

Assessment of human health risk via the consumption of the freshwater fish, *Cyprinus carpio* and *Oreochromis niloticus* from the Ganga river, India

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ABSTRACT : Atomic absorption spectrophotometer was used to measure the concentration of bio-accumulated of heavy metals viz. Cu, Cr, Cd, Pb, Zn and Hg in the muscles of two heavily consumed fish species *Cyprinus carpio* and *Oreochromis niloticus*. Mean concentrations (in mg/kg weight basis) of these metals in the muscles of these two fish species were recorded respectively as: Cu 3.35, 3.05, Cr 1.24, 1.58, Cd 0.48, 0.56, Pb 7.64, 9.23, Zn 22.68, 25.21 and, Hg 0.22, 0.26. To assess the human health risks, Target Hazard Quotient (THQ) and Target Risk (TR) were calculated. THQs for individual metals were lower than USEPA guideline value of 1. However, Hazard Index (HI) for *C. carpio* and *O. niloticus* were 0.396 and 0.264, respectively. Since Cu, Cr, Cd, Pb, and Zn do not cause any carcinogenic effect as their CPSo have not been established (USEPA 2012) so for, target risk values for intake of these metals were not calculated. Till now, recommended guidelines have not been established for these heavy metals in India, which is essential for setting of toxicological standard. Although consumption of *C. carpio* and *O. niloticus* at present bioaccumulation concentration are safe, their surplus and continuous consumption for a life time of more than 70 years has higher cancer risk.

Key Words : Heavy metals, Target cancer risk, target hazard quotient, the Ganga.