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Changes in microbial loop components during the formation and decay of *M. aeruginosa* bloom

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Effect on temporal changes in microbial loop components due to formation and decay of algal blooms has been well documented. The present study was focused on the temporal changes of microbial loop components with respect to the occurrence of *M. aeruginosa* bloom in Beira Lake from May 2006 to February 2007. Surface plankton samples were collected from 10 L plastic bucket and 100 ml portion of water sample was fixed with acidified Lugol's solution at a final concentration of 1%. Enumeration of phytoplankton, ciliate, and flagellate were done using a heamocytometer. Zooplankton of each sub samples was counted using a Sedgwick-Rafter counting chamber. Viable bacteria counts were taken by standard pour plate method.

The cell density of *M. aeruginosa* was low until 29 July (2 $x10^4$ cells ml^{-1}) and increased (10^7 cells ml^{-1}) from 30 September. Viable bacteria abundance ranged from $1x10^3$ to $6x10^6$ $CFUml^{-1}$ and increased gradually from May and reached to a peak ($6x10^6$ $CFUml^{-1}$) on 15 June. A sudden decline of viable bacteria abundance (10^5 $CFUml^{-1}$) was detected with increasing the cell density of flagellates. The abundance of the ciliate *Coleps* sp. was ranged from 6x 10^3 to $1x10^2$ cells ml^{-1} and reached to the maximum of 6 x 10^3 cells ml^{-1} on 02 July resulting with sudden decline of flagellate density. The results showed statistically significant pray-predatory interaction between bacteria-flagellates ($P<0.002$) and flagellates-ciliates ($P<0.003$) during the pre-bloom condition. Abundance of copepods increased (10^3 indi. ml^{-1}) with increased cell density of flagellates ($P<0.004$) and ciliates ($P<0.002$). During the *M. aeruginosa* bloom period bacteria density was low (10^5 $CFUml^{-1}$) and tented to increase (4-5x 10^6 $CFUml^{-1}$) during the collapse of the bloom. The density of flagellates increased with increasing *M. aeruginosa* cell density which followed decrease of bacterial cell abundance. This may due to release of predatory pressure from flagellate on bacteria. The densities of copepod nauplii and small copepods were in the order of magnitude of 10^3 ind l^{-1} before and after the bloom. Thus, the increase and decrease of different microbial loop component during the course of the *M. aeruginosa* bloom suggests that the dissolved organic matter produced from *M. aeruginosa* temporally enhanced the energy flow from bacteria, flagellate, ciliate to zooplankton through bacterivorous ciliates.

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