ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

The Use Of Feed Additives "Elevit" In Swine Diets.

G.S. Pokhodnya[1]*, E. G. Fedorchuk[2], T.A. Malakhova[3], N.S. Trubchaninova[4], and Yu. P. Breslavets[5].

[1]Doctor of Agricultural Sciences (Advanced Doctor), Professor at the Department of General and Private Animal Husbandry, Belgorod State Agrarian University, Vavilov St., s.Mayskiy, Belgorod District, Belgorod Region, Russia
[2]Candidate of Biological Sciences (Ph.D.), Associate Professor at the Department of Technology of Production and Processing of Agricultural Products, Belgorod State Agrarian University, Vavilov St., s.Mayskiy, Belgorod District, Belgorod Region, Russia
[3]Candidate of Agricultural Sciences (Ph.D.), Senior Lecturer at the Departmnet of Technology of Raw Materials and Animal Products, Belgorod State Agrarian University, Vavilov St., s.Mayskiy, Belgorod District, Belgorod Region, Russia
[4]Candidate of Agricultural Sciences (Ph.D.), Associate Professor, Dean of the Faculty of Technology, Belgorod State Agrarian University, Vavilov St., s.Mayskiy, Belgorod District, Belgorod Region, Russia
[5]Candidate of Agricultural Sciences (Ph.D.), Senior Lecturer at the Departmnet of Practical and Project-Based Learning, Belgorod State Agrarian University, Vavilov St., s.Mayskiy, Belgorod District, Belgorod Region, Russia

ABSTRACT

It was found that feeding boars-producers with feed additive "Elevit" in the amount of 100; 150; 200; 250 grams per day to the main diet contributes to the increase of sperm production by 5.0; 8.6; 11.9; 11.1%, respectively, compared with the control group. In addition, the boars of the experimental groups the quality of sperm increased: sperm resistance by 6.6; 8.1; 12.3; 11.9%, the survival rate of sperm outside the body – by 6.0; 6.7; 7.4; 8.1% compared with the control group. Feeding repair pigs with feed additive "Elevit" in the period of their preparation for insemination in the amount of 50; 100; 150; 200 grams in addition to basic diet promotes: manifestations of sexual hunting, respectively, by 10.0; 25.0; 25.0; 25.0%, the impregnation capacity of the pigs, respectively, 3.6; 7.5; 7.5; 7.5% and the multiple pregnancy-pigs, respectively by 2.1; 5.4; 5.4; 5.4% in comparison with the control group. Feeding adult sows with feed additives "Elevit" in preparation for insemination in the amount of 50; 100; 150; 200 grams in addition to the basic diet increases: manifestations of sexual hunting, respectively, by 5.0; 10.0; 10.0; 10.0%, fertilization of sows, respectively, 1.0; 7.1; 1.9; 7.1%, multiple pregnancy of sows, respectively, 2.8; 6.6; 7.6; 5.7% compared with the control group.
Based on these studies, we recommend feeding boars-producers with the feed additive ""Elevit" in the amount of 200 grams, repair and adult sows during the preparation for insemination in the amount of 100 grams per day in addition to the main diet.
Keywords: boars-producers, repair pigs, adult sows, pigs, fertilization, multiple fertility, feed additive "Elevit".

Corresponding author

ISSN: 0975-8585

INTRODUCTION

Currently, the main condition for increasing the production of animal products is the realization of the genetic potential of animal productivity, the essential characteristics of which should be not only an increase in the average daily growth, but also an increase in the overall resistance of the body under the condition of high conversion of feed and product quality [1, 6, 9, 15, 16].

However, in terms of industrial technology, a significant part of animals, including pigs, do not fully show their potential. This is because in the conditions of industrial complexes animals experience physical inactivity, lack of fresh air, sunlight and proper balanced diets. In our opinion, one of the perspective directions of increase of pigs' productivity in the conditions of industrial technology can become use of some biologically active feed additives possessing immunostimulating action.

One of the promising directions for improving the quality of feed for farm animals is the use of natural silicon-containing compounds.

Back in the sixties of the last century, a group of minerals was discovered, called zeolites, which were used in agriculture as adsorbents. Natural volcanic-sedimentary zeolite tuffs are microporous bodies that show high adsorption energy and have the ability to absorb substances well at low concentrations. Zeolite tuffs turned out to be promising neutralizing agents of a wide range of toxic chemicals and materials included in economic activity [1, 17].

The action of drugs obtained on the zeolite basis manifested primarily in the gastrointestinal tract. This action is varied and is due to the ion exchange and sorption properties of zeolites. Having a large active surface, zeolites adsorb selectively ammonia, ammonium ions, hydrogen sulfide, methane, carbon dioxide, water, hydrocarbons, phenols, exo - and endotoxins, heavy metals, radionuclides, some microorganisms. One of the functions of zeolites is to regulate the composition and concentration of electrolytes of the digestive tract, and through them mineral metabolism and acid-base state in animals.

Zeolites are capable of immobilization of enzymes of the gastrointestinal tract, thus increasing the activity and stability of the latter, digestibility of feed nutrients, absorption of nitrogen, calcium and phosphorus.

They do not affect the quantitative and qualitative composition of bile, do not inhibit the antitoxic function of the liver (G.V. Kiryutkin, V.P. Sirotkina, 1991). In studies of G.I. Kalashnik (1990), S.G. Kuznetsov, A.P. Bataev, I.I. Stetsenko (1993) it was found that under the influence of zeolites the content of somatotropin, somatostatin and other hormones increases in the blood, the rate of glycolysis in muscle and liver grows, as well as deposits of glycogen and lipid; cellular respiration and redox processes raise, stimulates hemopoiesis; specific and nonspecific resistance raises, buffer capacity of the blood, resistance to adverse environmental factors and stress stabilize; there is a restructuring of protein, lipid, carbohydrate and mineral metabolism, the strength of bone tissue increases. In addition, the authors found that zeolites have the properties to remove radionuclides from the body. However, it is known that the use of natural adsorbents, which include zeolites, is effective not only in cases of irradiation of animals to reduce the content of radionuclides, but also in the contamination of feed with toxic substances, including heavy metal salts, pesticides, nitrates and nitrites, toxic substances (A.A. Shaposhnikov and oth., 1996). Zeolites neutralize toxic substances, which ultimately leads to improving the physiological state of the organism, increasing its resistance to diseases, promotes better utilization of nutrients of the diet (N.A. Balakirev, V.S. Snytko, 1995).

The effect of natural minerals was studied on different types of animals. In studies of G.N. Vyaizanen, V.A. Savin, A. A. Struchkov (1995) natural zeolite had a positive effect on the physiological state of the cows and significantly reduced the content of lead in milk. The authors note that zeolite has a positive effect on reducing the contamination of cows with lead, chromium, cadmium, strontium and nickel in the second half of lactation. At the same time, this mineral can significantly reduce the harmful effect of radioactive substances on bone tissue and reduce the content of lead in the body.

Implementation to the diet of sheep zeolite-containing feeding has no significant effect on the digestibility of dry matter and fiber in the body. At the same time, stimulation of fermentation processes of polysaccharides and rumen, glucogenic and ketogenic effect of the drug on the body of sheep was noted (V.A. Koko-

rev and oth., 1995).

The goal and objectives. The purpose of the research was to study the reserves of pork production in terms of reproductive function of boars-producers and sows by feeding them with feed additive "Elevit" during the preparation for insemination.

To achieve this goal, the following objectives were set:

1. To study the effect of feeding boars-producers and sows with the feed additive "Elevit" on their reproductive function.
2. To determine the optimal dose of feeding boars-producers, repair and adult sows with the feed additive "Elevit" in preparation for insemination.

METHODS AND MATERIALS

The company OOO "Vita" (Belgorod region) made feed additive "Elevit" on the basis of wheat germ flour (table 1).

Table 1 – Feed additive "Elevit"

Composition:				
Component (average)	%	***Amino acids (average)***		g/kg
Protein	34,5	Lysine		22,5
Moisture	1,2	Arginine		34,4
Fat	5	Tryptophan		2,0
Cellulose	4	Valium		17,8
Water	5	Leucine		21,1
Carbohydrates		Methionine		4,2
sucrose	18	Histidine		13,3
raffinose	6	Threonine		14,4
fructose	5	Isoleucine		11,1
pentosans	10	Phenylalanine		15,4
other sugars (mannose, maltose, etc.)	8	*The amount of amino acids, including essential ones*		302,9 156,3
Mineral substances (average)	*mg/100 g*	***Fatty acid composition (average)***		*mg/g*
Calcium	800	Myristic	C14:0	1.8
Phosphorus	1320	Palmitic	C16:0	141.1
Sodium	1,0	Palmitoleic	C16:1	1.8
Magnesium	38,0	Stearic	C18:0	6.0
Potassium	1100	Oleic	C18:1	113.1
Manganese	27,0	Linoleic	C18:2	354.1
Ferrum	8	Linolenic	C18:3	111.6
Zinc	20	Erucic	C22:0	22.2
Selenium	0,02			
Vitamins (avearge)				***mg/100 g***
B1 (Thiamine)				3.0

B2 (Riboflavin)	0.6
B3 (Niacin (PP))	9.0
B5 (Pantothenic)	15.0
B6 (Pyridoxine)	1.0
B9 (Folic acid)	2.0
B12	0.03
E (Tocopherols)	30
A (Carotene)	0.6
D (Ergosterol)	0.7

According to the producer the chemical composition and energy value of wheat germ flour protein "Elevit" are similar to proteins obtained from the processing of animal products – milk or eggs. They have almost the same properties, the only difference is the absence of a shell.

At the manufacture of "Elevit" a special technology is used, as a result of which due to the high pressure there is a deformation of the wheat germ and the destruction of the protective cover. Thus, in case of contact with the food tract the absorption of nutrients begins immediately. The process is much faster than the use of conventional proteins, as it does not take time to decay the protective shell.

Moreover, wheat germ in its composition contains at least 12 essential vitamins, more than 18 amino acids, about 21 micro - and macronutrients, as well as a range of vitamins in more than 2-5 times compared to mature grain. They contain fatty polyunsaturated acids of omega-6 and omega-3 classes, which have antioxidant effect, as well as the most important source of coenzyme Q 10. But it is worth noting that this product is superior in calcium to its own cereals more than 2-3 times and the content of potassium – 3-6 times.

During the work, laboratory and production experiments, physiological and biochemical studies were carried out on the basis of generally accepted techniques. The comparative method of analog groups and the biometric method were used. Fertilization, multiple pregnancy and large sow fertility were determined by actual childbirth. Live weight of piglets in certain periods was determined by individual weighing. Diets for all groups of pigs were balanced in all nutrients and met the standards of FRCAH. Sperm from boars was taken by the manual way. Quantitative and qualitative parameters of sperm were determined by traditional methods (V.K. Milovanov, 1962). Suitable for use sperm was diluted by GCCS environment.

To study the effect of feeding boars-producers and sows (repair and adults) with feed additives "Elevit" on their reproductive functions we conducted three main experiences in the collective farm named after Gorin Belgorod district, Belgorod region.

In the first experiment 5 groups of adult boars (2.5-3 years old) of the Landrace breed were selected on the principle of analogues.

Conditions of detention for all groups of boars were the same, and feeding was different. Boars of the first control group were fed with standard K-57-2 feed in the amount of 3.5 kg per head per day. Boars of the second, third, fourth, fifth groups were fed in addition to the main diet with feed additive "Elevit" in the amount of 100; 150; 200; 250 grams per 1 head per day. Feed additive "Elevit" was fed to boars of experimental groups (2-5 groups) for 60 days. During this time from each boar 12 ejaculates were received. Quantitative indicators of boar sperm are presented in table 2.

ISSN: 0975-8585

Table 2 – Quantitative indicators of boar sperm depending on feeding them with feed additive "Elevit"

Experimental groups	Boars feeding conditions	The amount of boars in the group	The number of the studied ejaculates	Quantitative indicators of boar sperm		
				Sperm volume, ml	the concentration of sperm cells in 1 ml of semen, million	the total number of sperm in the ejaculate, billion
1	Main diet	3	12	294.5±1.8	208.0±1.9	61.2±1.1
2	MD+100 g of feed additive "Elevit"	3	12	305.1±1.4	211.0±2.0	64.3±1.2
3	MD+150 g of feed additive "Elevit"	3	12	309.5±1.3	215.0±1.8	66.5±1.7
4	MD+200 g of feed additive "Elevit"	3	12	314.5±1.8	218.0±1.1	68.5±1.5
5	MD+250 g of feed additive "Elevit"	3	12	315.0±2.0	216.0±1.2	68.0±1.6

The data in table 2 show that feeding boars with the feed additive "Elevit" in the amount of 100; 150; 200; 250 grams in addition to the main diet contributes to the increase: volume of ejaculates, respectively, by 3.5; 5.0; 6.7; 6.9%, sperm concentration in 1 ml of sperm, respectively, by 1.4; 3.3; 4.8; 3.8%, the total number of sperms in the ejaculate by 5.0; 8.6; 11.9; 11.1% compared with the first control group.

The qualitative indicators of boar sperm are presented in table 3.

Table 3 – Qualitative indices of boar sperm depending on the feeding them with feed additive "Elevit"

Experimental groups	Boars feeding conditions	The amount of boars in the group	The number of the studied ejaculates	Quantitative indicators of sperm		
				mobility, points	resistance	spermat survival outside the body, hour
1	Main diet	3	12	8.1±0.01	1108.0±80	74.0±1.2
2	MD+100 g of feed additive "Elevit"	3	12	8.1±0.01	1182.0±90	78.5±1.4
3	MD+150 g of feed additive "Elevit"	3	12	8.1±0.01	1198.0±74	79.0±1.3
4	MD+200 g of feed additive "Elevit"	3	12	8.2±0.01	1245±50	79.5±1.1
5	MD+250 g of feed additive "Elevit"	3	12	8.2±0.01	1240±62	80.0±1.5

The data in table 3 show that feeding boars with the feed additive "Elevit" in the amount of 100; 150; 200; 250 grams in addition to the main diet contributes to the increase of: resistance of spermies, respectively,

by 6.6; 8.1; 12.3; 11.9%, spermat survival outside the body, respectively, by 6.0; 6.7; 7.4; 8.1% compared to the first control group. At the same time the experimental boars in all groups on mobility of sperm cells were not significantly different.

Thus, the results of our studies showed that feeding boars-producers with feed additive "Elevit" helps to increase the quantitative and qualitative indicators of sperm.

In the second experiment 5 groups of repair pigs aged 8 months in 20 heads in each were selected on the principle of analogues. After transfer of pigs in reproduction workshop the conditions of their maintenance were identical in all groups, and conditions of feeding differed: the first group of pigs (control) received in days the main diet, according to standards of FRCAH, and sows of the second, third, fourth, fifth experimental groups to the main diet in addition were fed with feed additive "Elevit" in number of 50, 100, 150, 200 g, respectively on groups. The feed additive was fed to pigs before sexual hunting, but not longer than one sexual cycle (20 days). Selection of sows in hunting was carried out within 21 days after transfer to the reproduction workshop with the help of boars-samplers in the morning and in the evening.

All pigs showedsexual hunting within 21 days were transferred to the artificial insemination station, where their double insemination was made: immediately after sampling and after 24 hours. The manifestation of sexual hunting by young pigs is presented in table 4.

Table 4 – Influence of feeding young sows with feed additive "Elevit" on the manifestation of sexual hunting

Experimental groups	Conditions of pigs feeding	The number of pigs in the experiment	showed sexual hunting for 21 days	
			number	%
1	Main diet	20	14	70
2	MD+100 g "Elevit"	20	16	80
3	MD+150 g "Elevit" "Elevit"	20	19	95
4	MD+200 g "Elevit"	20	19	95
5	MD+250 g "Elevit"	20	19	95

The data in table 4 show that feeding young pigs with feed additive "Elevit" in the amount of 50, 100, 150, 200 g to the main diet increases the manifestations of pigs sexual hunting, respectively, by 10.0; 25.0; 25.0; 25.0% compared with the first control group. The results of insemination of young sows are presented in table 5.

Table 5 – Effect of feeding young sows with feed additive "Elevit" on the effectiveness of their insemination

Experimental groups	Conditions of pigs feeding	Number of sows inseminated	Giving childbirth		Piglets received, head		Large fertility, kg
			number	%	total	on 1 childbirth	
1	Main diet	14	10	71.4	91	9.1±0.1	1.25±0.01
2	MD+100 g "Elevit"	16	12	75.0	112	9.3±0.1	1.24±0.02
3	MD+150 g "Elevit" "Ele-	19	15	78.9	145	9.6±0.1	1.24±0.01
4	MD+200 g "Elevit"	19	15	78.9	144	9.6±0.1	1.23±0.02
5	MD+250 g "Elevit"	19	15	78.9	145	9.6±0.1	1.24±0.01

The data in table 5 show that feeding repair pigs with feed additive "Elevit" in the amount of 50; 100; 150; 200 g in addition to the main diet during the preparation for insemination contributes to the increase: fertilization of pigs, respectively, 3.6; 7.5; 7.5; 7.5%, multiple pigs, respectively 2.1; 5.4; 5.4; 5.4%. For large fertility experimental repair pigs of all groups were not significantly different. Thus, our results showed that the implementation in the diet of repair pigs feed additive "Elevit" during their preparation for insemination contributes to the manifestations of sexual hunting of pigs, and the impregnation capacity of multiple pregnancy. However, it should be noted that the maximum number of piglets at birth was obtained by feeding repair pigs with feed additive "Elevit" in the amount of 100-200 grams in addition to the basic diet.

In the third experiment on the principle of analogues 5 groups of adult sows aged 2.5-3 years old 20 heads in each after weaning pigs in 28 days were selected. After the transfer of sows to the reproduction workshop, the conditions of their keeping were the same in all groups, and the feeding conditions were different. The first (control) group of sows received the main diet per day, according to the norms of FRCAH, sows of the second, third, fourth, fifth experimental groups to the main diet were fed additionally with feed additive "Elevit" in the amount of 50; 100; 150; 200 g, respectively, in groups. The feed additive was fed to sows before sexual hunting, but not longer than one sexual cycle (20 days). Selection of sows in hunting was carried out with the help of boars-probes within 21 days after transfer to the reproduction workshop. All sows which showed sexual hunting for 21 days were transferred to the point of artificial insemination, where they were inseminated twice: immediately after sampling and 24 hours later. The manifestation of sexual hunting by adult sows is presented in table 6.

Table 6 – Influence of feeding adult sows with feed additive "Elevit" on the manifestation of sexual hunting

Experimental groups	Feeding conditions of sows	The number of sows in the experiment	Showed sexual hunting within 21 days	
			Number	%
1	Main diet	20	17	85.0
2	MD+100 g "Elevit"	20	18	90.0
3	MD+150 g "Elevit" "Elevit"	20	19	95.0
4	MD+200 g "Elevit"	20	19	95.0
5	MD+250 g "Elevit"	20	19	95.0

The data in table 6 show that feeding adult sows after weaning piglets from them with feed additive "Elevit" in the amount of 50; 100; 150; 200 g to the main diet increases sexual hunting in sows respectively by 5.0; 10.0; 10.0; 10.0% compared with the first control group. The effectiveness of insemination of adult sows depending on feeding them with feed additive is shown in table 7.

Table 7 – Effect of feeding adult sows with feed additive on the effectiveness of their insemination

Experimental groups	Feeding conditions of sows	The number of inseminated sows	Giving childbirth		Piglets received, head		Large fertility, kg
			number	%	total	on 1 childbirth	
1	Main diet	17	14	82.3	148	10.5±0.1	1.25
2	MD+100 g "Elevit"	18	15	83.3	163	10.8±0.1	1.24
3	MD+150 g "Elevit" "Elevit"	19	17	89.4	191	11.2±0.1	1.25
4	MD+200 g "Elevit"	19	16	84.2	181	11.3±0.1	1.27
5	MD+250 g "Elevit"	19	17	89.4	189	11.1 ±0.1	1.26

The data in table 7 show that feeding sows with the feed additive “Elevit” in the amount of 50; 100; 150; 200 g in addition to the main diet during the preparation for insemination contributes to the increase: fertilization of sows, respectively, by 1.0; 7.1; 1.9; 7.1%, multiple pregnancy of sows, respectively, 2.8; 6.6; 7.6; 5.7% compared to the first control group. For large fertility pigs of all groups were not significantly different.

RESULTS AND CONSIDERATION

The effect of natural minerals on the physiological state of pigs is of particular interest. The use of zeolites in feeding boars-producers affects favorably the quality of sperm and increases the reproductive ability of males [5, 17].

Feeding piglets with zeolites has a positive effect on the energy of their growth, normalizes metabolism in the body, does not cause dystrophic changes in the structure of epithelial cells of the gastrointestinal tract, liver, pancreas and kidneys.

The use of zeolite-based premixes in the diets of young pigs had an impact on hematopoiesis and some resistance indicators. In particular, under the influence of the drug, an increase in the level of hemoglobin, erythrocytes, leukocytes, and g-globulins in the blood was noted.

The inclusion of zeolite in the diet of pigs contributed to a significant decrease in the concentration of cadmium and lead in the body. These data confirm that the zeolite has a sorption properties.

The inplementation of zeolite of Shivyrtuysky field in the diet of young pigs lowered the content of chromium, cadmium and nickel in all organs and tissues, which explain the ability of the organism, as a self-regulating system, eliminate toxins; natural zeolite at the same time, having the properties of cation exchange, played the role of the regulator of this system (L.N. Gamko, T.L. Talyzina, 1997). The use of this mineral had a positive impact on the safety of pigs. The physiological status of pigs has been improved, which is confirmed by a number of biochemical parameters and clinical observations. The studies found that the diet of piglets with zeolite-containing diatomaceous earth had a positive effect on metabolism, normalized calcium and phosphorus metabolism, activated hematopoiesis, an increase in the concentration of total protein in blood serum was noted.

It was also found that natural zeolites reduce the incidence of gastric ulcer and pneumonia in pigs, as well as worm infestation in animals of all ages and diarrhea in piglets, especially in the post-release period.

Zeolites have a specific effect on the digestive and metabolic processes in pigs, which are determined not only by the regulation of the content of mineral elements in the body, but also by the physical and chemical properties of the mineral. The ability of zeolites to stimulate the digestive activity of animals is not excluded. Bentonite caused a significant reduction in the incidence of pigs of different age and sex groups of gastrointestinal and respiratory diseases, which resulted in a decrease in reliability. Morphological parameters of animal blood under the influence of the drug did not go beyond the physiological norm [1,2,3,4,5].

These changes at the use of different types of minerals in the diets of pigs led to an improvement in the physiological state and strengthen the body’s defenses, which contributed to better growth, development and preservation of animals.

Scientists of Belgorod State Agrarian University conducted tests of highly dispersed silicon dioxide (HDSD), which has unique, but largely unexplored properties, providing a wide range of its applications. At using in poultry medicine has received the name of avikan, in dairy cattle breeding and pig breeding – atoks [17].

Other compounds with sorption properties include *oxidized cellulose*. As a rule, all cellulose materials – fabric, paper and others – have to some extent ion exchange properties due to the presence of various functional groups and non-cellulose ingredients. However, the exchange capacity of conventional cellulose materials is small. So if you are using them as ion-exchangers they tend to introduce by the chemical way the ether functional group that contributes to the exchange. Attempts have been made to use oxidized cellulose for similar ubcongo G[(e)4(x)l5874.246(th)-637/La4/F7 9.96 Tfs of

with the drug “Mival-Zoo”.

The main components of the Russian feed for pigs are grain fodder (barley, wheat, corn, oats), legumes (peas, soybeans, vetch, chickpeas), and other feed products (bran, cake, meal, yeast, fish and meat and bone meal). Compared to other feed types, barley is the most commonly used grain component in pig feed production, rather than wheat; legums are used much more. The use of high-quality feed leads to an increase in the growth of live weight and improves meat productivity, the use of feed, balanced in protein and amino acids, can reduce feed costs per 1 kg of live weight gain. Feed recipes also need to be balanced on a number of vitamins and minerals, because the feed base of the modern pig enterprise necessarily includes a variety of balancing feed additives and vitamin preparations to ensure proper feeding of animals.

The growth of productivity and intensification of growing and fattening of young pigs impose strict requirements for the optimization of feeding rations, so for each animal not only the unconditional quality of feed additives, but also its cost are important.

To study the effect of feeding boars-producers and sows with feed additives “Elevit” on their reproductive function, we conducted three scientific and production experiments. Our studies have shown that the introduction of a certain amount of feed additive “Elevit” into the diet of boars-producers and sows is an effective way to improve sexual function.

Thus, the results of our studies showed that the implementation into the diet of sows feed additives “Elevit” in the period of preparation for insemination contributes to the manifestation of sows sexual hunting, fertilization and multiple fertility. The maximum number of piglets at birth was obtained by feeding sows with the feed additive “Elevit” in the amount of 100 grams in addition to the main diet.

CONCLUSIONS

1. Feeding boars with feed additive “Elevit” in the amount of 100; 150; 200; 250 grams in addition to the main diet contributes to the raising of:

- volume of ejaculates, respectively, by 3.5; 5.0; 6.7; 6.9%;
- sperm concentration in 1 ml of sperm, respectively, 1.4; 3.3; 4.8; 3.8%;
- total number of sperms in the ejaculate by 5.0; 8.6; 11.9; 11.1% compared to the first control group;
- resistance of sperm cells, respectively, 6.6; 8.1; 12.3; 11.9%;
- sperm experience out of the body, respectively, 6.0; 6.7; 7.4; 8.1%, compared with the first control group.

2. Feeding sows with feed additive “Elevit” in an amount of 50, 100, 150, 200 g to the main diet contributes to the increase of:

- sexual hunting in young pigs – respectively by 10.0; 25.0; 25.0; 25.0% in comparison with the first control group, at adult sows respectively by 5.0; 10.0; 10.0; 10.0%;
- fertilization in young pigs – respectively by 3.6; 7.5; 7.5; 7.5%, in adult sows respectively by 1.0; 7.1; 1.9; 7.1%;
- multiple pregnancy in young pigs – respectively by 2.1; 5.4; 5.4; 5.4%, in adult sows respectively by 2.8; 6.6; 7.6; 5.7%.

REFERENCES

[1] Breslavets P.I. Animal Husbandry / P.I. Breslavets, G.S. Pokhodnya, G.I. Gorshkov, V.I. Gudymenko, P.P. Kornienko, N.N. Shvetsov, E.G. Yakovleva, N.A. Musienko, M.R. Shvetsova, N.S. Trubchaninova, E.G. Fedorchuk, V.V. Gudymenko, I.N. Segal. – Belgorod: publishing house of BSAA, 2006. - 382 p.

[2] Gorin V.Ya. Dependence of reproductive function of sows from the season of the year / V.Ya. Gorin, G.S. Pokhodnya, A.A. Faynov, E.G. Fedorchuk, A.N. Ivchenko, T.A. Malakhova // Husbandry. – 2014. - No. 5 – P. 24-26.

[3] Ivchenko A.N. The growth of boars, borovkov and pigs / A.N. Ivchenko, E.G. Fedorchuk, G.S. Pokhodnya // Husbandry, 2006. - No. 11. – P. 23-24.

[4] Mysik A.T. Zootechnical and economic efficiency of use of Chlorella suspension in diets of boars-producers / A.T. Mysik, G.S. Pokhodnya, E.G. Fedorchuk, A.N. Ivchenko, N.P. Dudina // Animal Husbandry. – 2011. – No. 11. - P. 9-11.
[5] Narizhny A.G. Reserves the progressive method / A.G. Narizhny, G.S. Pokhodnya // Pig breeding. – 1995. – No. 5. – P. 23-24.
[6] Malakhova T.A. The use of the drug "Mival-Zoo" to improve reproductive function in sows / T.A. Malakhov, G.S. Pokhodnya // Bulletin of the Krasnoyarsk State University. 2015. – No. 9. – P. 175-180.
[7] Pokhodnya G.S. Artificial insemination of sows / G.S. Pokhodnya. – Belgorod: publishing house of Belgorod State Agricultural Academy, 2004. - 28 p.
[8] Pokhodnya G.S. Stimulation of reproductive function in sows/ G.S. Pokhodnya, T.A. Malakhov. – Belgorod: Publishing House LLC CPI "Politerra", 2016. – 204 p.
[9] Pokhodnya G.S. Seasonal influence on the reproductive function of boars/ G.S. Pokhodnya, M.M. Moroz // Husbandry. – 2007. – No. 6. – P. 31.
[10] Pokhodnya G.S. Hydroponic green fodder in the rations of breeding boars / G.S. Pokhodnya, P.P. Kornienko, E.G. Fedorchuk, A.I. Grishin, R.A. Strelnikov // Vestnik of Kursk State Agricultural Academy, 2012. – No. 2. – P. 96-97.
[11] Sopin N. F. Influence of conditions of maintenance of boars on their reproductive ability / N.F. Sopin, G.S. Pokhodnya / / Animal Husbandry of Russia, 1976. – No. 10. – P. 51-52.
[12] Fedorchuk E.G. The efficiency of use of feed additives "HydroLactive" in the diets of boars / E.G. Fedorchuk, G.S. Pokhodnya // Pig breeding and production technology of pork: Collection of scientific works of the scientific school of Professor G.S. Pokhodnya. – Belgorod: publishing house of Belgorod State Agricultural Academy, 2012. – P. 58-60.
[13] Khokhlov A.M. The main indicators of energy metabolism in purebred and hybrid pigs / A.M. Khokhlov, A.S. Smirnova, V.I. Gerasimov, G.S. Pokhodnya, N.I. Zhernakova, P.P. Kornienko // Pig breeding and production technology of pork: Collection of scientific works of the scientific school of Professor G.S. Pokhodnya. - Belgorod: Publishing house of IPC "Politerra", 2016. – Issue. 10. – P. 200-203.
[14] Shaposhnikov A.A. Influence of the adaptogenic drug "Mival-Zoo" on morphological and biochemical indicators of blood of sows and pigs / A.A. Shaposhnikov, G.S. Pokhodnya, N.I. Zhernakova, G.I. Gorshkov, A.G. Narizhny, E.G. Fedorchuk, L.E. Boeva // Agrarian science, 2009. – No. 9. – P. 28-30.
[15] Cooker. M. Farrowing te a time-table / M. Cooker // Pig Farming. – 1973. – Vol. 21, №21. – P. 32–33.
[16] Cuncha T. Animal nutrition and health / T. Cuncha. – 1974. – V. 29. – №10. – P. 5–8.
[17] Cuncha T. Practicas gue aumentan el tamano y peso de la lechigda / T. Cuncha // Agr. las Americas, – 1979. – V. 28. – №11. – P. 52–54.
[18] Cuncha T. Turenda in swine feeding / T. Cuncha // Worid Farming. – 1972. – V. 12. – №4.
[19] Cunha T. Vitamins for swine feeding and nutrition / T. Cunha// Veter. Med. Smoll Amin. Clin. –1978 / – V. 67. – № C 3. – P. 263–268.
[20] English P. Crates, crudles reduce crushing/ P. English// Pig. Am. – 1983.– №8. – P. 20–21.
[21] English P. Why piglets die / P. English // Pig Farming. – 1973. – Vol. 21, №11. – P. 22–23.
[22] Lutter K. Tiersucht / K. Lutter. – 1977. – B.31, №10. – S. 452–455.
[23] Petersen U. Controlling in der professinalen Schweineproduktion Top-Genetic Ashebery/ U.Petersen, E. Hohls. – 2001. – S.16.
[24] Wolter H. Profilaxe und practische von Stressedeu deim Schwein / H. Wolter. – Practische Tierarzt, 1978, 59, 122–124.