Seasonal variation of heavy metals concentrations in muscles of Oreochromis niloticus, River Nile water and sediments at Assiut Governorate, Egypt

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Abstract:

Water pollution is one of the most principal environmental and public health problems in river Nile. Heavy metals concentrations; iron (Fe), copper (Cu), cadmium (Cd), lead (Pb), zinc (Zn), chromium (Cr), manganese (Mn), mercury (Hg) and nickel (Ni) were determined in water, sediment and fish muscles of Oreochromis niloticus collected from six areas at Assiut Governorate on river Nile using inductively coupled plasma mass spectrometry (ICP-MS). The results revealed that Zn, Cu and Fe concentrations were the highest in water and muscles, followed by Mn, Cr, Pb, Cd, Ni and Hg in areas under investigation. Also, summer was the highest accumulation season and winter was the lowest one. In sediments, the order of accumulation was Fe>Zn>Mn>Cu>Ni>Pb>Cd>Cr>Hg. In conclusion, the present study revealed that the accumulation and bioaccumulation factor of heavy metals especially Zn, Fe and Cu were higher in summer season due to increase of temperature, accordingly the authors advice to decrease fish consuming in summer in order to avoid the receiving accumulated heavy metals from their muscles.

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