

Studying the Influence of Biologically Active Preparations on the Reproductive Qualities of Sows

Alisa Pîrlog*, Anatol Carapirea, Grigore Darie and Elena Cibotaru

Technical University of Moldova, Moldova

*Corresponding author

Alisa Pîrlog, Technical University of Moldova, Moldova

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ABSTRACT

Introduction: The work is devoted to the study of the reproductive qualities of sows that received a biologically active preparation (LB-MP) synthesized from brewer's yeast waste in addition to the main ration. For this purpose, three groups of sows were formed, one control and 2 experimental.

Materials and Methods: The preparation was administered in addition to the main diet of sows during 30 days before weaning and 10 days after weaning in 10 ml and 20 ml of the preparation.

Results: It was established that the additional introduction of the biologically active preparation - LB-MP in the composition of the sow diet allowed to obtain such results as: live piglets, heads, in the first experimental group (10 ml) -11.2 and 12.6 in the second experimental group (20 ml), compared to 10.8 in the control group. The number of live piglets surviving at 21 days in the control group was 10.4, a lower index compared to the experimental group 1-(10 ml) where we had 11.2 and 12.4 live piglets surviving at 21 days in the group experimental 2-(20 ml). And also, hematological and biochemical blood analysis were studied at the beginning and at the end of the experiment.

Conclusions: The results suggest that the additional use of the biologically active preparation LB-MP in sow diets positively influenced reproductive performance and piglet survival, with better outcomes observed in the group receiving 20 ml.

Keywords: Piglets, Live Mass, Preparation - LB-MP, Blood

Introduction

The reproductive qualities of sows are significantly influenced by the level and completeness of feeding. Many scientists believe that the feeding of sows should be differentiated in accordance with their physiological state [1]. The influence of the nutritional value of feeding on the reproductive qualities of sows has not been sufficiently studied.

The use of biologically active preparations is a modern and effective way to stimulate the functional reserves of the body, allowing to increase the productivity of animals [2]. When choosing biologically active preparations, the determining factor is primarily environmental safety and economic efficiency. These requirements are met by biologically active preparations

obtained from the waste of beer, wine and other yeast. The reproductive qualities of sows largely depend on a balanced diet. Therefore, in obtaining, maintaining and raising healthy piglets, an important role is played by full-fledged feeding of sows during gestation and lactation periods. But the main feed used in feeding pigs does not satisfy their need for certain substances, therefore it is necessary to introduce various sources of biologically active substances into their diet [3].

The researches by showed that the addition of biologically active substances to the main diet can stimulate the growth of animals and intensify physiological processes in the body [4].

At the same time, in a number of countries with highly developed pig breeding, approaches to the peculiarities of feeding sows differ. In feeding pregnant sows, it is proposed to

distinguish five stages, differing in the amount of feed given to the animals, others suggest differentiating the feeding of sows by three periods of gestation, but without dramatically changing the composition of the feed mixture. Judging by the existing recommendations, the norms of protein and amino acid nutrition of these animals differ very much. The purpose of our work was to study the biochemical parameters and biological properties of preparations synthesized from brewer's yeast waste for reproductive and productive qualities of sows

Aims

The experimental work was carried out on the breeder of the swine complex «Agroinvest» SRL., s. Burlacheny, Kagul district of the Republic of Moldova and in the laboratory of embryo reproduction and transplantation of the Moldavian Scientific and Practical Institute of Biotechnology in Zootechnics and Veterinary Medicine of the Republic of Moldova. In laboratory conditions, a biologically active preparation - LB-MP - was synthesized from beer yeast at the Institute of Microbiology and Biotechnology of the Republic of Moldova, which was tested in production experiments.

Material and Methods

In the experiments, pregnant sows were used a month before the expected farrowing. Three groups of sows were formed - two experimental and one control with five heads in each group. The sows of the experimental group received 10 ml in addition to the main ration during 30 days before farrowing and 10 days after farrowing, and 20 ml of the preparation (LB-MP), developed by the Institute of Microbiology and Biotechnology of the Republic of Moldova.

At the beginning and at the end of the experiment, blood samples were taken for the study of hematological and biochemical composition. In the postnatal period there were studied the average number of piglets born in each nest, their average live weight, and also the average live weight of the nest at 21 days.

Results

The intensive use of high-value breeding animals in order to obtain the maximum high-value offspring depends on the physical condition of the animal's organism.

With this goal, we studied hematological and biochemical indicators of blood. The experimental data are shown in table 1.

Table 1: Hematological analysis of the blood of sows

Indicators	Groups					
	Experimental (n=5), 10 ml		Experimental (n=5), 20 ml		Control (n=5)	
	Beginning of the experiment	End of the experiment	Beginning of the experiment	End of the experiment	Beginning of the experiment	End of the experiment
	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$
Leukocytes, 10 ⁹ /l	13,66 ± 1,91	18,6 ± 0,23	19,567 ± 1,654	16,60 ± 0,891	15,27 ± 1,98	18 ± 1,52
Lymphocytes, 10 ⁹ /l	7,53 ± 0,68	6,16 ± 0,15	7,350 ± 0,540	5,614 ± 0,497	7,83 ± 0,50	5,8 ± 0,10
Erythrocytes, 10 ¹² /l	8,23 ± 1,43	6,06 ± 0,24	7,585 ± 0, 352	6,754 ± 1,188	6,97 ± 0,13	6,65 ± 0,19
Hemoglobin, g/l	198 ± 26,21	121,25 ± 4,25	143,500 ± 8,086	166 ± 14,037	165,25 ± 32,01	126 ± 4,42
Platelets, 10 ⁹ /l	122,4 ± 42,86	280,4 ± 40,55	217,500 ± 37,496	167,857 ± 31,768	166,8 ± 43,86	215 ± 41,08

Table 2: Biochemical analysis of the blood of sows

Indicators	Groups					
	Experimental (n=5), 10 ml		Experimental (n=5), 20 ml		Control (n=5)	
	Beginning of the experiment	End of the experiment	Beginning of the experiment	End of the experiment	Beginning of the experiment	End of the experiment
	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$	$\bar{X} \pm s_{\bar{X}}$
Albumen, g/l	41,60 ± 2,39	40,10 ± 2,08	35,36 ± 0,861	39,271 ± 2,795	42,53 ± 2,78	35,63 ± 1,46
Calcium, mmol/l	3,39 ± 0,02	2,56 ± 0,05	3,332 ± 0,043	2,841 ± 0,193	2,47 ± 0,05	3,46 ± 0,04
Cholesterol, mmol/l	2,30 ± 0,18	1,94 ± 0,11	1,205 ± 0,091	1,144 ± 0,073	2,15 ± 0,14	1,94 ± 0,33
Glucose, mmol/l	3,60 ± 0,13	4,42 ± 0,17	3,258 ± 0,172	3,124 ± 0,342	4,43 ± 0,28	3,77 ± 0,44
Magnesium, mmol/l	0,73 ± 0,02	1,02 ± 0,01	0,897 ± 0,076	0,844 ± 0,015	0,64 ± 0,02	1,46 ± 0,02

Triglyceride, mmol/l	0,31 ± 0,05	0,05 ± 0,04	0,388 ± 0,031	0,314 ± 0,058	0,54 ± 0,06	0,23 ± 0,05
Urea, mmol/l	5,30 ± 0,43	3,68 ± 0,50	2,832 ± 0,303	3,534 ± 0,282	5,43 ± 0,49	3,96 ± 0,58

The data presented in tables 1 and 2 show that both at the beginning of the experiment and at the end of the experiment, all studied blood parameters are within physiological norms. It should be noted that the level of thrombocytes increased both in the experimental and in the control groups. It was also established that the level of triglycerides - the main source of energy in the organism - is more than twice as compared to the level established at the beginning of the experiment. For the dynamics of the glucose level, it should be noted that although this indicator has increased, it is within physiological norms. The level of erythrocytes and hemoglobin are within the normal range.

The influence of biologically active preparations on the reproduction functions of sows was studied. Experimental data on the number of piglets obtained from sows are presented in table 3.

Table 3: Number of alive piglets, stillbirths and survivors on the 21st day, according to feed ration

Nest nr.	Control group (CG)				Experimental group (EG) – 10 ml				Experimental group (EG)–20 ml			
	At birth		In 21 days		At birth		In 21 days		At birth		In 21 days	
	alive, heads	dead, heads	alive, heads	deadhead	alive, heads	dead, heads	alive, heads	deadhead	alive, heads	dead heads	alive heads	dead head
1	11	2	11	0	15	3	15	0	10	1	10	-
2	9	2	9	0	7	2	7	0	9	-	9	-
3	11	0	10	1	16	3	16	0	15	2	15	-
4	12	3	12	0	4	1	4	0	15	1	15	-
5	11	6	10	1	14	0	14	0	14	-	13	1
Average	10,8± 0,5	2,6± 0,9	10,4± 0,4	2	11,2± 1,96	1,8± 0,6	11,2± 1,96	0	12,60 ±1,29	0,8± 0,37	12,± 1,25	1

The data presented in table 3 show that the number of piglets born in the first experimental group (10 ml) was on average 11.2 or 0.4 heads more than the average indicators of the control group. In the second experimental group (20 ml) we obtained an average of 12.60 heads, or 1.8 heads more than the average indicators of the control group. The number of stillborn piglets obtained in the first experimental group (10 ml) was on average 1.8 ± 0.6 heads, and in the second experimental group (20 ml) we obtained an average of 0.8 ± 0.37 heads, which is 0.8 heads less in the first experimental group (10 ml) and accordingly 1.8 heads of stillborn piglets less in the second experimental group (20 ml) than in the control group.

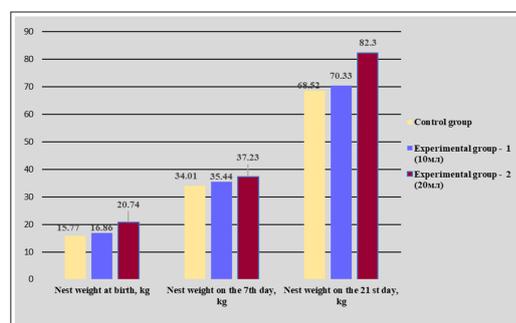


Figure 1: Nest weight at birth, on the 7th and 21st days, depending on the ration

The data presented in figure 1 show that enrichment of the rations of sows during 30 days before farrowing and 10 days after farrowing

with the LB-MP preparation has a positive effect on the average live weight of piglets 21 days after farrowing. The average live weight of piglets at 21 days in the first experimental group (10 ml) was higher than 1.81 kg, and in the second experimental group (20 ml) higher than 13.78 kg compared to the control group.

Conclusion

Introduction of the biologically active preparation - LB-MP to the main diet of sows during 30 days before weaning and 10 days after weaning, allowed to obtain the highest indicators of the birth of live piglets (11.2 ± 1.96) and (12.60 ± 1.29), reduce the amount of stillborn piglets (0.8 heads) and (1.80 heads), increase the live weight of the nest at 21 days in the first experimental group by 1.81 kg and respectively by 13.78 kg in the second experimental group compared to control.

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