

CYTOTOXICITY OF CYLINDROSPERMOPSIN, MICROCYSTIN-LR, MICROCYSTIN-RR AND NODULARIN ON RENAL CELLS

H.A.S.N. Abeysiri^{1,2}, K.T. Dilrukshi^{1,2}, I.C. Perera³ and M.M. Pathmalal^{1,2*}

¹Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

²Faculty of Graduate Studies, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

³Department of Zoology and Environment Sciences, University of Colombo, Colombo, Sri Lanka
*pathmalal@sjp.ac.lk

Cyanotoxins are secondary metabolites produced by different types of cyanobacteria. Among them, Cylindrospermopsin (CYN), Microcystins (MCs) and Nodularin (NOD) stand out due to their wide geographical distribution. The toxicity of cyanotoxins in various organs, including the kidney, has been documented using animal models. However, studies on renal toxicity of CYN, MCs and NOD are limited. Thus, the present study evaluated the cytotoxicity of CYN, MC-LR, MC-RR and NOD on the Vero renal cell line. Cell viability was measured using sulphorhodamine B (SRB) assay following exposure of cells to pure CYN, MC-LR, MC-RR and NOD at different concentrations (0.5, 1.0, 5.0, 10.0, 50.0, 100.0, and 200.0 μ M) for 24 h and calculating the half maximal Inhibitory Concentration (IC_{50}) values. The highest cell mortality was recorded for different concentrations (0.5, 1, 5, 10, 50, 100, and 200 μ M) of CYN. Cells exposed to 200 μ M concentration of CYN, MC-LR, MC-RR, and NOD showed 94.31 ± 0.01 , 92.92 ± 0.01 , 84.71 ± 0.01 , and 78.74 ± 0.01 % mortality percentages, respectively. Significant results were obtained for the dose-dependent cytotoxicity of the Vero renal cells exposure to CYN, MC-LR, MC-RR, and NOD at $p < 0.05$. The results revealed that CYN had the lowest IC_{50} value (23.30) while NOD had the highest (72.35). Therefore, the finding of the study showed that cyanotoxins could cause cytotoxicity in renal cells, with CYN having the highest effect and NOD the least.

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