Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Soft Rot Caused by *Aspergillus niger* Sensu Lato on Mother-in-Law's Tongue in China

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“Mother-in-law’s tongue” (MLT) (*Dracaena trifasciata* [Prain] Mabb. [syn. *Sansevieria trifasciata* Prain.]), also known as Saint George’s sword, snake plant, tiger’s tail orchid, and so on, is an evergreen perennial ornamental plant grown worldwide. In September 2016, severe soft rot occurred on the leaves of MLT in a flower market in Nanyang city (32°56’N, 112°32’E), Henan province, China, with 25% disease incidence ($n = 100$). Water-soaked spots initially appeared on the leaf margin, enlarged rapidly, and became soft rot under excessively watered conditions. A blight zone was visualized at the margin of a developing lesion in backlit conditions. Severely affected leaves folded down from the lesions. Lesion expansion stopped under dry conditions. Gray or dark brown mycelia were frequently seen on the lesions. Tissue pieces ($4 \times 4 \text{ mm}^2$) at the margin of lesions were cut out, treated with 75% ethanol for 10 s followed by 70 s in 0.1% HgCl_2 , rinsed eight times with sterile water, and plated on potato dextrose agar (PDA) medium. Pure *Aspergillus* cultures were obtained from the surface-disinfected lesions after 4 days of incubation at 26°C. Two single-spore-derived isolates (An-1 and An-2) were randomly selected and used for morphological and molecular identifications as well as pathogenicity tests. The isolates formed round dark brown colonies with a large number of conidia after 5 days of incubation on PDA at 28°C. Conidia were subspheroidal or oblate, unicellular, dark brown, 2.9 to 4.2 (3.5×1.9 to 3.4 (2.7) μm in size ($n = 100$), developed from a double series

of strigata borne on a conidial head, with ridge or stab-shaped prominences. For pathogenicity tests, the two isolates were separately grown on oatmeal agar and incubated at 30°C for 6 days. Mycelial plugs (5-mm diameter) were inoculated on the scalpel incision X-shaped wounds of surface-disinfected leaves of MLT. The inoculated leaves were kept on two layers of wet napkin in a steel basin covered with a plastic film. Soft rot symptoms developed from the wounds 6 days after incubation, similar to those observed on naturally affected leaves. The An-1- and An-2-inoculated unwounded leaves remained symptomless during the pathogenicity tests. Fungal cultures with the same phenotypes as the inocula were consistently reisolated from the lesions of the leaves inoculated by each of the two isolates, verifying the isolates as the causal agent of the disease based on Koch’s postulates. Both β -tubulin and rDNA internal transcribed spacer (ITS) sequences of the two isolates were separately amplified and sequenced. Sequences were submitted to GenBank with accession numbers MN259522 and MN259523 for the β -tubulin gene sequences and accession numbers MN227322 and MN227324 for the rDNA-ITS sequences of isolates An-1 and An-2, respectively. Both An-1 and An-2 clustered with members of *Aspergillus niger* van Tieghem in the phylogenetic tree of rDNA-ITS, clearly separated from other *Aspergillus* spp. In the phylogenetic tree of β -tubulin gene, both An-1 and An-2 formed a subclade inside a large clade consisting of members of *A. niger* in strict sense. Based on the molecular and morphological results, both An-1 and An-2 were clearly separated from other *Aspergillus* spp. and can be considered as *A. niger* sensu lato. Foliar diseases of MLT are known to be caused by a few fungal species such as *Chaetomella* spp. (Li et al. 2014) and *Colletotrichum sansevieriae* (Nakamura et al. 2006). This is the first report of *A. niger* sensu lato causing soft rot on MLT in China.

References:

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The author(s) declare no conflict of interest.

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