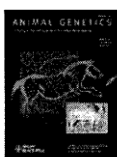


**Prion-like Doppel gene polymorphisms and scrapie susceptibility in portuguese sheep breeds**

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**Summary**

The establishment of an association between prion protein gene (*PRNP*) polymorphisms and scrapie susceptibility in sheep has enabled the development of breeding programmes to increase scrapie resistance in the European Union. Intense selection for *PRNP* genotype may lead to correlated selection for genes linked to *PRNP*. We intended to investigate if any association exists between genetic variation in prion-like protein Doppel gene (*PRND*) and scrapie susceptibility, determined through *PRNP* genotyping. Sampling included 460 sheep from eight Portuguese breeds and the *PRND* gene coding region was analysed by multiple restriction fragment-single strand conformation polymorphism (MRF-SSCP), whereas *PRNP* genotyping was carried out by primer extension. A synonymous substitution (c.78G>A) was detected in codon 26 of the *PRND* gene, in all breeds except Churra Mondegueira. Linkage disequilibrium was found between the *PRND* and *PRNP* loci ( $P = 0.000$ ). Specifically, *PRND* was monomorphic in the 45 animals with the more resistant ARR/ARR *PRNP* genotype ( $P = 0.003$ ), whereas a higher frequency of *PRND* heterozygotes (GA) was associated with ARQ/AHQ ( $P = 0.029$ ). These results constitute preliminary evidence of an association between a polymorphism in the *PRND* gene and scrapie susceptibility, and indicate that the possibility of undesirable consequences from widespread selection for *PRNP* genotype on genetic diversity and reproduction traits needs to be further investigated.