

**Braunomyces dictyosporus** gen. sp. nov. from Vietnam

Vadim A. Mel'nik¹ and Pedro W. Crous²

¹Laboratory of the Systematics and Geography of Fungi, Komarov Botanical Institute, Russian Academy of Sciences, Professor Popov Street 2, St. Petersburg, 197376, Russia; corresponding author e-mail: vadim.melnik@mail.ru
²CBS-KNAW Fungal Biodiversity Centre, Uppsalalaan 8, 3584 CT Utrecht, The Netherlands

**Abstract:** The generic name *Braunomyces* (ascomycetes, asexual morph), with *B. dictyosporus* as type species, is described, illustrated and discussed, based on material collected in Vietnam on leaf debris of an unidentified broadleaved tree. The new genus is well characterised and quite distinct from other synnematous and non-synnematous dematiaceous hyphomycete genera by its unique combination of traits, viz. determinate synnematous conidiomata, integrated, terminal and intercalary conidiogenous cells with one to several conidiogenous vesicles becoming cupulate with age, tretic conidiogenesis, and mostly cruciately septate, solitary dictyosporidium.

**Key words:**

*Ascomycota*

asexual morph

dematiaceous hyphomycetes

**INTRODUCTION**

Fungal diversity, especially that of tropical countries, is far from being well explored. Vietnam in south-east Asia is characteristic. Attempts to improve the knowledge on the diversity of Vietnamese fungi have been made within the scope of a Research Program of the Vietnam-Russian Tropical Research and Technological Centre. Numerous specimens of fungi were collected, including various hyphomycetes (asexual fungal morphs, mostly of ascomycetes). Results of examinations and identifications of these fungi were published in a series of papers (Alexandrova *et al.* 2013, Mel’nik 2011, 2012a, b, Mel’nik *et al.* 2012, 2013, Mel’nik & Braun 2013), including numerous new records and some new species. A synnematous hyphomycete on leaf debris of an unidentified broadleaved tree, superficially similar to species of the genus *Paathramaya* (Subramanian 1956, Bhat 1985, Seifert *et al.* 2011), proved to be a novel species that must be assigned to a new genus. The new genus is discussed and compared with synnematous and non-synnematous dematiaceous hyphomycete genera by its unique combination of traits, viz. determinate synnematous conidiomata, integrated, terminal and intercalary conidiogenous cells with one to several conidiogenous vesicles becoming cupulate with age, tretic conidiogenesis, and mostly cruciately septate, solitary dictyosporidium.

**MATERIAL AND METHODS**

The freshly collected sample was dried at room temperature (22 °C), and later examined in distilled water and photographed using a Zeiss microscope, Stemi 2000CS, and Axio Imager A1 equipped with Nomarski differential interference contrast optics. The conclusion that it represented an unnamed genus was accomplished through comparison of descriptions and illustrations in current relevant literature, including Seifert *et al.* (2011) and Seifert & Gams (2011). Type material is deposited at CBS, HAL, and LE.

**TAXONOMY**

*Braunomyces Melnik & Crous, gen. nov.*

MycoBank MB807593

**Etymology:** In honour of the German mycologist Uwe Braun, on the occasion of his 60th birthday in 2013, recognising his outstanding contributions to mycology.

**Diagnosis:** Synnema determinate, consisting of brown, apically spiny conidiophores. *Conidiogenous cells* terminal and intercalary, with a single or several aggregated swellings, subcircular to somewhat oblong in outline, later often collapsing, becoming cupulate, mono- to polytretic. *Conidia* solitary, dictyosporous, globose, subglobose, cruciately to obliquely septate, pale to medium dark olivaceous brown, verruculose to verrucose.

**Type species:** *Braunomyces dictyosporus* Melnik & Crous 2014

**Description:** Hyphomycete (asexual morph of ascomycetes). *Conidiomata* synnematous, on leaf debris, saprobic, scattered, dark brown to blackish. *Synnema* determinate, erect, straight, composed of tightly appressed filaments, forming a firm subcylindrical, dark brown stipe, widened and foot-like at the base, and a loose capitulum of apically divergent conidiophores. *Conidiophores* individually filiform, simple

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Fig. 1. *Braunomyces dictyosporus* (HAL 2606). A–B. Synnemata. C. Synnema with rhizoid-like base. Bars = 100 μm.
Braunomyces dictyosporus gen. sp. nov. from Vietnam

or sparingly branched, pluriseptate, brown, wall thin to slightly thickened, smooth. **Conidiogenous cells** integrated, terminal and intercalary, irregularly shaped due to vesicular conidiogenous loci, pale to medium brown, thin-walled, smooth, with a single or several aggregated swellings, subcircular to somewhat oblong in outline, later often collapsing, becoming cupulate, with a minute pore surrounded by a slightly darkened-refractive halo or halo sometimes lacking, conidiogenesis tretic (mono- to mostly polytretic). **Conidia** solitary, dictyosporous, globose, subglobose to slightly angular in outline, cruciately to obliquely septate, occasionally slightly constricted at the septa, wall relatively thin, pale to medium dark olivaceous brown, verruculose to verrucose.

**Notes:** Although we have no sexual structures or accompanying DNA phylogenetic data, we conclude that *Braunomyces* is a genus of ascomycetes, chiefly based on its tretic conidiogenous cells, further suggesting it to be affiliated to *Dothideomycetes*.

*Braunomyces dictyosporus* Melnik & Crous, sp. nov.  
MycoBank MB807594  
(Figs 1–3)

**Etymology:** Epithet derived from the dictyoseptate conidia.
**Diagnosis:** Synnemata determinate, 400–650 µm long, consisting of brown, apically oftening conidiophores. Conidiogenous cells terminal and intercalary, 6–20 × 2–7 µm, with a single or several aggregated swellings, 1.5–3.5 µm diam, subcircular to somewhat oblong in outline, later often collapsing, becoming cupulate, loci about 0.8–1.5 µm diam, with minute pore surrounded by a slightly darkened refractive halo or halo sometimes lacking, conidiogenesis tretic (monotet to mostly polytetric). Conidia solitary, conidium initials globose, colourless, aseptate, in this stage rough wall ornamentation already evident, at first forming a single median septum, followed by one or mostly two additional oblique to perpendicular septa, pigmentation setting in with septation and gradually proceeding, mature conidia dictyosporous, globose, subglobose to slightly angular in outline, (4–)5–8(–9) µm diam, 2- to 4-celled, cruciately to obliquely septate, occasionally slightly constricted at the septa, wall relatively thin (up to 0.8 µm), pale to medium dark olivaceous-brown, verruculose to verrucose.

**Type:** Vietnam: Dong Nai Prov.: Cat Tien National Park, Nam Cat Tien Sector, polydominant monsoon tropical forest, on dry leaves of an unidentified broadleaved tree, 16 Nov. 2011, Yu. Novozhilov (HAL 2606 F – holotype; LE 263985, CBS H-21489 – isotypes).

**Description:** Conidiomata synnematous, scattered, dark brown to blackish. Synnemata determinate, erect, straight, 400–650 µm long, composed of tightly appressed filaments, forming a firm subcylindrical, dark brown stipe, 20–40(–50) µm wide, widened and foot-like at the very base, to 130 µm diam, with a loose capitulum of apically divergent conidiophores, free terminal portions of the filaments 80–300 µm long. Conidiophores individually filiform, simple or occasionally branched, 1.5–3 µm wide, pluriseptate, brown, wall thin to slightly thickened, smooth. Conidiogenous cells integrated, terminal and intercalary, about 6–20 × 2–7 µm, irregularly shaped due to vesicular conidiogenous loci, pale to medium brown, thin-walled, smooth, with a single or several aggregated swellings (“conidiogenous vesicles”), 1.5–3.5 µm diam, subcircular to somewhat oblong in outline, later often collapsing, becoming cupulate, loci about 0.8–1.5 µm diam, with minute pore surrounded by a slightly darkened refractive halo or halo sometimes lacking, conidiogenesis tretic (monotet to mostly polytetric). Conidia solitary, conidium initials globose, colourless or very pale, aseptate, in this stage rough wall ornamentation already evident, at first forming a single median septum, followed by one or mostly two additional oblique to perpendicular septa, pigmentation setting in with septation and gradually proceeding, mature conidia dictyosporous, globose, subglobose to slightly angular in outline, (4–)5–8(–9) µm diam, 2- to 4-celled, cruciately to obliquely septate, occasionally slightly constricted at the septa, wall relatively thin (up to 0.8 µm), pale to medium dark olivaceous-brown, verruculose to verrucose.

**DISCUSSION**

Using the key to synnematous hyphomycete genera by Seifert & Okada (in Seifert et al. 2011), all accepted genera with dictyoconidia proved to be distinct from, and not applicable to, this species. Among other synnematous hyphomycete genera, there is only one which is superficially similar, *Paathramaya*, established by Subramanian (1956) for a single Indian species, *P. sundara*, based on a collection on dead twigs. Later, Subramanian & Nair (1966) introduced another genus, *Panchanania*, which was reduced to synonymy with *Paathramaya* by Bhat (1985). The conidiomata of the latter genus are also synnematous, determinate, and the conidiogenous cells are equipped with similar conidiogenous vesicles that collapse with age and become cupulate, but the conidiogenesis is holoblastic and the conidia of all species assigned to this genus (*Paathramaya drewsii*, *P. indica*, *P. jaipurensis*, *P. sundara*, and *P. suttonii*) are globose, subglobose to broadly ellipsoidal, consistently aseptate (amerosporous), dark brown and thick-walled (Moore 1984, Bhat 1985, Dominik 1970, Seifert et al. 2011) – in contrast to the tretic, dictyosporous Vietnamese fungus. Because of the collapsing, cupulate conidiogenous cells and globose, aseptate, dark, thick-walled conidia, the non-synnematous hyphomycete genus *Lemkea* is morphologically similar to *Paathramaya*, but differs in that the conidiogenous cells are discrete, appearing vesicle-like (Morgan-Jones & Sinclair 1983). Similar subglobose dictyoconidia are formed in *Neopericonia* (Kamal et al. 1983), but that genus is readily distinguishable by its mononematous conidiophores, discrete terminal conidiogenous cells, mono- to polyblastic conidiogenesis, and conidia formed singly or in short basipetal chains. Globose conidiogenous cells that finally collapse and become cupulate are also known in the mononematous...
hyphomycete genera *Bahuchashaka* and *Dwayabeeja*, but the conidiogenous cells in these genera are discrete, and the conidia are phragmosporous and monilioid (Seifert et al. 2011). *Dictyopolyschema* is a polyschema-like genus with monotretic conidiogenous cells forming dictyoconidia, but conidiophores are lacking, i.e. conidiogenous cells are formed on supporting hyphae directly (Ellis 1976, Seifert et al. 2011). In summary, although there are some hyphomycete genera with single or several traits similar to those of the Vietnamese fungus, none of them is sufficiently similar to justify classification of our species within them. Therefore, we introduce the new generic name *Braunomyces*, for this synnematous hyphomycete.

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**REFERENCES**
