CONTENT OF DIENE CONJUGATES AND LIPID HYDROPEROXIDE IN BLOOD PLASMA OF SOWS DEPENDING ON TONE OF AUTONOMIC NERVOUS SYSTEM

V.M. Skrypkina
National University of Life and Environmental Sciences of Ukraine
karpovskiy@meta.ua

The results of studies of some lipid peroxidation products in the blood plasma of sows depending on the type of vegetative regulation are shown in the article.

The purpose of the study was to examine the content of diene conjugates and lipid hydroperoxides in the blood plasma of sows depending on the prevailing tone of the autonomic nervous system.

Experiments were conducted at the pig farm "Idna" in Mlyniv district of Rivne region in 2014 year. In experiments were used clinically healthy sows of large white breed of 3 years old. Conditions of keeping and feeding for all animals were the same. In animals of experimental group we studied the tone of the autonomic nervous system using trygemino-vagal test, by the results of which we determined the type of autonomic regulation and, therefore, the animal were treated to normotonics, sympathicotonics or vagotonics. According to the studying of tone of the autonomic nervous system it was formed 3 experimental groups, 4 animals in each. The first group consisted of animals with balanced autonomic regulation, the second – with a predominance of sympathetic department, the third – with a predominance of parasympathetic department. For biochemical studies the blood samples were taken from the jugular vein in compliance with the rules of aseptic and antiseptic. Blood plasma was obtained from heparynized blood by centrifugation at 3000 x g. In plasma samples were tested hydroperoxides lipids and diene conjugates by conventional methods. The results were treated in accordance with generally accepted statistical methods using Student's t-test.

To evaluate the intensity of lipid peroxidation in animals the contents in its blood and tissues lipid hydroperoxides, diene, triene and polyene conjugates in the structure of fatty acid residue of phospholipids, carbonyls, malonic dialdehyde, schiff bases and others are examined. Our research showed that pigs with different tone of autonomic nervous system were characterized by some differences in the concentration of lipid peroxidation products in blood plasma.

When studying the diene conjugates in blood plasma it was found that its smallest amount was in animals with a predominance of parasympathetic type of vegetative regulation. Thus in sows vagotonics the concentration of diene conjugates in blood plasma compared to normotonics and sympathicotonics was significantly lower respectively by 52.48 % ($P<0.01$) and 49.90 % ($P<0.05$). Established that significant differences between normotonics and sympathicotonics for this indicator was not observed. Thus, in animal normotonics the content of diene conjugates in blood plasma averaged 5.05±0.23 nmol/ml, whereas in animals sympathicotonics it was slightly lower (at 5.15 %).

The primary products of lipid peroxidation – lipid hydroperoxides are unstable substances that quickly break down to form secondary products of lipid peroxidation.

Among the most common – malonic dialdehyde, which accumulation in the body explains the formation of intoxication syndrome that accompanies many internal diseases.

Examination of hydroperoxides of lipids in the blood plasma showed that in sows with the prevalence influence of the sympathetic part of the autonomic nervous system was observed the highest its concentrations 16.63±0.26 U/ml. In sows normotonics the hydroperoxides lipids concentration in blood plasma was significantly lower by 20.51 % ($P<0.01$) than in sympathicotonics. For animals vagotonics the content of hydroperoxides of lipids in the blood plasma was lower at 18.28 % compared to sympathicotonics. In sows with normotonic and parasympathicotonic types of vegetative regulation the studied parameters values were almost identical.

Thus, it was found statistically significant differences in the content of hydroperoxides of lipids in the blood plasma of sows when compared with different tone of the autonomic nervous system.

In sows, depending on the characteristics of vegetative homeostasis observed differences in the content of some products of lipid peroxidation in plasma. Established that in animals vagotonics the content of diene conjugates in blood plasma was lower by 52.5 % ($P<0.01$) than in normotonics, and by 49.9 % ($P<0.05$) than in sympathicotonics. In animals with a predominance of sympathetic tone was found higher content of lipid hydroperoxides in plasma compared to animals normotonics and vagotonics respectively by 20.5 % ($P<0.05$) and 18.3 %.