



海岛棉转录因子EREB5基因的克隆及特征研究

刘 坤, 单国芳, 李付广*, 刘传亮, 张朝军, 张雪妍, 武芝侠

中国农业科学院棉花研究所/农业部棉花遗传改良重点开放实验室, 河南 安阳 455000

Molecular Cloning and Characterization of *EREB5*, a Novel Transcription Factor Gene of ERF Family from *Gossypium barbadense* L.

LIU Kun, SHAN Guo-fang, LI Fu-guang*, LI U Chuan-liang, ZHANG Chao-jun, ZHANG Xue-yan, WU Zhi-xia*

Cotton Research Institute, Chinese Academy of Agricultural Sciences/Key Laboratory of Cotton Genetic Improvement, Ministry of Agriculture, Anyang, Henan 455000, China

摘要

参考文献

相关文章

Download: PDF (845KB) [HTML](#) 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 近年来, ERF (Ethylene-responsive element binding factor) 家族转录因子已成为植物抗逆、抗病的分子机制和作物分子育种研究的热点。本研究以电子克隆、同源扩增和RACE (Rapid-amplification of cDNA ends) 技术相结合的方法从海岛棉中分离出了一条新的ERF族转录因子基因, 命名为*EREB5*。该基因包含一个573 bp长的开放阅读框, 预期编码190 aa长的蛋白质分子。序列分析表明该蛋白除含有一个ERF保守域外, 还含有一段核定位信号序列、一段富丝氨酸的激活域、多种磷酸化位点和一个土豆抑制子 I 型家族基序等。构建系统发育树分析表明该因子属于ERF亚家族B3亚组。瞬时表达实验证明该因子定位于细胞核内, 同时, 凝胶阻滞实验结果说明EREB5蛋白和GCC盒具有较强的结合能力。再者, 荧光定量PCR结果表明乙烯和黄萎病菌处理可以诱导该基因的表达。这些结果暗示EREB5蛋白很可能在黄萎病抗性机制中扮演者重要角色。

关键词: 海岛棉 ERF 黄萎病 *EREB5* 基因克隆

Abstract: In recent years, ERF (Ethylene-responsive element binding factor) family transcription factors have become the research hot spot of crop molecular breeding and molecular mechanisms of resistance or tolerance of plant to bio- or abiotic stresses. In this study, one novel gene, designated as *EREB5*, was firstly isolated from *Gossypium barbadense* treated with *Verticillium dahliae* by cloning in silico, homologous amplification and RACE (Rapid-amplification of cDNA ends) techniques. The bioinformatics analyses demonstrated that the full-length cDNA contained a 573 bp open reading frame which encoded a deduced protein which included 190 amino acid residues, contained an ERF conserved domain, and belonged to the B3 subgroup of ERF subfamily. It also contained one nucleus localization signal, one serine-riched domain, some sites of phosphorylation and one motif of potato inhibitor I family. Transient expression analysis showed that *EREB5* protein was localized in nucleus, meanwhile, the results of Electrophoretic mobility shift assay revealed that *EREB5* protein had the ability of binding specifically to the GCC-box. Moreover, the results of expression analysis indicated that *EREB5* was able to be induced in *Gossypium barbadense* seedlings, by inoculating with *Verticillium dahliae* or stimulation of ethylene, respectively. These results imply that *EREB5* should play an important role in resistance of *Gossypium barbadense* to *Verticillium* wilt.

Keywords: *Gossypium barbadense* ERF *Verticillium* wilt *EREB5* gene cloning

Received 2011-03-21;

Fund:

国家863 项目(2006AA100105)

Corresponding Authors: lifug@cricaas.com.cn

About author: 刘 坤 (1966-), 男, 博士研究生

引用本文:

刘 坤, 单国芳, 李付广, 刘传亮, 张朝军, 张雪妍, 武芝侠. 海岛棉转录因子EREB5基因的克隆及特征研究[J] 棉花学报, 2011, V23(3): 205-211

LIU Kun, DAN Guo-Fang, LI Fu-Guang, LIU Chuan-Liang, ZHANG Chao-Jun, ZHANG Xue-Yan, WU Zhi-Xia. Molecular Cloning and Characterization of *EREB5*, a Novel Transcription Factor Gene of ERF Family from *Gossypium barbadense* L. [J] Cotton Science, 2011, V23(3): 205-211

链接本文:

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 刘 坤
- ▶ 单国芳
- ▶ 李付广
- ▶ 刘传亮
- ▶ 张朝军
- ▶ 张雪妍
- ▶ 武芝侠

