

Production of transgenic *Petunia* (Solanaceae) with enhanced hypersensitive response to *Pseudomonas syringae*

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Incompatible pathogen responses are frequently associated with cell death in the host plant at the site of infection by pathogens and referred to as hypersensitive response (HR). HR causes pathogen arrest and also leads to activation of defence genes. Phospholipase A (PLA) is an important enzyme group involved in many signal transduction pathways including pathogen defence responses. Potential involvement of *Arabidopsis thaliana* phospholipase. Genes namely, *AtPLA IIA* and *AtPLA IIB* in pathogen responses was tested by transforming *Petunia hybrida* (Family Solanaceae) for overexpression (sense) and suppression (antisense) of these genes. *Agrobacterium* mediated leaf disc transformation method was employed to produce transgenic *Petunia*. Development of HR was monitored in detached leaves after inoculation with *Pseudomonas syringae* pv tomato DC 3000. *AtPLA IIA* and *AtPLA IIB* overexpressing, suppressing and wild type plants showed HR responses after 3-3.5 hrs, 6-6.5 hrs and 6-7 hrs of pathogen inoculation respectively. Extensive spread of necrotic lesions was observed in all the genotypes after 24-36 hrs, but severe necrotic lesions were observed in overexpressing lines. Overexpression of *AtPLA IIA* and *AtPLA IIB* genes have led to an accelerated and intense induction of HR while antisense mediated suppression of the genes have led to relatively slow induction of HR. The results revealed that constitutive overexpression of *AtPLA IIA* and *AtPLA IIB* in transgenic *Petunia* enhances the HR towards *Pseudomonas syringae* attack. It can be postulated that *AtPLA IIA* and *AtPLA IIB* are involved in signal transduction pathway leading to the HR.

Keywords: *Arabidopsis*, hypersensitive response, *Petunia*, phospholipase A, signalling

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