A survey on the effects of citrate on canine mammary tumor cells (CF41-Mg)

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Mammary tumors are among the most prevalent tumors in female dogs which according to the pathological classification have several types. These tumors have many resemblances to human tumors and can be used as a suitable model for study of human mammary tumors. Although the antitumor effects of citrate against a variety of cancerous cells has been proven, the effect of this substance against canine mammary tumor cells has not yet been analyzed. The aim of present study was to evaluate the apoptotic and cytotoxic effects of citrate on canine mammary tumor cells(CF41-Mg) by Annexin-PI and MTT tests (a yellow tetrazole is reduced to purple formazan in living cells), respectively. MTT data showed dose dependant inhibition of citrate on proliferation of CF41-Mg cells and 50%inhibitory concentration (IC50) of this substance at a dose of26mM. In addition, percentage of apoptotic cells significantly increased after 48 hours' treatment with IC50 of citrate (P<0/001). According to the obtained results, it seems that citrate can be used as a suitable adjuvant therapy alongside other cancer treatment substances.

Keywords: *Citrate, Apoptosis, Canine mammary tumor*

Study of the antioxidant and antimicrobial effects of the ethanolic extract of *Eucalyptus camaldulensis Dehnh* against infectious bacteria isolated from clinical and animal sources

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Due to the increasing resistance of pathogenic bacteria to common antibiotics and antimicrobial agents, researchers are finding antimicrobial agents with plant origin as alternative drugs. Antioxidants are the main factors in neutralizing free radicals and prevent the spread of chronic diseases and destruction of many foods. After preparing the ethanolic extract from leaves of *Eucalyptus camaldulensis* Dehnh by maceration method, the antimicrobial effect of it was determined on *Staphylococcus aureus* and *Escherichia coli* isolated from women's urogenital tract infections and food stuff and *Salmonella pullorum* and *Salmonella* gallinarum isolated from birds cases by minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) methods. The antioxidant and reducing power effects of ethanolic extract of *Eucalyptus camaldulensis* Dehnh were studied by DPPH(2,2-diphenyl-1-picryl-hydrazyl-hydrate) assay. The least to most antimicrobial effects of ethanolic extract of *Eucalyptus camaldulensis* Dehnh were seen against *Salmonella pullorum, Escherichia coli, Staphylococcus aureus* and *Salmonellagallinarum*, respectively. Antioxidant effect and reducing power of ethanolic extract of *Eucalyptus camaldulensis* Dehnh were recorded less than BHT (Butylatedhydroxytoluene) in equal concentration ($p<0.05$). Ethanolic extract of *Eucalyptus camaldulensis*Dehnh leaves in high concentration has antimicrobial, antioxidant and reducing power, so it could be used to pharmaceutical industry for chemotherapy and disinfectants in control of human and animal diseases and as food preservatives. The aim of this investigation is study of the antioxidant and antimicrobial effects of the ethanolic extract of *Eucalyptus camaldulensis* Dehnh against infectious bacteria isolated from clinical and animal sources.

Keywords: *Eucalyptus camaldulensis Dehnh, Ethanolic extract, Antimicrobial, Antioxidant*

Evaluation of the clinical and serological effects of metamizole and midazolam as a premedication in pigeon

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In this research eighteen male pigeons with an approximate age of two years and weight of 300 gm, were divided into three groups with six individuals per group. In group I the pigeons were given an intramuscular injection of ketamine 40 mg/kg body weight. Each pigeon in group II was given an IM injection of midazolam at 6 mg/kg body weight and ketamine at 40 mg/kg body weight within 5 min following the first injection were used. Also, in group III pigeons were given an IM injection of metamizole at 500 mg/kg body weight and ketamine at 40 mg/kg body weight in the same method was used. The serological and clinical changes in the three groups were evaluated. A record was maintained of the signs of clinical and serological changes in each group. In order to determine the depth of anesthesia in each group and within 5 min from the last injection, various clinical reflexes evaluated on the body of each pigeon. Also, serological examination of alkaline phosphatase (ALP), oxaloacetic transaminase (OT), glucose (GLU), lactate dehydrogenase (LDH), and gamma-glutamyl transferase (GGT_f) were done. The results of clinical finding showed that there was significant difference ($p<0.05$) in the various clinical reflexes between group III, compared with groups I and II. Also, the results of the serological review in three groups showed that there were significant differences ($P>0.05$) in the mean values of ALP and OT. Finally, it seems that metamizole plus ketamine is comparatively the anesthesia drug of choice in birds.

Keywords: *Birds, Premedication, Ketamine, Metamizole, Midazolam*

Molecular detection of *Streptococcus uberis* in cows with sub clinical mastitis by PCR method

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With progress in monitoring and controlling of contagious mastitis and with development of dairy farms the importance of environmental mastitis such as *Streptococcus uberis* has been increased. This study conducted to evaluate frequency of Streptococcus uberis in cows suffering from subclinical mastitis. Study was performed in 4 dairy farms in Tehran province. Samples were collected from cows with subclinical mastitis which diagnosed with CMT, and were sent for bacterial culture, DNA preparation with commercial kit and PCR assay. Final product was electrophoresed in 2 percent agarose gel with 80 V during 2 hours. A total of 64 of 85 samples had amplicons with a size of 445 bp. A total of 6.6% of cows were suffering from subclinical mastitis with Streptococcus uberis pathogen. In conclusion monitoring and control methods of mastitis with environmental agents such as Streptococcus uberis Should be more considered and also could use more accurate and faster molecular methods to differentiate it.

Keywords: *Dairy cow, PCR, Streptococcus uberis*

Preventive effects of jujube (Ziziphus jujuba) extract on hepatic steatosis in the rats fed with high fat diet

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The aim of this study was to evaluate the preventive effects of Jujube (Ziziphus jujuba) extract on fatty liver disease induced by high fat diet in the rats. For this purpose, 80 male Wistar rats were randomly divided to 4 equal groups including: 1-Healthy control, 2-Feeding with high fat diet, 3-Feeding with high fat diet plus Clofibrate (320 mg/kg) treatment and 4- Feeding with high fat diet and treated with Jujube extract (200 mg/kg). Steatosis created by high fat emulsion (10 ml/kg). Different experimental groups compared considering serum biomarkers of liver tissue injury, hepatic antioxidant activity and liver histopathological changes. In the rats fed with high-fat diet, serum levels of hepatocellular enzymes significantly ($P<0.01$) reduced and liver antioxidants activities significantly ($P<0.01$) increased compared to control group. In extract treatment group, elevated markers of liver tissue injury and Malondialdehyde significantly reduced and declined serum albumin and protein significantly ($P<0.01$) increased. Also, in this group, Jujube treatment significantly ($P<0.01$) improved the activities of liver antioxidants and significantly ($P<0.01$) decreased liver Malondialdehyde levels. Histopathology of the liver confirmed the biochemical changes. The results showed Jujube extract exerts protective effects against hepatic steatosis in rats fed with high fat diet possibly through increasing of antioxidant activities.

Keywords: *Hepatic steatosis, Jujube (Ziziphus jujuba), Antioxidant, Rat*

Isolation and Identification of Shiga Toxin Producing *Escherichia coli* O157:H7 from Healthy Domestic Cats

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Escherichia coli bacteria are the normal intestinal flora of warm-blooded animals. This harmless bacteria can evolve into pathogenic *Escherichia coli* by acquiring virulence genes through plasmids, transposons or bacteriophages. Pathogenic *Escherichia coli* can be transmitted from asymptomatic carriers to other animal and humans. *Escherichia coli*s serotype O157:H7 has been recognized as the most important cause of hemolytic uremia syndrome. According to the close contact between cats and humans, this research conducted to study the presence of *Escherichia coli* serotype O157:H7 in non-diarrheic domestic cats. *Escherichia coli* were isolated from 101 fecal samples collected from healthy cats referred to veterinary clinics in Tehran. Isolated *Escherichia coli* confirmed by culture and biochemical test. *Escherichia coli* O157:H7 was detected by culture in chromomeric media culture and shiga toxin 1 and 2 genes were analyzed by multiplex polymerase chain reaction. Questionnaire data and test results were statistically analyzed. *Escherichia coli* O157:H7 which carrying shiga toxin 2 gene were detected in three samples. There was not statistically significant relationship between existence of *Escherichia coli* O157:H7 and variable sex breed, nutrition, contact, outdoor roaming and age ($p<0.05$). These results have demonstrated the role of cats in spread and transmit of pathogenic *Escherichia coli* to other animal and humans. Therefore, cats can serve as reservoirs for these pathogenic dangerous bacteria.

Keywords: *Escherichia coli, Cat, Shiga Toxin*

Effect of dietary supplementation vitamin C in liver tissue destruction rainbow trout (*Oncorhynchus mykiss*) in the face of nano-zinc oxide

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Unsuitable water quality and pollutants in the water causing stress response and eventually occurs on physiological parameters of fish health and reduced immune function of fish, hence the use of vitamins seems like a very necessary safety supplier for improve immunity. 170 pieces of fish with an average weight of 170 grams was taken at 70 L tanks. Then fish were placed in 40 and 80 mg per liter concentrations of nanoparticles on two levels of vitamin C (400 and 800 mg per kilogram of food). Compatibility during was performed twice feeding during this period fish with commercial food were fed at a rate of 2% body weight per day. The water used in the workshop physicochemical factors including temperature C ° 20 ± 2, pH 7/2 ± 0/4 and dissolved oxygen 6/74 ± 0/2 and water hardness 185 ± 16 ppm was measured on a daily basis and fixed in all treatments were considered. The combination of 800 mg/kg of vitamin C and 40 mg/l of Nano simultaneously taking the cause of the protective effect of vitamin C by Nano zinc on liver damage so that damages were lower compared with other treatments. This study shows that the use of a suitable material such as vitamin C at high concentration, 800 mg per kg in the diet of rainbow trout, seems to be necessary and useful for increasing the antioxidant defense.

Key words: *Nano Zinc oxide, Vitamin C, Liver tissue, Improve resistance*