

**Determination of the Best Storage Condition of
Tuna Fish on Board to Reduce Formation of
Histamine**

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ABSTRACT

Sri Lankan leading export markets for Tuna fish are Japan, European countries (EU market) and United State of America (U S A). High quality fresh tuna fish is mainly exported to Japan for Sashimi market as whole fish. Annually it is about 4300 Tons. Remarkable quantity of fresh Tuna fish is exported to EU market as fresh fillets, loins or steaks. It is about 3000 Tons annually. Mainly frozen Tuna fish is exported to USA in addition to the fresh form.

One of the major problems associated with export of fresh tuna fish is high content of histamine in the product. The objective of this study was to determine the most suitable storage system of fish on board to reduce formation of histamine.

Forty five samples of export quality tuna fish in three different storage systems on board namely Cold Sea Water cooling system (CSW), cooling of ice and at ambient temperature (without any cooling system) were subjected to detection of histamine using Enzyme- Linked Immunosorbant Assay (ELISA) and microbiological analysis using standard methods. Thirty-six samples from different anatomical sites of fish were examined for the same parameters.

Lowest histamine content (mean value- 2.500 ppm) was detected in fish stored in CSW. Highest histamine content and the total plate count were detected in fish stored without any cooling (At ambient temperature) on board. There is a significant difference in histamine level in all three treatments. Significant lower amount of microbes in Cold Sea Water (CSW) treatment compared to other two treatments. Histamine forming organisms were identified as *Klebsiella species*, *Morgenella* and *Hafnia*.

The ventral part of the fish showed the highest content of histamine and the total plate count. According to the outcome of the study that most suitable storage system on board is Cold Sea Water cooling system and also gilling and gutting (post harvest process) on board is very important to maintain the quality of fish specially histamine level.