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## HISTOLOGICAL STUDIES OF THE MUSCULAR TISSUE OF PIGS OF VARIOUS BREED COMBINATIONS

The thickness of muscle fibers in the first 3-4 months of life of animals increases and coincides with the period of maximum growth of the longest muscle of the back. The increase in muscle mass largely occurs as a result of an increase in muscle fiber thickness. Scientists in such studies have also revealed breed differences in the nature of changes in the diameter of the fibers of the longest muscle of the back. In pigs of large white breed, compared with landraces, the diameter of the muscle fibers increases at a higher rate to about four months of age. After this, the growth rate decreases, and in the Landraces, the muscle fibers continue to increase in volume to about eight months of age [1].

The histological features of the muscle tissue of pigs in the literature are not well described, therefore, we studied the change in the thickness of the muscle fibers of the longest back muscle in pigs of different genotypes with different pre-slaughter mass [2].

According to our research, the crossbred young animals in the thickness of the muscle fibers of the longest back muscle (Table 1).

During the slaughter of animals with a live weight of 95-105 kg with the thinnest thickness of muscle fibers, purebred young BKB turned out to be, and the highest index was found in three-breed animals with a difference of 16,7% ( $P \leq 0,001$ ). Significantly ( $P \leq 0,05$ ), the large muscle diameter of the muscle fibers, the muscle tissue of double-breed 1/2BKB1/2KY, differed from the meat of purebred peers BKB by 11,2%.

**Table 1. The diameter of the muscle fibers during slaughter with a live weight of 95-105 kg**

Breedcombination	n	The diameter of the fibers of the longest back muscle, microns	
		M±m	
BKB×BKB	8	40,59±1,21	
BM×BM	6	41,46±2,15	
BKB×BM	7	41,23±1,36	
BKB×KY	6	45,12±0,98*	
(BKB×BM)×BD	6	47,36±1,01****	

With an increase in slaughter weight up to 115 kg, crossbred youngsters (1/4BKB1/4BM)1/2BD reliably ( $P \leq 0,01$ ) exceeded purebred animals by BKB by 24,2% and BM by 15,0% and had a rather high value of this indicator (51,52 microns).

**Table 2. The diameter of the muscle fibers during slaughter with a live weight of 106-115 kg**

Breedcombination	n	The diameter of the fibers of the longest back muscle, microns	
		M±m	
BKB×BKB	5	41,47±1,74	
BM×BM	6	43,77±3,12	
BKB×BM	7	44,47±2,64	
BKB×KY	5	46,81±4,01	
(BKB×BM)×BD	5	51,52±2,41**	

Young animals of group 4 significantly ( $P \leq 0,05$ ) exceeded animals of group 1 by 12,9%, group 2 - by 6,9, group 3 - by 5,3% and were inferior to triple breeds of group 5 by 10,1%.

Two-breed youngsters 1/2BKB1/2BM tended to increase the thickness of muscle fibers in

comparison with control animals BM. A comparative analysis of them with the control group of purebred animals BKB showed a more significant difference in this indicator (3 microns, or 7,2%).

When analyzing the results of slaughter of animals of weight condition 116-125 kg, it can be seen that three-breed young animals (1/4BKB1/4BM)1/2BD reliably ( $P \leq 0,001$ ) exceeded purebred animals BKB and BM by 42,5 and 41,8 %, respectively (table 3).

**Table 3. The diameter of muscle fibers during slaughter with a live weight of 116-125 kg**

Breedcombination	n	The diameter of the fibers of the longest back muscle, microns
		M±m
BKB×BKB	5	38,11±1,87
BM×BM	8	38,30±1,54
BKB×BM	7	40,06±2,03
BKB×KY	7	51,25±1,27***###
(BKB×BM)×BD	7	54,30±1,71***###

Two-breed youngsters 1/2BKB1/2BM with this weight condition had almost no differences with control animals BM in the thickness of muscle fibers. In comparison with peers from the control group BKB, double-breed animals differed in greater thickness of muscle fibers by 5,1%. Two-breed animals 1/2BKB1/2KY had rather high values of this indicator and occupied an intermediate position between the control groups of animals and experimental ones.

We established breed differences in the nature of changes in the diameter of the fibers of the longest muscle of the back. In pigs of all breed combinations, the diameter of muscle fibers at slaughter of 95-105 kg increased at a sufficiently high rate. After that, as live weight increased, in purebred animals, its growth rate decreased, while in two-bred and three-bred animals, muscle fibers continued to increase in volume throughout the entire experience, which obviously causes a longer period of increased growth muscle tissue.

A number of scientists have found a positive correlation between the meat content in the carcass and the thickness of the muscle fibers. According to their data, the thinnest fibers have fatty pigs, the thickest ones are meat ones [3]. The results of our study of muscle tissue are closely related to the meat of the animal and some indicators of meat quality. The animals that gave the greatest yield of meat, have the greatest thickness of the muscle fibers of the longest back muscle.

In this regard, we recommend to take into account the histological indicators of muscle tissue when studying the meat qualities of pigs of various slaughter mass, depending on the direction of productivity [4].

### References

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