

*Materials of Conferences***ENZYMES OF OXIDATIVE STRESS IN PIG BLOOD**

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Under modern conditions big stress loads on animals can decrease the efficiency of adaptive system in an organism. In this connection, when designing the system of measures to protect productive health of pigs it is important to take into account characteristics of biochemical processes in animals in their postnatal development.

Long and marginally intensive stress causes activation of «primary toxins». Those are active forms of oxygen. Higher intensity of free radicals oxidation assists the formation of numerous free radicals resulting in peroxidised lipids and oxidative stress. Activated oxygen metabolites (superoxide radical, hydrogen dioxide, etc.) produce a harmful effect at cell and tissue level.

Xanthine oxidase is an enzyme referred to the class of oxireductases. It catalyzes the reaction of production of superoxide-anion-radical that may be an initial link of a multi-step process resulting in the oxidative stress.

The research was carried out at Open Joint Stock «Landrace» in Novosibirsk region. The object of the research were Landrace pigs. The animals were selected to be grouped following the principle of analogues with regard to origin, breed, productivity, age and live weight. The pigs were kept in accordance with the technology for complexes and farms. Blood to examine was taken from aural vein. The activity of xanthine oxidase was examined in blood serum of pigs aged 1, 2, 3, 4, 5 and 6 months. The data obtained was processed statistically with the package of applied software Statistica 6 and Excel.

The experiment identified age dynamics of xanthine oxidase activity in the blood serum of Landraces. The examination showed that the xanthine oxidase activity was high in the blood serum of the pigs aged 1 month ( $3,78 \pm 0,09$  mcM/hr.l,  $p < 0,001$ ) versus six month pigs. This testifies to the fact that young animals are more susceptible to the oxidative stress. According to the data of the experiment it may be suggested that the xanthine oxidase activity can be applied as a test for oxidative stress in pigs.

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**ENZYMES OF ANTIOXIDATIVE DEFENSE IN PIG BLOOD**

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An organism responds to stress by a standard response-stress. This is the process connected with homeostasis regeneration and vitality maintenance. The process increases activity of regulatory stress-system that makes organs and tissues involved function under altered conditions.

As a result, the stress-system activation intensifies the discharge of stress-hormones into blood. The primary messengers are followed by a cascade of biochemical reactions that encourage mobilization of an organism to respond to the action of a certain stressor. Xanthine oxidase facilitates the formation of oxygen intermediates under oxidative stress. They realize oxidizing modification of lipids. Antioxidative defense prevents changes in the lipids structure. Catalase, peroxidase, etc., are referred to the enzymatic link of the antioxidative defense. They break down hydrogen dioxide having been formed under the oxidative stress.

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Age changes in the activity of the examined enzymes were revealed in the blood of Landrace pigs. Significant increase in the peroxidase activity was identified in the blood of gilts aged 5 months ( $54,01 \pm 1,62$  c.u,  $p < 0,001$ ). At this age period catalase activity was high enough, but xanthine oxidase activity was low. The data obtained testifies to the protective effect of catalase and peroxidase under the oxidative stress and their activity may be the evidence of the oxidative stress process running.

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