

研究简报

棉花微管结合蛋白基因GhMAP1-LC3的克隆与表达分析

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摘要 应用RT-PCR从陆地棉(*Gossypium hirsutum* L.)石远321开花当天胚珠中分离到一个553 bp的片段, 含有一个360 bp的开放读码框, 推导的氨基酸序列(119个氨基酸)与水稻、拟南芥的MAP1-LC3 (Microtubule-associated Protein 1-Light Chain3)分别具有94%与90%的同源性, 由此推测该基因为编码棉花微管结合蛋白基因家族的一个成员, 命名为GhMAP1-LC3。实时定量RT-PCR分析表明, 该基因(GhMAP1-LC3)在棉花的胚根、叶片、花瓣、花药以及0~5 DAA(开花后天数)胚珠、10~25 DAA纤维中均有表达, 其中以20 DAA纤维中的表达量最高, 而在下胚轴、-3 DAA胚珠、30 DAA纤维与35 DAA纤维中没有表达。基于其表达模式以及对其他物种MAP1-LC3蛋白的认识, 推测其对纤维初生壁的形成起着重要作用。

关键词 [棉花](#) [微管结合蛋白](#) [纤维发育](#)

分类号 [S562](#)

Cloning and Expression Analysis of GhMAP1-LC3 Gene from Cotton (*Gossypium hirsutum* L.)

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Abstract Using RT-PCR, a fragment of cDNA was obtained from the ovules of cotton (*Gossypium hirsutum* L.) cv. Shiyuan 321 at 0 DAA (days after anthesis). The sequence of 553 bp, containing an open reading frame of 360 bp was deduced to encode a polypeptide of 119 amino acid residues, which shared 94% and 90% homology with the light chain 3 of microtubule-associated protein 1 (MAP1-LC3) from rice and *Arabidopsis thaliana*, respectively. Therefore, it seems that the cloned sequence represents the MAP1-LC3 gene in cotton, and it was named GhMAP1-LC3. The expression profile of the gene was analyzed by real-time quantitative RT-PCR. The results indicated that it was expressed in the ovule of 0 - 5 DAA and in the fiber of 10 - 25 DAA. In other cotton tissues, such as radicle, leaf, petal, anther, the transcript of GhMAP1-LC3 was also detected. The expression of GhMAP1-LC3 reached its peak in the fiber on 20 DAA. But the transcript of GhMAP1-LC3 was not detected in the fiber on 30 and 35 DAA, nor in the ovule on -3 DAA and in hypocotyls. Based on the expression profile of GhMAP1-LC3 and the function of MAP1-LC3, it was suggested that GhMAP1-LC3 play an important role in the formation of the primary wall of cotton fiber.

Key words [Gossypium hirsutum L.](#) [Microtubule-associated protein](#) [Fiber development](#)

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