

In the present study, an attempt was made to examine the antihyperlipidemic property of fish collagen peptides (FCP) prepared from the skin of hammerhead shark (*Sphyrna mokkaran*) in experimentally induced hyperlipidemic rats with respect to the changes in the levels of lipid profile components and the activities of key lipid metabolic enzymes. The ABTS free radical scavenging assay exhibited the antioxidant potential of FCP prepared with enzymatic hydrolysis. The crude FCP and the ultrapurified fraction was found to exhibit 88.5% and 94.6% radical scavenging activity that is equivalent to 20 µg/ml BHA. Gel filtration chromatographic fractions exhibiting maximum antioxidant activity were pooled and fractionated by anion exchange chromatography. The physico-chemical characterization of the active FCP fractions using SDS-PAGE, UV-Vis and FT-IR spectroscopy indicated the cleavage of peptide bonds and the formation of low molecular weight fragments with improved antioxidant properties. The chromatographic fraction with maximum antioxidant activity was further evaluated for their capability to attenuate the experimentally-induced oxidative stress and hyperlipidemia by feeding pre-heated fat and alcohol with the regular diet for 60 days. The oral intake of oxidized fatty diet with alcohol caused an exalted body weight gain, elevated levels of lipid profile (TC, TG, LDL-C and VLDL-C) and increased expression of fatty acid synthase. Likewise, induction of oxidative stress was noticed from the augmented levels of lipid peroxidation. Interestingly, FCP (100 mg/kg body weight/day) intake normalized the antioxidant enzyme activity and lipid peroxidation rate, whereas they were significantly higher in statin-treated group than normal control group. Correspondingly, FCP was found to enhance

the serum levels of good cholesterol (HDL-C) and HMG Co-A reductase. Moreover, there was increased expression of LCAT in liver with low levels of TC, TG, LDL-C and VLDL-C in serum. In conclusion, the results of the present study confirmed the competency of FCP to ameliorate oxidative stress induced hyper-lipidemia.

FF PO 15

Changes in electrophoretic patterns of sarcoplasmic proteins and myofibrillar proteins in *Caranx melampygus* during chilled storage

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SDS- PAGE studies were conducted to comprehend the changes in the electrophoretic pattern of myofibrillar and sarcoplasmic proteins of *Caranx melampygus* (bluefin trevally) during chilled storage. The study revealed that the intensity of myosin bands were reduced during storage. The relative front of myosin band was decreased during storage. The relative front on initial day for myosin was 0.331 and it decreased to 0.303 on 12th day of storage. In protein profile, molecular weights of protein bands were found to be 191.8 kDa, 99.1 kDa, 52.0 kDa for myofibrillar proteins on initial day, and 200.0 kDa, 101.4 kDa, 51.5 kDa on 12th day. Molecular weights of protein bands were found to be 97.4 kDa, 60.3 kDa, 50.9 kDa, 30.4 kDa, 29.2kDa, 26.8 kDa, 25.6 kDa, 21.5 kDa for sarcoplasmic proteins on initial day and 97.4 kDa, 61.1 kDa, 52.1 kDa, 45.8 kDa, 34.6 kDa, 30.0 kDa, 26.1 kDa, 21.5 kDa on 12th day. The number of bands for sarcoplasmic proteins and myofibrillar

proteins of *Caranx melampygus* were same on initial day and final day of storage.

FF PO 16

Isolation and characterization of lectins in *Etroplus suratensis* and their role in antimicrobial defense

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In Kerala aquaculture industry, production of *Etroplus suratensis* (pearl spot) is rapidly heading to heights. However, this rapid increase in production has highlighted bottlenecks in several aspects of their rearing, including knowledge of their susceptibility to infection. Tail fin rot disease is of utmost concern as this fish species is of high economic value. Indeed, currently little is known about the immune system and immune response in this species which severely limits approaches for disease control, should widespread disease outbreaks arise. Therefore, this study aims to characterize the immune response in the *E. suratensis*, with an emphasis on lectins in innate immunity, following stimulation with bacterial infection. No immune genes have been sequenced in pearl spot and hence identification of immune related genes and their expression studies are of importance to know the functions of lectins at cellular and molecular levels. Mannose binding lectin (MBL) was isolated and characterized for their biochemical and antimicrobial properties from *E. suratensis*. Various tissue extracts of *E. suratensis* were prepared and preliminary screening by haemagglutination assay was carried out for the presence of lectins. The proteins were precipitated out, purified by affinity chromatography and molecular mass

was determined by SDS-PAGE. The biochemical characterization was done by sugar binding assay and by checking their activities at various temperatures, pH and requirement of divalent cations. Antimicrobial activity against different pathogens was also examined. These preliminary studies will pave way for future experiments of expression analysis of key immune molecules as well as for study of immune responses to pathogen infections.

FF PO 17

Isolation and characterization of carotenoid producing bacteria from gut of Indian oil sardine *Sardinella longiceps* (Valenciennes, 1847)

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In the present study, screening of bacteria from gut of Indian oil sardine *Sardinella longiceps* (Valenciennes, 1847) collected from Kanyakumari coast (N- 08°05'48"; E- 77°33'47"), Tamil Nadu, India, has led to the isolation of a yellow pigmented strain SR-G1. Cell morphology, motility and the occurrence of spores were examined by phase contrast microscopy. The isolate was Gram-positive, with irregular rods, non-motile branched cocci with colonies on nutrient agar yellow, opaque, glistening, circular and low convex with entire margin. The pH of the medium and incubation temperature were found to be limiting factors in growth of the bacterial strain. The optimum temperature for growth was 28°C. Key biochemical reactions include positive for catalase and negative for oxidase. The strain