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研究报告

山茶花CjAPL1基因正义表达载体的构建及对拟南芥的转化分析

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Sense Expression Vector Construction and Analysis of Transgenic Arabidopsis thaliana with CjAPL1 Gene from Camellia japonica

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摘要 为研究山茶花*CjAPL1*基因对于重瓣花形成的作用，构建了pCAMBIA1300-*CjAPL1*正义植物表达载体，酶切结果显示，*CjAPL1*基因正向插入pCAMBIA1300的启动子和终止子之间，表明*CjAPL1*植物表达载体构建成功。将pCAMBIA1300-*CjAPL1*采用农杆菌介导的花序浸染法转化拟南芥，获得转基因阳性植株65株。随机挑选表型变异明显的3株进行PCR扩增都得到了目的条带，Southern杂交鉴定进一步确认为转基因阳性植株。同时荧光定量检测到在转基因植株中*CjAPL1*基因表现出较对照显著提高6 ~ 25倍的表达量。转基因阳性植株表型变异明显，花柱和雄蕊数相比野生型各增加1枚和1 ~ 4枚，萼片边缘发育成白色的瓣化状，表明在拟南芥中过量表达*CjAPL1*基因可以引起花器官形态的变异和数量的变化，因此该基因在花器官形成和重瓣花发育中具有显著的调控功能。

关键词： 山茶花 CjAPL1基因 表达载体 转基因表达

Abstract： In order to investigate the gene function of *CjAPL1*，a homologof *AP1* from *Camellia japonica*，during double flower formation，pCAMBIA1300-*CjAPL1* sense expression vector was constructed. The restriction enzyme digestion result showed that *CjAPL1* gene was correctly inserted into pCAMBIA1300 sites between 35S promoter and terminator，which indicated that an ectopic expression vector had been successfully constructed. The pCAMBIA1300-*CjAPL1* construct was transformed into *Arabidopsis thaliana* by inflorescence soaking mediated with *Agrobacterium*，and 65 independent transgenic plants were obtained. Three randomly selected positive plants with obvious phenotypic changes were confirmed by PCR amplification and Southern blotting，and highexpression levels of *CjAPL1 in* transgenic plants were also detected by the Real time-PCR analysis. Compared with WT plants，obvious phenotypic changes including increases of 1 style and 1－4 stamens，sepals edge developed petaloid morphology with white characteristics，and early flowering，were observed. These results showed that overexpression of*CjAPL1*gene could cause the change of floral organ morphology and number，and therefore indicated that *CjAPL1*could play notable functions during floral organ formation and double flower development.

Keywords： Camellia japonica， CjAPL1， expression vector， transgenic expression

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