

***Rigidotubus tephroleucus* gen. et sp. nov. (Cystostereaceae, Agaricales) evidenced by morphological characters and phylogenetic analyses**

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Abstract

A new poroid wood-inhabiting fungal genus, *Rigidotubus*, is proposed to accommodate *R. tephroleucus* sp. nov. based on morphological characters and molecular evidence. The genus is characterized by tough and poroid basidiomata, white to grayish white pore surface, white sterile margin, a monomitic hyphal system with clamped generative hyphae, ovoid to ellipsoid basidiospores negative in Melzer's reagent and Cotton Blue. The phylogenetic analyses inferred from the internal transcribed spacer (ITS) and nuclear large subunit (28S) ribosomal RNA gene regions confirmed that *Rigidotubus* belongs to Cystostereaceae in Agaricales. A key to the accepted genera of Cystostereaceae is provided.

Key words: Basidiomycota, phylogeny, taxonomy, white rot, wood-rotting fungi

Introduction

Agaricales is the largest group of mushroom-forming fungi, including 13, 233 described species belonging to 413 genera and 33 families (Kirk *et al.* 2008). Cystostereaceae Jülich is one of the families belonging to Agaricales, typified by *Cystostereum* Pouzar and characterized by annual or perennial, resupinate to effused or pileate, membranous, woody or crustose basidiomata; gray, ochraceous or pinkish, smooth to tuberculate or odontoid hymenium; a dimitic hyphal system with clamp connections; ellipsoid to cylindrical basidiospores; hymenial cystidia sometimes present (Jülich 1978, 1981, Hjortstam 1983, Larsson 2007). In addition, species in this family cause a white rot and play an important role in the carbon cycle and energy cycle of natural ecosystems (Larsson *et al.* 2004, Larsson 2007, Floudas *et al.* 2012).

Larsson (2007) conducted a phylogenetic classification for corticioid fungi at the family level inferred from rDNA sequences. That study showed that *Cystostereum* and *Cystidiodontia* Hjortstam grouped together in the family Cystostereaceae. He also indicated that three other genera including *Crustomyces* Jülich, *Parvobasidium* Jülich and *Parvodontia* Hjortstam & Ryvarden possibly belong to this family based on morphological characters (Larsson 2007).

During surveys of wood-rotting fungi in tropical areas of Hainan Province, southern China, two specimens with tough, resupinate basidiomata and poroid hymenophore were collected. Morphologically, they did not fit any of the known fungal taxa. In the current study, the two samples are categorized as *Rigidotubus tephroleucus* gen. et sp. nov., and its phylogenetic analyses and illustrated description are provided.

Materials and methods

Taxa sampling—Specimens of the new species were collected from Qixianling Forest Park and Limushan Forest Park of China during 2015. Both of the two forest parks are located in Hainan Island of southern China, and forests in the