
Merismella – A new generic record for India

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A new anamorphic dematiaceous hyphomycete genus characterized by superficial, olivaceous brown to dark brown pycnothyria, having thin, septate or aseptate setae arising from basal cells. Conidia long, many celled, hyaline, breaking up into 1-celled fragment. The taxon was identified as *Merismella*, which is a new addition to Fungi of India at generic level. *Merismella indiae* was found to be a new species.

Key words : *Merismella*, pycnothyria, *Rauwolfia serpentina*, sooty mould

INTRODUCTION

Survey of microfungi (2006-2007) colonizing various medicinal plants from some localities and forest areas of Jabalpur resulted in the discovery of one novel dematiaceous hypomycetes from India. On microscopic examination, however, it is found to be with entirely different fungal identity, which is described and illustrated as *Merismella* (Fungi, Dueteromycotina, Coelomycetes, Pycnothyriales, *Merismella*). *Merismella* Syd. is the anamorphic form of flyspeck fungus *Chaetothyrium* Speg. (Farr, 1986).

The genus *Merismella* has been established by Sydow (1927) with *M. concinna* as its type species. Previously there is no record of this genus from India (Bilgrami *et al.*, 1991; Jamaluddin *et al.*, 2001) although its telomorphic stage *Chaetothyrium* spp. Speg. has been reported from India. There are certain reports of distribution of the genus in Africa, Uganda and Panama (Hofmann and Piepenbring, 2006). *M. concinna* Sydow ; *M. oligomera* Sydow ; *M. gracilentia* Sydow; *M. proxima* Sydow and *M. amazonensis* Farr are the only five species of *Merismella* which are reported from the world. Detail investigations of present species of *Merismella* segregate it from earlier reported species of the genus.

MATERIAL AND METHODS

During routine survey of foliicolous fungi from forests

of Central India, authors came across a fungus causing Sooty mold disease of *Rauwolfia serpentina* Benth. (Apocynaceae). The fungus superficially associated with host was mounted on a glass slide by colloidion technique. When a drop of colloidion solution was applied to the colonies of such organisms on a leaf, the fungus got entirely embedded and the dried film was peeled off readily from the host surface. Removal of the colloidion by acetone on a glass slide resulted in undisturbed preparations (Hughes, 1976).

RESULTS AND DISCUSSION

The genus is characterized by the following features.

Mycelium effuse, epiphyllous, reticulate, delicate, consisting of hyaline hyphae. Setae thin rigid, dark to light, straight or curved pointed, septate or aseptate arising from basal cells. Pycnothyria superficial, olivaceous brown to dark brown. Conidiophores basal, cylindrical, septate. Fertile hyphae (Fruchthyphen) or conidia long, slender, cylindrical to filliform, many celled, hyaline, breaking up into 1-celled fragments.

***Merismella indiae* sp. nov. Dubey and Pandey (Fig. 1-9)**

Fungus epiphyllus; Mycelium effusum, reticulatum, delicatus, constans ex hyalo hyphae minus quam 2 µm crassus; setae annulatus, rectus an arcuatus an helicoidens, fuscus excipio pallidus brunneus apex,

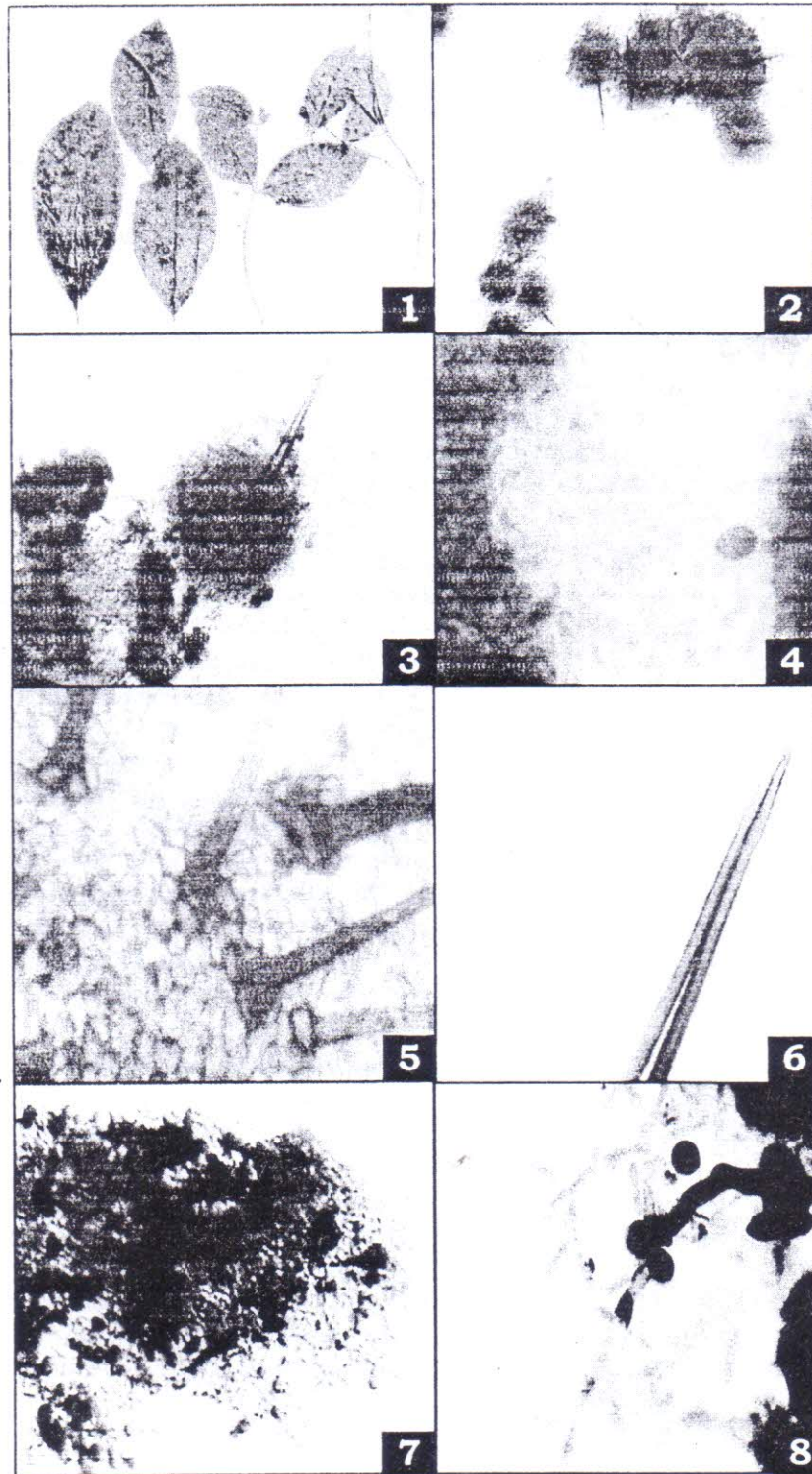


Fig.1-8. *Merismella indiae* sp. nov., 1 Sooty mold leaves of *Rauwolfia serpentina*, 2. Pycnothyria with setae (X40), 3. Two setae from same basal cell (X40), 4. Scutellum (X400), 5. Basal cell of setae (X400), 6. Aseptate setae (X400), 7. Branched Conidia (X100), 8 Conidial segments (X400), (Brown spores and hyphae are extragenous).

Table 1 : Comparative account of *Merismella indiae* sp. nov. with related species

Fungal Characteristics	<i>M. concinna</i>	<i>M. oligomera</i>	<i>M. gracilentia</i>	<i>M. proxima</i>	<i>M. amazonensis</i>	<i>M. indiae</i> sp. nov.
Setae	100-500 µm long, 7-12 µm (base) 3-7 µm (apex) wide, indistinctly septate, base conic, 40-50 µm diameter, 20 µm high.	150-300 µm long, 5-8 µm (base), 2.5-3 µm (apex) wide, indistinctly septate, base flat conic radiate to meandriform.	250--300 µm long, 7-8 µm (base) 2.5-3 µm (apex) wide, septate, base very wide, flat conic, small celled.	300-350 µm long, 10 µm (base) 4-5 µm (apex) wide, indistinctly, septate, base convex, roundish, 20-30 diam.	160-320 µm long, 6-8 µm (base) 2 µm (apex) wide aseptate, base lobed, 14-24 diam., 12-14 high.	55-240 µm long (mostly 120-200 µm), 6-9 µm (base) 2 µm wide, aseptate, base flat conic 18-20 µm diam., 10 µm high, sometimes two setae may arise from same basal cell.
Pycnothyrium	200 - 400 µm.	200 - 400 µm	300 - 400 µm.	350 - 650 µm.	184 - 264 µm.	66 - 176 µm.
Conidiophores	6-9 x 2.5-3 µm.	5-9 x 1.5-2 µm.	5-8 x 2-3 µm.	5 x 2 µm.	4-6 x 2 µm.	4-7 x 2.5 µm.
Conidia (Fertile hyphae)	50-130 µm long, Segments 7-13 x 2-2.7 µm.	18-27 µm long, segments 5-10 x 1-2 µm.	60-80 µm long segments 8-20 x 1.5-2 µm.	70 µm long, segments 5-10 x 1.5-2 µm	48-69 µm, segments 4-12 x 1-2 µm.	50-60 µm long, primary and secondary segments observed, segmenta 8-10 x 1.5-2 µm.

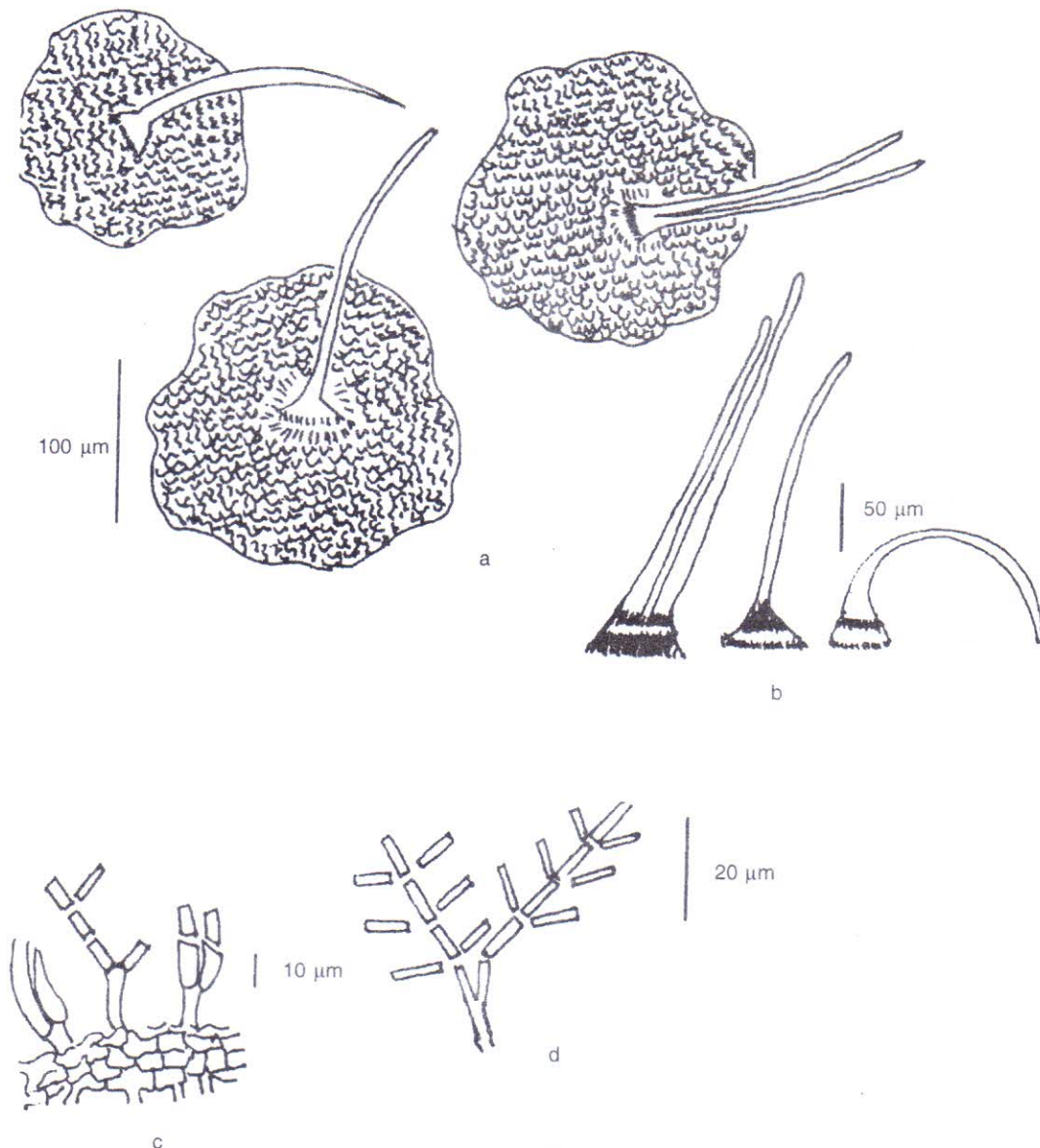


Fig. 9. Camera Lucida Drawing a, conidiomata; b, setae; c, conidiogenous cell d, conidia

aseptatus 55-240 μm (fere 120-220 μm) longus, 6-9 μm crassus ad basis, gradation attenuatus at 2 μm an minus a fere obtusus apex, projectus ex prominens, brunns, planus conicus ac latus ad, per 18-20 μm ac 10 μm altus basis cella, aliquando duo setae profectus ex uni basis cella; pycnothyrii superficialis, scutatus, astomus, pallens olivaceus brunns, 66-176 μm in diameter. Scutellum exilis texura "epidermoidea" cum pelliculosus mergo; conidiophorii cylindricus, 4-7 μm longus, consisto de 1-2 cellae ad per 2.5 μm crassus; fertilis hyphae at conidii 50-60 μm longus, hyalo profectus rectum de basis hypha at conidioma at 2 primo ramosus ex secundarius ramose, 3-6 septa ominis conidicus

ramasus, non colligo at septa, frustulalus, segmentum 8-10 x 1.5 μm . Nullus perfectus status observabilis.

Fungus epiphyllous; Mycelium effuse, reticulate, delicate, consisting of hyaline hyphae less than 2 μ thick; setae rigid, straight or curved or helical, dark brown except for the pale brownish apex, aseptate 55-240 μm (mostly 120-220 μm) long, 6-9 μm thick at base, gradually tapering to 2 μm or less at the nearly blunt apex, arising from a prominent, brown, flat conic and wide up to 18-20 μm and 10 μm high basal cell, sometimes two setae may arise from same basal cell; pycnothyria

superficial, scutate, astomous, light olivaceous brown, 66-176 μ in diameter, scutellum thin of textura epidermoidea with pelliculose margin; conidiophores (Konidientrager) cylindrical, 4-7 μ long, consisting of 1-2 cells up to 2.5 μ thick; conidia or fertile hyphae (fruchthyphen) 50-60 μ . um long, hyaline, arising directly from basal hyphae of the conidioma with at least 2 primary subdivided branches which later on produced secondary branches (segments), 3-6 septa per conidial branch, not constricted at the septa, fragmentation observed, segment 8-10 x 1.5-2 μ m. No telomorphic stage observed.

Etymology : Species epithet was given on the name of the country, as it is reported for first time from India.

Specimen examined : Infected leaves of *Rauwolfia serpentina* Benth. (Apocynaceae) Bargi Forest, Jabalpur (M.P.); December 2007, HClO No. 48114 (Holotype), HDBJ # 05 (Isotype), Leg R.Dubey.

The present species does not matched in most of the morphological characteristics with the earlier known species of *Merismella* (Table 1). Although it resembles with *M. amazonensis* Farr (1986), in few minor character but differs significantly from it in other characters, viz. size of setae and pycnothyria

and presence of secondary segments of conidia (Table 1). Therefore it was considered valid to consider it as a new species namely *Merismella indiae* sp. nov. Thus, it constitutes generic record for Fungi of India, besides a new species to the science.

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REFERENCES

- Bilgrami, K. S., Jamaluddin and Rizwi, M.A. 1991. *The Fungi of India*. Part III (List and References). Today and Tomorrow's Printer and Publishers, New Delhi, pp.798.
- Farr, M.L. 1986 Amazonian foliicolous Fungi II Deuteromycotina. *Mycologia* **78**(2): 269-286.
- Hofmann, A. and Piepenbring, M. 2006. New Records and Host Plants of flyspeck fungi from Panama. *Fungal Diversity* **22**: 55-70.
- Hughes, S.J. 1976. Sooty Mould. *Mycologia* **68**: 693-820.
- Jamaluddin, Goswami, M. G. and Ojha, B. M. 2004. *Fungi of India*. 1989-2001, Jodhpur, Scientific publishers- VII. 326pp.
- Sydow, H. 1927. Fungi in itinere costaricensi collecti. *Ann. Mycol.* **25**:1-160.

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