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论文

玉米中QM同源基因的克隆及其差异表达分析

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摘要：

利用cDNA-AFLP技术和5' RACE技术在玉米自交系黄早四*Ht2*上分离并克隆了*QM*（编码核糖体蛋白L10）同源基因(命名为*ZmQM*)。其cDNA全长为967 bp, 开放阅读框为738 bp,。该基因编码245个氨基酸的ZmQM蛋白，分子量为27.78 kD, 等电点(p*I*)为10.69, 预测含蛋白酶C磷酸化位点、N-酰基化位点和酰胺化等位点。玉米ZmQM蛋白与包括人类等l3个物种QM蛋白的同源性比较发现, 氨基酸序列相似性为66%~92%。RT-PCR分析表明, 在接种玉米大斑病菌(*Exserohilum turcicum*) 1号小种12 h后, 黄早四*Ht2*中*ZmQM*基因表达量较黄早四中明显上调，推测*ZmQM*基因可能参与黄早四*Ht2*对玉米大斑病菌1号小种的抗性反应。

关键词： *QM* 核糖体蛋白L10 *ZmQM*基因 黄早四*Ht2* *Exserohilum turcicum*

Cloning and Differential Exprcssion of QM-Like Protein Homologue from Maize

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Abstract:

A full-length *QM*-like cDNA (designated *ZmQM*) was cloned from maize (*Zea mays* L.) leaf tissues using cDNA amplified fragment length polymorphism (cDNA-AFLP) and rapid amplification of cDNA ends (RACE) techniques. The expression of *ZmQM* was examined in leaves of the *Ht2* isogenic lines Huangzaosi and Huangzaosi*Ht2* carrying gene *Ht2* for resistance to northern corn leaf blight after inoculation with race 1 of *Exserohilum turcicum* (Pass.) Leonard et Suggs. Gene *ZmQM* contains an open reading frame 738 bp in length, which encodes 245 amino acids with a predicted molecular weight of 27.78 kD and an isoelectric point of 10.69. Scanning PROSITE motifs indicated that the amino acid sequence of ZmQM protein includes a Ribosomal protein Ll0e signature, an N-glycosylation site, four Protein kinase C phosphorylation site, a Casein kinase II phosphorylation site, a Tyrosine kinase phosphorylation site, an N-myristoylation site, and an Amidation site. The nucleotide sequence of *ZmQM* shared 66–92% identity to *QM* genes isolated from other species. RT-PCR analysis showed that the expression of gene *ZmQM* was up-regulated in Huangzaosi *Ht2* at 12 h after inoculation with race 1 of *E. turcicum* compared with that in Huangzaosi. By inference, ZmQM protein may be involved in response of Huangzaosi*Ht2* to inoculation by *E. turcicum* race 1.

Keywords: *QM* Ribosomal protein L10 *ZmQM* Huangzaosi *Ht2* *Exserohilu turcicum*

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