

NEW SECTION AND NEW SPECIES OF A BLUING *PSILOCYBE* (FUNGI, BASIDIOMYCOTINA, AGARICALES) FROM COLOMBIA

by

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Abstract

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Psilocybe bispora is described as a new caerulescent species from Antioquia, Colombia. The species is characterized by having two types of basidiospores: subrhomboid thick-walled, and subellipsoid thin-walled, when observed in face-view. *Psilocybe bispora* belongs to a new section of the genus, section *Bisporae*, here described. Both the species and the section belong to the hallucinogenic mushrooms of the genus because of the bluing feature of the basidioma.

Key words: Hallucinogenic mushrooms, *Psilocybe bispora*, section *Bisporae*.

Resumen

Se describe *Psilocybe bispora* como una especie nueva y cerulescente, colectada en el Departamento de Antioquia, Colombia. Se distingue por poseer dos tipos de basidiosporas, unas subromboides de pared gruesa y otras subelipsoides de pared delgada, en ambos casos cuando se observan en vista frontal. Esta especie se adscribe a una nueva sección del género, *Bisporae*, aquí propuesta. El carácter cerulescente de este *Psilocybe* hace que la sección corresponda al grupo de las especies alucinógenas.

Palabras clave: Hongos alucinógenos, *Psilocybe bispora*, sección *Bisporae*.

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Introduction

There are 27 species of *Psilocybe* reported from Colombia, as discussed recently by Guzmán *et al.* (2004), 19 of them belong to the hallucinogenic group because of their bluing reaction of the basidiomata. However, it seems to be that still are several unknown species of *Psilocybe* in the country, because since 1964 (Guzmán, 1978) to the present the mycological explorations made do not cover most of the areas of this megadiverse country (Franco-Molano *et al.*, 2000). In the present contribution, a new species of *Psilocybe* is described from a subtropical cloud forest from the mountains of Antioquia which has been no so much explored.

Materials and methods

Microscopic observations were made through hand sections of dry basidiomata, mounted in 5% KOH 5% NH₄OH solutions, or each one mixed with a drop of 1% Congo red solution in the slide. In all cases the material was previously rehydrated with 96% alcohol. Basidiospore measurements include length and width in face view, and depth in side view.

Results

Psilocybe bispora Guzmán, Franco-Mol. & Ram.-Guill. sp. nov.

Figs. 1-7

Pileus (10-) 20-40 mm latus, convexus vel subumbonatus, laevis, brunneolus vel fulvus vel cinnamomeus. Lamellae adnatae vel sinuatae, spadiceae. Stipes 40-70 x 5-8 mm, subclavatus vel clavatus, albus vel subflavidus. Caeruleus. Sporae duobus typis communi, 1: (5.5-) 6.5-7 (-7.5) x (4.5-) 5-5.5 (-6) x 4.5-5.5 µm, subrhomboidae frontaliter, crassitunicatae, et 2: 7-9 x 3.5-5 (-5.5) x 3.5-4.5 µm, subellipsoideae frontaliter, tenuitunicatae. Pleurocystidia 10-15 x 4-4.5 µm, communi, hyaline, ventricose-cylindraceae vel clavatus ventricose. Cheilocystidia (16-) 19-27 (-30) x 4-5 (-6) µm, communi, clavatus ventricose vel angustatus ventricose longicollis, aliquando ramus. Pileipellis ixocutis. Hyphae fibulate. Ad terram, caespitosum, sylvia subtropicali, Colombia, prope Antioquia. **Holotypus:** A.E. Franco-Molano 1766 (HUA).

Etymology: *bispora*, from two types of basidiospores.

Pileus (10-) 20-40 mm diam, convex to subumbonate, smooth, dry, shiny, finely fibrillose, pale brown or beige to darker at the center, with blue hues overall; in dry

specimens the surface has a cinnamon grayish brown color, without the blue hues; margin entire. *Lamellae* adnate to sinuate, whitish in young stage to pale reddish-brown or chocolate brown, with margin whitish and entire. *Stipe* 40-70 x 5-8 mm, hollow, cylindrical, subclavate, dry, smooth to finely fibrillose, exanulate, white to pale yellow or brownish downward, bluing when touched; base white; in dry specimens the stipe is brownish red with the base whitish. *Context* whitish, up to 5 mm thick in the pileus, bluing. *Odor and taste* strong farinaceous. *Basidiospores* of two types, both common, 1: (5.5-) 6.5-7 (-7.5) x (4.5-) 5-5.5 (-6) x 4.5-5.5 µm, subrhomboid in face-view, subellipsoid in side-view, thick-walled, wall up to 0.8 µm thick, and 2: 7-9 x 3.5-5 (-5.5) x 3.5-4.5 µm, subellipsoid in both face- and side-view, frequently asymmetric in both face- and side-view, thin-walled, wall no more than 0.5 µm thick; both types of spores brownish-yellow, with a broad apical germ pore and a short hilar appendage at the base. *Basidia* 18-26 x (5.5-) 6-7 (-8) µm, 4-spores, sterigmata 4-5 x 1-1.5 µm, clavate-ventricose, sometimes with a middle constriction, some basidia produced spores type 1 and others type 2. *Pleurocystidia* 10-15 x 4-4.5 µm, common, but difficult to find (observed only with Congo red), ventricose-subcylindrical or clavate ventricose, hyaline. *Cheilocystidia* (16-) 19-27 (-30) x 4-5 (-6) µm, common, forming a sterile edge in the gill, clavate-ventricose or narrowly ventricose with a long cylindrical apex, sometimes irregularly branched, hyaline. *Subhymenium* cellular, with elements 3.5-5 µm wide, hyaline to yellowish, thin-walled. *Hymenophoral trama* subregular, with hyphae 4-19 µm wide, thin- to thick-walled, wall up to 1 µm thick. *Context of pileus* with hyphae 5-30 µm wide, cylindrical to inflated, thin- to thick-walled, wall up to 1 µm thick, hyaline to yellowish. *Pileipellis* as an ixocutis, 25-30 µm thick, with hyphae 2-3 µm wide, thin-walled, hyaline, postrated. *Clamp connection* present.

Habitat and distribution. Cespitose and gregarious, on soil, in a subtropical forest with *Nageia rospigliosii* (Pilg.) de Laub. ("pino romerón"), at 2500 m alt. Known only from the type locality.

Studied material. COLOMBIA, Department of Antioquia, Municipio Tamesis, Río Frio, 05°43'1"N-75°44'9"W, March 11, 2003, A.E. Franco-Molano 1766 (Holotype: HUA; Isotype: XAL).

Observations

Psilocybe bispora because of its bluing reaction belongs to the hallucinogenic species of the genus, following the criterion of Singer and Smith (1958) and Guzmán (1995). For its two types of basidiospores, subrhomboid thick-



Figura 1. *Psilocybe bispora*, basidiomata (holotype) (photo. Franco-Molano).

walled and subellipsoid thin-walled does not fit in any of the accepted caerulescent sections known (Guzmán, 1995, 2004). According to Guzmán (1995) and Noordeloos (2001) the form of basidiospores and the thickness of their wall are important taxonomic features in *Psilocybe*, and for Guzman (1995) this is the base of the division of the genus in sections. Thus the following new section is proposed to accommodate this new species.

Section *Bispore* Guzmán sect. nov.

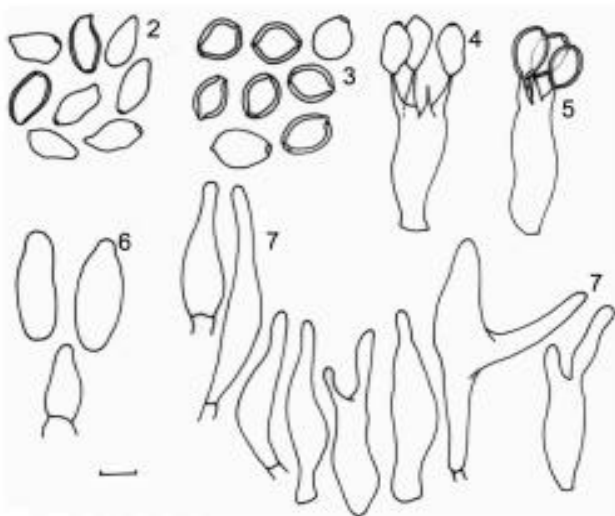
Sporae duobus typis, 1: subrhomboides frontaliter, crassitunicatae, et 2: subellipsoideae frontaliter, tenuitunicatae. Basidiomatae caeruleus. Typus: *Psilocybe bispora* Guzmán, Franco-Mol. et Ram.-Guill.

Because of two types of basidiospores: subrhomboid thick-walled and subellipsoid thin-walled, this section is related with sections: *Cordisporae* Guzmán and *Zapotecorum* Guzmán (Guzmán, 1995), which have subrhomboid thick-walled, and subellipsoid thin-walled spores, respectively. It is probably that section *Bisporeae* represents an ancestor of both above sections. The species belonging to these three sections are from the subtropical cloud forests, between 1000-2000 m altitude, where the majority of the caerulescent species of the genus have been found. However, it is interesting to observe that *Psilocybe bispora* grows in forests that reach the 2500 m altitude.

Certainly that the above described new species and section are based in one collection, but this collection has more than ten basidiomata, where the majority presented the two types of basidiospores. Moreover, several microscopic studies developed by the senior author in *Psilocybe* in a long time, moved to accepted this case as valid. This is an example to explain why we need more explorations, mainly in the subtropical cloud forests of the world.

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Figuras 2-7. *Psilocybe bispora*, 2. Basidiospores type two. 3. Basidiospores type one. 4. Basidium with spores type two. 5. Basidium with spores type one. 6. Pleurocystidia. 7. Cheilocystidia (all from the holotype). Scale bar 5 µm.

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