

Bioaccumulation of Heavy Metals in Common Carp (*Cyprinus Carpio*) from Masinga dam, Kenya

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Abstract

The pollution of aquatic ecosystems with heavy metals has become a worldwide concern and more so in developing countries. This is because of their ability to bioaccumulate in aquatic organisms and especially in fish which is a source of livelihood for human populations. Therefore, an assessment of heavy metal contamination (Cu, Zn, Pb, Cr and Mn) in muscles of *Cyprinus Carpio* from Masinga reservoir was carried out for a period of twelve months. The fish samples were collected on monthly basis using gill nets from five sampling sites in the dam. Fish samples obtained were immediately kept in pre-cleaned polythene bags, sealed, labeled and kept in ice boxes for transportation to the laboratory. In the laboratory fish muscles were extracted, dried and acid digested for heavy metal analysis. Heavy metal Concentrations were determined using atomic absorption spectrophotometer. The data obtained was analyzed using one way analysis of variance (ANOVA) and significant differences accepted at $p \leq 0.05$. Post Hoc Turkeys' test was used to separate means. The mean metal concentrations (mg kg^{-1}) in fish muscles were Cu (0.519 – 1.422), Zn (39.466 – 62.233), Pb (0.994 – 1.424), Cr (0.324 – 0.709) and Mn (0.659 -1.432). The heavy metal concentrations in muscles of the fish species under study were lower than World Health Organization (WHO) set limits for fish and fish products except for Cr. The elevated Cr concentrations in the fish muscles is a sign of untreated or inadequately treated wastewater most probably from tanneries located in the catchment. Results from this study demonstrate the need for an ecosystem based approach towards sustainable management of Masinga dam and its catchment. This will curb aquatic pollution which is a health risk for people consuming aquatic resources contaminated with heavy metals.

Keywords: Heavy metals, Bioaccumulation, aquatic pollution, fish, Masinga dam.