

Microcystin -LR Contamination status of Nile tilapia (*Oreochromis niloticus*) collected from reservoirs in Polonnaruwa District, Sri Lanka

H. A. S. N. Abeyesiri and P. M. Manage*

*Centre for Water Quality and Algae Research, Department of Zoology,
University of Sri Jayewardenepura, Sri Lanka*

**Email: pathmalal @ sjp.ac.lk*

Microcystin-LR (MC-LR) is a cyanotoxin derived from some cyanobacteria. Nile Tilapia (*Oreochromis niloticus*) is the most popular freshwater fish in Sri Lanka. MC-LR accumulation in Nile tilapia from four reservoirs; Parakrama Samudraya, Halmilla Wewa, Kaudulla Wewa and Ambagas Wewa in Polonnaruwa District was determined to evaluate the risk posed by the MC-LR contamination in fish on human health. Sample collection, transportation and analysis were followed according to the standard protocols and MC-LR was quantified by High Performance Liquid Chromatography (HPLC). Fish skin, flesh and head were analyzed for MC-LR and Tolerable Daily Intake (TDI) values were calculated according to the WHO guidelines (0.04 µg/day/person). The standard lengths of 30 fish ranged between 15.2 cm and 21.5 cm. The mean concentration of MC-LR in skin, flesh and head were 18.41 ± 1.76 µg/g, 0.32 ± 0.01 µg/g and 6.69 ± 0.42 µg/g respectively in fish samples collected from Parakrama Samudraya. In Kaudulla Wewa, level of MC-LR in skin, flesh and head were 13.27 ± 0.56 µg/g, 16.21 ± 0.47 µg/g and 3.08 ± 0.35 µg/g respectively and in Halmilla Wewa, MC-LR in skin and flesh were not detected. However, MC-LR in head was recorded as 0.40 ± 0.03 µg/g. In Ambagas Wewa, MC-LR levels were not detected in the fish samples. TDI of MC-LR in fish skin and head in Parakrama Samudraya was 0.35 ± 0.02 µg/day/person, and 0.16 ± 0.01 µg/day/person respectively. TDI of MC-LR in fish skin, flesh and head in Kaudulla Wewa was 0.48 ± 0.03 µg/day/person, 0.41 ± 0.04 µg/day/person and 0.07 ± 0.01 µg/day/person respectively. These values exceeded the TDI value given by WHO. However, the TDI value in fish flesh in Parakrama Samudraya was 0.007 ± 0.001 µg/day/person and the value was below the given WHO standard. Thus the present study revealed that consumption of head, and skin part of fish has a potent risk on accumulation of MC-LR in human body. Therefore, removal of head part and skin is recommended prior to consumption, in order to avoid MC-LR contamination. Further public awareness is needed to minimize the potent risk on accumulations of MC-LR in human body.

Keywords: MC-LR, TDI, Tilapia, Polonnaruwa