

Two new *Asterina* species on *Michelia champaca* from Kerala, India

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The genus *Michelia* comprises 50 species, of which four are in India. *Michelia champaca* L. and *M. nilagirica* Zenk are known from Kerala State (Santapau & Henry 1984; Sasidharan 2004; Nayar et al. 2006). The former species is endemic to South and South East Asia, while the latter is endemic to the southern Western Ghats and Sri Lanka. Hansford (1947) and Hosagoudar & Goos (1996) have described *Asterina michelieae* and *Asterostomella michelieae* on the latter host from Sri Lanka and the southern Western Ghats (Idukki forest region) of peninsular India, respectively. Our recent collections of *Michelia champaca* from the Wyanad region of Kerala State revealed two undescribed species of the genus *Asterina* and they are described and illustrated here in detail. Key to the *Asterina* species known on the host genus *Michelia* has been provided.

Asterina michelifolia sp. nov. (Images 1–5, Fig. 1)



Materials examined:

20.ix.2008, on leaves of *Michelia champaca* L. (Magnoliaceae), Chennalode, Padinharathara, Wyanad, Kerala, India, coll. M.C. Riju, HCIO 49111a (holotype), TBGT 3366a (isotype). MycoBank No. (MB 561622).

Coloniae hypophyllae, tenues, ad 2mm diam., confluentes. Hyphae flexuosae vel anfractuae, irregulariter acuteque vel laxe ramosae, formans retes arte reticulatae, cellulae 12–40 x 3–5 µm. Appressoria dispersa, unicellularis, opposita, alternata, unilateralis, antrorsa vel retrorsa, globosa vel cylindracea, integra, 5–18 x 5–8 µm. Pycnothyria dispersa, orbicularis, ad 58µm diam., stellatim dehiscentes et perlate orificium ad centro; pycnothyriosporae globosae, clavatae, 15–20 µm, parietus glabrus. Thyriothechia dispersa, orbicularis, ad 85µm diam., stellatim dehiscentes et perlate orificium ad centro et asci distinctum; asci globosi vel ovati, 37–45 µm diam.; ascospores brunneae, uniseptatae, constrictus ad septatum, 22–25 x 10–13 µm, parietus glabrus.

Colonies hypophyllous, thin, up to 2mm in diameter, confluent. Hyphae flexuous to crooked, branching irregular at acute to wide angles, forming closely reticulated rings, cells 12–40 x 3–5 µm. Appressoria scattered, unicellular, opposite, alternate, unilateral, antrorse to retrorse, globose to cylindrical, entire, 5–18 x 5–8 µm. Pycnothyria scattered, orbicular, up to 58µm in diameter, stellately dehisced and widely opened at the centre; pycnothyriospores globose, clavate, 15–20 µm, wall smooth. Thyriothechia scattered, orbicular, up to 85µm in diameter, stellately dehisced and widely opened at the centre by exposing asci; asci globose to ovate, 37–45 µm in diameter; ascospores brown, uniseptate, constricted at the septum, 22–25 x 10–13 µm, wall smooth.

Etymology: Specific epithet based on the host genus.

This species differs from *Asterina michelieae* Hansf. reported on *Michelia nilagirica* from Sri Lanka (Hansford 1947) in having typical thyriothecium and differs from *A. micheligena* in having straight mycelium and larger ascospores.

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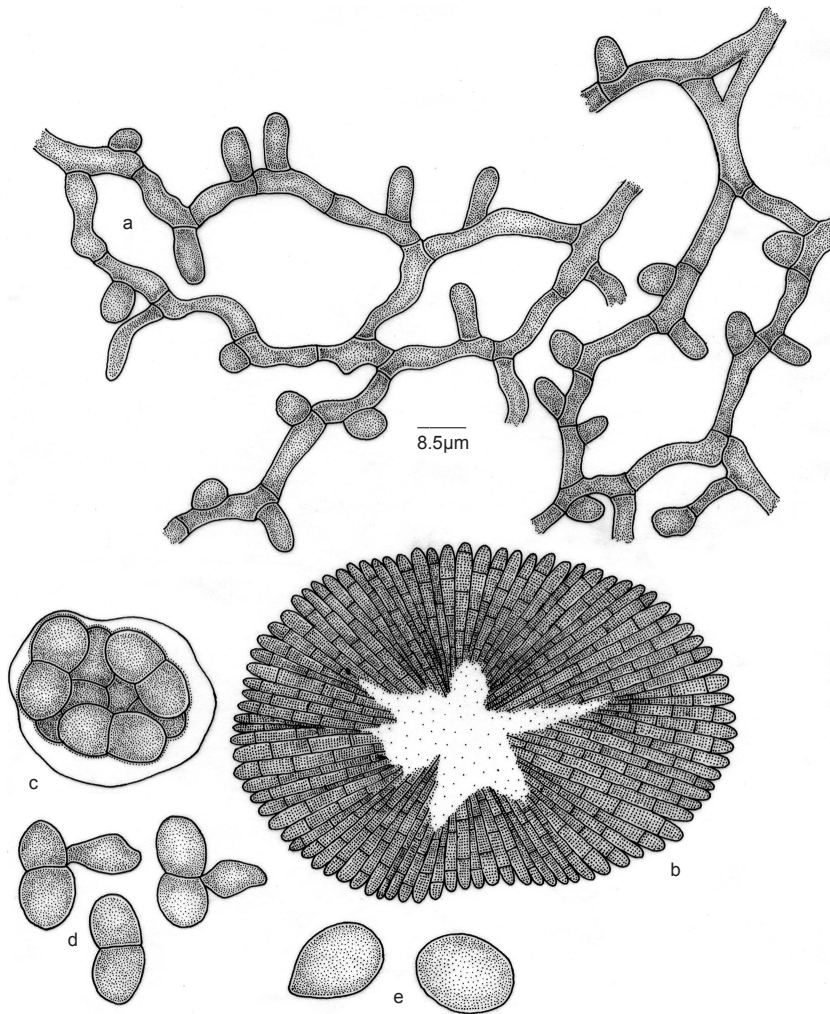
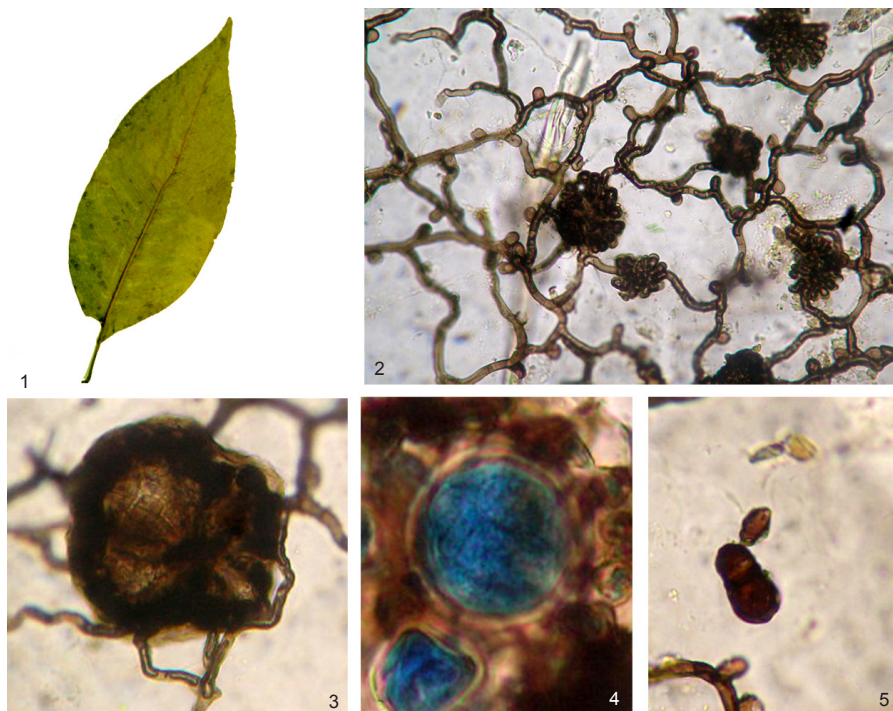


Figure 1. *Asterina michelifolia* sp. nov.
 a - appressate mycelium;
 b - thyriothecium;
 c - ascus; d - ascospores;
 e - pycnothyriospores



Images 1-5. *Asterina michelifolia* sp. nov.
 1 - infected leaf;
 2 - colony with thyriothecia;
 3 - thyriothecium;
 4 - asci;
 5 - germinating ascospore

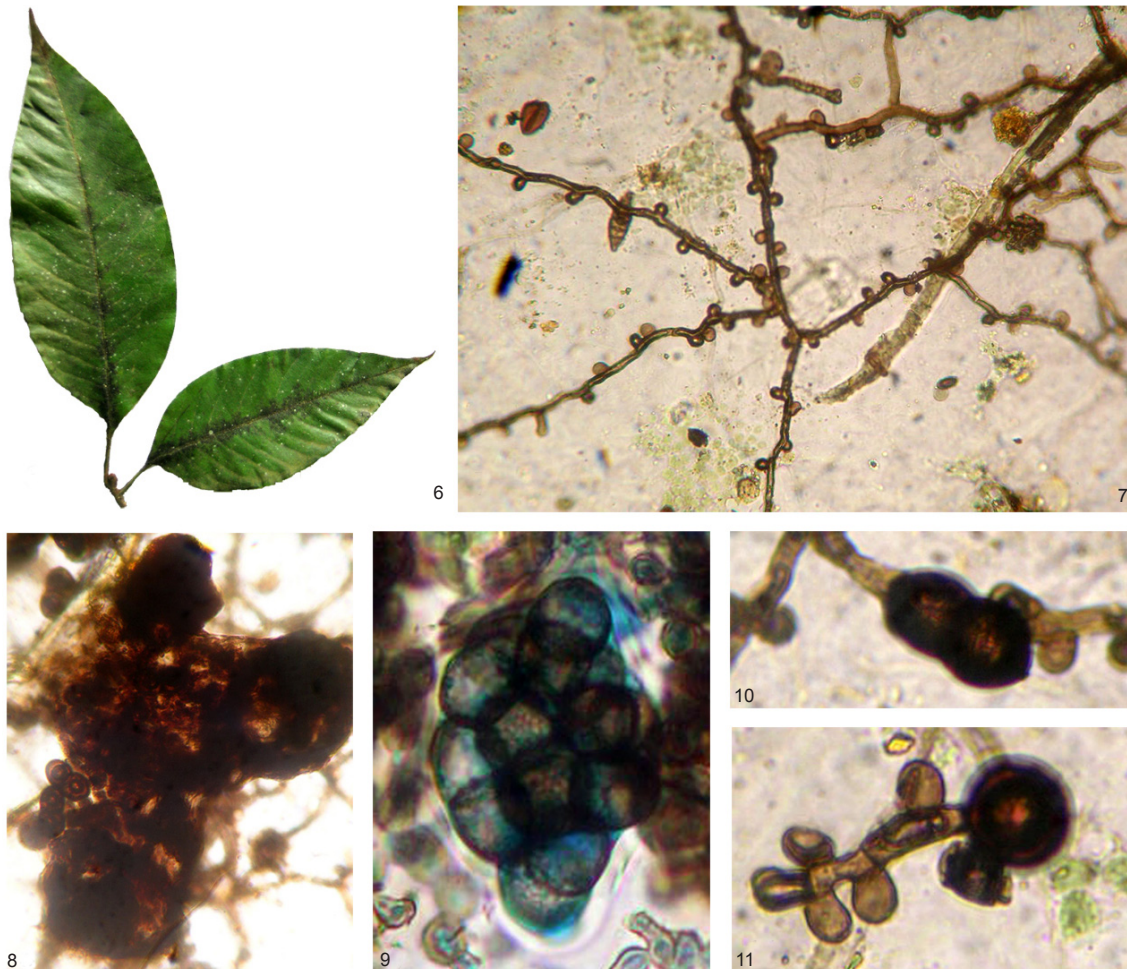
***Asterina micheligena* sp. nov.**
(Images 6–11, Fig. 2)

Materials examined: 20.ix.2008, on leaves of *Michelia champaca* L. (Magnoliaceae), Chennaiode, Padinharathara, Wyanad, Kerala, India, coll. M.C. Riju HCIO 49111b (holotype), TBGT 3366b (isotype). MycoBank No. (MB 561623).

Coloniae epiphyllae, densae, ad 3mm diam., confluentes et saepe et nervicolae. Hyphae flexuosae vel anfractuae, irregulariter acuteque vel laxe ramosae, formans retes arte reticulatae, cellulae 12–40 x 3–5 μ m. Appressoria dispersa, unicellularis, opposita, alternata, unilateralis, antrorsa vel retrorsa, globosa, integra, mammiformes, 4–7 x 4–9 μ m. Pycnothyria dispersa, orbicularis, ad 75 μ m diam., stellatim dehiscentes et perlate orificium ad centro; pycnothyriosporae

globosae vel leniter ovatae, 17–25 μ m diam., parietus glabrus. Thyriothechia dispersa, orbicularis, ad 188 μ m diam., stellatim dehiscentes et perlate orificium ad centro et asci distinctum; asci globosi vel ovati, ad 63 μ m diam.; ascosporae brunneae, uniseptatae, constrictus ad septatum, 25–33 x 15–18 μ m, parietus glabrus.

Colonies epiphyllous, dense, up to 3mm in diameter, confluent and often trait along the major veins of the upper surface of the leaves. Hyphae substraight to flexuous, branching opposite, alternate to irregular at acute to wide angles, loosely to closely reticulate, cells 9–24 x 4–6 μ m. Appressoria scattered, unicellular, opposite, alternate, unilateral, globose, entire, mammiform, 4–7 x 4–9 μ m. Pycnothyria scattered, orbicular, up to 75 μ m in diameter, stellately dehisced and widely opened at the centre; pycnothyriospores



Images 6–11. *Asterina micheligena* sp. nov.

6 - infected leaves; 7 - colony with apressariate mycelium; 8 - thyriothechia; 9 - asci; 10 - germinating ascospore; 11 - germinating pycnothyriospore

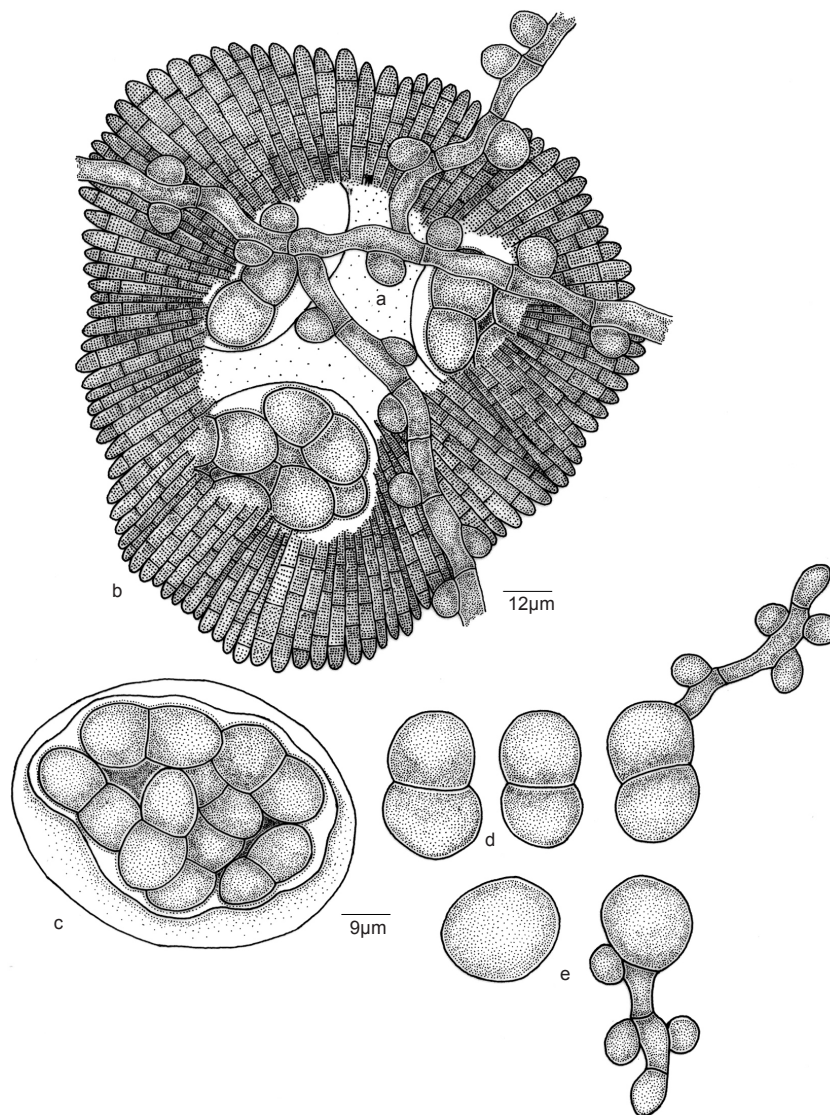


Figure 2. *Asterina micheligena* sp. nov.
 a - appressariate mycelium;
 b - thyriothecium;
 c - ascus;
 d - ascospores;
 e - pycnothyriospores

Key to the *Asterina* species on the genus *Michelia*

- 1 Only anamorph known *Asteostomella micheliae*
- 1 Teleomorph known 2
- 2 Mature fruiting body resembles perithecia *Asterina micheliae*
- 2 Mature fruiting body resembles thyriothecia 3
- 3 Ascospores less than 28µm long *Asterina michelifolia* sp. nov.
- 3 Ascospores more than 28µm long 4
- 4 Ascospores more than 15µm broad *Asterina micheligena* sp. nov.
- 4 Ascospores less than 15µm broad 5
- 5 On *Manglietia* *A. manglietiae*
- 5 On *Michelia* *A. micheliicola*

globose to slightly ovate, 17–25 µm in diameter, wall smooth. Thyriothecia scattered, orbicular, up to 188µm in diameter, stellately dehisced and widely opened at the centre by exposing asci; asci globose to ovate, up to 63µm in diameter; ascospores brown, uniseptate,

constricted at the septum, 25–33 x 15–18µm, wall smooth.

Etymology: Specific epithet based on the host genus.

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