MELIOLACEAE OF KERALA, INDIA – XVII
NEW SPECIES, NEW VARIETY AND NEW RECORDS

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Abstract

The paper deals with an account of five *Meliola* species. Of these, *Meliola syzygiigena* is a new species having variously curved appressoria. *M. capensis* var. *indica* is a new variety having 3% uncinate setae. *M. rauvolfiae* and *M. smilacis* are recorded here for the first time from India, while, *M. holarrhenae* is relocated after its type collection.

Keywords

Meliola, *new species, new records, Kerala, India*

Abbreviations

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

Meliola syzygiigena
V.B. Hosagoudar *et* M. Kamarudeen, sp. nov.
(Fig. 1)

Materials examined

Holotype: 6.ii. 2002, Chandanathode forest, Wyanad, Kerala, India, on leaves of *Syzygium* sp. (Myrtaceae), coll. M. Kamarudeen HCIO 44330.
Isotype: TBGT 726.

Diagnostic features

Coloniae hypophyllae, densae, velutinae, ad 5mm diam., confluentes. Hyphae rectae vel subrectae, alternate, opposite vel irregulariter acuteque ramosae, laxe vel dense reticulatae, cellulae 25-28 x 6-7µm. Appressoria alternata, minusve 1% opposita, antrorsa, subantrorsa, retrorsa, recta, curvula vel uncinata, 16-23µm longa; cellulae basilares cylindraceae vel cuneatae, 3-8µm longae; cellulae apicales ovatae, oblongae, cylindraceae, rectae vel curvulae, integrae, late rotundatae vel truncatae ad apicem, 12-16 x 6-8µm. Phialides paucae, mixtis appressoriis, alternatae vel oppositae, ampulliformes, 19-24 x 6-8µm. Setae myceliales numerosae, dispersae, rectae, acutae ad apicem, ad 294µm longae. Perithecia laxe

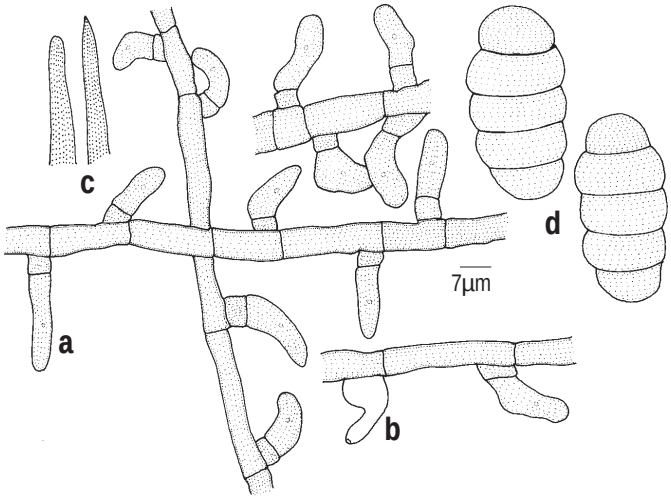

Figure 1. **Meliola syzygiigena *sp. nov.***
a - Appressorium, b - phialide, c - mycelial setae; d - ascospores

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aggregata, verrucosa, ad 144µm diam., cellulae peridiales protrudae; ascosporae oblongae vel subellipsoideae, 4-septatae, constrictae, 43-48 x 15-18µm.

Colonies hypophyllous, dense, velvety, up to 5mm in diameter, confluent. Hyphae straight to substraight, branching alternate, opposite to irregular at acute angles, loosely to closely reticulate, cells 25-28 x 6-7µm. Appressoria alternate, less than 1% opposite, antrorse, subantrorse, retrorse, straight, curved to uncinate, 16-23µm long; stalk cells cylindrical to cuneate, 3-8µm long; head cells ovate, oblong, cylindrical, straight to curved, entire, broadly rounded to truncate at the apex, 12-16 x 6-8µm. Phialides few, mixed with appressoria, alternate to opposite, ampulliform, 19-24 x 6-8µm. Mycelial setae numerous, scattered, simple, straight, acute at the tip, up to 294µm long. Perithecia loosely grouped, verrucose, up to 144µm in diameter, wall cells projected; ascospores oblong to subellipsoidal, 4-septate, constricted, 43-48 x 15-18µm.

Remarks
Based on the Beeli formula and the morphology of the head cells of the appressoria, the present species, *Meliola syzygiigena* is similar to an endemic species, *Meliola ranganathi* Hansf. but differs from it in having hypophyllous, velvet colonies, distantly placed and variously curved appressoria (Hansford, 1961; Hosagoudar, 1996).

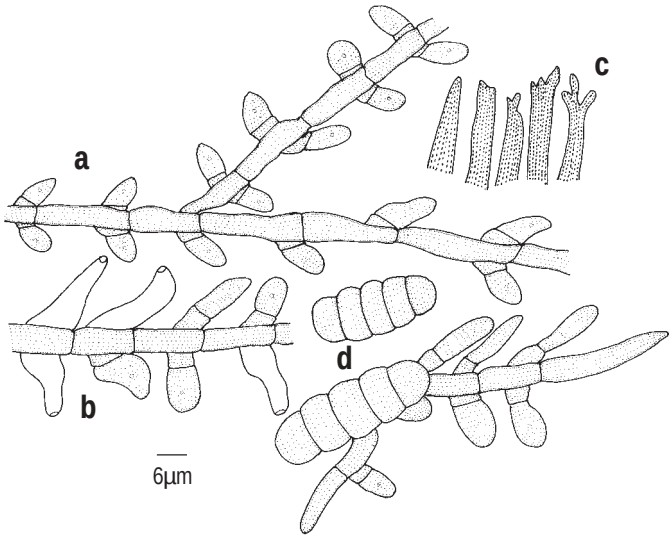

Figure 2. **Meliola capensis *var.* indica *var. nov.***
a - Appressorium, b - Phialide, c - Mycelial setae, d - Ascospores

Meliola capensis* (Kalch. & Cooke) Theiss. var. *indica
V.B. Hosagoudar, H. Biju *et* A. Manojkumar, var. nov.
(Fig. 2)

Affinis *M. capensis* sed differt setiis myceliales 3% uncinatis.

Materials examined
Holotype: 16.vii.2002, Ramagirikota, Palghat forest division, Kerala, India, on leaves of Sapindaceae member, coll. H. Biju & A. Manojkumar, HCIO 44526.
Isotype: TBGT 812.

Diagnostic features
Colonies amphigenous, thin to subdense, velvety, up to 3mm in diameter, confluent. Hyphae straight, branching alternate to opposite at acute to wide angles, loosely to closely reticulate, cells 19-21 x 4-6µm. Appressoria opposite, about 5% alternate, scattered, antrorse to subantrorse, 12-16µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells ovate, narrowed towards the tip, often conoid, entire, 9-11 x 6-8µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-20 x 6-7µm. Mycelial setae numerous, scattered to grouped around perithecia, simple, straight, flexuous, about 3% curved to uncinate, acute, bifid, trifid to rarely furcate at the tip, up to 445µm long. Perithecia scattered, up to 120µm in diam.; ascospores oblong to cylindrical, 4-septate, constricted at the septa, 32-36 x 12-15µm.

Remarks
The species with conoid head cells have been assigned to the group *Meliola capensis* (Hansford, 1961; Hosagoudar, 1996). The present new variety differs from all the varieties of the species in having 3% uncinate mycelial setae.

***Meliola holarrhenae* Hansf. & Thirum.**
Farlowia 3: 294, 1948; Hansf., Sydowia Beih. 2: 561, 1961; Hosag., Meliolales of India, p. 216, 1996.
(Fig. 3)

Materials examined
27.vii.2002, medicinal plant garden, Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, Kerala, India, on leaves of *Holarrhena* sp. (Apocynaceae), coll. M. Kamarudeen, HCIO 44523, TBGT 808; 14.viii.2002, *H. pubescens*, coll. P.A. Jose, HCIO 44513, TBGT 799.

Diagnostic features
Colonies amphigenous, mostly epiphyllous, few colonies on lower surface of the leaves, thin, subdense to dense, velvety, up to 3mm in diameter, confluent. Hyphae substraight to undulate, branching alternate, opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 16-23 x 5-7µm. Appressoria alternate, antrorse, closely antrorse to subantrorse, 16-20µm long; stalk cells cylindrical to cuneate, 6-8µm long;

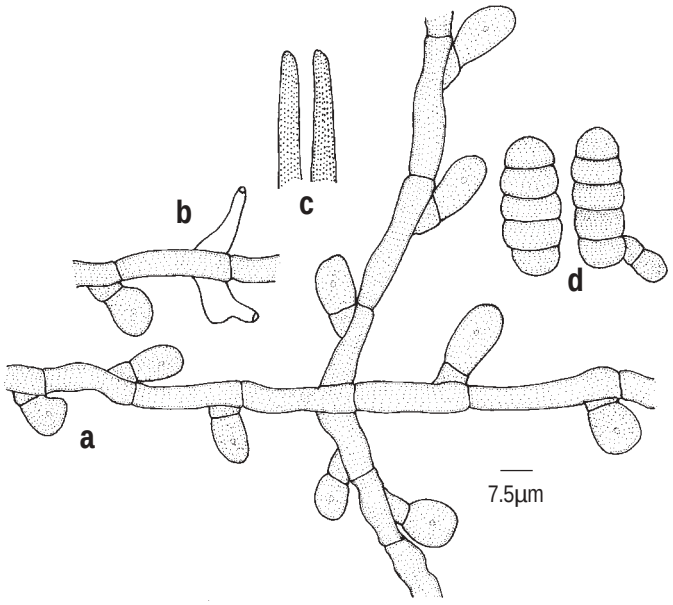

Figure 3. **Meliola holarrhenae** ***Hansf. & Thirum. a - Appressorium, b - Phialide, c - Mycelial setae, d - Ascospores***

head cells ovate to globose, broadly rounded to bluntly pointed towards the apex, entire to rarely angular, 9-15 x 8-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, neck elongated, 16-20 x 6-8µm. Mycelial setae scattered to grouped around perithecia, simple, straight to flexuous, about 2% uncinate at the apical portion, up to 245µm long, tip obtuse. Perithecia scattered, globose, up to 120µm in diameter; ascospores oblong, 4-septate, slightly constricted, 28-32 x 9-12µm.

Remarks

The present collections vary from the species description in having shorter but 2% uncinate mycelial setae and smaller ascospores. Since, the type material is not present in the Herbarium Cryptogamae Indiae Orientalis (HCIO), the present collections serves as neotype (Hosagoudar, 1996).

Meliola rauvolfiae **Mibey in Mibey & Hawksworth**
Mycol. Pap. 174: 69, 1997.
(Fig. 4)

Materials examined

18.xii.2001, Gravel bank, Munnar, Idukki, Kerala, India, on leaves of *Rauvolfia hookeri* Srinivasan and Chithra (Apocynaceae), coll. S. Shiburaj, HCIO 44383, TBGT 628.

Diagnostic features

Colonies epiphyllous, thin to subdense, up to 3mm in diameter, rarely confluent. Hyphae straight to flexuous, branching opposite at acute angles, loosely reticulate, cells 24-40 x 4-6 µm. Appressoria alternate, antrorse, 12-18µm long; stalk cells cylindrical to cuneate, 3-7µm long; head cells ovate, globose, entire, often attenuated and broadly rounded at the apex, 9-11 x 9-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 12-16 x 6-7µm. Mycelial setae mostly grouped around perithecia, simple, straight to slightly curved, obtuse at the tip, up to 350 µm long. Perithecia scattered to mostly grouped, globose, up to 120µm in diam.; ascospores oblong to cylindrical, 4-septate, constricted, 27-32 x 11-15µm.

Remarks

This species was known on *Rauvolfia mombosana* from Kenya and is reported here for the first time from India on a new host (Mibey & Hawksworth, 1997).

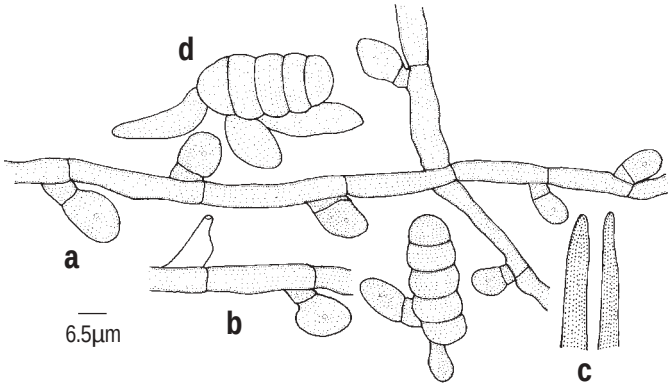

Figure 4. **Meliola rauvolfiae** ***Mibey a - Appressorium, b - Phialide, c - Mycelial setae, d - Ascospores***

***Meliola smilacis* Stev.**
Illinois Biol. Monographs 2: 56, 1916; Hansf., Sydowia Beih. 2: 712, 1961.
(Fig. 5)

Materials examined
1.ix.2002, in the forest near Kushavoor, Palode, Thiruvananthapuram, Kerala, on leaves of *Smilax* sp. (Smilacaceae), coll. A. Manojkumar, HCIO 44588, TBGT 874.

Diagnostic features
Colonies amphigenous, dense, crustose to velvety, up to 2mm in diameter, confluent. Hyphae straight to substraight, branching mostly opposite at acute to wide angles, loosely to closely reticulate, cells 16-20 x 6-8µm. Appressoria alternate, less than 1% opposite, antrorse to subantrorse, rarely recurved, 16-28µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate to oblong, broadly rounded at the tip, entire, 11-16 x 9-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-23 x 7-9µm. Mycelial setae numerous, simple, straight, up to 1% uncinate, obtuse and broadly rounded at the apex to acute, 2-3-dentate to slightly furcate at the apex, up to 500µm long. Perithecia loosely scattered, globose, up to 160µm in diameter; ascospores broadly ellipsoidal, 4-septate, slightly constricted at the septa, 44-48 x19-21µm.

Remarks
This is the only species of the genus *Meliola* on the members of the family Smilacaceae having dentate mycelial setae. This species was known from Porto Rico, Taiwan and Honduras and is reported here for the first time from India (Hansford, 1961; Hosagoudar, 1996).

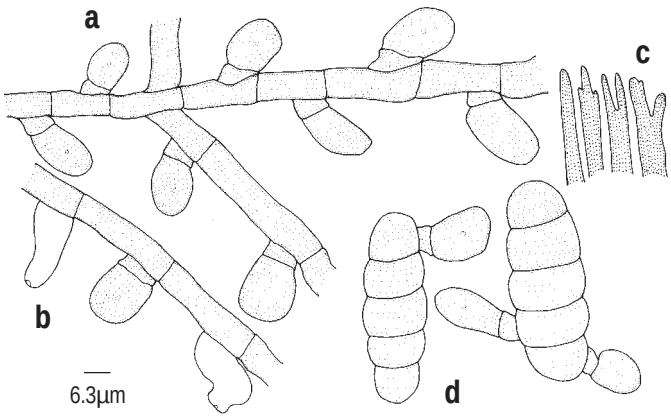

***Figure 5.* Meliola smilacis Stev.**
a - Appressorium, b - Phialide, c - Mycelial setae, d - Ascospores

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References
Hosagoudar, V.B. (1996). *Meliolales of India*. Botanical Survey of India, Calcutta, pp.363.
Hansford, C.G. (1961). The Meliolineae. A Monograph. *Sydowia*. Beih 2: 1-806.
Mibey, R.K. and D.L. Hawskworth (1997). Meliolaceae and Asterinaceae of the Shimba Hills, Kenya. *Mycological Papers* 174: 1-108.