

Marasmius species (Tricholomataceae) found in man-influenced habitats in the vicinity of Yaoundé, Cameroon

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Mossebo D. C. and Antonín V. (2004): Marasmius species (Tricholomataceae) found in man-influenced habitats in the vicinity of Yaoundé, Cameroon. – Czech Mycol. 56: 85–111

The authors describe collections of 13 taxa of *Marasmius* species made in the vicinity of the Cameroon capital, Yaoundé, in stands under the influence of man. One of them, *Marasmius luteostipitatus*, is described as a new species of sect. *Sicci*.

Key words: *Marasmius*, *M. luteostipitatus*, *Tricholomataceae*, Cameroon, Africa, new species.

Mossebo D. C. a Antonín V. (2004): Druhy rodu *Marasmius* (Tricholomataceae) sbírané na člověkem ovlivněných stanovištích v okolí Yaoundé, hlavního města Kamerunu. – Czech Mycol. 56: 85–111

Autoři popisují nálezy 13 taxonů špiček z rodu *Marasmius* na člověkem ovlivněných stanovištích v okolí Yaoundé, hlavního města Kamerunu. Jeden z nich, *Marasmius luteostipitatus*, je popsán jako nový druh ze sekce *Sicci*.

During his field studies of the Cameroonian mycoflora, one of us (D. C. M.) collected some interesting *Marasmius* species in the vicinity of the Cameroon capital, Yaoundé, in 1997–2000. In 2001, the same localities were visited by both authors. All of the studied localities were \pm strongly influenced by man (plantations, small fields, etc.) with scattered trees (as remnants of the original forest). The collections of the *Marasmius* species in those habitats are summarised in this paper.

Macroscopic descriptions and photographs were made by the collector. Microscopic descriptions were made by the second author (V. A.) and based on dried material or material preserved in a conservation liquid using an Olympus BX50 light microscope with a magnification of 1000 \times . A drawing tube was used for

the drawing of microscopic features. Observations were made on mounts in the following reagents: Congo Red, 10 % KOH and Melzer's reagent. Indications of colours follow Kornerup and Wanscher (1983).

The following abbreviations are used: av. = mean value of the sizes of basidiospores, E = quotient of length and width of the basidiospores, Q = mean value of E in all collections studied, L = number of entire lamellae, l = number of lamellulae between each pair of entire lamellae. Authors of fungal names are cited according to Kirk and Ansell (1992), abbreviations of herbaria follow Holmgren and Keuken (1974).

Marasmius atrorubens (Berk.) Mont., Ann. Sci. Nat., Bot., sér. 4, 1: 118. 1854.
(Fig. 1, Pl. 1)

Agaricus atrorubens Berk., Journ. Bot. 1: 138. 1842.

Description of collected carpophores

Pileus 7-15 mm broad, conical-convex with small central papilla when young, then appanate, finely tomentose, radially weakly striate up to 1/2 or 2/3 (never sulcate), yellow-brown to ferruginous-yellow with dark ferruginous-brown centre. Lamellae \pm close, L = 20-23, l = 2-3, narrow (\pm 1 mm broad), emarginate and attached with a tooth, dirty whitish, with pubescent, yellow-brown edge. Stipe 45-55 \times up to 0.5 mm, filiform, cylindrical, entirely distinctly strigose-hairy, slightly lustrous, whitish at apex, up to brown or dirty brown towards base; basal mycelium long, strigose, ochraceous.

Basidiospores 11-13.5 \times 3.7-4.5 μ m, av. = 12.1 \times 4.1 μ m, E = 2.4-3.3, Q = 3.0, (sub)fusoid, thin-walled, hyaline, non-dextrinoid, smooth. Basidia 20-24 \times 6.0-8.0 μ m, 4-spored, clavate. Basidioles 12-23 \times 4.0-9.0 μ m, clavate, subcylindrical. Cheilocystidia in the form of broom-cells, 10-20 \times 6.0-8.0 μ m, clavate to subcylindrical, with thin or apically slightly thickened walls; thick-walled parts brown in KOH. Pleurocystidia 22-32 \times 5.0-9.0 μ m, \pm fusoid, sometimes with mucronate apex, refractive, hyaline, thin-walled. Trama hyphae \pm cylindrical, \pm thin-walled, dextrinoid, hyaline, up to 10 μ m wide. Pileipellis a hymeniderm made up of broom-cells of the Siccus-type, 10-25 \times 5.0-8.0 μ m, clavate to subcylindrical, usually slightly thick-walled at apex, with 8-25, obtuse to subacute, slightly thick-walled, nodulose, digitate to narrowly conical, up to 10 \times 1.5 μ m projections, mixed with scattered thick-walled broom-cells; walls of both types \pm brown in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5.0 μ m wide hyphae with ochraceous yellow walls in KOH. Caulocystidia numerous, 55-240 \times 10-15 μ m, subulate to lageniform, rostrate, simple, (sub)acute, slightly thick-walled (up to 1.0 μ m), hyaline to pale ochraceous. Clamp-connections present in all tissues.



Pl. 1. *Marasmius atrorubens* (BRNM 666058), photo V. Antonin.

Pl. 2. *Marasmius* cf. *bingaensis* (BRNM 686392; herb. Mossebo), photo D. C. Mossebo.

Pl. 3. *Marasmius haediniformis* (herb. Mossebo), photo D. C. Mossebo.



Pl. 4. *Marasmius grandisetulosus* (BRNM 666054), photo V. Antonín.

Pl. 5. *Marasmius luteostipitatus* (BRNM 666062), photo V. Antonín.

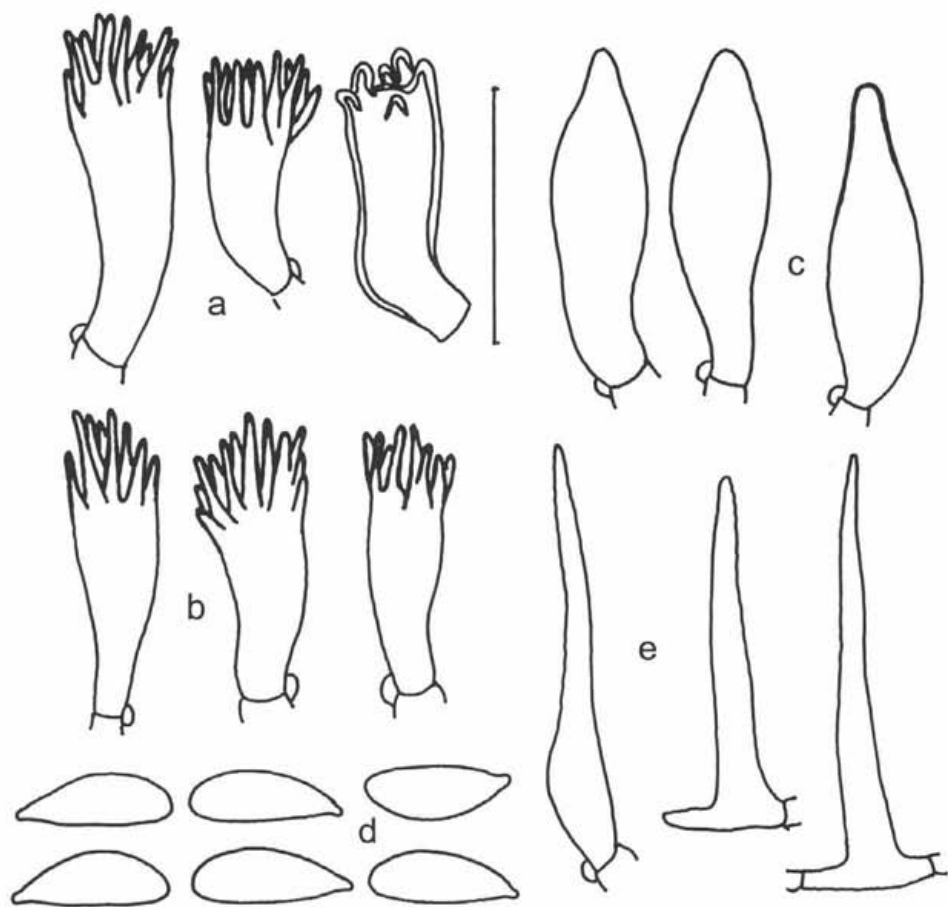


Fig. 1. *Marasmius atrorubens* (BRNM 666058). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores, e. caulocystidia. Scale bar = 50 μm for caulocystidia, 20 μm for other structures.

Ecology and locality: Yaoundé, Mt. Eloundem, single on fallen leaves and detritus, 30 March 2001 leg. V. Antonín (Cm01.09) and D. C. Mossebo (BRNM 666058).

Notes: *Marasmius atrorubens* is characterised by having an often papillate, orange-brown (when young), then darker orange-brown pileus at centre, which is paler towards margin, rather close lamellae, a reddish brown stipe with orange tinge, moderately large basidiospores, well-developed, often mucronate, short pleurocystidia and numerous, \pm slightly thick-walled caulocystidia. It belongs to sect. *Sicci* Singer, subsect. *Siccini* Singer, ser. *Atrorubentes* Desjardin et E. Horak. It seems to be widely distributed in tropical Africa (Benin, Burundi, Cameroon, Democratic Republic of Congo, Tanzania, Uganda; Antonín 2004a).

Marasmius nummularius Berk. et Broome differs by its concolorous lamellar edges, smaller basidiospores [(11-)12-15 × (3-)3.5-5 μm (Desjardin et al. 2000) or 10-12 × 3-3.5 μm (Pegler 1986)], well-developed cauloseae and the absence of pleurocystidia. Moreover, Desjardin et al. (2000) mentioned two types of cheilocystidia. *Marasmius glaucopus* (Pat.) Sacc. et D. Sacc. has a dark purplish brown pileus, dark purple lamellae and smaller basidiospores (8.3-9.3 × 3.8-5 μm) (Pegler 1983, Singer 1976).

***Marasmius cf. bingaensis* Singer, Bull. Jard. Bot. Brux. 34: 382. 1964.**

(Fig. 2, Pl. 2)

Description of collected carpophores

Pileus 5-10 mm broad when young, 15-30 mm when old, campanulate or subhemispherical, then convex to plano-convex, rarely appanate, radially sulcate except for 1-3 mm broad glabrous centre, with slightly denticulate margin, reddish orange or pale orange brownish. Lamellae distant, L = ca. 14-18, l = 0, adnexed, up to 3.5 mm broad, slightly ventricose, white, with entire, concolorous edge. Stipe 40-70 × 1-2 mm, cylindrical, fistulose, thin, white at apex, orange-brown to dark violaceous brown towards base. Context membranaceous, white. Spore print white.

Basidiospores (15-)20-25 × 3.5-6.0 μm, av. = 22.3 × 5.3 μm, E = 3.8-4.9, Q = 4.2, fusoid to (sub)lacrimoid or subclavate, thin-walled, hyaline, non-dextrinoid. Basidia 25-28 × 7.5-8.0 μm, 4-spored, clavate. Basidioles 15-28 × 4.0-8.0 μm, clavate, (sub)fusoid. Cheilocystidia 15-18 × 6.0-7.0 μm, in the form of broom-cells of the Siccus-type, clavate to subcylindrical, thin-walled, with up to 10 × 1.0 μm, digitate, nodulose, obtuse projections. Pleurocystidia numerous, 33-65 × 9.0-15 μm, fusoid, clavate-fusoid to clavate, thin-walled, with slightly refractive contents. Trama hyphae cylindrical to subinflated, ± thin-walled, branched, hyaline, dextrinoid, up to 15 μm wide. Pileipellis a hymeniderm made up of broom-cells of the Siccus-type, clavate, often irregular, thin-walled and hyaline at base, slightly thick-walled and ochraceous yellow with olivaceous tinge above, with 8-17 digitate, obtuse, irregular to regular, thick-walled, up to 10 × 2.0 μm projections with ochraceous yellow and olivaceous tinged walls; mixed with scattered, mostly larger, 13-31 × 5.0-10 μm, more distinctly thick-walled broom-cells, with a few more robust, conical obtuse projections. Stipitipellis a cutis consisting of parallel, cylindrical, slightly thick-walled, smooth, dextrinoid, up to 5.0 μm wide hyphae with ochraceous-olivaceous walls in KOH. Caulocystidia absent; scattered broom-cells present at apex. Clamp-connections present in all tissues.

Ecology and locality: Cameroon, Yaoundé, in a secondary forest at the foot of Mt. Eloundem (alt. 1600 m), fasciculate to cespitose, on dead twigs and branches, 25 Aug. 1999 leg. D. C. Mossebo M234 (BRNM 686392 and herb. Mossebo).

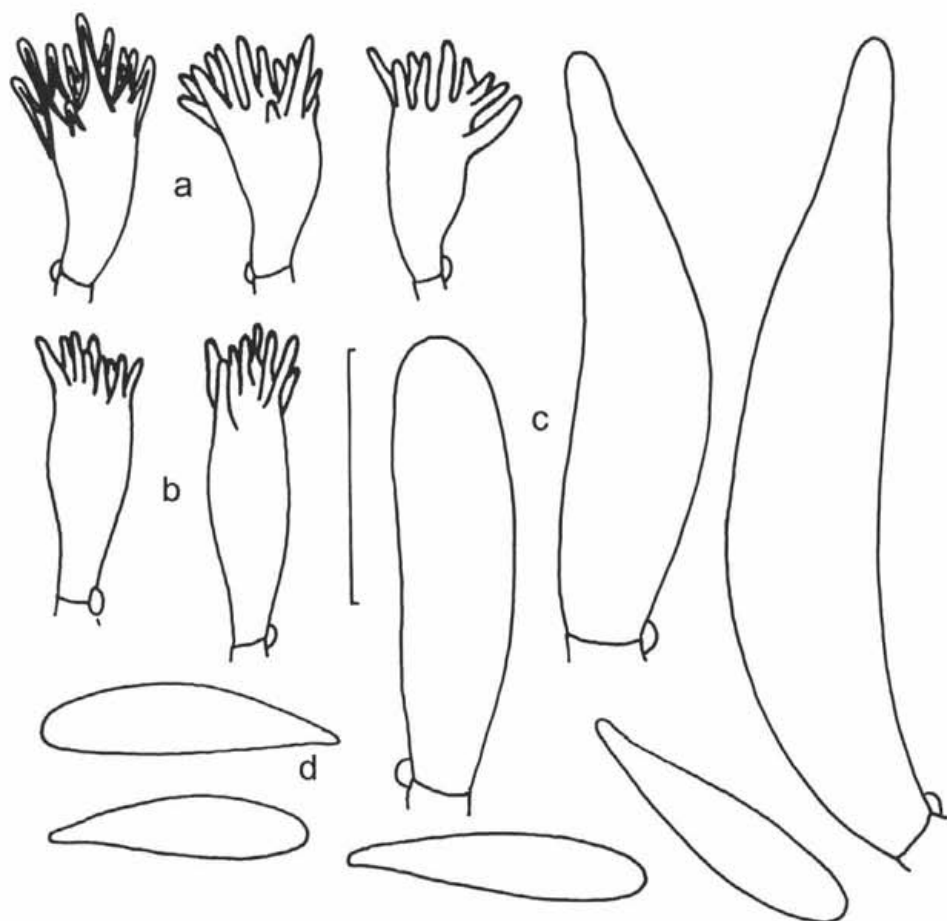


Fig. 2. *Marasmius* cf. *bingaensis* (BRNM 686392; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores. Scale bar = 20 μ m.

Notes: This species is characterised by having a rather small reddish orange or pale orange-brownish pileus, distant lamellae, an orange-brown to dark violaceous brown stipe towards base, large basidiospores, well-developed pleurocystidia and lacking caulocystidia. Having those microscopic features, it belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Haematocephali* Singer.

This fungus is similar to *M. bingaensis* Singer but the latter differs by its slightly darker pileus (\pm reddish brown (8-9D6), pinkish brown), stipe without an orange tinge (brown or chestnut brown) and smaller basidiospores (14-21 \times 3.8-5.5(-6.0) μ m). However, we do not exclude that collection M234

fits into the variability of *M. bingaensis*. Therefore, we refrain to describe it as a new taxon.

Marasmius camerunensis Antonín et Mossebo in Antonín, Mycotaxon 85: 113. 2003.

Ecology and locality: Cameroon, Littoral Prov., near the village of Poola'a, c. 5 km from Nkongsamba, on dead branches and trunks, 20 Aug. 1998 leg. D. C. Mossebo M196(1) (holotype BRNM 670732 and isotype herb. Mossebo).

Notes: A detailed description, drawings of microscopic characters and a discussion were published by Antonín (2003).

Marasmius confertus Berk. et Broome, Journ. Linn. Soc., Bot. 14: 34. 1873.

(Fig. 3)

Description of collected carpophores

Pileus 20–35 mm broad, subhemispherical, convex to plano-convex, sometimes obtusely conical with regular margin, smooth, non-striate, glabrous, reddish orange, darker at centre, sometimes covered with patches of a vanishing whitish substance. Lamellae moderately crowded, L = c. 30–40, l = 2–3, emarginate, ± horizontal, narrow (1–2 mm broad), whitish to yellowish, with concolorous entire edge. Stipe 40–55 × 1–1.5 mm, cylindrical, thin, filiform, fistulose, whitish to yellowish at apex, orange to dark orange towards base, with rich basal tomentum. Context thin to membranaceous, white. Spore print whitish.

Basidiospores (8.0-)10–13 × 4.0–5.5 μm, av. = 11.5 × 4.7 μm, E = 2.2–2.7, Q = 2.5, pip-shaped, lacrimoid, subellipsoid, thin-walled, hyaline, non-dextrinoid. Basidia 4-spored, clavate. Basidioles 15–25 × 3.0–7.5 μm, cylindrical to clavate. Cheilocystidia 11–20 × 5.0–8.0 μm, in the form of broom-cells of the Siccus-type, clavate to cylindrical, thin-walled, hyaline; projections up to 10(-14) × 1.0(-1.5) μm, digitate to subconical, nodulose, slightly thick-walled, with pale brownish walls in KOH. Pleurocystidia 35–55 × 9.0–12 μm, cylindrical, subfusoid, subclavate, often rostrate, obtuse, thin-walled, hyaline, with refractive contents. Trama hyphae cylindrical, thin-walled, subhyaline, dextrinoid, up to 12 μm wide. Pileipellis a hymeniderm consisting of two types of broom-cells of the Siccus-type: (1) 8.0–12 × 6.0–9.0 μm, clavate to cylindrical cells, thin-walled and hyaline at base, slightly thick-walled and brown at apex; projections up to 8.0(-10) × 1.0(-1.5) μm, numerous (10–40), digitate, obtuse to subacute, nodulose, with brown walls in KOH; (2-)11–21 × 8.0–11 μm, setoid, clavate to subcylindrical cells, thick-walled (up to 2.0 μm, except for their only slightly thick-walled base), with

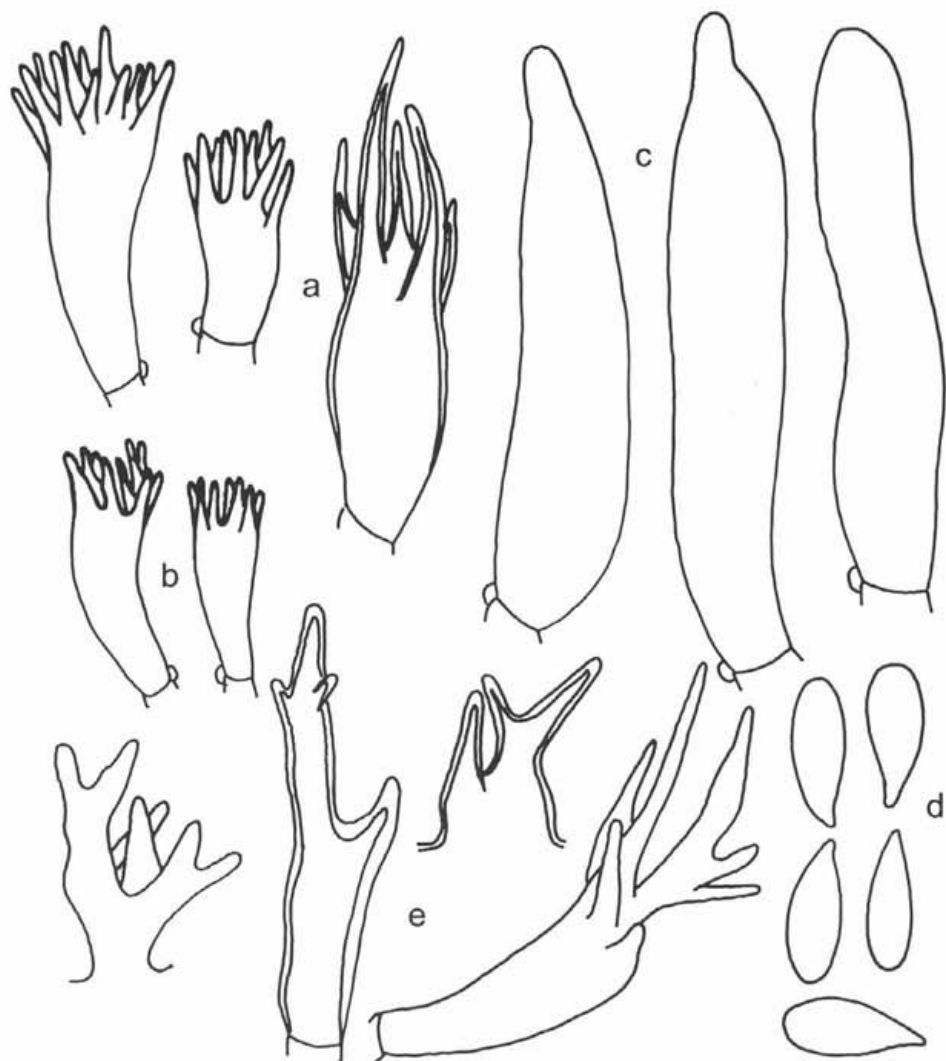


Fig. 3. *Marasmius confertus* (BRNM 686391; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores, e. caulocystidia. Scale bar = 20 μ m.

brown walls; with projections up to $45 \times 3.0 \mu$ m, \pm scattered (1-8), conical, smooth to nodulose, subacute to acute, with brown walls in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, thick-walled (up to 2μ m), dextrinoid, up to 10μ m wide hyphae with (ochraceous)olivaceous walls in KOH. Caulocystidia in the form of broom-cells of the *Siccus*-type, $11-22 \times 6.0-12 \mu$ m, cylindrical, clavate to fusoid, slightly to distinctly thick-walled ($0.5-2.0 \mu$ m), sometimes irregular,

adpressed to erect, sometimes transient to a setoid form (with one projection, then 32–48 μm long), with pale to dark brown walls in KOH; projections up to $30 \times 3.0 \mu\text{m}$, \pm conical, obtuse to subacute, rarely acute, thick-walled (0.5–2.0 μm), scattered (1–7), with pale to dark brown walls in KOH; rarely the entire cell \pm thin-walled and then only pale brownish. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, foot of Mt. Eloundem in the vicinity of the capital, alt. 1600 m, fasciculate on litter lying on soil, 25 Aug. 1999 leg. D. C. Mossebo M229 (BRNM 686391 and herb. Mossebo).

Notes: A very distinct species by its moderately large, smooth, reddish orange pileus, rather smaller basidiospores, very distinct, non-setoid pleurocystidia, two types of pileipellis cells and caulocystidia in the form of \pm thick-walled broom-cells. Having those features, it belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Haematocephali* Singer.

Compared with the literature, Antonín (2004a) mentioned more distant lamellae ($L = 16\text{--}19$) and slightly larger basidiospores ($11.5\text{--}15(-17) \times 4.0\text{--}5.0(-6.0) \mu\text{m}$).

It represents a fungus widely distributed in tropical Africa (Cameroon, Democratic Republic of Congo, Kenya, Nigeria and Uganda; Antonín 2004a).

Marasmius aff. corrugatiformis Singer, Bull. Jard. Bot. Brux. 34: 374. 1964.

(Fig. 4)

Description of collected carpophores

Pileus 5–30 mm broad, conical when young, then plano-convex, rarely appanate, with distinct, 4–6 mm broad umbo, regular at margin, reddish brown to dark brown at centre, paler, ochraceous yellow towards margin. Lamellae crowded, $L = \text{ca. } 80$, $l = 3\text{--}4$, almost free to adnexed to an adpressed small collarium, narrow (0.5–2 mm), \pm horizontal, white, with concolorous, entire edge. Stipe 30–90 \times 1.5–3 mm, cylindrical, fistulose, pruinose, whitish at apex, ochraceous to pale violaceous brown towards base, usually with a \pm tomentose basal mycelium. Context very thin to membranaceous, whitish. Spore print white to whitish.

Basidiospores 5.0–7.0 \times 2.0–3.0 μm , av. = 5.9 \times 2.6 μm , $E = 1.8\text{--}2.7$, $Q = 2.1\text{--}2.3$, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. Basidia 14–19 \times 4.5–6.0 μm , 4-spored, clavate. Basidioles 8.0–19 \times 3.0–7.0 μm , cylindrical, clavate or fusoid. Cheilocystidia in the form of broom-cells of the *Siccus*-type, 10–18 \times 5.0–8.0 μm , cylindrical to clavate, entirely thin-walled or slightly thick-walled above, hyaline, with moderately numerous (4–20), up to 8.0(-10) \times 1.0(-1.5) μm , digitate, nodulose, obtuse projections; mixed with basidioles. Pleurocystidia absent. Trama hyphae consisting of cylindrical to ellipsoid, thin-walled, hyaline, up to 20 μm wide cells, sometimes mixed with cylindrical

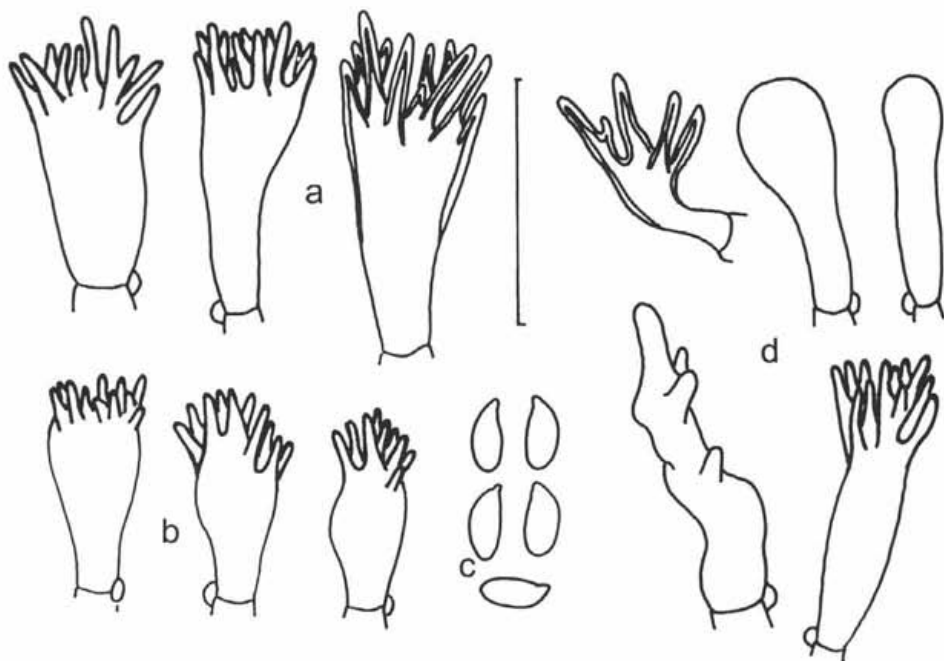


Fig. 4. *Marasmius* aff. *corrugatiformis* (herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. basidiospores, d. caulocystidia. Scale bar = 20 μ m.

or slightly inflated, slightly thick-walled, 2.0–5.0 μ m wide hyphae made up of long articles, which are more distinctly dextrinoid than other hyphae. Pileipellis a hymeniderm made up of broom-cells of the *Siccus*-type, 10–25 \times 5.5–10 μ m, (sub)cylindrical to clavate, thin-walled at base and slightly thick-walled above or entirely thick-walled, non-dextrinoid, with less numerous to numerous (4–20(–30)), up to 15 \times 2.0 μ m, digitate to subconical, \pm obtuse to subacute, \pm smooth to nodulose, thick-walled projections; thick-walled parts with distinctly ochraceous yellow walls in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5.0 μ m wide hyphae with subhyaline to yellowish walls in KOH. Caulocystidia in the form of broom-cells of the *Siccus*-type, predominantly present at apex, scattered towards base, 10–30 \times 4.0–9.0 μ m, cylindrical to clavate, either entirely thin-walled or entirely thick-walled or slightly thick-walled at apex only, non-dextrinoid, subhyaline, with up to 10 \times 1.0 μ m, thin- to slightly thick-walled, obtuse, nodulose, digitate to conical projections; mixed with less numerous, 17–26 \times 4.5–7.0 μ m, adpressed to erect, clavate to cylindrical, \pm slightly thick-walled terminal cells (present also towards base). Clamp-connections present in all tissues.

Ecology and locality: Littoral Province, Banla'a, about 10 km from Nkongsamba, on litter, 18 Aug. 1998 leg. D. C. Mossebo M192 (herb. Mossebo). – Littoral Province, Poola'a, about 5 km from Nkongsamba, fasciculate on litter in a coffee plantation, 20 Aug. 1998 leg. D. C. Mossebo M195 (herb. Mossebo).

Notes: This fungus is characterised by having a rather large, centrally reddish brown to dark brown and marginally ochraceous yellow pileus, crowded lamellae, a long, pruinose stipe which is ochraceous to pale violaceous-brown towards base, small basidiospores, short basidia and basidioles, and caulocystidia in the form of broom-cells of the *Siccus*-type and clavate to cylindrical cells. It belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Atrorubentes* Desjardin et E. Horak. It belongs to the *M. corrugatiformis/katangensis* group.

The true *Marasmius corrugatiformis* Singer has the same pileus colour and size of basidiospores but it differs by the presence of only one type of caulocystidia (lacking typical broom-cell caulocystidia). *Marasmius katangensis* Singer has a dark brown pileus with a pale brown margin and larger basidiospores ($7.0\text{--}12.5 \times 3.0\text{--}5.5 \mu\text{m}$). *Marasmius subarborescens* Singer has a paler, white, only at centre pale ochraceous pileus, inconspicuous (sometimes scattered or absent) cheilocystidia which are smooth or with 1–6 thin-walled projections and only simple, clavate, subcylindrical or fusoid caulocystidia (sometimes mixed with scattered broom-cells). *Marasmius confertus* Berk. et Broome, belonging to ser. *Haematocephali* Singer, has a \pm uniformly brown, orange or brownish orange pileus, only one type of caulocystidia (broom-cells only) and possesses pleurocystidia. Both collections of this fungus are preserved only in a conservation liquid, which involves some problems, and this is one of the reasons for refraining to describe it as a new taxon.

Marasmius cf. ferruginoides Antonín, Mycotaxon (in press).

(Fig. 5)

Marasmius cf. gardneri Singer s. Pegler, Kew Bull. Addit. Ser. 6: 194. 1977.

Description of collected carpophores

Pileus 5–17 mm broad, convex, sometimes slightly umbonate, with regular margin, smooth, glabrous, greyish brown, darker at centre. Lamellae moderately distant, $L = c. 30$, $l = 2\text{--}3$, adnate, narrow (1 mm), horizontal, whitish, with concolorous entire edge. Stipe 25–40 \times 0.9–1 mm, cylindrical, filiform, fistulose, almost concolorous with pileus. Context very thin to membranaceous, whitish.

Basidiospores 11–13 \times 3.0–4.0 μm , fusoid to clavate-fusoid, thin-walled, hyaline, non-dextrinoid. Basidia 20 \times 8.0 μm (only one found), 4-spored, clavate. Basidioles 13–26 \times 3.0–8.0 μm , clavate to cylindrical. Cheilocystidia 18–22 \times 7.0–8.5 μm , clavate, thin-walled, with less numerous, robust, conical, obtuse, thin-walled projections. Pleurocystidia 30–35 \times 8.0–10 μm , (sub)cylindrical, (sub)fusoid, subclavate, thin-walled, with slightly refractive contents. Trama hyphae cylindrical, thin-walled,

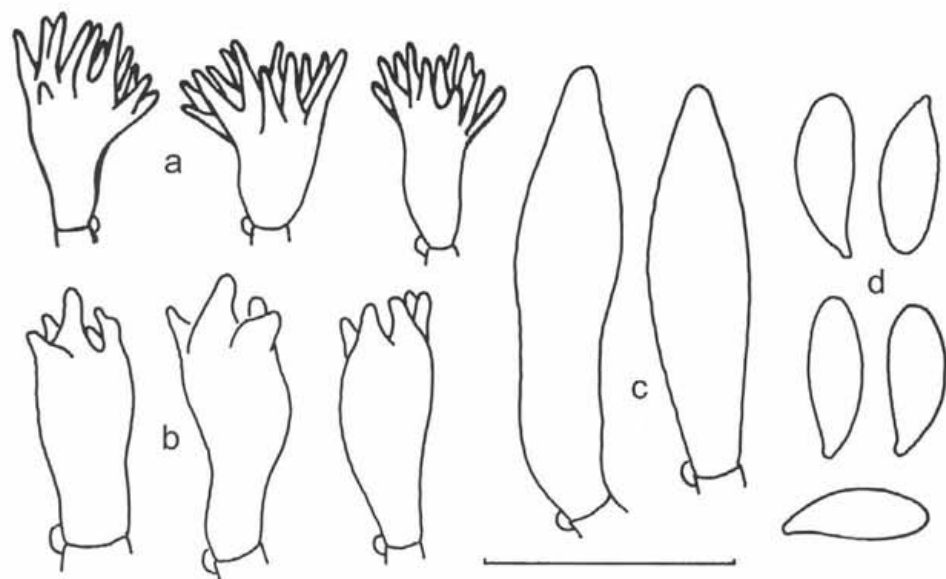


Fig. 5. *Marasmius* cf. *ferruginoides* (BRNM 686390; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores. Scale bar = 20 μ m.

subhyaline, dextrinoid, up to 20 μ m wide. Pileipellis a hymeniderm formed of broom-cells of the *Siccus*-type, 7.0–13 \times 4.0–9.0 μ m, clavate, subcylindrical, sometimes branched, thin-walled and hyaline at base, thin- to slightly thick-walled and hyaline to ochraceous yellow above; projections up to 8.0 \times 1.5 μ m, numerous [(8-)11–25(-30)], mostly conical, less frequently digitate, obtuse to subacute, slightly nodulose, slightly thick-walled, with ochraceous yellow walls in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5.0 μ m wide hyphae, with ochraceous olivaceous (yellow) walls in KOH. Caulocystidia absent. Clamp-connections present in all tissues.

Ecology and locality: about 2 km from the airport Nsimalen, about 20 km from Yaoundé, in a banana plantation, in \pm large groups on dead branches lying on soil, 14 Oct. 1997 leg. D. C. Mossebo M117 (BRNM 686390 and herb. Mossebo).

Notes: This species is characterised by having a rather small, smooth pileus, rather close lamellae, moderately large fusoid or clavate-fusoid basidiospores, well-developed but rather short pleurocystidia, and lacking caulocystidia. It belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Haematocephali* Singer.

This collection differs from descriptions in literature by more close lamellae and a differently coloured pileus; microscopic characters agree. Antonín (2004a, b) mentioned a deep yellow, yellowish orange or orange pileus, and the first author described the pileus colour as greyish brown. However, a photograph of

it shows fungi with \pm pale orange-brown pileus! Therefore it may really belong to *M. ferrugineoides*.

Marasmius grandisetulosus Singer, Bull. Jard. Bot. Brux. 34: 379. 1964.

(Fig. 6, Pl. 4)

Description of collected carpophores

Pileus 13–27 mm broad, campanulate-convex, with applanate to slightly depressed centre, crenulate at margin, sulcate-striate except for the slightly rugulose centre, finely tomentose, yellow-brown (\pm rather dark when young), then brownish yellow in striae but remaining yellow-brown at centre and on sulci. Lamellae distant, L = 16–18, l = 0–1, rather broad, shortly adnate, slightly intervenose when old, whitish, then cream-coloured, with finely pubescent, pale yellow-brown, rarely \pm concolorous edge. Stipe 25–45 \times 0.5–1 mm, cylindrical, mostly curved, slightly lustrous, smooth, glabrous, whitish at apex and brownish towards base in young carpophores, then cream at apex and through an (orange-) brown zone up to dark brown towards base; at base with whitish to pale ochraceous basal mycelium. Context membranaceous, without special smell.

Basidiospores 15–17.5 \times 3.5–4.5 μm , av. = 16.3 \times 3.9 μm , E = 3.6–5.0, Q = 4.3, clavate, clavate-fusoid, thin-walled, smooth, non-dextrinoid, hyaline. Basidia 27–29 \times 9.0–10 μm , 4-spored, clavate. Basidioles 15–29 \times 4.0–9.0 μm , clavate, fusoid or subcylindrical. Cheilocystidia in the form of broom-cells of the Siccus-type, 11–16 \times 6.0–7.0 μm , clavate or subcylindrical, thin-walled or with slightly thick-walled apex, with digitate, nodulose, slightly thick-walled projections; thick-walled parts and projections pale ochraceous in KOH. Pleurocystidia 33–60 \times 7.0–11 μm , fusoid, subcylindrical, sublageniform, often rostrate, thin-walled, with refractive contents. Trama hyphae cylindrical to subinflated, thin-walled, dextrinoid, hyaline, up to 12 μm wide. Pileipellis a hymeniderm formed of broom-cells of the Siccus-type, 14–21 \times (5.0–)8.0–11 μm , clavate to subcylindrical, thin-walled with slightly thick-walled apex, with 10–18(-21) nodulose, slightly thick-walled, subacute to obtuse, up to 10 \times 1.5 μm projections; thick-walled parts and projections with (yellow-)ochraceous walls in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5.0 μm wide hyphae with pale ochraceous walls in KOH. Caulocystidia absent except for scattered broom-cells at apex. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, Mt. Eloundem, single on dead stem, 30 March 2001 leg. V. Antonín Cm01.05 and D. C. Mossebo (BRNM 666054).

Notes: *Marasmius grandisetulosus* is characterised by having a moderately broad, campanulate-convex, yellow-brown and brownish yellow striped pileus,

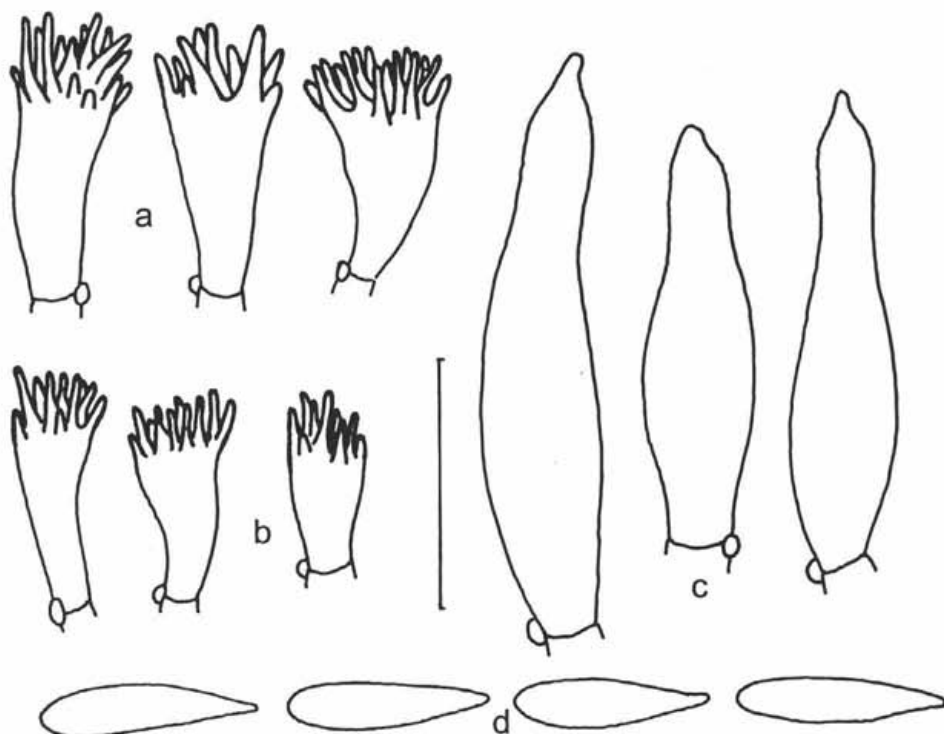


Fig. 6. *Marasmius grandisetulosus* (BRNM 666054). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores. Scale bar = 20 μ m.

distant lamellae with a mostly yellow-brown edge, a brown stipe becoming almost black when old, rather large basidiospores, well-developed pleurocystidia and lacking caulocystidia. Having those microscopic features, it belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Haematocephali* Singer. Our collection (BRNM 666054) differs only by slightly smaller basidiospores [$16.9\text{--}21.5(-23) \times 3.5\text{--}5.4 \mu\text{m}$, Antonín 2004a; compared to $18\text{--}21 \times 3.5\text{--}4.5 \mu\text{m}$, Singer 1964, respectively].

Marasmius tenuisetulosus (Singer) Singer and *M. montagneanus* Singer are very closely related species. The first species differs especially by always having concolorous lamellar edges and hyaline cheilocystidia. The second one has concolorous lamellar edges, shorter pleurocystidia ($27\text{--}43 \times 5.5\text{--}11 \mu\text{m}$), and grows on dead leaves (Singer 1976).

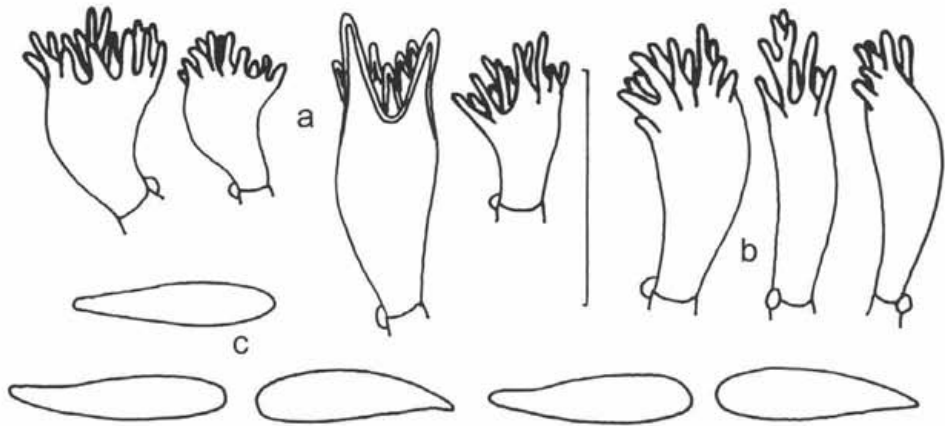


Fig. 7. *Marasmius haediniformis* (herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. basidiospores. Scale bar = 20 μm .

Marasmius haediniformis Singer, Bull. Jard. Bot. Brux. 34: 363. 1964.

(Fig. 7, Pl. 3)

Description of collected carpophores

Pileus 10–40 mm broad, conical to campanulate, then convex to plano-convex, almost appanate when old, with regular to slightly denticulate margin, entirely plicate-striate except for the glabrous, 3–5 mm broad centre, whitish to ochraceous yellow. Lamellae moderately crowded, $L = c. 23\text{--}28$, $l = 2$, \pm horizontal, 1–4 mm broad, white to off-white, with concolorous entire edge. Stipe 50–90 \times 1–1.5 mm, cylindrical, slightly broadened at base, fistulose, concolorous with lamellae at apex, orange-brown to brown towards base. Context very thin to membranaceous, concolorous with pileus. Spore print whitish to ochraceous.

Basidiospores 15–17 \times 3.5–4.5 μm , av. = 15.6 \times 3.8 μm , $E = 3.6\text{--}5.0$, $Q = 4.2$, narrowly clavate, clavate-fusoid to narrowly lacrimoid, thin-walled, hyaline, non-dextrinoid. Basidia 25 \times 7.0 μm (only one found), 4-spored, clavate. Basidioles 15–33 \times 3.0–8.0 μm , clavate, cylindrical to fusoid. Cheilocystidia in the form of broom-cells of the *Siccus*-type, 11–18 \times 5.0–9.0 μm , clavate to cylindrical, thin-walled, hyaline; projections up to 8.0 \times 1.0(–1.5) μm , digitate, obtuse, nodulose to coralloid, \pm slightly thick-walled, hyaline. Pleurocystidia absent. Trama hyphae cylindrical, thin-walled, hyaline, dextrinoid, up to 15 μm wide. Pileipellis a hymeniderm formed of broom-cells of the *Siccus*-type, 10–22 \times 5.0–12 μm , cylindrical to clavate, entirely thin-walled or slightly thick-walled at apex, with numerous (10–30), up to 8.0 \times 1.0 μm , digitate, obtuse to subacute, nodulose, slightly thick-walled projections; thick-walled parts with pale yellowish-ochraceous

walls. Stipitipellis a cutis consisting of cylindrical, parallel, thick-walled (up to $1.0\ \mu\text{m}$), dextrinoid, up to $7.0\ \mu\text{m}$ wide hyphae with yellow ochraceous (olivaceous) walls in KOH. Caulocystidia absent; scattered broom-cells of the Siccus-type present at apex. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, foot of Mt. Eloundem in the vicinity of Yaoundé, secondary forest, 1600 m alt., fasciculate to cespitose on litter and dead branches, 25 Aug. 1999 leg. D. C. Mossebo M65E (BRNM 686388 and herb. Mossebo). - ? Nsimalen (about 20 km from Yaoundé), about 2 km from the airport, in a banana plantation, fasciculate to cespitose on litter lying on soil, 14 Oct. 1997 leg. D. C. Mossebo M65C (herb. Mossebo).

Notes: This species is characterised by having a moderately large, very pale, plicate-striate pileus, a long stipe, rather large basidiospores, and lacking pleurocystidia and caulocystidia. It belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Leonini* Singer.

Collection M65C is included with a question mark. It differs by a larger, up to 50 mm broad pileus, a dark violaceous tinged stipe at base and cheilocystidia in the form of broom-cells mixed with irregular to coralloid cells; other characters agree with collection M65E.

Marasmius haediniformis probably represents a pantropical species (Singer 1976, Pegler 1997). In Africa, it has been collected in Cameroon, Democratic Republic of Congo, Ghana, Malawi, Nigeria, Sierra Leone, Uganda and Zimbabwe (Antonín 2004a).

Marasmius aff. haediniformis Singer, Bull. Jard. Bot. Brux. 34: 363. 1964.

(Fig. 8)

Description of collected carpophores

Pileus 10–20 mm broad, hemispherical to convex, then plano-convex, membranaceous, slightly radially striate, whitish when young, then beige to yellowish, becoming ochraceous when dry. Lamellae moderately distant, $L = \text{ca. } 13\text{--}18$, $l = 2\text{--}3$, adnate, straight, narrow (less than 1 mm broad), white to cream, with entire concolorous edge. Stipe 50–80 \times 1–1.5 mm, cylindrical, fistulose, smooth, glabrous, beige to yellowish at apex, orange-brown or violaceous red towards base. Context membranaceous, whitish.

Basidiospores 15–21 \times 3.0–4.0 μm , av. = 18.2 \times 3.7 μm , $E = 4.3\text{--}6.7$, $Q = 4.9$, narrowly clavate, sometimes clavate-cylindrical or subfusoid, thin-walled, hyaline, non-dextrinoid. Basidia 28–33 \times 7.0–8.5 μm , 4-spored, clavate. Basidioles 20–35 \times 3.0–8.0 μm , clavate, cylindrical, subfusoid. Cheilocystidia 16–20 \times 6.0–9.0 μm , in the form of broom-cells of the Siccus-type, clavate to sub-cylindrical, thin-walled; projections up to 5.0 \times 1.0 μm , digitate, nodulose,

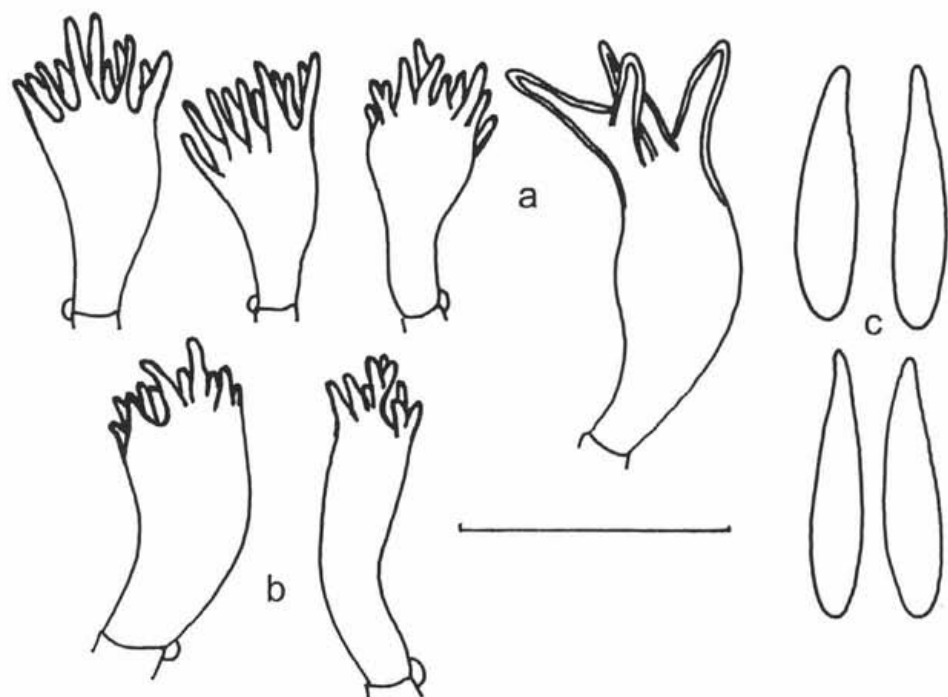


Fig. 8. *Marasmius* aff. *haediniiformis* (BRNM 686389; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. basidiospores. Scale bar = 20 μm .

obtuse. Pleurocystidia absent. Trama hyphae \pm cylindrical, thin-walled, branched, dextrinoid, up to 15 μm wide. Pileipellis a hymeniderm formed of broom-cells of the *Siccus*-type, 11–22 \times 7.0–12 μm , clavate, thin-walled at base, slightly thick-walled at apex, rarely entirely slightly thick-walled, with 2–10 \times 0.75–1.5 μm , \pm numerous (10–20), digitate, nodulose, slightly thick-walled, obtuse to subacute projections; thick-walled parts of all cells yellowish in KOH. Stipitipellis a cutis consisting of parallel, cylindrical, slightly thick-walled, smooth, dextrinoid, up to 4.0 μm wide hyphae, with ochraceous and olivaceous tinged walls in KOH. Caulocystidia absent. Clamp-connections present in all tissues.

Ecology and locality: Nsimalen (20 km from Yaoundé), about 2 km from the airport, in a banana plantation, in small groups on dead trunks and stumps, 14 Oct. 1997 leg. D. C. Mossebo M116 (BRNM 686389 and herb. Mossebo).

Notes: This collection is published separately from the typical *M. haediniiformis*. It differs especially by its orange-brown to violaceous red stipe at base, distinctly longer basidiospores and longer basidia and basidioles. It may represent either a new taxon (variety) or fall within a wider variability of *M. haediniiformis*.

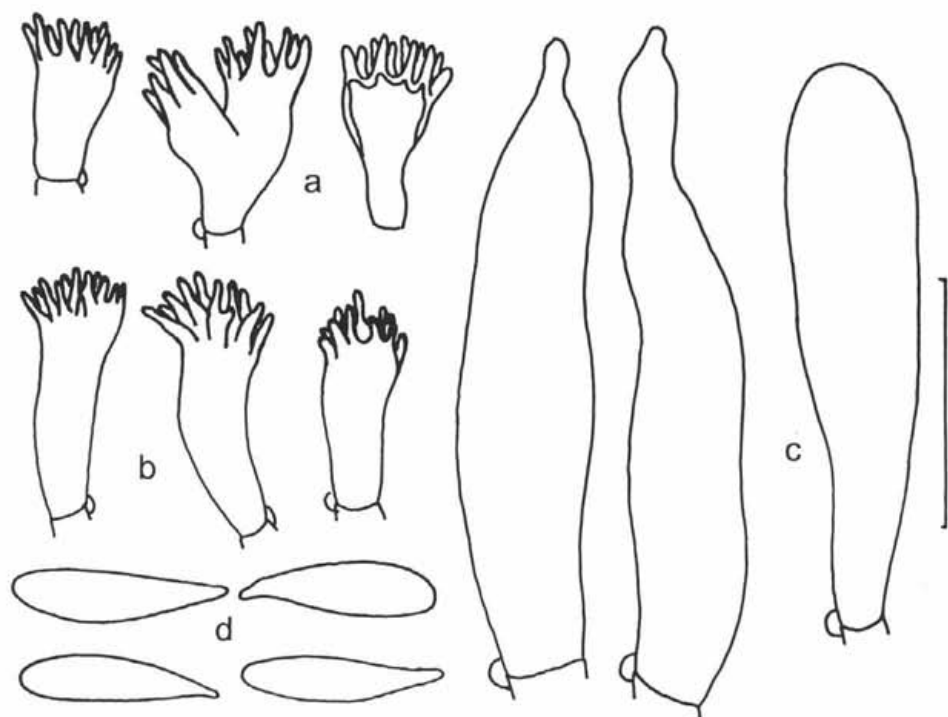


Fig. 9. *Marasmius haematocephalus* (BRNM 686387; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. pleurocystidia, d. basidiospores. Scale bar = 20 μ m.

Marasmius haematocephalus (Mont.) Fr., *Epicr. Syst. Mycol.*: 382. 1838.

(Fig. 9)

Agaricus haematocephalus Mont., *Ann. Sci. Nat. sér. 2*, 8: 369. 1837; *Androsaceus haematocephalus* (Mont.) Pat., *J. Bot.* 3: 336. 1889.

Description of collected carpophores

Pileus 2-5 mm broad when young, 7-12 mm when old, campanulate or obtusely conical, depressed at centre, with denticulate margin, sulcate-striate, dark violaceous. Lamellae distant, L = ca. 13-15, l = 0(-1), adnate, narrow (1-2 mm), horizontal to slightly ventricose, white-violaceous, with concolorous entire edge. Stipe 30-40 \times 0.5-0.6 mm, very thin, filiform, fistulose, \pm dark violaceous, with distinct whitish basal tomentum. Context membranaceous, whitish. Spore print whitish to ochraceous.

Basidiospores (14-)15-18.5 \times 3.5-5.0 μ m, av. = 15.7 \times 4.1 μ m, E = 3.0-4.3, Q = 3.8, narrowly fusoid, lacrimoid, narrowly clavate, thin-walled, hyaline, non-dextrinoid. Basidia 24 \times 6.5 μ m, 4-spored, clavate. Basidioles 13-28 \times

$\times 3.0\text{--}8.0\ \mu\text{m}$, clavate, subfusoid. Cheilocystidia in the form of broom-cells of the Siccus-type, $11\text{--}20 \times 4.5\text{--}7.0\ \mu\text{m}$, clavate to cylindrical, thin-walled; projections up to $6.0 \times 1.0\text{--}1.5\ \mu\text{m}$, \pm digitate, slightly thick-walled, obtuse to subacute, nodulose. Pleurocystidia $37\text{--}65 \times 9.0\text{--}14\ \mu\text{m}$, numerous, fusoid, clavate, rostrate, thin-walled, with refractive contents, hyaline. Pileipellis a hymeniderm formed of broom-cells of the Siccus-type, $(8.0\text{--})11\text{--}18 \times 5.0\text{--}10\ \mu\text{m}$, cylindrical to clavate, thin- to slightly thick-walled at base, slightly to distinctly thick-walled above, non-dextrinoid, with thick-walled parts grey-brown to brown-black in KOH; projections up to $6.0 \times 1.0\text{--}1.5\ \mu\text{m}$, digitate to narrowly conical, obtuse to subacute, mostly distinctly nodulose, moderately numerous (8-16(-20)), slightly to distinctly thick-walled, with walls grey-brown to brown-black in KOH (the coloration of pileipellis cells and projections is very distinct and dark). Stipitipellis a cutis consisting of cylindrical, parallel, thick-walled, dextrinoid, up to $5\ \mu\text{m}$ wide hyphae with scattered short lateral projections towards apex and olivaceous walls in KOH. Caulocystidia absent. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, Campus of the University of Yaoundé, mostly in \pm large groups, on dead fallen leaves and dead twigs, 8 June 2000 leg. D. C. Mossebo M272 (BRNM 686387 and herb. Mossebo).

Notes: *Marasmius haematocephalus* is characterised by having a small, \pm dark violaceous pileus, distant, violaceous lamellae, rather large basidiospores, distinct pleurocystidia, and by the absence of caulocystidia. It belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Haematocephali* Singer.

Marasmius haematocephalus represents a rather common pantropical and subtropical species known from the U. S. A. (e.g. Desjardin and Horak 1997), Central and South America (Courtecuisse 1996, Dennis 1951, Desjardin and Horak 1997, Patouillard 1889, Pegler 1977, 1988, Pegler and Calonge 1997, Singer 1976), Asia (Desjardin and al. 2000, Pegler 1977, Petch 1948, Wen Hua-An and Sun Shu-Xiao 1999), and New Zealand and Papua New Guinea (Desjardin and Horak 1997). In tropical Africa, it has been found in Cameroon, Democratic Republic of Congo, Gabon, Ghana, Ivory Coast, Kenya, Nigeria, Republic of the Congo, Sierra Leone, Tanzania, Uganda and Zimbabwe (Hennings 1897, Nicholson 1989, Pegler 1977, Patouillard 1928).

Marasmius aff. katangensis Singer, Bull. Jard. Bot. Brux. 34: 375. 1964.

(Fig. 10)

Description of collected carpophores

Pileus 3-30 mm broad, subhemispherical to campanulate and slightly umbonate when young, then obtusely conical to plano-convex or appanate, regular at margin, slightly striate, grey-orange to dark orange, darker at centre. Lamellae

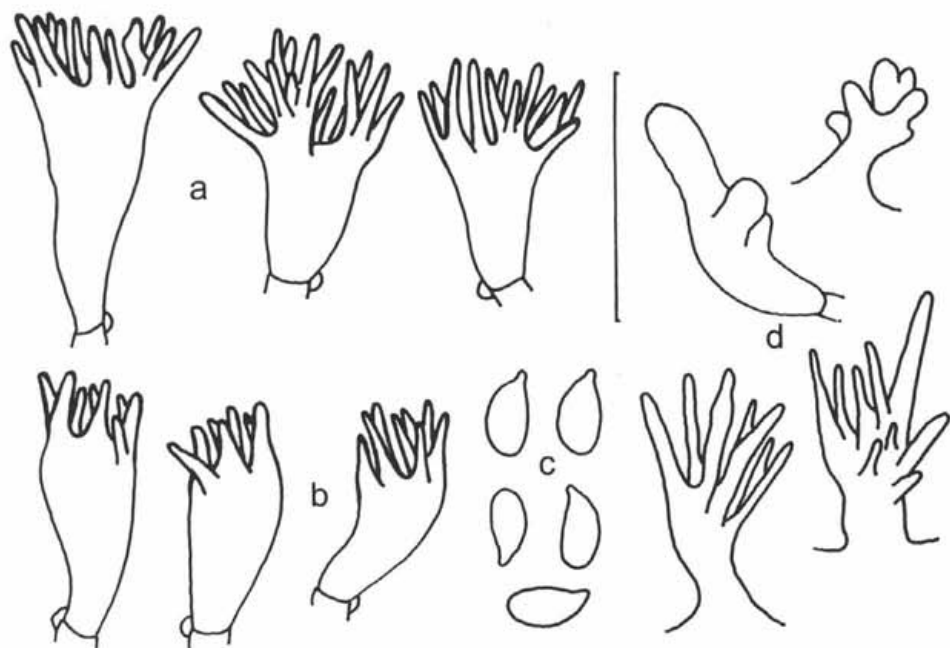


Fig. 10. *Marasmius* aff. *katangensis* (BRNM 686393; herb. Mossebo). a. pileipellis cells, b. cheilocystidia, c. basidiospores, d. caulocystidia. Scale bar = 20 μ m.

rather crowded, $L = c. 22-30$, $l = 3$, narrow, 1-2 mm broad, horizontal to slightly ventricose, ochraceous to yellowish, with entire, concolorous edge. Stipe 30-55 \times 1-1.5 mm, cylindrical, slightly broadened at base, fistulose, thin, whitish in the upper part, through brown-orange up to dark brown towards base and turning yellowish at the basal point. Context very thin to membranaceous (up to 1 mm above stipe insertion with pileus), whitish. Spore print whitish.

Basidiospores 6.2-7.5 \times 2.7-3.5 μ m, av. = 6.9 \times 3.1 μ m, $E = 1.9-2.5$, $Q = 2.3$, pip-shaped, ellipsoid-lacrimoid, thin-walled, hyaline, non-dextrinoid, mostly in tetrads in preparatum. Basidia 17-21 \times 5.5-7.0 μ m, 4-spored, clavate. Basidioles 13-32 \times 2.5-7.0 μ m, cylindrical, clavate, subfusoid. Cheilocystidia 11-15 \times 5.0-8.0 μ m, in the form of broom-cells of the *Siccus*-type, clavate, thin-walled, at apex sometimes slightly thick-walled, (sub)hyaline; projections up to 10 \times 1.5 μ m, digitate, \pm obtuse, slightly thick-walled, slightly nodulose. Pleurocystidia absent. Trama hyphae cylindrical, thin-walled, hyaline to pale yellowish in KOH, dextrinoid, up to 10 μ m wide. Pileipellis a hymeniderm formed of broom-cells of the *Siccus*-type, clavate to subcylindrical, thin-walled at base, thin- to slightly thick-walled above, with 8-18 digitate, obtuse to subacute, slightly nodulose, mostly slightly thick-walled, 4.0-10 \times up to 1.0(-1.5) μ m,

subhyaline to pale yellowish-greyish projections. Stipitipellis a cutis consisting of parallel, cylindrical, slightly thick-walled, smooth, up to $5.0 \mu\text{m}$ wide hyphae, non-dextrinoid and yellowish in KOH. Caulocystidia in the form of broom-cells of the Siccus-type similar to those in the pileipellis, $5.0\text{--}20 \times 3.0\text{--}6.0 \mu\text{m}$, entirely slightly thick-walled, with up to $15 \times 2.0 \mu\text{m}$, digitate projections, mixed with \pm clavate, simple to coralloid cells. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, Campus of the University of Yaoundé, in groups, on fallen twigs and leaves on soil, 17 May 1999 leg. D. C. Mossebo M264 (BRNM 686393 and herb. Mossebo).

Notes: This fungus is characterised by having a grey-orange to dark orange pileus, rather crowded lamellae, a brown-orange to dark brown stipe towards base, small basidiospores, short basidia, two types of caulocystidia and lacking pleurocystidia. It belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Atrorubentes* Desjardin et E. Horak.

The most closely related species is *Marasmius katangensis* Singer with a similar type of caulocystidia. However, it has a dark brown pileus with pale brown margin and larger basidiospores ($7.0\text{--}12.5 \times 3.0\text{--}5.5 \mu\text{m}$); *M. corrugatiformis* Singer differs especially by a brownish orange, ochraceous orange or bright orange pileus only at centre, its paler, yellow-orange or almost white margin, and by possessing only one type of caulocystidia (lacking typical broom-cell caulocystidia). *Marasmius confertus* Berk. et Broome has only broom-cell caulocystidia and possesses pleurocystidia (it belongs to ser. *Haematocephali* Singer).

***Marasmius luteostipitatus* Mossebo et Antonín sp. nov.** (Fig. 11, Pl. 5)

Pileo 15–30 mm lato, late convexo, centro appanato, sulcato-striato, luteolo-albido, centro pallide ochraceo. Lamellis distantibus, $L = 16\text{--}17$, intervenosis, luteolo-albidis. Stipite $30\text{--}60 \times 1\text{--}2$ mm, cylindraco, glabro, apicem luteolo vel luteo, ad basim obscure brunneo vel nigro-brunneo. Basidiosporis $16\text{--}18(-20) \times 4.0\text{--}5.0 \mu\text{m}$, clavatis vel anguste lacrimoideis, hyalinis, inamyloideis. Basidiis tetrasporis. Cheilocystidiis e cellulis similibus cellulis typo Marasmii sicci, $16\text{--}20 \times 5.0\text{--}6.5 \mu\text{m}$, clavatis vel subfusiformibus, tenuitunicatis. Pileipellis hymeniformis, e cellulis similibus cellulis hymenodermatis Marasmii sicci, $12\text{--}20 \times 6.0\text{--}12 \mu\text{m}$, clavatis vel subcylindracois, tenuitunicatis vel crassitunicatis. Caulocystidiis absentibus. Hyphis fibulatis, in stipite et medulla dextrinoideis. Ad detritum.

HOLOTYPUS: Cameroon, Provincia Central, Nsimalen, 3. IV. 2001 leg. V. Antonín Cm01.13 et D. C. Mossebo (holotypus in herbario BRNM 666062 asservatur).

Description of collected carpophores

Pileus 15–30 mm broad, broadly convex, then \pm appanate at centre, without a distinct central umbo, entirely striate-plicate, somewhat undulate at mar-

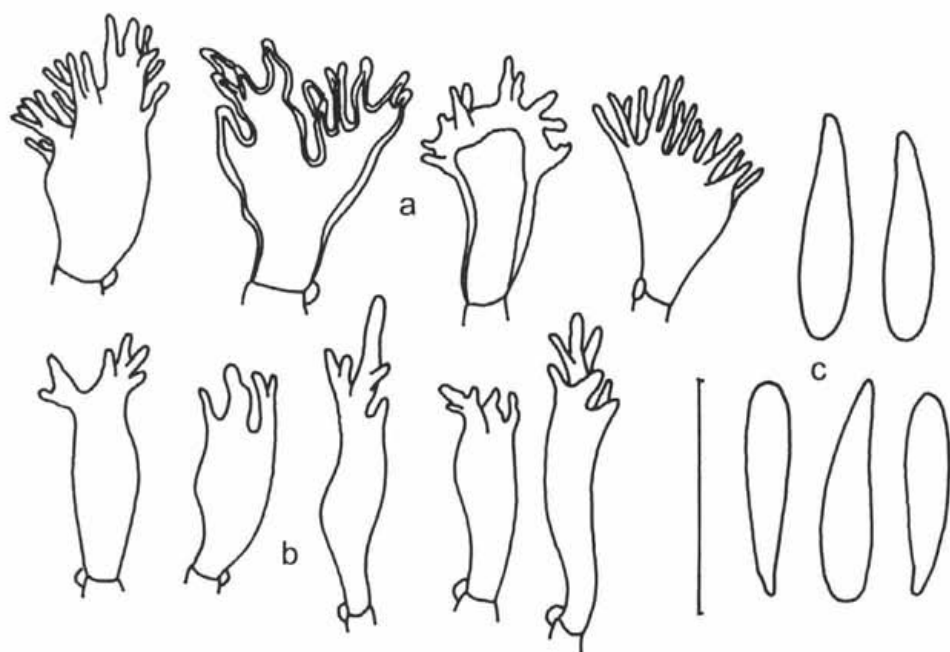


Fig. 11. *Marasmius luteostipitatus* (BRNM 666062). a. pileipellis cells, b. cheilocystidia, c. basidiospores. Scale bar = 20 μm .

gin, which is slightly reflexed when old, minutely tomentose, cream, more ochraceous-yellowish at centre, whitish cream at margin. Lamellae distant, $L = 16-17$, $l = 2(-3)$, broadly adnate to a pseudocollarium, irregularly intervenose, moderately broad (up to 2-3 mm), cream, with concolorous pubescent edge. Stipe 30-60 \times 1-2 mm, cylindrical, slightly broadened at apex, sometimes slightly broadened at base, curved, hollow, lustrous, smooth, glabrous, distinctly yellow at apex, dark brown towards base when young, then yellowish at apex, through a pale brown zone up to black-brown towards base.

Basidiospores 16-18(-20) \times 4.0-5.0 μm , av. = 17.9 \times 4.6 μm , $E = 3.3-4.6$, $Q = 3.9$, clavate, narrowly lacrimoid, thin-walled, non-dextrinoid, hyaline. Basidia 4-spored, clavate. Basidioles 13-47 \times 3.0-9.0 μm , cylindrical, clavate. Cheilocystidia in the form of broom-cells of the Siccus-type transient to coralloid cells, 16-20 \times 5.0-6.5 μm , (narrowly) clavate to subfusoid, thin-walled, with infrequent, nodulose, obtuse, \pm thin-walled, up to 10 \times 2.0 μm projections. Pleurocystidia absent. Trama hyphae cylindrical to subinflated, \pm thin-walled, hyaline (pale yellowish in subpileipellis), dextrinoid, up to 15 μm wide. Pileipellis a hymeniderm made up of broom-cells of the Siccus-type, 12-20 \times 6.0-12 μm , clavate or subcylindrical, often branched, thin- to distinctly thick-walled, with

10-35 nodulose, obtuse to subacute, thin- to thick-walled, up to $15.0 \times 2.0 \mu\text{m}$ projections; thick-walled parts yellow in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to $5.0 \mu\text{m}$ wide hyphae with yellowish (apex) or pale olivaceous (base) walls in KOH. Caulocystidia absent; scattered broom-cells present at apex. Clamp-connections present in all tissues.

Ecology and locality: Nsimalen, c. 20 km S of Yaoundé, single on detritus, 3 Apr. 2001 leg. V. Antonín Cm01.13 and D. C. Mossebo (holotype, BRNM 666062).

Notes: *Marasmius luteostipitatus* is characterised by having a pale coloured pileus, ochraceous-yellowish at centre, and whitish cream at margin, distant, irregularly intervenose lamellae, a distinctly yellow stipe at apex, moderately large basidiospores, cheilocystidia in the form of broom-cells with transient forms to coralloid cells and often branched or irregular pileipellis broom-cells; pleuro- and caulocystidia are lacking. Having those microscopic features, it belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Leonini* Singer.

Except for the presence of the yellow colour, it is very close to *M. haediniformis* Singer, with slightly smaller basidiospores ($12.0-16.5 \times (3.0-3.5-5.0 \mu\text{m})$), smaller cheilocystidia ($13-16(-20) \times 5.4-10 \mu\text{m}$) and very short projections of the pileipellis broom-cells ($1.0-5.0 \times 1.0 \mu\text{m}$). The apically yellow stipe represents a very distinct character in ser. *Leonini*. Only *Marasmius berteroi* var. *major* Singer, described from Argentina, has a similar stipe colour. However, it differs in having a larger, 10-56 mm broad, orange-fulvous, orange, orange-red or ferruginous pileus, a reddish brown to chestnut brown stipe at base, smaller ($(8-9-15.3 \times 2.7-4 \mu\text{m})$ basidiospores and $20-30 \times 5.5-7 \mu\text{m}$ basidia (Singer 1976).

Marasmius cf. *sierraleonis* Beeli, Bull. Jard. Bot. État Brux. 15: 36. 1938.

(Fig. 12)

Description of collected carpophores

Pileus ± 5 mm broad, convex, slightly depressed at centre, sulcate-striate, finely tomentose, rusty (cinnamomeous) brown. Lamellae moderately distant, $L = 15$, $l = 0(-1)$, free, cream, with finely pubescent, cinnamomeous-brown edge. Stipe $35 \times \pm 0.5$ mm, filiform, cylindrical, glabrous, smooth, lustrous, brownish at apex, through brown up to black brown towards base.

Basidiospores $(14-)15-16.5 \times 3.5-4.5 \mu\text{m}$, av. = $15.5 \times 3.9 \mu\text{m}$, $E = 3.4-4.5$, $Q = 4.0$, fusoid, lacrimoid, clavate, thin-walled, non-dextrinoid, hyaline. Basidia $26-27 \times 8.0-9.5 \mu\text{m}$, 4-spored, clavate. Basidioles $15-28 \times 5.0-9.0 \mu\text{m}$, clavate, cylindrical or fusoid. Cheilocystidia in the form of broom-cells of the *Siccus*-type, $10-17 \times 6.0-10 \mu\text{m}$, clavate or subcylindrical, \pm thin-walled with slightly thick-walled apex, with nodulose, slightly thick-walled, \pm obtuse projections; thick-walled parts yellow-ochraceous in KOH. Pleurocystidia absent.

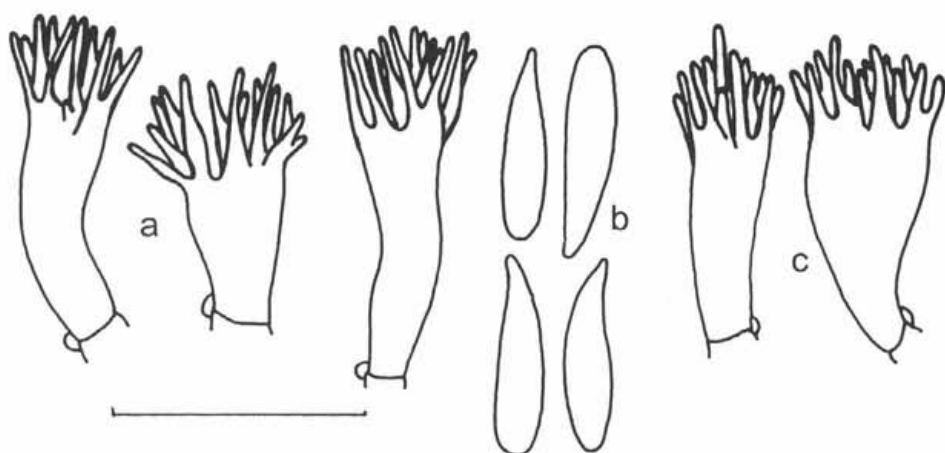


Fig. 12. *Marasmius* cf. *sierraleonis* (BRNM 666053). a. pileipellis cells, b. basidiospores, c. cheilocystidia. Scale bar = 20 μ m.

Trama hyphae cylindrical to subinflated, thin-walled, dextrinoid, hyaline, up to 15 μ m wide. Pileipellis a hymeniderm formed of broom-cells of the *Siccus*-type, 12–25 \times 5.0–10 μ m, clavate to (sub)cylindrical, thin-walled at base and slightly thick-walled at apex, with 9–20 slightly thick-walled, obtuse to subacute, nodulose, up to 15 \times 1.5(–2.0) μ m projections; thick-walled parts with ochraceous or yellow-brown walls in KOH. Stipitipellis a cutis consisting of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5.0 μ m wide hyphae with ochraceous walls in KOH. Caulocystidia absent, except for scattered broom-cells at apex. Clamp-connections present in all tissues.

Ecology and locality: Yaoundé, Mt. Eloundem, single on detritus, 30 March 2001 leg. V. Antonín Cm01.04 and D. C. Mossebo (BRNM 666053).

Notes: *Marasmius sierraleonis* is characterised by having a dull yellowish to rusty (purplish) brown pileus, white to cream lamellae with hyaline then darkening edge, without (or with only one) lamellulae, a thin, black stipe, large, fusoid, sublacrimoid or narrowly clavate basidiospores and by lacking pleuro- and caulocystidia. Having those microscopic features, it belongs to sect. *Sicci*, subsect. *Siccini* Singer, ser. *Leonini* Singer. The collection published here differs by a smaller pileus and a slightly smaller stipe (pileus 7–25 mm broad and stipe 25–70 \times 0.5–1 mm in typical forms) and smaller basidiospores (16–23(–25) \times 3.5–6.0 μ m in typical forms).

So far, *Marasmius sierraleonis* has been collected in Cameroon, the Democratic Republic of Congo, Kenya, Nigeria, Sierra Leone, Tanzania and Zimbabwe (Antonín 2004a).

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