

Abstract FM 04

DETECTION OF MICROCYSTIN-LR FROM WELL WATER IN CKDU HIGH PREVALENCE PADAVIYA, MEDAWACHCHIYA AND SPRING WATER IN KEBITHIGOLLEWA IN ANURADHAPURA DISTRICT, SRI LANKA

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Chronic Kidney Disease of unknown etiology (CKDu) is an upcoming health issue in Sri Lanka. Cyanotoxin has been proposed as one of the hypotheses for CKDu in Sri Lanka. Many cyanobacterial blooms are known to be toxic, causing serious hazard to human and animal health. Microcystin-LR (MC-LR) is one of the most potent cyanotoxins which affects the functions of kidneys and liver. The present study records the presence of MC-LR producing cyanobacteria and cyanotoxins with reference to some important water quality parameters of well water in Padaviya, Medawachchiya, Angunakolapellessa and also spring water in Kebithigollewa. The study was carried out for both dry and wet seasons and water samples were collected from 30 wells in Padaviya, Medawachchiya, 9 springs in Kebithigollewa and 21 wells in Angunakolapellessa as the control area. MC-LR quantification was carried out using ELISA. Identification and enumeration of cyanobacteria were carried out under a light microscope ($\times 400$). The results of the study revealed that all the water quality parameters measured were within the SLSI standards given for drinking water. Mean cell densities of *Microcystis* sp. varied from 141 ± 0.03 to 740 ± 0.96 cells mL^{-1} during dry season and from 21 ± 0.05 to 154 ± 0.03 cells mL^{-1} during wet season, where MC-LR concentrations ranged from 1.55 ± 0.02 to 3.89 ± 0.07 $\mu\text{g L}^{-1}$ and from 0.14 ± 0.01 to 1.99 ± 0.02 $\mu\text{g L}^{-1}$ during dry and wet seasons, respectively. MC-LR and *Microcystis* sp. were not recorded from spring water in Kebithigollewa and well water in Angunakolapellessa. A positive correlation was found between MC-LR detected wells and CKDu patients who consume water from the contaminated wells ($p < 0.05$). Further, a significant relationship was observed between *Microcystis* sp. cell densities, MC-LR concentrations and recorded CKDu cases in the study area.

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Keywords: Microcystin-LR (MC-LR), *Microcystis* sp., CKDu, ELISA, well water

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