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EFFECT OF PROBIOTICS CLOSTAT AND LAKTINA OVER PHEASANTS FOR RESETTLEMENT

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Abstract

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The aim was to determine the effect of probiotics CloSTAT and Laktina in pheasants for resettlement. The probiotics CloSTAT was in a dose of 0.5 g/kg forage and Laktina - in a dose of 0.5 g/l water. The experiment continued 90 days (from the day of pheasants' incubation). Every day during the experiment was controlled the dynamics of weight growth, the consumption of forage, the received energy and nutritive substances and the state of health. The utilization of food and the received substances was determined based on the controlled indexes. It was determined a higher growth of the experimental groups, better utilization of forage, energy and nutritive substances toward the control one during the grower period.

Key words: gain, utilization, forage, plumage

Introduction

During the last 2 – 3 decades in science and in the practice was imposed the conviction that the probiotic products and chemicals can improve the state of health and the productivity of animal (Fooks and Gibson, 2002; Grigorova et al., 2004).

Probiotic theme attains a special actuality in the light of the restriction for antibiotics' use as a growth stimulus in the animal breeding, and for the increased requirements of food quality.

The received results from the use of probiotics by chicken indicate an improvement of the productive indexes. This positive effect is a result mainly of the sustainment of normal and healthy microbe population indigestive system (Stoyanov et al., 2003; Luckstadt et al., 2004). Some of the probiotics are used mainly as supplement in mixtures (Aleksieva et al., 2004; Doyle, 2004), and the others - as supplement in water (Elliot, 2004).

The results, received by different doses, rate frequency and scheme of feed, kind of probiotic are rather contradictory (Ignatova, 2004; Georgieva et al., 2006). Most of the experiments are carried out with poultry. There are no experiments with useful poultry – pheasant, quail.

The aim of this study was to compare the effect of supplement of probiotics CLoSTAT and Laktina over the state health and some economic indexes to pheasant, intended for resettlement.

Materials and Methods

The investigation was carried out for determination the influence of probiotics CLoSTAT and Laktina over pheasant's state health and some economic indexes.

The scheme of the experiment is present on Table 1.

In the investigation, take part two probiotics. The firms' producer recommends the next doses:

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*- dose of probiotic CloSTAT- 0.5 g/kg (0.5 kg/t) recommend by Kemin Industries, Inc., U.S.A

**- dose of probiotic Laktina – 0.5 g /l drinking water recommend by Laktina Ltd. – Bulgaria

The prevention was realized with the products of CEVA SANTE ANIMALE during the growth period.

Antibiotic QUINOCOL through water daily in approximate dose of 1ml/2l water, recommended by the producer from 1st to 5th day.

Vaccination against Pseudoplague with vaccine CEVAC BI L through eye drops at 7th, 28th, 64th and 80th day;

Vaccination against Gumboro with vaccine CEVAI GUMBO L through drinking water at 14th and 22th day;

Vaccination against Measles with vaccine CEVAC FP L through application in wing crinkles at 56th day.

Probiotic CLoSTAT contains spores Bacillus subtilis 2x107 cfu/g, Calcium Carbonate;

Probiotic Laktina contains *Lactobacillus bulgaricus*, *Streptococcus termophilus, Laktobacillus casei, Bifidobacterium longum, Lactobacillus acidofilus tpc* in 1g no less from 1 milliard. The composition of the combined forages is shown at Table 2.

In Table 3 is present the chemical analysis of the base of which is calculated the received energy and nutritive substances in pheasants during different periods. It is visible that there are no differences in the planet contents and of this of analysis. The pheasants are fed *ad libitum* in-group. The breeding of pheasants is on floor. The temperature, air moisture, density were optimum. During the experiment was controlled live development, consumption of forage, respectively energy, protein, healthy condition. The received results were processed statistically (Statmost).

Results and Discussions

The data for live development of pheasants through the experimental period are present in Figures 1 and 2. During the first and second decade of the starter period, the gain of experimental groups varies, and it is lower toward control group. At the end of starter period (28 – 30 d) the pheasants, receiving probiotic Laktina have had higher gain (14.5 $g.kg^{-1}$) than the control group, but the gain of the experimental group receiving probiotic CLoSTAT is with 65.9 $g.kg^{-1}$ lower toward control group.

Comparison results show that the result of the group receiving Laktina are better than those of the receiving CLoSTAT. The positive effect of these supplements continues until the end of the period. The gain for the Ist group is with 78.6 $g.kg^{-1}$ for the IInd group with 146 $g.kg^{-1}$ higher in comparison with the control group. Other authors determine too the positive influence of the probiotics over the weight development of chicken (Ignatova, 2004; Georgieva et al., 2006) and quail (Aleksieva et al., 2004).

The consumption and utilization of forage and the received energy and nutritive substances during both periods are present in Table 4, and in Figures 3 and 4.

It is visible that with respect of the received forage during the starter period there are no differences between the groups. During the grower period, there are variances in the consumption of forage and the received substances in the experimental groups (from +100 $g.kg^{-1}$ for the first group to 127 $g.kg^{-1}$ for the second group). With respect of utilization of forage (Table 4 and Figures 3 and 4) the results show higher records for the experimental groups toward the control samples (81.9 $g.kg^{-1}$ for the group receiving CloSTAT and 71.8 $g.kg^{-1}$ for the group receiving Laktina). For the grower period the utilized forage, energy and proteins for one unit of growth is lower in the tested groups toward the control one (with 40.3 $g.kg^{-1}$ for the first experimental and 59.5 $g.kg^{-1}$ for the second experimental group). Comparing the two probiotics with respect of utilization of forage, energy and proteins the differences cannot be proved (100 – 200 $g.kg^{-1}$ in favour of Laktina). During the ex-

Table 1
Scheme of the experiment

Indexes	Control group	Experimental group I	Experimental group II
Starter feed (1-28 day)	Combined forages for pheasants + prevention	Combined forages for pheasants + probiotic CloSTAT in dose 0.5 g/kg*	Combined forages for pheasants + probiotik Laktina – 0.5 g /l drinking water **
Grower feed (29-90day)	Combined forages for pheasants + prevention	Combined forages for pheasants + probiotic CloSTAT in dose 0.5 g/kg*	Combined forages for pheasants + probiotik Laktina – 0.5 g /l drinking water **

Table 2
Composition of combined forages

Ingredients, g.kg^{-1}	Starter feed (0-28d)	Grower feed (29-90d)
Wheat+enzyme (105 CP)	494.5	611.6
Soybean meal (460 CP)	380	300
Fish meal (660 CP)	90	50
Sunflower oil	12	10
L-Lysine	-	1
DL-Methionine	1	1.5
Treonine	-	0.6
Salt	1	1.8
Limestone	12	11
Dicalcium phosphate	4	8
Sodium bicarbonate	2	1
Aviax*	0.5	0.5
Mikotox	1	1
vitamine –mineral mixture Rovimix 11–C RonoP starter	2	2
Nutritive value		
Moisture,	111	118
ME, kcal/kg	2872	2912
ME, MJ/kg	12	12.2
Crude Protein	280	241
Crude Fats	36	33
Linoleic acid	16	14
Crude Fiber	38	36
Crude ash	58	55
Ca	10.7	9.8
Available phosphorus	5.4	5.1
Phosphorus	8.4	8.0
Sodium	2.1	1.8
Chlorine	2.1	2.2
Chlorides	0.3	3.3
Lysine	17.0	14.1
Methionine	5.4	5.0
Methionine + Cysteine	10	9.3
Treonine	10.5	9.2
Tryptophane	3.5	3.0
Arginine	18.5	-

*to the combined forages of the control group is added Aviax 500g.kg^{-1} - which contains semduramicin sodium.

Table 3
Chemical structure of combined forages, g.kg^{-1}

Forages	Dry matter	Crude protein	Crude fats	Crude fiber	Crude ash	NFE
Starter feed	907.9	301.7	30.8	33.8	64.0	477.6
Grower feed	900.6	268.1	32.2	33.6	62.1	504.6

periments with chicken broilers that receive probiotics CloSTAT Teo and Tan (2004, 2006) it has been determined that there is an improvement in usage of the received forage, energy and proteins.

The data for the death rate show variances of the index in all groups during the starter period (Figure 5).

During the grower period there is a tendency of higher death rates in both experimental groups (Table 5).

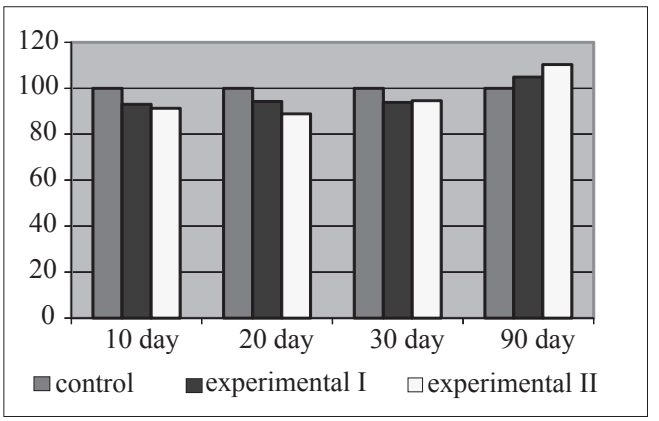

Fig. 1. Weight development

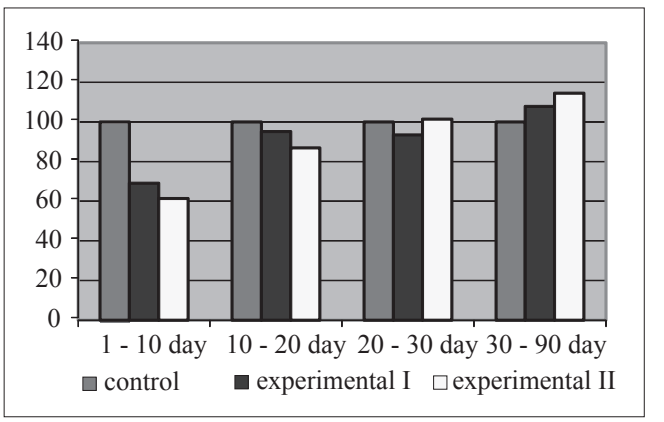

Fig. 2. Growth

Table 4
Feed, energy and protein consumption and utilization of forage, energy and protein, %

Groups	Control		Experimental I		Experimental II	
Periods Indexes	Starter (0-28 day)	Grower (29-90 day)	Starter (0-28 day)	Grower (29-90 day)	Starter (0-28 day)	Grower (29-90 day)
Feed intake, total period	100	100	100	101	100	87.30
Feed efficiency	100	100	108.18	95.97	107.18	94.05
Energy intake, total period	100	100	100	101	100	87.91
Energy efficiency	100	100	108.19	95.97	107.19	94.05
Protein intake, total period	100	100	100	101	100	101.27
Protein efficiency	100	100	108.26	95.97	104.92	108.21

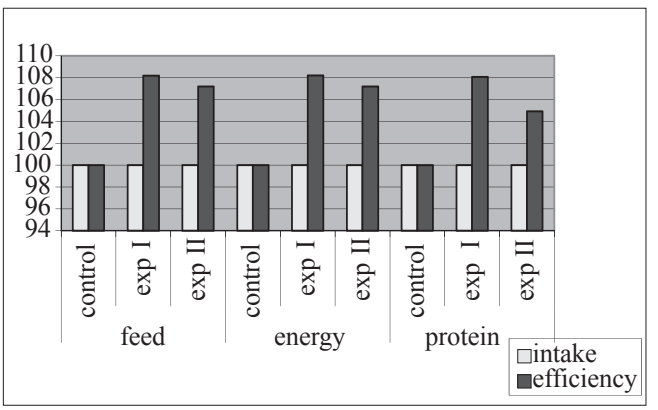

Fig. 3. Feed energy and protein intake and conversion during the starter period

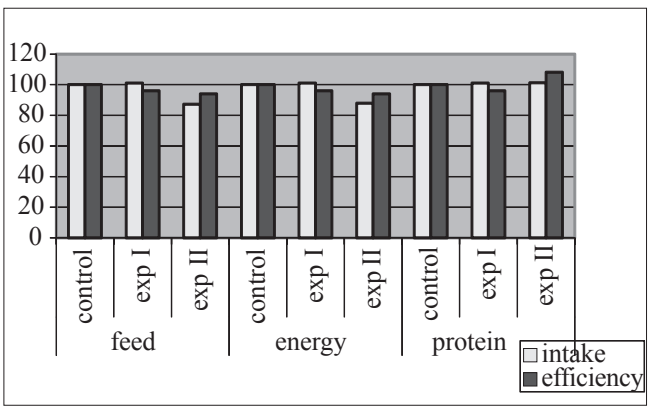

Fig. 4. Feed, energy and protein intake and conversion during the grower period

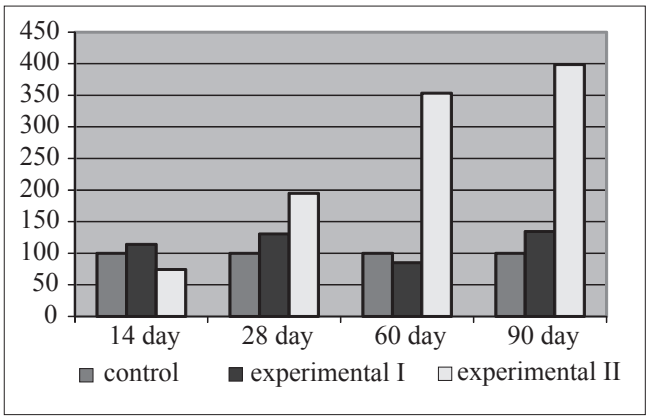

Fig. 5. Mortality during the growth periods

A possible explanation for the higher death rates during the grower period is the doses, which have been recommended by the producer (for the first groups 0.5

Table 5
Mortality during the growth periods, %

Age, days	Groups		
	Control	Experimental I	Experimental II
14	100	113.95	74.38
28	100	130.56	194.88
60	100	85.058	353.56
90	100	134.21	398.68

90 days old male and female pheasants (Phasianus colchicus colchicus), control group

90 days old male and female pheasants (Phasianus colchicus colchicus), experimental group I


90 days old male and female pheasants (Phasianus colchicus colchicus), experimental group II

g/kg and 0.5 g/l water). Most probably, the doses higher than recommended ones would have positive influence on this index, having in mind the longer period of growth of pheasants and the lower rates of utilization of forage and nutritive substances. There are also some other investigations that support our conclusions. The data from the quoted investigations are mainly for broilers (Teo and Tan 2004, 2006). There are no records for such studies for pheasants and this requires additional experiments. On these photographs are present male and female pheasants at the end of the experiment. The estimation by sight show the best plumage in both sexes (first group-received probiotics Laktina with water). Probably the increased protein synthesis in the experimental groups noticed also by other authors has positive influence on them. There are similar investigations for pheasant's plumage by Tyufekchiev (2006) when experimenting with pheasants receiving OVOCAP.

Conclusions

In equal conditions of cultivation was determined higher growth in the tested groups toward the control sample during the grower, having in mind that it is higher with Laktina. Including probiotics for pheasants in doses of 0.5 g/kg forage and 0.5 g/l water has positive influence over the utilization of forage, energy and nutritive substances, mainly in grower period.

The doses used here and the way of their application require additional investigations and inclusion of new indexes which will completely confirm the effect over the death rates. The better plumage of the tested groups gives us the reason to propose future investigations in the same direction and the optimization of doses and ways of application of probiotics.

References

Alexieva, D., A. Genchev, M. Lyutskanov, A. Vachkov, St. Vitanov and V. Simeonova, 2004. Investigation of the effects of Lactina probiotic products for fattening of Japanese quail eggs. **XLI** (4): 28-31 (Bg).

Christian, L., S. Nizametin, A. Hasan and A. Agma, 2004. Acidifier – a modern alternative for anti-biotic free feeding in livestock production with special focus on broiler production. *Veterinarija ir zootechnika*, **1** (27): 91-94 (Lt).

Doyle, M., 2004. Alternatives to Antibiotic Use for Growth Promotion in Animal Husbandry. Food Research Institute, Madison, WI 53706.

Elliot, M., 2004, Application of new concepts in pullet and layer nutrition. *A&E Nutrition Services*, PA.

Fooks, L. J. and G. R.Gibson, 2002. Probiotics as modulators of gut flora. *Br. J. Nutr*., **88** Suppl.1: 39-49.

Georgieva, V., G. Ganev, S. Chobanova, I. Manolov and A. Ilchev, 2006. Study the effect of probiotic supplements Lactina, Atsidifayer and their combinations in compound feed for broilers. **XLIII** (1): 18-21 (Bg).

Grigorova, S., S. Surdzhiyska and D. Stoyanov, 2005. Effect of probiotic Lactina on productivity of laying hens. *Animal Sciences*, 1 (Bg).

Ignatova, M., 2004, Study the effect of the addition of probiotic Enterosan broiler chickens. *Animal Science*, **XLI** (4): 20-22 (Bg).

Stoyanov, D., 2004. Testing the effect of the addition of probiotic Lactina to pelleted feed for broiler chickens. *Animal Science*, 2: 9 – 12 (Bg).

Teo, A. Y. and H. M. Tan, 2006. Effect of *Bacillus subtilis* PB6 (CloSTAT) on broilers infected with a Pathogenic Strain of *Escherchia coli*. *Appl. Poult. Res*., **15:** 229-235.

Teo, A. Y.and H. M.Tan, 2004. Evaluation of the Performance and Intestinal Gut Microflora of Broilers Fed on corn-Soy Diets Supplemented With *Bacilus subtilis* PB6 (CloSTAT), Absstr. XXII World Poult. Congr., Istanbul, Turkey. World's Poult.Sci. Assoc., Beekburgen, the Netherlands, p. 174.

Tyufekchiev, K., 2006, Influence of environmental substance OVOCAP on biological indicators and ecological plasticity of hunting pheasant and chickens from initial population White Plymouth Rock-mini, Ph.D.Dissertation, Blagoevgrad (Bg).

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