

Title Transcriptional activation of a pectate lyase gene, *RbPel1*, during petal abscission in rose

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Abstract

Petal abscission requires extensive dissolution of the middle lamella which is rich in pectins and pectic polysaccharides. The action of some wall hydrolases in abscission has been shown but the role of many other genes such as pectate lyase is still not clear. We have isolated a pectate lyase gene, *RbPel1*, from rose petal abscission zones. The gene encodes a putative product of 448 amino acids with all essential catalytic residues and domains conserved. Steady state levels of *RbPel1* transcripts increased in abscission zones during the course of ethylene-induced petal abscission. Transcript accumulation was strongly correlated with the abscission process, being faster during ethylene-induced abscission, slower in flowers undergoing natural abscission in the field and being activated within 2 h in flowers treated with high dose ethylene. No significant change in expression was observed in flowers of *Rosa hybrida* which normally do not undergo abscission. Our results show that activation of the pectate lyase may be an important step towards dissolution of the middle lamella during petal abscission in rose.