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## **Effect of Raffinose Oligosaccharide and *Pediococcus acidilactici* bacteria on carcass composition of goldfish (*Carassius auratus*) exposed to silver nano particles**

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### **Abstract**

Aim of this study was to investigate the protective effect of pre-treatment of bacteria *pediococcus acidilactici* and *oligosaccharide raffinose* on carcass composition of Goldfish (*carassius auratus*) in exposure to nano silver. Accordingly, 250 fish with a average weighing of  $26.3 \pm 0.18$  fed for 6 weeks in four treatments and each treatment with three replications including diet without food supplement (control 1), probiotic diet of bacteria with a concentration of  $10^7$  colonies per gram (treatment 2), food containing probiotic raffinose (1 g/kg) and synbiotic (treatment 4). After the end of the feeding period, 50% of the nano-silver concentration (0.5 mg/L) was added to the treatments for 14 days. At the end of the 14-day exposure, blood and carcass sampling was performed. Analysis of the data showed that there was no significant difference between moisture content, ash, protein and carcass fat ( $P < 0.05$ ). According to the results, Rafinose supplementation had the greatest effect on carcass fat. Among the supplements, the synbiotic food on carcass protein, ash and moisture showed more effect.

**Keywords:** Goldfish, Nanosilver, Peribiotic, Probiotic

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## **Effects of dietary administration of Formic acid on mucosal immune, innate immune parameters of common carp fingerling (*Cyprinus carpio*)**

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### **Abstract**

The present study was performed to investigate the effect of different levels of formic acid on mucus and serum immunity parameters in *Cyprinus carpio*. For this purpose, 360 fish with average weight of 21±5 g were fed on diets supplemented with 0%, 0.5%, 1% and 2% Formic Acid (FA) for 8 weeks. At the end of feeding trial, sampling was done from mucus and blood. Mucus protease and mucus and serum immunoglobulin didn't show significant differences ( $P \geq 0.05$ ) in FA treatments compared to control. Mucus and serum lysozyme showed significant increase ( $P \geq 0.05$ ) in 2% FA treatment compared to other groups. These results revealed beneficial effects of lysozyme and protease as immune parameters is using 2% dietary FA in carp.

**Keywords:** Blood, Common carp, Formic Acid, Immune, Mucus

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## **Some strategies for Iranian Fisheries Economics**

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### **Abstract**

Fisheries are one of the most important economic sub-sectors in providing food security, trade, jobs, entrepreneurship and deprivation in the world. Fisheries economy, along with other commercial activities in the seas and coastal regions, play a major role in the economic and social development of these areas and inland waters and have always been the first priority in the development of these areas. Sufficient knowledge of the fisheries economy and its training and promotion will play an essential role in the health of the society and empowerment of the country's exports. Investments in this sub-sector have grown by about 4 percent from around 110 billion Rials to 3030 billion Rials in the last 25 years since 1991. The exploitation of fishery products with over one million and 100 thousand tons and direct employment of over 223 thousand people, both growing by about 5 percent, today, it has brought approximately more than 400 million dollars. Responsible fishing of the sea and sustainable aquaculture in the coastal lines of the country assure utilizing more capacities and strengthening the fisheries economy in Iran. Regarding the strategies of this article, we can look specifically at marine development programs in the form of Integrated Coastal Zone Management programs and the use of renewable power and heritage value of fisheries.

**Keywords:** Aquaculture, Fisheries economy, Fisheries of Iran, Fisheries strategies fishing

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## **Gill and skin ectoparasites identification in suckermouth catfish (*Hypostomus plecostomus*) imported into Iran**

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### **Abstract**

In order to high diversity of aquarium fishes, some species should prepare from abroad. Through the importations, disease transmission will be rampant. External parasites is one of the important difficulties in aquarium fish keeping. In this research 180 imported suckermouth catfish (*Hypostomus plecostomus*) from South-East Asia were examined for gill and skin ectoparasites in spring 2017. The samples were transferred with their original water. Parasites identification were done with the direct observing with light microscope, staining and slide preparing to determination with their keys. 58 out of fish have no parasite (32.22%) and 122 fish have gill /skin ectoparasites (67.78%). Four parasites species were identified, e.g. three protozoans and one monogenean. The protozoans were *Trichodina* sp., *Trichophrya* sp. and *Ichthyophthirius multifiliis* and the monogenean was *Gyrodactylus* sp. *Trichophrya* was only observed in skin, but the others were present in gill and skin. Among these, external parasites have high speed transmission, then it is recommended to investigate new fish for such pathogens, as well as their health certificate.

**Keywords:** Ectoparasite, Ornamental fish importation, Sucker mouth catfish

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## **Effect of *Spirulina platensis* powder on digestive and liver enzymes and biochemical parameters in *Mugil cephalus* Linnaeus, 1758**

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### **Abstract**

This experiment was conducted to evaluate the effect of *Spirulina platensis* powder on the liver and digestive enzymes and biochemical parameters of *Mugil cephalus* for 60 days. The experiment was conducted in a completely randomized design with 450 of grey mullet larvae (with average weight of  $0.72 \pm 0.02$  g) in 5 treatments and 3 replicates ( $n=30$  in each replicate) and included: control group without using algae extract, and another groups (treatment 2, 3, 4 and 5) the amounts of this extract were 5, 10, 15 and 30 g/kg food. The results showed that at the end of experiment, although the highest the activity of protease and lipase enzymes, the lowest the activity of alanin aminotransferase (ALT) and alkaline phosphates (ALP) were observed in treatment containing 15 g/kg spirulina algae powder, in all of these parameters, treatment 5 (20 g/kg) (4) showed a significant difference compared with control treatment ( $P < 0.05$ ), in ALT, amylase and lipase, there were no significant difference among treatment 4 and 5 ( $P > 0.05$ ). The lowest cholesterol, glucose and triglyceride, the highest globulin, albumin and total protein were recorded in treatment 4. Finally, the present results showed that providing diet containing 15 g/kg spirulina algae had positive effects on the activity of liver and digestive enzymes and blood biochemical parameters of grey mullet.

**Keywords:** Aminotransferase, Biochemical parameters, Digestive enzyme, *Mugil cephalus*, *Spirulina platensis*

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## **Biomass and Catch Per Unit of Area Estimation and Distribution Pattern of Largehead hairtail (*Trichiurus Lepturus*) from Northcoast of the Gulf of Oman**

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### **Abstract**

*Trichiurus lepturus* is considered as one of the most economically important marine fish and consumed as food in many countries. With increasing population growth, sustainable management is essential for continuing exploitation of this species. The current study was conducted to assess the amount of biomass and Catch Per Unit of Area (CPUA) as well as to determine the distribution pattern of *Trichiurus Lepturus* as one of the most important and commercial fish species in the north coast of the Gulf of Oman. Samples were collected from 94 trawl stations selected at stratified random procedure. The study area was stratified to five layers (A to E) covering the depth layers of 10-20, 20-30, 30-50 and 50-100 m. The catch rates of CPUA and biomass of *T. Lepturus* were estimated 4778.3 kg/nm<sup>2</sup> and 2220.2 tons, respectively. The highest value of biomass for *T. Lepturus* was recorded in Chabahar to Ramin (D strata, 861.8 tones) in the east coast of Chabahar and the lowest value (105.9 tones) was estimated for stratum A (west coast of Chabahar). The highest value of biomass (1634.5 tones) was observed at 50-100 depth layer. On the other hand, the highest CPUA (1604.8 kg/nm<sup>2</sup>) was recorded in stratum D and the lowest CPUA (456.4 kg/nm<sup>2</sup>) was recorded in stratum A. The highest value of CPUA (701.5 kg/mn<sup>2</sup>) was observed at 50-100 depth layer. It was concluded that stratum B and D are the best fishing area as per higher density and distribution of *T. Lepturus* and depth of distribution deeper than 50 m.

**Keywords:** Abundance, Biomass, Distribution, *Trichiurus Lepturus*

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## **Feasibility study on the cultivation of *Cyprinidae*, in springlet of sugarcane farms (Mirza Kuchak Khan-Khorramshahr agro-industry)**

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### **Abstract**

Nowday aquaculture is accepted as one of the most important sources of human food production and experts consider it to be the most reliable way to reduce the pressure on aquatic reserves and overfishing. In our country many water resources that are not suitable for drinking and agricultural purposes are very good environments for aquaculture. In some people's thinking, sugarcane springlet is considered as a harmful and destructive environmental hazard. This research was conducted to determine the possibility of cultivation of *Cyprinidae* using the sugarcane springlet of Mirza kuchak Khan agro-industry (Iran, southeastern Khuzestan Province). In June 2018, the storage of fingerling fish was carried out in two soil pools with areas of 0.5 and 1.2 hectare. The storage density was 3000 fish per hectare and the duration of the breeding period was 180 days. During the breeding period, no change in water has been made and the physico-chemical parameters of the water have been monitored. Each of the pools was aerated overnight for 8 hours (3 hours at noon and 5 hours at night) with two air-conditioning and air-handling units. During the breeding period, in a specific time interval, with a digital scale and a biometric ruler, 15 fish were separately weighed and measured. During the breeding period, the trend changes of EC, pH and TDS in sugarcane farms springlet are  $6.61\pm 0.53$ ,  $8.07\pm 0.07$  and  $4387.9\pm 425.5$ , respectively. During the period, the average electrical conductivity of EC and PH pool water was  $7.22\pm 0.36$  ppt and  $8.43\pm 0.24$ , respectively. At the end of the period, the average weight and length of common crap, grass crap, big head and silver crap fish were 1248.5, 798.5, 1361.5, 1069 grams and 38.9, 35.1, 35, 40, 40.95 cm, respectively. And the total fish taken from the 1.7 hectare (two pools) was 5083 kilograms. The feed conversion factor of crap was 4.88. At the end of the breeding period, fish were tested by the Laboratory of the Veterinary Office for viral and bacterial diseases as well as the accumulation of heavy metals, It was found that fish meat do not pose a risk to human consumption.

**Keywords:** *Cyprinidae*, Mirza Kuchak Khan agro-industry, Sugarcane springlet

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