Natural occurrence of papaya ringspot virus in *Clitoria ternatea* in India

Siriya Sultana¹ · Buddhadeb Roy¹ · Ang Rinzing Sherpa¹

Received: 28 May 2018 / Accepted: 14 July 2018 / Published online: 20 July 2018

© Società Italiana di Patologia Vegetale (S.I.Pa.V.) 2018

Symptomatic *Clitoria ternatea* plants exhibiting typical symptoms of potyvirus infection such as leaf curling and deformations were found in West Bengal, India in 2016–2017. Rod shaped flexuous particles of $\sim 700 \times 13$ nm were observed in some symptomatic plants by transmission electron microscopy. To confirm the presence of a potyvirus, symptomatic plants were analyzed by antigen-coated plate-ELISA using potyvirus specific antibodies (Agdia, USA). Nine out of 14 samples tested were positive in ACP-ELISA. In addition, RT-PCR products 327 bp in size were obtained from total RNA isolated from leaves of symptomatic plants with universal potyvirus primers (Marie-Jeanne et al. 2000). To identify a potyvirus species, primers were designed in conserved regions of the nuclear inclusion protein (NIb) and coat protein genes of papaya ringspot virus (PRSV) (PRSV-CP-F: 5' TTTGAGCGAGARAGRGGAGA 3' and PRSV-CP-R: 5' CCAGGAGAGAGTGCATGTCT 3') to amplify a 975 bp fragment from total RNA of symptomatic *C. ternatea* samples by RT-PCR. The PCR products were bi-directionally sequenced and BLASTn analysis showed 89–91% nucleotide sequence identity of the PRSV isolates from *C. ternatea* in India (DDBJ accession number LC331253) with previously reported P and W type PRSV isolates from China

(KY933061), East Timor (KX655865), Taiwan (JX448373) and India (KJ755852). To the best of our knowledge, this is the first report of *C. ternatea* as a natural host and potential reservoir host of PRSV.

Acknowledgements We acknowledge Director, National Institute of Cholera and Enteric Diseases for providing the TEM facility for this investigation. Authors would like to thank Department of Science and Technology, New Delhi for SERB Project Grant No. SR/FT/LS-165/2012 and financial assistant from University Grant Commission (UGC), New Delhi to Miss Siriya Sultana, Senior Research Fellow (Maulana Azad National Fellowship) in the form of fellowship is greatly acknowledged.

Compliance with ethical standards

Conflict of interest The authors declare that we have no conflict of interest.

Reference

- Marie-Jeanne V, Ioos R, Peyre J, Alliot B, Signoret P (2000) Differentiation of Poaceae *Potyriviruses* by reverse transcription-polymerase chain reaction and restriction analysis. *J Phytopathol* 148:141–151

✉ Ang Rinzing Sherpa
ang2001@gmail.com

¹ West Bengal State University, Malikapur, Berunanpukuria, 24 North Parganas, Barasat, Kolkata, W.B. 700126, India