

BIOACCUMULATION OF POTENTIALLY RISKY HEAVY METALS IN COMMONLY CONSUMED FRESHWATER FISH IN AMPARA DISTRICT

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Abstract: Fish are pivotal in ensuring global food and nutrition security, given their abundance of essential nutrients. Nevertheless, their habitats face many challenges due to the proliferation of diverse malpractices, resulting in various forms of pollution. As fish ascend through higher trophic levels within the food chain, they emerge as prominent bio-indicators of increased heavy metal contaminations. Consequently, the human body becomes particularly susceptible to heightened levels of heavy metals, leading to a spectrum of health risks. In the present study, *Oreochromis niloticus* species were collected to determine the accumulated metal content in their muscles and the impact on consumers' health risk. Fish samples were collected from the Irakkamam tank, Ampara district, which is believed to be polluted by extensive pollutants from agricultural and natural sources. The heavy metals including Cr, Pb, As, Cd, and Hg were determined using ICP-MS. The estimated daily intake (EDI), and hazard index (HI) were determined to determine the health hazard levels. The mean concentration (ppm) of Cr, Pb, As, Cd and Hg in fish muscles were 7.98 ± 3.03 , 0.75 ± 0.34 , 0.03 ± 0.03 , 0.1 ± 0.06 and 0.10 ± 0.08 , respectively and Cr, Cd, and Pb exceeded the recommend levels prescribed by FAO. Except for As, the EDI (mg/day/person) of all metals exceeds the recommended daily dietary allowance. Moreover, HI through consumption of *Oreochromis niloticus* is above the standard threshold of one indicating a non-carcinogenic risk to consumers. Continuous consumption of *Oreochromis niloticus* species of the Irakkamam tank may cause chronic health hazards to consumers.

Keywords: Aquatic foods; Health hazards; Pollution; Trace metals