

***Vamsapriya indica* gen. et sp. nov.,
a bambusicolous, synnematosus fungus from India**

PUJA GAWAS* & DARBHE JAYARAMA BHAT**

pujabg@yahoo.co.in*; *bhatdj@rediffmail.com*

Department of Botany, Goa University

Goa-403 206, India

Abstract—*Vamsapriya indica* gen. et sp. nov. is reported from decaying culms of bamboo, *Bambusa arundinacea* (*Gramineae* or *Poaceae*), collected at Yellapur, Uttara Kannada, Karnataka, India. The fungus is unique in producing catenate, phragmosporous conidia on synnematosus conidiophores with non-clatrized, monotretic conidiogenous cells. The novel genus is described and illustrated, and compared with two closely resembling genera, *Didymobotryum* and *Podosporium*.

Key words—conidial fungi, tropical biodiversity, hyphomycetes, taxonomy

Introduction

Fungi occurring on monocot plants are fairly well documented (Ju & Rogers 1994; Fröhlich & Hyde 1999; Hyde & Alias 2000; Yanna et al. 2001). Among them, bambusicolous fungi have been well-studied (Petrini et al. 1989; Eriksson & Yue 1990; Hyde et al. 2002a) with a special interest on the pathogens (Samajpati 1984; Johnson 1985; Deka et al. 1990) and saprobes (Hyde et al. 2001; Zhou & Hyde 2002; Hyde et al. 2002b). Presently, more than 110 bambusicolous fungi have been recorded (Shenoy et al. 2005a).

During the course of studies on fungal diversity of Western Ghat forests (e.g. Pratibha et al. 2005; Shenoy et al. 2005b), we came across a unique, dematiaceous, synnematosus hyphomycetous fungus on decaying culms of bamboo, *Bambusa arundinacea* (Retz.) Willd. (*Gramineae* or *Poaceae*). On careful examination, we observed a combination of morphological characters of the genera *Didymobotryum* Sacc. and *Podosporium* Schwein. Both *Didymobotryum*, lectotypified by *D. rigidum* (Berk. & Broome) Sacc. and *Podosporium* lectotypified by *P. rigidum* Schwein. are characterized by large synnemata with a stipe and apical head, branched conidiophores, monotretic conidiogenous cells and acrogenous conidia. However, the conidia of *Didymobotryum* are catenate and 1-septate whereas those of *Podosporium* are solitary and phragmosporous (Ellis 1971). The unique combination of catenate, phragmosporous conidia in a single fungus, with the other features of both *Didymobotryum* and *Podosporium* warrants placement of the bambusicolous fungus in a new species and a new genus. *Vamsapriya indica* gen. et sp. nov. is described and illustrated in this paper.

Taxonomic Description

Vamsapriya Gawas & Bhat anam. gen. nov.

Ad fungos conidiales, hyphomycetes. Coloniae effusae, atro brunneae vel nigra. Mycelium substrato immersum, ex hyphis subhyalinis, septatis, ramosus, laevis. Conidiophora macronematica, synnemata, atrobrunnea, laevia, septata, ramosa, laxis apicem. Synnemata erecta, atro brunnea. Cellulae conidiogenae monotreticae, nunquam cicatricem, integratae vel discretiae, terminaliae, clavatae. Conidia sicca, catenulata, acrogenosa, brunnea, cylindrica, vermiformata, rotundata ad duo extremitas, phragmoseptata, angustus ad septa, acropetalibus.

Etymology: In Sanskrit Vamsa- bamboo; priya- loving.

Conidial fungi, hyphomycetes. Colonies effuse, dark brown to black. Mycelium immersed, composed of subhyaline, septate, branched, smooth hyphae. Conidiophores distinct, macronematous, synnematos, dark brown, smooth, septate, branched, wider at the apex. Synnemata erect, dark brown, composed of compact parallel conidiophores, fertile in the upper half. Conidiogenous cells monotretic, non-cicatrized, integrated or discrete, terminal, clavate. Conidia dry, catenate, acrogenous, brown, cylindrical, vermiform, phragmoseptate, constricted at the septa, developing in acropetal chains.

Type species: *V. indica*.

Vamsapriya indica Gawas & Bhat sp. nov.

Fig. 1-12

Ad fungos conidiales, hyphomycetes. Coloniae effusae, atrobrunneae vel nigra. Mycelium substrato immersum, ex hyphis subhyalinis, septatis, tremes, laevis, 2.5-3.5 µm latis. Conidiophora macronematica, synnemata, atrobrunnea, laevia, septata, tremes, laxis, apicem, 3-4.5 µm lata. Synnemata erecta, rigidis, atro brunnea, 700- 870 µm longa, 80-90 µm lat. ad pessum, 28-42 µm lat. ad medius, 110-150 µm lat. ad apicem fertilis ora. Cellulae conidiogenae monotreticae, nunquam cicatricem, integratae vel discretiae, terminaliae, clavatae, leviter curvatae extrinsecus, 4-12 x 2-4.5 µm. Conidia sicca, catenulata, acrogenosa, brunnea, laevia, simplicia, cylindrica, vermiformata, 2-12-septata, 10-80 x 4-6 µm, angustus ad septa, acropetalibus; conidia terminalia teres ad apicem, leviter truncata ad pessum; conidia alia leviter truncata ad duo extremitas.

Holotype: On dead and decaying bamboo twigs, Yellapur, Uttara Kannada, Karnataka, India, coll. Puja Gawas, 27/9/2005, Herb. No. IMI 393674.

Fungus hyphomycete. Colonies effuse, dark brown to black. Mycelium immersed, composed of subhyaline, septate, branched, smooth hyphae, 2.5-3.5 µm wide. Conidiophores macronematous, synnematos, dark brown, smooth, septate, branched, wider at the apex, 3-4.5 µm wide. Synnemata erect, rigid, dark brown, composed of compact parallel conidiophores, 700-870 µm long, up to 80-90 µm wide at the base, 28-42 µm wide in the middle, up to 110-150 µm wide at the apical fertile region. Conidiogenous cells monotretic, non-cicatrized, integrated or discrete, terminal, clavate, slightly curved towards the exterior, 4-12 x 2-4.5 µm. Conidia dry, catenate, acrogenous, brown, smooth, simple, cylindrical, vermiform, 2-12-septate, constricted at the septa, 10-80 x 4-6 µm, developing in acropetal chains; terminal conidia rounded at the apex, slightly truncate at the base; other conidia slightly truncate at both ends.

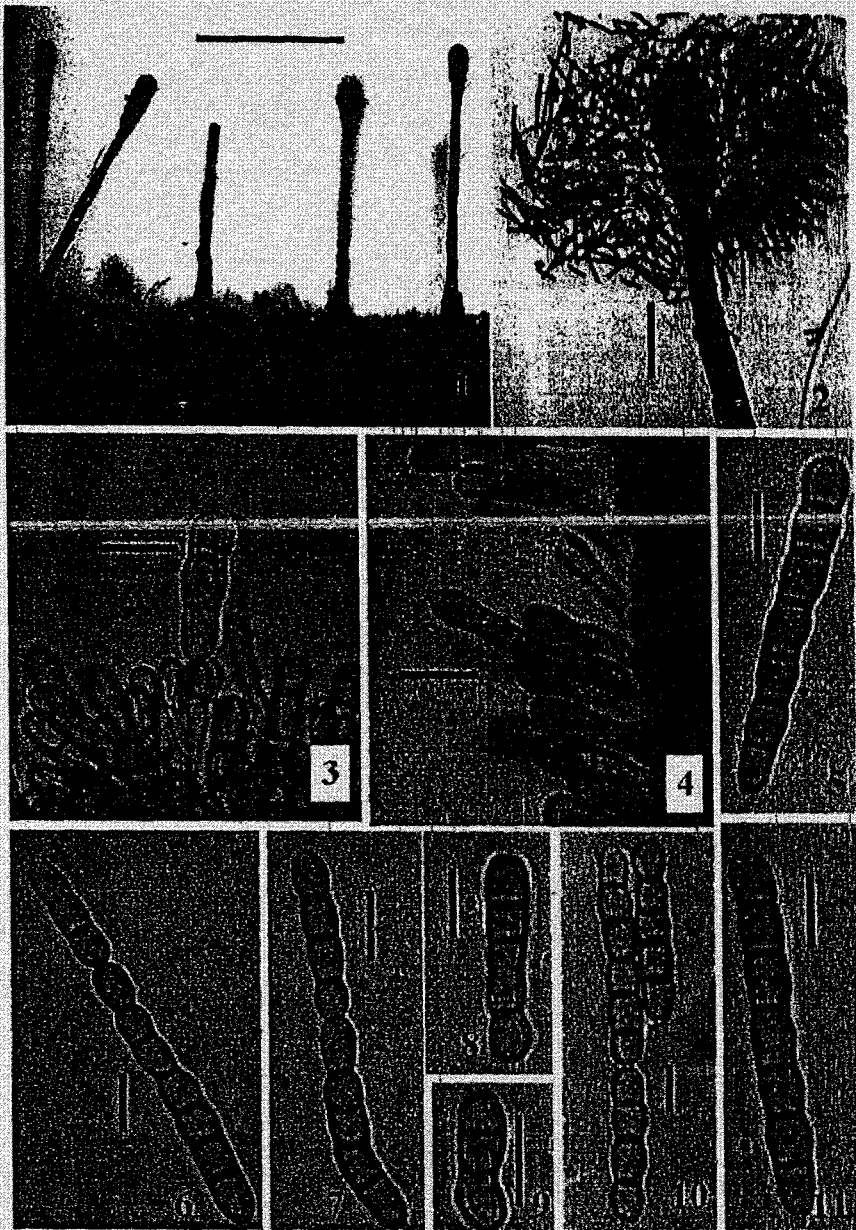


Fig. 1-11. *Vamsapriya indica*. 1. Stereomicroscopic image of the synnemata (bar = 0.5 cm), 2. Fertile apical zone (bar = 200 μ m), 3,4. Conidiogenous cells showing monotretic conidiogenesis (bars = 10 μ m), 5-11. Morphological variation in conidial size and display of catenate nature of the conidia (bars = 10 μ m)

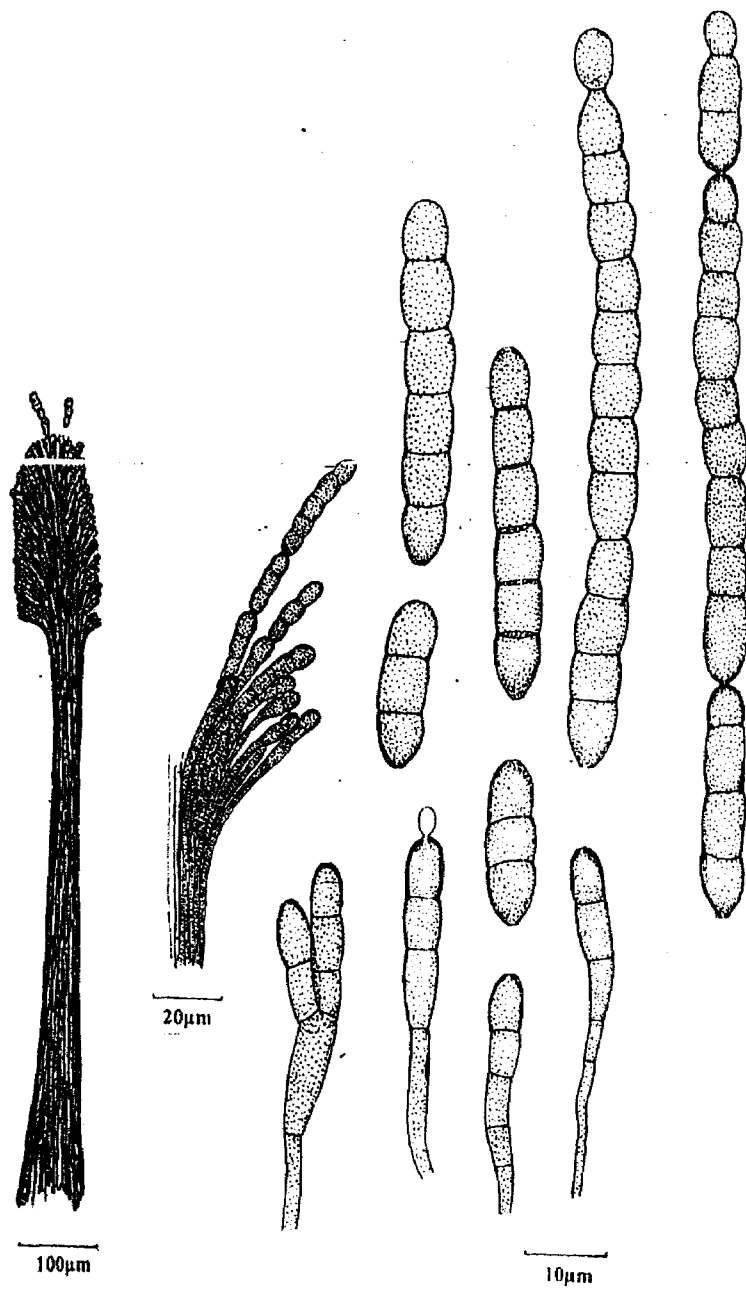


Fig. 12. *Vamsapriya indica*. Synnemata, conidiogenous cells and conidia

Discussion

Vamsapriya is morphologically similar to *Didymobotryum* and *Podosporium*. All three genera have brown to black rigid synnemata with compactly arranged brown conidiophores, monotretic, integrated, clavate to cylindrical conidiogenous cells bearing dry, acrogenous, simple conidia. *Didymobotryum* differs from *Podosporium* in having catenate, ellipsoidal-cylindrical, 1-septate conidia. *Podosporium*, in contrast, has solitary, obclavate, multiseptate conidia (Ellis, 1971). *Vamsapriya* exhibits a combination of morphological characters of both these genera, bearing catenate, cylindrical to vermiform, multiseptate (phragmosporous) conidia. The catenate conidia do not support disposition of *Vamsapriya* in *Podosporium* and their phragmosporous character makes it difficult to accommodate in *Didymobotryum*.

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Literature cited

- Deka PC, Baruah G, Devi M. 1990. A preliminary investigation of disease of bamboo in northeast region of India. *Indian Forester* 116: 714-716.
- Ellis MB. 1971. Dematiaceous Hyphomycetes. Commonwealth Mycological Institute, Kew, Surrey, UK.
- Eriksson OË, Yue Jz. 1990. Notes on bambusicolous pyrenomycetes. *Mycotaxon* 38: 201-220.
- Fröhlich J, Hyde KD. 1999. Biodiversity of palm fungi in the tropics: are global fungal diversity estimates realistic? *Biodivers. Conserv.* 8: 977-1004.
- Hyde KD, Alias SA. 2000. Biodiversity and distribution of fungi associated with decomposing *Nypa fruticans*. *Biodivers. Conserv.* 9: 393-402.
- Hyde KD, Ho WH, McKenzie EHC, Dalisay T. 2001. Saprobic fungi on bamboo culms. *Fungal Divers.* 7: 35-48.
- Hyde KD, Zhou D, Dalisay T. 2002a. Bambusicolous fungi: A review. *Fungal Divers.* 9: 1-14.
- Hyde KD, Zhou D, McKenzie EHC, Ho WH, Dalisay T. 2002b. Vertical distribution of saprobic fungi on bamboo culms. *Fungal Divers.* 11: 109-118.
- Johnson GI. 1985. Rust (*Dasturella divina*) of *Bambusa* spp. in Australia. *Australas. Plant Pathol.* 14: 54-55.
- Ju YM, Rogers JD. 1994. *Kretzschmariella culmorum* (Cooke) comb. nov. and notes on some other monocot-inhabiting xylariaceous fungi. *Mycotaxon* 51: 241-255.
- Petrini O, Candoussau F, Petrini LE. 1989. Bambusicolous fungi collected in southwestern France 1982-1989. *Mycol. Helv.* 3: 263-279.
- Pratibha SJ, Puja G, Shenoy BD, Hyde KD, Bhat DJ. 2005a. *Chalara indica* sp. nov. and *Sorocybe indicus* sp. nov. from India. *Cryptogamie Mycol.* 26: 97-103.
- Samajpati N. 1984. Decay and chemical changes in the wood of *Bambusa arundinacea* caused by *Daedalea flavida*. *Phytopathol. Z.* 110: 203-206.

- Shenoy BD, Jeewon R, Hyde KD. 2005a. *Oxydothis bambusicola*, a new ascomycete with a huge - subapical ascus ring found on bamboo in Hong Kong. *Nova Hedwigia* 80: 511-518.
- Shenoy BD, Vijaykrishna D, Cai L, Jeewon R, Bhat DJ, Hyde KD. 2005b. *Pseudohalocinctia miscanthicola* sp. nov. and three interesting fungi from tropics. *Cryptogamie Mycol.* 26: 123-132.
- Yanna, Ho WH, Hyde KD. 2001. Fungal communities on decaying palm fronds in Australia, Brunei and Hong Kong. *Mycol. Res.* 105: 1458-1471.
- Zhou D, Hyde KD. 2002. Fungal succession on bamboo in Hong Kong. *Fungal Divers.* 10: 213-227.