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PRKAG3 and RYR1 Gene in Latvian White Pigs

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Abstract : The aim of this study was to analyse PRKAG3 and RYR1 gene and genotypes frequencies in Latvian White pigs' breed. Genotypes of RYR1 gene two loci (rs196953058 and rs323041392) in 89 exon and PRKAG3 gene two loci (rs196958025 and rs344045190) in gene promoter were detected in 103 individuals of Latvian white pigs' breed. Analysis of RYR1 gene loci rs196953058 shows all individuals are homozygous by T allele and all animals are with genotypes TT, its mean - in 2769 position is Phenylalanine. Analysis of RYR1 gene loci rs323041392 shows all individuals are homozygous by G allele and all animals are with genotypes GG, its mean - in 4119 positions is Asparagine. In loci rs196953058 and rs323041392, there were no gene polymorphisms. All analysed individuals by two loci rs196953058-rs323041392 have TT-GG genotypes or Phe-Asp amino acids. In PRKAG3 gene loci rs196958025 and rs344045190 there was gene polymorphisms. In both loci frequencies for A allele was higher: 84.6% for rs196958025 and 73.0% for rs344045190. Analysis of PRKAG3 gene loci rs196958025 shows 74% of individuals are homozygous by An allele and animals are with genotypes AA. Only 4% of individuals are homozygous by G allele and animals are with genotypes GG, which is associated with pale meat colour and higher drip loss. Analysis of PRKAG3 gene loci rs344045190 shows 46% of individuals are homozygous with genotypes AA and 54% of individuals are heterozygous with genotypes AG. There are no individuals with GG genotypes. According to the results, in Latvian white pigs population there are no rs344435545 (RYR1 gene) CT heterozygous or TT recessive homozygous genotypes, which is related to the meat quality and pigs' stress syndrome; and there are 4% rs196958025 (PRKAG3 gene) GG recessive homozygote genotypes, which is related to the meat quality. Acknowledgment: the investigation is supported by VPP 2014-2017 AgroBioRes Project No. 3 LIVESTOCK.

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