

EVALUATION OF THE EFFECTIVENESS OF ACTIVE AND VACUUM PACKAGING ON THE QUALITY OF SILVER POMFRET (*PAMPUS ARGENTEUS*) FISH STEAKS DURING CHILLED STORAGE

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ABSTRACT : Changes in biochemical, microbiological and sensory attributes of silver pomfret (*Pampus argenteus*) fish steaks during chilled storage in control, air pack (AP), vacuum pack (VP) and active pack (oxygen scavenger) (OSP) were investigated. For this purpose, total volatile basic nitrogen (TVB-N), trimethylamine nitrogen (TMA-N), TBA values (TBA), free fatty acids value (FFA) and peroxide value (PV), sensory attributes and micro-biological analyses were carried regular interval during chilled storage. Silver pomfret steaks packed with oxygen scavenger (active packaging) was found to be the best in terms of biochemical, microbiological, sensory score and long shelf life compared to others. Instrumental analysis by colour reader (L*-value, a*-value, b*-value), textural analysis also complimented the findings based on microbiological, biochemical and sensory analyses. Active packaging on the silver pomfret steaks exhibited a providing an inert protection from the external environment during chilled storage. As a compare to vacuum packaging, it can said that the active packaging using oxygen scavenger in the packaging of fish may be an alternative to vacuum packaging. A shelf life extension as high as 35 days is economically advantageous in the retail and food services industries.

Key words : Silver pomfret, chilled fish, vacuum packaging, active packaging.

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INTRODUCTION

Fish is a highly perishable food and necessarily preserved by many preservation method like chilling, freezing, drying or some other means before it is consumed or processed. Chilling is a procedure by which temperature of the fish is lowered to a near point freezing but not lowers than it by means of heat withdrawal. The popularity of fishery products is increasing because of their palatability and nutrition. According to a report from the Food and Agriculture Organization (FAO) of the United Nations, the global production of fishery products has continued to grow over the past decades and exceeded 160 million tonnes in 2014 (FAO, 2016). Chilling is to decrease fish temperature to 0°C. The main target of chilling is to prevent physical, chemical and microbiological activities occurring under normal conditions by lowering the temperature. Chilled fish and other seafood's are the natural second preference, after fresh fish and seafood's, of consumers in all world. Fish marketed live or fresh (chilled) for human consumption

was the most important product, with a share of 40.5%, followed by frozen fish (29.3%) (Boziaris, 2014). The export of chilled fish was examined in relation to the parent major export group chilled items. There were 53 varieties of chilled items being exported from India in 2008 (MPEDA, 2011). Packaging makes food more appropriate and gives the food greater safety assurance from microorganisms, biological and chemical changes so that the packaged food may have a longer shelf life. Packaging fresh fishery product is carried out to avoid contamination, delay spoilage, permit some enzymatic activity to improve tenderness, reduce weight loss, and where applicable, to ensure an oxymyoglobin or cherry-red colour in red meats at retail or customer level. With the aim of reducing loss in freshness and improving the keeping quality of fish, chilling in combination with chemical preservative treatments, or innovative packaging techniques like modified atmosphere packaging, vacuum packaging and very recently active packaging techniques are employed (Mohan *et al*, 2016). Vacuum packaging,