Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Anthracnose Disease Caused by *Colletotrichum fioriniae* on Barbary Wolfberry (*Lycium barbarum*) in Gansu Province, China

S. J. Xu,[†] Z. Q. Jing, Z. J. Guo, and Q. Sun

Institute of Plant Protection, Gansu Academy of Agricultural Sciences, Lanzhou, Gansu 730070, P.R. China

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Barbary wolfberry (*Lycium barbarum* L.) is a well-known edible and medicinal plant, widely grown in northwest China (Gao et al. 2021). During the summer of 2019, typical anthracnose symptoms were observed on fruits of barbary wolfberry in Baiyin, Gansu Province, China. Approximately 30% of the barbary wolfberry fruits had typical anthracnose symptoms. Lesions on barbary wolfberry fruits were dark, circular or irregular, sunken, and necrotic or wilted, with the presence of orange to pink conidial masses under high humidity. Small pieces cut from the margins of lesions were surface disinfested with 75% ethanol for 10 s and 1% NaClO solution for 1 min, rinsed three times in sterile distilled water, dried on sterile filter paper, placed onto potato dextrose agar (PDA), and incubated at $25 \pm 1^\circ\text{C}$ for 5 days in the dark. Pure cultures were obtained by single-spore isolation. All isolates produced pale gray and dense aerial mycelia, in reverse orange to red, at times showing concentric rings on PDA at 25°C after 10 days in the dark. Conidia ($n = 100$) were colorless, smooth walled, aseptate, fusiform elliptical at one or both ends, and 8.3 to 17.6×3.7 to $6.2 \mu\text{m}$. Appressoria ($n = 100$) were solitary, pale to medium brown, smooth walled, subglobose to elliptical, sometimes clavate or irregular, and 5.7 to 11.7×4.1 to $8.5 \mu\text{m}$. The internal transcribed spacer (ITS) region of ribosomal DNA, glyceraldehyde-3-phosphate dehydrogenase (*GAPDH*) gene, beta-tubulin 2 (*TUB2*) gene, actin (*ACT*) gene, calmodulin (*CAL*) gene, chitin synthase 1 (*CHS-1*) gene, and histone H3 (*HIS3*) gene of

two representative isolates, BY19LB02 and BY19LB06, were amplified and sequenced with primers ITS1/ITS4, GDF1/GDR1, T1/Bt2b, ACT-512F/ACT-783R, CL1/CL2A, CHS-79F/CHS-354R, and CYLH3F/CYLH3R, respectively (Damm et al. 2012), and deposited in GenBank (ITS, MZ496816 and MZ505524; *ACT*, MZ557422 and MZ557417; *CHS-1*, MZ557423 and MZ557418; *GAPDH*, MZ557424 and MZ557419; *HIS3*, MZ557425 and MZ557420; *TUB2*, MZ557426 and MZ557421). BLAST analysis results for all the sequences showed 98 to 100% similarity with those of *C. fioriniae*. Based on the above, the isolates BY19LB02 and BY19LB06 were identified as *C. fioriniae*. To confirm pathogenicity, detached healthy barbary wolfberry fruits were surface sterilized with 75% ethanol for 30 s, rinsed three times in sterile distilled water, allowed to dry on sterile filter paper, and wounded using sterilized needles. Fruits were inoculated by pipetting $10 \mu\text{l}$ of conidial suspension (1×10^6 conidia/ml) onto each wound, and controls were inoculated with $10 \mu\text{l}$ of sterile distilled water. Each treatment had 30 fruit replicates. These fruits were kept in a moist chamber at 28°C in the dark. The experiment was repeated three times. After 5 days, anthracnose symptoms were observed on all of the inoculated fruits identical to those observed in the field, whereas control fruits did not develop symptoms. The pathogen was reisolated from the lesions of inoculated fruits, fulfilling Koch's postulates. To the best of our knowledge, this is the first report of *C. fioriniae* causing anthracnose on barbary wolfberry in Gansu Province, China. The same disease on barbary wolfberry was reported in Jilin Province, China (Liu et al. 2016). Gansu is one of the main barbary wolfberry producing areas in northwest China and its geographical area, climate, and environmental conditions are different from Jilin. Considering that barbary wolfberry is the main source of income for growers in Gansu, this identification can aid in the selection of appropriate management measures for this disease.

References:

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[†]Indicates the corresponding author.
S. J. Xu; xusj1001@aliyun.com