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EXPRESSION OF *TRICHODERMA HARZIANUMM* HYDROPHOBIN IN *SOLANUM LYCOPERSICUM*

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Trichoderma spp. are fungal antagonist, widely used as active ingredients in commercial bio-fungicides and bio-fertilizers. They have not only mycoparasitic activity, but they can also activate extensive metabolic changes in treated plants, resulting in a systemic resistance to a pathogen attack, thus indirectly altering plant-pathogen interactions. The mechanisms that regulate *Trichoderma*-plant-pathogen interaction have been deeply explored and many of the process key genes have been characterized. Genome sequence of several *Trichoderma* species have been completed, thus *Trichoderma* genus can be considered a very useful source of genes for biotechnological application as well as plant transformation.

Among molecules found essential for beneficial *Trichoderma*-plant interaction there are few hydrophobin and hydrofobin-like secreted proteins. One of these was a class II hydrophobin named HYTRA1. This has an antimicrobial activity and when applied to tomato plants is able to induce a defence response. In *in vitro* and *in vivo* assays, HYTRA1 directly inhibited pathogen development. It induced in tomato plants, depending upon the concentration, a multiplicity of effects, in fact it activated oxidative burst, the antioxidant system, and ISR with the accumulation of defence-related compounds important in plant defence.

To study the role of hydrophobin in *Trichoderma*-plant interaction, *Solanum lycopersicum* was transformed with *Hytra1* gene of *T. harzianum*, fused to a sequence encoding for a myc peptide.

Transformed plants were confirmed by PCR and RT-PCR. A phenotypic analysis revealed differences between transformed plant and control in terms of plant morphology and size. The performance of transgenic plants when challenged with different biotic stressors is presented and discussed.