First report of alfalfa mosaic virus in *Ligularia fischeri* in Korea

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Ligularia fischeri (Family Asteraceae), a perennial vegetable plant, is commonly used as a food in Korea. In March 2015, two symptomatic samples of greenhouse-grown *L. fischeri* plants showing mosaic and malformation on their leaves and one symptomless sample were collected from Gangwon Province in South Korea. To identify the infecting virus, total RNA was extracted from the pooled symptomatic leaves using an RNA extraction kit (Intron Biotechnology, Seoul, Korea) and subjected to RNA sequencing. The raw data analysis of RNA sequencing (50,830,462 reads) performed according to Zhao et al. (2016) showed 12 viral contigs (102–2352 bp) of alfalfa mosaic virus (AMV), covering the RNA3 segment of AMV genome. One large contig (2352 bp) had 90% sequence identity with AMV Manfredi isolate (KC881010). Based on the contigs, two primer sets AMV-MP-1F/1R (5'-GTAATTCGTACTCTTCGTGAGT-3'/5'-GCATAGTTCTGAGAACGTTTAG-3') producing a 1140 bp amplicon and AMV-CP-1F/1R (5'-TGATCGGTAATGGGCCGTTT-3'/5'-TTAATCCACCCAGTGGAGGT-3') producing a 780 bp amplicon were newly designed and used to confirm the presence of AMV by reverse-transcription PCR (RT-PCR) and sequencing. The two symptomatic samples were positive for AMV, whereas the asymptomatic sample was negative by RT-PCR. The complete sequences of movement protein (MP)

and coat protein (CP) genes of Korean AMV isolate Gomchi infecting *L. fischeri* were deposited to GenBank (accession Nos. LC219342 and LC219343, respectively). A BLAST search revealed the highest nucleotide sequence identities of 95% to KC881010 (MP sequence of AMV isolate Manfredi) and 99% to LN846978 (CP sequence of AMV isolate shark) for LC219342 and LC219343, respectively. Sap from one of the positive samples was mechanically inoculated onto *Vigna sinensis* and *Chenopodium amaranticolor*. Necrotic local lesions were observed 3 days post-inoculation (dpi), and mosaic and vein banding symptoms developed on the upper leaves of *V. sinensis* and *C. amaranticolor* 7–10 dpi, respectively. Presence of AMV in the inoculated plants was also confirmed by RT-PCR and direct sequencing. To our knowledge, this is the first report of an AMV infection of *L. fischeri* in Korea.

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