



Pochonia cordycepsociata, a new species associated with Chinese cordyceps in Tibet, China

HAI HUANG^{1,*}, ZHANG LUO, HAI MEI YUE, WEN FENG GONG, LEI CAI² & MU WANG^{1*}

¹Agriculture and Animal Husbandry College of Tibet University, Lyingchi, Tibet 860000, China

²State Key Laboratory of Mycology, Institute of Microbiology, Chinese Academy of Sciences, No. 3 Park 1, Beichen West Road, Chaoyang District, Beijing 100101, China

*Corresponding author's email: wangmutb@163.com

Abstract

During a survey of fungi associated with the Chinese cordyceps (*Ophiocordyceps sinensis*) collected from Tibet, China, a new species, *Pochonia cordycepsociata* was isolated from the sclerotium of *O. sinensis*. It is characterized and different from other *Pochonia* species by its aggregated compact hyphae, slender phialides, global to ellipsoid conidia and the absence of dictyochlamydospores. A multi-locus (ITS, SSU, LSU, TEF, RPB1 and RPB2) phylogenetic analysis supported its independence from other species. A synopsis of the morphological characters of the new species and its related taxa is provided.

Key words: *Metacordyceps*, morphology, *Ophiocordyceps sinensis*, phylogeny, systematics

Introduction

The genus *Pochonia* Bat. & O.M. Fonseca was resurrected based on the phylogenetic investigation of *Verticillium* sec. *Prostrata* which was re-classified into *Lecanicillium* W. Gams & Zare, *Pochonia*, *Haptocillium* W. Gams & Zare and *Simplicillium* Zare & W. Gams (Zare *et al.* 2001). *Pochonia* was circumstantiated based on the type species of *P. chlamydosporia* (Goddard) Zare & W. Gams, and currently 13 taxa are recognized (Zare *et al.* 2001; Sung *et al.* 2007; Zare and Gams 2007; Nonaka *et al.* 2013). All species of *Pochonia* are characterized by dictyochlamydospores or swollen hyphae cells, and phialidic conidia (Zare and Gams 2001, 2004). Moreover, phylogenetic studies by Kepler *et al.* (2012) supported that the genus *Pochonia* belongs to Claviciptaceae, but did not constitute a monophyletic clade. It is well-known that *Pochonia* species usually isolated from soil are able to parasitize nematode cysts (Barron *et al.* 1996), such as *P. chlamydosporia*, which is a potential bio-control agent (Zare & Gams 2003, Esteves *et al.* 2009). Zare & Gams (2004) recognized six species in this genus, which were acquired from cysts and eggs of *Heterodera* spp., leaf litter and soil.

In a survey of fungi associated with *Ophiocordyceps sinensis* (Berk.) G.H. Sung, J.M. Sung, Hywel-Jones & Spatafora collected from Miling, Tibet, China, several isolates had moderately slow growth, slender flask-shaper phialides clustering in regular terminal or intercalary whorls, fitting the generic concept of *Pochonia*. However, the isolates could be easily distinguished from other species of *Pochonia* by the shape of the mature conidia and aggregated compact hyphae submerged in the medium. A multi-locus phylogenetic analysis also showed that these isolates represent an independent species of *Pochonia*. Herewith we described and illustrated the new species.

Materials and Methods

Strains, media and morphological observation