

Determination of AquaStart median lethal dose (LC₅₀) as a disinfectant agent and study of the gill pathological effects on fry rainbow trout (*Oncorhynchus mykiss*)

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Aquastart is introduced as a peroxide-based disinfectant agent in aquaculture industries of Iran for the first time. This study was designed to determine the median lethal dose (LC₅₀) for 96 hours and histopathological finding in gill tissue. On fry rainbow trout. The research was carried out by 510 rainbow trout fry with an average weight of 1.33±0.01 grin 30 liter tanks under static conditions. Fish was exposed to 65, 75, 80, 85, 95, 100, 110 and 115 ppm concentrations of Aquastart for 96 hours. LC₅₀ value of 89.4 mg/L was estimated for Aquastart by collecting the mortality of fish during 96 hours with using of probity analysis. It was found that in the lethal concentrations of Aquastart abnormal symptoms such as open-mouthed swimming, flashing, gasping for air, sinking to the bottom, balance gone, turned upside down and open-mouthed death were observed in comparison to control group. The histological investigation showed a range of histopathological alternations in gills tissue including epithelial cells necrosis, hyperplasia, hyperemia, lamellar adhesion and clubbing of at the tip of secondary gill lamellae. However, the severity of these alternations increased with increasing of the doses of Aquastart and extensive necrosis was observed in this regard. The highest mortality rate was obtained with increasing duration of exposure and concentration of Aquastart, according to increased toxicity of the agent. This study will be the basis of in vivo research for this disinfectant agent.

Keywords: *Disinfectant, Median lethal dose (LC₅₀), Rainbow trout, Peracetic acid, Aquastart*

Evaluation of the clinical, analgesic and Sedative Effects of tramadol with acepromazine in the Horse

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A variety of analgesic and sedative agents are available, and which one can be used in horses is a highly controversial issue. The purpose of this study was to evaluate the analgesic and sedative effects and effect on vital signs and probable side effects of administered tramadol with Acepromazine in the horse. Ten healthy mix breed horses 2-10 years of age, weighing 250-350 kg were randomly divided into two groups. One group received combination of tramadol (1 mg/kg, IV) and acepromazine (0/05 mg/kg, IV). The second control group received a saline placebo (1ml/45 kg bwt, IV). Heart rate, respiratory rate, rectal temperature, systolic and diastolic blood pressure and GI movement were recorded. The records were averaged for the fifteen minutes intervals to 6 hours after injection. Analgesia was assessed with pin prick in the tail and perineal region. Data were analyzed statistically by two way of analysis of variance (ANOVA) using repeated measurements and Duncan's multiple range tests to determine significant differences using $P < 0,05$. In this study tramadol with acepromazine show good sedation but have no analgesic effects. The mean of temperature degree, respiratory rate, heart rate, systolic and diastolic blood pressure and GI movement in the treatment group at the time of 0, 15, 30, 60 and 360 minute did not show significant difference with the control group. Results of this study showed that parenteral administration of tramadol with acepromazine is fast and effective sedation in animals are created and no significant changes in vital signs and does not cause any danger to the animal although it does not reduce pain.

Keywords: *Tramadol, Acepromazine, Analgesia, Sedation, Horse*

Study of effect of Ginseng on testicular tissue after Orchidopexy operation in immature rat

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Perturbation of testicular descension into the scrotum result in cryptorchidism. After surgical correction of cryptorchidism (Orchidopexy), recovery of damaged testicular tissue, were observed gradually. The aim of present study, was to histological evaluation on the effect of Ginseng against testis after Orchidopexy in rat. In this study, 40 male Wistar rats (90-120 gr and 28 days old) randomly were divided in to 4 groups of 10 animals each. In first groups, after Orchidopexy, saline normal used orally for 30 days. In second groups, after Orchidopexy, Ginseng (500mg/kg/day) used orally for 30 days. In third groups, as a sham, after incision, testes were replaced from scrotum to abdominal cavity then returned to scrotum and used saline normal orally for 30 days. In fourth groups, as a healthy control, no operated. At the end of the experimental periods, testicular tissue samples were obtained for morphologic and histomorphometerical studies. The results were analyzed with one-way ANOVA and Tukey test and $P < 0.05$ was considered significant. Results indicated that using of Ginseng, accelerated repairing process of testicular injuries after Orchidopexy. So that diameter of seminiferous tubules and thickness of epithelium of tubules were increased and spermatogenic indices including Tubular differentiation index, Repopulation Index and spermatogenesis Index significantly increased ($P < 0.05$).

Keywords: *Ginseng, Testis, Cryptorchidism, Orchidopexy, Rat*

Evaluation of oral Clonidine effects on anesthesia induced by intramuscular injection of Ketamine Hydrochloride in New Zealand White Rabbits

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Ketamine is one of the most common drugs for anesthesia induction, but it often can't provide a decent anesthesia and it is often combined with sedative and muscle relaxants such as benzodiazepines, opioids or alpha 2 agonists. Alpha 2 agonists have been used in veterinary medicine for a long time as anesthesia premedication; Even so, there are few studies on Clonidine as an anesthetic premedication in rabbits. Clonidine is an alpha 2 agonist drug mainly used to treat high blood pressure in humans, recently though number of studies have shown that this drug has a great analgesic, sedative and anesthetic drug sparing effects. We conducted this study, in order to evaluate Clonidine effects on anesthesia caused by intra-muscular injection of ketamine in rabbits. Seven New Zealand white rabbits were anesthetized by using intra muscular injection of ketamine as the control group, after two weeks for ketamine complete clearance, the same group received 0.5 mg/kg of oral Clonidine 30 minutes prior to ketamine injection as the experimental group. Pedal, palpebral and righting reflexes and vital signs, such as heart rate, respiratory rate, SPO2 and rectal temperature of both groups were observed and documented in order to evaluate the quality of anesthesia. Results showed, administration of 0.5 mg/kg oral Clonidine 30 minutes prior to ketamine injection, provides deep and prolonged anesthesia and reduces heart rate but fails to produce proper analgesia.

Keywords: *New Zealand White Rabbits, Ketamine Hydrochloride, Anesthesia, Clonidine Hydrochloride*

A survey of lead contamination in raw cow's milk by atomic absorption spectrophotometry from different region of Tabriz

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Toxicities by heavy metals especially by lead are a public health problem. The aim of this study by random sampling (n= 400, 100 samples of each geographical path) was conducted on the north, south, east, and west industrial and traditional cattle-farms of Tabriz. The samples were freeze and then the lead amount of the samples was measured using flame atomic absorption method. The mean rate of lead in milk of the west, south, north, and east of Tabriz cattle-farms was reported as 0.531, 0.641, 0.686, and 0.656 ppm. A meaningful statistical difference was observed among the lead-mean of the different regions of Tabriz ($P < 0.05$). Considering the obtained results as well as the standard rate of the lead, all the gathered samples were infected by lead lower than the standard rate. In the present study no meaningful statistical relationship ($P > 0.05$) was observed among the mean-rates of milk lead as well as daily milk production of the cattle in different understudied regions

Keywords: *Lead, Milk, Cattle, Tabriz*

Profile of virulence genes of *Staphylococcus aureus* isolated from subclinical and clinical bovine mastitis in the Alborz province

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The aim of this study was to determine virulence genes patterns of *Staphylococcus aureus* isolated from bovine subclinical and clinical mastitis. A total of 1,920 quarters of 480 dairy cattle in seven commercial dairy farms of Alborz province, Iran examined using CMT test. *Staphylococcus aureus* were detected from clinical and subclinical samples with bacteriological culture. Based on coagulase reaction and 23sr DNA, a total of 33 and 12 strains of *Staphylococcus aureus* were isolated from subclinical and clinical mastitis cases respectively. The *Staphylococcus aureus* strains were characterized genotypically by polymerase chain reaction using oligonucleotide primers that amplified genes encoding clumping factor (*clfA*), coagulase (*coa*), the gene segments encoding the X region of protein A gene *spa* (*SpaA-X*), accessory gene regulator (*agrIII*), hemolysin A (*hla*), and hemolysin B (*hlyB*). Based on a remarkable variability detected in the studied genes 17 different profiles were identified among the samples, indicating a great diversity of *Staphylococcus aureus* involved in the etiology of mastitis cases in this region. The predominant profile between subclinical and clinical cases was *clfA*, *coa*, *agrIII*. These results help in the understanding of the distribution of the prevalent *Staphylococcus aureus* strains among bovine subclinical and clinical mastitis isolates in Alborz province, and might contribute to the establishment of preventive strategies to decrease the spread of infection.

Keywords: *Dairy cattle, Staphylococcus aureus, Virulence genes, Clinical and subclinical mastitis*

Evaluation of the prevalence of enterotoxigenic and enteropathogenic *Escherichia coli* in raw milk and dairy products by Duplex-PCR

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Enterotoxigenic *Escherichia coli* is very important and usual, particularly in the developing countries and it is the main reason of diarrhea in travelers to developing countries. Enteropathogenic *Escherichia coli* strains are defined as intimin-containing diarrheagenic *E. coli* but do not produce Shiga toxin, which can cause diarrhea in humans and different animal species. Pathogenic *Escherichia coli* strains are commonly transmitted through contaminated food and water. The aim of this study was to identify *Escherichia coli* pathotypes in raw milk and dairy product samples using Duplex PCR. A total of 102 raw milk and dairy products samples were randomly collected from different localities in Western Azerbaijan and transferred in sterile conditions to department of food and drug microbiology lab, affiliated to Tabriz University of medical sciences. 46 *E. coli* were identified based on culture and a number of biochemical tests. Duplex PCR assay were developed for detection of enterotoxigenic and enteropathogenic *Escherichia coli*. The target genes selected for each category were the *lt* and *st* for ETEC, *eae* and *bfp* for EPEC isolates. According to the results, the rate of *E. coli* in samples was 45%. No ETEC strains were isolated from any of the samples examined and only 2 (4.34%) EPEC strains were identified. Previous studies and our results showed the high percentage of *E. coli* and EPEC in raw milk products. It was concluded that using raw milk without pasteurization, and using traditional dairy products produced in unsanitary conditions and are the main resources for growth of *E. coli* pathotypes.

Keywords: *Escherichia coli*, Enterotoxigenic, Enteropathogenic, Raw milk products, Duplex-PCR

Evaluation of nerve regeneration of Commiphora myrrha extract on experimental sciatic nerve injury in rabbit

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Peripheral nerves are structures frequently affected by traumatic lesions. Neural tissue is one of the most important tissues of the body which recovers extremely sluggishly after being injured. The resin of *Commiphora myrrha* (Burseraceae) has been used for several centuries for the treatment of various diseases in the traditional medicines of India, China, Rome, Greece and Babylon. They are used in indigenous medicines for the treatment of wound, pain, arthritis, fractures, obesity, parasitic infection and gastrointestinal diseases. In this study, 30 New Zealand 35-36 weeks old and weighing 2.5-3 kg male rabbits were used, and randomly divided into four groups (A, B, C, D, E and F) of 5 rabbits each, according to the procedure performed. Group A (control), group B (userin), group C (commiphora 2.5%), group D (commiphora 5%), group E (commiphora 10%), group F (commiphora 20%). The animal was anesthetized and in all groups the nerve was sharply cut, and then anastomosed with nonabsorbable 6/0 material suture. For evaluation reair healing, 45 days after surgery, nerve samples were sent to laboratory. In this study some parameters such as bleeding, inflammation, hyperemia, and fibroplasia were evaluated. There is significant difference between groups C and D with others groups. The results show commiphora has positive effect on sciatic nerve regeneration in rabbits.

Keywords: *Commiphora myrrha extract, Sciatic nerve, Rabbit.*