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EFFECTIVENESS OF PREBIOTICS IN FEEDING EARLY WEANED PIGLETS

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Feeding of probiolact to early weaned young pigs at the rate of 2,0, 2.5 and 3,0 g per head daily facilitates the increase of average daily gains and that enables to reduce feed consumption has been established. The most effective dose of probiolact feeding is 2,5 g.

Nowadays one of the priority approaches of agricultural development is the production of environmentally friendly animal products without application of various growth stimulator, antibiotics and hormone preparations [1, 8].

Recently, natural biologically active substances that normalize digestive processes in the organism, effectively adjust qualitative and quantitative composition of microflora of the digestive tract of animals have been widely introduced as a safe alternative to antibiotics [2, 3, 4].

These substances include prebiotics, which are indigestible carbohydrate components of food that selectively stimulate and increase the activity of beneficial microflora inhibiting the development of pathogenic and conditionally pathogenic microflora, thus improving the state of the digestive tract [9, 5].

The aim of our study is to study the effectiveness of a new food supplement with a prebiotic effect applied for pig feeding.

The object of the research is the performance of early weaned young pigs of large white breed.

The subject of the research is a new prebiotic preparation prebiolact and its application in pig feeding.

Materials and methods. Four similar groups, each one containing 15 pigs, were selected for the experiment. 30-day pigs were weaned when their live weight was 7.2–7.4 kg. Scheme of the experiment is shown in Table 1.

The first group was a control one. After a 15-day period of comparison young pigs of the second group received prebiolact in the amount of 2.0 g per pig daily for 92 days of the basic period, the third and fourth groups – 2.5 g – 3.0 g per pig daily. In the final period post-effect of feeding of this preparation was studied until the live weight of pigs was 110–120 kg.

Animals were kept in group. Each month they were weighed and consumed feeds were registered. Biometric processing was performed according to the method of M.O. Plokhinsky [7].

Results and analysis. In the comparative period animals from all groups were fed a basic diet, which provided average daily gains at the level of 200–220 g (Table 2).

In the basic period of the experiment pigs were fed diets that had nutritious value of 1.89 feed units and 234 g of digestible protein. Every day animals were

Table 1. Scheme of the experiment

Groups	Number of animals, pigs	Feeding characteristics by the periods		
		comparative, 15 days	basic, 92 days	final, until live weight is 110 120 kg
1 (control)	15	BD*	BD	BD
2	15	BD	BD + prebiolact 2,0 g/pig daily	BD
3	15	BD	BD + prebiolact 2,5 g/pig daily	BD
4	15	BD	BD + prebiolact 3,0 g/pig daily	BD

**BD – basic diet*

fed: barley fodder flour – 0.64 kg, corn fodder flour – 0.30 kg, extruded soybean – 0.28 kg, sunflower meal – 0.15 kg, skimmed milk – 1.5 kg. Besides, the diet was balanced by the vitamin and mineral composition. Its structure was as follows: concentrated feeds – 89.7 %, fodder of animal origin – 10.3 %. 1 feed unit accounted for 124 g of digestible protein. The ratio between calcium and phosphorus was 1.2:1.0.

The results of the studies have established a positive effect of prebiolact on the performance of animals (Table 3). Thus, feeding of the preparation at the dose of 2.0 g per pig daily facilitated probable increase of average daily gains by 28 g or 6.4%, which resulted in a tendency towards the increase of the live weight of animals at the end of the period by 4.1 %, respectively. Feed consumption was decreasing by 0.26 feed units or 6 %.

When the dose of the preparation was 2.5 g per pig daily, average daily gains increased by 65 or 14.9 %. This made it possible to reduce consumption of feed units by 12.9 %, digestible protein – by 13 %, dry matter – by 12.9 %, lysine – by 13.2 %, methionine + cystine – by 12.8 %.

When increasing the dose of this preparation up to 3.0 g per pig daily, the performance of animals grows by 14% and an absolute gain – by 10.8 %.

In the final period animals were fed forage mixture which consisted of fodder flour of barley and corn, extruded soybean, sunflower meal, grass meal of alfalfa, fodder beet. The structure of the diet in the final period was as follows: concentrated feeds – 92.6 kg, juicy feeds – 7.4 kg. Deficiency of macro-elements was compensated by the introduction of table salt and tricalciumphosphate. The diet was fully supplied with nutrients and met the stan-

Table 2. Indices of performance of young pigs in the comparative period of the experiment, M±m, n=15

Index	1 group (control)	2 group	3 group	4 group
Live weight per pig: at the beginning of the period, kg	7,4±0,09	7,2±0,10	7,2±0,10	7,3±0,12
at the end of the period, kg	10,7±0,15	10,2±0,17	10,3±0,19	10,5±0,18
Duration of the period, days	15	15	15	15
Average daily gain, g	220±6	200±7	207±8	213±6

Table 3. Indices of performance of young pigs when feeding prebiotics in the basic period, M±m, n=15

Index	1 group (control)	2 group	3 group	4 group
Live weight per pig: at the beginning of the period, kg	10,7±0,15	10,2±0,17	10,3±0,19	10,4±0,18
at the end of the period, kg	50,7±0,69	52,8±0,61	56,3±0,55***	56,1±0,91***
Duration of the period, days	92	92	92	92
Live weigh gain: total, kg	40,0±0,60	42,6±0,51*	46,0±0,45***	45,6±0,85***
average daily, g	435±7	463±6*	500±5***	496±9***
± before control, g	-	+28	+65	+61
%	-	+6,4	+14,9	+14,0
Feed consumption per kg of gain, feed units	4,34	4,08	3,78	3,83
±before control, feed units	-	-0,26	-0,56	-0,51
%	-	6,0	12,9	11,7
Digestible protein, g	538	505	468	471
Dry matter, kg	3,1	2,9	2,7	2,7
Lysine, g	35,7	33,5	31,0	31,3
Methionine+cystine, g	23,3	21,9	20,3	20,4

*Note: *P<0,05, **P<0,01, ***P<0,001*

Table 5. Performance of pigs in the final period of the experiment, M±m, n=15

Index	1 group (control)	2 group	3 group	4 group
Live weight per pig at the beginning of the period, kg	50,7±0,69	52,8±0,61*	56,3±0,55***	56,2±0,91***
at the end of the period, kg	114,5±1,3	119,1±1,6	126,7±0,86***	125,3±1,63***
Duration of the period, days	90	90	90	90
Live weight gain total, kg	63,8±0,63	66,3±1,01	70,4±0,42***	69,2 ±0,91**
Average daily gain, g	709±7	737±11	782±5***	769±10**
± before control, g	-	+28	+73	+60
%	-	+3,9	+10,2	+8,4
Feed consumption per kg of gain, feed units	4,93	4,75	4,48	4,55
±before control, feed units	-	-0,18	-0,45	-0,38
%	-	+3,6	+9,1	+7,7
Digestible protein	427	412	388	394
Dry matter	3,86	3,72	3,50	3,56
Lysine	26,6	25,5	24,1	24,5
Methionine +cystine	19,2	18,4	17,4	17,7

Table 6. Fattening characteristics of pigs over the entire period of the experiment, M±m, n=10

Index	1 group (control)	2 group	3 group	4 group
Live weight per pig at the beginning of the period, kg	10,7±0,15	10,2±0,17	10,3±0,19	10,4±0,18
at the end of the period, kg	114,5±1,3	119,1±1,6 T	126,7±0,86***	125,3 ±1,63***
Duration of the period, days	182	182	182	182
Live weight gain, kg	103,8±1,21	109,2±0,72**	116,4 ±0,76***	114,8±1,57***
Average daily gain, g	570 ±7	600 ±4**	640±4***	631±9***
± before control: g	-	+30	+70	+61
%	-	+5,2	+12,3	+10,7
Feed consumption per kg of gain, feed units	4,79	4,55	4,27	4,33
± before control: feed units	-	-0,24	-0,52	0,46
%	-	+5,0	+10,9	+9,6

dards of feeding animals of this age group. Nutritious value was at the level of 3.5 feed units and 303g of digestible protein.

The results obtained show a positive effect of the preparation on the performance of animals even after its feeding. The tendency to increase the productive indicators was retained and practically kept at the level of the basic period. Thus, average daily gains in the second, third, and fourth groups exceeded the rate of the first group by 28, 73, and 60g or 3.9, 10.2 and 8.4%, making it possible to increase live weight at the end of the period by 4.6, 10.6, and 9.4% (Table 5). There was also a reduction of consumption by the researched animals of the digestible protein, dry matter, essential amino acids on average by 8,5-9,0 %.

The results of researches over the entire period of pig breeding show that the best performance was obtained by feeding doses of 1.5 g per pig daily, when average daily gains were at the level of 640 g, which is 12.3% higher than a control index. Feeding of the preparation also makes it possible to reduce consumption of feed units by 10.9% (Table 6).

Conclusions: 1. Feeding of prebiolact at the dose of 2.0, 2.5 and 3.0 g per pig daily facilitates the increase of average daily gains by 28, 65, and 60 g або 6.4, 14.9 and 14.0% that enables to reduce feed consumption by 6.0, 12.9 and 11.7%.

2. Post-effect of the preparation is characterized by the increase of average daily gains by 3.9, 10.2 та 8.4%, that makes it possible to increase live weight at the end of the period by 4.6, 10.6 та 9.4%.

3. It has been established that the most effective dose of probiolact feeding is 2.5 g, which leads to average daily gains by 12.2%.

Література

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АННОТАЦИЯ

Кучерявый В.П., Бойчук В.М. *Эффективность использования пребиотиков в кормлении раноотнятых поросят // Биоресурсы и природопользование. – 2014. – **6**, № 3–4. – С. 118–122.*

Установлено, что скармливание пребиолакта ранотнятому молодняку свиней в дозах 2,0, 2,5 и 3,0 г на голову в сутки способствует увеличению среднесуточных приростов и уменьшению затрат кормов. Наиболее эффективной дозой скармливания пребиолакта является доза в 2,5 г.

АНОТАЦІЯ

Кучерявий В.П., Бойчук В.М. *Ефективність використання пребіолакту в годівлі ранньовідлучених поросят // Biological Resources and Nature Management. – 2014. – **6**, № 3–4. – P. 118–122.*

Показано, що згодовування пребіолакту ранньовідлученому молодняку свиней в дозах 2,0; 2,5 і 3,0 г на голову за добу сприяє збільшенню середньодобових приростів та зменшенню витрат кормів. Післядія препарату виявляється у збільшенні продуктивності свиней. Встановлено, що найбільш ефективною дозою пробіолакту є 2,5 г.