INVESTIGATION OF THE EFFECT OF ADDITION OF SUGAR IN TO ICE ON TVB-N CONTENT , MICROBIAL GROWTH, pH AND HISTAMINE FORMATION DURING THE ICE STORAGE OF SKIPJACK TUNA IN BOATS

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ABSTRACT

Skipjack tuna comprises about half of world tuna production, being the number one species in every ocean in terms of catch. Addition of sugar into ice is done on storage as an ad-hoc practice to improve the external appearance of Skipjack and present study reports the effect of this practice on quality parameters of Skipjack. Forty eight of Skipjack samples were obtained from Beruwala landing site and divided in to two equal lots. One sample set (control) was kept in normal ice and the other (treated) in sugar added ice (ice: sugar = 200:1). Samples were kept for 20 days and at 3 days intervals, analyzed for histamine by AOAC method 977.13, Total Volatile Bases Nitrogen (TVB-N) by Conway-Byrnes method and microbial assay by Aerobic Plate Count (APC).

In the initial period of storage TVB-N increased slowly, then increased rapidly and in the later stage increased slowly whilst APC increased gradually in both samples. Initially in both samples histamine level gradually increased and in the later period (16^{th} and 20^{th} days) histamine content of treated sample was low (44.6±32.50 ppm, 60.0±17.72 ppm) over the control (57.8±22.47 ppm, 64.1±21.25 ppm). Initially pH decreased in both samples and then increased. Up to 16^{th} day and 12^{th} day tuna was safe for consumption on the basis of TVB-N and histamine respectively and never exceeded the rejectable level for APC during the study period. Treated and control samples were not significantly different for histamine content, TVB-N, APC and pH (respective p values 0.376, 0.974, 0.411 and 0.617). But there was a significant difference in above quality parameters of both samples with the storage time ($p < 0.05$). Since sugar addition into ice did not negatively affect to the quality parameters of Skipjack, this can be applied as a desirable practice to improve the buying ability of consumers.