Two New Species of *Corynespora* from West Bengal, India

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**ABSTRACT**

The present paper deals with the description and illustrations of the two undescribed species of *Corynespora* Gussow viz. *Corynespora calotropidis* Haldar sp.nov. and *Corynespora jatrophae* Haldar sp.nov. growing on the living leaves of *Calotropis gigantea* (Asclepiadaceae) and *Jatropha curcus* (Euphorbiaceae), collected from Murshidabad district, West Bengal, India. Morphotaxonomic identity of the species is presented here along with the microphotograph and visible symptoms on host plants consulting with the current literature.

**Key Words:** Anamorphic fungi, Morphotaxonomy, Foliicolous, *Corynespora*

**INTRODUCTION**

The genus *Corynespora* was erected by Gussow in the year 1906 with *Corynespora cassicola* (Berk. & Curt.) Wei = *C. mazei* Gussow as type species. It is a sac fungus and the present taxonomic position of the genus-Class-Dothideomycetes, Order-Pleosporales and the family-Corynesporaceae. The reproductive structure of this fungus is the conidia which are distoseptate with or without distinct hila and monoblastic terminal conidiogenous cells. The fungus causes foliar diseases in shrub, undershrub and perennial plants, predominating in the tropics and sub tropical regions including India. The genus is represented by about 140 species throughout the globe (Farr DF Rossman, Mycobank, 2016).

A good number of novel taxa of Hyphomycetes have been previously described by different workers of this country particularly from the Department of Botany, Presidency University, Kolkata (erstwhile Presidency College, Kolkata) and School of Mycology at D.D.U. Gorakhpur University and elsewhere, Bilgrami et al., 1991; Jamaluddin et al., 2004. Presently a number of species of *Corynespora* under hyphomycetes have been described from India and abroad by Bhat, 2010; Braun and Crous2007; Castañeda et al., 2004; Dubey and Rai; 2003; Ellis,1971,1976;Haldar 2011,2016a,2016b;2017; Hawskworth 1974; Jain et al., 2002; Kamal,2010; Kamal,1998;Kumar et al., 2007; Kumar and Singh2016a;2016b; 1998; Singh et al., 2000 Singh et al., 2007; 1998; Kharwar 1998; Singh et al., 2014; Kumar et al., 2012; Kumar et al., 2006; Kumar and Singh 2016; Kai Zhang et al.,2009; Meena et al.,1997; Mycobank, 2017; Pal et al.,2007; Singh et al 2012; Seifert and Gams 2001; Seifert et al., 2011, Seifert et al., 2001; Savile 1962; Sharma et al., 2002; Sharma et al., 2003; Sharma and Chaudhary 2002; Xiu Guo and Cheng Kuei 2005; Singh and Mall 2011; Singh and Mall, 2012; Zhi Qiang and XiGuo2007; Zhang et al., 2012 and Xiao-Mei Wang and Xiu-Guo Zhang 2007; 2016.

During working on the foliicolous fungi of Murshidabad district of West Bengal the author had collected two members of Hyphomycetes growing on the living leaves of *Calotropis gigantea* (Asclepiadaceae) and *Jatropha curcus* (Euphorbiaceae), which on critical examination found to be two new species of the genus *Corynespora*. Hence, these two species *Corynespora calotropidis* Haldar and *Corynespora jatrophae* Haldar have been created as new taxa.

**MATERIALS AND METHODS**

Plant specimens with distinct disease symptoms of the parasitic fungi on the leaves of different ages were detached intact from the host plants and they were kept in polythene bags and processed by following standard techniques, (Hawskworth 1974, Savile 1962). The infected leaves having distinct symptoms were collected and dried to make herbarium specimens. Morphological descriptions of the associated fungi are based on the slide preparations mounted on lacto-
phenol cotton blue mixture from infected areas of the leaves. Photographs of the infected spots on the host leaves were captured by Sony DSC-HX200, camera and for the examination of fungal structure and spore morphology. Morpho-taxonomic study of the fungi was done through the low and high magnification 100x400 of the compound microscope, (Olympus-CX21i FS1 Research Microscope) by using USB INSTA CMOS camera. The microphotographs were stored in electronic format JPEG. Morpho-taxonomic determinations of the new taxa were done with the help of most up to date literature and expertise available. Holotypes being deposited at AMH, Agharkar Research Institute (ARI), Pune (MS), India and isotypes retained in the Departmental herbarium for future reference. The nomenclatural novelties were deposited in Myco Bank (www.mycobank.org).

RESULTS AND OUTCOME

Corynespora calotropidis Haldar sp.nov. (Fig.1)

Myco Bank MB 821073

Incidence in early winter spots formed on both the corresponding surface of the lamina, usually circular or sub circular, occasionally angular to irregular, rarely aggregate to coalescent, whitish to grey in the centre surrounded by thick blackish brown to black margin with reddish brown halo, distinctly virulent, scattered, 2.5-14.5 mm in diam; Sexual morph: undetermined. Asexual morph: caespituli amphigenous, well developed, centrally effuse, unevenly distributed over the spots, greyish brown to blackish brown; mycelium immersed and superficial, external mycelia hyphae olivaceous or sub hyaline, branched and septate, width not uniform; conidiophore non stromatic, arising singly or in groups (2-4), often closely grouped together to form synnemata in groups of 2-4 long stalks, with up to 4 cylindrical proliferations, light brown to straw coloured, slightly paler towards the tip, almost simple, smooth, thick-walled, distinctly pluriseptate sometimes swollen at the base of the cylindrical proliferations, tip slightly nodose or bluntly rounded, average length of the conidiophore, 609.59-1496.04 µm and average breadth, 39.05-60.57 µm; conidiogenous cell monotretic, integrated, terminal, percurrent, cylindrical or doliiform, nodose tip, light to pale olivaceous, bearing conidia acrogenously; conidia solitary, obclavate, light to pale olivaceous or straw coloured, straight to curved, acrogenous, simple, distinctly pseudosepta (5-9), smooth, thick-walled, tip broadly rounded or obtuse or bluntly rounded, base truncate to unthickened hilaum, average length of the conidia, 991.06-1309.29 µm and average breadth, 72.67-86.02 µm. 

Specimen examined: On the living leaves of Calotropis gigantea R.Br. (Fam. Asclepiadaceae). Saktipur, Murshidabad, West Bengal, India; 14th October, 2016; Dinesh Haldar, AMH 9861 (Holotype), KNC 0160 (Isotype).

Etymology- calotropidis in relation to the host genus.

Figure 1: Corynespora calotropidis on Calotropis gigantea. A- Host plant. B-C: Leaf spots. D-G: Conidiophores. H-L: Conidia. Scale bars=20 mm.

Review of literature reveals that no species of Corynespora has yet been reported on the present host Calotropis gigantea R.Br. (Fam. Asclepiadaceae). Therefore C. calotropidis as a new taxon of species rank is found to be justified.

Corynespora jatrophae Haldar sp.nov. (Fig.2)

Myco Bank MB 821082

Incidence in winter, spots formed on lamina, older leaf more affected, scattered, virulent, mostly irregular or circular blackish brown on upper surface and grey olivaceous on lower surface of the corresponding spot, not vein-limited, 3-5 mm in diam. Sexual morph: undetermined. Asexual morph: caespituli amphigenous, chiefly epiphyllous, punctiform on the upper surface of the spot, velutinous on lower surface, mycelium external and internal, smooth sometimes branched, septate, thin walled, olivaceous to brown, conidiophores non stromatic arising singly from hyphae, fascicles not dense or in fascicle of 2-4, smooth, thick walled, long, branched or unbranched, erect to slightly bent, straight to flexuous, basal cellswollen, macronematous, mononematous, 6-18 septate, straw coloured, average length of the conidiophores, 819.91-1488.65 µm; average breadth 70.77-72.29 µm in diam. conidiogenous cells integrated, terminal,
monotretic, swollen towards the apex, scars unthikened, co-
nidia solitary, acrogenous, simple, smooth, unbranched, thin
walled, cylindrical to obclavatocylindrical, straight to mildly
curved, often rostrate, smooth, apices obtuse to rounded, sub
hyaline to olivaceous brown, tapered bases truncate, 2-10
pseudosepta, rarely euseptate, scars at the base, sometimes
germinating, average length of the conidia, 538.85-982.75µm
in diam. and breadth(broadest part), 88.79-92.96µm.

Specimen examined: On the living leaves of *Jatropha curcus*
L.,(Fam. Euphorbiaceae), Ring Road, Kashimbazar, Murshi-
dabad, West Bengal, India, 6th November 2016, Dinesh Hal-
dar, AMH 9849 (Holotype), KNC 0145(Isotype).

Etymology—*jatrophae* in relation to the host genus.

**DISCUSSION**

The fungi *Corynespora calotropidis* Haldar and *Corynespora
jatrophae* Haldar are abundant in nature during the month of
October to March of the year forming striking symp-
toms such as spots may be regular or irregular, sometimes
concentric rings with brown to dark brown margin, blotch
sooty in nature and blight. Spots become sometimes necrotic
leaving hole in the leaves. The present study reveals that the
*Corynespora calotropidis* Haldar and *Corynespora jatro-
phae* Haldar primarily grows on the leaf blades as well as
petioles, stems, inflorescence and fruits. The characteristics
of the symptoms depend on the nature of leaves as well as
parasites. The effects may vary from plant to plant and even
on same plant. When infection reaches a certain degree of
severity, the leaves curl, dry and drop down. Thus it may be
concluded that the species of the genus *Corynespora* grow
vigorously on leaves throughout the seasons but virulent in
winter to early summer.

**CONCLUSION**

The newly described taxa *Corynespora calotropidis* and-*
Corynespora jatrophae* are the primary causes of leaf spot
diseases of *Calotropis gigantea* and *Jatropha curcus*
respectively. The present work will be helpful to a fungal taxono-
mist to identify the anamorphic fungal species, host range
and phylogenetic relationship between different taxa of leaf
inhabiting fungi.

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