

论文

硬粒小麦 *Glu-B3* 基因家族新成员的克隆及其分子标记的开发

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摘要:

获得小麦低分子量谷蛋白基因家族新成员, 为深入研究该基因家族的组成及其在染色体上的分布与进化奠定基础。本研究根据已发表的小麦低分子量麦谷蛋白基因序列设计了1对简并引物, 以从硬粒小麦品种Langdon BAC文库中筛选的携带小麦低分子量谷蛋白基因的BAC为模板, 利用同源序列克隆技术克隆了1个MET类型的小麦低分子量谷蛋白基因 *LMWLDN-M*, 该基因编码350个氨基酸。利用 *LMWLDN-M* 与本实验室克隆的Langdon品种其他类型的小麦低分子量谷蛋白基因之间的SNP, 设计了该类型基因特异的引物。以Langdon代换系和中国春小麦缺体-四体为模板进行PCR扩增, 将该基因定位到小麦B基因组上。序列分析表明, *LMWLDN-M* 为 *Glu-B3* 基因家族的一个新成员。

关键词: 硬粒小麦 低分子量麦谷蛋白 基因家族 同源序列克隆

Cloning a New Member from *Glu-B3* Locus in Durum Wheat and Developing Its Specific Marker

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Abstract:

A new member of *Glu-B3* gene family was isolated from durum wheat Langdon variety. According to the alignment of the conserved N- and C- terminal domains of the deduced amino-acid of LMW-GS genes in GenBank, a pair of degenerate primers was designed. Using this primer pair, an M-type LMW-GS gene was identified from Langdon. The gene, designated as *LMWLDN-M*, encodes 350 amino acids. Compared with other sequences of *Glu-3* isolated from Langdon in our laboratory, a SNP was detected and thus a gene specific marker was developed. This marker can also be used to map the gene *LMWLDN-M* onto the chromosome 1B using LDN D-genome disomic substitution lines and CS nulli-tetrasomic lines as templates. By comparison with other members of Langdon isolated before, we confirm that *LMWLDN-M* is a new member of *Glu-B3* family. After sequencing the BAC carrying this gene, it can help us to understand the complex *Glu-3* loci well.

Keywords: Durum wheat Low-molecular-weight glutenin subunit Gene family Homology-based cloning

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