DIVERSITY OF CHROOCOCALES IN THE FRESHWATER PONDS OF KANYAKUMARI DISTRICT, TAMILNADU

JIJI JOSEPH AND REGINI BALASINGH

Department of Botany and Research Centre, Scott Christian College (Autonomous), Nagercoil - 629003, Tamil Nadu, India. E-mail: jijijoelth.ji@gmail.com

(Received 17 August 2009, Accepted 23 October 2009)

SUMMARY

The diversity of order Chroococcales was studied in the year 2007 to 2009. The present study was carried out in two fresh water ponds of Kanyakumari district. Thirty three species of algae were reported, of which seven species was found throughout the year.

Keywords: fresh water pond, algae, Chroococcales

INTRODUCTION

Algae are economically important aquatic group of plants and is quite common as well as widely distributed in different types of water (Tiwari and Chauhan, 2007). The bodies of standing water with small surface area when compared to lake are called ponds (Bennet, 1971). The people of India use it for cooking, washing, bathing and other ritual purposes (Chatterjee, 2002). Due to the discharge of domestic sewage, agricultural run off and industrial effluents water bodies like ponds, lakes, ditches, rivers, estuaries etc. are subjected to varying degrees of pollution (Kavitha and Regini Balasingh, 2007). Studies on planktonic diversity contributes to an understanding on environmental status of a water body (Sivakumar and Senthilkumar, 2007). The present paper is focused on the distribution of the Order Chroococcales in the selected fresh water ponds, both perennial and ephemeral in Kanyakumari district which has not been studied earlier.

MATERIALS AND METHODS

The investigations were carried out in one perennial (Veerakulam) and one ephemeral (Ikiyankulam) pond of Aloor village in Kanyakumari district during February 2007 to February 2009, for two years. Phytoplanktons were collected monthly by using a phytoplankton net (10µm mesh size) in between 7.30 a.m to 9.00 a.m. Samples were brought to laboratory and studied fresh as far as possible and preserved in 4% formaldehyde for

Address for correspondence: Jiji Joseph, Xanadu, Kallikkad, Mylakkara P.O., Kattakkada via., Trivandrum, Kerala - 695 572.
further microscopical studies. These were identified with the help of standard monographs and literature (Fritsch, 1945; Desikachary, 1959; Prescott, 1978; Anand, 1980). The samples were deposited in Botany department, Scott Christian College, Nagercoil, Tamil Nadu.

RESULTS AND DISCUSSION

Morphological enumeration

   Colonies spherical or elongated, sheath distinct with gas vacuoles. Cells 4.33µm in diameter.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond- Present throughout the year in all the seasons.

2. *Microcystis flos-aquae* (Wittr.)Kirchner.
   Colonies spherical, ellipsoidal or somewhat elongate with distinct mucilage. Cells 3.33 µm in diameter, spherical with gas vacuoles.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon season.

   Colonies at first round, later irregularly elongated with delicate sheath, cells 6.33 µm without gas vacuoles.
   Occurrence: perennial pond - Collected during northeast and southwest monsoon season.
   ephemeral pond- Collected during northeast monsoon season.

   Colonies round or rectangular. Margins of colonial mucilage definite. Cells 3.33 µm in diameter, spherical with gas vacuoles.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon season.

   Colony round or irregularly flattened and more or less lenticular, with distinct mucilage. Cells 3.33 µm in diameter closely arranged with gas vacuoles.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon and nonmonsoon season.

   Thallus gelatinous, cells 3.33µm in diameter, spherical or hemispherical, closely arranged in mucilage.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond- Present throughout the year in all the seasons.
7. **Aphanocapsa pulchra** (Kuetz.) Rabenh

   Thallus gelatinous, homogeneous, cells spherical, 4.3 µm in diameter, loosely arranged.

   Occurrence: perennial pond - Collected during northeast and southwest monsoon season.
   ephemeral pond- Absent throughout the year in all the seasons.

8. **Aphanocapsa roeseana** de Bary.

   Thallus broad, irregularly spherical, gelatinous, cells 6.3 µm in diameter, homogeneous mucilage sheath.

   Occurrence: perennial pond - Absent throughout the year in all the seasons.
   ephemeral pond- Collected during northeast monsoon season.

9. **Aphanocapsa montana** Cramer

   Thallus no definite shape, gelatinous cells 2.3 µm in diameter, spherical, single or in pairs, mucilage colourless.

   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon and nonmonsoon season.

10. **Aphanocapsa muscicola** (Menegh.) Wille.

    Colony microscopic, cells spherical 2.3 µm in diameter, 2-4 together, mucilage thick colourless.

   Occurrence: perennial pond - Collected during southwest and northeast monsoon season.
   ephemeral pond- Collected during southwest monsoon season.

11. **Aphanothece castagnei** (Breb.) Rabenh.

    Thallus gelatinous, without any definite shape cells ellipsoidal to cylindrical, 2.3 µm broad and 4.3 µm long, sheath colourless.

   Occurrence: perennial pond - Collected during nonmonsoon and southwest monsoon season.
   ephemeral pond- Collected during nonmonsoon.

12. **Aphanothece saxicola** Nag.

    Thallus mucilaginous cells cylindrical 1.3 µm broad and 2.3 µm long, single or in pairs.

   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon and nonmonsoon season.

13. **Aphanothece microscopia** Nag.

    Thallus small, gelatinous, cells oblong cylindrical, cells 4.3 µm broad and 6.3 µm long.

   Occurrence: perennial pond - Collected during northeast monsoon season.
   ephemeral pond- Collected during northeast monsoon season.

14. **Chroococcus schizodermaticus** West.

    Cells seen in groups of 2-4 enclosed in a sheath. Sheath yellow to brown in colour.21.3 µm diameter.

   Occurrence: perennial pond - Collected during northeast monsoon season.
   ephemeral pond- Collected during northeast monsoon season.
   Cells spherical or sub spherical with tabular gelatinous layer. Sheath colourless 9.3 µm diameter.
   Occurrence: perennial pond - Collected during northeast monsoon and southwest monsoon season.
   ephemeral pond - Collected during northeast monsoon and non monsoon season.

   Thallus mucilaginous, cells in groups of four in common mucilaginous envelop. Sheath is colourless 8.33 µm diameter.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond - Present throughout the year in all the seasons.

17. *Chroococcus minor* (Kuetz) Nag.
   Thallus gelatinous, cells spherical 3-4µm diameter, singly or in pairs, sheath colourless.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond - Present throughout the year in all the seasons.

18. *Chroococcus cohaerens* (Breb.) Nag.
   Thallus gelatinous, cells single or upto 2-8 in groups, 5.33 µ diameter, sheath thin and colourless, slimy.
   Occurrence: perennial pond - Collected during northeast monsoon season.
   ephemeral pond - Collected during northeast monsoon season.

   Cells spherical, blue green 13.3 µm diameter. Sheath colourless, not distinctly lamellated.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond - Present throughout the year in all the seasons.

20. *Chroococcus tenax* (Kirchn.) Hieron.
   Cells seen in groups of 2-4, 21.3 µm diameter, sheath colourless, very thick.
   Occurrence: perennial pond - Collected during southwest monsoon seasons.
   ephemeral pond - Collected during northeast monsoon and southwest monsoon seasons.

21. *Gloeocapsa compacta* Kuetz
   Thallus reddish brown, compact, cells without sheath, 2.3 µm diameter, blue-green colour.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season
   ephemeral pond - Collected during nonmonsoon season

22. *Gloeothece rupestris* (Lyngb.) Bornet.
   Cells ellipsoidal to cylindrical with envelop 9.3 µm broad, envelop colourless or brownish.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond - Collected during northeast monsoon and nonmonsoon season.
23. *Synechococcus elongatus* Nag

   Cells cylindrical 1.3 µm broad and 3.3 µm long, single or 2-4 cells together, blue-green colour.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Collected during northeast monsoon and nonmonsoon season.

24. *Synechocystis pevalekii* Ercegovic

   Thallus indefinite, cells spherical, after division hemispherical, 2.3 µm broad, single or in pairs, blue-green colour.
   Occurrence: perennial pond - Present throughout the year in all the seasons.
   ephemeral pond- Present throughout the year in all the seasons.


   Cells pyriform or cuneate 4.3 µm broad and 8.3 µm long with distinct mucilage envelop.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.
   ephemeral pond- Absent throughout the year in all the seasons.

26. *Eucapsis minuta* Fritsch

   Colonies large with regular contours, number of cells in a colony is multiple of two, cells spherical 1.3 µm broad in cubical colonies.
   Occurrence: perennial pond - Collected during northeast monsoon season.
   ephemeral pond- Absent throughout the year in all the seasons.

27. *Merismopedia convoluta* Breb.

   Cells spherical to oblong, 4.3 µm broad and 10.3 µm long, leaf like convolute colonies.
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon seasons.
   ephemeral pond- Collected during northeast monsoon and nonmonsoon seasons.


   Colonies with 32 cells, 90 µm diameter, cells oval or spherical, closely arranged.
   Occurrence: perennial pond - Collected during northeast monsoon and southwest monsoon seasons.
   ephemeral pond- Collected during northeast monsoon and southwest monsoon seasons.


   Cells 4 to many in small colonies, pale blue-green colour, gas vacuoles absent.
   Occurrence: perennial pond - Absent throughout the year in all the seasons.
   ephemeral pond- Collected during nonmonsoon season.
30. *Merismopedia tenuissima* Lemm  
   Cells closely packed in colonies of 16 cells, sub spherical, pale blue-green colour.  
   Occurrence: perennial pond - Collected during northeast monsoon and nonmonsoon season.  
   ephemeral pond- Collected during northeast monsoon and nonmonsoon season.  

   Colony small, cells 2.3 µm broad not closely packed, spherical or ovoid.  
   Occurrence: perennial pond - Collected during non-monsoon season.  
   ephemeral pond- Collected during non-monsoon season.  

   Cells spindle shaped with long narrow pointed apex many together in free swimming bundle, 1.3 µm broad and 30.33 µm long.  
   Occurrence: perennial pond- Present throughout the year in all the seasons.  
   ephemeral pond- Present throughout the year in all the seasons.  

33. *Dactylococcopsis raphidioides* Hansg  
   Cells spindle shaped, 2.3 µm broad, sigmoid or lunulately bend, single to a few in mucilage, light blue-green colour.  
   Occurrence: perennial pond- - Collected during northeast monsoon season.  
   ephemeral pond- Collected during southwest monsoon and nonmonsoon season.  

REFERENCES  