

Comparison of the antioxidant effect of vitamin E and *Curcuma Longa L.* extract on the histopathological lesions of Liver and kidney following aspartame consumption in rat

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Aspartame is one of the most widely used artificial sweeteners in worldwide. The aim of this study was comparison of the antioxidant effect of vitamin E and *Curcuma Longa L.* extract on the histopathological lesions of aspartame consumption in rat. 32 males adult Wistar rats were randomly divided into four equal groups as follows: (1) control, (2) receiving aspartame (350 mg/kg) orally, (3) receiving aspartame (350 mg/kg) orally and vitamin E (400 mg/kg) by peritoneal injection, (4) receiving aspartame (350 mg/kg) and *Curcuma Longa L.* extract (200 mg/kg) orally for 1 month. At the end of the experiment, after tissue processing of livers and kidneys of rats, histopathological changes were examined and analyzed by using the Kruskal-Wallis test. Histopathological examination of liver in group 2 showed disruption of the hepatic cords, vacuolar degeneration and accumulation of necrotic materials in hepatocytes. Furthermore, renal tissue evaluation revealed degeneration of proximal and distal convoluted tubules; glomerular atrophy and increasing of urinary space. Above-mentioned lesions were significantly improved in groups 3 and 4 in comparison to group 2 ($P < 0.001$). Besides, Vitamin E and *Curcuma Longa L.* extract had higher therapeutic effects in the liver tissue in comparison to the kidney. Furthermore, treatment with vitamin E caused a significant decrease of histopathological lesions in comparison to *Curcuma Longa L.* extract ($P < 0.001$). These results showed the antioxidant effects of vitamin E and *Curcuma Longa L.* extract on the lesions of aspartame consumption and this protection effect was more pronounced in the group received vitamin E.

Keywords: Antioxidant, Vitamin E, *Curcum Longa L.*, Aspartame, Liver, Kidney

Anti-bacterial effect of *Madracis* sp. and *Palythoa tuberculosa* soft coral extracts from Chabahar coasts

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Nowadays due to the bacterial resistance to antibiotics, the need to new materials with antibacterial properties, including bioactive compounds from marine organisms such as corals with antibacterial properties, is more notable. So this study was conducted to evaluate the antibacterial effects of the methanolic, hydroethanolic and n-hexanic extracts of two soft marine coral *Madracis* sp. and *Palythoa tuberculosa*. After sampling, n-hexanic, methanolic and hydroethanolic extracts of two coral species of *Madracis* sp. and *Palythoa tuberculosa* was prepared. Then the disk diffusion method was used in order to determination the antibacterial activity against the three strains of Gram-negative bacterium include *Vibrio cholera*, *Proteus vulgaris* and *Escherichia coli* and two Gram-positive bacteria, *Staphylococcus aureus* and *Listeria monocytogenes*, and the results were compared with the standard antibiotic erythromycin. The analysis of the results was conducted by using one-way ANOVA whit SPSS software. The methanolic and hydroethanolic extracts of *Madracis* sp. corals had the highest effect on *E. coli* bacteria, with the inhibition zone of 12.94 \pm 0.0 and 16.58 \pm 0.53 mm, respectively. In all the extracts prepared from *Palythoa tuberculosa* Coral, standard antibiotic had more significant effect against the bacteria. The extracts of *Madracis* sp. coral has high antimicrobial properties.

Keywords: Marine coral, Extract, Antimicrobial properties

Effect of hydro-alcoholic extract of Pistacia Vera L. on the severity of hypercholesterolemia lesions in rabbit aorta

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Atherosclerosis is the leading cause of cardiovascular diseases. The aim of this study is evaluating the effect of extract of Pistacia Vera L. on the severity of hypercholesterolemia lesions in rabbit aorta. For this purpose, 25 adult female rabbits passed adaptation period and they have been divided in to 5 treatment groups of 5 rabbits in each, included: scheme, positive control 1, positive control 2, treatment and negative control. Scheme group was fed with normal diet. Positive control 1 and 2 were fed by corn oil and cholesterol as the same amount of treatment respectively. Treatment was fed with Pistachios extract with the amount of 1,000 mg/kg. Furthermore, corn oil with the amount of 1 ml/kg with adding 1 percent cholesterol of total consuming food weight were administrated to treatment by gavage. Negative control was prescribed with 1000 mg/kg oral administration of Pistachios. In this study, no change in aortic tissue was observed in the scheme group. In the positive control 1 (receiving corn oil), there was no precipitation. The treatment compared with negative control (receiving cholesterol) indicated less amount of fatty deposits in aortic tissue. In the negative control (receiving pistachio extract) there was also no precipitation. This study indicates that pistachio extract can help in reduction of atherosclerosis side effects and reducing fat deposits in aortic tissue layer intima and media in hypercholesterolemic rabbits.

Keywords: *Pistachio, Aorta, Hypercholesterolemia, Rabbit*

Association of progesterone concentration and lactation number on percentage of endometrial polymorphonuclear cells in dairy cows

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The objectives of this study were to assess the association between progesterone concentration and lactation number with the percentage of endometrial polymorphonuclear cells (PMN) obtained by low volume lavage (LVL) for the diagnosis of subclinical endometritis in dairy cows. Dairy cows at 30days in milk (DIM), were clinically examined and reproductive tract were evaluated for any abnormality. Cows (n=150) with sound reproductive tract were included in this study. Endometrial cytology (LVL) and blood (tail vessels) samples were obtained at 30 DIM and at 40 DIM, and used for measuring percentage of PMN and Progesterone concentration, respectively. Two-blinded operators determined the percentage of PMN obtained by cytology. Data were analyzed with PROC FREQ, PROC CORR and PROC GLIMIX, in SAS 9.1. There was a significant negative correlation between serum progesterone concentration and percentage of PMNs ($r = -0.58$, $P < 0.001$). Lactation numbers >2 and peripheral progesterone concentrations >1 ng/mL were significantly associated with lower PMN percentages at 40 DIM ($P = 0.0041$, 0.0187 , respectively). According to the current study, cows with higher serum progesterone level, had lower chance of displaying subclinical endometritis assessing with the evaluation of PMNs% in the uterus at 40 DIM. This finding can be explained by the fact that the cows with higher serum progesterone level start estrous cycle earlier, which is prerequisite step for cleaning the postpartum uterus.

Keywords: Dairy Cows, Lactation, Progesterone, Subclinical Endometritis

Molecular epidemiology of isolated *Mycoplasma bovis* strains from clinical mastitis infections in Cattle

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Mycoplasma bovis is one of the main pathogenic species and the most common cause of pneumonia, mastitis and arthritis in cattle. The aim of this study was to evaluate the epidemiological factors (age, level of production, herd size, type of discharge, drop in production and a history of clinical mastitis) in isolated *Mycoplasma bovis* strains from clinical mastitis infection in cattle. Samples from 328 cows with clinical mastitis were taken by purposive sampling method, and were sent with ice and up to 24 hours to Mycoplasma reference laboratory, Razi Vaccine and Serum Institute of Karaj. Isolation and identification by culture and PCR methods was done, *Mycoplasma bovis* was isolated and 31 isolates were confirmed by nucleotide sequencing method. One of the isolates had 100 percent genetic relationship with reference strain of *Mycoplasma bovis* PG45 ATCC25523. Also, one of the isolates was different in nucleotide sequence with other isolates and the rest had 99.7% homology. Most positive cases were present in the age group 4-6 years and 800 cattle herd size and in this sense there was a statistically significant difference between samples ($P < 0.05$). In terms of production and consequent drop in production mastitis infection, there was no significant difference between positive samples ($P > 0.05$). The results showed that the mammary secretions could not be definitive diagnosis of this type of mastitis. Also, more positive samples had one of mastitis in their history. The results showed the presence of *Mycoplasma bovis* in milk samples is significant in clinical mastitis of cows in Iran and principles of biosecurity and quarantine should be at the top of *Mycoplasma bovis* infection control programs.

Keywords: *Mycoplasma bovis*, Epidemiology, PCR, Cattle, Clinical mastitis

Study of histopathology and bioaccumulation of Iron oxide (Fe₂O₃) nanoparticles in liver of common carp (*Cyprinus carpio*)

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Increasing production of nanoparticles and its usage in different industries has led concerns about its dangers and toxicity in the environment, but there is not enough information about their toxicity effects, and their safety is unknown. This study tried to evaluate the bioaccumulation and histopathology of iron oxide nanoparticles (Fe₂O₃) in liver tissues of Common carp (*Cyprinus carpio*). To this aim, Common carp fishes were prepared from a fish farm and transferred to the laboratory. After adapting to the laboratory conditions for a week, the fishes were divided into 4 treatments. The first treatment was considered as control and the other treatments received 50, 75 and the 100 milligrams per liter of iron oxide nanoparticles. In the days 14, 21 and 28, the fishes were randomly selected from each treatment and the liver tissues were separated and were examined for bioaccumulation and histopathology. In the present study the result of the statistical analysis showed in the day 21 of the experiment, the concentration of Iron was significantly higher than other treatments in the liver. Histopathological examination in liver showed the most lesions in treatment 4 in day28 included severe necrosis and vacuolar degeneration, infiltration of inflammatory cells mild and hyperemia. The results of present study showed by increasing of dose and exposure time of iron oxide nanoparticles (Fe₂O₃) the lesions in hepatocytes increased and iron concentration in liver decreased.

Keywords: *Iron oxide nanoparticles, Cyprinus Carpio, Bioaccumulation, Histopathology, Liver*

Comparative evaluation of interstitial lung pattern by analog radiography and computed radiography in domestic shorthair cats

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The aim of current study was comparing the diagnostic performance of computed radiography with that of analog radiography in evaluation of interstitial lung pattern based on histopathology as a gold standard. Twenty domestic shorthair cats apart from weight, age and gender differences after clinical examination were studied in lateral and ventrodorsal projections with both computed and analog radiography. Then, three radiologists independently evaluated the radiographs. Histopathology investigation used as gold standard to confirm the interstitial lung pattern detected on the radiographs. Statistical data of two radiologic approaches were analyzed by Cohen's Kappa test and the sensitivity and specificity of each approach were also calculated. The agreement for the interstitial lung pattern was fair for both systems, but computed radiography was more sensitive. In current study the ability of computed radiography was equivalent or superior to conventional radiography for evaluation of interstitial lung pattern, since displaying more radiographic details. Accordingly, it can be a proper substitute for analog radiography considering its advantages including elimination of dark room, high contrast resolution and wide dynamic range.

Keywords: *Computed radiography, Analog radiography, Histopathology, Interstitial lung pattern*

Survey Genotyping of Animal and Human *Klebsiella pneumoniae* Isolates using ERIC-PCR and evaluation of Antibiotic Sensitivity Pattern

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Klebsiella pneumoniae, is an opportunistic pathogens and cause infections in humans and animals. Drug resistant *K. pneumoniae* is rising. Therefore, antimicrobial susceptibility testing before prescribing antibiotics, it seems necessary. The aim of present study was to survey typing of clinical and animal *K. pneumoniae* isolates and evaluation of antibiotic susceptibility. A total 100 clinical and animal *K. pneumoniae* isolates were collected from Babak city. Antibiotic susceptibility was performed with Kirby-Bauer method according to CLSI guidelines. Then, DNA genomic extraction was done using DNA kit and PCR amplification was performed with *ERIC1* and *ERIC2* primer. Our results were shown that all strains (100%) were resistant to the ampicillin and amikacin antibiotics. The most and least resistance belong to tetracycline (53 strains; 88.3%) and imipenem (8 isolates; 13.3%), respectively. The results of cluster analysis and drawing dendrogram based on genetic similarities for 100 isolates was separated to seventeen distinct groups. According to our finding indicated an increasing resistance to antibiotics amongst *K. pneumoniae*. Additionally, the ERIC sequences have a pair of genes that contain highly reversed and central reps and are located in the outermost regions of the bacterial genome and have less complexity in determining the genetic diversity of all isolates, but the separation good at the strain level.

Keywords: *Klebsiella pneumoniae*, ERIC-PCR, Antimicrobial resistance