Variation of Histamine Development in Different Body Locations of Yellowfin Tuna (*Thunnus albacares*) Stored 0°C

By

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ABSTRACT

The biogenic histamine is an essential quality parameter in fish products and strict upper limits have been introduced in US and EU markets. The present study was undertaken to assess the within-fish variation of histamine concentrations in Yellowfin tuna (*Thunnus albacares*) by studying the histamine levels of different portions of the fish during storage at 0°C. In this study the histamine contents of fish samples taken from 4 different portions were determined by reversed phase high-performance liquid chromatography (HPLC) at regular intervals. In addition to the histamine determinations, total aerobic plate counts were also performed as a safety indicator.

Fresh fish contained negligible amounts of histamine as well as microbial flora. The section near the gut cavity and tail showed higher histamine values and the initial average histamine content was 2.00 ± 0.86 ppm. The mean histamine level remained at a low value of 2.32 ± 1.01 ppm up to 18 days for different fish portions studied. Upon storage, significant increases in the concentrations of histamine were noticed especially between 17 and 24 days. The initial variation was changed and the highest content was found in the section adjacent to the gills.

ANOVA revealed a significant variation ($P = 0.00$) of histamine level in various portions of the fish in relation to storage time and fish section. The mesophilic microbial counts showed an insignificant difference ($p > 0.05$) in relation to the storage time and fish section. The fish remained in sensorial acceptable condition until 24 days. However, histamine level exceeded the maximum limit of acceptability of 50 ppm between 24 and 32 days of storage.

It can be concluded from the present study that histamine development in Yellowfin tuna is very low for first 18 days under carefully controlled conditions at $0^{o}C$.

TABLE OF CONTENTS