

Taiwanascus samuelsii sp. nov., an addition to *Niessliaceae* from the Western Ghats, Kerala, India

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Abstract: A new species of *Taiwanascus*, *T. samuelsii*, was collected from southern parts of Western Ghats on dead branches of *Anacardium occidentale* and is described. The new cleistothecial ascomycete is different from the type and only species in *Taiwanascus*, *T. tetrasporus*, in cleistothecial size, setae, and ascospore characteristics.

Key words:
Ascomycota
Cleistothecia
Hypocreales
Stellate setae

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INTRODUCTION

The southern parts of the Western Ghats are rich and diverse in fungi due to the diverse forest ecosystem, geography, and climatic conditions. Many new microfungi were reported from this locality by mycologists at the National Fungal Culture Collection of India (NFCCI) (Rajeshkumar *et al.* 2010, 2011a, b, 2012). During early November 2011 an expedition was made to natural forests and plantations of Karadka village and adjoining areas (specifically northern Kerala) where no mycologists have ever surveyed for microfungi. During this survey, we discovered a rare specimen of *Niessliaceae* that forms cleistothecial ascomata with stellate setae.

The family *Niessliaceae* was established by Kirschstein (1939) to accommodate a group of taxa having small, dark, superficial, saprobic, setose perithecioid ascomata. Later, the new genus *Taiwanascus* (Sivanesan & Chang 1997) was described with the following characteristics: cleistothecial ascomata with aseptate setae, brown, thick-walled, straight, smooth, and more or less 2–6 times dichotomously branched at their apex with the upper branchlets possessing somewhat darkly thickened, minute denticles. Sivanesan & Chang (1997) also proposed a new family name *Taiwanascaceae* that was later synonymised with the *Niessliaceae* (Lumbsch & Huhndorf 2007). The characteristics of the only known species, *T. tetrasporus*, were consistent with those of the *Niessliaceae* (Samuels & Barr 1997).

MATERIAL AND METHODS

Cleistothecia were observed on the surface of a dead twig under a Nikon binocular stereo microscope (Model

SMZ-1500 with Digi-CAM, Japan). For morphotaxonomic studies and photomicrographs, Carl Zeiss (AXIO Imager 2, Germany) and Olympus (Model CX-41, Japan) microscopes were used. Asci and ascospores were mounted in lactic acid with cotton blue and measured using an ocular micrometer with 30 observations per structure (Crous *et al.* 2009). The measurements were also confirmed with the software available with the Carl Zeiss microscope. The material is deposited in the Ajrekar Mycological Herbarium (AMH 9575).

TAXONOMY

***Taiwanascus samuelsii* Rajeshkumar & Rossman, sp. nov.**

Mycobank MB803434
(Figs 1–2)

Etymology: *samuelsii*, named in honour of Gary G. Samuels, Mycologist (USDA-ARS, Beltsville, MD), for his scientific contribution to this fungal family.

Diagnosis: Ascospores 5.5–10.5 × 2.5–4.0 μm, ovoid, ellipsoidal to cylindrical, unlike those of *T. tetrasporus* with ascospores filiform or aculeate, 15–30 μm long, 1.0–1.5 μm thick.

Type: **India:** Kerala State: Kasaragod, Karadka, on *Anacardium occidentale*, 5 Nov. 2011, K.C. Rajeshkumar (AMH 9575 – **holotype**).

Description: Ascomata superficial, gregarious, cleistothecial 77–245 μm diam, globose to subglobose, dark brown *textura*

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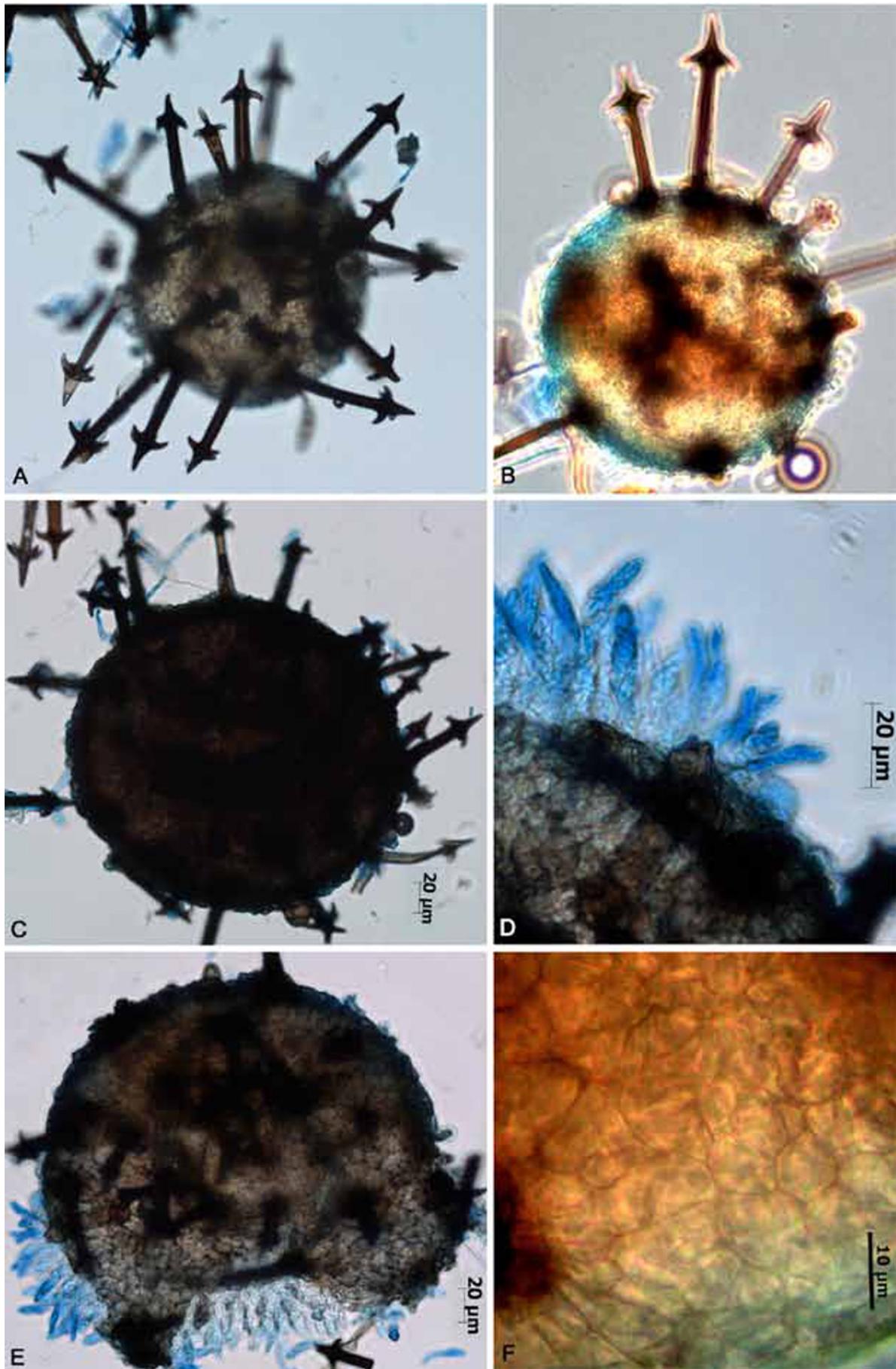


Fig. 1. *Taiwanascus samuelsii* (holotype): A–C. Ascomata with stellate setae. D, E. Asci coming out from cleistothecia. F. Textura angularis wall pattern of cleistothecia.

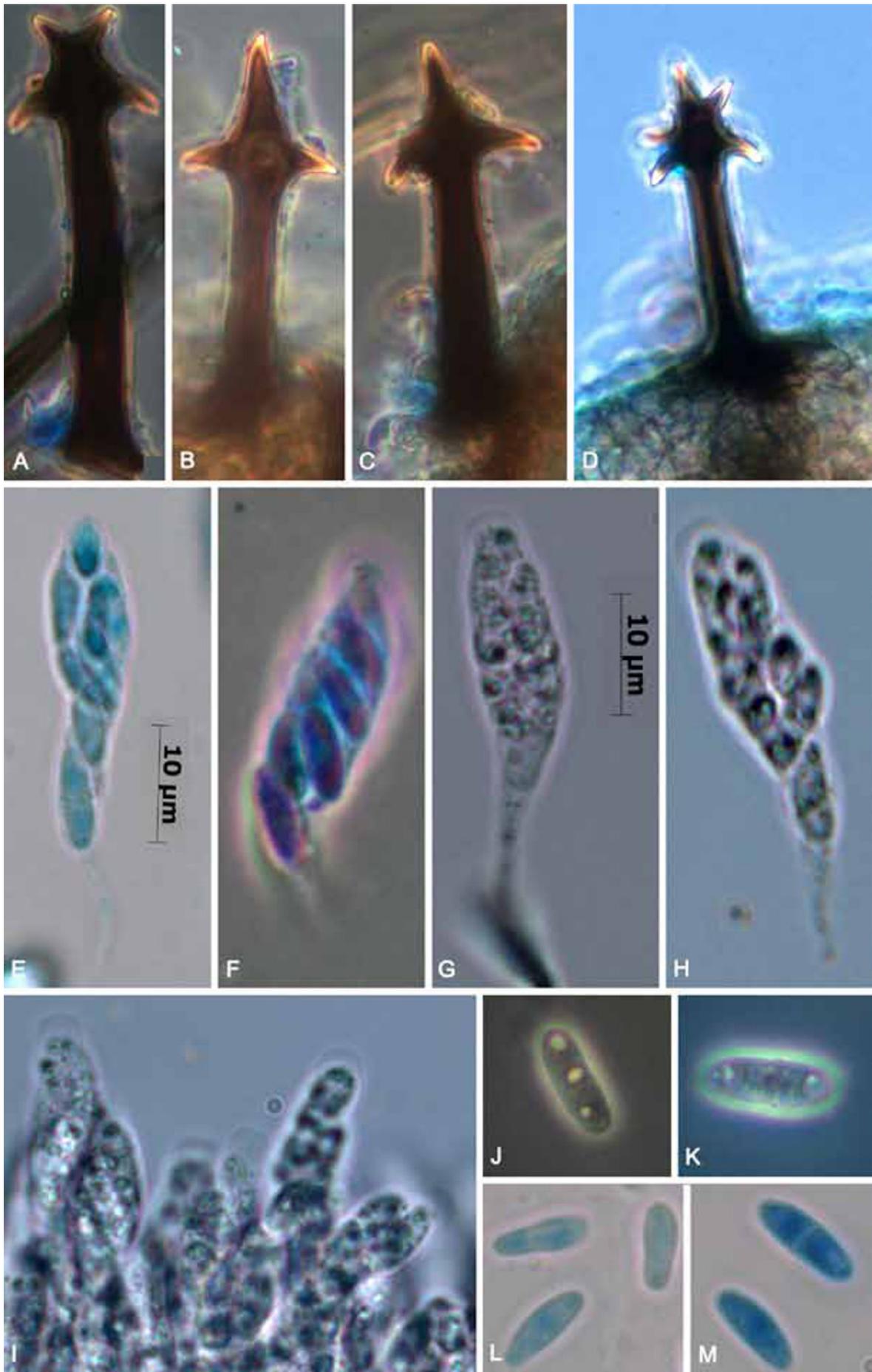


Fig. 2. *Taiwanascus samuelsii* (holotype): A–D. Ascomatal setae/appendages. E–H. Asci with ascospores. I. Asci in group. J–M. Ascospores.

angularis. Setae stellate, 80–110 × 10–25 µm, arising from entire ascomata, thick-walled, smooth at base, branched at top with 4–7(–9) branchlets, with acute or pointed apices. *Peridium* thin-walled. *Hamathecium* absent. *Asci* 32.5–44.0 × 7.0–9.0 µm, unitunicate, thin-walled, clavate, eight-spored, apex simple or with a thin apical ring. *Ascospores* 5.5–10.5 × 2.5–4.0 µm, ovoid, ellipsoidal to cylindrical, hyaline or pale yellow, mostly straight, smooth, thin-walled, guttulate, rounded at apex, aseptate or 1-septate.

Asexual morph: not observed.

DISCUSSION

The monotypic genus *Taiwanascus*, with its type species *T. tetrasporus*, is differentiated from *Valetoniella* on its cleistothecial ascomata. Both genera have dark brown setae on the ascomata that are cruciately branched at the apex (Samuels & Barr 1997, Sivanesan & Chang 1997). The non-fissitunicate asci in *T. tetrasporus* each contain four filiform to aculeate ascospores. The type species was collected as a saprotrophic, lignicolous fungus on unidentified angiosperm dead wood from Taipei, Taiwan (Chang WL1018-94, 18 Jan 1994; IMI 364835). This is the first record of the genus *Taiwanascus* from India.

Taiwanascus samuelsii is described as new based on the size of its cleistothecia, size and shape of the cleistothecial setae, and ascospore characteristics when compared with *T. tetrasporus*. *Taiwanascus tetrasporus* has cleistothecia 130–150 µm diam with setae that are 2–6 dichotomously branched with minute, apical branchlets, asci with four ascospores, and long fusiform to aculeate ascospores that are 15–30 µm long, 1.0–1.5 µm thick.

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