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三个桑树肌动蛋白基因的克隆与组织表达分析

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Molecular Cloning and Tissues Expression Analysis of Three *Actin* Genes from Mulberry (*Morus alba*)

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摘要 肌动蛋白基因在植物各种生理活动中具有极其重要的作用，通过同源克隆与反向PCR的方法，克隆了3个肌动蛋白基因的核心片段，其中一个为已报道的*MaACT1*，另两个分别被命名为*MaACT2*和*MaACT3*，进而PCR扩增获得*MaACT1*和*MaACT2*肌动蛋白全长CDS，其中*MaACT2*基因全长1 704 bp，由4个外显子和3个内含子组成，CDS为1 134 bp，编码377个氨基酸残基。采用RT-PCR的方法分析了3个基因在叶、茎、果、根等组织的表达情况以及在茎、叶和托叶的生长过程中的表达变化。*MaACT1*在茎中表达量较弱但有随着茎的生长逐渐增强的趋势，在幼叶中有较高的表达，*MaACT2*与*MaACT3*在根、茎、叶等组织中都有较高表达，*MaACT3*在叶、托叶和茎的各个发育时期表达都很稳定，可以作为桑树基因表达研究的内参基因。

关键词： 桑树 肌动蛋白 基因克隆 表达分析 进化

Abstract: Actins play many extremely important roles in plant, but none full-length cDNA *actin* genes were reported in mulberry until now. Three core fragments, two full CDS and one full-length genomic sequence of *actin* genes from mulberry were obtained with the strategies of homologous cloning and PCR in this research. Three mulberry *actin* genes obtained were designated as *MaACT1*, *MaACT2*, and *MaACT3*, respectively. The full-length of *MaACT2* was 1 704 bp, which consisted of four exons and three introns, and 377 amino acidswere encoded by 1 134 bp of a putative CDS of *MaACT2*. The expression profile of three *actins* in leaf, stem, fruit and root was analyzed by RT-PCR. The results showed that *MaACT1* was expressed low in stem, highen with the development of stem and high in young leaf. While *MaACT2* and *MaACT3* were expressed highly and stably in root, leaf and stem. The results showed *MaACT3* was a good candidate for a control gene in the mulberry expression study because it can be expressed highly and stably in different tissues during their development.

Keywords: Morus alba Actin Gene cloning Expression analysis Evolution

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