Investigation on the Effect of Addition of Sugar into Ice on TVB-N Content, Microbial Growth, pH and Histamine Formation during the Ice Storage of Skipjack Tuna in Boats

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Skipjack tuna comprises about half of the 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 Skipjack samples were obtained from Beruwala landing site and divided into two equal lots. Control sample set was kept in normal ice and the treated in sugar added ice (ice: sugar = 200:1). Samples were kept for 20 days and analyzed for histamine by AOAC method, Total Volatile Bases Nitrogen (TVB-N) by Conway-Byrnes method and microbial assay by Aerobic Plate Count (APC) at 3 days intervals. 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. Histamine level gradually increased in both samples Initially and in the latter 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). pH decreased initially in both samples and then increased. Tuna was found safe for consumption up to 16^{th} day and 12^{th} day on the basis of TVB-N and histamine respectively and never exceeded the rejected 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 addition of sugar into ice did not negatively affect the quality parameters of Skipjack, this can be applied as a desirable practice to improve the buying quality of consumers.

Key words: Skipjack, Microbial growth, Histamine