

Polymorphism in troponin T gene (TNNT3) and its effect on gene expression level and production traits in pigs of selected breeds

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Abstract :

The aim of the study was to investigate the T2 fragment of TNNT3 gene, identify its polymorphism and evaluate the relation between that polymorphism and TNNT3 expression level and production traits in most common pig breeds in Poland. The study was carried out on a total of 357 unrelated Polish Large White (PLW), Polish Landrace (PL), Pietrain and Duroc gilts. Additionally, 51 Pulawska, 23 Hampshire pigs and 48 wild boars were used in search for TNNT3 polymorphism. Three fragments of the TNNT3 gene: Exon_1314, Exon_1415 and Exon_15 were analyzed using the PCR-SSCP method. Two alleles (A and B) were found in fragment Exon_1314 and the sequences were submitted to the GenBank database with accession numbers EF644567 and EF644568, respectively. Fragment Exon_1415 revealed the presence of three alleles (C, D and E). Expression analysis using Real-Time PCR did not show any relation between mutations found and TNNT3 expression level. TNNT3 polymorphism did not reveal any relation with the shank weight without skin and backfat, loin eye, meat content of primary cuts, meat content of carcass and meat weight in primary cuts. However, a relation was observed between the polymorphism of TNNT3 gene and the meat quality expressed by post-slaughter pH45 and pH24. The values of daily gain and backfat thickness in PL pigs were related to the genotype of fragment Exon_1314 while in Pietrain pigs backfat thickness was related to the genotype of fragment Exon_1415 fragment.

Key Word :

expression, gene, pigs, polymorphism, tropomyosin, troponin

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