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DISEASE NOTE

First report of pitaya virus X and zygocactus virus X infection of dragon fruit (*Selenicereus undatus*) in Korea

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In September 2020, virus-like symptoms, including mild mottling and yellowing, were observed on the stems of dragon fruit (*Selenicereus undatus*) plants cultivated in six greenhouses in Chungcheongbuk, Gangwon, Gyeongsangnam, and Jeju provinces, Korea. Total RNA was extracted from a pool of 36 symptomatic samples, and a complementary DNA library was synthesized using an Illumina TruSeq RNA Sample Prep Kit (Illumina, USA) and analyzed with an Illumina HiSeq4000 sequencer at GnC Bio (Korea). In total, 42,207,345 reads were quality filtered and assembled *de novo* using the SPAdes v3.14.1 assembler. A total of 220,875 filtered mapped contigs were analyzed against the plant viral genome database at the National Center for Biotechnology Information. Two mapped viral sequences exhibited 89.8% nucleotide homology with a pitaya virus X (PiVX) isolate (GenBank accession No. NC024458) and 72.5% nucleotide homology with a zygocactus virus X (ZyVX) isolate (NC006059). To confirm infection in dragon fruit plants by PiVX and ZyVX, which belong to the genus *Potexvirus*, total RNA was extracted from 36 symptomatic samples. PiVX and ZyVX were detected in 23 and six of the 36 samples, respectively, by RT-PCR using specific primers for PiVX CP (110 F, 5'-CCGTTACCAGCTCTCTCCTG-3'; and CP 604R, 5'-TGGTTAATGCCCGACTCTTC-3') and ZyVX CP (Park et al. 2018). CP gene sequences of PiVX (expected size: 414 bp) from dragon fruits in four of the Korean provinces [LC630946 (Chungcheongbuk), LC630943 (Gangwon), LC630944 (Gyeongsangnam), and LC619646 (Jeju)] and those of ZyVX (592 bp) from two provinces [LC619645 (Chungcheongbuk) and LC630947 (Gyeongsangnam)] were deposited in GenBank. A sap transmission test showed mild mottling and yellowing on systemic leaves of *Celosia cristata* as an indicator plant at seven days post-inoculation. To our knowledge, this is the first report of PiVX and ZyVX infecting dragon fruit plants in Korea.

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References

Park CH, Song EG, Ryu KH (2018) Detection of co-infection of *Notocactus leninghausii* f. *cristatus* with six virus species in South Korea. Plant Pathol J 34(1):65–70

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