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A NEW ENDEMIC SPECIES OF *GLEOTRICHIA* CYANOBACTERIA FROM INDIA

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ABSTRACT

A new species of *Gleotrichia agarkarii* is described from ponds of Narsinghgarh (MP) India. This is characterized by the presence of a biconcave lens like hyaline bluish green cell (broader than longer) always present above the spore a feature never recorded so far in any of the cyanobacteria including the genus *Gleotrichia*

Key words: Gleotrichia agarkarii ; biconcave cell above the spore; Cyanobacteria

The cyanobacterium *Gloeotrichia* belongs to the order Nostocales and the family Rivulariaceae that includes filamentous nitrogen fixing and predominantly colony forming species that possess akinetes (Komárek & Anagnostidis, 1989). Most species of *Gloeotrichia* inhabit the littoral zone of lakes, being attached to different substrates and are only occasionally found in the plankton. The only truly planktonic species, *G. echinulata,* contains gas vacuoles and is an important constituent of the plankton of lakes worldwide. Plants mentioned hereunder are often seen attached as mucilaginous balls on the stem and small branches of *Chara, Nitella* and other small hydrophytic mass; the ball contains several species of Cyanophytes, including *Rivularia and Gleotrichia.* Among them are interesting trichomes of *Gleotrichia* species which always have a biconcave bluish green hyaline cell above the spore with 3 or more heterocysts. On account of hitherto unrecorded biconcave lens we wish to name these plants as a new species of *Gleotrichia.* As far as we could ascertain by the perusal of literature, such a distinct cell above the spore and below the cells of the trichome has never been described.

Material and Methods

Since 1966 we have been interested in aquatic vegetation of ponds in Narsinghgarh (MP) India and have had during 1966-70 collected several fresh water algae of great significance. Algal collections were studied under light microscope and camera lucida drawings were made from dil. glycerine mounts. These *Gleotrichia* plants were first collected in 1967 and then repeated after a gap of few years so as to ascertain highly peculiar feature. This short note aims to present hereunder, an unusual

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observation on record because we have had searched at many places and also consulted literature so as to compare our old observation, but invain.

Observations

Gleotrichia agarkarii spec.nov

Diagnosis:

Thallus hemisphericus vel lenticularis, mollis, solidus; filamentua radialis 204-270 mμ longa, attenuata in pilum 1.5 mμ latum, haud emergentia e colonia; vagina tenuis, hyaline, levis; trachoma 5.9-7.4 mμ latum, multicellulare, constrictum ad articulationes et basin; cellulae doliiformes, absque vacuoles aeries, 5.9-7.4 mμ latae, ad basin, 2.9-3 mμ latae ad apicem (longifores quam latate); heterocystas basales, vulgo 3, rarius 2 vel 1, 2.9-11.8 mμ longae, 3-8.8 mμ latae; sporae cylindricae 25.9-38.4 mμ longae, 10.3-11.8 mμ latae, luteae vel pallidae.

Cellula biconcave caerulescens hyaline 2.9-6 mμ longaet aeque lata, sed vulgo latior quam longa, simper adest supra sporam.

Thallus hemispherical or lenticular, soft, solid, 23 mm filaments radial, 204- 270 mμ long attenuating in a 1.5 mμ broad hair, not coming out of colony; sheath thin, hyaline and smooth; trichome 5.9 mμ to 7.4 mμ broad, many celled, constrictions at the joints and base; cells barell shaped without gas vacuole 5.9-7.4 mμ broad at the base and 2.9-3mμ broad at the apex (longer than the broader). Heterocyst basal mostly 3 rarely 2 or 1, 2.9 to 11.8 mμ long, 3 -8.8 mμ broad; spore cylindrical 25.9 mμ to 38.4mμ long, 10.3 mμ-11.8 mμ broad, yellow to pale with small sheath 1.5-2mμ broad.

Special feature: A biconcave bluish hyaline cell 2.9- 6 mμ broad but usually broader than longer, always present above the spore.

Description and comparison

Thallus: Balls of mucilaginous cluster of many forms of *Gleotrichia* and *Rivularia* etc are often seen attached to stem and branches of hydrophytic plants. Colour of the colony is often brownish green. *Gleotrichia agarkarii* Goswami & Arya is seen dispersed among them.

Filaments: Few, loosely arranged, radial, broad at the base gradually attenuating but not coming out of the colony. Cells are barrel shaped without gas vacuoles. Heterocysts: This is peculiar that 3 basal heterocysts are commonly seen while in some filaments we have seen 5 heterocysts also. As a matter of fact no other species of *Gleotrichia* possesses 5 heterocysts. And above all, the most novel feature is the presence of a biconcave hyaline and bluish cell (of 2.9 mμ to 6 mu in length and 2.9 to 6 mμ in breadth (but always broader than longer).

Such a hyaline cell above the spore has never been seen in any species of *Gleotrichia* in the world literature. As far as we could ascertain by various studies this interesting structure does not appear to offer any functional facility to this species. Morphological comparisons on trichome size can be undertaken with a few species of *Gleotrichia* reported from India (Desikachary,1959) in particular

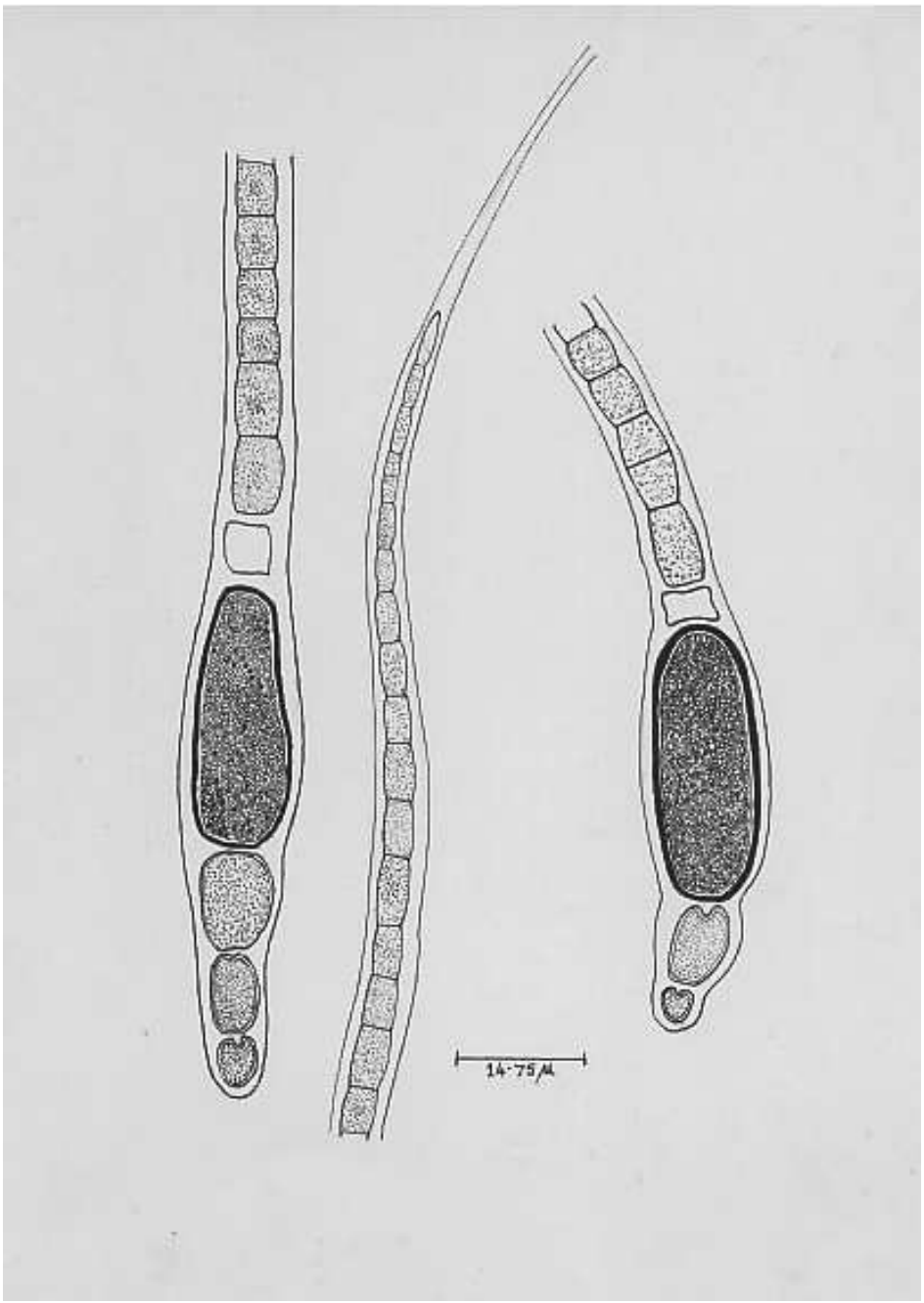

Fig 1. A.Camera lucida drawing of *Gleotrichia agarkarii* sp nov. showing the filament; note the biconcave lens like structure above the spore. Three basal heterocysts are common; two are rare.

with *G.echinulata* Var. *berhampurense Rao, G. intermedia* (Lemm) Geitler; *G. pisum* Thuret ex Born.et Flah.; *G. raciborski* Woloszynska but in no species (Nayak *et al,* 2001; Karlsson, 2003; Suryavanshi *et al,* 2010) such a distinctive feature of the lense above the spore has been known.

Hence we name it, on account of its novel feature (presence of a lens like hyaline structure above the spore) never known in any form of *Gleotrichia,* as *Gleotrichia agarkarii* honouring our teacher the late Professor M.S. Agarker who did pioneering work on algal flora from this region of central India. This species is endemic to Narsinghgarh (MP) as we have searched for more than two decades from various water bodies in Central India. Many species of *Gleotrichia* have been observed (Desikachary, 1959; Nayak *et al,* 2001; Suryavanshi *et al,* 2010) but as far as we know, not any species with a lens like structure above the spore has been published, hence this belated note.

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