



First report of *Potato spindle tuber* and *Citrus exocortis viroids* in *Cestrum* spp. in Italy

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Potato spindle tuber viroid (PSTVd), originally affecting potato and tomato, is regulated as a quarantine pest, and for which several European countries have recently taken phytosanitary actions in the ornamental horticulture industry. PSTVd was found in the Netherlands and in Germany on symptomless *Solanum jasminoides* in 2006 and, since then, it was reported in many countries and other Solanaceous ornamentals. In Italy, PSTVd was identified and characterised in *S. jasminoides*, *S. rantonnetii* (Di Serio, 2007) and tomato (Navarro *et al.*, 2009). *Citrus exocortis viroid* (CEVd) does not have regulated status, and particularly in Italy, it has been only reported in *Citrus* spp. (Ragozzino *et al.*, 2005). In 2010, during a phytosanitary survey to verify the presence of pospiviroids in commercial ornamental nurseries located in Latium region (Central Italy), 22 out of 25 tested plants of *Cestrum* spp. were found infected by PSTVd. Infected plants corresponded to three of *C. auricantum*, three of *C. rubrum*, six of *C. x cultum*, five of *C. endlicheri*, and five of *C. nocturnum*. None of the plants (from two different locations of the region) showed symptoms. Samples were analysed by reverse transcription polymerase chain reaction assay (RT-PCR) using primer pairs designed by Di Serio (2007). Results were confirmed by real time RT-PCR (RT-qPCR) for PSTVd (Boonham *et al.*, 2004). RT-PCR products were cloned (pGem-T Easy vector system, Promega, WI, USA) and sequenced (GenBank Accession Nos. HQ452399 - HQ452416). PSTVd sequences showed a 94 to 98% sequence identity with that of the PSTVd reference NC002030. Moreover, all the *Cestrum*-PSTVd isolates exhibited a cytosine insertion (C) at the sequence position 320, not found in previous published sequences of PSTVd. Additionally, CEVd was found in one plant of *C. auricantum*. The isolate was cloned and sequenced (HQ452417) and it showed a 95% of sequence identity to that of the CEVd reference NC001464.

To our knowledge, this is the first report of PSTVd and CEVd in *Cestrum*

spp. The identification of CEVd is highly significant to alert a possible further spread of CEVd to other trees or ornamentals. The natural occurrence of PSTVd, as quarantine pest, in *Cestrum* spp. evidences the important economic impact on the current phytosanitary control ongoing throughout Europe. European legislation should be updated with the new PSTVd hosts. Results prompt efforts to evaluate the current distribution of PSTVd, to eradicate it and to prevent new introductions through commercial trade.

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