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植物遗传学

水稻H3.2型组蛋白基因RH3.2A的克隆与盐胁迫下的表达分析

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摘要

组蛋白H3与其他类型的组蛋白分子H2A，H2B，H4共同构成了真核生物核小体的八聚体核心。研究发现组蛋白H3的多种翻译修饰，如甲基化、乙酰化、磷酸化等在调控基因转录过程种发挥了重要的作用。本研究从盐胁迫处理的水稻幼苗组织中分离了一个新的水稻组蛋白H3基因RH3.2A，编码具有136个氨基酸残基的多肽，与多种植物的组蛋白H3蛋白具有高度的氨基酸一致性。多序列比较发现，除了基因结构差异之外，还有3个位置的氨基酸残基（32、88、91）在H3.1与H3.2型组蛋白H3中存在差异。研究了RH3.2A基因在高盐和ABA胁迫下的表达，结果发现在水稻根部RH3.2A基因受高盐的强烈诱导，而在叶片RH3.2A基因的表达则不受高盐诱导，此外RH3.2A基因也受外源ABA的诱导，结合启动子分析的结果，我们认为RH3.2A基因可能参与了依赖于ABA的高盐胁迫应答反应。文章讨论了植物组蛋白H3基因在高盐胁迫应答反应中可能的作用。

关键词

水稻；基因表达；组蛋白H3；盐胁迫

分类号

Salt Induces Expression of *RH3.2A*, Encoding an H3.2-type Histone H3 Protein in Rice(*Oryza sativa* L.)

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Abstract

<P>Histone H3 is one of the four histones, along with H2A, H2B, and H4, which form the eukaryotic nucleosome octamer core. In this study, a new gene RH3.2A encoding an H3.2-type histone H3 protein from rice (Oryza sativa L.) was reported. RH3.2A was cloned through RT-PCR from salt-treated rice seedlings. This gene encoded a protein of 136 amino acid residues that were similar to some plant histone H3 proteins reported previously. However, the cDNA sequence of RH3.2A and other rice H3 genes were different. Alignment of RH3.2A encoding protein with other plant histone H3 proteins revealed that three amino acid residues (32, 88, and 91) were markedly different between H3.1-type and H3.2-type proteins. The mRNA expression analysis of RH3.2A revealed that RH3.2A gene was upregulated by salt stress in rice roots and ABA treatment in seedlings. The potential role of RH3.2A during salt stress was discussed.</P>

Key words

rice；gene expression；histone H3；salt stress

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