

研究报告

五指山猪 IGF2 基因 5' 调控区单核苷酸多态性分析

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摘要

利用PCR产物直接测序法, 对五指山猪、滇南小耳猪、香猪、梅山猪和大白猪共60个样本的IGF2基因5' 调控区部分片段的单核苷酸多态性进行了研究。找到13个SNP, 分别是: C5872T、C5888T、A5976G、C6010T、T6029A、C6037T、C6043T、C6063T、C6112T、C6164T、G13520A、G13563A和G13669A。T6029A为T←→A碱基颠换, A5976G、G13520A、G13563A和G13669A为A←→G转换, 其他均为C←→T转换。针对13个SNP位点得到23种组合基因型。统计各位点等位基因和基因型以及各组合基因型在总群体与各品种内的分布频率, 发现3个小型猪在A5976G、C6164T和G13669A位点上的优势等位基因均分别为G、T和A, 而梅山猪和大白猪的优势等位基因均分别为A、C和G; H19型为3个小型猪的特征组合基因型, 而另两个猪品种为H15型。同时对123头五指山猪IGF2基因C5888T位点进行了PCR-RFLP分析, 研究表明该位点C为优势等位基因(0. 8536), CC为优势基因型(0. 7235)。卡方检验表明该位点处于Hardy-Weinberg平衡状态。这些结果可为五指山猪等小型猪的生长发育规律、矮小机制等方面的研究提供遗传学依据。

关键词 [五指山猪](#) [IGF2基因](#) [SNP](#) [PCR-RFLP](#)

分类号

Single nucleotide polymorphism analysis on the 5' regulatory region of IGF2 gene in Wuzhishan pig

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Abstract

<P>Single nucleotide polymorphisms (SNPs) in partial 5' regulatory region of the insulin-like growth factor 2 (IGF2) gene were studied by DNA sequencing in 60 pigs from the Wuzhishan, Diannan small-ear, Xiang, Meishan and Large White pig breeds. Thirteen SNP sites were detected, including one transversion at T6029A, 4 A←→G transitions (A5976G,
G13520A, G13563A and G13669A) and 8 C←→T transitions (C5872T, C5888T, C6010T, C6037T, C6043T, C6063T,

C6112T, C6164T). These 13 SNPs formed 23

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composite genotypes. The gene, genotype and composite genotype frequencies of every SNP site in the whole group and in each breed were calculated. Results showed that the predominant allele in 3 miniature pig breeds was G, T and A at A5976G, C6164T and G13669A sites respectively, but the A-C-G allele was predominant in Meishan and Large White breeds. Moreover, H15 and H19 were the characteristic composite genotype for the large versus the miniature breeds, respectively. In addition, the C5888T SNP was analyzed in 123 Wuzhishan pigs by the PCR-RFLP method. Results showed that the predominant allele was C, and the predominant genotype was CC . χ^2 -test results indicated that the Wuzhishan pig breed was at Hardy-Weinberg equilibrium with respect to this SNP. These results provide the miniature pig breeds such as the Wuzhishan pig with certain genetic references on the regulation of growth and development, and the mechanism of its dwarfism.

Key words [Wuzhishan pig](#) [IGF2 gene](#) [SNP](#) [PCR-RFLP](#)

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