

Two new polypores (Basidiomycota) from central China

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Rigidoporopsis tegularis Juan Li & Y.C. Dai and *Skeletocutis fimbriata* Juan Li & Y.C. Dai are described as new from Hubei Province, central China. *Rigidoporopsis tegularis* is characterized by thick-walled, finely ornamented, amyloid and subglobose basidiospores, and monomitic hyphal structure without clamp connections. *Skeletocutis fimbriata* is distinguished from the other species in the genus by coarsely fimbriate margin basidiocarp and very narrow basidiospores.

Key words: Basidiomycetes, new species, taxonomy, wood-inhabiting fungi

In 2005 and 2006 field trips were made in order to study wood-inhabiting fungi in Hubei Prov., central China, a mycologically poorly investigated area. From those collections, two new species pertaining to *Rigidoporopsis* and *Skeletocutis* were found. Their illustrated descriptions are given in the present paper. The two new species grow on angiosperm trees in the warm temperate forests of the Shennongjia Nature Reserve (31°15′–31°75′N and 109°56′–110°58′E). Vegetation of the Reserve was described by Li *et al.* (unpubl. data). The forests are among the few near-virgin ones in Hubei Province, and the main gymnosperm trees are *Abies fargesii*, *Cunninghamia lanceolata*, *Pinus armandii* and *P. masoniana*, while the common angiosperm trees include *Castanea seguinii*, *Betula albo-sinensis*, *Fagus engleriana*, *F. lucida*, *Populus davidiana*, *Quercus variabilis* and several species of *Acer*, *Carpinus*, *Cerasus* and *Coriaria*.

The microscopic routine used in the study was presented by Dai *et al.* (2004). In the text the fol-

lowing abbreviations are used: IKI– = negative in Melzer's reagent, CB– = acyanophilous in Cotton Blue, *L* = mean spore length (arithmetic mean of all spores), *W* = mean spore width (arithmetic mean of all spores), *Q* = quotient of the mean spore length and the mean spore width (*L/W*).

Rigidoporopsis tegularis Juan Li & Y.C. Dai, *sp. nova* (Figs. 1 and 2)

Carpophorum annuum, *pileatum*; *facies pororum cremea*; *pori angulati*, 4–6 per mm. *Systema hypharum monomiticum*, *hyphae efibulatae*, *hyphae contexti* 3–8 µm in diam. *Sporae hyalinae*, *subglobosae*, *asperae*, *amyloideae*, 4.5–5 × 3.5–4 µm.

TYPE: China. Hubei Prov., Shennongjia Nature Reserve, on stump of *Carpinus*, 6.IX.2005 Li 656 (holotype IFP; isotype H).

ETYMOLOGY. *Tegula* (Lat.): roofing-tile; *tegaris*: imbricate like roofing-tiles.

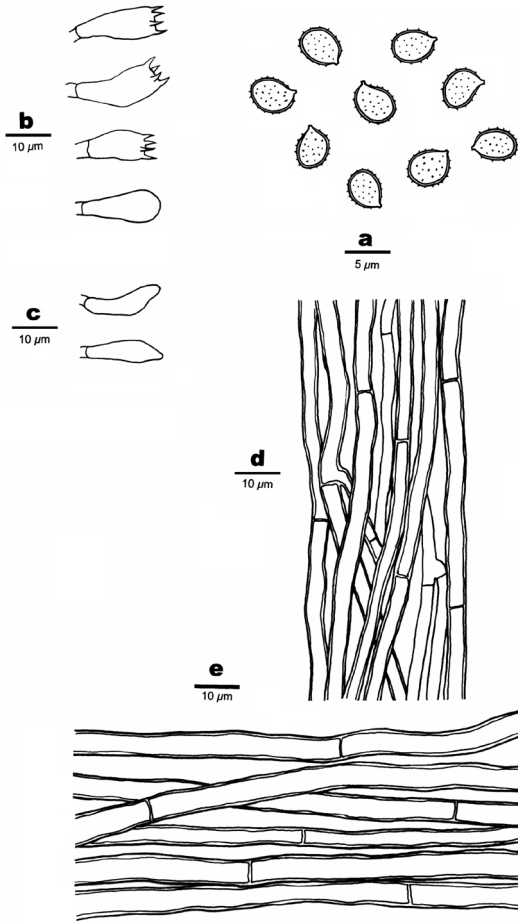


Fig. 1. Microscopic details of *Rigidoporopsis tegularis* (from the holotype). — **a**: Basidiospores. — **b**: Basidia and a basidiole. — **c**: Cystidioles. — **d**: Hyphae from trama. — **e**: Hyphae from context.

FRUITBODY. Basidiocarps annual, pileate, imbricate, often forming a big cluster, soft, without odour or taste when fresh, becoming hard corky and fragile upon drying. Pileus semicircular to flabelliform, projecting up to 4 cm, 5 cm wide and 0.4 cm thick at base. Pileal surface cream coloured, pale buff towards margin with age, buff when dry, velutinate when juvenile, slightly warted with age, becoming radially wrinkled upon drying; margin acute, incurved when dry. Pore surface white to cream when fresh, pale buff upon drying; pores angular, 4–6 per mm; dissepiments thin, entire to slightly lacerate, cottony. Context buff when dry, corky, up to 0.1 cm thick. Tubes pale yellowish brown, darker than



Fig. 2. *Rigidoporopsis tegularis* (holotype).

the pore surface, corky, up to 0.3 cm long.

HYPHAL STRUCTURE. Hyphal system monomitic; generative hyphae with simple septa, IKI–, CB–; all hyphae unchanged in KOH.

CONTEXT. Generative hyphae hyaline, thick-walled with a wide lumen, rarely branched, agglutinated, regularly arranged, sometimes bearing crystals, 3–8 μm in diam.

TUBES. Generative hyphae hyaline, thin- to thick-walled, moderately branched, subparallel along the tubes, 2.5–5 μm in diam. Cystidia absent; fusoid cystidioles hyaline, thin-walled, 15–18 \times 5–7 μm . Basidia clavate, with four sterigmata and a simple septum at the base, 14–19 \times 7–8 μm ; basidioles in shape similar to basidia, but slightly smaller. Rhomboid crystals sometimes present among hymenium.

SPORES. Basidiospores subglobose, hyaline, slightly to fairly thick-walled, finely asperulate, distinctly amyloid, CB– to slightly cyanophilous, (4–)4.5–5 \times (3.2–)3.5–4(–4.5) μm , $L = 4.73 \mu\text{m}$, $W = 3.8 \mu\text{m}$, $Q = 1.23\text{--}1.25$ ($n = 90/3$).

ADDITIONAL SPECIMENS EXAMINED (paratypes). China. Hubei Prov., Shennongjia Nature Reserve, on root of living *Carpinus*, 2.IX.2006 Li 1389 & 1396 (IFP).

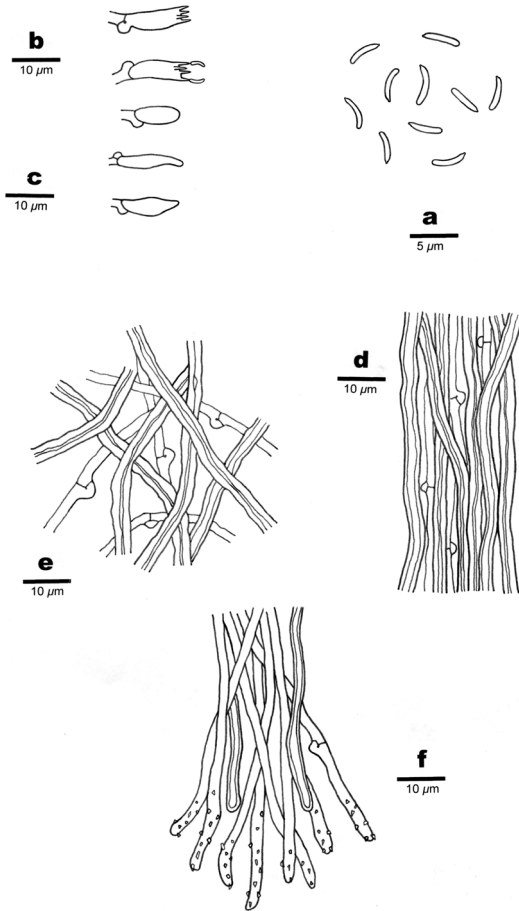


Fig. 3. Microscopic details of *Skeletocutis fimbriata* (from the holotype). — **a**: Basidiospores. — **b**: Basidia and a basidiole. — **c**: Cystidioles. — **d**: Hyphae from trama. — **e**: Hyphae from subiculum. — **f**: Hyphae at dissepiment edge.

Rigidoporopsis was established by Johanson and Ryvardeen (1979). The genus is characterized by a monomitic hyphal structure with simple septa, and by asperulate, amyloid basidiospores. Its hyphal structure resembles that in *Rigidoporus* which, however, has smooth and inamyloid basidiospores. *Rigidoporopsis* may be related to *Wrightoporia*, because they share the ornamentation of spores and their amyloid reaction, asperulate, but the latter has distinctly dimittic hyphal structure with clamps connection in generative hyphae. In addition, skeletal are dextrinoid in *Wrightoporia*, and gloeoplerous hyphae are present in most species of the genus. Two species have been reported previously in



Fig. 4. *Skeletocutis fimbriata* (holotype).

Rigidoporopsis: *R. amylospora* (Johanson & Ryvardeen 1979) and *R. macrospora* (Zheng & Bi 1987). The former has resupinate basidiocarps (Johanson & Ryvardeen 1979), and its basidiospores are ellipsoid and thinner than in *R. tegularis* ($4.5 \times 2.5\text{--}3 \mu\text{m}$ vs. $4.5\text{--}5 \times 3.5\text{--}4 \mu\text{m}$). The type of *R. macrospora* was examined, and it is in fact a collection of *Haploporus alabamiae* (Dai & Yuan 2007).

Staplers (1996) merged *Rigidoporopsis* in *Amyloporus*, but the latter genus has a distinct dimittic hyphal structure with gloeoplerous hyphae, and we keep the two as independent genera.

Rigidoporopsis tegularis is characterized by imbricate basidiocarps, monomitic hyphal structure, simple septa, and asperulate and amyloid basidiospores. The species causes a white rot, and it is found on wood of *Carpinus* in the warm temperate forests so far in central China only.

***Skeletocutis fimbriata* Juan Li & Y.C. Dai, sp. nova** (Figs. 3 and 4)

Carpophorum annuum, resupinatum; *facies pororum cremea*; *pori angulati*, 4–5 per mm. *Systema hypharum dimitticum*, *hyphae generativae fibulatae*, *hyphae skeletalae subiculi* $2.5\text{--}4.5 \mu\text{m}$ in diam. *Sporae cylindricae, hyalinae*, IKI–, CB–, $2.9\text{--}3.5 \times 0.5\text{--}0.8 \mu\text{m}$.

TYPE: China. Hubei Prov., Shennongjia Nature Reserve, on rotten angiosperm wood, 6.IX.2005 *Li 644* (holotype IFP; isotype H).

ETYMOLOGY. *Fimbriatus* (Lat.): fimbriate, referring to the coarsely fimbriate to rhizomorphic basidiocarp margin.

FRUITBODY. Basidiocarps annual, resupinate, difficult to separate from the substrate, soft, without odour or taste when fresh, becoming corky upon drying; making up patches up to 15 cm long, 7 cm wide, and 0.2 cm thick. Pore surface translucently white to cream when fresh, buff to cinnamon-buff when bruised or upon drying; margin coarsely fimbriate or with distinct hyphal threads; hyphal threads white to cream when juvenile, becoming buff yellow with age, cream to yellowish brown when dry, up to 1 cm long. Pores angular, 4–5 per mm; dissepiments thin, entire to slightly lacerate. Subiculum cream, corky upon drying, up to 0.5 mm thick. Tubes concolorous with the pore surface, corky, up to 0.2 cm long.

HYPHAL STRUCTURE. Hyphal system dimitic; generative hyphae bearing clamp connections; skeletal hyphae thick-walled, dominant, IKI–, CB–; all hyphae unchanged in KOH.

SUBICULUM. Generative hyphae hyaline, thin-walled, rarely branched, 1.8–3.2 μm in diam.; skeletal hyphae thick-walled to subsolid, occasionally branched, tightly interwoven, 2.5–4.5 μm in diam.

TUBES. Generative hyphae hyaline, thin-walled, rarely branched, sometimes encrusted, 1.5–3 μm in diam.; skeletal hyphae thick-walled to subsolid, rarely branched, agglutinated, subparallel along the tubes, 2–4 μm in diam. Tube orifice with moderately encrusted generative hyphae. Cystidia absent; fusoid cystidioles abundant, hyaline, thin-walled, 9–12 \times 3–4 μm . Basidia short clavate, with four sterigmata and a basal clamp connection, 8–11 \times 3–4 μm ; basidioles in shape similar to basidia, but slightly smaller.

SPORES. Basidiospores cylindrical, slightly curved, hyaline, thin-walled, smooth, IKI–, CB–, (2.8–)2.9–3.5(–3.6) \times 0.5–0.8 μm , $L = 3.18 \mu\text{m}$, $W = 0.66 \mu\text{m}$, $Q = 4.78–4.89$ ($n = 90/3$).

ADDITIONAL SPECIMENS EXAMINED (paratypes). China. Hubei Prov., Shennongjia Nature Reserve, on rotten angiosperm wood, 3.IX.2006 Li 1403 & 1434 (IFP).

Skeletocutis fimbriata is characterized by resupinate, cream coloured basidiocarps, dis-

tinctly coarsely fimbriate margin and very narrow basidiospores (less than 1 μm in width). It grows on very rotten angiosperm wood in areas of warm temperate climate.

Two other species in *Skeletocutis* bear rhizomorphs: *S. alutacea* and *S. percandida*. The former differs from *S. fimbriata* by its smaller pores (9–10 per mm) and thicker basidiospores (2.9–3.8 \times 1.6–1.9 μm , $L = 3.29 \mu\text{m}$, $W = 1.73 \mu\text{m}$; Niemelä 1998). *Skeletocutis percandida* is separated from *S. fimbriata* by its distinctly larger basidiospores (5.5–7.5 \times 2.4–3 μm , $L = 6.69 \mu\text{m}$, $W = 2.65 \mu\text{m}$; Niemelä 1998).

A systematic study on the *Skeletocutis subincarnata* complex was made by Niemelä (1998), and six species were listed with very thin basidiospores (less than 1 μm in width): *S. chrysellae*, *S. kuehneri*, *S. nivea*, *S. ochroalba*, *S. stellae* and *S. hymeniicola*. All these lack a rhizomorphic margin. In addition, the four last-mentioned species have smaller pores (7–10 per mm) than in our material. *Skeletocutis fimbriata* has similar pores and basidiospores as in *S. chrysellae* and *S. kuehneri*, but they occur on coniferous trees, on wood decayed by other polypores, while *S. fimbriata* grows on angiosperm trees which were not occupied previously by other wood-inhabiting fungi.

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