



Pseudodidymosphaeria gen. nov. in Massarinaceae

KASUN M. THAMBUGALA^{1,2,3}, YU CHUNFANG⁴, ERIO CAMPORESI⁵, ALI H. BAHKALI⁶, ZUO-YI LIU^{1,*} & KEVIN D. HYDE^{2,3}

¹Guizhou Key Laboratory of Agricultural Biotechnology, Guizhou Academy of Agricultural Sciences, Xiaohu District, Guiyang City, Guizhou Province 550006, People's Republic of China

²Institute of Excellence in Fungal Research, Mae Fah Luang University, Chiang Rai 57100, Thailand

³School of Science, Mae Fah Luang University, Chiang Rai. 57100, Thailand

⁴Institute of Basic Medical Sciences, Hubei University of Medicine, Shiyan, Hubei Province, 442000, People's Republic of China

⁵A.M.B. Gruppo Micologico Forlivese "Antonio Cicognani", Via Roma 18, Forli, Italy; A.M.B. Circolo Micologico "Giovanni Carini", C.P. 314, Brescia, Italy

⁶Department of Botany and Microbiology, King Saudi University, Riyadh, Saudi Arabia

*Corresponding author: email: gziuzuoyi@163.com

Abstract

Didymosphaeria spartii was collected from dead branches of *Spartium junceum* in Italy. Multi-gene phylogenetic analyses of ITS, 18S and 28S nrDNA sequence data were carried out using maximum likelihood and Bayesian analysis. The resulting phylogenetic trees showed this to be a new genus in a well-supported clade in *Massarinaceae*. A new genus *Pseudodidymosphaeria* is therefore introduced to accommodate this species based on molecular phylogeny and morphology. An illustrated account is provided for the new genus with its asexual morph and the new taxon is compared with *Massarina* and *Didymosphaeria*.

Key words: Dothideomycetes, *Spartium*, New genus, Morphology, Phylogeny

Introduction

The genus *Massarina* was introduced by Saccardo (1883), while Clements and Shear (1931) selected *M. eburnea* (Tul. & C. Tul.) Sacc. as the lectotype of this genus. Munk (1956) established *Massarinaceae* in order to accommodate the genera *Keissleriella* Höhn., *Massarina* Sacc., *Metasphaeria* Sacc., *Pseudotrichia* Kirschst. and *Trichometasphaeria* Munk. Von Arx & Müller (1975) synonymized *Massarinaceae* under *Pleosporaceae* together with *Cucurbitariaceae* and *Didymosphaeriaceae*. Barr (1987) segregated *Massarinaceae* from *Pleosporaceae* and synonymized it under *Lophiostomataceae* based on morphology. Schoch *et al.* (2009) showed *Massarinaceae* to be a distinct family in *Pleosporales* based on multigene phylogenetic analysis. Further studies on *Pleosporales* (Zhang *et al.* 2009, 2012) also recognized *Massarinaceae* as a distinct lineage based on both morphology and molecular phylogeny. Lumbsch & Huhndorf (2010) included *Bysothecium* Fuckel, *Massarina* and *Saccharicola* D. Hawksw. & O.E. Erikss. in *Massarinaceae*, while Hyde *et al.* (2013) accepted only *Massarina*. Quaedvlieg *et al.* (2013) epitypified *Stagonospora paludosa* (Sacc. & Speg.) Sacc., the type species of *Stagonospora* (Sacc.) Sacc. and assigned it to *Massarinaceae*. In addition, several molecular studies have suggested that some species of following genera may belong in *Massarinaceae*, i.e. *Aquaticheirospora*, *Cheirosporium*, *Corynespora*, *Helminthosporium* and *Neottiosporina* (Kodsueb *et al.* 2007; Suetrong *et al.* 2009; Zhang *et al.* 2012; Hyde *et al.* 2013; Wijayawardene *et al.* 2014). However, further phylogenetic studies on these genera and related species are required in order to clarify their familial placement.

Massarinaceae is characterized by immersed or superficial ascomata with papillate or epapillate ostioles, cellular pseudoparaphyses, bitunicate, fissitunicate, clavate to cylindrical, short pedicellate, asci and ellipsoid to fusoid, hyaline, 1–3-septate ascospores with or without mucilaginous sheaths (Hyde 1995; Zhang *et al.* 2012; Hyde *et al.* 2013). *Stagonospora* (Quaedvlieg *et al.* 2013) and ceratophoma-like (Sivanesan 1984) asexual morphs have been reported in *Massarinaceae*, which are characterized by immersed, globose to pyriform, ostiolate, pycnidial conidiomata, enteroblastic, doliiform, hyaline conidiogenous cells with several percurrent proliferations at the apex and oblong,