

研究论文

山东省普通小麦醇溶蛋白Gli-1和Gli-2位点等位基因的遗传变异

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摘要 采用酸性聚丙烯酰胺凝胶电泳(A-PAGE), 分析了山东省种植面积较大的37个小麦品种醇溶蛋白Gli-1和Gli-2位点等位基因的组成特点。结果表明, 山东小麦在醇溶蛋白Gli-1 (Gli-A1、Gli-B1和Gli-D1) 和Gli-2 (Gli-A2、Gli-B2和Gli-D2) 位点存在多样性, 共鉴定出58个等位基因, 出现频率较高的有6个, 分别为Gli-A1a (48.6%)、Gli-B11 (35.1%)、Gli-D1k (35.1%)、Gli-A2b (35.1%)、Gli-B2g (35.1%)和Gli-D2a (29.7%), 其中Gli-B11出现频率较高, 表明1BL/1RS易位系在山东小麦中存在比较普遍。醇溶蛋白6个主要位点的遗传变异系数较高, 平均为0.7930, 变幅为0.7297~0.8269, 其中Gli-D2位点遗传多样性最高, Gli-A1最低。对具有优质醇溶蛋白等位基因Gli-B1b或Gli-A2b的品种进行了高分子量谷蛋白亚基的组成分析, 表明烟农15、烟优361、山农98-1和山农93-52同时含有优质谷蛋白5+10亚基, 在小麦育种中可利用这些优质亚基基因。

关键词 [普通小麦](#) [醇溶蛋白](#) [等位基因](#) [变异](#)

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Genetic Variation at Gli-1 and Gli-2 loci in Wheat Cultivars from Shandong Province

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Abstract Using acid polyacrylamide gel electrophoresis(A-PAGE), thirty-seven wheat cultivars and lines from Shandong Province were used to analyze the allelic variation and genetic diversity based on gliadin allelic composition at Gli-1 and Gli-2 loci in order to provide useful database for wheat breeding and quality improvement. The results demonstrated that 58 different gliadin alleles were identified in 37 wheat cultivars and lines, including Gli-A1 (12), Gli-B1 (11), Gli-D1 (8), Gli-A2 (9), Gli-B2 (8) and Gli-D2 (10), of which 6 alleles were shown to be more frequent, i.e. Gli-A1a (48.6%), Gli-B11 (35.1%), Gli-D1k (35.1%), Gli-A2b (35.1%), Gli-B2g (35.1%) and Gli-D2a (29.7%). It was also found that allele Gli-B11, a marker for 1BL/1RS translocation, had a high frequency of occurrence. The genetic diversity of wheat cultivars and lines from Shandong Province is extensively with the mean Nei's genetic variation index (H) of 0.7930, varying from 0.7297—0.8269. The highest genetic diversity was found at Gli-D2, while the lowest at Gli-A1. In addition, the composition of H MW (high-molecular-weight) gluten subunit was investigated in the wheat cultivars carrying good-quality gliadin alleles, such as Gli-B1b and Gli-A2b. The results showed that there were 5+10 gluten subunit associated with good bread-making quality in Yannong 15, Yanyou 361, Shannong 98-1 and Shannong 93-52 (Fig.3), indicating that these wheat cultivars were probably potential germplasms for improving wheat quality.

Key words [Common Wheat](#) [Gliadins](#) [Alleles](#) [Variation](#)

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