

Mitosporic fungi from Sardar sarovar

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Abstract

The present paper deals with five species of Dematiaceous mitosporic fungi were collected from the submerged wood samples from the Sardar Sarovar region. Four species viz. *Ellisembia plovercovensis* Goh and Hyde, *Monodictys trichocladiopsis* Goh and Hyde, *Neta angliae* Hyde & Goh and *Xylomyces elegans* Goh, Ho, Hyde and Tsui are being recorded for the first time from India. Brief notes and illustration are given for each taxon. Geographical distribution of each species in India is also provided.

Keywords: Mitosporic fungi, Sardar Sarovar, India.

INTRODUCTION

The mitosporic fungi are a group of fungi that consists of asexual states of mostly ascomycetes and some basidiomycetes. The mitosporic fungi undergo mitotic division to produce microsporic asexual structures called conidia, which are of various colours, sizes, shapes, and septations. The mitosporic fungi are also traditionally referred to as fungi imperfecti, anamorphic fungi, or the form taxon deuteromycotina [1]. These fungi in its lifetime can reproduce sexually by producing meiospores (Ascospores or basidiospores) as well as asexually by producing mitospores (conidia) or by producing only meiospores or only mitospores. The mitosporic fungi are classified into two main classes, namely hyphomycetes and coelomycetes. The Hyphomycetes produce conidia directly from vegetative structures (hyphae) or on distinct conidiophores (a specialized hypha that bears conidiogenous cells and conidia) whereas, Coelomycetes produce conidia within asexual fruit bodies called pycnidia [2].

The Sardar Sarovar Dam is on the Narmada river in Gujrat state, 170 kilometers (106 miles) upstream from where the river flows into the Gulf of Khambait in the Arabian Sea. The Narmada is the largest westward flowing river in India. A few kilometers downstream from the dam site on the north bank is Kevadia Colony, the town built to house the construction workers and related bureaucracy. Vadgam, the first village behind the dam, starts around one kilometre from the dam site and stretches out for a several more kilometers along the north bank. About 15 kms upstream on the south bank a small tributary running into the Narmada forms the Gujrat-Maharashtra border. On the eastern (Maharashtra) side of the creek is the village of Manibeli, a focus of resistance to the project where the Narmada Bachao Andolan (NBA- Save the Narmada Movement) maintains an office.

MATERIALS AND METHODS

The survey was undertaken for one year (June 2010- May 2011). Samples of submerged wood were collected from various streams from Sardar Sarovar. Samples were transported in a cooling box to the laboratory. After rinsing in tap water, samples were placed in plastic boxes filled with distilled water and aerated by compressed air in an incubator at room temperature. After one week of aeration the samples were examined for the presence of fungal fruiting structures. Then the samples were placed in Petri-dishes with moistened filter paper and incubated at ambient temp. of 25^o - 30^o C for some weeks to stimulate fungal development.

Taxonomic Account

Ellisembia opaca (Cooke and Harkin.) Subram. (Fig. 1;Plate fig.1)
= *Bactrodesmium opacum* Cooke and Harkin.
= *Clasterosporium harknessii* Sacc.
= *Sporidesmium harknessii* (Sacc.) Ellis

Conidiophores: macronematous, 10- 20 X 4- 6 µm, 0- 1 septate. Conidia: arising singly or in small, simple, straight or slightly curved, dark reddish brown, smooth walled, acrogenous, solitary, dry, cylindrical, or obclavate to subfusiform, 60-138 X 13-15 straight or slightly flexous, rounded at the apex, truncate at the base, closely 14- 20 pseudoseptate, slightly constricted at the pseudosepta.

Habitat: On submerged wood, Sardar Sarovar, Leg.S.Y.Patil

Remark: The measurement of conidia and description of the present fungus is completely agrees with that of *Ellisembia opaca* by Subramanian, (1992) [3]. Therefore, it is assigned to that species.

Distribution in India: Andhra Pradesh, (Subramanian, 1992) [3].

Ellisembia plovercovensis Goh and Hyde (Fig. 2;Plate fig.2)

Colonies: effuse, brown. Mycelium: partly immersed and partly superficial, comprising pale to medium brown, 1.5- 3 µm wide, smooth or verruculose, septate, branched, hyphae. Stromata: not developed. Conidiophores: erect, solitary or aggregated in groups of 2- 4, cylindrical, pale to medium brown, 35- 58 X 3.5- 4.5 µm, uniform in width and colour, usually straight, unbranched, smooth, 2- 4 septate. Conidia: obclavate, straight, 32- 53 X 7- 10 µm with 5- 9 pseudosepta not constricted at the septa, rounded at the apex, obconically truncate at the base.

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Habitat: On submerged wood. Sardar Sarovar, Leg. S.Y.Patil

Remark: The measurement of conidia and description of the present fungus is completely agrees with that of *Ellisembia plovercovensis* by Goh and Hyde (1999) [4]. Therefore, it is assigned to that species. This makes a new addition to the fungi of India.

Monodictys trichocladiopsis Goh and Hyde (Fig.3;Plate fig.3)

Mycellium: partly superficial and partly immersed, comprising sub hyaline to pale yellowish brown, 1.5- 2 μm wide, smooth or verruculose, septate, branched hyphae setae and hyphopodia absent. Conidiophores: micronematous. Conidia: borne on undifferentiated hyphae, solitary, scattered or in loose clumps, ellipsoidal or pyriform, smooth walled, 30- 40 X 20- 25 μm , black, dictyoseptate, septa often observed by the dark pigmentation; basal cell sub-globose, yellowish brown, 4- 5 μm diameter.

Habitat: On submerged wood, Sardar Sarovar, Leg. S.Y.Patil

Remark: The description and measurement of conidia and conidiophores are completely agreed with that of *Monodictys trichocladiopsis* Goh and Hyde (1999) [4]. Therefore, it is assigned to that species. This makes new addition to the fungi of India.

Neta angliae Hyde & Goh (Fig., 4; Plate fig., 4)

Colonies: on natural substratum effuse, brown, composed of loose arachnoid network of dark brown, dichotomously branched, 4-6 μm wide, multiseptate, thick-walled, stiff, superficial hyphae, bearing conidiophores and conidia.

Conidiophores: solitary or in groups of 2-4, arising from a basal hyphal knot, straight to to flexuous, unbranched, 3-5-septate,

mediam brown, paler at the apex, 70-120 x 3-4 μm .

Conidiogenous cells: integrated, polyblastic, terminal, indeterminate, hyaline, thin-walled, bearing spine-shaped, 1-2 μm long denticles.

Conidia: hyaline, oblong-ellipsoidal or slightly allantoid, subobtuse at the apex, obconical at the base, 1-septate, not constricted at the septum, thin-walled, smooth, 10-13 x (-2) 2.5-3 μm .

Habitat:On submerged wood, Sardar Sarovar, Leg.,Patil.

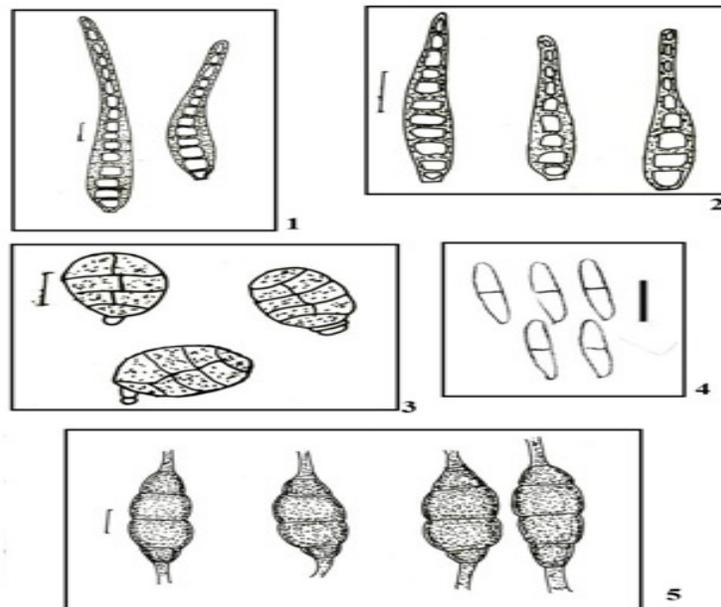
Remark: The description and measurements of conidia and conidiophores completely agree with that of *Neta angliae* Hyde & Goh (1999) [5]. Therefore, it is assigned to that species. It is being reported for the first time from India.

Xylomyces elegans Goh, Ho, Hyde and Tsui (Fig.5;Plate fig.5)

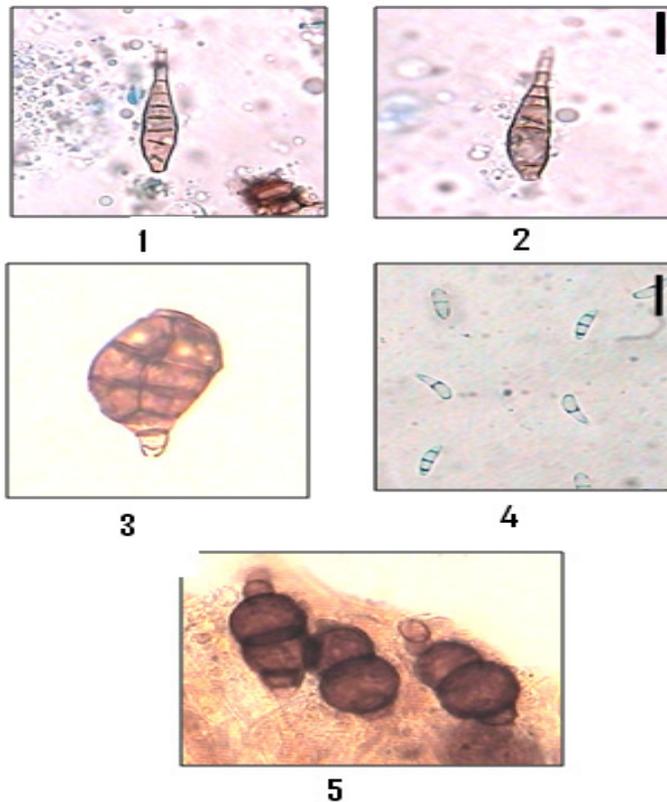
Colonies: scattered, effuse, dark brown, glistening. Mycelium: mostly immersed and partly superficial, composed of very pale reddish brown, branched, septate 2.5- 4.5 μm wide, smooth hyphae. Stromata: lacking. Setae and hyphopodia: absent. Conidiophores and conidia: not developed. Chlamydospores: abundant, intercalary, solitary, 66- 104 X 22- 40 μm , broadly fusiform, straight or rarely slightly curved with 4- 6 thick septa, distinctly constricted at the septa. The two central cells greatly enlarged, guttulate, thick walled, smooth, yellowish brown to orange brown, uniform in colour or sometimes end cells paler.

Habitat: On submerged wood. Sardar Sarovar, Leg.S.Y.Patil

Remark: The measurement of conidia and the description of the present collection completely agree with that of *Xylomyces elegans* Goh, Ho, Hyde and Tsui (1997) [6]. Therefore, it is assigned to that species. This makes new addition to the fungi of India.



1. *Ellisembia opaca* (Cooke and Harkin.) Subram.
(Scale Bar=10 μm)
2. *Ellisembia plovercovensis* Goh and Hyde
(Scale Bar=10 μm)
3. *Monodictys trichocladiopsis* Goh and Hyde
(Scale Bar=15 μm)
4. *Neta angliae* Hyde & Goh
(Scale Bar=10 μm)
5. *Xylomyces elegans* Goh, Ho, Hyde and Tsui
(Scale Bar=20 μm)



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3. ***Monodictys trichocladiopsis*** Goh and Hyde
(Scale Bar=15µm)
4. ***Neta angliae*** Hyde & Goh
(Scale Bar=15µm)
5. ***Xylomyces elegans*** Goh, Ho, Hyde and Tsui
(Scale Bar=40µm)

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