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ASSESSMENT OF HEAVY METALS CONTAMINATION IN FISH CULTURED IN SELECTED PRIVATE FISHPONDS AND ASSOCIATED PUBLIC HEALTH RISK CONCERNS, DAR ES SALAAM, TANZANIA

Leopord Sibomana Leonard, Anesi Mahenge & Nehemia Mudara

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ABSTRACT

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Environmental pollution caused by the increase of heavy metals concentration in aquatic and terrestrial environments is a growing global concern due to their nature and toxicity. This paper aimed to undertake an assessment of the quality of fish cultured in individual-owned fishponds in Dar es Salaam city and their associated health risks. Data collection involved sampling and quantification of the quality of two species of fish, which were African catfish (*Clarias gariepinus*) and Nile tilapia (*Oreochromis niloticus*), from three selected fish ponds in Dar es Salaam and chemical analysis involved heavy metals analysis in gills, fins, guts, and muscles. The concentrations of heavy metals were analyzed using Atomic Absorption Spectrophotometer (AAS). Results of this study indicated that the concentrations of trace metals in fish tissues varied considerably. The fish gills had higher concentrations of Cr, Zn, Cu, and Pb than the fins and guts, while muscles had the lowest concentrations of heavy metals in all fish species. A highly significant difference in the heavy metal concentrations measured in both catfish and tilapia tissues was observed with a P value of less than 0.05. Individual risk assessment showed that there was a minimal risk caused by the concentrations of Cr, Zn, and Cu upon consumption of fish; however, the combined effect was higher caused by the high concentration of Pb in fish organs. Monitoring of fish quality in privately owned fish ponds is recommended to safeguard consumers.

Keywords: Assessment, Contamination, Dar es Salaam, Fish-Ponds, Metals, Risk