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Great Achievements Made in Chinese Fisheries Sector

China is one of the countries with the longest history of aquaculture. During the past three decades since the implementation of reform and open-door policy, the aquaculture sector has been undergoing the rapidest development period in China. The world-largest aquaculture industry system consisting of aquaculture production, processing and trading has been established. Aquaculture has become the most important sector in agriculture in China, and has been playing an important role in optimizing product structure, increasing farmers' income and guaranteeing national food security.

Since 1978, aquaculture area has increased from 2.823 million hectares to 5.745 million hectares, while the labors involving in aquaculture and fisheries has increased from 3 millions to 13 millions and the total volume and value of aquatic products have reached 47.47 million tons and 445.75 billion RMB yuan, respectively, which are more than 10 times than those in 1978. The average consumption of aquatic products has reached 36 kg per capita, which is 1.6 times as much as the world average. Protein obtained from aquatic products has accounted for one third of the total animal protein, and the aquatic products have become the important source of animal protein for Chinese.

In 1978, aquaculture production accounted for only 26% of the total aquatic output

while the ocean catch accounted for more than 70%. Since 1988, China's aquaculture production has exceeded that from capture fisheries. In 2007, aquaculture production reached 32.78 million tons, accounting for 69% of the total aquatic production in China and 70% of the world total aquaculture production.

Thirty years ago, the processing of aquatic products was very weak, becoming a bottleneck in the production chain, while there were a total of 9,800 processing plants with an annual processing capacity of 21.24 million tons in 2007. After 30 years of development, both the processing capacity and technology level in China have been taking the lead in the world, increasing the the international competitive level of aquatic products.

Thirty years ago, the international trade volume of Chinese aquatic products was only 30 to 40 million US dollars annually. In 2002, China became the top exporter of aquatic products with the total value of 4.69 billion US dollars, while in 2007 the total value of exported aquatic products reached 9.74 million US dollars.

Source: China Fishery News, Dec. 3, 2008

2008 Annual Meeting of China Society of Fisheries

The 2008 Annual Meeting of China Society of Fisheries (CSF) was held on 25-28 November 2008 in Kunming of Yunnan Province of China. On behalf of AFS, Prof. Yang Yi, AFS president, delivered congratulation address during the opening ceremony held in the morning of 26 November 2008. Prof. Yang Yi briefed AFS history, objectives, activities and future events, and hoped to establish closer collaboration between AFS and CSF.

CSF holds the annual meeting for Chinese fisheries and aquaculture professionals to share their achievements in the past year. About 600 participants from all over China attended the annual meeting. There were more than 300 oral presentations on healthy aquaculture, disease prevention and seafood safety, fish germplasm resources and genetic breeding, nutrition and feed, environment, economics and management of fisheries resources, and seafood processing, fisheries equipment and engineering.

US Food and Drug Administration Opens Beijing Office

The US Food and Drug Administration opened its first overseas office in Beijing yesterday to better ensure the safety of increasing Chinese food imports.

"A permanent FDA presence in China will help us address the challenges presented by globalization," FDA commissioner Andrew von Eschenbach said at the opening ceremony.

"We look forward to working with the Chinese government and manufacturers to ensure that FDA standards for safety and manufacturing quality are met before products are shipped to the United States."

The FDA will open two more offices this week, one in Shanghai and the other in Guangzhou.

Christopher Hickey, the FDA's country director, said eight staff will be stationed in China. They will include inspectors and senior technical experts on regulation, policy, food, medicines and medical devices.

They will work with their Chinese counterparts to build capacity, and offer their experience and expertise, he said.

Their responsibilities will include inspecting local facilities, providing guidance on US quality standards, and eventually training local experts to conduct inspections on behalf of the FDA.

Shao Mingli, deputy health minister and head of China's State Food and Drug Administration, said the opening of the FDA office "provides a very clear signal to the whole world".

"As food and drug regulatory agencies, our first priority is to protect public health and life," Shao said.

"This is our top responsibility."

The opening of FDA China offices comes amid a huge milk contamination scandal that saw four babies die and 53,000 fall ill this year. The industrial chemical melamine was found in a number of dairy products.

The FDA last week issued an "import alert" for Chinese foods that may contain "dairy ingredients", urging importers to certify the products to be either free of such ingredients or melamine, otherwise the products will be denied entry.

Eschenbach said use of the import alert is a regular practice within the FDA's regulatory framework.

But the US would like to continue to work closely with China to resolve the issue, he said.

FDA associate commissioner for foods, David Acheson, said there was no timetable for the lifting of the alert, as it depends on how quickly the problem can be resolved.

Acheson said the United States will continue to import food from China and that trend was "going to increase".

Of the $320 billion in products the United States imported from China last year, about $4.4 billion comprised food, half of which was seafood such as shrimp, according to data from the US Census Bureau.

Also on Tuesday, Health Minister Chen Zhu said that China will send food and quality control officials to the US in the future.

Experts welcomed the potential partnership, but said it cannot solve all the problems.

Chen Junshi, a senior researcher with the Chinese National Institute for Nutrition and Food Safety, said the setting up of quality control offices in each other's country could improve mutual understanding and facilitate information sharing.

Source: China Daily 11/20/2008

Dietary zinc requirement of juvenile large yellow croaker，*Pseudosciaena crocea R.*

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Abstract: A growth experiment was conducted to determine the dietary zinc requirement for juvenile large yellow croaker (initial average weight 1.78 ± 0.02 g). Six semi-purified diets were formulated to contain 9.68, 30.63, 48.94, 91.28, 167.49 and 326.81 mg zinc ／ kg diet, supplied as ZnSO4·H2O. Each diet was randomly assigned to triplicate groups of fish in flow-through system, and each tank was stocked with 40 juvenile fish. Fish were fed twice daily (05：30 and 17：30) to apparent satiation for 8 weeks. The water temperature fluctuated from 26.5 to 29.5°C, salinity from 25‰ to 28‰ and dissolved oxygen was approximately 7 mg l-1 during the experimental period. No significant differences in survival were found among dietary treatments. Specific growth rate (SGR) significantly increased with increasing dietary zinc from 9.7 to 48.9 mg ／ kg of diet ($P<0.05$), and then leveled off. Zinc content in the vertebrae, whole body and serum were significantly affected by dietary zinc level ($P<0.05$). Broken-line analysis showed that the optimum dietary zinc requirement for large yellow croaker juveniles, using SGR and vertebrae zinc saturation as response criteria, was 59.6 and 84.6 mg zinc／kg diet, respectively.

Key words: Pseudosciaena crocea R.; zinc requirement; feeding and nutrition
Source: Journal of Fisheries of China, Vol. 32, No. 3, May, 2008

EFFECT OF TEMPERATURE ON THE ENERGY BUDGET OF THE GRASS CARP, *CTENOPHARYNGODON IDELLUS VAL.*

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Energy budgets were constructed for fingerling grass carp (Ctenopharyngodon idellus Val.) at 22, 26 and 30℃, based on an experiment conducted during April-May, 1992. The fish were fed lettuce leaves using Lactuca sativa var. Asparagina rations for a period of 15 days. Food consumption, faecal production and growth were estimated

directly, and nitrogen excretion and metabolism estimated indirectly from nitrogen and energy budgets respectively. Rates of maximum food consumption and growth increased with increased water temperature. The relationship between maximum rate of food consumption (CW:% body weight day-1) and temperature (T: ℃) was: Cw = 0.0405T2.324. Temperature had no significant effects on the proporti ons of food energy allocated to each component of the energy budget. The average energy budget was: 100C = 28.89F + 3.30U + 52.48R + 14.34G, where C is food consumption, F is faecal production, U is excretion, R is metabolism and G isgrowth.

【**Keyword**】：Temperature Grass carp Energy budget Growth
Source: OCEANOLOGIA ET LIMNOLOGIA SINICA, Issue 2, 1995

FOOD CONSUMPTION, GROWTH AND ECOLOGICAL CONVERSI ON EFFICIENCY OF PAGROSOMUS MAJOR：COMPARISON BETWEEN IN LABORATORY AND IN SITU DETERMINING METHOD

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Egger's gut content method usually applied in situ, was carried out in laboratory Pargosomus major’s ecological energetics parameters , such as food consumption, growth and ecological conversion efficiency, were determined by the above method and compared with those determined by the traditional in laboratory method. The results showed that the food consumption and growth determined by Egger's method were higher than those obtained by the in laboratory method, although there was no remarkable difference in the conversion efficiencies, which were respectively 24.43%(kJ) and 21.76%(kJ), when calculated with the energy value. Because the above results were determined under the same conditions, it can be deduced that there is no remarkable difference between the conversion efficiencies determined by both of methods.

【**Keyword**】：Method comparison; Feeding; Growth; Ecological energetic parameters; Pagrosomus major
Source:: Marine Fisheries Research, Issue 2, 1999

The role of temperature in sex control of aquatic animals

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In this roundup, the effect of temperature of embryonic development and larval development on sex determination and gonadal differentiation of crustaceans, shellfish, fish, amphibians and reptiles was briefly introduced. The general trend is that the lower temperature favored feminization, while higher temperature favored masculization. Besides, the action mechanism was preliminarily discussed in this roundup also.

【**Keyword**】：temperature; aquatic animals; sex control; masculinization; feminization
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Effect of dietary galactomannan oligosaccharides on growth performance and non-specific immune responses of juvenile gibel carp**(*Carassius auratus gibelio*)**

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A growth trial was undertaken to investigate the effects of the dietary galactomannan oligosaccharides levels on growth performance and non-specific immune responses of juvenile gibel carp. Diets were formulated to contain four dietary galactomannan oligosaccharides levels(0,0.1%,0.2% and 0.3% of dry diet, respectively).Triplicate groups of 40 fish(average weight 1.03 g) were stocked and fed to apparent satiation

twice daily for 10 weeks. The results showed that the weight gain and specific growth rate of fish were significantly increased by feeding diet added with of 0.2% galactomannan oligosaccharides level($P<0.05$),and feed coefficient was significantly decreased. The inclusion of galactomannan oligosaccharides in diets also significantly enhanced non-specific immune responses of juvenile gibel carp ($P<0.05$).

【**Keyword**】：galactomannan oligosaccharides(GMOS); growth performance; non-specific immunity; gibel carp

Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Digestive enzyme activities in stomach, foreintestine and hepatopancreas of *Pelteobagrus vachelli Richardson*

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A primary study was conducted to study the activities of three main digestive enzymes (protease, lipase and amylase) in stomach, foreintestine and hepatopancreas of Pelteobagrus vachelli Richardson. The results show that the optimum pH of protease in stomach, foreintestine and hepatopancreas is 2.30,8.50 and 8.90 respectively; while the optimum pH of lipase is 8.0,7.6 and 7.9;and amylase is 7.2,7.9 and 7.6.And the study of the optimum temperature of three digestive enzyme shows that: the optimum temperature of protease in stomach, foreintestine and hepatopancreas is 50 ℃,50 ℃ and 65 ℃ respectively; while the optimum temperature of lipase is 45 ℃,50 ℃ and 35 ℃;and amylase is 30 ℃,30 ℃ and 35 ℃.The activity of the three enzyme rises at first and then decreases within certain range of temperature. Under the most optimum pH and temperature conditions, both the activity distribution of protease and amylase is foreintestine>hepatopancreas>stomach; while the activity distribution of lipase is foreintestine>stomach>hepatopancreas.

【**Keyword**】：Pelteobagrus vachelli; digestive enzyme activity; optimum temperature; pH

Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Changes of body lipid content and fatty acid profile in cultured juvenile silver pomfret, ***Pampus argenteus***

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Changes of body lipid content and fatty acid profile in cultured juvenile silver pomfret (Pampus argenteus) were analyzed. The results showed that body lipid content in the initial of juvenile stage was relatively low, and increased with the growth of the juvenile. The lipid content from July 30th to September 15th was significantly higher than that from June 25th to July 15th($P<0.05$).In the initial of juvenile stage(in June),the saturated fatty acid(SFA) content in body was relatively low, and significantly lower than that from July to September($P<0.05$).The poly-unsaturated fatty acid(PUFA) and highly unsaturated fatty acid(HUFA) contents in the initial of juvenile stage were relatively high, and with the growth of the juvenile, the PUFA and HUFA contents reduced. The EPA and ARA contents from August to September were significantly lower than those in June. However, the DHA content did not significantly change from June to September($P>0.05$).

Keyword: Pampas argenteus; juvenile; cultured; lipid; fatty acid
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Parts of hematology indexes of *Myxocyprinus asiaticus* and the response to the water of Suzhou Creek

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Suzhou Creek is a famous urban polluted waterway in Shanghai, which was regulated for several yeas ,but the harmonious water ecological system has not been built. On the basis of testing the hematology indexes of Myxocyprinus asiaticus, this paper used the Suzhou Creek water to do some toxicological experiments to M.asiaticus, which lasted 32 d. The hematology indexes indicated that under(15±1) ℃ and(25±1) ℃,the average hemcglobin(Hb) content of two year old Chinese sucker is(77±9.50) g/L, red blood cell (RBC) is(1.98×1012±0.13×1012) ind/L, white blood cell(WBC) is(2.06×1010±0.12×1010)ind/L, the SOD activity is(106.21±4.09)U/mL and the lysozyme activity is(224.53±16.98 U/mL).The toxicological experiments indicated that under(15±1) ℃,there are notable differences of the Hb content of two years old fish between the two sections of Suzhou Creek which was aerated, circulated and sterlized the control group, but there is no difference between the two experimental groups; there is no differences among the RBC of the three groups; WBC of the three groups all reduced, and there are notable differences among them, the SOD activity values are close among the three groups, and there are no differences among them. All of these showed there is a intimidation from the organic poisons and the heavy metal in Suzhou Creek to Chinese sucker. The study foreshows that the low dissolved oxygen and the poisonous microorganism can become the key ecological factors to harm the existence of large fish in Suzhou Creek, so improving the water dissolved oxygen and eliminating the poisonous microorganism will be the control direction for Suzhou Creek at the next phase.

【Keyword】：Myxocyprinus asiaticus; hematology indexes ;response; water of Suzhou Creek

Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Artificial propagation of *huchen,Hucho taimen Pallas*

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The juveniles of wild Hucho taimen Pallas were caught and reared to adult in a pond with flowing water, and propagation and seed culture were carried out. The results showed that the Hucho taimen could be artificially induced to spawn time after time during the period of their reproduction seasons by injecting the hormone mixture which was composed of HCG,S-GnRH-A and DOM. It's about 8-11 days for the fish to spawn after injecting at water temperature(9±2) ℃.The eggs are round, no sticky, light yellow, and with a soft ovum membrane, and the eggs which were got from the 7+-9+ years old brood stocks had a diameter of 4.20-5.56 mm,and the average value was(4.98±0.33) mm; after absorbing water, diameter becomes 4.32-5.76 mm and the average value becomes(5.20±0.38) mm. The absolute fecundity is 4 500-14 000 eggs per fish, the relative fecundity is 1 000-1 200 eggs per kg. The average value of artificial inducing ratio, eyed-eggs percentage and larva floating ratio were 87.5%,83.5% and 86.4%,respectively.The developmental stages from fertilized egg to becoming fry with membrane, getting out of the membrane completely and to floating larva need 28-31 d [average(29.3±1.3) d],38-41 d [average(38.5±1.0) d] and 56-58 d [average(57.1±0.9) d],respectively. Using the acclimation method of gradual transition(daphnia→daphnia,limnodrilus→limnodrilus→limnodrilus,soft granular food→soft granular food→soft granular food, hard granular food→hard granular food),the fish fry can be weaned to artificial dry foods by gradually reducing the animal feed. Under the artificial culture conditions, the relationship between total length and day age of larva is L=1.9623e0.0219t,(R2=0.9507,n=30),and the relationship between total length and day age of juvenile is L=2.6877e0.0119t,(R2=0.9943,n=30),and after the first year average body length is(16.2±0.93) cm, the average body weight is(28.45±2.98) g.

【**Keyword**】：Hucho taimen Pallas; artificial propagation; fry; domestication; growth

Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Cloning and sequence analysis of Interleukin-2 cDNA in *Fugu rubripes*

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Fish interleukin-2 was a kind of important cytokine discovered recently. One pair of specific primers were designed according to IL-2 gene sequence published by Bird et al,IL-2 gene of Fugu rubripes was cloned by RT-PCR method with mRNA extracted from blood lymphocytes activated by PHA.Sequencing results showed that the gene was 450 bp in length,encoding a preprotein of 149aa residues.formation has the two cysteines important in disulphide-bond formation. It shows low amino acid identities(24%-34%) with other known IL-2 sequences. Phylogenetic analysis showed far relationships between Fugu rubripes and other species.

【Keyword】：Fugu rubripes;interleukin-2;cloning
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Study on the early development of *Rhinogobius duospilus larvae*

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The morphological development of Rhinogobius duospilus larvae was examined in a hatchery-reared condition. The standard body length of newly hatched larva was 4.67 mm. Larvae had an opened mouth on the 6th day after fertilization and hatched out on the 11th day after fertilization.Caudal fin rays appeared earliest while first dorsal fin spines latest. All of spines and soft rays completed on the 18th day after fertilization. Notochord flexion started on the 10th day after fertilization. On the 18th day, the hypurals developed completely and entered the postflexion larva stage.23 days after fertilization, Larvae developed into juveniles. Compared to some other species of Rhinogobius, it showed some important characters for early development of Rhinogobius duospilus such as earlier opened mouth, later hatching and faster development.

Keyword: *Rhinogobius duospilus*; larvae; early development; morphological characters
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

The epicentrals in several lower teleosts

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The comparative analysis on number, morphology, and distribution of intermuscular epicentrals in lower teloests nonacanthomorph such as Osteoglossomorpha, Elopomorpha, Clupeomorpha, Ostariophysi, was conducted. Epicentrals were only found in Elopomorpha and Clupeonorpha.Pike eels(Muraenesox cinereus) owned most epicentral bones 182,followed by Japanese eel(Anguilla japonica) 175,herrings(Tenualosa reevesii) 44,and estuarine tapertail anchovies(Coilia ectenes) 44. The morphologies of epicentral bones in all checked fish were not complicated only "I" type, "Y" type and one-end-multifork type. Most of epicentrals in Muraenesox cinereus are "Y" type, while in other species including Anguilla japonica, Tenualosa reevesii, and Coilia ectenes, the "I"-type epicentral is dominant. Most of "I"-type epicentrals are distributed in the anterior part of fish body.

【**Keyword**】：lower teleosts; intermuscular bone; epicentrals
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Microbes isolated from the intertidal zone of Zhoushan sea area and their antimicrobial activity

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In this paper we have isolated microbes from the intertidal zone of Zhoushan sea area in the different culture media and carried out the antimicrobial experiments to the separated strains by the slip of paper diffusion method. The results showed that PDA ,protein agar and MR2A medium can significantly adapt to isolate the fungi,actinomyces and bacteria,respectively.Among the 484 strains isolated from the seven sampling stations,82 strains belong to actinomyces,331 belong to fungi and 71 belong to bacteria. There are 154 strains having antimicrobial activity, and quite a few of the strains having relatively broader antibiotic range and strong antimicrobial activity. In all of antibiotic-producing strains,74.6 % can inhibit the growth of G+ bacteria,40.3 % for G-bacteria and 35.4 % for fungi.

Keyword: microbes; isolation; antimicrobial activity
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Effect on the quality of asparagus in cold storage with weak light illumination and fresh-keeping agent

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A new approach combining cold storage with weak light illumination and chemical fresh-keeping agents of 6-BA & chitosan was used to prolong shelf life of asparagus. Moreover, the low light illumination's cooperation with chemical fresh-keeping agent was also studied. Red light emitter diode was used as photo source with low light intensity. The concentration of 6-BA and chitosan is 10 mg/L and 1.5% separately, sample's sensory evaluation, weight loss rate, Vc content, chlorophyll content, soluble solid content and fiber content were tested periodically. The experimental results indicated that the cold storage with weak light illumination can improve quality of

asparagus in the storage, increase the Vc content of asparagus in the earlier period of storage, prevent the chlorophyll degeneration, postpone and extend asparagus post-harvest ripening period, but have no remarkable effects on the water loss rate of asparagus. The treatment with 6-BA and chitosan has positive effect on the asparagus storage performance. It was expected that the cold storage with the weak light illumination and chemical agent treating could become a new method to keep asparagus fresh.

【**Keyword**】：asparagus; weak light illumination;6-BA;chitosan;fresh-keeping
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Research on size selectivity of codends with different mesh configuration for fishes in beam trawl fishery

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In order to assess the size selectivity for fishes of beam trawl fishing in offshore of the East China Sea, experiments of codends with different mesh configuration, including diamond mesh, square mesh and turned through 90° diamond mesh(T90) in 4 sea trials have been carried out and catch data were collected by comparative fishing method. In analysis of size selection, the selectivity curves(Richards curve, which could be simplified to Logistic curve by hypothesis test) were considered geometrically similar. The results of model fit and simplification demonstrated that selectivity models fit well to the pooled catch data of fishes but between-trials variation was found, and Richards selectivity curves of codends with different configuration could be simplified to Logistic curves. As for Cynoglossus abbreviatus, comparisons of selectivity parameters(L50s,50% retention lengths and SRs, Selection Ranges) among codends with different mesh construction showed that L50s and SRs of T90 codends were maximum and minimal respectively while those of diamond

mesh codends were converse with T90 codends. As for Pseudosciaena polyactis and Collichthys lucida, L50s and SRs of diamond mesh codends were in the same manner but the SRs of square mesh codends were minimal. Besides the mesh openness, the special construction of fish body and codends were considered as the possible reasons for the difference in size selectivity of codends with different mesh configuration.

【**Keyword**】：size selectivity; multi-codends beam trawl ;square mesh; diamond mesh; turned through 90° mesh; fishes
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

The effect of Vitamin C injection on the activities of antioxidant enzymes in the *hemolymph of Hypriopsis cumingii*

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Studies were carried out on the effect of Vc on the activities of three major antioxidant enzymes in the hemolymph of Hypriopsis cumingii on the condition of indoor aquarium culture. The results showed that: Vc had a notable impact on the activities of Catalase (CAT),Superoxide dismutase(SOD) and Glutathione peroxidase (GSH-PX) enzymes($P<0.05$).Under the conditions of the injected doses of Vc 15 μg/g,30 μg/g and 45 μg/g,at 12 h, 24 h and 48 h after injecting, the activity of SOD enzyme would rise and then dropped, the activity of GSH-PX enzyme dropped down with the rise of injected dose of Vc, but always came down as a whole. However, the activity of CAT enzyme increased with the rise of injected dose of Vc.

【**Keyword**】：Vitamin C; Hyriopsis cumingii; Hemolymph; Antioxidant enzymes
Source: Journal of Shanghai Fisheries University, Issue 4, 2008

Cloning, sequence and function analysis of P450arom from *Oreochromis aurea* **ovary**

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The cDNA encoding ovarian P450arom(P450aromA) was isolated using RT-PCR and RACE(Rapid Amplification of cDNA Ends) methods. The cDNA was 1784 bp long with 38 bp 5′UTR,167 bp 3′UTR[excluding poly(A)] and 1566 bp open reading frame, which encoded 521 amino acids with a calculated molecular weight of 59 ku. Comparisons of the deduced amino acid sequence to that of the ovarian P450arom in other fishes revealed above70% identity, higher than the 60% identity in brain P450arom.But the percent of similarity in the regions of high homology, including the I-helix, an aromatase-specific conserved region II, and the heme-binding region III, were 83%-96%,78%-86% and 85%-100% respectively . Phylogenetic analysis of the P450arom gene family indicated that the Oreochromis aureus P450aromA was clustered with fish P450aromA.The bio-information analysis revealed that the predicted protein had no signal peptide and notable transmembrane region. It contained many casein kinase II phosphorylation sites,N-myristoylation sites,Protein kinase C phosphorylation sites, N-glycosylation sites.

【Keyword】：Oreochromis aurea; RACE;P450arom

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Analysis on genetic diversity of *Portunus triuberbuculatus* population from Lvsi fishing region

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Vertical polyacrylamide gel electrophoresis(PAGE) and inter-simple sequence repeat(ISSR) were used to investigate the genetic diversity of Portunus triuberbuculatus collected from Lvsi fishing region in the southern Yellow Sea. Results indicated that(1)Significant tissue specificity was observed in EST isozyme expression in muscle and liver; among 5 isozymes (LDH,GDH,EST,MDH,ME) of muscle and liver, twelve loci were detected, of which five(Est-1,Est-2,Mdh-2,Gdh-2,Me-3) were found polymorphic.(2)45 bands were amplified by 6 informative and reliable primers,37 of which were polymorphic, the mean effective allele number(Ae) was 1.548,Nei's gene diversity(H) was 0.316,Shannon's diversity index(Hsp) was 0.468.Results of both methods demonstrated a rich genetic diversity in this wild stock.

Keyword: Portunus triuberbuculatus; isozyme; ISSR; genetic diversity
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Preliminary study on genetic variability in Chinese mitten crab(Eriocheir sinensis) from the Yangtze river by AFLP marker

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AFLP marker was used to evaluate the current genetic variability of Chinese mitten crab (Eriocheir sinensis) from the Yangtze River. Six samplings of Chinese mitten crab were sampled in different locations of the Yangtze River and different years(Zhenjiang section in 1998,Nanjing section in 2005 and 2006,the Yangtze Rive estuary in 2004,2005 and 2006).The results indicated that: there were no significant differences in mean allele numbers(Na),effective allele numbers(Ne), Nei's diversity

indexes(H) and Shannon information indexes(I) among six samplings(P>0.05).AMOVA analysis showed that 3.89% of the total variation were among samplings, and 96.11% were contributed within samplings. UMPGA tree showed some genetic divergence between 2004-2006 samplings and 1998 samplings. It was preliminarily indicated that there was no significant genetic variability from wild population of the Chinese mitten crab in different locations of the Yangtze River and different years, and there were some genetic divergences between the samplings in 2004-2005 and the samplings in 1998,but these genetic divergences had not reached a significant level.

【**Keyword**】：Eriocheir sinensis; amplified fragment length polymorphism(AFLP);genetic variability

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