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2ND International Conference

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03-05 May 2018

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INDICATORS OF FREE RADICAL OXIDATION OF LIPIDS, PROTEINS AND ENDOGENOUS INTOXICATION IN THE ORGANISM OF DIFFERENT BREEDS BOAR FERTILIZERS

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Abstract

The study of the intensity of the course of free radical oxidation of lipids and proteins, the functioning of the antioxidant system of organism protection is of great importance for the evaluation of the etiology of fertility infertility. The purpose of the work is studying the activity of enzymes of antioxidant defense, indicators of free radical oxidation of lipids, proteins and endogenous intoxication in semen of pure-breeding and hybrid breeding boars. The research was conducted at the Bila Tserkva National Agrarian University, Ukraine. two groups of big white breeds and synthetic line SS23 were formed for 8 heads in each for the experiment. The material used for the study was ejaculates, which were obtained manually. The antioxidant system enzymes activity (superoxide dismutase, catalase), lipid peroxidation of lipids (hydroperoxides, diene conjugates, TBA-active compounds), oxidative modification of proteins, endogenous intoxication (medium mass molecules) were investigated in the plasma of sperm and sperm of boars. Sperm plasma of pure-breeding boars of large white breed is characterized by low activity of superoxide dismutase. Instead, the activity of this enzyme in spermatozoa was the highest and exceeded the similar index in animals of synthetic line SS23 by 16.1% ($P < 0.05$). The activity of catalase in the sperm plasma of the synthetic lineage SS23 is significantly lower (by 45%, $P < 0.001$) compared to the indexes of pure-breeding boars. The concentration of primary lipoperoxidation products, namely diene conjugates and lipid hydroperoxide in the genital germ cells, was significantly higher compared to similar sperm plasma values. The content of products of oxidative modification of proteins in semen plasma of purebred and synthetic animals is higher than that of sperm cytoplasm. The intensity of the lipids peroxide oxidation processes in the germ cells is much higher than in the extracellular space. Reactions of free radical peroxide oxidation of proteins and lipids in healthy boars sperm are characterized by a stable level of activity that is necessary for the normal course of processes associated with the implementation of reproductive function. All components of the antioxidant system under physiological conditions are in mutual compensatory ratios.

Keywords: boars fertilizers, semen, sperm, peroxide oxidation of lipids, enzymes of antioxidant system, oxidation modification of proteins, medium mass molecules