

研究论文

## 小麦Glu-D3和Glu-B3位点LMW-GS基因特异引物设计与PCR扩增

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**摘要** 用CTAB法提取小麦基因组DNA, 根据GenBank中公布的已知LMW-GS基因序列, 设计并合成染色体位点特异PCR引物1~7; 利用特殊小麦材料——六倍体普通小麦阿勃二体、1A、1B和1D缺体, 四倍体小麦及二倍体的一粒小麦和节节麦的基因组DNA为模版, 在优化的PCR体系下进行特异性扩增和引物验证。结果表明: 引物3和引物4为小麦谷蛋白Glu-D3位点LMW-GS基因特异PCR引物, 用其进行扩增时, 循环反应条件为: 94℃变性1 min, 62℃退火1 min, 72℃延伸2 min。扩增产物大小约1.60 kb, 包括了启动子和完整编码区。引物5和7为小麦谷蛋白Glu-B3位点LMW-GS基因特异PCR引物, 用其进行扩增时, 循环条件为: 94℃变性1 min, 64℃退火1 min, 72℃延伸2 min。扩增产物大小约1.45 kb左右, 包括了启动子和完整编码区。此外, 用引物3和4通过PCR技术克隆到小偃6号小麦Glu-D3位点LMW-GS基因(登录号为AY263369); 该基因编码的LMW-GS含9个Cys残基。这是首次发现含9个Cys残基的LMW-GS基因。它可能是小偃6号加工品质优良的主要原因之一。

**关键词** [普通小麦](#) [特异染色体位点](#) [低分子量麦谷蛋白基因](#) [PCR](#)

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## Development of Primers Specific for LMW-GS Genes at Glu-D3 and Glu-B3 Loci and PCR Amplification

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**Abstract** The genomic DNA was extracted from wheat cultivars using CTAB method. Based on the known LMW-GS gene sequences reported in GenBank, the primer 1—7 for specific chromosome locus LMW-GS genes were designed and synthesized. Using of the genomic DNA from special wheat germplasm, including hexaploid wheat Abbozanida disome, 1A, 1B and 1D nullisomes of Abbozanida, diploid and tetraploid wheat as template, amplified specific locus LMW-GS genes under the optimal reaction system to test these primers. The results showed that, Primer 3 and 4 were the specific for LMW-GS genes at Glu-D3 locus in wheat, its cycling reaction profile was: 1 min at 94℃, 1 min at 62℃, 2 min at 72℃. The size of the PCR product was about 1.60 kb, including promoter and the whole CDS. While primer 5 and 7 were the specific for the LMW-GS genes at Glu-B3 locus in wheat, its cycling reaction profile was: 1 min at 94℃, 1 min at 64℃, 2 min at 72℃. The size of the PCR product was about 1.45 kb, including promoter and the whole CDS. Moreover, LMW-GS codon by cloned gene at Glu-D3 locus of Xiaoyan No.6 contained 9 Cys residues. It was the first time to find a gene of LMW-GS with 9 Cys residues. This may be one of the major reasons that Xiaoyan No.6 has good processing quality.

**Key words** [Triticum aestivum L.](#) [Specific chromosome locus](#) [LMW-GS gene](#) [PCR](#)

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