

Research Article

Biological and Molecular Characterization of *Cucumber Mosaic Virus* (CMV) Causing Tomato Fern Leaf Disease from Southern India

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Abstract

Cucumber mosaic virus (CMV) is one of the most important virus causing severe damage in vegetable crops including tomato in India. CMV upon infection produces mild mosaic, severe stunting and at the advanced stages fern leaf like symptoms in tomato. Direct antigen coating- Enzyme linked immunosorbent assay (DAC-ELISA) technique was used for detection of CMV causing tomato fern leaf disease by using two CMV subgroup specific antisera (Subgroup I and II). The infected tomato leaf samples strongly reacted with the CMV subgroup I. The subgroup of virus was further confirmed by RT-PCR using viral coat protein (CP) gene specific primers. A PCR product of ~650 bp was amplified from infected sample. The sequence of CMV-CP gene of tomato showed maximum nucleotide homology (99%) with CMV KO-strain (KM272275) infecting hot and bell pepper. Phylogenetic analysis of CMV-CP gene with other CMV subgroups strains revealed that the virus clustered with KO-strain, which indicated that CMV causing tomato fern leaf disease belongs to subgroup IB. Host range studies revealed that tomato CMV produced systemic symptoms on cucumber, ridgegourd, bittergourd, bottlegourd, bushsquash, muskmelon, *Nicotiana tabacum*, *N. glutinosa*, chilli, brinjal and datura, whereas chlorotic local lesions on *Chenopodium amaranticolor*, *Gomphrena globosa* and *Vigna unguiculata*. To our knowledge this is the first report of on occurrence of CMV causing fern leaf disease on tomato belongs to subgroup-IB from Southern India.

Key words: CMV, DAC-ELISA, tomato and RT-PCR

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