

## Evaluation of antifungal activity of topical *Rosmarinus officinalis* essential oil on infected cutaneous wound with *Candida albicans* in rats: Histopathological study

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Today, due to side effects and development of drug resistance to Azol drugs and its derivatives, which used for treatment of *Candida* infections in either topical or oral forms, led to the use of biological materials. One of medicinal herb have been used more frequently, the past to the present, is Rosemary (*Rosmarinus officinalis* L.). In this study on 45 male Wistar-albino rats (weight  $210 \pm 10$  g), after general anesthesia, and a wound square with dimensions 1/5 in the 1/5 cm area between the shoulder, immediately was applied to the wound 0.1 ml of the suspension containing  $1/5 \times 10^7$  CFU *Candida albicans* yeast. Then tested in three groups of 15 rats each (control, topical ointment containing 1.5% and 3% *Rosmarinus officinalis* oil) were randomly distributed into 5 subgroups of 3 rats each (sample groups on different days) groups. End of days 4<sup>th</sup>, 8<sup>th</sup>, 12<sup>th</sup>, 16<sup>th</sup> and 20<sup>th</sup> from wounds of different groups, in order to histopathology and yeast counts by a special punch biopsy specimen. Investigation showed that the use of topical 1.5 and 3 percent of *Rosmarinus* essential oil compared with the control group cause the decreased substantially in infection rates and increased volume production of collagen and is lined. According to the finding results, wound healing is better at 3% *Rosmarinus officinalis* essential oil ointment treated group, compared to lower treatment dose and control groups.

**Key words:** *Candida Albicans*, *Rosmarinus officinalis*, Wound, Histopathology, Rat.

**Histopathologic study of pancreas in streptozotocin –induced diabetic rats treated with ethanolic extract of *Portulaca oleracea* (Purslane)**  
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Diabetes mellitus is a constellation of metabolic disorders that increase blood glucose and factors such as genetics, environmental factors, life-style habits that are involved in creating. In this study, to evaluate the effect of alcoholic extract of purslane on diabetic rats, 36 adult male Wistar rats were used in six groups, respectively, including healthy controls, diabetic with streptozotocin, diabetic with streptozotocin and treated with Purslane extract (200 mg/kg) for 4 weeks (T1), diabetic with streptozotocin and treated with Purslane extract (400 mg/kg) for 4 weeks (T2), treatment with Purslane extract (200 mg/kg) for 4 weeks thereafter induction of diabetes with streptozotocin (T3), treatment with Purslane extract (400 mg/kg) for 4 weeks and then inducing diabetes with streptozotocin (T4). Blood glucose was measured at the end of each week. At the end of experiment, all rats were euthanized, and pancreas tissue samples were placed in 10% buffered formalin and referred to pathology laboratory for histopathology slides preparation.

Histopathological findings demonstrated islet cell necrosis and inflammatory cell infiltration in diabetic rats. Purslane extract-treated groups showed significant reduction in the severity of the injuries. This reduction was greater in T3 and T4 groups compared to others. The results obtained showed anti-diabetic activities of purslane extract which is probably related to its antioxidant properties.

**Key words:** *Portulaca Oleracea, Diabetes, Rat, Streptozotocin*

**Evaluation of the effect of different doses of folic acid supplementation on serum lipid profiles in experimental obstructive cholestasis in rat**

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Hypercholesterolemia was the result of the cholestasis and failure of cholesterol and bile salts clearance through the bile duct. The main proposal of this study is to investigate the effect of folic acid supplementation on serum lipids composition in a rat model of cholestasis. 81 male Wistar rats were randomly divided into nine experimental groups with 9 rats in each group. Group 1, normal control rats, Group 2, sham-operated rats (The rats in this group underwent the same procedure except that the bile duct ligation), Group 3, cholestatic rats, Groups 4-6, folic acid control rats; Groups 7-9, cholestatic rats treated with folic acid; Folic acid treated groups were given folic acid (1,5,10 mg/kg) respectively, once a day by gavage for 28 days. Cholestasis was produced by Bile Duct Ligation (BDL). Serum samples were analyzed biochemically and lipids profile were measured according to standard protocols. cholestatic rats group showed higher concentrations of total cholesterol (TC), triglyceride (TG) and low density lipoprotein cholesterol (LDL) in serum. Administration of folic acid supplementation, significantly decreased the serum levels of TC, TG, and LDL and increased the serum level of high-density lipoprotein cholesterol (HDL). Cholestasis induced hypercholesterolemia and Folic acid supplementation showed hypolipidemic and hypocholesterolemic effects in cholestatic rats. These effects on the lipid profile varied with the different concentrations of folic acid. Our result suggested that Folic acid can be used as an antilipidemic agent in patients with cholestasis.

**Key words:** *Bile Duct Ligation, Cholesterol, Folic Acid, Lipoprotein*

## **Study on infection of rodents with leishmania by parasitological, serological and molecular methods (PCR) in Sarab area, East Azerbaijan province, Iran in 2011**

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Visceral leishmaniasis is a parasitic-infections and zoonotic disease in the countries of Mediterranean basin and Middle East, including Iran. The causative agent of visceral leishmaniasis in Iran is *leishmania infantum* and dog and canines are main reservoirs. Infections of *leishmania infantum* in rodents have been proved. The main objective of this investigation was to screen *leishmania* infection in rodents and possible role in transmission of the disease to human by Parasitology, Serology and Molecular methods in Sarab District, East Azarbaijan Province in 2011. In this research, 100 rodents of four species and genus were trapped alive in various parts of the Sarab area. Before killing the caught rodents, blood samples were collected from each of them in Polypropylene tubes and this samples were tested by direct agglutination test (DAT). Amongst them 1(1%) rodent seropositive, 6 (6%) rodents had lower titers than positive titer, and 93 rodents were seronegative. The smears were prepared from spleen and liver all animals examined microscopically and did not show any amastigotes. Part of the spleen and liver of rodents were cultured in NNN, RPMI 1640 media, but *leishmania* were not isolated from cultures media. Finally, from 100 rodents spleen tissue DNA extraction for PCR with using specific primers named k-DNA were done but any Band linked to *leishmania* were observed.

**Key words:** *Visceral Leishmaniasis, Rodents, Direct Agglutination Test (DAT), Sarab.*

## **Antidiabetic effect of ethanolic extract of *Salvia syriaca* aerial parts in normal and streptozotocin-induced diabetic rats**

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Many plants of genus *Salvia* are used for food products and medicine. The present study was designed to examine the antidiabetic effect of *Salvia syriaca* ethanolic extract in normal and streptozotocin-induced diabetic rats. Diabetes in rats was induced with a single injection of streptozotocin (70 mg/kg body weight) by intraperitoneal route. *Salvia syriaca* ethanolic extract (50, 100, and 200 mg/kg body weight) were administrated orally for 30 days. After 30 days, rats were anesthetized and blood samples were collected. Serum glucose, insulin, triglycerides, total cholesterol, urea, uric acid, creatinine, aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels in normal and streptozotocin-induced diabetic rats were evaluated. Oral administration of *Salvia syriaca* ethanoic extract for 30 days exhibited a significant reduction in serum glucose, triglycerides, total cholesterol, urea, uric acid, creatinine, AST, ALT and increased plasma insulin in streptozotocin-induced diabetic rats. The administration of extract did not change these serum parameters in normal rats. It is concluded that *Salvia syriaca* has antidiabetic effect in rats and the plant should be considered as an excellent candidate for future studies on diabetes mellitus.

**Key words:** *Salvia Syriaca; Diabetes; Rat*

## **Effects of Long-term administration of sildenafil citrate on serum markers of cardiac injury in the rats**

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Nowadays, sexual impotence due to increased heart disease, has led to rising in consumption of sexual enhancing drugs. In heart failure, due to decreased blood supply to corpus cavernosum, complete erection does not occur, which can lead to sexual dissatisfaction. One of the most important drugs which are used to treat this disorder is sildenafil citrate, a selective inhibitor of type 5 cGMP. The purpose of this study was to evaluate the long-term side effects of this drug on serum biomarkers of cardiac injury in the rat. In this study, 20 male Wistar rats were randomly assigned into 2 groups including: control and treatment. In treatment group, sildenafil citrate use at a dose of 100 mg/kg for 30 consecutive days in oral rout and control group only received Distilled water. At the end of experiment, the serum levels of cardiac troponin I, creatine kinase- MB, lactate dehydrogenase and aspartate aminotransferase were measured. The results obtained showed that sildenafil citrate has protective effects on cardiac enzymes which may be in association with releasing of nitric oxide (NO).

***Key words:*** Sildenafil citrate, Cardiac troponin I, Heart damage, Rat

## Identification and differentiation of vaccinal and virulent Newcastle disease virus in Iran by HRM analysis

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To control of outbreaks caused Newcastle disease, it is necessary to distinguish virulent viruses from vaccine strains, in minimum possible time and with high accuracy. The aim of this study was using High-Resolution Melting-Curve Analysis (HRM) for detection and differentiation of Iranian Newcastle disease virus (NDVs) isolates from vaccine strains. In this study, 5 virulent isolates along with 2 vaccine strains, including B1 and Lasota were used. Based on the nucleotide sequence of F gene, 8 primers (A - H) were designed for the analysis of HRM. At the first stage, one virulent and 2 vaccine virus was analyzed by 8 primer pairs. Based on the preliminary results of both RT-PCR HRM, 3 sets of the primers have been selected for final testing of the samples. The patterns obtained from wild viruses were compared with vaccine group. The melting temperatures for vaccine strains were higher than virulent isolates by A, B, C, F and H primer pairs; despite D, E and G. In this study, B and H primer pairs could separate vaccine strains from each other and from virulent isolates, better than other primers. Based on these results, HRM analysis and correct primer selection can determinate and differentiate virulent NDVs from vaccine strains. This technique is able to do this in short time and with high accuracy in comparison with previous conventional approaches such as pathogenicity indices tests, RT-PCR and nucleotide sequencing.

**Key words:** HRM Analysis, Newcastle Disease Virus, Vaccine Virus, Differentiation, Primer

## Dynamics of interaction between ram sperm with plasmid carrying human lysozyme gene in SMGT

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Many studies have shown spermatozoa can be used as vectors for transfer of exogenous DNA to oocyte to produce transgenic animals. However its efficiency is still questionable. The results of DNA concentration and incubation time on DNA uptake and sperm functionality has been different or sometimes opposite. In this study the effect of DNA concentration and incubation time of sheep spermatozoa with foreign DNA on DNA uptake, its dynamic and sperm functionality and their difference between ejaculated and epididimal sperm was investigated. For this the ejaculated (N=4) and epididimal (N=6) spermatozoa was incubated with different concentration (5-500ng/10<sup>6</sup> sperm/25μl) of rhodamine labaled pEGFP-IRES-hLys in various time (15-90min) and DNA uptake, dynamic of uptake and sperm functionality was assayed. Results showed to an average of 65% of incubated spermatozoa uptake the foreign DNA, depend on DNA concentration and incubation time. Although the amount of transfected spermatozoa could increase significantly with prolonged incubation time up to 60 min but the amount of DNA uptake was higher in the first 15min of incubation. Increase of foreign DNA concentration and incubation time increased the transfected spermatozoa and uptake intensity. It seems higher DNA concentration, more rapid DNA uptake and more rapid gain of transfection peak. Slight decrease of sperm total and progressive motility was seen in treatment group in comparison with Control groups (except in 5min incubation). No spermatozoa with post acrosomal absorption (true uptake) were motile. So incubation for more than 30 and 60 min in moderate (20-200ng) and low (5ng) plasmid concentration respectively is not useful.

**Key words:** Sperm, Sheep, Gene Transfer, Human Lysozyme.



## Histoanatomical study of lens and ciliary body in one- humped camel eye

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In the present study, a total number of 20 eyes of adult one-humped camels were studied. This study was conducted to understand the macroscopic and microscopic structure of the lens and ciliary body of camel eye. First, the lens and ciliary body of the eye was anatomically examined in terms of appearance, dimensions, location and structure. Having prepared histology slides and staining by H&E, Verhoeff, Trichrome masson's, and P.A.S., they were studied microscopically. Posterior surface of lens was more convex than anterior surface. The average lens diameter and thickness were respectively measured as  $1.82 \pm 0.01$  and  $1.14 \pm 0.02$  centimeters. The average ciliary body thickness was measured as  $0.7 \pm 0.01$  centimeters. In addition, as the ciliary body was seen annular, it has mean external and internal diameters as  $2.9 \pm 0.07$  and  $2.5 \pm 0.02$  centimeters. The epithelium of lens was cuboid and the lens capsule has positive PAS reaction intensively. Also the anterior surface of capsule was thicker than posterior surface. The density of lens fibers in sub capsular part were more than central. The elastic fibers in lens was not observed. The ciliary process epithelium has two layers, that superficial layer was pigmented and cuboid. Under the unpigmented epithelium, melanocytes with high pigments were situated. Connective tissue of ciliary body has more longitudinal smooth muscle fibers, blood and lymphatic vessels. Elastic fibers of connective tissue in ciliary body were thickness and more. In conclusion, the lens and ciliary body of camels were similar to large ruminants although there were little differences in anatomic dimensions and histologic characteristics.

**Key words:** One-humped camel, Lens, Ciliary Body.

