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Accumulation pattern of some selected heavy metals in some edible fish species from Bolgoda lagoon

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Heavy metals exist naturally at background levels in the environment but they can also be introduced into the aquatic environment from anthropogenic activities. Once released to the environment, these metals transfer via food chains by bioaccumulation and bioconcentration to fish, which leads to severe health hazards on humans and other piscivorous animals when they are consumed.

Therefore, the present study was carried out to determine the levels of Lead (Pb), Cadmium (Cd), Chromium (Cr), Zinc (Zn), Nickel (Ni), and Copper (Cu) of some selected edible finfishes, (*Ambassis commersoni* - Katilla), *Netuma thalassinus* - Anguluwa), *Mugil cephalus* - Godaya); shellfishes, *Metapenaeus dobsoni* - Malissa), *M. ensis* - Koralissa) and plankton from two sampling stations of Horethuduwa and Panadura estuary in Bolgoda Lagoon, from September 2005 to February 2006, by means of Flame Atomic Absorption Spectroscopy (FAAS).

The highest mean concentrations of Zn (2.8923 ±0.488 μg/g), Pb (0.1110 ±0.053 μg/g), Ni (0.0620 ±0.034 μg/g) in *N. thalassinus,* Cu (0.0226 ±0.009 μg/g) in *M. ensis* and Cd (0.0225 ±0.002 μg/g) in *M. cephalus* were recorded from Horethuduwa. The Cr levels (0.0307 ±0.004 μg/g) in *N. thalassinus* from Panadura Estuary were greatest among other species analysed. The detected highest metal concentrations remained well within the acceptable limits of CEA (Zn <5.0mg/kg, Pb <1.0mg/kg, Cd < 2.0mg/kg, Cr < 1.0mg/kg, Ni < 5.0mg/kg, Cu <3.0mg/kg). Therefore, the present detected heavy metal levels may not seriously effect on health hazards by consuming *A. commersoni, N. thalassinus*, and *M. cephalus, M. dobsoni* and *M. ensis* from Bolgoda Lagoon. Though, exposure to daily low doses of the mentioned heavy metals may lead to chronic toxicity. The highest bioaccumulation factors (BAF) for Cd (200.00), Cr (140.00), and Cu (186.67) were detected in plankton from Horethuduwa where as highest BAFs for Pb (25.00) and Ni (17.21) were recorded in plankton from Panadura Estuary and Zn (263.75) in *N. thalassinus* from Horetuduwa. Almost all the metals show low bioaccumulation factors except for Zn in *N. thalassinus*. The bioaccumulation factor for Pb was less than 1 for all fish species showing a diminution in higher tropic levels where as BAF of Pb was grater than 1 for plankton showing a definite biomagnification. Thus, the findings of the present study highly recommend the importance of regular monitoring of heavy metals in fishes and biota from Bolgoda Lagoon since all other metals tested other than Pb and Ni (except in *N. thalassinus*) show bioaccumulation.

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