

Determination of Geographical Variations of Heavy Metals in Swordfish (*Xiphias gladius*) and Yellowfin Tuna (*Thunnus albacares*)

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Bioaccumulation of heavy metals in marine fish has emerged as a serious health concern in consumers and economic burden to fish exporters. Heavy metal concentrations of fish found in Sri Lankan fishery products may cause risks of border rejections and economic losses. However, data are yet to be available in this regard. Present study was conducted to explore geographical variation of heavy metal accumulation in the swordfish (*Xiphias gladius*) and Yellowfin tuna (*Thunnus albacares*). The heavy metal analysis data (Hg, Cd, As, Pb) were collected from two fish export companies in Sri Lanka. Cd, As, Pb metals were not detectable in samples. There were 302 mercury analysis data of swordfish during June to September, 2017 and 33 mercury analysis data of yellowfin tuna during January, 2015 to August, 2017. According to the collected secondary data, particular way points were traced using log sheets. Then using QGIS software, monthly heavy metal variations were mapped against fish species. Results showed that heavy metal analysis data concentrated in main 4 areas between 64°00'00.000"E-70°00'00.000"E & 0°00'00.000"N-8°00'00.000"N, 76°00'00.000"E-80°00'00.000"E & 0°00'00.000"N-8°00'00.000"N, 88°00'00.000"E-92°00'00.000"E & 14°00'00.000"N-18°00'00.000"N and 82°00'00.000"E-90°00'00.000"E & 6°00'00.000"N-14°00'00.000"N. The results revealed that Mercury is the major heavy metal that accumulates in the Swordfish and Yellowfin tuna. According to EU standards, Mercury accumulation is higher in Swordfish that exceed 1ppm standard limit. Accumulation is highest in the fish harvested in the area of 64°00'00.000"E-70°00'00.000"E & 0°00'00.000"N-8°00'00.000"N. Accumulating proportion to its harvest was 40.33% that exceeds 1ppm level. The next highest mercury levels were found in the 88°00'00.000"E-92°00'00.000"E & 14°00'00.000"N-18°00'00.000"N and proportion to the total harvest was 10.81% which is greater than 1ppm. In conclusion, the fish caught from these two areas tend to have more Mercury contaminations than those of other areas, suggesting possible predictive modeling applications for heavy metal accumulations in fish.

Keywords: Sword fish, Yellowfin tuna, Heavy metal, Mercury, Mapping