

生物技术 生命科学

水稻OsDDM1a和OsDDM1b基因应答非生物胁迫的表达特性分析

高振蕊, 张海文, 黄荣峰

(中国农业科学院生物技术研究所, 北京 100081)

摘要:

环境胁迫会引起植物基因组DNA甲基化水平改变和组蛋白修饰变化,而DNA甲基化与组蛋白修饰在基因表达的调控过程中具有重要作用。分析表明水稻OsDDM1a和OsDDM1b基因属于SWI2/SNF2家族,编码染色质重塑酶,氨基酸序列的相似性达92.82%。OsDDM1a和OsDDM1b的表达均受ABA、NaCl、低温和干旱胁迫诱导,且这两个基因的启动子序列中均含有ABRE、DRE、MYC和WRKY等应答不同胁迫信号的元件。因此,推测水稻在感受外界刺激后可能通过激活OsDDM1a和OsDDM1b的表达,使水稻基因组DNA发生相应的甲基化修饰,进而调控相关基因的表达,表明OsDDM1a和OsDDM1b在水稻胁迫应答反应中发挥重要的作用。

关键词: 干旱胁迫; OsDDM1a; OsDDM1b; DNA甲基化; 水稻

Expressive Characteristics Analysis of OsDDM1a and OsDDM1b in Response to Abiotic Stresses of Rice

GAO Zhen-rui, ZHANG Hai-wen, HUANG Rong-feng

(Biotechnology Research Institute, Chinese Academy of Agricultural Sciences, Beijing 100081, China)

Abstract:

Environmental stress can cause changes of DNA methylation and histone modification in plants, which play important roles in regulation of gene expression. OsDDM1a and OsDDM1b, encoding chromatin remodeling enzymes, belong to SWI2/SNF2 family, and their amino acid sequence identity is up to 92.82%. They could be induced by ABA, NaCl, low temperature and drought stress. Several important cis-elements present were found in their promoter sequences, including ABRE、DRE、MYC and WRKY, which play key roles in response to environmental stress. Therefore, rice might change its level of DNA methylation by activating the expression of OsDDM1a and OsDDM1b in response to various environmental stresses, implying these 2 genes have pivotal function in stress tolerance.

Keywords: abiotic stress OsDDM1a OsDDM1b DNA methylation rice

收稿日期 2011-03-28 修回日期 2011-04-24 网络版发布日期 2011-06-15

DOI: 10.3969/j.issn.1008-0864.2011.03.07

基金项目:

国家自然科学基金项目(C0601-30971542)资助。

通讯作者: 黄荣峰, 研究员, 博士生导师, 主要从事植物抗逆分子生物学研究。E-mail: rfhuang@caas.net.cn

作者简介: 高振蕊, 硕士研究生, 主要从事植物抗逆分子生物学研究。E-mail: gzh1985@126.com。

作者Email:

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