TRANSGENIC TRANSIENT EXPRESSION AS A TOOL TO ASSESS THE EFFICACY OF SHORT PEPTIDES TO CONTROL BACTERIAL DISEASES

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The control of bacterial diseases of plants mostly relies on the extensive use of copper based compounds, which determine an accumulation of this trace element with heavy impact on soil microbiology and plant physiology. The use of molecules with infective-inhibitory activity, instead of an antibiotic effect, is expected to be a more ecofriendly approach, and even less resistance-inducing. Recently the use of short peptides to prevent the assembly of the Type Three Secretion System (T3SS) has been proposed. Several peptides were designed by our group, targeting T3SS of *Pseudomonas savastanoi* pv. *nerii:* preliminary observation demonstrated their anti-T3SS activity (Cerboneschi *et al.* 2012). In this frame, the sequences coding for Li27 and AP17 peptides were inserted in binary vectors pCambia1305.2, downstream a secretion signal peptide to deliver Li27 and AP17 to the apoplast. The recombinant plasmids were then electroporated into *Agrobacterium tumefaciens* EHA105, to induce peptides transient expression into *Nicotiana tabacum*, following agroinfiltration. Preliminary experiments with EHA105/pCAMBIA1305.2 carrying *gus*-plus as a reporter gene under the control of the secretion signal peptide confirmed, through histology, that GUS expression was mainly located outside *N. tabacum* cell membrane. To test anti-infective activity of Li27 and AP17 transiently expressed, leaf blades were infiltrated with bacterial suspensions containing both EHA105/pCAMBIA1305.2-Li27 or EHA105/pCAMBIA1305.2-AP17, and *Pseudomonas syringae* pv. *tabaci* ATCC11528 or *P. savastanoi* pv. *nerii* Psn23. Preliminary observations showed that the putative peptides expression causes some yellowing in infiltrated areas. Nevertheless, inhibitory effects on T3SS of both virulent and avirulent *Pseudomonas* strains for Tobacco seem to occur.

References

Cerboneschi *et al.* (2012) Proc.3rd Int.Workshop Expression, Structure and Function of Membrane Proteins p. 24

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