

MELIOLACEOUS FUNGI ON ECONOMICALLY IMPORTANT PLANTS IN INDIA - III: ON WILD EDIBLE PLANTS

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Since pre-historic period, man started using plants for food, clothing, shelter, transport, etc. As the necessity of plants for his needs increased, cultivation of those plants came into an existence. Hence, now a large number of plants have been brought under cultivation. In additions to these, the wild edible plants are particularly useful during famine and under similar scarcity conditions.

Of the known 17,000 flowering plants, about 600 plants are being used as food. The edible parts are: underground, leafy greens, flowers, fruits, seeds, etc. Based on their uses, plants are classified and corresponding meliolaceous fungi are noted and dealt in detail (Hosagoudar, 1996; Nayar *et al.*, 1989; Nair, 2000; Singh & Arora, 1978). This Note is third in the series published by Hosagoudar (1996, 2006).

Enumeration of species

1. *Amazonia acronychiae* Hosag. in Hosag. & Goos, Mycotaxon 36:230, 1989; Hosag., Meliolales of India, p. 65, 1996.

Materials examined: On leaves of *Acronychia pedunculata* (L.) Miq. (Rutaceae), Idukki, Kerala, 12.vi.1983, V.B. Hosagoudar HClO 40463.

Description: Colonies amphigenous, mostly epiphyllous, subdense, up to 3mm in dia., confluent. Hyphae substraight, branching opposite at wide angles, closely reticulate, cells 22-30 x 8-10µm. Appressoria alternate, closely antrorse, straight to curved, 24-44µm long; stalk cells cuneate, 10-22µm long; head cells ovate, clavate, angular to irregularly sublobate, 18-22 x 14-18µm. Phialides numerous, mixed with appressoria, conoid to ampulliform, 22-30 x 8-10µm. Perithecia scattered, flattened-globose, up to 110µm in diam.; ascospores obovoidal, 4-septate, constricted, 42-46 x 20-22µm.

Host range: *Acronychia pedunculata*

Distribution: India

2. *Amazonia kakachiana* Hosag., Meliolales of India, p. 70, 1996.

Materials examined: On leaves of *Vaccinium leschenaultii* Wight var. *zeylanica* Clarke (Vacciniaceae), Kakachi Cliff, Tirunelveli dist., Tamil Nadu, 25.ii.1994, V.B. Hosagoudar HClO 41621.

Description: Colonies amphigenous, mostly epiphyllous, dense, up to 2mm in diameter, rarely confluent. Hyphae flexuous, branching mostly alternate at acute angles, loosely to closely reticulate, cells 37-50 x 7-9.5µm. Appressoria alternate, antrorse to closely antrorse, 27-43.5µm long; stalk cells cylindrical to cuneate, 12-25µm long; head cells ovate, cylindrical, mostly entire, rarely truncate at apex to sublobate, 15-21 x 12-15.5µm. Phialides mixed with appressoria, scattered, ampulliform, 21-28 x 12-14µm. Perithecia scattered, flattened-globose, up to 250µm in dia.; ascospores fusiform, straight to curved, 3-septate, constricted at the septa, 52-56 x 21-23µm.

Host range: *Vaccinium leschenaultii*

Distribution: India

3. *Amazonia leae* Hansf. & Thirum., Farlowia 3:257, 1948; Hansf., Sydowia Beih. 2:370, 1961; Hosag., Raghu & Pillai, Nova Hedwigia 58: 529, 1994; Hosag., Meliolales of India, p. 72, 1996.

Materials examined: On leaves of *Leea macrophylla* Roxb. (Leeaceae), Balehonnur, Karnataka, 29.iv.1945, M.J. Thirumalachar HClO 10870; *L. indica* (Burm.f.) Merr., Gersoppa, Uttar Kannada, Karnataka, 24.ix.1992, P.A. Raghu HClO 40746.

Description: Colonies mostly epiphyllous, dense, subcrustose, up to 1mm in dia. Hyphae undulate, branching alternate to irregular at acute angles, radiating reticulate and almost solid at the centre, cells 10-15 x 6-8µm. Appressoria

alternate, antrorse, straight, 12-16µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells subglobose, entire, 10-12µm. Phialides not seen. Perithecia flattened-globose beneath radiate mycelia, up to 260µm in diam.; ascospores ellipsoidal, 4-septate, constricted, 140-44 x 14-20µm.

Host range: *Leea* spp.

Distribution: India

4. *Amazonia peregrina* Sydow & Sydow. Ann. Mycol. 15: 238, 1917; Hansford, Sydowia Beih. 2:507, 1961; Hosag. & Goos, Mycotaxon 36: 236, 1989; 42:126, 1991.

Meliola peregrina Sydow & Sydow, Philippine J. Sci. 8: 479, 1913; Hosag, Meliolales of India, p.74; 1996

Materials examined: On leaves of *Embelia basal* (Rem. & Schultes) A. DC. (*E. viridiflora sensu* Clarke) (Myrsinaceae), Gaganabawada, Maharashtra, 1.v.1984, D.B. Pawar HClO 36385; *Maesa indica* (Roxb.) DC. (Myrsinaceae), Idukki, Kerala, 10.i.1982, V.B. Hosagoudar HClO 40467; near Sholayar dam, Valparai, Coimbatore, Tamil Nadu, 25.xii.1990, V.B. Hosagoudar HClO 30513.

Description: Colonies amphigenous, mostly hypophyllous, crustaceous, up to 2mm in diameter, confluent. Hyphae straight to undulating, branching alternate to opposite at acute angles, closely reticulate, forming solid mycelial mat and impart thalloid appearance, cells 13-16.6 x 6-8µm. Appressoria alternate to unilateral, very closely arranged, antrorse, straight to curved, 13-16.5µm long; stalk cells cuneate, 3.5-5µm long; head cells globose, entire, 10-13 x 10-11.5µm. Phialides mixed with appressoria, alternate, ampulliform, 13-16.5 x 6.5-8µm. Perithecia mostly aggregated, flattened-globose, glabrous, black, up to 281µm in diam.; ascospores cylindrical to obovoidal, 4-septate, constricted, 36-43 x 13-16µm.

Host range: *Embelia basal* and *Maesa indica*

Distribution: Tropics

5. *Amazonia syzygii* Hosag. in Hosag. & Goos, Mycotaxon 36: 236, 1989; 42:126, 1991; Hosag., Dayal & Goos, Mycotaxon 46: 202, 1993; Hosag., Meliolales of India, p.74, 1996

Materials examined: On leaves of *Syzygium cumini* Skeels (Myrtaceae), Idukki, Kerala, 13.xii.1992, V.B. Hosagoudar HClO 4046; Shankarankudi, Valparai, Coimbatore, Tamil Nadu, 27.xii.1990, V.B. Hosagoudar HClO 30514; *Syzygium* sp., Sampaje forest nursery, Sampaje, Kodagu, Karnataka, 22.xii.1991, B.R. Dayal HClO 30841.

Description: Colonies amphigenous, subdense, crustose to slightly velvety, up to 2mm in diameter, rarely confluent. Hyphae substraight to slightly undulate, branching mostly opposite at wide angles, closely reticulate, cells 16-20 x 6-8µm. Appressoria alternate, straight, antrorse to spreading, 18-20µm long; stalk cells cylindrical to cuneate, 4-8µm long; head cells ovate to subglobose, entire, 10-14 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, conoid to ampulliform, 20-24 x 8-10µm. Perithecia flattened-globose, scattered to grouped, up to 180µm in diam.; ascospores obovate, 4-septate, slightly constricted, 44-48 x 16-20µm.

Host range: *Syzygium* spp.

Distribution: India

6. *Appendiculella calophylli* (Stev.) Toro var. *apetalii* Hosag., Kaveriappa, Raghu & Goos. Mycotaxon 51: 108, 1994; Hosag., Meliolales of India, p. 77, 1996.

Materials examined: On leaves of *Calophyllum apetalum* Willd. (Clusiaceae), Gersoppa, Karnataka, 24.x.1992, P.A. Raghu HClO 40854; *C. austroindicum* Kosterm., Kakachi, Tirunelveli, Tamil Nadu, Feb. 21, 1994, V.B. Hosagoudar HClO 41561.

Description: Colonies hypophyllous, subdense, crustose, up to 3mm in diam., rarely confluent. Hyphae substraight to flexuous, branching alternate, opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 30-46.5 x 6-9.5µm. Appressoria alternate, less than 1% opposite, straight to curved, antrorse to recurved, 30-43.5µm long; stalk cells cylindrical to cuneate, 6-31µm long; head cells ovoid to globose, entire, angular, sublobate to sinuate, 12-25 x 9-25µm. Phialides mixed with appressoria, opposite and alternate, ampulliform, 15-31 x 9-12.5µm. Perithecia scattered, up to 125µm in diam.; perithecial appendages numerous, subcylindrical to mammiform, obtuse to hamate at the tip, up to 25µm long; ascospores obovoidal, 4-septate, slightly constricted, 43-46.5 x 15-18.5µm.

Host range: *Calophyllum* spp.

Distribution: India

7. *Appendiculella calostroma* (Desm.) Hohnel in Sitzb. K.Akad. Wissen. Wien. Math. Naturw. Kl. 138:556, 1919; Kapoor, Indian Phytopathol. 20: 151, 1967; Kar & Maity, Norw. J. Bot. 19: 248, 1972; Hosag., Meliolales of India, p. 77, 1996.

Meliola calostroma (Desm.) Hohnel, Ann. Mycol. 15: 363, 1917.

Irene calostroma (Desm.) Hohnel, Ann. Mycol. 16:213, 1918.

Meliola rubicola Henn., Hedwigia 43: 140, 1904.

Irenina rubi Stev. & Rold. var. *angulosa* Stev. & Rold., Philippine J. Sci. 56: 52, 1935.

Irenopsis crataegi Bose, Indian Phytopathol. 13: 144, 1962.

Key to the genera

- 1A. Perithecia flattened-globose, wall cells radiating *Amazonia*
- 1B. Perithecia globose, wall cells not radiating 2
- 2A. Ascospores uniseptate *Armatella*
- 2B. Ascospores 3-4-septate 3
- 3A. Mycelial present *Meliola*
- 3B. Mycelial setae absent 4
- 4A. Perithecial setae present *Irenopsis*
- 4B. Perithecial setae absent 5
- 5A. Perithecial striated and larviform appendages present *Appendiculella*
- 5B. Perithecial appendages and setae absent *Asteridiella*

Underground parts-tubers, Rhizomes

S. No.	Name of the host plant	Name of the fungus
1.	<i>Polygonum glabrum</i>	63. <i>Meliola polygoni</i> Srinivasulu
2.	<i>Pueraria tuberosa</i>	64. <i>Meliola polygonicola</i> Hosag. 28. <i>Meliola banosensis</i> Sydow var. <i>puerariae</i> Hosag. 29. <i>Meliola banosensis</i> Sydow var. <i>puerariicola</i> Hosag.
Plants with edible greens		
3.	<i>Acronychia pedunculata</i>	1. <i>Amazonia acronychiae</i> Hosag. 9. <i>Asteridiella acronychiae-pedunculatae</i> Hosag.
4.	<i>Canthium parviflorum</i>	33. <i>Meliola canthii</i> Hansf. 47. <i>Meliola henryi</i> Hosag.
5.	<i>Casearia esculenta</i>	11. <i>Asteridiella caseariicola</i> Hosag.
6.	<i>Cinnamomum tamala</i>	8. <i>Armatella litseae</i> (P. Henn.) Theiss. & Sydow
7.	<i>Clausena indica</i>	37. <i>Meliola clausenae</i> Hosag.
8.	<i>Clerodendrum serratum</i>	39. <i>Meliola cookeana</i> Speg. var. <i>viticis</i> (Hansf.) Hansf.
9.	<i>Leea indica</i>	3. <i>Amazonia leeeae</i> Hansf. & Thirum. 15. <i>Irenopsis leeeae</i> Hansf. var. <i>indica</i> Hosag. 16. <i>Irenopsis leeeae</i> Hansf. var. <i>javensis</i> Hansf.
10.	<i>Leea macrophylla</i>	3. <i>Amazonia leeeae</i> Hansf. & Thirum.
11.	<i>Maesa indica</i>	4. <i>Amazonia peregrine</i> Sydow & Sydow 45. <i>Meliola groteana</i> Sydow & Sydow
12.	<i>Merremia umbellata</i>	54. <i>Meliola malacotricha</i> Speg. var. <i>major</i> Beeli
13.	<i>Mangifera indica</i>	53. <i>Meliola mangiferae</i> Earle
14.	<i>Mussaenda frondosa</i>	25. <i>Meliola anceps</i> Sydow & Sydow
15.	<i>Olax acuminata</i>	59. <i>Meliola olacicola</i> Hosag.
16.	<i>Polygonum chinense</i>	63. <i>Meliola polygoni</i> Srinivasulu 64. <i>Meliola polygonicola</i> Hosag.
17.	<i>Premna latifolia</i>	66. <i>Meliola prennicola</i> Hosag.
18.	<i>Tamarindus indicus</i>	76. <i>Meliola tamarindii</i> Sydow & Sydow
19.	<i>Toddalia asiatica</i>	77. <i>Meliola teclaeae</i> Hansf. var. <i>toddaliae-asiaticae</i> Hansf. & Thirum. 81. <i>Meliola toddaliicola</i> Hansf. var. <i>indica</i> Hansf. & Thirum.
Plants consumed as scarcity or famine food		
20.	<i>Adenanthera pavonina</i>	21. <i>Meliola adenanthericola</i> Hosag. et al.
21.	<i>Atalantia monophylla</i>	78. <i>Meliola tenella</i> Pat. var. <i>atalantiae</i> (Pat.) Hansf. 79. <i>Meliola tenella</i> Pat. var. <i>atalantiicola</i> Hosag.
22.	<i>Butea monosperma</i>	31. <i>Meliola buteae</i> Hafiz et al.
23.	<i>Cassia fistula</i>	23. <i>Meliola aethiops</i> Sacc.
24.	<i>Erythroxylum monogynum</i>	42. <i>Meliola erythroxylifolii</i> Batista & Vital
25.	<i>Ficus hispida</i>	14. <i>Irenopsis benguetensis</i> Stev. & Rold. ex Hansf.
26.	<i>Rubus ellipticus</i>	7. <i>Appendiculella calostroma</i> (Desm.) Hohnel 69. <i>Meliola rubiella</i> Hansf.
27.	<i>Mucuna pruriens</i>	56. <i>Meliola mucunae-acuminatae</i> Hansf. var. <i>indica</i> Hosag. et al.
28.	<i>Mussaenda frondosa</i>	25. <i>Meliola anceps</i> Sydow & Sydow
29.	<i>Olea dioica</i>	52. <i>Meliola malabarensis</i> Hansf. 60. <i>Meliola oleacearum</i> Hosag.
30.	<i>Pavetta indica</i>	67. <i>Meliola psychotriae</i> Earle
31.	<i>Phoenix spp.</i>	61. <i>Meliola palmicola</i> Wint. var. <i>africana</i> Hansf.
32.	<i>Pterocaropus marsupium</i>	68. <i>Meliola pterocarpi</i> Yates
33.	<i>Smilax zeylanica</i>	43. <i>Meliola gamblei</i> Hosag. 71. <i>Meliola salleana</i> Hansf. var. <i>smilacis</i> Hosag. 75. <i>Meliola smilacis</i> Stev.
34.	<i>Triumfetta rhomboidea</i>	18. <i>Irenopsis triumfettae</i> (Stev.) Hansf. & Deight. 19. <i>Irenopsis triumfettae</i> Stev. var. <i>indica</i> Hosag. & Abraham
Plants with edible flowers		
35.	<i>Caryota urens</i>	36. <i>Meliola caryotae</i> Srinivasulu
36.	<i>Clerodendrum serratum</i>	39. <i>Meliola cookeana</i> Speg. var. <i>viticis</i> (Hansf.) Hansf.
37.	<i>Dillenia pentagyna</i>	12. <i>Asteridiella dilleniae</i> Hosag. & Kamar.

38. *Woodfordia fruticosa*
- Plants with edible fruits**
39. *Artocarpus heterophyllous*
40. *Artocarpus lakoocha*
41. *Buchanania lanzan*
42. *Calophyllum apetalum*
43. *Canthium dicoccum*
44. *Carissa spinarum*
45. *Citrus medica*
46. *Dillenia pentagyna*
47. *Elaeagnus latifolia*
48. *Erythroxylum monogynum*
49. *Ficus hispida*
50. *Gmelina argorea*
51. *Grewia tiliaefolia*
52. *Leea indica*
53. *Leea macrophylla*
54. *Maesa indica*
55. *Mammea longifolia*
56. *Mangifera indica*
57. *Memecylon umbellatum*
58. *Microcos paniculata*
59. *Nothopegia colebrookiana*
60. *Olax scandens*
61. *Phoenix humilis*
62. *Phoenix sylvestris*
63. *Rubus ellipticus*
64. *Rubus niveus*
65. *Sarcostigma kleinii*
66. *Syzygium cumini*
67. *Trema orientalis*
68. *Trewia nudiflora*
69. *Vaccinium laeschenaaultii*
70. *Viburnum punctatum*
71. *Ziziphus mauritiana*
72. *Ziziphus nummularia*
73. *Ziziphus oenoplia*
74. *Ziziphus rugosa*
- Plants with edible seeds**
75. *Careya arborea*
76. *Jasminum arborescens*
77. *Mangifera indica*
78. *Murraya koenigii*
79. *Pongamia pinnata*
80. *Pterocaropus marsupium*
81. *Schleichera oleosa*
82. *Semecarpus anacardium*
83. *Smilax zeylanica*
84. *Toddalia asiatica*
85. *Ziziphus xylopyrus*
- Plants with edible seeds**
86. *Artocarpus heterophyllous*
87. *Buchanania lanzan*
88. *Castanopsis hystrix*
89. *Erythrina variegata*
90. *Mucuna pruriens*
91. *Sterculia urens*
83. *Meliola woodfordiae* Srinivasulu
27. *Meliola artocarpi* Yates
50. *Meliola integrifolii* C.R. Patil ex Hosag.
27. *Meliola artocarpi* Yates
26. *Meliola ardigoosii* Hosag. & Abraham
30. *Meliola buchananiicola* Hosag.
6. *Appendiculella calophylli* (Stev.) Toro var. *apetali* Hosag. et al.
62. *Meliola plectroniae* Hansf.
35. *Meliola carissae* Dooidge var. *spinari* Hosag.
32. *Meliola butleri* Sydow
12. *Asteridiella dilleniae* Hosag. & Kamar.
40. *Meliola elaeagni* Hansf. & Thirum.
42. *Meliola erythroxylifolii* Batista & Vital
14. *Irenopsis benguetensis* Stev. & Rold. ex Hansf.
38. *Meliola clerodendricola* Henn. var. *micromera* (Sydow & Sydow) Hansf.
44. *Meliola grewiae* Hansf. var. *longispora* Hosag. & Raju
3. *Amazonia leeeae* Hansf. & Thirum.
15. *Irenopsis leeeae* Hansf. var. *indica* Hosag.
16. *Irenopsis leeeae* Hansf. var. *javensis* Hansf.
3. *Amazonia leeeae* Hansf. & Thirum.
4. *Amazonia peregrina* Sydow & Sydow
45. *Meliola groteana* Sydow & Sydow
58. *Meliola ochrocarpi* Thite & Patil
53. *Meliola mangiferae* Earle
55. *Meliola memecylii* Sydow & Sydow
80. *Meliola thirumalacharii* Hosag. & Rajendran
57. *Meliola nothopegiae* Hansf.
59. *Meliola olacicola* Hosag.
61. *Meliola palmicola* Wint. var. *africana* Hansf.
61. *Meliola palmicola* Wint. var. *africana* Hansf.
7. *Appendiculella calostroma* (Desm.) Hohnel
69. *Meliola rubiella* Hansf.
69. *Meliola rubiella* Hansf. var. *indica* Hosag.
72. *Meliola sarcostigmaticola* Hosag.
73. *Meliola sarcostimatis* Hosag.
5. *Amazonia syzygii* Hosag.
13. *Asteridiella tremae* (Speg.) Hansf.
82. *Meliola trewiae* Hosag.
2. *Amazonia kakachiana* Hosag.
22. *Meliola aequatoriensis* Petrak46. *Meliola goosii* Hosag.
84. *Meliola ziziphi* Hansf. & Thirum.
84. *Meliola ziziphi* Hansf. & Thirum.
84. *Meliola ziziphi* Hansf. & Thirum.
84. *Meliola ziziphi* Hansf. & Thirum.
49. *Meliola indica* Sydow var. *careyae* Stev.
51. *Meliola jasmine* Hansf. & Stev.
53. *Meliola mangiferae* Earle
17. *Irenopsis murrayae* Hosag. & Rajkumar
65. *Meliola pongamiae* Hosag. & Abraham
68. *Meliola pterocarpi* Yates
34. *Meliola capensis* (Kalch. & Cooke) Theiss. var. *schleicherae* Hosag. & Pillai
20. *Meliola abrahamii* Hosag. et al.
74. *Meliola semecarpi-anacardii* Hosag. et al.
43. *Meliola gamblei* Hosag.
71. *Meliola salleana* Hansf. var. *smilacis* Hosag.
75. *Meliola smilacis* Stev.
77. *Meliola tecleae* Hansf. var. *toddaliae-asiaticae* Hansf. & Thirum.
81. *Meliola toddalicolica* Hansf. var. *indica* Hansf. & Thirum.
84. *Meliola ziziphi* Hansf. & Thirum.
27. *Meliola artocarpi* Yates
50. *Meliola integrifolii* C.R. Patil ex Hosag.
26. *Meliola ardigoosii* Hosag. & Abraham
30. *Meliola buchananiicola* Hosag.
48. *Meliola hystrix* Kar & Maity
41. *Meliola erythrinae* Sydow
56. *Meliola mucunae-acuminatae* Hansf. var. *indica* Hosag. et al.
10. *Asteridiella anamalaiana* Hosag.

Materials examined: On leaves of *Rubus ellipticus* Smith (Rosaceae), Kalimpong, West Bengal, March 19, 1957, J.N. Kapoor HClO 26605; *Crataegus crenulata* Roxb. (Rosaceae), Chaubattia, Uttar Pradesh, 15.x.1959, J.N. Kapoor HClO 28331; *Rubus calycinus* Don., Manebhanjan, Darjeeling, West Bengal, May 17, 1967, Coll. Unknown IMI 133535; *R. vulgaris* Meikle, Balehonnur, Karnataka, 28.iv.1946, M.J. Thirumalachar HClO 10900.

Description: Colonies amphigenous, mostly epiphyllous, dense, crustose, up to 2mm in diameter. Hyphae mostly straight, branching mostly opposite at wide angles, loosely reticulate, cells 37-50 x 6-8µm. Appressoria alternate, antrorse to spreading, 24-28µm long; stalk cells cylindrical to cuneate, 9-12.5µm long; head cells globose, irregularly sublobate, 12-15.5 x 18-25µm. Phialides mixed with appressoria, opposite to alternate, conoid to ampulliform, 18-28 x 9-12.5µm. Perithecia mostly grouped at the centre of the colony, up to 300µm in diam.; perithecial appendages many, cylindrical to conoid twisted, rounded at the apex, 49-95 x 18-25µm; ascospores ellipsoidal, mostly curved, 3-septate, 40-43.5 x 15-18µm.

Host range: *Rubus* spp.

Distribution: India

8. *Armatella litseae* (P. Henn.) Theiss. & Sydow, Ann. Mycol. 13: 235, 1915; Hansf. & Thirum., Farlowia 3: 286, 1984; Kar & Maity, Norway J. Bot. 19: 250, 1972; Hosag., J. Econ. Taxon. Bot. 15: 200, 1991; Yanxing, Yousheng, Bin & Guangzheng, Flora Fungorum Sinicorum 4: 48, 1996.

***Dimerosporium litseae* P. Henn., Bot. Jahrb. Syst. 32: 42, 1903.**

***Artalendea cinnamomi* Bat. & Maia, Atas Inst. Micol. Recife 1: 222, 1960.**

Materials examined: On leaves of *Neolitsea scrobiculata* (Meisner) Gamble, Nandi Hills, Karnataka, India, M.J. Thirumalachar 901 pp.; Kerala, India, 6.xii.1983, V.B. Hosagoudar MH 78117, 78190; Coimbatore, Tamil Nadu, India, 17.i.1986, V.B. Hosagoudar MH 82667; on *Daphnedium pulcherrima*, West Bengal, India, May 9, 1967, M.K. Maity IMI 136371, PCC 1249.

Description: Colonies hypophyllous, thin, crustaceous, up to 6mm in diameter, rarely confluent. Hyphae smooth walled, substraight to undulate, branching mostly alternate at wide angles, loosely reticulate, cells 16-30 x 6-8µm. Appressoria alternate, about 5% opposite, antrorse, straight to curved, 15-20µm long; stalk cells single celled, cylindrical to cuneate, 3-6.5µm long; head cells globose, stellately sublobate, 11-13.5 x 15-16µm. Perithecia seated on tortuous exappressoriolate mycelium, scattered, verrucose, up to 300µm in diam.; ascospores initially hyaline and continuous, oblong with rounded ends, dumb bell shaped, matured spores 1-septate with unequal cells, 30-36.5 x 11.5-13.5µm. During germination, one cell of the spore enlarges to produce appressorium and the other empties into it and collapses.

Host range: *Neolitsea zeylanica*, *Daphnedium pulcherrima*

Distribution: Asia

9. *Asteridiella acronychiae-pedunculatae* Hosag. in Hosag. & Goos, Mycotaxon 42: 126, 1991; Hosag., Meliolales of India, p79, 1996

Materials examined: On leaves of *Acronychia pedunculata* (L.) Miq. (Rutaceae), Eremeparai, Top Slip, Coimbatore, Tamil Nadu, Dec. 20, 1990, V.B. Hosagoudar HClO 30515.

Host range: *Acronychia pedunculata*

Distribution: India

Description: Colonies amphigenous, dense, crustose, up to 2mm in diameter, rarely confluent. Hyphae straight to substraight, branching alternate to opposite at acute angles, loosely reticulate, cells 27-34 x 7-9.5µm. Appressoria alternate, straight to slightly curved, antrorse to subantrorse, 27-40.5µm long; stalk cells cylindrical to cuneate, 9-18.5µm long; head cells clavate, ovate, cylindrical, entire to angular, 18-21.5 x 12-15.5µm. Phialides numerous, mixed with appressoria, alternate to opposite, ampulliform, 24-31 x 9-12.5µm. Perithecia scattered, up to 115µm in diam; perithecial cells conoid to mammiform, up to 18.5µm long; ascospores obovoidal, 4-septate, constricted at the septa, 34-37.5 x 15-21.5µm.

10. *Asteridiella anamalaiana* Hosag. in Hosag. & Goos, Mycotaxon 42: 127, 1991, Hosag., Meliolales of India, p81, 1996.

Materials examined: On leaves *Sterculia urens* of Roxb. (Sterculiaceae), Nedungundru, Valparai, Veloniae, Coimbatore, Tamil Nadu, 23.xii.1990, V.B. Hosagoudar HClO 30529 (as *Meliola anamalaiana*).

Description: Colonies epiphyllous scattered, dense, crustose to velvety, up to 2mm in diameter. Hyphae substraight to crooked, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 24-28 x 6-8µm. Appressoria alternate, mostly antrorse, 21-28µm long; stalk cells cylindrical to cuneate, 6-9.5µm long; head cells globose, angular to rarely sublobate, 15-18 x 18-22µm. Phialides numerous, mixed with appressoria, opposite to alternate, ampulliform, 18-22 x 6-9.5µm. Perithecia scattered, up to 140µm in diam.; perithecial cells protruded, conoid, curved at the apex, up to 15µm long; ascospores obovoidal to cylindrical, 4-septate, slightly constricted at the septa, 43-53 x 18-22µm.

Host range: *Sterculia urens*

Distribution: India

11. *Asteridiella caseariicola* Hosag., Meliolales of India, p 81, 1996.

Materials examined: On leaves of *Casearia esculenta* Roxb. (Flacourtiaceae), M.K. Vayal, Kanniyakumari dist., Tamil Nadu, 27.ii.1994, V.B. Hosagoudar HClO 41628.

Description: Colonies amphigenous, mostly epiphyllous, dense, crustose, up to 1mm in diam., rarely confluent. Hyphae straight to substraight, branching mostly opposite at acute angles, loosely to closely reticulate, cells 18-28 x 6-8µm. Appressoria alternate, antrorse, 27-43.5µm long; stalk cells cuneate, 9-18.5µm; head cells globose, stellately lobate, 18-24 x 18-25µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-28 x 6-8µm. Perithecia loosely grouped, up to 250µm in diam.; peridial cells mammiform, 15-25µm long; ascospores fusiform, mostly curved, 3-septate, 49-53 x 15-18.5µm.

Host range: *Casearia esculenta*

Distribution: India

12. *Asteridiella dilleniae* Hosag. & Kamar., J. Econ. Taxon. Bot. 25, 553, 2001.

Materials examined: On leaves of *Dillenia pentagyna* (Dilleniaceae), Kerala, India, 19.xi.2000, M. Kamarudeen HClO 43684, TBGT 353.

Description: Colonies epiphyllous, dense, minute, up to 1mm in diameter, confluent. Hyphae substraight to flexuous, branching alternate to irregular at acute to wide angles, loosely to closely reticulate, cells 17-24 x 8-10µm. Appressoria alternate, antrorse to subantrorse, 20-28µm long; stalk cells cylindrical to cuneate, 6-11µm long; head cells ovate to globose, entire, 14-17 x 14-16µm. Phialides borne on a separate mycelial branch, alternate, opposite to unilateral, ampulliform, 19-24 x 8-10µm. Perithecia scattered, up to 150µm in diameter; perithecial wall cells prominent, conoid, mammiform, attenuated and broadly rounded at the apex, straight to curved at the tip, up to 22µm long; ascospores oblong to cylindrical, 4-septate, constricted, 40-42 x 14-16µm.

Host range: *Dillenia pentagyna*

Distribution: India

13. *Asteridiella tremae* (Speg.) Hansf., Sydowia 10: 50, 1957; Hansf., Sydowia Beih. 2: 316, 1961; Patil & Mahamulkar, Indian Phytopathol. 52: 246, 1999.

***Meliola tremae* Speg., Ann. Mus. Nac. Buenos Aires 23: 45, 1912.**

***Irenina tremae* (Speg.) Stev., Ann. Mycol. 25: 457, 1927.**

Materials examined: On leaves of *Trema orientalis* (L.) Blume (Ulmaceae), in the campus of Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram, Kerala, 18.xii.2001, H. Biju HClO 44490, TBGT 780.

Description: Colonies epiphyllous, thin to subdense, up to 2mm in diameter, rarely confluent. Hyphae straight to flexuous, branching alternate, opposite to irregular at acute to wide angles, loosely reticulate, cells 30-45 x 4-6µm. Appressoria alternate, often distantly placed, antrorse, rarely recurved, 16-24 µm long; stalk cells cylindrical to cuneate, 3-11µm long; head cells ovate to globose, entire, truncate at the apex, rarely sublobate, 12-14 x 9-11µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-18 x 6-8µm. Perithecia scattered, up to 150µm in diam.; perithecial wall cells conoid to mammiform, up to 14µm long; ascospores oblong, 4-septate, constricted, 35-38 x 14-16µm.

Host range: *Trema orientalis*

Distribution: Tropics

14. *Irenopsis benguetensis* Stev. & Rold. ex Hansf., Sydowia 26: 311, 1963; Hosag. & Goos, Mycotaxon 36: 242, 1989; Hosag., Meliolales of India, p. 107, 1996.

***Irenopsis benguetensis* Stev. & Rold. Philippine J. Sci. 56: 49, 1935; Hansf., Sydowia Beih. 20: 321, 1961.**

***Meliola benguetensis* (Stev. & Rold.) Cif., Mycopathologia 7: 87, 1954 (non Stev. & Rold., 1935).**

Materials examined: On leaves of *Ficus asperima* Roxb. (Moraceae), Calvary Mount, Idukki, Kerala, 12.x.1982, V.B. Hosagoudar MH 73639; Idukki, Kerala, 4.x.1983, V.B. Hosagoudar MH 78155; *F. gibbosa* Blume, Calvary Mount, Idukki, Kerala, 21.ii.1983, V.B. Hosagoudar MH 75890; Lakshmi Estate, Idukki, Kerala, Dec. 25, 1983, V.B. Hosagoudar MH 79073, 79078; 12.x.1983, V.B. Hosagoudar MH 73639; 4.x.1983, V.B. Hosagoudar MH 78155; *F. hispida* L.f., Idukki, Kerala, Oct. 11, 1983, V.B. Hosagoudar MH 78943; *F. exasperata* Vahl, near Sholayar dam, Valparai, Coimbatore, Tamil Nadu, 29.xii.1990, V.B. Hosagoudar HClO 30520; *F. tinctoria* Forst. ssp. *gibbosa* (Blume) Corner var. *cuspidifera* (Miq.) Chitra, Nedungundru, Velonia, Valparai, Coimbatore, Tamil Nadu, 23.xii.1990, V.B. Hosagoudar HClO 30521; *F. nervosa* Heyne ex Roth, Koomati, Anamalai, Coimbatore, Tamil Nadu, March 13, 1994, V.B. Hosagoudar HClO 41576.

Description: Colonies amphigenous, mostly epiphyllous, subdense to dense, up to 4mm diameter, rarely confluent. Hyphae straight to undulate, branching alternate at acute angles, loosely to closely reticulate, cells 24-32 x 6-10µm. Appressoria alternate, antrorse, spreading, 30-38µm long; stalk cells cylindrical to cuneate, 11-18µm long; head cells globose, angulose, irregularly sublobate, 16-22 x 14-20µm. Phialides mixed with appressoria and also borne on a separate

mycelial branch, alternate, ampulliform, 20-26 x 8-10µm. Perithecia scattered to aggregated, verrucose, up to 144µm in diam.; perithecial setae 5-8, straight, spreading, dark-brown at base and pale brown at the apex, obtuse and mostly straight at the tip, up to 150µm long and 8-10µm thick; ascospores ellipsoidal, 4-septate, constricted, 38-44 x 16-28µm.

Host range: *Ficus* spp.

Distribution: Tropics

15. *Irenopsis leae* Hansf. var. *indica* Hosag. in Hosag. & Goos, Mycotaxon 36:243, 1989; Hosag., Meliolales of India, p. 111, 1996.

Materials examined: On leaves of *Leea indica* (Burm.f.) Merr. (Leeaceae), Kanchiar Forest, Idukki, Kerala, 17.xii.1982, V.B. Hosagoudar HClO 40488; MH 75795; Kanchiar forest, Idukki, Kerala, 17.xii.1982, V.B. Hosagoudar MH 75795; Idukki, Kerala, 23.xii.1983, V.B. Hosagoudar MH 79032; Reservoir side of Calvary Mount, Idukki, Kerala, Dec. 24, 1983, V.B. Hosagoudar MH 79069; Lakshmi Estate, Idukki, Kerala, Dec. 25, 1983, V.B. Hosagoudar MH 79088.

Description: Colonies epiphyllous, very thin, up to 3mm in diameter. Hyphae straight to undulate, branching opposite to alternate at wide angles, loosely reticulate, cells 18-28 x 6-8µm. Appressoria scattered, alternate to unilateral, closely antrorse, 18-24µm long; stalk cells cuneate, 6-10µm long; head cells ovate, globose, entire to irregularly sublobate, 10-18 x 16-20µm. Phialides numerous, mixed with appressoria, alternate to opposite, ampulliform, 16-22 x 8-10µm. Perithecia scattered to grouped, verrucose, up to 150µm in diam.; perithecial setae 3-8, straight to flexuous, spreading, dark at the base and paler towards the apex, tip obtuse, 84-150 x 8-10µm; ascospores obovoidal, 4-septate, constricted, 30-36 x 12-16µm.

Host range: *Leea indica*

Distribution: India

16. *Irenopsis leae* Hansf. var. *javensis* Hansf., Reinwardtia 3: 110, 1954; Sydowia Beih. 2: 370, 1961; Hosag., Nova Hedwigia 52: 499, 1991; Hosag., Meliolales of India, p. 112, 1996.

Materials examined: On leaves of *Leea indica* (Burm.f.) Merr. (Leeaceae), Koomati Settlement, near Sholayar Power Station-II, Valparai, Coimbatore, Tamil Nadu, March 28, 1990, V.B. Hosagoudar HClO 30384.

Description: Colonies epiphyllous, dense, rarely amphigenous, up to 2mm in diam., confluent. Hyphae straight, flexuous to slightly tortuous, branching alternate to irregular at acute angles, loosely reticulate, cells 18-25 x 6-9.5µm. Appressoria alternate, mostly unilateral, about 1% opposite, antrorse, subantrorse to rarely reflexed, 18-25µm long; stalk cells cylindrical to cuneate, 3-9.5µm long; head cells globose, slightly and irregularly lobate, 13-15 x 12-15.5µm. Phialides numerous, mixed with appressoria, alternate to opposite, ampulliform, 18-22 x 9-12.5µm. Perithecia scattered, up to 95µm in diam.; perithecial setae straight to tortuous, often perpendicular to the host, obtuse at the tip, up to 80µm long; ascospores obovoidal, slightly constricted at the septa, 4-septate, 30-37 x 13-15.5µm.

Host range: *Leea indica*

Distribution: India

17. *Irenopsis murrayae* Hosag. & Rajkumar, J. Econ. Taxon Bot. 25: 554, 2001.

Materials examined: On leaves of *Murraya koenigii*. (Rutaceae), Kerala, 8.xi.2000, Rajkumar HClO 43685; TBGT 354.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, up to 2mm in diameter, confluent. Hyphae mostly straight, rarely substraight, branching alternate to opposite at acute angles, closely to very closely reticulate, cells 9-13 x 6-8µm. Appressoria alternate, closely placed, antrorse, 16-21µm long; stalk cells cylindrical to cuneate, 4-7µm long; head cells ovate to globose, entire, 11-15 x 12-13µm. Phialides mixed with appressoria, scattered, opposite to alternate, ampulliform, 12-18 x 6-10µm. Perithecia scattered to loosely grouped, verrucose, up to 190µm in diameter; perithecial setae many, simple, straight, slightly wrinkled, acute, obtuse, wall smooth to suberulate at the apex, up to 75 µm long; ascospores slightly ellipsoidal, 4-septate, constricted, 35-40 x 14-18µm.

Host range: *Murraya koenigii*

Distribution: India

18. *Irenopsis triumfettae* (Stev.) Hansf. & Deight., Mycol. Pap. 23: 14, 1948; Hansf., Reinwardtia 3: 107, 1954; Sydowia Beih. 2: 368, 1961; Hosag. & Goos, Mycotaxon 36: 244, 1989; 42: 128, 1991; Hosag., Meliolales of India, p. 118, 1996.

Meliola triumfettae Stev., Illinois Biol. Monogr. 2: 30, 1916; Deighton, Mycol. Pap. 9:17, 1944.

Irenopsis coronata (Speg.) Stev. var. *triumfettae* (Stev.) Stev., Ann. Mycol. 25: 435, 1927; Stev. & Rold., Philippine J. Sci. 56: 51, 1933.

Meliola coronata Speg. var. *triumfettae* (Stev.) Cif., Mycopathologia 8:117, 1954.

Irenopsis molleriana sensu Kapoor, Indian Phytopathol. 20: 151, 1967.

Materials examined: On leaves of *Triumfetta bartramia* L. (Tiliaceae), Sribadam, Sikkim, 7.iv.1962, J.N.Kapoor HClO 18362; *T. pilosa* Roth, Lakshmi Estate, Idukki, Kerala, 14.xii.1982, V.B.Hosagoudar MH 75746; Calvary Mount, Idukki, Kerala, 15.xii.1982, V.B.Hosagoudar MH 75779; 28.xii.1983, V.B. Hosagoudar MH 80322; Lakshmi Estate, Idukki, Kerala, 6.x.1983, V.B.Hosagoudar MH 78175, 78176; *T. rhomboidea* Jacq., Pamba, Kerala, 10.x.1983, V.B.Hosagoudar MH 78933; near Sholayar dam, Valparai, Coimbatore, Tamil Nadu, 25.xii.1990, V.B. Hosagoudar HClO 30524, 30525.

Description: Colonies amphigenous, mostly epiphyllous, subdense, scattered, up to 3mm in diameter, rarely confluent. Hyphae undulate to tortuous, branching opposite to alternate at wide angles, loosely to closely reticulate, cells 15-20 x 6-8µm. Appressoria alternate, mostly straight, antrorse, 18-22µm long; stalk cells cylindrical to cuneate, 6-8µm long; head cells globose, entire to sublobate, 12-16 x 12-14µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-20 x 6-8µm. Perithecia scattered to aggregated, up to 207µm in diam.; perithecial setae 6-8, straight, spreading, continuous, curved or unciniate at the apex, apex obtuse, 99-144 x 6-8µm; ascospores ellipsoidal, 4-septate, constricted, 36-44 x 12-16µm.

Host range: *Triumfetta* spp.

Distribution: Tropics

19. *Irenopsis triumfettae* Stev. var. *indica* Hosag. & Abraham, J. Mycopathol. Res. 36: 98, 1998.

Materials examined: On leaves of *Triumfetta* sp (Tiliaceae), Kerala, India, 8.iii.1996, V.B. Hosagoudar HClO 44293, TBGT 81.

Description: Colonies amphigenous, dense, up to 1mm in diameter, confluent. Hyphae straight to flexuous, branching irregular at acute angles, loosely reticulate, cells 24-29 x 7-9µm. Appressoria alternate, antrorse to subantrorse, 17-22µm long; stalk cells cylindrical to cuneate 4-8µm long; head cells globose to slightly ovate, entire, 12-15 x 12-15µm. Phialides numerous mixed with appressoria, alternate to opposite, ampulliform, 14-22 x 7-9µm. Perithecia scattered, globose, verrucose, up to 160µm in diameter; Perithecial setae 6-8, simple, straight to slightly curved, tortuous to beaded and granulose towards the apex, obtuse at the apex, up to 140µm long, ascospores oblong, 4-septate, slightly constricted at the septa, 36-46 x 12-17µm.

Host range: *Triumfetta* sp.

Distribution: India

20. *Meliola abrahamii* Hosag., C.K. Biju & Rajkumar, Zoos' Print J. 16: 595, 2001.

Materials examined: On leaves of *Semecarpus anacardium* L.f. (Anacardiaceae), Kerala, India, 26.x.2000, G. Rajkumar HClO 43794, TBGT 394.

Description: Colonies epiphyllous, dense up to 3mm in diameter, confluent. Hyphae straight to slightly flexuous, branching mostly opposite at acute angles, loosely to closely reticulate, cells 24-32 x 8-10µm. Appressoria alternate, antrorse to subantrorse, 28-40 µm long; stalk cells cylindrical to cuneate, 6-16µm long; head cells oblong, straight to curved, entire, angular to sublobate, 22-24 x 11-16µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 19-24 x 6-8µm. Mycelial setae scattered to grouped around perithecia, simple straight; setae around perithecia are few, acute obtuse, up to 300µm long; setae on mycelia are acute, up to 1200µm long. Perithecia scattered, up to 175µm in diameter; ascospores cylindrical, 4-septate, constricted, 46-50 x 18-20µm.

Host range: *Semecarpus anacardium*

Distribution: India

21. *Meliola adenanthericola* Hosag., Kamarudeen & Babu in Hosag., C.K. Biju & Abraham, J. Econ. Taxon. Bot. 25: 68, 2001.

Materials examined: On leaves of *Adenanthera pavonia* L. (Mimosaceae), Kerala, India, M. Kamarudeen & K.P. Babu HClO 43799, TBGT 359.

Description: Colonies amphigenous, mostly epiphyllous, dense up to 2mm in diameter, confluent. Hyphae mostly crooked, rarely flexuous, branching alternate to opposite at acute to wide angles, loosely to closely reticulate, cells 18-25 x 6-8µm. Appressoria alternate, antrorse to spreading, 12-21µm long; stalk cells cylindrical to cuneate, 3-10µm long; head cells predominantly globose, often oblong to cylindrical, straight to curved, entire, 9-11 x 8-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 19-24 x 8-10µm. Mycelial setae scattered to grouped around perithecia, simple, straight, acute to obtuse at the tip, up to 345µm long. Perithecia scattered, up to 125µm in diameter; ascospores cylindrical to slightly fusiform, 4-septate, constricted, 35-39 x 12-15µm.

Host range: *Semecarpus anacardium*

Distribution: India

22. *Meliola aequatoriensis* Petrak, Sydowia 2: 339, 1948; Hansf., Sydowia Beih. 2: 613, 1961; Hosag., Nova Hedwigia 52: 500, 1991; Hosag., Meliolales of India, p. 121, 1996.

Materials examined: On leaves of *Viburnum punctatum* Buch.-Ham. ex D. Don

(Caprifoliaceae), M.K. Vayal, Kanniyakumari, Tamil Nadu, 6.viii.1977, A.N.Henry HClO 30386; Veerapuli Reserve Forest, Kanniyakumari, Tamil Nadu, 22.ii.1994, V.B. Hosagoudar HClO 41602.

Description: Colonies epiphyllous, dense, up to 2mm in diameter, confluent. Hyphae straight, flexuous to slightly crooked, branching irregular at acute angles, loosely to closely reticulate, cells 34-43.5 x 4-6.5µm. Appressoria alternate, closely antrorse to antrorse, straight to curved, 21-25µm long; stalk cells cylindrical to cuneate, 5-6.5µm long; head cells ovate, versiform, globose, entire, angular to slightly lobate, 15-18.5 x 12-15.5µm. Phialides borne on a separate mycelial branch, alternate to opposite, ampulliform, 18-25 x 12-15.5µm. Mycelial setae few, grouped around perithecia, straight to curved at the apex, acute to obtuse at the tip, up to 260µm long. Perithecia scattered, globose, up to 125µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 34-41 x 15-18.5µm.

Host range: *Semecarpus anacardium*

Distribution: India

23. *Meliola aethiops* Sacc., Biol. Orto Bot. Napoli 6: 41, 1921. Hansf., Sydowia Beih. 2: 252, 1961.

= *Meliola javanica* Cif., Mycopathologia 6: 19, 1951.

Materials examined: On leaves of *Cassia fistula* L. (Caesalpinaceae), Eanikara, Karakulam, Thiruvananthapuram, Kerala, 15.i.2001, Mrs. H.V. Sharada HClO 43742; TBGT 385; Karikulam, Ranni, Pathanamthitta, Kerala, 4.x.2002, A. Manojkumar HClO, TBGT 899.

Type: On leaves of *Cassia fistula* L. (Caesalpinaceae), Pakhal forest, Andhra Pradesh, 24.xi.1962, P.N. Rao, O.U.B. 181.

Description: Colonies amphigenous, subdense to dense, up to 2mm in diameter, confluent and cover larger area on the lower surface. Hyphae straight to substraight, branching opposite at acute to wide angles, loosely to closely reticulate, cells 16-24 x 4-6µm. Appressoria opposite, about 10% alternate, antrorse to subantrorse, 8-16µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells ovate, entire, 4-11 x 7-9µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 17-21 x 6-8µm. Mycelial setae scattered to mostly grouped around perithecia, simple, straight, obtuse at the tip, up to 250µm long. Perithecia loosely grouped, up to 175µm in diameter; ascospores cylindrical to ellipsoidal, 4-septate, constricted at the septa, 35-40 x 14-16µm.

Host range: *Cassia fistula*

Distribution: Tropics

24. *Meliola aethiops* Sacc. var. *cassiae* Rao, Mycopath. Mycol. Appl. 33: 163, 1967; Hosag., Meliolales of India, p. 121, 1996.

Description: Colonies epiphyllous, thin, confluent. Hyphae sinuous, branching at acute angles, loosely reticulate, cells 6-7.5µm wide. Appressoria alternate and rarely opposite, straight to curved, 12-13µm long and 9-12µm wide. Phialides mixed with appressoria, opposite, ampulliform, 15-24 x 7-9µm. Mycelial setae scattered to grouped around perithecia, straight, simple, acute and torulose near the apex, up to 340µm long. Perithecia scattered, up to 187µm in diam.; ascospores ellipsoidal, 4-septate, constricted, f 34-42 x 12-16.5µm.

Host range: *Cassia fistula*

Distribution: India

25. *Meliola anceps* Sydow & Sydow, Ann. Mycol. 14: 76, 1916; Stev., Ann. Mycol. 28: 205, 1928; Hansf., Sydowia Beih. 2: 586, 1961; Hosag. & Goos, Mycotaxon 37: 218, 1990; Hosag., Meliolales of India, p. 129, 1996.

Meliola makilingiana Sydow & Sydow, Ann. Mycol. 15: 188, 1917.

Meliola musaendae Sydow & Sydow, Ann. Mycol. 15: 190, 1917.

Materials examined: On leaves of *Mussaenda belilla* Buch.- Ham. (*M. laxa* Hook.f.) Hutch. ex Gamble (Rubiaceae), Idukki, Kerala, 8.x. 1983, V.B.Hosagoudar HClO 40494; MH 78906; 23.xii.1983, V.B.Hosagoudar MH 79030.

Description: Colonies epiphyllous, thin, up to 2mm in diameter, rarely confluent. Hyphae substraight to undulate, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 24-56 x 4-8µm. Appressoria densely arranged, alternate to unilateral, closely antrorse, 18-24µm long; stalk cells cylindrical to cuneate, 6-12µm long; head cells ovate, globose, slightly angular, entire, 10-14 x 8-10µm. Phialides mixed with appressoria, opposite to irregularly placed, ampulliform, 12-24 x 6-10µm. Mycelial setae scattered to grouped around perithecia, straight to curved but not uncininate, simple, bluntly rounded to bifid, often show knobs in the middle, up to 288µm long. Perithecia scattered, up to 130µm in diam. Ascospores obovoidal, 4-septate, slightly constricted, 28-32 x 10-12µm.

Host range: *Mussaenda* spp.

Distribution: India

26. *Meliola ardigosii* Hosag. & Abraham, Indian Phytopathol. 51: 301, 1998.

Materials examined: On leaves of *Buchanania lanzan* Spreng. (Anacardiaceae), Kerala, India, 6.ii.1997, V.B. Hosagoudar TBGT 148; HClO 42523.

Description: Colonies epiphyllous, dense, up to 2mm in diameter, rarely confluent. Hyphae straight, branching opposite at acute angles, loosely to closely reticulate, cells 15-23 x 7-8µm. Appressoria alternate, antrorse, straight to rarely curved, 22-28µm long; stalk cells cuneate, 7-10µm long; head cells ovate to cylindrical, entire, 15-18 x 12-15µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-25 x 7-10µm. Mycelial setae numerous, scattered, simple, straight, acute at the tip, up to 835µm long. Perithecia loosely grouped to scattered, verrucose up to 140µm in diameter; ascospores slightly ellipsoidal, 4-septate, slightly constricted, 50-53 x 24-26µm.

Host range: *Buchanania lanzan*

Distribution: India

27. *Meliola artocarpi* Yates, Philippine J. Sci. 12: 362, 1917; Hansf., Sydowia Beih. 2: 328, 1961; Hosag. & Goos, Mycotaxon 42: 130, 1991; Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 111, 1994; Hosag., Meliolales of India, p. 133, 1996.

Materials examined: On leaves of *Artocarpus heterophyllus* Lam. (Moraceae), Sundarankudi, Valparai, Coimbatore, Tamil Nadu, 25.xii.1990, V.B. Hosagoudar HClO 30530; Vittal, Dakshina Kannada, Karnataka, 20.xi.1992, P.A. Raghu HClO 40864; Koomati, Anamalai, 13.iii.1994, V.B. Hosagoudar HClO 41571.

Description: Colonies epiphyllous, subdense to dense, velvety, up to 5mm in diameter, rarely confluent. Hyphae straight to substraight, branching mostly irregular at acute angles, closely reticulate, cells 20-30 x 6-9.5µm. Appressoria alternate, antrorse to subantrorse, straight to curved, 24-42µm long; stalk cells cylindrical to cuneate, 8-13µm long; head cells ovate, globose, entire to angulose, 16-27 x 12-20µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-25 x 9-12.5µm. Mycelial setae numerous, simple, arcuate to uncininate, obtuse at the tip, up to 500µm long. Perithecia closely scattered, up to 195µm in diam.; ascospores oblong, 4-septate, constricted at the septa, 48-56 x 18-26µm.

Host range: *Artocarpus heterophyllus*

Distribution: India

28. *Meliola banosensis* Sydow var. *puerariae* Hosag. in Hosag. & Goos, Mycotaxon 42: 130, 1991; Hosag., Meliolales of India, p. 137, 1996.

Materials examined: On leaves of *Pueraria* sp. (Fabaceae), Eramparai, Top Slip, Coimbatore, Tamil Nadu, 20.xii.1990, V.B. Hosagoudar HClO 30531.

Description: Colonies epiphyllous, thin to subdense, up to 2mm in diameter, widely confluent. Hyphae straight, substraight to slightly crooked, branching opposite to alternate at acute to wide angles, loosely reticulate, cells 21-25 x 6-8.5µm. Appressoria alternate, antrorse to subantrorse, straight to curved, 12-15.5µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells ovate, globose, straight to curved, entire, 9-11 x 9-12.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-18.5 x 10-12.5µm. Mycelial setae few, grouped around perithecia, straight to curved but not uncininate, simple, acute, up to 300µm long. Perithecia loosely grouped, globose, up to 300µm in diam.; ascospores obovoidal to cylindrical, 4-septate, slightly constricted, 31-37.5 x 9-12.5µm.

Host range: *Pueraria* sp.

Distribution: India

29. *Meliola banosensis* Sydow var. *puerariicola* var. nov; Hosag., Meliolales of India, p. 138, 1996.

Materials examined: On leaves of *Pueraria tuberosa* DC. (Fabaceae), Koomati, Anamalai, Coimbatore, Tamil Nadu, 13.iii.1994, V.B. Hosagoudar HClO 41570.

Description: Colonies epiphyllous, thin, scattered to confluent. Hyphae flexuous, branching opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 15-22 x 6-8µm. Appressoria alternate, 10% opposite, antrorse to subantrorse, 12-15.5µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells mostly globose, entire, rarely angular, 9-12.5µm. Mycelial setae very few, straight, simple, acute at the tip, up to 372µm long. Perithecia immature, up to 100µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 34-37.5 x 15-18.5µm.

Host range: *Pueraria tuberosa*

Distribution: India

30. *Meliola buchaniicola* Hosag. in Hosag. & Goos, Mycotaxon 37: 223, 1990; Hosag., Meliolales of India, p. 147, 1996.

Materials examined: On leaves of *Buchanania lanzan* Spreng. (Anacardiaceae), Calvary Mount, Idukki, Kerala, 14.xii.1982, V.B. Hosagoudar HClO 40501; MH 75750.

Description: Colonies hypophyllous, subdense to dense, up to 8mm in diam., confluent. Hyphae tortuous, branching opposite to irregular at acute to wide angles, closely reticulate and form almost solid mycelial mat, cells 20-38 x 6-10µm. Appressoria alternate, straight to variously curved, antrorse to reflexed, 36-50µm long; stalk cells cylindrical to cuneate, often tortuous, 14-22µm long; head cells ovate, globose, angulose, sublobate, straight to variously curved, 22-30 x 12-16µm. Phialides few, mixed with appressoria, opposite to alternate,

conoid to ampulliform, 14-22 x 6-8µm. Mycelial setae numerous, simple, acute to obtuse at the tip, up to 954µm long. Perithecia scattered, verrucose, up to 234µm in diam.; ascospores obovoidal to cylindrical, 4-septate, constricted, 42-50 x 14-18µm.

Host range: *Buchanania lanzan*

Distribution: India

31. *Meliola buteae* Hafiz, Azmatulla & Kafi, *Biologia* 1: 112, 1955; Hansf., *Sydowia* Beih. 2: 291, 1961; Thite & Patil, *Kavaka* 10: 29, 1982; Hosag. & Goos, *Mycotaxon* 37: 223, 1990; Hosag., *Meliolales of India*, p. 148, 1996.

Materials examined: On leaves of *Butea monosperma* (Lam.) Taub. (*B. frondosa* Roxb.) (Fabaceae), Radhanagari, Kolhapur, Maharashtra, 10.xi.1974, M.S. Patil HClO 31940; Idukki, Kerala, Oct. 9, 1982, V.B. Hosagoudar MH 73797; 4.x.1983, V.B. Hosagoudar MH 78145; *B. parviflora* Roxb., Vellakayam, Idukki, Kerala, 24.ii.1983, M. Ali & C.N. Mohanan MH 75010; Kombe, Peppara and Neyyar Wildlife Sanctuary, Thiruvananthapuram, Kerala, 19.ii.1997, V.B. Hosagoudar HClO 42518, TBGT 165; TBGRI arboretum, Palode, Thiruvananthapuram, Kerala, 5.ix.2002, Manojkumar & H. Biju HClO 44598, TBGT 885.

Description: Colonies epiphyllous, subdense to dense, velvety, up to 4mm in diameter, confluent. Hyphae substraight to crooked, branching opposite to irregular at wide angles, loosely to closely reticulate, cells 22-38 x 6-8µm. Appressoria alternate about 5% opposite, antrorse, mostly spreading, straight to lcurved, 14-20µm long; stalk cells cylindrical to cuneate, 4-8µm long; head cells globose to subglobose, mostly curved, truncate, entire, 10-16 x 10-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-22 x 6-8µm. Mycelial setae mostly grouped around perithecia, straight, simple, acute to obtuse at the tip, up to 846µm long. Perithecia scattered to grouped, verrucose, up to 180µm in diam.; ascospores oblong, 4-septate, constricted, 40-48 x 16-20µm.

Host range: *Butea* spp.

Distribution: Asia

32. *Meliola butleri* Sydow, *Ann. Mycol.* 9: 379, 1911; Hansf., *Sydowia* Beih. 2: 382, 1961; Srinivasulu, *Nova Hedwigia* Beih. 47: 423, 1974; Hosag., *J. Econ. Taxon. Bot.* 9: 375, 1987; Hosag., *Meliolales of India*, p. 148, 1996.

Materials examined: On leaves of *Citrus aurantifolia* (Christm.) Swingle (*C. medica* L. var. *acida* (Roxb.) Hook. f. (Rutaceae), West Bengal, 15.viii.1906, R. Sen HClO 10429 type); Maruthamalai, Coimbatore, Tamil Nadu, 25.xi.1984, MH 82116; Sikkim, 5.iv.1962, J.N. Kapoor HClO 28366; *Citrus* sp., Calcutta, West Bengal, 28.vii.1919, S.N. Bal HClO 3210; Chouldhari, Port Blair, Andamans, 8.ii.1917, M. Mitra HClO 3211.

Description: Colonies amphigenous, mostly epiphyllous, subcrustose, dense, up to 4mm in diameter. Hyphae straight to undulate, branching opposite to irregular at wide angles, closely reticulate, cells 12-24 x 6-8µm. Appressoria alternate to opposite, antrorse, curved, 16-24µm long; stalk cells cylindrical to luncate, 4-6µm long; head cells ovate, clavate, cylindrical, often curved, entire, 12-16 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 16-20 x 6-8µm. Mycelial setae scattered, straight, acute to dentate, up to 650µm long. Perithecia closely scattered, verrucose, up to 220µm in diam.; ascospores oblong to subellipsoid, 4-septate, constricted, 32-44 x 14-18µm.

Host range: *Citrus* spp

Distribution: Tropics

33. *Meliola canthii* Hansf., *Proc. Linn. Soc. London* 157: 22, 1945; *Sydowia* Beih. 2: 604, 1961; Kapoor, *Indian Phytopathol.* 20: 152, 1967; Hosag., *Meliolales of India*, p. 153, 1996.

Materials examined: On leaves of *Canthium parviflorum* Lam. (*Plectronia parviflora* Bedd.) (Rubiaceae), Bhubaneswar, Orissa, Oct. 1920, S.N. Pal HClO 3115; *C. rheedii* DC., South Kanara, Karnataka, 27.iv.1913, T.R. Ranganath HClO 10397.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, up to 3mm in diam. Hyphae straight, branching irregular at acute angles, closely reticulate and radiate, cells 20-30 x 7-9µm. Appressoria alternate, straight to curved mostly antrorse, 24-32µm long; stalk cells cylindrical to cuneate, 2-12µm long; head cells cylindrical to clavate, entire to angulose, 16-20 x 14-18µm. Phialides mixed with appressoria, ampulliform, 20-28 x 8-12µm. Mycelial setae scattered to grouped around perithecia, simple, straight, acute, up to 400µm long. Perithecia not seen; ascospores oblong, 4-septate, constricted, 42-46 x 14-16µm.

Host range: *Canthium parviflorum*

Distribution: India

34. *Meliola capensis* (Kalch., & Cooke) Theiss. var. *schleicherae* Hosag. & Pillai in Hosag., Raghu & Pillai, *Nova Hedwigia* 58: 583, 1994; Hosag., *Meliolales of India*, p. 157, 1996.

Materials examined: On leaves of *Schleichera oleosa* (Lour.) Oken (Sapindaceae),

Vettiyar, Mavelikara, Kerala, 14.ix.1992, C.M. Pillai HClO 40757; Koomati, Anamalai, Coimbatore, Tamil Nadu, 13.iii.1994, V.B. Hosagoudar HClO 41581; Kombe, Meenmutty, Peppara & Neyyar Wildlife Sanctuary, Thiruvananthapuram, Kerala, 28.iii.1996, V.B. Hosagoudar 55; Sankili forest, Kollam, Kerala, 27.xii.2001, V.B. Hosagoudar TBGT 623; *Lepisanthes erecta* (Thw.) Leenh. (Sapindaceae), Sankili forest, Kollam, Kerala, 27.xii.2001, V.B. Hosagoudar HClO 44348, TBGT 643.

Description: Colonies epiphyllous, rarely amphigenous, dense, velvety, up to 2mm in diameter, confluent. Hyphae straight, branching opposite at acute angles, loosely to closely reticulate, cells 15-25 x 6-7µm. Appressoria opposite, crowded to sparse, 9-15.5µm long; stalk cells cuneate, 3-5µm long; head cells conoid, rarely broadly rounded at the apex, entire, 6-11 x 6-9.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 12-15.5 x 6-9.5µm. Mycelial setae scattered, straight, acute to dentate at the tip, up to 320µm long. Perithecia scattered, verrucose, up to 155µm in diam.; ascospores obovoidal, 4-septate, slightly constricted, 30-35 x 12-15.5µm.

Host range: *Schleichera oleosa*

Distribution: India

35. *Meliola carissae* Doidge var. *spinari* Hosag., *Curr. Sci.* 58: 145, 1989; Hosag., *Meliolales of India*, p. 158, 1996.

Meliola carissae sensu Kamal, Singh & Singh, *Indian J. Mycol. Pl. Pathol.* 12: 71, 1982, non Doidge, 1921.

Meliola carissae Doidge var. *spinari* Hosag., *J. Econ. Taxon. Bot.* 13: 31, 1989.

Materials examined: On leaves of *Carissa spinarum* L. (Apocynaceae), Uttara Pradesh, 5.i.1976, Kamal IMI 200122.

Description: Colonies epiphyllous, subdense, up to 3mm in diameter, confluent. Hyphae substraight to undulate, branching opposite to irregular at acute angles, loosely reticulate, cells 24-40 x 6-9.5µm. Appressoria alternate, straight to curved, antrorse to reflexed, 21-28µm long; stalk cells cylindrical to cuneate, 6-9.5µm long; head cells ovate, boat shaped, entire, angulose to shallowly lobate, 15.5-18.5 x 9-12.5µm. Phialides borne on a separate mycelial branch, opposite to alternate, conoid to ampulliform, 15.5-21 x 9-12.5µm. Mycelial setae scattered, straight, simple, acute, up to 860µm long. Perithecia scattered, verrucose, upto 155µm in diam.; ascospores obovoidal, straight to slightly curved, 4-septate, constricted, 34-37 x 12-15.5µm.

Host range: *Carissa spinarum*

Distribution: India

36. *Meliola caryotae* Srinivasulu, *Nova Hedwigia* Beih. 47: 424, 1974; Hosag., *Meliolales of India*, p. 159, 1996.

Materials examined: Material was not available for the study.

Type: On leaves of *Caryota urens* L. (Arecaceae), Castle Rock, Maharashtra, Nov., 1967, B.V. Srinivasulu MUH 130.

Description: Colonies epiphyllous, dense, velvety, up to 4mm in diameter. Hyphae slightly undulate, branching opposite to alternate at acute angles, closely reticulate, cells 10-25 x 6-8µm. Appressoria alternate, straight to curved, antrorse to spreading, 27-32µm long; stalk cells cylindrical to cuneate, 7-12µm long; head cells cylindrical to clavate, entire, 8-19 x 10-20µm. Phialides borne on a separate mycelial branch, opposite to alternate, ampulliform, 15-25 x 4-9µm. Mycelial setae scattered, simple, straight, acute to dentate, up to 530µm long. Perithecia scattered, verrucose, up to 270µm in diam.; ascospores oblong, 4-septate, constricted, 45-53 x 19-22µm.

Host range: *Caryota urens*

Distribution: India

37. *Meliola clausenae* Hosag. in Hosag. & Goos, *Mycotaxon* 37: 226, 1990; 42: 133, 1991; Hosag., *Meliolales of India*, p. 168, 1996.

Materials examined: On leaves of *Clausena indica* (Dalz.) Oliver (Rutaceae), Kanchiar forest, Idukki, Kerala, 23.ii.1983, V.B. Hosagoudar HClO 40508, MH 75009; Topslip, Coimbatore, Tamil Nadu, 20.xii.1990, V.B. Hosagoudar HClO 30540; M.K. Vayal, Kanniyakumari, Tamil Nadu, 27.ii.1994, V.B. Hosagoudar HClO 41618; C. dentate (Willd.) M. Roem., Varangaliar, Anamalai, Coimbatore, Tamil Nadu, 12.iii.1994, V.B. Hosagoudar HClO 41606.

Description: Colonies epiphyllous, thin, up to 2mm in diameter. Hyphae straight to slightly undulate, branching opposite at wide angles, loosely reticulate, cells 10-16 x 6-8µm. Appressoria alternate, 20% opposite, straight to curved, subantrorse to antrorse, 16-24µm long; stalk cells cylindrical to cuneate, 6-8µm long; head cells cylindrical, ovate, entire, 10-16 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 12-20 x 6-8µm. Mycelial setae scattered, straight, simple, acute to 2-3 dentate, up to 747µm long. Perithecia scattered, verrucose, up to 180µm in diam.; ascospores obovoidal, 4-septate, constricted, 36-42 x 14-16µm.

Host range: *Clausena indica*

Distribution: India

38. *Meliola clerodendricola* Henn. var. *micromera* (Sydow & Sydow) Hansf., *Sydowia* Beih. 2: 694, 1961; Hosag. & Goos, *Mycotaxon* 37: 227, 1990; Hosag.,

Meliolales of India, p. 170, 1996.

Meliola micromera Sydow, Ann. Mycol. 12: 552, 1914.

Materials examined: On leaves of *Gmelina arborea* Roxb. (Verbenaceae), Meenmutty, Idukki, Kerala, 12.xii.1982, V.B. Hosagoudar HClO 40511, MH 73690; near Painavu, Idukki, Kerala, 12.xii.1983, V.B. Hosagoudar MH 78979; 3.x.1983, V.B. Hosagoudar MH 78126; *G. asiatica* L., Mundandurai, Tamil Nadu, 7.xii.1987, A. Rajendran HClO 39285; Peppara, Thiruvananthapuram, Kerala, 20.ii.1997, V.B. Hosagoudar HClO 44070, TBGT 503; in the campus of TBGRI, Thiruvananthapuram, Kerala, 7.xii.2001, H. Biju HClO 44467, TBGT 757; 7.xii.2001, H. Biju 44468, TBGT 793.

Description: Colonies epiphyllous, subdense, velvety, up to 2mm in diameter, confluent. Hyphae straight to sinuous, branching opposite at acute angles, loosely to closely reticulate, cells 18-34 x 6-8µm. Appressoria alternate, antrorse, rarely spreading, mostly straight, 16-20µm long; stalk cells cuneate, 5-8µm long; head cells ovate, globose, entire, 11-14 x 10-12µm. Phialides numerous, mixed with appressoria, opposite to alternate, ampulliform, 12-20 x 6-10µm. Mycelial setae few, grouped around perithecia, straight, simple, obtuse at the tip, up to 190µm long. Perithecia scattered, up to 189µm in diam.; ascospores oblong, 4-septate, constricted, 30-32 x 10-14µm.

Host range: *Gmelina arborea*

Distribution: India

39. *Meliola cookeana* Speg. var. *viticis* (Hansf.) Hansf., Sydowia Beih. 2: 690, 1961; Hosag.,

Abraham & Crane, Mycotaxon 69: 391, 1998.

Meliola clerodendricola Henn. var. *viticis* Hansf., Proc. Linn. Soc. London 153: 9, 1941.

Meliola rizalensis Sydow & Sydow var. *viticis* (Hansf.) Hansf. & Deight., Mycol. Pap. IMI 23: 70, 1948.

Meliola clerodendri Yamam., Trans. Nat. Hist. Soc. Formosa 30: 418, 1940 (non Hansf., 1937).

Materials examined: On leaves of *Clerodendrum serratum* (L.) Moon (Verbenaceae), in the garden of TBGRI, Palode, Thiruvananthapuram, Kerala, 4.xii.1996, V.B. Hosagoudar HClO 42421.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, unto 5mm in diameter, confluent and covering the entire surface of the leaf. Hyphae flexuous, branching alternate to irregular at acute angles, loosely to closely reticulate, cells 19-24 x 46µm. Appressoria alternate, antrorse, straight to curved, 14-23µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate, globose, entire, rarely slightly angular, 9-13 x 9-11µm. Phialides numerous in some colonies, mixed with appressoria, alternate to opposite, ampulliform, 14-16 x 6-8µm. Mycelial setae scattered to grouped around perithecia, straight to slightly curved or rarely geniculate, broadly obtuse to 203 times furcated at the tip, the branches up to 30µm long, obtuse and broadly rounded at the tip, setae up to 245µm long. Perithecia scattered to loosely grouped, verrucose, up to 130µm in diam.; ascospores cylindrical, 4-septate, slightly constricted at the septa, 28-31 x 9-12µm.

Host range: *Clerodendrum serratum*

Distribution: Tropics

40. *Meliola elaeagni* Hansf. & Thirum., Farlowia 3: 292, 1948; Hansf., Sydowia Beih. 2: 369, 1961; Hosag., Meliolales of India, p. 187, 1996.

Materials examined: On leaves of *Elaeagnus kologa* Schlecht (*E. latifolia* L.) (Elaeagnaceae), Balehonnur, Karnataka, 29.iv.1945, M.J. Thirumalachar HClO 10856; *E. indica* Servetta, Veerapuli Reserve Forest, Kanniyakumari dist., Tamil Nadu, 22.ii.1994, V.B. Hosagoudar HClO 41641.

Description: Colonies epiphyllous, thin, crustose, up to 2mm in diam., rarely confluent. Hyphae straight, branching mostly opposite at acute to wide angles, loosely reticulate, cells 8-22 (-62) x 6-8µm. Appressoria alternate, antrorse to subantrorse, 15-25µm long; stalk cells cylindrical to cuneate, 6-8µm long; head cells globose, ovate, elongate-ovate, entire to angular, broadly rounded to truncate at the apex, 9-18.5 x 9-12.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-18.5 x 6-8µm, neck elongated. Mycelial setae not many, simple, straight, acute at the apex; up to 572µm long. Perithecia scattered, verrucose, up to 124µm in diam.; ascospores oblong, 4-septate, slightly constricted at the septa, 37-40.5 x 15-18.5µm.

Host range: *Elaeagnus* spp.

Distribution: India

41. *Meliola erythrinae* Sydow, Ann. Mycol. 15: 185, 1917; Hansf., Sydowia Beih. 2: 296, 1961; Srinivasulu, Nova Hedwigia 47: 426, 1974; Hosag. & Goos, Mycotaxon 42: 134, 1991; Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 112, 1994.; Hosag., Meliolales of India, p. 190, 1996.

Materials examined: On leaves of *Erythrina variegata* L. (*E. indica* Lam.) (Fabaceae), near Manambuli Power House, Valparai, Coimbatore, Tamil Nadu, 26.xii.1990, V.B. Hosagoudar HClO 30545; *E. stricta* Roxb., Vettiayar, Mavelikkara, Kerala, 15.xi.1992, C.M. Pillai HClO 40868.

Description: Colonies epiphyllous, thin, up to 3mm in diameter, confluent.

Hyphae substraight to slightly undulate, branching opposite at wide angles, loosely; reticulate, cells 30-35 x 5-7µm. Appressoria alternate, subantrorse, usually straight, 15-23µm long; stalk cells cylindrical to cuneate, 4-11µm long; head cells cylindrical, clavate, subglobose, entire to rounded angulose, 12-16 x 10-16µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 13-19 x 7-9µm. Mycelial setae few, scattered, straight to curved, simple, obtuse, up to 500µm long. Perithecia scattered to loosely grouped, verrucose, up to 160µm in diam.; perithecial cells conoid and up to 30µm long; ascospores cylindrical, 4-septate, slightly constricted, 35-42 x 11-15 µm.

Host range: *Erythrina variegata*

Distribution: Tropics

42. *Meliola erythroxylofolii* Batista & Vital, Ann. IV Congr. Soc. Bot. Brazil, p. 105, 1953 (*erythroxylofoliae*); Hansf., Sydowia Beih. 2: 199, 1961; Hosag. & Goos, Mycotaxon 37: 232, 1990; Hosag., Meliolales of India, p. 191, 1996.

Materials examined: On leaves of *Erythroxyllum obtusifolium* (Wight) Hook.f. (Erythroxyllaceae), Idukki, Kerala, 28.xii.1983, V.B. Hosagoudar HClO 40524.

Description: Colonies epiphyllous, dense, scattered, up to 3mm in diameter, confluent. Hyphae substraight, branching opposite at wide angles, loosely reticulate, cells 14-28 x 6-10µm. Appressoria alternate to unilateral, straight to slightly curved, antrorse, spreading, 24-28µm long; stalk cells cylindrical to cuneate, 6-10µm long; head cells ovate, entire, 18-20 x 12-14µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 18-20 x 8-10µm. Mycelial setae scattered to grouped around perithecia, simple, acute at the tip, up to 459µm long. Perithecia scattered, verrucose, up to 116µm in diam.; ascospores obovoidal, 34-44 x 14-22µm.

Host range: *Erythroxyllum obtusifolium*

Distribution: Tropics

43. *Meliola gamblei* Hosag. in Hosag. & Goos, Mycotaxon 42: 134, 1991; Hosag., Meliolales of India, p. 201, 1996.

Materials examined: On leaves of *Smilax zeylanica* L. (Smilacaceae), Kombar, South Canara, Karnataka, 16.xii.1918, J.S. Gamble HClO 30546.

Description: Colonies epiphyllous, dense, crustose, up to 2mm in diameter, confluent. Hyphae substraight to crooked, branching opposite at acute angles, loosely to closely reticulate, cells 18-31 x 6-9µm. Appressoria alternate, straight to curved, antrorse to spreading, 18-22µm long; stalk cells cylindrical to cuneate, 4-5 µm long; head cells ovoid to globose, straight to curved, often bluntly pointed at the apex, entire, 12-15.5 x 12-14µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 15-25 x 6-9.5µm. Mycelial setae few, straight, simple, acute to obtuse at the apex, up to 650µm long. Perithecia scattered, verrucose, up to 280µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 37-43.5 x 15-18.5µm.

Host range: *Smilax zeylanica*

Distribution: India

44. *Meliola grewiae* Hansf. var. *longispora* Hosag. & Raju, J. Econ. Taxon. Bot. 3: 717, 1985; Hosag., Meliolales of India, p. 210, 1996.

Meliola grewiae Srinivasulu, Nova Hedwigia Beih. 47: 427, 1974 (non, Hansford, 1957).

Materials examined: Material was not available for the study.

Type: On leaves of *Grewia teliaefolia* Vahl (Tiliaceae), Mahabaleshwar, Maharashtra, Nov. 1967, Srinivasulu MUH 136.

Description: Colonies amphigenous, mostly epiphyllous, dense; velvety, up to 3mm in diameter. Hyphae mostly straight, branching alternate at wide angles, closely reticulate, cells 31-50 x 6-10µm. Appressoria alternate, antrorse to subantrorse, 23-27µm long; stalk cells cuneate, 10-12µm long; head cells clavate, ovate, cylindrical, entire, angulose to slightly lobate, 13-15.5 x 13-15µm. Phialides mixed with appressoria, alternate to opposite, ampulliform. Mycelial setae numerous, grouped around perithecia, straight, simple, acute, up to 285µm; ascospores oblong, 4-septate, constricted, 41-46.5 x 14-16 µm.

Host range: *Grewia teliaefolia*

Distribution: India

45. *Meliola groteana* Sydow & Sydow, Ann. Mycol. 11: 402, 1913; Hansf., Sydowia Beih. 2: 511, 1961; Thite & Patil, Kavaka 10: 30, 1982; Hosag. & Goos, Mycotaxon 37: 234, 1990; 42: 135, 1991; Hosag., Meliolales of India, p. 211, 1996.

Meliola maesae Rehm, Philippine J. Sci. 8: 392, 1913.

Materials examined: On leaves of *Embellia viridiflora* Bl. (Myrsinaceae), Radhanagari, Kolhapur, Maharashtra, 10.xi.1975, M.S.Patil HClO 31942; *E. ribes* Burm.f., Nechal, Koyna dam, Satara, Maharashtra, 6.xii.1984, C.R. Patil HClO 40015; *Maesa indica* (Roxb.) DC. (Myrsinaceae), Coorg, Karnataka, 2.ii.1968, K.H. Anahosur HClO 31136; AMH 572; Calvary Mount, Idukki, Kerala, 8.i.1982, V.B. Hosagoudar MH 72647; Idukki, Kerala, 19.iv.1982, V.B. Hosagoudar MH 73719, HClO 40530; near Sholayar dam, Valparai, Coimbatore, Tamil Nadu, 25.xii.1990, V.B. Hosagoudar HClO 30549.

Description: Colonies hypophyllous, dense, velvety, up to 5mm in diameter,

rarely confluent, corresponding upper surface of the leaf turned yellowish brown. Hyphae straight to slightly crooked, branching opposite at wide angles, loosely to closely reticulate, cells 10-28 x 6-8µm. Appressoria alternate, about 10% opposite, antrorse, spreading, 10-15µm long; stalk cells cylindrical to cuneate, 2-5µm long; head cells globose, slightly angular, entire, 8-10 x 8-12µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 10-16 x 8-10µm. Mycelial setae fairly numerous, straight, simple, acute at the tip, up to 302µm long. Perithecia scattered, verrucose, up to 200µm in diam.; ascospores oblong, 4-septate, constricted, 40-44 x 12-16µm.

Host range: *Embelia viridiflora*, *Maesa indica*

Distribution: Tropics

46. *Meliola goosii* Hosag., Crypt. Bot. 2/3: 186, 1991; Hosag., Meliolales of India, p. 209, 1996.

Materials examined: On leaves of *Viburnum punctatum* Buch.-Ham. (Caprifoliaceae), Nilgiris, Tamil Nadu, 24.i.1990, V.B. Hosagoudar HClO 30363; M.K. Vayal, Kanniyakumari, Tamil Nadu, 27.ii.1994, V.B. Hosagoudar HClO 41607.

Description: Colonies epiphyllous, dense, up to 2mm in diameter. Hyphae straight to flexuous, branching alternate to opposite at acute angles, loosely to closely reticulate, cells 15-28 x 6-9.5µm. Appressoria alternate, antrorse, straight to curved, 21-28µm long; stalk cells cylindrical to cuneate, 6-9.5µm long; head cells ovate, globose, irregularly and stellately sublobate, 12-18 x 12-15.5µm. Phialides borne on a separate mycelial branch, opposite to alternate, ampulliform, 21-28 x 9-12.5µm. Mycelial setae scattered, straight, simple, acute to obtuse at the tip, up to 450µm long. Perithecia scattered, up to 120µm in diam.; ascospores obovoidal to cylindrical, 4-septate, slightly constricted at the septa, 40-44 x 15-19µm.

Host range: *Viburnum punctatum*

Distribution: India

47. *Meliola henryi* Hosag., Meliolales of India, p. 213, 1996.

Materials examined: On leaves of *Canthium rheedii* DC. (Rubiaceae), Valve House, Kanyakumari dist., Tamil Nadu, 28.ii.1994, V.B. Hosagoudar HClO 41631; *C. parviflora*, Petlond, Sangli, Maharashtra, 12.xii.1980, C.R. Patil HClO 40018.

Description: Colonies amphigenous, mostly epiphyllous, dense, crustose, up to 3mm in diameter, rarely confluent. Hyphae straight substraight, branching mostly opposite at acute to wide angles and profusely branched to form solid mycelial mat, cells 21-28 x 9-11µm. Appressoria alternate, antrorse to closely antrorse, 27-31µm long; stalk cells cuneate, 9-12.5µm long; head cells ovate, cylindrical, entire, rarely truncate at the apex, 15-22 x 12-15.5µm. Phialides borne on a separate mycelial branch, alternate to opposite, conoid to ampulliform, 15-18.5 x 6-8µm. Mycelial setae few, scattered, simple, straight, obtuse at the apex, up to 315µm long. Perithecia scattered, verrucose, up to 186µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 43-46.5 x 15-18.5µm.

Host range: *Canthium rheedii*

Distribution: India

48. *Meliola hystricis* Kar & Maity, Nytt. Mag. Bot. 17: 85, 1970 (*hystrixii*); Hosag., Meliolales of India, p. 218, 1996.

Materials examined: Material was not available for the study.

Type: On leaves of *Castanopsis hystrix* A. DC. (Fagaceae), Sukhiapokhari, Darjeeling, West Bengal, 11.v.1967, M.K. Maity PCC 1250.

Description: Colonies hypophyllous, thin, up to 4mm in diameter. Hyphae undulate to crooked, branching opposite to alternate at wide angles, loosely reticulate, cells 26-36 x 5-6µm. Appressoria alternate and rarely opposite, distantly placed, antrorse to recurved, straight to curved, 10-20µm long; stalk cells cylindrical to cuneate, 3-8µm long; head cells ovate, entire, straight to curved, 6-13 x 6-10µm. Phialides borne on a separate mycelial branch, alternate to opposite, ampulliform, 16-24.5 x 8-10µm. Mycelial setae scattered to grouped around perithecia, simple, straight, acute at the apex, up to 90µm long. Perithecia scattered to grouped, verrucose up to 264µm in diam.; ascospores fusiform, straight to curved, 4-septate, constricted at the septa, end cells conoid, middle cell longer, 42-46 x 16-18µm.

Host range: *Castanopsis hystrix*

Distribution: India

49. *Meliola indica* Sydow var. *careyae* Stev., Ann. Mycol. 26: 223, 1928; Mem. Dept. Agric. India Bot. Ser. 15: 107, 1928; Hansf., Sydowia Beih. 2: 149, 1961; Thite & Kulkarni, J. Shivaji Univ. (Sci.) 6: 163, 1973; Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 112, 1994; Hosag., Meliolales of India, p. 221, 1996.

Meliola barringtoniae Yates, Philippine J. Bot. 12: 363, 1917.

Meliola indica sensu Hosag., J. Econ. Taxon. Bot. 9: 375, 1987; Hosag., Dayal & Goos, Mycotaxon 46: 204, 1993.

Materials examined: On leaves of *Careya arborea* Roxb. (Lecythidaceae),

Gersoppa Falls, Karnataka, Oct. 1919, L.J. Sedgwick HClO 1985; Lonawala, Poona, Maharashtra, Dec. 1970, A.N. Thite HClO 31630; Idukki, Kerala, 10.i.1982, V.B. Hosagoudar HClO 40533, MH 72652; 26.ii.1983, V.B. Hosagoudar MH 75039; 2.x.1983, V.B. Hosagoudar MH 78105, 78122; 8.x.1983, V.B. Hosagoudar MH 78911; 28.xii.1983, V.B. Hosagoudar MH 80325; Tropical Botanic Garden, Trivandrum, 1.ix.1984, S. Shetty HClO 30837; Hosmatta, Subramanya, Dakshina Kannada, Karnataka, 31.viii.1992, H.S.P. Shenoy HClO 40869.

Description: Colonies epiphyllous, dense, velvety, up to 4mm in diameter, confluent. Hyphae substraight to flexuous, branching opposite at wide angles, closely reticulate, cells 25-30 x 6-8µm. Appressoria alternate and opposite, antrorse to spreading, mostly straight, 15-20µm long; stalk cells cylindrical to cuneate, 3-6µm long; head cells subglobose to broadly clavate, entire, 10-14 x 8-12µm. Phialides borne on a separate mycelial branch, alternate to opposite, ampulliform, 16-20 x 7-9µm. Mycelial setae numerous, scattered, straight, simple, acute, up to 700µm long. Perithecia scattered, verrucose, up to 180µm in diam.; ascospores oblong, 4-septate, constricted, 30-50 x 14-18µm.

Host range: *Careya arborea*

Distribution: India

50. *Meliola integrifolia* C.R. Patil ex V.B. Hosag., sp. nov; Hosag., Meliolales of India, p. 222, 1996.

Materials examined: On leaves of *Artocarpus heterophyllus* Lam. (*A. integrifolia auctnon* L.f.) (Moraceae), Dajipur Reserve Forest, Kolhapur, Maharashtra, 15.v.1991, C.R. Patil HClO 30805

Description: Colonies hypophyllous, dense, velvety, up to 5mm in diameter. Hyphae crooked, branching opposite to irregular at acute to wide angles, closely reticulate, form solid mycelial mat, cells 18-22 x 6-8µm. Appressoria opposite (60%), alternate and rarely solitary, antrorse to subantrorse, 12-18.5µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate, globose, entire, 9-13 x 9-12µm. Phialides mixed with appressoria, scattered, ampulliform, 15-22 x 9-10µm. Mycelial setae densely scattered, simple, straight, curved, uncinuate, acute, obtuse to bi-dentate, up to 300µm long. Perithecia closely grouped, verrucose, up to 140µm in diam.; ascospores oblong to obovoidal, 4-septate, constricted at the septa, 43-46.5 x 18-20µm.

Host range: *Artocarpus heterophyllus*

Distribution: India

51. *Meliola jasmini* Hansf. & Stev., J. Linn. Soc. London 5: 273, 1937; Hansf., Sydowia

Beih. 2: 235, 1961; Hosag., Indian J. Bot. 11: 185, 1988; Hosag. & Raghu, New Botanist 20: 70, 1993; Hosag., Meliolales of India, p. 226, 1996.

Materials examined: On leaves of *Jasminum sambac* (L.) Ait. (Oleaceae), Calicut, Kerala, 17.ix.1986, V.B. Hosagoudar AMH 7134; *Jasminum* sp., Tropical Botanic Garden, Trivandrum, Kerala, 20.xi.1992, A.G. Pandurangan HClO 40887.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, up to 2mm in diameter, confluent. Hyphae straight to substraight, branching opposite at acute to wide angles, loosely to closely reticulate, cells 18.5-25 x 6-8µm. Appressoria alternate, straight, antrorse, 15.5-22µm long; stalk cells cuneate, 4.5-6µm long; head cells ovate, entire, 12.5-15.5 x 9-12.5µm. Phialides borne on a separate mycelial branch, opposite to alternate, conoid to ampulliform, 31-37 x 9-15.5µm. Mycelial setae fairly numerous, scattered, straight, simple, acute to obtuse, up to 500µm long. Perithecia scattered, verrucose, up to 124µm in diam.; ascospores obovoidal, 4-septate, 31-34 x 12-18µm.

Host range: *Jasminum* spp.

Distribution: Tropics

52. *Meliola malabarensis* Hansf., Proc. Linn. Soc. London 157: 182, 1946; Sydowia Beih. 2: 531, 1961; Thite & Kulkarni, J. Shivaji Univ. 5: 161, 1973; Hosag. & Goos, Mycotaxon 37: 240, 1990; 42: 135, 1991; Hosag., Dayal & Goos, Mycotaxon 46: 206, 1993; Hosag., Meliolales of India, p. 246, 1996.

Materials examined: On leaves of *Olea* sp. (Oleaceae), Kanouth, Tellicherry, Kerala, 26.ix.1904, E.J. Butler HClO 3187; Puliannur, Kerala, 8.x.1907, E.J. Butler HClO 1050; *Olea dioica* Roxb., Painavu, Idukki, Kerala, 10.i.1982, V.B. Hosagoudar HClO 40544, MH 72646; Koomati, Valparai, Coimbatore, Tamil Nadu, 26.xii.1990, V.B. Hosagoudar HClO 30552; 13.iii.1994, V.B. Hosagoudar HClO 41572; Sampaje, Kodagu, Karnataka, 15.ii.1992, B.R. Dayal HClO 30839.

Description: Colonies hypophyllous, thin, up to 4mm in diameter, confluent. Hyphae straight to slightly undulate, branching opposite at wide to acute angles, loosely to closely reticulate, cells 22-42 x 6-8µm. Appressoria alternate, straight to curved, antrorse to spreading, 16-24µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate, globose, cylindrical, often curved, slightly truncate at the apex, entire, 10-14 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, variously curved, ampulliform, 18-20 x 6-10µm. Mycelial setae grouped around perithecia, straight, simple, simple, acute at the tip, up to 480µm long. Perithecia scattered, verrucose, up to 144µm in diam.; ascospores obovoidal, 4-septate, constricted, 32-38 x 10-16µm.

Host range: *Olea* spp.

Distribution: India

53. *Meliola malacotricha* Speg. var. *major* Beeli, Bull. Jard. Bot. Etat. 7: 89, 1920; Hansf., Sydowia Beih. 2: 649, 1961; Hosag. & Goos, Mycotaxon 37: 240, 1990; 42: 137, 1991; Hosag., Crypt. Bot. 2/3: 186, 1991; Hosag., Raghu & Pillai, Nova Hedwigia 58: 540, 1994; Hosag., Meliolales of India, p. 249, 1996. **Materials examined:** On leaves of *Merremia umbellata* (L.) Hall.f. (Convolvulaceae), Idukki, Kerala, 3.x.1983, V.B. Hosagoudar MH 78125; *Argyria hookeri* Clarke (Convolvulaceae), Vazhathope, Idukki, Kerala, 7.i.1982, V.B. Hosagoudar HCIO 40545, MH 71582; *A. elliptica* Choisy, Benne Forest, Nilgiris, Tamil Nadu, 24.i.1990, V.B. Hosagoudar HCIO 32827; *A. setosa* (Roxb.) Choisy, Topslip, Coimbatore, Tamil Nadu, 20.xii.1990, V.B. Hosagoudar HCIO 30553; *Merremia umbellata* (L.) Hall. (Convolvulaceae), Gersoppa, utara Kannada, Karnataka, 24.ix.1992, P.A. Raghu HCIO 40762. **Description:** Colonies epiphyllous, dense, crustaceous, scattered, up to 2mm in diameter. Hyphae straight to slightly undulate, branching opposite at acute angles, loosely to closely reticulate, cells 14-26 x 6-8µm. Appressoria opposite, about 5% unilateral, subantrorse to antrorse, spreading, 10-15µm long; stalk cells cylindrical to cuneate, 2-6µm long; head cells globose, entire, rarely bluntly pointed towards the apex, 8-10µm. Phialides mixed with appressoria, opposite and alternate, ampulliform, 14-16 x 6-8µm. Mycelial setae scattered to grouped around perithecia, simple, straight to curved, acute at the tip, up to 333µm long. Perithecia scattered to grouped, verrucose, up to 150µm in diam.; ascospores ellipsoidal, 4-septate, slightly constricted, 38-40 x 12-16µm. **Host range:** *Merremia umbellata*, *Argyria* spp. **Distribution:** Tropics

54. *Meliola mangiferae* Earle, Bull. New York Bot. Gard. 3: 307, 1905; Hansford, Sydowia Beih. 2: 464, 1961; Hansf. & Thirum., Farlowia 3: 296, 1948; Hansf., Sydowia Beih. 2: 464, 1961; Hosag. & Goos, Mycotaxon 37: 240, 1990; Hosag., Crypt. Bot. 2/3: 186, 1991; Hosag. & Ansari, J. Andaman Sci. Assoc. 7: 89, 1991; Hosag., Meliolales of India, p. 250, 1996. **Materials examined:** On leaves of *Mangifera indica* L. (Anacardiaceae), Puliannur, Kerala, 8.x.1907, E.J. Butler HCIO 1050; North Kanara, Karnataka, June 1913, G.S. Kulkarni HCIO 3316; Panamkuttu, Idukki, Kerala, 15.x.1982, V.B. Hosagoudar HCIO 40546, MH 73677; 18.xii.1982, V.B. Hosagoudar MH 75814; Vazhathope, Idukki, Kerala, 26.ii.1983, V.B. Hosagoudar MH 75036; Lakshmi Estate, Idukki, Kerala, 8.x.1983, V.B. Hosagoudar MH 78184; Benne Forest, Nilgiris, Tamil Nadu, 24.i.1990, V.B. Hosagoudar HCIO 32823; M. andamanica King, Shoalbay, South Andaman, 23.iii.1991, A.A. Ansari HCIO. **Description:** Colonies hypophyllous, thin, velvety, up to 4mm in diameter. Hyphae substraight to crooked, branching opposite to irregular at wide angles, loosely reticulate, cells 27-40 x 5-6.5µm. Appressoria alternate, mostly unilateral and variously curved, 24-31µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate, versiform, attenuated and rounded at the apex, entire, predominantly curved, 21-25 x 9-12.5µm. Phialides mixed with appressoria, alternate to opposite, elongated, 21-28 x 8-9.5µm. Mycelial setae scattered, simple, straight, acute, obtuse to 2-3 dentate at the tip, up to 860µm long; Perithecia scattered, verrucose, up to 175µm, surface cells conoid and projecting; ascospores obovoidal to ellipsoidal, middle cell slightly larger, 49-56 x 18-22µm. **Host range:** *Mangifera indica* **Distribution:** Tropics

55. *Meliola memecylii* Sydow & Sydow, Ann. Mycol. 12: 198, 1914; Hansf. & Thirum., Farlowia 3: 297, 1948; Hansf., Reinwardtia 3: 92, 1953; Sydowia Beih. 2: 155, 1961; Sreenivasulu, Nova Hedwigia Beih. 47: 431, 1974; Hosag. & Goos, Mycotaxon 37: 240, 1990; Hosag., Meliolales of India, p. 256, 1996. **Materials examined:** On leaves of *Memecylon depressum* Benth. ex Triana (Melastomataceae), Idukki, Kerala, 18.ii.1983, V.B. Hosagoudar HCIO 40547, MH 75833, 75834, 75863; Meenmutty, Idukki, Kerala, 22.xii.1983, V.B. Hosagoudar MH 78984; *M. umbellata* Burm.f., Mahabaleshwar, Satara, Maharashtra, 1.ii.1984, C.R. Patil HCIO 40013; Suriyanpettai, Cuddalore, Tamil Nadu, 15.vii.1993, K. Ravikumar HCIO 41617; *M. edule* Roxb. Kakachi, Tirunelveli, Tamil Nadu, 25.ii.1994, V.B. Hosagoudar HCIO 41538. **Description:** Colonies amphigenous, subdense, velvety, up to 5mm in diameter, confluent. Hyphae substraight to flexuous, branching opposite to irregular at wide angles, closely reticulate, cells 22-24 x 6-8µm. Appressoria alternate, about 5% opposite, straight to variously curved, subantrorse to spreading, 18-30µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate, cylindrical to conoid, entire, 16-18 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 20-30 x 8-10µm. Mycelial setae few, scattered, simple, acute to variously dentate at the tip, up to 1080µm long. Perithecia scattered, verrucose, up to 204µm in diam.; ascospores obovoidal, 4-septate, constricted, 40-54 x 17-24µm. **Host range:** *Memecylon* spp. **Distribution:** Asia

56. *Meliola mucunae-acuminatae* Hansf. var. *indica* Hosag., Siddappa & Udayan, Nova Hedwigia 56: 198, 1993; Hosag., Meliolales of India, p. 261, 1996.

Materials examined: On leaves of *Mucuna pruriens* (L.) DC. (Fabaceae), Anmode, Maharashtra, 10.x.1994, A.N. Thite HCIO 31907.

Description: Colonies epiphyllous, thin to dense, confluent. Hyphae crooked, branching opposite to irregular at wide angles, loosely reticulate, cells 15-28 x 4-6.5µm. Appressoria alternate, about 5% opposite, straight to variously curved, 12-18.5µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate, globose, entire, curved, 9-12.5 x 10-12.5µm. Phialides mixed with appressoria, alternate to opposite, conoid to ampulliform, 18.5-25 x 6-8µm. Mycelial setae few, grouped around perithecia, simple, straight, acute, obtuse to few dentate at the tip, up to 280µm long. Perithecia scattered, up to 125µm in diam.; ascospores cylindrical, 4-septate, constricted at the septa, 30-34 x 12-15.5µm.

Host range: *Mucuna pruriens*

Distribution: India

57. *Meliola nothopegiae* Hansf., Sydowia 10: 80, 1957; Sydowia Beih. 2: 469, 1961; Thite & Kulkarni, J. Shivaji Univ. 6: 163, 1973; Hosag., Lakshmanan & Viswanathan, Indian J. Bot. 11: 187, 1988; Hosag. & Goos, Mycotaxon 37: 242, 1990; Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 113, 1994; Hosag., Meliolales of India, p. 266, 1996.

Materials examined: On leaves of *Nothopegia colebrookiana* (Wight) Bl. (Anacardiaceae), Taleguppa, Karnataka, 29.x.1911, G.S. Kulkarni HCIO 1993; *N. beddomei* Gamble, Kanchiar forest, Idukki, Kerala, 12.xii.1982, V.B. Hosagoudar MH 75765; 29.xii.1983, V.B. Hosagoudar MH 80339; *N. heyneana* (Hook.f.) Gamble, near Kariar Dam, Tamil Nadu; 11.xii.1986, A. Rajendran AMH 7138; *N. racemosa* (Dalz.) Ramam., Gersoppa, Uttara Kannada, Karnataka, 21.x.1992, P.A. Raghu HCIO 40874.

Description: Colonies amphigenous, mostly epiphyllous, subdense, up to 5mm in diameter. Hyphae of the epiphyllous colonies straight, branching regularly opposite at acute angles, loosely reticulate. While the hyphae of the hypophyllous colonies crooked, branching opposite to irregular at wide angles, cells 18-26 x 6-8µm. Appressoria alternate, subantrorse to antrorse, 24-36µm long; stalk cells cuneate, 6-14µm long; head cells cylindrical, versiform, slightly angulose, entire, 16-22 x 12-14µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 10-20 x 8-10µm. Mycelial setae scattered to grouped around perithecia, straight, simple, acute at the tip, up to 675µm long. Perithecia scattered to aggregated, verrucose, up to 164µm in diam.; ascospores obovoidal, 4-septate, constricted, 44-50 x 18-20µm.

Host range: *Nothopegia* spp.

Distribution: India

58. *Meliola ochrocarpi* Thite & Patil, Geophytology 13: 125, 198; Hosag., Meliolales of India, p. 266, 1996.

Materials examined: On leaves of *Mammia suriga* (Buch.-Ham. ex Roxb.) Kosterm. (*Ochrocarpus longifolius* (Wight) Benth. ex T. And.) (Clusiaceae), Amboli, Radhanagari, Maharashtra, Oct. 1980, A.N. Thite HCIO 33671.

Description: Colonies amphigenous, dense, up to 5mm in diameter, confluent. Hyphae straight to substraight, branching mostly opposite at acute to wide angles, loosely to closely reticulate, cells 21-25 x 8-10µm. Appressoria alternate, antrorse, straight to curved, 18-22µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate, globose, rarely hamate, entire to rarely angular, 15-16 x 12-14µm. Phialides mixed with appressoria, scattered, ampulliform, 21-28 x 9-10µm. Mycelial setae numerous, simple, straight to rarely curved, acute at the tip, up to 860µm long. Perithecia scattered, up to 220µm in diam.; ascospores obovoidal to cylindrical, 4-septate, constricted at the septa, 46-53 x 18-22µm.

Host range: *Mammia suriga*

Distribution: India

59. *Meliola olacicola* Hosag., Meliolales of India, p. 267, 1996.

Materials examined: On leaves of *Olax wightiana* Wall. ex Wight & Arn. (Olacaceae), Amboli, Maharashtra, 12.i.1978, M.S. Patil HCIO 32563.

Description: Colonies amphigenous, dense, up to 2mm in diameter, confluent. Hyphae straight, branching mostly opposite at acute to wide angles, loosely to closely reticulate, cells 18-22 x 6-7µm. Appressoria alternate, 15% opposite, straight, subantrorse, 14-16µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells oblong, clavate to cylindrical, entire, 12-14 x 6-9.5µm. Phialides mixed with appressoria, alternate to opposite, conoid to ampulliform, neck straight to curved, 15-18.5 x 6-8µm. Mycelial setae mostly grouped around perithecia, simple, straight, acute at the apex, up to 350µm long. Perithecia scattered, up to 180µm in diam.; ascospores oblong to cylindrical, 4-septate, strongly constricted at the septa, 45-48 x 18-20µm.

Host range: *Olax wightiana*

Distribution: India

60. *Meliola oleacearum* Hosag., Sydowia 54: 55, 2002.

Materials examined: On leaves of *Olea dioica* (Oleaceae), Kerala, India, 25.i.1997, V.B. Hosagoudar, HClO 44122; TBGT 556.

Description: Colonies hypophyllous, dense, scattered, up to 10mm in diameter, confluent. Hyphae flexuous to crooked, branching opposite to irregular at acute angles, loosely to closely reticulate, cells 20-26 x 4-6.5µm. Appressoria alternate, antrorse, retrorse, spreading, curved towards hyphae, 14-24µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate, oblong, narrowly oblong, cylindrical, entire, rarely angular to sublobate, straight, curved to uncinuate, 11-18 x 6-10µm. Phialides many, mixed with appressoria, alternate, ampulliform, neck elongated, 20-26 x 4-6.5µm. Mycelial setae numerous, scattered, simple, straight, flexuous, sigmoid, curved, uncinuate, up to 400µm long, subobtuse to obtuse at the tip. Perithecia scattered, up to 120µm in diameter; ascospores oblong to slightly ellipsoidal, 4-septate, constricted, 35-40 x 14-16µm.

Host range: *Olea dioica*

Distribution: India

61. *Meliola palmicola* Wint. var. *africana* Hansf., Sydowia 10: 81, 1957; Sydowia Beih. 2: 726, 1961; Hosag., Meliolales of India, p. 275, 1996.

Materials examined: On leaves of *Phoenix* sp. (Arecaceae), Mudigere, Karnataka, 7.ix.1903, E.J. Butler HClO 1045; Bilkere, Karnataka, Sept. 19, 1903, E.J. Butler HClO 3941; *P. sylvestris* Roxb., Burdwan, West Bengal, 12.vii.1902, Bhattacharyya HClO 1047; Calcutta, West Bengal, S.N. Bal HClO 3340; Hunsur, Karnataka, 20.ix.1903, E.J. Butler HClO 1048; Talaguppa, Karnataka, Oct. 29, 1911, G.S. Kulkarni HClO 3343; Velvae, Karnataka, 24.ix.1903, E.J. Butler HClO 1049; Godavari, Andhra Pradesh, 16.iii.1917, P.V. Somayajulu HClO 10401; Jorhat, Assam, 19.v.1943, S. Chowdhuri HClO 1047; Hurali, Karnataka, 18.ii.1944, M.J. Thirumalachar HClO 10394.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, up to 7mm in diameter. Hyphae straight to undulate, branching mostly opposite at acute to wide angles, loosely reticulate, cells 16-28 x 6-8µm. Appressoria alternate subantrorse, mostly straight, 20-28µm long; stalk cells cylindrical to cuneate, 10-14µm long; head cells subglobose, ovate, angulose to sublobate, 14-18 x 12-16µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-24 x 6-10µm. Mycelial setae numerous, simple, straight, dentate, up to 550µm. Perithecia loosely grouped, verrucose, up to 220µm in diam.; ascospores subellipsoidal, 4-septate, slightly constricted, 50-56 x 18-22µm.

Host range: *Phoenix* spp.

Distribution: Tropics

62. *Meliola plectroniae* Hansf., Sydowia 9: 72, 1955; Beih. 2: 702, 1961; Hosag., Meliolales of India, p. 284, 1996.

Meliola coilocosa Nair & Kaul, Sydowia 36: 204, 1983; Hosag. & Goos, Mycotaxon 37: 228, 1990.

Materials examined: On leaves of *Canthium dicoccum* (Gaertn.) Teys & Benn. (*Plectronia umbellata* Benth. & Hook.) (Rubiaceae), Matheron, Maharashtra, 16.x.1911, S.L. Ajrekar HClO 3196; Mahabaleshwar, Satara, Maharashtra, Jan. 1978, V.P. Kaul HClO 33807 (type of *M. coilocosa*); Idukki, Kerala, 18.ii.1983, V.B. Hosagoudar HClO 40513; *C. rheedii* DC., Mahabaleshwar, Satara, Maharashtra, 17.i.1985, C.R. Patil HClO 40007.

Description: Colonies hypophyllous, thin, up to 5mm in diameter, confluent. Hyphae substraight to flexuous, branching mostly alternate, branches of the main hyphae tortuous, loosely reticulate, cells 18-30 x 6-8µm. Appressoria alternate, straight to variously curved, 24-34µm long; stalk cells aseptate to many septate, tortuous, aseptate stalk cells 8-16µm long, while, septate stalk cells up to 80µm long; head cells semilunar, versiform, ovate, angular, straight to mostly curved, 16-22 x 10-14µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 20-24 x 8-10µm. Mycelial setae thinly scattered, simple, straight, acute, up to 360µm long. Perithecia scattered, verrucose, up to 110µm in diam.; ascospores cylindrical, ellipsoidal, 4-septate, constricted, 52-56 x 16-18µm.

Host range: *Canthium* spp.

Distribution: Tropics

63. *Meliola polygoni* Srinivasulu, Nova Hedwigia Beih. 47: 432, 1974; Hosag., Meliolales of India, p. 286, 1996.

Type: On leaves of *Polygonum chinense* L. (Polygonaceae), Castle rock, Maharashtra, India, Nov. 1966, B.V. Srinivasulu MUH 144.

Materials examined: Material was not available for the study.

Description: Colonies epiphyllous, dense, crustose, up to 2mm in diameter. Hyphae closely reticulate, cells 20-25 x 5-7µm. Appressoria alternate, antrorse to spreading, 15-19µm long; stalk cells cylindrical to cuneate, 3-5.5µm long; head cells globose to ovate, entire, 8-13.5 x 7-11.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 19-23 x 4-7.5µm. Mycelial setae numerous, scattered, simple, straight, acute at the tip, up to 250µm long. Perithecia scattered, verrucose, up to 120µm in diam.; ascospores oblong, 4-

septate, slightly constricted at the septa, 32-36 x 10-12µm.

Host range: *Polygonum chinense*

Distribution: India

64. *Meliola polygonicola* Hosag., Meliolales of India, p. 286, 1996.

Materials examined: On leaves of *Polygonum chinense* L. (Polygonaceae), Ambe Ghats, Maharashtra, Dec. 1972, A.N. Thite HClO 31909.

Description: Colonies epiphyllous, dense, up to 2mm in diameter, confluent. Hyphae straight to substraight, branching opposite at acute angles, very closely reticulate and form almost solid mycelial mat, cells 12-15.5 x 5-7µm. Appressoria opposite, very few solitary, crowded, antrorse, 12-15.5µm long; stalk cells cuneate, 3-6.5µm long; head cells globose to slightly ovate, entire, 9-12 x 8-11µm. Phialides few, mixed with appressoria, scattered to opposite, ampulliform, 15-18.5 x 7-9.5µm. Mycelial setae few, simple, straight, obtuse to acute, up to 400µm long. Perithecia scattered, up to 124µm in diam.; ascospores oblong to cylindrical, 4-septate, constricted at the septa, 37-41 x 15-17µm.

Host range: *Polygonum chinense*

Distribution: India

65. *Meliola pongamiae* Hosag. & Abraham, Nova Hedwigia 68: 483, 1998.

Materials examined: On leaves of *Pongamia pinnata* (L.) Pierre (Fabaceae), TBGRI campus, Thiruvananthapuram, Kerala, India, 21.i.1997, V.B. Hosagoudar TBGT 123, HClO 42482; 20.xi.2000, V.B. Hosagoudar HClO 42482, TBGT 123; 18.xii.2000, H. Biju HClO 44542, TBGT 828; 23.i.2001, H. Biju HClO 44563, TBGT 850; 20.xi.2000, V.B. Hosagoudar HClO 43950, TBGT 422; Peringammala, Thiruvananthapuram, Kerala, 25.xi.2000, M. Kamarudeen HClO 43965, TBGT443.

Description: Colonies epiphyllous, crustose, up to 5mm in diameter. Surrounded by yellow haloes, with yellow discoloration of the lower leaf surface, several such spots causing defoliation. Hyphae straight to substraight, branching mostly opposite at wide angles, loosely to closely reticulate, cells 17-29 x 4-8µm. Appressoria alternate, about 2% opposite, antrorse, subantrorse to retrorse, 14-22µm long; stalk cells cylindrical to cuneate, 2-7µm long; head cells ovate, globose, 12-15 x 9-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, neck twisted, 19-22 x 7-10µm. Mycelial setae scattered, simple, straight, acute at the tip, up to 255µm long. Perithecia scattered loosely to grouped, verrucose, up to 150µm in diameter; ascospores oblong to cylindrical, 4-septate, slightly constricted, 38-44 x 14-17µm.

Host range: *Pongamia pinnata*

Distribution: India

66. *Meliola premnicola* Hosag. in Hosag. & Goos, Mycotaxon 37: 243, 1990; Hosag., Meliolales of India, p. 288, 1996.

Materials examined: On leaves of *Premna glaberrima* Wight (Verbenaceae), Idukki, Kerala, 18.ii.1983, V.B. Hosagoudar HClO 40554, MH 75837.

Description: Colonies epiphyllous, subdense, up to 5mm in diameter, rarely confluent. Hyphae substraight to flexuous, branching opposite at acute angles, closely reticulate, cells 26-30 x 8-10µm. Appressoria alternate, about 30% opposite, antrorse, 16-20µm long; stalk cells cuneate, 4-6µm long; head cells globose, ovate, entire, 12-14 x 10-12µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, neck elongated and twisted, 18-22 x 8-10µm. Mycelial setae grouped around perithecia, straight, simple, variously dentate at the apex, up to 720µm long. Perithecia scattered, verrucose, up to 170µm in diam.; ascospores ellipsoidal, 4-septate, deeply constricted, 42-48 x 14-16µm.

Host range: *Premna glaberrima*

Distribution: India

67. *Meliola psychotriae* Earle, Bull. New York Bot. Gard. 3: 308, 1905; Hansf., Sydowia Beih. 2: 597, 1961; Hosag. & Goos, Mycotaxon 37: 244, 1990; Hosag., Meliolales of India, p. 289, 1996.

Meliola microspora Pat. & Gaill. Var. *africana* Doidge, Trans. Roy. Bot. South Africa 5: 732, 1917.

Materials examined: On leaves and stems of *Pavetta indica* L. (Rubiaceae), Idukki, Kerala, 11.xii.1982, V.B. Hosagoudar MH 75721; Lakshmi Estate, Idukki, Kerala, 15.xii.1982, V.B. Hosagoudar MH 75767; 6.x.1983, V.B. Hosagoudar MH 78179; Idukki, Kerala, 21.xii.1983, V.B. Hosagoudar MH 78969; Lakshmi Estate, Idukki, Kerala, 25.xii.1983, V.B. Hosagoudar MH 79097.

Description: Colonies amphigenous, mostly hypophyllous, thin to dense, up to 3mm in diameter, confluent. Hyphae substraight to slightly undulate, branching alternate to opposite at acute angles, closely reticulate, cells 30-40 x 6-8µm. Appressoria alternate to unilateral, straight to curved, spreading, antrorse 20-30µm long; stalk cells cuneate to cylindrical, 6-10µm long; head cells ovate, entire, broadly rounded at the apex, 14-20 x 10-12µm. Phialides numerous, mixed with appressoria and borne on a separate mycelial branch, opposite to alternate, ampulliform, 16-22 x 6-10µm. Mycelial setae scattered to grouped around perithecia, simple, straight, acute to subacute at the tip, up to 540µm long. Perithecia scattered, verrucose, up to 164µm in diam.; ascospores

obovoidal, 4-septate, constricted, 30-40 x 12-18µm.

Host range: *Pavetta indica*

Distribution: Tropics

68. *Meliola pterocarp* Yates, Philippine J. Sci. 13: 235, 1918; Hansf., Sydowia Beih. 2: 299, 1961; Hosag., Dayal & Goos, Mycotaxon 46: 208, 1993; Hosag., Meliolales of India, p. 290, 1996.

Materials examined: On leaves of *Pterocarpus marsupium* Roxb. (Fabaceae), Sampaje forest nursery, Sampaje, Kodagu, Karnataka, 22.xii.1991, B.R. Dayal HClO 30835; Peppara, Thiruvananthapuram, Kerala, 3.ii.1997, V.B. Hosagoudar HClO 42494, TBGT 144; 6.ii.1997, V.B. Hosagoudar HClO 43951, TBGT 445; Kombe, Peppara and Neyyar Wildlife Sanctuaries, Thiruvananthapuram, Kerala, 19.ii.1997, V.B. Hosagoudar TBGT 196; 8.iii.2001, H. Biju HClO 44453, TBGT 742; on *Pterocarpus santalinus* L.f., in the campus of TBGRI, Palode, Thiruvananthapuram, Kerala, 18.xii.2001, H. Biju HClO 44492, TBGT 782.

Description: Colonies amphigenous, mostly epiphyllous, dense, up to 3mm in diam., rarely confluent. Hyphae substraight to flexuous, branching opposite at acute angles, loosely to closely reticulate, cells 18-31 x 6-9.5µm. Appressoria alternate, straight to curved, antrorse to reflexed, 15-18µm long; stalk cells cylindrical to cuneate, 6-9.5µm; head cells globose to obovoidal, entire to rarely slightly angulose, 12-16 x 12-15.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-22 x 7-9.5µm. Mycelial setae mostly grouped around perithecia, simple, straight, obtuse at the apex, up to 500µm long. Perithecia scattered, globose, up to 168µm in diam.; ascospores obovoidal, 4-septate, slightly constricted at the septa, 40-43.5 x 15-18.5µm.

Host range: *Pterocarpus* spp.

Distribution: Asia

69. *Meliola rubiella* Hansf., Sydow Beih. 1: 115, 1957; Sydowia Beih. 2: 240, 1961; Kapoor, Indian Phytopathol. 20: 158, 1967; Hosag., Meliolales of India, p. 303, 1996.

Materials examined: On leaves of *Rubus* sp. (Rosaceae), Senghila, Sikkim, 14.iv.1962, J.N. Kapoor HClO 28365; *R. ellipticus* Smith, Kalipong, Sikkim, 19.iv.1951, J.N. Kapoor HClO 26605.

Description: Colonies mostly epiphyllous, thin, up to 3mm in diameter. Hyphae substraight to undulate, branching opposite at wide angles, loosely reticulate, cells 20-28 x 4-6µm. Appressoria alternate, more or less antrorse, 12-16µm long; stalk cells cylindrical to cuneate, 4-5µm long; head cells ovate to subglobose, mostly entire, rarely slightly angulose, 12-14 x 10-12µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 13-18 x 4-6µm. Mycelial setae mostly grouped around perithecia, straight, simple, acute to obtuse, up to 350µm long. Perithecia scattered, verrucose, up to 200µm in diam.; ascospores oblong, 4-septate, constricted, 32-36 x 10-12µm.

Host range: *Rubus* spp.

Distribution: India

70. *Meliola rubiella* Hansf. var. *indica* var. nov; Hosag., Meliolales of India, p. 303, 1996.

Materials examined: On leaves of *Rubus niveus* Thunb. (Rosaceae), Veerapuli Reserve Forest, Kanniyakumari, Tamil Nadu, 22.ii.1994, V.B. Hosagoudar HClO 41640 (type p.p.).

Description: Colonies epiphyllous, very thin, up to 4mm in diam., rarely confluent. Hyphae straight, flexuous to crooked, branching opposite at acute angles, loosely reticulate, cells 30-37 x 6-9.5µm. Appressoria alternate, about 1% opposite, mostly antrorse, 12-18.5µm long; stalk cells cylindrical to cuneate, 4-9.5µm; head cells globose, entire, 8-9.5 x 9-12.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15-18.5 x 9-11µm. Mycelial setae very few, grouped around perithecia, simple, straight, obtuse at the apex, rarely curved, up to 155µm; ascospores cylindrical, 4-septate, slightly constricted at the septa, 37-41 x 12-14µm.

Host range: *Rubus niveus*

Distribution: India

71. *Meliola salleana* Hansf. var. *smilacis* Hosag. in Hosag. & Goos, Mycotaxon 37: 245, 1990; Hosag., Meliolales of India, p.305, 1996.

Materials examined: On leaves of *Smilax zeylanica* L. (Smilacaceae), Idukki, Kerala, 11.i.1982, V.B. Hosagoudar HClO 40558, MH 72660; 24.xii.1983, V.B. Hosagoudar MH 79066; 23.ii.1984, V.B. Hosagoudar MH 80365.

Description: Colonies amphigenous, mostly epiphyllous, subdense, up to 4mm in diameter, rarely confluent. Hyphae straight, branching opposite at acute angles, loosely to closely reticulate, cells 10-30 x 6-9µm. Appressoria alternate, straight, antrorse, 18-32µm long; stalk cells cuneate, 5-14µm long; head cells ovate, bluntly pointed, entire, 12-16 x 8-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-28 x 8-12µm. Mycelial setae mostly grouped around perithecia, straight, simple, acute at the apex, up to 855µm long. Perithecia scattered, verrucose, up to 198µm in diam.; ascospores obovoidal, 4-septate, constricted, 42-50 x 18-20µm.

Host range: *Smilax zeylanica*

Distribution: India

72. *Meliola sarcostigmatis* Hosag. in Hosag. & Goos, Mycotaxon 37: 246, 1990 (*sarcostigmae*); Hosag., Meliolales of India, p. 305, 1996.

Materials examined: On leaves of *Sarcostigma kleinii* Wight & Arn. (Icacinaeaceae), Idukki, Kerala, 18.ii.1983, V.B. Hosagoudar HClO 40561, MH 75835.

Description: Colonies hypophyllous, dense, velvety, up to 5mm in diameter, rarely confluent. Hyphae substraight to undulate, branching mostly opposite at wide angles, closely reticulate, cells 24-32 x 6-10µm. Appressoria alternate, about 10% opposite, straight to curved, antrorse, spreading, 14-24µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate, globose, entire, 10-14 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 22-26 x 6-10µm. Mycelial setae numerous, scattered, straight, simple, acute to obtuse at the tip, up to 468µm long. Perithecia scattered, surface cells projecting, up to 170µm in diam.; ascospores obovoidal, 4-septate, constricted, 38-44 x 14-16µm.

Host range: *Sarcostigma kleinii*

Distribution: India

73. *Meliola sarcostigmaticicola* Hosag., Abraham & C.K. Biju, Nova Hedwigia 68: 484, 1998.

Materials examined: On leaves of *Sarcostigma kleini* (Icacinaeaceae), Kerala, India, 18.iii.1997, V.B. Hosagoudar TBGT 124, HClO 42483.

Description: Colonies mostly hypophyllous, dense, velvety, up to 3mm in diameter, rarely confluent. Hyphae straight to flexuous, branching mostly opposite to irregular at wide angles, loosely to closely reticulate, cells 19-24 x 6-8µm. Appressoria alternate, subantrorse, straight to rarely curved, 16-23µm long; stalk cells cylindrical to cuneate, 3-7µm long; head cells ovate to cylindrical, straight to rarely curved, entire, 11-15 x 9-11µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 11-19 x 8-10µm. Mycelial setae scattered, simple, straight to curved but not uncinatae, acute, obtuse to variously dentate at the tip, up to 490µm long. Perithecia loosely grouped, verrucose, up to 150µm in diameter; ascospores cylindrical, 4-septate, slightly constricted, 33-35 x 12-15µm.

Host range: *Sarcostigma kleini*

Distribution: India

74. *Meliola semecarpi-anacardii* Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 114, 1994; Hosag., Meliolales of India, p. 308, 1996.

Materials examined: On leaves of *Semecarpus anacardium* L.f. (Anacardiaceae), Dakhina Kannada, Mangalore, Karnataka, 24.xi.1992, P.A. Raghu HClO 40877.

Description: Colonies epiphyllous, dense, crustose, up to 3mm in diameter. Hyphae straight, branching opposite at acute to wide angles, closely reticulate and form dense mycelial mat, cells 15-18.5 x 6-9.5µm. Appressoria alternate, antrorse to subantrorse, 18-28 µm long; stalk cells cylindrical to cuneate, 6-9.5µm long; head cells ovoid to globose, entire to angular, 12.5-18.5 x 12-15.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 18-22 x 9-12.5µm. Mycelial setae numerous, simple, straight, acute at the tip, up to 500µm long. Perithecia scattered to loosely grouped, verrucose, up to 250µm in diam.; ascospores obovoidal, 4-septate, deeply constricted at the septa, 49-56 x 21-25µm.

Host range: *Semecarpus anacardium*

Distribution: India

75. *Meliola smilacis* Stev., Illinois Biol. Monographs 2: 56, 1916; Hansf., Sydowia Beih. 2: 712, 1961.

Materials examined: On leaves of *Smilax* sp. (Smilacaceae), in the forest near Kushavaor, Palode, Thiruvananthapuram, Kerala, 1.ix.2002, A. Manojkumar HClO 44588, TBGT 874.

Description: Colonies amphigenous, dense, crustose to velvety, up to 2mm in diameter, confluent. Hyphae straight to substraight, branching mostly opposite at acute to wide angles, loosely to closely reticulate, cells 16-20 x 6-8µm. Appressoria alternate, less than 1% opposite, antrorse to subantrorse, rarely recurved, 16-28µm long; stalk cells cylindrical to cuneate, 4-10µm long; head cells ovate to oblong, broadly rounded at the tip, entire, 11-16 x 9-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-23 x 7-9µm. Mycelial setae numerous, simple, straight, up to 1% uncinatae, obtuse and broadly rounded at the apex to acute, 2-3-dentate to slightly furcate at the apex, up to 500 µm long. Perithecia loosely scattered, globose, up to 160 µm in diameter; ascospores broadly ellipsoidal, 4-septate, slightly constricted at the septa, 44-48 x 19-21µm.

Host range: *Smilax* sp.

Distribution: Tropics

76. *Meliola tamarindi* Sydow & Sydow, Ann. Mycol. 10: 79, 1912; Hansf., Sydowia Beih. 2: 250, 1961; Hosag. & Goos, Mycotaxon 37: 249, 1990; Hosag., Dayal & Goos, Mycotaxon 46: 208, 1988; Hosag., Kaveriappa, Raghu & Goos, Mycotaxon 51: 116, 1994; Hosag., Meliolales of India, p. 321, 1996.

Materials examined: On leaves of *Tamarindus indica* L. (Caesalpinaceae), Mysore, Karnataka, 4.iv.1913, L.S. Subramanian HClO 3363; Pachanadi, Mangalore,

Karnataka, 16.iv.1913, L.S. Mony HClO 3383; Tanikandam, Idukki, Kerala, 16.xii.1982, V.B. Hosagoudar HClO 40565, MH 75785; Sampaje forest nursery, Sampaje, Kodagu, Karnataka, 22.xii.1991, B.R. Dayal HClO 30840; Gersoppa, Uttara Kannada, Karnataka, 13.xi.1992, C.M. Pillai HClO 40879.

Description: Colonies amphigenous, mostly epiphyllous, dense, velvety, up to 2mm in diameter, confluent. Hyphae undulate to tortuous, branching opposite at wide angles, loosely reticulate, cells 18-28 x 6-10µm. Appressoria alternate to 5% opposite, antrorse, spreading, straight to curved, 20-30µm long; stalk cells cylindrical to cuneate, 4-12µm long; head cells ovate, angulose, entire to sublobate, straight to curved, 14-20 x 10-16µm. Phialides mixed with appressoria, alternate to opposite, scattered, 16-28 x 6-10µm. Mycelial setae scattered to grouped around perithecia, simple, obtuse at the tip, up to 450µm long. Perithecia scattered, verrucose, up to 140µm in diam.; ascospores obovoidal, 4-septate, constricted, 46-50 x 18-20µm.

Host range: *Tamarindus indica*

Distribution: Tropics

77. *Meliola tecleae* Hansf. var. *toddaliae-asiaticae* Hansf., Proc. Linn. Soc. London 153: 11, 1941; Hansf. & Thirum., Farlowia 3: 298, 1948; Hansf., Sydowia Beih. 2: 392, 1961; Hosag. & Goos, Mycotaxon 37: 249, 1990; Hosag., Meliolales of India, p. 323, 1996.

Materials examined: On leaves of *Toddalia asiatica* (L.) Lam. (Rutaceae) in the forest along the road from Painavu to Kulamavu, 12.xii.1982, V.B. Hosagoudar HClO 40567, MH 75714; 19.ii.1983, V.B. Hosagoudar MH 75852; 21.xii.1983, V.B. Hosagoudar MH 78923; Koomati, Anamalai, Coimbatore, Tamil Nadu, 13.iii.1994, V.B. Hosagoudar HClO 41563.

Description: Colonies amphigenous, mostly epiphyllous, dense, subvelvety, up to 3mm in diameter, confluent. Hyphae straight to substraight, branching opposite at wide angles, loosely reticulate, cells 16-32 x 6-10µm. Appressoria alternate, straight to curved, antrorse to subantrorse, 12-24µm long; stalk cells cuneate, 6-10µm long; head cells ovate, entire, 10-18 x 10-14µm. Phialides mixed with appressoria, to alternate, ampulliform, 16-24 x 6-8µm. Mycelial setae scattered, straight, simple, acute at the tip, up to 630µm long. Perithecia scattered, verrucose, up to 190µm in diam.; ascospores oblong, 4-septate, constricted, 40-44 x 14-18µm.

Host range: *Toddalia asiatica*

Distribution: Tropics

78. *Meliola tenella* Pat. var. *atalantiae* (Pat.) Hansf., Proc. Linn. Soc. London 158: 35, 1946; Sydowia Beih. 2: 381, 1941; Hosag., Indian Bot. Repr. 7: 59, 1980; Hosag., Meliolales of India, p. 326, 1996.

***Meliola bambusae* Pat. var. *atalantiae* Pat.**, J. de Bot. 11: 348, 1897.

Materials examined: On leaves of *Atalantia monophylla* (L.) Correa (Rutaceae), Athikadu forest, Nilgiris, Tamil Nadu, 2.viii.1975, E. Vajravelu MH 46418.

Description: Colonies epiphyllous, scattered, dense, velvety, up to 2mm in diameter. Hyphae straight to substraight, branching opposite at wide angles, closely reticulate and almost solid at the centre, cells 18.5-22 x 3-4µm. Appressoria alternate, antrorse to recurved, straight to curved, 24-31µm long; stalk cells cylindrical to cuneate, 6-12.5µm long; head cells mostly cylindrical, entire, 15.5-18.5 x 9-12.5µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 15.5-25 x 9-12.5µm. Mycelial setae straight, 2-3 times dichotomously branched, branches reflexed, up to 100µm long till branching, first ray up to 50µm and second ray up to 20µm long, acute to obtuse at the tip. Perithecia scattered, up to 180µm in diam.; ascospores obovoidal to cylindrical, 4-septate, constricted, 40-50 x 15.5-18.5µm.

Host range: *Atalantia monophylla*

Distribution: Tropics

79. *Meliola tenella* Pat. var. *atalantiicola* Hosag., J. Econ. Taxon. Bot. 11: 159, 1987; Hosag., Meliolales of India, p. 326, 1996.

Materials examined: On leaves of *Atalantia monophylla* (L.) Correa (Rutaceae), Tummalbailu, Nallamalai, Andhra Pradesh, 19.iv.1986, V.B. Hosagoudar HClO 38295; Sri Tirumala Hills, Andhra Pradesh, Feb., 1994, Ramesh & Bagyanarayana HAL.

Description: Colonies amphigenous, mostly hypophyllous, dense, velvety on the upper surface while moderately dense on the lower surface, up to 2mm in diameter, confluent. Hyphae substraight to undulate, branching opposite at wide angles, loosely reticulate in the hypophyllous colonies while closely reticulate in the epiphyllous colonies, cells 12.5-15.5 x 6-9.5µm. Appressoria alternate, straight to curved, antrorse to spreading, 15-25µm long; stalk cells cylindrical to cuneate, 6-6.5µm long; head cells versiform, cylindrical, straight to bent, entire, 10-16.5 x 9-12.5µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 15.5-21.5 x 9-10µm. Mycelial setae numerous, scattered, straight, dichotomously branched, 217µm long up to first branching, first ray up to 50µm long, second ray up to 46.5µm long and the third ray up to 10µm long, acute to obtuse at the tip, branches reflexed. Perithecia scattered, verrucose, up to 220µm in diameter, ascospores obovoidal to cylindrical, 4-septate, constricted, 40-46.5 x 15.5-18.5µm.

Host range: *Atalantia monophylla*

Distribution: India

80. *Meliola thirumalacharii* Hosag. & Rajendran, J. Econ. Taxon. Bot. 13: 76, 1989; Hosag., Meliolales of India, p. 330, 1996.

Materials examined: On leaves of *Microcos paniculata* L. (*Grewia microcos* L.) (Tiliaceae), Mekkari, Tirunelveli, Tamil Nadu, 15.xii.1987, A. Rajendran MH 82164, HClO 39397.

Description: Colonies follicolous, amphigenous, dense, up to 2mm in diameter, rarely confluent. Hyphae flexuous to crooked, branching alternate to irregular at acute angles, loosely reticulate, cells 24-90 x 7-9.5µm. Appressoria alternate to unilateral, distantly placed, antrorse to spreading, 24-46.5µm long; stalk cells cylindrical to cuneate, 6-28µm long; head cells ovate, globose, angular to irregularly sublobate, 18-22 x 18-28µm. Phialides numerous, borne on a separate mycelial branch, opposite to alternate, ampulliform, 30-37 x 6-9.5µm. Mycelial setae fairly numerous, scattered, simple, straight, obtuse at the tip, up to 615µm long. Perithecia loosely grouped, verrucose, up to 200µm in diam.; ascospores obovoidal, 4-septate, constricted at the septa, 52-56 x 22-28µm.

Host range: *Microcos paniculata*

Distribution: Tropics

81. *Meliola toddaliicola* Hansf. var. *indica* Hansf. & Thirum., Farlowia 3: 299, 1948; Hansf., Sydowia Beih. 2: 390, 1961; Hosag., Meliolales of India, p. 332, 1996.

Materials examined: On leaves of *Toddalia asiatica* (L.) Lam. (*T. aculeata* Pers.) (Rutaceae), Balehonnur, Karnataka, 29.iv.1945, M.J. Thirumalachar HClO 10865.

Description: Colonies epiphyllous, dense, up to 3mm in diameter. Hyphae substraight, branching opposite at acute to wide angles, closely reticulate, cells 15-20 x 6-7µm. Appressoria opposite to 30% alternate, antrorse to spreading, 13-20µm long; stalk cells cylindrical to cuneate, 3-5µm long; head cells wide ovate, entire, 10-15 x 8-10µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 12-20 x 6-8µm. Mycelial setae mostly grouped around perithecia, straight, simple, acute, up to 280µm long. Perithecia scattered, verrucose, up to 150µm in diam.; ascospores oblong, 4-septate, constricted, 38-44 x 15-17µm.

Host range: *Toddalia asiatica*

Distribution: Tropics

82. *Meliola trewiae* Hosag. in Hosag. & Goos, Mycotaxon 42: 138, 1991; Hosag., Meliolales of India, p. 336, 1996.

Materials examined: On leaves of *Trewia polycarpa* Benth. ex Hook. (Euphorbiaceae), Koomati, Valparai, Coimbatore, Tamil Nadu, 26.xii.1990, V.B. Hosagoudar HClO 30561; *T. nodiflora* L., Koomati, Valparai, Coimbatore, Tamil Nadu, 26.xii.1990, V.B. Hosagoudar HClO 30562.

Description: Colonies epiphyllous, very thin, up to 4mm in diameter, confluent. Hyphae flexuous, branching opposite to alternate at acute angles, loosely reticulate, cells 30-34 x 8-9.5µm. Appressoria alternate, antrorse to subantrorse, 12-18.5µm long; stalk cells cylindrical to cuneate, 3-6.5µm long; head cells ovate to globose, entire, 9-12.5 x 10-12µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 12-18.5 x 9-12.5µm. Mycelial setae few, grouped around perithecia and also scattered, simple, straight, obtuse at the tip, up to 300µm long. Perithecia scattered, verrucose, up to 124µm in diam.; ascospores obovoidal, 4-septate, constricted at the septa, 31-34 x 12-15.5µm.

Host range: *Trewia* spp.

Distribution: Tropics

83. *Meliola woodfordiae* Srinivasulu, Nova Hedwigia Beih. 47: 433, 1974; Hosag., Meliolales of India, p. 340, 1996.

Materials examined: Material was not available.

Type: On leaves of *Woodfordia fruticosa* Kurz. (Lythraceae), Castle rock, Maharashtra, Nov. 1966, B.V. Srinivasulu MUH 145.

Description: Colonies amphigenous, dense, velvety, up to 5 mm in diameter, confluent. Hyphae straight to undulate, branching opposite at acute angles, closely reticulate, cells 14-21 x 6-7µm. Appressoria alternate, antrorse, 13-16µm long; stalk cells cylindrical to cuneate, 3-4µm long; head cells ovate, clavate, cylindrical, entire to rarely lobate, 10-12 x 8-15µm. Phialides borne on separate mycelial branch, opposite to alternate, ampulliform, 17-19 x 4-7µm. Mycelial setae numerous, scattered, simple, straight, obtuse, up to 350µm long. Perithecia mostly in groups, verrucose, up to 200µm in diam.; ascospores oblong, 4-septate, constricted at the septa, 30-36 x 10-12µm.

Host range: *Woodfordia fruticosa*

Distribution: Tropics

84. *Meliola zizyphi* Hansf. & Thirum., Farlowia 3: 299, 1948; Hansf., Sydowia Beih. 2: 368, 1961; Thite & Kulkarni, J. Shivaji Univ. 6: 163, 1972; Hosag. & Goos, Mycotaxon 37: 251, 1990; Hosag., Crupt. Bot. 2/3: 187, 1991; Hosag., Meliolales of India, p. 342, 1996.

Materials examined: On leaves of *Zizyphus rugosa* Lamk. (Rhamnaceae),

Balehonnur, Karnataka, 4.iv.1945, M.J. Thirumalachar HClO 10879; Maredumilli, East Godavari, Andhra Pradesh, 15.ii.1994, M. Mohanan HClO 41582; *Z. xylopyrus* (Retz.) Willd., 28.xii.1983, V.B. Hosagoudar HClO 40572, MH 8-328; Thorepalli, Nilgiris, Tamil Nadu, 19.i.1990, V.B. Hosagoudar HClO 32891; *Z. glabrata* Heyne ex Roth (*Z. trinervia* Roxb.), Patgaon, Kolhapur, Maharashtra, 7.ii.1984, C.R. Patil HClO 40016; Idukki, Kerala, 22.x.1984, A. Diraviadoss MH 82602.

Description: Colonies amphigenous, mostly epiphyllous, thin, up to 5mm in diameter, confluent. Hyphae straight to substraight, branching alternate to opposite at acute angles, loosely reticulate, cells 20-38 x 6-8µm. Appressoria alternate to opposite, straight, spreading, antrorse, 10-14µm long; stalk cells cylindrical to cuneate, 2-6µm long; head cells globose, entire, 8-10µm. Phialides mixed with appressoria, alternate to opposite, ampulliform, 16-18 x 6-8µm. Mycelial setae scattered and grouped around perithecia, straight, simple, acute to variously dentate at the tip, up to 342µm long. Perithecia scattered, verrucose, up to 116µm in diam.; ascospores ellipsoidal, 4-septate, constricted, 30-32 x 10-12µm.

Host range: *Zizyphus* spp.

Distribution: India

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BILATERAL CORNEAL OPACITY IN A LEOPARD (*PANTHERA PARDUS*)

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plus web supplement of 1 page

A female leopard "Uttara" aged about 9yr at Nandankannan Zoo developed bilateral corneal opacity with impairment of vision on 19 June 2002. She was treated with intramuscular vitamin-A 6lac unit (Vitamin-A injection 2ml*) and cefotaxime sodium 1g (Taxim injection 1g**) once daily for five days along with Gentamycin eye drop (Genticyn eye drop, 5ml***) instillation into both eyes after restraining in a squeeze cage. There was improvement in vision, but the animal developed opacity and blindness after about one year. The previous treatment schedule did not improve the condition. Haematological study did not reveal any significant changes. The faecal sample examination did not reveal presence of any parasitic ova. Blood examination for presence of any blood protozoan parasite was also negative. The animal showed staggering gait with prolonged sleep at times. She was striking against the wire net enclosure during her movements. On close observation no abnormality on eyelid movement, eyeballs or presence of eye worms was detected. On 19 August 2003 it was decided to take radiograph of her skull. The leopard was completely blind so x-ray was taken without tranquilization. One side door of the squeeze cage was fully opened and the x-ray machine was kept very close to the skull while taking radiograph in lateral and antero-postero views (Image 1^o). The lateral radiograph of skull revealed hypertrophy of orbital plexus manifested by decreased density. There was increased vascularization of the orbit with radiodense cornea. The thickened cribriform plate was also marked. The frontal and nasal sinuses were clear (Image 2^o). The animal died the next day on 20 August 2003. Post-mortem examination revealed congested lungs with frothy exudates in the bronchioles and bronchi suggesting it to be pneumonia. No gross or histological changes could be detected in the brain or eye. Death in this case was attributed to respiratory distress produced by pneumonia.

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^o See Images 1-2 in the web supplement at www.zoosprint.org



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