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863课题进展

三个牛品种MBL1基因第一内含子与第二外显子遗传多态性研究

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摘要:

采用巢式PCR、DNA测序和CRS-PCR方法,研究中国荷斯坦牛、鲁西黄牛、渤海黑牛的MBL1基因内含子1和外显子2的单核苷酸多态性（SNPs）,发现了855（G/A）、2651（G/A）和2686（T/C）3个新SNP位点。855（G/A）位于内含子1上,2651（G/A）导致Val24Ile氨基酸的改变,2686（T/C）为同义突变。3个SNP位点在3个牛品种群体中优势等位基因相同,分别为G、G、C,其等位基因频率分别为0.87/0.58/0.57、1/0.75/0 74、1/0.76/0.63。经χ2适合性检验,荷斯坦牛在855（G/A）位点、鲁西黄牛在855（G/A）、2651（G/A）位点、渤海黑牛的所有位点达到Hardy-Weinberg平衡状态（P>0.05）。3个牛品种在855（G/A）位点均表现为低度多态；在2651（G/A）和2686（T/C）位点均表现为中度多态（0.25<PIC<0.5）。

关键词： 牛;MBL1基因;遗传多态性;优势等位基因

Studies on Polymorphisms Within Intron 1 and Exon 2 of MBL1 Gene in Three Cattle Breeds

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Abstract:

The single nucleotide polymorphisms (SNPs) within intron 1 and exon 2 of MBL1 gene in Chinese Holstein, Luxi cattle and Bohai cattle were investigated by using nested-PCR, DNA sequencing technology and CRS-PCR method. Sequencing results showed that three new SNPs were identified. They were 855（G/A）、2651（G/A） and 2686（T/C）. 855（G/A）SNP was located in intron 1; 2651（G/A）caused amino acids alteration in Val24Ile; 2686（T/C）was synonymous mutation. Predominant allele were identical at three SNP sites in three cattle populations, which were G, G, C and the allelic frequencies were 0.87/0.58/0.57, 1/0.75/0.74, 1/0.76/0.63, respectively. By χ2 tests, we found that 855(G/A) of Chinese Holstein, 855(G/A) and 2651(G/A) of Luxi cattle and all sites of Bohai cattle were in accordance with Hardy-Weinberg equilibrium (P>0.05). The value of polymorphism information indicated that 855（G/A） was slight polymorphism; 2651（G/A）and 2686（T/C）were moderate polymorphism in the three cattle breeds（0.25＜PIC＜0.5）.

Keywords: cattle MBL1 gene polymorphisms predominant allele

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