ISSN (print) 0093-4666 ISSN (online) 2154-8889

MYCOTAXON

http://dx.doi.org/10.5248/127.93

Volume 127, pp. 93–96 *January–March 2014*

Phallus coronatus sp. nov. from Vietnam

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Abstract — *Phallus coronatus*, a new small lignicolous gasteroid fungus, is described and compared with related species.
Key words — gasteromycetes, *Phallales,* taxonomy

Introduction

Phallus Junius ex L. is a widespread (mostly in tropics and subtropics) easy distinguished genus. Calonge (2005) cited 25 species of *Phallus* s.l., while Kreisel (1996) listed approximately 31 species with 19 indusiate taxa (Kreisel & Hausknecht 2009). Recently, several additional species have been described (Li et al. 2005, Calonge et al. 2008, Desjardin & Perry 2009, Moreno et al. 2009), so that by 2012, about 35 species (excluding doubtful taxa) were referred to the genus.

Mycologists from Moscow State University and Komarov Botanical Institute of Russian Academy of Sciences (RAS) have been investigating mycobiota diversity in Vietnam since 2010 under the auspices of the Research Program of the Vietnam-Russian Tropical Research and Technological Centre (VRTC; for details see Morozova et al. 2012). As a result, one new gasteroid species, *Calvatia holothurioides* Rebriev, has been described (Rebriev 2013). In this paper, we describe a new small lignicolous *Phallus* species.

Materials & methods

The material was collected during the March 29–April 14, 2012, expedition of VRTC in Chu Yang Sin National Park (Krong Bong District, Dak Lak Province). The Park, located 45 km southeast of Buon Ma Thuot Town, is one of the most important national

parks of Vietnam and represents a transitional forest between the lowland plain and Central Highlands. With Bi Doup–Nui Ba National Park with which it is contiguous, it forms the largest forest complex in Vietnam. The dominant vegetation type is broadleaf evergreen forest with emergent conifer along the ridgelines.

Basidiomes were dried using silica gel and packed in plastic bags (grippers). The type material is deposited in the mycological herbarium of the V.L. Komarov Botanical Institute of RAS (LE). Microstructures were studied under a light microscope Micmed-6 using 5% KOH solution. Scanning electronic microphotographs (SEM) were taken using a Carl Zeiss EVO-40 XVP in the South Science Center of Russian Academy of Sciences. Microscopic measurements were made with the specialized software Scandium 5.0. The collection was photographed in the field by A.V. Alexandrova, but without description. So all measurements were made from dried material.

Taxonomy

Phallus coronatus Rebriev, **sp. nov.** PLATE 1

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Differs from *Phallus drewesii* by its larger basidiomes, its pinkish pileus with a conspicuous apical disc, and its thicker pseudostipe reticulation ridges.

TYPE: Vietnam, Dak Lak Province, Krong Bong District, Chu Yang Sin National Park, Krong Kmar, 1.5 km W of Chu Pan Phan mountain 12°22.57′N 108°20.53′E, 1377 m a.s.l., on a fallen unidentified tree trunk in a polydominant montane forest with *Fagaceae, Magnoliaceae, Theaceae, Podocarpaceae*, 10 Apr. 2012. coll. A.V. Alexandrova (**Holotype**, LE 295238).

ETYMOLOGY: *coronatus*, refers to conspicuous disc with flattered margins on the top of pileus.

UNEXPANDED FRUITBODY (egg stage) ovoid, 10–14 × 8–-10 mm, brownish gray to dark brown, covered with unicolored scales and cracked; mycelial cords thin, white, branched. MATURE BASIDIOMES 40–70 mm high. Pseudostipe ≤4 mm in diam., gradually narrowing upward, white, deeply reticulate-lacunose with ellipsoid reticulations 2–3 × 0.5–1.5 mm. Indusium absent. Pileus receptacle 9–15 mm high and 3-6 mm in diam., conical-truncate, reticulate, pinkish; meshes polygonal, roundish to longitudinally extended, (0.7–)1 (–1.5) mm wide; apex truncated, formed by a plane, depressed, perforated, disc-like surface. GLEBA olivaceous, foetid. VOLVA with surface features and pigmentation identical to the egg stage. SPORES 3.5–4.0 × 1.5–2.0 μm, ellipsoid, smooth, subhyaline.

ECOLOGY: Gregarious, lignicolous on fallen trees.

Discussion

There are several *Phallus* species with small basidiomes, white pseudostipe when fresh, brownish exoperidium, and lignicolous habit.

Phallus drewesii Desjardin & B.A. Perry, which is the morphologically most similar species to *P. coronatus,* produces smaller basidiomes, a white pileus

Plate 1. *Phallus coronatus* (holotype, LE 295238): a. Fruitbodies; b. Unexpanded fruitbodies (eggs); c. Basidiospores.

with a less conspicuous apical disc, and thinner ridges on the pseudostipe reticulation (Desjardin & Perry 2009). *Phallus minusculus* Kreisel & Calonge forms smaller basidiomes with a spongy (not reticulate) pseudostipe (Calonge & Kreisel 2002). *Phallus pygmaeus* Baseia produces smaller basidiomes with a smooth pileus (Baseia et al 2003). *Phallus tenuis* (E. Fisch.) Kuntze differs in forming larger basidiomes with a yellow pileus and yellow pseudostipe that is spongy and not reticulate (Calonge 2005). *Phallus calongei* G. Moreno & Khalid, which is also characterized by a pileus topped by a conspicuous

disc, produces much larger basidiomes with spongy pseudostipes and is non-lignicolous (Moreno et al. 2009).

The infrageneric position of *P. coronatus* is not known. Based on its reticulated perforated pileus, the new species could be referred to subgenus *Phallus* (Kreisel 1996), close to section *Phallus*. However, its colored volva would exclude *P. coronatus* from section *Phallus*. Molecular data could clarify this problem.

The preliminary checklist of Vietnamese fungi (Trinh 1998) lists 50 gasteromycetous species from Vietnam, including four other *Phallus* species: *P. aurantiacus* Mont., *P. indusiatus* Vent., *P. multicolor* (Berk. & Broome) Cooke, and *P. rubicundus* (Bosc) Fr.

Acknowledgments

We express deepest gratitude to Prof. H. Kreisel, Prof. F.D. Calonge, and Dr. D.E. Desjardin for valuable advice. We thank Dr. K.V. Dvadnenko for preparing the SEM photographs. The authors are grateful to director Tong Ngoc Chung and the administration of the Chu Yang Sin National Park for providing the opportunity to carry out the surveys in the Park. Our field studies in Vietnam were made possible due to the support of the Joint Vietnam-Russian Tropical Research and Technological Centre. We would like to express our thanks to Dr. A.N. Kuznetsov, Dr. Nguyen Dang Khoi, and all expedition members for their great help during the fieldwork.

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