Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Anthracnose on *Hymenocallis littoralis* Caused by *Colletotrichum siamense* in China

Y. X. Huang,^{1,2} Y. Q. Zhang,¹ H. Q. Hu,¹ and N. J. Feng^{1,2,†}

¹ Department of Biotechnology, College of Coastal Agricultural Sciences of Guangdong Ocean University, Zhanjiang Guangdong, China, 524088

² Shenzhen Research Institute of Guangdong Ocean University, Shenzhen 518108, China

Funding: This research was supported by Key-Area Research and Development Program of Guangdong Province, China (2020B020219004) and Project of Enhancing School with Innovation of Guangdong Ocean University (GDOU2017052604) Plant Dis. 105:3740, 2021; published online as <https://doi.org/10.1094/PDIS-02-21-0405-PDN>. Accepted for publication 29 May 2021.

Spider lily (*Hymenocallis littoralis* (Jacq.) Salisb.) is a widely cultivated horticultural plant worldwide and has ornamental and medicinal value. Spider lily plants were seriously affected by a leaf spot disease in the campus of Guangdong Ocean University and gardens in Zhanjiang city in February 2018 with an incidence of 30 to 100%. Affected leaves usually developed small circular purple spots, which enlarged to oval spots and large irregular spots. The spots were brown at the center, deep purple at the border, and surrounded by a yellow halo. Diseased cultivars were collected in Zhanjiang and Gangzhou in Guangdong Province and Zhangping in Fujian Province. Symptomatic leaf samples were disinfested with 1% NaOCl and cultured on sucrose agar (PSA) at 28°C for 1 week. Ten single-spore isolates were recovered from PSA medium. Colonies developing on PSA were grayish white with a regular border. Conidia were straight, hyaline with rounded ends, 4.3 to 6.1 × 12.8 to 32.1 μm ($n = 50$ conidia of each isolate). Fungal mycelia were hyaline, septate, and branched. Conidia were borne on a long conidiogenous cell, appressoria were oval, 6.7 to 10.7 × 5.2 to 6.2 μm ($n = 50$). The isolates were morphologically identified as *Colletotrichum* sp. (Weir et al. 2012). Tests of pathogenicity were performed according to Koch's postulates using three isolates. Fresh wounds were made with a sterile needle on the healthy surface of leaves of *H. littoralis* at the 4- to 6-leaf stage and each leaf

was covered with a piece of cotton drenched with 200 μl of conidial suspension (10^6 conidia/ml) from each isolate. Control seedlings were inoculated identically except sterile water was used to drench the cotton. Inoculated plants were placed in a moisturizing light incubator at 25°C and 80% humidity under a 12-h light/dark cycle for 20 days and examined daily to monitor disease symptom development. Small round brown spots were observed at the inoculation sites 3 days after the inoculation. The brown spots developed into large brown lesions 5 days after inoculation. There were no symptoms observed in the water-inoculated plants. A *Colletotrichum* sp. strain based on morphology was consistently reisolated from leaves lesions, fulfilling Koch's postulates. For molecular identification, the internal transcribed spacer (ITS) region of ribosomal DNA, calmodulin (CAL), Tublin (Tub), and Apmat loci of three isolates were amplified using primer pairs of ITS4/ITS5, CL1C/CL2C, T1/T2, and AM-F/AM-R (Sharma et al. 2015). A phylogenetic tree derived from a neighbor-joining analysis of a concatenated alignment of ITS, CAL, Tub, and ApMAT sequences was created. The accession numbers of three isolates GZHL CG, ZJHL CG, and FJHL CG used in this study were MW553083, MN540457, and MN540458 for ITS; MW553087 to MW553089 for CAL; MW553090 to MW553092 for Tub; and MW553084 to MW553086 for ApMAT. The sequences of the three isolates were aligned with related species of *Colletotrichum* (Sharma et al. 2015). Analyses based on concatenated data sets of four genes showed that the sequences had high levels of identity to those of the *C. siamense* strains. According to both morphological and sequence analyses, the *H. littoralis* pathogen was identified as *C. siamense*. There is a report of foliar diseases on *H. littoralis* caused by *Colletotrichum* sp. (Tan et al. 2009). To our knowledge, this is the first report of anthracnose on *H. littoralis* caused by *C. siamense* in China. Identification of the pathogen provides valuable information for diagnosis and controlling this disease in *H. littoralis*.

References:

- Sharma, G., et al. 2015. Fungal Divers. 71:247.
- Tan, S. X., et al. 2009. J. Southwest China Normal Univ. (Nat. Sci. Ed.) 34:111.
- Weir, B. S., et al. 2012. Stud. Mycol. 73:115.

The author(s) declare no conflict of interest.

e-Xtra

Keywords: fungi, ornamentals, pathogen detection

[†]Indicates the corresponding author.
N. Feng; 835980248@qq.com