EFFECT OF DIFFERENT STORAGE TEMPERATURES ON SHELF LIFE OF YELLOWFIN TUNA IN SRI LANKA

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By

CHATHURI KANCHANA GALHENA

Aquatic Resources Technology Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
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ABSTRACT

This study was conducted to investigate the effect of storage temperatures on the shelf life and safety of yellowfin tuna (*Thunnus albacares*) by studying the changes in microbial, chemical, and organoleptical attributes. Shelf life of yellowfin tuna was determined through changes in total aerobic bacterial plate counts (APC), total volatile base nitrogen (TVB-N) and tri methyl amine (TMA), and organoleptic properties during the 21 days of the storage trial, where as one aspect of its safety was determined through histamine development during storage at 0, 4, and 7 °C. Samples were reserved from 5 top exporting companies as 25 loins per each. Based on TVB-N value indices, yellowfin tuna maintained an acceptable shelf life for 21, 17 and 12 day at 0, 4, and 7 °C, respectively. However, yellowfin tuna was rejected earlier by the sensory panelist than their TVB-N value indicated. Histamine development was found to be lower than the European Union (EU) safety level of 100 mg/kg fish during storage at 0 °C for 21 days. Yellowfin tuna stored at 4 and 7 °C became unsafe for human consumption, reaching unacceptable histamine levels after 21 and 15 days, respectively. Aerobic bacteria initially dominated the micro flora on yellowfin tuna, however, as storage time increased, aerobic bacteria became dominant at cold storage but the numbers did not exceed the International Commission on Microbiological Specifications for Foods (ICMSF) limit of 10^7 cfu/g.

Keywords: Yellowfin tuna, chemical/microbiological and organoleptic characters, shelf life, Histamine, safety.