First report of tomato leaf curl New Delhi virus infecting muskmelon in India

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During June 2018, severe symptoms of virus(es) and infestation of whitefly (*Bemisia tabaci*) were observed on muskmelon (*Cucumis melo*) crop in Patiala district of Punjab state. Fifteen per cent plants were found to be symptomatic, exhibiting severe yellowing and curling of leaves along with necrotic streaks symptoms on the fruits across seven hectare area surveyed. These symptoms resembled to the recently described infection of tomato leaf curl New Delhi virus (ToLCNDV) on melon (Trisciuzzi et al. 2018). DNA of eight symptomatic samples was subjected to PCR, with primer pair PALic and PARiv (Rojas et al. 1993) yielded ~ 1280 bp product in all the samples. To further identify the associated begomovirus species, PCR amplicon was cloned in pTZ57R/T vector and sequenced. The sequence (MH939186) from infected sample analyzed by BLASTn tool showed 98.3% nucleotide similarity with ToLCNDV (AY939926) infecting *Luffa cylindrica* and 95% with ToLCNDV (U15015) infecting tomato in India. The coat protein showed 97.8% amino acid identity with ToLCNDV accession No. MH-845616 and KT-965856 identified from Ludhiana and New Delhi, respectively. Primer pairs specific for the detection of major tomato leaf curl begomoviruses viz. tomato leaf curl New Delhi virus (ToLCNDV), tomato leaf

curl Gujarat virus (ToLCGV), tomato leaf curl Karnataka virus (ToLCKV) and tomato leaf curl Bangalore virus (ToLCBV) were tested (Reddy et al. 2005) but only primer pair CRNDv30 and CRNDc1181, specific for ToLCNDV amplified specific product of 1180 bp in all eight samples, reconfirming their association with ToLCNDV. To the best of our knowledge, this is the first report of infection of ToLCNDV from muskmelon in India.

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