



# First report of *Colletotrichum plurivorum* from the Andaman and Nicobar Islands causing anthracnose in chilli (*Capsicum annuum*)

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Chilli pepper (*Capsicum annuum*) is an important spice crop worldwide, which is cultivated widely in the Andaman and Nicobar Islands and accounts for one-third of the solanaceous vegetables grown in India. During the first quarter of 2017, severe leaf blight was observed in the field-grown chilli crops that resulted in substantial yield loss (Fig. 1). On fruit, symptoms were characterised by sunken lesions with concentric rings of acervuli (Fig. 2). Upon isolation on potato dextrose agar (PDA), fungal colonies were obtained from fruits and leaves and sub-cultured to obtain pure cultures (Fig. 3).

The mycelium was white during the initial stages and gradually turned greyish orange. The conidia were hyaline to slightly melanized, broadly clavate to cylindrical, 9.18-(10.21)-12.14 µm long and 3.05-(3.76)-3.05 µm wide (Fig. 4). Acervuli had black setae. Morphological characters indicated that the fungus represents a member of the genus *Colletotrichum*. A representative isolate (Cg\_Mg2) was selected for further analysis and identification.

The species of the fungus was determined by sequencing five genomic regions: actin (ACT), chalcone synthetase (CHS), histone (HIS), tubulin (TUB), calmodulin (CAL) and glyceraldehyde-3-phosphate dehydrogenase (GAPDH), as described by Weir *et al.* (2012). The multigene analysis revealed 99-100% similarity with sequences of *Colletotrichum plurivorum*, a species recently described by Damm *et al.* (2019) (GenBank Accession Nos. MG600928 (ACT), MG600844 (CHS), MG600890 (HIS), MG600988 (TUB) and MG600783 (GAPDH)), and the sequences generated in this study were submitted to GenBank (MG561752-MG561757).

A pathogenicity test was done using the method described by Than *et al.* (2008) with slight modifications. The fungal isolate Cg\_Mg2 was cultured on PDA for seven days at 28 ±1°C and the conidia were harvested using 5-10 ml of sterile distilled water. The conidial suspension was adjusted to a concentration of 10 conidia ml<sup>-1</sup> and detached chilli fruits were inoculated using the pin-prick method and left at room temperature. The experiment

was repeated twice with three replicates and sterile water inoculation was used as a control. Typical necrotic symptoms appeared five-seven days post inoculation on all inoculated fruits except the control. The fungal pathogen was re-isolated from the symptom observed, and the identity of the pathogen was confirmed morphologically.

This is the first report of anthracnose caused by *Colletotrichum plurivorum* on chilli from the Andaman and Nicobar Islands which are geographically well isolated from the Indian mainland, being closer to the southeast Asian countries. While this fungus is known to infect *C. annuum*, the confirmed distribution range to date included Benin, Brazil, Cameroon, China, Iran, Puerto Rico and Vietnam (Damm *et al.* 2019).

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Figure 1



Figure 2

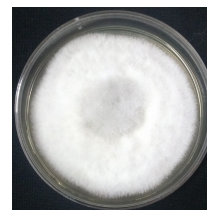


Figure 3

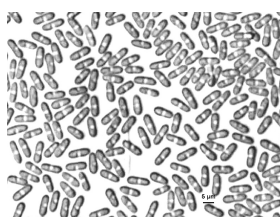


Figure 4

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