

## Additions to "On cuboid-spored species of *Entoloma*" \*)

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After the above mentioned manuscript went into press we made the acquaintance of several new or already described taxa of *Entoloma* which also belong to the group with distinct cuboid or quadrate spores. The result of a critical examination of type or authentical material is given below.

### 1. *Entoloma alboconicum* DENNIS 1961 (Fig. 1, a—e)

Kew Bull. 15:146

Illustrations: DENNIS (1961, l. c.).

Material: "Venezuela, Caracas, Botanical Garden; 20. VIII. 1958, leg. DENNIS (2537: holotype; K)."

Microscopical observations: Spores 8,5—13  $\mu$ , cuboid, rarely pentagonal. Basidia 40—60/10—14  $\mu$ , 4-spored. Cheilocystidia 15—60/5—14  $\mu$ , articulate, terminal cell irregularly shaped, often with coralloid knobs and excrescences, hyaline and thin-walled membrane. Cuticle a cutis of repent, cylindrical hyphae (5—12  $\mu$  diam.), pigment plasmatic. Clamp connections present.

The examination of the type material showed that the spores are, in contrast to DENNIS' sketches, predominately cuboid. According to the dried specimens the apex of the pilei must have been in fresh condition considerably more conical (or even cuspidate) as drawn by DENNIS (1961).

*Entoloma alboconicum* DENNIS fits well into the group of taxa keyed out under A (HORAK, 1976). Its taxonomic position is close to *E. avilanum* (DENNIS) from which it differs clearly by the white colour of pileus and stipe, by the larger spores and by the irregularshaped cheilocystidia.

### 2. *Entoloma cubensis* MURRILL ss. DENNIS 1953 (Fig. 2, a—c)

Bull. Soc. Myc. France 69: 168.

= *Entoloma brunneostriatum* DENNIS 1953

Bull. Soc. Myc. France 69: 166.

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\*) Sydowia 28: 171—236 (1976).

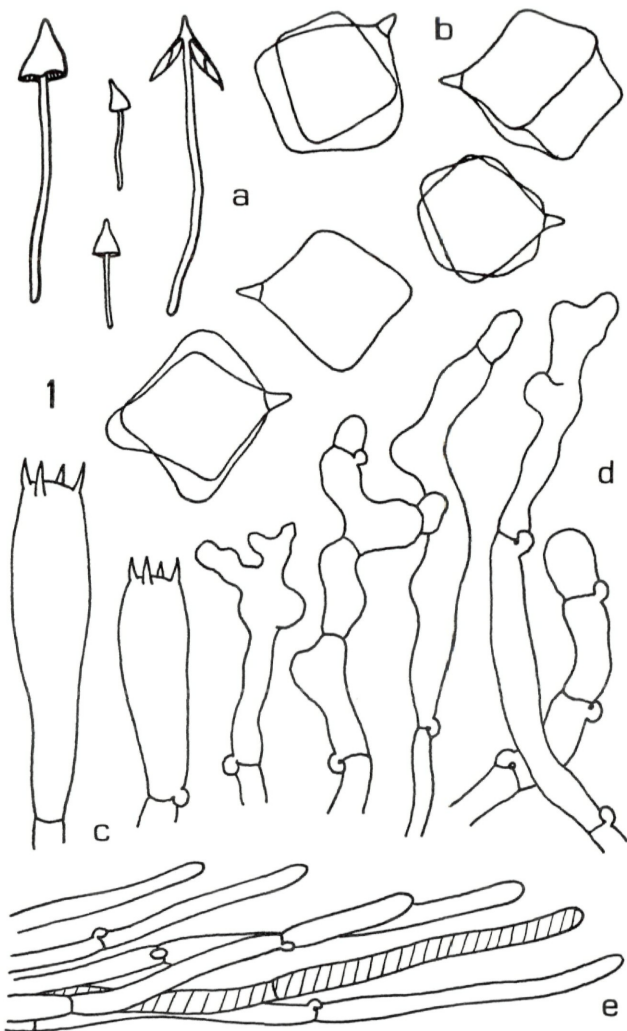


Fig. 1. *Entoloma alboconicum* DENNIS (type): a. carpophores (drawn from dried material). — b. spores. — c. basidia. — d. cheilocystidia. — e. cuticle

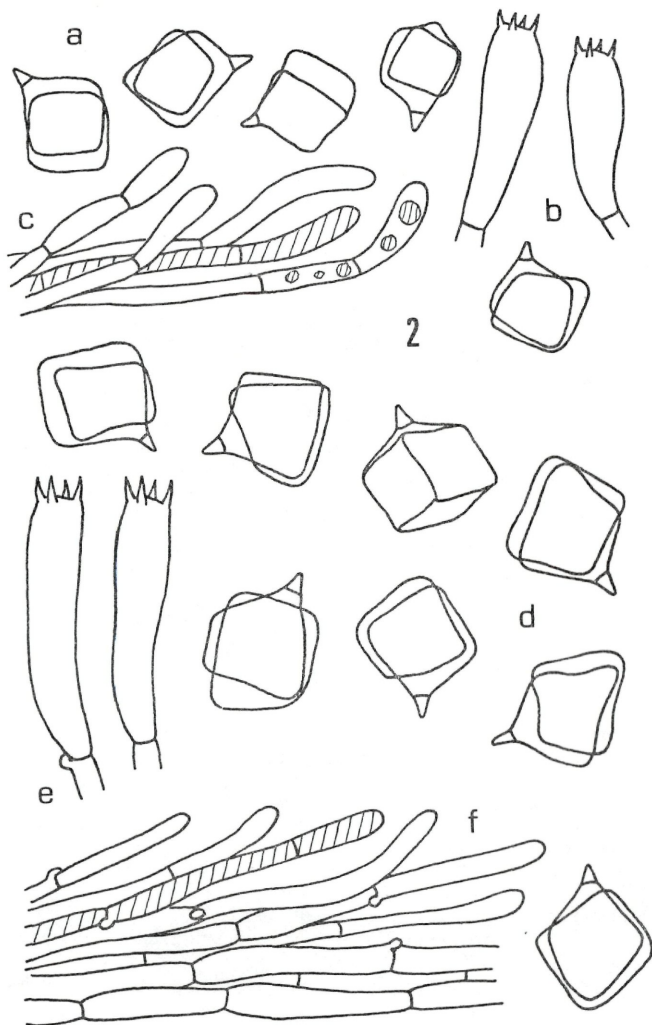


Fig. 2. *Entoloma cubensis* MURRILL ss. DENNIS (= *Entoloma brunneo-striatum* DENNIS) (318, K): a. apores. — b. basidia. — c. cuticle.   
*Entoloma kamerunense* (BRESADOLA) HORÁK (type): d. spores. — e. basidia. — f. cuticle

Illustrations: DENNIS (1953: l. c.).

Material: "Trinidad, St. Joseph; 10. XI. 1949, leg. DENNIS (318; K)".

Microscopical observations: Spores 5,5—7  $\mu$ , quadrate to cuboid, rarely pentagonal. Basidia 28—35/9—11  $\mu$ , 4-spored. Cheilocystidia absent. Cuticle a cutis of repent, cylindrical hyphae (5—10  $\mu$  diam.), pigment plasmatic or vacuolar. Clamp connections absent.

There is no discernible macro- and microscopical difference between the material of *E. cubensis* ss. DENNIS and *E. brunneostriatum* DENNIS, both collected at the same locality in Trinidad.

Unfortunately the type material of *Eccilia cubensis* MURRILL (1911) is in fragmentary condition and unfit for detailed study (HESLER 1967: 190). Under these circumstances it is impossible to prove whether *E. brunneostriatum* is a synonym of *E. cubensis* ss. MURRILL or not.

### 3. *Entoloma dragonosporum* (SINGER) HORAK c. n. (Fig. 3, a—b)

Basionym: *Rhodophyllus dragonosporus* SINGER 1965: Atas Inst. Mic. 2: 45.

Illustrations: SINGER (1965: l. c.).

Material: "Bolivia, Beni, Vaca Diez, Guyaramarin; 17. III. 1956, leg. SINGER (2106: holotype; BAFC)".

Microscopical observations: Spores 13—25(30)  $\mu$ , cuboid, corners prolonged into long finger-like projections, rarely 3- or 5-angled. Basidia 20—28/18—22  $\mu$ , stout, 4-spored. Cystidia absent. Structure of cuticle not studied since material is scarce. Clamp connections present.

Like the majority of cuboid-spored species of *Entoloma* this striking Bolivian fungus has a cuspidate pileus. The spores are by far the largest ones of all taxa studied hitherto.

### 4. *Entoloma kamerunense* (BRESADOLA) HORAK c. n. (Fig. 2, d, e, f).

Basionym: *Nolanea kamerunensis* BRESADOLA 1890: Bull. Soc. Myc. France 1: 34 ("camaroensis").

Synonym: *Rhodophyllus phleboides* ROMAGNESI 1941: Les Rhodophylles de Madagascar, p. 109.

?*Rhodophyllus rhodellus* ROMAGNESI (forma) 1941: Les Rhodophylles de Madagascar, p. 112.

Illustrations: BRESADOLA (1929; 589/1).

Material: "Kamerun; 1888, leg. J. BRAUN (Herb. *Bresadola*: holotype; S)".

Microscopical observations: Spores 7—10  $\mu$ , cuboid. Basidia 40—45/8—10  $\mu$ , 4-spored. Cheilocystidia absent. Cuticle a cutis of repent, cylindrical hyphae (6—12  $\mu$  diam.) with brown plasmatic pigment. Clamp connections numerous.

In autumn 1976 I had the opportunity to visit the Riksherbarium

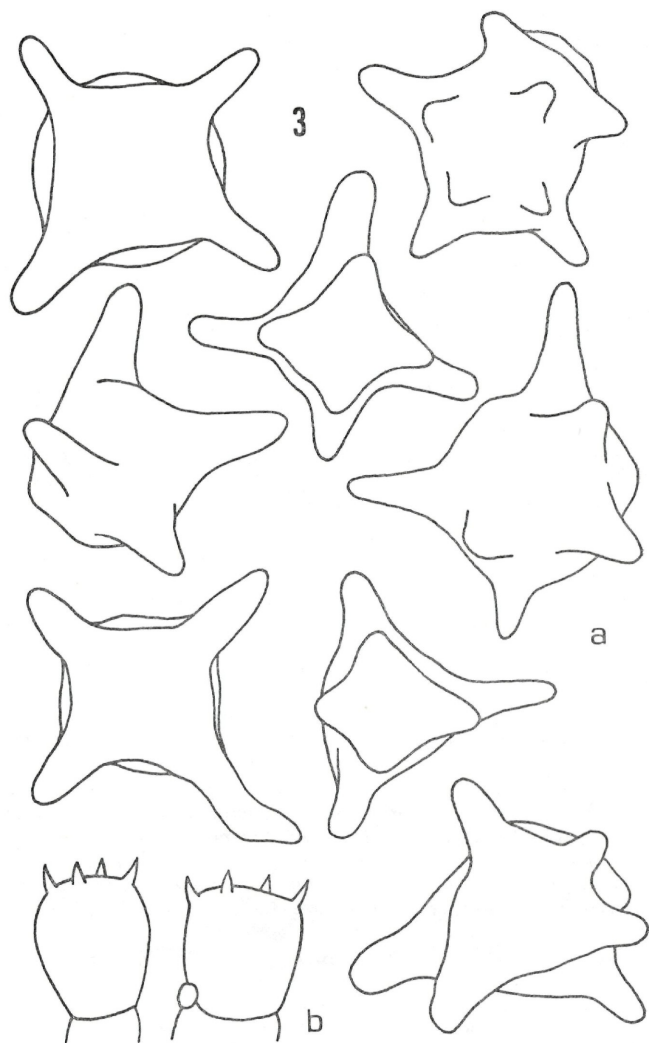


Fig. 3. *Entoloma dragonsporum* (SINGER) HORAK (type): a. spores. — b. basidia

in Stockholm (S). Contrary to former negative reports the type specimens of *N. kamerunensis* BRES. were found in good condition in the BRESADOLA Herbarium kept there. After examining the authentic material *E. kamerunense* and *E. phleboides* can not be separated. Therefore the fungus from Malagasy is now considered a synonym of BRESADOLA's fungus described about 50 years earlier.

#### 4. *Entoloma grave* HORAK sp. n. (Fig. 4, s-v)

Pileo 15—50 mm lato, convexo-papillato, pallide brunneo vel incarnato-brunneolo, venoso ad apicem, striato marginem versus, sicco, hygrophano. Lamellis adnatis, ventricosus, brunneo-incarnatis. Stipite 30—70/1,5—4 mm, cylindrico, pileo concolori, sicco, glabro. Odore saporeque farinaceo. Sporis 6,5—10  $\mu$ , quadratis (raro pentagonalibus). Cystidiis nullis. Cuticula ex hyphis cylindraceis, pigmento brunneo impletis. Fibulis praesentibus. Habitatio ad terram in silvis quercinis. Nova Guinea. Typus (ZT, 72/444).

Pileus 15—50 mm diam., conical when young, becoming papillate-convex, expanded with distinct conical umbo; pale brown with distinct reddish-brownish tint, hygrophanous; dry, strongly striate, subvenose at apex, otherwise glabrous. Lamellae adnate to adnexed, ventricose, L 10—15, 17 (—15), densely crowded, edge concolorous. Stipe 30—70/1,5—4 mm, cylindrical or attenuated upwards, terete, fragile; pale brownish or concolorous with pileus, base covered with white mycelium; dry, glabrous, hollow, single in groups. Context pale brownish. Odour and taste farinaceous.

Spores 6,5—10  $\mu$ , quadrate to rhomboid, sometimes with pentagonal profile. Basidia 30—36/9—11  $\mu$ , 4-spored. Cystidia none. Cuticle a cutis or palisade of cylindrical hyphae (6—8  $\mu$  diam.), with brown plasmatic pigment. Clamp connections numerous.

Habitat: On soil under *Castanopsis* and *Lithocarpus* (*Fagaceae*). Papua New Guinea.

Material: Papua New Guinea: "Morobe District, Gurakor, between Oomsis and Mumeng; 4. V. 1972, leg. A. KAIRO" (ZT, 72/444: holotype).

According to the macroscopical and microscopical characters *E. grave* is a close relative of *E. staurosporium* (BRES.). The two taxa are well distinguished by the shape of the spores which are mostly rhomboid but mixed with spores of pentagonal profile. In contrast to *E. staurosporium* the New Guinean species has adnate lamellae and the papilla is much more pronounced as in the before mentioned taxon.

#### 5. *Entoloma significum* CORNER & HORAK sp. n. (Fig. 5, r-v)

Pileo —70 mm lato, umbonato-convexo, carnoso, subsquamuloso ad apicem, pallide ochraceo-brunneo, striato. Lamellis adnatis vel submarginatis, pileo concoloribus dein incarnatis. Stipite —120/—14 mm, cylindrico vel attenuato apicem versus, pileo concolori vel pallidiori, sicco, glabro, cavo. Odore saporeque nullo vel subraphanoideo. Sporis 8—11  $\mu$ , quadratis vel

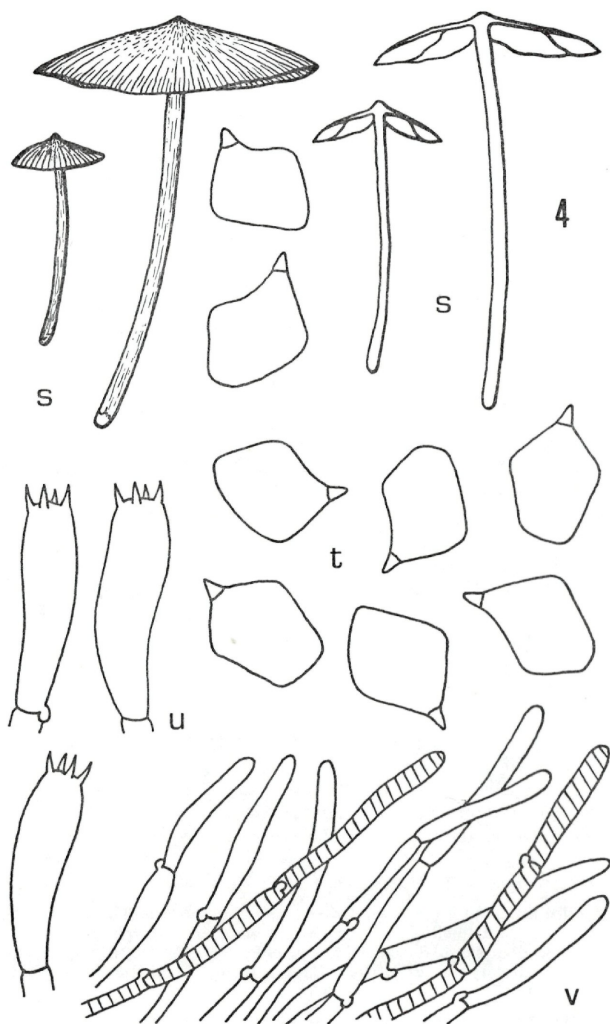


Fig. 4. *Entoloma grave* HORÁK (type): s. carpophores. — t. spores. — u. basidia. — v. cuticle

rhomboideis, raro pentagonalibus. Cystidiis nullis. Hyphis fibulatis. Habitatio ad terram in silvis. Borneo. Typus (RSNB 2903, ZT).

Pileus 25—70 mm diam., broadly umbonate-convex, conical when young, becoming expanded; pale pinkish, buff or fawn ochraceous, strongly striate towards margin; hygphanous, scurfy to subsquamulose over the centre, dry. Lamellae adnexed to adnate-emarginate, ventricose, L 16—20, 1—5, crowded, edge concolorous; whitish, pale brownish turning pink. Stipe 40—120/6—9 (—12 at base) mm, cylindrical, attenuated towards apex; concolorous with pileus or paler, base villous; dry, hollow, pruinose-puberulous at apex (sometimes floccose-fibrillose), fragile. Context concolorous with pileus, rather fissile, brittle. Odour and taste absent or slightly raphanoid.

Spores 8—11  $\mu$ , quadrate to rhomboid, occasionally pentagonal. Basidia 40—55/10—15  $\mu$ , 4-(rarely also 2)-spored. Cystidia absent. Cuticle a cutis of repent, cylindrical hyphae (8—20  $\mu$  diam.), with plasmatic brown pigment, oleiferous hyphae in subhymenium. Clamp connection present.

Habitat: On soil in forests. Borneo.

Material: Borneo: "North Borneo, Mt. Kinabalu, Kundasan, 1500 m; 9. IX. 1961, leg. CORNER (RSNB 2903, ZT: holotype)". — "North Borneo, Mt. Kinabalu, Mesilau, 1700 m; 11. IV. 1964, leg. CORNER (RSNB 8230)". — "North Borneo, Mt. Kinabalu, Mesilau; 22. IV. 1964, leg. CORNER (RSNB 8230 A)".

This species strongly reminds of *Entoloma nothofagi* STEV. from New Zealand. However, a number of characters are different: size of carpophores, colour of pileus, presence of clamp connections, and the rhomboid and larger spores.

6. *Entoloma pallide-flavum* (HENN. & NYM.) HORAK 1976: Sydowia 28: 178

Topotypical material (Herb. Bog. 88 (424): XII, 1921, leg. VAN OVEREEM) of this species was recently studied during a visit of the Herbarium Bogoriense, Java, Indonesia. The macro- and microscopical characters of the v. OVEREEM collection correspond in all details with the description published in HORAK (1976).

7. *Entoloma overeemi* HORAK sp. n. (Fig. 6, a—e)

Pileo usque ad 8 mm lato, convexo dein applanato umbilicato, albido vel luteolo, glabro. Lamellis adnato-decurrentibus, roseis. Stipite —10/—1 mm, cylindrico, albo, sicco. Sporis 5—7  $\mu$ , cuboideis. Cheilocystidiis vesiculosis. Ad terram. Holotypus (BO): Hort. Botan., Bogor, Java, Indonesia, VI. 1921, v. OVEREEM 117, 117 a.

Pileus 3—8 mm diam., convex when young later becoming applanate to depressed-umbilicate, papilla absent, white to pale yellow, smooth, indistinctly striate towards margin, dry. Lamellae



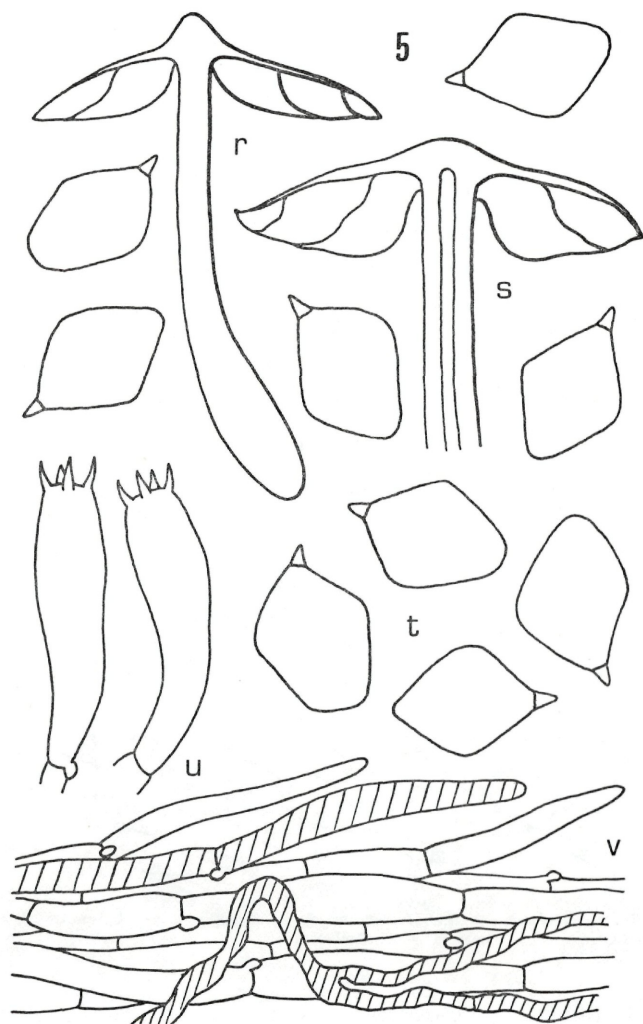


Fig. 5. *Entoloma signficum* CORNER & HORAK (type): r. carpophore. — t. spores. — u. basidia. — v. cuticle. — s. carpophore (RSNB 8230 A)

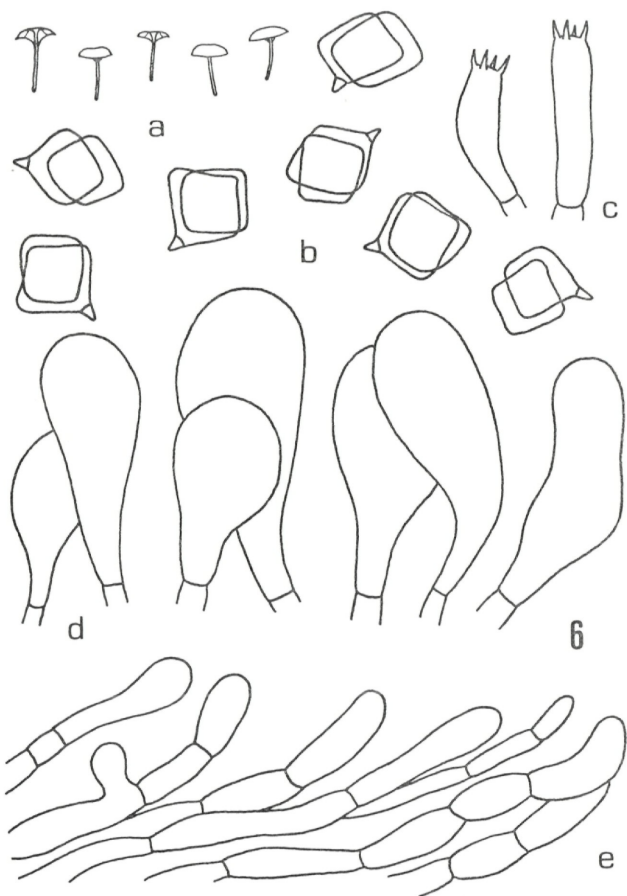


Fig. 6. *Entoloma overeemi* HORÁK (type): a. carpophores. — b. spores. — c. basidia. — d. cheilocystidia. — e. cuticle

(L 5–7, 1 1) broadly adnate to decurrent, at first whitish turning pink, gill edge fimbriate, concolorous. Stipe 5–10/–1 mm, cylindrical, central, whitish to yellowish, smooth, solid, single. Odour and taste unknown. Context thin, whitish.

Spores 5–7  $\mu$ , cuboid. Basidia 20–28/5–7  $\mu$ , 4-spored. Cheilocystidia 30–55/12–23  $\mu$ , clavate to vesiculose, hyaline, without plasmatic pigment. Pleurocystidia absent. Cuticle a cutis or trichoderm of short cylindrical cells (5–15  $\mu$  diam.), with faint plasmatic pigment. Clamp connections absent.

Habitat: On soil. Java (Indonesia).

Material: Indonesia: "Java, Bogor, Botanical Garden, VI. 1921, leg. v. OVEREEM (117, 117 a) (BO)".

This species is related to *Entoloma talisporum* CORNER & HORAK and *E. hyalodepas* (BERK. & BR.). However, the Javanese fungus is well separated by a number of characters from these two taxa which so far are known to occur in SE-Asia only.

If not otherwise stated the magnifications are: carpophores (natural size), spores (2000 $\times$ ), basidia and cystidia (1000 $\times$ ), cuticle (500 $\times$ ).

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