

STUDIES IN SOME ALGICOLOUS FUNGI INHABITING ON TWO ECONOMICALLY IMPORTANT ALGAE *OSCILLATORIA TENUIS* C. AGARDH AND *SARGASSUM ILLICIFOLIUM* (TURNER) C. AGARDH FROM MAHARASHTRA (INDIA).



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Abstract: In the present paper three algicolous fungi parasitizing on two economically important algae, have been studied and described. They are viz. *Speiopsis pedatospora* Tubaki and *Dictyosporium digitatum* Chen, Hwang and Tzean on *Oscillatoria tenuis* C. Agardh and *Varicosporina ramulosa* Meyers and Kolhm., on *Sargassum illicifolium* (Turner) Agardh. They are recorded for the first time from India (fungal biodiversity) as well as are important regarding food security (Sargasso food and BGA as biofertilizer).

Keywords: Fungal biodiversity, Algicolous fungi, Food security

INTRODUCTION

Algae inhabiting fungi are known as algicolous fungi and they represent taxonomically diverse group aquatic fungal biodiversity viz. mutualists, endosymbionts, parasites, pathogens and saprobes that are evolutionary, ecological and of commercial interest. In this present paper three algicolous fungi are reported. *Speiopsis pedatospora* Tubaki and *Dictyosporium digitatum* Chen, Hwang and Tzean, were collected from Blue green alga *Oscillatoria tenuis* Agardh and marine fungus *Varicosporina ramulosa* Meyers and Kolhm. was isolated from seaweed *Sargassum illicifolium* (Turner) Agardh. The Filamentous fungi colonize on variety of marine algae, but the brown and red sea weeds hold the greatest diversity. (Zucaro *et al.* 2008) They have been collected from fresh and marine aquatic localities of Maharashtra.

MATERIALS AND METHODS

Collections were made from both freshwater and marine water samples, submerged plant debris (wood pieces, twig, bark, leaf and petiole), submerged and decaying algae, were collected from W. Maharashtra (India). The samples were returned to the laboratory in polythene bags, transferred to moist chambers, and subsequently examined. The semi-permanent slides for the fungi isolated were prepared using lactophenol cotton blue staining method (Dring, 1976) and

sealed with DPX mountant. They were also cultured on Malt Extract Agar. Recent literature was referred for identification of these fungi and algal hosts.

DESCRIPTION

***Speiopsis pedatospora* Tubaki**

J. Hattori bot. Lab. 20: 171 (1958); Figs. 1 & 2

Colonies effuse, brownish, 0.1 to 0.2 mm in diam., mycelium partly immersed, 3 – 7 µm broad; conidiophores straight or slightly curved, macronematous, mononematous, multi septate, mid to pale-brown, 51-96 µm X 4 – 6 µm; conidia cylindrical or ellipsoidal, hyaline to mid pale, 9 – 14 µm X 3 – 6 µm, branches of compound structure, 54 – 75 µm long. Sexual stage not observed. Cultured on Malt Extract Agar medium.

Habitat: Collected from the alga *Oscillatoria tenuis* Agardh from Kas Lake, Dist.-Satara, (M.S.) India. 15th Aug. 2012. Leg. V. S. Shinde and deposited in M. H. B. D. Y.C.I.S. Satara No.: 1.

***Dictyosporium digitatum* Chen, Hwang and Tzean**

Mycological Research 95: 1146 (1991); Figs. 3 & 4
Colonies on algal substratum in the form of sporodochia, brown, sparsely distributed,

numerous; mycelium branched, septate, pale; conidia 46.5-74 x 26-46 μm , uniformly pale to medium reddish brown, complanate, cheiroid, maize ear like, consisting of 6-8 parallel, tightly appressed arms which are flattened in one plane, terminal cell of each arm is provided with a hyaline, thin-walled, straight appendage. Telomorph not observed. Cultured but failed to grow on Malt Extract Agar medium.

Habitat: Collected on living colonies of the blue green alga *Oscillatoria tenuis* Agardh from Kas Lake, Dist.-Satara, (M. S.) India. 15th Aug. 2012. Leg. V. S. Shinde and deposited in M. H. B. D. Y.C.I.S. Satara No.: 2

Varicosporina ramulosa Meyers and Kolhmeyer

Can. J.Bot. 43: 916 (1965); Figs. 5 to 7

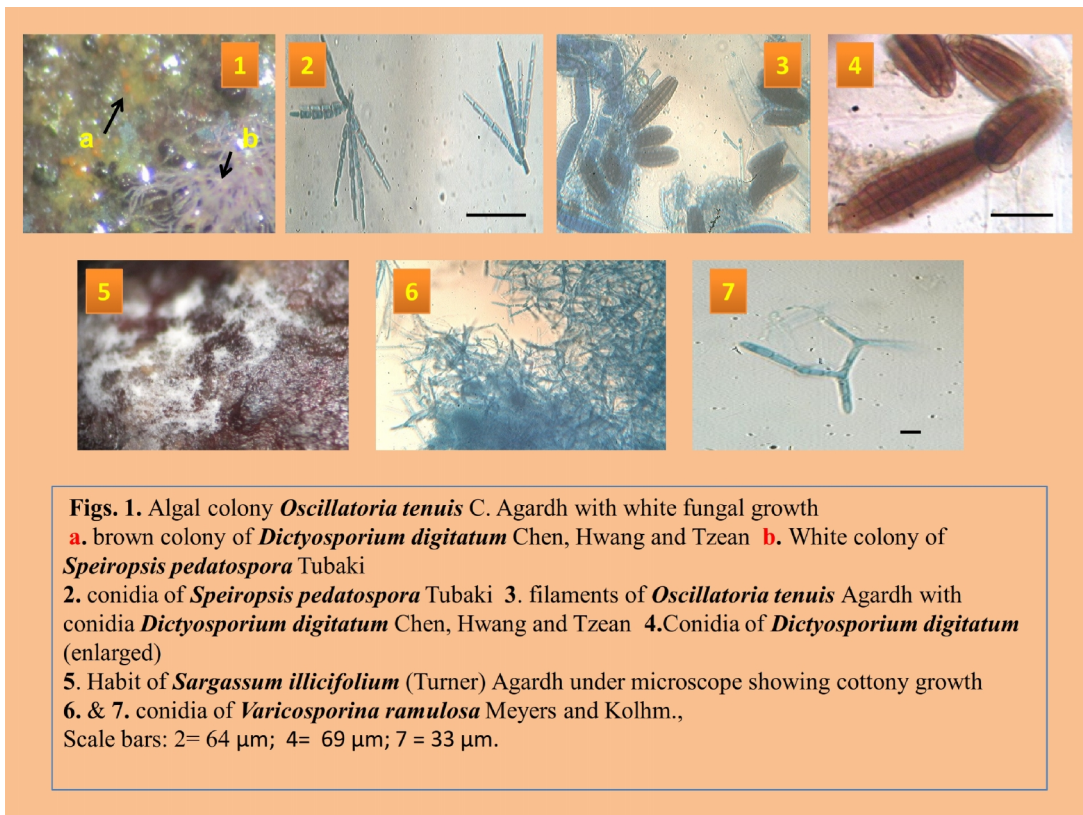
Colonies whitish to greyish, irregular, scattered on the thallus of *Sargassum*; mycelium branched, hyaline septate; conidiophores rarely branched, multiseptate 10- 22 μm long; conidia hyaline, multiguttulate, branched; main axis

slightly curved 27-40 x 2-4 μm at base and 2-5 μm at apex, first side branch 27 - 40 x 2-5 μm , 1-3 septate, second side branch 20-34 x 4-5 μm , rarely third side branch present. Telomorph not seen. Cultured but failed to grow on Malt Extract Agar medium.

Habitat: Collected on living algal plants *Sargassum illicifolium* (Turner) Agardh from sea coast of Vijaydurgh, Dist. Ratanagiri, (M.S.) India. 15th Aug. 2012. Leg. V. S. Shinde and deposited in M.H.B.D.Y.C.I.S. Satara No.: 3

CONCLUSIONS

In the present study two fungi, viz. *Speiopsis pedatospora* Tubaki and *Dictyosporium digitatum* Chen, Hwang and Tzean, were collected from *Oscillatoria tenuis* Agardh and *Varicosporina ramulosa* Meyers and Kolhmeyer was collected on *Sargassum illicifolium* (Turner) Agardh. All these fungi have been reported for the first time on algae from India. The species *Dictyosporium digitatum* Chen, Hwang and Tzean and *Varicosporina ramulosa* Meyers and Kolhmeyer have been reported for the first time



from India. And thus, these two are new additions to the fungal biodiversity of India. While *Oscillatoria tenuis* Agardh a new record for *Speiroopsis pedatospora* Tubaki.

Blue-green algae are treated as bio-fertilizers since long days. *Oscillatoria* is used as fertilizers to rice fields. Soil erosion is also reduced by this alga.

Sargassum illicifolium (Turner) Agardh alga mainly used in manufacture of various goitre medicines due to their high iodine content. It is known to be rich in dietary fiber and essential minerals such as calcium, iron and magnesium. *Sargassum* called "gulfweed," especially in the Southern United States and Japan.

Filamentous fungi can colonize a variety of marine algae, but brown and red sea weeds hold the greatest range. So as per the food security is concerned there is need to control of fungal growth in *Sargassum* samples. While *oscillatoria* is a BGA increasing fertility of soil in rice field.

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