



## New Host record of *Cercospora apii* s. lat. on medicinal plant: *Diplocyclos palmatus* (Linn.) Jeffery from India

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### ABSTRACT

Description and illustrations are provided for new host record of *Cercospora apii* s. lat on living leaves of *Diplocyclos palmatus* (Linn.) Jeffery (Cucurbitaceae).

**Key words:** Medicinal pant, foliar fungi, hyphomycetes, morphotaxonomy, *Cercospora*.

### INTRODUCTION

*Diplocyclos palmatus* (L.) Jeffery is a slender, much branched tendril climber distributed throughout India on hedges and bushes. This is of variously economic and medicinal value as it is used in various ayurvedic and ethnomedicinal preparations. This plant is a weak stemmed branched, tendril climber having simple, alternate membranous, 5 lobed leaves which are scabrid above and smooth beneath. Leaves are deeply cordate at the base with sinuate to sub serrate margin. Flowers are yellow, unisexual, male flowers in small fascicles and female solitary. Fruits are globose, smooth berry become bright red when ripe, contain white vertical lines. Seeds are yellowish brown and appear like shiva-linga, character on which the local name is based.

*Diplocyclos palmatus* (L.) Jeffery is acrid, thermogenic, anti-inflammatory, foetid, alterant, depurative and tonic and is used in vitiated conditions of pitta, cough flatulence, skin disease inflammations and general debility (Prajapatiet al. 2003).

During survey conducted during (2010-11) for medicinal plants and their foliar fungi in Mirzapur and Sonebhadra forests *Cercospora apii* s. lat Crous 2003 was found causing severe infection on leaves of *Diplocyclos palmatus* (L.) Jeffery. Perusal of literature shows that up till now no fungus is reported causing infection on *Diplocyclos palmatus* (L.) Jeffery. This is a new host record for *Cercospora apii* s. lat Crous 2003.

*Cercospora*, established by Fresenius (1863) is one of the most important of pathogenic fungi causing leaf spot. The genus is a destructive plant pathogen throughout the world. The genus *Cercospora* (type

species: *C. penicillata* (Ces.) Fresen) is one of the largest genera of hyphomycetes (Crous & Braun, 2003). The name *Cercospora*, which is derived from a combination of greek word “kerkok” (tail) and “sporos” (seed), designates the filiform conidia of the fungus (Crous & Braun 2003). The teleomorph state is *Mycosphaerella* Johanson (Dothidiomycetes, Capnodiales, Mycosphaerellaceae), a genus that has been linked with at least 30 different coelomycetes or hyphomycetes anamorph genera (Crous et al. 2007).

The genus *Cercospora* is one of the largest genera of hyphomycetes. In his monograph of genus *Cercospora* Fresen., Chupp accepted 1419 species. In total more than 3,000 species of *Cercospora* have been described, of which 659 presently are recognized (Crous & Braun, 2003). Generally, species of *Cercospora* are considered to be host specific (Chupp, 1954) at the level of plant, genus or family. This concept has led to the description of a large number of species. Several *Cercospora* sp, which are morphologically indistinguishable from *Cercospora apii* Fresen., were placed in the *C. apii* complex (Ellis, 1971) *Cercospora apii* sensu lato is the oldest name for a large complex of morphological indistinguishable *Cercospora* sp occurring on a wide host range.

### MATERIALS AND METHODS

Infected leaves having distinct symptoms (Fig.1) were collected and dried to make herbarium specimens, a part of which was deposited in the Herbarium Cryptogamiae Indiae Orientalis, IARI, New Delhi, as type materials. Microscopic slides were prepared in lactophenol and cotton blue mixture

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from the scrapping taken from the infected leaf portions. The mounted slides were examined and Camera Lucida drawings made by using different powers of eye pieces and objective combinations. The taxonomic determinations were made with the help of relevant literature (Vasudeva, 1963; Ellis, 1971, 1976; Crous & Braun, 2003; Kamal, 2010; Chupp 1954) for confirming the identity of the *Cercospora* species encountered. Beside aforesaid literature the "Index of Fungi" published regularly from C.A.B. International Mycological Institute Kew England, and two website [www.mycobank.org/mycotaxo.aspx](http://www.mycobank.org/mycotaxo.aspx) and [www.indexfungorum.org/names/names.asp](http://www.indexfungorum.org/names/names.asp) were also taken in account.

## RESULT AND DISCUSSION

### *Cercospora apii* s.lat. Crous and Braun 2003 (Fig. 2)

= *Cercospora citrullina* Cooke, Grevillea 12:31, 1883

= *Cercospora cucurbitae* Ellis and Everh., J. mycol. 4:3, 1883

= *Cercospora sechii* J.A. Stev., Puerto Rico Agric. Exp. Sta. Rep. 1917-1918: 137, 1919.

= *Cercospora momordicae* McRae, Ann. Cryptog. Exot. 2:267, 1929

= *Cercospora trichosanthi* McRae, Ann. Cryptog. Exot. 2:270, 1929

= *Cercospora luffae* Hara. Disease of cultivated plants: 228, 1928

= *Cercospora chardoniana* Chupp, Monogr. Uni. Puert Rico, B, 2:245, 1934

= *Cercospora momordicae* Mend., Philipp. J. Sci. 75:173, 1941. (nom. illeg.), homonym of *C. momordicae* McRae, 1929

= *Cercospora momordicae* Sawada, Rep. Gov. Agric. Res. Inst. Taiwan 86:173, 1943. (nom. illeg.), homonym of *C. momordicae* McRae, 1929

Leaf spots amphigenous, circular to angular, discrete, later coalescing to form large patches, spreading on entire leaf surface, necrotic, yellowish brown in center and reddish brown towards margin, up to 4 mm in diam. Colonies apiphyllous, effuse, yellowish brown. Mycelium internal, hyphae branched, septate,

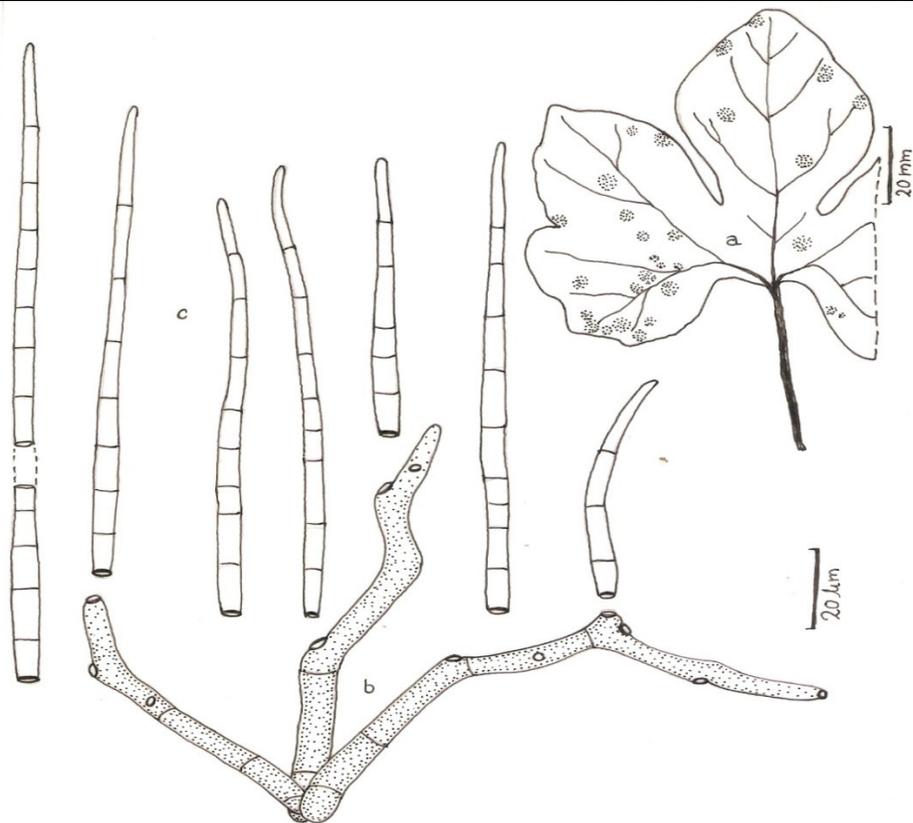
light olivaceous. Stromata poorly developed or none brown. Conidiophores arising in single or small divergent fascicles of 2-5, macronematous, mononematous, erect, straight to flexuous, unbranched, smooth, 2-6 transversely septate, geniculate, brown, slightly paler towards the tip, 60-160 x 4-5  $\mu$ m.



**Figure 1. Infected leaves of *Diplocyclos palmatus* (L.) Jeffery showing symptoms of *Cercospora apii* s. lat.**

Conidiogenous cells integrated terminal, sympodial, polyblastic, cicatrized, scars conspicuous, planate, thickened and darkened. Conidia acropleurogenous, holoblastic, dry, solitary, unbranched, 2-17 septate, smooth walled, hyaline, acicular, straight to curved, base truncate, apex acute to subacute, hilum conspicuously thickened and darkened, planate, 53-270 x 2.5 - 4  $\mu$ m.

On living leaves of *Diplocyclos palmatus* (L.) Jeffery (Cucurbitaceae) Sonebhadra, U.P. India, Dec 2010, Archana Singh, BHU Herb No. AS/9203, HClO No. 50123 This is first fungal infection recorded on *Diplocyclospalmatus*(L.) Jeffery from India. *C. apii* s lat has been reported on many members of Cucurbitaceae. *Diplocyclos palmatus* (L.) Jeffery is a new host record for *C. apii* s lat. Crous & Braun 2003.



**Figure 2.** *Cercospora appi* s. lat. Crous and Braun 2003 on living leaves of *Diplocyclos palmatus* (L.) Jeffery, a. Leaf spot, b. conidiophore, c. conodia (Scale: a=20mm)

Medicinal plants should be free from microbial infections. Among the disease causing organism foliicolous fungi play a very important role. Leaves provide a suitable habitat for the growth and development of the fungal organism by providing ample surface area and nutrient supply. Fungi attacking leaves of a medicinal plant directly affect photosynthesis by reducing the productivity. In addition, the quality of photosynthate and in turn the medicinal property of the plant is also degraded. It becomes necessary for herbal practitioner to be aware of this information. This will certainly be vital in preparation of problem safe medicines to cure the diseases and maintain the human health.

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