

# Planktonic chlorococcales from tributary of river Swarnrekha at Angara block Ranchi (Jharkand)

ASHMRITA MAHTO AND RADHA SAHU

Asian Journal of Environmental Science, (December, 2010) Vol. 5 No. 2 : 149-150

See end of the article for authors' affiliations

Correspondence to :

**RADHA SAHU**

Algal Biotechnology  
Laboratory, University  
Department of Botany,  
Ranchi University,  
RANCHI  
(JHARKHAND)  
INDIA

## SUMMARY

Fourteen species of order Chlorococcales were collected for the first time from the water of Pataka river near Angara block during Nov. 2008 to July 2009. These taxa were more dominant during summers. However, *Hydrodictyon reticulatum*, *Senedesmus dimorphous*, *S. bijuga*, *Pediastrum tetras* were recorded throughout the year and *Pediastrum* and *Senedesmus* were the most dominant genera with three and seven species, respectively.

Mahto, Ashmrita and Sahu, Radha (2010). Planktonic chlorococcales from tributary of river Swarnrekha at Angara block Ranchi (Jharkand). *Asian J. Environ. Sci.* 5(2):149-150.

## Key words :

Chlorococcales,  
Pataka,  
Planktonic.

Chlorococcales are non-motile unicellular or colonial form of algal taxa belonging to order Chlorococcales. Enormous information is available on occurrence and distribution of chlorococcales from various parts of India (Philipose, 1967; Patel, 1970; Patel and Isabella, 1980; Das and Sahu, 1989; Habibe *et al.*, 1998; Kant and Vohra, 1999; Tiwari *et al.*, 2000; Tiwari and V.S. Chauhan, 2007.

Pataka river is the tributary of the river Swarnrekha. This river is situated in Angara block, south east of Ranchi district. It flows east side and meets with Swarnrekha at Silli block. In this river, many rapids are found and the condition of the river is semi-arid.

As there is no report of any kind of algal investigation in the Pataka river at Ranchi, Jharkhand near Angara, survey was made for the collection and identification of Oder Chlorococcales algal specimen during the period of Nov. 2008 to July 2009. Present paper deals with the total 14 taxa belonging to order Chlorococcales.

## MATERIALS AND METHODS

Algal collection was made during Nov 2008 to July 2009 from the several sites of the river Pataka. The sample was collected

periodically from different sites of the river. The collected samples were preserved in 4% formalin. The morphological studies were made in fresh material using light microscope and making their camera lucida drawing. Identification was done with the help of available literature and standard monographs.

## RESULTS AND DISCUSSION

The results are summarized below according to the objectives of the study:

### Enumeration and Description of the algal taxa:

– *Chlorella numicola* Naegeli

Cell rounded or spherical, Chloroplast cup shaped, cells 4-7  $\mu\text{m}$  in diameter, habit – planktonic Nov., 2008 (Fig. 12).

– *Hydrodictyon reticulatum* (Linn.)

Lagerhein

Cell cylindrical, network net hexagonal, cell 14-21  $\mu\text{m}$  long, 5-7  $\mu\text{m}$  broad, habit free floating (June-2009) (Fig. 3).

– *Pediastrum boryanum* (Turp menegh)

Cells 6.2-8  $\mu\text{m}$  in diameter, No of cells 16 multinucleated arranged in a single layer, habit – planktonic. March-April 2009 (Fig. 1).

Received:  
September, 2010  
Revised:  
October  
Accepted :  
November, 2010

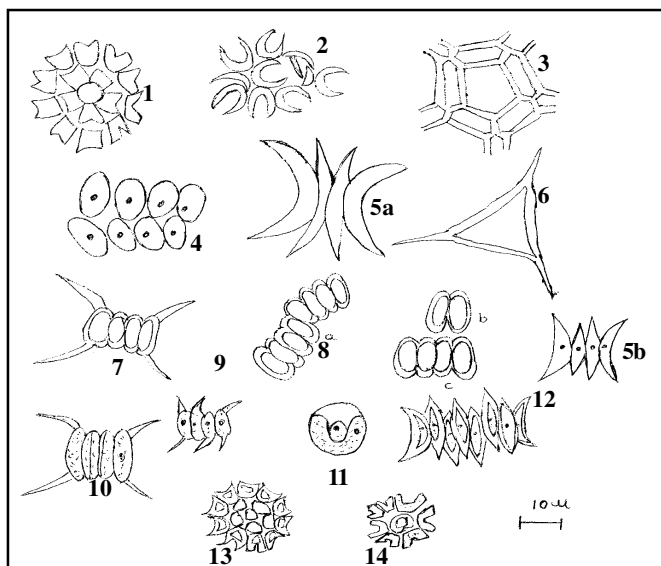


Plate-1 Fig.1-*Pediastrum boryanum*, Fig.2-*Scenastrum gracile collins*, Fig. 3- *Hydrodictyon reticulatum*, Fig. 4- *Senedermous arcuatus*, Fig. 5- *Senedermous cuminatus*, Fig. 6- *Tetracdran gracile Hansgirg*, Fig. 7- *Senedermous quadricaula*(Turp) Kutz, Fig. 8-(a) *Senedermous bijugatus* (b)2-Cell colony (c) 4 cell , Fig. 9- *Senedermous accuminatus*, Fig. 10- *Senedermous armatus* (chod), Fig. 11 -*Chlorella vulgaris*, Fig. 12- *Senedermous dimorphus* Kutz Fig. 13- *Pediastrum duplex meyen*, Fig. 14- *Pediastrum tetras*(Ehr).

**Plate 1: List of colorococcales from Pataka river**

– *Pediastrum tetras* (Ehr)

Ralfs-colonies, planktonic discoid 4-8 celled rectangular or circular, cells 5-6  $\mu\text{m}$  long, 10-12  $\mu\text{m}$  broad, habit-planktonic, Jan-March, 2009 (Fig. 15).

– *Pediastrum duplex meyen*

Colonies composed of 8-12 cells, perforated cells 12-13.5  $\mu\text{m}$  broad, 15-15.5  $\mu\text{m}$  long, habit-planktonic (March-April, 2009) (Fig. 14).

– *Senedermous accuminatus* var. minor Smith

Colony 4-8 cells, arranged in single alternating series, cells lunate with pointed apices, cells 3-7  $\mu\text{m}$  in diameter, 18-30  $\mu\text{m}$  long, habit-free floating (May-July, 2009) (Fig. 9).

– *Senedermous armatus* (Chod)

Colonies 4-8 cells, arranged in two rows with longitudinal axes, cells parallel, cell 3.2  $\mu\text{m}$  broad and 8  $\mu\text{m}$  long habit-planktonic, April 2009 (Fig. 4).

– *Senedermous bijugatus* (Turp) Lagerhein.

Colonies 4 celled in, a single flat series, oblong in shape, cells 5  $\mu\text{m}$  broad, 14-15  $\mu\text{m}$  colony, habit planktonic, Dec. 2008.(Fig. 8)

– *Senedermous dimorphus* (Turp) Kutz

Coenobia mostly 4-8 celled, flat plate like outer cells crescent shaped with the ends tapering and sharply pointed,

cells, 16-20  $\mu\text{m}$  long, 3-5  $\mu\text{m}$  broad, habit-planktonic, March, 2009 (Fig. 13)

– *Senedermous cuminatus*

Coenobia mostly 4-8 celled, flat plate like, outer celled crescent shaped with the ends tapering and sharply pointed cells, 16-20  $\mu\text{m}$  long, 3-5  $\mu\text{m}$  broad. habit free floating (March-April, 2008) (Fig. 5).

– *Senedermous orcuatus*

Colony 4 celled, cell oval or oblong shaped irregular and loosely arranged in single row cell 3-4  $\mu\text{m}$  in diameter 6-11  $\mu\text{m}$  long, habit-planktonic (March, June, 2009) (Fig. 9).

– *Senedermous Quadricaula* (Turp)Kutz

Colonies 4 celled, cell 2.6-3.9  $\mu\text{m}$  long, ranged in a linear series polar of alinear spine, habit-planktonic, (Oct., 2009) (Fig. 11).

– *Scenastrum gracile* Collins

Cell single, irregular arranged crescent shaped with blunt apices, cells 2.0-4.5 in diameter. habit-planktonic (April, June, 2009).(Fig. 2).

– *Tetracdran gracile* Hansgirg

Colonies flat, plate like, 4 celled cell triangular angles rounded with one or more setal chloroplast 1-4, parietal with or without pyrenoid, habit-planktonic, April, 2009. (Fig. 6).

**Authors' affiliations:**

**ASHMRITA MAHTO**, University Department of Botany, Ranchi University, RANCHI (JHARKHAND) INDIA

**REFERENCES**

- Anand, N.** (1998). Indian fresh water microalgae. Centre of Advance study in Botany, University of Madras, Guindy Campus Madras.
- Das, R.N.** and Sahu, R. (1989). Chlorococcales from fresh water habitats of Ranchi Vegetos., 2(2):223-228.
- Patel, R.** and Isabella, G. (1980). Chlorococcales of Gujarat. *J. Indian Bot. Soc.*, 46:50.
- Tiwari, A.,** Rana, A. and Chauhan, S.V.S. (2002). A systematic account of chlorococcales from Kitham lake, Agra. *Pykos*, 40 (1&2):103-105.
- Tiwari, A.** and Chauhan, S.V.S. (2007). A check list of Chlorococcales from Bandh Beratha water Reservoir at Bharatpur, Rajasthan. *J. Indian Bot. Soc.*, 86(1&2):43-47.