

## The Detection and Quantification of Cyanobacterial Toxins in Water Using the Brine Shrimp (*Artemia salina*) Assay

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### Abstract

The cyanobacteria (blue-green algae) are an ancient and ubiquitous group of prokaryotes that form dense growths or blooms in eutrophic water bodies. The blooms are of interest to aquaculturists and water management authorities due to their production of taste and odour compounds and/or potent natural toxins. The study focused on method development for toxin extraction and detection in cyanobacterial blooms based on its lethal effect on the brine shrimp, *Artemia salina*. The standard, pure microcystin-LR and extracts of cyanobacterial cells were assessed by an immersion assay and the results were analysed by the probits method using the software Ldp Line. The LC<sub>50</sub> for pure microcystin-LR was 6.80 µg ml<sup>-1</sup> while that of samples ranged from 0.80 - 33.58 mg ml<sup>-1</sup>. The cultured bloom, *M. aeruginosa* PCC 7813 with 3.68 µg mg<sup>-1</sup> MC-LR equivalents of toxin was the most toxic sample while the natural bloom from loch Carlisle was the least toxic with 0.18 µg mg<sup>-1</sup> MC-LR equivalents of toxin. The brine shrimp assay provides a simple and sensitive method for routine monitoring of blooms, particularly in developing countries where sophisticated equipment are not available.