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A new species of marine *Dactylospora* and its phylogenetic affinities within the Eurotiomycetes, Ascomycota

Abstract: An apparently undescribed lignicolous *Dactylospora* species was collected on a rocky shore in northern Taiwan. The ascomatal morphology of this fungus is similar to other marine *Dactylospora* species, whereas the unique feature of the new fungus is a distinct perispore forming an ascospore appendage, which comprises a thick and hyaline sheath connected at the septum that opens at both ends. *Dactylospora vrijmoediae* is described and illustrated as new to science. On the basis of a phylogenetic analysis of the partial 18S and 28S rRNA and *RPB2* genes, *D. vrijmoediae* occurs with other marine species, *D. haliotrepha*, *D. mangrovei*, and the terrestrial *Sclerococcum sphaerale* in an unnamed clade within the Eurotiomycetes, Ascomycota. The marine *Dactylospora* species are distantly placed and are separated from the terrestrial *Dactylospora* species included in the analysis (*D. lobariella*, *D. imperfecta*).

Keywords: Ascomycota; Dactylosporaceae; discomycete; marine fungi.

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Introduction

The first marine fungi were described in the period 1840–1849, and over the last 180 years, a total of 537 marine fungi have been described (Jones et al. 2009, Jones 2011).

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Jones (2011) also estimated that there could be as many as 1500 species in this ecological niche. Where can we find the missing fungi to account for the discrepancy in the number? Jones (2011) suggested a few avenues: (i) the unidentified species on a range of substrata in many studies could possibly be new species; (ii) many ecological groups of marine fungi are poorly studied (e.g., deep sea fungi and planktonic fungi); (iii) unculturable fungi are present but not detected using culture methods to assess diversity; (iv) cryptic species are present in the currently morphologically well-circumscribed species; and (v) wider geographical exploration of marine fungi with intensive sampling may further contribute to the number of marine fungi.

Taiwan is an island with a long coastline with various marine habitats, ranging from sandy beaches, rocky shores, mangrove stands to coral reefs. Our continued survey of marine fungi in Taiwan has inventoried 107 marine fungi (Pang and Jheng 2012a) and includes three new ascomycetes: *Sedecimiella taiwanensis* K.L. Pang, Alias et E.B.G. Jones on decaying mangrove wood (Pang et al. 2010); *Pileomyces formosanus* K.L. Pang et Jheng on trapped wood (Pang and Jheng 2012b); and *Kitesporella keelungensis* Jheng et K.L. Pang (Pang and Jheng 2012a).

Of the 537 marine fungi described thus far (Jones et al. 2009), about 80% belong to the Ascomycota. Most marine ascomycetes are predominantly perithecioid with only eight discomycetes (Suetrong and Jones 2006). Like marine basidiomycetes, marine discomycetes, with ascomata superficial on substrata, possibly cannot withstand wave action or being submerged in seawater for a long period (Suetrong and Jones 2006). However, they have leathery apothecia that can tolerate constant wetting by brackish or fully saline water (Suetrong and Jones 2006).

Recently, a new marine *Dactylospora* Körb. species was collected on wood at the northern coast of Taiwan. The morphology of this species is illustrated, and a phylogenetic analysis of the partial nuclear SSU and LSU rRNA and *RPB2* genes was run to investigate the relationships between the marine and terrestrial *Dactylospora* species.