ISBN 978-85-66836-16-5

EXPRESSION OF A CHIMERIC ANTIMICROBIAL PROTEIN IN TRANSGENIC TOMATO CONFERS RESISTANCE TO THE PHYTOPATHOGEN *Ralstonia solanacearum*[1] / A expressão de uma proteína quimérica antimicrobiana em tomate confere resistência às plantas contra *Ralstonia solanacearum*.

T.P. MORAIS[2]; R. NASCIMENTO[2]; L.R. GOULART[2]; J.M.Q. LUZ[2]; A.M. DANDEKAR[3]. [2]Universidade Federal de Uberlândia, Uberlândia, Brasil; [3]University of California, Davis, USA. E-mail: morais_prado@hotmail.com

Research interest on antimicrobial peptides has increased because of their broad range activity, resulting in several biotechnological applications addressed to plant protection. The present study taps into the *in vitro* characterization of a chimeric protein and its potential use for development of transgenic tomato plants with resistance to a bacterial pathogen. The chimera was designed based on the NE-CecB antimicrobial protein, which has been previously validated on the plant pathogen *Xylella fastidiosa*. Each domain was substituted by homologous genes found in plant genomes, comprising a pathogenesis-related protein (SlP14a) joined to a plant-derived cecropin B-like peptide (an α-helix from phosphoenolpyruvate carboxylase – PPC20). *In vitro* antibacterial activities of SlP14a and SlP14a-PPC20 were confirmed in kill-curves assays against the bacterial wilt pathogen *Ralstonia solanacearum*, suggesting their use as promising candidates in plant protection. Later, tomato plants were engineered to express SlP14a-PPC20 chimera and challenged with *R. solanacearum*. Within control plants (wild-type *Solanum lycopersicum* cv. MoneyMaker), disease evolved from wilting symptoms to plant death in two weeks. SlP14a-PPC20-transgenic plants, however, showed no symptoms or reduced disease severity. Bacterial multiplication in stems of transgenic plants was suppressed more than 2-fold compared to control plants, and absence of disease symptoms could be associated with this growth suppression.

Keywords: Genetic engineering; Disease resistant plants; Therapeutic antimicrobial proteins.

[1]Acknowledgments: To the California Department of Food and Agriculture PD/GWSS Board, Embrapa-Hortaliças, CAPES and CNPq.