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### **Application of Quality Index Method to determine the shelf life of Frigate tuna (*Auxis thazard*)**

**K W S Ariyawansa<sup>1</sup>, D N Wijendra<sup>2</sup> and S P S D Senadeera<sup>1</sup>**

<sup>1</sup>Post Harvest Technology Division, National Aquatic Resources Research and Development Agency, Crow Island, Mattakkuliya, Colombo 15, Sri Lanka; <sup>2</sup>Faculty of Graduate Studies, University of Sri Jayawardenapura, Gangodawila, Nugegoda, Sri Lanka.

An investigation was carried out to develop and evaluate a Quality Index Method (QIM) scheme for Frigate tuna (*Auxis thazard*) for the prediction of past and remaining storage time in ice. The quality index method (QIM) provides weighted evaluation of the key parameters in deterioration of individual species, assigning demerit points according to the importance of each parameter. For the development and evaluation of QIM scheme, frigate tuna were stored in ice and assessed raw and cooked. The QIM developed for raw frigate tuna comprised of 11 parameters (appearance of skin and stiffness of fish; cornea, form and colour of eyes; colour, smell and mucus of gills; condition of viscera; colour of blood and fillets) covering attributes, which gave a total of 25 demerit points. Sensory analysis of cooked frigate tuna using Torry scheme were carried out in parallel to determine the shelf life. In order to obtain more information about the quality of frigate tuna, Total Viable Counts (TVC), hydrogen sulphide producing bacteria, trimethylamine (TMA) and total volatile nitrogen (TVN) contents were determined.

The sensory evaluation was carried out by a panel of 6-7 members and the rejection level was found to be 22 days. The QIM scheme developed for frigate tuna showed a linear relationship between QIM scores and storage time in ice, ( $r^2 = 0.9378$ ) with slope of 0.755. The TVC varied from  $10^2$  cfu/g to  $10^6$ cfu/g within 7 to 22 days and hydrogen sulphide producing bacteria at  $10^2$  cfu/g within 16 to 22 days of storage in ice. The TMA and TVN amounts increased with time and the amounts ranged from 1.24 mg/100g to 2.5 mg/100g and 17.17 mg/100g to 34.94 mg/100g respectively. The variation of pH was ranged from 5.4 to 5.7 within the storage.

The QIM calibration curve obtained for frigate tuna indicates its applicability to determine the storage life of fish in ice. Further, it will facilitate the requirements of buyers and sellers while fulfilling the demands of inspection authorities and the consumers.