



Studies on *Wrightoporia* from China 3. *Wrightoporia subavellanea* sp. nov. based on morphological characters and rDNA sequence data

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Abstract

Wrightoporia subavellanea sp. nov. is described and illustrated from southern China on the basis of morphological characters and molecular data. It is characterized by an annual growth habit, resupinate basidiocarps with white rhizomorphs, large pores, narrow and strongly dextrinoid skeletal hyphae, broadly ellipsoid to subglobose, thick-walled, finely asperulate and strongly amyloid basidiospores ($3.8\text{--}4.2 \times 2.8\text{--}3.2 \mu\text{m}$), and presence of gloeoplerous hyphae in trama. A molecular study based the combined ITS (internal transcribed spacer region) and nLSU (the large nuclear ribosomal RNA subunit) dataset supported the position of the new species in *Wrightoporia*. A key to accepted species of *Wrightoporia* in China is provided.

Key words: Wrightoporiaceae, phylogeny, polypore, taxonomy, wood-inhabiting fungi

Introduction

Wrightoporia Pouzar (1966) was described and typified with *W. lenta* (Overh. & J. Lowe) Pouzar. The principal characteristics of the genus include a combination of resupinate to pileate basidiocarps, an annual to perennial growth habit, a monomitic to trimitic hyphal structure, and amyloid asperulate basidiospores (Ryvarden 1982, David & Rajchenberg 1987, Hattori 2008). About 39 species of *Wrightoporia* are accepted worldwide (Corner 1989, Teixeira 1992, Stalpers 1996, Lindblad & Ryvarden 1999, Hattori 2003, 2008, Chen & Cui 2012, Chen & Yu 2012), of which 17 species have been recorded in China (Cui & Dai 2006, Dai & Cui 2006, Dai 2007, 2012, Dai & Yuan 2007, Dai *et al.* 2011, Chen & Cui 2012, Chen & Yu 2012).

Investigations on the diversity of wood-inhabiting fungi in China have been carried out recently, and many new species were described based on morphological characters along with molecular evidence (Cui *et al.* 2011, He & Dai 2012, Cui 2013, Cui & Dai 2013, Cui & Decock 2013, Li & Cui 2013, Li *et al.* 2013, Zhao & Cui 2013, Zhao *et al.* 2013). During a taxonomic study on *Wrightoporia* in China, one species new to science was found based on morphological characters and phylogenetic analysis of ITS and nLSU rDNA sequences, and its illustrated description was provided. In addition, an identification key to the accepted species of *Wrightoporia* in China was also provided.

Materials and methods

Morphological studies.—The studied specimens were deposited at the herbarium of the Institute of Microbiology, Beijing Forestry University (BJFC). The microscopic routine followed Dai *et al.* (2010). Sections were studied at magnification up to $\times 1000$ using a Nikon E80i microscope and phase contrast illumination. Drawings were made with the aid of a drawing tube. Microscopic features, measurements and drawings were made from slide preparations stained with Cotton Blue and Melzer's reagent. Spores were measured from sections cut from the tubes. Presenting the variation in the size of the spores, 5% of measurements were excluded from each end of the range, and were given in parentheses. Basidiospore spine lengths are not included in the measurements. In the text the following abbreviations were used: KOH = 5% potassium hydroxide, CB = Cotton Blue, CB+ = cyanophilous, L = mean spore

Wrightoporia and its related genera requires evolutionary information from wider taxa samplings and more conserved gene markers.

Until now, 18 species of *Wrightoporia* were found in China, among them, several species were failed to get the rDNA sequences data. In the present study, all the available sequences of *Wrightoporia* in China were included in the phylogenetic analysis, and an identification key to the accepted species of *Wrightoporia* in China was provided.

Key to accepted species of *Wrightoporia* in China

1.	Hyphal system monomitic.....	<i>W. nigrolimitata</i> Jia J. Chen
1.	Hyphal system dimitic or trimitic.....	2
2.	Generative hyphae without clamp connections.....	3
2.	Generative hyphae with clamp connections.....	4
3.	Basidiocarps without rhizomorphs.....	<i>W. casuarinicola</i> Y.C. Dai & B.K. Cui
3.	Basidiocarps with rhizomorphs.....	<i>W. rubella</i> Y.C. Dai
4.	Basidiospores > 5.3 µm long.....	<i>W. lenta</i>
4.	Basidiospores < 5.3 µm long.....	5
5.	Skeletal hyphae indextrinoid.....	6
5.	Skeletal hyphae dextrinoid.....	9
6.	Gloeocystidia present.....	<i>W. austrosinensis</i>
6.	Gloeocystidia absent.....	7
7.	Basidiospores > 4.5 µm long.....	<i>W. campbelli</i> (Berk.) Ryvarden
7.	Basidiospores < 4.5 µm long.....	8
8.	Basidiospores > 2.6 µm wide.....	<i>W. cinnamomea</i> Ryvarden
8.	Basidiospores < 2.6 µm wide.....	<i>W. aurantipora</i> T. Hatt.
9.	Gloeoplerous hyphae present.....	10
9.	Gloeoplerous hyphae absent.....	13
10.	Cystidia present.....	<i>W. biennis</i> Jia J. Chen & B.K. Cui
10.	Cystidia absent.....	11
11.	Tramal skeletal hyphae > 2 µm in diam.....	12
11.	Tramal skeletal hyphae < 2 µm in diam.....	<i>W. subavellanea</i>
12.	Pore 1–2 per mm; pore surface pale orange to greyish brown.....	<i>W. labyrinthina</i> T. Hatt.
12.	Pore 2–4 per mm; pore surface cream to buff-yellow.....	<i>W. borealis</i> Y.C. Dai
13.	Skeletal hyphae absent in the context.....	<i>W. ochrococea</i> (Henn. & E. Nyman) A. David & Rajchenb.
13.	Skeletal hyphae present in the context.....	14
14.	Basidiospores > 3.2 µm wide.....	<i>W. unguiformis</i> Y.C. Dai & B.K. Cui
14.	Basidiospores < 3.2 µm wide.....	15
15.	Skeletal hyphae smooth.....	16
15.	Skeletal hyphae encrusted.....	17
16.	Basidiocarps annual; tramal skeletal hyphae 2–4 µm in diam.....	<i>W. africana</i> I. Johans. & Ryvarden
16.	Basidiocarps perennial; tramal skeletal hyphae 4–8 µm in diam.....	<i>W. tropicalis</i>
17.	Generative hyphae with both clamp connections and simple septa; cystidioles absent.....	<i>W. gillesii</i> A. David & Rajchenb.
17.	Generative hyphae only with clamp connections; fusoid cystidioles present.....	<i>W. japonica</i>

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