THE ASSESSMENT OF HORMONAL BACKGROUND IN BOARS WITH DECREASED REPRODUCTIVE ABILITY UNDER OXIDATIVE STRESS

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There are many exogenous and endogenous factors that cause excessive synthesis of reactive oxygen species (ROS). Due to their excess over the antioxidant potential of cells oxidative stress (OS) occurs. In turn, OS negatively affects the reproductive function of males and leads to its partial-temporary decrease, direct or indirect action on the axis of the hypothalamus-pituitary-gonad and / or disrupting its connection with other hormonal axes (Darbandi et al., 2018). It is well-known that ROS reduces the level of male sex hormones and disrupts the hormonal balance that regulates reproductive function (Appasamy et al., 2007). OS resulting from increased ROS synthesis or decreased availability of antioxidants can cause lipid peroxidation in Leydig cells and germ cells, damage lipoproteins, aggregation and fragmentation of proteins, and inhibit steroidogenic enzymes. OS of gonads cause a decrease in testosterone synthesis due to Leydig cells damage or other endocrine structures, such as the anterior pituitary gland (Turner et al., 2005). It was proved that testicular estradiol and inhibin produced intensively in case of OS, thereby inhibiting testosterone release. This is due to the effect of ROS on the activity of aromatases that cause an increase in estradiol synthesis (Oh et al., 2015; De Luca et al., 2021). The assessment of the hormonal background in boars was performed using the method of immunochemiluminescence to determine the level of sex hormones, testosterone-estradiol-binding globulin and mathematical and statistical data processing. Animals by indicators of sperm quality and content of OS markers were divided into two groups. The sperm quality of males met the standards in the control group (n=5), and was reduced in the experimental group (n=5), especially in terms of sperm motility and the number of motile sperm in the ejaculate. An intensification of peroxidation processes in the content of OS markers in blood serum was observed. In males of the experimental group there was a decrease of total testosterone by 45 % (8,3±0,32 nmol/l) in blood serum, while the content of 17β-estradiol was higher than in the control group by 45,1 % (1,93±0,07 nmol/l). There was also an increase in the number of

testosterone-estradiol-binding globulin in the experimental group of boars by 33,1 % (41,8±1,57 nmol/l). Such changes led to a significant decrease in the index of free androgens in boars with decreased reproductive ability – it made up 19.9%. The data indicate the relationship between the negative impact of the accumulation of peroxidation products in males on the hormonal activity of the endocrine glands and possible ways to implement the mechanisms of hypofertility in boars.