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Degradation of Cyanobacterium m*icrocystis aeruginosa* by predacious protozoa

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Field and laboratory studies were conducted to investigate the algicidal effect of protozoa on regulation of *Microcystis aeruginosa* in Beira Lake for a period of ten months from May 2006 to February 2007. Modified algal lawn method was used to isolate algicidal protozoa from lake water and their grazing effect on *M.* aeruginosa was studied. *M. aeruginosa* was the dominant phytoplankton among the phytoplanktons recorded in Beira Lake during the study period. The cell density of *M. aeruginosa* was low until July 29 (2 x10^4 cells ml^{-1}) and then increased from 14 August (7 x 10^5 cells ml^{-1}) to 30 of September (2 x 10^7 cells ml $^{-1}$) and thereafter decreased sharply to 14 October and remained with fluctuation from November onwards. Densities of the *Polytomella* sp showed a gradual increase with fluctuation from 08 May to 03 September and then much higher showing a sharp peak on 30 September 2 X 10^3 cells ml^{-1}. Thereafter they decreased sharply to 04 November (3 x 10^2 cells ml^{-1}) and then maintained the cell density around 2 x 10^2 cells ml^{-1} until 17 December. From 07 January onwards the cell density of *Polytomella* species was undetectable. A coupled oscillation between the *Polytomella* sp and *M. aeruginosa* bloom in a hypereutrophic lake and a negative relationship between *M. aeruginosa* and the grazing *Polytomella* sp were reported during the collapse of diatom and *M. aeruginosa* blooms in UK and Japan respectively. The significant correlation between *M. aeruginosa* and grazing effect of the *Polytomella* species in Beira Lake (84%) was found in the present study. The grazing effect of *Polytomella* species on *M. aeruginosa* was confirmed by in the laboratory study with (r^2 = 22 %) and without (r^2 = 50 %) eukaryotic inhibitor cycloheximide. Thus the results of the present study suggest a algicidal effect of the *Polytomella* species on *M. aeruginosa* . Loss rate of *M. aeruginosa* due to grazing effect of *Polytomella* species was studied and Considerable decline in the abundance of *M. aeruginosa* was detected with in 12 hours (0.02 hr^{-1}). The high loss rate of *M. aeruginosa* was resulted when the growth rate of *Polytomella* species was high (0.113 hr^{-1}). Thus, the present laboratory and field studies report that the flagellate *Polytomella* species plays an important role in regulating *M. aeruginosa*. Further ecological studies of the agent *Polytomella* species and *M. aeruginosa* are required.

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