ID:5

The effect of intraperitoneal injection of lead in different doses on liver function in male Wistar rats

Elham Moshtaghie[1], Hashem Nayeri[1], Ali Asghar Moshtaghie[1]

[1]Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

Objective: The aim of the present study is to examine the effects of lead on serum levels of liver-relatedparameters in Wistar rats.

Material and Methods: In this study, the effect of intraperitoneal injection of lead in different doses of 4 and 6 mg per kilogram of body weight on liver function in 24 male Wistar rats was studied after a short period (15 days) and long period (60 day) of treatment time. Serum concentration of liver-related parameters was measured at the end of the period. Data were compared using spss18. To examine the results, $P<0.05$ was considered as the level of significance of the differences.

Results: According to the results, it seems that in short term lead has not created significant changes in the average activity of SGOT, SGPT, LDH, and ALP enzymes, total protein, and direct bilirubin between the control and the treatment groups. This is while with the increase in duration of injection in long-term period, these changes are significant. During the test, no deaths were observed in animals.

Conclusion: The results suggest that the changes made by lead on the activity of the enzyme measured depend on the duration.

Keywords: Lead, aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, alkaline phosphatase

Corresponding author Email address: moshtaghie.e@gmail.com

ID:6

Cytotoxic Effects of Caralluma Tuberculata Hydroalcoholic Extract Against DU145 Prostate Cancer Cells

Saman Sargazi[1], Fatemeh Meshkini[1], Sadegh Zarei[1], Hamidreza Galavi[2], Maryam Shahidi[1]

[1] Department of Biochemistry and Molecular Biology, School of Medicine, Yazd University of Medical Sciences, Yazd, Iran

[2] Department of Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: A tetrazolium salt has been used to develop a quantitative colorimetric assay for mammalian cell survival and proliferation. Caralluma tuberculata containing different components such as Flavonoids which have shown anti-cancer benefits. The aim of present study was to determine the anti-proliferative potential of the hydroalcoholic Caralluma tuberculate extract (HACE) on DU145 human Prostate carcinoma cell line.

Material and Methods: DU145 cells were grown in RPMI-1640 medium as monolayer cultures grown at 37°C in a humidified atmosphere of 5% Co2 in air. The anti-proliferative activity of the HACE was evaluated by MTT assay 24h,48h and 72h after exposure. The reaction is carried out in situ in multiwell plates, and the reaction product, a purple-colored formazan soluble in dimethylsulfoxide, is measured colorimetri-cally, using a multiwell plate reader in 630 nm.

Results: The relationship between the number of cells per well and the OD of the formazan produced was linear up to 2.5 x 105 cells per well. The mean OD at day 2 for 24 samples plated at 2.5 x 103 cells per well was 0.448±0.10, range 0.115-0.688. The results of MTT showed that ED50 of DU145 is 100 µg/ml of the HACE after 48h of treatment**.**

Conclusion: The MTT test is based on the enzymatic reduction of the tetrazolium salt MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-tetrazoliumbromide] in living, metabolically active cells but not in dead cells. This method can therefore be used to measure cytotoxicity, proliferation or activation. This study found that the HACE induced cell death in DU145 human prostate carcinoma cell line.

Keywords: Caralluma tuberculata, prostate Cancer, MTT assay, Cell viability

Corresponding author Email address: sgz.biomed@gmail.com

ID:8

Nephrogenic acute respiratory distress syndrome: a narrative review on pathophysiology and treatment

Maryam Malek[1]

[1] Department of physiology, School of Medicine, Isfahan University of Medical Sciences

Objective: The kidneys have a close functional relationship with other organs especially the lungs. This connection makes the kidney and the lungs as the most organs involved in the multi-organ failure syndrome. The combination of acute lung injury (ALI) and renal failure results a great clinical significance of 80% mortality rate. AKI leads to an increase in circulating cytokines, chemokines, activated innate immune cells and diffuse of these agents to other organs such as the lungs. These factors initiate pathological cascade that ultimately lead to ALI and acute respiratory distress syndrome. We comprehensively searched the English medical literature focusing on AKI, ALI, organs cross talk, renal failure, multi organ failure and acute respiratory distress syndrome (ARDS) using the databases of PubMed, Embase, Scopus and directory of open access journals. In this narrative review, we summarized the pathophysiology and treatment of respiratory distress syndrome following AKI. This review promotes knowledge of the link between kidney and lung with mechanisms, diagnostic biomarkers, and treatment involved ARDS induced by AKI.

Keywords: Acute kidney injury, Acute lung injury, Renal failure, Respiratory distress syndrome, Multiple organ failure

Corresponding author Email address: malek_m57@yahoo.com

ID:9

Diagnostic value of RASSF1A gene hypermethylation in differential diagnosis of benign and malignant thyroid tumors

Gholamabbas Dinarvand[1]

[1] Department of Clinical Biochemistry, Abadan School of Medical Sciences, Abadan, Iran

Objective: Fine Needle Aspiration (FNA) is the best method for diagnosis of thyroid tumors, but it use only for about 20% of cases, the test results is reported as suspicious or intermediate. The aim of this study was to evaluate the RASSF1A gene hypermethylation as a Sensitive and Specific Molecular Test in Differential Diagnostic between Malignant and Benign Thyroid Tumors.

Material and Methods: To investigate hypermethylation of DNA after bisulfite treatment and PCR, enzyme digestion products are placed under. The measured concentration band in polyacrylamide gel(using software ImageJ) calculation of the quantity of methylation abnormalities.Further, the statistical analysis was used to determine the sensitivity and specificity of this test.

Results: Quantitative evaluation of the RASSF1A gene hypermethylation 8 out of 25 samples malignant tumors from benign distinguish.

Conclusion: The RASSF1A gene promoter hyper methylation has 92% sensitivity 100% specificity.

Keywords: tumor marker, RASSF1A gene, hypermethylation, papillary thyroid carcinoma,

Corresponding author Email address: ab55di@gmail.com

ID:14

Palmitate-induced impairment of autophagy turnover leads to increased inflammation in skeletal muscle cells by regulating the oxidative stress process

Asie Sadeghi[1], Reza Meshkani[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Autophagy is a cellular process activated in response to various stresses such as starvation, hypoxia, and oxidative stress. Autophagy was reported to modulate the inflammatory pathways. However, the role of autophagy in regulation of palmitate-induced inflammation of skeletal muscle C2C12 cells is not known.

Material and Methods: In the present study, we investigated the autophagic pathway in C2C12 cells treated with 0.5mM palmitate. We showed that the protein levels of LC3B and P62 increased after 12h palmitate treatment in C2C12 cells. Besides, inhibition of autophagy by chloroquine (CQ) and activation by rapamycin was associated with elevated mRNA and protein levels of IL-6 and TNF-α inflammatory cytokines in the C2C12 cells. To study the mechanism by which autophagy impairment leads to the activation of inflammatory responses, we measured Reactive oxygen species (ROS) levels in palmitate-treated cells.

Results: It was found that palmitate induces ROS production in C2C12 cells. In the further experiment, we showed that pretreatment of the cells with N-acetyl cysteine (NAC), a ROS scavenger, resulted in reduction of inflammatory responses along with the amelioration of LC3-B and P62 protein in the C2C12 cells treated with palmitate.

Conclusion: These findings suggest that palmitate-induced impairment of autophagy turnover leads to increased inflammation in skeletal muscle cells by regulating the oxidative stress process.

Keywords: autophagy, IL-6, TNF, LC3-B, Oxidative stress

Corresponding author Email address: asiesadeghi@gmail.com

ID: 17

Evaluation of antiproliferative effect of a new exopolysaccharide produced by Halorubrum sp. TBZ112

Masoud Hamidi[1], Rasool Mirzaei[1], Cédric Delattre[2], Korosh khanaki[1], Sobhan Faezi[1], Fatemeh Karimitabar[1]

[1] Research Center of Medical Biotechnology, Faculty of Paramedicine, Guilan University of Medical sciences, Langroud, Iran

[2] Université Clermont Auvergne

Objective: Microbial exopolysaccharides (EPSs) have several applications in pharmaceutical, nutraceutical and cosmetic industries. In the present study we aimed towards extraction, purification, monosaccharide composition and antiproliferative effect of exopolysaccharides produced by Halorubrum sp. TBZ112.

Material and Methods: The EPS production by Halorubrum sp. TBZ112 was performed in modified marine broth at optimized conditions. The precipitated exopolysaccharides by cold absolute ethanol were dialyzed against distilled water and was finally freeze-dried and weighted. The FT-IR, SEM, high-performance anion exchange chromatography (HPAEC) and high-performance size exclusion chromatography (HPSEC) coupled with multiangle light scattering (MALS) were performed. Antiproliferative effect of the EPS was done using MTT assay with concentration range of 100-1000 µg/ml in MKN45 and HDF cells for 24 and 48 h.

Results: Halorubrum sp. TBZ112 excreted 480 mg. L-1 of EPS under optimal growth conditions. Analyses by HPAEC indicated that the extracted EPS is a heteropolysaccharide containing ten moieties. The molecular weight of Halorubrum sp. TBZ112'EPS was estimated to be 5.052 kDa. All the EPS sample concentrations had no significant effect on the proliferation of human dermal fibroblast (HDF) and MKN-45 cells (p.value > 0.05).

Conclusion: The EPS from TBZ112 is relatively low molecular weight in comparison with other described EPSs isolated from extreme marine habitats and it is the first EPS produced by an extremely halophilic archaeon related to Halorubrum genus. This EPS can be applied as a biocompatible compound and requires more investigations in terms of their biological activities and further chemical structure details.

Keywords: Exopolysaccharide, Halorubrum, Biocompatible, Antiproliferative effect

Corresponding author Email address: m.hamidi2008@gmail.com

ID:19

Inhibitory effects of phenolic compounds on human lipase activity

Ghazal Khooshehchin[1], Farideh Razi[2], Parichehreh Yaghmaei[1], Azadeh Ebrahim Habibi[3]

[1] Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

[2] Diabetes Research Center, Endocrinology and Metabolism Clinical Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

[3] Biosensor Research Center, Endocrinology and Metabolism Molecular -Cellular Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

Objective: Lipase plays an important role in lipid digestion, therefore by using of lipase inhibitors, fat absorption can be decreased and potentially result into weight loss. Phenolic compounds have been reported as lipase inhibitors. In this study, the effects of 14 phenolic compounds on lipase activity were examined. Our results showed that 4,4′-isopropylidenediphenol, bithionol, hexachlorophene and diethylstilbestrol can be considered as lipase inhibitor, while diethylstilbestrol has the highest inhibitory effect on lipase. Human lipase (LPS) is a single-chain glycoprotein with 449 aminoacid and a molecular weight of 52 KD that hydrolyze glycerol esters of triacylglycerols LPS can be inhibited by various natural and chemical compounds In this research, inhibitory effect of phenolic compounds have been investigated on LPS In this in vitro study we analyzed effect of these 14 compounds on lipase activity: 2,6-Diisopropylphenol, 3,5-Diiodosalicylic acid, Carvacrol, 4-Chloro-2-isopropyl-5-methylphenol, Cumylphenol, Bithionol, Bis(4-hydroxyphenyl) methane, 4,4′-Cyclohexylidenebisphenol, Diethylstilbestrol, Diflunisal, 4,4′-Isopropylidenediphenol, 4,4′-Isopropylidenebis(2,6-dimethylphenol), Hexachlorophene and Tolmetin. All these compound purchased from Sigma (ST Louis USA). Dimetylsulfoxide (DMSO) (Merck/Darmstadt/Germany) was used as a solvent for the preparation of different concentrations (65,325,650,3250 mMOL) of above mentioned compounds.

Keywords: lipase, inhibitor, phenolic, compound

Corresponding author Email address: ghzl_kh@yahoo.com

ID:20

Identification of B and T cell epitope peptide vaccines from IGF-1 Receptor in breast cancer

Manijeh Mahdavi[1], Majid Kheirollahi[2], Violaine, Moreau[3], Mehrnaz Keyhanfar[4]

[1] Genetic and Molecular Biology Research Center, Research Institute for Primordial Prevention of Non-communicable disease, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Department of Genetics and Molecular Biology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

[3] CNRS UMR5048– UM- INSERM U1054, Centre de Biochimie Structurale, 29, rue de Navacelles, 34090 Montpellier Cedex, France

4 Department of Biotechnology, Faculty of Advanced Sciences and Technologies, University of Isfahan, Isfahan, Iran

Objective: The insulin-like growth factor-1 receptor (IGF-1R) plays a key role in proliferation, growth, differentiation, and development of several human malignancies including breast and pancreatic adenocarcinoma. IGF-1R targeted immunotherapeutic approaches are particularly attractive, as they may potentially elicit even stronger antitumor responses than traditional targeted approaches. Cancer peptide vaccines can produce immunologic responses against cancer cells by triggering helper T cell (Th) or cytotoxic T cells (CTL) in association with Major Histocompatibility Complex (MHC) class I or II molecules on the cell surface of antigen presenting cells.

Material and Methods: In our previous study, we set a technique based on molecular docking in order to find the best MHC class I and II binder peptides using GOLD.

Results: In the present work, molecular docking analyses on a library consisting of 30 peptides mimicking discontinuous epitopes from IGF-1R extracellular domain identified peptides 249 and 86, as the best MHC binder peptides to both MHC class I and II molecules. The receptors most often targeted by peptide 249 are HLA-DR4, HLA-DR3 and HLA-DR2 and those most often targeted by peptide 86 are HLA-DR4, HLA-DP2 and HLA-DR3.

Conclusion: These findings, based on bioinformatics analyses, can be conducted in further experimental analyses in cancer therapy and vaccine design.

Keywords: Docking, MHC, Bioinformatics, Peptide vaccine, IGF-1 receptor

Corresponding author Email address: manijeh.mahdavi@gmail.com

ID:21

In silico prediction discontinuous B cell epitope peptide vaccine against leishmaniasis

Manijeh Mahdavi[1], Majid Kheirollahi[2], Violaine Moreau[3]

[1] Genetic and Molecular Biology Research Center, Research Institute for Primordial Prevention of Non-communicable disease, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Department of Genetics and Molecular Biology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

[3] CNRS UMR5048– UM- INSERM U1054, Centre de Biochimie Structurale, 29, rue de Navacelles, 34090 Montpellier Cedex, France

Objective: The kinetoplastid protozoan parasites of the genus Leishmania cause diseases for which treatment is difficult and there is still no vaccine for use in humans. Leishmanolysin is the major enzymatic protein component of the promastigote surface. Because of its role as a ligand involved in the interaction of the parasite with defensive systems of the host, including components of the complement system and the macrophage surface is an attractive candidate for designing peptide vaccines.

Material and Methods: In the current study, PEPOP was used to predict peptides from Leishmanolysin in the form of discontinuous B-cell epitopes. PEPOP identified segments comprised of accessible and sequence continuous amino acids. These segments were clustered according to their spatial distances using method of extensions: Optimized Nearest Neighbor (ONN), Optimized Flanking Nearest Neighbor (OFN), Optimized Patched segments Path (OPP), Traveling Salesman Problem (TSP), and Shortest Path (SHP).

Results: Each peptide sequence has been generally comprised of several segments. From 3D structure of Leishmanolysin, PEPOP identified 100 segments gathered in three clusters according to their spatial distances. In this study, we wanted to predict peptides from a specific region of the protein, the residue 264-345 on the active site of Leishmanolysin. It corresponds to the segments S34 to S48. The predicted peptides, which did not relate to this region (264-345) were removed and at last 29 peptides were selected.

Conclusion: These results using bioinformatics analyses could be conducted in vaccine design against Leishmania infections.

Keywords: Leishmaniolysin, Discontinuous B cell epitope, Bioinformatics-, Peptide vaccine

Corresponding author Email address: manijeh.mahdavi@gmail.com

ID:23

The effects of vitamin E supplementation on endometrial thickness, and gene expression of vascular endothelial growth factor and inflammatory cytokines among women with implantation failure

Zahra Hashemi[1], Esmat Aghadavod[1], Zatollah Asemi[1], Behnaz Khani[2]

[1] Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences

[2] Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: This research was performed to determine the effects of vitamin E supplementation on endometrial thickness, and gene expression of VEGF and inflammatory cytokines among women with implantation failure.

Material and Methods: A randomized clinical trial was done among 40 women with implantation failure aged 18-37 years old. Participants were randomly divided into two groups: group A (n=20) received 400 IU vitamin E supplements and group B (n=20) received placebo for 12 weeks. Fasting blood samples were taken at baseline and after the 12-week treatment to determine biomarkers of oxidative stress, and gene expression of VEGF and inflammatory cytokines.

Results: After the 12-week intervention, compared with the placebo, women with implantation failure who consumed vitamin E supplements had significantly increased serum vitamin E levels (+18.6±15.0 vs. -1.5±1.0 nmol/mL, P<0.001) and endometrial thickness (+1.1±0.9 vs. -0.5±0.3 mm, P=0.01), and significantly decreased plasma malondialdehyde (MDA) concentrations (-0.4±0.3 vs. +0.4±0.3 µmol/L, P<0.004). In addition, results of RT-PCR demonstrated that compared with the placebo, vitamin E intake downregulated gene expression of oxidized low-density lipoprotein (Ox-LDL) (P=0.008), interleukin-1 (IL-1) (P=0.02) and tumor necrosis factor alpha (TNF-α) (P=0.007) in peripheral blood mononuclear cells of women with implantation failure.

Conclusion: Overall, vitamin E supplementation for 12 weeks among women with implantation failure had beneficial effects on endometrial thickness, MDA values, and gene expression of Ox-LDL, IL-1 and TNF-α.

Keywords: Vitamin E, supplementation, implantation failure, gene expression

Corresponding author Email address: z.hashemi93@gmail.com

ID:24

Evaluation of oxidative stress in burn blister fluids and its relationship with oxidative stress in serum

Seyed Isaac Hashemy[1], Arash Beiraghi Toosi[1]

1 Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Burn injury is a common medical emergency. Burn blisters and the possibility of transfer of their content including free radicals and inflammatory mediators has been a controversial issue, affecting therapeutic protocol. A group of scientists who believe in this transfer, recommend the debriment of burn blisters to avoid systemic complications due to free radicals; while the others who do not believe in this association, prefer to keep the blisters to reduce the possibility of infections and accelerate the process of wound healing.This study was aimed to investiagte the correlation between some oxidative stress markers (prooxidant-antioxidant balance, catalase, superoxide dismutase, and protein carbonyl content) in serum and blister content in burn injury.

Material and Methods: Serum samples and blister fluids were collected from 25 patients hospitalized in Department of Burn injury, Imam Reza hospital, Mashhad, Iran. The collection of samples was performed twice from each patient in the 1st and 2nd days after injury. Commercial kits were utilized to measure the above mentioned factors.

Results: The activity of catalase and superoxide dismutase did not have a significant difference between the 1st and 2nd in serum samples and blister fluids. But their activities were a bit lower in blister fluids comared to serum samples. Prooxidant-antioxidant balance and protein carbonyl, however, were significantly higher in blister fluids compared to serum samples; and an increase from the 1st day to 2nd day was also observed.

Conclusion: The correlation between oxidative stress markers in serum samples and blister fluids could not be proved through this study.

Keywords: Burn injury, Burn Blister, Oxidative stress, Superoxide dismutase, Protein carbonyl

Corresponding author Email address: hashemyi@mums.ac.ir

ID:25

Sodium valproate ameliorates Aluminum -induced cell death and oxidative stress in PC12 cells

Forough Iranpak[1], Mohammad Ali Takhshid[2], Mahmoud Vessal[1]

[1] Fars Science and Research Branch, Islamic Azad University, Shiraz, Iran

[2] Diagnostic Laboratory Sciences and Technology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Previous studies have implicated the role oxidative stress in Aluminum (Al)-induced neurotoxicity. Furthermore, recent studies have indicated that sodium valproate (SVP) had neuroprotective effects against oxidative stress. In the current study we aimed to explore whether SVP can exert protective effects against Al-induced cell death, apoptosis and oxidative stress in PC12 cells.

Material and Methods: In this in vitro study PC12 cells were treated with various concentration of Aluminum maltolate (Almal) (100-1500 µM) in the presence and absence of SVP (50-400µM).MTT assay was used to explore the effects of SVP on Almal-induced PC12 cell death. Flow cytometry using 7AAD/annexin-V and 2',7'-Dichlorofluorescin diacetate (DCFDA) were applied to quantify the effects of SVP on Al-induced apoptosis and oxidative stress, respectively. Mitochondrial membrane potential (MMP) was evaluated with a fluorescence microplate reader using rhodamine 123.

Results: A 48 h exposure of PC12 cells to Almal (100-1500 µM) dose dependently reduced cell viability; increased the percentage of apoptotic cells, enhanced oxidative stress and MMP. The effects of Almal at IC50 concentration (1000 µM) on cell death, apoptosis, oxidative stress, and MMP were significantly ($P<0.05$) blunted by SVP in a dose dependent manner.

Conclusion: The findings suggest that SVP can inhibit Al-induced cell death and apoptosis of PC12 cells via ameliorating oxidative stress.

Keywords: Aluminum, Sodium valproate, Oxidative stress, Apoptosis, PC12 cells

Corresponding author Email address: takhshidma@sums.ac.ir

ID:27

Reconstruction of the Emitter Site of Rluc by Manipulating the Primary Structure of Enzyme: A Dry Lab Approach

Yasaman Mazidi[1], Rahman Emamzadeh[1], Mahboobeh Nazari[2]

[1] Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran

[2] Monoclonal Antibody Research center, Avicenna Research Institute, ACECR, Tehran, Iran

Objective: Renilla luciferase-based assay is designed to provide a fast and sensitive method of detecting gene expression. It is a convenient alternative to firefly (Photinus pyralis) reporter. Renilla luciferase is a 36-kDa protein from sea pansy (Renilla reniformis) that requires only coelenterazine and oxygen to produce a blue light of 480nm. Understanding luciferase enzymology and the structure of compounds that modulate luciferase activity can be used to improve the design of luminescence-based assays making the reagent orders of magnitude more sensitive than published methods.

Material and Methods: By the use of RCSB server (http://www.rcsb.org), we got PDB file of the Rluc with 2PSF ID and the substrate from https://pubchem.ncbi.nlm.nih.gov with 2830 PubChem ID. We modified the active site in two positions with two individual mutations (Met143 to Val143 & Trp121 to Phe121) in order to improve the interactions between the hydrophobic substrate and the enzyme so that the catalysis become more efficient. We analyzed the binding properties using docking package “UCSF Chimera version 1.12” and “Python Prescription 0.8”.

Results: The comparison between binding affinities among obtained results showed that this manipulation cannot make the interactions between Rluc and its substrate any better or more productive.

Conclusion: This investigation can be used as a base for other projects using bioinformatics in developing probe-based assays in the genetic and epigenetic diagnosis**.**

Keywords: Renilla Luciferase, Coelenterazine, Protein engineering, Docking, Gene sensor

Corresponding author Email address: ya_miim@hotmail.com

ID:28

Improving the Catalytic Efficiency of Rluc Using Protein Engineering: A Docking Approach

Yasaman Mazidi[1], Rahman Emamzadeh[1], Mahboobeh Nazari[2]

[1] Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran.

[2] Monoclonal Antibody Research center, Avicenna Research Institute, ACECR, Tehran, Iran

Objective: Due to its ability to emit light, the luciferase from Renilla reniformis (RLuc) is widely employed in molecular biology as a reporter gene in experiments. To accomplish this bioluminescence, the 36-kDa enzyme catalyzes the degradation of its substrate coelenterazine in the presence of molecular oxygen, resulting in the product coelenteramide, carbon dioxide, and the desired photon of light. According to the studies, triads D120, E144, H285, and N53, W121, P220 are essential residues in catalytic and binding processes respectively.

Material and Methods: In the first step, we obtained the structural data of the substrate from PubChem database (https://pubchem.ncbi.nlm.nih.gov) with 2830 PubChem ID and the enzyme from RCSB (http://www.rcsb.org) with 2PSF PDB ID. In order to improve the mechanism of action, we replaced residue Met143 with a more hydrophobic amino acid Val143 to increase the stability of the hydrophobic substrate in the active site cavity.

Results: Using "Python Prescription 0.8" and docking package "UCSF Chimera version 1.12" we could get that by this gene manipulation, coelenterazine will have a binding affinity of -4.4 kcal/mol to the protein that may not cause the enzyme to act more efficiently than its wild-type on the luminance substrate.

Conclusion: By this study, we have shown that making the area of the active site more hydrophobic in this position cannot improve the functional capability and affinity of the enzyme to its target. These kinds of computer-based analysis provide basic needed data for improving the biosensors cost-effectively and reliably and are absolutely essential before taking the idea into action.

Keywords: Renilla Luciferase, Coelenterazine, Molecular probe, in-silico Analysis, Biosensor

Corresponding author Email address: ya_miim@hotmail.com

ID:29

Effects of methanolic extract of Allium hirtifolium. Boiss on liver and Kidney damage induced by lead acetate toxicity in wistar rat

Nafise Hajian[1], Zahra Rezayatmand[1], Kahin Shahanipur[1]

[1] Falavarjan Branch, Islamic Azad University, Falavarjan, Isfahan, Iran

Objective: In this study the liver and kidney protective effects of methanolic extract of Allium hirtifolium. Boiss (shallots) on liver and kidney which damage induced by lead acetate (PbAc) toxicity in wistar rats.

Material and Methods: Sixty adult wistar rats weighing 210–250 g were given feed and water. They were allocated randomly into six groups (ten each) for 15 and 30 days as follows: control group, PbAc(10mg/L drinking water), methanolic extract of shallots (12.5 mg/kg), methanolic extract of shallots (25mg/kg), PbAc plus methanolic extract of shallots (12.5mg/kg) and PbAc plus methanolic extract of shallots (25mg/kg). Serum concentrations of glucose, the liver enzymes such as aspartate transaminase(AST), alanine transaminase(ALT), Gamma Glutamyl transferase(GGT) and alkaline phosphatase(ALP), and renal parameters (including uric acid, urea, creatinine, and total protein), were measured at 15days and the end of period in all studied groups.

Results: PbAc exposure significantly increased liver and renal parameters activities. The treatment (30 days) by shallots (12.5 and 25mg/kg) +PbAc promoted a significant increase in serum enzyme levels AST, ALT, ALP, GGT and glucose. The treatment (15 days) by shallots (12.5mg/kg) +PbAc not significant change in liver (except AST, ALT significantly decreased) and renal parameters. The both time treatment by both dose of shallots +PbAc promoted a significant decrease in serum enzyme levels creatinine, and total protein.

Conclusion: The results of the study showed that the time of consuming lead and the extracts and also the densities and types of the extracts can have different effects on the factors related to hepatic and renal damages.

Keywords: Hepatic enzymes, renal, Lead acetate, Shallot

Corresponding author Email address: nafisehajian@yahoo.com

ID:30

Hyaluronic acid algorithm-based models for assessment of liver fibrosis: translation from basic science to clinical application

Zeinab Babaei[1], Hadi parsian[2]

[1] Department of Clinical Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Cellular and Molecular Biology Research Center, Babol University of Medical Sciences, Babol, Iran

Objective: The estimation of liver fibrosis is usually dependent on liver biopsy evaluation. Because of its disadvantages and side effects, researchers try to find non-invasive methods for the assessment of liver injuries. Hyaluronic acid has been proposed as an index for scoring the severity of fibrosis, alone or in algorithm models. The algorithm model in which hyaluronic acid was used as a major constituent was more reliable and accurate in diagnosis than hyaluronic acid alone. This review described various hyaluronic acid algorithm-based models for assessing liver fibrosis.

Material and Methods: A PubMed database search was performed to identify the articles relevant to hyaluronic acid algorithm-based models for estimating liver fibrosis.

Results: The use of hyaluronic acid in an algorithm model is an extra and valuable tool for assessing liver fibrosis.

Conclusion: Although hyaluronic acid algorithm-based models have good diagnostic power in liver fibrosis assessment, they cannot render the need for liver biopsy obsolete and it is better to use them in parallel with liver biopsy. They can be used when frequent liver biopsy is not possible, in situations such as highlighting the efficacy of treatment protocol for liver fibrosis.

Keywords: Algorithm, hyaluronic acid, liver disease, liver fibrosis

Corresponding author Email address: pariababaii@gmail.com

ID:32

The study of urinary biopyrrin levels and its correlation with blood oxidative stress in patients with liver cirrhosis

Homayun Dolatkhah[1], Maryam Shamsi[1], Mohammad Rahmati-Yamchi[1]

[1] Tabriz University of Medical Sciences, East-Azarbaijan, Tabriz, I. R. Iran

Objective: Reported that urine biopirin is one of the most valuable biomarkers for assessment of oxidative stress. On the other hand, liver cirrhosis is one of the hepatic disorders that significantly affects the antioxidant defense system and increases oxidative stress. Therefore, the main aim of this study was to investigate the amount of biopyrrin in urine and its relationship with the level of oxidative stress in patients with liver cirrhosis.

Material and Methods: In this study, a total of 136 subjects were selected in four groups: control group (group A), healthy subjects, and the patients were divided into three groups; the cirrhotic patients without ascite flouid (group B), the cirrhotic patients with ascite flouid and Infected (group C) and cirrhotic patients with ascitic fluid without infection (group D). In subjects with the aim of this study, and by obtaining informed written consent of the urine samples for measuring the biopyrrin using Costebio ELISA kit and serum for measuring malondialdehyde using calorimetric thiobarbituric acid method and total antioxidant capacity using Randox kit was taken from them. SPSS software version 16 was used to analyze the results.

Results: The mean levels of urinary biopyrrin and lipid peroxidation increased significantly in the three case groups compared to the control group (in both cases, $p < 0.0001$). The mean levels of total antioxidant capacity in the three case groups showed a significant decrease compared to the control group ($p < 0.0001$). There was an inverse and significant correlation between urine biopyrrin levels and total antioxidant capacity of serum ($r = -0.814$, $p = 0.001$), and a direct and significant correlation between urinary biopyrrin and levels of malondialdehyde in serum was observed ($r = 0.819$, $p = 0.004$).

Conclusion: The results of this study show that oxidative stress increases in patients with liver cirrhosis and the other hand, there is a strong and significant correlation with the amount of urinary biopyrrin and oxidative stress in patients with liver cirrhosis.

Keywords: Urinary Biopyrrin, Oxidative Stress, Liver Cirrhosis

Corresponding author Email address: dolatkhahh@gmail.com

ID:35

Evaluation of oxidative stress markers in male favic patients

Payam Baziyar[1], Reza Rasoul zadeh[1]

[1] Department of Biochemistry, Faculty of Sciences, Najafabad Branch, Islamic Azad University, Najafabad, Esfahan, Iran

Objective: Favism is caused by the intolerance of fava bean or inhalation of Vicia faba pollen. Patients have deficiency in glucose-6-phosphate dehydrogenase, enzyme which play a role in maintaining the balance of active oxygen species and its deficiency causes oxidative

damage. The purpose of this study was to measure the serum levels of some oxidative stress markers in favic patients and compare them with healthy subjects.

Material and Methods: In this case-control study, blood samples were collected from male favic patients (n=100) and healthy subjects (n=100) with 2-6 years old. Measurements of oxidative stress parameters were performed using appropriate kits. Data analysis was performed using SPSS software.

Results: There was no significant difference between the serum levels of paraoxonase (140.82 ± 0.5 for patients and 112.50 ± 23.42 for healthy cases) and carbonyl (0.62 ± 0.12 for patients and 0.58 ± 0.11 for healthy cases) in two groups (P <0.05) while the level of catalase (3.7 ± 0.8 for patients and 11.2 ± 1.1 for healthy cases) and thiol (0.15 ± 0.05 for patients and 0.24 ± 0.04 for healthy cases) showed a significant difference in patients and control group (P <0.05).

Conclusion: Based on the results, it can be concluded that deficiency in G6PD enzyme can lead to oxidative damage by altering the serum levels of some oxidative stress parameters.

Keywords: G6PD, favism, oxidative stress

Corresponding author Email address: payambaziyar@gmail.com

ID:36

Study of the effects of Thymus vulgaris on the activity and structure of paraoxonase1 Enzyme in Hyperlipidemic rats

Javad Saffari-Chaleshtori[1], Keihan Ghatreh-samani[1], Sahar Rostamian[1], Hojatollah Rohi[1], Ehsan Heidari[1]

[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Paraoxonese1 (PON1) is an enzyme associated with high density lipoprotein (HDL) with aryl esterase and paraoxonase activity in serum. The antioxidant properties of this enzyme protect the oxidation of low density lipoprotein (LDL). Certain antioxidant compounds and medical plants, such as Thymus vulgaris, can protect the LDL from oxidation. In this study, we evaluate the effects of Thymus vulgaris on the PON1 enzyme in hyperlipidemic and hypercholesterolemia rats.

Material and Methods: We used cultivated Thymus vulgaris (CTV) and harvested Thymus vulgaris (NTV) from nature in hyperlipidemic and hypercholesterolemia rats for the demonstration of the PON1 enzyme activity and the PON1 gene expression. Then, we demonstrated the molecular dynamic (MD) effects of their compounds on this enzyme via simulation studies using the AutoDockv:4.0.0 and the Gromacs software.

Results: CTV and NTV reduced the serum three glycerides (TG) and total cholesterol (TC), and they increased the PON1 serum aryl esterase activity; CTV and NTV, however, had no effect on the PON1 gene expression. The simulation and the MD results proved that among all the compounds analyzed by gas chromatography (GC), trans-Caryophyllene and carvacrol of CTV and NTV compounds had greater RG, RMSD, and RMSF than other compounds. Trans-Caryophyllene and carvacrol were affected to the greatest degree on the secondary structure of PON1.

Conclusion: CTV and NTV can increase the PON1 activity in serum, without increasing the gene expression. According to simulation and MD studies, trans-Caryophyllene and carvacrol approximately had the most important for increase the PON1 activity.

Keywords: Thymus vulgaris, PON1 enzyme, Molecular dynamic

Corresponding author Email address: J_Saffari@yahoo.com

ID:37

Different Application of Aptamers for Cancer Diagnosis and Therapy (Research review)

Maryam Beheshti[1]

[1] Department of Pharmaceutical Biotechnology, School of Pharmacy, Isfahan University of Medical Science, Isfahan, Iran

Objective: Nucleic acid aptamers are short single-stranded oligonucleotides that fold into unique three-dimensional structures and bind to a wide range of targets, including proteins, small molecules, metal ion, viruses, bacteria, and whole cells, with high specificity and binding affinities (from the low nanomolar to picomolar range) similar to those of antibodies . Aptamers also have advantages compared to antibodies, such as rapid in vitro selection, cell-free chemical synthesis, low immunogenicity and superior tissue penetration because of their smaller size. SELEX Technology: The selection cycle starts by mixing an initial DNA or RNA library with the target of interest. A library generally consists of up to 1015 random sequences of 20–60-nucleotides flanked by fixed primer regions at the 5′ and 3′ ends. After incubation, target-bound sequences are separated from unbound sequences through various partition strategies. A nucleic acid aptamer-based platform is superior to current antibody-based strategies, as aptamers allow: better tissue penetration; lack of immunogenicity; faster target accumulation and shortened body clearance, enabling the use of shorter-lived radioisotopes;simpler, better controlled, and thus less expensive chemical production; lack of aggregation issuesamenability to a variety of chemical modifications that are needed for production andstorage, such as pH changes or elevated temperature.

Keywords: Cell-specific aptamer, SELEX, cancer diagnosis, cancer therapy, targeted delivery

Corresponding author Email address: Maryam_beheshtee@yahoo.com

ID:38

Detection of PHA in Escherichia coli contains of Genes Encoding Poly (3-hydroxyalkanoate) Synthase from Pseudomonas aeruginosa PTCC 1310

Maryam Beheshti[1], Hamid Mir Mohammad Sadeghi[1], Daryoush Abedi[1]

[1] Department of Pharmaceutical Biotechnology, School of Pharmacy, Isfahan University of Medical Science, Isfahan, Iran

Objective: The aim of this study was to express these genes and optimize the conditions for their expression in E.coli.The optimization of conditions for phaC genes expression can serve as an important stage for establishing PHA production in E.coli.

Material and Methods and Results: To confirm the expression of functional PHA synthase enzymes by E.coli BL21 (DE3) cells carrying the phaC genes, the accumulation of PHA in bacteria was detected with Nile red (11). The E.coli BL21 (DE3) cells carrying the phaC gene, E.coli BL21 (DE3) without the phaC gene (as the negative control) and P.citranolleise (as the positive control) were investigated for PHA production. E.coli BL21 (DE3) cells were streaked on an LB plate supplemented with sodium-gluconate (0.5%w/v), Nile red (0.05 µg/ml), IPTG (0.1 mM) and ampicillin (100 µg/ml).

Conclusion: Using a Nile red plate assay, the accumulation of PHA in bacteria was detected which confirmed the expression of functional PHA synthase enzymes enzymes in E.coli BL21(DE3) cells. To increase the yield of PHA production, using mutant strains of E.coli that could block the oxidation of fatty acids and accumulate greater level of PHA is also recommended.

Keywords: PhaC1, PhaC2, Polyhydroxyalkanoate, Protein expression, PHA detection

Corresponding author Email address: Maryam_beheshtee@yahoo.com

ID:39

Lead Contents in Ca Dietary Supplements

Mehri Aliasgharpour [1]

[1] Faculty Member at Reference Health Laboratory- Research Center- Ministry of Health & Medical Education, Tehran, Iran

Objective: Calcium is one of the most important nutritional elements for optimal bone and dental health, and prevention or treatment of osteoporosis. Studies suggest that calcium, along with vitamin D, may have benefits beyond bone health, and it is generally accepted that the heart, muscles, and nerves also need calcium to function properly. However, the safety and efficacy of some calcium supplements have been questioned and it is important for individuals to know what types of supplements are the most appropriate.

Material and Methods: An academic search was conducted in EMBASE and PubMed databases for investigating lead content in calcium supplements between years 2000 to 2017. Different forms of calcium supplements are available in the markets; bonemeal, dolomite, refined, natural source calcium carbonate salts, and other chelates such as calcium citrate.

Results: Studies indicated that increased Pb concentration in the supplements ($p<0.001$) may pose a health risk particularly to children with milk intolerance who rely on these products to meet their calcium requirement. Investigations showed only 10% of commonly manufactured Ca supplements analyzed by Graphite Furnace and Flame Atomic Spectrometry met the criteria of acceptable Pb levels (1.5 g/daily dose). It was also found that lead intake was highest in chelated calcium supplements whereas lowest through calcium supplements with vitamin D formulation. Another study indicated that the chelated calcium such as calcium gluconate, calcium lactate and calcium citrate were free of lead.

Conclusion: It is important manufacturers to improve their quality control procedures and to label their products with possible lead level accordingly so that consumers can make informed choices.

Keywords: Calcium Supplements and, Lead, Atomic Graphite Furnace Spectrometry, Flame Atomic Absorption Spectrometry

Corresponding author Email address: aliasgharpour@health.gov.ir

ID:40

Comparative study of Oleracein E and Oleracein L effects on antioxidant enzyme activities, diabetic factors and damage oxidative biomarker levels in β-TC6 pancreatic cell line

Hanie Roozi[1], Masoud Mashhadi akbar boojar[1], Akram Eidi[1]

[1] Kharazmi university

Objective: Oleracein E and Oleracein L are two active component in Purslane. The object of this research is use these alkaloids that are effective in metabolism and have herbal origin. We select indicators including anti-oxidant enzyme, oxidative damage biomarker, glucose releasing enzymes and anti-diabetic factors to examine the role of both alkaloids on effective factors in diabetic pathway.

Material and Methods: β- TC6 cells were cultured for 24 hours. Then glucose uptake, insulin secretion, Super Oxide Dismutase (SOD), Catalase (CAT), Glutathione Peroxidase (GPX), malondialdehyde (MDA), dityrosine (DTY), alpha amylase and alpha glucosidase of pancreatic cell line were evaluated in the range of 0 to 400 µM of two alkaloids. Two alkaloids were purchased from Sigma Company.

Results: Data showed that both alkaloids able to increase antioxidant enzyme activities and decrease of oxidative biomarkers significantly. α- amylase and α-Glucosidase showed similar enzymatic properties, since two alkaloids exhibited hypoglycemic effect by inhibition of these enzymes. These essential components induced relatively high glucose uptake and insulin secretion in pancreatic β-TC6 cell line.

Conclusion: Increase in inter cellular glucose levels by diabetes causes increased free radicals and oxidative stress in pancreatic cell. Treatment with both alkaloids cause inhibiting the production of free radicals and prevents the oxidative stress. Since two alkaloids have significant stimulator antioxidant properties and anti-diabetic on the pancreatic cell line, they can be used to as a vegetable in the food, protect pancreas to oxidative stress and can suggest that these have the hypoglycemic potential and could be useful on the diabetes therapy.

Keywords: anti-diabetic factors, antioxidant enzymes, oleracein E; oleracein L, glucose releasing enzymes, pancreatic β-TC6 cell line

Corresponding author Email address: roozih1987@gmail.com

ID:41

The molecular role of Bisphenol A (BPA) in Cancer: a review study

Samira Nomiri[1], Reyhane Hoshyar[2], Somayeh Hayati[1]

[1] Student Research Committee, Birjand University of Medical Sciences, Birjand, Iran

[2] Cellular and Molecular Research Center, Clinical Biochemistry Department, Birjand University of Medical Sciences, Birjand, Iran

Objective: Bisphenol A (BPA) as an endocrine-disrupting chemical can affect on the structure and function of the endocrine system by inhibiting endogenous hormones. It is a chemical, organic, non-steroidal and synthetic compound that has two phenolic rings that are joined together by a methyl bridge. There are two methyl groups on this bridge. The BPA release from several products including polycarbonate plastics, poly acrylates and polyesters. Many studies have shown that BPA can contribute to chronic human diseases, such as diabetes, cardiovasculardiseases, polycystic ovarian disease, low count sperm, hepatotoxicity, obesity and different cancers.

Material and Methods: We reviewed a number of articles from Pubmed, Scopus and Sciences direct databases to investigate the association between BPA and cancer associated signaling pathways especially apoptosis in various cancers.

Results: BPA is mainly involved in the regulation of several signaling pathways in cancer cells including growth, survival, proliferation, migration, invasion, and apoptosis. These regulations are activated by the binding of BPA to nuclear and membrane receptors, or by BPA-mediated stimulation of these receptors or control gene expression. For instance, BPA treatment up-regulates anti-apoptotic proteins containing Bcl-2 and Bcl-xL, and down-regulates pro-apoptotic proteins like p53, Bax and Bim.

Conclusion: Previous data of molecular mechanisms of BPA action illustrated a variety of pathways which very low concentrations of BPA can stimulate cellular responses during tumorigenesis.

Keywords: Bisphenol A, Cancer, Apoptosis

Corresponding author Email address: s.nomiri@bums.ac.ir

ID:42

A Dual-function Liposome-based Probe Made of Microalgae in Cancer Therapy

Elham Pahlevani Gazi[1]

[1] Cellular and Molecular Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences

Objective: Undoubtedly, the biochemical characteristics of liposomes have been well known. Thereby they can be employed as suitable carriers in research and clinical field. On the other hand, microalgae contain some pigments possessing unique properties such as cytotoxicity, antiproliferation and pro-apoptotic. Furthermore due to physicochemical features of a pigment called Phycobilin, it can be used as fluorescent material. In this paper, a kind of novel probe will be introduced.

Material and Methods: The hydrophobic pigment Fucoxanthin (Fuco) is incorporated in among tails of phospholipid bilayer of targeted liposome coated by polyethylene glycol. Fuco possesses potent anticancer as well as antiangiogenic properties. Thus it implicates therapeutic role in liposome structure. Moreover phycobilin-coupled antibodies or conjugation of phycobilins with protein A on the surfacee of liposome can act as a tracer in monitoring and imaging tumoral tissue.

Results: Natural pigments in this probe as both diagnostic and therapeutic may cause low side effects. Besides the payload of liposome is higher than other drug delivery systems.

Conclusion: By using this probe, imaging and treatment can be done simultaneously. Targeted therapy and lack of radiolabeled materials for monitoring are considered as extraordinary traits of these probes.

Keywords: Liposome, microalgae, probe, phycobilin, cancer

Corresponding author Email address: misselham_62@yahoo.com

ID:44

Fatty Acid Metabolism in cancer cells

Negar Dinarvand[1], Morteza Pourfarzam[1]

[1] Department of Clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Cancer has attracted more and more attention in recent years owing to its high morbidity and mortality rate. Cancer cells often have characteristic changes in metabolism, including glucose and fatty acid metabolism. Fatty acids are required for the synthesis of membranes and signaling molecules and are mainly used for the production and storage of energy. In this article, we review and summarize some of the important enzymes of lipid metabolism pathway in the genesis and progression of cancers.

Material and Methods: The literature review and recent investigations were studied. Data were analyzed and the consistent and controversial results were compared.

Results: According to studies, upregulation of lipogenesis is a hallmark of cancer and blocking the lipogenic pathway is known to cause tumor cell death by apoptosis. In addition, fatty acid oxidation also is highly required for survival and growth in some tumors. Changes in lipid metabolism can affect numerous cellular processes, including cell growth, proliferation, differentiation and motility.

Conclusion: Although, dysregulation of fatty acid metabolism is well known as a part of malignant transmutation in many different cancers, identification and targeting of the enzymes involved in order to prevent and/or treat cancer needs more research.

Keywords: Cancer, fatty acid, metabolism

Corresponding author Email address: pourfarzam@pharm.mui.ac.ir

ID: 47

Investigating the expression of microRNAs involved in acute myeloid leukemia molecular pathways

Mohsen koolivand[1]

[1] Student Research Committee Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Acute myeloid leukemia is the most lethal leukemia among blood cancers. Its prevalence is 3 to 4 per 100,000 people, and the number of people infected increases annually. Understanding its molecular mechanism can play an important role in the diagnosis and treatment of this disease. Considering this issue, in the present study, we have tried to study the current paths with further investigation. The expression of miR-181a and miR-155 in patients and cell lines have been analyzed.

Material and Methods: In this study, 4 NB-4, U-937, KG-1 and HL-60 cells were classified as AML (acute myeloid leukemia) and 15 AML patients and 15 samples as controls for this study were used. One-way ANOVA and t-test were used to analyze the data and also to evaluate the expression of Real-Time PCR.

Results: Our studies showed that the expression of miR-181a, that is a tumor suppressor, is increased in patients with the more progressive disease, which in the subsequent studies indicates a prognostic role of this miRNA. Expression of the cells in the form of acute forms was also high. In the case of miR-155, which was also an oncogenic membrane, expression in both cell and human cells increased in comparison to the control sample.

Conclusion: The present study showed that the highest the severity of the disease, the increased expression of miR-181a, which was raised in those who were treated and declined, the survival rate was highest. While the expression of miR-155 reduced the amount of cell proliferation with effect on cyclin factors. Possibly by controlling some of these miRNAs, one can expect better treatments.

Keywords: Acute myelogenous leukemia, miR-155, miR-181a, cancer

Corresponding author Email address: mkoolivand14@gmail.com

ID:48

Evaluation of the effect of sulforaphane isothiocyanate antioxidant on acute myeloid leukemia cell lines

Mohsen Koolivand[1], Soheila Moein[2], Keyanoosh Malekzadeh[3]

[1] Student Research Committee Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[2] Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Hormozgan, Iran

[3] Medical Genetics Department, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Hormozgan, Iran

Objective: Acute myeloid leukemia has the highest mortality among leukemias and the factors cause this leukemia, is miRNAs. Generally, disrupted of the expression of miRNAs can play a role in changing the regulation of proteins in vital and important cell pathways. On the other hand, components that affect the miRNA expression have a high importance therapeutic effect. Therefore, we study the effect of sulforaphane on acute myeloid leukemia cell lines and the expression pattern of miR-155 and miR-181a.

Material and Methods: In this study, 4 classes of HL-60, U937, KG1 and NB4 were used for the treatment. The doses used for the treatment of the cells were 15, 30, 45 and 60 µM of sulforaphane in 24 and 48 hours. After treatment, miR-155 and miR-181a expression were evaluated. In order to determine the apoptosis of the cells, a flow cytometry was used at that time.

Results: Our findings suggest that sulforaphane reduces the number of live cells and increases the mortality rate of myeloid rats. ($P < 0.05$). The use of this substance caused a significant reduction in the expression of both miRNA in the cells of patient\'s group ($P < 0.05$). Reduced expression of miR-155 can be positively related to the factors and proteins involved in the cellular circulation. The reduced level of miR-181a will probably affect the regulatory genes in the process of differentiation and proliferation of myeloid. Apoptosis assays also showed that the highest apoptosis has occurred in 60 µM of sulforaphane in KG1 cells with 46.60% rate of apoptosis.

Conclusion: The results indicate that sulforaphane increases the death rate of AML cells and decreases the expression of miR-155 and miR-181a. in this study, the number of live cells decreased. Anyway, in future studies, it is better to performance intervention inhuman in order to determine the clinical effects of sulforaphane.

Keywords: Myeloid leukemia, miR-155, miR-181a, sulforaphane

Corresponding author Email address: mkoolivand14@gmail.com

ID:51

An electrochemical Aptasensor for detection of PDGF-BB in human plasma sample and MCF-7 breast cancer cell lysates

Nasrin Razmi[1], Mohammad Hasanzadeh[2], Ahad Mokhtarzadeh[3], Nasrin Shadjou[4], Soltanali Mahboob[5]

[1]Pharmaceutical Analysis Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[3] Immunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[4] Department of Nanochemistry, Nano Technology Research Center, Urmia University, Urmia, Iran

[5] Department of Biochemistry, Higher Education Institute of Rab-Rashid, Tabriz, Iran

Objective: Platelet-derived growth factor BB, an important cytokine in serum, is a protein marker for cancer diagnosis and directly involved in tumor growth and progression. Therefore, accurate and rapid detection of PDGF-BB is significant in biomedical fields. Electrochemical techniques have recently been utilized for low cost, accurate and sensitive detection of PDGF-BB. In present study, a novel electrochemical aptasensor using cubic gold nanoparticles based on the specificity of aptamer-target recognition for quantification of PDGF-BB was constructed.

Material and Methods: Novel structure of gold nanoparticles containing alpha-cyclodextrin and specific DNA aptamer used for construction of GNPs-alpha-CD-Apt-Au biosensors. The fabricated aptasensors were employed for the detection of PDGF-BB in standard, human plasma samples and MCF-7 cells using an electrochemical AUTOLAB system, cyclic voltammetry (CV) and square wave voltammetry (SWV) techniques.

Results: Under optimized condition the calibration curve for PDGF-BB was linear in 0.52-1.04 nM with lower limit of quantification of 0.52 nM. Also the fabricated aptasensor exhibited excellent analytical performance for MCF-7 cells determination, ranging from 328-593 cells mL-1, with lower limit of quantification of 328 cells mL-1.

Conclusion: The results indicated that the use of GNPs-alpha-CD can improve the affinity of the PDGF-BB binding and accurate detection of PDGF-BB. Therefore, the GNPs-cubic-alpha-CD-Apt-Au aptasensor showed high sensitivity, selectivity, stability and applicability for the detection of PDGF-BB.

Keywords: Electrochemical Aptasensor, Platelet-derived Growth factor BB, Cancer biomarker, Gold nanoparticles

Corresponding author Email address: nrn.razmi@gmail.com

ID:52

Construction of Electrochemical sensor using Polydopamin- β-cyclodextrin coated on glassy carbon electrode and its application towards determination of some amino acids

Sattar Sadeghi[1], Farzaneh Fazli[2]

[1] Urmia university of medical Sciences -medical biochemistry Department

[2] Urmia university of medical Sciences-Anatomy Department

Objective: A novel nano biopolymer film was electrodeposited on the surface of glassy carbon through cyclic voltammetry from dopamine, β-cyclodextrin, and PHosPHate buffer solution in PHysiological PH (7.40). The electrochemical behavior of polydopamine-Beta-cyclodextrin modified glassy carbon electrode was investigated for electro-oxidation and determination of some amino acids (L-Cysteine, L-Tyrosine, L-Glycine, and L-PHenylalanine). The modified electrode was applied for selected amino acid detection at PHysiological PH using cyclic voltammetry, differential pulse voltammetry and chronoamperometry, chronocoulometery. The linear concentration range of the proposed sensor for the L-Glycine, L-Cysteine, L-Tyrosine, and L-PHenylalanine were 0.2–70, 0.06–0.2, 0.01–0.1, and 0.2–10μM, while low limit of quantifications were 0.2, 0.06, 0.01, and 0.2μM, respectively. The modified electrode shows many advantages as an amino acid sensor such as simple preparation method without using any specific electron transfer mediator or specific reagent, good sensitivity, short response time, and long term stability.

Keywords: Dopamine, Beta – cyclodextrine, Nano biopolymer, Electrochemical nano sensor, Amino acid

Corresponding author Email address: sattar.sadfeghi.1990@gmail.com

ID:53

Genetic risk factors for inhibitor development in patients with hemophilia and rare bleeding disorders

Ghazaleh Dadashizadeh[1], Afsaneh Sarabandi[2], Taregh Bamedi[3], Shadi Tabibian[4], Mahmood Shams[5], Akbar Dorgalaleh[4]

[1] Department of Hematology, School of Paramedical, Sabzevar University of Medical Sciences, Sabzevar, Iran

[2] Department of Nursing, Faculty of Medical Sciences, Islamic Azad University, Zahedan Branch, Zahedan, Iran

[3] Department of Parasitology, Iranshahr University of Medical Sciences, Iranshahr, Iran

[4] Department of Hematology and Blood Transfusion, School of Allied Medicine, Iran University of Medical Sciences, Tehran, Iran

5 Department of Laboratory Sciences, Paramedical Faculty, Babol University of Medical Sciences, Babol, Iran

Objective: Inhibitor development is a lifelong challenge for patients with bleeding disorders who received replacement therapy. Most commonly, inhibitor formation was observed in hemophilia a patient, but patients with rare bleeding disorders (RBD) especially patients with deficiency of factor XIII (FXIII) and factor V (FV) can develop an inhibitor against exogenous factors. Several factors considered as risk factors for inhibitor formations in these patients. Genetic risk factors are the main accused that can cause inhibitor formation in hemophilia patients, but are less important in RBDs. In this review study, we searched Medline and Web of Science databases for English sources and the following key words: hemophilia, inhibitor, rare bleeding disorder, a rare inherited disorder, acquired hemophilia, acquired rare bleeding disorders, treatment complication, genetic in hemophilia, polymorphism in rare bleeding disorder, mutation in hemophilia and other required keywords. Hemophilia A (HA) patients who had the large deletion, nonsense mutation or intron 22 inversion are more susceptible to inhibitor development. Gene polymorphisms in the immune system are also considered as other risk factors in HA patients.

Keywords: Hemophilia, rare bleeding disorder, inhibitor

Corresponding author Email address: faithful.1390@yahoo.com

ID:56

Synthesis and biological evaluation of novel β-lactam-anthraquinone hybrids

Masoud Mohamadzadeh[1], Maaroof Zarei[2]

[1] Department of Biology, Faculty of Science, Islamic Azad University, Shiraz Branch, Shiraz, Iran

[2] Department of Chemistry, Faculty of Sciences, University of Hormozgan, Bandar Abbas, Iran

Objective: β-Lactam antibiotics are the most important antibacterial agents for human health. In addition, β-lactams are an important class of heterocyclic compounds due to their wide range applications in other biological activities. β-Lactam antibiotics interferes with the synthesis of peptidoglycan, the major component of the rigid cell wall that protects bacteria from osmotic lysis. Peptidoglycan consists of polysaccharides and peptides cross-linked in several steps that include a transpeptidase reaction. It is this reaction that is inhibited by penicillin and related compounds. The side chain of Taxol and related analogues (the anti-tumour agents) is preferentially prepared by nucleophilic ring opening of suitably substituted β-lactams. With the alarming trends in bacterial resistance to many β-lactam antibiotics it has become necessary to synthesize some novel β-lactams for bioassay of antibacterial activity and the need for drugs with more specific antibacterial activity. Therefore, the synthesis of the new β-lactams is the subject of extensive study. The anthraquinone and related compounds have been represented a broad and growing family of bioactive molecules.

Material and Methods: Novel β-lactam-anthraquinone hybrids were synthesized by ketene-imine cycloaddition and characterized by spectral data. Antibacterial and antifungal activities of these compounds against some gram-positive, gram-negative bacteria and some fungal were considered using MIC method.

Results: The spectral data of all compounds showed the characteristic peaks which confirmed their structure. The preliminary screening results indicated that some of these compounds demonstrated moderate to very good antibacterial and antifungal activities against pathogenic strains including Staphylococcus aureus (Methicillin resistant strain).

Conclusion: All the synthesized β-lactam substituted anthraquinone showed good antibacterial activity. The overall antibacterial activity of the synthesized compounds may be attributed to the presence of β-lactam substituent in all the compounds. The variation in bioactivity may be due to the presence of anthraquinone moiety in the synthesized compounds.

Keywords: β-Lactam, Biological activity, 2-Azetidinone, Anthraquinone

Corresponding author Email address: m.mohammadzadeh@iaushiraz.ac.ir

ID:57

The level of TRAIL and its gene expression in osteoporotic bile duct-ligated rats and the effect of naltrexone

Mona Moradi[1], Amir Hossein Doustimotlagh[2], Ahmad Reza Dehpour[3], Abolfazl Golestani[1]

[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

[2] Department of Clinical Biochemistry, School of Medicine, Yasuj University of Medical Sciences, Yasuj, Iran

[3] Department of Pharmacology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Osteoporosis is a major issue in chronic liver disease. OPG/TRAIL axis is a new recognized important pathway in the pathogenesis of bone loss. The aim of this study was to investigate the involvement of TRAIL in bone loss and the preventive effect of NTX in bile-duct-ligated rats using biomechanical bone strength test.

Material and Methods: Male Sprague–Dawley rats (200–250 g) were used in this study. The common bile duct of animals was exposed and ligated, then the rats received NTX (10 mg/kg) or saline once daily for 28 days after BDL or sham surgery, intraperitoneally. On the day 28 post-surgery, biomechanical strength test was performed at the right femurs and the plasma level of TRAIL and its mRNA expression were measured.

Results: Following BDL, the mean femoral bone strength was decreased. Unexpectedly, the cirrhotic animals receiving NTX showed a significant reduction in bone strength compared to the BDL group. Plasma TRAIL levels were elevated in BDL group as compared to SO. NTX reversed the increased plasma TRAIL, significantly. There was no difference in expression of TRAIL between all groups.

Conclusion: The present study showed that the bone strength reduces in liver cholestasis. Elevation of plasma levels of TRAIL, which is associated and caused by liver disease may result in bone loss. Further studies are warranted to clarify NTX preventive effect on bone loss.

Keywords: BDL rats, Bone loss, TRAIL, Naltrexone

Corresponding author Email address: Monamoradi13@gmail.com

ID:58

Serum brain-derived neurotrophic factor in patients with coronary artery disease

Fataneh Esmaeili[1], Ebrahim Eftekhar[1], Hossein Montazerghaem[2], Saeed Hosseini Teshnizi[3]

[1] Molecular Medicine Research Center, Hormozgan Health Institute, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[2] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[3] Biostatistician, Social Determinants in Health Promotion Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Brain-derived neurotrophic factor (BDNF) is a member of the neurotrophin family that has an important role in survival and maintenance of peripheral and central nervous system. New observations suggest a possible role of BDNF in the heart regulation. Inconsistent results were available regarding the importance of BDNF in the pathogenesis of coronary artery diseases (CAD). The aim of present study was to determine the association between serum BDNF levels and CAD.

Material and Methods: Total of 114 CAD patients with at least 50% stenosis in one of major coronary artery were selected from angiography division of the Shahid Mohammadi hospital in Bandar Abbas, Iran. According to angiography report, patients were divided into three groups including patients with 1 vessel disease (1VD=39; 27 male,12 female; mean age 58.89±10.66 years), 2 vessel disease (2VD=37; 25 male, 12 female; mean age 59.54±11.67 years) and 3 vessel disease (3VD=38; 32 male, 6 female; mean age 64.47±9.60 years). For comparison, 113 angiographically proven non-CAD participants (55 male, 58 female; mean age 47.10±11.35 years) were selected as control. Serum BDNF levels were measured with enzyme-linked immunosorbent assay (ELISA). Data were analyzed using SPSS software version 16.0.

Results: There were no significant differences between mean of serum BDNF in control (2.02±1.54 ng/ml), 1VD (2.42±2.08 ng/ml), 2VD (2.09±1.36 ng/ml) and 3VD (2.08±1.51 ng/ml) subjects ($p > 0.05$). Additionally, no association between BDNF levels and risk factors of CAD (including lipid profile, glucose level, hypertension, BMI, smoking) were observed.

Conclusion: Our findings indicate that serum BDNF levels were not associated with CAD. Further studies with larger sample size are required to confirm our results.

Keywords: Brain-derived neurotrophic factor, Coronary artery disease, Angiography

Corresponding author Email address: Esmaeili8993@gmail.com

ID:59

Does resveratrol supplement can change inflammatory mediators: A systematic review and meta-analysis on randomized clinical trials

Mitra Hariri[1]

[1] Neyshabur University of Medical Sciences

Objective: Resveratrol as a polyphenolic compound might be able to reduce inflammatory mediators. Changing in inflammatory state is identified by the measurement of inflammatory mediators such as interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-α), and C-reactive protein (CRP). Our objective was to conduct a systematic review and meta-analysis on randomized controlled trials assessing the resveratrol effect on serum inflammatory mediators concentration.

Material and Methods: Systematic search using ISI web of science, PubMed, Scopus, EMBASE and Google scholar was performed up to October 2017. Weighted mean difference estimated either by subtracting baseline values from post intervention value or as the post intervention values. Fixed effect model was applied to analyze data where heterogeneity was less than 25%; otherwise, random effects models were applied. The protocol was registered with PROSPERO (No. CRD42018085098)

Results: Our meta-analysis and systematic review considered fifteen trials, including 658 adults aged 18–75 years. Resveratrol significantly decreased serum CRP levels (WMD= -0.54, 95% CI= -0.78, -0.30; I2=77.7%, P<0.0001), but it had no significant effect on serum IL-6 (WMD= -0.06, 95% CI: -0.27, 0.14; I2=62.0%, P=0.005) and TNF-α levels (WMD= -0.20, 95% CI: -0.55, 0.16; I2=87.2%, P<0.0001). Resveratrol intake decreased TNF-α in young subjects (WMD= -0.34, 95% CI: -0.57, -0.12; I2=60.5%, P=0.038) and obese individuals (WMD= -1.52, 95% CI: -2.87, -0.16; I2=74.1%, P=0.004).

Conclusion: Our analysis indicated possible decreasing effect of resveratrol on CRP, but it might not be able to change IL-6 and TNF-α concentration. More studies separately on male and female with obesity, and varied age are necessary.

Keywords: Resveratrol, Inflammation, Interleukin-6, Tumor necrosis factor-alpha, C-reactive protein

Corresponding author Email address: Hariri.mitra@yahoo.com

ID:60

Association of Plasminogen Activator Inhibitor-1, Oxide-LDL and MDA serum levels with Coronary Artery Disease and it Extent

Fatemeh Khaki-Khatibi[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran

Objective: Coronary Artery Disease (CAD) is consequences of atherosclerosis. Studies have suggested that there were various factors which involved in CAD developing and extension. These factors include Plasminogen Activator Inhibitor-1 (PAI-1), Lipid Peroxidation and Oxidative Stress. The aim of this study is evaluation of PAI-1, Oxide-LDL and MDA (Malondialdehyde) serum level in patients with CAD and also association of this biomedical parameter with CAD extension. The evaluation of these factors can be useful for inhibition of the disease progression.

Material and Methods: 200 subject including 160 with CAD and 40 healthy individuals. Patients were divided into 4 subgroups: 40 subjects with no (NVD), 40 single (1VD), 40 double (2VD) and 40 triple vessel disease (3VD) according to angiography results. ELISA procedure was used to determine the serum of PAI-1 and Oxide-LDL levels. Serum MDA level was measured based on reaction with Thiobarbituric Acid (TBA).

Results: Serum PAI-1, Oxide-LDL and MDA levels in patient with CAD were found to be significantly higher than control group (p=0.001). In addition, in patients with 2VD serum PAI-1 levels were significantly higher than NVD and control group, 3VD significantly higher as compare with 1VD and control group (p=0.001). In patients with 2VD serum Oxide-LDL levels were significantly higher than NVD and control group (p=0.001), 3VD significantly higher as compare with 1VD and control group (p=0.001). In patients with 2VD serum MDA levels were significantly higher than NVD and control group, 3VD significantly higher as compare with 1VD and control group (p=0.001).

Conclusion: These findings suggested that PAI-1, Oxide-LDL and MDA are markers of CAD, because serum levels of the above parameters in patients with CAD were higher than control group and also statically were association with CAD extension and it possible that this parameter are involved in developing CAD. Therefore the evaluation of this parameter can be useful for inhibition of the CAD progression.

Keywords: Plasminogen Activator Inhibitor-1, Oxide-LDL, MDA, Coronary Artery Disease, Extent

Corresponding author Email address: fatemehkhakikhatibi@yahoo.com

ID:61

Effect of Achillea wilhelmsii extract on expression of the human telomerase reverse transcriptase mRNA in the PC3 prostate cancer cell line

Mojtaba Ashtiani[1], Fariba Nabatchian[1]

[1]Tehran University of Medical Science

Objective: Evidence has indicated that human telomerase reverse transcriptase (hTERT) was overexpressed in prostate cancer (PCa). Achillea wilhelmsii (AW) is a plant that has been traditionally used for its medicinal properties. The aim of current study was to evaluate the effects of AW extract on a PCa cell line.

Material and Methods: The cytotoxic activity of the hydroalcoholic extract of AW was studied on the PCa PC3 cell line using MTT assay. Flow cytometry was used to evaluate the effects of the extract on the apoptosis. The expression of hTERT mRNA was analyzed by the reverse transcription-quantitative polymerase chain reaction method. The ELISA method was used to measure the levels of telomerase enzyme.

Results: The hydroalcoholic AW extract demonstrated the appropriate inhibitory effect in 150 µg/ml concentration (IC50) on PC3 cell line following 48 h treatment. Treatment of the PC3 cells with AW resulted in a significant increase in early and late apoptotic cells and a decrease in live cells ($P<0.001$), in a dose-dependent manner. Moreover, the early apoptotic cells were significantly higher than late apoptotic cells. The hTERT mRNA expression was decreased following 24 h treatment of AW extract, although it was not different between 2, 4, 8 and 12 h treatments or 24, 48 and 72 h treatments. In addition, the hTERT concentration was significantly decreased following 24 h treatment of AW extract with the marginal P-value. There was no significant difference regarding hTERT concentration between 2, 4, 8 and 12 h treatments or 24, 48 and 72 h treatments.

Conclusion: The apoptotic effects in PC3 cell line, which could be explainable by its high potency to inhibit expression of the prominent oncogene hTERT in PCa. Therefore, targeting telomerase represents a promising strategy for PCa therapy, and AW may have considerable potential for development as a novel natural anticancer agent.

Keywords: Apoptosis, Achillea wilhelmsii, prostate cancer, telomerase

Corresponding author Email address: mojtaba.ashtiani.20@gmail.com

ID:62

Induction of apoptosis and G2/M cell cycle arrest by epirubicin in human MDA-MB231 breast cancer cells

Aliabbas Zia[1], Rabbani-chadegani1, Javad Sargolzaei[1]

[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Epirubicin (EPI) is an anticancer drug, structurally related to anthracyclines and widely used as a potent chemotherapeutic agent in the treatment of various cancers. EPI acts to stabilize topoisomerase-DNA complex and producing double strand breaks (DSBs), which is one of the most important hallmark of apoptosis.

Material and Methods: The cells were exposed to EPI for 24h and genomic DNA was extracted from drug treated and the controls, run on agaros gel electrophoresis. Also DNA fragmentation was analyzed with diphenylamine reaction method. The cell cycle distribution was determined by staining DNA with PI and after staining with PI solution, the cells were subjected to FACS analysis of their DNA contents. Apoptosis was also quantified using an annexinV/PI detection kit and analyzed immediately by flow cytometry. The HMGB1 protein was extracted from media of drug treated and the controls, run on SDS-PAGE, and then detected by western blot.

Results: Both agarose gel electrophoresis and diphenylamine reaction represented a significant increase ($p<0.001$) in DNA fragmentation especially at high concentration (≥80 µg/ml) of epirubicin treatment. The cells show increased number of the cells in G2/M phase after epirubicin treatment. The population of apoptotic and necrotic cells was significantly increased at high concentration of drug. The results also revealed that HMGB1 appear in the media of late apoptotic and necrotic MDA-MB 231 cells.

Conclusion: The present study demonstrate that epirubicin as chemotherapy agent cause cell shrinkage, DNA fragmentation, G2/M cell cycle arrest and also leads MDA-MB231 cells to HMGB1 release and apoptosis.

Keywords: Epirubicin, FACS, Apoptosis, HMGB1, Topoisomerase

Corresponding author Email address: arabbani@ut.ac.ir

ID:63

Analysis of the effect of ginger on reducing cox-2 gen expression in ht-29 colon cancer stem cells.

Arezoo haghighi[1], Noosha Zia jahromi[2], Hossein Hejazi[3]

[1] Department of Biochemistry, School of Basic Sciences, Islamic Azad University/Shahrekord Branch, Shahrekord, Iran

[2] Department of Biology, School of Basic Sciences, Islamic Azad University/Shahrekord Branch, Shahrekord, Iran

[3] Department of Parasitology and Mycology, School of Medicine, Esfahan University of Medical Sciences, Esfahan, Iran

Objective: Colon cancer is the second reason of mortality caused by cancer in the world, after lung cancer. Ginger has anti-inflammatory properties due to its content of [6]-gingerol and, hence, can play a role in the prevention of colon cancer. COX-2 gene expression is increased in colon cancer. The effect of ginger extract on reducing COX-2 gene expression in colon cancer HT-29 cells was investigated in this study.

Material and Methods: In this laboratory research, HT-29 cells of colon cancer were cultured in a 75 ml flask. Ginger extract at four concentrations (10, 20, 30, and 40 mg/mL) was added to the cells, which were cultured in the 96-well plates and the plates were incubated at 37˚C for 24, 48, and 72 hours in a 5% Co2 atmosphere. the MTT test was performed on HT-29 cells and the densities of the plates were read using an ELISA instrument. Total cellular RNA was extracted and expression of the COX-2 gene was investigated using the RT-PCR method. A sample not treated with the ginger extract was used as the positive control and GAPDH as the internal control.

Results: Determination of the expression of the COX-2 gene using the RT-PCR method indicated that the ginger extract at 20 mg/ml reduced expression of the COX-2 gene compared to using Aspirin as the positive control.

Conclusion: Results of this research indicated use of ginger extract at 20 mg/ml could play an important role in decreasing of colon cancer cell and in reducing the expression of the COX-2 gene.

Keywords: ht-29, ginger, colon cancer, COX-2

Corresponding author Email address: arezoohaghighi12@yahoo.com

ID:64

Lambda Phage nanoparticles displaying HER2 derived E75 peptide induce effective E75- CD8+ T response

Atefeh Arab[1], Javad Behravan[1]

[1] Mashhad univrsity of medical science

Objective: We have investigated the in vitro immunogenicity, and in vivo prophylactic and therapeutic potential of lambda (λ) phage particles displaying the E75 peptide (derived from HER2 protein) in an implantable TUBO breast tumor model of BALB/c mice.

Material and Methods: The mice were immunized with the E75 displaying phage (λF7-gpD::E75) every two week intervals over a six week period, and the generated immune responses were studied.

Results: Results showed in vitro induction of immune responses by the λF7(gpD::E75) construct compared to the control λF7 and buffer groups. In the in vivo prophylactic study all the control and vaccinated mice groups developed tumors. However, in the therapeutic experiments, we observed a significant difference in tumor size at days 14-36 for mice immunized with λF7 (gpD::E75) compared to control groups ($P< 0.05$). Moreover, the survival time prolonged in mice immunized with λF7 (gpD::E75). The discrepancy between the results obtained from the in vitro and in vivo studies may have been a result of the induction of Foxp3 CD4+CD25+ which has been previously reported to hamper effective T cells functionality.

Conclusion: In conclusion, we observed a significant immune stimulatory response in the in vitro study, while in vivo, the vaccine was not able to exert significant tumor inhibitory effects. We suggest that the presence of Foxp3+ CD4+CD25+ cells may have impaired the anti-tumor response in mice challenged in vivo with the TUBO xenograft tumor.

Keywords: Phage Display, E75 peptide, Lambda (λ), λF7, HER2/neu protein

Corresponding author Email address: aatefe.arab@yahoo.com

ID:65

Correlation analysis of vitamin D and IL-35 serum level in coronary artery disease patients

Mahsa Rahimzadeh[1], Nadereh Naderi[2]

[1] Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[2] Department of Immunology, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Accumulating evidences show that the novel anti-inflammatory cytokine IL-35 is secreted from regulatory T cells and can alter the progression of inflammatory and autoimmune diseases. The role of inflammatory and anti-inflammatory cytokines in the pathogenesis of atherosclerosis is increasingly evident. On the other hand recent studies revealed that vitamin D has several roles in control of human immune system function. A low vitamin D status may be an important factor of cardiovascular disease. Here, we investigated the relation between vitamin D status and regulatory T cells (Tregs) inhibitory cytokine, IL-35, in patients suffering from coronary artery disease (CAD).

Material and Methods: 40 patients suffering from 1 vessel disease (n=20) or 2 vessel disease (n=20) enrolled in this study and compared to the control group (n=20). Vitamin D serum level was measured using Electrochemiluminescence assay. IL-35 was measured using ELISA. Coronary artery stenosis was confirmed by angiography.

Results: Vitamin D and IL-35 concentrations in control group (25.4±9.2, 8.1±3.9 respectively) were significantly higher than patients with 1 or 2 vessel disease (11.1±5.8, 3.2±1.1 respectively, $p<0.05$). Subgroup analysis revealed that IL-35 (but not vitamin D) was significantly higher in one vessel disease patients (10.2±7.3) compared to those with 2 vessel disease (3.5±2.1, $p<0.05$). IL-35 was positively correlated to vitamin D serum levels ($r=0.46$, $p= 0.028$).

Conclusion: The positive correlation between IL-35 and vitamin D suggests that vitamin D may affect the coronary artery status through anti-inflammatory effect of IL-35 and regulatory T-cell function.

Keywords: IL-35, vitamin D, coronary artery disease

Corresponding author Email address: rahimzadeh91@gmail.com

ID:66

STAT3 SNP rs1053004 affects susceptibility to acute kidney injury

Mahsa Rahimzade[1], Sara Aghakhani[1], Nadereh Naderi[1], Hossein Montazerghaem[1], Mahmoud Khayatian[1]
[1] Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Twenty to thirty percent of patients undergoing cardiopulmonary bypass (CPB) develop AKI (acute kidney injury) which is defined by the increase in serum creatinine > 0.3 mg/dL in 48 h. STAT3 is one of the main transcription factors in development of inflammation and inflammation is the main cause of AKI after CPB. Hence the aim of this study was the elucidation of the influence of STAT3 gene polymorphism on development of AKI after CPB.

Material and Methods: STAT3 SNP rs1053004 were investigated in 90 patients undergoing coronary artery bypass, in Bandar Abbas, Iran. Patients categorized to AKI (n=33) and Non-AKI (n= 57) groups according to the changes in creatinine serum level during the first 48 hour after surgery and compared. Single nucleotide polymorphism was investigated using sequence-specific primers.

Results: Chi-square analysis revealed that the SNP rs1053004 distribution was in Hardy-Weinberg equilibrium (HWE). There were 40% men and 42% women in AKI group and 51% men and 50% women in the non-AKI group ($p > 0.05$). Comparison of the genotypes frequency in AKI and Non-AKI group showed that the frequency of GG (8% versus 20.7%) and AG (47% versus 29.1%) genotypes were significantly different. Rs1053004 GG genotype was significantly associated with a decreased risk (OR=0.2, 95% CI=0.08-0.56, P=0.01) while AG genotype increased the risk (OR=1.76, 95% CI=0.9-3.5) of CPB-AKI. The distribution of AA genotype was not significantly different between AKI and non-AKI groups.

Conclusion: The results showed that rs1053004 polymorphism was significantly associated with a decreased risk of AKI after CPB.

Keywords: Acute kidney injury, cardiopulmonary bypass, polymorphism

Corresponding author Email address: rahimzadeh91@gmail.com

ID:68

Investigating Aspirin Analogues Inhibitory Impacts on Diabetic Glycation

Shabnam Ghazanfari Sarabi[1], Mehran Habibi-Rezaei[2]

[1] University of Tehran

[2] University of Tehran, School of Biology, Protein Biotechnology Research Laboratory

Objective: Protein glycation, a non-enzymatic reaction, initiated by reducing carbohydrates and protein interactions following by generating Amadori products, which undergoes irreversible reactions to form stable advance glycation end products (AGEs). Glycation is a time-dependent process predominantly took place in diabetes, involves long-lived protein like hemoglobin since they are exposed to sugars longer than the other protein. Hemoglobin is one of the chief targets of reducing sugars attack, which its glycation leads to structural changes such as heme-loss, iron discharging and free radical generation. Mentioned events not only potentially bring about the hypoxia, but also cause free radical-involved damages. The anti-glycation agents are considered as useful therapeutics for glycation prevention. Acetylsalicylic acid (ASA, aspirin) is among the first identified glycation inhibitors, acting as a sugar competitor, which is able to inhibit protein glycation. So far, the exact mechanism of ASA is not clearly defined; however, most emphasis is on its acetylation reaction.

Material and Methods: Glycation of bovine hemoglobin with fructose during 20 days of incubation was evaluated, in which the involvement of ASA and its two other related compounds including benzoic acid (BA) and para-nitrobenzoic acid (NBA) on hemoglobin glycation was analyzed using spectroscopic method.

Results: Monitoring Soret band absorption revealed the less glycation range for native protein. Moreover, besides treated sample with ASA, treated sample with NBA exhibited lower range of glycation and the most glycation range was associated with the treatment of BA and fully glycated protein in the next stage.

Conclusion: Despite the lack of acetyl substituent, the more preventive effect for NBA on heme-loss than ASA was reported.

Keywords: Glycation, Hemoglobin, ASA

Corresponding author Email address: ghazanfari68@alumni.ut.ac.ir

ID:69

rs1256054 (dbSNP128) Polymorphisms and Breast Cancer Risk in Iran

Sakineh Abbasi[1]

[1] Tehran University of Medical Sciences

Objective: Receptor-mediated estrogen activation participates in the development and progression of breast cancer. Evidence suggests that alterations in estrogen signaling pathways, including estrogen receptor-α (ER-α) and -β (ER-β) occur during breast cancer development. ERα gene polymorphism has been found to be associated with breast cancer and clinical features of the disease in Caucasians and we expected ER-β) also might have such influence. Epidemiologic studies have revealed that age–incidence patterns of breast cancer in Middle East differ from those in Caucasians. Genomic data for ER-β is therefore of value in the clinical setting for that ethnic group and we have investigated whether polymorphisms in the ER-β gene are associated with breast cancer risk among Iranian women.

Material and Methods: A case–control study was conducted to establish a database of ER-β polymorphisms in Iranian women population for the first time and to evaluate ER-β polymorphism as an indicator of clinical outcome. Two selected coding regions in ER-β gene (exons 3 and 7) were scanned in Iranian women with breast cancer referred to Imam Khomeini Hospital Complex clinical breast cancer group (150 patients) and in healthy individuals (147 healthy control individuals). PCR single-strand conformation polymorphism technology was performed.

Results: A site of silent single nucleotide polymorphism (SNP) on exon 7 was found, but, we did not found any variation on exon 3. The frequency of allele 1 in codon 392 (CTC → CTG) was found only in breast cancer patients (5.7%) (χ^2=17.122, P=001). We found that allele 1 in codon 392 (C1176G) had direct association with the occurrence of lymph node metastasis.

Conclusion: Our data suggest that ER-β polymorphisms in exon 47 codon 392 is correlated with various aspects of breast cancer in Iran. ER-β genotype, as determined during presurgical evaluation, might represent a surrogate marker for predicting breast cancer lymph node metastasis.

Keywords: PCR-SSCP, breast cancer, estrogen receptor-β, polymorphism, metastases

Corresponding author Email address: sakineh4612004@yahoo.com

ID:70

Insects and there role in human nutrition

Abbas Bahrami[1]

[1] Department of Parasitology& Mycology, School of Medicine, Alborz University of Medical Sciences, Karaj, Iran

Objective: Animals, including insects, are important or even sole sources of numerous necessary nutrients, such as the eight essential amino acids, vitamin B12, riboflavin, the biologically active form of vitamin A, and several minerals.

Material and Methods: They are for many nations and ethnic groups an indispensable part of the diet. From a nutritional point of view, insects have significant protein content.

Results: It varies from 20 to 76% of dry matter depending on the type and development stage of the insect. Fat content variability is large (2–50% of dry matter) and depends on many factors. Total polyunsaturated fatty acids\' content may be up to 70% of total fatty acids. Carbohydrates are represented mainly by chitin, whose content ranges between 2.7 mg and 49.8 mg per kg of fresh matter. Some species of edible insects contain a reasonable amount of minerals (K, Na, Ca, Cu, Fe, Zn, Mn and P) as well as vitamins such as B group vitamins, vitamins A, D, E, K, and C. However their content is seasonal and dependent on the feed.

Conclusion: From the hygienic point of view it should be pointed out that some insects may produce or contain toxic bioactive compounds. They may also contain residues of pesticides and heavy metals from the ecosystem. Adverse human allergic reactions to edible insects could be also a possible hazard.

Keywords: Insect, Fat, Mineral, Protein, Vitamin

Corresponding author Email address: abbas_bahrami2@yahoo.com

ID:71

The Study of Toxic Metals Contamination (Pb, Cd, As, Hg) on Commercial Herbal Products

Mahtab keshvari[1], Sedigheh Asgary[1]

[1] Isfahan Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of medical Sciences, Isfahan, Iran

Objective: In spite of the increasing usage of herbal medicine in Iran, considerable research on their contaminations has not been carried out yet. Herbal medicines have been reported to contain many health hazards for herbal therapy patients. For this group, one of the health hazards is contamination to heavy metals such as Lead(Pb), Cadmium(Cd), Arsenic(As) and Mercury (Hg) Therefore, the aims of this study were the measurements of the level of Pb, Cd, As and Hg in oral herbal products available in Iranian market

Material and Methods: The samples analyzed were either in the form of soft capsule, Syrup, Oral drop pill or tablet. 15 products labeled (A-P), of different brands, at different batch production (n = 45) were purchased from traditional herbal medicine factory in Isfahan. A certain volume of each samples were digested with nitric acid by wet digestion method, then the final solutions of digestion was used to determine the contamination level of Pb, Cd, As and Hg. The measurements of Pb, Cd, As and Hg were performed by spectrometry of flame atomic absorption, graphite furnace atomic absorption and cold vapor atomic absorption, respectively.

Results: The lead, cadmium, Arsenic and mercury contents in the investigated samples were found at different levels. All four metals contamination were present in three samples. While three heavy metals were detected in the majority of samples.

Conclusion: By a comparison between acceptable global standards and the level of lead, cadmium, Arsenic and mercury on investigated herbal medicines, our results showed that the quantities of these heavy metals were well below acceptable intake recommended by global standards.

Keywords: Metals contamination, herbal medicines

Corresponding author Email address: Mahtabkeshvari87@yahoo.com

ID:75

Comparison of the Wound Healing Activity of Hydro-alcoholic Extract of Propolis with Those of Mesenchymal Stem Cells in Mouse

Mohammad Nasiri Kaftarak[1], Safoura Sameni[1], Seyedeh Sara Hashemi[2]

[1] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

[2] Burn & Wound Healing Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Defects and skin damage are one of the main clinical issues. Wound healing is a complex process of replacing dead tissues with a living tissue. Human bone marrow mesenchymal stem cells BM-Msc also have the ability to differentiate into other tissues and cells, in addition to their self-regeneration properties. Researches have shown promising links between the use of natural products and traditional medicine methods in the treatment of many diseases and ulcers. Hence, in this study, the effect of hydro-alcoholic extract of propolis was investigated and compared with those of mesenchymal stem cells on restoration and reproduction of dermal wound skin in mice skin.

Material and Methods: In this study, 44 male Syrian rats weighing between 30 and 35 grams were used. Mice were divided into 4 groups and the therapeutic effect of each treatment (right wound) was investigated and compared with the left one (control) as follows. Group 1: Phenytoin (A usual treatment for wound) vs. no-treatment. Group 2: Propolis vs. basal cream (Vaselina). Group 3: BM-Msc vs. no-treatment). Group 4: Propolis and BM-Msc vs. no-treatment). The prescribed drugs were placed on specific ulcers and the wound healing effects were followed on days 3, 5, 7, 14 and 21 based on the following criteria: wound area, wound bed, wound color, exudate amount, exudate environment and exudate type.

Results and Conclusion: The results confirmed the beneficial effects of propolis and the effect of stem cells on skin regeneration, with synergistic effects for co-treatment of BM-Msc and propolis in wound healing.

Keywords: Propolis, Bone Marrow Mesenchymal Stem Cells, Wound Healing, Mouse

Corresponding author Email address: sameni.iau@gmail.com

ID:76

Vascular endothelial growth factor (VEGF) -634G/C polymorphism was associated with severe pre-eclampsia and lower serum VEGF level

Ehsan Tabatabai[1], Saeedeh Salimi[1], Tahereh Davoodi[1], Milad Mohammadoo Khorasani[1], Minoo Yaghmaei[1]

[1]Cellular and Molecular Research Center, Department of Clinical Biochemistry, Zahedan University of Medical Sciences, School of Medicine, Zahedan, Iran

Objective: VEGF is an angiogenic factor whose production is increased in pre-eclampsia (PE). Therefore, the present study was conducted aiming at assessing the possible association of VEGF polymorphisms with PE susceptibility in the southeast of Iran.

Material and Methods: Overall, 192 PE women and 186 unrelated age-matched normotensive pregnant women were genotyped for the VEGF-2578C/A (rs699947),-1154G/A (rs1570360), and -634G/C (rs2010963) polymorphisms using the PCR-RFLP method. Serum VEGF levels were determined by the enzyme-linked immunosorbent assay method. Genomic DNA was extracted by DNA extraction kit. PCR products were digested by BglII (C-2578A), MnlI (1154G/A) and BsmFI (-634G/C) restriction enzymes. Serum levels of VEGF were assayed using commercially available enzyme-linked immune sorbent assay kits.

Results: There was no significant difference in VEGF-2578C/A, -1154G/A and -634G/C polymorphisms between PE women and controls. However, the frequency of VEGF-634GC and CC genotypes was significantly higher in women with severe PE compared to mild PE and controls. In addition, serum VEGF levels were significantly lower in PE women. The VEGF-634CC genotype was associated with lower serum VEGF levels compared to the VEGF-634GG genotype. Moreover, serum VEGF levels were significantly lower in individuals with the VEGF-634CC genotype compared to VEGF-634GC genotype only in the control group. The mean serum VEGF levels did not differ significantly between genotypes of VEGF-2587C/A and -1154G/A polymorphisms.

Conclusion: Our findings suggest that the association of VEGF-634G/C polymorphism with severe PE and the VEGF-634CC genotype was correlated with lower serum VEGF levels.

Keywords: polymorphism, pre-eclampsia, serum, VEGF

Corresponding author Email address: ehsantabatabai56@gmail.com

ID:78

Subclinical hypothyroidism increases serum triglyceride levels via PCSK9

Monire Sadat Fazaeli[1], Alireza Khoshdel[1], Mohamadreza Shafiepour[1], Mehdi Mahmoodi[1], Mohamadreza Hajizade[1], Mohamadali Fahmidekar[1], Mohadese Rohban[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Iran

Objective: It has been proven that serum triglyceride (TG) levels increase in overt hypothyroidism (OH). But this issue with subclinical hypothyroidism (SH) is still controversial. In SH, thyroid hormones include FT3 and FT4 are in normal values, while serum levels of thyroid stimulating hormone (TSH) increase. Some studies suggest that SH cannot increase the lipid profile, including TG, but some results suggest that it can be effective in increasing the levels of TG by regulation of Proprotein convertase subtilisin/kexin type 9 (PCSK9). PCSK9 is a serine protease and a secreted protein which increases cholesterol levels in plasma via inducing degradation of low-density lipoprotein receptor (LDLR).

Material and Methods: Anthropometric data and laboratory characteristics including serum TSH, FT4, TG and PCSK9 levels were evaluated from 20 newly diagnosed patients with SH and 20 healthy subjects in a cross-sectional study. Then statistical analysis and the correlation between the obtained data were examined.

Results: TSH levels were significantly higher in SH patients compared controls and FT4 levels was significantly lower in patients than healthy subjects. Serum levels of TG and PCSK9 were significantly higher in the patient group compared to controls, and they have a significant negative correlation with FT4.

Conclusion: Some new studies suggest that PCSK9, like its effect on LDLR, can reduce the number of VLDLR in the surface of hepatocytes. Thus the removal of TG from the serum decreases by the liver. The present study suggests that in SH patient's thyroid function can increase serum TG levels via PCSK9 regulation.

Keywords: Subclinical hypothyroidism, Triglyceride, Proprotein convertase subtilisin kexin 9

Corresponding author Email address: mfazaeli2008@yahoo.com

ID:79

The effect of 24-hydroxy cholesterol on ROS produced by beta-amyloid in astrocyte isolated from C57BL / 6 mice

Zahra Nazeri[1], Alireza Kheirollah[1], Shirin Azizidoost[1], Maryam Cheraghzadeh[1], Bahar Sepiani[1]

[1] Ahvaz Jundishapur University of Medical Sciences

Objective: Alzheimer's disease is a neurodegenerative disorder that characterized by the accumulation of beta-amyloid plaques outside the cells and intercellular hyper phosphorylation of tau protein. Amyloid beta is involved in both the pathogenesis of Alzheimer's disease and induction of reactive oxygen species. Since 24-hydroxy cholesterol (24-OHCho) as a polar metabolite can eliminate excess cholesterol in the brain, we investigated the regulatory role of 24-OHCho on reactive oxygen species level induced by exogenous cholesterol or amyloid beta.

Material and Methods: Astrocytes were isolated from the brain of newborn C57BL/6 mice and cultured in DMEM + 10% FBS. Cells were incubated with various amounts of cholesterol and generated ROS was evaluated by fluorimeter. Also intracellular ROS was measured in the presence of beta amyloid with or without of 24-OHCho and results were analyzed by using ANOVA and SPSS software.

Results: The findings showed that production of ROS was significantly increased when astrocytes were treated with exogenous cholesterol or amyloid beta compare to control. However, treating with 24-hydroxy cholesterol significantly inversed increased ROS level in beta-amyloid group.

Conclusion: Beta-amyloid is reported to increase cholesterol levels in Alzheimer's patients. On the other hand, 24-hydroxy cholesterol is the one of the important factors in regulating cholesterol in the central nervous system that by the reduction of cholesterol can play an effective role in reducing ROS.

Keywords: Alzheimer, Amyloid beta, 24-hydroxy cholesterol, Cholesterol, Reactive oxygen species

Corresponding author Email address: akheirollah@ajums.ac.ir

ID:80

Association of MTHFR Gene Polymorphisms and Male Infertility in Iranian Azoospermic Men

Najmeh Akbarzadeh[1], Safoura Sameni[1], Behrouz Gharesi-Fard[2]

[1] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

[2] Department of Immunology, Shiraz University of Medical Sciences, Shiraz, Iran; Infertility Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Male infertility is a multifactorial disorder influenced by several genetic and environmental factors. Methylenetetrahydrofolate reductase (MTHFR) is an important enzyme contributing to metabolic pathway of folate in spermatogenesis and male fertility. Variations in the MTHFR gene polymorphisms would mainly lead to amino acid exchanges, affecting the enzymatic activity of the gene. Two of the well-known single nucleotide polymorphisms of this gene are 677(C/T) and 1298(A/C) positions, which are predisposition factors to male infertility in some populations. This study aims to evaluate the MTHFR gene polymorphisms at 677 and 1298 positions in patients with azoospermia as compared to healthy men in Fars, Iran.

Material and Methods: A total number of 248 azoospermic patients and 197 healthy men from Fars, Iran participated in this study. The PCR-RFLP technique was used to investigate the polymorphism of the MTHFR gene at 677(C/T) and 1298(A/C) polymorphisms followed by enzymatic digestion with HinfI and MboII enzymes, respectively.

Results: This study has shown an association between azoospermia and A1298C and 677(C/T) polymorphisms. 677(C/T) and 1298(A/C) genetic polymorphisms conveyed an increase in azoospermia risk (OR =1.9, 95% CI= 1.3–2.9, p= 0.000 and OR= 1.7, 95% CI =1.1–2.5, p= 0.01 respectively). Combined MTHFR gene polymorphisms revealed higher azoospermia risk in 677(C/T) /CT-1298(A/C)/AC combined form (OR= 3.8, 95% CI= 1.9–7.6, p=0.000).

Conclusion: Our findings suggest that MTHFR 677(C/T) and 1298(A/C) polymorphisms are risk factor for azoospermia in Iranian patients from Fars Province. Furthermore, these two gene polymorphisms may act synergistically to increase the risk of azoospermia.

Keywords: Male infertility, Azoospermia, MTHFR gene

Corresponding author Email address: sameni.iau@gmail.com

ID:81

Investigating anti-diabetic effects of Melilotous officinalis on prevention of glycation and fructation of hemoglobin protein

Farzane Shaban Sarbandi[1], Shiva Khalil Moghaddam[1], Rabee Khoshnevis Zade[2]
[1] Islamic Azad University of Shahr Rey
[2] Islamic Azad University of Varamin-Pishva

Objective: Many important biochemical mechanisms are activated in the presence of high levels of glucose, which occur in diabetes. Elevated levels of glucose accelerate the formation of advanced glycation end-products (AGEs). Formation of endogenous AGEs can lead to further protein modifications and activation of several inflammatory signaling pathways. AGEs inhibition has been shown to prevent diabetes complications, and therapeutic advances have resulted in several agents that prevent their adverse effects. The aim of this study was to investigate the effects of the Melilotous officinalis extract on preventing hemoglobin glycation in the presence of glucose and fructose.

Material and Methods: Hemoglobin was extracted from healthy donors and incubated in the absence and presence of glucose, fructose and Melilotous officinalis extract. Protective effects of this extrac against glycation and fructation of hemoglobin were investigated by different fluorometry methods.

Results: Our results showed that fructose and glucose glycated the hemoglobin protein and alter its structure. Ethanolic and aqueous extract of Melilotous officinalis can prevent glycation and fructation of hemoglobin glycation in a dose dependent manner.

Conclusion: It can be concluded that the Melilotous officinalis extract has significant effects against diabetes complications.

Keywords: Diabetes complications, glycation, fructation, Melilotous officinalis

Corresponding author Email address: Shiva.moghaddam@yahoo.com

ID:83

Alzheimer's disease and women

Fatemeh Farshchi[1], Felor Zargari[2]

[1] Dept.of Biochemistry, Higher EducationInstitute of Rab-rashid, Tabriz, Iran

[2] Dept.of Medical Sciences, Marand Branch, Islamic Azad University, Marand, Iran

Objective: Alzheimer's disease(AD) is a common cause of dementia and progressive loss of memory and cognition. Age and gender are the main risky factors. Increased incidence of dementia in women due to obesity, diabetes and other conditions increases the likelihood of developing AD. Aβ-peptide and hyper phosphorylation Tau protein have a pivotal role in the pathogenesis of AD. The incidence of the disease is higher in women that cannot be attributed to the higher longevity of women. studies show that mitochondria from young females are protected against Amyloid-β, ROS and apoptotic signals. Some studies show that estrogens and phytoestrogens upregulate the expression of antioxidant enzymes in mitochondria. This paper indicates the role of estrogen and higher incidence of AD in women.

Keywords: Alzheimer's disease, estrogen, oxidative stress

Corresponding author Email address: fatemehfarshchi.95@gmail.com

ID:86

Inhibition of gastric cancer cell growth and proliferation by genistein

Neda Ghasemkhani[1], Iraj Khodadadi[1], Gholamreza Shafiei[1]

[1] Department of Biochemistry, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Despite the extension of knowledge regarding cancer genomic and high level diagnosis technology, cancer still remains a serious threat to human. Standard treatment regimens are still uncompleted with side effects on patients; therefore, recent studies have focused on treatment with minimum cytotoxicity such as genistein. In this study, anti proliferative, effects of genistein on gastric cancer AGS cell were assayed by MTT and colony formation.

Material and Methods: The MTT assay was applied to assay proliferation on AGS cells, cells were plated in triplicate and treated with different concentrations of genistein solution (0-100 µM) incubated for 12, 24, and 48 hours. After incubation, 10 µl MTT solution was added to each well to dissolve the formazan 100µl DMSO were added. The sample absorbance was monitored at 570 nm using ELISA plate reader. For colony formation assay, certain number of cells was cultured in 6-well plate and treated with different concentrations of Genistein (0, 10, 20, and 40 µM) and incubated at until cells in the control plates formed colonies were visible by naked eye.

Results: Genistein in treated cells compared to control cells decreased the growth and survival of cells. After 12 h treatment, at 30µl, there was no significant difference between the control and treatment cells, but at 40 and 50 µM ($p<0.05$) and at 60-100 µM ($p\leq0.001$), a significant difference was observed. In other times, there was a significant difference between the test and control cells. Also colony formation assay result showed decreased number of colonies. A significant difference was observed between the control and 10, 20, and 40 µM concentrations ($p\leq0.001$) and between 10 and 40 µM ($p\leq0.01$).

Conclusion: Genistein could decrease proliferation in gastric cancer AGS cell line in dose and time-dependent manner.

Keywords: Genistein, Gastric cell, Prolifration

Corresponding author Email address: neda.ghasemkhani@gmail.com

ID:87

Effect of CoCl2 on chondrogenic differentiation of dental pulp stem cells

Sahar Khajeh[1], Zohreh Mostafavi-Pour[1], Vahid Razban[2]

[1] Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

[2] Department of Molecular Medicine, School of Advanced Medical Sciences and Technologies, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: High incidence of articular cartilage defects is a major problem worldwide. The regeneration capacity of cartilage as an avascular and aneural tissue is extremely poor and often leads to inappropriate structural and biochemical healed tissue. The advent of cell based therapies is promising to revolutionize the cure. Tremendous ex vivo expansion capacity of dental pulp stem cells (DPSCs) makes them propitious cell type for therapeutic use however strategies to produce efficient cartilage-like tissue are imperative. Imitating cartilage microenvironment may help to improve the chondrogenesis. This study surveyed the potential role of a hypoxia mimicking agent CoCl2 on chondrogenic differentiation of human dental pulp stem cells.

Material and Methods: The optimum dose and exposure time of CoCl2 was explored by MTT assay. CoCl2 internalization was measured by inductively coupled plasma mass spectrophotometry, ICP. CoCl2 pretreated DPSCs were induced to differentiate toward Chondrocytes in 3-D pellet culture system. Production of specific chondrogenic markers, collagen II and GAGs was evaluated by histological and immunohistological analyses.

Results: MTT assay revealed the appropriate CoCl2 concentration and time of exposure for DPSCs. Data obtained from ICP showed the uptake of CoCl2 by cells. The results demonstrated that transient CoCl2 pretreatment could improve chondrogenic differentiation of DPSCs by increasing the pellet size, GAG content and collagen II expression compared to untreated samples.

Conclusion: Implementing CoCl2 as a simple chemical agent seemed closely correlated with enhanced DPSCs chondrogenesis by enlarged pellets containing more cartilage matrix deposition of GAGs and collagen II.

Keywords: Dental pulp, Mesenchymal stem cell, Chondrogenesis

Corresponding author Email address: zmostafavipour88@yahoo.co.uk

ID:90

Development of point of care assays for molecular biomarkers of cancer

Fatemeh Javadi-Zarnaghi[1]

[1] University of Isfahan

Objective: Early detection of cancer biomarkers in initial stages of tumor development is of great immense for public health. To this goal, rapid and easy-to-use point of care tests that grant utilization by non-specialized people are beneficial. Lateral flow assays (LFAs) have promising potentials for such applications. LFAs are cost effective and result in formation of stable colorful bands over a nitrocellulose membrane within a few minutes. The bands are visible by naked eyes and can be interpreted by non-specialized people e.g. at home. In the same lines, microRNAs and circular tumor DNAs in addition to cell surface biomarkers of malignant cells are target molecules for development of LFAs for the next generation prognosis of cancer. Our lab has recently applied the technology of molecular beacons to develop LFAs for microRNAs. Herein, I would summarize our most recent achievements in the development of such point of care tests.

Keywords: Point of care tests, Lateral flow assays, microRNA, cancer prognosis, molecular beacons

Corresponding author Email address: fa.javadi@sci.ui.ac.ir

ID:91

Is selenium supplementation knockdown the expression of SEPS1 in patients with metabolic syndrome and history of cardiovascular disease?

Mojgan Gharipour[1]

[1] Isfahan cardiovascular Research Institute

Objective: Metabolic Syndrome (MetS) consider as one of the most important risk factors for cardiovascular disease (CVD). Concerning previous studies, selenium supplement could improve the level of some selenoproteins. This trial designed to evaluate the changes in the SelS after selenium supplementation in mRNA and protein levels in CVD patients with MetS.

Material and Methods: This study is a single-center; double blind, placebo-controlled, randomized clinical trial which is done between 2014 to 2016 in Isfahan, Iran. Totally, 160 patients with documented coronary artery disease that confirmed by angiography enrolled in the study. para-clinical and clinical measurement, selenium, mRNA and protein measurement before and after intervention was done.

Results: There are no significant differences between demographic and socioeconomic characteristics and clinical and paraclinical parameters. No significant differences exist between nutritional habits in receiving nutritional selenium sources in the study groups. The level of selenium has no significant difference before (1.14±0.46, 1.37±0.34) and after (1.16±0.2 and 1.37±0.29, P=0.81) intervention in both non-MetS and MetS groups. The expression of both VIMPI and VIMPII decreased after intervention by selenium in the non-MetS and MetS groups but the decrement in the VIMPI was significant. In addition, compression between amounts of the level of SelS before and after intervention in non-MetS and MetS groups.

Conclusion: This novel finding provides preliminary evidence for a role of SEPS1 in the MetS and CVD. Improve the level of SelS in the MetS subjects so regarding possible role of SelS in the expression on pro-inflammatory cytokines, we suggest to find a new therapeutic strategy for improvement the function of SelS in the subjects with MetS.

Keywords: Selenium, SEPS1, metabolic syndrome, cardiovascular disease, knockdown

Corresponding author Email address: mojgharipour@yahoo.com

ID:92

Terminal extensions of mouse IMPDH1 isoforms modulate physiological function of the enzyme

Mohsen Nabi Afijadi[1], Raziye Yazdanparast[1]

[1] Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Inosine monophosphate dehydrogenase (IMPDH), the rate-limiting enzyme of the de novo pathway of guanine nucleotide biosynthesis, catalyzes the oxidation of IMP to XMP with the continuous reduction of NAD to NADH. Mammalian IMPDH has two homologues, IMPDH1 and IMPDH2, which are 84% identical in amino acid sequence and enzymatic activity. Human IMPDH1, propounds three isoforms, 514(canonical isoform), 546 and 595(retinal isoforms), which are named according to their amino acid lenght. In comparsion to canonical isoform, both 546 and 595 IMPDH1 isofirms have a 32 residues C-terminal extension while 595 isoform has an additional 49 residues on its N-terminus. In this report, we will show the influence of the terminal extensions on the kinetic behavior of the enzymes relative to that of the canonical form.

Material and Methods: After extraction of mouse recombinant IMPDH1 isoforms from E.coli and their purification by affinity chromatography (Ni-NTA spin kit), enzyme kinetic assay was performed at the saturated concentration of NAD and variation concentrations of IMP in 10 mM Tris-HCl (PH=8), 1mM DTT, 5mM EDTA and 50mM KCl, and the reduced NADH production was monitored at 340 nm by a UV-visible spectrometer.

Results: Kinetic parameters (Km, Vmax) of mouse canonical and retinal IMPDH1 isoforms, determined by Michaelis- Menten and LineWeaver-Burk approaches, were significantly different. Although Vmax of retinal isoforms was lower than that of the canonical form, however their Km (affinity) values were higher.

Conclusion: Based on our data, it might be concluded that the N and C-terminal extensions have impiared some degree of rigidity on the enzyme active site with subsequent lower substrate affinity.

Keywords: IMPDH1, rate limiting enzyme, UV-visible spectrometery

Corresponding author Email address: mohsennabi66@gmail.com

ID:95

Anti-cancer and antioxidant effects of Spirulina platensis derived C-Phycocyanin in colon carcinoma cells i n vitro and in vivo.

Leila Najafi[1], Mohammad Fazilati[2], Zahra Mojtahedi[1], Saeed Malekhosseini[3]

[1] Institute of Cancer Research (JCR), Shiraz-Medical Sciences University Shiraz, Iran

[2] Department of Biochemistry, Payame Noor University, Isfahan, Iran

[3] Department of immunology, Shiraz medical Sciences University, Shiraz, Iran

Objective: The Phycobiliprotein C-Phycocyanin(C-PC), the main light harvesting biliprotein, extracted from Spirulina platensis, has been demonstrated to have a series of physiological and pharmacological attributes without leading to harm and toxicity. In this research, attempted to evaluate potential of anti-cancer and antioxidant C-PC on mice colon carcinoma cells (CT-26) and human colorectal cancer cell lines (HT-29) in vitro and in vivo.

Material and Methods: The CT26 and HT29 carcinoma cells were treated with various concentrations of C-PC extract (1-100µg/ml) in 48hr.Then its anti-proliferative effect was measured by morphological observations, DAPI and AO/PI Staining, MTT assay, fluorescence microscope and Flow cytometry assays. Antioxidant effects of C-PC on CT26 tumor cells transplanted in Balb/c mice was also checked out in vivo. 21 male Balb/c mice were randomly divided into three equal groups. Group1 was used as control. Group 2 and 3 received Phycocyanin (1 mg/kg and 2 mg/kg) respectively, daily for 4 week via Gavages. Finally, levels of Malondialdehyde, Glutathione peroxidase, Superoxide dismutase and Catalase enzymes and Total antioxidant capacity were assessed in liver homogenate and serum.

Results: C-PC showed considerable anti-proliferative effect on CT26 and HT29 tumor cell lines with IC50 =47.4 µg/ml and IC50 =49.4µg/ml respectively. Further studies involving fluorescence microscope and Flow cytometry revealed characteristic apoptotic features like cell shrinkage, membrane blebbing and nuclear condensation into dense granules. In addition, C-PC, because of its antioxidant potential, significantly (P<0/001), decreased Malondialdehyde (lipid peroxidation index) and increased levels of liver antioxidant enzymes.

Conclusion: Our results confirmed this idea that C-PC can be used supplementary material in preclinical experiments and further investigation are recommended for finding C-PC molecular mechanism and medical applications.

Keywords: C-Phycocyanin, Anti-cancer, Antioxidant, Colorectal cancer, Apoptosis

Corresponding author Email address: toopeshadi2@yahoo.com

ID:97

Acrylamide changes some biochemical parameters in rats gavaged with vitamin C

Maryam Azhdari[1], Nasrin Davoudimoghdam[1], Sara Azhdari[1]
[1] Nutrition and metabolic Disease Research

Objective: Acrylamide is formed in white solid crystals (1). After consumption, monomer of this substance is easily absorbed through the digestive system, enters the blood circulation circulates, spreads to different organs, reacts with hemoglobin, DNA and some cellular enzymes and produces different toxic effects (5). The goal of this paper is evaluating the effect of vitamin C on the biochemical parameters and histological changes in kidney tissue damage induced by acrylamide in rats.

Material and Methods: 40 rats were randomly divided into four groups: the first group received distilled water (normal), the second group received 20 mg/kg acrylamide per day (control or AA) (8), the third group received 200 mg/kg vitamin C per day (Vit C), and the fourth group received 20 mg/kg acrylamide and 200 mg/kg vitamin C (AA+Vit C). Animals were gavaged with a weight range of 60-80 g until 2 months of puberty at a weight range of 200-220 gr/day at a specified hour. Several hours after receiving the last dose of drugs from each animal, the animals were anesthetized by ether inhalation and blood samples was taken for biochemical tests (Urea, Creatinine, Malondialdehyde Measurement).

Results: There was a significant decrease in the levels of serum malondialdehyde (**P <0.01), urea and creatinine (***P <0.001) and significant increase in serum DPPH levels in (AA+Vit C) group in comparison with AA group.

Conclusions: The results of this study showed that acrylamide is a toxic compound and consumption of vitamin C can reduce the adverse effects of acrylamide consumption on biochemical parameters. Today, much attention has been focused on finding natural antioxidants with fewer side effects.

Keywords: Acrylamide, Vitamin C, urea and Creatinine, Malondialdehyde, DPPH

Corresponding author Email address: azhdari_mar@yahoo.com

ID:99

Angiotensin-converting enzyme gene insertion/deletion polymorphism in Irainian patients with atherosclerosis

Gholamreza Shahsavari[1], Negar Nouri yazda[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: The angiotensin-co**n**verting enzyme (ACE) insertion/deletion (I/D) polymorphism is a genetic determinant that plays an important role in hypertension development and is a significant risk factor for coronary artery disease. In this study, we investigated these gene polymorphisms and the activity of angiotensin-converting enzymes in Irainian patients with atherosclerosis and healthy subjects.
Material and Methods: This study was carried out on145 healthy individuals and 154 patients with angiographically proven coronary artery stenosis at Shahid Madani Hospital, Khorramabad, Iran. The blood samples of all the selected patients and controls were collected and genomic DNA was extracted from whole blood. For all subjects, DNA testing for the angiotensin-converting enzyme gene I/D polymorphism was done using the polymerase chain reaction (PCR) amplification for detection of both the D and I alleles.
Results: Cases had a higher frequency of DD (34.4%) and ID (52.6%) genotypes compare with controls frequency of DD (31.7%) and ID (48.3%) genotypes, that was no statistically significant ($0.05<p$). Compared to healthy subjects, patients had not a significantly higher frequency of II genotype (20% vs. 13%, $0.05<p$).
Conclusion: Our results show there was no significant difference in the distribution of genotypes of ACE gene I/D polymorphism between patient and healthy subjects. Therefore, ACE gene I/D polymorphism was not associated with an increased risk of coronary artery disease in Irainian patients with atherosclerosis.

Key words: Angiotensin-converting enzyme, Coronary artery disease, Genetic Polymorphism

Corresponding author Email address: reza13sh@gmail.com

ID:101

Association of rs10889353 in ANGPTL3 and rs7557067 in APOB genes with hypertriglyceridemia in Iranian population

Masoumeh Shojaei[1]

[1] Department of cellular and molecular biology, nour danesh institute of higher education, Isfahan, Iran

Objective: Hypertriglyceridemia is a commonly encountered lipid abnormality that is highly associated with other lipid and metabolic disorders like atherosclerosis, diabetes mellitus, and elevates the risk of cardiovascular disease. This abnormality is often caused or intensified by a varying environmental factors like uncontrolled obesity, and sedentary life style that are more frequent in industrialized societies than in developing nations.

Materials and methods: According to SNPedia database, two polymorphisms in the APOB and ANGPTL3 seem to be associated with the HTG. We aimed to evaluate the significant association of two polymorphisms at ANGPTL3, rs10889353 and APOB, rs7557067 with HTG. The collected blood samples belonging to 94 HTG patients (case group) and 106 healthy individuals (control group) were investigated by ARMS- PCR technique. The results were analyzed using SPSS software. A value of $p< 0.05$ and an odd ratio (OR) with 95% confidence intervals (CI) were considered significant.

Results: The CC genotype for rs10889353C polymorphism in ANGPTL3 showed a significant association with HTG (P-value = 0.01). The rs7557067G polymorphism in APOB showed no significant association with the disease (P-value = 0.14)

Conclusion: We found a significant association between one of the polymorphisms and Hypertriglyceridemia.

Key words: HTG, polymorphism, APOB, ANGPTL3, association study

Corresponding author Email address: shojaeimassy@gmail.com

ID:102

Mechanism of the interaction of irinotecan with High mobility group box 1 protein in solution

Saeedeh Keyvani Ghamsari[1], Azra Rabbani Chadeghani[1]
[1] Institute of Biochemistry and Biophysics, Department of Biochemistry, University of Tehran, Tehran, Iran

Objective: Irinotecan is a potent chemotherapy agent that is widely used in cancer therapy. It exerts its biological action through binding to DNA-Topo-I complex inducing break in DNA structure and inhibits transcription and replication. DNA is not naked in the nucleus and forms a chromatin complex in association with histone and non-histone proteins. High mobility group box 1 protein is the most important non histone protein in chromatin structure participating in processes such as replication, transcription, recombination and DNA repair. In the present study, We focused on the interaction and binding affinity of irinorecan to HMGB1 in solution.

Material and Methods: The interaction of irinotecan with HMGB1 in solution was investigated employing fluorescence, UV/Vis and thermal denaturation techniques.

Results: Fluorescence emission spectra represented quenching of protein chromospheres with the drug and decreased fluorescence emission at 335nm with Ksv value of 0.12. Thermal denaturation analysis demonstrated that the binding of irinotecan to HMGB1 induced hyperchromicity at low concentrations, hypochromicity at higher concentrations and shifted protein melting temperature to higher degrees. UV/Vis spectroscopy results showed hypochromicity at 220 and 280 nm and the drug effects on HMGB1 spectrum showed that addition of the drug resulted extra peak at 230 nm in HMGB1 spectrum.

Discussion: The results suggest that apart from DNA-Topo-I, non- histone protein HMGB1 can also be considered as a new mechanism of action of irinotecan in the nucleus.

Keywords: Irinotecan, Non-histone protein, HMGB1, spectroscopy

Corresponding author Email address: Saeede.key1i@gmail.com

ID: 103

Study of antioxidant defenses enzymes in primary angle closure glaucoma patients

Ghazaleh Bagheri[1], Asghar Mohammad pour[2], Arezou Miraftabi[3], Gholamreza Shahsavari[4]

[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran

[2] Master Science Student of Biochemistry, Lorestan University of Medical Sciences. Khorramabad, Iran

[3] Assistant professor, Glaucoma Research Center, Hospital Hazrat Rasol, Iran University of Medical Sciences, Tehran, Iran

[4] Assistant Professor of Department of Clinical Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: The importance of oxidative stress in the formation and pathogenesis of glaucoma has been known. The serum oxidant/antioxidant profile is reportedly altered in ocular pathologies. This study was considered to evaluate comparative of the variability of antioxidant defenses enzymes in primary angle closure glaucoma patiets and Healthy Subjects.

Materials and Methods: The study included 56 primary angle closure glaucoma patients and 80 controls examined at the Department of Glaucoma, Farabi and Hazrat Rasol Hospitals, Tehran. Superoxide dismutase (SOD) was assayed by inhibition of the rate of adrenochrome formation. Catalase (CAT) was evaluated by decrease of H2O2 absorbance. Glutathione peroxidase (GPx) and Glutathione reductase (GR) were determined following NADP oxidation or reduction. Glutathione S-transferase (GST) was measured by increase of the absorbance of CDNB and glutathione conjugation.

Results: The antioxidant defenses enzymes in red blood cell: A significant decrease in CAT($p<0.006$), SOD($p<0.020$) and GPX($p<0.004$) activities was show in primary angle closure glaucoma patients as compared to control patients. A relative decrease of GR and GST activities in primary angle closure glaucoma patients compared with control group was insignificantly showed.

Conclusion: In conclusion, our results indicate that an excessive diminish of antioxidant defenses enzymes activities for detoxifies the reactive oxygen species produced by oxidative stress in primary angle closure glaucoma patients compare to healthy subjects, that had a pathological role in glaucoma with rising oxidative damage.

Key words: Primary glaucoma, Primary close angle glaucoma, Antioxidant enzymes, Oxidative stress

Corresponding author Email address: ghazaleh.bagheri1@gmail.com

ID:104

Assessment of the oxidative stress markers in primary open angle glaucoma patients

Samira Ehsani[1], Asghar Mohammad pour[2], Arezou Miraftabi[3], Gholamreza Shahsavari[4]

[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran

[2] Master Science Student of Biochemistry, Lorestan University of Medical Sciences. Khorramabad, Iran

[3] Assistant professor, Glaucoma Research Center, Hospital Hazrat Rasol, Iran University of Medical Sciences, Tehran, Iran

[4] Assistant Professor of Department of Clinical Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: Primary open-angle glaucoma (POAG) is the leading cause of irreversible blindness. The serum oxidant/antioxidant profile is reportedly altered in ocular pathologies. This study was considered to evaluate comparative of the the oxidative stress markers and variability of antioxidant defenses enzymes in primary open angle glaucoma patients (POAG) patients and Healthy Subjects.

Materials and Methods: We conducted a study of 84 POAG patients and 80 healthy subjects. In this study, the total plasma antioxidant capacity (TAC), malonyldialdehyde (MDA) concentration were measured. Superoxide dismutase (SOD) was determined by inhibition of the rate of adrenochrome formation at 550 nm. Catalase (CAT) was evaluated by decrease of H (2) O (2) absorbance at 240 nm. Glutathione peroxidase (GPx) and Glutathione reductase (GR) were determined following NADP oxidation or reduction at 340 nm. Glutathione S-transferase (GST) was determined by increase of the absorbance of CDNB and glutathione conjugation at 340 nm.

Results: The serum levels of TAC in patients with POAG significantly decreased than those of the healthy subjects ($p< 0.001$), while the MDA levels in these patients increased significantly ($p< 0.025$). Also, The antioxidant defenses enzymes: A significant decrease in CAT($p<0.036$), SOD ($p< 0.048$) and GPX ($p< 0.001$) activities was show in red blood cell of POAG patients as compared to control patients. A relative decrease of GR and GST activities in red blood cell of POAG patients compared with healthy subjects was insignificantly showed ($0.05<p$).

Conclusion: In conclusion, significant enhancement of lipid oxidation and an remarkable reduction of total antioxidant capacity in POAG patients compared to healthy subjects and also an excessive diminish of antioxidant defenses enzymes activities for detoxifies the reactive oxygen species produced by oxidative stress in POAG patients may indicate the pathological role of rising oxidative damage in primary open-angle glaucoma.

KEYWORDS: Primary glaucoma, Primary open angle glaucoma, Antioxidant enzymes, Oxidative stress

Corresponding author Email address: samira.ehsani925@gmail.com

ID:108

The association of urea and creatinine with alpha2 serum proteins

Sanaz Salar Amoli[1], Hamidreza Joshaghani[2], Nasser Behnampour[3]
[1] Department of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran
[2] Department of Medical Laboratory Sciences, Golestan University of Medical Sciences, Gorgan, Iran
[3] Department of Public Health, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran

Objective: serum protein electrophoresis separates the serum protein components into five main fractions. Alpha globulins are defined as a group of globular proteins. Urea (major protein catabolism product) and Creatinine (creatine product) transported through the bloodstream to kidneys. Alpha globulins, urea and creatinine are reported for diagnosing different diseases, especially renal diseases. The aim of our study was to determine the correlation between serum proteins, urea and creatinine.

Material and Methods: Patient's blood samples were drawn for bioche¬mical tests and Serum protein electrophoresis (by capillary electrophoresis) from 185 patients (103 females and 82 males, mean age= 53.44 y). All samples were measured for amount of Total protein, urea by the enzymatic method and Creatinine by Jaffe method.

Result: Within all the patients, the correlation coefficient between creatinine (mean=2.124 mg/dl) and urea (mean=72.26 mg/dl) was 0.847 (P=0.000). On average, total protein (mean= 6.27mg/dl) included 49.46% Albumin, 6.45% alpha1, 12.37 alpha2, 5.83% beta1, 6.61% beta2, 19.10% gamma. The association between alpha2, urea (P=0.001, correlation coefficient=0.248) and creatinine (P=0.001, correlation coefficient=0.247) was positive. But there was a negative correlation between Beta1, urea (P= 0.008, correlation coefficient= -0.194) and creatinine (P=0.004, correlation coefficient= -0.209)

Conclusion: This study illustrates that there was a statistical correlation between creatinine and in plasma which can calculate by a formula (0.579+0.026×0.026×urea). There was a noticeable correlation between urea, creatinine and alpha2 band. On the other hand, Beta1 band had a significant association with urea and creatinine.

Keywords: Urea, Creatinine, Alpha2, Beta1

Corresponding author Email address: sanaz_salar_71@yahoo.com

ID:111

Cytotoxic and apoptotic effects of aellinane through intrinsic pathway

Fariba Nabatchian[1]

[1] School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran

Objective: Ovarian cancer is considered as the fourth most frequent cancer in the woman. One of therapeutic methods is using herbal drugs that lead to induction of apoptosis in cancer cells. This research aims to evaluate the cytotoxic and apoptosis effects of lathyrane isolated from Euphorbia aellenii in the ovarian cancer cell line, Caov-4.

Material and Methods: MTT method was used for evaluate the viability of Caov-4 cell line which is treated by aellinane. Apoptosis induction by aellinane was confirmed by annexin V-FITC/PI staining, and caspase-6 activation. The Bcl2 and Bax protein content were detected by Western blotting. Finally ROS levels and loss of mitochondria membrane potential (DWm) were determined by the fluorescent ROS detection kit and fluorochrome JC-1, respectively.

Results: The IC50 value was 45 µM. Annexin V/propidium iodide (PI) staining and caspase-6 activity assay confirmed that lathyrane diterpene is able to induce apoptosis in Caov-4 cells. lathyrane diterpene also up-regulated Bax and down-regulated Bcl-2 proteins. Moreover, apoptotic effect of lathyrane diterpene was also related to ROS production and loss of mitochondrial membrane potential (DWm).

Conclusion: This study showed that aellinane has profound activity against Caov-4 cells. Analysis of proteins, relating to apoptosis pathway, revealed that lathyrane diterpene inducted the mitochondrion-mediated apoptosis pathway, which led to the activation of caspase-6. Therefore, it can be seen that lathyrane diterpene might be a promising herbal compound in cancer therapy.

Keywords: Euphorbia, lathyrane, diterpene, ovarian cancer, apoptosis

Corresponding author Email address: fnabatchian@yahoo.com

ID:113

Glutathione S-transferase M1 and T1 genetic polymorphisms in Iranian angle closure

Banafsheh Yalameha[1], Fatemeh Kazemi safa[2], Arezou Miraftabi[3], Gholamreza Shahsavari[4]

[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran

[2] Master of Science Student of Biochemistry, Lorestan University of Medical Sciences. Khorramabad, Iran

[3] Glaucoma Research Center, Hospital Hazrat Rasol, Iran University of Medical Sciences, Tehran, Iran

[5] Department of Clinical Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: Glutathione S-transferases (GSTs) are members of a multigenic family which have an essential role in cells as an antioxidant. In the present study, we investigated the polymorphism of GSTT1 and GSTM1 deletion genotypes (T0M1, T1M0, and T0M0) in primary closed angle glaucoma (PCAG) patients compared to healthy human subjects.

Material and Methods: We conducted a study of 41 PCAG patients (24 women, 17 men) and 100 healthy subjects (57 women, 43 men) to determine the prevalence of GSTT1 and GSTM1 deletion genotypes and the risk of PCAG, which were determined by multiplex polymerase chain reaction. GSTM1 and GSTT1 genotypes frequencies were analyzed by Odds ratio (OR) with 95% confidence intervals calculated by logistic regression. P-values were two-tailed and a value of < 0.05 was considered statistically significant.

Results: GSTM1 and GSTT1 null deletions genotypes were determined in 22 (53.7%) and 7 (17.1%) patients with PCAG and 34 (34%) and 15 (15%) in healthy subjects. Comparison of patients and healthy subjects regarding GSTM1 and GSTT1 genotypes revealed an increase of GSTM1 null deletions genotypes in patients with PCAG ($p = 0.03$).

Conclusion: It was concluded that the increased frequencies of GSTM1 null in patients with PCAG could be associated with a risk factor for incidence of PCAG in the Iranian population.

KEYWORDS: Primary glaucoma, Primary closed angle glaucoma, Glutathione S-transferases T1, Glutathione S-transferases M1, Genetic polymorphisms

Corresponding author Email address: yalameha.b7@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:114

Stattic enhances the anti-proliferative effect of docetaxel via Bax/Bcl-2/Cyclin B axis in human lung and prostate cancer cells

Jamal Mohammadian[1], Nasser Samadi[1], Ommoleila Molavi[2], Mohammad Bagher Pirouzpanah[3], Ali Akbar Rahim Rahimie[4]

[1] Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Biotechnology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[3] INSERM U1148, Laboratory for Vascular Translational Science, Cardiovascular Bioengineering, Paris 13 University, Sorbonne Paris, France

[4] Monoclonal Antibodies Production Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Combination chemotherapy with novel adjuvants has been introduced as an innovation in cancer treatment compared to conventional methods. Here, we investigated the effects of stattic, an important STAT3 inhibitor, on enhancing the anti-proliferative and apoptotic effects of docetaxel in A549 lung and DU145 prostate cancer cells.

Material and Methods: MTT was used to assess the cell viability. Cell apoptosis was evaluated by DAPI (4′, 6-Diamidino-2-phenylindole dihydrochloride) staining, Annexin V/PI assay, and cell cycle analysis. Real-time RT-PCR was used to assess the effects of docetaxel and/or stattic on STAT3 target genes (Bcl-2, Bcl-xl and cyclin B1).

Results: Stattic strongly suppressed the growth of both A549 and DU145 cells with IC50 around 3µM and significantly enhanced the cytotoxic effects of docetaxel in both cell lines. The anticancer effects of docetaxel and stattic combination therapy was found to be synergistic effects in A549 and DU145 cells with CI (combination index) being 0.71 and 0.52, respectively. Annexin V/PI revealed that there was 2-folds increase in the percentage of apoptotic cells in the cells treated with docetaxel in combination with stattic in both A549 and DU145 cell lines as compared with monotherapy groups. In comparison to the cells treated either docetaxel or stattic alone, we found a statistically significant decrease in the transcript level of Bcl-2 and Bcl-xl (anti-apoptotic proteins) and a marked increase in the level of the important pro-apoptotic protein, Bax in the cells received docetaxel and stattic combination therapy indicated ($p<0.05$).

Conclusion: In conclusion, here we report that stattic, a small STAT3 inhibitory molecule, significantly enhances the cytotoxic effects of docetaxel in lung and prostate cancer models in vitro. These findings suggest that combination of a STAT3 inhibitor and taxan derivatives can be considered as a promising strategy for treatment of patients with lung and prostate cancers.

KEYWORDS: Apoptosis, cell viability, combination index, docetaxel, stattic

Corresponding author Email address: drnsamadi@yahoo.com

ID:118

Altered fatty acid composition in gastric adenocarcinoma patients

Rana Ezzeddini[1], Mohammad Taghikhani[1], Mohammad Hossein Somi[2], Naser Samadi[3], Masoud Darabi[3]

[1] Department of Clinical biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

[2] Liver and Gastrointestinal Diseases Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[3] Department of Clinical biochemistry, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Gastric cancer cells appear to have an altered lipid metabolism as evidenced by modulated inflammatory factors that affect tissue lipid metabolism. The purpose of this study was to investigate fatty acid patterns in gastric adenocarcinoma patients.

Material and Methods: Stomach tissues were collected from 105 gastric adenocarcinoma patients and 130 healthy controls during endoscopy. The tissue lipid was extracted and fatty acids were analyzed by gas chromatography. Relative compositions (%) of fatty acid were determined and evaluated in paired cancerous and non-cancerous gastric adenocarcinoma tissues.

Results: In the stomach tissues, the levels of palmitic acid (16:0; $P<0.001$), palmitoleic acid (16:1n-7; $P<0.05$) and oleic acid (18:1n 9; $P<0.001$) were higher, and the level of linoleic acid (18:2n-6; $P<0.001$), linolenic acid (18:3n-9; $P<0.01$) and arachidonic acid (20:4n-6; $P<0.001$) were lower than normal gastric cases. Overall, tissues of patients with gastric adenocarcinoma had a significant increase in the total saturated ($P<0.01$) and monounsaturated fatty acids ($P<0.001$) and significant down regulation in polyunsaturated fatty acids ($P<0.001$).

Conclusion: Our findings indicated that variation of the fatty acid composition in gastric adenocarcinoma tissues may be regarded as an indicator of altered lipid metabolism occurring in vivo during human gastric adenocarcinoma.

Keywords: Gastric adenocarcinoma, Fatty acid composition, Gas chromatography

Corresponding author Email address: rana.ezzeddini@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:119

The regulation of cancer cell energy: Crosstalk and network between the various types of cells

Durdi Qujeq[1], Fatemeh Nejat PishKenar[1], Mehrdad Kashifard[1], M Mohamady[1], Karimollah Hajian-tilaky[1]

[1] Babol University of Medical Sciences, Faculty of Medicine Babol, Iran

Objective: In recent years, researchers have cited the relationship between tumor cells and normal cells around them. Researchers have also recognized that tumor cell control is critical to human health and survival. One of the methods of controlling tumor cellular metabolism is through regulation of the growth and energy of the tumor cell. The level of glycolysis is high in tumor cells. Also, tumor cells, by building up a network with neighboring cells, provide energy in addition to performing glycolysis through the protein degradation and the use of certain amino acids.

Material and Methods: Many methods have been used to control the metabolism of damaged or tumor cells and inhibit energy production by researchers. To determine the association of damaged or tumor cells with neighbor and adjacent cells, a co-culturing technique was used. Esophageal erosive and non-erosive cells, diabetic and non-diabetic pancreatic cells, liver cells, parotid cells and damaged cells were co-cultured with duplicated form. To compare the results of the control group and the case study, student t-test statistical method was used and $P< 0.05$ was significant.

Results: Our findings indicated that damaged and tumor cell microenvironment or media is very important in energy supply sources of injured and tumor cells. The combined results of various damaged and healthy cells showed that adjacent cells could play an important role in the metabolism and energy supply of the damaged or tumor cells.

Conclusion: It is very important to regulate the metabolism of an injured and tumor cell by controlling the amount of production and ways of providing cellular energy to maintain health. In the future, control of energy supply sources of tumor cells could be one of the treatments strategy for cancer cells treatment. Control of metabolic interactions, signaling and crosstalk between tumor cells and their non-malignant neighbor's cells will be important in cancer cells treatment.

Keywords: Cross-talk, signaling, metabolic interaction, tumor cells, damaged cells

Corresponding author Email address: dqujeq@gmail.com

ID:122

Stem cell therapy for diabetes mellitus

Durdi Qujeq[1], Zaineb Alsadat Bouzary[1]

[1] Department of Clinical Biochemistry, School of Medicine, Babol University of Medical Sciences, Babol, I.R Iran

Objective: Diabetes is one of the chronic diseases associated with increased blood glucose, which can be due to insulin secretion or insulin resistance. Diabetes resulting from defects in both insulin secretion and insulin activity. Finding new sources for tissue reconstruction or necrosis is one of the issues that researchers have taken in recent years. In this regard, in recent years attention has been paid by researchers with regard to the potential application of stem cells in repairing and restoring the damaged tissue.

Material and Methods: Stem cells were isolated from the umbilical cord blood by using a different centrifuge, using a Max column method. Alloxan was used to create diabetic rats and two rat groups were examined by stem cell injection and without stem cell injection. The level of insulin and glucose in the serum were determined. To compare the results of the control group and the case study, student t-test statistical method was used and $P< 0.05$ was significant.

Results: Our results demonstrated that the stem cell has the potential for the reconstruction and repair of the damaged tissue, so that the amount of insulin secretion increased in the group injected with stem cells compared with the control group. Blood glucose was also decreased in the injected stem cell group compared to the control group.

Conclusion: Our results indicated that stem cells have the potential to regenerate pancreatic cells, so that the amount of insulin secretion increases after injection. Therefore, stem cells can be one of the sources of tissue repair and should be used in the treatment of diabetic patients.

Keywords: diabetes mellitus, stem cell, glucose, insulin

Corresponding author Email address: dqujeq@gmail.com

ID:123

Novel and non-invasive biomarkers for early detection of cancers: Breast, esophageal, glioma, glioblstoma and prostate cancer

Durdi Qujeq[1], Danial Danesh Dost[2], Mohsen Vakili[2], Masomeh Karimi[2], Tooba Yousefi[2], Aillin Ebrahimzadeh[2], Karim Ollah Hajian –Tilaki[2], Shirin Haghighi[2], Anahita Ebrahim Pour[2], Give Sharifi[3], Abdulrahim Gholizadeh Pasha[2]

[1] Cellular and Molecular Biology Research Center (CMBRC), Health Research Institute, Babol University of Medical Sciences, Babol, Iran

[2] School of Medicine, Babol University of Medical Sciences, Babol, I.R Iran

[3] School of Medicine, Shaheed Behshti University of Medical Sciences, Tehran, I.R Iran

Objective: Novel and non-invasive biomarkers are urgently needed for early detection of cancer. Nowadays, prognosis and diagnosis of many type s of cancers is frequently late, time-consuming and expensive. New approaches for diagnosis and treatment of cancers is needed. In recent years cancer diagnosis is improving. In this regard, biochemical compound can be utilized as novel cancer biomarkers. Biomarker could be readily accessible in the biological fluid and the altered production and secretion of biomarkers in biological fluid and aberrant expression of biomarker contents in the tumor cells could reflect the status of cancer. The aims of our study is to introduce the basic properties of biomarkers, the function roles of biomarkers in breast, esophageal ,glioma, glioblstoma and prostate cancer , and the methods of detecting markers. We highlight the clinical values of biomarkers in breast, esophageal, glioma, glioblstoma and prostate cancer diagnosis and prognosis.

Material and Methods: Over the recent years, various bio-markers in cancer patients were evaluated by our research team on biological samples of different cancers in the form of theses and research designs. We investigate the role of biomarkers including, sarcosine, glyoxalase, fructose amine 3 kinase, nitrite, nitate, GFAP, IGFBB-2, YKL-40, alpha-fucosidase, fucosyl transferase, GDP-fucose transferase, phospholipids carrier protein, riboflavin carrier protein and survivin, in breast, esophageal, glioma, glioblstoma and prostate cancer patients. The content of these biomarkers were measured with standard biochemical kits by using spectrophotometer or Elisa methods. To compare the means of the healthy control group and the patient group, student t-test statistical method was used and p value statistical significance; $P< 0.05$.

Rsults: Our results demonstrate that the concentration of sarcosine, glyoxalase, fructose amine 3-kinase, nitrite, nitate, GFAP, IGFBB-2, YKL-40, alpha-fucosidase, fucosyl transferase, GDP-fucose transferase, phospholipids carrier protein, riboflavin carrier protein and survivin biomarkers in the in breast, esophageal, glioma, glioblstoma and prostate cancer patient samples varies in comparison with healthy control samples. These changes are associated with clinical, grade parameters and cancer progression.

Conclusion: The association of changes in biomarkers measured with the progression, staging and clinical signs of breast, esophageal, glioma, glioblstoma and prostate cancer samples can help in addition to early detection of these cancer at the design of the drug and ultimately cancer treatment. Current results have several implications that motivate promising future research in the fields of drug target therapy and cancer biomarkers.

Keywords: Cancer, breast, glioma, prostate, esophageal

Corresponding author Email address: dqujeq@gmail.com

ID: 125

Study of Survivin expression in breast cancer patients and healthy controls

Farzaneh Karimi[1], Noosha Zia Jahromi[1], Seyed Hossein Hejazi[1]
[1] Isfahan University

Objective: Breast cancer is developed as a result of asymmetric proliferation of breast cells. Genetic have important role in affection to breast cancer. Among these genes Survivin belongs to IAP family, which is the same family of Apoptosis inhibitor. In the process of operation, this gene have a high expression among breast cancer.

Materials and Methods: In this study samplery was carried out from 35 breast cancer patients and 35 healthy people and afterwards the tissues were kept in RNA later. After RNA extraction, cDNA was synthesised. Then RNA was measured in 280/260 nanometers wavelenght. Afterwards by using genes, dedicated-primers with RT-PCR technique, Survivin gene expression was studied qualitatively.also protein extraction from tissue was done then by SDS-page technique Survivin protein expression was studied.

Results: Studies have indicated that the survivin gene expression is high in people with breast cancer, also extracted protein from samples confirms the relation of gene expression and tumor progression in patient with this cancer.

Discussion: Due to difference between protein and gene expression in healthy and diseased samples it can be stated that we use as biomarker in detection in the disease progression.

Keywords: Breast cancer, Survivin, Metastasis

Corresponding author Email address: F_karimi1990@yahoo.com

ID:126

Measurement of nitric oxide levels and amount of enzyme that involved in the synthesis of NO in the esophagus specimens of patients with Gastroesophageal reflux disease

Fatemeh Nejat Pish Kenari[1], Durdi Qujeq[1], Saeed Mohammadi[2], Mehrdad Kashifar[2], Karimullah Hajian[2]

[1] Department clinical biochemistry, Babol University of Medical Sciences, Babol, Mazandaran, Iran

[2] Department Internal Medicine, Babol University of Medical Sciences, Babol, Mazandaran, Iran

Objective: Gastroesophageal reflux has an important role in incidence esophageal adenocarcinoma. Gastroesophageal reflux disease (GERD) occurs due to the return of the contents of the stomach to the esophagus. Contrary to the past which that researchers considered the effects of gastric reflux due to the direct effect of acid, some researchers have reported that reflux symptoms are due to the involvement of immune system and inflammation. One of the proteins produced in inflammation is the enzyme that involved in the synthesis of nitric oxide. This enzyme produces NO from L-arginine on the pathway for the production of L-citrulline.

Material and Methods: Approximately one hundred patients entered our study and enzyme that involved in the synthesis of NO and NO level was analyzed by ELISA kit in biopsy specimens. Our results analyzed by SPSS software version 24 and $P< 0.05$ was significant between patient and control groups.

RESULTS: Our finding showed that level of nitrite and nitrate and amount of enzyme that involved in the synthesis of NO are different between patient and control groups and we found that these markers increased in the patient's group compared to the control group.

Conclusion: Our results indicated that nitric oxide and enzyme levels are the useful and effective markers in determine subtype of GERD. So our findings it will be helpful in the treatment of GERD.

Keywords: Gastroesophageal reflux disease (GERD), Nitric oxide (NO), Esophagus, Esophagitis, Elisa

Corresponding author Email address: Fatemeh_nejat70@yahoo.com

ID:127

The Aurone derivatives assessment serves as proprietary probes of β amyloid aggregates in comparison with amorphous aggregates

Sirvan Abbasbeigi[1], Reza Khodarahmi[1], Sirous Ghobadi[2], Hadi Adibi[3]

[1] Medical biology research center, University of Medical Sciences, Kermanshah, Iran

[2] Associate Professor, Faculty of sciences, Razi University, Kermanshah, Iran

[3] Associate Professor, Faculty of Pharmacy, University of Medical Sciences, Kermanshah, Iran

Objective: In 1854, the term "amyloid" was used for the first time by Virchow. To describe an aggregated substance found in the liver of a deceased patient. Despite the misleading association to starch, the term is still used and currently 27 diseases are associated with amyloid fibril deposits of normally soluble proteins. Early detection of amyloid deposit could be effective in the diagnosis and treatment of disorders such as Alzheimer's disease (AD), Parkinson's disease (PD) and systemic amyloidosis. In this study, we tried to synthesize the aurone derivatives as an amyloid detection probe to compare with a standard probe called Thioflavin T in the different protein conditions.

Material and Methods: β-Lactogluboline was purified via fractionation method (As an all β secondary structure) and bovine serum albumin (As a α/β secondary structure) was purchased from Sigma Aldrich. For more precision, their qualities were evaluated by SDS-PAGE and Bradford protein assay. Furthermore, the spectrophotometric analysis of synthetic compounds such as UV-visible and fluorescence spectroscopies were considered in their individual and special wavelengths. Each synthetic compounds were excited and the emission spectra were recorded immediately at their own exclusive wavelengths, while, they were bound to the amyloid fibrils in comparison with native protein and also amorphous aggregates.

Results: The results of synthetic compounds were obtained in three different conditions, Native, Amorphous and Amyloid aggregations. We have shown that the synthetic compounds could selectively and specifically bind to amyloid fibrils almost as much as the ThT probe. Additionally, our synthetic compounds due to its neutral charge and high lipophilicity essence might cross the blood-brain barrier as an effective probe.

Conclusion: According to our result, the synthetic compounds could be accounted as remarkable probes to detect in vitro β-amyloid plaques, but it should be investigated further as potential probes for detecting β-amyloid plaques in the AD brain.

Keywords: Amyloid, Amorphous, Compounds, Probe, Synthetic

Corresponding author Email address: nemesis.student@gmail.com

ID:128

Protein-related cognition by the brain and the heart: Muscarinic receptor M2 variations in the physical and psychological stress

Monireh-Sadat Mousavi[1], Gholamhossein Riazi[1], Sogol Meknatkhah[1]

[1] Institute of Biochemistry and Biophysics (IBB), University of Tehran Tehran, Iran

Objective: Chronic adolescent stresses are associated with various cognitive impairments at older ages. Different chronic stressors through activating diverse biochemical pathways lead to explicit health problems. Differentiating effects of chronic physical and psychological stresses on M2 muscarinic receptors (M2MR) of the brain and the intrinsic cardiac nervous system (ICNS) allows us to find their different potency leading to cognitive damages.

Material and Methods: 21 female Wistar rats were divided into three groups (n=7, 3 weeks old); control, physical stress (electric shocks: 0.25 mA, 50 Hz, 2 sec duration, 10 min: 10 shocks), and psychological stress (witnessing electric shocks). After stress exposure in 5 consecutive days, serum corticosterone was measured for stress induction verification. Rats were then returned to their home cage for 1.5 months. In their adulthood, Y-maze and Object Recognition Task (ORT) were performed to evaluate cognitive performances of each group. Then, M2MR variation in brains and ICNSs were compared in physically and psychologically stressed rats by western blot.

Results: Both experimental groups exhibited a significant reduction in cognitive performance 1.5 months post-stress. Western blot analysis for M2MR expression level represented a significant reduction in brain and increase in ICNS of both stress groups compared to control. Comparative evaluation of cognitive impairment in stressed rats showed a major disturbance in psychologically stressed animals.

Conclusion: The reversed M2MR expression changes in brain and ICNS illustrated a kind of compensatory effect between brain and heart for cognition. Considering major cognitive impairment in psychologically stressed rats, adolescent psychological healthcare would be an effective strategy for cognitive damages prevention at older ages.

Keywords: Psychological Stress, Physical Stress, M2 Muscarinic Receptors, Cognitive Impairment, Intrinsic Cardiac Nervous System

Corresponding author Email address: mousavi.m@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID: 129

Synergistic prodigiosin-chloroform combination for antibiofouling properties

Seyedeh Maryam Musavi[1], Bita Archangi[1], Hosein Zolgharnein[1], Isaac Zamani[1]

[1] Khorramshahr University of Marine Science and Technology

Objective: Prodigiosin is a bacterial pigment that is produced by several species, including Serratia marcescens. One of the important properties of prodigiosin is its antibacterial effect. In this study prodigiosin was extracted using various solvents and the synergistic effect of solvents on the antibacterial properties of this pigment was investigated.

Material and Methods: For pigment extraction, acetone, acidic ethanol (4% HCl 1M), methanol and chloroform were used as solvents. Crude pigments were purified using column chromatography. Antibacterial effect of crude prodigiosin and purified prodigiosin were compared by disk diffusion method on Bacillus subtilis, Escherichia coli, Staphylococcus aureus and Pseudomonas aeruginosa.

Results: In all cases, the antibacterial effect of purified pigments was more than crude pigments, except pigment extracted with chloroform, which crude prodigiosin had a much stronger antibacterial effect than purified prodigiosin. This indicates the synergistic effect of chloroform on the antibacterial effect of prodigiosin.

Conclusion: Bacteria were used in this study are of important biofouling species. Due to the lack of an appropriate solution to solving the biofouling problem in marine industries and also according to the results obtained in this study, it is possible to use crude prodigiosin extracted with chloroform as a natural, strong and inexpensive antibacterial agent against biofouling bacteria.

Keywords: Prodigiosin, Serratia marcescens, Antibiofouling effect, Synergistic effect, chloroform

Corresponding author Email address: maryam.musavy@yahoo.com

ID:131

Effect of aqueous and acetone extracts of Cynara scolymus flowering shoot on liver enzymes (Alanine aminotransferase, Aspartate aminotransferase, Alkaline phosphatase and γ-glutamyl transferase) in streptozotocin-induced diabetic male rats.

Flora Panjehfouladgaran[1], Monireh Ranjbar[1], AliAsghar Moshtaghi[1], Omid Vakili[2]
[1] Department of Biological Sciences, Falavarjan Branch, Islamic Azad University, Isfahan, Iran
[2] Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Due to the increasing progress of diabetes mellitus and use of alternative and low risk Herbal Medicines, this experimental study investigated the effect of aqueous and acetone extracts of flowering shoot of Artichoke (Cynara scolymus) on liver enzymes in streptozotocin-induced diabetic male rats.
Material and Methods: 42 adult male Wistar rats were used. Blood glucose levels of 36 rats were measured at first and then, 24 rats became diabetic by receiving 65 mg/Kg STZ and classified in diabetic groups. The rats were divided into 7 groups. All of them were fed regularly. They were received 500 mg/Kg of artichoke flowering shoot extract by gavage. Gavage, was done for 10 times, every other day. At the end of the 20th day, blood was taken from the heart of animals and serum concentrations of glucose and liver enzymes were measured and obtained data were compared together.
Results: Aqueous extract, significantly reduced the levels of blood glucose, AST, ALT and ALP compared to diabetic group and ones treated with acetone extract. The activity of GGT was significantly increased in diabetic groups which treated with aqueous and acetone extracts, and normal group which treated with acetone extract, compared with normal control group (p-value<0.05).
Conclusion: According to the results of present study, the extract of this herb, especially aqueous extract, is effective in control of blood glucose and reducing liver enzymes activities.
Keywords: Alanine aminotransferase; Alkaline phosphatase; Aspartate aminotransferase; Cynara scolymus; γ-glutamyl transferase
Corresponding author Email address: flpanjeh@gmail.com

ID:132

The effects of hydroalcoholic extract of Boswellia Serrata on the viability and HMG-COAR level of astrocytes isolated from C57BL/6 mouse

Bahar Sepiani[1], Zahra Nazeri[1], Alireza Kheirollah[1]

[1] Department of Biochemistry, Cellular & Molecular Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran

Objective: Nervous system complexities and drug restrictions, suggest using traditional medicines to treat brain diseases. This study is designed to evaluate the toxicity of Boswellia Serrata extract (B.S) on mouse astrocytes and its effect on the HMGCR level in astrocytes.

Material and Methods: Astrocytes were isolated from the newborn mouse brain of C57BL/6. The hydroalcoholic extract of BS was prepared by maceration method and its cytotoxicity on astrocytes was evaluated via MTT assay in the concentrations of 1,5,10,20,50,80,100 µg/ml, in two cell density. The effect of B.S extract with a safe dose of 20 µg / ml on HMGCR level was investigated using western blotting method.

Results: Cell viability data showed increase for the BS concentrations less than 20 µg/ml which was significant for the point of 10 µg/ml. cell viability at the concentration of 20µg / ml showed the least difference compared to the control group and it was significantly decreased at 50 to 100 µg/ml of BS extract. The level of HMGCR significantly decreased in treatment with a safe concentration of 20 µg / ml of BS.

Conclusion: Viability of mouse astrocytes is affected by extract of BS in a dose-dependent manner so the BS extract with stimulatory effects and cytotoxic properties can be used in a wide range of pharmaceutical studies related to the nervous system. HMGCR is a ratelimiting enzyme in cholstrol metabolism Therefore, it seems that boswellia is a good choice for studying traditional medicine resources for the treatment of cholestrol-related diseases in brain.

Keywords: Boswellia Serrata extract, HMGCR, western blotting, MTT Assay, Astrocytes

Corresponding author Email address: b.sepiani13@gmail.com

ID:135

Interleukin-6 Promoter SNP is Associated with its Serum Levels, Susceptibility to the Prostate Adenocarcinoma, and Bone metastasis in Iranian Population

Ghader Dargahi Abbasabad[1], Seyed Mahdi Banan Khojasteh[2], Hadi Eskandari Naji[3], Mohammad Reza Zamani[4], Hamed Hajipour[5], Hamed Serati-Nouri [6]

[1] Razi Hospital

[2] Department of Animal Biology, Faculty of Natural Sciences, University of Tabriz, Tabriz

[3]Department of Clinical Biochemistry and Laboratory Medicine, Faculty of Medicine

[4] Department of Immunology and Biology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.

[5] Department of Reproductive Biology, Faculty of Advanced Medical Sciences

[6] Stem Cell Research Center, Tabriz University of Medical Sciences

Objective: Interleukin-6 (IL-6) is an inflammatory cytokine shown to be a strong factor for growth, proliferation and metastasis of many malignancies. The promoter single nucleotide polymorphisms (SNPs) of -174G>C (rs1800795) can alter the transcriptional pattern of this gene. This study aims at assessing the effect of IL-6 (rs1800795) SNPs on serum levels and susceptibility to benign prostate hyperplasia (BPH) and the prostatic adenocarcinoma (PCa).

Material and Methods: The project was performed on 112 men with PCa, 118 men with BPH and 250 healthful men as control group. After DNA extraction, Genotyping of IL-6 (rs1800795) was performed using PCR TaqMan Allelic Discrimination (ABI MGB) based on. Serum IL-6 levels were measured by ELISA.

Results: As results, the G allele frequency for rs1800795 in IL-6 gene was 74.1%, 68.6% and 67% in PCa patients, BPH patients and healthy men, respectively. G showed significant differences in PCa and healthy groups (P =0.030, OR = 1.73, 95% CI: 1.05-2.21). The GG genotype indicated more frequency in PCa group, whereas the GC genotype was more common in BPH group in comparison to other groups. In addition, individuals with G allele were found to have higher levels of serum IL-6.

Conclusion: Current study identified that IL-6 -174G > C (rs1800795) is associated with serum IL-6 levels, and statistically disease-susceptible SNP in prostate cancer and its bone metastasis in a northwest Iranian population.

Keywords: TL1 cytokine [Supplementary Concept], prostate, adenocarcinoma, hyperplasia, BPH

Corresponding author Email address: smbanan@tabrizu.ac.ir

ID:136

Antibacterial Activity of ethanolic and hexane extract of Artemisia annua

Fatemeh Zahra Malvandi[1], Behnam Mahdavi[2]

[1] Department of Biochemistry, Golestan University of Medical Sciences, Gorgan, Iran

[2] Department of Chemistry, Hakim Sabzevari University, Sabzevar, Iran

Objective: The genus Artemisia L. is an annual or a perennial herb or shrub found in northern temperate Region. Artemisia has a therapeutic history reaching back over two millennia and it is widely used in folk remedies. Artemisia annua has anti ulcerogenic, antifibrotic and antitumoral activity. In this study, we focus on the antibacterial activity of Artemisia annaua extract.

Material and Methods: The plant was collected from south of Gorgan - Iran and dried in a dark room. The dried plant parts were macerated in ethanol and n-hexane for 72 h. Then the antibacterial activity of the plant extract was evaluated using minimum inhibitory concentration (MIC) assay from theconcentration of 100µg/mL to 0.78µg/mL against Gram-positive bacteria of Bacillus subtilisand Gram-negative of Shigellasonnei.

Results: The hexane extract did not show any antibacterial activity. However, the ethanolic extract inhibited the growth of *B. subtilis* with aconcentration of 3.12±0.00 and S. sonneiwith 6.25±0.00. The extract activity was less than the positive controls of chloramphenicol.

Conclusion: The results of the present study revealed that Artemisia annua has potential antibacterial effect against Bacillus subtilis and Shigella sonnei and the finding of current study are valuable for the treatment of microbial infection.

Keywords: Artemisia annua, Antibact, ethanolic

Corresponding author Email address zahra.malvandi1994@gmail.com

ID:140

Synergistic anticancer effect of ZnO nanoparticle and 5FU on the growth of MCF7 cell line

Safoura Hoseinzadeh[1], Esfandiar Hiedarian[2], Elham Raeisi[3]

[1] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Department of Medical Physics and Radiology, School of Allied Medical Sciences, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Breast cancer is a malignant disease which is common in women. 5- Fluorouracil (5FU) is one of the most common chemotherapeutic drugs which is used for treating breast cancer. However, it is limited to use due to its side effects. On the other hand, ZnO nanoparticles as inorganic compound have shown the anticancer ability. Therefore, the aim of this study was to evaluate the cytotoxic effects of 5-FU and ZnO nanoparticles as a single or in combination on human breast cancer (MCF7) cell line.

Methods: MCF7 cell line was treated with different concentrations of ZnO nanoparticles (0-100 µg/ml) and 5-FU (0-10µm) for 48 h. The cytotoxic effects of ZnO and 5-FU were evaluated by 3-(4, 5-dimethylthiaztol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay on MCF7 cell line. Kruskal-Wallis and Dunn's tests were used to evaluate the statistical significance of the differences between different treated culture cells.

Results: 5-FU or ZnO as a single treatment decreased significantly the growth of MCF7 cells at 48 h. Nevertheless, combination of 5-FU and ZnO was more effective on the reduction of MCF7cell viability than each compound in vitro.

Conclusions: This study showed the synergistic anticancer effect of ZnO nanoparticles and 5-FU on MCF7 human breast cancer cell line.

Keywords: ZnO nanoparticles, 5-fluorouracil, MCF7, cell viability

Corresponding author Email address: safoura.hoseinzadeh@gmail.com

ID:141

Assessment of the cytotoxic effects of β-escin and 5-fluorouracil on breast cancer (MCF7) cell line

Raziyeh Mazrouei[1], Esfandiar Hiedarian[2], Elham Raeisi[3]

[1] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Assistant Professor, Department of Medical Physics and Radiology, School of Allied Medical Sciences and Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Breast cancer, a complex heterogeneous disease, occurs with a set of different clinical symptoms. Breast cancer is considered the second leading cause of cancer death worldwide among women. β-escin, a potential anti-cancer, anti-bacterial and anti-oxidant agent is a major natural triterpenoid saponin. 5-fluorouacil (5-FU) is an effective drug with anti-cancer effect and it is used widely in most cancers. We aim to measure cytotoxic effect of 5-FU and β-escin on MCF7 cell line.

Material and Methods: MCF7 cell line was treated with different concentrations of β-escin (0-100µg/ml) and 5-FU (0-11 µM) for 72 h. The effects of β-escin and 5-FU were measured on the cell proliferation by 3-(4, 5-dimethylthiaztol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. Then, the combination effects of β-escin and 5-FU were calculated at the levels of IC20 and IC30 on MCF7 cell proliferation.

Result: The results showed that the cytotoxic combination effects of β-escin and 5-FU was higher than β-escin or 5-FU alone. The combination effects of IC30 concentration of 5-FU with IC20 concentration of β-escin had the most anti-proliferation effects on MCF7 cell line.

Conclusion: Our results demonstrated that the anti-cancer effect by combining β-escin with 5-FU was stronger than each agents alone on breast cancer.

Keywords: β-escin, 5-fluorouracil, Breast Neoplasms, Cell viability

Corresponding author Email address: Mazrouei1395@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:142

The cytotoxic effects of protocatechuic acid and 5-fluorouracil on human gastric cancer (AGS) cell line

Zahra Motamedi[1], Esfandiar Hiedarian[2], Sayed Asadollah Amini[3]

[1] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Medical Plants Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Gastric cancer is one of the most common cancers in the world that causes many deaths every year. Nowadays, chemotherapy used to treat cancers but it have many side effects on the patients. 5-fluorouracil (5-FU) is a chemical agent which is widely used in the treatment of many cancers. Protocatechuic acid (PCA) is a polyphenolic compound which possesses anti-oxidative, antibacterial and anti-mutagenic activities. The aim of this study was to evaluate the cytotoxic effects of 5-FU and Protocatechuic acid on AGS cell line.

Material and Methods: AGS cell line was treated with different concentrations of PCA (0-900 µM) and 5-FU (0-60 µM) for 24 h. The effects of these compounds were measured on the cell proliferation by 3-(4, 5-dimethylthiaztol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. Then, the combination effects of IC20 and IC30 each of PCA and 5-FU were calculated on AGS cell proliferation.

Result: The results showed that the cytotoxic combination effects of PCA and 5-FU was higher than that alone PCA or 5-FU. The combination effects of IC20 of 5-FU and IC30 of PCA had better anti-proliferation effects on AGS cell line.

Conclusion: This study showed that the combination of PCA and 5-FU in the treatment of gastric cancer is more effective than each agents alone.

Keywords: Protocatechuic acid, 5-fluorouracil, AGS, Cell viability

Corresponding author Email address: z.motamedi1395@gmail.com

ID:143

Recombinant retinal isoforms of IMPDH1 were expressed in different conditions to canonical isoform

Behnaz Andashti[1], Razieh Yazdanparast[1], Hamid Galehdari[1]

[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran

Objective: Functional and structural studies require highly pure production of recombinant proteins. The Escherichia coli is the most common prokaryotic host for the expression of recombinant proteins. We applied the E. coli bl21 containing recombinant vector to express the recombinant mouse inosine 5-monophosphate dehydrogenase 1 (mIMPDH1) isoforms. The IMPDH1 catalyzes the IMP oxidation to XMP, which is a NAD- dependent and rate limiting reaction in de novo biosynthesis of guanine nucleotides. In mammals, the IMPDH1 is expressed at very high levels in the retina compared to the other tissues and retinal specific isoforms have been detected in addition to canonical isoform.

Material and Methods: Canonical (H1α) and two retinal (H1β and H1γ) isoforms of mIMPDH1 were cloned and expressed in E. coli bl21 (DE3) under induction of isopropyl ß-D-1-thiogalactopyranoside (IPTG).

Results: Retinal isoforms have been optimally expressed under condition of 1 mM IPTG (tenfold more than canonical isoform) after incubation for 4-6 hours in 25 ^{O}C.

Conclusion: IPTG releases repressor from the lac operon promoter sequence and causes expression of the protein of interest. Canonical isoform of the mIMPDH1 is high similarity to bacterial IMPDH, so it is probably more convenient for E. coli to express canonical to retinal isoforms.

Keywords: IMPDH1, Retinal isoform, Recombinant proteins, IPTG

Corresponding author Email address: behnaz.andashti@ut.ac.ir

ID:144

The SNP rs744166 C > T is not associated with acute kidney injury after cardiopulmonary bypass

Sara Aghakhani chegeni[1], Mahsa Rahimzade[1], Nadereh Naderi[2], Hossein Montazerghaem[3], Mahmoud Khayatian[1], Farzaneh Dastourian[1]

[1] Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[2] Department of Immunology, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[3] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran.

Objective: Acute kidney injury (AKI) is one of the main side effects of cardiopulmonary bypass (CPB) with high mortality rate. Several studies have tried to introduce reliable markers for early diagnosis of cardiac surgery associated acute kidney injury (CSA-AKI), but still no reliable marker exists. Therefore the aim of this study was testing the hypothesis whether IL-17A polymorphism that has a role in inflammation can predict CSA-AKI.

Material and Methods: 118 patients undergoing CPB were enrolled in this study. Based on the changes in serum creatinine level divided into two groups, 49 patients developed AKI and 62 participants in non - AKI group. Genomic DNA was extracted from the blood, and analysis of the SNP rs744166 in the IL-17A gene was performed by SSP-PCR method.

Results: The genotypic frequency of the SNP rs744166 C > T polymorphism was evaluated in the AKI and Non-AKI groups. In the Non-AKI group, the frequency of CC, TT, CT was 34%, 16% ,50%, and 28.1%, 29.7% and 42.2%, in the AKI group. The Statistical analysis based on chi-square test showed no significant differences in genotype frequency between two groups. Analysis of the allele frequency in AKI (C41% and T 59%) and Non-AKI (C, 41% and 50.8%) group didn't show significant differences.

Conclusion: This study showed that the SNP rs744166 wasn't suitable biomarker for predicting AKI after CPB.

Keywords: AKI; CPB; Polymorphism; IL-17A

Corresponding author Email address: sara.aghakhanibiochemy@gmail.com

ID:147

Anti-proliferation effects of rutin and 5-fluorouracil on prostate cancer (PC3) cell line

Atefeh Satari[1], Esfandiar Hiedarian[2], Sayed Asadollah Amini[3]

[1] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Medical Plants Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Prostate cancer is the second leading cause of cancer related deaths among men. Rutin, a strong antioxidant, has several pharmacological functions such as cytoprotective and anticancer effects. 5-fluorouracil (5-FU) is a chemotherapy agent which is widely used in the treatment of many cancers. The aim of this study was to investigate the anti-proliferation effects of 5-FU and rutin alone and combination on PC3 cell line.

Material and Methods: PC3 cell line was treated with different concentrations of rutin (0-1400µM) and 5-FU (0-10 µM) for 48 h. The effects of rutin and 5-FU were measured on the cell proliferation by 3-(4, 5-dimethylthiaztol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay test. Then, the combination effects of rutin and 5-FU were measured at the levels of IC10 and IC40 on PC3 cell proliferation.

Results: The results showed that the cytotoxic combination effects of rutin and 5-FU was higher than rutin or 5-FU alone. The combination effects of IC10 concentration of 5-FU with IC40 concentration of rutin showed significant anti-proliferative effects on PC3 cell line.

Conclusion: The present study showed that the combination of rutin and 5-FU has anti-proliferative effects on PC3 cell line than either of the single agents.

Keywords: Rutin, 5-fluorouracil, Prostatic Neoplasms, Cell viability

Corresponding author Email address: atefehsatari95@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:149

Methylene Blue-Curcumin Ion Pairing Nanoparticle for Human Breast Cancer Photodynamic Treatment

Khatereh Khorsandi[1], Reza Hosseinzadeh[1]

[1] Photodynamic Research Group, Medical Laser Research Center, ACECR, Tehran, Iran

Objective: Photodynamic therapy is a form of radiation therapy that is composed of three nontoxic elements producing reactive oxygen species (ROS), particularly singlet oxygen as a cytotoxic species. The aim of current study was to use methylene blue-curcumin ion pair nanoparticles and as photosensitizer for photodynamic therapy (PDT) on MDA-MB-231 cancer cells, also various light sources effect on activation of photosensitizer (PS) was considered.

Material and Methods: Ion pair nanoparticles were synthesized using opposite charge ions precipitation and lyophilized. The PDT experiments were designed and the effect of photosensitizers (0–75 µg. mL−1) and light sources (Red LED (660 nm; power density: 30 mW cm−2) and blue LED (465 nm; power density: 34 mW cm−2) on the human breast cancer cell line were examined.

Results: The results show that the ion pairing of methylene blue and curcumin enhance the photodynamic activity of both dyes and the cytotoxicity of ion pair nanoparticles on the MDA-MB-231 breast cancer cell line. Blue and red LED light sources were used for photo activation of photosensitizers. The results indicate that the red light effect on cell viability in the presence of ion pair nanoparticles is better than blue light in comparison with free dyes.

Conclusion: Nano scale ion pair precipitating of methylene blue-curcumin enhanced the cell penetrating and subsequently cytotoxicity of both dyes together on MDA-MB-231 human breast cancer cell line.

Keywords: Photodynamic therapy, Ion pairing nanoparticle, Methylene blue, Curcumin

Corresponding author Email address: khorsandi.kh@ut.ac.ir

ID:150

Effect of ethanolic extract of Fennel (Foeniculum vulgar) on steroid hormones in male Common carp (Cyprinuscarpio)

Alireza Nazari[1], Arezoo Mehrabipur[1]

[1] Faculty of Biology, Islamic Azad University, Falavarjan Branch, Esfahan, Iran

Objective: Sex steroid hormones play important roles in many physiological processes, particularly in the reproduction of Fishes. The effect of Fennel (foeniculum vulgar) as a phytoestrogenic hormones did not investigated in fishes yet. In this study, the effects of ethanolic extract of Fennel as a phytoestrogen on serum steroid hormones such as Progesterone (P), Testosterone (T) and 17β-estradiol (E2) in Common carp (cyprinuscarpio) males were investigated.

Material and Methods: 30 male fish mean weight 156±12 g and mean length 23±3 cm, divided in five groups, group control 1(C1) received 0.5 ml kg−1 normal saline, group control 2(C2) received 0.5 ml Tweein 80, 10%, group Test 1, 2 and 3 received 1.5, 2.25 and 3.75 ml kg−1 fennel extract by IP injection for 10 days respectively. After 2days post injection, the blood samples were taken and analyzed using ELAISA Kit.

Results: The results of present study revealed that groupT1, T2 and T3 had significant difference in comparison with group C1 ($P<0.05$) in level of progesterone while group T1 was decreased high significantly. The level of testosterone were decreased significantly ($P<0.05$) in group T1, T2 and T3 while group T2 was decreased more than other test groups. There was significant difference in level of 17 β- estradiol between test groups and group C1 ($P<0.05$) while group T2 had more decrease in comparable with T1 and T3.

Conclusion: The present study demonstrated that ethanolic extract of fennel in group T2 (dose 2.25ml kg−1) have more effect on steroid hormones in male common carp and additional experiments on females and other fish species are recommended.

Keywords: Common carp, Fennel, Progesterone, Testosterone, E2

Corresponding author Email address: alireza_15869@yahoo.com

ID:152

Therapeutic outcomes of atorvastatin on atherogenic lipid markers could be affected by metformin response in patients with type 2 diabetes

Abdolkarim Mahrooz[1], Ahad Alizadeh[2]

[1] Department of Clinical Biochemistry and Genetics, Faculty of Medicine, Mazandaran University of Medical Sciences, Khazarabad Road, Sari, Iran

[2] Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Objective: In many patients with type 2 diabetes (T2D), metformin is prescribed concomitantly with antilipidemic agents particularly statins. In this study, we evaluated whether response to metformin influences the therapeutic effects of antilipidemic medication on atherogenic lipid markers in patients with T2D.

Material and Methods:

One hundred and fifty patients newly diagnosed with T2D were followed for three months in this study. During this period, they took 1 g of metformin twice a day. None of the patients were taking antidiabetic medication prior to their diabetes diagnosis. We selected ≥1% and <1% reduction in HbA1c levels as the criteria for classifying diabetic patients as metformin responders (n=69) and nonresponders (n=81), respectively. The patients were receiving lipid-lowering therapy with the following drugs: 20 mg/day atorvastatin (n=109), 300 mg/day gemfibrozil (n=24), or both 20 mg/day atorvastatin and 300 mg/day gemfibrozil (n=17).

Results: There were no statistically significant differences between responders and nonresponders before treatment began with respect to most of the study parameters. At 3 months, total cholesterol (TC; $p<0.001$), low-density lipoprotein cholesterol (LDL-C; $p=0.002$), triglyceride (TG; $p=0.006$), high-density lipoprotein cholesterol (HDL-C; $p<0.001$), LDL-C/HDL-C ($p<0.001$), TC/HDL-C ($p<0.001$) and log (TG/HDL-C) ($p<0.001$) levels were significantly improved compared with baseline in responders receiving atorvastatin. Atherogenic ratios of LDL-C/HDL-C ($p=0.002$), TC/HDL-C ($p<0.001$) and log (TG/HDL-C) ($p=0.004$) decreased significantly in responders receiving atorvastatin than in nonresponders. The multivariate model identified a significant association between metformin response (as the independent variable) and TG, TC, HDL-C and LDL-C (dependent variables; Wilk's $\lambda = 0.927$, $p = 0.036$).

Conclusion: The ability of the atorvastatin monotherapy to reduce atherogenic lipids was comparable with that of atorvastatin and gemfibrozil combination therapy. Atorvastatin is more effective in reducing the atherogenic lipid markers in metformin responders receiving atorvastatin compared with nonresponders. Adoption of better therapeutic strategies for reducing atherogenic lipid markers may be necessary for metformin nonresponders.

Keywords: Type 2 diabetes, Metformin response, Atorvastatin, Antilipidemic medication, atherogenic lipids

Corresponding author Email address: amahrooz@mazums.ac.ir

ID:155

Immobilization of alkaline phosphatase onto chitosan nanoparticles and its application in bone tissue engineering

faribajafary[1], ShimaMotamedi[2], Farzanehjafary[3]

[1] Young Researchers and Elite Club, Isfahan (khorasgan) Branch, Islamic Azad University, Isfahan, Iran

[2] D.V.M from Veterinary university of Razi, Kermanshah

[3] Department of Biochemistry, School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Objective: One of the most important problems in oral and craniofacial surgery is harvesting bone by grafting tissue. So the principle subjects in this field of tissue engineering are inducing the regeneration of bone in osteopathy conditions. The product of alkaline phosphatase (ALP), ie Pi, via hydrolysis of phosphate substrate can induce osteoformation. The Pi has a functional role in the mineralization and differentiation of osteoblasts.

Material and Methods: In this study chitosan nanoparticles were synthesized using Ionic Gelation method and a particle diameter of under 100 nm was achieved. Then alkaline phosphatase was successfully immobilized on chitosan nanoparticles with binding efficiency of 0.71%. To investigate the effect of immobilized ALP by chitosan nanoparticles on differentiation of osteoblasts from mesenchymal stem cells, the comparison of bone marker expression between treatment (differentiated cells with immobilized ALP/chitosan nanoparticles) and control groups (cells from differentiation in culture medium without immobilized ALP/nanoparticles) was performed in the third, seventh and fourteenth days using the Real Time PCR technique.

Results: Whereas some proteins such as alkaline phosphatase, collagen type 1, osteocalcine and runx2 which are related with calcium binding and mineralization had high gene expression, others like tumor necrosis factor, the inhibitor of differentiation, had decreased expression in the treatment group.

Conclusion: According to our results, immobilized ALP on chitosan nanoparticles can significantly enhance the differentiation of osteoblasts which are derived from mesenchymal stem cells via up regulating the associated genes in a period of 14 days.

Keywords: Chitosan nanoparticles, alkaline phosphatase, immobilization, differentiation, osteoblast

Corresponding author Email address: f.jafary@yahoo.com

ID:156

The evaluation of the effect of morphine on the expression of cannabinoid receptors 1and 2 in two cell lines: MCF-7 and MDA-MB-231 in Breast Cancer

FaribaNabatchian[1], ZohrehShafeezadeh[1], GolnazVaseghi[2]

[1] Department of Clinical Laboratory Sciences, School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran

[2] Department of Physiology-Isfahan University of Medical Sciences

Objective: Studies illustrate Opioids, specially Morphin, that are used to relieve pain in cancer patients, can increase the risk of metastasis by suppressing the immune system and in this way promote tumor growth. Morphine mechanism of action is done through Opioid receptors that are distributed in the central nervous system (CNS). On the other hand, studies in the field of cancer treatment show Cannabinoids (the active ingredient in cannabis) are applied for cancer treatment and cannabinoids exert their effects by cannabinoid receptor type 1 and 2 which are expressed on the surface of cancer cells and normal cells. As mention earlier, the effects of Morphine is done through Opioid receptors that are distributed in the central nervous system (CNS), however recent studies demonstrate that there is a functional interference in central nervous system (CNS) between Opioid receptors and endocannabinoid system.

Material and Methods: MCF-7 and MDA-MB-231 breast cancer cell lines were treated with various doses of Morphin (1.6, 0.16, 0.016, 0.0016 µM) for 24 and 48 hours, Then the gene expression of cannabinoid receptor type 1 and 2 were measured by Real time PCR methods and then CTΔΔ obtained from that were applied for statistical analysis to determine relative gene expression of cannabinoid receptor type 1 and 2.

Results: The results showed reduced gene expression of cannabinoid receptor type 1 and 2 in two breast cancer cell lines that were treated with morphine for 24 and 48 hours. This means that different doses of morphine have significant effect on the expression of both receptors in MCF-7 and MDA-MB-231 breast cancer cell lines.

Conclusion: Morphine has effect on gene expression of cannabinoid receptors in breast cancer cell lines.

Keywords: Morphine, breast cancer, cannabinoid receptor type 1 and2

Corresponding author Email address: fnabatchian@yahoo.com

ID:158

Heterologous prime-boost strategy is an effective approach to develop a therapeutic HIV-1 vaccine

Kimia Kardani[1], Azam Bolhassani[2]

[1] Department of Pharmaceutical Biotechnology, School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran

Objective: Human immunodeficiency virus (HIV) is a major global health problem. There is an urgent need to develop an effective vaccine against HIV-1 infection, thus the vaccine must be able to induce protective immune responses, which can elicit and maintain both humoral and cellular immunity. Although, the recombinant subunit vaccines are safer than traditional ones but these vaccines are poor immunogens which need to use some effective approaches including adjuvants, delivery systems or prime/boosting. Recently, it has been shown that the heterologous prime-boost regimens are more efficient to produce a potent immunity as compared to homologous prime-boost regimens. Numerous heterologous prime-boost vaccine strategies have been tested in preclinical and clinical trials with promising results. After years of developing a potent vaccine, only six HIV-1 vaccines were almost efficient in clinical trials including a heterologous prime-boost strategy-based vaccine so-called as RV144 with 31% efficacy. Generally, the heterologous prime-boost immunizations have been generated as DNA prime/ protein boost (e.g., oligomericEnv DNA prime/protein boost), DNA prime/ peptide boost (e.g., MPER-V3 DNA/MPER-V3 peptide), DNA prime/ viral vector boost (e.g., HIV-1 subtype C mosaic Gag DNA/ Gag MVA) and protein prime/ viral vector boost (e.g., RV144: ALVAC prime [ALVAC-HIV(vCP1521)]. Future studies should be focused on developing a safe, affordable, effective heterologous prime-boost vaccine to reduce HIV-1 infections.

Keywords: HIV-1, Vaccination, Heterologous prime-boost, Subunit vaccines

Corresponding author Email address: azam.bolhassani@yahoo.com

ID:159

Psychological Stress Effects on Demyelination in the Cuprizone-Induced Model of Multiple Sclerosis

Sogol Meknatkhah[1], Gholam Hossein Riazi[1], Pouya Sharif Dashti[2], Monireh-Sadat Mousavi[1]

[1] Institute of Biochemistry and Biophysics (IBB), University of Tehran, Tehran, Iran

[2] Department of Chemical Engineering, University of Tehran, Tehran, Iran

Objective: Multiple sclerosis is the most common demyelinating disease worldwide in which stress is marked as an important risk factor. Considering the increasing stressful life events and the rise of emotional disturbance in modern societies, the impact of repetitive psychological stress seriousness on demyelination extremity in a cuprizone-induced model of multiple sclerosis on female rats was investigated.

Material and Methods: Wistar rats were randomly divided into 4 groups, (n=4, age 6w, 100-120 g) as follows: (1) the control group, (2) the physical stress group (electric shocks: 0.25 mA, 50 Hz, 2 sec duration, 10 min: 10 shocks), (3) the psychological stress group (witnessing electric shocks) and (4) the demyelination group (without any exposure to special stress, just fed cuprizone). After 5 days exposure to stress (group 2 and 3), the experimental groups (i.e.2, 3 and 4) were treated with 0.6% (w/w) cuprizone for 6 weeks in order to induce demyelination. The demyelination degree was compared in groups of animals by transmission electron microscopy.

Results: According to the TEM quantified results, both stress groups illustrated fewer myelinated axons when compared to the demyelination group ($P < 0.05$ for physical stress group and $P < 0.001$ for psychological stress one). Notably, data showed 73% reduction of myelinated axons in physical stress group ($p < 0.001$) while the reduction in psychological ones was 81% ($p < 0.001$) compared to control.

Conclusion: As psychological distress has severe effects on demyelination, it seems that psychological healthcare would be an effective approach for demyelinating disease prevention.

Keywords: Psychological Stress, Demyelination, Multiple Sclerosis

Corresponding author Email address: sogolmeknatkhah@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:160

Measurement of blood and tumoral glial fibrillary acidic protein and inflammatory protein levels in patients with stage IV glioma

Anahita Ebrahimpour[1], Durdi Qujeq[1], Guive Sharifi[1], Karimullah Hajian-tilaki[1]

[1]Department Clinical Biochemistry, Babol University of Medical Sciences, Babol, Iran

Objective: Grade IV glioma is one of the most common and dangerous brain cancers with high mortality that is caused by unknown causes. GFAP is the main protein constituent of the intermediate filament in the astrocytes. Studies show the potential role of this protein in brain lesions. The inflammatory proteins play an important role in the spread of this tumor. The aim of our study is measurement of blood and tumoral glial fibrillary acidic protein and inflammatory protein levels in patients with stage IV glioma.

Material and Methods: About 60 patients entered the study. The levels of proteins was determined by Elisa kit. The results were analyzed by SPSS software version 24. A significant difference was found between the two groups of control and patient, $P<0.05$.

Results: Our results demonstrated that levels of proteins involved in this disease, depending on the severity of the spread of the tumors were increased.

Conclusion: The results of this research show that glial fibrillary acidic protein and inflammatory protein levels are the useful markers in detecting the extent of the tumor in glioma.

Keywords: Glial fibrillary acidic protein, Elisa, Glioma, inflammatory

Corresponding author Email address: **anahita.ebrahimpour@gmail.com**

ID:163

Serum zinc level is associated with erythrocyte indices

Zahra Eslami[1], Hamidreza Joshghani[2], Seyyed Mehdi Jafari[3]

[1] Student Research Committee, Golestan University of Medical Sciences, Gorgan, Iran

[2] Department of Medical Laboratory Science, Golestan University of Medical Sciences, Gorgan, Iran

[3] Department of Clicinal Biochemistry, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Zinc (Zn) is an essential trace element in the body which have crucial role in many of the body's functions. Zinc deficiency affects abnormal synthesis of nucleic acids, proteins, impaired cellular growth, excessive cell death and excess lipid peroxidation of cellular membrane and thus these abnormality may related to shorten the Red blood cell (RBC) lifespan. The aim of this study was to evaluate the associations between Zn status and the erythrocyte indices.

Material and Methods: The number of 563 individuals (72.8% female and 27.2% male) included in this study. The level of serum Zn was measured by photometric method and blood index values were measured by using cell counter.

Results: This results indicated that the levels of RBC, Hb, HCT and MCHC serum as well as Zn level were significantly higher in men (Sig<0.01) in compared women but the level of MCV among women was higher (Sig<0.01). Moreover, in individuals <30 serum Zn level, MCHC (Sig<0.01) and RBC (Sig<0.05) were higher whereas Hb (Sig<0.05), Hct, MCV and MCH (Sig<0.01) were higher in individuals >30. Serum Zn level is directly related with RBC (R=0.119, PV=0.005) and MCHC (R=0.086, PV=0.041) but it is inversely related with MCV (R=-0.097, PV=0.021) and MPV (R=-0.118, PV=0.006).

Conclusion: These findings indicated a positive relationship between Zn level and RBC, and Zn deficiency effects on the number of RBC.

Keywords: Zinc, Erythrocyte, MCV, MCH, MCHC

Corresponding author Email address: z.eslami@goums.ac.ir

ID:164

Evaluation the effect of simvastatin on genes expression of c-myc, cyclin D1 and P53 in DMBA induced breast cancer in mice

Behnaz Karimi[1], Mahboobeh Ashrafi[1], Malihe Masoudian[2], Tahoora Shomali[1]
[1] Department of Basic Sciences, School of Veterinary Medicine, Shiraz University, Shiraz, Iran
[2] Department of Pathobiology, School of Veterinary Medicine, Shiraz University, Shiraz, Iran

Objective: Multiple genetic alterations of tumor suppressors and oncogenes can lead to cancer development. Meanwhile, some evidences suggest that statins may have anticancer potential, molecular mechanisms of their action completely were not known. Thus, this study was designed to evaluate effects of simvastatin on gene expression of c-myc, cyclin D1 and p53 in DMBA-induced breast cancer in mice.

Material and Methods: At first, breast cancer was induced by oral administration of DMBA (50mg/kg body weight) weekly for 4 weeks beginning at 5 weeks of age. The animals were weekly palpated for record of tumor parameters. After appearance of tumors, turmeric rats were divided into three groups; positive control without treatment, simvastatin (80mg/kg) and tamoxifen (50mg/kg) treated groups. Treatment was began orally and daily for 4 weeks. Then all mammary tumors and normal mammary gland (from negative control group) were dissected and stored for gene expression analysis of indicated genes by using real time polymerase chain reaction technique.

Results: Our study indicated significant increase of c-myc and cyclin D1 expression in control positive group in comparison to negative control group. Simvastatin and tamoxifen treatment decreased significantly expression of cyclin D1 and c-myc when compared to control positive group, but did not significantly alter p53 expression in comparison to the positive control group.

Conclusion: Our promising results confirmed anticancer potential of simvastatin in DMBA-induced breast cancer through down-regulating of cyclin D1 and c-myc oncogenes in line with tamoxifen.

Keywords: Simvastatin, DMBA, p53, cyclin D1, c-myc

Corresponding author Email address: Behnazkarimi667@gmail.com

ID:165

Comparative effects of zinc and nickel on thyroid parameters in serum of rat

Hoda Zameni[1], Ali asghar Moshtaghi[2]

[1] Department of Biochemistry, Gazvin Medical School, Gazvin, Iran

[2] Department of Biochemistry, Falavarjanbranch, Islamicazad University, Isfahan, Iran

Objective: Nickel is one of the toxic metals, which can enter the body through several routes due to its numerous applications and lead to some disorders. This study aimed to investigate the protective effect of zinc on Nickel-induced damages in the serum parameters related to the thyroid gland.

Material and Methods: In this study, 48 male rats weighting 250-300g were divided into the 8 separated groups (consisting of 6 rats): the nickel treatment, zinc treatment, nickel of zinc and nickel and control groups. The normal saline containing 15 mg and 5 mg nickel was injected intrapritoneally to the rats as the first and second treatment. The 3th and 4th group was treated with 3 mg and 1 mg zinc, the 5th and 6th received the combined doses of nickel (15mg) and zinc (3mg) and (5mg) nickel and zinc (1mg). the control group received only the normal saline injection. At the end of the experiment (15 and 60 d), all rats were decapitated and sera collected to measure the serum parameters related to the thyroid gland.

Results: The Results section should describe the outcome of the study. Data should be presented as concisely as possible and tables or figures should be avoided. The Discussion should be an interpretation of the philosophy behind the new findings and their probable significance.

Conclusion: Although a long-term injection of nickel provides hypothyroidism, zinc can be able to reduce the toxic effects of cadmium.

Keywords: Please provide 3 to 5 keywords which can be used for indexing purposes

Corresponding author Email address: hodzameni67@gmail.com

ID:168

Changing the activity of the liver enzymes after injection of carbon nanotubes in rats

Vajiheh Nasajpoor[1], Ali Noori[2], Hashem Naieri[2]

[1] M.Sc. of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

[2] Assistant Professor, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

Objective: Due to the specific characteristics of carbon nanotubes, which makes them useful in biological and medical fields, in this study, the probable toxicity of these nanoparticles was studied on liver enzymes.

Material and Methods: In this experimental study, doses of 10 and 20 mg / kg of multi-wall carbon nanotubes functionalized with carboxylic groups (10-20 nm diameter) were injected intraperitoneally to male Wistar rats in 21 stages. Blood sampling was collected in two stages, 24 hours and 144 hours after the last injection. Then, the level of activity of ALP, ALT, AST, and LDH enzymes were measured and were compared between different groups by one-way ANOVA test.

Results: In the first blood collection, LDH activity in the dose of 20 mg/kg decreased significantly than other groups. In the second blood collection, the activity of the ALP and LDH at a dose of 20 mg/kg and the activity of the ALT at a dose of 10 mg/kg decreased significantly compared to the control group.

Conclusion: Probably, carboxylic multi-wall carbon nanotubes, Along with accumulation in the liver and creating oxidative pressures, Causes liver dysfunction and enzyme activity. However, over the course of more than 144 hours, the toxicity can be resolved gradually, which requires further studies.

Keywords: Multi-wall Carbon Nanotubes, Oxidative Stress, Liver Enzymes,

Corresponding author Email address: vnasajpoor@gmail.com

ID:173

Relationship between Serum Level of Zinc with Caspase 3 and BAX in Patients with Type 2 Diabetes

Zahra Zahiri[1], Safoura Sameni[1]

[1] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

Objective: Type 2 diabetes is a metabolic disorder characterized by increased glucose in the blood following an insulin resistance or insulin deficiency. Zinc plays an important role in the synthesis, storage and secretion of insulin. A decline in the zinc level decreases the ability of the pancreas to secrete insulin and leads to activation of caspase 3 and Bax. Therefore, hyperglycemia induces apoptosis due to the activation of caspase 3 and Bax.

Material and Methods: The present study investigated and compared the relationship between serum level of zinc with caspase 3 and bax in 150 people with type 2 diabetes and 150 control subjects. Accordingly, FBS and the zinc level were initially measured and selected subjects were later monitored for the serum level of Bax and caspase 3 through ELISA method.

Results: In this investigation, type 2 diabetic serum samples revealed lower levels of zinc, and in the second stage, have shown relatively elevated levels of caspase 3 and Bax as compared to the healthy control ones.

Conclusion: These findings have shown that zinc has an invert correlation with the serum level of caspase 3 and Bax in diabetic patients.

Keywords: Type 2 diabetes, Zinc, Caspase3, BAX

Corresponding author Email address: sameni.iau@gmail.com

ID:174

Antagonistic effect of colony stimulating factor on cell death and HMGB1 release induced by anticancer drug 5-Azacitidine in hematopoietic stem cells of bone marrow

Hoda gol Fakhrabadi[1], Azra Rabbani-chadegani[1]

[1]Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: The cytosine analogue with antineoplastic activity, 5-azacitidine, is a DNA methyltransferase inhibitor which is currently considered an effective chemotherapeutic agent for epigenetic cancer therapy. Bone marrow is the most important tissue that hematopoiesis process occurs in it. High mobility group box1 (HMGB1), a chromatin associated nuclear, is a critical key of cell death and survival by regulating multiple signaling pathways, including inflammation, immunity, proliferation, metastasis and apoptosis. Colony stimulating factor (CSF) is necessary for proliferation and differentiation of hematopoietic stem cells to blood cells. The major toxicity of 5-azacitidine is myelosuppression but the precise mechanism of action remains unknown.

Material and Methods: In this study, the toxic effects of 5-azacitidine on non-adherent bone marrow cells, in the presence and absence of CSF was investigated using MTT assay, flow cytometry, diphenylamine assay, hoechst staining and intracellular HMGB1 expression and HMGB1 release by western blot analysis.

Results: The results obtained from MTT assay, showed that cell survival in the presence of CSFs possessed an 8-fold greater IC50 with respect to the absence of CSFs. Flow cytometry and diphenylamine assays revealed that 5-azacytidine in the absence of CSF increased the apoptosis/necrosis and DNA fragmentation of hematopoietic stem cells in a dose dependent manner. The apoptotic/necrotic property of 5-azacytidine was significantly decreased in the presence of CSF. The content of non-histone protein HMGB1 decreased and HMGB1 release increased as drug concentration increased but in the presence of the CSF the content of HMGB1 increased and HMGB1 release was not detected. Hoechst staining of cells treated with 5-azacytidine revealed remarkable morphological changes such as nuclear condensation suggesting occurrence of apoptosis.

Conclusion: In conclusion, 5-Azacitidine exhibits cytotoxic effect on hematopoietic bone marrow stem cells but in the presence of CSF its cytotoxicity is significantly decreased. It is suggesting its usage in combination therapy with CSF for cancer treatment.

Keywords: Hematopoietic stem cells, 5-Azacitidine, HMGB1, colony stimulating factor, apoptosis

Corresponding author Email address: H.fakhrabadi@ut.ac.ir

ID:175

Anticancer effects of the thymoquinone on PC3 prostate cancer cells

Gholamreza Shafiee[1], Iraj Khodadadi[1]

[1]Department of Clinical Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Herbal medicine and herb-derived agents are widely used for different therapeutic purposes. Thymoquinone (TQ) is one of the major bioactive components of Nigella sativa plant which is named as black seed. Therefore, this study was designed to evaluate of the anti-proliferation and anti-migration effects of Thymoquinone (TQ), an active part of Nigella sativa, on PC3 prostate cancer cells.

Material and Methods: In this experimental study, PC3 prostate cancer cells were treated with 0, 10, 30, 50, 70 and 90 µM concentrations of thymoquinone for 12, 24 and 48 hours and cell viability was determined by MTT assay. IC50 concentration of thymoquinone was obtained as 40 µM concentration of thymoquinone and 24h incubation time. PC3 cell migration was studied using the wound healing assay. Colony formation assay was used to determine cell proliferation and Gimsa staining was performed to observe morphological changes of the cells. The IC50 of Thymoquinone was found in concentration of 40 µM at 24h treatment. TQ had cytotoxic activity and anticancer effects and these effects were observed in a dose and time-dependent manner. Thymoquinone significantly ($p<0.05$) inhibited cell growth and proliferation as well as cell migration. Treatment of PC3 cells with 40 µM thymoquinone showed significant changes in nucleus and cytoplasm of the cells which are representative of apoptosis and cell death.

Results: The Results section should describe the outcome of the study. Data should be presented as concisely as possible and tables or figures should be avoided. The Discussion should be an interpretation of the philosophy behind the new findings and their probable significance.

Conclusion: Thymoquinone has significant anti-proliferative and antimigrative effects on prostate PC3 cells and therefore can be used as a complementary agent for prevention or treatment of prostate cancer.

Keywords: Antineoplastic agents, prostate, neoplasms, Thymoquinone

Corresponding author Email address: g.r_shafiee@yahoo.com

ID:176

A Mutation Study of Anti-Thrombin Aptamers for Designing Biosensors

Maryam Ghorbaninia[1], FatemehJavadi-Zarnaghi[1], Mohamad Reza Ganjalikhany[1], Manoochehr Tavassoli[1]

[1] Department of Biology, University of Isfahan, Isfahan, Iran

Objective: Anti-thrombin aptamers are G-quadruplex nucleic acids which bind to specific sites on thrombin molecule. Anti-thrombin aptamers are used as the recognition element in thrombin biosensors. Study of binding affinity between aptamer and protein is of great immense. There are two aptamers with high affinity and specificity for thrombin. The 15-mer aptamer is an anti-parallel G-quadruplex. Contrasting the 15-mer, 27-mer have a duplex/G-quadruplex structure. This aptamer interacts with a positively charged motif of thrombin. The positive charge of the motif leads to electrostatic bonding particularly in the duplex domain, and there are hydrophobic interactions in the G-quadruplex region. In this study, aptamer sequences were mutated based on increasing the number of purine in aptamer sequences and the binding affinity of aptamer-protein were investigated. Theses mutant aptamers help to improve designing biosensor.

Material and Methods: 27-mer structure of Anti-thrombin aptamer (PDB ID: 4I7Y) which has high affinity with thrombin was selected. A mutation in aptamer was made by Swiss-PdbViewer software. The binding affinity of aptamer-protein with H-dock and path-dock were investigated.

Results: 27-mer Anti-thrombin without any mutation had the best score in path-dock server. Point mutations in the positions of C14, T18 and T19 showed the best score in H-dock sever. According to both servers, there were not significant differences in scores of docking between 27-mer Anti-thrombin and mutant sequences.

Conclusion: Considering the results of docking, it was concluded that the point mutations in the aptamer have as much binding affinity as aptamer without mutation, but it reduces with increasing number of mutations. Hence, aptamers with point mutations can be used to detect thrombin depending on the design of biosensors.

Keywords: Anti-thrombin aptamers, thrombin, point mutation

Corresponding author Email address: m.ghorbaninia@sci.ui.ac.ir

ID:177

Risk of Recurrent Miscarriage and the Coagulation Cascade Factors, PAI-1, FXIII and FV Leiden Gene Polymorphisms in Iran

Mahvash Abdollahy[1], Safoura Sameni[1], Behrouz Gharesifard[1]

[1] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

Objective: Recurrent miscarriage is a heterogeneous condition. While the role of acquired thrombophilia has been accepted as aetiology of recurrent miscarriage, the contribution of specific inherited thrombophilic genes to this disorder has remained controversial. In this study, we compared the prevalence of three thrombophilic gene mutations at FXIII (G103T), FVL (G1691A) and PAI-1 (-675 4G/5G) among women with a history of recurrent miscarriages and fertile control women from Fars province, Iran.

Material and Methods: A total of 100 women with a history of two or more recurrent pregnancy losses and 100 fertile control women with no history of pregnancy losses participated in this study. DNA extraction was performed, followed by PCR-RFLP analysis of 3 gene mutations at FXIII at G103T point, the FVL at the G1691A point and PAI-1 at -675 4G/5G. The prevalence of these mutations was compared between women experiencing recurrent miscarriage and controls.

Results: This study has shown no significant association between recurrent miscarriage, genotype, allele and genotype combination distribution of FXIII (G103T), FVL (G1691A) and PAI-1 (-675 4G/5G) polymorphisms in Iranian patients from Fars Province.

Conclusion: The results of this study reveal that although FXIII (G103T), FVL (G1691A) and PAI-1 (-675 4G/5G) SNPs are related to thrombophilia and implicated in the coagulation cascade processes, they do not confer susceptibility to recurrent miscarriage in Iranian population.

Keywords: Recurrent pregnancy loss, FVL, F XIII 103G/T, PAI-1, Thrombophilia

Corresponding author Email address: Email@mailserver.com

ID:180

Investigating the Roll of Alpha2 Domain in Pathogenesis of Human Prion Protein Using Site Directed Mutagenesis

Alireza Beiramzadeh[1]

[1] University of Zanjan - Faculty of Science - Department of Biology

Objective: Prions are those proteins that exist in both animals and humans. They have several conformations, at least one of which are clinically considered abnormal because it leads to a group of progressive neurodegenerative conditions, known as transmissible spongiform, encephalopathies (TSEs) or prion deseases. The molecular mechanisms responsible for the structural transitions are so complicated that it considered a serious challenge in biology and medicine. In order to find structural information regarding the pathogenesis of PrP180-195, a fragment of human protein prion under α2 helix, we computationally investigated the geometric and dynamic effects of each residue alone the peptide fragment using Ala-scanningmutagenesis strategy. It was found that Wild Type (WT) and mutant peptides in TriFluoroEthanol (TFE) solvent prefer to adopt α-helix conformation. In spite of previous experimental reports, thistendency is also observed in water solvent, but with a lesser extent; demonstrating that the helix conformation in water solvent is energetically unstable when compared with that in TriFluoroEthanol (TFE) solvent. This structure, in turn, is prone to aggregation andpathological consequences.

Keywords: Prion Proteins, Conformation, Ala-Scanning Mutagenesis, Molecular Dynamic Simulation, Aggregation

Corresponding author Email address: abeiramzadeh@gmail.com

ID:181

***Natural p*roduct extract improves wound healing process in diabetic animal model**

Golnaz Goodarzi[1], Durdi Qujeq[2], Maryam M. Elmi[3], Farideh Feizi[4], Sadegh Fatthai[5]

[1] North Khorasan University of Medical Sciences, Bojnurd, Iran

[2] Department of Clinical Biochemistry, Babol University of Medical Sciences, Babol, Iran

[3] Department of Laboratory Sciences, Paramedical Faculty, Babol University of Medical Sciences, Babol, Iran

[4] Department of Anatomical Science, Babol University of Medical Science, Babol, Iran

[5] Cellular and Molecular Biology Research Center (CMBRC), Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Objective: The prevalence of diabetes as a chronic metabolic disease is growing around the world at an alarming rate. According to the World Health Organization reports the prevalence of diabetes will rise to 552 million by 2030. Increasing of morbidity or mortality related to diabetic foot ulcer that lead to amputation make it one of the important public health and economic problems. Compared to acute ulcer that normally recover in healthy people, chronic wound in diabetic patient stop at different phase and progression does not occur due to defecting angiogenesis, prolong inflammation phase and immune system dysfunction. Therefore, treatment of chronic wound in diabetic patients more attention has been paid by scientific researchers. One of the main goals of treatment is accelerate wound healing process with fewer side effects. Also, demand for natural remedies is growing in developing country since may be safer and cheaper. This study made an attempt to investigate the effect of the natural extract in diabetic animal models on associated wound healing process.

Material and Methods: The present study consisted of two stages. At first, to recognized detail about protein concentration we carried out SDS-PAGE and two-dimensional electrophoresis. Second, the in vivo study was conducted using diabetic animal model. Create wound on nap region and afterward daily treated for 4 weeks. Wound clause rate, epitheliazation time and histological study were carried out.

Results: The results obtained in this study indicate that natural extract could be increased wound healing process in diabetic animal models. The results of histological examination, supported outcome of wound models as well. The biological activities of extract may be due to presence of different components especially proteins.

Conclusion: Present study demonstrated that natural extract improves wound healing process in diabetic animal model. Also it might be consider as a useful wound healing agent.

Keywords: Foot ulcer, wound healing, natural products, diabetic animal model

Corresponding author Email address: Golnazgoodarzii@gmail.com

ID:182

Evaluation of serum homocysteine, folate and oxidative stress markers in patients with Inflammatory Bowel Disease (IBD)

MostafaVaghari-Tabari[1], Soheila Moein[1], Durdi Qujeq[2], Mehrdad Kashifard[3], Javad Shokri-Shirvani[4], Karimollah Hajian-tilaki[5]

[1]Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[2] Department of Clinical Biochemistry, School of Medicine, Babol University of Medical Sciences, Babol, I.R Iran
[3] Department of Internal Medicine, Gastroenterology Division, Ayatollah Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran
[4] Department of Internal Medicine, Gastroenterology Division, Ayatollah Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran
[5] Department of Biostatistics and Epidemiology, Babol University of Medical Sciences, Babol, Iran

Objective: Inflammatory Bowel disease (IBD) is a chronic inflammatory disease. A number of studies reported hyper- homocysteinemia in patients with IBD. The aim of this study was to evaluate the serum homocysteine levels, serum levels of oxidative stress markers and serum folate levels in patients with (IBD).

Material and Methods: A group of IBD patients as case group and a group of age and sex matched healthy volunteers as control group enrolled in study. Serum folate and homocysteine concentrations, and oxidative stress markers including total antioxidant capacity (TAC) and malondialdehyde (MDA) were measured. The obtained data were compared between two groups and Pearson correlation coefficient were used for analyzing the correlation between variables.

Results: The serum homocysteine levels were not significantly different between patients and control groups. Serum folate level reduced in IBD patients with active disease compared to patients in clinical remission. Serum levels of TAC was reduced but serum levels of MDA was significantly elevated in patients with IBD in comparison with controls. There was no significant correlation between serum levels of homocysteine, MDA, and TAC in IBD patients.

Conclusion: Hyper-homocysteinemiaare not common phenomena in IBD. Oxidative stress were occurred in IBD patients but not correlated with homocysteine levels. Folate deficiency may be occurred in patients with active disease.

Keywords: Folate, Homocysteine, IBD

Corresponding author Email address: mostafavaghari@yahoo.com

ID:183

A Mathematical Model to Predict the Biochemical Factors of Blood via Zinc Level in Type 2 Diabetic Patients and Normal Individual

Zahra Zahiri[1], Safoura Sameni[1], Hadi Raeisi Shahrak[2]

[1]Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

[2] Department of epidemiology and biostatistics, Shahrekord University of medical sciences, Shahrekord, Iran

Objective: Diabetes is one of the most common endocrine diseases in the world that has an ever-increasing trend. It is a metabolic disorder that causes insufficient metabolism of carbohydrates, lipids and proteins. The aim of this study was to propose a model to predict the serum level of different biochemical factors of blood, based on the Zinc level.

Material and Methods: A total number of 150 people with type 2 diabetes, and 150 normal subjects as control samples were recruited in this study. Under appropriate conditions including diet and calming environment, different biochemical parameters of blood profiling including FBS, TG, Cholesterol, HDL, LDL, BUN, Creatinine and Zinc were measured. Thereafter, linear regression modeling was used to assess simultaneous effect of blood biochemical factors on Zinc level in each group. All the statistical analysis were performed in SPSS 18.0 software and $P<0.05$ was considered significant.

Results: Mean of Zinc level in diabetes patients was 72.4± 25.5 and in control group was 74.7± 25.5, which was not statistically significant (P=0.44). Linear regression analysis showed that HDL (coefficient= -0.37, P=0.04) was the most effective factor of Zinc level followed by HbA1c (coefficient= -2.03, P=0.18), Plt (coefficient= 0.04, P=0.16) and FBS (coefficient= 0.01, P=0.89) among diabetic patients. Moreover, the most effective factor of Zinc level among normal subjects were age (coefficient= -0.98, P< 0.001), creatinine (coefficient= 24.95, P=0.02) and Plt (coefficient= -0.06, P=0.06).

Conclusion: Proposed models were successful in explaining 27.4% and 34.6% of zinc level variation among diabetes and normal subjects, respectively.

Keywords: Type 2 diabetes; Zinc; HbA1c; Modeling

Corresponding author Email address: sameni.iau@gmail.com

ID:185

Evaluation of the anti-tumorigenic effects of bilirubin on LS180 (with wild type p53) and SW480 (with mutant p53) colorectal cancer cell lines.

Omid Vakili[1], Maryam Niknam[1], Sayed Mohammad Shafiee[1]

[1]Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Colorectal cancer (CRC) is the third most common cancer worldwide and its development involves various genetic and molecular changes. p53 is a key tumor suppressor gene and is one of the most important elements of our body's anticancer defense. CRC patients with mutant p53 appear more chemo-resistance and have poorer prognosis than those with wild-type p53. The present study investigated the effect of bilirubin as a natural antioxidant on the cell viability and the expression level of both wild and mutant types of p53 protein in two colorectal cancer cell line, LS180 (with wild type p53) and SW480 (with mutant p53).

Material and Methods: Nontoxic concentrations of bilirubin were determined by using MTT assay. LS180 and SW480 cell lines were treated with bilirubin and DMSO (as vehicle control) for 24 and 48 hours' time intervals. Western blot analysis was employed to evaluate the expression level of p53 before and after treatment.

Results: In both cell lines bilirubin at the concentrations of 50 and 100 µM showed the best anti-cancer effects according to the cell viability analysis. The results also revealed that the level of p53 protein was higher in LS180 treated cells as compared with control. However, in the case of SW480 cell line, no considerable changes of the p53 protein was shown in treated cells compared with control ones.

Conclusion: Based on the observed changes in the cell viability and the expression level of p53 protein in these cell lines, bilirubin has a beneficial role in the prevention of CRC.

Keywords: Bilirubin, Colorectal cancer, p53

Corresponding author Email address: o.vakili.isf@gmail.com

ID:186

The study of affinity of some NSAID compounds and cox 2 selective inhibitors to cox-2 enzyme by In-silico techniques

Shima Rezaie[1], Naser Kakavandi[1], Mohammad Najafi[1]

[1]Department of Clinical Biochemistry, Iran University of Medical Sciences, Tehran, Iran

Objective: There are two form of cox enzyme: cox-1 and cox-2. Cox-1 is expressed in most cells and tissues. However, cox-2 is selectively induced by proinflammatory cytokines in inflammatory sites. Non-steroidal anti-inflammatory drugs (NSAIDs) are potent anti-inflammatory agents that stop production of prostaglandins by inhibit cox enzymes. These drugs inhibit both cox enzymes, while the cox-2 enzyme should be inhibited as an inducible form of inflammation. For this reason, the use of these drugs is limited. Our goal in this study is to compare the binding power of NSAIDs and cox-2 selective inhibitor to the cox-2 enzyme.

Material and Methods: The chemical structures of cox-2 (PDBID: 5KIR) enzyme were obtained from PDB (www.RCSB.org/pdb). The chemical structures of the synthetic compounds were obtained from the data base PubChem (https://pubchem.ncbi.nlm.nih.gov) in sdf format. The graphic program ADT version 4.2.6 was used to prepare ligands and proteins. At last, we used Autodockvina version 1.1.2 to estimate their affinity to enzymes.

Results: In the present study, the affinity of study ligands to the cox-2 enzyme was investigated by using docking analysis. celecoxib, indomethacin, ibuprofen, aspirin, rofecoxib and valdecoxib ligands had the affinity rating ΔG= -8, ΔG= -7, ΔG= -6.7, ΔG= -6.6, ΔG= -6.5 and ΔG= -6.5 respectively.

Conclusion: According to the results, it is observed that the cox-2 selective inhibitors include celecoxib, rofecoxib and valdecoxib, have close binding power and in some cases more than NSAIDs. So, by making changes to the structure of selective inhibitors, used them as cox-2 selective inhibitors.

Keywords: Cyclooxygenase 1, Cyclooxygenase 2, Non-Steroidal Anti-Inflammatory Agents (NSAIDs), celecoxib, valdecoxib

Corresponding author Email address: shima.rezaie72@yahoo.com

ID:187

Investigation of EMSY expression in cancerous compared to normal tissue in Iranian women with sporadic breast cancer by Real Time RT PCR

Farnaz Hosseini Beheshti[1]

[1] Department of Genetics and Molecular Biology, school of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran & Medical Genetics Center of Genome, Isfahan University of medical Sciences, Isfahan, Iran

Objective: Regarding the high prevalence of breast cancer among women and the importance of early diagnosis of disease in early stages using advanced molecular techniques and the importance of EMSY gene as a prognostic factor in breast cancer, The EMSY protein reacts with exon number 3 BRCA2 which suppresses the DNA repair function of BRCA2 in non-hereditary breast cancer, thereby EMSY introduces as a strong oncogene normal functions of EMSY involve repairing damaged DNA, genomic instability and chromatin remolding, expression of EMSY gene in the cancerous tissue compared to normal tissue of women with sporadic breast cancer was investigated by Real Time RT PCR.

Material and Methods: Extracting of tissue samples (normal and cancerous tissue) with Thrysol, Total RNA, and after synthesis of CDNA, by Real Time RT PCR technique, examined EMSY gene expression in women with sporadic breast cancer.

Results: Relative expression of EMSY gene by Real Time RT PCR technique in cancerous tissues compared with normal tissue increased by 61.6. Showed equality and a statistically significant difference in this case with P-value=0/001

Conclusion: Our study showed that there is a possible relationship between the high expression of EMSY gene and breast cancer and could be considered as a potential target for breast cancer treatment.

Keywords: Lavandula, Arthritis, Rheumatism, Matrix Metalloproteinase 9, cardiovascular disease

Corresponding author Email address: far_beheshti@yahoo.com

ID:189

The comparative study of affinity of some Lavandula sp. compounds MMP-9 enzyme by In-silico techniques.

Naser Kakavandi[1], Shima Rezaie[1], Mohammad Najafi[1]

[1]Department of clinical biochemistry, Iran University of medical sciences, Tehran, Iran

Objective: Lavandula species are frequently used in traditional medicine for the treatment of digestive disorders, such as liver and intestinal inflammatory conditions. Also for other inflammatory disorders such as arthritis and rheumatism. MMP enzymes break down the proteins of extra cellular matrix. They have important roles in cellular behaviors, such as cell proliferation, differentiation and apoptosis. MMP-9 inhibition has proven beneficial effects in animal models of cardiovascular disease the aim of the present study is to evaluate binding power compounds of lavandula to inhibit MMP-9.

Material and Methods: The chemical structures of MMP-9 (PDBID: 1L6J) enzyme were obtained from PDB (www.RCSB.org/pdb). The chemical structures of the synthetic compounds were obtained from the data base PubChem (https://pubchem.ncbi.nlm.nih.gov) in sdf format. The graphic program ADT version 4.2.6 was used to prepare ligands and proteins. At last, we used Autodockvina version 1.1.2 to estimate their affinity to enzymes.

Results: In this study, the affinity of ligands to the MMP9 enzyme was investigated by using docking analysis. Genkwanin, Rosmarinic acid, Methyl caffeate, Terpinolene, 1, 8-Cineole and Yunnaneic acid had the affinity rating ΔG= -9.1, ΔG= -8.3, ΔG= -7.2, ΔG= -7, ΔG= -6 and ΔG= -5.

Conclusion: According to the tendency of these compounds to inhibit MMP-9 enzyme, it can be from this plant and its compounds used as an alternative to synthetic drugs.

Keywords: Lavandula, Arthritis, Rheumatism, Matrix Metalloproteinase 9, cardiovascular disease

Corresponding author Email address: naserkakavandi71@gmail.com

ID:190

In Silico Evaluation of novel agent for anaerobic glycolysis inhibitors in cancer treatment

Farzaneh Jafary[1], Ali Morady[1], Mohamad Reza Ganjalikhany[2]

[1]Department of Biochemistry, School of Medicine, ShahidSadoughi University of Medical Sciences, Yazd, Iran

[2] Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran

Objective: Chemotherapy based on peptides are a novel approach for cancer therapy which is related to several advantages of peptide such as: low toxicity, easy to synthesis, high target specificity and others. Current research focuses on design of peptide inhibitor for lactate dehydrogenase enzyme in breast cancer cell. Lactate dehydrogenase (LDH) is an enzyme of anaerobic glycolysis and inhibition of LDH lead to decrease tumor cells growth and progression.

Material and Methods: In this study Peptiderive Server was used for design of peptide. The best modeled peptide was selected using molecular docking software (CABS-dock) and then pharmacology properties of peptides was analysis by FAF Drugs3. Finally, the anti-proliferative activity of these compounds was confirmed on a MCF7 cell lines via MTT assay and flow-cytometric techniques.

Results: the peptide ability to disrupt protein–protein interfaces is several attractive features when compared to small molecule. Therefore in this study we attempted to synthesize a peptide that could interference with the interaction of enzyme subunits and inhibited lactate dehydrogenase activity because the tetrameric form of enzyme play an important role in maintaining the active site geometry. Cytotoxic assay showed that the peptide could inhibit MCF-7 cancer cell growth, with an IC50 value of 60 µM. Our results indicated that, Inhibition of LDH case to inhibition of cell proliferation and induced cell death though the accumulation of reactive oxygen species (ROS) in the cancer cell line.

Conclusion: Inhibition of LDHA by these peptide led to impaired cell survival in cancer cells and so, making it a compelling strategy for treating cancer.

Keywords: Anaerobic glycolysis, Lactate dehydrogenase, peptide inhibitor, cancer

Corresponding author Email address: morady2008@gmail.com

ID:192

Effect of Metformin on liver Hexokinase and Glucokinase specific activity in PCOS rats

Asma Neysi[1], Fatemeh Zal[2], Behrad Aghazadeh Ghadim[1]

[1] Department of Biochemistry, Shiraz University of Medical Science, Shiraz, Iran

[2] Department of Biochemistry, Infertility Research Center, Shiraz University of Medical Science, Shiraz, Iran

Objective: Polycystic ovary syndrome (PCOS) is an endocrine disorder affects women in reproductive age and Insulin resistance (IR) is a critical factor in the pathogenesis of it which eventually can lead to diabetes. Considering the effects of Metformin on the reduction of glucose levels, recently it has been introduced as a curative option for PCOS patient. In the present study we assessed for the first time, the effects of Metformin on the liver Hexokinase (HK) and Glucokinase (GK) specific activities as two important enzymes in glucose metabolism in PCOS induced rat.

Material and Methods: The female rats were grouped based on PCOS condition and Metformin consumption. The morphology of ovaries was observed to confirm PCOS induction. Fasting blood glucose (FBG) and fasting serum insulin level were analyzed using glucose oxidase and ELISA methods. The HOMA-IR was used for IR levels determining. Liver HK and GK specific activity were determined using spectrophotometry.

Results: Calculating the HOMA-IR showed a sever IR in the PCOS rats (H-IR > 2.5), and treatment with Metformin, significantly reduced IR amount. GK activity reduced in PCOS rats and Metformin returned it to the normal state. We also observed an increase in HK activity in PCOS; however Metformin intensified the elevation of this enzyme compared to both normal and PCOS group.

Conclusion: PCOS is usually associated with IR and this explains the prevalence of diabetes and disturbed liver enzymes activities in PCOS. Treatment with Metformin has ameliorating effects on insulin sensitivity in PCOS, and this effect might be due to improving HK and GK enzyme activities.

Keywords: PCOS, Insulin resistance, Hexokinase, Glucokinase, Metfromin

Corresponding author Email address:asmaneisi66@gmail.com

ID:193

Sanguinarine sensitizes MCF-7 breast cancer cells to cytotoxic effects of doxorubicin and cisplatin

Morteza Molaparast[1], Mehdi Imani[1], Vahid Shafiei-Irannejad[2]

[1]Biotechnology Research Center, Urmia University, Urmia, Iran

[2] Department of Clinical Biochemistry and Laboratory Medicine, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Cancer as a disease, is the leading cause of death all over the world and annually costs high costs for cancer treatment. Chemotherapy is an important tool for treatment of many cancers, however, toxic adverse effects against healthy tissues is still a big obstacle against successful cancer chemotherapy. Here, we investigated the combination effect of natural compound sanguinarine with doxorubicin and cisplatin in MCF-7 breast cancer cells.

Material and Methods: The cytotoxic effects of sanguinarine, doxorubicin and cisplatin in combination with each other and each compound alone, was determined using MTT assay. Furthemore, doxorubicin- and cisplatin-induced apoptosis in combination with sanguinarine was evaluated by annexin V/FITC assay.

Results: Treatment with sanguinarine, doxorubicin and cisplatin had an inhibitory effect on viability of MCF-7 cells. Exposure to sanguinarine enhanced the cytotoxicity of chemotherapeutic agents in MCF-7 cells which was confirmed by reduced IC50 of doxorubicin and cisplatin. Moreover, sanguinarine significantly enhanced the doxorubicin- and cisplatin-induced apoptosis in MCF-7 cells.

Conclusion: These results indicate that saguinarine has a beneficial effect in breast cancer treatment by decreasing the effective concentrations of doxorubicin and cisplatin. Therefore, sanguinarine can be considered as a potent adjuvant in breast cancer chemotherapy.

Keywords: sanguinarine, doxorubicin, cisplatin, breast cancer, chemotherapy

Corresponding author Email address: morteza_molaparast@hotmail.

ID:195

Cytotoxic effect of vincristine on human liver carcinoma HepG2 cells

Azadeh Mohammadgholi[1], Azra Rabbani- Chadegani[2]

[1] Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

[2] Department of Biology, Faculty of Science, Islamic Azad University Central Tehran Branch, Tehran, Iran

Objective: The Introduction should state the purpose of the investigation. Provide an adequate background, avoiding a detailed literature review or a summary of the results.

Material and Methods: The cells were cultured in the absence and presence of various concentration of vincristine. The programmed cell death (apoptosis) was characterized by cleavage of poly ADP ribose polymerase (PARP), flow cytometry and DNA fragmentation.

Results: After exposure of the cells to vincristine, DNA fragmentation was increased in a dose dependent manner. As the concentration of vincristine was increased the content of cleaved PARP (89 KD) was increased. This data showed that apoptosis in HepG2 cells by vincristine is PARP dependent. Flow cytometry using Annexin - V-PI demonstrated that vincristine induced apoptosis. Thus at 25 µg/ml percentages apoptosis and necrosis were 5.50% and 0.48 %, but when the cells exposure to 100 µg/ml of the drug the percentages were 14.42% and 0.68 respectively.

Conclusion: The results showed that vincristine induced apoptosis in HepG2 cells and the process is PARP dependent.

Keywords: Vincristine, HepG2, PARP, Flow cytometry, DNA fragmentation

Corresponding author Email address: a.mohammadgholi@yahoo.com

ID:196

Effect of the S.marianum seed Extract on Serum GLP-1 in Alloxan-Induced Diabetic Rats

Vahid Reza Haghaniat[1], Alireza khoshdel[1], Mohammad R Hajizadeh[1], Mehdi Mahmoodi[1], Medina Lavy[1], Ali Shojaei[1], Giti Farsi[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: Recently, it is considered the role of hypoglycemic agents especially medicinal plants derivatives in treatment of diabetes mellitus. S.marianum seed contains alkaloids, flavonoids, saponin, tannin, phenolic compounds that known as Silymarin. An important source for silymarin is the seeds from plant with antioxidant properties that decreases the complications of the disease. The aim of study was to investigate the effects of hydroalcoholic extract of S.marianum seed on the serum levels of GLP-1

M***aterial and Methods:*** A total of 16 rats (initial weight of 213 ±12 g) were divided into two groups. One months after treatment with S.marianum seed extract, the rats were sacrificed and GLP-1 serum were measured.

R***esults:*** The results showed that the extract of S.marianum at doses of 400 mg/kg increased the serum level of GLP-1 ($p<0.05$)

C***onclusion:*** The data demonstrated S.marianum seed hydroalcoholic extract had an effect on GLP-1 secretion and this extract can be effective for improvement of diabetic complications.

Keywords: Alloxan, S.marianum, Rat, GLP-1

Corresponding author Email address: Alireza.khoshdel@gmail.com

ID:198

Association of serum matrix metalloproteinase-9 with hs-CRP and lipid profile levels in acute coronary syndrome

Faramarz Darabi [1], Ahmad Movahedian [1], Ali Alian [1], Armin Elahifar [2], Alli Pormoghdasi [2], Nizal Sarrafzadegan [2]
[1] Department of Clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Isfahan Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Matrix metalloproteinase-9 is involved in degradation of a collagenous matrix and implicated in the pathogenesis of cardiovascular diseases particularly acute coronary syndrome. The aim of this study was to investigate the association of serum matrix metalloproteinase-9 and lipid profile.

M***aterial and Methods:*** 110 patients based on coronary Angiography and electrocardiography results, were divided into two groups: acute coronary syndrome (ACS, n= 55), and stable coronary artery disease (stable CAD, n= 55). Venous blood samples were collected from patients. Serum was immediately separated and stored at -80°C until analysis. Serum total MMP-9 was measured by enzyme-linked immunosorbent assay (ELISA) kit. Lipid profile and hs-CRP were measured by an automated analyzer.

R***esults:*** The serum levels of MMP-9 were significantly higher in ACS patients compared to the stable-CAD patients (329 ± 16.88 ng/ml and 200.49 ± 12.25 ng/ml respectively, $P < 0.001$). The serum MMP-9 level was correlated positively with serum hs-CRP ($r=0.418$, $p<0.001$), and negatively with HDL-cholesterol ($r= -0.346$, $p<0.001$), but no association was found with the total cholesterol, triglyceride, and LDL-cholesterol.

C***onclusion:*** We conclude that increased serum MMP-9 may be useful indicators for ACS. The serum MMP-9 highly correlated with inflammation marker (hs-CRP), therefore it suggests that MMP-9 might be involved in the pathogenesis of ACS through inflammation promotion. Also, serum MMP-9 is associated with HDL-Cholesterol but no other lipids. Therefore, serum MMP-9 is an independent factor of non-HDL- Cholesterol for discriminating ACS from stable CAD.

Keywords: Acute coronary syndrome, matrix metalloproteinase-9, inflammation marker

Corresponding author Email address: faramarzdarabi@yahoo.com

ID: 200

Relationship between some serum trace elements (Zn, Cu, Se) levels and antioxidant status in Hashimoto's thyroiditis patients

Niko Rostaei Rad[1], Javad Zavar-reza[1], Ahmad Movahedian[2], Mahmood Vakili[1]

[1] Department of Clinical Biochemistry, Shahid Sadoughi University, Yazd, Iran

[2] Department of Clinical Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Hashimoto's thyroiditis (HT) is the most prevalent autoimmune thyroid disorder. Thyroid hormones have a crucial physiological role to maintain balance of metabolism of body. Also oxidative stress has been implicated in the pathogenesis of several inflammatory and immune mediated disorders including Hashimoto's thyroiditis. Therefore, present study was aimed to find the changes in serum Zinc (Za), Copper and Selenium levels and also evaluate effect of HT on body antioxidant status.

M***aterial and Methods:*** The study people consisted of 86 subjects divided into two groups: 43 people with Hashimoto's thyroiditis (HT) and 43age-matched healthy individuals. This study checked the amounts of total triiodothyronine (T3), total thyroxine (T4), thyroid stimulating hormone, (TSH), trace elementsstatus and some antioxidant status parameters

R***esults:*** The mean TSH and SOD levels was significantly increased in HT patients (1.56□0.73) compared to control group (1.09□ 0.62). The levels of T4 and Se were significantly lower in HT patients compared to control group ($P<0.05$). However, there was no significant difference in the mean of T3, Zn, Cu and PON-1 between hypothyroidism and control ($P<0.05$).

C***onclusion:*** These outcomes establish the hypothesis that people with HT have elevated oxidative stress and decreased trace elements levels, therefore the importance of monitoring the levels of those antioxidant capabilities and trace elements status in HT patients before treatment.

Keywords: Hashimoto's thyroiditis, Zn, Se, Cu, PON-1, SOD

Corresponding author Email address: Nikoraad@gmail.com

ID:201

Investigation of high dose of prednisolone on BAX and BCL-2 gene expression and apoptosis in CCRF-CEM cell line

Ako Azimi[1], Amin Ghasemi[2], Arash Khorrami[3], Shiva Pourvahdani[2], Milad Zadi Heydarabad[4]

[1] Maragheh University of Medical Sciences

[2] Student Research Committee, Maragheh University of Medical Sciences, Maragheh, Iran

[3] Department of Basic Sciences, Maragheh University of Medical Sciences, Maragheh, Iran

[4] Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Glucocorticoids are one of the most important drugs in the treatment of acute lymphoblastic leukemia for children. It is very important to response to glucocorticoid in the prognosis of this patient. Therefore, resistance to treatment is a major problem in these leukemia cases. In, this study, CCRF-CEM cell line was selected as a chemotherapy-resistant class. The aim of this study was to evaluate the effect of high dose prednisolone on induction of apoptosis and expression of BAX and BCL-2 genes at different times

M***aterial and Methods:*** CCRF-CEM cell lines were grown in standard conditions. Based on previous studies, a dose of 700 µM as sub-toxic doses were selected. Changes in gene expression of BAX and BCL-2 was evaluated using real time PCR techniques. Also stained with annexin V and the induction of apoptosis was assessed by FACS machine.

R***esults:*** In this study it was found that prednisone in high doses at different times significantly increases the gene expression of BAX and BCL-2 expression was reduced. As at 48 hours after treatment was more significant changes. Prednisone can induce apoptosis in a time dependent manner on this cancerous resistant cell line.

C***onclusion:*** Apoptosis induced by high-dose prednisolone in the CCRF-CEM cells, which is almost resistant, possibly by reducing the expression of BCL-2 and BAX expression is mediated.

Keywords: Leukemia, Prednisolone, BCL-2 associated X, BCL-2 Gene, Apoptosis

Corresponding author Email address: ako.azimi@gmail.com

ID:204

Structural and energetic analysis of human platelet-derived growth factor in complex with its receptor using molecular dynamics simulation studies

Tahereh Mohammadnezhad[1], Omid Zarei[1], Siavoush Dastmalchi[1], Maryam Hamzeh-Mivehroud[1]

[1] Biotechnology Research center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Human platelet-derived growth factor (PDGF) family, identified in 1974, are members of growth factors which are released from different cells such as activated platelets during tissue injury and bone fracture (1, 2). This type of growth factor family contains five members including AA, BB, AB, CC, and DD homo-/hetero-dimers. Among them, PDGF-BB is the most potent form in the family capable of chemotactic, mitogenic and angiogenesis activity for cells (2-5). Studies have shown that overactivated PDGF signaling plays an important role in tumors. Therefore, targeting PDGF-B and PDGF receptor would be beneficial in tumors with mesenchymal origin. The aims of the study are, a) Structural and energetic analysis of human platelet-derived growth factor in complex with its receptor using molecular docking and molecular dynamics simulation studies b) identification of hot spots involved in PDGF-BB: PDGFR-□□ complex using in silico alanine scanning mutagenesis by MM/PB(GB)SA methods.

M***aterial and Methods:*** Using the structurally solved structure of PDGF-BB:PDGFR-□□□□molecular dynamics simulation was carried out for 10 ns using AMBER package followed by calculation of binding free energy using MM-PB(GB)SA method. In order to identify the hot spots at the interface of the complex, in silico alanine scanning mutagenesis was performed. The important amino acids were mutated to alanine and molecular dynamics simulation for mutants was done for 10 ns followed by calculation of binding free energy.

R***esults:*** The result of molecular dynamics simulation and in silico alanine scanning mutagenesis showed the important and key residues at the interface of PDGF-BB:PDGFR-□□□complex.

C***onclusion:*** The result of the current investigation can be used for designing novel therapeutic agents where inhibition of PDGF signaling is required.

Keywords: PDGF-B, PDGFR-□, molecular dynamics simulation, MM-PB(GB)SA.

Corresponding author Email address: studentt76@yahoo.com

ID:205

The effect of essential oil of cultivated Satureja khuzestanica Jamzad on activity and genes expression of liver phosphoenolpyruvate carboxykinase in diabetic rats

Mobin khoshbin[1]
[1] Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: Researchers have been reported that Satureja khuzestanica essential oil (SKEO) has a wide range of effects such as: anti-inflammatory, antioxidant, hypolipidemic, hypoglycemic activities. Studies in diabetic animals have shown that gluconeogenesis is a major factor in the increase plasma glucose that appears in fasting and post-absorptive state. The aim of the present study is to evaluate the effect of cultivated SKEO on activity and gene expression of hepatic phosphoenolpyruvate carboxykinase (PEPCK) in normal and diabetic rats.

M***aterial and Methods:*** Thirty-two wistar male rats were divided into four groups randomly; group one as control, group two as diabetic untreated, group three as sham treated with cultivated SKEO (100 mg/kg/d) in aqueous solution orally for 21 days, and group four as diabetic treated with cultivated SKEO (100 mg/kg/d) in aqueous solution orally for 21 days. After 21 days, animals were anaesthetized, liver were then removed immediately and used fresh or kept frozen until analysis of activity and gene expression of PEPCK by using the quantitative real-time RT-PCR technique.

Results: Activity of the hepatic PEPCK and its mRNA levels of diabetic rats was significantly increased compared with those of normal control rats ($p<0.001$). Hepatic activity and gene expression of PEPCK in diabetic treated groups compared with diabetic untreated groups were significantly decreased ($p>0.05$). Also, hepatic activity of PEPCK activity correlated positively with its gene expression.

C***onclusion:*** This study showed that SKEO might be a exert beneficial effects on activity and gene expression of PEPCK in diabetic rats. Therefore, SKEO may contribute to reduction of serum glucose, which seems to be related to its antioxidant properties.

Keywords: Antihyperglycemic, Gene expression, Phosphoenolpyruvate carboxykinase, Satureja khuzestanica essential oil.

Corresponding author Email address: mobin_kh_69@yahoo.com

ID:

210

The Relationship between Metabolic Syndrome and Polycystic Ovary Syndrome

Zohreh Tabatabaiyan Nimavard[1], Kiana Karimzadeh[2]

[1] Faculty Member of Department of Nutrition, Faculty of Medical Sciences, Islamic Azad University, Science and Research Branch, Tehran, Iran

[2] Ph.D. student of marine ecology, Faculty of Marine Science & Technology, Islamic Azad University, Science and Research Branch, Tehran, Iran

Objective: One of the most common endocrine disorders in women is polycystic ovarian syndrome. The classic form of this syndrome is amenorrhea or menstrual irregularity, infertility, hirsutism, obesity and bilateral ovarian enlargement. Among PCOS patients about 50% are obese, body fat usually accumulates centrally, an increase in the waist to hip ratio increases the risk of developing diabetes mellitus and cardiovascular disease. In addition, insulin resistance and hyperinsulinemia are commonly found in PCOS patients. In these patients, the level of impaired glucose tolerances about 16-35% was reported and abnormally in lipid profile such as increase in cholestrol, Triglycride, LDL and decrease in HDL was shown. The metabolic syndrome causes heart disease and atherosclerosis. These patients are at risk of diabetes, increased blood glucose, central obesity, and insulin resistance. It is noteworthy that polycystic ovary syndrome has a relatively high prevalence in different societies.

K***eywords:*** Metabolic Syndrome, Spalurina algae.

Corresponding author Email address: z.taba2000@gmail.com

ID:211

Effect of fish meal Replacement with Salicornia (Salvia officinalis) meal in diet of Nile Tilapia (Oreochromis niloticus) on growth, blood parameter and liver Enzymes

Alireza Nazari[1], Bahar Kazemi[1], Hashem Nayeri[1]

[1] Faculty of Biology, Islamic Azad University, Falavarjan Branch, Esfahan, Iran

Objective: Food cost in intensive and semi intensive fish culture is expensive. In this regard, aquaculture industry for sustainable development, need to use inexpensive but high quality diet elements to reduce food cost. Salicornia a halophyte plant is one of the best candidates for replacing of fish powder in fish diet.

M***aterial and Methods:*** 72 Tilapia mean weight 154±25 gr and mean length22±5 cm divided into four groups in triplicate, one control group and three test groups. Group control received fish diet without Salicornia. Test group 1, 2 and 3 receiving diets with 25, 40 and 75 percent Salicornia Powder instead of 25, 40 and 75 percent fish powder for 8 weeks. Fishes' lengths and weights were measured each 15 days, then blood samples are gathered and liver parameters and bloods factors were measured.

R***esults:*** The result of the study showed that in the group receiving 75 % diet, glucose and dehydrate has had significant increase. In addition, in the group receiving 40% diet, vitamin D has showed significant decrease. In others parameters such as ALT, AST, AlP, Cholesterol as well as length and weight no significant change was seen.

C***onclusion:*** According to the research results 25 % Salconia diet can be best recommended food for aquatic industry without any biochemical change in Tilla pia fishes' liver and blood.

K***eywords:*** Salicornia, Tilapia, ALT, AST, ALP

Corresponding author Email address: alireza_15869@yahoo.com

ID:213

Salusins and cytokines expression in HUVECs

Maryam Esfahani[1], Ahmad Movahedian[1], Masoud Saidijam[2], Mohammad Taghi Goodarzi[2], Rezvan Najafi[2]

[1] Department of Clinical Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Research Center for Molecular Medicine, Hamadan University of Medical Sciences

Objective: Salusin-α and salusin-β are novel peptides, which have opposite role in atherosclerosis. Pro inflammatory cytokines have major role in atherosclerosis. We compared the effect of salusins on the expression of IL-6, IL-8, IL-18 in Human umbilical vein endothelial cells (HUVECs).

M***aterial and Methods:*** HUVECs were cultured in completed medium and treated with salusin-β and salusin-α (3, 10, 30, 90 nM), for 6, 12h. The possible cytotoxic effect of these proteins in HUVECs was assessed using MTT assay. The mRNA expression of IL-6, IL-8, and IL-18 was assessed by real-time PCR system. The primers were confirmed by sequencing. GAPDH housekeeping gene was used as internal control.

Results: Salusins had no cytotoxic effect in HUVECs. Salusin-α (90 nM) for 6h, reduced IL-6 mRNA expression, salusin-β increased IL-6 mRNA expression at 30 nM and 90 nM for 6h treatment and 90 nM for 12h treatment. Salusin-α decreased IL-8 mRNA expression at 10 nM, 30nM, 90nM for 6h treatment, salusin-β enhanced IL-8 mRNA expression at 30 nM ,90 nM for 6h treatment, and at 90 nM for 12h treatment. IL-18 mRNA expression was decreased at 90 nM of salusin-α for 6h treatment, salusin-β increased IL-18 mRNA expression at 30 nM and 90 nM for 6h treatment, and at 90 nM for 12h treatment.

C***onclusion:*** Salusin-β accelerated and salusin-α attenuated inflammatory responses in endothelial cells. These novel finding indicated new properties of salusins which may help to understand atherosclerosis pathogenesis.

K***eywords:*** Atherosclerosis, cytokines, salusin-alpha, human, salusin-beta

Corresponding author Email address: Esfahanimr21@yahoo.com

ID:214

Protective role of Adiponectin in preventing hyperglycemia-mediated kidney cell damage through altering Sirtuin-1 level

Mina Hemmati [1], Sajad Esmaeili [2]

[1] Cellular and Molecular Research Center, Birjand University of Medical Sciences, Birjand, Iran

[2] Student Research Committee, Birjand University of Medical Sciences, Birjand, Iran

Objective: Adiponectin (APN) is an adipocytokine, secreted from adipose tissue and has anti-inflammatory, anti-aging and anti-diabetic properties. Hyperglycemia can damage the renal cells and Sirtuin 1 (SIRT1) has an important role in kidney cell response to hyperglycemia. In this regard, the protective role of the APN in preventing hyperglycemia-mediated cell damage is important. Therefore, understanding the relationship between adiponectin, and SIRT1 protein is helpful in deciphering the mechanism of adiponectin function.

M***aterial and Methods:*** In this study, Human Embryonic Kidney -293 (HEK-293) cells were cultured under normal and high glucose, without and with APN (1, 10 and100 ng/mL) for 48 hours. To evaluate hyperglycemia-mediated cytotoxicity, cell viability was determined, using MTT assay and SIRT1 protein was assayed, using ELISA method.

R***esults:*** Data showed that APN in high dose (100 ng/mL) significantly increased SIRT1 protein, compared with the control high glucose ($P \leq 0.05$). The cytotoxicity assay showed a significant decrease in cell viability in high glucose, compared to the normal glucose condition ($P \leq 0.05$) and APN increased the cell survival, in a dose-dependent manner.

C***onclusion:*** According to the results, APN can be useful in preventing renal cell damage in hyperglycemia condition. It seems APN enhancement strategy can be beneficial in diabetics to reduce kidney cell damage.

K***eywords:*** Hyperglycemia, HEK-293 cells, Sirtuin1, Cytotoxicity, Adiponectin

Corresponding author Email address: mina1hemmati@yahoo.com

ID:215

Effect of Caffeic acid on Blood Glucose Level in Alloxan-Induced Diabetic Rats

Tayebeh Davoodi[1], Hassan Ahmadvand[2]

[1] Department of Biochemistry, Payame Noor University, Tehran, Iran

[2] Razi Herbal Researches Center, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: There is a significant progress in the development of drugs to improve of diabetic complications, but many side effects are still a serious concern. So, finding of medicinal herbs rich in natural antioxidants and their use in public health and prevention and treatment of diseases is very important. Caffeic acid (CA) acts as strong antioxidants. The aim of this study is to investigate the CA on serum level of fasting blood glucose (FBS) and glycosylated hemoglobin (HbA1C) in alloxan-induced type 1 diabetic rats.

M***aterial and Methods:*** 40 male Wistar rats were randomly divided into four equal groups: group I as healthy control, group II as healthy group who treated with CA (50 mg/kg i.p.daily), group III as diabetic control group, and group IV as diabetic group who treated with CA (50 mg/kg i.p. daily). Diabetes was induced in the 3rd and 4th groups by alloxan injection (100 mg/kgs.c.). After seven weeks, animals were anaesthetized and blood samples were collected and serum level of FBS HbA1C was measure.

R***esults:*** The serum level of FBS and HbA1C were significantly decresed in diabetic group who treated with CA compared with untreated diabetic group.

C***onclusion:*** The results of this study showed that CA has beneficial effects on the FBS and HbA1C in type 1 diabetic rats.

K***eywords:*** Diabetes, Herbal medicines, Caffeic acid

Corresponding author Email address: tayebehdavoodi@ymail.com

ID:216

Synergic antiproliferative effect of 5-Azacytidine, a DNA methyltransferase inhibitor, in combination with Alimta anticancer drug against A549 cells

Somayeh Amiri[1], Azra Rabbani-Chadegani[1]

[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Lung cancer is the leading cause of cancer-related deaths worldwide. Besides genetic mutations, epigenetic alterations have widely been reported to play a major role in the genesis of lung cancer. 5-azacytidine is a nucleoside analogue that inhibits DNA methyltransferases (DNMT) and leads to DNA hypomethylation. As the effects of epigenetic single agent treatment of solid tumors have been limited, the investigative focus now lies on combination therapies of epigenetically active agents with conventional chemotherapy. Therefore, the aim of this study was to evaluate the combination of 5-azacytidine, as chemosensitizing agent, with Alimta, a new-generation antifolate drug, in lung cancer A549 cell lines.

M***aterial and Methods:*** A 549 cells were exposed to low doses of 5-azacytidine and varying doses of Alimta for 72 h. Cell proliferation was assayed by MTT and potential synergism was calculated according to the method of Chou and Talalay. Also, colony formation assays, acridine orange/ ethidium bromide staining, Annexin V/Propidium iodide assay and cell cycle analysis were performed.

R***esults:*** The results showed that pre-treatment of A549 cells with 5-azacytidine resulted in the increase of their sensitivity to Alimta thus the IC50 value of Alimta (13µM) reduced to 3µM. Combination treatment indicated synergistic reduction of colony formation. Treatment of A549 cells with Alimta and 5-azacytidine resulted in an increase in early and late apoptosis; upon combination treatment there was increase in early apoptosis by 30.34%, late apoptosis by 25.12 %, and no change in necrotic fraction of cells. In addition, cell cycle analyses showed an increase in S phase population by Alimta, which was gradually replaced by Sub-G1 cell population by 5-azacytidine combined with Alimta.

C***onclusion:*** In conclusion, 5-azacytidine increases the chemosensitivity of Alimta in lung cancer cells in apoptotic signaling and provides a rationale for combination chemotherapy of DNMT inhibitors with traditional anticancer drugs in lung cancer.

K***eywords:*** A549 lung cancer cell, 5-azacytidine, Alimta, apoptosis, DNA methyltransferases

Corresponding author Email address: s.amiri@ut.ac.ir

ID:217

Study of expression and Methylation of MEIS-1 Gene Promoter in Colorectal Cancer

Narjes Soltani[1], Mohammad Soukhtanloo[2]

[1] Cancer Molecular Pathology Research Center, Ghaem Hospital

[2] Department of Medical Biochemistry, Mashhad University of Medical Sciences, International Campus, Mashhad, Iran

Objective: Colorectal cancer, the third most common type of cancer is a major cause of mortality worldwide. If colorectal cancer is detected at the early stages, the 5-year survival rate is 90%. MEIS1 homeobox gene is implicated in numerous solid tumors and hematological malignancies. Therefore, the present study aims to investigate the methylation status of the MEIS1 gene in colorectal cancer.

M***aterial and Methods:*** We used real-time quantitative methylation-specific PCR to detect MEIS1 promoter methylation in 42 colorectal cancer tissues and 42 normal colorectal tissues.

R***esults:*** Methylation was observed only in the positive control samples – CG Genome Universal Unmethylated DNA and CG Genome Universal Methylated DNA. There was no change observed in MEIS1 promoter methylation status in 42 patients.

C***onclusion:*** The results of the current study indicated that the MEIS1 gene promoter was not methylated in the cases. Gene expression study confirmed the unmethylated status of the MEIS1 gene in the colorectal cancer process among the studied population.

K***eywords:*** Colorectal cancer, Methylation, MEIS1

Corresponding author Email address: SoukhtanlooM@mums.ac.ir

ID:218

The effect of estrogen and/or progesterone on hepatocyte function and antioxidant status

Fatemeh Khademi[1]

[1] Department of Biochemistry, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Although much is known about physiological and pharmacological effects of estrogen and progesterone, their toxicity or protective effects on hepatocytes is not fully understood. Oxidative stress has been linked to pathogenesis of numerous liver disorders. . In this study we analyzed the antioxidant status and hepatocyte enzymatic alterations in HepG2 cell line treated with sex hormones estrogen and/or progesterone after H2O2 – induced oxidative stress.

M***aterial and Methods:*** HepG2 cells were treated with estrogen and/or progesterone (10 nM and 1µM) and H2O2 (50 and 200 µM) separately, and in combination, for 24 hours. Cellular viability by MTT assay and biochemical parameters involving antioxidant enzymes (GPx, GR) activity, GSH, ALT and AST levels were measured.

R***esults:*** MTT assay showed toxic effect of 200 µM H2O2 on the cells. According to MTT results, 10nM and 1 µM doses of estrogen and progesterone and 1µM of each in combination, in the presence of 50 µM H2O2 were selected for the rest of the experiments. Incubation of the cells with H2O2 caused a remarkable decrease in GPx and GR activities as well as GSH level, and an increase in ALT and AST levels. However, treatment with estrogen attenuated further changes and estrogen in combination with progesterone led to a more pronounced amelioration of H2O2-induced toxicity.

C***onclusion:*** Our results demonstrated that estrogen and progesterone might significantly improve the antioxidant defense within hepatocytes which undergo a low-intensity oxidative exposure.

K***eywords:*** HepG2 Cell Lines, Hepatocytes, Estrogen, Progesterone, Antioxidant

Corresponding author Email address: Khademifatemeh67@yahoo.com

ID:220

Curcumin as a Potent Osteoinductive Agent Promotes Matrix Mineralization and Osteogenic Activity of human Mesenchymal Stem Cells

Maliheh Khademi Shirvan[1], Mahsa Ghorbaninejad[2], Samaneh Hosseini[3], Mohamadreza Baghabaneslaminejad[3], Maryam Shahhoseini[2]

[1] Department of Molecular Genetics, Faculty of Basic Sciences and Advanced Technologies in Biology, University of Science and culture, ACECR, Tehran, Iran

[2] Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

[3] Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran

Objective: Human bone marrow mesenchymal stem cells (hBMSCs) are novel therapeutic tool in regenerative medicine. Despite years of research, efficient differentiation of MSCs into osteoblastic lineage still demands further investigations. Use of osteoinductive agents would be an appealing strategy to deal with this challenge. The current study aims to examine osteoinductive potential of curcumin as a natural polyphenol on osteogenic differentiation of hBMSCs.

M***aterial and Methods:*** MSCs were isolated from bone marrow and characterized. The cytotoxicity of curcumin on hBMSCs was assessed by MTT assay. Alkaline phosphatase (ALP) activity and calcium deposition were evaluated in hBMSCs cultures after 7 and 14 days. qRT-PCR was used to assess the expression levels of osteoblastic markers.

R***esults:*** There was no cytotoxicity associated with the concentrations of 10 and 15 µM of curcumin. ALP activity and calcium assay showed higher level of matrix mineralization in the presence of curcumin compared to control group. Gene expression level of osteoblastic markers that include Runx2, osterix, collagen typeI, osteopontin and osteocalcin significantly up-regulated in culture that contained curcumin in a time/dose-dependent manner.

C***onclusion:*** It is confirmed that curcumin as a natural compound with the ability to stimulate osteogenic differentiation and accelerate matrix mineralization have the potential to be utilized in bone regeneration.

K***eywords:*** Curcumin, MSCs, Osteogenesis

Corresponding author Email address: Maliheh.khademi1983@gmail.com

ID:221

Hypolipidemic activity of Dracocephalum kotschyi extract via AKT-mediated induction of PPARγ expression in adipose tissue

Shima Aslian[1], Razieh Yazdanparast[1]

[1] Institute of Biochemistry and Biophysics

Objective: Dracocephalum kotschyi, a well-known Iranian traditional medicine, was evaluated in terms of hypolipidemic properties. Enhanced PPARγ-mediated lipogenesis with subsequent accumulation of triglycerides droplets in adipocytes is considered as a therapeutic strategy for treatment of diabetic patients with hyperlipidemia. Here, we compared serum lipid profile of DKE (Dracocephalum kotschyi extract)-treated diabetic rats with negative and positive controls. Furthermore, adipose tissue expression levels of p-JNK, p-AKT, p-FOXO1, t-FOXO1 and PPARγ, as the main regulators of lipogenesis, were determined using western blot technique.

M***aterial and Methods:*** Streptozotocin-induced diabetic rats were orally treated with DKE at two different doses (0.25 and 0.5 ml/rat.day) and serum biochemical factors were evaluated during the 28 treatment days.

Results: Treatment with DKE (0.25 ml/rat) decreased the sera levels of TG, TC and LDL by 48, 31 and 43%, respectively, compared to the untreated diabetic group, whereas the dose of 0.5 ml/rat resulted in a decrease of TG, TC and LDL by 54, 40 and 54%, respectively. The serum level of HDL was 45% higher in DKE-treated group (0.5 ml/rat) than that of the untreated diabetic group. Western blot analyses demonstrated decrements of p-JNK (0.25 ml/rat, 31% and 0.5 ml/rat, 40%) and t-FOXO1 (0.5 ml/rat, 36%) expression levels in addition to the increased levels of p-AKT (0.25 ml/rat, 52% and 0.5 ml/rat, 97%), p-FOXO1 (0.25 ml/rat, 48% and 0.5 ml/rat, 51%) and PPARγ (0.25 ml/rat, 33% and 0.5 ml/rat, 79%) in DKE-treated rats compared to diabetic control group.

C***onclusion:*** This study demonstrated that DKE reverses hyperlipidemia symptoms in streptozotocin-induced diabetic rats via rebalancing the PPARγ and FOXO1 adipose expressions.

K***eywords:*** Adipose tissue, Dracocephalum kotschyi, hyperlipidemia, PPARγ

Corresponding author Email address: shaslian@ut.ac.ir

ID:222

The role of Her2-Nrf2 axis in induction of oxaliplatin resistance in colon cancer cells

Abbas Pirpour Tazehkand[1], Nasser Samadi[1], Maryam Akbarzadeh[2], Kobra Velaie[3], Mohammad Reza Sadeghi[4]
[1] Department of Biochemistry and Clinical Laboratories, Faculty of Medicine, Tabriz University of Medical Sciences, Golgasht Street, Tabriz, Iran
[2] Stem Cell and Regenerative Medicine Institute, Tabriz University of Medical Sciences, Golbad Street, Shahid Madani Hospital, Tabriz, Iran
[3] Department of Anatomical Science, Faculty of Medicine, Golgasht Street, Tabriz University of Medical Sciences, Tabriz, Iran
[4] Department of Molecular Medicine, Faculty of Advanced Medical Sciences, Golgasht Street, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Nrf2 plays a pivotal role in promoting chemoresistance by regulation of antioxidants and detoxification enzymes. Her2 is a member of tyrosine kinase receptor family with a key function in resistance of cancer cells to chemotherapeutics. The aim of this study was to investigate the possible cross talk between Nrf2 and Her2 mediated signaling pathways in development of oxaliplatin resistance in colon cancer cells.

Material and Methods: We first generated oxaliplatin-resistant LS174T and SW480 colon cancer cells with different Her2 expression levels by employing IC50 concentrations followed by a resting period. We evaluated the viability and apoptosis of the cells by MTT and flow cytometry assays, respectively. Nrf2 and Her2 gene expression levels were examined by qRT-PCR. The morphology analysis and combination index calculation were performed using the ImagJ and CompuSyn softwares, respectively.

Results: Development of resistant cells revealed a marked increase in IC50 value from 3.95 ± 0.92 µM to 29.27 ± 3.13 µM in SW480 cells and 377 ± 46 nM to 9.59 ± 0.76 µM in LS174T cells with a significant change in morphology of the cells from elongated to small round shape ($p<0.05$). Her2 expression level was increased in both types of resistant cells, but the Nrf2 expression was increased in LS174T/Res cells and decreased in SW480/Res cells which were consistent with the level of resistance in these cells (25 fold increase in IC50 value in LS174T/Res cells versus 7 fold increase in this value in SW480/Res cells). Inhibition of either Nrf2 or Her2 alone and in combination caused a significant increase in oxaliplatin-induced cytotoxicity and apoptosis with maximum effects in SW480/Res cells with low Her2 and Nrf2 expression levels.

Conclusion: Altogether, our results suggest that inhibition of Nrf2 signaling in colon cancer patients with Her2 overexpression can be considered as an important strategy to overcome oxaliplatin resistance.

Keywords: Apoptosis, Colon cancer, Oxaliplatin Resistance, Her2, Nrf2
Corresponding author Email address: nsamadi@ualberta.ca

ID:224

Rosmarinic acid inhibits lipogenesis despite induced activity of AKT in 3T3-L1 cells

Shima Aslian[1], Razieh Yazdanparast[1]

[1] Institute of Biochemistry and Biophysics

Objective: Rosmarinic acid, a bioactive natural antioxidant, is believed to possess ERK-mediated anti-lipogenesis activity in 3T3-L1 cells. However, antioxidants are known as JNK inhibitors that subsequently induce lipogenesis in adipocytes. Relevant emerging data propose that inhibition of JNK results in an augmented insulin-signaling pathway and increased level of p-AKT which ultimately leads to induced lipogenesis. In this study, we investigated both mentioned pathways in rosmarinic acid-treated 3T3-L1 adipocytes.

Material and Methods: 3T3-L1 cells were treated with DMI medium (DMEM containing 1 µM dexamethasone, 0.5 mM 3-isobutyl-1-methylxanthine, and 1.5 µg/ml insulin). After 48 hours the DMI medium was replaced by 10 µg/ml insulin-supplemented DMEM. Determination of lipogenic effects was proceeded via evaluating the triglycerides content of the treated cells. The expression levels of p-AKT, p-ERK and tubulin were determined by western blot technique.

Results: The cells were treated with 50 µM rosmarinic acid for 48 hours and the TG content was measured using the relevant kit (Pars Azmun, Iran). Our data indicated that rosmarinic acid reduces the TG content in 3T3-L1 cells by about 33% compared to that of untreated cells ($P<0.05$, $n=15$). In this study, rosmarinic acid treated 3T3-L1 cells (50 µM) demonstrated a 37% increased expression of p-ERK compared to the untreated cells ($P<0.01$, $n=3$) that is in accordance with other studies. On the other hand, the expression of p-AKT demonstrated a 17% increase ($P<0.5$, $n=3$) relative to control samples.

Conclusion: This study demonstrated that in rosmarinic acid treated 3T3-L1 cells, the activation of AKT loses its impact on lipogenesis with a mechanism that still remained unknown.

Keywords: Lipogenesis, Rosmarinic acid, p-AKT, p-ERK

Corresponding author Email address: shaslian@ut.ac.ir

ID:226

The crosstalk between long non-coding RNAs with cell signaling pathway in breast cancer

Tooba Yousefi[1], Durdi Qujeq[2], Sadra Samavarchi Tehrani[1], Maryam Abolghasemi[1]

[1] Student Research Committee, Babol University of Medical Sciences, Babol, Iran

[2] Faculty Medicine, Babol University of medical sciences, Babol, Iran

Objective: Breast cancer is the most common invasive cancer and cause of death in women. Crosstalk among abnormal signaling pathways widely occurs in breast cancer and generally leads to insensitivity to cancer treatment. Recent studies have explained the important roles of ncRNAs as positive or negative regulators of key signaling pathways. Long non-coding RNAs (lncRNAs), the novel class of ncRNAs, have recently emerged as important regulatory molecules involved in cellular processes and cancer progression. The continued identification of lncRNAs in various cancer types demonstrates that lncRNAs prepare novel diagnostic and prognostic tools in the treatment of breast cancer. In addition, the newly identified ncRNAs, circular-RNAs, correlated with cancer-related miRNAs and the circRNA-miRNA are implicated in different cancer-related signaling pathways. Thus, the purpose of this article was to review the involvement of lncRNAs in the various key signaling pathways in breast cancer (such as, TGF-β, Wnt/β-catenin, PI3K/Akt/mTOR, notch, NF-kB, Hedgehog, MAPK) and also specified the function of circRNAs in breast cancer.

Material and Methods: By literature review from 2005 to 2017 including medline, pubmed, scopus and google scholar, 130 article was reviewed.

Results: The malignant phenotype of tumor cells are controlled by ncRNAs and these molecules are involved in breast tumorigenesis and tumor progression through regulating of several target genes.

Conclusion: lncRNAs are dysregulated in many human cancers, such as breast cancer and have become important players and demonstrated potential applications in clinical diagnosis. Moreover, circRNAs participate in regulating various biological process in breast cancer, play regulatory roles in gene expression at the transcriptional or posttranscriptional level.

Keywords: lncRNAs, breast cancer, signaling pathway

Corresponding author Email address: tooba.usefi@gmail.com

ID:228

Study the effects of bilirubin on the expression of BECN1 and LC3 genes in LS180 and SW480 colorectal cancer cell lines

Maryam Niknam[1], Sayed Mohammad Shafiee[1], Maryam Rasuli[1]

[1] Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Colorectal cancer (CRC) is one of the most prevalent and deadly cancers worldwide. Among the factors and mechanisms that are involved in the multifactorial etiology of CRC, autophagy is an important transformational switch that occurs when a cell shifts from normal to malignant. ROS have been copiously reported as early inducers of autophagy upon nutrient deprivation. Bilirubin is recognized as the most potent endogenous antioxidant. The anti-oxidant property of bilirubin has given us the initiative to assess its effect on autophagy. The present study investigated the effect of bilirubin on the expression levels of autophagy markers, BECN1 and LC3 genes in two colorectal cancer cell lines, LS180 and SW480.

Material and Methods: Nontoxic concentrations of bilirubin were determined by using MTT assay. LS180 and SW480 cell lines were treated with bilirubin and DMSO (as vehicle control) for 24 and 48 hours' time intervals. Quantitative Real-Time PCR was used to assay the mRNA expression levels of BECN1 and LC3 genes.

Results: By using MTT assay, concentrations of 50 and 100 µM bilirubin were determined as nontoxic concentrations for the studied cell lines. Based on the results of Quantitative Real-Time PCR, BECN1and LC3 expression level decreased in both cell lines.

Conclusion: Based on the observed changes in the expression levels of BECN1 and LC3 genes which are involved in autophagy process, bilirubin has an antitumor defense role in the studied cell lines, probably through the control of autophagy as a key step in survival and drug resistance of tumor cells.

Keywords: Colorectal cancer, Bilirubin, Autophagy, BECN1, LC3

Corresponding author Email address: shafieem@sums.ac.ir

ID:229

Metformin attenuates oxidative stress and liver damage after bile-duct ligation in rats

Fatemeh Jahanbazi[1], Heibatollah Sadeghi[1], Hossein Sadeghi[1], Navid Omidifar[2], Behnam Alipoor[1], Esmaeel Panahi Kokhdan[1], Seyed Hossein Mousavi-Fard[3], Amir Hossein Doustimotlagh[1]

[1] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

[2] Senior Resident of Pathology, Department of Pathology, Transplant Research Center, Nemazee Hospital, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

[3] Department of Biochemistry and Biophysics, Texas A&M University, College Station, Texas, United States of America

Objective: The aim of current study was to investigate the effects of metformin (Met) on oxidative stress markers in bile duct ligation (BDL)-induced liver fibrosis in rats.

Material and Methods: The male Wistar rats divided into four groups including SC (sham control), BDL (Bile duct ligation surgery), Met1 (BDL surgery and administration of 250 mg/kg of metformin) and Met2 (BDL surgery and administration of 500 mg/kg of metformin). After BDL, the animals treated with Met by gavage for 10 days and the hematoxylin and eosin staining, biochemical analysis and oxidative stress markers were assayed.

Results: Hepatotoxicity was verified by remarkable increase in plasma levels of AST, ALT, ALP, GGT and liver histology 10 days after the BDL surgery. The results showed that treatment with Met significantly reduced plasma ALP and alleviated liver injury indexes ($P \leq .05$). Furthermore, BDL caused a considerable increase in hepatic lipid peroxidation, protein oxidation and NO metabolites production, as well as a significant decrease in plasma GSH and FRAP levels ($P \leq .05$), interestingly, all of the changes were reversed by Met administration.

Conclusion: Metformin exerts antioxidative effects in the liver fibrosis and may represent a protective effect when administered to rats with BDL-induced hepatic injury.

Keywords: Oxidative stress, Cholestasis, Metformin, Antioxidant

Corresponding author Email address: f.jahanbazi70@gmail.com

ID:233

Evaluation of the association between serum testosterone levels and severity of 6-hydroxydopamine- induced Parkinsonism in rat

Roghaye Razaghi[1], Hossein Piri[1]

[1] Qazvin University of Medical Sciences

Objective: Parkinson's disease is a neurodegenerative disease, which is the most common age dependent neurodegenerative disorder after Alzheimer's disease. The disease is caused by the destruction of dopaminergic neurons in the substantia nigra. Parkinson's disease symptoms appear when about 60-80% of these neurons are destroyed and dopamine do not produce enough. Oxidative stress, mitochondrial dysfunction, protein aggregation and autophagic stress has been implicated in Parkinson's. Early diagnosis of Parkinson's disease can result in more effective treatment and preventing the exacerbation of the disease. Identifying the biomarkers can help in the diagnosis. Testosterone levels is reduced in patients with Parkinson's disease. Regarding the controversy about the relationship between serum testosterone and prolactin and Parkinson's disease, this study was designed to evaluate the serum levels of testosterone in Parkinson's disease in the animal model.

Materials and Methods: Male wistar rats, weighing 200-300gو were divided into control, sham and Parkinsonism groups. Parkinson's disease was induced by injecting 6-hydroxy dopamine in the MFB by Hamilton syringe. The development and severity of Parkinsonism was measured by apomorphine-induced rotational tests. In the third and sixth weeks after stereotaxic surgery, and after the behavioral tests, blood samples were collected from the animals' tail and heart, and the serum levels of testosterone were evaluated by ELISA.

Results: Control and sham group did not show rotation but the Parkinson's group showed significant rotation that sixth week was more than the third week. Parkinson's rats were divided into two groups, mild and severe, based on severity of symptoms. In both groups, testosterone level was increased, but it was significant only for the severe group.
Conclusion: The results of study showed that 6-hydroxy dopamine-induced Parkinsonism is associated with increased serum levels of testosterone.
Keywords: Parkinson Disease, 6-Hydroxydopamine, Testosterone, Substantia Nigra, Behavioral Test
Corresponding author Email address: razaghi.biochem@yahoo.com

ID:236
Association between MicroRNAs and signaling pathways in breast cancer
Sadra Samavarchi Tehrani[1], Durdi Qujeq[2], Tooba Yousefi[1], Maryam Aboghasemi[1]
[1] Student Research Committee, Babol University of Medical Sciences, Babol, Iran
[2] Faculty Medicine, Babol University of medical sciences, Babol, Iran
Objective: Breast cancer (BC) is known as the second leading cause of cancer-related mortality in the worldwide. The progression of breast cancer is affected by many factors, most of them involve changes in the expression of certain genes, including non-coding RNAs (ncRNAs). MicroRNAs (miRNAs) are a group of the ncRNAs that implicated in the post-transcriptional control of gene expression. Furthermore, these small molecules are often changes in various cancers, particularly breast cancer. Recently, studies have shown that miRNAs are either directly or indirectly involved in various signaling pathways such as TGF-β, Wnt/β-catenin, PI3K/Akt/mTOR, notch, NF-kB, and MAPK. In this review, we determined the pathogenic mechanism of breast cancer related to miRNA expression and also clarified the regulation network of miRNA expression and the associated functions of these miRNAs during the progression of breast cancer. Finally, the correlation between the expression of various miRNA and its implications for the diagnosis and prognosis of breast cancer are highlighted.
Materials and Methods: We identified eligible studies published up to August 2017 by a comprehensive search of PubMed, Scopus, google scholar and web of science databases. Finally, 200 article was reviewed.
Results: Dysregulation of genes implicated in different signaling pathway leading to breast cancer. miRNAs function as regulatory molecules, acting as oncogenes or tumor suppressors that affected on mediators of signaling pathway and result in down- or up-regulation target genes.
Conclusion: miRNAs as novel regulatory genes, are involved in mechanisms of a various signaling pathway. Furthermore, these small molecules could be used as a diagnostic and prognostic biomarker in breast cancer
Keywords: Breast cancer, MicroRNAs, signaling pathway
Corresponding author Email address: Tehranisadra94@gmail.com

ID:238

Study on interactions between Urethane cationic gemini surfactant and Plasmid DNA
Leili Sadat Sharifmousavi[1], Pouneh Sadat Pourhosseini[1], Farhood Najafi[2]
[1] Department of Biophysics, Faculty of Biological Sciences, Alzahra University, Tehran, Iran
[2] Department of Resin and Additives, Institute for Color Science and Technology, Tehran, Iran
Objective: Cationic gemini surfactants are new classes of amphiphilic molecules that contain two hydrophobic tails and two polar headgroups linked by a spacer. The spacer could be rigid or flexible, aliphatic or cyclic. Cationic gemini surfactants may interact with plasmid DNA (pDNA) through electrostatic interactions to produce surfactant-DNA complex. The interaction of pDNA with gemini surfactants is a complementary topic of interest, which has been the subject of many recent investigations over the past decades.
Materials and Methods: The micellization behavior of cationic gemini surfactants, having a 2-methelene group as a spacer (C2) in aqueous solution containing pDNA is studied by conductivity measurements. The critical aggregation concentration (CAC) as well as the polymer saturation point (PSP) are determined. The ionization degree of complex, and that of free micelles are calculated.
Results: The titration of pDNA solution with the surfactant results in an increase in the solution conductivity. The rate of increase in specific conductivity is steep first, then declines after a first breakpoint (CAC) in the plot of specific conductivity versus surfactant concentration. The first breakpoint follows by the second one, indicating the PSP which shows the onset of micellization.

Conclusions: Results show that addition of surfactant monomer into the pDNA solution results in complex formation via electrostatic interactions. When the biomacromolecule is saturated by surfactant molecules, the addition of monomeric surfactants results in micelle formation. Therefore, the precence of biomacromolcule increases the CMC, which is the critical micelle concentration of surfactant in the absence of pDNA.

Keywords: Urethane cationic gemini surfactant, plasmid DNA, micellization, specific conductivity

Corresponding author Email address: leily71@yahoo.com

ID:239

Effects of Endurance Training, Distillate Fenugreek and Gemfibrozil on the expression of GLUT4 and serum concentration of ANGPTL4 in hypertriglyceridemic rats

Zahra alipour[1], Samad Akbarzadeh[1]

[1] Department of clinical Biochemistry, Faculty of Medicine, Bushehr University of Medical Sciences, Bushehr, Iran

Objective: Hypertriglyceridemia refers to an increase in plasma triglycerides. Today exercise is considered as a good tool for regulating homeostasis of energy, lipids and carbohydrates. In traditional medicine fenugreek is used to treat diseases like diabetes and high cholesterol. GLUT4 mainly is expressed in insulin-sensitive cells such as adipose tissue, muscle cells and heart cells. ANGPTL4 is an LPL inhibitor, which ultimately leads to an increase in plasma triglycerides levels. The purpose of this study was to investigate related mechanisms and compare the effectiveness of endurance exercise, fenugreek plant and gemfibrozil drug in reducing plasma triglycerides via effect on GLUT4 gene expression and serum concentration of ANGPTL4 in hypertriglyceridemic rats.

Materials and Methods: This study is a case-control study, which was performed on 56 wistar male rats in weight range 180-210g and rats were divided into 7 groups. After induction of hypertriglyceridemia started exercise, fenugreek extract and gemfibrozil gavage for 4 weeks. At the end of the last week of treatment blood samples were taken from all groups and serums were collected for measuring various parameters. In addition, muscle tissue was isolated to expression of GLUT4 gene using Real-time PCR.

Results: 400 and 200 mg/kg doses of fenugreek extract, endurance exercise and gemfibrozil consumption significantly reduced serum triglyceride levels in treatment groups. 400 mg/kg dose of Fenugreek increased expression of GLUT4 gene significantly also decreased serum level of ANGPTL4 significantly. Endurance exercise increased expression of GLUT4 gene and decreased serum level of ANGPTL4. 100 mg/kg dose of gemfibrozil and 200 mg/kg of fenugreek was not observed significant changes.

Conclusion: Results of this study show that fenugreek, endurance exercise and gemfibrozil consumption significantly reduce serum levels of triglycerides. Also, 400 mg/kg dose of fenugreek caused a reduction in serum concentration of ANGPTL4 and an increase in gene expression of GLUT4.

Keywords: Hypertriglyceridemia, Endurance exercise, Fenugreek extract, GLUT4, ANGPTL4

Corresponding author Email address: smdakbarzadeh@yahoo.com

ID:240

Targeting AMP-activated protein kinase in cancer by curcumin

Elnaz Zahiri[1], Arash Soltani[1], Seyed Isaac Hashemy[2]

[1] Department of Clinical Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran

[2] Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Curcumin is a polyphenolic molecule derived from rhizomes of Curcuma longa, which is renowned for its potential anti-inflammatory, antioxidant, anti-proliferative and anti-cancer activities. Considering the role of AMP-activated protein kinase (AMPK) in cell growth, autophagy and anabolic processes, the interaction between curcumin and AMP kinase pathway has recently gained interest in cancer therapy. Curcumin regulates AMPK activity by promoting the phosphorylation of AMPK. Several investigations reported that activation of AMPK triggered by curcumin induces cell cycle arrest, apoptosis in cancer cells and prevents cancer metastasis. Moreover, curcumin exhibits apoptotic effects and inhibits cell proliferation through AMPK activation. Further study suggests that curcumin exerts anti-differentiation effect and inhibits cancer cell growth via regulating AMPK signaling pathway and its possible substrates, including P38, COX-2, and PPAR-γ. Similarly, the curcumin-dependent activation of AMPK strongly induces apoptosis and death of ovarian cancer cells via a p38-dependent mechanism. The anti-metastatic effect of curcumin may be due to AMPK activation and subsequent inhibition of NF-κB, urokinase plasminogen activator (uPA) and matrix metalloproteinase 9 (MMP-9). Curcumin

also stimulates autophagy in lung adenocarcinoma cells, therefor, inhibits proliferation of cancer cells and induced cell injury in these cells through activating the AMPK signaling pathway. Moreover, AMPK is involved in down-regulation of protein synthesis by the inhibition of mTOR signaling and elongation of protein synthesis. Demethoxycurcumin (DMC), a natural dimethoxy derivative of curcumin, inhibits the kinase activity of mTORC1 by activating AMPK in breast cancer cells. Curcumin caused a significant down-regulation of glycolytic enzymes expressions in esophageal cancer cells via AMPK activation. Generally, given the key role of AMPK in energy homeostasis, makes it a therapeutic target for cancer and inflammatory diseases. Taken together, AMPK has a central role in the regulation of metabolism, inflammation and can be targeted for various cancer therapies.

Keywords: AMPK, curcumin, cancer, apoptosis

Corresponding author Email address: zahirie961@mums.ac.ir

ID:241

Role of regulatory miRNAs of PI3K/AKT signaling axis in the pathogenesis of colorectal cancer

Atena Soleimani[1], Farzad Rahmani[1], Seyed Mahdi Hassanian[1]
[1] Department of Medical Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Colorectal cancer (CRC) is a malignant disease with high mortality in the world. In a large number of CRC patients, up-regulation of PI3K/AKT signaling pathway is reported. MicroRNAs, small noncoding 18-25 nucleotides RNAs, regulate wide range of biological processes in several cancers including CRC. In this review, we summarize the role of PI3K/AKT signaling regulatory miRNAs in the pathogenesis of CRC.
Material and Methods: Comprehensive search was performed via PubMed, Scopus, Web of Science and Google scholar database using the following keywords: [colorectal cancer OR colon cancer] and [microRNA OR miRNA OR mir] and [PI3K OR AKT OR mTOR OR PTEN]. Search strategy was limited to English language studies.
Results: Results show that oncogenic or tumor suppressor microRNAs are correlated with tumorigenesis behavior including proliferation, progression, migration, invasion, differentiation as well as resistance to chemo/radiotherapy in colorectal cancer. MiRNAs can affect PI3K upstream and downstream mediators in post-transcriptional levels and change function of PI3K, AKT, mTOR and transcription factors trough up-regulation or down-regulation of these molecules.
Conclusion: These findings clearly support the role of PI3K/AKT regulatory miRNAs as potential novel diagnostic and prognostic biomarkers in CRC patients. Taken together, restoration of tumor suppressor miRNAs or targeting oncogenic miRNAs with biological and pharmacological inhibitors could be a potent therapeutic strategy for CRC patients.

Keywords: PI3K/AKT signaling, MicroRNA, Colorectal cancer
Corresponding author Email address: Soleimaniat961@mums.ac.ir

ID:242

Evaluation of FoxP3 gene polymorphism in patients with acute kidney injury after cardiac surgery

Farzaneh Dastourian[1], Gholamreza Farshidfar[1], Mahsa Rahimzadeh[1], Nadereh Naderi[2], Hossein Montazerghaem[3], Sara Aghakhani Chegini[1]

[1] Department of Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[2] Department of Immunology, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[3] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Acute kidney injury (AKI) is associated with reduced glomerular filtration and subsequently reduced renal function. AKI following cardiopulmonary bypass (CPB) has a high prevalence and mortality. FoxP3 is a transcription factor produced in regulatory T-cells (Treg). Tregs play an anti-inflammatory role and controls the immune responses. Hence in this study the influence of FoxP3 gene polymorphism on development of CPB-AKI has been elucidated.

Material and Methods: In this study the association of single-nucleotide polymorphism rs3761548 of FoxP3 gene with AKI was determined in 116 patients after cardiopulmonary bypass surgery was determined with SSP-PCR (sequence specific primers- polymerase chain reaction) technique. Patients were classified into two groups (40 AKI patients and 40 non-AKI) according to changes in creatinine level, 48 hours after surgery.

Results: The mean age of participants was 52.2±9.7 in AKI and 50.8±10.8 in non-AKI group (p=0.41). 58% of the subjects were male and 53% were female (p=0.66). Surgery parameters such as Cross-clamp Time, Bypass Time and Ejection fraction were not significantly different between two groups (p> 0.05). Frequency of FoxP3 rs3761548 CC, CA and AA were 30, 32 and 26 in AKI group and 33.87, 35.3 and 29.8 in non-AKI group respectively. Analysis revealed that the genotype frequencies were not significantly different between two groups. The allele frequency was not significantly different between AKI and non-AKI groups.

Conclusion: These results suggested that FoxP3 polymorphism (rs3761548) could not be used as an indicator for the prognosis of AKI after CPB.

Keywords: AKI, FoxP3, Polymorphism

Corresponding author Email address: farzaneh.dastourian@gmail.com

ID: 243

Simvastatin and Temozolomide Co-treatment induce cell death in Glioblastoma cell lines

Sanaz Dastghaib[1], Pooneh Mokaram[1], Saeid Ghavami[2]

[1] Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

[2] Department of Human Anatomy and Cell Science, Rady Faculty of Health Sciences, University of Manitoba, Winnipeg, Canada

Objective: Glioblastoma multiforme (GBM) is the common, invasive, and incurable malignant tumor of the central nervous system. Nowadays, surgery, radiotherapy, and chemotherapy using Temozolomide (TMZ) are the gold standard protocol for treatment of patients. The main problem is resistance to TMZ and survival chance is too low. Recently, several studies showed that statins especially simvastatin have beneficial effects not only inhibits mevalonate cascade and reducing cholesterol, but also influences the expression of many proteins to involve in cells growth including Ras/Raf/Mapk, and Rho GTPase. In this study, we attempted to evaluate the combined effect of Simvastatin + TMZ in Glioblastoma cell lines.

Material and Methods: The concentration (0–20 μM) of simvastatin (0–1000 μM) of TMZ, also the combination of Simvastatin 1, 2.5 μM with (100 μM) TMZ during 24–96 hours on cell viability of Glioblastoma cell lines (U87, U251) were examined with MTT assay.

Results: Our data indicate that Simvastatin induces significant cell death in U251 and U87 for concentrations greater than 5 μM in 48 h and greater than 1,2.5 μM in 72,96 h. According to our data, the combination of TMZ 100 μM with simvastatin (1, 2.5 μM) increase the ability of TMZ in cell death in 48, 72,96 hours. The results were evaluated by one-way or two-way ANOVA followed by Tukey's, using Graph Pad Prism 7.0. P-value < 0.05 was considered statistically significant.

Conclusion: These results indicate that co-treatment of Simvastatin and TMZ has a major impact on the lethal ability of TMZ in glioblastoma cancer

Keywords: Cancer, Simvastatin, Temozolomide

Corresponding author Email address: suny.respina@gmail.com

ID:244

Fabrication of all-trans-retinoic acid-loaded biocompatible precirol: A strategy for escaping dose-dependent side effects of doxorubicin

Fatemeh Ramezani[1], Mehdi Sabzichi[2], Jamal Mohammadian[2], Marjan Ghorbani[3], Somaiyeh Saghaei[4], Hadi Chavoshi[2], Hamed Hamishehkar[4]

[1] Department of Molecular Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Hematology & Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

[3] Stem Cell & Regenerative Medicine Institute, Tabriz University of Medical Sciences, Tabriz, Iran

[4] Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Drug delivery-based nanoparticles have been emerged to be an alternative and efficient approach to cancer therapy compared to conventional systems. Here, we investigated the role of all trans retinoic acid (ATRA) formulated with precirol in increasing doxorubicin (Dox) induced apoptosis and cell cycle arrest in MDA-MB-231 breast cancer cells.

Material and Methods: ATRA-loaded Nano structured lipid carriers (NLCs) were evaluated in terms of particle size, zeta potential, Fourier transforms infrared spectroscopy (FTIR), cell internalization, and scanning electron microscope (SEM). To understand molecular mechanism of apoptosis and cell cycle progression flow cytometric assay, MTT and DAPI staining was applied. Real time (RT)-PCR analysis was employed to investigate the expression of apoptosis related genes, including Survivin, Bcl-2 and Bax.

Results: The optimized ATRA formulation exhibited average particle size of 95 ± 5 nm with nearly narrow size distribution. The IC50 values for ATRA and doxorubicin were 48 ± 0.4 M and 0.81 ± 0.02 M, respectively. ATRA-loaded NLCs decreased percentage of cell proliferation from 51 ± 7.2% to 36 ± 4.1% ($p < 0.05$). Co-treatment of the MDA-MB-231 cells with ATRA formulation and doxorubicin caused two-fold increase in the percentage of apoptosis ($p<0.05$). The results from gene expression exhibited a significant decrease in survivin along with increase at Bax mRNA levels accompanied by a slightincrease in Bax/Bcl-2 ratio.

Conclusion: Our results propose that ATRA encapsulated in precirol as a biocompatible compound augments the efficacy of Dox in cancer therapy.

Keywords: ATRA, Apoptosis, Doxorubicin, Cellular uptake, Nano structured lipid carrier (NLC)

Corresponding author Email address: f_ramazani61@yahoo.com

ID: 245

Critical Inhibitory Role of Linker Histone H1 in Self-Renewal of Cancer Cells

Arad Boustan[1], Fatemeh B. Rassouli[1]
[1]Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: Linker histone H1, with seven variants in human somatic cells, plays crucial roles in chromatin remodeling, nucleosome spacing and DNA methylation. H1 is one of the epigenetic regulators that inhibit cancer cell proliferation, while determines hierarchies in tumour population. It has been shown that chromatin configuration compatible with proliferation is only observed in cells with stable repression of H1, and that induced expression of H1 resulted in silencing of oncogenic and self-renewal genes. Clinical studies revealed differential expression of H1in cells derived from breast and kidney carcinoma, glioma, melanoma, and hepatocellular carcinoma, as H1 expression was high and low in cancer stem cells and differentiated cells, respectively. Other research has also determined that down regulation of each H1 variant in breast cancer cells resulted in altered gene expression in a variant specific manner, with H1.2 and H1.4 knock downs being most deleterious. In addition, it has been reported that H1.2 is responsible for apoptosis induction in leukemia cells, and such effect had been attributed to its structural homology with proteins secreted by activated macrophages and their tumoricidal activity.

Keywords: Histone H1, Cancer cell, Self-renewal, Epigenetic regulation

Corresponding author Email address: behnam3260@um.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:247

Thymus vulgaris as cholesterol reducing blood-contact adsorbent

Ehsan Salehi[1], Saeedeh Afshar[1], Ali Chehrei[1]
[1] Department of Chemical Engineering, Faculty of Engineering, Arak University, Arak, Iran

Objective: In hyperlipidemia i.e., high levels of cholesterol, when there is no potential alternative to drug therapy, the extracorporeal column adsorption is the most effective tool to immediately reduce the blood lipid content. In current study, Thymus powder performance as a biocompatible serum-contact adsorbent was investigated according to isothermal and kinetic batch adsorption experiments using the actual human pooled serum as adsorbing medium.

Material and Methods: To measure the isothermal data, 0.1 g of adsorbent was equilibrated with 0.1 dl pooled serum at different concentrations (150 to 200 mg/dl), and the final concentration of the cholesterol was measured after 24 h . For gathering the kinetic data, 0.5 g adsorbent was poured in 0.5 dl pooled serum solution with the initial concentration of 175 mg/dl, and the concentration of the solution was monitored at different time intervals. X-Ray Diffraction technique, Scanning Electron Microscopy, and Fourier Transform Infrared spectroscopy were also used to characterize the Thymus powder before and after adsorption.

Results: Cholesterol removal was increased from 30% to 50% with increasing adsorbent dose from 0.01 to 0.1 g; meanwhile, further increase had negligible effect on the blood cholesterol level. Cholesterol adsorption capacity of the powder was around 85 mg/g. The adsorption mechanism could be explained as “chemical adsorption” through “H-bonding” on the surface of the fluffy fibers and inside the Thymus powder pores. These results were also confirmed bay FTIR and SEM analyses results.

Conclusion: Cholesterol adsorption from human blood serum was studied using Thymus as a biocompatible and effective herbal biosorbent for possible application in extracorporeal blood perfusion therapy.

Keywords: Serum, Thymus, Cholesterol, Biosorption, Extracorporeal perfusion

Corresponding author Email address: sa_afshar_1369@yahoo.com

ID:248

Inorganic nanoplatlate based photosensitizer delivery for photodynamic treatment of breast cancer cells

Reza Hosseinzadeh[1], Khatereh Khorsandi[2]
[1] Medical Laser Research Group, Medical Laser Research Center, ACECR, Tehran, Iran
[2] Photodynamic Research Group, Medical Laser Research Center, ACECR, Tehran, Iran

Objective: Breast cancer is one of the most common malignancies in women and second lethal cancer after lung cancer among females. New drug delivery systems have been developed to overcome chemotherapy problems. In recent years, much attention has been paid to nanoparticles as carriers for drug delivery. In this study nanoplatelet zirconium phosphate materials are considered as drug delivery system for delivery of methylene blue to enhancing photodynamic therapy efficacy in human breast cancer cells.

Material and Methods: Zirconium phosphate-methylene blue nano-hybrids were characterized by using X Ray Powder Diffraction (XRPD), Scanning Electron Microscopy (SEM), and Thermo gravimetric Analysis (TGA). Photodynamic therapy by zirconium phosphate-methylene blue on MDA-MB-231 human breast cancer was evaluated by MTT assay, colony assay, AO/EB dual staining and flowcytometry detection of apoptosis.

Results: The results indicate that zirconium phosphate-methylene blue nanoparticles could decrease the toxicity of free methylene blue and show biocompatibility in the dark condition. The results suggest that zirconium phosphate-methylene blue significantly enhances the photodynamic therapy efficacy via apoptosis cell death mechanism against human breast cancer cells.

Conclusion: Finally, zirconium phosphate nanoparticles could be suggested as biocompatible nano carrier for photosensitizer delivery in photodynamic treatment.

Keywords: Photodynamic therapy, Nano-platelets, Zirconium phosphate, Methylene blue, Apoptosis

Corresponding author Email address: r.hoseinzadeh@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:250

Overexpression of the fat mass and obesity associated gene FTO in Breast Cancer

Mina Mozafarizadeh[1], Masoud Houshmand[2]
[1] Department of Cellular and Molecular Biology, Nour Danesh Institute of Higher Education, Isfahan, Iran
[2] National Institute for Genetic Engineering

Objective: Breast cancer is the most frequently diagnosed cancers which cause cancer-related death across the world. Obesity has been reported to increase breast cancer risk. Several studies have shown Singe Nucleotide Polymorphisms (SNPs) linked to overweight and obesity, such as rs9939609 (A/T) in Fat mass and Obesity Associated gene (FTO). Thus, we aimed to investigate the association between these obesity-related SNP and BC risk.
Material and Methods: Genomic DNA was extracted from peripheral blood of 63 breast cancer patients and 83 normal controls. For statistical analysis, SNP Stats and SPSS software were used. Height and weight were measured to calculate body mass index (BMI).
Results: On subgroup analysis by BMI, FTO rs9939609 genotypes TT/AA/AT were significantly associated with the risk of breast cancer only in none obese subject ($P < 0.005$). No significant associations between any variants and breast cancer risk were seen in obese subjects.
Conclusion: Based on the absence of an association between obesity-related SNP and breast cancer in obese subjects, we found that in obese women specific obesity-related SNPs may prevent the prediction of breast cancer risk when adjustment by BMI. It would not imply that we should be obese to restrain the breast cancer risk. But if the valid mechanisms in obese populations against cancer were conclusively assessed, we might be able to offer treatment approaches. Obviously, more studies are necessary to clarify the effect of obesity-related polymorphisms in the prevention of breast cancer.

Keywords: Breast cancer risk, FTO gene, polymorphism

Corresponding author Email address: mina19921371@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:251

Effect of DMSO on VEGF production in THP1 monocytic cells in vitro

Fatemeh Hajighasemi[1], Shaghayegh Tajik[2]
[1] Department of Immunology, Faculty of Medicine, Shahed University, Tehran, Iran
[2] Immunology, Asthma and Allergy Research Institute, Tehran University of Medical Sciences, Tehran, Iran

Objective: Vascular endothelial growth factor (VEGF), as a cytokine has an important role in inflammation, tumor angiogenesis, invasion and metastasis. Moreover overexpression of VEGF in leukemic patients has been reported. Dimethyl sulfoxide (DMSO) is a solvent with anti-inflammatory and antioxidant activities. Moreover epigenetic modification by DMSO has been revealed. In this study the effect of DMSO on VEGF production in THP1 human acute monocytic leukemia cells THP1 monocytic cells has been investigated in vitro.

Material and Methods: THP1 monocytic leukemia cells were cultured in complete RPMI medium. The cells at logarhytmic growth phase were stimulated with PMA at optimum concentration and then incubated with different doses of DMSO (0.01-1%). The level of VEGF secreted in the cell culture supernatants was measured with enzyme-linked immunosorbent assay kits.

Results: DMSO significantly decreased the PMA - stimulated VEGF production in THP1 monocytic leukemia cells dose-dependently.

Conclusion: The results of this study suggest that DMSO could be a possible VEGF suppressor. Therefore the anti- tumor and anti-angiogenic properties of DMSO may be partly due to its inhibitory effects on VEGF production. Besides DMSO might be a good therapeutic candidate for malignant diseases in which VEGF are over-expressed. Further study for identification of DMSO effects on other angiogenic and tumor promoting markers are warranted. Also DMSO might be valuable for preparing of new medications in treatment of leukemia and other VEGF related disorders. Furthermore THP1 monocytic leukemia cells could be useful tools for screening of VEGF modulators.

Keywords: DMSO, VEGF, THP1cells

Corresponding author Email address: Fatimahajighasemi@gmail.com

ID:252

Serum levels of calcium, zinc and vitamin D, but not magnesium, are correlated with inflammatory and atherogenesis indices in polycystic ovary syndrome patients

Sahar Mazloomi[1], Narges Alizadeh[2], Reza Hajihosseini[3], Faranak Sharifi[4]
[1] Student Research Committee, Hamadan University of Medical Science, Hamadan, Iran
[2] Kurdistan University of Medical Sciences
[3] Payam-e Noor University of Tehran
[4] Clinical Endocrinology, Metabolic Diseases Research Center, Zajan University of Medical Sciences

Objective: Polycystic ovarian syndrome (PCOS) is associated with an increased number of cardiovascular risk factors and atherogenesis. A possible correlation between serum level of magnesium, calcium, 25 (OH)D and zinc with cardiovascular disease was recorded. But the correlation of these minerals with inflammatory and atherogenic indices was not assessed in the PCOS patients, controlled by dietary intake. We aimed to explore the potential relationships between serum zinc, magnesium, calcium and vitamin D with inflammatory and atherogenic indices in PCOS patients controlled by dietary intake.

Material and Methods: A case-control study with 103 PCOS patients and 206 healthy controls matched by age and BMI wasconducted.

Results: There was a significant increase in serum TG/HDL-C ($p=0.001$), LDL-C/HDL-C ($p=0.01$), TNF-α, IL-6 and hs-CRP ($p<0.001$), as well as a significant decrease in adiponectin to leptin ratio ($p<0.001$) in the PCOS compared to healthy control group. Serum levels of calcium, zinc and 25 (OH)D had significant effect on adiponectin to leptin ratio ($p=0.004$, $p=0.03$ and $p<0.001$), adjusting for other variables. Serum zinc had significant effect on IL-6 and TNF-α levels ($p=0.004$ and $p=0.01$, respectively). Higher serum zinc level decreases IL-6 and TNF-α by 88% and 89%, respectively. Serum calcium had significant effect on TG/HDL-C ratio ($p=0.02$). Calcium decrease this ratio by 63%, adjusted for other variables. No significant correlation was seen between serum magnesium level and athrogenic indices and/or inflammatory markers in the PCOS group.

Conclusion: Results provide clues to element treatments in the PCOS patients. Calcium, zinc and vitamin D supplementation may decrease inflammation and risk of atherogenesis in this group.

Keywords: polycysticovary syndrome, inflammation, atherogenesis, zinc, magnesium

ID:253

Preparation of 17-AAG loaded poly(ε-caprolactone)-poly(ethylene glycol) Nanofibers for Targeting Hsp90 Gene Expression in A549 Lung Cancer Cells

Sona Talaei[1], Hassan Mellatyar[1], Nosratallah Zarghami[1]
[1] Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: The expression of heat shock protein 90 is increased in tumors such as lung cancer cells. 17-allylamino-17-demethoxygeldanamycin (17-AAG) with binding to ATP–binding pocket of Hsp90, inhibits formation multi-chaperone complex of Hsp90 that leads to degradation of the Hsp90 client proteins such as hTERT by ubiquitin–proteasome system. Poor water-solubility of 17-AAG is a key limitation for its clinical application. In current study to improve the solubility of 17-AAG, we developed implantable 17-AAG-loaded PCL-PEG nanofibers.

Material and Methods: For this purpose, 17-AAG-loaded PCL-PEG nanofibers were successfully fabricated by electrospinning method and characterized using Field Emission Scanning Electron Microscopy (FE-SEM) and Fourier Transform Infrared (FTIR). To assess cytotoxic effects of 17-AAG-loaded PCL-PEG nanofibers and free 17-AAG, a colorimetric cell viability (MTT) assays were performed. Cells were treated with equal concentrations of 17-AAG-loaded PCL-PEG nanofiber and free 17-AAG and Hsp90 gene expression levels in the two groups was compared by real-time PCR. The effect of 17-AAG and 17-AAG loaded PCL-PEG nanofiber treatment on telomerase activity was monitored by TRAP assay.

Results: MTT assay confirmed that 17-AAG-loaded PCL-PEG nanofiber enhanced 17-AAG cytotoxicity in A549 cells. This finding was associated with decrease of Hsp90 gene expression and telomerase activity.

Conclusion: The results demonstrated that 17-AAG-loaded PCL-PEG nanofibers are more effective than free 17-AAG in down-regulating Hsp90 expression and inhibition telomerase activity. Therefore, PCL-PEG nanofiber could be superior carrier for this kind of hydrophobic agents.

Keywords: Lung Cancer, Hsp90, 17-AAG, PCL-PEG nanofiber

Corresponding author Email address: sonatalaye@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:254

The effect of vinorelbine on High-Mobility Group protein N2 and induction of apoptosis in lung cancer A549 cells

Maryam Salarian[1], Azra Rabbani-Chadegani[1]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Vinorelbine is a Vinca alkaloid antitumor drug, widely used in the treatment of cancers such as advanced non-small cell lung cancer. The main mechanisms of vinorelbine cytotoxicity is due to its interactions with tubulin and chromatin components. High-Mobility Group protein N2 participate in the processes such as transcription and DNA repair. Therefore, this study focuses on the effect of vinorelbine on non-histone chromatin proteins such as HMGN2 protein.
Material and Methods: The cells were exposed to various concentrations of vinorelbine and the viability determined by MTT assay. HMGN2 proteins were extracted from the control and drug-treated cells and analyzed by immunoblot. HMGN2 gene expression was studied by Real-time PCR. For morphological study, cells were stained with Acridine orange/ethidium bromide. To determine the percentage of apoptotic cells flow cytometry with annexin V/PI was performed.
Results: The results obtained from MTT assays showed that viability of A549 cells decreased in a dose- and time- dependent manner with IC50 value of 0.5 µm after 48 hours of exposure. The content of HMGN2 decreased on SDS-gel upon increasing drug concentration and western blots confirmed it but HMGN2 release into extracellular space was not detected. Moreover, Real-time PCR showed that the expression of this gene was decreased by increasing vinorelbine concentration. Acridine orange/ethidium bromide staining of cells revealed morphological changes such as chromatin condensation and nuclear fragmentation indicating occurrence of apoptosis and necrosis. The flow cytometry results showed increased in the percent of apoptotic cells and necrotic cells as the drug concentration increased.
Conclusion: In conclusion, vinorelbine affects HMGN2 of A549 cells preceding the cells into apoptosis and necrosis. The mechanism of action is possibly through the direct interaction of vinorelbine with HMGN2.The other possibility is compaction of chromatin under exposure to vinorelbine which inhibits chromatin transcription and replication.

Keywords: HMGN2, apoptosis, vinorelbine, A549

Corresponding author Email address: anitasalarian@yahoo.com

ID:255

Targeting HSP90 gene expression by 17-DMAG loaded poly(ε-caprolactone)-poly(ethylene glycol) electrospun nanofibrous scaffolds in A549 lung cancer cells

Hassan Mellatyar[1], Sona Talaei[1], Nosratallah Zarghami[1]
[1] Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Up-regulation of HSP90 gene takes place in lung cancer cells. Therefore, targeting the HSP90 in lung cancer may be promising step in lung cancer therapy. The present study aimed to evaluate the efficiency of implantable 17-dimethylaminoethylamino-17-demethoxy geldanamycin (17-DMAG)-loaded poly(ε-caprolactone)-poly(ethylene glycol) (PCL-PEG) nanofibers to increase the anti-cancer effects via inhibition of HSP90 expression and telomerase activity.
Material and Methods: For this purpose, 17-DMAG-loaded PCL-PEG nanofibers were successfully fabricated via electrospinning technique and characterized using Field Emission Scanning Electron Microscopy (FE-SEM) and Fourier Transform Infrared (FTIR). Colorimetric MTT metabolic activity assay was used to determine the drug cytotoxicity. Also, the expression levels of HSP90 gene in the A549 cells seeded on the scaffolds were assessed using real-time RT-PCR. The effect of 17-DMAG and 17-DMAG loaded PCL-PEG nanofiber treatment on telomerase activity was monitored by TRAP assay.
Results: Taking into account drug load, IC50 was significantly decreased in 17-DMAG-loaded PCL-PEG nanofibers in comparison with free 17-DMAG. This finding was associated with decrease of HSP90 gene expression and telomerase activity.
Conclusion: 17-DMAG-loaded PCL-PEG nanofiber can be more effective than free 17-DMAG in down-regulating of HSP90 expression and inhibition telomerase activity, at the same time exerting more potent cytotoxic effects. Therefore, PCL-PEG could be a superior carrier for this type of hydrophobic agent.

Keywords: Lung Cancer, Hsp90, 17-DMAG, Nanofiber

Corresponding author Email address: Hasan_rova@yahoo.com

ID:256

The Study of DNA methylation patterns of prodynorphin gene (PDYN) promoter in morphine tolerant rats

Sara Edalat Behbahani[1], Zahra Khoshdel[1], Mir Behrad Aghazadeh Ghadim[1]

[1] Department of Biochemistry and Research Centre for Psychiatry and Behavioural Sciences, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Background and aims: The repeated administration of morphine may result in the development of morphine tolerance, which involves the altered expression of numerous genes, including PDYN in the lumbar spinal cord. In the light of this fact, the present study evaluated the expression of PDYN gene at mRNA level in the spinal cords of tolerant rats.We also assessed the methylation status of the promoter region of this gene.

Material and Methods: The Tolerance was induced by administration of intrathecal (i.t) morphine (22 nmoles) once daily from days 1-10. It should be mentioned that nociceptive testing was performed daily by the tail-flick test. Moreover, the real-time PCR was performed to assess changes in the expression of PDYN gene.Additionally, the status of gene promoter methylation was determined by MS-PCR on DNA samples modified by sodium bisulfite.

Results: Our results revealed that the level of PDYN mRNA was significantly up-regulated by the repeated morphine administration as compared to those in the saline group. Furthermore, we did not find significant differences between methylation status of promoter regions of the PDYN gene either in morphine tolerant rats or in saline-injected animals.

Conclusion: In summary, our data suggest that morphine tolerant rats show increased mRNA expression of the PDYN gene in the lumbar spinal cords. The evidence also suggests that the methylation status of PDYN promoter region inthespinal cord has not contributed to morphine tolerance.

Keywords: Morphine tolerance, PDYN, Epigenetic, Methylation

Corresponding author Email address: sara_1547@yahoo.com

ID:257

The protective role of the variant rs3088442 in the 3´UTR of the SLC22A3 gene in type 2 diabetes: a possible contribution of microRNA-147

Abdolkarim Mahrooz[1], Mohammad Bagher Hashemi-Soteh[1], Maryam Ghaffari-Cherati[2], Ahad Alizadeh[3]
[1] Molecular and Cell Biology Research Center, Mazandaran University of Medical Sciences, Sari, Iran
[2] Department of Clinical Biochemistry and Genetics, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran
[3] Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Objective: A guanine to adenine substitution in the variant rs3088442 created a microRNA (miR-147) binding site in the SLC22A3 messenger RNA, which resulted in a reduction in the expression of this gene. Considering the important roles of organic cation transporter 3 (OCT3) encoded by SLC22A3 in the transfer of various endogenous and exogenous compounds and its wide tissue distribution, in this study, therefore, we investigated whether this variant influence susceptibility to T2D in patients newly diagnosed with T2D.

Material and Methods: The case control study comprised of 150 newly diagnosed T2D patients diagnosed based on the WHO criteria and 152 control subjects. The genetic analyses were made by the restricted fragment length polymorphism (RFLP) after PCR amplification.

Results: The association of the rs3088442 variant with T2D showed a significant odds ratio (OR) for the A carrier genotypes (AG + AA) vs. GG genotypes (OR=0.37, p<0.001). There was a statistically significant higher OR for A carriers vs. GG homozygotes in both men (OR=0.37, p=0.036) and women (OR= 0.38, p=0.001). A carriers also had a significantly lower OR vs. GG homozygotes in the BMI <30 kg/m2 group (OR= 0.23, p<0.001) compared with the BMI ≥30 kg/m2 group (OR= 0.67, p= 0.34). In addition, A allele carriers had significant ORs vs. GG homozygotes for both the age <50 years group (OR= 0.31, p= 0.016) and the age ≥50 years group (OR= 0.47, p= 0.008).

Conclusion: Our findings provide evidence for the protective role of the variant rs3088442 in susceptibility against T2D. The association of the A allele of rs3088442G>A with T2D become weaker in obese people than that of non-obese. The variant rs3088442 as a genetic marker may potentially assist in the identification of individuals at increased risk of T2D, and this would help to design targeted preventive programs. However, further research in different populations with a larger sample size is strongly recommended to confirm and clarify the role of this variant in susceptibility to T2D.

Keywords: SLC22A3, Organic cation transporter, rs3088442, type 2 diabetes, Genetic variant

Corresponding author Email address: amahrooz@mazums.ac.ir

ID:259

The roles of Long Non-Coding RNAs in DNA Damage Response, Oxidative Stress, and Cancer Progression

Sadra Samavarchi Tehrani[1], Hossein maghsoudi[1], Ansar Karimian[1], Bahman Yousefi[2], Hadi Parsian[3]
[1] Student Research Committee, Babol University of Medical Sciences, Babol, Iran
[2] Molecular Medicine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran
[3] Cellular and Molecular Biology Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Objective: Long non-coding RNAs (lncRNAs) are a novel class of ncRNAs that implicated in regulating gene expression. Recently, studies have suggested that dysregulation of the lncRNAs is contributed to cancer initiation and progression. The inability of cancer cells in taking care of DNA damages can lead to cancer progression. DNA damage response (DDR) pathway is a sophisticated network directly identifies a huge number of disruptions in DNA structure, stability, and integrity. DDR-induced expression of lncRNAs can provide a regulatory mechanism that controls the expression of DNA damage responsive genes. DNA damage changes the expression of a different lncRNAs at multiple levels including transcriptional regulation, post-transcriptional regulation. Moreover, LncRNAs play key roles in cellular response to stressful conditions. In this review, we will focus on the roles of the different lncRNAs in various human cancers and discuss the association between the lncRNAs expression with the DDR and oxidative stress that is involved in pathophysiological and physiological intra- and extracellular damages.

Material and Methods: Databases including PubMed, Scopus and Google Scholar were used to search eligible studies. Finally, approximately 180 article was reviewed.

Results: Targeting DNA repair machinery has been a hot topic in anti-cancer therapy in the last decades. LncRNAs are involved in different genomic processes and recent research has shed light on their involvement in cancer progression. Hence, numerous lncRNAs have been indicated to confer chemoresistance on cancer cells by improving DNA repair, modulating the cellular apoptosis rate and affecting the EMT process.

Conclusion: The increase in our knowledge of the molecular cross-talks between DNA damage response, oxidative stress and lncRNAs will provide an invaluable insight into the drug discovery campaigns around the world, hopefully in the coming years.

Keywords: Long non-coding RNAs, DNA damage response (DDR), oxidative stress

Corresponding author Email address: Tehranisadra94@gmail.com

ID:260

Functional hepatocyte-like cells derived from human adipose tissue derived stem cells

Nahid Davoodian[1], Sahere Rouzbehan[1], Zahra Shabani[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Human adipose tissue derived stem cells (hADSCs) are considered as a promising candidate for cell therapy of end-stage liver diseases. They possess the special affinity to acquire hepatocyte functions alongside of longer culture period and higher proliferation compared to mesenchymal stem cells (MSCs) derived from other sources. So far, wide varieties of strategies have been used for in vitro stem cell differentiation toward hepatocytelike cells. However, hepatic differentiation status of these cells has not been sufficient for clinical use, mainly because their metabolic activities are not fully induced. The aim of the present study was to explain a new protocol for the efficient hepatic differentiation of hADSCs.

Material and Methods: hADSCs were obtained from human adipose tissue and were cultured in hepatic differentiation medium containing fibroblast growth factor 4 (FGF4), hepatocyte growth factor (HGF), dexamethasone and oncostatin M up to 21 days. Afterwards, the hepatic functionality of differentiated cells was evaluated by analyzing specific hepatocyte genes and biochemical markers at different time points of differentiation induction.

Results: qRT-PCR analysis revealed significant up regulation of ALB, AFP, CK18, CK19 and HNF4a expressions in differentiated cells. Moreover, positive staining was detected for ALB and AFP using immunocytochemistry assay whereas negative control stained negatively. Also, the finding of glycogen deposits in differentiated cells and urea production suggested that most of cells differentiated into hepatocyte-like cells.

Conclusion: Summing all, our present report has provided a simple protocol for differentiation of hADSCs into functional hepatocyte-like cells.

Keywords: Human adipose tissue derived stem cells (hADSCs), Hepatic differentiation, Hepatocyte-like cells

Corresponding author Email address: Nahid_Davoodian@yahoo.com

ID:261

Association of serum calcium and hematological factors with body mass index and head circumference in preterm infants

Nahideh Tahmasebpour[1], Somaye Sadat Heidary[1], Fariba Pishbin[1], Ebrahim Abbasi Oshaghi[1], Monireh Taghizadeh Maleki[2], Roghayeh Shahabi[2]

[1] Department of clinical biochemistry, Hamadan university of Medical Science, Hamadan, Iran

[2] Women's Reproductive Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Preterm birth is defined as delivery of a baby before 37 weeks of pregnancy. Preterm delivery rate in Iran was estimated to be 12–13% in 2016. Although most preterm babies survive, they are at increased risk of neurodevelopmental impairments and respiratory and anemia complications. Also the length of pregnancy can affect the anthropometric and biochemical parameters. This pilot study was aimed to assess anthropometric parameters and their relation to hematological factors and serum calcium concentration.

Material and Methods: Blood samples for biochemical and hematological factors assay were obtained from preterm (n = 20) and term newborns (n = 25) within the first 2 h of life and before milk feeding or energy intake. The Relationship between total serum calcium concentration and hematological factors with body mass index (BMI) and head circumference was evaluated and compared in term and preterm infants.

Results: BMI, head circumference, calcium and hematological parameters were measured in all studied infants. A significant correlation was observed between BMI and head circumference and maturity (r = −0.33, P = 0.04). Serum calcium concentration was positively correlated with gestational age, BMI and head circumference (r = −0.31, P = 0.05). However, when term and preterm infants were analyzed independently, RBC count was correlated with head circumference (r = −0•31, P = 0•05) and body length (r = −0•33, P = 0•04) only in the term infant group. Conclusion Preterm infants are more exposed to development problems than term infants.

Conclusion: Our findings showed that prematures had lower BMI and head circumference than matures. Serum calcium concentration was associated with gestational age, BMI and head circumference but, in the case of RBC count, no correlation was observed in preterm infants. More studies are needed to explain the cause of these correlations and possible mechanisms involved in preterm complications.

Keywords: Preterm infants, Hematological factors, Body Mass Index, Head circumference

Corresponding author Email address: tahmasebpour.3089@yahoo.com

ID:262

Analysis of hyperglycemia toxicity and quercetin antioxidant effects on m-TOR and Nrf-2 gene expression in HepG2 Cell Line

Amir Yarahmadi[1], Fatemeh Zal[1,2], Fatemeh Khademi[1], Zohreh Mostafavi-Pour[1]

[1] Biochemistry Department, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

[2] Infertility Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: The most important characteristic of diabetes is hyperglycemia. Hyperglycemia can cause oxidative stress during diabetes. It has been shown that some types of cancers are more common among patients suffering from diabetes mellitus. In this study we aimed to identify the mechanisms underlying glucose-induced oxidative stress and ameliorating effects of quercetin (Q) by investigating the m-TOR and Nrf-2 expression as central molecules involved in cancer.

Material and Methods: HepG2 cells were cultured with different concentrations of glucose (5.5, 30, and 50 mM) and/or Q (25 µM) for 48 and 72 h. Effects of glucose and/or Q on m-TOR and NRF-2 gene expression were assayed by Real-Time PCR.

Results: Real-Time PCR data showed that after treatment of HepG2 cells with 30 and 50 mM of glucose for 48h, an increase in m-TOR expression accrued, although after 72 h, only 30 mM had an increasing effect. At 50 mM, glucose-induced NRF-2 gene expression after both 48 and 72 h treatment. The results also showed that 25 µM of Q reduced m-TOR and NRF-2 expression at both 30 and 50 mM after 48 and 72 h incubation.

Conclusion: The efficacy of quercetin in HepG2 cells on the expression level of m-TOR and Nrf-2 in vitro suggests that Q has potential influence on reducing oxidative stress caused by hyperglycemia and during diabetes may be able to modulate some carcinogenic signaling pathways.

Keywords: Hyperglycemia, Quercetin, m-Tor, Nrf-2, HepG2 cells

Corresponding author Email address: yarahmadiA961@mums.ac.ir

ID:263

A clinical comparison of LDL-cholesterol direct measurement versus Friedewald calculated

Azam Karkhaneh[1], Asma Kheirollahi[2], Farahnaz Behnam[1]

[1] Reference Laboratory, Iranian Social Security Organization, Tehran, Iran

[2] Department of Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Increased plasma low-density lipoprotein cholesterol (LDL-C) is one of the strongest risk factor for coronary artery disease. Therefore, the measuring method must be able to detect clinically important changes. In addition to the direct homogenous assay, LDL can be calculated by Friedwald formula (FF) (total cholesterol (TC) minus high-density lipoprotein (HDL)-cholesterol minus triglycerides (TGs)/5 in mg/dl). However, validity of Friedewald formula in patients with different levels of serum triglyceride is ambiguous.

Material and Methods: 667 outpatient with overnight fasting was included in the study. The serum concentrations of triglycerides, total cholesterol, HDL-C and LDL-C measured using enzymatic methods with an automatic analyzer (Hitachi 902) and also the LDL-C was calculated by FF. The TG values were divided into five strata (<50, 51-150, 151-300, 301-400, and >401 mg/dl) and we compared LDL calculated by FF and LDL measured directly, across various strata of TG.

Results: The accuracy of the Friedwald calculation was not acceptable in five strata of triglyceride concentrations. While higher level of TG (>300) underestimates the LDL calculated by FF, the estimated LDL-C for lower level of TG strata (<300) was higher than LDL measured directly.

Conclusion: According to the results, the Friedwald calculation is not very accurate in comparison with the direct method and the Friedwald estimation should be interpreted with caution at high level of TG.

Keywords: LDL-C, Homogenous assay, Friedwald formula, Triglyceride

Corresponding author Email address: akbio89@gmail.com

ID:264

Investigating the anticancer secondary metabolite production by Dendrostellera lessertii cell culture technique

Seyed-Erfan Moussavi-Torshizi[1], Razieh Yazdanparast[1]
[1] Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: 3-Hydrogenkwadaphnin (3-HK) is a novel diterpene ester which is isolated from the leaves of Dendrostellera lessertii (D. lessertii) with anticancer properties. 3-HK is present at extremely low concentrations in the nature-harvested plants. This study was aimed to investigate the efficiency of plant cell culture for the production of this compound.
Material and Methods: Plant tissue culture was used to obtain callus (plural: calli). Thin layer chromatography (TLC) was then performed on ethanol extract of the calli to determine the most productive callus. These calli were chosen to be utilized in plant cell culture. The biological activity of the cell cultures medium was investigated every week for 60 days with brine shrimp lethality assay (BSLA) and MTT assay (K562 and 4T1).
Results: After 48 days, the lethal concentration 50 (LC50) reached 3 µl.ml-1 in BSLA and inhibitory concentration 50 (IC50) reached 20 µl.ml-1 in MTT assay for K562 and 30 µl.ml-1 for 4T1 cell lines. Furthermore, megakaryocyte differentiation was observed in K562 cells after 24h of treatment.
Conclusion: This study has shown that a biological active compound is produced and released from the cells to the medium, which shares the 3-HK properties. These data suggest that 3-HK production can be achieved through plant cell culture.
Keywords: 3-Hydrogenkwadaphnin, Dendrostellera lessertii, anticancer secondary metabolite, Plant cell culture
Corresponding author Email address: ryazdan@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:265

Molecular Epidemiology of Rabies Virus Based on the Glycoprotein Gene in West Azarbaijan, Bushehr and Hormozgan; 2005 to 2016

Arefeh Vaziri[1], Fatemeh Jahanbakhsh[2], Iman salahshourifar[1]
[1] Department of Genetic, Faculty of Basic Sciences, Science and Research branch, Islamic Azad University, Tehran, Iran
[2] Rabies Reference Center, Virology Department, Pasteur Institute of Iran

Objective: Rabies virus (RABV) is a prototype of Lyssavirusgenus in the Rhabdoviridae family; the glycoproteins of this virus are considered as important structure in the development of infection. Rabies, as a zoonosis disease, is an acute lethal encephalomyelitis that affects mammals including humans. The aim of this study was phylogenetic analysis of rabies virus in samples collected from three provinces of Iran in last decade.

Materials and Methods: Brain tissue of 33specimens of different animals from West Azerbaijan, Bushehr and Hormozgan between 2005 and 2016 were included in this study from the bio-bank of the Rabies department. To investigate genotype, groups and subgroups of these samples molecular epidemiologic methods were used based on the sequence of glycoprotein gene.

Results: Overall 27 FAT confirmed rabies positive brain specimens were extracted, using RT-PCR Glycoprotein were amplified. Full or partial part of Glycoprotein was sequenced and aligned Phylogenetic analysis done using MEGA v.6.0. The samples were assigned into the 3 clusters by phylogenetic typing using Mega 6 software. isolates belonging to the first cluster were identical to Iran\'s samples genetically, all 27 samples, except for two samples, in the second cluster related to isolates of West Azerbaijan province, and showed similar patterns as Turkey isolates. The third cluster, which is different from the two other clusters in terms of phylogenetic patterns, included only two samples and were similar to isolates from Egypt and Brazil.

Conclusion: Most of the samples were divided into Middle East 2 (ME2) and Midlist 1 (ME1) subgroups. There are two samples (cows) and (dogs) from West Azerbaijan belonging to Africa 4 (AF4) subgroup, no cases relating to this virus has been reported in Iran until now. AF4 is a subgroup of Cosmopolitan Rabies subgroup that is common in the Middle East. The confirmatory +result is that the samples obtained from the three provinces were divided into three distinct groups.

Keywords: Rhabdoviridae, Phylogenetic, Glycoprotein, Molecular Epidemiology, Rabies

Corresponding author Email address: arefe.v.t@gmail.com

ID:266

Effect of different preservation methods on allograft skin

Atefe Ghahremanloo[1], Abolfazl Nosrati Tirkani[2], Daryoush Hamidi Alamdari[3], Seyed Isaac Hashemy[3]
[1] Department of Medical Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Laboratory of stem cell, Department of Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran
[3] Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: It has been estimated that the 150000 cases were hospitalized yearly in Iran because of burn. The damaged area should be covered quickly and both the infection and fluid loss should be restricted. Human allograft skin is considering the one of the best treatments for burn wound, plastic and reconstructive surgery. Due to the increased demand for skin transplantation, storage and evaluation of graft viability are considered as an important issue for the skin banks worldwide. The used methods for skin storage are based on whether the skin should be retained viable or not. In general, two methods for skin storage were recruited includes viable skin and non-viable skin methods. In the non-viable skin method, glycerol is used as a fundamental culture medium supplement, but in the viability method, RPMI or DMEM are used as the main medium at 4°C in the refrigerated method or DMSO is used at -80°C to -120°C in the cryopreservation methods. In the refrigerated method, skin graft has the most viability while the Cryopreservation method is preferred for long time storage of viable skin grafts and prevention of contamination. The purpose of this literature review is to analyze the methods of preserving and storing skin allograft in the world. *Conclusion:* According to the studies, there is a direct relationship between the level of skin viability and successful skin graft transplantation.

Keywords: allograft skin, skin transplantation, burning wound, cryopreservation

Corresponding author Email address: ghahremanloua961@mums.ac.ir

ID: 269

Screening of Phage Displayed Peptide Library to select PDL-1 Specific Peptides

Raheleh Tooyserkani[1], Mohammad Javad Rasaee[1], Mojgan Bandehpour[2]
[1] Jalal Al Ahman Highway, Tarbiat Modares University, Facualty of medical sciences, Department of Medical Biotechnology
[2] Shahid Beheshti University of Medical Sciences

Objective: Phage display is exploited as a potential technique to discover specific peptide antagonists against different tumor antigens. PDL-1, mainly involved in immune checkpoint pathway, is tailored as an antigen to target tumor specifically. Upon interaction with PD-1 receptor on tumor infiltrating T-lymphocytes, it triggers an inhibitory signal to suppress T-lymphocyte function. This results in immune system failure to eradicate tumor. Therefore, blocking PDL-1/PD-1 interaction serves as an effective approach in cancer immunotherapy, as it has demonstrated significant therapeutic output.
Material and methods: Herein, we selected peptides against Fc- conjugated PDL-1 using an M-13 phage library presenting 12-mer random peptides. We adapted a solution- based panning strategy using protein G- coated paramagnetic beads. Four rounds of panning were performed. In the second and fourth rounds, negative selection was done to remove protein G and Fc bound phages, respectively. To improve panning stringency, target concentration was decreased from 500ng to 62.5 ng while detergent concentration was increased round by round. Binding capacity of selected peptides were evaluated in polyclonal phage ELISA at the end of panning rounds. Furthermore, 9 positive plaques from the fourth round were sequenced to check whether a consensus binding sequence has been emerged between selected peptides.
Results: The adapted panning strategy was successful to enrich highly specific peptides with desirable binding affinity since ELISA signal was significantly increased in sequential rounds. Also a consensus binding motif was observed between most of the selected peptides which proved to bind to a site similar to PD-1 binding site on PDL-1.
Conclusion: Several peptide candidates with the consensus motif would be further analyzed through in silico approaches to select the best binder with regard to affinity and binding energy. Furthermore, inhibitory potential assays would be performed in vitro and in vivo.

Keywords: PDL-1, Phage Displayed peptide Library, Peptide, Antagonist, Cancer Immunotherapy
Corresponding author Email address: ra.tooyserkani@modares.ac.ir

ID:270

Utilization of Scaffold Free 3D Cell Culture System to Study the Growth Kinetics and Drug Response of Spherical Breast Cancer Model

Sahar Moradimehr[1], Shiva Akbari-Birgani[1]
[1] Department of Biological Science, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

Objective: Three-dimensional (3D) cell culture, scaffold-based and scaffold-free, is increasing in use today because of its ability to mimic in vivo condition. Cell-cell and cell-ECM interactions establish a 3D communication network maintaining the tissue specificity and homeostasis. Under 3D culture, cancer cells can generate the tumorsphere; a model for study of cancer.

Material and Methods: Herein, we used a scaffold-free method to generate the mammospheres from MCF-7 cell line to determine the growth and evaluate their drug resistance. In order to generate the mammospheres, MCF-7 cells were seeded with different cell number then their growth kinetics and cell viability were studied using light microscopy and Hoechst/PI staining. The cell viability of the 2D and 3D cultured cells was measured using MTT assay in the presence of a pro-apoptotic compound; Actinomycin-D. Then the mammospheres were treated with Actinomycin-D at the determined IC50. Afterward, their growth kinetics and cell viability were studied again.

Results: The growth kinetics shows that the best growth curve is obtained from mammospheres generated by fewer seeded cells, so the study was continued with the minimum cells. The obtained IC50 for 3D culture is higher than 2D. Mammospheres treatment showed growth inhibition and decrease in cell viability but in a very slow rate during a week.

Conclusion: Totally, this study shows that cells in the mammosphere have higher drug resistance in comparison to the cells cultured in 2D. It is suggested that this observation is due to the comprehensive cell-cell communication in 3D systems which is missed in 2D systems.

Keywords: Cancer, Mammosphere, 3D cell culture, Drug resistance

Corresponding author Email address: s.moradimehr@iasbs.ac.ir

ID: 272

Effect of Boswellia Carterii on Morphology, Growth Kinetics, and Cytogenetic of Hamster Embryonic Fibroblasts

Mahboobeh Zarei[1], Safoura Sameni[1], Davood Mehrabani[2]

[1] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

[2] Burn and Wound Healing Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Boswellia carteri (frankincense) is a gum resin of Burseraceae family with many therapeutic applications. Its positive effects on epithelial treatment have been shown. The aim of this study was to investigate the effect of Boswellia carterii on morphology, growth kinetics, and cytogenetics of hamster embryonic fibroblast cells.

Material and Methods: Hamster embryos with the age of 8-11 days of pregnancy, as the mid-gestation, were used as the source of embryonic fibroblasts. They were cultured in α-MEM media until 4th passage. After expansion in 24-well plates, frankincense essential oil in concentration of 1:100,000, was added to the media to evaluate its effects. The growth curve and cell doubling time were determined. Karyotyping analysis was done for chromosomal stability.

Results: The finding of this study revealed that Frankincense can accelerate the growth kinetics of hamster embryonic fibroblasts at the dose of 1:100,000 without any changes in chromosomal stability or morphological modification.

Conclusion: Boswellia carteri increases the proliferation rate of hamster embryonic fibroblasts, without any change in the chromosomal stability. Therefore, they may be safely used in the media if higher proliferation is needed in a shorter time interval.

Keywords: Boswellia carteri, cell growth, Hamster, Embryonic fibroblasts

Corresponding author Email address: mahboobehzarei930@gmail.coml

ID:274

The effect of FADS2 gene rs174583 polymorphism on desaturase activities, fatty acid profile, insulin resistance, biochemical indices and incidence of Type 2 Diabetes

Leila Mazoochian[1], Morteza Pourfarzam[1], Hamid Mir Mohammad Sadeghi[2]
[1] Department of Clinical Biochemistry and Pharmaceutical Biotechnology, School of Pharmacy and Pharmaceutical Sciences, Isfahan, Iran
[2] Department of Pharmaceutical Biotechnology, School of Pharmacy and Pharmaceutical Sciences, Isfahan, Iran

Objective: In this study, we investigated the associations of erythrocytes fatty acid composition and activities of delta-5 desaturase and delta-6 desaturase, with T2D risk to determine if rs174583 polymorphism of FADS2 gene had any effect on these associations.

Material and Methods: Fatty acid profile of erythrocytes was determined using gas chromatography mass spectrometry (GCMS) in 95 T2D patients and 95 apparently healthy subjects. The genotypes of SNP of FADS2 gene were determined using the PCR-RFLP technique. Other biochemical parameters were measured in the serum using standard analytical procedures.

Results: Delta 6 desaturase (D6D) activity was increased ($p<0.001$) and, Delta 5 desaturase (D5D) activity was decreased in T2D patients ($p<0.001$) compared to controls. Insulin resistance index (HOMA-IR) was positively correlated with D6D ($r= 0.34$, $P<0.001$) and negatively correlated with D5D ($r= -0.19$, $P=0.02$). Palmitic acid ($p<0.001$) and dihomo-gamma-linolenic acid ($p=0.03$) were higher and linoleic acid ($p<0.001$) and arachidonic acid ($p<0.001$) were lower in T2D patients. The distribution of rs174583 genotypes which includes: C/T, C/C, and T/T was not different in the two groups ($p=0.63$).

Conclusions: In the population studied, there was a strong association between the distribution of rs174583 genotypes and the erythrocytes fatty acid composition and delta-5 and delta-6 desaturase activities. However, there was no association between the distribution of rs174583 genotypes and the biochemical parameters studied, i.e. HOMA-IR and the lipid profiles, except TG in T2D patients. In addition, the distribution of rs174583 genotypes did not differ significantly between T2D patient and controls and it did not appear to be an association between rs174583 SNP and incident of type 2 diabetes in the population studied.

Keywords: fatty acid desaturase, single nucleotide polymorphism, fatty acid profile, ,

Corresponding author Email address: leilamazoo@yahoo.com

ID:276

Evidences of Rabies Among Mongooses in Iran

Zahra Emami[1], Fatemeh Jahanbakhsh[2]
[1] Science and Research Branch, Islamic Azad University
[2] Pasteur Institute of Iran, Center for Reference and Research on Rabies

Objective: Rabies is a dangerous disease which causes acute encephalitis in the animals and human. Rabies is endemic in Iran, sylvatic and urban epidemiologic cycles are existing together. While dog is the reservoir of urban rabies, sylvatic rabies reservoir(s) is still unknown in the country. Increasing mongoose rabies among reported rabies cases in southern of the country has led to the study of the genetic diversity of rabies among mongooses in this region.
Material and Methods: A total of 26 new isolates obtained from north and south of Iran collected from 2005-2016, full length nucleoprotein were sequenced for 20 isolates and partial N gene for 6 isolates; including %42 (11) domestic animals, %35 (9) dogs and %23 (6) were wild animals (1 Jackal,1 wolf and 3 mongooses). Sequences were analyzed using maximum-likelihood phylogenetic method with representative viruses from all over the world.
Results: Our study revealed that all isolate of the present study clustered in two major clusters (ME1a and ME2) of cosmopolitan lineage. Iranian mongooses' sequences clustered in ME1a, the group that closely related to the wildlife adapted rabies.
Conclusion: It seems there is no epidemiological connection between Iranian mongoose isolates and mongoose isolates from other part of the world.

Keywords: Rabies, molecular epidemiology, Iran, phylogenic analysis

Corresponding author Email address: Jahanbakhsh@pasteur.ac.ir

ID:280

Trimethylamine-N-Oxide Induce the Expression of Toll like Receptor 4 in Murine Macrophage Cell line

Zakaria Vahabzadeh[1], Mohammad Moradzad[1]
[1] Liver& Digestive Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran

Objective: The exact mechanism by which gut microbiota-dependent trimethylamine-N-oxide (TMAO) induces inflammation and foam cell formation during atherosclerosis is not well understood. Activation of toll-like receptor 4 (TLR4) on macrophages has been shown to initiate a signaling pathway which resulted in to production of pro-inflammatory cytokines. The present study was designed to evaluate the expression of TLR4 at protein and mRNA levels in macrophages.
Material and Methods: J774A.1 murine macrophage cell line were treated with different concentration (37.5, 75, 150 and 300 μM) of TMAO for 24 h. The cells were also treated with tunicamycin, as a positive control for stress. Western blotting and RT-qPCR was used to evaluate the expression of TLR4 at protein and mRNA levels respectively. MTT assay was also used to monitor the viability of cells during different treatments.
Results: Unlike tunicamycin, high dose of TMAO significantly increased TLR4 at both protein and mRNA levels compared to the control cells ($p<0.05$). The viability of treated cells was higher than 96% and no cell death occurred.
Conclusion: Our results provide findings to contribution and alteration of TLR4 as a cell surface receptor in response to abnormal activation of macrophages by TMAO.

Keywords: Toll-like receptor 4, Atherosclerosis, Trimethylamine-N-Oxide, Macrophages
Corresponding author Email address: zakariav@yahoo.com

ID:281

Induction of osteogenic differentiation in osteosarcoma cells by poly (ethylene glycol)-coated hydroxyapatite

Azadeh Izadi[1], Azadeh Meshkini[1], Mohammad H. Entezari[1]
[1] Ferdowsi University of Mashhad

Objective: Hydroxyapatite nanoparticles have extensively been used in biomedical fields such as drug delivery system, tissue engineering, and bone reparation. Up to now, several methods have been employed for the synthesis of hydroxyapatite nanoparticles such as wet chemical deposition, biomimetic depositional sol-gel route and etc. The aim of this study was to synthesize poly (ethylene glycol)-coated hydroxyapatite (PEG@HAP) nanoparticles by the hydrothermal method and to evaluate their biological effects on osteosarcoma cells.

Material and Methods: PEG@HAP nanoparticles were synthesized by the hydrothermal method and characterized by XRD and FT-IR techniques. To detect the cytotoxic effect of nanoparticles on osteosarcoma cells (Saos2), MTT assay was utilized. The cellular morphology of Saos2 cells was observed by phase contrast microscope. Osteogenic differentiation was evaluated by the assessment of alkaline phosphatase activity (ALP).

Results: The XRD pattern of nanoparticles showed the formation of single-phase hydroxyapatite, and the spectrum matched well with the JCPDS value (09-0432). The FT-IR spectrum showed the adsorption the band at 604 cm-1 which is related to the bending vibration of phosphate groups and the band at 1044 cm-1 which is attributed to the stretching vibration of phosphate groups. The sharp absorption band at 3570 cm-1 corresponds to the stretching vibration of OH groups. Based on MTT assay and microscopic images, PEG@HAP nanoparticles increased the proliferation of Saos-2 cells at concentrations of 10 and 50 µg/ml while no significant effect was observed at higher concentrations up to 150 µg/ml. Moreover, it was found that PEG@HAP nanoparticles have ability to induce osteogenic differentiation in Saos-2 cells which was quantified by ALP activity. A significant increase was observed in ALP activity in Saos-2 cells as they were treated with PEG@HAP nanoparticles.

Conclusion: Based on the obtained results, PEG@HAP nanoparticles possess high potency for the induction of osteogenic differentiation and could be considered as an appropriate biomaterial for cancer therapy.

Keywords: Osteosarcoma, Hydroxyapatite, MTT assay

Corresponding author Email address: a.meshkini@um.ac.ir

ID:282

MAA and SBA histochemical studies in human stomach adenocarcinoma

Fatemeh Momen Eslamyie ee[1], Jina Khayatzadeh[1], Fatemeh Eslami Muhammadi[1], Aria Jahani Moghadam[1], Sara Ghodrati[1], Minoo Gohari[1], Alireza Khooyi[2], Alireza Fazel[3]
1 Department of biology, Mashhad branch, Islamic azad university, Mashhad, Iran
2 Department of pathology, Mashhad University of Medical Sciences, Mashhad, Iran
3 Department of Anatomy and Cell Biology, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Stomach adenocarcinoma is the second most common cancer in Iran. In this cancer, genetic and morphological changes occur in glandular stomach cells. In this study, we have evaluated the changes of some terminal and glycoconjugate in different degrees of stomach adenocarcinoma.
Material and Methods: Tissue samples of 40 stomach adenocarcinomas and normal tissues were selected from pathology Department of Imam Reza Hospital. H&E stained tissue slides were restudied and the adenocarcinomas were graded sections were stained with SBA and MAA (conjugated with HRP) lectins and Alcian blue pH 1, 2.5 for microscopically observation.
Results: ositive response to Alcian blue pH 1, was seen in the stroma of normal mucosa and cancer tissues, but normal glandular cells and cancer cells with different degrees of differentiation showed negative response. In Alcian blue pH 2.5 the response in normal glandular cells were intense but it decreased by the tumor progression. The response of normal glandular cells in comparison with cancer cells was not significant in SBA lectin histochemistry staining and also no reaction was observed in normal and cancer cells with MAA lectin histochemistry.
Conclusion: Genetic changes in gastric cancer cells probably resulted in reduction of carboxylated mucusubstances in comparison with healthy samples and not production of sulfated mucusubstances in these cells. It also seems that the two terminal sugars that have specific attachment to SBA and MAA (sialic acid α2-3 galactose/GalNAC and α and β GaL<α and β-GaLNAC) lectins don't have an important and fundamental role in cellular interactions and special biological behaviors which result from neoplastic changes in gastric glandular cells. It seems that each glycoconjugate follows a special pattern according to its specific role in different grades cancer so it may be the pathologic diagnostic marker.
Keywords: alcian blue, stomach adenocarcinoma, lectin histochemical
Corresponding author Email address: fateme7603@gmail.com

ID:283

Spectroscopic study of the binding affinity of Alimta with DNA in the solution

Sepide Alinia[1], Azra Rabbani-Chadegani[1]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Alimta (pemetrexed disodium) is an anticancer drug widely used in the treatment of lung cancer. Alimta acts as antifolate which inhibits several folate-dependent enzymes, leading to a global reduction in DNA synthasis. In eukaryotes, genetic material (DNA) is complexed with histones and other nuclear proteins producing a defined structure known as chromatin. One of the most potent target of anticancer drugs in the cell is DNA molecule. To date there is no research about the interaction of Alimta with DNA. The aim of this study was to evaluate the binding affinity of Alimta anticancer drug to DNA.

Material and Methods: The present study focuses on the binding affinity of Alimta to DNA molecule employing spectroscopic techniques such as circular dichroism (CD) and thermal denaturation (Tm).

Results: The results showed that the binding of Alimta to DNA reduced absorbance at both 260 and 210 nm with different extents. Melting temperature (Tm) of DNA exhibited hypochromicity without any shift in Tm value. The binding of the drug induced structural changes in both positive at (275) nm and negative at (245) nm extremes of CD. In the presence of Alimta molar ellipticity is decreased at positive extreme and ellipticity at negative extreme becomes more positive.

Conclusion: From the results it is concluded that Alimta as a potent anticancer drug represents high binding affinity to DNA, suggesting DNA molecule as one of the target of Alimta cytotoxicity.

Keywords: Alimta, DNA, Circular dichroism, Thermal denaturation

Corresponding author Email address: sepide.alinia92@ut.ac.ir

ID:284

In vitro interaction of anticancer drug Levofloxacin with DNA

Marjan Mohammadifar[1], Azra Rabbani-Chadegani[1]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Levofloxacin is a fluoroquinolone antimicrobial agent which exhibits broad-spectrum bactericidal activity, recently the anticancer effect of Levofloxacin has been reported and shown contributions to deeper insight into the mechanism of action Levofloxacin. The interaction of this class of antibiotics with DNA might be important for a better understanding of their therapeutic efficacy.
Material and Methods: In this study the interaction of Levofloxacin with DNA has been assayed by Thermal denaturation analysis, UV/vis spectroscopy and circular dichroism.
Results: Results imply that the structure of DNA alters in both positive at (275 nm) and negative at (245 nm) extremes of circular dichroism spectra after interaction with Levofloxacin. The UV absorption spectrum of DNA in the presence of Levofloxacin was decreased at both 260 and 210 nm. In thermal denaturation study of the binding of DNA to Levofloxacin revealed that the drug band to DNA and reduced absorbance at 260 nm (hypochromicity).
Conclusion: The data suggested that one of the most important target of anticancer drug Levofloxacin is DNA and it may affect cancer cells by possibly intercalating and changing the structure of target DNA.
Keyword: Levofloxacin, DNA, anticancer drugs, spectroscopy analysis
Corresponding author Email address: marjan.bio1992@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID: 285

Oligonucleotide aptamers: potential novel molecules against viral hepatitis

Mina Mirian[1]
[1] Department of Pharmaceutical biotechnology and Isfahan Pharmaceutical Sciences Research Center, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, I.R. Iran

Objective: Viral hepatitis, as an international public health concern, seriously affects communities and health system. In recent years, great strides have been taken for development of new potential tools against viral hepatitis. Among these efforts, a valuable strategy introduced new molecules called "aptamers". Aptamers as potential alternatives for antibodies could be directed against any protein in infected cells and any components of viral particles.
Material and Methods: In this review, we will focus on recent advances in the diagnosis and treatment of viral hepatitis based on aptamer technology.
Results: In recent years, various types of aptamers including RNA and DNA were introduced against viral hepatitis. Some of these aptamers can be utilized for early and precise diagnosis of hepatitis infections and other group selected as therapeutic tools against viral targets. Designing diagnostic and therapeutic platforms based on aptamer technology is a promising approach in viral infections. The obtained aptamers in the recent years showed obvious potential for use as diagnostic and therapeutic tools against viral hepatitis.
Conculosion: Although some modifications to increase the biostability and half-life of aptamers are underway, it seems these molecules will be a favorable substitute for monoclonal antibody in near future.
Keywords: Aptamer, Hepatitis B, Hepatitis C, SELEX
Corresponding author Email address: mina.mirian@yahoo.com

ID:286

The effect of dacarbazine on histone H1 subtypes expression and content in lung cancer A549 cells

Homa Esfahani[1], Azra Rabbani-chadegani[1]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Dacarbazine is an antitumor drug which is used for the treatment of malignant metastatic melanoma and Hodgkin's disease. Dacarbazine is a cell-cycle nonspecific antineoplastic agent, which functions as an alkylating agent that binds to specific sections of DNA and prevents cell division, resulting in cell death.H1 and related linker histones are important both for maintenance of higher-order chromatin structure and for the regulation of gene expression, however, its role in diseases, such as cancer, remains understudied. In this study we obtain the effect of dacarbazine on histone H1 subtypes expression and content in lung cancer cells.

Material and Methods: The cells were exposed to various concentration of dacarbazine and the viability was assessed by MTT assay. The cells were stained with ethidium bromide /acridin orange and examined with fluorescence microscope. Histone H1 proteins extracted from drug-treated and the control and analysed by western blotting also expression of H1 (H1.1 and H1.2) proteins were examined by real-time PCR.

Results: The result from MTT assay were showed that dacarbazine decreased cell survival of non-small lung cancer cells in a dose- and time-dependent manner. Dacarbazine, at 5 µM showed significant reduction in the content of histone H1.1 when analysed on SDS-PAGE and western blot and its mRNA expression level reduced. Whereas, the content of intracellular H1.2 protein and mRNA expression level slightly changed. The morphological experiment showed occurance of apoptosis in dacarbazine treated cells.

Conclusion: In conclusion, the result obtained from this study suggests that dacarbazine represents apoptotic effect on A549 cells. Histone H1.1 protein plays an important role in this process and can be considerd as a target for dacarbazine.

Keywords: histone H1, chromatin, dacarbazine, lung cancer,

Corresponding author Email address: homaesfahani@ut.ac.ir

ID: 287

The Effect of Hydro-alcoholic Herbal Extracts on Nitric Oxide Production by Endothelial Cells

Samira Barangi[1], FahimehNourbakhsh[1], Mohammad Soukhtanloo[2]

[1] Department of Pharmacodynamics and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences

[2] Department of Clinical Biochemistry, School of Medicine, Mashhad University of Medical Sciences

Objective: Endothelium-derived nitric oxide (NO) is a potent signaling molecule in the cardiovascular system and has different roles in many diseases such as hypertension and atherosclerosis. These disease relate to impaired vascular NO synthesis from L-arginine by nitric oxide synthases (NOS) and is converted to nitrite and nitrate in oxygenated solutions. The inducible isoform of NOS (iNOS) generates large amounts of NO upon stimulation over a prolonged period of time. Recently, herbal plants are widely used for treatment of hypertension. In this study, we investigate the effect of extract of Trigonellafoenum-graecum, Nigella sativa, Allium sativum, and Cannabis sativa on NO production by the endothelial cells 3T3 cell line.

Material and Methods: The hydro-alcoholic extract of plants was prepared by methanol:water (1:1 v/v). The powdered extract dissolved in water and the 3T3 cell line was treated with plant extracts. The clarified supernatant of the culture was used for evaluation of quantitative changes in NO production using Griess test.

Results: The hydro-alcoholic extract of plants was prepared by methanol:water (1:1 v/v). The powdered extract dissolved in water and the 3T3 cell line was treated with plant extracts. The clarified supernatant of the culture was used for evaluation of quantitative changes in NO production using Griess test.

Conclusion: This study suggested that the T.foenum extract can significantly increase NO concentration in cell culture and the increase in nitric oxide production is because of the presence of diosgeninT.foenum extracted that can be used for treatment of hypertension.

Keywords: Nitric oxide, plant extracts, Endothelial cells

Corresponding author Email address: barangis941@mums.ac.ir

ID:288

The role of long non-coding RNAs and autophagy in hepatocellular carcinoma: a review.

Samira Barangi[1], Fahimeh Nourbakhsh[1], Mohammad Soukhtanloo[2], Gholamreza Karimi[1]

[1] Department of Pharmacodynamics and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences

[2] Department of Clinical Biochemistry, School of Medicine, Mashhad University of Medical Sciences

Objective: Long non-coding RNAs (lncRNAs) promote or repress the physiological and pathological processes such as autophagy, as a catabolic process. Several studies have revealed autophagy has a double-edged sword role in cancer; suppresses tumorigenesis or promotes cancer progression. Hepatocellular carcinoma (HCC) is a highly malignant cancer with poor survival rate and the third-leading cause of deaths from cancer worldwide. The aim of this review is investigate the relationship between lncRNAs and autophagy in HCC. The lncRNA highly up regulated in liver cancer (HULC), an oncogenic lncRNA, overexpress in human HCC. HULC decrease the miRNAs expression cause to increased ubiquitin-specific peptidase 22 (USP22) and silent information regulator1 (Sirt1) by which activate autophagy through enhanced LC3-II/I, decreased p62 expression and increased Atg5 and Atg7 deacetylation. Moreover, HOX antisense intergenic RNA (HOTAIR), other oncogenic lncRNA, activates autophagy by up-regulating Atg3 and Atg7 expression and promotes cell proliferation in HCC. Enhanced autophagy is a multi-drug resistance (MDR) mechanism in HCC cells. Metastasis-associated lung adenocarcinoma transcript1 (MALAT1) can regulate MDR by down-regulates miR-216b as a tumor suppressive miRNA and increasing LC3-II levels in HCC. Antisense transcript of HNF1A (HNF1A-AS1), another oncogenic lncRNA in HCC, significantly promoted autophagy via increased LC3-II/I and Atg5 expression but reduced miR-30b. Furthermore, PTEN homolog pseudogene1 (PTENP1), as a tumor suppressive lncRNA, provoke autophagy by inhibited PI3K/Akt signaling pathway. Conclusion: According to lncRNAs role in autophagy, it seems that lncRNAs is an important diagnostic marker and potential therapeutic target for reducing HCC risk and improving HCC therapeutic efficacy.

Keywords: Long non-coding RNA, Autophagy, Hepatocellular carcinoma

Corresponding author Email address: barangis941@mums.ac.ir

ID:292

Improving soluble expression of a single-chain antibody fragment against human epidermal growth factor receptor 2 (HER2) by co-expression of chaperones

Amir Mirzapour Estabragh[1], Vajihe Akbari[1], Hamid Mir Mohammad Sadeghi[1]

[1] Department of Pharmaceutical Biotechnology, Isfahan University of Medical sciences, Isfahan, Iran

Objective: The human epidermal growth factor receptor (HER) family plays an important role in cell growth and signaling, and its expression is altered in many kinds of cancer cells. Antibody fragments can be substitutes for complete antibodies in many of their therapeutic and diagnostic applications. In previous studies, the therapeutic potential of an antibody fragments for treating HER2-related cancers has also been reported. However, the majority of anti-her2his-ScFv protein was expressed as inclusion bodies by Escherichia coli. Various methods have been proposed to stop or reduce the formation of inclusion bodies during the production of recombinant proteins. One of them is the co-expression of molecular chaperones with these proteins.

Material and Methods: The mixture of plasmids pKJE7 and pET22b-ScFv was transformed by the electroporation method to the cells of the E. coli strain BL21 (DE3). Bacteria harboring chaperone and ScFv gene were cultured and when the culture reached to OD600 of 0.5, arabinose was added to induce expression chaperone and IPTG (1mM) was used to express the ScFv protein. Then, bacterial cells were harvested and dispersed in a suitable buffer, and the cells were lysed by sonication. The soluble and insoluble fractions of cell lysate were separated by centrifugation and each part was purified using a Ni-NTA affinity column. To compare the expression level antibodies were used in each system of expression by SDS-PAGE and Western blotting assay, as well as the method of Bradford to determine protein concentration.

Results: Our results showed that the majority (80-90 %) of anti-her2his-ScFv was expressed as inclusion bodies and insoluble protein. however, co-expression of chaperones and anti-her2his-ScFv significantly increase soluble expression of anti-her2his-ScFv.

Conclusion: The results obtained in the present study indicate that co-expression of molecular chaperones pKJE7 will enhance solubility and as result the biological function of anti-her2his-ScFv expressed by E. coli.

Keywords: HER2, Single-chain variable fragment, Molecular chaperone, Inclusion bodies, Protein folding

Corresponding author Email address: Amirm2@ymail.com

ID:293

Zataria Multiflora Essenthial Oil Strongly Synergizes Human Prostate Carcinoma PC3 Cells to Doxorubicin-induced Growth Inhibitionand Apoptosis

Elaheh Zare[1], Sussan K. Ardestani[1]

[1] Institute of Biochemistry and Biophysics, Department of Biochemistry, University of Tehran, Tehran, Iran.

Objective: One of the biggest challenges in the treatment of prostate cancer is lowering the toxicity of doxorubicin. Tantalizing evidence shows that the natural compounds as combinatory therapy for cancer has been successful. In present study, Zataria Multiflora Essential Oil(ZEO)was concomitantly employed with doxorubicin in order to reduce the doxorubicin dosage and toxicity.

Material and Methods: The IC50 of ZEO and doxorubicin was determined by MTT assay. Combination assay was done by combining 26.3; 15; 7.5 µg/mL of ZEO and 0.78; 0.39; 0.19; 0.09µg/mL of doxorubicin. Cells were treated with ZEO or DOX either together or first with ZEO for 24 h then with DOX, or vice versa, for a total of 48 h, and viability were determined by MTT assay. The combination index (CI) was calculated by the Chou-Talalay equation (CI <1synergism; CI =1 additive effect; and CI >1 antagonism). In order to verify ZEO-DOX induced apoptosis use AnnexinV-FITC/PI staining.

Results: IC50 of ZEO and DOX in 48h was 26.3 and 1.89 µg/mL respectively. Also IC50 of ZEO and DOX can induce 44.4% and 48.64% primary and secondary apoptosis respectively. But in combination assay we find 15 µg/mL of ZEO and 0.19 µg/mL of doxorubicin together for 48 h with CI =0.35 has strong synergistic effect and it induce 41.4% in primary and secondary apoptosis compared to control.

Conclusion: The results showed that ZEO can act as an amplifier to sensitize cancer cells and heighten the efficacy of doxorubicin in lower dosage. It seems ZEO can be applied for the treatment of prostate cancer as combinatory therapy to enrich the armamentarium of therapeutic agents with acceptable safety and efficacy.

Keywords: Doxorubicin, Zataria Multiflora Essenthial Oil, Prostate Cancer, Synergy, Apoptosis

Corresponding author Email address: Elaheh.zare@ut.ac.ir

ID:294

Methadone induces necrotic-like cell death and increases the expression of the dnmt1 gene in 1321N1 cells (human astrocytoma)

Maryam Mazraesefidi[1], Mahdi Mahmoodi[1], Mohammadreza Mirzaii[1], Farzaneh Hosseini[1], Alireza Khoshdel[1], Mohammadreza Hajizadeh[1]

[1] Department of Clinical Biochemistry, Rafsanjani University of Medical Sciences, Rafsanjan, Iran

Objective: Epigenetic modifications, such as DNA methylation and histone modifications, are heritable and alter the phenotype while the DNA sequence remains unaffected. Epigenetic effects have been proposed to be produced by opioids, Especially Methadone. Methadone is a widely used therapeutic opioid in narcotic addiction and neuropathic pain syndromes.

Material and Methods: This in vitro study was performed using human astrocytoma (1321N1) cells. Cell viability was measured by MTT assay. Necrosis was determined by flow cytometry and DNA fragmentation in 1321N1 cells treated with 122 µg/mL (IC50) Methadone for 24 hours. Expression of epigenetic enzymes including, DNMT1 and TET1 were measured by realtime PCR.

Results: Our results showed Methadone-induced cell death seems to be related to necrotic processes rather than typical apoptosis also Methadone upregulated the mRNA expression of dnmt1 gene and It has no significant effect on the mRNA expression of tet1 gene.

Conclusion: present in vitro experiments showed that treatment with the opioid methadone was associated with an increased probability of hypermethylation. This strengthens the evidence that opioids interfere with mechanisms of classical epigenetics.

Keywords: Methadone, Epigenetic, Necrosis, DNMT1, TET1

Corresponding author Email address: mmazraesefidy@gmail.com

ID:295

In-vitro Screening for cholinesterase and antioxidant activities of thymus vulgaris from Lorestan

Masoume Falavand[1], Farideh Azarbani[1]

[1] Lorestan University

Objective: Cholinesteraseis a family of enzymes that catalyzes the hydrolysis of the neurotransmitter acetylcholine to acetic acid and choline. It involves two types: Acetylcholinesterase and butyrylcholinesterase (plasma cholinesterase). The aim of present study was to evaluate the chemical composition and antioxidant activity of the thymus vulgaris hydroalcoholic extract and its effect on the plasma cholinesterase enzyme activity.

Material and Methods: Thymus vulgaris was collected from Lorestan province and extracted by Maceration method. Theextract was analyzed using GC-MS spectrometer. Antioxidant activity of the extract was evaluated by 2, 2- diphenyl- 1- picryl hydrazyl (DPPH) assay. Plasma sample was taken from healthy volunteer donor and plasma cholinesterase activity was estimated by Ellman method.

Results: Thirty-seven components comprising 95.9% of the total extract were identified, of which 1, 2-Benzenediol (11.6%), 2-Methoxy- 4- vinylphenol (9.75%), 2(3H)- Furanone, dihydro - 4- hydroxy (8.05%), Hydroquinone (7.79%), 2, 6- dimethoxy Phenol, (7.50%) and p-Cymene (6.53%) were found to be the main components. The thymus vulgaris hydroalcoholic extract showed DPPH radical inhibition with IC50 value of 450 µg/ml. The extract at the 1 mg/ml concentration increased the plasma cholinesterase activity by 58.99% compared to control. The extract inhibitory and cholinesterase activation activities were concentration dependent.

Conclusion: Thymus vulgaris possesses potent antioxidant properties and significantly increase the plasma cholinesterase activity.

Keywords: Chemical composition, Thymus vulgaris, Antioxidant, Cholinesterase activity

Corresponding author Email address: masoume.falavand@gmail.com

ID:296

Invitro increased cholinesterase activity produced by extract of the chrysanthemum flowers from Lorestan

Masoume Falavand[1], Farideh Azarbani[1]

[1] Lorestan University

Objective: Plasma cholinesterase is a glycoprotein synthesized in the liver and found primarily in blood plasma. It is a serine hydrolase that catalyzes the hydrolysis of esters of choline. The objectives of this study were to evaluate the chemical composition and antioxidant activity of the chrysanthemum flower hydroalcoholic extract and its effect on the plasma cholinesterase activity in vitro.

Material and Methods: The Chrysanthemum flowers was collected from Lorestan province and extracted by Maceration method. Theextract was analyzed using GC-MS spectrometer. Plasma sample was taken from healthy volunteer donor, plasma cholinesterase activity was estimated by Ellman method and antioxidant activity determined by 2, 2- diphenyl- 1- picrylhydrazyl (DPPH) radical scavenging assay.

Results: Thirty-two components comprising 95.9% of the total extract were identified, of which 3,5-dihydroxy- 6- methyl-2, 3-dihydro- 4H- pyran- 4- one (24.32%), (E)- 2- Methylcrotonic acid (8.93%), 1- Pyrrolidine ethanamine (8.56%) and Thymol (5.41%) were found to be the main components. The hydroalcoholic extract showed DPPH radical inhibition with IC50 value of 480 µg/ml and at the concentration 1 mg/ml increased the plasma cholinesterase activity by 46.67% compared to control. The extract cholinesterase activation and antioxidant properties were concentration dependent.

Conclusion: Chrysanthemum flower extract exhibited significant plasma cholinesterase activation and antioxidant properties.

Keywords: Chrysanthemum, Chemical composition, Antioxidant, Cholinesterase activity

Corresponding author Email address: masoume.falavand@gmail.com

ID:298

Quercetin interacts with doxorubicin in a dose-dependent manner in ovarian cancer therapy

Mahdie Hemati[1], Ali Moradi[1]

[1] Department of Biochemistry, Facultyof Medicine, Yazd Shahid Sadoughi Medical Science University, Yazd, Iran

Objective: Ovarian cancer is one of the most common invasive types of cancer in women. To overcome multi-drug resistance (MDR) to Doxorubicin (DOX) as a chemotherapeutic drug, combination therapy has a special situation. Quercetin (QC) as a herbal medicine, is a phenolic compound that has antioxidant properties and anti-proliferative activity against many cancer cells. The aim of this study was to investigate the therapeutic effects of QC in combination with DOX in ovarian cancer cells**.**

Material and Methods: Human ovarian cancer cell line (OVCAR-3) was supplied from the Pasteur Institute of Iran (Tehran, Iran) and cultured in DMEM medium with 10% FBS (fetal bovine serum) (Gibco, Grand Island, USA) and penicillin-streptomycin (Gibco,Grand Island, USA) under standard condition (37°C and 5% CO2 in a humidified incubator). QC treatment at various concentrations (10, 20, 30 and 40 µg/ml) was examined in combination with different concentrations of DOX (0.03, 0.07, 0.15 and 0.31 µg/ml) by colorimetric MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) tetrazolium reduction assay.

Results: Unlike low concentrations (5 µg/ml –30 µg/ml) of QC augmented the cytotoxicity effects of DOX, high concentration (above 40 µg/ml) of QC resulted in varying degrees of attenuation of cytotoxicity of DOX.

Conclusion: These results suggest that QC at low concentrations synergistically promote the cytotoxicity effects of DOX and improve therapeutic index of DOX in ovarian cancer and also show during ovarian cancer treatment, combination regimens of high QC may reverse therapeutic response.

Keywords: Ovarian cancer, Quercetin, Doxorubicin, Synergism

Corresponding author Email address: m.hemati14@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:300

Nanomicelle curcumin induce MMP-2 and MMP-9 activity and expression in patients with coronary artery 300 disease

Marzieh mogharrabi[1], Mohammad soukhtanloo[1], Shima hasanzadeh[1], Hamidreza rahimi[1], Reza kazemi oskuee[1]

[1] Mashhad University of Medical Science

Objective: Curcumin (active ingredient of turmeric) is a potent natural anti-inflammatory agent, which can inhibit inflammatory pathways at appropriate concentrations. The present study is a clinical trial for investigating the effects of curcumin on activity and gene expression of MMP-2 and MMP-9. Inhibition of these enzymes plays a key role in stabilizing of atherosclerotic plaques.

Material and Methods: In this study, 70 patients with coronary artery disease (with 40-50% stenosis) randomly divided into two groups of curcumin (80 mg Nano micelle per day) and placebo for three month. In this study, activity levels of MMP 2 and MMP-9 in serum samples of patients were measured using the gelatin zymography assay before and after the intervention. MMP-2 and MMP-9 gene expression in peripheral blood mononuclear cells (PBMCs) was also analyzed by Real-Time PCR. Data were analyzed using SPSS 11.5 software and statistical significance was set at p value < 0.05.

Results: In this experiment, no significant differences was observed in age and sex of the patients in two groups. Enzyme activity and expression of MMP-2 and MMP-9 in two groups were not significant before the intervention ($p > 0.05$). After three months of medication, the expression of MMP-2 and MMP-9 produced by PBMCs, significantly decreased in curcumin group in comparison with placebo ($p<0.001$). Furthermore, zymographic analysis showed that the administration of curcumin significantly inhibited the activity levels of MMP-2 and MMP-9 in comparison with patients receiving placebo ($p<0.05$).

Conclusion: Our results indicated that curcumin can play a role in inhibiting the activity and expression of MMP-2 and MMP-9 and can prevent the rupture of atherosclerotic plaque by targeting of these enzymes. These results suggest that curcumin could be considered as an effective therapeutic agent in the treatment of CAD patients.

Keywords: Curcumin, matrix metalloproteinase, Coronary Artery Disease

Corresponding author Email address: SoukhtanlooM@mums.ac.ir

ID:301

Influencing factors on mitochondrial function as key mediator of glucose induced insulin release

Zahra Aghelan[1], Reza Khodarahmi[2], Abolfazl Nasiri[1]

[1] Clinical Biochemistry Department, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

[2] Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

Objective: Pancreatic β-cells recognize changes in blood glucose and release insulin to creat normoglycemia. Diabetes is a chronic disorder of insulin insufficiency leads to the disturbtion of glucose homeostasis and multiorgan problems. Since both prevention and treatment of type 2 diabetes should focus on mitochondrial targets for the improvement of nutrient stimulated insulin secretion, we decided that in this article review influencing factors on mitochondrial function as key mediator of glucose induced insulin release.

Material and Methods: About 110 articles with mitochondrial, diabetes and insulin keywords were studied from various databases including PubMed, ISI web of Knowledge, science Direct and Google Scholar that 85 of them were selected as references.

Results: The significant role of mitochondria is to provide controlling signals for the first and second phase of insulin secretion. All of the identified TCA cycle intermediates were identified as key components of biphasic insulin secretion, in particular for second-phase insulin secretion. The mitochondrial membrane potential (ΔψM), and its response to glucose, is the principal stimulus of mitochondrial ATP synthesis and is hence a central mediator of glucose induced insulin release. Also, changed mitochondrial dynamics in pancreatic β cells are seemed to trigger the development of type 2 diabetes mellitus.

Conclusion: The studies have the potential to enhance our understanding of the mechanisms mediating the triggering and the amplifying pathways of insulin release, which according to, will be helpful for understanding the mechanisms implicated in the progressive beta cell failure that results in type 2 diabetes.

Keywords: Diabetes, Insulin, Mitochondria

Corresponding author Email address: padidehbiochemist@yahoo.com

ID:304

Carbohydrate components in the process of esophageal carcinoma differentiation in human

Fatemeh Momen Eslamyie[1], Jina Khayatzadeh[1], Aria Jahani Moghadam[1], Fatemeh Eslami Muhammadi[1], Sara Ghodrati[1], Sepideh gohari[1], Alireza Khooyi[2], Alireza Fazel[3]

[1] Department of Biology, Mashhad Branch, Islamic Azad University, Mashhad, Iran

[2] Department of Pathology, Mashhad University of Medical Sciences, Mashhad, Iran

[3] Department of Anatomy and Cell Biology, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Change in cellular glycoconjugates, is one of the most important phenomenon in the process of cancerization and indicates abnormal biological behavior of tumoral cells.

Material and Methods: Tissue samples of 40 esophageal SCCs (10 patients in each differential grade) were selected from pathology department of Imamreza hospital. After identifying tumor differentiation grade, 5micron sections in Alcian Blue (pH 1 and 2.5) staining, for detecting Sulfated and Carboxylated Mucosubstances and in lectin histochemistry procedure, MAA and SBA, which specifically sugar residues, sialic acid α2-3 galactose/GalNAC and α and β GaL<α and β-GaLNAC were used. The intensity of the staining, which showed the concentration of the terminal sugar residues was studied.

Results: None of the specimens in various grades cancer represented Carboxylated and Sulfated Mucosubstances, which was the same as the normal tissue, although stroma of the tumor and esophageal mucousal glands showed positive reactivity. In results for MAA lectin showed, no specific terminal sugar residue of sialic acid α 2-3 galactose/GalNAC in normal epithelium, different degrees of SCC cells, stroma and esophageal mucousal glands. SBA lectin respond was increased by degrading tissue differentiation with the exception of undifferentiated grade.

Conclusion: It seems that in the process of cancerization of esophageal squamous cells, functional changes which result in producing Acidic Carboxylated and Sulfated Mucosubstances and also changes in the presence of specific terminal sugar residue, sialic acid α 2-3 galactose/GalNAC do not occur. Whereas, different in presence of terminal sugar, α and β GaL< α and β-GaLNAC, probably represent obvious and abnormal glycosilation of cellular proteins in the process of esophageal epithelium cancer**.**

Keywords: Squamous Cell Carcinoma (SCC), Glycoconjugates, MAA, SBA lectins, Alcian blue, esophagus

Corresponding author Email address: fateme7603@gmail.com

ID:306

Effects of Allium hirtifolium and vitamin E on cisplatin-induced nephrotoxicity in rats

Ali Mirzaei[1], Amir Parsa Davar[1]

[1] Yasuj University of Medical Sciences

Objective: Cisplatin is a highly effective chemotherapeutic agent used for treatment of many types of malignancies. The clinical use of cisplatin is highly restricted, because of its nephrotoxicity. In this study, the protective effect of Allium hirtifolium (A. hirtifolium) with high pharmacological properties against cisplatin-induced nephrotoxicity was investigated in rats.

Material and Methods: In the current study, the effects of A. hirtifolium hydroalcoholic extract and vitamin E (400 mg/kg, BW) were investigated against renotoxicity markers (creatinine (Cr) and blood urea nitrogen (BUN), inflammatory indices (tumour necrosis factor alpha (TNF-a), interleukin 6 (IL-6) and NO metabolite and oxidative stress indicators (malondialdehyde (MDA), reduced glutathione (GSH), total oxidant status (TOS) and total antioxidant status (TAS) in rats treated with cisplatin. Cisplatin was injected at a dose of 7 mg/kg, BW, on the sixth day of the experiment.

Results: At the end of the study on the eleventh day, treated rats with cisplatin exhibited renal dysfunction as evidenced by raise in BUN and creatinine and depleted of creatinine clearance level along with enhanced glucose excretion in urine compared with negative control rats. Biochemical study of kidneys in cisplatin group shown a change in oxidative stress biomarkers (increased MDA and TOS and decreased GSH and TAS activities, inflammatory indices (increase in tumor necrosis factor alpha (TNF-a), interleukin 6 (IL-6) and NO metabolite. Treatment with A. hirtifolium and vitamin E in rats significantly attenuated renal toxicity, oxidative stress, and inflammatory mediators compared with cisplatin group.

Conclusion: Administration of A. hirtifolium extract similar vitamin E exhibited a protective and repairing effect against renal histopathological injury induced by cisplatin due to their antioxidant and anti-inflammatory capacities**.**

Keywords: Cisplatin, Allium hirtifolium, nephrotoxicity

Corresponding author Email address: mirzaee3a2003@yahoo.com

ID:307

The effect of quercetin on oxidative stress factor and genes expression of PON1 and AhR in BDL cirrhotic rats

Ameneh Khodarahmi[1], Ali Moradi [1], Mahdieh Hemati[1]

[1] Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran

Objective: Quercetin is a major suppressor of liver fibrosis through its antioxidant and anti-inflammatory properties. Aryl hydrocarbon receptor (AhR) is a ligand-activated transcription factor that stimulates Paraoxonase 1 (PON1), the most important antioxidant enzymes, transcription activation in mouse liver. This study aimed to determine the protective effect of quercetin on hepatic damage via the gene expression of AhR and PON1in biliary duct ligated (BDL) fibrotic rat model.

Material and Methods: To accomplish that, male Wistar rats were divided into four groups (n=8 for each): sham, sham+quercetin (30 mg/kg per day), BDL and BDL+quercetin (30 mg/kg per day). We measured the MDA level and in hepatic tissue of four groups. The expression of AhR and PON1 were measured at the levels of gene by real-time PCR.

Results: Our results demonstrated that AhR and PON1 gene expression significantly reduced in liver tissue of BDL rats compared with sham group ($P<0.05$). However, treatment with quercetin increased gene expression of AhR and PON1 in the liver tissue of BDL+Q group compared with BDL group ($P<0.05$). The liver MDA level significantly increased in BDL rats compared with sham group ($p < 0.05$). It was found that quercetin could significantly decrease the formation of MDA in BDL-treated rats**.**

Conclusion: Quercetin demonstrated hepatoprotective activity against BDL-induced liver injury by influencing the gene expression of AhR and PON1.

Keywords: Querecetin, Oxidative stress, Bile duct ligation, Paraoxonase 1

Corresponding author Email address: ameneh.khodarahmi66@gmail.com

ID:308

The Comparative Effect of Eight Weeks Moderate and high- Intensity Resistance Training on Serum Concentrations of Myostatin in Old Wistar Rats

Zohre Shanazari[1], Mohammad Faramarzi[1], Ebrahim Banitalebi[1], Rohollah Hemmati[2]

[1] Department of exercise physiology, Shahrekord University, Shahrekord, Iran

[2] Department of Biology, Faculty of Basic Sciences, Shahrekord University, Shahrekord, Iran

Objective: One of the most important and prevalent disorders in elderly people is age-related muscular atrophy, or Sarcopenia. Sarcopenia is associated with a significant reduction in muscle strength and volume. The purpose of this study was to investigate the effect of two types of moderate and high intensity resistance training on serum levels of myostatin in elderly rats.

Material and Methods: 30 male Wistar rats (23 months old) were randomly divided into 2 experiment and one control group including moderate intensity Resistance training (n = 10), high intensity Resistance training (n = 10) and the control group (n = 10). Resistance training included 8 weeks of climbing a ladder with high intensity (80% MVCC) and moderate intensity (60% of MVCC) and 5 days a week. Next, the serum density of myostatin were measured using the ELISA method. The statistical analysis was performed using Mankwa test and SPSS statistical software with significance level of (P <0.05). Statistical analysis was performed using Mankwa\'s test with a significant level (P <0.05).

Results: The results showed that eight weeks of resistance training with two different intensities had a significant effect on myostatin levels in the elderly rats (P <0.05). Myostatin concentrations in both, high and moderate resistance groups decreased significantly after 8 weeks (P <0.05). However, there was no significant difference between the effect of high and moderate resistance training on myostatin levels.

Conclusion: It seems that resistance training can be recommended by changing the resting levels of factors associated with muscular atrophy as an effective training method for preserving or increasing muscle mass and muscle strength in elderly people.

Keywords: myostatin, Wistar rats, sarcopenia, muscle strength

Corresponding author Email address: md.faramarzi@gmail.com

ID:309

Life Psychosocial Stresses and Coronary Artery Disease

Fatemeh Meshkini[1], Maryam Sadat Shahidi[1], Saman Sargazi[1]

[1] Shahid Sadoughi University of Medical Science

Objective: It is hypothesized that the impacts of life events accumulate and can trigger and promote atherosclerosis in susceptible individuals. In the current study, the correlation of total life stressors during 1 year was investigated relative to coronary artery disease (CAD).

Material and Methods: The study population consisted of 148 males and 152 females aged 35-76 years. The subjects were classified as CAD cases and controls according to the results of coronary angiography. The severity of CAD was scored on the basis of the number and the extent of lesions at coronary arteries. The stressful events of life were assessed using Holmes-Rahe Questionnaire and was presented as total psychological stress scores per year (TPSS).

Results: The frequency of cigarette smoking, diabetes mellitus, and hypertension was more prevalent in CAD cases than control subjects. The levels of TPSS were increased in patients with CAD compared to the controls (160.3 ± 71.3 vs. 139.8 ± 66.5, P = 0.020). TPSS was also associated positively with the levels of uric acid, erythrocytes counts, erythrocyte sedimentation rate, aspirin consumption, and negatively with high-density lipoprotein-cholesterol and apo-AI. In logistic regression analysis, TPSS correlated with the occurrence of CAD by the odds ratio of 1.773 (1.073-2.930), P = 0.025, but the association was weakened after adjustment for classical risk factors, especially hypertension. TPSS exhibited significant association with the severity of CAD [F (3,274) = 2.6, P = 0.051].

Conclusion: The results suggest that TPSS are associated with the occurrence and severity of CAD significantly, but the association is not independent.

Keywords: Coronary artery disease, life events, psychosocial, stress

Corresponding author Email address: ftmeshkini_84@yahoo.com

ID:310

Antiproliferative activity and Apoptotic Properties of Dorema aucheri against human colorectal cancer cells 310

Ali Mirzaei[1], Soheila Ansari[1], Ghasem Ghalamfarsa[1], Zeynab Salehpour[1], Ebrahim Hosseini[1]

[1] Yasuj University of Medical Sciences

Objective: Colorectal cancer is one of the most prevalent malignancies in the world. Dorema aucheri is rich in phenolic compounds with antioxidant and antimicrobial activities. According to the side effects of current chemical chemotherapy and cytotoxic effects of Dorema aucheri, in the present study, the anticancer effects of hydroalcoholic extract of Dorema aucheri (HEDA) on two colorectal cancers (SW48 and SW1116) cells were investigated.

Material and Methods: The cells were exposed to different concentrations of extracts as well as vincristine sulphate for 24 hours. Cytotoxic activity of HEDA in colorectal cancers (SW48 and SW1148) was determined by the MTT assay at different concentrations. Apoptosis cells were stained with FITC-Annexin V and propidium iodide (PI) and assessed by flow cytometry. Quantitative real-time polymerase chain reaction (qRT-PCR) amplification was performed. The expression of the EGFR gene of HEDA was determined. The statistical analysis was carried out using analysis of variance (ANOVA).

Results: The IC50 values, of HEDA and vincristine sulphate, were determined 478.5 and 60 µg/mL in SW1116 cell line respectively. The IC50 values of HEDA and vincristine sulphate were reported also 531.8 and 90 µg/mL in SW48 cells, respectively in 24 hours. The rate of apoptosis in HEDA and vincristine sulphate was determined 21.8% and 15.5% in SW1116 cells respectively and also the rate of apoptosis in SW48 cells was found 62.5% and 41.4%, respectively. The expression of the EGFR gene in both cells treated with HEDA and vincristine sulphate was significantly lower than that of the control group ($P<0.05$). The reduction rate of SW48 cells was more than SW1116 cells ($P<0.05$).

Conclusion: The present results recommend that HEDA possess important anti-proliferative property. The viability and expression of the EGFR gene of SW48 and SW1148 cells was reduced after treatment with HEDA, and apoptosis in human colon carcinoma cell lines (SW48 and SW1148) was enhanced which suggested for further phytochemical analysis and mechanistic evaluation.

Keywords: Dorema aucheri, Apoptosis, colon cancer cell line SW48, EGFR gene

Corresponding author Email address: Mirzaee3a2003@yahoo.com

ID:311

Anticonvulsant Activity of aqueous root extract of Glycyrrhiza glabra in rats

Ali Mirzaei[1], Zeynab Salehpour[1]

[1] Medicinal plant Research Centre, Yasuj Medical Siences University , Yasuj, Iran.

Objective: Epilepsy is a major chronic brain neurological disease in the world. The aim of the present study was to evaluate of anticonvulsant properties of Glycyrrhiza glabra L. aqueous root extract (GGRE) on rats.

Material and Methods: The anticonvulsant activity of GGRE with two dose (300 and 600 mg/kg p.o.) were estimated using two in vivo models of epilepsy. Pentylenetetrazole (PTZ)-induced seizure (80 mg/kg, i.p.) and maximal electro shock (MES) induced convulsion (150 mA, 50 Hz, 0.2 sec) models were used in rats. Myoclonic and tonic-clonic seizures were controlled and the percent of mortality estimated. The effect of GGRE (450 mg/kg, o.p.) on malondialdehyde (MDA), superoxide dismutase (SOD), and catalase (CAT) of rat brain tissue homogenate was determined after PTZ- Induced Seizure. For analysis of data one-way ANOVA was used. Values are expressed as mean ± standard deviation (n = 3).

Results: All animals were shown seizure after PTZ and MES administration. The GGRE significantly increased the initiation time of myoclonic seizures in comparison with a normal group ($P<0.05$). In the duration of tonic-clonic seizures, decreased time for seizures was observed in diazepam, high dose, and a low dose of GGRE in comparison with control in both models of PTZ and MES ($P<0.001$). In rat brain tissue analysis, MDA was increased ($P < 0.001$), while SOD and CAT were decreased ($P < 0.001$) in PTZ-induced seizure compare to negative control. Administration of GGRE (450 mg/kg) was restored the enzymes activities and MDA level.

Conclusion: GGRE possessed protective anticonvulsant activity against generalized tonic-clonic and cortical focal seizures in PTZ and MES models and recovers free radical induced neuronal injury in PTZ-induced seizure. Therefore, suggests that the GGRE is useful in suppressing generalized tonic-clonic seizures and possible depressant action in the central nervous system.

Keywords: Anticonvulsant Activity, Glycyrrhiza glabra, Pentylenetetrazole-induced seizures (PTZ), maximal electro shock (MES) malondialdehyde (MDA), superoxide dismutase (SOD)

Corresponding author Email address: mirzaee3a2003@yahoo.com

ID:312

Aqueous extract of Datura Innoxia leaves interact with double-stranded DNA in solution

Elham Chamani[1], Khatereh Khorsandi[2], Fatemeh Tajik[1]

[1] Department of Clinical Biochemistry, Birjand University of Medical Sciences, Birjand, Iran

[2] Photodynamic Research Group, Medical Laser Research Center, ACECR, Tehran, Iran

Objective: The use of medicinal herb derivatives to synthesize drugs with fewer side effects and stronger therapeutic properties has been one of the main goals of the researchers around the world. Anticancer drugs including etoposide made from plant compounds. Datura Innoxia (from Solonacea family) is one of medicinal herbs that used for treatment of diseases. In the recent years, more attention has been paid to anticancer properties of Datura Innoxia. DNA could be one of the main targets of drug molecules in the cell, in the present study; we investigated the interaction of aqueous extract of Datura Innoxia (D.innoxia) leaves with double-strand DNA in solution.

Material and Methods: We firstly collected the leaves of Datura innoxia from the suburbs of Birjand (South Khorasan Province, Iran) in August-September. The leaves were separated and washed and the extract was obtained by maceration method. We also determined the level of total phenolic, flavonoids and tannin content of D.innoxia extract. The interaction of aqueous extract of D.innoxia leaves with double-stranded DNA was investigated by employing Ultraviolet/Visible (UV) and Circular Dichroism spectroscopy.

Results: Phytochemical screening results demonstrated high level of phenolic compounds in aqueous extract of D.innoxia leaves versus phenol and tannin compounds. Aqueous extract of D.innoxia increased the absorbance of double-stranded DNA in 210nm and 260nm and at high concentration shifted it to higher wavelength accompanying with hypochromicity. CD results also confirmed the effect of D.innoxia extract on DNA.

Conclusion: The results suggest that D.innoxia may exert its cytotoxic effect through interaction with double-stranded DNA and cellular components.

Keywords: Datura innoxia, Phenolic compounds, Double-stranded

Corresponding author Email address: chamani.ec@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:314

Evaluation of IL7Rα in Iranian HIV-1 infected patients

Maryam Adelipour[1], Shahab Falahi[2], Azra Kenar koohi[2]
[1] Abadan School of Medical Science, Abadan, Iran
[2] Department of Microbiology, Faculty of Medicine, Ilam University of Medical sciences, Ilam, IR Iran

Objective: IL-7 is a hematopoietic factor that has an important function in the CD4+ T – cell homeostasis. Any malfunction between IL-7 and IL-7 receptor can explain different rates of HIV progress to AIDS among HIV- infected patients. The aim of this study was analyzing IL-7 Rα polymorphism (the rs6897932 exon 6) based on ARMS (complete form) method in HIV-1 infected patients who received High Active Anti-retroviral Therapy (HAART).
Material and Methods: In this study 120 HIV-1 infected patients (40Female and 80Male) were enrolled to assess rs6897932 polymorphisms of IL-7 by Amplification refractory mutation system (ARMS)-PCR.
Results: 54 of patients (20female and 34 male) had C polymorphism and 63 patients (20 female and 43 male) had C/T polymorphism. Only 3 patients (Male) had T polymorphism.
Conclusion: All patients showing C polymorphism were under first-line antiretroviral therapy (ART) while patients with T polymorphism were under second-line regimen of treatment. There was no significant relationship between patients with T or C polymorphism and CD4 recovery; it can be owing to the very few number of patients with T polymorphism. Based on another study, the presence of T polymorphism may be associated with a high proliferation of the virus and rapid depletion of CD4 count, consequently, a failure in treatment.

Keywords: HIV-1, IL-7 R, CD4 count, polymorphism

Corresponding author Email address: Adelimaryam@rocketmail.com

ID:315

Effect of C-reactive protein on CEA expression in LS174T colorectal cancer cell line

Abbas Pakdel[1], Mousa Ghazi- khanloosani[1], Ahmad Reza Bandegi[1], Parviz Kokhaei[2]
[1] Department of Biochemistry, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran
[2] Cancer Research Center and Department Of Immunology, Semnan University of Medical Sciences, Semnan, Iran

Objective: Colorectal cancer (CRC) is a multi-stage disease, with several factors contributing to its occurrence. Epidemiological studies have shown that chronic inflammation and increas blood lipids are associated with increased incidence of cancers, including CRC. C-reactive protein (CRP) is a marker of systemic inflammatory. Carcinoembryonic antigen (CEA) is a glycoprotein that increase in many cancers, widely used as a tumor marker in cancers. To evaluate the effects of CRP on the CEA expression, important gene involved in the development of CRC, the CRC cell line, LS174T, was treated with the commercial CRP.

Material and Methods: LS174T cell lines treated with commercial CRP at different concentrations and times. The expression of CEA genes at the mRNA level was quantitatively compared using the qPCR. The CEA protein secretion in cell culture medium and CEA in cell lysates was measured using ELISA method.

Results: CEA measurement in supernatant showed a significant elevation in CEA secretion in 20 mg/L CRP ($p < 0.05$). In addition, CEA analysis in cell lysate was shown significant elevation ($P < 0.01$, $p < 0.001$ for 10 mg/L and 20 mg/ L CRP respectively). Quantitative analysis of CEA mRNA expression showed a significant increase in concentration dependent manner ($p < 0.05$ and $p < 0.001$ for 10 and 20mg/L CRP respectively). The expression and secretion of CEA at 10mg/L CRP over time have not shown significant differences.

Conclusion: Considering the effect of soluble CRP on the expression and secretion of CEA, this antigen may play an important role in the biology of CRC.

Keywords: Colorectal cancer, carcinoembryonic antigen, C-reactive protein

Corresponding author Email address: pakdel@semums.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID: 318

Contributing effect of CPF-7 and Magainin II peptides on STZ delivery to mouse pancreatic β cells

Nona Boostan[1], Razie Yazdanparast[1]
[1] Institute of Biochemistry and Biophysics, the University of Tehran, Tehran, I.R. Iran

Objective: Magainin II and CPF-7, initially known as antimicrobial peptides, have recently been categorized as anti-diabetic peptides. The current study was aimed to investigate the effects of the peptides on the severity of diabetes induced by STZ.
Material and Methods: The STZ induced diabetic mice were subjected to twice daily injection of each peptide for 4 consecutive weeks. The blood samples were obtained through orbital sinus blood collection. The oxidative stress status and glucose serum of each sample were evaluated using common routine procedures. The influence of the peptides on the integrity of pancreatic islet cells was achieved using immunohistochemistry (IHC) technique.
Results: The peptides significantly increased the water intake in diabetic groups compared to saline-treated diabetic animals. Intraperitoneal administration of CPF-7 and Mag II to the STZ-induced diabetic models not only displayed a similar pattern of glucose tolerance test in comparison to the diabetic control group but increased the blood glucose level as well. Furthermore, the oxidative stress status of pancreatic tissue induced by STZ was persisted even in the presence of the peptides based on the IHC data, implying that each of the peptides has potentiated the influence of STZ.
Conclusion: Despite the accumulated data in the literature concerning the anti-diabetic effects of many antimicrobial peptides, here we report the probable role of CPF-7 and Mag II in enhancing the permeability of cell membranes. This property might candidate each of the peptides as novel drug transporting agents pending further investigations.
Keywords: Antimicrobial peptides, diabetes, cell penetrating peptides, drug delivery
Corresponding author Email address: boostan.nona@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:319

Cloning and activity evaluation of the recombinant esRAGE: an in vitro and ex vivo study

Morteza heydari[1]
[1] Institute of Biochemistry and Biophysics. University of Tehran. Iran

Objective: The RAGE membrane receptor contains three parts: the extracellular part of RAGE receptor is consisted of 3 domains: type variable immunoglobulin and constant immunoglobulins named C1 and C2. The C1 and C2 domains are believed to be involved in ligand binding. The RAGE receptor also has a cytoplasmic domain that plays a vital role in the binding of signaling molecules. This domain is connected by a transmembrane section to the extracellular domain. It is known that long-term activation of RAGE receptor causes progression of chronic diseases such as diabetes, neurodegeneration, aging and inflammatory disorders. The esRAGE variant, the plasma soluble isoform, is the result of an alternative splicing of the original gene and it is devoid of both cytoplasmic and transmembrane sections.

Material and Methods: The RNA content of 100 mg human lung tissue was extracted by trizol reagent. In the next step, the cDNA library was created by RT-PCR. Using the two relevant primers, amplification of the product was performed. Then, the PCR product and PET plasmid were purified, followed by double digestions with NdeI and XhoI enzymes and ligation of the products using T4 ligase. BCl2 competent bacteria were prepared and transfected with the recombinant plasmid. Following IPTG induction, the desired protein was expressed and purified for further studies.

Results: In this report, we will discuss the effect of the recombinant esRAGE in its native and aggregated forms on the oxidative stress status of two human cell lines.

Conclusion: Our data indicated that under experiment diabetic environment, aggregation and cytotoxicity of recombinant esRAGE was augmented.

Keywords: RAGE, esRAGE, isoform, chronic diseases

Corresponding author Email address: heydari.morteza@ut.ac.ir

ID:320

The effect of mitoxantrone as an anticancer drug on hematopoietic stem cells of bone marrow cytotoxicity and HMGB1 protein

Hossein Dabbaghi[1], Azra Rabbani Chadegani[1], Hoda Gol Fakhrabadi[1]

[1] Department of biochemistry, Institute Biochemistry and Biophysics, University of Tehran, Tehran, Iran

***Objective*:** Severe bone marrow suppression and anemia are the main side effects of using anticancer chemotherapy drugs like mitoxantrone. In the present study cytotoxicity of mitoxantrone on the viability and chromosomal protein, HMGB1 of multipotent hematopoietic stem cells of mouse bone marrow was investigated to evaluate the mechanism of mitoxantrone side effects.

***Material and Methods*:** Non-adherent bone marrow cells obtained from male Balb/c and incubated 12h in the absence and presence of various concentration (0-22 µM) of mitoxantrone. Viability was determined by trypan blue exclusion and MTT assays. The control and treated cells were stained with Annexin V/ PI and detected by FAC scan flow cytometry. The high mobility group box 1 protein (HMGB1) cells was extracted and analyzed on SDS-PAGE and immunobloted.

***Results*:** The results revealed that mitoxantrone exhibited dose dependent cytotoxicity on the cells and upon increasing concentration of the drug viability of the cells decreased from 92% in the control to 53% in 2 µM of mitoxantrone. Annexin V/ PI analysis with flow cytometry showed that increasing the concentration drug from 2 µM to 5 µM, necrosis was increased from 10% to 20%. The content of HMGB1 protein was decreased on SDS-PAGE upon increasing drug concentration as western blot confirmed it, whereas its release into culture media was increased.

Conclusion: From the results it is concluded that mitoxantrone is cytotoxic for hematopoietic stem cells of bone marrow and proceed them to necrosis through release of HMGB1 into culture media. Its severe bone marrow suppression suggest that its usage in therapy must be down with caution.

***Keywords*:** Bone marrow suppression, Mitoxantrone, Hematopoietic stem cells, HMGB1 protein

Corresponding author Email address: Hossein.Dabbaghi@ut.ac.ir

ID:321

Study of the Interleukin 6 level in MS patients and compared with health individuals

Majid Karshenas[1], Noosha Zia-Jahromi[2], Elaheh Pourazizi[3]

[1] Islamic Azad University, Shahrekord Branch, Iran

[2] Department of Biochemistry, Faculty of Basic Sciences, Islamic Azad University, Shahrekord Branch, Iran

[3] Department of Biochemistry, Faculty of Basic Sciences, Islamic Azad University, Najafabad Branch, Iran

Objective: Multiple sclerosis (MS) is a chronic inflammatory disease of central nervous system (CNS) that its most important symptoms are including, demineralization of peripheral and central nerves, axon damage and their loses and consequently, various nervous disorders are appeared in correspondence to it. Cytokines play an important role in MS that are regarded as a great target for treatment interventions. Regarding that cytokines play an important role in MS and this matter considered as a great target for treatment interventions, this research aim at determining the Interleukin 6 serum level.

Material and Methods: In this study, 4 cc of the peripheral blood was taken from 40 health individuals and 40 individuals with MS. After separating serum using ELISA method, Interleukin 6 serum levels of sick and health individuals were studied.

Results: The results showed that the Interleukin 6 serum level is increased in patients with MS compared with health individuals.

Conclusion: We can use the Interleukin 6 as a biomarker for early diagnosis of MS disease.

Keywords: Inflammatory disease, Multiple sclerosis, Interleukin 6

Corresponding author Email address: majid.karshenas@yahoo.com

ID: 322

Changes in expression of Bax and Bcl-2 in K562 cells after treatment of aqueous extract of D.innoxia leaves

Elham Chamani[1], Setareh Javanshir[2], Kazem Dastjerdi[3], Zohreh Rezaei[4], Gholam Abass Mohamadi[2]
[1]Department of Clinical Biochemistry, Birjand University of Medical Sciences, Birjand, Iran
[2] Department of Clinical Biochemistry, Kerman University of Medical Sciences, Kerman, Iran
[3] Department of Medical Biotechnology, Birjand University of Medical Sciences, Birjand, Iran
[4] Department of Medical Genetics, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: Medical plants and their derivatives are effective in treatment of cancer by synthesizing drug compounds with strong anticancer activity and less side effects. Datura Innoxia is an annual herb that belong to the Solanacea family. It was prescribed widely as a medical plant for treatment of diseases including arrhythmia and coughing. Up to know, there has been no report on the toxic effect of Datura Innoxia on k562 cell line. In the present study, we investigated the changes in gene expression of Bax and Bcl-2 in K562 cell line, which treated with various concentration of aqueous extract of Datura Innoxia (D.innoxia) using Real-Time PCR quantitative methods.

Material and Methods: Datura innoxia plant is collected in August-September from surrounding areas of Birjand (South Khorasan province, Iran) and its leaves were dry far away direct radiation. then the extract was made by maceration methods. K562 cells, in the exponential phase, were treated with various concentration of aqueous extract of D.innoxai (0, 0.4, 0.6 and 1mg/ml) for 24 hours. Doxorubicin was used as an apoptotic-inducter. Eventually, the expression of two apoptosis related genes in treated cells evaluated by quantitative Real Time PCR analysis.

Results: In Result, the expression of Bax A in different concentration of extract significantly up-regulated in compare with control (cells . ($P<0.05$ fold changes 1.39, 1.4 and 1.38 respectively). In addition, the expression of Bcl-2 dramatically down-regulated in compare with control. ($P<0.05$ fold changes -5.95, -12.04 and -5.29 respectively).

Conclusion: Evidently, Datura innoxia extract increases the expression of Bax and decreases expression of Bcl-2 in K 562 cells after 24 hours treatment and these changes contribute the K562 cells to apoptosis induction.

Keywords: Datura innoxia, K562 Cells, Bax, BCl2

Corresponding author Email address: chamani.ec@gmail.com

ID:324

Effect of fingolimod administration on myelin repair and astrocytes activation of rat\'s optic chiasm in lysolecithin-induced focal demyelination animal model

Mona Hashemian[1], Maryam Ghasemi-Kasman[2], Hadi parsian[3]

[1] Student Research Committee, Babol University of Medical Sciences, Babol, Mazandaran, Iran

[2] Neuroscience reaserch center, Babol University of Medical Sciences, Babol, Mazandaran, Iran

[3] Department of Clinical Biochemistry, Babol University of Medical Sciences, Babol, Mazandaran, Iran

***Objective*:** Multiple sclerosis is a neurodegenerative disorder that occurs in 70 percent of people with visual impairment as the first symptom. In this study, the effect of oral administration of fingolimod on myelin restoration and astrocytes activation has been investigated in lysolecithin-induced focal demyelination model of optic chiasm.

***Material and Methods*:** Focal demyelination was induced by administration of LPC (1%, 2 µL) into the rat optic chiasm. Rats receive daily oral administration of fingolimod (0.3 mg/kg). Visual-evoked potentials (VEPs) recordings were performed for assessment the function of optic pathway on days 7 and 14 post lesions. Myelin specific staining and immunostaining against GFAP, and Iba 1 were also carried out for evaluating of myelination and astrocytes activation respectively.

***Results*:** Electrophysiological data indicated that fingolimod administration could significantly reduce the P1-N1 latency and increase the amplitude of VEPs waves compared to the saline group. Immunostaining against PLP, as mature myelin marker, showed that myelin repair was improved in animals received fingolimod treatment. Also, fingolimod effectively reduced the expression of GFAP and Iba 1 in optic chiasm.

***Conclusion*:** The present study indicates that fingolimod administration effectively enhances myelin repair and inflammation of rats optic chiasm.

***Keywords*:** Fingolimod, Lysolecithin, Optic chiasm, myelin repair, inflammation

Corresponding author Email address: Mona.Hashemian67@gmail.com

ID:325

Investigation of CCND1 gene expression in cancerous tissue compared to normal tissue in Iranian women with sporadic breast cancer by Real-Time RT PCR method

Safataj Neda[1], ketabchi Fatemeh[2], Hosseini Beheshti Farnaz[1], Salehi Mansoor[1]

[1] Department of Genetics and Molecular Biology, shool of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Medical Genetics Center of Genome, Isfahan University of medical Sciences, Isfahan, Iran

Objective: Breast cancer is the most common cancer and leading to death in women. This cancer is a highly heterogeneous disease which divided into several types such as LCIS, DCIS and invasive carcinoma. Cyclines are one of the most important cyclic controls of Cell division in breast. Cyclin D1 is one of the main regulators of cell cycle, which plays a role in regulating the cycle of the cell from stage G1 to S. Regarding the high prevalence of breast cancer among women and the importance of early diagnosis of disease in early stages using advanced molecular techniques and the importance of CCND1 gene as a prognostic factor in breast cancer, expression of CCND1gene in the cancerous tissue compared to normal tissue of women with sporadic breast cancer was investigated by Real Time RT PCR.

Material and Methods: Extracting of tissue samples (normal and cancerous tissue) with Thrysol, Total RNA, and after synthesis of CDNA, by Real Time RT PCR technique, examined CCND1 gene expression in women with sporadic breast cancer.

Results: Relative expression of CCND1 gene by Real Time RT PCR technique in cancerous tissues compared with normal tissue increased by 5.34-fold. Showed equality and a statistically significant difference in this case with P-value= P value = 0.002

Conclusion: Our study showed that there is a possible relationship between the high expression of CCND1gene and breast cancer and could be considered as a potential target for breast cancer treatment.

Keywords: Gene Expression, Breast Cancer, CCND1, Real Time RT PCR

Corresponding author Email address: Neda_safataj@yahoo.com

ID: 328

Tetanus neutralizing antibodies, Screening and panning of scFv antibody phage display

Hamideh Rouhani Nejad[1], Jalil fallah mehrabadi[1]

[1] Malek Ashtar University

Objective: Tetanus toxin is one of the most toxic substances which affects the central nervous system and causes severe muscle contraction. Therefore, rapid diagnosis and treatment of tetanus neurotoxins is very important. Now day, fully human monoclonal antibodies have been considered in the treatment of tetanus diseases due to lack of stimulation of immune response in the body and high efficacy. Herein, we first prepare the tetanus single chain human monoclonal antibody and so the antibody production has been investigated using phage display method.

Material and Methods: For this purpose, the library was constructed using a pSEX81 expression phagmid vector and enrichment was performed using a phage display method in order to library screening. Finally, human recombinant monoclonal antibody has been detected via phage monoclonal ELISA.

Results: According to the results, the most affinity between the produced monoclonal antibody and tetanus antigen was monitored in the fourth cycle. So, this results confirmed the production of monoclonal human antibody with high specify for tetanus toxoid.

Conclusion: This study we have been focused on the monoclonal human antibody production by using phage display. Results of this study are very interest for developed and synthesis the several immunoassay diagnosis methods such as immunosensors.

Keywords: ScFv, phage display, monoclonal human antibody, pSEX81, Tetanus

Corresponding author Email address: rohaninejhad@gmail.com

ID:329

Comparison of the effect of hydroalcoholic extract of aloe vera, chamomile and green tea on wound healing in diabetic rats

Parisa emami aref[1], Seddighe Niknia[1], Mehdi Pouraminaei[1], Mehdi Mahmoodi[2], Mohammad Reza Hajizadeh[1], Alireza Khoshdel[1], Mohammad Reza Mirzaei[1], Mohammad Ali Fahmidehkar[3]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[2] Department of Clinical Biochemistry, Afzalipoor Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran

[3] Research Center of Advanced Technologies in Medicine, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

Objective: The complications of diabetes mellitus delay wound healing. Since ancient times, the use of herbs and their derivatives have been used to treat diabetes and its complications, including plants such as aloe vera, green tea and chamomile.

Material and Methods: First, the hydroalcoholic extract of leaves of aloe vera, green tea and chamomile was extracted individually by Soxhlet apparatus. In this study, male rats who were diabetic with streptozotocin were used. We created an injured area of about 2 cm2 in the body of the Rat. Rats were divided into groups treated with chamomile extract, green tea and aloe vera at a dose of 25 mg/kg and a control group without treatment. The area of the wounds was measured on days 1, 5, 7, and 11.

Results: The results showed that the wound healing rate was higher in chamomile treated diabetic rats and less in the treated group with green tea than in other groups. But the rest rate in all three groups was significantly higher than the diabetic control group.

Conclusion: All three plants used in this study have antioxidant properties and effective in the reintroduction of epithelium, but chamomile was more effective and green tea had less effect.

Keywords: diabetes, wound, aloe vera, green tea, chamomile

Corresponding author Email address: fahmidehkarma@gmail.com

ID: 333

Candidate biomarkers in early diagnosis of Parkinson disease

Mohsen Hemmati Dinarvand[1], Nasser samadi[1], Farshad Hemmati Dinarvand[2], Maryam Niknam[3]

[1] Department of Clinical Biochemistry and Laboratory Medicine, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Plant Virology Research Center, Shiraz University, Shiraz, Iran

[3] Department of Clinical Biochemistry and Laboratory Medicine, Faculty of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Parkinson's disease (PD) is a common neurodegenerative disease. Oxidative stress is considered as a key modulator in the development of PD. This study aimed to investigate associations between serum NOX1 (NADPH oxidase1), ferritin, selenium (Se) and uric acid (UA) levels and clinical parameters in patients with PD.

Material and Methods: Serum levels of NOX1, ferritin, Se and UA were measured in 40 PD patients and 40 healthy individuals. Receiver operating characteristic (ROC) analysis was performed to investigate incremental diagnostic value of each factor in the study groups.

Results: Mean serum NOX1 levels was markedly higher in patient group (22.36±5.80 ng/mL) versus healthy individuals (8.89±2.37 ng/mL) ($p<0.001$). Significant differences were also observed in the serum concentrations of ferritin ($p = 0.005$) and Se ($p = 0.001$) between patients with PD and healthy individuals. However, the serum concentrations of UA were not statistically significant between the study groups ($p = 0.560$). ROC analysis revealed a diagnostic ability of serum NOX1 and ferritin levels for PD with an area under ROC curve of ≥0.7 ($p < 0.05$) and relatively high sensitivity and specificity. Combination of serum NOX1 and Se along with ferritin and UA levels increased the sensitivity up to 85%, specificity up to 97% and area under the ROC curve up to 0.94 (95% confidence interval (95% CI): 0.89 to 0.99, $p < 0.001$).

Conclusion: Our findings indicated that serum concentrations of NOX1, ferritin and Se are significantly higher in the patients with PD. Therefore, these factors can be considered as potential diagnostic biomarkers for diagnosis and monitoring of PD patients.

Keywords: NADPH oxidase1, Ferritin, Selenium, Uric acid, Parkinson Diseases

Corresponding author Email address: Mohsen_h43@yahoo.com

ID:335

Apoptotic and cytotoxic effects of carboxyl-functionalized single- and multi-walled carbon nanotubes: an in vitro and in vivo study

Fedora khatibi shahidi[1], Susan Kabodanian Ardestani[1], Majid Zeinali[1]

[1] Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Nanotechnology is under fast development in various fields. Carbon nanotubes (CNTs), with unique physicochemical properties, have attracted attention of numerous researchers and industries but their potential toxicity to life is not addressed well. Various factors can affect toxicity of these nanomaterials. Due to their widespread use, it is important to study CNT cytotoxicity. In the current study, toxicity of carboxyl-functionalized SWCNT and MWCNT was evaluated.

Material and Methods: In vitro studies: Toxicity of CNTs against A549 cells was evaluated by MTT assay. Morphological changes of the cells were evaluated using acridine orange-ethidium bromide staining. In vivo studies: 5-7 weeks male BALB/c mice were injected intraperitoneally with a CNT dose of 75µg/mice and monitoring was continued in a period of five weeks after injection. Oxidative stress response was examined by measuring total antioxidant, total peroxide, malondialdehyde (MDA) and protein carbonyl in tissue (lung and liver) homogenates of treated mice. To assess liver damages, SGOT and SGPT enzymes were measured in serum of mice.

Results: Carboxylated CNTs at doses lower than 500µg/ml have no toxic effect against A549 cell line within 24 hours. During an incubation time of 48 hours, cell toxicity was seen at CNT concentrations more than 100µg/ml.The morphological studies showed that carboxylated CNTs could induce apoptosis in A549 cells. Both CNT preparations reduced the amounts of total antioxidant in the lung tissues of mice at the first week post-injection. No significant increase was observed in the amount of total peroxide. Results showed that carboxylated MWCNT could increase the amount of MDA in the liver after five weeks and carboxylated SWCNT could cause an increase in the amount of liver protein carbonyl. No significant liver injury was detected.

Conclusion: According to the obtained results, carboxylated CNTs do not induce acute toxic effects in BALB/c mice and A549 cell line at the examined dose.

Keywords**:** Carbon nanotubes, Oxidative stress, Cytotoxicity assay, BALB/c mice, A549 cell line

Corresponding author Email address: fkhatibish@gmail.com

ID:338

Relationship between NQO1 C609T Polymorphism and Coronary Artery Disease in Iranian population

Mitra Pourgholi[1], Sohrab Halalkhor[2]
[1] Student Research Committee, Babol University of Medical Sciences, Babol, Mazandaran, Iran
[2] Department of Biochemistry, Faculty of Medical Sciences, Babol University of Medical Sciences, Babol, Mazandaran, Iran

Objective: Coronary artery disease (CAD), the leading cause of death in most parts of the world. NQO1 is considered an antioxidant enzyme by catalyzing a two-electron reduction of quinone compounds and detoxification of the electrophilic compounds. NQO1 can act as a pro-oxidant enzyme contributing in the formation of ROS. The gene coding for NQO1 is therefore being investigated in relation to progression of CAD. The aim of this study is investigation of effects of C609T polymorphism in CAD susceptibility among population.

Material and Methods: One-hundred and forty-five patients with diagnosed CAD as case group were compared to 139 controls. 10 cc whole blood with EDTA was obtain in streel condition. DNA was extract by use of salting out method. The presence of C609T polymorphism was analyzed using by polymerase chain reaction-based restriction fragment length polymorphism.

Results: Among total population, those with combined CT/TT (T allele carrier) genotype showed a trend toward lower odds of CAD compared to those with CC (wild type) genotype, but it did not statistically significant level. When data were analyzed separately for men or women, CT + TT group as compared to CC genotype was associated with decreased odds of CAD in women, but not in male patients.

Conclusion: Our statistically analysis in this study revealed that NQO1gene C609T polymorphism is a risk factor in woman CAD patients but not in male.

Keywords: CAD, NQO1, C609T, polymorphism

Corresponding author Email address: sohrabhalalkhor@yahoo.com

ID:340

Effect of Idarubicin-ZHER2 affibody conjugate on induction of death HER2 positive malignant cells

Leila Siavoshinia[1]
[1] Department of Biochemistry, Ahvaz Jundishapur University of medical science, Ahvaz, Iran

***Objective*:** The targeting therapy of HER2-positive cancerous cell line by conjugation of a chemical toxin to a peptide is a new approach for specific representation of selective drugs and has also fewer undesirable side effects. ZHER2 affibody is a small engineered peptide that binds to HER2 receptors with high affinity. Our previous study indicated that idarubicin-ZHER2 conjugate could not induce an immune response in BALB/c mice.

Material and Methods: ZHER2 affibody was expressed in competent cells of E. coli, and purified by His-select affinity column chromatography. Affibody ZHER2 and idarubicin-ZHER2 conjugate were treated on the HER2-positive cancerous cell lines SKOV3, HN5, SKBR3, and MCF7 with different concentration (5-80 µM) and Idarubicin was treated on all cell lines with different concentration (0.01-1 µM). The cytotoxicity effects of idarubicin-ZHER2 conjugate on the cell lines were assessed through MTT assay. The expression of HER2 level was detected by western blot analysis.

Results: The purified Affibody ZHER2 was assessed by SDS-PAGE and Coomassie Brilliant Blue stain to confirm the affibody band. The conjugation's success was confirmed by UV-Visible and fluorescence spectroscopy. Although, the non-conjugated form of Idarubicin showed potential toxic effects against all four mentioned cell lines, however, the idarubicin-ZHER2 conjugate showed more cytotoxicity effect especially on the HER2 positive cell line.

***Conclusion*:** Our results indicated Idarubicin-ZHER2 conjugate has very weak cytotoxicity effect on the MCF7 cell line after 48 hours' treatment, however, in SKBR3 has more effect compared to negative control group. This cytotoxicity effect of the conjugate was much more in HN5 & SKOV3 cell line compared to the others. Higher overexpression of HER2 in HN5 & SKOV3 cell line was confirmed compared to SKBR3 cell line by western blot analysis.

***Keyword*:** Idarubicin-ZHER2, HN5, SKOV3, SKBR3, MCF7

Corresponding author Email address: l.siavoshi92@gmail.com

ID:342

Investigation of Caspase Activity During NB4 Cell Line Differentiation

Zahra Madadi[1], Shiva Akbari-Birgani[1], Parviz Davoodi Monfared[1]

[1] Department of Biological Sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

***Objective*:** Caspase family are involved in inflammation, apoptosis and cell differentiation. Caspase-9 and -3/7 are the key enzymes in apoptosis and recently evidences have suggested that their activity have a pivotal role in determining cell fate. Therefore, monitoring caspase activity would be a good indicator of cell differentiation. The present study has investigated the caspase-9 and -3/7 activities during promyelocytic leukemia NB4 cell line, as a model of APL into the granulocytes.

***Material and Methods*:** NB4 cell line was maintained in RPMI 1640 supplemented with 10% FBS and 1% penicillin/streptomycin. In order to differentiation induction, different concentrations of all-trans retinoic acid (ATRA) was used and cell differentiation was assessed by Giemsa and NBT staining. Then the best concentration of ATRA was selected. In another test, cells were treated with ATRA and collected at indicated time after treatment. To investigate the caspase activity, total protein concentration of cell lysates was determined by Lowry assay. Then caspase-9 and -3/7 activities were measured by colori/bioluminometric Kits.

***Results*:** Morphological changes resulted from cell differentiation were shown by Giemsa staining as well. The highest percentage of differentiation estimated by NBT reduction assay. The results of caspase-9 activity measurement show that this enzyme activity increases during cell differentiation progress. Interestingly, unlike caspase-9 the highest amount of caspase-3/7 activity was observed with one-day delay.

***Conclusion*:** In conclusion, this study shows that caspase activity changes during cell differentiation and it suggests that caspase-9 and -3/7 collaborate in differentiation progress.

***Keywords*:** Differentiation, NB4 cell line, ATRA, Caspase activity

Corresponding author Email address: z.madadi@iasbs.ac.ir

ID:343

Evaluation of the cytotoxic and apoptosis inducing activity of spiroquinazolinone benzamide derivatives in MCF-7 and K562 cell lines

Malihe Mohseni[1], Majid Mahdavi[1]
[1] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran

***Objective*:** Apoptosis is programmed cell death that has a critical role in cell development and homeostasis. This process is performed by the activation of cysteine proteases caspases. Caspases be suppressed by the inhibitor of apoptosis protein (IAP) family which enables binding to caspases and inhibits the apoptosis. Survivin, the smallest member of this family ,has an important role in apoptosis inhibition and cell division . In the study, we have investigated cytotoxic and apoptosis of the spiroquinazolinone family on MCF-7 and K562 cells and we have evaluated expression of Survivin in this cell lines after treatment.

***Material and Methods*:** The most avtive compound among this family evaluated by MTT cytotoxicity assay and was selected for further assessments. Apoptosis was assessed morphologically by acridine orange/ethidium bromide (AO/EtBr) double staining, evaluation of the cell surface phosphatidylserine (PS) expression through annexin V/PI technique and, the formation of DNA ladder. Expression of survivin was evaluated after treatment using western blotting

***Results*:** The results showed that apoptosis occurred in cells treatment compared to untreated cells. In addition reduction in survivin protein level was shown in a time and dose dependent manner in the treated cells.

***Conclusion*:** We introduced spiroquinazolinone family with high cytotoxic activity in two apoptosis-resistant cell lines. We evaluated the anti-proliferative effect of this compound through several mechanisms. All of these findings may help us in designing new synthetic derivatives with potent cytotoxic activity, improved stability, and high bioavailability to induce apoptosis in cancer cells.

***Keywords*:** Apoptosis, Survivin, Spiroquinazolinone, MCF-7 cells, K562 cells

Corresponding author Email address: malihemohseni65@yahoo.com

ID:344

Protective effects of selenium on parameters associated with kidney function in male wistar rats intoxicated with cadmium

Ali Asghar Moshtaghie[1], Pedram Malekpouri[1], Pegah Azimi Anaraki[1]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

***Objective*:** Cadmium is an unessential heavy metal that is present in water, air, food as results of industrial manufactory and cigarette smoke. It's a serious threat to human health due to bioaccumulation in the liver and kidneys. Selenium is a necessary trace element and constituent part of several enzymes, including glutathione peroxidase (GSH-Px), thyroidoxin reducatas (TR), and selenoprotein p (SeP), which has some protective effects against the toxicity of cadmium.
Purpose: the purpose of this study was to investigate the protective effects of selenium on serum parameter ***related*** to kidney function in cadmium-toxicity in rats and it investigates the acute and chronic effects of cadmium on the kidney.
***Material and Methods*:** The present study was conducted in a short-term period of 15 days and long-term period of 45 days on 60 male wistar rats. The rats were divided into 10 groups containing 6 in the short-term. The control group received 0.5mg/kg BW normal saline and groups 2 to 4 0.5mg/kg and 1 mg/kg BW normal saline and 2mg/kg BW of cadmium chloride (CdCl2.H2O), respectively. The control group received 0.5 mg/kg BW normal salin and other groups received 0.23mg/kg BW., 0.5 mg/kg BW sodium selenate (Na2SeO3), 1mg/kg BW cadmium chloride, 1mg/kg BW cadmium chloride + 0.23 mg/kg BW sodium selenate and 1mg/kg BW cadmium chloride + 0.5mg/kg BW sodium selenate, respectively. All injections were administered intraperitoneally (i.p).
Results: After intraperitoneal injection to short-term group, a significant decrease in sodium, potassium and albumin ($p<;0.05$) was observed while urea and uric acid levels were elevated significantly ($p<;0.5$) as compared with control group. Serum creatinine and total protein levels did not change significantly in acute exposure with cadmium ($p>0.05$). Combined treatment with sodium selenite (0.5mg/kg) + Cadmium chloride (1mg/kg) showed significant increase in serum sodium, potassium, albumin, total protein and uric acid in the chronic period ($p<;0.05$).In addition, serum level of sodium, potassium, albumin and total protein in combination treatment (sodium selenate 0.23+cadmium chloride 1mg/kg) revealed a significant increase as compared to the cadmium chloride group (1mg/kg) in the long-term period ($P< 0.05$). Serum urea and creatinine did not change significantly in the long-term period as compared with control ($P< 0.05$).
***Conclusion*:** The result shows that selenium has some protective effects against the toxicity induced by cadmium on the renal function of the rat.

Keywords: Rare elements, Kidney, Uric acid, Creatinine, Rat

Corresponding author Email address: moshtaghie_a@iaufala.ac.ir

ID:345

Investigation interaction extract of seed and shoot coriander whit AL on liver and blood factors in rat

Mahsa Najafi[1], Monir Ranjbar[1], Ali Asghar Moshtaghi[1]
[1] Islamic Azad University Falavarjan, Esfahan, Iran Objective

***Objective*:** Aluminum is an element that is important because of its negative effects on various disorders. From The syndrome associated with this element: encephalopathy, Alzheimer's disease, membrane disorders, liver abnormalities, can be called win. It has been shown that at high doses, it can have many negative effects in various tissues including the liver, Which increases the activity of important liver enzymes including ALT, AST, and ALP. On the other hand in this study, Cholestrol is also important because it can cause disorders Different in the body

***Material and Methods*:** In this study, 72 rats (250-300(gr)) were divided into 12 groups. Aluminum chloride was used in two concentrations of 100and 200 (mg / kg) body weight that in order investigation liver damage. In addition, in this study used cholestroel with olive oil for the evaluation of blood damage. The end of, Samples of anesthetic completely anesthetized After 30 days of testing they were taken from their heart for blood sampling.

***Results*:** The results of This study showed that when using aluminum chloride at a concentration of 200 (mg / kg) body weight more We have had the most negative impact on liver damage. shown the mean of the data for the aluminum chloride consumer group in both groups In the contributing factors (ALT, AST, ALP), there is no significant difference at (0/05level) This is if When taking coriander plant extracts at the level of blood factors (HDL, LDL, CHO) as well as in Level of liver factors (ALT, AST, ALP) The mean of data was significantly different at 0/05level.

***Conclusion*:** In this research, was shown that each of the parts of the plant coriander is important because of the presence of compounds determinative free radicals and can also be effective in liver damage.

***Keywords*:** ALT, AST, ALP, Chol, Coriander

Corresponding author Email address: mahsa6250@gmail.com

ID:346

The association of paraoxonase 1 gene L55M polymorphism with atherosclerosis in Irainian people

Negar Nouryazdan[1], Gholamreza Shahsavari[1]
[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: Atherosclerosis is a complex and progressive disorder characterized by the accumulation of lipids in the arteries. It is one of the leading causes of death in industrialized countries. Oxidative modification of low-density lipoprotein (LDL) in the arterial wall plays an important role in the initiation and progression of atherosclerosis. Paraoxonase1 (PON1) is involved in lipid metabolism and is believed to protect LDL oxidation. In our study, we investigated the relationship between PON1 gene L55M polymorphism and progression of atherosclerosis.

Material and Methods: In this study blood specimans were collected from 145 healthy individuals and 154 patients with angiographically proven coronary artery stenosis at Shahid Madani Hospital, Khorramabad, Iran. Genomic DNA was extracted from whole blood. For all subjects, DNA testing for the paraoxonase 1 gene L55M polymorphism was done using the restriction fragment length polymorphism polymerase chain reaction (RFLP-PCR) amplification for detection of both the L and M alleles.

Results: Cases had a higher frequency of LM (48.7%) and MM (16.2%) genotypes compare with controls frequency of LM (41.4%) and MM (7.6%) genotypes, that was statistically significant (0.05>p). controls subjects had a higher frequency of LL (51%) genotypes compare with cases frequency of LL (35.1%), that was statistically significant (0.05>p). There was a 3.114-fold increase in the risk of atherosclerosis in subjects presenting the PON1 55 MM genotype compared to those with the LL genotype (OR=3.114; 95% CI=1.412–6.870)

Conclusion: It has been concluded that there was a significant difference in the distribution of genotypes of paraoxonase 1 gene L55M polymorphism between patient and healthy subjects. Therefore, paraoxonase 1 gene L55M polymorphism and MM genotype was associated with an increased risk of coronary artery disease in Irainian patients with atherosclerosis.

Keywords: Paraoxonase, Coronary artery disease, Genetic Polymorphism

Corresponding author Email address: negar.noury@gmail.com

ID:347

The role of Wnt/B-catenin signaling pathway through cross-talk with FoxO3 with piperine in animal model of Alzheimer's disease

Mitra Pourgholi[1], Sohrab Halalkhor [2], Soheila Hosseinzade[3], Hadi Parsian[2], Farzin Sadeghi[4]
[1] MSc student of clinical biochemistry, Babol University of Medical Sciences, Babol, Mazandaran, Iran
[2] Department of Biochemistry, Faculty of Medical Sciences, Babol University of Medical Sciences, Babol, Mazandaran, Iran
[3] Neuroscience Research Center, Health Research Center, Babol University of Medical Sciences, Babol, Mazandaran, Iran
[4] Cell and Molecular Biology Research Center, Health Research Center, Babol University of Medical Sciences, Babol, Mazandaran, Iran

***Objective*:** Oxidative stress mediates the neuropathological changes characteristic of Alzheimer's disease. Therefore, treatment interventions based on maintaining cell survival and reducing the severity of lesions have always been considered. The Piperine is main alkaloids black pepper, which is important for antioxidant, anti-seizure and anti-inflammatory activity. Peperine effect on behavioral disorders and its role in signaling Wnt / B-catenin pathway and its interaction with FOXO3 after intraperitoneal injection of Piperin in Alzheimer's disease was investigated by intravenous injection of streptozotocin in rat. In Alzheimer's disease, Wnt / B-catenin signal pathway impairment is associated with neuromuscular degeneration and synaptic disorder due to beta-amyloid

***Material and Methods*:** 30 male Wistar rats were used. Animals were randomized into one of the control and treatment groups with different doses of piperine. The radial maze of the 8 arm and the shuttle box was performed and then the left brain and the left hemisphere were used for real-time PCR.

***Results*:** In this study, the gene expression of B-catenin in the wnt / betacatenin pathway was observed, which was also seen in the other studies.

***Conclusion*:** In this study, we concluded that beta catenin gene expression and other genes in this pathway contribute to the improvement of memory processes and the severity of degeneration in the hippocampus

***Keywords*:** Streptozotocin, Piperine, Alzheimer

Corresponding author Email address: sohrab halalkhor@yahoo.com

ID:348

Investigating the effect of nickel on High Molecular Weight isoenzyme of alkaline phosphatase and other liver parameters in male rats

Rezvan Karshenas[1], Ali Asghar Moshtaghie[2]
[1] Ph.D. student Biochemistry, Islamic Azad University, Falavarjan Branch, Isfahan, Iran
[2] Department of Biochemistry, Faculty of Basic Sciences, Islamic Azad University, Falavarjan Branch, Isfahan, Iran

***Objective*:** Nickel is one of the most important environmental pollutants in our environmental living. It enters into the human body in various ways and leads to produce numerous complications. The purpose of this research was to investigate the effect Nickel on serum parameters related to liver function in male rats.

***Material and Methods*:** In this study, the effect of intraperitoneal injection of 5 mg / kg body weight of nickel chloride was investigated on liver function parameters. For this purpose 12 Wistar male rats were injected for 60 days and sera were prepared and those parameters related to liver function were determined using Gel filtration technique with Sephacril s300 high molecular weight iso-enzyme of ALKP was separated. All enzyme activities were determined.

***Results*:** 3 injections per week of nickel chloride led to change in liver enzymes and increased the levels of aminotransferases (ALT:16.9%-AST:18.6%)incomparison to un treated control, which was statistically significant, was ALP elevated by (27.2%)and HMW-ALP was decreased by (16.5%), whereas elevation of LDH (52.7%)wasseen.

***Conclusion*:** Changes in liver enzyme activities may suggest changing in liver function following Nickel administration. Reduction in high molecular weight ALP may also propose reduction in bile duct function.

Keywords: Nickel, Liver enzymes, High molecular weight

Corresponding author Email address: rkarshenas699@gmail.com

ID:350

Effect of probiotics supplementation on metabolic and genetic parameters in patients with diabetic nephropathy: a randomized, double-blind, placebo-controlled trial

Alireza Mafi[1], Gholamreza Namazi[1], Alireza Soleimani[1], Fereshteh Bahmani[1], Esmat Aghadavod[1], Zatollah Asemi[1]
[1] Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences

***Objective*:** Limited data is available on the effects of probiotics supplementation on metabolic and genetic parameters in patients with diabetic nephropathy (DN). This study was designed to determine the effects of probiotic supplementation on metabolic and genetic parameters in patients with DN.

***Material and Methods*:** This was a randomized double-blind placebo-controlled clinical trial in which 60 patients with DN. Subjects were randomly divided into two groups to take probiotics supplements or placebo (n=30 each group) for 12 weeks.

***Results*:** After 12 weeks of intervention, patients who consumed probiotic supplements had significantly decreased fasting plasma glucose (-23.4±40.4 vs. +1.3±31.7 mg/dL, P=0.01), serum insulin concentrations (-3.8±5.1 vs. -0.9±3.9 µIU/mL, P=0.01) and homeostasis model of assessment-estimated insulin resistance (-2.3±3.4 vs. -0.4±1.7, P=0.007) compared with the placebo. In addition taking probiotics resulted in a significant decrease in serum triglycerides (-38.9±51.1 vs. +6.0±43.5 mg/dL, P=0.001) and a significant rise in HDL-cholesterol levels (+4.4±4.9 vs. -1.4±3.5 mg/dL, P<;0.001). Following supplementation with probiotics, significant reductions in plasma malondialdehyde (-0.6±0.4 vs. +0.1±0.5 µmol/L, P<;0.001), advanced glycation end products (-32.4±47.9 vs. +1.4±14.7 AU/g protein, P<;0.001), and high-sensitivity C-reactive protein (-1.6±2.0 vs. -0.2±0.9 mg/L, P=0.001). Probiotics supplementation down regulated gene expression of low-density lipoprotein receptor (P=0.02) and interleukin-1 (P=0.02) in peripheral blood mononuclear cells of subjects with DN.

***Conclusion*:** Overall, probiotics supplementation for 12 weeks in DN patients had significant effects on metabolic status and improved gene expression of IL-1 and LDLR.

***Keywords*:** Probiotics, Gene expression, Metabolic profiles, Diabetic nephropathy

Corresponding author Email address: armafi.m@gmail.com

ID:353

Evaluation of the association between serum prolactin levels and severity of 6-hydroxydopamine- induced Parkinsonism in rat

Roghaye Razaghi[1], Hashem HaghDoost Yazd[1], Hossein Piri[1]
[1] Islamic azad university science and research brach faculty of science-department of biology

***Objective*:** Parkinson's disease is a neurodegenerative disease, which is the most common age dependent neurodegenerative disorder after Alzheimer's disease. The disease is caused by the destruction of dopaminergic neurons in the substantia nigra. Parkinson's disease symptoms appear when about 60-80% of these neurons are destroyed and dopamine do not produce enough. Oxidative stress, mitochondrial dysfunction, protein aggregation and autophagic stress has been implicated in Parkinson's. Early diagnosis of Parkinson's disease can result in more effective treatment and preventing the exacerbation of the disease. Identifying the biomarkers can help in the diagnosis. Prolactin levels increase in patients with Parkinson's disease. Regarding the controversy about the relationship between serum testosterone and prolactin and Parkinson's disease, this study was designed to evaluate the serum levels of testosterone and prolactin in Parkinson's disease in the animal model.
Material and Methods: Male wistar rats, weighing 200-300gr were divided into control, sham and Parkinsonism groups. Parkinson's disease was induced by injecting 6-hydroxy dopamine in the MFB by Hamilton syringe. The development and severity of Parkinsonism was measured by Apo morphine-induced rotational tests. In the third and sixth weeks after stereotaxic surgery, and after the behavioral tests, blood samples were collected from the animals' tail and heart, and the serum levels of prolactin were evaluated by ELISA.
***Results*:** Control and sham group did not show rotation but the Parkinson's group showed significant rotation that sixth week was more than the third week. Parkinson's rats were divided into two groups, mild and severe, based on severity of symptoms. In both severe and mild cases, prolactin level was increased in the third week, but it was significant only for the severe group.
***Conclusion*:** This study also indicated that serum level of prolactin was increased immediately in a few weeks after poison injection, but then return to normal levels.

***Keywords*:** Parkinson Disease, 6-Hydroxydopamine, Prolactin, Substantia Nigra, Behavioral Test

Corresponding author Email address: razaghi.biochem@yahoo.com

ID:354

Measurment of phospholipid and riboflavin 2 transporters in patient with glioma

Shirin Haghighi-Fashi[1], Durdi Qujeq[1], Guive Sharifi[1]
[1] Department Clinical Biochemistry, Babol University of Medical Sciences, Babol, Mazandaran, Iran
[2] Department Internal Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

***Objective*:** Glioma is one of the most common primary central nervous system tumors accounting for 60 % of primary brain tumors. Current diagnostic methods for glioma were either invasive or expensive. In addition to the high morbidity and mortality, the survival rate of glioma is also low so the early detection of cancer is of crucial importance to its prognosis.
Material and Methods: About 60 patients entered the study. The levels of proteins was determined by Elisa kit. The results were analyzed by SPSS software version 24. A significant difference was found between the two groups of control and patient.
Results: Our results demonstrated that levels of proteins involved in this disease, depending on the severity of the spread of the tumors, increases.
Conclusion: One short sentence which summarizes the contents of the article, presenting the final outcome of and concluded from the research or proposing further study on the subject, may be given at the

***Keywords*:** Riboflavin 2 transporters, Phospholipid 2 transporters, Elisa, Glioma

Corresponding author Email address: dqujeq@gmail.com

ID:357

Evaluation of correlation between serum total bilirubin and uric acid levels with the severity of coronary artery disease

Alireza Mafi[1], Gholamreza Namazi[2], Razieh Salami[1], Parastoo Asa[2]
[1] Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences
[2] Department of Clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Coronary Artery Disease (CAD) is the leading cause of morbidity and mortality worldwide. Oxidative stress and inflammation are important in the pathogenesis of CAD. In the recent years, it has been suggested that serum total bilirubin, due to its antioxidant properties, may have a protective effect on the atherosclerosis, while, serum uric acid may be an important risk factor for CAD. The aim of our study was to evaluate the association between serum total bilirubin, serum uric acid, and severity of CAD documented by coronary angiography.

***Material and Methods*:** This study included 50 stable CAD patients, 30 unstable CAD patients and 54 non-CAD subjects. Serum total bilirubin and uric acid levels were determined by routine laboratory methods. Fasting blood glucose, lipid profiles, AST, ALT, ALP and other risk factor were also determined.

***Results*:** Serum uric acid levels were higher in stable CAD patients (6.6 ± 1.8 mg/dl) than in unstable CAD patients (6.2 ± 1.7mg/dl) and non-CAD subjects (5.5 ± 1.4 mg/dl) (p <; 0.001). No significant difference was found in the mean serum total bilirubin concentration in the studied groups. Also, no significant correlation was found between serum total bilirubin and uric acid levels with the severity of coronary artery disease.

***Conclusion*:** In this study, no correlation was found between serum total bilirubin and uric acid levels with coronary artery disease.

***Keywords*:** Serum total bilirubin, Serum uric acid, Coronary artery disease,

Corresponding author Email address: namazi-gh@kaums.ac

ID:358

Expression of HDAC1 and DNMT-1 Genes Involved in Epigenetic in rheumatoid arthritis referring to Rafsanjan Rheumatology clinic

Fahimeh Mohammadizaderanjbar[1], Mohammad Reza Hajizadeh[1], Mehdi Mahmoodi[2], Mitra Abasifard[1]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Department of Clinical Biochemistry, Afzalipoor Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Rheumatoid arthritis is an autoimmune disease characterized by chronic inflammation of the synovial tissues in multiple joints that leads to bone and joint destruction. Epigenetics refers to the study of heritable changes in gene expression that occur without a change in DNA sequence. Changes in histones, Especially stiilation and driving forceThe key to the epigenetic configuration of the genes is considered HDAC is the key enzyme responsible for these changes. DNA methylation is an epigenetic phenomenon that is caused by the addition of a methyl group (CH3) to cytosine. The addition or removal of the methyl group is done by DNA-methyl transferase enzyme. The purpose of this study was to investigate the expression of histone deacetylase and DNMT-1.

Material and Methods: The population includes 30 referring to Rafsanjan Rheumatology clinic in 2017. Who are studied in comparison with the control group with gene expressions of HDAC1 and DNMT-1 are measured by Real time PCR technique.

Results: The results show that the gene expressions of HDAC1 and DNMT-1 increases significantly ($p \leq 0.05$). Furthermore, the number of red and white blood cells demonstrate a substantial upsurge.

Conclusion: We examine the basic principles of epigenetic mechanisms and their contribution to human health as well as the clinical consequences of epigenetic errors. In addition, we address the use of epigenetic pathways in new approaches to diagnosis and targeted treatments across the clinical spectrum.

Keywords: Gene Expression, Epigenetics, Arthritis, Rheumatoid

Corresponding author Email address: f.mohammdizadehranjbar@gmail.com

ID:359

PLGA-based nanospheres as efficient vaccine delivery vehicles for the design of subunit vaccine against Toxoplasama gondii

Mojgan Allahyari[1], Majid Golkar[1], Alireza Vatanara[2], Reyhaneh Mohabati[1]
[1] Department of Recombinant Protein Production, Research and Production Complex, Pasteur Institute of Iran
[2] Department of Pharmaceutics, Tehran University of Medical Sciences, Tehran, Iran

***Objective*:** The application of safe and efficient adjuvant and/or delivery system is inevitable in new vaccine design strategy to achieve desired immune responses. PLGA particles as a FDA-approved vaccine delivery platform have attracted much attention regarding their remarkable features. Here, we adsorbed rSAG1 and rGRA2 (recombinant Toxoplasma antigens) on PLGA nanospheres (NSs) individually and evaluated the effect of both nanospheres in eliciting immune responses against acute toxoplasmosis infection in vivo.

***Material and Methods*:** Blank PLGA NSs were prepared using double emulsion solvent evaporation technique, then rSAG1 and rGRA2 adsorbed individually on them. All nanospheres were characterized by dynamic light scattering using spectroscopy technique. BALB/c were subcutaneously immunized two times with three weeks interval. The concentrations of IFNγ and IL-10 were determined in free spleen cells supernatant by ELISA kit.

***Results*:** Analysis demonstrated slightly polydisperse nanospheres (PDI <; 0.2) with the average size of less than 490 nm for both rSAG1-PLGA and rGRA2-PLGA, and their zeta potential was higher than blank NSs, showing antigen adsorption. The significantly increase of IFNγ and decrease of IL-10 (as key indicators of Th1 and Th2, respectively) in immunized mice with rSAG-PLGA or rGRA2-PLGA compared to control mice clearly demonstrated eliciting of desired cellular immune responses

***Conclusion*:** Adsorption of SAG1 and rGRA2 on PLGA NSs had no effect on their antigenicity. Antigens loaded on PLGA could elicit significantly higher Th1-associated immunity, confirming the role of PLGA.

***Keywords*:** PLGA, vaccine delivery, rSAG1/rGRA2, Toxoplasma, Adsorption

Corresponding author Email address: mojalah@yahoo.com

ID:361

Evaluation and comparison of altered metabolites in Raji cells "B- lymphocyte" after infection with Epstein Barr Virus using 1HNMR spectroscopy

Zahra Dindar[1], Rouhollah Vahabpour[2]
[1] MSc in Biochemistry, Biology Group, Payameh Nour University, Tehran, Iran
[2] Medical Lab Technology Department, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

***Objective*:** Burkit's lymphoma is a non-Hodgkin's malignant lymphoma and abnormal neoplasia which most commonly involves the bones of jaw and marrow. The EBV is a virus of the Herpesviridae family known to cause this desease. EBV was the first of human virus to be directly implicated in human cancers and infects more than 90% of the word's population.

***Material and Methods*:** The EBV from B95-8 cell line infected B- lymphocytes and cells were cultured in RPMI 1640 medium using non- invasive 1HNMR spectroscopy and Prometab software in MATLAB was analyzed with METABOANALYST, HMDB website.

***Results*:** The results of this study have revealed the aromatic amino acids and key sugars in glycolytic and pentose phosphate pathways play a critical role in Epstein Barr virus viability and make significant changes in infected cells immortality by altering key metabolites in metabolic pathways such as sugar metabolism, nitrogen metabolism, pentose and glucuronate interconversion pathway.

***Conclusion*:** Present study has shown that the virus can recruit the cellular replication machinery and alters vital metabolites and amount of their synthesis following infection of Raji cells, results in their immortality and carcinogenesis.

***Keywords*:** 1HNMR, Metabolomics, Raji cell, EBV

Corresponding author Email address: z.dindar83@yahoo.com

ID:366

Promoter methylation analysis of miR-34a, miR-34b/c, miR-126 and miR-9-3 tumor suppressor miRNAs in colorectal cancer cell lines

Mostafa Moradi Sarabi[1], Abdollah Zahedi[1], Naser Pajouhi[1], Peyman Khosravi[1], Hassan Ahmadvand [1] Shahrokh Bagheri[1], Zahra Shokri[1], Saber Abbaszadeh[1], Mona Moghadasi[1]

[1] Department of Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

***Objective*:** MicroRNAs (miRNAs) are small, non-coding RNAs that have been implicated in the regulation of diverse cellular processes. Emerging evidence suggests that miRNAs are regulated by epigenetic mechanisms, and aberrant promoter DNA methylation of miRNAs has an important role in different types of cancer invasion including colorectal cancer (CRC). To verify the role of DNA methylation in CRC progression, we analyzed promoter DNA methylation of five tumor suppressor miRNAs including miR-34 cluster (34a, -34b/c), miR-126 and miR-9-3 in a panel of five CRC cell lines

***Material and Methods*:** We used methylation specific PCR (MSP) technique to evaluate the methylation profile of the promoter CpG islands of miR-34 cluster (34a, -34b/c), miR-126 and miR-9-3 in a panel of five CRC cell lines (HCT116, HT29/219, SW741, Caco2 and LS180). After bisulphite treatment of DNA, which modify unmethylated but not methylated cytosines to uracil, DNA was amplified by two sets of primer pairs, which differentiating between unmethylated and methylated cytosines. PCR products were analyzed by electrophoresis on a 1.5% agarose gels and visualized under UV illumination.

***Results*:** The promoter methylation status of miR-34a, miR-34b/c, miR-126 and miR-9-3 were different in CRC cell lines. Among the cell lines, (3/5, 60%), (5/5, 100%), (5/5, 100%) and (5/5, 100%) showed promoter methylation for miR-34a, miR-34b/c, miR-126 and miR-9-3, respectively. miR-34b/c, miR-126 and miR-9-3 were fully methylated whereas miR-34a was the less methylated miRNA in five CRC cell lines.

***Conclusion*:** Promoter hypermethylation of miR-34b/c, miR-126 and miR-9-3 is a frequent epigenetic changes that is observed in CRC cell lines. The association between

***Keywords*:** Colorectal cancer, Methylation specific PCR, MiR-34a, miR-34b/c, MiR-126

Corresponding author Email address: mostafa.moradi@gmail.com

ID:368

Studying the molecular mechanism of interactions between novel 2-amino benzamides and Histone Heacetylase enzyme using molecular dynamic simulations

Farzin Hadizadeh[1]
[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

***Objective*:** Histone deacetylases (HDACs) are attractive therapeutic targets for the treatment of cancer and other diseases. It has four classes (I-IV), among them especially class I isozyme are involved in promoting tumor cells proliferation, angiogenesis, differentiation, invasion and metastasis and also viable targets for cancer therapeutics. It was claimed that novel HDACIs were optimized as potential drug candidates, designed for regional or systemic release, and created as significant inhibitors.

***Material and Methods*:** Molecular dynamics simulation was used to evaluate a new 2-amino benzamide derivative as an inhibitor of histone deacetylase1. Simulation calculations were performed using the Nanoscale Molecular Dynamics NAMD 2.9 program with CHARMM27 force field in atomic details at real physiological condition aqueous solution at T = 37 °C, P = 1atm. The visualization package Visual Molecular Dynamics (VMD) was used to analyze results. Analysis studies such as rmsd, rmsf, radius of gyration, short-range electrostatic and vander waals interactions energy, distance between coordinated Zn2+ ion with active site residues and also hydrogen bonding during the simulation were performed.

***Results*:** The obtained findings indicate mode of interactions and inhibition strengths of the studied inhibitor for HDAC1. The average RMSD value of ligand-bond protein was 2.27 ± 0.15 A°, the average RMSF of ligand-bond protein was 0.73 ± 0.456 A°, respectively. The ligand-bond protein potential energy was found to be -33259.5 ± 13.35 kcal/mol indicating the stability of the system. These results improved the expected penta-coordination complex between HDAC1 residues and ligand with zinc ion at the enzyme active site.

***Conclusion*:** Molecular dynamics simulation showed interaction mode of 2-amino benzamide derivative with HDAC1 including zinc ion coordination, strong hydrophobic interactions and formation of hydrogen bond with benzamide derivative.

***Keywords*:** Histone deacetylase 1; 2-AminoBenzamide, Molecular dynamics simulations, HDAC1 inhibitors

Corresponding author Email address: t.abdizadeh@gmail.com

ID:371

Evaluating the antiproliferative effect of Tranilast, a TGF-β antagonist, on colon cancer cells

Negar yavari[1], Farzad Rahmani[2], Seyyed Mehdi Hassanian Mehr[2], Amir Avan [3], Majid Khazaei[1]
[1] Department of physiology, Mashhad university of Medical science, Mashhad, Iran
[2] Department of biochemistry, Mashhad university of Medical science, Mashhad, Iran
[3] Department of new sciences and technology, Mashhad university of Medical science, Mashhad, Iran

***Objective*:** Colorectal cancer (CRC) is a major cause of morbidity and mortality throughout the world. CRC is a highly treatable and often curable disease and Surgery is the primary form of treatment and results in cure in approximately 50% of the patients. There are several other therapies that have been identified. The purpose of this study is to investigate the therapeutic effects of Tranilast, a TGF-β antagonist, on targeting cell cycle progression and angiogenesis in CRC cell line.
***Material and Methods*:** CRC cell line, CT26, was treated with Tranilast and cell viability was measured by MTT assay. Next, Real-Time PCR and western blot were performed to evaluate the effect of Tranilast on the expression level of several genes involved in cell cycle and angiogenesis including cyclin D1 and VEGF.
***Results*:** Our results showed that treating CT-26 cells by Tranilast reduced expression of cyclin D1 and VEGE receptor1 in colon cancer cells and it significantly reduced the level of Cyclin D1.
***Conclusion*:** This study suggests that Tranilast has a potent anti-cancer property in colon cancer cells by suppressing cell cycle progression and angiogenesis. Further studies are needed to determine the exact molecular mechanism of this drug in cancer patients.

***Keywords*:** Tranilast, Colorectal Cancer, Cyclin-D1, Tumor progression

Corresponding author Email address: Negar.yavari94@gmail.com

ID:372

Effect of losartan in cell proliferation and angiogenesis of colon cancer

Mahdieh khoshakhlagh[1], Farzad Rahmani[1], Seyed Mahdi Hasanian mehr[1], Majid khazai[2]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Department of physiology, Mashhad university of medical scince

***Objective*:** Colorectal cancer (CRC) is one of the major cause of mortality worldwide. There are several therapeutic interventions that have been identified. Angiotensin II (Ang II) is a main component of the renin angiotensin system that was found to be expressed in tumor growth and angiogenesis. It is found that angiotensin II type 1 receptor (AT1R) is significantly up-regulated in tumor cells. AT1R blocker (ARB), including losartan was inhibited the growth of cancer cells and angiogenesis. The purpose of this study is to investigate the therapeutic potency of losartan in targeting cell cycle progression and angiogenesis in colorectal cancer cells.

***Material and Methods*:** CRC cell line, CT26, was treated with losartan and cell viability was measured by MTT assay. Next, Real-Time PCR was performed to evaluate the effect of losartan on the expression level of several genes involved in cell cycle and angiogenesis including cyclinD1 and VEGF. Consistently, Western blot was used to evaluate protein expression of these key proteins in colon cancer cells upon losartan treatment.

***Results*:** Cell cytotoxicity of losartan was evaluated and the IC50 for this drug was about 980nm in these cells. Our results showed that losartan down-regulates expression of cyclinD1 in colon cancer cells. Consistently, losartan decreased angiogenesis by suppressing VEGF activity in CT-26 cells

***Conclusion*:** This study suggests that losartan by suppressing cell cycle progression and angiogenesis can elicit potent anti-cancer properties in colon cancer cells. These results support the therapeutic potency of this inhibitor for colon cancer patients. However, further in vitro, in vivo and clinical studies are required to determine the exact molecular mechanism of this drug in cancer patients

***Keywords*:** Colorectal cancer, Losartan, Angiogenesis, Tumor progression

Corresponding author Email address: khoshakhlaghm951@mums.ac.i

ID:375

Crocin inhibits the prenylation of Ras onco-protein in MCF-7 cell line

Seyed Ali Hashemi[1], S. Zahra Bathaie[1], Mohammadali Mohagheghi[2]
[1] Department of Clinical Biochemistry, Tarbist Modares University
[2] Oncology Department, Cancer Research Center, Medical Oncology-Hematology Department , Cancer Institute of Iran, Tehran University of Medical Sciences, Tehran, Iran

***Objective*:** Ras family of onco-proteins is the most frequently mutated protein in cancer. Post-translational prenylation and thereby anchorage on cell membrane is inevitable for transducing activity of Ras in normal and cancer cells. Interestingly, inhibition of Ras prenylation have been targeted as an approach against cancer for past three decades. Crocin, as the main carotenoid of saffron have been reported for its anticancer effects both in vitro and in vivo. In the present study, the effect of crocin on inhibition of K-Ras prenylation was investigated in MCF-7 breast cancer cell line.

***Material and Methods*:** The present study was designed to conduct both in silico and in vitro. First, we estimated the spatial interaction between crocin and a ubiquitous crystal structure of prenyl transferase enzyme a Rat Farnesyl transferase enzyme [FT]) through a docking analysis by AutoDock vina. Then, MCF-7 was cultured in 10% FBS- enrich DMEM medium and treated with 3.5 mg/ml (IC50) crocin. Then, the level of protein expression and prenylation of K-Ras was examined by gel shift assay- Western blotting technique in the cell lysates after 6, 12, and 24 h of treatment.

***Results*:** Our in silico findings showed that crocin strongly (binding affinity~12 kJ/mol) binds with substrate- binding- site of rat FT through hydrogen and Van der Waals bonds. Concomitantly, our in vitro study has also shown that treatment of MCF-7 with crocin resulted in a time dependent, and significant diminish of K-Ras protein expression, as well as its prenylation.

***Conclusion*:** In conclusion, our data showed that crocin is a potent agent for inhibition of K-Ras prenylation in MCF-7 cancer cell line. We suppose that the prenyl- like structure of crocin may be responsible for its anti- prenyl transferase activity observed in the present study. The precise mechanism of crocin action needs for more studies.

***Keywords*:** K-Ras, Prenyl trsnsferase inhibitor, crocin, braset cancer

Corresponding author Email address: Seyedali.hashemi@modares.ac.ir

ID:377

Anti-Diabetic Effects of Olea europaea through Increased Antioxidant Enzymes Activity in Alloxan-Induced Diabetic Rats

Saber Abbaszadeh[1]

***Objective*:** Diabetes is a big challenge in the health care system. Many people live with diabetes. It is estimated that this population increase to 592 million by 2035. Different studies have been described many mechanisms involved in pathogenesis of diabetes mellitus. Oxidative stress is the major mechanisms which is involved in the pathogenesis of this disease and ROS are the most important kind of free radicals. Therefore, the antioxidant therapy can be a good choice for treatment of diabetes. Olive is known as Olea europaea (Olea europa). The leaves and fruits of olive tree in traditional medicine are used as an antihypertensive agent. Oleurophene is one of a variety of these polyvinens, which is abundant in olive leaves. This compound prevents liver and kidney and cardiovascular diseases by preventing and inhibiting membrane lipid oxidation.

So, we decided to evaluate the protective effects of Oleurophene against diabetes through increased antioxidant enzymes activity.

***Material and Methods*:** Forty male Sprague-dawley rats (180-200 g) rats were divided randomly in four groups. The rats were diabetic by using alloxan injection intraperitoenally (120 mg/kg). After 8 weeks treatment with quercetin intraperitoenally, the rats were killed and their blood samples were collected. Antioxidant enzymes activity of serum including catalase, glutathione peroxidase and glutathione level were measured biochemically. Serum catalase and glutathione peroxidase activities and glutathione level was decreased significantly in diabetic control group compared to the corresponding control and sham group. But, antioxidant activities of serum catalase and glutathione peroxidase activities and glutathione level was increased significantly in Oleurophene -treated group in comparison with other groups

Results: Hydrogl particles were successfully synthesized. The FTIR spectra from starch and hydrogel confirmed carboxy methylation of the starch. Furthermore, SEM images also confirmed the hydrogel formation. Microscopic photographs of hydrogels revealed the various size of particles. So the particles smaller than one micrometer were selected using differential centrifuge. The result of swelling test indicates their high ability of water absorption which is a good criteria for their potential to drug absorption. Investigating the protein release in buffers with different pH showed that these particles release their cargo in acidic conditions. With the aim of utilization of hydrogels for drug delivery their cytotoxicity was examined and results show that they are not cytotoxic.

Conclusion: The results indicate that diabetic rats have decreased antioxidant enzymes activity, but, Oleurophene -treated and Olive leaves rats showed significant increase in their serum antioxidant enzymes activity. Therefore, researches are required to convert Olea europaea to a therapeutic agent as a beneficial treatment for diabetes

Keywords: Olea europaea, Oleurophene, Diabetes, Antioxidant Enzymes, rat

Corresponding author Email address: saberabaszade1370@gmail.com

ID:378

Hydrogel Synthesis and its use in protein encapsulation

Parviz Davoodi Monfared[1], Saeed Mohammadi[2], Shiva Akbari Birgani[1], Foad Kazemi[1]
[1] Department of Biological Sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran
[2] Hematology and Oncology Research Center, Shariatee Hospital, Tehran, Iran

Objective: The hydrogels are three-dimensional polymeric networks with high capacity for water absorption. They are applicable in enzyme immobilization and drug delivery especially for cancer therapy.
Material and Methods: In this study, we introduce a new method of hydrogel synthesis and encapsulation of Bovine Serum Albumin (BSA) as a model protein. First of all, starch polymer was carboxymethylated and then used to synthesis of hydrogel granules. In order to confirm the construction of hydrogel granules, FTIR spectroscopy and SEM microscopy were applied. The physicochemical properties of synthesized particles were investigated using the morphometric analysis and swelling test. In another experiment, hydrogel was synthesized again and protein encapsulation was done. Afterward, the protein release ratio at the broad ranges of pH was investigated using UV-Vis spectrophotometry. Finally, the cytotoxicity of the synthesized hydrogels was examined by MTT assay.
Results: Hydrogl particles were successfully synthesized. The FTIR spectra from starch and hydrogel confirmed carboxy methylation of the starch. Furthermore, SEM images also confirmed the hydrogel formation. Microscopic photographs of hydrogels revealed the various size of particles. So the particles smaller than one micrometer were selected using differential centrifuge. The result of swelling test indicates their high ability of water absorption which is a good criteria for their potential to drug absorption. Investigating the protein release in buffers with different pH showed that these particles release their cargo in acidic conditions. With the aim of utilization of hydrogels for drug delivery their cytotoxicity was examined and results show that they are not cytotoxic.
Conclusion: On the whole, the newly synthesized hydrogel due to its specific features as like as biodegradability and pH dependent drug delivery will be a safe tool to drug delivery into the cancer cells.

Keywords: Hydrogel, Drug delivery, Protein encapsulation

Corresponding author Email address: p.d.monfared@iasbs.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:380

The effect of folic acid loaded on functionalized multi wall carbon nanotube for breast cancer treatment

Leila Jalali[1], Nasrin Mollania[1], Hassan Azhdari-Zarmehri[2]
[1] Department of Basic Science Department of Hakim Sabzevari University, Sabzevar, Iran
[2] Department of Basic Medical Sciences and Neuroscience Research Center, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

Objective: Folic acid is used for preventing and treating low blood levels of folate (folate deficiency). Some people use folic acid to cancer treatment. Carbon nanotubes (CNTs) are formed as hollow cylinders with a single layer (CNT single wall, SWNTs) or multi-layer (CNT multiwalled, MWNTs) graphene sheets into seamless cylinders have been described. CNT due to their unique features and attractive architecture, have attracted great interest. They are also considered as one of the most promising nanomaterials. In recent years it has been shown that CNT are loaded with the drug.
Material and Methods: In order to load the drug on to a multiwall carbon nanotube, first, the amount of folic acid in ethanol was placed on a stirrer for 30 minutes to dissolve. Then, the amount of carbon nanotube multiplied with no agent was added to it, and for 240 minutes in the ultra-sonic instrument.
Results: Folic acid was loaded on carbon nanotube and determined with some techniques. The In vitro cytotoxicity of nanoparticles on MCF7 cell lines was assessed by MTT assay.
Conclusion: Folic Acid Load with Carbon Nanotube without Factor was performed and the results were analyzed using Spectrophotometry device and FTIR method

Keywords: anticancer drug, anti-cancer property, nanotubes, folic acid

Corresponding author Email address: leilajalali68 @ yahoo.com

ID:381

Evaluation of efficacy of nilotinib versus imatinib in newly diagnosed Chronic Myeloid Leukemia: A systematic review

Ameneh Khodarahmi[1], Sadegh Zarei[1], Ali Moradi[1]

[1] ShahidSadoughi University of Medical Sciences and Health Services, Yazd

***Objective*:** Chronic Myeloid Leukemia (CML) is a malignant tumor. It is created by the constant activation of tyrosine kinases, which leads to abnormal white blood cell proliferation. Preclinical studies have shown that nilotinib, a new tyrosine kinase inhibitor, is more potent than imatinib in CML. The aim of this study was to evaluate the efficacy of nilotinib versus imatinib in patients with newly diagnosed chronic myeloid leukemia in the chronic phase.

***Material and Methods*:** Articles published between 2014 and 2017 were searched in the databases of PubMed, MEDLINE and Google scholar. Search keywords included of "imatinib" OR "Glivec" OR "Gleevec" AND "nilotinib" AND "chronic myeloid leukaemia" OR "leukemia, myelogenous, chronic, bcr-abl positive" OR "bcr-abl positive chronic myelogenous leukemia" AND "CML". According to the mentioned keywords, 27 articles were found that ultimately 9 articles were selected based on the desired purpose.

***Results*:** Data were collected from 9 clinical studies (4,366 individuals). The major molecular response to nilotinib (43%) was approximately twice the magnitude of imatinib (22%) over a 12-month period (P<0.001 for both comparisons). And the complete cytogenetic response rate for nilotinib (78% for the 400-mg dose) over 12 months was significantly higher than for imatinib (65%) (P<0.001 for both comparisons). Patients receiving nilotinib took longer time to enter the advanced phase than those receiving imatinib. In people who received imatinib, gastrointestinal disorder was more common, while in the nilotinib recipients, dermatologic events and headache were observed.

***Conclusion*:** Nilotinib showed better efficacy against imatinib in newly diagnosed Chronic Myeloid Leukemia patients.

***Keywords*:** Imatinib, nilotinib, chronic myeloid leukaemia

Corresponding author Email address: ameneh.khodarahmi66 @ Gmail.com

ID:382

MicroRNAs as a new biomarkers in diagnosis and treatment of chronic kidney disease

Samaneh Salehipour bavarsad[1], Mohammadtaha jalali[1], Narges mohammad taghvaei[1], Fatemeh ahmadpour[1], Khadijeh mahboobnia[1]

[1] Department of clinical biochemistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: Chronic kidney disease(CKD) development leads to end stage renal disease that requiring dialysis or transplantation. Histological signs of progressive CKD are an increased degree of tubulointerstitial atrophy and fibrosis.Determine of the severity of the CKD by serum urea and creatinine may be recognized the renal function inaccurately.New biomarkers are needed to more accurately classify CKD progression and the risk of CKD-related complications.The appropriate biomarker must be non-invasive, easy and reliable measurement and with a high sensitivity and specificity.In this review, we studied published papers on the role of microRNA (miRNAs) in CKD. miRNAs are single-stranded RNA of 22 nucleotides that regulating mRNA expression. Circulating miRNAs present in peripheral blood and many extracellular fluids are interesting biomarker candidates. Serum miRNAs are extremely stable is due to their consist of in cell-derived microvesicles known as exosomes and conservation from circulating ribonucleases. The concentration of some circulating miRNAs is altered in CKD patients such as miR-21 and miR-29. On the other hand, the kidneys have no roles in the physiological clearance of circulating miRNAs. Therefore,the use of miRNAs as therapeutic agents is very attractive but new data is requirement considering their specificity and influence on other systems.The diagnosis of patients by miRNA profiling and the treatment of patients by targeting specific miRNAs will be feasible in the future for true personalized medicine although much more efforts are necessary to identify miRNAs specifc to diseases, stages or patients.The use of miRNA blockers and agonists as therapeutic agents is very attractive but new information will be necessary considering their role in other systems.

Keywords: Please provide 3 to 5 keywords which can be used for indexing purposes

Corresponding author Email address: s.salehipour@yahoo.com

ID:384

Relative expression of AKT1 gene and miRNA which target this gene from PI3K signaling cascade in breast cancer cell line

Javad Razaviyan[1], Razie Hadavi[2], Samira Mohammadi-Yeganeh[3]
[1] Department of Clinical Biochemistry, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Student Research Committee and department of Biochemistry, Semnan University of Medical Sciences, Semnan, Iran
[3] Cellular and Molecular Biology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Breast cancer is the most common cause of cancer-related death among women. PI3K signaling pathway is an oncogenic cascade playing crucial roles in breast cancer and is activated in many breast cancer cases. miRNAs are small RNAs that cause gene silencing by binding to the mRNA 3′UTR of their target genes and therefore have an important function in regulation of gene expression.
Material and Methods: AKT1 was selected as target gene and its targeting miRNA was bioinformatically predicted. Then miRNA which target this gene was predicted applying bioinformatics software and tools. MCF-7 and MCF-10A cell lines were cultured, RNA extraction and cDNA synthesis were performed. Finally, quantitative RT-PCR was done and REST® 2009 was used to evaluate the expression of AKT1 gene and its targeting miRNA
Results: Bioinformatics prediction indicated miR-501-3p can target AKT1 gene with the highest score. Also the expression level of miR-501-3p has been significantly decreased in MCF-7 cell line compared to the normal breast cell line by 1818 folds and the expression level of AKT1 gene was significantly increased by 2 folds as well.
Conclusion: We found a correlation between up-Regulation of AKT1 gene and down-regulation of miR-501-3p. These results suggest that this miRNA can be used as inhibitory agent for AKT1 in breast cancer targeted therapies. However, more investigations are needed to practically confirm these findings.
Keywords: Breast cancer, PI3K pathway, AKT1, miR-501-3p
Corresponding author Email address: javadrazaviyan@gmail.com

ID:387

Reactive oxygen species and P38 MAP kinase have role on TGF-β stimulated GAG synthesizing enzymes gene expression

Reyhaneh Niayesh Mehr[1], Hossein Babaahmadi Rezaei[1], Parisa Dayati[1], Faezeh Seif[1]
[1] Department of Clinical Biochemistry, Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: Hyperelongation of glycosaminoglycan (GAG) chains on vascular wall proteoglycans leads to an increase in their binding to lipoproteins and retention of atrogenic LDLs in the blood vessels wall. This event is critical early step in the progression of atherosclerosis. Transforming growth factor (TGF)-β is one of the vasoactive agents which regulates the GAG hyperelongation via stimulation of GAG synthesizing enzymes expression such as C4ST-1 and ChSy-1. So, identification the TGF-β signaling pathway is important and may be a therapeutic strategy for prevention the development of athergenesis. The aim of this study was to evaluate the role of possible signaling mediators including ROS and ROS-sensitive P38 MAP kinase in TGF-β induced C4ST-1 and ChSy-1 mRNA expression in cultured vascular smooth muscle cells (VSMCs).

Material and Methods: Invitro study was performed on human VSMCs. The mRNA expression of C4ST-1 and ChSy-1 enzymes were assessed by Real-time PCR technique. GAPDH was used as a house keeping gene.

Results: Treatment of VSMCs with TGF-β (2ng/ml) led to increase in the mRNA levels of C4ST-1 and ChSy-1 enzymes, which were significantly (P<;0.01) reduced by using TGF-β receptor antagonist (SB431542,10μM), ROS scavenger (N-Acetyl-L-cysteine [NAC],10mM) and P38 MAP kinase inhibitor (SB202190,20μM).

Conclusion: Our results demonstrated that in human VSMCs ROS and P38MAP kinase are involved in this TGF-β signal transduction pathway. As a result, we suggest that effect of TGF-β on GAG synthesizing enzymes gene expression mediates via ROS-dependent mechanism.

Keywords: Transforming Growth Factor-beta, glycosaminoglycan enzymes, Reactive Oxygen Species, P38 Mitogen-Activated Protein Kinase

Corresponding author Email address: babaahmadi-h@ajums.ac.ir

ID:388

Assessment of Insulin Like Growth factor (IGF1) and blood glucose levels in STZ-induced diabetic rats after administration of aqueous extract of Ficus carcia leaves

Monireh Aghajany-Nasab[1], Mansoori R[1]

[1] Dept. of Biochemistry & Biophysics School of Medicine Guilan University of Medical Sciences, Rasht, Iran

[2] School of Paramedical, Medical Plants Research Center of Student Basij, Guilan University of Medical Sciences

Objective: Diabetes is a metabolic disorder which can cause many complications. Long term complications of diabetes consist of retinopathy, nephropathy, neuropathy and angiopathy and several others. The goal of treatment in diabetes mainly concentrates on keeping blood sugar levels as close to normal as possible, without causing low blood sugar. This can usually be accomplished with a healthy diet, exercise, weight loss, and use of appropriate medications. In addition the use of some herbal medicine could have beneficial effects in patients. This study was designed to assess effects of aqueous extract of ficus carcia leaves on blood glucose and IGF1 in streptozocine STZ-induced diabetic rats.

Material and Methods: 24 male Wistar rats were randomly divided in 4 groups. Normal, diabetic, diabetic treated with (500mg/kg/daily), diabetic treated with (1000 mg/kg/daily) of aqueous extract of Ficus Carcia leaves. Blood Glucose was measured by Glucose oxidase –Peroxidase Method and the quantitative determination of IGF1 was performed by use of IGF1-ELISA kit.

Results: Blood glucose levels significantly increased in diabetic rats compared with controls ($P< 0.001$) and aqueous extract of ficus Carcia leaves decreased this levels ($P < 0.05$). Serum IGF-1 was significantly lower in diabetic rats than normal controls ($P < 0.05$). Although both concentrations of the aqueous extract of ficus Carcia leaves caused significant increase in serum IGF-1 in diabetic rats, there was more increase in IGF1 levels in 1000 mg/kg treated group.

Conclusion: This study showed that aqueous extract of ficus carcia has anti-diabetic effects through reducing blood glucose and increasing IGF1.It seems this extract might be a good candidate as a supplementary substance for control glucose levels in diabetes.

Keywords: IGF1, ficus carcia, diabetic, RATs

Corresponding author Email address: maghajany@gmail.com

ID:390

Indomethacin-Amino Acids Interacting Systems: A Molecular–Level Approach

Fateme Naghavi-Al-Hosseini[1], Mahmoud Mirzaei[1]
[1] Department of Medicinal Chemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Indomethacin (Ind) is one of the nonsteroidal anti-inflammatory drugs (NSAIDs), which interacts with cyclooxygenase (COX) as an inhibitor. Molecular–level mechanism of ligand-receptor interactions could improve the knowledge of designing novel ligands for specific receptors. Moreover, amino acids (AA) are among the co–formers to construct hybrid structures with NSAIDs to increase their solubility. In this work, we have investigated the Ind–AA interacting systems using the in silico methods at the molecular–level.
Material and Methods: In this in silico study, 3D structure of IND and 20 AAs, obtained from ChemSpider, were optimized based on the PM3 method of HyperChem. To indicate possible interacting sites for hybrid structure formations, molecular docking processes were performed for each 20 Ind-AA structures, based on the Genetic Algorithm method of AutoDock4 software.
Results: The obtained interacting energies between Ind and AA counterparts are ranged from -1.69 (Glu) to -4.29 (Lys) kcal/mol. The Ind-AA hybrids interaction type is mainly hydrophobic.
Conclusion: Based on the docking processes results, formations of Ind-AA hybrid structures were recognized. Ind low solubility led to recognized hydrophobic interactions with AAs. The role of AA counterparts could be as separators between the Ind molecules of crystal structures, which improves water insertion inside the molecular layers for better solvation. Based on the obtained binding energies, Ind-Glu is the least stable and Ind-Lys is the most stable hybrid structure, which could be suggested for further investigations. To recognize the best interacting Ind-AA hybrid; the energies indicated that the Ind-Lys is the strongest pair at the molecular–level.

Keywords: In Silico; Indomethacin; Amino Acid; Interactions.

Corresponding author Email address: f.naghavi.94@gmail.com

ID: 391

In-Vitro bioactivity of methanol extract of the Proveskia abrotanoides Kar

Ramin Masoudi Marghmaleki[1], Zeinab Toluei[1], Fereshteh Jookar Kashi[1]

[1] Division Biotechnology, Department of Cell and molecular Biology, University of Kashan, Kashan, Iran

Objective: Proveskia abrotanoides Kar. is a wild growing plant belong to Lamiaceae family and has been used in traditional Iranian herbal medicine. Current study has been designed to measure antioxidant activity and antimicrobial effects of methanolic extract of P. abrotanoides.

Material and Methods: Aerial parts of P.abrotanoides were collected from Ghohrood, Kashan. Powdered air-dried plant material was extracted with methanol. Extract was tested for its antioxidant activities using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. The antimicrobial activity of methanol extract was evaluated against a set of 10 microorganisms and its potency was assessed quantitatively by minimum inhibitory concentration (MIC) values and determination of minimum bactericidal concentration (MBC).

Results: In the DPPH test, IC50 value was 47.97 µg/ml, indicating an antioxidant potency of about 17% of that of butylated hydroxytoluene (IC50 = 8.23 µg/ml) for this extract. Also in antimicrobial activity test, MIC values for P. abrotanoides against Salmonella paratyphi-A serotype, Bacillus subtilis, Staphylococcus epidermidis, Escherichia coli, Staphylococcus aureus, Klebsiella pneumonia, Shigella dysenteriae, Proteus vulgaris and Candida albicans were 62.5 µg/ml and for the Pseudomonas aeruginosa strain, was 31.2 µg/ml. Also, MBC values were 500, 250, 250, 250, 500, 125, 250, 62.5, 500 and 62.5 µg/ml, respectively.

Conclusion: The DPPH system model shows well that natural anti-oxidants can compete with synthetic antioxidants and can be replaced with these antioxidants in the food industry. Also, according to the results, we have seen a moderate and good antimicrobial activity of this plant

Keywords: Proveskia abrotanoides, Antioxidant, Antimicrobial, DPPH, Microorganism

Corresponding author Email address: r.masoudi@grad.kashanu.ac.ir

ID:393

Study on the effects of Jujube (Ziziphus jujuba) fruit extract on serum lipid profile in high fat fed diet rats

Nader Jadid[1], Bahram Amouoghli[2]
[1] Falavarjan Branch Islamic Azad University, Isfahan, Iran
[2] Department of clinical Sciences, Faculty of Veterinary Medicine, Tabriz branch, Islamic Azad University

Objective: Hypercholesterolemia, hypertriglyceridemia, low HDL-C and high LDL-C levels in the serum are common disorders that arise following the high-fat diet feeding. These disorders are accompanied with very dangerous complications such as atherosclerosis and hepatosteatosis. Liver plays a key role in lipid metabolism. Steatosis of the liver indicates excessive accumulation of lipids in hepatocytes due to an imbalance in the formation and breakdown of lipid. Therefore, improving of this disorders seems to be more essential. The aim of this study was to evaluate the pharmacological activities of jujube extract on serum lipid profile in high fat fed diet rats, which can be used as a dietary supplement or a pharmaceutical product for prevention of the hyperlipidemia complications.

Material and Methods: In this study, rats were randomly divided into five groups of 10 animals each including: 1- control group, 2- healthy rats treated with jujube extract, 3- high-fat fed diet group, 4- high-fat fed diet + clofibrate (320 mg/kg/day) treatment group (as positive control) and 5- high-fat fed diet + jujube extract treatment. In order to induce hyperlipidemia, the emulsified fat was used. Briefly, the rats of groups 3-5, received the emulsified fat daily for 8 weeks through the gavage. In control rats, normal saline was given in the same way. Simultaneously, groups 2 and 5 jujube extract (200 mg/kg) was gavaged for 8 weeks. At the end of experimental, fasting blood samples were collected from retro-orbital plexus. Serum samples were prepared by centrifuging the blood at 2500 rpm for 15 min. Serum triglycerides, total cholesterol and HDL were measured enzymatically by commercial kits and spectrophotometric methods thereafter VLDL and LDL levels were calculated.

Results; In healthy rats treated with jujube extract there was no significant alterations in serum lipid profile. In positive control group, Clofibrate treatment significantly (p<;0.001) decreased distinctive elevated levels of serum triglycerides (TG), total cholesterol (TC), LDL-C and VLDL-C in comparison with the high fat fed diet rats, and significantly (p<;0.01) increased slightly reduced serum HDL-C level compared with the high fat fed diet rats. In high-fat fed diet pluse extract treatment group, jujube extract significantly (p<;0.01) decreased distinctive elevated levels of serum triglycerides (TG), total cholesterol (TC), LDL-C and VLDL-C in comparison with the high fat fed diet rats, and significantly (p<;0.05) increased slightly reduced serum HDL-C level compared with the high fat fed diet rats.

Conclusion: The results obtained showed that jujube extract could improve the disorders of lipid metabolism induced by high-fat diet and prohibit the occurrence of hepatosteatosis.

Keywords: jujube extract, high-fat diet, serum lipid profile, rats

Corresponding author Email address: nader_jadid67@yahoo.com

ID:394

Homology Modeling and Molecular Dynamic Simulation of GyrA and GyrB Subunits of DNAgyrase extracted from klebsiella pneumoniae

Fatemeh Khademimoghadam[1], Mohamad Reza Dayer[1], Farzaneh Mesami[1]
[1] Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Objective: DNAgyrase and topoisomerase IV are two members of bacterial Type II topoisomerase that control nucleic acid processes during DNA replication. DNAgyrase in turns is composed of two distinct subunits of GyrA and GyrB that arranged in an A2B2 tetramer. This enzyme is inhibited by quinolones which unfortunately emerge quinolone resistance in klebsiella pneumoniae. Since there is no coordinate structure for GyrA and GyrB subunits of klebsiella pneumoniae useful for drug design, we decided here to model and optimize a coordinate structure using homology modeling and molecular dynamic methods.

Material and Methods: Structures as templates based on their similarity to our enzyme were downloaded from PDB database and a coordinate structure were modeled by MODELLER software. In this study, four structures extracted from each subunit were equilibrated and optimized using GROMACS package. Root mean square deviation, secondary structure analysis and Ramachandran plot analysis have been done by using GROMACS, SPDBV and RAMPAGE server respectively. Finally, the best structure for each subunit were chosen according to their molecular stability and their Ramachandran plot.

Results: The Ramachandran plot analysis for the best structure of GyrA and GyrB indicated that 96.2 and 95.5 percent of amino acid were in allowed regions respectively. The GyrA secondary structure analysis showed that amino acids contributed to coils, helices and strands were 68.5%, 22.6% and 8.9% respectively. These numbers for GyrB were 64.9%, 25.8% and 9.3%.

Conclusion: Owing to biological importance of DNAgyrase subunits, simulation of this protein in silico could be beneficial for therapeutic purposes in drug design and inhibitory ligands.

Keywords: Homology modeling; DNAgyrase; Quinolones resistance; Klebsiella pneumoniae

Corresponding author Email address: Yaldakhademi.scu@gmail.com

ID:396

Evaluation expression of PIK3CA gene from PI3K/AKT signaling pathway and its targeting miRNA in breast cancer cells

Razie Hadavi[1], Javad Razaviyan[2], Samira Mohammadi-Yeganeh[2]
[1] Semnan University of Medical Sciences, Semnan, Iran
[2] Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: miRNAs are key gene regulators that are involved in many biological and pathological processes including breast cancer. Breast cancer is the most common form of malignancies in women and requires new therapies and biomarkers. Different signaling pathway such as PI3K/AKT signaling pathway are involved in breast cancer. miRNA which target PIK3CA gene was predicted using bioinformatics software and the expression levels of this miRNA and its target gene was evaluated.

Material and Methods: A variety of Bioinformatics software including TargetScan, DIANA Tool, MiRwalk, microPIR, miRanda, miRDB, microcosm were applied. MCF-7, as a non-metastatic breast cell, and MCF-10A, a normal epithelial cell line, were cultured. RNA extraction, cDNA synthesis, and quantitative real-time PCR were performed. Expression of genes and miRNAs was normalized to HPRT1 gene and small nuclear RNA SNORD 47 (U 47), respectively and analyzed using REST 2009®. P-value <;0.05 was considered statistically significant.

Results: The results of our bioinformatic predictions indicated that miR-576-5p can targets PIK3CA. Real-time PCR data demonstrated the expression level of PIK3CA gene was up-regulated by 8.2 folds while miR-576-5p was down-regulated by 10,000 folds in MCF-7 cell line compared to the normal breast cells (P-value<;0/05).

Conclusion: The results of our study indicated a significant decrease in the expression of miR-576- 5p and increase in the expression of PIK3CA and further studies including luciferase assay and gene and miRNA expression studies on clinical samples are required to experimentally confirm this interaction. MiRNA-based approaches could be useful in diagnosis, prognosis and treatment of breast cancer.

Keywords: Breast cancer, PI3K/AKT pathway, PI3CA, miR-567-5p

Corresponding author Email address: raziehadavi@gmail.com

ID:397

Antioxidant and Chemopreventive effect of *Astragalus ovinus* against DMBA induced breast cancer in rats

Fouad Mehraban[1], Mostafa Mostafazade[1], Mina Khasayesi[1], Hossein Sadeghi[2], Arsalan Azizi[2], Mehdi Akbartabar[2], Vahid Barati[2], Heibatollah Sadeghi[3]

[1]Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran

[2] Medicinal Plant Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

[3] Cellular and Molecular Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

Objective: The aim of this study was to investigate the antioxidant and chemopreventive effect of *Astragalus ovinus* hydroalcoholic extract(AOE) against DMBA - Induced breast tumors in rats.

Material and Methods: The antioxidant activity was evaluated by DPPH, FRAP assays. Forty adult female Sprague-Dawley rats were divided into 4 equal groups. The first group served as control and treated with a single dose of olive oil orally, the DMBA (group II) and treatment groups (III & IV) were treated with a single dose of DMBA dissolved in olive oil at dose of 50 $mg.kg^{-1}$ body weight. Group I and II received normal salin and group III and IV treated with AOE orally at doses of 120 and 240 mg kg^{-1} respectively for 30 consecutive days. Chemopreventive effects were assigned by weight and volume of tumors, expression levels of PCNA, serum levels of $CA_{15.3}$, p53 protein, MDA, CAT, calcium, and histopathological studies.

Results: Results showed that the AOE contains a noticeable amount of phenolic and flavonoids compounds. This extract showed a potent antioxidant activity both *in vitro* and *in vivo* assays. Furthermore, orally treatment of rat with AOE decreased the final diameter and volume of tumors, as well as reduced the serum levels of $CA_{15.3}$, p53 protein, MDA, and calcium. AOE also decreased the expression of PCNA in cancerous tissues and reduced the histopathological deformity.

Conclusion: The present study showed the antioxidant and chemopreventive effects of AOE in DMBA-induced breast tumor in rats .This chemopreventive activity of AOE may be largely due to its antioxidant properties.

Keywords: *Astragalus Ovinus*, Breast Cancer, DMBA

Corresponding author Email address: hsadeghim@yahoo.com

ID:398

Nanocapsulations of methanolic extract of Vaccinium Macrocarpon and evaluation of its antidiabetic effect

Shokoofeh Khazaei[1], Nasrin Mollania[1], Jafar Mosafer[2], Tokyam Hajjar[1]
[1] Department of Biology, Faculty of Basic Science, Hakim Sabzevari University, Sabzevar, Iran
[2] Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

Objective: Diabetes mellitus is a metabolic disease characterized by high levels of blood glucose. One of the medicinal herbs that has been discussed with anti-diabetic effects is Vaccinium Macrocarpon. Nanocapsulation are used to protect sensitive substances from the external environment, control drug release, safe use of toxic substances and prevent side effects of the drug.
Material and Methods: Vaccinium Methanolic extracts was ready and with the emulsion-evaporation method, the Vaccinium extract is inserted into a PLGA bio-nano-polymer. The streptozotocin-diabetic male mice was prepared and nanocapsules injected. The healthy group was not diabetic and a group that did not receive any treatment were considered as controls. Serum levels of fasting blood glucose, triglyceride, cholesterol, HDL and LDL were used to control blood markers levels throughout the course.
Results: According to the results of TEM, nano-capsules are formed correctly. In the daily glucose test, reduction was observed in all treatment groups during the period. And the results of LDL, HDL, triglyceride and cholesterol was compared with control.
Conclusion: The study suggests that PLGA nanoparticles can be used as a drug delivery system for antioxidant and phenolic compounds.
Keywords: Nanoencapsulation, Biodegradable Polymers, Anti-diabetic studies
Corresponding author Email address: shkhazaei6969@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:399

Effects of Different Doses of Metformin on SNARE Proteins Expression in Skeletal Muscle of Rats with Type2 Diabetes Mellitus

Azam Rezaei Farimani[1,2], Mohammad Taghi Goodarzi[1], Sadegh Zarei[1]
[1] Department of Clinical Biochemistry, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Department of Basic Medical Sciences, Neyshabur University of Medical Sciences, Neyshabur, Iran

Objective: Soluble N-ethylmaleimide-sensitive factor activating protein receptors, SNAREs, play important roles in membrane trafficking. Among the different isoforms of SNARE proteins, SNAP-23, syntaxin-4 and VAMP-2 are highly expressed in skeletal muscle tissue and play important roles in GLUT-4 trafficking and vesicle fusion. The altered expression of these proteins can be one of the etiological causes of insulin resistance and type 2 diabetes. The aim of this study was to investigate the effect of metformin on the expression of SNARE proteins in an animal model of type 2 diabetes.
Material and Methods: Forty male Wistar rats were used. A single dose of streptozotocin/nicotinamide were injected to induce type 2 diabetes. Metformin (100 and 150 mg/kg) was administered orally for a month. FBS, body weight and insulin level were measured. The expression of SNARE proteins were assessed using Real-Time qRT-PCR.
Results Mean delta Ct of SNAP23, syntaxin-4 and VAMP-2 were lower in diabetic rats compared with healthy rats, as a result, their expression increased, although differences were not significant. A dose of 100mg/kg metformin did not change the expression of these proteins, while 150mg/kg metformin decreased the expression of all three genes, the differences were not statistically significant.
Conclusion: Streptozotocin along with nicotinamide led to type 2 diabetes induction that was associated with a relative decrease in insulin secretion and insulin resistance. Depending on the dose, metformin can modify SNARE proteins expression in skeletal muscle. This may be another mechanism for metformin to improve diabetes.

Keywords: SNARE proteins, Type 2 diabetes, Metformin

Corresponding author Email address: azam_rezaei1@yahoo.com

ID:401

Investigation the protective effects of Chlorella vulgaris in rats CCl4 induced liver fibrosis

Jamshid Karimi[1], Roohollah Mohseni[1], Zahra Arab Sadeghabadi[1]
[1] Student Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: In current study the possible protective effects of Chlorella vulgaris extract (CVE) on carbon tetrachloride (CCl4)-induced hepatic fibrosis in rat and the mechanism underlying these effects was investigated.
Material and Methods: Hepatic fibrosis was induced in male rats by 1ml/kg of CCl4 (50% v/v olive oil) administration twice weekly for 10 weeks. Simultaneously Chlorella Vulgaris extract was administrated by daily gavage 50 mg/kg and 100 mg/kg. Histological evaluation, serum biochemical parameters and oxidative stress parameter in tissue were measured.
Results: Our results showed that CVE significantly attenuated CCl4-induced liver fibrosis as evidenced by modulating the elevated levels of serum biochemical indexes including decreasing the serum alanine transaminase (ALT), aspartate transaminase (AST), and improving the histological changes including reducing infiltration of inflammatory cells and collagen fibers in liver tissue. Also CVE attenuated lipid peroxidation and total oxidative statute and prevents total antioxidant capacity reduction through fibrogenesis.
Conclusion: Taken together, these results suggest that CVE produced a protective effect on CCl4-induced hepatic fibrosis in rat. Therefore, CVE may be an effective hepatoprotective agent and viable candidate for treating hepatic disorders and other oxidative stress-related diseases.

Keywords: Chlorella vulgaris, Hepatic fibrosis, CCl4

Corresponding author Email address: rooholla.mohseni@yahoo.com

ID:402

Antioxidant and antimicrobial activity of methanol extract of the Salvia reuterana Boiss

Ramin Masoudi Marghmaleki[1], Zeinab Toluei[1], Fereshteh Jookar Kashi[1]
[1] Division Biotechnology, Department of Cell and molecular Biology, University of Kashan, Kashan, Iran

Objective: Salvia reuterana Boiss. is a medicinal herb of the lamiaceae family with various therapeutic usages and is mostly distributed in the central highlands of Iran. The aim of this study was to evaluate the antioxidant and antimicrobial activity of the methanolic extract of Salvia reuterana.

Material and Methods: Aerial organs of S. reuterana were collected, from the Ghohrood, Kashan area. The dried and powdered plant material was extracted with methanol. Radical-scavenging activity (RSA) of the plant extracts was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay method. Antimicrobial activity of plant extract was studied on 10 microorganism. Minimal inhibition concentration (MIC) values and minimum bactericidal concentration (MBC) were determined.

Results: In the DPPH assay, IC50 value was 211.96 µg/ml, indicating an antioxidant potency of about 4% of that of butylated hydroxytoluene (IC50 = 8.23 µg/ml) for this extract. Also in antimicrobial activity test, MIC values for S. reuterana against Salmonella paratyphi-A serotype, Pseudomonas aeruginosa, Staphylococcus epidermidis, Escherichia coli, Staphylococcus aureus, Klebsiella pneumonia, Shigella dysenteriae, Proteus vulgaris and Candida albicans were 62.5 µg/ml and for the Bacillus subtilis strain, was 31.2 µg/ml. Also, MBC values were 500, 125, 62.5, 250, 250, 500, 500, 250, 62.5 and 500 µg/ml, respectively.

Conclusion: Herbal extracts generally display remarkable biological activities such as antioxidant and antimicrobial properties which are useful for preserving foods from decay. The results of this study indicate that the extract of this plant has a relatively good antioxidant activity and antimicrobial effect.

Keywords: Salvia reuterana, Antioxidant, Antimicrobial, DPPH; Microorganism

Corresponding author Email address: r.masoudi@grad.kashanu.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:403

loading of folic acid upon biologically functional Ag-nanoparticles: anti-cancer and differentiation induction of mesenchymal stem cells into neural level evaluation

Fahimeh Mollania[1], Nasser L Hadipour[1], Nasrin Mollania[2]
[1] Department of Chemistry, Faculty of Basic Sciences, Tarbiat Modares University, Tehran, Iran
[2] Department of Biology, Faculty of Basic Sciences, Hakim Sabzevari University, Sabzevar, Iran

Objective: During the two past decades, nanoparticles have been regularly carried out in controlled clinical human sciences. The release rate of drugs can be affected by important parameters such as functional groups anchored on the surface of the carrier.

Material and Methods: After preparation of green synthesed functional AgNPs and their characterization, the drug loading was performed and the content of loading was determined. Furthermore, anti-cancer effect upon breast cancer and differentiation of mesenchymal stem cells into neural level evaluation was performed with with 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) Assay and real time PCR respectively. The expression of neuron-specific enolase (NSE) and neurofilament gene was analysed.

Results: This study presented the effective conditions for loading of folic acid on biologically AgNPs. After loading, the nanocarrier were cleaned and the scoured test was further delineated by XRD and SEM. the amount of loading/release of the drug was investigated in different pH, including mouth and stomach pH values. Examined parameters in this study revealed that the prepared silver nanoparticles decorated with amine groups are successful in the controlled delivery of folic acid. The provided nanocarrier have shown positive effects on the stimulating of differentiation induction and anti-cancer properties.

Conclusion: The uniform AgNPs were successfully synthesized through the biologically methods. In addition to the large loading capacity, this produced nanomaterial released the drug in a long period and especially independent to pH.

Keywords: AgNPs, Folic acid, Mesenchymal stem cells, anti-cancer

Corresponding author Email address: f.mollania@yahoo.com

ID:405

Protection against H2O2-induced cytotoxicity in PC12 cells by microalgae's extracts

Saeed Niazi Vahdati[1], Ali Lashkari[1], Susan Kaboudanian Ardestani[1], Malihe Safavi[2]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran
[2] Iranian Research Organization for Science and Technology, Tehran, Iran

Objective: The aim of current research is to discover of new compounds with stronger neuroprotective potential and fewer side effects compared to synthetic drugs. Microalgae are microscopic organisms capable to convert solar energy to chemical energy via photosynthesis. Recently, microalgal researches has gained a lot of attention recently because of its roles to the production of renewable fuels, also several secondary metabolites which produced by alga cells such as polysaccharides, polyphenols, polyunsaturated fatty acids, carotenoids and sterols. These compounds show several pharmacological activities and have neuroprotective potential. Here we studied antioxidant and neuroprotective activity of the crude extract of some micro algae.

Material and Methods: Antioxidant activity of the extracts was determined by using 2, 2'- azino-bis (ethylbenzthiazoline-6-sulfonic acid (ABTS. (+)) radical cation assay. Cell viability detection by MTT assay. Also mechanism of action was studied by mitochondrial membrane potential (MMP) and intracellular reactive oxygen species (ROS).

Results: The highest reducing power, ABTS radical scavenging, and chelating power were found in methanol extracts of microalgae. The results showed that the treatment of PC12 cells with microalgae extracts to H2O2 exposure effectively increased the cell viability. In addition, this treatment decreased the amount of intracellular ROS, stabilized the mitochondria membrane potential (MMP), and decrease the activity of apoptosis-related protein like caspase 3.

Conclusion: Marine algal are valuable sources for antioxidant agents and could be used for the detection novel functional ingredients for pharmaceutical aim for alleviate the neurodegenerative diseases or for delaying aging.

Keywords: Microalgae, Antioxidant activity, Neuroprotection, PC12 cell line, Bioactive compounds

Corresponding author Email address: Saeed.niazi@ut.ac.ir

ID:406

Eco-friendly functionalized magnetic nanoparticles as a novel nanocarrier for controlled loading of acyclovir as an anti-cancer agents

Nasrin Mollania[1], Mohsen Fatemi[1]
[1] Department of Biology, Faculty of Basic Science, Hakim Sabzevari University, Sabzevar, Iran

Objective: Considering many applications of functionalized magnetic iron oxide nanoparticles (MIONPs); herein, a new strategy is developed for biosynthesis of MIONPs to improve their performance in the acyclovir delivery. Acyclovir has been the mainstream therapy for herpes viruses and recent studies have revealed the positive cytotoxic effects of antiviral-drugs in cancer treatment.

Material and Methods: A biological method for producing of MIONPs was introduced. The drug loading was studied by including MIONPs (0.01 g) into a phosphate buffered (1 ml, pH 9) containing acyclovir (1mg) with magnetic stirring (50 ℃, 5h). The accuracy of loding was investigated by FESEM, FT-IR and XRD techniques and in vitro release of acyclovir was screened through the dialysis method. Then in vitro cytotoxicity of nanoparticles on MDA-MB231 cell lines was assessed.

Results: Biologically synthethized MIONPs was funcional which stabilize the nanoparticles and can be exploited for the conjugation of other molecules to these particles. As results showed that the nanoparticles have displayed uniform spherical shape with an average size of 18.8-28.3 nm. The bands at 3355 and 2920 cm-1 in the FT-IR spectrum were ascribed to N–H and C–H stretching vibrations and corroborated that the amine groups in the surface of nanomagnetic. After acyclovier loading, the grafted amine group at the surface provided hydrogen bond interactions with the oxygen atoms of acyclovir and caused immobilization of drug. It can be concluded that loading and release of acyclovir from this biocompatible nanocarier can be controlled by pH.

Conclusion: Since, antiviral-drugs cause various allergenic side effects; therefore, design of a new biocompatible nanocarrier bearing less harmful impacts for oral delivery should be useful.

Keywords: Magnetic iron oxide nanoparticles, Acyclovir, Anti-cancer agents

Corresponding author Email address: biochemhsu@gmail.com

ID:408

MiR-141 regulates expression and activity of SIRTuin1 and AMP-activated protein kinase in hepatocytes.

Zeinab Yousefi[1], Mitra Nourbakhsh[1]
[1] Department of Biochemistry, iran university of medical science, Tehran, Iran

***Objective*:** MicroRNAs (miRNAs) are a class of small non-coding RNAs that function as critical gene regulators by targeting mRNAs for translational repression or degradation. Sirtuin 1 (SIRT1) belongs to the family of silent information regulator 2, which plays a crucial role in the DNA damage response, carcinogenesis, and the regulation of lifespan. SIRT1 and its activators have also been shown to play an important role in the pathophysiology of various metabolic diseases including non-alcoholic fatty liver disease (NAFLD). Recent Data suggest that AMPK may act as an intermediary regulator for the metabolic role of SIRT1. The aim of this study was to investigate the effect of miR-141 on SIRT1 and AMPK in HepG2 cells.

***Material and Methods*:** Levels of SIRT1 protein, AMPK and its phosphorylated form were determined by Western blotting. Gene expression of miR-141 and SIRT1 was determined by real-time PCR. Luciferase reporter assay was performed for identification of direct targeting of SIRT1 3'-UTR by miR-141. SIRT1 activity was assessed by fluorimetric method.

***Results*:** The expression of miR-141 was upregulated while SIRT1 was downregulated as a result of transfection of HepG2 cells with miR-141. Additionally, the protein level of SIRT1 and AMPK protein level were decreased due to the over expression of miR-141. miR-141 significantly decreased AMPK phosphorylation. The activity of SIRT1 was also declined in cells transfected with miR-141. The results of luciferase reporter assay proved SIRT1 to be a direct target of miR-141.

***Conclusion*:** Results showed that miR-141 could effectively suppress SIRT1 and lead to decrease in AMPK level and its phosphorylation in transfected cells. Downregulation of miR-141 may be a considered as a therapeutic strategy against NAFLD by targeting SIRT1/AMPK signaling.

***Keywords*:** MiR-141, SIRT1, AMPK, liver, Non-alcoholic fatty liver disease

Corresponding author Email address: Zainabyousefi1991@gmail.com

ID:411

The effect of Vitamin E on Alzheimer's disease: A systematic review

Ameneh Khodarahmi[1], Fatemeh Yaghoubi[1], Javad Zavar Reza[1], Elaheh Emadi-Andani[1]
[1] ShahidSadoughi University of Medical Sciences and Health Services, Yazd, Iran

***Objective*:** Increasing oxidative stress is one of the primary causes of Alzheimer's disease (AD). Vitamin E is a strong antioxidant in dietary that protects the body against free radicals. The aim of this study is to assess the efficacy of Vitamin E in the treatment and prevention of progression of AD.

***Material and Methods*:** Articles published between 2014 and 2017 were searched with the keywords of "Alzheimer's disease" OR "cognitive impairment" AND "Vitamin E" OR "tocopherol" OR "tocotrienol" AND "clinical trial" in the databases of PubMed, MEDLINE and Google scholar. Among the 21 related articles, 11 clinical trials that were included the effects of vitamin E on Alzheimer's patients were selected.

***Results*:** Although experimental studies have shown that vitamin E can have beneficial effects in AD animal models, its efficacy in AD patients is still debated. As in some studies, vitamin E has been able to slow down the progression of the disease, while in others, there was no difference between the treatment group and the placebo group. Interestingly, the combination of vitamin E with other antioxidants, such as vitamin C, could have positive effects on AD.

***Conclusion*:** This study shows that vitamin E can have different effects on AD. These different effects can be as follows: Differences in dosage and length of treatment with vitamin E, Inadequate vitamin E dose to achieve clinical result, Use of vitamin E in different stages of disease progression.

***Keywords*:** Vitamin E, tocopherol, tocotrienol, Alzheimer´s disease

Corresponding author Email address: F.yaghobi67@gmail.com

ID:412

An overview of drug delivery systems in Lukemia therapy [Review Article]

Khadijeh Mahboobnia[1], Narges Taghvaie[1], Samaneh Salehipour bavarsad[1], Fatemeh Ahmadpour[1]
[1] Department of clinical biochemistry. Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Objective*:** Leukemia is one of the most frequent malignancies in the paediatric population, but it also involves a considerable proportion of adults in developed countries. Chemotherapy is the first line of treatment for hematologic malignancies with many limitations, including the lack of drug specificity and undesirable side effects. The research activities in the basis of targeted delivery of anti-neoplastic drugs have developed considerably over the past 5 years. Recentely, mineral and organic nanoparticles have attracted much attentions in the field of biology and medicine. The use of divers drug nanocarriers such as antibody–drug conjugates, liposomal drug delivery systems, lipoprotein-like nanoparticles, polymer-drug conjugates, etc, as the systems that can rectify many of the common treatment problems, has become one of the most important areas of nanomedicine. These techniques have led to advancement of drug delivery systems that improve the success of treatment. In this review we studied published papers on new drugs that target specific parts of cancer cells. Research in this area continuous to revolutionize treatment. The purpose of this review is to summarize the information in the field of targeted drug nanocarriers which are currentely at the research stage or clinical trial for leukemia treatment.

Keywords: Lukemia, Drug delivery, targeting nanoparticles

Corresponding author Email address: mahboobnia.kh@ajums.ac.ir

ID:414

DNA methylation of tumor suppressive miRNAs in Breast Cancer [Review Article]

Fatemeh Ahmadpour[1], Samaneh Salehipour bavarsad[1], Khadijeh Mahboobnia[1], Ghorban Mohammadzadeh[1]
[1] Department of clinical biochemistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Abstract*:** MicroRNAs are small non-coding RNAs that post-transcriptionally repress protein-coding mRNAs. miRNAs act on their target mRNAs based on sequence complementarity in the 3´ UTR. In Cancer, according to target genes, miRNAs can be oncogenes or tumor suppressors as regulatory molecules. Tumor suppressor miRNAs usually inhibit the progression of cancer by suppressing oncogenic targets. Epigenetic modifications were described to perform an important role in many disease onsets and developments. However, miRNAs can epigenetically be altered by histone modification and DNA methylation similar to other protein-coding gene. Hypermethylation of CpG islands, associated with the start of the gene (Promoter and first exon regions) leads to silencing of gene expression. The present review describes important information about 18 tumor suppressor miRNA genes that epigenetically regulated in Breast cancer. In particular, some miRNAs such as Let-7a/b, miR-145, miR-34a and miR-200a/b are discussed as the most important miRNAs in breast cancer. Since each miRNA may control multiple target genes, disruption of miRNA regulation caused by aberrant DNA methylation patterns of the sequence may affect on major downstream pathways. Any interference of this complex system can contribute to the disease development; thus, it is essential to understand these epigenetic modifications. This review provides the recent literature on the DNA methylation of CpG islands in tumor suppressive miRNAs and performance in breast cancer which can lead to better recognition of the disease and suggest new therapeutic approaches.

***Keywords*:** Breast Cancer, tumor suppressive, miRNAs, DNA methylation, Epigenetic

Corresponding author Email address: ahmadpourfatimaa@gmail.com

ID:415

Evaluation of soluble expression of a single-chain antibody fragment against human epidermal growth factor receptor 2 (HER2) by three different E. coli strains

Zahra Ekhlasi[1], Vajihe Akbari[1]
[1] Department of Pharmaceutical Biotechnology, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Several studies showed successful soluble expression of scFvs using genetically modified Escherichia coli species. Origami(DE3) has mutations which lead to higher formation of disulfide bonds and more soluble protein expression. ShuffleT7 is a novel modified strain which has DsbC isomerase more than Origami(DE3). In our previous work, single chain antibody of pertuzumab was overexpressed on E. coli but more of them were insoluble. The present study evaluate soluble expression of scFv against HER2 by different E.coli strains.

***Material and Methods*:** In this experimental study, scFv plasmid is transformed to strains of E.coli (BL21(DE3),Origami(DE3),Shuffle T7) by heating shock. Then expressed in LB broth with suitable antibiotics in different temperature (23,30,37) and differential concentration of inducer, IPTG. After leased cells by microsmash, soluble and insoluble protein separated by centrifuge. For analyse of scFv used SDS-PAGE, Western blot. Soluble scFv pured in affinity chromatography by Imidazole solution. Amount of disulfide bonds evaluated by Ellman method.

***Results*:** The primary results of this study showed that total expression of scFv was higher in BL21(DE3) than Shuffle T7 and Origami(DE3) but soluble expression of scFv in BL21(DE3) was a little more than Shuffle T7 based on SDS-PAGE analysis. scFv expression was higher in lower temperatures and lower concentrations of IPTG.

***Conclusion*:** Genetic modification and using two antibiotics may lead to decrease in expression of protein in Shuffle T7 and Origami(DE3) but after using only one soluble expression of scFv had no diffrence. pET plasmid in present of IPTG is toxic for E.coli and reduced culture temperature improve folding process in cells these can be why scFv protein expression was higher in lower concentration of IPTG and lower temperatures.

***Keywords*:** E. coli, soluble expression, disulfide bond, single chain antibody, HER2 receptor

Corresponding author Email address: zahraekhlasi2014@gmail.com

ID:417

Anti-proliferative and apoptotic activity of Astragalus ovinus leaf extracts and its terpenoid fraction on MCF-7 cancer cell line

Pak Marzieh[1], Khasayesi Mina[1], Sadeghi Heibatollah[3], Sadeghi Hossein[2], Panahi kokhdan Esmaeil[2], Danaei Nazanin[2]
[1] Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran
[2] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj- Iran
[3] Cellular and Molecular Research Center, Yasuj University of Medical Sciences, Yasuj- Iran

***Objective*:** *Astragalus ovinus* (Fabacea) has been used in folk medicine to treat a different of diseases. Despite some reports about the antitumor effects of some species of this genus, there is no evidence addressing this effect in *Astragalus ovinus(A.ovinus).* Here, we studied the cytotoxic effect of methanolic extract of *A. ovinus* and its terpenoid fraction on MCF-7 breast cancer cell line.

***Material and Methods*:** MCF-7 cells were cultured and then incubated in the methanolic extract of *A. ovinus* and its fractions with various concentrations for 24 hours. Cell viability was measured by MTT assay. Furthermore, the effects of the indicated extracts were tested on some regulators of cell death such as Caspase-8, Caspase-9.

***Results*:** The estimated IC_{50} values of the methanolic extract, and terpenoid fraction on MCF-7 cell after 24 h were determined 979.44 and 372.134 µg/ml, respectively. *A. ovinus* extract and its fraction induced apoptosis by activation of caspase-8 and caspase-9.

***Conclusion*:** Our data confirmed the significant cytotoxic and antiproliferative effects of *A. ovinus* on breast cell line through induction caspase. These findings provide a basis for the therapeutic potential of *A. ovinus* in the management of breast cancer. Isolation of the compound responsible for this effect may lead to the development of a new anticancer compound against breast cancer.

***Keywords*:** *Astragalus ovinus*, MCF-7, Apoptosis, caspase, antiproliferative

Corresponding author Email address: m.pak12@yahoo.com

ID:421

Anticancer properties of microalgae extract

Ali lashkari[1], Susan Kaboudanian Ardestani[1], Saeed niazi vahdati[1], Malihe Safavi[2]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran
[2] Iranian Research Organization for Science and Technology, Tehran, Iran

***Objective*:** In recent decades, life expectancy has increased significantly in human societies. However, it has been concomitant with the increased of aged population and their related complication such as cancer. Currently several products from green algae are available which compose of secondary metabolites that can be extracted from the algal biomass. Astaxanthin, carotenoids and β-carotene are some secondary metabolites, which are used for cosmetic and therapeutic also preventive purposes. Here we studied the anti-cancer activity of micro algae's crude extracted.
***Material and Methods*:** The anticancer activity of the algae's extracts was evaluated by MTT assay against breast cancer (MDAM B-231), and lung cancer (A 549) cell lines. Kind of death was evaluated by activity of caspase-3 and mitochondria membrane potential (MMP), and the cells morphology by acridine orange/ethidium bromide staining, also cell cycle analysis by flow cytometry. Beside, we evaluate the mechanism of cell death by measuring ROS production.
***Results*:** The results showed that microalgae extract could induce potent and dose-dependent cytotoxic effects on the A549 and MDAM B-231 cells as demonstrated by MTT assay. In addition, microalgae extract increased the amount of intracellular ROS also stabilized the mitochondria membrane potential (MMP), and increased the activity of apoptosis-related proteins such as caspase 3.
***Conclusion*:** Selectivity index of microalgae extract is high. Our results suggest the potential therapeutic implications of the soluble extract from microalgae in the treatment of various types of cancers.

***Keywords*:** Microalgae, Anticancer activity, Bioactive compounds

Corresponding author Email address: ali.lashkari@ut.ac.ir

ID:423

The effect of Venlafaxine on the proliferation and apoptosis of human chronic myeloid leukemia K562 cells in vitro

Hossein Vakilpour[1], Sadeghi Heibatollah[2], Sadeghi Hossein[3], Panahi kokhdan Esmaeil[3], Danaei Nazanin[3]
[1] Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran
[2] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj- Iran
[3] Cellular and Molecular Research Center, Yasuj University of Medical Sciences, Yasuj- Iran

***Objective*:** Chronic myeloid leukemia (CML) is a malignant clonal disorder of hematopoietic stem cells which results in increase of myeloid and erythroid cells and platelets in the peripheral blood and hyperplasia in bone marrow. In the present study, we investigated the antiproliferative and apoptotic effects of Venlafaxine, an antidepressant, against human chronic myeloid leukemia cancer cell line k562 in vitro.

***Material and* Methods:** K562 cells were incubated in RPMI 1640 culture media with various concentrations of venlafaxine for 24 hours. Cell viability was measured by MTT (Methyl-Thiazol-Tetrazolium) assay. Some regulators of cell death and proliferation such as, Morphological changes, Caspase-8 and 9 protein levels, DNA fragmentation, and Nitric oxide (NO) production were measured to evaluate anti-proliferative effects of Venlafaxine in K562 cells.

***Results*:** The results showed that Venlafaxine exhibited anti-proliferative effects in K562 cells. Morphological evidence of apoptosis including: significant increase of Caspase-8 and 9 protein levels, stimulation DNA fragmentation, inhibition of NO production, were observed in cells treated with Venlafaxine.

***Conclusion*:** Our findings revealed that Venlafaxine could inhibited of proliferation and induced of apoptosis in K562 cells, and Venlafaxine may be a candidate lead compound to explore potential antileukemia drugs.

***Keywords*:** Venlafaxine, K562 cells, cell proliferation, apoptosis

Corresponding author Email address: hosein.vakili70@gmail.com

ID:424

The Role of Mitochondria in Prevention of Oxidative Stress caused by Air Pollutants [Review Article]

Behnaz Yazdani[1]
[1] Islamic azad university of najafabad, Isfahan, Iran

***Objective*:** Mitochondria is the main target of air pollutants and their interference with mitochondria`s metabolic pathways will lead to an increase in generation of reactive oxygen species (ROS). This paper aims to review the cell's defensive mechanisms in the protection of biomolecules (e.g., lipids, proteins, and DNA) from oxidative damages caused by air pollutants and their connection with diseases (such as lung cancer, brain inflammation, neural functioning, heart failure and aging).

***Keywords*:** Mitochondria, oxidative stress, air pollutants, ROS, aging

Corresponding author Email address: behnazyazdani6@gmail.com

ID:427

The study of the effect of ionic quenchers and proteolytic digestion on the structures of wild type and mutated mnemiopsin photoproteins

Mojtaba Azmoodeh[1], Atiyeh Mahdavi[1], Leila Hassani[1]
[1] Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

***Objective*:** Photoproteins are bioluminescent proteins shining in optical organs of bioluminescent creatures and have the ability to emit light. Mnemiopsin, extracted from Mnemipsis leidy, is a calcium-regulated photoprotein belongs to the cetenophore photoprotein family. Arg 39 was replaced with Lys in R39K mutant cause increased luminescence activity more than nine-fold compared to the wild type (WT). Its other brilliant properties include slow luminescence decay rate and broad pH profile in comparison to the WT. Regarding the broad applications of the photoproteins in analytical science, medicine, industries etc., structural and functional studies of them are very important and valuable. Here we investigated the limited proteolytic effect of trypsin on the WT and mutated photoproteins in the presence and absence of Ca2+ ions at different times, as well as, the effect of ionic quenchers CsCl and KI on the photoproteins structures were studied.

***Material and Methods*:** The plasmids pET28a harboring WT and mutant mnemipsins' genes were first transferred into the cloning strain E. coli DH5a, and then expression strain E. coli BL21. Following the photoproteins' expression and purification, the His6-tagged recombinant proteins were produced to a great extent and purified under native conditions using affinity chromatography with Ni-NTA resin.

***Results*:** Fluorescence quenching measurements showed that while there is no significant difference between CsCl and KI extinction in WT photoprotein, the effect of CsCl quenching is greater than that of KI for R39K mutant. the trypsin enzyme, in the presence and absence of calcium, causes the photoeprotein to degrade.

***Conclusion*:** CsCl has more quenching effect than KI which indicates that Trp residues of photoprotein are targeted at a negative charge that is quenched by a quench-free extinguisher. The limited proteolytic effect of trypsin also revealed that the presence of Ca2+ ions had no effect on the stability of these photoproteins.

***Keywords*:** Photoprotein, Mnemiopsin, R39K mutant, ionic quenchers, limited proteolytic

Corresponding author Email address: azmoodehmojtaba67@yahoo.com

ID:428

Investigation on the effects of green synthesized Copper oxide nanoparticles on the structure of calf thymus DNA

Fariba Pasham[1], Azadeh Mohamadgholi[1], Adeleh Divsalar[2]
[1] Department of Biology, Faculty of Science, Islamic Azad University Central Tehran Branch, Tehran, Iran
[2] Department of Cell & Molecular Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran

***Objective*:** Copper oxide (CuO) is an important metal oxide and has many applications in different fields including medicine. Nanoparticles are synthesized through different methods such as sono-chemical route, hydrothermal approach, chemical reduction which have many disadvantages. So, in this study, we have used synthesized copper oxide nanoparticles using green chemistry method. This method can be a valuable substitute for toxic and destructive chemical methods and has fewer side effects. The side effects of the green synthesized Copper oxide nanoparticles were investigated via its interactions and induction of structural changes in calf thymus DNA.

***Material and Methods*:** In the present study, for the first time, we have investigated the interaction of CuO nanoparticles with calf thymus DNA using various spectroscopic methods of Uv-Visible, fluorescence and circular dichroism (CD) techniques.

***Results*:** By the analysis of UV- Visible data, it was found that CuO nanoparticles can change the structure of calf thymus DNA and induce denaturation in it. Extrinsic fluorescence emission spectra of intercalated ethidium bromide (EB) in the presence of DNA showed that by increasing the concenteration of CuO nanoparticles, a significant reduction of in EB intensity and quenching of EB fluorescence was observed. Also, the CD results suggested that CuO nanoparticles can change the structure of DNA.

***Conclusion*:** Result of the present study has shown that the green synthesized nanoparticles can bind and interact with DNA, and may have used this nanoparticle for the treatment of diseases, including cancer.

***Keywords*:** CuO nanoparticles, green chemistry, side effects, circular dichroism, fluorescence

Corresponding author Email address: Pashamf68@gmail .com

ID:429

Molecular basis of Prp19/Pso4 ubiquitin ligase activation: analysis of its role in DNA damage response

Sina Mozaffari-Jovin[1], Tales Rocha de Moura[1], Csaba Zoltán Kibédi Szabó[1], Jana Schmitzová[1], Olexandr Dybkov[1], Constantin Cretu[1], Michael Kachala[1], Dmitri Svergun[1], Henning Urlaub[1], Reinhard Lührmann[1], Vladimir Pena[1]
[1] Max Planck Institute for Biophysical Chemistry, Am Fassberg 11, D-37077 Göttingen, Germany

***Objective*:** The Prp19/NTC is a multimeric ubiquitin ligase involved in diverse cellular pathways, including pre-mRNA splicing, DNA damage response (DDR), extending cellular life span and suppression of apoptosis. The transfer of ubiquitin is mediated by Prp19 – a homotetramer component of NTC which also serves as a scaffold for the assembly of other NTC components. During DDR, Prp19 binds replication protein A (RPA)-ssDNA and promotes the formation of ubiquitin chains on RPA. Consequently, ATR, in complex with its functional partner ATRIP, accumulates at the damaged sites, triggering a co-ordinated response for DNA repair. Owing to its role in DDR, Prp19 exhibits anti-apoptotic and life span extension properties, and is dysregulated in human cancers.

***Material and Methods*:** In this study, in order to elucidate the regulatory mechanism of the Prp19 complex by NTC proteins, we used an integrated approach consisting of X-ray crystallography of the Prp19 core complex, protein-protein crosslinking of NTC by EDC or BS3 followed by mass spectrometric analysis of crosslinked peptides, homology modelling, in vitro ubiquitination assays and assessment of the function of NTC in DDR by in vivo ubiquitination assays and confocal microscopy.

***Results*:** We find that Prp19 alone is an autoinhibited E3 ubiquitin ligase and have elucidated the basis of its autoinhibition by crystallography and mutational analysis. Formation of the NTC core by stepwise assembly of SPF27, CDC5L and PLRG1 onto the Prp19 tetramer enables the ubiquitin ligation activity. Protein–protein crosslinking of NTC, functional assays in vitro and assessment of its role in cellular response to DNA damage provide mechanistic insight into the organization of the NTC core and the communication between PLRG1 and Prp19 that enables E3 activity.

***Conclusion*:** Our data reveals a unique mode of regulation for a complex E3 ligase and advances understanding of its dynamics in various cellular pathways.

***Keywords*:** DNA damage response, Prp19/Pso4/SNEV complex, pre-mRNA splicing, E3 ubiquitin ligase, NineTeen Complex

Corresponding author Email address: smozaff@mpibpc.mpg.de

ID:432

Targeting breast cancer cells using a suicide gene

Masoud Mohseni Dargah[1], Shiva Akbari Birgani[1]
[1] Department of Biological Sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

***Objective*:** In order to treat cancer, there are some treatment methods including chemotherapy, radiotherapy and surgery. Since these ways of treatment have their own side effects, a new approach with lesser disadvantages is demanded nowadays. Inducible caspase 9 (iC9) is one of our alternatives which can induce apoptosis in cells of interest. In comparison to necrosis, it has less damages to tissues.

***Material and Methods*:** To evaluate the reliability of this approach, MCF7 breast cancer cell lines were first cultured. The cells were transfected by iC9 to induce apoptosis. Flow cytometry was done to confirm the programed cell death (PCD) induced by the gene. Finally the population distribution and cell cycle of the cell lines were analyzed via CD marker and cell cycle analysis techniques after transfection of the gene.

Results: Flow cytometry suggested that apoptosis has been induced well via the gene of interest. Assessment of CD markers showed that this approach can reduce all population of the cell lines nonspecifically. Cell cycle analysis proved that G1/SubG1 arrest occurs after suicide gene is transfected into the cells.

Conclusion: In this study we applied a suicide system by the name of inducible caspase 9 to induce PCD in the targeted cancer cells. Use of inducible caspase 9 had great results to eliminate MCF7 breast cancer cells, so it is suggested that this approach could be a great promise for in vitro and furthermore in vivo gene therapy in the future.

***Keywords*:** Suicide Gene, Apoptosis, Breast cancer, Gene therapy

Corresponding author Email address: m.mohsenidargah@gmail.com

ID:433

Measurement of serum homocysteine level and insulin resistance Subclinical hypothyroidism

Anahita Ebrahimpour[1], Durdi Qujeq[1], Karimullah Hajian[1], Mostafa vaghari[1]

[1] Department Clinical Biochemistry, Babol University of Medical Sciences, Babol, Mazandaran, Iran

Objective: Subclinical hypothyroidism known as mild thyroid disorder without significant sign and symptoms. The correlation between Subclinical hypothyroidism and some of cardiovascular disease risk factors such as serum homocysteine and lipid levels and also insulin resistance index is not well established and the current study was conducted to clarify this issue.

Material and Methods: A group of patients with mild elevation in levels of thyroid stimulating hormone (TSH) along with normal levels of T3 and T4 were selected as patients group and a group of healthy age and sex matched blood donors were selected as control group. Serum homocysteine, glucose, triglyceride, total cholesterol, LDL-cholesterol, HDL-cholesterol and insulin levels were measured. Obtained data compared between groups with independent sample t test. For evaluation of the correlation between mentioned parameters Pearson correlation coefficient were used.

Results: Serum homocysteine level and Homeostatic Model Assessment of Insulin Resistance (HOM-IR) significantly increased in patients with SCH compared to control group. There was a significant positive correlation between serum homocysteine levels and HOM-IR in SCH patients.

Conclusion: SCH likely have significant effect on insulin resistance index and also cardiovascular disease risk factors such as homocysteine.

Keywords: homocysteine, Subclinical hypothyroidism, cardiovascular disease

Corresponding author Email address: anahita.ebrahimpour@gmail.com

ID:436

Homocysteine increase CD28 exposure and IL-2 secretion from activated CD4+ T cells

Samaneh Maskani[1], Hafez Heydari[2], Mitra kheirabadi[2]
[1] Department of Cellular and Molecular Research Center, Sabzevar University of Medical sciences, Sabzevar, Iran
[2] Department of Biology, Faculty of Basic Sciences, Hakim Sabzevar University, Sabzevar, Iran

***Objective*:** CD4+ T cells are absorbed to the atherosclerotic lesions, proliferates within them and secretes interleukin-2, which lead to lesions development and instability. Because Hyperhomocysteinemia (HHcy) accelerates atherosclerosis by increasing proliferation and stimulating cytokine secretioninTcells, we aimed to investigate its effect on the CD4+ T cells functions.

***Material and Methods*:** Resting CD4+ T cells were purified from peripheral blood using negative selcetion method, then treated with different concentrations (6.25-100 μM) of homocysteine. Assesment of lactate dehydrogenase activity in cells supernatant, and CD28 exposure via flow cytometeric.

***Results*:** Cell counting showed that at 6.25 μM concentration, homocysteine induce resting human CD4+ T cells proliferation. Homocysteine significantly increase IL-2 secretion in concentrations ≥ 25 μM in CD4+ T cells activated by anti-C3 antbodies. Also, flow cytometeric analysis showed that CD28 exposure has been increased in presence of homocysteine (at concentrations ≥25 μM) during CD4+ T cells activation.

***Conclusion*:** In conclusion, Hcys is a T cell activator which facilitate T cell proliferation and expansion at certain concentrations. Homocysteine likley accelerate the growth and activity of atherosclerotic plaques by IL-2 secretion.

***Keywords*:** Homocysteine, T lymphocyte, CD28, IL-2

Corresponding author Email address: s.maskani76@yahoo.com

ID:437

Probing the of side effects synthesized Zinc Nanoparticles using green chemistry on the structure of calf thymus DNA

Mahnaz Jangi[1], Azadeh Mohammadgholi[1], Adeleh Divsalar[2]
[1] Department of Biology, Faculty of Science, Islamic Azad University Central Tehran Branch, Tehran, Iran
[2] Depatment of cell and Molecular Sciences, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran

***Objective*:** In the present study, the green synthesized of zinc oxide nanoparticles using the extract of coffee powder was applied because of their compatibility with the environment and do not produce any toxic and harmful substances in the reaction.

***Material and Methods*:** For the first time, we have investigated the interaction of zinc oxide nanoparticles with calf thymus DNA using various spectroscopic methods of Uv-Visible, fluorescence and circular dichroism (CD) techniques.

***Results*:** Uv-Visible data showed that zinc oxide nanoparticles induce denaturation in DNA by increasing in zinc oxide nanoparticles at both of the room and physiologic temperatures. Extrinsic fluorescence emission of ethidium bromide (EB) results also, shows that by increasing of zinc oxide nanoparticles concentrations, the emission intensity of EB decreases, which may be resulted of intercalation of nanoparticles. Also, CD data showed that the synthesized zinc oxide causes structural changes in DNA.

***Conclusion*:** Finally, according above results, it can be concluded that zinc oxide nanoparticles can bind with DNA and induce some structural changes in DNA structure.

***Keywords*:** Zinc oxide nanoparticles, green chemistry, fluorescence, circular dichroism, Uv-Visible

Corresponding author Email address: jangimahnaz9@gmail.com

ID:440

Inhibition of sphingosine kinase 2 enhances the effectiveness of doxorubicin in induction of apoptosis in NSCLC cells by downregulation of survivin

Hasanifard Leili[1], Samadi Nasser[1], Rashtchizadeh Nadereh[1], Dastmalchi Siavoush[1], Karimi Pouran[1]
[1] Department of Biochemistry and Clinical Laboratories, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

***Objective*:** Improvement in the efficacy of anticancer agents needs novel strategies to break down chemoresistance. Sphingosine kinase-2 (SphK2) is an important enzyme in sphingolipid metabolism which can be considered as a therapeutic target. We investigated the role of SphK2 in the effectiveness of doxorubicin (DOX) in induction of apoptosis in NSCLC cells and studied the involvement of c-FLIPS, MCL-1 and survivin expressions in DOX-dependent SphK2 signaling.
***Material and Methods*:** Cell proliferation was examined by MTT assay and the percentage of apoptosis was studied by DAPI staining. Flow cytometric assay was applied to investigate the population of the cells in each phase of cell cycle. Gene expression levels were examined by quantitative RT-PCR and protein levels were tested by western blot analysis.
***Results*:** Stimulation of SphK2 caused around 70% decrease in cell death induced by IC50 of DOX (1.1 µM) (p<;0.01). Cell cycle analysis showed a marked accumulation of the cells in S phase with a significant decrease in sub G1 phase when we incubated the cells with DOX along with SphK2 stimulation (p<;0.05). Inhibition of SphK2 almost abolished the effect of SphK2 stimulation on cell survival (p<;0.01). This inhibition alone or in combination with DOX also decreased Survivin expression followed by increase in cell apoptosis (p<;0.05) without any significant change in MCL-1 expression (P<0.05).
***Conclusion*:** Our data suggest that stable inhibition of SphK2 can be applied to increase DOX effect in the induction of cell death.

Keywords: Doxorubicin, apoptosis, c-FLIPS, Survivin, MCL-1

Corresponding author Email address: drnsamadi@yahoo.com

ID:442

Encapsulation of chemical synthesized silver nanoparticles into methyl methacrylate and investigation of its antimicrobial efficiency

Saba Norouziasl[1], Nasrin Mollania[1], Gholamali Farzi[1], Fariba Mollania[1]
[1] Department of Biology, Faculty of Basic Science, Hakim Sabzevari University, Sabzevar, Iran

***Objective*:** Nowadays, the most substantial hygienic problems in developed and developing countries are hospital infections and antibiotic resistance which lead to widespread outbreaks of infectious diseases. The causative bacteria's have had a high resistance to antibiotics as a consequence of widespread consumption of antibiotics. In recent years, it has been acknowledged that some of the metallic nanoparticles have antibacterial aspects.

***Material and Methods*:** In this study, after synthesis of chemical silver nanoparticle, these nanoparticles are encapsulated via methyl methacrylate and mini-emulsion method. To biological application improvement the sodium dodecyl sulfate removed through centrifuge and dialysis. The antimicrobial effect of silver nanoparticle and encapsulated nanoparticles on Pseudomonas aeruginosa bacterial strain is studied by microdilution method.

***Results*:** The average particle size of encapsulated chemical silver nanoparticle was 64 nm. As results showed that after the mini-emulsion polymerization of silver nanoparticle has a Little anti-bacterial effect in the compared with nanoparticle before encapsulation, which results in preventing cells from exposing to the high concentration of nanoparticles at once.

***Conclusion*:** This study is proposed a simple method for encapsulating nanoparticles using direct emulsion polymerization. The effect of the cytotoxicity of the nanoparticles after the encapsulation is diminished, but the lifetime of the nanocarrier increased.

***Keywords*:** Encapsulation, Antibacterial effect, Pseudomonas aeruginosa

Corresponding author Email address: saba.noruziasl@yahoo.com

ID: 443

Rapid and sensitive nanobiosensor for human influenza A detection based on lateral flow immunoassay [Review Article]

Azadeh azizi[1], Asieh Aramvash[1], Ferida Behzadian[1]
[1] Department of Bioscience and Biotechnology, MalekAshtar University of Technology, Tehran, Iran

***Objective*:** Now day rapid recognition of various analytes at little concentrations has been provided using developing the several types of nanobiosensors. However, Rapid and sensitive point-of-care (POC) recognition remains a challenge in biomedical diagnostics application. Recently, appearance the lateral flow immunoassay (LFIA), has received increased interest as a means in order to POC screening and diagnosis the wide variety of analytes. Herein, a rapid test strip has been developed based on lateral flow immunoassay in order to detect H1N1 human influenza type A virus. Influenza A viruses is responsible for seasonal epidemics accounting for over 200000 hospitalizations and 30000-50000 deaths in each year. For this purpose, gold nanoparticles have been synthesis according to Mirkin and coworkers protocol. Then, monoclonal anti-NP protein has been conjugated at the surface of GNPs. Moreover, after the fabrication the LAFIA test strip, by applying 100 µL of the sample on a sample pad the LFIA was performed on the strip. Finally, the test strip was investigated by monitoring the color changed on the test line for15 min at room temperature. According to the results, LFIA test strip was successfully developed for a rapid and sensitive detection of the influenza A virus. In the presence of Influenza virus the test line NP was colored compare to negative control due to virus -conjugated gold nanoparticle complex concentration on the test line. The result showed that LFIA test strip is capable of detecting Influenza virus as low as 10 pfu•mL-1 within3 min. In conclusion, Rapid test strip has a wide and interest potential which could be useful for various medical and diagnostic applications.

***Keywords*:** Lateral flow immunoassay (LFIA), Influenza A virus, Nanobiosensors, Gold nanoparticle

Corresponding author Email address: azizi.a@modares.ac.ir

ID:446

The effect of antioxidant and inhibition of alpha-amylase pancreatic enzymes of the Ferula in vitro conditions and evaluation of blood biochemical parameters and kidney histology in diabetic mices

Zaynab Sanei[1], Nasrin Mollaniya[1], Toktam Hajar[1]
[1] Department of Biology, Faculty of Basic Science, Hakim Sabzevari University, Sabzevar, Iran

***Objective*:** Diabetes mellitus is a metabolic disorder that causes insulin secretion as a deficiency of insulin secretion or a decrease in the response of various tissues of the body to insulin secretion. Medicinal herbs, due to the antioxidant activity and the ability of these plants to control the pancreatic alpha-amylase enzyme, are the best choices for control of diabetes due to fewer side effects.

***Material and Methods*:** In the in-vitro section, after the preparation of the extract, the antioxidant property of the DPPH method and the ability to inhibit the alpha-amylase enzyme by the Bernfeld method was performed. In the in-vivo section, 20 male mice with a mean weight of 25-30 gr were used. Mice received 200 mg / kg of streptozotocin as an intraperitoneal injection of diabetic mice. The specimens were randomly divided into two groups, the control group receiving water on a daily basis and the second group of mice receiving the extract of the Ferula was treated for 40 days.

***Results*:** The results of this study indicated that the extract had the high potential for antioxidant activity and the ability to inhibit alpha-amylase enzyme, and the measurement of the chemical factors of diabetic mices after treatment with the extract decreased FBS, HbA1C, TG, CHO and increased HDL levels. In the study of kidney specimens, there was a reduction in the complications of diabetes.

***Conclusion*:** The anti-oxidant compounds of the Ferula and its ability to inhibit alpha-amylase activity have anti-diabetic activity and decreased blood glucose and lipid levels in diabetic mices.

***Keywords*:** Inhibition of pancreatic alpha-amylase, Diabetic mice, Streptozotocin, Ferula

Corresponding author Email address: zaynab.sanei83@gmail.com

ID:447

Determination of paraoxonase 1 (PON1)-Q192R phenotype distribution by double substrate method in patients with type 2 diabetes: effects on the association of PON1 activity with age

Abdolkarim Mahrooz[1], Ahad Alizadeh[2], Parisa Masoumi[3]
[1] Immunogenetics Research Center, Mazandaran University of Medical Sciences, Sari, Iran
[2] Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran
[3] Department of Clinical Biochemistry and Genetics Faculty of medicine, Mazandaran University of Medical Sciences, Sari, Iran

***Objective*:** Low paraoxonase 1 (PON1) activity is associated with increased risk of coronary artery disease in patients with type 2 diabetes (T2D). In this study, we have determined the phenotypic distribution of PON1-Q192R as a common variant in the coding region of PON1 gene by double substrate method and the relationship of the phenotypes with age.
***Material and Methods*:** A total of 115 patients with T2D were enrolled in this study. Hydrolyses rates of the two substrates paraoxon (paraoxonase activity; POXase) and phenylacetate (arylesterase activity; AREase) were spectrophotometrically assayed. Blanks were used to correct for the nonenzymatic hydrolysis of the substrates. The molar extinction coefficient were 1,310 and 17,100 M-1 cm-1, respectively for AREase and POXase. The ratio POXase/AREase was determined for each person to assign individuals to one of the three possible phenotypes (individual genotypes): QQ (homozygous with low activity), QR (heterozygous with intermediate activity) or RR (homozygous with high activity).
***Results*:** The ratio of POXase/AREase was revealed a trimodal frequency distribution in the study patients. Accordingly, the study subjects were divided into the three phenotypes at the ratios of 1.3 and 2.7. Patients with a ratio below 1.3 were classified as QQ phenotype, between 1.3 and 2.7 as QR phenotype and patients with a ratio above 2.7 were defined to have RR phenotype. Our results showed that linear regression of POXase vs. AREase in each subgroup was significant: r=0.602, p<;0.001 for QQ phenotype; r=0.837, p<;0.001 for QR phenotype; r=0.893, p=0.007 for RR phenotype. According to correlation analyses, there was no statistically significant correlation between POXase and age (r=−0.016, p=0.881) in total data. When analyses were performed according to Q/R phenotypes, there was a negative and significant correlation between POXase and age in QR + RR group (r =−0.318, p=0.043). In people with QQ phenotypes, there was no statistically significant correlation between these two parameter (r=−0.091, p=0.514).
***Conclusion*:** Based on double substrate method, the frequency of Q phenotype (low activity) was 0.78 and of R phenotype (high activity) 0.22 in the study population. Considering age as a risk factor for cardiovascular diseases, our findings might show that the presence of the R allozyme potentiate the effects of age on susceptibility to the diseases in T2D.

***Keywords*:** Paraoxonase 1, Q192R phenotype, Double substrate method, Type 2 diabetes, Age

Corresponding author Email address: amahrooz@mazums.ac.ir

ID:449

Inhibition of lncRNA CBR3-AS1 induces apoptosis and inhibits cell proliferation in human gastric cancer cells

Parvaneh Nikpour[1], Zohreh Baratieh[1], Mehrnaz Jahani[1], Modjtaba Emadi-Baygi[1]
[1] Department of Genetics and Molecular Biology, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Gastric cancer is responsible for > 700,000 annual cancer-related deaths in the world. CBR3-AS1 (PlncRNA-1) is a newly identified long noncoding RNA encoded from the antisense direction of the CBR3 gene. Up-regulation of PlncRNA-1 has been reported in various cancer types. In the current study, we investigated the effects of suppression of this lncRNA by RNAi technique in a human gastric cancer cell line.

***Material and Methods*:** Real-time RT-PCR was performed to determine the relative expression of CBR3-AS1 in three gastric carcinoma cell lines. RNA interference technique was utilized to knock-down the expression of CBR3-AS1. Cell viability and apoptosis analyses were performed after treatment with siRNA.

***Results*:** Among three gastric cancer cell lines examined, CBR3-AS1 had the highest relative expression in AGS cell line. Over 99% reduction (p<;0.0001) was observed in CBR3-AS1 expression level after siRNA treatment CBR3-AS1 knockdown significantly decreased cell viability in AGS cells with a significant 60-70% reduction rate. A significant increase in the rate of Annexin V positive cells was also detected after CBR3-AS1 knock-down.

***Conclusion*:** In conclusion, these findings suggest that CBR3-AS1 is over-expressed in AGS gastric cancer cells and affects cell survival of these cells. More work needs to be performed for exploration of the molecular mechanisms underlying CBR3-AS1 functions in cancer cells. This lncRNA may be a promising molecule that might/could be used as novel biomarker of cancer diagnosis, prognosis and therapy.

***Keywords*:** CBR3-AS1, Gene Expression, RNA Interference, Stomach Neoplasms

Corresponding author Email address: pnikpour@med.mui.ac.ir

ID:450

CBR3-AS1 and TUG1 are over-expressed in gastric cancer tissues: Supportive evidence from TCGA Pan-Cancer Data

Parvaneh Nikpour[1], Zohreh Baratieh[1], Zahra Khalaj[1], Mohammad-Amin Honardoost[1], Modjtaba Emadi-Baygi[1], Hossein Khanahmad[1], Mansoor Salehi[1]

[1] Department of Genetics and Molecular Biology, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Gastric cancer (GC) is the third leading cause of cancer death worldwide. Despite the current improvements of life expectancy and survival rate, most of the patients are diagnosed when their cancer has been progressed to advanced stages. Therefore, unraveling the molecular mechanisms of GC to find early-stage biomarkers is urgent. Based on the critical roles of CBR3-AS1, TUG1 and FAM83H-AS1 genes in cancer pathogenesis, in this study, we aimed to assess the expression profile and clinicopathological features of these lncRNAs in human gastric cancer. Furthermore, gene expression, clinicopathological characteristics and overall survival data of these lncRNAs were retrieved and analyzed from the Cancer Genome Atlas (TCGA) cohort.

***Material and Methods*:** Total RNA extraction, cDNA synthesis, and quantitative real-time PCR were performed for 80 paired GC tissues. Furthermore, expression and clinicopathological data of the lncRNAs from 318 gastric cancer patients were retrieved from TCGA database.

***Results*:** Expression of CBR3-AS1 and TUG1 were significantly up-regulated in GC tumoral tissues compared with their paired adjacent non-tumoral ones. FAM83H-AS1 showed no differential expression between tumoral and non-tumoral tissues. Consistently, the expression of CBR3-AS1, TUG1 and FAM83H-AS1 were significantly higher in TCGA tumor tissues than those in normal ones. The Kaplan-Meier survival curves demonstrated that none of the studied lncRNAs correlated with GC overall survival.

***Conclusion*:** In conclusion, CBR3-AS1 and TUG1 lncRNA genes may play a critical role in GC progression and may serve as potential diagnostic biomarkers in GC patients.

***Keywords*:** CBR3-AS1, TUG1, Gene Expression, Stomach Neoplasms, TCGA

Corresponding author Email address: pnikpour@med.mui.ac.ir

ID:451

Effects of PlncRNA-1 gene silencing on cell cycle progression and migratory ability of human gastric cancer cells

Parvaneh Nikpour[1], Zohreh Baratieh[1], Mehrnaz Jahani[1], Modjtaba Emadi-Baygi[1]
[1] Department of Genetics and Molecular Biology, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** PlncRNA-1 has been demonstrated to promote malignancy in various cancers. We previously reported that PlncRNA-1, a long non-coding RNA that is up-regulated in gastric cancer (GC), affects the proliferation and apoptosis of GC cells. However, other functions of PlncRNA-1, especially on cell cycle and migration regulation remain largely unknown. The present study was aimed at exploring the functional role of PlncRNA-1 in a selected gastric cancer cell line.
***Material and Methods*:** The relative expression of PlncRNA-1 was assessed by real-time quantitative reverse transcription-polymerase chain reaction in several human gastric cancer cell lines. Then, expression of PlncRNA-1 in AGS gastric cancer cell line was knocked down by an RNA interference strategy. Potential effects of PlncRNA-1-specific interfering RNA on the cell cycle were investigated by flow cytometry. We also performed wound-healing assays to study PlncRNA-1 migratory function.
***Results*:** Functionally, PlncRNA-1 suppression inhibited gastric cancer cell proliferation and cell movement and promoted S phase cell cycle arrest.
***Conclusion*:** Together, our data imply that PlncRNA-1 exerts strong effects on the cell cycle profile and migratory ability of those gastric cancer cells that express it and is necessary for their proliferation and invasiveness. Lithium-ion battery efficiency, Biocompatible silver nanoparticles, Field emission scanning electron microscopy, Dynamic Light Scattering.
***Keywords*:** PlncRNA-1, Cell cycle, Migration, RNA Interference, Stomach Neoplasms
Corresponding author Email address: pnikpour@med.mui.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:453

Inhibitory Effect of Graphene Quantum Dots on the Hen Egg White Lysozyme Amyloid Fibril Formation

Mohsen Mahdavimehr[1], Ali Akbar Meratan[1]
[1] Department of Biological Science, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

***Objective*:** Protein misfolding and aggregation is related to a large number of neurodegenerative disorders including Alzheimer's, Parkinson's, and Huntington's diseases, and peripheral disorders, such as systemic amyloidosis and type II diabetes. Currently, there are no effective treatments for neurodegenerative diseases. However, identification and development of new drugs for protein aggregation inhibition has been established a new field of researches. Here, we exploited Graphene Quantum Dots (GQDs) as an efficient inhibitor of hen egg white lysozyme (HEWL) amyloid fibrillation.
***Material and Methods*:** In this study, a range of amyloid-specific techniques, including thioflavin T (ThT) and 1-anilino-naphthalene 8-sulfonate (ANS) fluorescence measurements and Congo red binding assay were employed to investigate the efficacy of GQDs for inhibition of HEWL amyloid fibrillation. Additionally, the morphology of resultant aggregates in the absence and presence of GQDs were analyzed by Atomic Force Microscopy (AFM).
***Results*:** Kinetics of HEWL amyloid formation in the absence and presence of GQDs demonstrated a concentration-dependent decrease in ThT fluorescence. Similarly, a pronounced dose-dependent decrease in ANS fluorescence intensities was also observed. These results were more confirmed by a significant decrease in Congo red absorbance and AFM images, suggesting that in the presence of GQDs formation of mature fibrillar structures was strongly inhibited.
***Conclusion*:** Based on obtained results, it is concluded that GQDs are able to act as an effective inhibitor of HEWL amyloid fibrillation.

***Keywords*:** Hen egg white lysozyme, Graphene Quantum Dots, Amyloid fibril, Inhibition, Atomic Force Microscopy

Corresponding author Email address: mahdavimohsen@iasbs.ac.ir

ID:454

Apolipoprotein E (ApoE) genotyping in diabetic patients with cardiovascular complications [Review Article]

Bahareh Rashidian[1]
[1] Department of Biotechnology, Faculty of Chemistry, University of Kashan, Kashan, Iran

***Objective*:** Apolipoprotein E(ApoE) is one of the most reviewed lipoproteins which has rules in lipid metabolism. Its gene is polymorphic with three alleles, and the two polymorphic sites are codon 112 and 158 which codes Cysteine and Arginine respectively. Since aplipoprotein E takes part in lipid metabolism and its distribution, it might have important rules in cardiovascular diseases. And also Insulin resistance caused by diabetes and obesity is characterized by increased plasma triglyceride lipoprotein concentrations.the three most common allelic forms of this gene are ε2, ε3 and ε4. According to previous studies, ε2 is a protective allele against CVD and ε4 is not. Also, ε4 has its rules in Insulin resistance in Diabetes especially type 2, So ApoE genotyping has been had vital importance. To investigate whether there is a relationship between ApoE gene and these two diseases, in this research 107 blood samples of diabetic patients with CVD in Kashan city were collected, and amplified with a multiplex ARMS PCR to investigate six genotypes separately. The frequencies of alleles were 3,81and 15 percent for ε2, ε3 and ε4 respectively and E3E3 genotype was the most in the population. There is no significant effect of genotype on lipoproteins concentrations or the type of CVD ($P>0.05$) but it has significant affect on their average concentration($P\leq0.05$) and the frequencies of alleles in Kashan diabetic with CVD population is differed from the other studies in Iran but its similar to populations like China, Norway and Saudi Arabia. in conclusion this study shows that there is an average impact of this genotype on lipoproteins of plasma or types of CVD, so it can be helpful to predict and prevent diseases associated with this genotype.

***Keywords*:** Diabetes, Cardiovascular diseases, Apolipoprotein E, genotyping, Multiplex-ARMS PCR

Corresponding author Email address: brashidian71@gmail.com

ID:455

Desipramine induces apoptosis in human chronic myeloid leukemia K562 cells

Hossein Vakilpour[1], Sadeghi Heibatollah[2], Sadeghi Hossein[3], Panahi kokhdan Esmaeil[3], Danaei Nazanin[3]
[1] Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran
[2] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj- Iran
[3] Cellular and Molecular Research Center, Yasuj University of Medical Sciences, Yasuj- Iran

***Objective*:** Antitumor effects of antidepressants have been reported in some cancer cell lines. However, to our knowledge, there is not any study about anti-proliferative effects of desipramine, a tricyclic antidepressant, in human chronic myeloid leukemia. Therefore, in this study, we examined the effects of desipramine in human leukemia k562 cells.
***Material and Methods*:** The cytotoxic effects of desipramine were studied using MTT assay. K562 cells were cultured and treated with various concentrations of desipramine and incubated for 24 h, then IC50 value was determined. Morphology changes of cells was evaluated by reverse phase microscopy**.** The activity of caspases 8 and 9, gel electrophoresis of DNA and Nitric oxide (NO) production were used for apoptosis investigation.
***Results*:** In the present study, desipramine drug reduced cell viability of K562 cells and induced apoptosis by increases activity of caspases 8 and 9, stimulation DNA fragmentation and inhibition of NO production. These results confirm that desipramine displays anti-proliferative effects in k562 cells mediated by promotion of apoptosis.
***Conclusion*:** With respect to the results of the present study, desipramine inhibited the growth of K562 cell line and induced cell death in this cell line. These results showed that it may be possible to use this drug in cancer research fields, although more clinical researches are needed.

Keywords: Antidepressants, Desipramine, K562 cell, Anti-proliferative, Apoptosis

Corresponding author Email address: hosein.vakili70@gmail.come

ID:456

Hematological and liver toxicity of anti-tuberculosis drugs

Maryam Sadat mirlohi[1], Alireza Ekrami[1], Saeed Shirali[1], Mehdi Ghobeishavi[1], Fatemeh Pourmotahari[2]
[1] Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2] Department of Biostatistics Sciences, Dezful University of Medical Sciences, Iran

***Objective*:** Tuberculosis (TB) is a major global health problem, and anti-tuberculosis drugs can cause severe adverse reactions. The aim of this study was to determine hematological and biochemical changes and associated risk factors in smear positive pulmonary tuberculosis patients undergoing treatment with standard protocols.

***Material and Methods*:** In a descriptive study, a total of 40 tuberculosis patients aged between 15-60 years were collected from hospitals in Khuzestan Province (Iran) from March 2013 to March 2014. The patients were treated with drugs (isoniazid, rifampicin, ethambutol, and pyrazinamide) during the initial two months, followed by isoniazid and rifampicin for the next four to six months. Activities of liver enzymes (ALT, AST, and ALP) and hematological parameters were recorded before and after treatment. Data were analyzed using paired samples t-test and Wilcoxon test by SPSS 16

***Results*:** After using drug treatments, hematological parameters (RBC, Hb, HCT, MCV, MCH, and MCHC), except platelet count, were changed significantly ($p \leq 0.001$). Liver enzyme activities (ALT, AST, and ALP) were decreased significantly ($p \leq 0.001$) after treatment.

***Conclusion*:** In this study, changes of hematological and biochemical parameters have been observed in patients with pulmonary tuberculosis. It can be concluded that the anti-tuberculosis treatment is associated with changes of hematological parameters and liver enzymes.

***Keywords*:** Tuberculosis, Hematological parameters, Liver enzymes, Isoniazid, Khuzestan

Corresponding author Email address: maryammirlohi@gmail.com

ID:459

Coexpression of erythropoietin, TNF-α and NFκB-1 in brain, spinal cord and kidneys during experimental autoimmune encephalomyelitis

Sahar Rostami[1], Abdolamir Allameh[1], Hadi Parsian[2]
[1] Department of Clinical Biochemistry, Tarbiat Modares University, Tehran, Iran
[2] Cellular and molecular biology research center, Babol University of medical sciences, Mazandaran, Iran

***Objective*:** Multiple sclerosis (MS) is a progressive demyelinating disease of the central nervous system (CNS) that mainly occurred in young adults. Several studies indicated that, in patients that suffer from MS, CNS lesions correlate well with the several peripheral disorders and there is a bidirectional relationship, metabolic activities and functional similarity between CNS and kidneys. Accordingly, we hypothesized that CNS disorders in MS patients causes an exact compensatory response in kidneys.

***Material and Methods*:** To gain insight into the changes which occur in kidney responses we immunized mice with myelin oligodendrocyte glycoprotein 35–55 peptides to induce experimental autoimmune encephalomyelitis (EAE) as a murine model of MS. The mRNA expression level of EPO, TNF-α and NFκB-1in kidney, brain and spinal cord were analyzed by real time PCR. The EPO expression in protein level was investigated by immunohistochemistry in kidney and spinal cord, the inflammatory infiltration was evaluated by H&E staining and serum anti-oxidative capacity was measured by FRAP assay. All process was performed on EAE induced mice in low score (9-10 days post-immunization) and high score (14 days post-immunization) as compared to control and sham.

***Results*:** We found that the expression of EPO, TNF-α and NFκB-1increased significantly in both CNS and kidney correlated with peripheral oxidative stress. Under these circumstances plasma total antioxidant activity was suppressed in EAE mice particularly in peak stage

***Conclusion*:** Our results demonstrated that the CNS may not be the only tissue which altered in EAE model. Kidney is the other tissue that respond to CNS disorders and contribute in EAE induction.

***Keywords*:** EAE/MS, kidney, Erythropoietin, TNF-α, NFκB-1

Corresponding author Email address: srostami.m@gmail.com

ID:461

Nrf 2 Polymorphism at rs6721961 in Breast Cancer Patients with No Precedent Chemotherapy among Kurdish Population

Soraya Sajadimajd[1], Mozafar Khazaei[1], Sedigheh Khazaei[1]
[1] Fertility and Infertility Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran.

***Objective*:** Owning to the putative role of Nrf2 in activation of several protective genes in response to oxidative stress and pathological conditions, the aim of present study was to investigate the role of Nrf2 expression and it's polymorphism in Breast cancer patients with no previous therapy.

***Material and Methods*:** Breast cancer patients (34 cases) and controls (80 cases) from western Kurdish population of Iran were selected to evaluate the genotype of Nrf2 (rs6721961) by PCR- restriction fragment length polymorphism. In addition, the statistical association between Nrf2 (rs6721961) was analyzed with the expression of Nrf2, ER, PR, Her2, SOD, catalase and other clinicopathological characteristics.

***Results*:** The mean age of patients and controls were 43.55±1.89 and 46.44±2.16, respectively. In control group, Nrf2 rs6721961 polymorphism deviated from Hardy-Weinberg Equation with a p=value of 0.035 while among the patients, SNP exact test for HWE, showed a satisfied association with HWE (p=0.7). Besides, there was no significant relation between Nrf2 expression with catalase (p= 0.28) while SOD had a meaningful association with Nrf2 expression (p=0.02). There were no meaningful association of SNP with the expression levels of Her2 (p=0.30), ER (p=0.60) and PR (0.63). Besides, SNPSTAT showed that the expressions of Her2, ER and PR were in agreement with hardy-Weinberg equations.

***Conclusion*:** The results clearly indicated that Nrf2 is involved in the risk of breast cancer. In addition, geographical and racial differences are the imperative effectors in the appearance of several genes in patients that would be considered in all studies.

***Keyword*:** Nrf2, Polymorphism, Catalase, SOD, Oxidative stress

Corresponding author Email address: s.sajadi@ut.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:462

Study of glutathione S-transferase P1 Ala114/Val114 genotypes specific polymorphism in Iranian population with considering gender differences in lung cancer

Glavizh Adibhesami[1], Gholamreza Shahsavari[1]
[1] Lorestan University of Medical Sciences, Lorestan, Iran

***Objective*:** Lung cancer continues to be the leading cause of cancer death in both men and women in the United States, with more than 158 900 deaths expected in 1999. Among tobacco-smoke structures, polycyclic aromatic hydrocarbons (PAHs), such as benzo-a-pyrene (BaP), play a major role in lung chemical carcinogens. Many of the Xenobiotic-metabolizing enzymes (XMEs) are similar to cytochrome P450, glutathione S-transferases (GSTs), and hydroxyl epoxide in BaP metabolism, which can lead to the prevalence of high-mutagenic metabolites such as 7 and 8-diol-9 and 10- epoxied BPDE). GSTP1 is highly expressed in lung tissue and is considered the predominant GST in the lungs.

***Material and Methods*:** We selected 120 lung cancer patients tissue, 120 normal cases (as control) The GSTP1 genotypes were determined in all cases. The ARMS-PCR method was used for diagnosis of techno-specific single nucleotide polymorphisms (SNP). The primary ARMS PCR was used in order to conclude the Ala114→Val114 genotype.

***Results*:** For those with Ala114/Ala114 genotype, the odds ratio of lung cancer was 34% higher than the odds for people with Ala114/Val114 heterozygote genotype (P=0.515; OR=1/34; 95% CI=0.556-3.22), although it is not statistically significant. The results also showed that for those who had the Ala114/Ala114 genotype (P=0.071), the odds ratio for lung cancer was 65% higher than the odds for people with homozygous Vla114/Val114 genotype (P=0.089; OR=0.606; 95% CI=0.34-1.08).

***Conclusion*:** We found no relationship between the homozygote genotype Ala114/Ala114 (P=0.071) and Ala114/Val114 (P=0.515) and Vla114/Val114 (P=0.089).

***Keywords*:** Lung cancer, Glutathione S-transferees P1 Ala114/Val114, Genetic polymorphism, ARMS

Corresponding author Email address: glavizh.adib@gmail.com

ID:463

Chemical composition and antioxidant activity of Rosa Damascene flower from Lorestan and its effect on the serum paraoxonase (PON1) activity

Syedeh Somayeh Mousavi[1], Farideh Azarbani[1]
[1] Khorramabad, Lorestan University, Lorestan, Iran

***Objective*:** Paraoxonase1 (PON1) acts as an antioxidant enzyme and protects low-density lipoproteins from oxidative modification in metabolism. The present study was conducted to investigate the chemical compounds and antioxidant activity of Rosa damascene flower from Lorestan and its effect on the serum paraoxonase1 (PON1) activity in vitro.
***Material and Methods*:** Rosa damascene flower was collected from Lorestan province and extracted by Maceration method. Antioxidant activity was determined by 1,1-diphenyl-2- picryl hydrazyl (DPPH) assay. Rosa Damascene flowers extract was analyzed using GC-MS spectrometer. Serum sample was taken from healthy volunteer donor. The effect of extract on serum paraoxonase activity was evaluated by spectrophotometric method.
***Results*:** Twenty-five components comprising 91.4% of the total extract were identified, of which 2,4-Dihydroxy-2,5-dimethyl-3(2H) furanone (24.67%), Hydroxy methyl furfurole (11.04%), Benzene ethanol (6.23%), 2-Octanone (5.53%) were found to be the main components. The extract showed DPPH radical inhibition with IC50 value of 392.38 µg/ml and at the 1mg/ml concentration increased serum paraoxonase activity by 51.22% compared to control. The extract radical inhibitory and PON1 activation activities were concentration dependent.
***Conclusion*:** The Rosa damascene flower extract is a potent antioxidant against DPPH radicals and significantly increases the activity of serum paraoxonase1 enzyme.

***Keywords*:** Rosa Damascene, Chemical composition, Antioxidant, Paraoxonase1 activity

Corresponding author Email address: Mousavi.bioshimi@gmail.com

ID:464

Chemical composition and antioxidant activity of Narcissus tazetta flower extract and its effect on the serum paraoxonase (PON1) activity

Syedeh Somayeh Mousavi[1], Farideh Azarbani[1]
[1] Khorramabad, Lorestan University, Lorestan, Iran

***Objective*:** Paraoxonase1 (PON1) is synthesized in the liver and bound to high density lipoprotein (HDL) particles in blood. It protects against atherogenesis by inhibiting lipid peroxidation. The aim of present study was to investigate the chemical composition and antioxidant activity of the Narcissus flower hydro alcoholic extract and its in vitro effect on PON1 activity.
***Material and Methods*:** The Narcissus flowers were collected from Lorestan province and extracted by Maceration method. Their hydro alcoholic extract was analyzed using GC-MS spectrometer. Antioxidant activity of the extract was evaluated by 2, 2- diphenyl- 1- picryl hydrazyl (DPPH) assay. Serum sample was taken from healthy volunteer donor and in vitro serum paraoxonase1 (PON1) activity was estimated by spectrophotometric method.
***Results*:** Forty compounds comprising 93.2% of the total extracts were identified which most important compounds were 1-Octadecanol (16.39%), 12, 15-Octadecatrienoic acid, ethyl ester (15.30%), Linoleic acid ethyl ester (14.82%), Tetradecanoic acid, ethyl ester (10.25%) and Trans- phytol (10.18%). DPPH IC50 value was observed 771.43 µg/ml for Narcissus tazetta flower extract and at the concentration 1mg/ml increased serum paraoxonase activity by 47.26% compared to control. The extract DPPH inhibitory and PON1 activation activities were concentration dependent.
***Conclusion*:** The Narcissus tazetta flower showed potent antioxidant activity against DPPH radicals and significantly increased the activity of PON1 enzyme.

***Keywords*:** Narcissus tazetta flower, Chemical compounds, Antioxidant, PON1 activity

Corresponding author Email address: Mousavi.bioshimi@gmail.com

ID:465

Evaluation of oxidative stress in malignant patient with colorectal cancer

Moslem Abolhassani[1], Asadi Karam[1], Iman Torabi[1]
[1] Department of Biochemistry, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

***Objective*:** There are several factors involved in colorectal cancer. Among the numerous agents, Oxidative stress has the potential role in tumor initiation, promotion and malignant conversion during the development of cancer. As well as wide usage pesticide in agriculture induce oxidative stress and disrupt cellular signaling and lead to damage all components of the cell, including lipids, proteins, and DNA.

***Material and Methods*:** In this case-control study, a total of 42 patients with colorectal cancer and 30 healthy subjects were selected. The enzymatic activity of acetylcholinesterase was measured according to Alman\'s modified method. The paraoxonase-1-arylestrazation activity was evaluated by using the phenylacetata as substrate. Serum levels of malondialdehyde and total antioxidant capacity were also measured based on the Naxifer kit protocol.

***Results*:** The mean age and BMI of subjects with colorectal cancer were significantly higher than the control group (P = 0.0001). Current results demonstrated that the level of acetylcholinesterase activity and paraoxonase-1 arylesterase activity in the patient group were significantly lower than the control group (P = 0.0001). Comparing the CRC group with control group illustrate that the level of malondialdehyde and total antioxidant capacity in the serum of patient group were significantly higher than the control group (P = 0.0001). Correlation coefficient of the factors in the patient group showed a significant and inverse correlation between plasma TAC and age. Also, there was a significant and inverse correlation between TAC and paraoxonase-1 arylesterase activity.

***Conclusion*:** The reduction of acetylcholinesterase activity along with reduction of paraoxonase-1 arylesterase activity was associated with an increase in serum levels of malondialdehyde and total antioxidant capacity in CRC subjects.

***Keywords*:** Colorectal cancer, Enzyme activity, AChE, Paraoxonase-1, MDA

Corresponding author Email address: asadi_ka@yahoo.com

ID:466

Newly modified ciprofloxacin causes G0/G1 cell cycle arrest and apoptosis in human leukemia stem cell-like KG1-a cells via down-regulation of Bcl2 and surviving

Majid Mahdavi[1], Farhad Eslami[1], Majid Mahdavi[1], Esmaeil Babaei[1], Hossein Mostafavi[2]
[1] Department of Biology, Tabriz university, Tabriz, Iran
[2] Department of Organic Chemistry & Biochemistry, Tabriz university, Tabriz, Iran

***Objective*:** Ciprofloxacin (CP) is an antibiotic with low side effects, which have anti-proliferative and apoptotic activities in numerous cancer cell lines. Prior studies indicated several CP derivatives, displayed higher in vitro anticancer activity than parent CP anticancer activity. Here, the anti-proliferative and apoptosis-inducing effects of a new modified CP, 1-isopropyl 4-methyl ciprofloxacin (IMC), was examined in human acute myeloid leukemia (AML) KG-1a cell line.
***Material and Methods*:** Acute myeloid leukemia KG-1a cells were treated with different concentration (10-120 µM) of IMC and cell viability determined by MTT assay. Induction of apoptosis evaluated morphologically by fluorescence microscope, as well as cell cycle analysis. Expression levels of some anti-apoptotic genes including Bcl-2 and Survivin were analyzed by qRT-PCR.
***Results*:** IMC mediated growth inhibition in a dose- and time-dependent in the KG-1a cells. G0/G1 cell cycle arrest was showed after treatment of the cells with IC50 value (35 µM) of the compound. Furthermore, the qRT-PCR analysis revealed that treatment of the KG-1a cells with IMC down-regulates the expression of Bcl-2 and Survivin.
***Conclusion*:** According to the present data, it looks that this new modified CP is a good candidate for further evaluation as an effective chemotherapeutic drug in AML.

***Keywords*:** Ciprofloxacin, Apoptosis, Acute myeloid leukemia, Bcl-2, Survivin

Corresponding author Email address: majid.mahdavi@tabrizu.ac.ir

ID:469

The effect of positive charges saturation as an alternative mechanism for thermostability of firefly luciferase [Review Article]

Farzane Kargar[1], Mojtaba Mortazavi[1], Masoud Torkzadeh Mahani[1], Shahryar Shakeri[1], Safa Lotfi[1]
[1] Department of Biotechnology, Environmental Research Center, Institute of Advanced Science and Technology and Environmental Sciences, Kerman Graduate University of advanced technology and industrial, Kerman, Iran

***Objective*:** Firefly luciferase is a monooxygenase that catalyzes the ATP-dependent conversion of firefly luciferin into a luciferyl-adenylate, which is oxidized to an electronically excited oxyluciferin in a multi-step reaction and produces visible light with a remarkable quantum yield. Protein engineering has some interesting approaches such as increasing of Arg and loop anchoring for designing and construction of thermostable proteins. Due to high proportion of solvent-exposed surface loops in photinus pyralis luciferase, some of these residues were evaluated bioinformatically for site directed mutagenesis. After this, the single mutation (N177R) was selected. To further clarify the effect of this position on the structure and function of photinus pyralis luciferase, Arg residues was inserted into the Photinus pyralis luciferase, using site-specific insertion mutagenesis. The Quick Change Site-Directed Mutagenesis was used to create the mutant luciferase. The Photinus pyralis luciferase gene was used as template and the gene was cloned into a pET28a+ expression vector. The plasmids containing the mutant luciferase were amplified using PrimeSTAR HS DNA polymerase and two complementary primers containing the desired mutation, using a thermal cycler. Subsequently, primary PCR products were purified using a clean-up kit. The products were treated with DpnI to digest the non-mutated parental plasmids. After the second purification, the product used to directly transform into competent Escherichia coli BL21 cells. Insertion of charged residues in this loop may create a series of kinetics and structural changes which must confirmed by activity assay and fluorescence spectroscopy. Homology modeling and molecular docking simulation will be used to evaluate the effect of mentioned substitutions.

***Keywords*:** Photinus pyralis, Bioluminescence, Bioinformatically, Site directed mutagenesis

Corresponding author Email address: mortezavimm@gmail.com

ID:472

Isolation and identification of native cellulose enzyme producing bacteria [Review Article]

Mojtaba mortazavi[1], Farzane Kargar[1], Mahmood Maleki[1], Shahryar Shakeri[1], Masoud Torkzadeh Mahani[1]
[1] Department of Biotechnology, Environmental Research Center, Institute of Advanced Science and Technology and Environmental Sciences, Kerman Graduate University of advanced technology and industrial, Kerman, Iran

***Objective*:** Cellulose is a long chain polymer that made up of repeating units of glucose with β-1, 4 glycosidic linkages. Cellulases cause hydrolysis of the individual cellulose fibers to break it into smaller sugars units & finally producing glucose molecules. This enzyme was identified in some fungi and bacterial species. Cellulases production bacteria include aerobic, anaerobic, thermophilic and mesophilic species. Cellulase is an expensive enzyme that is important for commercial use. In order to design new biotechnological applications of this enzyme, some strategies that improve their environmental performance include: Increasing the efficiency of enzyme production, generating cost-effective enzymes, producing more stable enzymes and identification of new strains. Because of the high growth rate of bacteria, it has a high potential for cellulase production. In this study for this regard, 72 strains of bacteria were collected from different regions of Iran, which had a high chance of producing cellulase. These bacteria were grown on a culture that containing the CMC. To ensure the synthesis of cellulase, the liquid M9 media containing CMC were used and the growth of the bacteria was investigated. After screening of cellulases bacteria, the DNA of these bacteria were extracted. The 16S rDNA gene of cellulases producing strains was amplified using standard PCR protocol. Primers 8F and 1541R were used to amplify the 16S ribosomal gene and analyzed by 1% agarose gel electrophoresis and the clean-up PCR product was subjected to cycle sequencing. The results show that 12 samples were able in the cellulase synthesis. The formation of a clear area in the culture medium indicates the decomposition of cellulose. In following, these strains were identified using 16S rDNA. The results show that some of these screened bacteria were belonged to the Bacillus sp. At the end, the sequences bioinformatics analysis and phylogenetic tree of these strains will be conducted.

***Keywords*:** 16S rDNA, Bacillus sp, cellulase, bioinformatics analysis

Corresponding author Email address: mortezavimm@gmail.com

ID:476

The comparison of catalase and superoxide dismutase activities in individual's exposure to outdoor air pollution in the cities of Arak and Zanjan

Nushin Rezaee Vandchali[1], Ali Koolivand[1]
[1] Arak University of Medical Sciences, Arak, Iran

***Objective*:** Nowadays, Air pollution is the most important health and environmental problems in developing cities. Long-term exposure to Outdoor air pollutants is a major risk factor for morbidity and mortality from chronic diseases such as cardiovascular disease, diabetes, cancer and pulmonary disease.
***Material and Methods*:** In this cross-sectional study, a total of 203 healthy adult men never-smoking (111 exposed subjects and 92 controls) were enrolled. The levels of superoxide dismutase enzyme were assessed by ELISA assay and antioxidant enzyme activity of catalase in the serum samples was determined using a spectrophotometric method.
***Results*:** Data analysis showed a significantly lower level of superoxide dismutase enzyme activity in the exposure group compared to control group. On the other hand, there were no differences in the levels of enzymes activity of catalase between residents in the cities of Arak and Zanjan.
***Conclusion*:** This study suggests that activity of superoxide dismutase enzyme could be useful biomarker of environmental stresses such as in exposure of air pollution. On the other hand, our result did not support the hypothesis that catalase could be considered as an oxidative stress marker following exposure to outdoor air pollution.

***Keywords*:** Air Pollution, Catalase, Superoxide dismutase enzyme, Arak, Zanjan

Corresponding author Email address: nushinrezaee.vand@gmail.com

ID:480

A new method for evaluation of serum brucellosis: a gel card test method, high thruput and fast way for analyzing Malta fever

Alireza Sheikh[1], Morteza Shojae[1]
[1] Department of medical biochemistry, Iran university of medical science, Tehran, Iran

***Objective*:** Brucellosis is a zoonotic infection caused by the bacterial genus Brucella. The bacteria are transmitted from animals to humans by ingestion through infected food products, direct contact with an infected animal, or inhalation of aerosols. Although there has been great progress in controlling the disease in many countries, there still remain regions where the infection persists in domestic animals and, consequently, transmission to the human population frequently occurs. It is an important human disease in many parts of the world especially in the Mediterranean countries of Europe, north and east Africa, the Middle East, south and central Asia and Central and South America and yet it is often unrecognized and frequently goes unreported. There are only a few countries in the world that are officially free of the disease although cases still occur in people returning from endemic countries.

***Material and Methods*:** The high variety of clinical manifestations of the human brucellosis makes difficult the diagnosis. Direct agglutination, Rose Bengal test, Coombs test, and ELISA are the most widely used techniques for the serologic diagnosis of brucellosis. While in acute forms, all these techniques are sensitive enough, only the Coombs test can be used in more evolved forms to discard serologically a brucellosis diagnosis. Besides, the increase of titers in serum as measured by the Coombs test may indicate a reactivation of the disease We use two different methods for evaluation of sera and comparison with brucella gel tests. SAT (Serum agglutination test) and brucellacapt test were prepared to test the same serums.

***Results*:** Data from 300 serum specimens and comparison with other method shows that brucella gel test has 96% specificity and 98% sensitivity for diagnosing the positive and negative sera.

***Conclusion*:** Brucella gel test is a fast and high throughput way in comparison with other common tests in

***Keywords*:** Brucella, SAT, Brucellacapt, Zoonotic

Corresponding author Email address: alireza.sheikhi71@yahoo.com

ID:481

Metformin enhances doxorubicin sensitivity via inhibition of doxorubicin efflux in P-gp-overexpressing MCF-7 cells

Vahid Shafiei Irannejad[1], Nosratollah Zarghami[1], Nasser Samadi[1], Bahman Yousefi[1], Saman Bahrambeigi[1], Roshan Dinparast[1], Morteza Molaparast[1]

[1] Departement of Clinical Biochemistry and Laboratory Medicine, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

***Objective*:** Resistance against chemotherapy is still a major problem in successful cancer treatment in the clinic. Therefore, identifying new compounds with lower side effects and higher efficacy is an important approach to overcome multidrug resistance (MDR). Here, we investigated the activity and possible mechanism of the antidiabetic drug, metformin, in human doxorubicin (DOX) resistant breast cancer (MCF-7/DOX) cells.

***Material and Methods*:** The effect of metformin on the cytotoxicity of DOX was evaluated by MTT assay. The P-gp mRNA/protein expression levels following treatment with metformin was determined using real time polymerase chain reaction (RT-PCR) and western blot analysis, respectively. Intracellular rhodamine 123 accumulation assay was performed to evaluate the P-gp function. Cellular ATP content was determined using ATP assay kit. The effect of metformin on DOX-induced apoptosis was evaluated by annexin V/FITC assay.

***Results*:** Exposure to metformin considerably enhanced the cytotoxicity of DOX. Metformin had no substantial effect on P-gp expression, while, the activity of P-gp and intracellular ATP content decreased with metformin treatment in a dose-dependent manner. Furthermore, metformin significantly increased the DOX-induced apoptosis.

***Conclusion*:** These results indicate that metformin could reverse MDR in breast cancer cells by reducing P-gp activity. Therefore, metformin can be suggested as a potent adjuvant in breast cancer chemotherapy.

***Keywords*:** Metformin, Multidrug resistance, P-gp, Breast cancer

Corresponding author Email address: vahid.shafiei@hotmail.com

ID:482

Arbutin attenuates astrocytes activation and inflammation in PTZ-induced kindling model

Seyed Raheleh ahmadian[1], Mahdi pouramir[2], Maryam ghasemi[3], Farzin sadghi[3]
[1] Student Research Committee, Babol University of Medical Sciences, Babol, Iran
[2] Cellular and Molecular Biology Research Institute, Faculty of Medicine, Babol University of Medical Sciences, Babol, Iran
[3] Cellular and Molecular Biology Research Center, Health Research Center, Babol University of Medical Sciences, Babol, Iran

Objective: Several evidences suggest that inflammatory processes play important role in pathology of epilepsy. In recent years, application of herbal compounds with anti-inflammatory properties, such as arbutin has been regarded as useful agent in reducing of the symptoms of epilepsy. In this study, the effect of arbutin on spatial memory and inflammation level was evaluated in pentylenetetrazol (PTZ)-induced kindling model.

Material and Methods: Male NMRI mice have received the daily injection of arbutin at dose of 25 and 50 mg/kg. All interventions were injected intraperitoneally (i.p), 10 days before PTZ administration and the injections were continued until 1 h before each PTZ injection. Spatial learning and memory was evaluated using Morris water maze test after the 7th PTZ injection. Animals have received 10 injections of PTZ and then, brain tissues were removed. Immunostaining method against TNF-α as inflammatory factor marker and GFAP as astrocytes marker was performed on brain sections.

Results: Our results showed that arbutin administration reduced the seizures behavior and prevented cognitive impairment in fully-kindled animals. The level of astrocytes activation and TNF-α expression were attenuated in animals which have received arbutin compared to those received saline.

Conclusion: Overall, these findings suggest that arbutin effectively ameliorates memory impairment and alleviates the level of inflammation and astrocytes activation in PTZ-induced kindling model.

Keywords: Arbutin, anti-inflammation, Memory improvement, Anticonvulsant, pentylenetetrazol

Corresponding author Email address: Rsahmadian16@gmail.com

ID:483

Investigation of cytotoxicity and apoptosis induction in human leukemia K562 cell line by an active compound from pyrazine family

Saeedeh Rostampour[1], Majid Mahdavi[1], Esmaeil Babaei[1], Hossein Mostafavi[2]
[1] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran
[2] Department of Organic Chemistry, Faculty of Chemistry, University of Tabriz, Tabriz, Iran

***Objective*:** It has been recently showed that pyrazine derivatives have various biological activities including anti-bacterial, anti-viral and anti-cancer. Some pyrazines are essential for all forms of life due their DNA strand breakage activity and their apoptosis inducing effects. The present study aimed to evaluate the cytotoxicity and induction of apoptosis in human leukemia K562 cells by (2)-3-phenyl prop-2-enyl-pyrazin-2-carboxylate (2-P. P) a new compound from pyrazinoic acid family.

***Material and Methods*:** The K562 cells were treated with various concentration (10-120 µM) of the 2-P. P for 24-72 hours. Cell viability was determined by MTT growth inhibition assay. Apoptosis, as the mechanism of cell death, was investigated morphologically by Hoechst staining, cell surface expression assay of phosphatidyl serine by annexin-V/PI technique, as well as, DNA fragmentation assay. The effect of 2-P.P on K562 cell cycle was studied by flow cytometry.

***Results*:** He results revealed that 2-P.P inhibited viability with IC50 of 70 µM for 72 h. Assessment of Annexin V/PI double staining by flow cytometry, morphological changes by fluorescence microscope and the formation of DNA ladders upon treatment of the cells with the 2-P.P showed that this compound induce apoptosis at IC50 value. Cell cycle arrest was observed in G0/G1 phase and sub-G1 cell population increased after 24- 72 h of treatment.

***Conclusion*:** It is concluded that 2-P.P can be suitable candidate for further pharmaceutical evaluations.

***Keywords*:** Pyrazines, Apoptosis, K562, Chronic Myeloid Leukemia

Corresponding author Email address: Rsahmadian@gmail.com

ID:484

Impact of digoxin on the cisplatin sensitivity in bladder cancer cells

Ebrahim eftekhar[1], Parisa Zargar[1]
[1] Molecular Medicine Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

***Objective*:** Cisplatin-based chemotherapy improves the overall survival of patients with bladder cancer. However, most of these patients show resistance to cisplatin, when used as a monotherapy. This study was conducted to investigate the potential of digoxin as a chemosensitizer for increasing the therapeutic efficacy of cisplatin in bladder cancer cells.
***Material and Methods*:** MTT assay was used to determine the cytotoxic effect of cisplatin and digoxin on 2 human bladder cancer cell lines (EJ138 and 5637). To evaluate the effect of digoxin on the sensitivity of cells against cisplatin, cells were pretreated with low cytotoxic concentration (IC30) of digoxin and then various concentration of cisplatin.
***Results*:** Digoxin and cisplatin inhibit the growth of bladder cancer cells in dose-dependent manner. 5637cell line was more resistant to cytotoxic effect of digoxin and cisplatin than EJ138. Pretreatment with digoxin markedly sensitized both cell lines to the cytotoxic effects of cisplatin.
***Conclusion*:** Taken together our findings, show for the first time that pretreatment with low dose of digoxin significantly enhanced the cytotoxic property of cisplatin on bladder cancer cells. The combination of digoxin and cisplatin may be considered as a potential new chemotherapy regimen to overcome cisplatin resistance in patients with bladder cancer.
***Keywords*:** Digoxin, Bladder cancer, Cisplatin, Chemotherapy
Corresponding author Email address: eftekhar19@gmail.com

ID:485

Cytotoxic Activity of Postia puberula hydroalcholic extract on MCF-7 Cell line

Zahra Abasian[1], Zahra Lorigooini[1], Mahmoud Rafieian-kopaei[1], Hamzeh Ali Shirmardi[2]
[1] Medical plants Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran
[2] Research Center of Agriculture and Natural Resources Research and Education Center, Agricultural Research Education and Extension Organization, Shahrekord, Iran

***Objective*:** Breast cancer is the most common cancer in women around the world and the most frequent types of cancer in developing countries. An impressive number of modern drugs used in cancer treatment are isolated or derived from natural sources especially medicinal plants. The genus Postia (tribe Inuleae) with four species, distributed over Syria and Iran. The aim of this present study was to examine the cytotoxic activity of Postia puberula hydroalcholic extract on MCF-7 cell line of cancer using MTT assay.
***Material and Methods*:** The hydroalcholic extracts of P. poberola were prepared by maceration method and their cytotoxic effects on MCF-7 human breast cancer cell line. Cell viability was measured by MTT assay after 48 hours. Also DPPH scavenging assay was measured.
***Results*:** The percentages of viable cells treated with different concentrations of extract were significantly lower (P value<; 0.05) than the untreated cancer cells at the dose of 1000, 500 and 250 µg/ml IC50 value for Postia puberula extract was calculated 157.84 ± 12.15 µg/ml, using Probit analysis. Also DPPH scavenging assay showed 24.46 µg/ml as IC50 value for antioxidant activity.
***Conclusion*:** Results of the present study suggested Postia puberula as a potent chemotherapeutic and chemopreventive agent as it exerted a cytotoxic effect on cancer cell line, also Postia puberula showed a high antioxidant properties. Postia puberula may be a new hope as an anticancer drug in future. The Results section should describe the outcome of the study. Data should be presented as concisely as possible and tables or figures should be avoided. The Discussion should be an interpretation of the philosophy behind the new findings and their probable significance.

***Keywords*:** MCF-7, Breast cancer, Postia puberula, DPPH

Corresponding author Email address: zahraa.abasian@gmail.com

ID:491

Design of New Toxoplasma gondii DHFR Inhibitors by Proteochemometrics Modeling and Structure-based Virtual Screening

Safoura Hariri[1], Farhad Shirini[1], Jahan B. Ghasemi[2], Behnam Rasti[3]
[1] Department of Chemistry, Faculty of Science, University of Guilan, Rasht, Iran
[2] Faculty of Chemistry, University of Tehran, Tehran, Iran
[3] Department of Microbiology, Faculty of Basic Sciences, Lahijan Branch, Islamic Azad University (IAU), Lahijan, Guilan, Iran

***Objective*:** DHFR is a drug target for treatment of infectious diseases such as Toxoplasmosis that affects more than a third of the world's population. Toxicity and side effects of the existing drugs and lack of their selectivity for the DHFR of the parasite have necessitated design of new lipid-soluble antagonist to resolve the problems. In this regard, PCM approach as a tool to design selective ligands is as an extension of the traditional QSAR models.
***Material and Methods*:** PCM was applied to illustrate ligand-receptor interaction space and design selective ligands to inhibit T.gondii DHFR. We constructed a PCM model using GRINDs-VolSurf molecular descriptors and sequence-based Z-scales as ligand and receptor descriptors, respectively. To design the new ligands, the active ligand in the dataset was docked to the T.gondii DHFR receptor and then imported to pharmit server to identify the pharmacophore features. Afterward, receptor-based virtual screening was performed using PubChem libraries. Lipinski's rule of five was used for filtering the output of VS. The identified ligands were analyzed by docking score and ADME/Tox parameters.
***Results*:** The PCM model was validated by internal and external parameters and a high consistency with acceptance criteria was obtained. Also, by evaluating the influence of a ligand descriptor on selective inhibition of distinct receptor, we designed new inhibitors for T.gondii DHFR using the structure-based pharmacophore model.
***Conclusion*:** We designed new ligands that target the enzyme DHFR against toxoplasmosis using the PCM modeling results.
***Keywords*:** DHFR, PCM, virtual screening
Corresponding author Email address: Hariri.s@gmail.com

ID:492

Investigation of in vitro aldose reductase inhibitory potential of effective fraction of salvia officinalis

Seifollah Bahramikia[1], Somayeh Amraee[1]
[1] Department of Biology, Faculty of Science, Lorestan University, Khorramabad, Iran

***Objective*:** Aldose reductase (AR) is the key enzyme of the polyol pathway, which plays an important role in the pathogenesis of diabetic complications. AR inhibitors can be used as an important strategy in the treatment of diabetic complications.

***Material and Methods*:** The aim of the present study was to investigate effect of effective fraction of salvia officinalis on the activity of the bovine lens aldose reductase. For this purpose, the phenol and flavonoid contents, IC50 values of different fractions of the salvia officinalis were first measured to scavenge the DPPH free radicals. Then, the effect of crude extract and effective fraction of the plant on the enzyme activity were investigated.

***Results*:** Results indicated that ethyl acetate fraction had the highest of phenolic and flavonoid contents by 412.6 ± 1.55 and 372.5 ± 6.47 mg / ml, respectively. Also, the ethyl acetate fraction showed the lowest IC50 content of 1.18µg/ml for scavenging of the free radicals and 9.25µg/ml for the inhibition of AR activity. According to the lineweaver–Burk plot, the ethyl acetate fraction acts as an uncompetitive enzyme inhibitor.

***Conclusion*:** One short sentence which summarizes the contents of the article, presenting the final outcome of and concluded from the research or proposing further study on the subject, may be given at the. These findings revealed that different fractions showed significant amount of AR activity, where in ethyl acetate fraction it was found to be maximum which may be due to its high phenolic and flavonoid content.

***Keywords*:** Salvia officinalis, Aldose reductase, Ethyl acetate fraction, Inhibititory effect

Corresponding author Email address: bahramikia.s@lu.ac.ir

ID:495

The effect of Glutamine on serum levels of glyoxal and methylglyoxal in type 2 diabetic rats

Maryam Nasri[1], Hassan Ahmadvand[1], Ismail Babaee Nejad[1]

[1] Department of biochemistry, Lorestan University of medical science khorramabad, Iran

Growth & Development research center, Tehran University Medical science, Tehran, Iran

Objective: Glyoxal and methylglyoxal are mediated by glycolytic agents and contribute to vascular complications in diabetes. The levels of glyoxal and methylglyoxal, enhance in diabetes. Regarding the role of glycemic products in the development of diabetes and the reduction of the level of glutamine in diabetic plasma, the aim of this study was to measure the effect of glutamine on glyoxal and methylglyoxal in type 2 diabetic rats.

Material and Methods: 30 male Wistar rats were divided into 3 groups: 1) healthy group 2) diabetic group receiving peritoneal injection of 110 mg / kg nicotinamide and 60 mg / kg streptozotocin 3) glutamine-treated diabetic group. After induction of diabetes, the rats were treated daily with oral glutamine at a dose of 1 g / kg and treated for 7 weeks. The animals were then anesthetized and blood was collected from the heart and serum was isolated and the serum glyoxal and methylglyoxal levels were measured using HPLC technique. These compounds were derived with o-phenylenediamine and determined at a wavelength of 315 nm against the standard glyoxal and methylglyoxal.

Results: The results showed that glyoxal and methylglyoxal levels significantly increased in the diabetic Compared to control group respectively (2.30 and 2.47 fold). Treatment with glutamine reduces glyoxal and methylglyoxal levels (5.69% and-33.57%) respectively ($P < 0.05$). However, the reduction in methyl glyoxal was statistically significant.

Conclusion: According to the results, glutamine can be used as an anti-glycemic compound in reducing the complications of diabetes and decreasing serum glyoxal and methylglyoxal levels.

Keywords: Type 2 Diabetes, Glutamine, Glyoxal, Methylglyoxal

Corresponding author Email address: maryam.nasri95@gmail.com

ID:496

The Kinetic Study of Permuted and Non-permuted Renilla luciferase

Roya Mokhtar-Ahmadabadi[1], Shiva Akbari-Birgani[1]
[1] Department of Biological Sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

***Objective*:** Circular permutation is a nature-based strategy in protein engineering methods and so applicable in zymogen construction. A zymogen is an inactive form of an enzyme which is activated by a proteolytic digestion.
***Material and Methods*:** In this study, we have benefited from circular permutation strategy to design a biosensor in the form of zymogen. Indeed, we have changed the position of N and C terminal domain of Renilla luciferase. This rearrangement results in enzyme inactivation unless it is exposed to the caspase-9, the processing protease. All the standard protocols for the cloning and protein purification were done for both form of luciferase, intact and engineered. The effect of circular permutation on enzyme activity, the decay rate of emitted light and the kinetic parameters were investigated.
***Results*:** Examining the enzyme activity of these enzymes showed that in the absence of caspase-9, the permuted form of luciferase has no activity, however, it regains its activity after cleavage by caspase-9. Measuring and comparing the decay rate of bioluminescent emission for both enzyme do not show a significant difference. Afterward, the enzyme kinetics studies have been done and the Michaelis-Menten plots were graphically depicted. The results show kinetic parameters Km and Vmax values, decreases in the permuted luciferase rather than non-permuted one.
***Conclusion*:** In conclusion, the study showed that circular permutation of Renilla luciferase changes its kinetic parameters. It may be due to the conformational changes in substrate binding site that occur during permutation process.
***Keywords*:** Circular permutation, Enzyme kinetics, Renilla luciferase
Corresponding author Email address: aghaghi_69@yahoo.com

ID:497

An overview of the quality control process for Andrology tests and set up a method for new SCSA test in a medical diagnostic laboratory

Seyedeh Zahra Shahrokhi[1], Mohammad Reza Deemeh[1]
[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

***Objective*:** The quality control process results in increase of accuracy and precision in analytic detection in the clinical laboratory. Medical diagnostic laboratories have the existing rules for quality control in most subclinical section. However, quality control process in the Andrology department have been underestimated, and many infertility laboratories are not aware of the rules and procedures for implementing quality control in this section. Also, the introduction of new tests in the Andrology department such as SCSA (sperm chromatin structure assay) and TUNEL requires standardization of new quality control procedures. In this study, in addition to a review of the quality control processes for Andrology department section, we provide a novel and accurate method for SCSA quality control.

***Material and Methods*:** For pool control sample, semen samples were selected from individuals with concentration > 60 million/ml and semen volume>3 cc, were liquated divided on 500 µl micro tube and then were storage in -20 refrigerator. After 1 week, first micro tube of semen was thawed and this SCSA results was considered as references value. Then every month one micro tube of semen samples were thawed and the obtained results were compared with references value. In addition, samples were prepared and were send to other laboratories for assessment the SDI.

***Results*:** The results shows when the samples were kept at a – 20oC for one year, the SCSA results did not have a significant clear difference with the samples that were read after one 1 week from pool control production. We observed CV about 8%, which was acceptable. In addition, the produced control samples and which were sent to other laboratories did not differ significantly in the SCSA results and CV content was reported 7%.

***Conclusion*:** The method used for assessing the quality control process is was appropriate for the SCSA test and result in improvement in accurate and precision of this test results. Quality control procedures in the Andrology department have a great importance in order to improvement the accuracy and precision of the results in this Andrology section.

***Keywords*:** Quality control, Andrology, SCSA test

Corresponding author Email address: zahra.shahrokhi@modares.ac.ir

ID:499

Inhibitory effect of Irisin on LDL oxidation as a newly atherosclerosis diagnostic biomarker In vitro

Alieh Abdolrezaie[1], Masoumeh Sadeghi[2], Hashem Nayeri[1], Narges Jafari Dinani[2]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran
[2] Cardiac Rehabilitation Research Center, Isfahan Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Recently, Irisin has been identified as a new glycopeptide and myokine and that is result of the proteolysis of the FNDC5. This peptide is secreted from the heart muscle while exercising. The low level of irisin in the bloodstream is associated with signs of atherosclerosis and the effect on LDL oxidation, causing to make delayes in the oxidation process and will be prevent the formation of foam cells and vascular endothelial destruction. This study aimed to investigate the effect of irisin on reducing LDL oxidation as an effective factor in atherosclerosis.

***Material and Methods*:** Fasting blood samples were collected from normal people and serum was isolated by ultracentrifugation gradient medium. At the end the effect of certain concentration of irisin on activity of LDL oxidation induced by CuSo4, the oxidation kinetics was studied in vitro.

***Results*:** The results of this study showed that the 5 (µg/ml) concentration of the irisin had the most effective concentration on reducing LDL oxidation and significantly increased the lag phase as a factor affecting the incidence of atherosclerosis ($p<;0.001$).

***Conclusion*:** Findings showed that the irisin secreted from the heart muscle tissue as a newly biomarker on inhibition of serum lipid oxidation such as LDL as an indicator of heart disease, including atherosclerosis by strengthening the antioxidant properties of the lipoproteins internal particle and inhibition of free radicals result from CuSo4 in vitro, was significantly effective, and probably will have similar effects in vivo.

***Keywords*:** Irisin, Atherosclerosis, LDL oxidation, FNDC5

Corresponding author Email address: a.abdolrezaie@yahoo.com

ID:500

Effect of trehalose on inflammation, oxidative stress, astrocyte reactivity and functional outcome in an experimental model of spinal cord injury

Mahdieh Nazari-Robati[1], Mahboobe Akbari[1], Mohammad Khaksari[2], Moghaddameh Mirzaee[3]
[1] Department of Clinical Biochemistry, Kerman University of Medical Sciences, Kerman, Iran
[2] Endocrinology and Metabolism Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran
3 Department of Biostatistics and Epidemiology, School of Public Health, Kerman University of Medical Sciences, Kerman, Iran

***Objective*:** Inflammation and oxidative stress are implicated in the pathogenesis of spinal cord injury (SCI). Trehalose, a nonreducing disaccharide, exhibits anti-inflammatory and antioxidant effects. The present study investigated the therapeutic efficacy of trehalose in SCI model.
***Material and Methods*:** 120 male Wistar rats were randomly divided into three groups including SCI, SCI+phosphate buffer saline (vehicle) and SCI+trehalose. All rats were subjected to SCI. Immediately after SCI, vehicle and trehalose groups received intrathecal injection of buffer and trehalose respectively. Then, the level of tissue TNFα, IL-1β, nitric oxide, malondialdehyde, myeloperoxidase, GFAP as well as hindlimb function were assessed at 4 h, 1, 3 and 7 d post-SCI.
***Results*:** Data indicated an early significant decrease in inflammatory and oxidative responses following SCI in trehalose treated group. Moreover, trehalose reduced GFAP expression as soon as 1 d post-trauma. Furthermore, trehalose treatment increased the score of hindlimb function.
***Conclusion*:** Our results indicated that treatment with trehalose reduces the development of secondary injury associated with SCI. This effect likely underlies improved neurological function.

***Keywords*:** Spinal cord injury, trehalose, Inflammation, Oxidative stress, Reactive astrocytes

Corresponding author Email address: mnazari@kmu.ac.ir

ID:503

Introduction of lipocalin-2 as a novel and probable biomarker to assist in the judgment of several pathologic conditions

Abbas Nezhadebrahimi[1], Mohammad Mostakhdem hashemi[1]
[1] Golestan university of medical sciences, Gorgan, Iran

***Objective*:** Lipocalin-2 (Lcn2) is a potent novel biomarker for a variety of pathologic conditions. Neutrophil gelatinase associated lipocalin (NGAL), also known as oncogene 24p3, uterocalin, siderocalin or lipocalin 2, is a 24 kDa secreted glycoprotein originally purified from a culture of mouse kidney cells infected by simian virus 40. This protein has been implicated in diversified functions such as apoptosis and innate immunity. In addition to neutrophils, lipocalin-2 is expressed in several other tissues, including liver, lung, kidney, adipocytes, and macrophages. Notably, the pro-inflammatory transcription factor NF-kB has been shown to transactivate lipocalin-2 expression through binding with a consensus motif in the promoter region of the lipocalin-2 gene, suggesting that this secretory protein might be involved in the inflammatory responses. Increased expression of lipocalin-2 has been found under various pathophysiological conditions such as infection, cancer, inflammation, kidney injury, cardiovascular disease, burn injury, intoxication, vasculitis/Kawasaki disease, asthma, arthritis and lupus nephritis. It also plays a direct role in iron transport and regulates the levels of important proteins of the iron metabolism. Lcn2: siderophore complexes can deliver iron to cells. It can also prevent H2O2 toxicity, which is considered to be the classical inducer of oxidative stress caused by ROS generation in an in vitro.
***Material and Methods*:** The data were collected from a precise scanning of literature published in four well-known databases: pubmed medline, web of science, scopus and embase.
***Results*:** The accompaniment of the alterations of lipocalin were showed in several pathologic circumstances including: oxidative stress induced by acute or chronic inflammation, kidney diseases, and also malignancies.
***Conclusion*:** Lipocalin 2 has a potency to be considered as a biomarker in a variety of pathological conditions because of its small size and relative stability. Kidney injuries and malignancies are two of the most relative circumstances that the use of lipocalin.

***Keywords*:** Lipocalin 2, Oxidative stress, Malignancy, Kidney injury

Corresponding author Email address: mohammad_hashemi69@yahoo.com

ID:504

Can lipid profile and liver function be affected by excess levels of fasting blood glucose?

Abbas Nezhadebrahimi[1], Mohamad Mostakhdem hashemi[1], Elhame Zaree[1], Sareh Moshiri[1], Hasan Mohajeri[1]
[1] Golestan university of medical sciences, Gorgan, Iran

***Objective*:** The elevation of blood glucose to higher than normal ranges can begin or at least aggravate several pathologic conditions. The components of lipid profile can be altered and also liver function may be impaired in this situation. According to this fact, we evaluated the levels of total cholesterol, triglyceride, fasting blood glucose, LDL, HDL, urea, creatinine and also the activity of ALT, AST, and ALP as the markers of liver function of 50 persons with fasting blood glucose above 115 mg/dl as case group (hyperglycemic) and 50 individuals with fasting blood glucose less than 115mg/dl as control group (euglycemic).

***Material and Methods*:** Specimen sampling and experiments were carried out in the "Artin" pathobiologic laboratory in Gorgan, Iran. The normal distribution of data was tested by Kolmogorov-Smirnov Shapiro-Wilk tests. Then, mean and standard deviation were calculated for each variable and the t-test and mann-whitney tests were used to compare the means of data in two groups in the case of parametric and non-parametric data by respect. Spearman's correlation coefficient was used to evaluate the correlations between variables within each group using SPSS-v16 software.

***Results*:** The differences in FBS, HDL, LDL, and alkaline phosphatase were significant in two groups but there were no significant differences in the levels of ALT and AST activity, urea, and creatinin in the case and control groups. No correlation was found between FBS and other factors in two groups.

***Conclusion*:** We comparing fasting blood glucose with urea, creatinine, total cholesterol, TG, HDL, LDL, AST, ALT, and ALP. Our study showed that changes in FBS can lead to changes in lipid profiles while it doesn't affect liver function markers.

***Keywords*:** FBS, lipid profile, liver function, hyperglycemia

Corresponding author Email address: abbas_nejadebrahimi@yahoo.com

ID:505

Inhibition of Bovine Insulin Amyloid Fibrillation by Graphene Quantum Dots

Ali akbar Meratan[1], Ebrahim Rostampour Ghareghozloo[1]
[1] Department of Biological Sciences, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran

Objective: Protein and peptide fibrillation in the extracellular space of tissues plays a significant role in the development of several serious human diseases, such as Alzheimer's and Parkinson's diseases, and type II diabetes. Thus, one prevention and therapeutic strategy for these disorders is to inhibit or delay the fibrillation process. Graphene Quantum Dots (GQDs) have recently have attracted great attention because of their unique optical properties and potential applications in biological systems. In the present study, we have provided experimental evidence that GQDs can effectively inhibit bovine insulin amyloid fibrillation.

***Material and Methods*:** This study is aimed at exploring the influence of GQDs on the in vitro amyloid fibril formation of bovine insulin at pH 2.2 and 37 °C. A range of techniques including Thioflavin T (ThT) binding assay, 1-anilinonaphthalene-8-sulfonic acid (ANS) fluorescence spectroscopy, and Congo red binding assay were employed.

***Results*:** Kinetics of insulin amyloid formation in the absence and presence of GQDs demonstrated a concentration-dependent decrease in ThT fluorescence. Interestingly, we observed more than 90% decreases in ThT fluorescence intensity at 2:1 GQDs: protein ratio. Similarly, a pronounced dose-dependent decrease in ANS fluorescence intensities was also observed. These results were more confirmed by a significant decrease in Congo red absorbance, suggesting that in the presence of GQDs formation of insulin amyloid fibrils was strongly inhibited.

***Conclusion*:** Based on obtained results, it is concluded that GQDs are able to act as an effective inhibitor of insulin amyloid fibrillation.

***Keywords*:** Insulin, Graphene Quantum Dots, Amyloid fibril, Inhibition

Corresponding author Email address: ebrahim.rostampour1370@gmail.com

ID:506

Study effect of curcumin on the expression of endothelin-1 induced by TGF-β in bovine endothelial cells

Faezeh Seif[1], Hossein Babaahmadi rezai[1], Zahra Keshavarz[1]
[1] Atherosclerosis Research Center, Department of Clinical Biochemistry, Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Objective*:** Atherosclerosis is a chronic inflammatory disorder which accompanied by increase in the expression of transforming growth factor-beta (TGF-β). TGF-β increased endothelin-1 expression via activation of the Smad signaling pathway. Endothelin-1(ET-1) is a vasoconstrictor peptide that secreted from endothelial cells. Various studies have shown that ET-1 through increase the size of atherosclerotic plaques involved in the development of atherosclerosis. Curcumin is a plant polyphenol compound that is used as a traditional supplement in many countries. The potential therapeautic or preventive effects of curcumin may be related to its antioxidant and anti-inflammatory properties. In this study, was investigated the effect of curcumin on the expression of Endothelin-1 stimulated by TGF-beta.
***Material and Methods*:** In this study was performed on Bovine endothelial cells (BEC). The mRNA expression of ET-1 was assessed by Real-time PCR technique. GAPDH was used as a house keeping gene.
***Results*:** Treatment of BEC with TGF-β (2ng/ml) led to increase in the mRNA level of ET-1, which was significantly (P<; 0.01) reduced by using TGF-β receptor antagonist (SB431542, 10µM) and curcumin 10µM.
***Conclusion*:** Our data indicate that in BEC, Curcumin by reducing the expression of ET-1 induced by TGF-β can be introduced as an effective therapeutic for atherosclerosis.

***Keywords*;** Endothelin-1, Curcumin, Atherosclerosis, Transforming growth factor-β

Corresponding author Email address: faezehseif@yahoo.com

ID:507

Neuroprotective effect of hydralazine upon dopaminergic SH-SY5Y human neuroblastoma cells in a 6-hydroxydopamine model of Parkinson's disease

Mohammad Hadi Nematollahi[1], Mehrnaz Mehrabani[2], Mojdeh Esmaeli Tarzi[3], Solmaz Mirzamohammadi[4], Mehrzad Mehrabani[5]

[1] Department of Biochemistry, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran
[2] Physiology Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran
[3] Endocrinology and Metabolism Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman University of Medical Sciences, Kerman, Iran
[4] Shahroud University of Medical Sciences, Shahruod, Iran
[5] Herbal and Traditional Medicines Research Center, Kerman University of Medical Sciences, Kerman, Iran

***Objective*:** The prevalence of neurodegenerative diseases such as Parkinson's disease (PD) is clearly growing in all the world's societies and it cannot be completely cured by present prescriptions. Recent findings have confirmed that activating the hypoxia HIF-1α/VEGF signaling pathway could mediate neuroprotective procedures. In the present study, we determined to assess the neuroprotective capacity of hydralazine, a mimetic agent of the hypoxia pathway, in vitro model of PD.

***Material and Methods*:** At the beginning of the experiment, the effects of various concentrations of hydralazine on SH-SY5Y human neuroblastoma cell viability were considered to obtain the non-cytotoxic concentrations of a drug by MTT-assay. Additionally, the cells exposed to different concentrations of 6-hydroxydopamine (6-OHDA) (100 µg/ml) to evaluate 6-OHDA-induced SH-SY5Y cell toxicity by MTT and apoptosis detection assays. Afterward, the cells were pretreated with 25, 50, 75 and 100 µg/ml concentrations of hydralazine for 6 h, followed by incubation with 6-OHDA (100 µg/ml) for 24 h. Eventually, protein expression of HIF-1α and VEGF in experimental groups was analyzed by western blotting.

***Results*:** Hydralazine at 50 µg/ml concentration significantly attenuated 6-OHDA-induced cell apoptotic cell death in SH-SY5Y cells. Pretreatment with hydralazine significantly up-regulated the protein expression of HIF-1α and VEGF in the cells incubated with 6-OHDA versus 6-OHDA group alone.

***Conclusion*:** The present data suggest that hydralazine pretreatment via regulation of transcription factor HIF-1α expression levels and correlated target genes may mediate beneficial properties in reversing 6-OHDA-induced deteriorations and provide a useful therapeutic strategy for preventing PD.

***Keywords*:** Parkinson disease, Hydralazine, HIF-1α, 6-OHDA, SH-SY5Y cells

Corresponding author Email address: mh.nematollahi@yahoo.com

ID:508

Antimicrobial activity of Teucrium polium L. extract on Candida species isolated from environment

Nasrin Amirrajab[1]
[1] Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Objective*;** Yeasts including Candida species are isolated from the infected environment of hospital in southeastern of Iran. Exposure to fungi has been reported to cause several types of human health problems, primarily irritations, infections, allergies, and toxic effects, and it has been suggested that toxigenic fungi are the cause of additional adverse health effects. On the other hand, the most of synthetic antimicrobial products have some side effects, which make them less popular. Hence, the aim of this study was to evaluate the antifungal properties of Teucrium polium L. extract against Candia species isolated from the infected environment of hospital in southeastern of Iran.
***Material and Methods*:** In this study, we assessed the activities of Teucrium polium L. leaf extracts against Candida species, including C. albicans, C. glabrata, C. tropicalis, using the agar-well diffusion method.
***Results*:** The minimal inhibitory concentrations (MICs) values of leaf extracts from Teucrium polium L. leaf extract ranged 3.12-2.5 mg/ml against the tested Candida.
***Conclusion*:** Based on the results, the ethanolic extracts of the selected plants exhibited antifungal potency against the tested fungi and could be used as alternative natural antimicrobial agent and recommended to be used in formulation of herbal disinfect for the inhibition of growth of microbial environment in future researches.
***Keywords*:** Candida, Teucrium polium L., Microbial environment
Corresponding author Email address: n_amirrajab@yahoo.com

ID:509

Study of BUN/Creatinine levels in the population with (A, B, O) blood group referred to Golestan hospital, Ahvaz

Zari TahannejadAsadi[1]
[1] Department of Laboratory Sciences, school of paramedicine, Ahvaz Jundishapur University of medical Sciences, Ahvaz, Iran

***Objective*:** The ABO system remains the most important of all blood groups in transfusion practice. In 1900 karl Landsteiner described human blood group ABO. In addition to red cells, ABO antigens can be found on other tissue cells and in the secretions. The substances are glycoproteins and glycolipids. The aim of this study was to evaluate, BUN/Creatinine levels in the population with (A, B, O) blood group referred to Golestan hospital, Ahvaz.
***Material and Methods*:** In the present study, the sera of all population with blood group (A, B, AB, and O) who referred to Golestan hospital Lab, were collected. The sera were tested for detection of BUN and Creatinine levels. The statistical tests were used.
***Results*:** The BUN range of patients were in O blood group (74-119), A blood group (37-139) B blood group (49-149), and the Creatinine range of patients were showed in O blood group (2.8-7.2), A blood group (2- 9.3), B blood group (2-9.9) The mean BUN in blood group O (86.2), A (79.7), B (89.6), mean Creatinine in blood group O (4.9), A (5.6), B (5.7), mean age of 59.1 and aged 31-86 years.
***Conclusion*:** The results of present study showed the mean BUN and Creatinine levels in people with blood group B, was higher than other groups.
***Keywords*:** Blood Group, BUN, mean, Creatinine, Blood Group, BUN, mean
Corresponding author Email address: aztahannjad@yahoo.com

ID:510

The effects of garlic extract on IL-1β expression and oxidative stress status in retinal tissues of type 1 diabetic rats

Nasrin Ziamajidi[1], Roghayeh Abbasalipourkabir[1], Fatemeh Lotfi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Chronic Hyperglycemia in diabetes mellitus through oxidative stress, and stimulation of proinflammatory cytokines such as Interleukin-1beta (IL-1β), damages to various tissues such as eyes. In this study the effects of aqueous garlic extract on the expression of IL-1β and oxidative stress status in the retinal tissues of type 1 of diabetes rats were studied.

***Material and Methods*:** Twenty four Wistar rats divided into 4 groups: control rats (C), diabetic rats (STZ, 65mg/kg, ip) (D), diabetic rats treated with aqueous garlic extract (200mg/100g, gavage, 4 weeks) (D+G), normal rats received aqueous extract of garlic (200mg/100g, gavage, 4 weeks) (G). In the retinal tissues, total antioxidant capacity (TAC) by FRAP method and total oxidant status (TOS) by Xylenol orange measured by spectrophotometry. The IL-1β gene expression by qRT-PCR technique in the retinal tissues and its protein level in retinal tissue and serum were measured by ELISA.

***Results*:** The level of glucose in the serum of D rats increased compared with C group and decreased in D+G rats compared with D rats (p<;0.05). TOS level in the retinal tissue of D rats increased (p<; 0.001) and TAC level decreased (p<; 0.05) compared with C group. Whereas, after treatment with garlic, TOS level reduced (p<; 0.001) and TAC level increased (p<; 0.01) compared with D group. The level of IL-1β gene expression increased 1.82 fold in D rats compared with control group and decreased 1.36 fold in D+G rats compared with D rats. IL-1β protein level in the serum and retinal tissues of D rats increased compared to the C group and decreased in D+G rats compared to D group (p<;0.001).

***Conclusion*:** Garlic extract decreased TOS level, increased TAC level and also reduced the level of IL-1β gene and protein expression. Therefore, garlic extract can reduce the severity of damage to diabetic retinal tissues through antioxidant and anti-inflammatory properties.

***Keywords*:** Diabetes mellitus type 1, IL-1β, Oxidative stress, Garlic extract

Corresponding author Email address: n_ziamajidi@yahoo.com

ID:511

Quantitation of amphiregulin gene expression in patients with cirrhosis

Sina Mohagheghi[1], Zohreh Khajehahmadi[1], Jamshid Karimi[2], Heidar Tayebinia[2]
[1] Student Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Department of Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Chronic liver disease (CLD) is a disease process of the liver that can be triggered by different causes such as viral hepatitis, metabolic liver diseases, or chronic alcohol consumption. Nonalcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease, and its prevalence has risen rapidly in concert with the prevalence of type 2 diabetes and obesity. The epidermal growth factor receptor signaling system has been identified as a key player in all stages of the liver response to injury, especially fibrogenesis. One of the Ligands that can bind EGFR is amphiregulin. In our study, we analyzed AR gene expression in specimens obtained from healthy and fatty liver segments of patients undergoing resection of metastases and compared them with samples from patients with NASH-, ALD-, PSC-, AIH- and viral hepatitis-related cirrhosis.

***Material and Methods*:** Forty-four liver tissue specimens were collected from individuals with advanced fibrotic livers (n=30), NAFL (n=6), and healthy livers (n=8) in Namazi Hospital, Shiraz, Iran. All these samples were carefully reviewed by a liver pathologist. real-time quantitative reverse-transcription polymerase chain reaction was used to compare the mRNA expression of Amphiregulin gene in these three groups.

***Results*:** Semi-quantitative RT-PCR analysis of liver RNA from controls and from patients with cirrhosis showed a significant upregulation of AR in human livers with cirrhosis compared with fatty livers and controls (P=0.006 and P=0.000, respectively). Quantification of AR gene expression in these samples confirmed that AR gene expression was approximately 4.2-fold greater in cirrhotic livers compared to controls.

***Conclusion*:** The results of the present study indicate that Amphiregulin gene expression was different between patients with cirrhotic liver disease and control patients and it may be related to the mechanism of the progression of liver injury toward cirrhosis.

***Keywords*:** Cirrhosis, Non-alcoholic Fatty Liver Disease, Amphiregulin

Corresponding author Email address: amr.mohaghegh@yahoo.com

ID:512

Study of telomerase reverse transcriptase and Uterine-Ovarian-specific genes expression in the endometrial tissue of ovariectomized female Sprague-Dawley rats

Shadi Foroughi[1], Roghayeh Abbasalipourkabir[2], Reza Aflatoonian[2], Nasrin Ziamajidi[2], Saman Javid[2]
[1] Hamadan University of Medical Science and Royan Institute, Tehran, Iran
[2] Department of Clinical Biochemistry of Hamedan University of Medical Sciences, Hamadan, Iran

***Objective*:** An in vivo study was carried out to study of telomerase reverse transcriptase and Uterine-Ovarian-specific genes expression in the endometrial tissue of ovariectomized female Sprague-Dawley rats
***Material and Methods*:** Twenty-four female Sprague-Dawley rats divided into 4 groups of six rats. The first and second groups were ovariectomized and given tamoxifen and tamoxifen-loaded SLN respectively for six days continuously. Group 3 served as the untreated ovariectomized control group and group 4 was made up of untreated normal healthy rats. At the end of the study, the rats were sacrificed and study of the genes expression and serum zinc and copper were carried out.
***Results*:** The results showed that the expression of TERT in the group treated with tamoxifen, and tamoxifen-loaded solid lipid nanoparticles, significantly decreased (p<; 0.001) compared with ovariectomized control group. The results also revealed that the treatment with tamoxifenloaded solid lipid nanoparticles increased expression of UO-44 gene compared to ovariectomized control group, while there was no difference between tamoxifen treated and control group.
***Conclusion*:** Encapsulation of tamoxifen in solid lipid nanoparticles increased its targeting efficiency and improved the impact of the drug on the serum levels of some trace elements.
***Keywords*:** Tamoxifen, TERT, UO-44, SLN.
Corresponding author Email address: rpourkabir@hotmail.com

ID:513

Effects of nano-emulsion cream containing lavender essential oil and licorice extract on healing of deep skin wound in rats

Maryam Kazemi[1], Sayyed Alireza Talaei[1, 2], Mohammad Hossein Aarabi[3]
[1] Physiology Research Center, Kashan University of Medical Sciences, Kashan, Iran
[2] Biochemistry and Nutrition in Metabolic Diseases Research Center, Kashan University of Medical Sciences, Kashan, Iran
[3] Department of Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Cutaneous wound healing is one of the public health interests. Various strategies have been developed in order to quickly attain skin lesions closure. Despite the very good medicinal properties of lavender essential oil and licorice extract, some factors such as allergic reaction and being biodegradable limit the application of them as candidates for pharmaco-therapeutic treatments. Nano-emulsification is one of the ways to overcome these limitations. The aim of this study was to investigate effects of nano-emulsion cream containing lavender essential oil and licorice extract on healing of deep skin wound in rat model.

***Material and Methods*:** In this experimental study 85 male Wistar rats were divided into following groups: wounded, wounded received nano-emulsion cream containing lavender essential oil and licorice extract, lavender essential oil and licorice extract cream, placebo and phenytoin. In order to create a full-thickness skin defect, a uniform wound area (2.5 cm diameter) was excise from the nape of the rats. Animals were received topical treatment once a day for 14 days. Surface area of the wounds was measured by digital scale photographing. Also, expression of TGF-β1, Col I and Col III genes was evaluated by real-time PCR at days 2, 7 and 14 of the study.

***Results*:** Nano-emulsion cream decreased surface area of the wounds faster than lavender essential oil and licorice extract cream (P<;0.01) and phenytoin (P<;0.05), significantly. Also, analysis of real-time PCR data showed that topical treatment of wounds with nano-emulsion cream increases expression of TGF-β1, Col I and Col III genes in the rats' skin (P<;0.01).

***Conclusion*:** Nano-emulsion cream containing lavender essential oil and licorice extract exhibited a promising wound healing potential towards excisional wound models in rats.

***Keywords*:** Wound healing, Drug delivery, Nano-emulsion, Lavandula angustifolia, Glycyrrhiza glabra

Corresponding author Email address: talaei@kaums.ac.ir

ID:514

Therapeutic effect of combination Silibinin and Sodium Butyrate on a mouse model of ulcerative colitis

Vahid Pouresmaeil[1], Vahid Ariabod[2], Javad Saghravanian[3], Fatemeh Sadat Sotudeh[3], Mohammad Reza Khakzad[2], Amir Hooshang Mohammadpour[4]

[1] Department of Biochemistry, Mashhad Medical Sciences Branch, Islamic Azad University, Mashhad, Iran
[2] Mashhad Medical Sciences Branch, Islamic Azad University, Mashhad, Iran
[3] Department of Biology, Ferdowsi University of Mashhad, Mashhad, Iran
[4] Department of Pharmacodynamics and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

***Objective*:** Intestinal inflammation (IBD) is a complex multifactorial disease that includes two Crohn's disease and ulcerative colitis (UC). Ulcerative colitis is a disease in which the inner lining of the colon is inflamed. So far, this disease has no definitive cure, and the drugs used, such as anti-inflammatories, can stop the disease for a while, in addition to having complications. Our goal in this study is to find the appropriate drug for the improvement or definitive treatment of the disease without side effects.

***Material and Methods*:** In this study, 48 Balb/C male mice weighing 25 to 35 g were divided into 6 groups of 8. They were administered for 2 weeks with an effective dose of Silibinin (SB) or sodium butyrate (BU) or a mix of two. To compare the therapeutic effects of these compounds, an anti-inflammatory drug such as Mesalazine (Mz) was also used. After 12 days of treatment, colitis was induced by rectal acetic acid injection in mice, and 48 hours later, on day 14, all mice were sacrificed. In order to verify the results, histomorphologic and immunohistologic studies were performed on the blood and the colon tissue.

***Results*:** Histomorphologic examination of colonic biopsy specimens according to the available classification: mild, moderate and severe colitis, shows that groups treated with SB or BU alone have no significant difference with the MZ group, but the combination of SB and BU shows a significant difference with this group and the negative control. Immunohistological studies, TNF-α, IL-6, glutathione tests on tissue and blood confirm the results observed above.

***Conclusion*:** The present investigation outlines the anti-inflammatory activities of SB+BU against experimental ulcerative colitis. The anti-ulcerogenic effect was confirmed by the histological preservation of the colon architecture, inhibiting neutrophil infiltration and promoting the antioxidant capacity of the damaged colonic tissue.

***Keywords*:** Ulcerative colitis, Intestinal inflammation, Silibinin, Sodium Butyrate, Mice

Corresponding author Email address: v.pouresmaeil@mshdiau.ac.ir

ID:516

Diagnostic Value of Blood microRNAs in Gastrointestinal Cancer

Amir Hossein Aalami[1], Vahid Pouresmaeil[2]
[1] Department of Biology, Mashhad Branch, Islamic Azad University, Mashhad, Iran
[2] Department of Biochemistry, Mashhad Medical Sciences Branch, Islamic Azad University, Mashhad, Iran

***Objective*:** Gastrointestinal cancers (GICs) mainly including esophageal, gastric cancer (GC) and colorectal cancer (CRC). GICs accounted for about 35% of these mortalities. Recent accumulating evidences have demonstrated that aberrant expression of miRNAs is highly associated with tumor initiation, progression and metastasis in various types of cancers including GICs. Upper GICs is the most common cancer in Iran. The present review study aimed at investigating the role of circulating micro-RNAs in the diagnosis of GICs.

***Material and Methods*:** This review was done by searching on PubMed, Scopus, Science Direct and Web of Science by entering Gastrointestinal Cancers, Circulating microRNAs, Blood, Plasma, Serum, Diagnosis as keywords.

***Results*:** The expression levels of 50 miRs in blood were significantly higher in patients with GICs compared to healthy controls. It seems that a number of steps of GIC occurrence, proliferation and metastasis may be associated with changes in the miRs (expression profile). Consequently, we identified 10 miRNAs (miR-17, miR-18a, miR-19b, miR-20a, miR-21, miR-92a, miR-106a, miR-210, miR-223 and miR-378) that were most frequently reported to be upregulated in GIC and could be used as diagnostic biomarkers in GICs.

***Conclusion*:** Gastrointestinal cancer is still a deadly threat to human health due to tumor metastasis and relapse inducing refractory advanced tumor stage and poor prognosis. Circulating miRNAs in digestive cancer patients may be promising biomarkers that are stable and reproducible in peripheral blood. For this reason, only the combination of several miRNAs could be effective for the diagnostic purpose.

***Keywords*:** Gastrointestinal Cancer, Circulating MicroRNA, Blood, Diagnosis

Corresponding author Email address: amir.h.aalami@protonmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:517

Sequence specificity of interactions of heavy metal cations with myc and kit promoters

Seyyed ali Mehrdad[1], Kazemi Noureini Sakineh[1]
[1] Hakim Sabzevari University, Sabzevari, Iran

***Objective*:** Human beings are generally in contact with metallic compounds which are mostly toxic at high concentration. Understanding molecular aspects of metals toxicity has been more attended recently in epigenetics and molecular biology fields. Here we investigated whether such heavy metal cations interact with double strand DNA, which are probably effective on the expression level of relevant genes.
***Material and Methods*:** Synthetic labeled DNA of some specific sequences in promoters of myc and kit genes were prepared. Fluorescence intensity of the DNA after complete unfolding followed by incubation with different heavy metal ions at various concentration ratios was measured, while heated from 30 to 99°C. Melting temperature of the labled DNA were evaluated form dF/dT measurements. Any changes in Tm value may be inferred as the affected conformational stability and integrity of the DNA.
***Results*:** Most of the changes were observed as decreasing melting temperature of the double stranded DNA normally in concentration dependent manner. The extent of such impact may greatly depend on special characteristics of metal ions and the sequence of target DNA. In comparison with the control Wolfram, Molybdenum and Selenium did not change Tm value except slightly at very high concentrations. However, Cadmium, Mercury and Zinc showed various extent of alteration in Tm values of the DNA in sequence and concentration dependent manner.
***Conclusion*:** Heavy metal ions depending on their chemical characterizations may interact considerably with specific sequences of DNA.
***Keywords*:** Metal ion, sequence specific DNA, interaction, FRET
Corresponding author Email address: s.a.mehrdad67@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID: 518

Heavy metal interactions with telomeric G-quadruplex DNA; an optimized transitional-FRET melting method

Seyyed ali Mehrdad[1], Kazemi Noureini Sakineh[1]
[1] Hakim Sabzevari University, Sabzevari, Iran

***Objective*:** The G-quadruplex structure in the DNA is a subject that is associated with gene regulations and many cell functions. We have previously introduced transitional-FRET assay to determine selectivity of some heavy metals including Ni, Cd, Co, Pb and Hg interactions with G-rich sequences. Here we apply this novel method to investigate interactions of other heavy metals including Cr, Hg, Ag with telomeric G-quadruplex.

***Material and Methods*:** Potential interaction between metal ions with synthetic double-labled probe of telomeric sequence was investigated using tFERT method. Fluorescence intensity of the probe in presence of the related complementary sequence and various concentrations of metal ions was measured when gradually heated from 30 to 99°C in sodium and or potassium cacodylate buffers.

***Results*:** Any changes in G-quadruplex conformation may result in shift in melting temperature. Heavy metal ions made various extents of changes in melting temperature of the probe. Most of the changes were observed as increasing melting temperature normally in concentration dependent manner, while rarely reduced that. Heavy metals such as selenium, chromium, silver and mercury (I) did not affect melting temperatures significantly, however some other metals made strong shifts in Tm values of the probe. The tFRET graphs obtained in sodium buffer were more informative; this buffer provides a wider window to monitor Tm changes.

***Conclusion*:** The direction and amount of such impacts of heavy metal ions may greatly depend on special characteristics of metal cations and the exact conformational descriptions of target DNA. In general metal ions showed significant impact on G-quadruplex structure and thermal stability.

***Keywords*:** Metal ion, G-quadruplex DNA, Interaction, T-FRET

Corresponding author Email address: s.a.mehrdad67@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:519

Investigating the Anti-Cancer Properties of Nanoliposomes Containing essential oil of Cumin (Cuminum cyminum L.)

Shahla Salary[1], Shahram Pourseyedi[1], Azadeh Lohrasbi Nejad[1]
[1] Department of Biotechnology, Shahid Bahonar University of Kerman, Kerman, Iran

***Objective*:** Liposome is one of the nanocarriers that allows the loading of lipophilic and hydrophilic drugs. The cumin (Cuminum cyminum L.) is known to have useful medicinal effects in cancer, metabolism and respiratory diseases. However herbal extracts have limited application due to their instability and low solubility. The goal of this study is to develop nanoliposomes for encapsulation of the cumin essential oil and to investigate the resulting effects on the delivery of the essential oil in the MCF7 cancer cell line.

***Material and Methods*:** The cumin (Cuminum cyminum L.) essential oil was first extracted and then gas chromatography and mass spectrometry were used to identify the extracted compounds. Thin-film hydration method was then used to create small liposomes loaded with the extract. The lipid phase was prepared with L-alpha phosphatidylethanolamine dioleoyl, cholesteryl hemisuccinate and the essential oil. Finally, the cell toxicity of liposomal and free essential oil was compared on MCF7 cell line.

***Results*:** The employed methodology produced nanoliposomes measuring 243.6 nm in size with 100% frequency and polydisparity index of 0.33. Cell toxicity assay showed 13% increase in cancer cell death with liposomal essential oil.

***Conclusion*:** In this study, nanoliposomes containing cumin (Cuminum cyminum L.) essential oil were produced. Cell toxicity assay showed increased cancer cell death of liposomal essential oil compared to the free essential oil

***Keywords*:** Nanoliposomes, Drug delivery, Essential oil, Cuminum cyminum L., MCF7

Corresponding author Email address: shahsal93@gmail.com

ID:520

Effect of using vitamin C supplements on obesity: a systematic review

Vahid Reisi-Vanani[1], Sajad Maghareh-Dehkordi[1]
[1] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

***Objective*:** Obesity correlates with many chronic disease like cardiovascular disease, diabetics, cancer and etc. excessive fat increases free radicals which could result in using extra antioxidants like vitamin C, the aim of this study was to review the effect of ascorbic acid supplements on obese people and laboratory animals.
***Material and Methods*:** In this systematic review, based on PRISMA guidelines, the MeSH terms \"Dietary Supplements\", \"Ascorbic Acid\"," Obesity\", and two other relevant terms were searched by two individuals independently in databases including: PubMed, and Medline up to February 2018.
***Results*:** Our search identified 93 citations. We excluded 65 irrelevant and included 28 articles with all considered inclusion criteria. Using vitamin c containing supplements has many beneficial effects on obesity. It has preventive effect by decreasing food absorption and increasing fecal output. It also reduces risk of many obesity-derived diseases like esophageal adenocarcinoma, cardiovascular disease, diabetes, liver metabolic disease and etc. administering vitamin C containing supplements improves metabolic functions of body by reducing oxidative stress and inflammation; controlling blood pressure, enhancing immune system, and etc. its usage during exercise decreases heartbeat and feelings of fatigue, as result it makes obese people more willing to lose weight. Despite all these findings, a clinical trial revealed negative association of its usage with abdominal obesity in women.
***Conclusion*:** Vitamin c supplements showed synergistic effect with many other supplements, like phytosterols, in prevention of obesity and many correlated diseases, so its coadministration would revel better results, but more studies are needed on its effect on obese women.

***Keywords*:** Ascorbic Acid, Dietary Supplements, Obesity

Corresponding author Email address:VahidReisi@outlook.com

ID:521

Nano-biosensor-based Early Detection of Breast and Colon Cancers by Targeting Plasma miR-155

Hamidreza Mollasalehi[1], Asma Hamidi[2]
[1] Department of Cellular and Molecular Biology, Faculty of Biological Sciences and Technology, Shahid Beheshti University, G.C, Tehran, Iran
[2] Protein Research Center, Shahid Beheshti University, Tehran, Iran

***Objective*:** Cancer treatment is facilitated by early-phase diagnosis. The molecular diagnosis of cancer tumor markers can provide a sensitive and highly specific method for detection of cancers. Among molecular detection methods, nano-bio-sensing technology could serve as a point-of-care and cost-effective method with high specificity and sensitivity. MicroRNAs are preferred among many tumor markers mainly because of a key role in metastasis and apoptosis that mostly appear in the early-stage of cancer.

***Material and Methods*:** MiRNA-155 was selected for investigation in the plasma of the suspected patients with/without chemotherapy to check whether the expression of the biomarker was dysregulated or not. MiRNAs from plasma of 10 suspected patient to breast and colon cancers were extracted. Subsequently, the extracted samples were subjected to the designed optical nano-bio-sensor in which mi-RNAs are targeted by nano-probes.

***Results*:** The color changing of the nano-biosensor from red to violet were observed in testing of six out of ten samples of suspected patients which could be occurred because of upregulation in miRNA-155. However, the intensity of the violet shift in samples with clinical symptoms was higher and faster than two samples that were in the early stages of cancer. This could be attributed to the amount of expressed miRNA-155. The other four samples didn`t show any color change that could be related to chemotherapy treatment which was probably resulted in lowered amount of miRNA-155.

***Conclusion*:** In conclusion, nano-biosensor approach targeting miRNA-155 was successfully analyzed as a potential method for early detection of cancer as well as evaluation of prescribed therapeutic methodologies.

***Keywords*:** MiRNA-155, Nano-bio-sensing, Tumor marker

Corresponding author Email address: hr.mollasalehi@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:522

Homology Modeling of Desmoteplase: The Important Enzyme for Plasminogen Activation

Kaveh Haji-Allahverdipoor[1], Habib Eslami[2]
[1] Department of Biotechnology, Tarbiat Modares University, Tehran, Iran
[2] Department of Pharmacology, Hormozgan University of Medicinal sciences, Bandar Abbas, Iran

***Objective*:** The Desmodus rotundus plasminogen activator (DSPA-α, desmoteplase) from vampire bat saliva is plasminogen activator that does not exhibit NMDA (N-methyl-D-aspartate) associated neurodegeneration. Three-dimensional structure of protein is very important for novel insights into safe plasminogen activator discovery and design.
***Material and Methods*:** For modeling the structure of protein, the sequence of target protein was obtained from UniprotKB database (Accession number P98119). A PSI-BLAST Search with default parameters was carried out against the Protein Data Bank (PDB) to find suitable templates for homology modeling. The multiple sequence alignment of target sequence and selected templates was performed with Clustal Omega web server. Than 1000 models of target protein were generated with Modeller software using multiple sequence alignment of target and known templates. Internal scoring functions such as DOPE score (discrete optimized protein energy), molpdf and GA341 were used to select the best model.
***Results*:** The quality of final model was evaluated by various tests. Finally, the validated model was subjected to energy minimization with Gromacs, molecular dynamic package, with steepest descent algorithm and CHARRM forcefield parameters. The Ramachandran plot of selected model obtained from RAMPAGE server showed that 99.1% of residues were in favored and allowed regions. The Z-score of ProSA-Web server was -8.88 which indicated that it was reliable and accurate model.
***Conclusion*:** The model was accurate and reliable for further computational study about structure and function of protein.
***Keywords*:** DSPA-α, Plasminogen activator, Homology modeling
Corresponding author Email address: k.allahverdipoor@modares.ac.ir

ID:523

In Silico Modeling of DSPA-β

Kaveh Haji-Allahverdipoor[1], Habib Eslami[2]
[1] Department of Biotechnology, Tarbiat Modares University, Tehran, Iran
[2] Department of Pharmacology, Hormozgan University of Medicinal sciences, Bandar Abbas, Iran

***Objective*:** Four type of plasminogen activator have been identified as Desmodus rotundus salivary plasminogen activators (DSPAs). Lack of adverse effect within the central nervous system is a prominent feature of DSPAs. Model of protein is important for further studies about design and discovery of plasminogen activator drugs.
***Material and Methods*:** Sequence of target protein, salivary plasminogen activator Beta of Desmodus Rotendus, was retrieved from UniprotKP database (Accesion number P98121). The template search for the target sequence was conducted in PSI-BLAST against Protein Data Bank database. The sequences of target protein and templates were aligned with the Clustal Omega web server. The modelling procedure of target sequence completes with generation of 1000 models of target sequence with associated known templates. The output is a best model for the target sequence with respect to internal scoring functions, such as least DOPE score, least molpdf and highest GA341.
***Results*:** Final model evaluation was carried out with Prosa-Web, RAMPAGE and verify-3D web servers. Prosa Z-score for best model (-7.66) suggests good quality for selected model. Best model indicated 91.1 % of the residues in favored regions, 6.9 % residue in allowed region and 2% residue in disallowed region. Appraisal of three dimensional profile with VERIFY 3D showed good quality and reliability for selected model (86.84% of the residues had an averaged 3D-1D score ≥ 0.2). Then, the validated model was subjected to energy minimization with molecular dynamics simulation package, GROMACS, to accomplish low energy 3D structure.
***Conclusion*:** The model was accurate and reliable for further computational study about structure and function of protein.
Keywords: DSPA-β, Plasminogen activator, Homology modeling.
Corresponding author Email address: k.allahverdipoor@modares.ac.ir

ID:525

Comparative Modeling of Desmodus rotundus salivary plasminogen activator-γ

Kaveh Haji-Allahverdipoor[1], Habib Eslami[2]
[1] Department of Biotechnology, Tarbiat Modares University, Tehran, Iran
[2] Department of Pharmacology, Hormozgan University of Medicinal sciences, Bandar Abbas, Iran

***Objective*:** The distinguishing feature of Desmodus rotundus salivary plasminogen activators (DSPAs) is their inability of neurodegeneration related to t-PA within the central nervous system. The three dimensional structure of DSPA-γ protein is vital for the discovery of novel plasminogen activator drugs. DSPA-γ protein was modeled using comparative modeling approach.

***Material and Methods*:** The primary sequence of target protein, salivary plasminogen activator gamma of vampire bat, was obtained from the UniProtKB database (accession number P49150). The sequence of target protein was aligned with associated protein structures that retrieved from Protein Data Bank using Clustal Omega web server. The 1000 homology models of protein were generated with the Modeller software using multiple sequence alignment. The final model was selected among generated models based on scoring functions of the Modeller, molpdf, DOPE score and GA341.

***Results*:** Evaluation servers such as ProSA-web and verify-3D were used to clarify the reliability of model. The Ramachandran plot for final model was produced by Rampage server. For best model, 97.7 % of the residues were in the favored and allowed regions, and 2.3 % was in disallowed regions. Z-score of this webserver (-8.64) showed that model is within the area of native 3D structures and the energy plot of ProSA-web showed overall the energy graph was negative with limited peaks in the middle of graph. Verify-3D plot revealed extremely good quality of final structure of protein. Minimization was performed by Gromacs package with CHARMM forcefield parameters.

***Conclusion*:** Results of this study indicated that obtained model was reliable for further computational studies about structure and function of protein.

***Keywords*:** DSPA-γ, Plasminogen activator, Comparative modeling

Corresponding author Email address: k.allahverdipoor@modares.ac.ir

ID:526

Application of the CRISPR-Cas9 genome editing technologies mediated PD-1 disruption of T cells as a novel cancer therapy

Hossein Saghi[1], Mohammad Soukhtanloo[1], Fateme AriaKia[1], Abolfazl Nosrati [1], Mohammad Jalili-Nik[1], Hamed Sabri[1]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of medical sciences, Mashhad, Iran

***Objective*:** Programmed cell death-1 (PD-1) is an immunoreceptor protein expressed on T cells. Following the activation of T cells, binds to its ligand PD-L1 found in dendritic cells which helps to control the immune response. When PD-1 binds to the PD-L1 belong to the family of immune checkpoint proteins; it basically limits the development of the T cell response. Some cancer cells have large amounts of PD-L1 on their surfaces that help them to escape the immune system's attack. Disruption of this immune checkpoint by CRISPR-Cas9 system has been considering as a novel method to enhance cellular immune responses against tumor cells. Disruption of PD-1 immune checkpoint by CRISPR-Cas9 genome editing is a non-viral mediated transfection method to enhance cellular immune responses. CRISPR-Cas9 conferring targeted gene editing by small RNAs which guide the Cas9 nuclease to the target site. Accordingly, PD-1/PD-L1 co-stimulation was inhibited by direct disruption of PD-1 genome expression on human primary T cells. The Cas9 enzyme is able to takes two strands of DNA at a specific site and subsequently, a portion of single guide RNA (sgRNA) that contains a small sequence of pre-designed RNA attach to specific DNA sequences. This process lead to PD-1 gene knock out of the primary T cells obtain from late stage cancer patients which demonstrated enhanced IFN-γ production and also decreased survivals of tumor cells by disruption of PD-1. Conclusion: Blockade of the PD-1 immunosuppressive pathway using of CRISPR-Cas9 genome editing technologies enhance the anti-tumor efficacy of genetically modified T cells and may be a promising method to replace traditional chemotherapy and radiotherapy to avoid their side-effect.

***Keywords*:** CRISPR-Cas9, PD-1¬ disruption and immunotherapy, Cancer

Corresponding author Email address: SoukhtanlooM@mums.ac.ir

ID:528

Insulin Resistance, Inflammation and Oxidative Stress in Addicted subjects: study in human, rat, HepG2 and data mining

Ebrahim Abbasi Oshaghi[1], Fatemeh Mirzaei[2], Mehrdad Ahmadi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Student Research Committee, Kermanshah University of Medical sciences, Kermanshah, Iran

***Objective*:** This study was planned to survey the inflammatory and antioxidant and other Insulin resistance related condition in addicted men, animal models and HepG2 cell line.

***Material and Methods*:** In animal models the gene expression of inflammatory markers (iNOS, TNF-α), antioxidant pathway (SOD, catalase and GPX) and apoptosis pathway (Bax, Bcl2 and P53) were determined by Real Time PCR. The activity of antioxidant enzymes, nitric oxide, TNF-α, and caspase 3 also was determined in animal models. Live morphological changes were evaluated by Masson's trichrome and H &E and TUNEL assay. For human study, biochemical parameters were determined in 500 male (250 addicts and 250 controls). In this respect, HOMA-IR, blood glucose, lipid profile (cholesterol, triglycerides, HDL, LDL and VLDL) and inflammatory markers (IL-6, TNF-α) were determined. Total antioxidant capacity (TAC), activities of superoxide dismutase (SOD), catalase (CAT), and Malondialdehyde (MDA), were measured. Liver enzyme such as AST, ALT, ALP, bilirubin and total protein levels were also measured. In the in vivo, the different dose of opium was evaluated in hepatocellular carcinoma cell line (HepG2). MTT assay and antioxidant tests also were determined in HepG2. Also, Data Mining analysis was used for prediction of these factors with liver disease and insulin resistance.

***Results*:** The change of antioxidant, inflammatory markers and biochemical factors were significant in addicted people. HepG2 analysis and animal experiments showed harmful effect of opium. On assessing the proposed technique on a database of addicted and non-addict data, the authors were capable to achieve a high classification accuracy using the decision tree classifier.

***Conclusion*:** This experiment has established that some blood factors and genes expression impaired in addicted people and related with insulin resistance.

***Keywords*:** Insulin resistance, Oxidative stress, Inflammation, Data mining

Corresponding author Email address:7abbasi@gmail.com

ID:531

Effect of vanadyl sulfate on metabolic responses and gene expression in type 2 diabetic rats

Nastaran Manteghi[1], Esmat Aghadavood jolfayi[1], Seyyed Mehdi mirhashemi[1], Mohsen Taghizadeh[1], Alireza Talaei[1]
[1] Kashan University of medical sciences

***Objective*:** Type 2 diabetes is one of the most growing diseases in developed and developing countries. Obesity is one of the causes of diabetes as it leads to insulin resistance. Hyperglycemia with tissue inflammation can increase cytokine, such as TNF-α and IL-6 and thus effect its intervention on insulin signaling. PPAR-γ receptors that play a role in the signaling pathway for insulin can be a good option for improving insulin resistance and type 2 diabetes. We carried out this study to evaluate the effect of vanadyl sulfate on serum levels of fasting blood glucose, triglyceride, cholesterol, HDL, LDL, insulin, HOMA-IR, and expression of PPAR-γ, TNF-α and IL-6 genes in the rat liver tissue.

***Material and Methods*:** In this study, 40 healthy male Wistar rats weighing between 180 and 210 g were selected. The rats were randomly divided into four groups of ten. The first group was the control group that was fed with standard chow and urban water. The second group used high-fat diet and 25% fructose. Third groups received high-fat and 25% fructose diets and also received 25 mg / kg body of vanadyl sulfate. Group 4 received high fat and fructose diets in 25% of doses and treated with vanadyl sulfate 50 (mg / kg body). After 12 weeks, the rats were killed and the blood and liver tissue were isolated and prepared for studding.

Results: Vanadium sulfate caused a significant reduction in weight loss in diabetic rats than in the control group during the three months of treatment and significantly reduced blood glucose, insulin and HOMA factor. Also, vanadyl sulfate reduced blood levels of triglyceride, cholesterol and LDL in the diabetic group. It was able to increase the expression of PPAR-γ in the treated groups and decrease the expression of TNF-α gene significantly but in this study no significant effect was observed on IL-6 gene expression.

***Conclusion*:** Based on the results of this study, the use of high-fat diet containing fats and 25% fructose in water caused diabetes, and vanadyl sulfate can reduce body weight, blood glucose, triglycerides, cholesterol and LDL. Vanadium sulfate could increase PPAR-γ gene expression and decrease TNF-α gene expression significantly. In this study, there was no difference in blood HDL level and IL-6 gene expression in the studied groups. According to these results, vanadyl sulfate may be effective in reducing complications of diabetes.

***Keywords*:**

Corresponding author Email address: manteghi_n@yahoo.com

ID:532

Evaluation of growth rate and migration potential of A375 resistant cells to a low concentration of ciprofloxacin

Jamileh gholami[1], Razieh jalal[1]
[1] Ferdowsi University of Mashhad

***Objective*:** Cancer cells require ATP to maintain normal cellular processes and generate energy for the rapid division. Glycolysis and the mitochondrial oxidative phosphorylation pathways are two main sources of cancer cells' energy. Bactericidal antibiotics such as fluoroquinolones cause mitochondrial dysfunction and decrease intracellular ATP level. The aims of this study were to compare the growth rate and migration potential of ciprofloxacin-resistant melanoma cells with ciprofloxacin-sensitive cells.

***Material and Methods*:** For this purpose, human melanoma A375 cells were treated with ciprofloxacin at a concentration of 5 µg mL-1 for two weeks. The cells that had been grown exponentially in the presence of 5 µg mL-1 of ciprofloxacin were designated as ciprofloxacin-resistant A375 cells and named A375-CIP5. The cell migration of A375-CIP5 and parental cells (A375) was assessed by wound healing assay. The growth rate of A375-CIP5 and A375 cells were determined by measuring their doubling time.

***Results*:** The results indicated that A375-CIP5 cells had a longer doubling time (51 h) and a decreased growth rate compared with the parental A375 cells (doubling time 49 h).

A375-CIP5 cells also showed a delay in wound closure relative to parental cells at 72 h post-wound.

***Conclusion*:** These observations demonstrated that the extent of intratumoral heterogeneity in melanoma influences growth rate as well as cell migratory activity. These findings suggested that differential characteristics in the ciprofloxacin-resistant melanoma cells from parental cells.

***Keywords*:** Ciprofloxacin, Drug-resistance, Melanoma

Corresponding author Email address: razieh@um.ac.ir

ID:533

Synthesis, characterization and application of nano-liposome for co-delivery of cisplatin, cinnamaldehyde and All-trans-retinoic acid to circumvent the drug resistance in MDA-MB-231 breast cancer cells

Nassim Valinezhadi[1], Gholam-Reza Dehghan[2], Hamed Hamishehkar[1], Soheil Abbaspour[3]
[1] Drug Applied Research Center, Tabriz University of Medical Sciences
[2] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran
[3] Immunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

***Objective*:** Combination therapy-based on Nano-carriers is an emerging technology in order to escape the drug resistance in cancer treatment.
***Material and Methods*:** Here co-encapsulation of cisplatin, all-trans retinoic acid (ATRA) and cinnamaldehyde(CA) was prepared in a single Nano-liposome to investigate the CA and ATRA's synergistic effects to overcome cisplatin resistance in MDA-MB-231 breast cancer cells. In this way, Liposomes containing drugs were prepared by thin film hydration technique. The formulation characterized for particle size, zeta potential, scanning electron microscope (SEM) and Fourier transforms infrared spectroscopy (FTIR). In order to evaluate apoptotic rate, molecular mechanism and cell cycle arrest; MTT, flow cytometric assay and DAPI staining was performed. Real-time PCR was applied for Bax, Bcl-2 and Survivin genes expression.
***Results*:** The co-loaded liposome demonstrated average size 45±2nm with encapsulation efficiencies of >80%. CA as a natural product and ATRA exhibited significant synergetic efficacy in improvement of MDA-MB-231 cancer cells sensitivity to cisplatin as a cytotoxic agent. Remarkably, composite liposome led to increase of apoptosis percentage. The Real-time PCR results showed reduction of Surviving gene expression and increase of Bax and Bcl-2 mRNA levels.
***Conclusion*:** This study suggests that co-delivery of ATRA, CA and cisplatin potentially affect in drug-resistant tumors treatment.

***Keywords*:** Co-delivery, Liposome, ATRA, Cinnamaldehyde, Cisplatin

Corresponding author Email address: nassimvalinezhadi@yahoo.com

ID:535

Effect of gallic acid on liver oxidative stress markers in renal ischemia-reperfusion injury in rats

Reza Mohammadrezaei Khorramabadi[1], Hassan Ahmadvand[2], Esmaeel Babaeenezhad[1]
[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
[2] Department of Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

***Objective*:** Renal ischemia-reperfusion (RIR) is one of the reasons of acute renal failure (ARF). Furthermore, RIR induces oxidative stress in the liver. Objectives: Considering the role of gallic acid (GA) as an antioxidant, we used GA to investigate its effect on liver oxidative stress markers in RIR injury in rats.
***Material and Methods*:** Twenty-two adult male Sprague-Dawley rats were randomly divided into 3 groups; group I (control; non-ischemic animals, n = 8), group II (renal I/R injury, n = 7) and group III (renal I/R injury + GA 100 mg/k i.p daily, n = 7). Pedicles were occluded for 45 minutes (ischemia) and subjected to 24 hours of reperfusion. Daily pretreatment began 15 days before the induction of RIR. Hepatic malondialdehyde (MDA) and glutathione (GSH) were determined, and catalase (CAT) and glutathione peroxidase (GPX) activities in the liver were assessed.
***Results*:** The level of MDA in the liver significantly decreased in treated RIR rats compared with the untreated group. The level of GSH in the liver increased in treated RIR rats compared with the untreated group. CAT and GPX activities in the liver were significantly less in the untreated group than the control one. GA significantly increased CAT and GPX activities in the liver of the treated group.
***Conclusion*:** Our study showed that the pretreatment with GA as an antioxidant agent has protective effects on liver oxidative stress markers in RIR injury in rats.

***Keywords*:** Gallic acid, Renal ischemia-reperfusion, Liver, Oxidative stress

Corresponding author Email address:reza.mrkhoramabadi@gmail.com

ID:536

The salivary creatinine, urea and prostate-specific antigen (PSA) positively and significantly associated with the serum creatinine, urea and PSA in prostate diseases

Jamal amiri[1], Heydar Farahani[1]
[1] Department of Biochemistry and Genetic, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran

***Objective*:** In recent years, the use of saliva as a specimen, due to its non-invasive and easy access increased. But their roles have not been confirmed yet. Therefore, our aim was to evaluate the correlation between salivary, serum creatinine, urea and prostate-specific antigen (PSA) ratio in patients with prostate diseases.
Material and Methods: This case control study included 20 prostate cancer (PCa) patients and 20 benign prostatic hyperplasia (BPH) patients. The PSA, creatinine and urea levels in their saliva and serum were measured with the enzyme-linked immunosorbent assay and Biochemical kits, respectively. The derived data was compared using the Mann–Whitney U test. The correlation between salivary and serum creatinine, urea and PSA was determined using Spearman's correlation test.
***Results*:** Significant differences were observed between the PCa and BPH groups in terms of the creatinine, urea and PSA levels in the serum and saliva (P <; 0.001). The correlation was positively and significantly between salivary and serum creatinine in PCa and BPH groups (r = 0.753, P <; 0.05) and (r = 0.729, P <; 0.05) respectively. The serum urea in PCa (r= 0.747, P<;0.05) and BPH (r=0.798, P<;0.05) groups was positive and statistically significant correlated with salivary urea. As well as, the salivary PSA in the PCa (r = 0.610, P <; 0.05) and BPH (r = 0.531, P <; 0.05) groups was positively and significantly associated with the serum PSA in the two groups.
***Conclusion*:** According to the results of the present study, the salivary creatinine, urea and PSA can be used as an alternative to the serum creatinine, urea and PSA for diagnosis and monitoring of prostate diseases.
***Keywords*:** Creatinine, Urea, PSA, Saliva, Prostate diseases
Corresponding author Email address:Jamal.amri71@gmail.com

ID:537

Serum blood glucose in Subclinical Hypothyroid Patients and Healthy Womens

Hassan Mohajery[1], Elham Zarei[1], Amirahmad Mohajery[2], Abbas Nezhadebrahimi[1], Azadreza Mansourian[3], Sharabeh Hezarkhani[4]

[1] Student Research Committee, Metabolic Disorder Research Center. Golestan University of medical sciences. Gorgan, Iran
[2] BSc, Student Research Committee, sirjan faculty of medical sciences. sirjan University of medical sciences. Sirjan, Iran
[3] Metabolic Disorder Research Center, Golestan University of Medical Sciences. Gorgan, Iran
[4] Department of Internal Medicine, Gorgan Medical School, Golestan University of Medical Sciences. Gorgan, Iran

***Objective*:** Subclinical Hypothyroidism (sHT) is a common thyroid dysfunction characterized by an increase in serum thyroid stimulating hormone (TSH) in the presence of normal serum levels of thyroid hormones including free thyroxineor fT4 and free triiodothyronine or fT3. Glucose metabolism impairments have been observed in hypothyroidism. These defects manifest as elevated fasting blood glucose and etc. Regards to the intense complications of uncontrolled glycemic status, it's very important to monitor the levels of blood glucose in subclinical hypothyroidism patients who could develop glucose metabolism defects. So, in this study we aimed to investigate the status of fasting blood glucose (FBG) in subclinical hypothyroid patients and compare with healthy persons.

***Material and Methods*:** 40 women suffering subclinical hypothyroidism with the age range of 20-60 years who were considered as case group and 40 healthy women with matched age and body mass index to prior group as control group were enrolled in the study. Peripheral venous blood were collected from the volunteers after a 10 hour period of fasting and FBG were measured using available spectrophotometric commercial kits. The normal distribution of data was tested by Kolmogorov-Smirnov Shapiro-Wilk tests. Then, mean and standard deviation were calculated for each variable and the t-test and mann-whitney tests were used to compare the means of data in two groups in the case of parametric and non-parametric data by respect.

***Results*:** No significant differencewas seen about FBG between case and control groups.

***Conclusion*:** In our study, there was no difference in fasting blood glucose levels in subclinical hypothyroidism group with normal group but there is a possibility of an abnormality in the metabolism of glucose in people with hypothyroidism. According to small size of population in this study, it's proposed to carry out other studies with large populations to explore the glucose metabolism impairments in this situation**.**

***Keywords*:** Fasting blood glucose, Subclinical hypothyroidism

Corresponding author Email address: hassan.mohajery.68@gmail.com

ID:538

Study of the association between perforin levels, IR, and CVD among PCOS women

Elham Zarei[1], Hassan Mohajery[1], Fatemeh Aliakbari[1], Fatemeh Mohammadzadeh[2], Azadreza Mansourian[3]
[1] Student Research Committee, Metabolic Disorder Research Center. Golestan University of medical sciences. Gorgan, Iran
[2] Department of Internal Medicine, Gorgan Medical School, Golestan University of Medical Sciences. Gorgan, Iran
[3] Metabolic Disorder Research Center, Golestan University of Medical Sciences. Gorgan, Iran

***Objective*:** Polycystic ovary syndrome (PCOS) is demonstrated to be associated with insulin resistance (IR), dyslipidemia, abdominal obesity and cardiovascular disease (CVD) risk. Perforin is showntobe contributed in inflammation and play important roles in diabetes and CVD. Present study was aimed to investigate serum levels of perforin in PCOS women and determine whether it is related to IR and CVD risk factors.

***Material and Methods*:** 40 PCOS and 40 healthy age and BMI-matched women were selected. At days 2 to 5 of menstrual cycle,blood samples were collected. Fasting glucose and insulin, lipid profile and perforin levels were measured. Also, IR, abdominal obesity, dyslipidemia, metabolic syndrome (MS) and CVD risk were evaluated usingcriteria.

***Results*:** Patientshad significantly higher FBS, TG, HOMA-IR WHR, WC, and perforin levels comparedtocontrols. The number of women with IR, abdominal obesity, dyslipidemiaand CVD risk was significantly higher in cases than controls while MS was not significantly different between the two groups. Significant negative correlations were found between HOMA-IR and insulin levels and perforin concentrations.

***Conclusion*:** It is showed that perforin producing-CD4+CD28null T cells are expanded in PCOS patients. Also, it is demonstrated that PCOS share common features similar to diabetes, obesity and CVD, such as cytotoxic T cells activation and the release of perforin and geranzyme B as cytotoxic enzymes. So it could be suggested that increased levels of perforin among PCOS women caused by same factor among CVD patients.

***Keywords*:** Perforin, PCOS, CVD

Corresponding author Email address:zareielham65@yahoo.com

ID:539

The protective effects of quercetin on damages caused by renal ischemia reperfusion

Negar Naderi[1], Hassan Ahmadvand[2,3], Esmaeel Babaeenezhad[1,4], Reza Mohammadrezaei Khorramabadi[1], Sobhan Rahimi Monfared[1], Maryam Nasri[1], Peyman Jafarpoor[1]
[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran
[2] Razi Herbal Medicine Research Center, Faculty of Medicine, Lorestan University of Medical Sciences
[3] Department of Biochemistry, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran
[4] Tudent of Veterinary Medicine, Faculty of Veterinary Medicine, Lorestan University, Khorramabad, Iran

***Objective*:** Quercetin has antioxidant, anti-inflammatory, antibacterial and anti-cancer effects. This study was carried out to investigate the possible protective effects of quercetin on damages caused by renal ischemia reperfusion (IR).
***Material and Methods*:** Thirty male Sprague-Dawley rats were divided into 3 groups (n=10): Group 1 as the control group, group 2 as the IR group (IR + Physiological normal saline (0.25 ml/day, i.p)) and group 3 as the treatment group (IR + Quercetin (50mg/kg/day, i.p)). The rats were treated intraperitoneally for 12 days before the induction of renal IR. To cause renal IR, renal pedicles were clamped by safe clamps for 45 minutes. After that, the clamps were removed and 24 hours was considered as reperfusion.
***Results*:** In the IR group, the serum level of triglyceride, cholesterol, low density lipoprotein, very low density lipoprotein, urea, creatinine, the activity of gamma-glutamyltransferase, alkaline phosphatase, aspartate aminotransferase and alanine aminotransferase significantly increased against the control group, while serum High density lipoprotein level significantly reduced. The level of malondialdehyde in serum, kidney and liver in the IR group significantly increased compared with the control group. However, the level of glutathione and the activities of catalase and glutathione peroxidase in serum, kidney and liver in the IR group significantly decreased compared with the control group. Treatment with quercetin could reverse all of these findings.
***Conclusion*:** This study indicates that quercetin has protective effects on lipid profile, renal and liver functional markers, and oxidative stress biomarkers in serum, kidney and liver of rats with renal IR.
***Keywords*:** Quercetin, Renal reperfusion ischemia, Renal function markers, Oxidative stress biomarkers, Rat
Corresponding author Email address: naderinegar@yahoo.com

ID:540

Induction and inhibition of catalase activity by Spirulina, an edible cyanobacterium

Fatemeh Teimorpour[1], Mahnaz Hadizadeh[2], Hanieh Jafary[1]
[1] Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
[2] Department of Biotechnology, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran

***Objective*:** Spirulina, a filamentous cyanobacterium, exhibits various therapeutic functions such as antioxidant, anticancer, anti-allergic and antidiabetic. This cyanobacterium can also be used as feed and food additives. The aim of this study was to determine whether the antioxidant properties of Spirulina can be related to its effect on the activity of catalase, as an enzyme involved in regulation of oxidative stress.

***Material and Methods*:** Various concentrations of Spirulina extracts (0.001–80.00 mg/mL) obtained with different solvents (water and methanol) were used to determine their effects on the enzyme activity. The catalase (EC. 1.11.1.6) activity was measured spectrophotometrically by monitoring the decrease in absorbance at 240 nm resulting from the decomposition of H2O2.

***Results*:** The tested extracts at low concentrations (<; 0.05 mg/mL) induced catalase activity, while higher extract concentrations (0.05-1 mg/mL) had no effect on the catalase activity. But at concentrations higher than 1 mg/ml, a dose-dependent inhibitory effect was observed in enzyme activity. Inhibitory effect of methanolic extract of Spirulina was stronger than that of aqueous extract. A dose of 80 mg/ml of alcoholic and aqueous extract of Spirulina reduced catalase activity to 82% and 26% of control activity, respectively.

***Conclusion*:** Overall, the results showed that the antioxidant capacity of both the aqueous and alcoholic extracts of Spirulina depends on their concentration.

***Keywords*:** Spirulina, Catalase, Antioxidant, Extract

Corresponding author Email address: f.teimorpour@gmail.com

ID:541

Correlation between Resistin level and Metabolic Syndrome component: a review

Sanya Haiaty lale[1], Mostafa Mostafazadeh[1], Ali Rastqar[2], Mahtab Keshvari[3], Ahad Bazmani[4]
[1] Student Research Committee, Tabriz University of medical Sciences, Tabriz, Iran
[2] Department de Psychiatry et Neuroscience, Université Laval, Québec, QC, Canada
[3] Isfahan Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of medical Sciences, Isfahan, Iran
[4] Tabriz- Infectious and Tropical Diseases Research Center

***Objective*:** Metabolic syndrome (MetS) has a collection of some abnormal and pathological conditions that cause many critical diseases. Resistin is one of possible candidate for these situations but there are not enough data to proof if resistin has positive, neutral or negative effects on one or some components of MetS. This review has tried to summarize data about compare the effects and contribution of resistin in initiation and progression of MetS components and also its different actions among human and other mammalians.

***Material and Methods*:** This review has tried to summarize data the relationship of resistin and MetS components have obtained from clinical researches and in some cases even animal studies. To find relevant studies, a search in PubMed, Science Direct and Scopus up from inception to December 23, 2017 was performed. Human and animal's studies investigating resistin and initiation and progression of MetS components were included in the search.

***Results*:** In experiments among different human genetic groups as well as the patients with various disease such as diabetes, polycystic ovary and nonalcoholic fatty liver disease (NAFLD) that is used by authors, there is not shown any significant correlation between fasting blood glucose (FBG) and resistin level. Furthermore, this review shows the results of correlation between resistin and TG, HDL, and central or abdominal obesity was inconsistent.

***Conclusion*:** These inconsistencies can arise from different sample size or genetic groups, gender, and also the studied disease in experiments. Therefore, to obtaining precise results, it requires to systematic review and meta-analyzes.

***Keywords*:** Correlation, Resistin, Metabolic Syndrome

Corresponding author Email address: sanyahaiaty@gmail.com

ID:542

Cadmium induced toxicity on bone and kidney: Study of zinc protective effects

Nasim Babaknejad[1], Shiva Najafi[1], Ali Asghar Moshtaghie[1]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran.

***Objective*:** Cadmium (Cd) is an environmental and industrial toxic metal with adverse effects on most organ systems such as bone and kidney. This study aims to study zinc (Zn) protective roles against Cd toxicity on serum parameters related to renal and bone function.

***Material and Methods*:** In this study, 20 male Wistar rats were randomly divided into four groups of five animal each. The Cd group was treated with 1 mg Cd/kg, and the control group received 0.5 cm3 normal saline, intraperitoneally for three weeks. The Zn group was treated with 0.5 mg Zn/kg alone or in combination with Cd. All animals were anesthetized (ketamine to xylazine, 0.7 mg/kg) 24 h after the administration of the final dose(s). The blood samples were collected from cardiac puncture. Bone and renal serum markers were used to assess the effects of Cd or/and Zn. SPSS statistics software (version 15 for Windows) was used for statistical analysis.

***Results*:** Results showed that Cd reduced serum creatinine, albumin and total protein, and increased alkaline phosphatase, calcium, phosphorus, magnesium, urea, sodium, and potassium as compared with control group. 0.5 mg/kg Zn administration prevented and reversed the Cd toxic alterations on serum parameters related to bone and kidney function ($p<;0.05$).

***Conclusion*:** The findings seem to indicate that Zn may have protective influence on the skeleton and kidney against Cd exposure.

***Keywords*:** Cadmium, Zinc, Bone, Kidney

Corresponding author Email address: n.babaknejad@gmail.com

ID:545

Heat shock protein 27 and drug resistance in gastric cancer

Hossein saghi[1], Mohammad Soukhtanloo[1], Mohammad Jalili-Nik[1], Abolfazl Nosrati[1], Ehsan Tohidi[1], Abolfazl Maghrouni[1]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of medical sciences, Mashhad, Iran

***Objective*:** Drug resistances have been a critical issue in the treatment of Gastric cancer (GC). Unfortunately, GC didn't respond to chemotherapy drugs (intrinsic resistance) or get resistant following the first time treatment (acquired resistance). Consequently, GC is the second most common cause of cancer death worldwide. Several studies have reported Heat Shock Protein 27 (Hsp27) overexpression in GC patients' serum and tissue. In this review, we discuss the role of hsp27 in GC development, considering the role of Hsp27 in drug resistance. MET kinase inhibition results in expression of the anti-apoptotic Hsp27 that encounter drug efficacy of MET inhibitor. Moreover, Doxorubicin (DOX) affects through induction of FasR/FasL system which mediates apoptosis. Overexpression of hsp27 prevents apoptosis through FasR/FasL system and plays a key role in resistance of GC treated with DOX. Similarly a study on Vincristine resistant GC cell line has been shown that suppression of hsp27 using hsp27 antisense oligonucleotides (ASO) induce chemo-sensitivity to vincristine. In addition, melatonin anticancer activity has been elucidated through inducing GC cell line apoptosis. This apoptosis is accompanied by the melatonin-induced phosphorylation of HSP27 which consequently leads to an anti-apoptotic P38/PI3K/Akt signaling pathway. Furthermore, it's been indicated that 5-fluorouracil (5-FU) resistant GC cell line can acquire resistance to another chemotherapy drugs. GC cell line treated with 5-FU have shown overexpression of hsp27 and subsequently 2.6 fold cross-resistance to DOX. Conclusion: Taken together, hsp27 might play a crucial role in apoptotic resistance of GC cells, so targeting hsp27 can be used as chemo-sensitizer for combination therapy.

***Keywords*:** Hsp 27, Gastric cancer, Drug resistance

Corresponding author Email address: SoukhtanlooM@mums.ac.ir

ID:546

Comparison of breast milk stem/progenitor cells colony-forming efficiency in breast milk of mothers with preterm delivery with full-term delivery

Hossein saghi[1], Abolfazl Nosrati Tirkani[1]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of medical sciences, Mashhad, Iran

***Objective*:** Stem cells have a great potency for self-renewal, proliferation and tissue regeneration. Various sources of stem cells have been developed for several therapeutic purposes, including adipose tissue, bone marrow, umbilical-cord blood and specifically breastmilk stem cells. A large body of evidence has shown that human breastmilk is a novel source of multipotent stem cells, forming during the period of pregnancy. Therefore, it can be hypothesized that mothers with preterm delivery (gestational time is 34±4 week), may not provide enough efficient stem cells in their breastmilk in compare with full-term infant mothers (gestational time is 40±2 week). Moreover, since breastmilk stem cells are thought to be involved in infant development, possible lack of efficient stem cells in preterm infants may have negative impact on their future health. So 10CC fresh breastmilk obtained from neonatal research center, maternity ward, imam reza hospital. Then, the sample mixed, centrifuged and cultivated on the Methocult H4435 (STEMCELL TECHNOLOGY) for 14 days. The cultured breastmilk-derived stem cells in preterm infant mothers presented higher colony numbers as compared with the cultured stem cells in full term infant mothers. Indeed, there are the significant relationship between the age of mothers and CFE (P<;0.05). Conclusion: We expected that stem cells colony numbers of breastmilk would be lower in the case of preterm birth due to the incomplete pregnancy period. Interestingly, oppose to our expectation, the results demonstrated increased numbers stem cells colony in preterm infant mothers' breast milk, which could be considered as a compensatory response in order to support the preterm infant development out of the mother's body

***Keywords*:** Breastmilk, Stem cells, Preterm delivery, Full term delivery

Corresponding author Email address: saghih951@mums.ac.ir

ID:547

The novel method for Membrane for cell expansion purpose

Hossein Saghi[1], Abolfazl Nosrati Tirkani[1], Mohammad Jalili-Nik[1]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of medical sciences, Mashhad, Iran

***Objective*:** The Human Amniotic Membrane (HAM) is a transparent and avascular innermost layer of human placenta. HAM has been widely used for transplantation and reconstruction of damaged ocular surface. Accordingly, cultivation of adult stem cells locate in the limbus, named limbal epithelial stem cells on the denuded HAM is a new method for treatment of patients with limbal stem cell deficiency. In order to localize presented procedure, production of denuded HAM was much-needed. Production of denuded HAM by non-enzymatic (biologic) procedure was the aim of current study.

***Material and Methods*:** The human placenta obtained from the HCV, HIV, and Syphilis seronegative cesarean part of maternity ward of imam reza hospital. Then, the placenta washed three times in the phosphate buffer saline at the clean room to remove extra blood. Then, amnion transparent membrane separated from the placenta and chorion and washed three times with balance salt solution (BSS). The amniotic membrane sored at -80°c for one week in the cryopreservation media consist of equal volume glycerol and DMEM. After that, the amniotic membrane thawed at the clean room temperature and the epithelial layer removed and washed ten times at BSS and flatted on nitrocellulose sheet with appropriate amount of DMEM media and sored at -20°c while the denuded epithelial side was up.

***Results*:** To confirm our decellularization procedure, paraffin block prepared. The histological results showed that there is no cells on the surface of HAM. Indeed, the HAM stained by trypan blue protocol after denuding procedure.

***Conclusion*:** The results of this study suggest that the cryopreserved Human amniotic membrane retains and support the proliferation of explant cultured limbal stem cells. Furthermore, the graft of cryopreserved Human amniotic membrane seems to be the appropriate biological matrix for reconstruction of other epithelialized surface

***Keywords*:** Human amniotic membrane, limbal stem cell, cryopreservation

Corresponding author Email address: NosratiA9@mums.ac.ir

ID:548

The effects of human fibrin sealant on explant expanded limbal stem cells

Hossein Saghi[1], Abolfazl Nosrati Tirkani[1], Mohammad Jalili-Nik[1]
[1] Department of Medical Biochemistry, Faculty of Medicine, Mashhad University of medical sciences, Mashhad, Iran

***Objective*:** Limbal stem cells (LSCs) locate in the limbal basal layer, the narrow zone encircled the cornea, comprise the constant source of the adult limbal epithelial progenitor/stem cells. They are responsible for the persistence of corneal cells homeostasis and corneal cells replacement. Thermal and chemical burn, physical injuries, and congenital disorder caused the limbal stem cell deficiency (LSCD). Corneal transplantation is the current therapeutic strategy that needs to find the appropriate donor and risk of rejection. The LSCs expanded on the epithelial surface of the human amniotic membrane (HAM) is the new therapeutic alternative. The aim of present study was the expanding the LSCs on the HAM. The immunohistochemistry (IHC) and immunofluorescent (IF) were conducted as a confirmatory test. The into the 1.5 × 1.5 mm2 corneal segment which obtained from khatam-al-Anbia eye hospital was washed, the conjunctival layer removed, and fixed on the human amniotic membrane by fibrin glue. After two weeks incubation in 5% CO2 and 37 °C, the LSCs develop on the HAM, the paraffin block prepared in order to confirm the LSCs migration. The IHC and IF tests and using ΔNp63 (p63 (A4A): sc-8431) antibody were recruited to verify the existence of expanded LSCs. The results of immunohistochemical staining showed that the 3.242% - 6.37% of the explant fibrin-cultured limbal stem cells on human amniotic membrane contained ΔNp63 positive cells which depends on the age and sex donors The explant culture of limbal biopsy is a new method for expanding the LSCs. The fibrin glue used to fix the explant provide an appropriate scaffold for migration of LSCs. Notably, the limbal biopsy and fibrin glue can be obtained from patients themselves thereby the risk of rejection and find the HLA-matched donor has been eliminated.

***Keywords*:** Limbal stems cell deficiency, Explant culture, Human amniotic membrane

Corresponding author Email address: NosratiA9@mums.ac.ir

ID:549

Evaluation of two nucleic acid extraction methods to provide DNA template for LAMP reaction

Hamidreza Mollasalehi[1], Erfan Shahbazi[1], Dariush Minai-Tehrani[1]
[1] Department of cellular and molecular biology, faculty of biological sciences and technology, Tehran, Iran

***Objective*:** Loop-mediated isothermal amplification (LAMP) is a novel method by which small amounts of DNA are amplified to the large amounts (109) in less than one hour in isothermal condition. Four to six primers targeting six regions (or more) in the target sequence are used which increases the method's specificity. Nucleic acid content which is used as DNA template in LAMP reaction could get provided through different approaches. In this study we aim to determine whether Silica particles Guanidium thiocyanate (Boom) technique or boiling method could be used as an appropriate way for providing the required DNA template.

***Material and Methods*:** The Boom technique was performed in accordance with its protocol [1] in which Guanidium thiocyanate (GuSCN) is used to lyse cells and inactivation of nucleases. In presence of high concentration of GuSCN, nucleic acid binds to silica particles.In boiling method the samples were incubated in 100 ºC for 5 minutes and centrifuged to extract genomic DNA. Six specific LAMP primers were designed to amplify the target DNA at 60 ºC in an hour. Agarose gel electrophoresis was utilized for investigation of the amplicon where a ladder like pattern compromising various sizes of amplicons was considered as positive detection.

***Results*:** Gel electrophoresis demonstrated that there is not a considerable difference between the LAMP products ladder like patterm whether the reaction was applied each of the methods.

Conclusion: Boiling was found more preferable for the LAMP reaction because it is easier, cheaper and faster than the Boom technique.

***Keywords*:** LAMP, DNA extraction, Boiling, Boom, Isothermal amplification method

Corresponding author Email address: erfanshahbazi92@gmail.com

ID:551

Evaluation of nucleic acid extraction methods for optimization of loop-mediated isothermal amplification efficiency for detection of Morganella morganii

Erfan Shahbazi[1], Hamidreza mollasalehi[2], Dariush Minai-Tehrani[3]
[1] Department of microbiology, faculty of biological sciences and technology, Tehran, Iran
[2] Faculty of Biological Sciences & Technology, Shahid Beheshti University, G.C., Tehran, Iran.
[3] Department of cellular and molecular biology, faculty of biological sciences and technology, Tehran, Iran

Objective: Loop-mediated isothermal amplification (LAMP) is a novel method by which small amounts of DNA is amplified exponentially in less than one hour in a constant thermal condition. Special primer design in the target sequence guarantees the specificity of the method. Nucleic acid content as DNA template in LAMP reaction could play a crucial role in the efficacy of the method. In this study, we aim to determine whether silica particles guanidium thiocyanate technique or boiling method could serve as a more appropriate template- providing method.

Material and Methods: The guanidium thiocyanate technique, GuSCN is used to lyse cells and inactivation of nucleases. In presence of high concentration of GuSCN, nucleic acid binds to silica particles. After several washing stages, nucleic acid content of cells could be accessed free of contaminants. In boiling method the samples were incubated in 100 ºC for 5 minutes and centrifuged to extract genomic DNA. Six specific LAMP primers were designed to amplify the target DNA at 60 ºC in an hour. Agarose gel electrophoresis was utilized for investigation of the amplicon where a ladder like pattern consisting of various sizes of amplicons was considered as positive detection of Morganella morganii.

Results: Gel electrophoresis analysis demonstrated that there is not a considerable difference between the LAMP products ladder like pattern whether the reaction was applied using DNA template provided by each of the methods.

Conclusion: Boiling was found more preferable for the LAMP reaction because it seemed easier, cheaper and faster than guanidium thiocyanate technique.

Keywords: LAMP, DNA extraction, Boiling method, Boom, Silica-guanidium thiocyanate method

Corresponding author Email address: erfanshahbazi92@gmail.com

ID:552

Cadmium toxicity study on bone and kidney parameters

Shiva Najafi[1], Nasim Babaknejad[1], Aliasghar Moshtaghie[1]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

***Objective*:** Cd is a toxic metal that has a destructive impact on most organ systems. Violent poisoning by cadmium in human is created through drinks or meals which have packed in the metallic tins with cadmium plating. The symptoms of variation in the mineral metabolism of bones and kidneys are observed and different conditions maybe appeared. This study has been designed to determine Cd renal toxicity and effects of cadmium on the metabolism in the parameters related to the bone in rat.

***Material and Methods*:** In this experimental study for renal toxicity, rats were divided into two groups. The Cd group was treated with1 mg /kg, and the control group received 0.5 cm3 normal saline, intraperitoneally. through IP injection for 3 weeks. Kidney malondialdehyde (MDA) and serum sodium, potassium, urea, creatinine, and protein were measured. But for bone toxicity, rats were distributed in two experimental groups and tested in the lab of Falavarjan university. These groups were received 0.5cc physiological serum and 1mg/kg Cadmium respectively Blood samples were taken in a 30 days period and those factors related to the bone metabolism were measured. The data were analyzed by 2-ANOVA Ways, complementary tests through software SPSS 16.

***Results*:** The results showed that Cd reduced serum creatinine and protein, and increased urea, sodium, and potassium in kidney parameters. But in bone parameters cadmium chloride caused to increase alkaline Phosphatase, calcium, phosphorus, magnesium and decrease albumin as compared with control group (P <; 0.05).

Conclusion: Findings showed that cadmium can play a toxicity role on the metabolism parameters related to bone and kidney

***Keywords*:** Cadmium, Kidney, Rats, Bone

Corresponding author Email address: shivanajafi7@gmail.com

ID:553

Association of organochlorine pesticides with epigenetics alterations in breast, colorectal, brain and bladder cancer patients

Gholamreza Asdaikaram[1], Parisa Paydar[2], Moslem Abolhassani[1], Neda Mortazavi[1], Fatemeh Yousefei[3]
[1] Department of Biochemistry, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran
[2] Endocrinology and Metabolism Research Center, Institute of Basic and Clinical Physiology Sciences, Kerman, Iran
[3] Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

Objective: Pesticides are a wide groups of environmental contaminants which may cause delayed health effects such as cancer, in exposed individuals. Organochlorines are one of the main classes of pesticides, that have spread widely in the environment, induced epigenetic alterations that may be responsible for cancer.

Material and Methods We investigated serum levels of some organochlorines that largely used in agricultural activities, especially in the past, in the serum of patients with breast, colorectal, bladder and brain cancer and their correlation with DNA methylation and histone methylation and acetylation.

Results: Our result showed significant difference in the serum level of organochlorines pesticides in cancer patients compared with control groups. We also find hyper-methylation of some genes and histone methylation and acetylation in the patients with some kind of studied cancer.

Conclusion: Based our results it could be concluded that organochlorines pesticides exist in our environment and may be considered as cause of some kind of cancer in south eastern of Iran.

Keywords: organochlorines, pesticides, cancer, epigenetics

Corresponding author Email address: asadi_ka@yahoo.com

ID:554

Effects of nano-emulsion of Rosmarinus officinalis L. and Mentha piperita L. essential oils on histopathology of articular cartilage in an animal model of osteoarthritis

Mojgan Mohammadifar[1], Sayyed Alireza Talaei[2], Zarichehr Vakili[3], Mohammad Hossein Aarabi[4]
[1] Kashan University of Medical Sciences
[2] Physiology Research Center, Kashan University of Medical Sciences, Kashan, Iran
[3] Department of Pathology, School of Medicine, Kashan University of Medical Sciences, Kashan, Iran
[4] Department of Clinical Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

***Objective*:** Osteoarthritis is the most common musculoskeletal disorder characterized by its pathological degeneration of articular cartilage. Following cartilage degeneration, the bone erosion in joint cause pain and inflammation. The aim of this study was to evaluate the effect of nano-emulsion containing Rosemary and peppermint essential oil on histopathology of articular cartilage in an animal model of osteoarthritis (OA).

***Material and Methods*:** In this experimental study 28 male Wistar rats were used. Using spontaneous emulsification method, nano-emulsion of essential oils was prepared. For OA induction 2 mg of monosodium iodoacetate (MIA) were injected into intra-articular left knee joint. Animals were divided into following groups: Control, osteoarthritis, osteoarthritis received nano-emulsion solution, Peppermint and Rosemary essential oils, and diclofenac sodium gel. Gels and solution were topically applied at dose of 1 ml on injected knee once daily for 14 days. The histopathology of articular cartilage was evaluated at the last day.

***Results*:** MIA injection causes fibrillation and destruction of articular cartilage, infiltration of inflammatory cell and increase in connective tissue. Comparing to diclofenac and essential oils, nano-emulsion significantly decreased fibrillation of the cartilage and inflammatory cells count (P<;0.01). Also, nano-emulsion increased the cartilage thickness (P<;0.001).

***Conclusion*:** Nano-emulsification of rosemary and peppermint essential oils decreases fibrillation and inflammation of articular cartilage of rats suffering osteoarthritis.

Keywords: Nano-emulsion, Rosmarinus officinalis L., Mentha piperita L., Osteoarthritis, Histopathology

Corresponding author Email address: mohammadifar.m@gmail.com

ID:556

The effect of cadmium on heart malondialdehyde (MDA) status: protective roles of magnesium and zinc

Nasim Babaknejad[1], Ali Asghar Moshtaghie[1], Hashem Nayeri[1], Somaye Bahrami[1]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

***Objective*:** Cadmium (Cd) is an environmental and industrial pollutant that causes harmful effects on different organs such as liver, kidney and heart by induction of oxidative stress. The aim of this study was to assess the protective effects of zinc (Zn) and magnesium (mg) against Cd toxicity on heart malondialdehyde levels.

***Material and Methods*:** Thirty adult (10-week-old) male Wistar rats were randomly divided into six groups of five animal each. The Cd group was treated with 1 mg Cd/kg, and the control group received 0.5 cm3 normal saline, intraperitoneally for three weeks. The protection experimental groups received 1 mg/kg Cd + 0.5 mg/kg Zn, 1 mg/kg Cd + 1.5 mg/kg Zn, 1 mg/kg Cd + 0.5 mg/kg Mg, and 1 mg/kg Cd + 1.5 mg/kg Mg by intraperitoneal injection for 21 days, respectively. All animals were anesthetized (ketamine to xylazine, 0.7 mg/kg) 24 h after the administration of the final dose(s). Heart tissue samples were quickly weighed and homogenized in phosphate buffer. The protein content in homogenates of rat heart was determined by the Tali-Lowry Protein Assay Kit. Heart MDA statues was investigated. SPSS statistics software (version 15 for Windows) was used for statistical analysis.

***Results*:** Results showed that Cd increased heart MDA levels as compared with control group (p<;0.05). However, Zn or Mg treatment prevented Cd alterations in heart MDA levels (p<;0.05). These changes were more pronounced at higher doses of Zn and Mg.

***Conclusion*:** The results of the present study indicate that Zn or Mg co-treatment could prevent Cd toxic effects on heart tissue by their antioxidant property and reducing lipid peroxidation**.**

***Keywords*:** Cadmium, Zinc, Magnesium, MDA, Heart

Corresponding author Email address: n.babaknejad@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:558

Serum irisin changes following consumption of fenugreek seed's alcoholic extract in hypertriglyceridemic rats

Anahita Abbasifard[1], Samad Akbarzadeh[2], Hajar Jaberi[2]
[1] Student of MSc Biochemistry, Student Research Committee, Bushehr University of Medical Science, Bushehr, Iran
[2] Department of Biochemistry, Faculty of Medicine, Bushehr University of Medical Science, Bushehr, Iran

***Objective*:** There is a hypothesis that indicates irisin as an adipomyokine, can boosting energy consumption and heat generation via burning fat. The aim of this study was to investigate whether irisin changes following the use of fenugreek seed's alcoholic extract coincide with triglyceride changes?
***Material and Methods*:** In this experimental study, 38 male Wistar rats (180-250g) were divided into five groups: standard control (STC), hypertriglyceridemic control (HTC) and test groups include fenugreek extract200 (FE-200), fenugreek extract400 (FE-400) and gemfibrozil (GEM). The test groups were received doses of 200 mg/kg/day or 400 mg/kg/day of fenugreek seed's alcoholic extract and gemfibrozil at 100 mg/kg/day dose. The first 16 weeks were used to apply the especial model (High Fat-high Carbohydrate diet for long-term) for inducing hypertriglyceridemia, followed by five weeks treatment with gavage. The lipid profile was measured by spectrophotometry and irisin by ELISA method.
***Results*:** The model we used to induce the hypertriglyceridemia ($p=0.000$) was significantly successful. Serum triglyceride levels decreased after the treatment ($p=0.001$); while there were not significant changes in other component of lipid profiles and serum irisin concentration ($p=0.197$). Moreover, the serum concentration of irisin and triglyceride was not correlated ($p=0.693$, $r=0.071$).
***Conclusion*:** The result of this study suggested that, fenugreek seed's alcoholic extract and gemfibrozil significantly reduced serum triglyceride levels. There was no correlation found between the concentration of triglyceride and irisin.
***Keywords*:** Diet, Fenugreek, gemfibrozil, Hypertriglyceridemia, irisin
Corresponding author Email address: anahita722@gmail.com

ID:559

Immunohistochemical Evaluation of colorectal cancer with new anti-CEA monoclonal antibody (RM)

Mohammad Soukhtanloo[1], Arash Ahmadi[1]
[1] Department of Medical Biochemistry, Mashhad University of Medical Sciences

***Objective*:** Colorectal Cancer (CRC) is a common malignancy with a large morbidity, mortality and healthcare costs. Assessment the level of the carcinoembryonic antigen (CEA) by immunohistochemical method widely used in investigation and monitoring of CRC and other types of cancers. In the present study we have evaluated the diagnostic value of anti-CEA antibody compared with DAKO antibody in order to detection of CEA in Colorectal Cancer.
***Material and Methods*:** we examined Overall 89 cancerous tissue samples (50 cases with CEA; and 39 control without CEA). Immunohistochemical evaluation was performed by using anti-CEA antibody based on intensity and quantity scoring. Sensitivity and specificity of anti-CEA antibody was evaluated and compared with DAKO antibody.
***Results*:** Immunohistochemistry evaluation using anti-CEA antibody based on intensity scoring showed 28 true Positive and 2 false negative for tissue sections of CRC. Sensitivity and specificity of anti-CEA antibody versus DAKO antibody based on quantity scoring were reported 93.9% and 100 %, respectively. Evaluation of Mc Nemar\'s test and Kappa factor showed accordance between anti-CEA and DAKO antibodies (p value=0.001 and Kappa factor=0.931).
***Conclusion*:** Our results showed that IHC localization of CEA using the Rabbit monoclononal antibody (RabMAb) is a useful tool in detecting CRC and provides complementary information along with standard biochemical assays.

***Keywords*:** Colorectal cancer, carcinoembryonic antigen

Corresponding author Email address: soukhtanloom@mums.ac.ir

ID:561

Exploring the function, conformation and stability alterations of proteinase K (as a model enzyme) by zinc oxide nanoparticles

Mansoore Hosseini-Koupaei[1], Behzad Shareghi[1], Ali Akbar Saboury[2]
[1] University of Shahrekord
[2] University of Tehran

***Objective*:** Proteinase K is one of the most active endopeptidase among the known proteases. This enzyme has important applications as protein degrading components in food processing industry, in medicine for the preparation of proteolytic creams and collagen implants, in nucleic acid preparations and has been used in researches on prions in Transmissible Spongiform Encephalopathy (TSE).Furthermore, ZnO nanoparticles have been used in different pharmaceutical and biological applications, but their effect on the stability, activity and structure of various enzymes should be studied in more details

Material and Methods: The effect of nanoparticles on the catalytic properties, conformation, stability and dynamics of native proteinase K was investigated by steady state thermal stability, fluorescence, circular dichroism, UV-Vis spectroscopy as well as kinetic techniques.

***Results*:** The enzyme activity of proteinase K showed that nanoparticles inhibited the activity of the enzyme and its thermal stability was increased by enhancing the concentration of nanoparticles. Structural studies showed that nanoparticles could change the structure of enzyme. The fluorescence spectroscopic experiments revealed that nanoparticles had the ability to quench the intrinsic fluorescence of enzyme through a static quenching procedure. The thermodynamic parameters also indicated that the binding process was spontaneous and that hydrogen bonds and van der Waals forces played a major role in the interaction of nanoparticles with enzyme.

***Conclusion*:** The inhibition of proteinase K activity with the increase of nanoparticles concentrations were caused by the change of the structure, as induced by the weak interactions (van der Waals and hydrogen) bonds between enzyme and ZnO nanoparticles.

***Keywords*:** Enzyme activity, stability, structure, nanoparticles

Corresponding author Email address: mansoorehosainy@yahoo.com

ID:563

Blood Vitamin E and Glutathione Levels and Lipid Peroxidation in Relation to the Severity of Coronary Artery Disease

Fariborz Haghparast[1], Eghbal Sekhavati[2]
[1] Islamic azad university-new city- Larestan-Fars
[2] Larestan school of medical Sciences, Larestan, Iran

***Objective*:** Oxidation of low-density lipoprotein is believed to play an important role in atherogenesis, and antioxidants are thought to protect against coronary artery disease (CAD).
***Material and Methods*:** We investigated the association between vitamin E, vitamin C, glutathione and superoxide dismutase concentrations in plasma, as antioxidants, and malondialdehyde levels as a marker of oxidative stress and the severity of CAD as assessed by a semiquantitative scoring system in which coronary angiograms are analyzed for the number and size of distinct stenotic lesions (global stenosis score). The study group consisted of 65 consecutive male survivors of myocardial infarction aged<;45 y and 55 ages- matched male control subjects.
***Results*:** Lipid-adjusted plasma vitamin E, vitamin C, glutathione and superoxide dismutase concentrations were significantly lower in the patients than in control subjects (all P <;0.05), whereas the absolute plasma vitamin E concentrations did not differ significantly. Plasma malondialdehyde concentration was significantly higher in patients compared with control subjects (P<;0.005). No association was found between the plasma concentration of vitamin E and the stenosis score. In contrast, a significant inverse correlation was found between lipid-adjusted plasma values of vitamin E concentration and the global coronary stenosis score (r = -0.477, P<;0.001) and positive correlation was found between plasma malondialdehyde concentration and global coronary stenosis score (r = 0.385, P<; 0.01).
Conclusion: We conclude that a low vitamin E, as antioxidant, concentration might play a role in the development of stenosis in coronary arteries and may contribute to clinically manifest CAD.

***Keywords*:** vitamin E, glutathione, malondialdehyde, Coronary Artery Disease

Corresponding author Email address: fhaqparast@yahoo.com

ID:564

Effect of long term treated with Arthrocen on inflammatory cytokines including IL-17 and TNF-α and MMPs gene expression in peripheral Lymphocytes of with Osteoarthritis patients

Elmira Moradi[1], Ali Zareie Mahmoodabadi[1]
[1] Dept of Clinical Biochemistry, Faculty of Medicine, Baqiyatallah University of Medical Science, Tehran, Iran

***Objective*:** Osteoarthritis (OA) is an inflammatory disease; the most common clinical symptoms of disease induce by inflammation. The common drugs which used for OA treatment shown serious side effect whereas only lower symptoms of OA. Recently there has been great interest in the use of plant-derived compounds and supplements in managing the OA. Arthrocen is a plant-based supplement and the aim of this study was to investigate the effect of ASU on inflammatory cytokines and Protease such as mmp-9 and mmp-13 gene expression in OA pation.

***Material and Methods*:** The 60th OA patients were selected and randomly divided to placebo and case groups(n=30). Both group treated daily with 300 mg placebo and ASU repecpectively. The treatment duration was 6 month. At initiate; 3 month and 6 month after treatment blood samples were collected and serum and lymphocytes separated and storage. The inflammatory cytokines (IL-17 and TNF-α) was measured using Eliza method with specific kit. For evaluation of MMPs gene expression; total RNA was purified from lymphocyte and Real time-PCR was down using specific primers.

***Results*:** The result shown that ASU significantly reduced sera IL-17 and TNF-α in treated groups then placebo(p<;0.05). ASU treated patient shown significant reduce in mmp-13 and mmp-9 mRNA (p<;0.001).

***Conclusion*:** Data shown the efficacy of arthrocen on inflammatory factors in blood and related genes; therefor it is probable that ASU use as a alternative treatment in OA.

***Keywords*:** Osteoarthritis, avocado soybean unsaponifiables (ASU), TNF-α, IL-17, mmp

Corresponding author Email address: El.moradi70@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:565

MiR-342-5p expression levels in coronary artery disease patients and its association with inflammatory cytokines

Reza Ahmadi[1], Soudabeh Fallah[2], Esfandiar Heidarian[1], Nariman Moradi[2], Mojtaba Malek[2]
[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran
[2] Department of Biochemistry, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran

***Objective*:** Atherosclerosis is a progressive inflammatory disease and is the main underlying mechanism of coronary artery disease (CAD). Immune system cells and cytokines play pivotal roles in the development of atherosclerosis. Several studies have shown the role of microRNA in the inflammatory processes of atherosclerosis and miR-342-5p has been shown to be involved in macrophage activation during atherosclerosis and cytokines secretion. But until now, there has been no data regarding the association of miR-342-5p with CAD and inflammatory cytokines.

***Material and Methods*:** This case control study was conducted on 82 CAD patients and 80 controls. Peripheral blood mononuclear cell (PBMC) miR-342-5p expression and gene expression of IL-6 and TNF-α were evaluated using real time-PCR. Also, the serum levels of IL-6 and TNF-α were measured using ELISA kits.

Results: The results demonstrated a higher expression of miR-342-5p in CAD patients compared to controls (p<;0.001). Moreover, logistic regression revealed an increased risk of CAD according to the expression of miR-342-5p after adjusting for CAD risk factors (OR [CI] = 6.1 [1.0-37.2], p=0.048). Also, serum IL-6 and TNF-α showed higher levels in CAD patients (p=0.003 and p=0.004, respectively). Furthermore, there were positive correlations of miR-342-5p with genes expression and serum levels of IL-6 and TNF-α.

***Conclusion*:** The present study demonstrated higher levels of miR-342-5p in CAD patients and showed positive correlation with inflammatory cytokines. This result is in accordance with a previous study, and suggested a regulatory role for miR-342-5p in atherosclerosis and cytokine secretion, although more studies are required in this direction.

***Keywords*:** Atherosclerosis, Inflammation, TNF-α, IL-6, miR-342-5p, Coronary Artery Disease

Corresponding author Email address: fallah.s@iums.ac.ir

ID: 566

miR-342-5p and miR-155 expression levels in coronary artery disease patients and their association with severity of stenosis and clinical parameters

Reza Ahmadi[2], Esfandiar Heidarian[2], Nariman Moradi[1], Mojtaba Malek[1], Soudabeh Fallah[1]

[1] Department of Biochemistry, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran.

[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Aberrant expression or function of microRNAs contribute to the pathogenesis of coronary artery disease (CAD). Therefore, in this study we evaluated the expression of miR-155 and miR-342-5p and also the SIRT-1, PPAR-ϒ, Akt1 and cytokines levels in peripheral blood mononuclear cells (PBMCs) of CAD patients and controls.

Material and Methods: The study population consists of 82 CAD patients and 80 non-symptomatic subjects (or subjects without angiographically significant stenosis) (served as control group). The RNAs expression was determined by Real-time PCR. Cytokine and Akt1/phospho-Akt levels were measured using ELISA and western blot analysis, respectively.

Results: The data indicated that the expression of miR-155 and miR-342-5p were significantly elevated ($P < 0.05$) in the PBMCs of CAD patients compared with controls. The SIRT-1, PPAR-ϒ expression, and Akt1, phosphor-Akt levels were lower in CAD patients as compared with the control group ($P < 0.05$). TNF-α and IL-6 serum level were also significantly higher in CAD patients ($P < 0.05$). Moreover, the miR-342-5p level in patients with one-vessel disease was higher than those with three-vessel disease ($P=0.049$). Finally, we observed a significant positive correlation between miR-155 level with lipid parameters and systolic blood pressure.

Conclusion: Our findings provide the evidence that up-regulation of the miR-342-5p and miR-155 might be related to the factors that could be involved in the CAD pathogenesis such as blood pressure and lipid profiles.

Keywords: Coronary artery disease; microRNAs; miR-155; miR-342-5p

Corresponding author Email address: fallah.s@iums.ac.ir

ID: 568

Helicobacter pylori Infection is a Significant Factor Risk for Hyperhomocysteinemia in the Patients with Coronary Artery Disease

Soudabeh Fallah[1], Reza Ahmadi[2], Soudabeh Fallah[3], Nariman Moradi[3], Fadaei Reza[3], Tabatabei Azardokht[3], Morteza Seifi[4]
[1] Iran University of Medical Sciences.
[2] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran
[3] Department of Biochemistry, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
[4] University of Alberta - Medical Genetics, Edmonton, Canada

Objective: This work aimed to determine whether seropositivity to Helicobacter pylori infection was an independent risk factor for hyperhomocysteinemia patients with cardiovascular disease.
Material and methods: The H. pylori IgG, IgA and homocystein levels in 96 patients with cardiovascular disease and 64 participants free of cardiovascular disease as control subjects were determined by ELISA assay.
Results: The results showed that seropositivity to H. pylori IgG and IgA levels of coronary artery disease (CAD)patients was significantly higher than the controls and CAD patients with H. pylori IgG and IgA negative antibodies. A significant correlation was found between the seropositivity to H. pylori IgG and homocysteine levels of CAD patients in comparison with the controls and CAD patients with seronegativity to H. pylori IgG and IgA (r=0.233, P= 0.019).
Conclusion: The involvement of H. pylori infection in atherosclerosis process was based on the chronic inflammation, which might facilitate the CAD-related pathologies. The effect of the presence of H. pylori infection on homocysteine levels elevation in the CAD patients (as a risk factor independent of other traditional factors) was remarkable**.**

Keywords: Cardiovascular disease, ELISA assay, homocysteine, Helicobacter pylori

Corresponding author Email address: fallah.s@iums.ac.ir

ID: 570

Investigation of the effect of Teucrium polium extract on inhibiting fibrillation of hen egg white lysozyme

Masoumeh Faramarzi Nasab[1], Seyfollah Bahramikia[1]
[1] Department of Science, Lorestan university. Khorramabad, Iran

***Objective*:** The mistakes in protein folding and their self-accumulation as amyloid deposits are known as the cause of many fatal and disabling disorders, such as Alzheimer\'s disease, Parkinson\'s disease, and contagious spongiform encephalopathy. The process of intermolecular interaction in accumulations is complicated and numerous factors affect on it. Restrain of producing protein assemblies can reduce the damage caused, as a result, a variety of work has been done to identify anti-myeloidogenic compounds. In this research, hen egg white lysozyme was used as a protein model and the effect of Teucrium polium extract on inhibiting the fibrillation of this protein was investigated.

***Material and Methods*:** Amyloid accumulation induced in hen egg white lysozyme with protein incubation in acidic ph and 57 ° C temperature. The effect of Teucrium polium extract on Inhibition of fibrillation using 420 nm THT fluorescence intensity, Congo red spectrophotometer spectrum in the range of 400-700 nm, and observation of fiber morphology by atomic microscope was investigated.

***Results*:** It was observed that Teucrium polium extract has inhibitory effect on fibrillation of this protein.

***Conclusion*:** Due to the inhibitory effect of Teucrium polium extract on fibrillation of lysozyme protein, by separating and purifying the active compounds of the plant, it can be used to prevent and treat amyloid-dependent diseases.

***Keywords*:** Teucrium Polium Extract, Protein Fibrillation, Lysozyme, Amyloidosis

Corresponding author Email address: masoumehfaramarzi82@gmail.com

ID:571

Inhibition of amyloid fibrillation of lysozyme by Salvia officinalis extract

Masoumeh Faramarzi Nasab[1], Seyfollah Bahramikia[1]
[1] Department of Science, Lorestan university. Khorramabad, Iran

***Objective*:** A wide range of fatal and disabling human diseases, including Alzheimer's disease, type II diabetes and a large number of systemic amyloidosis, are assosiated with deposition of extracellular high amounts of insoluble protein accumulation, called plaques or amyloid fibrils, in tissues and organs like the brain, liver and heart. These protein assemblies can be deposited in the brain, in a specific tissue (other than the brain) or in several tissues. The aim of this study is investigating the inhibiting of hen egg white lysozyme fibrillation (HEWL) (as a protein model) in the presence of Salvia officinalis extracts.

***Material and Methods*:** Amyloid accumulation induced in hen egg white lysozyme with protein incubation in acidic ph and 57 ° C temperature. The effect of Salvia officinalis extract on Inhibition of fibrillation using 420 nm THT fluorescence intensity, Congo red spectrophotometer spectrum in the range of 400-700 nm, and observation of fiber morphology by atomic microscope was investigated.

***Results*:** Studies at difrent concentrations of the Salvia officinalis extract were performed and it was shown that the crude extract has inhibitory effect on HEWL fibrillation.

***Conclusion*:** Due to the inhibitory effect of Salvia officinalis extract on fibrillation of lysozyme protein, by separating and purifying the active compounds of the plant, it can be used to prevent and treat amyloid-dependent diseases.

***Keywords*:** Salvia Officinalis Extract, Lysozyme, Protein Fibrillation, Amyloidosis

Corresponding author Email address: masoumehfaramarzi82@gmail.com

ID:574

Role of Clinical Evaluation of Ischaemia Modified Albumin in Diagnosis of Acute Coronary Syndrome: Unstable Angina to Myocardial Infarction

Mehryar Zargari[1], Babak Bagheri[2], Nastaran Mojibi[1], Samineh Motallebi Reikandeh[3]

[1] Department of Biochemistry, Biophysics and Genetic, Cellular and Molecular Research Center, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

[2] Department of Cardiology, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

[3] valiasr high school, Sari, Iran

Objective: Acute Coronary Syndrome (ACS) includes a spectrum of disorders ranging from unstable angina to myocardial infarction. Since, Ischaemia Modified Albumin (IMA) is an ischaemia biomarker that has been approved by the US Food and Drug administration and has clinical application. Although, many studies have been done on IMA as a biomarker in ACS patients, role of IMA for differentiating patients with unstable angina, Non ST-Segment Elevation Myocardial Infarction (NSTEMI) and ST-Segment Elevation Myocardial Infarction (STEMI) requires further study.

Material and Methods: The study included 75 subjects with ACS, who were divided into three groups of 25 patients each: Unstable angina, NSTEMI and Myocardial Infarction (MI) and 25 healthy people as control. They were enrolled into the study from the Fatemeh Zahra Heart Center, Sari, Iran. IMA was measured by the Cobalt-Albumin Binding (CAB) assay, cTnI was measured by rapid immunoassay and CKmb was estimated utilising colorometric enzyme method by commercial kits. Receiver Operator Characteristic (ROC) curve was used to assess role of IMA in diagnosis of ACS.

Results: IMA levels in unstable angina patients were significantly higher than NSTEMI and MI ($p<0.001$). While there was no significant difference in IMA levels between NSTEMI and MI ($p=0.675$). Bivariate correlation analyses were performed to assess for any relationship between IMA levels and two common cardiac biomarkers ($p>0.5$, $r=0.25$).The area under the ROC curve of IMA for ACS patients was 0.783. The sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV) of IMA was 74.7%, 72%, 88.9% and 48.6% respectively.

Conclusion: IMA is a useful biomarker in diagnosis of ACS especially unstable angina patients and there is no significant correlation between IMA and necrotic biomarkers (cTnI and CKmb) in ACS patients.

Keywords: Acute Coronary Syndrome, Modified Albumin, Cobalt-Albumin Binding assay

Corresponding author Email address: zargari.mehryar@gmail.com

ID:575

Joining of immunology to tissue engineering!

Mehrnaz Moattari[1], Gholamreza Kaka[1]
[1] Department of Animal Biology, Faculty of Biological Science, Kharazmi University, Tehran, Iran

***Objective*:** One of the prevalent human disabilities is peripheral nerve damage. The rate of peripheral nerve injuries in developed countries is assessed between 18 per 100,000 persons/year.
***Material and Methods*:** Male Wistar rats (n=20, 180-200g) were randomly divided into scaffold group with fractalkine or scaffold group with IL-4. Eight weeks after surgery, functional recovery was evaluated at 2, 4, 6 and 8 weeks after surgery using withdrawal reflex latency.
***Results*:** Nociceptive function was assessed by withdrawal reflex latency. During 2, 4, 6 and 8 weeks after surgery, there were no significant differences among the treated-group compared with Ctrl and Sham groups. At 8 weeks after surgery, functional recovery was found in treated-group compared to Ctrl and Sham group in rat models (p<;0.05).
***Conclusion*:** This study suggests that biasing the infiltrating inflammatory/immune cellular milieu after injury toward a proregenerative population creates a permissive environment for repair. This approach is a shift from the current modes of clinical and laboratory methods for nerve repair, which potentially opens an alternative paradigm to stimulate endogenous peripheral nerve repair.

***Keywords*:** Immunology, Tissue engineering, Scaffold

Corresponding author Email address: mhr.moattari@gmail.com

ID:576

Epigenetic alteration of the IKB kinase gene in patients with multiple sclerosis

Seyed Alireza Mesbah-Namin[1], Ensiye Karimi[1], Mohammad Ali Sahraian[2], Rozita Doosti[2]
[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[2] Sina MS Research Center, Tehran University of Medical Sciences, Tehran, Iran

***Objective*:** Multiple Sclerosis (MS) is a chronic autoimmune, inflammatory neurological disease of central nervous system. Both genetic and epigenetic factors are thought to be involved in pathogenesis of MS. Regarding the pivotal role of inflammation in this disease and based on key regulatory role of the IKB kinase B (IKK-β) in the NF-kB complex pathway, this project aimed to evaluate the methylation status of the IKK-β promoter gene in MS patient samples to find the possible susceptibility for MS.

***Material and Methods*:** Forty patients with relapsing-remitting form of MS who were managed with interferon-beta drug enrolled in this study, along with age-sex matched 35 healthy individuals with no history of autoimmune disease. DNA extracted of whole blood of the samples was treated by sodium bisulfate first, then methylation status of the first CpG island of IKK-β gene promoter was investigated in two normal and patient groups by methylation specific PCR using the specific primers.

***Results*:** The data revealed that 25 of MS patient samples (62.5%) were methylated in homozygous form in this region of the promoter and 14 (35%) showed the heterozygous phenotype and one sample was also dropped out (2.5%) because of lack of any bands. In contrast, normal samples data had significantly different data, 25 samples (71.42%) heterozygous forms, 8 samples showed (22.85%) homozygous forms and 2 samples (5.7%) were also dropped out.

***Conclusion*:** In conclusion, data obtained from this study indicated that the epigenetic alteration in this key regulator of the important transcription factor such as NF-kB has happened and associated with MS susceptibility. Of course, it should be mentioned that study on the epigenetic modification of whole regions of the IKK-β promoter is more important and this field needs to be extended and further investigations would be considered in more samples.

***Keywords*:** Multiple Sclerosis, IKB kinase, Epigenetic, DNA, Methylation

Corresponding author Email address: mesbahna@modares.ac.ir

ID:577

Combinatorial Effects of Aurapten and X-radiation in Mouse Colon Adenocarcinoma Cells

Hamide Salary[1], Maryam M. Matin[1,2], Fatemeh B. Rassouli[1,2], Mehrdad Iranshahi[3], Shokouhozaman Soleymanifard[4]
[1] Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
[2] Cell and Molecular Biotechnology Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran
[3] Department of Pharmacognosy and Biotechnology, Biotechnology Research Center, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran
[4] Department of Medical Physics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

***Objective*:** Application of ionizing radiation is a routine approach in cancer treatment. Nevertheless, resistance to radiotherapy, which resulted from the presence of DNA repair systems in cancer cells, is an important obstacle that needs to be overcome. Auraptene (7-geranyloxycoumarin) is a coumarin derivative with valuable biological activities, such as anticancer and chemopreventive effects. To improve efficacy of radiotherapy in animal model of colon adenocarcinoma, we investigated cytotoxicity of X-radiation alone and in combination with auraptene on CT26 cells.

***Material and Methods*:** Cells were treated with non-toxic concentrations of auraptene (10 and 15 µg/ml) for 24, 48 and 72 h, while untreated cells and cells treated with 0.4% DMSO were considered as control groups. Afterwards, irradiation was applied in different doses (2, 4 and 6 Gry) and cells were recovered for 48 h. For quantitative colorimetric assay of cell viability, alamarBlue was used.

***Results*:** Our findings revealed that in combination with control treatments, auraptene (15 µg/ml) increased cytotoxicity of 4 and 6 Gry radiation up to 19% and 22%, respectively. To evaluate in vitro results, combinatorial effects of auraptene and radiotherapy will be studied in tumour induced animals.

***Conclusion*:** Present findings indicated that auraptene could be used in combination with other therapeutic options against cancer.

***Keywords*:** Auraptene, Radiotherapy, Colon adenocarcinoma, CT26 cells

Corresponding author Email address: ha.salary@yahoo.com.sg

ID:578

The use of natural products to target cancer stem cells Review

Seyyedeh Razieh Ghasemi Shahri[1], Fatemeh B. Rassouli[1]
[1] Ferdowsi University of Mashhad, Mashhad, Iran

Objective: From wide range of natural products with pharmaceutical effects, the privileged structures of polyphenols, flavonoids and alkaloids let them to influence multiple cellular pathways simultaneously. In case of cancer cells, for instance, such potential is valuable since survival, self-renewal and re-emergence of cancer is due to activity of many different mechanisms. Polyphenols, mostly consist of aromatic benzene rings bonded to hydroxyl groups, negatively affect angiogenesis, proliferation and migration of cancer cells. Well known examples of polyphenol derivatives are resveratrol and curcumin that possess anti-oxidative and chemopreventive effects, as well as apoptosis inducing activity. Flavonoids are major class of polyphenolic secondary metabolites, and their structure includes two phenyl rings and one heterocyclic ring. Quercetin and kaempferol are great examples of flavonoid derivatives that act as angiogenesis inhibitors, apoptosis inducers and inflammation regulators. Alkaloids are compounds with nitrogen and aromatic rings in their structure that beside anti-neoplastic and anti-metastatic effects, could reverse drug resistance of cancer cells. Capsaicin is an alkaloid derivative with the ability to promote separate modes of cell death – autophagy and apoptosis – in different cancer cells. Another example is piperine that could induce cell cycle arrest and endoplasmic reticulum stress in malignant cells. Conclusion: It could be concluded that natural products reviewed above are good candidates for designation of novel chemotherapy regimens against cancer, since they interact with various cellular targets, and thus harness cancer cell population via different aspects.

***Keywords*:** Anticancer activity, Polyphenols, Flavonoids, Alkaloids

Corresponding author Email address: raziehghasemi73@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID: 579

Antioxidants could improve the biological properties of aged stem cells

Najmeh Aminizadeh[1], Seyed Alireza Mesbah-Namin[2], Taki Tiraihi[2], Taher Taheri[3]
[1] Kerman branch, Islamic Azad university
[2] Tarbiat Modares University
3 Shefa Neuroscience Research Center

***Objective*:** The proliferation and differentiation potential of stem cells decline with ageing. There are numerous reports have examined the links between oxidative stress, longevity, and age-related disease. This study was used selenium and glutathione as endogenous ROS scavenger substances to improve the aged cells properties.
***Material and Methods*:** The adipose-derived stem cells (ADSCs) and the bone marrow stromal cells (BMSCs) were collected from aged male rats cultured and treated with different concentrations of sodium selenite for 3 days or glutathione mono ethyl ester (GSH-MEE) for 1 day. We evaluated their relative proliferation, differentiation potential, telomerase activity, telomere length and the related telomerase gene expression.
***Results*:** Incubating the rat ADSCs with 27 nM sodium selenite for 3 days significantly increased the relative cell proliferation, without any change in its telomerase activity, telomerase gene expression, and telomere length, but it did improve differentiation of the aged ADSCs to cholinergic neuron-like cells. GSH-MEE at a concentration of 2 mM for 1 day resulted in increasing relative cell proliferation, but it did not change its telomerase activity, telomerase gene expression, telomere length, and differentiation potential. However, both of two antioxidants did not have any effect on telomerase activity of the cells. Also, rat BMSCs were treated with 2 mM GSH-MEE for 24 h. The proliferation rate, telomerase activity, telomere length, and differentiation to cholinergic neuron-like cells were also increased. Sodium selenite in 100 nM concentration could improve the proliferation rate and differentiation potential of rat BMSCs, as well.
***Conclusion*:** The results suggested that both substances could improve the biological properties of the aged rat stem cells and they would be of potential benefit for enhancing of the performance of aged people's stem cells.

***Keywords*:** Sodium selenite, Glutathione, ageing, ADSCs, BMSCs

Corresponding author Email address: naminizade@gmail.com

ID:580

Hypoglycemic effect of aqueous extract of Salvia mirzayanii Rech. F& Esfand in diabetic patients: first clinical trial study

Soheila Moein[1], Mahmoodreza Moein[1]
[1] Molecular Medicine Research Center, Hormozgan Health Institute, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

***Objective*:** Medicinal plants are used in diabetes treatment. In this regard, Salvia mirzayanii Rech. F& Esfand is used for diabetes treatment in Iranian traditional medicine. The main objective of this study is to investigate the effects of aqueous extract of Salvia mirzayanii in diabetic patients.
***Material and Methods*:** In the present clinical trial, the patients were divided two cases (n=27) and control (n=25) groups. Case group received one capsule containing 450 mg of aqueous extract of Salvia mirzayanii while the control group received one capsule containing 450 mg of caramelized flour. Fasting blood samples were collected at the beginning of the study and after three months to evaluate FBS, HbA1C, insulin, ALT, and AST levels, and profile lipid.
***Results*:** Types of used drugs, sex, age, and BMI were not significantly different between case and control groups before treatment. Also, after treatment, BMI did not significantly change between these two mentioned groups. The results show that FBS and HbA1C levels did not vary significantly in the case of the group after treatment, however; in this group, insulin secretion was increased significantly (p value=0.015). In the case group, after treatment, liver enzymes (ALT and AST) levels did not increase significantly; in other words, use of this herbal drug was not toxic for liver. After the treatment, LDL was decreased significantly in the case group.
***Conclusion*:** The herbal drug used in the present study enhanced insulin secretion, inhibited increasing the liver enzymes, and improved LDL level in diabetic patients. However, in a future study better results such as management of FBS and HbA1C in diabetic patients may obtain with increasing dose of the herbal capsule.

***Keywords*:** Salvia mirzayanii extract, Diabetes, fasting blood sugar, Glycosylated hemoglobin, Profile lipid

Corresponding author Email address: soheila-9@yahoo.com

ID:581

Application of FITC for detecting the binding of antiangiogenic peptide to HUVECs

Fahimeh Amini-Sepehr[1]

[1] Department of biology, Faculty of Science, University of Guilan, Rasht, Iran

Objective: Angiogenesis is the generation of new blood vessels from the existing vasculature. The angiogenic programme requires the degradation of the basement membrane, endothelial cell migration, and invasion of the extracellular matrix, with endothelial cell proliferation and capillary lumen formation before maturation and stabilization of the new vasculature. Angiogenesis is dependent on a delicate equilibrium between endogenous angiogenic and antiangiogenic factors. However, under pathological conditions, this tight regulation becomes lost which can result in the formation of the different diseases. Endostatin, a 20 kDa fragment of collagen XVIII, is a member of a group of endogenous antiangiogenic proteins activated by proteolytic processing. Endostatin inhibits endothelial cell proliferation, migration/invasion, and tube formation.

Material and Methods: Inhibitory action by endostatin has been proposed to involve binding to the receptor. The use of a fluorescent probe as a detector and its application in imaging methods is widely used. The use of fluorescence helps us to accurately count cells, cell surface receptors, or intracellular organelles. The number of fluorescent probes having traceability in vitro and in vivo studies is very high. One of these probes is Fluorescein isothiocyanate (FITC) with a maximum absorption at 490 nm and a maximum emission at 525 nm. In this study, 27-amino acid fragment corresponding to the N-terminal domain of endostatin was labeled with fluorescence probes, FITC. Various conditions such as concentration, time, and temperature were tested to achieve the proper conditions for marking peptides. Unlabeled FITCs separated by gel filtration Chromatography method with Sephadex G10. HUVECs are harvested and treated with conjugate samples (FITC-peptide) from gel filtration chromatography.

Results: After the required time, the cells were fixed on separate lamelles and the binding of labeled peptides to their receptors on HUVECs was analyzed by Fluorescence microscope. The purpose of this study is to use Conjugated peptides with FITC for detecting.

Conclusion:

Keywords: Antiangiogenic peptide, Binding assay, Fluorescein isothiocyanat, FITC, HUVEC

Corresponding author Email address: F.aminisepehr71@gmail.com

ID:583

Construction, expression, and characterization of 1F5 human-mouse chimeric anti-CD20 monoclonal antibodies

Fatemeh Khademi[1], Pantea Mohammadi[1], Ali Mostafaie[1]
[1] Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

***Objective*:** Despite the unparalleled success of anti-CD20-targeted immunotherapy, the currently available mAbs are not sufficiently efficacious in the treatment of lymphoma. 1F5 is one of a panel of anti-CD20 mAbs, and it was the first mAb used in the serotherapy of human B-cell lymphoma. Despite the efficacy of murine 1F5 mAbs in the lymphoma patients, the 1F5 chimeric antibodies with human effector functionality are yet to be approved and widely used in the treatment of lymphoma

***Material and Methods*:** MRNAs were extracted from human peripheral blood mononuclear cells (PBMC) and 1F5 hybridoma cells (ATCC HB-9645). The mRNA was reverse transcribed into cDNA. The method for constructing 1F5 chimeric antibody genes involves the following: (1) Primary PCR amplification of VH and VL, and CH and CL genes from 1F5 hybridoma and human PBMC cDNAs, respectively; (2) Joining of the VH and CH, and VL and CL sequences via overlap PCR to create chimeric heavy-chain and chimeric light-chain genes, respectively. Subsequently, a bicistronic expression vector (pBudCE4.1-HC-LC) encoding chimeric antibody heavy-chain and light-chain driven by elongation factor-1α (EF-1α) and cytomegalovirus (CMV) promoters, respectively in the pBudCE4.1 was constructed. CHO-K1 cells were transfected with the plasmid pBudCE4.1-HC-LC and stable clones were selected under Zeocin selective pressure. 1F5 chimeric antibodies were purified by HIS-Select Nickel Affinity chromatography and biological activities were investigated.

***Results*:** In this study, the conversion of 1F5 mAb from mouse IgG2a to human–mouse chimeric IgG1 was achieved. The generated 1F5 chimeric mAbs mediate enhanced complement-dependent cytotoxicity against a Burkitt's lymphoma cell line in vitro, and exhibit superior cell growth inhibition activity in vitro, compared to rituximab.

***Conclusion*:** The 1F5 chimeric anti-CD20 mAbs with increased potency in CDC are promising reagents for improved clinical efficacy. Our work contributes to the future studies involving in vivo biological functions and application of 1F5 chimeric antibody.

***Keywords*:** CD20, Chimeric 1F5, Complement-dependent cytotoxicity, Monoclonal antibody

Corresponding author Email address: fkhademi60@gmail.com

ID:584

Construction and characterization of monoclonal antibodies against the extracellular domain of B-lymphocyte antigen CD20 using DNA immunization method

Fatemeh Khadem[1], Ali Mostafaie[1], Shahram Parvaneh[1], Farah Gholami Rad[1], Pantea Mohammadi[1], Gholamreza Bahrami[1]
[1] Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

***Objective*:** To date, several new anti-CD20 monoclonal antibodies (mAbs) have been developed for potential efficacies compared with familiar mAb rituximab. Despite the recent advances in development of anti-CD20 mAbs for the treatment of B cell malignancies, the efforts should be continued to develop novel antibodies with improved properties. However, the development of mAbs against CD20 as a multi-transmembrane protein is challenging due to the difficulty of providing a lipid environment that can maintain native epitopes. To overcome this limitation, we describe a simple and efficient DNA immunization strategy for the construction of a novel anti-CD20 mAb with improved anti-tumour properties.

***Material and Methods*:** Using a DNA immunization strategy that includes intradermal (i.d.) immunization with naked plasmid DNA encoding the CD20 gene, we generated the hybridoma cell line D4, which secretes functional mAbs against an extracellular epitope of CD20. Binding specificity was examined by immunocytochemistry analysis and a cell-based enzyme-linked immunosorbent assay using a Burkitt's lymphoma cell line. Moreover, the binding specificity of D4 mAbs was determined by western blot analysis. Cell proliferation was examined by the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Apoptosis was detected by the annexin V/propidium iodide staining and dye exclusion assay.

***Results*:** Immunocytochemistry analysis and a cell-based enzyme-linked immunosorbent assay showed that D4 mAbs are capable of binding to native extracellular epitopes of CD20. The results showed that D4 anti-CD20 mAbs produced by DNA immunization exhibit potent growth inhibitory activity and have superior direct B-cell cytotoxicity compared to rituximab.

***Conclusion*:** Taken together, the data reported here open the path to DNA-based immunization for generating pharmacologically active monoclonal antibodies against CD20. In addition, the data support future in vivo animal testing and subsequent procedures to produce a potential therapeutic mAb.

***Keywords*:** Apoptosis, CD20, DNA immunization, Monoclonal antibody, Proliferation

Corresponding author Email address: fkhademi60@gmail.com

ID:585

Adsorbtion of leflunomide upon multiwall carbon nanotube: anti-cancer effect investigation upon Hela cell line and differentiation induction of mesenchymal stem cells evaluation

Fariba Mollania[1], Heidar Raissi[1]
[1] Chemistry Department, University of Birjand, Birjand, Iran

***Objective*:** Leflunomide [HWA 486 or RS-34821, 5-methyl-N-(4trifluoromethylphenyl)-4-isoxazole carboximide] is an immunosuppressive agent effective in the treatment of rheumatoid arthritis. Many attempts have been carried out to design and synthesize new targeted biocompatible compounds with a high capacity for loading and controlled release of desired drug molecules which show minimum leak of drug molecules before reaching to the target organ and studying their activities for combating human diseases.

***Material and Methods*:** After functionalization of multi wall carbon nanotube (MWCNT), the drug loading content of the nanocarrier was computed by, Loading content = M0-Mt /MN× 100 %, Where, M0 and Mt are the amounts of leflunomide in primary and filtered solutions, respectively. MN is the amount of functional MWCNT used in the loading process. Anti-cancer effect and differentiation of mesenchymal stem cells into neural level evaluation was performed with MTT Assay and real time PCR respectively.

***Results*:** After loading of leflunomide on MWCNT, the nanocarrier were washed and the scoured test was further analysed by XRD, TEM and SEM. The effect of the drug in free and connected to nanocarrier forms on Hela cell line cytotoxicity was examined. Death rate of cancer cells is related to dose and adjacent time. The MWCNT-leflonomide can have a somewhat increased effect and induce the stimulating of differentiation induction of mesenchymal cells into Nerve cells. In this thesis, this effect was investigated by measuring the increase of Nestin and nurofilament gene expression.

***Conclusion*:** Functional MWCNT involve relatively large surface area; which enable them as potential carriers in drug delivery with multiple practical applications in medicine and biology.

***Keywords*:** Leflunomide, MWCNT, Anti cancer effect

Corresponding author Email address: mollania_f@yahoo.com

ID: 586

The prognostic value and diagnosis of serum haptoglobin to identify new cases of bladder cancer

Hossein Beig Mohammadi[1]
[1] Clinical Biochemistry and molecular Diagnosis, labbafinezhad hospital

***Objective*:** Serum C-reactive protein (CRP) is believed to be increased in metastatic urothelial cancer of the bladder. However, the changes depend on the stage and grade of the upper tract urothelial carcinoma (UTUC). This study aimed to compare low-range and high-range serum CRP and haptoglobin in new cases of UTUC.

***Material and Methods*:** Blood was collected from newly diagnosed patients with UTUC (n=43 patients; 39 male/4 female) and normal individuals (n=26; 24 male and 2 female) with no sign of infection or cancer. All the patients showed clinical symptoms of bladder cancer. Serum CRP and haptoglobin were estimated based on conventional methods.

***Results*:** Haematuria and polyuria were common symptoms in 65.12% of the patients suffering from UTUC. The serum level of HAPT in control and UTUC patients was 126±13 and 181±14.5 mg/dl respectively. No significant difference was observed in HAPT level in patients and controls. The HAPT was in the high-range level in 27% of controls and 30% of the patients. The average serum CRP level in patients and controls was 11.87±3.5 and 11.45±4.2 respectively. Serum CRP was above 3.5 mg/l (>3.5 mg/l) in 46% of patients (20/43). The CRP level was significantly higher (P=0.023) in patients having CRP above 3.5 mg/l compared to respective controls. The UTUC patients were separated into two groups based on low-range (<;3.5mg/L) and high-range CRP (>3.5 mg/L).Serum CRP was <;3.5 mg/L in 69% of the controls, whereas 31% of controls had CRP >3.5 mg/L. However, 46% of UTUC patients had serum CRP > 3.5 mg/L and 54% of UTUC patients had serum CRP <; 3.5 mg/L.

***Conclusion*:** Although there was no difference in haptoglobin levels in patients and controls, but serum CRP was significantly increased in patients and it was associated with clinical symptoms of UTUC, suggesting that serum CRP can be considered.

***Keywords*:** Bladder cancer, Biomarkers, CRP, Haptoglobin, Low-grade

Corresponding author Email address: Hosseinbeigmohammadi@yahoo.com

ID:588

Study of Antioxidant Compounds in Macro-Algae, *Hypnea cornuta*

kiana Karimzadeh[1], Zohreh Tabatabaian nimavard[2]
[1] Department of Marine biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
[2] Academic member of department of Science and Technology Medical and research branch, Islamic Azad university, Tehran, Iran

Objective: Hypnea cornuta, which is used as a food production, is a macro alga rich in protein and other essential nutrients. The present study was conducted to evaluate the antioxidant activity of methanol extract (ME), as well as the phenolic compounds of red algae, Hypnea cornuta in three different sites of Gheshm Island, Iran.

Material and Methods: Amount of total phenolic compounds in methanol extract of algae was measured using Folin-Ciocalteu assay. The antioxidant activity of the algae extracts and the standard was assessed on the basis of the radical scavenging effect of the stable 1, 1-diphenyl-2-picrylhydrazyl (DPPH)-free radical activity.the inhibition concenteration at 50% inhibition(IC50)was the parameter used to compare the radical scavenging activity.A lower IC50 mean the better radical scavenging activity.IC50 ME is express in comparison with BHT concentration that IC50 EM is equal 28.50 ±0.14µg/ml and BHT is equal 10.2 µg/ml.

Results: Amount of total phenolic compounds in methanol extract was showed about 5.6±0.3 mg/g of dry sample among three different sites. using catecol(1,2Dihydroxy Benzen)as standard total phenolic content was expresed as mg /g of dry powder.data reported of three replication. .This alga exhibited a DPPH radical scavenging activity with very low oxidation index IC50, significantly equivalent to IC50 of some commercial antioxidants such as butylated hydroxytoluene (BHT), butylated hydroxyanisol (BHA) and ascorbic acid (AA)

Conclusion: The phenolic constituent appears to be responsible at least in part, for the observed antioxidant activity of the algal extract. The results suggest that this alga could be a potential source of natural antioxidant, which could be considered for future applications in medicine, food production or cosmetic industry.

Keywords: Antioxidant activity, Phenolic compounds, Hypnea cornuta

Corresponding author Email address: bio6037@gmail.com

ID:589

Hepatoprotective and Antioxidant Activity of Quercetin on Hepatic Cholestasis Induced by Bile Duct Ligation in Rats

Nahid Azarmehr[1], Fatemeh Razmkhah[1], Hossein Sadeghi[2], Nazanin Danaei[2], Navid Omidifar[3], Hossein Vakilpour[1], Amir Hossein Doustimotlagh[2]

[1] Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran
[2] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj, Iran
[3] Senior Resident of Pathology, Department of Pathology, Transplant Research Center, Nemazee Hospital, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

***Objective*:** Quercetin is a flavonoid with antifibrotic, and hepatoprotective properties. The current study was to evaluate effects of quercetin on oxidative stress markers in bile duct ligation (BDL)-induced liver fibrosis in rats.

***Material and Methods*:** The male Wistar rats divided into three groups including SC (sham control), BDL (Bile duct ligation surgery) and BDL+ Quercetin (administration of 50 mg/kg per day by intraperitoneally). Ten days later the rats were sacrificed, the blood was collected for liver enzymes determination and the liver was separated for the measurement of oxidative stress markers and hematoxylin and eosin staining, respectively.

***Results*:** The application of BDL clearly increased the malondialdehyde (MDA) levels and decreased the glutathione peroxidase (GPX) activity. Quercetin treatment significantly decreased the elevated tissue MDA levels and increased the reduced GPX enzyme activity in the liver tissue (P<;0.05). Another interesting finding was that the protein carbonyl groups were decreased in quercetin-treated BDL rats compared to BDL rats (P<;0.05). Histopathological studies further confirmed the protective effects of quercetin on cholestasis-induced hepatic injury in rats.

***Conclusion*:** Quercetin treatment might be beneficial in cholestasis-induced hepatotoxicity through increasing GPX activity and decreasing lipid and protein oxidation.

***Keywords*:** Oxidative stress, Cholestasis, Quercetin, Antioxidant

Corresponding author Email address: azarmehr.n122@gmail.com

ID:590

Study the Interaction of Human Serum Albumin with 3, 5, 6, - Trichloro -2-Pyridinol

Soheila Kashanian[1], Zohreh Shariati[1]
1 Department of Chemistry, Sensor and Biosensor Research Center (SBRC) & Nanoscience and Nanotechnology Research Center (NNRC), Razi University, Kermanshah, Islamic Republic of Iran

***Objective*:** 3,5,6-Trichloro-2-pyridinol (TCP) is a stable metabolite of two major pesticides, Triclopyr and Chlorpyrifos, which are widely use in agriculture. HSA is the most abundant protein in the circulatory system and one of its functions is transporting hydrophobic molecules as well as maintaining blood PH. In this study, interaction of Human Serum Albumin (HSA) with TCP has been investigated to study the effect of TCP on HSA structure.
***Material and Methods*:** The interaction of HSA with TCP was investigated by UV absorption spectrophotometry, spectrofluorometry and circular dichrosim (CD) in Tris-HCl buffer at pH=7.4.
***Results*:** The UV spectra of HSA show a sharp peak about 210 nm, adding TCP increased this peak significantly. Fluorescence spectra of HSA at 344 nm were decreased in the presence of TCP and TCP quenched the fluorescence spectra of HSA. The thermodynamic study showed that the interaction of TCP with HSA is spontaneous. The CD spectra of HSA in the presence of TCP were increased.
***Conclusion*:** Hyperchromism in UV absorption band shows that the microenvironment around Trp-214 is changed by adding TCP. Decreased fluorescence spectra in the presence of TCP indicate that TCP decreases the quantum efficiency of HSA. Thermodynamic results indicate that in vitro spontaneous interaction of TCP with HAS, may result in strong in vivo interaction. According to CD results, TCP can increase the α-helix content of HSA and condense its secondary structure. Therefore, TCP is able to strongly interact with HSA and can change its conformation. Thus pesticides , such as TCP, that are used in agriculture can enter to the blood circulation and change the structure of HSA.

***Keywords*:** Human Serum Albumin, pesticide

Corresponding author Email address: kashanians@gmail.com

ID:592

Stereological study of methimazole-induced adrenal atrophy

Farzaneh Dehghan[1], Jamal Zabolizadeh[1], Ali Noorafshan[1], Mohammad Reza Panjehshahin[1], Saeed Karbalaee –doust[1]
[1] Department of anatomical sciences, shiraz university of medical sciences, shiraz, Iran

***Objective*:** Methimazole is an antibody drug which causes adrenal gland atrophy. In this study, the degree of different parts of adrenal gland atrophy was determined by stereological method.
***Material and Methods*:** 20 rats were divided into control and experimental groups. Methimazole (30gr/kg/day, for 30 days, 0.5ml/rat was orally administrated. Normal saline was given to control group with the same manner. After this period, animals were anesthetized and their adrenal gland were removed, fixed, processed, sectioned by IUR method and stained with Heidenhain ,s Azan. Volumes of different parts of adrenal glands were estimated by Cavalieri principle and point counting method.
***Results*:** Methimazole decrease the volumes of adrenal gland, cortical zone and zona fasciculata by 17%, 18.5% and 23% respectively (p<;0.05).
***Conclusion*:** It seems that Methimazole exert its affect mainly on zona fasciculate.
***Keywords*:** Methimazole, Adrenal, stereology, Cavalieri principle, Volume
Corresponding author Email address: dehghanf@sums.ac.ir

ID:593

Cytogenetic Abnormalities with Interphase FISH Method and Clinical Manifestation in Chronic Lymphocytic Leukemia Patients in North-East of Iran

Faeze Bagherifar[1], Hossein Rahimi[2], Mohammad Hadi Sadeghian[3], Mohammad Reza Keramati[3], Amir Hossein Jafarian[3], Sepideh Shakeri[1], Seyyede Fatemeh Shams[1], Neda Motamedi[1], Maryam Sheikhi[1], Hossein Ayatollahi[3]

[1] Cancer Molecular Pathology Research Center, Department of Hematology and Blood Bank, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

[2] Associate professor of Internal Medicine, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

[3] Associate professor of Hematopathology, Cancer Molecular Pathology Research Center, Department of Hematology and Blood Bank, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

***Objective*:** Chronic lymphocytic leukemia (CLL) is one of the most prevalent adult leukemias. This malignancy is known by lymphocytosis for a duration of more than 3 months. In fact, it is a heterogeneous clinical disease with changeable progression. Chromosomal aberrations are significant parameters to predict result and survival rate and find treatment strategies for each patient. Cytogenetic methods are known as sensitive and relatively new procedures to detect abnormalities in genome.

***Material and Methods*:** In order to identify CLL-related chromosomal abnormalities, 48 CLL patients included 38 Men and 10 Women with mean age of 58.25±36 were enrolled in this case series study. The survey was done at Cancer Molecular Pathology Research Center, Mashhad University of Medical Sciences. Interphase fluorescent in situ hybridization (I-FISH) was done on unstimulated peripheral blood or bone marrow samples, which were cultured in whole medium culture; it was used to detect chromosomal abnormalities such as 11q- , 13q14-, 17p- , 6q- and trisomy 12 in CLL patients.

***Results*:** Analysis demonstrated that 45.5% of CLL cases had chromosomal abnormalities; 13.63% had del 17p, 40.90% had del 13q14 and 9.09% had del 11q. Statistical analysis of data revealed a significant relevancy between age variable and splenomegaly occurrence (P value<;0.05). The younger the patients were, the less the splenomegaly occurrence.

***Conclusion*:** Laboratory findings were correlated with clinical data.

***Keywords*:** Chromosomal aberration, Chronic lymphocytic leukemia (CLL), Interphase FISH (I-FISH), Polymerase chain reaction (PCR)

Corresponding author Email address: bagherifarf951@mums.ac.ir

ID:594

Thrombosis and thromboembolism risk factors in HIV positive individuals in Southern Iran

Aria Dianatinasab[1], Mostafa Dianatinasab[1], Esmael Rezaee[1]
[1] Department of Biochemistry, Student research committee, Shiraz University of Medical Sciences, Shiraz, Iran

***Objective*:** The reported incidence of venous thromboembolism (VTE) in patients with human immunodeficiency virus (HIV) infection has ranged from 0.25 to 0.96% in clinical studies, and up to 17% at autopsy. Among HIV positive patients there are several factors that may lead to thromboembolism, it means that many of factors are contributing to increasing the risk of thromboembolism. The present study was performed to find the reasons and risk factors of VTE among HIV patients.

***Material and Methods*:** This cross-sectional study analyzed a total of 100 HIV serology positive patient between 2015 to 2017 in behavioral disease consoling center in Shiraz, Southern Iran. First, based on enzyme-linked immune sorbent assay (ELISA) patients were identified, then confirmation was obtained by western blot and PCR methods. From all participants, a total of 10 ml blood sample was collected, then using a centrifuge 3000 rpm for 10 min, serum and plasma was separated from the cell. CD4 was assessed using standard Cy flow counter (partec), HIV viral load was assessed with Qia gene and hematologic parameters determined using IL –AC9000 with the hemophile kit.

***Results*:** Our data shown a higher prevalence of VTE in patients under age 50 who are HIV-positive compared to those who are HIV-negative. Also, there was a statistically significant association between the stage of AIDS (P=0.002), low CD4+ cell count (P=0.001), using HAART treatment regimen (P=0.03), smoking (P=0.01) and drug injection (P=0.001) with higher risk of VTE.

***Conclusion*:** Currently available epidemiological evidence suggests that chronic HIV infection is associated with a two to 10-fold increased risk of VTE in comparison with a general. Some risk factors demonstrated a strongest association with VTE such as stage of AIDS, low CD4+ cell count especially in the presence of clinical AIDS, protein S deficiency, and protein C deficiency.

***Keywords*:** Venous thromboembolism (VTE), HIV/AIDS, Risk factors, ELISA, PCR

Corresponding author Email address: dianati.aria@gmail.com

ID:595

Investigating the effect of probiotic on expression of bfpA genes in intestinal E. coli

Fatemeh Hadavand[1], Mohsen Mirzaee[2], Mohammadreza Mehrabi[2]
[1] MSc. Student, Borujerd Branch, Islamic Azad University, Borujerd, Iran
[2] Assistant Professor, Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran

***Objective*:** Escherichia coli is a gram negative bacterial family of Enterobacteriaceae. After entering the mouth, the bacterium enters the intestine and starts to freeze poison after binding to the intestinal mucus cells. Toxins caused by bacteria, damage the intestinal mucosa and cause severe abdominal pain and diarrhea. Pili made proteins called Palin, which are codenamed by bfpA genes. This gene exists on the large plasmid contained in EPEC. Probiotic bacteria with the ability to change the gut microbial flora play an important role as beneficial bacteria in the body. The purpose of this study was to investigate the effect of probiotic Lactobacillus acidophilus on the expression of bfpA gene in E. coli strains.

***Material and Methods*:** In this study, the probiotic sample Lactobacillus acidophilus was prepared by Pishgam Co. (Iran-Tehran). After the effects of probiotics on the expression of bfpA gene, a Real Time-PCR technique was used to determine the probiotic effect.

***Results*:** The results showed that probiotics had a significant effect on bfpA gene expression. This means that the presence of probiotics along with the EPEC can reduce the expression of the bfpA pathogen and reduce the pathogenicity of the bacteria through the gene.

***Conclusion*:** It is concluded that the level of probiotic effects on the reduction of the expression of the pathogen gene expression for the EPEC bacterium is high. So that the gene has deactivated bfpA and has reduced the pathogenicity of the EPEC bacteria.

***Keywords*:** Probiotic, BfpA, E. coli, Real Time-PCR

Corresponding author Email address: Fateme.hadavand94@gmail.com

ID:596

The effect of probiotic Lactobacillus acidophilus on the expression of eae gene in E. coli pathogenic

Fatemeh Hadavand[1], Mohsen Mirzaee[2], Mohammadreza Mehrabi[2]
[1] MSc. Student, Borujerd Branch, Islamic Azad University, Borujerd, Iran
[2] Assistant Professor, Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran

***Objective*:** Probiotics are one of the most important factors in strengthening the intestinal flora. Strengthening the colon's natural flora reduces the pathogenicity of bacteria that produce enteric infections, of which the most enteropathogenic E. coli bacteria have the highest levels of pathogenicity. The purpose of this study was to investigate the effect of probiotic on eae gene expression in E. coli strains.

Material and Methods: In this study, the probiotic sample Lactobacillus acidophilus was prepared by Pishgam Co. (Iran-Tehran). After the effects of probiotics on the expression of eae gene, a Real Time-PCR technique was used to determine the probiotic effect.

***Results*:** Therefore, performing the test steps of the results of the gene expression test showed that probiotic Lactobacillus acidophilus had a significant effect on eae expression. This means that the presence of probiotics along with EPEC can reduce the expression of the pathogen gene.

***Conclusion*:** The obtained results can be deduced that probiotics reduce the pathogenicity of EPEC bacteria due to the effect on the eae gene.

***Keywords*:** Lactobacillus acidophilus, Probiotic, EPEC, eae gene, Real Time-PCR

Corresponding author Email address: Fateme.hadavand94@gmail.com

ID:598

Expression and Purification of DR5 agonist VHHs by NTA agarose, candidates in targeted cancer therapy

Elham Golnaz Sadeghnezhad[1], Sadegh Hasannia[1]
[1] Tarbiat Modares University, Faculty of biological science, Department of Biochemistry

Objective: The development of therapeutics against DR5 (the most abundant receptor on cancerous cells) that induces apoptosis in cancer cells is been increasingly attractive approach over the past 30 years. Recombinant TRAILs, agonistic antibodies, or derivatives that target DR5 have been developed and each of them has its drawbacks. One of the most interesting antibody derivatives to DR5 are VHHs (single variable domains derived camelidae family heavy chain antibodies). The aim of this study was been expression of high-affinity VHHs against DR5 receptor in appropriate vector and strain and their purification by affinity chromatography. This purified VHHs can be used for further studies such as determining thermodynamic and kinetic parameters, induction of cell death and apoptosis useful in cancer therapy.

Material and Methods: In this study, the effect of intraperitoneal injection of lead in different doses of 4 and 6 mg per kilogram of body weight on liver function in 24 male Wistar rats was studied after a short period (15 days) and long period (60 day) of treatment time. Serum concentration of liver-related parameters was measured at the end of the period. Data were compared using spss18. To examine the results, $P<0.05$ was considered as the level of significance of the differences.

Results: We cloned different VHH sequences in pET-21 a (+) then transformed them in SHuffle® T7 Competent E. coli strain. After optimization of temperature and IPTG concentration it was purified by affinity chromatography (Ni-NTA agarose). The presence of purified protein was confirmed by western blotting and ELISA with anti His-Tag antibody. Results ELISA and western blotting results confirmed the presence of about 15 KDa VHHs.

Conclusion: We have found that SHuffle® T7 Competent E. coli stain is a good candidates for expression of VHHs because they have disulfide bonds in them and this strain can help correctly folding of these proteins and we can have them in supernatant.

Keywords: Cancer, Death Receptor 5, VHH, Apoptosis, protein purification

Corresponding author Email address: golnaz.sadeghnezhad@gmail.com

ID:606

Nanostructured Lipid Carriers (NLCs) enhance Letrozol Efficacy in MCF-7 Breast Cancer Cells

Roya Bazzaz Dehkharghani[1], Sattar Bazzaz Dehkharghani[1], Arash Barbast[1]
[1] Drug Applied Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

***Objective*:** Side effects of anti-cancer agents and resistance to treatment is an obstacle in cancer chemotherapy and novel delivery systems, like NLC, can diminish these problems. In this study we formulated Letrozol (LTZ) – aromatase blockage used in treatment of breast cancer- in NLCs to enhance efficacy and diminish harmful effects of LTZ.

***Material and Methods*:** We prepared NLC formulation with dissolving LTZ in Miglyol and adding into compritol. Then poloxamer 4% as surfactant was added under homogenization. After sonication, this hot nano-emulsion was cold down. The average size of LTZ-loaded NLCs was measured with particle size analyzer. We used scanning electron microscope to investigate morphology of particles. In order to cytotoxicity study, MTT assay was done. The flow-cytometry was used to determination of apoptotic cells and cell cycle analysis.

***Results*:** The size distribution of NLC formulations was 60 to 135 nm with a poly dispersity index (PDI) of 0.165. IC50 value for LTZ was 2.2±0.2 μM. LTZ-loaded NLCs suppressed proliferation of MCF-7 cells more effectively than LTZ alone(p<;0.05). There were no differences between cells incubated with NLCs alone and control cells which demonstrated biocompatibility and low cytotoxicity of carriers. Our results showed that LTZ-loaded NLCs increased cells in apoptotic phase 42±3.45 %(p<;0.05). Exposed cells with LTZ-loaded NLCs led to accumulation of them in subG1 phase up to 13±3.2%. Treatment of cells with LTZ-NLCs caused 30±2.8% apoptosis and 34±0.7% G2/M arrest.

***Conclusion*:** The use of LTZ as an anti cancer drug along with NLC, new generation of lipid-based drug delivery system, improved the sensitization of cancer cells to this chemotherapy agent.

***Keywords*:** Apoptosis, Nano structured lipid carrier, Letrozol

Corresponding author Email address: nutroy.art@gmail.com

ID:607

Study of cytotoxic effect of Eucaliptus sargentii hydroalcoholic extract on lung cancer cell lines A549

Maryam Sharifi[1], Azadeh Mohammadgholi[1], Nastaran Asghari Moghaddam[1]
[1] Department of Biology, Faculty of Basic Sciences, Islamic Azad University, Central Tehran Branch, Tehran, Iran

***Objective*:** Eucalyptus plant contains antioxidant compounds that have anti-cancer activity. This plant is from the family of Myrtaceae. BAX is one of the most effective proteins in the pathway of apoptosis (scheduled death)
***Material and Methods*:** In this study, the effect of extract on induction of apoptosis in human lung cancer cells was investigated using cancer cell culture and RT methods.
***Results*:** Cells were incubated in presence and absence of hydroalcoholic extract of eucalyptus. The results of MTT assay showed that the IC50 value for the 24 hour period was equal to 62 mg / ml of the extract. The results of the RT showed that the expression of the BAX gene was about 2 times greater than that of the control gene over a period of 24 hours.
***Conclusion*:** Overall, the results indicate that hydroalcoholic extract of eucalyptus causes toxin in lung cancer cells and thus can lead to apoptosis. Concurrent use of the extract and the drug in the treatment of lung cancer can be a promising way to treat cancer and reduce the side effects of chemical compounds.
***Keywords*:** BAX, Hydroalcoholic Eucalyptus Extract, Apoptosis, A549, MTT
Corresponding author Email address: a.mohammadgholi@yahoo.com

ID:609

Sonic hedgehog pathway suppression and reactivation accelerates differentiation of rat adipose-derived mesenchymal stromal cells toward insulin-producing cells

Dian Dayer[1], Mohammad Reza Tabandeh[1], Mahmoud Hashemi Tabar[1], Eskandar Moghimipour[1]

[1] Ahvaz Jundishapur University of Medical Sciences

Objective: Sonic hedgehog (Shh) is an intercellular signaling molecule that regulates pancreas development in mammals. Manipulation of Shh signaling pathway can be used as reliable approach to improve the generation of functional insulinproducing cells (IPCs) from mesenchymal stromal cells (MSCs).

Material and Methods: In the present study, a novel differentiation protocol was used to produce IPCs from adipose tissue–derived MSCs (ATDMSCs) based on sequential inhibition and reactivation of Shh pathway. ATDMSCs were differentiated into IPCs via a 14-day basic protocol using 1% insulin transferrin selenium (ITS) and 1% nicotinamide in Dulbecco's Modified Eagle's Medium medium. A mixture of 0.25 mol/L cyclopamine + 64 ng/mL basic fibroblast growth factor at day 3 of differentiation and 150 ng/mL recombinant Shh at day 11 of differentiation were used, respectively, to promote sequential inhibition and reactivation of Shh pathway. Insulin granule formation, glucose-stimulated insulin secretion and gene expression pattern related to the pancreatic endocrine development and function were analyzed in manipulated and unmanipulated IPCs.

Results: IPCs obtained after Shh manipulation secreted higher amounts of insulin in vitro. This phenotype was accompanied by increased expression of both genes critical for β-cell function and transcription factors associated with their mature phenotype including Pdx1, MafA, Nkx2.2, Nkx6.1, Ngn3, Isl1 and insulin at day 14 of differentiation.

Conclusion: Our findings indicated that the early inhibition and late reactivation of Shh signaling pathway during the differentiation of ATDMSCs improved the functional properties of IPCs, a novel method that could be considered as an alternative approach for cell-based therapy for type 1 diabetes.

Keywords: adipose tissue–derived mesenchymal stromal cells, insulin-producing cells, sonic hedgehog manipulation

Corresponding author Email address: dayer86@gmail.com

ID:610

Reducing effects of quercetin on interleukin-6 gene expression and pSTAT3 in human prostate cancer DU-145 cells

Esfandiar Heidarian[1], Akram Abbasi-Veldani[2], Sayed Asadollah Amini[3]

[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

[2] Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Medical Plants Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Interleukin-6 (Il-6) leads to the progression of the prostate cancer through affecting pSTAT3 cell signaling protein. Quercetin, a herbal antioxidant, has anti-tumor effects. The aim of this study was to evaluate the effects of quercetin on proliferation, IL-6 gene expression, and pSTAT3 cellular signaling protein in DU-145 prostate cancer cells.

Material and Methods: DU-145 cells viability was evaluated by 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay after treatment with different concentrations of quercetin (40-160 µM). The expression of IL-6 was investigated using real-time polymerase chain reaction. Cellular concentration of pSTAT3 signaling protein was determined by Western blotting technic.

Results: Treatment with quercetin caused a significant decrease in cell viability, proliferation, and cellular level of pSTAT3 signaling protein in DU-145 prostate cancer cells. Quercetin IC_{50} for DU-145 prostate cancer cells was 80 µM. The elevation of quercetin concentration in cell culture media resulted in decreasing IL-6 gene expression and its protein synthesis. Furthermore, quercetin suppressed pSTAT3 signaling protein at dose concentrations more than 40 µM.

Conclusion: IL-6 gene down-regulation and decreased IL-6 protein level by quercetin resulted in diminishing of pSTAT3 signaling protein which led to the reduction of the cell survival, and proliferation in DU-145 cells.

Keywords: Interleukin-6, DU-145 cell line, prostate cancer, quercetin, pSTAT3

Corresponding author Email address: heidarian46@yahoo.com

ID:611

Herbal medicine in depression treatment

Roshanak Zarringhalami[1], Parichehr Hanachi[1]

[1] Alzahra University, Tehran, Iran

Objective: Life stress, such as sadness, neglect and loss, pressure of daily Chores is leading to major risk factor for developing depression later in life. Patients today are looking for alternative medicine and therapies such as herbal and other natural medicine for the cure and treatment of disease because of Prescription medicine's side effects. The use of complementary and alternative therapies like using herbal medicine is more common through the people who has psychiatric problems such as depression. Many of herbal medicine for treatment of psychiatric problems has been evaluated in a wide range of animal models. The damage of monoamine transmission systems that causes decreasing of concentrations of 5-hydroxytryptamine (5-HT), norepinephrine (NE) and dopamine (Da), so all these lead to depression. Pathophysiology of anxiety is because of imbalance in concentration of noradrenergic, serotonergic, and glutamatergic transmission because of that Monoamine oxidase inhibitors (MAOIs), through tricyclics (TCAs) and selective serotonin reuptake inhibitors (SSRIs) and noradrenaline reuptake inhibitor (NARI) can be used as antidepressant agents.

Material and Methods: In this review article we are going to looking for the effects of herbal medicine in treatment of depression.

Results: Various antidepressant in herbal medicine is regulating neurotransmitters that mentioned, and cause to suppress of uptake these neurotransmitters, also Herbal medicines contain chemical compound that have antidepressant effects by sensitization of serotonin receptors or inhibiting monoamine oxidases.

Conclusion: In conclusion, herbal medicines can be used in the treatment of depression, anxiety other neural diseases. Plants that have antidepressant effects and tested in vitro and in vivo could be used as a drug for depression treatment.

Keywords: depression, treatment, herbal medicine

Corresponding author Email address: roshanakzaringhalami@yahoo.com

ID:612

Protective effect of Pomegranate Peel Extract on Renal Ischemia Reperfusion Injury in mice

Saber Abbaszadeh[1]

[1] Student Research Committee, Lorestan University of Medical Sciences, Khorramabad, Iran

Objective: ROS are recognized as the most important involved mechanisms in pathogenesis of renal ischemia reperfusion injury. So, antioxidant therapy is proposed as a beneficial solution for treatment of ischemia-reperfusion (IR) injury. Punica granatum which known as pomegranate is a native plant pf Iran with various antioxidant properties. Therefore, we decided to evaluate the protective effect of Pomegranate peel extract on renal ischemia reperfusion injury in rats.

Material and Methods: Forty male Sprague-dawley rats (200-250 g) were randomly divided into 5 groups as follow: control group, IR + water group, sham group (only received pomegranate peel extract), pomegranate peel extract and IR+ 100 mg/kg pomegranate peel extract. After that, the rats were treated for two weeks. Then, both renal arteries were obstructed for 45 minutes and subsequently 24 hours of reperfusion. Antioxidant enzymes activity of kidney including catalase, glutathione peroxidase and glutathione level were measured biochemically. The results were analyzed by using Mann-Withney test and SPSS software.

Results: Catalase and glutathione peroxidase activities glutathione level was decreased significantly in IR + water group in comparison with control and sham group. Increased activity of catalase and glutathione peroxidase and glutathione level were observed in pre-treated groups with pomegranate peel extract.

Conclusion: 14 days pre-treatment with pomegranate peel extract decreased renal ischemia reperfusion injury through increased activity of renal antioxidant enzymes such as catalase, glutathione peroxidase and glutathione activities. Therefore, herbal medicines can be utilized as suitable choice for the ischemia reperfusion injury.

Keywords: Renal, Ischemia-Reperfusion, Pomegranate Peel extract, kidney, rat

Corresponding author Email address: saberabaszade1370@gmail.com

ID:613

Investigation of presence norA gene in clinical isolates of staphylococcus aureus

Mohsen Afshari[1], Mohsen Mirzaee[2], Mohammadreza Mehrabi[2]

[1] Student, Borujerd Branch, Islamic Azad University, Borujerd, Iran

[2] Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran

Objective: Staphylococcus aureus is one of the most important causes of hospital opportunistic infections around the world. One of the mechanisms of Staphylococcus aureus resistance to antibiotics, including ciprofloxacin, is the existence of anthropometric pumps such as norA. The aim of this study was to evaluate the antibiotic resistance pattern and to investigate the presence of Effluxe norA pumps in strains of Staphylococcus aureus strains isolated from the reference laboratory of Kermanshah.

Material and Methods: In this study 100 clinical isolates of Staphylococcus aureus were collected from the referral laboratory Kermanshah. All of 100 Staphylococcus aureus were detected after biochemical tests and identification of the isolates. DNA extraction was performed by lysostaphin and identification of norA gene was performed by PCR method.

Results: Of the patients with Staphylococcus aureus, 55 were male (55%) and 45 were female (45%). Of 100 isolates, PCR results showed that norA gene was present in 40 isolates (40%).

Conclusion: In this study, the prevalence of the study gene is higher than other studies, which can be due to the prevalence of recent years in the country.

Keywords: Staphylococcus aureus, antibiotic resistance, norA, PCR

Corresponding author Email address: mohsen.afshari.1369@gmail.com

ID:614

Study of the prevalence of norB gene in Staphylococcus aureus strains isolated from the reference laboratory of Kermanshah

Mohsen Afshari[1], Mohsen Mirzaee[2], Mohammadreza Mehrabi[2]

[1] Student, Borujerd Branch, Islamic Azad University, Borujerd, Iran

[2] Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran.

Objective: Staphylococcus aureus is a positive cocci that is found everywhere. It is colonized in humans and domestic livestock and is considered an opportunistic pathogen. Staphylococcus aureus is one of the most important causes of acquired hospital infections. The aim of this study was to presence of Effluxe norB pumps in strains of Staphylococcus aureus.

Material and Methods: In the present research 100 clinical isolates of Staphylococcus aureus were collected from the referral laboratory Kermanshah. All of 100 Staphylococcus aureus were detected after biochemical tests and identification of the isolates. DNA extraction was performed by lysostaphin and identification of norB gene was performed by PCR Technique.

Results: Of the patients with Staphylococcus aureus, 55 were male (55%) and 45 were female (45%). Of 100 isolates, PCR results showed that norB gene was present in 28 isolates (28%).

Conclusion: As shown in the results of this study, The prevalence of norB gene is relatively high, which can be due to the increased use of antibiotics in recent years in the country

Keywords: Staphylococcus aureus, Effluxe pumps, norB, PCR Technique

Corresponding author Email address: mohsen.afshari.1369@gmail.com

ID:615

Evaluation of BCL2 and Ki67 Expression in patients With Diffuse Large B cell Lymphoma (DLBCL) and Their Correlation With Staging and prognosis of the disease

Elham Pourrahim[1], Hossein Rahimi[1], Amir Hossein Jafarian[1], Elnaz Rashidian[1], Faeze Bagherifar[1], Elham Mahmoudi[1]

[1] Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Diffuse Large B Cell Lymphoma (DLBCL) is the most common type of non- Hodgkin Lymphoma. DLBCL can divide into two subgroup of GCB and non GCB by immunohistochemistry markers. The role of BCL2 and Ki67 as prognostic factors in DLBCL and its subgroups are still controversial.

Results: In this study, we investigated the correlation between bcl2 expression and staging (p-value=0.082), but Ki67 expression has a significant correlation with staging (p-value=0.002). there was no statistically analysis showed a correlation between the type of DLBCL subgroups and Bcl2 expression (p-value=0.024), and there was a significant correlation between type of DLBCL subgroups and prognosis (p value=0.019). In addition, our results showed a correlation between BCL2 and Ki67 expression (p=0.045).

Conclusion: BCl2 and Ki67 expression were not associated with prognosis. High Ki67 expression in correlated with higher clinical stages. Bcl2 expression is higher in non GCB subgroup of DLBCL and GCB subgroup of DLBCL is associated with better outcome.

Keywords: Diffiuse Large B Cell lymphoma, BCL2, Ki67, immunohistochemistry

Corresponding author Email address: ELHAM_Pourrahim@yahoo.com

ID:616

Characterization of a wound dressing mat composed of polycaprolactone(PCL) and silversufadiazine(SSD)

Fereshteh Nejaddehbashi[1], Mahmoud Orazizadeh[2], Mahmoud Hashemitabar[2], Mohammadreza Abbaspour[3], Vahid Bayati[2], Eskandar Moghimipour[4]

[1] cellular and molecular research center ahvaz Jundishapur University of medical sciences
[2] Department of anatomical sciencesahvaz Jundishapur University of medical sciences
[3] targeted drug delivery research center mashhad university of medical sciences
[4] nanotechnology research center, faculaty of pharmacy,ahvaz jundishapour university

Objective: Due to effective applications of nanoscale methods in a variety of medicine fields, this study focused on designing and fabricat a polymeric nanofibrous mat for wound dressing. Evaluation of PCL nanofibrous mat containing silversulfadiazine(SSD) in vitro was applied.

Material and Methods: A PCL/SSD mat was fabricated by using electrospinning .The electrospun nanofibers were characterized by field emmision scanning electron microscopy (FE-SEM),differential scanning calorimetric(DSC),contact angle, and Energy-dispersive X-ray spectroscopy(EDX). Cytotoxicity studies performed to examine the effects of SSD on cultured cells with MTT analysis.Antibacterial activity of PCL/SSD mat were examined with Staphylococcus aureus (ATCC29213), and Pseudomonas aeruginosa(ATCC27853). Presences of inhibition zone around nanofibrous mat containing SSD showed antibacterial activity due to the presence of Ag in SSD.

Results: The PCL/SSD nanofibrous mat showed applicable characteristics as a wound dressing.

Conclusion: This nanofibrous mat could be an ideal biomaterial for wound dressing applications in future.

Keywords: Polycaprolactone, Silver-sulfadiazine, Electrospining, Tissue engineering

Corresponding author Email address: fereshte_negad@yahoo.com

ID:617

Phylogenetic Study of Fasciola Species in Lorestan Province

Tiyam Mehrpooya [1], Farzad Parsa [2], Reza Yari [3]

[1] Borujerd Branch, Islamic Azad University, Borujerd, Iran

[2] Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran

[3] Department of Biology, Faculty of Sciences, Boroujerd Branch, Islamic Azad University, Boroujerd, Iran

Objective: The common parasitic liver of Fasciola hepatitis and Fasciola gigantica are the causative agents of Fascioliasis, a worldwide and prevalent disease in humans and animals. The disease has inflicted many damage and damage in various parts of the world, including Iran. The identification of Fasciola heptaica and Fasciola gigantica is very important in terms of genetic genetics.

Material and Methods: This study was conducted between June and September 1996 by examining 200 suspected liver from carcasses slaughtered in Boroujerd and Khorramabad Abattoirs. After figuring out the phylogeny tree by UPGMA method, all samples were Fasciola hepatitis and the genetic similarity between the specimens was very high.

Results: In this study, 10 samples of Fasciola were collected from Lorestan province. After DNA extraction by extraction kit (Sinoclon-Iran), PCR technique was used and products for sequencing (pioneer-Iran) were sent. After plotting the phylogeny tree by NJ method, the similarity between the studied samples was reported above 90% and the genetic variation (Diversity) was very low (less than 2%)

Conclusion: As shown in the results of this study, the similarity of the parasites in the genus of isolates in the province is very high and it is better to do so in order to better understand the subtypes.

Keywords: Phylogenetic, Fasciola Species, Lorestan, PCR

Corresponding author Email address: Tmehrpooya@gmail.com

ID:618

Identification of Fasciola Species in Slaughterhouses of Lorestan Province by PCR

Tiyam Mehrpooya [1], Farzad Parsa [2], Reza Yari[3]

[1] Borujerd Branch, Islamic Azad University, Borujerd, Iran

[2] Department of Laboratory sciences, Borujerd Branch, Islamic Azad University, Borujerd, Iran

[3] Department of Biology, Faculty of Sciences, Boroujerd Branch, Islamic Azad University, Boroujerd, Iran

Objective: Fasciolosis is one of the common human and animal diseases that, according to the World Health Organization, about 4.2 million people are infected with Fasciola, and another 1800 million people are at risk of infection. In recent studies, the human cases of disease in the world are estimated to be 2.4 to 17 million, a disease that has been prevalent in livestock in Iran for many years. One of the precise methods for identifying this disease is the use of PCR molecular techniques.

Material and Methods: This study was conducted between June and September 1996 by examining 200 suspected liver from carcasses slaughtered in Boroujerd and Khorramabad Abattoirs. Of the carcasses examined, 10 samples of Fasciola amorad were examined. DNA extraction was performed by extraction kit method (Sinoclon-Iran), and all samples were subjected to molecular evaluation of PCR.

Results: According to the results of this study, all specimens were suspected to be Fasciola hepatitis and the genetic similarity between the specimens was very high.

Conclusion: The proper recognition of the phasicula plays a significant role in choosing the correct control and counteracting the disease, so using PCR techniques can be used both in time and cost and in the results obtained.

Keywords: Fasciola, Slaughterhouses, Lorestan, PCR Technique

Corresponding author Email address: Tmehrpooya@gmail.com

ID:619

A comparison between three well-known statins in binding to HAS

Yasaman Mazidi[1], Rahman Emamzadeh [1], Mahboobeh Nazari[2]

[1] Department of Biology, Faculty of Sciences, University of Isfahan, Isfahan, Iran

[2] Monoclonal Antibody Research center, Avicenna Research Institute, ACECR, Shahid Beheshti University, Tehran, Iran

Objective: Statins are indicated as an adjunct to diet for the reduction of elevated total cholesterol (total-C) and low-density lipoprotein cholesterol (LDL-C) levels in patients with primary hypercholesterolemia, when the response to diet restricted in saturated fat and cholesterol and to other nonpharmacological measures alone has been inadequate. In fact statins are prodrugs isolated from the fungus Aspergillus terreus with potential antineoplastic activities and are activated in vivo. They bind to the coenzyme A portion of the active site.

Material and Methods: We obtained the needed structural data from RCSB database (http://www.rcsb.org) with 1E78 PDB ID for HAS and from PubChem server (https://pubchem.ncbi.nlm.nih.gov) with 60823, 446155 and 53232 CIDs for Atorvastatin, Fluvastatin, Lovastatin respectively. Comparison between the binding energies was done using PyRX v0.8 and docking package Molegro Virtual Docker v6.0.

Results: In the present study we tried to predict the behavior of other statins in comparison to Lovastatin in binding to HAS. The results showed that Atorvastatin has the best affinity to HAS (about 2 kcal/mol more than Lovastatin) though we know that both Lovastatin and its beta-hydroxyacid metabolite are highly bound to human plasma proteins.

Conclusion: Human serum albumin (HSA) is one of the most abundant proteins in the circulatory system. For many drugs, binding to serum albumin is a critical determinant of their distribution and pharmacokinetics. It can be concluded that Atorvastatin can have better distribution in comparison to other statins while this fact may also affect drug release. Further studies is suggested on this issue to find the best balance between these two important factors in drug delivery.

Keywords: HSA, drug release, Lovastatin, Atorvastatin, Fluvastatin

Corresponding author Email address: ya_miim@hotmail.com

ID:620

The effect of Quercetin on the expression of NANOG, SOX2, and KLF4 genes in the SW480 cell line of colorectal cancer

Hadis Ahmadirad[1], Mohammadreza Hajizadeh[1]
[1] Department of Clinical Biochemistry, Rafsanjani University of Medical Sciences, Rafsanjan, Iran

Objective: Cancer is one of the chronic and non-communicable malignant diseases, which is considered as a health problem affecting the health of the community. Colorectal cancer is one of the most common types of cancers in the gastrointestinal tract. Several factors are known for the disease, among which genetic and nutritional factors are among the most important factors. Incorrect expression of involved genes, such as OCT4, SOX2, NANOG, and KLF4, can contribute to the development of colorectal cancer.

Material and Methods: In this study, the effect of quercetin, which is a natural flavonoids, has been reported in several studies with antioxidant and anticancer properties. Against the cell line SW480, a system model for colon cancer in humans, was investigated. IC50 quercetin concentration was determined on the growth of SW480 cells using the MTT kit and the expression of NANOG, SOX, and KLF4 genes was also evaluated using Real Time PCR in SW480 cells.

Results: MTT results showed IC50 (50% cell growth inhibitor) was 60 µg / ml. The results showed that expression of NANOG, SOX, and KLF4 genes in quercetin-treated SW480 cells decreased compared to control group.

Conclusion: Due to the satisfactory effects of Quercetin on colorectal cancer cells, its anticancer effects are likely to be exerted through effects on transcription factors, which, of course, need further investigation for the definitive opinion.

Keywords: quercetin, cell line SW480, NANOG, SOX2, KLF4

Corresponding author Email address: Hajizadehus@yahoo.com

ID:621

Investigation of the association between TIMP-1 and COL4A4 gene polymorphisms and keratoconus

Davood Yar[1], Ramin Saravani[1]

[1] Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: Keratoconus (KC) is a bilateral and progressive thinning anterior protrusion of the cornea, which may result in severe visual impairment due to reduce visual acuity. Type IV collagen is found in the cornea and matrix metalloproteinases (MMP) is able to degrade collagen type IV. MMP enzymatic activity is inhibited by tissue inhibitor of metalloproteinase-1 (TIMP-1). Alter and decreases TIMP-1 levels are associated with the formation of KC. In present study, we investigated the impact of COL4A4 rs2228557 C/T and TIMP-1 rs4898 C/T (X-chromosome) variants on the risk of KC in a sample of Iranian population.

Material and Methods: A case-control study was performed on 140 patients with KC and 150 healthy control subjects. We used the modified methods of Nested-PCR and ARMS-PCR in combination (Nested-ARMS-PCR), and confirmed their validity with RFLP-PCR.

Results: We found significant differences in males, between patients with KC and healthy individuals regarding the genotype TY or T allele frequencies of rs4898 (OR=0.43, 95%CI=0.20-0.92, p-value=0.03), while in females in the studied population, no statistically significant differences were observed (OR=1.07, 95%CI=0.52-2.20, p-value=0.85). The rs2228557, T allele was associated with KC (OR=0.69, 95% CI=0.50–0.97, p-value=0.035).

Conclusion: In the rs2228557 variant, T allele acts as a protective factor from the disease and decreased the risk of KC compared with the C allele. Also, in our investigation about rs4898, we found that TY genotype or T allele decreased the risk of KC compared with the C allele in males, and is a protective factor for KC in our population.

Keywords: Keratoconus, Collagene, COL4A4, TIMP-1, polymorphism

Corresponding author Email address: Davidyari.85@gmail.com

ID:622

Truncated enzymes of Chondroitinase ABC I exhibit stable microenvironments around structural components over their wild type

Hossein Omidi-Ardali[1], Abolfazl Golestani1, Mahdi Aminian[1]

[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Immune response stimulation and inactivation of chondroitinase ABC I (cABC I) in physiological condition have been limited its use in various clinical conditions as a bacterial enzyme drug. In the present study, we have investigated some structural and functional features of NΔ89, CΔ274 and NΔ89CΔ274; three designed truncated cABC I, in order to clarify the unclear role of two terminal parts of cABC I i.e., the 1-89 and 747-1021 amino acids sequences of the full length enzyme through truncation.

Material and Methods: Truncated proteins were designed by bioinformatics studies and were expressed. Activity analysis performed using spectrophotometric and zymographic assays. Secondary and tertiary structure changes were monitored by fluorescence, circular dichroism spectrophotometer and trypsinolysis.

Results: The numbers of potential epitopes, the susceptibility to trypsin digestion, ANS fluorescence spectra, and fluorescence quenching using KI and acrylamide were diminished for NΔ89 and CΔ274 in comparison to the wild type. Secondary and tertiary structure investigation for NΔ89 and CΔ274 revealed that the intrinsic fluorescence was increased and Far-UV CD spectra were changed accordingly. Relative to the wild type enzyme, 0.164, 0.195 and 0 remaining activity was shown with the zymographic assay for NΔ89, CΔ274 and, NΔ89CΔ274 variants, respectively.

Conclusion: The diminished enzyme activity and structural changes suggested a reorientation of microenvironments interactions including Cation–π interactions around structural elements toward lowering regional mobility. Constructing applicable truncated cABC I with improved features could be regarded as a strategy to regain new possible functional advantageous over the full length enzyme.

Keywords: Chondroitin ABC Lyase, Protein Engineering, Protein Structural Elements

Corresponding author Email address: hosseinomidi15@yahoo.com

ID:623

Protective effects of Echium amoenum Fisch. & C.A. Mey. against global cerebral ischemia in the rats

Leila Safaeian [1], Abolfazl Azami Tameh [2], Alireza Ghannadi [1], Elmira Akbari Naghani [3], Hamed Tavazoei [1]

[1] Department of Pharmacology and Toxicology, Isfahan University of Medical Sciences

[2] Anatomical Research Center, Kashan University of Medical Sciences

[3] Physiology Research Center, Kashan University Medical Sciences

Objective: Ischemic stroke is a devastating disease and the second leading cause of death. Echium amoenum Fisch. & C.A. Mey. is an important Iranian traditional remedy and a main source of phenolic compounds like rosmarinic acid, cyanidin and delphinidin. Neuroprotective activities have been recently reported for these biochemical constituents. This study was designed to evaluate the protective effect of Echium amoenum total anthocyanin extract (ETAE) on partial/transient cerebral ischemia in the rats.

Material and Methods: Rats received ETAE (50, 100 and 200 mg/Kg, i.p.) 30 minutes before the induction of cerebral ischemia. Cerebral ischemia was induced by occluding bilateral common carotid arteries (BCCAO) for 30 min, followed by 72 h reperfusion. The neurological deficit, brain performance and sensory motor function were assessed 48h and 72h after surgery. After scarification, the brains were evaluated for myeloperoxidase (MPO) activity and histopathological changes.

Results: Our results showed that motor function significantly decreased in BCCAO group as compared to the sham group. Histopathological analysis exhibited the shrinkage and atrophy of the neurons in BCCAO group. ETAE at the dose of 200 mg/kg improved spontaneous activity, memory performance and neuronal damage induced by cerebral ischemia compared to the control group and also decreased the brain MPO activity following cerebral ischemia. However could not affect the ability to climbing, body proprioception, vibrissae touch and brain edema.

Conclusion: The anthocyanin rich fraction obtained from Echium amoenum was found to have protective effects against post-ischemic reperfusion brain damage. However further investigations are required for better evaluation of its neuroprotective effect and finding the exact mechanisms of action.

Keywords: Cerebral ischemia, Echium amoenum, Anthocyanins

Corresponding author Email address: leila_safaeian@pharm.mui.ac.ir

ID:625

Evaluation of malone-di-aldehide as an indicator for semen bacterial contamination

Masume Malekshahian[1], Razavian M.H[1]

[1] Qom university, Iran

Objective: Infertility involves about 15% of couples. 60% of infertility cases are related to male factors, and the share of infertility due to genital tract infection is between 20%. In bacteriospermia, the presence of bacteria and leukocytes produce active forms of oxygen and damage to sperm cells. In the present study: Determination of frequency and diversity of bacteria involved in urinary tract infection, determination of malondialdehyde in sperm and seminal plasma as an index of oxidative damage and its relation with microbial contamination and effect of oxidative stress and microbial contamination on The quality of Semen was evaluated in Qom infertile men.

Material and Methods: This trans-sectional study performed on 53 patients referred to Infertility treatment Center of Jahad Daneshgahi. After sampling, semen parameters based on WHO, 1999 protocol and bacterial contamination by culture and differential tests and also malondialdehyde concentration in sperms and seminal plasma via fluorimetric method were determined and results analyzed by ANOVA and T test in SPSS16 software.

Results: Based on the results, 92% of the patients had bacterial contamination including Staphylococcus aureus (65%), Staphylococcus epidermidis (24.5%), Proteus mirabilis (2.4%), Klebsiella (4.8%) and Enterococcus (4.8%). Bacteriospermia had not only a significant effect on the quality of semen, especially sperm motility(p<;0.01) but significantly increased (p<;0.01) the malondialdehyde concentration in patients\' cells and seminal plasma.

Conclusion: Infection affect semen quality and decrease the chance of a successful ART. Malondialdehyde can be used as a quick and accurate indicator for evaluating bacterial contamination in infertile men.

Keywords: Infertility, Bacteriospermia, reactive oxygen spices, malondialdehyde

Corresponding author Email address: Razavian@qom-iau.ac.ir

ID: 626

Investigating the effect of ice water on liver enzymes in serum of rats

Seied Amirhossein Latifi[1], Jamal amri[2]

[1] Corresponding author: Traditional and Complementary Medicine Research Center (TCMRC), Arak University of Medical Sciences, Arak, Iran.

[2] Traditional and Complementary Medicine Research Center (TCMRC), Arak University of Medical Sciences, Arak, Iran

Objective: According to Persian medicine resources, ice water causes the functional damage of the liver. Therefore, we designed a study to measure the alanine amino transferase (ALT) and aspartate amino transferase (AST) enzymes in serum of rats.

Material and Methods: In this experimental study, 12 adult male Wistar rats weighting 220-200 g were used. The rats were divided into 2 equal groups including, control and experimental groups. The control and experimental groups respectively received normal water (20 ° C) and ice water (4 ° C) for 8 days. At the end of the eighth week, blood was taken from the heart of animals. After separating the serum, concentration of ALT and AST were measured by biochemical kits. Data were evaluated by Student's t-test.

Results: Results showed that ice water significantly increased the levels of ALT and AST levels in experimental group ALT (U/L):231.2 ±16 and AST (U/L):73±2.2 compared to control group ALT (U/L): 172.8±11.7 and AST (U/L): 61.8±1.4 (P<;0.05).

Conclusion: Ice water increase serum ALT and AST, so probably can change the pattern of liver activity. Which can cause liver disease in the long-term. Although more studies are needed.

Keywords: ice water, liver enzymes, serum

Corresponding author Email address: seiedalatifi@yahoo.com

ID:628

Study of effects of novel synthetic acridine derivatives on acetylcholinesterase enzyme activity

Maryam Hatami[1], Safa Lotfi[1], Elham Rezvannejad[1], Mojtaba Mortazavi[1]

[1] Department of Biotechnology, Institute of Science and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran

Objective: Alzheimer's disease (AD) is the most common age-related neurodegenerative disease causing neurological and cognitive disorders and finally leading to death. According to the cholinergic hypothesis of AD pathogenesis, the clinical features of the disease are attributed to the reduction of acetylcholine synthesis, a neurotransmitter involved in the memory and learning process. Therefore using acetylcholinesterase inhibitors is one of the major therapeutic strategies for relative improvement of AD symptoms. Today, worldwide research is being conducted to find more powerful new drugs with fewer side effects for Alzheimer's. In the present study the effect of eight novel synthetic acridine derivatives on the inhibition of acetylcholinesterase activity has been assessed.

Material and Methods: The activity of acetylcholinesterase enzyme was measured using Ellman\'s method at different concentrations of substrate, then the enzyme activity plot was drawn and Km and Vmax parameters were determined. At the next step, at constant concentration of substrate, the enzyme activity was measured in the presence of various concentrations of acridine derivatives and neostigmine (a well-known acetylcholinesterase inhibitor) and then the half maximal inhibitory concentration (IC50) of each compound was calculated.

Results: Comparing the IC50 values of acridine derivatives with neostigmine IC50 showed all eight acridine compounds have the ability to inhibit the acetylcholinesterase activity, but one of them is a powerful inhibitor of the enzyme.

Conclusion: These novel synthetic acridine derivatives can inhibit the acetylcholinesterase activity and one of the compounds has a potential to use as a drug to treat Alzheimer's disease. It is clear that additional studies should be conducted on this compound to give a definite opinion.

Keywords: Alzheimer's disease, Cholinergic hypothesis, Acetylcholine, Acetylcholinesterase inhibitor, Acridine derivative

Corresponding author Email address: safalotfi@ut.ac.ir

ID:629

Investigation of interaction of Receptor for Advanced Glycation End products with HMGB1 protein using HADDOCK

Safa Lotfi[1]

[1] Department of Biotechnology, Institute of Science and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran

Objective: Receptor for Advanced Glycation End products (RAGE) is a cell surface receptor belonging to the immunoglobulin superfamily. The extracellular domain of RAGE which itself consists of three domains (V, C1, C2) is capable of binding to various biological ligands. One of the RAGE ligands is HMGB1 protein which interacts with RAGE through its B-box domain. HMGB1 is a non-histone chromosomal protein that can act as a signaling molecule after releasing from the cell and binding to the cell surface receptors like RAGE. Simultaneous increased expression of HMGB1 and RAGE directly affects the growth and metastasis of various types of tumors. In the present work, interaction of RAGE extracellular domain and HMGB1 B-box was investigated using HADDOCK webserver.

Material and Methods: At first the 3D structure of HMGB1 B-box was determined by I-TASSER web server and the best model was selected for the interaction study. Then the interaction of RAGE extracellular domain (PDB entry 4LP5) and the B-box was studied using HADDOCK. The results obtained were analyzed by Chimera and LigPlot softwares.

Results: The results showed RAGE interacts with HMGB1 through its V domain. The LigPlot data showed Glu59, Glu62, Lys63, Arg69, Glu85, Lys86, Lys91, Tyr61, Lys78, Ala76, Ala77, Lys83, Glu51 from HMGB1 protein and Lys110, Gln100, Lys52, Glu50, Leu64, Gln92, Glu94, Arg179, Thr177, Trp61, Glu59, Glu182, Pro181 and Gly20 from RAGE receptor participate in the protein-protein interaction.

Conclusion: Considering that the role of HMGB1-RAGE interaction in cancer metastasis, the results obtained the work can be useful to design new anticancer drugs.

Keywords: RAGE receptor, HMGB1 protein, HADDOCK, Cancer, Metastasis

Corresponding author Email address: safalotfi@ut.ac.ir

ID:630

Cytoprotective and antioxidant effects of hydroalcoholic extract of Otostegia persica (Burm.) Boiss. against H2O2-induced oxidative stress in human endothelial cells

Leila Safaeian[1], Shaghayegh Haghjooy Javanmard[2], Nasrollah Ghasemi-Dehkordi[3], Samaneh Yaghoobi[1]

[1] Department of Pharmacology and Toxicology, School of Pharmacy and Phaemaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Applied Physiology Research Center, Cardiovascular Research Institute, Isfahan University of Medical Sciences

[3] Department of Pharmacognosy, Isfahan University of Medical Sciences

Objective: Otostegia persica (Burm.) Boiss. is an endemic plant of Iran with various applications in traditional medicine and consisting of several antioxidant constituents. Supplementation with herbal antioxidants has been associated with reduction in the risk of cardiovascular diseases. This research aimed to investigate the effect of hydroalcoholic extract from aerial parts of O. persica in human umbilical vein endothelial cells (HUVECs) against hydrogen peroxide (H2O2) as an inducer of oxidative damage in vasculature.

Material and Methods: The total phenolic content of the extract was estimated using Folin-Ciocalteu method. The probable cytotoxicity of O. persica extract on HUVECs after 24 h incubation and also its cytoprotective effect against oxidative stress induced by H2O2 (0.5 mM for 2 h) was assessed using 3-(4, 5- Dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. The intra and extra-cellular hydroperoxides concentration and ferric reducing antioxidant power (FRAP) were determined in pretreated cells.

Results: Total phenolic content was estimated as 42.41 + 0.1 mg tanic acid equivalent/g of the dried extract. No cytotoxic effect was observed from O. persica extract at the range of 25-250 µg/ml. Pretreatment of HUVECs with plant extract at the concentrations of 50-250 µg/ml significantly reduced the cytotoxic effect of H2O2. O. persica extract attenuated the concentration of hydroperoxides and increased FRAP value in intra- and extra-cellular fluids at different concentration ranges.

Conclusion: This study indicated the antioxidant and cytoprotective activities of O. persica extract against H2O2-induced oxidative stress in HUVECs. However more researches are required for finding its precise mechanism and assessing its clinical value for preventing and treatment of cardiovascular diseases.

Keywords: Otostegia persica, HUVECs, Oxidative stress, Antioxidants

Corresponding author Email address: leila_safaeian@pharm.mui.ac.ir

ID: 633

The level of catecholamine metabolite in urine of hypertensive patients

Boshra Haghi[1], Sanaz Salar Amoli[1], Marie Saghaeian Jazi[2], Hamidreza Joshaghani[3], Nasser Behnampour[4]
[1] Department of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran
[2] Department of Molecular Medicine, Golestan University of Medical Sciences, Gorgan, Iran
[3] Department of Public Health, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran
[4] Department of Biostatistics, Faculty of Public Health, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Hypertension is defined as increased blood pressure of the arteries. It has been reported that in hypertension condition, levels of the epinephrine and norepinephrine secretion is increased. Measurement of these metabolites including Vanillylmandelic acid (VMA), Metanephrine (MN), Normetanephrine (NMN) in urine can be considered as a non-invasive method for monitoring different diseases such as cardiovascular complications. The aim of this study was to compare these metabolites levels in urine of the hypertensive patients according the gender.

Material and Methods: The 24H urine samples from hypertension patients (number=51, female=30 and male=21; aged of mean=40.49□2.32) was collected. All the individuals had systolic blood pressure level higher than 140 mmHg. The uVMA was measure with HPLC and for detection of the uMN and uNMN ELISA was used. The measured variables were compared with the normal range defined by the kit supplier. For statistical analysis, SPSS v25 was used.

Results: Our findings indicated that the mean levels of the Catecholamine metabolite in urine (uVMA=5.2□0.45, MN=157□21 and NMN=300□34) are in normal range. The level of the uNMN and uVMA was more in male (mean-difference= 27.68 and 1.62 respectively), however the female showed higher level of the uNMN (mean-difference=12.12, p value=0.01). We observed a significant correlation between uNMN and uMN (RS=0.624, P<;0.0001), but there was no correlation between VMA and other metabolites.

Conclusion: Altogether our findings suggest that urinary Catecholamine metabolites can be associated with gender in hypertensive individuals.

Keywords: hypertension, Catecholamine metabolites, Urine

Corresponding author Email address: boshra.haqi1994@gmail.com

ID:635

Evaluation of BAALC gene expression in normal cytogenetic acute myeloid leukemia patients in north-east of Iran

Elham Mahmoudi[1], Seyyede Fatemeh Shams[1], Mojgan Amirpour[1], Hossein Ayatollahi[1], Maryam Sheikhi[1], Somaye Azarkerdar[1]

[1] Cancer Molecular Pathology Research Center, Department of Hematology and Blood Bank, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Acute myeloid leukemia (AML) is known as one of the most common leukemia among adults. Environmental and different genetic factors affect disease process, prognosis and treatment. Among different genetic factors NPM1, FLT3, MLL and BAALC genes are the most effective on patient's survival rate. The aim of this study was to assess amount of BAALC gene expression in AML patients, and its relation to survival rate.

Material and Methods: In this case-control study, from all 94 individuals referred to Ghaem Medical Center during 2012-2015, 47 cases were normal cytogenetic AML and others were healthy individuals that were studied as control group. Real-time PCR method was applied for gene expression evaluation. Other information of patients was extracted from medical documents. SPSS v.21 was used for data processing.

Results: Mean age of studied cases was 31.50 years. The most of BAALC gene expression was seen in M1 and M2 subtypes, and the less was in M5. A significant relation was found between amount of gene expression and patient\'s survival rate.

Conclusion: BAALC gene expression was increased significantly in AML cases. BAALC expression had reverse relation with patients' survival rate in North-East of Iran.

Keywords: Acute myeloid leukemia, Survival rate, Prognosisampus

Corresponding author Email address: MahmoudiE951@mums.ac.ir

ID:636

Serum T3, T4 and TSH levels in healthy Individuals belonging to an ethnic community living in Golestan province

Sanaz Salar Amoli[1], Hassan Mohajery[2]

[1] Department of Medical Laboratory Sciences, Golestan University of Medical Sciences, Gorgan, Iran
[2] Department of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran

Objective: The role of Thyroid hormones in regulating systemic human physiology is completely clear. It is known that thyroid hormones have specific regulatory effects on puberty and reproduction and etc. Iodine trace element is essential in thyroid hormones (T3, T4) synthesis. Golestan province Population is more susceptible to get excessive iodine, thus in this population thyroid functions may modified. So people of such regions are vulnerable to health disorders. The aim of the present study is to determine the Serum T3, T4 and TSH levels in healthy Individuals belonging to an ethnic community living in Golestan province.

Material and Methods: Blood samples of 40 individuals living in a city of Golestan province and 40 individuals in other cities were drawn for biochemical tests and thyroid hormones level (T3, T4 and TSH) were evaluated.

Results: Means of normal control population range for TSH, T3, and T4 was 2.35, 1.61 and 9.17, respectively. On the other hand means of normal range of thyroid hormones for our case subjects was about 3.02 for TSH, 1.76 and 11.43 for T3 and T4. So in comparison of two case and control groups, means of thyroid hormones for who are living in our intended ethnic was noticeably higher than our control group. (P<;0.005)

Conclusion: According to Excessive iodine in water in this place, means of thyroid hormones are almost higher than other cities and they are more susceptible to hyperthyroidism.

Keywords: TSH, T3, T4

Corresponding author Email address: sanaz_salar_71@yahoo.com

ID:637

Association of high expression levels of SOX2, NANOG and OCT4 in gastric cancer tumor tissues with progression and poor prognosis

Gholam Basati[1], Hadiseh Mohammadpour[2], Amirnader Emami Razavi[2]

[1] Biotechnology and Medicinal Plants Research Center, Ilam University of Medical Sciences, Ilam, Iran

[2] Cancer Research Center, Cancer Institute of Iran, Tehran University of Medical Sciences, Tehran, Iran

Objective: Expression of the essential regulator genes, SOX2, NANOG and OCT4, so called as stemness factors, are prerequisite for the tumorigenic capability of cancer stem cells (CSC) and their potential role in the formation and progression of various human cancers. This study explored the expression and prognostic effect of these genes in gastric cancer patients by a quantitative real-time PCR (qRT-PCR) approach.

Material and Methods: In this study, the expression levels of SOX2, NANOG and OCT4 were quantified by a qRT-PCR method in 100 gastric cancer tumor tissues versus the paired adjacent normal tissues. Then, the relationship between the expression of the three genes in gastric cancer tumor tissues and the clinicopathological characteristics and overall survival of patients were investigated.

Results: Higher expression levels of SOX2, NANOG and OCT4 were found in gastric cancer tumor tissues compared with those in paired adjacent normal tissues (P=0.000). Overexpression of the mentioned genes in gastric cancer tumor tissues was resolved to be significantly associated with tumor size (P<;0.05), TNM stage (P=0.001), tumor grade (P<;0.01) and shortened overall survival time (P=0.0001).

Conclusion: These findings indicted that the stemness factors SOX2, NANOG and OCT4 are significantly overexpressed in gastric cancer and may serve as potential biomarkers of gastric cancer progression and prognosis.

Keywords: Gastric cancer, SOX2, NANOG, OCT4, Tumor tissue

Corresponding author Email address: basati-gh@medilam.ac.ir

ID:638

Apoptosis induction and targeting AMPK by Britannin in human breast cancer

Marzieh Moeinifar [1], Faranak Fallahian[2], Mohammad Taghikhani[1]

[1] Department of Clinical Biochemistry, Tarbiat Modares University, Tehran, Iran

[2] Department of Cellular and Molecular Biology, Qom University of Medical Sciences, Qom, Iran

Objective: Nowadays, there is an urgent need for novel drugs with improved efficiency against tumor cells. Of note, induction of cell death pathways with regard to molecular targets is considered as a promising treatment method in cancerous cells. AMP-activated protein kinase (AMPK) which is involved in suppression of cell growth and induction of apoptosis, is emerged as an attractive target molecule for cancer treatment. Recently, naturally derived products such as Britannin had drawn growing attention as an agent in cancer therapy.

Material and Methods: Britannin was extracted from Inula aucheriana by using chromatography methods. human breast cancer cell line (MCF-7) and normal breast cancer cell line (MCF10A) were applied To investigation of anticancer properties of Britannin. Cytotoxic effects of Britannin were examined by MTT assay. Apoptosis induction was evaluated by flowcytometry and also, activity of caspase3 was assessed by colorimetric assay. Furthermore, intracellular changes in protein expression of Bax, Bcl2 and AMPK were analyzed by western blotting method.

Results: The viability of MCF-7 and MCF10A cells inhibited after 24h treatment by Britannin with the IC50 values 15±2.3µM and 80±5.4µM, respectively. Apoptosis induction in MCF-7 cells was confirmed by annexin V-FITC/PI staining and caspase3 activation. In addition, Britannin decreased the expression of Bcl2 (anti-apoptotic protein) and increased the expression of Bax (pro-apoptotic protein) in MCF-7 cells. Moreover, Britannin increased phosphorylated active form of AMPK in MCF-7 cells.

Conclusion: Taken together, the data shows that the cytotoxic effect of Britannin on the cancerous cells is significantly higher than on normal cells. Furthermore, results demonstrate Britannin induces mitochondrial-apoptosis through activation of AMPK in breast cancer cells and may potentially serve as an adjuvant agent for the treatment of human breast cancer.

Keywords: Apoptosis, Breast cancer, Britannin, AMPK

Corresponding author Email address: marzieh.moeinifard@modares.ac.ir

ID:639

Effect of oral contraceptives on cancer susceptibility

Fatemeh Zal[1], Zohreh Mostafavipour[1], Mostafa Moradi Sarabi[2]

[1] Biochemistry Depatment, Medical School, Shiraz University of Medical Sciences, Shiraz, Iran

[2] Biochemistry and Genetics Department, Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

Objectivep: Oral contraceptives (OCs) are exogenous synthetic sex hormones that used primarily to inhibit pregnancy through disrupt endogenous endocrine function. The association between OCs use and cancer risk is a key challenge in public health and has been controversial.

Material and Methods: To evaluate the effect of OCs in cancer susceptibility, in our first study, plasma glutathione peroxidase (GPx) and glutathione reductase (GR) activities and malondialdehyde (MDA) level as oxidant and antioxidant markers were determinedin OCs user women and compared with control non users. In other study we quantified the amount of global 5-methyl cytosine (5-mC) levels and the methylation patterns of CpG islands of two key tumor suppressor gene including APC1 and ESR1 in serum of OCs users by enzyme-linked immunosorbent assay and methylation specific PCR methods, respectively.

Results: Our results indicated that OCs significantly increased oxidative stress and decreased antioxidant defense and also showed significant decrease in the level of global DNA methylation in OCs users relative to control non users. However, our data showed that there were no significant differences between CpG island methylation pattern in the healthy control and oral contraceptive treated women for ESR1 and APC1. Although, we found a trend for hypermethylation of APC1 and ESR1 in OCs users.

Conclusion: These data suggest that OCs, by enhancing the stress oxidative and methylation of some tumor suppressive promoters and reducing global DNA methylation, may represent a potential risk factor for cancer susceptibility.

Keywords: oral contraceptives, cancer susceptibility, antioxidant markers, methylation

Corresponding author Email address: fatemehzal@yahoo.com

ID:640

Novel drugs Development for testicular cancer based on in-silico assay of dsNZ-1-PE38KDEL

Mohammad Hossein Shabahanhg[1], Fatemeh Khademolhoseini[1], Nazanin Gholampour-Faroji[2], Aliakbar Haddad-Mashadrizeh[3], Ali Eshaghi[4]

[1] Pharmaceutical Research Group, Khayyam Bioeconomy Institute, Mashhad, Iran

[2] Structural biology and Bioinformatics Research Group, Khayyam Bioeconomy Institute (KBI), Mashhad, Iran

[3] Cell and Molecular Biotechnology Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

4 Department of Biology, Islamic Azad University, Khorasan Razavi, Mashhad, Iran

Objective: Immunotoxins as smart drugs in cancer therapy, tracking malignant cells via its affinity to cell surface specific antigens. However, these types of drugs are facing to challenges such as immunogenicity, persistence and tumor uptake. So, structural and functional characterization of these drugs could be provide opportunities for optimization, which is considered in this study about dsNZ-1-PE38KDEL based on in-silico analysis.

Material and Methods: Accordingly, NCBI, Uniprot and PDB were subjected for achievement to the sequence and structures of proteins. Modeller software was used for antigen modeling as well as fragments assembling of drug. ERRAT, Verify 3D and RAMPAGE were employed to determine the structural quality of protein. Moreover, assessment the stability of drug was performed by Gromacs via Gromos force field at 310 K during 20 ns. Meanwhile, immunogenicity features of drug was evaluated via IEDB. Finally, affinity assay of drug to the corresponding antigens was carried out by HADDOCK and visualized via PYMOL programs.

Results: Molecular investigation of the sequence of dsNZ-1-PE38KDEL has led to illustrate the presence of NZP-1 monoclonal antibody and modified toxin of exotoxin A of the Pseudomonas in the context of drug. PDPN antigen were identified as target of this drug. Expression assay of this antigen led to presence of it at high level on the surface of a broad range of cells such as Brain, Mesothelial, testis, ovarian, stomach, and cervix tissues. Fragments assembling provide a model of drug with 691 amino acid in the length and stable in the physiological like condition. Moreover, affinity of this drug to PDPN antigen showed significantly difference related to other antigens.

Conclusion: In general, the results of this study led to presentation an optimal model of dsNZ-1-PE38KDEL immunotoxin, which can be used in experimental state. Moreover, this model provide opportunity for its optimization, which are considered in our group.

Keywords: Cancer, intelligent drugs, Toxin, Ligand, Immunotoxin

Corresponding author Email address: nazanin.gholampoor@yahoo.com

ID:641

Purification and Characterization of Cellulase from Caspian Sea Gammarous

Houman Maftoon[1], Fatemeh Tohidi[1], Kasra Kamali[1], Ali Taravati[1]
[1] Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran

Objective: In recent years the interest in cellulases has increased due to the many potential applications for these enzymes in various industries including textile, laundry, food, pulp and paper industry. So, significant attentions have been devoted to the different organism for purification of cellulases with different properties.
For this purpose, cellulase was purified from Caspian Sea Gammarous and its activity were determined using carboxymethyl cellulose (CMC) as a substrate.

Material and Methods: A portion of Gammarous hemoganate was concentrated by precipitation with ammonium sulfate at 60% and 90% saturation. Then, the fraction percipiteted with 60% of ammonium sulfate were applied to DEAE Sepharose columns, equilibrated with 50 mM tris buffer, pH 8 and eluting by same buffer with a salt gradient.

Results: Cellulase was purified 3.53 fold with specific activity of 90 U/mg in comparison to crude enzyme extract using ammonium sulfate precipitation. With the analysis of SDS–PAGE, the molecular weight of the purified cellulase was estimated to be 54 kDa.

Conclusion: It is concluded that this enzyme have great potential for use in cellulose biodegradation technologies.

Keywords: Gammarous; Gammarous; Cellulase; Purification; DEAE Sepharose columns
Corresponding author Email address: houman1376maf@gmail.com

ID:642

Synthesis of carboxyl functionalized chitosan magnetic nanoparticles as carriers for biotechnological application

Houman Maftoon[1], Ali Taravati&amp[1], Fatemeh Tohidi[1]
[1] Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran

Objective: Chitosan is a natural linear polysaccharide with special physicochemical, biological and chemical properties which it has been widely used in many industrial and biomedical fields. Magnetic Fe3O4 nanoparticles coated with chitosan functionalized with carboxyl group were prepared by means of the co-precipitation method.

Material and Methods: The magnetic carboxylated chitosan nanoparticles were prepared by grafting of alpha-ketoglutaric acid onto the surface of chitosan magnetic Fe3O4 nanoparticles. The chemical structures and formation of the magnetic nanoparticles was confirmed by UV–vis absorption spectroscopy and Fourier transform infrared (FTIR) spectroscopy.

Results: Results of present study indicated that carboxylated chitosan was successfully coated on the Fe3O4 surfaces. The prepared magnetic carboxylated chitosan was stable in solution and could be easily collected with the aid of an external magnet.

Conclusion: The results presented in this study show that magnetic carboxylated chitosan nanoparticles should be suitable as nanomagnetic matrix for various application such as delivery and enzyme immobilization.

Keywords: Chitosan; Magnetic Nanoparticle; Functionalization

Corresponding author Email address: houman1376maf@gmail.com

ID:643

SOX2OT stable knock down enhances chemo-toxicity to Cytarabine in cancer cells

Marie Saghaeian Jazi[1], Lorena Zentilin[2], Saeed Mohammadi[3], Nader Mansour Samaei[3]

[1] Biochemistry and metabolic disorders research center, Golestan University of Medical Sciences, Gorgan, Iran

[2] International Centre for Genetic Engineering and Biotechnology (ICGEB), Padriciano, Trieste, Italy

[3] Stem cell research center, Golestan University of Medical Sciences, Gorgan, Iran

Objective: SOX2 Overlapping transcript (SOX2OT) is a long non-coding RNA overexpressed in tumor tissues. SOX2OT encompasses SOX2 gene, master regulator of stemness and both are transcribed in same direction. Since the discovery of SOX2OT in 2003, its function has been studied in different contexts of stem cell biology and carcinogenesis; however, its mechanism of action is not clearly defined yet. Regarding the overexpression of SOX2OT in tumors of different origins (Breast, Lung and liver) and the previously reported function of SOX2 in drug resistance, here we aimed to explore the chemo-toxicity of two common nucleoside analogues (Cytarabine and 5-fluorouracil) in SOX2OT knocked down cancer cells of Glioblastoma (U87-MG) and teratocarcinoma (NTERA-2).

Material and Methods: U87-MG and Ntera-2 cancer cell lines were transduced with SOX2OT-shRNA or control-shRNA expressing lentivirus and the stable cells were selected by puromycin marker. The derived cells: SNT2, LNT2, SU87 and LU87 were treated with different concentrations of Cytarabine and 5-fluorouracil for 48 hours in complete culture medium. The NT2 (NTERA-2) and U87-MG cells were also treated as controls. The cell viability was measured with MTT assay. The results were analyzed with GraphPad Prism v.7 software.

Results: Cell viability of SNT2 cells treated with Cytarabine at different concentrations was significantly lower than NT2 cells (p value<;0.001, ~36% decline in 0.8 µg/ml); however, chemo toxicity in U87-MG cells was achieved at higher drug concentrations with less significant difference between SOX2OT knocked down cells and control (p value<;0.01, ~15% decline in 1.2 µg/ml). Similarly, 5-flurouracil treatment killed SOX2OT knocked down cells less efficiently in comparison to control (U87-MG: p value<;0.01, ~10% increased viability in 5 µg/ml And NT2: p value>0.05, ~5% increased viability in 1 µg/ml).

Conclusion: Our findings suggests that SOX2OT knockdown can potentially improve the Cytarabine chemotherapy outcome in brain and teratocarcinoma cancer cell lines.

Keywords: SOX2OT, Cytarabine, 5-fluorouracil, Cell viability

Corresponding author Email address: lorena.zentilin@icgeb.org

ID:645

Enhancement of Thermostability of Photinus pyralis Luciferase by a site directed mutagenesis

Mojtaba Mortazavi[1], Farzane Kargar[2], Masoud Torkzadeh Mahani[2], Shahryar Shakeri[2], Safa Lotfi[2]
[1] Department of Biotechnology, Environmental Research Center, Institute of Advanced Science and Technology and Environmental Sciences, Kerman Graduate University of advanced technology and industrial
[2] Graduate university of advanced technology and industrial

Objective: Firefly luciferase is a monomeric enzyme of 62 kD. In the presence of Mg 2+, ATP an O2, the enzyme oxidizes the luciferin and produces yellow-green light. The best-known bioluminescent organism is the North American firefly, Photinus pyralis, which emits in flashes. Firefly luciferase enzyme is a single polypeptide chain which produces light by oxidative decarboxylation of luciferin. The crystal structure of P. Pyralis luciferase was shown, which has 550 amino acids.
Material and Methods: Because of the arginine saturation effects on thermostability of firefly luciferase by loop anchoring, some of hydrophobic solvent-exposed residues in the P. Pyralis luciferase were evaluated bioinformatically in order to change to arginine. Finally, the Ile 108 residue was selected and mutated to Arg in the Photinus pyralis luciferase, using Quick Change site-specific insertion mutagenesis. The mutant plasmids were amplified using PrimeSTAR HS DNA polymerase and finally, primary PCR products were purified using a clean-up kit. The products were treated with DpnI. After this, the clean-up product was used to directly transform into competent E. coli BL21 cells.
Results and Conclusion: Creating single mutation and replacing the amino acid, may leads to changes in the kinetics and structural properties of luciferase enzyme. Some bioinformatics simulation will be used to evaluate the effect of mentioned substitution.

Keywords: Photinus pyralis luciferase, bioluminescence, PrimeSTAR, SDM

Corresponding author Email address: mortezavimm@gmail.com

ID:646

In silico evaluation structure of 1,4 –alpha -D-glucano-transferase enzyme in the Neisseria bacteria for clinical application

Farzane Kargar[1], Mojtaba Mortazavi[2], Masoud Torkzadeh Mahani[2], Hossein Asadi[2], Younes ghasemi[3], Kiarash Jamshidi Goharrizi[4]

[1] MSc Student, Institute of Science and High Technology and Environmental Sciences, Graduate university of advanced technology and industrial

[2] Assistant Professor, Biochemistry, Department of Biotechnology, Environmental Research Center, Institute of Advanced Science and Technology and Environmental Sciences, Kerman Graduate University of advanced technology and industrial,

[3] Department of Pharmaceutical, Biotechnology, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran.

[4] Department of Plant Breeding, Yazd Branch, Islamic Azad University, Yazd, Iran.

Objective: The 1, 4-alpha-glucan branching protein GlgB is an enzyme which has the important role in the glycogen biosynthesis pathway. The deficiency in this enzyme resulted in Glycogen storage disease and resulting in the accumulation of an amylopectin-like polysaccharide and glycogen storage diseases. Consequently, the 1,4-alpha-glucan branching protein GlgB was considered as a special topic in the clinical and biotechnological research as industrially synthesis of highly branched cyclic dextrin and synthetic glucan. One of the newly introduced 1,4-alpha-glucan branching protein GlgB belongs to the Neisseria sp. HMSC071A01that is referred to RefSeq (WP_049335546). For better evaluation of this enzyme, the comprehensive studies were conducted on the modeling structure of this enzyme by using the bioinformatics software.

Material and Methods: In this study, the important characteristics of the 1, 4 alpha glucan branching enzyme in the Neisseria sp. HMSC071A01 were evaluated as the 2D and 3D structure, functional properties, metabolic pathway, activity and phylogenetic tree. For this purpose, by use of the sequence of 1,4 alpha glucan branching enzyme from the NCBI, the 3D molecular modeling of this enzyme was conducted in the I-TASSAR web server. In the following, its metabolic pathway and activity were investigated by using the TargetP software. Additionally, the phylogenetic tree and the secondary structure of this enzyme was evaluated by Mafft and online Prabi softwares, respectively. By drawing the phylogenetic tree, the closest species to the Neisseria sp. HMSC071A01was the taxonomic group of Betaproteobacteria (WP_004519500.1)

Results: The results showed that the structure of 1, 4 alpha glucan branching enzyme has the 34.45% of alpha helix and 45.45% of the random coil. Our analysis predicted that this enzyme has a potential signal peptide in the protein sequence which can be involved in enzyme secretion pathway.

Conclusion: By these analyses, a comprehensive view of the sequence and structure of this enzyme was created and our findings can be used in some fields of the clinical and industrial biotechnology.

Keywords: Neisseria, molecular modelling, phylogenetic tree, bioinformatics

Corresponding author Email address: mortezavimm@gmail.com

ID:647

Evaluate the effects of Carnosic acid on iL-1β gene expression in LPS-activated synoviocytes

Mehranoush Saffarpour[1], Azadeh Rasooli[1]
[1] Pharmaceutical sciences-Payame- Noor University-Tehran shargh

***Objective*:** Osteoarthritis (OA) is a major cause of disability in the adult population. As a progressive degenerative joint disorder, OA is characterized by cartilage damage, changes in the subchondral bone and inflammation of the synovium tissue and tendon. Non-pharmacologic agents modulating pro-inflammatory mediator expression offer considerable promise as safe and effective treatments for OA. The aim of this study was to evaluate the effects of Carnosic acid (CA) on iL-1β gene expression in synoviocytes.

***Material and Methods*:** To determine the dose response of CA, synoviocytes (5 × 105 cells/well) were incubated at 5% CO2, 37ºC for 72 h with (1) control media alone or (2) CA at concentrations of 0.01, 0.09, 0.1,0.9, 1, 9, 10 and 90 mg/ml. Synoviocytes were treated with LPS (20 ng/ml) for 1h and iL-1β mRNA were measured by both reverse-transcriptase PCR and Real-time PCR.

***Results*:** CA reduced iL-1β, expression in LPS-activated synoviocytes to levels similar to nonactivated control levels. Cells activated with 20 ng/ml LPS showed a significant upregulation of iL-1β expression. In activated synoviocytes cells pretreated with CA, iL-1β was reduced by 42/48% when compared to activated control cells.

***Conclusion*:** This study demonstrates that CA acts as a potent inhibitor of iL-1β. Previous research has shown that these mediators are important in the pathogenesis of OA and the reduction in these mediators has been associated with amelioration of cartilage breakdown.

***Keywords*:** Osteoarthritis, Carnosic acid, iL-1β, Synoviocyte

Corresponding author Email address: mehranoush47@gmail.com

ID:648

Relationship of tissue DNA lesion (8-OHdG) with serum antioxidant activity in Iranian patients diagnosed with high-grade oral squamous cell carcinoma

Azin Hamidavi[1], Abdolamir Allameh[1], Iraj Harirchi[2], Abdolkarim Moazeni-roodi[2]
[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, I.R. IranPOB
[2] Cancer Research Center, Cancer Institute of Iran, Tehran University of Medical Sciences, Tehran, I.R. Iran

***Objective*:** Oral squamous cell carcinoma (OSCC) is strongly associated with oxidative damage and oxidative stress. Tobacco and alcohol consumption are important etiological factors for this cancer and sources of reactive oxygen species (ROS). The extent of oxidative DNA damage could be related with antioxidant factors. In this study, changes in serum total antioxidant status was determined in relation to DNA lesion (8-OHdG) levels in tumor biopsies from Iranian patients diagnosed with OSCC.

Material and Methods: Samples from patients (n=40) comprising of 80% pathologically well differentiated and moderately differentiated and 20% poorly differentiate tumors were collected Blood samples and gingival biopsies (n=35) from normal individuals were also processed and considered as control. Plasma total antioxidant capacity (TAC) was estimated using FRAP assay. Tissue biopsies were processed for DNA samples were isolated for estimation of 8-OHdG levels using ELISA.

***Results*:** Results showed that the plasma TAC in OSCC patients was significantly depleted (~25%; P<;0.05) compared to normal individuals. The 8-OHdG formation in DNA showed that in DNA isolated from tumors was increased (4-5 folds; P=0.03) compared to normal samples. A significant decline in plasma TAC in one-third of OSCC patients was well correlated with DNA damage factor.

***Conclusion*:** Overall results suggest that oxidative DNA damage is an important index of OSCC(r=0.8; P=0.001). Attenuation of TAC in these patients clearly show the protective role antioxidant factors in DNA damage-repair system and causation of OSCC

***Keywords*:** DNA damage, Antioxidant factors, Oral squamous cell carcinoma(scc), Tissue DNA lesion (8-OHdG),

Corresponding author Email address: azihamidaviasl@yahoo.com

ID:649

Considering the effect of sepsis on MPO gene expression in some tissues in CLP rats

Azadeh Rasooli[1], Mehranoush Saffarpour[1], Saba Miri[2]
[1] Department of Biochemistry, Payame-e-Noor University, Tehran, Iran
[2] Department of Biotechnology, Alzahra University, Tehran, Iran

***Objective*:** Sepsis is a systemic reaction to invasive microorganisms, including bacteria and fungi, and is one of the most common causes of mortality among over the counter patients all over world.
MPO is one of the formation of ROS (Reactive oxygen species) and oxidation of biological substances. So, in this study the effect of sepsis was investigated through considering myeloperoxidase (MPO) gene expression in whole blood, liver and lung tissues in experimental cecal ligation and puncture (CLP) rat model.
***Material and Methods*:** The female Wistar rats were grouped as follows: Control, laparotomy (LAP) and CLP groups. 24h after CLP, gene expression of MPO was determined by real-time PCR. A used method to present relative gene expression is the comparative CT method also referred to as the 2-ΔΔCT method. Also, for result validation, MPO activity was determined by ELISA method.
***Results*:** The data indicated that gene expression of MPO was increased in sepsis. Also, the results of ELISA analysis proved that MPO level was significantly increased in all targeted tissues in the CLP group ($P<0.05$).
***Conclusion*:** Our results showed that the MPO level as inflammatory enzyme may be a novel biomarkers for sepsis in all organs.

***Keywords*:** Gene expression, CLP, Inflammatory enzyme, Sepsis

Corresponding author Email address: a.rasouli_57@yahoo.com

ID:651

Diosignin with an anti-obesity effect similar to orlistat, a promising candidate for management and treatment of obesity

Maryam Mohammad Sadeghi-pour[1], Mehdi Mahmoodi[1, 2], Mohammad Reza Hajizadeh[1,2]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[2] Molecular Medicine Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: The obesity is a chronic disease. as a result of imbalance between energy intake and energy consumption. The prevalence of obesity is on the rise throughout the world every year. overweight and obesity are one of the most important causes of disease and mortality that can be prevented. one of the medicines for the treatment of obesity is Orlistat (ORL), which, it also has an untoward effect on the gastrointestinal tract (steatorrhea). Herbal remedies can be a suitable alternative to chemical drugs. Diosgenin is a bioactive steroidal saponin in the fenugreek, The Diosgenin is lipid-lowering, anti-diabetes, anti-cancer and anti-oxidative stress agent.

Material and Methods: Sw480 cells were cultured in RPMI1640 medium. The cells were treated for 24 and 48 hours with the Diosignin and Orlistat. IC50 was calculated using MTT method. The cells were then pre-treated with the IC20 concentrations for 24 and 48 hours before extracting RNA and synthesis cDNA. the gene expression of ACC and FAS was evaluated by Real Time PCR method

Results: The sesults showed that the mRNA expression level of ACC (P=0/001) and FAS (P=0/024) in the SW480 cell line decreased significantly after 24 and 48 hours of treatment with diosignin and orlistat

Conclusion: The Results of this study showed that the diosgenin, up-/down-regulated significantly the expression of ACC and FAS, similar to orlistat. So it can be suggested that it can be used as new suggestion with less side effect in the treatment of obesity.

Keywords: Diosgenin, Orlistat, obesity

Corresponding author Email address: hajizadehus@yahoo.com

ID:652

A meta-analysis of circulating visfatin levels and cancer risk

Hassan Mehrad-Majd[1], Masoumeh Mohammadi[2]

[1] Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran

[2] Cellular and Molecular Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Lack of specific biomarkers is one of the main challenges in early detection of cancers. Aberrant expression of visfatin as a pro-inflammatory adipocytokine, has been reported to associate with risk of many types of cancers. However, epidemiological studies are controversial. Some studies showed that increased visfatin levels were associated with cancer risk. Therefore, we performed a meta-analysis to assess the association between circulating visfatin levels and cancer risk.

Material and Methods: An electronic literature search of Medline, EMBASE, Scopus, and Cochrane Library was conducted to identify all relevant studies involving circulating visfatin and malignancies up to March 2018. Data related to Standard mean differences (SMDs) with 95% confidence intervals (95% CIs) were collected and pooled using a random-effect model. Egger's linear regression test were conducted to examine the risk of publication bias.

Results: The analysis included twenty seven studies with 2693 cases and 3040 healthy controls that met the study criteria and described the relationship between circulating visfatin levels and cancer risk. A total of 27 studies were included in meta-analysis for pooling SMD analysis. The Results: of the meta-analysis showed a significant higher visfatin levels in patients with various cancers, with a pooled SMD of 0.88 ug/ml, (95% CI = 0.56-1.20, P=0.000). Further, subgroup, meta-regression, and sensitivity analysis also did not change the obtained results. No evidence of publication bias was also observed for pooling SMD analysis.

Conclusion: This meta-Results: collectively suggest that high circulating visfatin levels are associated with a higher risk of various cancers. However, further well designed studies are needed to confirm the role of visfatin as a potential biomarker for early detection of cancers.

Keywords: Visfatin, Cancer, circulating level, Meta-analysis

Corresponding author Email address: mehradmajd.h@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:654

Association between the FokI and ApaI polymorphisms in the vitamin D receptor gene and susceptibility to Behcet's disease: A systematic review and meta-analysis

Hassan Mehrad-Majd[1], Samira Tabaei[2], Zahra Mirfeizi [2]
[1] Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Rheumatic Diseases Research Center, Faculty of medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Vitamin D with its immunomodulatory effect has newly been proposed as an important factor in the pathogenesis of Behcet's disease (BD). This immunomodulatory function is mediated through binding to vitamin D receptor (VDR). Evidence supporting the association of VDR gene polymorphisms and susceptibility to BD has been controversial. We performed a meta-analysis of observational studies to determine if VDR gene variants (FokI and ApaI) confer susceptibility to Behcet's disease.
Material and Methods: An electronic search of Medline, Embase, Cochrane, and Scopus databases was conducted to identify studies that investigated associations of the FokI (rs10735810), and ApaI (rs7975253) polymorphisms of the VDR gene with BD. Pooled odds ratios (OR) with 95% confidence intervals (CI) were estimated to assess the strength of the association in different genetic models.
Results: Six eligible studies comprised 516 controls and 468 cases were included in this meta-analysis. The combined results revealed a significant association between FokI polymorphism and the risk of BD in recessive genetic model (OR=0.37, 95%CI=0.22–0.61). Overall association of A allele of ApaI variant with the risk of BD was found in allelic comparison model (A vs. a: 1.54 95% CI = 1.04–2.26, P = 0.029). This significant relationship were also kept for further subgroup analysis based on ethnicity as well as other genetic models (all $p > 0.05$).
Conclusion: This meta-analysis provided evidence regard the potential effect of FokI and ApaI polymorphisms in VDR gene on susceptibility to Behcet's disease. Further well-designed studies with large sample sizes are needed to confirm the meta-results.

Keywords: Behcet's disease, Vitamin D receptor, Polymorphism, Meta-analysis

Corresponding author Email address: mehradmajd.h@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:656

A meta-analysis of circulating visfatin levels and cancer risk

Hassan Mehrad-Majd[1], Masoumeh Mohammadi [2]

[1] Clinical Research Unit, Mashhad University of Medical Sciences, Mashhad, Iran

[2] Cellular and Molecular Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Lack of specific biomarkers is one of the main challenges in early detection of cancers. Aberrant expression of visfatin as a pro-inflammatory adipocytokine, has been reported to associate with risk of many types of cancers. However, epidemiological studies are controversial. Some studies showed that increased visfatin levels were associated with cancer risk. Therefore, we performed a meta-analysis to assess the association between circulating visfatin levels and cancer risk.

Material and Methods: An electronic literature search of Medline, EMBASE, Scopus, and Cochrane Library was conducted to identify all relevant studies involving circulating visfatin and malignancies up to March 2018. Data related to Standard mean differences (SMDs) with 95% confidence intervals (95% CIs) were collected and pooled using a random-effect model. Egger's linear regression test were conducted to examine the risk of publication bias.

Results: The analysis included twenty seven studies with 2693 cases and 3040 healthy controls that met the study criteria and described the relationship between circulating visfatin levels and cancer risk. A total of 27 studies were included in meta-analysis for pooling SMD analysis. The results of the meta-analysis showed a significant higher visfatin levels in patients with various cancers, with a pooled SMD of 0.88 ug/ml, (95% CI = 0.56-1.20, P=0.000). Further, subgroup, meta-regression, and sensitivity analysis also did not change the obtained results. No evidence of publication bias was also observed for pooling SMD analysis.

Conclusion: This meta-results collectively suggest that high circulating visfatin levels are associated with a higher risk of various cancers. However, further well designed studies are needed to confirm the role of visfatin as a potential biomarker for early detection of cancers.

Keywords: visfatin, Cancer, circulating level, Meta-analysis

Corresponding author Email address: mehradmajd.h@gmail.com

ID:658

Urine Metabolomics Profile Revealed Molecular Signature of Steroid Resistance in Focal Segmental Glomerulosclerosis: A Pilot Study

Shiva Kalantari[1], Mohsen Nafar[1], Saeed Chashmniam[2], Nasrin Boroumandnia[3]

[1] Chronic Kidney Disease Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Department of Chemistry, Sharif University of Technology, Tehran, Iran

[3] Urology-Nephrology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Focal segmental glomerulosclerosis (FSGS) is considered as one of the most severe glomerular diseases and around 80% of cases are resistant to steroid treatment. Since a large proportion of steroid resistant FSGS patients progress to end-stage renal disease (ESRD), and this population may benefit from treatment with other therapeutical strategies before ESRD, identification of non-invasive biomarkers to predict these high risk population is needed. The current work aimed to identify the non-invasive candidate predictive biomarkers to distinguish steroid resistant FSGS patients using metabolomics approach. The important pathways impaired in non-responder patients and identification the possible molecular mechanism of resistance was the alternative aim.

Material and Methods: Urine was collected from more than 50 biopsy proven patients diagnosed with idiopathic FSGS at Shahid Labbafinejad Hospital Medical Center. After evaluation the patients, only 17 FSGS patients were recognized eligible for monotherapy with steroid drug. These patients were treated with prednisolone (1 mg/kg) and followed for 6-8 weeks. Ten and seven patients was categorized as steroid sensitive and steroid resistant respectively based on the level of 24h protein excretion. Metabolomic profile of urine samples were analyzed by one dimensional 1H- nuclear magnetic resonance (1H-NMR). The predictive candidates and their diagnostic importance were determined using statistical analysis. The impaired molecular pathways in resistant patients were identified using pathway analysis and the common target molecules and functional classes between candidates and prednisolone were predicted using bioinformatics analysis.

Results: Homovanillic acid, 4-methylcatechol and tyrosine were suggested as the significant ($P<0.05$) predictive biomarker candidates while L-3,4-dihydroxyphenylalanine (L-DOPA), norepinephrine and gentisic acid had high accuracy (AUC > 0.78) as well. Tyrosine metabolism was the most important pathway that is perturbed in steroid resistant FSGS patients and molecules contributed in apoptosis were the common target of action of candidates and prednisolone.

Conclusion: Our findings demonstrate that metabolomic approach is a valuable technique in biomarker discovery platform and, urine metabolites including homovanillic acid and tyrosine may serve as potential non-invasive predictive biomarkers for evaluation the responsiveness of FSGS patients to steroid therapy. Furthermore, tyrosine metabolism as well as apoptosis pathways are the target of regulations in the future validation studies.

Keywords: Focal segmental glomerulosclerosis, predictive biomarker, prednisolone, steroid resistant, steroid sensitive

Corresponding author Email address: shiva.kalantari@sbmu.ac.ir

ID:659

Decreased Na^+/K^+-ATPase activity and altered susceptibility to peroxidation and lipid composition in the erythrocytes of metabolic syndrome patients with coronary artery disease

Gholamreza Namazi[1]

[1] Department of clinical biochemistry, Faculty of Medicine, Kashan University of Medical Sciences, Kashan, Iran

Objective: The increased generation of reactive oxygen species that occurs in the condition of metabolic syndrome (MetS) may be responsible for the increased oxidative injury to erythrocyte membranes in coronary artery disease (CAD). Therefore, we have looked into the effects of MetS on both indexes of oxidative damage and biochemical properties of erythrocyte membranes in CAD patients.

Material and Methods: We analyzed markers of oxidative stress, Na^+/K^+-ATPase activity, and the total cholesterol content (CEM) and fatty acid compositions of the erythrocyte membrane in 82 patients with stable CAD and 39 non-CAD subjects. The fatty acid composition of the erythrocytes membrane was determined by gas chromatography-mass spectrometry. Lipid peroxides in plasma and membrane samples were measured by a flourimetric method. Plasma total antioxidant status, erythrocyte superoxide dismutase (SOD) activity, Na^+/K^+-ATPase activity and CEM were measured by spectrophotometric methods.

Results: The CAD patients had higher levels of CEM, membrane lipid peroxidation, erythrocytes SOD activity and Na^+/K^+-ATPase activity compared with non-CAD subjects. The Na^+/K^+-ATPase activity was correlated negatively with membrane lipid peroxidation, and positively with the CEM. In CAD patients with MetS compared with those without MetS, we found that the membrane lipid peroxidation and CEM were increased, whereas the n-3 fatty acids content, SOD activity, Na^+/K^+-ATPase activity were decreased.

Conclusion: These findings suggest an impairment of erythrocyte membrane biochemical properties in stable CAD patients as consequence of oxidative injury that may contribute to the development of CAD. In addition, MetS may be related to increased oxidative injury to erythrocyte membranes

Keywords: Coronary artery disease, Metabolic syndrome, Erythrocyte membrane, Oxidative stress, Na^+/K^+-ATPase activity

Corresponding author Email address: namazi-gh@kaums.ac.ir

ID:661

Status of vitamin D deficiency among men and veiled women in northwestern of Iran

Saba Nikanfar[1], Jalil Rashedi[2], Akbar Samadi[3], Nader Mohammad Zadeh[4], Behroz Mahdavi Poor[2], Hossein Bannazadeh Baghi[4], Mohammad Asgharzadeh[5]

[1] Department of Clinical Biochemistry and Laboratory Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Department of Laboratory Science, Tabriz University of Medical Sciences, Tabriz, Iran

[3] Tabriz Children's Hospital, Tabriz University of Medical Sciences, Tabriz, Iran

[4] Department of Microbiology, Tabriz University of Medical Sciences, Tabriz, Iran

[5] Biotechnology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: The starting point of the synthesis of 25-hydroxyvitamin D [25(OH)D] in the body can be activated by 6-10% of skin exposed to the solar UVB radiation. The route of this activation is obstructed in people who cover their whole body, even face, and hands. This study evaluated the severity of D-hypovitaminosis among women and men in different age groups in the northwest of Iran. It also evaluated the association of dress-code for Iranian women with the levels of 25(OH)D.

Material and Methods: In this cross-sectional study, we evaluated the severity of hypovitaminosis D on 3091 people (2515 women and 576 men aged 10-90) who were suspected D-hypovitaminosis in 2016.

Results: The average concentration of 25(OH)D was insufficient in developing ages among both sexes and also in 20-30 yr old veiled women. Unexpectedly, the average concentration was significantly higher in women, not covering their face and hands (19.9 ±0.29 ng/ml) than men (16.71±0.34 ng/ml), $P<0.001$and $t(3089)= -5.087$.

Conclusion: The higher level of the vitamin D in veiled women not covering the face and hands than in men at one hand, and not practicing food fortification in the region on the other, indicate that the nutritional deprivation regarding D-hypovitaminosis outweighed the solar UVB deprivation. The lowest observed concentration of vitamin D in 10-20 age group necessitates the consumption of supplements.

Keywords: Vitamin D deficiency, UVB, Veiled women

Corresponding author Email address: nikansaba@gmail.com

ID:665

Kinetics of binding inhibitors drugs aminophosphonates with cyclin-dependent kinase 2

Reyhane Sabaghzadeh[1]
[1] Hakim Sabzevari University

Objective: Enzyme inhibitors can be drugs that bind to an enzyme and decreases its activity. The binding of an inhibitor can stop a substrate from come in the enzyme's active site and/or hinder the enzyme from catalyzing its reaction. Different types of inhibition are produced calculate on whether these inhibitors bind to the enzyme, the enzyme-substrate complex, or both.

Material and Methods: AutoDock is a set of automated docking tools. It is designed to conclude how small molecules, such as substrates or drug candidates, bind to a receptor of known 3D structure. Docking is generally used for the study of biomolecular interactions and mechanisms, and it is activated to structure-based drug design. In this paper, including a basic docking of some drugs molecules with an anticancer target.

Results: Inhibitor molecules were prepared using Chem Draw 8.0. The Autodock software version 1.5.6 was used for the molecular docking process. The Lamarckian Genetic Algorithm method was used for the global optimum binding position search. Partial charges were calculated using Gasteiger's method. Docking parameters were as follows: population size of 150, maximum number of energy evaluation ranges of 25,0000, maximum number of generations is 27,000,mutation rate of 0.02,cross-over rate of 0.8,Other docking parameters were set to the software its default values. After docking, the Inhibitors were ranked according to their docked energy as implemented in the AutoDock program.

Conclusion: we normally want to build a QSAR model to predict the biological activity of a compound. Therefore, we fit descriptors against the biological activity. If we fit our descriptors against values provided by a docking simulation instead, the only thing we might be able to predict is the outcome of our docking simulation. There is little point in doing this. It is important that experimental ki values are necessary since by using the estimated Ki you add some uncertainly factors (docking methodology is not appropriate since it is known that the correlation between docking score or estimated binding energy from docking score i.e. autodock is very poor) that can bad affect the QSAR model.

Keywords: cyclin-dependent kinase 2, nhibitor, QSAR, Molecular docking

Corresponding author Email address: r.sabbaghzadeh@hsu.ac.ir

ID:666

Effects of Methylglyoxal and Aspirin on In Vitro Coagulation and Clot Permeability

Fahima Danesh Pouya[1], Javad Zavar-reza[1], Yousef Rasmi[2]

[1] Department of Clinical Biochemistry, Urmia Medical School, Urmia, Iran

[2] Shahid Sadoughi Medical School, Yazd, Iran

Objective: Methylglyoxal (MGO) is an –α, β dicarbonyl aldehyde inevitably produced from triose-phosphate intermediates of glycolysis, and amino acid. Increased MGO in blood leads to alterations in coagulation, clot permeability and thus, atherosclerosis in children with diabetes; however, the precise mechanism is not clear. The present study aimed to compare different concentrations of MGO and aspirin on coagulation and clot permeability in the plasma of healthy individuals in vitro.

Material and Methods: Different concentrations of MGO (5, 50, 100, 500 µM) and aspirin (1, 10, 100 mg/l) were added to the plasma citrate. They were incubated at 37°C for 24 h. Then, coagulation parameters were analyzed by the turbidimetric procedure and then clot permeability was investigated.

Results: MGO at 500 µM with aspirin 100 mg/l made significant changes in the coagulation maximum velocity (0.253±0.006), total coagulation time (803±8.88s) and permeation coefficient (0.778×10-6±0.099) compared to MGO at 500 µM (0.271±0.007), and (500±10.00), (0.446×10-6±0.017), respectively ($P< 0.05$). MGO at 500 µM with aspirin 1 mg/l did not significantly change in either parameter ($p>0.05$). MGO at 100 µM with aspirin 1 mg/l did not significantly change in either parameter ($p> 0.05$), compared to MGO at 100 µM. MGO at 5 µM with aspirin (1, 10, 100 mg/l) changed in all coagulation and clot permeability parameters ($p<0.05$), compared to MGO at 5 µM.

Conclusion: Our findings revealed that aspirin (≥1 mg/l) was held to have more effects on higher concentrations of MGO. Moreover, it decreased the velocity of coagulation and increased permeability of clot.

Keywords: Aspirin, Coagulation, Methyglyoxal, Permeability

Corresponding author Email address: f_daneshpouya@hotmail.com

ID:667

Alterations of Trace Elements in Alzheimer's Disease

Fahima Danesh Pouya[1], Yousef Rasmi[1]

[1] Department of Clinical Biochemistry, Urmia Medical School, Urmia, Iran

Objective: Several of the trace elements (zinc, copper, iron, magnesium, selenium, manganese, calcium, aluminum, nickel, chromium, mercury, lead and rubidium) play important roles in the human body as a cofactor in the structure of various proteins, but for some of these metals, biological effects are not known. It has been noted that there is a competition between these elements for binding to proteins. Therefore, an imbalance between these metals will disrupt the nervous system performance. The main purpose of this review is to investigate the role of these metals in the development of Alzheimer's disease with more emphasize to the effectiveness of lithium and molybdenum disulfide nanoparticles as inhibitors of Alzheimer's disease.

Material and Methods: In this review we searched "Alzheimer's disease", "Trace element" and "Beta amyloid" as primary terms in three popular search engines in medical sciences including PubMed, Science Direct and Google scholar data bases.

Results: Growing body of evidence has proven that the imbalance between these metals are associated with the production of reactive oxygen species and the accumulation of some proteins in the brain, such as beta-amyloid and tau. Furthermore, as the age increases, the toxicity excesses in the brain in which subsequently results in Alzheimer's disease progression.

Conclusion: Based on evidence obtained from various studies, it has been suggested that lithium and molybdenum disulfide nanoparticleshave protective effects against Alzheimer's disease progression.

Keywords: Trace element, Beta amyloid, Alzheimer's disease

Corresponding author Email address: f_daneshpouya@hotmail.com

ID:669

Association between genetic polymorphisms of long non-coding RNA GAS5 and prostate cancer risk in a sample of the Iranian population

Hedieh Sattarifard[1], Mohammad Hashemi[1], Gholamreza Bahari[1]

[1] Zahedan University of Medical Sciences

Objective: The aim of the present study was to determine whether there is an association between the long non-coding RNA (lncRNA) prostate cancer-associated non-coding RNA (GAS5) polymorphisms and prostate cancer (PCa) risk in a sample of the Iranian population.

Material and Methods: This case-control study was performed on 154 patients with PCa and 164 subjects with benign prostatic hyperplasia (BPH). Genotyping assay was performed by ALLELE SPECIFIC PCR.

Results: The findings indicated that the ID genotype of the rs145204276 significantly decreased the risk of PCa (odds ratio=0.20, 95% confidence interval: 0.12-0.34, P=0.0001). The GAS5 variants were not found to be significantly associated with the clinicopathological characteristics of PCa patients.

Conclusion: In conclusion, our findings support an association with protection against the GAS5 variants and the risk of PCa in a sample of The Iranian population.

Keywords: long non-coding RNA, prostate cancer, polymorphism

Corresponding author Email address: hedieh.sattarifard@gmail.com

ID:671

Molecular imaging in Alzheimer's disease

Saleh Salehi Zahabi[1], Amir Salehi[2]

[1] Assistant Professor in Medical Physics, Department of Radiology and Nuclear Medicine, Paramedical School, Kermanshah University of medical sciences, Kermanshah, Iran

[2] M.Sc Student in clinical Biochemistry, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: Alzheimer disease (AD) is a significant health problem with increasing costs to patients, families, and society. AD is defined histologically by the presence of extracellular β-amyloid (Aβ) plaques and intraneuronal neurofibrillary tangles in the cerebral cortex. Advances in brain Molecular imaging technology in the past five years have contributed greatly to the understanding of AD. Structural and metabolic imaging studies demonstrate brain changes in impaired and at-risk individuals. PET imaging of AD pathology has helped chart the trajectory of pathology as it spreads in the living brain. Therefore, the in vivo imaging of Aβ and tau aggregates with Positron Emission Tomography (PET) or Single Photon Emission Computed Tomography (SPECT) would promote drug development, early diagnosis, and monitoring of the disease status in AD patients.MRI and other magnetic resonance techniques that are sensitive to the different aspects of Alzheimer's disease pathology, such as biochemical (magnetic resonance spectroscopy), microstructural (diffusion magnetic resonance imaging), functional (functional magnetic resonance imaging) and blood flow (perfusion magnetic resonance imaging) developed. In this article, we review the studies that report on these recent Molecular Imaging advances, and discuss their potential importance in the diagnostic and staging of Alzheimer's disease.

Keywords: Molecular Imaging, Alzheimer's disease, Biochemistry, PET, MRI

Corresponding author Email address: sszahabi@gmail.com

ID:672

A DFT study of synthetic drugs aminophosphonates: HOMO, LUMO

Reyhane Sabaghzadeh[1]

[1] Hakim Sabzevari University

Objective: Molecular modeling, consists of a set of features and visualization software, construction, editing and analysis of molecules providing as the basis of pharmacological planning; characterization of such a structure, their bond distances and their angles dihedral is not so simple to perform on a trial basis ,if necessary, then use methods in silico for the characterization may, by theoretical calculations based on quantum physics that optimize the geometric structure, until it reaches its most stable conformation, but also can indicate some very important indexes for the design of new drugs such as energies of HOMO orbital border (Highest Occupied Molecular orbital) and LUMO (Lowest Unoccupied Molecular orbital), minimum potential energy, dipole moment and the specific layout of each atom in the molecule

Material and Methods: All calculations were performed in the framework of DFT with the Lee-YangParr correlation functional (B3LYP) computational level, using the 6-31G basis set for the ground state optimization. The frontier molecular orbital's and the HOMO e LUMO energy gap has been computed.

Results: Referring back to Table, it can be seen that tetramethyl ((1,4 phenylenebis(azanediyl))bis((4-methoxyphenyl)methylene))bis(phosphonate) is the most reactivity, among the four drug.

Conclusion: The chemical hardness (ɳ) is useful in studying the stability and reactivity of compounds. It is formulated in terms of the energies of the HOMOs and LUMOs.ɳ =[EHOMO - ELUMO]/2 This formula indicates the more reactivity compounds have small chemical hardness, while less ones have large chemical splittings. In other words, the more reactivity compounds have small excitation energies, that is, their electron densities are easily altered, while less ones have large excitation energies or their electronic densities are difficult to modify.

Keywords: DFT, HOMO, LUMO

Corresponding author Email address: r.sabbaghzadeh@hsu.ac.ir

ID:673

The Effect of Stabilizing Ectoine on Lactoperoxidase Enzymes

Marzieh Borjian Borougeni[1], Hashem Nayeri[1]

[1] Department of Biochemical, Islamic Azad University of Isfahan, Falavarjan Branch, Isfahan, Iran

Objective: Lactoperoxidase (LPO:EC 1,11,1.7) an oxidoreductase enzyme with a glycoprotein structure and a defensive protein. Using enzymes would depend on stabilization due to their sensitivity.Ectoine is an organic molecule, Amphother, water binding and compatible with the cell metabolism which act as enzyme protector toward the denature factors. It protects the enzyme even in lower concentration.

Material and Methods: concentrations (30,75,150, 250, 250) µl of free enzyme (as controlled sample) and stabilized lactoperoxidase with (ectoine 0.8M T=25°C, Ph=6.4) were incubated and their remaining activity was measured by the UV-VIS 2600 spectrophotometer. To evaluate the effect of times, 75µl of free enzyme and stabilized enzyme with (0.8M ectoine in T=25, Ph=6.4) was incubated for (5h, 24h,48h,72h ,1week) and remaining activity was measured. 75µl free enzyme and stabilized enzyme for 4weeks were investigated at (4, 25, -20°C) and their remaining activity was measured by UV-VIS2600 Spectrophotometer. assurance of the stabilization process by Ft-ir method, spectrophotometric scanning and fluorescence measurement methods were obtained.

Results: The optimal concentration of the enzyme, which has the highest activity level, is 75µl and 0.9 mg, it is noteworthy that in presence of ectoine enzyme has a significant activity in very small amount. In other experiments, the average activity of the enzyme stabilized at (5, 24, 48, 72 hours, and 1 week) was equal to (3.31,7.28,7.75,2.43,4.85) and the free enzyme Respectively (2.04,4.52,4.94, 1.07,0.04). The reminder activities of the enzyme stabilized at 4°C ,20°C after 4weeks was about 50% of their activity and at 25°C was 30%, while the free enzyme was deactivated after 2weeks.

Conclusion: *Results* of this research revealed that stabilization with compatible solute like Ectoine causes the enzymes to be stable at in adverse and unfavorable conditions and increases the amount of its remaining activity compared with the free enzyme.

Keywords: Ectoine, Stabilization, Compatible solute, Lactoperoxidase, Stability

Corresponding author Email address: Shiva.borjian688@gmail.com

ID:674

Calcium: a novel and efficient inducer of differentiation of adipose-derived stem cells into neuron-like cells

Farjam Goudarzi[1]
[1] Regenerative Medicine Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

Objective: This study comparatively investigated the effectiveness of calcium and other well-known inducers such as isobutylmethylxanthine (IBMX) and Insulin in differentiating of human adipose-derived stem cells (ADSCs) into neuronal-like cells.

Material and Methods: ADSCs were immunophenotyped, and differentiated into neuron-like cells with different combinations of calcium, IBMX, and insulin. Calcium mobilization across the membrane was determined. Differentiated cells were characterized by cell cycle profiling, staining of Nissl bodies, detecting the gene expression level of markers such as Neun, MAP2, NSE, Doublecortin, Synapsin I, GFAP, and MBP by qRT-PCR and protein level by immunofluorescence technique

Results: Treatment with Ca+IBMX+Ins induced neuronal appearance and projection of neurite-like processes in the cells accompanied with the inhibition of proliferation and the halt in the cell cycle. A significantly higher expression of MBP, GFAP, NeuN, NSE, synapsin 1, doublecortin, and MAP2 were detected in differentiated cells confirming the advantages of Ca+IBMX+Ins to the other combinations of inducers.

Conclusion: Here, we showed an efficient protocol for neuronal differentiation of ADSCs thereby calcium fostered differentiation by augmenting the number of neuron-like cells and instantaneous increase in the expression of neuronal markers

Keywords: Adipose tissue, Calcium, Cell Differentiation, Mesenchymal Stromal Cells, Neurons
Corresponding author Email address: farjam.goudarzi@gmail.com

ID:675

The Role of Calcium in Differentiation of Human Adipose-Derived Stem Cells to Adipocytes

Sheno Karimi[1], Mohammad-taghi Goodarzi[2], Iraj Khodadadi [2], Farjam Goudarzi[3], Adel mohammadalipour[4]
[1] Department of Nutrition Sciences, School of Nutrition and Food Sciences, Kermanshah University of Medical Sciences, Kermanshah, Iran
[2] Department of Clinical Biochemistry, Faculty of Medicine, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran.
[3] Regenerative Medicine Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran
[4] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Differentiation process of mesenchymal stem cells (MSCs) into adipocyte is involved in obesity. Multiple factors such as Ca2+ play important roles in different stages of this process. Because of the complicated roles of Ca2+ in adipogenesis, the aim of present investigation was to study the influx and efflux of Ca2+ into and out of the cells during adipogenesis.

Material and Methods: Adipose-derived MSCs were used to differentiate into adipocytes. MSCs were exposed to 2.5 mM Ca2+ or 1.8 mM Ca2+ plus calcium ionophore, A23187, for 3 days. Lipid staining, triglycerides (TG) content, and glyceraldehyde phosphate dehydrogenase (GAPDH) activity were evaluated to confirm the efficiency of the differentiation. Gene expression of GLUT4, PPARγ2, RAR-α, and calreticulin, as well as the protein levels of GLUT4 and PPARγ2 were determined.

Results: Ca2+ and in particular Ca2+ plus A23187 significantly lowered the efficiency of differentiation accompanied by decrease in intracellular TG deposits, GAPDH activity and alleviation of gene, and protein levels of GLUT4 and PPARγ2. While calreticulin and RAR-α were remarkably upregulated in A23187 group.

Conclusion: This study showed the inhibitory effects of calcium in adipogenesis. Additionally, it indicated the greater inhibitory effect of calreticulin and RAR-α in controlling adipogenesis by higher levels of calcium.

Keywords: Adipose tissue, Calcium, Glut4, Mesenchymal stromal cells, PPARγ

Corresponding author Email address: shenokarimi0617@gmail.com

ID:677

The effect of insulin-loaded trimethylchitosan nanoparticles on rats with diabetes type I

Mohammad Jamshidi

Objective: The aim of this study was to explore the efficacy of insulin-loaded trimethylchitosan nanoparticles on certain destructive effects of diabetes type one.

Material and Methods: Twenty-five male Wistar rats were randomly divided into three control groups (n=5) and two treatment groups (n=5). The control groups included normal diabetic rats without treatment and diabetic rats treated with the nanoparticles. The treatment groups included diabetic rats treated with the insulin-loaded trimethylchitosan nanoparticles and the diabetic rats treated with trade insulin. The experiment period was eight weeks and the rats were treated for the last two weeks.

Results: The livers of the rats receiving both forms of insulin showed less severe microvascular steatosis and fatty degeneration, and ameliorated blood glucose, serum biomarkers, and oxidant/antioxidant parameters with no significant differences. The gene expression of pyruvate kinase could be compensated by both the treatment protocols and the new coated form of insulin could not significantly influence the gene expression of glucokinase ($p>0.05$). The result of the present study showed the potency of the nanoparticle form of insulin to attenuate hyperglycemia, oxidative stress, and inflammation in diabetes, which indicate the bioavailability of insulin-encapsulated trimethylchitosan nanoparticles.

Conclusion: One short sentence which summarizes the contents of the article, presenting the final outcome of and concluded from the research or proposing further study on the subject, may be given at the bioavailability of insulin-encapsulated trimethylchitosan nanoparticles.

Keywords: insulin, diabete, trimethylchitosan, pyruvate kinase, glucokinase

Corresponding author Email address: mohamadjamshidi87@yahoo.com

ID:680

Cytotoxic activity and apoptosis studies of novel stilbene derivative

Maryam Mehdipour[1]

[1] Tabriz university

Objective: Stilbenes are a class of naturally occurring phytochemicals, these compounds have a numerous biological activities. Stilbene derivatives have been found to be possess promising anticancer activities against human cancer cell lines in vitro. In the present study we have investigated cytotoxic activity and apoptosis of new stilbene derivative (ST1) on K562 chronic myeloid leukemia cell line.

Material and Methods: The human K562 cells were cultured in RPMI-1640 medium supplemented. Toxicity of ST1 against K562 cell lines was studied using MTT assay. The cells after exposure to various concentration of ST1 placed into 96 well plates and incubated for 24, 48 and 72 hr. Morphologically study of apoptosis cell were carried out using acridine orange and ethidium bromide (AO/EtBr). The cells treated with ST1 for 72 hr and photos were imaged by fluorescence microscope.

Results: Via MTT assay the cell viability was decreased in response to ST1 in a dose and time-dependent manner and the IC50 value of ST1 was obtained 150 µM. Apoptosis, as the mechanism of cell death, was evaluated by morphological study. Condensed chromatin content and the fragmented nuclei during apoptosis were clearly visible. These cytological changes indicated that the most of the cell death was occurred through apoptosis.

Conclusion: From the all Results: it can be concluded that ST1 can be use as templates for future anticancer compounds and development of stilbene derivatives for biomedical applications.

Keywords: Cytotoxicity, K562, stilbene derivatives, apoptosis

Corresponding author Email address: m.mehdipoor2010@yahoo.com

ID:681

Investigation of the Synergistic Effect of Tamoxifen and Aged Garlic on Breast Cancer

Mehrzad Jafarzadeh[1], Ghadiriyan Shahrzad[2], Mousavizadeh Kazem[3], Joghataie Mohammad Taghi[1]

[1] Cellular and Molecular Research Center, Iran University of Medical Sciences, Tehran, Iran

[2] Department of biochemistry, Faculty of Advanced Technologies, pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran

[3] Department of Molecular Medicine, Faculty of Advanced Technologies in Medicine, Iran University of Medical Science, Tehran, Iran

Objective: Tamoxifen is a non-steroidal anti-estrogen that is widely used to treat breast cancer. Combination therapies are one of the therapeutic strategies that can help enhance the performance, reduce the dose, and shorten the consumption period of tamoxifen. This study aimed to investigate the synergistic effect of tamoxifen and dehydrated garlic on the MCF-7 estrogen-receptor-positive (ER+) and progesterone-receptor-positive (PR+) human breast cancer cell line transplanted into BALB/c mice.

Material and Methods: Two weeks after tumor transplantation, the first, second, and third groups of BALB/c mice were injected with 17beta-estradiol and tamoxifen dissolved in dimethyl sulfoxide (DMSO) at doses of 5.1, 10, and 20 µM, aged garlic extract and tamoxifen at doses of 10, 30, and 60 mg/kg, and PBS over a 14-day period respectively. Then, the tumor volume was measured using a caliper. TUNEL assay kit was used to detect apoptosis.

Results: Data were analyzed using the one-way analysis of variance (ANOVA). The Results: showed a significant difference between the negative control group and tamoxifen-treated group in terms of the simultaneous injection of aged garlic extract and tamoxifen ($p<0.05$). The Results: also showed increased apoptosis in this synergy.

Conclusion: Tamoxifen prevents estrogen from binding to cancer cells, thus stopping cancer cell growth. Aged garlic extract stimulates an enzyme called Glutathione S-transferases (GSTs) and eradicates free radicals. The Results: of this study are consistent with this finding and apoptosis has increased.

Keywords: Tamoxifen, Aged Garlic, synergy

Corresponding author Email address: jafarzadehmehrzad@gmail.com

ID:682

Functional convergence of Akt protein with VEGFR-1 in human endothelial progenitor cells exposed to sera from patient with type 2 diabetes mellitus

Mehdi Hassanpour[1], Reza Rahbarghazi[2]
[1] Stem Cell Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Diabetes mellitus type 2 predisposes patients to various microvascular complications. In the current experiment, the potent role of diabetes mellitus was investigated on the content of VEGFR-1, -2, Tie-1 and -2, and Akt in human endothelial progenitor cells.

Material and Methods: The gene expression profile of mTOR and Hedgehog signaling pathways were measured by PCR array. The possible crosstalk between RTKs, mTOR and Hedgehog signaling was also studied by bioinformatic analysis. Endothelial progenitor cells were incubated with serum from normal and diabetic for 7 days.

Results: Compared to non-treated cells, diabetic serum-induced cell apoptosis (~2-fold) and prohibited cell migration toward bFGF ($p <; 0.001$). ELISA analysis showed that diabetes exposed cells had increased abundance of Tie-1, -2 and VEGFR-2 and reduced amount of VEGFR-1 ($p <; 0.0001$) in diabetic cells. Western blotting showed a marked reduction in the protein level of Akt after cells exposure to serum from diabetic subjects ($p <; 0.0001$). PCR array revealed a significant stimulation of both mTOR and Hedgehog signaling pathways in diabetic cells ($p<0.05$). According to data from bioinformatic datasets, we showed VEGFR-1, -2 and Tie-2, but not Tie-1, are master regulators of angiogenesis. There is a crosstalk between RTKs and mTOR signaling by involving P62, GABARAPL1, and HTT genes. It seems that physical interaction and co-expression of Akt decreased the level of VEGFR-1 in diabetic cells.

Conclusion: Regarding data from the present experiment, diabetic serum contributed to uncontrolled induction of both mTOR and Hedgehog signaling in endothelial progenitor cells. Diabetes mellitus induces mTOR pathway by involving receptor tyrosine kinases while Hedgehog stimulation is independent of these receptors.

Keywords: Human endothelial progenitor cells, Diabetes mellitus, Receptor tyrosine kinases, mTOR and Hedgehog signaling pathways

Corresponding author Email address: Rahbarghazir@tbzmed.ac.ir

ID:683

Anticancer activity of a benzochromene derivative on HT-29 cell line

Mina Hanifeh Ahagh[1]

[1] Department of Biology, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran

Objective: Cancer is one of the leading causes of death worldwide. Colon cancer is considered as a major cause of cancer-associate death in human. Today, different strategies, including surgery approaches, photodynamic therapy, radiation and chemotherapy have been used to manage tumor cells. There are increasing attempts to develop new anti-cancer agents either with high therapeutic effects and low side effects. Benzochromenes and their derivatives have a wide range of applications in various fields of chemistry, biology and pharmacology. This research reports the cytotoxic activity and apoptosis study of a benzochromene derivative.

Material and Methods: The HT-29 cell line was obtained from Pastor Institute of Iran (Tehran, Iran). Ethidium bromide (EtBr), 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazoliumbromide (MTT) and acridine orange (AO) were purchased from Sigma-Aldrich (St. Louis, MO, USA).

Cell viability was determined using MTT assay in HT-29 cells, at different time intervals with and without treatment of the compound. And, morphology of apoptosis was evaluated by acridine orange/ethidium bromide (AO/EtBr) staining using fluorescence microscopy.

Results: Anti-proliferative and apoptotic effects of the compound was investigated in the human colorectal adenocarcinoma cell line (HT-29 cells). This compound affected viability of the treated cells in a time-dependent manner, with IC50 value of 60 µM. To detect apoptosis, after treatment of HT-29 cancer cells at the respective IC50 concentration, the cells were observed for the gross cytological changes and the cell death.

Conclusion: These data indicate that benzochromene derivative is a potent chemotherapeutic agent for colorectal adenocarcinoma. Further studies are required to determine whether this compound induces apoptosis or necrosis in HT-29 cell line.

Keywords: Cytotoxic, apoptosis, benzochromene

Corresponding author Email address: Hanifeh.ahg@gmail.com

ID:684

In vitro evaluation of cross-strain inhibitory effects of IgY polyclonal antibody against H. pylori

Mahdi Aminian[1], Roya Solhi[2], Masoud Alebouyeh[3], Abolfazl Khafri[4], Morteza Rezaeifard[2], Mahdi Aminian[2]

[1] Tehran university of medical sciences

[2] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

[3] Foodborne and Waterborne Diseases Research Center, Gastroenterology and Liver Diseases Research Institute, Shahid Beheshti University of Medical

[4] Department of Quality Control Management, Razi Vaccine & Serum Research Institute, Karaj, Iran

Objective: The present study aimed to evaluate in vitro cross-strain inhibitory effects of IgY polyclonal antibody on both growth and urease enzyme of four local strains of H. pylori.

Material and Methods: Leghorn chickens were immunized with whole cells of four different strains of H. pylori, separately. Rising of specific IgY was detected by ELISA. The IgY purified using polyethylene glycol method and the purity was evaluated by SDS-PAGE and Western blotting. Each strain was treated with its own-specific and also other strain-specific IgYs.

Results: The strain-specific IgY could inhibit the growth of specific strains by 49-72% and also other different strains of H. pylori by 29-86%. Our findings revealed that strain-specific IgY could inhibit urease activity of its own by 64-72% and other different strains by 49-79%.

Conclusion: These findings confirmed strain-specific and also cross-strain inhibitory effects of the IgY polyclonal antibody on both growth and urease activity of H. pylori.

Keywords: H. pylori, IgY polyclonal antibody, Growth Inhibition, Urease Inhibition

Corresponding author Email address: amminian@tums.ac.ir

ID:686

Implication of biological coatings to increase efficiency of goldnanoparticles in cancer treatment

Shadi Shamsian[1], Sirus Khodadadi[2]
[1] Payam noor university, Tehran shargh branch
[2] Malek ashtar university

Objective: Nanotechnology is the engineering of functional systems at the molecular scale. Gold nanoparticles are versatile materials with a broad range of applications in a variety of fields such as cancer therapies. The purpose of this study was the implications of biological coating to increase efficiency of nanotechnology in cancer treatment. According to these facts, we were interested to synthesis gold nanoparticles with Turkevich method and coated with Leucine and Lysine.

Material and Methods: Structural properties of gold nanoparticles were investigated by coupling several techniques, such as UV-visible, dynamic light scattering (DLS) and transmission electron microscopy. Metabolic activity of SK-N-MC cells treated with coated gold nanoparticles was determined by using MTT assay. The amount of LDH released by cells was also measured by spectrophotometry to investigate the cell membrane's integrity.

Results: Our Results: showed high stability of gold nanoparticles in aqueous solution over a period of time indicating stabilization via surface-bond amino acid. After 48 hours of incubation, Leucine coated nanoparticles made a slight change in the rate of MTT reduction and LDH release. This changes were only observed in cells that were exposed to high amounts of Leucine coated goldnanoparticles. Lysine coatings, however, made a considerable change on the reduction of cellular activity. The most drastic changes were observed when cells were exposed to high amounts of amino acid. The Results: were compared with control cells

Conclusion: Base on the reported Results: , amino acid coated gold nanoparticles have potential to destroy neuroblastoma cancerous cells that showed potential applications of these nanoparticles in the field of medicine and biology.

Keywords: goldnanoparticles, SK-N-MC, MTT assay

Corresponding author Email address: shamsianshadi@gmail.com

ID:687

Real-time PCR for detection of pathogenic Yersinia pseudotuberculosis from food

Marjan Heidarzadeh[1]

[1] Department of Biology, Faculty of Food Industry and Agriculture, Standard Research Institute, Karaj, Iran

Objective: Yersinia pseudotuberculosis is zoonotic bacterial pathogen causing foodborne infection (yersiniosis) in humans worldwide. The main reservoir for pathogenic Y. pseudotuberculosis is a wide range of domestic and wild animals such as rodents, deer, birds, and various farm animals serve as potential reservoirs. all Y. pseudotuberculosis are consideredpotentially pathogenic to humans. A variant of the chromosomally located gene ail (attachment invasion locus) is present in in Y. pseudotuberculosis. The ail gene is the target gene used for detection in this research, and the developed primer/probe sets target different sites of the ail gene for the this pathogen.

Material and Methods: The method comprises the following consecutive steps:

a) Microbial enrichment: The number of Y. pseudotuberculosis bacterial cells is increased by growth in a non-selective or semi-selective liquid nutrient medium.

b) Nucleic acid extraction: Bacteria cells are separated from the nutrient broth, lysed, and the nucleic acid extracted for use in the PCR reaction.

c) Amplification and detection: The extracted nucleic acidis amplified using a probe-based real -time PCR. Detection of the target sequence is achieved by monitoring a clear increase in the fluorescence signal above the cycle threshold, Ct.

d) Isolation: After a PCR-positive result is obtained, the target organism can be isolated by using culture methods as described in this Article.

Results: The method is applicable for detection of Y. pseudotuberculosis strains considered potentially pathogenic to humans. Selectivity was performed using the primers F-Yps1 and R-Yps2, in combination with a MGB™-probe or a TAMRA-quenched probe in combination with the internal amplif ication control using the primer/probe system IAC-fw, IAC-re and probe pUC 19. The limit of detection LOD_{95} is 15 genome equivalents (75 fg) per single reaction.

Conclusion: Inclusivity of the PCR assay was tested on 44 target strains, 95% inclusivity was obtained. The primer/probe sets did not detect the serotypes O:11 and O:12. exclusivity of the assay was tested on 23 non-target strains, 100 % exclusivity was obtained. The strains tested were isolated from samples of human (n = 24), animal (n = 2), food (n = 10), environment (n =4), and unknown (n=27) origin.

Keywords: Real-time PCR, detection, Yersinia pseudotuberculosis, food

Corresponding author Email address: m.heidarzadeh@standard.ac.ir

ID:688

Association between HLA-G 3'UTR 14-bp ins/del polymorphism and susceptibility to prostate cancer

Shekoufeh hassanzarei[1], Mohammad hashemi [1], Hedieh sattarifard [1]

[1] Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: Human leukocyte antigen G (HLA-G) is a non-classic MHC class I molecule that is highly expressed in tumor cell to inhibit different immune-competent cells. A 14-bp insertion/deletion polymorphism in exon 8 of the 3' untranslated region of the HLA-G gene has been recommended to be correlated with HLA-G mRNA stability and the expression of HLA-G. This finding revealed to evaluate the association of 14-bp ins/del polymorphism in HLA-G gene and prostate cancer in 150 cases and 146 controls of Tehran (Iran) men.

Material and Methods: This finding revealed to evaluate the association of 14-bp ins/del polymorphism in HLA-G gene and prostate cancer in 150 case and 146 control of south-east Iranian men. We designed a rapid and simple PCR for detection of 14-bp ins/del polymorphism in the HLA-G gene.

Results: The frequency of the Del allele was 58.0% in prostate cancer patients and 56.2% in the control group and the difference was not statistically significant (OR = 1.074, 95%CI 0.774-1.489, P = 0.334).

Conclusion: Our proofs, for the first time, suggest that the 14-bp insertion/deletion polymorphism in HLA-G gene was not associated with prostate carcinoma. Further studies on larger populations with different ethnicities are required to verify our findings.

Keywords: Polymorphism, HLA-G, Prostate cancer

Corresponding author Email address: zshokoo@yahoo.com

ID:689

Real-time PCR based screening methods for the detection of of the P-nos and P-nos-nptII DNA sequences in genetically modified organisms and derived products

Marjan Heidarzadeh[1], Firozeh Salamat[2], Hadis shokouhi[3], Ahmad Vaghar-Kashani[4], Reza Sadria[5]

[1] Department of Biology, Faculty of Food Industry and Agriculture, Standard Research Institute, Karaj, Iran

[2] BioSun Pharmed

[3] Pasteur Institute of Iran

[4] University of Tehran-Kish Campus

[5] Payvand Clinical and Specialty Laboratory

Objective: This article specifies a procedure for the detection of a DNA sequence of the promoter region of the nopaline synthase gene (*P-nos*) from *Agrobacterium tumefaciens* and a procedure for the detection of the DNA transition sequence between *P-nos* and the neomycin-phosphotransferase gene (*nptII)* from the Tn5 transposon of *Escherichia coli* K12. The *nos*-promoter and the *P-nos-nptII*-construct are frequently found in genetically modified plants. The *P-nos* and *P-nos-nptII* specific methods are based on realtime PCR and can be Used for qualitative screening purposes.The methods described are applicable for the analysis of DNA extracted from foodstuffs. They may also be suitable for the analysis of DNA extracted from other products such as feedstuffs and seeds. The application of these methods requires the extraction of an adequate amount of amplifiable DNA from the relevant matrix. The DNA sequence amplified by the *P-nos* element-specific method can be detected in samples which contain DNA of the naturally occurring Ti-plasmid of *A. tumefaciens*. For this reason, it is necessary to confirm a positive screening result.

Material and Methods: DNA was extracted from the test sample applying a suitable method (CTAB). The DNA analysis consists of two parts:

a) verification of the amount and amplifiability of the extracted DNA, e.g. by means of a target taxon specific real-time PCR

b) detection of the P-nos and/or P-nos-nptII sequence in a real-time PCR

Validation followed a two part process:

a) in-house validation followed by a pilot interlaboratory study;

b) a collaborative trial validation.

Results: The P-nos or P-nos-nptII target sequence was considered as detected, if by using the P-nos specific primers p-nos-F1 and p-nos-R and the probe p-nos-Tm or the P-nos-nptII specific primers p-nos-F2 and NPTIIR and the probe NPTII-Tm2, a sigmoid shaped amplification curve is observed and a Ct value or Cvalue is calculated,— in the PCR control reactions with no added DNA (PCR reagent control, extraction blank control), no amplification has occurred, and. in the reactions for the amplification control (positive DNA target control, PCR inhibition control) the expected Ct values or Cp values are achieved

Summary of the collaborative trial

P-nos-nptII	*P-nos*	PCR systems
12		Number of laboratories
12		Number of laboratories submitting results
36[a]		Number of samples per laboratory
429	429	Number of accepted results
285	286	Number of accepted samples containing the *P-nos* target sequence
144	143	Number of accepted samples which did not contain the *P-nos* sequence
1 (0,7%)	5 [b] (3,5%)	False-positive results
0 (0%)	0 (0%)	False-negative results

a One laboratory analysed only 33 of 36 samples in both assays.
b False positive reactions only appeared for non-GM pot ato DNA.

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

Conclusion: The robustness of the *P-nos* and *P-nos-nptII* methods was tested in a pilot interlaboratory study with four participating laboratories with regard to changes in the conditions of the diffrent factors like realtime PCR machines PCR master mix kits and volumes,annealing temperature and primer or probe concentration For each tested factor 3 PCR replicates were analysed with 20 copies each of the target sequence. Under these changed conditions all PCR reactions gave positive results as expected, hence the method can be considered robust. The dilutions, prepared by the participants from the supplied standard DNA, in the range from 20 copies to 0,1 copies per reaction were tested in 6 replicates with the *P-nos* and *P-nos-nptII* PCR procedure by each laboratory. For the dilutions with 20 copies and 10 copies per PCR test, 72 of 72 reactions were positive, therefore a detection limit (LOD) of 10 copies can be specified. When using theoretically 0,1 copies, for the *P-nos* method only 4 and for the *P-nos-nptII* method only 1 out of 72 results were positive, which can be considered as an indication that the supposed copy number is plausible.

Keywords: Real-time PCR, detection; genetically modified organisms, P-nos, P-nos-nptII

Corresponding author Email address: m.heidarzadeh@standard.ac.ir

ID:690

Irisin and ALT are 2 independent factors for liver stiffness in NAFLD patients

Javad Daneshmoghadam[1], Mehrnoosh shanaki[2], Hossein poustchi[3]

[1] School of allied medical sciences, Shahid beheshti university of medical sciences,Tehran,Iran.

[2] Department of laboratory science, School of allied medical science, Shahid beheshti university of medical sciences, Tehran, Iran

[3] Liver and pancreatobiliary Diseases Research Center, Digestive Diseases Research Institute, Tehran university of Medical Sciences, Tehran, Iran

Objective: Nonalcoholic fatty liver disease is a metabolic disorder characterized by clinicopathological conditions including simple steatosis , steatohepatitis and cirrhosis. NAFLD is the most common chronic liver disease and known as an independent predictor of type 2 diabetes mellitus and insulin resistance.

It would be interesting to study the independent factors of liver stiffness in NAFLD and T2DM patients.

Material and Methods: The objective: of this study was to determine the plasma levels of irisin and other clinical parameters in patients with NAFLD (n=41),T2DM (n=41) and NAFLD with T2DM (NAFLD+T2DM) (n=40) in comparison with healthy subjects (n=40).

Results: Multiple stepwise linear regression with LS as the dependent variable showed that ALT(β [SE]=0 0.056 [0.012], p<;0.001) and irisin plasma levels (β [SE] = -1.672 [0.414], p<;0.001) were two independent predictors for LS.CONCLUSION:It

Conclusion: It seem that decreased levels of irisin and increased ALT can be associated with hepatocellular damage in NAFLD

Keywords: irisin, NAFLD, Liver stiffness, T2DM, steatosis

Corresponding author Email address: Daneshi040@gmail.com

ID:691

Evaluate the oxidative stress on chondrogenic ability of mesenchymal stem cells

Adel Mohammadalipour[1], Farjam Goudarzi[2], Majid Bahabadi[3], Mohammad Taghi Goodarzi[3], Iraj Khodadadi[3]

[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran.

[2] Regenerative Medicine Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

[3] Department of Clinical Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Oxidative stress involved in cartilaginous disorders such as osteoarthritis may affect mature chondrocyte. Therefore, mesenchymal stem cells (MSCs) present in synovial fluid can exhibit a different behavior when differentiated into chondrocyte under oxidative conditions. The aim of the present study is to investigate the oxidative stress effects on the differentiation of MSCs to chondrocyte.

Material and Methods: The isolated MSCs from adipose tissue were immunophenotyped and then differentiated into chondrocytes in the presence of 10 and 50 □M H2O2. After cell viability determination, the reactive oxygen species (ROS), glycoseaminoglycans level and hydroxyproline content were analyzed. In addition, gene expression of aggrecan type-II, collagen, and Sox9 transcription factor as well as safranin staining were also determined.

Results: Reactive oxygen species, which was significantly induced by higher hydrogen peroxide, significantly increased the content of glycoseaminoglycan and hydroxyproline to that the control cells both on the 9th day and 21st days post differentiation. The significant increased level of the gene expression of aggrecan, type-II, collagen, and Sox9 was also observed in concomitant with higher safranin staining on the 21st day ($p>0.05$).

Conclusion: The Results: indicate a positive role of oxidative stress on differentiation into chondrocyte, which may lead to over chondorgenesis and its consequences during the oxidative state.

Keywords: Chondrocytes, Differentiation, Oxidative stress, Mesenchymal Stem cells

Corresponding author Email address: amapoor@gmail.com

ID:693

Nanoencapsulated chrysin upregulates Mir-34a in AGS Gastric Cancer Cells

Leila Faramarzi[1], Nosratollah Zarghami[2], Younes Pilehvar-Soltanahmadi[3]

[1]Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran

[2]Department of Clinical Biochemistry, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

[3]Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Chrysin, as a flavone, has shown cancer chemopreventive activity. The present study utilized the PLGA–PEG–chrysin to evaluate the expression of miR-34a in human gastric cells.

Material and Methods: The structure of nanoparticles and encapsulated chrysin was evaluated using 1H NMR, FT-IR, and SEM. MTT assay was used for the evaluation of cytotoxicity effect of nanoencapsulated chrysin. Expression levels of miR-34a were studied by real-time PCR.

Results: The Results: demonstrated that chrysin–PLGA–PEG nanoparticles are more effective than pure chrysin in upregulation of miR-34a due to enhanced uptake by cells. Therefore, PLGA–PEG could be a superior carrier for this kind of hydrophobic agent.

Conclusion: Based on cytotoxicity assay and real-time PCR findings of miR-34a gene expression, we significantly suppose that the PLGA–PEG encapsulated chrysin can be successfully used in cancer chemotherapy.

Keywords: Chrysin, PLGA-PEG, gastric cancer, miR-34a

Corresponding author Email address: faramarzi.l1370@gmail.com

ID: 695

Serum ghrelin and fasting glucose levels in women with polycystic ovary syndrome in correlation HOMA-IR

Mohadese Rohban[1], Ali R Khoshdel[2], Azita Manshori[3], Mahdi Mahmodi[4], Mohamad R Hajizade[1], Mahdie Zohoriyan[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

[2] Department of Clinical Biochemistry, Faculty of Medicine, and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[3] of Gynecology and Obstetrics, School of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[4] Department of Clinical Biochemistry, Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Polycystic Ovary Syndrome is the most common hormonal disorder in women.which is characterized by frequent anovulation hyperandrogenism and is closely associated with obesity. Ghrelin is a 28- amino acid peptide secreted by the stomach with important roles on food intake and glucose homeostasis, that may have an effect on ovarian function. The aim of this study was to compare ghrelin levels in women with polycystic ovary syndrome (PCOS) and healthy subjects and to evaluate the relationships between circulating ghrelin and insulin resistance.

Material and Methods: This case–control study was included 30 women with PCOS and 30 healthy subjects. The subjects were coordinated with age and BMI. Serum levels of ghrelin, fasting glucose and insulin were measured, then IR was determined by a homeostasis model assessment (HOMA) of IR in women with PCOS and healthy subjects.

Results: The Results: of paired t-test serum ghrelin levels in PCOS patients were lower than controls ($p>0.05$). Insulin levels and HOMA-IR factor were significantly different in both healthy and patients ($p>0.05$). Also the difference between fasting glucose levels in both groups were not statistically significant.

Conclusion: The fact-finding showed decreased ghrelin levels in women with PCOS which reflects the metabolic and hormonal changes in the syndrome. In patients with PCOS, ghrelin levels negatively correlated with insulin and HOMA-IR.

Keywords: polycystic ovary syndrome, HOMA-IR, insulin

Corresponding author Email address: Sanjabi1367@gmail.com

ID:697

Effects of Hesperetin on the expression of the matrix metaloprotein-9 gene in the prostatic cancer cell line of PC3

Moein Shirzad[1], Esfandiar Heidarian[2], Effat Farokhi[3]

[1] Department of Clinical Biochemistry, Babol University of Medical Sciences, Babol, Iran

[2] Shahrekord University of Medical Sciences, Shahrekord, Iran

[3] Department of Biochemistry, Clinical Biochemistry Research Centre, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: One of the most current cancers in the world is prostate cancer that formed in the prostate gland. The prostate cancer is initially androgen-dependent (AD) but in continuous will progresses to become androgen-independent (AI) and treatment resistant. Matrix metalloproteinase (MMP) are a family of zinc containing endoproteinases that is belongs to a large group of proteases and these are responsible for destroy from ECM. Hesperetin is a flavonone found abundantly in citrus fruits and has potential anticarcinogenic activity. To examine whether Hesperetin has protective effects in prostate cancer, the present study examined the role of Hesperetin in induced apoptosis.

Material and Methods: PC3 cells were cultured in RPMI1640 medium with 10% FBS and incubated at 37□C with 5% CO2. After 24 h cells were treated with different concentration (0-1000 µM) of Hesperetin antioxidant. Forty eight h after treatment all flasks were exposed with MTT sulotion.Then, MTTassay used for survival or mortality cells. Total RNA was extracted and cDNA was synthetized using specific primer. Synthetized products were analyzed by Real Time PCR to determine expression MMP-9gene level. Data were analyzed by GraphPad Prism (v5.01, USA) using Mann-Whitney or Kruskal-Wallis tests.

Results: after 48 h of treatment, PC3cells were illustrated a IC50 in 450 µM in exposed by Hesperetin ($p>0.05$). Also, the expression from MMP-9 gene increased in this cells after 48 h, significantly ($p>0.05$).

Conclusion: Manifested that, the expression from MMP-9 gene increased in PC3 cells of prostate cancer in countered with Hesperetin antioxidant. These novel findings provide insight into the differential role of Hesperetin in expression MMP-9 in PC3 cells of prostate cancer.

Keywords: Prostate cancer, MMP-9, Hesperetin, PC3 cell

Corresponding author Email address: moein.shirzad@yahoo.com

ID:698

Berberine in combination with theophylline enhances apoptosis of MDA-MB-231 cells via BCL-2 family pathway

Fatemeh Hashemi Niasari[1], Azra Rabbani-Chadegani[1], Mahdieh Razmi[1], Soudabeh Fallah[2]

[1] Institute of Biochemistry and Biophysics, Department of Biochemistry, University of Tehran, Tehran, Iran

[2] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

Objective: Breast cancer is the most common female cancer and novel therapeutic agents are needed to treat this disease. Berberine, a natural isoquinoline alkaloid, has been shown to possess anticancer activity and induces apoptosis in various cancer cell lines. Theophylline, a methylxantine, has been widely used to the treatment of airway diseases including asthma and COPD. The aim of the present study was to investigate the effects of berberine alone and in combination with theophylline on MDA-MB-231 breast cancer cells.

Material and Methods: The cells were exposed to different concentrations of berberine alone and in combination with theophylline and the viability determined by MTT assay. BAX and BCL-2 mRNA expression were studied by Real-time PCR and Bax protein level and production of reactive oxygen species (ROS) determined using ELISA method.

Results: MTT assay showed that theophylline in combination with berberine increased toxicity of berberine in a dose dependent manner. Real-time PCR analysis of BCL-2 and BAX expression revealed that berberine alone and in combination with theophylline downregulated BCL-2 expression and upregulated BAX mRNA as compared to the control. Anion superoxide production increased significantly when the cells pretreated with theophylline compared to berberine treatment alone ($P<0.01$). Also the content of Bax protein level increased as berberine concentration increased, whereas in the presence of berberine and theophylline, the content of Bax was significantly increased ($P<0.001$).

Conclusion: Theophylline increases sensitivity of the MDA-MB-231 breast cancer cells to berberine through induction of ROS generation and increase in BAX/BCL-2 ratio. These findings provide an insight in to the potential application of berberine and theophylline in combination for the treatment of breast cancers.

Keywords: Berberine, Theophylline, Bcl-2 family, MDA-MB-231 breast cancer cells

Corresponding author Email address: hashemi.fatemeh@ut.ac.ir

ID:699

Association between serum levels of insulin in women with polycystic ovary syndrome with HOMA-IR and BMI

Mohadese Rohban[1], Ali R Khoshdel[2], Mohamad R Shafipor[3], Mohamad R Hajizade[1], Monire Fazaeli[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[2] Department of Clinical Biochemistry, Faculty of Medicine, and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[3] Assistant Prof, Department of Glands, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: Polycystic ovarian syndrome (PCOS) is one of the most common endocrinopathic disorder which is highly associated with obesity and insulin resistance. The purpose of this study was to investigate the relationship between serum levels of insulin and glucose with HOMA-IR (Homeostatic model assessment insulin resistance) and BMI in women with polycystic ovary syndrome and to compare it with healthy subjects.

Material and Methods: This patient-control study was conducted among 60 women including 30 women with polycystic ovary syndrome and 30 healthy subjects. The healthy control group was matched with patients for BMI and age. Serum levels of fasting glucose and insulin were measured. Then, HOMA-IR formula was used to determine insulin resistance in patients and healthy control group. Data were analyzed using SPSS 21.0 and Results: were considered significant at ($p>0.05$).

Results: The results of the paired t-test showed that the serum levels of insulin and HOMA-IR factor were significantly different between patients and healthy group (($p>0.05$)). However, the difference between fasting glucose levels in both groups was not statistically significant. In addition, there was no statistically significant relationship between insulin resistance and BMI in patients with polycystic ovary syndrome.

Conclusion: Women with polycystic ovary syndrome have significant insulin resistance that is independent of obesity, changes in body composition, and impairment of glucose tolerance. Moreover, polycystic ovary syndrome and obesity have a synergistic deleterious effect on glucose tolerance.

Keywords: Polycystic ovary syndrome, HOMA-IR, insulin

Corresponding author Email address: Sanjabi1367@gmail.com

ID:700

Carotid intima media thickness (cIMT) and liver stiffness (LS) predictors in T2DM and NAFDL patients

Abolfazl Omidifar[1], Mehrnosh Shanaki[1], Hossein Poustchi[2]

[1] Student Research Committee, Department of Medical Laboratory Sciences, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Liver and Pancreatobiliary Diseases Research Center, Digestive Diseases Research Institute, Tehran University of Medical Sciences, Tehran, Iran

Objective: Nonalcoholic fatty liver disease (NAFLD) is a spectrum of progressive liver disease which includes simple steatosis, NASH, fibrosis and eventually cirrhosis. Several studies have indicated that NAFLD had a significant relationship with the features of metabolic syndrome, such as abdominal obesity, glucose intolerance or diabetes mellitus type 2(T2DM) and insulin resistance. There is little information concerning cIMT and LS predictors in the context of NAFLD and T2DM.

Material and Methods: We evaluated the clinical and subclinical features in healthy control and patients with NAFLD, T2DM and NAFLD + T2DM. T2DM was diagnosed based on American diabetes association (ADA) criteria. NAFLD was diagnosed using ultrasonography and Liver Stiffness was determined by elastography. Carotid intima and media thickness and the amount of visceral fat measured by ultrasonography.

Results: Multiple stepwise linear regression with LS as the dependent variable showed that ALT (β [SE] = 5.395 [0.917], p<;0.001) and SBP (β [SE] =0.03 [0.011], p<;0.010) were two predictor factors for LS. Strikingly, Multiple stepwise linear regression showed that SBP (β [SE] =0.002 [0.001], p<;0.007) was an independent factor for cIMT.

Conclusion: Our results suggested ALT, BP and SBP can be associated factors with cIMT and LS in NAFLD and T2DM pathogenesis.

Keywords: NAFLD, T2DM, liver stiffness, carotid intima and media thickness

Corresponding author Email address: ab.omidifar@gmail.com

ID:701

1 H NMR-based metabolomics study of serum in metabolic healthy and unhealthy obesity

Nahid Safari-Alighiarloo[1], Saeed Chashmniam[2], Nahid Hashemi Madani[1], B. Fatemeh Nobakht M.Gh[3], Mohammad Ebrahim Khamseh[1]

[1] Endocrine Research Center, Institute of Endocrinology and Metabolism, Iran University of Medical Sciences, Tehran, Iran

[2] Department of Chemistry, Sharif University of Technology, Tehran, Iran

[3] Department of Basic Medical Science, Neyshabur University of Medical Science, Neyshabur, Iran

Objective: Metabolically healthy obese (MHO) has a lower risk of developing metabolic diseases compared with the metabolically unhealthy obese (MUHO). The molecular basis for this discrepancy remains unclear. Our objective: was to investigate metabolic profiles of both healthy and unhealthy obese subjects to identify new biomarkers and underlying metabolic pathways.

Material and Methods: Plasma samples of 22 MHO and 22 MUHO individuals were collected and subjected to nuclear magnetic resonance (NMR) analysis for metabolite profiling. Multivariate statistical analyses (PCA and PLS-DA) were applied to uncover metabolites that differed between two groups, and pathway analysis was performed to find responsible pathways.

Results: The results showed several differential metabolites between MHO and MUHO groups. Glutamine, proline, methionine, betaine, taurine, choline, 2-Aminobutyrate, tagatose were found to be lower in MUHO phenotype compared to MHO ones. On the other hands, two metabolites, palmitoleic acid and D-sphingosine, were higher in the MUHO group. In this line, three metabolites, proline, methionine and choline were negatively correlated with insulin resistance. Moreover, pathway analysis revealed impairment in some metabolic pathways including protein biosynthesis, ammonia recycling, glutamate metabolism and urea cycle in MUHO group.

Conclusion: Specific metabolomic profiles could distinguish MHO and MUHO groups. Some of differential metabolites had a correlation with insulin resistance, which could provide useful clues to study the underlying mechanisms of the development of abnormal metabolic phenotypes.

Keywords: Metabolomics, healthy obese, unhealthy obese, NMR

Corresponding author Email address: Safari.nhd@gmail.com

ID:703

Saliva Metabolomic profile of patients with Chronic Hepatitis B

B. Fatemeh Nobakht M. Gh[1], Kambiz Gilany[2], Ashraf Mohamadkhani[3], Saeed Chashmniam[4], Babak Arjmand[5]

[1] Department of Basic Medical Sciences, Neyshabur University of Medical Sciences, Neyshabur, Iran

[2] Reproductive Biotechnology Research Center, Avicenna Research Institute, Tehran, Iran

[3] Liver and Pancreatobiliary Diseases Research Center, Digestive Disease Research Institute, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

[4] Department of Chemistry, Sharif University of Technology, Tehran, Iran

[5] Metabolomics and Genomics Research Center, Endocrinology and Metabolism Molecular Cellular Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

Objective: Hepatitis B virus (HBV) causes chronic Hepatitis B virus infection (CHB), cirrhosis and hepatocellular carcinoma (HCC). Because liver biopsy is the gold standard approach for diagnosis of this disease, it is essential to find non-invasive and accurate methods for CHB. Therefore, the aim of this study was to investigate the saliva metabolic profile of CHB patients and to identify potential biomarkers of disease.

Material and Methods: Saliva from 16 healthy persons and 20 patients with CHB were analyzed by nuclear magnetic resonance. Then, multi variate statistical analysis was performed to identify discriminative metabolites between two groups.

Results: A set of metabolites were detected, including propionic acid, putrescine, acetic acid, succinic acid, tyrosine, lactic acid, butyric acid, pyruvic acid, 4-pyridoxic acid and p-aminobenzoic acid, which in combination with one another could accurately separate CHB patients from healthy controls.

Conclusion: It demonstrated that metabolomics has the potential to be developed into a novel clinical tool for hepatitis diagnosis and could contribute to an improved understanding of disease mechanisms.

Keywords: Saliva, Metabolomics, Hepatitis B virus, Biomarkers

Corresponding author Email address: nobakhtf1@nums.ac.ir

ID:704

Alteration in hemoglobin structure upon interaction with titanium oxide nanoparticles

Farnoosh Attar[1], Fakhteh Aliakbari[1], Mojtaba Falahati[1]

[1] Department of Biology, Faculty of Food Industry & Agriculture, Standard Research Institute (SRI), Karaj, Iran

Objective: The unique properties of titanium oxide nanoparticles (TiO2 NPs) have made them widely used in medical and food applications. However, their probable toxic effects against biomacromolecules especially proteins are not well understood. The present study was aimed to evaluate the effects of TiO2 NPs on the human hemoglobin (Hb) using circular dichroism (CD) and UV-visible (UV-vis) spectroscopic methods.

Material and Methods: The far (190-260 nm) circular dichroism bands of Hb (3 µM in phosphate buffer pH 7.4, 10 mM) before and after addition of various concentrations of TiO2 NP with the ranging from 3 to 30 µM were recorded using a spectropolarimeter, model Aviv 215 at room temperature. Also, heat denaturation curves of free Hb and Hb/TiO2 NP complex at various temperatures (25-95ºC) were measured by monitoring the changes of absorbance intensity at 280 nm using Cary spectrophotometer.

Results: Far CD spectrum of Hb revealed a strong double-minimum potential at 210 and 222 nm, indicating α-helical structure. Upon addition of nanoparticle, a decrease in Hb α-helix and increase in β-sheet and random coil contents were observed. In addition, the thermal stability analysis showed that the Tm of free Hb was approximately 60ºC, whereas, the observed Tm of Hb/TiO2 NP was about 50ºC which demonstrates the decline in protein stability after adding NP.

Conclusion: The result of this study showed that TiO2 NPs interact with blood proteins, inducing considerable conformational changes and possibly cytotoxic effects, respectively.

Keywords: Hemoglobin, Titanium oxide nanoparticle, Circular dichroism spectroscopy, Interaction, Structure

Corresponding author Email address: farnooshattar@gmail.com

ID:705

Evaluation of tau protein interaction with titanium oxide nanoparticles using fluoresecence spectroscopy

Farnoosh Attar[1], Paria Badpa[1], Mojtaba Falahati[1]

[1] Department of Biology, Faculty of Food Industry & Agriculture, Standard Research Institute (SRI), Karaj, Iran

Objective: Due to the vast applications of nanoparticles in the medical field, as well as the production and targeting of biomolecules, studies on the properties of these particles are essential. Titanium oxide nanoparticles (TiO2 NPs) have antibacterial activity and are recognized as photocatalytic materials which are applied in drug delivery system. In this study, the interaction of TiO2 NPs with tau, as a protein model of the nervous system, was investigated by fluorescence spectroscopy.

Material and Methods: The intrinsic fluorescence intensity of tau protein upon interaction with varying concentrations of TiO2 NPs (4–20 μM) was performed by exciting the protein sample (4 μM, phosphate buffer pH 7.4, 10 mM) at 270 nm, using a spectrofluorometer MPF-4 model at three different temperatures of 289, 310, and 315 K.

Results: After addition of varying concentrations of TiO2 NP, the fluorescence intensity of tau showed a continuous reduction around 305 nm. Also, it was observed that TiO2 NP effectively quenched tau protein fluorescence via static quenching mechanism, with association constants range from 6 × 107 M-1 to 3 × 107 M-1 at temperature range of 298–315 K. In addition, positive values of ΔS^{o} and ΔH^{o} indicated that the interaction of TiO2 with protein and subsequent complex formation is mediated by hydrophobic interactions.

Conclusion: In brief, these Results: exhibit potential details regarding the structure alteration of tau in biological systems to design and decorate new medicinal agents using TiO2 NPs as potential applicant in biomedical and pharmaceutical applications.

Keywords: Titanium oxide nanoparticle, Tau, Thermodynamic, Fluorescence spectroscopy, Interaction

Corresponding author Email address: farnooshattar@gmail.com

ID:706

The effects of water deuterium depletion on growth rate and expression of PSMA and P53 genes

kamal Yavari[1], Motahhareh Mirdamadi[1]

[1] Nuclear Science and Technology Research Institute, Tehran, Iran

Objective: Recent studies show that the Deuterium-depleted water (DDW) is a new promising agent in cancer therapy. The purpose of this study was to show the efficacy of D-depletion in prostate cancer (PC) cells growth inhibition and in order to reveal the molecular background of the inhibitory effect of deuterium depletion, the expression of different genes was investigated.

Material and Methods: The LN-CAP cells were cultured in the RPMI culture medium made with various concentrations of DDW(30, 50, 75, 100, 125 and 150ppm). Cellular growth inhibition rates were determined using the 3-(4, 5-dimethyldiazol-2-yl)-2, 5-diphenyltetrazolium-bromide) (MTT) proliferation assay. PCR reaction was performed to determine the status expression of P53 and PSMA genes.

Results: Our data showed that DDW significantly inhibited the proliferation of NL-CAP cells at a specific concentration of DDW (100ppm). It was found that deuterium depletion alerts PSMA and P53 genes expression and there were positive correlations among the degree of growth retardation, PSMA inhibition, P53 induction and D-concentration.

Conclusion: Altered D/H ratios strongly regulate the expression of distinct genes having key roles in cancer sub-molecular growth- regulatory system.

Keywords: Deuterium-depleted water, PSMA, P53, Prostate Cancer Cells, Inhibition

Corresponding author Email address: kyavari@aeoi.org.ir

ID:707

Influence of deuterium depleted water on proliferation and cell cycle of human breast carcinoma cells

kamal Yavari[1], Lida kooshesh[1]
[1] Nuclear Science and Technology Research Institute, Tehran, Iran

Objective: Breast cancer is one of the most common malignant diseases and the second cause of death among women in the world. Therefore, it is necessary to its treat or control using new approaches. In recent studies, deuterium-depleted water (DDW) therapy has been increasing. The purpose of this study was to show the efficacy of D-depletion in MCF-7 breast cancer cells growth inhibition and the possible mechanisms underlying these effects.

Material and Methods: MCF7 cells were cultured in RPMI cell culture medium made with different concentrations of DDW (30, 50, 75, 100, 125 and 150ppm) alone or with various concentrations (l, 4, 8, 16, and232µg/ml) of 5-FU. In order to evaluate cell growth inhibition rate and analyze cell cycle, MTT and Flow Cytometry methods were used respectively.

Results: Our data showed that DDW significantly inhibited the proliferation of MCF-7 cells at low concentrations of DDW (30 and 50 ppm). The length of the S phase and the and G2 to M phase decreased significantly in cells treated with 50ppm in compared to the control group (150 ppm), whereas the G0 to G1 phase were increased.

Conclusion: We conclude that DDW is a promising new adjutant anticancer agent with potential for future applications.

Keywords: Deuterium depleted water, Breast Cancer, Cell Cycle, Cell growth inhibition, Flow Cytometry

Corresponding author Email address: kyavari@aeoi.org.ir

ID:708

The effects of deuterium depleted water on antioxidant system of fibroblast cells

kamal Yavari[1], Maryam Ashofteh[2]
[1] Nuclear Science and Technology Research Institute, Tehran, Iran

Objective: Oxidative stress associated with many conditions including aging and inflammatory disease. Recently, researchers studied the benefic effects of many natural antioxidants and a great importance was revealed to deuterium content in water. In this research we studied the changes in fibroblast cell antioxidant enzymes which are involved in the cell's antioxidant system after administration of deuterium depleted water (DDW) in cell culture medium.

Material and Methods: HNNFPi8 cell lines incubated with specific DDW culture media with deuterium concentration of 30ppm, 50ppm, 75ppm, 100ppm, 125ppm and 150ppm were followed by treatment with 0.01 to 5.0 mMMnCl2 up to 96hr. In order to measure superoxide dismutase (SOD) and catalase antioxidant enzymes quantitative luminescence methods was used.

Results: The Results showed that in the cells treated with low concentrations of DDW (100 and 125 ppm), the increase antioxidant activity of the cells were more than ones treated with urban water (150ppm).

Conclusion: The Results: of this project suggest that DDW is effective in reducing the damaging effects of the environmental stresses.

Keywords: Deuterium depleted water, oxidative stress, Manganese, Aging, Antioxidant Enzymes

Corresponding author Email address: kyavari@aeoi.org.ir

ID:709

The effects of deuterium depleted water on morphology and growth rate of human colorectal cancer cells

kamal Yavari[1], Zahra Zarei Mahmoudabadi[1]
[1] Nuclear Science and Technology Research Institute, Tehran, Iran

Objective: Recent studies show that the Replacement of the tap water in cell culture with deuterium depleted water (DDW) Results: in the shortage of deuterium (D) and might exert anticancer effects. To investigate the in vitro effects of deuterium-depleted water (DDW) on human colon cancer cell growth and the possible mechanisms underlying these effects, we cultured and treated HT29 cancer cell line with various concentrations of DDW.

Material and Methods: Cellular growth inhibition rates were determined using the 3-(4, 5-dimethyldiazol-2-yl)-2, 5-diphenyltetrazolium-bromide) (MTT) proliferation assay. HT29 cells were treated with 75 and 100 ppm DDW, and the morphology and structure of the cells were observed by scanning electron microscopy (SEM).

Results: Treatment with DDW especially in concentrations of 50 and 75ppm imposed inhibitory effects on the growth of the HT29 cell lines. Under SEM examination, the control cells (HT29 cells cultured in the culture medium made with regular distilled tap water containing 150ppm D) showed smooth surface and more extracellular matrix, while the DDW exposed cell group showed a rough surface and more microvillus on the cell surface.

Conclusion: These findings confirm the idea of low concentration of DDW (50 and 75ppm) can be as a new and efficient adjuvant in cancer cell therapy.

Keywords: Deuterium depleted water, HT29 Colon Cancer Cells, Cell Structure, Inhibition, SEM

Corresponding author Email address: kyavari@aeoi.org.ir

ID:712

Discovery of Urinary Biomarkers in Lupus Nephritis Patients Using Two Dimensional Shotgun Proteomics

Mohsen Ghasemi[1], Mohsen Ghaemi[1], Shiva Kalantari[2], Mohsen Nafar[2], Zahra Zakeri[3], Alexander Manoylov[4], Amirata Saei Dibavar[4], Roman Zubarev[4]

[1] Department of Basic Science, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Chronic Kidney Disease Research Center (CKDRC), Shahid Beheshti University of Medical Sciences, Tehran, Iran
[3] Department of Internal Medicine, Shahid Labbafinejad Medical Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[4] Division Head of Physiological Chemistry I, Institute for Medical Biochemistry and Biophysics, Karolinska Institutet, Stockholm, Sweden

Objective: Lupus nephritis (LN) is a common and serious complication in Systemic lupus erythematosus (SLE) and is associated with significant mortality and morbidity of SLE patients. Finding reliable biomarkers for LN will help to evaluate disease activity, early diagnosis and prognosis. The present study analyzed urine proteome of patients with LN using high resolution LC/MS/MS to identify non-invasive diagnostic candidate biomarkers.

Material and Methods: Urine samples were collected from patients with LN (n=20), SLE (n=20) and healthy volunteers (n=20). The urine proteins was extracted and desalted using ultrafiltration. To increase the depth and accuracy of the proteome analysis, samples proteins were digested and labeled with TMT-10plex isobaric label reagents. The 10-plexed digests were injected into the multi-junction capillary isoelectric focusing device (pI-Trap) as a first dimension of separation, fractionated into 10 fractions and subjected to LC-MS/MS analysis using data-dependent acquisition method. The protein profile was then analyzed using multivariate models (e.g. orthogonal projection to latent structure discriminant analysis (OPLS-DA)) to identify significant specific diagnostic candidates. Subsequently, receiver operating characteristic (ROC) analysis was performed and values for area under curve (AUC) was calculated for each candidate.

Results: Over 1100 unique proteins were identified in urine proteome. According to OPLS-DA model proteins were differentially changed between LN, SLE and normal subjects. Based on fold changes a panel of 6 up regulated (AFM, SERPINA1, ORM1, ALB, TF, CP) and 7- down regulated proteins (LRRc15, FSHB, SDC2, VMO1, TFF2, BEFB1, CD44) were suggested as the diagnostic candidates for LN. Afamin (AFM) was the most important candidate with a sensitivity of 95%, specificity of 95% and AUC of 0.93.

Conclusion: Urine proteomics analysis was successfully established for non-invasive diagnosis of LN patients. Our suggested panel is specific for this disease, However further studies are required to assess the utility of these biomarkers in routine clinical practice.

Keywords: Biomarker, Lupus Nephritis, Shotgun Proteomics, LC/MS/MS, OPLS-DA

Corresponding author Email address: moghsm@yahoo.com

ID:714

Chondroitin sulfate degradation and eicosanoid metabolism pathways are impaired in the focal segmental glomerulosclerosis

Shiva Kalantari[1], Hootan Yazdani[2], Mohsen Nafar[1], Mohammad Naji[3], Nasrin Boroumandnia[3]

[1] Chronic Kidney Disease Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Department of Biology, Faculty of Basic Science, Islamic Azad University, Science and Research Branch, Tehran, Iran

[3] Urology-Nephrology Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Focal segmental glomerulosclerosis (FSGS), the most common primary glomerular disease, is a diverse clinical entity that arises after podocyte injury. Although numerus studies suggested molecular pathways responsible for development of FSGS, many unknowns about its pathogenic mechanism is still remained. The present study investigated and confirmed the role of two important pathways that were predicted as candidates for pathogenesis of FSGS in our previous in silico analysis.

Material and Methods: The expression level of four enzyme genes that were representative of "chondroitin sulfate degradation" and "eicosanoid metabolism"pathways were investigated in the urinary sediment of biopsy proven FSGS patients (n = 20) and healthy subjects (n=17) using quantitative real time polymerase chain reaction (Q-RT-PCR). These target genes were arylsulfatase, hexosaminidase, cyclooxygenase-2 and prostaglandin I2 synthase. Mann–Whitney U test was used to compare different variables between patient and control groups, patients with proteinuria of > 3 gr/day and <; 3gr/day, as well as patients with eGFR > 60 ml/min/1.73 m2 and <; 60 ml/min/1.73 m2. Correlation of target genes and clinical and pathological characteristics of the disease was calculated. Receiver operating characteristic (ROC) analysis was performed to To assess and compare the diagnostic accuracy of gene expression level between the study groups. Combination of target genes as a diagnostic or prognostic panel for ROC analysis was carried out using multiple logistic regression.

Results: The ROC analysis revealed that combination of three target genes (i.e. hexosaminidase, arylsulphathase and cyclooxygenase-2) improve the diagnosis accuracy of patients group to 76%, however, the mean difference between healthy and patients groups was not significant. The expression level of prostaglandin I2 synthase was lowers the limit of RT-PCR detection. Hexosaminidase were correlated with the level of proteinuria where cyclooxygenase-2 were correlated with interstitial inflammation and the serum creatinine level in the disease group. A combined panel of these three target genes improved the discriminant accuracy of disease progression in terms of proteinuria and glomerular filtration rate to 87% and 74% respectively.

Conclusion: Our data indicated that these target genes contributes in the pathogenesis of FSGS and can be considered as biomarkers for non-invasive evaluation of disease progression.

Keywords: Focal segmental glomerulosclerosis, molecular pathway, biomarker, Chondroitin sulfate, eicosanoid metabolism

Corresponding author Email address: shiva.kalantari@sbmu.ac.ir

ID:715

The effect of kiwifruit on liver fat and liver enzymes (ALT, AST) in hamsters fed by a high-fat and normal diet

Zahra Zaheri Jamil[1], Narjes Rezaei[1], Heidar Tayebinia[1]

[1] Department of Clinical Biochemistry, Hamadan University of Medical Sciences; Hamadan, Iran

Objective: Kiwifruit with many nutritional compounds including polyphenols, vitamin C and E, has a significant effect on increasing serum HDL-C and improving lipid profiles. Our goal in this study was to evaluate the effect of Kiwifruit on the level of liver fat as well as liver enzymes in hamsters fed by a high fat and normal diet.

Material and Methods: 42 male Syrian hamsters were categorized into 6 groups. Normal diet fed group and groups fed by a normal diet plus kiwifruit (1.86g / kg and 3.73g / kg), high-fat diet fed group and groups fed by a high fat diet plus kiwi (1.86g / kg and 3.73g / kg).

Liver fat were extracted by Folch method, and then cholesterol and triglyceride levels were measured with special kits using photometric methods. The amount of liver enzymes (ALT, AST) was also measured with specific enzyme kits using photometric methods.

Results: The levels of liver triglyceride in normal diet plus kiwi fed groups significantly reduced compared to control normal group ($p>0.05$). The amount of AST was significantly reduced in both normal and high-fat diet plus kiwifruit fed groups compared to control normal and control high fat group ($p>0.05$). ALT levels also decreased significantly in the groups receiving normal diet plus Kiwi compared to control normal group ($p>0.05$).

Conclusion: The Results of this study indicate that the use of kiwi has a beneficial effect on liver function by decreasing levels of liver enzymes (AST, ALT) and also liver triglycerides.

Keywords: Actinidia, High fat diet, Liver, Triglyceride

Corresponding author Email address: zaherijamilzahra@gmail.com

ID:716

The Effect of Metformin on the Expression of Caspase 3, 8, 9 and PARP-1 in Human Breast Cancer Cell Line T47D

Shima Rezaie[1], Naser Kakavandi[1], Mohammad Najafi[1]

[1] Department of clinical biochemistry, Iran university of medical sciences, Tehran, Iran

Objective: Metformin is used to lower blood sugar in patients with type II diabetes. Recent research showed that metformin has effects on cancer cell growth. Studies show that metformin can induce apoptosis in certain cancer cell lines. In this study, we examined the effect of metformin on apoptosis in the T47D breast cancer cell line.

Material and Methods: The T47D breast cancer cell line was selected and purchased from the Pasteur Institute (Tehran, Iran). Cells were treated with doses of 5, 10, and 50 µM of metformin at 24, 48, and 72 hours. The transcription levels of genes involved in apoptosis, includingcaspase-3, -8, -9, and PARP-1, were evaluated by real-time PCR.

Results: The Results of this study showed that at all three doses (5, 10, and 50 µM) of metformin and at three times (24, 48, and 72 h), the expression of caspase-8 and caspase-9 were increased. Also, at all doses metformin increased the expression of PARP-1 at 48 and 72 hours, but at 24 hours the expression of PARP-1 was not affected.

Conclusion: These Results indicate that metformin does not affect expression of caspase-3 at any dose or time point. This study showed that metformin, by increasing the transcription of caspase-8 and caspase-9, causes cell death through apoptosis.

Keywords: Breast cancer, Metformin, Apoptosis

Corresponding author Email address: shima.rezaie72@yahoo.com

ID:717

The Effect of Human Platelet-Rich Plasma on Adipose-Derived Stem Cell Proliferation and Osteogenic Differentiation

Naser Kakavandi[1], Shima Rezaie[1], Mohammad Najafi[1]

[1] Department of clinical biochemistry, Iran university of medical sciences, Tehran, Iran

Objective: The cultured mesenchymal stem cells (MSC) have been used in many clinical trials; however, there are still some concerns about the cultural conditions. One concern is related to the use of FBS as a widely used xenogeneic supplement in the culture system. Human platelet-rich plasma (hPRP) is a candidate replacement for FBS. In this study, the effect of hPRP on MSC proliferation and osteogenic differentiation has been evaluated.

Material and Methods: Human adipose-derived stem cells (hADSC) were expanded. Cells from the third passage were characterized by flow cytometric analysis and used for in vitro experiments. Resazurin and alizarin red stains were used for cell proliferation and osteogenic differentiation assays, respectively.

Results: Treatment with hPRP resulted in a statistically significant increase in cell proliferation compare to the negative control group (P<;0.001). Cell proliferation in the 15% hPRP group was also significantly higher than that in the 10% hPRP group ((p>0.05)). Additionally, it caused less osteogenic differentiation of the hADSC compared to the FBS (P<;0.001), but in comparison to negative control, it caused acceptable mineralization (P<;0.001).

Conclusion: These findings indicate that hPRP not only improves the proliferation but also it can be a suitable substitution in osteogenic differentiation for clinical purposes. However, the clinical application value of hPRP still needs more investigation.

Keywords: Platelet-Rich Plasma, Adipose tissue, Stem Cells, Cell differentiation, Cell proliferation

Corresponding author Email address: naserkakavandi71@gmail.com

ID:720

Study of insulin loaded chitosan-alginate nanoparticle effects on RAGE expression and oxidative stress status in the kidney tissue of rats with type 1 diabetes

Shirin Heidarisasan[1], Nasrin Ziamajidi[1], Jamshid Karimi[1], Azar Ghavimishamekh[1], Roghayeh Abbasalipourkabir[1]

[1] Department of Biochemistry, School of Medicine, Hamadan University of Medical Sciences

Objective: Chronic hyperglycemia leads to activation of the AGE-RAGE axis and oxidative stress in kidney tissue which promotes diabetic renal damage. Thus, this study examined the effect of orally administered insulin-loaded trimethyl chitosan nanoparticles on RAGE mRNA expression and oxidative stress status in the kidney tissue of STZ diabetic rats.

Material and Methods: Streptozotocin (STZ)-induced diabetic rats were treated orally with insulin-loaded trimethyl chitosan nanoparticles (8IU/kg) and insulin (8IU/kg) was subcutaneously injected from the 8th to the 10th week. After 10 weeks, serum urea, creatinine and uric acid were measured. Also, the RAGE mRNA expression and oxidative stress markers (TAC, TOS, MDA, Thiol groups, Catalase activity) were examined in the kidney tissue.

Results: After 10 weeks of diabetes induction, the rats showed a significant change in serum biochemical parameters, oxidative stress status and RAGE expression of the kidney in the diabetic groups. Oral nano-insulin treatment similar to injected insulin could significantly ameliorate biochemical parameters., Elevated TAC level, Thiol groups and catalase activity also reduced TOS and MDA levels ((p>0.05)). However, a reduction in RAGE expression by both treatments was not statistically significant. Of course, the influence of nano-insulin on the amelioration of all these parameters was more compared to the injected form. But no markedly significant differences were seen between these two kinds of treatment.

Conclusion: This data revealed that orally, insulin-loaded trimethyl chitosan nanoparticles are better therapeutic intervention than injected insulin for type 1 diabetes.

Keywords: Diabetes mellitus, Insulin, Nanoparticles, Chitosan-alginate, RAGE

Corresponding author Email address: heidarisasan87@gmail.com

ID:723

Optimization of the Induction Conditions for Over-expression of a Recombinant Urate Oxidase in E. coli.

Sepideh Khojasteh[1], Saba Ghanbari[1], Mojtaba Mortazavi[1], Mohammad Mahani[1], Aliakbar Khalili Yazdi[1], Masoud Torkzadeh–Mahani[1]

[1] Department of Biotechnology, Institute of Science, High Technology & Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran

Objective: Urate oxidase, an enzyme belonging to the class of oxidoreductases, catalyzes the conversion of uric acid to Allantoin. This enzyme has been used to treat hyperuricemia, gout, and tumor lysis syndrome. Because of the high demand for this drug, the development of a recombinant system for the production of urate oxidase is required.

Material and Methods: A strain of E. coli (BL21) which was carrying a codon optimized A. flavus urate oxidase gene on pET28a vector was used in this study. In order to improve the level of expression of Urate Oxidase in E. coli, the effect of different induction temperatures (18, 22, 30, 37 °C), different IPTG concentrations (0.25–1.5 mM), and various agitation rates (100-300 rpm), and several post-induction harvest times (3-24hrsa) were examined. The level of protein expression in these conditions was investigated by SDS-PAGE and Bradford methods.

Results: Through these tests, an improved condition for the maximum enzyme expression was found. It included an induction temperature of 35 °C, IPTG concentration of 1 mM, an agitation rate of 170rpm, and also a post-induction harvest time of 5hrs. Following further experiments, it was shown that the Urate Oxidase enzyme expressed in this condition were soluble.

Conclusion: The above-mentioned parameters were lead to a significant increase in the level of Urate Oxidase expression in E. coli. This would result in a further decrease in the production costs for the manufacture of this clinically important drug.

Keywords: Recombinant Urate Oxidase, A. flavus, Expression, E. coli, Culture Optimization

Corresponding author Email address: sepideh.khojasteh73@yahoo.com

ID:724

Cloning, Expression, Purification, and Characterization of the Recombinant Aspergillus flavus Uricase from Escherichia coli

Saba Ghanbari[1], Sepideh khojasteh[1], Azadeh lohrasbi_nejad[2], Hadi beitollahi[1], Aliakbar khalili _yazdi[1], Masoud Torkzade Mahani[1]

[1] Department of Biotechnology, Institute of Science, High Technology & Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran

[2] Agricuiturl Biotechnology Department Shahid Bahonar University of Kerman, Iran

Objective: Accumulation of uric acid is a complication in the hyperuricemia, gout, etc. Uricase can convert uric acid to Allantoin, a compound with higher solubility. Since this enzyme is commonly used in treatment of these conditions, development of a reliable source for the production of uricase is essential. Our aim was to codon optimize an A. flavus Uricase gene for expression in E. coli.

Material and Methods: The Uricase gene was codon optimized based on the available E. coli codon usage table. Then, the synthesized gene was cloned into pET28a, which was afterwards transformed into E. coli (BL21). Thereafter, the expression of this gene was induced with 1 mM IPTG in Terrific Broth (TB) supplemented with Kanamycin. After investigating the protein solubility test, the His-tagged uricase was isolated from this crude extract by Ni-Sepharose affinity chromatography. The protein concentration and purity tests were performed by Bradford method and SDS-PAGE analysis, respectively. Ultimately, the activity of the purified protein was measured by the standard spectrophotometric tests.

Results: The codon optimized uricase gene was expressed in a soluble form in E. coli. Additionally, it was shown that this protein could be purified in a single step to a high degree of purity. The activity tests revealed that the purified uricase as a specific activity of 15.6 U/mg.

Conclusion: We revealed that the recombinant A. flavus uricase could be produced by E. coli. Our uricase showed a satisfactory activity compared to the commercially available enzymes, including Rasburicase.

Keywords: Uricase, Recombinant, E. coli, Codon optimization, specific activity

Corresponding author Email address: sabaghanbari89@yahoo.com

ID: 726

Comparison of Apelin level in hypertensive patients receiving different hypertension medication

Reyhane Javanshir[1], Mina Hemmati[2]
[1] Student Research Committee, Birjand University of Medical Sciences, Birjand, Iran
[2] Cardiovascular Disease Research Center, Birjand University of Medical Sciences, Birjand, Iran

Objective: Apelin as an adipokine secreted from adipose tissue has an important role in regulating the blood pressure and hypertension. The aim of this study was to evaluate and compare the plasma apelin level in hypertensive patients under treatment with amlodipine, losartan and amlodipine + losartan.

Material and Methods: In this case control study, the serum level of apelin was compared in 4 groups as follows: Healthy subjects group (n=31) who did not have high blood pressure and other known disease. Hypertensive patients were treated with amlodipine (n=31), hypertensive patients were treated with losartan (n =45) and the fourth group of 33 patients that treated with amlodipine and losartan. Apelin level in serum samples was measured using Human Apelin ELISA Kit according to the manufacturers' instructions.

Results: The average blood level of apelin in the control group, and groups receiving amlodipine, losartan and amlodipine + losartan were 366.16 ± 36.04, 247.19 ± 27.77, 282.93 ± 47.08 and 289.84 ± 32.20 pg/dl, respectively. Losartan + amlodipine group had the higher level of apelin compared with amlodipine alone ($p<0.05$).

Conclusion: The Results: of this study showed that apelin has definite protective effect in the prevention of hypertension in treatment subjects. Also according to the Results: of this study, the renin-angiotensin aldosterone system inhibitors such as losartan cause more apelin increase resulting better blood pressure control.

Keywords: Apelin, Hypertension, Losartan, Amlodipin

Corresponding author Email address: mina1hemmati@yahoo.com

ID:727

Determination of acute hepatotoxic effect of orally administrated aqueous and hydro-alcoholic extract of Echium amoenum Fisch & Mey in rat

Ali Hosseini-Sharifabad[1], Seyed Ebrahim Sajjadi[1], Mohammad Shojaei[1]

[1] Department of Pharmacology and Toxicology, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: People believe that medicinal plants are safe because of their natural origin. This public conviction has been led to a dramatically increasing rate in employment of herbal remedies to treat the disorders. Echium amoenum fisch & C.A.Mey (Boraginaceae) grows in most regions of Europe and in northern parts of Iran. In Iran its dry violet-blue petals have been used as an antidepressant, sedative, tranquillizer, tonic and anti-cough agent. One of the most important active components of E.amoenum petals is pyrrolizidine alkaloid. It has been previously reported that pyrrolizidine alkaloids lead to hepatic deterioration. The aim of this study is to assessment of safety range for E.amoenum hydro-alcoholic extract (EAHAE) and aqueous extract (EAAE) about liver toxicity.

Material and Methods: Adult wistar rats fed different doses of EAHAE, 400, 600, 800 mg/kg or EAAE, 800, 1000, 1400, 2000 for 28 days in the separated groups. The negative control animals received normal saline while the positive control was injected 1 ml/kg of CCl4. Then, the serum activity of ALT, AST, and ALP and the serum total bilirubin were measured, by a spectrophotometer method.

Results: The Results show, 800 mg/kg EAHAE remarkably increased the hepatic biomarker compare to normal. None of the treated doses of EAAE caused significant increase in the markers. The histopathological Results: confirmed the biochemical observations.

Conclusion: Our findings illustrate, EAAE didn't show any hepatotoxic effect. Indeed it is entirely safe for the liver even in the high doses administered for a long period. But EAHAE caused hepatic dysfunction when administered at the high dose.

Keywords: Echium amoenum, Aqueous extract, Hydro-alcoholic extract, Hepatotoxic, Safety

Corresponding author Email address: hosseini_a@pharm.mui.ac.ir

ID:728

Immunomodulatory Effects of probiotic lactobacillus acidophilus in healthy adults: a double-blind, randomized, controlled trial

Mahboobeh Mehrabani Natanzi[1], Zohreh Khodaii[1]

[1] Dietary supplements and probiotic research center, Alborz university of medical Sciences, Karaj, Iran

Objective: Dietary supplements and probiotic research center, Alborz university of medical Sciences, Karaj, Iran Introduction: The role of probiotics in management of chronic diseases, principally due to their role in immune system modulation and the anti-inflammatory response, has recently been experienced a renewed interest in society. In this study, we investigated the effect of daily consumption of probiotics on serum pro-inflammatory cytokines levels in healthy adults.

Material and Methods: Healthy adults (n = 60) aged 18–40 years were randomly assigned to control and probiotic groups. The probiotic group received one capsule of probiotics containing 109 cfu lactobacillus acidophilus daily for 30 days, while the placebo group received similar capsules with no bacteria for the same duration. At the end of the study, levels of serum TNF-α, IL-2, and C- reactive protein were measured.

Results: The present study showed that daily consumption of probiotics significantly reduced the levels of serum TNF-α and CRP (P= 0.000), while there was no significant change in the level of serum IL-2.

Conclusion: In conclusion, probiotics are able to modulate the immune system and reduce production of pro inflammatory mediators and probiotics consumption provide benefits in healthy adults. In conclusion, probiotics could significantly reduce the serum levels of pro-inflammatory cytokine (TNF-α) and CRP. ***Keywords:*** probiotics, Immunomodulatory, TNF-α, Healthy, CRP

Corresponding author Email address: mmerabani95@gmail.com

ID:729

IRAK inhibitor increase insulin sensitivity in mouse model of Insulin resistant

Athena Rajaie nejad[1], Hossein Fallah[1]
[1] Department of Clinical Biochemistry, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Insulin resistance is a characteristic feature of most patients with type 2 diabetes mellitus and is one of the defining clinical features in the metabolic syndrome or syndrome X. Insulin resistance (IR) is a common pathologic state in which target cells fail to respond to ordinary levels of circulating insulin. Epidemiological evidence suggesting a correlation between inflammation and insulin resistant states such as obesity, but the mechanistic links were unknown. Interleukin-1 receptor-associated kinases (IRAK) play a central role in inflammatory responses by regulating the expression of various inflammatory genes in immune cells. This study was aimed to investigate the effect of IRAK inhibitor on gene transcription and serum concentration of adiponectin in insulin resistant mice.
Material and Methods: Experimental mice were randomly divided into 6 groups: the control group was fed a regular chow diet while other group fed with a high-fat diet(HFD) for 12 weeks. After the first 12 weeks, the animals were treated with IRAK inhibitor, both IRAK and pioglitazone, pioglitazone, DMSO, for two weeks. Adiponectin and IL6 Gene expression level was analyzed by real-time PCR. Additionally, Serum adiponectin levels were measured by ELISA.
Results: our study showed that IRAK inhibitor significantly reduces serum Glucose (390 mg/dl to 240 mg/dl), Insulin (22 mIU/L to 14 mIU/L) and HOMA-IR (21 to 9) in comparison with control group. IRAK inhibitor also increase serum level of Adiponectin (10 µg/ml to 18 µg/ml) and in mRNA expression level, our study revealed that this agent significantly reduces IL6 mRNA and increases adiponectin mRNA in adipose tissue.
Conclusion: The study findings revealed that IRAK inhibitor might be a protective candidate against insulin resistance through increase in adiponectin levels.

Keywords: IRAK inhibitor, inflammation, insulin resistance, adiponectin, HFD

Corresponding author Email address: hf59ma@gmail.com

ID:730

Relationship between iron, TIBC, ferritin and thyroid hormones in patients referring to Shooride Mashhad clinic laboratory

Roya Sehat[1]
[1] Departments of Biotechnology, Faculty of Biology, AL Zahra University, Tehran, Iran

Objective: Iron Deficiency is common complication in the word and can be influence the function of multiple proteins, including thyroid hormones. In other hand, change in Iron status or levels of thyroid hormones can be affect each other's. Aim of this study was evaluation of these actions.

Material and Methods: in this study 420 outpatients from Shooride clinic in Mashhad was evaluated, 287 female and 133 male enrolled in the study, median age of these group was 41.5 years, for all patients Fe and TIBC perform with automated method, and ferritin, TSH, T4, T3 by ELISA method and CRP test by latex agglutination. The interactions between these three conditions and thyroid hormones levels were determined using MANOVA multivariate assay.

Results: in our study correlation between Iron status and levels of thyroid hormones was not statistically significance but in patients with lower iron, TSH was in higher levels and T4 on lowest levels, positive correlation was not seen with T3. Although the analysis of the test has not been meaningful, it seems that different levels of iron may partially affect the amount of these hormones. Analyzes showed that iron levels decreased with increasing TSH levels, and it is interesting to note that at higher levels of TSH, the average level of ferritin was at its highest. This indicates an inverse relationship between the level of the TSH hormone and the iron status and ferritin status.

Conclusion: change in iron status and levels of thyroid hormones seem to influence each other's.

Keywords: Iron Deficiency, Thyroid hormones, Ferritin, ELISA

Corresponding author Email address: Ro_sehat@yahoo.com

ID:732

The Effect of Continuous Aerobic Exercise with Low Carbohydrate Diet on the Serum Immunoglobulins G among Overweight Adult Men

Omolbanin Ghasemian[1], Daryoush Zarghmizadeh[2]
[1] Department of Veterinary, Behbahan Branch, Islamic Azad University, Behbahan, Iran
[2] Department of Sport Physiology, Behbahan Branch, Islamic Azad University, Behbahan, Iran

Objective: The aim of exercise is to preserve body homeostasis at a reasonable level that reduces catching diseases. One of the way to achieve this result is improvement of immune system The goal of this research was determine the effect of Continuous aerobic exercise with low carbohydrate diet on immunoglobulin G level in adult men with overweight.

Material and Methods: Adult men with overweight, 30 men with age average 36-50 and BMI between 25-30 Kg/m2 were selected and divided in three groups with 10 person randomly in Behbahan city. Blood samples were collected of each group before induction of exercise and diet from brachial vein. The diet with limitation of carbohydrate was applied for 8 weeks. Continuous aerobic exercise performed for 8 weeks and 3 sessions in a week. In the following, the second blood samples were collected after 8 weeks. At the end by using ELISA method, the level of immunoglobulin G was measured.

Results: The results of this research revealed that 8 weeks continuous aerobic exercise with low carbohydrate diet was caused significant reduction in serum level of immunoglobulin G in adult men with overweight ($P<0.05$). As a result, continuous aerobic exercise with low carbohydrate diet may induces suppression of humoral immunity.

Conclusion: As a conclusion the limitation of carbohydrates in the diet may induces suppression of immunoglobulins production and influences the immune system functions and continuous aerobic exercise with low carbohydrate diet, by reduction of serum immunoglobulins may causes humoral immunity suppression in adult men with overweight

Keywords: Continuous aerobic exercise, diet limitation of carbohydrate, IgG

Corresponding author Email address: ghasemian1249@yahoo.com

ID:733

Expression of mir33 following pretrain administration of morphine in rat

Sadegh Moradi[1], Abolfazl Ardjmand[1], Behrang Alani[2], khatereh kharazmi[1]
[1] Physiology Research Center, Kashan University of Medical, Science
[2] Departement of Applied Cell Science, Kashan University of Medical, Science

Objective: The importance of non-coding RNA involved in biological processes such as learning and memory has become prominent in recent years. MicroRNAs (miRNAs) represent a class of small regulatory non-coding RNAs that mediate gene silencing by identifying specific sequences in the target messenger RNAs (mRNAs). In addition, morphine administration in different times relative to training or testing has different effects on animals learning and memory. The aim of current study is to investigate the expression of mir33 following pretrain administration of morphine in rat.
Material and Methods: To determine the expression of mir33 we used PCR on hippocampal samples. We used pretrain administration of different doses of morphine (2.5, 5, or 7.5 mg/kg/ip) in an inhibitory avoidance model of memory. The relative expression of mir33 in different morphine-treated groups were compared with the sham and control groups.
Results: the comparison of relative expression of mir33 between sham and control groups showed no difference ($p>0.05$). However, the comparison of relative expression of mir33 between the morphine treated groups and the control showed significant difference ($p<0.05$).
Conclusion: The pretrain administration of different doses of morphine in rat alters the relative expression of hippocampal mir33.

Keywords: mir33, learning & memory, PCR, Rat

Corresponding author Email address: smv6020@yahoo.com

ID:734

IMPDH1 retinal isoform have higher catalytic activity than canonical isoform in the mouse

Behnaz Andashti[1], Razieh Yazdanparast[1], Hamid Galehdari[1]
[1] Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: RP (Retinitis Pigmentosa) is a hereditary degenerative retinal disorder causing photoreceptor dystrophy. Mutations in the IMPDH1 gene cause RP10 disease. Mechanism of the IMPDH1 interference in RP10 disease has not really been clear. Inosine 5-monophosphate dehydrogenase 1 (IMPDH1) catalyzes the oxidation of IMP to XMP using NAD+ as the cofactor. This is the rate-limiting step in de novo guanine nucleotide biosynthesis. The IMPDH1 gene is highly expressed in the mammalian retina and has some retinal specific transcripts created by alternative splicing or translation start site. It has been suggested that the IMPDH1 should have a specific function in the retina, mediated by retina-specific variants, so there is an essential need for a functional assay of retinal isoforms to identify the mechanism of IMPDH1 mutations pathogenicity.
Material and Methods: After expression and purification of recombinant mouse IMPDH1 retinal and canonical isoforms, we performed enzymatic activity assay for each isoform and calculated catalytic activity separately. The reaction was started by addition of 5µg/ml purified recombinant IMPDH1 to assay solution and monitoring the absorbance increase at 340 nm for 15 min.
Results: Enzyme activity for canonical mouse IMPDH1 isoform was achieved at 1.1 µmol.min-1 and for retinal isoforms, H1 (546) was about 1.07 µmol.min-1 and H1 (603) about 1.7 µmol.min-1.
Conclusion: The higher retinal isoform activity may be due to more frequency of these isoform compared to canonical isoform in the retina and can be related to mechanism of RP10 disease.
Keywords: RP, IMPDH1, Retinal isoform, Catalytic activity
Corresponding author Email address: b_andashti@yahoo.com

ID:735

Liposomal Gold and Silver Nanoparticles

Seyed Moazam Mortazavi[1], Shirin Mortazavi[2]
[1] Department of Clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran
[2] School of medicine, Shahid Sadoghi University of Medical Sciences Yazd, Iran

Objective: Liposomes can be described as artificially made vesicles composed of one or more phospholipid bilayer(s). They are being used to encapsulate different material including medicinal and nutritional compounds as well as cosmetic and diagnostic agents. Recently, liposomes have also been employed for the entrapment and delivery of a number of different trace elements (e.g. selenium), divalent cations (such as calcium and magnesium) and metal nanoparticles. Because of their unique optical and physical properties, silver and gold nanoparticles are widely used in many fields as ideal materials for labelling, imaging, and sensing. This review article addresses the use of liposome-encapsulated silver and gold nanoparticles in targeting drugs and diagnostic agents with reduced cytotoxic effects in patients with various cancers and many other diseases.

Keywords: cancer, encapsulation, gold nanoparticle, liposome, nanosilver

Corresponding author Email address: moazammortazavi@yahoo.com

ID:736

Artificial neural network for predicting the parameters which correlated with antioxidant power of human plasma

Hadi Ansarihadipour[1], Golnaz Ansarihadipour[2], Mehdi Ansarihadipour[3]
[1] Department of Biochemistry and Genetics, School of Medicine, Arak University of Medical Sciences, Arak, Iran
[2] Islamic Azad University, Science and Research Branch
[3] Sharif University of Technology

Objective: Oxidative stress leads to serious clinical complications. Various biomarkers represent oxidative condition in patients. Measuring all these biomarkers for each patient would be a costly and time-consuming process. This study developed a mathematical model to predict structural changes in Hb and presented a ranked importance of oxidative parameters in human plasma and erythrocytes.
Material and Methods: blood samples with normal biochemical and hematological parameters were divided in different groups. Ferric reducing ability of plasma (FRAP) was calculated as antioxidant status of blood. Protein carbonyl (PCO) levels in plasma and erythrocytes and Hb oxidized derivatives were considered for oxidative status of blood samples. Artificial neural network (ANN) analysis was developed as multilayer feed forward architecture for predicting the parameters which correlated with antioxidant power of plasma. The best model was performed by four-layer perceptron method (19-10-10-1) with hyperbolic tangent and identity activation functions for hidden and output layers, respectively. Oxidant and antioxidant parameters were ranked based on the calculated importance.
Results: our results showed that uric acid, oxyHb, BUN, creatinine and Hb absorbance at 560 and 420 nm were the most important parameters with the normalized importance values more than 50%.
Conclusion: the results of this study demonstrated the ability of ANN analysis to predict oxidative parameters in human plasma and erythrocytes. Identification of important parameters can eliminate less important parameters from the clinical procedures leading to a cheaper and faster diagnosis.
Keywords: Artificial neural network, Human plasma, Oxidative stress, Protein carbonyl
Corresponding author Email address: hadyansary@yahoo.com

ID:738

Study of insulin-loaded chitosan nanoparticle effects on TGF-β1 expression in kidney tissue of type 1 diabetic rats

Azar Ghavimishamekh[1], Roghayeh Abbasalipourkabir[2], Mohammad Taghi Goodarzi[2], Nasrin Ziamajidi[2], Arash Dehghan[1], Shirin Heidarisasan[1]
[1] Students Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Departement of Biochemistry, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: In diabetes, the increasing blood glucose levels through oxidative stress, with increase in inflammatory cytokines and growth factors, such as TGF-β1, can cause long-term complications, including nephropathy. Subcutaneous injection of insulin is a common method used to treat Type 1 diabetes, which can lead to problems such as hypoglycemia and edema. In the present study, we examined the effect of insulin in its two injectable and oral forms on the expression of TGF-β1 in kidney tissue of STZ diabetic rats.
Material and Methods: A total of 25 male Wistar rats were randomly divided into 5 groups: C: normal control, D: diabetic control, D+NP, oral insulin-loaded trimethyl chitosan nanoparticles (8 IU / kg), and subcutaneously injected insulin (8 IU/kg). The groups were treated from 8th to 10th weeks. After 10 weeks, TGF-β1 mRNA expression and serum TGF-β1 protein were examined in the kidney tissue.
Results: fter 10 weeks of diabetes induction, the rats showed significant change in serum TGF-β1 and TGF-β1 expression of kidney in diabetic groups ($p<0.05$). Oral insulin-loaded trimethyl chitosan nanoparticles treatment, similar to injected insulin, could not significantly reduced TGF-β1 expression and serum TGF-β1 protein ($p>0.05$).
Conclusion: These data showed that oral insulin-loaded trimethyl chitosan nanoparticles were better therapeutic intervention than injected insulin for Type 1 diabetes.
Keywords: Diabetes mellitus, insulin, Nanoparticles, Chitosan-alginate, TGF-β1
Corresponding author Email address: Ghavimishamekh@gmail.com

ID:739

Effect of curcumin on serum metabolomic profile in patients with non-alcoholic fatty liver disease

B. Fatemeh Nobakht M. Gh[1], Saeed Chashmniam[2], Seyed Reza Mirhafez[1], Mohsen Azimi Nezhad[1], Maryam Dehabeh[3]
[1] Department of Basic Medical Sciences, Neyshabur University of Medical Sciences, Neyshabur, Iran
[2] Department of Chemistry, Sharif University of Technology, Tehran, Iran
[3] Biology department, Payamnoor University, Mashhad, Iran

Objective: Curcumin, a natural polyphenolic compound in the spice turmeric, has been found to have potent anti-oxidative and anti-inflammatory activity. Curcumin may benefit non-alcoholic fatty liver disease (NAFLD) through its beneficial effects on biomarkers of oxidative stress (OS) and inflammation, which are two feature of this disease. However, the effects of curcumin on NAFLD remain poorly understood. This investigation evaluated the effects of curcumin administration on metabolic status in NAFLD patients.

Material and Methods: Fifty eight NAFLD patients participated in a randomized, double-blind, placebo-controlled designed study. The subjects were randomly allocated into two groups to receive either 250 mg curcumin (n = 30) or placebo (n = 28) one capsule per day for a period of 8 weeks. Fasting blood samples were taken from each subject at the start and end of the study period. Subsequently, metabolomics analysis was performed for serum samples by NMR.

Results: Compared with the placebo, curcumin supplementation resulted in significant decreases in serum 3- methyl-2-oxovaleric acid, 3-hydroxyisobutyrate, kynurenine, succinate, citrate, α-ketoglutarate, methylamine, trimethylamine, hippurate, indoxyl sulfate, chenodeoxycholic acid, taurocholic acid, and lithocholic acid. This panel of metabolic biomarkers could effectively distinguish NAFLD subjects treated with curcumin and placebo groups, achieving an area under receiver operating characteristic curve (AUC) values of 0.99.

Conclusion: Curcumin intake for 8 weeks to NAFLD patients had beneficial effects on mitochondrial dysfunction and gut microbiota dysbiosis associated with NAFLD.

Keywords: Metabolomics, NMR, Curcumin, Medicinal herb

Corresponding author Email address: nobakhtf1@nums.ac.ir

ID:741

The Expression of mir320 is reduced by metformin in insulin resistant 3T3L1 adipocytes

Yousof Naghiaee[1], Javad Mohiti[1], Reza Didehdar[1]
[1] Department of Biochemistry and Molecular Biology, School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Objective: MicroRNAs are small non-coding double stranded RNAs With 19-22 nt long repress activity of complementary mRNA regulate 30% of mammalian gene products. Some miRNAs as miR320 play any role in the development of insulin resistance in adipocytes, an important pathophysiological effect in diabetes. There is a new idea of miRNAs as biomarker in insulin resistant. Metformin is currently the drug of first choice for the treatment of T2D that reduce hepatic glucose output and increase uptake of glucose by the periphery, including adipocyte tissue. However metformin reduces insulin resistance. The aim of this study was whether metformin change expression of miR320 in insulin resistant 3T3L1 adipocytes.

Material and Methods: 3T3L1 cells were cultured in 6 plates in Dulbecco's modified Eagle's medium (DMEM) containing 10% FBS and differentiated to adipocytes with differentiation medium. Than the cells were induced to insulin resistance. metformin treatment was done at 2 and 24 hours in different concentrations (2.5 ,5,10 and 20 mmol/l). Quantitative real-time PCR was performed to determine miR-320 expression in insulin-resistant 3T3L1 adipocytes and compared with insulin resistant cells without metformin(control). Each sample was measured in triplicate, and gene expression levels were calculated using the 2-ΔΔct method.

Results: The results indicate that the expression of miR320 was increased in insulin resistant adipocytes.The expression of miR320 was inhibited in 2 hours metfornmin treatment for all concentrations so the maximum effect of metformin was 10 mmol/l(11.5 fold,p-value 0.02).

Conclusion: This study demonstrated that metformin reduced miR320 expression in insulin resistant 3T3-L1 adipocytes. More studies about IR-related miRNAs assessment serve therapeutic strategy to control insulin resistance

Keywords: MiR-320, 3T3-L1, metformin, insulin resistance

Corresponding author Email address: yosofnaghiaee@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:742

Effect of titanium dioxide nanoparticles on human umbilical vein endothelial cells viability and intercellular ROS level

Yousef Rasmi[1], Zafar Gholinejad[1]
[1] Department of Biochemistry, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

Objective: Titanium dioxide nanoparticles is a widely used materials in cosmetics, food, industries and medicine. Metal nanoparticles induce production of reactive oxygen species (ROS) in endothelial cell leading to cell death. Titanium is a safe and well tolerable element but the properties of materials change in nanoscale. We evaluated the effect of titanium dioxide nanoparticles on Human Umbilical Vein Endothelial Cells (HUVECs) viability and intercellular ROS level.

Material and Methods: HUVECs were cultured in DMEM media supplemented with 10% fetal bovine serum. The cells were cultured in 96 well plate and treated with titanium dioxide nanoparticles at 0, 1, 5, 25, 50 and 100 µg/ml concentration and cell viability were assessed by WST-1 method. The intercellular ROS were determined via 2.7 dichlorofluorescein diacetate dye activation and florescent intensity flowcytometric measurement.

Results: Findings demonstrated that titanium dioxide nanoparticles reduce cell viability in 100 µg/ml concentration. The intercellular ROS level were increased and oxidative stress occurred after exposure to nanoparticles in dose dependent manner.

Conclusion: Titanium dioxide nanoparticles have toxic effects on HUVECs cell line that probably mediated via oxidative stress. Therefore, titanium dioxide nanoparticles may trigger the different diseases via endothelial injury.

Keywords: Titanium dioxide, Nanoparticles, Oxidative stress, Cell culture, HUVECs

Corresponding author Email address: rasmiy@umsu.ac.ir

ID:744

Hotair ,new marker in patients suffer from breast ,colon, thyroid and glioma cancer

Durdi Qujeq[1], Reza Nasrnezhad Nesheli[1]
[1] Department of Clinical Biochemistry, Faculty Medicine, Babol University of Medical Sciences, Babol, Iran

Objective: Thyroid cancer is a one of important endocrine cancer. the cellular and biochemical mechanism of thyroid cancer is not well known. Recent years, noncoding RNAs were investigated by researchers. In this regard, hotair is homeo box transcript antisense RNA, this encoded antisense to the HOXC locous.
Material and Methods: To measure Hotair level, tissue and plasma can be prepared from cancer patients and examined by using immunological and genetic methods in different samples. The tissue samples are available in the surgical department of the affected patients, and a plasma sample is also available in coordination with cancer patients. The ANOVA method can be used to analyze the results
Results: Several researches and studies have shown that Hotair level changes in many cancer patients compared to the control group, and these changes is measurable and significant changes can be used for early diagnosis and differential diagnosis.
Conclusion: It is likely that Hotair, will be useful in the detection of cancers in a timely manner and before the onset of cancer and metastasis. Also, having these features better than previous markers , have a better diagnostic advantage.
Keywords: Hotair, new marker, cancer
Corresponding author Email address: dqujeq@gmail.com

ID:745

Status of serum selenium in patients with the polycystic ovary syndrome with and without insulin resistance

Maryam Kanafchian[1], Soleiman Mahjoub[1,2], Sedigheh Esmaeilzadeh[2], Maryam Rahsepar[1]
[1] Department of Clinical Biochemistry, School of Medicine, Babol University of Medical Sciences, Babol, Iran
[2] Infertility and Reproductive Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Objective: Polycystic ovary syndrome (PCOS) is one of the most common endocrine diseases of women. Insulin resistance (IR) is one of the important factors associated with the clinical signs in PCOS patients. This study aimed to evaluate serum selenium levels and their correlation with IR in women with PCOS and in control subjects.

Material and Methods: This case-control study was conducted at Fatemeh Zahra Infertility center in Babol, Iran. 60 women with PCOS (20–40 years old) and 90 healthy women were included in this study. The PCOS group was divided into two sub-groups including insulin-resistant (n=36) and non-insulin-resistant (n=24) groups. Fasting blood sugar, insulin, and serum selenium levels were performed in both groups. Insulin was measured using ELISA method. IR was assessed using Quantitative Insulin Sensitivity Check Index (QUICKI) and Homeostasis Model Assessment (HOMA-IR) indexes. The serum levels of Se were measured by an atomic absorption spectrophotometer.

Results: Serum selenium levels were significantly lower in patient group as compared with the controls (p=0.001). Insulin and HOMA-IR values were significantly higher but QUICKI values were significantly lower in the patient group than in the control group. There was no significant correlation between selenium levels and IR in the patient group.

Conclusion: The findings indicated decreased serum selenium levels and increased insulin resistance in the PCOS patients as compared to the controls. No significant correlation was found between serum selenium and insulin resistance in PCOS groups.

Keywords: Polycystic Ovary Syndrome, selenium, Insulin resistance

Corresponding author Email address: kanafchianm@gmail.com

ID:746

Lower omega-3 index is associated with obesity in men with metabolic syndrome

Fouzieh Zadhoush[1], Morteza Pourfarzam[1], Masoumeh Sadeghi[2]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, I. R. Iran
[2] Cardiovascular Research Center, Isfahan Cardiovascular Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Diet plays a pivotal role in the development of metabolic syndrome (MetS) and its cardiovascular consequences. Fatty acids (FAs) composition of dietary intake, affects FAs blood concentrations, cell membrane composition, insulin sensitivity and different unfavorable metabolic consequences. In this study, association between omega-3 index (red blood cell concentrations of eicosapentaenoic acid (%EPA) and docosahexaenoic acid (%DHA)) with anthropometric measurements and obesity was investigated in men with MetS, using gas chromatography/mass spectrometry (GC/MS).

Material and Methods: A total of 50 men with MetS, between 40 and 60 years of age and 30 normal men matched for age, sex and dietary intake were investigated from Isfahan Cardiovascular Research Center. Anthropometric measurements include height, weight, body mass index (BMI), waist and hip circumference (WC and HC respectively) were taken from all the subjects. To determine the omega-3 index, FAs composition of erythrocyte membranes was analysed using GC/MS.

Results: Negative associations were seen between the omega-3 index and anthropometric measurements of obesity include: BMI ($r = -0.283$, $p=0.049$), weight ($r = -0.285$, $p=0.045$), WC ($r = -0.359$, $p=0.011$) and HC ($r = -0.354$, $p=0.013$) in men with MetS. Such negative association was not observed in normal group ($P > 0.05$).

Conclusion: Omega-3 index was negatively associated with BMI, weight, WC and HC in men with MetS. In conclusion, lower level of omega-3 index is associated with a higher level of unfavorable anthropometric indices and can improve by lifestyle modification.

Keywords: Gas chromatography/mass spectrometry, metabolic syndrome, Omega-3 index

Corresponding author Email address: zadhoush@mail.mui.ac.ir

ID:747

Investigation of the cyp2c9 Gene polymorphism frequency and effects on the warfarin dose used by the patient's in the city of Kerman

Mohammad Javad Soltani Banavandi[1], Farideh Olia[2], Morteza Seifati[2], Naghmeh Sattarzadeh[3], Shahriar Dabiri[4]
[1] Departement of Microbiology, Kerman Branch, Islamic Azad University, Kerman, Iran
[2] Departement of Microbiology, Ashkzare Branch, Islamic Azad University, Yazd, Iran
[3] PhD student of Pharmaceutical Biotechnology, Faculty of Pharmacy, Kerman University of Medical Sciences, Kerman, Iran
[4] Pathology Department, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Warfarin is used as an edible drug and anticoagulant in the word is used for treatment and prevent to terembolitic disorders with bar the coagulation that depend on vitamin k. inspite of its affect this drug has a therapeutic indicator and reaction to that, is completely diverse. The high dose of this drug leads to bleeding and low dose leads to unpleasant type of coagulation. The aim of his study was the investigation of relation between age, gender, dietetic and polymorphism cyp2c9 and dose of warfarin in patient that consuming warfarin in the population of city of Kerman.
Material and Methods: A total of 100 blood sample from people with heart disease that used warfarin were collected which had referred to the lab for PT testing in city of Kerman, while receiving the consent form consent form. They were including 61 women and 39 men of age (20_90). PCR_RFLP was done after extraction of DNA from samples and relationship between cyp2c9 and dose of usage of warfarin was investigated.
Results: PCR_RFLP testing was performed with 100 samples and it's product checked by gel electrophoresis. According to the results frequency of genotype's TT and TC ,CC were respectively 1%,12%,87%.
Conclusion: Analysis of data shown that there was meaningful relationship between dose of usage of warfarin and age of people. And also there was no meaningful. relationship between different genotype polymorphism cyp2c9 and dose of usage of warfarin , age and gender of people.
Keywords: Warfarin, PCR-RFLP, polymorphism, vitamin k, cyp2c9
Corresponding author Email address: mj.soltani@yahoo.com

ID:748

Comparative Study on the effects of B and I derivatives of Cucurbitacin on ceramide metabolism in liver cancer cell line Huh-7

Marziyeh Fathi Chesli[1], Masoud Mashhadi Akbar Boojar[1], Gilda karimi[1], Sarah Khavari-Nejad[1]
[1] Department of Cell and Molecular Biology, Faculty of Biological Sciences, Kharazmi University, Tehran, Iran

Objective: The two derivatives of Cucurbitacin, B and I both belong to triterpenoid constituent of Cucurbitaceae species with cancer prevention potential. However, their mechanism of anti-cancer activity remains unknown, particularly in liver cancers. Here, we demonstrate, for the first time, that CuB and CuI inhibited the cell death of human liver cancer Huh-7 cells through a ceramide-dependent mechanism.

Material and Methods: In this study, Huh-7 cells were treated with two derivatives of CuB and CuI in the concentration range: 0, 0.5, 1, 2, 4, 6, 8 and 16 µM. Cell viability determined by the MTT method. Ceramide level, ceramidase, glucosylceramide synthase (GCS) and sphingomyelinase (SMase) activities were evaluated by spectrophotometer and HPLC in cell extract after 24 h treatment.

Results: The results showed that both derivatives were able to induce apoptosis in Huh-7 cells in ceramide generation pathways by which ceramide increase in dose dependent manner. This increase was attributed to to ceramide catabolism inhibition by decrease in ceramidase and glucosylceramide synthase (GCS) activities. On the other hand it was contributed to the rising activity of sphingomyelinase (SMase). Increasing in Caspase-3 activity also was related to program cell death that caused by both derivatives in which CuI was more potent than CuB. This difference may be attributed to structural modifications.

Conclusion: Our data explains the programmed cell death caused by both derivatives of CuB and CuI and demonstrates its therapeutic potential against Huh-7.

Keywords: Cucurbitacin B, Cucurbitacin I, ceramide metabolism, Cell line Huh-7

Corresponding author Email address: marziyehfathi55@gmail.com

ID:749

Cichorium intybus L seed extract ameliorates the palmitic acid induced oxidative stress in endothelial cells (HUVECs) by increasing eNOS and Akt phosphorylation, and decreasing endothelin-1 levels

Razie Abdollahi[1], Azin Nowrouzi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences

Objective: Excess circulating lipids in obesity (lipotoxicity) contribute to insulin resistance and endothelial dysfunction by initiating, promoting and maintaining oxidative stress. Insulin plays a physiologic role in vasculature where it regulates blood flow by endothelial nitric oxide synthase (eNOS) activation and endothelin-1 (ET-1) production. The balance between these two is important for the endothelial function. In this study, the effect of Cichorium intybus L (chicory) seed extract (CSE) on insulin signaling in endothelial cells has been investigated.

Material and Methods: Human umbilical endothelial cells (HUVEC) were treated with palmitic acid (PA, 100 □M) and different concentrations of CSE (0.625, 1.25, 2.5, 5.0 mg/ml) selected according to cell viability, MTT, assay. ROS levels were measured in CSE-treated cells (3, 12, 24 hr) by fluorimetry and fluorescence microscopy. NO levels were measured, by Griess method, in the culture media of groups treated with CSE (1.25, 2.5, 5.0 mg/ml), palmitate (100 □M) and insulin (100nM); Western blot was used to determine Akt and eNOS phosphorylation in the cells; endothelin-1 levels were measured in culture media by ELISA assay.

Results: PA increased ROS and impaired NO production. CSE (12 h) reduced ROS and increased NO production such as to normalize the NO: ROS ratio. In addition to increasing insulin-stimulated threonine 308 phosphorylation of Akt and serine 1177 phosphorylation of eNOS, CSE decreased endothelin-1 levels.

Conclusion: CSE appeared to play a beneficial role in endothelial cell function by magnifying the metabolic and attenuating the pro-atherogenic arms of insulin signaling pathway.

Keywords: Oxidative stress, chicory seed extract, nitric oxide, HUVEC cell, palmitate

Corresponding author Email address: r.abdollahi1370@yahoo.com

ID:752

Induction of cell cycle arrest by Britannin, a Sesquiterpene Lactone isolated from Inula aucheriana, in breast cancer cells

Faranak Fallahian[1], Mahmoud Aghaei[2], Mohammad hossein Abdolmohammadi[1], Maryam Hamzeloo-Moghadam[3]
[1] Cellular and Molecular Research Center, Qom University of Medical Sciences, Qom, Iran.
[2] Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran
[3] Traditional Medicine and Materia Medica Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Breast cancer is currently the most common cause of cancer-related death in women, especially in western populations and industrialized countries. Despite advances in therapies using chemotherapy, surgery and radiation, breast carcinoma remains a great challenge for clinical therapy. In the recent years, there has been growing interest in the use of natural products with more potent anticancer properties and reduced adverse effects. Increasing evidences demonstrate that plant-derived compounds could alter the natural history of cancer. Sesquiterpene lactones (SLs) are the active constituents of a variety of medicinal plants used in traditional medicine for the treatment of human diseases such as inflammation, headache and infections. Parthenolide, Artemisinin, and Tehranolide are examples of such compounds and have already reached cancer clinical trials. Britannin is a sesquiterpene lactone which in our previous works was isolated from the Inula aucheriana aerial parts and its anticancer activity was demonstrated. In this study, we evaluated the effects of Britannin on the cell cycle distribution and also cell cycle related proteins in breast cancer cells.
Material and Methods: Analysis of cell cycle distribution was carried out by flow cytometry. The effects of Britannin on Cyclin D1 and CDK4 expression were evaluated by Western blot.
Results: The obtained results show that Britannin at the low concentrations induces cell growth inhibition mainly via G1 phase arrest while it seems that apoptosis contribute to cell growth inhibitory effect of high doses of Britannin. Reduction of Cyclin D1 and CDK4 protein levels was also observed after treating cancer cells with Britannin.
Conclusion: The obtained results demonstrate that Britannin can inhibit MCF-7 and MDA-MB-468 breast cancer cells proliferation via arresting cell cycle progression through Cyclin D1/CDK4-mediated pathway.

Keywords: Britannin, sesquiterpene lactone, Cell cycle, CDK4, cyclin D1

Corresponding author Email address: faranak.fallahian@gmail.com

ID:753

Aqueous Citrullus colocynthis Sch. seed extract improves hepatic lipid profile in early and late stage diabetic rats by acting on PPARα, SREBP-1c, CPT1, ACC and FAS mRNA expression, triglyceride levels, and hepatic tissue morphology

Arezoo Afshari[1], Azin Nowrouzi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical sciences, Tehran, Iran

Objective: Insulin deficiency and hyperglycemia in diabetes mellitus have a central role in lipid metabolism disorders. Citrullus colocynthis aqueous extract (CCAE) of the seeds has been shown to benefit lipid profile and hepatic tissue morphology in diabetic rats. The present study focuses on the effects of CCAE on hepatic lipid metabolism alteration in diabetes.
Material and Methods: The liver tissues of the rats were used to measure, by RT- PCR, the expression levels of the mRNA for PPARα, SREBP-1c, CPT1, ACC and FAS. Hepatic triglyceride was measured by kit. PCC was measured as a marker of oxidative stress in the tissue. The histology examination was done through staining methods. The six groups (n = 6) of rats included Groups 1 (Control, non-diabetic), Group 2 (CCAE-control), Group 3 (NIA/STZ), Group 4 (CCAE-NIA/STZ), Groups 5 (STZ), Group 6 (CCAE-STZ). Treatment with CCAE was daily and intraperitoneal.
Results: Diabetes induction by STZ (late-stage) and NIA/STZ (early-stage) caused a lowering of PPARα, SREBP-1c, ACC and FAS mRNA expression, and an increase in CPT1 mRNA expression, PCC and hepatic TG concentrations, as well as morphological changes. After treatment with CCAE, the mRNA expression of PPARα increased but SREBP-1c, ACC and CPT1 mRNA levels, PCC and hepatic TG content decreased.
Conclusion: CCAE acted beneficially toward hepatic lipid metabolism via decreasing levels of ROS and CPT1 mRNA expression and increasing PPARα mRNA expression in late-stage diabetes. In early-stage diabetes, CCAE treatment also ameliorated lipid accumulation in hepatocytes.
Keywords: Diabetes mellitus, Lipogenesis, β-oxidation, Oxidative stress, Citrullus colocynthis
Corresponding author Email address: arezooafshari@gmail.com

ID:754

Relation of biochemical and hematologic indices to erythrocyte count in Arak women who referred to clinical laboratory.

Hadi Ansarihadipour[1], Mehdi Ansarihadipour[2], Golnaz Ansarihadipour[3]
[1] Arak University of Medical Sciences
[2] Sharif University of Technology.
[3] Faculty of Veterinary Medicine, Islamic Azad University, Karaj Branch, Karaj

Objective: Artificial Neural Network (ANN) is the powerful and preferred tool for data mining because of their flexibility and accuracy. The main purpose of this article is to describe the importance of ANN analysis in predicting the relation of biochemical and hematologic indices to erythrocyte count.

Material and Methods: blood samples were collected from women who referred to clinical laboratory. Iron, TIBC, FBS, Urea, uric acid, LDL, HDL, triglyceride, cholesterol, bilirubin, ALT, AST and Alkaline phosphatase were assayed as biochemical parameters of plasma. Hematologic parameters were HCT, RBC, MCV, Hb, MCH, MCHC, WBC, PLT and ESR. After data extraction, the results were analyzed by artificial neural networks. The characteristics of our multilayer perceptron were: a) biochemical and hematologic indices as independent variables in input layer, b) Batch method in the training phase, c) standardized method for rescaling the covariates, d) hyperbolic tangent and identity as activation functions, e) scaled conjugate gradient as optimization method, and f) erythrocyte count as dependent variable in output layer.

Results: According to our results, independent variable importance analysis showed that Hb concentration (100%), MCH (96.5%), ALT (70.8%), cholesterol (69.4%) and FBS (63.8%) were the most important parameters with the normalized importance values more than 50%. Also sum of squares errors (0.182 and 0.072), relative errors (0.026 and 1.986), and correlation between predicted and observed values (y=0.58+0.88x) showed that our ANN models have acceptable validity in predicting the most important parameters in relation to erythrocyte count.

Conclusion: ANN analysis is a powerful, reliable, accurate and important method in different fields of clinical biochemistry, especially in complicated processes such as correlation between biochemical and hematologic indices.

Keywords: Artificial Neural Network, Biochemical indices, Clinical Laboratory, Erythrocyte count, Hematologic indices

Corresponding author Email address: golnazansary@yahoo.com

ID:755

Investigation of somatic RET Gene Expression in Patients with Medullary Thyroid Cancer in Imam Khomeini Hospital

Elham shakiba[1,2], Monireh Movahedi[2], Ahmad Majd[2], Mehdi Hedayati[1]
[1] Cellular and Molecular Endocrine Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Department of Cellular and Molecular Biology, Faculty Of Biological Science, North Tehran Branch, Islamic Azad University, Tehran, Iran

Objective: Thyroid cancer is the most common malignancies of the endocrine glands. Medullary thyroid carcinoma (MTC) accounts for 5% of all thyroid cancers, and aberrant activation of RET (rearranged during Transfection) signaling is The basic molecular mechanism of MTC tumorigenicity which is caused by mutations in the RET gene. Analysis of RET gene mutations of Exon 10,11,16 is recommended in Iranian population. In some patients with medullary thyroid cancer, genetic studies do not show any mutations in these exons, and other mechanisms in these patients can affect the gene expression of RET, and examination of RET gene expression in these patients can be an alternative way to Identify and treat these people.
Material and Methods: 33 patients underwent thyroidectomy at Imam Khomeini Hospital in Tehran, and MTC diagnosis was confirmed by the pathologist. FFPE tissues of patients with medullary thyroid cancer were examined for mutations in exons 10, 11 and 16. DNA extracted from the tissue was amplified by PCR method and after determining the amplification of the desired region on the gel, were sequenced. In patients without mutations in these exons, RNA was extracted and after the synthesis of CDNA, the amount of RNA expression was measured employing the RT-PCR method.
Results: In patients who did not have mutations in exon 10, 11, and 16, RET gene expression was increased
Conclusion: Examination of RET gene expression could provide a complementary method for identifying and treating patients with medullary thyroid cancer.
Keywords: RET, MTC, Gene Expression, Thyroid cancer
Corresponding author Email address: shakibaelham@ymail.com

ID:756

Anticancer activity of Drimia maritima in human breast cancer cell lines MCF7 and MDA-MB-468

Mohammad Hossein Abdolmohammadi[1], Faranak Fallahian[1], Mahmoud Aghaei[2], Maryam Hamzeloo-Moghadam[3]
[1] Cellular and Molecular Research Center, Qom University of Medical Sciences, Qom, Iran
[2] Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran
[3] Traditional Medicine and Materia Medica Research Center and Department of Traditional Pharmacy, School of Traditional Medcine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: One of the major concerns in conventional therapeutic approaches is the risk of undesired and severe side effects arising from the non-specific targeting of both normal and cancer cells. Therefore, the discovery of natural plant products with low toxicity has attracted considerable scientific interest in the recent years. After survey on the historical Pharmacopoeia of Iranian Traditional Medicine and medicinal plants which had been used to manage cancer-like disorders, Drimia maritima (D.maritima) has been subjected to investigate the anticancer features of D.maritima as well as its possible molecular mechanisms of action in two breast cancer cell lines, MCF7 and MDA-MB-468 cell lines.
Material and Methods: To observe cell viability and proliferation, MTT assay were carried out. Apoptosis was assessed with the Propidium iodide and Annexin-V staining, mitochondrial membrane potential ($\Delta\Psi m$) measurement, cytochrome c release, and Bcl-2 and Bax protein expression.
Results: D.maritima was found cytotoxic against MCF-7 and MDA-MB-468 cells with IC50 value of 20.48±1.17 µM and 25.74±2.05 µM, respectively. Flow cytometric analysis showed that D.maritima induced apoptosis that was associated with the loss of mitochondrial membrane potential ($\Delta\Psi m$), cytochrome c release, and increasing Bax/Bcl-2 ratio.
Conclusion: Our results suggest that D.maritima exerts effective anticancer activity against human breast cancer cell lines MCF-7 and MDA-MB-468 through induction of apoptotic pathway.
Keywords: Drimia maritima; Anticancer; Apoptosis; Breast cancer
Corresponding author Email address: mh.abdolmohammadi@gmail.com

ID:757

Oxidative stress and basal cell carcinoma: Is it through alteration in zinc levels?

Ziba Majidi[1], Mahmoud DJalali[2], Mohammad Hasan Javanbakht[2], Koorosh Foladsaz[1], Solaleh Emamgholipour[3]
[1] Department of Clinical Biochemistry, Zanjan University of Medical Science, Zanjan, Iran
[2] Department of Cellular & Molecular Nutrition, Tehran University of Medical Sciences, Tehran, Iran
[3] Department of Clinical Biochemistry, Tehran University of Medical Sciences, Tehran, Iran

Objective: Basal cell carcinoma (BCC) is one of the most common skin cancers in the world. The most important cause for this cancer is oxidative stress and free radicals. Additionally, it is well-stablished that smoking is an important risk factor for a wide range of cancers. Although there is accumulating evidence that zinc function as an antioxidant, its possible role in BCC is obscure. Here, we aimed to investigate that plausible association of zinc levels in BCC with smoking-induced oxidative stress.
Material and Methods: Overall, 98 individuals have participated in this study; 40 BCC patients and 58 controls. All participants were recruited from Razi Hospital, Tehran, Iran. Peripheral blood was collected from subjects after overnight fasting. We evaluated the level of serum zinc with the use of Atomic Absorption Spectroscopy method. Besides, we evaluated serum Malondialdehyde (MDA) with colorimetric assay.
Results: The concentration of MDA was significantly higher in BCC group in comparison to control group (P = 0.001). Also, it was found that the case group had lower concentration of zinc than the control group (P = 0.000). Logistic regression showed no correlation between MDA and smoking (B = 0.209, P = 0.237) and zinc and smoking (B = -0.031, P = 0.142).
Conclusion: Collectively, it appears that there is no association between smoking–induced oxidative stress and zinc levels in BCC. However, further studies with larger sample size are needed to establish this concept.

Keywords: BCC, zinc, MDA, antioxidants
Corresponding author Email address: majidi.ziba@gmail.com

ID:759

Protein expression of BIR3 domain from XIAP in E. coli

Mohammad Shamsi[1], Farangis Ataei[1], Saman Hosseinkhani[1]
[1] Department of Biochemistry, Faculty of Biological Science, Tarbiat Modares University, Tehran, Iran

Objective: Apoptosis is a major type of regulated cell death in our bodies. Too much or too little apoptosis has been implicated in diverse diseases, including neurodegen¬eration and autoimmunity. Abundant evidence supports a role for inhibition of apoptosis in the promotion of cancer and blunting of therapeutic responses. Inhibitor of apoptosis proteins (IAPs) are a family of anti-apoptotic proteins characterized by the presence of baculoviral IAP repeat (BIR) domains. IAPs modulate apoptosis by binding and inactivating caspases and responsible for many drug resistances in cancer therapy. XIAP, one of the important IAPs directly binds to and thus inhibits caspase-3, caspase-7, and caspase-9. It possesses three N-terminal BIR domains: the first BIR domain (BIR1) is involved in the activation of NF-kB signaling, BIR2 can directly inhibit caspase-3 as well as caspase-7, and BIR3 inhibits caspase-9. XIAP also possesses a UBA (ubiquitin-associated) domain, which enables XIAP to participate in ubiquitin-dependent signaling processes, and a C-terminal RING (really interesting new gene) domain harboring an ubiquitin E3 ligase activity. In this research, the pET28a vector include the BIR3 domain (346-256 aa) of XIAP gene was transformed into a E.Coli BL21(DE3) expression strain. We tried some different circumstances to protein expression of the interested gene. our result shown that the BIR3 domain of XIAP was expressed in all conditions that we tested include 18° and 30° C of temperature, and lactose and IPTG as inducers. Time of induction was 18 hours for 18°C and 4 hours for 30°C. At these conditions, the BIR3 protein was expressed as soluble form.

Keywords: XIAP, BIR3, Expression, E.Coli

Corresponding author Email address : mshamsi90@ymail.com

ID:761

Adipokines are biomarker for cancer diagnosis

Fariba Rezaei Fakhrnezhad[1], Parichehr Hanachi[1]
[1] Department of Biochemistry, Faculty of Biology,Alzahra University, Tehran-Iran

Objective: Obesity is associated with an array of health problems in adult and pediatric populations. Adipose tissue represents an active endocrine organ that, in addition to regulating fat mass and nutrient homeostasis, releases a large number of bioactive mediators (adipokines) that signal to organs of metabolic importance. Several diseases are directly related to obesity, including diabetes, hypertension, atherosclerosis, stroke, musculoskeletal disorders, and a diverse range of malignances-such as breast and prostate cancer.

Material and Methods: Research evidence regarding the role of established and novel obesity-related biomarkers. The mechanisms have been proposed to contribute to the obesity-cancer link, including high levels of circulating and local estrogens, altered amounts of adipokines (leptin and adiponectin), disrupted insulin/IGF signaling, modifications within the microbiome, and local and systemic effects of inflammation. The Adipokines such as adiponectin, omentin, apelin, leptin, resistin, and fatty-acid-binding protein-4 may reflect various pathophysiological pathway that link obesity and cancers.

Results: The results of the study in prostate cancer shows, Leptin-to-adiponectin ratio and IL-6 were elevated in men with prostate cancer. Leptin, chemerin and IL-6 were associated with Gleason score. The relationships between leptin, chemerin and IL-6 were dependent on each other. Overweight and obese men had a higher Gleason scor.

Conclusion: An improved understanding of these processes is anticipated to propel novel and effective intervention strategies to reduce the global obesity-cancer burden.

Keywords: Adipokines, Adipo tissue biomarkers, cancer, obesity

Corresponding author Email address: r.fakhrnezhad@gmil.com

ID:764

Development of novel resveratrol nanodelivery systems based on lipid nanoparticles

Zahra Arab Sadeghabadi[1], Roghayeh Abbasalipourkabir[1], Roohollah Mohseni[1], Nasrin Ziamajidi[1]
[1] Student Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Resveratrol (RSV) is a potent antioxidant found in grapes and red wines. Nevertheless, its pharmacokinetic properties are less favorable, since the compound has poor bioavailability, low water solubility, and is chemically unstable. To overcome these problems, we developed resveratrol nanodelivery system based on lipid nanoparticles to enhance its therapeutic effects for further use in medicines, supplements, and nutraceuticals.

Material and Methods: Nanoparticles were prepared by a modified hot homogenization technique. The Lipid nanoparticle was made from palm oil, lecithin and emulsifier (sorbitol). Particle size (PS), polydispersity index (PI), zeta potential (ZP), drug entrapment efficiency (EE) and drug release were determined. Drug release behavior was measured in pH=7.4 and pH=3.5 (physiological temperature37∘C).

Results: 1 mg/ml were determined as suitable drug concentrations. PS of nano particle and nanoparticle loaded resveratrol were determined as 227.2 nm and 248.5 nm, respectively. ZP of nanoparticles was −13.5 mV ± 0.4 and −13.8 mV ± 0.1 in the same order. The drug EE was 74%. Controlled release was from 24% to 80%, reaching the maximum release at 6 h.

Conclusion: Construction of nanoresveratrol can be considered suitable carriers for enhance the absorbance and bioavailability and therapeutic benefits of resveratrol and allowing a controlled release after uptake

Keywords: Lipid nanoparticles, Nanoresveratrol, Bioavailability, Particle size

Corresponding author Email address: zahra.arab125@yahoo.com

ID:766

Interaction of hemoglobin with sodium dodecyl sulfate and ascorbic acid: a chemometrics study

Radnoush Mirzajani[1], Heshmatollah Ebrahimi-Najafabadi[2], Ebrahim Mirzajani[3]
[1] Department of Chemistry, Rasht Branch Islamic Azad University, Rasht, Iran.
[2] Department of Medicinal Chemistry, School of Pharmacy, Guilan University of Medical Sciences, Rasht, Iran.
[3] Department of Biochemistry, Faculty of Medicine, Guilan University of Medical Sciences, Rasht, Iran.

Objective: Hydrogen peroxide can be produced over interaction of sodium dodecyl sulfate (SDS) with hemoglobin which would facilitate oxidation process of hemoglobin. Presence of ascorbic acid (AA) can hinder extreme oxidation of oxyhemoglobin.

Material and Methods: Hemoglobin was purified from blood sample according to the method of Williams. UV-Vis spectra of Hb solutions mixed with different concentration of SDS and AA were recorded. Chemical components, concentration and spectral profiles were estimated using MCR-ALS techniques.

Results: The intensity of soret band of OxyHbdecreased due to interaction of Hb with SDS. Furthermore, changes were also observed for peaks at 575 and 540. Subspace plots confirm presence of OxyHb, MetHb and Hemichrom in each mixture. The resolved concentration profiles using MCR-ALS reveal that the mole fraction of OxyHb increased upon presence of AA up to concentration level of 3 mM. The higher concentration of AA shows reverse effect. AA demonstrated dual effect on the interaction of hemoglobin with SDS. AA disturbs interaction of SDS and hemoglobin and exhibits antioxidative effect. However, it caused a tiny decrease in mole fraction of OxyHb.

Conclusions: H2O2 produces upon interaction of OxyHb with SDS. Oxidation of OxyHb facilitates due to overproduction of H2O2. Ascorbic acid interact with H2O2 to form dehydroascorbic acid. Furthermore, the available free SDS reduced because the Gibbs free energy for micelle production of SDS became more negative in presence of AA.

Keywords: Hemoglobin, Ascorbic acid, Sodium dodecyl sulfate, Multivariate curve resolution, Antioxidan

Corresponding author Email address: rad.mirzajani@gmail.com

ID:768

Prostate-specific antigen as a novel marker for diagnosis of breast cancer

Ghader Babaei[1], Shiva Gholizadeh-Ghaleh Aziz[1], Azadeh Aliarab[2]
[1] University of Medical Sciences, Urmia, IRAN
[2] Shahid Beheshti University of Medical Sciences and Health Services

Objective: Breast cancer is the most commonly diagnosed cancer in women. According to the Surveillance, Epidemiology and End Results database, it is the third most common cause of cancer-associated mortality in women. The ability to identify and diagnose breast cancer has improved markedly. Prostate-specific antigen (PSA) is a serine protease expressed at high levels in prostate epithelium, and elevated PSA in serum is a well-established marker of prostate cancer. As well as numerous studies have demonstrated the production of PSA in female tissues such as the breast, and low levels of PSA are present in female sera. PSA is produced by the majority of breast tumors and is a favorable indicator of prognosis in breast cancer. Low levels of PSA are released into the female circulation, and while the level of serum PSA is elevated in both benign and malignant breast disease, the molecular form of circulating PSA differs between women with and without breast cancer. Thus, PSA represents a marker with numerous potential clinical applications as a diagnostic and/or prognostic tool in breast disease.
Material and methods: The current review has been achieved by using an organized search of the scientific data published on molecular biology of prostate specific antigen in women from various databases, including PubMed, ScienceDirect, Scopus, Scielo, SciFinder and Google Scholar.
Results: The results of the present study showed PSA could be a good candidate as a prognostic factor to diagnosis of breast cancer.
Discussion: Prostate-specific antigen (PSA) has been reported to be a potential biomarker of breast cancer. Given the dire need for tumour markers, only further studies can establish the utility of PSA in the detection and treatment of breast diseases and provide irrefutable evidence for its diagnostic and/or prognostic use as a new weapon against human breast cancer

Keywords: Tumor, prostate specific antigen, breast cancer, biomarker
Corresponding author Email address: ghaderbiochem@gmail.com

ID:769

Study of serum lead and cadmium levels of mine workers and their relation with liver function

Meisam Javadi aghjeh kohal[1], Mohammad Abdollahi teimourlouei[1], Homayun Dolatkhah[1]

[1] Departement of Biology, Faculty of Basic Sciences, Islamic Azad University Jolfa International Branch, Jolfa, East-Azarbaijan, I. R. Iran

[2] Departement of Clinical Biochemistry and Laboratories Medicine, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran

Objective: Work in mines in all countries of the world is accompanied by an accident and danger. Because health has different physical, psychological, social and spiritual dimensions, so measuring health with miners needs togo beyond disease and mortality and activity limitation. Therefore, the main objective of this study was to examine the level of serum lead and cadmium in mine worker and the evaluation liverdisorders in these workers.

Material and methods: This study was a descriptive case-control study with target population of workers employedin different mines.By conveying the type of study and the study objectives,by obtaining written consent,270 employees working in mines as case group and270 individuals healthy non-employment was selected in the mines as a control group and 10 ml ofblood was taken from them.All blood samples taken were transferred to a freezer at-80 0c and stored until the tests were performed.Cadmium and lead concentrations were directly measured by the CTA-3000atomic absorption spectrophotometer(Chemtech Analitical Instruments Limited UK).The amount of AST,ALT,ALP and ϒ-GTactivity in serums were measured by colorimetric method.The levels of 5'-Nocleotidas in subjects serum measurd by ELISA method.

Results: According to demographics ofworkers,the average employment rate in mining was7.2years.The level of lead and cadmium in miners(case group) was significantly higher than the control group(Respectively p-value equal 0.025 and 0.001).The mean level of serum ASTandALT activity in the case group was significantly higher than the control group(p-value was 0.004 and 0.045 respectively).The rate ofAST/ALTincreased in case group.The level of ALP activity in the two groups did not show a significant difference,butϒGT and 5'-Nucleotidease activity in the case group showed a significant increase compared tothe control group(in both cases $p<0.0001$).

Conclusion: The findings of this study show that the prolonged increase in lead and cadmium in the blood of mines' workers has asignificant effect on the level of liver enzymes. Screening for liver tests in these workers can be helpful in maintaining their health.

Keywords: Mine Workers, Trace Elements, Liver Disfunction

Corresponding author Email address: meysamjavadi29@gmail.com

ID:770

The survey levels of Arsenic and Mercury in serum of mine workers in East Azarbaijan and relationship with kidney function

Mohammad Abdollahi teimourlouei[1], Meisam Javadi Aghjeh kohal[1], Homayun Dolatkhah[2]
[1] Deptment of Biology, Faculty of Basic Sciences, Islamic Azad University Jolfa International Branch, Jolfa, East-Azarbaijan, I. R. Iran
[2] Departement of Clinical Biochemistry and Laboratories Medicine, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran

Objective: Since work in the mine is always considered with the probability of different risks for workers employed there, one of these risks can be the presence of metallic trace elements in the mine and its impact on the function of the various organs of the body. Therefore, the main aims of this research is to survey the level of arsenic and mercury in the serum of mine workers and its relation with the function of the kidneys.

Material and methods: This study was a descriptive case-control study with target population of workers employed in different mines. By conveying the type of study and the study objectives, by obtaining consent letter, 270employees working in mines as case group and270 individuals' Healthy non-employment was selected in the mines as a control group. From selected subjects was taken 10 ml blood sample. All blood samples after serum-making were transferred to a freezer at-80 0c and stored until the tests were performed. The amount of arsenic and mercury was measured directly by Chemtech Analytical Instruments atomic absorption spectrophotometer CTA-3000.The levels of Creatinine in serum measured by Jaffe vs enzymatic colorimetric method. The amount of Cystatin-C, β2-Microgluboline and β2-Trace Protein in serum measured by ELISA method.

Results: According to the information gathered by the workers, the average activity of workers in the mines of the province was 6.5 years. Serum levels of arsenic and mercury in the case group (miners) were significantly higher than the control group (respectively value equal 0.0003 and 0.036). In the case group, levels of serum creatinine significantly higher than the control group (p = 0.002).Serum cysteine C, β2-microglobulin andβ2-Trace Protein levels also showed a significant increase in the case group compared to the control group (Respectively p value was 0.032, 0.045 and0.022).

Conclusion: The results of this study showed that kidney dysfunction due to increased arsenic and mercury levels in miner's workers was a serious warning to the health of these subjects. The annual survey of these kidney function workers is a very important suggestion to maintain their health.

Keywords: Trace Elements, Mine Workers, Kidney Dysfunction

Corresponding author Email address: mohammadabdollahi312@gmail.com

ID:772

Protective effects of Arbutin against tert-butyl hydroperoxide-induced oxidative stress in human foreskin fibroblasts (HFFs) through regulation of P53 and BAX/Bcl-2 ratio

Shima Ebadollahi[1], Mahdi Pouramir[1], Ebrahim Zabihi[1], Monireh Golpour[1], Mohsen Aghajanpour[1]
[1] Cellular and Molecular Biology Research Center, Babol University of Medical Sciences, Babol, Iran

Objective: The integrity of human skin as a main target of oxidative stress is endangered by multiple insults such as exposure to UV irradiation and chemical stressors, which can trigger the production of reactive oxygen species (ROS). Anti-oxidative responses include activation of many stress-response genes (e.g. p53) and their signaling pathways. Tert-Butyl hydroperoxide (t-BHP) is widely used to study cellular injuries such as oxidative damage and cell apoptosis. T-BHP was found to induce the apoptotic process in cells through the up and down regulation of Bax/Bcl-2 protein. Arbutin (p-hydroxyphenyl-β-D-glucopyranoside), a natural polyphenol, is identified as a herbal medicine that possesses beneficial functions including anti-inflammatory, antioxidant and anti- tumor activities. Accordingly, we evaluated the cytoprotective effect of arbutin and the mechanism related to oxidative stress in t-BHP induced fibroblast cells.
Method: The cell viability was estimated by MTT and the percentage of apoptotic or necrotic cells was determined using a double staining Annexin V Fluorescein Isothiocyanate (FITC) Apoptosis Detection kit (eBioscience, San Diego, CA, USA). The mRNAs of P53, BAX and Bcl-2 were measured by Quantitative PCR.
Result: The viability of fibroblast cells decreased after 24 h of incubation with t-BHP in a dose-dependent manner ($p< 0.01$). Arbutin pre-treatment markedly promoted fibroblasts viability, in a dose-dependent manner ($p< 0.01$). Additionally, arbutin significantly reduced P53 expression and the ratio of Bax/Bcl-2 ($p< 0.01$). As well as, arbutin inhibits necrotic death induced by t-BHP in fibroblast cells ($p< 0.01$).
Conclusion: Arbutin showed a protective effect against t-BHP-induced oxidative damage by increasing cell viability and reducing necrosis, Bax/Bcl-2 ratio and P53 expression in fibroblast cells. Our results confirm that arbutin possesses antioxidant properties, and may be useful for the prevention of free radical-induced skin damage.

Keywords: Arbutin, oxidative stress, fibroblast cells, apoptosis, tert-butyl hydroperoxide

Corresponding author Email address: shima7631@yahoo.com

ID:775

Investigating the pharmacological properties of the enzyme monoamine oxidase in terms of psychiatry

Keyvan Alborzian Moghaddam[1], Negin Hoghoughi[2]
[1] Divisin of biology, department of biochemistry, nourdanesh institue of higher education, meymeh, Isfahan, Iran
[2] Division of genetic, department of biology, university of Isfahan, Isfahan, Iran

Objective: Drugs that Inhibit monoamine oxidase (MAO; moraamins: oxygen oxidoraductase(deamtnating) have proven useful in the treatment of depresssloe and of mild to moderate hypertension. The development of new MAO Inhtb Itor drugs by pharmaceutical Industry has almost been abandoned because of the toxic effects of the original hydrazine and hydrazine drugs. They produced hepatotoxicity, impaired red-green color vision and neurologtc damage. These toxic reactions were unrelated to the ability of these compounds to inhibtt MAO. Nevertheless interest to this area of pharmacology has subsided. The ma]or complication associated with the few MAO Inhibitor drugs that are currently used is a hypertensive episode following the Ingestion of foods containing high concentrations of amines, particularly tyramine . Apparently the Ingested amines enter the circulation and because they cannot be metabolized by the liver, they are free to release norepinephrtne from nerve endings, thereby producing a hypertensive reaction. During the past several years multiple forms of MAO have been identified in vitro and in vivo. The purpose of this review Is to present a syrapsis of these observations.

Keywords: Monoamine oxidase, depress, neurologtc damage, MAO

Corresponding author Email address: keyvan alborzian1@gmail.com

ID:776

Effects of Fetal Bovine serum and Human serum on Isolation, proliferation Adipose-Derived Stem Cells

Alireza Khoshdel[1], Hosein Mohammadpour[2], Maryam Hosseinipour[2], Giti Farsi[2], Vhid Razban[3], Mehdi Mahmoodi[4], Mohamadreza Hajizadeh[2]

[1] Department of Clinical Biochemistry, Faculty of Medicine, and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[2] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[3] Department of Molecular Medicine, Faculty of Advanced Medical Sciences and Technologies, Shiraz University of Medical Sciences, Shiraz, Iran

[4] Department of Clinical Biochemistry Afzalipoor Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Although the therapeutic potential of embryonic stem cells and bone marrow stem cells is theoretically enormous due to their reproducibility, there are still restrictions to their practical use. Hence, it has been considered the adipose - derived stem cells (ADSCs). Common proliferation protocols use fetal bovine serum (FBS) as a growth factor which is potentially a source of pathogens, and contains animal antigens that can cause an allergic reaction after transplantation in the recipient, and regarding immunity, human serum (HS) could be a suitable alternative to it. The aim of this study is to compare the culture medium enriched with FBS or HS as supplements in the proliferation and differentiation of ADSCs.

Material and methods: HS was extracted from venous blood of a healthy person, and The ADSCs were isolated by collagenase I and cultured by mediums enriched with FBS or HS. Expression of the surface markers of ADSCs was investigated by flow cytometry.

Results: The analysis of cell growth showed that the isolation and proliferation of ADSCs in both media (HS & FBS) were similar.

Conclusion: This study showed that FBS could be replaced by HS in case of isolation, proliferation of stem cells as supplement.

Keywords: Human serum, Adipose-derived stem cell, Fetal bovine serum, Proliferation, Isolation

Corresponding author Email address: Alireza.khoshdel@gmail.com

ID:777

Molecular Docking Studies of tyrosine kinase inhibitors targeting DDR1

Reza Azizi[1], Mahmoud Mirzaei[2]
[1] Department of Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Department of medicinal chemistry, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: The discoidin domain receptors1 (DDR1) that functions as cell surface receptor is activated by the binding of matrix fibrillar collagen and regulates proliferation, invasion, migration and adhesion. Deregulated DDR1 signaling has been linked to the pathogenesis cancer. DDR1 plays a relatively critical role in the development and survival of cancer cells, and their inhibitors are the main approaches to targeting tumor suppression. Cancer related tyrosine kinases such as DDR1 might provide new therapies for diseases such as cancer. Since the DDR1 is overexpressed in tumor cells, so the inhibition of the DDR1 kinase activity would be a significantly effective strategy in cancer therapy.
Material and methods: In this study we examined the insilico inhibition of DDR1 by the tyrosine kinase inhibitors imatinib, ponatinib, gefitinib, erlotinib, sorafenib, sunitinib, dasatinib and DDR1-IN-1 using AutoDock.
Results: Our results indicate that DDR1-IN-1 has an interesting inhibitory activity on DDR1 insilico, and can be used in further studies to develop therapeutic modalities for the treatment of metastatic cancers. Among the eight compounds investigated, DDR1-IN-1 exhibited potent binding energy ΔG = -10.59 kcal/mols with DDR1 receptor compared to commercially available tyrosine kinase inhibitors.
Conclusion: In the current study DDR1-IN-1 was suggested as a specific DDR1 inhibitor and strongly suggested that DDR1-IN-1 is a potent anti-cancer compound as ascertained by its potential interaction with DDR1. This hypothesis provides a better insight to control metastasis by blocking DDR1.
Keywords: DDR1, Inhibitor, Docking analysis, Cancer
Corresponding author Email address: azizirr@yahoo.com

ID:778

Bioassay-guided isolation and xanthine oxidase inhibitory effects of compounds from pollen of Crocus sativus against Alzheimer

Zahra Farajzadeh Vahid[1], Mohammad Reza Rashidi[2], Majid Mahdavi[1], Morteza Eskandani[3], Mohsen Poorsoltan[4]
[1] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran.
[2] Faculty of Pharmacy, Tabriz University of Medicinal Science, Tabriz, Iran
[3] Research Center for Pharmaceutical Nanotechnology, Tabriz University of Medical Science, Tabriz, Iran
[4] Agriculture and Natural Resources Research Center of South Azerbaijan, Tabriz, Iran

Objective: Xanthine Oxidase (XO), an enzyme with oxidative activity, has key roles in neurodegenerative. It would be a hopeful and focal target in treatment of aging disease such as Alzheimer. The inhibition of XO with known chemical drugs may pose some degree of toxicity and unwanted side effects, which depicted investigation of new herbal medicines.
Method: The methanol extract of dried powder of pollen of Crocus sativus was extracted using maceration material and methods and was further fractionized using liquid-liquid extraction. The chloroform fraction showed potent inhibitory effects against XO and therefore was more fractionized using Sep-Pak (C18) cartridge with a step gradient of methanol: water. Sub-fraction eluted by 100:0 solvent showed better bioactivity. The selected sub-fraction was more purified using HPLC material and methods based on the inhibitory effects of dominant peaks against XO.
Result: Methanol extract showed potent XO inhibitory effect (XX%), and obtained chloroform extract displayed >XX% inhibition at the final concentration of 100 µg/ml. Moreover, methanol: water (100:0) sub-fractions obtained by Sep-Pak inverse chromatography showed ~95% inhibitory effects against XO.
Conclusion: The results obtained here showed the potent inhibitory effects of pollen of C. sativus against XO.

Xanthine Oxidase, Crocus sativus, chromatography, Alzheimer,

Corresponding author Email address: Zahra_farajzadeh94@ms.tabrizu.ac.ir

ID:779

Oral administration effect of biochanin A ondiameter of LDL particles sdLDL-c serum levels in Streptozotocin-Nicotinamide induced diabetic rats

Mr Mahdi Bahmani[1]
[1] Hamadan University of Medical Sciences

Objective: Small dense LDL (sd-LDL) particles are smaller and more dens than the other sub classes of LDL. sdLDL particles are also more sensitive to oxidation. Furthermore, the particles easily penetrate the sub-endothelium space. Therefore, sdLDL particles are more atherogenic than typical LDL. Elevated sdLDL levels is one of the dyslipidemia of diabetes mellitus. Biochanin A is a natural agonist for PPAR transcription factors and can activate both PPARα and PPARγ. According to role of PPAR on lipid metabolism, in the present study, we investigate the effect of Biochanin A on sdLDL level in Streptozotocin-Nicotinamide induced diabetic rats.

Material and methods: The diabetes model was induced by single intraperitoneal injection injection of a steroptosovotin-nicotinamide to adult male rats. To confirm diabetes, fasting blood glucose (FBG) was measured after 72 h. Then, treated by10 and 20 mg/kg of Biochanin A for 28 days. Furthermore sdLDL was measured by precipitation method.

Results: Treatment with 10 and 20 mg/kg of biochanin A decreased the FBG, serum sd-LDL levels and increased Body weight, diameter of LDL particles in diabetic animals significantly.

Conclusion: Administration of biocanin can be useful improvment of diabetes mellitus type 2 and dyslipidemia associated with it.

Keywords: Sd-LDL-c, diabetes mellitus, Biochanin A, PPAR

Corresponding author Email address: bahmani.m64@gmail.com

ID:780

Evaluation of relationship between serum levels of osteocalcin with atherosclerotic coronary arteries in people undergoing angiography at Bushehr Heart Center

Zahra elyaspour[1], Ali Movahed[2], Daryoush Iranpour[3], Niloufar Motemed[4]
1 Department of Biochemistry, Bushehr University of Medical Sciences, Bushehr, Iran
2 Department of Biochemistry, The Persian Gulf Tropical Medicine Research Center, Bushehr University of Medical Sciences, Bushehr, Iran
3 Department of Cardiology, Faculty of medicine, Bushehr University of Medical Sciences, Bushehr, Iran
4 Department of Community Medicine, Faculty of Medicine, Bushehr University of Medical Sciences, Moallem Street, Bushehr, Iran

Objective: The aim of this investigation was to evaluate the relationship between serum levels of osteocalcin with coronary artery plugs in people undergoing angiography.

Material and methods: In this case-control study, 138people who referred to Bushehr Heart Center for routine examination were participated. Demographic information of the participants was registered by a standard questionnaire. Before undergoing the angiographic processes, 10 ml blood was collected from all the participants and stored at – 80 °C until the analysis. After the angiography was performed, those who found to be normal entered the control group, and those with one or more arteries blocked were placed in the case group. Finally, serum levels of osteocalcin were measured in all the samples, by using ELISA kits.

Results: Serum levels of osteocalcin in the case group were significantly higher than the control (P=0.019). Moreover, no relationship was found between the osteocalcin levels and the number of blocked arteries and the severity of atherosclerosis (P= 0.95). By separating the two factors like age and T2DM disease in both the groups, a difference was found in the concentration of osteaocalcin and coronary artery atherosclerosis (P= 0.034).

Conclusion: The results of this investigation showed that a significant relationship exists between the increase in the concentration of serum osteocalcin and coronary artery atherosclerosis.

Keywords: Osteocalcin, atherosclerotic coronary arteries, angiography

Corresponding author Email address: ze.dezire@gmail.com

ID:781

Correlation of trypsin inhibitory capacity with antineutrophil cytoplasmic antibody in multiple sclerosis

Giti Farsi[1], Alireza Khoshdel[2], Vahid R Haghaniat[1], Abbas Lotfi[3], Amir Moghadam Ahmadi[4], Mohammad R Hajizadeh[1], Mehdi Mahmoodi[5]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Department of Clinical Biochemistry, Faculty of Medicine, and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[3] Department of Clinical Biochemistry, Faculty of Medicine, Tarbiat modares University of Medical Sciences, Tehran, Iran
[4] Neurologist, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[5] Department of Clinical Biochemistry Afzalipoor, Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Objective: Alpha-1 antitrypsin (AAT) is an inhibitor of proteinase3, an autoantigen for antineutrophil cytoplasmic antibody (ANCA). AAT deficiency is an inherited genetic disorder caused by mutations in the SERPINA1 gene that manifests as liver cirrhosis, lung diseases and auto immune diseases, and is characterized by low serum levels of AAT. This protein has been associated with a variety of autoimmune diseases. In this study sera from Iranian patients with multiple sclerosis were investigated in order to detect correlation between AAT activity with ANCA.

Material and methods: The activity of Alpha-1 antitrypsin as its potential trypsin inhibitory capacity (TIC) was measured spectrophotometrically with BAPNA substrate and ANCAs were detected in patients sera using the standardized indirect immuno fluorescence test.

Results: Seventy-three percent of patients were c-ANCA whereas no one was p-ANCA positive. The mean of TIC was detected 2.23 µM/mL/min.

Conclusion: We concluded that there was a significant difference between Alpha-1 antitrypsin activity and ANCA- positive tests in patients with multiple sclerosis.

Keywords: Alpha-1 antitrypsin, Antineutrophil cytoplasmic antibody, Multiple sclerosis

Corresponding author Email address: **Gity.Farsi@gmail.com**

ID:782

Chronic pregabalin administration impairs memory of rat in Object Recognition Task

Ali Hosseini-Sharifabad[1], Mohammad Rabbani[1], Ali Sheikh Darani[1]
[1] School of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Pregabalin is used as an adjunctive therapy in patients with partial seizure, fibromyalgia and central neuropathic pain associated to spinal cord injury and generalized anxiety disorders. This study is designed to determine the effects of pregabalin on memory of rat using object recognition task.
Material and methods: Male wistar rats were intraperitoneally injected 10 or 30 or 100 mg/kg/day of pregabalin for 28 days according to their respective group (n=7). In parallel the group of animal received a same volume of saline as the vehicle. After the end of treatments animals were undergone the new object recognition task (ORT) for evaluation of their spatial memory. For this reason the discrimination (d2) and recognition (R) indexes as well as the frequency of new object exploration were calculated. The data were analyzed using one way analysis of variance followed by Tukey post hoc tests. The P-values less than 0.05 were considered as statistically significant.
Results: Our results show that administration of pregabalin at the dose of 10, 30 or 100 mg/kg for 28 days significantly reduces the d2 and R indexes and frequency of exploration in the T2 trials compare to the control group. 100 mg/kg of pregabalin shows more decrease in the above factor compare to the 10 mg/kg.
Conclusion: The findings of the present study indicate, long term exposure to the pregabalin impairs spatial memory of rat in the object recognition task. The pregabalin induced cognitive deficit shows a dose dependent manner in this study.
Keywords: Pregabalin, Chronic, Memory, Rat, Object recognition task
Corresponding author Email address: **hosseini_a@pharm.mui.ac.ir**

ID:783

Assessment of urinary concentration of minerals and it,s relationship with urinary iodine excretion during pregnancy in urmia county

Vahideh Jalili[1], Zahra Ashrafi[1], Jaffar Nourooz-Zadeh[1], A. Ali Nikibakhsh[2]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Urmia university of Medical Science, Urmia, Iran
[2] Department of Nephrology of Motahhary, Urmia, Iran

Objective: Iodine is a trace element and is required for the biosynthesis of thyroid hormones. Determination of urinary iodine concentration in pregnant women especially in iodine deficient areas is important. Random spot UI concentrations and UI/Cr is most widely used for UI measurements. Renal iodide clearance depends on glomerular filtration rate (GFR) and tubular reabsorption of urinary iodine is affected by osmotic diuresis. The ame of this study was to evaluate the relationship between deuresis and iodine excretion and thyroid function during pregnancy.

Material and methods: In this cross-sectional study 131 pregnant women at 1st trimester and 60 no pregnant women were enrolled. Random urine were collected at 1st, 2nd, 3rd trimester. UIC was determind by Sandal- Kolthoff technique. Urinary calcium and creatinin were analyzed by CPC and gaffe method respectivly. Na+ and K+ measured by flame photometer. serum TSH was determind by chemiluminescence.

Results: The amounts of I/creatinine ratio in 1st, 2nd, 3rd trimester were 0.008 µg/g, 0.02 µg/g, 0.01 µg/g, respectivly. The corresponding values for the means of Ca/Cr, Na/Cr, K/Cr ratios were 0.08, 0.12, 0.12; 1.39,1.73,1.93; 0.5, 0.6, 0.6 respectivly. Mean of TSH values in 1st, 2nd. 3rd trimester were 1.1 (mIU/L),1.7 (mIU/L), 1.5 (mIU/L) during the three gestation stages.

Conclusion: In this study, increasing values of urinary Ca, Na, K and iodine during pregnancy and correlation between them in first and second trimester suggests that increase in deuresis due to pregnancy causes high iodine excretion, that may mask the iodine deficiency in pregnant women at iodine defficient areas.

Keywords: Urinary iodine concentration(UIC), Glommerular filtration rate (GFR), iodine defficient (ID)

Corresponding author Email address: psy.bio.chem@gmail.com

ID:784

Assessment of urinary Ca, Na, K and it,s relationship with urinary iodine excretion and during pregnancy in Urmia county

Vahideh Jalili[1], Zahra Ashrafi[1], Jaffar Nourooz-Zadeh[1], A. Ali Nikibakhsh[2]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Urmia university of Medical Science, Urmia, Iran
[2] Department of Nephrology of Motahhary, Urmia, Iran

Objective: Iodine is a trace element and is required for the biosynthesis of thyroid hormones. Determination of urinary iodine concentration in pregnant women especially in iodine deficient areas is important. Random spot UI concentrations and UI/Cr is most widely used for UI measurements. Renal iodide clearance depends on glomerular filtration rate (GFR) and tubular reabsorption of urinary iodine is affected by osmotic diuresis. The ame of this study was to evaluate the relationship between deuresis and iodine excretion and thyroid function during pregnancy.

Material and Methods: In this cross-sectional study 131 pregnant women at 1st trimester and 60 no pregnant women were enrolled. Random urine were collected at 1st, 2nd, 3rd trimester. UIC was determind by Sandal- Kolthoff technique. Urinary calcium and creatinin were analyzed by CPC and gaffe method respectivly. Na+ and K+ measured by flame photometer. serum TSH was determind by chemiluminescence.

Results: The amounts of I/creatinine ratio in 1st, 2nd, 3rd trimester were 0.008 µg/g, 0.02 µg/g, 0.01 µg/g, respectivly. The corresponding values for the means of Ca/Cr, Na/Cr, K/Cr ratios were 0.08, 0.12, 0.12; 1.39,1.73,1.93; 0.5, 0.6, 0.6 respectivly. Mean of TSH values in 1st, 2nd. 3rd trimester were 1.1(mIU/L),1.7 (mIU/L), 1.5 (mIU/L) during the three gestation stages.

Conclusion: In this study, increasing values of urinary Ca, Na, K and iodine during pregnancy and correlation between them in first and second trimester suggests that increase in deuresis due to pregnancy causes high iodine excretion, that may mask the iodine deficiency in pregnant women at iodine defficient areas.

Keywords: Urinary iodine concentration (UIC), Glommerular filtration rate (GFR), iodine defficient (ID)

Corresponding author Email address: psy.bio.chem@gmail.com

ID:785

Evaluating the association of single nucleotide polymorphism (SNP) rs6983267 with esophageal cancer in Iranian patients

Farzaneh Karimi[1], Maryam M. Matin[1]
[1] Department of Biology, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: Esophageal cancer is one of the leading causes of death worldwide. The main problem with esophageal cancer is related to its late diagnosis and therefore poor prognosis. Single-nucleotide polymorphisms (SNPs) in several genes may increase the risk of different cancers. Several genome-wide association studies in various populations have proposed rs6983267 as a susceptibility marker for multiple cancers such as prostate, colorectal, breast, bladder, ovarian, thyroid and lung cancers. Therefore, rs6983267 in chromosome 8q24 was selected for further analysis in esophageal cancer patients.
Material and methods: In this case–control study, 30 patients with esophageal cancer and 45 control samples were collected from different hospitals in Mashhad, Iran. Genomic DNA was extracted from 5 ml fresh peripheral blood and the genotyping was performed by TaqMan allele discrimination method.
Results: Hardy–Weinberg test was done and samples were in equilibrium ($p < 0.05$). Chi square test was used to investigate the association between rs6983267 and cancer development, however the results did not show any significant association and genotype frequencies were similar between control and case groups.
Discussion: In conclusion, rs6983267 did not show any significant association with esophageal cancer in these patients. This might be due to small sample size or the effect of interacting factors. Therefore, we suggest to study this SNP in combination with other SNPs and also in a larger sample size to confirm the results.

Keyword: Esophageal cancer, Single-nucleotide polymorphism, 8q24 region, rs6983267

Corresponding author Email address: matin@um.ac.ir

ID:787

Anti – cancer effect of immobilized whey proteins on grapheme oxide Nano sheets on human breast cancer cell line MCF - 7

Seyed Ziyae Aldin Samsam Shariat[1], Behnaz Tahsiri[2]
[1] Department of Clinical Biochemistry, Phaculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Department of Biochemistry, Shahid sadoughi, Universityof medical Sciences Yazs, Iran

Objective: Breast cancer is one of the common malignancies in women worldwide. Due to the increasing incidence of cancer and toxicity of chemotherapeutic agents, development of an effective therapeutic method without side effects is an urgent need. Recently, protein immobilization has aroused much interest because it can improve protein efficiency. Therefore, the aim of this study was to evaluate of anti – cancer effect of immobilized whey proteins on graphene oxide.
Material and methods: Cytotoxicity and mechanism of cell death induced by the immobilized whey proteins were analyzed by MTT assay and flowcytometery method respectively.
Results: The results showed that immobilized whey proteins have potent cytotoxic activity against MCF – 7 cells in a dose dependent manner, while they did not have cytotoxicity against cell lines HTB – 22. Immobilized forms of whey proteins inhibited the MCF – 7 growth by 69 and 87% during 24, 36, and 48 h, respectively but did not have inhibitory effect on normal cell lines. The apoptosis level of MCF -7 in flow cytometry was 70 and 86% in 24 and 48 h, respectively.
Conclusion: Since anti – cancer potential of immobilized whey proteins on silver nanoparticles is more than native whey proteins, it can be taken as a cytotoxic agent on MCF – 7 cells.
Keywords: Whey, Lyophilized, Immobilization, Breast cancer, Apoptosis
Corresponding author Email address: samsam @pharm.mui.ac.ir

ID:788

An anthropometric measurement is Conversely Correlated to LAMP-2 Gene Expression Level: A Predictor for diseases like atherosclerosis

Mohammad Najafi[1], Bita sadat Hosseini[1]
[1] Iran University of Medical Sciences, Tehran, Iran

Objective: The nutritional assessments are merged with cellular events to understand the role of food on progression of nutrition-related diseases which can act as early predictors for atherosclerosis. The associations between anthropometric measurements and lipid profile may affect cholesterol homeostasis through lysosomal entrance system. Since lysosomal membrane LAMP-1 and LAMP-2 proteins are effectively involved in cholesterol transportation. The aim of this study was to investigate the relation between gene expression levels and anthropometric measurements.

Material and methods: The community-based survey was conducted with 126 healthy volunteers in the study. The LDL-C, HDL-C, and TC values were measured by routine laboratory techniques. The HC, WC, and WHR measures were calculated on the basis of current anthropometric material and methods. The LAMP-1 and LAMP-2 expression levels were measured by Real Time qPCR technique.

Results: The results indicated that the HC, WC, WHR measures are significantly related to BMI value (r 0.6, p 0.0001; r 0.6, p 0.0001; r 0.1, p 0.006, respectively). The LAMP-2 expression level was conversely related to LDL-C value, based on normal upper range (>130mg/dl, $p<0.005$). Furthermore, these results were studied between the gender groups which showed the LAMP-2 expression level was conversely correlated to WHR among males (r -0.37; $p<0.05$).

Conclusion: Our data showed that the LAMP-2 expression level is reduced when the serum LDL is above the normal range (>130mg/dl). In addition, we suggested that the increase of WHR may indicate the increase of intracellular cholesterol synthesis due to the decrease of cholesterol uptake.

Keywords: LAMP, Lipid, Anthropometric measurements, WHR, atherosclerosis

Corresponding author Email address: nbsmmsbn@iums.ac.ir

ID:789

Oxidative modifications of human hemoglobin during exposure to iron-catalyzed oxidation systems

Golnaz Ansarihadipour[1], Hadi Ansarihadipour[1]
[1] Islamic Azad University, Science and Research Branch, Karaj, Iran

Objective: The main aim of this study was to describe the oxidative effects of of iron on human hemoglobin.
Material and methods: Oxidative changes in hemoglobin were studied by spectrophotometric analysis. Protein oxidation was estimated by carbonyl groups assay. Oxidative damage in erythrocyte membrane was investigated according to structural changes in cytoskeleton proteins by sodium dodecyl sulfate polyacrylamide gel electrophoresis and staining with Coomassie briliant blue G-250.
Results: Increase in optical density (OD) at 340 nm showed a significant change in globin and heme interaction, which predicted for low oxygen affinity. Formation of methemoglobin (metHb) was represented by an increase in optical density at 630 nm. Also there was a marked elevation in hemichrome content of erythrocytes in comparison to control groups. A decrease in OD420 showed a significant decrease in oxyHb concentration and conversion of oxygen hemoglobin to methemoglobin. Interestingly, elevated levels of carbonyl groups confirmed the oxidative damage in human erythrocytes. Also a positive correlation was observed between hemoglobin absorbance at 340 nm and iron concentration. Analysis of membrane proteins showed a slight decrease in the intensity of α-spectrin band and molecular aggregates in the range of 150 to 180 kD.
Conclusion: These findings may be helpful in evaluating the oxidative status of erythrocytes and structural changes in Hb and membrane proteins during iron administration in patients with iron deficiency or thalassemia.
Keywords: Hemoglobin, Iron-catalyzed oxidation system, Oxidative modifications
Corresponding author Email address: golnazansary@yahoo.com

ID:790

Evaluation of Total antioxidant status in patients with esophageal cancer

Yavar Mahmoodzadeh[1], Zahra Farzaneh[1], Reza Alipanah Moghadam[1], Farideh Manafi[1], Arash Mehri[1]
[1] Ardabil University of Medical Sciences

Objective: Cancers are among the most common causes of death throughout the world. Esophageal cancer is the second and third most common malignancy in Iranian males and females, respectively. Antioxidants, play a role in preventing the harmful consequences of oxidative stress. Due to the fact that oxidative stress is closely related to all aspects of cancers Therefore, the present study was designed to compare the total antioxidant levels in patients with esophageal cancer and healthy subjects.

Material and methods: This case-control study was conducted on 25 subjects who diagnosed as esophageal cancer and 25 normal subjects were selected (considering the inclusion and exclusion criteria) by simple sampling. After obtaining written consent from them, blood samples were prepared. Total antioxidant statues was determined spectrophotometrically in serum of all subjects with FRAP test method. Finally data were compared with t-test between two groups. SPSS software, version 22 was used for data analysis.

Results: Serum Total antioxidant statues was lower in patients with esophageal cancer compared with the healthy subjects. ($P<0.001$)

Conclusion: Serum total antioxidant was significantly different between patients with esophageal cancer and healthy controls. The findings of the present study showed that low levels of total antioxidants in the serum of some people could be involved in pathogenesis of various cancers such as esophageal cancer.

Keywords: Total antioxidant, esophageal cancer, oxidative stress, FRAP test

Corresponding author Email address: ymahmoudzade@gmail.com

ID:791

Evaluation of SEPP1 and SELS gene polymorphisms (rs7579 and rs34713741) in relation to colorectal cancer susceptibility in subset of Iranian population

Guilda Amini[1], Salehi Rasoul[1], Moshtaghi Aliasghar[1]
[1] Department of Biochemistry, Falavarjan Islamic Azad University, Falavarjan, Iran

Objective: Colorectal cancer is one of the most common cancers worldwide, and according to WHO in 2013, 45 of every 100000 people were develop this cancer. In studying genetic factors that cause this cancer, attention is focused on mutations. Nowadays, extensive and numerous studies are conducted on the relationship between genetic changes such as polymorphisms and the risk for developing various kinds of cancer. Research has shown that some of selenoproteins polymorphisms are also involved in the development of various types of cancer, among which the pivotal role of rs7579 is in the SEPPI and rs34713741 in the SELS genes.

Material and methods: In this research, peripheral blood samples were randomly taken from 60 colorectal cancer patients and 74 healthy people who were matched to the patients with respect to age and gender. The DNA genomes were extracted from the blood samples using kit, and the HRM technique was employed to study two polymorphisms.

Results: HRM diagrams related to the polymorphism were analyzed, the genotypes in the case and control groups were then compared, and a significant relationship was observed between frequency distributions A,G alleles of the rs7579 polymorphism (p value = 0.03). In the SELS gene, no significant correlation was found between allele frequency and genotypic distribution in rs34713741 polymorphism and colorectal cancer. (pvalue=0.93).

Conclusion: Based on results of this study, we can suggest that there is a significant relationship between the rs7579 polymorphism of the SEPPI gene and increased risk for colorectal cancer development. In this study, there was not found any significant relationship between rs34713741 in the SELS gene and colorectal cance

Keywords: Colorectal cancer, SEPPI gene, SELS gene, Gene polymorphism, HRM

Corresponding author Email address: guilda2002fr@gmail.com

ID:792

Effective herbal formulation on Anxiety and insomnia based on traditional medicine

Mandana Ahmadi[1], Hossein Mahdavi[1], Zohre Hadadi[1]
[1]Sinafaravar pharmaceutical Company, Isfahan, Iran

Objective: Depression disorder is one of the most common mental illness in the world and became a very important area of research interest in psychology. Major depressive disorder (MDD) is characterized by a lowered mood. Anxiety disorders are common mental diseases of the central nervous system and present proliferating health problem worldwide. The use of complementary medicines for mental health problems generates wide public interest. The plant's sedative properties including a reduction of stress, agitation, and anxiety have been widely explored. This review focuses on pharmacological properties of Echium amaenum and Melissa officinalis as analgesic, anxiolytic, antidepressant protective effects on CNS. Echium amaenum, famous as Borage, belongs to Boraginaceae family. It is one of the famous plants in Iranian traditional medicine for different effects such as anxiolytic and sedative properties. The main medicinal parts of the plant are flowers and the leaves. several studies evaluated the associations between antioxidant activity of Borage extract and its γ-linolenic acid content. Borage increased the antioxidant power of samples of hippocampus. Melissa officinalis L(Lemon balm) is member of the family Lamiaceae. M.officinalis extract has a moderate affinity to gamma-aminobutyric acid receptor (GABA). So it seems that the anxiolytic properties of M.officinalis may be due to binding to GABA type receptors.

Keywords: Anxiety disorders, Echium amaenum, Melissa officinalis

Corresponding author Email address: mandana.ahmadi84@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:793

Investigating the activity of Arylesterase in patients with esophageal cancer

Farideh Manafi[1], Zahra Farzaneh[1], Reza Alipanah Moghadam[1], Yavar Mahmoodzadeh[1], Mohammad Mazani[1]
[1] Ardabil University of Medical Sciences

Objective: Cancer has the highest disease-related mortality rate in Iran. Esophageal cancer is among the 10 most frequent cancers in the world. Iran is one of the known areas with a high incidence of esophageal cancer. The most fundamental cause of cancer is known to be oxidative stress. Low level of antioxidants increased free radical activities and significantly increases the risk of cancer. Reduction of antioxidant enzymes such as arylesterase plays an important role in the pathogenesis of esophageal cancer. So the aim of this study was to investigate ARE activities in esophageal cancer in comparison with healthy persons.

Material and Methods: During this case control study, 25 patients with esophageal cancer and 25 normal subjects were selected (considering the inclusion and exclusion criteria) by simple sampling. After obtaining written consent from them, blood samples were prepared. Arylesterase activity was measured with phenyl acetate (Fluka) according to the method proposed by Gan. Data analysis was done using SPSS software, version 22. The t-test was used to compare the groups and assess their difference.

Result: Upon matching of case and control groups, arylesterase activities in patients with esophageal cancer showed to be significantly lower than healthy subjects ($P<0.001$).

Conclusion: It was concluded that in patients with esophageal cancer, oxidative stress was raised by attenuation of arylesterase activities and oxidant levels rising.

Keywords: Arylesterase, esophageal cancer, oxidative stress

Corresponding author Email address: manafi.farideh@gmail.com

ID:794

iNOS gene modulation(mRNA and protein level) in M1/M2 Macrophage polarization process of High Fat diet induced diabetic rats by High Intensify Interval Training(HIIT) and Continuous Endurance Training(CET)

Sattar Gorgani[1], Arezoo KHoshdooni Farahani[2]
[1] AJA university
[2] Science and research university

Objective: Due to the growing trend of diabetes as well as considering the role of exersice in controling diabetes complications and the lack of investigation in effectiveness of exercise on diabetes involved molecular mechanism, the aim of current study was to compare the effect of HIIT and CET on serum glucose level and iNOS gene modulation (mRNA and protein level) in visceral adipose tissue.

Material and Methods: 45 healthy male Wistar rats, average weight of 200±10 gr after induction of diabetes by high fat diet were divided randomly to 4 groups: normal healthy control (NC) - diabetic control (DC) - continuous endurance training (CET) - high-intensity interval training (HIIT). Traninig programs were done 5 days/week for 10 weeks.CET group protocol include 30 minutes running at 50 to 60 percent of VO2max.HIIT protocol consisted of 5 repeated interval of 2 minute rat's sprint on the treadmill at each rat's 80-90% VO2 max workload with 1 minute . We assessed the seromic glucose level using glucose oxidase method. In addition, iNOS gene expression was assessed by real time q-PCR. Finally, Western Blot eas used for iNOS gene modulation (protein level).

Results: The Results showed that exercise reduced glucose level in HIIT and CET groups whereas, HIIT group experienced lower glucose than CET group (p<0.001). The comparison of iNOS gene expression in visceral adipose tissue between groups showed that iNOS expression were significantly more in DC group than NDC group (p<0.001) but after 10 weeks of exercise, iNOS gene expression decreased in HIIT groups more than CET groups((p>0.05)). The Results: of western Blot confirmed it and showed the decrease of iNOS(protein level) in HIIT groups more than CET groups (p>0.05).

Conclusion: Our findings suggest that HIIT workout is more effective intervention than CET for iNO decreasing, glucose decreasing and management of diabetes.

Keywords: INOS, Diabetes, High Intensity Interval training, Cotinuous Endurance Training

Corresponding author Email address: Parsmandegar@gmail.com

ID:795

rbutin attenuates behavioral impairment and oxidative stress in animal model of Parkinson's disease

Mahdi Pouramir[1], Masoumeh Dadgar[1]
[1] Professor of Biochemistry, Babol University of Medical Sciences, Babol, Iran

Objective: Arbutin has been shown to have antioxidant and free-radical scavenging abilities. The aim of this study was to investigate the effects of arbutin administration on behavioral impairment, oxidative and nitrosative stress in 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-induced animal model of Parkinson's disease (PD). Twenty-one mice were divided into 3 experimental groups (n=7). Experimental groups received saline as vehicle or arbutin (50 mg/kg i.p) for 7 days. From the 8th day, saline or arbutin (50 mg/kg) were followed in 2 h by MPTP (20 mg/kg i.p) for the next 7 days. Behavioral deficits were evaluated using locomotion test; hang test and forepaw stride length. Antioxidant activity including lipid peroxidation marker (TBARS), nitrite, protein carbonyl levels, and ferric reducing antioxidant power (FRAP) were analyzed in serum and midbrain tissue. Treatment with arbutin improved motor function in the MPTP-induced Parkinsonism. Mice treated with MPTP showed reduced levels of FRAP and increased levels of TBARS, nitrite, and protein carbonyl, compared to the control group. In contrast to MPTP group, arbutin treatments reduced the levels of TBARS, nitrite, protein carbonyl, and FRAP levels in the PD mice. These findings suggest that arbutin decreases the behavioral impairment and oxidative stress in animal model of PD and it may be regarded as effective supplementary agent in treating PD patients.

Kywords: Arbutin, Parkinson's disease, Behavioral impairment, Oxidative stress, Nitrosative stress

Corresponding author Email address: pouramir@yahoo.com

ID:798

The comparative study of two Dimensional Electrophoresis Pattern of serum proteome in Gaucher Patients type I and III

Sarah Kiani[1], Arghavan Einy[1], Hadi Mozafari[2]
[1] Medical biology research center – Kermanshah university of medical science, Kermanshah, Iran
[2] Department of biochemistry, medical school, Kermanshah university of medical science, Kermanshah, Iran

Objective: The gaucher disease (GD) is the most common type of lysosomal storage diseases that, particularly affects the macrophage cells. The disease is caused by the defect in glucocerebrosidase enzyme and it causes to the neurological complications, bone disorders, enlarged liver and spleen, anemia and etc. In GD patients, different symptoms occur due to accumulation of glucocerebroside in the liver, spleen, bone marrow, and especially in macrophages. According to mutation types, gaucher disease is divided into three clinical types, including type 1 gaucher which is the most common form of the disease (without neurological disorders). In addition, neurological disorders occur in GD type II and III.
Material and methods: In present study, proteome pattern of 5 gaucher patients type I, 4 gaucher patients type III and 5 controls were determined and compared. The proteome of serum was evaluated by two-dimensional gel electrophoresis. Their images were analyzed with the Imagemaster software, after scanning the gels and protein pattern differences between patients and healthy people were identified.
Results: In the gels, 326 repeatable spots were identified. Finally, the data were analyzed by SPSS software to determine the variations between the percent volumes of spots as protein expression. According to articles and Swiss-2D page database, we identified Immunoglobulin light chain, Alpha-1- antitrypsin, Apolipoprotein A1, Immunoglobulin Heavy chain Gamma, Histidine rich glycoprotein, haptoglobin protein that were different significantly between healthy and gaucher patients.
Conclusion: It is possible that, these protein level changes be a useful tool for diagnosis and management of gaucher disease.

Keywords: gaucher disease, two-dimensional gel electrophoresis, proteome, protein, spot

Corresponding author Email address: Agy.einy@Gmail.com

ID:800

Evaluation of marker of lipid peroxidation (MDA) and its correlation with insulin resistancein women with polycystic ovary syndrome

Maryam Rahsepar[1], Soleiman Mahjoub[1,2], Sedigheh Esmaeilzadeh[2], Maryam Kanafchian[1]
[1] Department of Clinical Biochemistry, School of Medicine, Babol University of Medical Sciences, Babol, Iran
[2] Infertility and Reproductive Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Objective: Polycystic ovary syndrome (PCOS) is common endocrinopathies which affects 15.2% Iranian women at the reproductive age. Insulin resistance is a common feature of this syndrome. PCOS is also associated with oxidative stress changes. Insulin resistance can augment oxidative stress in due to high levels ofglucose and free fatty acids. The goal behind present study was to evaluate the correlation between malonyldialdehyde (MDA) serum and insulin resistancein PCOS and control groups.

Material and Methods: This case-control study was carried out 60 women with PCOS and 90 healthy women as control group. All women were 20-40 years old who referred to Fatimah Zahra Infertility and Reproductive Health Research center, Babol in 2015 and PCOS was diagnosed according to the Rotterdam criteria (2003). Insulin, MDA were measuredusing ELISA and TBARS methods respectively. Also homeostasis model assessment for insulin resistance (HOMA-IR) was calculated Correlations between MDA and HOMA-IR were evaluated by spearman correlation test.

Results: It was found that the mean of serum MDA, Fasting insulin and HOMA-IR were significantly higher in the PCOS group compared with matched controls ($p<0.001$, $p=0.003$ and $p=0.008$ respectively), but no significant correlation was found between MDA and HOMA-IR in both group.

Conclusion: This study revealed that there is significant increase oxidative stress and insulin resistance in PCOS group compare with control group. Also, no correlation was found between the serum MDA and insulin resistance.

Keywords: Polycystic ovary syndrome, Insulin resistance, Oxidative stress, Malondialdehyde

Corresponding author Email address: mrbiochem92@gmail.com

ID:801

Comparison of continuous and non-continuous aerobic exercise on serum vascular endothelial growth factor (VEGF) and Endostatin (ES) in male rats with coronary artery disease

Elham Dehghan[1], Maryam Nekooei[2], AA.Ravasi[3], Reza Nuri[1], AA.Gaeini[3]
[1] Department of Sport physiology, Kish International Campus, University of Tehran, Kish, Iran
[2] Department of Biochemistry, Shiraz University of Medical Sciences, Shiraz, Iran
[3] Department of Sport physiology, University of Tehran, Tehran, Iran

Objective: Cardiovascular diseases (CVD) are considered as the fatal diseases worldwide. Physical activities are associated with decreasing the risk of coronary heart disease (CHD) which is one of the widespread CVDs. The purpose of the presented study was to investigate the effect of discontinuous and continuous aerobic exercise on serum VEGF and ES in rats with coronary artery disease.

Material and Methods: A group of forty healthy rats were divided into different groups including discontinuous and continuous aerobic exercise group with coronary artery disease, control group with coronary artery disease and healthy control group. After rupturing the rats by isoproterenol, rats in the experimental group performed discontinuous and continuous aerobic exercise on a treadmill. Then blood samples were collected for serum VEGF and ES indices.

Results: From the gained results, it is proved that both types of continuous and non-continuous aerobic exercises could increase the blood VEGF in rats with coronary artery disease ($p=0.01$), while there was no difference in the level of endostatin in the experimental group compared with control groups ($p>0.05$).

Conclusion: As a conclusion, discontinuous and continuous aerobic exercises can be used in the rehabilitation of patients with coronary artery disease, additionally, these methods might be effective in the process of angiogenesis.

Keywords: coronary artery disease, discontinuous aerobic exercise, continuous aerobic exercise endostatin, vascular endothelial growth factor

Corresponding author Email address: Elhamdehghan24@yahoo.com

ID:802

Effective herbal formulation on Pain and inflammatory removal with neural origin based on traditional medicine

Mandana Ahmadi[1], Hossein Mahdavi[1], Zohre Hadadi[1]
[1] Sinafaravar pharmaceutical Company

Objective: The stress that anxiety puts on your body can lead to a host of different issues. One of the most common is stomach pain. Treating any underlying stressors may help improve a person\'s quality of life. The most common conventional treatment of dyspepsia is some type of over-the-counter or prescription acid-blocking medication, which both come with many serious possible side effects. When it comes to dyspepsia relief, herbal drug has been used for thousands of years as an effective digestive aid and natural remedy for stomach. Glycyrrhiza glabra have been used in the treatment of peptic ulcer for many years; also it is used as the basis of antiulcer therapy in tradition medicine. Glycyrrhetic acid, account for its antiulcer activity by inhibiting 15-hydroxy prostaglandin dehydro- genase and 13-prostaglandin reductase. Inhibitions of these two enzymes stimulate an increase in the concentration of prostaglandins E and F2α in the stomach which thus promotes the healing of peptic ulcers. It acts by increasing the life span of gastric epithelial cells, increasing mucus production, decreasing hydrogen ion back-diffusion, inhibiting peptic activity and stimulating immunoreactive secretin production. Rosa damascene has also been shown to have anti-inflammatory effect. the extract could significantly reduce edema which maybe acted by inhibiting the mediators of acuteinflammation. In addition, R.damascena contains vitamin C, which has antioxidant and anti-inflammatory effects. Valerian has a mechanism of action similar to benzodiazepines; however, instead of binding to the gamma subunit like a benzodiazepine, it appears to bind to the beta subunit on the GABA-A receptor instead. Regardless, it has the same effect on chloride movement into the neuron when the major inhibitory neurotransmitter, GABA, binds to the GABA-A receptor, thereby causing a Calmed state.

Keywords: Stomach, Glycyrrhiza glabra, Rosa damascene, Valeriana officinalis

Corresponding author Email address: mandana.ahmadi84@gmail.com

ID:804

Analysis of water and methanol extracts from a red alga Dichotomaria obtusata by GC-MS

Maryam Nekooei[1], Maria Zahiri[2], Ammar Maryamabadi[3], Iraj Nabipour[2], Sayed Mohammad Shafiee[1]
[1] Department of Biochemistry, Shiraz University of Medical Sciences, Shiraz, Iran
[2] The Persian Gulf Marine Biotechnology Research Center, Bushehr University of Medical Sciences, Bushehr, Iran
[3] R&D Department, Shakhe Zeytoon Lian Co, Bushehr, Iran

Objective: Marine algae have various biological and medicinal benefits such as anti-cancer, anti-inflammatory, antioxidant, antibacterial and antifungi effects. The aim of the present study was the analysis of water and methanol extracts from a red algae Dichotomaria obtusata to find the potent beneficial ingredients of the algae.
Material and Methods: Dichotomaria obtusata were collected in June 2017 from the coastal area of Bushehr City in Persian Gulf, Iran. The red algae was transported to the laboratory, cleaned and dried. The dried seaweed was ground to a fine powder for preparation of methanol and aqueous extract. The analyses of the algae extracts was performed by gas chromatography-mass spectrometry (GC-MS).
Results: The GC-MS analyses of the algae extracts resulted in identification of twenty substances in the methanol and water extract of D. obtusata. for the major ingradients were free fatty acids (FFAs) such as palmitic acid, Myristic acid, steroids (desmosterol, squalene), phenolics, indole, cyclobarbital and biphenyl.
Conclusion: FFAs from marine algae were reported as antibacterial against several test organisms. Therefor; it is suggested that D. obtusata extracts may have an antibacterial effect. Moreover, due to the presence of flavonoids, it may have favorable effects on bone metabolism especially on osteoporosis. This is the first report of the extract analysis of Dichotomaria obtusata from Persian Gulf using GC-MS which can clarify its beneficial effects in treatment and management of several disorders.

Keywords: Red algae, Dichotomaria obtusata, GC-MS
Corresponding author Email address: Nekooei.maryam@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:805

Betatrophin rs2278426 (C/T) variant increased susceptibility to type2 diabetes mellitus

Hassan Ghasemi[1], Jamshid Karimi[1], Heidar Tavilani[1]
[1] Departement of Biochemistry, Hamadan University of Medical Sciences

Objective: Angiopoietin-like protein 8 (ANGPTL8) is a hormone that mainly secreted from the liver and adipose tissue, and plays an important role in the proliferation of pancreatic beta cells and lipid metabolism. Therefore, we studied the association of ANGPTL8 rs2278426 (C/T) and rs892066 (C/G) polymorphisms with the risk of type 2 diabetes mellitus (T2DM) and their association with biochemical parameters.

Methods: Two hundred eighty eight subjects (controls; n=138 and type 2 diabetic patients; n=150) were enrolled in this study. Direct haplotyping was performed using amplification-refractory mutation system (ARMS)-RFLP-PCR.

Results: The CT genotype frequency of rs2278426 (C/T) variant was significantly higher in T2DM patients compared to the controls group (P = 0.02), and there was a significant association between this genotype and increased risk of T2DM (OR: 2.41, CI: 1.26-4.59, P=0.007). In addition, there was a significant relationship between CT genotype of this variant and High Density Lipoprotein cholesterol (HDL-C), Fasting Blood Sugar (FBS), insulin, insulin resistance and glycated hemoglobin (p>0.05). Furthermore, bioinformatics analysis revealed that Arginine (Arg) to Tryptophan (Trp) substitution at rs2278426 position causes structural instability of ANGPTL8 protein. Genotype and allele distribution of rs892066 (C/G) was not statistically significant in T2DM patients compared to the control group. The distribution of haplotypes had no significant difference between controls and T2DM patients (P=0.24).

Conclusion: Our results suggest that the rs2278426 (C/T) variant is associated with increased risk of T2DM and may cause dyslipidemia due to its effect on decreasing HDL-C levels.

Keywords: ANGPTL8, type 2 diabetes mellitus, insulin resistance

Corresponding author Email address: clinicalbiochem.1365@gmail.com

ID:807

Evaluation and comparison of phenolic and flavonoid contents of dried and fresh Kiwifruit alcoholic and hydroalcoholic extracts.

Zaheri Jamil[1], Heidar Tayebinia[1], Narjes Rezaei[1]
[1] Department of Clinical Biochemistry, Hamadan University of Medical Sciences; Hamadan, Iran

Objective: The Actinidia Deliciosa, known as Kiwi, is native to the East Asian regions. This fruit has a high nutritional value. One of the characteristics of this fruit is its antioxidant properties. The purpose of this study was to measure and compare the total content of phenolic and flavonoid compounds as antioxidant index compounds in fresh and dried kiwifruit hydroalcoholic and alcoholic extracts.

Material and Methods: Hydroalcoholic extracts of Dried and fresh kiwifruit were prepared using 98% ethanol and their hydroalcoholic extracts were prepared using 50% ethanol during several consecutive days. Total phenolic and flavonoid contents were measured spectrophotometrically Analysis of total phenol content was done by means of folin–ciocalteu reagent and gallic acid standard and total flavonoid content was determined using AlCl3 reagent and quercetin standard.

Results: The highest amount of phenol was observed in fresh kiwi alcoholic extract and its lowest amount was observed in dried kiwi hydroalcoholic extract (11.8-15.2 mg/g) The highest amount of flavonoids was observed in dried kiwi alcoholic extract and its lowest amount was observed in fresh kiwi alcoholic extract (0.4-1.19 mg/g).

Conclusion: The Results show both fresh and dried kiwifruit extracts, contain high levels of phenol and flavonoid antioxidants. So, taking dried kiwifruit as well as fresh kiwifruit can be beneficial. Also, the Results: showed that the alcoholic extract contained more phenol and flavonoid content. Therefore, alcoholic extract (extraction with 98% ethanol) seems to be more effective.

Keywords: Actinidia, Total phenolic compounds, flavonoids

Corresponding author Email address: zaherijamilzahra@gmail.com

ID:808

Assessment of Sitosterol and lathosterol as synthesis and absorption markers of cholesterol in type2 diabetes

Bentolhoda Hayatmoghadam[1], Fahime Amirkhani[1], Morteza Pourfarzam[1]

[1] Department of clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Type2 diabetes is a group of metabolic diseases that associated with hyperglycemia, resulting from deficiency in the human body's ability to secretion and action of insulin. Several factors are involved in the pathogenesis of diabetes including in metabolism disorder of cholesterol and other non-cholesterol sterols. Nowadays measurement of serum noncholesterol sterols have been used as surrogate markers of cholesterol absorption and synthesis in clinical lipid research. Various studies have suggested that there is a relationship between this markers and type 2 diabetes mellitus (DMII). In this study, the concentration of sitosterol and lathosterol as absorption and synthesis marker was investigated.

Material and Methods: This cross-sectional study contained 155 male subjects divided into two groups as healthy controls (50 non-DMII volunteers) and patients with DMII, (105 sample). The analytical method in this study for measuring the concentration of synthesis and absorption markers of cholesterol in blood plasma is gas chromatography and mass spectrometry (GC-MS).

Results: According to statistical analysis, Sitosterol level was significantly decreased in DMII groups compared with controls ($p<;0.006$) and also significant difference was shown in lathosterol level between DMII groups with controls ($p<;0.01$) and lathosterol level was higher than sitosterol level.

Conclusion: This study showed that cholesterol metabolism disorder in DMII are associated with high cholesterol synthesis and low absorption that may give reasons for how DMII progresses.

Keywords: Type 2 diabetes, synthesis and absorption markers of cholesterol, gas chromatography- mass spectrometry (GC-MS)

Corresponding author Email address : Hodamoghadam963@gmail.com

ID:810

Evaluation of the frequency of depression, anxiety and thyroid hormones level in patients suffering from Gravse

Fatemeh Mohammadizadeh[1], Alireza Khoshdel[2], Azadeh Rezaie[1], Mohammadreza shafipour[3], Mahmood Sheikhfathollahi[4], Mohadeseh Rohban[1], Monireh Fazaeli[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[2] Department of Clinical Biochemistry, Faculty of Medicine, and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

[3] Department. of Glands, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[4] Department of Social Medicine and Occupational Environment Research Center, Medical School, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: Graves' disease is an autoimmune thyroid disease caused by thyroid stimulating hormone receptor antibodies which stimulate the thyroid to synthesize and secrete the excess thyroid hormone. Since thyroid hormones play an important role in maturation and regulation of central nervous system activity, increased levels of thyroid hormones in Graves\' disease may have psychological and depressive effects directly on the central nervous system or indirectly on adrenergic activity. The aim of the study was to examine the association between depression, anxiety and thyroid hormones level in patients with Graves.

Material and Methods: We investigated the association between Graves disease and anxiety, depression and thyroid hormones level in 90 patients with Graves disease in three groups (30 hyperthyroid, 30 euthyroid and 30 new case). We used the Beck anxiety and depression scale to assess anxiety and depression in groups. Thyroid hormones level was determined using ELISA method.

Results: The rate of depression and anxiety in the hyperthyroid group was significantly higher than euthyroid group. Also, the level of the TSH hormone had a significant negative correlation with depression. Although, there was no significant relationship with anxiety. Levels of T3 and T4 hormones were not significantly correlated with depression and anxiety in three groups.

Conclusion: Graves' disease and reduction in level of TSH hormone, can cause anxiety and depression in patients.

Keywords: Graves, thyroid hormone, depression, anxiety

Corresponding author Email address: alireza.khoshdel@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:812

Studies on paxillin expression in 4T1 mammary carcinoma tumors treated with an anti-VEGF receptor peptide

Atefeh Nazarian[1], S. Mohsen Asghari[1]
[1] Department Biology, Faculty of Science, University of Guilan, Rasht, Iran

Objective: The breast cancer is one of most common cancers among women worldwide. Tumor growth and metastasis depend on angiogenesis triggered by chemical signals from tumor cells. Angiogenesis, the formation of new blood vessels from pre-existing vessels, is a prerequisite for tumor growth to supply the proliferating tumor with oxygen and nutrients. Due to the important role of Vascular endothelial growth factor (VEGF) in the induction of angiogenesis, so prevention of this function must be effective way in inhibition of angiogenesis and proliferation of tumor cells. VEGF-binding molecules appear to regulate VEGFR1 and VEGFR2 mediated downstream signaling cascade several intermediary signalling molecules such as paxillin. Paxillin is a cytoskeletal protein that colocalizes at focal adhesion contacts. Currently, increasing evidence has demonstrated that the paxillin signaling pathway participates in the processes of cancer invasion and metastasis via different molecular mechanisms. Disrupting the paxillin pathway blocks the migration and invasion of cancer cells. Therefore paxillin pathway activation is recognized as a potential predictor of cancer metastasis. Increased paxillin expression have been observed in many malignant human tumors.

Materials and Methods: In this study, we assessed paxillin gene expression level in breast tumor-bearing Balb/c mice either treated with PBS or antagonistic peptide. Total RNA was isolated using Trizol reagent (Invitrogen) followed by cDNA synthesis. Real time PCR carried out using specific primers and relative expression of paxillin gene assessed, and analyzed by the SPSS software.

Results: Our Results indicated that the expression level of paxillin gene remarkably reduced in the peptide-treated against of control groups.

Conclusion: This finding demonstrated that the sequesterated VEGFR-1 and VEGFR-2 followed by inhibition of activation of paxillin gene can caused to reduced the cell migrating of 4T1 breast cancer tumor model, suggesting that paxillin is a downstream signalling target of the antiangiogenic peptide.

Keyword: Tumor angiogenesis, Antagonistic peptide, Paxillin, Real time PCR

Corresponding author Email address: nazarian.atefeh@gmail.com

ID:813

The protective effect of Zataria multiflora Boiss essential oil on CCl4 induced liver fibrosis in rat via down-regulation of bFGF and IL-1β

Maryam Barghi[1], Mahboobeh Ashrafi[1], Mahmoud Aminlari[1], Fateme Namazi[2], Saeed Nazifi[3]
[1] Department of Basic Sciences, Shiraz University, Shiraz, Iran
[2] Department of Pathobiology, Shiraz University, Shiraz, Iran
[3] Department of Clinical Studies, Shiraz University, Shiraz, Iran

Objective: Hepatic stellate cells (HSCs) activation is an essential step in the development and progression of liver fibrosis. Many factors such as growth factors (FGFs) and inflammatory mediators (ctyokines) can attribute in HSCs activation. In other hand, Zataria Multiflora Boiss essential oil has anti-inflammatory effect and may had a preventive effect on the development of liver fibrosis. Thus, in the present study the protective effect of Zataria Multiflora Boiss essential oil on CCl4 induced liver fibrosis was evaluated with regard to the expression of bFGF and IL-1β.

Material and Methods: Male rats were divided into 5 groups, C: control rats; CO: vehicle control group; CE: rats that received essential oil (500µl/kg); F: fibrosis group that was given CCl4 (1mg/kg); FE: fibrosis rats that received both CCl4 and essential oil with mentioned dosages. At the end of the 11th week, liver tissues were collected for analysis of bFGF and IL-1β expression by real time RT-PCR and histopathological evaluations.

Results: The Results of histopathological study showed that the development of liver fibrosis with 5.35±1.34 score in F group, while in FE group fibrotic index was 3.1±0.73. Also, the expression of bFGF and IL-1β significantly were increased in F group compared to C group. But, Zataria Multiflora Boiss essential oil could significantly modulate their expression.

Conclusion: Zataria Multiflora Boiss essential oil could had a protective effect on CCl4-induced liver fibrosis with down-regulation of growth factor (bFGF) and inflammatory cytokine (IL-1β).

Keywords: Zataria Multiflora Boiss, essential oil, liver fibrosis, carbon tetrachloride, bFGF, IL-1β, Zataria Multiflora Boiss

Corresponding author Email address: mbarghi6@gmail.com

ID:815

Comparison of continuous endurance training and high intensity interval training effects in miR-122 and lipogenic genes expression in insulin resistant rats induced by high-fat diet

Fatemeh Kalaki[1], Mehrnoosh Shanaki[1], Sattar Gorgani-Firuzjaee[2]
[1] Department of Medical Laboratory Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Department of Medical Laboratory Sciences, AJA University of Medical Sciences, Tehran, Iran

Objective: Non-alcoholic fatty liver disease (NAFLD) is related to obesity and lifestyle, while Physical exercise is beneficial for NAFLD. MicroRNAs (miRNAs) considered as new main regulators of lipid homeostasis by regulating relating genes. As the most abundant liver-specific microRNA, microRNA-122 is involved in liver hemostasis. This study we shown effect of high intensity interval (HIIT) and continues endurance (CET) training in high fat diet fed rat by concentrate on miR-122 expression and lypogenic genes.

Material and Methods: 24 rat were specified to normal chow (NC, n = 6), high-fat diet (HFD, n =18) group and were fed with normal chow and HFD for 13-weeks. HFD groups were divided to diabetic group (n=6), HIIT (n=6) and CET (n=6). The HFD + HIIT and HFD + CET rat were subjected to treadmill running for 8-weeks. After exercise training, the expression of miR- 122 and lipogenic genes (ACC, FAS, SREBP-1C and PPARγ) were examined.

Results: HFD decreased miR-122 expression and increased lipogenic genes in liver of diabetic rats. HIIT effectively increases miR-122, decreases the expression of lipogenic genes and improves fatty liver disease compared to CET.

Conclusion: These findings suggest that exercise training as a non-pharmacological therapy for miR-122 induction and improving NAFLD. Also, our Results: showed that high intensity interval training compared with continuous endurance training have more effective role on NAFLD improvement.

Keywords: Nonalcoholic Fatty Liver Disease, miR-122, Diabetes, High Intensity Interval Training, Continues Endurance Training

Corresponding author Email address: fatemeh.kalaki@sbmu.ac.ir

ID:816

Investigation sitosterol and lathosterol in serum of patients with coronary artery disease

Fahimeh Amirkhani[1], Bentolhoda Hayatmoghadam[1], Morteza Pourfarzam[1]
[1] Department of clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Today, cardiovascular disease is the most common cause of death. The most important risk factors for developing cardiovascular disease are high blood cholesterol levels. Serum non-cholesterol sterols is identified as successor markers of cholesterol absorption and synthesis. Lathsterol is a precursor to cholesterol which is believed as a marker of cholesterol synthesis while, sitosterol is a marker of cholesterol absorption.

Material and Methods: The standard method for analyzing cholesterol serum markers in blood plasma is gas chromatography and mass spectrometry (GC-MS). In this method, sterols are extracted from physiological fluids and, after derivation, then by gas chromatography from each other split. The population included 128 patients, undergoing clinically indicated coronary angiography. The severity of coronary stenosis was scored after coronary angiography, and patients were divided into 2 groups; the stenosis group (CAD patients, n = 74) had a significant stenosis indicated by coronary angiography and the second group, N-stenosis (control, n = 54), had no significant coronary stenosis.

Results: The Results of the analysis show that the level of sitosterol in the group CAD patients (stenosis) decreased compared with patients without coronary artery (N-stenosis) (P <; 0.18), according to statistical analysis, there is no significant difference between the two groups. Also level of lathsterol in the group CAD patients (stenosis) increased compared with patients without coronary artery (N-stenosis) (P <;0.01), according to statistical analysis, there is significant difference between the two groups.

Conclusion: Overall, various studies have shown that the concentrations of these markers will be different between the control and the patient group and the Results: of this study indicate that in patients with coronary artery stenosis, cholesterol absorption is not significantly different, but cholesterol synthesis in patients with coronary artery disease decreased.

Keywords: Coronary artery disease, markers of cholesterol absorption and synthesis, G Chromatography-Mass Spectrometryas

Corresponding author Email address: amirkhani_fm@yahoo.com

ID:817

Biological effects due to reduced expression of human HLA-G isoforms in women with unexpected miscarriage

Faramarz Faramarz Farzad[1], Neda Yaghoubi[2]

[1] Department of Immunology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

[2] Department of Clinical Biochemistry, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Human leukocyte antigen-G, an immune tolerance effector molecule, has important roles in the prevention of recurrent spontaneous abortions. To determine which isoforms are more probable to affect fetus loss, we evaluated the expression of seven HLA-G isoforms and their effect in threatened-abortion women compared with controls.

Material and Methods: A total of 101 women with threatened abortion in comparison to healthy controls, were included in this case-control study. All of the participants were aged between 20 to 32 years. Quantitative real time PCR was used for evaluation of HLA-G isoforms expression. Soluble HLA-G isoforms including HLA-G2 and G4, were also measured through an immunoassay method.

Results: Interestingly, our findings showed the reduced expression of HLA-G isoforms, except G7 ($P<0.05$). Also, HLA-G5 was the most effective isoform of HLA-G in senile patients ($P < 0.001$). The most striking result to emerge from the data is that simultaneous decreased expression of HLA-G2 and G4 isoforms, may be the most probable cause of spontaneous abortion.

Conclusion: These Results: provide further support for the hypothesis that HLA-G may have significant roles in pregnant women and can be considered as an important protective marker of unexpected abortion.

Keywords: HLA-G, Soluble HLA G, Threatened Abortion, Pregnant Women

Corresponding author Email address: Farzadf2@mums.ac.ir

ID:819

Assessment of erythrocyte Na^+K^+-ATPase activity in type 2 diabetic patients

Fouzieh Zadhoush[1], Morteza Pourfarzam[1]

[1] Department of Clinical Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, I. R. Iran

Objective: Unfavorable alteration of erythrocyte membrane Na^+K^+-ATPase activity thought to play an important role in pathophysiology of diabetic complications, but its relationship to glycemic status and other biochemical parameters poorly understood. This study aims to evaluate erythrocyte membrane Na+K+-ATPase activity and its relationship to atherogenic and anti-atherogenic parameters in type 2 diabetic patients.

Material and Methods: This cross-sectional study comprised 90 type 2 diabetic patients and 40 non-diabetic control groups. Fasting plasma levels of glucose (FBS), total cholesterol, triglycerides, HDL-C, LDL-C and HbA1c were determined in subjects. Erythrocyte membrane were prepared for the estimation of Na^+K^+-ATPase activity by osmotic lysis in terms of inorganic phosphate released/mg protein/hour.

Results: Significant reduction in erythrocyte membrane Na^+K^+-ATPase activity was seen in diabetic patients compared to the control group (0.509 ± 0.08 and 0.949 ± 0.07 µM Pi/mg protein/h respectively) ($P<0.05$). Na^+K^+-ATPase activity was negatively correlated with FBS ($r = -0.18$, $P = 0.044$), HbA1c ($r = -0.214$, $P = 0.030$) and waist- hip ratio ($r = -0.183$, $P = 0.043$) and positively but non-significant, correlated with HDL-C ($r = 0.161$, $P = 0.072$) in diabetic patients. FBS, triglycerides, HbA1c, weight, waist and hip circumferences, waist-hip ratio and BMI were significantly higher and HDL-C was significantly lower in diabetic patients compared to control group.

Conclusion: The data indicates significant correlation between lower levels of erythrocyte Na+K+-ATPase activity and bad glycemic status in diabetic patients. Unfavorable changes of erythrocyte membrane Na+K+-ATPase activity and serum lipid profile, might explain some of the pathogenetic mechanisms of diabetic complications.

Keywords: Erythrocyte membrane, Na+K+-ATPase activity, Type 2 diabetic patients

Corresponding author Email address: pourfarzam@pharm.mui.ac.ir

ID:820

Comparison of continuous endurance training (CET) and high-intensity interval training (HIIT) effects on miR-195 expression in diabetic rats induced by high-fat-high-fructose diet

Soheyla Khakdan[1], Ali Rahimipour[1], Sattar Gorgani-Firuzjaee[2]

[1] Department of Medical Laboratory Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Department of Medical Laboratory Sciences, AJA University of Medical Sciences, Tehran, Iran

Objective: Diabetic cardiomyopathy refers to structural and functional changes of the myocardium in diabetic patients, which is independent of hypertension and coronary artery disease. miR-195 plays an important role in apoptosis of cardiomyocyte and myocardial dysfunction. Exercise training is known as an effective strategy for improving diabetes and related complications. Here we investigated the effect of continuous endurance training (CET) and high-intensity interval training (HIIT) on miR-195 expression and myocardial function in diabetic rats induced by high-fat high-fructose diet.

Material and Methods: The rats were divided into non-diabetic (n=6) and diabetic group (n=18). Type 2 diabetes was induced by high-fat-high-fructose diet in diabetic rats. After induction diabetes, the rats were divided into 3 groups; sedentary rats (n=6), continuous endurance training group (CET, n=6), high-intensity interval training group (HIIT, n=6). After 8 weeks of exercise training, expression of miR-195 and myocardial function was evaluated.

Results: In the heart of diabetic rats, expression of miR-195 and its target genes (Sirt1 and BCL-2) were increased and decreased, respectively. HIIT effectively reduce the expression of miR-195, increase the expression of Sirt1 and BCL-2 and improves diabetic cardiomyopathy compared to CET. Our Results also showed that HIIT improves myocardial function by increasing EF% and FS%, but CET has no significant effect on cardiac performance.

Conclusion: We described exercise training as an appropriate strategy for inhibiting miR-195 and also showed that HIIT compared with CET has a more effective role in inhibiting miR-195 and improving myocardial function in diabetic rats.

Keywords: Diabetic Cardiomyopathy, miR-195, Myocardial dysfunction, High Intensity Interval Training, Continuous Endurance Training

Corresponding author Email address: soheylakhakdan@sbmu.ac.ir

ID:821

High-intensity interval training (HIIT) effectively reduced miR-195 expression in cardiomyocyte of high-fat high-fructose diet induced diabetic rats

Soheyla khakdan[1], Ali Rahimipour[1], Sattar Gorgani-Firuzjaee[2]
[1] Department of Medical Laboratory Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Department of Medical Laboratory Sciences, AJA University of Medical Sciences, Tehran, Iran

Objective: Diabetic cardiomyopathy (DCM) considers to diabetes-related changes in the structure and function of myocardium and represents the main reason of morbidity and mortality among these patients. Recently, microRNAs have been identified as important regulatory molecules for treating heart disease. The role of exercise as a regulatory stimulus of heart microRNAs is now beginning to be under investigation. MiR-195 therapeutic silencing via diminishing myocardial hypertrophy and improving myocardial function attenuates DCM in diabetic mice. The present study investigated whether continuous endurance training (CET) and high-intensity interval training (HIIT) inhibits miR-195 and which exercise training is effective in this regard.

Material and Method: The rats were divided into non-diabetic (ND, n=6) and diabetic group (n=18). Type 2 diabetes induced by high-fat high-fructose diet (HFHFD) and after induction diabetes, the rats were sub-divided into 3 categories; sedentary rats (HFHFD+SED, n=6), continuous endurance training (HFHFD+CET, n=6), and high-intensity interval training (HFHFD+HIIT, n=6). After 8 weeks of running on a rodent treadmill, expression of miR-195 and myocardial function were evaluated.

Results: Expression of miR-195 was increased and levels of its target genes (BCL-2 and Sirt1) were decreased in heart of type 2 diabetic rats induced by high-fat high-fructose diet. HIIT effectively reduces the expression of miR-195 and increases the expression of Sirt1 and BCL-2 compared with CET. Our Results: also showed that HIIT improves myocardial functions by increasing EF% and FS%, but CET has no significant effect on cardiac performance.

Conclusions: We described exercise training as an appropriate strategy for inhibiting miR-195 and also showed that HIIT compared with CET has a more effective role in inhibiting miR-195 and improving myocardial function in diabetic rats.

Keywords: Diabetic Cardiomyopathy, miR-195, Myocardial dysfunction, High Intensity Interval Training, Continuous Endurance Training

Corresponding author Email address: soheylakhakdan@sbmu.ac.ir

ID:822

High intensity interval training (HIIT) effectively increased miR122 expression in the liver of high-fat high-fructose diet induced diabetic rats

Fatemeh kalaki[1], Mehrnoosh Shanaki[1], Sattar Grgani-Firuzjaee[2]
[1] Department of Medical Laboratory Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Department of Medical Laboratory Sciences, AJA University of Medical Sciences, Tehran, Iran

Objective: Non-alcoholic fatty liver disease (NAFLD) is related to obesity and lifestyle, while Physical exercise is beneficial for NAFLD. MicroRNAs (miRNAs) considered as new main regulators of lipid homeostasis by regulating relating genes. As the most abundant liver-specific microRNA, microRNA-122 is involved in liver hemostasis. This study we shown effect of high intensity interval (HIIT) and continues endurance (CET) training in high fat diet fed rat by concentrate on miR-122 expression and lypogenic genes.

Materials and Methods: 24 rat were specified to normal chow (NC, n = 6), high-fat diet (HFD, n =18) group and were fed with normal chow and HFD for 13-weeks. HFD groups were divided to diabetic group (n=6), HIIT (n=6) and CET (n=6). The HFD + HIIT and HFD + CET rat were subjected to treadmill running for 8-weeks. After exercise training, the expression of miR- 122 and lipogenic genes (ACC, FAS, SREBP-1C and PPARγ) were examined.

Result: HFD decreased miR-122 expression and increased lipogenic genes in liver of diabetic rats. HIIT effectively increases miR-122, decreases the expression of lipogenic genes and improves fatty liver disease compared to CET.

Conclusions: These findings suggest that exercise training as a non-pharmacological therapy for miR-122 induction and improving NAFLD. Also, our Results: showed that high intensity interval training compared with continuous endurance training have more effective role on NAFLD improvement.

Keywords: Nonalcoholic Fatty Liver Disease, miR-122, Liver Metabolism, High Intensity Interval Training, Continues Endurance Training

Corresponding author Email address: fatemeh.kalaki@sbmu.ac.ir

ID:823

Protective effects of silibinin against insulin amyloid fibril-induced toxicity in SH_SY5Y human neuroblastoma cells

Bentolhoda Katebi[1]
[1] Departement of Biological Science, inistitue of advanced studies in basic science (IASBS), Zanjan, Iran

Objective: Misfolding and deposition of various peptides and proteins is a key pathogenic feature of more than 20 amyloid-related diseases. Inhibition of protein aggregation is therefore viewed as a potential method to halt or slow the progression of neurodegenerative disorders. In this regard, numerous reports have demonstrated the effectiveness of some of the naturally occurring small molecules, and specially certain natural polyphenols, on prevention of protein aggregation and their associated cytotoxicity. In the present study, the effect of silibinin, as a major biologically active component extracting from the seeds of milk thistle plant named Silybum marianum, on the cytotoxic action of insulin fibrils was tested with human neuroblastoma SH-SY5Y cells. Insulin fibril-induced neuronal toxicity was verified by the MTT viability assay, intracellular ROS measurement, PI cell death assay, and morphological analysis. We found that the cell exposure to the co-incubated insulin amyloids with silibinin led to the increased cell viability and decreased ROS content dose-dependently, compared to cells exposed to insulin fibrils alone. Co-incubation with silibinin also attenuated the extent of morphological alterations induced by insulin fibrils. These Results: suggest that silibinin has protective effects against insulin fibrils-induced cytotoxicity, which might be a potential therapeutic agent for treating or preventing neurodegenerative diseases.

Keywords: Insulin, Amyloid fibril, Silibinin, SH-SY5Y cells, Cytotoxicity

Corresponding author Email address : b.katebi@iasbs.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:824

Investigation of an isothermal amplification-based method for specific identification of Morganella morganii

Saja Aldhaif[1], Hamidreza Mollasalehi[1]
[1] Research Center Protein, Shahid Beheshti University, Velenjak, Tehran, Iran

Objective: Morganella morganii is a gram-negative rod in the Enterobacteriaceae family. Although, it is mostly found as normal flora in the intestinal tracts of human mammals, however, M. morganii could serve as an opportunistic pathogen mainly causing nosocomial infections and hospital diseases mostly infecting urinary tract. Therefore, its timely and precise detection seems to be crucial.

Materials and Methods: The standard strain of M. morganii and nine other related bacteria was purchased. Briefly, the bacteria were cultured in nutrient broth and DNA was extracted from the cultured colonies. Nucleic acid content of the cells were subjected to isothermal amplification- based detection using specific primers of M. morganii. For specificity assessment, all strains were amplified separately using the designed primers. In addition, a mixture of all bacteria was prepared to analyze selectivity of the method. Amplicon detection was performed by agarose gel electrophoresis

Results: According to the results, a ladder like pattern on the gel was supposed as positive presence and successful identification of M. morganii among other bacteria both in separate samples and the mixed sample. Therefore, specific detection of M. morganii was found to be possible by the designed method.

Conclusion: The designed method requires neither temperature alteration, nor high cost instrumentation and reagents. Therefore, it could be used as a point-of-care diagnostic approach for rapid detection of pathogens especially those causing secondary hospital infections.

Keywords: Morganella morganii, isothermal amplification, point-of-care diagnosis, infection

Corresponding author Email address: sajaaldhaif@yahoo.com

ID:825

Study on the effect of charged amino acids on thermal amorphous aggregation of human lysozyme with in vitro and in silico tools

Naghmeh Saadati-Eskandari[1], Azadeh Ebrahim-Habibi[2], Latifeh Navidpour[3], Parichehreh Yaghmaei[4]

[1] Endocrinology and Metabolism Molecular-Cellular Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

[2] Biosensor Research Center, Endocrinology and Metabolism Molecular-Cellular Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

[3] Department of Medicinal Chemistry, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

[4] Department of Biology, Faculty of Basic Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran

Objective: Misfolding and aggregation of proteins affects adversely their structure and function. These changes in proteins may result in the appearance of diseases in vivo, while causing serious problems in the half-life of proteins used or produced by food and pharmaceutical industries. Lysozyme is of significance in these industries, since it is used as natural food preservative, antimicrobial in cheese, antibiotic in chicken food and inhibitor of the growth of HIV virus in vitro. Since amino acids could preserve the stability of proteins, it would be beneficial to investigate the effect of their various structures on protein aggregation process.

Material and Methods: For in vitro experiments, we used UV-Vis spectrophotometer to and transmission electron microscopy (TEM) to generate and study the aggregation process of human lysozyme. For in silico experiments, docking was made by Autodock Vina softwares, and aggregation-prone regions of the enzyme were predicted by AGGRESCAN, and Tango programs.

Results: The result obtained from these experiments showed that between the tested amino acids, positively charged ones were the best in reducing heat-induced aggregation of human lysozyme.

Conclusion: Therefore, it is possible that these amino acids, by increasing protein solvability and stabilization of protein structure, could be effective in reducing protein aggregation problems in the medical, pharmaceutical and food industries, and even in the prevention of aggregation-related diseases caused by protein aggregation.

Keywords: Protein amorphous aggregation, Human Lysozyme, Heat-induced aggregation

Corresponding author Email address: saadatin.9160@gmail.com

ID:828

The effect of metformin and curcumin combination on high glucose-induced lipogenesis in HepG2 cells

Fatemeh Namvarjah[1], Hajar Shakori[1], Reyhaneh Babaei[1], Reza Meshkani[1]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Iran

Objective: Control of type 2 diabetes and its associated lipid disorders are the medical challenges facing the world today. Metformin, as the first line of treatment, has potentially harmful side effects. Combination therapy is a novel approach to reduce these complications and increase the effectiveness of metformin. Since plant polyphenols, such as curcumin, have been reported to have hypolipidemic effects, we in this study aimed to study the combination effect of metformin and curcumin on lipogenesis in a model of hepatocyte, HepG2 cells.

Material and Methods: 33mM glucose was used to induce lipogenesis in HepG2 cells. MTT test was used to obtain non-lethal doses of metformin and curcumin. After treatment of the cells with different concentrations of metformin and curcumin, total lipids (Oil Red O-test), triglyceride levels, and the expression of genes involved in lipogenesis (FAS and SREBP-1c) was measured.

Results: Metformin and curcumin, both significantly decreased high glucose-induced lipogenesis by decreasing total lipids and triglyceride levels (p<;0.001). The lowest effective dose of metformin and curcumin were 0.25mM and 5µM, respectively. The combination of these concentrations greatly enhanced this effect (p<;0.001). The lowest effective doses of metformin and curcumin significantly reduced the expression of FAS and SREBP-1c in high-glucose treated cells. The combination of metformin and curcumin reinforced these effects.

Conclusion: Our findings suggest that curcumin can potentially increase the efficacy of metformin through enhancing the inhibition of FAS and SREBP-1c expression

Keywords: lipogenesis, metformin, curcumin, HepG2

Corresponding author Email address: namvarjah@razi.tums.ac.ir

ID:830

The hydroxyurea effect on the expression on epi genetic enzymes in Nalem-60 cell line

Milad akhlaghi[1]
[1] Shahid Sadooghi medical science university of YAZD

Objective: Leukemia is classified according to the origin of the lymphoid and myeloid species, and according to the clinical course, into acute and chronic forms. Recently, epigenetic agents have been shown to play a role in the development of various cancers, including leukemia. Epigenetics is one of the most effective cancer chemotherapy goals and also, HDCAs and DNMTs are introduced as the most important epigenetic agents involved in regulating the expression of key genes associated with cancer, also identifying a change in the gene expression of these enzymes can be a good drug for future therapies, so, our goal in this study is to see if the Hydroxyurea can directly affect the gene expression of these enzymes.

Material and Methods: Nalem-60 cell line and normal peripheral blood cell were cultured and the the Hydroxyurea were added to the both groups, then the RNA were extracted from both treated and control cells, and then cDNA synthesized from RNAs and then PCR and real time PCR were done for investigating the expression of the target gens and then analyzed the data for comparison between the target and control groups.

Results: the Results showed that there are significant change in the expression of epigentic gens in Nalem-60 cell line compare to normal cell after treatment with Hydroxyurea.

Conclusion: Hydroxyurea, in addition to its known anti-cancer potential, is likely to have effects on epigenetic enzymes, which may be used in addition to cancer in the treatment of other epigenetic-related diseases, such as Alzheimer's.

Keywords: Leukemia, Epigenetic, Hydroxyurea, cancer

Corresponding author Email address: milad70akhlaghi@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:831

Assesment of SNHG17 and TTC28-AS1 expression levels in patients with T2DM and healthy

Mahroo Mohamadi[1]
[1] General Research Labrotary, School of Paramedical Science, Shahid Beheshti University of Medical Science, Tehran, Iran

Objective: Diabetes mellitus (DM) is a metabolic disease that characterized by impaired fasting glucose levels. Type 2 diabetes is a type of DM that More common in adults. With type 2 diabetes, the body dont produce enough insulin (the hormone that regulate the level of glucose in our blood) to maintain a normal glucose level.so the bodies glucose will be high. The previous search demonstrated genetic factors are one of the pathogenesis of the T2DM. Sequencing of human genome demonstrated that noncoding RNA accounts for 98% of proteins. Long non-coding RNAs (LncRNAs) are a class of RNA molecules, which have a transcribing length of over 200 nt. Recent studies have revealed that disturbance of LncRNAs levels correlated with several diseases, such as diabetes mellitus (DM). In the past, the researchers demonstrated relevance of a few LncRNA with T2DM. In this article we represent 2 gene that have relationship with T2DM and its complications.

Keywords: T2DM, GWAS, LncRNA, Genetic Factors, nc RNA

Corresponding author Email address: mahroomohamadi@sbmu.ac.ir

ID:834

PPARα antagonist could not significantly suppress the anticonvulsant effect of DHA in amygdala kindling model of rat

Hakimeh Gavzan[1], Mohammad Sayyah[2]

[1] Department of Basic Sciences, Faculty of Veterinary Medicine, Amol University of Special Modern Technologies, Amol, Iran

[2] Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran

Objective: Docosahexaenoic acid (DHA) is the most abundant and bioactive fatty acid in the brain. Recently, the application of DHA as supplementary has been considered for treatment and prevention of epilepsy. Peroxisome proliferator-activated receptors (PPARs) activation by DHA has been proposed as some therapeutic effect of DHA. We investigated probable involvement of PPARα in the anticonvulsant effect of DHA in amygdala kindling model of epilepsy.

Material and Methods: Study was performed in 2 groups of 8 kindled rats. Group1 received the most effective dose of DHA (1mM/10µl/rat) alone. Group2 pretreated by sub-effective dose of PPARα antagonist, GW6471 (1µg/1µl/rat), then DHA administered after 15min. Control groups received HPB10% and DMSO as the solvent of DHA and GW6471, respectively. All injections were performed intracerebroventriculary. The electrical stimulation was performed 15min, 1h and 3h after DHA. Then, the incidence of generalized-clonic seizures (GS) was monitored.

Result: The percentage of full-kindled rats with no GS in group1 are 57, 28 and 42% in 15min, 1h and 3h, respectively. Protection was significant in 15min ($p<0.05$). In group2 were 37, 75 and 25% in 15min, 1h and 3h, respectively. Protection was significant in 1h ($p< 0.01$).

Conclusion: GW6471 couldn't significantly suppress DHA anticonvulsant effect. Furthermore, along with GW6471, DHA anticonvulsant effect in 15min and 1h after injection insignificantly decreased and increased, respectively. Perhaps GW6471 has partial and transient inhibition on DHA effect. So, PPARα could be probably involved in DHA anticonvulsant effect against seizure induced by amygdala kindling.

Keywords: DHA, PPARα, GW6471, Seizure

Corresponding author Email address: h.gavzan@ausmt.ac.ir

ID:836

Combined application of lithium chloride and mitomycin C reduces metastasis and induces G2/M cell cycle arrest in MDA-MB-231 breast cancer cells

Mahdieh Razmi[1], Azra Rabbani-Chadegani[1], Fatemeh Hashemi-Niasari[1]
[1]Department of Biochemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Breast cancer is the main reason of cancer mortality in females. Mitomycin C (MMC), as a potent antitumor drug, is used for the treatment of various types of cancers, however, adverse toxic effects and resistance of cancer cells, have limited the application of MMC suggesting combination of MMC with novel biological agents. Recent studies indicate that lithium possesses antitumor and anti-metastasis activity in different types of malignancies. In the present study, we aimed to explore the effect of MMC combined with lithium chloride (LiCl) on cell death, metastasis and cell cycle arrest in MDA-MB-231 breast cancer cells.

Material and Methods: MDA-MB-231 breast cancer cells were exposed to various concentrations of mitomycin C alone and combined with LiCl and viability determined by MTT assay after 24 h incubation. To test if MMC plus LiCl inhibit metastasis, we assessed mRNA expression of MMP9 by RT-PCR and colony-forming assay. To determine whether the cell proliferation inhibition was because of cell cycle arrest, cell-cycle analysis performed using PI staining and flow cytometry analysis.

Results: LiCl synergistically promoted cytotoxicity induced by mitomycin C and IC50 value of MMC declined from 20 µM to 5 µM. LiCl combined with mitomycin C significantly down-regulated MMP9 gene expression as an important biomarker of metastasis. Also, combination of LiCl with MMC reduced the ability of cells to form colonies. Cell-cycle analysis revealed that an obvious accumulation of cells are in Go/G1 phase in the control, whereas in the cells treated with LiCl plus MMC, the fraction of cells in the G2/M phase is significantly increased indicating that LiCl enhanced MMC-induced apoptosis through arrest of MDA-MB-231 cells at G2/M phase.

Conclusion: Taking all together, these findings demonstrate that combination of LiCl with MMC represents potential anti-metastatic and anti-proliferative effects, and this combination could be a promising candidate therapy for the treatment of breast cancer.

Keywords: Lithium, Mitomycin C, Metastasis, Cell cycle arrest, Breast cancer cells

Corresponding author Email address: E-mail: razmi.mahdieh@ut.ac.ir

ID:837

Lack of Significant Elevation of VE-Cadherin-Positive Endothelial Microparticles in Cardiac Syndrome X

Fereshteh Ghaffari[1], Yousef Rasmi[1], Shahram Seyedi[2], MirHossein Seyed-Mohammadzad[3], Alireza Rostamzadeh[3], Elmira Roshani[1]

[1] Department of Biochemistry, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran
[2] Department of Immunology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran
[3] Department of Cardiology, Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran

Objective: Endothelial microparticles (EMPs), membrane-shed vesicles that are generated from the endothelial cells surface in response to cellular dysfunction and /or damage, has been shown that can be involved in an inflammatory process, blood coagulation and endothelial dysfunction. In addition, studies suggest that microvascular coronary dysfunction plays a crucial role in cardiac syndrome X (CSX). The objective: of this study was to evaluate the EMP levels in patients with CSX and normal subjects.

Material and Methods: CSX patients (n=40) were selected from individuals who referred to Department of Cardiology, UMSU, Urmia. The control group (n=19) were selected from healthy subjects without any disease related to endothelial dysfunction. They were matched according to gender and BMI. We measured the level of VE-Cadherin by flowcytometery using CD144 monoclonal antibody in the peripheral blood of patients and control subjects.

Results: CD144 endothelial microparticles counts were 30.79±19.01 counts/µL in CSX patients versus 26.92±11.98 counts/µL in healthy control subjects, P=0.51. CD144 endothelial microparticles percent were 2.13±1.64% in CSX patients versus 1.32±0.93 % in healthy control subjects, P=0.10.

Conclusion: Findings indicate that VE-Cadherin CD144 EMP levels increase in CSX patients but VE-Cadherin levels in CSX patients were not significantly higher than healthy control subjects. Endothelial and microparticles may increase the risk of thrombosis in CSX.

Keywords: Cardiac syndrome X, Endothelial, Microparticle, Platelet

Corresponding author Email address: fereshte.gaffari165@gmail.com

ID 838

The study of Lactate Dehydrogenase interaction with simple graphene and carboxylated graphene by using molecular dynamics simulation

Salman Ahmadi[1], Mohammad Saba Y. Mardoukhi[1]

[1] Department of Biology, Faculty of Science, University of Guilan, Rasht, Iran

Objective: Due to high speed dividing and higher energy requirement, the glycolysis to oxidative phosphorylation ratio in cancerous cells is higher than in normal cells. In hypoxia condition, cancerous cells make HIF-1α active, which is the Lactate Dehydrogenase (LDH) inducer and catalyze the pyruvate reversible transformation to lactate. LDH level increases in serum because of some incidence such as cancers, necrosis and etc.

Material and Methods: In this study, for the first time, LDH absorption on simple graphene surface and carboxylated graphene using molecular dynamics simulation, which is very low-cost, fast, and highly sensitive to determine the serum LDH level, has been studied.

Results: RMSD changes for LDH in carboxylated graphene state is higher than in simple graphene state. According to RMSF graphs, the highest fluctuation rate in all four LDH chains, in residues 100-110 and 200-220 are observed. According to SASA parameter, the amount of Solvent Accessible Surface Area in carboxylated Graphene's presence is very higher than in simple graphene state. Gradually, the number of hydrogen bonds formed between COO groups of carboxylated graphene surface and amino acids of protein surface are increasing.

Conclusion: According to RMSD changes, LDH shows higher dynamic to absorb to carboxylated Graphene surface than simple graphene. Increasing in SASA is because of its absorption to graphene's surface via hydrogen bonds and electrostatic interactions with COO groups of graphene. Therefore, compared with a simple graphene, the interaction of LDH with graphene containing COO is stronger, and it can be used to study the changes in LDH concentration in blood and determine the presence or absence of cancer.

Keywords: Lactate Dehydrogenase, Graphene, molecular dynamics simulation

Corresponding author Email address: Salman.ahmadi6889@gmail.com

ID:841

Cofilin, a mediator of VEGF signaling, downregulated by blockade of VEGF receptors with an anti-angiogenic peptide in the breast cancer bearing Balb/c mice

Maryam Bidram[1], S. Mohsen Asghari[2]
[1] Department of Biology, Faculty of Science, University of Guilan, Rasht, Iran

Objective: Angiogenesis is the main mechanism for the formation of new vessels in adults. VEGFs are important regulators of vascular development during health and disease which comprise of five members and acting on vascular endothelial cells through three VEGF receptors (VEGFRs), including VEGFR1, VEGFR2, and VEGFR3. Tumor angiogenesis plays a key role in metastasis. In tumor cells stimulated by growth factors, the activation of cofilin initiates actin polymerization, which leads to cell migration. Thus, cofilin pathway is essential for cell motility and metastasis. In this study, we investigated the cofilin expression in the breast cancer bearing model mice treated by a peptide that neutralizes VEGFR1 and VEGFR2.

Material and Methods: The breast cancer bearing model mice were divided into two groups, PBS and anti-angiogenic peptide-treated mice. Total RNA was extracted from tumor tissues using TRIzol reagent followed by cDNA synthesis. The level of cofilin expression was determined in breast tumor tissues by Real-time PCR using cofilin specific primers, and was evaluated the quantitative expression of cofilin against GAPDH as the reference.

Results: The treated mice showed less cofilin expression against control. Therefore, we found that decrease the level of cofilin expression by blockage of VEGFR was mediated by the antagonistic peptide. In other words, the VEGFR antagonist peptide leads to angiogenesis inhibition and reduces the tumor size.

Conclusion: These findings suggest that cofilin expression may be a useful strategy to address the downregulation of angiogenic signals and may be regarded as a novel target for drug design in cancer therapy.

Keywords: Breast cancer, anti-angiogenic peptide, cofilin, Real-time PCR
Corresponding author Email address: S.maryam33@yahoo.com

ID:842

The new human gene, UBE2Q1, overexpression affects CEA level in colorectal cancer cell lines

Sayed Mohammad Shafiee[1], Sara Khakshournia[1], Maryam Rasouli[1]
[1] Department of Biochemistry, School of Medicine, Shiraz University of Medical Sciences

Objective: Activation of the ubiquitin-proteasome pathway in various malignancies including colorectal cancer is established. This pathway mediates the degradation of damaged proteins and regulates growth and stress response. The recently discovered human gene, UBE2Q1, with a putative ubiquitin-conjugating enzyme activity, is reported to be overexpressed in some malignancies. Carcinoembrionic antigen (CEA) is highly related glycoprotein involved in cell adhesion. CEA is usually present at very low levels in the blood of healthy adults. CEA is raised in colorectal cancer (CRC), therefore, it is used as a CRC tumor marker.

Material and Methods: Several CRC cell lines were transfected by UBE2Q1 containing plasmid using lipofection method. All cell lines were checked by quantitative Real-Time RT-PCR and Western blot analysis to confirm the UBE2Q1 overexpression. To evaluate the plausible effects of UBE2Q1 overexpression on CEA level, the level of CEA in lysates and also in the supernatant media of UBE2Q1 transfected cell lines were measured by enzyme linked immunosorbent assay (ELISA) and also checked by Western blot analysis.

Results: The cell lysates showed higher levels of CEA concentration in comparison with the levels of secreted CEA in the culture media of each cell lines. Among the cell lysate samples and cell culture media of the cell samples, the highest CEA level was from non-transfected SW1116 cells.

Conclusion: The Results: showed that UBE2Q1 overexpression could decrease the level of CEA expression and secretion from CRC cell lines. Considering CEA as a tumor marker, our Results: recommended that UBE2Q1 overexpression may have advantageous effects on CRC tumor prognosis.

Keywords: Colorectal cancer, Carcinoembyonic antigen, UBE2Q1

Corresponding author Email address: shafieem@sums.ac.ir

ID:844

Enhanced anti-proliferative and pro-apoptotic effects of metformin encapsulated in PLGA-PEG nanoparticles on SKOV3 human ovarian carcinoma cells

Leila Faramarzi[1], Younes Pilehvar-Soltanahmadi[2], Mehdi Dadashpour[2], Akram Mohammadi[2], Nosratollah Zarghami[2]

[1] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran

[2] Department of Medical Biotechnology, Faculty of Advanced Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Metformin (MET) has recently received attention for its anticancer potential effects. However, the low bioavailability and short half-life of MET limited its use as an anti-cancer drug. The present study intended to evaluate the efficiency of PLGA-PEG as a nano-carrier for MET to increase anticancer effects.

Material and Methods: MET-loaded PLGA-PEG NPs were characterized by particle size, zeta potential, Fourier transforms infrared spectroscopy (FTIR), drug release profile and Field emission scanning electron microscopy (FE-SEM). Anti-proliferative and apoptotic effects of nanoformulated MET were evaluated using MTT and flow-cytometric assays, respectively. Also, real-time PCR was used to determine the gene expression levels of apoptotic (bax, bcl-2 and caspase-3 and caspase-7), p53 and hTERT genes.

Results: Evaluation of cytotoxicity showed that MET-Nanocapsulated had more cytotoxicity than free MET in time-and dose-dependent manner. The segregation of the cell nuclei into segments and the percentage of apoptotic cells induced by Met-Nanoencapsulated was significantly higher than free Met.Also, it was found that Met-loaded PLGA-PEG NPs more triggered cell cycle arrest at G2/M checkpoint and increased the percentage of dead SKOV3 cancer cells than free MET. Compared to MET treated cells, the mRNA expression levels of apoptotic genes bax, caspase-3 and caspase-7, as well as tumor suppressor p53 and hTERT were significantly altered in MET-NPs, treated cells.

Conclusion: it is supposed that nano-encapsulation of Met into polymeric PLGA-PEG NPs may be a convenient drug delivery system to enhance its anticancer effects in ovarian cancer therapy.

Keywords: Metformin, polymeric nanoparticles, apoptotic effect, ovarian cancer

Corresponding author Email address: faramarzi.l1370@gmail.com

ID:845

The effect of Bowman Birk trypsin Inhibitor on autophagy-related genes expression level in U87MG cell line

Bahareh Kardideh[1], Kamran Mansouri[2], Zahra Samimi[3], Ali Mostafaie[4]

[1] Department of immunology, Kermanshah University of Medical sciences, Kermanshah, Iran

[2] Molecular Biologic Research Center, Kermanshah University of Medical sciences, Kermanshah, Iran

[3] Student research committee, Kermanshah University of Medical sciences, Kermanshah, Iran

[4] Molecular Biologic Research Center, Kermanshah University of Medical sciences, Kermanshah, Iran

Objective: Bowman-birk trypsin inhibitor (BBI) is a member of protease inhibitors, with both trypsin and chymotrypsin inhibitory effects. In addition to the anti-inflammatory effect of BBI, many studies have demonstrated that it can also prevent tumorigenesis in various cancers. BBI can inhibit cell cycle at G1/S stage and its effect on cancer inhibition has been proposed related to apoptosis. On the other hand, apoptosis and autophagy are assumed highly interactive mechanisms. Autophagy has an essential role in cellular energetic balance, cell cycle and cell death, so any factor affecting autophagy could be of great importance in many human diseases such as cancer. The aim of this study was to investigate the effect of BBI on the expression of autophagy-related genes in U87MG cell line.

Material and Methods: BBI was purified from soybean by using Ion-exchange chromatography. U87MG cells were cultured in DMEM supplemented with 10% FBS at 37◦C and 5% CO2. The effect of BBI on Cell proliferation was measured by MTT. After 24h of incubation, the cells were treated with three concentrations of BBI (50, 100 and 200 µg/ml). Total RNA was then isolated by RNA extraction kit after 24h. cDNA templates were synthesized using cDNA synthesis kit. Finally, the expression levels of Atg-5 and Bnip-3 were analyzed with Real-time PCR technique.

Results: BBI had an antiproliferative effect on U87MG cell line. Results: of Real-time PCR analysis showed that the expression of autophagy-related genes in U87MG cells treated with BBI was increased significantly in comparison to control.

Conclusion: BBI increased the expression of autophagy-related genes in U87MG cells. This increase in autophagy level could be correlated with apoptosis process and facilitate cancer cell death.

Keywords: Autophagy, Bowman birk trypsin inhibitor, antiproliferative effect, Autophagy related genes

Corresponding author Email address: bahare.kardide1990@gmail.com

ID:849

Hypomethylation of the miRNA-34a gene promoter is associated with Severe Preeclampsia

Mahnaz Rezaei[1]
[1] Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: PE is a pregnancy-specific complication, which genetic and epigenetic factors play key roles in its pathogenesis. DNA methylation is a main epigenetic alteration with important roles in gene regulation. Micro RNAs (miRNAs) as another member of epigenetic machinery regulate the gene expression and involve in different biological pathways including apoptosis and placental development. Therefore, the present study performed to assess the association between miRNA-34a promoter methylation and PE susceptibility.

Material and Methods: The placenta of 104 PE pregnant women and 119 normotensive pregnant women were collected after delivery. The methylation status of the miRNA-34a promoter was assessed using Methylation Specific PCR (MSP).

Results: The frequency of the hemi-methylated (MU) miR-34a promoter was significantly lower in PE women compared to the controls (17.3 vs. 29.4%) (OR, 0.45 [95% CI, 0.2–0.9], P = 0.016). The overall methylation rate was 23.1% in PE women and 41.2% in the control group and was significantly lower in PE women (OR, 0.4 [95% CI, 0.2–0.8], P = 0.004). The frequency of hemi-methylated (MU) and overall methylated (MU+MM) promoter of miR-34a gene was significantly lower in severe PE but not in mild PE women compared to the controls [(OR, 0.3 [95% CI, 0.1–0.8], P = 0.02) and (OR, 0.3 [95% CI, 0.1–0.7], P = 0.009), respectively]. There was an association between hemimethylated (MU) and overall methylated (MU+MM) promoter and late onset PE [(OR, 0.4 [95% CI, 0.2– 0.9], P = 0.03) and (OR, 0.4 [95% CI, 0.2–0.8], P = 0.01), respectively].

Conclusion: An association was found between hypo-methylation of the miR-34a promoter and PE and PE severity."

Keywords: Preeclampsia, Hypomethylation, miRNA-34a

Corresponding author Email address: mrezaei550@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:850

Induction of Endoplasmic Reticulum Stress by Tunicamycin in ovarian cancer cell lines

Shekufe Rezghi Barez[1], Mahmoud Aghaei[2]

[1] Department of Biochemistry, faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Iran

Objective: Recently, induction of apoptosis via ER stress is the strategy for cancer therapy especially in ovarian cancer. The aim of this study was to investigate ER stress induction in ovarian cancer cells by TM and confirm by quantitative real-time RT-PCR.

Material and Methods: Ovarian cancer cells (OVCAR-3 and SKOV-3) were used in this study. The cells were seeded into 15-cm diameter plate and were treated with Tunicamycin (2.5µM) and incubated for several times (0, 6, 12, and 18 hr). The mRNA expression levels of the ER stress markers including XBP-1, sXBP1, Chop and ATF4 were determined by real-time RT-PCR and normalized by GAPDH expression.

Results: TM significantly increased the expression levels of XBP-1, sXBP1, Chop and ATF4 genes in time dependent manner. This effect was more obvious in expression of sXBP1 (5.5 fold in skov-3 and 2.5 fold in ovcar-3), XBP1 (8 fold in skov-3 and 4.5 fold in ovcar-3), and ATF4 (3fold in skov-3 and 1.5 fold in ovcar-3) than CHOP (5 fold in skov-3 and 3,5 fold in ovcar-3).

Conclusion: Our Results: showed that Tunicamycin induced ER stress in ovarian cancer cell lines. Moreover, XBP1 is the best sensitive gene marker for determining activated UPR.

Keywords: ER stress, Tunicamycin, ovarian cancer, XBP1, UPR

Corresponding author Email address: shekoofehrezghi@gmail.com

ID:851

Supportive roles of fibrin scaffold in increasing of expression and cardiac protein markers during of differentiation of human adipose-derived stem cells

Zahra Bagheri-Hosseinabadi[1], Seyed Alireza Mesbah-Namin[2], Hamidreza Mollaei[3]
[1] Department of Clinical Biochemistry, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Department of Clinical Biochemistry, Tarbiat modares University, Tehran, Iran
[3] Department of Medical Microbiology, Kerman University of Medical Sciences, Kerman, Iran

Objective: Human adipose-derived stem cells (hADSCs) are potentially predisposing for clinical application of tissue engineering as like as cardiac tissue, because of its easy isolation from the patients and high capability of these cells to amplify and it\'s differentiation in culture is the most advantage for autologous transplanting to same patients. Suitable scaffold helps to protect, attachment and active orientation of the cells. The main purpose of this study focused on the possibility of better amplification and differentiation of hADSCs towards to the cardiac-like cells in fabricated fibrin scaffold, in comparison with culture plates, by checking the expression levels of cardiac protein markers.

Material and Methods: After approving the characteristics of hADSCs by flow cytometry and differentiation of hADSCs into adipocytes, osteocytes and chondrocytes, treated cells with trichostatin A (TSA) cultured in scaffold (3D) and plates (2D) were followed until 4 weeks. The morphology of the scaffold was characterized by Scanning Electron Microscopy. Immunochemistry assays and qRT-PCR were used to evaluate the expression of special cardiac proteins and genes such as NKX2.5, Cx43 and cTnI in treated hADSCs in 3D and 2D groups.

Results: Immunochemistry assay and qRT-PCR showed the significantly higher expression of special cardiac genes such as NKX2.5, Cx43 and cTnI in TSA treated hADSCs in the 3D group in comparison with 2D group ($P<0.05$).

Conclusion: The Results had shown that the fibrin scaffolds allow a higher and sooner differentiation of hADSCs into cardiomyocyte-like cells treated especially TSA and can lead to the expression of special cardiac genes in a shorter period of time in comparison to 2D.

Keywords: Human ADSCs, Cardiomyocyte-like cells, Fibrin scaffold

Corresponding author Email address: Baghery.zahra@yahoo.com

ID:852

Molecular Docking Studies of endonuclease inhibitors for IRE1

Shekufe Rezghi Barez[1], Mahmoud Mirzaie[2]

[1] Department of Biochemistry, faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Iran

[2] Pharmaceutical Chemistry Department of Biochemistry, faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Iran

Objective: ER stress is an important Causes of diseases especially developing cancer. Serine-threonine kinase/endonuclease depending Inositol-1 protein (IRE1) is an enzyme that possesses intrinsic endonuclease and protein kinase activity and is reactivated in ER stress network. Endonuclease activity lead to cell survive. IRE1 endonuclease Inhibitors have recently used as anti-cancer drug. In this study, the molecular docking studies of three different IRE1 endonuclease Inhibitors, MKC-3946, 4UC8 and STF-083010.

Material and Methods: The pdb file IRE1 and STD files of endonuclease inhibitors, MKC-3946, 4UC8 and STF-083010 were obtained from Protein Data Bank and Pub Chem respectively. For converting STD to pdb format, OpenBable GUI version 2.3.2a was used. AutoDock 1.5.6 was used for molecular docking.

Results: The Results have showed that the synthesized ligand STF-083010 favorably well with the standard ligands. The best binding affinity is in ligand STF with -5.97. Also, the Results: showed that the STF derivatives gave better binding interaction than ligand MKC and 4UC8. The S atom in the ring of STF derivative as the hydrophobic group and SO2 group as the acceptor band gave binding affinities values (-5.9797 Kcal/mol) for IRE1. This interaction in STF have enhanced the binding affinity compare another ligands.

Conclusion: The sited ligands carry out binding energy in the selected receptor (IRE-1). STF-083010 was favorable affinity and have the best interaction for IRE1. Our Results: suggest STF as a suitable ligand for cancer therapy."

Keywords: Molecular docking, STF, IRE1, inhibitor, ER stress

Corresponding author Email address: shekoofehrezghi@gmail.com

ID: 853

Immobilization of recombinant uricase on the Metal-Organic Framework (Ni-MOF) to improve enzyme stability

Neda Motamedi[1], Masoud Torkzadeh-Mahani[1], Azadeh Lohrasbi-Nejad[2], Ali Riahi-Madvar[3]
[1] Graduate University of Advanced Technology, Kerman, Iran
[2] Department of Agricultural Biotechnology, Shahid Bahonar University of Kerman, Iran
[3] Department of Biotechnology, Graduate University of Advanced Technology, Kerman, Iran

Objective: Uricase (EC 1.7.3.3) converts uric acid to allantoin. This enzyme (34kDa) mainly used for therapeutic goals and diagnostic objective:s. Despite having many applications, its low stability is one of the major problems for use in industry. So far many methods have been used to stabilize uricase, such as PEGylation and use of additives. In this study Metal-Organic Framework (Ni-MOF) is used as a support for immobilization of uricase.

Material and Methods: The strain BL21 includes pET28a-uricase vector was used. Recombinant uricase was expressed in the presence of 1 mM IPTG at 37° C for 5h and purified by Ni-NTA column. The quality of purified enzyme determined by SDS-PAGE. Then, Ni-MOF crystals washed twist with Tris/HCl (50 mM) and employed to immobilize uricase. The optimum time for incubation of uricase with Ni-MOF calculated by investigation of fluorescence spectra of protein. The activity of the naked and immobilized enzyme was assayed and compared to various conditions.

Results: The Results show that the best time for immobilization of uricase (0.15 mg/ml) on the Ni-MOF (0.5 mg) was 30 minutes. Comparing of the optimum temperature displays that binding of uricase to particle caused of remaining activity of the enzyme at 40 to 65 °C, while naked enzyme inactivated at the temperature above 35 °C. Result belongs to calculating of activity in various pH solution shows that the optimum pH for activity of immobilized uricase increased 1.0 unit, relative to the naked enzyme. Also, the Results: of thermal inactivation indicated that the half-life of the immobilized enzyme was 15 min at 55 ° C, while free enzyme loses its activity within about 30 seconds.

Conclusion: The obtained Results indicate that Ni-MOF due to having Ni ion can bind to recombinant protein (including His-tag) with high affinity. These interactions between enzyme and support were formed in a way that protein folding was preserved. So that caused the increased stability of enzyme at high temperatures and pH."

Keywords: Recombinant uricase, Metal-Organic Framework, Immobilization, Stability

Corresponding author Email address: neda.m2950@yahoo.com

ID:854

Interaction effects of acute exercise and L-arginine supplementation on nitric oxide as a marker of nitrosative – oxidative stress in muscle of rats

Masume Kazemi[1], Sayed Mohammad Marandi[2], Ahmad Movahedian[3], Mohammad Faramarzi[1]
[1] Department of Exercise Physiology, University of Shahrekord, Shahrekord, Iran
[2] Department of Exercise Physiology, University of Isfahan School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences
[3] School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences

Objective: Acute phase exercises can cause severe morphological damages to skeletal muscles involved in those activities. According to the growing importance of sports supplements, the aim of the present investigation was to evaluate the effect of L- Arginine supplements on the oxidative and nitrosative stress induced in gastrocnemius muscle acute exercises in rats.

Material and Methods: Thirty two male Vistar rats were randomly divided into four groups: sedentary control (SC); sedentary control with L-Arg treatment (SC + Arg); exhaustive exercise (E); and exhaustive exercise with L-Arg treatment (E + Arg). E and E+Arg groups performed a 1 hour acute running test, or until exhaustion on a treadmill (16-26 m/min) and Arg and E+Arg groups treated orally with the L-Arg (2% diet, for 30 days). Sampling was performed 1 hour after exercise. Nitric oxide production was evaluated by measuring nitrite formation, using Griess reagent. oxidant-Antioxidant's ratio was measured as TOS / TAC levels.

Results: Acute exercise decreased NO in (SC + Arg), (E) and (E + Arg) groups compared to the control group but it was significant change just in (E + Arg) group. The antioxidant-oxidant's balance of TOS / TAC decreased in (E) group compared to the control group. CPK increased in (E), (SC + Arg) and (E+Arg) groups compared to the control group (SC). ($p \leq 0.05$).

Conclusion: The Results of the present study didn't show existence of oxidative-nitrosative stress and supplementation effect in gastrocnemius muscle 1 h after the acute phase exercise.

Keywords: Acute Exercise, Oxidative-Nitrosative Stress, Nitric Oxide

Corresponding author Email address: kazemimasume@gmail.com

ID: 855

Routine liver and kidney function tests as a tool for monitoring heavy metal toxicity

Baratali Mashkani[1], Mehdi Alesheikh[1], Bamdad Riyahi Zanjani[1], Mahdi Balali Mod[1], Mohamad Soukhtanloo[1], Seyed Issac Hashemy[1]

[1] Depertment of Medical Biochemistry, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Mine workers in different industries are exposed to toxic metals including lead and mercury with serious health consequences. The aim of this study was to determine whether the routine liver and kidney function test can be used as tool to screen for heavy metal intoxication.

Materials and methods: Alanin aminotransferase (ALT), aspartate aminotransferase (AST) activities, total and direct bilirubin as well as serum urea and creatinine were measured using a BT 3000 Auto-Analizer machine and reagents from Pars-Azmoon (Tehran, Iran). Determination of lead and mercury were performed using an Atomic Absorption Spectrometry aparatus (Perkin-Elmer 3030, USA) in the Imam Reza hospital, Mashhad, Iran.

Results: The mean concentration of both blood lead and urine mercury of the workers were (63 ± 15 ppb for lead and 9.8 ± 4.6 ppb for mercury) significantly higher than the control group (42 ± 11ppb for lead and 4.8 ±2.5 ppb for mercury). In addition, ALT, AST activitiy, total and direct bilirubin, urea, creatinin and creatinin clearance of the workers found to be significantly higher than that of control group. However, no correlation was observed between blood lead/urine mercury concentrations and changes in the liver function tests. Serum creatinine level in both groups was directly correlated with the urine mercury concentration.

Conclusion: Based on findings of this study, GFR is suggested as a biomarker in screening for mercury intoxication.

Keywords: Renal function tests, Kidney function tests, Lead, Mercury

Corresponding author Email address: mashkaniba@mums.ac.ir

ID:856

CGS-21680 induces MIN 6 cell survival through PKA/Akt/CREB signaling pathway

Mohammad Keyvanloo Shahrestanaki[1], Mahmoud Aghaei[1]
[1] Department of Clinical Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Pancreatic β-cells (PBCs) have high adaptability in regeneration and proliferation to compensate needs for high demands of insulin. However, prolonged exposure to the high Glc (glucotoxicity) disturbs this adaptability of PBCs and finally leads to the hyperglycemic condition and diabetes. Recently, purinergic signaling of Adenosine trough A2a receptor (A2aR) has been implicated to specifically increase β-cells proliferation and increase insulin secretion. However, intracellular signaling of this receptor was not established, yet. Thus we focused on possible signaling pathway of A2aR.

Material and Methods: The expression of A2aR and IPP-1 in MIN6 cells has been measured by qRT-PCR. Then, the effects of various concentrations of CGS 21680, as A2a receptor agonist on MIN6 viability and proliferation has been evaluated by MTT and Brdu assays. Accumulation of cAMP, insulin secretion and PKA activity assessments were evaluated by ELISA. Phosphorylation and dephosphorylation of IPP-1, Akt and CREB was measured using Western blotting.

Results: A2a expression in MIN6 cells was confirmed. The Results: showed that the pharmacological CGS-21680 increased MIN6 viability and proliferation. CGS-2180 increase intracellular levels of cAMP, which leads to activation of PKA. CGS 21680 in a dose dependent manner increased insulin secretion. Phosphorylation rate of Akt and CREB were increased in response to the 10 µM of CGS 21680.

Conclusions: Our data suggest that CGS-21680 activates A2aR PKA/Akt/CREB signaling pathway to modulate of proliferation of Min6 β-cells, which represents a feasible therapeutic strategy for simultaneous enhancement of β-cells function and insulin biosynthesis."

Keywords: β-cell, A2a receptor, CGS-21680, Diabetes, Adenosine

Corresponding author Email address: maghaei@pharm.mui.ac.ir

ID:857

A2a adenosine receptor activation improves MIN6 pancreatic beta cells function and survival during endoplasmic reticulum stress

Fatemeh Panahi[1], Mahmoud Aghaei[1], Mohammad Keyvanloo Shahrestanaki[1]
[1] Department of Clinical Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Chronic hyperglycemia induces Endoplasmic reticulum (ER) stress in pancreatic beta cells (PBCs). ER stress leads to the progressive dysfunction and lose of the PBCs. In this regards, finding new agents which alleviates ER stress can be helpful to prevent β-cells failure. Recent studies revealed that A2a Adenosine receptor (A2aAR) promote PBCs proliferation. However, the effects of A2aAR activation on PBCs has not been studied during ER stress. Thus, the aim of this study was to investigate the signaling pathway of A2aAR in MIN6 cells during ER stress.

Material and Methods: MIN6 cells were co-treated with 2 ug/ml of Tm and A2aAR agonist, CGS 21680 (0.01- 10 µM). Cell survival and proliferation has been evaluated by MTT and Brdu assays. Insulin secretion was evaluated by ELISA. BiP, CHOP, XBP1, and sXBP1 expression level was measured by qRT-PCR. Accumulation of misfolded proteins was evaluated with Thioflavin T staining assay. Akt and eIF2α phosphorylation were evaluated with western blotting.

Results: The MTT and Brdu assay Results: showed activation of A2a receptor can increase MIN6 viability, proliferation and insulin secretion during ER stress. According to our results, A2aAR agonist decreased BiP, CHOP, XBP1, and XBP1s gene expression levels following ER stress. Thioflavin T staining assay showed that accumulation of misfolded proteins was reduced in response to the CGS 21680 possibly through Akt activation. eIF2α phosphorylation was decresed.

Conclusions: We showed that A2a receptor activation can improves MIN6 cells function and viability during ER stress. Further evaluation of intracellular signaling pathways of this receptor needed.

Keywords: β-cell, A2a receptor, ER Stress, Diabetes, CGS 21680

Corresponding author Email address: maghaei@pharm.mui.ac.ir

ID:859

Kinetic study of immobilized alcohol dehydrogenase: A comparison between physical adsorption and chemical immobilization

Saber Ghannadi[1], Hossein Abdizadeh[1], Ali Akbar Saboury[2]
[1] School of Metallurgy and Materials Engineering, College of Engineering, University of Tehran, Tehran, Iran
[2] Institute of Biophysics and Biochemistry, University of Tehran, Tehran, Iran

Objective: The enzyme immobilization methods are identified either as chemical or physical procedures based on the nature of bonding. In this study, kinetic parameters of immobilized alcohol dehydrogenase and immobilization yield were investigated to evaluate the pros and cons of these two methods.

Material and Methods: For physical immobilization, 5 mg titania nanoparticles were dispersed in an alcohol dehydrogenase solution (1 mg/ml) in different pHs (5-9) for 5 minutes to 4 hours. For chemical immobilization, the nanoparticles were functionalized with (3-Aminopropyl)triethoxysilane; then crosslinked with Glutaraldehyde. Functionalized support dispersed in phosphate buffer and mixed with alcohol dehydrogenase solution (1 mg/ml) for 5 min to 4 h. kinetic parameters were investigated by using formaldehyde as a substrate and NADH as a cofactor.

Results: Unlike chemical immobilization, in covalent bonding, the immobilized enzyme was debonded after washing, since the driving force of immobilization in physical immobilization is electrostatic and hydrophobic interaction. On the other hand, the Micaelis constant (Km) of immobilized enzyme in chemical and physical immobilization is about 23 mM and 11 mM, respectively, compared to the free enzyme (11.5 mM). Moreover, catalytic efficiency of the immobilized enzyme in chemical immobilization is a quarter of physical immobilization value.

Conclusion: The kinetic parameters of covalently immobilized enzyme are being degraded than those of physical adsorption due to a lower affinity of enzyme for substrate in the chemical immobilization. On the other hand, the strength bond in chemical bonding is very strong compared to the physical one.

Keywords: Alcohol dehydrogenase, physical and chemical immobilization, titania, kinetic parameters

Corresponding author Email address: saberghannadi@gmail.com

ID:860

Test of a new Rhenium Complex for Carbon Monoxide Photorelease in human epithelial cells

Mohammad Reza Lornejad[1], Christine Schaefer[1], Elham Kianfar[2], Guenther Knoer[2]
[1] Pioneer Research Anahita Co. & Institute of Biochemistry and Biophysics, University of Teheran
[2] Institute of Inorganic Chemistry, Johannes Kepler University, Linz, Austria

Objective: Carbon monoxide (CO) is a signal molecule which regulates vital cellular processes. The gas is generated naturally in the human body and can exert antiapoptotic, vasodilatory, and anti-inflammatory effects. New Substances which release CO after exposure to light (=CO-releasing molecules Photoactivated (PhotoCROMs) are therefore highly interesting for new biomedical and pharmacological applications. Before CO-release studies in biological systems can be performed, the question arises, how the new water-soluble organometallic rhenium-derivative RE (BIAN) (CO) 3 C1 complex (PhotoCORM 3) affects human intestinal epithelial cells?

Material and Methods: The biological compatibility was tested on intestinal epithelial (Caco-2) cells. Differentiated Caco-2 cells were treated with different PhotoCORM 3 concentrations, followed by analysis of cell morphology (light microscopy) and cytotoxicity (LDH assay). Additional, the cellular uptake of PhotoCROM 3 was determined spectrophotometrically.

Results: Cytotoxicity could not be determined colorimetrically using LDH assay, because the LDH assay (absorption wavelength 490 nm) interfered with the red coloured PhotoCROM 3 complex (absorption wavelength 500 nm). Caco-2 cell morphology did not change markedly after 24 h treatment with the PhotoCROM 3 complex and high biologically compatibility is expected. Interestingly, regions of intense cellular uptake of the red-coloured PhotoCORM 3 were located dose-dependently within the cell monolayer.

Conclusion: Selective absorption of PhotoCROM 3 into subpopulations of intestinal epithelial cells should be investigated more in detail, e.g. with regard to a new colorectal cancer therapy. The LDH assay was not applicable, therefore an alternative cytotoxicity method should be used."

Keywords: PhotoCORMs, CO, instestinal, cell, Caco-2

Corresponding author Email address: lornejad@gmail.com

ID:861

Autophagy and DAPK1

Parvaneh Movahhed Abbasabad[1], Faranak kazerouni[1], Rouhollah Vahabpour[1]
[1] Department of Medical Laboratory Sciences, School of Allied Medical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

Objective: Autophagy consists of several sequential steps sequestration, transport to lysosomes, degradation, and utilization of degradation products. This process is quite distinct from endocytosis-mediated lysosomal degradation of extracellular and plasma membrane proteins. Autophagy has opposing, context dependent roles in cancer. It plays a complex dual role in tumorigenesis and can behave similarly as a tumor suppressor (acting to prevent tumor initiation) or as a tumor promoter to ensure tumor longevity via apoptosis inhibition. Reduced autophagy can contribute to tumor progression, whereas increased autophagy may be a mechanism for tumor survival under hypoxic, metabolic, or therapeutic stress conditions. The first studies in the 1990s pointed to the relationship between autophagy and tumorigenesis and showed that about 50% of prostate, breast, and ovarian cancers have an absence of one Beclin1 allele that codes for Beclin1, a key component in the autophagosome nucleation. A critical and important regulator of cell death and autophagy is Death-associated protein kinase 1 (DAPK1). DAPK1 belongs to a family of five serine/threonine (Ser/Thr) kinases that possess tumor suppressive function and also mediate a wide range of cellular processes, including apoptosis and autophagy. The loss and gain-of-function of DAPK1 is associated with various cancer and neurodegenerative diseases respectively. Recent research indicates communications between cellular organelles under cancerous and neurodegenerative conditions where in endoplasmic reticulum stress, inflammation, oxidative stress and autophagy are the signaling pathways. Both cancer and neurodegenerative disease have been linked with misregulated autophagy, and to loss and gain-of-function of DAPK1, respectively. Thus it will be interesting to determine DAPK1's autophagic functions contribute to its role in these pathologic conditions.

Keywords: autophagy, DAPK1, cancer

Corresponding author Email address: movahhed1994@gmail.com

ID:862

Beta Boswellic Acid enhances spatial learning and memory by reduction of tau phosphorylation level and increase of Reelin expression in the hippocampus regions of adult male rats

Marzieh Dehghan Shasaltaneh[1], Nasser Naghdi[2], Gholam Hossein Riazi[1], Leila Alizadeh[3]
[1] Laboratory of Neuro-organic Chemistry, Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran
[2] Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran
[3] Shefa Neuroscience Research Center, Khatam-Alanbia Hospital, Tehran, Iran

Objective: One of heterocyclic compounds that plays an inhibitory role on protein kinases, is beta boswellic acid (BBA). A few protein kinases induce hyperphosphorylation of tau protein and acts as a destructive factor on memory. To evaluate the effect of BBA on Reelin expression for regulation of hyperphosphorylated tau protein, acute and chronic dose of the herbal component were utilized.

Material and Methods: Four rat groups received different doses of BBA, intracerebroventricularly. Then, their spatial memory was assessed by behavioral tests like Morris Water Maze (MWM). Histological analysis was performed for various regions of hippocampal neurons. In addition, phosphorylation of tau protein at residues Ser396 and Ser404, and expression of Reelin protein were demonstrated by both western hybridization analysis and immunohistochemistry techniques. The alteration of astrocyte cells were evaluated using immunofluorescence.

Results: BBA (35g/kg of body weight) has a significant effect in the probe trial of MWM test. Dark neuron formation in CA1 and CA3 regions of hippocampus was reduced by BBA administration. The level of phosphorylated tau in hippocampus was declined upon BBA injection. Astrocyte cells immigrated to the hippocampal regions to remove tau hyperphosphorylated. This component improves Reelin expression.

Conclusion: Reelin expression enhances spatial learning and memory in the presence of BBA, so it is an effective drug for reduction of hyperphosphorylated tau protein in the brain.

Keywords: Spatial Memory; Boswellic acid; Reellin; Hyperphosphorylated tau

Corresponding author Email address: m_deghan1361@ut.ac.ir

ID:863

The evaluation of Helicobacter pylori infection on pro-inflammatory cytokines involved in cardiovascular diseases

Taher Mohammadian[1], Haneyeh Mohammady[1], Mohammad Hassan Shahhosseiny[1]
[1] Department of Microbiology, Shahr-e-Qods Branch, Islamic Azad University, Tehran Iran

Objective: Cardiovascular diseases are one of the most causes of morbidity and mortality in industrial and developing countries such as Iran. The epidemiologic pattern of Helicobacter pylori infection is differed between developed countries and developing countries. At the present study, the effects of Helicobacter pylori infection on factors of cardiovascular disorders (fibrinogen and hs-CRP) were evaluated.

Material and Methods: In the cross-sectional study, 96 volunteers who referred to clinical lab were tested. The titer of total IgG against Helicobacter pylori was evaluated by ELISA method. Then, the amount of fibrinogen was determined by coagulation method, in which the amount of fibrinogen conversion to fibrin in the presence of large amounts of thrombin is measured. In addition, the determination of hs-CRP was done by immunoturbidometric method. Data and different factors were analyzed by SPSS statistical software.

Results: The existence of total IgG was detected in 61 (63.54%) of 96 patients and was negative in 35 people (36.46%). The frequency of fibrinogen and hs-CRP in women was higher than that of men and according to the findings, the fibrinogen and hs-CRP levels were high in IgG positive subjects. The findings showed that there was a significant relationship between fibrinogen and hs-CRP levels with Helicobacter pylori infection.

Conclusion: Helicobacter pylori infection may to lead atherosclerosis by increasing the levels of pro-inflammatory cytokines such as fibrinogen and hs-CRP. Also, due to the high level of fibrinogen and hs-CRP in Helicobacter pylori infected individuals, it can help to prevent cardiovascular disease by reducing the amount of infection in individuals.

Keywords: Helicobacter pylori, Cardiovascular Disorders, Atherosclerosis, hs-CRP Fibrinogen

Corresponding author Email address: tmohammadian@yahoo.com

ID:864

Inhibiting Notch Activity in liver cancer Stem Cells by Functionalized Gold Nanoparticles with SAHM1 and vitamin C

Maryam Ghanbari[1], Mostafa shourian[1]
[1] Department of biology, faculty of science, university of Guilan, Rasht, Iran

Objective: Liver cancer is the sixth most frequent cancer and the second leading cause of cancer-related death worldwide. Hepatocellular carcinoma (HCC) accounts for over 80% of primary liver cancer cases and it is characterized by a high recurrence rate and heterogeneity. These pathological properties may flow from cancer stem cells (CSCs), which are capable of self-renewal and differentiation responsible for tumor progression, metastasis, and chemotherapy-resistance. Notch signaling has been implicated to regulate the CSC population, where it has been shown to be critical for maintenance and self-renewal of CSCs. Notch is linked to aggressive metastatic growth and therapy resistance. Notch-targeted therapy is thus an interesting treatment option. Another novel therapeutic strategy for HCC treatment is Vitamin C (VC). VC kills cancer cells and preferentially kills CSCs via SVCT-2. Utilizing these CSC features, after we made the GNPs suspension using a reference method, by adding 2 ml of trisodium citrate 1% to 50 ml of aqueous solution of 1% HAuCl4 we functionalized Au nanoparticles, carrying Notch inhibitor peptide, SAHM1, with VC to efficiently deliver Notch signaling inhibitors to CSCs via SVCT-2. The VC and peptide were co-immobilized on surface of gold nanoparticle. We aimed to enhance particle uptake in CSCs by utilizing the machinery for cellular import of VC. Our data reveal that specific CSC characteristics can be utilized in nanoparticle design to improve CSC targeted drug delivery and therapy.

Keywords: Notch inhibitor, Cancer Stem Cells, Gold nanoparticles, Vitamin C, Liver cancer

Corresponding author Email address: shourian@guilan.ac.ir

ID:870

Investigation of the synergistic toxicity of ZnO and TiO2 nanoparticles in human hepatoma HepG2 cells

Hamid Gholami[1], Roghayyeh Abbasalipourkabir[2], Shirin Heydari Sasan[2], Heresh Moridi[1], Hossein Shateri[1]
[1] Student Research Center, Hamadan university of medical scince
[2] Department of Biochemistry, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Hepatocellular carcinoma (HCC) is the sixth most common cancer worldwide and the third leading cause of cancer-related death, with a growing incidence in recent years. Modulation at the mRNA levels of apoptotic-related genes often correlates with the sensitivity of various types of cancer cells to chemotherapeutic agents. Nanoparticle drug delivery systems are being developed to effectively deliver smaller doses of chemotherapeutic agents and control drug distribution in the body. In this study, we evaluate the expressions of BCL2 and BAX genes in HepG2 treated with of ZnO and TiO2 nanoparticles, which can result in a new approach to hepatocellular carcinoma therapy.

Material and Methods: In this study, we treated HepG2 cells with different concentrations of ZnO and TiO2 nanoparticles at 48 h. The IC50 was determined. We extracted RNA by using RNX solution, after which cDNA was synthesized. The precise primers for the BCL2, BAX and TBP genes were designed by specific software. The quantity of BCL2 and BAX gene expression compared to ACTIN gene (reference gene) was analyzed using real-time PCR.

Results: BCL2 and BAX gene expression levels in HepG2 cells treated by ZnO NPs were 0.8 (BCL2) and 1.37(BAX); in HepG2 cells treated with ZnO and TiO2 NPs, the gene expressions were 0.03 (BCL2) and 2.46 (BAX).

Conclusion: In this study, the Results: have shown that synergistic toxicity of ZnO and TiO2 is an effective anti-cancer agent. Nanoparticles cause apoptosis in HepG2 cells. We have shown that nanoparticles ZnO and TiO2 increase cytotoxicity in comparison with drugs that only have HepG2 cells.

Keywords: ZnO, TiO2, Nanoparticle, BCL2, BAX

Corresponding author Email address: Gholami.Hamid@ut.ac.ir

ID:871

Efficient Production of a Xylanase as a Promising Candidate for Some Pharmaceutical Applications

Hemad Rahimian gavaseraei[1], S. Shirin Shahangian[1], Mahmoud Reza Aghamaali[1], Saeed Aminzadeh[2], Zeinab Takalloo[2]

[1] Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran

[2] National Institute of Genetic Engineering and Biotechnology, Tehran, Iran

Objective: Xylanases are widely used in biotechnological processes and industries. One of their most common application is production of xylitol as an artificial low calorie sweetener for diabetic patients and fat people. Xylan degradation by xylanases can also be useful for production of succinic acid and acetic acid, which are very important compounds in the preparation of aspirin.

Material and Methods: The recombinant pET26b(+) expression vector containing xylanaseB gene was transformed into E.coli BL21 as an expression host. After confirming the transformation by colony-PCR, the positive colonies were applied for xylanase production. The enzyme activity was assessed using beechwood xylan as substrate. The initial rates of reaction were plotted against various concentrations of xylan and the kinetic parameters Km and Vmax were determined by Michaelis-Menten equation using GraphPad Prism software.

Results: Sequence analysis of the xylanaseB gene demonstrated high sequence identity with glycoside hydrolase family 10 enzymes. The enzyme was over-expressed in soluble form and its molecular weight was estimated to be approximately 32KDa using SDS-PAGE analysis. The xylanaseB exhibited high activity on beechwood xylan and the Km and Vmax values were 3.26 mg/ml and 0.42 µmol/min, respectively.

Conclusion: Xylanase B was successfully produced in prokaryotic host in soluble form. The enzyme showed high activity and its kinetic parameters were comparable with some other commercial xylanases. These properties could suggest this enzyme as a good candidate for a variety of pharmaceutical and biotechnological applications.

Keywords: Recombinant xylanaseB, Expression, Kinetic parameters

Corresponding author Email address: hemadrahimian@yahoo.com

ID:872

Protective effects of Tempole on sperm and biochemical parameters in testicular tissues of diabetic male rats

Heresh Moridi[1], Akram Ranjbar[2], Hossein Shateri[1], Hamid Gholami[1]
[1] Student research center hamadan university of medical science
[2] Department of Toxicology and Pharmacology, School of Pharmacy, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Oxidative stress is one of the causes of diabetes and is one of the most important causes of infertility in diabetic men. Therefore, studying the effect of antioxidant substances, identify and treat diabetes-induced infertility. In this study, the effect of Tempol on Infertility parameters and oxidants, antioxidants Indices in testicular tissue of diabetic male rats was investigated.

Material and Methods: The animals were randomly divided into 4 groups. The control group / diabetic group / control group treated with 100 mg / kg Tempol / diabetic rats treated with 100 mg / kg Tempol. After a month of treatment, rats were sacrificed and testicular tissue samples for microscopic examination and biochemical tests were isolated. Epididymal tissue was taken for semen analysis.

Results: The Tempol has significantly increased parameters including motility, move forward, hyperactive and causes a significant reduction in immobile sperm in the treated group compared to the diabetes group. Tempol, significantly decreased lipid peroxidation. The total antioxidant capacity was significantly increased by treatment with Tempol, The difference between levels the thiol groups in the groups were not statistically significant. Tempol also increased the number of spermatogonia, primary spermatocytes, beginnings spermatid cells, late spermatid cells, Sertoli cells in the treated groups compared to diabetic group, Although between the two groups (a diabetic and diabetic treated with Tempol) was not statistically significant results. In examining the seminiferous tubules the severity of lesions was reduced in diabetic rats treated with Tempol But the Results: were not significant.

Conclusions: It seems Tempol as an antioxidant Effects on the conservation and recovery Fertility is diabetic rats but more studies are needed to confirm this.

Keywords: Tempol, Diabetes, Oxidative Stress, Sperm, Infertility

Corresponding author Email address: hereshmoridi@yahoo.com

ID:873

Serum Magnesium Levels in Migraine Patients During Migraine Attack and Migraine-free Time

Maryam Alaei[1], Zahra Bathaie[1]
[1] Tarbiat modares University, Tehran, Iran

Objective: Migraine as the most prevalent neurological disabling disorder is the third prevalent and sixth common medical disorder. Approximately, 18% of women and 6% of men all over the world are suffering from migraine. Although, the exact cause of migraine is not clearly known, yet, different biochemical and mineral statue are of paramount importance in determining patients' clinical outcome. The role of Magnesium in pathogenesis of migraine attacks has been highlighted by different studies. Various receptors including: serotonin and NMDA receptors, nitric oxide synthesis and release, as well as some other neurotransmitters are effected by serum level of Magnesium. Therefore, in the present study, we investigated the serum levels of Magnesium in migraine patients in two different phases.

Material and Methods: Serum Samples from 50 migraine patients during migraine attack and migraine-free time and 50 healthy controls were collected in this study. Serum Magnesium level was measured by using atomic absorption spectroscopy.

Results: The serum Magnesium level was 0.82 ± 0.8 mmol/L during migraine attack 0.86 ± 0.15 mmol/L during the migraine-free time and 1.02 ± 0.1 mmol/L in control group.

Conclusion: Lower level of serum Magnesium was observed in patients suffering from migraine attack, in comparison with migraine-free time and control group. Moreover, serum Magnesium level showed an inverse correlation with frequency of migraine attacks. These Results: indicate the possible role of decreased serum Magnesium level in pathogenesis of migraine and migraine pain.

Keywords: Migraine; Magnesium; Atomic Absorption Spectroscopy

Corresponding author Email address: maryam.alaee@modares.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:874

L-Arginine increases the solubility of heat-induced unfolded/aggregating human insulin

Sepideh Haghighi-Poodeh[1], Azadeh Ebrahim-Habibi[1], Latifeh Navidpour[2], Parichehreh Yaghmaei[3]
[1] Department of Biology, Faculty of Basic Sciences, Science and Research Branch, Islamic Azad University, Tehran
[2] Department of Medicinal Chemistry, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran
[3] Department of Biology, Faculty of Basic Sciences, Science and Research Branch, Islamic Azad University, Tehran

Objective: Recombinant human insulin is a hypoglycemic hormone widely produced for therapeutic use in diabetic patients, whose stability is important, both during pharmaceutical production and clinical use. Use of additives such as amino acids can contribute to stabilizing the protein by counteracting aggregates formation.

Material and Methods: Aggregation of human insulin was induced at pH 4.8 and 45 °C and kinetically studied for 20 min, after what aggregates reach a maximum amount. The growth kinetics and structure of the resulting aggregates in the presence and absence of L-Arginine and EDTA were characterized by UV−visible spectrophotometer and transmission electron microscopy (TEM). The kinetic aggregation data (such as Kagg, t0 and Alim) of insulin were fitted to the model described by BI Kurganov.

Results: In the absence of additives, amorphous aggregation forms very quickly; the lag phase (nucleation step) is short and in some conditions (e.g. increasing concentrations of insulin), aggregation occurs without lag phase. In the presence of EDTA, aggregation rate increases significantly but use of L-Arginine (50mM) dramatically suppress the heat-induced amorphous aggregation of insulin.

Conclusion: Kinetic parameters of protein aggregation, such as lag time, vary with the initial concentration of protein and in the presence of additives. While the chelator EDTA has an inducing effect on insulin aggregation, the basic amino acid L-Arginine counteract the process, and could be considered as potential agent for the inhibition and reduction of the toxic effects of industrial and disease-related protein aggregation.

Keywords: Recombinant human insulin, L-Arginine, amorphous aggregates, heat-induced aggregation

Corresponding author Email address: haghighisepideh@gmail.com

ID:875

A comparative study of curcumin and nanocurcumin effects on biochemical parameters of testicular tissue in male rats after exposed to Paraquat

Hossein Shateri[1], Akram Ranjbar[2], Hadi Ghasemi[1], Heresh Moridi[1], Hamid Gholami[1]
[1] Student Research Center Hamadan University of Medical Science
[2] Department of Toxicology and Pharmacology, School of Pharmacy, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Infertility and the imposition of financial and material costs on couples are one of the most important problems of societies. Pesticides used in agriculture from threats to human health and contribute to the pathogenesis of diseases such as infertility. Paraquat is one of the herbicide that involves various organs of the body by producing free radicals and damaging the cell membrane. Therefore, the possible effects of paraquat on testicular tissue followed by oxidative stress can be considered as a cause of infertility. The aim of this study was to examine the effect of curcumin treatment as an antioxidant on biochemical parameters of testicular tissue in male rats after exposed to Paraquat and its comparison with nanocurcumin.

Material and Methods: Forty-two male Wistar rats were randomly divided into six groups: control groups (C), group received 5 mg/kg paraquat (P), the group received curcumin (CUR), the group received nanocurcumin (NC), the group received curcumin and 5 mg/kg paraquat (CUR+P) and the group received nanocurcumin and 5 mg/kg paraquat (NC+P). Oral administration of these compounds was done daily for one week. Biochemical parameters including lipid peroxidation (LPO), total antioxidant capacity (TAC), total oxidant status (TOS) and total thiol moleculs (TTM) and histopathological parameters was investigated.

Results: Administration of curcumin and nanocurcumin significantly increased the amount of TAC and reduced levels of MDA and TTM in paraquat-exposed rats. Compared to curcumin, nanocurcumin had more effects on TAC, TOS and MDA, but there was no significant difference between TTM levels in the two treated patients.

Conclusion: It seems that in the treatment of infertility, nanocurcumin has better antioxidant effects than curcumin. However, further investigation is required to confirm this subject.

Keywords: curcumin, nanocurcumin, paraquat, biochemical parameters

Corresponding author Email address: hosseinshateri87@gmail.com

ID:877

Carnosine-graphene oxide conjugates decorated with hydroxyapatite as promising nanocarrier for ICG loading with enhanced antibacterial effects in photodynamic therapy against Streptococcus mutans

Ashkan Karbasi[1], Elham Gholibegloo[1], Maryam Pourhajibagher[2], Nasim Chiniforush[3], Ali Ramazani[4], Tayebeh Akbari[5], Abbas Bahador[6], Mehdi Khoobi[1]

[1] Nanobiomaterials Group, Pharmaceutical Sciences Research Center, Tehran University of Medical Sciences, Tehran, Iran
[2] Dental Research Center, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran
[3] Laser Research Center of Dentistry, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran
[4] Department of Chemistry, Faculty of Science, University of Zanjan, Zanjan, Iran
[5] Department of Microbiology, Islamic Azad University, North Tehran Branch, Tehran, Iran
[6] Department of Microbiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Antimicrobial photodynamic therapy (aPDT) has been emerged as a noninvasive strategy to remove bacterial contaminants such as S. mutans from the tooth surface. Photosensitizer (PS), like indocyanine green (ICG), plays a key role in this technique which mainly suffers from the poor stability and concentration-dependent aggregation. An appropriate nanocarrier (NC) with enhanced antibacterial effects could overcome these limitations and improve the efficiency of ICG as a PS. In this study, various ICG-loaded NCs including graphene oxide (GO), GO-carnosine (Car) and GO-Car/Hydroxyapatite (HAp) were synthesized and characterized by Fourier Transform Infrared Spectroscopy (FT-IR), X-ray Diffraction (XRD), Filed Emission Scanning Electron Microscopy (FE-SEM), Energy Dispersive Spectroscopy (EDS), Zeta Potential and Ultraviolet-Visible spectrometry (UV–Vis). The colony forming unit and crystal violet assays were performed to evaluate the antimicrobial and anti-biofilm properties of PSs against S. mutans. The quantitative real-time PCR approach was also applied to determine the expression ratio of the gtfB gene in S. mutans. The zeta potential analysis and UV–Vis spectrometry indicated successful loading of ICG onto/into NCs. GO-Car/HAp showed highest amount of ICG loading (57.52%) and also highest aqueous stability after one week (94%). UV–Vis spectrometry analyses disclosed a red shift from 780 to 800 nm for the characteristic peak of ICG-loaded NCs. In the lack of aPDT, GO-Car@ICG showed the highest decrease in bacterial survival (86.4%) which indicated that Car could significantly promote the antibacterial effect of GO. GO@ICG, GO-Car@ICG and GO-Car/HAp@ICG mediated aPDT, dramatically declined the count of S. mutans strains to 91.2%, 95.5% and 93.2%, respectively ($P<0.05$). The GO@ICG, GO-Car@ICG, GO-Car/HAp@ICG significantly suppressed the S. mutans biofilm formation by 51.4%, 63.8%, and 56.8%, respectively ($P<0.05$). The expression of gtfB gene was considerably reduced to 6.0, 9.0 and 7.9-fold after aPDT in the presence of GO@ICG, GO-Car@ICG, GO-Car/HAp@ICG, respectively ($P<0.05$).

Keywords: S. mutans, Antimicrobial photodynamic therapy, Indocyanine green, Graphene oxide, Carnosine

Corresponding author Email address: akarbasi@gmx.com

ID:880

Comparative cytotoxicity of cisplatin- and herbal extract-loaded PEG/PLA copolymers on human ovarian cancer in vitro

Amirhossein Skandari-Zanjani[1], Amaneh Javid[1], Saeed Rezaei-Zarchi[1]
[1] University of Science & Arts

Objective: Block copolymers such as PEG/PLA block copolymers have been particularly attended for their biocompatibility and biodegradability, as well as the ability to form different types of nanoparticles.

Material and Methods: PEG/PLA copolymers were synthesized by chemical deposition method. Watermelon seed (WS) and Persian olive (PO) extraction was done by Soxhlet method. Cisplatin (CP) and herbal extract loading onto PEG/PLA was performed by oil-in-water emulsion technique. The copolymers were evaluated by FTIR, UV-Vis absorption by Nanodrop, and electron microscopy. Human epithelial ovarian cancer cells of OVCAR-3 type were cultured in RPMI with 10% FBS and treated with synthesized copolymer system.

Results: CP release profile by dialysis showed 97.37% after 72h, long-term release-mechanism and stability. MTT assay showed highest % cell death rate after administration of WS and PO loaded PEG/PLA (~99.5%, $p<0.001$) and the combination of CP-WS-PEG/PLA and PO-CP-PEG/PLA (~97.5%, $p<0.001$). The cytotoxicity enhancing effect of present nanocomposites was strengthened in the presence of herbal extracts. While, extracts, CP and PEG/PLA alone had considerable dose-dependent cytotoxicity when compared to control ($p>0.05$).

Conclusion: The CP- and herbal extract-loaded PEG/PLA, in absence of any kind of surfactant, provided a better platform for improved aqueous solubility of hydrophobic CP with sustained drug release characteristics. In vitro study Results: confirmed that PEG/PLA diblock copolymer can be used as a surfactant free effective carrier system for drug delivery to treat ovarian cancer.

Keywords: PEG/PLA, Pharmaceutical Carriers, Plant Extracts, Cisplatin, Ovarian Cancer.

Corresponding author Email address: am_71_es@yahoo.com

ID:881

The effects of different concentrations of trehalose on mRNA levels of NG2 and neurocan genes in injured spinal cord in male rats

Mehrnaz Karimi Darabi[1], Mahdieh Nazari-Robati[1], Mohammad Khaksari[1], Mahboubeh Akbari[1], Masoumeh Mirzaie[1]
[1] Kerman University of Medical Science

Objective: Spinal cord injury (SCI) is one of the most debilitating clinical problems which can affect patients lifelong and quality of life. Glial scar and inflammation are the most important inhibitor factors to neuroregeneration after spinal cord injury (SCI). chondroitin sulfate proteoglycans (CSPGs) are known to be part of the glial scar that forms post injury, acting as a barrier to prevent axon extension and regrowth. Inflammation is believed to stimulate the upregulation of CSPGs expression. Recent evidence showed that trehalose reduces the development of inflammation in SCI. Therefore, we investigated the effect of trehalose on neurocan and NG2 mRNA levels in experimental SCI.

Material and Methods: Male rats were divided into six groups (n=5). Sham (laminectomy), SCI (laminectomy and SCI), vehicle (laminectomy and SCI, treated with phosphate buffer saline), T10, T100 and T1000 (laminectomy and SCI, treated with 10, 100 and 1000 mM trehalose). Rats were sacrified at 1, 3 and 7 days post-injury to measure neurocan and NG2 mRNA level in lesion. In addition, locomotor function was evaluated to confirm SCI and efficacy of treatment.

Results: Our experiments showed that CSPGs (neurocan and NG2) levels increased significantly after spinal cord injury. 3 and 7 days post-SCI, 10 mM trehalose downregulated mRNA level of both neurocan and NG2 respectively compared to vehicle group. Furthermore, trehalose treatment improved locomotor function compared to vehicle and SCI groups.

Conclusion: Collectively, treatment with low dose trehalose showed a decrease in neurocan and NG2 mRNA level which can contribute to improved functional outcome.

Keywords: Spinal cord injury, Trehalose, Neurocan, NG2.

Corresponding author Email address: me.karimi@kmu.ac.ir

ID:883

Association of VDR TaqI genetic polymorphism with Hashimoto's thyroiditis risk in female patients in Tabriz

Hassan Raei[1], Einollah Valizadeh[2], Mina Tavakkoli[3]
[1] Amozesh va Parvaresh
[2] University of Medical Sciences, Nutrition research Center, Tabriz, Iran
[3] Islamic Azad University, Falavarjan, Esfahan, Iran

Objective: Hashimoto's thyroiditis (HT) is the most prevalent autoimmune thyroid disorder caused by an interaction between genes and environmental triggers. Many studies in different populations have shown association between vitamin D receptor (VDR) gene polymorphisms and various autoimmune diseases, including HT. The aim of this study is to investigate the association between VDR TaqI (exon 9) gene polymorphism and HT subtypes.

Material and Methods: For the present study, 38 women with HT and 38 healthy women were collected from Endocrinology Clinic in Tabriz. Genomic DNA was isolated from peripheral blood-EDTA, and the target VDR gene was genotyped by PCR-RFLP technique after VDR-TaqI (rs731236) restriction enzymes digestion. Also, Serum levels of 25(OH)D3, calcium and TSH hormone were measured.

Results: Our Results: showed a significant difference in the genotype distribution of VDR-TaqI polymorphism (Tt) between patients with HT and controls (P = 0.01) and TSH levels were higher in HT than controls(P=0.007). Also, there were no statically significant differences between the groups in calcium (P=0.71) and vitamin D levels (P=0.06).

Conclusion: There is a relationship between VDR TaqI gene polymorphism and HT and Vitamin D insufficiency with HT. This study showed that VDR TaqI gene polymorphism may be predisposed to the HT occurrence.

Keywords: Vitamin D, Calcium, Hashimoto's Thyroiditis, VDR TaqI gene polymorphism

Corresponding author Email address: raeishabtab@yahoo.com

ID:884

Molecular Analysis of Genes Involved in Flavonols, Anthocyanin and Proanthocyanidins Biosynthesis in Diospyros Species

Fizabatool Kazmi[1], Parichehr Hanachi [1], Irum Shahzadi[2]
[1] Alzahra university
[2] Department of Biotechnology, Faculty of Environmental Sciences, COMSATS University, Pakistan

Objective: Diospyros lotus is native to Asian countries including Pakistan and locally named as "Amlok". This fruit plant contains various types of flavonoids including flavonols, anthocynins and proanthocyanidins that possess several health benefits and helps in the prevention of astringent taste. Anthocyanin and proanthocyanin are important secondary metabolites involved in fruit maturation.

Material and Methods: Methanolic extract of leaves and fruits was prepared for biochemical analysis of protein, antioxidant and enzymatic acivities. These activites were determined using spectrophotometer. In this work, the variations of flavonols, anthocyanin and proanthocyanidin contents were determined in D. lotus fruit development (four stages) and leaf.

Results: The Results: showed that FLS, DFR, LAR, ANS enzymes showed highest activity in mature stage (stage 4) of fruit. Highest 90% DPPH scavenging activity was observed in stage 4 of D. lotus. The mature (4) stage of D. lotus is rich in anthocyanin and proanthocyanidin with high enzyme activities.

Conclusion: This study provide evidence regarding the enzymatic and antioxidant activity of Diospyros lotus having remarkable amount of plant secondary metabolites which have valuable importance against different diseases.

Keywords: Anthocyanins, DPPH activity, Enzyme activity, Proanthocyanidins.

Corresponding author Email address: fizabatool1472@gmail.com

ID:885

Investigation of hsa- miR-124 genes expression during differentiation of human mesenchymal stem cells to Insulin producing cells

Hadi Rajabi[1], Alireza Abhari[1], Sevda Rahimzadeh[1], Somayyeh Aslani[1]
[1] Clinical Biochemistry and Molecular Diagnosis

Objective: MicroRNAs are a class of small noncoding RNAs, which control gene expression by inhibition of mRNA translation. MicroRNAs are involved in the control of biological processes including cell cycle, apoptosis and cell differentiation. Here, we aim at in vitro differentiation of human adipose-derived tissue stem cells into insulin producing cells(IPCs) and analyzes expression level of miR-124 during this differentiation process.

Material and Methods: We were differentiated human adipose-derived mesenchymal stem cells(hAD-MSC) toward endocrine pancreatic lineage following a 20-day and three stage protocol. We used combination of low-glucose DMEM medium, β-mercaptoethanol, and nicotinamide for pre-induction and high-glucose DMEM, β-mercaptoethanol, Nicotinamide, and Exendin-4 for induction stages of differentiation and maturation of insulin producing cells. MicroRNA expression levels were analyzed using real-time PCR and insulin production by the IPCs was confirmed by ELISA analysis and DTZ staining.

Results: MicroRNA expression level analysis of undifferentiated hAD-MSCs during pancreatic differentiation exposed that miR-124 upregulated during differentiation into insulin-producing cells.

Conclusion: We detected that hAD-MSCs could differentiate into insulin producing cells in vitro via three stage protocol, moreover our Results: demonstrated that miR-124 upregulated during the differentiation process.

Keywords: Adipose-derived mesenchymal stem cells, Insulin producing cells IPC, MicroRNAs
Corresponding author Email address: hadirajabi.bio@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:886

Evaluation of galectin-9 on caspase-3 activity in two cell lines of Acute Lymphoblastic Leukemia

Narges Zargar Balajam[1], Mahmoud aghaei[1]

[1] Department of Clinical Biochemistry, Isfahan University of Medical Sciences

Objective: Acute lymphoblastic leukemia (ALL) is a malignant of the bone marrow which it makes too many lymphocytes. Galectin-9 belong to a lectins superfamily, which are carbohydrate-binding proteins that has recently been revealed to use antitumor effects on various types of cancer cells. In general, the functions of galectin-9 in tumors include enhancing oncogenic signal pathways, regulating tumor cell growth or apoptosis, modulating cell migration, cell adhesion and suppressing immune responses. In cells undergoing apoptosis, two different mechanisms are operated: the intrinsic or extrinsic pathways. Galectin-9 plays an important role in these pathways by binding to various ligands. Anti-cancer dysregulation of apoptosis is a major hallmarks of cancer. Caspase-3 is one of the key regulators of the apoptotic response. In this study we investigated the clonogenic inhibitory capability of galectin-9 and caspase-3 activity in the induction of apoptosis by galectin-9 in Jurkat and KE-37 cell lines.

Material and Methods: The growth inhibitory effect of galectin-9 was determined by using Colony forming assay in Jurkat and KE-37 cell lines. Detection of galectin-9 on pro-apoptotic protein (Bax) and anti-apoptotic protein (Bcl-2) was conducted using Western blot in these two cell lines. To investigate caspase function in the induction of apoptosis by galectin-9, we examined the role of caspase-3 after treatment by galectin-9 in Jurkat and KE-37 cell lines.

Results: Our Results: showed that galectin-9 significantly reduced cellular colonies in a dose dependent manner (1-100 nM) in Jurkat and KE-37 cell lines. In addition, we found that galectin-9 also induced apoptosis by regulation of Bax/Bcl-2 ratio, and notable increase caspase-3 activity.

Conclusion: The present investigation introduced a possible mechanism for the control of acute lymphoblastic leukemia cell inhibition through galectin-9. Also galectin-9 can inhibit cell proliferation and induce apoptosis in Jurkat and KE-37 cell lines. Galectin-9 may be potential targets for developing novel cancer therapies.

Keywords: Acute lymphoblastic leukemia, galectin-9, apoptosis, caspase-3

Corresponding author Email address: maghaei@pharm.mui.ac.ir

ID:887

Evaluation of blood levels of OX-LDL, MDA and lipid in patients with or without atherosclerotic plaques

Hajar Azadikhah[1], Esmaeel Ghani[2], Hossein Farshidi[3]

[1] Hormozgan University of Medical Sciences

[2] Endocrinology and Metabolism Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[3] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Atherosclerosis is caused as a result of impairment of lipid profile and endothelial dysfunction. The entry and accumulation of free cholesterol in the wall of the artery, mediated by LDL particles, is a precondition for early onset atherosclerosis. The aim of this study was to evaluate the level of OX-LDL, lipid peroxidation and lipid profile in patients with or without atherosclerotic plaques.

Material and Methods: This study was performed on blood samples of patients with (n = 86) and without plaque (n =49) referring to the angiography section of Shahid Mohammadi Hospital in Bandar Abbas. Lipid peroxidation was evaluated by measuring MDA based on reaction with thiobarbituric acid (TBARS). The levels of OX-LDL and lipid profiles (LDL, HDL, TG and cholesterol) were measured by ELISA and commercial kits, respectively.

Results: OX-LDL and MDA were not significantly different between the two groups. There was no significant difference in systolic and diastolic blood pressure, BMI and abdominal circumference between the two groups, while the wrist circumference in patients with atherosclerotic lesions was significantly higher than those without plaque. The levels of LDL, TG, and plasma cholesterol in the atherosclerotic group were significantly higher than those without plaque, but plasma HDL was not different. OX-LDL had only a significant direct relation with the weight and diameter of the abdomen.

Conclusion: Patients without plaque had no significant difference in oxidative stress markers with atherosclerotic patients, while lipid profiling could still be a marker of progression of atherosclerosis and plaque formation. Some patients have no plaque; however, they are at risk for cardiovascular disease.

Keywords: Atherosclerosis, OX-LDL, MDA, lipid peroxidation, lipid profiles

Corresponding author Email address: hajar.azadikhah@gmail.com

ID:889

Association of Methylentetrahydrofolate Reducase (MTFR) Gene Polymorphism (C677T) with Homocysteine in Coronary Artery Disease (CAD)

Saiedeh Amani[1], Ebrahim Mirzajani[2], Seyed Mehrdad Kassaee[2], Minoo Mahmoudi[2], Fardin Mirboloouk[2]

1 Department of Biology, Hamedan brunch, Islamic Azad University, Hamedan, Iran

2 Cell and Molecular Research Center, Faculty of Medicine, Guilan university of Medical Sciences, Rasht, Iran

Objective: MTHFR is an essential enzyme for homocysteine, Metionine and Folate metabolism.The most common gene polymorphisim of MTHFR (C677T) is associate with labile enzyme and subsequently,Folate reduction and elevation of hcy level those are risk factor for cavdiovascular disease. The aim of this study was to investigate the association between genetic polymorphisim of MTHER (C677T) and coronary artery disease.

Material and Methods: This was case-control study consisted of 80 pateints with CAD documented with angiography and 80 normal controls. DNA was extracted with Rouch DNA extraction kit. Using ARMS_PCR, we studied the prevalence of MTHFR mutation (C677T) analyzed by agarose gel electrophoris and the effects of these polymorphisim on plasma level of Hcy,measured by EIA methods.

Results: The frequency of different genotype of C677T (CC, CT, TT) were determind in patient and control groups. it was (42.2%, 50% and 7.8%) in patients and (39.5%, 46.1% and 14.5%) in control groups, respectively. Also allele frequency for C and T in patients were 67.5% and 53.9% and in the controls were 62.5% and 53.3%.the mean plasma level of Hcy was 17.58 µmol/l and 13.59 µmol/l in patients and controls, respectively.

Conclusion: The polymorphism of C677T in patients are higher than control groups. But in the controversy with some other findings, especially in patients ,TT genotype may be protective genetic marker for coronary artery disease. also the other biochemical risk factor for CAD is elevation of Homocysteine. The mean level of Hcy in patients is higher than controls. This may be return to mutation in 677C>T or deficiency of vit.B12 and folic acid in diet.

Keywords: Homocysteine Reductase, Coronary artery disease, C677T polymorphism, Homocysteine

Corresponding author Email address: amani_saiedeh@yahoo.com

ID:896

Association of Maternal Hair Cortisol Level with Neonatal Facial Pain Expression Based on Newborns' Gender

Arash Rafeeinia[1], Mohammad Aryaie[1], Seyed Mehran Hosseini[1]
[1] Golestan University of Medical Scienc

Objective: Mother's mental and physical conditions during pregnancy affect the development of fetus. This study aimed to investigate the role of neonates' gender in pain responses and its association with maternal stress during pregnancy and programming.

Material and Methods: This study was conducted on 105 neonates (53 females and 52 males) born in Gorgan, Iran. The pain stimulus was intramuscular injection of vitamin K, a routine procedure for infants at birth. The first painful injection was performed for all children under the same conditions. The neonatal infant pain scale was used to assess pain intensity in newborns. Maternal stress during pregnancy was evaluated by measuring hair cortisol levels. Statistical analysis was done using Kolmogorov-Smirnov, independent t-test and Pearson correlation tests.

Results: Mean pain intensity score before, during and after injection was not significantly different between male and female newborns. Mean pain score during injection was significantly higher in male neonates whose mothers had high cortisol levels compared to male neonates whose mothers had normal cortisol levels (P-value = 0.01).

Conclusion: These data indicate gender indifferences in response to pain at birth and imply the differential effect of maternal hair cortisol levels on pain score of male neonates.

Keywords: Hydrocortisone, Infant, Newborn, Pain, Pregnancy

Corresponding author Email address: arashrafeeinia@yahoo.com

ID:897

Evaluation of adipose triglyceride lipase gene expression in peripheral blood mononuclear cells of patients with obesity compared with normal subjects

Sahar Yarahmadi[1], Mitra Nourbakhsh[1], Nikta Dadkhah Nikroo[2], Mojataba Malek[3]
[1] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences
[2] Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran
[3] Research Center for Prevention of Cardiovascular Disease, Institute of Endocrinology and Metabolism, Iran University of Medical Sciences, Tehran, Iran

Objective: Obesity is one of the major health problems and the main cause of disorders such as atherosclerosis, diabetes, and non-alcoholic fatty liver disease (NAFLD). Adipose triglyceride lipase (ATGL) is an enzyme which is expressed in most tissues and catalyzes the initial step in triglyceride hydrolysis in adipocytes and non-adipocyte lipid droplets. This enzyme has been suggested to be involved in insulin resistance and hepatosteatosis. In this study we investigated the gene expression of ATGL from peripheral blood mononuclear cells (PBMC) in normal and obese subjects and assessed its association with metabolic parameters.

Material and Methods: Forty three obese subjects with BMI> 30 and 41 normal-weight control subjects were enrolled in this study. Peripheral blood mononuclear cells (PBMCs) were separated and used for total RNA extraction followed by cDNA synthesis. The gene expression of ATGL was analyzed by real-time PCR using the specific primers for ATGL and beta-actin as the normalizer. Fasting blood glucose and insulin were measured and used for calculation of HOMA-IR as an index of insulin resistance. Lipid profile and liver enzyme activities were also measured by calorimetric methods. Hepatic steatosis was evaluated by ultrasound.

Results: ATGL mRNA expression was significantly higher in the PBMCs of obese subjects compared with controls (p<;0.01). Additionally there were increasing levels of ATGL expression corresponding to higher fat accumulation in the liver. However no significant difference was observed between the obese subjects with metabolic syndrome compared with obese subjects without metabolic syndrome. ATGL showed significant positive correlations with HOMA-IR and insulin as well as systolic and diastolic blood pressure.

Conclusion: ATGL gene expression is increased in obese patients and might be considered a contributing factor in obesity-associated insulin resistance. It may also be involved in the development of NAFLD in obesity.

Keywords: Obesity, adipose triglyceride lipase, non-alcoholic liver disease

Corresponding author Email address: Sahar.yarahmadi94@yahoo. Com

ID:898

Adenosine Induces Apoptosis in Oral Cancer

Mahmood poorjam[1], Seyyed Mehdi jafari[1]
1 Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Extracellular Adenosine is an important signaling molecule that inhibits cell proliferation and induces apoptosis in the several cancer cells. The aim of this study was to evaluate the effects of adenosine on cell growth and apoptosis in OC2 oral cancer.

Material and Methods: OC2 cells were incubated with various concentration of adenosine for 48 h and cell viability was determined by MTT assay. The effect of adenosine on cell apoptosis was evaluated by flow cytometry.

Results: Adenosine inhibited cell proliferation in dose dependent manner. Adenosine treatment also induced apoptosis in cancer cells.

Conclusion: Our Results suggest that adenosine induced cell cytotoxicity in oral cancer cells by induction of apoptosis.

Keywords: Adenosine, Apoptosis, Oral cancer

Corresponding author Email address: mahmoodgenetic@gmail.com

ID:900

miR-590-3p inhibits sirtuin1 expression and reduces cell survival of breast cancer cells

Mitra Nourbakhsh[1], Zohreh Abdolvahabi[1], Saman Hosseinkhani[2], Zahra Hesari[1], Masoumeh Tavakoli-Yaraki[1]
[1] Iran University of Medical Sciences
[2] Tarbiat Modares University

Objective: Sirtuins have emerged as important regulators of diverse physiological and pathological processes, including life-span extension, inflammation, and cancer. Sirtuin1 (SIRT1) which belongs to class III histone deacetylases can deacetylate various proteins including p53. Since SIRT1-mediated deacetylation suppresses the functions of several tumor suppressors including p53, p73, and HIC1, it has been suggested that SIRT1 has a promoting function in tumor development and progression. MicroRNAs are among the regulators of SIRT1 and their expression is deranged in many different types of cancers. The aim of this study was to evaluate whether inhibition of SIRT1 expression and function by miR-590-3p can influence survival of breast cancer cells.
Material and Methods: MCF-7 and MDA-MB-231 breast cancer cells were transfected with miR-590-3p mimic, inhibitor and their negative controls. SIRT1 levels were assessed by real-time PCR as well as western blotting. WST-1 test was used for the assessment of cell survival. Quantification of SIRT1 activity was performed by a fluorometric method. Apoptosis assay was performed by labeling cells with Annexin V-FITC and propidium iodide followed by flow cytometry. Bioinformatics analysis was done to assess whether SIRT1 3′-UTR is a direct target of miR-590-3p and the Results: were confirmed by the luciferase reporter assay.
Results: SIRT1 levels were higher in MCF-7 and MDA-MB-231 cell lines compared to MCF-10a cells. Upregulation of miR-590-3p significantly reduced SIRT1 expression, leading to a significant decrease in the cell viability. SIRT1 3′-UTR was shown to be a direct target of miR-590-3p. Additionally, miR-590-3p induced apoptosis in breast cancer cells.
Conclusion: Targeting of SIRT1 expression by miR-590-3p and the subsequent decline in cell survival may be considered a new therapeutic strategy for breast cancer treatment.

Keywords: microRNA, breast cancer, miR-590-3p, SIRT1

Corresponding author Email address: nourbakhsh.m@iums.ac.ir

ID:902

Gene expression of Osteopontin in patients with liver cirrhosis

Zohreh khajehahmadi[1], Sina Mohagheghi[1], Jamshid Karimi[2], Heidar Tayebinia[2]
[1] Student Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Department of Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Cirrhosis is a chronic liver disease and most commonly caused by alcohol abuse, hepatitis virus infection, autoimmune disorders, biliary obstruction or nonalcoholic steatohepatitis. Osteopontin (OPN) is a secreted phosphorylated glycoprotein and has been implicated in the pathogenesis of different organ fibrosis. The aim of these experiments was to assess the OPN gene expression in patients with NASH-, ALD-, PSC-, AIH- and hepatitis-related cirrhosis and compared them with normal liver segments of patients undergoing resection of metastases.

Material and Methods: Thirty-eight liver tissue specimens were collected from freshly explanted livers with ALD-, NASH-, AIH-, PSC- and viral hepatitis-related cirrhosis (n=30), and healthy livers (n=8) in Namazi Hospital, Shiraz, Iran. The relative expression of OPN was determined by qPCR using gene-specific primers. A liver pathologist reviewed all these samples.

Results: Semi-quantitative RT-PCR analysis of liver RNA from controls and from patients with cirrhosis showed a significant upregulation of OPN in human livers with cirrhosis compared with controls (P=0.000). our Results: demonstrate that OPN gene expression was approximately 4.8-fold greater in NASH-, ALD- and viral hepatitis-related cirrhotic livers than that of controls.

Conclusion: Our Results indicate that the OPN gene is overexpressed in NASH-, ALD- and viral hepatitis-related cirrhosis and therefore is a cause dependent variable. By considering this point, OPN may have important functions in cirrhosis.

Keywords: Cirrhosis, Osteopontin, Alcoholic Liver Cirrhosis

Corresponding author Email address: z_khajehahmadi@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:903

The expression of the MMP9 gene under the effect of VEGF antagonist peptide in mouse-Balb/c model induced by breast cancer

Sajad maleki[1], Mohsen asghari[1]
[1] University of Guilan

Objective: Many biological processes, including angiogenesis and tumour cell invasion, require extracellular proteolysis for degradation of the extracellular matrix. This allows endothelial and tumour cells to migrate through tissue stroma and subsequently to enter and spread via the blood and/or lymphatic systems. The matrix metalloproteinases (MMPs), including MMP-2 and MMP-9, are amongst the best studied proteases in this respect. Tissue remodeling is a key element in the local invasion and metastasis ofmalignant breast tumors. MMP-9, also known as gelatinase B, is a 92-kDa zinc-dependent endopeptidase that promotes degradation of type IV collagen, the main component of basement membrane. Blocking VEGF signaling in vivo significantly reduces tumor angiogenesis, invasion and metastasis, demonstrating the importance of VEGF as a mediator of the MMP9 induced invasion and metastasis.

Material and Methods: The aim of present study was to investigate the MMP9 gene expression by real time PCR using specific MMP9 primes against GAPDH gene as the reference in murine 4T1 breast cancer model, in an antiangiogenic peptide-treated against a PBS-treated control group. For this purpose, total RNA was extracted using a Trizol reagent (Invitrogen) and cDNA was synthesized.

Results: demonstrated a reduced level of the MMP9 gene expression ((p>0.05)) against control.

Conclusion: We hypothesized that triggering MMP9 expression by disturbing VEGF-VEGFR complex led to downregulation of VEGF production in the downstream and inhibition of invasion, metastasis and angiogenesis. These finding encouraged us to find the mechanism of MMP9 signaling to regulate VEGF effect, and provide new therapeutic targets of MMP9 in breast cancer.

Keywords: antagonistic peptide, MMP9, Real time PCR

Corresponding author Email address: Sm_ashari@guilan.ac.ir

ID:904

Crocin suppresses migration and invasion of BT- 474 human breast cancer cell line

Nassim Faridi[1], Seyedeh Zahra Bathaie[1], Saeed Abroun1, Hamid Heidarzadeh[1], Mohamadali Mohagheghi[2], Parvaneh Farzaneh[3]

[1] Tarbiat Modares university

[2] Cancer Research Institute

[3] Iranian Biological Research Center

Objective: Natural products including saffron have been used to prevent and treat various types of diseases in traditional medicine. Crocin, important carotenoids of saffron, was introduced as an active component useful in the treatment of cancer and might be a good candidate for the development of anticancer drugs. Breast cancer is the second leading cause of cancer death and the most common malignancy among women, worldwide. Cancer invasion and metastasis are the leading causes of mortality in patients with breast cancer. Chemokine receptor 4 (CXCR4) is involved in modulation of the tumor metastasis process. It plays a critical role in determining the metastatic destination of breast cancer. Bone and lungs are the targets, where CXCL12, as the ligand of this receptor is abundant.

Material and Methods: In this study, BT-474 breast cancer cells line were exposed to different concentrations of crocin at different time intervals. The IC50 of crocin at 48 h was obtained 3.5 mg/ml, as determined by MTT assay. Flow cytometric indicated that crocin induces apoptosis in these cancerous cells. The expression of CXCR4 was detected and compared by western-blotting.

Results: We showed that the incubation of BT-474 cells with IC50 dose of crocin led to the significant decrease in the expression of CXCR4 compared to the untreated cells. Furthermore, the scratch test was shown a significant decrease in the number of migrating cells into the wound area due the crocin treatment.

Conclusion: Our study indicated that crocin not only induced apoptosis in the mentioned cancer cells, but also could inhibit the invasion and metastasis of these human breast cancer cells. Inhibiting the expression of CXCR4 is probably one of the molecular mechanisms of this function.

Keywords: Saffron, Crocin, Breast Cancer, Metastasis, CXCR4

Corresponding author Email address: Nassim-Faridi@yahoo.com

ID:905

The Role of α–N-acetylgalactosaminidase enzyme in EPG 257/85 RDB Cell Line Signaling Pathways

Mahbube Jafari[1], Seyed Abbas Mirzaei[1], Mohammad-Saeid Jami[1]
[1] Department of Medical Genetics and biotechnology, Cellular and Molecular Research center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Among many factors involving in cancer development, some of them are really less noted because of their ambiguous role in this complicated condition. One of these factors is an enzyme called alpha-N-acetyl galactosaminidase (or Nagalase in abbreviation) that prevents macrophage activation by deglycosylation of Gc protein and therefor inhibiting the production of Gc Macrophage activating factor (Gc MAF). Thus Nagalase suppress immune system in cancer patients. The present study has performed to investigate wether this enzyme play other roles in cancer cells or not.

Material and Methods: We performed the shRNA-mediated knockdown of NAGA gene in EPG 257/85 RDB cells to study the role of Nagalase enzyme in expression level of some genes in this cancer cell line. RELA and MMP1 gene expression were measured by real-time PCR method.

Results: NAGA gene knockdown results in down-regulation of RELA gene and up-regulation of MMP1 gene ($p>0.05$).

Conclusion: Our results showed that NAGA gene knockdown is effective in some cancer related signaling pathways. Thus, our data pave the way for new therapeutic options for suppressing gastric cancer growth.

Keywords: Nagalase, Cancer, EPG 257/85 RDB, Signaling Pathways

Corresponding author Email address: Mahbube71Jafari@gmail.com

ID:906

Activation of GPx-1 by metformin in bile-duct ligation-induced liver injury: in vivo combined with molecular docking studies

Amir Hossein Doustimotlagh[1], Mahboubeh Mansourian[1], Hossein Sadeghi[1]

[1] Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

Objective: The inhibition of hepatic fibrosis is now attainable objective:s in the management of chronic liver disease. The purpose of this study was to assess the possible defensive effects of metformin on activity of the endogenous antioxidant enzymes and hydroxyproline content in bile duct ligation (BDL)-induced cholestatic rats. Also, the interaction behaviors of metformin with enzyme GPx were elucidated by molecular docking and conformation characterization.

Material and Methods: The present study was conducted on 28 adult male Wistar rats into four groups of seven animals: sham-control (SC), BDL alone, and BDL+ metformin received daily metformin in normal saline as gavage for 10 days at two doses 250 and 500 mg/kg/BW. Biochemical analysis, antioxidant enzymes activity and hydroxyproline content were determined.

Results: The activity of GPx enzyme was significantly decreased in the hepatic tissue following BDL. Also, there was significant increase in hydroxyproline content, demonstrating that oxidative stress-related model in rats was successfully constituted. Administration of metformin attenuated hydroxyproline content in the cholestatic liver and ameliorated the depletion of the activities of GPx enzyme compared to non-treated BDL group (250 and 500 mg/kg/BW ($p>0.05$). Molecular docking study provides evidence of the ability of metformin to regulate the enzymatic activity of GPx.

Conclusion: Our data indicate that novel hepatoprotective effects of metformin in an animal model with BDL-induced liver injury, makes it as a potentially beneficial therapeutic agent for the cure of cholestatic liver disease by decreasing oxidative stress. The mechanism fundamental these effects might contribute to antioxidant actions particularly via the GPx enzyme.

Keywords: Bile-Duct Ligation, Metformin, Antioxidant enzymes, Rat, Molecular docking

Corresponding author Email address: amirhosseindoustimotlagh@gmail.com

ID:908

4-TM.P from pyrazines causes G0/G1 cell cycle arrest and induction of apoptosis in human leukemia stem cell-like KG1-a cells.

Ramin Ansari Ahl[1], Majid Mahdavi[1], Gholamreza Dehghan[1], Mohammad Khalaj[1]

[1] Tabriz University-Faculty of Natural Science

Objective: Pyrazine derivatives possess numerous important pharmacological effects, including anti mycobacterial, antibacterial, antifungal, anti diabetic, diuretic, anticancer, antiviral, hypnotic, and analgesic. Here, the anti-proliferative and apoptosis- inducing effects of a new pyrazine,4-(2,6,6-trimethylcyclohex-1-en-1-yl) butan-2-yl pyrazine-2-carboxylate (4-TM.P), was examined in human acute myeloid leukemia (AML) KG-1a cell line.

Material and Methods: Acute myeloid leukemia KG-1a cells were treated with different concentration (20-200 µM) of the 4-TM.P and cell viability determined by MTT assay. Induction of apoptosis evaluated morphologically by fluorescence microscopy, as well as cell cycle analysis.

Results: 4-TM.P mediated growth inhibition in a dose- and time-dependent in the KG-1a cells. IC50 value was calculated 130 µM after 72 h of treatment. G0/G1 cell cycle arrest was showed after treatment of the cells with IC50 value (130 µM) of the compound.

Conclusion: According to the present data, it looks that this compound is a good candidate for further evaluation as an effective chemotherapeutic drug in AML.

Keywords Pyrazine, Apoptosis, Acute myeloid leukemia, KG-1a cells

Corresponding author Email address: ansariramin72@gmail.com

ID:909

Peroxidase-like activity of Porous CoS nanoparticles and Their application in glucose sensing

Ali Foroutan Kalourazi[1], Navvabeh Salarizadeh[2], Fahimeh Ghavamipour[3], Mohammad Bagher Askari[4], S. Shirin Shahangian[1]

[1] Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran

[2] Department of Biochemistry and Biophysics, Education and Research Center of Science and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran

[3] Department of Biochemistry, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

[4] Department of Physics, Faculty of Sciences, University of Guilan, Rasht, Iran

Objective: Natural enzymes have been widely applied in analytical fields such as glucose, uric acid and cholesterol detection. However, some intrinsic drawbacks of enzymes such as sensitivity to environmental changes and poor stability greatly impede their widespread applications. To overcome these limitations, numerous efforts have been devoted to develop potential alternatives to enzymes, such as enzyme mimetics.

Material and Methods: Peroxidase-like activity of CoS nanoparticles (nanozyme) was measured in a time course mode by monitoring the absorbance changes at 510 nm, using the reaction mixture containing aminoantipyrine/phenol/H2O2 and nanozyme. A colorimetric method for glucose detection has been developed using glucose oxidase (GOx) coupled reaction with nanozyme. The concentration of serum glucose was also determined.

Results: The CoS nanoparticles presented considerable intrinsic peroxidase-like activity toward classical peroxidase substrate, AAP, in the presence of H2O2. Since H2O2 is a main product in the GOx catalytic reaction, the CoS and GOx catalytic reactions were coupled to detect H2O2 and glucose. The linear range for glucose was from 1.2×10-4 to 4×10-3 M. This colorimetric sensing method was successfully applied to the detection of glucose concentrations in diluted serum samples.

Conclusion: A simple, cheap, selective and sensitive colorimetric assay was developed for the detection of glucose in serum samples. The data were consistent with the Results: provided by medical laboratory.

Keywords: Nanozyme, Peroxidase-like activity, Glucose detection

Corresponding author Email address: aliforoutan1048@gmail.com

ID:910

Detection of surface antigen of the hepatitis B virus based on WS2 nanoparticles by using ELISA method

Soheil Delkhosh[1], Mostafa Shourian
[1] Department of Biology, Faculty of Sciences, University of Guilan

Objective: Hepatitis B virus (HBV) is one of the most common viruses that causes liver cirrhosis and acute and chronic infections. One of the main markers of viral replication in the serum of S1 proteins is the surface antigen of hepatitis B (HBs Ag) transmitted by infected hepatocytes. Given the fact that the ELISA method is capable of detecting low concentrations of specific antigens, labeled in this method can increase the sensitivity to be detectable at least as much as possible from the antigen. One of the metal nanoparticles is WS2 (IUPAC Name: bis sulfanylidene tungsten) that is used as a label for safety experiments that has high availability and, unlike enzymes, is more susceptible to pH and humidity and chemical stability than the enzymes themselves.

Material and Methods: Given that these nanoparticles have a high surface-to-volume ratio, they can be a good place to stabilize antibodies to construct the immunosensor. Also, the properties of WS2 nanoparticles, including low cost and the ability to magnetism, and the ability to bind molecules on the surface according to the absorption method by borate buffer, have led to consideration in this study.

Results: On the WS2 nanoparticles, antibodies are fixed against the surface antigen of hepatitis B and in the immunological sandwich model, the amount of surface antigen of hepatitis B is evaluated.

Conclusion: In this study, the WS2 nanoparticle stabilization is carried out on secondary antibodies to increase the susceptibility to surface antigens of hepatitis B, which leads to an enhanced qualitative detection of hepatitis B by ELISA.

Keywords: Hepatitis B virus, bis sulfanylidene tungsten, ELISA, immunosensor

Corresponding author Email address: Shourian@guilan.ac.ir

ID: 911

Study of DNA binding and cytotoxic activity of a quinoline derivative on HT-29 cell line

Pedram Karrari[1], Gholamreza Dehghan[1], Razieh Ghodsi[2]
[1] Department of Biology, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran
[2] Biotechnology Research Center, Institute of Pharmaceutical Technology, Mashhad University of Medical Sciences, Mashhad, Iran

Objective: Cancer is the second leading causes of mortality, which is a great concern of the current century to the mankind. DNA is currently a target for some of the drugs used in cancer therapy. Among the various treatment strategies for removing the cancer cells through DNA damage, by using small agents, capable of binding to DNA and oxidative or hydrolytic DNA cleavage as anticancer drugs, is an effective method in chemotherapy. Among heterocyclic compounds, quinoline scaffold has become an important construction motif for the development of new drugs. Quinoline and its derivatives possess many types of biological activities and have been reported to show significant anticancer activity through different mechanisms of action such as growth inhibition by cell cycle arrest, apoptosis, inhibition of angiogenesis and disruption of cell migration. In the present study we have investigated the cytotoxicity and DNA-binding of a quinolone derivative (acetaminophenyl tetrahydrobenzoquinone, THQ), as a new quinolone derivative.

Material and Methods: The HT-29 cell line was obtained from Pastor Institute of Iran (Tehran, Iran), calf thymus DNA (ctDNA) was purchased from Sigma-Aldrich Chemical CO. The binding mechanism of THQ with calf thymus DNA (ctDNA) was investigated using UV-vis absorption spectroscopy. Cell viability was determined using MTT assay in HT-29 cells, at different time intervals in the presence or absence of THQ.

Results: The result indicated anti-proliferative and apoptotic effects of THQ on HT-29 human colorectal adenocarcinoma cell line. THQ affected the viability of the treated cells in a time-dependent manner, with IC50 value of 2 µM. Furthermore, this compound can interact with DNA through non-intercalative mode and the intrinsic binding constant (Kb) was estimated to be 2 × 103 M-1.

Conclusion: These data indicate that THQ is a potent chemotherapeutic agent, and effectively bind to double helix DNA through non-intercalative mode. Further studies are required to determine whether this compound induces apoptosis or necrosis in HT-29 cell line.

Keywords: Cytotoxic, DNA binding, non-intercalative, tetrahydrobenzoquinone

Corresponding author Email address: pk.medicalsin@gmail.com

ID:914

Investigate of antioxidants status in coronary artery disease patients

Mehryar Zargari[1], Fatemeh Meshkini[2], Mehdi Rasouli[3], Babak Bagheri[2], Negar Dinarvand[4]
[1] Faculty of Medicine, Department of Clinical Biochemistry, Mazandaran University of Medical Sciences, Sari, Mazandaran, Iran
[2] Department of Biochemistry and Molecular Biology, School of Medicine, Yazd University of Medical Sciences, Yazd, Iran
[3] Department of Cardiology, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Mazandaran, Iran
[4] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Cardiovascular disease (CVD), especially coronary artery disease (CAD), is the leading cause of death worldwide and responsible for the highest mortality rate in Iran (nearly 50% of all deaths each year). The known traditional risk factors for CAD are smoking, obesity, hypertension, a family history of CAD, diabetes mellitus, and hyperlipidemia. In addition to the traditional CAD risk factors, enhanced oxidative stress is a novel risk factor of CAD. The aim of present study was to investigate blood (enzymatic and non-enzymatic) antioxidants status with the occurrence and severity of CAD.

Material and Methods: Generally, 286 samples consisted of 141 men and 145 women aged 30–70 y who were classified as CAD cases and controls according to the results of coronary angiography. The severity of CAD was scored on the basis of the number and the extent of lesions at coronary arteries. Activity of the SOD, CAT, GPX and the concentrations of TAOC by using of FRAP as well as other risk factors were investigated. MDA also was measured in order to investigate of lipid peroxidation.

Results: The results showed a significant increase in SOD activity (p=0.019) and uric acid concentration (p=0.000) of CAD patients compared to control group. Although there were any change in GPX and CAT activity also in FRAP and MDA, a significant positive correlation were seen between GPX and SOD activity (r=0.154, p=0.011), and between levels of FRAP and uric acid (r=0.749, p=0.000).

Conclusion: The results suggest that some of antioxidants are associated with the occurrence and severity of CAD significantly, but the association is not independent and requires to more investigation.

Keywords: Cardiovascular disease, antioxidants

Corresponding author Email address: kdinarvand92@gmail.com

ID:915

Insulin Receptor in pancreatic ductal adenocarcinoma and In vitro Doxorubicin treatment

Ali Gheysarzadeh[1], Amir Ansari[1], Mohamad Reaza Mofid[1]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: The roles of the Insulin like growth factor (IGF) system in carcinogenesis have been established for various cancers. Recently it has been shown that IGF-1 is highly present in serum of patients with cancers. IGF-1 ligand also binds to Insulin receptor (IR) with equal affinity of IGF-1 receptor. Therefore the aim of this study was evaluate IR expression in pancreatic ductal adenocarcinoma (PDAC) tumors in compared to normal adjacent tissue, and In vitro study of Doxurubicin (DOX) treatment in AsPc-1 cells, as well.

Material and Methods: In this study first mRNA expression of IR in 27 cases of tumor tissues and matched adjacent non-tumorous tissues by quantitative real-time PCR were measured. In addition, the effects of Doxorubicin on its mRNA expression were evaluated in AsPc-1 cell lines and finally the data were analyzed using one way ANOVA.

Results: The result of the current study showed that average expression of IR in PDAC tumor was two fold of normal adjacent tissue ($P < 0.001$). Moreover our study showed that IR expression was reduced in a dose dependent manner ($P < 0.05$).

Conclusion: Overally the present study indicated that IR strongly involved in PDAC. This observation showed that IR was over-expressed in PDAC, and its expression was catastrophically reduced in response to DOX treatment.

Keywords: Insulin receptor, PDAC, Doxorubicin

Corresponding author Email address: gheysarzad@gmail.com

ID:917

Development of a Nanozyme-based Glucose Colorimetric Assay using a Novel Peroxidase-Mimetic

Yasaman Gozali[1], Ali Foroutan Kalourazi[1], Shirin Shahangian[1], Navvabe Salarizadeh[2], Reza H. Sajedi[3]
[1] University of Guilan, Rasht, Iran
[2] Malek Ashtar University of Technology, Tehran, Iran
[3] Tarbiat Modares University, Tehran, Iran

Objective: Nanozymes, as artificial enzymes have recently attracted much attention in many fields of research. Not only they can be as efficient as natural enzymes, but also show some priorities, including lower cost and higher stability. Different nanozymes have been reported to show mimetic properties of multi-enzymes. They possess widespread applications including targeted cancer therapy, diagnostic medicine and bio-sensing.

Material and Methods: The peroxidase-like activity of MoWCuS nanoparticles and the kinetic parameters were determined using H2O2 and TMB as substrates by varying the concentration of TMB at fixed H2O2 concentration and vice versa. Glucose detection assays were conducted by coupling glucose oxidase (GOx) reaction, using different concentrations of glucose, with nanozyme-TMB-H2O2 colored assay system. The absorption of samples was measured at 652 nm.

Results: Kinetic study of the nanozyme shows that it follows typical Michaelis–Menten behavior towards both substrates. The kinetic parameters of the new nanostructure were comparable with those of HRP. As a result of glucose sensing, a typical glucose concentration-response curve was obtained with a linear range from 3×10-6 to 2×10-3 M. The proposed method was applied to detect glucose in human serum samples and the results agreed well with those obtained using the conventional enzymatic method.

Conclusion: The novel nanostructure exhibits efficient peroxidase-like activity and a sensitive colorimetric assay for serum glucose sensing was successfully developed

Keywords: Nanozyme, Peroxides-like activity, Kinetic analysis, Glucose sensing

Corresponding author Email address: gozali.y91@gmail.com

ID:918

Development of a Nanozyme-based Glucose Colorimetric Assay using a Novel Peroxidase-Mimetic

Yasaman Gozali[1], Ali Foroutan Kalourazi[1], Shirin Shahangian[1], Navvabe Salarizadeh[2], Reza H. Sajedi[3]
[1] Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran
[2] Department of Biochemistry and Biophysics, Education and Research Center of Science and Biotechnology, Malek Ashtar University of Technology, Tehran, Iran
[3] Department of Biochemistry, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

Objective: Nanozymes, as artificial enzymes have recently attracted much attention in many fields of research. Not only they can be as efficient as natural enzymes, but also show some priorities, including lower cost and higher stability. Different nanozymes have been reported to show mimetic properties of multi-enzymes. They possess widespread applications including targeted cancer therapy, diagnostic medicine and bio-sensing.

Material and Methods: The peroxidase-like activity of MoWCuS nanoparticles and the kinetic parameters were determined using H2O2 and TMB as substrates by varying the concentration of TMB at fixed H2O2 concentration and vice versa. Glucose detection assays were conducted by coupling glucose oxidase (GOx) reaction, using different concentrations of glucose, with nanozyme-TMB-H2O2 colored assay system. The absorption of samples was measured at 652 nm.

Results: Kinetic study of the nanozyme shows that it follows typical Michaelis–Menten behavior towards both substrates. The kinetic parameters of the new nanostructure were comparable with those of HRP. As a result of glucose sensing, a typical glucose concentration-response curve was obtained with a linear range from 3×10-6 to 2×10-3 M. The proposed method was applied to detect glucose in human serum samples and the results agreed well with those obtained using the conventional enzymatic method.

Conclusion: The novel nanostructure exhibits efficient peroxidase-like activity and a sensitive colorimetric assay for serum glucose sensing was successfully developed.

Keywords: Nanozyme, Peroxides-like activity, Kinetic analysis, Glucose sensing

Corresponding author Email address: gozali.y91@gmail.com

ID:922

Evaluation of Copper level in the serum of hypo and hyperthyroidism patients in Urmia county.

Roya Salari Moghaddam[1], Siamak Asri Rezaee[2]
[1] Department of Biology, Faculty of Basic Sciences, Azad Islamic University of Bonab
[2] Department of Clinical Pathology, Faculty of Veterinary Medicine, Urmia University

Objective: One of the largest endocrine glands of human body is thyroid gland, the normal actions of this gland depends on presence of trace element like as copper. The above element is needed for many metabolic and physiological activities in the human body. The present study investigated the alteration in copper levels, hypo and hyper thyroid patients.

Material and Methods: In this cross-sectional study, 120 members were selected randomly. The patients were 33 males and 47 females with average age of 38 ± 16 and healthy group included 40 person 18 males and 22 females with average age of 40 ± 12. Patients were classified into 2 categories including hypothyroidism, hyperthyroidism and healthy group.3 milliliters of venous blood were drawn, sera were separated then TSH, T3, T4 were measured by ELISA assay and copper by spectrophotometric method. Statistical analysis was performed by using SPSS software version 22 and after examining the normality of the data with Kolmogorov-Smirnov test, the results were analyzed by One-way ANOVA, and subsequently Tukey test. The level of significance was also determined ($P < 0.05$).

Results: The findings indicated that there was significant increase in TSH ($P < 0.001$) of hypothyroid patients, significant decrease in T4 and copper levels ($P < 0.01$), but obvious change was not observed in the level of T3. Also there was significant decrease in TSH levels ($P < 0.001$) of hyperthyroid patients and increase in T4, T3, copper ($P < 0.05$).

Conclusion: According to the results of this study, it can be concluded that copper plays an essential role in production of thyroid hormones. The deficiency of copper may cause disorders during processes and functions related to thyroid hormones.Increasing in copper levels of hyperthyroid patients demonstrated disturbance in copper metabolism and its aggregation in patients body.

Keywords: Hypothyroidism, Hyperthyroidism, T4, T3, Copper

Corresponding author Email address: Roya.Salari@yahoo.com

ID:924

Effects of naringin on Liver Glutathione peroxidase activity in rats after swimming

Giti Farsi[1], Alireza Khoshdel[2], Vahid R Haghaniat[1], Mohammad R Hajizadeh[1], Mehdi Mahmodi[1], Saeed Haghaniat[3], Mohammad Zamanian[4]

[1] Department of Clinical Biochemistry, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

[2] Department of Clinical Biochemistry and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

[3] Medical health organization, Kerman University of Medical Sciences, Kerman, Iran

[4] Physiology-Pharmacology Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: Stressful conditions induce physiological changes in a body to maintain the homeostasis. Acute stress exposure like swimming has effects on several cell functions. The present study was to investigate the influence of acute swimming stress and naringin on liver glutathione peroxidase (GPX) activity. Naringin belongs to the flavonoid family compounds which is found naturally in citrus fruits.

Material and Methods: Forty male wistar rats were randomly divided into 5 groups: 2 control groups containing non-exercised control without naringin supplements and normal control rats and three experimental groups with orally administration of 40, 80 and 160 mg/dl naringin. After 20 days, the rats were killed and the activity of GPX in the collected liver tissue was measured.

Results: Analysis of our data demonstrated that the statistically higher GPX activity in exercised rats in comparison to normal controls (p value=0.0028) naringin increased GPX activity in 80 and 160 groups in comparison to exercised controls (p value 160<0.001) although there was no significant difference between 40 groups in comparison to exercised control.

Conclusion: The findings d demonstrated that acute swimming would increase GPX activity in exercised rats. Also, naringin provided significant amelioration of GPX activity in exercised rats, however, the greatest effect of naringin was observed at 80 and 160 mg/kg body weight.

Keywords: Naringin, Swimming, Glutathione peroxidase

Corresponding author Email address: Gity.Farsi@gmail.com

ID: 925

KRAS Gene Polymorphisms and their Impact on Breast Cancer Risk in an Iranian Population

Sara Sanaei[1]
[1] Cellular and Molecular Research Center, School of Medicine Zahedan University of Medical Sciences, Zahedan, Iran.

Objective: Single nucleotide polymorphisms (SNPs) in the let-7 miRNA binding site within the 3' untranslated region (3'UTR)of KRAS appear related to the risk of cancer. The present case-control study was conducted with 244 BC patients and 204 healthy women to examine whether KRAS polymorphisms (rs61764370 T/G and rs712 G/T) are associated with breast cancer (BC) risk in an Iranian population.
Material and Methods: The polymerase chain reaction restriction fragment length polymorphism (PCR-RFLP) method was used for genotyping of KRAS SNPs.
Results: Our results showed that the rs61764370 TG genotype (OR= 3.73; 95% CI =1.38-10.08; P=0.007) as well as the G allele OR= 3.56; 95% CI =1.33-9.53; P=0.008, respectively) increased the risk of BC. However, the KRAS rs712 TT vs GG+GT genotype in a recessive model was associated with a reduced risk of BC (OR= 0.56; 95% CI =0.38-0.84; P=0.006). In addition, the rs712 T allele decreased the risk of BC compared with the G allele (OR=0.75, 95%CI=0.58-0.97, P=0.031). However, we found no relationship among KRAS SNPs and clinicopathological characteristics of BC patients (P>0.05).
Conclusion: Taken together, the present study provided evidence of relationships between KRAS polymorphisms and BC risk in a southeast Iranian population. Additional studies using larger sample sizes and diverse ethnicities are now warranted.
Keywords: Let-7, KRAS, polymorphism, PCR-RFLP, breast cancer
Corresponding author Email address: sarasanae7@yahoo.com

ID: 926

Insulin Receptor can be used as therapeutic target in gastric cancer

Amir Ansari[1], Ali Gheysarzadeh[1], Mohammad Reza Mofid[1]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Insulin receptor (IR) is a tyrosine kinase receptor that has central role in glucose uptake and also can bind to IGF-II with high affinity. Recent investigation show that IR can involve in some disease like cancer. Following, by insulin binding to its receptors activating some signaling that involve in mediating cell growth and proliferation. Therefore, IR can play key role in metabolic and mitogenic biological actions.

Material and Methods: We used gastric cancer and normal adjacent tissue for this study (n=32). Gene expression levels were assessed by quantitative real-time (RT-PCR). mRNA expression were evaluated finally and analyzed using one way ANOVA test.

Results: The result of current study was showed that average expression of IR in gastric cancer tumor was increase 1.2 fold in compare with normal adjacent tissue ($P< 0.001$).

Conclusion: Overally the present study indicated that IR involved in gastric cancer. This observation showed that IR was over-expressed in gastric cancer and in compare with normal adjacent tissue. By investigation in IR and its signaling can approach to new therapeutic strategies for some cancers.

Keywords: Insulin receptor, gastric cancer, therapeutic strategies

Corresponding author Email address: amir.ansari1369@yahoo.com

ID: 928

Effects of Silybum marianum seed extract on serum Alpha-1-antitrypsin activity in Alloxan-induced diabetic rats

Alireza Khoshdel[1], Vahid reza Haghaniat[2], Giti Farsi[2], Mohammad reza Hajizadeh[2], Mehdi Mahmodi[2], Saeed Haghaniat[3]
[1] Department of Clinical Biochemistry, Faculty of Medicine and Pistachio Safety Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Department of Clinical Biochemistry, Faculty of Medicine, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[3] Medical health organization, Kerman University of Medical Sciences, Kerman, Iran

Objective: Alpha-1-antitrypsin (AAT) is the prototypic member of the serine protease inhibitors (serpin) superfamily of proteins, which has a major role in inactivating neutrophil elastase and other proteases to maintain protease–antiprotease balance. Silybum marianum (S.marianum) with common name Milk thistle has been used as a drug in order to treat liver diseases. The main active components are alkaloids, flavonoids, saponin, tannin, phenolic compounds. One of the important sources of silymarin is seeds of this plant. The aim of study was to investigate effects of hydroalcoholic extract of S.marianum seeds on serum AAT activity.

Material and Methods: A total of 40 rats (initial weight of 213 ±12 g) were divided into five groups, including; 3 groups of diabetic rats with supplement of S.marianum extract with dose of 100,200 and 400, and 2 control groups containing normal control and diabetic control rats. One month after treatment with S.marianum seeds extract, the rats were killed and sera AAT activities were measured.

Results: The results showed that the extract of S.marianum at doses of 200 and 400 mg/kg increased the sera AAT activity in diabetic rats.

Conclusion: The data demonstrated S.marianum seeds hydroalcoholic extracts had effects on AAT activity. Also,this extract can be effective for improvement of diabetic complications by increasing AAT activity.

Keywords: Alpha-1-antitrypsin, Silybum marianum, Diabetic, Silymarin

Corresponding author Email address: Alireza.khoshdel@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID: 929

Assessment of oxidative stress and Homocysteine Level in Type 2 Diabetic Patients with and without Retinopathy and Nephropathy

Mohammad Malekaneh[1], Gholamreza Anani Sarab[1], Reyhaneh Rezaee[1]
[1] Birjand University of Medical Sciences, Birjand, Iran

Objective: Oxidative stress is an imbalanced condition between the reactive oxygen species (ROS) and antioxidants. Increased oxidative stress appears to be an important factor leading to insulin resistance and impaired glucose tolerance in diabetes. Persistent hyperglycemia inevitably causes increased production of ROS, leading to more radical production. Moreover, levels of certain pro-oxidants such as ferritin and homocysteine are elevated in diabetes. Increasing ROS production plays a central role in the development of microvascular complications of diabetes, including nephropathy and retinopathy.

Material and Methods: This is a cross-sectional study on patients with type 2 diabetes referred to Diabetes Clinic of Birjand University of Medical Sciences. Blood samples were collected from 81 diabetic patients and 35 healthy subjects with no history of autoimmune diseases or chronic inflammatory disorders. Serum separation and freezing were performed on peripheral blood samples. Serum total homocysteine levels were measured by enzyme immuno- assay and total antioxidant serum level by using FRAP method.

Results: The total level of homocysteine was measured 13/8 ± 10/9 and 11.7 ± 4.9 and 16.6 ± 9.5 and 13.2 ± 7.4 in the groups of nephropathy, retinopathy, diabetic and control respectively. There is no significant difference in the median homocysteine level between cases and control groups (p= 0.153). The antioxidant capacity level in the nephropathy, retinopathy, diabetic and control groups was 848.9 ± 2.22 and 860.8 ± 150.51 and 812.1 ± 171 and 986 ± 260 respectively, reaching statistical significance (p= 0.007).

Conclusion: The results of this study imply that antioxidant capacity in type 2 diabetes is significantly reduced. However this study showed that there is no relationship between homocysteine level and type 2 diabetes.

Keywords: Homocystein, Antioxidants, Diabetes type 2, FRAP,

Corresponding author Email address: drmalekaneh@yahoo.com

ID: 934

MiR-101 is upregulated during osteoblastic differentiation of human adipose derived mesenchymal stem cells

Somayeh Aslani[1], alireza abhari[1], ebrahim sayhinia[1], davood sanajou[1], sevda rahimzadeh1, hadi rajabi[1]
[1] Tabriz university of medical science

Objective: Mesenchymal stem cells have several sources in body such as adipose tissue. Their potential for osteoblastic differentiation has been well recognized. Investigating factors that influence osteoblastic differentiation helps to unveil this process. One of these factors is small noncoding micro RNAs (miRNAs). miRNAs regulate gene expression at post transcriptional level. In this study, we examined the changes in gene expression of miR-101 during osteoblastic differentiation.

Material and Methods: Adipose tissue derived mesenchymal stem cells (ADSC) were purchased from the Tehran Royan Center and cultured in an osteoblastic differentiation medium for 21 days. Osteoblastic differentiation was determined by Alizarin red staining. Total RNA was isolated on 0,7,14 and 21 days of differentiation and expression of miRNA-101 was studied by real-time RT-PCR.

Results and Conclusion: Our study show that the expression of miRNA-101 is elevated during osteoblast differentiation that could potentially have regulative role in osteoblastogenesis.

Keywords: osteoblastic differentiation, mesenchymal stem cell, miRNA-101

Corresponding author Email address: Smh.aslani@gmail.com

ID:935

Cytotoxic study of quinoline derivatives as an anticancer compound against MCF-7 cancer cell line

Maryam Ghaffari[1], Gholamreza Dehghan[1]
[1] Immunology Research Center- university of Tabriz faculty of natural science

Objective: Cancer is the major disease among abnormalities, which is attributed to changes in lifestyle and environmental toxin such as tobacco, stress. tumorigenicity, developmental toxicity and hepatotoxicity are major problems which are related to cancer treatment with current chemotherapeutic agents. Therefore, there is an essential necessity for establishing new anticancer agents with relatively low side effects. Quinolines are nitrogen containing heterocyclic aromatic compounds. Quinoline exhibited their anti-cancer activity through cell cycle arrest, inhibition of tubulin polymerization and the inhibition of tyrosine kinase. In the present work we have investigated cytotoxic and genotoxicity effect of benzo-[h] quinoline-4-carboxamide(QC) against MCF-7 cancer cell line.

Material and Methods: Cell viability was determined using MTT (3-(4,5-Dimethylthiazol-2- yl)-2,5-diphenyltetrazolium bromide) assay by seeding 1×104 MCF-7 cell lines in 96 well culture plate. Then, the culture medium was replaced with various concentrations of QC and incubated for 24 and 48h. At the end of incubation plates were read in ELISA reader at 570 nm . To detect apoptotic properties MCF-7 cells were fixed by paraformaldehyde. Then the cells were permeabilized by Triton X-100 and stained with DAPI (4\',6-diamidino-2-phenylindole) stain. In the final step, the cells were evaluated under a fluorescence microscope.

Results: In vitro cytotoxicity activity of the QC was investigated against MCF-7 cancer cell by MTT assay. The IC50 value for the QC was estimated 7µM. Induction of apoptosis was investigated in MCF-7 cells by microscopic analysis of DAPI stained cells. Morphology of DAPI stained cells showed a significant fragmentation in the chromatin in comparison with untreated MCF-7 cells.

Conclusion: The antiproliferative activity of novel quinoline derivatives was studied on MCF-7 cancer cell. We used MTT assay and estimated cytotoxicity with the IC50 rate of 7µM . According to DAPI staining, QC induces DNA fragmentation. We concluded that compound can be an appropriate agent with significant antiproliferative effect against MCF-7 cells.

Keywords: quinoline derivative, Cytotoxicity, Cancer, Apoptosis

Corresponding author Email address: maryamghaffari777@gmail.com

ID:937

Promoter's methylation regulates the expression of DLX3 and ATF4 genes during osteoblastic differentiation of mesenchymal stem cells

Sevda Rahimzadeh[1], Alireza Abhari[1], Majid Farshdoosti Hagh[1], Somayeh Aslani[1], Faroogh Maroofi[1], Hadi Rajabi[1]
[1] Tabriz university of medical science

Objective: osteoblastic differentiation capacity of mesenchymal stem cells offers a huge promise in regenerative medicine of bone disorders therapy. Epigenetic modifications, especially DNA methylation play an important role in regulation of transcription factor's expression that control lineage specific differentiation. In this study, we investigated the correlation between the promoter methylation and the expression of DLX3 and ATF4 genes during osteoblastic differentiation.
Material and Methods: The MSCs were cultured under standard osteoblastic differentiation medium. RNA and DNA were extracted in 0,7,14 and 21 days of differentiation. The expressions and the promoter methylation levels of DLX3 and ATF4 genes were analyzed by real-time polymerase chain reaction (PCR) and methylation specific quantitative PCR (MS-QPCR), respectively.
Results: DLX3 and ATF4 genes expression were upregulated during osteoblastic differentiation. Conversely, analysis of the MS-QPCR results showed that the promoters DNA methylation of these two genes were remarkably reduced. A significant negative relationship was observed between DLX3 and ATF4 gene expressions and their promoters DNA methylation.
Conclusion: Our findings suggest that the increase in the expressions of DLX3 and ATF4 genes by reductions in DNA methylation of their associated promoters could potentially regulate the osteoblastic differentiation of MSCs.
Keywords: DNA methylation, Osteoblastic Differentiation, Mesenchymal stem cells, DLX3 and ATF4 genes
Corresponding author Email address: rahimzadeh.sevda@gmail.com

ID:938

Genotypic distribution of PCSK9 P.R46L in Ahwaz population

Narges Mohammad Taghvaei[1], Samira Taghizadeh jazdani[1], Hajieh bibi Shahbazian[2]
[1] Hyperlipidemia Research Institute, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2] Health Research Institute, Diabetes Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: Proprotein convertase subtilisin/kexin type 9 (PCSK9) is the ninth member of the proprotein convertase family and is a key regulator of cholesterol homeostasis. The variant P.R46L associated with an increase in low-density lipoprotein cholesterol (LDL-C) receptors at the level of the liver cells and a decrease in LDL-C levels. The effects of PCSK9 mutations on plasma levels of LDL-C has been caused to PCSK9 account as a therapeutic target to reduce LDL-C levels. Since the pharmacological inhibitors of PCSK9 are available, the aim of this study was to investigate the genotypic distribution of P.R46L in Southwestern population of Iran (Ahvaz) and relationship between P.R46L and lipid profile and Liver enzymes.
Material and Methods: The study was composed of 912 Participants. The P.R46L polymorphism was genotyped using polymerase chain reaction (PCR) followed by restriction fragment length polymorphism (RFLP). The serum levels of lipid profile (TG, Chol, HDL-C, LDL-C, non-HDL) and AST, ALAT were measured using the standard methods.
Results: In genotype distribution P.R46L alleles, 908 subjects have GG genotype, 3 subjects have genotype GT and 1 person have TT genotype .The level of serum LDL-C in person with genotype (TT) was 29 mg/dl and the mean serum LDL-C levels of individuals with genotype (GT) were 41 mg/dl.
Conclusion: The results of the distribution of genotypes and the frequency of P.R46L alleles from the PCSK9 gene in the southwestern Iranian population are similar to those of other populations. LDL-C levels of individuals with the allele T were 10 to 20 percent lower than those without an allele T.

Keywords: lLDL cholesterol, P.R46L, PCSK9, PCR-RFLP

Corresponding author Email address: NTaghvaie@gmail.com

ID:939

Study of the association between blood androgen with perforin and geranzyme levels in PCOS women

Elham Zarei[1], Fatemeh aliakbari[1], Hassan mohajery[1], Fatemeh mohammadzadeh[2], Azadreza mansourian[3]
[1] Student Research Committee. Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran
[2] Department of Internal medicine, Gorgan Medical school Golestan University of Medical Sciences, Gorgan, Iran
[3] Metabolic Disorder Research Center. Golestan University of Medical Sciences, Gorgan, Iran

Objective: PCOS is one of the endocrinopathies among women. Hyperandrogenism is one of the indexes of PCOS diagnosis. It is said that androgens are involved in the regulation of perforin and geranzyme secretion from secretory granules of T cytotoxic lymphocytes. The aim of present study is to evaluate the association between blood androgen with perforin and geranzyme levels in PCOS women.
Material and Methods: 40 healthy and 40 PCOS women who were matched based on BMI and age and were verified by an endocrinologist and gynecologist were selected for this study. Biochemical factors including hormonal profile were measured using biochemical methods. Perforin and geranzyme levels were measured by ELISA.
Results: Patients had higher FAI, DHEA-S, free testosterone (FT), perforin and geranzyme than healthies while their SHBG levels were lower. There were significant correlations between perforin with FT and FAI and between geranzyme with FAI.
Conclusion: It is showed that T cytotoxic lymphocytes are higher in PCOS women than normals. Also, hyperandrogenemia was said to affect perforin and geranzyme secretion. So, based on that studies and current results, it could be concluded that change in androgen levels in PCOS can be associated with change in perforin and geranzyme levels by affecting T cytotoxic lymphocytes.

Keywords: Androgen, perforin, geranzyme, PCOS

Corresponding author Email address: zareielham65@yahoo.com

ID:941

Effects of 17-AAG in combination with Oxaliplatin and Capecitabine on the angiogenesis major indicator in HT-29 human colorectal cancer cell line

Fatemeh Kheradmand[1], Yousef Rasmi[2], Anahita Fathi Azarbayjani[3], Shima Zeynali Moghaddam
[1] Department of Biochemistry, Cellular Molecular and Solid Tumor Research Center, Urmia University of Medical Science, Urmia, Iran
[2] Department of Clinical Biochemistry, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran
[3] Department of pharmaceutics, School of pharmacy, Urmia University of Medical Sciences, Urmia, Iran

Objective: Angiogenesis considered as a major determinant of tumor growth and development. One of the important mediators of this pathway, nitric oxide synthase (NOS) enzyme is directly linked to evaluated angiogenesis development. Numerous anti-cancer drugs qualified because of their angiogenesis effects. In this study, we aimed to investigate the effects of 17-AAG as a new treatment option in combination cases with oxaliplatin and capecitabine on NOS2 gene expression in HT-29 cells.

Material and Methods: Based on previous WST-1 (cell viability assessment) the lowest dose with high cytotoxicity which was 0.5×IC50 for double combination and 0.25×IC50 dose for triple combination selected for NOS2 gene (Real-Time PCR) expression assessments. The NOS2 gene expression levels selected with Real-time PCR examination.

Results: NOS2 level decreased in single treatment comparing control group and also in capecitabie/17-AAG group (in relation to single treatment), which are in line with WST-1 assay results. But in disagreement with WST-1 results, all of other double combinations (which were shown decreased viability), could not down-regulate NOS2 mRNA levels. Surprisingly in triple combination, NOS2 gene expression decreased, however decrease in viability was not significant comparing single treatment.

Conclusion: Our results indicate that 17-AAG in double combination with capecitabine can affect viability and angiogenesis. All other double combinations were shown significant anti proliferative effect but not anti-angiogenic effect. 17-AAG in triple combination with capecitabine and oxaliplatin inhibit angiogenesis more potent than viability. According to our results 17-AAG as a heat shock protein inhibitor had anti-angiogenic effect in single and especially in double combination cases on colorectal cancer cell lines.

Keywords: Angiogenesis, HT-29, NOS2, 17-AAG

Corresponding author Email address: fkheradmand@yahoo.com

ID:946

Assosiation of 12058T>C, HNF1β Nucleotide Transition with Benign Prostatic Hyperplasia: a Case-Control Study in Iranian Population

Fereshte Jozaghkar[1], Abasalt Hosseinzadeh Colagar[1], Emaduddin Moudi[2]
[1] Department of Molecular and Cell Biology, Faculty of Basic Sciences, University of Mazandaran, Babolsar, Iran
[2] Babol University of Medical Sciences

Objective: Genome wide association studies (GWAS) have identified several non-coding genetic variants in associated with prostate cancer risk and benign prostatic hyperplasia (BPH). These SNPs could affect genes expression levels. HNF1β codes hepatocyte nuclear factor-1beta that binds to DNA as a homodimer or heterodimer. Recently have been reported that expression of HNF1β is associated with cancer risk in various organs such as prostate gland. So, HNF1β variants could increase the risk of BPH and prostate cancer.

Material and Methods: To investigate the correlation of rs4430769 which is located on intron 2 of HNF1β and BPH, the Boiling DNA extraction and the PCR-RFLP methods have been used for the blood sample of 30 patients and 30 normal controls participants. The PCR product has been 397bp which has been cut by BpmI restriction enzyme in C allele. For visualizing the PCR-RFLP bonds, the 1.5% gel agarose electrophoresis has been used.

Results: There could be 3 types of bonds with 246bp, 151bp, and 397bp that for CC the first and 2nd bond, for CT all of 3 bonds, and for TT just the 3rd bond have been visualized on gel agarose from PCR-product with 397bp length. The frequency of allele A rs4430796 was almost Significant different (Pvalue = 0/09) in case and control groups.

Conclusion: In spite of what our study showed, The frequency of allele A rs4430796 might be more different in case and control groups if the number of sample increase.

Keywords: Hepatocyte Nuclear Factor-1beta, Polymorphism, Benign Prostatic Hyperplasia

Corresponding author Email address: ahcolagar@umz.ac.ir

ID:948

Evaluation of lipoprotein (a) and its association with cardiovascular disease risk in women with subclinical hypothyroidism

Hassan Mohajery[1], Elham Zarei[1], Fatemeh Aliakbari[1], Amirahmad Mohajery[2], Fatemeh mohammadzadeh[3], Azadreza mansourian[4]

[1] Student Research Committee. Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

[2] Student Research Committee. sirjan University of Medical Sciences, sirjan, Iran

[3] Department of Internal medicine, Gorgan Medical school Golestan University of Medical Sciences, Gorgan, Iran

[4] Metabolic Disorder Research Center. Golestan University of Medical Sciences, Gorgan, Iran

Objective: Subclinical hypothyroidism (SCH) is defined as high levels of TSH and normal levels of free-T4. Cardiovascular disease (CVD) risk was shown to be higher in people with SCH. Also, lipoprotein a (Lp-a)) was indicated as one of the independent risk factors of CVD. Present study aimed to investigate Lp-(a) levels and its association with CVD risk among women with SCH.

Material and Methods: Present study was done on 40 women with SCH and 40 healthy women that were matched based on age and BMI. Demographic data were recorded and then serum levels of TSH, thyroid hormones, lipid profile and Lp-(a) and also dyslipidemia and CVD risk were determined.

Results: TSH levels were significantly higher in SCH group than healthy persons. Also, Lp-a levels were higher in patients that was not significant. Lp-a showed significant correlation with T4 and fT4 in SCH group. Dyslipidemia and CVD risk were not significant in any groups.

Conclusion: Lp-(a) levels were independent of SCH occurrence; however, based on evidences, thyroid hormones could affect Lp-(a) metabolism. More evaluations is still needed.

Keywords: Subclinical hypothyroidism, dyslipidemia, cardiovascular disease (CVD) risk, Lp-(a)

Corresponding author Email address: hassan.mohajery.68@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:951

17-AAG in double combination with capecitabine and irinotecan inhibits cell migration and metastasis

Shima Zeynali Moghaddam[1], Fatemeh Keradmand[2], Mahshid Mohammadian[1], Hassan Malekinejad[3], Anahira Fathi Azarbayjani[4], Omid Esnaashari[5]

[1] Department of Clinical Biochemistry, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

[2] Department of Biochemistry, Cellular Molecular and Solid Tumor Research Center, Urmia University of Medical Science, Urmia, Iran

[3] Department of Pharmacology and Toxicology, Faculty of Pharmacy, Urmia University of Medical Sciences, Urmia, Iran

[4] Department of Pharmaceutics, Faculty of Pharmacy, Urmia University of Medical Sciences, Urmia, Iran

[5] Radiotherapy Center of the Omid Hospital, Urmia, Iran

Objective: The purpose of this study was to assess anti-metastatic effect of newly presented anticancer agent (17-AAG), an HSP-90 inhibitor, alone and in combination with capecitabine and irinotecan (common chemotherapy agents) on HT-29 human colorectal carcinoma.

Material and Methods: According to our previous study on cytotoxic effect of 17-AAG, capecitabine and irinotecan, in this study, HT-29 human colorectal cancer cells treated with IC50 dose of every single drug, 0.5×IC50 in double combination groups and 0.25×IC50 in triple combination group. We accomplished wound scratch and Real-time PCR assays to assess migration and MMP-9 gene expression, respectively.

Results: Wound scratch assay showed that 17-AAG when used in double combination with capecitabine and irinotecan was effective anti-metastatic agent in HT-29 cells. However, we observed significantly increased cell migration capacity in our triple combination group, that is in line with our previous study which showed this combination\'s antagonistic effect .17-AAG, capecitabine and irinotecan single treatments and 17-AAG/capecitabine and 17-AAG/irinotecan double treatments were significantly decreased MMP-9 mRNA expression, but triple comination had no significant effect on mmp-9 mRNA expression.

Conclusion: In conclusion both wound scratch assay and MMP-9 mRNA expression analysis indicated that 17-AAG acts as an anti-metastatic agent in combination with capecitabine and irinotecan against HT-29 cells, but triple combination could not be a suitable candidate for colorectal cancer treatment, because it couldn\'t inhibit cell migration and MMP-9 gene expression significantly. So 17-AAG could be a suitable choise for colorectal cancer therapy in double combination with common chemotherapy agents.

Keywords: HT-29, migration, metastasis, MMP-9, 17-AAG

Corresponding author Email address: s.zeynali1993@gmail.com

ID:952

Antitelomerase activity of blackberry extract in human colorectal cancer cells

Mohsen Tatar[1], Zohreh Bagheri[2], Masoumeh Varedi[2], Fakhraddin Naghibalhossaini[1]
[1] Department of Biochemistry, Shiraz University of Medical Sciences, School of Medicine, Shiraz, Iran
[2] Department of Physiology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Objective: Berries have attracted considerable attention because of their antineoplastic activities demonstrated in both preclinical and clinical studies. Several mechanisms have been proposed to explain berry anti-tumor effects, which include inhibition of angiogenesis and induction of cell cycle arrest and apoptosis. However, no previously published studies have investigated the antitelomerase activity of berry in cancer cells. The aim of this research was to examine the antitelomerase effect of blackberry in human colorectal cancer (CRC) cells.

Material and Methods: Anti-telomerase activity of blackberry juice was analyzed in 6 human CRC cells, both in cell-free systems and intact cells by TRAP assay. The effect of blackberry on the expression of human telomerase catalytic subunit, hTERT mRNA and methylation status of its promoter was also examined by quantitative RT-PCR and MSP analysis, respectively.

Results: Blackberry extract significantly inhibited the growth of 6 CRC cells in a dose-dependent manner. Telomerase activity of CRC cells incubated with IC50 concentration of berry extract for 48 and 72 h decreased by 15-37.5% and 43.23 - 62.5% ($p<0.05$), respectively. Berry treatment caused a significant reduction of hTERT expression in SW480, HT29/219, LS180, and HCT116 cells ($p<0.01$) and a non-significant reduction in other 2 cell lines. Berry treatment partially induced hypomethylation of hTERT promoter in these cells.

Conclusion: Our data indicate that telomerase inhibition is a key mechanism by which blackberry exert its anticancer effect in CRC cells.

Keywords: Blackberry, colorectal cancer, anti-telomerase, hTERT expression, promoter methylation

Corresponding author Email address: mohsentatar@ymail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:954

Adenosine receptor signaling and cross-talk with other pathways in cancer

Boshra haghi[1], Seyyed Mehdi Jafari[1]
[1] Department of Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

Objective: The adenosine receptors are members of the G-protein coupled receptors that regulate various biological processes of cancer such as proliferation and survival. There are various evidence have indicated that adenosine receptor regulate this processes with regulation of various signaling pathways. Therefore, we sought to conduct a review to evaluate the correlation of adenosine receptors with different signaling pathways in various tumor cells.
Material and Methods: This review focuses on the adenosine receptor signaling and cross-talk with other tumorigenic signaling pathways in cancer. The related studies and analyses were obtained through a search of Pubmed, Web of Science, and Embase.
Results: These results indicate that adenosine receptor correlated with various signaling pathways such as NF-κB, PI3K/Akt, TNFR1, ERK1/2, BCL 2, WNT and Hedgehog signaling pathways in cancer.
Conclusion: The adenosine receptors have important roles in biology of cancer by cross-talk and regulation various signaling cascade. In general, understanding the cross-talk between signaling pathways may achieve a better therapeutic effect in cancer treatment.

Keywords: Adenosine receptor, Cell signaling, Cancer

Corresponding author Email address: boshra.haqi1994@gmail.com

ID:955

Effect of vitamin D supplementation on hematological and biochemical inflammation markers

Zahra Khorasanchi[1], Majid Ghayour Mobarhan[1]
[1] Mashhad university of medical sciences

Objective: Recent studies on the heat shock protein 27 are increasing. In normal conditions, the expression of these proteins is low, but stress situation induces the expression and releasing of heat shock proteins 27. Studies have shown that Vitamin D exhibits several anti-inflammatory effects. We have evaluated the effects of Vitamin D supplementation on heat shock protein 27 antibody titres in adolescent girls in Mashhad.

Material and Methods: Six hundred forty adolescent girls received vitamin D3 at a dose of 50,000 IU/week for 9 weeks. Demographic, clinical, and biochemical parameters and serum anti-HSP27 antibody titers were determined in all the subjects at the baseline and at the end of the study.

Results: At baseline, serum anti-Hsp27 titer was 0.22 (0.12-0.33), while this value after intervention was reduced to 0.19 (0.11-0.33) ($P<0.05$). Similar results were also detected for WBC and RDW (e.g., RDW level was 13.0±1.3 and 12.1±1.7, P = 0. 03, before and after therapy. Interestingly we observed a significant reduction in white blood cell count after high dose vitamin D supplementation ($P=0.009$). No significant changes were observed in high-sensitivity C-reactive protein (hs-CRP) ($P>0.05$). Moreover, RDW was significantly decreased in 2nd, 3rd and 4th quartiles of response to treatment with vitamin D ($P=0.01$, $P=0.001$ and $P=0.006$, respectively). The anti-HSP27 was only significantly decreased in the 4th quartile of response to treatment with vitamin D ($P=0.03$).

Conclusion: It appears that vitamin D supplementation effects on immunity system and decrease heat shock protein 27 antibody titers, therefore reduces the risk of cardiovascular disease.

Keywords: Vitamin D, inflammation, HSP27

Corresponding author Email address: z.khorasanchi@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:958

Triggering drug resistance problem by selection of a panel of regulated death pathways

Zahra Shahsavari[1], Marzieh Neykhonji[1]
[1] Department of Laboratory Medicine, Faculty of Paramedical Sciences Department of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Regulated cell deaths are natural way for removing cancer cells. Most of the anti-cancer agents trigger apoptosis and related cell death networks to eliminate malignant cells. Defective or inefficient apoptosis is an acquired hallmark of cancer cells. Drug resistance, often prevents tumor cells from undergoing sufficient levels of apoptosis, resulting in cancer cell survival and treatment failure. This calls for novel therapeutic concepts to reactivate other cell death pathways (such as necroptosis, ferroptosis, autophagy, etc.) in the human malignancies. Whereas triggering a single type of programmed cell death may not be sufficient for the treatment of cancer, the selection of different cell death inducers or the combined use of different cell death pathway inducers will help to overcome drug resistance. Thus, Targeted therapies using death mechanism-based combinations panel is a valid way to overcome drug resistance development.

Keywords: Regulated cell death, Cancer, Drug resistance, Cell deaths panel

Corresponding author Email address: m.neykhonji@yahoo.com

ID:959

The crosstalk between Wnt/β-catenin signaling pathway, DNA damage response and oxidative stress

Ailin Ebrahimzadeh[1], Durdi Qujeq1, Ansar Karimian[1]
[1] Department of Clinical Biochemistry, Babol University of Medical Sciences, Babol, Iran

Objective: Since the survival of all organisms affected by the integrity and stability of genetic information, therefore the existence of DNA repair is essential for maintaining genomic integrity in cells. The most important factor in causing DNA damage is oxidative stress, which affects Wnt signaling in many ways. This signaling pathway is one of the most important regulating cascades in the proliferation process and has a strong links to various types of cancers. Recent studies have shown that the Wnt/ β-catenin signaling pathway, which has a most important role in modulation of cell fate determination, cell proliferation, and apoptosis, can induce DDR by several regulating proteins, including H2A.X-γ, p16INK4a, P53 and P21. Inhibition of the elements involved in DDR can be used to increase the effectiveness of radiotherapy and chemotherapy as well as selective killing of cancer cells in DNA repair pathways. Moreover, because the Wnt/β-catenin signaling plays an important role in regulation and maintenance of cancer stem cells (CSCs) proliferation, it has been considered as an attractive target for the production of anti-cancer drugs.

Material and Methods: In this review study, which we conducted on studies published over the past 10 years, we had examined the association of Wnt/β-catenin signaling with cancer as well as the defect in the pathway of DNA repair.

Results: At the end of this study, we found that inhibition of the elements involved in DDR, by creating defects in DNA repair pathways, could lead to selective killing of cancer cells and increase the effectiveness of radiotherapy and chemotherapy. In addition, oxidative stress can also affect the Wnt signaling pathway and thus the DNA repair.

Conclusion: A better understanding of the cross-talk between these pathways and events could provide strategies for the treatment of cancer cells and help to design most effective methods for treatment of cancer.

Keywords: Cancer, Wnt/β-catenin, DNA damage, DNA repair, oxidative stress

Corresponding author Email address: ailin.ebrahimzadeh@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:961

Antioxidant effect of taraxasterol on ethylene glycol-induced kidney stone in rats

Mahboubeh Yousefi Ghale Salimi[1], Maryam Eidi[2], Nasser Ghaemi[3], Ramezan Ali Khavari Nejad[1]
[1] Department of Biology, College of Basic Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran
[2] Department of Biology, College of Biological Sciences, Varamin Pishva Branch, Islamic Azad University, Varamin Pishva, Iran
[3] School of Chemistry, College of Science, University of Tehran, Tehran, Iran

Objective: Taraxasterol is one of the important constituents of Taraxacum officinale L. (Compositae) with antioxidant potential.
Material and Methods: The present study was designed to evaluate the antioxidant effect of taraxasterol on ethylene glycol induced urolithiatic rat. Urolithiasis was induced by oral treatments of ammonium chloride and ethylene glycol in adult male rats. Taraxasterol (2, 4 and 8 mg/kg) was treated for 33 days by gavage. Then, the animals were anesthetized and blood, liver and kidney sampling were done. Serum alanine aminotransferase, aspartate aminotransferase and lactate dehydrogenase activities, superoxide dismutase and glutathione peroxidase activities in serum, kidney and liver were evaluated.
Results: The Results showed that taraxasterol decreased serum alanine aminotransferase ($p < 0.001$), aspartate aminotransferase ($p < 0.001$), lactate dehydrogenase ($p < 0.05$) activities, while increased superoxide dismutase and glutathione peroxidase in serum ($p < 0.01$), kidney ($p < 0.05$ and $p < 0.001$, respectively) and liver ($p < 0.01$ and $p < 0.001$, respectively) tissue homogenates in treated urolithiatic rats in comparison to the control urolithiatic rats.
Conclusion: In conclusion, the Results: showed that acute exposure to ethylene glycol decreased the endogenous antioxidant defense system of liver and kidney tissue rats, suggesting an important role of oxidative stress in the pathogenesis of ethylene glycol-induced cellular toxicity. potential antioxidant may prevent crystal deposition in renal tissue. Taraxasterol treatment effectively ameliorates reactive oxygen species production by promoting antioxidants SOD and GPx.
Keywords: Kidney stone, Antioxidant, taraxasterol, Rat
Corresponding author Email address: yousefim519@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:964

Investigation of the Antiangiogenic Activity of a Peptide Derived from Endostatin

Ashkan Ranjbar[1], S. Mohsen Asghari[1], S. Shirin Shahangian[1], Kamran Mansouri[2], Mahvash Hadavi[1]
[1] Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran
[2] Medical Biology Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

Objective: Angiogenesis as a multi-stage process involves the proliferation, migration and differentiation of endothelial cells and formation of capillary splits, and is one of the key stages in the growth and metastasis of tumors. Therefore, controlling this phenomenon is very important in therapeutic categories. Endostatin is an endogenous angiogenic inhibitor that has been subjected to various clinical trials in order to investigate the antiangiogenic effect of the tumor.

***Material and Methods*:** A fragment of 49 amino acid derived from the N-terminal of endostatin, containing histidine-rich sequence, was subjected to an in-vitro proliferation and angiogenesis assays. MTT test was used to investigate the effect of different concentrations of peptide (16-130 nM) on proliferation of human umbilical vein endothelial cells (HUVECs). The effect of various concentrations of peptide (30, 60 and 130 nM) on angiogenesis of HUVECs was analyzed by capillary-like tube formation assay using cytodex-3 microcarriers.

Results: The effect of the peptide on HUVECs proliferation indicates that it inhibited the proliferation in a dose-dependent manner. As 7, 15, 30, 55 and 71% inhibition was observed at peptide concentrations of 16, 30, 50, 60 and 130 nM, respectively. Also the peptide suppressed the HUVECs tube formation in a concentration dependent manner. The peptide inhibited the formation of capillary-like network by 12, 58 and 95% at concentrations of 30, 60 and 130 nM, respectively.

Conclusion: The Results of this study show that the peptide efficiently inhibits the proliferation and tube formation of HUVECs. Keywords: Endostatin; Peptide; Angiogenesis; Proliferation.

Keywords: Endostatin, Peptide, Angiogenesis, Proliferation

Corresponding author Email address: ashkan.ranjbar@live.com

ID 965

Lack of association between mir221 rs17084733 polymorphism and the risk of breast cancer in a sample of Iranian population

Mahsa azizi[1], Nahid Rahimi[1], Gholamreza Bahari[1], Seyed Mehdi Hashemi[2], Mohammad Hashemi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Zahedan University of Medical sciences, Zahedan, Iran
[2] Department of Internal Medicine, School of Medicine, Zahedan University of Medical sciences, Zahedan, Iran

Objective: Breast cancer (BC) is the most common malignancy amongst females worldwide. Although, the etiology of the BC is still unknown, but genetic and environmental factors have been acknowledged as risk factors. The present study aimed to inspect the impact of miR-221 rs17084733 polymorphism on BC risk in a sample of Iranian population.

***Material and Methods*:** This case control study was done on 210 BC patients and 203 healthy women. DNA was extracted from whole blood by salting out method. Genotyping was achieved using PCR-RFLP method. Statistical analyses were performed using the Chi-square and logistic regression analysis.

***Results*:** The frequencies of GG, AG and AA in cases and controls were 41.9%, 56.7%, 1.4% and 50.7%, 48.3%, 1.0%, respectively. There was no significant difference in allele and genotype frequency between the groups.

Conclusion: In summary, our Results: did not support an association between miR-221 rs17084733 polymorphism and BC risk.

Keywords: breast cancer, polymorphism, micro RNA

Corresponding author Email address: azizi.ma72@yahoo.com

ID:967

The role of miR 33b in high glucose induced lipogenesis

Mina Zare[1], Zohreh Mostafavi-Pour[1], Ghodratollah Panahi[2], Reza Meshkani[2]
[1] Recombinant Protein Laboratory, School of Advance Sciences and Technologies, Shiraz University of Medical Sciences, Shiraz, Iran
[2] Departement of Clinical Biochemistry, Tehran University of Medical Science, Tehran, Iran

Objective: Insulin resistance is one of the major causes of Type 2 diabetes. Many studies have been shown that Hyperglycemia (glucotoxicity) and hyperlipidemia (lipotoxicity) have deleterious effects on insulin resistance. miRNAs have a key role in various metabolism pathways including lipid synthesis, fatty acid oxidation. The aim of this study was to investigate the effects of high glucose (HG) on miR 33 b expression and lipid synthesis in HepG2 cells.
Material and Methods: Human HepG2 hepatoma cell lines were treated with high glucose (HG) (33 mM) or normal glucose (NG) (5.5 mM). TRIzol reagent was used to isolate total RNA and miRNAs. The cDNA synthesis and real-time PCR was carried out with the miScript II RT Kit and miScript SYBR Green PCR Kit (QIAGEN). Triglyceride contents were evaluated by Triglyceride Quantification Colorimetric/Fluorometric Kit – BioVision.
Results: The Results showed that HG significantly enhanced Triglyceride content in both supernatant and intracellular. Also, miR 33b expression significantly increased in HepG2 cells treated with HG. Mimic hsa-miR-33b (10 nM) also leads to increased expression of Triglyceride content.
Conclusion: Our Results: indicated that HG-induced lipid biosynthesis is mediated through the activation of the hsa-miR-33b in HepG2 cells.

Keywords: Insulin resistance, High Glucose, miR-33b, Hyperlipidemia

Corresponding author Email address: minaazare@gmail.com

ID:968

Amplified fluorescence immunosensing of CA 15-3 tumor marker using luminescent carbon dots and AuNPs/PAMAM/aptamer as a donor-acceptor pair

Somayeh Mohammadi[1], Abdollah Salimi[2]
[1] Research Center for Environmental Determinants of Health (RCEDH), Kermanshah University of Medical Sciences, Kermanshah, Iran
[2] Departement of Chemistry, University of Kurdistan, Sanandaj, Iran

Objective: Currently, early detection and diagnosis of breast cancer is the best means of reducing the mortality and morbidity associated with it. Detection of tumor cells depends on the identification of some biomarkers. Some breast cancer biomarkers have commonly used in clinical diagnosis, including tissue markers, genetic markers and serum markers. CA15-3 with much better clinical specificity than CEA is the most widely used serum marker in breast cancer.
Material and Methods: We proposed an amplified FRET immunosensing for detection of CA15-3 marker. This immunoassay was realized by biospecific interactions between CA 15-3 antigen and the corresponding antibody and aptamer. In this fluorescence immunoassay, CA15-3 Ab-carbon dots and AuNPs labeled PAMAM-Dendrimer/aptamer were used as donor and acceptor, respectively.
***Results*:** The decreased fluorescence intensity was linear at three ranges including at the concentration range 1.1 µU mL-1 to 16 µU mL-1, 16 µU mL-1 to 0.163 mU mL-1 and 0.163 mU mL-1 to 5.0 mU mL-1. The detection limit of the FRET immunoassay was determined to be 0.9 µU mL−1. In addition, this FRET immunosensing is applicable in diluted human serum. The recovery values were in the range of 95.86−96.97% for CA 15-3 Ag in spiked serum sample with RSD lower than 7.3%.
Conclusion: According to obtained results, this sensitive immunoassay demonstrated good robustness and specificity in the analysis of serum samples. This fluorescence immunoassay system had several advantages, such as simple operation, fast detection, and no require for expensive equipment.

***Keywords*:** Fluorescence resonance energy transfer, Carbon dot, AuNPs-PAMAM-labeled aptamer, CA 15-3 immunoassay, Cancer diagnosis

Corresponding author Email address: smhmohammadi4@gmail.com

ID :969

The prevalancy of Thyroid disorders in Gorgan-Golestan Province, north east of Iran

Hassan Mohajery[1], Ali reza Ahmadi[2], Ezatolah Ghaemi[3], Golemreza Veghari[4], Akhtar Saifi[4], Elham Zarei[1], Azadreza mansourian[4]

[1] Student Research Committee, Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

[2] laboratory Sciences Research, Golestan University of Medical Sciences, Gorgan, Iran

[3] Departement of Microbiology, Gorgan Medical School, Golestan University of Medical Sciences, Gorgan, Iran

[4] Metabolic Disorder Research Center, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Thyroid which is the largest endocrine gland in human and produce two important hormones named thyroxin (T4) and triidothyronine(T3) The disorders of thyroid hormone leading to various metabolic disorder. The aim of this study was to investigate the prevalence of thyroid hormone disorder in Gorgan located in Golestan provinc in the north east of Iran.

Material and Methods: The sample papulation in this stady randomly were choes from patients referred to the Danesh medical diagnostic laboratory in Gorgan the sample included 247(mael:76 and female :171 persons). Thyroid hormones index including (TSH،T4،T3) were measured by chemilumincen method. The References range for the hormonesT4: Male :4.3-10.7 ،Female:4.7-11.9 ، T3 :0.6-2.1 ، TSH:0.42-5.47.

Results: The mean and standard devation for TSH ،T4 ،T3 were 2.53±2.76mic In/m. 8.82±7.24ng/dl ،1.10±0.17 ng/ml. There was not significont differences between male and female. Based on TSH index 8.9٪(22persons) and 10.1٪(26 persons) were on state of hypothyroid and hyperthyroid respectively between age and mean in middle age subjects (r=-0.244،p≥0.15)In age group >50years there was a reverse significant correlation between TSH and T4 (r=-0.210،p=0.025) in general there was a meaningful direct correlation between T3 and T4 (r=0.112، p≤0.039).

Conclusion: The finding of this study indicate that 20٪of those subject referred to the Laboratory exhibit a kind thyroid disorder. The thyroid disorder mostly seen in middle-age subjects than other age group.

keywords: Thyroid gland, Thyroid function, Thyroid disorder

Corresponding author Email address: hassan.mohajery.68@gmail.com

ID:971

Gene expression analysis of some adipocytokines in reproductive tissue of PCOS rats

Marzieh Bavari[1], Mohammad Reza Tabandeh[1]
[1] Department of Biochemistry and Molecular Biology, Chamran university, Ahvaz, Iran

Objective: Polycystic ovary syndrome (PCO) is recognized as the most common endocrinopathy in female. adiponectin, leptin, resistin and visfatin are the major adipocytokines which their changes in serum or adipose tissue have been identified in patients with obesity, insulin resistance and PCO. Various secretion or gene expression patterns of adipocytokines or their receptors have been detected in adipose tissue or ovary of PCO patients. To date there is no report about the regulation of ovarian adipocytokines gene expression after PCO induction and treatment by insulin sensitizing drugs including pioglitazone and metformin.

Material and Methods: Thirty female rats were divided into six experimental groups with five rats in each group including control group, PCO group (4 mg estradiol benzoate), metformin treated (200 mg/kg/day), pioglitazone treated (20 mg/kg/day), PCO + metformin and PCO + pioglitazone. PCO was detected by microscopic observation of vaginal smear and treatment by metformin and pioglitazone was initiated one week after that. Ovarian adipocytokines expression was analyzed by real time PCR and western blotting.

Results: Our Results: demonstrated that PCO induction resulted in elevation of adipocytokines mRNA and protein levels in ovary in concomitant with incidence of insulin resistance and increasing androgen and progesterone production. We observed that metformin and pioglitazone attenuated ovarian adipocytokines expression and improved insulin resistance and abnormal steroid production in PCO rats.

Conclusion: Based on data presented here we concluded that alteration of ovarian adipocytokines expression may has important role in PCO development and manipulation of adipocytokines expression or signaling by pioglitazone or metformin can be a novel therapeutic mechanism in the treatment of PCO patients by these drugs.

Keywords: PCO, adipocytokines, Gene expression, Pioglitazone, Metformin

Corresponding author Email address: marzieh_bavari@yahoo.com

ID:972

A novel denaturant/detergent stable protease as a good candidate for use in biochemical and biomedical researches

Moslem Afsharnezhad[1], S. Shirin Shahangian[1], Reyhaneh Sariri[1]
[1] Department of Biology, Faculty of sciences, University of Guilan, Rasht, Iran

Objective: High activity and good stability of some proteases in the presence of urea and SDS and their ability to digest different protein substrates make them promising candidates for use in a variety of biochemical and biomedical applications, including preparation of chromosomal DNA, protein fingerprinting, digestion of unwanted proteins (nucleases) during DNA/RNA preparations. Here, the effect of urea and SDS on the activity and stability of a new protease was evaluated.

Material and Methods: The enzyme was purified from F.johannis via cation exchange chromatography. The effect of urea (0-8.0 M) and SDS (0-1.0%) on the activity and stability of the protease was investigated, using casein as substrate. Prior to the assay, the enzyme was incubated with urea and SDS for 2 h. The remaining activity was indicated as a percentage of the activity of untreated enzyme taken as 100%. Additionally, the activity of the purified protease on different protein substrates was examined.

Results: The protease purification resulted in 5.5-fold purification with 40% activity recovery. The enzyme retained its full activity at high concentration of urea (up to 6.0 M). The remaining activity of enzyme in the presence of 0.5% SDS was shown to be 70%. The proteolytic activity of the enzyme on different protein substrates such as casein, gelatin, ovalbumin and bovine serum albumin, showed a broad substrate specificity.

Conclusion: Since the enzyme is considerably active in the presence of denaturing chemicals such as SDS and urea and shows broad substrate specificity, it could be a promising candidate for use in biochemical, molecular and biomedical research fields.

Keywords: Denaturant stable enzyme, Urea, SDS, Substrate specificity

Corresponding author Email address: moslem.afsharnezhad@yahoo.com

ID: 973

Comparison of the Effect of Artemisia Sieberi Essential Oil and Albendazole Drug on Protoscolices of Hydatid Cyst under in Vitro Conditions

M.R. Youssefi[1], M. Abouhosseini[2], M.J. Hosseini[1]
[1] Department of Parasitology, Babol Branch, Islamic Azad University, Babol, Iran
[2] Faculty of Veterinary Medicine, Amol University of Special Modern Technologies, Amol, Iran

Objective: Hydatidosis is a major zoonotic disease, and the best treatment for this disease is surgery. So far, many chemical protoscolex killers have been used to prevent protoscolices leakage during surgery, but it is necessary to consider the adverse effects of chemicals and the use of medicinal herbs. Considering the antiparasitic properties of Artemisia sieberi, this study was conducted to evaluate and compare the effect of Artemisia sieberi essential oil and albendazole drug on protoscolices of hydatid cyst under in vitro conditions.

Material and Methods: In this laboratory study, essential oils were prepared from aerial parts of the plant. Gas chromatography–mass spectrometry was performed to determine its components. Protoscolices were extracted from the livers infected with hydatid cyst and were exposed to Artemisia sieberi (2.5, 5 and 10 µg/ml) for 10, 30, 60 and 120 minutes. The viability of protoscolices was measured by eosin staining. Albendazole was used as a standard drug.

Results: 31.5% alpha-Thujone was identified as the main composition pf essential oil. The amount of essential oil protoscolices at the concentration of 2.5 µg / ml in 10, 30, 60 and 120 minutes was 51.8, 71.5, 82.8 and 99.3%, respectively. Albendazole showed lower toxic effect with similar dose at similar intervals, but both treatments showed a significant effect ($p<0.05$). The highest toxic effect of essential oil was observed at 10 µg/ml concentration 30 minutes after treatment. For albendazole, this effect was observed at a dose of 10 µg / ml after 120 minutes.

Conclusion: The Results: of the study showed that Artemisia sieberi essential oil has an acceptable scolicidal effect compared to albendazole and can be used as a scolicidal agent.

Keywords: Hydatid cyst, essential oil, Artemisia, Gas chromatography–mass spectrometry

Corresponding author Email address: youssefi929@hotmail.com

ID 976

The association of rs2241766 polymorphism in adiponectin gene with liver enzymes, fasting blood glucose and adiponectin in patients with non-alcoholic fatty liver

Samaneh Rabiee[1], Masoumeh Nezhadali[1], Mehdi Hedayati[2]
[1] Department of Biology, Islamic Branch, Islamic Azad University, Islamshahr, Iran
[2] Cellular and molecula endocrine research center, Research Institute for endocrine Science, Shahid Beheshti University of Medical Scince

Objective: The adipose tissue, as a microorganism, produces substances called adipokines, one of which is the adiponectin hormone, which is effective on the metabolism of glucose and preventing damage to liver cells. In this study, the association of single-nucleotide polymorphism rs2241766 or (+ 45T> G) with liver enzymes, fasting blood glucose and adiponectin in patients with non-alcoholic fatty liver was investigated.
Material and Methods: This case-control study was performed on 80 patients with non-alcoholic fatty liver and 80 healthy controls as control. Fasting blood glucose, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) enzymes were measured by standard methods using the kits of Pars Azmoon company and Adiponectin levels with using the Eliza kits of Sweden Merdodia company. Determination of genotypes was determined using PCR-RFLP method. Data were analyzed by SPSS software version 20.
Results: The two groups were significantly different in terms of age, ALT, AST, adiponectin and fasting blood sugar. In this study, there was no significant difference in genotypes or alleles in two groups. There were no significant differences in rs2241766 polymorphism genotypes in any of the variables in the healthy group, but in patient individuals, the liver enzymes AST (P= 0.09) and ALT (P= 0.09) differed significantly in genotypes.
Conclusion: It seems that there is no meaningful relationship between rs2241766 polymorphism in adiponectin gene and non-alcoholic fatty liver disease. The level of adiponectin in patients with liver enzymes has a significant but reversible relationship.

Keywords: Non-alcoholic fatty liver, Adiponectin, polymorphism, Liver Enzyme

Corresponding author Email address: kmp_rabiee@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID 978

Targeting Cancer Stem Cell Metabolism for Therapeutic Strategy

Shima Nazem[1], Nasibe Shamlou[1], Zahra Shahsavari[1]
[1] Shahid Beheshti University of Medical Science

Objective: Metabolism plays a crucial role in dictating of division patterns and quiescent state of cancer's locomotive engine, the cancer stem cells (CSCs). CSCs have special metabolic characteristics that distinguish them from the other tumor cells. CSCs are largely dependent on aerobic glycolysis for their energy production and also are associated with increased fatty acid synthesis and increased rates of glutamine utilization. These cells can shift their metabolic substrate utilization, between glycolysis and mitochondrial oxidative metabolism, in order to adapt their microenvironmental niche. In this limelight of research, it is necessary to use a new strategy to identify highly specific oncogenic metabolic targets to discover novel effective anti-cancer metabolic drugs. Thus, targeting the metabolic pathways may constitute a basis for developing new therapeutic applications to eliminate locomotive drivers of tumors, the cancer stem cell population.

Keywords: Metabolism, Cancer Stem Cells, Therapeutic application

Corresponding author Email address; nazem.sh727@gmail.com

ID:981

The Effect of Chemical and Organic Compounds on Egg Yolk lipid Removal

Mohammad Mohammadi[1], Mr Mahdi Aminian[1]
[1] Department of biochemistry, school of medicine, Tehran university of Medical Sciences, Tehran, Iran

Objective: Egg yolk is rich in fat and proteins. The first step to purify proteins is to remove the lipid in the yolk. A suitable substance for this purpose should remove lipid from the environment while it has the least effect on proteins. These materials should have other optimal conditions and safety for other methods.

Material and Methods: Lipid removal from egg yolk was performed by the following chemical compounds; destiled water with different dilations, polyethylene glycol 6000, polyvinylpyrrolidone, sodium silicate, ammonium sulfate, activated charcoal with different concentrations. The mixture then was centrifuged (4°C, 20 min) at 13000xg and supernatant which contained protein was collected. We also used organic solvents to remove lipid. These include chloroform-methanol mixture, methanol, Butanol, diisopropyl ether-butanol mixture, diisopropyl ether. The mixture then was centrifuged (25°C, 5 min) at 1000xg following by collection of supernatant. The content of glucose, triglyceride, cholesterol, HDL, albumin, and total protein was determined before and after lipid removal in both yolk and supernatant samples.

Results: The results howed that among the chemical compounds, polyethylene glycol followed by distilled water are the best fat remover. Polyethylene glycol reduced the concentration of triglyceride from 18,000 mg/dL to 0, while the total protein concentration was decreased from 17g/l to 4 g/l. Among the organic compounds, chloroform reduced the concentration of triglyceride to zero but the total protein content was decreased significantly. Butanol and diisopropyl ether significantly reduced triglyceride while a large amount of total protein remained in the environment.

Conclusion: Egg yolk contains special proteins in a context with high concentration of triglycerides and cholesterol. This high fat content can disrupt the extraction of proteins such as egg antibodies or other proteins. Fats in egg yolks disturb other laboratory methods such as ELISA or photometry by creating opacity.

Keywords: lipid removal, Egg yolks, Polyethylene glycol, diisopropyl ether

Corresponding author Email address: shimibio@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:982

Effect of Atorvastatin with and without vitamin E supplementation on PPARγ gene expression in type 2 diabetic patients with hyperlipidemia

Banafsheh Sadat tabaei[1]

[1] Department of nutrition and biochemistry, Zanjan university of medical sciences, Zanjan, Iran

Objective: The peroxisome proliferation-activated receptor γ (PPARγ) plays an important role in lipid and glucose homeostasis. The highest expression of PPARγ is at the adipocytes which affects on signaling pathways of insulin and endothelial dysfunction. Type 2 diabetes increases the risk of cardiovascular diseases which is more related to dyslipidemia. Statins, as a lipid lowering drugs, activate PPARγ gene expression via 15-deoxy-delta-12-14PGJ2 production. Moreover, studies have shown that vitamin E induces PPARγ expression, as well as improves glycemic control. Then, co-supplementation of atorvastatin with vitamin E may have more beneficial effects in hyperlipidemic patients.

Material and Methods: Twenty-four type 2 diabetic women with hyperlipidemia enrolled at the present study. They were randomly assigned to receive 20mg/day atorvastatin alone and/or in combination with 400IU/day vitamin E for 12 weeks. Fasting blood samples were gathered at the baseline and end. PBMC was extracted and PPARγ gene expression was measured by the real time PCR.

Results: Results showed that PPARγ mRNA level was significantly higher in the atorvastatin plus vitamin E supplemented group than atorvastatin alone (4.9 ± 1.77 vs 3.12 ± 0.93, $P \leq 0.05$).

Conclusion: The present study showed that vitamin E supplementation with atorvastatin has a synergistic effect on PPARγ gene expression which may has beneficial effects on dyslipidemia to reduce risk of cardiovascular disease in diabetes.

Keywords: Atorvastatin, Vitamin E, PPARγ, Diabetes Mellitus, hyperlipidemia

Corresponding author Email address: Tabaei.banafsheh@yahoo.com

ID:984

FUS gene in prostate cancer

Elham Ghanbarpanah[1], Mohammad-Ali Kohanpour[2], Farnaz Hosseini Beheshti[3], Mahtab Keshvari[4]

[1] Department of Biology, Arsanjan Branch, Islamic Azad University, Arsanjan, Iran

[2] Department of physical education, Lamerd Branch, Islamic Azad University, Lamerd, Iran

[3] Medical Genetics Center of Genome, Isfahan University of medical Sciences, Isfahan, Iran

[4] Isfahan Cardiovascular Research Center, Cardiovascular Research Institute, Isfahan University of medical Sciences, Isfahan, Iran

Objective: The progression of prostate cancer is invariably dependent upon the androgen receptor (AR) pathway. Recently, it has been shown that FUS is used by non-encoded RNAs in target gene targeting regions (such as cyclin D1) and that target gene suppresses transcription by complex interrupting function. It has been observed that FUS has some tumor suppressor feature. Increasing the expression of FUS decreases and increases the rate of apoptosis of prostate cancer cells, respectively. In fact, FUS reduces the proliferator factors such as cyclin D1 and Cdk6, and increases Cdk (an anti-proliferation factor) and p27 (a proliferative inhibitory factor). Therefore, FUS prevents the growth of prostate cancer cells. An immuno-histochemical analysis has shown that FUS gene expression has an inverse correlation with the degree of prostate cancer, which suggests that patients with higher levels of FUS are more likely to survive and less likely to have bone pain. Therefore, the lack of FUS expression may contribute to the progression of prostate cancer. How androgen develops the cell cycle, it is shown by FUS that the key to FUS is the signaling of the androgen receptor and the progression of the cell cycle in prostate cancer. Based on these findings, we might be able to consider more exogenous expression of FUS as a treatment for prostate cancer.

Keywords: prostate cancer, FUS, androgen receptor, cyclin D1

Corresponding author Email address: elham.ghanbarpanah@gmail.com

ID:985

Determination of toxic tobacco compounds in urine by UPLC-QTOF-MS

Somayeh Mohammadi[1], Celia Domeno[2], Isabel Nerin[3], Margarita Aznar[2]

[1] Research Center for Environmental Determinants of Health (RCEDH), Kermanshah University of Medical Sciences, Iran

[2] Department of Analytical Chemistry, Instituto de Investigación en Ingenieria de Aragon (I3A), University of Zaragoza, Zaragoza, 50018, Spain

[3] Smoking Cessation Unit, Department of Medicine, Psychiatry and Dermatology, Faculty of Medicine, University of Zaragoza, Zaragoza, 50009, Spain

Objective: The World Health Organization reports that there are more than 1 billion smokers in the world. Tobacco products contain a diverse array of chemical carcinogens that cause many types of cancer. There are more than 60 carcinogens in cigarette smoke and at least 16 in unburned tobacco. Among these, tobacco specific nitrosamines (such as 4-(methyl nitrosamino)-1-(3-pyridyl)-1-butanone (NNK) and N′-nitrosonornicotine (NNN)), polycyclic aromatic hydrocarbons (such as benzo[a]pyrene) and aromatic amines (such as 4-aminobiphenyl) seem to have an important role as causes of cancer. The trace levels of nicotine and its metabolites have been measured in urine, meconium, hair, saliva or serum. Compared to other human biological samples, collection of urine is non-invasive and comparatively easier and more convenient than other methods. Several analytical methods have been reported for analysis of tobacco-specific nitrosamines, aromatic amines, nicotine and cotinine in biological samples such as serum, urine, saliva. Recently, ultra-high performance liquid chromatography coupled with electrospray ionization quadrupole time-of- flight tandem mass spectrometry (UPLC-QTOF-MS) has been widely applied especially for biological matrices, such as urine, plasma and saliva. The objective of this study was to develop an analytical method for the simultaneous determination and quantification of 9 important tobacco biomarkers, including 4 tobacco-specific nitrosamines such as 4-(methylnitro-samino)-1-(3-pyridyl)-1-butanone (NNK), N-nitrosoanabasine (NAB), N\'-nitrosonornicotine (NNN) and N-nitrosoanatabine (NAT); 3 aromatic amines such as 2,4-dimethylaniline , 4-aminobiphenyl and 2-naphthylamine; nicotine and cotinine using solid phase extraction followed by an ultra-performance liquid chromatography–tandem quadrupole-time-of-flight mass spectrometry analysis. This analytical method was applied to 12 urine samples (in four periods of times after stop smoking). Nicotine, cotinine and N-nitrosoanatabine (NAT) were detected in urine samples. Nicotine was determined in 6 out of 12 urine samples. Cotinine, the main metabolite from nicotine, was detected in 11 out of 12 urine samples. NAT was detected in 4 urine samples.

Keywords: Tobacco markers, Nitrosamines, Carcinogenic compounds, High resolution-mass spectrometry, Urine samples

Corresponding author Email address: smhmohammadi4@gmail.com

ID:986

Investigation of anti EGFRVIII monoclonal antibody (A-EGFRvIII-f) effects on biology of an EGFRVIII over expressed cell line

Elham Sheshkhan[1], Malihe Paknejad[1]
[1] Department of Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: EGFRvIII is the most common extracellular mutation of EGFR has been shown to express in variety of cancers, such as glioblastoma multiforme (GBM). This mutant receptor is a tumor-specific and can cause increased proliferation, angiogenesis, invasiveness and reduced apoptosis. In the present study we describe in vitro effects of mAb A-EGFRvIII-f (mAb against EGFRvIII) on U87vIII human glioblastoma cell line (EGFRvIII-transfected GBM cell line).
Material and Methods: The cell viability of U87vIII was assessed with the MTT assay for 24, 48 and 72hr with different concentrations of mAb A-EGFRvIII-f. Then Cell cycle analysis was measured using the FACscan flow cytometer after treated U87vIII cell with (100 µg/ml) or medium (DMEM/3% FBS) alone for 48hrs and 72hr. Cell death detection ELISA plus kit was used to study the proapoptotic effect of different concentrations of A-EGFRvIII-f in U87vIII cell cultures for 24, 48 and 72hr. After incubation of U87vIII with different concentrations of A-EGFRvIII-f (at four concentrations of 100, 75 , 50 and 25 µg/ml) for 24, 48 and 72 hours, the supernatant was assessed for VEGF secretion by human VEGF ELISA kit.
Results: Our in vitro analysis showed that A-EGFRvIII-f inhibits the proliferation of the U87vIII cells. The maximum growth-inhibitory effect is 40% after 72 hours of treating with 100 µg/ml of A-EGFRvIII which shows a time-dose dependant effect of A-EGFRvIII-f. The antiproliferative activity of A-EGFRvIII-f treatment on U87vIII cells in vitro could be demonstrated by increase in G0/G1 phase and decrease in S phase in comparision with control cells. Beside we obsereved concentration-dependent induction of cell apoptosis by A-EGFRvIII-f. Also treatment of U87MG.D2-7 cells with A-EGFRvIII-f reduce VEGF protein level to a maximum of 50%.
Conclusion: Taken together, our results describe treatment of U87MG.D2-7 cells with A-EGFRvIII-f led to mild growth-inhibitory effect, slight proapoptotic activity and significant reduction of VEGF in vitro which results from signal transduction inhibition. These conclusions are important to help us predict how A-EGFRvIII- f may act in vivo or in clinical setting and be considered as therapeutic agents of choice for the treatment of GBM.
Keywords: mAb A-EGFRvIII-f, U87vIII, cell viability, Cell cycle, apoptosis
Corresponding author Email address: el.sheshkhan@gmail.com

ID:987

Serum immunoglobulin levels in splenectomized and non-splenectomized patients with major beta-thalassemia in Zahedan

Alireza Rezaeifar[1], Fatemeh Dahmardeh[2], Ghasem Miri-Aliabad[3]
[1] Department of Clinical Biochemistry, School of Medicine, Zabol University of Medical Sciences, Zabol, Iran
[2] Department of Biology, Facuty of Sciences, University of Zabol, Zabol, Iran
[3] Department of Pediatrics, Children and Adolscent Health Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: Major Thalassemia is the most common hemoglobin disorder in the world. This disease results in clinical side effects in the affected persons and these patients need blood transfusion. This study was conducted with the aim of investigation of serum immunoglobulin levels in splenectomized and non-splenectomized patients with major beta-thalassemia in Zahedan.
Material and Methods: The study sample included 60 beta-thalassemia patients were splenectomized and non-splenectomized and also 20 healthy subjects who were enrolled by accessible method. IgA, IgM and IgG immunoglobulin levels evaluated in all group using Eliza method.
Results: Mean serum level of IgM in splenectomized patients was lower in non-splenectomized group. Mean serum level of IgA and IgG were not statistically different in splenectomized and non-splenectomized patients.
Conclusion: The results of this study showed that only serum level of IgM was statistically different in splenectomized and non-splenectomized patients and IgA level was significantly lower in the control group compared to both splenectomized and non-splenectomized groups. These are due to the effects of the disease on the immune system.
Keywords: Major Beta-thalassemia, Immunoglobulin, Splenectomy
Corresponding author Email address: rezaeifar.alireza@gmail.com

ID:988

Some markers of autophagy are too important to investigate neurodegenerative diseases under the influence of herbal component

Maryam Sanjary pour[1], S. Zahra Bathaee[1]
[1] Department of Clinical Biochemistry, Faculty of Medical Science, Tarbiat Modares University, Tehran, Iran

Objective: Alzheimer's disease is an advanced neurodegenerative disorder. It is the most common cause of dementia. Nowadays the use of herbal medicines to prevent and slow down the progression of Alzheimer\'s disease is very important. One of the suggested natural products to control neurodegenerative diseases is saffron. In order to investigate the neuroprotective role of saffron compounds, we studied the effect of crocin on a PC12 model of Alzheimer's disease. Understanding the signaling pathways involved in the regulation of autophagy is crucial to the development of strategies for therapy. In this regard, we studied the expression of some autophagic markers (LC3-II/ LC3-I, Beclin-1) in PC12 model of Alzheimer's disease.
Material and Methods: The differentiated neuron-like PC12 cells were incubated with the aggregated amyloid beta (Aβ) to induce an Alzheimer's model. Fluorimetric methods like thioflavin-T, circular dichroism and electron microscopic Images were applied to confirm the aggregated Aβ. Then PC12 was treated to the effective dose of crocin to assess the role of the mentioned herbal reagent as prevention or treatment of Alzheimer's disease. Finally, the alterations of apoptosis in treated cells were examined through flow cytometry method. The expression of Beclin-1 and LC3II protein were evaluated using Real time and western blotting analysis to survey autophagy examination.
Results: The results show that crocin increase the expression of Beclin-1 and LC3II protein accumulation.
Conclusion: We concluded that crocin through autophagy activation could improve the biochemical process of Alzheimer. So we can introduce crocin as potential drug for improvement of Alzheimer disease.
Keywords: Alzheimer's disease, Crocin, Amyloid Beta, Autophagy, PC12
Corresponding author Email address: sanjarymaryam007@gmail.com

ID:989

Evaluation of the effects of Bee venom on the proliferation and migration of fibroblast cells

ICBMB2018.COM

Alireza Rafati[1], Nafiseh Sadat Dehghanian[2], Alireza Rafati[1], Safoura Sameni[2]
[1] Department of Pharmaceutical Chemistry and Nutrition, Sarvestan Branch, Islamic Azad University, Shiraz, Iran
[2] Department of Biochemistry, Shiraz Branch, Islamic Azad University, Shiraz, Iran

Objective: Bee venom, like other supplements, has been used for thousands of years to treat various diseases such as rheumatoid arthritis, multiple sclerosis, gout, infection, burns, wound healing, and pain relief. It has at least 18 active chemical components. Bee venom has different peptides and Non-peptide components. Many experiments have been carried out on the biological and medicinal activities of bee venom, and it has been shown that bee venom stimulates the migration of keratinocyte.

Material and Methods: Fibroblast cells were dissected from the foreskin of the neonate, and the keratinocytes were isolated from the dermal papillomas. The cells grew in the DMEM medium and at passage 3 were prepared for the MTT technique, to calculate the cell viability upon bee venom treatment at different doses. Thereafter, wound healing assay and adhesion assay were performed.

Results: By increasing the concentration of venom, the amount of cell viability, cell migration, proliferation and adhesion increases as compared to the control group.

Conclusion: Regarding the fact that high cell proliferation of fibroblasts may benefit and accelerate the wound healing process, the findings of this study suggest the application of bee venom in clinical trials to help the wound therapeutic progressions.

Keywords: Bee venom, fibroblast, wound healing, MTT assay
Corresponding author Email address: alireza_rafati57@yahoo.com

ID:990

Imidazoquinolines induce apoptosis via ROS production in U-87MG glioblastoma cells

Zahra Shahsavari[1], Fatemeh Mostafavi[1], Faranak Kazerouni[1], Salman Taheri[2]

[1] Department of Laboratory Medicine, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Chemistry and Chemical Engineering Research Center of Iran, Tehran, Iran

Objective: Glioblastoma multiform, one of the most common and aggressive malignant brain tumors, is highly resistant to therapy. We aimed to determine the effect of 5 new derivate of Imidazoquinolines on the U-87MG glioblastoma cells.

Material and Methods: U87MG glioblastoma and AGO1522 normal fibroblast were treated with 5 derivate of Imidazoquinolines. We analyzed cell viability by MTT assay and the induction of apoptosis using annexin V-PI staining via flow cytometry. Additionally caspas-3 activity and ROS production were measured by fluorometric assays.

Results: U-87MG cells treated with 5 derivate of Imidazoquinolines demonstrated reduced viability, and an increase in annexin V- and annexin V/PI-positive cells. A dose dependent decrease in cell viability was observed in U-87MG treated by 5 derivate of Imidazoquinolines compared with AGO1522 normal fibroblast cells. In addition this derivate significantly induce caspase-3 activity and ROS generation.

Conclusion: These findings indicate that Imidazoquinolines that have potent direct activity against Glioblastoma cells, inhibits cell growth of U-87MG cells by inducing apoptosis and generation of ROS.

Keywords: Glioblastoma, Iimidazoquinolines, Apoptosis
Corresponding author Email address: sana.mh994@gmail.com

ID:992

The role of CXCL 12 in pathogenesis of astrocytoma

Shirin Fattahpour[1], Masih Sabori[1]

[1] Isfahan University of Medical Sciences, Alzahra University Hospital, Isfahan University of Medical Sciences

Objective: The purpose of this study was to appraise a competent systematic review of CXCL12 role in contribution and development of astrocytoma. Common language between tumor and microenvironment is chemokine. Microenvironment next the tumor, trace entire process of tumor. CXCL 12 is subset of chemokines and component of Immunological factors has significant figure in pathogenesis of astrocytoma. As a result, present study was designed for investigate the communication of tumor cell proliferation and CXCL12 in tumor surrounding microenvironment.

Material and Methods: An electronic search in databases PubMed, EMBASE and Scopus was carried out until March 2018. Literatures that performed the PICO (Patients, Interventions, Controls and Outcome) criteria, were selected. There was no language restriction.

Results: Results of the 467 articles were found in initial search, 6 studies set by the PICO criteria. 3 studies were about axis of CXCL12 and its receptors CXCR4-CXCR7 in Tumor microenvironment. 3 studies were about pathogenesis role of CXCL12 in central nervous system (CNS) tumors specially astrocytoma.

Conclusion: These finding have ascertained that CXCL12 has cardinal character in neurogenesis happened in astrocytoma. For improving cancer remedies, interactions between tumor and Microenvironment have to qualify well. Based on this study, probably can use of CXCL12/CXCR4 axis in chemical therapy. Microenvironment is influenced by different biochemical factors so well -designed studies are need in future.

Keywords: cxcl12, astrocytoma, Microenvironment
Corresponding author Email address:

ID:993

Hematological Parameters in Newborns of Mothers with and without Hypertension

Alirreza Rezaeifar[1], Fatemeh Dahmardeh[2], Ghasem Miri-Aliabad[3]

[1] Department of Clinical Biochemistry, School of Medicine, Zabol University of Medical Sciences, Zabol, Iran

[2] Department of Biology, Facuty of Sciences, University of Zabol, Zabol, Iran

[3] Department of Pediatrics, Children and Adolscent Health Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

Objective: Pregnancy induced hypertension (PIH), preeclampsia and eclampsia syndrome is a multi system disorder associated with adaptive changes in the fetal circulation and causes a marked imbalance in the haemostatic system of the mother and the neonate. The aim of this study was Comparison of hematological parameters in newborns of mothers with and without hypertension.

Material and Methods: This case–control study included 30 newborns of mothers with PIH and 30 newborns with normotensive mothers matched for age and sex as a control group. The ombelical cord blood samples were collected from all newborn and complete blood count and ferritin levels were estimated.

Results: The mean corpuscular volume, mean corpuscular hemoglobin, red cell distribution width, mean platelet volume and platelet distribution width were higher in the newborns of hypertensive mothers compared to the control group, and total white cell counts, thrombocyte counts and ferritin level were lower. The mean of red blood cell count, hemoglobin and hematocrit was higher in newborns of hypertensive mothers compared to the control group, but the difference was not significant.

Conclusion: Newborns of hypertensive mothers should be carefully evaluated and monitored in terms of hematologic abnormalities. Complete blood counts can be used as significant parameters for early diagnosis of possible complications.

Keywords: Infant, Hypertension, Blood Parameters, Pregnancy
Corresponding author Email address: rezaeifar.alireza@gmail.com

ID:994

Cisplatin-modified SiO2 and SiOC nanocomposites: A smart nanocomposite system for controlled drug loading and release

Mojgan Zare[1], Saeed Rezaei-Zarchi[1]
[1] University of Science and Arts of Yazd

Objective: Ovarian cancer is the 8th common cancer in women and is the 5th leading cause of mortality from cancer among women in the United States of America. In this research, surface modified SiO2 and SiOC nanoparticles were characterized for cisplatin (CP) loading.

Material and Methods: SiOC nanoparticle was made by using sol-gel method and SiO2 was made by using Thermal decomposition and were surface-modified with N-(3-dimethyl aminopropyl)-N' ethylcarboimide hydrochloride (EDC) and 1,1' carbonyl diimadazole (CDI) for better drug entrapment. Cisplatin loading on nanocomposites was carried out by oil-in-water emulsion method. The copolymers were evaluated by FTIR, UV-Vis absorption by Nanodrop, and electron microscopy. Human epithelial ovarian cancer cells of A2780 type were cultured in RPMI with 10% FBS and treated with synthesized copolymer system.

Results: The dialysis-based UV-Vis absorbance results fort cisplatin release from SiO2 and SiOC nanoparticles at 37 °C and pH 7.4 (body's physiologic temperature and pH) and, 42 °C and pH 6.5 (temperature and pH of cancer microenvironment) have shown that SiOC-CDI with 1 mg CP showed 91.18% drug release at pH 6.5 after 6 h 42 oC, SiO2-CDI (1 mg CP) exhibited 97.3% drug release at pH 6.5 and 42 oC after 48 and 72 h, respectively, which shows that this nanocomposite could have the ability of controlled drug release after 48-72 h, which is a good property for a nanocomposite based drug carrier system.

Conclusion: The present results show that the CP-loaded polymer modified SiO2 and SiOC nanocomposite systems showed effective drug loading and controlled-release capacities, which can be exploited in the drug delivery of cisplatin for cancer treatment, which is the next aim of this project.

Keywords: SiO2, SiOC, Controlled release, Biodegradable nanoparticles, EDC

Corresponding author Email address: mojdezare9292@gmail.com

ID:996

Role The electrolyte imbalance on manitoring infection

Laleh Beigi[1], Shabnam Eivany[1]
[1] Al zahra Clinical laboratory in Isfahan

Objective: Electrolyte imbalance was used as indicator of status patients. So, measure Na+, K+ is a routine method during course of disease and it's cure. Infection to various pathogens is a common problem in wold. Role of monitoring electrolyte during course infection doesn't well studied. The aim of this study is assessment amount of electrolytes during course infection.

Material and Methods: we measure Na+, K+ ions for 100 patient samples in fasting and nonfasting status. The results were assessed by SPSS software.

Results: In according of our results, Na+ ion level is increasing in fasting status. But this level return to normal level in nonfasting status.

Conclusion: Most patients with electrolyte imbalance are affected to TB. Tuberclosis bacteria influences on adrenal gland and Na+ level. So, it seems that electrolyte imbalance is influenced by this bacteria. for the accuracy of this hypothesis, It is needed to more study.

Keywords: Infection, electrolyte imbalance, K+ level, Na+ level, TB

Corresponding author Email address: sh.eivany50@gmail.com

ID:997

Association of Wnt10b gene expression with vascular endothelial growth factor (Vegf) in subcutaneous adipose tissue of 3 groups of people with different BMI

Sara Pourdashti[1], S.ZahraBathaei[1], S.hamid Yaghoti[2], Mohammad Taha Jalali[2], Mohammad Reza Soroush[3]
[1] Department of Clinical Biochemistry, Faculty of Medical Science, Tarbiat Modares University, Tehran, Iran
[2] Department of Clinical Biochemistry, Faculty of Para Medical Science, Jundishapour University, Ahvaz, Iran
[3] Department of General Surgery, Faculty of Medical Science, Tehran university of Medical Science, Tehran, Iran

Objective: Hypoxia, caused by deficiency of angiogenesis, is a key factor in linking obesity to its complication. Therefore, understanding the mechanism of angiogenesis regulation in adipose tissue can be useful in decreasing the complication of obesity. The Wnt signaling thought to be effective pathway in regulating of angiogenesis in adipose tissue. Thepurpose of the study was to investigate the association of Wnt10b (as a main protein of Wnt pathway) and Vegf gene expression in subcutaneous adipose tissue of people with different BMI (body mass index)
Material and Methods: Subcutaneous adipose tissues were gathered from 66 participants aged ≥ 20, who had undergone elective abdominal surgery. The subjects were placed in three groups based on BMI (body mass index). The Wnt and Vegf gene expression in subcutaneous adipose tissues was measured by Real-Time PCR.
Results: The result showed no different expression of Wnt and Vegf between three groups, however in all groups the expression of these two genes was associated positively with each other (Pearson correlation=0.73 P=0.00).
Conclusion: Our study indicated, the gene expression of Wnt10b and Vegf was associated and this result can be considered in future and in vitro study for determining the regulating mechanism of angiogenesis in adipose tissue.

Keywords: Adipose tissue, Gene expression, Wnt10b, Veg

Corresponding author Email address: s.pourdashti@modares.ac.ir

ID:1000

Four months of combined and compound morning training improves testosterone/cortisol ratio, adiponectin and insulin resistance in male students

M Karami[1]
[1] AJA university

Objective: The aim of the study was to assess whether combined and compound morning training (CCMT) can improve hormonal and metabolic profiles in healthy male students.
Material and Methods: Eighty-three male students were randomly put into two groups: experimental (n = 42) and control (n = 41). The experimental group participated in the selected (aerobic, balance, resistance and stretch) exercises with moderate intensity for 16 weeks, four sessions per week, a 40 min workout in the morning. Salivary testosterone and cortisol, serum adiponectin, insulin and lipid profile were determined in both groups before and after the intervention.
Results: Four months of training caused an increase in testosterone (85 ± 9.4 vs. 93 ± 9.7 pg/ml), adiponectin (11.35 ± 2.00 vs. 12.86 ± 1.97 ng/ml) and testosterone/cortisol ratio (0.006 ± 0.003 vs. 0.009 ± 0.004), as well as a reduction in cortisol (16.3 ± 6.15 vs. 12.4 ± 4.85 ng/ml) and insulin resistance (2.15 ± 0.52 vs. 1.79 ± 0.34), for the experimental as compared to their baseline data (P value <0.001). Furthermore, a moderate correlation between testosterone and adiponectin was revealed (r = 0.31, P value = 0.04).
Conclusion: This new training strategy successfully and meaningfully improved hormonal and metabolic parameters. The research proposed that CCMT can promote anabolic pathways. Favourably, the programme could be considered as a testosterone enhancer and cortisol reducer simultaneously.

Keywords: Adiponectin, Salivary cortisol, Salivary testosterone, Insulin resistance, Morning exercise

Corresponding author Email address: karami1999@gmail.com

ID:1003

Evaluation of seminal plasma zinc level in asthenozoospermic and normozoospermic men.

Mahsa Sadat Seyed Salehi[1], Maryam Shahhoseini[2], Bahar Movaghar[3]
[1] Department of Advance Science and Technology, Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran
[2] Department of Genetics, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, Tehran, Iran

[3] Department of Embryology, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, Tehran, Iran

Objective: Zinc is an essential trace element. The importance of zinc in sperm concentration, morphology and DNA integrity is well known. In limited number of studies association of seminal plasma zinc level and sperm motility have been evaluated and precise role of seminal plasma zinc in motion characteristics of sperm have not been fully understood. Therefore, the aim of this study is comparison of seminal plasma zinc levels between normal and low motility semen samples to elucidate the role of zinc in sperm motility.

Material and Methods: Semen samples of 200 men who refereed to Royan institute. Sperm motility were analyzed by CASA system and divided into normozoospermic group (N=100) and asthenozoospermic group (N=100) according to WHO 2010 criteria. Semen samples were centrifuged and the zinc level of seminal plasma was examined by spectrophotometry assay. Data were analyzed by independent T-test of SPSS software and Pearson correlation coefficient.

Results: The seminal plasma zinc level was significantly higher in normozoospermic group compared to asthenozoospermic individuals (P<0.05). Moreover, negative correlation was found between zinc level and sperm total and progressive motility in normozoospermic men. However only progressive motility exhibits negative correlation with zinc level in asthenozoospermic patients.

Conclusion: Our result indicated that the seminal plasma level of zinc is significantly lower in asthenozoospermic patients. Furthermore, seminal plasma zinc level showed negative correlation with progressive motility in both normal and low motility semen samples.

Keywords: Zinc, Asthenozoospermia, Sperm motility

Corresponding author Email address: mah.salehi8631@yahoo.com

ID:1005

Influence of heroin addiction on regulation of sperm DNA Packaging

Zohreh Nazmara[1], Morteza Koruji[1], Mohammad Najafi[2]
[1] Department of Anatomical Sciences, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

Objective: Prescription opioid narcotics as the well-known toxins may be involved in the male fertility and sperm parameters also decrease with the use of heroin. Use of illicit drugs appears to have a negative impact on fertility, though more in-depth research in this area is required to make a clear link. The aim of this study was to investigate the effects of heroin on histone-to-protamine transition ratios, gene and protein expression level of protamines and expression level of miRNA-122 as a possible regulation factor in active heroin users.

Materials and Methods: Semen was collected from 43 healthy men and 24 heroin addicted men Aniline blue staining as an assessment of nuclear condensation status, real-time qPCR for assessment of expression level of protamine mRNA and miRNA-122, and Western-Blot analysis for assessment of protamine protein were performed to provide the relationship between addiction and the parameters. The differences between groups were determined by independent-samples t-test and Man-Whitney U. The partial correlation and regression analyses were performed between heroin consumption and other parameters. P-value ≤ 0.05 was proposed to be significant.

Results: Our finding showed that sperm histone-to-protamine transition was significant difference in addicted group vs. non-exposed ones (P≤ .05). Real-time qRT–PCR assessment showed that there was a significant difference in expression level of P1 and P2 mRNA and miRNA-122 (P≤ .05). Western Blot assessment revealed a statistically significant decrease in P2 protein amounts in addicted group. We also observed that duration of drug dependence is correlated with sperm concentration. Partial correlation analysis showed a negative relationship between miRNA-122 and the amount of PRM-2 gene expression levels.

Conclusions: We concluded that heroin consumption affect sperm chromatin condensation. In addition heroin may decrease protamine protein and mRNA levels by alteration of miRNA-122.

Keywords: Sperm DNA Packaging, Protamine, miRNA-122, Addiction, Heroin

Corresponding author Email address: koruji.m@iums.ac.ir

ID:1006

The Effect of Heroin Addiction on Human Sperm Parameters, DNA fragmentation, and Serum Sexual Hormone Levels

Zohreh Nazmara[1], Morteza Koruji[1], Mohammad Najafi[2]
[1] Department of Anatomical Sciences, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
Objective: To investigate the effects of heroin on sperm parameters, DNA fragmentation in mature sperm, and serum reproductive hormone levels in active heroin users.
Material and Methods: Semen and blood samples were collected from 25 men who used only heroin for at least 12 months and the same number healthy men who did not use any drugs and did not suffer from infertility problems. Computer-based analysis,flow cytometry acridine orange test (FCM-AOT) of sperm chromatin integrity as an assessment of semen quality , and
Hormones assessment were performed to provide valuable new information on the relationship between addiction and semen profile and serum reproductive hormone levels.
Results: Our finding showed that semen PH (7.8 vs. 7.75), sperm motility (42.93 ± 3.89% vs. 68.9 ± 2.68%), and viability (73.27 ± 3.85% vs. 86.48 ± 1.05%), and DNA fragmentation index (DFI) (44.5±13.17 vs. 10.74± 2.6) were significant differences in addicted group vs. non-exposed ones ($P \leq .05$). In addition, serum sex hormone levels were not significantly differed between groups. There was a correlation between the amount of daily heroin consumption and LH level. We also observed that duration of drug dependence is correlated with sperm abnormalities.
Conclusion: We concluded that heroin consumption affect sperm maturities such as DFI and impair semen profile in general and particularly sperm morphology and motility. Heroin may be considered as one of the idiopathic male infertility reason.
Keywords: Addiction, Heroin, DNA freagmentation, sexual hormones, sperm parameters
Corresponding author Email address: koruji.m@iums.ac.ir

ID:1008

Evaluation the effects of pyrazole with new substitutes on the proliferation of MDA-MB-468 breast cancer cells
Zahra Shahsavari1, Maryam Ashourpour[2], Faranak Kazerouni[1], Mohsen Amini[3]
[1] Department of Laboratory Medicine, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[3] Medical Chemistry Department, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran
Objective: Triple negative breast cancer is an aggressive form of breast cancer with limited treatment options and is without proven targeted therapy. Pyrazole moiety represents an important category of heterocyclic compound in pharmaceutical and medicinal chemistry. A navel series of 11different pyrazole substitutes have been evaluated for their potential anti-proliferative activity against human breast tumor cell line, MDA-MB-468.
Material and Methods: MTT assay, apoptosis assay by Annexin V-PI staining via flowcytometry, caspase-3 activity and generation of ROS using fluorometric assay were carried out to determine anticancer effects of the compounds on MDA-MB-468 breast cancer cell line.
Results: Some of the compounds, specifically 12 and 18, showed potent growth inhibition against MDA-MB-468 cells in a dose-dependent manner compared with AGO-1522 normal fibroblast cells, with IC50 values in the range of 8.36 and 13.25 μM, and an increase in annexin V- and annexin V/PI-positive cells. Moreover, the compounds led to increased levels of reactive oxygen species (ROS) and caspase-3 activity.
Conclusion: Our data indicate that these derivatives may present promising chemotherapeutic agents, via targeting apoptosis by ROS production.
Keywords: Triple Negative Breast Cancer; New Pyrazole Substitutes; Apoptosis; ROS
Corresponding author Email address: maryamashourpour1371@gmail.com

ID:1009

The Study of DNA methylation patterns of prodynorphin gene (PDYN) promoter in morphine tolerant rats
Sara Edalat Behbahani[1], Zahra Khoshdel[1], Mir Behrad Aghazadeh Ghadim[1]
[1] Department of Biochemistry and Research Center for Psychiatry and Behavioral Sciences, Shiraz University of Medical Sciences, Shiraz, Iran
Objective: Repeated administration of morphine may result in the development of morphine tolerance, which involves the altered expression of numerous genes, including PDYN in the lumbar spinal cord. In the light of this fact, the present study

evaluated the expression of PDYN gene at mRNA level in the spinal cords of tolerant rats. We also assessed the methylation status of the promoter region of this gene.
Material and Methods: The Tolerance was induced by administration of intrathecal (i.t) morphine (22nmoles) once daily from days 1-10. It should be mentioned that nociceptive testing was performed daily by the tail-flick test. Moreover, the real-time PCR was performed to assess changes in the expression of PDYN gene. Additionally, the status of gene promoter methylation was determined by MS-PCR on DNA samples modified by sodium bisulfite.
Results: Our results revealed that the level of PDYN mRNA was significantly up-regulated by the repeated morphine administration as compared to those in the saline group. Furthermore, we did not find significant differences between methylation status of promoter regions of the PDYN gene either in morphine tolerant rats or in saline-injected animals.
Conclusion: In summary, our data suggest that morphine tolerant rats show increased mRNA expression of the PDYN gene in the lumbar spinal cords. The evidence also suggests that the methylation status of PDYN promoter region in the spinal cord has not contributed to morphine tolerance.
Keywords: Morphine tolerance, PDYN, Epigenetic, Methylation
Corresponding author Email address: khoshdz37@yahoo.com

ID:1010

Trace Elements in Iranian Patients with Gaucher Disease
Hadi Mozafari[1], Mohammad Taghikhani[2], Azam Afsharnaderi[2], Shohreh Khatami[3]
[1] Department of Clinical Biochemistry, Medical School, Kermanshah University of Medical Sciences, Kermanshah, Iran
[2] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[3] Department of Biochemistry, Pasteur Institute of Iran, Tehran, Iran
Objective: Gaucher disease (GD) is the most frequent autosomal recessive disorder of glycolipid storage. Despite of the main roles of trace elements on hematopoiesis, oxidative stress and etc, these parameters are not well studied in GD. The aim of present study was the evaluation of zinc (Zn) and copper (Cu) as two main functional, and efficient trace elements in human.
Material and Methods: Thirty three gaucher patients and 70 age and sex matched healthy controls from different regions of Iran participated in the study. The fluorometric assays for measuring the Glucocerebrosidase and Chitotriosidase activity were performed. The levels of Zn and Cu were determined by atomic absorption/flame emission spectrophotometer. Data were analyzed using SPSS 22.0 software.
Results: The significant differences in both serum Zn and Cu levels were found in patients with GD (64.55 ± 23.44 and 70.48 ± 18.14, respectively) compared to the normal subjects (83.01 ± 21.44 and 96.53 ± 19.56; P<0.001). In addition, GD treated with enzyme replacement therapy (69.58 ± 23.24) had insignificant higher levels of Zn than those were untreated (55.75 ± 21.98; P>0.05).
Conclusion: Both Zn and Cu blood concentrations were decreased in treated or untreated GD patients. Possibly, supplements of Zn and Cu will be useful and essential for GD patients.
Keywords: Gaucher Disease, Zinc, Copper
Corresponding author Email address: hmozafari2003@yahoo.com

ID:1012

Effects of P-coumaric acid in presence of low level laser irradiation on human melanoma skin cancer cells
Maryam mohammadi[1], Zahra kianmehr[2], Khatereh Khorsandi[1]
[1] Photodynamic Research Group, Medical Laser Research Center
[2] Department of Biology, Faculty of Sciences, North Tehran Branch, Islamic Azad University
Objective: Melanoma is malignant form of skin cancer and is associated with a high mortality rate. Therefore, early diagnosis and surgical intervention play a key role in treatment. One of the significant strategies for the prevention and treatment of various cancers is the use of plant compounds. Phenolic compounds are important category of natural antioxidants in plants that have important biological activities, such as antioxidant and anticancer effects. In this study, the effect of P-coumaric acid as phenolic compound along with low level laser therapy was investigated on human melanoma cell line A375.
Material and Methods: Human melanoma cancer cell line A375 was exposed to irradiated with a red laser source (660 nm; power density: 30 mW cm-2) and another was kept in the dark for 90 sec. After treatment with laser, the cells were treated

with different concentrations of P-coumaric acid (0-1000 µg/mL) for overnight. The MTT assay was used to determine the cell viability. The morphology of cells was studied using inverted light microscopy.
Results: The results showed that early treatment with low level laser and then P-coumaric acid reduced the survival of the melanoma cancer cells more than the early treatment with P-coumaric acid and then low level laser irradiation. ***Conclusion*:** This study showed that low level laser therapy alone is not able to kill melanoma skin cancer cells. However, application of low level laser therapy along with P-coumaric acid, reduced the cell viability. The morphology study of the cells has confirmed the MTT results.
Keywords: Human Melanoma Skin Cancer, P-Coumaric Acid, Low Level Laser Therapy (LLLT), Cell viability
Corresponding author Email address: researcher.mari@gmail.com

ID: 1014
Study of the effect of different doses of zinc oxide nanoparticles on liver marker enzymes
Saeedeh Zaki[1], Pirouz Pourmohammad[2], Reza Alipanah Moghadam[2]
[1] Department of genetics, Tehran payame noor university, Tehran, Iran
[2] Department of Biochemistry, Ardabil University of Medical Sciences, Ardabil, Iran
Objective: Liver is the largest internal organ in human body and has a surprising role in the maintenance, performance and regulating homeostasis of the body. The liver is the main source of metabolizing toxic substances in the body. Therefore, damage to this organ leads to increased serum levels of liver enzymes (AST & ALP). Nanoparticles are very small sized particles with enhanced catalytic reactivity. Due to the widespread use of zinc oxide nanoparticles (ZnO-NPs) and their possible unwanted effects in vital organs, the purpose of this study was to compare the severity of liver toxicity induced by different doses of ZnO-NPs, in order to select the appropriate dose with low toxicity for the liver.
Materials and Methods: In this experimental study, 24 adult male Wistar Rats were randomly divided into three groups (8 animals per group). Group1: Control group that received normal saline and groups 2 and 3 that received ZnO-NPs by daily intraperitoneal injections (6 times/week) for two weeks at a dose of 25 and 50 mg/kg (bw) respectively.
Result: The results showed that injection of ZnO-NPs in both 25 and 50 mg/kg leads to an increase in serum levels of AST (Aspartate aminotransferase) and ALP (alkaline phosphatase). But this increase at the dose of 50 mg/kg was more than the 25 mg/kg.
Conclusion: The results of this study showed that ZnO-NPs at the dose of 25 mg/kg have a lower toxicity than 50 mg/kg on the liver organ.
Keywords: AST, ALP, wistar rat, zinc oxide nanoparticles
Corresponding author Email address: S.pirouz@ymail.com

ID:1015
Investigating the thermoinactivation mechanism of chondroitinase ABC I
Asma Kheirollahi[1], Molood Bagherieh[1], Azam Karkhaneh[2], Abolfazl Golestani[1]
[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran
[2] Reference Laboratory, Social Security Organization, Tehran, Iran
Objective: Chondroitinase ABC I (cABCI) is a bacterial lyase that specifically digests chondroitin sulfate and/or dermatan sulfate glycosaminoglycans. Medical application of this enzyme has been limited by its thermal instability as reported in some studies. A variety of chemical modifications, including deamidation of Gln and Asn, are known to cause irreversible thermal inactivation of enzymes at high temperatures. Non-enzymatic deamidation is a hydrolytic reaction resulting in a change in the primary structure, which in turn may affect secondary and tertiary structures of proteins. In the present study, to elucidate the mechanism of irreversible thermal inactivation of cABC I, the extent of deamidation of amino acid residues in the proteins was determined.
Material and Methods: Ammonia liberated in the deamidation reactions was determined using glutamate dehydrogenase. Production of ammonia during thermal inactivation of cABC I was assessed by incubating samples of the enzyme in 50 mM phosphate buffer, pH 6.8 in sealed tubes, at 40 °C for 15 min. The tubes were then cooled, opened and the amount of dissolved ammonia was determined enzymatically using glutamate dehydrogenase.
Results: Our results showed that the enzyme completely lost its catalytic activity after 15 min incubation at 40 °C. However, the amount of ammonia during thermal inactivation of cABC I was minor.

Conclusion: Based on the obtained results we can conclude that the deamidation is not the major contributor to the thermal inactivation process of cABC I.

Keywords: Chondroitinase ABC I, Deamidation, Thermal inactivation

Corresponding author Email address: kheirollahi.asma@yahoo.com

ID: 1016

Assessment the structural model of antiEGFR-ZZ-PE38 under analogous of physiological condition

Moein iranmanesh[1], Fatemeh Khademolhoseini[1], Nazanin Gholampour Faroji[2], Aliakbar Haddad Mashadrizeh[3], Ali Eshaghi[4]

[1] Pharmaceutical Research Group, Khayyam Bioeconomy Institute, Mashhad, Iran

[2] Structural biology and Bioinformatics Research Group, Khayyam Bioeconomy Institute, Mashhad, Iran

[3] Cell and Molecular Biotechnology Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

[4] Department of Biology, Islamic Azad University, Khorasan Razavi, Mashhad, Iran

Objective: Expansion the cancer therapy methods has leading to development a range of monoclonal antibodies and immunotoxins. In this regard, anti-GFR-ZZ-PE38 immunotoxin was introduced since 2008 up to 2013. So, structural and functional assay of this drug at physiological like condition, could be confirm the literature sequence of it for optimization, which are considered in this study based on advanced computing methods.

Material and Methods: NCBI, Uniprot and RCSB were subjected for achievement to the sequences and structures of proteins. Modeller was used for antigen modeling and assembling of the fragments of drug. ERRAT, Verify 3D and RAMPAGE were employed to determine the quality of protein structure. Stability assay of drug was performed by Gromacs via Gromos force field at 310 K during 20 ns. Functionality properties of drug was evaluated via its affinity to corresponding antigens and epitope mapping by HADDOCK and IDEB, respectively.

Results: Literature review led to obvious a sequence with 744 amino acid in the length of anti-GFR-ZZ-PE38 including scfv-cetuximab part, ZZ sequence with penetrance capacity, and modified toxin of exotoxin A of the Pseudomonas which are conjugate with flexible linkers. On the other hand, modeling led to represented structures of fragments with suitable quality. Fragments assembling led to the appearance of 10 structures of the drug. Nonetheless, one model among them showed appropriate stability and immunogenicity at physiological like condition. Moreover, functional assay of the drug based on affinity of it to corresponding antigens showed significantly affinity to EGFR related to other antigens.

Conclusion: Generally, the results of this study led to the presentation of a model of antiEGFR-ZZ-PE38 with is suitable in the structure and function. So, this model can be used in the experimental state. Moreover, this model is provide opportunity for its optimization, which are considered in our group.

Keywords: Cancer, Monoclonal antibody, Immunotoxin, antiEGFR-ZZ-PE38, Simulation

Corresponding author Email address: iranmaneshmoein1998@gmail.com

ID: 1017

Structure-function relationship of RHO kinase I

Soheila Rezaei Adariani[1], Reza Ahmadian[1], Badri Nath Dubey[1], Ehsan Amin[1], Radovan Dvorsky[1], Lothar Gremer[1], Mohammad Akbarzadeh[1], Marcel Buchholzer[1], Jens M. Moll[1]

[1] Institute of Biochemistry and Molecular Biology II, Heinrich-Heine University, Düsseldorf, Germany

***Objective*:** The serine/threonine Rho-associated protein kinases (RHO kinases I/II), which are key determinants in many fundamental cellular functions, serve as distinguished therapeutic targets in the treatment of a wide variety of diseases, particularly cardiovascular diseases. In contrast to the terminal globular kinase domain and the PH-C1 tandem little is known about the sequence -structure-function relationship of the central amphipathic α-helical segment of the RHO kinase proteins. Thus, a major aim of this study was to elucidate the structural basis of the entire segment of RHO-kinase I by using multiple biophysical platforms, including multi-angle light scattering (MALS), analytical ultracentrifugation (AUC), small-angle X-ray scattering (SAXS), negative stain electron microscopy (EM), and X-ray crystallography. The obtained results together

with structural reconstitution of full-length RHO kinase I revealed that a highly elongated coiled-coil structure may switch between a dimeric and a tetrameric state. These and unexpected data obtained from measurements of enzymatic activity of full-length RHO-kinase I about the role of RHOA as a RHO kinase activator will be presented and discussed.

Keywords: Rho kinase, ROCK, Serine/threonine kinase, Coiled-coil, Structure function relationship

Corresponding author Email address: reza.ahmadian@uni-duesseldorf.de

ID: 1020

Evaluating the Salivary cathepsin enzyme level under Psychological Stress and its Relationship with Rumination and Personality Traits.

Shahdokht Rastegar[1], Mohammad Aberomand[1]
[1] Department of Clinical Biochemistry, Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: Salivary enzymes are used as a noninvasive biomarker to assess the activity of the sympathetic-adrenal-medullary system. The aim of this study was to evaluate the salivary cathepsin enzyme level under psychological stress and its relationship with rumination and the personality traits.

Material and Methods: In a cross-sectional study a total of 58 medical students, who wanted to participate in the final exam, were selected by simple random sampling. Two months before the exam, in the basal conditions, the NEO Inventory short form, and the Emotional Control Questionnaire (ECQ) were completed. Saliva samples were taken from students in both the basal conditions and under exam stress. Salivary enzymes levels were measured by photometry and data was analyzed using paired samples t-test, Pearson correlation analysis and Stepwise regression.

Results: A significant difference was found between the mean of Salivary enzymes levels in the rest and under exam stress. Also, we found a significant correlation between Salivary level enzyme level with neuroticism (P<0.01), agreeableness (P<0.05) and rumination (P<0.01), explaining 49% of the variance of Salivary cathepsin enzyme level under stress exam.

Conclusion: According to this study, the salivary cathepsin enzyme level may increase in individuals with traits of neuroticism, agreeableness and ruminative thoughts in response to psychological stressors (e.g. exam). Also, measuring salivary cathepsin enzyme level could be used in assessing physiological responses to stress, as a noninvasive method.

Keywords: Salivary, cathepsin, rumination, personality traits, stress

Corresponding author Email address: shahdokht63rastegare@gmail.com

ID: 1023

Role of pancreatic duct cell in beta cell neogenesis.

Shahdokht Rastegar[1], Ramin Tavakoly[1], Esmaeel Ebrahimi[1]
[1] Department of Biochemistry, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Objective: Diabetes mellitus is known as main threatening for health society. Main characteristic of type 2 diabetes is hyperglycemia, which is associated with the selective destruction of pancreatic beta cells, these cells as the main center of blood glucose preservation at normal level. Proliferation and neogenesis are two factors for preservation of beta cell mass. Continues production of beta cell is a therapeutic strategy to keep normal blood glucose and pancreatic duct cell can be one of the sources of new beta cells.

Material and methods: Review method for better access to relevant articles, we searched keywords such as beta cell neogenesis; diabetes mellitus; duct cell and compensatory mechanisms in databases of Wiley; Scopus; Science Direct and PubMed. Then obtained papers from 1990 to now according to the year publication were classified. Indeed; our goal was evaluation of articles based on chronological order.

Results: In the study, reviewed the role of pancreatic duct cell in the production of beta cell based on a chronological. Reviewed show one of the sources of beta cell production is pancreatic duct cells. They have the ability to convert beta cells in the postnatal period and even adulthood. Pancreatic duct-derived cells can be a potential source for the production of beta cells. Indeed they acquire mesenchymal characteristics and then differentiate into cells with potential of insulin secretion.

Conclusion: In final, we concluded given that in obese people and patients with diabetes there are probability of duct cell replication and beta cell neogenesis under obesity and diabetes especially in the early stages of diabetes.

Keyword: Diabetes, Pancreatic duct cell, Beta-cell, neogenesis
Corresponding author Email address: shahdokht63rastegare@gmail.com

ID: 1026

Association between polymorphism of SIRT1 gene and changes in BMI and renal complications in patients with type 2 diabetes.

Ramin Tavakoly[1], Shahdokht Rastegar[1], Mohammad Taha Jalali[1]
[1] Department of Biochemistry, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Objective: Type 2 diabetes mellitus (T2DM) is a complex multifactorial and polygenic metabolic disorder. SIRT1 has an essential role in insulin signaling pathway and energy homeostasis. Several studies have demonstrated that calorie restriction leads to change expression of SIRT1 in various tissues such as kidney. We aimed to investigate whether rs3758391 variant was associated with diabetic nephropathy, measures of kidney function and BMI in a population with and without diabetes in southwest Iran.
Material and Methods: The study composed 132 patients with T2DM and compared to normal subject (n=66). Subjects were genotyped for rs3758391 polymorphism by PCR-RFLP method. Fasting blood glucose, HbA1c, Urea, creatinine, and urinary albumin were measured using a biochemistry analyzer. Serum cystatin C levels were measured by ELISA.
Results: The genotype distribution and allele frequencies were significantly different between the entire diabetic group and healthy subjects (p value<0.05). The odds ratio (OR) for TT genotype and T allele carrier were 5.7 (95% confidence interval (CI) 2.2-14.9, p<0.001) and 4.01(2.1-7.5) (95% CI 2.1-7.5, p<0.001) for T2DM, respectively. The OR for TT genotype and T allele carrier were 3.96 (95% CI 1.5-10.0, p=0.003) and (OR: 3.0,95% CI1.4-6.4, p=0.003) for diabetic nephropathy, respectively. The OR for TT was 2.9 (95% CI 1.1-7.5, p=0.02) for decreased eGFR below 60 ml/min/1.73m2.
Conclusion: Our results confirm that the risk allele of the rs3758391 SNP in the SIRT1 gene is strongly associated with T2DM and diabetic nephropathy. The TT genotype was also associated with decreased eGFR.
Keywords: Type 2 diabetes, diabetic nephropathy, sirtuin, SIRT1, rs3758391 polymorphism.
Corresponding author Email address: tavakoliramin42@ymail.com

ID: 1027

Study of correlation between changes in lipid oxidation status and glutathione peroxidase activity with levels of body iron in patients with iron deficiency anemia.

Ramin Tavakoly[1], Shahdokht Rastegar[1]
[1] Department of Biochemistry, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: Iron deficiency anemia is (IDA) a prevalent disorder among women in reproductive ages and can relate to oxidation situation in these women. The aim of this study was to investigate whether the malondialdehyde levels and activities of glutathione peroxidase (GPx) can be affected during iron deficiency anemia in reproductive aged women.
Material and Methods: In this clinical trial study, 30 women with IDA, 30 women with Iron deficiency (ID) and 30 healthy controls were studied. The concentration of plasma malondialdehyde was measured as a lipid oxidation byproduct. We also evaluated the activities of glutathione peroxidase in all groups. Statistical analysis for continuous variables was performed by the calculation of one-way analysis of variance (ANOVA).
Results: The number of people who completed the study in each group was thirty. Mean plasma concentration of MDA was significantly higher in IDA group than ID group and healthy group women (5.18±0.46µmol/L, 3.4±0.34 µmol/L and 2.75±0.33 µmol/L respectively (p-value<0.05)). The mean glutathione peroxidase activity in IDA groups was significantly lower than healthy group women (1.4±0.2 (U/gHb), 2.91±0.12 (U/gHb) and 2.99±0.24 (U/gHb) (p-value < 0.05)). The concentration of MDA in IDA and ID group was negatively correlated with levels of hemoglobin (Hb), MCV and plasma ferritin (p-value <0.01 and p-value <0.05).in healthy control subjects also there was a revers correlation between MDA concentration and these factors amounts (p-value <0.01). Also activity of glutathione peroxidase and those factors levels showed significant positive correlation in every group (p-value<0.01 and p-value <0.05).
Conclusion: Our findings showed that lipid peroxidation increases in women with iron deficiency and iron deficiency anemia. And that activity of glutathione peroxidase decreases in iron deficiency anemia but not in iron deficiency and it was also revealed not significant correlation between plasma free iron levels with MDA concentration and Gpx activity.
Keywords: Anemia, iron deficiency, malondialdehyde, glutathione peroxidase, lipid peroxidation

ICBMB2018.COM

Corresponding author Email address: tavakoliramin42@ymail.com

ID: 1028

CE-SELEX Selection of ssDNA aptamer for inhibition proprotein convertase subtilisin/kexin 9

Rouhollah Sattary[1], Abbasali Palizban[1], Hossein Khanahmad[2]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Department of Molecular Biology and Genetics, Faculty of Medicine, Isfahan University of Medical Sciences, Iran

Objective: Familial hypercholesterolemia (FH), a common genetic disease, is known with the increase in levels of LDL-C and risk of premature cardiovascular disease because of deficiency in uptake of LDL-C by LDLR. Proprotein convertase subtilisin/kexin type 9 (PCSK9) enzymes as the third gene that causes familial hypercholesterolemia (FH), plays a vital role in the metabolism of LDL-C through interaction with LDLR and then its destruction, which result in elevate plasma levels of LDL-C.

Material and Methods: In this study, for a recombinant molecular target, PCSK9 was performed capillary electrophoresis (CE) SELEX selection. A library of ssDNA was incubated with PCSK9. Sequences bound to PCSK9 were separated using CE, PCR amplified, and purified, generating an enriched ssDNA pool appropriate for further rounds of selection. We also used PCSK9 [biotinylated]-LDLR binding assay kit to evaluate the selected aptamers.

Results: After capillary electrophoresis separation, PCR amplification, ssDNA generation, cloning and sequencing, we successfully confirmed an aptamer, specifically targeting PCSK9. ssDNA aptamer with nanomolar IC50 and dissociation constants was selected after only three rounds.

Conclusion: Our results indicate that CE-SELEX technology is an efficacious method for selecting and designing a specific protein-bound ssDNA, which can be used to treatment patients with hypercholesterolemia by inhibition PCSK9, in spite of the fact that more works are needed.

Keywords: PCSK9 enzyme, familial hypercholesterolemia (FH), CE-SELEX, DNA aptamer

Corresponding author Email address: setarehbadi@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID: 1031

Evaluating of induction of apoptosis by Cornus mass L. extract in the gastric carcinoma cell line (AGS)

Farzaneh Sadat Hosseini[1], Mohammad Reza Hajizadeh[1,2], Mojgan Noroozi[2], Mehdi Mahmoodi[1,2]
[1] Department of Clinical Biochemistry, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Molecular Medicine Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran

Objective: Natural products and derivatives of medicinal plants can play an important role to cure cancer. Present study was aimed to determine the effect of Cornus mass L. extract on the induction of apoptosis in AGS gastric carcinoma cell line in compared to L929 cells.

Material and methods: In this experimental study, AGS and L929 cells were cultured and treated with different concentrations (0–10 mg/ml) of Cornus mass L. extract for 48 and 72 hours. Cell proliferation was assessed by MTT assay. The percentage of apoptotic cells was determined by flow cytometry. Data were analyzed using one-way ANOVA. Differences with a p value less than 0.05 were considered significant.

Results: There was a significant difference among various concentrations of extract when cells were treated for 48, 72 h decreased cell viability in AGS cells compared to L929 cells in a dose and time-dependent manner (P < 0.05). This extract also displayed approximately several-fold enhanced anti-cancer potency in AGS compared to L929 cells. The IC50 value in AGS cells (evaluated after 48,72h) of extract against AGS cells was 5/44, 2/44 mg/ml ($p \leq 0.05$). Flow cytometry results exhibited an obviously significant augmentation in apoptotic AGS cells compared to L929 cells.

Conclusion: Our results implicate the fact that Cornus mass L. extract acts as a novel inhibitor of cancer proliferation in in vitro. This may results in developing a promising therapeutic agent for the treatment cancers.

Keywords: Apoptosis, Gastric cancer, Cornus mass L. extract, L929 cells, AGS cell line

Corresponding author Email address: hosseinifarzaneh89@gmail.com

ID: 1034

Fumigant properties of nano-encapsulated essential oil form of essential oils of Artemisia haussknechtii as Biopesticides in Insect-pest Managemen

Parvaneh Pakravan[1], Masumeh Khanahmadi[2], Abbas Hemati Azandaryani[3]
[1] Department of Chemistry, Zanjan Branch, Islamic Azad University, Zanjan, Iran
[2] Department of Chemistry, Kermanshah Branch of ACECR, Kermanshah, Iran
[3] Nano Drug Delivery Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran

Objective: The Artemisia species are one of the most popular plants, which are used for the management of diseases such as hepatitis, malaria, cancer, inflammation and infections by fungi, bacteria, and viruses. Nano-capsules containing pesticides could provide more precise, controlled and effective use of pesticides and therefore potentially reduce the overall quantities of pesticide used. In this study, the insecticidal activity of nano-encapsulated form from Artemisia Haussknechtii essential oils was investigated.

Material and methods: Interfacial compression polymerization method was investigated for nano-capsules preparation. The effects of emulsifier composition, co-emulsifier, and temperature on the properties of the nano-capsules were investigated. The scanning electron microscopy of particles proved the preparation of nanoparticles. Fumigant toxicity of Nano-encapsulated form of Artemisia Haussknechtii essential oils was evaluated against Tribolium castaneum and Sitophilus oryzae.

Results: It was demonstrated a mortality of 100 percent of Sitophilus oryzae in the concentration of 166ppm. With the alteration of concentrations of the oil and extracts and exposure time, the variety of fumigant toxicity had shown due to the volatility of extract. The results demonstrated that A. haussknechtii essential oil and its nano-encapsulated form could play a significant role in the formulation of essential oil-based insecticides for the management of stored-grain insects.

Conclusion: New formulation and techniques such as nano-encapsulated form of essential oils and controlled release technique were applied to overcome the rapid degradation of essential oils for using as pesticides.

Keywords: Artemisia Haussknechtii; Essential oil; Extract; Fumigant toxicity; Nano-encapsulated

Corresponding author Email address: pakravanparvaneh20@gmail.com

ID: 1035

Coenzyme Q10 increases SIRT1 gene expression in the liver of STZ induced diabetic rats

Fatemeh Samimi[1], Farideh Jalali Mashayekhi[2], Maryam Baazm[3], Mohammad Taghi Goodarzi[4]
[1] Student research committee, Arak university of medical sciences, Arak, Iran
[2] Department of Clinical Biochemistry, Arak University of Medical Sciences, Arak, Iran
[3] Department of Anatomy, Arak University of Medical Sciences, Arak, Iran
[4] Research Center for Molecular Medicine, Hamadan University of Medical Sciences, Hamadan, Iran

Objective: Oxidative stress, through the production of reactive oxygen species (ROS), has been proposed as the root cause underlying the development of diabetes complications. Various factors, such as sirtuins (silent information regulators or SIRTs) are associated with these complications. Antioxidant therapy may be effective in decreasing the risk of diabetic complications. This study was carried out to investigate the effects of Coenzyme Q10 on the expressions of SIRT1 gene in the liver of STZ-induced diabetic rats.

Material and methods: A total of 30 male rats were randomly divided into five groups; groups 1 and 2 as control received saline or Sesame Oil respectively (as vehicle), group 3 received CoQ10 (10 mg/kg), group 4 was diabetic rats (induced with STZ:55 mg/kg) and group 5 diabetic rats that received CoQ10 (10 mg/kg) for 5 weeks. At the end of experiments, liver tissue was collected from all rats. The SIRT1 gene expression was determined by qRT-PCR. In addition, liver malondialdehyde (MDA), as an index for lipid peroxidation, was estimated by colorimetric method.

Results: Results of qRT-PCR showed that gene expression of SIRT1 significantly decreased in the liver tissue of diabetic rats compared to control groups. Our data revealed that treatment with CoQ10 significantly increased levels of SIRT1 mRNA compared with the diabetic rats. The treatment of diabetic rats with CoQ10 also showed a significant decrease in the MDA level.

Conclusion: The present data illustrated that diabetes - induced oxidative stress may be causally related to the downregulation of SIRT1 mRNA. Thus, it is possible that CoQ10 with its effect on gene expression can have antioxidant effects, thus decreasing diabetic complications.

Keywords: Coenzyme Q10, Diabetes mellitus, Gene expression, SIRT1, liver

Corresponding author Email address: sepide.md88@yahoo.com

ID: 1036

Association between Growth Hormone and Insulin-Like Growth Factor-1 Axis in two age groups

Hamidreza Joshaghani[1], afsaneh shafiei[2], ommolbanin younesian[2], mohammadreza afsharmanesh[2]
[1] Medical Laboratory Research Center, Golestan University of Medical Science, Gorgan, Iran
[2] Department of Clinical Biochemistry, Medical School, Golestan University of Medical Science, Gorgan, Iran

Objective: Human growth hormone (GH) is an endocrine hormone, secreted from the anterior pituitary.GH/GHR interaction stimulate production of peptide insulin-like growth factor-I (IGF-I) from liver. IGF-I synthesized by other extrahepatic tissues in small amounts. The IGF-I is key for developmental and postnatal growth. Serum Growth hormone (GH) and IGF-I levels are utilized as diagnosis biomarkers in GH-related disorders. The aim of the study was to investigate the relationship between serum levels of GH and IGF-I in two age groups.

Material and methods: A total of 108 persons entered in this study. Serum GH and IGF-I levels were measured using chemiluminescence technique on MAGLUMI 800 analyzer.

Result: The results indicated that the mean concentrations of GH and IGF-I were 1.88 ng/ml and 86.77 ng/ml. We also found that there was a negative correlation between GH levels and IGF-I levels (P-value – 0.076) for < 20 years age group and a significant positive correlation between GH levels and IGF-I levels (P-value 0.004) For ≥ 20 years age group.

Conclution: This data suggested that Serum GH levels did not predict serum IGF-I level in < 20 years age group, but Serum GH levels was useful to predict serum IGF-I level in > 20 year age group.

Keywords: GH, IGF-I, chemiluminescence.

Corresponding author Email address: a.sh9898@yahoo.com

ID: 1037

Sequence analysis of the outer membrane cytochrome c from UV induced Thiobacillus ferrooxidans

Saba Miri[1], Ezat Asgarani[1], Azadeh Rasooli[1]

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

[1] Department of Biotechnology, Faculty of Life Science, Alzahra University, Tehran, Iran
[2] Department of Biochemistry, Faculty of Sciences, Payame-e-Noor University, Tehran, Iran

Objective: This paper studies the effects of ultraviolet irradiation (UV) on the outer membrane cytochrome c (Cyc2) sequence in the mutated Thiobacillus ferrooxidans (T. ferrooxidans) which can affect the iron oxidation activity of the bacteria. Several membrane and soluble c-type cytochromes such as Cyc2, proposed to be involved in the respiratory pathway of FeII oxidation in T. ferrooxidans.

Material and methods: The bacteria irradiated with UV light for 180s and oxidation experiment was carried out with 5% pulp density ore powder. Then, DNA samples were obtained from original bacteria and mutated bacteria. cyc2 gene was amplified by using specific primers using HotStar HiFidelity PCR. Then, cyc2 fragments were extracted from agarose gel (1%) using gel purification kit and PCR products were sequenced.

Results: The results showed that the Eh of UV mutated bacteria and original bacteria reached to 586, 487¬mV respectively at the first 8h of the bioleaching process, while, the Eh value of negative control was 332¬mV. These results indicated that the oxidative activity of T. ferrooxidans is greatly improved by mutation. However, the UV irradiation has no significant effects on DNA sequence of cyc2 gene from mutated bacteria.

Conclusion: The improved oxidation rate of the mutant bacteria may be attributed to changes in regulatory regions or other carriers in the Fe2+ oxidation respiratory pathway, which need more detailed research to arrive at a solid conclusion.

Keywords: Thiobacillus ferrooxidans, Ultraviolet irradiation, mutation, cytochrome c

Corresponding author Email address: sabamiri70@gmail.com

ID: 1038

Associations between serum paraoxonase activity and APO-A and APO-B in subjects with different levels of HDL

Maryam Teimouri[1], Hashem Nayeri[1]
[1] Department of Biochemistry, Falavarjan Branch, Islamic Azad University, Isfahan, Iran

Objective: There is a strong inverse relationship between plasma high density lipoprotein (HDL) level and the risk of developing coronary artery disease (CAD). Serum concentration of HDL is inversely related to the development of Atherosclerosis. Paraoxonase-1 (PON1) is a HDL associated enzyme that plays a vital role in reduction of low density lipoprotein (LDL) oxidation. The aim of this study was to investigate the associations between paraoxonase activity (PON1) with APO-A and APO-B levels in subject with different levels of HDL cholesterol (HDL-C) levels.

Material and methods: 135 subjects, 20–60 years old, contributed to this study. The subjects were divided into three groups (45 in each group) with different level of HDL (High, Normal and Low). For each group, the activity of PON1 was measured using paraoxon as a substrate. Moreover, the serum level of APO-A and APO-B were measured. The statistical analysis was performed using SPSS software.

Results: PON-1 activity and APO-A levels were decreased in subject with lower levels of HDL (P < 0.001). APO- B levels were higher in subject with lower levels of HDL (P < 0.001). Serum PON-1 activity was positively correlated with TC, TG, apo A-B, and LDL-C levels (P < 0.01).

Conclusions: In conclusion, determination of serum PON1 activity and lipoproteins may play important roles in the earlier prediction of CAD and design of therapeutic in treatment of CAD toward PON1 activity regulation.

Keywords: High density lipoprotein, Coronary artery disease, Paraoxonase-1, lipoproteins

Corresponding author Email address: hnaieri@gmail.com

ID: 1039

The increased level of local CSC marker in patients with Functional GH secreting Pituitary Adenoma

Farzad Shiriyan[1], Masoumeh Tavakoli[2]
[1] Iran university
[2] Department of Endocrinology, Firoozgar Hospital, Iran University of Medical Sciences, Tehran, Iran

Objective: The cancer stem cell (CSC) hypothesis has captured the attention of many scientists. It is believed that elimination of CSCs could possibly eradicate the whole cancer. Sex-determining region Y (SRY)-box 9 protein (SOX-9) is a putative marker for CSC populations and is involved in the cancer cell proliferation, migration and progression. The aim of the present study was to investigate the expression level of local SOX-9 in tumor tissue of patients with Functional Growth

ICBMB2018.COM

hormone secreting pituitary adenomas which is one of the most common pituitary-related tumors with high morbidity. The relevance of the SOX expression level with patient\'s clinic pathophysiology and tumor invasiveness was also determined.

Materials and Methods: In this case-control study, 30 patients with Functional Growth hormone secreting pituitary adenomas who were referred to the Firouzgar Hospital in Tehran were participated. Tumor tissue samples were used to extract mRNA and cDNA, and to determine the gene expression of SOX, the Real-Time PCR-based Cyber Green method was used. The correlation of SOX with patient\'s clinic pathophysiology features were evaluated. Finally, statistical analysis was performed using version 6 of GraphPad Prism software and independent t-test.

Results: Measurement of SOX expression level in tumor tissues of patients with Functional Growth hormone secreting pituitary adenomas revealed that the level of this gene was significantly increased in patients comparing to healthy subjects and normal tissues. Also, the increased level of this gene was associated with elevated level of tumor grade and stage.

Conclusion: The results of the current study have shown that the SOX-9 gene can account as a local CSC marker in patients Functional Growth hormone secreting pituitary adenomas and can be noticed as a possible biomarker for controlling disease.

KeyWords: functional pituitary adenoma, GH secreting adenoma, SOX, cancer

Corresponding author Email address: farzadshiriyan@gmail.com

ID: 1040

Bioinformatic analysis of Aspartyl/asparaginyl β-hydroxylase protein

Hadi Bakhtiari[1], Reza Azizi[1], Ali gheisarzadeh[1], Mohammadreza Mofid[1]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Membrane Protein human Aspartyl/Asparaginyl beta-hydroxylase (ASPH) play an important role in calcium homeostasis. The gene is expressed from two promoters and undergoes extensive alternative splicing. The encoded set of proteins share varying amounts of overlap near their N-terminal but have substantial variations in their C-terminal domains resulting in distinct functional properties. The longest isoforms (a and f) include a C-terminal ASPH domain that hydroxylates aspartic acid or asparagine residues in the epidermal growth factor (EGF)-like domains of some proteins, including protein C, coagulation factors VII, IX, and X, and the complement factors C1R and C1S. In human tumorous cells expression of this enzyme can be elevated, which is associated with progression of tumor. Serum level of ASPH served as indicator for different carcinomas.

Materials and methods: In this article we study the structure and some aspects of bioinformatics in ASPH using different bioinformatics methods and sites. The amino acid sequence of the enzyme was taken from the NCBI site. One part of the study was carried out with bioinformatics tools that are available on the NCBI and Expasy and was done online. Another part was performed via Pdb Viewer-Swiss.

Results: There are several isoforms of this enzyme in different organisms, so we draw its phylogenetic trees using the blast review software on NCBI. In addition to drawing phylogenetic tree, we determined the amino acid sequence. Also we identified the main physico-chemical properties of a protein, predicted primary, secondary, tertiary structure analysis, looked for transmembrane segments and coiled-coil regions, of ASPH. Finally we used the hydrophobicity to identify the groups with hydrophobic characterization of ASPH.

Conclusion: Owing to the bioinformatics knowledge, ASPH can be considered as an ideal target in cancer studies, such as cancer detection and therapy.

KeyWords: Bioinformatics, ASPH, Isoform, Hydroxylase

Corresponding author Email address: bakhtyiari.hadi@yahoo.com

ID: 1041

Molecular cloning and expression of the oxalyl-coenzyme A decarboxylase in E. coli

Fatemeh Abarghooi Kahaki[1], Bahram Kazemi [1], Mojgan Bandehpour[1]
[1] Department of Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Oxalic acid is found in nutritional sources or is produced by the intestinal microflora. Enzyme oxalyl-coenzyme a decarboxylase from the bacterium Oxalobacter formigenes can degrades oxalic acid. Oxalic acid is catabolized by an activation-decarboxylation reaction which yields formate and CO2. Oxalyl-coenzyme a decarboxylase is a 568-amino-acid protein with a molecular weight of 60,691. In this study, we report the heterologus over-expression of Oxalyl-coenzyme a decarboxylase in E. coli BL21 (DE3).
Materials and methods: Escherichia coli is the most commonly used host for producing of recombinant protein. Using BL21 derived strain can reduce proteolyses of hetrologous protein. In this study for over-expression of oxalyl-coenzyme a decarboxylase we design a synthetic gene and clone in pET28a using NdeI and EcoRI sites. To express oxalyl-coenzyme a decarboxylase from pET28a, transformed BL21 (DE3) and different medium like LB and TB was applied. The results of experiments were analyzed by SDS-PAGE, western blotting and cell growth and recombinant protein production kinetics.
Results: The optimal expression of oxalyl-coenzyme a decarboxylase in E. coli can be easily achieved when the growth conditions are properly controlled. Media components and IPTG concentration have profound effects on the way in which recombinant protein is produced. In this study the maximum expression was obtained from TB medium at 28°C with IPTG concentration of 0.1mM. The final yield was 35 % of total soluble proteins, which is a significant rate for oxalyl-coenzyme a decarboxylase expression in Escherichia coli.
Conclusion: In conclusion, the studies presented here establish that high-level expression of oxalyl-coenzyme a decarboxylase. Using rich medium likes TB and decrease temperatures can improve the amount of protein considerably.
KeyWords: Oxalyl-coenzyme a decarboxylase, Oxalobacter formigenes, Escherichia coli, Over-expression
Corresponding author Email address: fatemehabarghooyi@gmail.com

ID:1043

Antibody capturing and stepwise elution: two modified biopanning method in phage display
Mostafa Lakzaei[1], Mahdi Aminian[1]
[1] Tehran University of Medical Sciences
Objective: Phage display technology is a powerful method for generation of monoclonal antibodies against a given antigen. According to the conventional biopanning, phages that are bound to the antigens are eluted with acidic or alkaline conditions. However, these methods sometimes are not sufficient for obtaining the superior binders ScFv-phages. In this study, single chain variable fragments (scFvs), which could specifically recognize diphtheria toxoid (DT), were isolated from naive phage displayed human antibody libraries (Tomlinson I + J). To reduce the low-affinity phages and also to minimize binders to the undesired antigens, three different biopanning strategies were applied.
Materials and methods: The conventional biopanning method was modified by using stepwise elution and antibody capturing. In the conventional biopanning, the amplified phages after each round of selection were incubated with the directly coated diphtheria toxoid. Stepwise elution was the same as conventional biopanning, except that the elution step was carried out with pH 5 and pH 2.2, glycine buffer 0.1 M. In the antibody capturing method, the mixture of diphtheria toxoid and amplified phages were added to the precoated wells with polyclonal anti diphtheria. The efficiency of three different biopanning method were analyzed by monoclonal ELISA. After each rounds of panning, eluted phages were used to infect E. coli TG1 and rescued by M13KO7. After 4 rounds of panning 128 phage clones, from three different biopanning methods, randomly picked for monoclonal ELISA.
Results: According to the results of monoclonal ELISA, Of the 128 clones tested, 9 clones form conventional biopanning, 5 clones form stepwise elution and 15 clones form antibody capturing showed positive binding to diphtheria toxin (absorbance against diphtheria toxin /absorbance against BSA coated >3).
Conclusion: Comparison of results of monoclonal phage ELISA in three procedures indicated that the majority of positive clones were in antibody capturing method.
KeyWords: Phage display, diphtheria toxoid, scFv, biopanning
Corresponding author Email address: amminian@yahoo.com

ID:1045

The association of OPRM receptor with pathophysiology of Functional and Non-Functional Pituitary adenoma
Fahimeh Taghavi[1,2], Masoumeh Tavakoli-Yaraki[1], Mohammad Ghorbani[2], Mohammad Ebrahim Khamseh[2]

ICBMB2018.COM

[1] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Endocrinology, Firoozgar Hospital, Iran University of Medical Sciences, Tehran, Iran

Objective: Pituitary adenoma is one of the most common tumor-related inflammatory diseases in the young people that Approximately 2.5 million people in the world and about 35,000 people in Iran are afflicted. The etiology of this type of cancer is un - known and investigations are in progress to clarify the molecular mechanism of pituitary adenoma. OPRM receptor plays an important role in the differentiation and multiplication of a variety of cells. Evidences revealed the effective role of OPRM receptor in regulation of cancer cell proliferation and migration. The aim of the present study was to investigate the expression level of OPRM receptor in tumor tissue of patients with functional and non-functional pituitary adenoma and the relevance of the receptor expression level with patient\'s clinic pathophysiology.

Materials and methods: In this case-control study, 40 patients with pituitary adenoma with who were referred to the Firouzgar Hospital in Tehran were participated. Tumor tissue samples were used to extract mRNA and cDNA, and to determine the gene expression of OPRM receptor, the Real-Time PCR-based sybergreen method was used. The correlation of OPRM receptor with patient\'s clinic pathophysiology features were evaluated. Finally, statistical analysis was performed using version 6 of GraphPad Prism software and independent t-test.

Results: Measurement of OPRM receptor expression level in tumor tissues of patients with functional and non-functional pituitary tumor revealed that the level of this gene was significantly increased in patients comparing to healthy subjects and normal tissues. Also, the increased level of this gene was associated with elevated level of tumor grade and stage.

Conclusion: The results of the current study have shown that the OPRM receptor can account as local bio marker in patients with functional and non-functional pituitary tumor due to the significant differences of the expression level in patients comparing to controls.

KeyWords: functional pituitary adenoma, non-functional pituitary adenoma, OPRM receptor, cancer, Pituitary
Corresponding author Email address: ftagahavi10@gmail.com

ID:1046

Lysosomal acid lipase (LAL) gene expression in PBMCs is inversely associated with interleukin 32 serum concentration: a case-control study

Maryam Teimouri[1], Hossein Hosseini[1], Akram Vatannejad[1], Mahmoud Dusti[1]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Recent studies showed that atherosclerosis is a lysosomal storage disease (LSD) and lysosomal acid lipase (LAL) is the most important enzyme of lysosomal cytosol that involved in the hydrolysis of esterified cholesterol (EC) to free cholesterol (FC). Whereas several in vitro and in vivo studies have described the crosstalk between lysosomal cholesterol accumulation and increased inflammation, there is no study addressing the correlation between LAL gene expression and a pro inflammatory cytokine, Interleukin 32 (IL-32) serum concentration in atherosclerotic patients.

Materials and methods: IL-32 serum concentration was quantified by enzyme-linked immunosorbent assay (ELISA) in atherosclerotic patients (n=40) and control group (n=40). LAL gene expression analysis was performed by quantitative real-time PCR, and correlation between two parameters was assessed.

Results: Mean IL-32 serum concentration was significantly higher in patient group (P=0.002) and LAL gene expression showed negative significant correlation with IL-32serum concentration (P=0.04, r= -0.367).

Conclusion: Although more longitudinal studies are needed, these findings might further advance our understanding of the role of lysosomal lipid homeostasis components in the pathogenesis of inflammatory diseases especially atherosclerosis.

KeyWords: lysosome, inflamation, LAL, IL-32, atherosclerosis
Corresponding author Email address: m.teimouri20@gmail.com

ID:1048

An enzyme-free and colorimetric biosensor for amplified multiplexed detection of nucleic acids by formation of branched G Quadruplex junctions

Mojdeh Amandadi[1], Hadi Ravan[1]
[1] Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: Multiplex analysis is capable of interrogating more than one biomarker simultaneously in each sample. Due to the complexity of biological system, single biomarker alone is not effective enough for an accurate diagnosis. Herein, we presented an enzyme-free and colorimetric biosensor for simultaneous analysis of multiple nucleic acid biomarkers.

Material and Methods: A target DNA containing four biomarkers was hybridized to three biomarker-specific oligonucleotides, that bear overhang region with a DNA hybridization translation activity, via their 5′-end regions and to a capture probe-magnetic microparticle. Upon hybridization, the biomarker-specific oligonucleotides were labeled with three distinct monolayer double-stranded (ds) DNA-modified AuNPs via their hybridization translator partners. By adding initiator oligonucleptide, a series of DNA strand displacement reactions spontaneously occurred between the confined ds DNA on the nanoparticles' surface. Output of the chain catalyzed a cascade of DNA self-assembly steps to form four-way branched junctions in presence of a set of DNA hairpins. Such a four-way junction structure can draw the splitted partzymes of G-quadruplex together and induce the formation of intact G-quadruplex probes at each end of the four arms. Upon incubation with hemin, catalytic hemin/G-quadruplex peroxidase-mimicking DNAzymes form, which catalyze the formation of a colored product from a colorless substrate.

Results: The biosensor has exhibited a turn-on signal when all biomarkers are present in the sample. The biosensor can detect the biomarkers with a LOD value of 100 aM and a noticeable capability to discriminate single-nucleotide substitutions.

Conclusion: As a result, it can be concluded that the biosensor could be reasonably applied in the simultaneous biomarker analysis for relevant clinical applications.

Keywords: Multiplexed detection, biosensor, Nucleic Acids

Corresponding author Email address: Amandadi.m2@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:1049

The Role of the Electrolyte Imbalance in Monitoring Infection

Shabnam Eivany[1]
[1] Al zahra Clinical laboratory in Isfahan

Objective: The Role of Electrolyte Imbalance in Monitoring Infection Introduction Electrolyte imbalance was used as an indicator of status patients. So, measureing Na^+, K^+ is a routine method during the course of a disease and its cure. Infection of various pathogens is a common problem in the world. Role of a monitoring electrolyte during the course of infection has not been studied thoroughly yet. The aim of this study is to assess the amount of electrolytes during a course infection.

Material and Methods: we measured the Na^+ and K^+ ions for 100 patient samples in a fasting and non-fasting status. The results were assessed by SPSS software.

Results and Conclusion: According to our results, the Na^+ ions level increased in a fasting status. But this level returned to a normal one in a non- fasting status. Most patients with an electrolyte imbalance are affected by bacterial infection. It seems that bacteria or an immune weakness system are involved in this case. However, the role of bacteria in an electrolyte imbalance has not been understood. To find out about the accuracy of this hypotesis, more investigation is required.

Keywords: Infection, electrolyte imbalance, Na+ level, bacteria infection, K^+ level

Corresponding author Email address: Sh.eivany 50@.Gmail. com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

roxancongress.com
www.rayancompany.ir

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1050

Assessment of promoter methylation of miR-424 and its effects on this miroRNA gene expression in the colorectal cancer cells

Zahra Nouri Ghonbalani[1]

[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Iran

Objective: Colorectal cancer (CRC) is the third leading cause of death from cancer in adults. DNA methylation is the most important form of epigenetic changes in cancer. Since miRNAs act as gene expression regulators in many biological processes, they can be an oncogene or suppressor of the tumor depending on their targets. Molecular research has shown that methylation in the CpG islands of the promoter region causes suppresses or reduces expression of miRNAs. the main objective of this study is Assessment of promoter methylation of miR-424 and its effects on miR-424 gene expression level, which is involved in the process of inhibiting tumor angiogenesis.

Material and Methods: All fresh frozen, case=25 and control= 25, were collected from the Imam hospital, Tehran, Iran. Genomic DNA was extracted from the samples and treated with sodium bisulfite. The promoter methylation status of the miR-424 was assessed using a methylation-specific polymerase chain reaction (MSP). Total RNA was extracted and RT-PCR was used to measure miR-424 expression levels.

Results: It was identified that miR-424 promoter was hypermethyled in CRC tissues. The miR-424 expression levels were significantly downregulated in CRC tissues and normal samples.

Conclusion: In conclusion, our data clearly demonstrate that hypermethylation of miR-424 promoter CpG island is an important reason that miR-424 expression can be downregulated, although it is not the only reason of miR-424 regulation.

Keywords: Methylation Specific PCR, Colorectal Cancer, miRNA, CPG islands, promoter methylation

Corresponding author Email address: ZAHRA.NOURI.HR@GMAIL.COM

ID:1053

The Effects of Ginger Extracts and Vitamin K on Serum levels of enzymes ALT, AST or ALP in Mice NMRI with Non-Alcoholic Fatty Liver

Parisa Tavakoli[1], Hanyeh Jafari[1], Parichehreh Yaghmaye[1]
[1] Science and Research Branch, Islamic Azad University

Objective: Non-alcoholic fatty liver is a liver inflammation caused by excessive accumulation of fat in the liver tissue. The objective of this study was to investigate the effects of ginger extracts and vitamin k on Serum levels of enzymes Alanine Transaminase (ALT), Aspartate Aminotransferase (AST) or Alkaline Phosphatase (ALP) in mice NMRI with a non-alcoholic fatty liver.

Materials and Methods: In this study, mice NMRI were randomly divided into control) standard diet (, Sham (High-fat diet), Silymarins received, hydroalcoholic Zingiber extract (200 mg/kg/body weight), vitamin K received, Zingiber extract and vitamin K received of 5 mice in each. After the experiences blood samples were collected using a cardiac puncture method and the serum proteins levels were measured. Data were compared between groups using ANOVA.

Results: Serum AST or ALP level significantly increased in the ginger extract, vitamin K groups compared to control group (p<0.001); But The serum levels of ALT was significantly decreased(p<0.001).

Conclusion: The results of this study showed that ginger extract with vitamin K protects the damage induced by the non-alcoholic fatty liver in the liver tissue.

Keywords: Ginger extract, Vitamin K, ALT, ALP, AST

Corresponding author Email address: parisa.tavakolli@yahoo.com

ID:1054

Rezveratrol ameliorates high-fat diet-induced insulin resistance and skeletal muscle tissue inflammation by suppressing macrophage infiltration

Maryam Shabani[1], Maryam Shabani[1], Reza Meshkani[1], seied-Hosein Hoseini[1], Maryam Teimory[1]
[1] Department of biochemistry, Tehran University of Medical Sciences, Tehran

Objective: Skeletal muscle (SM) is the critical site of insulin resistance because important organ for postprandial glucose disposal. SM harbors not only myofiber but also wide kind of immune cells, including macrophages. M1 subtype has pro-inflammatory phenotype that releases pro inflammatory cytokines such as IL-6, TNF, iNOS and its surface markers include F4-80, CD11b, CD11c. In contrast M2 macrophages secrete anti-inflammatory mediators such as arginase, IL10, and their surface markers are CD206. M1 phenotype is predominant in obesity. Obesity result in releasing pro-inflammatory cytokines from muscle cells and macrophages can activate NF-κB by activating several pathways such as TLRs, JNK, ERK and p38, that leading to interfere with insulin signaling. Resveratrol is a polyphenolic compound and possesses potential anti-inflammatory and anti-diabetic effects, can suppress the activation of NF-κB responsible for the induction of cytokines secretion.

Material and Methods: C57BL/6 mice were fed with normal diet, high-fat diet and HFD + Rezveratrol (0.4% per Kg diet) for 20 weeks. Body weights, FBS, GTT and biochemical parameters in blood were assayed. Macrophage infiltrations (f4-80+, CD11b+) and macrophage polarization (CD11c (M1), CD206 (M2)) in muscle tissues were analyzed by flow cytometry and immunohistochemical staining. Expressions of genes related to pro-inflammation (TNF, MCP1, IL-1b, TLRs, CD11b, F4/80, SIRt1…) were determined by real-time-PCR analysis. Activation of MAPKs signaling assayed by western blot.

Results: REZ significantly improved body weight, FBS and GTT, Moreover, macrophage infiltration into muscle tissue was markedly reduced. Intriguingly, REZ also significantly reduced surface marker of M1, but increased M2 surface marker. Pro-inflammatory biomarkers such as TNF, IL-6, MCP1, TLRs were significantly decreased in REZ-treated mice. Concurrently, REZ significantly suppressed the (ERK) and (NF-kB) signaling pathways in muscle tissue.

Conclusion: These results suggest that Rezveratrol may ameliorate HFD-induced insulin resistance in mice by attenuating muscle inflammation, macrophage infiltration and suppressing the ERK signaling pathway

Keywords: Skeletal muscle, Macrophage infiltration, High-fat diet, Flow cytometry, Western blot

Corresponding author Email address: shabanimaryam@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1055

FHL1 gene expression as a biomarker for differential diagnosis of papillary thyroid carcinoma from benign thyroid tumours

Masoumeh Farhadi Nejad[1], Ghazl Farhadiannezhad[1], Gholamabbas Dinarvand[1]
[1] Abadan School of Medical Sciences

Objective: Fine Needle Aspiration (FNA) is the best method for preoperative diagnosis of thyroid tumours that it widely performed for patients, but for about 20% of cases, the test answer is reported as suspicious or intermediate. The aim of this study was to evaluate the diagnostic value of relative mRNA expression of FHL1 gene to differential diagnosis of papillary thyroid carcinoma from benign thyroid tumors.

Material and Methods: 25 samples from patients with malignant thyroid tumors and 25 samples from patients with benign thyroid tumors were included in this study. FHL1 gene expression was measured in paraffin embedded samples.

Results: Relative mRNA expression of FHL1 gene in the malignant group was 0.50%, while in the benign group was very high (5.29%) and the difference between the two groups was significant ($p = 0.019$). ROC analysis showed that expression of FHL1 gene has a good performance for differentiation between benign and malignant thyroid tumors (AUC = 0.92).

Conclusion: FHL1 gene expression sensitivity and specificity as a diagnostic test was 84.0 and 84.0 respectively, thus FHL1 gene expression is more efficient for differential diagnosis of papillary thyroid carcinoma from benign thyroid tumors.

Keywords: FHL1, sensitivity, specificity, papillary thyroid carcinoma

Corresponding author Email address: ghazlfarhadiyan@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1057

The association of OPRM receptor with pathophysiology of Functional and Non-Functional Pituitary adenoma

Fahimeh Taghavi[1], Masoumeh Tavakoli-Yaraki[1], Mohammad Ghorbani[2], Mohammad Ebrahim Khamseh[2]
[1] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Endocrinology, Firoozgar Hospital, Iran University of Medical Sciences, Tehran, Iran

Objective: Pituitary Adenoma is one of the most common tumor-related inflammatory diseases in the young people that Approximately 2.5 million people in the world and about 35,000 people in Iran are afflicted. The etiology of this type of cancer is un-known and investigations are in progress to clarify the molecular mechanism of pituitary adenoma. OPRM receptor plays an important role in the differentiation and multiplication of a variety of cells. Evidences revealed the effective role of OPRM receptor in regulation of cancer cell proliferation and migration. The aim of the present study was to investigate the expression level of OPRM receptor in tumor tissue of patients with functional and non-functional pituitary adenoma and the relevance of the receptor expression level with patient\'s clinic pathophysiology.

Material and Methods: In this case-control study, 40 patients with pituitary adenoma with who were referred to the Firouzgar Hospital in Tehran were participated. Tumor tissue samples were used to extract mRNA and cDNA, and to determine the gene expression of OPRM receptor, the Real-Time PCR-based sybergreen method was used. The correlation of OPRM receptor with patient\'s clinic pathophysiology features were evaluated. Finally, statistical analysis was performed using version 6 of GraphPad Prism software and independent t-test.

Results: Measurement of OPRM receptor expression level in tumor tissues of patients with functional and non-functional pituitary tumor revealed that the level of this gene was significantly increased in patients comparing to healthy subjects and normal tissues. Also, the increased level of this gene was associated with elevated level of tumor grade and stage.

Conclusion: The results of the current study have shown that the OPRM receptor can account as local bio marker in patients with functional and non-functional pituitary tumor due to the significant differences of the expression level in patients comparing to controls, it can be noticed as a possible biomarker for controlling disease.

Keywords: Functional Pituitary Adenoma, Non-Functional Pituitary Adenoma, Pituitary, OPRM Receptor, Cancer

Corresponding author Email address: ftagahavi10@gmail.com

ID: 1058

Functional variants in two genes of the paraoxonase family (PON1 and PON2) and susceptibility against type 2 diabetes: Genetic evidence for the involvement of PON1-L55M variant in glycemic control

Abdolkarim Mahrooz[1], Mohammad Bagher Hashemi-Soteh[2], Ahad Alizadeh[3]

[1] Department of Clinical Biochemistry and Genetics, Faculty of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

[2] Immunogenetics Research Center, Mazandaran University of Medical Sciences, Sari, Iran

[3] Department of Epidemiology and Reproductive Health, Reproductive Epidemiology Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

Objective: Accrding to investigations, further association studies of the new variants will need to evaluate their role in the complex disease, type 2 diabetes (T2D) and in different populations, particularly populations with a high prevalence of diabetes. The prevalence of T2D in Iran seems to be among the highest in developing countries. The goal of this study was to simultaneously evaluate the association between functional variants in PON1 and PON2 genes and susceptibility for T2D and determine whether they can influence glycemic control.

Material and Methods: This study included 145 newly diagnosed patients with T2D and 148 controls. The common variants including PON1-Q192R, PON1-L55M and PON2-S311C were genotyped by PCR-based RFLP. A mismatch-PCR/RFLP was performed for genotyping the PON2-A148G variant.

Results: The variant PON1-Q192R in males (OR=2.55, 95%CI 1.16-5.69, p=0.023) and PON2-A148G in females (OR=1.56, 95%CI 1.00-2.44, p=0.059) were associated with T2D. Compared with the LL genotypes of PON1-L55M, HbA1c levels were significantly lower in the LM genotypes (p=0.01) and MM genotypes (p=0.032) in patients. Multiple linear regression analyses showed that among the study variants only the PON1-L55M variant as an independent variable significantly associated with glycemic control. Whereas in both good glycemic controls and poor glycemic controls, the HbA1c levels decreased in the order of LL<LM<MM, but a significant difference among the genotypes was observed only in patients with poor glycemic control. Moreover, based on gamma correlation analysis, the correlation of −0.261 (p=0.001) suggests that there was a significant inverse association between the numbers of allele M of PON1-L55M and HbA1c levels.

Conclusion: Sex should be considered a confounding variable in association studies on the variants PON1-Q192R and PON2-A148G in T2D. Patients sharing the 55M allele were prone to having good glycemic control. Our findings provide genetic evidence that the PON1-L55M variant may be a factor contributing to glycemic control.

Keywords: Paraoxonase, PON1, PON2, Type 2 diabetes, Glycemic control

Corresponding author Email address: amahrooz@mazums.ac.ir

ID:1061

Regular exercise training reversed CTRP 12 (Adipoline) reduction in obese subjects as responsible factor for their dyslipidemia risk

Sattar Gorgani-Firuzjaee[1], Mehrnoosh Shanaki[2], Reza Maleki[1], Novabeh Zare[3], Alireza Khoshdel[1]
[1] AJA University of medical sciences
[2] Shahid Beheshti University of medical sciences
[3] Mazandaran university

Objective: In obesity imbalanced secretion of proinflammatory and antiinflammatory adipokines lead to dyslipidemia. Abnormal adipokines secression was seen in obesity, diabetes, atherosclerosis and inflammatory diseases. CTRP 12 (adipoline) abundantly expressed in adipose tissue. Previous studies show that adipoline importance in the pathogenesis of the metabolic disease such as obesity, Type II diabetes and metabolic syndrome. Exercise training mainly prescribed for managment of metabolic complication such as obesity and obesity related disease. This work directly evidenced the effect of exercise intervention on adipoline in obese subjects and responsible molecular mechanism of CTRP 12 lipid lowering effect.

Material and Methods: This study investigated adipoline and lipid profil in obese subjects and age, sex matched normal wight population. Then in second case-control study analyzed adipoline and lipid profile in regular exercise trained and non-regular exercise trained subjects. To prove importance of sport intrvention designed 2 month endurance sport intervention trial in 18 volentier men (25-45 year old). In addition the effect of sport intervention on adipoline level in high fat induced animal model and effect of adipoline modulation on denovo lipogenesis in HepG2 cells was investigated.

Results: The results show lower CTRP 12 and higher lipid profile in obese subjects, and this finding reversed in regular exercisae trained subjects. Importantly sport intervention traial confirmrd the results of case-control study. Animal study demonstrat that sport intrvention, specially HIIT program induces adipoline level and reduces lipid profil. Importantly higher CTRP 12 treatment proved animal finding and reduced denovo lipogenesis either at total lipid content or key lipogenic gene mRNA and protein expression in invitro.

Conclusion: The results showed lower level of CTRP-12 in obese subjects could be responsible molecular mechanim of higher lipid profile and dyslipidemia risk. Long life programed physical activity specially HIIT recommened to manage metabolic diseases.

Keywords: Obesity, metabolic syndrom, CTRP-12, physical activity

Corresponding author Email address: gorggani59@gmail.com

ID:1062

NADPH oxidase involvement in phosphorylation of Erk1/2 mediated by epidermal growth factor receptor transactivation of Endothelin-1 in vascular smooth muscle cells

Masoumeh Zamanpour[1], Hossein Babaahmadi Rezaei[1], Faezeh Seif[1]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

***Objective*:** Endothelin-1(ET-1) is an important growth factor lead to proteoglycan synthesis and progression of atherosclerosis. Furthermore study the signalling pathway of ET-1 is necessary. ET-1 receptors are the member of G protein coupled receptors (GPCR) family. GPCR agonist can transactivate receptor tyrosine kinase such as epidermal growth factor receptor (EGFR) and mediated phosphorylation of Erk1/2, the immediate downstream of EGFR. NADPH oxidase (NOX) produced reactive oxygen species (ROS) which lead to activation and regulation of many signalling molecules. GPCR agonist such as ET-1 and thrombin regulate ROS generation in vascular smooth muscle cells. In the present study, we assessed the hypothesis if ET-1 transactivated EGFR lead to phosphorylation of Erk1/2 by a mechanism dependent on NADPH oxidase activity in VSMCs.
***Material and Methods*:** We used VSMCs and the level of Erk1/2 phosphorylation (p Erk1/2) were assessed by western blotting using specific antibody to phosphorylated Erk1/2(anti phosphoErk1/2(Thr202/Tyr204)).
Results: Stimulation of human VSMCs with ET-1 and EGF induced elevation of phosphorylation of Erk1/2. ET-1 increased pErk1/2 was blocked in the presence of Bosentan (ET receptor antagonist) and AG1478 (EGF receptor antagonist). Also ET-1 induced increase in pErk1/2 significantly inhibited by DPI (NADPH oxidase inhibitor).
Conclusion: Our study demonstrated that ET-1 lead to phosphorylation of Erk1/2 via transactivation of EGFR in VSMCs. Also we have showed that NOX enzymes involved in phosphorylation of Erk1/2 mediated by EGFR transactivation of ET-1.

Keywords: Endothelin-1, transactivation, NADPH oxidase, pErk1/2, G protein coupled receptor

Corresponding author Email address: zamanpour.m.bio@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1063

Synthesis and evaluation of the antileishmanial activity of antimony (V)-complexes of hydroxypyranone and hydroxypyridinone ligands

lotfollah saghaie[1], Zeynab Zarrabi[1], Afshin Fassihi[1], Sedigheh Saberi[2], Nader Pestechian[2]

[1] Department of Medicinal Chemistry and Isfahan Pharmaceutical Research Center, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, I.R. Iran.

[2] Department of Mycology and Parasitology, School of Medicine, Isfahan University of Medical Sciences, Isfahan.

Objective: Most of antimony (Sb) compounds including N-methylglucamine Sb (V), which have been widely used for the treatment of leishmaniasis are less effectve and toxic. Attempts have been made to synthesize safer and more effective Sb-complexes as antileishmanial drugs in the last decades In the present study, we report the synthesis and antileishmanial activity of five novel complexes of Sb (V) with hydroxypyranones (HPs) and hydroxypyridinones (HPOs) ligands.

Material and Methods: The complexes were synthesized from related ligands and SbCl5 in water at 60oC and pH 8. Identification and structural elucidation of complexes were achieved by FTIR, 1HNMR, electron spin ionization mass spectroscopic (ESI-MS) technique, elemental analysis and through physical constants. All compounds were evaluated for in vitro activities against the amastigote and promastigote forms of Leishmania major.

Results: Most of the synthesized compounds exhibited good antileishmanial activity against both forms of the Leishmania major. The IC50 value of the most active compound after 24, 48 and 72 h against amastigote model was 30, 24 and 16 µg/mL, respectively. However, the most potent complex inhibited the promastigote form of parasite after 24, 48 and 72 h with IC50 values of 20, 15 and 8 µg/mL, respectively

Conclusion: These results indicated that antimony (V)-complexes of HPs and HPOs ligands would be a good candidate for treatment of Leishmania major.

Keywords: Hydroxypyranones, Hydroxypyridinones, Antimony (V)-complexes, antileishmanial, activity

Corresponding author Email address: saghaie@pharm.mui.ac.ir

ID:1064

Enhancement of antioxidant activity of soybean meals by solid state fermentation with Bacillus pumilus PTCC 1733

Saba Miri[1], Maryam Bigdeli[1], Azadeh Rasooli[2]
[1] Department of Biotechnology, Faculty of Life Science, Alzahra University, Tehran, Iran
[2] Department of Biochemistry, Faculty of Sciences, Payame Noor University, Tehran, Iran

Objective: Free radicals are considered to be important causative factors in the development of cancer and cardiovascular diseases. This relationship has led to interest in evaluating the antioxidant capacities of many dietary supplements. Fermented soybean meal is produced by symbiotic fermentation using bacterium. Bacillus pumilus is a Gram-positive, rod-shaped and endosporeforming with potential production of enzymes for industrial purposes. In this study we investigated the antioxidant activity of fermented soybean meal by Bacillus pumilus.

Material and Methods: Soybean meal was fermented under optimized condition (7 log cfu/g inoculation of Bacillus pumilus, 70% water content, at 30ºC for 24). The antioxidant capacity of fermented soy bean meal was investigated by free radical scavenging activity of iron and 2, 2-Diphenyl-1-picrylhydrazyl (DPPH) assay.

Results: DPPH radical scavenging activity of fermented soybean meal was 80%, and radical scavenging activity of iron was 48%. Therefore, free radical scavenging activity of soybean meal significantly increased by solid state fermentation.

Conclusion: Stronger antioxidant activity of fermented soybean, probably due to its increased aglycone isoflavone and malonylglycoside isoflavone as well as total polyphenol contents which resulted from fermentation.

Keywords: Soybean meal, Bacillus pumilus, fermentation, DPPH, antioxidant

Corresponding author Email address: sabamiri70@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1066

The effects of Pulicaria undulata extract on the aggregation of Aβ1-42 fibrils in Alzheimer's disease

Faezeh Gorgij[1], Arezou Ghahghaei[1]
[1] Department of Biology, Faculty of Science, University of Sistan and Baluchestan, Zahedan, Iran

Objective Alzheimer's disease (AD) is a neurodegenerative disease that affects cognitive activities. One of the major causes of AD is the aggregation of amyloid beta (Aβ) peptides, particularly Aβ1-42. The previous studies have been shown that Pulicaria undulata (P.undulata) extract has anti-aggregation properties. In this study, we have explored the effects of P.undulata extract on the fibril formation of Aβ 1-42.

Material and Methods: Aβ 1-42 fibril formation was examined in the presence and absence of different ratios of P.undulata extract by Thioflavin T (ThT) binding assay, using a Cary Eclipse spectrofluorometer. To detect hydrophobicity changes in the Aβ1-42 upon its interaction with P. undulata extract, an ANS-binding assay of the Aβ1-42 alone and in the presence of different concentrations of P.undulata was done, using a Varian spectrofluorometer.

Results: In the ThT binding assay, an enhancement in the ThT fluorescence intensity following the incubation of Aβ1-42 peptide was observed, indicating amyloid formation in the peptide. By adding P. undulata extract in various ratios to the Aβ1-42 samples, the ThT fluorescence intensity decreased. According to the result of the ANS binding assay, Aβ1-42 alone showed high ANS binding which represents the exposure of the hydrophobic region in the Aβ1-42. In the presence of P.undulata extract, fluorescence intensity of Aβ1-42 declined as the concentration of extract increased.

Conclusion: This study indicates that P.undulata have the ability to prevent the aggregation of Aβ1-42 in a concentration-dependent manner. Indeed by increasing the concentration of P. undulata extract, amyloid aggregation is reduced. Thus, P.undulata can be a therapeutic agent for amyloid diseases.

Keywords: Aβ1-42, Pulicaria undulata, Protein aggregation

Corresponding author Email address: f.gorgiej@gmail.com

ID:1067

Proteomics Analysis of Biological Samples in Both Patients and Animal Model of Some Pain Related Diseases

Zahra Bathaie[1]
[1] Dept. Clinical Biochemistry, Faculty med. Sci., Tarbiat Modares University

Objective: Proteomics is a relatively new field of science that has been attracted in the last two decades, especially after finishing the Human Genome Project. Determination of the changes in the proteome pattern of different biological samples such as plasma and CSF have been done by many scientific research groups around the world. In continue to our previous studies on the structure-function of biomacromolecules, we also studied the changes in the protein pattern, in some pain related diseases, in the plasma of patients, and both plasma and CSF of model animals. Various techniques, including Two-Dimensional Electrophoresis (2DE), Mass Spectrometry Analysis, ELIZA, Western Blotting and Bioinformatic Tools were used for analysis of the obtained data. In this presentation, I will review the principle of proteomics analysis and then a summary of our new proteomics findings in some pain related diseases such as pain induced by Spinal Cord Contusion in rat; Trigeminal Neuralgia Patients before and after MVD; and Episodic and Chronic Migraine in both patients and model rats.

Keywords: Pain, Proteomic pattern, TN, Contugen, Migraine

Corresponding author Email address: zbatha2012@gmail.com

ID:1068

Current progress on aptamer-based biosensors to detection of platelet-deived growth factor

Nasrin Razmi[1], Behzad Baradaran[1], Maryam Hejazi[2], Mohammad Hasanzadeh[3], Jafar Mosafer[4], Ahad Mokhtarzadeh[5], Miguel de la Guardia[6]

[1] Immunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran
[2] Zabol University of Medical Sciences, Zabol, Iran
[3] Pharmaceutical Analysis Research Center, Tabriz University of Medical Sciences, Tabriz 51664 Iran
[4] Research Center of Advanced Technologies in Medicine, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran
[5] Department of Biotechnology, Higher Education Institute of Rab-Rashid, Tabriz, Iran
[6] Department of Analytical Chemistry, University of Valencia, Dr. Moliner 50, 46100 Burjassot, Valencia, Spain

Objective: Platelet-derived growth factor (PDGF-BB) is a significant protein biomarker in diagnosis of cancer. Thus, quantification of PDGF-BB in biomedical fields is very important. This review gives an overview of aptasensors, both optical and electrochemical, for detection of PDGF-BB.

***Material and Methods*:** The use of aptamers (DNA or RNA molecules) as recognition elements in both optical biosensors involving fluorophore labeled aptamers or using of the redox species and electrochemical methods using element called electrode as a transduction part and measuring the produced current from the reduction and oxidation reactions for determination of PDGF-BB are discussed.

Results: Among current methods towards the protein detection, owing to its high sensitivity and selectivity, simplicity, disposability and accuracy, easy control, compatibility, robustness, rapid response, possibility of usage for online control, and inexpensiveness; the electrochemical aptasensors based on the specific interaction between aptamer and target molecule are highly applicable for PDGF-BB detection.

Conclution: The advantages of inexpensive instrumentation would provide the designing of easy, cheap and disposable sensors for in-home use. However, further efforts are still needed to facilitate and improve their use for a fast, direct and accurate detection.

Keywords: Cancer biomarker; Biosensors; Biomedical analysis; Aptamers

Corresponding author Email address: nrn.razmi@gmail.com

ID :1071

The effect of Δ⁹-Tetrahydrocannabinol on tubulin structure and micro tubular protein dynamicity

Mina Mohammadkhani[1]
[1] Institute of Biochemistry and Biophysics(IBB)/Tehran University

Objective: Cannabis and its constituent cannabinoids are known to impair several aspects of cognitive function, with the most robust effect on short term, episodic and working memory in human. There is growing evidence of role of microtubule dynamic (one of the prevalent proteins in nerve cells) in memory formation and learning. Dynamic microtubules are shown to be involved in dendritic spine changes and synaptic plasticity. Each factor effects on this dynamic protein or changes the structure of its building block (tubulin) will effect on cognitive function of brain.

Material and methods: In order to estimate specific domain in where Δ⁹-tetrahydrocannabinol (THC) the most important ingredient of cannabis reacts with tubulin, we had computer base calculation, thus we used Auto dock software. Then for investigation of alternation of Micro tubular protein dynamicity we used UV Visible spectroscopy in absence and presence of different concentration of THC, also we used other spectroscopic methods like fluorescence spectroscopy to study interaction between THC and tubulin, and circular dichroism (CD) spectroscopy to determine structural changes of tubulin.

Results: According to computer base study which has done, THC has site specific interaction with GTP binding site in tubulin. We also found the alternation of microtubule polymerization in presence of different concentration of THC through turbidity spectroscopy compare to control test. Fluorescence spectrometry assay shows interaction between THC and tubulin, also structural changes in tubulin and shift from Alpha structure to beta sheet and random coils observed in CD spectroscopy.

Conclusion: According to our results, THC impaired tubulin secondary structure and micro tubular dynamic, thus it causes cognitive problems in brain.

Keywords: Microtubule protein, Tubulin, dynamicity, structural changes, Δ⁹-tetrahydrocannabinol (THC)

Corresponding author Email address: m_mohammadkhani@ut.ac.ir

ID: 1072

Combination of Metformin and Phenformin inhibits synergistically proliferation and hTERT expression in human breast cancer cells

Davoud Jafari-Gharabaghlou[1], Younes Pilehvar-Soltanahmadi[2], Mehdi Dadashpour[2], Soheila Vafajouy-Jamshidi[1], Nosratollah Zarghami[2]

[1] Department of Clinical Biochemistry and Laboratory Sciences, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

[2] Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Emerging evidence has revealed the potent anti-cancer effects of biguanides, Metformin (MET) and Phenformin (PHE). Thus, To explore an efficient chemopreventive strategy for breast cancer, the antiproliferative effects of the combination of MET and PHE against breast cancer cells were assessed in this work.

Material and Methods: Cytotoxicity of the drugs individually and in combination against T47D and MDA-MB-231 breast cancer cells were assessed using MTT assay and the median-effect method was used to analyze the precise nature of the interaction between MET and PHE. Besides, the expression levels of hTERT after 48 h drug exposure was determined using qRT-PCR.

Results: Based on the cytotoxicity assay, both MET and PHE further inhibited the growth of MDA-MB-231 cells compared with T47D cells. It was found that MET+PHE drastically reduced the IC50s of MET and PHE in both cells than the single treatments in synergistic manner. Importantly, MET+PHE showed higher antiproliferative effect with smaller IC50 values against MDA-MB-231 cells than T47D cells.

Real-time PCR results revealed that hTERT expression was significantly reduced in both breast cancer cell lines treated with MET+PHE than the single treatments. In comparison between two types of breast cancer cells, it was detected that MET+PHE could further decline hTERT expression in MDA-MB-231cells than T47D cells (p<0.001).

Conclusion: It is speculated that the combination of MET and PHE may be a promising and convenient approach to improve the efficiency of breast cancer treatment.

Keywords: Metformin, Phenformin, Combination therapy, Synergistic effects, Breast cancer

Corresponding author Email address: jafari.soba@gmail.com

ID:1073

Synthesis and characterization of solid lipid nanoparticles from stearic acid and tripalmitin for drug delivery

Parvaneh Bayat[1], Parvaneh Pakravan[1], Marzieh Hossienpour[1], Mojtaba Salouti[1]
[1] Department of Chemistry, Zanjan Branch, Islamic Azad University, Zanjan, Iran.

***Objective*:** Solid lipid nanoparticles (SLNs) are colloidal carrier systems which provide controlled-release profiles for drugs. In this study, SLNs were prepared by a single emulsification-solvent evaporation method and characterized using photon correlation spectroscopy (PCS) scanning electron microscopy (SEM) and differential scanning calorimetry (DSC).
Material and Methods: Tripalmitin glyceride (TPMG, 20mg) and Stearic Acid (SA, 30mg) was dissolved in organic phase (1ml, Acetone) by heating at 70-80°C and 5 mg of epirubicin (EPR) was dissolved by adding in to the solution. The prepared solution was added to 8ml of hot polysorbate 80 (Tween 80, 1 % W/V) solutions under stirring using a homogenizer at 45,000 rpm for 15 minutes. The resultant dispersion was immediately sonicated using a probe sonicator at amplitude of 50% with the pulse of 4 sec intervals. After probe sonication the organic solvents present in the solution was evaporated using rotoevaporator for 2 hours at 80 rpm. The prepared SLN samples were freeze dried at -48 °C for 24 hours to yield dry powder.
Results: PCS revealed a particle hydrodynamic diameter of 135.4 nm and polydispersity index (PDI) of 1 for the drug-loaded nanoparticles. DSC indicated that the majority of SLNs possessed less ordered arrangements of crystals compared with corresponding bulk lipids, which is favorable for improving drug-loading capacity. EPR entrapment efficiency value for the SLNs was 78.5%. SLNs formulation was stable over a period of 6 months.
Conclusion: SLNs could be an alternative approach to other colloidal drug delivery systems and tablets for enhancing the bioavailability of the drugs and achieving sustained release action.
Keywords: Solid lipid nanoparticles, Homogenization, Stearic acid, Tripalmitin, Epirubicin
Corresponding author Email address: parvanehbayat70@gmail.com

ID:1074

Serum ferritin is correlated with the Thyroid stimulation hormone level

M. Afshar[1], Ahmad Barahouie[1]
[1] Golestan university of medical sciences

Objective: Iron is one of the key factors necessary for the normal thyroid function. In most of the human tissues, iron is mainly stored in form of Ferritin. It has been reported that Serum ferritin level is dys-regulated in thyroid disease and ferritin level in circulation is associated with thyroid hormone function. Indeed, many studies have indicated the relationship between serum ferritin levels and Thyroid stimulating hormone (TSH). The purpose of this study was to measure serum ferritin levels in relation to concentration of TSH in Iranian population of Ahvaz city, Iran during 2016-2017.

Material and Methods: The number of 130 individuals (female=99 and male=31) were requited in this cross sectional study. The serum ferritin level and TSH were evaluated using chemiluminescence method. The data was analyzed using SPSS v.16 and the p-value≤0.05 was considered as significant.

Results: The results of our findings showed that most of the included individuals were in normal range for serum ferritin (73.76 ; ±78.75) and TSH level (2.63 ; ±9.56). the person's correlation test revealed that the ferritin level is significantly correlated with the measured TSH hormone (R=0.213, p value=0.015).

Conclusion: Altogether, we found that the serum ferritin and TSH levels are significantly co-related. Our results suggest that, measurement of the serum ferritin can be helpful in monitoring the thyroid hormone dysfunction.

Keywords: Ferritin, Thyroid hormone, TSH

Corresponding author Email address: a.barahouie1490@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID: 1077

Quercetin attenuates high glucose-induced lipotoxicity and lipid droplet accumulation in RAW264.7, involvement of suppression of skew RAW264.7 toward M1

Maryam Shabani[1], Reyhaneh Babaei Khorzoughi[1]
[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences

Objective: Macrophages are flexible cells and able play multiple functions in inflammatory conditions. These major components of innate immunity cells secrete various cytokines and a vast number of mediators molecules and CD markers. These process tightly regulated and these molecules have both beneficial and detrimental outcome in health. macrophages can acquire specialized phenotypes; M1 (pro-inflammatory phenotype) and M2 (anti-inflammatory phenotype). M1 subset secreted inflammatory mediators such as iNOS, TNF, MCP1, IL-6, and have CD11-c surface marker. But, M2 markers are CD206, CD163, TGFβ, Arginase. M1/M2 balance has a critical role in inflammation. Diabetes Mellitus is an inflammatory condition and polarization pattern of macrophage is going toward to M1. Quercetin is a flavonol, one of the six subclasses of flavonoid compounds. This polyphenol possesses strong anti-inflammatory capacities; through an increase of antioxidative activities, reduction of lipogenesis and macrophage polarization regulation.

Material and Methods: RAW 264.7 macrophages were stimulated by high glucose concentration, then we have studied effects of Quercetin (25µM) on high glucose-induced lipotoxicity and macrophage polarization. we have measured high glucose-induced lipogenesis by oil-red O staining. For investigating macrophage polarization, we assessment M1 marker, CD11c, as an inflammatory factor via flow cytometry. Also, inflammatory genes expression include: iNOS, arginase, and MCP1 were assayed by Real-time PCR.

Results: This study suggests that high glucose induce RAW264.7 lipogenesis. Flow cytometry analyses showed that high glucose skew RAW264.7 toward M1 subset, whereas Quercetin attenuated M1 marker up to about 70%. RT-PCR confirmed the anti-inflammatory effect of Quercetin through attenuation of inflammatory genes expression (P < 0.05).

Conclusion: Reduction of lipogenesis, M1 surface marker and above inflammatory genes approve that Quercetin can be used as a therapeutic drug in inflammatory diseases.

KeyWord: RAW624.7 cell line, Quercetin, High Glucose, Macrophage polarization

Corresponding author Email address: shabanimaryam@yahoo.com

ID:1080

New surface-modified solid lipid nanoparticles using lysine amino acid for improving drug delivery

Marzieh Hossienpour[1], Parvaneh Pakravan[1], Parvaneh Bayat[1]

[1] Department of Chemistry, Zanjan Branch, Islamic Azad University, Zanjan, Iran

Objective: The present research focuses on the development of the surface modified solid lipid nanoparticulate (SLN) system for enhancing the stability and sustaining the release of epirubicin (EPR).

Material and Methods: SLNs were produced by emulsification-solvent evaporation method. The lipid phase including EPR (30mg), 30mg Stearic Acid (0.1 mmol) was dissolved in 1.8mL of 1:1 mixture of acetone: dichloromethane. Then the mentioned solution was added during 3 minutes to the18 mL of Tween 80 solution (1%w/v) in deionized water, while stirring in 1200rpm. Ultimately, produced nanoemulsion was stirred in 600rpm at room temperature for 75 minutes to evaporate the solution. After15 minutes of adding organic phase to aqueous phase, 1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide (EDC) (0.2 mmol) dissolved in deionized water containing Tween80 (1%w/v) was added to nanoparticles mixture during 5 minutes, while stirring at 600rpm. Then, lysine (0.1 mmol) was added, in order to produce targeted nanoparticles. Non bound lysine was separated from nanoparticles mixture by dialyzing versus 100mL deionized water containing Tween 80 (1% w/v) using dialysis bag with molecular weight cut-off of 12,400Da. EDC is used to activate carboxylic acids to cross-link with amines (lysine).

Results: FT-IR spectra of the pure lysine, physical mixture of lysine with SLN were performed separately and compared with FT-IR spectra of lyophilized drug loaded SLN.

Conclusion: It is worth noting that these surface-modified SLNs may serve as efficient delivery systems for EPR. Lysine targeted SLNs containing EPR increase the cytotoxicity of EPR in MCF -7 cells and could be a valuable method for reducing the prescribed dose and also systemic side effects.

Keywords: Carbodiimide; Epirubicin, Solid lipid nanoparticles; MCF -7; Lysine

Corresponding author Email address: Marziyehhoseinpoor2018@gmail.com

ID:1085

Protective effects of curcumin and Nano-curcumin on the sperm parameters in male rats after exposed to Aluminum phosphide

Hadi Ghasemi[1], Akram Ranjbar[1], Hossein shateri[1], Nejat Kheiripoor[2]
[1] Department of Biochemistry, Hamadan University of Medical Sciences, Hamadan, Iran
[2] Kashan univercity of medical sciences

Objective: Abnormal spermatogenesis in result of sperm DNA damage is one of the important factors of idiopathic infertility in men. Pesticides used in agriculture could produce oxidant agents which threats to human health and contribute to the damages to sperm DNA and lead to male infertility. Aluminum phosphide (ALP) is a solid tablet form pesticide that its poisoning is one of the leading causes of suicidal deaths in the world. Poisoning with ALP could affect the most of the body's organs by producing phosphine as a free radical. Therefore, the possible effects of ALP on the sperm followed by oxidative stress can be considered as a cause of male infertility. So, this study was conducted to comparative assessment of Nano-curcumin and curcumin as antioxidants on sperm parameters in male rats after exposure to ALP.

Material and Methods: 49 male Wistar rats were randomly divided into following groups (n=7): healthy control group (C), curcumin 100 mg/kg received (CUR) group, Nano-curcumin 100 mg/kg received (NC) group, ALP 2 mg/kg received group (ALP), ALP 2 mg/kg + curcumin 100 mg/kg received group (AC), ALP 2mg/kg + Nano-curcumin 100 mg/kg received group (AN). All components were administered by intragastric gavage for seven consecutive days (one week). Sperm parameters including motility, count, morphology, and viability were evaluated using the light microscope. Sperm vitality assessment was performed by using vital staining eosin 0.5 %.

Results: Data analysis showed that intragastric administration of ALP significantly decreased the sperm viability and motility in ALP treated rats. Moreover, our results revealed that curcumin and Nano-curcumin administration improved the sperm parameters such as the sperm count, motility, and viability. Also, compared to curcumin, Nano-curcumin was more effective on sperm viability.

Conclusion: Curcumin seems to have beneficial effects on male infertility by improving the quality of sperm parameters in ALP poisoned patients.

Keywords: Aluminum phosphide, Nano-curcumin, curcumin, male infertility, Sperm parameters

Corresponding author Email address: hadigh110@gmail.com

ID:1086

Significant correlation of angiotensin converting enzyme polymorphism with unexplained recurrent pregnancy loss in north of Iran

Shekufeh Fazelnia[1], Seyed Mohammad Bagher Hashemi Soteh[1]

[1] Immunogenetic Research center, Molecular and cell Biology Research Centre, Mazandaran University of Medical Sciences, Sari, Iran

Objective: Spontaneous abortion is considered as the most complex problem during pregnancy. Thrombophilia is resumed as a cause of recurrent pregnancy loss (RPL). Angiotensin converting enzyme (ACE) converts angiotensin I to angiotensin II and is involved in thrombosis. The most common polymorphism in this gene is the insertion/deletion (I/D). In this study, we analyzed the association ACE I/D in women with unexplained RPL from the north of Iran.

Material and Methods: Sample population consisted of 100 women with unexplained RPL and 100 controls. The ACE I/D polymorphism was genotyped by PCR-RFLP. The association between genotypes frequency and RPL were analyzed using χP2P and exact fisher tests. Associated risk with genotypes combinations was also investigated by binary logistic regression.

Results: There was significant association between ACE/DD genotype and RPL (OR=2.04; 95% CI=0.94-4.44; p=0.036). ACE/D Allele was also significantly associated with the RPL (OR=1.59; 95% CI=1.05-2.41; p=0.013).

Conclusion: ACE I/D polymorphism may probably be a prognostic factor in female family members of women with the history of recurrent abortion.

Keywords: Angiotensin converting enzyme, Thrombophilia, Recurrent abortion

Corresponding author Email address: hashemisoteh@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1087

Genetic manipulation of the LRRK2 gene using CRISPR system in eukaryotic cells

Azadeh Samareh[1], Hosseinali Sasan[1], Hadi Ravan[1]
[1] Department of Biology, Faculty of Sciences, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: CRISPR genetic editing (Clustered Regularly Interspaced Short Palindromic Repeats) complex is a bacteria adaptive immune system with unprecedented diversity. This multifunctional ribonucleoprotein contains of crRNA, tracrRNA and endonuclease of cas9 components. Bacteria CRISPR endonuclease digest and integrate parts of invading bacteriophage and or any other foreign DNA into host genome. Entering for the second time, bacterial CRISPR enzyme system expressed and foreign DNA digested and inactivated. This process actually created a memory system in bacteria which acts like human immune cells. Considering to multiple potentials editing, mutation, regulation and silencing of different genes by CRISPR system, it is possible to use this system as a benefic candidate for pharmaceutical, biotechnology and gene therapy applications. Leucine-rich repeat kinase 2 (LRRK2) is one of the most important genes involving in PD. Mutations such as deletion and translocation in this gene cause PD severity.
Material and Methods: In this study, an oligonucleotide as gRNA of LRRK2 Parkinson disease gene was designed with score of 96. This oligonucleotide was then ligated into PX459-Puro using DNA ligase. Recombinant vector harboring gRNA segment was transformed into Ecoli DH5α cells. In the next step, Recombinant plasmids was transformed into eukaryotic culture N2A cells using of turbofect procedure.
Results: Using of colony PCR and DNA sequencing methods cloning the segment of interest was confirmed thus genetic manipulation in LRRK2 gene by CRISPR system was finally detected.
Conclusion: Results taken by this study, can lead to use CRISPR system as a strong tool for editing and regulating of many genes.

Keywords: Genetic manipulation; CRISPR system; LRRK2 gene; Parkinson disease

Corresponding author Email address: azade.samare71@gmail.com

ID:1088

Development of CRISPR System for Editing of Parkinson Disease Genes in prokaryotic cells

Azadeh Samareh[1], Hosseinali Sasan[1], Hadi Ravan[1]
[1] Department of Biology, Faculty of Sciences, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: CRISPR as a restriction endonuclease enzymatic system is a simple powerful tool for different genomes editing purposes. It enables researchers to easily alter DNA sequences and modify gene expression. This technique has many potential applications in correcting genetic defects, treating and preventing the spread of diseases and improving crops. CRISPR consists of two key molecules, an enzyme, called Cas9 and a piece of RNA, called guide RNA (gRNA) causing alterations in DNA molecules.

Material and Methods: By current study, LRRK2 Parkinson disease gene gRNA was designed with high score using of crispr.mit.edu webserver. gRNA oligonucleotides were then ligated into PX459-Puro expression vector using of T4 DNA ligase and then transformed into DH5α host bacterial cells via heat-shock procedure. After 24 hrs and using of ampicillin antibiotic screening well-grown colonies were selected and plasmid extraction performed using of alkaline lysis method.

Results: Successful cloning of gRNA segment was verified using of colony PCR and DNA sequencing analysis.

Conclusion: Primary results found by this work can enable us to more develop systems for editing, regulation, mutation and other manipulations in some bacterial genes.

Keywords: CRISPR system; Parkinson Disease; prokaryotic cells

Corresponding author Email address: azade.samare71@gmail.com

ID:1089

Comparison of Escherichia Coli Strains in Production of Active Streptomyces sp. Cholesterol oxidase

Aliakbar Fazaeli[1], Mahdi Aminian[1], Abolfazl Golestani[1]
[1] Department of Clinical Biochemistry, Tehran university of medical science, Tehran, Iran

Objective: Recombinant enzymes production in active soluble form is very important in the process of enzyme biotechnology. Choosing a proper expression host strain play a critical role in avoiding accumulation of large amount of insoluble, misfolded inclusion bodies that need additional solubilization and refolding steps. Escherichia coli (E. coli) strains mostly used as the host strain that offers easy genetic manipulation, short and inexpensive culture conditions. cholesterol oxidase from Streptomyces sp. is a key enzyme in the serum cholesterol levels determination and mostly produces in misfolded inclusion body form because of its protein structure. In this study we, we evaluate 3 different Escherichia coli strains capability to produce active soluble cholesterol oxidase from Streptomyces sp.

Material and Methods: Escherichia coli expression strains (Rosetta gami 2, BL21(DE3), and BL21(DE3)pLysS) transformed with the codon-optimized cholesterol oxidase gene that designed in pET-24 expression plasmid. Transformed strains cultured in same bacterial growth condition (LB media, 37°C). Protein expression induced by 0.2 mM IPTG at early exponential phase (OD600= 0.6) and incubated for 6 hours at 37°C. Bacterial cells harvested by centrifugation and disrupted by sonication. After sonication, the pellet and supernatant used in SDS-PAGE and also enzyme assay for evaluating the enzyme production.

Results: Based on SDS-PAGE gel electrophoresis and enzyme assay, Rosetta gami 2 was the best soluble cholesterol oxidase producer. High amounts of enzyme were expressed as inclusion bodies in both BL21(DE3) strains. Cholesterol oxidase enzyme assay indicates significant improvement in activity of recombinant cholesterol oxidase producing by Rosetta gami 2.

Conclusion: Rosetta gami 2 was the best host among 3 Escherichia coli expression strains that we have used in this study. Rosetta gami 2 is the strain with capability of protein expression whit many disulfides bonds. We believe that this ability enhanced production of cholesterol oxidase from Streptomyces sp. in its active form.

Keywords: Rosetta gami 2, BL21(DE3), BL21(DE3) pLysS, Protein expression, Cholesterol oxidase

Corresponding author Email address: amminian@Yahoo.com

ID:1090

Expression Optimization of Recombinant Cholesterol Oxidase from Chromobacterium

Aliakbar Fazaeli[1], Mahdi Aminian[1], Abolfazl Golestani[1]

[1] Department of Clinical Biochemistry, Tehran University of medical science, Tehran, Iran

Objective: Cholesterol oxidase is a flavoprotein that catalyzes the dehydrogenation of C(3)-OH of cholesterol. It is a key enzyme in the determination of serum and food cholesterol levels and also very important biocatalyst providing valuable intermediates for industrial steroid drug production. Recombinant expression of cholesterol oxidase in active soluble form has great importance. In this study, we optimize Chromobacterium cholesterol oxidase protein expression.

Material and Methods: Protein expression optimized by designing a suitable gene sequence in pET-24 plasmid and by using different Isopropyl β-D-1-thiogalactopyranoside (IPTG) concentrations. Bacterial growth conditions optimized to maximize the yield of cholesterol oxidase by 3 different culture media (Super Broth, Terrific Broth, and Luria Broth). E. coli BL21(DE3) and E. coli BL21(DE3)pLysS used as host strains and enzyme expression induction was performed in 3 different temperature (17°C, 27°C, 37°C).

Results: Based on our experiments, BL21(DE3) pLysS produced highest soluble active enzyme. The highest activity of recombinant cholesterol oxidase occurred in the presence of 0.2 mM IPTG in Terrific Broth medium after 10 hours of incubation at 27°C.

Conclusion: We believe that BL21(DE3)pLysS might be a good strain for producing active recombinant cholesterol oxidase from Chromobacterium. The active recombinant cholesterol oxidase was obtained in high yield using BL21(DE3)pLysS and optimized expression condition.

Keywords: Cholesterol oxidase, Protein expression, Enzyme

Corresponding author Email address: amminian@yahoo.com

ID: 1091

A label-free fluorescent DNA nanoplatform on target cell based on aptamer- membrane protein interaction

Akram Norouzi Goki[1], Hadi Ravan[1], Abbas Mohammadi[1], Mahdieh Norouzi Goki[1]
[1] Department of Clinical Biochemistry, Kerman University of Medical Sciences, Kerman, Iran
[2] Department of Nursing, Islamic Azad university of Kerman, Kerman, Iran

Objective: Cancer biomarkers include a wide range of molecules including membrane proteins. About one-third of proteins of all organisms are membrane proteins and they perform some of the most important cellular functions. Although proteins cannot be amplified like nucleic acids, thanks to the nanotechnology, hybrid bionanostructures can be used to amplify bioassay signals. To date, various 2D and 3D DNA nanostructures have been developed for detection and manipulation of cells markers as well as cell imaging and therapy and intelligent sensing. In the present study, we report a preformed label-free fluorescent DNA nanoplatform using Evagreen dye capable to anchor on target cell surface through aptamer-target interaction for PTK7 detection.

Material and Methods: Nanostructure DNA oligonucleotides were designed using NUPACK web server. DNA nanostructure formation was verified by gel electrophoresis. Concentration and incubation time of Evagreen dye were optimized. CCRF-CEM cell line (with high-level expression of PTK7 protein) was used for evaluating the efficiency of nanoplatforms.

Results: The results showed that DNA nanoplatforms could perfectly anchor on CCRF-CEM cells rather than the non-target cell.

Conclusion: Based on aptamer-target interaction and non-enzymatic signal amplification, we have built a functional DNA nanoplatform with high specificity for the recognition of PTK7 on target cancer cell.

Keywords: Aptamer, Self-assembly, Evagreen, Cancer cell biomarker, label-free fluorescence

Corresponding author Email address: ravan@uk.ac.ir

ID:1092

Assessment of association of circulating BDNF levels and its gene promoter methylation status with coronary artery disease

Fataneh Esmaeili[1], Ebrahim Eftekhar[1], Elahe Mansouri[1], Hossein Montazerghaem[2]
[1] Molecular Medicine Research Center, Hormozgan Health Institute, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[2] Cardiovascular Research Center, Hormozgan University of Medical Sciences, BandarAbbas, Iran

Objective: New evidences show an important role of brain-derived neurotrophic factor (BDNF) in cardiovascular homeostasis. The aim of present study was to investigate the association of BDNF methylation status and its serum level with coronary artery disease (CAD) risk.
Material and Methods: According to angiography report 128 CAD patients with at least 50% stenosis in one major coronary artery were selected and divided into 1 vessel disease (1VD=48), 2 vessel disease (2VD=40) and 3 vessel disease (3VD=40) groups. For comparison, 73 angiographically proven non CAD participants were recruited as control. Genomic DNA was isolated from blood sample and methylation status of exon 2 BDNF gene promoter was determined using MS-PCR method. Serum BDNF levels were measured by ELISA. Data were analyzed using SPSS v16.0.
Results: BDNF gene promoter was methylated in 76.7%, 79.2%, 82.5% and 90.0% of the control, 1VD, 2VD and 3VD groups, respectively. The results indicate that hypermethylation of BDNF gene can increase the risk of CAD. However, the association was marginally significant (p=0.087) (1VD vs control group: OR=1.154;95% CI,0.477-2.790; 2VD vs control group: OR=1.431;95% CI,0.537-3.812 and 3VD vs control group: OR=2.732;95% CI, 0.851-8.776). Serum BDNF level was not statistically different between groups.
Conclusion: Our findings indicate that patients with severe CAD have a higher percentage of BDNF gene methylation compared to control group. Serum BDNF level was not statistically different between studied groups. Additionally, hypermethylation of BDNF gene could increase the risk of CAD. Although, this association was marginally significant.

Keywords: DNA methylation, Coronary Artery Disease, Brain-derived neurotrophic factor

Corresponding author Email address: Esmaeili8993@gmail.com

ID:1093

The advantages of curcumin on metformin in attenuation of oxidative stress and diabetic nephropathy

Soheila Asadi[1], Mohammad taghi Goodarzi[1], Iraj khodadadi[1], Jamshid karimi[1], Zohre Rahimi[2]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan-Iran
[2] Department of Clinical Biochemistry, Faculty of Medicine, Kermanshah University of Medical Sciences, kermanshah-Iran

Objective: The role of oxidative stress and consequent apoptosis on the development of diabetic nephropathy (DN) has previously been established. Since curcumin is a natural polyphenol with powerful hypoglycemic and antioxidant properties, we aimed to investigate the comparative effects of curcumin and metformin (a common therapeutic medicine for type 2 diabetes) on oxidative status and apoptosis status in kidney of type 1 diabetic rats.

Material and Methods: In this experimental study 60 male Wistar rats were divided into 10 groups. Type 1 diabetes was induced by streptozotocin. Rats received chow diet and treated with either normal saline in control (N) and diabetic control (D) groups or different doses of metformin (300 or 500 mg/kg body weight) or curcumin (50 or 150 mg/kg body weight) in N+Met300, N+Met500, N+Cur50, N+Cur150, D+Met300, D+Met500, D+Cur50, and D+Cur150 groups. Urinary creatinine, urea, and protein were measured. Total antioxidant capacity (TAC), total oxidant status (TOS), malondialdehyde (MDA), and the activity of superoxide dismutase (SOD), glutathione peroxidase (GPx), and catalase were assessed in kidney tissues. The mRNA level and protein level of Bax and Bcl-2 determined in kidney tissue of experimental groups.

Results: Both metformin and curcumin showed significant effects on urinary creatinine, urea, and protein levels (p value for all was <;0.001). Unlike metformin, curcumin completely restored TAC and TOS (p<;0.001), and MDA (p=0.012) in kidney tissues and significantly recovered the activities of SOD (p=0.003), GPx (p<;0.001), and catalase (p=0.011). The high dose of curcumin could decreased Bax/Bcl2 ratio mRNA level, although curcumin and metformin (500mg/kg body weight) could decreased bax protein level in diabetic treated rat with curcumin and metformin and decreased Bax/Bcl-2 ratio.

Conclusion: Curcumin was found more effective than metformin in attenuating oxidative status and apoptosis in diabetic nephropathy.

Keywords: curcumin, diabetic nephrophaties, metformin, oxidative stress, apoptosis

Corresponding author Email address: sohila.asadi75@yahoo.com

ID:1094

Effect of Resveratrol on FOXO expression in adipose tissue of diabetic rats

Soheila Asadi[1], Mohammad taghi Goodarzi[2], Zohre Rahimi[1], Massoud Saeidi jam[2]
[1] Department of Clinical Biochemistry, Faculty of Medicine, kermanshah University of Medical Sciences, kermanshah-Iran [2] Department of Clinical Biochemistry, Faculty of Medicine, Hamadan University of Medical Sciences, Hamadan-Iran

Objective: Diabetes is a common metabolic disorders characterized by elevated blood glucose level. Oxidative stress has a critical role in insulin resistance, and adipose tissue is the central organ in this process. FOXO proteins are important transcriptional factors in oxidative stress and insulin resistance. Resveratrol (RSV) is polyphenol with hypoglycemic and antioxidant properties. The aim of this study was to examine the effects of RSV on FOXO gene expression, SOD serum activity, and insulin level and insulin resistance in type 2 diabetic rats.

Material and Methods: Thirty male wistar rats were used in this study. Diabetes was induced in rats (n=24) using STZ & NA; then, they were divided into 4 groups (n=6). six untreated normal rats was used as normal control group (group 1); diabetic rats in groups 2 to 5 were treated by 0, 1, 5 and 10 mg /kg body weight of RVS respectively for 30 days. At the end of experimental period, the rats were sacrificed, abdominal incision was given and blood was collected from the cardiac puncture, serum was separated, adipose tissues obtained and stored at −80°C. Glucose was determined by PARS Azmum kit (Iran). Insulin serum level was determined by ELISA method. SOD activity in serum was determined using Randox kit (England). FOXO1 and FOXO3a genes expression in adipose tissue were evaluated using real-time PCR.P<0.05 considered as significant level

Results: Findings of the present study indicated that resveratrol reduce blood glucose level significantly and increased insulin level and improve insulin sensitivity. Resveratrol resulted in an increased SOD activity serum levels and caused to reduction of expression of FOXO1 and FOXO3a in adipose tissue of type 2 diabetic rats.

Conclusion: In summary, the results showed that RVS by attenuate FOXO expression in adipose tissue of type 2 diabetic rat indicate potential hypoglycemic and antioxidant properties and consequently ameliorated.

Keywords: Diabetes, oxidative stress, insulin resistance, FOXO1, FOXO3a

Corresponding author Email address: sohila.asadi75@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:1098

The importance of DT-Diaphorase enzyme in Phenylketonuria (PKU) detection

Mahdiye Zaboli[1], Masoud Torkzadeh Mahani[1]
[1] Graduate University of Advanced Technology, Kerman, Iran

Objective: Phenylketonuria (PKU) is an autosomal recessive inborn error of phenylalanine (Phe) metabolism resulting from deficiency of phenylalanine hydroxylase (PAH). Untreated PKU is associated with growth failure, microcephaly, seizures delay and severe intellectual impairment. Early quantitative determination of plasma L-Phe is essential for the diagnosis of PKU and control of dietary therapy of PKU patients. Determination of phenylalanine is based on the increase in absorbance of NADH during the first minute of reaction. In the present assay the NADH is recycled to NAD+ with diaphorase and NBT (Nitro blue tetrazolium chloride dye). Therefore, the equilibrium which normally lies far toward phenylalanine is displaced to phenylpyruvic acid and the linearity in time of formation of product is much extended. In addition, the sensitivity of the assay is increased.

Material and Methods: The codon-optimized gene DT-Diaphorase was synthesized. The synthesis included the insertion of NcoI and xhoI restriction sites prior to and following the designed gene for simple digestion and ligation into pET28a plasmid. The recombinant DT-Diaphorase plasmids were transformed to E.coli BL21 competent cells for recombinant-protei expression. The transformed bacteria which contain recombinant plasmid were cultured in 37ºC with 250 rpm in LB and TB medium for 10 hours. The enzyme was purified by Ni-NTA column, Protein concentration was determined by BCA kit. in next experiments, the purified protein was desalted and used in the reaction mixture to convert back the NADH to NAD+.The assay was based on the increase in absorbance at 550 nm as the formation of formazane dye from the reaction of NADH and NBT.

Results: Our Results showed the creation of a colorful formazane dye after the addition of the recombinant Diaphorase enzyme to the reaction mixture that this phenomenon confirmed high activity of Diaphorase enzyme in convertion back the NADH formed by phenylalanine dehydrogenase to NAD+, which prevented product inhibition and pushed the equilibrium of the dehydrogenase reaction to almost 100% formazane dye completion.

Conclusion: The use of engineered Diaphorase has allowed creation of a simple, single-step, fast, accurate and sensitive colorimetric method for the determination of blood phenylalanine.

Keywords: DT-Diaphorase, PKU, formazane dye

Corresponding author Email address: zabolimahdiye@gmail.com

ID:1099

Study of Cytotoxic Effects of Tamoxifen-PLA Polymer Nanocapsules on Breast Cancer Cell Line MCF-7

Yasaman Alamdari[1], Maryam Bikhof-Torbati[2], Masud Shabanzadeh[3]
[1] Biology department, Basic sciebce collage, East Tehran Branch, Islamic Azad University, Tehran, Iran
[2] Biology department, Basic sciebce collage, Imam Khomeini Rey Branch, Islamic Azad University, Tehran, Iran
[3] Chemistry department, Basic sciebce collage, Damghan Branch, Islamic Azad University, Damghan, Iran

Objective: Breast cancer is an uncontrolled growth of abnormal cells which occurs in various breast tissues, such as the transmitter ducts, or the milk gland or in non-glandular tissue. A combination of chemotherapy, radiation therapy and surgery are usually prescribed. Nowadays, nanocomposites are a successful tool to improving the quality of the drug delivery system in cancer patients, as well as reducing the complications of chemotherapy drugs on healthy cells. PLA Polymer Polymers are biocompatible biodegradable materials which are used as drug carrier. These materials turn to neutral lactic acid monomers during carbohydrate metabolism. In this study, the effect of cytotoxic nanosilver tamoxifen-encapsulated with PLA polymers on MCF-7 cell line (breast cancer) was investigated.

Material and Methods: The anticancer effects of nano-tamoxifen on the MCF-7 cell line were investigated using MTT assay at 48 and 72 hours. In this assay, tetrazolium (MTT) is converted by mitochondrial enzymes into furmasan purple crystals in the living cells. The amount of furmasan was calculated by spectrophotometric colorimetric method in a wavelength of 570 nm which, represents the percentage of cell biomass.

Results: With increasing drug exposure time from 48 to 72 hours and increasing drug concentration from 10 to 200µg /ml, the cytotoxic effect of the drug on the MCF-7 cell line was increased.

Conclusion: Finally, treatments of 200µg /ml for 72 hours lead to the highest mortality rate and decreased 6.57% to 5.35% cell viability.

Keywords: Poly lactic acid PLA, Tamoxifen, Nanodrugs, MCF-7

Corresponding author Email address: yasaman.alamdari24@gmail.com

ID:1100

Nitric Oxide concentrations changes in the plasma of patients with trigeminal neuralgia during different pain states

Asghar farajzadeh[1], S. Zahra Bathaie[1]
[1] Tarbiat Modares University, Tehran, Iran

Objective: Trigeminal neuralgia (TN), with exclusive severe pain, is a chronic neuropathic pain disorder in cranial nerves. Since involved mechanisms in pain pathway sensitization during TN is not understood completely, the results of the treatments are not satisfactory all the times. Regarding nitric oxide (NO) fundamental role in neuropathic pain, it is a candidate molecule involved in the pain pathway during TN.

Material and Methods: Thirteen healthy individuals, as a control group, and thirteen patients undergoing microvascular decompression (MVD) for treatment of purely paroxysmal TN, were included in the study. In order to evaluate NO in plasma of control group and patients before and after MVD, we used commercial calorimetric nitrate/nitrite (NO) assay Kit. Based on manufacturers' instructions, absorption of samples at 540 nm was read by the microplate reader and the level of total NO, including both nitrite and nitrate, was measured. McGill pain questionnaire was used to assess Pain Rating Index (PRI) in patients before and after MVD.

Results: NO concentration was 38.53 ± 1.45, 47.61 ± 1.261 and 44.23 ± 2.948 µM in the control group, and patients before and after MVD, respectively. Statistical analyses of NO concentrations revealed a significant decrease ($P<0.01$) after MVD. In addition, it was significantly higher in patients (before and after surgery, $P<0.01$), in comparison with the control group. Moreover, assessment of pain severity in patients showed significant decrease after surgery ($P<0.01$).

Conclusion: Regarding elevated NO and PRI, in patients compared to healthy individuals and their decrease after MVD, it is suggested that No plays important role in pain pathway sensitization during TN.

Keywords: Trigeminal neuralgia, Nitric oxide, Pain pathway, Pain rating index

Corresponding author Email address: farajzade.a@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1101

Promoter methylation status of ABCA1 gene and its association with the severity ofcoronary artery occlusion

Elahe Mansoori[1], Ebrahim Eftekhar[1], Fataneh Esmaeili[1], Mahmood Khayatian[1], Hossain Farshidi[2], Maryam Montaseri[3]
[1] Molecular Medicine Research Center, Hormozgan Health Institute, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[2] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[3] Department of Public Health, Faculty of Health, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Recent findings suggest that aberrant DNA methylation may have an important role in the pathogenesis of coronary artery disease (CAD). The aim of present study was to investigate the promoter methylation status of ABCA1, as an important gene in HDL metabolism, and its association with the severity of coronary artery occlusion.
Material and Methods: In this study 146 subjects based on the results of angiography were classified into four groups including normal group (n=42), patients with 1 coronary artery occlusion (1VD=40), patients with 2 coronary artery occlusion (2VD=33) and patients with 3 coronary artery occlusion (3VD=31). Blood sample was collected before angiography and used for genomic DNA isolation. Methylation-specific PCR was used to examine gene promoter methylation status.
Results: ABCA1 gene promoter were methylated in 61.9% of the control group and 77.4, 54.5 and 77.7% of patients with 1VD, 2VD and 3VD, respectively. Promoter hypermethylation of the ABCA1 gene could not significantly increase the risk of CAD. Additionally, no significant association was observed between methylation status of ABCA1 gene and clinical risk factors of CAD.
Conclusion: Our findings demonstrate that the promoter methylation pattern of ABCA1 gene were not markedly different in patient groups compared to control. Additionally, changes in methylation status of this gene could not significantly increase the risk of CAD.

Keywords: DNA methylation, Coronary artery disease, ABCA1 gene

Corresponding author Email address: elahemansouri92@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:1102

Anticancer effect of recombinant Soluble Tumor Necrosis Factor-Related Apoptosis-Inducing Ligand (TRAIL) Protein on MDA-MB-231 cell lines

Maryam Rahmani Sarbanani[1], Masoud Torkzadeh Mahani [1]
[1] Graduate University of Advanced Technology, Kerman, Iran

Objective: Successfully cancer therapies aim to induce apoptosis in cancer cell lines. Apoptosis is an evolutionarily conserved and essential for maintenance of tissue homeostasis and removal of unwanted cells. (TRAIL) belongs to the group of therapeutic agents selectively targeting a wide variety of cancer cells without affecting the normal cells. The therapeutic potential of TRAIL is attributed to its receptor expression in a variety of tissues. Which initiates apoptosis in cancer cells through interaction with the death receptors DR4 and DR5. Due to its selective nature, it is considered as a significant therapeutic agent in cancer therapy. The purpose of this study was to produce recombinant human sTRAIL in Rosseta Gami2 E.coli strain and its functions on cancerous cell in vitro.

Material and Methods: We optimized the coding sequence of this protein. We used xhol and BamH1 restriction enzymes for its digestion and cloned it inside Pet 28a vector which carries the T7 promoter. The recombinant plasmid was transformed into Rosseta Gami2 E.coli strain for expression. The transformed bacteria which contain recombinant plasmid were cultured in 37ºC with 250 rpm in LB and in 20ºC in TB medium for 18 hours. TRAIL was purified by Ni sepharose column, and the presence of the recombinant protein was confirmed by SDS-PAGE. The concentration of purified protein was measured by Bradford assay. In next experiments, the purified protein was desalted and applied toward MDA-MB-231 cell lines and cell viability was assessd by the MTT assay.

Results: Our finding showed that the recombinant protein (34kD) has been successfully produced. MDA-MB-231 cell lines were used for examining the effects of sTRAIL on cell growth by MTT assay. sTRAIL was shown powerfull cytotoxicity to MDA-MB-231. sTRAIL cuased Inhibition of poliferation in all cell lines with IC50 values of 252 ng/ml in MDA-MB-231 cell lines.

Conclusion: In summary, TRAIL can be considered as a promising therapeutic agent for effective, targeted and less toxic agents for treatment of cancers.

Keywords: sTRAIL, Codon optimization, Rosetta gami2, Cancer therapy

Corresponding author Email address: Maryamrahmani95mg@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1103

Association between interleukin-4 (IL-4) VNTR, gene polymorphism, and breast cancer susceptibility in Iranian population

Milad Mohammadoo-khorasani[1], Mostafa Ibrahimi[1], Behzad Jamalzei[1], Reza Ibrahimi[2], Maryam Alaei[1], Maryam Moossavi[3]
[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[2] Student Research Committee, Faculty of Medicine, Mashhad University of Medical Sciences Mashhad, Iran
[3] Department of Molecular Medicine, Birjand University of Medical Sciences, Birjand, Iran

Objective: Breast cancer (BC) is one of the most common types of cancer and the second leading cause of cancer death among women. Epidemiological studies have shown that BC is linked to genetic and environmental factors, and inheritance plays a key role in the pathobiology of this disease. Interleukin-4(IL-4) is a key differentiation cytokine and is produced by Th2 and activates Th2 development. Hence the current study aimed to assess the possible association between interleukin-4 (IL-4) VNTR polymorphism, and BC susceptibility in a sample of Iranian population.
Material and Methods: IL-4VNTR polymorphism was evaluated in 150 BC women and 150 age-matched healthy women by polymerase chain reaction method.
Results: Among 3 possible alleles for IL-4 gene, we only observed 2 alleles. Current findings indicate that RP2/RP2 genotypes can be regarded as potent protective factors against breast cancer (OR= 0.929 [95%CI, 0.929 – 0.995]).
Conclusion: Our result have shown that the RP2/RP2 genotype of the IL-4 VNTR polymorphism could be a protective factor for BC susceptibility.

Keywords: IL-4, breast cancer, VNTR polymorphism

Corresponding author Email address: milad.kh@modares.ac.ir

ID:1104

Plasma proteomic pattern of migraineurs in two phases of migraine-attack and pain-free period

Maryam Alaei[1], S. Zahra Bathaie[1], Mansoureh Togha[2]

[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

[2] Department of Neurology, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Objective: Migraine diagnosis is completely symptom-base by using the criteria described in the International Classification of Headache Disorders 3 Beta (ICHD-3β), which may lead to some challenges especially in terms of chronic migraine. Therefore, in the present study the plasma protein profile was compared in the migraineurs at two phases of attack and pain-free periods using two-dimensional gel electrophoresis (2DE).

Material and Methods: The blood samples of 10 migraine patients, in two different phases, were collected. Firstly, plasma was separated. To remove high abundance protein such as albumin, TCA/Aceton 10% solution was used and then two dimentional electrophoresis was done. Finally, All the gels were compared an analyzed by Melani software. The spots with significant differences between pain-free versus migraine attack period in each patient was detected. To identify the possible protein in each spot, SWISS-2DPAGE http://world-2dpage.expasy.org) analysis was done.

Results: Analysis revealed that the expression of several proteins is different between two phases. One of these protein was with higher expression in the attack period comparing to pain-free period.

Conclusion: Overall, the expression of some proteins such as fibrinogen was elevated in the plasma of migraineurs in the migraine-attack phase, which may be associated with hypercoagulability and neurogenic inflammation during migraine attack.

Keywords: Migraine, proteomics, plasma

Corresponding author Email address: maryam.alaee@modares.ac.ir

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1105

CRISPR Development of Parkin gene in E. coli

Saeid Malek Ghasemi[1], Hosseinali Sasan[1], Sara Soltanian[1]
[1] Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: Recently CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) system acts as a new and beneficial versatile achievement offering us a potential platform for recognition, redirection, editing, regulation, inactivation and many other genetic manipulations. CRISPR enzymatic technique is included two sections, DNA recognition unit (gRNA contains crRNA and tracrRNA) and DNA cutter unit that called Cas9 endonuclease. Parkin is one of the important genes related to Parkinson disease in human, which we decided to establish a recombinant CRISPR vector that is included of a gRNA which is able to disrupt Parkin gene.

Material and Methods: By this research, an oligonucleotide crRNA (principal part of guide RNA) was designed with high score with 20 bps long. The oligo nucleotides were then allied to construct dsDNA. The segments of the interest were then ligated into linear PX459-Puro expression vector using of T4 DNA ligase before heat shock transformation in E. coli DH5α competent host cells. After 24 hrs, 10 well-grown colonies were selected and plasmid extracted using of alkaline lysis method.

Results: PCR and DNA sequencing analysis show that the cloning of Parkin gRNA segment was successful.

Conclusion: Crispr-cas9 system as a new version of genome editing tools is able to disrupt or manipulate each region of genome. For this purpose, it is important to make a good condition for vector restriction, ligation and ultimately transformation of this recombinant vector into DH5α which results taken in this work show, successfully cloning of recombinant vector contain of specific gRNA which target Parkin gene.

Keywords: Genetic Manipulation, CRISPR System, Parkin Gene, Parkinson Disease, DH5α

Corresponding author Email address: saeid_malek_2011@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1106

CRISPR Development of Parkin gene in N2A eukaryotic cells

Saeid Malek Ghasemi[1], Hosseinali Sasan[1], Sara Soltanian[1]
[1] Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: Clustered Regularly Interspaced Short Palindromic Repeats-associated nuclease (CRISPR-Cas) system which is consist of a gRNA and an endonuclease protein called Cas that this protein can be conducted by single guide RNAs in order to disrupt genes in cells. Although the originates comeback to a microbial adaptive immune system, but nowadays it has become beneficial versatile achievement which provide a very efficient method for targeted gene disruption and any other genetic manipulations. Parkinson's disease (PD) cause involuntary shaking, muscle rigidity and also progressive loss of dopaminergic neurons. It is the second most incurable and common neurodegenerative disease in population until now. Parkin gene has an important role in incidence of Parkinson disease since some study reported which delete mutations can be causes PD severity.

Material and Methods: By this work, Desire gRNAs were ligated into Pguide-it vector which was modified by TAKARA Company then exist of gRNA was demonstrated by cloning PCR and sequencing analysis then recombinant vector containing gRNA of parkin gene was successfully transfected in N2A eukaryotic cells using of lipofectamine material.

Results: Florescence microscopy analysis and also PCR experiments verified successful cloning procedure.

Conclusion: Results found in this work could help us to modify different genes using of CRIPR endonuclease system and the result show mutation with exon 4 deletion which is common in people suffering of heritable form of PD.

Keywords: Genetic Manipulation, CRISPR System, Parkin Gene, Parkinson Disease

Corresponding author Email address: Saeid_malek_2011@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1108

Genetic manipulation of the ZNF543 as a guilty gene in Parkinson disease (PD)

Mohammad Hashemabadi[1], Hosseinali Sasan[1], Hadi Ravan[1], Saeed Esmaeili Mahani[1]
[1] Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran

Objective: RNA-guided platform technology based on CRISPR (Cluster Regularly Interspaced, Palindromic Repeat) open a new avenue toward DNA manipulation which consisted of two major parts: guide RNA and Cas9 endonuclease. Collaboration between these components form a RNA-protein complex which cause DSB (double strand break). Cell repair mechanisms consist of NHEJ (non-homologous end-joining) and HDR (Homology-Directed Repair) can detect break in genome and repair it. Inspired by these nature mechanism, scientists were able to precise manipulate cells genome. Given a recent study, ZNF543 gene mutation acts as one of the Parkinson disease reasons, so we decide to establish a cell model with mutation in promoter region of ZNF543 as a guilty gene in Parkinson disease.

Material and Methods: A general analysis to finding conserved region throughout the ZNF543 gene using UCSC genome browser were done, then the dsDNA for desire guide RNA with highest score offered by crispr.mit.edu site was ligated into linear (Pguide-it) vector and recombinant vectors were then transformed into DH5α) E. coli), then we use of SH-SY5Y cell line for vector transfection and transfect were done with lipofectamine2000, for mutations detect in promoter region conventional PCR were done.

Results: Transfection efficiency was determining by fluorescence microscopy and mutations were demonstrate with conventional PCR.

Conclusion: Crispr system as a new method for genome editing were used in this study, and we create some indel mutation in ZNF543 gene as a guilty gene in Parkinson disease. It was demonstrated which delete mutation in this gene is related to PD.

Keywords: Crispr System, ZNF543, Parkinson Disease, Mutation, Cell Model

Corresponding author Email address: mohammadhashemabadi@gmail.com

ID:1109

α-Lipoic Acid: A Multifunctional antioxidant that improves lipid profile in patients with gestational diabetes

Hadise Aslfalah[1], Ali Khosrowbeygi[2], Mehri Jamilian[3], Mostafa Delavar[4], Hadi Ansarihadipour[5]
[1] Student research committee, Arak University of medical sciences, Arak, Iran
[2] Department of Clinical Biochemistry, Arak University of Medical Sciences, Arak, Iran
[3] Endocrinology and Metabolism Research Center, Arak University of Medical Sciences, Arak, Iran
[4] Department of Pharmacology, School of Medicine, Arak University of Medical Sciences, Arak, Iran
[5] Department of Biochemistry and Genetics, School of Medicine, Arak University of Medical Sciences, Arak, Iran

Objective: The importance of gestational diabetes (GDM) is due to its harmful effects on the fetus and the long-term prediction of NIDDM in the mother. Increasing serum levels of TG and LDL are risk factors for high blood lipids and cardiovascular disease in the future for women with GDM. GDM are associated with an increased level of oxidative. Data has shown that ALA is effective due to its antioxidant properties to prevent or treat diabetes complications and prevents excessive production of reactive species of oxygen and nitrogen. The aim of this study was to investigate the effect of lipoic acid on lipid profile in women with gestational diabetes mellitus.

Material and Methods: Sixty women with GDM enrolled in this study. Thirty of them were randomized in the drug group (receiving 100 mg/day of ALA) and 30 women were randomized in placebo group. Intervention was continued for 12 weeks. In both groups all subjects finished the study and were included in the analysis. Serum levels of the variables were measured before and after supplementation.

Results: Serum value of TG (P = 0.006) decreased significantly in the drug group Also, The mean serum triglyceride level before the study was not statistically significant, but the mean serum triglyceride level after the study was statistically significant. However, did not show significant differences in TC, HDL-C and LDL-C.

Conclusion: The results of the current study had shown that after supplementation with 100 mg / day of ALA for 12 weeks, serum value of TG in women with gestational diabetes mellitus decreased.

Keywords: Alpha lipoic acid, Gestational diabetes, oxidative stress

Corresponding author Email address: Falah.949@yahoo.com

ID:1110

Introducing suitable protein targets for treatment of muscle invasive bladder cancer

Samira Bahrami[1], Bahram Kazemi[1], Abbas Basiri[2], Hakimeh Zali[3]
[1] Biotechnology Department, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Department of Urology, Urology and Nephrology Research Center, Shahid Labbafinejad Medical Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[3] Proteomics Research Center, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Bladder cancer is the second cause of death in the genitourinary malignancies after prostate cancer. About 70% of bladder tumors are non-muscle invasive (NMIBC) and 30% are muscle invasive (MIBC). Recurrence of the tumor is the prominent characteristic of bladder cancer. Chemotherapy as usual treatment for MIBC could not improve survival rate of these patients adequately. Therefore, it necessitates researchers to develop new therapeutic targets. Therapy based on the antibodies is one of the main strategies to treat the solid tumors. Antibody-drug conjugates (ADC) can improve the anticancer activity of drugs by delivering a strong potent cytotoxic agent specifically to desired tumor cells. Selecting suitable targets is the most critical step for the activity of an ADC. So the aim of this study is to discover therapeutic cell surface antigen targets for bladder cancer using data obtained by proteomic study.
Material and Methods: Another study has been showed that 181 proteins were overexpressed in tissue of MIBC patients in comparison with controls by iTRAQ (Isobaric tags for relative and absolute quantitation) labeling method. Using GO (Gene Ontology) and PANTHER (Protein analysis through evolutionary relationships) database and also Clupedia app, gene ontolology of these proteins was annotated.
Results: Upregulated membrane proteins as suitable targets were selected that included EGFR (Epidermal growth factor receptor), Hsp60 (Heat shock protein 60), Hsp90 and TFRC (Transferrin receptor).
Conclusion: Monoclonal antibodies against these proteins or their inhibitors were used for treatment of different cancers in preclinical and clinical trials.
Keywords: Muscle invasive bladder cancer, Antibody-drug conjugate, Gene ontology
Corresponding author Email address: bahramy.samira@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
roxancongress.com
www.rayancompany.ir
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1111

Positive correlation between Interleukin-1 receptor antagonist gene 86bp VNTR polymorphism and colorectal cancer susceptibility: a case control study

Mostafa Ibrahimi[1], Milad Mohammadoo-khorasani[1]
[1] Research Center for Gastroenterology and Liver Disease at Taleghani Hospital, Tehran, Iran

Objective: Colorectal cancer (CRC) is one of the most common malignancies worldwide. Genetic variations in cytokine genes and their receptors lead to severity of the disease. The interleukin-1 receptor antagonist (IL-1Ra) is a cytokine that inhibits interleukin- 1 (IL-1) activity by binding to the IL-1 receptors. Also Interleukin 4 (IL-4) is an anti-inflammatory cytokine that can play an important role in several cancers. The present case control study was aimed to evaluate the association of IL-4 and IL-1 RA VNTR polymorphisms with the susceptibility to CRC in a sample of Iranian population from Research Center for Gastroenterology and Liver Disease at Taleghani Hospital, Tehran.
Material and Methods: A total of 123 patients diagnosed with CRC and 152 healthy controls were recruited in the present study. Genomic DNA was extracted by salting out method from whole blood and genotyping of IL-1RA and IL-4 VNTR polymorphisms were determined by PCR-based technology.
Results: Our study manifested the frequency of 1/2 and 2/4 genotypes of IL-1 RA 68bp VNTR polymorphism are statistically significant between both groups (P=0.0001 and P=0.01 respectively). However, we could not find any correlation between IL-4 VNTR polymorphism and CRC cancer.
Conclusion: It seems that 1/2 and 2/4 genotypes of IL-1RA are correlated with CRC susceptibility in our population. Although, more studies are need to confirm our results.

Keywords: Colorectal cancer, Cytokines, IL-4, VNTR polymorphism, IL-RA

Corresponding author Email address: miladkh24@yahoo.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1112

Targeting Cancer Stem Cells by Exosome-Madiated Drug Delive

Fatemeh B. Rassouli [1], Fatemeh Sadat Ferizni[2]
[1] Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
[2] Novel Diagnostics and Therapeutics Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: High prevalence and mortality of cancer have made this disease a major health concern worldwide. Late diagnosis, resistance to conventional therapies and metastasis are challenges that need to be overcome by novel anticancer approaches. Since cancer stem cells (CSCs) are associated with undesired properties such as failure of chemoradiotherapy, specific targeting of these cells will lead to much more promising clinical outcomes.

Material and Methods: To review novel targeting strategies against CSCs, recent papers including key words cancer stem cells, exosome and drug delivery were extracted from databases PubMed, Scopus, and Web of Science.

Results: Exosomes are very small vesicles derived from intracellular late endosomes, presented in cell conditional medium and body fluids. They can be isolated by special surface markers, and carry different biomolecules, such as proteins, lipids, mRNAs and micro RNAs, which protect them from degradation. Due to their biocompatibility, stability and ease of production by most cell types, exosomes are good candidates for precise delivery of therapeutic molecules to CSCs. Recent studies reported that doxorubicin-loaded exosomes induced considerable anticancer effects in vivo, similar to exosome-encapsulated paclitaxel that can directly target drug resistant CSCs. Other anticancer drugs that showed improved efficacy upon exosome-mediated delivery are withaferin A, celastrol and curcumin. Since CSCs express surface markers such as CD44, CD24 and CD133, exosomes coated with such antibodies could specifically deliver their therapeutic cargo to improve CSC targeting efficiency.

Conclusion: Exosomes are natural nanocarriers with great potential to be used in future CSC-targeted therapies, although more research is necessary to optimize their cargo loading capacity.

Keywords: Exosome, Cancer stem cell, Targeted therapy

Corresponding author Email address: behnam3260@um.ac.ir

ID:1113

Synthesize, characterizing and study of the cytotoxicity of nioliposomal nanocarrier containing ginger extract

Bibi Fatemeh Haghiralsadat[1], Afsaneh Alsadat Movahedpour[1], Masoud Zare Shehneh[1], Seyed Mohammad Moosavi Zade[1], Raheleh Ehsani[1]

[1] Shahid Sadooghi University of Yazd, Yazd, Iran

Objective: Today, Cancer is the most common cause of mortality in human societies. Treatment on different types of cancer is very complex and the discovery of new anticancer drugs along with high efficiency, low cytotoxicity that is able to affect the cells selectively with a low price, is one of the major concerns of the pharmaceutical community in the world. Recently, it has been proven that nanoscience can increase the effectiveness of treatment while reducing the side effects. Niliposomes is one of these nanocarriers for drug delivery. The aim of this paper was to synthesize Nioliposomes containing ginger extract and investigate its cytotoxicity on healthy and cancerous cells.

Material and Methods: Ethanolic extract of Ginger root was prepared using soxhlet apparatus. Nioliposomes containing ginger extract were synthesized by thin-film hydration method. In order to reduce nanocarrier particles size probe sonication was applied. Nanoparticle's size, zeta potential, encapsulation efficiency, and release profile of extract form carriers were assayed. Blank nanocarrier, nanocarrier containing ginger extract and the extract alone cellular cytotoxicity were evaluated by MTT assay on Human foreskin fibroblast (HFF) cell line, as a normal and typical cell line.

Results: The Nioliposomes showed the mean diameter of 87 nm and the loading efficiency of 48.5%. The release profile of extract from nanocarrier showed to be controlled and time-dependent. Although nioliposome containing ginger extract showed no cytotoxicity in healthy cell lines, it was toxic to cancer cell lines.

Conclusion: Given the fact that nioliposomal form of ginger has cytotoxic properties in cancerous cells and has no cytotoxic effect in normal cells proves the carrier to be a potent therapeutic option in cancer treatment.

Keywords: Ginger, nioliposome, cancer

Corresponding author Email address: haghirosadat@gmail.com

ID:1114

The role of Retinoic Acid in pathogenesis of Craniosynostosis

Shirin Fattahpour[1], Hossein Abdali[2], Amin Ghanei[3], Samihe Mehdipour[4]
[1] Alzahra research center, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Craniofacial and Cleft Research Center, Alzahra Research Institute, Isfahan University of Medical Sciences, Isfahan, Iran
[3] Department of Plastic Surgery, Isfahan University of Medical Sciences, Isfahan, Iran
[4] School of medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: The aim of present perusal was to perform a systematic review for revealing the impact of Retinoic acid in pathogenesis of Craniosynostosis. The condition in which cranial sutures are fused prematurely is predicated Craniosynostosis. Increased intracranial pressure, conversions of the pattern of cranial growth, the maladaptive shape of the head and mental delay are caused by this. Skeleton organ s development is affected by retinoic acid witch the most active metabolite of vitamin A.

Material and Methods: An electronic search using the databases PubMed, Cochrane Library and Scopus until March 2018 was carried out. Literatures that performed the PICO (Patients, Interventions, Controls and Outcome) criteria, were selected. PRISMA checklist were used to appraise the quality of included studies. There was language restriction.

Results: A whole of 311 abstracts were matched by key words in the literature search, extracted. Nine studies met the inclusion PICO criteria. Four studies were about pathophysiological conditions that caused craniosynostosis. Four studies were about signaling pathway of retinoic acid in craniosynostosis development. And finally one study proceeded to metabolism of retinoic acid and mutagen role of it.

Conclusion: These finding have ascertained that retinoic acid altered osteoblast-to-preosteocyte transitioning. Development of cranial suture at different phase affected by activity of functional module. Moreover, cranial suture patency maintains by retinoic acid. Based on this study, if key signaling molecules in these pathways are recognized, probably can use of pharmacological approaches to therapy.

Keywords: Craniosynostosis, Retinoic acid, vitamin A, Signalling pathway

Corresponding author Email address: Shirin_fattahpour@yahoo.com

ID:1115

Exogenous nitric oxide induced early mineralization in rat bone marrow mesenchymal stem cells via activation of alkaline phosphatase

Mahsa Maleklou[1], Sadiyeh Pari[1], Mohammad Hussein Abnosi[1]
[1] Biology Dept., Faculty of Sciencest, Arak University, Arak Iran

Objective: Previously we showed, low concentration and short time treatment with sodium nitroprusside (SNP) as a nitric oxide (NO)–donor caused no harm to rat bone marrow mesenchymal stem cells (MSCs). This study was conducted to characterize the impact of NO on MSCs differentiation.
Material and Methods: MSCs were treated with 100µM and 1000 µM of SNP for 1 hour in every 48 hours with osteogenic media. After 5, 10, 15 and 21 days the viability and the level of mineralization was determined using MTT assay and alizarin red respectively. Nuclear diameter and cytoplasm area of the cells were studied with the help of fluorescent dye. Concentration of calcium and activity of ALT, AST, LDH and ALP were evaluated with the help of commercial kits.
Results: SNP with concentration of 1000µM revealed to be toxic but the 100µM concentration did not show decrease of viability until the day 15. The low concentration of SNP increased the matrix deposition as well as activity of ALP, LDH and AST. In addition metabolic activity of the cell has changed from aerobic to anaerobic.
Conclusion: We recommend more investigations, but it may be announce that the prescription of low concentration of SNP might be useful in promotion of bone repair.
Keywords: alkaline phosphatase, cell morphology, mesenchymal stem cells, osteoblasts, sodium nitroprusside
Corresponding author Email address: Mahsamaleklou1@gmail.com

ID:1116

The investigation obscure degree of reticulation in breast cancer management; providing new pliable network for molecular targeted therapy

Vida Pourteimoor[1], Samira Mohammadi-Yeganeh[2], Mahdi Paryan[3]
[1]Biology Department, Faculty of science, University of Zanjan, Zanjan, Iran
[2] Cellular and Molecular Biology Research Center, Biotechnology Department, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[3]Department of Research and Development, Production and Research Complex, Pasteur institute of Iran, Tehran, Iran

Objective: Breast cancer (BC) is a heterogeneous disease and different interlinked molecular platforms are implicated in the various developmental stages of complex entity. In particular, some signaling pathways, inflammatory factors and immune system related- lattice are drastically coordinated with tumor mass to introduce more flexible and destructive progression in BC.
Material and Methods: Our analysis through studying some articles and several well done Meta analyses is exerted a newly designed hypothesis that is implied a concrete risk factor assessment for obtaining more precise evaluation of therapy regimens.
Results: Generally, C-MYC, PGE2, IL-6, TNF-α, some stromal cells specially tumor- associated macrophages (TAMs), adipokine and psoriasin are provided a tenacious and feasible schemata of tumor growth and progression in both early stage management of breast cancer and therapy implication periods.
Conclusion: The mentioned interlinked molecular mechanisms can be abnormally regulated in different stages of breast cancer similar to that of impaired molecular interactions based on cell- type, the degree of drug metabolism as well as the stress and immune response level whose can contribute to tumor viability. In a way that, IL-6, IL-10 and psoriasin can be considered as external influential switches for mesenchymal transition of cognate interlinked lattice to manifest more pliable gowth type. Finally, the therapeutic implications of this molecular interactome might be play a key role in the early diagnosis of targeted therapy risks.

Keywords: Breast cancer, molecular interaction, targeted therapy

Corresponding author Email address: vidasilver@yahoo.com

ID:1117

Study of a surface antigenic protein of acinetobacter baumannii, ABAYE2132, by bioinformatics approaches

Behnam behnooye[1], Safa Lotfi[1], Seyed Mohammad Moshtaghioun[2], Mojtaba Mortazavi[1], Ali Falahati[2]
[1] Department of Biotechnology, Institute of Science and High Technology and Environmental Sciences, Graduate University of Advanced Technology, Kerman, Iran
[2] Department of Biology, Faculty of Science, Yazd University, Yazd, Iran

Objective: Nowadays nosocomial infections caused by acinetobacter baumannii constitute a large part of hospital infections. The cause of the increased risk of infection with A. baumannii is rapid and simultaneous resistance of this bacterium to antibiotics. This issue, coupled with the absence of a confirmed vaccine, has led to both public health and economic problems all over the world. The bacterium is still recognized by time-consuming conventional methods and delayed or doubtful diagnosis can cause problems in controlling the disease. So, study of specific antigenic proteins of A. baumannii that can be used as vaccines or biomarkers in diagnostic tests is really important. In the present work, the bioinformatics approaches were utilized to study ABAYE2132 which is a surface antigenic protein belonging to the A. baumannii Pilus.

Material and Methods: The three dimensional (3D) structure of ABAYE2132 protein was predicted through SWISS-MODEL homology modeling server. Structural validation of the 3D models and stereochemical analysis of Ramachandran diagrams were performed and dihedral angles were calculated. The multiple sequence alignment performed by T-COFFEE showed that the proteins which have similarity in sequence and structure to ABAYE2132 protein play a role in cell adhesion.

Results: The results revealed that the created 3D models of ABAYE2132 protein have good quality and stability and the protein participates a role in the cell adhesion process which is often considered as the first stage of pathogenesis.

Conclusion: ABAYE2132 can be introduced as a vaccine candidate against acinetobacter baumannii.

Keywords: Acinetobacter baumannii, ABAYE2132 protein, Bioinformatics, Vaccine, Cell adhesion

Corresponding author Email address: safalotfi@ut.ac.ir

ID:1118

A comparative study between the use of Malva neglecta and thyme with terbutaline in the treatment of asthma cats

Sulmaz Tarakameh Samani[1], Mahsa kamali[2]

[1] Department of Veterinary, School of veterinary medicine, Shahid Chamran, Shiraz, Iran

[2] Department of Anatomy, School of Medicine, Shiraz, Iran

Objective: Asthma attacks are dangerous for cats and in some cases due to the severity of illness and death due to respiratory problems will be cats. Beta-agonists Terbutaline is a bronchodilator as chemicals used in the form of sprays used in cats. Because some cats are allergic to the spray, we decided to plant Malva neglecta is domestic in ran and thyme for the treatment of asthma in cat.

Material and Methods: A total of 12 domestic cats with asthma were randomly selected and were divided into three groups of four. In the first group 2 times a day for 5 days every 2 puffs of terbutaline spray was used. In the second and third groups respectively 5 minutes twice a day, every time the animals are exposed to smell of thyme and Malva neglecta, 2 drops of oil plants from its flower that is effective on asthma treatment, were sprayed in the air.

Results: Overall, the improved breathing in two patients treated with vegetable oil spray Thyme and Malva with the improvement of respiratory problems due to the use of terbutaline as chemical drug were matched in the form of spray.

Conclusion: Malva neglecta herb mucilage compounds that is effective on asthma because it is antitussive. Thyme also has plant compounds such as thymol and carvacrol to a greater extent. So, Thyme and Malva flower oils can be produced individually or in combination in spray form, commercially.

Keywords: Asthma, Cat, Malva neglecta, Terbutaline, Thyme

Corresponding author Email address: dr.sulmazsamani@gmail.com

ID:1119

Long-Term Effects of Prenatal Stress and Protective effects of Nano- curcumin on Dopamine and Glutamate Receptors in Adult Mice Brain

Mahsa kamali[1], Sulmaz Tarakameh Samani[2]

[1] Department of Anatomy, School of Medicine, Shiraz, Iran

[2] Department of Veterinary, School of veterinary medicine, Shahid Chamran, Shiraz, Iran

Objective: Prenatal stress is so common but its significant effects on development and life time of fetus is unknown. In this study, we assessed the protective effects of Nano-curcumin and prenatal stress on the expression of selective dopamine and glutamate receptor subtypes in the adult offspring's of mice subjected to repeated restraint stress during the last week of pregnancy.

Material and Methods: Virgin female mice (25±30 g) were obtained from a highly inbred rats from our own animal facility at the Shiraz University of Medical science. On the day of proestrus, sexually experienced male mice (25±30 g) were introduced for mating. At the end of the test, the pregnant females were randomly assigned to prenatal stress, nano-curcumin and control group. After 90 days, the adult mice were sacrificed and brains removed and Dopamine D2-like receptors and Glutamate NMDA receptors in dorsal frontal cortex (DFC), medial prefrontal cortex (MPC), hippocampal CA1 region and core region of nucleus accumbens (NAc) were measured.

Results: These results indicate that stress during the gestational period has long lasting effects that extend into the adulthood of prenatally stressed offsprings Changes in dopamine and glutamate receptor subtype levels in different forebrain regions of adult mice in prenatal stress was significant compare with control group.

Conclusion: Our research concludes that Maldevelopment of these pathways may provide a neurobiological substrate for the development of schizophrenia and other idiopathic psychotic disorders and Nano-curcumin has a protective impact on these complications.

Keywords: Dopamine D2-like receptors, Glutamate receptors NMDA, Nano-curcumin, Prenatal restraint stress

Corresponding author Email address: mhs.kamali@gmail.com

ID:1121

The Effect of high intensity intermittent trainings on brain-derived neurotrophic factor and glial cell linederived neurotrophic factor levels in brain of rats

Seyed-Hosein Abtahi-Eivary[1], Hossein Taheri Chadorneshin[2]
[1] Gonabad University of Medical Sciences
[2] Department of Sport Biosciences, University of Bojnord, Bojnord, Iran

Objective: Researches have showed that exercise trainings increase the brain-derived neurotrophic (BDNF) and glial cellderived neurotrophic factor (GDNF) in the brain. In addition, hydrogen peroxide (H2O2) and tumor necrosis factor alpha (TNFα) increase protein content of BDNF and GDNF in vitro. However, there is insufficient information about the interactive effects of high intensity exercise training, H2O2, and TNFα on neurotrophins. Hence, in the present study, we investigated the effect of high intensity intermittent training on the content of BDNF, GDNF, H2O2 and TNFα in the brain of albino wistar rats.

Material and Methods: Sixteen albino wistar rats divided into control and high intensity intermittent training groups. High intensity intermittent training has carried out for 6 weeks with 95 to 100% of maximum oxygen consumption on treadmill. BDNF, GDNF and TNFα contents have measured by sandwich ELISA method and H2O2 concentration by colorimetric method by commercial kits. Data analyzed using Student's t-test, and $p \leq 0.05$ considered as statistically significant.

Results: High intensity intermittent training resulted in 75 and 143 percent increased in H2O2 ($p<0.0001$) and TNFα ($p<0.0001$) levels, which accordance with 149 and 170 percent increase in BDNF ($p<0.0001$) and GDNF ($p<0.0001$) content in the brain, respectively.

Conclusion: Overall, performance of training sessions as interval with maximum capacity resulting in increase of BDNF and GDNF content in brain of albino wistar rat and it seems H2O2 and TNFα influence on neurotrophins adaptation induced by high intensity intermittent training.

Keywords: Rat, BDNG, GDNF, TNF-A, H2O2

Corresponding author Email address: abtahi.h@gmu.ac.ir

ID:1123

Genotypic distribution of PCSK9 P.R46L in Ahwaz population

Samira Taghizadeh Jazdani[1], Narges Mohammad taghvaei[1], Hajiehbibi Shahbazian[2]
[1] Hyperlipidemia Research Institute, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2] Diabetes Research Center, Ahvaz Jundishapur University of Medical Sciences Ahvaz, Iran

Objective: Proprotein convertase subtilisin/kexin type 9 (PCSK9) is the ninth member of the proprotein convertase family and is a key regulator of cholesterol homeostasis. The variant P.R46L associated with an increase in low-density lipoprotein cholesterol (LDL-C) receptors at the level of the liver cells and a decrease in LDL-C levels. The effects of PCSK9 mutations on plasma levels of LDL-C has been caused to PCSK9 account as a therapeutic target to reduce LDL-C levels. Since the pharmacological inhibitors of PCSK9 are available, the aim of this study was to investigate the genotypic distribution of P.R46L in Southwestern population of Iran (Ahvaz) and relationship between P.R46L and lipid profile and Liver enzymes.

Material and Methods: The study was composed of 912 Participants. The P.R46L polymorphism was genotyped using polymerase chain reaction (PCR) followed by restriction fragment length polymorphism (RFLP). The serum levels of lipid profile (TG, Chol, HDL-C, LDL-C, non-HDL) and AST, ALAT were measured using the standard methods.

Results: In genotype distribution P.R46L alleles, 908 subjects have GG genotype, 3 subjects have genotype GT and 1 person have TT genotype. The level of serum LDL-C in person with genotype (TT) was 29 mg/dl and the mean serum LDL-C levels of individuals with genotype (GT) were 41 mg/dl.

Conclusion: The results of the distribution of genotypes and the frequency of P.R46L alleles from the PCSK9 gene in the southwestern Iranian population are similar to those of other populations. LDL-C levels of individuals with the allele T were 10 to 20 percent lower than those without an allele T.

Keywords: LDL cholesterol, P.R46L, PCSK9, PCR-RFLP

Corresponding author Email address: NTaghvaie2gmail.com

ID:1124

Diagnostic Aptamer for Cancer Detection: Recent Advances

Roohollah Sattary[1], Hadi Bakhtiari[1]
[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Aptamers, single-stranded oligonucleotides (generally less than 100 nucleotides), bind to broad variety of cancer specific targets with same binding affinity to antibodies (nano or picomolar range); However, there are several advantages of using aptamer in comparison with antibodies, for instance more convenient in vitro selection, lack of aggregation problems, simple chemical synthesis methods and inexpensive process of selection and production. In addition, after identification of specific aptamers during different selection process, they can be easily modified and improved for diagnostic applications. In general, each round of SELEX, the systematic evolution of ligands by exponential enrichment, contains three main steps: Binding, Partitioning and Amplification. About cancer detection, there are some SELEX technologies, such as protein-based SELEX, Whole Cell-Based SELEX, Live-Animal-Based SELEX and High-Throughput SELEX, using them aptamers are developed against different types of cancers. In the field of cancer specific biosensor, aptamers are ideal bioreceptors. There are some aptasensor methods in cancer detection such as Fluorescent, colorimetric and electrochemical strategies. Aptamers are developed against a wide variety of tumor specific biomarkers, such as those of early detection, metastatic detection and etc. Some of aptamers are designed to target multiple cancers. In addition, aptamer are appropriate tools for tumor marker discovery. Aptamers are becoming common as promising diagnostic agents, as of last decades, there were substantial advances developing aptamers detecting a variety of tumors, such as lung, ovarian, colorectal, prostatic, osteosarcoma, hepatocellular, bladder and breast cancers.

Keywords: Aptamer, Cancer, Aptasensor, diagnosis

Corresponding author Email address: bakhtiyari.hadi@yahoo.com

ID:1126

Theranostic application of aptamers in cardiovascular diseases

Hadi bakhtiari[1], Roohollah Sattary[1]

[1] Department of Clinical Biochemistry, Faculty of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Aptamers are biomolecular ligands made of single-stranded DNA or RNA oligonucleotides selected by a method known as Systematic Evolution of Ligands by Exponential Enrichment (SELEX) based on affinity and specifity for target molecules. Whereas aptamers have many advantages versus monoclonal antibodies, such as fast detection method, high affinity and specificity, flexible modification and stability, and low toxicity and immunogenicity, they are hopeful novel diagnostic and therapeutic approaches. To date, aptamers have been selected against a various of targets such as proteins, sugars, phospholipids, metal ions, chemical compounds, as well as whole cells. A notably active field of aptamer research in the last decade was development of aptamers against various molecular targets involved in cardiovascular diseases. Aptamers were also applied to cancer diseases, infectious diseases, inflammatory diseases, and eye diseases. Until now, therapeutic applications of synthetic nucleic acid aptamers for cardiovascular diseases include aptamers that were selected against thrombin, von Willebrand factor (vWF), factor IX, factor XII, P-selectin, VEGF as potential anticoagulants, antithrombotics, and anti-angiogenic. Also, aptamers that were selected against troponin T and I, C-reactive protein (CRP), CK-MB, myoglobin, and brain natriuretic peptide(BNP) used to diagnostic applications for cardiovascular diseases. With the developments of SELEX technology and further preclinical and clinical trials, aptamers are promising to replace conventional anticoagulants or antithrombotics in treating cardiovascular diseases. Furthermore, this highly sensitive and selective aptamers provides a novel method for clinical diagnostics that predict risk for cardiovascular disease.

Keywords: Aptamers, Cardiovascular diseases, SELEX, Anticoagulants

Corresponding author Email address: setarehbadi@gmail.com

ID:1129

Review on role of cathepsins in Alzheimer's disease

Ali Nouri[1], Esfandiar Heidarian[1], Shakiba Gheisari[2]
[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran
[2] Community Oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Alzheimer's disease (AD) is a multifactorial disease. In addition to the precipitating of two proteins beta-amyloid peptide and neurofebrillary tangles, which are the main mechanisms involved in the pathogenesis of AD, other factors such as inflammatory mechanisms and changes in lysosomal enzymes play an important part in the pathogenesis of this disease. Increased and decreased lysosomal proteases, such as cathepsin, can lead to functional impairment and gradual death of neurons. The aim of this review was to investigate the role of cathepsins in the pathogenesis of AD. To conduct this review, relevant articles published between 2000 and 2016, and indexed in reliable databases including PubMed, Google Scholar, Scopus and Web of Science were retrieved. After reviewing the articles, 30 articles that directly addressed the subject of this re-view were included in final analysis. Cathepsins exacerbate intracellular conditions in neurons, by processing beta-amyloid precursor protein and converting it into amyloid beta. They also play a protective role against AD and fight it by catalyzing the decomposition of beta-amyloids and converting them into the cut out forms of the carboxyl C-terminus. In addition, the 24 kDa fragment resulting from the effect of cathepsin D on apolipoprotein E (ApoE) is the second binding to the receptor in the ApoE. This fragment may also be the cause of the pathogenicity of Apo E in AD. Identifying and explaining the mechanisms involved in the pathogenesis of AD can play a significant role in the prevention and treatment of this disease. Since cathep-sins play a pivotal role in the decomposition of beta-amyloid and reduction of the risk of AD, further stud-ies can be considered an effective approach to study AD.

Keywords: Alzheimer's disease, Cathepsin, Apo E, Lysosome

Corresponding author Email address: ali.noori1371@gmail.com

ID:1130

Stabilization of recombinant D-lactate dehydrogenase enzyme with Metal–Organic Framework

Mahdieh Torkzadeh Mahani[1], Masoud Torkzadeh Mahani[1]
[1] Department of Biotechnol Graduate University of Advanced Technology, Kerman, Iran

Objective: Lactate dehydrogenase (LDH) belongs to the family of oxidoreductases and catalyzes the reduction of NADH and pyruvate to NAD+ and D-lactate in the final step of anaerobic glycolysis. D-LDH is a marker of common injuries and diseases such as kidney stones, heart failure, some types of cancers and appendicitis. Accordingly, biosensors design and construction is very significant to measure blood lactate levels. The thermal sensitivity of D-LDH and low expression of this protein in the host bacteria are limiting the usage of this protein in certain clinical and diagnostic applications.
Material and Methods: The codon optimized 1008 bp D-LDH gene along histidin-tag was cloned at NcoI/XhoI sites and expressed in E.coli BL21 strain. The recombinant D-LDH plasmids were transformed to E.coli BL21 competent cells for recombinant-protein expression. The transformed bacteria which contain recombinant plasmid were cultured in 18ºC with 155 rpm in LB and TB medium for 21 hours. The enzyme was purified by Ni-NTA column, Protein concentration was determined by BCA kit. The Metal–Organic Framework (MOF) was synthesized for the stability of D-LDH. The Specific activity of free D-LDH and D-LDH+MOF were calculated using the reduction of absorbance in 340 nm due to oxidation of NADH, by spectrophotometer. In this study, new MOF was synthesized and used to immobilize D-LDH enzyme and then kinetic and thermodynamic parameters of the MOF-treated enzyme was measured.
Results: According to the results, it was found that MOF-treated enzyme relative to nacked enzymes has higher stability at high temperatures and acidic and basic environments. Also, the amount of ΔG^{o} (index of the energy required to cross the activation energy barrier of the reaction) for MOF-treated enzyme was approximately 4 kJ.mol-1 more than the untreated enzyme. It implies that MOF-treated D-LDH needs more energy for thermalinactivation in comparison to nacked D-LDH.
Conclusion: Recombinant Enzyme Stabilized by MOF can be used in various industries which are faced with the problem of rapid deactivation of this enzyme due to rise temperature and pH changes.
Keywords: D-Lactate dehydrogenase, NADH, Metal–Organic Framework (MOF)
Corresponding author Email address: m.t.mahani68@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018
Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:1132

Study of correlation between changes in lipid oxidation status and glutathione peroxidase activity with levels of body iron in patients with iron deficiency anemia

Ali Nouri[1], Ramin Tavakoli[2], Shakiba Gheisari[3], Esfandiar Heidarian[1]
[1] Clinical Biochemistry Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran
[2] Department of Biochemistry, School of Medicine, Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[3] Community Oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran

Objective: Iron deficiency anemia is (IDA) a prevalent disorder among women in reproductive ages and can relate to oxidation situation in these women. Objective: The aim of this study was to investigate whether the malondialdehyde levels and activities of glutathione peroxidase (GPx) can be affected during iron deficiency anemia in reproductive aged women.

Material and Methods: In this clinical trial study, 30 women with IDA, 30 women with Iron deficiency (ID) and 30 healthy controls were studied. The concentration of plasma malondialdehyde was measured as a lipid oxidation byproduct. We also evaluated the activities of glutathione peroxidase in all groups. Statistical analysis for continuous variables was performed by the calculation of one-way analysis of variance (ANOVA).

Results: The number of people who completed the study in each group was thirty. Mean plasma concentration of MDA was significantly higher in IDA group than ID group and healthy group women (5.18±0.46µmol/L, 3.4±0.34 µmol/L and 2.75±0.33 µmol/L respectively (p-value<0.05)). The mean glutathione peroxidase activity in IDA groups was significantly lower than healthy group women (1.4±0.2 (U/gHb), 2.91±0.12 (U/gHb) and 2.99±0.24 (U/gHb) (p-value < 0.05)). The concentration of MDA in IDA and ID group was negatively correlated with levels of hemoglobin (Hb), MCV and plasma ferritin (p-value <0.01 and p-value <0.05). In healthy control subjects also there was a revers correlation between MDA concentration and these factors amounts (p-value <0.01). Also activity of glutathione peroxidase and those factors levels showed significant positive correlation in every group (p-value<0.01 and p-value <0.05).

Conclusion: Our findings showed that lipid peroxidation increases in women with iron deficiency and iron deficiency anemia. And that activity of glutathione peroxidase decreases in iron deficiency anemia but not in iron deficiency and it was also revealed not significant correlation between plasma free iron levels with MDA concentration and Gpx activity.

Keywords: Iron deficiency, anemia, malondialdehyde, glutathione peroxidase

Corresponding author Email address: ali.noori1371@gmail.com

ID:1134

Molecular cloning and expression of the oxalyl-coenzyme a decarboxylase in E. coli

Fatemeh Abarghooi Kahaki[1], Bahram Kazemi[1], Mojgan Bandehpour[1]
[1] Department of Biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Oxalic acid is found in nutritional sources or is produced by the intestinal microflora. Enzyme oxalyl-coenzyme a decarboxylase from the bacterium Oxalobacter formigenes can degrades oxalic acid. Oxalic acid is catabolized by an activation-decarboxylation reaction which yields formate and CO2. Oxalyl-coenzyme a decarboxylase is a 568-amino-acid protein with a molecular weight of 60,691. In this study, we report the heterologus over-expression of Oxalyl-coenzyme a decarboxylase in E. coli BL21 (DE3).

Material and Methods: Escherichia coli is the most commonly used host for producing of recombinant protein. Using BL21 derived strain can reduce proteolyses of hetrologous protein. In this study for over-expression of oxalyl-coenzyme a decarboxylase we design a synthetic gene and clone in pET28a using NdeI and EcoRI sites. To express oxalyl-coenzyme a decarboxylase from pET28a, transformed BL21 (DE3) and different medium like LB and TB was applied. The results of experiments were analyzed by SDS-PAGE, western blotting and cell growth and recombinant protein production kinetics.

Results: The optimal expression of oxalyl-coenzyme a decarboxylase in E. coli can be easily achieved when the growth conditions are properly controlled. Media components and IPTG concentration have profound effects on the way in which recombinant protein is produced. In this study the maximum expression was obtained from TB medium at 28°C with IPTG concentration of 0.1mM. The final yield was 35 % of total soluble proteins, which is a significant rate for oxalyl-coenzyme a decarboxylase expression in Escherichia coli.

Conclusion: In conclusion, the studies presented here establish that high-level expression of oxalyl-coenzyme a decarboxylase. Using rich medium likes TB and decrease temperatures can improve the amount of protein considerably.

Keywords: Oxalyl-coenzyme a decarboxylase, Oxalobacter formigenes, Escherichia coli, Over-expression

Corresponding author Email address: fatemehabarghooyi@gmail.com

ID:1136

Evaluation of the level of some inflammatory factors in sprayer workers

Mohammad Abdollahi Teimourlouei[1], Meisam Javadi Aghjeh Kohl[1], Morteza Vahed Jabbari[2], Rasoul Sharifi[3]
[1] Islamic Azad University, Jolfa International Branch
[2] Higher Education Institute of Rab-Rashid
[3] Department of Biology, Ahar Branch, Islamic Azad University, Ahar, Iran

Objective: Pesticides and pesticides are harmful to the human health and increase the level of inflammatory factors and cause inflammation occurrence. The most important indices of inflammation are tumor necrosis factor alpha (TNF-α) and C - reactive protein (hs-CRP). Therefore, this study evaluated the effect of pesticide spraying activity on hs-CRP and TNF- levels in spraying workers.
Material and Methods: This practical study was conducted to evaluate the serum level of and TNF-α and hs-CRP among sprayer workers in East Azarbaijan. Target population was 90 people and was divided into two treatment groups (45 man) with six-month spraying experience and the control group (45 man) without any spraying experience. Blood samples were enrolled from all subjects and after serum preparation, levels of hs-CRP were measured using Immunoturbidimetry method and TNF-α levels by ELISA method and Orgenium kits (Finland). The results were compared using SPSS version 19 and Independent sample t-test method ($p<0.05$).
Results: The mean serum levels of hs-CRP and TNF-α in the case group showed a non-significant change compared to the control group.
Conclusion: The results of this study showed that toxins and spraying activity didnot change in the level of serum hs-CRP and TNF- in sprayer workers.

Keywords: Sprayer Workers, Serum hs-CRP, Serum TNF-α

Corresponding author Email address: mohammadabdollahi312@gmail.com

ID: 1137

Evaluation of the level of some of the Trace elements in the sprayer workers

Mohammad Abdollahi Teimourlouei[1], Meisam Javadi Aghjeh Kohl[1], Morteza Vahed Jabbari[2], Rasoul Sharifi[3]
[1] Islamic Azad University, Jolfa International Branch
[2] Tabriz Higher Education Institute of Rab-Rashid
[3] Department of Biology, Ahar Branch, Islamic Azad University, Ahar, Iran

Objective: Pesticides and toxins have deleterious effects on human health and can affect the biochemical factors of the body. Therefore, the present study evaluated the effects of pesticides on some of the trace elements.

Material and Methods: The present study is an experimental study whose target population were 90 people. They were divided into two treatment groups (45 man) with six-month spraying experience and the control group (45 man) without any spraying experience. Blood samples were enrolled from all subjects and serum copper and zinc levels were measured by atomic absorption technique. The results were compared using SPSS version 19 and Independent sample t-test method.

Results: Means of serum copper levels in the case group showed a significant increase relative to control group ($p=0.002$). Therefore, the levels of serum zinc in case group relative to control group no significant change ($p=0.7$).

Conclusion: The results of this study showed that spraying activity can increase the serum level of some trace elements such as copper in sprayer workers.

Keywords: Sprayer Worker, Serum Copper, Serum Zinc

Corresponding author Email address: mohammadabdollahi312@gmail.com

ID:1139

Evaluation of serum lipid profiles and oxidative stress indices in in sprayer workers

Meisam Javadi Aghjeh Kohl[1], Mohammad Abdollahi Teimourlouei[1], Morteza Vahed Jabbari[2], Rasoul Sharifi[3]
[1] slamic Azad University, Jolfa International Branch
[2] Higher Education Institute of Rab-Rashid
[3] Islamic Azad University, Ahar, Iran

Objective: Direct or indirect contact with pesticides and toxins leads to some biochemical changes, including increasing the production of active oxygen species and oxidative stress in humans. Increasing Malondialdehyde (MDA) and lipid peroxidation level and reducing the total antioxidant capacity (TAC) level are its symptoms. Therefore, the aim of this study evaluated the effect of toxins on lipid profiles, TAC and MDA in Sprayer men.

Material and Methods: This practical study was conducted to evaluate the serum level of Lipid profile, TAC and MDA among sprayer workers in East Azarbaijan. Target population was 90 people and were divided into two treatment groups (45 man) with six-month spraying experience and the control group (45man) without any spraying experience. Blood samples were enrolled from all subjects in fasting status and Lipid profiles were measured by Pars Azmoon kit and HITACHI 911. The MDAlevel as a marker of plasma lipid peroxidation was measured by a thiobarbituric acid kit (Abcam, USA). Serum TAC was measured by using Ferric Reducing Ability of sreum (FRAP) assay Kit (Abcam, USA). The results were compared using SPSS version 19 and Independent sample t-test method ($p<0.05$).

Results: Serum lipid profile showed a non- significant increase in the treatment group compared to the control group, while malondialdehyde level in the treatment group showed a significant increase and total antioxidant capacity decreased significantly (respectively $p=0.03$, $p<0.0001$).

Conclusion: The results of this study showed that exposure to toxins has not a significant effect on serum lipid profiles but increases the oxidative stress and increased malondialdehyde in these individuals.

Keywords: Sprayer Workers, Oxidative Stress, Lipid Profile

Corresponding author Email address: meysamjavadi29@gmail.com

ID:1141

Can Epithelial Mesenchymal Transition Affect Head And Neck Squamous Cell Carcinoma Differentiation?

Habib Sadeghi Rad[1], Mohammad Reza Noori-Daloii[1], Abbas Shakoori Garakani[1], Ghodratollah Panahi[1], Saman Mehrabi[1], Mojtaba Saffari[2]

[1] Tehran University of Medical Sciences

[2] Shahid Beheshti University of Medical Sciences

Objective: Head and neck squamous cell carcinoma (HNSCC) represent a large majority of cancers arising from the head and neck, especially the oral cavity. Despite advances in therapy, the 5-year survival rate remains low because of the number of patients presenting advance stages of the disease. The role of EMT in head and neck squamous cell carcinoma tumorigenesis remains unexplored. In the current study, mRNA expression of three major factors in tumor specimens was investigated to define their functional and pathological roles in this malignancy

Material and Methods: To detect effect of epithelial mesenchymal transition and inflammation on HNSCC, E-Cadherin, Vimentin and TNF-a gene expression was examined in 31 tumorous and 31 non-tumorous samples what were obtained from head and neck squamous cell carcinoma patients. The samples are collected from tongue (10), lip (6), submandibular (5), throat (3), cheek (3), mandibular (2) and larynx (2). Total RNA was extracted from all tumor samples for cDNA synthesis and mRNA expression levels of E-Cadherin, Vimentin and TNF-a were accessed by real-time PCR.

Results: Our study showed a significant decreased E-Cadherin and increased Vimentin and TNF-a expression in tumorous samples in comparison with non-tumorous ones ($P \leq 0.05$) what it demonstrate epithelial mesenchymal transition and inflammation happening. Also, there was a significant correlation between Vimentin mRNA expression and poor differentiation of tumor. ($P \leq 0.05$)

Conclusion: As many studies investigated EMT markers in head and neck cell lines, we showed role of these markers and their relation with patient's clinic-pathological characteristics. So, therapeutic strategies could be more effective in head and neck cancer if epithelial mesenchymal transition is considered.

Keywords: HNSCC, EMT, E-Cadherin, Tumor differentiation, Gene expression

Corresponding author Email address: nooridaloii@sina.tums.ac.ir

ID:1142

Increased NOX5 Expression may Contributes to Oxidative Stress in Asthenozoospermic Men

Akram Vatannejad[1,2,3], Heidar Tavilani [4], Mohammad Reza Sadeghi[5], Mehrdad Karimi[6], Niknam Lakpour[7], Saeid Amanpour[8], Mahmood Doosti[1]

[1] Department of Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

[2] Student's Scientific Research Center, Tehran University of Medical Sciences, Tehran, Iran

[3] Department of Cellular and Molecular Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Iran

[4] Urology and nephrology research center, Hamadan University of Medical Sciences, Hamadan, Iran

[5] Monoclonal Antibody Research Center, Avicenna Research Institute, ACECR, Tehran, Iran

[6] Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

[7] Reproductive Biotechnology Research Center, Avicenna Research Institute, ACECR, Tehran, Iran

[8] Cancer biology research centre, Tehran University of Medical Sciences, Tehran, Iran

Objective: Nickel is one of the most important environmental pollutants in our environmental living.It enters into the human body in various ways and leads to produce numerous complications.The purpose of this research was to investigate the effect Nickel on serum parameters related to liver function in male rats.

Material and Methods: Inthis study, the effect of intraperitoneal injection of 5 mg / kg body weight of nickel chloride was investigated on liver function parameters. For this purpose 12 Wistar male rats were injected for 60 days and sera were prepared and those parameters related to liver function were determined using Gel filtration technique with Sephacril s300 high molecular weight iso-enzyme of ALKP was separated.All enzyme activities were determined.

Results: 3 injections per week of nickel chloride led to change in liver enzymes and increased the levels of aminotransferases (ALT:16.9%-AST:18.6%)incomparison to un treated control,which was statistically significant,was ALP elevated by (27.2%) and HMW-ALP was decreased by (16.5%),whereas elevation of LDH (52.7%) wasseen.

Conclusion: Changes in liver enzyme activities may suggest changing in liver function following Nickel administration.Reduction in high molecular weight ALP may also propose reduction in bile duct function.

Keywords: NOX, Infertilit

Corresponding author Email address: dootimd@sina.tu.ms.ac.ir

ID:1143

The association of SNP rs1870634 in LINC00841 with CAD: A GWAS-Replication Study in an Iranian Population

Mehrnoosh Shanaki[1], Hamid Ghaedjhi[1], Shahriar Tarighi[1]
[1] Assistant Prof. at Shahid Beheshti University of Medical Sciences

Objective: Recent genome-wide association studies (GWAS) identified a list of single-nucleotide polymorphisms (SNPs) associated with coronary artery disease (CAD). Replication of GWAS findings in different population corroborated the observed association in the parent GWAS. In this study, we aimed to replicate the association of rs1870634, a GWAS identified SNP, to CAD in an Iranian population.

Material and Methods: The study population consisted of 267 subjects undergoing coronary angiography coronary angiography including 155 CAD patients and 112 non CAD age- and gender-matched controls. The genotype determination of rs1870634 SNP performed using high-resolution melting analysis (HRM) technique.

Results: Our results revealed that the GG genotype frequency was significantly higher in CAD patients compared with controls (P =0.03). The results of binary logistic regression suggested that this genotype was significantly associated with CAD risk adjustment for age, BMI, sex, TC, and LDL-C lipid levels (OR of 2.78, 95% CI (1.10–7.01), P=0.03).

Conclusion: Moreover, our results showed that the GG+TG genotypes were 2.52 times more likely to develop CAD (95% CI 1.05–6.03) than TT genotype carriers after adjusting for age, sex, and lipid profiles (P=0.037). These data showed that the GG genotype could be associated with increased risk of CAD in a sample of Iranian population.

Keywords: Coronary artery disease, Long intergenic non-protein coding RNA841, Single-nucleotide polymorphisms

Corresponding author Email address: shanaki_m@sbmu.ac.ir

ID:1145

Peptides, as useful agents for angiogenesis and tumor growth prevention

Mehrzad Jafarzadeh[1], S. Mohsen Asghari[2], Momad Taghi Joghatayi[3], Kazem Mosavizadeh[3], Mohammad Hashemi Bahremani[4]

[1] Department of Biology, University Campus2, University of Guilan, Rasht, Iran

[2] Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran)

[3] Cellular and Molecular Research Center, Iran University of Medical Sciences, Tehran, Iran

[4] Department of pathology, Imam Hossein hospital, shahid Beheshti University of medical science, Tehran, Iran

Objective: Angiogenesis the complex multistep process including the proliferation, migration and different ion of endothelial cells, microtubule formation and sprouting of new capillary branches is a critical event in growth and metastasis of tumors and prevention of angiogenesis is therefore one of the most important strategies for treatment of cancer. Breast cancer is the biggest health threat to women. The current common treatments include surgery, chemotherapy, and radiotherapy. In most cancers, metastasis is the primary cause of treatment failure. Surgery and radiotherapy are effective on local tumors, but they cannot affect metastatic cancers. Chemotherapy is often used to treat metastatic cancers, the effectiveness of which is basically limited due to its toxic side effects at high doses. Due to the side effects of chemotherapy drugs, peptide therapy has become increasingly popular in the world. In this study aims to investigate the effect of a designed bFGF antagonist peptide on inhibition of tumor growth in 4T1 metastatic breast cancer model.

Material and Methods: Female Balb/c mice (5-7 weeks old) were used in this study. Tumors were established using 4T1 tumor transplantation method. Treatment began after two weeks, when tumors reached an appropriate size. After that, the designed peptides at three selected doses were injected intraperitoneally. Tumors size was measured every other day using a digital caliper, and their volume was measured.

Results: Peptide inhibited growth and angiogenesis of MCT ($P \leq 0.05$), and decreased the level of Level of angiogeogenic Factors in treated mice compared to the PBS-treated controls.

Conclusion: The control of tumor angiogenesis has been considered as an important part of host defense response to tumor growth. The results showed that anti-angiogenic peptide effectively inhibited the growth of the breast cancer.

Keywords: Peptide, Breast Cancer, Angiogeogenesis, Tumor Growth

Corresponding author Email address: jafarzadehmehrzad@gmail.com

ID:1146

Coffee 'could halve breast cancer recurrence' in tamoxifen-treated BALB/c mice

Shahrzad ghadirian[1], Mohammad najafi[2], Nikoo Nasoohi[1]

[1] Department of Molecular and Cellular Sciences, Faculty of Advanced Sciences and Technology, Pharmaceutical Sciences Branch, Islamic Azad University (IAUPS) Tehran, Iran

[2] Department of Biochemistry, Iran University of Medical Sciences, Tehran, Iran

Objective: Breast cancer is the biggest health threat to women. The current common treatments include surgery, chemotherapy, and radiotherapy. In most cancers, metastasis is the primary cause of treatment failure. Surgery and radiotherapy are effective on local tumors, but they cannot affect metastatic cancers. Tamoxifen is a non-steroidal anti-estrogen that is widely used to treat breast cancer. Combination therapies are one of the therapeutic strategies that can help enhance the performance, reduce the dose, and shorten the consumption period of tamoxifen. This study aimed to investigate the synergistic effect of tamoxifen and coffee on the 4T1 into BALB/c mice.

Material and Methods: Methods Female Balb/c mice (5-7 weeks old) were used in this study. Tumors were established using 4T1 tumor transplantation method. Treatment began after two weeks, when tumors reached an appropriate size, the first, second, and third groups of BALB/c mice were injected with 17beta-estradiol and tamoxifen dissolved in dimethyl sulfoxide (DMSO) at doses of 5.1, 10, and 20 µM, aged coffee and tamoxifen at doses of 10, 30, and 60 mg/kg, and PBS over a 14-day period respectively. Then, the tumor volume was measured using a caliper. TUNEL assay kit was used to detect apoptosis. Results Data were analyzed using the one-way analysis of variance (ANOVA).

Results: The results showed a significant difference between the negative control group and tamoxifen-treated group in terms of the simultaneous injection of coffee extract and tamoxifen ($P<0.05$). The results also showed increased apoptosis in this synergy.

Conclusion: Tamoxifen prevents estrogen from binding to cancer cells, thus stopping cancer cell growth. This study aimed to investigate the synergistic effect of tamoxifen and coffee. The results of this study are consistent with this finding and apoptosis has increased.

Keywords: Hormonotherapy, Tamoxifen, coffee, Breast Cancer

Corresponding author Email address: jafarzadehmehrzad@gmail.com

ID:1147

The stimulating effects of macrocyclic dinaphtho diamide on the CSF production in lung tissue and colony formation of bone marrow cells

Hemen Moradi-Sardareh[1], Ensiyeh Fazel Samiei[2], Masoud Mashhadi Akbar Boojar[3]
[1] Department of Biochemistry, Faculty of Medicine, Tehran University of Medical Science, Tehran, Iran
[2] Tehran Center, Payame Noor University, Tehran, Iran
[3] Faculty of Biological Science, University of Kharazmi, Tehran, Iran

Objective: Colony stimulating factors (CSFs) are endogenous cytokines that have key roles in proliferation and differentiation of hematopoietic progenitor cells and in regulation of mature blood cells performance. The CSFs families members are widely used for therapeutic purposes in many field include microbial infections, in cancer chemotherapy, alzheimer disease, hematopoiesis process, and for some neutropenia- related pathologies. Crown ethers are chemical compounds with therapeutic application that can affect the colony formation in vitro.

Material and Methods: The primary objective of the present study is to evaluate the effect of TDN (novel crown ether) on colony formation of red bone marrow cells in incubation with lung tissues cells. Method In this study, bone marrow cells and lung tissue cells of Balb/C were used as a source of hematopoietic stem cells and a source to production colony-stimulating factors, respectively. These cells were incubated with TDN separately and together**.**

Results: Briefly, the results of this study show that the effects of TDN has excitatory in concentrations lower than 50 µg/ml on colony formation and greater than 50 µg/ml is toxic to cells and it was inhibited the colony formation. Maximum stimulatory and inhibitory effects are shown in 50 and 400 µg/ml of crown ether and no colony was observed in the latter concentration.

Conclusion: The results from this study indicate that TDN significantly able to stimulate the colon formation while increased concentrations of TDN is inhibited colony formation by induction toxic effects due to excessive production of free radicals

Keywords: Colony stimulating factor, Crown ether, Macrocyclic dinaphtho diamide, chemotherapy

Corresponding author Email address: hemen.moradi@yahoo.com

ID:1148

Silencing of High Mobility Group Isoform I-C (HMGI-C) Enhances apoptosis in prostate cancer Cell lines (PC3)

Shima Khajouee[1,2], Hadis Ahmadirad[1], Elham baghbani[2], Behzad Baradaran[2]
[1] Molecular Medicine Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran
[2] Immunology Research center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Prostate cancer is one of the main reasons of death between men. Although there are many methods of treatment for this cancer, many advanced prostate cancer patients still died of the postoperative recurrence and metastasis of disease. Therefore, the innovation of new treatment modalities to overcome these ineffective therapies of tumor cells may be a potential source of improved therapies. Over expression of HMGA2 gene was observed in many human malignancies such as colorectal cancer, thyroid, pancreatic carcinoma, lung cancers. The aim of this study was to investigate the effect of specific HMGA2 small interfering RNAs (siRNAs), on the viability, induction of apoptosis of PC3 cells.

Material and Methods: siRNA transfection was performed with liposome approach. The expression levels of mRNA and protein were measured by qRT-PCR and western blot analysis, respectively. The cytotoxic effects of siRNA were determined using MTT assay on the PC3 cells. Apoptosis was quantified using TUNEL assay.

Results: Transfection with siRNA significantly suppressed the expression of HMGA2 gene in dose dependent manner after 48 hours, resulting in spontaneous apoptosis. Moreover siRNA transfection had effects on prostate cancer cells viability.

Conclusion: Our results suggest that the HMGA2 specific siRNA effectively decrease prostate cancer cells viability and induce apoptosis in this cell line and therefore can be considered as a potent adjuvant in prostate cancer therapy.

Keywords: HMGA2, siRNA, PC3 cell line, apoptosis

Corresponding author Email address: behzad_im@yahoo.com

ID: 1149

Serum ferritin is correlated with the Thyroid stimulation hormone level

Ahmad Barahouie[1], M. Afshar[1]
[1] Department of Clinical Biochemistry, School of Medicine, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Iron is one of the key factors necessary for the normal thyroid function. In most of the human tissues, iron is mainly stored in form of Ferritin. It has been reported that Serum ferritin level is dys-regulated in thyroid disease and ferritin level in circulation is associated with thyroid hormone function. Indeed, many studies have indicated the relationship between serum ferritin levels and Thyroid stimulating hormone (TSH). The purpose of this study was to measure serum ferritin levels in relation to concentration of TSH in Iranian population of Ahvaz city, Iran during 2016-2017.

Material and Methods: The number of 130 individuals (female=99 and male=31) were requited in this cross sectional study. The serum ferritin level and TSH were evaluated using chemiluminescence method. The data was analyzed using SPSS v.16 and the p-value≤0.05 was considered as significant.

Results: The results of our findings showed that most of the included individuals were in normal range for serum ferritin (73.76 ±78.75) and TSH level (2.63 ±9.56). The person's correlation test revealed that the ferritin level is significantly correlated with the measured TSH hormone (R=0.213, p value=0.015).

Conclusion: Altogether, we found that the serum ferritin and TSH levels are significantly co-related. Our results suggest that, measurement of the serum ferritin can be helpful in monitoring the thyroid hormone dysfunction.

Keywords: Ferritin, Thyroid hormone, TSH

Corresponding author Email address: a.barahouie1490@gmail.com

ID:1150

Synergistic effects of A2B adenosine receptors agonist with docetaxel in esophageal cancer cells

Seyyed Mehdi Jafari[1], Jahanbakhsh Asadi[1]

[1] Biochemistry & Metabolic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran

Objective: The function of A2B adenosine receptors has been evaluated in various human cancer cells, but currently, there has been no study about the role of A2B adenosine receptors in esophageal cancer. The aim of current study was to evaluate the effect of A2B adenosine receptors agonist on cell growth of YM-1 esophageal cancer cells in presence of a chemotherapy drugs.

Material and Methods: The YM-1 human esophageal cancer cells were seeded in 96-well plates. The cells then were treated with various concentrations of A2B adenosine receptors agonist (BAY606583) in the absence or in the presence of the docetaxel for 48 h and cell viability determined by MTT assay.

Results: A2B adenosine receptor agonist induced cell cytotoxicity in YM-1 cancer cells in a dose dependent manner. Combination of A2B adenosine receptor agonist with docetaxel had a synergic effect on the reduction of cell proliferation.

Conclusion: A2B Adenosines receptors agonist can sensitize esophageal cancer cells to the chemotherapeutic drug with prolonger effect and thus it can be considered for designing of novel anticancer therapies.

Keywords: A2B Adenosines receptors, esophageal cancer cells, BAY606583, Docetaxel

Corresponding author Email address: s.meh.jafari@gmail.com

ID:1151

Correlation between β1-Integrin Expression and different stages of Colorectal Cancer in Iranian Patients

Nasrin Vafaeinezhad[1], Behrooz Motlag[2], Malihe Varsee[1], Mojtaba Fathi[2,3]
[1] Student Research Committee, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran
[2] Department of Clinical Biochemistry, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran
[3] Zanjan Cancer Gene Therapy Research Center, School of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran

Objective: Colorectal cancer (CRC) is a preventable and potentially curable disease if high risk adenomas and early stage tumors are removed. For early diagnosis, validated biomarkers are an urgent need. Beta 1 integrin not only is a membrane receptor that plays a role in ECM formation, but also contribute in proliferation, migration, invasion, survival in transformed cancer cells. In this study, correlation between different stages of CRC and expression level of β1-Integrin at protein level was investigated.

Material and Methods: Formalin-fxed, paraffn-embedded (FFPE) tumor samples of 45 patients who were operated because of colorectal cancer without any neoadjuvant therapy were obtained. β1 integrin expression was evaluated using Immunohistochemistry by a monoclonal antibody. Image J software was used to semi-quantify the intensity of colour within cells. The Relationship of colour intensity in different stages of CRC was assessed using statistical anylysis.

Results: In normal and primary stage tissues of CRC, weak reaction was observed in immunohistochemistry indicating that expression of β1 integrin does not work well for discrimination of early stages from normal tissues of CRC. Significantly higher β1integrin expression was found in advanced stages of CRC compared with that of normal ones ($p = 0.01$), showing that this biomarker could be able to diagnose higher stages from normal subjects.

Conclusion: β1 expression in CRC represents a reliable diagnostic factor regarding the staging of CRC and our findings imply that β1 integrin expression profiles may have further potential in identifying stages of colorectal cancer.

Keywords: Colorectal cancer, β1 integrin, biomarker, immunohistochemistry

Corresponding author Email address: nasrinvafaeinezhad@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747
roxancongress.com
www.rayancompany.ir

ID:1154

Synthesis, characterization and application of nano-liposome for co-delivery of cisplatin, cinnamaldehyde and all-trans retinoic acid to circumvent the drug resistance in MDA-MB-231 breast cancer cells

Nassim Valinezhadi[1], Gholam-Reza Dehghan[2], Hamed Hamishehkar[1], Mohammad-Ali Hosseinpourfeizi[2], Soheil Abbaspour[3]

[1] Drug Applied Research Center, Tabriz University of Medical Sciences

[2] Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran

[3] Immunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Objective: Combination therapy-based on nano-carriers is an emerging technology in order to overcome the drug resistance in cancer treatment.

Material and Methods: Here co-encapsulation of cisplatin, all-trans retinoic acid (ATRA) and cinnamaldehyde (CA) was carried out in a single nano-liposome to investigate the CA and ATRA's synergistic effects to overcome cisplatin resistance in MDA-MB-231 breast cancer cells. In this way, liposomes containing drugs were prepared by thin film hydration technique. The formulation characterized for particle size, zeta potential, scanning electron microscope (SEM) and Fourier transforms infrared spectroscopy (FTIR). In order to evaluate apoptotic rate, molecular mechanism and cell cycle arrest; MTT, flow cytometric assay and DAPI staining was performed.

Results: The co-loaded liposome demonstrated average size of 45±2nm with encapsulation efficiencies of >80%. CA as a natural product and ATRA exhibited significant synergetic efficacy in improvement of MDA-MB-231 cancer cells sensitivity to cisplatin as a cytotoxic agent. The IC50 values for free drugs were estimated 20µM for cisplatin, 130µM for CA and 50µM for ATRA. Our results showed that encapsulation of cisplatin, CA and ATRA increases the IC50 values to 16µM for cisplatin, 96µM for CA and 35µM for ATRA. Also, treating the cells with drugs IC50 combination significantly increases the cytotoxic effect compared with single treatments and the IC50 value for combination was 10µM. Remarkably, the composite liposome lead to increase in the apoptosis percentage.

Conclusion: This study suggests that co-delivery of ATRA, CA and cisplatin potentially affects the drug-resistant of tumor cells to chemotherapy.

Keywords: ATRA, Cisplatin, Co-delivery, Cinnamaldehyde, Liposome

Corresponding author Email address: nassimvalinezhadi@yahoo.com

ID:1156

Effect of Different Bands of UltraViolet (UV) Radiation on Growth and Chlorophyll Content of Deracocephalum moldavica L. Herb

Amorhossein Rahbari[1,2], Mohammad Fazilati[3], Ebrahim Alinia Ahandani[1], Ani Boghozian[1]
[1] PhD student of Biochemistery-Payame noor Uiversity-Esfahan branch and employee of clinical laboratory in Ayatollah bahari hospital in Hmadan
[2] employee of clinical laboratory in Ayatollah bahari hospital in Hmadan
[3] Research Center of Guilan province in Rasht city
Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Objective: Dracocephalum moldavica is an herbaceous plant, annual, originating from southern Siberia. The herbaceous material is sedative and appetizing. Its essential oil has antibacterial properties and is suitable for stomach ache and bloating and it is also used in health, cosmetics and food industries in this research, the effect of UV-A and UV-C bands on the herbaceous drug was studied.
Material and Methods: The plants were grown in a uniform environment in the culture room and exposed to UV rays (20 minutes UV-A daily and UV-C for 10 minutes) after 10 days in six weeks. Indices of fresh and dry weight of aerial and root organs, leaf area, chlorophyll a, b and total chlorophyll content were investigated.
Results: The results of variance analysis of the studied traits showed that the effect of UV treatment on the measured traits was significant at the probability level of 1%. Investigation of UV-treated samples showed that fresh weight of root and shoot in UV-C significantly decreased (Fig. 1). Also, dry weight measurements of treatments and control plants showed that this radiation reduced the dry weight of the air and root organs. This decrease in airship was significant especially in UV-C treatment.
Conclusion: The results of the comparison of the mean of the studied traits showed that there was a significant difference between treatments, so that the highest amount of each of the traits was related to the control treatment and the least amount was related to treatment of UV-C bands. This study shows the sensitivity of the plant to the UV rays and the sensitivity of the plant to UV-C bands is higher than the UV-A bands.

Keywords: Ultraviolet radiation, Dracocephalum moldavica, chlorophyll content, growth indices

Corresponding author Email address: dr.moh.faz@gmai.com

ID:1158

The Correlation between urinary catecholamine metabolites levels together in hypertensive patients

Boshra Haghi[1], Sanaz Salar Amoli[1], Marie Saghaeian Jazi[2], Hamidreza Joshaghani[3], Nasser Behnampour[4]
[1] Department of Gastroenterology and Hepatology, Golestan University of Medical Sciences, Gorgan, Iran
[2] Department of Molecular Medicine, Golestan University of Medical Sciences, Gorgan, Iran
[3] Department of Medical Laboratory Sciences, Golestan University of Medical Sciences, Gorgan, Iran
[4] Department of Biostatistics, Faculty of Public Health, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Hypertension is defined as increased blood pressure of the arteries. It has been reported that in hypertension condition, levels of the epinephrine and norepinephrine secretion are increased. Measurement of these metabolites including Vanillylmandelic acid (VMA), Metanephrine (MN), Normetanephrine (NMN) in urine can be considered as a non-invasive method for monitoring different diseases such as cardiovascular complications. The aim of this study was to compare these metabolites levels in urine of the hypertensive patients according the gender.

Material and Methods: The 24H urine samples from hypertension patients (number=51, female=30 and male=21; aged of mean=40.49□2.32) were collected. All the individuals had systolic blood pressure level higher than 140 mmHg. The uVMA was measure with HPLC and for detection of the uMN and uNMN ELISA was used. The measured variables were compared with the normal range defined by the kit supplier. For statistical analysis, SPSS v25 was used.

Results: Our findings indicated that the mean levels of the Catecholamine metabolite in urine (uVMA=5.2□0.45, MN=157□21 and NMN=300□34) are in normal range. The level of the uNMN and uVMA was more in male (mean-difference= 27.68 and 1.62 respectively), however the female showed higher level of the uNMN (mean-difference=12.12, p value=0.01). We observed a significant correlation between uNMN and uMN (RS=0.624, P<0.0001), but there was no correlation between VMA and other metabolites.

Conclusion: Altogether our findings suggest that urinary Catecholamine metabolites can be associated with gender in hypertensive individuals.

Keywords: Hypertension, Catecholamine metabolites, Urine

Corresponding author Email address: boshra.haqi1994@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1159

The role of CXCL 12 in pathogenesis of astrocytoma

Shirin Fattahpour[1], Masih Saboori [2], Shohre Fattahpour[3,4]
[1] Isfahan University of Medical Sciences
[2] Department of Neurosurgery, Isfahan University of Medical Sciences, Isfahan, Iran
[3] Department of Materials Engineering, Biomaterials Research Group, Isfahan University of Technology, Isfahan, Iran
[4] Isfahan Pharmaceutical Sciences Research Centre, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: The purpose of this study was to appraise a competent systematic review of CXCL12 role in contribution and development of astrocytoma. Background Common language between tumor and microenvironment is chemokine. Microenvironment next the tumor, trace entire process of tumor. CXCL 12 is subset of chemokines and component of Immunological factors has significant figure in pathogenesis of astrocytoma. As a result, present study was designed for investigate the communication of tumor cell proliferation and CXCL12 in tumor surrounding microenvironment Methods an electronic search in databases PubMed, EMBASE and Scopus was carried out until March 2018. Literatures that performed the PICO (Patients, Interventions, Controls and Outcome) criteria, were selected. There was no language restriction. Results of the 467 articles were found in initial search, 6 studies set by the PICO criteria. 3 studies were about axis of CXCL12 and its receptors CXCR4-CXCR7 in Tumor microenvironment. 3 studies were about pathogenesis role of CXCL12 in central nervous system (CNS) tumors specially astrocytoma. Conclusion these finding have ascertained that CXCL12 has cardinal character in neurogenesis happened in astrocytoma. For improving cancer remedies, interactions between tumor and Microenvironment have to qualify well. Based on this study, probably can use of CXCL12/CXCR4 axis in chemical therapy. Microenvironment is influenced by different biochemical factors so well -designed studies are need in future.

***Keywords*:** CXCL12, Astrocytoma, Microenvironment, Signalling pathway

Corresponding author Email address: shirin_fattahpour@yahoo.com

ID:1161

Crocin suppresses migration and invasion in human breast carcinoma metastatic and non-metastatic cell lines

Nassim Faridi[1], Zahra Bathaie[1], Hamid Heidarzadeh[1], Saeed Abroun[2], Mohammad-Ali Mohagheghi[3]
[1] Department of Clinical Biochemistry, Faculty of Medical Science, Tarbiat Modares University, Tehran, Iran
[2] Department of Hematology, Faculty of Medical Science, Tarbiat Modares University, Tehran, Iran
[3] Cancer research center, Tehran University of Medical Science, Tehran, Iran

Objective: Natural products including saffron have been used to prevent and treat various types of diseases in traditional medicine. Crocin is one of the most important carotenoids of saffron, which was introduced as an active component useful in the treatment of cancer and might be a good candidate for the development of anticancer drugs. Cancer invasion and metastasis are the leading causes of mortality in patients with breast cancer. CXCR4 is the first identified chemokine receptor that plays a critical role in determining the metastatic destination of breast cancer.

Material and Methods: In this study, we compared the effect of crocin on non-metastatic (BT-474) and metastatic (MDA-MB-231) breast cancer cell lines by MTT assay, flow cytometry, measuring growth rate, colony formation, invasion and protein expression. To investigate the motility and migration of the mentioned cells, scratch test was applied.

Results: Breast cancer cell lines were exposed to different concentrations of crocin at different time intervals. The IC50 of crocin at 48 h was obtained 2.5 and 3.5 mg/ml for BT-474, MDA-MB-231, respectively, as determined by MTT assay. Flow cytometry analysis using annexin V/PI staining indicated that crocin induces apoptosis in these cancerous epithelial cells, while it was safe for normal human epithelial cells. Colony formation assay showed that crocin decreased colony numbers in both cell lines, even at lower doses than IC50. For cell invasion assay, the expression of CXCR4 in both cell lines was detected and compared by western-blotting, and the results showed that crocin significantly decreases the expression of CXCR4. In the cell scratch wound healing test, the number of MDA-MB-231 cells migrated to scratch area was much more than BT-474 cells, while after crocin treatment, the number of migrated cell were fewer in MDA-MB-231 metastatic cells compared to BT-474, as non-metastatic cells.

Conclusion: Our study indicated that crocin not only induced apoptosis in the mentioned cancer epithelial cells, but also could inhibit the invasion and metastasis of these human epithelial breast cancer cells. These results are consistent with the preventive effect of crocin in breast cancer-induced animal model that we previously reported. Other molecular mechanisms of crocin action are under study in our Lab.

Keywords: Saffron, Crocin, Breast Cancer, Metastasis, CXCR4

Corresponding author Email address: Nassim.Faridi@modares.ac.ir

ID:1164

Evaluating the cytotoxic effect of crocin on some breast cancer cell lines based on determining the apoptosis, ER stress and autophagy markers

Hamid Heidarzadeh[1], Zahra Bathaie[1], Nassim Faridi[1], Saeed Abroun[2], Mohammad Ali Mohagheghi[3]
[1] Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[2] Assistant Professor, Department of Hematology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[3] Professor, Cancer Institute, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran

Objective: We showed the anticancer activity of crocin, a saffron carotenoid, in breast and gastric cancers. However, its mechanism of action is not clearly known. This study aims to investigate the effect of crocin on MCF7 and MDA-MB-468 breast cancer cell lines in order to investigate its effect on caspase 9 (Cas9) and cleaved-Cas9, expression and splicing of XBP1, and accumulation of LC3-II.

Material and Method: The cytotoxic effect of crocin on these breast cancer cell lines was investigated by MTT assay and flow cytometry using annexin V/PI staining. Then, the levels of Cas9 and Cleaved-Cas9 was evaluated by Western blotting. The splicing of XBP1 mRNA and expression of the spliced protein was investigated using RT-PCR and Western blotting, respectively. Tunicamycin treatment was also used to confirm the UPR involvement. Accumulation of LC3-II was also evaluated by Western blotting. As a control, chloroquine treatment was also applied for autophagy evaluation.

Results: The results showed a time and dose-dependent cytotoxic effect and apoptosis induction by crocin in the mentioned cells. The expression of Cas9 and its cleavage, therefore, the ratio of Cleaved-Cas9/Cas9 was significantly increased. Crocin treatment, such as Tunicamycin, leads to a noticeable increase in the splicing of XBP1 mRNA and expression of XBP1s. An increase in the ratio of LC3-II/LC3-I in these cells also indicated the involvement of autophagy due to crocin treatment, which was in synergism with chloroquine treatment. However, there is some differences between these cell lines on response to crocin treatment.

Conclusion: The data indicated the apoptosis induction in these breast cancer cell lines after crocin treatment. Because of the observed changes in the UPR and autophagy markers, it seems that these pathways are possibly involved in this process and intracellular regulation of cell fate.

Keywords: Breast Cancer, Caspase 9 activation, UPR, XBP1 splicing, LC3-II accumulation

Corresponding author Email address: hami_heidarzadeh@yahoo.com

ID:1165

Evaluation Level of Total Antioxidant Status (TAS), Total Oxidant Status (TOS) and Thiol Disulfide Between Non-Obese And Obese İndividuals

Hadi Karimkhani[1], Mervenur[1], Gözde Ülfer[1], Hadi Karimkhani[1], Türkan Yiğitbası[1], Nesrin Emekli[1]
[1] Department of Biochemistry, School of Medicine, Istanbul Medipol University, Istanbul, Turkey

Objective: Obesity is an energy intake more than the energy consumed and the increase in body fat mass relative to lean body mass. It is a chronic disease causes hormonal disorders together; this makes various diseases in many systems. Obesity has been common in the worldwide increasingly and is associated with adverse health problems such as hypertension, coronary heart disease, diabetes, some types of cancer. The aim of this study is to investigate the role of thiol-disulfide balance as an oxidative stress formed in obesity.

Material and Methods: The study was conducted with 45 obese and 45 healthy (non-obese) control groups. TG, Total cholesterol, HDL, LDL were measured by the enzymatic colorimetric method in serum with Cobas Roche 6000 autoanalyzer. TAS, TOS and thiol-disulfide balance were measured with Erel method in the serum that is taken for routine triggers from the individuals who applied to the IMU Biochemistry Laboratory.

Results: In this study, obese group weight(kg), BMI, TG, TOS and OSI level compared to the control group was significantly increased ($p<0.001$), while HDL and TAS levels were significantly lower ($p<0.001$). In obese group compare to control group, disulfide, disulfide/native thiol, disulfide/total thiol concentration were significantly increased ($p<0.01$).

Conclusion: The results obtained of this study will benefit for further studies. A significant change in thiol-disulfide balance has been suggested that it is important parameter can calculate in future studies of obesity. Understand the molecular basis of obesity-related disease development; it will be useful in developing new approaches to prevent or treatment of these diseases.

Keywords: Disulfide, Disulfide/thiol ratio, Obesity, Oxidative stress, Thiol

Corresponding author Email address: drhadi.h@gmail.com

ID:1166

Evaluation of the silencing effect of miR-105 on Tim3 expression in Aml cell line

Banafsheh Ashrafnia[1], Hossein Khan Ahmad[2], Kamran Ghaedi[2]
[1] Department of Genetics, Isfahan University of medical Sciences, Isfahan, Iran
[2] Department of biology, Isfahan univercity of biology sciences, Isfahan, Iran

Objective: Acute myeloid leukemia is a myeloid stem cell disease in which differentiation of cells is impaired. In AML, Stem cells consist of hematopoietic and leukemic ones. Treatments of cancers such as chemotherapy just targets leukemic cells, but does not affect on LSCs. Tim3 is a marker on the surface of LSCs that could be a subject for targeting. Tim3 just is expressed on LSCs and could be silenced by miRNAs. Some bioinformatic programs indicate that miR-105 can target Tim3. In this study the role of miR-105 in silencing of Tim3 was evaluated experimentally.
Material and Methods: HL-60 cell line was cultured and induced by PMA to express Tim3. On the next day, expression of Tim3 was measured by flow cytometry. Then PMA threated cells were cultured in 24 cell culture plate in four groups and transfected by miR-105-5p mimic, scramble FITC, transfection reagent and cell culture medium as negative control. After a day, scramble FITC group was observed by Fluorescent microscope and the next day the expression of Tim3 was evaluated by flow cytometery in all groups. Finally, the mRNAs of Tim3 were quantified by qPCR.
Results: Our results showed miR-105-5p can reduce Tim3 protein but can not affect on quantity of its mRNA significantly.
Conclusion: We concluded that miR-105 can target Tim3. Therefore, bioinformatic prediction data were confirmed by experiment and Targeting of Tim3 could be considered as a therapeutic methods. KEY WORDS: Tim3, HL60, miR-105-5p

Keywords: Tim3, Hl60, miR-105

Corresponding author Email address: b.ashrafnia@gmail.com

ID:1167

Molecular docking evaluation of some SSRIs as SLC6A4 inhibitors for depression treatment

Banafsheh Ashrafnia[1]
[1] Isfahan University of medical science

Objective: Serotonin is a regulatory neurotransmitter that is synthesised from L-tryptophan, which passes through the blood-brain barrier. Serotonergic disfunction has been implicated in depression, anxiety, obsessive-compulsive disorder, sleep and eating disorders, schizophrenia, Alzheimer's dementia, personality disorders, alcoholism, autism, pain, aggression and impulse control disorders. 5HTT is a serotonin transporter that regulate its concentration by uptaking serotonin from synapse. 5HTT is encoded by the gene SLC6A4. Selective serotonin reuptake inhibitors (SSRI) (fluoxetine, sertraline, paroxetine, fluvoxamine and citalopram) act by blocking the reuptake of serotonin (5-HT) from the synaptic cleft by binding to 5HTT and blockade of it. These drugs are widely prescribed first line treatments for major depressive disorder (MDD). The objective of this study is to explore the binding modes of some SSRIS to design safer and effective drugs.
Material and Methods: At first, we got 3D structure of SLC6A4 from PDB database and got structure of components (SSRIs) from Pubchem database. Then, we optimized our ligands by hyperchem software. After that, molecular docking was performed using autodock software for four ligands including fluoxetine, serteraline, fluvoxamine and citalopram.
Results: The results of docking study showed that the best binding affinity is for serteraline with -8.04 kcal/mol and lowest binding energy for fluvoxamine with -4.61kcal/mol. Binding energy of citalopram and fluoxetine are -6.47 and -5.55 respectively.
Conclusion: The docking study indicated serteraline is the most efficient inhibitor of SLC6A4. This information can be utilized to design more potent SLC6A4 inhibitors for the therapeutic of deppression.
Keywords: Molecular Docking, SSRI, SLC6A4, Depression
Corresponding author Email address b.ashrafnia@gmail.com

ID:1168

Correlation between PROX1 Protein and Different Stages of Colorectal Cancer in Iranian Patients

Malihe Varsei[1], Mojtaba Fathi[1], Behrooz Motlag[1], Nasrin Vafaee nezhad[1]
[1] Zanjan University of Medical Sciences

Objective: Colorectal cancer (CRC) is one of the leading cause of cancer related deaths, despite progress in the treatment during past decades. PROX1 is a specific target of the B-Catenin/TCF pathway in the intestinal epithelium which plays a pivotal role in CRC formation. The aim of current study was to investigate the potential of PROX1 as a biomarker for early detection of CRC**.**

Material and Methods: 45 cancer specimens in different stages and 45 normal specimens as control were included in this study. Tissues of patients who were operated because of colorectal cancer paraffn-embedded, then samples prepared for immunohistochemistry. Monoclonal antibody against PROX1 was used for detection of the protein and DAB (Di-Amin-Banzidin) stained cells were considered as positive for expression of PROX. Finally, Imaje J was used to quantify of DAB stained samples and statistical analysis performed for correlation between PROX1 and different stages of CRC.

Results: In the natural and primary stage tissues of CRC, a poor response was observed in immunohistochemistry, which indicates that the expression of PROX1 extract is not good for discrimination of early stages from normal tissues of CRC. Significantly higher PROX1 expression was found in advanced stages of CRC compared with that of normal ones ($p = 0.01$) showing that this biomarker could be able to diagnose higher stages from normal subjects.

Conclusion: The expression of PROX1 in CRC represents a reliable diagnostic factor regarding the staging of CRC and our findings suggest that PROX1 expression profiles may have more potential in identifying stages of colorectal cancer.

Keywords**:** Colorectal cancer, PROX1, Immunohistochemistry, Biomarker

Corresponding author Email address: m_fathi@zums.ac.ir

ID:1169

A review: CNVs in Neurodevelopmental disorders

Parnian Ghari[1], Hamid Galehdari[1]
[1] Shahid Chamran University of Ahvaz

Objective: Deleting, connecting or repeating 1000 nucleotides or more, throughout DNA can alter the specific locus status of the genome and cause structural changes namely CNV. The function of CNVs is not well defined, but has been seen to have contributed to genomic variation. These alterations occur at very low rates. However, recently they have been able to investigate the role of CNVs by analyzing the genome, for instance in neurodevelopmental disorders, maternal defects due to genes and cancer. Most CNVs are safe, although they can sometimes cause illness. Denovo germline CNV is one of the major contributors to congenital neurological disorders, such as autism. Different CNVs have a different penetration for ASD due to factors such as dose sensitivity and genes performance.

Materials and Methods: Previously, the karyotyping method was used as a common and appropriate method to identify genetic disorders. However, later, higher-resolution devices such as WGS and NGS were used to detect CNVs. There are four primary methods for detecting CNVs: depth-read, paired-end mapping, splitread and assembly approaches although many of these devices do not have the high sensitivity required, the clinical application of NGS tests is increasing.

Results: In a number of ways, CNVs can affect gene function: 1. Disturbance in coding regions as a stimulant or dominant allele 2. Supervisory landscape disorder 3. The production of chimeric genes 4. The effect of position According to the results, pathogenic CNVs are more common in patients with syndromicity than non-syndromic patients.

Conclusion: Because of the difference in the mechanisms created by denovo CNV that are heavily dependent on genome architecture, the CNV mutation rate, based on the genomic region and the original source, is different. Therefore, structural changes in human genome can be considered as a new major factor involved in genetic variation and sensitivity ofdisease.

Keywords: CNV, neurodevelopmental disorders, variation

Corresponding author Email address Parniyan.ghari@gmail.com

ID:1171

CD14+ monocytes and cardiovascular risk in patients with Hashimoto's thyroiditis.

Monire Sadat Fazaeli[1], Alireza Khoshdel[1], Mohammad Reza SHafiepour[1], Mehdi Mahmoodi[1], Mohamadreza Hajizade[1], Mohamadali Fahmidehkar[1], Mohadese Rohban[1]

[1] Rafsanjan University of Medical Sciences

Objective: Hashimoto's thyroiditis is an autoimmune disease that is associated with high cholesterol levels and increased cardiovascular disease (CVD) risk. Atherosclerosis is prominently controlled by macrophages and CD14+ cells are proinflammatory monocytes that are expressed mainly by macrophages. In this study, we examine the relationship between CD14+ expression on monocytes and vascular risk.

Material and Methods: Data and serum levels of TSH, FT4, Anti-TPO antibody, total cholesterol, LDL, HDL and expression level of CD14 on monocytes from 20 new untreated patients with Hashimoto's thyroiditis and 20 age- sex- and BMI-matched euthyroid controls were analyzed in a cross-sectional study. Quantification of CD14 expression on monocytes was done by flow cytometry. Lipoprotein ratios (total cholesterol/HDL cholesterol and LDL/HDL cholesterol ratios) were calculated to predict vascular risk. Then the relationships between these parameters were examined

Results: Lipoprotein ratios and CD14 expression on monocytes was significantly higher in patients than in the control group (p= 0•001). There was a significant and positive relationship between Lipoprotein ratios and CD14 expression.

Conclusion: We found that CD14+ monocytes were significantly associated with cardiovascular risk in patients with Hashimoto's thyroiditis.

Keywords: Hashimoto's thyroiditis, Cluster of differentiation 14, cardiovascular disease

Corresponding author Email address: mfazaeli2008@yahoo.com

ID:1172

Visfatin induces gene expression of extracellular matrix components in pre-adipocytes and differentiated adipocytes

Samira Ezzati Mobasser[1], Mitra Nourbakhsh[1], Zahra Malekpour Dehkordi[2]

[1] Department of Biochemistry, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Biochemistry, School of Medicine, Yazd University of Medical Sciences, Yazd, Iran

Objective: Adipose tissue (AT) can respond rapidly to excess caloric intake and insufficient energy expenditure. Adipocytes and pre-adipocytes are enclosed by a three dimensional network of extracellular matrix (ECM) proteins which serve as mechanical support and allow AT to extend normally. Adipose tissue fibrosis is a condition in which ECM increases aberrantly, which restrict adipocytes and leads to immune cell infiltration and cytokine production. Visfatin is a multi-functional molecule that acts as an adipokine, cytokine and enzyme. Secretion of this cytokine in adipose tissue increases during obesity. The major objective of this study was to investigate the effect of visfatin on gene expression of collagen VI and osteopontin as major constituents of ECM family.

Material and Methods: 3T3-L1 cells were cultured in DMEM supplemented with 10% FBS and 1% antibiotic at 37℃ in 5% CO2. To induce differentiation, confluent 3T3-L1 pre-adipocytes were further cultured in DMEM containing 10% FBS, 1% antibiotic, 0.5 mmol/L isobutylmethylxanthine, 0.25 µmol/L dexamethasone, and 1 µg/mL insulin. Cells were treated with 200 ng recombinant visfatin for 24, 48 and 72 h. Total cellular RNA was extracted and cDNA was synthesized from 1µg total RNA. Real-time quantitative RT-PCR analyses were performed using SYBR green method.

Results: Our results showed that visfatin significantly increased osteopontin gene expression in pre-adipocytes as well as differentiated adipocytes, 24 and 48 h after treatment. Although, the expression of collagen VI genes in pre-adipocytes was not affected by visfatin, it was increased in adipocytes.

Conclusion: Visfatin increases extracellular matrix proteins in pre-adipocytes and adipocytes and thus might be a contributing factor in adipose tissue fibrosis.

Keywords: Obesity, Adipose Tissue Fibrosis, Visfatin, Collagen VI, Osteopontin

Corresponding author Email address: Samira.Ezzati@ymail.com

ID:1173

APETALA1 homologous gene identification in garden cress (Lepidium sativum L.) herb

Mahboubeh Sheikhbahaei[1], Hosein-AliSasan[1]
[1] Shahid Bahonar University of Kerman

Objective: The flowering process in plants proceeds through the induction of an inflorescence meristem triggered by several pathways. Many of the genes associated with these pathways encode transcription factors of the MADS domain family. The MADS-domain transcription factor APETALA1 (AP1) is a key regulator of flower development.

Material and Methods: The first step to understand the molecular mechanisms under the function of each gene in a plant is identification and sequencing of that gene. For this purpose, Total RNA was isolated from flower bud of garden cress (Lepidium sativum L.) and was used for cDNA synthesis. The specific primers were designed based on nucleotide sequence alignment of AP1 homologus genes from plants of the same family and were used in RT-PCR. After observing its electrophoretic pattern and ensuring the quality of the resulting PCR product, amplified fragment was sent for sequencing. After receiving the results of sequencing, fragment sequence examined with BLAST and MUSCLE softwares.

Results: The results indicated amplification of 787 nucleotides fragment that named LsAP1 and was recorded by accession number KP070728.2 in NCBI database. The studies show high similarity and overlapping of gene bank sequences with LsAP nucleotide sequence.

Conclusion: According to these results, LsAP1 may play a similar role as AP1 in flower induction and could act as a flower meristem identity gene in Lepidium sativum L.

Keywords: Primer, RT-PCR, Blast, Flowering, Herb

Corresponding author Email address: mh.sheikhbahaei@gmail.com

Code:1174

Cancer Immunotherapy by Autologous T Cells

Melika Bakharzi[1], Fatemeh B. Rassouli[2]
[1] Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
[2] Novel Diagnostics and Therapeutics Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: Cancer immunotherapy is a strategy by which components of immune system are recruited to combat malignant cells. In recent years, a great deal of investigation has focused on this approach and promising outcomes have obtained.

Material and Methods: To review current knowledge regarding cancer immunotherapy, published papers including key words immunotherapy, cancer and adaptive cell therapy, were extracted from PubMed, Scopus, Web of Science, and Google Scholar.

Results: Adoptive cell therapy (ACT) is a method by which lymphocytes are isolated from patients' peripheral blood or tumor-draining lymph nodes, genetically manipulated and expanded in vitro, and then reinfuse to the same patient. The aim of this approach is to generate acceptable number of tumor-specific T cells and improve their functionality. The use of tumor-infiltrating lymphocytes (TILs) is another option for ACT through which mixtures of T cells, grown from resected metastatic tumor deposits, are expanded ex vivo. This process also involves lymphodepleting regimen prior to TIL infusion, since it eliminates immunosuppressive cells in the tumor microenvironment and increases levels of homeostatic cytokines such as interleukins. To provide antigen-specificity for T cells, genetic engineering was first used to express T cell receptor (TCR) α and β chains, but since highly avid TCRs were able to destroy healthy tissues expressing the same target antigen as well, chimeric antigen receptors (CARs), which consist of an Ig variable domain attached to a TCR constant domain, seem to be more applicable.

Conclusion: In a series of recent clinical trials, it has been shown that autologous T cells therapy is a promising option for cancer treatment, specifically for patients with melanoma. Nevertheless, more investigation is required to improve clinical outcomes of cancer immunotherapy and reduce its adverse effects.

***Keywords*:** Immunotherapy, Cancer, Adaptive cell therapy

Corresponding author Email address: behnam3260@um.ac.ir

ID:1175

Evaluation of the Analytical Performances of Five Different Hemoglobin A1c Methods due to Significance of HbA1c Test in Diagnosis and Prognosis of Diabetic Patients

Rohollah Mousavi Dehmordi[1], Mohammad Taha Jalali[2], Hajie Bibi Shahbazian[3], Mohammad Reza Afsharmanesh[2]

[1] Department of Clinical Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Hyperlipidemia Research Centre, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

[3] Department of Endocrinology, Health Research Institute, Diabetes Research Center, Jundishapur University of Medical sciences, Ahvaz, Iran

Objective: Diabetes Mellitus is a global endemic disease and also considered as one of the biggest public health problems with rapidly increasing prevalence in both developing and developed countries. Glycated hemoglobin (HbA1c) is considered the gold standard test to evaluate the degree of glycemic control in patients with diabetes Mellitus disease. The American Diabetes Association has recommended HbA1c as a substitute test to fasting blood glucose (FBS) for diagnosis of this disease. Several laboratory methods have been developed to measure the levels of blood HbA1c in the clinical Laboratory. The aim of this study was to evaluate the clinical performance of different assays for categorizing patients into healthy, controlled and uncontrolled diabetes mellitus according to ADA's suggestion.

Material and Methods: In this study, HbA1c levels of 55 samples were analyzed by six commercially methods; microcapillary electrophoresis (Sebia), enzymatic method (Pishtaz Teb), immunoturbidometry (Pars Azmoon), boronate affinity (Nycocard), immunofluorescence (i-chroma) and Tosoh G8 HPLC. SPSS version 15 packages were used for computation and analysis of the data.

Results: Sensitivity of microcapillary electrophoresis, enzymatic method, immunoturbidometry, boronate affinity, and immunofluorescence at HbA1c level of 6.5% were 97.5%, 100%, 77.5%, 77.5%, and 67.5%, respectively. The Specificity results of all methods at HbA1c level of 6.5% were 100%, 86.7%, 100%, 100%, and 93.3%, respectively. Positive (and negative) predictive values of all methods at HbA1c level of 6.5% were100%(93.8%),95.2%(100%), 100%(62.5%), 100%(62.5%), and 96.4%(51.9%), respectively.

Conclusion: The results show that some methods for measuring HbA1c for the classification of diabetic patients based on HbA1c levels are still not acceptable.

Keywords: Diabetes Mellitus, HbA1c, Analytical Performance, HbA1c measurement methods

Corresponding author Email address: mra448@yahoo.com

ID:1176

Carboplatin liposomal nanoparticles: Preparation, characterization, and cytotoxicity effects on lung cancer in vitro environment

Ebrahim Savareh[1], Hemen Moradi-Sardareh[2], Meysam Ebrahimifar[3]

[1] Department of Clinical Biochemistry, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

[2] Department of Biochemistry, Tehran University of Medical Science, Tehran, Iran

[3] Department of Toxicology, Faculty of Pharmacy, Islamic Azad University, Shahreza, Iran

Objective: The study aimed to encapsulate anticancer drug carboplatin into liposomal nanoparticles by reversephase evaporation technique and evaluate its efficacy on lung cancer in vitro environment. Nanoparticles were characterized in terms of size, drug loading efficiency, drug retention capability, and cytotoxicity effects. Nanoscale particles with 67% drug encapsulation efficiency were prepared. Also, high retention capability (drug release equal to 25% after 72 h) of the nanodrug was confirmed. In addition, results of the nanodrug cytotoxicity indicated nanoparticles increased potency of the drug by approximately 90%. Findings of the study indicated liposome can be used for carboplatin delivery to lung cancer.

Material and Methods: Carboplatin-loaded liposomal nanoparticles by reverse- phase evaporation method were constructed. Drug-loaded nanoparticles were characterized in terms of size, size distribution, zeta potential, drug loading efficiency, and drug retention capability. Next, efficacy of the nanodrug was evaluated on lung cancer cell line TC1 in vitro environment by MTT (3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide) assay.

Results: Nanoscale particles with 67% drug encapsulation efficiency were prepared. Also, high retention capability (drug release equal to 25% after 72 h) of the nanodrug was confirmed. In addition, results of the nanodrug cytotoxicity indicated nanoparticles increased potency of the drug by approximately 90%.

Conclusion: Results of the study showed that liposomal nanoparticles can be a promising vehicle for carboplatin delivery to lung cancer.

Keywords: Carboplatin, liposome, lung cancer, nanotechnology, reverse-phase evaporation

Corresponding author Email address: e.savareh@gmail.com

ID:1177

A Genetic Association Study of MTHFR C677T Polymorphism with Risk of Metabolic Syndrome: A Meta-Analysis

Mohammadsadegh Vaziri[1], Soheil Azizi[2], Amir Shamshirian[2], Reza Alizadeh-Navaei[2], Zatollah Asemi[3], Omid Reza Tamtaji[3], Hamed Jafarpour[2], Reza Alipoor[1]

[1] Hormozgan University of medical scienses

[2] mazandaran University of medical scienses

[3] kashan University of medical scienses

Objective: Methylenetetrahydrofolate Reductase (MTHFR) is an enzyme that plays a crucial role as a methyl-group donor in demethylation of homocysteine. Due to the incidence of C677T mutation in the MTHFR gene, thymine is replaced by cytosine, followed by the translation of valine instead of alanine in the structure of the produced enzyme, resulting in the formation of a temperature-sensitive enzyme and thus reducing its activity. The aim of this systematic review and meta-analysis was to study the relationship between MTHFR gene polymorphism and metabolic syndrome (MS).

Material and Methods: We used search engines and databases such as Science Direct, Google Scholar, and PubMed to identify eligible studies up to 2018. The articles were studied based on keywords including MTHFR, mutation, variant, and polymorphism in combination with metabolic syndrome. Data were analyzed using Comprehensive Meta-Analysis version 2.2.064 software.

Results: After extracting the data from seven articles, the total number of subjects was 1280 in the patient group and 1374 in the control group. The odds ratio was estimated to be 1.078 for the allele model of T vs. C (95% confidence interval: 1.626-0.715), 1.157 for the allele model of CC vs. CT (95% confidence interval: 0.829-1.615), 1.020 for the allele model of CT + TT vs. CC (95% confidence interval: 1.611-0.646) and 0.799 for the allele model of TT vs. CC + CT (confidence interval 95%: 1.185-0.539). As well, the results showed no statistically significant correlation between polymorphism genotypes of MTHFR gene and metabolic syndrome ($P<0.05$).

Conclusion: In general, this study showed that the presence of a C677T polymorphism in the MTHFR gene has no effect on the incidence of metabolic syndrome.

Keywords: MTHFR Gene, Metabolic Syndrome, Polymorphism, Variant, Meta-Analysis

Corresponding author Email address: vazirisadegh@gmail.com

ID:1178

Evaluation of Different Genotypes at Codons 72 and 248 of p53 Gene in Samples of Endometriosis

Hajar Dahim[1], Ahmad Shabanizade[2]

[1] Department of Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

[2] Rafsanjan University of Medical sciences, Faculty of Madicne, Refsanjan, Iran

Objective: Endometriosis is a prevalent gynecological disorder among women which is diagnosed by the growth of endometrial tissue outside of uterus and is mainly accompanied by severe pelvic pain and infertility. P53 also known as cellular tumor antigen P53 inside codons 72 and 248 are contained with single nucleotide changes in which tends to be nearly rampant. This will probably be increasing the chances of endometriosis infection to some great extent. Our aim was to evaluate the connection between endometriosis and polymorphism inside the codons 72 and 248 of P53 gene.

Material and Methods: In this study, single nucleotide changes in codons 72 and 284 of TP53 gene among 44 persons infected with endometriosis and the same studying population for non-infected group have been examined. After primer design and amplification of polymorphic sequences by PCR, the polymorphisms of related codons have been evaluated by the digestion method (RFLP).

Results: In this study on the codon 72, there were seen differences in the distribution of genotype frequencies of normal polymorphic subjects and control subjects with endometriosis. At codons 248, it was observed no significant correlations polymorphic and normal genotypes of endometriosis and non-endometriosis groups.

Conclusion: According to the results, we can say that probably polymorphism of codon 72 of p53 gene is one of the predisposing factors of endometriosis.

Keywords: Endometriosis, polymorphisms, tumor suppressor genes

Corresponding author Email address: hajardahim17@gmail.com

ID:1179

Relationship between serum vitamin D Status and thyroid hormone profile

Erfan Moghassemi[1], Mohamadreza Afshar[1]

[1] Department of Clinical Biochemistry, Golestan University of medical sciences, Gorgan, Iran

Objective: Vitamin D have an important role in various aspect of body function. There is some evidence that indicated deficiency of vitamin D has been associatedwith various disease such as Thyroid disorders. The aim of this study was to evaluate association the serum level of vitamin D and thyroid hormone profile.

Material and Methods: The number of 103 individuals included in this study. The serum levels of TSH, free T3 and free T4 were evaluated by chemiluminescence method. The serum level of vitamin D was evaluated using enzyme linked immune sorbent assay (ELISA) kit. The data was analyzed using SPSS software.

Results: The results showed that the mean concentrations of vitamin D, TSH, free T3 and free T4 were 24.3ng/mL, 3.24 IU/ml, 1.53 pg/ml, and 0.86 pg/ml respectively. We also found that there was no correlation between vitamin D levels and TSH, free T3 and free T4 hormone.

Conclusion: The results of this study showed no significant correlation between Vitamin D and thyroid hormone profile.

Keywords: Vitamin D, Thyroid hormone profile

Corresponding author Email address: erfanmoghassemi1373@gmail.com

ID:1180

The effect of different culture media and the amounts of sucrose on the production of glucosyltransferase enzyme by streptococcus mutans.

Samaneh Sadat Rasi Varaei[1], Mahdi Aminian[1], Abbas Bahador[1]

[1] Department of Clinical Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Dental caries is one of the most common diseases among people in the world. It is believed that Streptococcus mutans is the primary causative organism in caries development. Cell-associated glucosyltransferase (GTF) produced by this bacteria, an enzyme catalyzing the formation of insoluble glucan from sucrose, is a major virulence factor of S. mutans. Water-insoluble glucan adheres firmly to the tooth surface and forms dental plaque. Previous studies have indicated that antibody against GTF enzyme can have inhibitory effects on dental caries. Due to the low amount of this enzyme, finding the optimal condition for production of GTF enzyme is necessary.

Material and Methods: In this study we cultured two different strains of S. mutans in four broth culture media (BHI, TH, TPGY and TS) with different percentages of sucrose. SDS PAGE and GTF assay was done for GTF produced in different condition.

Results: The results showed that culturing of S. mutans25175 in Todd Hewitt Broth (THB) with 1% sucrose had better effect on the production of GTF enzyme. Conclusion: The purpose of our study is to investigate the effect of different culture media and various amount of sucrose percentage in media on GTF production by S. mutans.

Conclusion: We concluded that Todd Hewitt Broth (THB) with 1% sucrose is appropriated condition for production of GTF enzyme.SDS-PAGE of GTF gave protein bands with molecular masses of approximately 160 kDa. GTF assay was done with phenol surfuric acid method and the result showed the orange color that have great absorbance compared to control.

Keywords: Dental caries, Glucosyltransferase, purification

Corresponding author Email address: amminian@tums.ac.ir

ID:1182

Biochemical and Hematological profile of Beta thalassemia major patients in bushehr

Zeynab Gharehdaghi[1], Eisa Safavi[2], Shaghayegh Rostami Yasuj[2]

[1] MSc of Hematology and Blood Banking, Student of Research Committee, Bushehr University of Medical Sciences, Bushehr, Iran

[2] PhD of Social Health, Bushehr University of Medical Sciences, Bushehr, Iran

Objective: Beta thalassemia major is a genetic disease due to mutations in the hemoglobin beta chain genes. Frequent infusion of blood can increase the iron load of the body, which can cause various complications with deposition in the liver, heart, glands and other organs. The present study is the analysis of liver and kidney functions, Hematological status, lipid patterns, FBS and critical serum ions in beta-thalassemia major patients.

Material and Methods: This descriptive cross-sectional study which was done on all patients with beta thalassemia major was admitted to Bentolhoda hospital of Bushehr. The levels of ALT, AST, ALP, Alb, direct and total Bilirubin, BUN, Cr and uric acid, TG, Cholestrol, LDL, HDL, FBS, and Serum content of Na, K, P, Ca were assessed in serum sample. Hematological parameters such as Hb, HCT, MCV, MCH, MCHC and ferritin were measured. SPSS21 software, descriptive statistics and inferential statistics (Pearson correlation coefficient test, Eta) were utilized for data analysis.

Results: The statistical population included 106 patients (female: 59.5%, male: 40.5%) with an average age of 24 years old. The average of parameters such as serum ALT (39.52U/L), AST (42.24U/L), ALP (371±176U/L), Bili total (2.49±1/76 mg/dl), Bili Direct (0/58±0/2mg/dl), FBS (123.77±71.79mg/dl), P (5.35±0.87mg/dl), Ca (9.9±0.63mg/dl), TG (137±75mg/dl) were significantly higher in patient groups as compared with the healthy control group (pvalue<0.05). The mean of serum Na (135.3±1.8mmol/l), cholesterol (112.5±30.5mg %), HDL (27±9.5mg/dl), LDL (55±20.5mg/dl) p (<0.05) were lower in patients comparison to healthy control group (pvalue<0.05). The mean of K, Alb, BUN, Cr, Uric acid were (4.2±0.3 mmol/l), (4.64±0.39g/dl), (14.85±6.26mg/dl), (0.78±0.22mg/dl), (4.93±1.56mg/dl) Respectively.The average values of hematological parameters: Hb (8.6±0.97g/dl), ferritin (3516±3087ng/ml), HCT (27.1±2.6%), MCV (80±4.14fl) and MCH (25.9±2.00pg) were reduced significantly in patients except MCHC (31.8±1.16g/dl).

Conclusion: Our study demonstrated that beta-thalassemia patients and healthy group control had significant difference in serum contents of ions, liver function, hematological parameters and biogenesis of lipids and lipoproteins were impaired.

Keywords: Thalassemia major, Liver Enzymes, hematological, lipid patterns, hematological parameters

Corresponding author Email address: eisa_sm@yahoo.com

ID:1183

Evaluating the effect of uric acid on proliferation and inflammation in human peripheral blood mononuclear cells

Reyhane Ebrahimi[1], Solaleh Emamgholipour[1]

[1] Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran.

Objective: Overproduction of uric acid as the final compound of purines catabolism, can be inversely associated with human disease severity. Here, we aimed to explore whether the uric acid treatment can activate cell proliferation and inflammation or not in human peripheral blood mononuclear cells (PBMCs).

Material and Methods: For this purpose, PBMCs were harvested from heparinized blood samples obtained from 6 healthy adult volunteers. PBMCs were grown in RPMI 1640 supplement with 5% (v/v) fetal bovine serum and 100 IU/mL penicillin in a 96 well culture plate for 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay and in a 6 well culture plate for the measurement of inflammatory factors (IL-1β, IL-6, TNF-α) mRNA transcripts using real-time PCR. Uric acid was solved with prewarmed media (37 °C), and then passed through sterile 0.20-µm filters. Therefore, cells were treated with uric acid at various concentrations of 0, 3, 5, 6, 10, 12, 18 and 20 mg/dl for MTT assay and at concentration of 0, 5 and 12 mg/dl for real-time PCR and then incubated for 24 h at 37 °C.

Results: The proliferation of PBMCs treated with the increasing concentration of uric acid (0-20 mg/dl) were assessed by MTT assay. Our results showed that uric acid induced a concentration-dependent proliferative effect in PBMCs after incubation for 24h. Furthermore, in this study we demonstrated that treatment of uric acid had no effect on IL-1β, IL-6 or TNFα mRNA expression in PBMCs from healthy people after incubation for 24h.

Conclusion: These results showed that uric acid can rise the proliferation of PBMCs in a concentration-dependent manner while its high concentration has no effect on inflammation. Altogether, further investigation is required to clear the importance of uric acid as an activator of proliferative pathways.

Keywords: Uric acid, MTT assay, PBMC, real-time PCR

Corresponding author Email address: reyhane93ws@gmail.com

ID:1184

Prediction of insulin resistance with atherogenic index of plasma in type 2 diabetes patients

Fouzieh Zadhoush[1], Morteza Pourfarzam[1]

[1] Department of Clinical Biochemistry, Faculty of Pharmacy, Isfahan University of Medical Sciences, Isfahan, I. R. Iran

Objective: Insulin resistance (IR) is a key factor in the pathogenesis of the type 2 diabetes mellitus (T2DM). Abnormal atherogenic index of plasma (AIP) and TG/HDL-C ratio, as two atherogenic indices, indicate an atherogenic lipid profile and may predict IR in T2DM. The purpose of this study is to examine the relationships of TG/HDL-C ratio and AIP to IR, esteamated by homeostatic model assessment of insulin resistance (HOMA-IR), in T2DM and healthy subjects.

Material and Methods: This cross-sectional study comprised 130 male subjects divided into two groups: 40 healthy subjects and: 90 T2DM patients. After recording age, anthropometric factors and blood pressure, fasting blood samples was taken for measurement of blood glucose, insulin, Hb A1c, high-sensitivity C-reactive protein and lipid profile. TG/HDL-C ratio, AIP and HOMA-IR were calculated. Kolmogorov Smirnov test, independent samples T-Tests, Mann–Whitney U test and correlation tests were used in this study.

Results: Compared to healthy subjects, T2DM patients showed significantly higher weight, waist circumference, hip circumference, waist-hip ratio, body mass index, fasting blood glucose, insulin, Hb A1C, triglycerides, HDL-C, TG/HDL-C ratio, AIP, hs-CRP and HOMA-IR. There were no significante differences in total cholesterol, LDL-C, systolic blood pressure and diastolic blood pressure between groups. AIP was significantly correlated with insulin, HOMA-IR, triglycerides, total cholesterol, TG/HDL-C ratio and inversely correlated with HDL-C in T2DM patients In healthy subjects, AIP was significantly correlated with triglycerides, waist circumference and body mass index and inversely correlated with HDL-C and LDL-C. TG/HDL-C ratio didn't show any correlation with HOMA-IR in both groups.

Conclusion: The elevation of AIP is powerful predictor of IR in T2DM patients among all the lipid variables examined. AIP serve as a simple and clinically useful approach to identify IR in T2DM patients in daily practice, while TG/HDL-C ratio does not predict IR in T2DM.

Keywords: Type 2 Diabetes Mellitus, Insulin Resistance, HOMA-IR, AIP, TG/HDL-C ratio

Corresponding author Email address: zadhoush@mail.mui.ac.ir

ID:1185

Effect of dexamethasone on the endothelin-1 (ET-1) and endothelial nitric oxide synthase (eNOS) genes expression during hepatic warm ischemia/reperfusion in rat

Kasra Ghanaat[1], Abbas Khonakdar-Tarsi[1]

[1] Mazandaran university of medical sciences

Objective: Hepatic ischemia/reperfusion injury (I/RI) is a multifactorial pathophysiologic process which can lead to liver damage and dysfunction. This study examined the protective effect of dexamethasone on the gene expression of endothelial nitric oxide synthase (eNOS) and endothelin-1 (ET-1) and on the liver tissue damage during warm hepatic I/R.

Material and Methods: A total of 32 male Wistar rats was randomly divided into four groups of eight: SHAM: the group receiving saline; DEX: the group receiving dexamethasone (8 mg/kg); I/R: Ischemia-reperfusion insulted group; and DEX + I/R: I/R group receiving dexamethasone. After 3 h of reperfusion followed by 60 min of ischemia, serum and ischemic tissue were collected. Serum was used to determine the hyaluronic acid (HA), aspartate and alanine aminotransferases (AST and ALT). To evaluate the eNOS and ET-1 gene expression, the total RNA was extracted from the liver tissue, cDNA was synthesized and real-time PCR was performed. Tissue staining was performed by the Hematoxylin and Eosin stain.

Results: I/R increased serum AST, ALT and HA in I/R group compared with that in the SHAM group ($P < 0.001$). Dexamethasone significantly reduced the indicators in DEX + IR group ($P < 0.001$). In addition, the gene expression of the eNOS and ET-1 increased during I/R. Dexamethasone could significantly decrease the ET-1, but not eNOS gene expression in the DEX + IR group.

Conclusion: Dexamethasone can decline hepatic I/RI by protecting the sinusoidal endothelial glycocalyx and modifying the expression of ET-1. Given that the reactive oxygen species (ROS) are the main cause of glycocalyx degradation and ET-1 is the regulator of hepatic perfusion, thus, dexamethasone has antioxidant properties and helps proper hepatic perfusion after ischemia to maintain.

Keywords: Ischemia, reperfusion, glycocalyx, endothelin-1

Corresponding author Email address: Khonakdarab@gmail.com

ID:1187

Evaluation of serum Albumincreatinine ratio in women with various kidney diseases

Mahdieh Safarzad1, Hamid Reza Joshaghani[1], Sanaz Salar Amoli[2], Naser Behnampour[3]
[1] Laboratory Sciences Research Center, Golestan University of Medical Sciences, Gorgan, Iran
[2] Biochemistry and Metabolic Disorder Research Center, Golestan University of Medical Sciences Gorgan, Iran
[3] Department of Public Health, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran

Objective: Identifying those women with kidney disease on admission can optimize their management. Recently, the serum albumin to creatinine ratio at admission has been proposed as a novel and accurate predictor of complicated clinical outcome in renal diseases; therefore, we performed this retrospective study aimed to validate such observation in a larger series of patients with different kidney malfunctions. A complicated course was defined as developing one or more of the following: severe nephropatic injury, renal failures and etc.
Material and Methods: Data from 126 patients were reviewed and compared with reference interval ranges.
Results: Those with worse evolution presented a higher admission creatinine than those with good outcome (2.4 vs. 0.6-1.2 mg/dl; $p < 0.005$). Serum albumin at admission showed a limited ability to identify patients at risk of a complicated course, with mean level of 4.1 g/dl; the normal level of serum albumin is 3.5-5.5 g/dl (95% CI). So creatinine/albumin ratio is about that is 1.70.
Conclusion: The serum creatinine/albumin at admission provided a limited value to predict severe forms of kidney diseases.
Keywords: Albumin, creatinine, kidney diseases
Corresponding author Email address: joshaghani@goums.ac.ir

ID:1188

Targeting Cancer Stem Cell Metabolism for Therapeutic Strategy

Shima Nazem[1], Nasibe Shamlou[1], Zahra Shahsavari[1]
[1] Department of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Objective: Metabolism plays a crucial role in dictating of division patterns and quiescent state of cancer's locomotive engine, the cancer stem cells (CSCs). CSCs have special metabolic characteristics that distinguish them from the other tumor cells. CSCs are largely dependent on aerobic glycolysis for their energy production and also are associated with increased fatty acid synthesis and increased rates of glutamine utilization. These cells can shift their metabolic substrate utilization, between glycolysis and mitochondrial oxidative metabolism, in order to adapt their microenvironmental niche. In this limelight of research, it is necessary to use a new strategy to identify highly specific oncogenic metabolic targets to discover novel effective anti-cancer metabolic drugs. Thus, targeting the metabolic pathways may constitute a basis for developing new therapeutic applications to eliminate locomotive drivers of tumors, the cancer stem cell population.
Keywords: Metabolism, cancer stem cells, erapeutic application
Corresponding author Email address: nazem.sh727@sbmu.ac.ir

ID:1189

Study of the association between total protein, creatinine and urea among patients with renal disease

Mahdieh Safarzad[1], Hassan Mohajery[2], Sanaz Salar Amoli[2], Amir Ahmad[3]
[1] Laboratory Sciences Research Center, Golestan University of Medical Sciences, Gorgan, Iran
[2] Biochemistry and metabolic disorder research center, Golestan University of Medical Sciences, Gorgan, Iran
[3] BSc.student research committee, sirjan univercity of medical sciences, sirjan, Iran

Objective: present study aims to evaluate the association between total protein, creatinine and urea among patients with renal disease in Sayyad Shirazi Hospital of Gorgan.
Material and methods: Present study was done on 80 people with renal disease including 37 men and 43 women. Blood samples was given from all patients and their total protein, creatinine, and urea were measured using biochemical methods.
Results: The results showed that urea and creatinine were correlated significantly in all patients and among men and women separately (P=0.00 in all three groups). There was no significal correlation between total protein, urea and creatinine in any of the three groups.

Conclusion: The results showed that there is no significant correlation between total protein, creatinine and urea levels and this finding was not related to sex. So more studies are needed to clarify these relations.
Keywords: Total protein, creatinine, urea, renal disease
Corresponding author Email address: hassan.mohajery.68@gmail.com

ID:1190

Comparison of pET23a and pQE30 vectors in expression of Heat shock protein 27
Hamed Saeidi[1], Azam Bolhasani[2]
[1] Department of Cellular and Molecular Biology, Islamic Azad University of Damghan, Damghan, Iran
[2] Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran
Objective: Heat shock protein 27 (HSP27) is a multidimensional protein which acts as a protein chaperone and an antioxidant and plays a role in the inhibition of apoptosis and actin cytoskeletal remodeling. Heat shock proteins (HSPs) can be severed as the endogenous adjuvants to improve the efficiency of vaccines. In this study, we compared the two vectors for expression of Hsp27 in different strains of E.coli.
Material and methods: Hsp27 gene (Accession No: NM_013560) was synthesized in two prokaryotic expression vectors (pET23a and pQE30-Hsp27). The BL21 and Rosetta expression strains were transformed by these constructs. The hsp protein was purified by affinity chromatography using Ni-NTA resin and identified with SDS-PAGE and His-tag antibody Western blot technics.
Results: The detection of Hsp27 gene in pQE30 and pET23a vectors was confirmed by gel electrophoresis bond on ~720 bp site using 1KB DNA ladder. The HSP27expression was detected in the pET23a-Rossetta strain and Hsp27 was efficiently purified by affinity chromatography under both denaturing and native conditions. While the expression of hsp27 protein was not performed in bacterial strain pQE30-m15.
Conclusion: The considering new research on these vectors and Regarding pET23a-Rosetta's vectors superiority to other vectors of Hsp27, Use this vector to achieve the highest yield of expression, this recombinant protein can be used in vaccine design in future.
Keywords: HSP27, Expression vector, pQE30, pET23a, recombinant protein
Corresponding author Email address: hmdpilot@gmail.com

ID:1191

The effects of resveratrol on apoptosis of peripheral blood mononuclear cells in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled clinical trial
ShadiSadat Seyyedebrahimi[1, 2], Hadi Khodabandehloo[3], Reza Meshkani[2]
[1]Department of Clinical Laboratory Sciences, School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran
[2]Department of Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran
[3]Department of Biochemistry, School of medicine, Zanjan University of Medical Sciences, Zanjan, Iran
Objective: Type 2 diabetes (T2D) is one of the most common metabolic disorders that is now considered as a major public healthcare problem all around the world. The aim of this study was to determine whether resveratrol, a natural polyphenol with anti-carcinogenic, anti-inflammatory, anti-proliferative and antioxidant properties, affects apoptosis of peripheral blood mononuclear cells (PBMCs) in a randomized, placebo-controlled, double-blind clinical trial.
Material and methods: A total of 48 patients with T2D randomly were assigned to receive 800 mg/day resveratrol or placebo for 2 months. At the baseline and at the trial end, the apoptosis of fresh PBMCs was measured by Invitrogen Kit, using a double-stain YO-PRO 1 and PI by flow cytometry. We also measured metabolic and anthropometric parameters at the baseline and at the end of the study.
Results: Our results revealed that compared with the placebo group, consumption of resveratrol for two months significantly induced apoptosis in PBMCs. Furthermore, resveratrol resulted in a significant reduction in weight, body mass index, and blood pressure levels. Resveratrol was well tolerated, and no serious adverse event was occurred.
Conclusion

Our study demonstrated that 8 weeks of supplementation with 800 mg/day resveratrol can induce apoptosis in PBMCs of patients with T2D.

Keywords: Type 2 diabetes, Resveratrol, Apoptosis, PBMC

Corresponding author Email address: shadi_seyyedebrahimi@yahoo.com

ID:1193

Vitamin D and thyroid hormones, T4 and TSH, in patients with beta thalassemia major

Zeynab Gharehdaghi[1], Eisa Safavi[2], Shaghayegh Rostami Yasuj[1]
[1] MSc of Hematology and Blood Banking, Student of Research Committee, Bushehr University of Medical Sciences, Bushehr, Iran
[2] PhD of Social Health, Bushehr University of Medical Sciences, Bushehr, Iran

Objective: Beta thalassemia major is a genetic disease due to mutations in the hemoglobin beta chain genes. Frequent infusion of blood can increase the iron load of the body, which can cause various complications with deposition in the glands and general problem such as vitamin deficiency. Adequate circulating levels of vitamin D are essential for optimal skeletal health and reducing fracture risk in patients. For mentiond reasons this study was performed to evaluate fluctuations of vitamin D, hormones T4 and TSH in patients.

Material and methods: This descriptive cross-sectional study which was done on all patients with beta thalassemia major was admitted to Bentolhoda hospital of Bushehr. Vitamin D and hormones T4 and TSH were measured in each patient. For data analysis, SPSS21 software, Descriptive and inferential statistics were utilized.

Results: The statistical population included 90 patients (female: 54.5%, male: 45.5%) with an average age of 23 years old. The mean values of T4 and TSH and vitamin D were 7.4±1.8 ng/dl and 3.59±0.9 ng/ml and 29.1±23.6ng/ml respectively (in males: 6.4, 4.3, 23.9 and in females: 8.2, 2.9, 32.7). Prevalence of primery hypothyroidism was 5.55% in present population. Although vitamin D had a high variation, however, in 41% of patients it was below 20 ng/ml. There were significant correlations between age and TSH levels (Pvalue<0.01) and also between age and vitamin D (Pvalue<0.01). There were inverse and significant correlations between age, T4 (Pvalue=0.01) and T4, TSH (Pvalue<0.01). No significant correlation was observed between sex and T4, TSH levels (Pvalue=0.39, 0.14).

Conclusion: This study showed that the average T4 and TSH and vitamin D in the population were into the normal range but somebody had hypothyroidism disorder and vit D deficiency. The sex had no effect on the levels of these hormones, but aging could reduce T4, vitamin D and increased TSH values.

Keywords: Thalassemia major, Thyroid Hormones, Hypothyroidism, vitamin D deficiency

Corresponding author Email address: eisa_safavi@yahoo.com

ID: 1194

Correlation between serum vitamin D and Complete Blood Count

Hanieh Shojaian[1], Mohamadreza Afshar[1]
[1]Department of Clinical Biochemistry, School of Medicine, Golestan University of Medical Sciences, Gorgan, Iran

Objective: It has been reported that vitamin D play an important role in regulation of erythropoiesis. The aim of this study was to evaluate the associations between 25-hydroxyvitamin D status and the Complete Blood Count (CBC) index.
Material and methods
The number of 65 individuals included in this study. The CBC index was measured by cell counter. The levels of vitamin D measured by Elisa kit.
Result: This result indicated that an invers correlation between vitamin D with Red blood cell and haemoglobin and a positive correlation between vitamin D with The red cell distribution width. No significant correlation was detected between vitamin D and White blood cell, Average red blood cell size, and hematocrit.
Conclusion: The inverse correlation between serum vitamin D and RBC and haemoglobin may point to an inhibitory role of vitamin D in the regulation of erythropoiesis.

Keywords: Vitamin D, CBC

Corresponding author Email address: H.shojaian@goums.ac.ir

ID: 1196

Prospects of Targeting Cancer Stem Cells by Antibody Mediated Approaches

Elham attar[1], Fatemeh B. Rassouli[1,2]
[1] Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran
[2] Cell and Molecular Biotechnology Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

Objective: The growing statistics of cancer prevalence and mortality has made this disease a global health concern. Cancer stem cells (CSCs) are a subpopulation of malignant cells with therapy resistant phenotype that play key roles in formation and progression of cancer.
Material and methods: Number of recent review articles included key Cancer stem cells, surface markers, Antibody-mediated cancer therapy were extracted from databases PubMed, Scopus, and Web of Science.
Results: Due to quiescent nature of CSCs, application of conventional therapeutic modalities, which target actively dividing cells, does not necessarily end to complete elimination of cancer cells. In this regard, novel approaches are focused on targeted eradication of CSCs by their specific biomarkers to improve patient care. Recent attempts to prepare antibodies against CSC superficial markers have lead to great achievements, such as development of anti-CD44 antibody therapy and anti-CD133 antibody-drug conjugates. In addition, antibody-based strategies have focused on stimulating persistent responses against CSC antigens through induction of adaptive immunity. Furthermore, immunotherapy of cancer not only allows direct induction of cancer cell death, also provides the opportunity to coat CSCs with specific antibodies and mark them for recognition by immune cells.
Conclusion: Despite promising outcomes, most of these new strategies are not successful in identifying CSCs, mainly due to nonspecificity of CSC markers. Hence, a panel of antibodies must be applied to distinguish CSCs from the rest of tumor population, as well as non-cancerous and normal cells.

Keywords: Cancer stem cells, Specific markers, Antibody-mediated cancer therapy

Corresponding author Email address: behnam3260@um.ac.ir

ID:1197

Lysosomal acid lipase (LAL) gene expression in PBMCs is inversely associated with interleukin 32 serum concentration: a case-control study

Maryam Teimouri[1], Hossein Hosseini[1], Akram Vatannejad[1], Mahmoud Dusti[1]
[1]Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Recent studies showed that atherosclerosis is a lysosomal storage disease (LSD) and lysosomal acid lipase (LAL) is the most important enzyme of lysosomal cytosol that involved in the hydrolysis of esterified cholesterol (EC) to free

ICBMB2018.COM

cholesterol (FC). Whereas several in vitro and in vivo studies have described the crosstalk between lysosomal cholesterol accumulation and increased inflammation, there is no study addressing the correlation between LAL gene expression and a pro inflammatory cytokine, Interleukin 32 (IL-32) serum concentration in atherosclerotic patients.

Material and methods: L-32 serum concentration was quantified by enzyme-linked immunosorbent assay (ELISA) in atherosclerotic patients (n=40) and control group (n=40). LAL gene expression analysis was performed by quantitative real-time PCR, and the correlation between two parameters was assessed.

Results: Mean IL-32 serum concentration was significantly higher in patient group (P=0.002) and LAL gene expression showed negative significant correlation with IL-32serum concentration (P=0.04, r= -0.367).

Conclusion: Although more longitudinal studies are needed, these findings might further advance our understanding of the role of lysosomal lipid homeostasis components in the pathogenesis of inflammatory diseases especially atherosclerosis.

Keywords: Lysosome, inflamation, LAL, IL-32, atherosclerosis

Corresponding author Email address: m.teimouri20@gmail.com

ID:1198

Effect of Biochanin A on Serum Chemerin in Diabetic Rats

Hamidreza Dorostkar[1], Zahra Hasanvand[2], Zahra Salemi[2], Reza Azizi[3]
[1] Student Research Committee, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
[2] Department of Biochemistry, Arak University of Medical Sciences, Arak, Iran
[3] Department of Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Bioflavonoids are shown to have many biological activities, such as anti-diabetic effects, insulin-like effects, and stimulation of insulin secretion. Chemerin is an important hormone that secretes from adipocytes and is associated with insulin resistance. In this study, the effects of Biochanin A (a flavonoid) on serum levels of Chemerin, insulin and Fasting blood glucose were measured in diabetic rats.

Material and Methods: The Wistar rats were randomly divided into four groups of 6 members. The first group was selected as the healthy control group and in three other groups, diabetes was induced by streptozotocin (35 mg/kg intraperitoneally). The second group was selected as diabetic control, and the third and fourth groups were treated with Biochanin A with doses of 10 mg/kg and 15 mg/kg for 30 days, respectively. After the study, the biochemical parameters including Chemerin, insulin and fasting blood glucose were measured.

Results: There was no significant association between Biochanin A and the level of serum Chemerin in diabetic rats. However, the level of insulin and fasting blood glucose in these groups showed a significant difference compared to the diabetic control group ($p < 0.05$).

Conclusion: In this study, Biochanin A did not show a significant effect on Chemerin levels in diabetic rats, which may be due to dose or duration of treatment. However, it showed that Biochanin A had hypoglycemic effects and therefore has beneficial effects in the treatment of diabetes.

Keywords: Biochanin A, Chemerin, Diabetes, Insulin, Rat

Corresponding author Email address: azizirr@yahoo.com

ID:1199

Histamine and Food Allergy

Reza Azizi[1], Zahra Salemi[2], Negar dinarvand[1]
[1] Department of Biochemistry, School of Pharmacy, Esfahan University of Medical Sciences, Isfahan, Iran
[2] Department of Biochemistry, School of Pharmacy, Arak University of Medical Sciences, Arak, Iran

Objective: Histamine is synthesized by histidine decarboxylase (HDC) in wide types of immune cells and is involved in abundant physiologic and pathologic processes. Histamine is a mediator released during inflammatory reactions, such as food allergy. Food allergy is immunological reactions to 'fight off' specific allergens within food in susceptible individuals. The Aim of this study is investigation of the histamine hemostasis and food allergy to discover the relationship between them.

Material and Methods: Analysis of data from multiple electronic databases such as Scopus, PubMed, Google Scholar and Science Direct were performed. Various criteria were applied to select the articles for inclusion.

Results: Food allergy reaction is divided to 4 types of the immune response. These reactions with different mechanisms cause increased concentrations of histamine. Histamine does various action in different tissue.

Conclusion: The correct and timely diagnosis of food allergy can lead to reduction of the chemicals release and inhibit of abnormal reaction of the body. According to some studies, Measurement of N-methylhistamine (NMH) as the major metabolite of histamine may help to diagnose patients with food-allergen induced clinical symptoms.

***Keywords*:** Histamine, food allergy, histidine decarboxylase

Corresponding author Email address: kdinarvand92@yahoo.com

ID:1200

The gene expression levels of NPC2 and LAL in atherosclerotic patient and control group

Maryam Teimouri[1], Hossein Hosseini[1], mahmoud dusti[1]
[1] Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Objective: Atherosclerosis is the most common cause of cardiovascular disease (CVD). Disturbing of total cholesterol (TC) homeostasis is important in the foam cell formation and the hydrolysis of cholesterol ester (CE) to FC in lysosome by lysosomal acid lipase (LAL) is the rate-limiting step in the cholesterol efflux and cholesterol homeostasis. Recent studies showed that atherosclerosis is a lysosomal storage disease (LSD) that lysosomal proteins such as NPC2 which involved in the removal of cholesterol from lysosome are important in the cholesterol homeostasis and atherosclerosis process. Therefore in this study, we investigate the gene expression of LAL and NPC2 levels and correlation between of them in PBMCs of atherosclerotic patients and control group.

Material and Methods: The expression level of LAL and NPC2 in PBMCs were examined in male atherosclerotic patients (n=40) and control group (n=40) aged>50 years using real-time PCR.

Results: There was no significant difference in NPC2 gene expression levels (p=0.615). The expression level of LAL was significantly lower (p=0.035) in control group compared to the patient group. NPC2 gene expression was directly correlated with LAL gene expression (p= 0.003, r= 0.338).

Conclusion: In the present study, we have observed a significant positive correlation between the expression of LAL gene and the expression of NPC2 gene. These results indicate that lysozyme is involved in atherosclerotic disease and this relationship suggests that there is direct interaction between the LAL and the NPC2 protein in the process of cholesterol lysosomal hemostasis in atherosclerosis.

Keywords: Lysosome, atherosclerosis, LAL, NPC2

Corresponding author Email address: m.teimouri20@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1201

Effect of Biochanin A on Vaspin Hormone in Diabetic Rats

Hamidreza Dorostkar[1], Zahra Hasanvand[2], Zahra Salemi[2], Reza Azizi[3]
[1] Student Research Committee, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
[2] Department of Biochemistry, Arak University of Medical Sciences, Arak, Iran
[3] Department of Biochemistry, Isfahan University of Medical Sciences, Isfahan, Iran

Objective: Bioflavonoids have anti-diabetic effects. They can also stimulate insulin secretion or create insulin-like effects. Vaspin is a hormone from the adipose tissue that is associated with insulin sensitivity. In this study, the effects of Biochanin A, as a flavonoid, on vaspin, fasting blood sugar and glycated hemoglobin, have been measured in diabetic rats.

Material and Methods: 24 adult male Wistar rats were randomly divided into four groups and each group consisted of six rats. The first group was named as a healthy control group, and in the other three groups, diabetes was induced by intraperitoneal injection of streptozotocin (35 mg/kg). The second group was designated as diabetic control. The third and fourth groups received 10 and 15 mg/kg body weight of Biochanin A, respectively, for 30 days. Finally, biochemical parameters including vaspin, fasting blood sugar and glycated hemoglobin were measured.

Results: There was a significant difference in the level of vaspin in the healthy control group and diabetic control group ($p < 0.05$), but the effect of Biochanin A on the level of vaspin in the third and fourth diabetic groups was not significant compared to the diabetic control group. The level of fasting blood sugar and glycated hemoglobin in rats treated with Biochanin A showed a significant decrease ($p < 0.05$) in comparison with the second group.

Conclusion: Biochanin A may not have a significant effect on vaspin levels due to the duration of the study period or the use of prescribed concentrations, but showed beneficial effects in reducing blood sugar and glycated hemoglobin. This indicates the therapeutic potential of this bioflavonoid to improve diabetes.

Keywords: Biochanin A, Diabetes, Glycated hemoglobin, Vaspin, Rat

Corresponding author Email address: hrdorostkar@yahoo.com

ID:1202

Endothelin-1 stimulates carboxy terminal Smad2 phosphorylation in vascular Smooth muscle cells by a mechanism dependent on NOX-dependent mechanism

Parisa Dayati[1], Hossein Babaahmadi Rezaei[1]
[1]Department of Clinical Biochemistry, Jundishapur University of Medical Sciences, Ahvaz, Iran

Objective: G protein-coupled receptor (GPCR) agonist endothelin-1 (ET-1) stimulates glycosaminoglycan (GAG) elongation on proteoglycans in vascular smooth muscle cells (VSMCs) through transactivation of the transforming growth factor (TGF)-β receptor (TβR1). The canonical downstream response to TβR1 is C-terminal phosphorylation of Smad2 transcription factor (phospho-Smad2C). The knowledge of the mechanisms through which ET-1 activate TβR1 are much less well advanced. NADPH oxidase (NOX) is implicated in the pathogenesis of atherosclerosis and is one of the potential therapeutic targets. In this study, we identified the involvement of NOX in ET-1-mediated transactivation of TβR1.
Material and Methods: Invitro study was performed on human VSMCs. Signaling molecule phospho-Smad2C was assessed by Western blotting.
Results: Endothelin-1 treatment led to an increase in phospho-Smad2C level, which was inhibited by bosentan and SB431542. In the presence of Diphenyliodonium (DPI) and apocynin (NOX inhibitors), ET-1-stimulated phospho-Smad2C levels were inhibited.
Conclusion: This work shows that NOX plays an important role in ET-1-mediated transactivation of the TβR1.
Keywords: transactivation, Smads, TGF-β, G protein coupled receptor, endothelin-1
Corresponding author Email address: babaahmadi-h@ajums.ac.ir

ID:1204

Investigation the effect of metformin and Quercetin combination on high glucose-induced lipogenesis in HepG2 cells.

Reyhaneh Babaei Khorzoughi[1], Fatemeh Namvarjah[1], Reza Meshkani[1]
[1] Department of Clinical Biochemistry, Tehran University of Medical Sciences, Tehran, Iran

Objective: The increasing prevalence of diabetes worldwide is one of the most serious health problems of the 21st Century. Insulin resistance plays a major role in the pathogenesis of diabetes. One of the main causes of insulin resistance can be the increased accumulation of lipids, especially triglycerides, which accumulate in adipose, muscle and liver tissues. Metformin is in the first line of the anti-diabetic drug due to reduce the amount of glucose and lipids and increase insulin sensitivity. Compared to Metformin, phytochemicals from natural resources such as Quercetin (one of the most important flavonoids) with very low side effects and low cost have opened a new field in the treatment of diabetes.

Material and Methods: The viability of cells were treated by quercetin and metformin alone and combined was evaluated using by MTT assay. Lipid content and TG level of cells have measured by oil red O staining and TG assay in HepG2 cells which were treated with metformin, quercetin alone and in combination. To explore the molecular mechanisms, FAS and SREBP-1c gene expression were examined by Real-time quantitative PCR. Following, western blotting was performed to measure the levels of p-ACC and p-AMPK.

Results: Quercetin and metformin combination strongly reduce lipid content of treated cells. Our data indicated SREBP-1C and FAS gene expression was suppressed ($p<0.05$) and p-ACC and p-AMPK protein levels were induced by the combination of metformin and quercetin compared with the single treatment groups.

Conclusion: These results show that combination of quercetin and metformin has a synergistic effect on reduction of high glucose-induced lipogenesis in HepG2 cells by modulating AMPK/SREBP/ACC pathway.

Keywords: Diabetes, Lipogenesis, Metformin, Quercetin, Combination

Corresponding author Email address: Reyhan.babaie71@gmail.com

Scientific Secretariat:
Department of Clinical Biochemistry, School of Pharmacy & Pharmaceutical Sciences, Isfahan, Iran.
Tel/Fax: +9831-36700272
ICBMB2018.COM
https://t.me/ICBMB2018

Executive Secretariats:
Unit 6,3rd Floor, Platinum Building No. 8,Alley4, North Amirabad , Tehran, Iran
Cell Phone: +98-9032225747
Tel: +98-21-88334436-8
Unit 1, No 38, Khosravi Alley, North Kargar St., Tehran,Iran ,Rayan office
Cell Phone: +98-9033335747

ID:1205

The study of Antioxidant activity of extract from a brown alga, Padina boergesenii

Kiana Karimzadeh[1], Zohreh Tabatabaian Nimavard[2]

[1] Department of Marine Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

[2]Academic Member of Department of Science and Technology Medical and Research Branch, Islamic Azad University, Tehran, Iran

Objective: The main aim of this descriptive research was surveying of antioxidant activity of extract from a brown alga, Padina boergesenii, is a macro alga rich in protein and other essential nutrients. The present study was conducted to evaluate the antioxidant activity of methanol extract (ME), as well as the phenolic compounds of brown alga, Padina boergesenii cornuta in three different sites of Gheshm Island, Iran.

Material and Methods: Amount of total phenolic compounds in methanol extract of algae was measured using Folin-Ciocalteu assay. The antioxidant activity of the algae extracts and the standard was assessed on the basis of the radical scavenging effect of the stable 1, 1-diphenyl-2-picrylhydrazyl (DPPH)-free radical activity.the inhibition concenteration at 50% inhibition (IC50) was the parameter used to compare the radical scavenging activity.A lower IC50 mean the better radical scavenging activity.IC50 ME is express in comparison with BHT concentration that IC50 EM is equal 28.50 ±0.14µg/ml and BHT is equal 10.2 µg/ml.

Results: Amount of total phenolic compounds in methanol extract was showed about 6±0.3 mg/g of dry sample among three different sites. using catechol (1,2Dihydroxy Benzen) as standard total phenolic content was expresed as mg /g of dry powder.data reported of three replication. This alga exhibited a DPPH radical scavenging activity with very low oxidation index IC50, significantly equivalent to IC50 of some commercial antioxidants such as butylated hydroxytoluene (BHT), butylated hydroxyanisol (BHA) and ascorbic acid (AA).

Conclusion: The phenolic constituent appears to be responsible at least in part, for the observed antioxidant activity of the algal extract. The results suggest that this alga could be a potential source of natural antioxidant, which could be considered for future applications in medicine, or cosmetic industry. Keywords: Antioxidant activity, Phenolic compounds, brown alga, Padina boergesenii.

Keywords: Antioxidant activity, Phenolic compounds, brown alga

Corresponding author Email address: bio6037@gmail.com

ID:1206

Microrna-630: The Strange Mystery in Various Cancers; a Systematic Review

Zeynab Gharehdaghi[1], Shaghayegh Rostami Yasuj[1]
[1] Student of Research Committee, Bushehr University of Medical Sciences, Bushehr, Iran

Objective: MicroRNAs (miRNAs) are small non-coding RNAs that post transcriptionally regulate gene expression. They are involved in almost all biological processes, and many have been identifed as potential oncogenes or tumor suppressor genes. MiR-630 was recently discovered to play pivotal roles in regulating cell proliferation, differentiation, migration and invasion. Dysregulation of miR-630 has been demonstrated in multiple types of cancers. Studies have shown that miR-630 had activator or suppressor effects on SLUG, E2F1, E2F2, PTEN, E2H2, H19, P53, PΔNP63α, ANG, SOX4, IGF-1R, cdcl2, CREB, MTDH, PARP3, DDIT4, EP300, c2cER, RAD18, Lmo3 in various cancer, whether it functions as an oncogene or a tumor suppressor seems to be context-dependent. These studies would help us to better understand the pleiotropic functions of miR-630 in cancer development. Last, additional studies are clearly needed to fully validate the usefulness of miR-630 as a diagnostic and/or prognostic biomarker.

Keywords: miR-630, micro RNA 630, oncogene, supressor, cancer

Correspondig author Email address: z.gharehdaghi1993@gmail.com

ID:1208

The efficacy of Zinc Containing-Supplements on Glycosylated Hemoglobin in Patients with Diabetes Mellitus Type 2 (II)

Zohreh tabatabaian nimavard[1], Kiana Karimzadeh[2]
[1] A Cademic Member of Department of Science and Technology Medical and Research Branch, Islamic Azad University, Tehran, Iran
[2] Department of Marine Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran

Objective: Today, diabetes -a chronic metabolic disease- is one of the most common diseases among different societies. Though the prevalence of diabetes mellitus type I and II is increasing, the incidence rate of type II diabetes is growing more rapidly. The main causes of type 2 diabetes include: impaired insulin secretion or insulin receptors resistance and genetic factor. Obesity, family history of type 2 diabetes, increasing age, high blood pressure, polycystic ovary syndrome (PCOS), and gestational diabetes (GD) are amongst the other effective factures of this disease. As diabetes has become a global problem and due to its high morbidity and mortality, primary prevention to prevent diabetes disease has been the subject of many research studies in recent decades. Considering that the amount of zinc element in healthy people pancreas is twice as much as for those with diabetes, this element plays a role in insulin production. It has been observed that zinc deficiency in the blood leads to hypoinsulinaemia and chronic zinc deficiency increases type 2 diabetes risk. Using 50 mg per day zinc dose in this clinical trial research study, serum zinc concentration increased and glycosylated hemoglobin percentage in patients with diabetes mellitus type2 was significantly decreased.

Keywords: Type2 diabetes, Zinc, Hypoinsulinaemia, Glycosylated hemoglobin

Corresponding author Email address: z.taba2000@gmail.com

ID:1209

The role of SIRT1 in molecular mechanism of palmitate induced-apoptosis in skeletal muscle cell line (C2C12)

Gholamreza Taheripak[1], Niyosha sabeti[2], Farshid Rezaee[3]
[1] Department of Biochemistry, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Biochemistry, Islamic Azad University, Science and Research Branch, Tehran, Iran
[3] Department of Biochemistry, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

Objective: insulin resistance is one of the characteristics of type 2 diabetes which mainly affects skeletal muscle. Various studies have shown that insulin resistance is associated with increased free fatty acids specially palmitate in the plasma. It has been documented that palmitate induces apoptosis in various cells, including skeletal muscle cells. SIRT1 seems to be an apoptotic regulator, and given the fact th
at reducing the expression of this gene leads to increased insulin resistance, the effects of this protein on induction of Palmitate induced-apoptosis potentially contributes to the prevention and treatment of type 2 diabetes**.**
Material and Method: C2C12 myoblasts were cultured and differentiated into myotubes in DMEM medium. Inhibitors and activators of SIRT1 were added 1 h before the incubation with palmitate. Cellular ROS levels were measured using a cell-permeative probe, 2′,7′-dichlorofluorescindiacetate(DCFDA). The activity of caspase-3 and -9 was measured using the Caspase-3/CPP32 colorimetric assay and Caspase-9/MCH6 colori- metric assay kits. TUNEL-positive nuclei were examined and counted under a fluorescence microscope.
Results: Palmitate induced apoptosis and reduced SIRT1 protein and gene expression in C2C12 cells. SIRT1 activator, resveratrol reduced Tunnel-positive cells, decreased caspase3 and 9 activity and ROS level while addition of the SIRT1 inhibitor, sirtinol had opposite effects. In addition, activation of SIRT1 increased levels of Bcl-2 and Akt-p while reduction of SIRT1 had opposite effects in presence of palmitate.
Conclusion: These results extend the potential utility of SIRT1 activators to inhibition of apoptosis and treatment of type 2 diabetes.

Keywords: Type 2 diabetes, SIRT1, Palmitae, Apoptosis

Corresponding author Email address: Taheripak.gh@iums.ac.ir

ID: 888

Evaluation of blood levels of OX-LDL, MDA and lipid in patients with or without atherosclerotic plaques

Ms Hajar Azadikhah[1], Dr Esmaeel Ghani[2], Dr Hossein Farshidi[3]
[1] Student Research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[2] Endocrinology and Metabolism Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran
[3] Cardiovascular Research Center, Hormozgan University of Medical Sciences, Bandar Abbas, Iran

Objective: Atherosclerosis is caused as a result of impairment of lipid profile and endothelial dysfunction. The entry and accumulation of free cholesterol in the wall of the artery, mediated by LDL particles, is a precondition for early onset atherosclerosis. The aim of this study was to evaluate the level of OX-LDL, lipid peroxidation and lipid profile in patients with or without atherosclerotic plaques.

Material and Method: This study was performed on blood samples of patients with (n = 86) and without plaque (n =49) referring to the angiography section of Shahid Mohammadi Hospital in Bandar Abbas. Lipid peroxidation was evaluated by measuring MDA based on reaction with thiobarbituric acid (TBARS). The levels of OX-LDL and lipid profiles (LDL, HDL, TG and cholesterol) were measured by ELISA and commercial kits, respectively.

Results: OX-LDL and MDA were not significantly different between the two groups. There was no significant difference in systolic and diastolic blood pressure, BMI and abdominal circumference between the two groups, while the wrist circumference in patients with atherosclerotic lesions was significantly higher than those without plaque. The levels of LDL, TG, and plasma cholesterol in the atherosclerotic group were significantly higher than those without plaque, but plasma HDL was not different. OX-LDL had only a significant direct relation with the weight and diameter of the abdomen.

Conclusion: Patients without plaque had no significant difference in oxidative stress markers with atherosclerotic patients, while lipid profiling could still be a marker of progression of atherosclerosis and plaque formation. Some patients have no plaque; however, they are at risk for cardiovascular disease.

keywords : Atherosclerosis, OX-LDL, MDA, lipid peroxidation, lipid profiles

Corresponding author Email address: hajar.azadikhah@gmail.com