

Bioconcentration of metals in two edible aquatic plants from a Sri Lankan freshwater wetland

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Plants are known to accumulate metals and this ability is species- specific and governed by a number of environmental variables including metal availability in water and sediment. In aquatic systems, where pollutant inputs are discontinuous and pollutants are quickly diluted, analyses of metals in plant tissues provide time integrated information about the quality of the system.

Two edible aquatic (marsh) plants, i.e. *Ipomoea aquatica* (Kankun, S.) and *Alternanthera sessilis* (Mukunuwenna, S.) from Iriyawetiya freshwater wetland that receives surface runoff from populous Kiribathgoda peri-urban area were investigated for their bioconcentration capacity for iron (Fe), cadmium (Cd), chromium (Cr), copper (Cu), manganese (Mn), nickel (Ni), lead (Pb) and zinc (Zn) with a view to understanding the risks associated with their consumption on human health.

The highest bioconcentration factor (BCF) for the two species were found to be for Ni, which is found in relatively small quantities in the wetland. BCF of both species for Fe was 2.7 times lower than that of *Alocasea macorrhiza* that recorded the highest value (85) for iron accumulation. Bioaccumulation capacity of *I. aquatica* for Cd was 13.7 times lower and of *A. sessilis*, 20 times lower than that of *Pistia stratiotes* which recorded the highest BCF (833) for the metal. *A. sessilis* having a BCF value 30.5 times less than that of *Salvinia molesta* which recorded the highest (521), proved to be a weak accumulator of Cr and accumulation capacity of *I. aquatica* for Cr was only 8 times lower *S. molesta*. Both the species were found to be even weaker accumulators of Cu, where BCF of *I. aquatica* was 20 times lower than the highest value (307) recorded for *P. stratiotes* and that of *A. sessilis* was 22 times less than *P. stratiotes*. They also proved to be very weak accumulators of Mn and Zn while recording relatively low capacities too for accumulating Ni in tissues of *I. aquatica* (144 against the highest recorded 5047 for *Eichhornia crassipes*) and *A. sessilis* with a BCF value of 323. These two species are also poor accumulators of Pb as indicated by relatively low BCF values, 36 for *I. aquatica* (50 times lower than the highest value recorded for *Limnocharis flava*) and 46 for *A. sessilis* (40 times less than the highest value).

Comparisons with known potentially harmful levels of metals in plant tissues reveal that consumption of these two plant species may not pose a threat to human health due to their low bioconcentration capacity of the above metals.