STUDIES ON FOLIICOLOUS FUNGI - XXV: NEW SPECIES AND NEW RECORDS

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Abstract

This paper gives an account of three new species. Asterina rhodomyrti *sp. nov. has been observed for the first time to occur on this endemic host plant* Rhodomyrtus tomentosa*;* Asterina tylophorae-indicae *sp. nov. differs from A. peraffinis in having unicellular appressoria in contrast to bicellular ones;* Asterostomella ceropegiae *sp. nov. differs from* Asterina secamonicola *in having gibbous nature of the basal cells of the appressoria*. Asterina leptalea *and* Heteroconium solaninum *are new records to India.*

Keywords

Asterina leptalea, Asterina rhodomyrti *sp. nov.* , Asterina tylophorae-indicae *sp. nov.*, Asterostomella ceropegiae *sp. nov.*, Heteroconium solaninum, *India, Kerala, new records, new species*

Abbreviations

HCIO - Herbarium Cryptogamae Indiae Orientalis; TBGT - Tropical Botanic Garden, Thiruvananthapuram

***Asterina leptalea* Sydow**

in H. Sydow & Petrak, Ann. Mycol. 29: 233, 1931.
Anamorph: *Asterostomella helicteridis* Hosag., Balakr. & Goos, Mycotaxon 58: 88, 1996.
(Figure 1)

Material examined

14.i.2003, in the forest near Tenmala dam, Kollam, Kerala, on leaves of *Helicteres isora* L. (Sterculiaceae), coll. V.B. Hosagoudar, HCIO 44815, TBGT 1052.

Diagnosis

Colonies amphigenous, dense, crustose to velvety, up to 2mm in diameter, confluent. Hyphae flexuous to crooked, branching irregular at acute to wide angles, loosely reticulate, cells 15-28 x 2-4µm. Appressoria scattered, alternate, unicellular, stipitate to sessile, clavate, globose, hamate, straight to curved, angular, slightly to deeply 3-5-lobate, straight to deeply curved, 8-10 x 9-11µm. Thyriothecia scattered, loosely grouped to rarely connate, orbicular, up to 150µm in diameter, stellately dehisced at the centre, crenate at the margin; asci few to many, globose, octosporous, bitunicate, up to 30µm in diameter; ascospores oblong, conglobate, brown, uniseptate, constricted at the septum, 16-18 x 8-10µm, wall smooth. Pycnothyria many, similar but smaller than the thyriothecia; pycnothyriospores oblong, pyriform, brown, 14-18 x 6-11µm.

Remarks

Sydow in Sydow & Petrak (1931) described *Asterina leptalea* on *Helicteres hirsuta* from the Philippines. Ouyang and Hu in Ouyang *et al.* (1996) described *Asterina helicteris* on *Helicteres angustifolia* from China. The latter species was compared with *A. buettneriae* Theiss by the authors but appears to be similar to the former species. Hosagoudar *et al.* (1996) described *Asterostomella helicteridis* on *Helicteres isora* from the Western Ghats region of peninsular region and is the pycnothyrial form of *A. leptalea* Sydow.

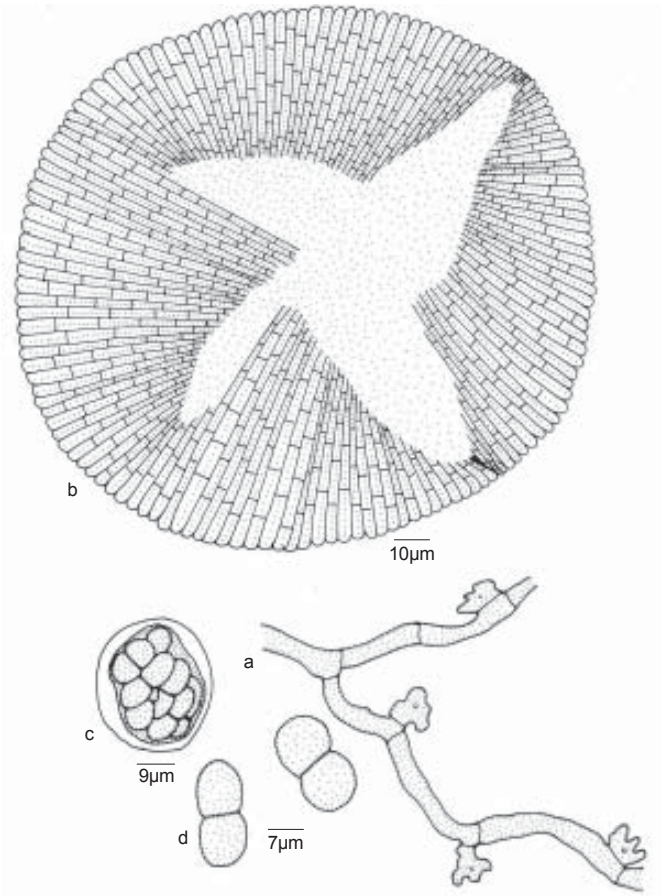

Figure 1.* Asterina leptalea *Sydow
a - Appressoriate mycelium; b - Thyriothecium; c - Ascus; d - Ascospores

Asterina rhodomyrti
V.B. Hosagoudar, H. Biju & A. Manojkumar, sp. nov.
(Figure 2)

Material examined

Type: 20.i.2003, on leaves of *Rhodomyrtus tomentosa* (Ait.) Hassk. (Myrtaceae), Rajamala, Munnar, Idukki, Kerala, coll. A. Manoj Kumar & H. Biju, HCIO 44870.
Isotype: TBGT 1098.

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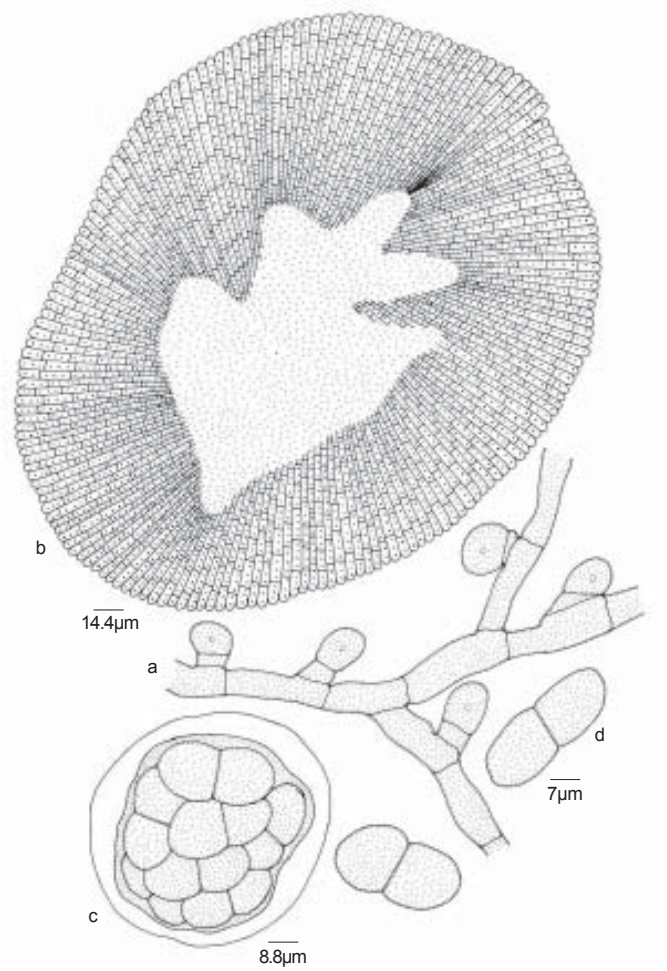

Figure 2. **Asterina rhodomyrti** ***sp. nov.***
a - Appressoriate mycelium; b - Thyriothecium; c - Ascus; d - Ascospores

Diagnosis

Coloniae amphigenae, plerumque epiphyllae, densae, crustosae vel velutinae, ad 2mm diam., raro confluentes. Hyphae rectae vel subrectae, irregulariter acuteque ramosae, laxe vel dense reticulatae, cellulae 19-26 x 4-7µm. Appressoria alternata, ad 2% opposita, arte antrorsa, subantrorsa vel retrorsa, bi-cellula, 12-15µm longa; cellulae basilares cylindraceae vel cuneatae, 3-7µm longae; cellulae apicales ovatae vel globosae, integrae, 8-10 x 8-9µm. Thyriothecia dispersa, orbicularis, ad 275µm diam., saepe 3-5 connata, et saepe elongata, margine crenatae, stellato dehiscentes vel parlatae ad centro; asci pauci vel numerosi, octospori, ad 60µm diam.; ascosporae oblongae, conglobatae, brunneae, uniseptatae, constrictae, 27-30 x 13-15µm.

Colonies amphigenous, mostly epiphyllous, dense, crustose to velvety, up to 2mm in diameter, rarely confluent. Hyphae straight to substraight, branching irregular at acute angles, loosely to closely reticulate, cells 19-26 x 4-7µm. Appressoria alternate, about 2% opposite, closely antrorse, subantrorse to retrorse, two celled, 12-15µm long; stalk cells cylindrical to cuneate, 3-7µm long; head cells ovate to globose, entire, 8-10 x 8-9µm. Thyriothecia scattered, orbicular, up to 275µm in diameter, often 3-5 connate, and often elongated, margin crenate, stellately dehisced or dissolved at the centre; asci few to many, globose, octosporous, up to 60µm in diameter; ascospores oblong, conglobate, brown, uniseptate, constricted at the septum, 27-30 x 13-15µm , wall smooth.

Remarks

About 32 *Asterina* species are known on the members of the family Myrtaceae (Hosagoudar & Abraham, 2000). Based on the host specificity and an endemic status of the host plant, the present collection has been placed under a new species.

Asterina tylophorae-indicae
V.B. Hosagoudar, H. Biju et A. Manojkumar, sp. nov.
(Figure 3)

Material examined

Type: 21.i.2003, Mannavan shola, Munnar, Idukki, Kerala, on leaves of *Tylophora indica* (Burm.f.) Merr. (Asclepiadaceae),

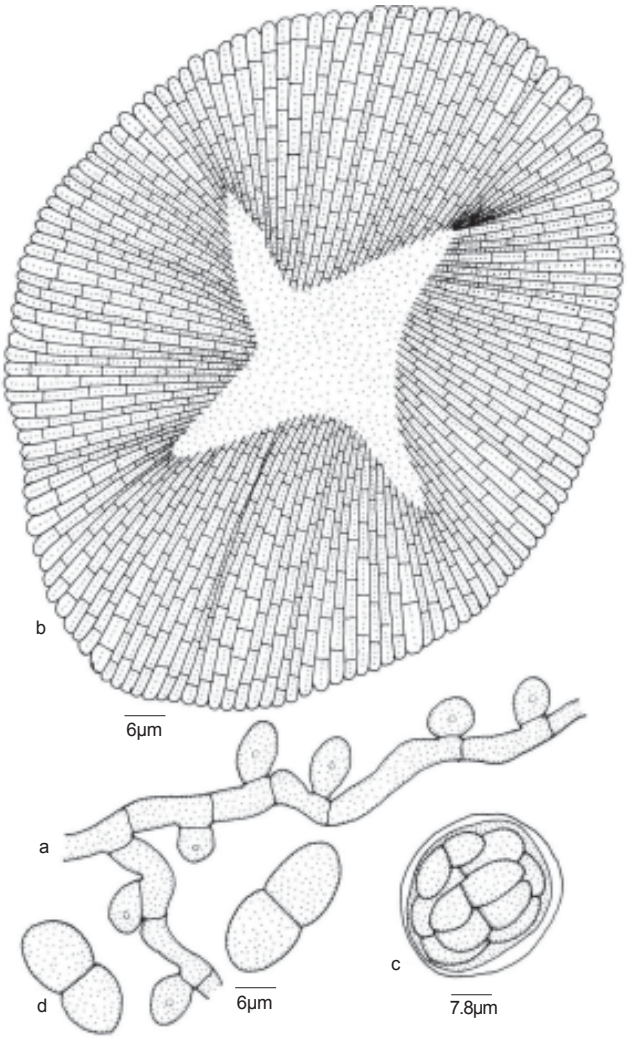

Figure 3. **Asterina tylophorae-indicae** ***sp. nov.***
a - Appressoriate mycelium; b - Thyriothecium; c - Ascus; d - Ascospores

coll. A. Manojkumar & H. Biju, HCIO 44848.
Isotype: TBGT 1085

Diagnosis
Coloniae epiphyllae, subdensae vel densae, ad 2mm diam., raro confluentes. Hyphae subrectae vel anfractuae, irregulariter curvulae, irregulariter acuteque ramosae, laxe vel arte reticulatae, cellulae 14-18 x 3-5µm. Appressoria alternata, ad 3% opposita, unicellula, ovata, globosa, recta vel curvula, integra, crassa posita, 8-10 x 4-7µm. Thyriothecia dispersa vel laxe aggregata, orbicularis, ad 100µm diam., crenatae ad margine et stellato dehiscentes ad centro; asci pauci, globosi, octospori, ad 30µm diam.; ascosporae oblongae, conglobatae, brunneae, uniseptatae, constrictae, 19-21 x 9-11µm.

Colonies epiphyllous, subdense to dense, up to 2mm in diameter, rarely confluent. Hyphae substraight to crooked, curved irregularly, branching irregular at acute angles, loosely to closely reticulate, cells 14-18 x 3-5µm. Appressoria alternate, about 3% opposite, unicellular, ovate, globose, straight to curved, entire, broad based, 8-10 x 4-7µm. Thyriothecia scattered to loosely grouped, orbicular, up to 100µm in diameter, crenate at the margin and stellately dehisced at the centre; asci few, globose, octosporous, up to 30µm in diameter; ascospores oblong, conglobate, brown, uniseptate, constricted at the septum, 19-21 x 9-11µm.

Remarks
Asterina peraffinis Speg. is known on *Tylophora flanagani* from South Africa. The new species differs from it in having unicellular appressoria in contrast to bicellular (Doidge, 1942; Hosagoudar & Abraham, 2000).

Asterostomella ceropegiae
V.B. Hosagoudar, H. Biju & A. Manojkumar, sp. nov.
(Figure 4)

Material examined
Type: 23.i.2003, on leaves of *Ceropegia* sp. (Asclepiadaceae), Kundala, Munnar, Idukki, Kerala, coll. A. Manojkumar & H. Biju, HCIO 44833.
Isotype: TBGT 1070.

Diagnosis
Coloniae amphigenae, densae, crustosae, ad 2mm diam. Hyphae subrectae vel flexuosae, irregulariter acuteque vel laxe ramosae, laxe reticulatae, cellulae 19-23 x 3-4µm. Appressoria dispersa, alternata, unilateralia, unicellula, ovata, globosa, cylindracea, irregulariter sublobata vel fortiter lobata, gibbosa ad basim, 8-16 x 8-10µm. Pycnothyria dispersa, saepe connata, orbicularis, ad 138 µm diam., margine crenatae vel fimbriatae, hyphae fringiorum flexuosae, breviter, stellato dehiscentes ad centro; pycnothyriosporae unicellulae, brunneae, piriformes, 16-20 x 8-10µm.

Colonies amphigenous, dense, crustose, up to 2mm in diameter. Hyphae substraight to flexuous, branching irregular at acute to wide angles, loosely reticulate, cells 19-23 x 3-4µm. Appressoria scattered, alternate, unilateral, unicellular, ovate, globose, cylindrical, irregularly sublobate to deeply lobate, gibbous at the base, 8-16 x 8-10µm. Pycnothyria scattered, often connate, orbicular, up to 138µm in diameter, margin crenate to fimbriate, fringed hyphae flexuous, small, stellately dehisced at the centre; pycnothyriospores unicellular, brown, pyriform, 16-20 x 8-10µm, wall smooth.

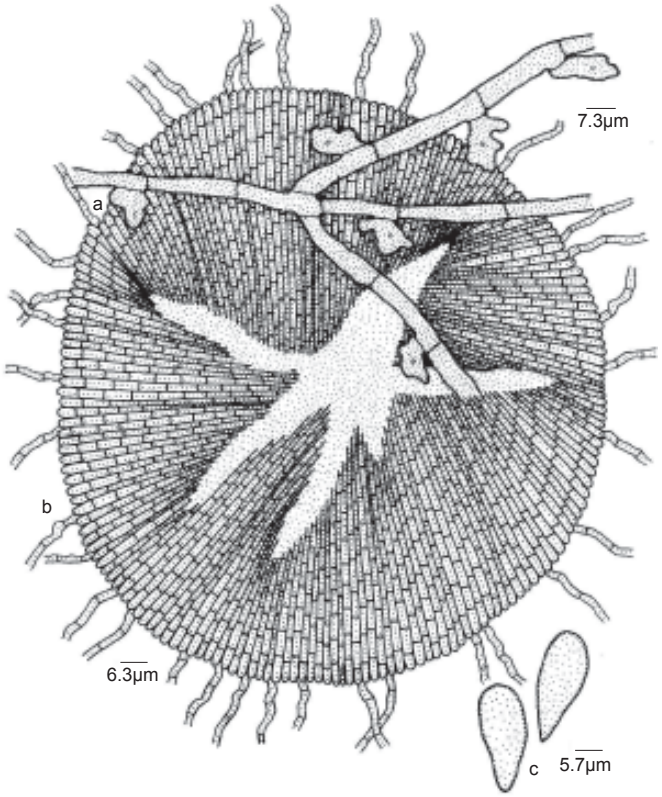

Figure 4. **Asterostomella ceropegiae *sp. nov.***
a - Appressoriate mycelium; b - Pycnothyriothecium; c - Pycnothyriospores

Remarks
Basal portion of some of the appressoria is gibbous and very firmly appressed to the hyphae and impart that they are septate. Few thyriothecia were observed but were empty. Numerous pycnothyriospores were scattered in the colonies.

Of the known six species of the genus *Asterina* on the members of Asclepiadaceae, the present taxon is closer to *Asterina secamonicola*, which is having unicellular appressoria but differs from it in having only pycnothyrial state and the gibbous nature of the basal portion of the appressoria.

***Heteroconium solaninum* (Sacc. & Sydow)**
Ellis, More dematiaceous Hyphomycetes, p. 65, 1976.
Helminthosporium solaninum Sacc. & Sydow, in Sacc., Rend. Congr. Bot. Patermo, p. 58, 1902. (Figure 5)

Material examined
24.i.2003, growing on the colonies of *Schiffnerula camelliae* (Sydow, Sydow & Butler) Hughes, parasitic on *Thea sinensis* L. (Theaceae), Maattupetti, Munnar, Idukki, Kerala, coll. A.

A comparative account of* Asterina *species known on Asclepiadaceae members

Species name	Appressoria	Thyriothecia	Asci	Ascospores	Pycnothyria
Asterina asclepiadis Hosag. & Goos	Two-celled, numerous, head cells entire to angular, truncate at the apex	Up to 124µm	4-6 spored, 31-38µm	18-22 x 6-8µm	—
Asterina concinna Sydow	Two-celled, numerous head cells entire to sublobate	90-160µm	4-8 spored, 25-32µm	16-18.5 x 8-10.5µm	
Asterina cynanchi Hosag. & Shiburaj	Two-celled, numerous, head cells sublobate to deeply lobate	Up to 140µm	28-35µm	14-16 x 7-9µm	Present
Asterina heterostemmae Yamam	Two-celled, not many, head cells 2-4 lobate	112-140µm	22-26 x 17-22µm	15-17.5 x 7-8.5µm	Present
Asterina leonensis Sydow	Two-celled, alternate & opposite; head cells lobate	100-150µm	22-26 x 17-22µm	15-17.5 x 7-8.5µm	—
Asterina peraffinis Speg.	Two-celled, not numerous, occasionally one celled, head cells lobed, often obliquely septate	120-160µm	30-40 x 22-30µm	17-20 x 8-12.5µm	Present
Asterina secamonicola Doidge	Unicellular	180-200µm	30-50 x 24-30µm	20-23.5 x 6-8µm	—
Asterostomella ceropegiae sp.nov.	Unicellular, ovate, globose, cylindrical, irregularly sublobate to deeply lobate, gibbous at the base, 8-16 x 8-10µm	Pycnothyria up to 138µm	pycnothyriospores unicellular, brown, pyriform, 16-20 x 8-10µm, wall smooth.	—	—

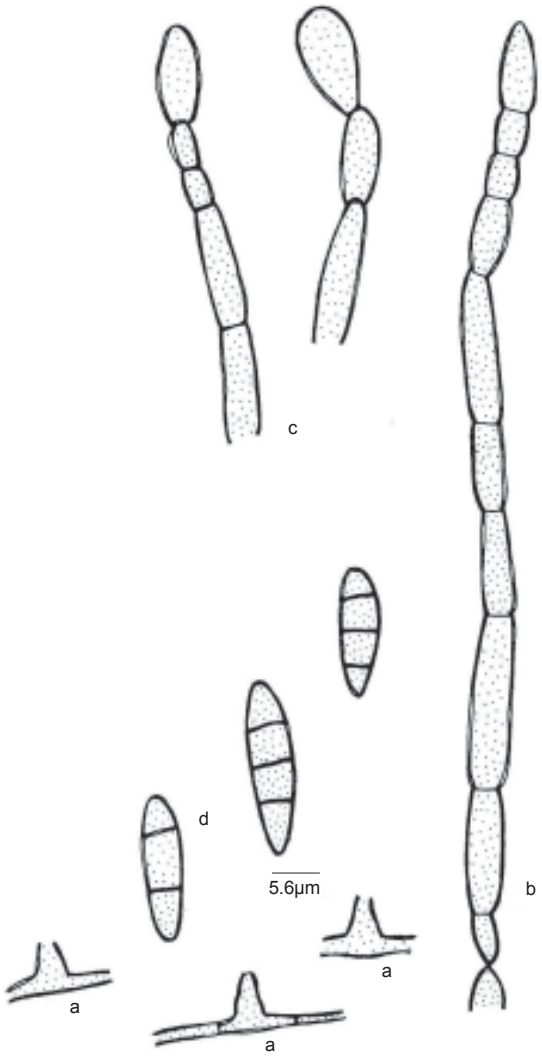

Figure 5.* Heteroconium solaninum *(Sacc. & Sydow) Ellis a - Basal portions of the Conidiophore; b - Conidiophore; c - Conidiogenous cells with developing conidia; d - Conidia

Manojkumar & H. Biju, HCIO 44824, TBGT 1061.

Diagnosis

Colonies amphigenous, dense, velvety, black to brown, up to 5mm in diameter. Hyphae superficial, pale-brown, straight, branched, septate, encircling the host hyphae and also spread on the primary host, 1.6-3µm broad. Conidiophores macronematous, mononematous, simple, straight to curved, brown, dark-brown to olivaceous brown, septate, smooth, 40-120 x 3-5µm. Conidiogenous cells terminal, integrated, monoblastic, percurrent, cylindrical. Conidia catenate, dry, acrogenous, simple, tapered at one or both ends, fusiform, obovoidal, oval, 0-3 septate, pale, 9-18 x 4-7µm, wall smooth.

Remarks

This species was known on *Asterina* and other Microthyriales from Brazil, China, Ghana, Guinea, San Domingo, Sierra Leone, Tanzania and Uganda (Ellis, 1976; Bilgrami *et al*., 1991). It is reported here for the first time from India.

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