



## Removal of Microcystin-LR using Cellular Extracts of *Bacillus cereus*

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### Abstract

Microcystin -LR (MC-LR) is considered to be the most dominant type of cyanobacterial toxins present in water bodies. The present study focuses on using cellular extracts of *Bacillus cereus* in removal of MC-LR in water. Bacterial cell extracts were prepared using over night fresh cultures of *B. cereus* which was previously recorded as a potent MC-LR degrading bacterium. Bacterial cell disruption was performed by bead beating on a micro-mini bead beater. Cell debris was removed by centrifugation at 13000 rpm, 20 min. Subsequently, a series of concentrations of cellular extract (100%, 75%, 50% and 25%) was prepared. These cell extracts were separately incubated at 28°C with 100 µg ml<sup>-1</sup> of MC-LR for a period of 4 days. 1ml aliquots were removed at 24 hour intervals for four days and frozen at (-20) °C. Then frozen samples were freeze-dried and subjected to Photo diode array- High Performance Liquid Chromatography (PDA-HPLC) analysis to detect the remaining MC-LR concentrations of the samples. At the end of fourth day, 81.1 µgml<sup>-1</sup> of MC-LR was removed when 100% of cell extract was used. When 75 % of cell extract was used, 77.6 µgml<sup>-1</sup> of MC-LR removal was evident at the end of fourth day. Where as when 50 % and 25% of cell extract were used only 40.7 µgml<sup>-1</sup> and 25.7 µgml<sup>-1</sup> of MC-LR removal was detected respectively. The results of the present study indicate that bacterial cell extracts of *B. cereus* has the ability to remove MC-LR by an enzyme mediated mechanism.

**Keywords:** Microcystin-LR, *Bacillus cereus*, Cellular extracts, Photo Diode Array-High Performance Liquid Chromatography (PDA-HPLC)