

## New Asterinaceae members from Kerala, India

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**Abstract:** This paper gives an account of three new taxa of the genus *Asterina*. Of these, *Asterina enicostemmatidis* and *A. scleropyri* are the new species, while, *A. lobulifera* var. *indica* is the new variety, collected from the Western Ghats region of Kerala State, are described and illustrated in detail.

**Keywords:** *Asterina*, New species, Kerala, India

### Introduction

The genus *Asterina*, the type genus of the family Asterinaceae is characterized by an ectophytic, septate, branched hyphae, which produce lateral appressoria. Thyriothechia orbicular, astomatous, dehisce stellately at the centre; asci globose, bitunicate, 4-8-spored; ascospores uniseptate with brown coloured at maturity. This genus represents more than 600 species and infra-specific taxa in the world and represent more than 100 in India. These are obligate parasites and are host specific. The speciation depends upon their corresponding host plants and the number of species known on the members of that family.

After the work of Doidge (1942) in South Africa, as such, no extensive or monographic work has been carried out in any part of the world. Based on this thought, to know the Asterinaceous fungal wealth of Kerala state, a systemic survey is being carried out and the present result forms a part of it.

### Taxonomy

#### 1. *Asterina enicostemmatidis* sp.nov. (Fig. 1)

Coloniae amphigenae, densae, ad 3 mm diam. Hyphae anfractuae, opposite acuteque vel laxe ramosae, laxe vel arte reticulatae, cellulae 18-33 × 4-7 μm. Appressoria unicellularis, alternata, ovata, mammiformes, sessilis, 7-13 × 4-9 μm. Thyriothechia dispersa, orbicularis, ad 132 μm in diam., stellatim dehiscentes ad centre,

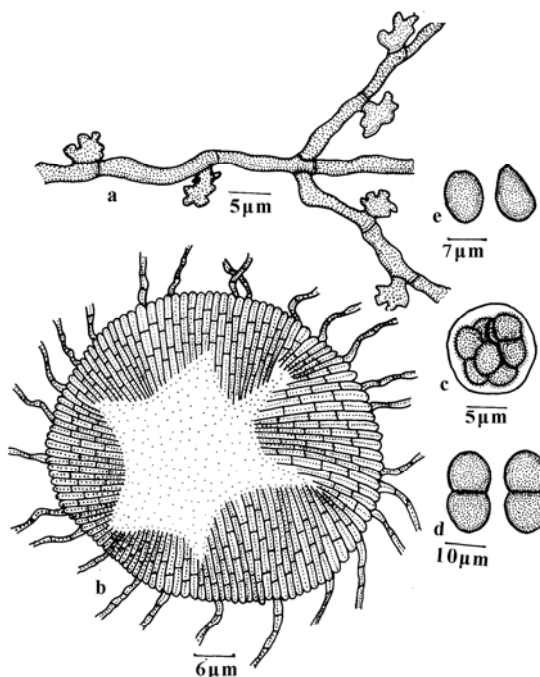


Fig. 1. *Asterina enicostemmatidis* sp. nov. a. Appressariate mycelium, b. Thyriothecium, c. Ascus, d. Ascospores, e. Pycnothyriospores

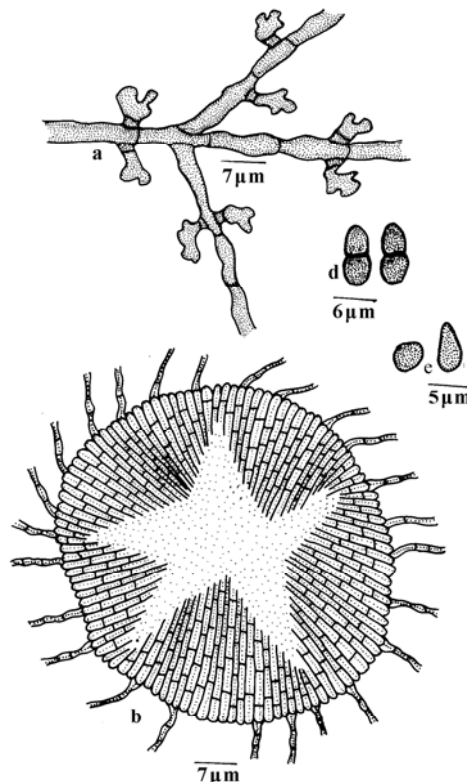


Fig. 2. *Asterina lobulifera* Sydow var. *indica* var. nov. a. Appressariate mycelium, b. Thyriothecium, d. Ascospores, e. Pycnothyriospores

marginem crenatae vel fimbriatae; asci globosi, octospori, ad 40 μm in diam.; ascospores conglobatae, uniseptatae, constrictus ad septatae, 11-20 × 7-9 μm, parietus glabrus. Pycnothyria thyriothechiis similes, orbicularis, ad 110 μm diam., margine crenatae vel fimbriatae; pycnothyriosporae ovatae, pyriformes, brunneae, 9-18 × 4-13 μm, parietus glabrus.

Colonies amphigenous, dense, up to 3 mm in diameter. Hyphae crooked, branching opposite at acute to wide angles, loosely to closely reticulate, cells 18-33 × 4-7 μm. Appressoria unicellular, alternate, ovate, mammiform, sessile, 7-13 × 4-9 μm. Thyriothechia scattered, orbicular, up to 132 μm in diam., dehisce stellately at the center, margin crenate to fimbriate; asci globose, octosporous, up to 40 μm in diameter; ascospores conglobate, uniseptate, constricted at the septum, 11-20 × 7-9 μm, wall smooth. Pycnothyria similar to thyriothechia, orbicular, up to 110 μm in diam, margin crenate to fimbriate; pycnothyriospores ovate, pyriform, brown, 9-18 × 4-13 μm, wall smooth.

**Material examined:** On the leaves of *Enicostemma axillare* (Gentianaceae), upper peak of Pakshipathalam, Wayanad, Kerala, India, Oct. 30, 2007, A. Chandrababha HClO 48242 (Type), TBGT 2980 (Isotype).

*Lembosia microtheca* Theiss. is known on *Goeppertia* sp. of the family Gentianaceae (Stevens & Ryan, 1939) and as such there is no report of genus *Asterina* on the members of the family Gentianaceae (Hosagoudar & Abraham, 2000). Hence, it is described here as a new species.

2. *Asterina lobulifera* Sydow var. *indica* var.nov. (Fig.2) Affinis var. *lobulifera* sed differt appressoriis 5-10% opposites.

Colonies amphigenous, dense, up to 2 mm in diameter. Hyphae flexuous to crooked, branching opposite to irregular at acute to wide angles, loosely to closely reticulate, cells  $15-26 \times 4-7 \mu\text{m}$ . Appressoria 2-celled, alternate, opposite (5-10%) subantrorse straight to curved,  $11-15 \mu\text{m}$  long; stalk cells cylindrical to cuneate,  $4-7 \mu\text{m}$  long; head cells ovate, globose, sublobate to lobate,  $7-11 \times 4-7 \mu\text{m}$ . Thyriothecia scattered two grouped at the centre of the colonies, orbicular, up to  $121 \mu\text{m}$  in diameter, margin crenate to fimbriate, stellately dehisced at the center; ascospores oblong, conglobate, uniseptate, constricted at the septum,  $13-22 \times 7-9 \mu\text{m}$ , wall smooth. Pycnothyria smaller, similar to thyriothecia; pycnothyriospores ovate, pyriform, brown,  $11-22 \times 7-11 \mu\text{m}$ , wall smooth.

**Material examined:** On the leaves of *Glochidion* sp. (Euphorbiaceae), upper peak, Periya, Wayanad, Kerala, India, Oct. 29, 2007, A. Chandrababha HCIO 48236 (Type), TBGT 2974 (Isotype).

*Asterina cassiae* Sydow and *A. lobulifera* Sydow are known on the genus *Glochidion* from Philippines (Sydow & Sydow, 1914; Hosagoudar & Abraham, 2000). *A. lobulifera* differs from *A. cassia* in having two celled appressoria. However, the new variety differs from the var. *lobulifera* in having 5-10% opposite appressoria (Saccardo, 1924; Katumoto, 1991).

### 3. *Asterina scleropyri* sp.nov. (Fig.3)

Coloniae amphigenae, plerumque epiphyllae, densae, ad 2 mm diam., raro confluentes. Hyphae rectae, plerumque opposita acuteque ramosae, laxe vel arte reticulatae, cellulae  $15-22 \times 6-9 \mu\text{m}$ . Appressoria unicellularis, opposita (80%) vel alternata (20%), ovata, conoidea, ad apicem attenuata et late rotundata, integra,  $8-18 \times 6-9 \mu\text{m}$ . Thyriothecia laxe aggregata ad coloniae centralis, orbicularis, ad  $210 \mu\text{m}$  diam., stellatim dehiscentes et dossoluta ad centro vel asci visa; asci globosa, octospora, ad  $30 \mu\text{m}$  diam.; ascosporae oblongae, conglobatae, brunneae, uniseptatae, constrictae ad septatae,  $26-31 \times 8-13 \mu\text{m}$ , parietus glabrus. Pycnothyria thyriotheciis similes, brevibus; pycnothyriosporae ovatae, pyriformes, brunneae,  $8-13 \times 4-7 \mu\text{m}$ , parietus glabrus.

Colonies amphigenous, mostly epiphyllous, dense, up to 2 mm in diameter, rarely confluent. Hyphae straight,

branching mostly opposite at acute angles, loosely to closely reticulate, cells  $15-22 \times 6-9 \mu\text{m}$ . Appressoria unicellular, opposite (80%) to alternate (20%), ovate, conoid, attenuated and broadly rounded at the tip, entire,  $8-18 \times 6-9 \mu\text{m}$ . Thyriothecia loosely grouped at the center of the colony, orbicular, up to  $210 \mu\text{m}$  in diameter, stellately dehisced and the central portion dissolved by exposing inner contents, margin crenate; asci globose, octosporous, up to  $30 \mu\text{m}$  in diameter; ascospores oblong, conglobate, brown, uniseptate, constricted at the septum,  $26-31 \times 8-13 \mu\text{m}$ , wall smooth. Pycnothyria similar to thyriothecia, smaller; pycnothyriospores ovate, pyriform, brown,  $8-13 \times 4-7 \mu\text{m}$ , wall smooth.

**Material examined:** On the leaves of *Scleropyrum pentandrum* (Dennst.) Mabb. (Santalaceae), Silent Valley National Park, Palakkad, Kerala, India, May 15, 2007, R. Rama Subbu HCIO 48240 (Type), TBGT 2978 (Isotype).

*Asterina congesta* Cooke, *A. decipiens* Sydow, *A. elmeri* Sydow and *A. polythria* Doidge are known on the members of the family Santalaceae (Hosagoudar & Abraham, 2000). The present new species differ from all in having unicellular, alternate and opposite, ovate but attenuated appressoria (Hansford & Thirumalachar, 1948; Sydow, H. & Sydow, P. 1939.; Doidge, 1942; Stevens & Ryan, 1939).

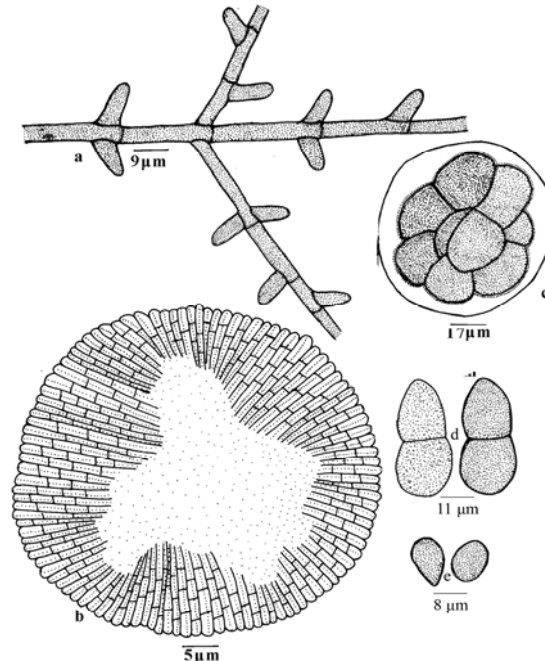


Fig. 3. *Asterina scleropyri* sp. nov.  
a. Appressariate mycelium, b. Thyriothecium,  
d. Ascospores, e. Pycnothyriospores

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