Colletotrichum plurivorum causes anthracnose on okra in Brazil

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Received: 5 February 2020 / Accepted: 14 July 2020 / Published online: 17 July 2020
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Keywords Ascomycetes · Fungal pathogen · Vegetable · *Abelmoschus esculentus*

Okra (*Abelmoschus esculentus*) is a tropical vegetable cultivated widely in the Amazon region. In August 2016, typical anthracnose symptoms were observed on the leaves of okra in Altamira, Pará, Brazil with 60% disease incidence. Symptomatic leaf tissue were surface sterilized, rinsed with sterile water, and plated on potato dextrose agar. Colonies had greyish white aerial mycelium in 7-day-old cultures at 25 ± 2 °C. Conidiophores were smooth-walled, septate. Conidiogenous cells were hyaline, straight, and 19×4 µm. Appressoria were single, elliptical, and 8.5×6.5 µm. The conidia were aseptate, cylindrical, with round apex and base, and 13×5 µm. The isolated fungus was identified as *Colletotrichum* sp. The isolate was deposited in Culture Collection of Microorganisms (CMAA), Jaguariúna, Brazil (CMAA 1735). The isolate was further identified by sequencing the actin (*ACT*), chitin synthase (*CHS1*), beta-tubulin (*TUB*) and glyceraldehyde-3-phosphate dehydrogenase (*GAPDH*) genes (Damm et al. 2019). The sequences were deposited in GenBank (accession Nos. MK495949, MK495952, MK495951 and MK495950) and revealed over 98% identity with *Colletotrichum plurivorum* (MG747766, MG600847, MG600984 and MK862223). Reference sequences of *C. orchidearum* and *C. magnum* species complexes were used for the alignment and the phylogenetic analyses conducted using Bayesian method clustered the isolate in the clade corresponding to *Colletotrichum plurivorum*. The pathogenicity of the isolate was confirmed by spraying a suspension of conidia (1×10^6 mL⁻¹) on okra cv. Santa Cruz 47 with 4–6 leaves and the control

plants were sprayed with distilled water. The plants were maintained in a dew chamber for 24 h under greenhouse at 27 °C with a 12-h-light/dark photoperiod. After 5 days, dark brown necrotic lesions were observed on the leaves of okra plants whereas control plants were all symptomless. The fungus was re-isolated, and showed the same morphological characteristics as the inoculated strain, fulfilling Koch's postulates. *C. plurivorum* has been reported to infect papaya (Sun et al. 2019) and cassava (Liu et al. 2019). To our knowledge, this is the first report of *Colletotrichum plurivorum* causing anthracnose on okra in Brazil.

Data availability Not applicable.

Code availability Not applicable.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest associated with this publication.

Ethics approval Not applicable.

Consent to participate Not applicable.

Consent for publication Not applicable.

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