Disease Note

Diseases Caused by Fungi and Fungus-Like Organisms

Molecular and Morphological Identification of *Monilia yunnanensis* Causing Brown Rot on Chinese Quince and Peach in Yunnan, China

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More than 30% of fruits of Chinese Quince (*Chaenomeles speciosa*) and peach (*Prunus persica*) showed circular, water-soaked, and brown spots in July 2022 in Kunming, Yunnan, China. The center of these spots was covered by a large number of earthy brown and oblate sporogenous mycelium containing conidiophores and conidia, which were single celled, limoniform, and hyaline (13.73 to 22.77 × 8.17 to 12.84 µm, n = 50). By September 2022, almost 100% of fruits showed symptoms. Later, most of them fell or a few stiff, black, and mummified fruits were left on the trees. Fungal isolates were isolated by the single-spore technique on potato dextrose agar (PDA) from the diseased fruits and incubated at room temperature (20 to 28°C) in darkness for 14 days. The colony was gray, smooth at margins, and 7.6 to 8.0 cm in diameter. To fulfill Koch's postulates, mycelial plugs of one representative isolate, YHD611, from Chinese Quince and another, YHD610, from peach were used to inoculate three wounded and three nonwounded surface-disinfected fruits of both hosts at room temperature (19 to 27°C), respectively. Three wounded and three nonwounded fruits inoculated with sterile PDA plugs served as controls. The wounded peaches appeared water soaked and had brown lesions 3 days after inoculation and then completely decayed after 9 days, whereas the nonwounded fruits showed symptoms after 5 days. The wounded fruits of Chinese Quince developed similar symptoms 8 days after inoculation and completely decayed after 13 days, whereas the nonwounded fruits showed obvious symptoms after 15 days. In a subsequent study, the isolate YHD611 was inoculated onto peach and the isolate YHD610 was inoculated onto Chinese Quince to understand host specificity of the isolates. The results showed that when peaches were infected with YHD611, symptoms were observed on wounded fruits after 3 days and on nonwounded fruits after 5 days. When Chinese Quince was infected with YHD610, symptoms were observed on wounded fruits after 14 days and on nonwounded fruits after 21 days. Fungal isolates from symptomatic fruits were identical to the original isolates. There were no symptoms on the control fruits of both hosts. Molecular identification was confirmed based on the sequences of the internal transcribed spacer (ITS, primers ITS1 and ITS4) and β-tubulin (TUB2, primers Bt2a and Bt2b) genes (Niu et al. 2016). BLASTn analysis of the ITS (OQ155197 and OQ155196) and TUB2 (OQ185202 and OQ185201) of YHD611 and YHD610 revealed a 100% sequence identity, respectively, to *Monilia yunnanensis* AH7-2 (KT735924.1 for ITS and KT736008.1 for TUB2). In the phylogenetic analyses based on ITS and TUB2 sequence data, the isolates YHD611 and YHD610 belonged to the *M. yunnanensis* clade. Based on morphological and molecular identification, both isolates were identified as *M. yunnanensis*, which was reported as the pathogen causing brown rot of plum, peach, apple, and pear in Yunnan, China (Hu et al. 2011; Yin et al. 2015). To our knowledge, this is the first report of *M. yunnanensis* causing brown rot on the fruits of Chinese Quince in Yunnan, China. This study also reports that *M. yunnanensis* from Chinese Quince can infect peach, and the pathogen from peach can infect Chinese Quince. These findings suggest that *M. yunnanensis* can transfer from one host to another and causes serious economic losses in multiple fruit crops in Yunnan, China.

References:

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