

storage studies of the soup powder prepared by co-drying are presented and compared with the traditionally prepared fish soup powder.

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Setting and gel forming ability of natural actomyosin (NAM) isolated from threadfin bream fish meat

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In the present investigation natural actomyosin (NAM) has been isolated from fresh threadfin bream meat and its setting and gel forming ability have been assessed using small strain tests. The Ca^{2+} -ATPase enzyme activity of NAM was 8.28 $\mu\text{mol Pi/g meat/min}$ and the free-SH content of NAM was found to be 1.94 mM-SH/g meat. The electrophoretic mobility under reduced condition revealed the number of protein subunits in the given molecule. As myosin is the oligomeric protein (5-6 subunits) and actin is dimeric (2 subunits), as reasonably expected 7-8 bands in the SDS-PAGE pattern were witnessed. The setting and gel forming ability were monitored by Controlled Stress Rheometer (CSR) under oscillatory mode. The increase in storage modulus (G') values with setting time was observed and at the end of 45 min, G' registered a value of 1.92 Pa. The elastic component (G' maxima) was almost doubled in the temperature sweeps of set actomyosin. The frequency sweeps of thermally induced gels obtained from unset natural actomyosin registered a slope of the regression of G' value was 0.118 while that of set actomyosin recorded the value of 0.115. The present study reveals that setting has a positive effect on the gel

forming ability as revealed by temperature and frequency sweeps.

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Development of polylactic acid/nanoclay films for packaging of mahi mahi fish (*Coryphaena hippurus*) fillets at low temperatures

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Biodegradable films were manufactured by uniformly dispersing nanoclay (NC) in a polylactic acid (PLA) matrix using polyethylene glycol (PEG-400) as a compatibilizer. Montmorillonite (MMT) was the nanoclay used and 0.5%, 1% and 2% (w/w) MMT was separately compounded with PLA and PEG in an extruder for uniform mixing. The compounded mixtures were then made into films using a blown film monolayer machine. The interaction between the PLA/NC and PEG affected the tensile strength and the heat sealing properties of the films which showed a decreasing trend with increase in NC content. Surface morphology of the films characterized by SEM also exhibited the differences. The PLA/nanoclay films at 0.5 and 1% showed superior barrier properties against water vapour and oxygen transmission when compared to neat PLA films and LDPE films. Similarly, moderate antimicrobial activity was observed against aerobic bacteria with PLA/nanoclay films. Efficiency of the developed films for storage of fishery products was determined by packing mahi mahi fish (*Coryphaena hippurus*) fillets and their microbial and biochemical characteristics were evaluated during chilled

storage ($2\pm 1^{\circ}\text{C}$) conditions. Biochemical parameters like pH, thiobarbituric acid value, peroxide value, free fatty acid, total volatile base nitrogen and aerobic plate count were determined. Study indicated that the microbial and biochemical quality of fish packed in different PLA/NC film were superior to LDPE and virgin PLA films.

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Influence of packaging atmosphere on the quality of karikkadi shrimp stored at chilled condition

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The objective of the current study was to assess the effect of different packaging atmosphere (air, vacuum, and oxygen absorber) on the keeping quality of whole *Parapenaopsis stylifera*, commonly known as 'karikkadi shrimp', during chilled storage (2°C). Fresh karikkadi shrimp after washing in potable water was divided into 3 sets and nylon-ethylene vinyl alcohol (EVOH)-polyethylene multilayered film was used to pack all the 3 sets of shrimps. Fresh shrimp had moisture and protein contents of 77% and 20%, respectively. Within a day, the O_2 absorber, ZPT 200 EC reduced the percentage of oxygen inside the package to less than 0.01%. During storage, there was a significant difference ($p < 0.05$) in the count of mesophilic and psychrotrophic bacteria of all the three samples and shrimp packed with O_2 absorber (OA) had lower values compared to vacuum (VP) and air packed (AP) samples. The count of *Pseudomonas* spp. was higher in AP than the reduced O_2 packed samples (VP and OA), throughout

the storage. TBARS values presented an increasing trend during the storage of shrimp and the rate of increase of TBARS value was more in AP sample. Based on the sensory score, the shrimps packed with OA and VP were acceptable up to 15 and 12 days, respectively whereas the shelf life was only 9 days for AP sample. Results of the current study indicate that reduced O_2 packaging atmosphere positively influences the quality and shelf life of chilled stored shrimp by restricting the presence of O_2 inside the package.

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Encapsulation of dietary fish oil and its incorporation in bread

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Lipids from fish are important because of their health benefits associated with high levels of long chain omega-3 polyunsaturated fatty acids (PUFA) like Eicosa pentaenoic acid (EPA) and docosahexaenoic acid (DHA). These plays an possible role in foetal and early childhood development and improved cognition and provides protection against various cancers in human cell lines and have a potential to improve cardiovascular and mental health. Decreased rates of cardiovascular diseases have been noted in populations with high fish consumption. The consumption of omega-3 poly unsaturated fatty acids in diet is low and alternative ways for the incorporation fish oil are being explored. Supercritical fluid extraction (SFE) has become an attractive technology for obtaining high quality fish oil and also some by-products from fish. Technologies such as microencapsulation extends the shelf-life of fish oils, offering