



First report of milk vetch dwarf virus infecting *Capsicum annuum* L. in Korea

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Received: 31 May 2022 / Accepted: 3 August 2022 / Published online: 15 August 2022
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Keywords Milk vetch dwarf virus · Nanovirus · Pepper · *Capsicum annuum* · Korea

Milk vetch dwarf virus (MDV) is a DNA virus belonging to the genus *Nanovirus* in the family *Nanoviridae*. The genome of MDV consists of eight circular single-stranded DNA segments of about 1 kb in length. To date, MDV has been identified in several legume plants (Zhang et al. 2020).

In 2019, we collected leaf samples from ten hot pepper plants (*Capsicum annuum* L.) showing viral disease symptoms such as yellowing, mosaic, and dwarfing in ten different geographical regions in Korea. To reveal viruses infecting hot pepper plants, total RNA was extracted followed by deletion of the ribosomal RNA. Ten RNA-sequencing libraries representing ten hot pepper plants were paired-end sequenced using the NovaSeq 6000 system. De novo assembly and a BLASTX search identified cucumber mosaic virus, broad bean wilt virus 2, hot pepper endornavirus, and pepper cryptic virus 2. From the libraries, we identified 19 contigs (9,332 reads) associated with MDV. The identified DNA fragments were DNA-R (818 reads), DNA-C (268 reads), DNA-M (1,604 reads), DNA-U2 (1,387 reads), DNA-N (189 reads), DNA-U1 (87 reads), DNA-U4 (930 reads), DNA-S (3,104 reads), and C1 alphasatellite (945 reads). Two assembled contigs for DNA-S (OM963137) and DNA-R (OM963138) were blasted against NCBI's nucleotide database. DNA-S shared 98.19% nucleotide identity with MDV isolate YS-AA-1 from *Carica papaya*

in Korea (MK726376), while DNA-R showed 98.77% nucleotide identity with MDV isolate Medusa from lily in Korea (MK433283). The presence of MDV was confirmed by PCR in the hot pepper samples used for RNA-seq using MDV DNA-S specific primers (Choi et al. 2019). Twenty additional hot pepper plants from diverse regions in Korea were also tested by PCR using the same primers but none of them was infected with MDV. To our knowledge, this is the first report of MDV infecting the hot pepper plant in Korea.

Acknowledgements This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture and Forestry (IPET) through Crop Viruses and Pests Response Industry Technology Development Program, funded by Ministry of Agriculture, Food and Rural Affairs (MAFRA) (121055-2).

Data availability Partial sequence of DNA-S (GenBank OM963137) and DNA-R (GenBank OM963138) for MDV isolate JC are publicly available in NCBI's GenBank.

Declarations

Conflict of interests There are no potential conflicts of interest, and this research is not involved with any Human Participant or Animal. All authors have approved the submission of this manuscript.

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