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Evaluation of anti-oxidant properties and phenolic content of Thymus transcaspicus

Narjes Zamani, Manijeh Mianabadi, Masoomeh Younesabadi*

Department of Biology, Faculty of Science, University of Golestan, Golestan, Iran

Considering that anti-oxidant compounds are very important for inhibition of oxidative damage to biological target molecules, they are used for prevention and treatment of many diseases such as cancer, cardiovascular, autoimmune and neurodegenerative diseases. Because of risk factors that interfere with stress like population, cigarette smoke, drugs, illness, agitation and disturbance has increased; it is thought people need to use anti-oxidant compound more than past. Furthermore, anit-oxidant compounds are widely used for preservation and keeping foodstuffs and edible oils. Whereas, making process of synthetic anti-oxidant is very expensive and some of them like butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT) have confirmed undesirable effects, finding of natural anti-oxidant from new sources is very important. In this study, the antioxidant activity of Thymus transcaspicus (Laminaceae family) was investigated at first by using TLC screening and then by 2,2-diphenyl-1-picrylhydrazyl free radical scavenging (DPPH) and ferric-reducing antioxidant power (FRAP) methods. Therefore, the plant of T. transcaspicus was harvested from Sar-AliAbad with an altitude of 2350 meter around Gorgan city of Iran during the flowering phases (June-July, 2007) and the aerial parts of plant were dried at room temperature and powdered. Powdered plant was extracted by ethanol: water (4:1) and concentrated using rotary evaporator. FRAP assay evaluated the capacity of plant extract in ferric to ferrous ion reduction. The results of FRAP assay indicated that reduction power of T. Transcaspicus was equivalent to 477.4±2.3 mmol Fe+2 g-1 DW. The result of DPPH assay showed that the crude extract of T. transcaspicus was powerful for DPPH radical scavenging compared to BHT as a positive control. Since there was a positive correlation between antioxidant activity with total phenol and flavonoid content, their content in crude extract of T. transcaspicus was measured. Crude extract of T. transcaspicus contained 37.72±0.15 mg gallic acid equivalent and 8.23±0.027 mg quercetin equivalent per gram dry weight. These results shown T. transcaspicus possess valuable and potent antioxidant properties.

Keywords: Thymus transcaspicus, Antioxidant properties, DPPH, ferric-reducing anti-oxidant power

P-10-18-2

Inhibition of human breast cancer cells by aqueous extract of Hibiscus gossypifolius Mill (Sour tea)

Mohsen Mohammadian Yajloo [1], Parvin Pasalar [1], Shahnaz Khaghani [1], Malihe Paknejad [1], Massoud Amanlou [2], Shahla Rezaei [2]*

1- Department of Clinical Biochemistry, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran, 2- Department of Medicinal Chemistry, School of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

Majority of the currently available anticancer drugs are designed to have selective toxicity towards tumor cells. Among these the focus of many studies are natural compounds which inhibit the growth of cancer cells more selectively than normal cells. In present study the cytotoxic effect of *Hibiscus gossypifolius Mill* (sour tea) aqueous extract on human breast adenocarcinoma cell line (MCF-7) and normal fetal foreskin fibroblast (HFFF) was investigated. The plant calyces were extracted by maceration method with distilled water then evaporated to dryness using rotary evaporator. The extract was prepared as a stock solution, sterilized and further diluted to final concentrations. The cells were grown in completed RPMI-1640 and seeded in 96-well micro plates at concentration of 2.5×104 cells/well. After 12 hours incubation, different concentrations of the extract were added and cells further incubated for 24, 48 and 72 hours. Cell survival percent was determined at 540 nm using MTT assay. At concentration of 0.5 mg/ml of the extract, following 72 hours incubation, the number of viable MCF-7 cells was less than 50%. Cytotoxicity was considered whenever cell survival percent was less than 50. The extract was not cytotoxic towards normal HFFF cell line in all tested concentrations. These results suggest that the aqueous extract, in a concentration and time dependent manner, inhibits the growth of MCF-7 more selectively than HFFF cells.

Keywords: Hibiscus gossypifolius Mill, sour tea, natural anticancer compound, MTT assay, MCF-7, HFFF

P-10-152-2

Radical scavenging activity of Juniperus excelsa subfractions

Soheila Moein [1], Mahmood Reza Moein [2], Zahra Lorigooini [3]*

1- Biochemistry Department, Faculty of Medicine, and Infectious Disease Research Center, Hormozgan University of Medical Sciences, Bandar abbas, Iran, 2- Pharmacognosy Department and Pharmaceutical Sciences Research Center, Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran, 3- Pharmacognosy Department, Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran

Free radicals are involved in various diseases such as Alzheimer's disease, aging, cancer, inflammation, rheumatoid arthritis and atherosclerosis. Testing of plants antiradical properties of interest, aims primarily to finding new promising sources of natural antioxidants, functional foods and neutraceuticals. In this research, radical scavenging activities of Juniperus excelsa subfractions were determined. Juniperus excelsa leaves were collected from Genu Mountain, north of Bandar-e-Abbas. After drying, plant leaves were extracted with ethanol and this extract was loaded on silica gel column. The column was eluted by CHCl3: MeOH: H2O (98:2:0-85:15:2) and MeOH. Totally 43 subfractions were obtained. In radical scaveniging assay, subfractions of extract were incubated with DPPH free radical and after 30 minutes the absorbance was measured at 495 nm using a microplate reader. Radical scavenging activity was shown as IC50 (concentration in µg/ml required to inhibit DPPH radical formation by 50%). When DPPH is exposure antioxidant compounds its purple color changes to yellow. In this research, the fraction number 43 cause the most yellowish in DPPH free radical and its IC50 (217±1.9) was less than the other fractions. In other words, this fraction showed the highest radical scavenging activity. Some of the fractions 1-2, 3-8, 12-15, 17-18 couldn't scavenge DPPH free radical (IC50>400).The results showed the radical scavenging activity of Juniperus excelsa subfractions. Anyway by using silica gel column chromatography it is possible to obtain more antioxidant subfractions.

Keywords: column chromatography, DPPH scavenging, free radicals, Juniperus excelsa subfractions, silica gel

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P-10-389-1

Composition of essential oil and antibacterial activity of methanol and ethanol extract of Scrophularia Striata Boiss

Faranak Samsamnia [1], Hamzeh Amiri [2]*

1- Islamic Azad University- Branch of Broujerd, 2- Biology Department of Lorestan University, Lorestan, Iran

S. striata belongs to Scrophulariaceae family and it is commonly called "Teshne Dari". Infected diseases are important disorders and humans have tried to treat and control them. There are several reports on antibacterial activity of essential oils and Extracts. Plant materials were collected from North West Mountains of kuhdasht in Lorestan province. Collected plant was dried in the shade and hydrodistillated. Identification of constituents of essential oil was performed by GC and GC/MS. Also antibacterial assays of ethanol and methanol extracts were carried out by paper disc diffusion method. Among the identified thirty five components, linalool (18.33) 6,10,14–trimethyl pentadecan-2-one (8/38), Dibutylphthalate (6/97), –damascone (5/89), –terpineol (4/86), germacrene-D (4/67) were found as the main components. The ethanolic extract has antibacterial activity against Staphylococcus aureus, Staphylococcus epidermidis, E. coli, Pseudomonas aeroginosa with inhibition zone diameter (14, 13, 11, 11) respectively while methanol extracts have only antibacterial activity against Gram-positive bacteria.

Keywords: Scrophularia Striata Boiss, Staphylococcus aureus, Staphylococcus epidermidis, E. coli, Pseudomonas aeroginosa, antibacterial, essential oil

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P-10-126-1

Free radical scavenging activity and phenolic and flavonoid contents of Echinophora platyloba (Umbelliferae) extracts

Vahid Khazai [1], Khosro Piri [1], Snbl Nazeri [1], Roya Karamian [2], Ali Hatami [3]*

1- Department of Biotechnology, Bu-Ali Sina University, 2- Department of Biology, Bu-Ali Sina University, 3- Department of Animal science, Bu-Ali Sina University,

Free radicals and oxygen species are present in biological systems from a wide variety of sources. These free radicals may oxidize nucleic acids, proteins, lipids or DNA and can initiate degenerative disease. Antioxidant compounds like phenolic acids, polyphenols and flavonoids scavenge free radicals. The aim of this study is the investigation of antioxidant properties of Echinophora platyloba. We evaluates the free radical scavenging activity, total flavonoid and the total phenolic compounds of methanol, hydroalcoholic and water extracts of Echinophora platyloba. The antioxidant activity measurement was carried out using the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay; total phenol content was determined using the Folin-Ciocalteu method and aluminum chloride colorimetric method was used for flavonoids determination. The total phenol content varied from 1.18±0.7 to 3.15±0.4 mg g-1 in the extracts. Flavonoid contents were between 8.15±22 and 3/16±14 mg g-1. The highest radical scavenging effect belonged to methanol extract. The potential use of Echinophora platyloba for their antioxidant and naturalizing activities against free radicals is discussed.

Keywords: antioxidant, free radicals, phenolic contents, flavonoid contents, DPPH

P-10-130-1

Effects of the Pistacia atlantica gum extract on the levels of blood glucose, pancreatic hormone and enzymes in diabetic dogs

Behrad Eshratkhah [1], Mohammad Sadaghian [1], Elnaz Afruzeh [2], Abolfazl Khasevani [2], Mehdi Naghizadhe [2], Farzad Jabbarilar khosroshahi [2]*

1- Islamic Azad University of Shabestar Branch, Shabestar, Iran, 2- Islamic Azad University of Tabriz Branch, Tabriz, Iran

Diabetes mellitus (D.M.) is a syndrome characterized by abnormal insulin secretion and/or action. Derangement in carbohydrate metabolism is diagnosed by the presence of hyperglycemia. This study evaluated effect of oral Pistacia atlantica gum extract administration on the levels of blood glucose, insulin, lipase and amylase in alloxan-induced diabetic dogs. The animals were classified in three groups: group I (control), group II (non-treated diabetic dogs with prepared extract or diabetic control group) and group III (treated diabetic dogs with prepared extract). The results showed that oral administration of Pistacia atlantica gum extract, significantly ($P<0.05$) reduced the levels

of blood glucose in treated diabetic dogs and there was no significant difference between treated diabetic group and other groups concerning the blood of insulin, lipase and amylase levels. These results suggest that the administration of this extract might be beneficial for reducing the risk of oxidative stress and its complications in diabetes mellitus. Also, the hypoglycemic effect of this extract may be related to non-pancreatic hormonal and enzymatic activity.

Keywords: diabetes mellitus, Pistacia atlantica, glycemia, insulin, lipase, amylase, dog

P-10-42-2

Micropropagated Haplophyllum Stapfianum Hand.-Mazz. (Rutaceae) oil as a rich source of γ-palmitolactone

Maryam Gholami , Katayun Javidnia , Ramin Miri , Mohammad Soltani*

Shiraz University of Medical Sciences, Shiraz, Iran

The plant kingdom represents an enormous reservoir of biologically active molecules and nearly 50% of drugs used in medicine are of plant origin. Producible synthetically on a commercial scale is the second important motive for establishing and developing optimized micropropagation of various plants. Haplophyllum is an old world genus of Rutaceae family and is unrivalled on the basis of the diversity of its secondary metabolite classes including lignans of diverse structures, coumarins, sterols, flavonoid and several classes of alkaloids and is represented by about 70 species that most of them are known from a limited range of distribution. Iran with 26 species of Haplophyllum 14 of which are endemic is a major center of endemism of this genus. Halophyllum stapfianum, a critically endangered species endemic to Iran was micropropagated in order to find its optimized in-vitro cultural condition and its essential oil composition was investigated by GC and GC/MS and compared with wild plant oil composition. Hexadecanoic acid and phytol were the major compounds of wild plant oil, in contrast with the oil of in-vitro sample which new compound comprised more than half of the total oil.

Keywords: micropropagation, GC/MS, in-vitro

P-10-183-1

Effect of consumption of cocoa powder on plasma lipids and lipoproteins of mildly hyperlipidemic humans

Naiereh Parsaeyan

Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Cocoa powder is rich in polyphenols such as catechins and procyanidins. Coca powder may have beneficial effects on human health and protect against cardiovascular disease. The aim of this study was to investigate plasma lipids and lipoproteins concentrations of mildly hyperlipidemic humans after consumption of 20g/d cocoa powder. We selected 50 mildly hyperlipidemic patients. Blood total cholesterol, triglyceride, LDL-cholesterol and HDL-cholesterol were measured by special kits .They consumed 20 grams of cocoa powder after addition of hot milk, twice each day for four weeks. They did not use medicine for decreasing lipids and did not change their diets and body activities. Their blood lipids and lipoproteins concentrations were measured before and after cocoa powder consumption and recorded in questionnaire. Cocoa powder consumption caused significant reduction of serum cholesterol (26.88 mg/dl), triglyceride (36/31 mg/dl), LDL-cholesterol (22/56 mg/dl) and insignificant elevation of HDL-cholesterol (8.85 mg/dl). Therefore, results of this study confirm that cocoa powder has beneficial effect on blood lipids and lipoproteins. We suggest that consumption of specific amount of coca powder with respect to food habits in each region can protect against cardiovascular disease.

Keywords: cocoa powder, hyperlipidemic, catechins, procyanidins

P-10-183-2

Effect of cocoa powder on cardiovascular risk factors of hyperlipidemic humans

Naiereh Parsaeyan

Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Cardiovascular disease is main cause of death in the world. Hyperlipidemia, especially increased concentrations of cardiovascular risk factors such as LDL-cholesterol and apolipoprotein B100 lead to cardiovascular disease. Nutrition plays a key role in prevention of many chronic diseases such as cardiovascular diseases. Flavonoids such as cocoa powder protect against cardiovascular risk factors and mortality. We examined whether cocoa powder can reduce cardiovascular risk factors of hyperlipidemic human. 50 hyperlipidemic subjects were selected and their blood lipids and lipoproteins concentrations measured before and after ingestion of 20g cocoa powder in hot milk twice a day for 4 weeks. They did not use lipids lowering medicine and did not change their diets and body activities. Cocoa powder caused significant reduction of serum cholesterol (26.88mg/dl), triglycerides (36.31mg/dl), LDL-cholesterol (22.56mg/dl) ($p=0.001$) and insignificant reduction of apolipoprotein B100 (7.8mg/dl). But concentration of HDL-cholesterol (8.85mg/dl) and apolipoprotein A1 (1.44mg/dl) increased insignificantly. So intake of moderate amount of cocoa powder may contribute to reduction of cardiovascular risk factors and cardiovascular diseases.

Keywords: cocoa powder, cardiovascular risk factors, hyperlipidemia

P-10-183-3

Effect of consumption of cocoa powder on plasma lipids and lipoproteins of mildly hyperlipidemic humans

Naiereh Parsaeyan

Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Cocoa powder is rich in polyphenols such as catechins and procyanidins. Coca powder may have beneficial effects on human health and protect against cardiovascular disease. The aim of this study was to investigate plasma lipids and lipoproteins concentrations of mildly hyperlipidemic humans after consumption of 20 g/d cocoa powder. We selected 50 mildly hyperlipidemic patients. Blood total cholesterol, Triglyceride, LDL-cholesterol and HDL-cholesterol were measured by Special kits. They consumed 20 grams of cocoa powder after addition of hot milk, twice each day for four weeks. They did not use medicine for decreasing lipids and did not change their diets and body activities. Their blood lipids and lipoproteins concentrations were measured before and after cocoa powder consumption and note in questionnaire. Cocoa powder consumption caused significant reduction

of serum cholesterol (26.88 mg/dl), triglyceride (36/31 mg/dl), LDL-cholesterol (22/56 mg/dl) and insignificant elevation of HDL-cholesterol (8.85 mg/dl). Therefore results of this study confirm that cocoa powder has beneficial effect on blood lipids and lipoproteins. We suggest that consumption of specific amount of coca powder with respect to food habits in each region can protect against cardiovascular disease.

Keywords: cocoa powder, hyperlipidemic humans, lipids, lipoproteins

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P-10-202-1

Effects of garlic on liver phosphatidate hophohydrolase and serum lipids profile in hyperlipemic rats

Esfandiar Heidarian [1], Hamoon Akbari [1], Esmat Jafari Dehkordi [2]*

1- Ilam University of Medical Sciences, 2- Health Center of Shahre-kord, Shahre-kord University of Medical Sciences, Iran

Phosphatidate phosphohydrolase (PAP) catalyzes the dephosphorylation of phosphatidic acid to yield Pi and diacylglycerol. This reaction is a rate limiting and regulatory step in glycerolipid metabolism. The produced diacylglycerol is a precursor in the synthesis of triglycerides and phospholipids. In herbal medication, garlic (Allium sativum) is prescribed as antihyperlipemic agent. In this study, the effects of garlic on liver PAP activity, liver triglyceride and serum lipids profile were investigated. Rats were randomly divided into 4 diet groups (n= 6/ group). Group I (control) were fed with a standard pellet diet. The group II animals were fed with a standard diet plus 4% garlic. The group III and IV rats were fed, a lipogenic diet for 2 weeks, containing 0.5% cholic acid, 20% sunflower oil and 2% cholesterol. Additionally, the group III and the group IV drank water containing 3% ethanol. In the group III, after 2 weeks, 4% garlic was added into lipogenic regime for 45 days, whereas the rats in the group IV were maintained on lipogenic diet. By the day 60th, liver PAP activity, serum triglyceride, total cholesterol, HDL-cholesterol, LDL- cholesterol, VLDL-cholesterol and liver content triglyceride were measured. In group III, rats fed lipogenic with garlic diet hsd decreased serum triglyceride, total cholesterol, HDL-cholesterol, LDL- cholesterol and VLDL-cholesterol levels compared to the group IV. In the group IV and the group II, the liver PAP activity were reduced significantly ($P<0.05$) with respect to the group I, whereas no significant change was observed between group III and group I ($P>0.05$). On the other hand, the liver PAP activity in the group II significantly decreased ($P<0.05$) compared to group I. The liver triglyceride level was significantly elevated ($p < 0.05$) in the group IV than the other groups. Additionally, the liver triglyceride level in group II increased compared with the group I but not significantly. Feeding the garlic diet had significant reduction effects on the liver PAP activity and can decrease the serum triglyceride level. The supplementation of garlic to the lipogenic diet reduced serum triglyceride and cholesterol.

Keywords: garlic, hyperlipemia, cholesterol, triglyceride, phosphatidate phosphohydrolase

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P-10-208-1

In vitro antifungal activity of Satureja khuzestanica Jamzad against Cryptococcus neoformans

Nasrin Amirrajab, Majid Zarrin, Batool Sadeghinejad*

Department of Laboratory Sciences, School of Paramedical Sciences, Ahwaz Jondishapur University of Medical Sciences, Ahwaz, Iran,

Over the last decade, the incidence of systemic fungal infections such as cryptococcal infection (cryptococcosis) has dramatically been increased. The current antifungal drugs such as amphotericin B have limitation because of side effects and resistance of strains. Therefore, it is necessary to find a new drug for treatment of cryptococcosis. In this study, the in vitro activity of Satureja khuzestanica Jamzad extraction was investigated against isolates of Cryptococcus neoformans. Nine isolates of C. neoformans were used for this study. Agar dilution susceptibility method was performed for determining of antifungal activity of ethanolic plant extract. Fungal isolates (1×106 cell/ml) were added to different concentrations of ethanolic plant extracts and mixed with semisolid Sabouraud dextrose agar medium (SDA) in plates. The drug free sample was mentioned as negative control and plates including amphotericin B were as positive control. Plant extract inhibited all fungal growth in a dose dependent manner. The MIC (Minimum Inhibitory Concentration) values of Satureja khuzestanica Jamzad were determined to be in the range of 0.250-2.0 mg/ml. The MFC (Minimum Fungicide Concentration) values of this compound were in the range of 0.5–4.0 mg/ml. Our studies showed that Satureja khuzestanica Jamzad prohibits the growth of Cryptococcus neoformans. This screening may be the basis for the study of Satureja khuzestanica Jamzad as a possible antifungal agent.

Keywords: antifungal drugs, Satureja khuzestanica, Cryptococcus neoformans

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P-10-183-4

Effect of shelled almond on cardiovascular risk factor of diabetic patients

Naiereh Parsaeyan

Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

The prevalence of type 2 diabetes has increased in the world especially in Iran. Increased concentration of cardiovascular risk factors such as LDL-cholesterol and apolipoprotein B100 can increase risk of heart disease in diabetic patients. Nuts such as almond have cardiovascular benefits but their effects in diabetic patients are unclear. The aim of this study was evaluation of the effect of shelled almond on cardiovascular risk factors such as lipids and lipoproteins in diabetic patients. We examined effect of shelled almond on 30 type 2 diabetic patients who consumed daily 60g almond for 4 weeks. They did not use lipids lowering medicine and not change their diets and body activities. Their blood fasting glucose, hemoglobin A1c, lipids and lipoproteins were measured before and after almond consumption for 4 weeks. Shelled almond consumption caused significant reduction of serum cholesterol (26.88 mg/dl), triglyceride (36.31 mg/dl), LDL-cholesterol (22/56 mg/dl) ($p=0.001$) and insignificant reduction of blood fasting glucose (12mg/dl), Hemoglobin A1c (1%) and apolipoprotein B100 (7.8mg/dl). But concentration of HDL-cholesterol (8.85 mg/dl) and apolipoprotein A1 (1.44 mg/dl) increased insignificantly. Therefore results of this study confirm that shelled almond has beneficial effect on cardiovascular risk factor of diabetic

patients. We suggest that consumption of specific amount of shelled almond with respect to food habits in each area can protect against cardiovascular risk factor of diabetic patients.

Keywords: almond, cardiovascular risk factors, diabetes

P-10-209-1

Effects of artichoke leaves on liver phosphatidate phosphohydrolase, serum and liver triglyceride levels in rats fed by lipogenic and normal diet

*Esfandiar Heidarian [1], Reza Hajihosseini [2], Zahra Shamsolahi [2]**

1- Ilam University of Medical Sciences, Ilam, 2- Tehran Payame Noor University, Tehran, Iran

Phsphatidate phosphohydrolase (PAP) catalyzes the dephosphorylation of phosphatidate to yield diacylglycerol and inorganic phosphate. It is a key regulatory enzyme in lipid metabolism such as triacylglycerols and phospholipids. Artichoke (Cynara scolymus L.) leaves were used in traditional medicine for a variety of diseases especially, hyperlipemia. In rats, it has been demonstrated to inhibit hepatocyte cholesterol biosynthesis. The objective of this study was to assess the effects of artichoke leaves on liver PAP activity, serum lipid levels and liver content triglyceride in rats fed cholesterol diet. The rats were randomly divided into 4 different diet groups (n=6/ group). The group I (control) received standard diet. The group II received a supplement with 10% artichoke leaves. Group III and group IV received a lipogenic diet for 2 weeks, containing 0.5% cholic acid, 20% sunflower oil and 2% cholesterol. Additionally, the group III and the group IV drank water containing 3% ethanol. In the group III, after 2 weeks, 10% artichoke leaves were added into lipogenic regime for 45 days, whereas the rats in the group IV were maintained on lipogenic diet. By the 60th day, liver PAP activity, serum triglyceride, total cholesterol and liver content triglyceride were measured. It was observed that the group III had a significant decrease ($P<0.05$) in the liver PAP activity compared to the group I and the group II, whereas no significant change was observed in liver PAP activity between the group III and the group IV ($P>0.05$). The group II showed a significant decrease ($P<0.05$) in the liver triglyceride compared with the group I and the group III. On the other hand, in group II, rats fed with artichoke leaves, the serum triglyceride level decreased than the group I but not significantly ($P>0.05$). Additionally, the serum triglyceride level in the group III was significantly reduced ($p<0.05$) by feeding artichoke leaves compared with the group IV. In the group II serum cholesterol level decreased (but not significantly) with respect to the group I. In group III, rats were fed with a high cholesterol diet mixed with artichoke leaves, the serum cholesterol level was also significantly lowered ($P<0.05$) by artichoke leaves when compared to the group IV which were on a lipogenic diet. Considering that PAP is involved in the formation of fatty liver and also the fact that artichoke leaves has the ability in reducing the liver content of triglyceride by diminishing PAP activity, the artichoke leaves may be used for the treatment of fatty liver. Also, it can reduce serum triglyceride and cholesterol levels in lipogenic regime.

Keywords: artichoke, phosphatidate phosphohydrolase, triglyceride, liver

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P-10-151-1

Biochemical evaluation of anti-malarial effects of Artemisia khorassanica extracts in vivo in murine malaria

Behnaz Esmaeili [1], H. Nahrevanian [2], M. Kazemi [3], H. Nazem [3], M. Amini [4]*

1- Department of Biochemistry, Payame Noor University, Tehran Center, Iran, 2- Department of Parasitology, Pasteur Institute of Iran, 3- Islamic Azad University, Qom Branch, 4- Department of Parasitology, Pasteur Institute of Iran, Tehran, Iran

Malaria is a life-threatening disease affecting half a billion humans in underdeveloped and developing countries. Malaria is caused by parasitic protozoa known as a Plasmodium. Drug-resistant malaria is a major world wide public health problem. Artemisia medicines could be an important and sustainable source of treatment. The genus Artemisia is represented by 34 species growing in different parts of Iran, of which two species are endemic. The aerial parts of A. khorasanica were collected at flowering stage from the Khorassan Province, northeast of Iran. The aerial parts were air-dried at room temperature and were then powdered. The A. khorassanica powder was macerated in methanol and the extract defatted at -15°C in refrigerator and filtered. The water was added to the filtrate then eluted with n-Hexane which non-polar components were identified through GC-MS analysis. The toxicity of herbal extract was assessed on naïve mice and finally its anti-malarial activity was investigated in Plasmodium berghei infected mice. As a result this is the first report on application of Iranian flora A. khorssanica extract for treatment of murine malaria. The herbal extract was successfully tested in vivo for its anti-plasmodial activity through Artemisin composition, which is widely used as a standard malaria therapy. Major components from A. khorassanica are beta-davanone-2-ol, n-octadecane, n-nonane, dihydromyrcene, 4-methyl nonane, n-decane, n-eicosane, palmitic acid, cis-thujone, trans-thujone, champhore, n-dodecane, n-tetradecane, davanone, chrysanthenone, n-hexadecane isophorone and 1,8-cineole. Although, this study confirmed antimalarial effects of A. Khorssanica extracts against murine malaria in vivo, however there are fewer efficacies on reducing pathophysiological symptoms by this medication.

Keywords: Plasmodium berghei, Artemisia khorassanica, malaria, pharmacochemistry, herbal extract

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O-10-93-4

Comparison the effectiveness of extraction protocols phenol-chloroform-silica and guanidinium thiocyanate-silica in recovering DNA from human skeletal remains

Alireza Saboori [1], Mohammad Fazilati [2], Hamideh Yadegari [3]*

1- Legal Medicine Organization of Isfahan, 2- Food Science Department, Faculty of Agriculture, Isfahan University of Technology, 3- Legal medicine organization of Isfahan, Isfahan, Iran

DNA Typing methods offer great help in identification of single deceased individuals, war and mass disaster victims. It has been a challenge to extract DNA from bones previously soaked in water, burned or buried for a long time, due to the reduced quality and quantity of DNA in the bone samples. The aim of this investigation was the comparison and evaluation of two different DNA extraction methods, namely the phenol-chloroform-silica and the guanidinium thiocyanate-Silica for DNA analysis of old bones.

Keywords: DNA profiling, bone, short tandem repeats, polymerase chain reaction

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P-10-299-1

Cinnamon, green tea and turmeric water extract inhibit lipid oxidation in a high glucose pooled serum

Beman Ali Jalali-Khanabadi, Abdorrahim Absalan, Saied Mojtaba Beheshtitabar, Javad Mohiti Ardakani, Mohammad Ali Sadeghieh*

Department of Biochemistry, Faculty of medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

As free radicals amounts are increased in oxidative stress and this occurs also in diabetic patients, antioxidants may have a critical impact on anti-oxidation defense. Cinnamon, green tea and turmeric are three herbs containing anti-oxidant components, characteristically phenolics. Here we determine anti-oxidant activity of them in a high glucose pooled serum with a glucose concentration of 290mg/dl. The pooled serum was divided into four groups, each involved eleven serum sample. Lipid oxidation test was done in a phosphate buffer solution for each four groups. One group was added without additive and accounted control group, another was added by cinnamon extract, the else with green tea and the remaining with turmeric. The ultimate concentration of all additives was adjusted on 1mg/dl in reaction solution. Lipid oxidation for each serum sample was induced by the addition of serum and Cu2+ for all groups. Conjugated dienes formation monitored in 245nm for 300 minutes. Three parameters including Lag-time, maximal rate (V-max) and maximal amount of lipid peroxide products (OD-max) were calculated in Excel and kinetic curves of lipid oxidation were plotted, then statistical analysis of aforementioned parameters was performed in Spss software. Serum lipid oxidation rate was reduced in the presence of cinnamon, green tea and turmeric in comparison with control group ($P<0.05$, one-way ANOVA). As our experiences showed water boiled extract of cinnamon, green tea and turmeric are anti-oxidant containing herbs that maybe favorable as dietary additives for coronary heart disease prevention specially in diabetic patients.

Keywords: anti-oxidation, cinnamon, diabetes, green tea, turmeric

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P-10-115-1

Determination of certain biochemical factors of Gum Tragacanthus (Astragalus verus Oliver) collected from eastern and northeastern Isfahan province

B. Khademi [1], M. R. Vahabi [1], M. Fazilati [2], A. R. Hajipour [3]*

1- Faculty of Natural Resources, Isfahan University of Technology,
2- College of Agriculture, Isfahan University of Technology,
3- Department of Chemistry, Isfahan University of Technology,
Isfahan, Iran

Iran is the main production site and growing center of different species of the genus Astragalus verus Oliver in the world. Currently, around 17 million hectares of land is covered by different species of the genus Astragalus, with the Alborz and the Zagross Mountains being the major habitats for the A. tragacanthus. The gum extracted from the species has numerous applications in foodstuff, cosmetics, pharmaceuticals, and industrial materials and processes, which give it a high economic value. Iran is its major producer across the whole area from the Pacific Ocean to Asia, accounting for 70% of its global production. One major production site inside Iran is Isfahan Province, where 31.4% of its land (amounting to around 33,606.5 km2) hosts different varieties of the plant as its natural habitat, around 74% of which (24870 km2) is the specific habitat to the genus A. tragacanthus. In the present study, Astragalus shrubs were collected from five major habitats (50 from each) across the eastern and northeastern regions in the Province. The shrubs were collected in July and the gum was collected one week after the shrubs had been tapped by inclined incisions. Atomic absorption and Kjeldahl methods were used in determining the most important elements in the gum tragacanthus. The results revealed that Ca and P had the highest and the lowest quantities (8.11 versus 0.26 mg.g-1), respectively, in the exudates. The gum collected from Tar region had the lowest Ca content (6.48mg.g-1) but the highest sodium, magnesium, and potassium contents (7.09, 3, and 5.75 mg.g-1, respectively). The ash of the gum varied between 2 to 3% and its protein content ranged from 3.3 to 4.3%. The gum tragacanthus obtained from the Kalroud habitat had the lowest total nitrogen content (0.54%).

Keywords: A. tragacanthus, Gum tragacanthus, biochemical factors, elements, habitat, Isfahan Province, Iran

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P-10-291-2

Comparison of the cumin oil and sibutiramine effects on blood free leptin, glucose, and weight in wistar rat

Javad Mohiti Ardekani, Zahra Akbarian*

Department of Biochemistry, Yazd University of Medical Science, Yazd, Iran

Cumin (Cuminum Cyminum L.) is a plant used in traditional medicine to cure obesity, and some of the new studies suggested that Cumin has a role in diabetes treatment and reducing the lipids level. Sibutramine is an anti-obesity chemical medicine that is prescribes for fat people of BMI≥30kg/m. The aim of this study was to compare the anti-obesity effect of these two drugs and their affect on free and total leptin and glucose. 18 rats were randomly divided into 3 groups as cumin oil treated (group A), sibutiramine treated (group B) and control (group C). 400 µg/kg/day and 3mg/kg/day, respectively, were given to the groups A and group B by Gavage (tube feeding) for 20 days. Free leptin was purified by gel filtration chromatography and purified fractions were measured by a sensitive ELISA kit. Free leptin level decreased in cumin (group (A) (1.6±0.15ng/ml) and sibutiramine treated (Group B) (2.1±0.05ng/ml) compared to the control group (5.1±0.2ng/ml) $P<0.005$). Glucose concentration decreased in both treated groups (80±15, 105±18mg/ml, respectively) compared to control (115±7.8) ($P<0.005$). The lipids also decreased significantly after treatment ($P<0.05$). Sibutiramine reduces the peptide via inhibition of serotonin and epinephrine reabsorption in CNS. Cumin oil showed similar effects to sibutiramine on weight decreasing and also decreasing the blood free leptin and glucose and lipids.

Keywords: cumin oil, sibutiramine, free leptin, obesity

P-10-227-2

Effects of almond dietary supplementation on the relation of coronary heart disease lipid risk factors and serum lipid oxidation parameters in mild hyperlipidemic men

Beman Ali Jalali-Khanabadi [1], Naiereh Parsaeyan [1], Hassan Mozaffari-Khosravi [2], Mohammad Ali Sadeghieh [2]*

1- Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, 2- Nutrition Department, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Plasma lipid oxidation is closely implicated in the development of cardiovascular disease. Dietary almond supplementation (DAS) may participate in beneficial effects on cardiovascular lipid risk factors. The aim was to evaluate the effects of DAS on serum lipid levels and their relation to lipid oxidation parameters in mild hyperlipidemic men. In this before and after clinical trial study 30 men (age 45+/-7 years) with mild hyperlipidemia received 60 g almond daily for 4 weeks. Fasting serum levels of lipids and lipoproteins were determined, and the copper-induced serum lipid oxidation was evaluated before and after supplement. Lipid oxidation was followed by monitoring of the change of conjugated dienes in diluted serum after addition of Cu2+. A number of quantitative parameters including lag-time, maximal rate of oxidation (V-max), and maximal amount of lipid peroxide products (OD-max) were evaluated. DAS significantly decreased total cholesterol (TC), low density lipoprotein cholesterol (LDL-C), and apolipoprotein B100. At baseline, there were not significant association between lipid risk factors and lipid oxidation parameters, but there were observed positive correlation between TC and lag-time (r=0.51, p=0.005) and negative correlation between TC with V-max and OD-max (r=0.42, p=0.02 and r=0.47, p=0.01). These results demonstrated that ADS, in addition to lowering effects on serum levels of lipid risk factors, may contribute in a favorable change on the relation of lipid risk factor and susceptibility of serum lipids to oxidative modification.

Keywords: almond diet supplementation, lipid risk factors, oxidation parameters

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P-10-36-2

Antioxidant activities of the oils and extracts of Biebersteinia multifida DC

Hamzeh Amir

Department of Biology, Lorestan University, Khoramabad, Iran

In the present study the essential oil composition and antioxidant activities of the oils and also methanolic extracts of leaves, fruits and roots of Biebersteinia multifida were evaluated. GC-MS analysis of the oils resulted in the identification of 36 compounds. Thymol (16.5-38.4%), β-caryophyllene (9.8-15.5%), 1,8-cineol (5.8-18.4%), α-pinene (0.9-14.3%) and β-pinene (2.3-12.4%) were the main components. The samples were subjected to screening for their possible antioxidant activity by using DPPH and β-carotene-linoleic acid assay. In the first case, the radical scavenging activity of the oil and methanolic extract of fruits were superior to all other oils and extracts (IC50=16.7µg/ml). In the case of the linoleic acid system, oxidation of the linoleic acid was effectively inhibited by volatile oils and extracts of different parts. The fruit extracts showed 95.4±2.15% inhibition, which is comparable to the synthetic antioxidant BHT, curcumine and ascorbic acid.

Keywords: Biebersteinia multifida, essential oil, methanolic extract, antioxidant activity

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P-10-36-3

Antioxidant activities of the essential oils and methanol extracts of Teucrium orientale L. subsp. taylori (Boiss) Rech.f

Hamzeh Amiri

Department of Biology, Lorestan University, Khoramabad, Iran

This study is designed to examine the chemical composition and in vitro antioxidant activity of the essential oil and methanol extract of Teucrium orientale subsp. taylori. The GC and GC–MS analysis of the essential oil resulted in the determination of 40 components representing 97.4% of the oil. The major constituents of the oil were linalool (19.6%), caryophyllene oxide (15.6%), 1,8-cineol (14.5%), β-pinene (8.7%), 3-octanol (7.5%), β-caryophyllene (7.3%) and germacrene D (4.6%). Antioxidant activities of the samples were determined by two different test systems namely DPPH and β-carotene/linoleic acid assay. In DPPH system, the weakest radical scavenging activity was exhibited by the non polar sub-fraction of methanol extract (237.40±2.1µg ml−1). Antioxidant activity of the polar sub-fraction of methanol extract was superior to the all samples tested with an EC50 value of 61.45±0.5µg ml−1. In the second case, the inhibition capacity (%) of the polar sub-fraction of methanol extract (95.21% ±1.3) was found the strongest one, which is almost equal to the inhibition capacity of positive control BHT (94.9%±1.1). In the case of reducing power assay, a similar activity pattern was observed as given in the first systems. Polar sub-fraction was the strongest radical reducer when compared with the non-polar and the oil. The amount of the total phenolics was highest in the polar sub-fraction as 370 µ/mg dry extract (37%). A positive correlation was observed between the antioxidant activity potential and total phenolic level of the extracts.

Keywords: Teucrium orientale subsp.taylori, essential oil, antioxidant activity, DPPH, β-carotene-linoleic acid

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O-10-145-9

Garlic cytotoxicity on Sk-mel3 and L929

Tooba Ghazanfari [1], Hoda Hakimzadeh [2], Roya Yaraee [2], Davood Jamali [2]*

1- Immunoregulation Research Center Shahed University Tehran, Iran, 2- Biochemistry department, Shahed University, Tehran, Iran

Melanoma is the leading cause of death related to skin cancer. Incidence rate of malignant melanoma has shown a rise in the last decades worldwide. On the other hand effective treatment for melanoma is limited. Therefore, new therapeutic strategies are necessary. The effectiveness of herbal medicine as anticancer agents has been studied for many years and shown noticeable improvement with low adverse effects. In this study we have evaluated effect of garlic on cell viability of melanoma cell line (Sk-mel3) and compared it to L929 cell line. Human melanoma cancer cells (Sk-mel3) were obtained from the Pasteur Institute of Iran and maintained in RPMI with 10% fetal bovine serum. The cell line were grown and maintained in a humidified incubator at 37˚C and in 5% CO2 atmosphere. The cells were seeded in 96 well plates and grown, then treated with different. Concentrations of garlic for 24, 48 and 72 hours, MTT assay was performed for each group. As our results show, dilution 1/2 of

garlic has caused significant reduction of cell viability of Sk-mel3, at 24 hours, also the cell viability at dilutions 1/2, 1/5, 1/10, 1/50, 1/100 and 1/200 of garlic significantly decreased compared to the control group at 24 and 48 hours. Regarding the results, garlic can be studied as an anti-tumor drug for melanoma cancer.

Keywords: garlic, melanoma cancer (Sk-mel3), cell viability, MTT, cytotoxicity

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P-10-145-6
Cytotoxic effect of garlic extract on human gastric cancer cell line (AGS) in vitro

Tooba Ghazanfari, Hoda Hakimzadeh, Mohammad-Reza Jalali-Nadoushan*

Immunoregulation Research Center Shahed University Tehran, Iran

Gastric or stomach cancer a disease with a high death rate, is the fourth most common cancer and second leading cause of cancer-related death worldwide. Poor prognosis and side effect of current anticancer drugs in the advanced gastric cancer patients are still the major problem for gastric cancer treatment. However there are different therapeutic methods for gastric cancer, not any of them possess complete efficacy up to now. Therefore, new therapeutic strategies are considered necessary. Herbal medicines are rich sources of natural anticancer materials. In this study the cytotoxic effect of garlic was investigated on AGS cell line. Human gastric cancer cells (AGS) were obtained from the Pasteur Institute and maintained in RPMI with 10% fetal bovine serum. Cells were incubated at 37˚C with 5% CO2-humidified air. Cells were seeded in 96 well plates and were treated with different concentrations of garlic for 24, 48 and 72 hours. MTT assay was performed for each group. These results indicate that doses 1/2, 1/5, 1/10, 1/1000 and 1/100, 1/200 of garlic significantly decreased and increased cell viability respectively, at 24 hours. Doses 1/2, 1/5, 1/10 and 1/50 of garlic decreased and increased viability of cells respectively, at 48 hours. Also doses 1/2, 1/5, 1/10 of garlic significantly decreased viability of cells, at 72 hours. Garlic was found has potent cytotoxic effect on AGS. Further investigation to identification and isolation of its effective component is suggested.

Keywords: garlic, gastric or stomach cancer (AGS), cytotoxicity, anti-tumor, cell viability

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P-10-145-7
In vitro cytotoxic effect of ginger extract on MCF-7 cell line of breast cancer

Hoda Hakimzadeh, Tooba Ghazanfari, Jalaleddin Shams, Roya Yaraee, Davood Jamali*

Immunoregulation Research Center, Shahed University, Tehran, Iran

Breast cancer is a common malignancy for women in developed and also developing countries and second most common cancer among Iranian women. There are different therapeutic methods for breast cancer, not any of them possess complete efficacy up to now. Multidrug resistance of breast cancer is one of the most causes of failure in clinical chemotherapy. In present study we have evaluated cytotoxic effect of ginger on the viability of breast cancer cells. Human breast cancer cells (MCF-7) were obtained from the Pasteur Institute of Iran and maintained in RPMI with 10% fetal bovine serum. Cells were incubated at 37˚C with 5% CO2-humidified air. Cells were seeded in 96 well plates and were treated with different concentrations of Iranian herbal medicine ginger for 24, 48 and 72 hours. MTT assay was performed for each group. The results indicated that the viability of MCF-7 cells at doses of 5, 2 and 0.02 mg/ml of ginger significantly decreased, at 24 hours. The doses of 5, 2, 1 and 0.02 mg/ml ginger significantly decreased viability cells, at 48 hours. The doses of 5, 2, 1, 0.05, 0.02 and 0.01 mg/ml ginger significantly decreased viability cells, at 72 hours. The obtained results suggest that ginger can be studied as anti-tumor drug for breast cancer. Future investigation for clarify and purify of its effective component is suggested.

Keywords: ginger, breast cancer (MCF-7), cytotoxicity, MTT, cell viability

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P-10-145-8
Viability of HT-29 cell line colon cancer affected by aloe vera extract

Tooba Ghazanfari, Hoda Hakimzadeh, Mohammad-Reza Jalali-Nadoushan, Roya Yaraee*

Immunoregulation Research Center Shahed University Tehran, Iran

Fruits and vegetables are suggested for prevention and treatment of cancer and other diseases and certain herbal drugs as anticancer agents have been studied for many years by researchers. Cancer, next only to heart diseases, is the second leading cause of deaths in many countries in the world. Colon cancer is a serious health problem in most developed countries and is the third leading cause of cancer mortality throughout the world. In this study we considered the cytotoxic effect of aloe vera extract on the cell viability of HT-29 cell line. Human colon cancer cells (HT-29) were obtained from the Pasteur Institute and maintained in RPMI with 10% fetal bovine serum. Cells were incubated in incubator at 37˚C with 5% CO2-humidified air. Cells were seeded in 96 well plates and were treated with Iranian herbal medicine aloe vera with different concentrations for 24, 48 and 72 hours, MTT assay was performed for each group. These results indicate that the viability of HT-29 cells at dose 5 mg/ml of aloe vera significantly decreased at 24 hours. The doses 5 and 1 mg/ml of aloe vera significantly decreased viability of cells, at 48 hours and doses 5, 2, 1, 0.2 and 0.02 mg/ml of aloe vera significantly decreased viability of cells, at 72 hours. Regarding the results, aloe vera can be studied as an anti-tumor drug for colon cancer. Its effect is dose and time depended.

Keywords: colon cancer (HT-29), cytotoxic, aloe vera, viability, MTT

P-10-312-1
Effect of cumin oil on the level of free leptin hormone in rats

Zahra Akbariankouchaksarai [1], Javad Mohitiardakani [1], Gholamali Naderi [2]*

1- Biochemistry Department, Shahid Sadoughi University of Medical Sciences, Yazd, 2- Shahed University, Tehran, Iran

In Iranian traditional medicine cumin seed has been used as a plant drug to suppress appetite and to treat obesity. Leptin exists in blood in two forms of free and receptor-bound. The level of free form of leptin hormone can change according to factors like weight loss or gain; the level of free leptin in fat people is higher than thin people. We studied the effect of cumin oil on weight, total leptin hormone and free leptin in animal rat models. Rats were divided into control and case groups.

In the control group, rats from beginning to the end of study consumed high fat regiment; in the case group, rats received 400µg/kg/day cumin oil with high fat regiment from 20th day to the end of test period. Blood samples were collected on 20th day (begging of consumer cumin oil) and in 55th day (at the end of consumer cumin oil) .Total leptin was measured by ELISA Kit. Free leptin was purified by gel filtration chromatography method and then their fractions were measured by a sensitive ELISA Kit. According to our results a significant decrease was observed in weight (171± 20) compare to control group (250±12) ($p<0.01$). Free leptin level decreased in cumin oil group (1.6±0.15ng/ml) compared to the control group (5.1±0.2ng/ml) ($P<0.001$). Cumin oil can decrease the weight, total leptin and free leptin. So cumin oil can be use as a medicine plant drug for treatment obesity in obese people.

Keywords: rat, cumin oil, leptin, free leptin

P-10-152-1

Reducing power and flavonoid compounds of Myrtus communis

Soheila Moein [1], Mahmood Reza Moein [2]*

1- Biochemistry Department, Faculty of Medicine, and Infectious Disease Research Center, Hormozgan University of Medical Sciences, Bandar abbas, Iran, 2- Department of Pharmacognosy and Pharmaceutical Sciences Research center, Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran

Myrtus communis (MC) L. is a plant traditionally used as an antiseptic and disinfectant drug. In this research the antioxidant activity of Myrtus communis was assayed by using reducing power and determination of flavonoids. The methanolic extract of Myrtus communis leaves was fractionated by using petroleum ether, chloroform and ethyl acetate solvents. The reducing capacity of Myrtus communis extract and fractions were determined by using ferric chloride. In reducing power assay, chloroform fraction showed the highest reducing capacity. The flavonoid (antioxidant compounds) amount of Myrtus communis extract and fractions were determined by using chloride aluminum. The amount of flavonoids in crude extract was 171.87±7.2 µg/ml. The amount of this compound in chloroform fraction was 150.78±5.7 µg/ml ($P<0.001$) which higher than petroleum ether fraction (47.4±5.3 µg/ml) and ethyl acetate fraction (46.3±3.3 µg/ml). The highest amounts of flavonoids of chloroform fraction are contributed in the highest reducing capacity. Totally, the leaves of Myrtus communis can be used as antioxidant and as food additives to avoid the degradation of foods.

Keywords: antioxidant activity, flavonoid compounds, fractions, Myrtus communis, reducing power

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P-10-391-1

Effects of natural honey on burn wound healing process on male rat

Mohammad Ansari [1], Ali Mohammad Alizadeh [2], Maliheh Paknejad [2], Mahmood Khaniki [3], Sayeed Mehdi Naeimi [3]*

1- Department of Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, 2- Cancer Research Center & Department of Physiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, 3- Department of Pathology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Wound healing is the restoration of physical integrity to tissue internal and external structures and involves intricate interactions between the cells and numerous other factors. Appropriate treatment and care is essential to acceleration of the healing process, prevention of infection and chronicity of the wound and different means and approaches have thus far been used to this end. The aim of present study was to evaluate the effect of natural honey on the burn wound healing process, created by hot metal (1×1 cm2) on the back of rat and evaluated through measuring the area of the healed region, TGF-b (Transforming growth factor-beta) serum, process pathological on different days and conducting tensiometery experiments after complete wound healing. Results indicated that 1- The percentage of wound healing on days 12 and 18 in control group of burn wounds changed in the group treated with natural honey from 30.17, 61.36 to 38.93 ($P<0.05$), 78 ($P<0.05$), respectively; 2- TGF-b serum slightly increased in treated group without no significant; 3-Stress (maximum tensile force causing skin rupture) changed from 5.25±0.64 Newton in the control group of burn wounds to 6.59±0.65 Newton in group treated with natural honey without significance; 4-Strain (tissue length under maximum strain) changed from 13.25±1.2 mm in the control group of burn wound to 18±2.1 mm ($P<0.05$) in group treated with natural honey; 5- In point of view of histopathology examination by H& E stain in light microscopy, healing process was better achieved in the treated group with more oriented matrix arrangement and less inflammatory reaction than control. Our findings suggest that natural honey may have accelerated the burn wound healing process and somehow increased collagen laid down in the rat.

Keywords: burn wound, natural honey, strain, stress, TGF-b

P-10-96-1

Determination of biochemical in Gum Tragacanth from Astragalus gossypinus in west of Isfahan province

Parisa Ghomeshi Bozorg [1], Mohamad Reza Vahabi [1], Mohamad Fazilati [2], Hosein Zeanali [3]*

1- Natural Resources Faculty, Isfahan University of Technology, Isfahan, Iran, 2- Agriculture Faculty, Isfahan University of Technology, Isfahan, Iran, 3- Isfahan Agriculture Research Center, Isfahan, Iran

Gum tragacanth is one of the most important plant gums which exudates from the stem of Astragalus gossypinus. Iran is the greatest supplier of gum tragacanth. Nowadays in many industries including food, medicine and clinics, gum tragacanth has found new and various usages. Chemical structure is a mixture of complex polysaccharides with inorganic elements. In this research, samples of gum tragacanth were taken from six sites in west of Isfahan province, and the most important carbohydrates, amino acids and inorganic elements were determined and compared. Flame photometric and atomic absorption were used to determine the inorganic elements, HPLC for carbohydrates and amino acid analyzer for amino acid determination. The results showed that sucrose and glucose have the greatest carbohydrate amount in gum tragacanth. Between 9 amino acids which were recognized and measured, hydroxyproline was found in the greatest and methionine in the least amount, relatively. The comparison of inorganic elements revealed that calcium and phosphorus have the most, and nitrogen had the least percentage of inorganic elements in gum tragacanth.

Keywords: gum tragacanth, biochemical, amino acid, carbohydrate, inorganic element

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P-10-389-2

Essential oil composition and anatomical study of Oliveria decumbens Vent

Hamzeh Amiri [1], Hossein Lari Yazdi [2], Faranak Samsamnia [2], Behrouz Dosti [3]*

1- Department of Biology, Lorestan University, Khoramabad, Iran, 2- Department of Biology, Islamic Azad University Branch of Broujerd, Broujerd, Iran, 3- Department of Science, Islamic Azad University Branch of Khoramabad, Iran,

Oliveria belongs to Umbelliferae family and Oliveria decumbens is an endemic species of this genus in Iran. Also, the essential oils belong to secondary metabolites which are widely used in drug, food and cosmetic industries and also antimicrobial agents. Oliveria decumbens were collected from northwest mountains of Kuh-dasht in Lorestan province, Iran. Collected plant materials were dried in shade and were hydro distillated using a Clevenger apparatus. The oil was analyzed by capillary GC and GC/MS. The anatomical studies were carried out using distaining method with brown bismark and methyl green. GC and GC/MS analysis of the essential oil resulted in the identification of 16 compounds, representing the 96.46% the total oil. Major constituents of the oil were thyme (49.30%), γ-trepanned (23.12%) and p-cymene (9.97%). The anatomical studies showed that, the surface of leaves have been covered by unsecretory hairs while in cross section of the stems, the secretary canals were observed in cortex region.

Keywords: Oliveria decumbens, essential oil, secretary structure

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P-10-120-1

Studies of various biochemical parameters of broiler chicks plasma following administration of Kelussia odoratissima leaves extract

Rahmat Parandin [1], Alireza Abbaspour [2]*

1- Department of Biology, Faculty of Sciences, Payame Noor University, Kermanshah, Iran, 2- Department of Biochemistry, Faculty of medicine, Bejnord University, Iran

In all countries of the world there exists traditional knowledge related to the health of humans and animals. Object of this study was the effect of various biochemical parameters of broiler chicks plasma following administration of Kelussia odoratissima leaves extract. The extract of Kelussia odoratissima had been prepared according to conventional methods. Ten days chicks were randomly divided into three study groups, control, A and B of 10 chicks per group. Control group received 1 ml of distilled water (vehicle) and test groups A and B received graded doses of 300 and 500 mg/kg body weight of aqueous extract of Kelussia odoratissima, respectively, on daily basis for 30 days and parameters were assessed by known methods. The results of this study showed that there was a significant decrease in parameters as body and heart weight, hematocrit, hemoglobin, glucose and triglyceride of plasma, which could be because biochemical effect of this extract on different tissues.

Keywords: Kelussia odoratissima, broiler chicks, biochemistry

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P-10-141-1

Study the biological actuate of Dorema aucheri Boiss (Bilhar)

Abdolreza Hajipoor [1], Mohamad Fazilati [2], M.R Vahhabi [3], Seyyed hossein Mostafavi [4]*

1- Pharmaceutical Research Laboratory, College of Chemistry, Isfahan University of Technology, Isfahan; Department of Pharmacology, University of Wisconsin, Medical School, Madison, USA, 2- Department of Agriculture, Faculty of Biochemistry, , Isfahan University of Technology, 3- Department of Natural Sources, Isfahan University of Technology, Iran, 4- Pharmaceutical Research Laboratory, College of Chemistry, Isfahan University of Technology, Isfahan, Iran

The plant of Dorema aucheri Boiss (Bilhar) grows in the region of East Asia, including Iran, Afghanistan and Pakistan. This plant is used as food in Yasouj and area around. Unfortunately it is reported that the cancer rate in these areas is higher than average. We did assume that the reason of higher cancer may be due to using this plant. Therefore, we tried to find the effects of using this plant and its relation to getting cancer. We prepared dried Dorema aucheri Boiss (Bilhar), leaf and stem and extracted the essential oil of the plant. The extracted oil was injected to some groups of mice and studied the pathology of these mice; we found that injecting the extracted oil in micro liter scale to these mice caused getting cancer dramatically.

Keywords: Dorema aucheri, plant, Bilhar, mice, cancer

P-10-505-1

Inhibitory effect of some plant extracts on pancreatic lipase

Ahmad Gholamhoseinian, B. Shahouzehi, F. Sharifi far*

Department of Biochemistry, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Almost 90-95 percent of the total ingested fat is driven to completion in the intestine by pancreatic lipase. Recently, one of the strategies for preventing or treating obesity is inhibition of dietary fat absorption by pancreatic lipase inhibitors. 100 species of plants were prepared and botanically identified. The air dried plants were extracted with methanol for 24 h. Rate of reduction in turbidity of trioleion as substrate by pancreatic lipase at pH 8.9 and 340nm in presence and absence of extracts was determined. 23 extracts had more than 30 percent inhibitory activity on pancreatic lipase. Caryophillium aromaticus, Eucalyptus globoulus, Ferula assafoetida, Levisticum officinale, Otostegia persica, Quercus infectoria, Rehum ribes, Rosa damascene, Sanguisorba minor and Urtica urens showed more than 50 percent inhibitory effect. We performed kinetic study on 4 most active extracts. Quercus infectoria, Eucalyptus globoulus, Rosa damascene showed non competitive inhibition and Levisticum officinale showed mixed inhibition. The effective agent of these more active extracts can be purified and used as therapeutic agent in future. This study may serves as a foundation for comprehensive therapeutic strategies to management of obesity.

Keywords: inhibitory effect, obesity, pancreatic lipase, plant extract

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P-10-120-2

Effect of Morus alba Leaf extract on serum glucose and lipids in diabetic rats

Rahmat Parandin [1], Alireza Abbaspour [2]*

1- Department of Biology, Faculty of Sciences, Payame Noor University, Iran, 2- Department of biochemistry, Faculty of medicine, Bejnord University, Iran,

Diabetes mellitus is a chronic disease characterized by elevated blood glucose levels and disturbances in carbohydrate, fat, and protein metabolism. The objective of the present investigation was to evaluate the therapeutic efficacy of Morus alba leaves in an animal model of diabetes. 24 adult male Wistar strain rats (200-250g) were divided randomly into four groups (one control and three experimental), and housed in single cages. Diabetes was induced with injection of Stereptozocine (60 mg/kg, i.p.) and the control group was given an injection of normal saline. The experimental group received aqueous extract of Morus alba leave (600 mg/kg) intra gastric for 35 days. Finally, blood samples were taken and measured for glucose and lipids levels. Administration of Morus alba leaf extract caused a significant decrease in blood levels of glucose ($P<0.05$), cholesterol and triglycerides ($P<0.01$), HDL ($P<0.05$) levels was seen with no significant changes in LDL values in diabetic rats and significant changes in nondiabetic rats was not seen. It appears that Morus alba plant extract can have significant effects on various blood glucose and lipids in diabetic rats, although further work is needed to elucidate the extent and mechanism of these changes.

Keywords: diabetes, Morus alba, glucose, lipid, rat

O-10-543-1

Separation of the proteolytic enzymes of ficin from fig by ion-exchange chromatography

Naghmeh Zhalehjoo, Ali Mostafaie*

Medical Biology Research Center (MBRC), Kermanshah University of Medical Sciences. Kermanshah, Iran

Fig latex contains a group of cysteine proteases named ficin (E.C.3.4.4.12). This enzyme can be used in drug and food industries for production of digestive drugs, meat tenderization and cheese production, therefore, separation of this enzyme was studied. Latex and fig fruit extraction were collected. Protein content was determined by UV spectrophotometry method. Then precipitation was done by ammonium sulfate. The precipitate was colleced by centrifugation and suspended in phosphate buffer containing EDTA and NaCl and followed by ion-exchange chromatography. The results were analyzed by electrophoresis on polyacrylamide gel (SDS-PAGE) and gel staining with R-250 coomassie. It showed that purified enzymes had molecular weight about 25 KD. This study led to the gain of a procedure for separation and purification of proteolytic enzymes of fig fruits. This enzyme can be used for casein hydrolysis and preparation of meat digestive drugs.

Keywords: cysteine protease, Ficin, Fig, Ion-exchange chromatography

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P-10-439-1

Study of the effects of five medicinal herbs water on nitric oxide production by cultured vascular endothelioma cells

*Seyyed Mahdi Naeemi [1], Mohammad Ansari [2], Maliheh Paknejad [2], Ahmad Ansari [2] **

1- Osve Pharmaceutical Co, 2- Biochemistry Department, Tehran University of Medical Sciences, Tehran, Iran

Nitric oxide (NO) is a free radical that is produced in mammalian cells from arginine in a reaction catalyzed by nitric oxide synthase (NOS). It has pleiotropic activities for various biological functions. NO is produced in variety of cells including endothelial cells, neutrophils, macrophages and neurons. At least, there are two isoforms of NOS; one is constitutive NOS (Ca2+-calmodulin dependent) which includes endothelial NOS (eNOS) and neuronal NOS (nNOS). The other is Ca2+-independent NOS which is named inducible NOS (iNOS). NO release from endothelial cells regulates vascular tone. Evidence for the importance of eNOS derived NO in the regulation of vascular tone is based on experiments in animals and humans demonstrate that L-arginine based inhibitors of NOS increase blood or perfusion pressure and vascular resistance. In this study we treated water extracts of Thymus serpyllum leave, Matricaria chamomilla flower, Malva silvestris flower, Echium amoenum flower and Castalica alba flower on cultured endothelioma cell line (En-F2) and measured NO production. These plants are used for treatment of inflammation and headache in Iranian traditional medicine. Thymus serpyllum, Matricaria chamomilla reduced NO production at doses of 0.2, 0.5, 1, 1.5, 2, 2.5, 3g/L in comparison with control significantly ($p\leq0.05$). Castalica alba reduced NO production at doses of 0.2 and 0.5g/L, there was no effect on NO production at doses of 1, 1.5, 2 and 2.5g/L but it increased NO production at dose of 3g/L in comparison with control significantly ($p\leq0.05$). Echium amoenum had no effect on NO production at doses of 0.2 and 0.5g/L, it increased NO production in comparison with control significantly ($p\leq0.05$) at doses of 1, 1.5, 2, 2.5 and 3g/L. Malva silvestris reduced NO production at doses of 0.2, 0.5 and 1g/L in comparison with control but was not significant. It reduced NO production at doses of 1.5, 2, 2.5 and 3g/L in comparison with control significantly ($p\leq0.05$). According to nitric oxide theory of migraine headaches there is a vasodilatation in cerebral vessels. Since the agents can reduce NO production they probably can be used for decreasing vasodilatation in cerebral vessels. So Thymus serpyllum, Matricaria chamomilla, Malva silvestris, Echium amoenum and Castalica alba can help for reduction or treatment of migraine attacks.

Keywords: nitric oxide, migraine, Thymus serpyllum, Matricaria chamomilla, Castalica alba, Echium amoenum, Malva silvestris

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O-10-218-1

Measurable melatonin in alcoholic and hot water extract of Tanacetum parthenium, Tripleurospermum disciforme and Viola odorata using HPLC-UV, ELISA and TLC Methods

Mohammad Ansari [1], Kheirolla Rafiee [1], Safura Vardasbi [1], Narges Yasa [2], Seyyed Mahdi Naeemi [3], Azin Nowrouzi [3]*

1- Department of Biochemistry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, 2- Department of Pharmacognosy, School of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran, 3- Science & Research Branch, Tehran Islamic Azad University, Tehran, Iran

The current study was undertaken to screen some medicinal plant species with historical evidence of efficacy in the treatment of

neurological and antioxidant deficiency related disorders for their melatonin content. Also, we tried to compare the melatonin content of boiled and alcoholic extracts. In this study, three medicinal herbs, Tanacetum parthenium (L.) Schultz. Bip. (Asteraceae), Tripleurospermum disciforme (C.A. Mey) Schultz. Bip. (Asteraceae), and Viola odorata (L.) (Violaceae) were analyzed using high performance liquid chromatography with ultraviolet detector (HPLC-UV), enzyme linked immunosorbent assay (ELISA) and thin layer chromatography (TLC). Melatonin content in the dry plant powders differed with different assay methods. For example, Tripleurospermum disciforme melatonin content was 3.073µg/g and 2.906µg/g with HPLC and ELISA methods, respectively. Value of melatonin in water and alcoholic extracts of this herb was significantly higher with both ELISA and HPLC methods compared to other plants ($p<0.001$). The results also suggest that a hydroalcoholic solution can extract more melatonin from flowers of the herbs than hot water ($p<0.001$). The presence of melatonin in these plant tissues may provide some explanation for the anecdotal evidence of their physiological effects in humans. The results suggest that these herbs should be reevaluated in reference to their nutritional and medicinal values and the possibility of their application in other disease conditions should be considered.

Keywords: melatonin, Tanacetum parthenium, Tripleurospermum disciforme, Viola odorata, HPLC

P-10-568-1

Antioxidant capacities of some Iranian medicinal plants using Fe2+/ ascorbate-induced lipid and protein oxidation in the liver homogenates of rats

Seifollah Bahramikia, Razieh Yazdanparast*

Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Reactive oxygen species (ROS) and their likely involvement in some human physiopathologies have attracted growing interest from the health sector over the last few decades. Medicinal plants are a source for a wide variety of natural antioxidants for counteracting the overdosed productions of ROS. The present study was designed to investigate the antioxidant activities of four different medicinal plants namely; Teucrium polium, Cyeprus rotundus, Anethum graveolens and Nasturtium officinale. In our study, antioxidant capacity was evaluated by various antioxidant assays in the liver homogenates induced by Fe+2-ascorabate system such as lipid peroxidation and protein oxidation. In addition, DPPH radical scavenging activity, total phenolic and total flavonoids contents of the plant extracts in cell-free systems were evaluated. Based on the results, the four plant extracts showed antioxidant activities by the methods used. The results show that the antioxidant activities varied greatly among the four extracts, and in that regard, T. polium showed the highest activity. The antioxidant activity decreased in the order: T. polium>A. graveolens>C. rotundus>N. officinale. Considering the results, it can be concluded that leaves of these plants especially T. polium might be considered as potentially useful as a source of natural antioxidants for food or drug product because of its high antioxidant capability.

Keywords: antioxidant activities, Fe+2/ascorabate, Iranian medicinal plants, lipid peroxidation, protein oxidation

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P-10-585-1

Evaluation effect of Citrulus colocynthis on strychnine–induced convulsions in mice

Elaheh Mousavi, Nazanin Bavarsad omidian, Ali Rahnama, Hosein Najafzade*

Veterinary Faculty of Shahid Chamran University, Ahwaz, Iran

Citrulus colocynthis is a medicinal plant traditionally used as an abortifacient and to treat constipation, edema, bacterial infections, cancer and diabetes. Preliminary phytochemical screening of the plant showed the presenece of large amounts of phenolics and flavonoids. The aim of present study was evaluation of the effect of the ethanolic extract of the seeds of Citrulus colocynthis on seizure induced by strychnine in mice. After extract preparation by maceration method, the strychnine was injected in 6 mice and then time of starting, the number, duration of convulsions and time of death were determined. In one other group, Phenobarbital was injected 20 min before strychnine administration and in 2 other groups, extract of Citrulus colocynthis was injected 20 min before strychnine administration at doses 300 and 600 mg/kg. The status of animals in present groups was monitored as group 1. The starting time of convulsions respectively in groups1-4 was 2.66, 0, 2.88 and 3.45 min. The number of convulsions respectively in group 1-4 was 3.83, 0, 2 and 2. The duration of convulsions in group 1-4 was 65.16, 0, 38.3 and 53.7 seconds. The time of death in group 1-4 was 5.07, 0, 5.01 and 6.08 min. The number of convulsions in group 4 was significantly decreased in comparison to group 1. The results of this study showed that the ethanolic extract of seeds of Citrulus colocynthis has no anticonvulsive effect on strychnine model in mice.

Keywords: Citrulus colocynthis, strychnine, convulsions, mice

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P-10-599-1

The effect of hydroalcholic extracts of Silybum marianum L. on hypercholesterolemic rabbits

Sedighe Asgary [1], Bahar Nazari [2], Elham Razban [3], Hossein Madani [3], Parvin Mahzoni [4]*

1- Cardiovascular Research Center and Applied Physiology Research Center, Isfahan University of Medical Sciences, 2- Cardiovascular Research Center, Isfahan University of Medical Sciences, 3- Biology Department, Isfahan University of Basic Science, 4- Pathology Department Isfahan University of Medical Sciences, Iran

Atherosclerosis, a chronic inflammatory disease, is responsible for death in the developed world. It is treated with different chemical drugs. Concerning length of therapy and side effects, herbal medication may be suitable substitute for these drugs. This study investigates the effects of Silybum marianum L. on some blood lipid factors. We used fifty adult male Newzeland rabbits randomly divided into three groups of five and fed for 45days as follow: basic diet, high cholesterol, and high cholesterol with Silybum marianum extract. Blood samples were taken at the beginning and the end of the study to measure their blood lipid factors. Data were analyzed with ANOVA followed by Duncan test. The results showed the extract of Silybum marianum L had significant effect on decrease of cholesterol, LDL-cholesterol and triglyceride levels and also significant effect on increase of HDL-cholesterol in high cholesterol along with Silybum marianum extract group relative to diet and high cholesterol group ($p<0.05$). Finally, it has to be elucidated that the extract can be used for treatment of atherosclerosis because of its effect on decreasing of

blood risk factors such as total cholesterol, LDL-cholesterol and triglyceride levels and preventing progression of atherosclerosis in hypercholesterolemic rabbits.

Keywords: atherosclerosis, blood lipids, Silybum marianum

P-10-219-1

Study of paraoxonase and arylesterase activity changes of paraoxonase 1 following aqueous garlic extract injection in rat

M. Ghari Ghoran [1], N. Rashtchizadeh [2], A. Ghorbanihagjo [2], J. Hashemzadeh [2], M.H. Mirmomeni [2]*

1- Department of Biology, Faculty of Science, Razi University, Kermanshah, Iran, 2- Department of Biochemistry, Tabriz University of Medical Sciences, Tabriz, Iran

Paraoxonase 1 (PON 1) (EC 3.1.8.1) is an HDL-associated enzyme and important factor that protects LDL from oxidation which is a significant step in cardiovascular diseases. Effects of aqueous garlic extract supplementation on blood HDL-associated paraoxonase 1, lipid profile and oxidant/antioxidant status were investigated in normal rats which were divided into two groups of control and specimen randomly. One week after interperitoneal injection of extract, routine blood analysis including paraoxonase and arylesterase activity and lipid parameters were performed. We used uv-visible spectrophotometer to determine the paraoxonase and arylesterase activities and MDA (malondialdehyde) concentration. For determination of lipid profile including HDL (high-density lipoprotein), LDL-C (low-density lipoprotein-cholesterol), total cholesterol and triglyceride concentrations and TAS (total antioxidant status) we used autoanalyzer. Serum total cholesterol, LDL-C and triglyceride levels were found to be significantly lowered, but paraoxonase and arylesterase activities and HDL level increased after the extract use. Blood TAS values were found increased and MDA level decreased during this episode. We conclude that aqueous garlic extract supplementation increases paraoxonase and arylesrerase activity, improves blood lipid profile and strengthens blood antioxidant potential. It also leads to a decrease in the level of oxidation product (MDA) in the blood samples, which demonstrates reduced oxidation reactions in the body.

Keywords: antioxidant, arylesterase, aqueous garlic extract, oxidative stress, paraoxonase 1

P-10-590-1

Effects of light and differentiation on Gingerol and Zingiberene production on cultured cells of Zingiber officinale

Parvaneh Anasori, G. Asghari*

Isfahan Pharmaceutical Sciences Research Center, School of pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

Ginger (Zingiber officinale Roscoe) is a perennial plant with aromatic odour and a pungent taste. It has not been cultivated in Iran yet. The most important compounds, responsible for Ginger's therapeutic activity including treating nausea due to pregnancy, after surgery or chemotherapy, motion sickness, osteoarthritis, are related to gingerols and zingiberene. A number of chemical and physical factors that could influence secondary metabolism in Zingiber officinale cell cultures have been found. In this study the effect of light and differentiation on the secondary metabolism were evaluated. A sterile in vitro plant was obtained on MS medium. Then different explants from the sterile ginger were cut and inoculated on mediums suitable for callus growth. One group stored at 16/8 light cycle and the other at continuous dark environment. After the growth of calli, different samples from both groups in several stage of growth were collected and extracted with dichloromethane and analyzed by thin layer chromatography (TLC). N-hexan, di-ethyl ether (40:60) were used as solvent system. The accumulation of 6-gingerol and zingiberen was much higher in culture systems of Zingiber officinale where morphological differentiation was apparent, and light is a stimulatory factor for these secondary metabolite production.

Keywords: Zingiber officinale, callus, light, differentiation

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P-10-518-1

Evaluation of effect of tribullus terrestris on convulsion induced by pentylentetrazole

Mahsa Afrough [1], Fakhri Kiani [1], Nazanin Bavarsad omidian [1], Negar Katvandi [1], Hosein Najafzade [2]*

1- Department of Veterinary Medicine, Shahid Chamran University, Ahwaz, 2- Department of Pharmacology, Veterinary Faculty, Shahid Chamran University, Ahwaz, Iran

Tribulus terrestris (caltrops) is traditionally used for its diuretic and antistone effect. In this study, its anticonvulsive effect was evaluated in rats. Hydro-ethnanolic extract of Tribulus was obtained by maceration method. Experiment was done in 3 groups of rats as follow: Pentylentetrazole was given intrapritoneally at 60 mg/kg in all rats. In group 2, phenobarbital was given 20 min before pentylentetrazole administration. Extract of Tribullus was intrapritoneally injected at 250 mg/kg in group 3. The rats were monitored for 30 min after pentylentetrazole administration. Duration and number of tonic and clonic convulsions were recorded in monitoring time. Convulsions were significantly decreased by extract of Tribullus. Thus, by this study, it was suggested that Tribulus terrestris can have anti-epileptic effect in pentylentetrazole induced convulsion in rats.

Keywords: Tribulus terrestris, convulsion, anti-epileptic, pentylentetrazole

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P-10-260-2

Antioxidant effect of alcoholic and liquid extract of caper buds on hydroxyl radical in vitro

Durdi Qujeq, Amineh Niknehad*

Department of Biochemistry and Biophysics, Babol University of Medical Sciences, Babol, Iran

Increasing in production amount of free radicals such as hydroxyl radical in biological system, cause disease. Scavenging of free radicals is part of healthy and antioxidant defense systems of body. The aim of this study is to determine antioxidant effect of alcoholic and liquid extract of Caper buds on hydroxyl radical in-vitro. This study was designed as an experimental study. From five kg of Caper buds, alcoholic extract and liquid extract were prepared. 0.5 ml from each one was added to 30 tube that included hydroxyl radicals. To 30 control tubes, no extract was added. Then concentrations of radical hydroxyl in tubes were calculated. Data were entered to SPSS software and analyzed. $P<0.05$ were considered significant. After adding Caper

buds extracts into the tubes, mean concentration's of hydroxyl radical in all tubes has a significant difference to tubes without any extract ($P<0.05$). Mean concentration of hydroxyl radical in tubes without any extract was 1.43±0.03mm/ml, in tubes with alcoholic extract of Caper buds it was 0.84± 0.12 mm/ml, and in tubes with liquid extract of Caper buds 0.88± 0.11 mm/ml. Adding Caper buds alcoholic and liquid extract had no significant effect on proxidation lipid index in homogenated liver tissue ($p>0.05$). Alcoholic extract and liquid extract of Caper buds has antioxidant effect in-vitro and decreased hydroxyl radical concentration.

Keywords: free radical, hydroxyl radical, antioxidant, caper

P-10-630-1

Hyperglycemic and antioxidant effects of sour orange peel extract in normal and alloxanized rats

Mostafa Lakzaei [1], Mahdi Pouramir [1], Ali-Akbar Moghadamnia [2]*

1- Biochemistry Department, Babol University of Medical Sciences, Babol, Iran, 2- Pharmacology Department, Babol University of Medical Sciences, Babol, Iran

Sour orange is known as an herbal plant in traditional medicine. Pervious studies indicate a protective effect of citrus fruits or juices against risk of some chronic diseases. Antihyperglycemic and antioxidant effects of the sour orange peel extract were investigated. Alloxan- induced hyperglycemic rats were used to evaluate the antihyperglycemic and antioxidant properties of the sour orange peel extract. The administration of sour orange peel extract (100 and 300 mg/kg/day) increased serum glucose in alloxan-induced hyperglycemic rats. Serum antioxidant activity was higher at 24 h in high (1645.2±57.36) and low doses (1217.6± 41.79) and at 48 h in low (1416± 68.1) dose after alloxan injection as compared to the control groups at 24 h(943.1± 25.78) and 48h (1169.9± 52.42). This study demonstrated the extract of sour orange peel increase the antioxidant power of alloxanized rats. Treatment with 100 and 300 mg/kg body weight of sour orange peel extract enhanced the glucose level in alloxanaized rats.

Keywords: sour orange peel, antihyperglycemic, antioxidant, alloxan

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P-10-12-1

Effects of Quercetin on the susceptibility of albumin to glycation

Mohammad-Reza Safari

Laboratory Medicine Department, Paramedicine Faculty, Hamadan University of Medical Sciences & Health Services, Hamadan, Iran

Quercetin is a polyphenolic antioxidant that is contained in vegetables, fruit, and beverages such as wine and tea. As diabetes leads to glycation of various protein which has effect on structure and biochemical activity of them, the inhibition of this process seems very vital. For several years, researchers in this field have done their best to recognize the antidiabetics compounds. The aim of this study was to determine the effects of Quercetin on albumin glycation in vitro. So in the presence of various concentration of Quercetin, albumin was glycated and evaluated using TBA method. The results showed that Quercetin causes statistically significant ($P<0.05$) inhibition or decrease of the reaction of albumin glycation. The findings of this research showed that Quercetin could probably inhibit the reaction of glycation and decrease complications occurring in diabetes.

Keywords: albumin, glycation, Quercetin

P-10-573-1

The role of herbal drug (IMOD) in decreasing inflammatory products produced by microglial cells

Banafsheh Amiraslani [1], Farzaneh Sabouni [1], Shahsanam Abbasi [1], Moloud Mirrazavi [1], Hamidreza Khoramkhorshid [2], Habibollah Nazem [3]*

1- National Institute of Genetic Engineering and Biotechnology, Tehran, Iran, 2- Genetic Research Center, Social Welfare and Rehabilitation Sciences University, Tehran, Iran, 3- Payame Noor University, Iran

Microglias, the tissue macrophages of the central nervous system, play an important role in defending against foreign invaders. In contact with microbial, viral and bacterial signals, they can initiate inflammatory cascade by presenting surface antigen, migration, proliferation and producing secretary products such as prostaglandins, cytokines, chemokines and nitric oxide. To diminish this inflammation we try to find the way to decrease inflammatory products which can help us in treatment of neurodegenerative disease such as Alzheimer and Parkinson. To reach this goal we investigated the effect of IMOD, an herbal drug that can reduce spread of Human Immunodeficiency Virus (HIV) infection in human body, on the inflammation of microglial cells. Briefly, primary mixed glial cells were prepared from the cerebral cortex of 1-4 day rats. Pure Microglia culture was treated with lipopolysaccharide (LPS) and IMOD, then after 24 and 48 hours the concentration of nitric oxide (NO) was determined. The observed results shows that high concentrations of IMOD have a toxic effect on microglial cells, but low concentration of this drug can not be harmful for these cells.

Keywords: microglia, IMOD, inflammation, nitric oxide, lipopolysaccharide

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P-10-563-1

The ability of IMOD to modulate the production of NO in activated astrocytes

Moloud Mirrazavi [1], Farzaneh Sabouni [1], Shahsanam Abbasi [1], Banafsheh Amiraslani [1], Hamidreza Khoramkhorshid [2], Habibollah Nazem [3], Reza Hajihosseini [3]*

1- National Institute of Genetic Engineering and Biotechnology, Tehran, Iran, 2- Genetic Research Center, Social Welfare and Rehabilitation Science University, Tehran, Iran, 3- Payame Noor University, Tehran, Iran

Astrocytes are the major glial cell population in the central nervous system (CNS).They function to maintain normal brain physiology, including survival and guidance of migrating nervous during development, formation and preservation of the blood-brain barrier and maintenance of neuronal homeostasis and plasticity. Activated astrocytes produce a variety of pro-inflammatory cytokines, chemokines and nitric oxide (NO). Among these factors, NO seems to play a critical role in pathophysiology of inflammatory neurological disease including demyelinating disorders (e.g. Multiple sclerosis, Experimental allergic encephalopathy), neurodegenerative disorder like Alzheimer's disease and in ischemic and traumatic brain injuries

associated with the activation of glial cells. IMOD is a herbal extract drug which had exhibited a strong immunostimulatory potential in pervious phases of the clinical trails and increased the number of CD4 cells in HIV patients. Here we examined the ability of IMOD to modulate the inflammatory activity of activated astrocytes. Therefore, treatments that suppress the activation of astrocytes may alleviate inflammation in the CNS and provide potential of the treatment of these diseases. We used human astrocyte cell line 1321N1. The culture was treated for 4 hours with different concentrations of IMOD (1/50-1/3500) and NO production was assayed. The results demonstrated that the cells produce NO after stimulation by lipopolysaccharide (LPS). IMOD alone at all concentration didn't induce cell to produce NO but IMOD in combination with LPS did it synergistically.

Keywords: astrocyte, IMOD, nitric oxide (NO), inflammation

P-10-663-1

Antihyperlipidemic and antilipidperoxidative effects of sour orange peel extract

Mahdi Pouramir [1], Mostafa Lakzaei [1], Ali-Akbar Moghadamnia [2]*

1- Biochemistry Department, Babol University of Medical Sciences, Babol, Iran, 2- Pharmacology Department, Babol University of Medical Sciences, Babol, Iran

Sour orange peel extract is widely known for its use in herbal medicines to treat many diseases. Pervious studies indicate a protective effect of citrus fruits or juices against risk of some chronic diseases. In this study antihyperlipidemic and antilipidperoxidative effects of sour orange peel extract was investigated. Alloxan- induced hyperglycemic rats were used to evaluate the antihyperlipidemic and antilipidperoxidative properties of the sour orange peel extract. The administration of sour orange extract (100 and 300 mg/kg/day) decreased serum TG concentration in alloxan-induced hyperglycemic rats but cholesterol was not affected after consumption of sour orange peel extract. TBARS was lower in low dose at 24 h after alloxan injection. This study demonstrated the extract of sour orange peel decreased serum TG and TBARS concentration.

Keywords: sour orange peel, antihyperlipidemic, alloxan, TBARS

O-10-664-1

Antihyperlipidemic effect of Pyrus boissieriana Buhse leaves extract in normal rats

Zahra Khanbabapoor [1], Nazanin Gholizade [1], Farzane Habibnejad [1], Mahdi Pouramir [2], Mostafa Lakzaei [2], Ali Akbar Moghadamnia [2]*

1- Babol Farzanegan High School, 2- Biochemistry Department, Babol University of Medical Sciences, Babol, Iran

Pyrus boissieriana Buhse leaves extract has a wide range of biological activities such as antioxidant, antibacterial, antifungal. This study was designed to evaluate the effect of Pyrus boissieriana Buhse leaves extract on lipid profile in normal rats. Oral administration of Pyrus boissieriana Buhse leaves extract (500 mg/kg body weight) for 0, 7, 14 and 21 days on serum triglycerides and cholesterol level in normal rats were evaluated. Oral administration of the extract for 7 days exhibited a significant reduction in serum triglycerides, but cholesterol was not affected after consumption of Pyrus boissieriana Buhse leaves extract. This study demonstrated the Pyrus boissieriana Buhse leaves extract decreased serum triglycerides concentration.

Keywords: Pyrus boissieriana Buhse, antihyperlipidemic, triglycerides, cholesterol

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P-10-665-1

Effect of Pyrus boissieriana Buhse leaves extract on hepatic marker

Farzane Habibnejad [1], Nazanin Gholizade [1], Zahra Khanbabapoor [1], Mahdi Pouramir [2], Mostafa Lakzaei [2], Ali-Akbar Moghadamnia [3]*

1- Babol Farzanegan High School, 2- Biochemistry Department, Babol University of Medical Sciences, Babol, Iran, 3- Pharmacology Department, Babol University of Medical Sciences, Babol, Iran

Pyrus boissieriana Buhse leaves extract has many biological properties such as antioxidant, antibacterial and antifungal. Effects of Pyrus boissieriana Buhse leaves extract treatment on hepatic markers such as AST (aspartate aminotransferase); ALT (Alanine aminotransferase) and ALP (Alkaline phosphatase) in the serum of normal rats were studied. 56 adult male rats of wistar strain weighing 150-200 g were randomized into 7 groups. Experiment and control groups rats were treated with Pyrus boissieriana Buhse leaves extract and water, respectively, for 0, 7, 14 and 21 days. ALT did not affected after consumption of Pyrus boissieriana Buhse leaves extract. At 21 day AST and ALP significantly decreased in experimental group compared to the control. This study demonstrated that Pyrus boissieriana Buhse leaves extract decrease AST and ALP activity.

Keywords: Pyrus boissieriana Buhse, hepatic markers, ALT, AST, ALP

O-10-613-1

Hypoglycemic effects of Achillea Wilhelmsi in normal and streptozotocin induced diabetic rats

Heibatollah Sadeghi [1], Esmat Radmanesh [2], Habibollah Nazem [3], Mehdi Akbartabar [3], Ali Mirzaee [3], Reza Mohammadi [3]*

1- Yasuj University of Medical Sciences, Herbals Medicine Research Center, Yasuj, Iran, 2- Boyerahmad Education Center, Boyerahmad, Iran, 3- Isfahan Payame Noor University, Isfahan, Iran

Diabetes mellitus is a syndrome, initially characterized by a loss of glucose homeostasis resulting from defects in insulin secretion and insulin action both resulting in impaired metabolism of glucose and other energy yielding fuels as lipids and protein. Several plant species have been described as having hypoglycemic effects such as Allium Sativum, Trigonella Foenum, Marus nigra, Ocimum Sanctum, Astragalus Ovinus. The main aim of this study was to determine the effect of Achillea Wilhelmsii on blood glucose levels in normal and diabetic albino rats induced by stereptozotocine. Forty-eight, male wistar rats were divided into two groups, non-diabetic (normal) and STZ-induced diabetic rats. Each one of two groups divided four sub groups: control (received normal saline) and treatment received 100,200 and 300 mg/kg aqueous-alcoholic extract of Achillea Wilhelmsii daily for one month. Blood glucose was estimated by the glucose oxidase method. At the end of one month significant decrease in blood glucose levels was observed in diabetic rats that received 100mg/kg ($p<0.001$), 200mg/kg($p<0.001$), 300mg/kg($p<0.001$) aqueous- alcoholic extract of Achillea Wilhelmsii compared with control groups but no significant effects on blood glucose was observed in

normal groups. The results of this study show that aqueous- alcoholic extract of Achillea Wilhelmsii had a significant reducing effect on blood glucose level in diabetic rats.

Keywords: Achilea Wilhelmsii, blood glucose, diabetes, streptozotocin

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P-10-599-2

Acute effects of vinegar intake on some biochemical risk factors of atherosclerosis in rabbits fed a high cholesterol diet

Mahbubeh Setorki [1], Bahar Nazari [2], Sedighe Asgary [3], Akram Eidi [3], Ali Haeri rohani [3]*

1- Department of Biology, Science and Research Branch, Islamic Azad University, Tehran, Iran, 2- Cardiovascular Research Center, Isfahan University of Medical Sciences, Isfahan, Iran, 3- Isfahan Cardiovascular Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Exaggerated postprandial spikes in blood glucose and lipids induce proportional raises in oxidative stress, which acutely trigger impairment, endothelial inflammation and increased risk of future cardiovascular events. This study was undertaken to investigate acute effects of vinegar intake on some of the biochemical atherosclerosis risk factors in high cholesterol fed rabbits. Thirty two male rabbits were randomly divided to four groups of eight. After fasting for 12-15 hours, blood samples were taken to determine baseline values. The rabbits were randomly divided into four groups: normal diet, high cholesterol diet (%1cholesterol), %1 cholesterol with 5ml vinegar (low dose), and % 1 cholesterol with 10ml vinegar (high dose). Three hours after feeding, blood samples were collected again to investigate acute effects of vinegar intake on the measured factors. The Results showed that using high-dose vinegar with cholesterolemic diet caused significant reduce in LDL-cholesterol, oxidized-LDL, malondialdehyde, total cholesterol and apolipoprotein B in comparison with hypercholesterolemic diet. Consumption low-dose vinegar with cholesterolemic diet induced a significant decrease in fibrinogen and glucose compared to hypercholesterolemic diet. Levels of serum nitrite, nitrate, triacylglycerol, HDL-cholesterol, apolipoprotein A, serum glutamic pyruvic transaminase, serum glutamic oxaloacetate transaminase and C-reactive protein were not significantly different in low and high doses vinegar with cholesterolemic diet compared to hypercholesterolemic diet. A significant difference was observed for LDL-cholesterol, apolipoprotein B100 and total cholesterol between low and high doses vinegar. This study suggest that vinegar, as an antioxidant, might have acute effects on biochemical risk factors of atherosclerosis and a probable protective value can be considered for its postprandial use.

Keywords: vinegar, atherosclerosis, risk factors

P-10-694-2

Antioxidant activity of methanolic extract of sour orange peel and protection effect on lipid peroxidation

Zahra Goli [1], Mahdi Pouramir [2], Mostafa Lakzaei [2]*

1- Biochemistry Department, Tehran Payame Noor University, Tehran, Iran, 2- Biochemistry Department, Babol University of Medical Sciences, Babol, Iran

Researchers are investigating on citrus peel, generated as a by-product of the juice industry, as a source of antioxidant. In this study antioxidant activity of sour orange internal peel (mesocarp) was determined in biologic model. Mesocarp powder was extracted by methanol. The aqueous solutions of extract were stored for 1 month at different condition (light room temperature, dark room temperature, refrigerator and freezer). Antioxidant activity and its stability in aqueous solutions were measured by ferric reducing antioxidant power (FRAP) assay and protection effect of extract on lipid oxidation of raw and cooked fish was evaluated using thiobarbituric acid reactant substances (TBARS) for long time (14 days) and short time (90 minutes). FRAP assay show that extract has antioxidant activity with high stability and activity was variable in different conditions and times. TBARS test show that protection effect of extract increase with concentration and 5% aqueous solution could prevent lipid oxidation in high level. Therefore, the use of sour orange internal peel extract is recommended as a natural antioxidant source to substitute synthetic antioxidants.

Keywords: antioxidant, lipid oxidation, sour orange peel, raw and cooked fish

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P-10-615-1

The saffron's molecular components effect on H1-oligonucleotide complexes in the in vitro studies

Reyhaneh Houshyar, S. Zahra Bathaie*

Clinical Biochemistry Department, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

It has been discovered that saffron (spatially its carotenoides) has antitumor activity, it is considered as a drug in tumor chemotherapy and chemoprevention. Saffron and its constituents, which have high antitumor affect different malignant cells, can be used in association with other antitumor drugs in the treatment of different kinds of cancers. Effect of saffron is not clear. It is known that transcriptional activation of genes occurs due to the H1 dissociation from linker DNA; hence, the effect of saffron components on the histone Hl-DNA complex, as a model of chromatin, is considered. In addition, an oligonucleotide with high affinity for H1 is used for clarification of the mechanism of interaction. The circular dichroism (CD) spectra of Hl-DNA complexes changed due to the reduced interaction, after addition of the mentioned ligands. These observations led to the suggesting of a mechanism in which the H1 depletion may affect transcription of some genes for example suppressing tumor genes. In conclusion, saffron various applications as an anti-oxidant, anti-genotoxic, and anti-cancer agent are due to its secondary metabolites and their derivatives (safranal, crocins, crocetin, picrocrocin), which interact with maintained complexes and induce some conformational changes in them.

Keywords: chromatin, circular dichroism, H1-DNA, interaction, saffron

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O-10-278-3

Determination of IC50 of curcumin total extract in epithelial like cell line of breast cancer T47D

Nosratollah Zarghami, Mohamad Rahmati, Javad Ranjbaran, Behzad Baradaran*

Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran

Curcumin is a phenolic compound has been extracted of curcuma longa rhizome. Its anti-tumoral effects have been observed but the effect of total extract on the growth of breast cancer cell line has not

been indentified. The aim of study is to determine minimum lethal dose of curcumin extracted. Curcuma longa rhizome extract was produced in N-hexane, dichloromethane and methanol phases sequentially. Then to determine the concentration curcuminoids, absorbance in 420-430 nm was measured and compared with pure curcumin standard curve. Then T47D cell line was cultured in RPMI medium. Viability percentage was determined by trypan blue staining. Finally, curcumin N-hexane extract effect on growth of cells was studied by MTT assay method. The results had showed that the maximum concentration of curcumin was observed in N-hexane phase of extract. IC50 is the concentration of extract that caused 50% reduction in MTT absorbance, in MTT assay, compared to the control. Anti prolifrative effect of N-hexane extract was observed and an IC50 equal to 0.342 mg/ml for N-hexane phase of extract was calculated. In this study we observed anti-tumoral effect of curcumin extract on T47D cell line. These results were similar to results of other cell lines (MCF-7, MCF-10, K562) in former studies. Determination of IC50 enables us to treat cells by the therapeutic concentrations and it is expected to decrease non targeted interference effects to a large extent.

Keywords: curcumin, breast cancer, T47D cell line, MTT assay

P-10-716-1

Effect of green tea consumption on biochemical values of type 2 diabetic patients

Ateke Mousavi [1], Mohammad Reza Vafa [2], Tirang Neyestani [3]*

1- Army Medical University, 2- Iran Medical University, 3- Nutrition Institute of Shahid Beheshti University, Tehran, Iran

Diabetes is a worldwide high prevalence disease and the rate of diabetic patients is growing rapidly. It's believed that antioxidants may help to manage to prevent diabetic long term complications, including CVD and nephrotoxicity. Green tea (GT) is a good source of antioxidant polyphenolic compounds including Epigalocatechin gallate. This study was undertaken to evaluate the possible effects of different daily doses of green tea intake on certain metabolic biomarkers in type 2 diabetic patients. A total of 63 patients of known cases of diabetes mellitus type 2 (28 male, 36 female) were introduced to a randomized clinical trial and randomly assigned to three groups. First group drank four cups of GT per day for two months (n=24, age=56.2), second drank two cups of GT per day for two months (n=25, age=54.6) and third group was control and didn't drink green tea (n=14, age=52.0). Patients in GT group prepared GT as a 2.5gr tea bag in a standard way. At the beginning and in the end of intervention, fasting venous blood samples (10 cc) were taken from all patients (test and control). Daily intake 2 and 4 cups of green tea per day did not have any significant effect on fasting blood glucose, trigelyceride, blood urea nitrogen, ceratinine, apolipoprotein A1 and B100, total antioxidant capacity (TAC) and malondialdehyde (MDA). Total cholesterol and LDL cholesterol decreased in test groups but it was not significant (p=0.06). We did not see the beneficial effect of green tea in diabetic patients. For precise conclusion long term, higher population studies are needed.

Keywords: diabetes, green tea, biochemical values

P-10-736-1

Unique compounds in mastic gum with medical properties for enhancing memory

Fatemeh Shahrokhi Asl, Gholam Hossein Riazi, S. M. Ghafari, Shahin Ahmadian*

Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

Iran Mastic gum derived from pistacia lentiscus tree of family anacardeaceae and is native of Mediterranean region. Scientific literature has documented medical properties and pharmacological usage of mastic gum for enhancing memory in thousands of years. Recent studies indicate significant role of microtubules in memory. Microtubules are cytoskeleton polymer essential in eukaryotic cells with variety of functions. In this study microtubules were purified by two cycles of temperature-depended assembly and disassembly. Triterpenoid compounds of gum ethanolic extract was analyzed by GC-MS, isolated by preparative HPLC. These triterpenoid compounds were examined on microtubule dynamic in 37˚C and 350nm by spectrophotometer. Then the viability of neural cells was studied by MTT assay after incubation in 24 h in the ranges of 10-50µM. In this method three cell lines SK-NM-C and SK-Be (2) and fibroblast were examined. Then the morphology of these tree cell lines was observed. The result showed that triterpenoid compounds especially mastic acid could bind to microtubule with significant increase in their polymerization. In results of cell toxicity assay no toxicity for this component observed and the cell lines and morphology do not changed either. In this study we determined that triterpenoid compound of mastic gum could interact with microtubule protein and stabilize them, and normal shape and activity of microtubules were saved without any aggregation. Continuous experiments showed that these compounds had no toxicity effect on cell viability and they could be applied as a drug for supporting and enhancing memory.

Keywords: microtubule, tubulin, triterpenoid, mastic acid

P-10-841-7

Inhibitory effect of sesquiterpene lactone fraction from Artemisia khorassanica on iNOS and COX-2 expression through the inactivation of NF-κB

Ahmad Emami [1], Mahmoud Mahmoudi [2], Shahrzad Zamani Taghizadeh [2], Ali Ahi [2]*

1- Pharmacy School, Mashhad University of Medical Sciences, 2- Immunology Research Center, Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran

The genus Artemisia L. is one of the largest and most widely distributed of the Astraceae (Compositae) in the world and Artemisia khorassanica is endemic to Khorassan privince. Members of the Artemisia genus are important medicinal plants throughout the world. The present study focuses on the effects of sesquiterpene lactone fraction from Artemisia khorassanica (SLAK) on lipopolysaccharide (LPS)-induced nitric oxide (NO), prostaglandin E2 (PGE2), tumor necrosis factor-α (TNF-α) and interleukin-1α (IL-1α) production in the mouse macrophage J774A.1 cells. Moreover, we evaluated SLAK modulation of inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) enzyme expression by western blot analysis. Our data revealed that SLAK (10-200µg/ml) in a dose-dependent manner, inhibits NO, PGE2, TNF-α and IL-1α production induced by LPS in the J774A.1 cells. These data were consistent with the

modulation of iNOS and COX-2 expressions. It was also shown that SLAK suppresses the iNOS and COX-2 enzyme expression through the inhibition of NF-κB activity. This study is the first report of anti-inflammatory effect of Artemisia khorassanica. Our results demonstrated that Artemisia khorassanica from Khorasan Province could be good candidates for the investigation of anti-inflammatory activity in vivo. So, isolation of effective compounds in this fraction and elucidation of their structures will be essential.

Keywords: sesquiterpene lactone fraction, Artemisia khorassanica, inducible nitric oxide synthase, cyclooxygenase-2, nuclear factor-κB

P-10-810-1

Determination of catechin in four grape Vitis Vinifera Varieties grown in Iran by high performance liquid chromatography (HPLC)

Zohreh Faezizadeh, Amir Gharib, Masoud Godarzi*

Department of Laboratory Science, Para-medical School, Islamic Azad University, Branch of Broujerd, Iran

Vitis Vinifera (grape) from Vitaceae has been used in traditional medicine to treat diarrhea, gout and varicosis in Iran for several decades. The main phenol in grape samples is catechin. This compound is well known for its beneficial health effects that involve anti-cancer, anti-bacterial and anti-oxidant properties. In recent years, quality of grape samples are being determined by measurement of the levels this phenolic compound. So, in this research we determined catechin in four grape Vitis Vinifera Varieties by high performance liquid chromatography (HPLC). In this study multiple extractions of Yaghoti, Fakhri, Black and Red grape with 80% methanol and 80% methanol containing 0.15% HCl solution were prepared. Then grape sample extracts were analyzed, by HPLC, within 20 minutes using methanol and 3% acetic acid gradient elution system on a C18 column. The results shown that catechin concentration in Yaghoti and Red grape (5.49±0.15 and 4.86±0.08 µg/g, respectively) were higher than in other grapes. In this research, the simplicity and quality of methods for extraction and analysis by HPLC indicated these methods can be used as an ideal analytical method for determination of effective compounds in grape samples.

Keywords: catechin, extraction, HPLC, phenolic compound, Vitis Vinifera

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O-10-823-1

Effect of chamomile, clove and garlic extract on non-enzymatic glycosylation of albumin invitro

Majid Sirati Sabet [1], Nematollah Gheibi [1], Mehdi Sahmani [1], Esmaeil Abbasi [2], Farhad Khabbaz [2]*

1- Department of Biochemistry, Genetic and Medical Physics, Faculty of Medicine, Qazvin University of Medical Sciences & Health Services, Qazvin, Iran, 2- Department of Pharmacology, Faculty of Medicine, Qazvin University of Medical Sciences & Health Services, Qazvin, Iran

Diabetes mellitus is a common disease in human societies. Proteins non-enzymatic glycation has deleterious effects on structure and function of proteins. Non-enzymatic glycosylation of proteins can implicate the pathogenesis of diabetic complications such as retinopathy and nephropathy. Using herbs is a method to prevent that reaction. Chamomile, clove and garlic are herbs whose alkaloid compounds have antioxidant properties. The aim of this investigation was to study effect of chamomile, clove and garlic extract on non-enzymatic glycosylation of albumin invitro. In this experimental study, hydroalcoholic extract of chamomile, clove and garlic were prepared. Invitro albumin glycosylation reaction was carried out in presence of different concentrations (0.01, 0.05 and 0.1 g/L) of chamomile, clove and garlic extracts and the amounts of glycosylated albumin was measured. Non-enzymatic glycosylation of albumin was determined by nitrobluetetrazuliom method. Absorbance changes were measured in 530 nm by eppendorf ECOM-E 6125 spectrophotometer. In this study, chamomile extract in 0.01, 0.05 and 0.1 g/L concentrations inhibited albumin glycosylation 9%, 17% and 26%, respectively. Albumin glycosylation reaction was inhibited 23% by 0.01 g/L concentration of clove and garlic extracts and the level of inhibition of albumin glycosylation decreased when extract concentration increased. Chamomile extract with 0.1 g/L concentration has the greatest effect between used extracts. Chamomile extract inhibited albumin glycosylation reaction in vitro and clove and garlic extracts showed inhibiting effect at low concentration but this effect decreased at high extracts concentration.

Keywords: glycosylation, albumin, extract, chamomile, clove, garlic

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P-10-836-1

Cytotoxic effects of the benzophenanthridine chelidonine in liver cancer cells (HepG2)

Sakineh Kazemi Noureini

Department of Biology, Faculty of Basic Science, Tarbiat Moallem University of Sabzevar, Sabzevar, Iran

Chelidonium majus, the greater celandine (family Papaveraceae) with a long history in phytomedicine for the treatment of many diseases or health disturbances, contains isoquinoline alkaloids, especially protoberberine and benzophenanthridine alkaloids. Extracts of this plant exhibit interesting antitumor and antiviral activities in addition to hepato-protective and anti-genotoxic effects in induced hepato carcinogenesis in mice. This study has been focused on special effects of chelidonine, the main alkaloid of the plant in HepG2 cells. Neutral red uptake and MTT assay were used to estimate cytotoxicity of chelionine in HepG2 cells. Morphologically, treated HepG2 cells showed apoptotic features after 24 hours and a small fraction of cells appeared with single blister cell death. The viablity of HepG2 cells after 48 hours treatment is not in dose dependent manner and tends to reach plateau immediately after the living cells are reduced in number to slightly higher than 50%. However, 12 µM concentration of chelidonine was considered as LD50, where the maximal attainable effects were realized. Repeated treatment of cells with very low doses of chelidonine caused a decline in growth rate by four weeks and many of the cells appeared to be aged with large volume and stain dark in β-galactosidase assay.

Keywords: chelidonine, HepG2, cytotoxicity

P-10-833-1

Evaluation analgesic and anti-inflammatory effect of pomegranate peel extract

Samane Olapour, Mahsa Afrough, Hosein Najafzadeh*

Faculty of Veterinary Medicine, Shahid Chamran University, Ahwaz, Iran

Pomegranate is an important source of antioxidants, potassium and vitamin C. Pomegranate has anti-coagulative, anticancer, cholesterol lowering and sedative effects. The aim of this study was evaluation analgesic and anti-inflammatory effect of pomegranate peel extract in mice. Hydroalcoholic peel extract of pomegranate was prepared by maceration method. In one group of mice the number of writhing was counted within 10 minutes after acetic acid injection intraperitoneally. In other group, the extract was administrated 20 min before acetic acid injection and the number of writhing was counted as later group. In formalin test the formalin was subcutaneously injected in foot of mice in another group. The licking time of foot was calculated 5 and 15-25min after formalin injection. In other group test was done as previous but the extract was administrated 20 min before formalin injection. The results showed that pomegranate peel extract could considerably decreased writhing and licking. Thus, pomegranate peel extract has analgesic and anti-inflammatory effect.

Keywords: pomegranate peel extract, analgesia, anti-inflammation, mice

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O-10-841-1

Comparison of the cytotoxicity of three Artemisisa khorassanica fractions on cancer cell lines

Ahmad Emami [1], Mahmoud Mahmoudi [2], Shahrzad Zamani Taghizadeh Rabe [2], Ali Ahi [2]*

1- Pharmacy School, Mashhad University of Medical Sciences, 2- Immunology Research Center, Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran

Artemisia spp. are important medical plants in the world. Cancer cell toxicity of fractions and compounds from different Artemisia species had been shown. In present study, three samples of Iranian Artemisia khorassanica were collected. Cytotoxicity of their isolated fractions was studied on cancer cell lines. Ethanol, ethylacetate, dichloromethane and hexane fractions were isolated from three Artemisia samples of different places in Khorassan province. Gastric (AGS), colon (HT-29), breast (MCF-7) and cervix (Hela) cell lines were incubated with different concentrations of fractions for 72 h. Then, cytotoxicity was measured using MTT assay and reported as IC50. All fractions showed strong inhibitory effects on cancer cells in a dose-dependent manner. But, it was different for same fractions from three samples. The strongest fractions were ethylacetate of sample 1, dichloromethane of sample 2, dichloromethane of sample 3 and hexane fraction from sample 1 of Artemisia khorassanica. MCF-7 and Hela were the most sensitive cell lines. With regard to significant toxicity of isolated fractions, they could be evaluated in prevention and treatment of different cancers.

Keywords: Artemisia khorassanica, cancer cell lines, cytotoxicity

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P-10-654-1

The effect of garlic consumption on total antioxidant status and some biochemical and hematological parameters in blood of rats

Tayebeh Ghiasvand, Alireza Zamani, Jafar Hadei, Hossein Babaahmadi-Rezaei*

Medicine Research Center, Hamadan University of Medical Sciences, Hamedan, Iran

The effect of dietary garlic supplementation on total antioxidant status (TAS), nitric oxide and routine biochemical and hematological parameters was investigated in blood of rats. A total of thirty male rats were divided equally into two groups. Each of fifteen rats of treatment group was fed 600mg/kg garlic solution in water and controls received distilled water by gavage. After garlic consumption for 1 month, blood serum total antioxidant, nitrate and some routine biochemical and hematological tests including serum lipids parameters, blood sugar, complete blood count (CBC), Hemoglobin and etc, were measured. The garlic treatment group showed significant increase in the mean level of TAS from (0.77±0.10 mmol/L) to (1.18±0.11mmol/L) ($p<0.01$) and nitrate (a nitric oxide metabolite) from (0.78±0.06µmol/L) to (1.44±0.27µmol/L) ($p<0.05$) in the blood sera of rats compared with the controls. There were no significant differences between the routine biochemical and hematological parameters. In conclusion, the garlic consumption should have antioxidant property and profile and total blood cell counts.

Keywords: garlic, antioxidant, lipids, blood cells, nitrate

O-10-915-1

Influence of Cadmium(II) ion on the dipicolinic acid binding to DNA

Ali Reza Rezvani [1], S. Zahra Bathaie [2], Masoud Memar [2]*

1- Department of Chemistry, University of Sistan and Balouchestan, Zahedan, Iran, 2- Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University (TMU), Tehran, Iran

Among the dicarboxylic acids, dipicolinic acid is known for its various ligating modes, and diverse biological activity such as effective anti-HIV agents, design of insulin-mimetic agents, electron carriers in some model biological systems and as specific molecular tools in DNA cleavage. Intermolecular interactions, such as hydrogen bonding, π-π stacking, ion pairing and donor-acceptor interactions are famous for making aggregates of molecules. As is clear, hydrogen bonding has been described as the most important interaction in supramolecular chemistry. In the present work, synthesis of (DPA)(H2dipic)] as a co-crystal and [Cd(dipic)(H2O)2] complex for interaction with double stranded ctDNA was accomplished. All experiments on ligand-DNA interaction were performed in 0.06 M tris buffer, pH =7.4, at 25˚C. Titration of the mentioned compound with increasing amounts of ctDNA, resulted in a decrease in molar absorptivity (Hyperchromic in λmax) of the π□π* absorption band as well as a small red-shift (4nm). The CD spectra of ctDNA in the presence of compounds showed a band at 275nm and a negative band at 248nm. In comparison with the characteristic features of the B-form DNA, which are seen in each figure, some changes were observed in the CD plots of DNA in the presence of different concentrations of these compounds. These results are an indication of binding these compounds to DNA minor

groove without intercalation and induce ctDNA conformational changes.

Keywords: dipicolinic acid, minor groove

O-11-729-7

Medicinal plants used to control Diabetes Mellitus in alloxan-induced diabetic male rabbits

Nadir Ali Rind

Institute of Biotechnology and Genetic Engineering, University of Sindh, Jamshoro, Pakistan

The study was carried out to investigate whether 1% Garlic, Cinnamon and Ginger could decrease the glucose, Cholesterol and Urea level in controlled and diabetic rabbits. The variable affects in body weight in experimentally alloxan induced diabetic male rabbits were noted. Fifteen male rabbits were divided into five experimental groups such as normal control, diabetic control, diabetic Garlic, Ginger and Cinnamon-treated. The diabetes mellitus (DM) was induced in the rabbits using 150 mg/kg of alloxan. Normal control rabbits were injected with 0.9 % (NaCl) Normal saline. The diabetic treated group was given extract 400ml/rabbit of each medicinal plants (1% extract) orally every day for 15 days after induction of Diabetes Mellitus. At the end of the fifteen days of experiment blood samples were collected to determine glucose, Cholesterol and Urea concentration. The results showed that 1% cinnamon brought down serum glucose level from 316mg/dl to normal level 145mg/dl. For quantitative analysis 21 male rabbits were taken and given different doses of (0.5%, 0.75%, 1%, 1.25% and 1.50%) led to lowering of blood glucose level in diabetic treated male rabbits. The maximum fall of glucose was observed in 1% cinnamon brought down serum glucose level from 316mg/dl to normal level 150mg/dl after eighteen days of treatment. The findings from this study suggest that the aqueous extract of cinnamon may be prescribed as dietary therapy and drug treatment for controlling diabetes mellitus. It was concluded that cinnamon might be used in diabetic patients to prevent Serum Glucose Level.

Keywords: diabetes, garlic, cinnamon, ginger, alloxan, glucose level, male rabbits

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P-10-826-1

Effect of temperature on kinetics properties of cytochrome b2 (NAD-independent lactate dehydrogenase, EC 1.1.1.27) from Satureja hortensis

Laleh Arzi [1], Ezzatollah Keyhani [2], Jacqueline Keyhani [2]*

1- Institute of Biochemistry and Biophysics, University of Tehran, Iran, 2- Laboratory for Life Sciences, Tehran, Iran

Satureja hortensis L. (summer savory) is well known in Iranian traditional medicine as a remedy for various ailments, but research on its basic biochemistry is still very scarce. Flavocytochrome b2 (L-(+)-lactate ferricytochrome c oxidoreductase) (EC 1.1.2.3) is a tetramer, in which each protomer contains both FMN and protoheme IX. It takes part in a catalytic reaction that transfers electrons from lactate to cytochrome c (or other electron acceptors such as potassium ferricyanide) and then to the terminal respiratory chain. In this work, the enzyme activity was investigated in S. hortensis leaves extract. Flavocytochrome b2 activity was measured by following reduction of potassium ferricyanide in the presence of lactate and EDTA. Assays were performed in the spectrophotometer and at different temperatures. Polyacrylamide gel electrophoresis of the extract was performed under non-denaturating conditions and followed by activity staining in the presence of lactate and tetrazolium blue. pH activity profile indicated optima at pHs 8.0 and 9.5. With lactate, as substrate, Km (millimolar) and Vmax (micromolar/min/mg prot) were, respectively, 2.6 and 0.47 at pH 8.0, and 6 and 0.94 at pH 9.5 at normal temperature. Kinetics parameters were also determined at 70˚C, giving the following results: Km (millimolar) and Vmax (micromolar/min/mg prot) were, respectively, 1.2 and 0.4 at pH 8.0, and 1.66 and 0.77 at pH 9.5. Electrophoresis revealed two distinct bands. Data showed that at least two cytochrome b2 isoenzymes were present in S. hortensis leaves and that the enzymes exhibit thermostability at 70˚C.

Keywords: cytochrome b2, kinetics properties, Satureja hortensis, thermostability

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P-10-841-6

Study the anti-tumoral, anti-angiogenic and anti-metastatic effects of a plant product ACA-1

Mahmoud Mahmoudi [1], Tooba Ghazanfari [2], Shahrzad Zamani Taghizadeh Rabe [2]*

1- Pharmacy School, Mashhad University of Medical Sciences, 2- Immunology Research Center, Bu-Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran

ACA1 plant product is an aqueous extract and has been used in traditional medicine in Iran. Anti-tumoral activity of ACA-1 on stomach cancer (AGS) cells and its mechanism of action is demonstrated. AGS cells were treated by different concentrations of ACA-1 (1-5 mg/ml). Cytotoxicity effect of ACA1 on AGS cells was determined by MTT assay. The cell death pattern was determined using AnnexinV-FITC and propidium iodide staining by flowcytometry. Boyden Chamber Assay was used for evaluation of the invasion of cancer cells through the porous membrane. Caspase 8 and 9 enzymatic activities were measured using labeled peptide by ELISA. ACA1 showed strong and dose-dependent cytotoxicity effect on AGS cells by induction of early apoptosis. Increase in caspase 8 and 9 activities was involved in this process. Also, ACA1 decrease invasion on AGS cells. So, it could be a good candidate as a new anti-tumoral product against gastric adenocarcinoma.

Keywords: plant product ACA-1, apoptosis, angiogenesis, cell invasion

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P-10-1024-1

Effect of aluminum on the expression of SIPK in suspension-cultured tobacco cells

Atefeh Payez [1], Faezeh Ghanati [1], Seyed Mahdi Seyedi [2]*

1- Department of Plant Science, faculty of Science, Tarbiat Modares University, Tehran-Iran, 2- National Institute of Genetic Engineering and Biotechnology, Tehran-Iran

Toxicity of heavy metals for plants is usually accompanied by accumulation of reactive oxygen species (ROS). It has been suggested that control of plant response to this phenomenon is mediated by mitogen-activated protein kinases (MAPKs). In tobacco, the major

ROS-induced MAPK is salicylate-induced protein kinase (SIPK) that is influenced by many biotic and abiotic stresses. The present paper reports on the effect of Al on the expression of SIPK in the suspension-cultured tobacco cells (Nicotiana tabacum L. cv. Burley 21), which is a sensitive plant to Al stress. The cells were grown in LS medium and were sub-cultured every one week. The synchronized cells in their logarithmic growth phase (d7), were treated with 80 µM AlCl3 for 6 and 12 hours. After extraction of RNA from cells, expression of SIPK gene was assayed, using RT-PCR technique with 18S as an internal control. The results showed that the expression of SIPK increased by Al (both after 6 and 12 h of the treatments), compared with that of the control cells. The results indicated that MAPK cascade is involved in transmitting of Al stress signal.

Keywords: aluminum, MAPK cascade, Nicotiana tabacum, SIPK, tobacco cells

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O-10-750-2

Study of cytotoxic and apoptogenic properties of Hydroalcoholic saffron extracts in hepatocellular human carcinoma (HepG2)

Azam Brook [1], Jalil Tavakkol afshari [2], Seed hadi Mosavi [3]*

1- Bu-Ali Research Institute, Immunology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, 2- Department of Pharmacology & Pharmacological Research Centre of Medicinal Plants, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, 3- Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Saffron (dried stigmas of Crocus sativus L.) is a rich source of carotenoids and is known for its anti-cancer and anti-tumor properties. In this study cytotoxic and apoptogenic properties of Hydro alcoholic saffron extract was evaluated in human hepatocellular carcinoma (HepG2). Malignant and non-malignant cells (L929) were cultured in DMEM medium and incubated with different concentrations of hydro alcoholic saffron extract (200 to 2000µg/ml). Cell viability was quantitated by MTT assay. Apoptotic cells were determined using PI staining of DNA fragmentation by flow cytometry (sub-G1 peak). ROS was measured using DCF- DA by flow cytometry analysis. Saffron could decrease cell viability in cancer but not in non-malignant cells in a concentration and time dependent manner. The IC50 values were determined 1800(µg/mL) for72 hour. Saffron induced a sub-G1 peak in flow cytometry histogram of treated cells compared to control indicating apoptotic cell death is involved in saffron-induced toxicity. Also saffron extracts couldn't induce generation of ROS. It might be concluded that saffron could cause cell death in HepG2 cells, in which apoptosis or programmed cell death play an important role. Saffron could be also considered as a promising chemotherapeutic agent in cancer treatment in future.

Keywords: Crocus sativus L, cytotoxicity, apoptosis, HepG2

P-10-793-1

Protective effect of aqueous saffron extract on the genotoxicity and cytotoxicity effect of cadmium on mice liver

Maryam Adelipour [1], Ali Zaree Mahmoudabady [2], Moslem Jafari Sani [2], Somaye Malmir [2]*

1- Biochemistry Department Faculty of Medicine, Baqyiatallah University, Tehran, Iran, 2- Biochemistry Department & Molecular Biology Research Center, Baqyiatallah University, Tehran, Iran

Heavy metals are one of the most important industrial and environmental pollutants for human life. Studies have shown that these compounds have toxic effects on human organs. The injuries probably induced by genotoxicity and cytotoxicity mechanism. This study we evaluated the saffron protective effect on the genotoxicity and cytotoxicity in liver tissue of mice that was exposed to cadmium. 20 mice (25-30 gr) were divided in 4 group (1 normal & 1 negative control (saffron extract) & 1 positive control (cadmium) & 1 treated (Cadmium with saffron), the concentration of saffron liquid extract was 5 mg/dl. The extract (5 ml/kg) was injected to mice peritoneally four times: 0,12h, 24h and 36h. Then 1h after last injection cadmium solution (30µM) was injected peritoneally; animals were killed and liver tissue obtained. Enzyme activity and glutathione and Malondealdehyde (MDA) concentrations for cytotoxicity effect were measured and using cammet assay the genotoxicity effect were investigated. Glutathione concentration was significantly decreased whereas the enzyme activity and MDA concentration increased. DNA fracture in cadmium exposure group significantly increased but in saffron treated group it was significantly reduced. These results showed that saffron extract has a suitable protective effect against the toxic effect of cadmium. Anticytotoxicity and antigenotoxicity effect of saffron could refer to its antioxidant property. Therefore the saffron consumption could be as a suitable therapy for heavy metals genotoxicity.

Keywords: saffron, cadmium, cammet assay, genotoxicity, cytotoxicity

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P-10-518-2

Effects of chicory on HgCl2 induced hepatotoxicity in rats

Mahsa Afrough, Fakhri Kiani, Hosein Najafzadeh*

Faculty of Veterinary Medicine, Shahid Chamran University, Ahwaz, Iran

Chicory (Cichorium intybus) is a plant that cultured in some area in Iran. All of parts of the chicory especially its leave and root have medicinal properties. It is traditionally used for treatment icterus, renal failure, gout and arthritis in human. Important side effects were not reported from this plant. In this study the prophylactic effect of chicory extract was evaluated in HgCl2 induced hepatotoxicity in rats. HgCl2 was injected in one group of rats. Chicory extract was co-administrated with HgCl2 in other group. One group was kept as control. Rats were euthanized 48 and 72 hours later. Blood was collected and serum concentration of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) was measured. The serum concentration of ALT and AST was significantly increased by HgCl2. These changes were prevented by chicory extract. Thus, chicory extract has protective effect on HgCl2 induced hepatotoxicity in rats.

Keywords: chicory extract, HgCl2, hepatotoxicity, ALT, AST, ALP, rats

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P-10-833-2

Evaluation antidiarrheal effect of pomegranate peel extract

Samanne Olapour, Elaheh Mousavi, Masoume Sheikhzade, Omid Hoseininezhad, Hosein Najafzadeh*

Faculty of Veterinary Medicine, Shahid Chamran University, Ahwaz, Iran

Pomegranate is an important source of antioxidants, potassium and vitamin C. Pomegranate has anti-coagulative, anticancer, cholesterol lowering and sedative effects. The aim of this study was to evaluate antidiarrheal effect of pomegranate peel extract in rat. Hydroalcoholic peel extract of pomegranate was prepared by maceration method. In on group of rat, castor oil was orally administrated at dose 0.5 ml and the number of defecation and weight of feces was determined within 4 hours (control group). In other group of rats, peel extract of pomegranate was orally given at dose 400mg/kg and 30 min later castor oil was orally administrated as control group. In third group, diphenoxylate was orally given at dose 5mg/kg and 30 min later castor oil was orally administrated as control group. The results showed that pomegranate peel extract decreased the number of defecation and weight of feces in comparison to control group but this decreasing was not statistically different. Thus, pomegranate peel extract has antidiarrheal effect lesser degree than diphenoxylate.

Keywords: pomegranate peel extract, diphenoxylate, antidiarrheal effect, rats

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P-10-793-3

Protective effect of aqueous saffron extract, on dichloroethylsulfide (HD)-induced DNA damage in macrophage cells

Frogh Sharif, Ali Zaree Mahmoudabady*

Biochemistry Department & Molecular Biology Research Center, Baqyiatallah University, Tehran, Iran

The aim of the present study was to estimate the antigenotoxicity effect of aqueous saffron extract, in macrophage cells treated with cadmium chloride as a heavy metal. Macrophage cells were obtained from peritoneum of mice (2x106 cells) divided to six groups (negative control, positive control HD, saffron, saffron+ HD, HD+Saffron). The test groups were treated with LD50 concentration of HD and 50mg/kg of aqueous saffron extract. The potential antigenotoxicity was determined by the comet assay as the extent of DNA fragmentation in mouse macrophage in vitro. The comet assay detects DNA strand breaks induced directly by genotoxic agents as well as DNA fragmentation due to cell death. Another oxidant agent, KMnO4, already proved to be genotoxic, was used as a positive control. The results of the study demonstrated that the genotoxicity of HD was comparable with that of KMnO4. However, the genotoxic activity of HD may be significantly reduced by pretreatment with 50mg/kg of aqueous saffron extract (approximately 60%) but didn't show any protective effect in post-treatment of intoxicated cells with saffron extract.

Keywords: comet assay, HD, macrophage, genotoxicity, saffron extract

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O-10-414-1

Antioxidant and radical scavenging activity of eriocitrin, a glycosylated flavanone from Citrus Limon (L.)

MohammadAli Farboodniay Jahromi [1], Zahra Hosseini [1], Mehrdad Niakosari [2], Alireza Khodavandi [3]*

1- Division of Medicinal Plants Research, Fars Technological and Environmental Research Center, Shiraz, Iran, 2- Department of Food Sciences and Technology Shiraz University, Shiraz, Iran, 3- Department of Biomedical Sciences, University Putra Malaysia (UPM)

This study deals with the investigation of in vitro antioxidant activity of eriocitrin, a flavanone glycoside, which was isolated by column chromatographic separation and systematic fractionation of a methanolic extract of citrus limon (L.) peel over silica gel. The isolated compound was identified through the usual methods of analysis and comparison with the authentic sample (mmp, Co-TLC and UV). Following the lead of activities reported for certain varieties of citrus fruit peels, antioxidative properties and free radical scavenging activity of the isolated eriocitrin was evaluated by two different systems, namely DPPH and carotene/linoleic acid assays. The compound demonstrated a significant ($p<0.05$) 1,1-diphenyl-2-picrylhydrazyl free radical scavenging ability. The percentage inhibitory effect was found to be 96.68% 0.56 which was almost comparable to that of standard antioxidant BHT (97.54% 0.63). The results of this study lies in close conformity with previously reported activities for various flavonoids. This compound fulfills some structural requirements like o-dihydroxy system for the manifestation of free radical scavenging activity. Further investigation with the total and individual phenolic components and the estimation of their possible synergistic effects remains to be the relevant interesting aspects in order to locate other active constituents of the peel extract.

Keywords: eriocitrin, radical scavenging activity

P-10-924-1

Allium hirtifolim (Iranian Shallot) as a anti cancer

Hamideh Ghodrati Azadi [1], Gholam Hossein Riazi [2], Seyed Mahmood Ghaffari [2], Shahin Ahmadian [2], Taraneh Javdani Khalife [2]*

1- Department of Basic Sciences, School of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran, 2- Institute of Biochemistry and Biophysics, University of Tehran,

Allium hirtifolim Boiss. (Persian Shallot) belongs to Allium genus (Alliaceae family). We investigated the in vitro effects of extract of A. hirtifolium and its Allicin on the proliferation of HeLa (cervical cancer), MCF7 (human, Caucasian, breast, adenocarcinoma) and L929 (mouse, C3H/An, connective) cell lines. Then this study aims at defining the anti-microtubule activities of A. hirtifolium and its Allicin and examining its effects on nerve cell microtubules to investigate the anticancer effects of A. hirtifolium. Our results showed that components of A. hirtifolium might inhibit proliferation of tumor cell lines. This inhibition in HeLa and MCF-7 cells was dose-dependent. The presence of Allicin was evaluated by TLC method in bulbs and the extract of A. hirtifolium was analyzed by HPLC. MTT test was performed 24-48 and 72h after cell culture. A significant decrease in cell lines was observed in HeLa and MCF-7 as compared to L929 cell lines. DNA fragmentation analysis revealed a large number of apoptotic cells in treated HeLa and MCF-7 cell groups, but no effects in L929 cells. Therefore A. hirtifolium might be a candidate for tumor suppression. Inhibition of MTs polymerization induced by A. hirtifolium and its ability to bind to tubulin as a ligand

was tested through turbidimetry assay then investigated by Transmission Electron Microscopy (TEM). A. hirtifolium displayed growth inhibitory activity against HeLa and MCF-7 cells with IC50 value of 20 and 24µg/ml, respectively for 72 h. The concentration of A. hirtifolium necessary to inhibit the assembly of MTs by 50% was 96µg/ml. This plant decreased MTs polymerization. We suggest A. hirtifolium can be an effective ligand for cancer therapy.

Keywords: Allicin, Allium hirtifolium, dynamic instability, microtubule

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P-10-929-1

The heart of date palm: Its nutritional and functional constituents

Ali Movahed, Mohammad Mehdi Mohammadi, Samad Akbarzadeh, Iraj Nabipour*

Faculty of Medicine, Boushehr University of Medical Sciences, Bushehr, Iran,

Kabkub is the main cultivated species of date palm, phoenix dactylifera L in southern part of Iran, Bushehr. The tree's terminal buds (heart of palm or palmitos) is widely used and believed to have many nutritional values. We analyzed the total carbohydrates, proteins, minerals, fats and dietary fiber in the sample. Fats were extracted and analyzed using Bligh-Dyer method and gas chromatography. Total proteins and carbohydrates were determined by Kjeldahl and Lane–Eynon methods respectively. The minerals were analyzed by atomic absorption spectroscopy. The unsaturated fatty acids present in the sample were mainly linoleic, linolenic and oleic acids, all together make 27.2 % of the fats and palmitic acid was the main saturated fat. The protein and carbohydrate content of the palm heart were 0.3 g and 2.29 g per one ounce, respectively. The minerals present in the sample were mainly Zn, Fe, Mg, P, Mn, Ca, Cu, Na, K and Se which all have potential benefits for health. This study conclude that, having many essential fatty acids, minerals and fiber the palm heart can be used as a good source of nutritional and functional nutrients. We suggest more investigations about the micronutrients present in the product including vitamins and amino acids.

Keywords: date palm, Kabkub, palmitos, palm heart, nutritional values

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P-10-841-9

The cytotoxic and pro-apoptotic effects of Pleurotus Florida body extract on cancer cell lines

Tooba Ghazanfari [1], Mahmoud Mahmoudi [2], Shahrzad Zamani Taghizadeh Rabe [3], Davood Jamali [3], Zahra Siadat [4], Nafiseh Tabasi [5]*

1- Department of Immunology, Shahed University of Medical Sciences, 2- Bu-Ali Research Institute, Immunology Reaserch Center, Mashhad University of Medical Sciences, 3- Bu-Ali Research Institute, Immunology Research Center, Mashhad University of Medical Sciences, 4- Department of Nutrition and Biochemistry, Faculty of Medicine, Mashhad University of Medical Sciences, 5- Bu-Ali Research Institute, Immunology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

The use of mushrooms has been recommended in Traditional Medicine is meant for treatment of different disease including cancer. Nowadays, different medical approaches are used for the treatment of cancers, but in most cases they are not effective or have unpleasant side-effects. This enforced scientists to study more effective drugs with less toxicity. This study evaluated the cytotoxicity effect of aqueous extract of Pleurotus florida body on cytotoxicity of some cancer cell lines. The pattern of cellular death in sensitive cell line is evaluated too. Cancer cell lines were provided by Natural Cell Bank of Iran and incubated in culture medium. Aqueous extract was prepared from Pleurotus florida body. The growth inhibitory activity of this extract was determined for different cancer cell lines and fibroblast cell line using colorimetric MTT assay. Apoptotic cells were determined using AnnexinV-FITC and propidium iodide (PI) staining of treated cells by flow cytometry. The results showed that the aqueous extract induced a significant inhibitory activity for cancer cell lines in a dose-dependent manner. It exhibited the most cytotoxicity effect against AGS. This toxicity was induced by apoptotic and non-apoptotic cell death in AGS cell line. Edible mushroom, Pleurotus florida had cytotoxicity effect on cancer cell lines especially gastric adenocarcinoma cell line through apoptotic and non-apoptotic cell death. Further studies are needed to elucidate the mechanisms by which this extract acts.

Keywords: Pleurotus Florida, cancer cell lines, cytotoxicity, apoptosis, necrosis

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P-10-512-3

Investigation of antifungal effects of Pterocarya Fraxinifolia and characterization of an anti-fungal cream

Sadegh Hasannia [1], Nazanin Pirooznia [1], J. Golchai [2], K. Khalili Ghadikolai [2], E. Dasi Sangachini [2], M. Rasa [2]*

1- Biology Department, Faculty of Sciences, University of Guilan, Iran, 2- Dermatology department, Guilan University of Medical Sciences, Guilan, Iran

Pterocarya fraxinifolia is an indigenous plant found in north of Iran. Native people and farmers use the leaves of this tree as antifungal foot infections. Its neurotoxic effect has also been reported. Dermathopytes are the main cause in fungal infections like dermaphytosis and Tinea, in which keratinated region like hair, nail and external layer of skin especially foot fingers are involved. The United State spends 400 million dollars annually for the treatment of the disease. Moist warm conditions are suitable for fungi growth and cause infection, therefore infection is commonly seen in athlete's foot fingers known as athlete's foot. However the disease isn't a serious risk for human health but it can be dangerous for diabetes and HIV patients. In this study we used PDA (Potato-Dextrose Agar) and NB (Nutrient Broth) medium for the cultivation of fungi. Several conventional extraction methods are used but hydroalcoholic extraction with 50%-50% (w/w) ethanol-water concentration is preferred. After evaporation of solvent in 37°C, the dry residue was dissolved in water and used for inhibition analysis. We separated seven bands with TLC technique and determined the influence of each band separately on fungi growth. Base of absorption inhibition and previous studies the principle structure in the extract was 5-hydroxy 1,4 naphtaquinone. Plates were examined for growth and colony diameter then the minimum inhibition concentration (MIC) was determined. Different formulations regarding their appearance, particle size and phase homogenesity, emolliency and viscosity were evaluated. 2% of extract was added to make a proper formula having the best antifungal effect.

Keywords: Pterocarya fraxinifolia, fungal infections, athlete's foot

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O-10-952-2

Effect of essential oil from the wild Satureja khuzestanica Jamzad on activity and gene expression of some hepatic glycoregulatory enzymes in normal and diabetic rats

Reza Shahsavari [1], Abdolvahab Ehsani- Zonouz [2], Ghasem Ahangari [3], Mohsen Firoozrai [3]*

1- Department of Biochemistry, School of Medicine, Lorestan University of Medical Sciences, Khoramabad, Iran, 2- Department of Biochemistry, School of Medicine, Iran university of Medical sciences, Tehran, Iran, 3- Department of Clinical Genetics, National Institute of Genetic Engineering and Biotechnology, Tehran, Iran

This study was to evaluate the effect of the wild Satureja khuzestanica essential oil (SKEO) on activities and genes expression of hepatic glucokinase (GK), glycogen phosphorylase (GP) and phosphoenolpyruvate carboxykinase (PEPCK) in normal and diabetic rats. The wild SKEO was orally administered at dose (100 mg/kg per day) to normal as well as diabetic rats for 21 days. The levels of mRNA were determined using the quantitative real-time RT-PCR technique. The plasma glucose concentrations of diabetic rats receiving the wild SKEO compared with diabetic control were significantly decreased ($p<0.001$). Hepatic GK and GP activities and their relative mRNA levels of diabetic rats treated with the wild SKEO moderately increased compared with diabetic control ($p>0.05$). The activity of hepatic PEPCK and its relative mRNA levels were significantly decreased in normal rats treated with the wild SKEO ($p<0.001$). The enhancement of PEPCK activity and its relative mRNA levels of diabetic treated rats with SKEO was significantly decreased compared with diabetic control ($p<0.001$). In conclusion, our results indicate that an excessive inhibition of PEPCK as well as a moderate enhancement of GP and GK in liver of STZ-induced diabetic rats treated with the wild SKEO may contribute to the plasma glucose lowering action of SKEO that seems to be in relation with antioxidant properties of SKEO.

Keywords: antihyperglycemic, gene expression, glucokinase, glycogen phosphorylase, phosphoenolpyruvate carboxykinase, Satureja khuzestanica essential oil, diabetic rats

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O-10-878-2

Variation in the visfatin gene may alter the necessity of oral antidiabetic drugs in type2 diabetes patient

Khadijeh Mirzaei [1], Hourieh Saghafi [1], Mohammad Javad Hosseinzadeh [2], Azam Najmafshar [2], Nazila Jafari [2], Farzaneh Karimi [2], Mazaher Rahmani [2], Arash Hossein-nezhad [2]*

1- BioNano Group of Endochrinology and Metabolism Research Center, 2- Department of Nutrition & Biochemistry, Tehran University of Medical Sciences, Tehran, Iran

Type 2 diabetes is associated with significant morbidity and mortality. Treatment of this disease with oral antidiabetic drugs is famed by considerable interindividual variability in pharmacokinetics and clinical efficacy. Genetic factors are known to contribute to individual differences in bioavailability, drug transport, metabolism and drug action. We investigated the role of visfatin gene polymorphism (rs2110385) on requisite of oral antidiabetic drugs in type2 diabetes patient. In a cross-sectional study we recruited 94 patients with type 2 diabetes. Laboratory tests were FBS, OGTT, HbA1C, fasting serum Visfatin and Insulin. HOMA-IR and QUICKI indexes were calculated. Genotyping for SNP was performed using the PCR-RFLP method. We found no significant difference in FBS, G2h and HbA1C levels and fasting insulin concentration, HOMA and QUICKI indexes between genotypes in patients. The required dose of glibenclamid for preservation glucose homeostasis at the equal point between patients was lower in genotype GG compared to others but regarding to dose of metformin there are no differences between genotypes. Regarding that glibenclamide is classified in insulin secretagogues class; it seems that visfatin gene variation modifies the insulin secretion. The effect of this visfatin promoter gene polymorphism on visfatin expression should be investigated.

Keywords: visfatin genotype, antidiabetic drug, HOMA, QUICKI, type 2 diabetes

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O-10-996-2

Changes in xenobiotic metabolizing enzymes and oxidative stress-related factors in dimethylhydrazine-induced colon carcinogenesis in rats

A. Dadkhah [1], Abdolamir Allameh [1], H. Khalafi [2], F. Fatemi [2], N. Davoodian [2], J. Ashrafi-Helan [3]*

1- Department of Clinical Biochemistry, Faculty of Medical Science, Tarbiat Modares University, Tehran, Iran, 2- Radiation Application Research School, Nuclear Science and Technology Research Institute, Tehran, Iran, 3- Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran

In this study, we have examined the effects of dietary caraway essential oils on colon carcinogenesis induced by 1,2-dimethylhydrazine in rats. Male Wistar rats were divided into 6 groups (n=36). Group 1 served as the untreated control, and the group 2 received only DMH (20 mg/kg b.w) injection (s.c) once a week for a period of 5 weeks. The rats in groups 3 & 4 received only commercial pellet diet containing 0.01 and 0.1 % of caraway oil and the group 5 & 6 received diet as group 3 and 4 along with the DMH injections until the end of whole experimental period of 16 weeks. Our results indicate that aberrant crypt foci (ACF) incidence induced by DMH were found to be significantly inhibited (87.5 and 72.5%, respectively) in colon of rats treated with dietary essential oils. To find out the mechanism(s) by which the essential oils reduced carcinogenesis, plasma, liver and colon tissues were collected and analyzed for parameters related to oxidative stress and xenobiotic metabolizing enzymes. Lack of influence of caraway oils on hepatic lipid peroxidation product, superoxide dismutase, catalase and ferric reducing ability of plasma may suggest that the oils do not interfere in these factors in liver tissue. However, DMH-related changes in liver cytochrome P4501A1 and glutathione s-transferae activities were recovered in rats treated with caraway preparation. Hepatic CYP1A1 was readily reversed 29.8 and 35.7%, respectively, in rats fed with diet containing either 0.01% or 0.1% caraway oils. The rate of GST induction in liver due to essential oils was found to be 55 and 38.5 %; respectively. In conclusion, histopathological and biochemical results clearly suggested that essential oils of caraway seeds inhibit colon cancer through interference with hepatic xenobiotic metabolizing enzymes.

Keywords: colon cancer, caraway, essential oil, oxidative stress, xenobiotic metabolizing enzymes

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P-10-697-3

Medicinal plants for diabetes in Iran

Ahmad Gholamhosseinian, Ebrahim Abbasi*

Department of Biochemistry and Physiology Research Center, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Over the last three decades diabetes has emerged as the major cause of adult morbidity and mortality in Iran. The main determinant of the risk of complications with diabetes type-1 and type-2 are the total lifetime blood glucose levels. In this respect medicinal plants are being used by an increasing number of patients who typically do not inform their clinicians of concomitant use. The present paper reviews of plants that have been mentioned/used in Iranian traditional medicine and have shown experimental or clinical anti-diabetic activity. Literature on clinical trials retrieved from a systematic search of Pub Med, MEDLINE, Iran Medex, Iranian Journal of Diabetes & Lipid Disorders and Journal of Pharmaceutical Research between 1955 until 2009. The search terms were diabetes, medicinal plants and glucose. Based on the available evidence, several plants such as Allium sativum L, Anethum graveolens L, Rhus coriaria L, Peper nigrum L, Cinnamomum zeylanicum Nees, Capsicum frutescens L, Teucrium polium, Silybum marianum (Gaertn), Plantago ovata L, Ocimum basilicum, Silymarin, Plantago psyllium L, Allium porrum L, Berberis Vulgaris, Cynara scolymus, Morus Nigra leaves, Borage officinalis, Tribulus tertestris, Urtica dioica, Teucrium polium, Myrtus communis L and Trigonella foenum-graecum can lower blood glucose in patients. Plants commonly used are well tolerated by the patients, and have a safety profile, which make them potentially valuable for treatment.

Keywords: diabetes, medicinal plants, glucose

P-10-1061-1

Identification and purification of two mammalian toxins from the venom of the scorpion Hottentotta schach (Buthidae)

Mohammad Ghane [1], Abbas Zare M [2], Hadi Rabei [2], Naser Mohammadpur [2], Azade Habib [2]*

1- College of Science, Science & Research Unit, Islamic Azad university, Tehran, Iran, 2- Department of Venomous Animals and Antivenom Production, Razi Vaccine and Serum Research Institute, Karaj, Iran

Toxic peptides are the main factors in scorpion venom cause toxicity, (their amount being 1- 3 percent of total venom.). Most of the scorpion toxins have been isolated from the venoms of scorpions in the family Buthidae. The scorpion Hottentotta Schach belonging to the Buthidae family is widely found in the western region of Iran, but no published articles has been found to date on its venoms. In this study, we aimed to isolate and purify mammalian toxins from the venom of the scorpion Hottentotta Schach present in Iran. The crude venom was dialyzed against deionized water and centrifuged in order to separate soluble proteins from the insoluble mucoproteins and the soluble proteins were applied on a sephadex-G50 gel filtration. The toxicity of each fraction was determined by I.V injection to mice and toxic fractions were further purified by two steps ion-exchange (anion) and RP-HPLC chromatography. The purity of the final toxic protein fractions was checked and confirmed by RP-HPLC column & SDS-PAGE. Two neurotoxins, termed HS311 and BS413 were purified. Results showed that the LD50 of basic venom on mice is 45µg/mice and contain at least 100 peptides from high molecular weight to low molecular weight out of which two of the peptides which showed toxicity to mice were isolated and purified. LD50 of these toxins were 3 and 2.17µg/mice, respectively. The molecular weight of the purified toxins were 7860 and 7600 Da, respectively, as determined by SDS-PAGE. In conclusion this study showed that the main factor in the toxicity of scorpion (Hottentotta Schach) venom is a low molecular weight peptide. The result of this research shows that purification of the toxic peptides from the crude scorpion venom can be achieved in few steps.

Keywords: scorpion, venom, identification, purification, toxin, Hottentotta schach

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P-10-1060-1

Hypocholesteremic and antioxidant effects of Dorema glabrum extract in rats fed high cholesterol diet

Gholamreza Dehghan [1], G. Fatholahi [2], N. Sheikhzadeh [2], N. Ahmadiasl [3]*

1- Department of Biology, Faculty of Natural Science, University of Tabriz, Tabriz, Iran, 2- Payame Noor University of Mashhad, Mashhad, Iran, 3- Department of Physiology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Dorema glabrum is a perennial herb that belongs to umbelliferae, growing in Iran and neighboring countries. In the present work we studied the effects of hydro-alcoholic extract from aerial parts of D. glabrum (DHAE) on serum lipid metabolism and antioxidant potential in serum and liver of rat, fed high cholesterol diet in vivo. A group of 24 male albino rats each weighing 120±5.0 g, was divided into four groups. Group I was used as negative control and fed on standard diet and orally administered 1 ml distilled water. Group II was used as positive control and fed on high cholesterol diet and orally administered 1ml distilled water. Groups III and IV were fed on high cholesterol diet and orally administered DHAE (0.2 and 0.4g/kg body weight/day, respectively). The acute toxicity test (LD50) demonstrated that D. glabrum was not lethal up to a dose of 2 g/kg after oral administration. The liver total antioxidant power increased by doses 0.2 and 0.4 g/kg/day. DHAE significantly decreased ($p<0.05$) plasma LDL-Cholesterol and triglyceride as compared with positive control (group II). The activities of catalase and peroxidase significantly increased in the liver of rats treated with extract compared with positive control group ($p<0.05$). These results lead to the conclusion that DHAE shows relevant antioxidant activity and decreases plasma levels of triglyceride and cholesterol in rats fed high cholesterol diet.

Keywords: ntioxidant enzymes, Dorema glabrum, FRAP, lipid profile, rat

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P-10-253-1

The effect of pomegranate juice consumption on oxidative stress markers in human plasma and urine

Asghar Zarban, M. Malekaneh, M. Khorashadizadeh, M. R. Boghraty*

Department of Biochemistry, Birjand University of Medical Sciences, Birjand, Iran

Free radicals and oxidative stresses may play a role in pathogenesis of many diseases, so using antioxidants, especially natural antioxidants, can protect biological systems against them. Pomegranate juice is a source of antioxidants, particularly polyphenolic compounds, which can be effective for this goal. 20 healthy men voluntarily took part in this

study with daily drinking of 250 ml of pomegranate juice for a month. The plasma and urine samples of them were taken before and after study. Plasma and urinary total antioxidant capacity (TAC), lipid peroxidation levels and DPPH radical scavenging activities were analyzed. Also urinary phenolic contents were evaluated by Folin-Ciocalteu method. The plasma and urinary lipid peroxidation levels were reduced significantly ($p< 0.02$). There were no significant increase in plasma TAC and DPPH radical scavenging activity but a significant increase was shown in the urine samples after the study. Also the levels of urinary phenolic contents were increased and showed direct correlation with urinary TAC and DPPH radical scavenging activity. Pomegranate juice consumption result in an improvement of oxidative stress markers and reducing the lipid peroxidation levels.

Keywords: pomegranate, oxidative stress, antioxidant activity, lipid peroxidation

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P-10-253-2

Polyphenol content, antioxidant and antibacterial activities of different types of honey

Asghar Zarban, M. Khorashadizadeh, A. Naseri, Z. Sepahee*

Department of Biochemistry, Birjand University of Medical Sciences, Birjand, Iran

The health benefits of honey depend on its quality and its quality varies greatly on the basis of the type of flowers used by the bees. Among honey constituents, polyphenols such as flavonoids and phenolic acids may function as natural antioxidants in our diet. The objective of this study was to evaluate polyphenol content, total antioxidant and antimicrobial activity of 25 honey samples obtained from beekeepers and local markets. The total phenolic content of the honey samples was determined by Folin–Ciocalteu method and the antioxidant activity was assessed by ferric reducing/antioxidant power (FRAP) assay. Antimicrobial activity of honey samples were determined by micro-dilution spectrophotometeric method. The total phenolic contents of the honey samples as gallic acid equivalents, ranged from 3.76 to 25.80 mg/100 g. The total antioxidant power as FRAP values of the 10% (w/v) honey solution ranged from 39.0μM to 935.0μM with a large difference in antioxidant profile of various honeys. This study showed antimicrobial activity of honeys against Staphylococcus aureus, Escherichia coli and Candida albicans. There were a marked correlation between the total antioxidant power and antimicrobial activity of honey samples and their total phenolic content ($p<0.001$). Also, there was a significant correlation between color intensity of samples with total phenolic content and also total antioxidant power of samples ($p<0.001$, $r=0.960$ & $p<0.001$, $r=0.951$, respectively). Some honey types, especially darker honeys, are rich in phenolic compounds which are directly correlated with color intensity, antioxidant and antimicrobial activities of different honeys. These phenolic contents and biological properties may consider as new markers for quality control and standardization of honeys.

Keywords: honey, phenolic content, antioxidant activity, antimicrobial activity

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O-10-491-1

Anti-growth effect of n-hexane total extract of Curcuma longa on cell line A549

N. Zarghami, M. Pourhassan, M. Rahmati, A. Alibakhshi, R. Arezoomand, J. Ranjbari*

Research Center of Drug Applied Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

Curcumin, a phenolic substance derived from curcuma longa rhizome, has powerful anti-tumoral effects. Previous studies have shown these effects by using pure curcumin, but effect of total extract of curcuma longa on growth of lung cancer cell lines has not been studied. Therefore, in this research effect of curcuma longa total extract on growth of A549 was studied. First, rhizome of curcuma longa was rubbed and extracted in the continuous extraction by n-hexane, dichloromethane and methanol, respectively. Then, effective substance concentration (curcumin and its derivatives) in all three phases was determined spectrophotometrically. Then, anti-growth effect of n-hexane extract on cell growth was studied by 24h MTT assay. This study showed that n-hexane phase of curcuma longa total extract has more of curcumin and its derivatives than the other two phases; therefore, effect of n-hexane total extract was performed by MTT assay. After performing MTT assay, anti-growth effect of n-hexane extract was observed and IC50 (inhibitory concentration for killing 50% of cells) was calculated 226.5μg/ml. Result of current study is consistent with result of other studies performed on other cancer cell lines. In these studies anti-tumoral effect of pure curcumin was investigated, while in our study anti-tumoral effect of curcuma longa total extract was investigated. Therefore, based on our result, effective concentration of curcuma longa n-hexane extract can be used for treatment of lung cancer.

Keywords: anti-growth, A549, curcumin, curcuma longa, n-hexane total extract

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P-10-1075-1

The effect of barley seed extract on the serum levels of cholesterol, triglyceride and leptin hormone in streptozotocin-induced diabetic rats

Gholamali Naderi, Mohsen Naseri, Ali Davati, Negar Feizpoor*

Department of Clinical Biochemistry, Shahed University, Tehran, Iran

Diabetes is one of the prevalent diseases, leading to disability and mortality in the world with increasing occurrence. Most of the mortality of the people suffering from diabetes is due to atherosclerosis and its enduing cardiovascular disorders. This study deals with the effects of consuming barely aqueous extract on serum level of total cholesterol and triglyceride and leptin hormone in the fasting blood sample of streptozotocin-induced diabetic and non-diabetic rats. Forty male Wistar rats were randomly divided into 4 groups of diabetic (with normal regiment), barely aqueous extract treated diabetic (with normal regiment mixed with barely aqueous extract for at the weight ratio of 1%), non-diabetic (with normal regiment) and barely aqueous extract treated non-diabetic (with normal regiment mixed with barely aqueous extract for at the weight ratio of 1%) groups. Level of cholesterol, triglyceride and leptin hormone in the serum of fasting animals in different times at the beginning of the study, after diabetes induction (in diabetic groups) and after one, three and four weeks barely extract treatment was measured and the trend for their changes experienced

were examined during the study. The results revealed that diabetes induction results in increase in serum total cholesterol in extract treated diabetic and untreated diabetic groups but, oral consumption of barely aqueous extract results in decrease in cholesterol level at the first week and this decrease was significant at fourth week ($p<0.05$). In untreated diabetic groups, lack of extract consumption resulted in a partial increase in cholesterol. Level of triglyceride untreated diabetic group and extract treated diabetic group increased after diabetes induction relative to before it. In diabetic groups, level of triglyceride partially decreased at the first week and a significant decrease was seen in the level of triglyceride at the fourth week ($p<0.05$). In the untreated diabetic group, level of triglyceride had a partial increase till the end of study. The level of leptin hormone significantly decreased in diabetic groups ($p<0.01$). In extract treated diabetic group, level of the hormone increased after consumption of extract. This had significantly increasing trend till the end of study ($p<0.01$).The results revealed that barely aqueous seed extract decreases serum level of cholesterol and triglyceride in diabetic rats and level of leptin hormone increases along with insulin and glucose level decreases in the diabetic rats.

Keywords: barely seed, cholesterol, leptin hormone, rat, triglyceride

P-10-1099-1

Antibacterial effects of Nepeta persica extracts against pathogenic bacteria

Mohammad Niakan [1], Javad Safaei [2], Zahra Djafari [2], Hossein Batooli [3], Mojgan Beygi [3]*

1- Shahed University, Medicine faculty, Microbiology Department, Tehran, Iran, 2- Essential oil Research Center, University of Kashan, Iran, 3- Isfahan Research Center of Agriculture and Natural Sources, Isfahan, Iran

Nepeta persica plants used in traditional medicine in the Iran were screened for Activity against bacterial species.Methanol extracts were the most active while Gram positive bacteria were the most sensitive as compared to Gram negative bacteria. The inhibitory effects of methanol extracts of nepeta persica were tested against pathogenic bacteria species by using disc-diffusion assay and macro broth dilution methods, respectively. Appliedmethods.Methanol extracts of Nepeta persica were against two strains of the Staphylococcus aureus (ATCC 25922, 25213) standard bacteria. Plant extracts under five different concentrations (25mg/ml, 50mg/ml, 100mg/ml, 200mg/ml and 300mg/ml) were tested by using the disc diffusion methods. Main methanol extract showed antibacterial activity against bacterial strains. Nepeta persica extract exhibited significant inhibitory effect. Nepeta persica extract showed zone inhibitory Concentration activity at >200 µg/mLconcentration, in general S aureus with 200µg/mL was the most susceptible. However Nepeta persica methanol extract, were found to be inhibiting both gram-positive staphylococcus bacteria. Nepeta persica methanol extract can be a good source of antibacterial agents. However Nepeta persica methanol extract, were found to be inhibiting staphylococcus bacteria.

Keywords: N. persica, antimicrobial effects, methanol extracts

P-10-1127-1

Biochemical study of Juglans regia methanolic extract in alloxan monohydrate induced diabetic male Wistar Rats

Shideh Montasser Kouhsari, Manochehr Teimoori Shaban*

Cellular and Molecular Biology Department, University College of science, School of Biology, University of Tehran, Tehran, Iran

In this research, the effects of methanolic extract of Juglans regia leaves in control and Alloxan monohydrate induced diabetic wistar rats (190-200g) were compared with those of three antidiabetic drugs: Metformin, Glibenclamide and Acarbose. 36 male wistar rats were divided in 6 groups of 6 rats. In Alloxan monohydrate induced diabetic rats blood glucose, TC, TG, LDL/HDL were measured by enzymatic assays. The inhibitory activity of Juglans regia leaves methanolic extract was measured on intestinal alpha-Glucosidase enzymes (Sucrase and Maltase) by a colorimetric in-vitro method. The obtained results indicated that this extract has antidiabetic effects and reduces significantly blood glucose and mildly plasma TC, TG, LDL/ HDL and VLDL in diabetic rats. The activity of intestinal Maltase and Sucrase enzymes decreased 68% and 29% respectively in presence of Juglans regia leaves methanolic extract.

Keywords: alpha glucosidase, alloxan monohydrate, Juglans regia, maltase, sucrase

P-10-1127-2

Biochemical and molecular study of Urtica dioica leaves ethanolic extract in alloxan monohydrate induced diabetic male wistar rats

Shideh Montasser Kouhsari, Andisheh Imani Khoshkhou*

1- Cellular and Molecular Biology Department, University College of science, School of Biology, University of Tehran, Tehran, Iran

In this research, the effects of ethanolic extract of Urtica dioica leaves in control and Alloxan monohydrate induced diabetic Wistar rats (190-200g) were compared with those of three antidiabetic drugs: Metformin, Glibenclamide and Acarbose. Urtica dioica is from Apiaceae family and it has numerous medical benefits, mainly antibronchial, diuretic, antiscurvy and antiasthmatic properties. In this study, 27 wistar male rats were divided in 9 groups of 3 rats. Diabetic rats were obtained by subcutaneous injection of 100mg/kg body weight, alloxan monohydrate. Serum blood glucose was measured by enzymatic assay (glucose oxidase). Also the effect of ethanolic plant extract was compared with antidiabetic common drugs, Metformin, Glibenclamide and Acarbose. For measuring the insulin hormone levels in pancreas, using insulin primer, the RT- PCR assay was done in control and diabetic rats. The obtained results indicated that ethanolic extract of Urtica dioica leaves reduces significantly serum glucose in diabetic rats and its effects are comparable with those of antidiabetic drugs.

Keywords: acarbose, alloxan monohydrate, glibenclamide, metformin, RT-PCR, Urtica dioica

P-10-1127-3
Antidiabetic effects of ethanolic extract of Rhus coriaria fruits in diabetic wistar rats

Shideh Montasser Kouhsari, Saeed Mohammadi*

Cellular and Molecular Biology Department, University College of science, School of Biology, University of Tehran, Tehran, Iran

The extracts of Rhus coriaria fruits are reported to have different medical properties, such as antifungal, anti- inflammatory, antimalaria, antimicrobial, antitumorigenic, antiviral and cytotoxic effects. To determine the antidiabetic effects of R.coriaria ethanolic extract, we have investigated these effects in control and Alloxan monohydrate induced diabetic rats. In three weeks period, the level of plasma glucose was measured enzymatically (Glucose Oxidase assay). Also the level of LDL/HDL, TC, TG, and VLDL was measured by enzymatic assays after treatment of diabetic rats by R. coriaria ethanolic extract. The mRNA level of insulin in pancreas was measured by RT-PCR technique in control and diabetic rats. Our results show that the ethanolic extracts of Rhus coriaria fruits decreases significantly the blood glucose and increase the blood serum HDL. The insulin mRNA level was enhanced mildly after treatment of diabetic rats by this plant ethanolic extract.

Keywords: alloxan monohydrate, glucose oxidase, HDL, insulin, Rhus coriaria

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P-10-1127-4
Molecular and biochemical study of the antidiabetic effects of Vaccinium arctostaphylos ethanolic extract in alloxan monohydrate induced diabetic wistar rats

Shideh Montasser Kouhsari, Aboozar Monavvar Feshani*

Cellular and Molecular Biology Department, University College of science, School of Biology, University of Tehran, Tehran, Iran

For this study we used four groups (n=6) of Wistar rats (200-250 gr): normal control, diabetic control, diabetic treated with ethanolic plant extract and treated with Acarbose. The effects of ethanolic fruit extract of Vaccinium arctostaphylos on plasma glucose levels were measured by enzymatic assay (Glucose Oxidase) in four groups of rats after 1, 3, 5, 8, 24 hours and 1, 2 and 3 weeks. Also after 3 weeks of treatment with plant extract, TG, TC, LDL/HDL and VLDL in blood serum were measured enzymatically. For measuring the GLUT-4 (Glucose transporter-4) mRNA levels in heart muscle tissue, using GLUT-4 primer, the RT-PCR assay was done in control and diabetic rats. The obtained results showed that administration of ethanolic plant extract of Vaccinium arctostaphylos, decreased mildly the blood glucose within 1 to 3 hours and also decreased it significantly after 3 weeks. This plant extract also decreased markedly TG (triacylglycerol) in blood serum. We have also observed that the ethanolic extract of Vaccinium arctostaphylos increased the expression of GLUT-4 gene in heart muscle tissue of treated Wistar rats.

Keywords: alloxan monohydrate, glucose oxidase, GLUT-4, RT-PCR, Vaccinium arctostaphylos

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P-10-1127-5
Biochemical and anti-diabetic effects of methanolic extract of Salvia officinalis leaves in diabetic male wistar rats

Shideh Montasser Kouhsari , Leila Moradabadi*

Cellular and Molecular Biology Department, University College of science, School of Biology, University of Tehran, Tehran, Iran

Common sage (Salvia officinalis L.) is among the plants that are claimed to be beneficial to diabetic patients and previous studies have suggested that this plant has hypoglycaemic effects in normal and diabetic rats. In the current study, we have investigated the effects of methanolic extract of S.officinalis leaves on blood glucose, plasma biochemical parameters and erythrocyte antioxidant enzymes. Treatment of Alloxan monohydrate -induced diabetic rats with oral administration of sage leaves methanolic extract for 3 weeks, resulted in a significant reduction in blood glucose (Glucose oxidase assay). Total cholesterol (TC), triglycerides (TG), LDL/HDL ratio and VLDL were mildly decreased after treatment of diabetic rats by plant extract. We have also observed significant enhancement in activity of blood antioxidant enzymes including superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx).

Keywords: alloxan monohydrate, CAT, GPx, Salvia officinalis, SOD

P-10-433-7
Preventing effect of saffron carotenoids (crocin and crocetin) on animal model of stomach cancer

H. Miri [1], S. Zahra Bathaie [1], M. Mokhtari-Dizaj [2], H. Hassanzade [2], M. R. Ashouri [2]*

1- Department of Clinical Biochemistry, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran, 2- Department of Medical Physics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Gastric cancer is the second leading cause of cancer related death worldwide. Notwithstanding the global declining incidence of gastric cancer, mortality is still rising in Asian countries. At the beginning of 90´s it was reported for the first time that saffron extracts inhibited the growth of malignant cells both in vivo and in vitro. The results of our previous studies showed its anticancer effect against breast cancer. In addition, saffron and its carotenoids interacted with DNA and induced some conformational changes in it. Also we have suggested the effect of saffron carotenoids on H1 structure and H1–DNA interaction as another possible mechanism of their anticarcinogenic action. In the present study we are investigating the preventing effect of the mentioned compounds against gastric cancer in rats. Forty five male Wistar rats were divided into nine different treatment groups: group A, water alone; group B, N-methyl-N'-nitro-N-nitrosoguanidine (MNNG 200 mg/kg) to induce adenocarinoma in the stomach; groups C to E, crocetin (50, 75 & 100 mg/kg/day) plus MNNG; groups F to H, crocin (40, 50 & 60 mg/kg/day) plus MNNG. All animals received treatment for 10 days through gavage, and were sacrificed after 8 to 16 weeks. Gastric neoplasm was evaluated by histology and sonography. DNA synthesis was evaluated by flow cytometry. Our results indicated the cancer induction by MNNG and different degrees of prevention by saffron carotenoids on treated groups.

Keywords: gastric cancer, saffron, carotenoids, crocin, crocetin

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O-10-4-17

Glucose lowering and hepatocytotoxic effects of Cichorium intybus extracts

Azin Nowrouzi, Safura Vardasbi, Zahra Shajary, Marzieh Sadat Tonekaboni, Nasrin Ziamajidi, Abdolreza Ghamarian, Robab Zakeri, Hoda Boushehri, Abolfazl Golestani, Shahnaz Khaghani, Mohammad Ansari*

Biochemistry Department, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Cichorium intybus (chicory) has been used for treating various illnesses throughout human history. Its glucose lowering effects have been described in diabetic mice, recently and previously; and it is known to possess hepatoprotective features. In the present study, homemade boiled water extract of chicory seedlings (10%) was found to be capable of accelerating the rate of glucose consumption within the body as blood glucose levels went down 3 times faster compared to when the extract was not consumed during the same lengnth of time and under similar conditions; Chicory seemed to correct polyuria as well in diabetic patients. We also investigated the effect of alcoholic extracts of the leaves and seeds of Cichorium intybus on cellular proliferation in HepG2 human hepatoma cell line. In our hands and with our method of extract preparation, ethanol extracts of the leaves (water soluble) and seeds (soluble in DMSO) of chicory were capable of killing HepG2 cells in culture, with IC50 of about 0.2mg/ml, and 1.1mg/ml, respectively. These extracts caused an increase in lactate dehydrogenase and nitric oxide levels in the cell culture medium. The seed extract of chicory was 5.5 times less potent in killing the cells than the leaf extract. A comparative analysis of the extracts suggested several differences between seed and leaf extracts of chicory, with respect to their sugar content and DPPH bleaching activity, and with respect to some chemical constituents. These differences may provide a clue as to the protective substance that may reside in chicory. Water extracts of the leaves and seeds did not show hepatotoxicity.

Keywords: chicory, HepG2, seed, leaf, extract, glucose