First Report of *Schlumbergera* Virus X in Dragon Fruit (*Hylocereus* spp.) in Spain

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Dragon fruit (*Hylocereus undatus*) is a high-value fruit crop that was introduced about a decade ago in the mainland of Spain. In 2021, chlorotic spots were observed on young cladodes in a commercial dragon fruit orchard in the province of Seville (southern Spain). Sap extracts from four symptomatic cladodes were used to mechanically inoculate indicator plants: no symptoms were produced in *Datura stramonium* plants, but *Chenopodium amaranticolor* reacted with chlorotic local lesions, and prickly pear plants (*Opuntia ficus-indica*) showed irregular yellow ringspot symptoms on young cladodes at 30 days postinoculation. Total RNA was extracted from all four symptomatic cladodes as previously described (Pallas et al. 1987). Reverse transcription (RT)-PCR, which was carried out with M-MLV-RT and GoTaq Pol (Promega Biotech Ibérica, SL, Madrid, Spain) and tobamovirus primers (Dovas et al. 2004), failed to produce any amplicons. Electrophoretic analysis of dsRNA, extracted from symptomatic cladodes, yielded a banding pattern similar to the one reported for potexviruses (Valverde et al. 1986). Primers specific for cactus virus X (Kim et al. 2016) failed to produce amplicons, whereas potexvirus group primers (Potex F5/Potex R2) (van der Vlugt and Berendsen 2002) amplified an expected 584-bp amplicon from RNA extracts of all four field-collected samples. The RT-PCR products from the four samples were Sanger sequenced. All showed identical sequence results (GenBank accession no. MZ614940) with a predicted amino acid identity of 99% with

the corresponding RNA-dependent RNA polymerase amino acid sequence of *Schlumbergera* virus X (SchVX) (GenBank accession no. ACD99908). SchVX-specific primers (431s, 5'-TTTGAGGAGTTCGTCAGCAAGA-3' and 431As, 5'-TCAAGAGCCCATTTGAGAGAGTG-3') that were designed based on the new sequence amplified the expected amplicon of around 430 nucleotides from the total RNA extracts of the four samples. The amplicons were Sanger sequenced, and the expected nucleotide sequence was obtained. This pair of primers was used in RT-PCR tests on subsequent surveys in two commercial dragon fruit greenhouses from the province of Seville and in one experimental greenhouse in the province of Almeria. All samples from 25 symptomatic plants of *H. undatus*, *H. hybridum*, *H. costaricensis*, and *H. purpusii* in Seville and from one symptomatic *H. undatus* plant from Almeria tested positive for SchVX, while 15 asymptomatic plants tested negative. The results obtained in this investigation support that SchVX is present in the cladodes of dragon fruit plants expressing the symptoms. SchVX has been reported previously in *H. undatus* in Brazil (Duarte et al. 2008) and in prickly pear in Mexico (De La Torre-Almaráz et al. 2016). To our knowledge, this is the first report of the virus in Spain. These findings suggest that SchVX has been introduced in dragon fruit farms in Spain, and propagation of this emerging crop through planting of cuttings should include testing for this virus in order to prevent further spread.

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The author(s) declare no conflict of interest.

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