

SUMMARY

EXPRESSION OF CHAYOTE GENES (*Sechium edule*) AND *Phytophthora capsici*, DURING THE WILTING OF THE PLANT

The resistance or susceptibility of a plant to a specific pathogen is usually the result of the balance between two forces: 1) the capacity of the plant to detect the characteristic structures of the pathogen and activate the necessary mechanisms to stop its advance, and 2) the capacity of the pathogen to produce proteins and metabolites that facilitate the plant invasion. To date, a large number of studies shows the importance of the genes that encode proteins that participate in the generation of immunity in the plant (MAPKs, NBS-LRR, WRKY, chitinases and genes involved in the synthesis and perception of ethylene) and that participate in the virulence of the pathogen (hydrolytic enzymes and effectors). However, this relationship varies in each host. Chayote [*Sechium edule* (Jacq.) Sw], is a crop of great importance in Veracruz, in which the incidence of *Phytophthora capsici* has been observed, without protection strategies for the crop. The aim of the present work was to analyze the expression of genes of *S. edule* and *P. capsici* during the wilting of the plant with the purpose to understand the mechanisms that are regulated during the process. Four-week-old chayote plants were inoculated with *P. capsici*, and the expression of two *MAPK* genes, three *ACS* genes, one *ETR1* gene, one *CTR1* gene, three *NBS-LRR* genes, one *WRKY* gene and one *Chib* gene, were identified and evaluated, in addition *PME6* and *IPG10* genes, and three *NLP* genes of *P. capsici*, during the first days of plant wilt. Eleven of the chayote genes evaluated expressed in the inoculated plants and in the control plants; however, *ACS6*, *ETR1* and *Chib* genes showed a differential expression between the inoculated plants and the controls at different post-inoculation times, suggesting that chayote plant responds through the ethylene signaling pathway when perceiving *P. capsici*. On the other hand, starting from 12 hours after the inoculation, expression of oomycete constitutive genes was detected in the inoculated tissue. However, the expression of genes encoding hydrolytic proteins and necrosis-like inducing proteins of *P. capsici* was not detected. This work represents the first study of this type carried out during the interaction of *S. edule* with *P. capsici*, indicating a participation of the ethylene signaling pathway.

Key words: Immunity, *Sechium edule*, MAPKs, ethylene, WRKY, *NBS-LRR*, chitinases, *Phytophthora capsici*, hydrolytic enzymes.