

**A new species of *Marasmius*
(Basidiomycota, *Marasmiaceae*)
and the first record of *M. foliophilus* from Brazil**

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Resumen – De nouvelles espèces de *Marasmius*, *Marasmius rotaliscystidiatus* et de *M. foliophilus*, une espèce africaine qui a été collectée par la première fois à la Mata Atlântica à São Paulo, Brésil, sont décrites et discutées. De nouvelles espèces qui appartiennent à la section *Marasmius*, soussection *Marasmius* et *M. foliophilus* pour la section *Epiphylli*, soussection *Eufoliatini*.

Agaricales / biodiversité / Forêt Atlantique brésilienne / taxonomie

Abstract – A new species of *Marasmius*, *Marasmius rotaliscystidiatus* and *M. foliophilus*, an African species collected for the first time in Atlantic Forest at São Paulo City, SP, Brazil are described illustrated and discussed. The new species belongs to section *Marasmius* subsection *Marasmius* and *M. foliophilus* to the section *Epiphylli*, subsection *Eufoliatini*.

Agaricales / biodiversity / Brazilian Atlantic forest / taxonomy

INTRODUCTION

In the course of making collections of *Marasmius* for its revision in the Parque Estadual das Fontes do Ipiranga (PEFI), São Paulo, SP, Brazil, a new species was collected. This species is classified in section *Marasmius*, subsection *Marasmius* for having a small and umbilicate pileus, collariate lamellae and pileus surface composed of *Rotalis*-type broom cells. The main characteristic of this new species is the similarity of pleurocystidia and cheilocystidia both of the *Rotalis*-type.

The subsection *Marasmius* is poorly known in São Paulo State. *Marasmius vigintifolius* Singer, that was described from Bolivia and mentioned by Pegler (1997) is the only citation.

Antonín (2003) described *Marasmius foliophilus* based on material collected in Cameroon, Africa and also mention its occurrence for the Democratic Republic of Congo. This species is recorded for the first time for Brazil and outside of Africa.

MATERIAL AND METHODS

The macroscopical descriptions are based on fresh material collected at the Parque Estadual das Fontes do Ipiranga (PEFI). The microscopic analyses were made from dried material rehydrated in 70% ethanol followed by 5% KOH and Melzer's reagent. The Qm represents the mean length/width quotient of the total spores measured. The specimens were deposited in the Herbário do Estado "Maria Eneyda P. Kauffmann Fidalgo" (SP).

RESULTS

Marasmius rotaliscystidiatus C. Puccin. & Capelari, sp. nov. (Fig. 1)

Etymology: By the presence of pleurocystidia with similar form to the *Rotalis*-type broom cells.

Pileo 1-5 mm lato, hemispherico vel convexo, umbilicato, margine crenulato, sulcato, spadiceo vel brunneo, zona crenea circum maculam atram centralem. *Lamellis* collariatis, distantibus, creneis. *Stipite* 15-45 mm longi, filiforme, glabro, insitio, nigrobrunneo ápice concolore lamellis, rhizomorphis nullis. *Basidiosporis* 7.5-12.5 × 2.75-5.25 µm, oblongibus-fusiformibus, hyalinis, inamyloideis. *Basidiis* tetrasporis. *Pleurocystidiis* 24-27.5 µm, clavatis, simillis cellulis typi *Marasmii rotalis*, hyalinis, tenuitunicatis. *Cheilocystidiis* cum cellulis typi *Marasmii rotalis*, 21.25-26.5 × 8.75-11.25 µm, clavatis vel pyriformibus, hyalinis, tenuitunicatis. *Pileipellis* hymeniformis, cum cellulis typi *Marasmii rotalis*, 15-21.25 × 10-15 µm, pyriformibus. *Caulocystidiis* absentibus. *Hyphis* fibulatis. *Crescit in foliis sicca*.

Holotypus (hic designatus): Brazil, São Paulo State, São Paulo City, Parque Estadual das Fontes do Ipiranga (23°39'S 46°37'W), 27 September 2005, C. Puccinelli & U.C. Peixoto CP163 (SP).

Pileus 1-5 mm diam., hemispherical to convex, deeply umbilicate with central dot and a cream zone around the dot which is dark brown to brown, margin crenate, surface glabrous, sulcate, light brown to brown. Context thin, cream. Lamellae adnate to a collarium, distant to subdistant (about 12 lamellae), without lamellulae, cream to brownish cream, with cream edge. Stipe 15-45 mm in length, central, filiform, glabrous, insititious, dark brown to chestnut becoming concolorous with lamellae at apex, without black rhizomorphs.

Basidiospores 7.5-12.5 × 2.75-5.25 µm (Qm = 2.20, n = 47 spores), oblong-fusoid, smooth, hyaline, inamyloid, thin-walled. *Basidia* clavate, 4-spored. *Basidioles* clavate to fusoid. *Pleurocystidia* 24-27.5 × 6-8.75 µm, clavate with projections similar to the cheilocystidia, hyaline, thin-walled, some of them indistinctly thick-walled. *Cheilocystidia* similar to broom cells of the *Rotalis*-type, main body 21.25-26.5 × 8.75-11.25 µm, clavate to pyriform, hyaline, thin to thick-walled with short rounded setulae more abundant in apical portion. *Pileipellis* hymeniform composed of the *Rotalis*-type broom cells, main body 15-21.25 × 10-15 µm, globose to subglobose, yellowish brown to brownish, thin to thick-walled, setulae 2.25-3.5 µm, rounded, wart-like, and more abundant in apical portion. *Caulocystidia* absent. *Lamellar trama* interwoven, hyphae 3.5-6.25 µm diam., slightly dextrinoid, thin-walled, hyaline, septated, clamp connections present.

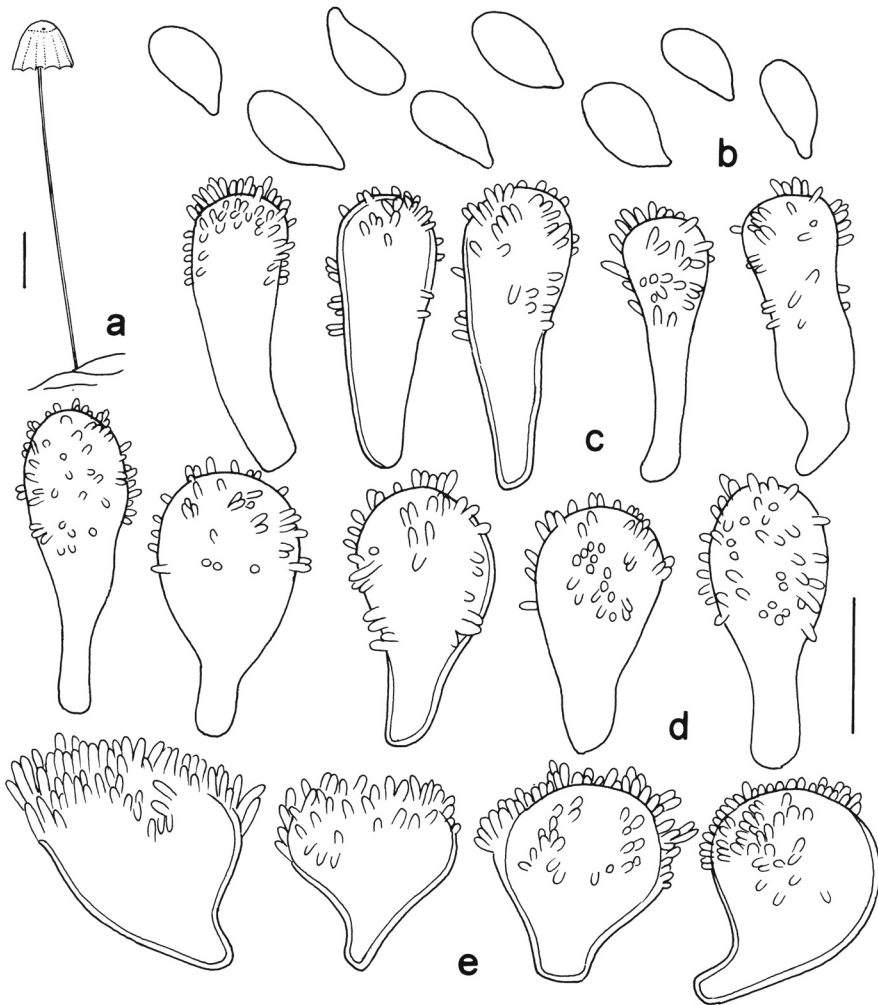


Fig. 1. *Marasmius rotaliscystidiatus* (from holotype). A. Basidioma. B. Basidiospores. C. Pleurocystidia. D. Cheilocystidia. E. Pileipellis. Bars: A = 1 cm; B, C, D, E = 10 μ m.

Habitat: Scattered on dry leaves in the litter.

Known distribution: São Paulo, Brazil.

Material examined: Brazil, SP, São Paulo. Parque Estadual das Fontes do Ipiranga (23°39'S 46°37'W), 15 September 2005, C. Puccinelli & U.C. Peixoto CP158 (SP); 27 September 2005, C. Puccinelli & U.C. Peixoto CP163 (SP; holotype).

Notes: *Marasmius rotaliscystidiatus* is characterized by the deeply umbilicate, light brown to brown pileus with a central dark dot and a cream zone

around it, collariate, cream to brownish cream lamellae with concolorous edges, a dark brown to chestnut brown stipe, becoming concolorous with lamellae at apex, without rizomorphs. But the main and until now unique characteristic in section *Marasmius* is the presence of pleurocystidia with projections similar to the *Rotalis*-type broom cells of the pileipellis scarcely distributed on the entire lamella sides. Comparing with the original descriptions, *M. rotaliscystidiatus* is macroscopically similar to the following species: *M. apatelius* Singer from Congo, *M. baeocephalus* Singer from Ecuador, *M. tereticeps* Singer from Bolivia, *M. tubulatus* Petch from Sri Lanka and *M. vigintifolius* Singer from Bolivia.

Marasmius apatelius (Singer 1964) differs from *M. rotaliscystidiatus* by the absence of a cream zone around the umbilicus, presence of rhizomorphs and shorter spores measuring 6.8-10 μm . *M. baeocephalus*, according to Singer (1964), is easily recognized in section *Marasmius* by the very small pileus up to 1 mm diam. and the white zone around the central dot. Besides the pileus dimension, this species differs from *M. rotaliscystidiatus*, by the presence of brown lamellar and collarium edge and short basidiospores (6-8 μm). *M. tereticeps* can be distinguished by the pileus colour that is close to rust.

Petch (1948) gave only a macroscopical description of the basidioma and spores dimension when described *M. tubulatus*. Considering these data, this species can be basically distinguished from *Marasmius rotaliscystidiatus* by the pileus pruinosity. Afterwards, Pegler (1986) revised this Sri Lanka species including the type and added following microscopical data: spores ranging between 7.5-9 \times 4-5 μm , abundance of basidioles and a non dextrinoid lamellar trama, characteristics that are different in both species.

M. vigintifolius has a similar pileus appearance but differs by the brown colour of the lamellar and collarium edge, sometimes rhizomorphs are present and the morphology of the pileipellis that is not completely hymeniform, but sometimes is subhymeniform in adult specimens horizontally extended (Singer 1965).

***Marasmius foliiphilus* Antonín, Mycotaxon 85: 115 (2003)**

(Fig. 2)

Pileus 2-7 mm diam., convex to applanate when mature, sulcate only near the margin, glabrous, white. Context thin, white. Lamellae adnate to subdecurrent, 11-16 lamellae, furcate, white, edges concolorous. Stipe 5-16 mm long, central, hollow, filiform, entirely pubescent (under lens), insititious, brown, becoming cream towards the apex.

Basidiospores 6.5-8.75 \times 2.75-3.75 μm ($Q_m = 2.6$, $n = 20$ spores), ellipsoid-fusoid, smooth, hyaline, thin-walled, inamyloid. Basidia clavate, 4-spored. Cystidia 21.25-37.5 \times 5.0-6.25 μm , not abundant, more common on the edge than on the side of the lamellae, ampullaceous or lageniform to fusoid, thin, hyaline. Pileipellis hymeniform, composed of clavate to pyriform structures, 11.0-17.5 \times 6.25-7.5 μm , smooth, with some digitate projections at the apex, hyaline, thick-walled rarely thin-walled. Caulocystidia numerous, 27.5-55.0 \times 3.75-6.25 μm , cylindrical, clavate, versiform or irregular, thick-walled. Lamellar trama interwoven, hyaline, hyphae septated, clamp connections absent.

Habitat: Scattered on dry leaves in the litter.

Known distribution: Cameroon, Democratic Republic of Congo and Brazil.

Material examined: BRAZIL, SP, São Paulo, Parque Estadual das Fontes do Ipiranga (23° 39'S and 46° 37'W), 15 December 2004, C. Puccinelli CP59 (SP).

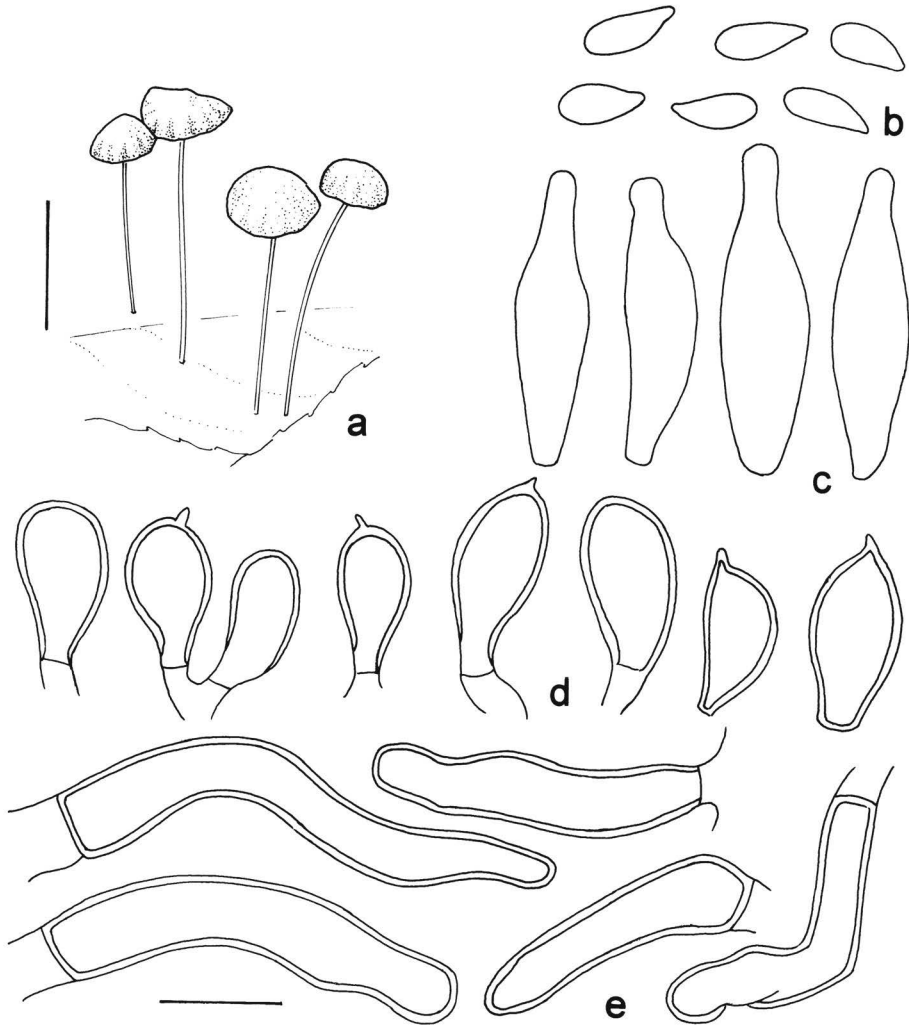


Fig. 2. *Marasmius foliophilus*. A. Basidiomata. B. Basidiospores. C. Cystidia. D. Pileipellis. E. Caulocystidia. Bars: A = 1 cm; B, C, D, E = 10 μ m.

Notes: *Marasmius foliophilus* belongs to section *Epiphylli* Singer, subsection *Eufoliatini* Singer. This African species recently described (Antonín 2003) is characterized by the small basidioma, white pileus, well-developed lamellae and pubescent stipe. It is easily recognized by the pilear surface cells which have some digitate projections at the apex, slight dextrinoid reaction of the lamellar trama, clampless hyphae and small basidiospores. The material collected in São Paulo occurs in a great number of basidiomata and has basidiospores slightly bigger than that mentioned in the original description (6.0-8.0 \times

2.5-3.5 μm), and pileus surface cells smaller than the type (13-32 \times 6.0-8.0 μm). Antonín (2003) also mentions that pileocystidia are rare or absent in the type material, and in the Brazilian material studied they were absent.

For the tropics, there are only two clampless species, *Marasmius caliensis* Singer and *M. sanctixaverii* Singer in this subsection. *M. foliophilus* is very similar to *M. caliensis* but the latter one has not any digitate projections in the pileus surface cells. *M. sanctixaverii* has bigger basidiomata and basidiospores, abundant cystidia and three types of caulocystidia.

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