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Agaricales of Indonesia. 6. *Psilocybe* (Strophariaceae) from Indonesia (Java, Bali, Lombok)

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Psilocybe subaeruginascens Höhn. and *Stropharia aerugineomaculans* Höhn. (both species originally described from Java) and five new species of *Psilocybe (Ps. aureicystidiata, Ps. eximia, Ps. largicystidiata, Ps. mendica, Ps. overeemii)* from tropical-montane, broadleaf rain forests in Indonesia (Java, Bali, Lombok) are fully described and illustrated. Ecology and distribution of the hitherto recorded taxa of *Psilocybe* occurring in SE-Asia and Australasia are discussed.

Key words: Basidiomycetes, fungal systematics, taxonomy, mycogeography.

As compared to other countries in the tropical-subtropical belt of SE-Asia, little attention has been paid to the Indonesian Agaricales so far. The first lists of species have been published by Zollinger (1854), in later years followed by the records summarized in Hennings (1900), Höhnel (1914), Overeem-Haas (1922), Heyne (1927), and Overeem (1927). More recently, selected genera of Tricholomataceae s.l. and Russulales have been published in the series "Agaricales from Indonesia": 1. Desjardin & Horak (1999). – 2. Desjardin, Retnowati & Horak (2000). – 3. Verbeken, Horak & Desjardin (2001). – 4. Desjardin & Horak (2002). – 5. Wilson, Desjardin & Horak (2004).

With regard to Indonesian taxa belonging to *Psilocybe* (fam. Strophariaceae), the first and last report dates back to Höhnel (1914), who described *Psilocybe subaeruginascens* Höhnel and *Stropharia aerugineomaculans* Höhn. [= *Psilocybe aerugineomaculans* (Höhn.) Singer & A.H. Sm.] from Bogor, Java.

From SE-Asian and Australasian countries situated in the geographical neighborhood of Indonesia, additional records on

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Psilocybe can be found in the literature, e.g. : Australia: Guzmán & Watling (1978), Margot & Watling (1981), Chang & Mills, (1992). – India: Natarajan & Raman (1983), Thomas & al. (2002). – New Caledonia: Guzmán & Horak (1979). – New Zealand: Guzmán & Horak (1979), Guzmán, Bandala & King (1991, 1993), Johnston & Buchanan 1995). – Papua New Guinea: Guzmán & Horak (1979), Horak (2006). – Sri Lanka (Pegler, 1986). – Thailand: Guzmán, Bandala & Allen (1993).

In connection with the present paper, the type collections of following species of *Psilocybe* were re-examined and compared with the Indonesian material described in the present contribution:

Indonesia: *Psilocybe subaeruginascens* Höhnel 1914. Fragmente. Mykologie, 826. Sitzungsberichte Kaiserlichen Akademie Wissenschaften Wien, Mathem.-Naturw. Klasse 73: 30. – *Stropharia aerugineomaculans* Höhnel 1914. Fragmente. Mykologie, 827. Sitzungsberichte Kaiserlichen Akademie Wissenschaften Wien, Mathem.-Naturw. Klasse, Mathem.-Naturw. Klasse 73: 30.

New Caledonia: *Psilocybe neocaledonica* Guzmán & E. Horak 1979. Sydowia 31: 53.

New Zealand: *Psilocybe novaezelandiae* Guzmán & E. Horak 1979. Sydowia 31: 51.

Papua New Guinea: *Psilocybe brunneocystidiata* Guzmán & E. Horak 1979. Sydowia 31: 45. – *Psilocybe inconspicua* Guzmán & E. Horak 1979. Sydowia 31: 50. – *Psilocybe papuana* Guzmán & E. Horak 1979. Sydowia 31: 49. – *Psilocybe nothofagensis* Guzmán & Horak 1979. Sydowia 31: 47. – cf. also Horak 2006. Sydowia 58: 3 – 14.

Sri Lanka: *Psilocybe ochreata* (Berk. & Broome) E. Horak, in Guzmán 1983. Beiheft Nova Hedwigia 74: 138. – *Psilocybe goniospora* (Berk. & Broome) Singer 1962. Sydowia 15: 70.

General information and detailed data about the taxonomy and world-wide distribution of *Psilocybe* were published by Guzmán (1980, 1983, 1995, 1999, 2004) and Guzmán, Allen & Gartz (1998).

The material of *Psilocybe subaeruginascens* and of the five new Indonesian, saprobic *Psilocybe* presented in this paper was gathered by E. Horak and D.E. Desjardin at several localities in Java, Bali, and Lombok. Based upon the fact that for Indonesia a vast diversity of ecological habitats and niches of the vegetation have been reported in the pertinent literature (Jones 1995), the authors expect many more yet undiscovered taxa of *Psilocybe* that presumably fruit only on rare occasions. The following example convincingly demonstrates this observation: the region around Bogor and Cibodas (Java) was thoroughly searched for mushrooms during several collecting trips but nevertheless basidiomes of the conspicuous *Psilocybe aerugineomaculans* (Höhnel 1914) were not

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encountered again at the type locality in the Botanical Garden, Bogor (Java).

It is noteworthy that three out of the five new Indonesian species *(Ps. eximia, Ps. aureicystidiata, Ps. overeemii)* described in this contribution are defined by rhomboid basidiospores in combination with conspicuous chrysocystidia-like pleurocystidia, non-gelatinized pileipellis and non-blueing context. In the pertinent literature, this unique combination of characters is reported world-wide only for the following taxa of *Psilocybe* recorded from Sri Lanka [*Ps. goniospora* (Berk. & Broome) Singer and *Ps. lonchophora* (Berk. & Broome) E. Horak ap. Guzmán], from New Caledonia (*Ps. neocaledonica* Guzmán & E. Horak) and neotropical species from Ecuador [*Ps. aequatoriae* Singer (= *Hypholoma aequatoriae* (Singer) Guzmán], and Mexico (*Ps. naematoliformis* Guzmán (= *Naematoloma naematoliforme* (Guzmán) Guzmán, and *Ps. neorhombispora* Guzmán, unpubl.]. The taxonomic status of these enumerated taxa is still under discussion and molecular data will eventually reveal whether they are correctly accommodated in *Psilocybe* or in *Hypholoma*. In order to integrate the before-mentioned species, Guzmán (2004) recently proposed the new sect. Neocaledonicae and thus emendated the taxonomic concept and circumscription of *Psilocybe*.

Material and Methods

All specimens examined were originally collected and documented by E. Horak and D.E. Desjardin during several collecting trips to Indonesia.

For microscopical analysis, the material was routinely mounted in 3 – 5 % KOH (and occasionally also in 5 % NH_4OH and 1 % Congo Red in 5 % KOH). Holotypus material is kept in Herbarium Bogoriense, Bogor, Indonesia (BO); isotypes are lodged in the herbaria ZT (Zurich, Switzerland) and XAL (Xalapa, Mexico).

Key to Indonesian species of *Psilocybe*

1. Basidiomes (pileus, stipe and context) turning blue to blue-green when bruised. Lamellae broadly adnate. Stipe with white, membranaceous, inconspicuous and evanescent annulus. Basidiospores thick-walled. In lowland tropical broadleaf forest. – (sect. Stuntzii). 2

1*. Basidiomes not turning blue to blue-green when bruised. Annulus on stipe present or absent. Basidiospores thin-walled or thick-walled. In tropical-montane broadleaf forest 3

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2. (1). Pileus 15 – 30 mm diam., convex to broadly campanulate, off white, grey-beige or pale fuliginous in centre. Lamellae pale grey-brown. Base of stipe with rhizoids attached to mycelial pad. Spore print lilac-brown. Basidiospores 8.5 – 9.5 × 5.5 – 6.5 × 5.2 – 5.7 µm, elliptical to amygdaliform, not distinctly rhomboid. On horse manure (type) or on soil among decaying litter of broadleaf trees. Java. ..... 1. *Ps. subaeruginascens* Höhnel

2*. Pileus up to 40 mm diam., umbonate, centre dark blue, reddish grey towards substriate margin. Lamellae olive-yellow, mottled. Base of stipe without mycelial pad. Spore print fuscous to black. Basidiospores 8.5 – 10.5 × (6.5) 7 – 8 × 5.5 – 6 µm, distinctly rhomboid to submitriform. On rotten wood of broadleaf trees. Java. ..... 2. *Ps. aerugineomaculans* Höhnel

3. (1). Basidiospores subellipsoid to subovoid or oblong, thin-walled. 4

3*. Basidiospores distinctly rhomboid or mitriform, thick-walled. Pileus with prominent conical papilla. 5

4. (3). Pileus with sharply pointed papilla, 5 – 12 mm. Veil remnants on stipe absent. Basidiospores 5.5 – 7 × 4 – 4.5 × 3.5 – 4 µm. Pleurocystidia absent. On rotten plant debris. Bali. – (sect. Pratenses). ..... 3. *Ps. mendica*

4*. Pileus umbonate-expanded, 9 – 18 mm diam. Veil remnants on stipe fibrillose, inconspicuous. Basidiospores 5.5 – 6.5 (–7) × 3 – 4 × 3 – 3.5 µm. Pleurocystidia hyaline, fusoid, conspicuous. On rotting trunk of tree fern. Java. – (sect. Singerianae). ..... 4. *Ps. largicystidiata*

5. (3). Chrysocystidia-like pleurocystidia absent. Pileus 20 – 40 mm diam. Basidiospores 5 – 5.5 (– 6) × 4.5 – 5 × 3.5 – 4 µm. Cheilocystidia conspicuous, vesiculose to broadly utriform. Odor farinaceous. On bare soil or among leaf-litter of fagalean trees. Java. – (sect. Psilocybe). ..... 5. *Ps. eximia*

5*. Chrysocystidia-like pleurocystidia present. Cheilocystidia inconspicuous, fusoid. Odor not distinctive. – (sect. Neocaledonicae). 6

6. (5). Annulus on stipe conspicuous, persistently membranaceous or fibrillose. Pileus 5 – 10 mm diam. Basidiospores 4.5 – 5.5 × 4 – 5 × 3 – 3.5 µm. On rotting leaf-litter of fagalean trees. Java. ..... 6. *Ps. overeemii*

6*. Annulus on stipe inconspicuous or absent. Pileus 15 – 30 mm diam. Basidiospores (4.5 –) 5 – 5.5 (– 6) × 4 – 5 × (3 –) 3.5 – 4 µm. On rotten wood of fagalean trees. Java (type), Lombok. ..... 7. *Ps. aureicystidiata*

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Enumeration and description of Indonesian species *of Psilocybe*

1. ***Psilocybe subaeruginascens*** Höhnel, Fragm. Mykologie, 826. Sitzungsberichte Kaiserlichen Akademie Wissenschaften Wien, Mathem.-Naturw. Klasse 73: 30. 1914. – Fig. 1: 1 – 6.

Translation of German-written protologue: "*Psilocybe (Deconica) subaeruginascens* Höhnel: Pileus 15 – 25 mm diam., convex, whitish, centre pale fuliginous, glabrous, submembranaceous. – Lamellae broadly adnate to subdecurrent, moderately crowded, 2 – 3 mm wide, pale grey-brown, edges paler. – Stipe 30 – 40 × 1.5 – 3 mm, cylindrical, base slightly swollen, white, apex subpruinose, otherwise smooth, shiny, tough, base attached to white but eventually becoming green-blue or blue mycelial pad. – Ring small, membranaceous, in upper portion of stipe. – Spore print pale lilac-brown. – Basidiospores 10 × 7 × 5 µm, rhomboid or rhomboid-limoniform in face view, slightly depressed in side view, apex truncate, lilac. – Cystidia absent. – Upon bruising the color of the basidiomes turns to pale green-blue. – Gregarious on horse manure. – Holotypus. – Indonesia, Java, Buitenzorg, 1907, leg. Höhnel 3942 A."

Description of collection ZT 7229:

Pileus 20 – 30 mm diam., broadly and obtusely campanulate, ivory or pale grey-argillaceous, at disc with blue-green tinge, smooth, dry, veil remnants absent. – Lamellae 16 – 24 reaching stipe, lamellulae in 5 – 7 series, broadly adnate, at first pale brown, becoming fuscous in old specimens, fimbriate edges whitish. – Stipe 40 – 65 × 2 – 3 mm, cylindrical, equal, white, turning blue-green upon handling, dry, hollow, rather tough, smooth to slightly fibrillose, base with conspicuous white rhizoids and mycelial strands attached to substrate, solitary. – Ring fragile and non-persisting, membranaceous, non-striate, hanging, white. – Context rather tough, white, blueing upon exposure. – Odor unpleasant, fetid. – Taste unknown. – Chemical reactions on pileus: KOH – negative.

Spore print dark fuscous or black. – Basidiospores 8 – 9.5 × 5 – 6.5 × 4.5 – 5.5 µm, elliptical to subrhomboid in face view, amygdaliform in side view, thick-walled (1 – 1.3 µm diam.), with distinctive apical germ pore, smooth, opaque. – Basidia 24 – 30 × 6 – 8 µm, cylindrical or constricted-suburniform, 4-spored, sterigmata up to 7 µm long. – Cheilocystidia 18 – 24 × 6 – 10 µm, polymorphic, shape ranging from fusoid to subutriform, thin-walled, hyaline, apex rounded or subcapitate, occasionally covered with thin, hyaline incrustation (also in KOH!). – Pleurocystidia and caulocystidia absent. – Pileipellis a thin cutis composed of cylindrical, repent, hyaline to pale yellow, non-gelatinized, non-incrusted hyphae, 4 – 10 µm diam., distinctive terminal cells absent. Subpellis composed of irregularely interwoven, cylindrical or puzzle-like, hyaline, thin-walled hyphae. – Clamp connections present.

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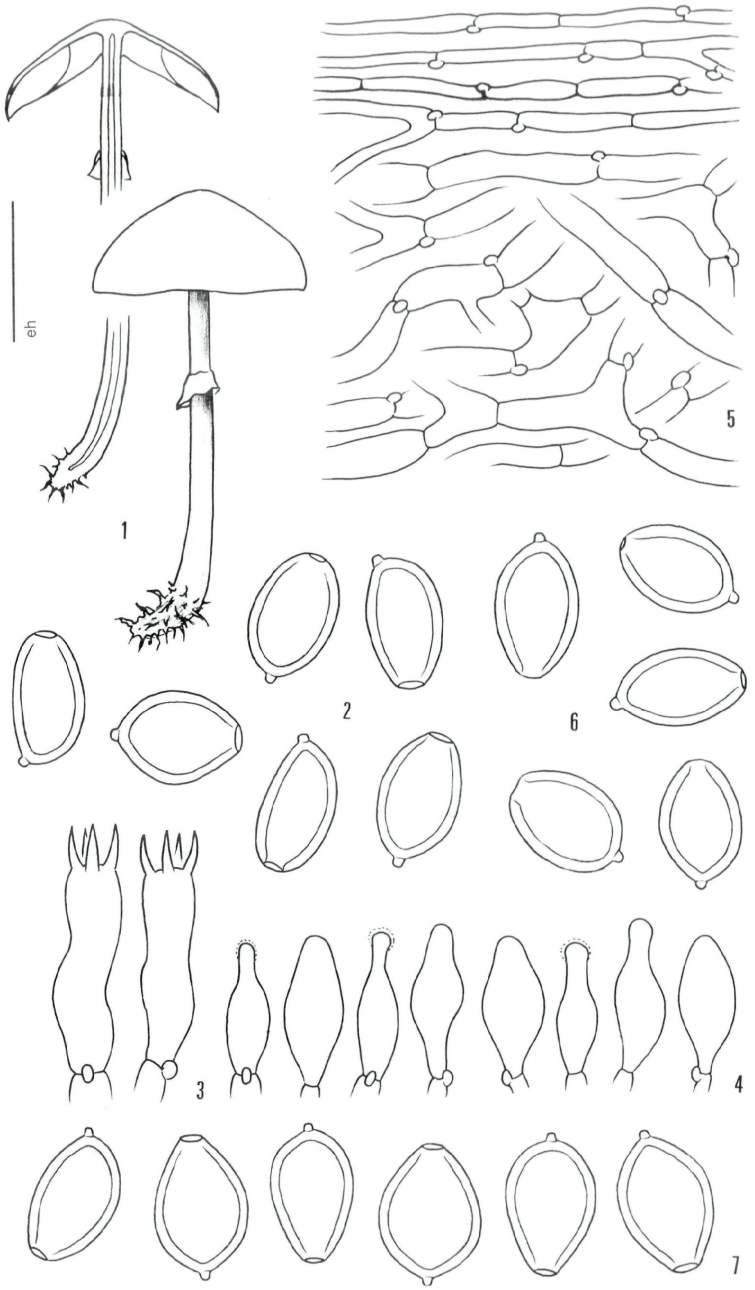


Fig. 1. 1 – 6: *Psilocybe subaeruginascens* Höhnel (ZT 7229, topotypical material): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. 5. Pileipellis. – 6. Basidiospores (holotype). – *Psilocybe aerugineomaculans* Höhnel (holotype): 7. Basidiospores. – Scale bar: 10 mm (1), 5 µm (2, 6, 7), 10 µm (3, 4), 20 µm (5).

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Etymology: *subaeruginascens* (Lat.) – similar to *"aeruginascens"*.

Specimens examined: INDONESIA: Java: Bogor (Buitenzorg), 1907, leg. Höhnel 3942 A (holotype, FH); Bogor, Botanical Garden, on soil among rotting litter of broadleaf trees, 20 Jan 1999, leg. Horak ZT 7229 (BO 99 – 355).

Habitat and Ecology: Coprophilous or saprobic. – On horse manure (type) or on soil among litter, in tropical-lowland broadleaf forest.

Distribution: Indonesia: Java.

Discussion: Owing to the blueing basidiomes *Ps. subaeruginascens* is considered to be psychoactive.

The type specimen consists of two fragmented basidiomes, plus broken fragments of stipe and lamellae. There is one intact, pale tawny brown pileus, 12 mm diam. No partial veil remnants recognizable on the stipe fragments.

The topotypical material mentioned above (BO 99 – 355) corresponds in all essential characters with the type specimens gathered nearly 100 years ago by F.v. Höhnel. Macroscopically, the most distinctive features are its habit and the blue-green colors on ageing and handled specimens. In the field this *Psilocybe* can readily be mistaken for a taxon of *Copelandia,* a widely distributed genus in tropical-subtropical habitats in SE-Asia (Horak 1980, Gerhardt 1996). Microscopically, however, *Ps. subaeruginascens* is clearly separated by its non-metuloid cystidia and the lack of green-blue crystals or incrustation (in KOH) at the apex of the cystidia.

Based upon the re-examination of the type specimen, Guzmán (1983) and Thomas & al. (2002) emphasize that *Psilocybe subaeruginascens* and *Ps. aerugineomaculans* are actually contaxic. It is noteworthy, however, that Guzmán (1995) has abandoned this concept and subsequently accepted two independent taxa.

Our observations also demonstrate that morphologically these two taxa are distinctly separated (cf. enclosed key). In addition, Guzmán (1983) refers to a Japanese collection which purportedly represents the first Japanese record of *Ps. subaeruginascens*. The drawings of the basidiomes definitely do not relate to the original descriptions of the two before-mentioned Javanese taxa. In the meantime, Guzmán (1995) accomodated the Japanese specimens in the new taxon *Ps. septentrionalis*.

The fresh topotypical material of *Ps. subaeruginascens* allows for the first time to present its distinctive, microscopical characters. Under these circumstances the identity and concepts of several blueing species recorded from Australia (Margot & Watling 1981;

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Chang & Mills 1992, Grgurinovic 1997) and New Zealand (Guzmán, Bandala & King 1991, 1993; Johnston & Buchanan 1995) are in need of critical re-evaluation.

It is remarkable that Bogor (Buitenzorg) is also the type locality of the second Javanese species with blueing and macroscopically similar basidiomes viz. *Ps. aerugineomaculans* (see below). As already pointed out by Höhnel in the relevant protologues, these two taxa are readily distinguished by the colors of the basidiomes and the shape of the basidiospores.

2. ***Psilocybe aerugineomaculans*** (Höhnel) Singer & A.H. Sm., Mycologia 50:273. 1958. – Fig. 1: 7

Basionym. – *Stropharia aerugineomaculans* Höhnel, Fragm. Mykologie, 827. Sitzungsberichte Kaiserlichen Akademie Wissenschaften Wien, Mathem.-Naturw. Klasse, Mathem.-Naturw. Klasse 73: 30. 1914.

Translation of German-written protologue: "*Stropharia aerugineomaculans* Höhnel. – Pileus up to 40 mm diam., umbonate-campanulate, centre dark blue, pale reddish grey towards substriate margin, smooth. – Lamellae adnate, moderately crowded, 4 – 5 mm wide, olive-yellow, mottled. – Stipe up to 50 × 2 mm, cylindrical, white, apex subfloccose, otherwise smooth, shiny, hollow. Ring membranaceous, small, white. – Spore print dark fuscous or black. – Basidiospores 10 × 6 µm or 7 × 5 µm, heart-shaped or sublimoniform in face view, depressed in side view, apex with papilla. – Upon bruising the color of the basidiomes turns to pale green-blue. – On rotten wood. – Holotypus. – Indonesia, Java, Buitenzorg, 1907, leg. Höhnel B 1771."

Etymology: *aerugineus* (Lat.) – greenblue; *maculans* (Lat.): becoming spotted.

Specimens examined: Indonesia: Java: Bogor (Buitenzorg), 1907 – 08, leg. Höhnel B 1771 (holotype, FH).

Habitat and Ecology: Saprobic. – On rotten wood, in tropical-lowland broadleaf forest.

Distribution: Indonesia: Java.

Discussion: Because of its blueing basidiomes *Ps. aerugineomaculans* is considered to be psychoactive (Singer & Smith 1958).

The type specimen of this Javanese species is in fragmentary condition and consists of one half of one fragmented basidiome only. The dark brown pileus is about 11 mm diam., convex and without conical centre or papilla. The stipe is lacking any partial veil remnants. The basidiospores 8.5 – 10.5 × 7 – 8 × 5.5 – 6.0 µm are distinctly rhomboid to submitriform in face view, inequilaterally ellipsoid in side view and truncate with a broad germ pore. The

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smooth, dark orange-brown walls (in 3 % KOH) are about 0.6 – 1.0 µm thick. Basidia 4-spored. All hymenial cystidia are collapsed, and did not revive. Pileipellis a thin ixocutis of repent, radially arranged, parallel, cylindrical hyphae, 3.5 – 6 µm diam., walls hyaline, smooth, non-incrusted, gelatinized. The hypodermium is composed of cylindrical, hyaline to pale yellow hyphae up to 13 µm diam.

The type locality of this conspicuous agaric with blueing basidiomes is situated in the Bogor Botanical Garden (cf. *Ps. subaeruginascens*). During numerous occasions the authors collected mushrooms at this locality but this striking species was not found again. Unfortunately, the type material is poorly preserved and accordingly the actual size and shape of the cheilocystidia and pleurocystidia still remain a mystery.

Further discussion under *Ps. subaeruginascens*.

3. ***Psilocybe mendica*** E. Horak & Desjardin, **sp. nov.** – Fig. 2: 1 – 6

Pileus 5 – 12 mm diam., convexus dein applanatus, semper papilla acuta instructus, ochraceus vel argillaceus, innate fibrillosus, marginem versus squamulis minutis, subpersistentibus e velo obtectus, siccus. Lamellae late adnatae vel subdecurrentes, brunneae vel distincte lilacinae, angustae. Stipes 10 – 20 × 0.5 – 1 mm, cylindricus, aequalis, pileo concolor, minute fibrillosus. Cortina nulla. Odor sapoque nulli. Basidiosporae 5.5 – 7 × 4 – 4.5 × 3.5 – 4 µm, subovoideae vel ellipsoideae, tenuitunicatae, poro germinativo instructae. Cheilocystidia (15 –) 17 – 30 × 8 – 15 µm, hyalina, tenuitunicata, utriformia vel late fusoidea, interdum apicaliter mucronata. Pleurocystidia nulla. Pileipellis ex hyphis cylindraceis, haud gelatinosis, cutem formantibus. Fibulae praesentes. Ad frustula, in silvis montanis tropicalibusque. Holotypus. – Indonesia (Java), leg. E. Horak 8436 (isotypi XAL, ZT).

Pileus 5 – 12 mm diam., convex at first, later expanded or concave with margin up-turned, always with a distinctive, sharply pointed papilla, ochre to beige when moist, becoming paler when dried, hygrophanous, innately fibrillose, margin non-striate. – Veil remnants scarce and inconspicuous, forming pallid, small, triangular, fibrillose and ephemerous squamules towards margin of pileus. – Lamellae 32 – 40 reaching stipe, lamellulae in 3 – 7 series, broadly adnate to subdecurrent, less than 1 mm wide, brown with a distinctive lilac tint, even edges concolorous. – Stipe 10 – 20 × 0.5 – 1 mm, cylindrical, equal, concolorous with pileus, minutely fibrillose, dry, hollow, flexible, solitary, remnants of veil absent. – Context concolorous with pileus, not staining. Odor and taste not distinctive.

Spore print brown, with distinctive lilac tint. – Basidiospores 5.5 – 7 × 4 – 4.5 × 3.5 – 4 µm, subovoid (to subrhomboid) in face view, ellipsoid in side view, thin-walled, smooth, pale yellow-brown, with distinctive germ pore. – Basidia 15 – 25 × 6 – 8 µm, 4-spored, hyaline, subclavate, occasionally with median constriction. –

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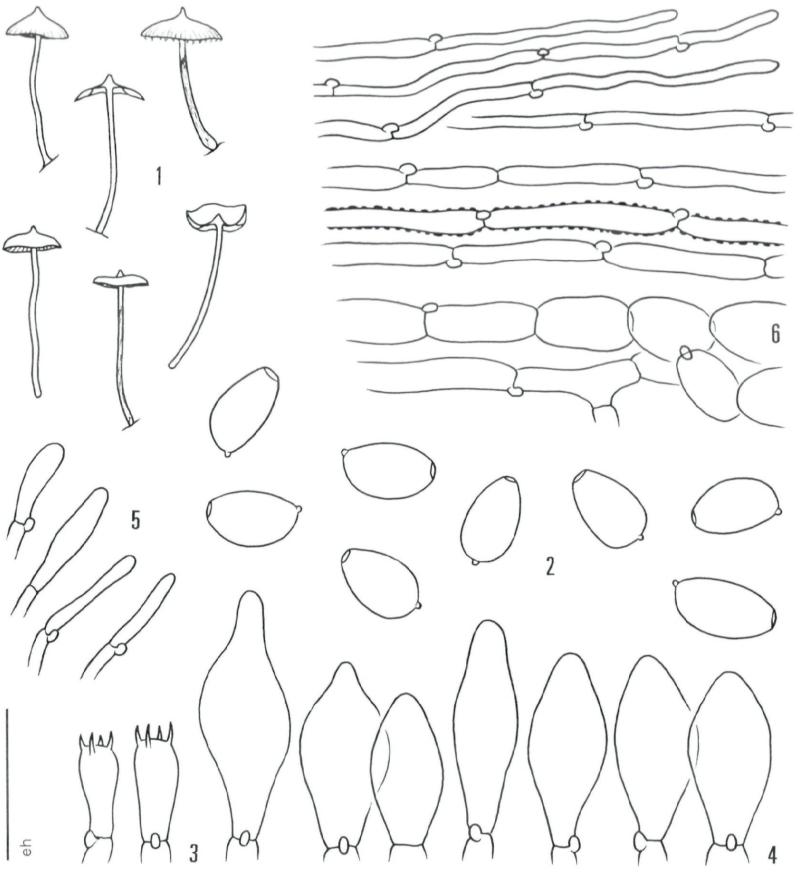


Fig. 2. 1 – 6: *Psilocybe mendica* (holotype): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. – 5. Caulocystidia. – 6. Veil, pileipellis and subpellis. – Scale bar: 10 mm (1), 5 µm (2), 10 µm (3,4), 20 µm (5, 6).

Cheilocystidia (15 –) 20 – 35 × 7 – 13 µm, hyaline, thin-walled, polymorphic, shape ranging from vesiculose to broadly ventricose, broadly fusoid or utriform, apex lacking mucro. – Pleurocystidia absent. Caulocystidia clavate to subfusoid or cylindrical, inconspicuous. – Subhymenium composed of hyaline to yellowish, thin-walled hyphae, 5 – 13 µm diam. – Trama subregular, composed of hyaline or yellowish hyphae, 3.5 – 17 (– 21) µm diam. – Hyphae of veil 1.5 – 3 µm diam. – Pileipellis a cutis composed of cylindrical, non-gelatinized, thin-walled hyphae, 3 – 6 µm diam., encrusted with pale brown pigment. – Subpellis composed of ovoid, hyaline or yellowish cells, 10 – 16 µm diam. – Hyphae of veil remnants (on pileus surface) cylindrical, hyaline, 1,5 – 3 µm diam., terminal cells not differentiated. – Clamp connections present.

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Etymology: *mendicus* (Lat.) – poor, inconspicous.

Specimens examined: Indonesia: Bali, Bedugul, Lake Bratan, trail to Mt. Catur, 16 Jan 2000, leg. E. Horak ZT 8436 (holotype, BO, isotype XAL). – Bali, Bedugul, Eka Karya Botanical Garden, 17 Jan 2000, leg. E. Horak 8437 (BO 00 – 258, ZT).

Habitat and Ecology: Saprobic. – On rotting organic debris (leaves, twigs) of dicot trees, gregarious, in tropical-montane broadleaf rain forest, 1350 m alt.

Distribution: Indonesia: Bali (recorded only from and near the type locality).

Discussion: *Psilocybe mendica* is well characterized by its minute basidiomes. Taxonomically, it belongs to sect. Pratenses because of its subovoid or ellipsoid, thin-walled basidiospores and the lack of pleurocystidia (Guzmán 1983, 1995). The taxon is well separated from other members in this section by the polymorphic and comparatively large and broad cheilocystidia.

Psilocybe mendica and *Ps. inconspicua* Guzmán & E. Horak (1979) from Papua New Guinea represent the first two tropical species in sect. Pratenses so far described from SE-Asian localities. The two taxa of rather small-sized basidiomes are readily distinguished by the shape of the pileus viz. with sharply acute papilla in *Ps. mendica*, in contrast to the blunt umbo in *Ps. inconspicua*. Furthermore, *Ps. mendica* is distinctly separated by the presence of conspicuous, appendiculate veil remnants on the pileus margin and the basidiospores ovoid in face view.

4. ***Psilocybe largicystidiata*** E. Horak & Desjardin, **sp. nov.** – Fig. 3: 1 – 7

Pileus 9 – 18 mm diam, convexus dein applanatus vel concavus, subumbonatus, brunneus, siccitate argillaceus vel albidus, marginem versus squamulis minutis subpersistentibus e velo obtectus, siccus. Lamellae adnatae vel subdecurrentes, argillaceae, fimbriatae. Stipes 10 – 20 × 1 – 2 mm, cylindricus, basim versus incrassatus, apicaliter pileo concolor, gradatim fuscus basim versus, albofibrillosus. Cortina nulla. Odor saporque nulli. Basidiosporae 5.5 – 6.5 (–7) × 3 – 4 × 3 – 3.5 µm, oblongae vel subellipsoideae, tenuitunicatae, poro germinativo instructae. Cheilocystidia 17 – 35 × 8 – 12 µm, ex clavato subfusoidea, hyalina, tenuitunicata. Pleurocystidia (40 –) 50 – 60 × (8 –) 9 – 12 µm, conspicua, lageniformia vel fusoidea. Pileipellis ex hyphis cylindraceis, haud gelatinosis, cutem formantibus. Fibulae praesentes. Ad frustula, in silvis montanis tropicalibusque. Holotypus. – Indonesia (Java), leg. E. Horak 8845 (BO 01 – 34, isotypi XAL, ZT).

Pileus 9 – 18 mm diam, at first convex, later becoming expanded or concave with up-turned margin, center subumbonate, margin strongly pellucid-striate, date brown when moist, old or drying paler

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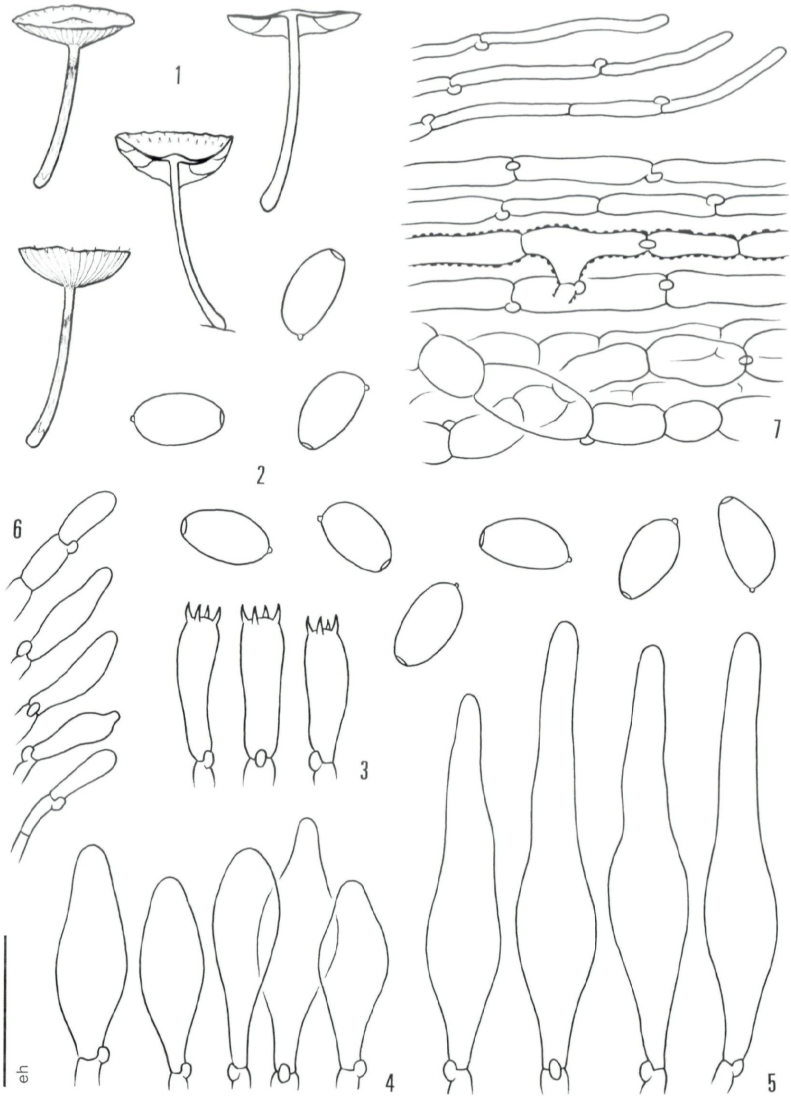


Fig. 3. 1 – 7: *Psilocybe largicystidiata* (holotype): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. – 5. Pleurocystidia. – 6. Caulocystidia. – 7. Veil, pileipellis and subpellis. – Scale bar: 10 mm (1), 5 µm (2), 10 µm (3, 4, 5), 20 µm (6, 7).

or off white, strongly hygrophanous, centre minutely rugulose, dry. – Veil remnants scarce and inconspicuous, forming whitish, small, triangular, fibrillose squamules towards margin of pileus. – Lamellae 20 – 26 reaching stipe, lamellulae in 3 – 5 series, broadly adnate to subdecurrent, beige-brown, edges subfimbriate, up to 2.5 mm wide. – Stipe 10 – 20 × 1 – 2 mm, cylindrical, towards base

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slightly swollen, apex concolorous with pileus or paler as lamellae, gradually dark brown to fuscous at base, dry, hollow in mature specimens, with inconspicuous basal tomentum attached to substrate, solitary. – Veil remnants on stipe whitish, fibrillose. – Context concolorous with pileus, not staining. – Odor and taste not distinctive.

Spore print brown, lilac tint absent. – Basidiospores 5.5 – 6.5 (–7) × 3 – 4 × 3 – 3.5 µm, oblong (both in face view and side view), thin-walled, smooth, pale yellowish brown, with conspicuous germ pore. – Basidia (13 –) 15 – 18 × 5 – 6 µm, 4-spored, hyaline, subventricose. – Cheilocystidia 17 – 35 × 8 – 12 µm hyaline, clavate or subfusiform to utriform, occasionally bluntly rostrate. – Pleurocystidia (40 –) 50 – 60 × (8 –) 9 – 12 µm, numerous, hyaline, lageniform to fusoid. – Caulocystidia 18 – 35 × 6 – 10 µm, scattered, polymorphic, similar to cheilocystidia. – Subhymenium composed of subcellular or cylindrical, hyaline hyphae, 3 – 8 µm diam. – Hyphae of stipe 3 – 10 µm diam., walls hyaline, smooth or encrusted. – Trama subregular, composed of hyaline or yellowish hyphae, 2 – 8 µm diam. – Hyphae of veil 1.5 – 3 µm diam. – Pileipellis a cutis composed of cylindrical, non-gelatinized, hyaline hyphae, 3 – 6 µm diam., pigment encrusting. – Subpellis composed of polymorphic, globose, ovoid or broadly cylindrical hyphae, 5 – 20 µm diam. Hyphae of veil remnants on pileus surface cylindrical, hyaline, 2 – 3 µm diam., terminal cells not differentiated. – Clamp connections present.

Etymology: *largus* (Lat.) – large; *cystidatus* (Lat.) – with cystidia.

Specimens examined: Indonesia: Java, Mt. Halimun National Park, Cikaniki Field Station, 8 Jan 2001, leg. E. Horak 8845 (Holotypus. – BO 01 – 34, isotypes XAL, ZT).

Habitat and Ecology: Saprobic. – Scattered, probably on a rotten stem of tree fern, in tropical-montane broadleaf rain forest, 1050 m alt.

Distribution: Indonesia: Java (recorded only from type locality).

Discussion: Because to the thin-walled, oblong spores and the exceedingly long, thin-walled and numerous pleurocystidia, *Psilocybe largicystidiata* is an outstanding species readily accommodated in sect. Singerianae (Guzmán 1983, 1995). Microscopically, the Javanese species is reminiscent of *Ps. laticystis* Guzmán & A.H. Sm. (1978) whose pleurocystidia, however, are 10 – 19 µm diam. and sometimes subglobose to pyriform. In addition, *Ps. laticystis*, another species with large pleurocystidia so far only recorded from

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the Northwestern USA (Guzmán 1983), is separated from the Indonesian taxon by the gelatinized pileipellis (ixocutis).

5. ***Psilocybe eximia*** E. Horak & Desjardin, **sp. nov.** – Fig. 4: 1 – 5

Pileus 20 – 40 mm, primo conicus dein convexus vel applanatus, semper papilla acuta instructus, fuscus vel fuliginosus, conspicue radialiter striatosulcatus. Lamellae adnatae vel subemarginatae, ochraceoferrugineae vel fuliginosae, haud fimbriatae. Stipes 40 – 50 × 2 – 4 mm, cylindricus, pallide ochraceus vel fuscus, glaber. Cortina nulla. Odor saporque farinacei. Basidiosporae 5 – 5.5 (– 6) × 4.5 – 5 × 5 – 4 µm, frontaliter rhomboideae vel mitriformes, lateraliter ovoideae, fuligineae, crassetunicatae, poro germinativo instructae. Cheilocystidia 22 – 35 (– 40) × 10 – 15 (– 20) µm, clavata, vesiculosa vel subutriformia, hyalina. Pleurocystidia nulla. Pileipellis ex hyphis cylindraceis, haud gelatinosis, cutem formantibus, pigmento brunneo instructis. Fibulae praesentes. Ad terram nudam, in silvis montanis tropicalibusque. Holotypus. – Indonesia (Java), leg. E. Horak 7326 (BO 99 – 203, isotypi XAL, ZT).

Pileus 20 – 40 mm diam., at first conical, becoming convex to expanded, always with prominent, acutely pointed papilla, dark date brown to fuliginous when moist, ochraceous when dry, hygrophanous, strongly radially folded-striate from centre to margin, dry, rather tough-membranaceous, veil remnants absent. – Lamellae 35 – 50 reaching stipe, lamellulae in (3 –)5 series, adnate, 2 – 5 mm wide, at first rust brown or ochraceous, becoming fuscous to fuliginous with age, occasionally with violaceous tinge in old specimens, even edges concolorous. – Stipe 40 – 50 × 2 – 4 mm, cylindrical, occasionally gradually enlarged into base, slender, pale ochraceous to dark brown, smooth, tough, fistulose. – Veil remnants absent. – Context white beneath center of pileus, otherwise orange brown, especially in rind of stipe, tough, not staining. – Odor and taste farinaceous, raphanoid or resembling crushed corn.

Spore print fuscous, lilac tint absent. – Basidiospores 5 – 5.5 (– 6) × 4.5 – 5 × 3.5 – 4 µm, rhomboid or mitriform in face view, oblong in side view, thick-walled (up to 1 µm thick), smooth, dark brown to fuliginous, opaque, with distinctive germ pore. – Basidia 15 – 25 × 4 – 6 µm, 4-spored, cylindrical to subclavate, often with median constriction, hyaline. – Cheilocystidia 22 – 35 (– 40) × 10 – 15 (– 20) µm, polymorphic, broadly clavate, vesiculose, broadly fusoid or broadly utriform, thin-walled, hyaline. – Pleurocystidia absent. – Subhymenium composed of globose or subglobose cell, up to 55 µm diam., thick-walled, walls encrusted with brownish pigment. – Trama composed of subglobose or subcylindrical, thick-walled cells, 15 – 37 µm diam. – Hyphae of stipe cylindrical, 4 – 12 µm diam., hyaline, encrusted with brownish pigment. – Pileipellis a cutis composed of cylindrical, non-gelatinized, hyaline, thin-walled hyphae, 2 – 3 µm diam. – Subpellis composed of conspicuous, globose

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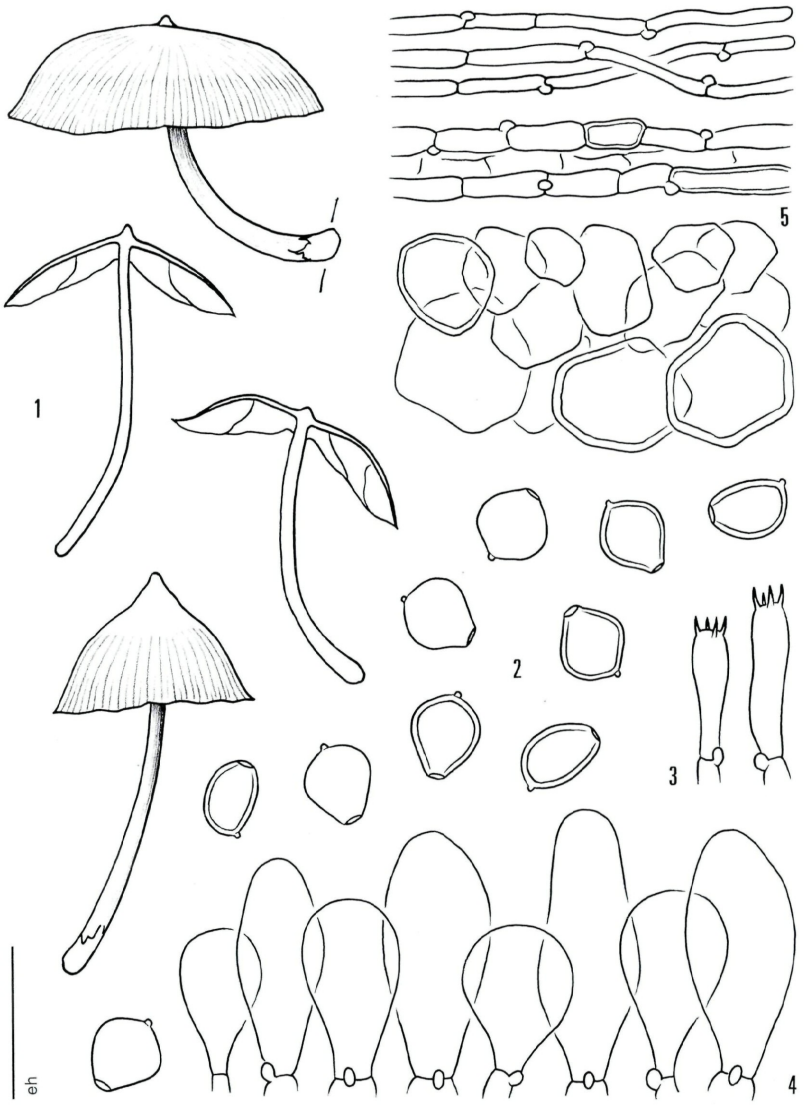


Fig. 4. 1 – 5: *Psilocybe eximia* (holotype): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. – 5. Pileipellis and subpellis. – Scale bar: 10 mm (1), 5 µm (2), 10 µm (3,4), 20 µm (5).

to ovoid cells up to 55 µm diam., with brown walls up to 3 – 4 µm thick. – Clamp connections present.

Etymology: *eximius* (Lat.) – outstanding.

Specimens examinded: Indonesia: Java, Mt. Halimun National Park, ca. 1000 – 1100 m, near Cikaniki Field Station, 10 Jan 1999, leg. E. Horak 7326

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(Holotypus. – BO 99 – 203, isotypes XAL, ZT); same locality, 9 Jan 2001, leg. D. Desjardin & A. Wilson 7207 (BO, SFSU); same locality, 11 Jan 2001, leg. D. Desjardin 7234 (BO, SFSU).

Malaysia: Pahang Province, Fraser's Hill, along Jalan Air Terjun, road to Jeriau Waterfall, in tropical montane broadleaf forest, 9 Jan 2006, leg. D. Desjardin (SFSU).

Habitat and Ecology: Saprobic. – Scattered on bare, muddy soil among moss, ferns, grasses and litter, in tropical-montane broadleaf rain forest dominated by *Castanopsis-Quercus*, 1000 – 1100 m alt. (type material).

Distribution: Indonesia: Java (recorded only from type locality). – Malaysia.

Discussion: Because of the rhomboid, thick-walled basidiospores in combination with the peculiar farinaceous or raphanoid odor of the basidiomes, *Psilocybe eximia* clearly belongs to sect. Cordisporae (Guzmán 1983). In addition, the globose to vesiculose cheilocystidia distinctly separate this species from all other described taxa accommodated in sect. Cordisporae (Guzmán 1995).

6. ***Psilocybe overeemii*** E. Horak & Desjardin, **sp. nov.** – Fig. 5: 1 – 7

Pileus 5 – 10 mm, convexus dein applanatus, semper papilla acuta instructus, fuscus, siccitate aurantius vel ochraceus, dense fibrillis concoloribus e velo obtectus, siccus. Lamellae adnexae, angustae, primo fuscae (lilacino tinctae) dein lateritiobrunneae. Stipes 6 – 12 × 0.5 – 0.8 mm, cylindricus, pileo concolor vel fuligineofuscus, basim versus subfloccosus velutinusque. Cortina nulla. Odor saporque nulli. Basidiosporae 4.5 – 5.5 × 4 – 5 × 3 – 3.5 µm, frontaliter rhomboideae vel mitriformes, lateraliter ovatae, crassetunicatae, opacae, fuscae, poro germinativo instructae. Cheilocystidia 15 – 25 × 3.5 – 6 µm, fusoidea, apicaliter saepe ramosa, hyalina. Pleurocystidia 16 – 25 × 6 – 11 µm, clavata, rarissime mucronata, tenui- vel crassetunicata, pigmento luteobrunneo refractivoque impleta. Pileipellis ex hyphis cylindraceis, haud gelatinosis cutem formantibus, pigmento brunneo incrustatis. Subpellis haud cellularis. Fibulae praesentes. Ad frustula. Holotypus. – Indonesia (Java), leg. E. Horak 7311 (BO 99 – 130, isotypi XAL, ZT).

Pileus 5 – 10 mm diam, at first convex becoming expanded, centre depressed in old specimens, always with acute, conical papilla, deep date brown when moist, drying becoming pale ochraceus, papilla remaining orange-brown, hygrophanous, margin non-striate, dry, densely covered with concolorous, coarse, non-persisting fibrils of veil. – Lamellae 32 – 40 reaching stipe, lamellulae in 3 – 5 series, adnexed, very narrow, up to 1 mm wide, tobacco brown with faint lilac tint, becoming dark brick brown, concolorous edges fimbriate. – Stipe 6 – 12 × 0.5 – 0.8 mm, cylindrical, curved, concolorous with pileus or fuscous, base with white mycelium, apex smooth to subpruinose, subvelutinous to floccose towards base, solid, tough,

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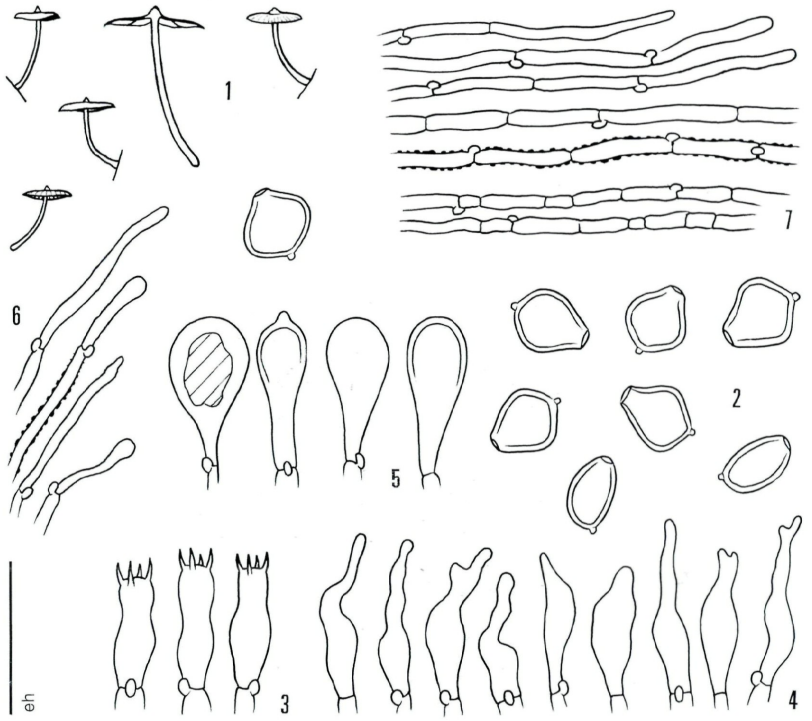


Fig. 5. 1 – 7: *Psilocybe overeemii* (holotype): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. – 5. Pleurocystidia. – 6. Caulocystidia. – 7. Pileipellis and subpellis. – Scale bar: 10 mm (1), 5 µm (2), 10 µm (3, 4, 5), 20 µm (6, 7).

dry. – Veil remnants absent on stipe. – Context concolorous with pileus, tough. – Odor and taste unknown.

Spore print dark brown with faint lilac tint. – Basidiospores 4.5 – 5.5 × 4 – 5 × 3 – 3.5 µm, rhomboid or mitriform in face view, oblong in side view, thick-walled (up to 1 µm diam.), smooth, dark brown to fuliginous, opaque, germ pore distinctive. – Basidia 15 – 17 (– 20) × 5 – 6 µm, 4-spored, subcylindrical, usually with median constriction, hyaline. – Cheilocystidia 15 – 25 × 3.5 – 6 µm, fusoid or sublageniform with slender neck, frequently irregularly branched, hyaline, thin-walled. – Pleurocystidia 16 – 26 × 6 – 10 µm, clavate, with mucro at apex present or absent, thin- or thick-walled (at apex and/or at base), hyaline, with yellow-brown, strongly refractive content (chrysocystidia-like). – Caulocystidia scattered, polymorphic, not distinctive. – Subhymenium subcellular, with hyaline to yellowish elements, 3 – 6 µm diam. – Trama subregular, composed of hyaline, yellowish or brownish hyphae, 2 – 6 (– 8) µm diam. – Hyphae of stipe 2 – 9 µm diam., strongly encrusted with brown pigment. – Pileipellis a cutis composed of 2 – 6 µm diam., thin-walled,

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brownish yellow, non-gelatinized hyphae, encrusted with brown pigment. – Subpellis poorly developed, composed of hyaline or yellowish, 3 – 5 µm diam. hyphae. Hyphae of veil remnants on pileus surface cylindrical, hyaline, 2 – 3 µm diam., terminal cells not differentiated. – Context composed of subglobose to ovoid cells, 5 – 12 µm diam., encrusted with pigment. – Clamp connections present.

Etymology: Named after the Dutch mycologist C. van Overeem.

Specimens examined: INDONESIA: Java, Mt. Halimun National Park, 1200 m, near Cikaniki Field Station, 8 Jan 1999, leg. E. Horak 7311 (Holotypus. – BO 99 – 130, isotypes XAL, ZT). – Bogor, Botanical Garden (?), leg. Overeem (paintings only in BO).

Habitat and Ecology: Saprobic. – Scattered, on rotten debris of dicot trees, in tropical-montane broadleaf rain forest under *Castanopsis-Quercus*, about 1200 m alt. (probably also in tropical-lowland forest).

Distribution: Indonesia: Bali (recorded only from type locality).

Discussion: As pointed out in the key, *Psilocybe overeemii* is characterized by the distinctly rhomboid-mitriform, thick-walled basidiospores and conspicuous, clavate chrysocystidia-like pleurocystidia. Thus this taxon is closely related with the sympatric *Ps. aureicystidiata* (described below). The two species, however, are readily separated by the size and shape of the basidiomes and by the presence and distribution of veil remnants on pileus and stipe.

In C. van Overeem's collection of watercolor paintings (kept in BO), plate 323 clearly depicts the present species, probably found in the Botanical Garden of Bogor. Unfortunately, no specimens are preserved but the well-executed drawings relating to the macroscopical and microscopical characters support the identity of this record. Accordingly, the taxon is named in honor of the Dutch mycologist C. van Overeem (1893 – 1927) who worked as Curator at the Herbarium Bogoriense for several years.

7. ***Psilocybe aureicystidiata*** E. Horak & Desjardin, **spec. nov.** – Fig. 6: 1 – 7

Pileus 15 – 30 mm, convexus vel campanulatus, papilla acuta instructus, brunneus, siccitate argillaceus, marginem versus squamulis conspicuis persistentibus e velo obtectus, siccus. Lamellae adnatae vel subdecurrentes, densae, angustae, pallide argillaceae vel fuscae. Stipes 30 – 40 × 5 – 2 mm, cylindricus, pileo concolor, apicaliter pruinosus, annulo subpersistenti et zonis fibrillosis rufobrunneis ochraceis vel albidis e velo dense obtectus. Odor saporque nulli. Basidiosporae (4.5 –) 5 – 5.5 (– 6) × 4 – 5 × (3 –) 3.5 – 4 µm, frontaliter rhomboideae vel mitriformes, lateraliter ovoideae, crassetunicatae, poro germinativo instructae.

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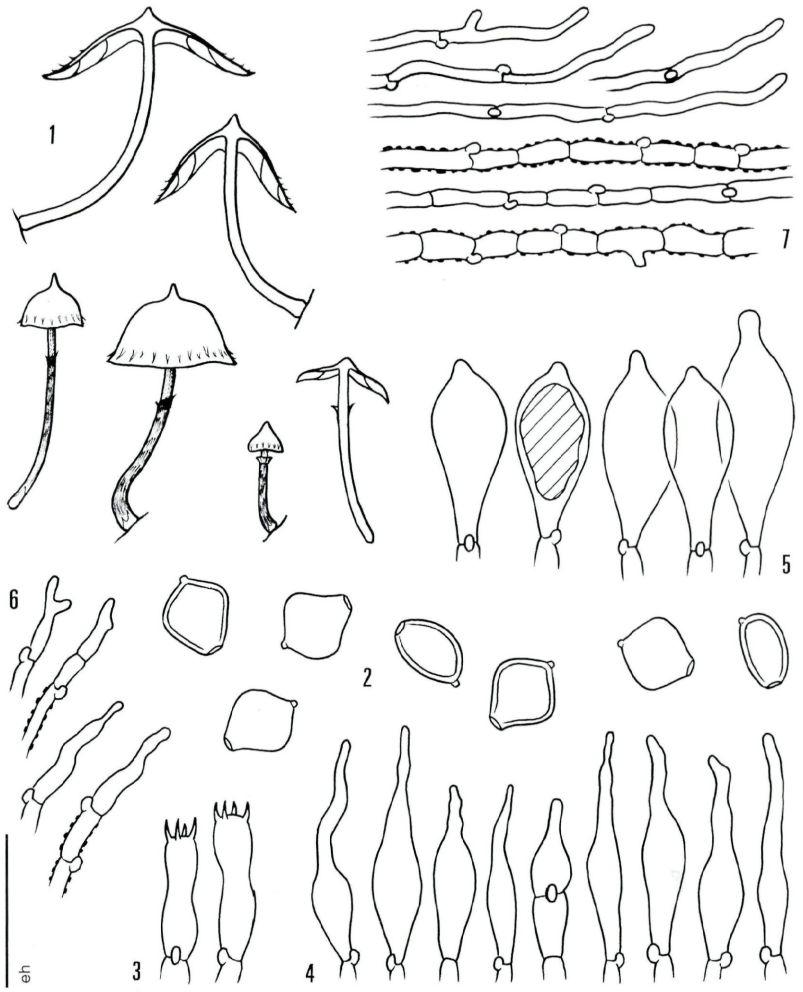


Fig. 6. 1 – 8: *Psilocybe aureicystidiata* (holotype): 1. Basidiomes. – 2. Basidiospores. – 3. Basidia. – 4. Cheilocystidia. – 5. Pleurocystidia. – 6. Caulocystidia. – 7. Pileipellis and subpellis. – Scale bar: 10 mm (1), 5 µm (2), 10 µm (3, 4, 5), 20 µm (6, 7).

Cheilocystidia (15 –) 20 – 32 × 4 – 6 µm, fusiformia, apicaliter interdum constricta vel ramosa, hyalina. Pleurocystidia (15 –) 20 – 32 × 8 – 12 µm, clavata vel late fusiformia, distincte mucronata, pigmento luteo conspicue impleta. Pileipellis ex hyphis cylindraceis, haud gelatinosis, cutem formantibus. Fibulae praesentes. Ad frustula, in silvis montanis tropicalibusque. Holotypus. – Indonesia (Java), leg. E. Horak 7034 (BO 98-92, isotypi XAL, ZT).

Pileus 15 – 30 mm diam, at first hemispherical to convex, becoming campanulate, apex with sharply pointed papilla, date brown to pale liver brown when moist, fading to argillaceous, weakly hygrophanous, smooth or radially wrinkled, innately fibrillose,

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dry, densely covered with appressed, fibrillose to squamulose, persistent, pale reddish brown, pale ochre or whitish veil remnants towards the non-striate margin. – Lamellae 40 – 55 reaching stipe, lamellulae in 7 – 15 series, adnate or subdecurrent, densely crowded, narrow (– 1.5 mm wide), at first pale argillaceous, becoming dark tobacco brown or chocolate brown with age, occasionally with reddish tints, edges fimbriate, paler concolorous or whitish. – Stipe 30 – 40 × 1.5 – 2 mm, cylindrical, equal, often curved, concolorous with pileus, base dark brown, apex pruinose, dry, hollow, solitary. – Veil remnants as persistent annulus or cortina, towards base densely covered with girdles of appressed, fibrillose, persistent, reddish brown or pale ochre zones of veil. – Context concolorous with pileus, not staining. – Odor and taste not distinctive.

Spore print dark purple brown or fuscous, lilac tint absent. – Basidiospores (4.5 –) 5 – 5.5 (– 6) × 4 – 5 × (3 –) 3.5 – 4 µm, rhomboid or mitriformin face view, oblong in side view, thick-walled (up to 1 µm diam.), smooth, dark brown to fuliginous, opaque, with distinct germ pore. – Basidia (12 –) 15 – 20 × 4.5 – 6 µm, 4-spored, hyaline, subclavate to cylindrical, with median constriction. – Cheilocystidia (15 –) 20 – 32 × 4 – 6 µm, hyaline, fusiform to slender clavate, apex mucronate or elongated, occasionally constricted. – Pleurocystidia (15 –) 20 – 32 × 8 – 12 µm, clavate to broadly fusoid, apex distinctly mucronate-rostrate, thin-walled, hyaline, in KOH or NH_4OH with strongly refractive content, chrysocystidia-like. – Caulocystidia like cheilocystidia. – Subhymenium subcellular, composed of 5 – 12 µm diam., yellowish, thin-walled hyphae. – Trama subregular, composed of hyaline or yellowish hyphae, 3.5 – 13 µm diam. – Hyphae of stipe 2 – 5 µm diam., densely covered with brown encrusting pigment. – Pileipellis a cutis composed of cylindrical, non-gelatinized, hyaline hyphae, 1.5 – 2.5 µm diam. – Subpellis non-cellular, composed of short-celled hyphae, 5 – 10 µm diam., strongly encrusted with brown pigment. Hyphae of veil remnants on pileus surface cylindrical, hyaline, 3 – 4 µm diam., terminal cells not differentiated or occasionally subfusoid. – Clamp connections present.

Etymology: *aureus* (Lat.) – golden; *cystidiatus* (Lat.) – with cystidia.

Specimens examined: Indonesia: Java, Cibodas, trail to Mt. Gedeh, between entrance and waterfalls, 10 Jan 1998, leg. E. Horak 7034 (Holotypus. – BO 98-92, isotypes XAL, ZT). – Java, Mt. Halimun National Park, Cikaniki Field Station, 8 Jan 1999, leg. E. & A. Horak 7310 (BO 99 – 129, ZT, XAL). – Lombok, Sembalun Bumbung, Puncak, 29 Jan 2001, leg. E. & A. Horak 9189 (ZT, XAL).

Additional material examined: Sri Lanka: *Psilocybe goniospora* (Berk. & Broome) Singer, Peradeniya, Nov. 1868, Thwaites 835 (holotype, K); *Psilocybe lonchophora* (Berk. & Broome) E. Horak ap. Guzmán, Peradeniya, Dec. 1868, Thwaites 835 (holotype, K).

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Habitat and Ecology: Saprobic. – Scattered, on rotten logs of dicot trees, in tropical-montane broadleaf rain forest dominated by *Castanopsis javanica-argentea* and *Quercus* sp., between 1100 – 1900 m alt.

Distribution: Indonesia: Java (type), Lombok.

Discussion: Both macroscopically and microscopically, *Psilocybe aureicystidiata* is an outstanding species. In young specimens, the margin of the pileus is covered with conspicuous, fibrillose or squamulose veil remnants. In addition, white veil remnants are densely covering the stipe below the distinctive, subpersistent cortina. Furthermore, this new species is readily recognized by the prominent and numerous chrysocystidia-like pleurocystidia that (in KOH or NH_4OH) are filled with a strongly refractive, yellowish content. Contrary to *Ps. overeeemii,* the pleurocystidia of *Ps. aureicystidiata* are mucronate and thus recall those reported for typical taxa of the genus *Hypholoma* (Fr.) P. Kumm. (1871). Because of the presence of the distinctive pleurocystidia, *Ps. aureicystidia* and the before-listed *Ps. overeemii* belong to the new sect. Neocaledonicae, recently proposed by Guzmán (2004).

In the field, the Indonesian *Psilocybe aureicystidiata* can readily mistaken for the Papuan *Ps. brunneicystidiata* Guzmán & E. Horak (1979). By comparison the large basidiomes of both species are characterized by the acutely pointed papilla of the pilei covered with copious, persistent, fibrillose-squamulose veil remnants and the rhomboid-mitriform basidiospores which, however, are significantly larger in *Ps. brunneicystidiata* as those reported for the confusingly alike counterpart from Indonesia.

Distinctly mitriform basidiospores in combination with chrysocystidia-like pleurocystidia have been also reported for the Sri Lankan *Ps. goniospora* (Berk. & Broome) Singer (1961) and *Ps. lonchophora* (Berk. & Broome) E. Horak ap. Guzmán (1983). The re-examination of the type material revealed, however, that the basidiospores of these two, probably contaxic taxa (Pegler 1986) are distinctly larger as compared to those of *Ps. aureicystidata.*

Additional, unpublished Indonesian taxa of *Psilocybe*

The evaluation of the notes and drawings of C. van Overeem's unpublished color painting (no. 324, kept in Herbarium BO) revealed that in *Psilocybe* chrysocystidia-like pleurocystidia are not exclusively linked to rhomboid and thick-walled basidiospores but occur also in combination with ovoid, thin-walled basidiospores (cf. sect. Chrysocystidiatae Singer). To date, specimens of this remarkable, Javanese representative of *Psilocybe* were not rediscovered in the

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Javanese localities sampled by us. Eventually, fresh material of this enigmatic species will allow the comparison with the putatively related *Ps. ochreata* (Berk. & Broome) E. Horak & Guzmán described from Sri Lanka (Pegler 1986).

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