



## Three new fungi from Silent Valley National Park, Kerala, India

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There are several sporadic reports on fungi of Silent Valley National Park, but a consolidated account of any group of fungi of this evergreen forest is lacking. We have been making continuous efforts in the study of these fungi (Hosagoudar et al. 1996; Florence 2004; Hosagoudar & Biju 2006; Hosagoudar et al. 2010; Rajeshkumar & Hosagoudar 2010; Shaji & Hosagoudar 2010) and in this note we provide an account of three new fungi.

### *Asteridiella toddaliae* sp. nov.

(Fig. 1)

**Material examined:** 02.viii.2008, on leaves of *Toddalia asiatica* (L.) Lam. (Rutaceae), Cheriavalakkad, Silent Valley National Park, Palakkad, Kerala, India, coll. M.C. Riju et al. TBGT 4513 (holotype). Part of the collection has been deposited in HClO, New Delhi, (MycoBank # 561021).

Coloniae amphigenae, densae, velutinae, ad

3mm diam., raro confluentes. Hyphae rectae, subrectae vel undulatae, plerumque opposite laxe ramosae, laxe vel arte reticulatae, cellulae 22–30 x 7–10 µm. Appressoria alternata, unilateralis, ad 10% opposita, antrorsa vel subantrorsa, raro retrorsa, 12–25 µm longa; cellulae basilares cylindratae vel cuneatae, 2–8 µm longae; cellulae apicales ovatae, globosae, integrae, 10–18 x 7–13 µm. Phialides appressoriis intermixtae, alternatae, oppositae, ampulliformes, 15–23 x 5–8 µm. Perithecia laxe aggregata ad coloniis centre, ad 210µm diam.; cellulae peritheciales mammiformes vel conoideae, 17–28 µm longae; ascosporae oblongae vel ellipsoideae, 4-septatae, constrictus ad septatae, 45–48 x 22–25 µm.

Colonies amphigenous, dense, velvety, up to 3mm diam., rarely confluent. Hyphae straight, substraight to undulating, branching mostly opposite at wide angles, loosely to closely reticulate, cells 22–30 x 7–10 µm. Appressoria alternate, unilateral, about 10% opposite, antrorse to subantrorse, rarely retrorse, 12–25 µm long; stalk cells cylindrical to cuneate, 2–8 µm long; head cells ovate, globose, entire, 10–18 x 7–13 µm. Phialides mixed with appressoria, alternate, opposite, ampulliform, 15–23 x 5–8 µm. Perithecia loosely grouped at the centre of the colony, up to 210µm in diam.; perithecial wallcells mammiform to conoid, 17–28 µm long; ascospores oblong to ellipsoidal, 4-septate, constricted at the septa, 45–48 x 22–25 µm.

Of the known species of the genus *Asteridiella* on Rutaceae, *Asteridiella obesa* (Speg.) Hansf. var. *obesula* (Speg.) Hansf. and *A. fagaricola* (Speg.) Hansf. var. *zanthoxyli* Hansf. having alternate and opposite appressoria (Hansford 1961). The present new species differs from the former taxon known on *Esenbeckia latifolia* from Paraguay in having perfectly rounded head cells of appressoria in contrast to rounded-angulose. It also differs from the latter taxon known on *Zanthoxylum hymenale* from Argentina in having only 10% opposite appressoria in contrast to 90% (Hansford 1961). The specific epithet is derived from the host genus.

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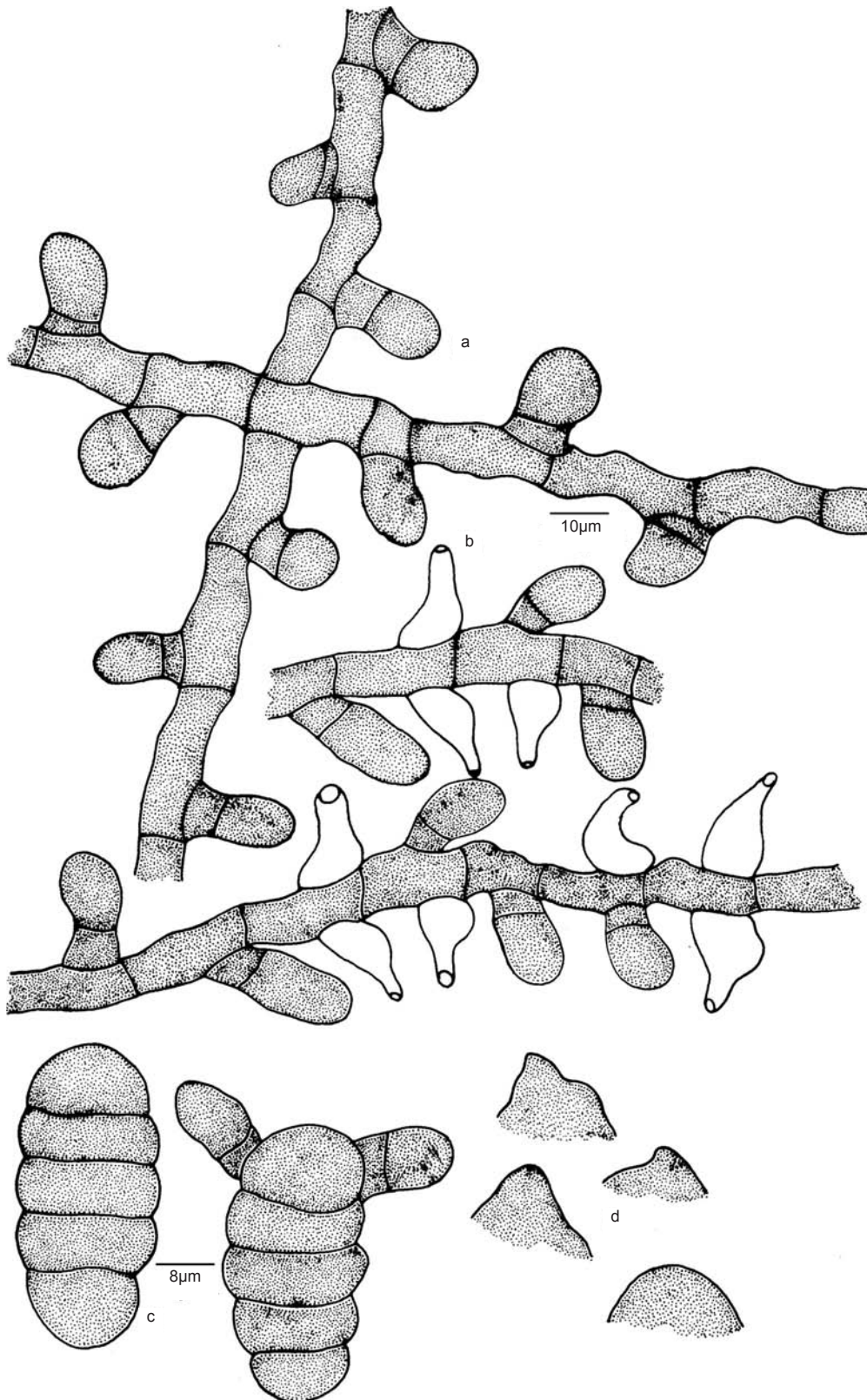
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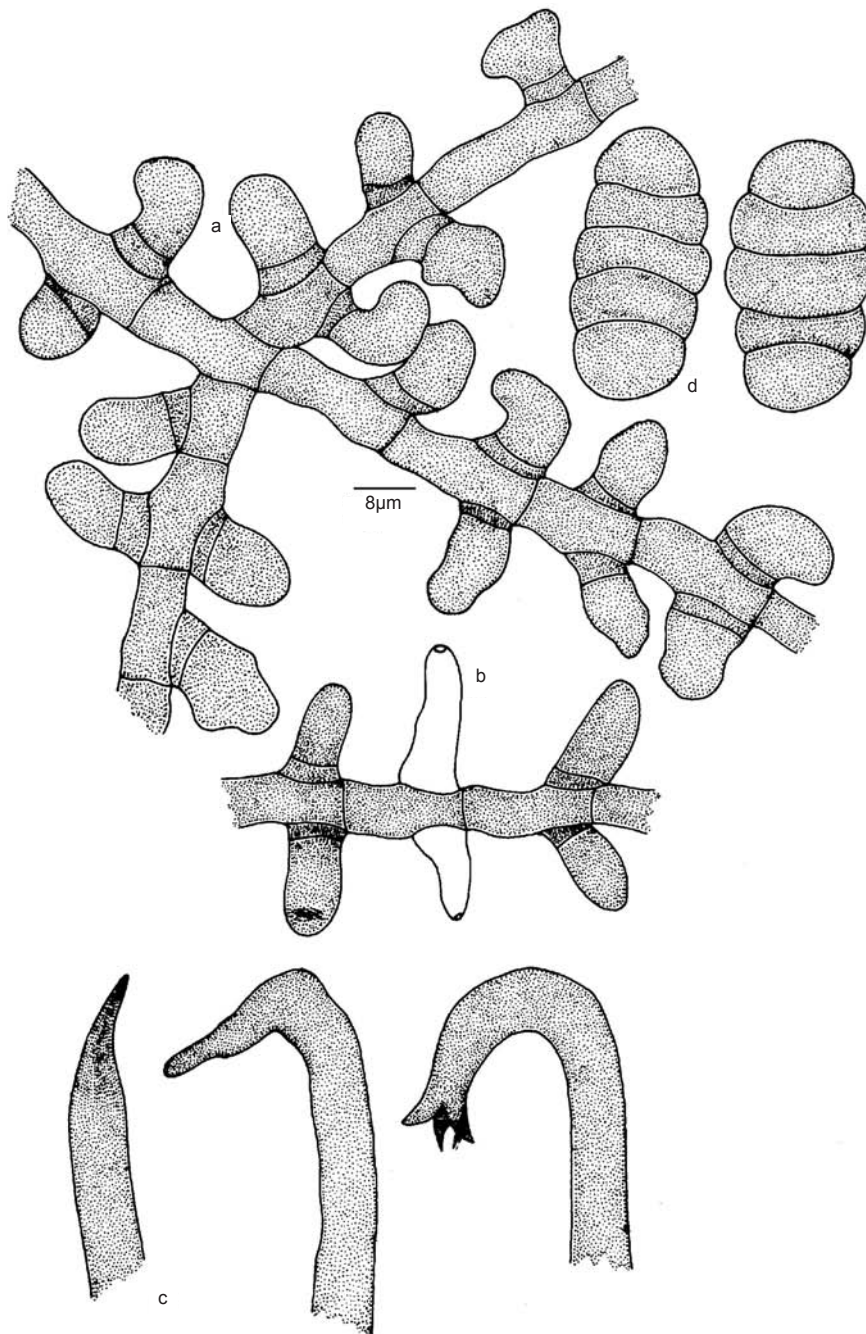
**Figure 1. *Asteridiella toddaliae* sp. nov.**  
a - Appressorium; b - Phialide; c - Ascospores; d - Perithecial wall cells

*Meliola clausenigena* sp. nov.  
(Fig. 2)

**Material examined:** 01.viii.2008, on leaves of *Clausena* sp. (Rutaceae), Poochipara, Silent Valley National Park, Palakkad, Kerala, India, coll. M.C. Riju et al. TBGT 4514 (holotype). Part of the collection has been deposited in HCIO, New Delhi, (Mycobank # 561022).

Coloniae amphigenae, densae, velutinae, ad 3mm

diam., dispersae vel confluentes. Hyphae rectae, flexuosae, opposite laxe ramosae, laxe vel arte reticulatae, cellulae 15–30 x 5–8  $\mu$ m. Appressoria plerumque opposita, raro unilateralis, antrorsa vel subantrorsa, 17–23  $\mu$ m longa; cellulae basillares cylindraceae vel cuneatae, 5–8  $\mu$ m longae; cellulae apicales ovatae, oblongae, raro globosae, rectae vel curvulae, integrae, saepe sinuatae, truncatae ad apicem, 12–15 x 7–10  $\mu$ m. Phialides appressoriis intermixtus, oppositae, alternatae vel unilateralis, 15–20 x 7–10



**Figure 2.** *Meliola clausenigena* sp. nov.

a - Appressorium; b - Phialide;  
c - Apical portion of the mycelial setae; d - Ascospores



$\mu\text{m}$ . Setae myceliales simplices, rectae vel uncinatae ad portio apicalis, acutae, obtusae vel 2–3-dentatae ad apicem, ad  $240\mu\text{m}$  longae. Perithecia dispersa vel aggregata, ad  $190\mu\text{m}$  diam.; ascospores oblongae vel cylindratae, 4-septatae, constrictus ad septatae,  $37\text{--}40 \times 15\text{--}20 \mu\text{m}$ .

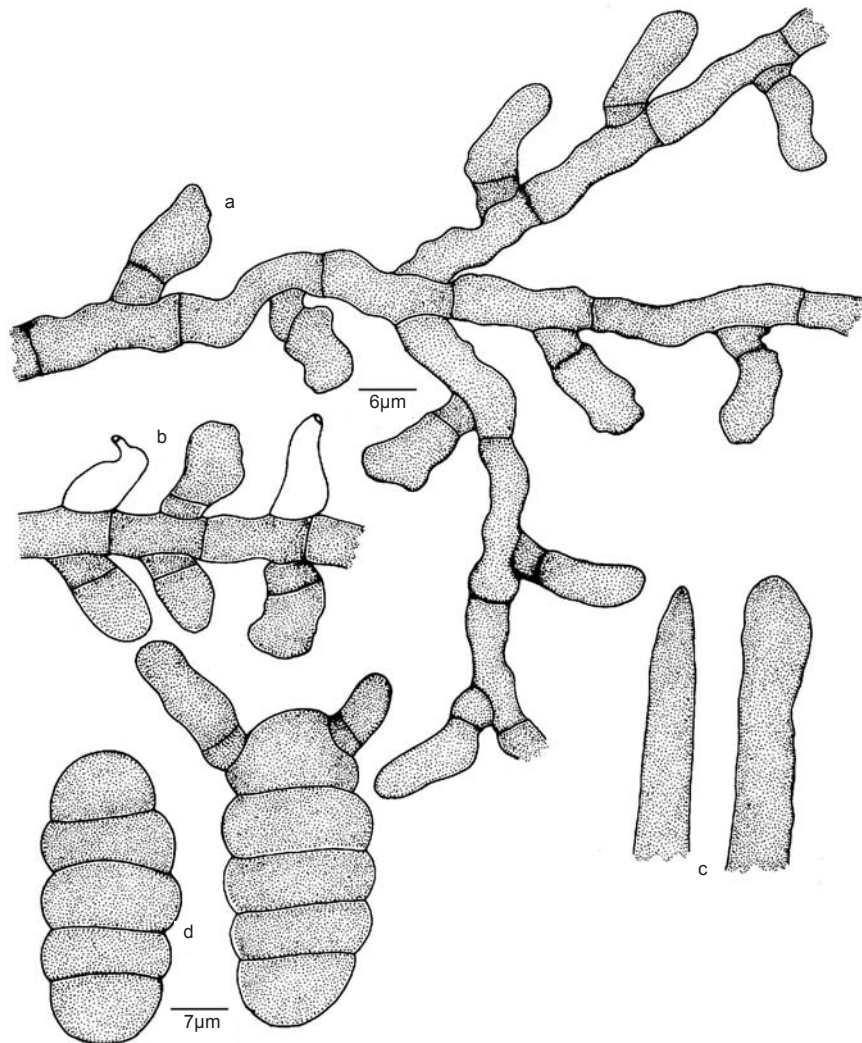
Colonies amphigenous, dense, velvety, up to 3mm in diam., scattered to confluent. Hyphae straight, flexuous, branching opposite at wide angles, loosely to closely reticulate, cells  $15\text{--}30 \times 5\text{--}8 \mu\text{m}$ . Appressoria mostly opposite, rarely unilateral, antrorse to subantrorse,  $17\text{--}23 \mu\text{m}$  long; stalk cells cylindrical to cuneate,  $5\text{--}8 \mu\text{m}$  long; head cells ovate, oblong, rarely globose, straight to curved, entire, often sinuate, truncate at the apex,  $12\text{--}15 \times 7\text{--}10 \mu\text{m}$ . Phialides mixed with appressoria, opposite, alternate to unilateral,  $15\text{--}20 \times 7\text{--}10 \mu\text{m}$ . Mycelial setae simple, straight to uncinuate at the apical portion, acute, obtuse to 2–3-times dentate at the tip,

up to  $240\mu\text{m}$  long. Perithecia scattered to grouped in the colonies, up to  $190\mu\text{m}$  in diam.; ascospores oblong to cylindrical, 4-septate, constricted at the septum,  $37\text{--}40 \times 15\text{--}20 \mu\text{m}$ .

This is the only species of the genus *Meliola* known on the members of the family Rutaceae having straight, curved to uncinuate apical portion of the mycelial setae (Hansford 1961; Hosagoudar et al. 1996; Hu et al. 1996, 1999; Hosagoudar 1996, 2008; Hosagoudar & Agarwal 2008). The specific epithet is derived from the host genus.

***Meliola strombosii* sp. nov.**  
(Fig. 3)

**Material examined:** 01.viii.2008, on leaves of *Strombosia* sp. (Olacaceae), Cheriavalakkad, Silent Valley National Park, Palakkad, Kerala, India, coll.



**Figure 3. *Meliola strombosii* sp. nov.**

a - Appressorium; b - Phialide;  
c - Apical portion of the mycelial setae;  
d - Ascospores

M.C. Riju et al. TBGT 4515 (holotype). Part of the collection has been deposited in HClO, New Delhi, (MycoBank # 561023).

Coloniae amphigenae, plerumque hypophyllae, densae, velutinae, ad 4mm diam., confluentes. Hyphae flexuosae vel undulatae, oppositae vel alternatim acuteque vel laxe ramosae, laxae vel arte reticulatae, cellulae 15–25 x 5–10 µm. Appressoria alternata, opposita vel unilateralis, antrorsa vel subantrorsa, raro retrorsa, 17–28 µm longa; cellulae basilares cylindratae vel cuneatae, 5–8 µm longae; cellulae apicales oblongae vel cylindratae, rectae vel flexuosae curvulae, integrae, 10–20 x 5–8 µm. Phialides appressoriis intermixtus, alternatae, oppositae vel unilateralis, ampulliformes, 20–30 x 6–8 µm. Setae myceliales rectae vel curvulae, dispersae, acutae ad apicem, ad 720µm longae; Perithecia dispersa, ad 240µm diam.; ascosporae obovoideae, 4-septatae, constrictus ad septatae, 50–55 x 20–23 µm.

Colonies amphigenous, mostly hypophyllous, dense, velvety, up to 4mm diam., confluent. Hyphae flexuous to undulate, branching opposite to alternate at acute to wide angles, loosely to closely reticulate, cells 15–25 x 5–10 µm. Appressoria alternate, opposite to unilateral, antrorse to subantrorse, rarely retrorse, 17–28 µm long; stalk cells cylindrical to cuneate, 5–8 µm long; head cells oblong to cylindrical, straight to flexuously curved, entire, 10–20 x 5–8 µm. Phialides mixed with appressoria, alternate, opposite to unilateral, ampulliform, 20–30 x 6–8 µm. Mycelial setae straight to curved, scattered, acute at the tip, up to 720µm long; Perithecia scattered in the colonies, up to 240µm in diam.; ascospores obovoidal, 4-septate, constricted at the septa, 50–55 x 20–23 µm.

*Meliola strobosiae* Hosag. et al. is known on *Strombosia ceylonica* from Kukke Subramanya, Karnataka (Hosagoudar 2008). However, the present new species differs from it in having narrow head cells (5–8 µm against 8–12 µm) and larger spores (50–55 x 20–23 against 36–40 x 15–17 µm). The specific epithet is derived from the host genus.

## REFERENCES

- Florence, E.J.M. (2004).** *Biodiversity Documentation for Kerala. Part 2: Microorganisms (Fungi)*. Kerala Forest Research Institute, Peechi, 293pp.
- Hansford, C.G. (1961).** The Meliolinae. A Monograph. *Sydowia Beihefte* 2: 1–806.
- Hosagoudar, V.B. (1996).** *Meliolales of India*. Botanical Survey of India, Calcutta, 363pp.
- Hosagoudar, V.B. (2008).** *Meliolales of India. Vol. II*. Botanical Survey of India, Calcutta, 390pp.
- Hosagoudar, V.B., T.K. Abraham & P. Pushpangadan (1996).** *Fungi of Kerala*. Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, 151pp.
- Hosagoudar, V.B. & D.K. Agarwal (2008).** *Taxonomic studies of Meliolales. Identification Manual*. International Book Distributors, Dehra Dun, 263pp.
- Hosagoudar, V.B. & H. Biju (2006).** Studies on foliicolous fungi – XXII. Microfungi of Silent Valley National Park, Palghat district in Kerala State. *Journal of Mycopathological Research* 44: 39–48
- Hosagoudar, V.B., M.C. Riju & D.K. Agarwal (2010).** Three new Meliolaceae members from Silent Valley National Park. *Indian Phytopathology* 63: 76–78.
- Hu, Y., Y. Ouyang, S. Bin & G. Jiang (1996).** *Flora Fungorum Sinicorum. Vol. 4. Meliolales (1)*. Science Press Beijing, 270pp+plate IV.
- Hu, Y., S. Bin, Y. Ouyang & G. Jiang (1999).** *Flora Fungorum Sinicorum. Vol. 11. Meliolales (2)*. Science Press Beijing, 252pp.
- Rajeshkumar, P.P. & V.B. Hosagoudar (2010).** Occurrence of Endomycorrhizal fungi in Poochipara forests in Silent Valley National Park in Kerala state. National Seminar on Biodiversity: for Human Welfare, held in the Department of Studies and Research in Microbiology, Cauvery Campus, Madikeri, Kodagu, on 7<sup>th</sup>–8<sup>th</sup> April, 2010, 87pp.
- Shaji, S.S. & V.B. Hosagoudar (2010).** Endomycorrhizal fungi in Sairandri and Neelikkallu sections of Silent Valley National Park, Kerala. National Conference on Plant Biodiversity on 23<sup>rd</sup> and 24<sup>th</sup> April. Dept. of Botany, Yashvantarao Chavan Institute of Science, Satara, Maharashtra, 39pp.

