



First report of broad bean wilt virus 2 infection in eggplant in China

Peng-Huan Rui¹ · Lei Jiang¹ · Shuai Li¹ · Xi-Zi Jiang¹ · Qing-Qing Zhao¹ · Ji Ying Feng¹ · Tong Jiang¹

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Broad bean wilt virus 2 (BBWV-2) belongs to the genus *Fabavirus* in the family *Comoviridae*, and is known to infect a wide range of plant species, including many economically important vegetable and ornamental species (Lisa and Boccardo 1996). In June 2018, eggplant plants (*Solanum melongena* L.) in a commercial field in the Anhui Province, China, showed plant stunting, necrosis and yellow mosaic in leaves. To identify the causal virus, three randomly collected leaf samples were analyzed individually through RT-PCR using five primer sets specific for cucumber mosaic virus (CMV), tobacco mosaic virus (TMV), pepper mild mottle virus (PMMoV), broad bean wilt virus 2 (BBWV-2) or tomato spotted wilt virus (TSWV). Total RNA was extracted from these three samples using TRIzol reagent. A ca. 2.1 kb RT-PCR product was obtained from all three tested samples using the BBWV-2 specific primer set (AF, 5'-CAATGCGCAACATACAGAGGC-3' and AR, 5'-GAGGCTAGTGACCTACGCC-3', designed from the movement protein gene and the 3' non-coding region, respectively, which are both conserved in BBWV-2). No positive result was obtained using other primer sets. The resulting PCR products were cloned and sequenced individually. Alignment of the resulting PCR product sequences (2088 nucleotides) with other known BBWV-2 isolate sequences showed that the virus from eggplants shared approximately 90% amino acid sequence identity with the Chinese BBWV-2 isolate B935 from broad bean (GenBank accession No. AJ132844) (Qi et al. 2000) or 94% amino acid sequence identity with the South Korea BBWV-2 isolate RP1 from pepper (JX183228.1) (Kwak et al. 2016).

To investigate the distribution of BBWV-2 in the Anhui Province, China, vegetable fields in an area of about three km² were surveyed, showing that 35 to 50% cucumber, cowpea, pepper and eggplant plants displayed virus-like symptoms.

Analyses of 13 randomly collected symptomatic eggplant samples and three eggplant samples without virus-like symptoms through RT-PCR as described above showed that eight eggplant samples with virus-like symptoms were positive for BBWV-2 infection, two for CMV infection, two for TMV infection. One eggplant sample with virus-like symptoms and the three asymptomatic eggplant samples were negative for virus infection. This finding indicated that BBWV-2 is the most prevalent virus in eggplant fields in this area. Because BBWV-2 can infect many host plants and can be readily transmitted by aphids, an effective BBWV-2 management becomes necessary. This is the first report of BBWV-2 infection in eggplant fields in China, and is the first report of a *Fabavirus* in the Anhui Province.

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Compliance with ethical standards

Ethical statements The authors declare that they have no competing interests. This work does not involve the use of any human participants or animals. This research article is original, and has not been published nor is it being considered for publication elsewhere. Informed consent was obtained from all individual participants included in the study, all the authors mutually agree to this submission.

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✉ Tong Jiang
jiangtong4650@sina.com

¹ School of Plant Protection, Anhui Agricultural University, Hefei 230036, China

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