



Knufia aspidiotus sp. nov., a new black yeast from scale insects

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Abstract

Three ascomycetes, isolated from the body cavity of the scale insect, *Aspidiotus* sp., collected in Song Mountain, Yanqing, Beijing, China, were identified to be a new species of *Knufia*. *Knufia aspidiotus* sp. nov. is introduced in this paper. The species is characterized by slow-growing, dematiaceous and blastic, endogenous conidia in undifferentiated hyphae, as well as darkly pigmented, enlarged multicellular bodies, and is similar to other *Knufia* species in morphology. Phylogenetic analyses, based on the small ribosomal subunit (SSU) gene and internal transcribed spacer (ITS) region, indicated that *Knufia aspidiotus* was related to, but clearly distant from other sequenced species in *Knufia*.

Key words: new species, morphology, phylogeny, taxonomy

Introduction

Species of the genus *Knufia* are black yeasts, belonging to the family Chaetothyriaceae (Chaetothyriales, Ascomycota). The genus was introduced by Hutchison and Untereiner (1995), and presently comprises *K. cryptophialidica* L.J. Hutchison & Unter., *K. endospora* Tsuneda & Currah, *K. perforans* (Sterfl.) Tsuneda, Hambl. & Currah, *K. peltigerae* (Fuckel) Réblová & Unter., *K. epidermidis* (D.M. Li, de Hoog, Saunte & X.R. Chen) Tsuneda, Hambl. & Currah, and *K. petricola* (Wollenz. & de Hoog) Tsuneda, Hambl. & Currah (= *Phaeococomyces chersonesos* Bogom. & Minter) (Hutchison *et al.* 1995, Tsuneda *et al.* 2005, 2011, Réblová *et al.* 2013, Selbmann *et al.* 2013, Vicente *et al.* 2013).

The diagnostic features of *Knufia*, based on the morphology of type species, *K. cryptophialidica*, are the formation of black, slow-growing colonies and production of conidia from undifferentiated, holoblastic, conidiogenous cells on the hyphae, as well as from phialides (Hutchison *et al.* 1995). After studying four strains of *K. cryptophialidica* (including the ex-type strain), Tsuneda and Currah (2005), however, concluded that phialidic conidia production was not a constant character. Only the ex-type culture formed phialides, while *K. endospora* lacked phialidic conidiogenesis (Tsuneda *et al.* 2004, 2011). Comparison of morphological characters of *Knufia* species in culture indicate (1) slow-growing, black colonies; (2) blastic, and endogenous conidia in undifferentiated hyphae or multicellular bodies; and (3) darkly pigmented, enlarged multicellular bodies are reliable characteristics to differentiate species (Tsuneda *et al.* 2004, 2005, 2011).

Molecular analyses have recently been applied to the taxonomy and phylogeny of black yeasts (Halici *et al.* 2010, Nelsen *et al.* 2011, Feng *et al.* 2012, Lawrey *et al.* 2012, Chomnunti *et al.* 2013). This is because black yeasts are notoriously difficult to identify by morphology alone, due to their lack of significant differentiation, their pleomorphic growth, and their variable modes of conidiogenesis (Untereiner *et al.* 1995, Sterflinger 2006). The large and small ribosomal subunit sequences (LSU and SSU) are suitable for placement

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