

## Diseases Caused by Viruses

### First Report of Costus Stripe Mosaic Virus Infecting *Tradescantia spathacea* Plants in Brazil

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*Tradescantia spathacea* (family Commelinaceae) is cultivated worldwide as an ornamental (Golczyk 2013) and as medicinal plant (Tan et al. 2020). In 2019, 90 of ~180 plants of *T. spathacea*, grown in two beds of 4 m<sup>2</sup> and exhibiting leaf mosaic, were found in an experimental area at Escola Superior de Agricultura Luiz de Queiroz, University of São Paulo (Piracicaba municipality, São Paulo state, Brazil). Potyvirus-like flexuous filamentous particles were observed by transmission electron microscopy in foliar extracts of two symptomatic plants stained with 1% uranyl acetate. Total RNA was extracted using the PureLink viral RNA/DNA kit (Thermo Fisher Scientific) from leaves of two symptomatic plants and separately subjected to a reverse transcription polymerase chain reaction (RT-PCR). The potyviruses degenerate pairs of primers CIfor/CIRv (Ha et al. 2008), which amplifies a fragment corresponding to part of the cylindrical inclusion protein gene, and WCIEN/PV1 (Maciel et al. 2011), which amplifies a fragment containing part of the capsid protein gene and the 3' untranslated region, were used. The expected amplicons (~700 bp) were obtained from both total RNA extracts. Two amplicons from one sample were purified using the Wizard SV Gel and PCR Clean-Up System kit (Promega) and directly sequenced in both directions at Macrogen (Seoul, South Korea). The obtained nucleotide sequences (GenBank MW430005 and MW503934) shared 95.32 and 97.79% nucleotide identity, respectively, with the corresponding sequences of the Brazilian isolate of the potyvirus costus stripe mosaic virus (CoSMV, MK286375) (Alexandre et al. 2020). Extract from an infected plant of

*T. spathacea* was mechanically inoculated in 10 healthy plants of *T. spathacea* and two plants each of the following species: *Capsicum annuum*, *Chenopodium amaranticolor*, *Commelina benghalensis*, *Datura stramonium*, *Gomphrena globosa*, *Nicandra physaloides*, *Nicotiana tabacum* cultivars Turkish and Samsun, *Solanum lycopersicum*, *T. pallida*, and *T. zebrina*. All *T. spathacea* plants exhibited mosaic and severe leaf malformation. *C. benghalensis* plants developed mild mosaic, whereas infected *T. zebrina* plants were asymptomatic. The plants of other species were not infected. RT-PCR with specific CoSMV primers CoSMVHC-F and CoSMVHC-R (Alexandre et al. 2020) confirmed the infection. Nucleotide sequences of amplicons obtained from experimentally inoculated *T. spathacea* and *T. zebrina* (MW430007 and MW430008) shared 94.56 and 94.94% identity with the corresponding sequence of a Brazilian CoSMV isolate (MK286375). None of eight virus-free plants of *T. spathacea* inoculated with CoSMV using *Aphis craccivora* exhibited symptoms, nor was CoSMV detected by RT-PCR. Lack of CoSMV transmission by *A. solanella*, *Myzus persicae*, and *Uroleucon sonchi* was previously reported (Alexandre et al. 2020). *T. spathacea* plants are commonly propagated vegetatively and by seeds. Virus-free seeds, if available, can provide an efficient and easy way to obtain healthy plants. Only three viruses were reported in plants of the genus *Tradescantia*: Commelina mosaic virus, tradescantia mild mosaic virus, and a not fully characterized potyvirus (Baker and Zettler 1988; Ciuffo et al. 2006; Kitajima 2020). CoSMV was recently reported infecting *Costus spiralis* and *C. comosus* (Alexandre et al. 2020). As far as we know, this is the first report of CoSMV infecting *T. spathacea* plants.

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