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Investigation of codon 136 (A-V) and codon 171 (H-Q-R) polymorphisms for scrapie susceptibility in Makuei Sheep breeds

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Abstract

Prion diseases in livestock can be a potential danger for humans as well. The Makuei sheep breed is one of the most important sources of protein in Iran. In this study, the polymorphism status of codons 136 and 171 of prion protein and their genotypes was investigated in Makuei ecotype sheep. Blood samples were obtained from 60 Makuei sheep and DNA was extracted. The codon 136 (A-V) and codon 171 (H-Q-R) polymorphisms were evaluated by PCR with specific primers. The results showed that allele A (65%) at codon 136 was significantly higher than allele V (35%). AA genotype (46.67%) was also the most common genotype. At codon 171, the Q and R alleles were significantly higher than the H allele. In addition, the allele R was significantly lower than the allele Q. Allele Q (58.33%) and QQ genotypes (40%) were the most common alleles and genotypes. In conclusion, the findings provide strong preliminary lines of evidence that motive large-scale genotyping studies to establish an effective breeding control and successful eradication of scrapie-susceptible genotypes.

Key words: Prion disease, Scrapie, Makuei ecotype, PrP, Genotype

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