

The lipids peroxidation processes run at a maximal rate in animals during the first days of their life. The transition of organism to the aerobic type of respiration encourages oxygenation of tissues. Proviso, the increased generation of oxygenic metabolites results from adaptive reactions and this activates the processes of the peroxide oxidation of lipids.

Investigations were carried out at Closed Joint Stock «Landrace» in Novosibirsk region. Landrace pigs were the objects of the investigations. The animals were selected and grouped by the principle of analogues with regard to origin, breed, productivity, age and live weight. The pigs were kept following the technology for complexes and farms. The blood to examine was taken from aural vein. The content of free fatty acids was examined in the blood serum of the pigs aged 1, 2, 3, 4, 5 months. Statistical processing of the data was done with the package of applied software Statistica 6 and Excel.

The maximal content of free fatty acids was found in the blood serum of one month piglets (59,66%, $p < 0,001$) that testifies to lipolysis present in the pigs in early postnatal development.

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AGE CHANGES OF LIPIDS METABOLISM INDEXES IN PIG BLOOD

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To study the characteristics of lipid exchange at early stages of pigs' postnatal development is crucial and timely for pig-breeding.

The content of lipids and their fractions in blood depends upon genetic factors, physiological status, feeding and age of pigs.

Lipids perform various functions in vital activity of the organism, structural and energetic functions being the basic.

Lipids are not only the source of power; they influence the reproductive function and productivity.

Lipids are part of cell membranes; they form ultrastructure of biological membranes and ensure their specificity. Main functions of the biological membranes are those of recognizing, transporting, fermentative and others. These functions depend upon different structural lipids available in the membranes.

Lipids are differentiated into two main groups: structural and reserve. Cholesterol is a structural lipid.

Cholesterol is referred to sterols, derivatives of cyclopentanhydrophenanthrene. As an intermediary compound, it is involved in the synthesis of bile acids, vitamins of group D and sex hormones. It is a structural component of biological membranes. Cholesterol and its esters with long-chained fatty

acids are important components of plasma lipoproteins and outer membrane of a cell.

In membranes, cholesterol together with glycolic lipids and phospholipids form complexes. Membranes of some species are distinguished by the presence of different classes of lipids and their quantitative content which depends upon genetic factors. A great amount of cholesterol is found in the membranes of erythrocytes of myelinic fibers, less cholesterol is in mitochondrial membranes. Permeability of a certain type of membranes goes down with the growing concentration of cholesterol in the lipid biolayer.

Cholesterol is found in the organism both in free and etherified forms. Lipoproteids combined with cholesterol in complexes are of great value when cholesterol transported.

Investigations were carried out at Closed Joint Stock «Landrace» in Novosibirsk region. Landrace pigs of different genotypes were the objects to investigate. The animals were selected and grouped by the principle of analogues with regard to breed, productivity, live weight and age. The pigs were kept following the technology for complexes and farms. The blood to examine was taken from aural vein. The content of cholesterol was determined in the blood serum of the pigs aged 1 month. The data obtained were processed statistically with the package of applied software Statistica 6 and Excel. According to the data of the investigations, it was identified that in List 217 progenies aged 1 month, the amount of cholesterol made up 15,18% ($p < 0,001$) against minimal values.

The experimental data confirm the possibility to employ the lipids metabolism indexes to forecast economic traits of pigs at early age.

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EXAMINATION OF THE LEVEL OF SULFHYDRYL GOUPS IN PIG LIVER MITOCHONDRIAL FRACTION

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The pigs of industrial complexes are affected by many artificial stress-factors caused by man. The stressors give rise to peroxide oxidation of lipids, its level being determined by the formation of radicals, destruction of membrane and mitochondrial structures and condition of anti-oxidant defense. Thiols are referred to anti-oxidants as they possess anti-radical and anti-peroxide properties. Some sulfur containing low molecular compounds contain SH-groups, cystin being referred to the compounds.

An experiment was carried out on the SSF experimental training farm «Tulinskoye» of Novosibirsk State Agrarian University. Large White and Kemerovo pigs were the objects to examine. The animals were selected for the principle of analogues. Blood was taken from aural vein. The content of cystin in blood serum and that of hemoglobin in blood were identified in the pigs. Blood biochemical indexes were examined in the pigs aged 6 months. The content of SH-groups was examined in mitochondria and supernatant of liver in the pigs. Tissue samples were taken from 6 animals of each group during control slaughtering. Mitochondria were isolated out of 10% homogenate in the 0,25 M solution of sucrose with the method of differential centrifuging. The mitochondrial fraction purity was tested by contrasting phases. To analyze, there was taken the number of mitochondria corresponding to 0,1–0,2 mg of mitochondrial protein. The protein was determined with bull serum albumin as a standard.

Statistical processing of the data was done with the package of applied software Statistica 6 and Excel.

The experiment identified that the concentration of general SH-groups in the liver mitochondria of Kemerovo breed increased by 12,77% ($p < 0,01$) and that of hemoglobin went up as well in comparison with the gilts of Large White breed. This testifies to the protecting effect of the sulfhydryl groups.

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THE CONTENT OF THIOLIC GROUPS IN MITOCHONDRIA OF DIFFERENT PIG ORGANS

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The concentration of sulfhydryl groups in blood and tissues reflects the intensity of metabolism. The involvement of thiolic groups in the processes of cell division and growth is identified. The SH-groups manifest their very good ability to enter into reactions. Thiols have hydrophilic properties. The thiols become localized in an aqueous phase of a cell where they protect a great many biologically important molecules from oxidative damages.

An experiment was carried out on the SSF experimental training farm «Tulinskoye» of Novosibirsk State Agrarian University. Kemerovo pigs were the objects to examine. The animals were selected for the principle of analogues. Biochemical indexes of the blood of 6-month pigs were examined. The content of SH-groups was examined in mitochondria, liver and heart supernatant in the pigs. Tissue samples were taken from 6 animals of each group during control slaughtering. Mitochon-

dria were isolated out of 10% homogenate in the 0,25 M solution of sucrose with the method of differential centrifuging. The mitochondrial fraction purity was tested by contrasting phases. To analyze, there was taken the number of mitochondria corresponding to 0,1–0,2 mg of mitochondrial protein. The protein was determined with bull serum albumin as a standard.

Statistical processing of the data was done with the package of applied software Statistica 6 and Excel.

The examinations showed that the concentration of general SH-groups in mitochondria of pig liver was twice as much as pig heart of both Large White and Kemerovo breeds. Regarding the supernatant, the differences were somewhat less. The experiment identified the increased concentration of the general SH-groups in liver mitochondria in Kemerovo gilts (0,01) versus Large Whites. The same age Kemerovo pigs exceeded Large Whites by 10,98% (0,05) for the level of thiols titer in heart mitochondrial fraction. The experimental data allow to suggest high anti-oxidative activity of thiol groups in mitochondria of different organs in Kemerovo breed.

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AMINOTRANSFERASE ACTIVITY OF BLOOD IN PIGS FATTENING

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One of the major problems of modern pig-breeding is searching for interior estimates to select pigs for productivity.

In this respect, enzymes are of interest, particularly aminotransferases that are involved in transamination of amino acids. It was proved experimentally that transamination reactions yield enzyme substrate complexes and dissociate a hydrogen atom attached to the carbon atom of amino acids. Composite relationship between aminotransferases activity and protein synthesis accounts for great importance of transamination in the process of vital activities of the organism. During postnatal development, transamination reactions and amino acid synthesis change identically.

Aspartate-aminotransferase-L-aspartate: 2-oxoglutarate-aminotransferase [C.F. 2.6.1.1] is an indicator-enzyme as the functional status of different organs (liver, heart) can be evaluated by increased activity of the enzyme in blood serum. It refers to the class of oxidoreductases, catalyzes the reverse reaction of an amino group transfer from L-aspartic acid to α -ketoglutaric acid. In terms of chemical composition, aspartate-aminotransferase is a composite protein, the co-enzyme of which is pyridoxalphosphatum, it localizes in all organs and tissues.