

***Albatrellus yunnanensis*, a new species from China**

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Abstract—*Albatrellus yunnanensis*, a new species is described and illustrated herein. It is characterized by yellowish to yellowish ochraceous pileus, nearly glabrous or with minute scales, cream tube layer, white context, clamped generative hyphae and non-amyloid, relatively large basidiospores. Differences and similarities between the new species and related species are discussed and a key to *Albatrellus* species known from China is given. *A. mexicanus* is treated as a synonym of *Polyporoletus sublividus* after re-studying its holotype.

Key words—*Albatrellaceae*, taxonomy

Introduction

Up to now, approximately seven species of the genus *Albatrellus* Gray have been recorded from the markets of southwestern China (Liu et al. 1992, Zhang 1999, Wang & Liu 2002, Wang et al. 2004, Zheng et al. 2004). Among them, *A. confluens* (Alb. & Schwein.) Kotl. & Pouzar, *A. dispansus* (Lloyd) Canf. & Gilb. and *A. ellisii* (Berk.) Pouzar are the most common ones. While studying the specimens of *Albatrellus*, we found that four specimens bought from Nanhua county (Yunnan Province) wild mushroom market could not be assigned to any known *Albatrellus* species. The supermarket specimens local market specimens are described, illustrated, and proposed as a new species. Differences and similarities between the new species and closely related species are discussed, and a key to *Albatrellus* species known from China is given.

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Materials and methods

All specimens examined are preserved in the Cryptogamic Herbarium, Kunming Institute of Botany, Chinese Academy of Sciences (HKAS).

The macroscopic characters were recorded from fresh specimens or taken from field notes accompany the specimens. Microscopic examinations were carried out on dry specimens, mounting hand cut sections of basidiocarps in 5–10% KOH, Congo red and Melzer's reagent.

Dimensions for basidiospores are given using notation of form (a–) b–c (–d). The range b–c contains a minimum of 90% of the measured values. Extreme values—e.g., a or d—are given in parentheses. Q is used mean 'length/width ratio' of basidiospores in side view, **Q** (in bold face) means average Q of all basidiospores measured \pm sample standard deviation (Yang & Zhang 2003).

Taxonomic description

Albatrellus yunnanensis H.D. Zheng & P.G. Liu, sp. nov.

Figs. 1–7

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*Fructificatio annua, stipitata, singularis vel confluens. Pilei circularis vel reniformis, subplano vel centro depressus, olivaceus flavus usque ad obscure luteae ochraceae suffusae, 5–20 cm lato, glabrous ad squamulosae. Stipite solido, bulboso, centrali, excentrico vel laterali, 4–7 \times 2.5–7 cm. Tubuli decurrentibus, cremeibus, 1–3 per mm, angulatis. Systema hypharum monomiticum, hyphae generatoriae hyalinae fibulatae. Sporae ellipsoideae to subglobae, hyalinae, laeves, nonamyloidea, (7.5–) 7.8–9.9 (–11.8) \times (5.3–) 6.0–7.5 (–8.0) μ m (182 spores), [Q = (1.13–) 1.21–1.42 (–1.53), **Q** = 1.31 \pm 0.07]. Basidia clavata, 4-sterigmatica, 25–48 \times 10–15 μ m.*

Holotypus: CHINA, Yunnan Prov.: Nanhua county wild mushroom market, 9 Sept. 2000, leg. Xiang-Hua Wang 1154 (HKAS 37107)

Etymology: "yunnanensis" referring to Yunnan, where the holotype was collected.

Basidiocarp annual, stipitate, medium to large, single or confluent.

Pileus circular to kidney-shaped, plane or centrally depressed, olivaceous yellow to dull yellow with ochraceous tints, up to 20 cm in diam. nearly glabrous or cracked into very small scales (about 0.3–0.5 mm wide), margin even or undulated.

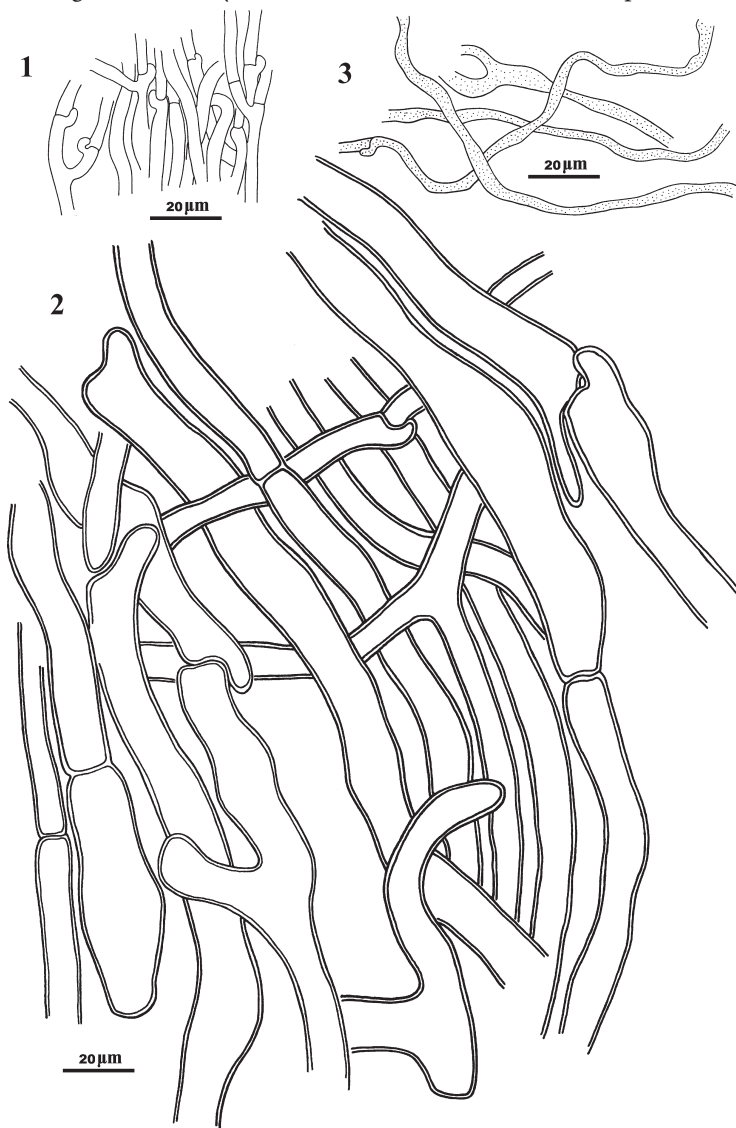
Tube layer 1–5 mm thick, cream when fresh, discoloring flesh-pinkish to red gradually when touched or bruised, becoming pale brownish to reddish brownish after drying, decurrent nearly to the base of the stipe; pores angular, 1–3/mm.

Stipe central, eccentric or lateral, concolorous with the pileus or somewhat darker, bulbous, distinctly inflated at the base, 4–7 \times 2.5–7 cm.

Context white, whitish or cream when fresh, becoming darker after exposed in the air for some time, light yellow to light orange after drying, fleshy, soft, up to

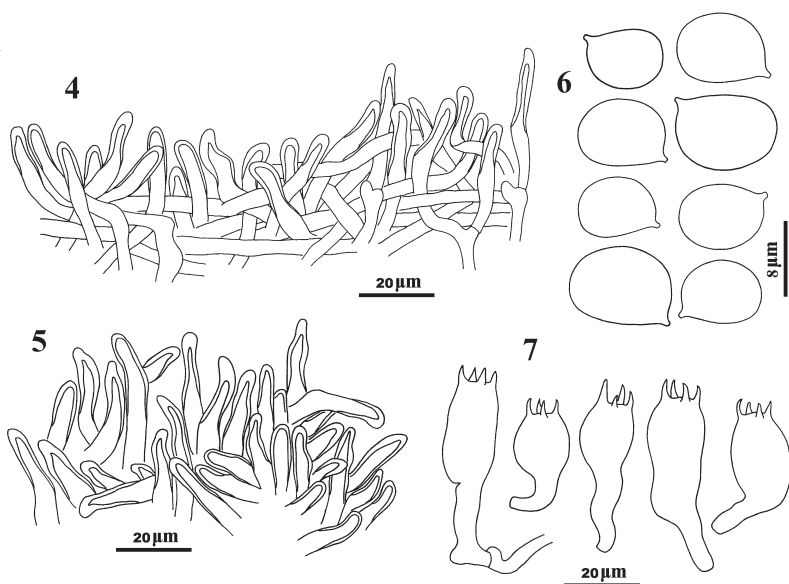
5 cm thick, separated from the tubes by a thin and dark layer in dry specimens, odor pleasant and taste mild.

Hyphal system monomitic, generative hyphae with clamp connections. Tramal hyphae (Fig. 1) 2.0–5.0 μm in diam. thin-walled, with conspicuous clamp



Figs. 1–3: *Albatrellus yunnanensis* (HKAS 37107, holotype)

1. tramal hyphae; 2. contextual hyphae; 3. gloeoplerous hyphae (HKAS 32906)



Figs. 4–7: *Albatrellus yunnanensis* (HKAS 37107, holotype)
4. pileipellis hyphae; 5. stipitipellis hyphae; 6. basidiospores; 7. basidia

connections, occasionally branched. Contextual hyphae (Fig. 2) varying in diam. from 4 µm to 20 µm, thick-walled (0.5–1.0 µm thick), branched. Gloeoplerous hyphae (Fig. 3) present in context and trama, thin-walled, long, with occasional clamp connections. Pileipellis hyphae (Fig. 4) erect, 3.0–5.0 µm in diam. with thick-walled tips, forming a loose palisade. Stipitipellis hyphae similar (Fig. 5). Basidiospores (Fig. 6) ellipsoid to subglobose, hyaline, smooth, non-amyloid, (7.5–) 7.8–9.9 (–11.8) × (5.3–) 6.0–7.5 (–8.0) µm (182 spores), [$Q = (1.13–) 1.21–1.42 (–1.53)$, $Q = 1.31 \pm 0.07$].

Basidia (Fig. 7) clavate, with a narrow base and a basal clamp connection, 4-sterigmate, 25–48 × 10–15 µm.

Specimens examined—CHINA, Yunnan Prov.: Nanhua county wild mushroom market, 9. Sept. 2000, leg. Xiang-Hua Wang 1154 (HKAS 37107, **holotype**); 3 Aug. 1998, Xiang-Hua Wang 619 (HKAS 32906); 12 July 2001, Xiang-Hua Wang 1231 (HKAS 39167); 16 Aug. 2004, Huan-Di Zheng 585 (HKAS 48311)

Remarks—The combination of the glabrous to more or less squamulose pileal surface, olivaceous yellow to dull ochraceous yellow coloration and non-amyloid, relatively large basidiospores distinguish this species from other members in the genus.

Because the macroscopic characters of *A. yunnanensis* are similar to those of *A. mexicanus* (Laferrière & Gilbertson 1990), we studied the holotype (BPI-US 1107534) of the latter. Our observations on that specimen are as follow:

Pileus circular or nearly so, glabrous, pale buff, tawny or pale brown, up to 9 cm in diam. Stipe up to 5 cm long and 2 cm wide, cylindrical with a bulbous base, concolorous with the pileus. Tube yellowish green to reddish brown, angular, 1 mm in diam. or even larger. Context pale orangish, 5 mm thick. Basidiospores non-amyloid, subgloboae to broadly ellipsoid, $(7.5-) 7.8-9.3 (-9.8) \times (5.8-) 6.0-7.2 (-8.0) \mu\text{m}$, rough, with a double wall separated by interwall pillars, not glabrous as mentioned in its original description. Hyphal system monomitic, with clamp connections and simple septa.

These features agree with the diagnostic characters of *Polyporoletus sublividus* (Snell 1936, Gilbertson & Ryvarden 1986–1987). Therefore *Albatrellus mexicanus* Laferr. & Gilb. is treated as a synonym of *Polyporoletus sublividus* Snell. Basidiospore morphology helps separate *A. yunnanensis* and *P. sublividus*.

Albatrellus ellisii, *A. pes-caprae* (Pers.) Pouzar, and *A. skamanius* (Murrill) Pouzar have basidiospores of similar size. But they could be distinguished from *A. yunnanensis* by the morphological characters (see the following key). *A. confluens* is similar to *A. yunnanensis* in the size and color of the basidiocarps, but the basidiospores of the former are much smaller and its pileus is usually with orange or pinkish tints and more glabrous.

Key to *Albatrellus* species known from China

- 1 Hyphae with clamp connections 2
- 1 Hyphae without clamp connections 8
- 2 Basidiospores up to 6 μm long 3
- 2 Basidiospores 7–11 μm long or even longer 5
- 3 Pileus and stipe yellow, tissue not becoming red in dry specimens, basidiospores non-amyloid, $3.5-4.5 \times 2.5-3.5 \mu\text{m}$ *A. peckianus*
- 3 Pileus and stipe pinkish buff, pale orange to grayish blue, basidiospores smooth, moderately amyloid, $3.5-5.5 \times 3-4.5 \mu\text{m}$ 4
- 4 Pileus surface pale orange, usually with olivaceous tint, but no blue tint *A. confluens*
- 4 Pileus and stipe grayish blue, some place part yellowish green, but the blue color often disappeared in old specimens or during drying, pore surface and context of apricot color *A. flettii*
- 5 Pileal surface nearly glabrous or cracked into very small scales, olivaceous yellow to dull yellow with ochraceous tints, basidiospores non-amyloid, $(7.5-) 7.8-9.9 (-11.8) \times (5.3-) 6.0-7.5 (-8.0) \mu\text{m}$ *A. yunnanensis*

- 5 Pileal surface apparently cracked or with very coarse scales 6
- 6 Pileal surface grayish-brown, fuliginous to nearly black, cracked into small scales,
basidiospores non-amyloid, $7-9 \times 5-6.5 \mu\text{m}$ *A. skamanius*
- 6 Pileal surface yellowish or brownish, with distinct scales 7
- 7 Pileal surface yellowish, dull yellow or with greenish tints, becoming grassy
green when touched or bruised, with thick and coarse scales, basidiospores
non-amyloid, $7-10 \times 5.5-8 \mu\text{m}$ *A. ellisii*
- 7 Pileal surface grayish brown to reddish brown, never become grassy green
when bruised, with fibrillose scales, basidiospores non-amyloid,
 $7-10 \times 5.5-7 \mu\text{m}$ *A. pes-caprae*
- 8 Pileal surface brown to black, viscid, with a resinous cuticle glossy after drying,
pore surface white, pileipellis hyphae ends clavate, basidiospores
non-amyloid, $4-5.5 \times 3.5-5 \mu\text{m}$ *A. yasudae*
- 8 Pileal surface without a viscid resinous cuticle 9
- 9 Fruitbodies caespitose with numerous petaloid pilei, vivid yellow or with pale
brownish tint, basidiospores non-amyloid, $3.5-5 \times 3-4 \mu\text{m}$ *A. dispansus*
- 9 Fruitbodies with single or a few confluent pilei 10
- 10 Pileal surface and pore surface with blue or grayish tints, basidiospores
non-amyloid, $4-5.5 \times 3-4.5 \mu\text{m}$ *A. caeruleoporus*
- 10 Pileus white, pale tan, greenish yellow to brownish 11
- 11 Pileus and stipe greenish yellow, near glabrous or with small scales, pore surface
whitish or with yellowish tint, basidiospores non-amyloid to weakly amyloid,
 $5-7 \times 4-5.5 \mu\text{m}$ *A. cristatus*
- 11 Pileus surface white, pale tan to brownish 12
- 12 Pileus pale brown, with distinct small darker scales, stipe apricot with a
black base, basidiospores amyloid, $4-5 \times 3-4 \mu\text{m}$ *A. tianschanicus*
- 12 Fruitbodies whitish, at least when young 13
- 13 Basidiospores non-amyloid, growing under *Picea* forest *A. ovinus*
- 13 Basidiospores amyloid 14
- 14 Basidiospores $4.5-5.5 \times 3.5-4.5 \mu\text{m}$, pileus first white, turning citric yellow
when matured, discoloring yellow when bruised, growing under
Picea forest *A. citrinus*
- 14 Basidiospores $4.0-5.0 \times 3.0-3.5 \mu\text{m}$, pileus white, discoloring orange when bruised,
growing under *Pinus* forest *A. subrubescens*

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