

Title Microbial growth and trimethylamine production in trigger fish (*Balistes polylepis*) during its storage on ice

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Citation Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.

Keyword trigger fish; microorganism

Abstract

The shelf-life of fish and fish products is negatively affected by the deteriorative changes that marine species undergo during storage. Microbiology of marine food products is fundamental to understanding the quality and safety issues that are important to the seafood industry and consumers. The aim of this study was to determine the level of deteriorative changes and the types of microorganisms that grow in the triggerfish (*Balistes polyepsis*) during its storage on ice. Naturally contaminated fresh triggerfish was stored on ice for 17 d. Samples were taken every three d for measurement of pH, total mesophilic bacteria count, and trimethylamine (TMA) production. Identification of the types of microorganisms present was also performed. The results demonstrated a very close relationship between changes in pH of the product and total mesophilic bacteria ($P<0.05$). It was observed that the pH varied from 6.23 to 6.07 in the last 7 d of storage ($P<0.05$) with no significant changes in the first days of the storage. The microbial growth was more evident in the last 7 d of storage (from 990 to 729333 CFU/g). Significant amounts of TMA were detected in the product after 8 d of storage ($P<0.05$). High correlation coefficients were observed between changes in pH and TMA ($r=0.84$), pH and total count ($r=0.76$), and total count and TMA ($r=0.86$). Identification tests of the type of microorganisms that grow in triggerfish revealed the presence of *Pseudomonas putrefaciens* and *Proteus vulgaris*. *Pseudomonas* was the most predominant genus. It is concluded that the optimal storage time for triggerfish on ice is no more than seven days. Furthermore, the identification of change in pH or TMA are simple useful tools to determine the degree of spoilage of triggerfish during its storage on ice.