Diseases Caused by Viruses

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

Gabriel Madoglio Favara, Felipe Franco de Oliveira, Camila Geovana Ferro, Heron Delgado Kraide, Eike Yudi Nishimura Carmo, Gressa Amanda Chinelato, Elliot Watanabe Kitajima, and Jorge Alberto Marques Rezende[†]

Plant Pathology and Nematology Department, Escola Superior de Agricultura Luiz de Queiroz, University of São Paulo, Piracicaba, SP 13418-900, 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 m² 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/CIRev (Ha et al. 2008), which amplifies a fragment corresponding to part of the cylindrical inclusion protein gene, and WCIE/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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[†]Indicates the corresponding author.

J. A. Marques Rezende; jrezende@usp.br