

THE INFLUENCE OF THE POLYMORPHISM OF CATHEPSIN F GENE ON THE MEAT QUALITY OF UKRAINIAN LARGE WHITE PIGS

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The development of modern agricultural science allows the use of molecular markers in animal breeding which are associated with meat quality parameters. Molecular genetics is engaged in the study of candidate genes that affect the quality of meat at the DNA level. A big number of polymorphisms that affect the quality of pork have been identified and are currently actively used for selection abroad, and a number of them have already been investigated into Ukrainian selection (for example, CTSS, CTSL, CTSB, CTSK) (V. Balatsky at al., I. Bankovska at al., 2016).

The aim of this study was to analyze the effect of the single nucleotide polymorphism (SNP) $g.22 G \leq C$ of the of Cathepsin F (CTSF) gene on the physical and chemical parameters of the meat quality of Ukrainian Large White pig breed.

The research was conducted in the farm for Ukrainian Large White (LW) breed of "Stepne" in the Poltava region. For physicochemical studies of muscle tissue samples were taken in the amount of 102 pieces of the longest muscle back between 9-12 thoracic vertebrae after 48-hour maturation half a mile at a temperature of $+ 4^{\circ} C$ in the amount of 200 g of muscle tissue.

The evaluation of the quality of slaughter products was carried out according to generally accepted methods of zoochemical analysis. DNA was isolated from muscle tissue using Chellex-100 ion exchange resin (Walsh P.S., 1991). The genotyping was carried out by PCR-PDRF method (V. Russo at al., 2008).

In the presented samples of Ukrainian Large White pigs, the presence of both the G allele (0.443) and the C allele (0.557) was detected.

Regarding the distribution of genotypes, for the studied population, there was no significant deviation from the pragmatic equilibrium calculated from the Hardy-Weinberg formula, which indicates that the present population is in a state of genetic equilibrium, and the CTSF locus is not involved in the selection process.

The single-factor dispersion analysis shows the probable effect of the SNP $g.22 G \leq C$ of the CTSF gene on the index of moisture-retaining ability of the meat, energy value, total moisture and calcium content in Large White pig breed with the effect on the

formation of the test feature of the studied trait $\eta^2 = 6.39\%$ ($p = 0,03$), $\eta^2 = 6,51\%$ ($p = 0,036$), $\eta^2 = 6,54\%$ ($p = 0,035$) and $\eta^2 = 6,33\%$ ($p = 0,042$), respectively.

The possibility of marker associated selection to improve the quality of commercial pork by SNP $g.22 G \leq C$ of the CTSF gene was substantiated.

Keywords: POLYMORPHISM OF THE GENE, GENOTYPE, CATHEPSIN F, PIGS, MARKER ASSOCIATED SELECTION, MEAT QUALITY.