CYANOPHYCEAN ALGAE FROM EASTERN UTTAR PRADESH, INDIA

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ABSTRACT

In the present paper 10 Cyanophycean algae belonging to 10 genera have been described from eastern U.P. The genera described are: *Chroococcus, Microcystis, Aphanothece, Aphanocapsa, Arthrospira, Spirulina, Lyngbya, Anabaena, Rivularia, Gloeotrichia.* All these forms are being reported for the first time from eastern U.P., India.

Key words: CyanophyceaN algae.

INTRODUCTION

Work on diversity of Cyanophycean algae has been carried out by several algologists such as Anand (1976), Anand *et al.* (1995), Desikachary (1959), Doers and Parker (1988), Fernabez *et al.* (1999), Geitler (1932), Misra *et al.* (2001), Misra and Srivastava (2005), Prasad and Mehrotra (1978, 1980), Prasad and Srivastava (1992), Sen and Gupta (1998), Tewari *et al.* (1999), Verma *et al.* (2002), Watanabe (1996). These works reveal that Cyanophycean forms of eastern Uttar Pradesh (UP), India have not been investigated earlier.

District Gorakhpur is located on 26^0 15'-27^0 N latitude and 83^0 7.5'-83^0 45' E longitude. Average temperature of this area ranges from 36^0-40^0C and rainfall 184.7 cm. District Mau is located on 25^0 45'-26^0 15' N latitude and 83^0 7.5'-83^0 52.5' E longitude. Average temperature of this area ranges from 35^0-40^0C and rainfall 181 cm.

MATERIALS AND METHODS

Sample collection was made during January and October 2005 from different natural aquatic habitats of eastern Uttar Pradesh (UP) (Gorakhpur, Mau). Collection was made with the help of planktonic mesh net. Algal samples were preserved in 4% formalin. For the detailed study algae were stained with Methylene blue and examined in Labophot-II microscope. The following algae were identified with the help of literature, mainly that of Desikachary (1959), Geitler (1932), Prasad and Srivastava (1992).

MORPHOTAXONOMIC DESCRIPTIONS

Class: Cyanophyceae

Order: Chroococcales

Family: Chroococcaceae

Genus: *Chroococcus* Naeg.

***Chroococcus schizodermaticus* West,** Fig. 1

(Prasad and Srivastava 1992. p. 31, Fig. 6)

Thallus simple, solitary somewhat globose; cells 11 µm in diameter, arranged loosely in groups of four, somewhat reniform, each cell surrounds very distinct, yellowish-brown lamellated sheath, cell contents blue-green, homogenous without gas-vacuoles; cell wall thick, smooth.

Locality: Chilwa Lake.

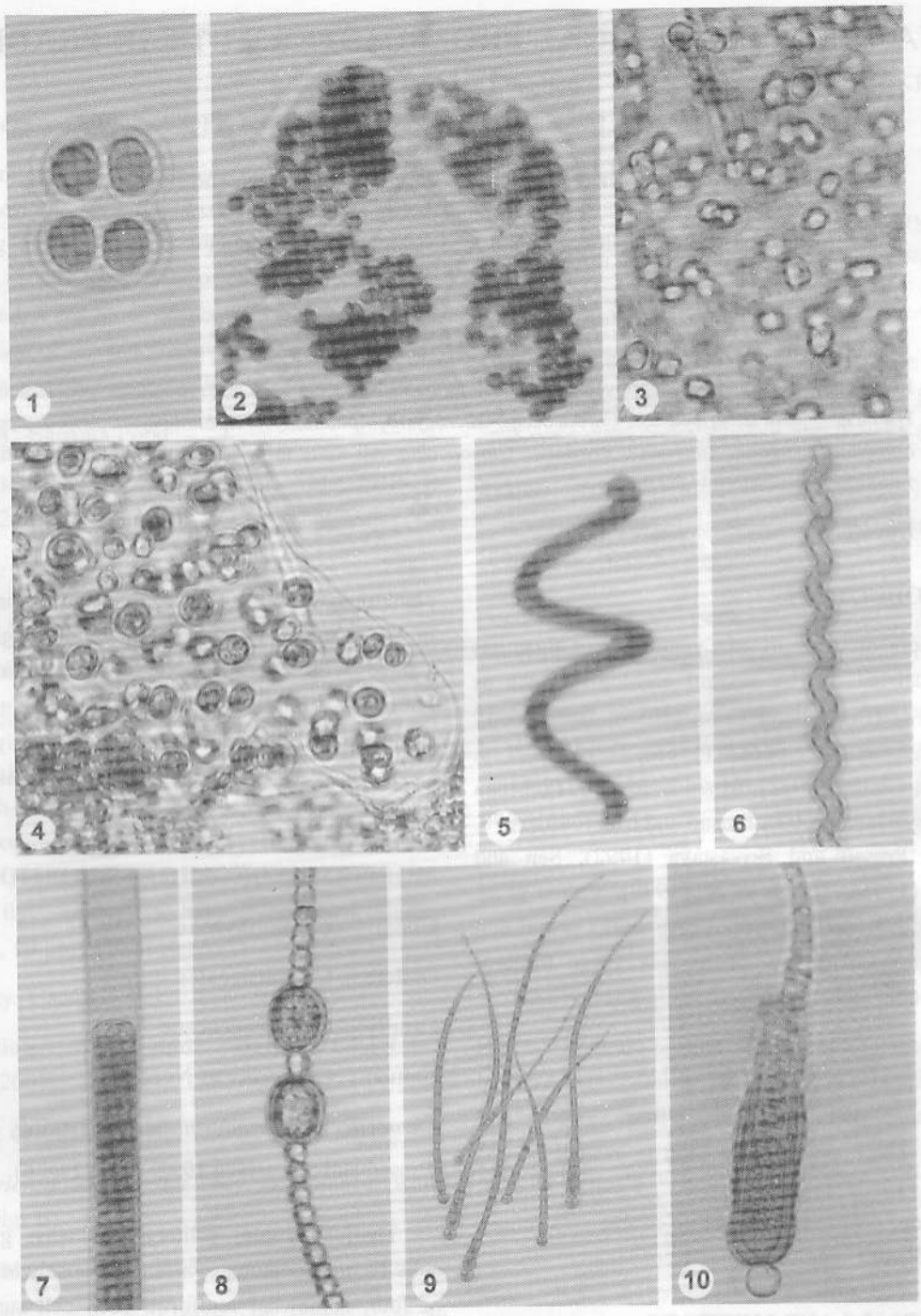

Plate 1. (Fig. 1. *Chroococcus schizodermaticus* West, 7600; Fig. 2. *Microcystis aeruginosa* var. *major* (Wittr.) Smith, 6000; Fig. 3. *aphanothece bullosa* (Meneh.) Rabenh., 7750; Fig. 4. *Aphanocapsa litoralis* var. *macrococca* Hansg., 8000; Fig. 5. *Arthrospira platensis* (Nordst.) Gomont, 6650; Fig. 6. *spirulina princeps* W. et G.S. West, 7500; Fig. 7. *Lyngbya truncicola* Ghose, 7700; Fig. 8. *Anabaena iyengarii* var. *Attenuata* Rao, C.B., 7500; Fig. 9. *Rivularia hansgirgi* Schmidle, 2000; Fig. 10. *Gloeotrichia raciborskii* var. *kashiense* Rao, C.B., 8000.

Collection No. and Date: GKP/CHIL-13 (8/1/2005).

Genus: *Microcystis* Kuetz.

***Microcystis aeruginosa* var. *major* (Wittr.) Smith,** Fig. 2

(Desikachary 1959, p. 94, Pl. 17, Fig. 2)

Colonies clathrate, with distinct hyaline mucilage; cells 5 µm in diameter, spherical generally with gas-vacuoles.

Locality: Ramgarh Tal.

Collection No. and Date: GKP/RT-1 (8/1/2005).

Genus: *Aphanocapsa* (Kuetz.) Rabenhorst

***Aphanocapsa litoralis* var. *macrococca* Hansg.,** Fig. 4

(Desikachary 1959, p. 131, Pl. 21, Fig. 1. Geitler 1932, p. 153, Fig. 66 (b))

Thallus amorphous without any definite shape, mucilaginous, blue-green or yellowish; cells spherical to subspherical, 7-10 µm in diameter, single or in twos, densely or sparsely aggregated.

Locality: Najra Tal.

Collection No. and Date: MAU/NT-3B (11/10/2005)

Genus: *Aphanothece* Naeg.

***Aphanothece bullosa* (Meneh.) Rabenh.,** Fig. 3

(Desikachary 1959, p. 142, P1. 22, Fig. 12)

Thallus more or less spherical, irregularly lobed, up to 200 µm in diameter, greenish, soft; cells long cylindrical, 5 µm broad, 9 µm long with individual envelopes, blue-green or olive-green.

Locality: Najra Tal.

Collection No. and Date: MAU/NT-3B (11/10/2005)

Order: Nostocales

Family: Oscillatoriaceae

Genus: *Arthrospira* Steizenberger

***Arthrospira platensis* (Nordst.) Gomont**, Fig. 5

(Desikachary 1959, p. 190, P1. 35, Fig. 2)

Thallus blue-green; trichomes slightly constricted at the cross-walls, 6 µm broad, not attenuated at the ends or only a little attenuated, more or less regularly spirally coiled; spirals 30 µm broad, distance between the spirals 48 µm; cells 5 µm long, 6 µm broad, cross-walls granulated; end-cells broadly rounded.

Locality: Ramgarh Tal

Collection No. and Date: GKP/R-3 (13/10/2005)

Genus: *Spirulina* Turpin em. Gardner

***Spirulina princeps* W. et G.S. West,** Fig. 6

(Desikachary 1959, p. 197, P1. 36, Fig. 7)

Trichome 4 µm broad, short, blue-green, regularly spirally coiled, spirals 14 µm distant.

Locality: Charpani Tal

Collection No. and Date: GKP/CT-7 (14/10/2005)

Genus: *Lyngbya* Ag.

***Lyngbya truncicola* Ghose,** Fig. 7

(Desikachary 1959, p. 308, P1. 51, Fig. 4)

Filaments straight, more or less parallel, 15 µm broad; sheath firm and yellowish, unlamellated; trichome blue-green, 13 µm broad, not constricted at the cross-walls, cell-walls not granulated; cell short, 4 µm long, contents granular; apical cell rotund, not attenuated, calyptra none.

Locality: Gorakhnath Temple Tank

Collection No. and Date: GKP/GT-5 (13/10/2005)

Order: Nostocales

Family: Nostocaceae

Genus: *Anabaena* Bory

***Anabaena iyengarii* var. *attenuata* Rao, C.B.**, Fig. 8

(Desikachary 1959, p. 408, Pl. 76, Fig. 5)

Plant mass mucilaginous, deep blue-green; trichomes single, straight or irregularly curved, tapering at the ends, 4 µm broad, cells barrel-shaped, 5 µm long; heterocysts barrel-shaped, 5 µm broad, 6 µm long; spores ellipsoidal, single, on either side of the heterocyst, 14 µm broad and 13 µm long, with a smooth hyaline wall.

Locality: Banaura Pond

Collection No. and Date: MAU/BP-1B (11/10/2005)

Family: Rivulariaceae

Genus: *Rivularia* (Roth) Ag.

***Rivularia hansgirgi* Schmidle**, Fig. 9

(Desikachary 1959, p. 549, P1. 112, Fig. 7)

Thallus expanded, flat, gelatinous, thin, solid, blackish-brown; trichome long, horizontally expanded, intricate and curved; at the end gradually tapering, 6 µm broad, distinctly torulose; sheath thin, colourless, heterocysts basal, single, hyaline, 10 µm in diameter.

Locality: Charpani Tal

Collection No. and Date: GKP/CT-7 (14/10/2005)

Genus: *Gloeotrichia* Ag.

***Gloeotrichia raciborskii* var. *kashiense* Rao, C.B.**, Fig. 10

(Desikachary 1959, p. 563, P1. 117, Fig. 2)

Thallus large, trichomes with constrictions at the joints, 10 µm broad; heterocysts single, spherical, 12 µm in diameter; spores ellipsoidal with a hyaline smooth outer wall, 14 µm broad, 43 µm long.

Locality: Charpani Tal

Collection Nos. and Date: GKP/CT-7 (14/10/2005)

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