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863课题进展

hsp70基因编码区一新SNP的发现及其多态性与热应激性状的相关性研究(英文)

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摘要：

为了探索*hsp70*基因多态性与热应激性状（直肠温度和红细胞钾含量）的相关性,利用PCR-SSCP方法检测290头中国荷斯坦奶牛*hsp70*基因的未知SNP，并利用PCR-RFLP方法对基因进行分型,采用SBYE荧光定量PCR方法检测不同组织中*hsp70* mRNA表达水平。结果显示，在1524位点发现一个G/A突变，有两种基因型（AA/AB）,基因频率和基因型频率分别是0.957 0,0.043 0和0.913 7,0.086 3，卡方检验该群体处于哈迪-温伯格平衡。相关性分析结果表明，AA、AB基因型的直肠温度没有显著差异，但在红细胞钾含量中有极显著差异。肝脏中hsp70 mRNA表达水平显著高于其他组织。推测hsp70基因1524位点的G/A SNP与中国荷斯坦奶牛热应激有关。

关键词： 热休克蛋白70,多态性,热应激,荧光定量PCR,荷斯坦奶牛

A New SNP in Coding Region of hsp70 Gene and the Association of Polymorphism with Heat Stress Traits in Chinese Holstein Cattle

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Abstract:

In order to explore the association of *hsp70* gene polymorphism with heat stress traits \[rectal temperature (RT) and potassium content in erythrocytes (PCE)\] in 290 heads of Chinese Holstein cattle, Polymerase chain reaction (PCR)-single strand conformation polymorphism (SSCP) was used to detect possible single nucleotide polymorphisms (SNPs) in *hsp70* gene, genotypes were analyzed by the PCR-restriction fragment length polymorphism (RFLP) technique, SBYE method was used to quantify hsp70 mRNA expression in different tissues through fluorescent quantitative reverse transcription (RT)-PCR assay. We found a G/A SNP at nucleotide 1524, resulting two genotypes of AA and AB. Allele and genotype frequencies were 0.957 0 and 0.043 0, and 0.913 7 and 0.086 3, respectively. χ2 test showed that the population was at Hardy-Weinberg equilibrium. Association analysis indicated that there was no difference in RT between AA and AB genotypes, however, the PCE was significantly different between AA and AB genotypes. The results of the fluorescent quantitative RT PCR study showed that the expression of hsp70 mRNA in the liver was significantly higher than other tissues ($P<0.05$). We presume that the G/A SNP at nucleotide 1524 in the hsp70 gene might be in association with heat stress in Chinese Holstein cattle.

Keywords: heat shock protein 70 polymorphism heat stress fluorescent quantitative RT-PCR Holstein cattle

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