

Cladosporium clerodendri-viscosi, a new species on family Verbenaceae from North-Eastern Uttar Pradesh, India

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Abstract

The present paper deals with illustration and description of new species of *Cladosporium* viz. *C.clerodendri-viscosi* on *Clerodendrum viscosum* (Verbenaceae) from North-Eastern Uttar Pradesh, India and compared with type species of *Cladosporium* on this host. The new species is distinguished from the latter (*C.herbarum*) by its shorter conidiophores and conidia and less develop stomata.

Keywords : Fungal diversity, morphotaxonomy, phytopathogenic fungi, saprobes, new species.

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Introduction

Cladosporium being one of the largest genera of foliicolous fungi was established by Link (1815). This genus is cosmopolitan found usually as saprobes, colonizing a variety of organic substrates of plant origin as well as weak pathogen. This fungus characterized by causing a wide range of irregular leaf spots, flexuous, straight to curved, swollen at the apex and dark olivaceous conidiophores and conidia with catenate, apex obtuse, obconico-truncate, thickened hila. The subtropical forest of North-Eastern Uttar Pradesh is biodiversity hot spots in general and phytopathogenic in particular due to diverse climatic condition. A large number of *Cladosporium* from different part of the world. Further addition to the genus were done by Indian Mycologist (Bilgrami et. al. 1979, 81, 91; Butler & Bisby, Jamaluddin et al. 2004, Sarbhay et al. 1975, 1986, 1996, Kamal 2010. Currently some new *Cladosporium* species were added to the Indian Mycota from Uttar Pradesh (Sharma et al, 1998; Kumar et al, 2006, 2007, Singh et al 2008, Bhartiya et al, 2015,2016)

Among the collected specimen one was found severely infected with *Cladosporium* species. Critical microscopic examination and comparison with allied taxa are described here as *C.clerodendri-viscosae* on *Clerodendrum viscosum* collected from Uttar Pradesh, India.

The comparative analysis of overall morphological features of this features of this collection warrants its description and illustration of a novel species. The holotype have been deposited in HCIO,IARI, New Delhi.

Materials and methods

Infected leaf samples were collected in north-eastern Uttar Pradesh during course of a field survey in 2017. Surface scrapings and sections were taken through infection spots and mounted in lactophenol and cotton blue mount mixture for microscopic examination. Drawing were made with the help of camera-lucida and measurement were carried out with the help of micrometry at 1000X magnification. The holotype has been deposited in Herbarium Cryptomiae. Indiae Orientalis (HCTO) Indian Agriculture Research Institute (IARI), New Delhi and isotype is kept in the Departmental Herbarium of Gorakhpur University for further references. The taxonomic concept is based on Index Fungorum (www.indexfungorum.org) accessed 24 feb, 2019. Detailed description and nomenclatural details were deposited in MycoBank (www.MycoBank.org)

Results and Discussion

Clacosporium clerodendri-viscosi Bhartiya, H.D., Kumari Nisha and Singh, Anu, sp.nov.

Description

Infection spots amphigenous, irregular, later spreading on entire leaf surface, dark green. Colonies amphiphylous, effuse, olivaceous brown Mycelium of hyphae external, superficial, septate, branched, smooth walled, olivaceous brown, 16µm width. Stromata poorly developed, pseudoparenchymatous, irregular, dark brown, 15-21 µm width. 7-10 µm height. Conidiophores arising single or in fascicles of 1-3 from stromata and terminal to lateral mycelia hyphae, macronematous, mononematous, 4-9 transversely septate, erect, straight to curved, swollen at the apex, olivaceous brown, 27-397x2.5-6.5 µm. Conidiogenous cells integrated, terminal to intercalary, polyblastic cicatrized, bearing dark distinct conidial scars. Conidia simple, holoblastic, dry, solitary to catenate, acropleurogenous, spherical to subspherical, cylindrical, fusiform, ellipsoidal, oval, 0-7 transversely septate, protuberant, apex subacute to obtuse, base rounded, obconico-truncate to subtruncate, hila darkly thickened, light to mid olivaceous, 5.5-29x3.5-5.5µm

Type India, Uttar Pradesh, Town of Maharajganj, Nichloul forest, 12 Feb, 2017, on living leaves, of *Clerodendrum viscosum*, L. (Verbenaceae), coll. Nisha Kumari, HCIO 43094 (holotype), GPU Herb No. NK 8508 (isotype),

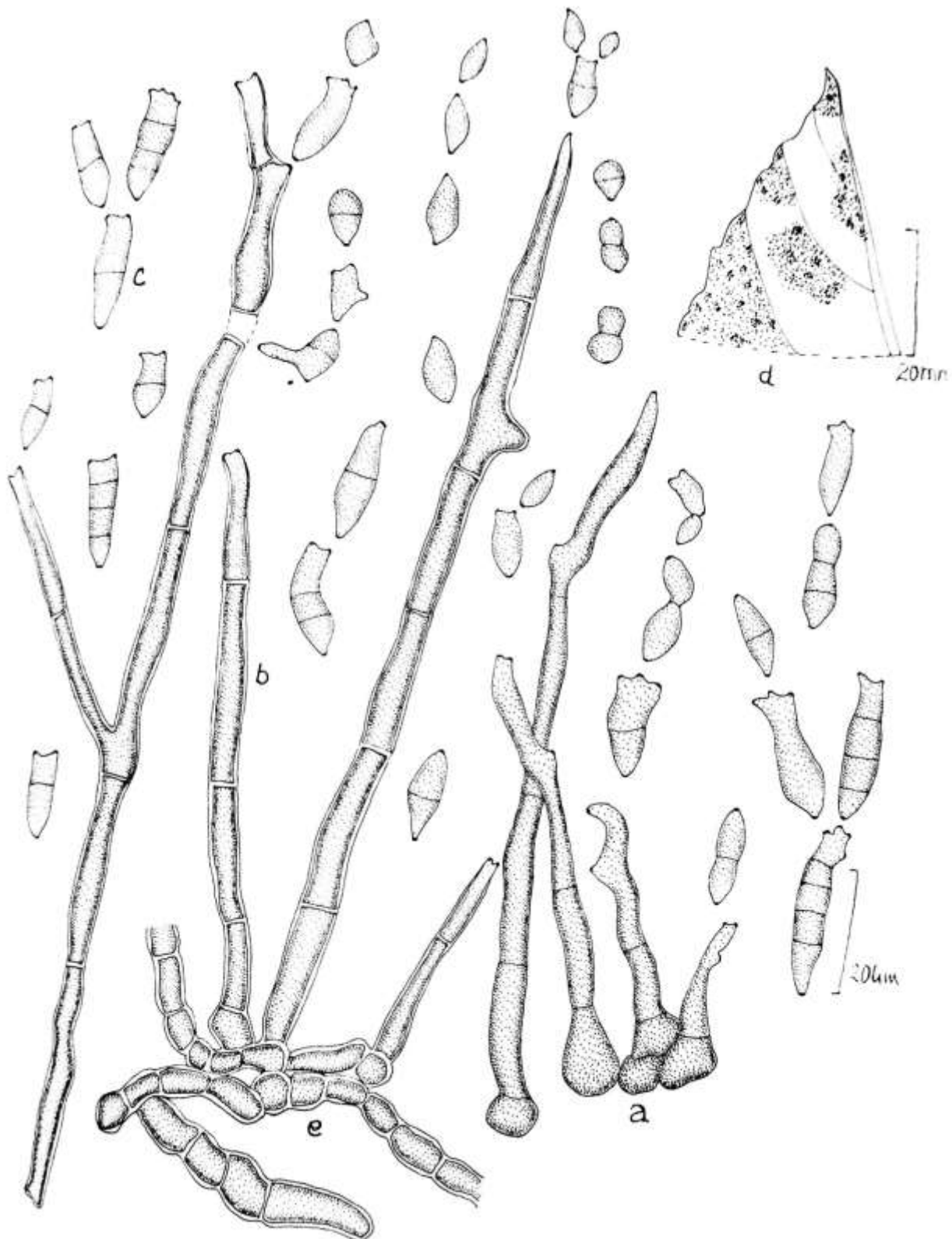


Fig. 1 : *C. clerodendri-viscosi* sp. nov.
 a. Stromata . b. Conidiophores
 c. Conidia d. Leaf spots
 e. Mycelium
 Bars : a-c = 20 μ m d=20mm.

Discussion

A literature survey has indicated that there are no records of *Cladosporium* on the host species, host genus or host family. Therefore, to justify the novelty of the present collection, a detailed morphotaxonomic comparison with *C. clerodendri-viscosae* is given.

A comparative account of morphotaxonomic features of *Cladosporium* species on the type species (*C. herbarum*)

| Fungus Name | Stromata | Conidiophores | Conidia |
|--|---|--|---|
| <i>C. clerodendri viscosi</i> sp. nov. | Poorly developed, pseudoparenchymatous, dark brown, 15-21 μm width, 7-10 μm height. | Single or fascicles (2-3), macronematous, mononematous, 4-9 septate, erect, straight, to curved, swollen at the apex, olivaceous brown, 27-397x 2.5-6.5 μm | Simple, holoblastic, solitary to catenate, simple, cylindrical, fusiform, spheroidal, oval, 0-4 septate, protuberant, apex subacute to obtuse, base rounded, obconicotruncate, to subtruncate, hila darkly thickened, light to mid olivaceous, 5.5-29x3.5-5.5 μm |
| <i>C. herbarum</i> Link, 1821 | Well developed | Macronematous, flexuous, geniculate, thick terminal and intercalary, vasculular swelling, pale to mid olivaceous brown, 250.0 μm long, 3-6 μm thick. | Branched chains, ellipsoidal, colony thick walled, verruculose, rounded at the nodes, 0-1 septate, protuberant, olivaceous brown 5-23x 3-8 μm |

From the data presented in the above table. It is clear that the proposed species is very much different from the *C. herbarum* in shape size and colour of stromata, conidiophores and conidia. *Cladosporium clerodendri-viscosae* differ from type species in having poorly developed stromata whereas well developed stromata in latter species, further more *C. clerodendri-viscosae* has longer conidiophores (27-397x2.5-6.5 μm versus 250x3-6 μm) in *C. herbarum*). Similarity conidia are 0-4 septate, smooth walled and longer (5.5-29x3.5-5.5 μm) versus branched chain, less septate, verruculose and shorter conidia (5-23x3.8 μm) in *C. herbarum*. To accommodate the present collection, it is treated as new taxon at species rank.

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