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Humoral Factors of Resistance of the Organism Piglets of Different Genotypes.

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ABSTRACT

It was found that the maximum level of protective factors of the organism have crossbred pigs, with a degree of breed (0.5 PM-1 + 0.25 LF + 0.25 LC) and (0.75 PM-1 + 0,125 LF + 0,125 LC) that in turn, indicates a high immune protection of the organism of the animal. For fattening qualities, it is the most productive hybrids with a degree of breed (0.5 PM-1 + 0.25 LF + 0.25 LC). This combination can be recommended for use to create a new specialized type of pigs.

Keywords: precocious meat breed, Landrace breed, hybrids, phagocytic activity of blood, bactericidal activity of blood serum, lysozyme activity of blood serum.

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INTRODUCTION

Highly specialized meat breeds of pigs characterized by a number of constitutional flaws: violation of cardiovascular, hormonal systems, acid-base ratio, thermoregulation and the change of the skeleton [1, 2, 3, 5].

The level of natural resistance depends on the functional state of the organism and environmental factors: climate, feeding, housing, and the genotype of the animal [4].

In humoral factors include skin and mucosal barriers, bactericidal properties by secretion, lysozyme, interferon and other properties.

A major role in the implementation of the protective function belongs lysozyme. Besides antimicrobial activity, he also possesses the property of stimulating phagocytosis. It is known that lysozyme is found in all body environments, and especially sensitive to it of microbes group cocci.

The bactericidal properties of blood are formed as a result of exposure on the pathogen the whole complex of humoral factors of nonspecific protection - lysozyme, complement, interferon. The bactericidal activity of blood serum allows to evaluate the overall level of non-specific forces of the body and is an indispensable tool for the study of humoral immunity [6].

In the process of growing adaptation animal system is undergoing a large functional load, which affects the activity of the whole organism.

The weakening of the absorbing ability of white blood cells most commonly occurs in two and four months of age and deterioration bacterialyse and bacteriostatic properties of blood serum in a half-two months of age and in the first month of fattening. B These same periods recorded the maximum number of ill pigs and fallen.

Based on the above, the purpose of our research was to study the performance of non-specific resistance in purebred and crossbred pigs.

MATERIALS AND METHODS

Experimental studies were carried out on pig-breeding complex of "Polus", Karachay-Cherkess Republic.

For the experiment, from a group of piglets for herd replacements was selected 30 purebred and 30 crossbred pigs, of which formed the control and experimental groups. Animals were selected on the basis of analogues with a live weight of 135 - 140 kg.

Crossbreeding was carried out according to the scheme presented in Table 1.

Table 1: Crossbreeding schemes

Breed	Breed, type, degree of the breed	
	sows	boars
I	PM-1, Krasnodar type	PM-1, Krasnodar type
II	50%PM-1+25%LF+25%LK	50% PM -1+25% LF +25% LK
III	PM -1, Krasnodar type	50% PM -1+25% LF +25% LK
IV	50%PM-1+25% LF +25% LK	PM -1, Krasnodar type

The first group used purebred animals Krasnodar type of precocious meat breed (PM-1). In the experimental groups - hybrids with a degree of breeds (50% PM-1 x 25% of the French breeding Landrace (LF) x 25% of the Landrace Canadian selection (LC)).

Diets for all gender and age groups of pigs balanced the relevant protein-vitamin mineral additives by firm "Provimi".

After the rearing of each nest on the principle of analogues were selected by two pigs (one sow and one boar) - altogether 30 pigs from each group and placed on control fattening.

RESULTS AND DISCUSSION

As a result, production testing found that pigs II, III and IV of the experimental groups were superior to the control group counterparts in 21 days in absolute weight gain by 0.39, 0.35 and 0.43 kg, according to the average daily gain of 18, 16 and 20 g, and for the entire suckling period, respectively, 0.79, 0.65 and 0.61 kg and 28, 25, 20 g.

Growth intensity on piglets experimental groups was higher than the control. The relative increase in body weight during the suckling period was greater in animals II, III and IV group at 14.14; 39.11 and 19.53 percent than in I group.

Analysis of the results of control-fed experimental piglets up to 100 kg live weight showed that the animals of group II (0,5 PM-1 + 0,25 LF + 0,25 LC) exceeded their peers in group I (PM-1) on average daily weight gain fattening at 183 g (P> 0,999), on the precocity of 15.1 days (P> 0,999), on feed efficiency - increase body weight by 0.46 kg.

Piglets from III and IV experimental groups (with a degree of breed 0,75 PM-1 + 0,125 LF +0,125 LC) authentically superior to animals in the control group on average daily gain at 154 and 106 g (P> 0,999), according to the precocity and 14.0 10.6 days (P> 0,999), feed efficiency at 0.38 and 0.31 kg. Youngsters II and III group was also authentically superior in all parameters of fattening qualities gilts of group IV.

To characterize the performance of a nonspecific resistance of the organism gilts of different genotypes were studied phagocytic, bactericidal, lysozyme activity of blood serum and complement activity (Table 2).

Table 2: Protective factors organism experimental piglets

Index	Group			
	I	II	III	IV
At 90 days of age				
The phagocytic activity of blood serum, %	35,22±0,32	38,94±0,40	37,34±0,37	36,90±0,34
The bactericidal activity of blood serum, %	40,85±0,58	46,08±0,40	44,78±0,32	44,23±0,35
Lysozyme activity of blood serum, %	33,67±0,43	37,45±0,29	36,64±0,24	36,12±0,30
Complement, %	10,36±0,19	12,47±0,22	11,35±0,17	11,00±0,16
At the age of 150 days				
The phagocytic activity of blood serum, %	37,54±0,40	42,14±0,37	41,52±0,45	41,07±0,36
The bactericidal activity of blood serum, %	44,95±0,51	48,87±0,49	47,02±0,45	46,77±0,47
Lysozyme activity of blood serum, %	36,23±0,38	40,00±0,42	38,85±0,37	38,20±0,32
Complement, %	12,18±0,12	14,59±0,13	13,46±0,21	13,12±0,15

Our research found that crossbred piglets during all the study period superior purebred animals by phagocytic, bactericidal and lysozyme activity of blood serum. At 90 days of age the animals II, III and IV groups were superior to the control group by the phagocytic activity of blood serum to 3.72 (P> 0.99), 2.12 and 1.68; for germicidal activity at 5.23, 3.93 and 3.38 (P> 0,99-0,999); lysozyme activity respectively by 3.78 (P> 0.99), 2.97, 2.45 (P> 0.95), absolute percent.

By 150 days of age there was an increase in phagocytic, bactericidal and lysozyme activity of blood serum. The most significant changes in these indicators occurred in the groups of crossbred piglets. In I, II, III and IV groups phagocytic activity of blood serum has increased compared to the 90 days of age at 2.32, 3.20, 4.18 and 4.17, the bactericidal activity increased by 4.10, 2.29, 2.24 and 2.54 absolute percent.

At 150 days of age gilts II, III, IV groups authentically superior purebred animals for I group on phagocytic activity of blood serum at 4.60, 3.98, 3.53% ($P > 0.99$); on the bactericidal activity 3.92 ($P > 0.99$), 2.07 ($P > 0.95$), 1.82% and lysozyme activity serum 3.77 respectively ($P > 0.99$), 2.62 ($P > 0.95$), 1.97 absolute percent.

Complement activity was higher in crossbred piglets group II compared to group I at 90 days of age at 2.11%, and 150 days of age by 2.41% ($P > 0.95$).

CONCLUSION

Thus, the maximum level of protective factors of the organism possess crossbred pigs, with a degree of breed (0,5 PM-1 + 0,25 LF + 0,25 LC) and (0,75 PM-1 + 0,125 LF + 0,125 LK), that in turn, indicates a high immune protection of the organism of the animal. These animals possess better feeding qualities. These combinations can be used to create a new specialized type of pigs.

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