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Review of the cytotoxic activity (anticancer) of marine sponges

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Abstract

Marine drugs are one of the new ways of the development and manufacture of pharmaceutical products from aquaculture. Cancer is one of the common diseases and the main cause of death in the world. Biological and chemical reviews of sponges have shown that they are a rich source of anticancer compounds. In the case of cytotoxic effect of sponges extensive studies have been done especially in American and European countries. A lot of studies on the Persian Gulf and Oman Sea on sponges are in progress from past decade. The results of this evaluation indicated that sponges: *Iophon* sp. ،*Dysidea pallescens* ،*Ircinia echinata* ،*Dysidea avara* ،*Axinella sinoxeai*s and *Ircina* spp of the Persian Gulf and its Islands have cytotoxic effects on cancer cell lines. The cytotoxic properties of marine sponges, it has been proved in many parts of the world and on the other hand, the diversity and abundance of sponge species in the Persian Gulf and Oman Sea reviewed in this scientific evaluation and examined the cytotoxic properties of the marine sponge with emphasis on the sponge in the Persian Gulf.

Keywords: Sponge, Natural compounds, Cytotoxicity, Persian Gulf

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Haematological study of safflower (*Carthamus tinctorius*) extract fed common carp (*Cyprinus carpio*) fingerlings exposed to sub lethal salinity stress

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Abstract

Some dietary additive can lead to elevate fish tolerance in environmental stress situations. In this study, effect of dietary safflower (*Carthamus tinctorius*) extract on hematological parameters of common carp (*Cyprinus carpio*) fingerlings in salinity stress was investigated. In this regard, fish with average weight of 9.51±0.13 g were fed with different levels of safflower extract (0 (control), 0.5, 1.5 and 3 % in diet) for 70 days. At the end of rearing period, the fish were exposed to a sublethal salinity stress (10g/l) and for hematological indices were studied in four times including before salinity stress, 6, 12 and 48 h after salinity stress. According to the results red blood cell count (RBC) was significantly higher in fish of control group as compared with treatment groups, and white blood cells (WBC) was recorded lower in fish of control group as compared to treatments ($P<0.05$). In all of studied fish levels of RBC, WBC, hematocrit (Hct) and hemoglobin (Hb) increased 6 h post challenge. Red blood cell counts (RBC) increased 24 h and 48 h after salinity stress but other mentioned factors decreased during 48 h post challenge. On the other hand, levels of hemoglobin 48 h after salinity stress in fish that fed with 1.5% and 3% safflower extract in diets were significantly higher compared to other groups and WBC in these fish were recorded lower compared to others 48 h post challenge too ($P<0.05$). Totally it seems, safflower extract can improve salinity stress tolerance in common carp.

Keywords: Safflower, Salinity stress, Hematology, Common carp

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Sub-lethal effect of pesticide danitol on erythrocyte antioxidant enzymes activity of common carp (*Cyprinus carpio*)

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Abstract

Danitol is a non-systemic insecticide, which is used in agriculture. Considering the rare data on danitol toxicity in fish, the aim of this study was to investigate pesticide danitol toxicity in common carp and its effects on erythrocyte antioxidant enzymes activity. For this purpose, the fish were exposed to 0, 0.2, 0.5, 1, 1.5 and 2 mg/l danitol for 96 h; and danitol acute toxicity was found to be 0.47 mg/l according to mortality data. Then, the fish were exposed to 0.05 and 0.1 mg/l danitol for 21 days to investigate chronic effects of danitol on the fish erythrocyte antioxidant enzymes. At the end of the trial, blood samples were taken from different treatments and used for antioxidant enzymes' activity determination. The results showed that danitol is a "very toxic" substance in common carp. In additation, danitiol toxicity decreased superoxide dismutase, catalase, glutathione peroxidase and glutathione reductase activity, but not significantly. There was a negative and significant relationship between danitol concentration and antioxidant enzymes' activity. Overall, it is suggested that danitol toxicity leads oxidative stress in common carp and determination of antioxidant enzymes' activity is a suitable indicator to monitor the stress.

Keywords: Pollutant, Pesticide, Blood, Physiology

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Evaluation of antibacterial activity and immune parameters of skin mucus and plasma in Persian (*Acipenser persicus*) and Russian sturgeon (*Acipenser gueldenstaedtii*)

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Abstract

The present study aimed to compare immune parameters of skin mucus and plasma in Persian sturgeon and Russian sturgeon. The mucus and plasma samples was collected from 20 specimens (10 Persian and 10 Russian sturgeon). Total protein, lysozyme, alkaline phosphatase (ALP) and total immunoglobulins of the samples were measured. The levels of total protein, immunoglobulin, alkaline phosphatase of Persian sturgeon in plasma and mucus were, 8.46 ± 0.26, 7.6 ± 1.111, 38± 1.6, 23± 1.4, 134.06 ± 8.77 and 23± 1.4, respectively. The levels of total protein, immunoglobulin, alkaline phosphatase of Russian sturgeon in plasma and mucus were, 9.71 ± 0.75, 8.2 ± 1.40, 36.6 ± 1.4, 19.8 ± 2.4, 83.70 ± 19.68 and 23.17 ± 2.54, respectively. Results showed that the levels of total protein and total immunoglobulin in both samples of mucus and plasma and levels of alkaline phosphatase in mucus were not significantly different between the two species ($P>0.05$), While the levels of lysozyme in mucus and plasma and alkaline phosphatase levels in plasma samples were recorded significant differences between the two species ($P<0.05$). In additation, no antibacterial activity in mucus and plasma of the two species were recorded.

Keywords: Non-specific immunity, Antibacterial activity, Sturgeons

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Study on some growth characteristics of trout barb (*Capoeta trutta*) in Bushehr and Tigris basins

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Abstract

Studying growth characteristics of fishes is one of the most important factors in evaluating fish conditions and trout barb is one of the important native fishes in Bushehr and Tigris basin. For this purpose, 223 specimens of trout barb (*Capoeta trutta*) from four rivers of Bushehr Basin and eigth rivers of Tigris Basin were caught by seine net. The specimens, after collection and anesthetizing in 1% clove oil, were fixed in 10% bufferd formalin and transferred to the Ichthyology Museum of Isfahan University of Technology for further studies. Length and weigth of the specimens were measured by a digital caliper and a digital sclae to the nearest 0.01 mm and 0.01 g, respectively, and length-weight relationship and condition factor were calculated. Based on the parameter b and Pauly test, in general, the growth for this fish was a positive allometric pattern, however, in some populations such as Ahram, Doirej, Eivan Abasi, Sirvan and Zimakan rivers, the growth pattern was negative allometric, indicating unsuitable feeding conditions in these rivers.

Keywords: Length-weight relationship, Growth, Cyprinidae, Barb

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The effects of dietary Natuzyme multi-enzyme on susceptibility to Abamectin exposure in common carp (*Cyprinus carpio*)

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Abstract

Some pesticides, such as Abamectin have ability to penetrate and absorbed the skin or digestive system. So, using a variety of multi-enzymes for increasing the efficiency of the digestive system of fish has been increased. The aim of this study was to utilize Natuzyme multi-enzyme in common carp (*Cyprinus carpio*) diets and investigation of its impact on fish survival rates along with the Abamectin. For this purpose, fishes were divided into 2 treatments with 3 replications and each groups feeding with two different types diets (with enzyme 750 mg/kg and without enzyme) for eight weeks. After that time, 21 fishes were exposed from each group with concentrations of 1.243 mg per liter of Abamectin for 96 hours. All of the physicochemical parameters of water and the amount feeding in the two groups were similar in this study and just concentrations of multi-enzymes were related. Finally, LC_{50} of Abamectin for fishes that they had consumed Natuzyme multi-Enzyme was determined; for this aim 147 fishes exposed in different Concentrations of Abamectin (0.25, 0.5, 1, 2, 3, 6 ml/L) for 96 hour and. mortality rates were recorded at time of 0, 24, 48, 72 and 96 h. Analysis of the data showed significant difference between treatment and control groups in terms of fatalities ($P < 0.05$). Higher mortality related to treatment 1. The 96 h LC_{50} of abamectin for Treatment 1 was 0.305 mg/L. The results of this study showed that the usage of Natuzyme multi-enzyme in the common carp diets can increase the death rate and toxicity of Abamectin. Our result well confirmed that however Natuzyme multi-enzyme could increase growth indices in carp, but because of elevation of phosphorus and nitrogen in higher doses, immune system will be decreased and eventually mortality rate will be increased during lethal exposure to the lethal concentrations of Abamectin, so this dietary supplement in the form of exposure to environmental contaminants, especially pesticides with different half-life is not recommended.

Keyword: Natuzyme multi-enzyme, Abamectin, Common Carp, Diet

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The status of introduction and farming of the Nile Tilapia (*Oreochromis niloticus*) in Iran

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Abstract

The aims of this study were the survey of biological and ecological adaptations, other experiences in the world and different viewpoints about farming of the Nile tilapia (*Oreochromis niloticus*) with regarding to Iranian's situation. In 2008, the Nile Tilapia was introduced to achieve localization of technology and knowledge of tilapia fish production, de-employment and the possibility of controlled development in Bafgh, Iran. The characterizations of the fish, as an invasive species, are high adaptation to changes in salinity levels and oxygen availability, use of different trophic levels, high reproductive rate. The recent studies have confirmed the presence of tilapia species in the southwest of Iran that creates a warning. Due to the lack of successful control methods and the mentioned ecological destruction effects, it is not recommended to introduce the species to the country.

Keywords: Tilapia, Ecosystem, Environment, Iran

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