

## CHLOROCOCCALES ALGAE IN KATORA POND OF RAIPUR CITY

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### ABSTRACT

A taxonomic survey of the Chlorococcales algae in Katora pond of Raipur city (Chhattisgarh) was carried out for one year. Katora pond is situated on the north east part of the city. The pond covers an area of about 1.8 hectares. Samples were gathered monthly during the period of January to December. Seasonal variation observed in the density of chlorococcalean algae in the pond appear to be due to two factors: one being the temperature, the seasonal variation of which had caused the variation, season wise. The other factor had been the growth of cyanobacteria. Increase in the density of cyanobacteria, during summer months has always caused the decline in the chlorococcalean density. In Katora pond 14 forms were recorded.

**KEYWORDS:** Chlorococcales, Seasonal Variation, Raipur City.

Raipur city is the capital of Chhattisgarh State. Within the Raipur city area pond was selected as study sites. The pond covers an area of about 1.8 hectares. This pond exhibits pulse stability, flooding in rainy season and drying up in summer (Bharati, 1964). Moreover, on account of continuous silting water retaining capacity of this pond is also gradually decreasing. The water is being mostly used by the slum dwellers mostly for *nistar* purposes. Pond is receiving huge amounts of sewage and sullage. Polluted water of this pond is supporting several groups of algae. One of the important group, with respect to density, is chlorococcales (Chaturvedi, 1996).

### MATERIALS AND METHODS

Samples were collected in plastic cans. Before collecting the sample, the cans were washed thoroughly with tap water and then were rinsed several times with the pond water to be collected. Surface water only was collected from the pond, for experimentation. To identify the chlorococcalean algae, from the pond water samples were collected in the following manner: A vial of about 50 ml was tied to the bottom of plankton net. Through the net 10 litre of surface water was filtered from the pond. Lugol's iodine solution was added as preservative to this sample. Volume of this vial-collected sample was made up to 100 ml. These preserved samples were observed

after words for the presence of chlorococcalean algae at convenient time.

### RESULTS

In Katorapond 14 forms were recorded. *Schroederia indica* was detected only the month of September. *Tetraedrom minimum* and *Selenastrum minutum* were detected only in 2 samples were the most rare species, *Scenedesmus armatus* var (Iqbal, 2002). *bicaudatus*, *Scenedesmus quadricauda*, *Scenedesmus bijugatus*, were present throughout the year and also the most dominant forms of chlorococcalean algae in this pond (Laal, 1976). *Pediastrum vatum* was absent only in the month April. *Chlorococcum infusionum* could not be recorded in the months of March to July. *Micractinium pusillum* and *Pediastrum duplex* were present only in 3 of the months, being absent from march to November and January to September respectively (Mathur, 1990) (Table 1).

*Scenedesmus acutiformis*, *Scenedesmus obliquus* was little more regular in its occurrence, was present in 9 months and absent only in April to June. *Kirchneriella obese* was also detected in 9 months. *Tetraedron muticum* was present for 8 of the months with its absence from the month of April to the month of July (Philipose 1976, Sinha, 1997 and Tarar, 1998).

Table 1: Seasonal Variation in the Density of Chlorococcalean Algae Inkatora Pond

Algae	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
<i>Chlorococcum infusioinum</i>	61.36	88.36	--	--	--	--	-	58.90	115.38	61.36	58.90	36.80
<i>Micractinium pusillum</i>	7.36	12.26	--	--	--	--	--	--	--	--	--	14.72
<i>Kirchneriella obesa</i>	2.46	4.90	4.90	12.26	4.90	--	4.90	2.46	2.46	7.36	--	--
<i>Pediastrum duplex</i>	--	--	--	--	--	--	--	--	--	4.90	2.46	2.46
<i>Pediastrum ovatum</i>	9.82	4.90	9.82	--	4.90	4.90	7.36	4.90	7.36	27.00	12.26	7.36
<i>Scenedesmus acutiformis</i>	4.90	2.46	2.46	--	--	--	2.46	2.46	2.46	2.46	4.90	4.90
<i>S. armatus var. bicaudatus</i>	34.36	34.63	36.80	49.08	36.80	68.72	166.92	157.10	174.28	184.10	66.28	73.64
<i>Scenedesmus bijugatus</i>	61.36	46.64	66.28	85.92	110.46	117.84	169.36	184.10	186.56	201.28	117.84	130.12
<i>Scenedesmus obliquus</i>	2.46	2.46	2.46	--	--	--	2.46	12.26	7.36	7.36	2.46	2.46
<i>Scenedesmus quadricauda</i>	105.56	51.54	58.90	17.18	34.36	34.36	51.54	117.84	130.12	83.46	83.46	100.64
<i>Schroederia indica</i>	--	--	--	--	--	--	--	--	4.90	--	--	--
<i>Selenastrum minutum</i>	--	--	--	--	--	--	--	4.90	7.36	--	--	--
<i>Tetraedron minimum</i>	--	--	2.46	--	4.90	--	--	--	--	--	--	--
<i>Tetraedron muticum</i>	7.36	7.36	4.90	--	--	--	--	12.26	14.72	17.18	19.62	17.18

- Chlorococcum infusioinum*** (Schrank) Meheghini Philipose, 1967, Cells 10-109 $\mu$  in diameter chloroplast like a hollow spherical with a single pyrenoid.
- Kirchneriella obesa*** Philipose, 1967, (W. West) Schmidle, Colonies of 4 cells irregularly arranged within a wide gelatinous envelop. Cells strongly lunate with the ends almost near each other. Cells 2-8 $\mu$  broad, 6-16 $\mu$  long.
- Micractinium pusillum*** Fresenius Philipose, 1967, Colonies quadrate with 4-16 cells arranged in group of four. Cells spherical and 3-10 $\mu$  diameter. Chloroplast single, parietal, cup-shaped and with a pyrenoid.
- Pediastrum ovatum*** (Ehr.) A. Braun Philipose, 1967, Colonies 4-8 celled with the cells arranged in a ring round a central space, four celled colonies 60 $\mu$  and eight-celled colonies 80 $\mu$  in diameter.
- Pediastrum duplex*** Meyen Philipose, 1967, Colonies 16 - 32 cells with lens-shaped perforations between cells. Cells 8-21 $\mu$  in diameter. Inner cells quadrate to angular and not in contact at the central portion of the side wall.
- Scenedesmus acutiformis*** Schroeder Philipose, 1967, Colonies 4 celled. Cells cylindrical-fusiform and arranged in a linear series. Cells 3.8-8  $\mu$  broad and 12-22.4 $\mu$  long.
- Scenedesmus armatus var. bicaudatus*** (Gulielmetti) Chodat, Philipose, 1967, Colonies two or four celled,

the spines of the two terminal cells alternating with each other.

8. *Scenedesmus bijugatus* (Turpin) Kuetzing Philipose, 1967, Colonies flat, of 2-4 cells arranged in a single linear series. Cells oblong- ellipsoid with the ends broadly rounded. Cells 3.5 - 7 $\mu$  broad, 7 - 23 $\mu$  long.
9. *Scenedesmus obliquus* (Turpin) Kuetzing Philipose, 1967, colonies 4 cells arranged in a linear series. Cells fusiform with acute ends with straight sides. Cells 2.7-6.6 $\mu$  broad, 6-23 $\mu$  long.
10. *Scenedesmus quadricauda* (Turpin) Brebisson Philipose, 1967, Colonies 4 celled, cells oblong-cylindrical with rounded ends and arranged in a linear series, terminal cells with a long, curved spine, cells 3-7 $\mu$  broad, 9 - 18 $\mu$  long, spines 6.5 - 15 $\mu$  long.
11. *Schroederia indica* sp. nov. Philipose, 1967, Cells more or less semicircular, chloroplast parietal and one in number. Cells 4.4 - 12.3 $\mu$  broad and 68 -84 $\mu$  long with spines.
12. *Selenastrum minutum* (Naegeli) Collins Philipose, 1967, Cells crescent shaped, uniformly curved and plump with pointed ends, solitary. Cells 2-3 $\mu$  broad, 7-9 $\mu$  long.
13. *Tetraedron minimum* (A. Braun) Hansgirg. Philipose, 1967, Cells crescent shaped, curved and pointed ends, solitary, cells 2 - 3 $\mu$  broad, 7-9 $\mu$  long.
14. *Tetraedron muticum* (A. Braun ) Hansgirg. Philipose, 1967, Cells small, flat and triangular with the sides slightly concave and angles broadly rounded. Cells 6-30 $\mu$  in diameter.

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