Genetic diversity and genome sequencing of some potato virus Y isolates from Egypt

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Potato is the second most important food crop in Egypt in terms of yield and cash value. Virus infection is a major factor which affects production and tuber quality. Detection of several different potato viruses has been reported in some studies; yet, few limited studies addressed the genetic characterization of such viruses. PVY is a major virus affecting potato and is of worldwide distribution. The aim of this work is to elucidate more information on PVY genetic diversity in Egypt. Following several surveys for the detection of major viruses affecting potato in different geographic governorates, some PVY isolates were subjected to molecular characterization by means of immuno-capture RT-PCR and also full genome sequencing. Multiple recombinant types of PVY were distinguished. At least 3 recombinant strains previously associated with potato tuber necrotic ringspot disease (PTNRD), including a novel recombinant were identified. These findings suggest the presence of PTNRD-inducing virus strains infecting potato.

Electrophoretic mobility of DNA amplicons obtained by IC-RT-PCR from host leaves infected by PVY

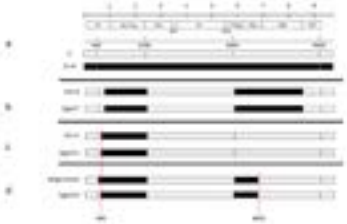

Diagram of the Egyptian PVY isolates shows the molecular nature of the defined recombinants strains identified by sequence analysis

Phylogenetic analysis of nucleotide sequences of the whole genomes for the three Egyptian isolates (with yellow background) and 26 additional, representative PVY isolates conducted with the neighbor joining (NJ) algorithm

Recent Publications

1. Rabie M, Ratti C, Abdel Aleem E and Fattouh F (2017) Detection and molecular characterization of tomato yellow leaf curl virus naturally infecting *Lycopersicon esculentum* in Egypt. Acta Virologica. 61(3):252-263.
2. Fattouh F A, Ali A S, Fathy R M and Fathy R M (2015) Further molecular characterization and effect on host photosynthetic pigments and carbohydrate pools of an Egyptian isolate of TBSV. J. Plant. Pathol. Microbiol. 6(3):261-271.
3. Fattouh F, Ratti C, ELAhwany A M D, Abdel Aleem E, Babini A R and Autonell C R (2014) Detection and molecular characterization of Egyptian isolates of grapevine viruses. Acta Virologica. 58(2):137-145.
4. Hafez E E, Saber G and Fattouh F A (2010) Tomato bushy stunt virus (TBSV) infecting *Lycopersicon esculentum*. Z Naturforsch. 65c:619-626.

5. Hafez E E, Abdel Aleem E E and Fattouh F A (2008) Comparison of barley stripe mosaic virus strains. Z Naturforsch. 63(3-4):271-276.

Biography

Faiza A Fattouh has completed her PhD at Purdue University, USA. She is currently an Emeritus Professor of Virology at Alexandria University. She has served as a Head of the Botany and Microbiology Department of the Faculty of Science, Alexandria-University, Egypt. She has over 35 publications in National and International reputable journals. She has acted as Principle Investigator in over 10 International Cooperative projects in the field of Plant Virology. She is on the Editorial Board and served as Reviewer to several scientific publications. Her research interest includes Identification, molecular characterization and phylogenetic studies on plant viruses of economically important hosts in Egypt.

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