

MELIOLACEAE OF KERALA, INDIA – XX
THREE NEW SPECIES AND ONE NEW VARIETY OF GENUS *MELIOLA*

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ABSTRACT

This paper gives an account of five Meliola species. Of these, Meliola cassiae-fistulae, M. desmodii – triangularis and M. triquetri are the new species and M. capensis var. dimocarpi is the new variety. Meliola memecyli var. microspora forms the new record to India. All these species are described and illustrated in detail.

KEY WORDS

India, Kerala, Meliola, new species, new variety

ABBREVIATIONS

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

Meliola capensis var. dimocarpi

V. B. Hosagoudar et A. Manojkumar, var. nov.

(Fig. 1)

Material examined

Type: 14.x.2002, Deer Rehabilitation Centre, Thenmala, Kollam, Kerala, coll. A. Manojkumar, on leaves of *Dimocarpus longan* Lour. (Sapindaceae), HCIO 44690.

Isotype: 14.x.2002, Deer Rehabilitation Centre, Thenmala, Kollam, Kerala, coll. A. Manojkumar, on leaves of *Dimocarpus longan* Lour. (Sapindaceae), TBGT 971.

Diagnostic features

Similis *Meliola capensis* (Kalch. & Cooke) Theiss. var. *baileyana* Hansf. differt a appressoriis et ascosporis brevioribus.

Colonies epiphyllous, dense, crustose to velvety, up to 2mm in diameter, confluent. Hyphae straight, branching alternate at acute to wide angles, loosely to closely reticulate, cells 17-21 x 5-7µm. Appressoria opposite, about 1% solitary, antrorse, 14-16µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells ovate, conoid, entire, attenuated and broadly rounded at the apex, 10-12 x 7-9µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-23 x 5-7µm. Mycelial setae numerous, simple, straight, very few flexuous, curved to uncinat, acute, obtuse, acute to 2-4 times dentate at the tip, up to 400µm long. Perithecia scattered, globose, up to 125µm in diameter; ascospores oblong, 4-septate, constricted at the septa, 32-34 x 12-15µm.

Remarks

Opposite appressoria with conoid head cells and simple to denate mycelial setae brings the present collection to *Meliola capensis* (Kalch. & Cooke) Theiss. group (Hansford, 1961). The Beeli Formula 31^{1/3} 2.3222 brings it closer to *M. capensis* (Kalch. & Cooke) Theiss. var. *baileyana* Hansf. However, the new variety differs from it in having shorter appressoria and smaller ascospores.

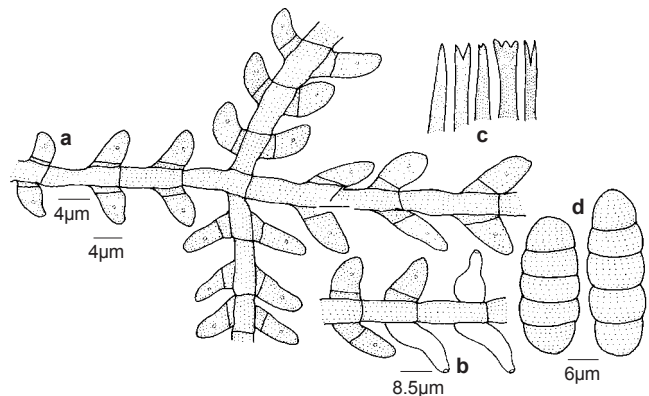


Figure 1. *Meliola capensis var. dimocarpi, var. nov.*
 a - Appressorium; b - Phialide; c - Mycelial setae;
 d - Ascospores

Meliola cassiae-fistulae

V. B. Hosagoudar et A. Manojkumar, sp. nov.

(Fig. 2)

Material examined

Type: 4.x.2002, Parakuzhy forest, Karikulam, Ranni, Pathanamthitta, Kerala, India, coll. A. Manojkumar, on leaves of *Cassia fistula* L. (Caesalpiniaceae), HCIO 44707.

Isotype: 4.x.2002, Parakuzhy forest, Karikulam, Ranni, Pathanamthitta, Kerala, India, coll. A. Manojkumar, on leaves of *Cassia fistula* L. (Caesalpiniaceae), TBGT 988.

Diagnostic features

Coloniae epiphyllae, subdensae, ad 3mm diam. Hyphae subrectae vel flexuosae, alternate, opposite vel irregulariter acuteque vel laxe romosae, laxe reticulatae, cellulae 19-23 x 4-6µm. Appressoria alternata, ad 1% opposita, antrorsa vel subantrorsa, 12-16µm longa; cellulae basilares cylindratae vel cuneatae, 3-4µm longae; cellulae apicales ovatae, globosae, integrae, curvulae, 9-13 x 9-10µm. Phialides mixtus appressoriis, alternate vel opposite, ampulliformes, 14-16

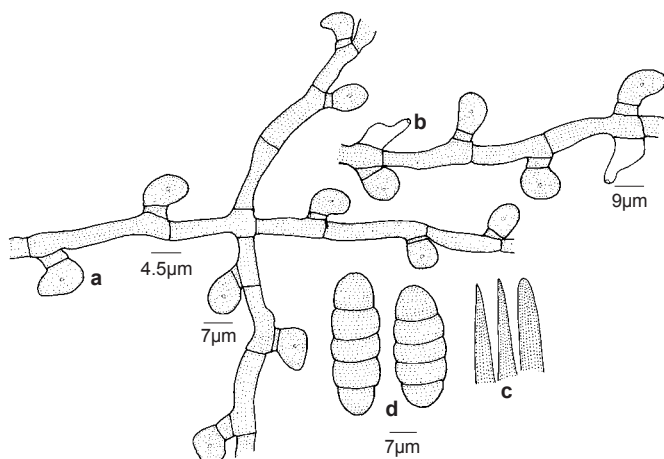


Figure 2. *Meliola cassiae-fistulae* sp. nov.
a - Appressorium; b - Phialide; c - Mycelial setae;
d - Ascospores

8-10µm. Setae myceliales paucae, simplices, rectae, acutae vel obtusae ad apicem, ad 300µm longae. Perithecia dispersa, globosa, ad 120µm diam.; ascosporae oblongae, 4-septatae, leniter constrictae, 35-37 x 11-12µm.

Colonies epiphyllous, subdense, up to 3mm in diameter. Hyphae substraight to flexuous, alternate, opposite to irregular at acute to wide angles, loosely reticulate, cells 19-23 x 4-6µm. Appressoria alternate, about 1% opposite, antrorse to subantrorse, 12-16µm long; stalk cells cylindrical to cuneate, 3-4µm long; head cells ovate, globose, entire, curved, 9-13 x 9-10µm. Phialides many, mixed with appressoria, alternate to opposite, ampulliform, 14-16 x 8-10µm. Mycelial setae very few, simple, straight, acute to obtuse at the tip, up to 300µm long. Perithecia scattered, globose, up to 120µm in diameter; ascospores oblong, 4-septate, slightly constricted, 35-37 x 11-12µm.

Remarks

Meliola aethiops Sacc. is known on this host genus but the new species differs from it in having alternate appressoria, few mycelial setae and smaller ascospores (Hansford, 1961). It also differs from *M. aethiops* Sacc. var. *cassiae* Rao in having straight setae in contrast to torulose and having smaller ascospores (Hosagoudar *et al.*, 1997).

Meliola desmodii-triangularis

V.B. Hosagoudar *et* A. Manojkumar, sp. nov.

(Fig. 3)

Material examined

Type: 4.x.2002, Placherry forest, Ranni, Pathanamthitta, Kerala, coll. A. Manojkumar, on leaves of *Desmodium triangulare* (Retz.) Merr. (Fabaceae), HClO 44695.

Isotype: 4.x.2002, Placherry forest, Ranni, Pathanamthitta, Kerala, coll. A. Manojkumar, on leaves of *Desmodium triangulare* (Retz.) Merr. (Fabaceae), TBGT 976.

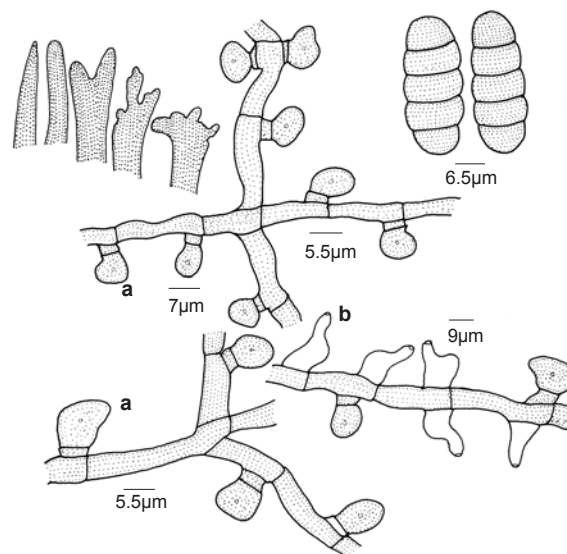


Figure 3. *Meliola desmodii-triangularis* sp. nov.
a - Appressorium; b - Phialide; c - Mycelial setae;
d - Ascospores

Diagnostic features

Coloniae epiphyllae, valde tenuis, ad 2mm diam., raro confluentes. Hyphae subrectae, flexuosae vel raro anfractuae, alternate vel irregulariter acuteque vel laxe ramosae, laxe vel dense reticulatae, cellulae 22-28 x 4-5µm. Appressoria alternata, unilateralia, ad 8% opposita, antrorsa, subantrorsa vel recurvata, recta vel curvula, 11-16µm longa; cellulae basillares cylindraceutae vel cuneatae, 2-5µm longae; cellulae apicales plerumque globosae, raro ovatae, integrae, saepe variae curvulae, 8-12x8-11µm. Phialides numerosae, mixtus appressoriis, alternate vel opposite, ampullaceae, 12-21x6-8µm. Setae myceliales juxta perithecia aggregatae, simplices, rectae vel leniter curvulae, acutae, obtusae vel 2-4 ter dentatae vel cristatae ad apicem, ad 300µm longae. Perithecia dispersa, globosa, ad 130 µm diam.; ascosporae oblongae, 4-septatae, constrictae, 28-32 x 9-12µm.

Colonies epiphyllous, very thin, up to 2mm in diameter, rarely confluent. Hyphae substraight, flexuous to rarely crooked, branching alternate to irregular at acute to wide angles, loosely to closely reticulate, cells 22-28 x 4-5µm. Appressoria alternate, unilateral, up to 8% opposite, antrorse, subantrorse to recurved, 11-16µm long; stalk cells cylindrical to cuneate, 2-5µm long; head cells mostly globose, rarely ovate, entire, often variously curved, 8-12 x 8-11µm. Phialides many, mixed with appressoria, alternate to opposite, ampulliform, 12-21 x 6-8µm. Mycelial setae scattered to grouped around perithecia, simple, straight to slightly curved, acute, obtuse to 2-4 times dentate to cristate at the tip, up to 300µm long. Perithecia scattered, globose, up to 130µm in diameter; ascospores oblong, 4-septate, constricted at the septa, 28-32 x 9-12µm.

Remarks

Of the known nine species of the genus *Meliola* on the host genus *Desmodium*, the present species can be compared with

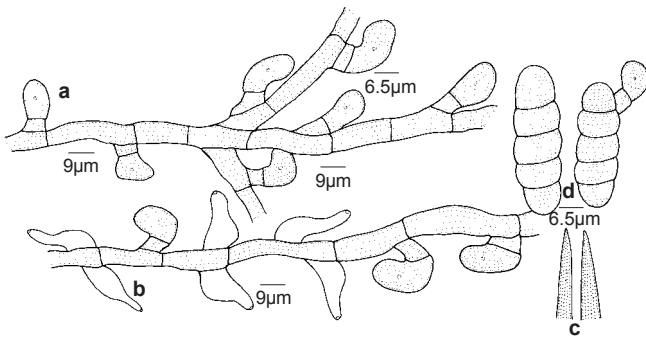


Figure 4. *Meliola desmodii-triquetri* sp. nov.
a - Appressorium; b - Phialide; c - Mycelial setae;
d - Ascospores

M. constipata Speg. having simple and dentate mycelial setae (Hansford, 1961). However, differs from it in having acute, obtuse, 2-4 dentate to cristate mycelial setae and having distinctly smaller ascospores.

Meliola desmodii-triquetri

V.B. Hosagoudar et A. Manojkumar, sp. nov.

(Fig. 4)

Material examined

Type: 4.x.2002, Parakuzhy, Karikulam, Ranni forest, Pathanamthitta, Kerala, coll. A. Manojkumar, on leaves of *Desmodium triquetrum* (L.) DC. (Fabaceae), HCIO 44694.

Isotype: 4.x.2002, Parakuzhy, Karikulam, Ranni forest, Pathanamthitta, Kerala, India, coll. A. Manojkumar, on leaves of *Desmodium triquetrum* (L.) DC. (Fabaceae), TBGT 975.

Diagnostic features

Coloniae hypophyllae, tenues, patentiae, ad 5mm diameter, confluentes. Hyphae subrectae vel flexuosae, alternate, opposite vel irregulariter acuteque vel laxe ramosae, laxe vel dense reticulatae, cellulae 25-35 x 4-5µm. Appressoria alternata, ad 5% opposita, antrorsa vel retrorsa, recta vel curvula, 14-20µm longa; cellulae basiliares cylindratae vel cuneatae, 4-8µm longae; cellulae apicales ovatae, globosae, integrae, rectae vel variae curvulae, 9-12 x 9-11µm. Setae myceliales dispersae, simplices, rectae, acutae ad apicem, ad 300µm longae. Perithecia dispersa, globosa, ad 144µm diam.; ascospores oblongae, 4-septatae, leniter constrictae, 32-40 x 11-14µm.

Colonies hypophyllous, thin, spreading, up to 5mm in diameter, confluent. Hyphae substraight to flexuous, branching alternate, opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 25-35 x 4-5µm. Appressoria alternate, about 5% opposite, antrorse to retrorse, straight to curved, 14-20µm long; stalk cells cylindrical to cuneate, 4-8µm long; head cells ovate, globose, entire, straight to variously curved, 9-12 x 9-11µm. Phialides many, mixed with appressoria, alternate to opposite, ampulliform, 16-24 x 6-8µm. Mycelial setae scattered, simple, straight, acute at the tip, up to 300µm long. Perithecia scattered, globose, up to 144µm in diameter; ascospores oblong, 4-septate,

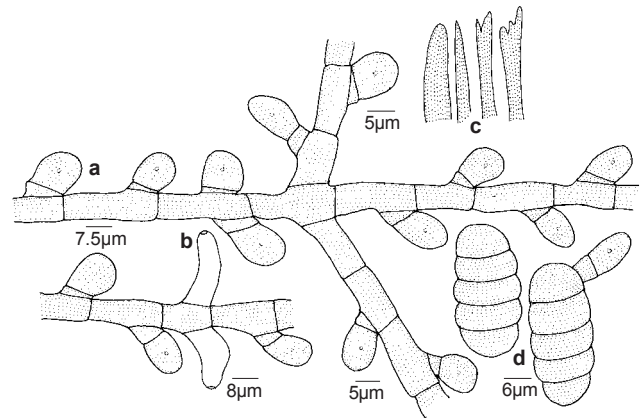


Figure 5. *Meliola memecylii* Sydow var. *microspora* Hansf.
a - Appressorium; b - Phialide; c - Mycelial setae;
d - Ascospores

slightly constricted at the septa, 32-40 x 10-14µm.

Remarks

Based on the Beeli formula 3113.3221, the present collection can be compared with *Meliola desmodii* Karst & Roum. var. *heterochaeta* Cif. known on *Desmodium supinum* from San Domingo (Hansford, 1961). However, Hansford (1961) stated that it is incompletely studied material. In such case, the present species stands distinct and hence, it has been placed under a new species.

***Meliola memecylii* Sydow var. *microspora* Hansf.**

(Fig. 5)

Sydowia 10:68, 1957; Hansf., Sydowia Beih. 2: 156, 1961.

Material examined

3.x.2002, Vandanam Sacred grove, Alapuzha, Kerala, coll. A. Manojkumar, on leaves of *Memecylon edule* Roxb. (Melastomataceae), HCIO 44701, TBGT 982.

Diagnostic features

Colonies epiphyllous, dense, crustose, up to 2mm in diam., confluent. Hyphae straight, branching opposite at wide angles, loosely to closely reticulate, cells 22-24 x 6-7µm. Appressoria alternate, about 2% opposite, antrorse to subantrorse, 16-18µm long; stalk cells cylindrical to cuneate, 3-4 µm long; head cells ovate, entire, 12-14 x 9-11µm in diameter. Phialides mixed with appressoria, alternate to opposite, ampulliform, 20-24 x 8-10µm. Mycelial setae mostly grouped around perithecia, simple, straight, acute, obtuse to dentate at the tip, up to 800µm long. Perithecia scattered, globose, up to 190µm in diameter; ascospores oblong, 4-septate, strongly constricted at the septa, 36-40 x 16-18µm.

Remarks

In the present collection, very few appressoria are opposite. Otherwise, the present collection perfectly matches with the species assigned. This species was reported from Philippines and was known only from a type collection and is known here

Table 1. A comparative account of *Meliola* species on the genus *Desmodium*

Beeli formula	Other characters of the species	Name of the species
3111.3223	Colonies thin, hyphae crooked; head cells ovate, bent and angulose-lobate; mycelial setae acute	<i>bantamensis</i>
3111.4222	Colonies epiphyllous; mycelial setae all dentate at the tip; ascospores 33-43.5µm long	<i>desmodii</i> – <i>laxiflori</i> var. <i>dentatae</i>
3111.4232	Colonies dense, velvety; head cells globose to ovate; often bent; mycelial setae acute; spores narrow	<i>desmodii</i> – <i>laxiflori</i>
3113.3221	Mycelial setae mostly simple and obtuse	<i>desmodii</i> var. <i>heterochaeta</i>
3113.3221	Colonies hypophyllous, thin; hyphae substraight; appressoria straight to curved, head cells entire; ascospores 32-38 x 11-30µm	<i>desmodii</i> – <i>triquetri</i>
3113.3222	Colonies epiphyllous; hyphae substraight; appressoria rarely opposite, head cells entire; ascospores 32-38 x 11-30µm	<i>desmodii</i> <i>pulchelli</i>
3113.3222	Colonies thin; hyphae tortuous; head cells ovate, globose, mycelial setae obtuse to acute	<i>meibomiae</i>
3113.4220	Appressoria spreading to antrorse; phialides mixed with appressoria, ascospores 35-40 µm long	<i>bantamensis</i> var. <i>keralensis</i>
3113.4221	Colonies dense, crustose, caulicolous; hyphae substraight; appressoria crowded, head cells globose; mycelial setae numerous, acute.	<i>kawandensis</i>
3113.4223	Colonies thin to dense, sometimes velvety; hyphae straight to crooked; head cells globose, usually small; mycelial setae acute or 2-4 dentate. Phialides frequently crowded	<i>bicornis</i>
31 ¹ / ₃ .3231	Colonies epiphyllous, very thin; hyphae substraight to crooked; head cells of appressoria globose, entire, variously curved	<i>desmodii</i> – <i>triangularis</i>
31 ¹ / ₃ .4221	Colonies dense, velvety; hyphae substraight; head cells ovate, pyriform; mycelial setae bi-dentate	<i>constipata</i>

for the first time from India (Bilgrami *et al.*, 1991).

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