



First report of a variant of *Pepper leaf curl Lahore virus* on winter cherry in India

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Solanum capsicastrum (family Solanaceae) known as winter cherry, is grown in pots and beds in gardens for its ornamental value. There is a previous record of natural occurrence of a strain of *Eggplant mottled crinkle virus* on *S. capsicastrum* (Raj *et al.*, 1988). During September 2011, a leaf curl disease was observed on more than 40% plants of *S. capsicastrum* growing in gardens at Lucknow, India. The infected plants exhibited severe leaf curl accompanied by green blisters and distortions (Fig. 1). The causal agent was successfully transmitted in an insect proof glasshouse from naturally infected to healthy seedlings through whiteflies (*Bemisia tabaci*). This produced similar symptoms indicating *Begomovirus* infection.

Presence of a *Begomovirus* was confirmed by PCR using the total DNA extracted from leaf samples and *Begomovirus* specific primers (Rojas *et al.*, 1993) producing 1.2 kb amplicons in naturally as well as experimentally inoculated *S. capsicastrum* plants. For molecular identification of the *Begomovirus*, the full-length DNA-A molecule of 2740 bp long was amplified by rolling circle amplification (RCA) using TempliPhi 100 Amplification Kit (GE Healthcare UK Limited) followed by restriction digestion with *Bam*HI, cloned, and sequenced; the sequence was deposited in GenBank (Accession No. JN880419). Sequence analysis of the *Begomovirus* isolate under study (JN880419) using the BLASTn programme revealed 93% identity with *Pepper leaf curl Lahore virus* (*PepLCLV*) (AM691745), *PepLCLV*-[Pakistan:Lahore1:2004] (AM404179) and *PepLCLV*-[Pakistan:Lahore2:2004] (AM491589) of *Capsicum annuum* from Pakistan. It also showed 90-91% identity with *Pepper leaf curl Bangladesh virus* isolates (HM007101, HM007096, DQ116881) of *C. annuum* from India and Pakistan. As per the criteria proposed by Fauquet *et al.* (2008), the *Begomovirus* infecting *S. capsicastrum* was proposed as a variant of *PepLCLV*-[Pakistan:Lahore1:2004] and was named as *PepLCLV*-[*Solanum capsicastrum*: Lucknow: India]. Phylogenetic

analysis also supported BLASTn analysis since the *PepLCLV*- [*S. capsicastrum*] variant clustered in a single distinct branch that embraces *PepLCLV* (Fig. 2). The reports of natural occurrence of *PepLCLV* on *C. annuum* from Pakistan (Tahir *et al.*, 2010) and *Eggplant mottled crinkle virus* on *S. capsicastrum* from India (Raj *et al.*, 1988) are available in the literature. However, the *Begomovirus* infection on *S. capsicastrum* is being reported for the first time from India.

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References

- Fauquet CM, Briddon RW, Brown JK, Moriones E, Stanley J, Zerbini M, Zhou X, 2008. Geminivirus strain demarcation and nomenclature. *Archives of Virology* **153**, 783–821. [http://dx.doi.org/10.1007/s00705-008-0037-6]
- Raj SK, Srivastava KM, Aslam M, Singh BP, 1988. Occurrence of a strain of eggplant mottled crinkle virus in *Solanum capsicastrum* in India. *Plant Pathology* **37**, 599-603. [http://dx.doi.org/10.1111/j.1365-3059.1988.tb02122.x]
- Rojas MR, Gilbertson RL, Russell DR, Maxwell DP, 1993. Use of degenerate primers in the polymerase chain reaction to detect whitefly transmitted geminiviruses. *Plant Disease* **77**, 340-347. [http://dx.doi.org/10.1094/PD-77-0340]
- Tahir M, Haider MS, Briddon RW, 2010. Chili leaf curl betasatellite is associated with a distinct recombinant begomovirus, *Pepper leaf curl Lahore virus*, in *Capsicum* in Pakistan. *Virus Research* **149**, 109-114. [http://dx.doi.org/10.1016/j.virusres.2009.12.007]



Figure 1

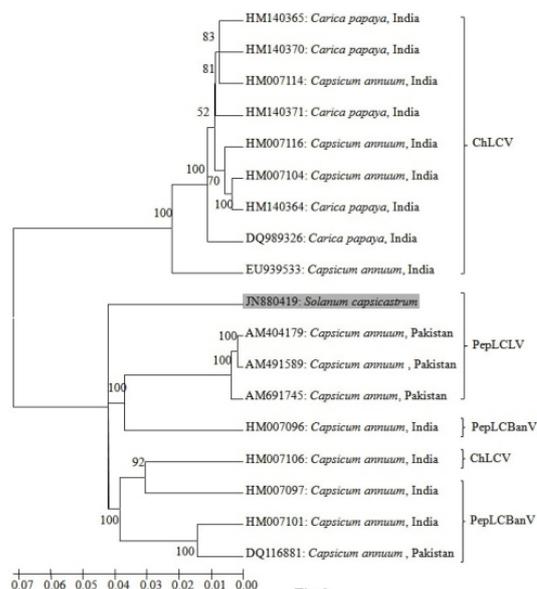


Figure 2

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