Validating Torrymeter as a sensor tool for freshness assessment of *Katsuwonus pelamis*, *Decapterus russelli* and *Lethrinus nebulosus*

A.P.A. Madushani[1]*, S. Ariyawansa[2] and C.V. L. Jayasinghe[1]

[1]Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila, Sri Lanka

[2]National Aquatic Resource Research and Development Agency (NARA),Crow Island, Colombo 15, Sri Lanka

Fish freshness is determined by microbiological, chemical, organoleptic and rapid sensing instruments. Torrymeter is a portable sensor tool that can measure freshness of fish as a quick, easy and non-destructive method. In Sri Lankan context, Torrymeter is yet to be practiced. The present study was carried out for validation of Torrymeter to determine freshness of Skipjack tuna (*Katsuwonus pelamis*), Indian Scad (*Decapterus russelli*) and Spangled emperor (*Lethrinus nebulosus*). Freshness of each fish which were stored in chilled condition (0-4 °C) were measured over for seven days to obtain Torrymeter (Model 14-10949) readings, Total Volatile Basic Nitrogen (TVB-N), Total Plate Count (TPC), and Overall Quality Index Method (OQIM). Torrymeter data were correlated with respective values of later three methods. Torrymeter, TPC, TVB-N, and elaborate OQIM values obtained for freshness of fish showed linear relation with storage period. Obtained Torrymeter readings were analyzed by Chi-square test of Analysis of variance with TPC, TVB-N, and OQIM and correlation coefficient was calculated. High correlation coefficients of Torrymeter readings with TPC, TVB-N, and OQIM showed for spangled emperor that corresponds 85.7% to all three methods, while Indian scad showed 85.7%, 96.2% and 85.7% for the same. This result suggest that Torrymeter can be used to measures freshness of spangled emperor and Indian scads accurately. However, poor correlation (1-3%) was observed for Torrymeter reading of skipjack tuna with values of other freshness determination methods indicating the unsuitability of using Torrymeter for determination of freshness of skipjack tuna which had bruised skin/damaged tissues due to bad fish handling practices.

Keywords: fish freshness; organoleptic quality index method; torrymeter; TVB-N

*Corresponding author – email: anushikam1992@gmail.com