Heterobasidion australne sp. nov. is derived from the Heterobasidion insulare complex, and its illustrated description is given. It is similar to H. ecrustosum by morphology but closely related to H. orientale genetically. Heterobasidion australne has been recorded from southern China, where it seems to be relatively common in coniferous forests, growing mostly on dead wood of several genera of gymnosperm trees. Occasionally, it has been recorded also on living trees, but its pathogenicity is uncertain.

Key words Basidiomycota · Bondarzewiaceae · New species · Wood-rotting fungi

Introduction

Heterobasidion Bref. is one of the most important basidiomycetous genera because some members of this genus cause extensive root rot on coniferous trees in managed forests. Two taxa, the widely distributed H. annosum (Fr.) Bref. and East Asian H. insulare (Murrill) Ryvarden, have generally been accepted in the genus (Gilbertson and Ryvarden 1986; Ryvarden and Gilbertson 1993; Núñez and Ryvarden 2001). Mating studies carried out later showed that both H. annosum and H. insulare are species complexes (Korhonen 1978; Dai et al. 2002). Three Northern Hemisphere species were recognized in the former complex: H. annosum sensu stricto, H. parviporum Niemelä & Korhonen, and H. abietinum Niemelä & Korhonen (Niemelä and Korhonen 1998). The Heterobasidion taxon occurring in Australia and adjacent regions was named H. araucariae P.K. Buchanan (Buchanan 1988). Three intersterile groups (N, T, Y) were found in the East Asian H. insulare complex (Dai et al. 2002).

Recently, several species were described within the H. insulare complex. Heterobasidion linzhiense Y.C. Dai & Korhonen was described from Tibet of China, based on the results of mating tests and on the large basidiospores of this taxon (Dai et al. 2007). Furthermore, based on morphology, culture study, and phylogeny, the intersterility group N was described as H. orientale Tokuda, T. Hatt. & Y.C. Dai, and the intersterility group T as H. ecrustosum Tokuda, T. Hatt. & Y.C. Dai (Ota et al. 2006; Tokuda et al. 2009). The intersterility group Y, found in southern China, is microscopically similar to H. ecrustosum but intersterile with it. It is partially interfertile with H. orientale but has evident differences in morphology. Thus, it is treated here as an independent species.

Materials and methods

The studied specimens are deposited at the herbarium of Institute of Beijing Forestry University (BJFC), the herbarium of Applied Ecology, Chinese Academy of Sciences (IFP), and the herbarium of the Botanical Museum of the University of Helsinki (H). Anatomy was studied, and measurements and drawings were made from slide preparations stained with cotton blue. Drawings were made with the aid of a drawing tube. The microscopic routine used in the study followed Yuan et al. (2006). In presenting variation in the size of the spores, 5% of the measurements at each end of the range are shown in parentheses. The following abbreviations are 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, and \( n \) = number of spores measured from given number of specimens. Special color terms are from Petersen (1996).

**Description**

*Heterobasidion australe* Y.C. Dai & Korhonen, sp. nov.

Figs. 1–4

MycoBank no.: MB 514018.

Carpophororum perenne, effuso-reflexum vel pileatum; facies pororum nivea vel cremo-bubalina, pori rotundi vel angulati, 4–5/mm. Systema hypharum dimiticum, hyphae generatioriae septatae sine fibulis, hyphae skeletales contexti 3.5–5 \( \mu \)m in diametro. Sporae perlate ellipsoideae vel subglobosae, hyalinae, asperae, 4.3–5.5 \( \times \) 3.5–4.5 \( \mu \)m.


Etymology: Australe (Latin), south, referring to southern China.

Basidiocarps perennial, effused-reflexed to pileate, usually imbricate, leathery when fresh, corky when dry, without odor or taste. Pileus semicircular to fan shaped, projecting up to 3 cm, 7 cm wide, and 7 mm thick at base. Pileal surface white to cream when young, becoming reddish brown to dark brown with age, at least reddish brown at base, crustose, indistinctly zonate; margin white to cream, sharp to blunt. Pore surface white when fresh, cream to pale buff when dry, glancing; pores mostly round, occasionally angular, 4–5/mm; dissepsiments thin, entire. Context cream, hard corky, azonate, up to 2 mm thick, with a thin crust except for the margin. Tubes cream to buff, hard corky, up to 5 mm long.

Fig. 1. Basidiocarps of *Heterobasidion australe* (Dai 7298)

Fig. 2. Basidiocarps of *Heterobasidion australe* (Dai 7324)

Fig. 3. Microscopic structures of *Heterobasidion australe* (drawn from Dai 7296). a Basidiospores. b Basidia and basidioles. c Hyphae from tube. d Hyphae from context