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***Manoharachariella indica* sp. nov. from the Western Ghats, India**

KUNHIRAMAN C. RAJESHKUMAR¹ & SANJAY K. SINGH²

National Facility for Culture Collection of Fungi,

MACS' Agharkar Research Institute, G.G. Agarkar Road, Pune, India

CORRESPONDENCE TO: ¹rajeshfungi@gmail.com & ²singhksingh@gmail.com

ABSTRACT — *Manoharachariella indica* is described as a new species from India, differing from *M. lignicola*, the only other described species of the genus, by larger conidia, longer conidiophores, and additional conidiophore septa.

KEY WORDS — anamorphic fungi, dematiaceous hyphomycete, Tamhini Ghats, Maharashtra

Introduction

The Western Ghats, one of the world's most diverse 'biodiversity hot spots', is unique and diverse for its fungal wealth. Studies on microfungi and exploration of fungal diversity from different microhabitats in the Western Ghats are routinely conducted by the National Fungal Culture Collection of India (NFCCI) (Rajeshkumar et al. 2010, 2011a, b; Singh et al. 2009, 2010). During a September 2011 expedition to explore microfungal diversity in the Mulshi and adjoining areas we discovered a dematiaceous hyphomycete on a dead twig from the bamboo dominating the evergreen patch in the valley of the Tamhini Ghats.

Bagyanarayana et al. (2009) recently established *Manoharachariella* for *M. lignicola* Bagyan. et al. from litter in Andhra Pradesh, India. Monoblastic integrated conidiogenous cells that produce solitary doliiform obpyriform dictyoseptate apiculate conidia characterize this dematiaceous hyphomycete genus. We describe a second species in this genus.

Materials and methods

ISOLATES AND MORPHOLOGY — Conidia were isolated directly from the surface of a dead twig and observed under a Nikon binocular stereomicroscope (Model SMZ-1500 with Digi-CAM, Japan). Single conidial cultures were established on 2% potato dextrose agar plates (PDA; Crous et al. 2009). For morphotaxonomic studies and photomicrographs, Zeiss (AXIO Imager 2, Germany) and Olympus (Model CX-41,

Japan) microscopes were used. Conidia and conidiophores were mounted in lactic acid cotton blue and measured using an ocular micrometer (and confirmed with software available with the Zeiss microscope), with 30 observations per structure. Culture colony characteristics were studied on two different media: 2% malt extract agar (MEA) and PDA (Crous et al. 2009). Herbarium specimens are deposited in the Ajrekar Mycological Herbarium (AMH), and the culture NFCCI 2630 was accessioned and preserved at NFCCI; WDCM-932, Agharkar Research Institute, Pune, India.

Taxonomy

Manoharachariella indica Rajeshkumar & S.K. Singh, sp. nov. PLATES 1–3

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Differs from *Manoharachariella lignicola* by larger conidia, longer conidiophores, and additional conidiophore septa.

TYPE: India, Maharashtra, Tamhini Ghats, on dead twigs, September 2011, K.C. Rajeshkumar (Holotype, AMH 9438; ex-type culture NFCCI 2630).

ETYMOLOGY: *indica*, referring to the country where this fungus is native.

Colonies effuse, thin, mid to dark brown or blackish brown, mycelium superficial or semi immersed or immersed, hyphae pale to dark brown, smooth, 4–6 μm . Stroma none. Setae and hypopodia absent. Conidiophores macronematous, mononematous, straight or flexuous, sparingly branched, arising laterally and apically from the immersed mycelium, 5–15-septate, smooth, pale to dark brown 76–276 \times 6–10.8 μm . Conidiogenous cells monoblastic, integrated, terminal or

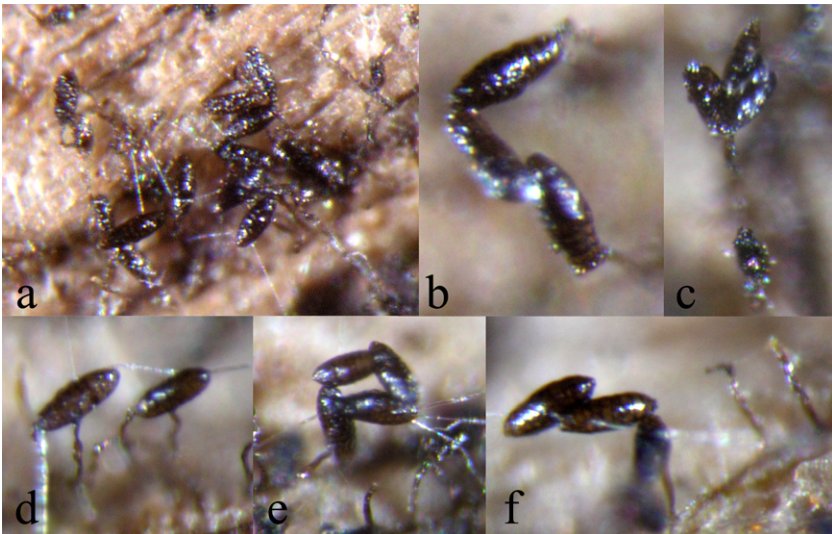


FIG. 1. *Manoharachariella indica* (holotype): a. Habit. b. Sticky conidia in false chain. c. Terminal and lateral conidiogenesis. d–f. Conidiophores and conidia in nature.

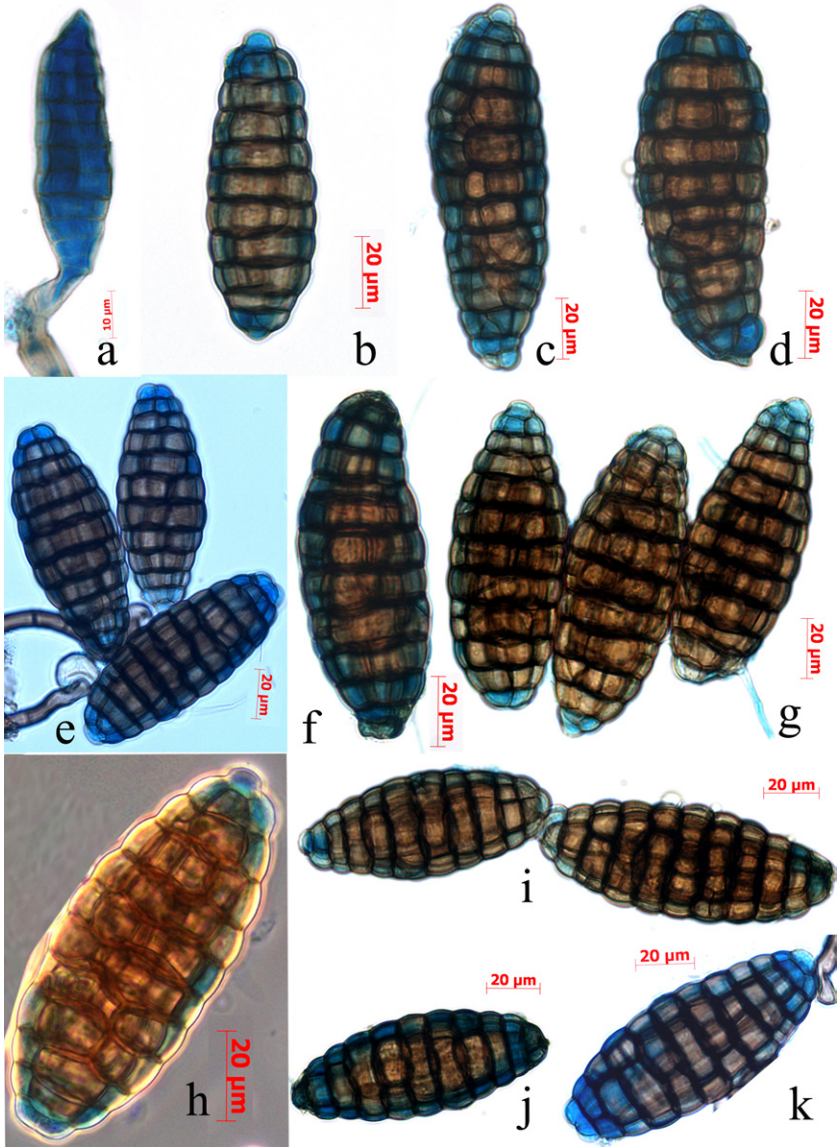


FIG. 2. *Manoharachiella indica* (holotype): a. Conidial development. b–c. Apiculate conidia. d, f–g, j–k. Variation in conidial size and shape. e. Conidia with conidiophores. h. Conidia under phase contrast view. i. Sticky conidia in false chain.

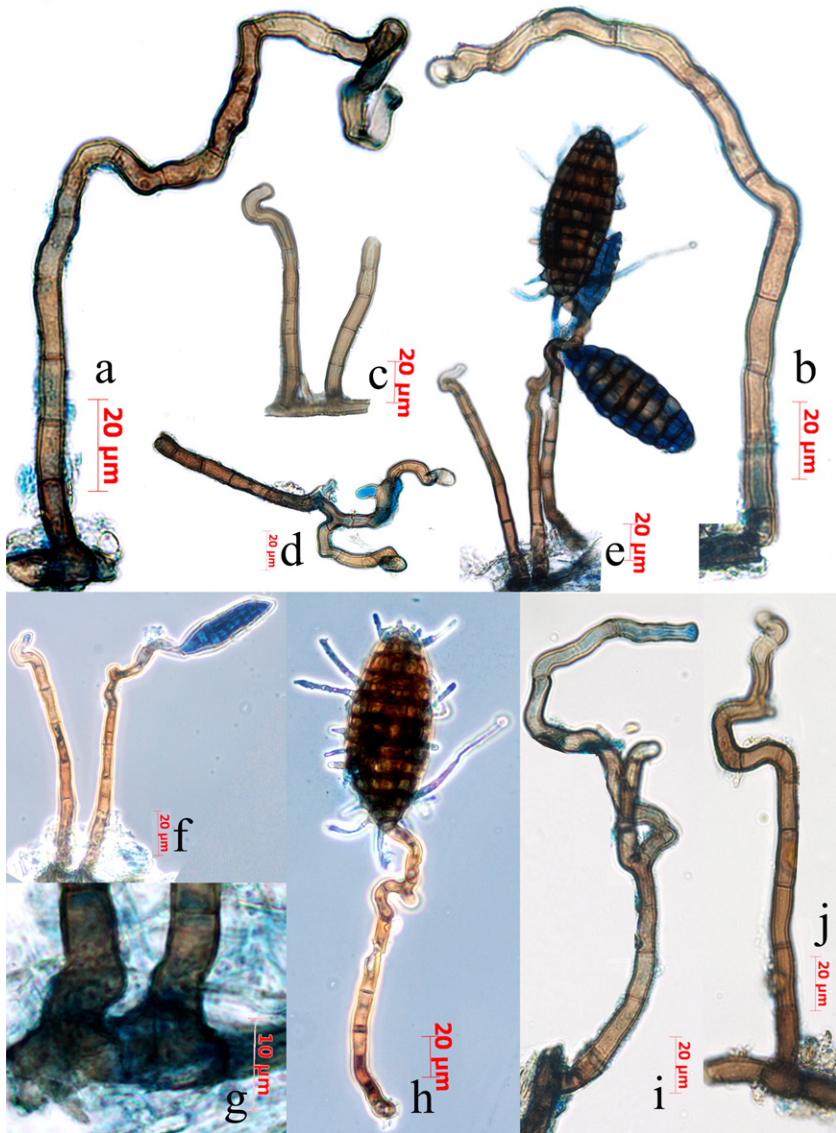


FIG. 3. *Manoharachariella indica* (holotype): a–b. Mature conidiophores. c. Young conidiophores. d. Hyphal branching and initiation of conidiophores in nature. e. Conidiophores and attached conidia. f. Conidiophores with young conidia. g. Foot cells of conidiophores. h. Mature conidia attached with conidiophores, showing multi-polar germination. i. Branched conidiophore. j. Simple conidiophore.

intercalary, pale to mid brown, $4.4\text{--}8.6 \times 4\text{--}7.6 \mu\text{m}$. Conidia solitary, dry or sticky, acropleurogenous, simple, doliiform, obpyriform, ellipsoidal or irregular, apiculate, apiculus rounded or obtuse, smooth, dictyoseptate, longitudinally 10–13-septate, tiered, pale to dark brown or blackish brown, apical and basal tiers hyaline or subhyaline. $84\text{--}110\text{--}(120) \times 31\text{--}44 \mu\text{m}$; young conidia hyaline or subhyaline, $56 \times 17 \mu\text{m}$.

Conidia in nature are dry and/or sticky and also form false chains of 2–3 conidia. Conidial germination was observed as being multi-polar in moist chambers, but also after 12 hours of inoculation on PDA plates.

Colonies on PDA and MEA very slow growing, 1–2 mm diam after 14 days, pale brown, velutinous; reverse pale brown.

TELEOMORPH: not observed.

Discussion

The monotypic *Manoharachariella* with its type species *M. lignicola* somewhat resembles *Septosporium* Corda (especially *S. rostratum* M.B. Ellis, 1961) in having dictyoseptate beaked conidia but differs in the absence of setae, unbranched conidiophores, and percurrent conidiogenous cells. Two species of *Xenosporium* Penz. & Sacc. — *X. africanum* Piroz. (Deighton & Pirozynski 1966) and *X. boivinii* S. Hughes (Hughes 1978)— resemble *Manoharachariella* in conidial shape but differ in their monoblastic, acrogenous or acropleurogenous, obpyriform, apiculate, smooth and dictyoseptate conidia that are transversely longitudinally septate. In addition, secondary conidia are absent in *Manoharachariella* but present in *Xenosporium*. *Manoharachariella*, like *Bioconiosporium* Bat. & J.L. Bezerra (Ellis 1976), produces solitary dictyoseptate conidia but the conidia are monoblastic with single apiculus and lack the two large protuberances that are prominent in *Bioconiosporium*. Conidia in both *Monodictys* S. Hughes (Ellis 1971) and *Manoharachariella* are monoblastic, dictyoseptate, and acrogenous but those in *Manoharachariella* are apiculate and tiered. Bagyanarayana et al. (2009) noted all these differences when they established *Manoharachariella*.

Manoharachariella lignicola is differentiated from *M. indica* by its smaller ($42.5\text{--}50.5 \times 25\text{--}32 \mu\text{m}$) 7–9 transversely septate conidia and smaller conidiophores ($\leq 35 \mu\text{m} \times 3\text{--}4.5 \mu\text{m}$) with fewer (1–3) septa.

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