Cadmium and lead content in fresh water fish from Sri Lanka

S Wimalasena* and M W G Devika
Department of Chemistry, University of Kelaniya, Kelaniya

Trace metals particularly cadmium and lead are known to bio-accumulate in marine animals and hence humans and other animals consuming them are liable to health problems. The levels of cadmium and lead in fresh water fish from Sri Lanka have not been reported. The present study was under taken to deduce whether fresh water fish consumed by us contain these two metals in concentrations greater than the permissible levels. The present study reports the cadmium and lead content in five varieties of fresh water fish namely *Oreochromis mossambicus* (S. Tilapia), *Mastacembelus armatus,* (S. Theliya), *Ophicephalus straitus* (S. Loola), *Heteropneustes fossilis* (S. Hunga) and *Anguilla bicolor bicolor* (S. Kalu aandha) purchased from the markets in Anuradhapura.

The concentration of the metals in the flesh, gut, gills and liver of the fish samples were determined in triplicate using atomic absorption spectrometer. The lead content in the flesh, gut, gills and liver were 1.41 ± 0.16 – 0.39 ± 0.02 ppm, 2.13 ± 0.11 - 0.42 ± 0.08 ppm, 1.36 ± 0.32 - 0.57 ± 0.05 ppm and 3.22 ± 0.25 -1.40 ± 0.08 ppm respectively. The cadmium content in the flesh, gut, gills and liver were 3.61 ± 0.42 – 0.62 ± 0.35 ppm, 9.01 ± 1.18 -0.83 ± 0.25 ppm, 6.96 ± 1.66 - 0.85 ± 0.221 ppm and 48.36 ± 19.56 – 3.10 ± 0.65 ppm respectively.

In all the fish samples the liver was found to accumulate the highest amount of lead and cadmium. The highest concentration of cadmium and lead were found in the liver from *O. mossambicus* (48.34 ± 19.56 ppm) and in *H. fossilis* (3.22 ± 0.26 ppm). The highest concentration of cadmium and lead were found in the flesh from *M. armatus* (3.61 ± 0.42 ppm) and *O. striatus* (1.41 ± 0.16 ppm) respectively.

The maximum values of cadmium and lead permitted to be present in aquatic animals by the US Food and Drug Standard is 0.5 ppm and 1 ppm respectively. The cadmium level in the flesh was higher than 0.5 ppm in all samples of flesh analysed. The level of lead was lower than the tolerance value of 1 ppm in *O. Mossambicus* and *H. fossillis.*

Financial assistance by University of Kelaniya on research grant RP/PG/97/01/29 is acknowledged.

Tel: 011 2914486