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牛羊朊蛋白基因 (PRNP) 多态性与抗病性的研究进展

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Research Progress in the Relationship of Polymorphism of Prion Protein Gene (PRNP) with Disease Resistance for Sheep and Cattle

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摘要

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摘要 朊蛋白 (PRNP) 是近年来造成人和部分哺乳动物传染性海绵状脑病(TSE)的主要根源, 该基因的多态性显著影响了人和动物对TSE的易感性或抗病性。本文分析了朊蛋白基因及其编码蛋白的结构与功能; 简要介绍了绵羊基因编码区突变与致病性的关系; 系统分析了牛科动物启动子区域内23bp的插入/缺失、第一内含子区域内12bp的插入/缺失及其与疯牛病 (BSE) 抗病性的作用机制; 全面总结了全球已经报道的牛科动物12和23bp插入/缺失的等位基因与单倍体频率, 评价了其发病的可能性。该研究将为牛的分子育种提供指导。

关键词: 朊蛋白基因 (PRNP) 插入/缺失多态 疯牛病抗性

Abstract: The prion protein is the pathogenesis agent for transmissible spongiform encephalopathies (TSE) of human being and some mammal. The polymorphisms of the prion protein gene (PRNP) are significantly affect the susceptibility or resistance to TSE for human being and mammal. In this paper, we analyzed the structure and function of the gene and coding protein. The relationship of mutations in coding region with pathogenicity for sheep was introduced briefly. The molecular mechanism of the insertion/deletion (Indel) in the promoter (23bp) and the first intron (12bp) of PRNP for bovine spongiform encephalopathy (BSE) was analyzed systematically. We also summarized and compared the allele and haplotype frequencies of 12bp and 23bp Indel from known bovine PRNP for evaluating the possibility of BSE. It could assist the cattle molecular breeding project.

Keywords: prion protein gene (PRNP) insertion deletion (Indel);resistance to BSE

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