P10: Epidemiological and molecular characterization of the emerging cucurbit-infecting whitefly-transmitted Begomovirus SLCV in production fields in the Palestinian West Bank.

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Introduction

A new cucurbit-infecting whitefly transmitted begomovirus has entered the Mediterranean region (Antignus et al., 2003). This new (to the Palestinian Authority) virus, may have devastating impact on cucurbit crops in the area (Ali-Shtayeh et al., 2010). The virus endangers the production of squash and watermelon to the point of becoming the limiting factor in both crops (Antignus et al., 2003). In 2006, the virus was reported to cause the severe symptoms observed in squash fields in Egypt (Idris et al., 2006). More recently, in 2008, it was detected in all surveyed areas in Jordan and disease incidence reached 95% in squash samples collected from the Dir Alla area (Al-Musa et al., 2008). Detection, and knowledge of the epidemiology and molecular characteristics of this virus is very important to the local agriculture and to save farmers from total lost. As a first step in controlling the new cucurbit-infecting begomoviruses, we propose the following: Characterization at the epidemiological and molecular levels of the emerging cucurbit-infecting whitefly-transmitted Begomovirus *squash leaf curl virus* (SLCV) in production fields in the Palestinian West Bank.

Material and methods

In the summers and falls of 2008 and 2009, cucurbit plants (squash, *Cucurbita pepo* L.; cucumber, *Cucumis sativus* L.; and melon, *Cucumis melo* L.) from 23 of 33 cucurbit fields surveyed at three districts (Jenin, Nablus, and Tulkarm) in the West Bank of the Palestinian Authority exhibited curled, blistered, yellowed, and mottled leaves and small deformed fruits. Disease incidence ranged from 24 to 100% and was associated with whitefly (*Bemesia tabaci*) infestation. Total nucleic acids were extracted from 208 leaf samples from symptomatic plants using the Dellaporta method (Dellaporta et al., 1983), and fast Edie DNA extraction method (Edwards et al., 1991). In symptomatic leaves of 94 plants (89 squash, 3 cucumber, and 2 melon) of 208 plants examined, geminiviral DNA was detected by PCR and rolling circle amplification (Al-Musa et al., 2008). Geminivirus DNA-A and DNA-B component fragments were amplified by PCR using degenerate primers PAL1v1978/pPAR1c496, for DNA-A component and PBL1v2040l/PCRc1 for DNA- B component (Rojas et al., 1993). A fragment from DNA-A was amplified using specific primers for DNA-A: SLCVSTCF1F and SLCVSTCF3R and the generated PCR product was sequenced. Homology between fragments of SLCV-Pal and other SLCV isolates from the region and elsewhere was carried out using the sequencing results of 5 isolates. Nonviruliferous whiteflies were allowed to feed on symptomatic cucurbit plants for 48 h. The whiteflies were then transferred to 30 healthy squash seedlings at the first-leaf stage and given a 48-h inoculation access period. Typical SLCV symptoms developed in these plants 9 to 10 days postinoculation (Al-Musa et al., 2008).

Results

A DNA-A fragment (922 bp) from a conserved region of the coat protein (AV1) gene showed 98, 98, 97, and 96% nucleotide identity with sequences of *Squash leaf curl virus* (SLCV) isolates from Jordan (GenBank Accession No. EF532620), Egypt (DQ285019),California (DQ285016), and Arizona (AF256203), respectively. The new emergent disease in the Palestinian Authority was detected in all surveyed squash fields located in the Jenin District,

in an area (Al-Fara') about 25 km to the west of Dir Alla in Jordan. Only a few sporadic cases were found in cucumber fields (three isolates) in Tulkarm and in melon fields (two isolates) in Nablus. This indicates that the virus might have spread from Jordan via viruliferous whiteflies or seedlings. The virus endangers the production of squash in the affected areas to the point of becoming the limiting factor of growing squash in open fields. To our knowledge, this is the first report of a whitefly-transmitted geminivirus infecting cucurbits in the Palestinian Authority.

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P11: **Antibacterial activity of Rosmarinus officinalis L., alone and in combination with cefuroxime, against methicillin-resistant Staphylococcus aureus**

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Abstract

Objective: To determine the antimicrobial activity of rosemary (Rosmarinus officinalis L.) and to investigate the synergistic effects of this extract combined with ceforuxime against methicillin-resistant Staphylococcus aureus (MRSA). Methods: The inhibitory and bactericidal activities of rosemary ethanol extract, alone and in combination with cefuroxime, were studied. Results: The minimum inhibitory concentrations (MICs) of the ethanol extract of rosemary were in the range of 0.39 to 3.13 mg/ml. The minimum bactericidal concentrations (MBCs) were usually equal to or double that MICs. The antimicrobial activity of combinations of the ethanol extract of rosemary and cefuroxime indicated their synergistic effects against all MRSAs. Conclusion: The present work clearly demonstrates that rosemary has a key role in the elevation of susceptibility to β -lactams.