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植物诱变育种·农业生物技术

植物非生物逆境相关锌指蛋白基因的研究进展

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摘要： 植物能够适应多种逆境主要是通过改变其基因表达和代谢途径来实现的,因此研究这些基因表达和功能对提高植物耐逆性具有重要意义。锌指蛋白是一类具有手指状结构域的转录因子,这种结构域由锌离子与多个半胱氨酸和(或)组氨酸组成,锌离子在稳定其结构和发挥调控功能方面具有关键作用。植物锌指蛋白在植物耐逆性方面具有重要作用。本文综述了近几年来从拟南芥(*Arabidopsis thaliana*)、水稻(*Oryza sativa*)、小麦(*Triticum aestivum*)、番茄(*Solanum lycopersicum*)等植物中克隆的与非生物逆境相关锌指蛋白基因的研究成果,重点阐述了其基因表达部位、受逆境诱导情况及转基因植株的耐逆性等。目前的研究结果表明锌指蛋白能够调控耐逆相关基因的表达,在植物逆境代谢中发挥重要作用,因此可以利用锌指蛋白基因进行作物耐逆性的遗传改良,提高作物的耐逆能力。

关键词： 逆境 锌指蛋白 基因 耐逆性

PROGRESS IN THE STUDY OF ABIOTIC STRESS-RELATED ZINC FINGER PROTEIN GENES IN PLANTS

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Abstract: Plants can adapt to a variety of stress conditions mainly by changing their gene expression and metabolic pathways. It will be of great significance to study the expression and functions of the genes conferring plants tolerance to abiotic stresses. Zinc finger proteins are an important class of transcription factors with finger domains that are composed of zinc ions and several cysteines and (or) histidines. Zinc ion not only maintains the stability of zinc finger structure, but also is essential for the regulatory role of zinc finger proteins, which are essential in plants for stress tolerance. In this paper the recent research progresses of abiotic stress-related zinc finger protein genes obtained from *Arabidopsis thaliana*, rice, wheat, tomato and other plants were reviewed. The tissue expressional pattern of the genes as well as the stress response and tolerance properties of the transgenic plants are focused. The results indicated that the zinc finger proteins could regulate stress-related gene expression and played an important role in plant metabolic pathways under stresses. Therefore, crop species with high tolerance to abiotic stresses can be obtained by genetic engineering of zinc finger protein genes.

Keywords: stress zinc finger protein gene stress tolerance

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