

Marasmius species new to India

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11 species and 1 variety of *Marasmius* FR., namely *M. tubulatus* PETCH, *M. gordipes* SACC. & PAOL., *M. nigrobrunneus* (PAT.) SACC., *M. brunneolus* (BERK. & BR.) PEGLER, *M. coniatu* BERK. & BR., *M. florideus* BERK. & BR., *M. subconiatu* PETCH, *M. hypochroides* BERK. & BR., *M. fulviceps* BERK., *M. atrorubens* (BERK.) BERK., *M. atrorubens* var. *dumontii* SINGER and *M. griseoroseus* (MONT.) DENNIS are recorded and described for the first time from India.

11 species and 1 variety of *Marasmius* FR. so far not reported from India are described. The colour codes added in brackets are from KORNERUP & WANSCHER (1967). The collections cited are deposited in the herbarium of the Calicut University Botany Department (CALI).

Descriptions

1. *Marasmius tubulatus* PETCH. – Trans. Brit. Mycol. Soc. 31: 42 (1948). – Fig. 1. f–j.

Pileus 3–10 mm diam., convex with a depression in the centre; surface orange grey (5B3), glabrous, sulcatostriate; margin straight, crenate. – Lamellae deeply collariate, dull white, distant, without lamellulae; edge smooth, concolorous with pileus. – Stipe 1.5–2 cm × 0.2–0.5 mm, setose, central, cylindric; surface dark brown (5F8), glabrous. – Odour slightly unpleasant. – Spore print white.

Spores 7–9.5 × 4–5 µm, ellipsoid, hyaline, inamyloid, thin-walled, smooth. – Basidia 20–22 × 5–7 µm, cylindricocclavate, bearing four sterigmata up to 4 µm long. – Edge of lamellae sterile. – Cheilocystidia 11–20 × 10–13 µm, obovoid to pyriform, covered with dense, small, brownish verrucae, rarely smooth. – Pleurocystidia none. – Hymenophoral trama regular, inamyloid; hyphae 1.5–7 µm diam., hyaline, thin-walled. – Context inamyloid; hyphae 2–10 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic with Rotalis-type broom cells, 15–20 × 11–20 µm, obovoid to pyriform, with upper half covered with brown verrucae. Stipe tissue inamyloid; hyphae 1.5–7 µm diam., hyaline,

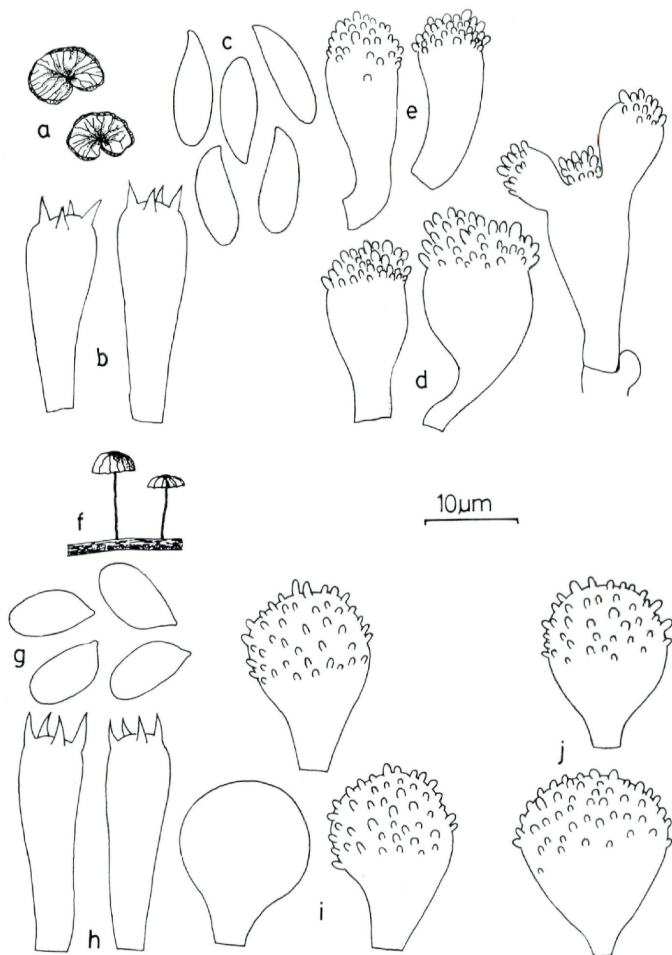


Fig. 1. a–e: *Marasmius griseoroseus*. – a: habit, $\times 3$. – b: basidia. – c: spores. – d: cheilocystidia. – e: epicuticular elements. f–j: *Marasmius tubulatus*. – f: habit, $\times 1$. – g: spores. – h: basidia. – i: cheilocystidia. – j: epicuticular elements.

thin-walled; peripheral hyphae brownish, with a thickened wall. – Clamp connections present.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, in groups on dead twigs partially buried in soil, 3 June 1985, CALI No. M 112.

So far, this species was known only from Sri Lanka. The black papilla reported to be present in the Sri Lankan specimens (PEGLER, 1986) is lacking in the present collections. In all other respects, it closely resembles *M. tubulatus* from Sri Lanka.

2. *Marasmius gordipes* SACC. & PAOL. – Atti R. Instit. Venet. Sci., Lett. ed Arti 6 Ser., 6: 392 (1988). – Fig. 2. a–d.

Pileus 0.5–1 cm diam., convexo-umbilicate; surface reddish brown (8D8) to brown (6E6), glabrous, sulcatostriate; margin straight, entire. – Lamellae collariate, yellowish white (4A2), distant, without lamellulae; edge smooth, concolorous with the pileus. – Stipe 3–7 cm × 0.5–1 mm, central, cylindric, hollow; surface brown (6E6), smooth. – Odour none. – Spore print white.

Spores 6–9 × 4.5–5.5 µm, ovo-ellipsoid, hyaline, inamyloid, thin-walled, smooth. – Basidia not seen. – Basidioles 15–33 × 5–8 µm, cylindrico-clavate to fusoid. – Edge of lamellae sterile. – Cheilocystidia 9–23 × 6–8.5 µm, cylindric or clavate, bearing 10–18 apical setules, 1–4 µm long, with a slightly thickened, brownish wall. – Pleurocystidia none. – Hymenophoral trama regular, inamyloid; hyphae 2–8 µm diam., hyaline, with a slightly thickened wall. – Context inamyloid; hyphae with slightly thickened wall. – Pileipellis hymenodermic with Siccus-type broom cells, 9–17 × 6–15 µm, cylindric or clavate, bearing 6–15 apical setules, 1–4 µm long, with a slightly thickened brownish wall. – Stipe tissue inamyloid; hyphae 2–12 µm, diam., hyaline with a slightly thickened wall; peripheral hyphae brownish. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Chethaleth Reserve Forest, abundant on ground, in groups, 18 June 1985, CALI No. M 249.

The type of *M. gordipes* is from Malaysia and PETCH (1948) reported it from Sri Lanka. The long, slender stipe and the ovate-ellipsoid spores are characteristic of this species. In the present collection the spores are slightly smaller. *M. foliicola* SINGER (1976), a neotropical species, seems very close differing mainly in having an orange pileus.

3. *Marasmius nigrobrunneus* (PAT.) SACC. – Syll. Fung. 11: 37 (1895). – Fig. 2.e–i.

Pileus 1–4 mm diam., convex; surface brownish grey (6E2) to black, glabrous, plicato-sulcate. – Lamellae collariate, white, dis-

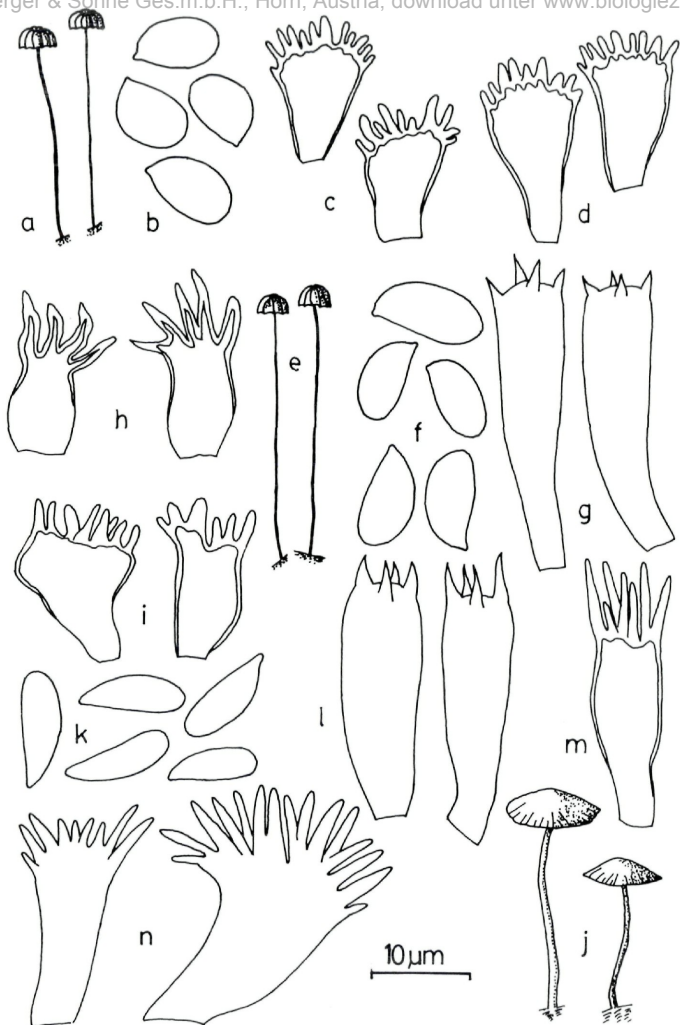


Fig. 2. a–d: *Marasmius gordipes*. – a: habit, $\times 1$. – b: spores. – c: cheilocystidia. d: epicuticular elements. e–i: *Marasmius nigrobrunneus*. – e: habit, $\times 1/2$. – f: spores. – g: basidia. – h: cheilocystidia. – i: epicuticular elements. j–n: *Marasmius florideus*. – j: habit, $\times 1$. – k: spores. – l: basidia. – m: cheilocystidia. – n: epicuticular elements.

tant, without lamellulae; edge smooth, concolorous with the pileus. – Stipe 4–8 × 0.4–0.7 mm, central, cylindric, equal, hollow; surface white at the tip, blackish elsewhere, glabrous, shining. – Odour none. – Spore print white.

Spores 8–10 × 4–5 µm, ellipsoid, hyaline, inamyloid, thin-walled, smooth. – Basidia 23–30 × 6.5–8 µm, clavate, bearing four sterigmata. – Edge of lamellae sterile. – Cheilocystidia 10–15 × 4–8 µm, cylindrico-clavate to clavate, bearing 4–9 apical setules, hyaline or brownish, with a thickened wall. – Pleurocystidia none. – Hymenophoral trama regular inamyloid; hyphae 2–8 µm diam., hyaline, thin-walled. – Context thin, inamyloid; hyphae 2–6 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic, with Siccus-type broom cells, 7–18 × 7–10 µm, brownish, with a thickened wall. – Stipe tissue dextrinoid, hyphae 2–7 µm diam., hyaline, slightly thick-walled; peripheral hyphae dark brown. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Sultan Batteri, from a forest near Kuppadi Forest Range Office, gregarious on litter, 19 June 1985, CALI No. M 268.

M. nigrobrunneus is pantropical in distribution with records from Vietnam (PATOULLARD, 1891) Sri Lanka (PETCH, 1948), Trinidad (DENNIS, 1951), Argentina and Bolivia (SINGER, 1976). SINGER (1976) mentions an Indian collection at Farlow Herbarium (FH) but no formal reports are available and MANJULA (1983) does not include this species in her list of Indian species. The greyish black pileus and long, slender stipe are characteristic for this species.

4. *Marasmius brunneolus* (BERK & BR.) PEGLER. – Kew. Bull. Addit. Ser. XII: 163 (1986). – Fig. 3.a–f.

Pileus 0.8–2.5 cm diam., convex, becoming applanate; surface greyish brown (8D4) at the centre of the pileus, greyish red (10D4) towards the margin, glabrous, sulcato-plicate; margin straight, wavy. – Lamellae adnexed, purplish white (14A2) when young, greyish white when mature, narrow, up to 3.5 mm wide, distant, without lamellulae; edge smooth, concolorous with the pileus. – Stipe 1.6–3.7 cm × 0.5–1 mm, central, cylindric, hollow; surface white at the tip, dark brown (8F7) at the base, shining, glabrous. – Odour none. – Spore print white.

Spores 18–24 × 3–4 µm, lanceolate, hyaline, inamyloid, thin-walled, smooth. – Basidia 23–37 × 7–8 µm, cylindrico-clavate, bearing four, short sterigmata. – Edge of lamellae sterile. – Cheilocystidia 8–17 × 6–9 µm; cylindric or clavate, brownish, with a thickened wall, bearing 10–17 apical setules, 1–10 µm long. – Pleurocystidia abundant, 30–70 × 7.5–11 µm, fusoid, often sub-

mucronate or constricted, thin-walled, with hyaline, refractive contents. – Hymenophoral trama regular, dextrinoid; hyphae often inflated, 2–20 μm diam., thin-walled. – Pileipellis hymenodermic with Siccus-type broom cells, 11–17 \times 7–10 μm , cylindric to clavate, brownish, with a thickened wall, bearing 10–20 apical setules, 2–7 μm long. – Stipe tissue dextrinoid; hyphae 2–7 μm diam., hyaline, thin-walled; peripheral hyphae brownish and slightly thick-walled. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Sultan Batteri, from a forest locality near Kuppadi Forest Range Office, in groups, abundant, on forest floor, amongst litter, 19 June 1985, CALI No. M 267.

M. brunneolus was first described as a variety of *M. helvolus* BERK. PEGLER (1986), after studying the type collection, found it to differ considerably and consequently gave it species status. PETCH (1948) has given a coloured illustration of this Sri Lankan species. This is the first record of this species outside of Sri Lanka.

5. *Marasmius coniatius* BERK. & BR. – Journ. Linn. Soc., Bot. 14: 35 (1873). – Fig. 3.g–k.

Pileus 0.5–1.5 cm diam., conico-convex; surface brownish orange (6C8) at the centre, fading to melon yellow (5A6) towards the margin, glabrous, plicato-striate; margin straight, crenate. – Lamellae adnexed, white, narrow, 1.5–3 mm wide, distant, without lamellulae; edge smooth, concolorous with the pileus. – Stipe 2.5–4 cm \times 0.4–0.7 mm, central, cylindric, hollow; surface white at the tip, blackish towards the base, glabrous, shining. – Odour none. – Spore print white.

Spores 13–21 \times 4–5 μm , lanceolate, hyaline, inamyloid, thin-walled, smooth. – Basidia 20–28 \times 5–8 μm , cylindrico-clavate, bearing four sterigmata up to 4 μm long. – Basidioles frequent, fusoid or mucronato-clavate. – Edge of lamellae sterile. – Cheilocystidia 10–18 \times 5–9 μm , clavate, with a slightly thickened wall, bearing numerous, apical setules, 1–6 μm long, brownish, thick-walled. – Pleurocystidia none. – Hymenophoral trama subregular to regular, dextrinoid; hyphae slightly inflated, 2–15 μm diam., hyaline, thin-walled. – Context dextrinoid; hyphae 2–9 μm diam., hyaline, thin-walled. – Pileipellis hymenodermic with Siccus-type broom cells, 7–20 \times 4–7 μm , cylindric, clavate or pyriform, with 10–15 apical setules, 1–5 μm long, brownish with a thickened wall. – Stipe tissue dextrinoid; hyphae 2–10 μm diam., hyaline, thin-walled; peripheral hyphae at the basal part slightly thick-walled and brownish. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Muthanga forest, in groups on the forest floor, 20. June, 1985, CALI No. M 283.

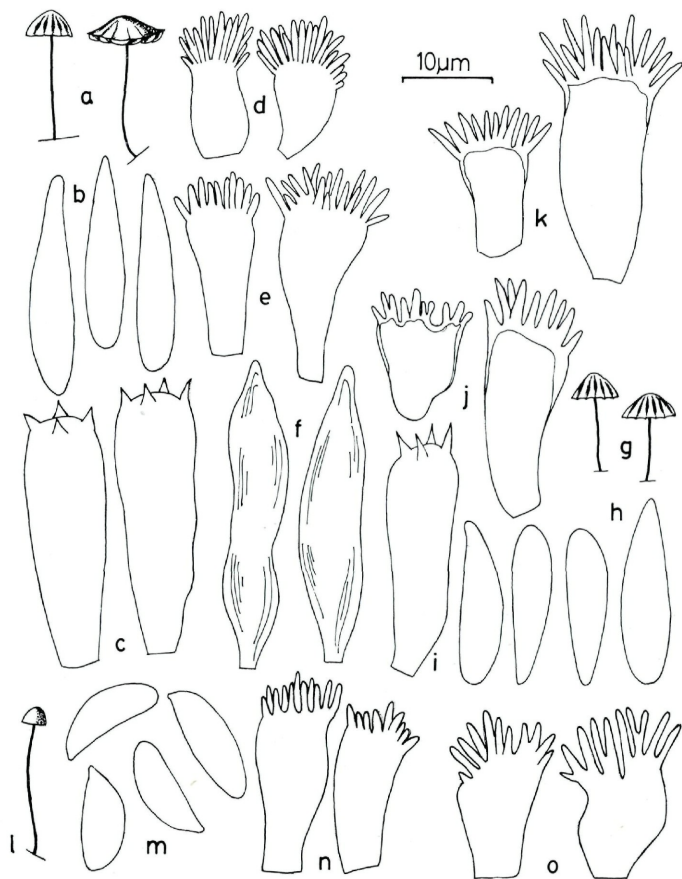


Fig. 3. a-f: *Marasmius brunneolus*. - a: habit, $\times 1/2$. - b: spores. - c: basidia. - d: cheilocystidia. - e: epicuticular elements. - f: pleurocystidia. g-k: *Marasmius coniatatus*. - g: habit, $\times 1/2$. - h: spores. - i: basidium. - j: cheilocystidia. - k: epicuticular elements. l-o: *Marasmius fulviceps*. - l: habit, $\times 1/2$. - m: spores. - n: cheilocystidia. - o: epicuticular elements.

The type specimen is from Sri Lanka and so far this species has not been reported from elsewhere. This is one of the most common *Marasmius* in Kerala. The small basidiomes with conical, orange pilei and the large lanceolate spores are characteristic for the species.

6. *Marasmius florideus* BERK. & BR. – Journ. Linn. Soc., Bot. 14: 39 (1873). – Fig. 2.j–h.

Pileus 1–2 cm diam., conical to convex; surface dark brown (7F8) at the centre, reddish brown (7E8) at the middle and orange brown (7D8) towards the margin, glabrous, striate; margin straight, entire. – Lamellae adnexed, dull white, subdistant, with lamellulae; edge smooth, concolorous with the pileus. – Stipe 3–4.5 cm × 1.5–2 mm, central, cylindric or slightly compressed, hollow; surface white at the tip, reddish brown (7E8) or orange brown (7D8) at the base, glabrous. – Odour none. – Spore print white.

Spores 9–12 × 3–4 µm, cylindrico-fusoid, hyaline, inamyloid, thin-walled, smooth. – Basidia 16–20 × 6–7 µm, cylindrico-clavate bearing four sterigmata up to 4 µm long. – Edge of lamellae sterile. – Cheilocystidia 10–20 × 5–10 µm, clavate, bearing 4–10 large, apical setules, 3–12 µm long, yellowish brown, with a slightly thickened wall. – Pleurocystidia none. – Hymenophoral trama regular, dextrinoid; hyphae slightly inflated, 2–15 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic with Siccus-type broom cells, 11–23 × 5–10 µm, clavate, bearing 8–20 apical setules, 3–12 µm long, yellowish brown, with a thickened wall. – Stipe tissue dextrinoid; hyphae 1.5–10 µm wide, hyaline, thin-walled; peripheral hyphae at the base yellowish brown, with a thickened wall. – Clamp connections present.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, scattered on ground amongst litter, June 1985, CALI No. M 112.

So far, *M. florideus* was known only from Sri Lanka. It is a very attractive species with reddish brown pileus. The cylindric-fusoid spores are characteristic microscopical features. The neotropical *M. floriceps* BERK & CURT. (1869) seems to be close to this species.

7. *Marasmius subconiatatus* PETCH. – Trans. Brit. Mycol. Soc. 31: 41 (1948). – Fig. 4.a–e.

Pileus 4–6.5 mm diam., convex; surface reddish brown (7E8) at the centre, fading through orange brown (7D8) to copper red (7C8) towards the margin, glabrous, plicato-striate; margin straight, somewhat crenate. – Lamellae adnexed, white to cream (4A3), narrow, up to 1.5 mm wide, subclose, with lamellulae; edge smooth,

concolorous. – Stipe 1.5–2.5 cm × 0.4–0.7 mm, central, cylindric, equal, hollow; surface white at the tip, light orange (5A4) at the base, glabrous. – Odour none.

Spores 8–11 × 3.5–4.5 µm, elongate-ellipsoid, hyaline, inamyloid, thin-walled, smooth. – Basidia 25–33 × 8–9 µm, clavate, bearing four sterigmata up to 5 µm long. – Edge of lamellae sterile. – Cheilocystidia 5–16 × 5–8 µm, cylindric to cylindrico-clavate, with 6–15 apical setules, 2.5–8 µm long, hyaline, thin-walled. – Hymenophoral trama subregular, dextrinoid; hyphae 1–7 µm diam., hyaline, thin-walled. – Context dextrinoid; hyphae 2–9 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic with Siccus-type broom cells, 7–20 × 3.5–8 µm, cylindric to cylindrico-clavate, with numerous apical setules, 3–7 µm long, pale brown, with a thickened wall. – Stipe tissue dextrinoid; hyphae 1.5–9 µm, hyaline, thin-walled. – Clamp connections present.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, Botanical Garde, scattered on ground amongst litter, in the shade of trees, 11. Aug. 1985, CALI No. M 323.

Earlier this species was known only from Sri Lanka. The present Indian collection differs in having a much longer stipe.

8. *Marasmius hypochroides* BERK & BR. – Journ. Linn. Soc. Bot. 14: 35 (1873). – Fig. 4. f–j.

Pileus 3–6 cm diam. conic to applanate; surface yellowish brown (5E8) at the centre, fading to greyish orange (5B3) towards the margin, glabrous, striate; margin straight, entire. – Lamellae adnexed, dull white, up to 7 mm wide, subclose with lamellulae; edge smooth, brownish. – Stipe 6–10 mm × 2–5 mm, broader towards the base, central, often slightly compressed, hollow; surface brownish orange (5C5) at the base, orange white (5A2) at the apex, glabrous. – Odour none. – Spore print white.

Spores 7–10 × 5–6 µm, ellipsoid, hyaline, inamyloid, thin-walled, smooth. – Basidia 24–28 × 7–8 µm, clavate, bearing four sterigmata up to 3 µm long. – Edge of lamellae sterile. – Cheilocystidia Siccus-type, 8–25 × 4–20 µm, clavate, hyaline, slightly thick-walled, bearing 3–15 apical setules, 4–10 µm long. – Pleurocystidia none. – Hymenophoral trama regular, dextrinoid; hyphae inflated, 3–30 µm diam., hyaline, thin-walled. – Context dextrinoid; hyphae inflated, 1.5–20 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic, of Siccus-type broom-cells, 10–24 × 4–11 µm, clavate, bearing 3–10 apical, pointed setules, 3–11 µm long, yellowish brown, with a thickened wall. – Stipe tissue dextrinoid; peripheral hyphae yellowish, thick-walled. – All hyphae with clamp connections.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, scattered on ground amongst litter, 3 June 1985, CALI No. M 116.

Earlier this species was known from Sri Lanka only. The large basidiomes and the broadly ellipsoid spores are characteristic of this species.

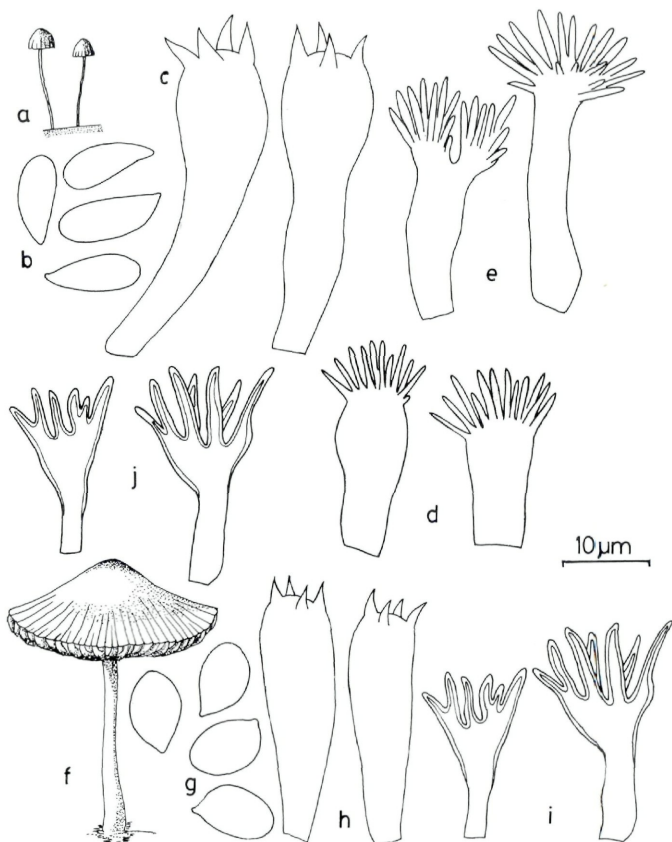


Fig. 4. a–e: *Marasmius subconiatius*. – a: habit, $\times 1/2$. – b: spores. – c: basidia. – d: cheilocystidia. – e: epicuticular elements. f–j: *Marasmius hypochroides*. – f: habit, $\times 1/2$. – g: spores. – h: basidia. – i: cheilocystidia. – j: epicuticular elements.

9. *Marasmius fulviceps* BERK. in HOOKER. – Lond. Journ. Bot. 6: 490 bis (1847). – Fig. 3. 1–0.

Pileus 5–10 mm diam., convex, surface light brown (6D8) at the centre, bronze brown (5E5) towards the margin, glabrous, not striate; margin straight, entire. – Lamellae free or slightly adnexed, yellowish white (3A2), narrow, up to 1.5 mm wide, close, with lamellulae; edge smooth. – Stipe 3–4.5 cm × 0.4–0.8 mm, filiform, equal, central, cylindric, hollow; surface yellowish white (3A2) at the tip, dark greyish brown (6F3) at the base, smooth, shiny. – Odour none.

Spores 10–12 × 4–5 µm, subfusoid, hyaline, inamyloid, thin-walled, smooth. – Basidia not seen. – Basidioles 20–22 × 6–7 µm, fusoid or clavate. – Edge of lamellae sterile. – Cheilocystidia 9–15 × 6–11 µm, clavate, hyaline, thin-walled; bearing 6–15 apical setules, 1–6 µm long. – Pleurocystidia none. – Hymenophoral trama regular, dextrinoid; hyphae 1.5–12 µm diam., hyaline, thin-walled. – Context dextrinoid; hyphae 2–10 µm diam., hyaline, thin-walled. – Pileipellis hymenodermic, with Siccus-type broom cells, 7–15 × 5–11 µm, clavate, bearing 7–16 apical setules up to 8 µm long, pale brown, with a slightly thickened wall. – Stipe tissue dextrinoid; hyphae 1–8 µm diam., hyaline, thin-walled; peripheral hyphae at the base of the stipe with a slightly thickened, brownish wall. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Muthanga forest, on decaying leaves in groups, 20 June 1985, CALI No. M 286.

The type material of this species is from Sri Lanka. According to PEGLER (1986) the illustrated account given by PETCH (1948) represents *M. nummularius*, which was mistakenly listed as a synonym of *M. fulviceps*. SINGER (1951) while studying the type of this species could not find spores but PEGLER (1986) reports their presence in the type collection. The non-striate pileus and the subfusoid spores of *M. fulviceps* are reminiscent of another Sri Lankan species viz., *M. nummularius* which differs by the narrower spores, coloured edge of lamellae, presence of caulocystidia and ochraceous lamellae.

10a. *Marasmius atrorubens* var. *atrorubens* (BERK.) BERK. in HOOKER. – Journ. Bot. & Kew Misc. 8: 137 (1856). – Fig. 5. a–f.

Pileus 10–15 mm diam., convex becoming applanate; surface copper red (7C8) to reddish orange (7B7), glabrous, striate; margin straight to plane, entire. – Lamellae adnexed, white, narrow, up to 1 mm wide, close, with lamellulae; edge concolorous with the sides. – Stipe 35–40 × 0.5–1 mm, central, cylindric, equal, hollow; surface white at the tip, reddish orange (7B7) in the middle, and blackish at the base, finely hispid. – Odour none. – Spore print white.

Spores $11-17 \times 4.5-5 \mu\text{m}$, clavate-fusoid with inner side more or less applanate, hyaline, inamyloid, thin-walled, smooth. – Basidia $18-22 \times 6-7 \mu\text{m}$, clavate, bearing four sterigmata. – Basidioles many, fusoid or clavate-mucronate. – Edge of lamellae sterile. – Cheilocystidia $8-20 \times 5-9 \mu\text{m}$, cylindric or clavate, hyaline, thin-walled, bearing 7–11 apical setules, $1.5-8 \mu\text{m}$ long. – Pleurocystidia none. – Hymenophoral trama regular, dextrinoid; hyphae $2-8 \mu\text{m}$ diam., hyaline, thin-walled. – Context very thin, dextrinoid; hyphae $1-10 \mu\text{m}$ diam., hyaline, thin-walled. – Pileipellis hymenodermic, with Siccus-type broom cells, $9-18 \times 6-12 \mu\text{m}$, clavate, to cylindric-clavate, bearing 10–27 apical setules, $2-7 \mu\text{m}$ long, reddish brown, with a thickened wall. – Stipe tissue dextrinoid; peripheral hyphae at the base of the stipe thick-walled and brownish. Hairs of the stipe stiff and erect and seta-like, $50-125 \times 5-10 \mu\text{m}$, with a broad base and tapering apex, thick-walled, brown. – Clamp connections present.

Material examined. – INDIA, Kerala, Wayanad, Sultan Batteri, from a forest locality near Kuppadi Forest Range Office, in groups, abundant on forest floor, CALI No. M 274.

This is a common neotropical species. SINGER (1976) erected the new variety „cystidifer“ for specimens having pleurocystidia. In the present collection, however, no pleurocystidia were observed. This species has not been recorded earlier from India and Sri Lanka.

10b. *Marasmius atrorubens* var. *dumontii* SINGER. – Fl. Neotrop. Monogr. 17: 243 (1976). – Fig. 5. g–h.

Pileus 5–25 mm diam., convex becoming applanate, somewhat umbonate; surface reddish brown (7E8) at the centre, orange brown (7D8) towards the margin, velvety smooth; margin straight, regular, becoming wavy. – Lamellae adnexed, white, narrow, up to 1 mm wide, close, with lamellulae; edge smooth. – Stipe 5–10 cm \times 0.5–1.5 mm thick; slender, central, cylindric; surface brown (7D7), densely hispid. – Odour none. – Spore print white.

Spores $10-14 \times 3-3.5 \mu\text{m}$, clavato-fusoid with inner side more or less applanate, hyaline, inamyloid, thin-walled, smooth. – Basidia not observed. – Basidioles $19-22 \times 5-7 \mu\text{m}$, fusoid or mucronate-clavate. – Edge of lamellae sterile. – Cheilocystidia $10-20 \times 5-8 \mu\text{m}$, cylindric or clavate, hyaline, thin-walled, bearing 5–12 apical setules, $1-6 \mu\text{m}$ long. – Pleurocystidia none. – Hymenophoral trama subregular, dextrinoid; hyphae $2-10 \mu\text{m}$ diam., hyaline, slightly thick-walled. – Context dextrinoid; hyphae $2-6 \mu\text{m}$ diam., hyaline, slightly thick-walled. – Pileipellis hymenodermic, with Siccus-type broom cells, $13-50 \times 5-10 \mu\text{m}$, clavate, brownish, slightly thick-walled. Aside from the broom cells,

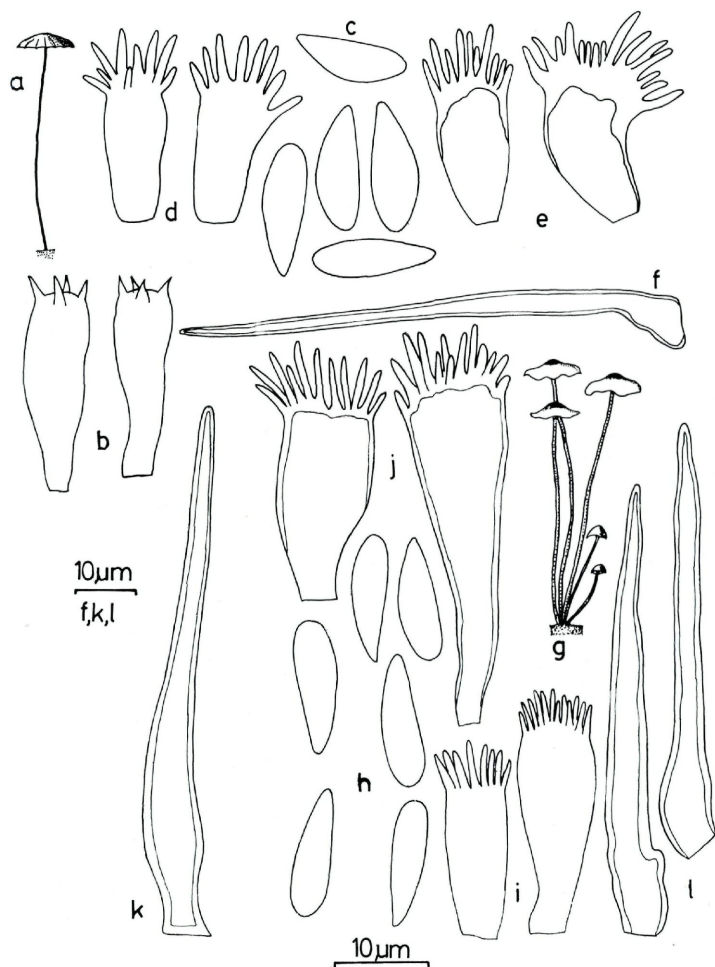


Fig. 5. a-f: *Marasmius atrorubens* var. *atrorubens*. - a: habit, $\times 1/2$. - b: basidia. - c: spores. - d: cheilocystidia. - e: epicuticular elements. - f: hair from stipe surface. g-l: *Marasmius atrorubens* var. *dumontii*. - g: habit, $\times 1/2$. - h: spores. - i: cheilocystidia. - j: epicuticular elements. - k: hair from pileal surface. - l: hairs from stipe surface.

thick-walled hairs like those of the stipe surface are also present. – Stipe tissue dextrinoid; peripheral hyphae thick-walled and brownish. Hairs of the stipe stiff and erect and seta-like, $40\text{--}120 \times 5\text{--}10 \mu\text{m}$, with a broad base and pointed apex, brownish, thick-walled. – Clamp connections present.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, in groups on the ground amongst litter, 3 June 1985, CALI No. M 119.

This variety, first described from Venezuela, differs from var. *atrorubens* in the presence of hairs on the surface of the pileus. As far as known, it has not been reported from any other region.

11. *Marasmius griseoroseus* (MONT.) DENNIS. – Kew Bull. 8: 35, Fig. 6 (1953). – Fig. 1. a–e.

Pileus 2–5 mm diam., cupulate-reniform, dorsally attached; surface white or yellowish white (2A2), glabrous, faintly striate; margin straight, entire. – Lamellae radiating from a lateral point, yellowish white (2A2), close, with interveining; edge smooth. – Stipe none; basidiomes originating from a pad of white, basal mycelium. – Odour none. – Spore print white.

Spores $10\text{--}13 \times 4\text{--}4.5 \mu\text{m}$, subfusoid to clavate, hyaline, inamyloid, thin-walled, smooth. – Basidia $22\text{--}27 \times 7\text{--}8 \mu\text{m}$, clavate, bearing four sterigmata up to $4 \mu\text{m}$ long. – Edge of lamellae sterile. – Cheilocystidia $12\text{--}25 \times 7\text{--}13 \mu\text{m}$, clavate or pyriform, hyaline, thin-walled, bearing numerous, short, obtuse warts. – Pleurocystidia none. – Hymenophoral trama subregular, dextrinoid; hyphae $2\text{--}7 \mu\text{m}$ diam., hyaline, thin-walled. – Context very thin, dextrinoid; hyphae $2\text{--}7 \mu\text{m}$ diam., hyaline, slightly thick-walled. – Pileipellis hymenodermic with Rotalis-type broom cells, $10\text{--}30 \times 7\text{--}13 \mu\text{m}$, clavate or pyriform, rarely furcate or with small branchlets at the tip, hyaline, thin-walled, bearing scattered or crowded warts. – Clamp connections present.

Material examined. – INDIA, Kerala, Malappuram, Calicut University Campus, Botanical Garden, in dense clusters, on dead, rotting wood, 23 June 1986, CALI No. M 365.

This is the first report of this species for the palaeotropics. SINGER (1976) reported it from Columbia and Bolivia. DENNIS (1953) collected it from lowland forests of Trinidad. The type material is from French Guiana. This small, white, pleurotoid species forms characteristic dense clusters on rotting wood.

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