Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Epicoccum sorghinum* Causing Leaf Blight on *Kadsura coccinea* in China

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Kadsura coccinea (Lem.) A. C. Smith, a perennial medicinal woody vine in the family Schisandraceae, is mainly cultivated in Jiangxi, Guangdong, Sichuan, Guizhou, and Yunnan Provinces in China. The roots and canes of *K. coccinea* have been used for the treatment of chronic gastritis, bruises, rheumatism, and dysmenorrhea by local residents in China (Xu et al. 2018), and the fruit also can be eaten as a dessert. In October 2019, severe leaf blight symptoms were observed on the second year growth of six of 13 *K. coccinea* vines in the private garden of Guangdong Institute of Traditional Chinese Medicine (N23°10'3.09", E113°23'47.31") in Guangzhou, China. Zonate lesions of alternating light brown and dark brown started from the leaf tips. After surface sterilization, samples of leaf tissue taken from the margin of the lesion and healthy leaf tissue were plated on potato dextrose agar (PDA) and incubated at 28°C in the dark for 2 days. Mycelia growing from the edges of the tissue samples were transferred to new PDA plates and cultured at 28°C in the dark for 6 days. A total of 11 isolates were obtained from six diseased leaves. The colonies of the isolates were regular round and approximately 6.0 cm in diameter after 6 days of culture, and the reverse side was light brown. Aerial hyphae were villose and white. After 12 days of incubation, the colonies became pale brown and secreted a scarlet diffusible pigment that colored the underside of the colony reddish brown. Many small pycnidia (89.1 to 215.0 × 111.2 to 244.4 µm) were visible in the colony. Unicellular chlamydospores were brown to black and were 2.4 to 7.8 × 4.9 to 12.4 µm, and multicellular chlamydospores were 4.8 to 22.5 × 13.7 to 54.6 µm.

Based on the above morphological characteristics, these isolates were identified as *Epicoccum* sp. (Zhou et al. 2018). Genomic DNA was extracted using a Fungal DNA Kit (Omega Bio-tek, Guangzhou, China). Polymerase chain reaction amplifications of the gene fragments of ribosomal internal transcribed spacer (ITS), β-tubulin (TUB), 28S nrDNA (LSU), and actin (ACT) of strain GDTCMF19 were amplified with primers ITS1/ITS4, T1/Bt2b, LR7/LROR, and ACT-512F/ACT-783R, respectively (Aveskamp et al. 2010; Carbone and Kohn 1999; Glass et al. 1995; O'Donnell et al. 1997). Sequences from isolate GDTCMF19 were deposited in GenBank (accession nos. MN915133 for ITS, MN917744 for TUB, MN915134 for LSU, and MN917745 for ACT). The identification of the isolate as *Epicoccum sorghinum* was validated by constructing a phylogenetic tree and that showed high congruence to *E. sorghinum* H10, *E. sorghinum* SCCZ16, and *E. sorghinum* SCCZ09 (shown in the supplementary materials). Pathogenicity tests were performed by inoculating unwounded leaves of six healthy second-year transplants with 6 × 6-mm mycelial discs of *E. sorghinum* grown on PDA. All control plants were inoculated with sterile PDA discs. All plants were maintained in a chamber at 25 to 28°C and relative air humidity of 50 to 65%. After 2 weeks, typical symptoms were observed. Small brown spots that gradually expanded were observed at the leaf margins 7 days after inoculation. After 2 weeks, zonate lesions similar to those observed in the garden were observed on 1/3 of the inoculated leaf. No symptoms appeared on control plants. The experiments were repeated three times. To fulfill Koch's postulates, the fungus was reisolated from the inoculated leaves on PDA and confirmed as *E. sorghinum*. To our knowledge, this is the first report of *E. sorghinum* causing leaf blight on *K. coccinea* in China. Because *K. coccinea* is used medicinally by local residents, the leaf blight is of concern, and this report will assist with monitoring distribution of the disease to assist with developing management recommendations.

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