

Physico-chemical factors influencing the growth of diatoms in two habitats of Mysore

J. MAHADEV, NAGARATHANAMMA AND AKHEEL SYED AHMED

Asian Journal of Environmental Science (June to November, 2009) Vol. 4 No. 1 : 12-14

See end of the article for authors' affiliations

Correspondence to :
J. MAHADEV
Department of Studies
in Environmental
Science, University of
Mysore, Manasa
Gangothri, MYSORE
(KARNATAKA)
INDIA

SUMMARY

The paper attempts to give an account of the periodicity of algae in two fresh water lakes of Mysore (Mandakhalli and Kukrahalli). Various physio-chemical parameters were analyzed at monthly intervals (2007-2008) and average values were calculated. Samples were screened for phytoplanktons and number of diatoms found at both the habitats. It is interesting to note that there were significant physico-chemical factors influencing the growth of diatoms in the two lakes. Seventeen species of diatoms were recorded in Mandakhalli lake and eighteen species in Kukrahalli lake during the study period. Higher pH, calcium and oxidizable organic matter coupled with low concentration of nitrates and phosphates were found to favour growth of diatoms.

Key words :

Diatoms, Physico-chemical factors, Mysore lakes

During the recent years lakes are becoming the victim of cultural eutrophication, which in turn is due to increase in anthropogenic pressure in their catchment areas, affecting the quality of water. Several workers have studied the ecology of fresh water algae, a few of interest one are of Munwar (1970), Singh (1960), Zafar (1964) and Hosmani and Bharathi (1982). The present study was aimed at monitoring the diatom population in Mandakhalli and Kukrahalli lakes of Mysore and correlating their occurrence with various physico-chemical parameters including calcium carbonate saturation index.

MATERIALS AND METHODS

Water samples were collected in 11 plastic carboys from two lakes of Mysore (Kukrahalli and Mandakhalli) at monthly intervals during June 2007 to May 2008. Samples were analyzed for various physico-chemical parameters and the phytoplankton analysis was done according to method described by Standard method of Examination Water and Waste Water APHA (1995) and, Trivedy and Goel (1986). Sedimentation of water was made in 4% formaldehyde and lugols iodine solution, and phytoplanktons were counted in 1 ml sample under a compound research microscope (40x magnitude) Fritsch (1975).

RESULTS AND DISCUSSION

The results of the analysis of the two lakes

are given in (Table 1). All physico-chemical factors showed higher values in Kukrahalli which were compared to Mandakhalli during study period. The data revealed that Mandakhalli lake through oligotrophic exhibits few characters of eutrophication due to severe environmental impact. The colour of Kukrahalli lake water appeared green during the study period because of algal bloom. There was objectionable smell of hydrogen sulphide during most part of the study period.

Singh (1960), Philipose (1960), Zafar (1964) and Munwar (1970) have studied periodicity of diatom. The important factors considered were nitrate, phosphate, calcium and pH. Diatoms increase with increase in nitrate and phosphate. In the present study, the concentration of nitrate was quite low but the diatom population was significantly high (Table 2). Tripathy and Pandey (1990), Naganandini and Hosmani (1998) observe that diatoms were maximum during winter and summer, while Parvateesam and Mishra (1993) observed that diatoms were maximum during summer season. The present study showed low concentration of calcium and dissolved oxygen influencing growth of diatoms in both the lakes. The pH ranges of 7 to 8.25 influence the growth of diatoms. Nitrates and phosphates are also considered to be important parameters in the growth of diatoms.

Rajendra Nair (1990) and Hosmani (1975) reported that diatom populations were directly correlated to phosphate content. In the present

Accepted :
January, 2009