

Preliminary investigations on the seasonal dynamics of algicidal bacteria and protozoa on regulation of *Microcystis aeruginosa*

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Seasonal variations of algicidal bacteria and protozoa on regulation of *Microcystis aeruginosa* in Beira Lake was studied, from July 2005 to February 2006. During August to mid-October, the cell density of *M. aeruginosa* reached to the maximum (3.0×10^6 cells ml^{-1}) recording low density of algicidal bacteria ($2.1\text{--}1.28 \times 10^2$ PFU ml^{-1}) and protozoa (30 PFU ml^{-1}). Thereafter, algicidal protozoa were tended to increase towards late October, reaching the maximum of 60 PFU ml^{-1} while decreasing the cell density of *M. aeruginosa* and algicidal bacteria. In contrast algicidal protozoa density was decreased to 20 PFU ml^{-1} during January when the cell density of algicidal bacteria was increased up to 2.3×10^2 PFU ml^{-1} following the decrease of *M. aeruginosa* cell density to the lowest (1.3×10^5 cells ml^{-1}). The results show that the reduction of protozoan predatory pressure on algicidal bacteria enhance the bacteria infectivity on *M. aeruginosa* which temporary regulate the abundance of *M. aeruginosa* density. In the laboratory experiments, it was observed that the significant decline of cell density *M. aeruginosa* (PCC 7820) when the culture of isolated algicidal agents was inoculated. Based on morphological and chemical characters, three algicidal bacteria strains and one algicidal protozoa species were isolated from clear plaques on *M. aeruginosa* algal lawn and the agents were tentatively identified as *Pseudomonas* sp. and *Amoeba radiosa* respectively. The algicidal mechanism of isolated bacteria showed that infection on *M. aeruginosa* was by direct contact and not by extracellular inhibitors.

Thus, the results obtained from field and the laboratory studies signify that the *M. aeruginosa* population is alternatively regulated by algicidal bacteria and protozoa and these agents play an important role in regulating *M. aeruginosa* in the freshwater environments.

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