

Boletus candidissimus



Fungal Planet 1002 – 18 December 2019

***Boletus candidissimus* T.H.G. Pham, A.V. Alexandrova & O.V. Morozova, sp. nov.**

Etymology. The epithet refers to the pure white colour of the basidiomata.

Classification — *Boletaceae*, *Boletales*, *Agaricomycetes*.

Basidiomata medium sized, boletoid. *Pileus* 18–35 mm diam, initially hemispherical, becoming convex with slightly appendiculate margin, projecting 1–2 mm beyond the pores, white (4A1, Kornerup & Wanscher 1978), cream (4A2–3) on drying, surface dry, velutinous, tomentose or felted. *Hymenophore* adnate, up to 4 mm thick, white, becoming cream, except for the edge of the tubes that remain white; pores almost not seen due to long cheilocystidia, round or angular under the cheilocystidia layer, up to 0.3 mm diam. *Stipe* 60–80 × 6–8 mm, almost cylindrical, broadened slowly towards the base, solid; longitudinally irregularly striate to irregularly reticulate in an upper part; dry, with transparent drops of exudate in the lower part; white (4A1). *Context* white, with darker hygrophanous spots in the upper part of stipe, unchanging. *Smell* weak, *taste* mild. *Spores* (12.5–)13.5–14(–15.5) × (3.5–)4–5(–5.5) µm, Q = (2.5–)3–3.5(–4), fusoid, subfusoid and inequilateral in side view with weak suprahilar depression, yellowish brown in KOH, smooth. *Basidia* 32–41 × 9.5–11 µm, 4-spored, narrowly clavate to clavate, clampless. *Cheilocystidia* cylindrical to narrowly clavate, sometimes septate, with terminal cells 37–85 × 6–8 µm, often thick-walled in the upper part, hyaline, forming sterile tube edge. *Pleurocystidia* 41–70 × 8–11 µm, lageniform or fusiform. *Hymenophoral trama* divergent, boletoid. *Pileipellis* a trichoderm, made up of palisade of chains of swollen elliptic cells, 27–56 × 12–15 µm, larger in the base of hairs, smaller in their apex, end cells conical or lageniform or tapering into the long neck, 23–52 × 7–13 µm, hyaline. *Stipitipellis* a caulohymenium of basidiolae-like clavate cells, 19–30 × 7–10 µm, with scattered basidia. *Caulocystidia* 55–110 × 11–15 µm, cylindrical to narrowly clavate, usually septate. *Clamp connections* absent.

Habit, Habitat & Distribution — Solitary or in groups on soil in evergreen tropical forests. Known from Vietnam.

Typus. VIETNAM, Dak Lak Province, Krong Bong District, Chu Yang Sin National Park, Krong Kmar, 8 km west of Chu Yang Sin, 12.37958°N, 108.3523°E, 1680 m alt., mountain polydominant rainforest with the participation of *Fagaceae*, *Magnoliaceae*, *Theaceae*, *Podocarpaceae*, 1 Apr. 2013, A.V. Alexandrova & T.H.G. Pham (holotype LE315542, ITS, *tef1α* and LSU sequences GenBank MN511175, MN597966 and MN392934, MycoBank MB832741).

Additional material examined. VIETNAM, Dak Lak Province, Krong Bong District, Chu Yang Sin National Park, Krong Kmar, 7 km northwest of Chu Yang Sin mountain, 12.414833°N, 108.378222°E, 1240 m alt., mountain polydominant rainforest with the participation of *Fagaceae*, *Magnoliaceae*, *Theaceae*, *Podocarpaceae*, 27 May 2014, A.V. Alexandrova & T.H.G. Pham (LE315543, ITS sequence GenBank MN511176).

Notes — *Boletus candidissimus* is characterised by the pure white basidiomata and pileipellis structure consisting of a palisade of hairs composed of chains of swollen elliptic cells, ending by conical or lageniform cells, sometimes tapering into the long neck. White forms lacking pigment appear in the different groups of boletoid fungi. Due to the appendiculate pileus margin and fusoid spores it resembles *Leccinum* species, from which it differs by the special pileipellis structure, not squamulose stipe and lack of any colour changes of context. Superficially *B. candidissimus* is close to *B. purus* (Corner 1972), although that species possesses large clavate cheilocystidia, and a pileipellis consisting of a palisade of clavate cells. The North American species *Tylophilus rhoadsiae* (Bessette et al. 1999) differs by the adnexed hymenophore, pileipellis and stipitipellis structure, bitter taste and an association with pine. In the phylogenetic tree, sequences of the species are nested within the /Boletoideae clade (data not shown) in the sense of Wu et al. (2016). They do not cluster with any known boletoid genera. In spite of this, we avoid introducing a new genus until more data becomes available.

Colour illustrations. Vietnam, Dak Lak Province, Krong Bong District, Chu Yang Sin National Park, type locality. Spores (from holotype and LE315543 (SEM)); pileus (from LE315543); longitudinal section and basidiomata *in situ* (from holotype); elements of pileipellis; trama and hymenium with pleurocystidia; pleurocystidium; cheilocystidia; caulocystidia (all from holotype). Scale bars = 10 µm (spores), 1 cm (basidiomata), 20 µm (microstructures).

Pham Thi Ha Giang, Saint Petersburg State Forestry University, 194021, 5U Institut'skiy Str., Saint Petersburg, Russia / Joint Russian-Vietnamese Tropical Research and Technological Center, Hanoi, Vietnam; e-mail: giangvietnga@gmail.com

Ailina V. Alexandrova, Lomonosov Moscow State University (MSU), Faculty of Biology, 119234, 1, 12 Leninskie Gory Str., Moscow, Russia / Joint Russian-Vietnamese Tropical Research and Technological Center, Hanoi, Vietnam / Peoples Friendship University of Russia (RUDN University), 6 Miklouho-Maclay Str., 117198, Moscow, Russia; e-mail: alexandrova@mail.bio.msu.ru

Olga V. Morozova, Komarov Botanical Institute of the Russian Academy of Sciences, Prof. Popov Str. 2, RUS-197376, Saint Petersburg, Russia; e-mail: OMorozova@binran.ru