CITRUS LEPROSIS VIRUS C CODIFICA TRÊS PROTEÍNAS COM ATIVIDADES SUPRESSORAS DE SILENCIAMENTO GÊNICO

Citrus leprosis virus C ENCODES THREE PROTEINS WITH GENE SILENCING SUPPRESSION ACTIVITY

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Resumo:

Introduction. *Citrus leprosis virus C* (CiLV-C) belongs to the genus *Cilevirus*, family *Kitaviridae*, and is considered the most devastating virus infecting citrus in Brazil, being the main viral pathogen responsible for citrus leprosis (CL), a severe disease that affects citrus orchards in Latin America. **Objective.** The aim of the present study was to identify the cilevirus suppressor proteins. **Methodology and Results.** Here, proteins encoded by CiLV-C genomic RNA 1 and 2 were screened for potential RNA silencing suppressor (RSS) activity by five methods. Using the GFP-based reporter agroinfiltration assay, we have not found potential local suppressor activity for the five CiLV-C encoded proteins. However, when RSS activity was evaluated using the *alfalfa mosaic virus* (AMV) system, we found that the p29, p15 and p61 CiLV-C proteins triggered necrosis response and increased the AMV RNA 3 accumulation, suggesting a suppressive functionality. From the analysis of small interfering RNAs (siRNAs) accumulation, we observed that the ectopic expression of the p29, p15 and p61 reduced significantly the accumulation of GFP derived siRNAs. The use of the RSS defective *turnip crinkle virus* (TCV) system revealed that only the *trans*-expression of the p15 protein restored the cell-to-cell viral movement. Finally, the *potato virus X* (PVX) system revealed that the expression of p29, p15 and p61 increased the PVX RNA accumulation; in addition, the p29 and p15 enhanced the pathogenicity of PVX resulting in the death of tobacco plants. Furthermore, PVX-p61 infection resulted in a hypersensitive response (HR), suggesting that p61 could also activate a plant defense response mechanism. **Conclusion.** This is the first report describing the RSS activity for CiLV-C proteins and, moreover, for a member of the family *Kitaviridae*.

Palavras-chave: RNA silencing suppressor; Citrus leprosis virus C; RSS activity; Hypersensitive response; Family *Kitaviridae*

Apoio

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