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OPTIMIZATION OF REPRODUCTIVE FUNCTION BOAR WHEN ADMINISTERED IN THE DIET PHOSPHOLIPID CONCENTRATE

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This article presents the results of an experiment on feeding phospholipid concentrate from sunflower seeds on the reproductive function of male pigs and effectiveness of insemination of sows.

It is found that the high-energy supplement has a positive effect on the manifestation of boars sexual reflexes, improves sperm and blood, increases the fertilizing capacity of sperm.

Key words: phospholipid concentrate, breeding boars, sperm, parameters of reproduction.

Productivity of pigs and their safety are directly related to their full feeding, characterized by the necessary number of useful and biologically active substances.

Specific role for phospholipids, and in particular lecithin, the lack of which affects the formation of lipid-acid composition of total lipids of the liver, reduced fertility, increased non-viable offspring, enhances the process of lipid peroxidation [2, 5].

Phospholipids are also called " essential" because of their qualities, essential for growth, development and proper functioning of all body cells. By the introduction of phospholipids can affect membrane functions associated with membrane proteins and affect the impaired function [3].

Recently, scientists discovered new properties of the previously known essential phospholipids. For example, it was found that the use of human products containing essential phospholipids not only improve the functional state of the liver, but also improves spermatogenesis, in particular for low mobility and high amounts of pathological forms of spermatozoa [8, 9]. The primary phospholipid with a phosphatidyl choline. It is established that he is also involved in the fertilization process, as when moving to the egg cell membrane lipid structure of the sperm undergoes significant incremental changes - the process of increasing the fertilizing ability (capacitation), and then - the phenomenon of activation or the acrosome reaction.

One source of phospholipids is a phosphatide concentrate - a by-product of production of crude sunflower oil (FUS). It is a protein product consisting of phosphates, oil impurities protein nature. It consists of a complex of unsaturated fatty acids, lecithin, thiamin, riboflavin, pantothenic acid, pyridoxine, a number of vitamins and minerals [1].Phosphatide concentrates also contain about 15.0% of active substance phosphatidylcholine.

Efficiency of use of phosphatide concentrate proved work of many researchers as the productivity of broiler chickens, and the increasing resistance and productivity of pigs [4, 6, 7]. These studies examined the effect of feeding the phosphatide concentrate boars on semen parameters, blood and reproductive performance when administered in the diet of different doses of FUS.

Material and methods. Experiments were carried out in the LLC "Stroiplastmass-Agroproduct" Ulyanovsk region.

Were formed 4 groups of breeding boars of Large White breed aged 3.0-3.5 years. Number of animals - 3 goal in each group. Animals during the experimental period was obtained by 4 kg complete feed K- 57-2 per day.

The first group of animals was the control and received no phosphatide concentrate. Boars II experimental group additionally fed 1.5% phosphatide concentrate to the basic diet; Group III - 3.0% and Group IV - 4.5% of the drug to the basic diet. 45 days after the feeding of the drug studied manifestation boars

sexual reflexes, quantitative and qualitative indicators of semen and blood biochemistry.

Then carried out artificial insemination of sows sired by sperm treated with different doses of the drug.

The results of the study. In the study of the duration of sexual reflexes in male pigs when fed to them in addition to the diet of phosphatide concentrate high efficiency of its use. Data are presented in Figure 1

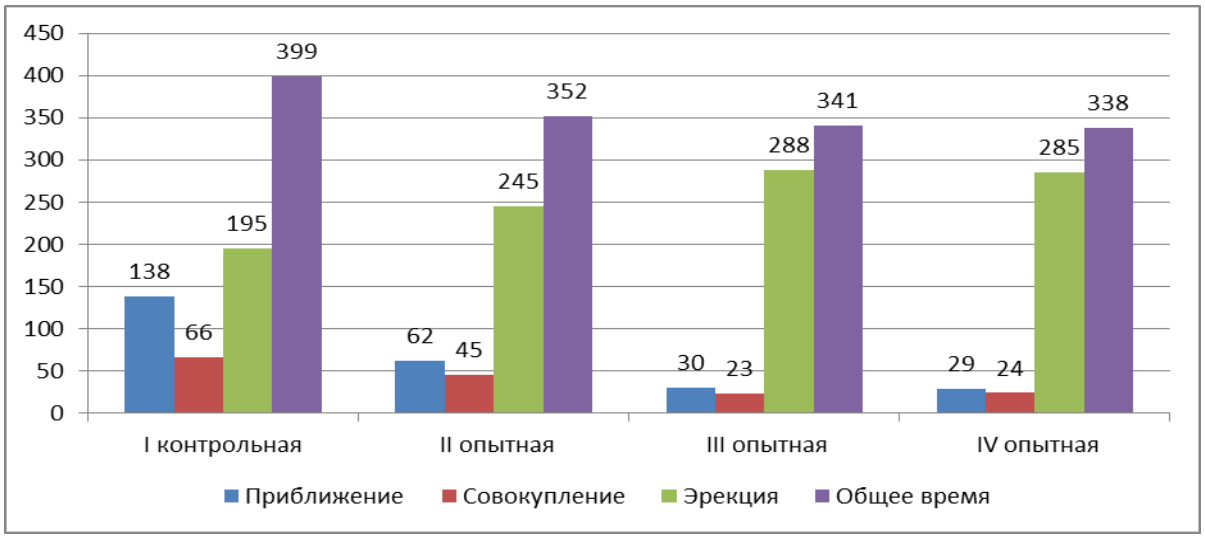

Figure 1: Duration of sexual reflexes in male pigs after introduction into the diet of phosphatide concentrate

When feeding boars phosphatide concentrate while sexual reflex decreased by 11,8-15,3% in the experimental groups.

At the same time, changed some sexual reflexes. Thus, compared to the control while approaching the third and fourth experimental groups on average decreased by almost 5 times, while reflex copulation - 2.8 times, and the time of ejaculation reflex increased significantly. The average figure was higher by 47.2%.

It was thus established that feeding boars phosphatide concentrate significantly improved the sexual reflex in boars, especially in the third and fourth treatment groups.

Quantitative and qualitative indicators of boar semen at feeding phosphatide concentrate are shown in table 1.

The volume of semen in boars experimental groups increased by 2,9-11,1% concentration - to 5,7-8,3%. The greatest impact of feeding had a phosphatide concentrate on resistance of spermatozoa in the experimental groups, this figure was 1.5-2.0 times higher than in the control group. The best performance obtained in the third and fourth treatment groups.

1. Effect of phosphatide concentrate on indicators of sperm

Indicators	Group			
	I	II	III	IV
Semen volume, ml	235±2,0	242±1,5^{x}	261±4,0^{xx}	267±5,0^{xx}
Concentration, million / ml	227±2	240±4^{x}	246±5^{xx}	241±4^{xx}
The total number of spermatozoa, million.	53,3±1,2	58,1±1,8	64,2±2,0	64,1±2,2
Resistance, standard units	1000±50	1550±80^{xx}	1950±100^{xxx}	1950±100^{xxx}
APV, standard units	680±26	800±30	850±35^{xx}	850±35^{xx}
Preservation of acrosome,%	92	93	94	94

^{x} P ≤ 0,05; ^{xx} P ≤ 0,01; ^{xxx} P ≤ 0,001

The results of biochemical analysis of blood serum breeding boars showed that all the indicators, there were positive changes, especially the content of vitamins A, C and E, as well as total calcium. Data are presented in Table 2.

2 Biochemical parameters of blood serum

Indicators	Group			
	I	II	III	IV
Total protein, g / l	69±1,3	76±2,2^{x}	79±3^{x}	79±3^{x}
Reserve alkalinity,%	48±1,0	32±1,2	53±1,4	53±1,4
Carotene, mM / l	3,1±0,3	3,4±0,4	3,6±0,5	3,6±0,4
Vitamin A, mM / l	0,40±0,01	0,43±0,01^{xx}	0,49±0,02^{xx}	0,48±0,02^{xx}
Vitamin C, mM / l	10,06±0,10	10,47±0,12^{x}	10,72±0,17^{xx}	10,69±0,17^{xx}
Total calcium, mM / l	2,36±0,03	2,50±0,04^{x}	2,64±0,09^{xx}	2,62±0,09^{xx}
Norganic phosphorus, mM / l	1,18±0,02	1,33±0,05	1,44±0,07	1,43±0,06
The concentration of vitamin E, mg%	0,48±0,02	0,53±0,04	0,57±0,05^{xx}	0,65±0,05^{xx}

^{x} P ≤ 0,05; ^{xx} P ≤ 0,01

From the table it can be seen that the best results are obtained when fed boars in addition to the diet of 3.0% phosphatide concentrate. It was found that all values were within the physiological norm.

Artificial insemination of sows was performed after 45 days from the start of feeding the phosphatide concentrate producers. At a dose of semen (100 ml) was 2.5-3.0 million fctive sperm. The first insemination was carried out immediately after the detection of the queens in the hunt, the second - 24 hours after the first. Indicators of reproductive sows are shown in table 3.

3 Efficiency of sperm insemination of sows boars experimental groups

Indicators	Group			
	I	II	III	IV
Inseminated, sows	40	40	40	40
Farrow: - sows	32	34	36	36
- the percentage of	80,0	85,0	90,0	90,0
A total of pigletsl.	325	345	367	365
. Including living .	317	340	364	362
On 1 sow	9,90±0,03	10,01±0,03^{x}	1012±0,05^{xx}	10,06±0,04^{xx}
On 100 inseminated sows	792	850	910	905
Weight of pig at birth, kg	1,20±0,01	1,24±0,02^{x}	1,26±0,02^{xx}	1,26±0,02^{xx}
- 2 months	14,7±0,1	15,2±0,2^{x}	15,4±0,2^{xx}	15,4±0,2^{xx}
Safety of pigs up to 2 months: -head	295	322	347	344
- the percentage of	93,0	94,7	95,3	95,0

^{x} $P \leq 0,05$; ^{xx} $P \leq 0,01$

The third and fourth groups of experienced fertility of sows increased by 10.0%, there is a tendency to an increase in multiple pregnancy piglets, pigs also rapidly gaining weight to 2 months of age.

Thus, the feeding of breeding boars phosphatide concentrate had an effective impact on the performance of sexual reflexes and sperm, blood serum biochemical parameters and indicators of reproductive sows. Sufficient for feeding a dose of 3.0% phosphatide concentrate to the main diet of boars 1 times per day for 45 days.

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