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大豆转录因子GmWRKY53的分离及序列分析

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Title: Isolation and Sequence Analysis of Transcription Factor GmWRKY53 from Soybean (Glycine max)

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摘要: WRKY蛋白是只存在于植物中的一类转录因子家族,由WRKY蛋白N端高度保守的WRKYGQK氨基酸序列及特殊的锌指结构而命名。WRKY除参与植物发育和代谢的调控外还与植物的抗逆反应有关。本研究利用抗病相关基因NPR1基因启动子区的W-box顺式元件采用酵母单杂交方法,以拟南芥AtNPR1启动了子区W-box元件构建诱饵载体,从大豆中分离到了一个转录因子GmWRKY53,通过序列分析表明,GmWRKY53具有与AtWRKY蛋白的保守氨基酸序列极相似的二级结构,在酵母单杂交系统中该蛋白能够与抗病相关基因AtNPR1基因启动了子区的W-box特异结合并启动报道基因的表达。对大豆WRKY转录因子的研究有助于深入理解大豆抗病及发育调控机制。

Abstract: The WRKY protein is a super family of transcription factors unique to plants which was so named as all family members contain a conserved amino acid sequence WRKYGQK and special zinc finger motif at its N-terminal end. WRKY protein may participate in regulating the expression of a wide range of genes involved in various biological processes such as development, metabolism and response to a range of abiotic and biotic stresses. We characterized a predicated transcription factor GmWRKY53 from soybean using the yeast one hybrid system with the bait vector which had W-box of the AtNPR1(Arabidopsis thaliana) promoter related with pathogen defense. It contained one conserved domain, and showed similarity with AtWRKY family members in both overall amino-acid sequences and the secondary structure arrangement within the DNA-binding motifs. In yeast one-hybrid system, GmWRKY53 can specially activate the genes fused with the promoter containing W-box of the AtNPR1 promoter. The study on transcription factor WRKY of soybean is conducted to understand the regulation of various physiological programs of soybean, including pathogen defense, senescence and development.

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