

Studies on heavy metals in water, sediment and *Clarias gariepinus* of river Gongola, Gombe state

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ABSTRACT:

Evaluation of heavy metal contamination (Cu, Zn, Pb, and Cd) in water, sediments and in the muscles of *Clarias gariepinus* in river Gongola, Gombe state, was carried out between April and September 2019 in six sampling sites. The concentrations were determined using atomic absorption spectrophotometer. The data obtained was analyzed using one way analysis of variance and significant differences accepted at $P \leq 0.05$. Post hoc Duncan test was used to separate means. Mean heavy metal concentrations (mg.kg^{-1}) in the sediments were Cu (0.448-0.750) and Zn (0.019-0.025). Pb and Cd were below detectable limit. There was significant differences in metal concentrations for Cu ($P=0.002$), whereas Zn ($P=0.756$) showed no significant difference among the sites. Surface water from all the sites did not show significant difference in heavy metal contamination ($P>0.05$). The mean metal levels (mg.kg^{-1}) in *C. gariepinus* muscles, were Cu (0.388-0.759) and Zn (0.020-0.082), whereas Pb and Cd were below detectable limit. Copper exhibited significant difference between the sites ($P=0.00$) while for Zn there was no significant difference in the sites. Pearson matrix correlation analysis showed some significant correlations among the heavy metal levels in the water, sediments and different catfish muscles. The concentrations of all the metals in surface water, sediments and catfish muscles did not exceed the WHO recommended limit for drinking and consumption. Results from this study showed the need for an ecosystem approach towards sustainable management of rivers to curb aquatic pollution which is a risk to the entire ecosystem.

Keywords:

Heavy metals, Water, Sediments, Catfish, River Gongola.