



***Calvatia guzmanii* sp. nov. (Agaricaceae, Basidiomycota) from Paraná State, Brazil**

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Abstract

A new species of *Calvatia* is described from a semideciduous seasonal forest fragment in the western region of Paraná State, southern Brazil. *Calvatia guzmanii* is proposed as new based on the combination of dark brown and spiny to velvety exoperidium, prominent subgleba and echinulate-reticulate basidiospores with a short pedicel. A comparison with morphologically similar *Calvatia* species is given.

Key words: Neotropical fungi, mycobiota, puffball, taxonomy

Introduction

Calvatia Fries (1849: 442) comprises medium to large sized puffballs, often with a well-developed, compact to cellular sterile base, irregular dehiscence of the smooth to echinate peridium, the presence of eucapillitium and distinctly ornamented, globose to elliptical basidiospores (Calonge & Martín 1990). The genus comprises ca. 40 accepted taxa (Kirk *et al.* 2008), although various generic concepts have been adopted by mycologists (Zeller & Smith 1964, Calonge & Martín 1990, Kreisel 1992, 1994). Molecular phylogenetic studies have not been very successful on clarifying relationships among *Calvatia* and other puffball genera, especially because they have been limited to northern European (Krüger & Gargas 2008, Larsson & Jeppson 2008) and North American (Bates *et al.* 2009) taxa. *Handkea* Kreisel (1989: 282), a segregated genus from *Calvatia*, was recently considered under *Lycoperdon* Persoon (1801: 140) by Larsson & Jeppson (2008), while *Langermannia* Rostkovius (1839: 23) and *Calvatia* s. str. have formed one clade with a good support based on North American samples (Bates *et al.* 2009), but weak support from European specimens (Larsson & Jeppson 2008). Thus, a morphology-based classification, discussed in detail by Calonge & Martín (1990), was followed in the present paper, until new data on *Calvatia* phylogeny consider a wider sampling and improve our knowledge.

In Brazil, about 10 *Calvatia* s.l. taxa have been recorded (Silveira 1943, Baseia 2003, Baseia & Calonge 2008, Suárez *et al.* 2009, Cortez *et al.* 2012). In this paper, we describe a new *Calvatia* species collected during the mycological survey of the western region of Paraná State, southern Brazil (Alves & Cortez 2013).

Materials and Methods

Specimens were collected at São Camilo State Park (PESC), a fragment of seasonal semideciduous forest in the municipality of Palotina, western region of Paraná State, Brazil. Standard procedures for morphological