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Diversity of conidial fungus *Periconia* associated with *Asclepiadaceae*

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ABSTRACT

Periconia pergularigena sp. nov., is described, illustrated, discussed and compared with closely related species discovered on living leaves of *Pergularia pallida* (*Asclepiadaceae*) from eastern Uttar Pradesh, India. This new fungus is the first species reported on a host belongs to the *Asclepiadaceae* showing parasitic nature. The status of these species is analyzed, with comments on taxon with current status on the basis of morphological characters. This species is characterized by shorter conidiophores and shorter and smooth conidia. Descriptions and nomenclatural details were deposited in MycoBank (www.MycoBank.org).

Key Words: Mycodiversity, Anamorphic fungi, Morphotaxonomy, *Asclepiadaceae*, *Periconia*, new species.

INTRODUCTION

The anamorphic fungus genus *Periconia* was proposed by H.J. Tode (1791) in his Fungi Mecklenburgenses Selecti, fasc. 2, p. 2. The genus has been well studied by various authors (Mason & Ellis, 1953; Ellis, 1971, 1976; Saikia & Sarbhoy, 1982; Muntañola, -Cvetković *et al.*, 1998, 1999) and currently comprises 184 species (Index Fungorum assessed 30 April, 2015). The species of *Periconia* are temperate and tropical in their distribution and occur on rotting vegetation in terrestrial (Romero, 1983, 1994; Photita *et al.*, 2001; Yanna *et al*., 2002), freshwater (Cai *et al*., 2002), mangrove (Alias & Jones, 2000; Sarma & Vittal, 2000) and marine (Morrison-Gardiner, 2002) habitats. They are also plant pathogens and endophytes (Romero et al., 2001).

According to Ellis (1971), *Periconia* includes the species with macronematous conidiophores mostly with a Stipe and spherical head, which branches are present or absent. Conidiogenous cells are monoblastic or polyblastic, discrete on Stipe and branched. Conidia are catenate, usually spherical or sub-spherical, pale to dark brown, verruculose or echinulate, without septa.

During the inventory of foliicolous anamorphic fungi carried out in the subtropical region of northeastern Uttar Pradesh, India, *Periconia pergularigena* is found hitherto undescribed on leaves of *Pergularia pallida* (Asc1epiadaceae), is presented here in details

MATERIALS AND METHODS

The samples with diseased symptoms were placed in separate polyethylene bags and carried to the structures were drawn at 1000× magnification with the help of camera lucida to illustrate all possible details of morphology and ontogeny of

reproductive propagules. Measurements were taken with the help of combination of stage and an ocular micrometer. Morphotaxonomic determinations were made with the help of current literature and available resident expertise. The type specimens have been deposited in the Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute (ARI), Pune and Isotype specimen was retained in the mycological herbarium of the Birbal Sahni Institute of Palaeobotany (BSIPMH), Lucknow for future reference. The systematics of the taxa is given in accordance with Cannon & Kirk (2007), Kirk *et al.* (2008), Seifert *et al.* (2011), Farr & Rossman (2015) and the Index Fungorum (www.indexfungorum.org).

RESULTS

TAXONOMY

Periconia *pergularigena* Sham. Kumar & Raghv. Singh**, sp. nov.** **Fig. 1 a-c**

Mycobank MB814010

Anamorphic fungi, *hyphomycetes*, *Foliicolous*, *Infection spots* hypogenous, sub-circular to irregular, brown on upper surface with dark brown margin, light brown on lower surface, discrete, later becomes necrotic, 2–20 mm in diam., sometime scattered on entire leaf surface. *Colonies* amphiphyllous, effuse, dark gray. *Mycelium* internal. **Sexual morphs:** undetermined. **Asexual morphs:** *Stromata* absent. *Conidiophores* macronematous, mononematous, arising singly, straight, erect, unbranched, cylindrical, thick-walled, 3-septate, basal cell swollen, light to dark olivaceous brown, upto195 µm long and 10–20 µm wide. *Conidiogenous cells* integrated, terminal, monotretic, scars unthickened. *Conidia* solitary to catenate, dry, acrogenous, simple, circular to sub-circular and oval, unicellular, smooth, thin-walled, hilum unthickened, sub-hyaline to olivaceous brown, 5–18 × 5–18 µm.

Etymology: the specific epithet, *pergularigena* in reference to the host genus.

Known distribution: India (in this paper)

Material examined: India, Uttar Pradesh (U.P.), Gorakhpur, University campus of DDU Gorakhpur University, on living leaves of *Pergularia pallida* (Roxb.) Wight & Arn. (*Asclepiadaceae*), 7th March, 2008, Coll., Shambhu Kumar, AMH–9521 (**holotype**), BSIPMH–008 (isotype).

Teleomorphs: undetermined.

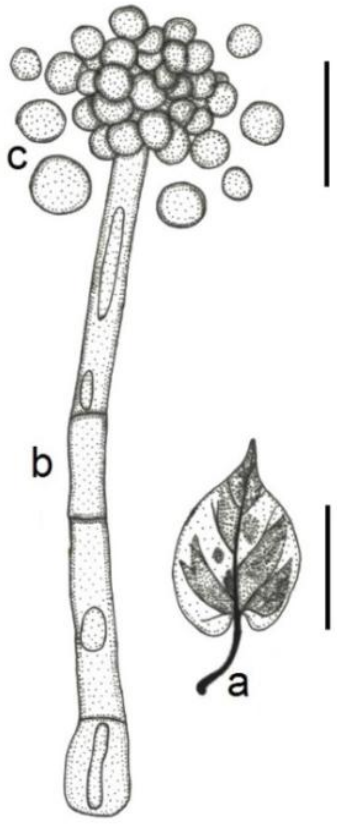

Fig 1. *Periconia pergularigena* Lucida Drawing (Holotype, AMH 9521), **a.** Infection spots **b.** Conidiophores **c.** Conidia. Bar **a** = 20 mm, **b–c** = 20 µm

DISCUSSION

Literature survey indicated that there was no record of species of *Periconia* on the host and host family from all over the world (Farr & Rossman, 2014; www.indexfungorum.org, accessed April 30, 2015) and particularly from India (Bilgrami *et al.* 1979, 1981, 1991; Butler & Bisby, 1954, Jamaluddin *et al.* 2004; Rao & Rao 1963; Sarbhoy *et al.* 1975, 1986, 1996). *Periconia pergularigena* is the first species of the genus *Periconia* on a host of the *Asclepiadaceae*. Although, Mason and Ellis (1953) kept *P. lichenoides* as the type, without adopting the name for any of the species they recognized. They stated that *P. lichenoides* was either *P. byssoides* or *P. cookiei*, but could not determine which with certainty from Tode's drawing. The lectotypification by Hughes (1958) with *P. byssoides* Pers. was then illegitimate because it was not an original species of Tode (1791), but it is now legitimate under Art. 7.8 because, it is associated with the sanctioning protologue of Fries. Hence, therefore, the present collection is needed to be comparable with *P. byssoides* and *P. ckkkei*.

The conidiophore of *P. pergularigena* is much shorter than *P. byssoides* (200–1400 × 10–20 µm) and *P. cookei* (upto 800 × 14–26 µm). The conidia dimension are almost similar in these three species but condia are smooth in *P. pergularigena* while while verrucose in *P. byssoides and P. cookei.* Therefore, the present collection is treated as new species.Althogh, the fungus causing foliar disease on the host by producing sucircular to irregular symptoms that idicated the parasitic nature of the fungus.

Since, the spores/mycelial suspension of *P. pergularigena* did not infect other hosts except *Pergularia pallida*; therefore, we may conclude that this fungus is host specific.

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