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Genetic resistance to scrapie of the sheep in Poland

Summary

Frequency of incidence of five alleles of scrapie (ARR, ARH, ARQ, AHQ, VRQ) and their genotypes, occurring in national sheep breeds such as Wrzosówka, Polish Mountain Sheep, Kamieniecka, Pomorska, Żelaźnieńska and Polish Merino was evaluated. On the ground of the conducted studies, the incidence of all five alleles of PRNP genotype was found. The following sheep breeds were characterised by the lowest differentiation of allele forms of PRNP genes: Polish Merino (ARR, ARQ and VRQ), Polish Mountain Sheep and Wrzosówka sheep (ARR, ARQ and AHQ). On the other hand, all the discussed five alleles were recorded in Polish longwool sheep (Pomorska and Kamieniecka). The most favourable frequency of ARR allele was found in Polish Merino, Kamieniecka and Żelaźnieńska sheep. Any incidence of VRQ allele was not found in Polish Mountain Sheep and Wrzosówka sheep. In the examined sheep breeds, 11 genotypes were found in total; their combination reflects the frequency of alleles and is differentiated depending on the breed. On the example of Polish Merino, it was demonstrated that running the breeding work with the utilization of rams with ARR/ARR genotype in reproduction causes a considerable increase of incidence of desirable conditions and distinct lowering of the frequency of undesirable conditions; it points to the necessity of developing the appropriate breeding programme.