

## Some Meliolaceae from Kerala, India

V. B. Hosagoudar & T. K. Abraham

Microbiology Division, Tropical Botanic Garden and Research Institute,  
Palode 695 562, Thiruvananthapuram, Kerala, India

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This paper gives an account of five new species of the genus *Meliola*. *Meliola ellertoniae*, *M. gooseana*, *M. loranthacearum*, *M. pepparaensis* and *M. unonae* are described and illustrated in detail.

Key words: *Meliola*, new species, Kerala, India.

As a part of the study of the Mycobiota in the Peppara and Neyyar wildlife sanctuaries, located in Thiruvananthapuram district of Kerala State, we have collected several meliolaceous fungi. Of these, five new species are described and illustrated.

### 1. *Meliola ellertoniae* Hosagoudar et Abraham, sp. nov. – Fig. 1.

Coloniae plerumque hypophyllae, raro amphigenae, crustosae, dense, ad 3 mm diam., rare confluentes. Hyphae rectae vel subrectae, rare leniter flexuosae, oppositae vel irregulariter acuteque ramosae, laxae vel raro arte reticulatae, cellulae 19–24 × 6–7 µm. Hyphopodia alternata, antrorsa, raro arte antrorsa, recta, 25–33.5 µm longa; cellula basali cylindracea vel cuneata, 8–11 µm longa; cellula apicali ovata, oblonga, ellipsoidea, leniter attenuata ad apicem, integra vel raro angularis, 17–22.5 × 9–13 µm. Phialides numerosae, hyphopodiis intermixtae, alternatae vel oppositae, ampullaceae, 20–31 × 6–8 µm. Setae myceliales modice numerosae, dispersae vel aggregatae circum perithecia, simplices, rectae, acutae vel obtusae ad apicem, ad 275 µm longae. Perithecia dispersa vel laxae aggregata, verrucosa, ad 200 µm diam.; ascosporae cylindraceae, 4-septatae, constrictae, 41–45 × 19–20 µm.

Colonies mostly hypophyllous, rarely amphigenous, crustose, dense, up to 3 mm in diameter, rarely confluent. – Hyphae straight to substraight, rarely slightly flexuous, branching oppositely to irregularly at acute angles, loosely to rarely closely reticulate, cells 19–24 × 6–7 µm. – Hyphopodia alternate, antrorse to closely antrorse, straight, 25–33.5 µm long; stalk cells cylindrical to cuneate, 8–11 µm long; head cells ovate, oblong, ellipsoidal, slightly attenuated towards the apex, entire to rarely angular, 17–22.5 × 9–13 µm. – Phialides many, mixed with hyphopodia, alternate to opposite,

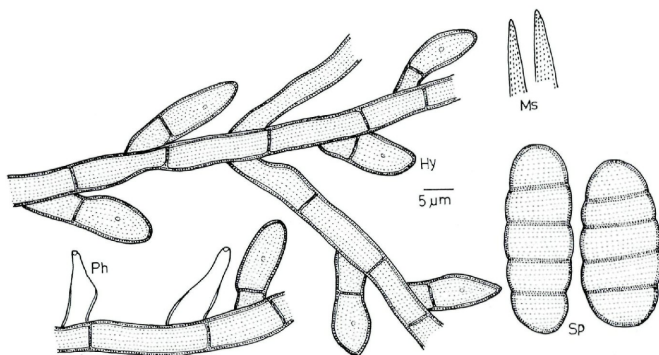


Fig. 1. - *Meliola ellertoniae* sp. nov. - Hy - Hyphopodia; Ms - Mycelial setae; Ph - Phialides; Sp - Ascospores.

ampulliform,  $20-31 \times 6-8 \mu\text{m}$ . - Mycelial setae moderately numerous, scattered to grouped around perithecia, simple, straight, acute to obtuse at the tip, up to  $275 \mu\text{m}$  long. - Perithecia scattered to loosely grouped, verrucose, up to  $200 \mu\text{m}$  in diam. - Ascospores cylindrical, 4-septate, constricted at the septa,  $41-45 \times 19-20 \mu\text{m}$ .

**Holotype.** - INDIA: Kerala, Thiruvananthapuram, Attayar, Neyyar wildlife sanctuary, on leaves of *Ellertonia rheedi* Wight (Apocynaceae), March 18, 1997, V. B. Hosagoudar TBGT 121. Isotype: HClO 42480.

This species can be compared with *Meliola tabernaemontanae* Speg. var. *major* Hansf. having the same Beeli formula 3111.4221. It differs, however, in having oblong to ellipsoidal and entire to slightly angular head cells of the hyphopodia and scattered setae on the mycelium.

## 2. *Meliola gooseana* Hosagoudar et Abraham, sp. nov. - Fig. 2.

Coloniae hypophyllae, densae, ad  $2 \text{ mm}$  diam., rare confluentes. Hyphae flexuosae vel anfractuae, irregulariter acuteque ramosae, laxe reticulatae, cellulae  $25-37 \times 10-12.5 \mu\text{m}$ . Hyphopodia alternata, antrorsa, subantrorsa vel retrorsa,  $17-27.5 \mu\text{m}$  longa; cellula basali cylindracea vel cuneata,  $5-10 \mu\text{m}$  longa; cellula apicali ovata, oblonga, globosa, integra vel leniter angulosa,  $12-17.5 \times 12-16 \mu\text{m}$ . Phialides hyphopodiis intermixtae, alternatae vel oppositae, ampullaceae,  $15-25 \times 7-8 \mu\text{m}$ . Setae myceliales aggregatae circum perithecia, simplices, rectae, obtusae vel varie dentatae ad partem apicalem, ad  $833 \mu\text{m}$  longae. Perithecia dispersa, verrucosa, ad  $150 \mu\text{m}$  diam.; ascospores cylindraceae, 4-septatae, constrictae,  $47-50 \times 20-22.5 \mu\text{m}$ .

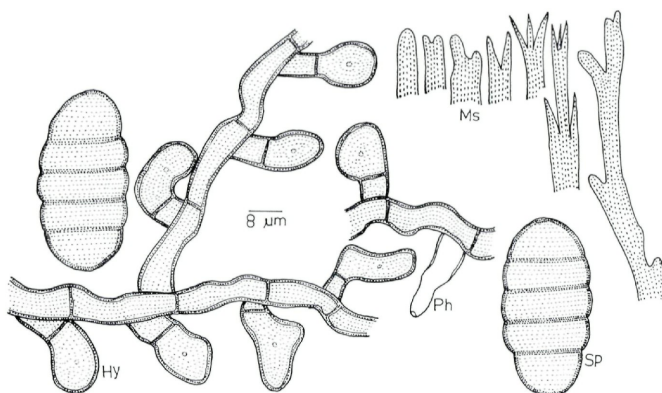


Fig. 2. - *Meliola gooseana* sp. nov. - Hy - Hyphopodia; Ms - Mycelial setae; Ph - Phialides; Sp - Ascospores.

Colonies hypophyllous, dense, up to 2 mm in diameter, rarely confluent. - Hyphae flexuous to crooked, branching irregularly at acute angles, loosely reticulate, cells  $25-37 \times 10-12.5 \mu\text{m}$ . - Hyphopodia alternate, antrorse, subantrorse to retrorse,  $17-27.5 \mu\text{m}$  long; stalk cells cylindrical to cuneate,  $5-10 \mu\text{m}$  long; head cells ovate, oblong, globose, entire to slightly angular,  $12-17.5 \times 12-16 \mu\text{m}$ . - Phialides mixed with hyphopodia, alternate to opposite, ampulliform,  $15-25 \times 7-8 \mu\text{m}$ . - Mycelial setae mostly grouped around perithecia, simple, straight, obtuse to variously dentate in the apical portion, up to  $833 \mu\text{m}$  long. - Perithecia scattered, verrucose, up to  $150 \mu\text{m}$  diam. - Ascospores cylindrical, 4-septate, constricted at the septa,  $47-50 \times 20-22.5 \mu\text{m}$ .

Holotype. - INDIA: Kerala, Thiruvananthapuram, Peppara wildlife sanctuary, on leaves of *Actinodaphne* sp. (Lauraceae), February 5, 1997, V. B. Hosagoudar TBGT 139. Isotype: HClO 42490.

*Meliola gooseana* is close to *M. litsae* Syd. and *M. shettyi* Hosag. & al. (Hansford, 1961; Hosagoudar, 1996). It differs from both, however, in the apical portion of the mycelial setae, which are dentate.

This species is named in honour of Prof. R. D. Goos for his contributions towards the taxonomy of microfungi.

### 3. *Meliola loranthacearum* Hosagoudar et Abraham, sp. nov. - Fig. 3.

Coloniae amphigenae, densae, velutinae, ad 5 mm diam., rare confluentes. Hyphae rectae vel subrectae, oppositae vel irregulariter acuteque ramosae, laxae vel arte reticulatae, cellulae  $24-32 \times 4-6.5 \mu\text{m}$ . Hyphopodia opposita, ad 30% alternata,

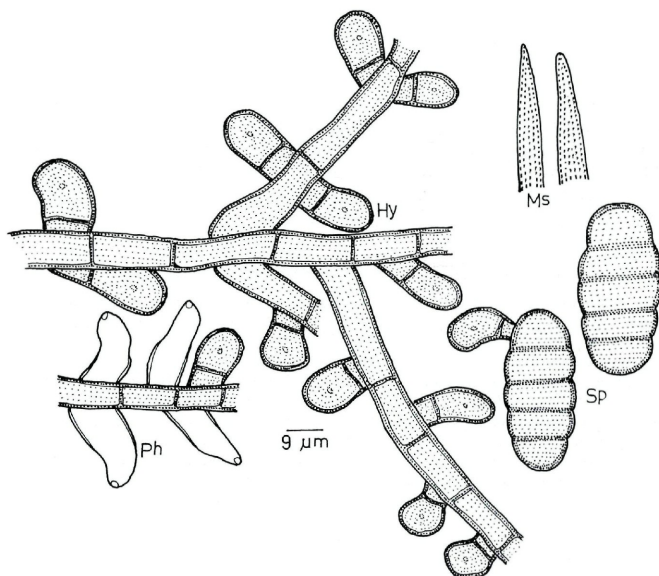


Fig. 3. – *Meliola loranthacearum* sp. nov. – Hy – Hyphopodia; Ms – Mycelial setae; Ph – Phialides; Sp – Ascospores.

antrorsa vel subantrorsa, 11–14.5 µm longa; cellula basali cylindracea vel cuneata, 3–5 µm longa; cellula apicali plerumque globosa, raro ovata, integra, 8–10 × 8–9 µm. Phialides hyphopodiis intermixtae, alternatae vel oppositae, ampullaceae, 19–24 × 8–10 µm. Setae myceliales modice numerosae, simplices, rectae, acutae ad apicem, ad 637 µm longae. Perithecia laxe aggregata, verrucosa, ad 215 µm diam.; ascosporae cylindraceae, 4-septatae, fortiter constrictae, 42–45 × 16–18 µm.

Colonies amphigenous, dense, velvety, up to 5 mm in diameter, rarely confluent. – Hyphae straight to substraight, branching oppositely to irregularly at acute angles, loosely to closely reticulate, cells 24–32 × 4–6.5 µm. – Hyphopodia opposite, about 30% alternate, antrorse to subantrorse, 11–14.5 µm long; stalk cells cylindrical to cuneate, 3–5 µm long; head cells mostly globose, rarely ovate, entire, 8–10 × 8–9 µm. – Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 19–24 × 8–10 µm. – Mycelial setae moderately numerous, simple, straight, acute at the tip, up to 637 µm long. – Perithecia loosely grouped, verrucose, up to 215 µm diam. – Ascospores cylindrical, 4-septate, strongly constricted at the septa, 42–45 × 16–18 µm.

**Holotype.** – INDIA: Kerala, Thiruvananthapuram, Peppara wildlife sanctuary, on leaves of *Dendrophoe falcata* (L. f.) Etting (Loranthaceae), February 5, 1997, V. B. Hosagoudar TBGT 141. Isotype: HClO 42492.

This species can be compared with *Meliola glaziovii* Hansf., having acute setae and opposite to alternate hyphopodia but it differs from this species in having smaller hyphopodia (11–14.5  $\mu\text{m}$  vs 14–20  $\mu\text{m}$ ) and longer mycelial setae (637  $\mu\text{m}$  vs 300  $\mu\text{m}$ ).

*Meliola loranthacearum* was associated with *M. prataprajii* Hosag. & T. K. Abraham and *Asterina* sp.

#### 4. *Meliola pepparaensis* Hosagoudar et Abraham, sp. nov. – Fig. 4.

Coloniae amphigenae, plerumque epiphyllae, subdensae vel densae, ad 3 mm diam., raro confluentes. Hyphae rectae, raro leniter subrectae vel flexuosae, plerumque opposite acuteque ramosae, laxae vel arte reticulatae, cellulae 12–18  $\times$  4–5  $\mu\text{m}$ . Hyphopodia alternata, antrorsa vel subantrorsa, 12–18  $\mu\text{m}$  longa; cellula basali cylindratae vel cuneata, 3–6.5  $\mu\text{m}$  longa; cellula apicali ovata vel oblonga, integra, 9.5–11.5  $\times$  6.5–8  $\mu\text{m}$ . Phialides hyphopodiis intermixtae, alternatae vel oppositae, ampullaceae, 12–16  $\times$  4–5  $\mu\text{m}$ . Setae myceliales plerumque aggregatae circum perithecia, simplices, rectae, flexuosae vel anfractuae, apicem penultimatim rectis, flexuosae et anfractae, curvatae, uncinatae, rotundatae ad apicem, ad 300  $\mu\text{m}$  longae. Perithecia laxae aggregata, verrucosa, ad 136  $\mu\text{m}$  diam.; ascospores oblongae vel cylindratae, 4-septatae, leniter constrictae, 35–39  $\times$  16–18  $\mu\text{m}$ .

Colonies amphigenous, mostly epiphyllous, subdense to dense, up to 3 mm in diameter, rarely confluent. – Hyphae straight, rarely slightly substraight to flexuous, branching mostly oppositely at acute angles, loosely to closely reticulate, cells 12–18  $\times$  4–5  $\mu\text{m}$ . – Hyphopodia alternate, antrorse to subantrorse, 12–18  $\mu\text{m}$  long; stalk cells cylindrical to cuneate, 3–6.5  $\mu\text{m}$  long; head cells ovate to oblong, entire, 9.5–11.5  $\times$  6.5–8  $\mu\text{m}$ . – Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 12–16  $\times$  4–5  $\mu\text{m}$ . – Mycelial setae mostly grouped around perithecia, simple, straight, flexuous to crooked, penultimate tip straight, flexuous, crooked, curved, uncinata, rounded at the tip, up to 300  $\mu\text{m}$  long. – Perithecia loosely grouped, verrucose, up to 136  $\mu\text{m}$  diam. – Ascospores oblong to cylindrical, 4-septate, slightly constricted at the septa, 35–39  $\times$  16–18  $\mu\text{m}$ .

**Holotype.** – INDIA: Kerala, Thiruvananthapuram, Peppara wildlife sanctuary, on leaves of *Tabernaemontana heyneana* Wall. (Apocynaceae), February 5, 1997, V. B. Hosagoudar TBGT 143. Isotype: HClO 42493.

*Meliola pepparaensis* can be compared with *M. urceolae* Hansf. and *M. wardii* Stev. var. *minor* Hansf. It differs from the former species, however, in having ovate to oblong head cells of hyphopodia, straight setae and the setae with coils at the penultimate end. It differs from the latter by the absence of crowded hyphopodia.

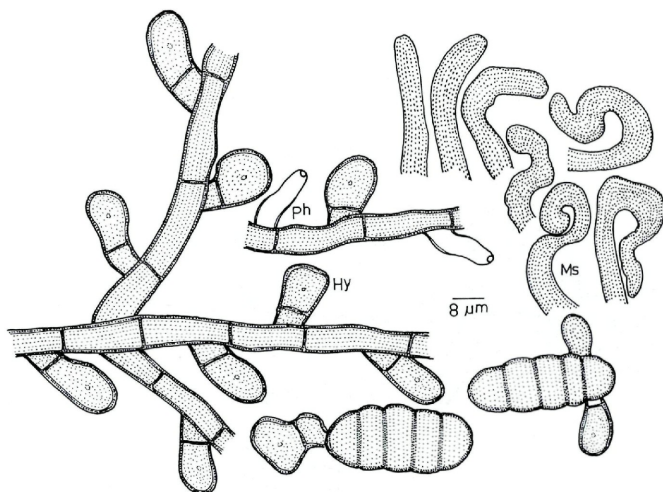


Fig. 4. - *Meliola pepparaensis* sp. nov. - Hy - Hyphopodia; Ms - Mycelial setae; Ph - Phialides; Sp - Ascospores.

5. *Meliola unonae* Hosagoudar et Abraham, sp. nov. - Fig. 5.

Coloniae hypophyllae, subdensae, ad 3 mm diam., confluentes. Hyphae rectae vel subrectae, opposite vel irregulariter acuteque ramosae, laxe vel raro arte reticulatae, cellulae 12-24 × 4-6.5 μm. Hyphopodia alternata, ad 1% opposita, antrorsa vel arte antrorsa, 17-21 μm longa; cellula basali cylindracea vel cuneata, 6-7 μm longa; cellula apicali ovata vel oblonga, integra vel raro leniter angularia, 11-15 × 7-9 μm. Phialides hyphopodiis intermixtae, alternatae vel oppositae, ampullaceae, 17-23 × 6-8 μm. Setae myceliales perpaucae, simplices, rectae, obtusae ad apicem, ad 400 μm longae. Perithecia dispersa vel laxe aggregata, verrucosa, ad 125 μm diam.; ascospores oblongae vel cylindraceae, 4-septatae, fortiter constrictae, 40-42 × 16-18 μm.

Colonies hypophyllous, subdense, up to 3 mm in diameter, confluent. - Hyphae straight to substraight, branching oppositely to irregularly at acute angles, loosely to closely reticulate, cells 12-24 × 4-6.5 μm. - Hyphopodia alternate, about 1% opposite, antrorse to closely antrorse, 17-21 μm long; stalk cells cylindrical to cuneate, 6-7 μm long; head cells ovate to oblong, entire to rarely and slightly angular, 11-15 × 7-9 μm. - Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 17-23 × 6-8 μm. - Mycelial setae very few, simple, straight, obtuse at the apex, up to 400 μm long. - Perithecia scattered to loosely grouped, verrucose, up to 125 μm diam. - Ascospores oblong to cylindrical, 4-septate, strongly constricted at the septa, 40-42 × 16-18 μm.

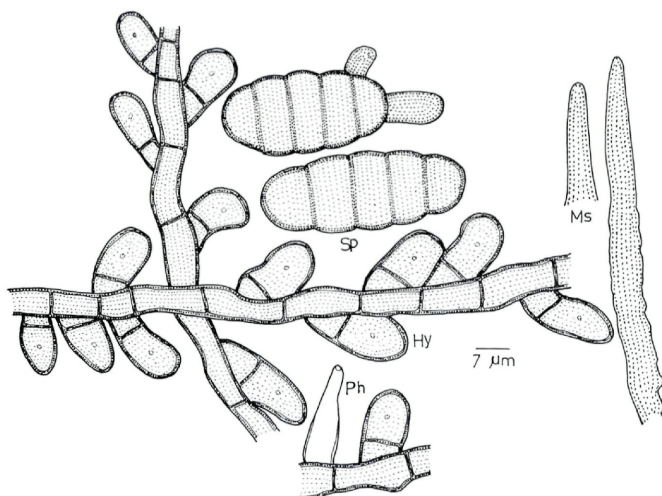


Fig. 5. – *Meliola unonae* sp. nov. – Hy – Hyphopodia; Ms – Mycelial setae; Ph – Phialides; Sp – Ascospores.

Holotype. – INDIA: Kerala, Thiruvananthapuram, Neyyar wildlife santuary, Attayar, on leaves of *Unona pannosa* Dalz. (Annonaceae), March 18, 1997, V. B. Hosagoudar TBGT 127. Isotype: HCIO 42486.

The present species can be compared with *Meliola popowiae* Doidge var. *tenuis* Hansf. & Deight. However, it differs from it in having hypophyllous colonies, not scattered and having 1 % opposite hyphopodia and phialides mixed with hyphopodia.

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