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 micheliae and Asterostomella micheliae 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 Waynad 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.

Materials examined:

Colonies hypophyllae, tenues, ad 2mm diam., confluentes. Hyphae flexuous vel anfractuæ, irregulariter acutæque vel laxe ramosae, formans retes arte reticulatae, cells 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. Pycnothryria dispersa, orbicularis, ad 58µm diam., stellatim dehiscentes et perlate orificium ad centro; pycnothryriospores globose, clavatae, 15–20 µm, parietus glabrus. Thyriothecia 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, unisepatae, 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. Pycnothryria scattered, orbicular, up to 58µm in diameter, stellately dehisced and widely opened at the centre; pycnothryriospores globose, clavate, 15–20 µm, wall smooth. Thyriothecia 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, unisepate, 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 micheliae 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 - appressoria-like 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)


Coloniae epiphyllae, densae, ad 3mm diam., confluentes et saepe et nervicolae. Hyphae flexuosae vel anfractuae, irregulariter acute vel laxe ramosae, formans rete arte reticulatae, cellulae 12–40 x 3–5 μm. Appressoria dispersa, unicellularis, opposita, alternata, unilateralis, antrorsa vel retrorsa, globosa, integra, mammiformes, 4–7 x 4–9 μm. Pycnothyria dispersa, orbicularis, ad 75μm diam., stellatim dehiscentes et perlata orificium ad centro; pycnothyriospores globosae vel leniter ovatae, 17–25 μm diam., parietus glabrus. Thyriothecia dispersa, orbicularis, ad 188μm diam., stellatim dehiscentes et perlata orificium ad centro et asci distinctum; asci globosi vel ovati, ad 63μm diam.; ascosporae brunneae, uniseptatae, constrictus ad septatum, 25–33 x15–18 μm, 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 μm. Appressoria scattered, unicellular, opposite, alternate, unilateral, globose, entire, mammiform, 4–7 x 4–9 μm. Pycnothyria scattered, orbicular, up to 75μm in diameter, stellately dehisced and widely opened at the centre; pycnothyriospores...
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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 michelinae
2  Mature fruiting body resembles thyriothecia ............................................................... 3
3  Ascospores less than 28µm long ........................................................................ Asterina michelinae
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. michelinae

Figure 2. Asterina micheligena sp. nov.

- apprassoriate mycelium;
- thyriothecium;
- ascus;
- ascospores;
- pycnothyriospores

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.
REFERENCES


