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Algae of Mehekari water reservoir

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Abstract

Algae are the most beautiful microflora of the microscopic world. The collection and study of algae has a charm and fascination, which is better experienced than described (Randhawa, 1959). These are a group of organisms that have been generally described as photoautotrophic unicellular or multicellular, mainly water dwelling organisms lacking complex morphological organization. Algae from the locations was collected in the convenient season and documented.

Keywords: Algae, Cyanophyceae, Mehekari, Reservoir

Introduction

Mehekari Lake is constructed on the Seena River in Ashti tehsil of Beed and Ahmednagar district of Maharashtra. The study was carried out to explore the presence of algal diversity of the water reservoir. Earlier the author reported the algal species of chlorophyceae from the water reservoir. In the present communication total 10 species of freshwater algae of class chlorophyceae and cyanophyceae have been taxonomically and morphologically described.

Materials and Methods

Random sampling technique has been used for collection of algal samples. Different locations of

the Mehekari Project were selected for the present study. Sample collections were made for 2 consecutive years (2018-2020), from November to March. The samples were preserved in 4% formalin. Identification of taxa was carried out by using Philipose (1967), Prasad and Misra (1992), Pal et., al (1962), Desikacharya (1959) Randhava (1959) and other relevant literature.

Results and Discussion

During present investigation 10 genera and 11 species of phytoplanktons were observed which are described as under.

Order: Chlorococcales

Family: Hydrodictyaceae

Genus: *Hydrodictyon* Roth

Macroscopic, free floating, net like colonies of several hundred to many thousand cells which are, cylindrical, coenocytic, and cylindrical with large central vacuole. Reticulation of colony 3 – 12 sided. Chloroplast parietal and with a single pyrenoid. Asexual reproduction by zoospores, sexual reproduction by isogametes.

1) *Hydrodictyon indicum* Iyengar

Philipose, 1967, p 134, f 49

Cells meshes and much larger; cells, when living, very turgid, and nets, therefore, very brittle and easily breaking up into individual coenocytes on handling; cells deeply green, cylindrical and very big; cell wall very thick and lamellated with knob like portions of the cell wall.

Geuns: *Pediastrum*

Colonies free floating, disc shaped to stellate, monostromatic with 4 to 64 or more polygonal cells, marginal cells with or without process and usually differently shaped than interior cells; cell wall smooth or with ornamentations; cell wall multinucleate; chloroplast parietal, disc shaped in later stages filling the entire cell, with one to many pyrenoids; reproduction by zoospores, aplanospores, sexuality isogamous

2) *Pediastrum boryanum* (Turpin) Menegh.

Philipose, 1967, p 118, f 40 (a)

Colonies circular to oval and 16 celled, cells arranged in concentric rings without intercellular spaces. Inner cells polygonal with straight sides. Outer face of marginal cells slightly to deeply emarginate and with two short processes ending in stumpy spines. Cell wall usually granulate, sixteen celled colonies 80 μ in diameter.

Order: Ulothrichales

Family: Ulothrichaceae

Genus: *Uronema* Lagerheim

Filaments simple, unbranched, uniseriate, mostly attached and grow epiphytically; terminal cell often tapering to an acuminate tip, straight or bent, may be shorter or larger than the other cells of filaments vegetative cells usually cylindrical and elongated with a parietal plate like chloroplast containing one or more pyrenoids; reproduction by zoospores and aplanospores.

3) *Uronema confervicolum* Lagerheim

Prasad and Misra, 1992, p 46, pl 6, f 3

Filaments long, slightly curved, consisting of many cells, constricted at septa; cells cylindrical, slightly longer than broad, apical cells acuminate with pointed apex, basal cell narrow and long; each cell with one laminate chloroplast, occupying a part of the cell; pyrenoid not prominent. Long cell 10 μ m, long basal cell 12.2 μ m; lat cell 7.5 μ m, basal cell 5 μ m.

Order: Cladophorales

Family: Cladophoraceae

Genus: *Rhizoclonium* Kuetzing

Plants fresh water or marine filamentous, coarse and wiry, unbranched or with one to two cells rhizoidal branches, slightly or not at all constricted at septa; cells multinucleate; cell wall thick and lamellate; chloroplast parietal, reticulate with several pyrenoids; reproduction by fragmentation, zoospores or by cells resembling akinetes.

4) *Rhizoclonium hieroglyphicum* (Ag.) Kuetz.

Prasad and Misra, 1992, p 56, pl 7, f 7

Filaments long, wiry, unbranched at septa; cells long, cylindrical, with thick stratified walls,

multinucleate, chloroplast parietal, reticulate with several pyrenoids; rhizoids primary, long and colourless, formed from the direct prolongation of the lower end of filaments. Cells 27.5 μm broad, 132.5 μm long.

Order: Zygnematales

Family: Zygnemataceae

Genus: *Zygnema* C.A. Agardh

Unbranched filaments of short cylindrical cells, often curved by a pectic sheath; vegetative cells 1 to 9 longer than broad, usually with two distinctly stellate chloroplasts, each with a prominent central pyrenoid chloroplast connected by a cytoplasmic isthmus containing the nucleus; reproduction by aplanospores, akinetes and zygospores, sexuality by formation of zygospores wholly in the conjugation canal or in one of the gametangia; zygospores morphology varying; median spore wall smooth or ornamented, hyaline or coloured.

5) *Zygnema khannae* Skuja

Prasad and Misra, 1992, p 76, pl 12, f 9

Vegetative cells 22.5 μm broad, 65 μm long; conjugation not seen; reproduction by aplanospores; aplanospores ellipsoid to ovoid; outer spore wall punctate, median spore wall irregular, yellowish brown in colour.

Genus: *Debarya* (Witt.) Transeau

Filaments are slender, cylindrical cells; chloroplast a narrow axial plate containing 2-8 pyrenoids; conjugation scalariform by protuberances from both gametangia; zygospores variable in shape, ovate formed between the gametangia, the median wall yellow, brown, or blue, smooth; reproduction by aplanospores and akinetes.

6) *Debarya costata* Randhawa

Randhawa, 1959, p 109, f 5 (a)

Vegetative cells 10 μm broad and each cell has a single plate shaped chloroplast bearing six pyrenoids. Conjugation scalariform. The conjugation processes are given out in the shape of long cylindrical phallic bodies, which meet and produce long conjugation canals.

Order: Charales

Family: Characeae

Tribe: Nitelleae

Genus: *Nitella* Agardh (em. Leonh)

Corona of 10 cells in two tiers of five each; stem and branchlets entirely ecorticate; branchlets normally two at a stem node, usually furcate; antheridia terminal; oogonia lateral; oospores laterally compressed. The terminal position of antheridium and laterally compressed ellipsoidal or spheroidal oospores are characteristic features of this genus. The vegetative structures this genus range from simple forms with once forked branchlets to form having many celled ultimate rays (Pal *et al.*, 1962)

7) *Nitella bengalensis* Kundu

Pal, Kundu, Sundaralingam and Venkataraman, 1962, p 67-68, f 100-104

Monoecious; stem 300 μm in diameter, whorls of 6 branchlets; sterile and fertile whorls dissimilar; sterile whorl branchlets long; 2 to 3 times; oogonia solitary, usually along with an antheridium at the second and third function of the branchlets, antheridium 300 μm in diameter, oogonium 450 μm long, 330 μm broad, spiral cells 9 convolutions; corona persistent, occasionally deciduous; 34 μm high; oospores subglobose, antheridium 220 μm in diameter.

Order: Chroococcales

Family: Chroococcaceae

Genus: *Gloeocapsa* Kuetz.

Thallus crustaceous, leathery, lubricous or mucilaginous, expanded, brownish or blackish green; cells spherical or ovoid arranged irregularly forming colonies which may be single or many together forming expanded masses; each cell with distinct or indistinct, lamellated or unlamellated sheaths; cell contents coloured or colourless, homogenous; cell division in all three directions; reproduction by fragmentation, occasionally with nannocytes.

8) *Gloeocapsa kuetzingiana* Nag.
Desikachary, 1959, p118, pl 23, f 4

Thallus thin, soft, brownish or blackish; cell densely arranged in colony, 125 μ diam.; cells without sheath 5 μ diam., with sheath 7.5 μ diam., blue green; sheath yellow to brown, not lamellated.

9) *G. punctata* Nag.
Desikachary, 1959, p 115, pl 23, f 2

Thallus gelatinous, light blue green; cells with sheath 5 μ broad, cell without sheath 1.5 μ , blue-green; sheath thick, colourless, unlamelleated or scarcely lamellated; cells 2-16 in groups or colonies, about 25 μ diam.

Genus: *Aphanocapsa* Naeg.

Cells spherical or nearly so, many loosely arranged without an order, forming a formless gelatinous mass, often a few cm. in diam., mucilage homogenous, colourless, cells often with a thin more or less gelatinized individual sheaths; division in two directions, often 2, 4 and sometimes many within a common mucilaginous envelope of the parent cell; nannocysts present in some species, formed by repeated division.

10) *Aphanocapsa biformis* A.Br.
Desikachary, 1959, p 134, pl 21, f 3

Thallus olive green, gelatinous, often expanding; cells 5 μ diam, spherical, mostly with a special envelope; loosely arranged, 2-4 together in a common mucilaginous envelope, nannocytes about 2 μ diam.

Order: Nostocales

Family: Oscillatoriaceae

Genus: *Oscillatoria* Vaucher

Trichome single or forming a flat or spongy free-swimming thallus, sheath absent, rarely with more or less very delicate sheath, motile, mostly by a creeping movement causing rotation on the longitudinal axis; end of trichome distinctly marked, pointed, bent like a sickle or coiled more or less like a screw.

11) *O. Formosa* Bory ex. Gomont
Prasad and Srivastava, 1992, p 62, pl 9, f 5

Trichomes elongated, solitary or aggregated to form dark blue green masses almost straight, very gently attenuated towards slightly bent apices; cells quadrate or up to half times as long as broad, 5 μ long; cell contents bright blue green, homogenous without granules and gas vacuoles; end cell obtuse or bluntly rounded, non capitate, calyptra absent; cell wall thick, smooth.

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