

**Wood-inhabiting fungi in southern China 3.  
A new species of *Phellinus* (*Hymenochaetales*)  
from tropical China**

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**Abstract** — *Phellinus minisporus* sp. nov. is described and illustrated from Hainan and Yunnan provinces, southern China. It has resupinate basidiocarps, smaller pores, abundant hymenial setae, and its basidiospores are minute, broadly ellipsoid to subglobose, pale yellowish and fairly thick-walled. The new species is distinguished from the other species in the genus by having minute basidiospores ( $2\text{--}2.5 \times 1.6\text{--}2 \mu\text{m}$ ).

**Key words** — *Hymenochaetales*, lignicolous and poroid fungi, taxonomy

## Introduction

Extensive studies on the *Hymenochaetales* in China were carried out recently, and many new species have been described from the country (Dai 1995, 1999; Dai et al. 1997, 2000, 2008a, b; Dai & Xu 1998, Dai & Zhou 2000, Dai & Zang 2002, Dai & Cui 2005, Dai & Yuan 2005, Dai & Niemelä 2006, Wang 2006, Cui & Dai 2008, Dai & Yang 2008, Xiong & Dai 2008). *Phellinus* Quél. is the largest genus in the *Hymenochaetales*, and more than 200 taxa are found in the world (Larsen & Cobb-Poulle 1990, Dai 1999, Núñez & Ryvarden 2000, Gibertoni et al. 2004, Ryvarden 2004, Parmasto 2007, Dai et al. 2008b, Dai & Yang 2008). Among them, about fifty species have been recorded from China (Dai 1999, Dai & Niemelä 2006, Dai et al. 2008 b, Dai & Yang 2008).

During the study on wood-inhabiting fungi in southern China, an unknown species of *Phellinus* was identified and described in the present paper.

### Materials and methods

The studied specimens were deposited at the herbarium of Institute of Applied Ecology, Chinese Academy of Sciences (IFP), and the herbarium of Beijing Forestry University (BJFC). The microscopic procedure followed Cui et al. (2007). In presenting the variation in the size of the spores, 5% of measurements were excluded from each end of the range, and are given in parentheses. In the text the following abbreviations were used: IKI = Melzer's reagent, IKI- = negative in Melzer's reagent, KOH = 5% potassium hydroxide, CB = Cotton Blue, CB+ = cyanophilous, CB- = acyanophilous, L = mean spore length (arithmetic average of all spores), W = mean spore width (arithmetic average of all spores), Q = variation in the L/W ratios between the specimens studied, n = number of spores measured from given number of specimens. Sections were studied at magnification up to  $\times 1000$  using a Nikon Eclipse E80i microscope and phase contrast illumination. Drawings were made with the aid of a drawing tube. Special colour terms followed Petersen (1996) and Anonymous (1969).

### Description

*Phellinus minisporus* B.K. Cui & Y.C. Dai, *sp. nov.*

FIG. 1

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*Carpophorum perenne*, *resupinatum*. *Facies pororum fulva vel hinnulea*; *pori rotundi vel sinuolati*, 8–11 per mm. *Systema hypharum dimiticum*, *hyphae generatoriae septatae, efibulatae*. *Sporae late ellipsoideae vel subglobosae, crassitunicatae*, IKI-, CB(+), 2–2.5  $\times$  1.6–2  $\mu$ m.

TYPE. — China. Hainan Province, Changjiang County, Bawangling Nature Reserve, on dead angiosperm tree, 3.IX.2006 Dai 7868 (holotype in BJFC, isotype in IFP).

ETYMOLOGY — *minisporus* (Lat.): referring to the minute basidiospores.

FRUITBODY — Basidiocarps perennial, resupinate, firmly attached to the substrate, not readily separable, no odour or taste when fresh, woody hard when dry, up to 12 cm long or more in longest dimension, 4 cm wide, and 4 mm thick at centre; sterile margin narrow to almost lacking, pale yellowish to yellowish brown, less than 1 mm wide. Pore surface yellowish brown to fawn brown, slighting shining; pores mostly circular, some slightly sinuous, 8–11 per mm; dissepiments thin, entire. Subiculum cinnamon brown to fawn brown, hard corky, ca. 0.1 mm thick. Tubes concolorous with pores, woody hard, up to 4 mm long, tube layers distinct.

HYPHAL STRUCTURE — Hyphal system dimitic; all septa without clamp connections; skeletal hyphae IKI-, CB-; tissue darkening but otherwise unchanged in KOH.

SUBICULUM — Generative hyphae hyaline to pale yellowish, fairly thick-walled with a wide lumen, rarely branched and frequently simple septate, 2–4.6  $\mu$ m in

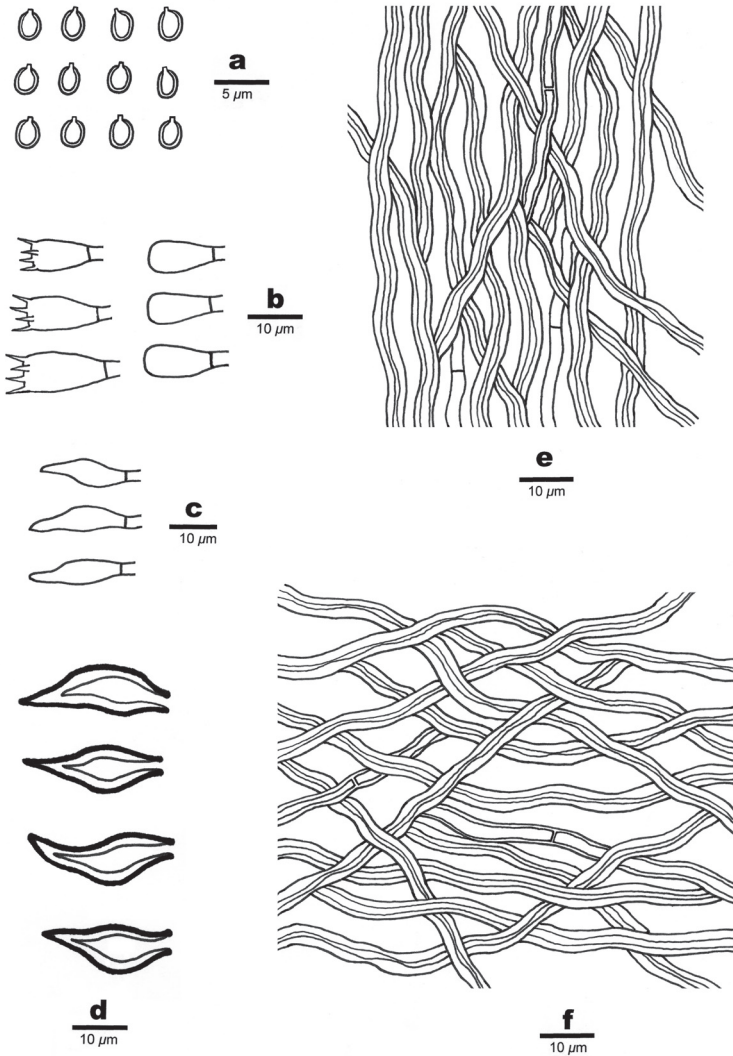


FIG. 1. Microscopic structures of *Phellinus minisporus* (drawn from the holotype).  
—a: Basidiospores. —b: Basidia and basidioles. —c: Cystidioles. —d: Hymenial setae.  
—e: Hyphae from tubes. —f: Hyphae from subiculum.

diam; skeletal hyphae yellowish brown to rust brown, thick-walled with a wide to narrow lumen, unbranched, loosely interwoven, 2.5–5.4 μm in diam.

**TUBES** — Generative hyphae hyaline to pale yellowish, thin- to slightly thick-walled, rarely branched, frequently simple septate, 1.7–3.6  $\mu\text{m}$  in diam; skeletal hyphae yellowish brown to rust brown, thick-walled with a wide to narrow lumen, more or less straight, regularly arranged, agglutinated, 2.2–5  $\mu\text{m}$  in diam. Hymenial setae frequent, ventricose to subulate, dark brown, thick-walled, 16–30  $\times$  5.4–9.5  $\mu\text{m}$ . Cystidia absent, fusoid cystidioles occasionally present, 9.2–16.7  $\times$  3.5–5.6  $\mu\text{m}$ ; basidia barrel-shaped, with four sterigmata and a simple septum at the base, 9–15  $\times$  4.6–7.5  $\mu\text{m}$ ; basidioles in shape similar to basidia, but slightly smaller. Rhomboid crystals frequently present in trama and hymenia.

**SPORES** — Basidiospores broadly ellipsoid to subglobose, pale yellowish, fairly thick-walled, smooth, IKI–, weakly to moderately CB+, (1.8–)2–2.5(–2.8)  $\times$  (1.5–)1.6–2(–2.3)  $\mu\text{m}$ , L=2.21  $\mu\text{m}$ , W=1.92  $\mu\text{m}$ , Q=1.12–1.2 (n=120/4).

ADDITIONAL SPECIMENS (PARATYPES) EXAMINED. — China. Yunnan Province, Mengla County, Xishuangbanna Nature Reserve, on fallen angiosperm branch, 16.IX.2007 *Yuan* 3586 & 3589 (BJFC & IFP). Guangxi Autonomous Region, Longzhou County, Nonggang Nature Reserve, on fallen angiosperm trunk, 4.VII.2007 *Zhou* 170 (BJFC & IFP).

**TYPE OF ROT** — White rot.

**REMARKS** — *Phellinus minisporus* has resupinate basidiocarps, smaller pores, abundant hymenial setae, and minute, broadly ellipsoid to subglobose, pale yellowish and fairly thick-walled basidiospores. These characters distinguished it from other species in the genus.

Four species in *Phellinus*, *P. cesatii* (Bres.) Ryvarden 1972, *P. ferrugineovelutinus* (Henn.) Ryvarden 1972, *P. glaucescens* (Petch) Ryvarden 1972, and *P. purpureogilvus* (Petch) Ryvarden 1972, have resupinate basidiocarps, ventricose setae and small, colored basidiospores (Larsen & Cobb-Pouille 1990, Dai 1999), however, the basidiospores of the above species are more or less bigger than those of *Phellinus minisporus*: 3.3–4.1  $\times$  2.5–3.1  $\mu\text{m}$  in *P. cesatii* (Dai 1999), 2.5–3.3  $\times$  2–2.5  $\mu\text{m}$  in *P. ferrugineovelutinus* (Dai 1999), 3.5–4  $\times$  3–3.5  $\mu\text{m}$  in *P. glaucescens* (Larsen & Cobb-Pouille 1990), 3.5–4.5  $\times$  3–4  $\mu\text{m}$  in *P. purpureogilvus* (Larsen & Cobb-Pouille 1990).

*Phellinus rufitinctus* (Berk. & M.A. Curtis ex Cooke) Pat. 1900 may be confused with *P. minisporus* by having similar smaller basidiospores, however, it has tramal setal hyphae, and its basidiospores are hyaline and thin-walled (Gilbertson & Ryvarden 1987, Larsen & Cobb-Pouille 1990, Ryvarden 2004).

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