



Kamalomyces mahabaleshwarensis sp. nov. (Tubeufiaceae) from the Western Ghats, India

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Abstract

A new species of *Kamalomyces* was collected on an unidentified woody twig from Mahabaleshwar, situated in the northern part of Western Ghats of Maharashtra, India. The species belongs to the monotypic genus *Kamalomyces* which is represented by *K. indicus*. It can easily be differentiated from the type species of this monotypic genus by variations in the dimension of ascostroma, the spiral arrangement of ascospores in the asci, and the number of ascospore septa (upto 20). Thus *Kamalomyces mahabaleshwarensis* sp. nov. is introduced with a description and illustrations in this study.

Keywords – anamorph – Ascomycetes – bitunicate asci – Mahabaleshwar

Introduction

The Western Ghats, a mega diversity hotspot situated in the Southern west coast of the Indian Peninsula has a rich and diverse flora, fauna and mycobiota. During January 2012, surveys were conducted to explore the microfungus diversity in natural forest of Mahabaleshwar situated in the northern part of Western Ghats of Maharashtra, India, which resulted in the collection of unusual ascomycete species growing on an unidentified woody twig. This species can be placed within Tubeufiaceae. Members of the Tubeufiaceae are easily recognized and usually occur on decaying woody plant material, or fungi. The ascomata mostly form in a gregarious masses on a dark subiculum or are often covered in mycelium and are usually dark and globose, but may also be light coloured. Asci are bitunicate, cylindrical and ascospores are filiform, cylindrical to narrowly fusiform, tapering towards the rounded to sub-acute ends, trans-septate, hyaline, pale yellow or brown, and smooth-walled (Barr 1979; Boonmee et al. 2011). This new species shares diagnostic morphological characteristic of *Kamalomyces* Verma et al. *Kamalomyces* was introduced by Verma et al. (2008) from Central India with *K.indicus* as its type species. The genus is characterised by superficial, clustered to solitary, globose to subglobose, stalked ascomata forming on a subiculum of crowded black mycelium. Asci are 8-spored, saccate-clavate, pedicellate, with an ocular chamber and ascospores are fusiform to clavate, trans-septate with crowded septa and hyaline (Verma et al. 2008; Boonmee et al. 2011). The new species is distinct from *Kamalomyces indicus*. The present study describes and illustrates this new species.

Materials and methods

The fungal samples were brought to the BSI laboratory. Measurements of the asci and ascospores were made of material mounted in distilled water and material fixed in lactic acid and cotton blue Solution. Digital images were made using Digital color CCD Camera (Nikon DS Fi1) attached to a Nikon eclipse 50i microscope with interference optics. The type specimens (holotype) have been deposited in Ajrekar Mycological Herbarium, Pune (MH), India. Descriptions and nomenclatural details are deposited in MycoBank.

Results

Taxonomy

Kamalomyces mahabaleshwarensis Rashmi Dubey & Neelima **sp. nov.**
MycoBank: MB803953.

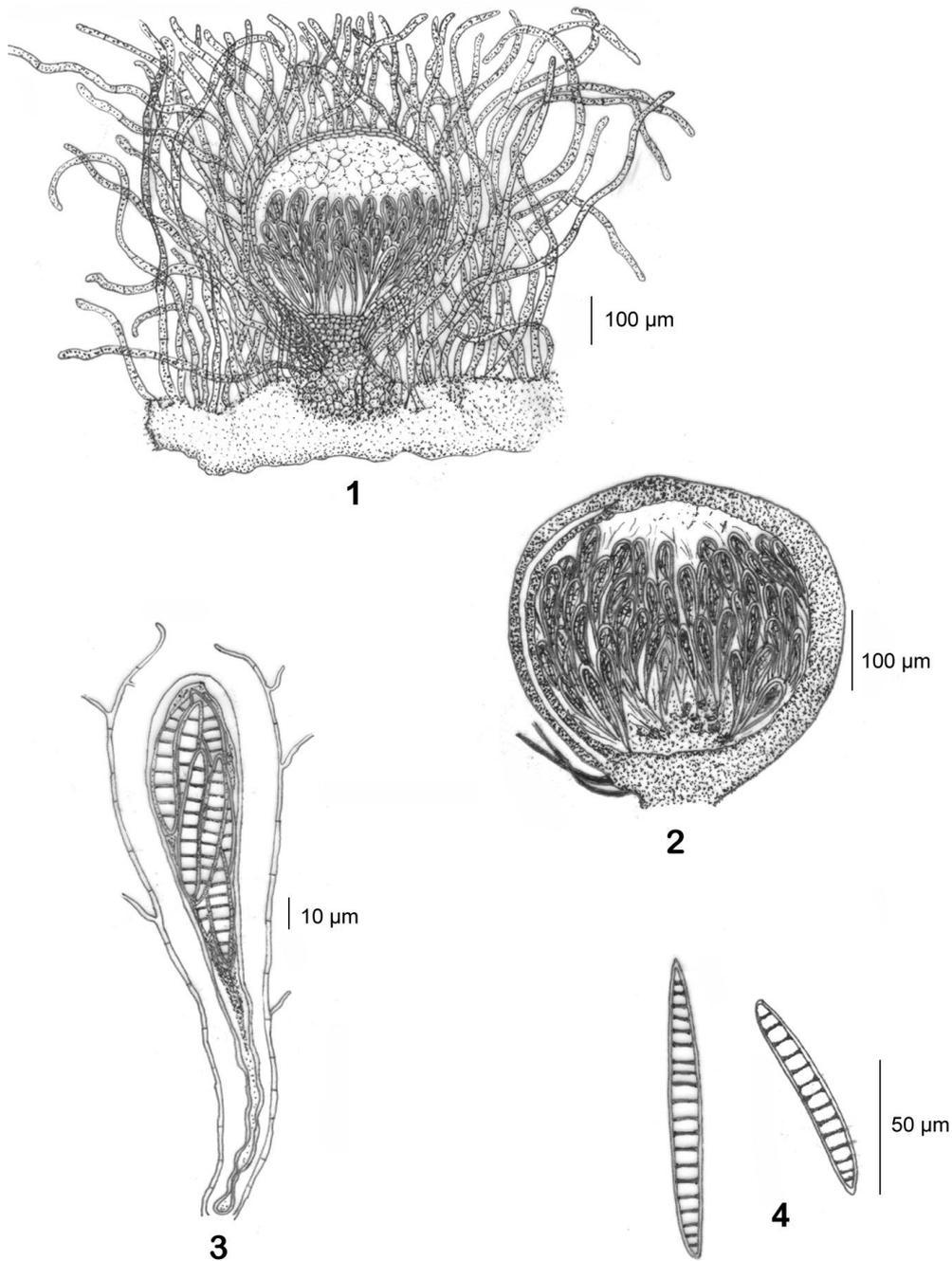
Figs 1–4

Etymology –species named after the place of collection Mahabaleshwar (collection site).

Saprobic on unidentified woody twig, appearing as blackish, floccose, superficial, velvety, irregular areas, spreading over the host stem, up to 30 mm in diameter. Ascomata 320–460 × 360–450 µm, clustered to solitary, superficial, dark brown, subglobose to globose, pedicellate, forming on a subiculum of crowded black mycelium and embedded in sterile, curly, dark brown, irregularly interwoven, 5.62–6.68 µm thick hyphae. Peridium 27.5–43.13 (35.5) µm comprising of many layers of darkened cells of *textura angularis*, dark at margin.

Table 1 Comparative account of *Kamalomyces indicus* and *Kamalomyces mahabaleshwarensis* sp.nov.

S.No.	Morphotaxonomic characters	<i>Kamalomyces indicus</i> Verma et al. 2008	<i>Kamalomyces mahabaleshwarensis</i> sp. nov.
1.	Colony on host surface	Spots black floccose, small rounded to irregular, 1–9 × 1–5mm in diam.	Spots blackish, floccose, superficial, hairy, large and irregular, spreading, 30 mm in diameter.
2.	Ascomata	Embedded in sterile, curly interwoven, 6.5–7.5 µm thick, hyphae, brown, globose – subglobose, superficial, 280–300 × 225–250 µm.	Embedded in sterile, curly, dark brown, irregularly interwoven, 5.62–6.68 µm thick hyphae, dark brown, superficial, clustered to solitary, subglobose – globose, stalked, 320–460 × 360–450 µm.
3.	Ascomatal Peridium	Peridium (14.5–) 19–28 µm thick, 3–4 layered, dull at margin.	Peridium 27.5 – 43.13 (35.5) µm thick, many layered, dark at margin
4.	Asci	Asci 100–170 × 40–50 µm, 8–spored, bitunicate, clavate, straight, thin walled, hyaline,	Asci 170–290 × 24–34µm, 8–spored, bitunicate, clavate, cylindric-clavate, thin walled, hyaline.
5.	Pseudoparaphyses	1–1.5 µm cellular, filiform, hyaline, branched.	1.5–2.0 µm, cellular, filiform, hyaline, branched.
6.	Pedicel of asci	(21–) 25–49.5(–68.5) µm long.	46.15–112µm long.
7.	Ascospores	Long, 77.5–107.5 × 8.5–10 µm, smooth, straight or slightly curved, 3–4 seriate and arranged in a parallel way in the ascus, multiseptate, septa transverse (upto 52), constricted at the septa, some spores have clitellum like swellings.	Long, 55–86 × 8.05–12 µm, smooth, straight or slightly curved, 2–3 seriate and spirally arranged in the ascus, fusiform, septa transverse (upto20), constrictions and clitellum like swelling not observed.



Figs 1–4 – *Kamalomyces mahabalesharensis* 1 Ascomata embedded in curly hairs. 2 Ascomata with ascus and ascospores. 3 Ascus having pseudoparaphyses. 4 Ascospores.

Hamathecium with 1.5–2 μm cellular, filiform, hyaline, branched pseudoparaphyses, embedded in a gelatinous matrix. Asci 170–290 × 24–34 μm, 8-spored, bitunicate, clavate to cylindric-clavate, with an ocular chamber, pedicel 465–112 μm long. Ascospores 55–86 × 8–12 μm, overlapping 2–3-seriate, fusiform-clavate, straight to slightly curved, slightly tapering towards the ends, upper part broader, with up to 20 transverse septa, hyaline, smooth walled.

Asexual state– Unknown.

Known distribution – Reported in the natural forest of Central and Western parts of India.

Material examined– India, Maharashtra, Satara, Mahabaleshwar, on unidentified submerged woody twig, 24.01.12, Rashmi Dubey (AMH 9590, **holotype**).

Discussion

This taxon appears to be typical of Tubeufiaceae as it has superficial, globose to subglobose, dark brown to black ascomata which form on a subiculum of crowded black mycelium, clavate asci and cylindrical-fusiform to elongate, trans-septate hyaline ascospores. No other genus in Tubeufiaceae has such a suite of characters and the crowded septa are particularly distinct (Boonmee et al. 2011). Genus *Kamalomyces* is presently monotypic with only one species, *K. indicus*. As highlighted in Table 1, the proposed species differs from the type species in dimensions of ascoma, asci and ascospores. The peridium of present species is many layered and is much thicker, while the peridium of type species is 3-4 layered thick and comparatively thinner. Moreover, the ascospores of the new species have only up to 20 transverse septa, while in *K. indicus* there are up to 52 septa. The ascospores of new species are spirally packed in the ascus, while they are parallel in the type species. These differences in morphotaxonomic characters show that the species is novel. Therefore, it is described as a new species.

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