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Using AHP for selecting the best method for fish processing plant (Case study the Mirod fish processing plant)

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Abstract

The waste produced in the canning industry is very importance because of its high protein content. In Iran, these wastes are reused only by the boiler (fish meal and fish oil) method. Reuse of food waste can be an effective way to reduce waste, stabilizing food waste as well as generating energy, using modern processing methods and less damage to the environment. In this research, using the Analytical Hierarchy Process (AHP) method and identifying some methods for using fish waste, among the alternatives of fish meal, aerated compost, enzymatic hydrolysis and waste incineration using technical, economical, environmental and administration has identified the best way to utilizing waste from the factory for fish canning plant. The results of AHP showed that according to the experts, criteria and sub-criteria of environmental, economical, technical and administration, the best method for using fish waste canning was fish meal with a score of 0.459. The enzymes hydrolysis, aerobic compost and waste incinerators were rated at 0.256, 0.189 and 0.097, respectively. Ultimately, sensitivity analysis was carried out toward the general purpose. The overall inconsistency rate was also 0.07, which indicates the reliability of the evaluation results and the validity of the model. Regarding the studied conditions and sensitivity analysis, fishmeal was recognized as the best method for managing and using fish waste canning plant in the industrial zone of Mirood.

Keywords: AHP, Fish waste canning, Waste manegment

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A review of anticoagulant and anticancer properties of fucoidan polysaccharide extracted from brown algae

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Abstract

Algae are one of the most valuable natural resources in the world. These organisms have bioactive compounds that are widely used in medical and pharmaceutical fields. Fucoidan is one of the sulfated polysaccharides that is extracted from marine algae, mainly from brown algae. In recent years, it has been identified as an anticoagulant and anticancer agent. Due to the presence of some species of brown algae such as the genus *Sargassum*, Iran has a lot of potential for extracting this valuable compound. The study of the therapeutic properties of fucoidan can reveal several aspects of the biological activity of this important compound. Therefore, the present study aimed to evaluate the anticoagulant and anti-cancerous properties of fucoidan polysaccharide. This study can be useful in reflecting the biological properties of this polysaccharide.

Keywords: Anticancer, Anticoagulant, Brown algae, Fucoidan, Polysaccharide

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Reproductive Physiology the mechanisms of in Bony Fishes

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Abstract

Reproduction includes regulatory hormone processes, involving in growth and maturation of gonads and germinal cells, producing gametes (ovum and sperm) with fertilization ability, which is essential for species survival. Therefore, reproduction tissues should be developed during embryo development and after sexual puberty, germinal vesicles fully grew and effectively matured. Fish have several strategies for reproduction, consisting of viviparity (internal fertilization, embryo development and fetus essential nutrients provided within mother's body; ovoviparity (internal fertilization, embryo developed within ovary and fed with yolk sack of produced eggs); ovoparity (external development, embryo developed externally within broodstock environment).in the present study reproduction mechanisms of osteichthys during maturation process is discussed, including: Gonadotrop Releasing Hormones, pituitary gland, Gonadotropins, sexual steroids, spermatogenesis, ovulation, vitellogenesis, ovum development and oocyte maturation.

Keywords: Osteichthys, Ovum, Puberity, Reproduction, Sperm

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Optimized catch of the Largehead hairtail (*Trichiurus lepturus*) in the waters of the Oman Sea (Sistan and Baluchestan Province)

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Abstract

The purpose of this study was to develop a framework for investigating the catch trend and estimation of optimized catch limit of the *T. lepturus* stock by collecting catch data in the northern waters of the Oman Sea. In this research, catch data was collected for 20 years and optimized catch limit was estimate with the help of limited data approach and R software. The average (95% confidence interval) of the Bayesian surplus production model and Monte Carlo simulation for the intrinsic growth rate (r), maximum sustainable yield (MSY), biomass of maximum sustainable yield (BMSY), and fishing mortality of maximum sustainable yield (F_{msy}) were obtained 0.92 (1.12-0.76) annually, 8.42 (12.5-5.68) thousand tons, 18.2 (12.8-25.8) thousand tons, 0.46 (0.56-0.38) per year, respectively. The results showed that exploitation ratio of the Largehead hairtail stock is over fishing and decrease exploitation ratio and fishing effort proposed. It seems that reducing catch and fishing effort of *T. lepturus* stock will put in a more suitable condition in the Long-term and more benefits of the exploiters and the fishing community will provide.

Keywords: Bayesian surplus production model, Largehead hairtail, Monte Carlo simulation

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Fungal infections detected among some ornamental fish distributed in Gorgan city

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Abstract

Nowadays, ornamental fish business is of great attraction for investment and research. The present study was conducted to study the fungal contaminations of fresh water ornamental fish in Gorgan, during 2016. During this period, 164 fish, encompass of Singaporean Guppy (*Poecilia reticulata*), tiger barb (*Systemus tetrazona*), angel (*Pterophyllum scalare*), platy (*Xiphophorus aculatus*), swordtail (*Xiphophorus helleri*) and Molli (*Poecilia sphenops*), were randomly sampled from 4 shops in Gorgan. For examination of fungal contamination, skin and gill were sampled from the fish. The most frequent fungi were yeast, mucor and penicillium in the fish skin, and yeast and mucor in the fish gill. The highest fungal contamination in the fish skin was related to the *Aspergillus* in Gourami (33%), and the lowest related to the mucor in Singaporean Guppy (3%). In the fish gill, the most frequent fungi was yeast (33%) in Singaporean Guppy and the less frequent was related to mucor (11%) in swordtail. Swordtail fish was the most infected fish both in skin and gill, with mucor, yeast and alternaria, in the fish skin, and yeast and mucor in the fish gill.

Keywords: Fungi, Gorgan, Infectious, Ornamental fishes

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Analyzing Export of Iranian fishery products (2004-2014)

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Abstract

The statistics of the export of fish and fishery products were investigated from three aspects containing code, tariff names, and the trend of merging and adding tariffs for a period of 10 years up to 2014. In addition, by calculating and comparing the annual growth rate, the amount and total value, the Rial and Dollar unit value of export based on the differentiation of each country according to the Iranian fisheries organization was carried out. Results showed that during this period, about 468 thousand tons of exports which worth about 1.5 billion dollars and a unit value of about \$ 3.2 were done. The weight of the export products was about 12.8%, and the Rial and Dollar unit value were increased 26.5% and 12.8%, respectively. The value of the Rial unit with a growth of 12.1% has been around 3 times, but the dollar unit value has fallen up to 0.6 percent. Further, the most quantity and value of exports was about 71 thousand tons and \$ 250 million, respectively. In 2004, export started with 30 export tariffs codes and reached to 52 tariff codes in 2015. Among 296 World tariffs Code of fishery products, only 115 export tariff codes had been used. Iraq, and then Vietnam and UAE had always the highest number of exports among the top three issuers during the same period. The highest quantity and value of export belonged to Iraq, Vietnam and the UAE with a total of 76% and 73% of the period for these three countries. Due to the discrepancies in the statistics between customs duties and Iranian fisheries organization, it was necessary to organize statistics, tariffs and formulation of export strategies in order to increase the unit value of the export, and along with increasing export volumes, exact targeting in the share of export destinations should be taken into account by the authorities.

Keywords: Fisheries, Fisheries products, Iran, Seafood exports, Seafood trade

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The effect of changes in conical lift net mesh size on catch composition of Caspian Sea Sprat in Amirabad port

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Abstract

In the past, *Clupeonella engrauliformis* was the most abundant catch in the Caspian Sea Sprats but due to collapse in sprats stocks, *Clupeonella cultriventris* has been the most dominant species recently. According to change in catch composition, it seems necessary to review the fishing gear. Therefore, a research was done to study the effect of mesh size on length frequency of catch fish in the Amirabad fishing port in July and August in 2017. Three conical lift net with mesh sizes of 5.5, 7 and 8.5 mm (knot to knot) were used to catch fishes in three night. Weight and length of 3000 specimens were measured in more than 10 fishing efforts in fishing depth of 40 m. The results showed that more than 99 percent of the fish caught was *Clupeonella cultriventris*. The lowest average length was caught in mesh size of 5.5 mm. The length comparison of the caught fish between mesh size of 7 and 8.5 mm and 7 and 5.5 mm showed a significant difference. It seems that caught from different fish populations is the main reason for the results.

Keywords: Caspian Sea, Clupeidae, Conical Lift net, Mesh

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Effect of temperature on growth and fat storage of microalgae *Dunaliella Tertiolecta*

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Abstract

Biotechnology seeks to find effective stimuli to increase the rate of growth and the content of various biochemical compounds such as lipids and pigments in algae. Temperature is one of the most important physical factors that has a significant impact on the growth and activity of aquatic organisms. The ambient temperature plays an important role in accelerating the population growth of algae. *Dunaliella* is an algae that is categorized as chlorophyll in algae without cell walls, moving, and salty. *Dunaliella* two-tagged algae are recognized as the most resistant photosynthetic eukaryotic organism. Most microalgae produce high levels of lipids under stress conditions. Changing environmental conditions, in addition to affecting the amount of growth and fat production, can also affect the quality of the microalgae fat. In this research *Dunaliella* algae were cultured in Whalen culture medium after sampling from Uromiye Lake and purification. Experiments were performed with 4 treatments (20, 25, 30 and 35 degrees Celsius) and 6 replicates completely randomized. For the optimal growth of *Dunaliella*, the lightness of 3000 lux was achieved with 12 hours of lightning and 12 hours of darkness and Whalen's culture medium. Counts of algae cells, daily temperature and pH measurements, and fat content in different growth phases were assessed. Data were analyzed using SPSS software. According to the results, the growth of algae decreased with increasing temperature and the highest growth was observed at 20 °C. Also, the results showed that the highest amount of fat storage was in the droplet at 25 °C and in the constant phase.

Keywords: *Dunaliella*, Fat, Growth, Microalgae, Temperature

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Haematological response of Common carp (*Cyprinus carpio*) exposed to nano silver after feeding with food supplements

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Abstract

Due to the emergence of nanotechnology and the lack of awareness of the potential risks of these particles and the beneficial effects of probiotics on aquatic animals on the other hand, the present study examined the effects of nano silver contamination on the physiological indices of common carp fed with probiotics (bactocel bacteria), and probiotic (button mushroom) and synbiotic. The whole period of the experiment was 60 days. Fish were subjected to four experimental treatments of feeding with probiotic, probiotic and synbiotic after 6 weeks for 3-4% of body weight, then were exposed to 1 ppm of silver nanoparticles. The results of the data analysis showed that M.C.H, M.C.H.C, MCV and hemoglobin had a significant difference with the control group ($P<0.05$). Probiotics have led to a reduction in these indices. Hemoglobin increased in probiotic and synbiotic treatments and decreased in prebiotic treatment, which showed a significant difference with the control group ($P<0.05$). The amount of lymphocytes and eosinophils in probiotic treatment increased and the highest neutrophil content was observed in synbiotic treatment. Also, regarding monocytes, the results showed that monocytes have the highest levels in the treatment of prebiotics. The nutritional supplements used in this study greatly contribute to improving the resistance performance of common carp in exposure to silver nanoparticles.

Keywords: Common carp, Probiotics, Resistance improvement, Silver nanoparticles

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