GENUS OSCILLATORIA VAUCHER (CYANOBACTERIA) FROM ANJANI DAM OF JALGAON DISTRICT, MAHARASHTRA, INDIA

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The present study deals with the taxonomic enumeration of genus Oscillatoria Vaucher from Anjani dam, Erandol Tahsil of Jalgaon district, Maharashtra. The species of Oscillatoria are delimited on the basis of nature of trichome, colour, sheath, diameter of the cell, granulation, constriction and nature of apex. A total of 20 taxa have been identified from the collected samples of different sites of Anjani dam. All the taxa are being recorded for the first time from the present study area.

Key words: Oscillatoria, Cyanobacteria, taxa, Anjani dam, Maharashtra

Cyanobacteria represent the diverse group of gram negative, prokaryotic oxygen generating phototrophs that are adapted in all possible aquatic habitats of the world. Oscillatoria Vaucher is a commonly occurring cyanophycean alga of family Oscillatoriaceae. The genus Oscillatoria is a filamentous form which does not differentiate heterocyst and akinetes. They may be terrestrial, free floating, epiphytic or growing on surface of rocks and are survive in extreme environmental conditions.


MATERIALS AND METHODS

Anjani dam is located near the Palasdal village (20° 4' North latitude and 75° 19' East longitude) situated on Anjani river in the Erandol Tahsil of Jalgaon district, Maharashtra. The algal samples collections were made monthly early in the morning between 7.00 to 09.00 am during May, 2017 to April, 2019 from different sites of Anjani dam. All the collected samples were studied fresh as far as possible and later preserved in 4 % formalin for further studies. Camera lucida drawings were made with the help of mirror type of camera lucida. The identification of taxa was made by the following the monograph of Desikachary (1959), Prescott (1962), Santra (1993) and relevant research papers.

Taxonomic enumeration

Oscillatoria amoena (Kutez.) Gomont Pl.1, Fig.1
Desikachary T.V.1959, P.230: Pl. 40, Fig. - 12. Thallus more or less blue green; trichomes straight, slightly constricted at the cross walls, ends gradually attenuated, 4.6 μm broad, dull blue green; cells nearly as long as broad, 6.4 μm long, septa granulated. Terminal cell capitate, broadly conical with calyptra. Coll. No.: -397
**Oscillatoria anguina** Bory ex Gomont  
*Pl.*, 1, Fig. 2  
Das S.K. and Adhikary S.P. 2014, P. 67, Pl. 3, Fig. 10.  
Trichomes bright blue green or blackish green, 8.2 μm broad, straight, constricted at finely granulated cross walls, gradually attenuated at the ends, cells are 2.1 μm long, apical cells obtusely button like flattened with thickened outer cell wall.  
Coll. No.: -122

**Oscillatoria annae** Van Goor  
*Pl.*, 1, Fig. 3  
Desikachary T.V. 1959, P. 203; Pl. 38, Fig. 13  
Filaments solitary, straight, yellowish blue green in colour; constricted at the cross-walls, cells 7.8 μm broad and 2.2 μm long, end cell rounded, calyptra absent.  
Coll. No.: -2114

**Oscillatoria brevis** (Kuetz) Gomont  
*Pl.*, 1, Fig. 4  
Kumawat D.A. and Jawale A.K., 2006, P. 99, Fig. 7.  
Trichomes straight; not constricted at cross walls; ends briefly attenuated, apical cell rounded, conical in shape, calyptra absent. Cell 3.9 μm broad and 2.1 μm long.  
Coll. No.: -122

**Oscillatoria chalybea** (Mertens) Gomont var. *insulris* Gardner  
*Pl.*, 1, Fig. 5  
Desikachary, T.V. 1959, P. 219, Pl. 38, Fig. 18.  
Trichome straight as long as broad, end bends and sickle shaped, not constricted at the cross-walls; end cell obtuse, not capitulate, without calyptra. Cell 14.8 μm broad, 4.6 μm long.  
Coll. No.: -395

**Oscillatoria cortiana** Meneghini ex Gomont  
*Pl.*, 1, Fig. 6  
Desikachary T.V. 1959, P. 233, Pl. 38, Fig. 14.  
Thallus dull blue-green; trichome slightly constricted at the cross-walls, 4.1 μm broad, gradually tapering at the ends, bent, not capitulate, blue green; cells 3.7 μm long, septa not granulated, end cell without calyptra.

**Oscillatoria irrigua** Kützing ex Gomont  
*Pl.*, 1, Fig. 7  
Desikachary T.V., 1959, P. 224, Pl. 42, Figs. 7, 9.  
Thallus blackish blue-green, trichome light blue green, straight, not torulose, 5.6 μm dia., slightly attenuated, sub-capitate and straight. Cell quadrate, 12.3 μm dia 5.6 μm long. Apical cell with thick wall.  
Coll. No.: -279

**Oscillatoria jasorvensis** Vouk  
*Pl.*, 1, Fig. 8  
Desikachary T.V., 1959, P. 221-222.  
Thallus pale to dark blue-green, free floating. Trichome long, straight, without constriction 4.2 μm broad, bent at the ends, not attenuated, not capitulate. Terminal cell rounded or dome shape, apex slightly tapering without calyptra. Cells 4.2 μm broad, 2.1 μm long, cyanophycean granules distributed throughout cell.  
Coll. No.: -135

**Oscillatoria margaritifera** (Kutz.) Gomont  
*Pl.*, 1, Fig. 9  
Desikachary T.V., 1959. P. 202, Pl. 42, Fig. 8.  
Trichome fragile, curved, constricted at cross walls, apices slightly bent and attenuated, cells 24.4 μm broad and 6.2 μm long, cross wall granulated end cell capitulate with slightly convex calyptra.  
Coll. No.: -122

**Oscillatoria okeni** Agardh ex Gomont  
*Pl.*, 1, Fig. 10  
Desikachary, T.V. 1959, P. 231, Pl. 38, Fig. 17.  
Thallus dull blue-green; trichomes straight, fragile distinctly constricted at the cross-walls. Trichome 4.5 μm broad, 1.5 μm long; end cells obtuse or sub conical not capitulate, without calyptra.  
Coll. No.: -2114

**Oscillatoria perornata** Skuja  
*Pl.*, 1, Fig. 11  
Desikachary, T.V. 1959, P. 205, Pl. 41, Fig.
8,9,14.
Trichome, pale blue-green, erect or flexuous, apices briefly attenuated or curved; cells 6.7 μm broad and 1.8 μm long, distinctly constricted and granulated at the cross wall; apical cell hemispherical without calyptra.
Coll. No. :-315.

Oscillatoria princeps Vaucher ex Gomont Pl.1, Fig.12
Desikachary, T.V. 1959, P. 210, Pl. 37, Fig. 14, Trichome mostly straight, not constricted at cross walls, slightly attenuated at the apices, occasionally with thin sheaths; cells 35.1 μm broad and 6.4 μm long; apical cell flatly rounded, slightly capitate, truncate, fragmented part containing two horns like structure.
Coll. No. :-165.

Oscillatoria princeps Vaucher ex Gomont var. pseudolimosa Ghose Pl.1, Fig.13
Desikachary T.V., 1959, P 210, Pl. 39, Fig. 15
Thallus blue green; trichome straight, rigid and fragile, unconstricted at the cross-walls, cross-walls not granulated; cell 27.7 μm broad, 8.3 μm long, apical cells lightly convex, calyptra absent.
Coll. No. :-286.

Oscillatoria proboscidea Gomont Pl.1, Fig.14
Prasad B.N. and Srivastava M.N. 1992, P. 69, Pl. 8 Fig.9
Trichomes single dark blue-green, flexuous or more or less erect, distinctly attenuated and slightly curved at the ends, not constricted at the cross walls, 22.2 μm in diameter; cells 1/4 to 1/6 times as long as broad, 8.3 μm long; end cells almost truncate, capitate with thick convex outer membrane.
Coll. No. :-286.

Oscillatoria rubescens De Candolle ex Gomont Pl.1, Fig.15
Desikachary T.V., 1959, P. 235, Pl. 42, Fig. 12.
Trichome are nearly straight, at the ends gradually attenuated, 8.2 μm broad, not constricted at the cross-walls, cells 1/2 - 1/3 as long as broad, 2.2 μm long, often granulated at the septa, with gas-vacuoles; end cell capitate, with convex calyptra.
Coll. No. :-2114.

Oscillatoria sancta Kuetzing ex Gomont Pl.1, Fig.16
Desikachary T.V., 1959, P. 203, Pl. 42, Fig. 10.
Thallus dark blue green, mucilaginous sheath present, trichome more or less straight, constricted at cross walls, cells 14.2-15.0 μm broad and 2.2-4.1 μm long, end cell hemispherical and attenuated, slightly capitate with a thickened membrane.
Coll. Nos. :-154, 267.

Oscillatoria subbrevis Schmile Pl.1, Fig.17
Desikachary T.V.,1959, P. 207, Pl. 37, Fig. 2 and Pl. 40, Fig. 1
Trichome single, 3.0 μm broad nearly straight, not attenuated at the apices; cells 1.5 μm long, not granulated at the cross walls; end cell rounded, normal calyptra absent.
Coll. No. :-399.

Oscillatoria tenuis Agardh ex Gomont Pl.1, Fig.18
Desikachary T.V., 1959, P. 222, Pl. 42, Fig. 15.
Thallus blue green or olive green, trichome straight, constriction not present at the cross-walls, cell 9.0 μm broad and 4.1 μm long, granule present uniformly.
Coll. No. :-395.

Oscillatoria vizagapatensis Rao Pl.1, Fig.19
Prasad B.N. and Srivastava M.N. 1992, P. 16 Pl. 8, Fig.12
Trichome solitary pale blue-green uniformly broad, straight, not constricted at the cross walls. 11.2-18.5 μm in diameter; cells much shorter than broad, 1.8-3.7 μm long; end cells rounded, capitate forming a cap with thick outer membrane, cell wall thick, smooth.
Coll. Nos. :-262, 2114.
Plate 1

Genus *Oscillatoria* from Jalgaon

Scale bar A: 10 μm - Figs. 2, 3, 4, 6, 7, 8, 10, 11, 15-20.
Scale bar B: 25 μm - Figs. 1, 5, 9, 12, 13, 14.
Oscillatoria willei Gardner em Drouet Pl.1, Fig.20
Desikachary T.V., 1959. P. 217, Pl. 38, figs. 4, 5. Trichome bent at the ends, 2.2 μm broad, not constricted at cross walls, ends not attenuated cell 1.8 μm long, cell rounded without a thickened membrane.
Coll. No.: -2125.

CONCLUSION

There are 20 taxa of Oscillatoria representing 18 species and 02 varieties of Genus Oscillatoria and all these taxa were recorded for the first time from the study area.

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