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***Mycoenterolobium borivaliense* sp. nov. (*Pleosporomycetidae*, *Dothideomycetes*) reported from India**

Rashmi Dubey*, Amit D. Pandey

Botanical Survey of India, Western Regional Centre, Pune, Maharashtra, India

Corresponding authors: dr.rashmidubey@gmail.com

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ABSTRACT

Mycoenterolobium borivaliense was encountered during a field survey to Sanjay Gandhi National Park, Maharashtra India which is found to be a new species to science. The present paper describes and illustrates a new species *Mycoenterolobium borivaliense* in the Pleosporomycetidae, Dothideomycetes, Ascomycota. This taxon was isolated as epiphyte from decaying bark of an unknown plant collected from Sanjay Gandhi National Park, Maharashtra, India. The isolate was identified on the basis of asexual-morphs. A brief description of morphology of *Mycoenterolobium borivaliense* is provided and to our understanding the present taxon has turned out to be hitherto unreported species.

Key words: Ascomycota – Asexual morph – Taxonomy.

INTRODUCTION

The asexual genus *Mycoenterolobium* was introduced by Goos (1970) with *Mycoenterolobium platysporum* as the type species growing on decaying wood of *Araucaria* from Hawaii. Later, Mercado & Mena (1986) published its new variety viz., *Mycoenterolobium platysporum* var. *magnum* from Cuba. Subsequently, Karandikar et al. (2015) introduced *Mycoenterolobium flabelliforme* from dead bark of *Tectona grandis* collected from Toranmal region of Maharashtra State, India. There is no sequence data for these two species; therefore, taxonomic placement of the genus was not possible until the current study. Recently *M. aquadictyosporium* was established by Calabon et al. (2020) from fresh water habitat of Thailand with molecular data. The sequence data placed *Mycoenterolobium aquadictyosporium* close to the family *Testudinaceae* within *Pleosporomycetidae*, *Dothideomycetes*.

However, the family *Testudinaceae* is heterogeneous morphologically and phylogenetically weakly supported, and the new taxon is referred to *Pleosporales* incertae sedis until further taxon sampling is undertaken. In our survey of Litter fungi in Sanjay Gandhi National Park, we observed and isolated a saprobic hyphomycete from decaying bark.

MATERIALS AND METHODS

The fungus was isolated in Potato Dextrose Agar (PDA) and Malt Extract Agar (MEA) media, but showed no growth. Therefore the species was identified on the basis of morphological characters. Photographs and microscopic details were observed in lactophenol-cotton blue using (OLYMPUS CX41 aided with Digi-CAM) microscope. Measurements of the fungal structures were taken from microscope.

TAXONOMY

Mycoenterolobium borivaliense sp.nov. Rashmi Dubey & Amit D. Pandey

Fungi, Dikarya, Ascomycota, Pezizomycotina
Dothideomycetes Pleosporomycetidae, incertae sedis,
incertae sedis.

Mycobank Number: MB-837982

Saprobic on decaying wood, Sexual morph:
undetermined. Asexual morph hypomycetes on natural

substrate, colonies on natural substrate black, effuse and shiny. Mycelium immersed to somewhat superficial, composed of branched, septate, smooth hyaline to subhyaline hyphae, 1.0–1.5 μm . Conidiophores micronematous, mononematous, short, unbranched, brown, smooth, 1–4 septate, 5–22 \times 3.5–4 μm . Conidiogenous cells integrated, terminal, monoblastic, determinate, oval to irregular in outline. Conidia acrogenous, solitary, dark brown, flat, dictyosporus, smooth walled, 25–100 μm high \times 20–60 μm wide, triangular becoming more or less fan shaped on maturity, composed of 5–14 rows of cells radiating from single cell at the point of attachment, dark brown, smooth walled.

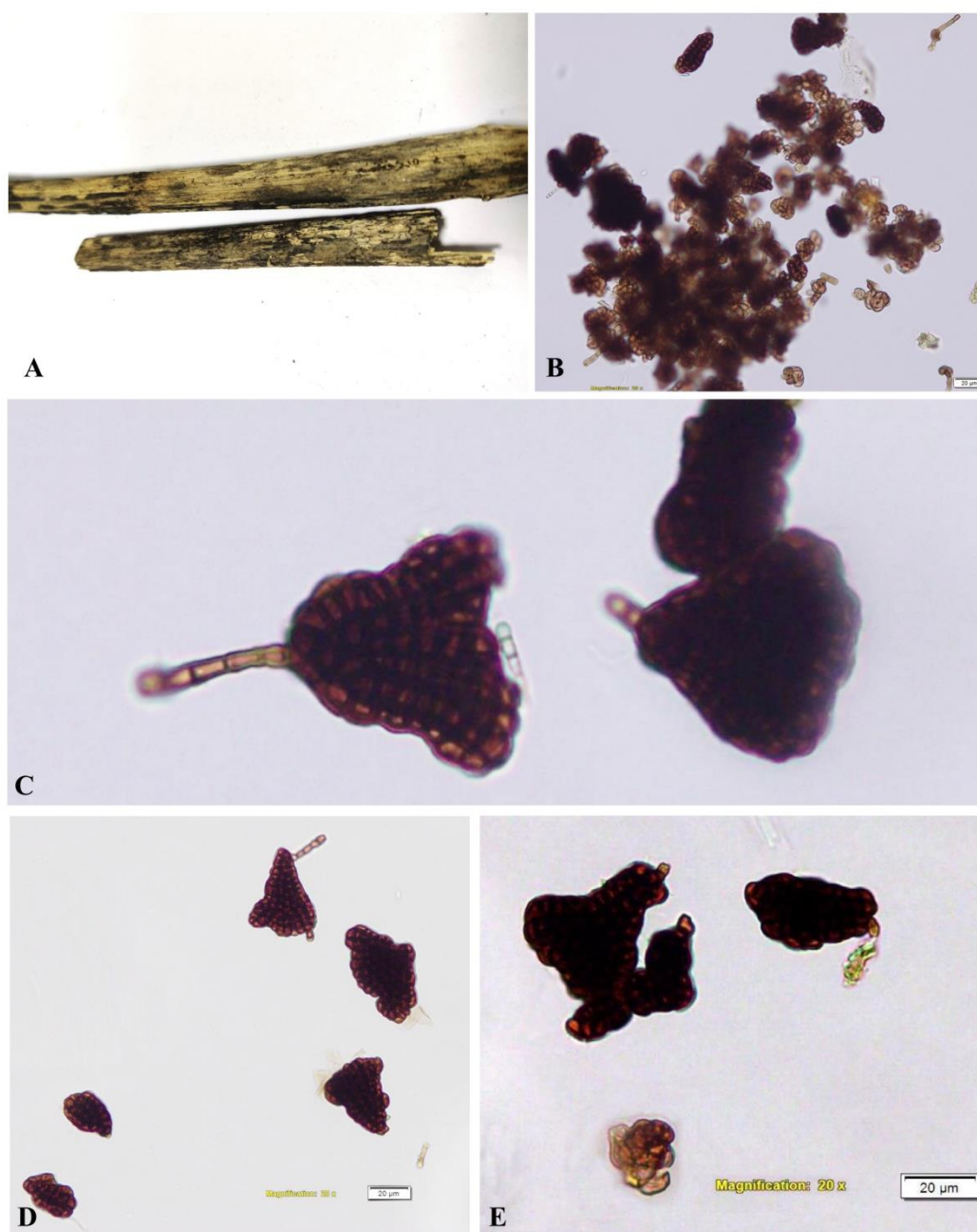


Fig. 1. *Mycoenterolobium borivaliense* sp. nov.: A. Host stem; B. Conidiophores and conidia; C-E. Dictyosporus conidia

Teleomorph – Not known.

Known distribution – Known from type locality.

Material examined: On decaying bark, Kanheri Caves, Tulsi range, Sanjay Gandhi National Park, Mumbai, Maharashtra, India, date 07/09/2016, RD, Holotype, SGNP 210626-BSI (WC).

Etymology: Referring to the place of collection Borivali National Park (previous name of Sanjay Gandhi National Park).

DISCUSSION

Mycoenterolobium is unique in the production of massive, flattened, fan-shaped conidia that resemble *Cancellidium* species. However, they differ in the arrangement of conidial rows of cells at the attachment point to the conidiophores. The conidia of *Mycoenterolobium* are made up of rows of cells, radiating in a linear pattern from a basal cell attached to the conidiophore, while *Cancellidium* is distinct in having parallel adherent rows of septate branches radiating from the conidiophore (Goos 1970; Seifert et al. 2011; Zhao et al. 2013). *Cancellidium* conidia also contain internal branched chains of blastic, cicatrized, and monilioid cells, developing from the base (Pratibha et al. 2014), and these are lacking in *Mycoenterolobium*. Dictyosporous hyphomycetes wherein conidial morphology differs from *Mycoenterolobium* include *Aquadictyospora*, *Dictyopalmispora*, *Dictyosporium*, *Dictyocheirosora*, *Digitodesmium*, *Jalapriya*,

Pseudodictyosporium, and *Vikalpa* (Kirschner et al. 2013; Boonmee et al. 2016; Yang et al. 2018; Hyde et al. 2019; Hongsanan et al. 2020). Three species and a variety are included in *Mycoenterolobium*: *M. aquadictyosporium* Calabon et al. 2020, *M. flabelliforme* Karandikar et al 2015, *M. platysporum* Goos 1970 and *M. platysporum* var. *magnum* Mercado & J. Mena 1986. In the proposed new species conidia are flat and made up of rows of cells, radiating in a linear pattern from the point of attachment as in type species. However, *M. borivaliense* shows unique features like dark brown flared conidia giving rise to more or less broad fan-shaped structure on maturity, besides the conidiophores of present collection is long, $5-22 \times 3.5-4 \mu\text{m}$ and is 1-4 septate, whereas the conidiophores in the earlier reported species are either inconspicuous/absent as in *M. platysporum* or very short and aseptate as in *M. flabelliforme* (table -1).

Key

1. Conidiophores present: 3
2. Conidiophores completely absent – *M. platysporum*
3. a. Conidiophores small, aseptate or rarely one septate – *M. flabelliforme*
b. Conidiophores micronematous, inconspicuous, short or absent – *M. aquadictyosporium*
c. Conidiophores long, 1-4 septate – *M. borivaliense* sp.nov.

Therefore, considering these variations in overall morphotaxonomic features, the present taxon is proposed as a new species *M. borivaliense* sp.nov.

Table 1. Comparative account of four reported species with the *M. borivaliense* sp.nov.

S.no	<i>M. platysporum</i>	<i>M. aquadictyosporium</i>	<i>M. platysporum</i> var. <i>magnum</i>	<i>M. flabelliforme</i>	<i>M. borivaliense</i> sp.nov.
Colonies	Colonies on natural substrate black, effuse and shiny	Saprobic on decaying wood submerged in freshwater habitat. On MEA, dark brown to greyish brown from above, dark brown to black from below.	Colonies on natural substrate black, effuse and shiny	Colonies black, shiny, uniformly spread, mycelium immersed	Colonies black, shiny, uniformly spread, mycelium immersed.
Conidiophores	Inconspicuous, short or absent	Conidiophores $7-22 \times 2-8 \mu\text{m}$	Absent	short, non-septate, occasionally one septate, $3.0-9.5 \times 3.5-4 \mu\text{m}$.	Long, 1-4 septate, $5-20 \times 3.5-4 \mu\text{m}$.
Conidia	Conidia are black, shiny, flat, one celled thick and semicircular to	Conidia dark brown, smooth walled, composed of 15-25 rows of cells radiating from single cell at the	Conidia acrogenous, solitary, dictyosporous, strongly flattened, fan	Conidia acrogenous, solitary, dark brown, flat, triangular becoming	Conidia acrogenous, solitary, dark brown, flat, dictyosporous, smooth

	irregular in outline. 110–130 × 75–80 µm	point of attachment, 45–92 × 43–104 µm and 10–30 µm thick at maturity.	shaped at maturity. 85–153 × 95–246 µm.	more or less fan shaped on maturity, made up of 7 to 15 rows of cells, 23.5–37.5 µm × 24.5–45.5 µm	walled, 25 – 100 µm high × 20 – 60 µm wide, triangular becoming more or less fan shaped on maturity, composed of 5–14 rows of cells radiating from single cell 25–100 µm × 20–60 µm wide. composed of 5–14 rows of cells
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