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Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile tilapia) and *Ompok bimaculatus* (Pena walaya) from Padaviya reservoir of North Central Province, Sri Lanka

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Oreochromis niloticus (Nile tilapia) and *Ompok bimaculatus* (Pena walaya) are two edible fish species captured in the reservoirs in the North Central province. Objective of this study was to assess the cadmium and arsenic levels in muscle, liver and kidney tissues of *O. niloticus* and *O. bimaculatus* inhabiting the Padaviya reservoir to assess association of metal/metalloid levels in tissues with body weights, and total lengths of the fishes. The body weight (180-300g; 110-225g) and the total length (19.0-24.1cm; 24.0-34.0cm) of Nile Tilapia (n=30), and Pena walaya (n=30) respectively were recorded during three sampling events in 2018. The tissues were analyzed for cadmium and arsenic levels using Inductively Coupled Plasma Mass Spectrometry. Cadmium and arsenic contents of the muscle tissues were below the limit of detection (LOD) (<0.05 mg/kg wet weight) except cadmium in the muscle tissues of five Nile tilapia (0.05-0.10 mg/kg). Cadmium contents in the liver tissues of both Nile tilapia and Pena walaya, ranged from <0.05 to 0.14 mg/kg (wet weight) where cadmium levels of 67-70% of the fishes were below the LOD. Arsenic levels in liver tissues of Nile tilapia and Pena walaya were <0.05–0.10 mg/kg and <0.05–0.06 mg/kg respectively where arsenic levels in 83% of Nile tilapia and 97% of Pena walaya were below the LOD. Cadmium content in the kidney tissues of Nile tilapia and Pena walaya were <0.05-0.90 mg/kg and <0.05-0.40 mg/kg respectively where cadmium levels in 30% and 33% fishes were below the LOD. Arsenic was detected only in kidney tissues of 10% Nile tilapia (<0.05-0.46 mg/kg). Cadmium contents in liver tissues of Nile tilapia positively correlated ($p < 0.05$) with the total length. No other significant associations were found between the metal/metalloid content in the tissues and the body size of the fishes. Results revealed that the cadmium and arsenic contents in the edible muscle tissues of most of these fishes were within the safe limits specified by the regulatory authorities for human consumption. Bioaccumulation pattern of cadmium in the tissues of both fishes followed the order: muscle < liver < kidney, showing greater cadmium bioaccumulative capacity in the kidney tissues. Periodic monitoring of metal/metalloid levels in edible fishes in Padaviya reservoir is recommended considering human safety. The data generated in this study can serve as baseline information for future monitoring and human health risk assessment programmes.

Keywords: Arsenic, cadmium, *Ompok bimaculatus*, *Oreochromis niloticus*, Padaviya reservoir

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