Serological Reagent Preparation and Improvement of Serological Method for the Detection of *Plantago asiatica* mosaic virus in Lily

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Abstract


In early 2011, a viral nucleic acid fragment belonging to the *Potexvirus* was detected by RT-PCR in imported lily bulb. The virus was identified as *Plantago asiatica* mosaic virus (PlAMV) and that was confirmed by nucleotide sequence analysis. A predicted 933-bp DNA fragment containing the full-length sequences of viral coat protein gene was amplified by RT-PCR with the primer pair PlAMV-cup/PlAMV-cpdw (5'-CCGCGGCCGCCACACTACTC/5'-GGCCCACCAGACTTTTACT), designed based on alignment of seven PlAMV nucleotide sequences in the database of GenBank. The deduced amino acid sequence of coat protein gene of the virus found in the imported lily bulb is 93% identical to that of the PlAMV (GenBank accession no. AB360794.1). The viral coat protein expressed by bacteria was prepared for antiserum production. The antiserum was shown to be able to specifically detect the PlAMV in indirect ELISA and western blotting. For detection of the virus distributed in lily plant, the indexing efficiency of direct tissue blotting (DTB) was significantly higher than that resulted in ELISA. The rates of detectable PlAMV from roots were significantly higher than those from the bulb scales. As well, different isolates of PlAMV CPs from various lily lines could be specifically detected by RT-PCR using the primer pair of PlAMV-cup/PlAMV-cpdw. Accordingly, serological or molecular reagents developed in this study are both useful for virus-indexing; moreover, DTB is an effective serological method to improve the detection efficacy of PlAMV from lilies.

**Key words:** Virus disease of Liliaceae, *Plantago asiatica* mosaic virus (PlAMV), Antiserum preparation, Direct tissue blotting, RT-PCR detection.

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