

Detection of Hepatotoxic Microcystin in *Chroococidiopsis* Species

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The investigation on microcystins, as one of many cyanotoxins, is increasing due to the related ecological and public health risks. There is evidence that microcystins have a tumour promoting activity and microcystin-LR could be a tumour initiator and possibly carcinogenic to humans. *Chroococidiopsis* is a desiccation-tolerant cyanobacterium colonizing hypolithic and cryptoendolithic habitats in extremely hot and cold deserts worldwide. However, there are no previous records about this most primitive living cyanobacterium from Sri Lanka.

In this study five *Chroococidiopsis* isolates 1R (EU 276382), L5 (EU276383), Batti6.2 (EU310432), YRS 4a (EU 310420) and D3 (EU310430) which has been isolated from tsunami affected coastal belt of Sri Lanka were tested for their microcystin variants using HPLC and FTIR analysis. Microcystin from cultured samples were extracted according to the standard protocol. The reverse phase HPLC determination of microcystins was carried out with a Shimadzu HPLC pump (model SIL-6A) connected to a silica based reverse phase C18 column. FTIR was used to qualitatively identify the functional groups of microcystin. The transmission spectra of the samples were recorded using thin layers. The spectra were measured from 400 to 4000 nm and recorded on a Nicolet 6700 FTIR spectrometer (Thermo SCIENTIFIC, USA). Spectra were analyzed by applying the method of curve decomposition using Origin and OMONIC curve fitting software built in with a FTIR spectrometer. The *Artemia salina* bioassay was applied to the analysis of lethal effect of microcystin variants in *Chroococidiopsis* along with the standard cyanobacterial strains of *Microcystis aeruginosa* (PCC 7941) and *Microcystis aeruginosa* BL1. According to HPLC analysis, microcystin-RR was detected in *Chroococidiopsis* spp. 1R and L5 while microcystin-YR, was detected in L5, Batti.6.2, D3 and YRS 4a. In FTIR analysis, isolated toxins showed common functional groups like amines, alkanes, carboxylic acids, ethers and alkenes that were already found in microcystin-LR previously. Microcystin extracted from YRS 4a and Batti6.2, with concentrations of 80 µg/mL and 10 µg/mL of L5 showed 75%, 15%, 10% mortality in bioassay after 48 h of exposure to toxin. The results obtain from the study confirmed the presence of microcystin variants in *Chroococidiopsis* isolates 1R, L5, Batti6.2, YRS 4a and D3.