

ON COLLECTIONS OF GARLIC ODOROUS *MARASMIELLUS IGNOBILIS* (BERK. & BR.) SINGER FROM INDONESIA

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Atik Retnowati. Koleksi *Marasmiellus ignobilis* (Berk. & Br.) Singer berbau bawang putih dari Indonesia. *Floribunda* 4(2): 57–61. — *Marasmiellus ignobilis* (Berk. & Br.) Singer dikoleksi di Indonesia dari tiga tempat yaitu Kebun Raya Bogor, Taman Nasional Gunung Halimun-Salak dan Bukit Pohen (Bedugul, Bali). Tulisan ini melaporkan untuk pertama kalinya jenis *Marasmiellus* yang mempunyai bau bawang putih dari Indonesia.

Kata kunci: Bau bawang putih, *Marasmiellus ignobilis*, Indonesia.

Atik Retnowati. On Collections of Garlic Odorous *Marasmiellus ignobilis* (Berk. & Br.) Singer from Indonesia. *Floribunda* 4(2): 57–61. — *Marasmiellus ignobilis* (Berk. & Br.) Singer was collected from three sites in Indonesia, i.e Bogor Botanical Garden, Mount Halimun-Salak National Park and Pohen hill (Bedugul, Bali). This is the first report on the occurrence of *Marasmiellus* with garlic odor in Indonesia.

Keywords: Garlic odor, *Marasmiellus ignobilis*, Indonesia.

By crushing a small piece of pileus, Largent (1973) described some mushroom odors and it can be unpleasant or disagreeable, fragrant and pleasant to sweet, anise-like (or like licorice), raphanoid, fabaceous (bean-like), farinous, and not distinctive is the most common mushroom odor. Individual human perception to mushrooms odor is variable, and some people are odor blind. In fact, to identify mushrooms odor is very subjective to person. A studying of *Marasmiellus* of Java and Bali, *Marasmiellus ignobilis* (Berk. & Br.) Singer was examined, and collection of *M. ignobilis* was collected from Java and Bali.

METHOD

Macro and microscopic characters were described and illustrated based on dried fungal specimens collected from Bogor Botanical Garden, Mount Halimun-Salak National Park and Pohen hill (Bedugul, Bali). Microscopic observation was made in material mounted in 3% of KOH. Twenty five basidiospores were measured from each collection. Color notation was determined using Kernerup & Wancher (1978). Examined specimens are deposited in Herbarium Bogoriense (BO) of Botany Division, Research Center for Biology, The Indonesian Institute of Sciences.

Species Descriptions

Marasmiellus ignobilis (Berk. & Br.) Singer,

Beih. Nova Hedwig. 44: 264. 1873. Figure 1 and 2.

Basionym: *Marasmius ignobilis* Berk. & Br., Journ. Linn. Soc. Bot. 14: 40. 1873. Type: Srilanka, Peradeniya, on wood, Thwaites 100 (K, holotype).

Pileus 5–12 mm diam, plano-convex in side view, flabelliform to semiorbicular in face view; margin wavy to irregular, decurved; surface rugulose, sometimes rugulo-striatulate or with smooth margin, felted to suede-like, dull, dry, pale brownish orange (6C3) to pale brown pinkish orange (7C3). Context unobserved. Lamellae adnate, distant (4–6) with 3–4 series of lamellulae, wavy, intervenose in age, narrow, pale cream-buff. Stipe absent or only a small bulb at the edge of pileus. Odor strongly of garlic; taste indistinctive.

Basidiospores 8.0–8.8(9.6) x 3.2–4.8 μm (the observed spores 9 only), ellipsoid, smooth, hyaline, inamyloid, thin-walled. Basidia unobserved. Basidioles fusoid to clavate. Cheilocystidia common; main body 13.6–24 x 7.2–9.6 μm , fusoid, to clavate, or irregular shaped, with diverticulate, thin-walled, hyaline; diverticulate 8.0–9.6 x 1.6–2.4 μm , clavate to cylindrical, or irregular in shaped, thin-walled. Pleurocystidia absent. Pileipellis composed of *Rameales*-structure, diverticulate; hyphae 2.4–4.0 μm , slightly incrustated, thin-walled, hyaline, inamyloid. Pileal trama interwoven; hyphae 3.2–4.0 μm , thin-walled, slightly incrustated, clearly incrustated on cell walled, inamyloid. Stipe tissue monomitic; hyphae 4.8–

5.6 μm , hyaline to yellowish white, thick-walled up to 0.8 μm , no diverticulate. Stipe vestiture common, present at the outer layer, pileipellis like, incrusted. Clamp connections present.

Habit, habitat, and distribution. Gregarious on *Philodendron* liana bark or twigs of undetermined dicot. Indonesia, Srilanka, Kenya, Tanzania, Uganda, and Mexico.

Specimens examined. Indonesia: Java, Bogor Botanical Garden, on *Philodendron* liana bark, 8 January 2000, D.E. Desjardin 7063; Mount Halimun National Park, loop trail via Owa trail, 21 October 2011, A. Retnowati 957; Bali, Bedugul, Pohen hill, 17 May 2013, A. Retnowati 1064.

Notes. *Marasmiellus ignobilis* widely distributed from East Africa (Kenya, Tanzania, and Uganda) (Pegler 1977), Neotropic (Mexico) (Singer 1973), and Asia (Srilanka (Pegler 1986), and Indonesia). The species occur at different areas presents high variations of morphological characters (Table 1). However, the variations are within range of the existing characters. Neotropic mate-

rials has the largest pileus (10–37 mm diam) compared to other materials from Indonesia (5–12 mm diam), Srilanka (2–15 mm diam), and East Africa (5–12–20). The highest number of lamellulae (3–4 series) are found at Indonesian materials, followed by Srilanka and East Africa materials by having 2 series of lamellulae. *Marasmiellus ignobilis* has variable types of stipe attachment with eccentric, lateral, or almost central stipe with 1–7 mm long. Basidiospores are up to 12.2 μm observed from Neotropic materials, and no difference form of cheilocystidia of all materials. Garlic odor is a key character of *M. ignobilis*, however, Pegler (1977) described *M. ignobilis* from East Africa without mentioning the presence of garlic odor in his descriptions.

Some species of *Marasmiellus* which smell garlic odor are *M. alliiodorus* (Bertero ex. Mont.) Singer (Singer 1973), *M. subingratus* (Dennis) Singer (Pegler 1983), and *M. osmophorus* Dennis (Singer 1973). The last two species belong to section *Rameales*. *Marasmiellus alliiodorus* is

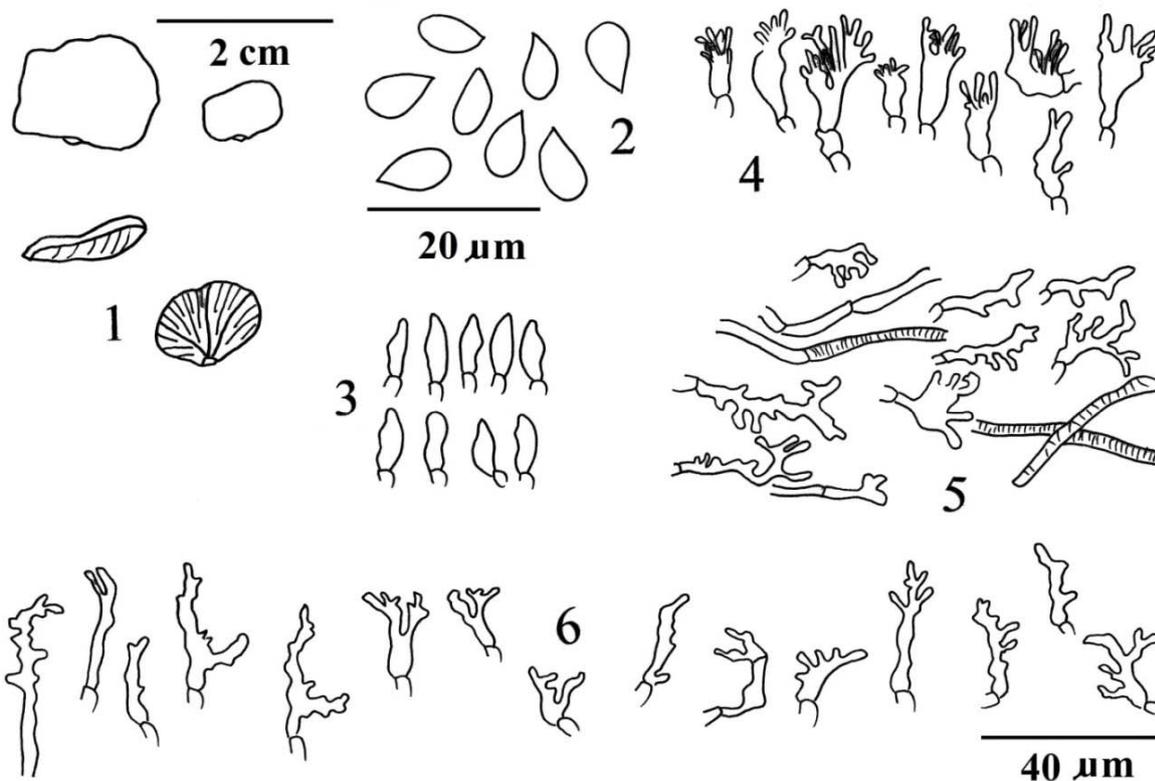


Figure 1. *Marasmiellus ignobilis* (Berk. & Br.) Singer (D.E. Desjardin 6808); 1. Basidiomes; 2. Basidiospores; 3. Basidia-Basidioles; 4. Cheilocystidia; 5. Pileipellis; 6. Hyphae of stipe with diverticulate; number 3, 4, 5, and 6 use the same scale (scale bar = 40 μm).



Figure 2. Basidiocarps of *M. ignobilis* collected from Mount Halimun National Park (A. Retnowati 957), a. Distant lamellulae with intervenose lamellae; b. Plano convex in side view, flabelliform to semiorbicular in face view of pileus; c. Dry and dull pileus surface.

different from *M. ignobilis* in having no caulocystidia and it is species of southern South America. *Marasmiellus subingratus* is having smaller pileus (up to 8 mm diam) than pileus of *M.*

ignobilis (5–12 mm diam); no lamellulae and intervenose lamellae; long hairy stipe; no cheilocystidia. *Marasmiellus osmophorus* is having sulcate-striate margin and small pileus (15 mm

Table 1. Variations of morphological characters of *M. ignobilis* from different regions (Singer (1973) and Pegler (1977, 1983, 1986))

Collected from	Pileus (mm diam)	The number of lamellulae (series)	Stipe (mm)	Basidiospores (µm)	Cheilocystidia (µm)	Present/absent of garfic odor
Indonesia	Plano convex in side view, flabelliform to semiorbicular in face view 5-12	Distant, intervenose in age 3-4	Absent or only a small bulb	Ellipsoid 8.0-8.8(9.6) x 3.2-4.8	- Fusoid to clavate - 13.6-24 x 7.2-9.6	Present
Sri Lanka	Orbicular to reniform 2-15	Distant, at times branching and anastomosing 2	Lateral to eccentric 1-5 x 0.3-0.5	- Ovoid to ellipsoid - 7.5-10 x 4.5-5.5	Clavate to ventricose 28-37 x 5-10	Present
East Africa	Orbicular to reniform 5-12(-20)	Distant 2	Lateral 3-7 x 1-2 mm	Ovoid to ellipsoid 6.5-8.5 x 4.3-6	Cylindric or clavate with a nodulose apex 25-37 x 4-12	Not mentioned
Neotropic	Convex at first, subapplanate in age 10-37	- Forked and anastomosing, intervenose, intermixed with lamellulae when mature - not mentioned	- Eccentric, somewhat to strongly curved - 1-6 x 0.5-2	- Ellipsoid - 9.5-12.2 x 4.5-6.5 (-7)	- Clavate to irregular ventricose or cylindrical - 12-22 x 8-11	Present

diam); no lamellulae and intervenose lamellae; reddish brown, insititious; no caulocystidia.

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REFERENCES

- Largen DL. 1973. *How to identify mushrooms to genus I: Macroscopic features*. Mad River Press Inc. Eureka. California.
- Pegler DN. 1977. A preliminary agarics flora of East Africa. *Kew Bull. Add. ser.* 6: 1–615.
- Pegler DN. 1983. Agarics flora of Lesser Antilles. *Kew Bull. Add. Ser.* 9: 195–232.
- Pegler DN. 1986. Agarics flora of Sri Lanka. *Kew Bull. Add. Ser.* 12: 144–172.
- Singer R. 1973. A monograph of the Neotropical species of *Marasmiellus*. The genera *Marasmiellus*, *Crepidotus* and *Simocybe* in the Neo-tropics. *Beih. Nova. Hedwigia* 44: 1–340.