



Corynespora celsatri sp. nov. on *Celastraceae* from India

Kumar S¹ and Singh R²

¹Department of Forest Pathology, Kerala Forest Research Institute, Peechi 680653, Kerala, India.

²Centre of Advanced Study in Botany, Institute of Science, Banaras Hindu University, Varanasi 221005, U.P., India

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Abstract

Corynespora celsatri sp. nov., is introduced on living leaves of *Celastrus paniculatus* (*Celastraceae*) collected from Paniyara forest of Mahrajganj, Uttar Pradesh, India. The new species is illustrated and compared with closely similar species reported on *Celastraceae*. This species is characterized by having longer conidiophores and conidia among the members reported on same host family. A key to all species of *Corynespora* on *Celastraceae* is also provided.

Key words – fungal diversity – hyphomycetes – new species

Introduction

The family *Celastraceae* (Eudicots, Celastrales) is one of the main families of Angiosperm (flowering plants), commonly called the staff vine or bittersweet family. The family contains 96 genera and 1,350 species (Christenhusz & Byng 2016), distributed mostly in tropical and temperate region. The plants of this family are mostly woody and shrubs. Among the family, the plant genus *Celastrus* (staff vine, staff tree or bittersweet) has includes 30-40 species. The host (*Celastrus paniculatus* Willd. - Jyotishmati) on which we described the new fungus, is a rare, endangered and economically important medicinal plant has used since ancient time in the traditional Ayurvedic system. The plant is woody climbing shrub distributed throughout India, mainly in tropical forests and subtropical Himalayas and it grows in the range of 1,800-2,000 meters. Recent studies show that the wild populations of the plant in India are at high risk (Warrier et al. 1996). The species is vulnerable in Western Ghats of South India (Rajasekharan & Ganeshan 2002). The plant is critically endangered (CR) in Uttar Pradesh and Uttarakhand (Prakash & Singh 2001). The plant is used as medicine in different kinds of diseases. The plant leaves contain bioactive compounds 'saponin' which responsible for anti-microbial and anti-fungal activities.

The fungus *Corynespora* (*Corynesporascaceae*) has been examined as one of the pathogen of forest plants in tropics and subtropics that causes disease on the living leaves. During our recent survey in Terai forest region (Paniyara Forest, Mahrajganj) of Uttar Pradesh for inventory of foliicolous fungi, *Corynespora celsatri* was found hitherto undescribed on living leaves of *Celastrus paniculatus* (*Celastraceae*). Descriptions and illustration of the new taxon is presented here in details.

Materials & Methods

The fresh leaves with disease symptoms were collected from the Paniyara forest (subtropical forest) of Mahrajganj district of Uttar Pradesh. The collected samples were carried to the laboratory and processed by following the standard techniques (Castañeda-Ruiz 2005). The sun dried and pressed leaf specimens were placed in air tight polyethylene bags and then kept in paper envelopes along with collection details. Photographs of infection spots on host leaf were taken by using Sony DSC-5730 camera. For examination of the fungal structure and spore morphology, the microscope slides were prepared in lacto-phenol cotton blue mount mixtures. The slides were examined using an Olympus BX51 microscope (Olympus, Tokyo, Japan) by using Syntek USB camera. The microphotographs were stored in electronic format TIF. Detailed observations of morphological characters were carried out at different magnification through light microscope (200× and 400×). The measurements of 15 conidia, hila, and conidiophores with the extremes given in parentheses were done with the help of micrometer. Morphotaxonomic determinations were made with the help of current literatures. The holotype has been deposited in Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute (ARI), Pune (MS), India. The systematics of the taxon is given in accordance with Ellis (1971, 1976), Cannon and Kirk (2007), Kirk et al. (2008), Seifert et al. (2011), Farr & Rossman (2015), Jayasiri et al. (2015), the Index Fungorum (www.indexfungorum.org; accessed 30 July 2015) and Mycobank (www.mycobank.org; accessed 30 July 2015)

Results

Corynespora celastri Sham. Kumar & Raghv. Singh, **sp. nov.**

Figs 1–2

Mycobank MB 817427

FoF 02386

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

Foliicolous, *Infection spots* initially hypogenous but later amphigenous, circular, sub-circular to irregular, 5 to more than 20 mm in diameter, brown to blackish, necrotic. *Colonies* epiphyllous, effuse, greyish. *Mycelium* internal. **Sexual morph:** undetermined. **Asexual morph:** *Stromata* absent. *Conidiophores* solitary, macronematous, mononematous, cylindrical, erect to procumbent, straight to flexuous, unbranched, curved, thick-walled, smooth, 5–18-septate, with 3–8 successive cylindrical proliferations, mid brown, 135–200 × 3–5 μm. *Conidiogenous cells* integrated, terminal, brown, smooth, monotretic, scars unthickened. *Conidia* acrogenous, dry, solitary, unbranched, thin-walled, smooth, straight to slightly curved, usually obclavate to obclavate-cylindrical, 7–17-distoseptate with 0–1 transverse band like eusepta, 55–120 × 8–15 μm ($x = 87.5 \times 11.5 \mu\text{m}$, $n = 15$), apex obtuse to rounded, olivaceous to very light brown, hilum thickened, 3–5 μm wide, germinating conidia present.

Known distribution – India

Material examined – India, Uttar Pradesh, Mahrajganj, Paniyara Forest, on living leaves of *Celastrus paniculatus* Willd. (*Celastraceae*), 6th November, 2014, Shambhu Kumar, AMH 9687 (**holotype**), BSIPMH 031 (**isotype**).

Discussion

Two species of *Corynespora* have already been reported on family *Celastraceae* viz. *C. aterrima* (Berk. & M.A. Curtis ex Cooke) M.B. Ellis on *Gymnosporia buxifolia* (L.) Szyszył. (= *Celastrus buxifolius* L.) (Ellis 1960) and *Celastrus* sp. (Ellis 1971) from Africa and *C. cassicola* has been also reported as endophyte on *Elaeodendron glaucum* (Rottb.) Pers. from the tropical forests of southern India (Murali et al. 2007). Currently *C. aterrima* is found synonym of *Solicorynespora aterrima* (Berk. & M.A. Curtis) R.F. Castañeda & W.B. Kendrick (1990). Below table and key can be used to distinguish our new species from other species.



Fig. 1 – *Corynespora celastri* on *Celastrus paniculatus*. a. Host plant. b-c. Leaf spots. Scale bars = 20 mm.

Table 1 Comparison of *Corynespora* spp. reported on *Celastraceae*

<i>Corynespora</i> spp.	Conidiophores	Conidia
<i>C. aterrima</i>	120–140 × 7–10 μm	33–74 × 8–10 μm, 3–5-eusepta
<i>C. cassicola</i>	110–850 × 4–11 μm	40–220 × 9–22 μm, 4–22-distosepta
<i>C. celastri</i>	135–200 × 3–5 μm	55–120 × 8–15 μm, 7–17-distosepta

Key to all species of *Corynespora* on *Celastraceae*

- 1 Conidiophores >140 μm)..... **2**
- 1* Conidiophores ≤140 μm, Conidia 33–74 × 8–10 μm, 3–5-eusepta *C. aterrima*
- 2 Conidia longer (40–220 × 9–22 μm, 4–22-distosepta)..... *C. cassicola*
- 2* Conidia 55–120 × 8–15 μm, 7–17-distosepta..... *C. celastri*



Fig. 2 – *Corynespora celastri* (holotype, AMH 9687). a–e. Conidiophores. f–g. Conidia. h– i. Germinating conidia. Scale bars = 20 μ m.

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