Distribution of the Hallucinogenic Mushroom *Psilocybe antioquensis* Guzmán et al. (Agaricomycetideae) in Colombia, Mexico, and Cambodia

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**ABSTRACT:** Two new records from Mexico and one from Cambodia of the hallucinogenic mushroom *Psilocybe antioquensis*, originally known only from Colombia, are discussed. This fungus grows on soil in subtropical meadows, and it is defined by its subumbonate pileus, long pseudorhiza, ovate-subrhomboid thick-walled spores, and for their pleuro- and cheilocystidia. It belongs to the section *Mexicanae* in genus *Psilocybe.*

**KEY WORDS:** *Psilocybe antioquensis*, hallucinogenic species, distribution, ecology, Colombia, Mexico, Cambodia

**INTRODUCTION**

In the confirming studies of hallucinogenic mushrooms in Thailand and other regions of southeast Asia made by Allen and Merlin (1992 a,b) and in the works of Guzmán on the second edition of *The Genus Psilocybe* (in preparation), the wide distribution throughout Mexico and Cambodia of the Colombian hallucinogenic mushroom *P. antioquensis* Guzmán et al. (1994) is presented below. It is well known that many of the hallucinogenic species of *Psilocybe* have worldwide distribution as *P. semilanceata* (Fr.:Secr.) P. Kumm., *P. cubensis* (Earle) Singer and *P. subcubensis* Guzmán; the first being more common in Europe, the U.S., Chile, and New Zealand, and the latter species being pantropical. However, there are certain species only known from the country where they were described. Species, such as *P. aztecorum* P. Heim emend. Guzmán, *P. galindii* Guzmán, and *P. fagi-cola* P. Heim are known only from Mexico; *P. venenata* (Imai) Imaz et Hongo from Japan; and *P. samuiensis* Guzmán, Band.-Muñoz et Allen from Thailand. Others species, such as *P. mexicana* P. Heim is known only from Mexico and Guatemala, and *P. yungensis* Singer et Smith is known only in Bolivia (type locality) and Mexico (Guzmán, 1983).
campanulate, with a narrow or wide papilla, or convex with or without papilla, not fully expanded at maturity, glabrous, subviscid to dry, smooth but the margin sulcate-striate, with entire or lacerate margin, hygrophanous, orange brown (6A5-8), sometimes ochraceous brow (5E5) or ochraceo olivaceous (4E6), fading to ochraceous (4A4-7), mainly in apex, with concolorous or whitish margin. Lamellae adnate to sinuate, pale ochraceous (4A2-4) to dark violaceous (14F3-4), with whitish edges. Stipe (40-) 60–124 (-180) × (1-) 1.5-2 (-3) mm (including the pseudorhiza), hollow, slightly and irregularly undulate, equal, subbulbous or attenuated at the base, cartilaginous, whitish to pale or dark ochraceous (4A3, 4A7), covered by white, appressed to grayish fibrills to more or less smooth above. Veil poorly developed, white, fibrillose or silky, soon evanescent, leaving fine appressed fibrils on the upper part of the stipe. Context in pileus whitish to pale ochraceous (4A2), in stipe ochraceous (4A3-4) to reddish ochraceous (6A6). Odor and taste farinaceous. KOH readily stains reddish brown pileus, stipe and context. All parts, except lamellae stain green-blue when bruised and irregularly green-blue to black when dry. Spore print dark violaceous brown (11F4 or 13F4).

Spores (6-) 8–10 (-11) × (5-) 6–6.5 (-7) × 5–6 µm, ovate-subrhomboid in face view, subellipsoid in side view, thick-walled, wall around 1 µm thick, pallid brownish, with a distinct and broad germ pore in one end, and an apical short appendage in the other. Basidia (20-) 23–28 (-45) × (6-) 7–9 (-10) µm, four spored, rare two spored, hyaline, ventricose, frequently flexuos, with a median constriction and a narrow base. Pleurocystidia (13-) 15–20 (-23) × (3.5-) 5–7 (-9) µm, hyaline, rare to more or less common, regular or irregularly sublageniform, or fusoid ampullaceous, with a narrow or ample base and a short or long neck in the apex, sometimes irregularly branched [those ventricose or subcylindric elements described by Guzmán et al. (1994) are basidioles]. Cheilocystidia (13-) 15–
20 (-25) (-29) × (3-) 4–6 (-7) (-9) µm, hyaline, forming a sterile band, similar to pleurocystidia, but more irregular branched, frequently subcylindrical or submoniliform. Subhymenium with hyphae, 2–5 wide, hyaline or incrusted with yellowish brown pigment. Hymenophoral trama regular, with hyaline or incrusted like subhymenium hyphae, 6–18 µm wide, some of them subglobose. Pileipellis an ixocutis, (10-) 20–40 µm thick, with hyaline, 1–3 (-9) µm wide hyphae. Subpellis (hypodermium) nondifferentiated. Context with hyaline to incrusted hyphae, 3–25 µm wide, some are subglobose. Stipepellis with postrated hyaline to yellowish brown hyphae, 2–12 µm wide, some of them subraised with a globose head, up to 13 µm diam. Clamp connections present.

Habitat
Solitary or in small to numerous groups, in clay soil or sand soil, in meadows with horses, cattle, or Indian Brahman cattle (*Bos*), and/or water buffalo (*Bubablus*), with leveling grasses, sometimes the mycelia is attached to the roots of the grasses, in subtropical humid regions, at 1000–1600 m altitude.

Distribution
Known from Antioquia in Colombia; Jalisco and Veracruz in Mexico, and Angkor in Kampuchea (formerly Cambodia). Probably a pantropical species.

Studied Specimens
- Colombia, Antioquia Department, Porce Municipio, near the road Medellín to Amalfi, zone of Puente Gabino, Aug. 31, 1990, Guzmán 29562-B (holotype HUA, isotype XAL); 29560-B; 29567-B; 29569-B (all in HUA and XAL).
- Mexico, Jalisco, Tala, June 11, 1994, Gómez 4 (IBUG); Veracruz, Xalapa, El Seminario, near the Campus of Universidad Veracruzana, July 18, 1981, García 426; Galván 83 (both in XAL).

DISCUSSION
Its large pseudorhiza and oblong-subrhomoid thick-walled spores, and its basidioma, such as *Psilocybe mexicana* or *P. galindii*, and the form and size of the pleuro- and cheilocystidia, are the mean taxonomic features of *P. antioquensis*. It belongs to the section *Mexicanae* Guzman (1983) for form and thick-walled spores as well as for the bluing feature of the basidioma. The Mexican and Cambodian material studied confirm the Colombian material, although there is a small variation in the size of the cheilocystidia. While the type of the cheilocystidia are (13-) 15–20 (-25) × (3-) 5–7 µm, the Mexican material are (13-) 17–25 (-29) × (4.5-) 6–8 (-9) µm, and the Cambodian material...
are (15-) 17–25 (-28) × (4-) 5–6 (-8) µm. Also, the pleurocystidia in the type and Cambodian material are (13-) 16–20 (-23) × (4-) 5–7 (-8) µm, in the Mexican material from Xalapa are (13-) 16–27 (-29) × (3.5-) 5–7 (-9) µm. These variations have no taxonomic value. The records of *P. antioquensis* in Mexico and Cambodia are new. It is interesting to observe that *P. antioquensis* runs from Colombia to Mexico, through the humid subtropical mountains. This distribution is similar to that of *P. yungensis* described from the forests region of Yungas, in Bolivia (Singer and Smith, 1958), and found in Mexico, in the forests of the Huautla de Jiménez region. Both localities of *P. yungensis* have the same type of vegetation, a cloud subtropical forest (Singer, personal communication in 1957 to the senior author in the Huautla de Jiménez region). The Bolivian locality presents an altitude of 2000 m, and Huautla de Jiménez 1800 m. The record of *P. antioquensis* from Cambodia shows the probability of pantropical distribution of this species, through the subtropical regions of the world. The Cambodian record is the second report of a hallucinogenic species of *Psilocybe* in Cambodia. Heim and Wasson in 1958 and Allen and Merlin in 1992 (Guzmán et al., 1998) reported *P. cubensis* from Cambodia. *Psilocybe antioquensis* is closely related to *P. samuiensis* Guzmán, Band.-Muñoz and Allen, species only known from Thailand (Guzmán et al., 1993). The Thailand species differs in having large spores, (9-) 10–12 (-13) × 6–8 (-9) × 6–7 µm, and in having a poorly developed pseudorhiza. *Psilocybe antioquensis* is also close to *P. galindii*, but that species has spores (8-) 9.5–12 (-14) × (6.5-) 7–8 × 6–7 µm.

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**REFERENCES**


