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Physico-chemical and Biological Characterization of the River Kunda at Downstream of Khargone (Madhya Pradesh), India

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Abstract

Present paper is an attempt to present the results of physico-chemical and biological investigation carried out on the river Kunda at Khargone, M.P., and India. In all 24 taxa were identified.

Key Words: ***Physico-chemical, Khargone, Biological, River water, Quality, Characterization***

Introduction

Khargone is situated between 27° 45' N and 75° 30' E at 250 amsl, about 84 Km south of Khandwa central railway station, and at the bank of river Kunda, a tributary of Narmada . Algal growth can be observed round the year on the bank of this river. At present the river is polluted due to the mixing of sewage water flowing through drainage and joins the river at various places.

Earlier Mahajan (1990, 1991,1997 a & b), Mahajan and Sanvalia 1997, Bhawsar *et al.* 2001 have reported algal taxa from river Kunda but no work has been done on the water analysis and algal flora of downstream of the river Kunda. Hence the present investigation has been undertaken.

Material and Methods

Water samples and algal materials were collected during 2000-2001. Physico-chemical characteristics of the water samples were determined following Golterman and Clymo 1969, APHA 1980. Phycological data were carefully identified after consulting the standard literature (Desikachary 1959, Randhawa 1959 and Phillipose, 1967).

Results and Discussion

During the present study in all 24 algal taxa were reported, out of which 45.83% belongs to Chlorophyceae, 33.33% to Bacillariophyceae and 20.83% to Cyanophyceae. Thus, Chlorophyceae is the dominant group. *Scenedesmus*, and *closterium* are most common amongst green algae while *Navicula, Gomphonema* and *Fragillaria* are amongst diatoms. Blue-greens like *Oscillatoria* and *Nostoc* are less common. Occurrence of *Johannesbaptistia sp.* is a new record for the West Nimar district of Madhya Pradesh. Besides this, few microscopic invertebrates viz. *Daphni, Vorticella, Rhabditis, Paramecium* have also been identified in the present investigations (Table 1 and 2).

The river Kunda is unpolluted at the point when it enters the Khargone city, but gets progressively polluted due to inputs from a number of sewage channels. Consequently the pH, Conductivity, Turbidity, Chlorides, Total hardness, Total alkalinity of the water increases and simultaneously dissolved oxygen of the river water decreases. The average values recorded for Dissolved Oxygen, Chlorides and Total Hardness were 10 mg /L, 139.2 mg/L and 290 mg/L respectively.

Table 1. Physico-chemical data of water sample collected from downstream of river Kunda at Khargone

Parameters	Concentration
Temperature	25.5°C
Turbidity (NTU)	10.72
pH	8.63
Conductivity	1.23 μ mhos
Chlorides	139.9 mg/L
Total Hardness	290 mg/L
Total Alkalinity	90 mg/L
Dissolved O2.	10 mg/L
B.O.D.	2 mg/L
Total Solids	70 mg/lit
Calcium	40.08 mg/L
Magnesium	46.02 mg/L

Table 2. Algal species reported from downstream of river Kunda at Khargone, Madhya Pradesh.

S. No.	Class	Name of algal taxa reported.
1.	Chlorophyceae	1. *Chlorelaa sp.* 2. *Closterium cyclicum* 3. *Closterium cynthea* 4. *Cosmarium cyclinum* 5. *Mougeotia sp.* 6. *Scenedesmus armatus* 7. *Scenedesmus brasilienses* 8. *Scenedesmus denti culatus* 9. *Spirogyra condensate* 10. *Spirogyra sinensis* 11. *Zygnema sp.*
2.	Bacillariophyceae	1. *Cymbella aphinis* 2. *Fragillaria rumpens* 3. *Fragillaria rumpens var. familiaris* 4. *Gomphonema lanceolatum* 5. *Gomphonema sperophorum* 6. *Navicula pupula* 7. *Navicula raingardii* 8. *Pinnularia brevicostata*
3.	Cyanophyceae	1. *Aphanocapsa muscicola* 2. *Johannesbaptistia sp.* 3.*Nostoc calcicola* 4. *Oscillatoria princes* 5. *Spirulina sp.*

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References

APHA-AWWA WPCF 1980. *Standard Methods for the Examination of Water and Wastewater*. 15th edn. American Public Health Association Washington D. C.1133 pp.

Bhawsar R., Mahajan S. K. and Dhanse A. 2001. Phycological studies in the upstream of river Kunda at Khargone, M. P. Natl. seminar on Fresh Water Ecosystem organized by Deptt. of Zoology, Govt P. G. College Khargone and sponsored by UGC Regional office, Bhopal . **Abst. P 21.**

Desikachary T. V. 1959. *Cyanophyta*. Pub. I.C.A.R., New Delhi.

Golterman H. L. and Clymo R. S. 1969. *Methods for the Chemical Analysis of Fresh Water*. B. P. Handbook No. 8 Blackwell. Sci. pub. Oxford. **pp 166.**

Mahajan S. K. 1990 Cyanobacteria of Khargone Madhya Pradesh. In: *Proc. Natl. symp. on Cyanobacteria*. Nit. Fixation NFBHAC. IARI, New Delhi.

Mahajan S. K. 1991. Algal flora of Choolgiri Hills, Madhya Prdesh. ***Phykos.* 30 (1 & 2), 87-89.**

Mahajan S. K. 1997. a. A checklist of diatoms from Madhya Pradesh . *Proc. 84th Annual Sess. Ind. Sci. cong. Part – III (Bio. Sect.).* ***Abst p. 8.***

Mahajan S. K. 1997. b A checklist of blue green algae from Madhya Pradesh.. *Natl. Symp. on Recent Trends in Algal Research, Visakhapatnam.* ***Abst. P. 8.***

Mahajan S. K. and Sanvalia V 1997. Taxonomic studies of algae in polluted and non-polluted waters of river Kunda, Madhya Pradesh. *Natl. Symp. on Recent Trends in Algal Research* (Sponsored by UGC, CSIR, INSA and Seaweed Research and Utilisation Association). Organized by Deptt. of Bot., Andhra University, Visakhapatnam, ***Abst. P. 10.***

Philipose M. T. 1967. *Chlorococcales. Pub*. I.C.A.R., New Delhi.

Randhawa M. S. 1959. *Zygnemaceae. Pub* . I.C.A.R., New Delhi.