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Some interesting meliolaceous fungi from Kerala, India

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This paper gives an account of six species and two varieties of meliolaceous fungi. Of these, *Amazonia antistrophecola, A. goosii, A. melicopecola, Meliola allophyli-serrulati, M. artabotrydicola* and *M. syzygiibenthamiani* are new species : *Irenopsis triumfettae* (Stev.) Hansf. & Deight. var. *indica* and *Meliola ixorae* Yates var. *psychotriae* are the new varieties. All these taxa are described and illustrated in detail.

Key words : New taxa; *Amazonia, Irenopsis, Meliola,* Kerala, India.

During a survey of foliicolous fungi in Neyyar wildlife sanctuary, Thiruvananthapuram district of Kerala state, authors made several collection of these fungi. Of these, eight interesting meliolaceae taxa are presented in this work.

Amazonia antistrophecola sp. nov. (Fig. 1)

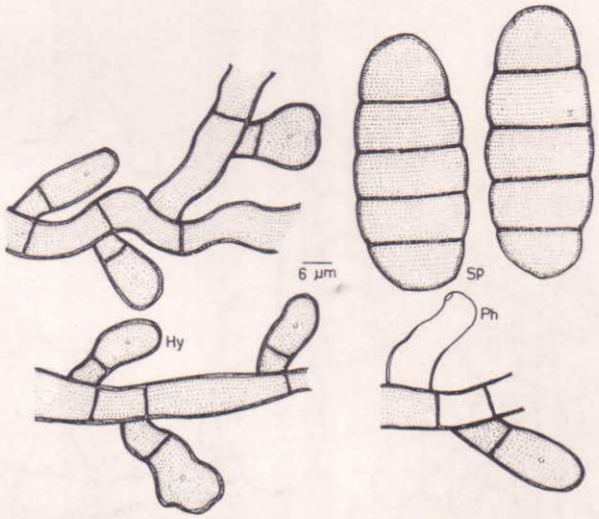

Fig 1. *Amazonia antistrophecola* sp. nov. Hy-Hyphopodium, Ph-Phialides; Sp-Ascospore

Coloniae amphigenae, plerumque epiphyllae, densae, crustosae, ad 2 mm diam., confluentes. Hyphae subrectae vel flexuosae, saepe cursum parallele, alternate vel irregulariter laxe reticulatae, cellulae 12-19.5 x 7-10 µm. Hyphopodia alternata, antrorsa vel subantrorsa, 17-22 µm longa; cellula basali cylindracea vel cuneata 4.5-7.5 µm longa; cellula apicali ovata, globosa, cylindracea, integra, 12-14.5 x 9.5-12 µm. Phialides

illis hyphopodiis commixtis, disseminatis, ampullaceus, 24-29 x 9.5-12 µm. Perithecia depressus globosa, ad 150 µm diam.; ascosporae cylindraceae vel ellipsoideae, 4-septatae, constrictae, 52-54 x 22-25 µm.

Colonies amphigenous, mostly epiphyllous, dense, crustose, up to 2 mm in diameter, confluent. Hyphae straight to flexuous, often run parallel, branching alternate to irregular, loosely reticulate, cells 12-19.5 x 7-10 µm. Hyphopodia alternate, antrorse to subantrorse, 17-22 µm long; stalk cells cylindrical to cuneate, 4.5-7.5 µm long; head cells ovate, globose, cylindrical, entire, 12-14.5 x 9.5 - 12 µm. Phialides mixed with hyphopodia, scattered, ampulliform, 24-29 x 9.5-12 µm. Perithecia flattened-globose, up to 150 µm in diam.: ascospores cylindrical to ellipsoidal, 4-septate, constricted at the septa, 52-54 x 22-25 µm.

Holotype : On leaves of *Antistrophe serratifolia* (Bedd.) Hook, f. (Myrsinaceae), Athirumala, Neyyar wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 26, 1996, V. B. Hosagoudar HCIO 42287; *Isotype :* TBGT 070.

Amazonia peregrina Sydow and *A. suttoniae* (Stev.) Hansf. are known on the members of the family Myrsinaceae (Hansford, 1961). The present new species differs from the former in having loosely reticulate hyphae, smaller hyphopodia and perithecia, and larger ascospores. It also differs from the latter species in having amphigenous colonies, loosely reticulate hyphae, smaller perithecia and ascospores. However, the present new species is intermeidate of both.

Amazonia goosii sp. nov. (Fig. 2)

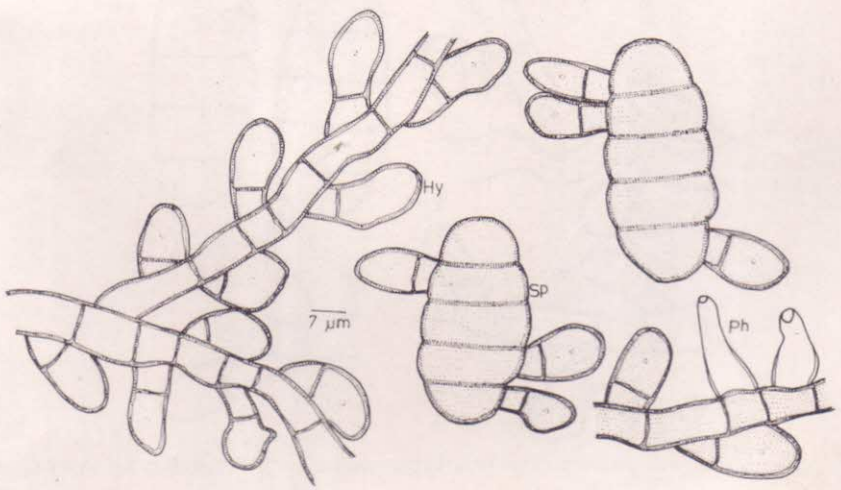

Fig 2. *Amazonia goosii* sp. nov. : Hy-Hyphopodium; Ph-Phialide; Sp-Ascospore

Coloniae amphigenae, raro epiphyllae, densae, ad 1 mm diam., raro confluentes. Hyphae rectae vel anfractae, irregulariter acuteque ramosae, dense reticulatae, celulae 9-12 x 7-8.5 µm. Hyphopodia alternata, anguste posita, anguste antrorsa vel subantrorsa, 17-22

µm longa; cellula basali cylindracea vel cuneata, 4.5-7 µm longa; cellula apicali ovata vel oblonga, integra, 12-14.5 x 9-12 µm. Phialides illis hyphopodiis commixits, alternatis vel oppositis, ampullaceus, 17-22 x 9-12 µm. Perithecia dispersa, dippressus-globosa, ad 243 µm diam.; margine crenata vel fringiora, hyphae fringiorae longae, compactae, absolute circundatum perithecia; ascosporae oblongae, 4-septatae, leviter constrictae, 46-51x21-24 µm.

Colonies epiphyllous, rarely amphigenous, dense, up to 1 mm in diameter, rarely confluent. Hyphae substraight to crooked, branching irregular at acute angles, closely reticulate, cells 9-12 x 7-8.5 µm. Hyphopodia alternate, very closely placed, closely antrorse to subantrorse, 17-22 µm long; stalk cells cylindrical to cuneate, 4.5-7 µm long; head cells ovate to oblong, entire, 12-14.5 x 9-12 µm. Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 17-22 x 9-12 µm. Perithecia scattered, flattened-globose, up to 243 µm in diam.; margin crenate to fringed, fringed hyphae long, compact, completely encircling the perithecia; ascospores oblong, 4-septate, slightly constricted at the septa, 46-51 x 12-24 µm.

Holotype : On leaves of *Canthium* sp. (Rubiaceae), Agastiar hill, Neyyar wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 26, 1996, V. B. Hosagoudar HCIO 42288; *Isotype :* TBGT 071.

Amazonia polypoda Sydow and *A. psychotriae* (Henn.) Theiss. with its variety are known on the members of the family Rubiaceae (Hansford, 1961). The present new species differs from all in having substraight to crooked hyphae, fringed hyphae of the perithecia and longer ascospores.

This species is named in honour of Prof. R. D. Goos for the inseperable affinity with Indian microfungi.

Amazonia melicopecola sp. nov. (Fig. - 3)

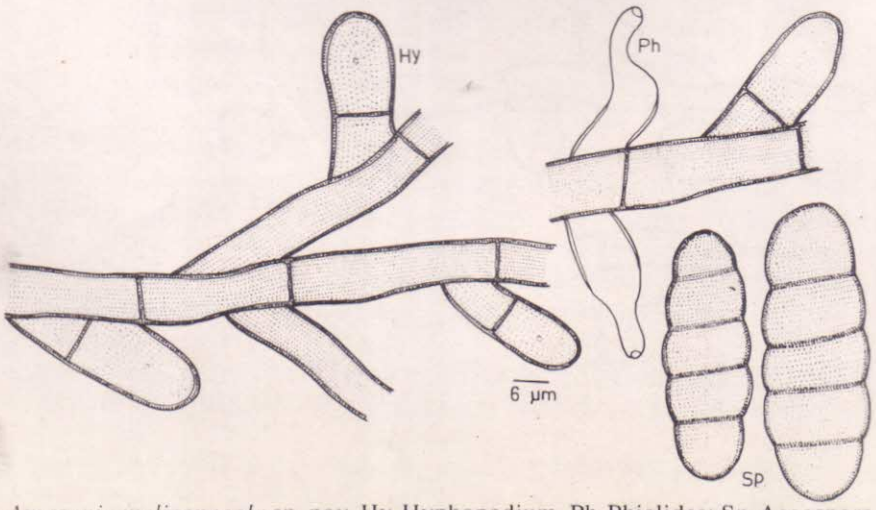

Fig 3. *Amazonia melicopecola* sp. nov. Hy-Hyphopodium, Ph-Phialides; Sp-Ascospore

Coloniae amphigenae, densae, ad 2 mm diam., confluentes. Hyphae rectae vel flexuosae, opposite acuteque ramosae, laxe reticulatae, cellulae 29-36.5 x 9-10 µm. Hyphopodia alternata, anguste antrorsa vel subantrorsa, 21-30 µm longa; cellula basali cylindracea vel cuneata, 7-14.5 µm longa; cellula apicali ovata, integra, 14-17 x 11-13 µm. Phialides numerosis, illis hyphopodiis commixtis, alternatis vel oppositis, ampullaceus, 24-29 x 9-12.5 µm. Perithecia dispersa, dippressus-globosa, ad 208 µm diam.; ascosporae oblongae, 4-septatae, leviter constrictae, 43-46 x 20-22 µm.

Colonies amphigenous, dense, up to 2 mm in diameter, confluent. Hyphae straight to flexuous, branching opposite at acute angles, loosely reticulate, cells 29-36.5 x 9-10 µm. Hyphopodia alternate, closely antrorse to subantrorse, 21-30 µm long; stalk cells cylindrical to cuneate, 7-14.5 µm long; head cells ovate, entire, 14-17 x 11-13 µm. Phialides numerous, mixed with hyphopodia, alternate to opposite, ampulliform, 24-29 x 9-12.5 µm. Perithecia scattered, flattened-globose, up to 208 µm in diam.; ascospores oblong, 4-septate, slightly constricted at the septa, 43-46 x 20-22 µm.

Holotype : On leaves of *Melicope lunuankenda* (Gaertn.) T. G. Hartley [*Euodia lunuankenda* (Gaertn.) Merr.] (Rutaceae), Agastiar hill, Neyyar wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 26, 1996, V.B. Hosagoudar HCIO 42289; *Isotype :* TBGT 071.

Amazonia acronychiae Hosag. is the only known species of the genus *Amazonia* on the members of the family Rutaceae (Hosagoudar and Goos, 1989). The present new species differs from it in having longer and entire head cells of the hyphopodia.

This collection was mixed with *Asterina* sp.

Irenopsis triumfettae (Stev.) Hansf. & Deight. var. *indica* var nov. (Fig. - 4)

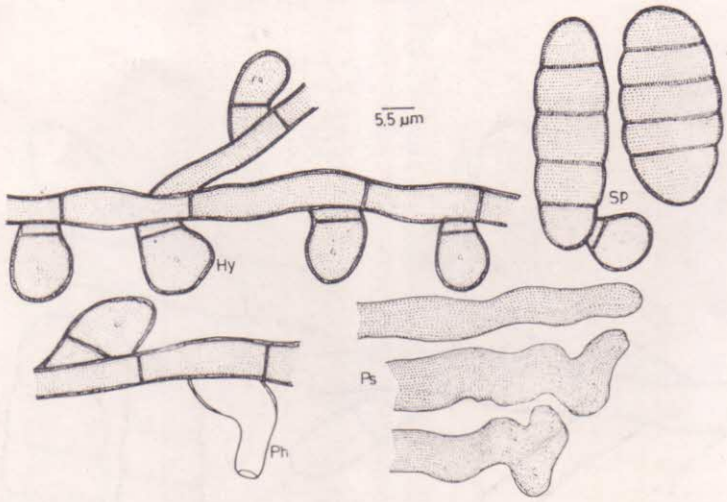

Fig 4. *Irenopsis triumfettae* (Stev.) Hanfs. & Deight. var, *indica* var. nov. : Hy-Hyphopodium, Ph-Phialides; Ps - Perithecial setae; Sp-Ascospore

Perraffinis *Irenopsis triumfettae* (Stev.) Hansf. & Deight. var. *glyphaeicola* (Deight.) Hansf. & Deight. differt a cellulae hyphopodiis apicalis integrae.

Colonies amphigenous, dense, up to 1 mm in diameter, confluent. Hyphae substraight to flexuous, branching irregular at acute angles, loosely reticulate, cells 24-29 x 7-9 µm. Hyphopodia alternate, antrorse to subantrorse, 17-22 µm long; stalk cells cylindrical to cuneate, 4.5-7.5 µm long; head cells globose to slightly ovate, entire, 12-14.5 µm in diameter. Phialides numerous, mixed with hyphopodia, alternate to opposite, ampulliform, 14-22 x 7-9 µm. Perithecia scattered, up to 160 µm in diam.; perithecial setae 6-8, simple, straight, flexuous, tortuous to beaded and granulose at the penultimate tip, up to 140 µm long; ascospors oblong, 4-septate, slightly constricted at the septa, 36-46 x 12-17 µm.

Holotype : On leaves of *Triumfetta* sp. (Tiliaceae), Ayirakallu, Meenmutty, Neyyar Wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 8; 1996, V. B. Hosagoudar HCIO 42293; *Isotype :* TBGT 081.

Based on the morphology of the tip of the perithecial setae, the present collection is close to *Irenopsis triumfettae* (Stev.) Hansf. & Deight. var. *glyphaeicola* Deight.) Hansf. & Deight. However, the new variety differs from it in having entire head cells of the hyphopodia.

Meliola allophyli-serrulati sp. nov. (Fig. - 5)

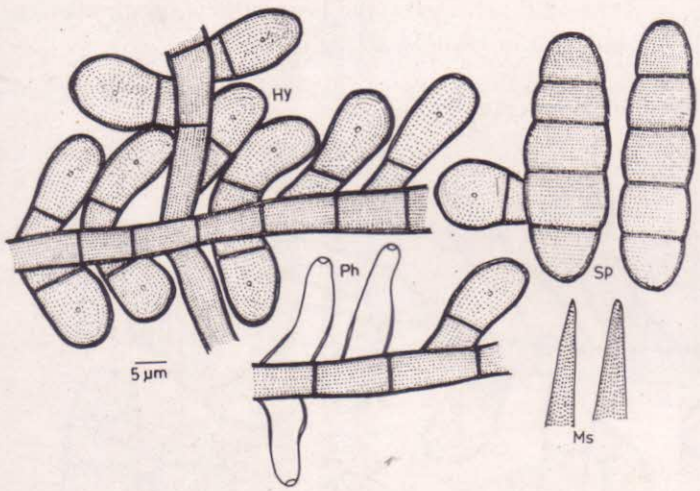

Fig 5. *Meliola allophyli serrulati* sp. nov. : Hy-Hyphopodium, Ph-Phialides; Ms - Mycelial setae; Sp-Ascospore

Coloniae hypophyllae, subdensae, crustosae, ad 2 mm diam., raro confluentes. Hyphae rectae vel subrectae, raro anfractuae, plerumque opposite acuteque vel laxe ramosae, laxe reticulatae, cellulae 19-21 x 8-10 µm. Hyphopodia opposita, ad 5% alternata, antrorsa vel subantrorsa, plerumque recta, raro curvula, 19-27 µm longa; cellula basali cylindracea vel cuneata, 4.5-10 µm longa; cellula apicali globosa, ovata, rotunda vel

raro truncata ad apicem, integra, 14.5-17 x 12-14.5 µm. Phialides illis hyphopodiis commixtis, alternatis vel oppositis, ampullaceus, 21-31.5 x 9-12 µm. Setae myceliales parce numerosae, dispersae vel juxta perithecia aggregatae, simplices, rectae vel curvulae, acutae vel obtusae ad apicem, ad 620 µm longae. Perithecia dispersa, ad 170 µm diam.; ascosporae oblongae vel cylindraceae, rectae vel leviter curvulae, 4-septatae, leviter constrictae, 43-46 x 17-19.5 µm.

Colonies hypophyllous, subdense, crustose, up to 2 mm in diameter, rarely confluent. Hyphae straight, rarely crooked, branching mostly opposite at acute to wide angles, loosely reticulate, cells, 19-21 x 8-10 µm. Hyphopodia opposite, about 5% alternate, antrorse to subantrorse, mostly straight, rarely curved, 19-27 µm long; stalk cells cylindrical to cuneate, 4.5-10 µm long; head cells globose, ovate, rounded to rarely truncate at the apex, entire, 14.5-17 x 12-14.5 µm. Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 21-31.5 x 9-12 µm. Mycelial setae moderately numerous, scattered to grouped around perithecia, simple, straight to curved, acute to obtuse at the apex, up to 620 µm long. Perithecia scattered, up to 170 µm in diam.; ascospores oblong to cylindrical, straight to slightly curved, 4-septate, slightly constricted, 43-46 x 17-19.5 µm.

Holotype : On leaves of *Allophylus serrulatus* Radlk. (Sapindaceae), Karadimala, Athirumala, Neyyar widlife sanctuary, Thiruvananthapuram, Kerala, India, March 28, 1996, V. B. Hosagoudar HCIO 42294. *Isotype :* TBGT 083.

This new species can be compared with *Meliola serjaniae* Stev. var. *major* Hansf. having the same Beeli formula 3113.4223. However, the present new species differs from it in having 95% opposite hyphopodia in contrast to 2%

Meliola artabotrydicola sp. nov. (Fig. - 6)

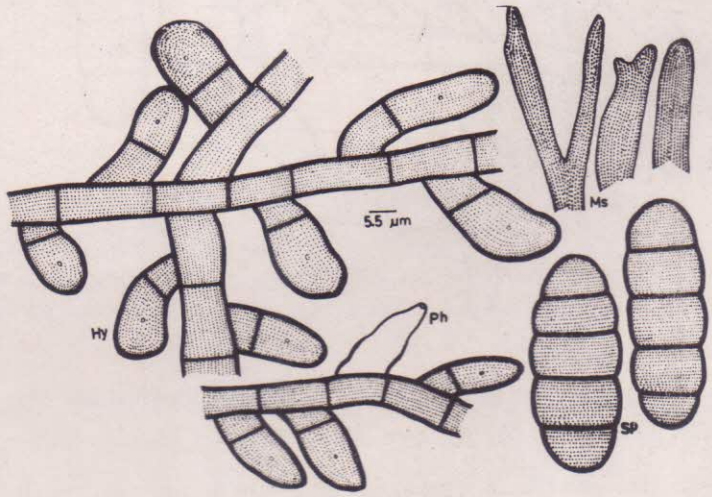

Fig 6. *Meliola artabotrydicola* sp. nov. : Hy-Hyphopodium, Ph-Phialides; Ms - Mycelial setae; Sp-Ascospore

Coloniae amphigenae, densae, crustosae, dispersae, ad 2 mm diam. Hypahe rectae, plerumque opposite acuteque vel laxe ramosae, dense reticulatae, cellulae 17-24 x 7-10 µm. Hyphopodia alternata, anguste posita, antrorsa vel subantrorsa, 21-36.5 µm longa; cellula basali cylindracea vel cuneata, 4.5-12 µm longa; cellula apicali ovata vel oblonga, rotunda, truncata ad apicem, integra, 17-24 x 11-13 µm. Phialides illis hyphopodiis commixtis, alternatis vel oppositis, ampullaceus, 24-29 x 9-12 µm. Setae myceliales dispersae, simplices, rectae, acutae, dentatae vel furcatae ad apicem, ad 610 µm longae. Perithecia dispersa, ad 210 µm diam.; ascosporae obovoideae, 4-septatae, leviter constrictae, 50-53 x 23-25 µm.

Colonies amphigenous, dense, crustose, scattered, up to 2 mm in diameter. Hyphae straight, branching mostly opposite at acute to wide angles, closely reticulate, cells 17-24 x 7-10 µm. Hyphopodia alternate, closely placed, antrorse to subantrorse, 21-36.5 µm long; stalk cells cylindrical to cuneate, 4.5-12 µm long; head cells ovate to oblong, rounded, truncate to attenuated at the apex, entire, 17-24 x 11-13 µm. Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 24-29 x 9-12 µm. Mycelial setae scattered, simple, straight, acute, dentate to furcate at the tip, up to 610 µm long. Perithecia scattered, up to 210 µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 50-53 x 23-25 µm.

Holotype : On leaves of *Artabotrys zeylanicus* Hook. F. & Thoms. (Annonaceae), Meenmutty, Neyyar wildife sanctuary, Thiruvananthapuram, Kerala, India, March 10, 1996, V. B. Hosagoudar HCIO 42302; *Isotype :* TBGT 086.

The present new species is close to *Meliola artabotrydis* Hansf. reported on *Artabotrys* spp. from Uganda (Hansford, 1961). However, differs from it in having longer hyphopodia, furcate mycelial setae and smaller ascospores.

Meliola ixorae Yates var. *psychotriae* var. nov. (Fig. - 7)

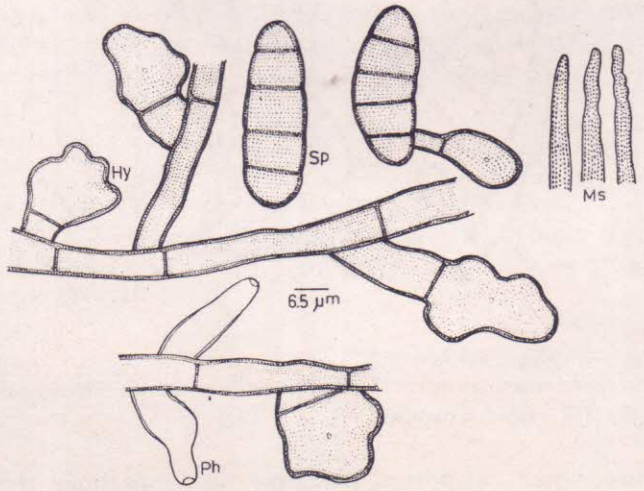

Fig 7. *Meliola ixorae* Yates var. *psychotriae* var. nov. : Hy-Hyphopodium, Ph-Phialides; Ms - Mycelial setae; Sp-Ascospore

Perraffinis *Meliola ixorae* Yates et M. *psychotriae-nudiflorae* Hosag. differt a var. *ixorae* phialides illis hyphopodiis commixtis et differt a var. *psychotriae-nudiflorae* hyphopodiis, setae myceliales et ascosporis longioribus.

Colonies hypophyllous, subdense, spreading, up to 5 mm in diameter. Hyphae mostly flexuous, branching opposite to irregular at wide angles, loosely reticulate, cells 20-30 x 4-5 µm. Hyphopodia alternate, straight to curved, antrorse to subantrose, 26-39 µm long; stalk cells cylindrical to cuneate, 7-14.5 µm long; head cells ovate, globose, entire to mostly lobate to sublobate, 19-24 x 14-17 µm. Phialides numerous, mixed with hyphopodia, alternate to opposite, 14-17 µm, ampulliform, 12-14.5 x 4.5-6 µm. Mycelial setae numerous, scattered to grouped around perithecia, simple, straight, flexuous to curved, obtuse at the tip, up to 914 µm long. Perithecia scattered, verrucose, up to 187 µm in diam. ; ascospores cylindrical, straight to curved, 4-septate, slightly constricted at the septa, 36-40 x 9-12.5 µm.

Holotype : On leaves of *Psychotria macrocarpa* Hook. f. (Rubiaceae), Athirumala, Neyyar wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 26, 1996, V. B. Hosagoudar HCIO 42301; *Isotype :* TBGT 093.

Based on the narrow ascospores, the present collection is close to *Meliola ixorae* Yates. However, the new variety differs from the var. *ixorae* in having phialides mixed with hyphopodia. It also differs from *Meliola psychotriaemudiflorase* Hosag. in having longer hyphopodia, mycelial setae and ascospores (Hosagoudar, 1996.).

Meliola syzygii-benthamiani sp. nov. (Fig. - 8)

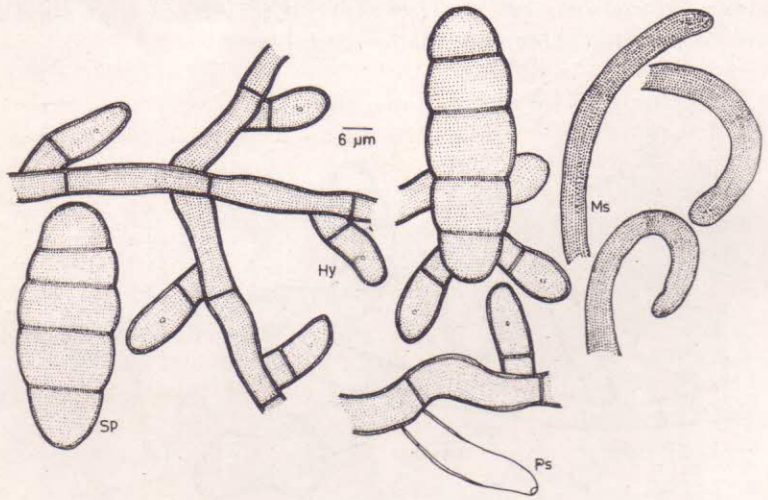

Fig 8. *Meliola syzygii-benthamiani* sp nov. : Hy-Hyphopodium, Ph-Phialides; Ms - Mycelial setae; Ps - Perithecial setae; Sp-Ascospore

Coloniae hypophyllae, tenues, dispersae, patentiae, ad 5 mm diam. Hyphae rectae vel subrectae, plerumque opposite acuteque ramosae, laxe vel dense reticulatae, cellulae 34-36.5 x 7-10 µm. Hyphopodia alternata, subantrorsa, plerumque recta, raro leviter curvula, 17-22 µm longa; cellula basali cylindracea vel cuneata, 4.5-7.5 µm longa; cellula

apicali ovata, rotunda vel leviter attenuata ad apicem, integra, 12-14.5 x 9.5-12 µm. Phialides illis hyphopodiis commixtis, alternatis vel oppositis, ampullaceus, 17-22 x 7-9 µm. Setae myceliales paucae, simplices, arcuatae ad penultimate apicem, obtuse ad apicem, ad 365 µm longae. Perithecia dispersa, ad 110 µm diam.; ascosporae obovoideae, 4-septatae, leviter constrictae, 53-56 x 19-22 µm.

Colonies hypophyllous, thin, scattered, spreading, up to 5 mm in diameter. Hyphae straight to substraight, branching mostly opposite at acute angles, loosely to closely reticulate, cells 34-36.5 x 7.10 µm. Hyphopodia alternate, subantrorse, mostly straight, rarely slightly curved, 17-22 µm long; stalk cells cylindrical to cuneate, 4.5-7.5 µm long; head cells ovate, rounded to slightly attenuated at the apex, entire, 12-14.5 x 9.5-12 µm. Phialides mixed with hyphopodia, alternate to opposite, ampulliform, 17-22 x 7-9 µm. Mycelial setae few, simple, penultimate tip arcuate, obtuse at the tip, up to 365 µm long. Perithecia scattered, up to 110 µm in diam.; ascospores obovoidal, 4-septate, slightly constricted, 53-56 x 19-22 µm.

Holotype : On leaves of *Syzygium benthamianum* (Wight ex Duthie) Gamble (Myrtaceae), Athirumala, Neyyar wildlife sanctuary, Thiruvananthapuram, Kerala, India, March 26, 1996. V.B. Hosagoudar HCIO 42300, *Isotype :* TBGT 104.

Meliola megalopoda Sydow, *M. hawaiiensis* Stev. and *M densa* Cooke are the three species known on Myrtaceae members having uncinate mycelial setae. The present new species differs from *M. megalopoda* Sydow in having entire head cells of the hyphopodia. It differs from *M. densa* Cooke in having regularly ovate head cells of the hyphopodia and also differs from *M. hawaiiensis* Stev. in having distantly arranged hyphopodia and smaller ascospores.

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