

Experimental study on inhibitory effect of *Brassica oleracea* L. var. *italica* (broccoli) ethanolic extract on 4-Nitroquinoline-1-oxid -induced oral carcinoma in the mice

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Squamous cell carcinoma of the oral cavity is the most frequent cancer in the world. Cancer chemoprevention is using of natural, synthetic or biological substances to reverse or prevent the development of cancer. *Brassica oleracea* L. var. *italica* (broccoli) because of substantial quantities of isothiocyanates and polyphenolics has cancer protective properties. In this study, 60 male mice were randomly allocated into four groups. Group 1 served as control and was given the basal diet and tap water without 4-NQO. Mice from Groups 2 to 4 assigned to receive 30 ppm 4-NQO in drinking water for 12 weeks. Simultaneously, the mice of groups 3 and 4, received broccoli extract at the doses of 200 and 400 mg/kg respectively, 3 times per week. At the end of experiment, the mice were euthanized and tissue specimens collected from tongues and routine sections were prepared. Microscopically, there were no pathological alterations in control mice. Premalignant lesions appeared after 12 weeks of the last application of 4NQO in carcinogen groups. Administration of broccoli extract at both doses during the experiment caused a significant reduction in the frequency of tongue preneoplasms. The incidences of tongue severe dysplasia in the high dose group was significantly smaller than the low dose group ($p < 0.05$). The results obtained showed, broccoli is effective in prohibition of progress of oral cavity mucosa induced by 4-Nitroquinoline-1-oxid.

Key words: *Brassica Oleracea* L., 4-Nitroquinoline-1-oxid, Oral Carcinogenesis, Mice

Effect of nano chitosan contain *Artemisia sieberi* and *Satureja hortensis* essences isolated on *Aspergillus* species from fish meal factories producing of mazandaran province

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Fish meal includes valuable feeding materials along with high contents of digestible vitamins, minerals and proteins. Contamination with mycotoxins producing fungi reduce crops yields and cause irreparable damage to public health. In present study, the effect of *Artemisia* and *Satureja* nano essences on aspergillus species isolated from fish meal factories were evaluated by micro dilution in Mazandaran province. Chitosan is a non-toxic, natural, biodegradable material which is derived from chitin. Chitosan has a strong antimicrobial property against a broad spectrum of micro organisms, including fungi, a Gram-positive and Gram-negative bacteria. This study involved separation and identification of aspergillus species in 89 samples of fish meal from 14 factories in Mazandaran province. After cultured in Sabouraud's Dextrose Agar medium and incubation, each colony was thoroughly investigated and observed under microscope; moreover, the present aspergillus were purified. Furthermore, the highest numbers were related to aspergillus fumigatus and aspergillus nidulance, respectively. Subsequently, to carry out the MIC, MFC test, the RPMI1640 2% culture medium was used in the micro plate. The MIC test results reveal that *Satureja* nano essence has a better effect compared to *Artemisia* nano essences; in addition, the MFC test results reveal that *Artemisia* nano essence is more effective compared to nano essences of *Satureja*.

Key words: Fish Meal, *Aspergillus*, Nanoessences, *Artemisia Sieberi*, *Satureja Hortensis*

Effectiveness of a probiotic, *Pediococcus acidilactici* on the growth performance and hematological parameters in the ornamental fish, Green Terror (*Andinocara rivulatus*)

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This research was conducted to define the effect of probiotic *Pediococcus acidilactici* (CNCM-MA 18/5 M, Lallemand, France) on the growth performance and hematological parameters of the ornamental fish, Green terror (*Andinocara rivulatus*). In this regard, 120 fish Green terror with average weight and length of 3.93 ± 0.20 (g) and 4.73 ± 0.26 (Cm) were used and randomly release to the 12 aquarium. After 14 days period adaption aquariums. The hypotheses were studied with use of four isocaloric-isonitrogenous ration containing 0, 10⁹, 10⁸, 10⁷ CFU/kg probiotic, *Pediococcus acidilactici*, each with three replicates. Along the period, the fish were biometry every 21 days to compare their growth performance at each treatment, and after 84 days at the end of the period, blood samples were taken to evaluate the effect of test diets on heamatological parameters. The results showed that the growth performance had significant increase ($P < 0.05$) in treatments feed with probiotic. The fish fed with the diet containing 10⁸ CFU/kg diet probiotic showed statistically significant growth increment. The hematological parameters (i.e. RBC, hemoglobin, hematocrit, MCV, MCHC, MCH, and WBC) in the group fed diet containing 10⁸ CFU/kg probiotic showed statistically significant differences in comparisons to the control groups ($P < 0.05$). In summary, this research suggests that the Green terror fish off spring that were fed with a ration contain 10⁸ CFU/kg diet probiotic grow well, and probiotic *Pediococcus acidilactici* can affect growth and hematological indices significantly.

Key words: Probiotic (*Pediococcus Aacidilactici*), Growth Performance, Hematological parameters, Ornamental Fish, Green Terror (*Andinocara Rivulatus*)

Evaluation of oxidative stress in the horses with strangles

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This study was conducted on horses with strangles for evaluation of serum concentration of F2isoprostanes (F2iso) and malondialdehyde(MDA) as oxidative markers and serum antioxidants (Glutathione Peroxidase (GPx), Superoxide Dismutase (SOD), Catalase (CAT) and Total Antioxidant Capacity (TAC)). 60 horses confirmed on the bases of clinical and laboratory signs of strangles. Blood samples tacked from jugular vein and separated serum. Sampling performed from 52 healthy horses with same management and diet, too. Serum concentrations of F2iso, MDA, TAC and HB and activity of GPx, SOD and CAT enzymes measured in the samples. In the patient group the means of serum concentrations of MDA and F2iso were high than healthy group significantly ($p=0.001$). Activity of GPx, SOD and CAT enzymes and serum concentration of TAC decreased in patient group, that the difference means between two groups was significant ($p=0.002$, $p=0.001$, $p=0.001$ and $p=0.004$, respectively). The mean of HB in the serum of horses with strangles increased significantly ($p=0.003$). In conclusion, there was an oxidative stress in the horses with strangles and increase the means of serum concentrations of MDA and F2iso and decrease GPx, SOD, CAT and in horses affected with strangles. This result must be observing in treatment them.

Key words: Strangles, Oxidative Stress, Horse

Protective effect of melatonin in lamotrigine-treatment on newborn mice cerebellum

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The purpose of this study was to investigate the Protective effect of melatonin in lamotrigine-treatment on newborn mice cerebellum. The adult female mice were divided randomly into 5 groups, including one control and four experimental groups, after formation vaginal plagues. Group I received normal saline, group II received low-dose the lamotrigine, group III received low-dose lamotrigine + melatonin, Group IV received high dose lamotrigine, and group V received high doses of lamotrigine + melatonin on days 9, 10 and 11 of gestation. They received the drugs within gavages. Babies born after morphometric procedures were placed within the 10% fixative solution for hystothechnic procedures. The Samples were stained with H&E general staining and special staining of Tunnel. The data were analyzed statistically using ANOVA followed by the Tokey's multiple comparison tests was performed. The results of microscopic studies demonstrated tissue changes including incomplete villus in the cerebellum, lack of completion of cerebellar cortex's 3 layers, the presence of apoptosis or necrosis and congestion in the Lamotrigine intervention groups. Mean while, the combined effect of melatonin+ lamotrigine was significant compared with only lamotrigine group. Based on the obtained results it was observed in the fetus growth parameters morphometry that the effect of melatonin is a protective effect as an antioxidant against free radicals created from administrating of Lamotrigine. Also, it was observed that melatonin had no protective effect on decreasing of gray layer thickness undertreated with Lamotrigine. The density of Purkinje cells was decreased because of reduced mitotic activity in the intervention groups; so, the incidence of apoptosis was observed. Whereas the combined effect of melatonin in the intervention groups had no protective effect on the incidence of apoptosis. Prescription Lamotrigine reduced fetal growth parameters and Parameters will be slightly reduced cerebellar tissue. Melatonin administration significantly from the beginning of gestation, fetal growth parameters has an effect, but a significant protective role in tissue pathologic changes in the cerebellum and cerebellar tissue has no character.

Key words: Lamotrigine, Melatonin, Mice, Teratogen

The study and comparison of the quantity of amino acids in the skin of dogs diagnosed with Dermatophytosis and in healthy dogs

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The stratum corneum includes keratinocyte cells; this is the first defense layer which stands in the face of pathogenic microorganisms. Identifying the components of stratum corneum can provide plenty of information on its resistance against superficial infections. Stratum corneum contains higher amount of amino acids which most of them can serve as a source of nitrogen for the growth and colonization of dermatophytes. The objective behind this study is to investigate and compare the quantity of amino acids in dogs diagnosed with dermatophytosis and in healthy dogs. 30 dogs suspected lesions of dermatophytosis and 30 healthy dogs were used in this study. Skin scraping samples from 30 dogs with no obvious skin lesions and from 30 dogs suspected lesions of dermatophytosis were taken. Amino acids were analyzed by high-performance liquid chromatography in both groups. Between two groups, significant differences were found for the rate of aspartic acids, serine and asparagine amino acids. Aspartic acid seems to play inhibitory role in growth and colonization of dermatophytes in a way that less of it is found in infected dogs compared with healthy counterparts. It seems asparagine and serine has a stimulatory role in the growth and colonization of dermatophytes. The inhibitory properties of aspartic acids are suggested to be used in the manufacture of more effective antifungal agents especially for chronic type of dermatophytosis.

Key words: *Stratum Corneum, Dermatophytosis, Amino Acids, Dogs*

Transfection Enhanced Green Florescent Protein to bovine spermatogonial colony through Turbofect

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Spermatogonial Stem Cells (SSCs) are the only stem cells in adults that can transfer genetic information to future generations. Considering that a single SSC gives rise to a vast number of spermatozoa, genetic manipulation of these cells is a potential novel technology with feasible application to various animal species. The aim of this study was to evaluate Enhanced Green Fluorescent Protein (EGFP) gene transfection into bovine spermatogonial colonies via Turbofect carrier and assess the best incubation day in uptake exogenous gene by spermatogonial colonies. Transfection efficiency EGFP gene through Turbofect was determined different three days (day 4, 6 and 8) after the beginning of the culture by fluorescent microscope. Immunofluorescent staining against OCT4 and Vimentin led to the confirmation of the nature of both SSCs and sertoli cells. Results showed that the transfected colonies through Turbofect increased significantly ($p < 0.05$) in each three days of transfection in comparison with those of the control groups. The transfection colonies were higher (significant) in comparison with those of the free exogenous gene carrier groups. The rate of infected colonies was higher when transfection proceed day 4. It was concluded that Turbofect can be used safely for direct loading exogenous DNA to spermatogonila colony particularly during the fourth day of culture.

Key words: Spermatogonial Stem Cells, Transfection, Turbofect

Acaricidal Mechanism of Some Entomopathogen Fungus Strains on Tick (*Rhipicephalus annulatus*)

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Biological control of parasites by entomopathogen fungi is the best way to control them instead of using of chemical agents. Entomopathogen fungus is non pathogen for animals and plants. Ticks are one of the most important parasites of animals that can transmit very important pathogens. *Rhipicephalus annulatus* is a hard tick that infested animals and humans. This study demonstrated on acaricidal mechanism of entomopathogen fungi (*Metarhizium anisopliae*, *Beauveria bassiana* and *Lecanicillium psalliotae*). Acaricidal mechanism of each strains observed with optical microscope (lens 100 ×) after death of ticks due to espousing with fungal strains. The results showed that each fungi can affect the tick cuticle and then penetrate to haemocoel cavity by means of species and strain-specific mechanisms and each fungal strain had different special mechanism for killing the ticks. Results obtained from this study can help us to find the choice fungal strain for biological control of arthropods and ticks, with knowing the structure of their teguments.

Key words: Acaricidal Mechanism, Entomopathogen Fungi, *Rhipicephalus Annulatus*, Tick

Changes of NGAL compared with some common biomarkers of acute renal injury after cisplatin administration in dog

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The objective of this 28-day study was to investigate changes in plasma and urine neutrophil gelatinase-associated lipocalin (NGAL) levels in dogs with acute kidney injury following the administration of cisplatin. A total of 10 healthy adult male Iranian mixed dogs, (dosed dogs=7 and control dogs=3) were include in this study. Treated dogs were given cisplatin at a dose of 0.75 mg/kg for 5 consecutive days. Urine and blood samples were collected on days 0, 1 (1, 2, and 4 hours) 2, 3, 4, 7, 10, 14, and 28. Clinical examinations of the Animals were performed twice per day for signs of toxicity with cisplatin. Changes in creatinine serum levels, indicating renal function (glomerular filtration rate) on the test and control animals on day 0 were on average 0.66 and 0.94 mg/dL, respectively. From day 2 onwards, significant changes in the creatinine serum levels in the test animals were observed. On the final day of the experiment, mean values of the creatinine serum level for the test and control animals were 1.35 and 1.00 mg/dL, respectively. Both Plasma and urine NGAL levels within 2 hours after the first injection of cisplatin were significantly increased. The plasma NGAL fell to its initial value at day zero after 24 hours. However, the urine NGAL level did not decrease even after 24 hours. In conclusion, the results of this study showed that the plasma and urine NGAL levels rise much faster than urea, creatinine and other traditional biochemical markers, and therefore, they can be used as excellent early markers of detect acute kidney injury in dogs. To our best knowledge, this is the first study on evaluating on NGAL as a biomarker for acute kidney injury following administration of cisplatin in dogs.

Key words: Acute Renal Injury, Urea, Creatinine, NGAL, Dog

Bacteria identification in shrimp hatcheries and farms in Iran

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The identification and detection of the pathogens in shrimp hatcheries and growout farms had been done during 2007 until 2011 throughout the 11 hatcheries and 16 growout farms in Khozestan, Bousher, Hormozgan and Sistan and belouchestan. In the hatcheries, from napli, zoea, mysis and postlarvea and in thrgrowout farm at the first and end of shrimp season, 10 shrimp collected. The samples cultured in TSA and TCBS media for total count and vibrio count, respectively. In Khozestan province, detected 15 species containing *V. alginolyticus*, *V. proteolyticus* and *V. proteolyticus* detected were the main bacteria. In Bousher province detected 12 species containing *V. parahemolyticus*, *V. vulnificus*, *V. alginolyticus*, *V. flavialis* and *V. harveyi* were the main bacteria. Finally, 7 species containing *V. parahemolyticus*, *V. vulnificus* and *V. anguillarum* were the main bacteria in Hormozgan province but in Siatn and belochestan province, 14 species detected so that, *V. parahemolyticus*, *V. vulnificus*, *V. alginolyticus*, *V. natrigenes* and *V. flavialis* were the main pathogens. It is concluded that the important factors can involved in species diversity were different pH levels, salinity, temperature and oxygen concentration.

Key words: Bacteria, Hatcheries, Farms, Shrimp, Identification