

Diversity of *Trichocladium* Harz from North Maharashtra

S. Y. Patil

P. G. Department of Botany , S.S.V.P.S.L.K.Dr. P. R. Ghogrey Science College, Dhule-424005 (M.S.), India

Abstract

The present paper deals with four species of *Trichocladium* Harz, Dematiaceous Hyphomycetes were collected from the submerged wood samples from the various water bodies in North Maharashtra region. Three species viz. *Trichocladium angelicum* Roldan & Honrubia *Trichocladium engledense* Hyde & Goh and *Trichocladium taiwanense* Matsush. are being recorded for the first time from India. While *Trichocladium lignincola* Schmidt is being reported for the first time from Maharashtra state. Brief notes and illustration are given for each taxon. Geographical distribution of each species in India is also provided.

Keywords: *Trichocladium*, North Maharashtra, India.

INTRODUCTION

"Biodiversity is nothing but variability among the living organisms including terrestrial, marine and all other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity of forms right from the molecular unit to the individual organism and on to the population, community landscape and biospheric levels. It may be the diversity within species, between species and of ecosystem. Biodiversity has assumed more significant since the "United Nations Convention on Biological Diversity" which was held during the Earth Summit at Rio Janeiro (Brazil) in 1992. It now serves as the focal point for documenting knowledge on the biological resources of our earth.

Recent biodiversity studies have revealed a number of undiscovered aquatic hyphomycetes from different parts of the world [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21 and 22].

The genus *Trichocladium* was erected by Harz with *Trichocladium asperum* Harz as its type species. There are 35 names in *Trichocladium*. Goh and Hyde (1999) [23] monographed the genus, accepting 18 species and describing a number of new species. They referred another 22 *Trichocladium* names to other genera, e.g. *Bactrodesmium*, *Henispora* and *Pithomyces*. Two new species added to the genus by Hyde and Goh (1999) [24] and Jones et al. (2001) [25].

MATERIALS AND METHODS

The survey was undertaken for one year (June 2009- May 2010). Samples of submerged wood were collected from various streams from Pimplner, Aner, Pal, Toranmal. 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

Genus *Trichocladium* Harz

The genus *Trichocladium* is characterized by having, Conidiophores: mostly inconspicuous, poorly differentiated, forming short pedicels, zero to three septate, simple or rarely branched, straight or curved smooth, bearing conidia at the apex, hyaline or light brown. Conidiogenous cells: monoblastic or polyblastic, integrated, terminal or intercalary, determinate, cylindrical, doliform. Conidia: acrogenous or acropleurogenous, solitary, clavate, obvoid, pyriform or cylindrical, uni to multiseptate, mostly thick walled, smooth or verrucose, light to dark brown, cells may be unequally pigmented, germ pore occurs in some or all cells. Phialides may be formed in some pleomorphic species producing small, hyaline, one-celled conidia.

Trichocladium angelicum Roldan and Honrubia (Fig.1 Plate fig.1)

Colony: black, compact, mycelium sparse, cottony, grayish, chlamydospores brown, 7- 12 µm diameter. Conidiophores: sub-hyaline to grayish brown, micro to semi macronematous, apical or lateral up to 75 X 3.5 - 5.5 µm. Conidiogenous cells: apical or lateral, mono or polyblastic 4 - 17 X 2.5 - 5.5 µm. Conidia: solitary, rarely paired, acrogenous, rarely pleurogenous, walls thick and smooth, basal cell (remains of separating cell) hyaline, obconico- truncate, 3- 12 X 2.5- 4.5 µm, the remaining 3- 5 cells swollen, subhyaline and highly vacuolated typically larger towards one apex, apical cell regularly globose to ellipsoid; conidia (including basal cell) 25- 47 X 7.5- 12 µm.

Habitat: On submerged wood, Aner Dam

Remark: The descriptions and measurements of conidia and conidiophores are completely agreed with that of *Trichocladium angelicum* Roldan and Honrubia (1989) [26]. Therefore, it is assigned to that species. It has been reported for the first time from India.

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*Corresponding Author

S. Y. Patil

P. G. Department of Botany , S.S.V.P.S.L.K.Dr. P. R. Ghogrey Science College, Dhule-424005 (M.S.), India

Tel: +91-9922296057; Fax: +91-2562272562

Email: sambhajip@rediffmail.com

***Trichocladium englandense* Hyde and Goh** (Fig. 2; Plate fig.2)

Colonies: effuse, dark brown to black. Mycelium composed of branched, septate, smooth, 1- μm wide, hyaline to pale brown hyphae. Conidiophores: micronematous, mononematous, thin walled, pale olivaceous, smooth, simple or branched. Conidiogenous cells: integrated terminal or intercalary, monoblastic, determinate. Conidia: solitary or aggregated, pyriform or obovoid, sometimes oblong and clavate, straight or slightly curved 2 septate, 20- 32 X 9- 15 μm , apical cell enlarged and pale to medium orange- brown, longer cells smaller and pale olivaceous.

Habitat: On submerged wood, Latipada

Remark: The description and measurement of conidia and conidiophores are completely agreed with that of *Trichocladium englandense* Hyde and Goh (1999) [24]. Therefore, it is assigned to that species. This makes new addition to the fungi of India

***Trichocladium lignincola* Schmidt** (Fig. 3; Plate fig. 3)

Hyphae: septate, subhyaline to light brown. Conidiophores: 4-6 x 3-6

μm , macronematous, simple, one-to two-celled, smooth, hyaline to light brown, lateral, short, sometimes indistinct. Conidia: middle brown, 3-6 celled, 24-30 x 13-15 μm , strongly constricted around septa, single cell nearly globular.

Habitat: On Submerged wood, Pal.

Distribution in India: Orissa [27], West Bengal [28] and Kerala [29].

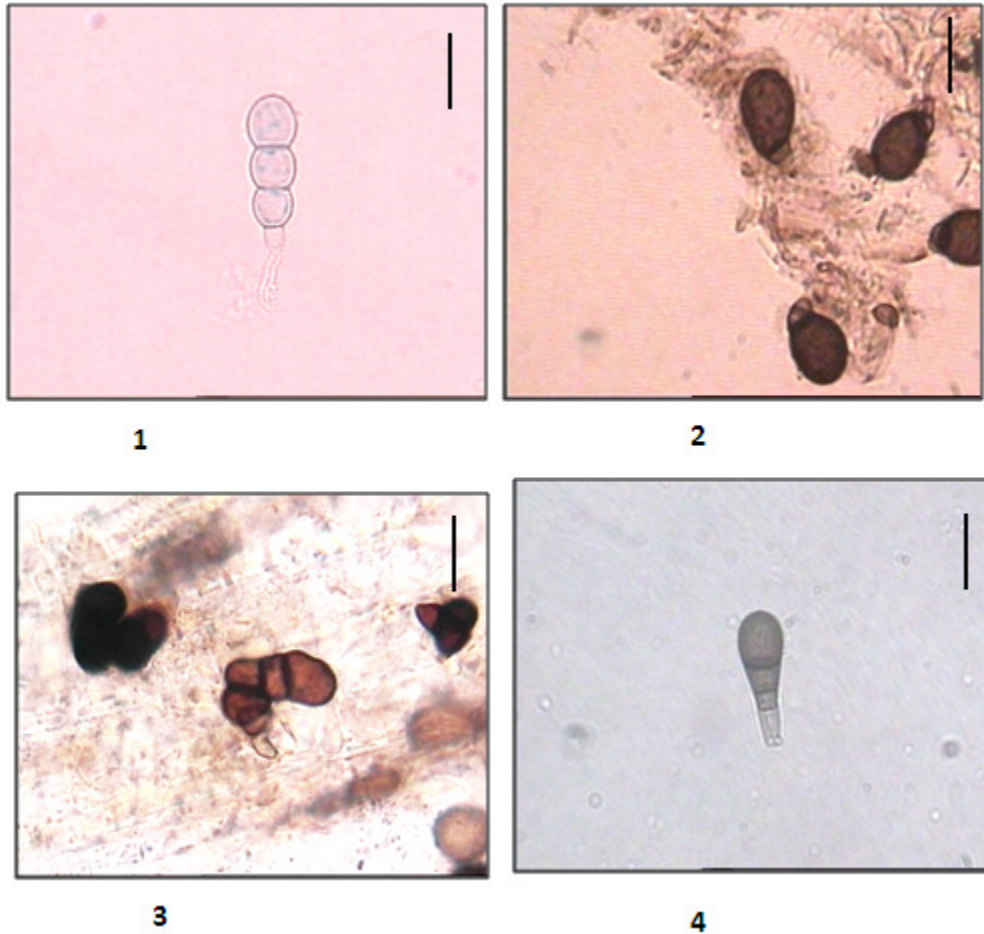
Remark: The present fungus is being reported for the first time from Maharashtra.

***Trichocladium taiwanense* Matsush.** (Fig. 4; Plate fig. 4).

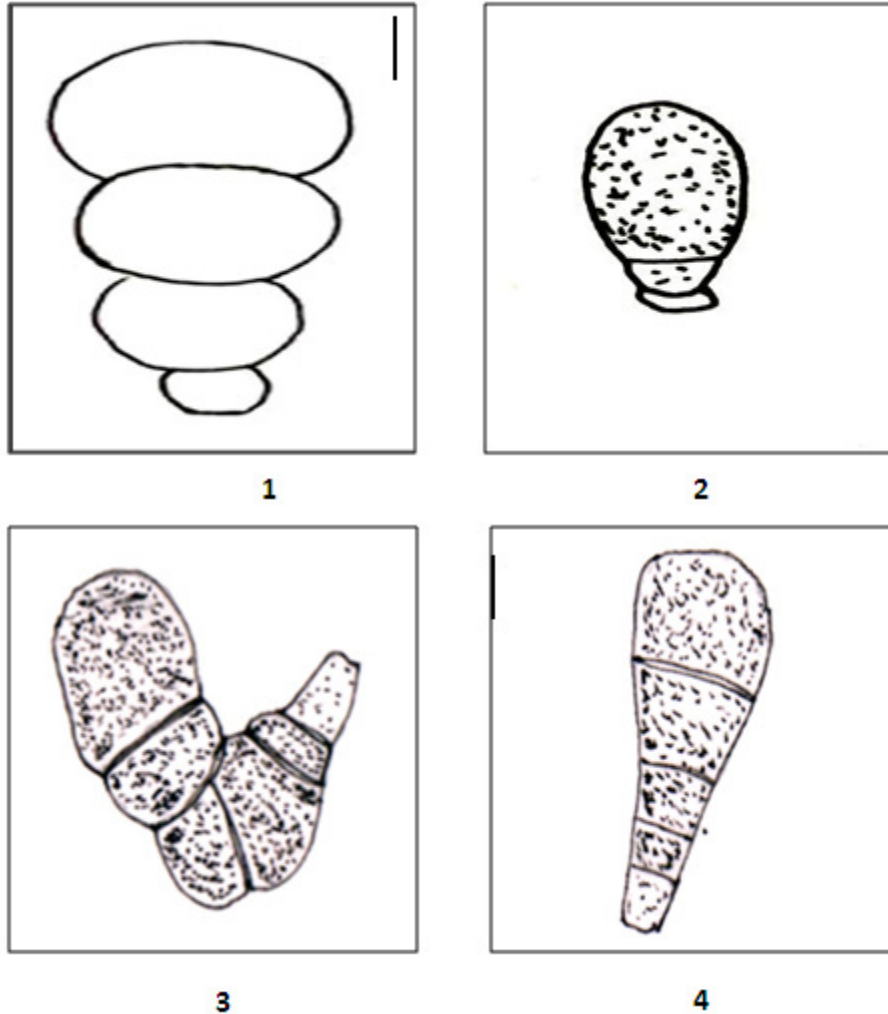
Conidia: ellipsoid, clavate, 3-5 celled. 12-24x8-14 μm , smooth, hemispherical, rounded apex, without septal constriction.

Habitat: On submerged wood, Latipada

Remark: The description and measurement of conidia and conidiophores are completely agreed with that of *Trichocladium taiwanense* Matsush (1983) [30]. Therefore, it is assigned to that species. This makes new addition to the fungi of India
All the four species of *Trichocladium* were found rarely.



1. *Trichocladium angelicum* Roldan and Honrubia
(Scale Bar=15 μm)
2. *Trichocladium englandense* Hyde and Goh
(Scale Bar=10 μm)
3. *Trichocladium lignincola* Schmidt
(Scale Bar=15 μm)
4. *Trichocladium taiwanense* Matsush.
(Scale Bar=10 μm)



1. *Trichocladium angelicum* Roldan and Honrubia
(Scale Bar=15 μ m)
2. *Trichocladium englandense* Hyde and Goh
(Scale Bar=10 μ m)
3. *Trichocladium lignicola* Schmidt
(Scale Bar=15 μ m)
4. *Trichocladium taiwanense* Matsush.
(Scale Bar=10 μ m)

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