

Occurrence of heterotrophic bacteria causing lysis of *M. aeruginosa* in Beira Lake, Sri Lanka

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Abstract

Field and the laboratory studies were carried out to ascertain the potential impact of algicidal bacteria on *Microcystis aeruginosa* from June 2005 to March 2007 in Beira Lake, Sri Lanka. *M. aeruginosa*, and *M. wesenbergii* quantitatively dominated in most sampling dates and constituted >75% of the phytoplankton cell densities when the bloom reached to its peaks. Densities of algicidal bacteria were relatively high with large fluctuations between 2.3×10^2 PFU ml⁻¹ to 0.3×10^2 PFU ml⁻¹. Three algicidal bacteria species were isolated from the lake and identified as *Alcaligenes denitrificans*, *A. xylosoxydans*, and *Flavobacterium marinotypicum*. The algicidal effect of the bacterium was studied and the results suggest that the bacteria did not release extracellular products inhibitory to *M. aeruginosa*, and that the bacteria killed the algae by direct contact. In the field, rapid decline of *Microcystis* bloom was detected when algicidal bacteria were increased. In the laboratory, when the bacterium were inoculated at low densities (10^4 cells ml⁻¹) together with *Microcystis*, the bacterium proliferated to 10^7 cells ml⁻¹ and caused *Microcystis* cell lysis. Thus, the result of the present study strongly suggests that algicidal bacteria degrade *M. aeruginosa* bloom in natural freshwater environments. 32