

MELIOLACEAE OF KERALA, INDIA - XXIV: SIX NEW SPECIES AND ONE NEW RECORD FOR INDIA

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ABSTRACT

This paper gives an account of seven taxa of the family Meliolaceae. Of these, *Asteridiella phaulopsisidis*, *Meliola allophylligena*, *M. crotonis-malabarici*, *M. kulathupuzhaensis*, *M. peringamalaensis* and *M. smilacacearum* are new species, while *M. diospyricola* is reported for the first time from India.

KEYWORDS

India, Meliolaceae, New taxa

ABBREVIATIONS

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

Asteridiella phaulopsisidis sp. nov.

(Fig. 1a-e)

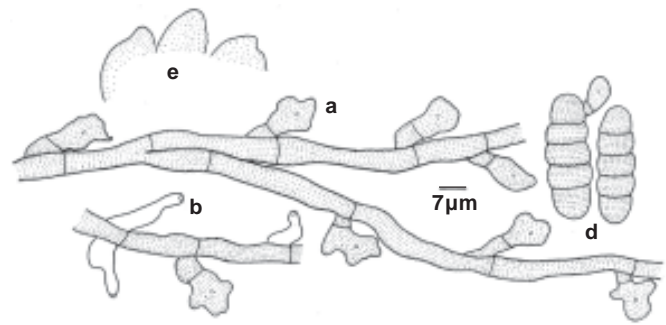


Figure 1. *Asteridiella phaulopsisidis* sp. nov.
a - Appressorium; b - Phialide; c - Mycelial setae;
d - Ascospores; e - Perithecial wall cells

Material examined

Type: 27.xii.2001, on leaves of *Phaulopsis imbricata* (Forssk.) Sweet (Acanthaceae), Sankili forest, Shendurney Wildlife Sanctuary, Kollam, Kerala, India, V.B. Hosagoudar, HCIO 44283.
Isotype: TBGT 672

Diagnosis

Coloniae epiphyllae, densae, ad 1mm diam., confluentes. Hyphae subrectae vel flexuosae, alternate vel irregulariter acuteque ramosae, laxe vel dense reticulatae, cellulae 16-25 x 5-7µm. Appressoria alternata, antrorsa vel arte antrorsa, 16-20µm longa; cellulae basiliares cylindratae vel cuneatae, 3-10µm longae; cellulae apicales ovatae vel globosae, integrae, angularis vel stellatim lobatae, 9-12 x 9-11µm. Phialides appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 16-19 x 5-7µm. Perithecia dispersa vel laxe aggregata, globosa, ad 125µm diam.; cellulae peritheciales conoideae, protrudae, ad 13µm altae; ascosporae oblongae vel ellipsoideae, 4-septatae, leniter constrictae, 30-36 x 11-13µm.

Colonies epiphyllous, dense, up to 1mm in diameter, often confluent. Hyphae substraight to flexuous, branching alternate to irregular at acute angles, loosely to closely reticulate, cells 16-25 x 5-7µm. Appressoria alternate, antrorse to closely antrorse, 16-20µm long; stalk cells cylindrical to cuneate, 3-10µm long; head cells ovate to globose, entire, angular to stellately lobate, 9-12 x 9-11µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-19 x 5-7µm. Perithecia scattered to loosely grouped, globose, up to 125µm in diameter; perithecial wall cells conoid, protruded, up to 13µm long; ascospores oblong to ellipsoidal, 4-septate, slightly constricted at the septa, 30-36 x 11-13µm.

Remarks

Based on the Beeli formula 3101. 3220, *Asteridiella phaulopsisidis* can be compared with *A. thumbergiae-chrysopsidis* (Hansf. & Deight.) Hansf. known on *Thunbergia chrysops* from Sierra Leone but differs from it in having shorter appressoria with stellately lobate head cells and perithecial wall cells are conoid in contrast to mammiform (Hansford, 1961).

Meliola allophylligena sp. nov.

(Fig. 2a-d)

Material examined

Type: 27.xii.2001, on leaves of *Allophylus serrulatus* Radlk. (Sapindaceae), Sankili forest, Shendurney Wildlife Sanctuary, Kollam, Kerala, India, V.B. Hosagoudar, HCIO 44330.
Isotype: TBGT 726.

Diagnosis

Coloniae epiphyllae, densae, ad 2mm diam., confluentes. Hyphae rectae, opposite vel irregulariter acuteque ramosae, laxe vel dense reticulatae, cellulae 14-20 x 6-8µm. Appressoria alternata, ad 40% opposita, antrorsa vel arte antrorsa, recta vel curvula, 16-21µm longa; cellulae basiliares cylindratae vel cuneatae, 5-7µm longae; cellulae apicales ovatae, globosae, clavatae, integrae, 11-15 x 11-13µm. Phialides appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 14-20 x 6-8µm. Setae myceliales dispersae vel plerumque juxta perithecia, simplices, rectae, raro ad 1% curvulae, ad apicem obtusae et 1% dentatae, ad 245µm longae. Perithecia dispersa vel laxe aggregata, ad 125µm diameter; ascosporae late ellipsoideae, 4-septatae, constrictae, 32-36 x 12-16µm.

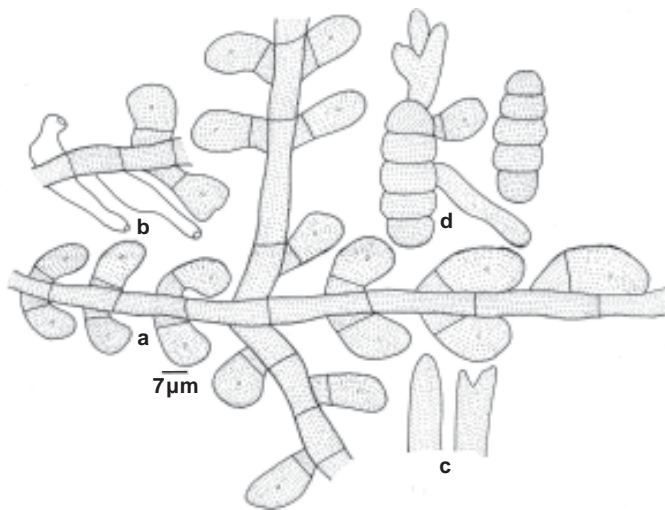


Figure 2. *Meliola allophylogena* sp. nov.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

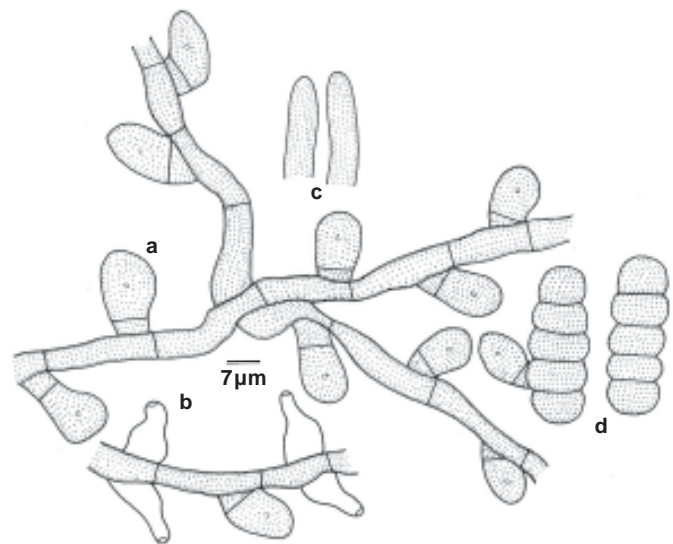


Figure 3. *Meliola crotonis-malabarici* sp. nov.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

Colonies epiphyllous, dense, up to 2mm in diameter, confluent. Hyphae straight, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 14-20 x 6-8µm. Appressoria alternate, about 40% opposite, antrorse to closely antrorse, straight to curved, 16-21µm long; stalk cells cylindrical to cuneate, 5-7µm long; head cells ovate, globose, clavate, entire, 11-15 x 11-13µm. Phialides numerous, mixed with appressoria, alternate to opposite, ampulliform, 14-20 x 6-8µm. Mycelial setae scattered to mostly grouped around perithecia, simple, straight, rarely about 1% curved, obtuse at the apex, about 1% dentate at the tip, up to 245µm long. Perithecia scattered to loosely grouped, up to 125µm in diameter; ascospores broadly ellipsoidal, 4-septate, constricted at the septa, 32-36 x 12-16µm.

Remarks

Typical obtuse and 1% dentate mycelial setae distinguishes this taxon from rest of the *Meliola* species known on the members of the family Sapindaceae (Hansford, 1961; Hosagoudar, 1996; Hu *et al.*, 1996, 1999; Mibey & Hawksworth, 1997). Hosagoudar and Goos (1990) had assigned this taxon to *Meliola nepheli* Sacc. var. *singalensis* Hansf.

Meliola crotonis-malabarici sp. nov.

(Fig. 3a-d)

Material examined

Type: 27.xii.2001, on leaves of *Croton malabaricus* Bedd. (Euphorbiaceae), Sankili forest, Shendurney Wildlife Sanctuary, Kollam, Kerala, India, V.B. Hosagoudar, HClO 44354.

Isotype: TBGT 722

Diagnosis

Coloniae epiphyllae, densae, crustosae, raro velutinae, ad 2mm diam., raro confluentes. Hyphae rectae vel flexuosae, oppositae acutaeque ramosae, laxae vel dense reticulatae, cellulae 16-28 x 5-7µm. Appressoria alternata, antrorsa, valde antrorsa vel subantrorsa, 14-21µm longa; cellulae

basilares cylindratae vel cuneatae, 3-7µm longae; cellulae apicales ovatae, clavatae, globosae, integrae, 11-15 x 9-11µm. Phialides numerosae, appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 14-16 x 8-10µm. Setae myceliales plerumque circa perithecia, simplices, rectae, flexuosae, curvulae et raro uncinatae, obtusae ad apicem, ad 250µm longae. Perithecia dispersa vel laxae aggregata, globosa, ad 140µm diam.; ascosporae oblongae vel cylindratae, 4-septatae, constrictae, 32-36 x 12-16µm.

Colonies epiphyllous, dense, crustose, rarely velvety, up to 2mm in diameter, rarely confluent. Hyphae straight to flexuous, branching opposite at acute angles, loosely to closely reticulate, cells 16-28 x 5-7µm. Appressoria alternate, antrorse, closely antrorse to subantrorse, 14-21µm long; stalk cells cylindrical to cuneate, 3-7µm long; head cells ovate, clavate, globose, entire, 11-15 x 9-11µm. Phialides numerous, mixed with appressoria, alternate to opposite, ampulliform, 14-16 x 8-10µm. Mycelial setae mostly grouped around perithecia, simple, straight, flexuous, curved to rarely uncinuate, obtuse at the tip, up to 250µm long. Perithecia scattered to loosely grouped, globose, up to 140µm in diameter; ascospores oblong to cylindrical, 4-septate, constricted at the septa, 32-36 x 12-16µm.

Remarks

Based on the dense colonies and obtuse mycelial setae, *Meliola crotonis-malabarici* is similar to *M. gymnanthicola* Stev. known on *Gymnanthus lucida* from Porto Rico (Hansford, 1961). However, differs from it in having straight and antrorse appressoria; straight to curved mycelial setae and smaller ascospores.

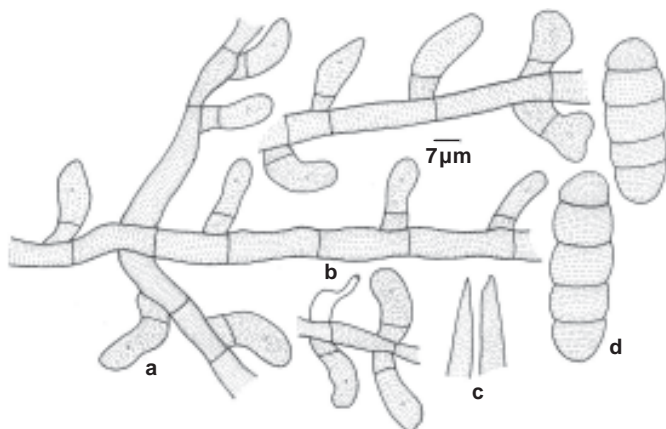


Figure 4. *Meliola diospyricola* Hansf.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

Meliola diospyricola Hansf., Proc. Linn. Soc. New South Wales 78: 55, 1953; Sydowia Beih. 2: 498, 1961.

(Fig. 4a-d)

Material examined

11.iii.1997, on leaves of *Diospyros* sp. (Ebenaceae), Chemunji, Thiruvananthapuram, Kerala, India, V.B. Hosagoudar, HCIO 44355, TBGT 589.

Diagnosis

Colonies hypophyllous, dense, up to 3mm in diameter, confluent. Hyphae straight, substraight to crooked, branching opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 22-35 x 5-7µm. Appressoria alternate, about 2-3% opposite, antrorse, subantrorse, closely antrorse to retrorse, straight to curved, 22-26µm long; stalk cells cylindrical to cuneate, 6-8µm long; head cells ovate, oblong to cylindrical, entire to rarely angular, 16-18 x 9-11µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 24-28 x 4-7µm. Mycelial setae closely scattered, simple, straight, acute at the tip, up to 882µm long. Perithecia scattered to loosely grouped, verrucose, up to 250µm in diameter; ascospores oblong to cylindrical, 4-septate, middle cell slightly larger, constricted at the septa, 42-45 x 15-17µm.

Remarks

This species was reported from Australia, Philippines and China (Hansford, 1961; Hu *et al.*, 1999) and is reported here for the first time from India.

***Meliola kulathupuzhaensis* V.B. Hosagoudar et S. Justin P. Jacob, sp. nov.**

(Fig. 5a-d)

Material examined

Type: 4.xii.2001, on leaves of *Bauhinia* sp. (Ceasalpinaceae), Kulathupuzha, Kollam, Kerala, India, Justin P. Jacob, HCIO 44370.

Isotype: TBGT 613.

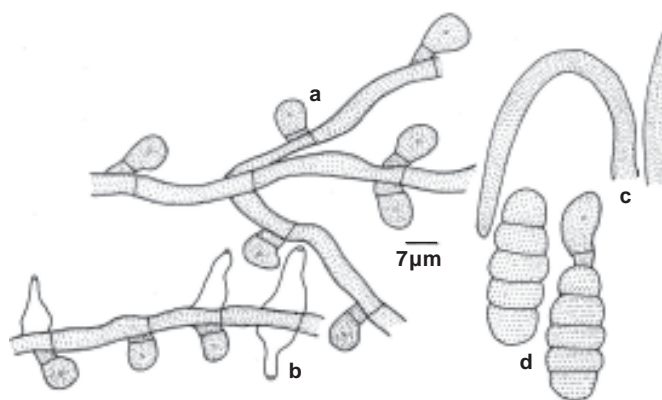


Figure 5. *Meliola kulathupuzhaensis* sp. nov.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

Diagnosis

Coloniae epiphyllae, tenues vel subdensae, ad 3mm diam., confluentes. Hyphae flexuosae vel anfractuae, opposite laxe ramosae, laxe vel modice dense reticulatae, cellulae 24-32 x 4-5µm. Appressoria alternata, ad 10% opposita, subantrorsa vel retrorsa, 10-13µm longa; cellulae basillares cylindratae vel cuneatae, 2-3µm longae; cellulae apicales ovatae, clavatae, globosae, plerumque integrae, raro angularis, 8-10 x 7-10µm. Phialides appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 14-21 x 8-10µm. Setae myceliales non numerosae, dispersae vel circa perithecia aggregatae, simplices, rectae, curvulae, uncinatae, raro geniculatim uncinatae, acutae vel ad apicem obtusae, ad 240µm longae. Perithecia dispersa, globosa, ad 150µm diam.; ascosporae oblongae vel cylindratae, 4-septatae, constrictae, 27-37 x 9-15µm.

Colonies epiphyllous, thin to subdense, up to 3mm in diameter, often confluent. Hyphae flexuous to crooked, branching opposite at wide angles, loosely to moderately closely reticulate, cells 24-32 x 4-5µm. Appressoria alternate, about 10% opposite, sub antrorse to retrorse, 10-13µm long; stalk cells cylindrical to cuneate, 2-3µm long; head cells ovate, clavate, globose, mostly entire, rarely angular, 8-10 x 7-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 14-21 x 8-10µm. Mycelial setae not many, scattered to grouped around perithecia, simple, straight, curved, uncinatae, often geniculately uncinatae, acute to obtuse at the tip, up to 240µm long. Perithecia scattered, globose, up to 150µm in diameter; ascospores oblong to cylindrical, 4-septate, constricted at the septa, 27-37 x 9-15µm.

Remarks

Based on the uncinatae mycelial setae, *Meliola kulathupuzhaensis* can be compared with *M. curviseta* Racib., *M. pazschkeana* Gaill., *M. pazschkeana* Gaill. var. *macropoda* Hansf. and *M. cubitella* (Stev. & Tehon) Ciferri but differs from all in having alternate and opposite appressoria; straight, curved and geniculately curved mycelial setae (Hansford, 1961).

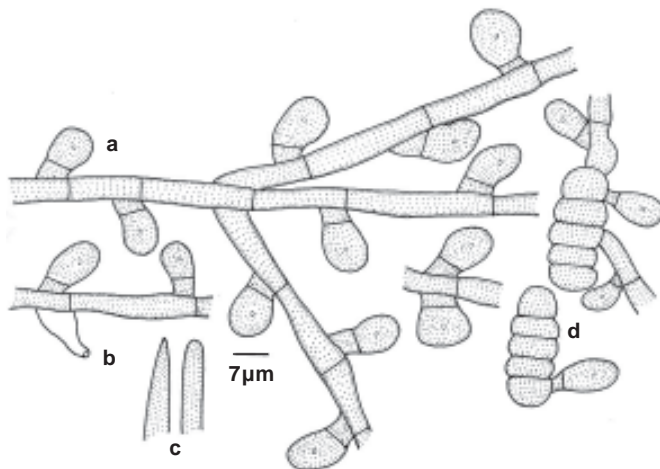


Figure 6. *Meliola peringamalaensis* sp. nov.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

***Meliola peringamalaensis* V.B. Hosagoudar et
M. Kamarudeen, sp. nov.**

(Fig. 6. a-d)

Material examined

Type: 24.xi.2001, Peringamala, Palode, Thiruvananthapuram, Kerala, India, on leaves of *Alstonia scholaris* (L.) R. Br. (Apocynaceae), M. Kamarudeen HClO 44379.

Isotype: TBGT 677.

Diagnosis

Coloniae epiphyllae, densae, velutinae, ad 3mm diam., confluentes. Hyphae rectae vel subrectae, oppositae vel irregulariter acuteque ramosae, laxae vel dense reticulatae, cellulae 22-28 x 4-7µm. Appressoria alternata, paucae opposita, antrorsa vel subantrorsa, 11-21µm longa; cellulae basilares cylindratae vel cuneatae, 2-6µm longae; cellulae apicales ovatae, clavatae, cylindratae, integrae vel angularis, plerumque rectae vel raro curvulae, 9-16 x 8-10µm. Phialides appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 12-20 x 6-8µm. Setae myceliales bifformes: setae myceliales simplices, rectae, flexuosae, geniculatae, raro curvulae, ad apicem acutae vel obtusae, ad 735µm longae; setae myceliales circa perithecia simplices, incurvatae, acutae vel obtusae ad apicem, ad 150µm longae. Perithecia dispersa, globosa, ad 150µm diam.; ascospores oblongae vel cylindratae, 4-septatae, constrictae, 30-32 x 11-13µm.

Colonies epiphyllous, dense, velvety, up to 3mm in diameter, confluent. Hyphae straight to substraight, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 22-28 x 4-7µm. Appressoria alternate, less than 1% opposite, antrorse to subantrorse, 11-21µm long; stalk cells cylindrical to cuneate, 2-6µm long; head cells ovate, clavate, cylindrical, entire to angular, mostly straight, rarely curved, 9-16 x 8-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 12-20 x 6-8µm. Mycelial setae are of two types: the setae on mycelia are simple, straight, flexuous, geniculate, rarely

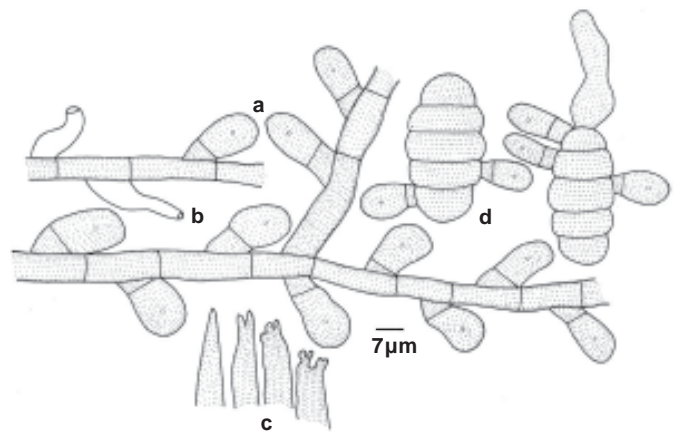


Figure 7. *Meliola smilacacearum* sp. nov.
a - Appressorium; b - Phialide; c - Apical portion of the mycelial setae; d - Ascospores

curved, acute to obtuse at the tip, up to 735µm long; setae around perithecia were simple, incurved, acute to obtuse at the tip, up to 150µm long. Perithecia scattered, globose, up to 150µm in diameter; ascospores oblong to cylindrical, 4-septate, constricted at the septa, 30-32 x 11-13µm.

Remarks

Meliola alstoniae Koord. and *M. hendrickxii* Hansf. are known on the host genus *Alstonia* (Hansford, 1961; Hosagoudar, 1996; Hu *et al.*, 1996, 1999; Mibey & Hawksworth, 1997). *Meliola peringamalaensis* differs from the former species in absence of solid plate forming mycelia and having numerous mycelial setae; differs from the latter species in having flexuous, longer setae and phialides mixed with appressoria. It also differs from *M. alstoniae-comptonii* Huguenin in having epiphyllous round colonies, with longer and flexuous mycelial setae and smaller ascospores (Huguenin, 1969; Hosagoudar *et al.*, 1997).

***Meliola smilacacearum* sp. nov.**

(Fig. 7. a-d)

Material examined

Type: 27. xii. 2001, on leaves of *Smilax* sp. (Smilacaceae), Sankili forest, Shendurney Wildlife Sanctuary, Kollam, Kerala, India, V.B. Hosagoudar HClO 44384.

Isotype: TBGT 694.

Diagnosis

Coloniae epiphyllae, densae, ad 2mm diam. Hyphae rectae vel subrectae, oppositae vel irregulariter acuteque ramosae, laxae vel dense reticulatae, cellulae 16-20 x 6-8µm. Appressoria alternata, ad 2% opposita, antrorsa vel subantrorsa, 16-21µm longa; cellulae basilares cylindratae vel cuneatae, 3-7µm longae; cellulae apicales ovatae, clavatae, globosae, integrae, 12-14 x 11-13µm. Phialides appressoriis intermixtae, alternatae vel oppositae, ampulliformes, 16-20 x 8-10µm. Setae myceliales paucae vel numerosae, simplices, rectae, ad 2% curvulae vel uncinatae, acutae, dentatae vel cristatae ad apicem, ad 600µm longae. Perithecia dispersa vel laxae

aggregata, globosa, ad 215µm diam.; ascospores oblongae vel ellipsoideae, 4-septatae, constrictae, raro cellula centralis magniora, 41-45 x 18-21µm.

Colonies epiphyllous, dense, up to 2mm in diameter. Hyphae straight to substraight, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 16-20 x 6-8µm. Appressoria alternate, about 2% opposite, antrorse to subantrorse, 16-21µm long; stalk cells cylindrical to cuneate, 3-7µm long; head cells ovate, clavate, globose, entire, 12-14 x 11-13µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-20 x 8-10µm. Mycelial setae few to numerous, simple, straight, about 2% curved to uncinatae, acute, dentate to cristate at the apex, up to 600µm long. Perithecia scattered to loosely grouped, globose, up to 215µm in diameter; ascospores oblong to ellipsoidal, 4-septate, constricted at the septa, rarely central cell larger, 41-45 x 18-21µm.

Remarks

Having acute to dentate mycelial setae, *M. smilacacearum* can be compared with *M. smilacis* Stev. known on *Smilax* spp. from Porto Rico, Honduras and Taiwan (Hansford, 1961) but differs from it in having only epiphyllous colonies, longer, straight but few uncinatae mycelial setae and smaller ascospores.

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CASTRATION IN A COMMON MONGOOSE *HERPESTES EDWARDSI*

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plus web supplement of 1 page

Castration in non-domestic species is carried out to increase the docility of animals having intimate contact with humans (Fowler, 1985). The present paper describes open method of castration in a Common Mongoose (*Herpestes edwardsi*).

A male common mongoose, aged about six months and weighing 700g was presented to the surgery clinic of Orissa Veterinary College for castration. It was anaesthetized with a mixture of atropine sulphate 0.02mg and ketamine hydrochloride 7mg injected intramuscularly using an insulin syringe (Image 1^w). The mongoose was recumbent within two minutes. A cover of hypodermic needle cut at its closed end was applied to both canine teeth to serve as mouth gag and the tongue was pulled out (Image 2^w). After routine preparation of the site, castration was performed through scrotal incision as usual. Ligation of spermatic duct and vessels and transfixation and ligation of tunica vaginalis communis was done with 1-0 chromic cat gut. The skin was sutured with nylon suture after pouring povidone-iodine lotion (Image 3^w). Cephalixin 125mg dispersible tablets (Ceff 15mg, DT. Lupin Lab, Mumbai) were administered orally once daily in fish soup for five days. Skin stitches were removed on the twelfth post-operative day and the animal recovered uneventfully.

Fowler (1985) opined that veterinarians must inform the client that castration may not necessarily decrease unpredictable behaviour or increase docility. In the present case castration of the mongoose was done due to the request of the owner in spite of the above suggestions being explained to him. The mongoose was well anaesthetized with the mixture of atropine sulphate and ketamine hydrochloride as suggested by Retting and Divers (1985) for restraint and handling of animals of family Viverridae.

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^w See Images in the web supplement at www.zoosprint.org



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