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Cyanobacterial flora from fresh water habitat of Bokaro Thermal Power Station (Dist. Bokaro) Jharkhand, India

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SUMMARY

The present study deals with the systematic enumeration of 25 taxa of cyanobaacterial flora collected from fresh water habitat of Bokaro thermal power station. They have been reported for the first time from this area. Species rich genera are *Microcystis, Chlorococcus, Aphanocapsa, Aphanothece,Oscillatoria, Lyngbya* and *Calothrix*. The objective of present work is to prepare a status report of diversity in cyanophycean assemblage.

Key words : Cyanobacteria, Diversity, Fresh water habitat

Cyanobacteria (blue green algae) form important phytoplankton components in most tropical waters. They represent a large group of photosynthetic prokaryotic microbes. They are almost aquatic and if terrestrial they are bound to inhabit damp environment (Sharma and Tripathi 2003).

Bokaro Thermal Power Station (BTPS) is situated in Bokaro district of Jharkhand state. It is one of the major power producer of Jharkhand. It is along 'Konar river'basin which is the tributary of river 'Damodar'. It is 120 Km away from the state capital'Ranchi'.

Although several workers have explored the cyanobacterial flora of fresh water habitat of the country (Srivastava 1989, Jha and Sharma 1995, Subramanian 2000, Pal 2003, Tripathi 2006, Bisnoyi 2007, Purti 2008) but cyanobacterial flora from Bokaro thermal power station has not been explored earlier. An attempt has been made therefore to communicate blue green algae from this place by the author.

MATERIALS AND METHODS

To study the cyanobacterial diversity, samples were collected after regular visit during March-09 to September-09 from fresh water habitat in and around BTPS and also the bank of Konar river. Specimens have been preserved in 4% formaline. Temporary slides were made and studied under standard research microscope. The camera lucida diagrams were drawn for measurement of vegetative and reproductive organs. Identification was done with the help of keys presented in standard monographs prepared by algologists.

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RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been presented under following heads :

Systematic enumeration:

– Pl. 1 Fig.1
Microcystis robusta (Clark) Nygard
Gelatinizing cell, 1.5µm in diameter

– Pl. 1 Fig. 2
Microcystis marginata (Menegh.) Kuetz.
Cells 3-6µm in diameter, closely arranged with gas vacuoles

– Pl.1 Fig. 3
Chroococcus minutus (Kuetz.) Nag.
Cells spherical in group of 2-4 with sheath, 12-15 µm in diameter.

– Pl. 1 Fig.4
Chroococcus pallidus Nag.
Cells single, seldom up to 8 in elliptic oblong colonies,10-12 µm in diameter.

– Pl. 1 Fig.5
Gloeocapsa rupestris Kuetz.
Cells without sheath 6-9 µm in diameter.

– Pl. 1 Fig.6
Aphanocapsa koordersi Storm.
Cells loosely arranged, 2-3 µm in diameter.

– Pl. 1 Fig. 7
Aphanocapsa brunnea Nag.
Cells 4.5-5.5 µm in diameter.

– Pl. 1 Fig.8
Aphanothece pallida(Kuetz.)Rabenh.
Cells 5-8 µm in diameter.

– Pl. 1 Fig. 9
Aphanothece bullosa(Menegh.)Rabenh.

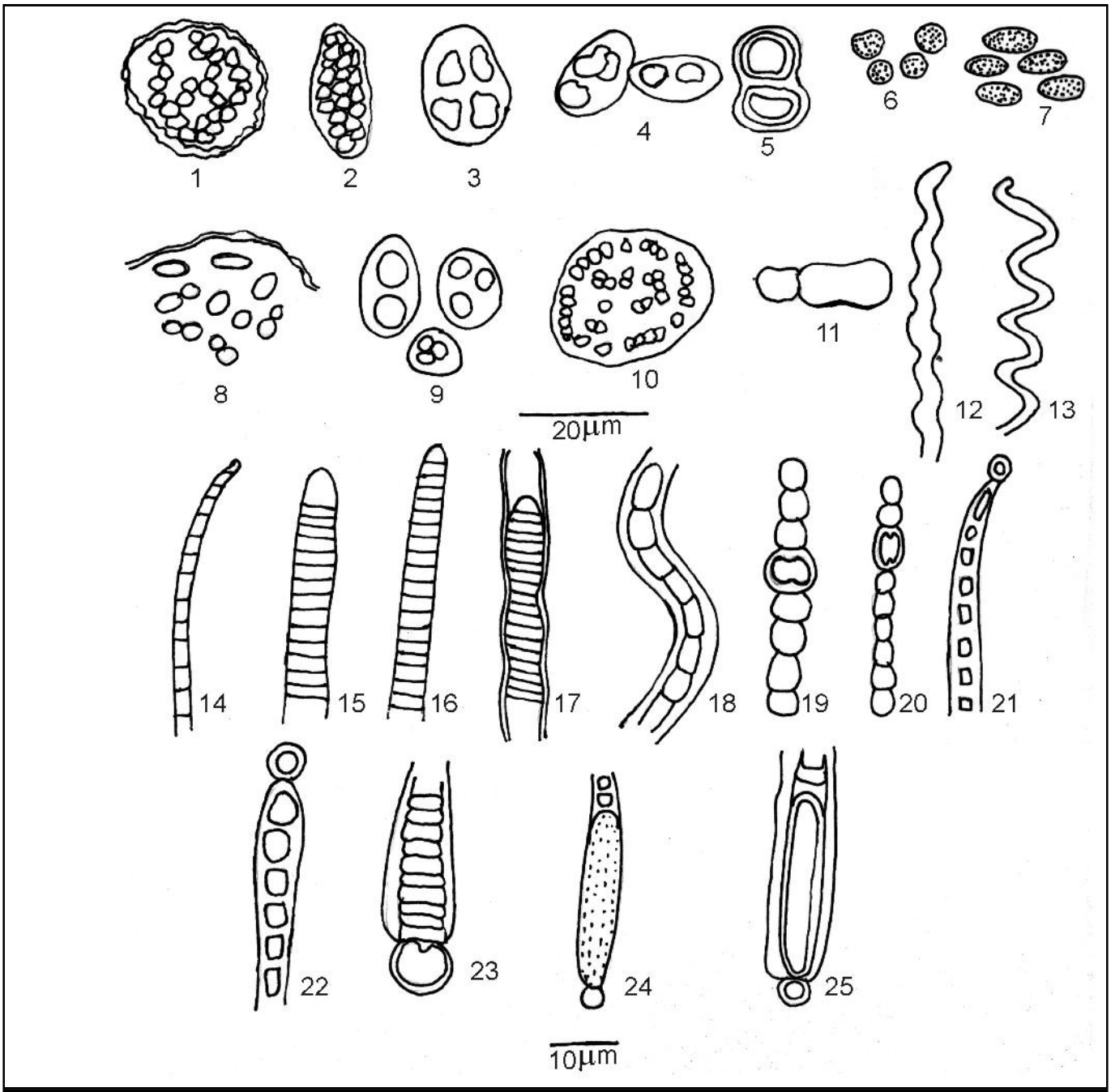

Fig. 1 : ***Microcystis robusta*** **(Clark) Nygard 2.** ***Microcystis marginata*** **(Menegh.) Kuetz. 3.** ***Chroococcus minuts*** **(Kuetz.) Nag. 4.** ***Chroococcus pallidus*** **Nag. 5.** ***Gloeocapsa rupestris*** **Kuetz. 6.** ***Aphanocapsa koordersi*** **Strom. 7.** ***Aphanocapsa brunnea*** **Nag. 8.** ***Aphanothece pallida*** **Kuetz. 9.** ***Aphanothece bullosa*** **Rabenh. 10.** ***Coelosphaerium kuetzingianum*** **Nag. 11.** ***Chlorogloea fritschii Mitra*** **12.** ***Spirulina princeps*** **West. 13.** ***Spirulina laxissima*** **West, 14.** ***Oscillatoria obscura*** **Bruhl. 15.** ***Oscillatoria subuliformis*** **Kuetz. 16.** ***Oscillatoria boryana*** **Bory ex Gomont, 17.** ***Lyngbya spirulinoides*** **Gomont 18.** ***Lyngbya lagerheimii*** **(Mob.) Gomont 19.** ***Anabaena aphinezomenoides*** **Forti. 20.** ***Anabaena cireinalis*** **Rabenh. 21.** ***Calothrix webery*** **Schmidle 22.** ***Calothrix vigulery*** **Fremy 23.** ***Calothrix brevissima*** **West 24.** ***Gloeotrichia echinulata*** **Smith 25.** ***Gloeotrichia ghosei*** **Smith**

Cells 3.8-5.4 µm in diameter.

– Pl. 1 Fig.10
Coelosphaerium kuetzingianum Nag.
Cells 2.25-5 µm in diameter.

– Pl. 1 Fig. 11
Chlorogloea fritschii Mitra
Cells 6-8 µm in diameter.

– Pl. 1 Fig. 12
Spirullina princes W.et G.S West
Trichomes 4.5-5 µm broad.

– Pl. 1 Fig. 13
Spirullina laxissima West G.s
Spirals loose, trichomes 0.7-0.8 µm broad.
– Pl. 1 Fig.14
Oscillatoria obscura Bruhl.
Trichomes 3-4.6 µm broad, cells1-3 µm long.
– Pl.1 Fig.15
Oscillatoria subuliformis Kuetz.
Trichomes 9-12 µm broad, cells2-6 µm long.
– Pl. 1 Fig.16
Oscillatoria boryana Bory ex Gomont
Trichomes 6-7.5 µm broad, cells 3-4 µm long.
– Pl. 1 Fig. 17
Lyngbya spirulinoides Gomont
Filaments loosely spirally coiled trichomes 3.4-6.8 µm long and 10-12 µm broad.
– Pl. 1 Fig. 18
Lyngbya langerheimii(Mob.) Gomont
Trichomes 1-2 µm broad, cells 1.2-3 µm long.
– Pl. 1 Fig.19
Anabaena aphenizomenoides Fort.
Trichomes 4-5 µm broad, cells 12-15 µm long.
– Pl.1 Fig. 20
Anabaena cireinalis Rabenh.
Trichomes 13-19 µm broad, cells 13-32 µm long.
– Pl. 1 Fig. 21
Calothrix webery Schmidle
Trichomes 4.5-6 µm broad
– Pl. 1 Fig. 22
Calothrix vigulery Fremy
Trichomes 15-18 µm broad.
– Pl. 1 Fig. 23
Calothrix brevissima West.
Trichomes very short, 30-60 µm long and 5-7 µm broad.
– Pl. 1 Fig. 24
Gloeotrichia echinulata Smith
Trichomes 8-10 µm long, heterocyst 7-10 µm broad.
– Pl. 1 Fig.25
Gloeotrichia ghosei Smith
Trichomes 9-11 µm broad, heterocyst 9.9-13.3 µm broad.

Altogether 25 cyanobacterial flora were identified belonging to 3 taxa of *Oscillatoria* and *Calothrix,* 2 taxa of each genera *Microcytis, Chlorococcus, Aphanocapsa, Aphanothece, Spirullina, Lyngbya, Anabaena* and *Gloeotrichia* and single taxon of each genera *Gloeocapsa, Chlorogloea* and *Coeosphaerium.* Higher diversity was observed during the monsoon season when there was fresh water domination and low surface water temperature (Saraswathi and Kanan 2003).The species rich genera are *Oscillatoria* and *Calothrix.*

REFERENCES

Aiyer, R.S. (1965). Comparative algological studies in rice field in Kerala state. *Agric.Re & J.Kerala,* : 100-125.

Bisnoyi, S. (2007). Species diversity and richness of cyanophycean assemblage of Bihar, *Biol. Fert. Soils,* **5** : 107-120.

Desikachary, T.V. (1959). Cyanophyta, I.C.A.R New Delhi, monograph on algae.

Jha, M.N. and Sharma, S.G. (1995). DBT project report on Ecology of diazotrophic cyanobacteria, RAU, Bihar.

Purti, N. (2008). Blue green algae from Khunti district of Jharkhand. *Indian J.Biospectra*, **3** (1) : 127-132.

Saraswathi, R. and Kanan, L. (2003). Community structure of phytoplankton in southern India, Phycology, Kalyani publishers, New Delhi, pp. 37-58.

Subramanian, L.(1990). Effective use of cyanobacteria in effluent treatment, In: Proc. Biol. Nitrogen fixation, IARI, New Delhi 437.

Tripathi, K.K. and Prasad, A.N. (2006). Cyanobacterial biotechnology, Phycology, Kalyani publishers, New Delhi, pp. 225-233.

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