DEVELOPMENT OF CHITOSAN BASED ACTIVE FILM TO EXTEND THE SHELF LIFE OF MINIMALLY PROCESSED FISH

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ABSTRACT

Chitin and its deacetylated form, chitosan, have major interest in the field of food package because of biodegradability, long lasting, eco friendly, flexible, tough, very difficult to tear and its antimicrobial activity. In the crustacean processing unit, the dumping of large quantities of discards into the environment lead to a major problem of accumulation of discards due to the very slow biodegradation of chitin. Instead of simply dumping the waste, the shrimp and crab wastes have been widely used for the isolation of chitin, followed by its usage in food packaging. In this study, the prawn wastes were collected from the Muttom and the chitin and chitosan were isolated using simple chemical method. The yield of chitin and chitosan was 31% and 58% respectively. The maximum percentage of degree of deacetylation (90.7%) was achieved through this experiment. The high degree of deacetylation makes the chitosan as water soluble and bio adhesive. So, the chitosan based food packaging film was developed without addition of antimicrobial agents. In the antimicrobial study, the chitosan based film without antimicrobial agent was shown 3.6cm and 2.9cm in diameter for *Listeria monocytogene* and *Pseudomonas putida* respectively. Then the biodegradability test of this packaging material was shown that 93% of reduction in weight in 20 days of incubation with *B.subtilis.* In the final study, the chitosan based film was used to pack 5g of fish fillets and the freshness of the fish was calculated using quality index method.

KEYWORDS: Action of Chitosan, Films and Coatings, Chitin Extraction