

专论

中国荷斯坦牛 *GlyCAM1* 基因遗传多态性与乳房炎关联性分析

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摘要:

以273头中国荷斯坦牛为研究对象,利用CRS-PCR、PCR-SSCP及DNA测序技术检测糖基化依赖细胞粘附分子1 (GlyCAM1) 基因外显子3、内含子3的遗传多态性。结果表明: GlyCAM1 基因分别在外显子3和内含子3的第2081 (A/C)、2417 (C/T) 位存在突变,两位点在牛群中的等位基因频率A/B分别为0.752 5/0.2475、0.904 6/0.095 4;经 $\chi^2$ 适合性检验,

中国荷斯坦牛群2417位点的突变达到Hardy-Weinberg平衡状态 ( $P > 0.05$ ),但2081位点的突变未达到Hardy-Weinberg平衡状态 ( $P < 0.05$ )。采用最小二乘法拟合线性模型将该基因座不同基因型与奶牛乳房炎进行了关联分析,结果表明: 胎次效应 ( $P < 0.01$ )、场效应 ( $P < 0.01$ ) 和泌乳月 ( $P < 0.05$ ) 对乳房炎的影响较大。2081位基因型效应对SCCS的影响达到了显著水平 ( $P < 0.05$ ),且AA基因型个体的SCS显著低于AB和BB基因型个体 ( $P < 0.05$ )。

关键词: 中国荷斯坦牛 糖基化依赖细胞粘附分子1基因 遗传多态性 SCS 乳房炎

Analyzing Relationship between GlyCAM1 Gene Polymorphisms |and Mastitis in China Holstein Cow

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Abstract:

The genetic polymorphism of GlyCAM1 gene exon 3 and intron 3 in 273 heads of China Holstein cow were studied by CRS-PCR and PCR-SSCP and DNA sequencing. The results showed that two polymorphic sites were identified, which were located at position 2081 (A/C) and 2417 (C/T) in the GlyCAM1 gene exon 3 and intron 3, respectively. At the 2081 site and 2417 site, the allelic frequencies of A and B were 0.752 5/0.2475 and 0.904 6/0.095 4, respectively.  $\chi^2$  adaptability test indicated that the polymorphic site 2417 was in accordance with the Hardy-Weinberg equilibrium ( $P > 0.05$ ) in China Holstein cow. But the polymorphic site 2081 was not in accordance with Hardy-Weinberg equilibrium ( $P < 0.05$ ). Meanwhile, the results indicated that the mastiffs were significantly affected by fetal effect ( $P < 0.01$ ) and field effect ( $P < 0.01$ ) and lactation month effect ( $P < 0.05$ ). At the 2081 site, SCS was significantly affected by genotype effect, which the cow with genotype AA showed lower somatic cell score than that of genotype AB and BB ( $P < 0.05$ ).

Keywords: China Holstein cow GlyCAM1 gene genetic polymorphism SCS mastitis

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