

MOLECULAR IDENTIFICATION OF POTENTIAL MICROCYSTIN PRODUCING CYANOBACTERIA FROM NORTHERN SRI LANKA

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Cyanobacteria are gram negative photosynthetic prokaryotes with most widespread phylogenetic groups. The species most commonly associated with microcystin production is *Microcystis aeruginosa*. This study was aimed to investigate the presence of potential microcystin producing cyanobacteria from Northern part of Sri Lanka. Soil samples (n=10) and water samples (n=32) were collected from tube wells (n=9), house hold wells (n=7) and paddy fields (n=16) from Thenmarachchi (n= 18), Vadamarachchi (n=11) and Valikamam (n=13) areas in Jaffna district. Samples were inoculated in to cyano-specific BG11 media and incubated at 28 ±2°C under fluorescent light with intensity of 4.8 × 10⁻⁴cm⁻²W–5.9 × 10⁻⁴cm⁻²W at a 16:8-h dark/light cycle to obtain pure cultures. DNA was extracted from environmental samples, by Boom's method. For culture isolates of standard *Microcystis aeruginosa*, *Microcystis aeruginosa* from Beira Lake (accession number - EF051239) and *Microcystis* samples C1 and C2 (isolated from environmental samples) standard CTAB method was used. Extracted DNA was quantified and sensitivity of the PCR assay was determined using a serial dilution of template DNA (100 ng/μl, 10 ng/μl, 1 ng/μl) extracted from *Microcystis aeruginosa* isolate EF051239 with the optimized concentration of primers(0.6μM), dNTP(0.1mM) and Taq DNA polymerase(1U). The *mcyE* gene was amplified from cyanobacterial DNA by Polymerase Chain Reaction (PCR) using HEPF (5'-TTTGGGGTAACTTTTTGGCCATAGTC-3') and HEPR (5'-AATTCTTGAGGCTGTAAATCGGGTTT-3') primers. Expected 472bp fragment of *mcyE* was present in amplified PCR products from DNA (100ng/μl and 10 ng/μl) extracted from *Microcystis aeruginosa* EF051239 and DNA extracted from two cyanobacterial cultures C1 and C2. Hence culture isolates C1 and C2 were confirmed as having the potential to produce toxic microcystin. Occurrence of potentially toxic cyanobacteria in water bodies was observed and better knowledge about toxin producing cyanobacteria is necessary before using these waters for human consumption.

Keywords: Cyanobacteria, Cyanotoxin, Morphology, Sri Lanka