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Serological and molecular detection of melon (*cucumis melo* l.) infecting viruses in Azerbaijan

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Azerbaijan has a great potential for production of most important cucurbit crops. Being dangerous diseases, viruses with DNA and RNA genomes lead to reduced plant quality and yield. Until now more than 35 viruses have been found in cucurbit plants around the world. The main objective of this study is phytopathological monitoring, detection and identification of main viruses which infect vegetables (squash, melon, watermelon) grown in greenhouse and natural conditions with visual, serological and molecular methods. For this purpose during on a preliminary assesment 52 different cucurbite samples were collected taking into consideration viral diseases potensial symptoms. The collected plant samples were diagnosed using field tests (AgriStrip BIOREBA AG, Switzerland) that allows analyses a large number of samples at the same time based on immunochromato test. Extracts were obtained from leaf samples which showed positive results for checked virus and analyzed with DAS-ELISA method (BIOREBA AG, Switzerland). Samples were considered to be positive if the A405 nm values were more than three times those of the healthy control. The consentration of virus samples has been identified spectrophotometrically on the bases of optical absorption of enzymatic reaction products at 405 nm in comparison with negative control samples with at least three times more values have been considered positive for tested disease. As a result of serological tests, *melon necrotic spot virus* (MNSV) belonging to carmovirus have been found in two melon (*Cucumis melo* L.) samples, *Zucchini Yellow Mosaic Virus* (ZYMV) belonging to potyvirus in three melon samples, *Squash mosaic virus* (SqMV) belonging to three melon samples and in two samples SqMV + ZYMV, ZYMV+ CMV (*Cucumber mosaic virus*) as a mixed virus infections. Serologycal methods show that 54.6% disease level has been identified for the ZYMV virus. For identification of ZYMV, total RNA extracts were separated using TRI-Reagent (Sigma Chemical, St Louis, MO, USA) from leaves of infected plants that were positive in DAS-ELISA. Extracted total RNA samples have been amplified by RT-PCR method with ZYMV-CP-5' (5'-GGTTCATGTCCCACCAAGC-3') and ZYMV-CP-3' (5'-ATGTCGAGTATCACATTTCC-3') spesific primers. Amplified PCR products were electrophoresed in Tris-acetate-EDTA buffer through 1.5% (w/v) agarose gel, stained with ethidum bromide (1.5 µg) and viewed with a UV transilluminator. ~600 bp amplicons were observed in all samples which confirm the presence of ZYMV.

Biography

Nargiz Sultanova received B.Sc. in Biological Sciences at the Baku State University (September 1999-Jule 2003) and has completed her Master in Molecular biology at the Baku State University in Azerbaijan (September 2003 - July 2005). She completed her PhD in 2014 at the Institute of Botany, Azerbaijan National Academy of Sciences. She has worked with both theoretical and applied molecular biology, including virology, plant biology, plant biochemistry and plant pathology. She now serves as a senior researcher at the Bioadaptation laboratory at the Institute of Botany in Azerbaijan. She is author of more 47 scientific journal papers, published in a wide range of journals that covers a broad range of research areas.

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