Bovista sclerocystis, a new species from Mexico

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Abstract: *Bovista sclerocystis* is described as a new species. It was found in Mexico, growing on rich soil of a tropical forest. It belongs to section Globaria, series Albosquamosa. The most striking character of this taxon is the exoperidium composed of polymorphous mycosclereids.

Key words: Gasteromycetes, Lycoperdaceae, tropical fungi

Kreisel (1967), who included 46 species. Kreisel and Calonge (1996) later combined *Lycoperdon septinum* Lloyd with *B. septina* (Lloyd) Kreisel & Calonge, a member of the *B. colorata* (Peck) Kreisel complex. In the course of a revision of the Gasteromycetes preserved at the herbarium of the Instituto de Ecología, Xalapa, Mexico (XAL), we were able to study a collection of the proposed taxon, composed of 20 mature basidiomata. Morphological and anatomical characters differentiate this taxon from all previously described species in the genus.

Samples were prepared for microscopy using 5% KOH as mounting medium before viewing with a Nikon Lapophot 104 light microscope. Ultramicroscopy was carried out after gleba samples were coated in gold with a Balzers SCD 004 sputter coater, using a JEOL JSM-T330A scanning electron microscope.

Bovista sclerocystis Calonge, Kreisel & Guzmán, sp. nov. FIGS. 1–3

Etymology. *sclerocystis*, due to the presence of mycosclereids in the exoperidium.

Basidiomata globosa, 10–20 mm diam, basi rhizomorphis subalbidis adnata.

Exoperidium ochraceo-brunneum, equaliter dense

The genus *Bovista* Pers.:Pers. was monographed by

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FIG. 1. *Bovista sclerocystis*. Variable morphology of the mycosclereids. Scale bar = 10 μ m. MA-Fungi 34355.

FIG. 2. *Bovista sclerocystis*. Spores as seen under SEM. Observe the fine ornamentation made of small pyramidal warts, up to 0.3 μm high. Scale bar = 1 μm . XAL, G. Carrion 823.

FIG. 3. *Bovista septina*. Spores observed under SEM showing a larger size and the ornamentation made of cylindrical warts. Scale bar = 1 μm . MA-Fungi 34355.

granulosum vel verrucosum. *Verrucae* et cellulis mycosclereidis multiformibus, crassae tunicatis, ad 42 μm longis, compositae. *Endoperidium* brunneolum, tenuiter papyraceum, cum orificio apicali irregulari. *Gleba* matura pulverulenta, floccosa, brunneola tabacina. *Sporae* globosae, 3.3–4.0 μm diam, brunneolae, glabrae ad punctatae sub microscopio optico, verruculosae sub SEM, haud pedicellatae. *Capillitium* modo transitorio ramificatum dichotomicum. *Hyphae* brunneae, subelasticae, non perforatae, non septate,

ad 5 μm crassae. *Paracapillitium* abundans, hyalinum. Habita ad terram in silvis tropicalibus, MEXICO, CHIAPAS: Ocozocoautla, Reserva Naturali El Ocote, 15 Feb 1986, G. Carrion 823 (XAL-HOLOTYPUS).

Fruit bodies globose, 10–20 mm diam, base with rudimentary pseudostipe and ramified whitish rhizomorphs. *Exoperidium* ochraceous-brown, forming equal fine warts or granules, composed of polymorphous mycosclereids (FIG. 1) which are globose, 12–30 μm diam, ovoid, ellipsoid, claviform, or irregular,

15–42 × 12–15 µm, with cell walls 1–7 µm thick. *Endoperidium* thin, papery, ochraceous to brownish, dull to slightly shining, with an apical aperture of irregular outline, 1–6 mm diam. *Gleba* ochraceous, grayish brown, powdery floccose. *Subgleba* absent. *Spore deposit* when mature grayish brown, without olivaceous tints.

Spores globose, 3.3–4.0 µm diam, smooth to punctate under LM, brownish, verruculose under the SEM, with pyramidal warts less than 0.3 µm high (FIG. 2), apedicellate with a rest of sterigma up to 1 µm long, hyaline. Broken fragments of sterigmata scarce, hyaline, up to 6 × 1 µm, which can be visible in water mounts. *Capillitium* 2–5 µm diam, of transitory type, with few dichotomous branches, which indicate it well could be of *Lycoperdon* type, brownish, subelastic, moderately thick-walled, not pitted, neither septate. *Paracapillitium* 2–4 µm diam, abundant, hyaline, incrustated, asperulate.

Specimen examined. MEXICO, CHIAPAS: Ocozacoautla, Natural Reserve El Ocote, 15 Feb 1986, G. Carrión 823 (XAL-HOLOTYPE), (MA-Fungi 52379-ISOTYPE).

From the taxonomical point of view, *B. sclerocystis* is related closely to *B. septina* (Lloyd) Kreisel & Calonge, known from Ecuador and Venezuela (Kreisel and Calonge 1996), but is distinguished by having a compact subgleba, larger fruit bodies (20–30 mm diam), darker gleba (chocolate-black), with an almost black spore deposit, larger and more distinctly ornamented spores, with cylindrical warts up to 0.5 µm high (FIG. 3) and by its habitat at 4000–4500 m. Both *B. sclerocystis* and *B. septina* belong to section *Globaria*, series *Albosquamosa* (Kreisel 1967). *Bovista*

abyssinica Mont. also is related closely to *B. sclerocystis* but has a compact subgleba, olive brown capillitium without pores and pseudosepta but with spiny exoperidium without mycosclereids, growing on high mountains of tropical Africa (Kreisel 1967, 2001). The presence of mycosclereids in the exoperidium of *B. sclerocystis* is a unique character in *Bovista*, while it is rather common in the genus *Tulostoma* (Wright 1987). Thus, this character, together with the almost smooth globose spores, capillitium of transitory type without pores or septa, abundant, hyaline, incrustated, asperulate paracapillitium, lack of subgleba and ecology, add up to a combination of features that differentiate this taxon from all previously described within *Bovista*.

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