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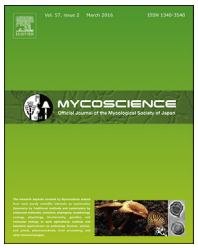
MYCOSCIENCE

ISSN 1340-3540 (print), 1618-2545 (online)

journal homepage: www.elsevier.com/locate/myc



Short communication

Pseudoplagiostoma dipterocarpi sp. nov., a new endophytic fungus from Thailand

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ARTICLE INFO

Article history:
Received 12 August 2015
Received in revised form
3 December 2015
Accepted 6 December 2015
Available online 25 January 2016

Keywords:
Dipterocarpaceae
Fungal endophyte
Pseudoplagiostomaceae
Taxonomy

ABSTRACT

A new species of endophytic fungi, described herein as *Pseudoplagiostoma dipterocarpi*, was isolated from leaves of *Dipterocarpus tuberculatus* in Chiang Mai Province, Thailand. Morphological characteristics indicated that its conidial length was longer than in previously described *Pseudoplagiostoma* species. Phylogenetic analysis also supports the morphological results. A description, illustration and a key to species are provided.

The genus *Pseudoplagiostoma* was circumscribed by Cheewangkoon et al. (2010) with *P. eucalypti* Cheew., M.J. Wingf. & Crous, as the type species. This genus belongs to the order Diaporthales, family Pseudoplagiostomaceae (Cheewangkoon et al. 2010). Currently, there are four *Pseudoplagiostoma* records, *P. corymbia* Crous & Summerell, *P. eucalypti* Cheew., M.J. Wingf. & Crous, *P. oldii* Cheew., M.J. Wingf. & Crous and *P. variabile* Cheew., M.J. Wingf. & Crous in Index Fungorum (http://www.indexfungorum.org/names/names.asp), with these species recorded from Australia, Bhutan, China, Malaysia, Thailand, Venezuela and Vietnam with plant pathogenic habits (Cheewangkoon et al. 2010; Crous et al. 2012; Lueangpraplut et al. 2013). During our investigation of endophytic fungi on *Dipterocarpus tuberculatus* Roxb., we found an interesting species of *Pseudoplagiostoma* whose morphological observation and phylogenetic analysis revealed it as a new species.

Leaf samples of *D. tuberculatus* were collected from natural forest in Mae Wang District, Chiang Mai Province, northern Thailand (18°40′52.7″N, 98°52′10.2″E), in Jun 2014. The samples were then taken to the laboratory and processed within 24 h. Samples were washed in running tap water for 15 min. Endophytic fungi were isolated using a triple sterilization method and cultured on cornmeal media (Suwannarach et al. 2012). The fungal isolates were identified according to their macroscopic and microscopic structures. A pure culture of the fungus was air-dried to prepare the holotype specimen. The holotype material and its original (ex-type) strains were deposited in the Culture Collection of Sustainable Development of Biological Resources Laboratory (SDBR), Faculty of

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http://dx.doi.org/10.1016/j.myc.2015.12.002

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Taxonomy

Pseudoplagiostoma dipterocarpi Suwannarach & Lumyong, sp. nov. Fig. 1.
MycoBank no.: MB 812863.

Diagnosis: This species can be distinguished from other *Pseudoplagiostoma* species by its longer conidial length.

Etymology: *dipterocarpi*, refers to the name of the host plant, *Dipterocarpus tuberculatus*.

Holotype: THAILAND, Mae Wang District, Chiang Mai Province, 18°40′52.7″N, 98°52′10.2″E, isolated as an endophyte from leaves of *Dipterocarpus tuberculatus*, Jun 2014, Suwannarcah N., dried culture: SDBR-ETT57; ex-type living culture: TBRC 1895.

Gene sequences (from holotype): KR994682 (ITS) and KR994683 (LSU).

Fungal colonies on malt extract agar grew to 75–80 mm in diam at room temperature (25 ± 2 °C) for 1 wk (Fig. 1A). Colonies effuse, white to smoke-gray surface and reverse side greenish to olive brown. Mycelia superficial and immersed, hyphae branched, septate, hyaline to dark brown, 2–3 μm wide. Masses of conidia salmon to orange color when incubated for 3 wk (Fig. 1B). Conidiophores reduced to conidiogenous cells. Conidiogenous cells discrete, cylindrical to ampulliform, hyaline, smooth, straight to curved, wider at the base, 18–25 × 2.5–4.5 μm (Fig. 1C). Conidia aseptate, hyaline, smooth, thick-walled (1–2 μm), guttulate, elongate ellipsoidal, straight, apex obtuse, base tapering to flat protruding scar, 14–36 × 7–11 μm (Fig. 1D, E).

The morphological characteristics clearly separated the new species, *P. dipterocarpi* from other *Pseudoplagiostoma* species. The conidiogenous cells of *P. dipterocarpi* (18–25 × 2.5–4.5 μm) were longer than those of *P. eucalypti* (6–15 × 2–6 μm) (Cheewangkoon et al. 2010). *Pseudoplagiostoma variabile* is distinguished from *P. dipterocarpi* by its conidia variable in shape, subglobose to bean-shaped (Cheewangkoon et al. 2010). The conidial length of *P. corymbiae* (14–19 × 7–10 μm), *P. ecalypti* (14–22 × 6–11 μm), *P. oldii* (11–20 × 6–11 μm) and *P. variabile* (6.5–19 × 6.5–10.5 μm) were shorter than in *P. dipterocarpi* (14–36 × 7–11 μm) (Cheewangkoon et al. 2010; Crous et al. 2012). Moreover, *P. oldii* is distinguished from *P. dipterocarpi* by its conidia turning brown at maturity (Cheewangkoon et al. 2010).

Extraction of fungal DNA followed the methods described in Suwannarach et al. (2014). The internal transcribed spacer (ITS) region of the ribosomal RNA gene was amplified by polymerase chain reaction (PCR) using ITS4 and ITS5 primers under the following thermal conditions: 95 °C for 2 min, 30 cycles of 95 °C for 30 s, 50 °C for 30 s, 72 °C for 1 min, and 72 °C for 10 min. In addition, the large subunit (LSU) region of ribosomal RNA gene was also amplified with LROR and LRO5 primers under the following thermal conditions: 94 °C for 2 min, 30 cycles of 95 °C for 30 s, 52 °C for 30 s, 72 °C for 1 min,

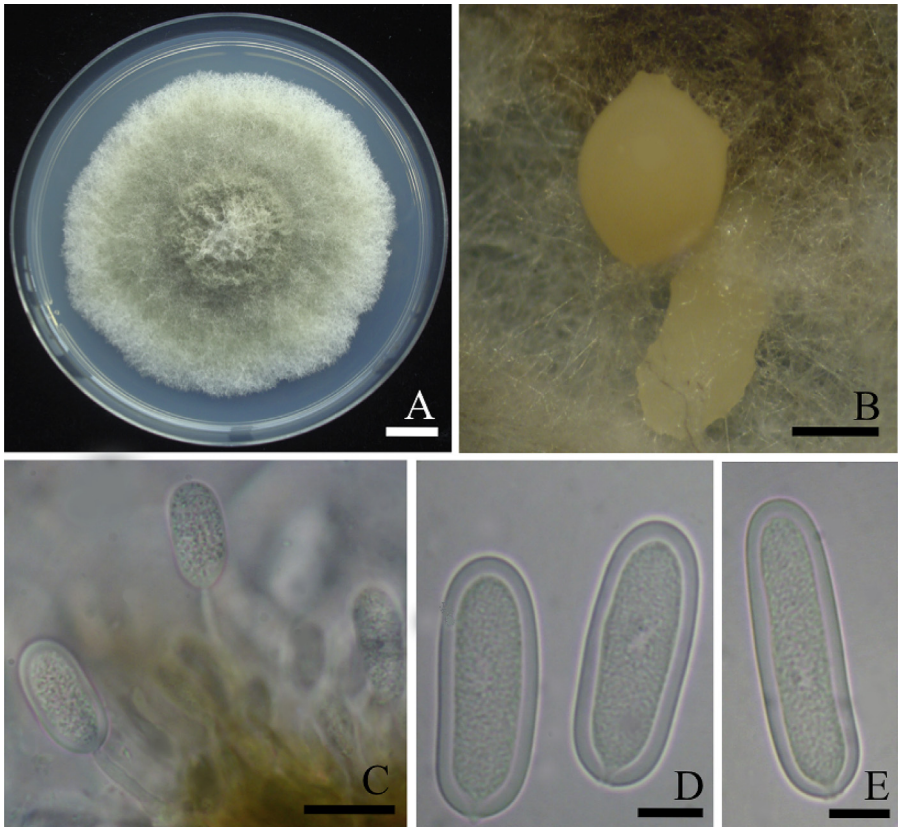

Fig. 1 – *Pseudoplagiostoma dipterocarpi* SDBR-CMU-ETT57. A: Colony on malt extract agar. B: Mass of conidia. C: Conidiogenous cells bearing conidia. D, E: Conidia. *Bars*: A 1 cm; B 2 mm; C 10 μm; D, E 5 μm.