Materials of Conferences

CYTOCHEMICAL TESTS IN PREDICTING PIGS' PRODUCTIVE TRAITS

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One of the main directions in improving genetic and breeding methods is to search for interior tests to assess precocity and productivity in pigs. The interest arisen to cytochemical methods of determining cell ferments is due to the fact that changes in blood lymphocytes are visualized much earlier than occur morphological and quantitative changes in blood proteins. Cytochemical examinations allow to evaluate conditions of different organs and tissues in a blood drop avoiding biopsy and can be done in dynamics by which there can be determined the state of exchange processes of a whole series of organism systems.

An experiment was made on the experimental training farm of the state breed stud "Tulinskoye" under Novosibirsk State Agrarian University. The object of investigations was made up of the pigs from UKM (universal Kemerovo breed stud pigs). With cytochemical methods applied there was determined the activity of ferments in lymphocytes, that is, succinate dehydrogenase (SD) and glucose 6-phosphate dehydrogenase (G-6-PDG) which are involved in the exchange of energy, proteins, fats and carbohydrates; and the amount of lipids and glycogen - in neutrophils. Blood cytochemical indexes were examined

in the pigs aged 3, 4, 5 and 6 months.

The SD lowest activity in blood lymphocytes was identified in the pigs aged 3 months. The maximal growth of enzymatic activity was found in the pigs aged 4 months (26.13%, $p < 0.05$). The high level of fermentative activity is maintained at the age of 5 months. In the next going age periods the activity of the enzyme was observed to go down. Considerable G-6-PDG activation in blood lymphocytes was revealed in the pigs aged 4 months (39.49%, $p < 0.001$). Regarding the 5- and 6-month age, the enzymatic activity was marked to gradually go down. Investigations in age dynamics of glycogen level in blood neutrophils showed glycogen increase at 4 and 5 months ($p < 0.001$) and subsequent decrease in its concentration at 6 months. Low content of lipids in blood cells was found in the 3-month piglets. Gradual growth of the content of lipids was identified in blood of the animals under 5 months and it was high even at 6 months.

The relationship between cytochemical tests and productive traits of pigs is testified to by correlation coefficients. The negative aspect of the relationship was observed between precocity, SD activity, G-6-PDG, glycogen level and lipids in animal blood cells ($r = -0.214 – 0.393$, $p < 0.05 – 0.001$). As a result of the experiment it was established that cytochemical markers can be applied to assess precocity and productivity of pigs.

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FORECASTING OF PIG PRODUCTIVITY WITH BIOCHEMICAL BLOOD INDEXES

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The use of genetic, biochemical and other interior parameters is an intensively advancing direction. Lipids are the group of substances distinguished by chemical composition and functions. Triglycerides are the most common lipids. Lipoproteins are complex compounds which basic function is to transport lipids. In blood there are several classes of lipoproteins. Low and high density lipoproteins (LDLP and HDLP) are referred to them. Lipoprotein spectrum of blood serum can vary with some diseases in man and animal.

An experiment was made on the experimental training farm of the state breed stud (SBS) "Tulinskoye" under Novosibirsk State Agrarian University. The object of investigations was made up of the pigs from UKM (universal Kemerovo breed stud pigs). The content of (LDLP and HDLP) triglycerides were determined in the blood serum of the pigs. Biochemical indexes of blood were examined in the pigs aged 1.5; 3; 4; 5 and 6 months.

When investigating the content of triglycerides in the blood serum of the UKM pigs, it was established that the maximal rise of their concentration was in the 3-month pigs vs. those aged 1.5 months (28.95%, $p < 0.001$). In the next following age periods the level of triglycerides went down which was further replaced by their building up in the animals of 6 months old (18.42%, $p < 0.05$). The lowest concentration of high density lipoproteins in serum was recorded in the pigs aged 1.5 months. The determination of HDLP amount showed that it was higher in the 3-month piglets. Considerable increase in the HDLP content was identified in the 4-month animals (20.63%, $p < 0.001$) vs. those of 1.5-months old. Gradual decrease of the concentration of the examined parameter was observed in the serum of the gilts in the next following age periods. The UKM animals were marked to have the minimal count of low density lipoproteins at the age of 3 months. The growing level of the determined index was identified in the same-aged at 4 and 5 months, it reached maximal value (2.56 mM/l, $p < 0.001$). The 6-month gilts were found to have the decline of the HDLP content in blood se-