



First report of *Bean yellow mosaic virus* on Cape gooseberry in India

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Cape gooseberry (*Physalis peruviana*, Solanaceae) is an important crop cultivated in tropical, subtropical and temperate areas for nutritional and medicinal purposes. During a survey in April 2013, a severe mosaic disease was observed on most of the *P. peruviana* plants growing in a farmer's field at Barabanki, India. Naturally infected plants exhibited mosaic, leaf distortion and stunting symptoms (Fig. 1a). Sap from infected leaves of *P. peruviana* was inoculated on seedlings of *P. peruviana*, *Chenopodium amaranticolor*, *Datura innoxia*, *Petunia hybrida* and *Nicotiana glutinosa*. Sap inoculations resulted in local lesions on *C. amaranticolor* 10 days post inoculation (dpi), and systemic mosaic and leaf crinkling on *P. peruviana*, *D.inoxia* and *P. hybrida* (Fig. 1b-d), but not on *N. glutinosa* 30 dpi. The symptoms on inoculated *P. peruviana* were similar to those of naturally infected *P. peruviana*. Flexuous filamentous virus particles of ~750 x 12 nm were observed in leaf dip preparations using an electron microscope, indicating the presence of a potyvirus.

Total RNA was extracted from leaf samples of three symptom-bearing and one healthy *P. peruviana* plant and tested by RT-PCR using degenerate potyvirus primers (Ha *et al.*, 2008). A ~700 bp band was amplified from all three plants with symptoms but not from the healthy sample, suggesting potyvirus infection. All amplicons were cloned and sequenced (GenBank Accession Nos. KJ191461- KJ191463). The sequences were 98-99% identical to each other and had the highest identity (99%) and a close phylogenetic relationship with an isolate of *Bean yellow mosaic virus* (BYMV; JX177278) isolated from *Diuris* sp. in Australia (Fig. 2). Therefore, the virus associated with mosaic disease of *P. peruviana* was identified as BYMV. According to the literature, *Cucumber mosaic virus* in

India (Gupta & Singh, 1996), Colombian datura virus in Hungary (Salamon & Palkovics, 2005), *Tomato spotted wilt virus* in Transkei (da Graça, *et al.*, 1985) and a tospovirus in Brazil (Eiras *et al.*, 2012) have been found to infect *P. peruviana*. However, the natural occurrence of BYMV has not been previously reported. To our knowledge, this is the first report of natural occurrence of BYMV on *P. peruviana*.

References

- da Graça JV, Trench TN, Martin MM, 1985. *Tomato spotted wilt virus* in commercial Cape gooseberry (*Physalis peruviana*) in Transkei. *Plant Pathology* **34**, 451-453. <http://dx.doi.org/10.1111/j.1365-3059.1985.tb01390.x>
- Eiras M, Costa IFD, Chaves ALR, Colariccio A, Harakava R, Tanaka FA, Garcêz, RM, Silva LA, 2012. First report of a tospovirus in a commercial crop of Cape gooseberry in Brazil. *New Disease Reports* **25**, 25. <http://dx.doi.org/10.5197/j.2044-0588.2012.025.025>
- Gupta SP, Singh BR, 1996. Severe mosaic of cape gooseberry due to *Cucumber mosaic virus*. *Indian Journal of Virology* **12**, 155-156.
- Ha C, Coombs S, Revill PA, Harding RM, Vu M, Dale JL, 2008. Design and application of two novel degenerate primer pairs for the detection and complete genomic characterization of potyviruses. *Archives of Virology* **153**, 25-36. <http://dx.doi.org/10.1007/s00705-007-1053-7>
- Salamon P, Palkovics L, 2005. Occurrence of Colombian datura virus in *Brugmansia hybrids*, *Physalis peruviana* L. and *Solanum muricatum* Ait. in Hungary. *Acta Virologica* **49**, 117-122.



Figure 1

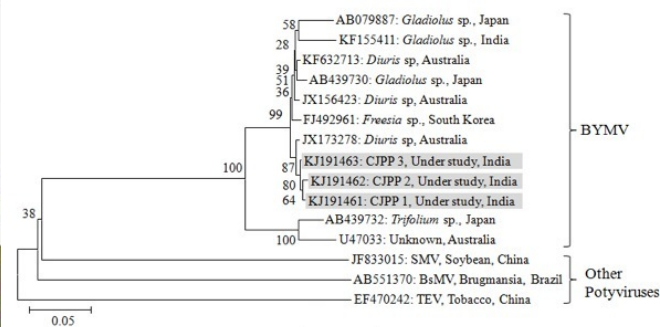


Figure 2

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