

TRANSMISSION AND NATURAL HOSTS OF TURNIP CURLY TOP VIRUS*

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Abstract

Turnip curly top virus (TCTV) is a unique geminivirus which has been recently reported from turnip growing farms of Fars province. Despite differences in the gene organization of this virus compared to other geminiviruses, most of its biological properties including vector and natural hosts have remained uncharacterized. In the present work the ability of two leafhopper species, *i.e.*, *Circulifer haematoceps* and *Orosius albicinctus* to transmit TCTV was studied. The results showed that TCTV is efficiently transmitted from infected plants to healthy turnip seedlings by *C. haematoceps* under greenhouse conditions. Infection of turnip plants was verified by symptoms appearance and PCR. Typical TCTV symptoms including inward rolling of the leaf margins and swelling of veins on the lower leaf surfaces of inoculated plants was observed 10-20 days post inoculation. The presence of virus in symptomatic plants was confirmed by PCR using specific TCTV primer pairs. In order to identify more natural hosts of the TCTV, plant samples from different crops and weed species were collected in severely TCTV infected farms and tested by PCR using two specific primer pairs. PCR results showed the presence of TCTV infection in radish samples showing curly top and chlorosis symptoms. Furthermore, TCTV infection of symptomless weed species including herb sophia, bugloss, black nightshade and flower of an-hour was confirmed by PCR test. To compare the sequence of radish isolate of TCTV with available TCTV sequences in GenBank, full-length genome of the radish isolate was amplified by rolling circle mechanism using phi DNA polymerase, cloned and sequenced. Sequence comparison showed 93-99% homology between radish and TCTV isolates. Results of this study indicated that in contrast to most curtoviruses, TCTV has a narrow natural host range.

Keywords: Geminivirus, *Curtovirus*, Rolling circle amplification, *Circulifer haematoceps*, Virus transmission.

See Persian text for figures and tables (Pages ۸۳-۹۱).

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