

Effect of feed supplements on the occurrence of *Coccidia* oocysts in the digestive tract of pheasants

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The occurrence of coccidiosis is an enormous problem of pheasant farming. The aim of this study is to show, that this disease can be cured by unconventional dietary supplements. Dietary supplements which were used in this study were as follows: prebiotics (*Ascophyllum nodosum*), probiotics (*Lactobacillus thermophilus*) and homeopaths. Four groups of pheasants were made – three experimental groups and one control group. The experimental groups received the feed supplements orally mixed in water for four weeks daily from the first day after birth. All groups were consisted of 15 individuals. The pheasant *Phasianus colchicus* was used in this experiment. Dietary supplements were served for 30 days and the experiment was three times repetition. The experiment at each group lasted for 56 days. The favourable effect of homeopaths ($P < 0.05$) and *Lactobacillus thermophilus* ($P < 0.05$) on the intestinal tract of pheasant was statistical significant.

Keywords: *Eimeria tenella*, homeopaths, prebiotics, probiotics, *Phasianus colchicus*

1 Introduction

Coccidiosis is one of the most frequently occurring mass disease in young pheasants, partridges and turkeys and may significantly limit the success of the whole breeding. *Coccidia* are unicellular parasites that in birds, like in mammals, primarily attack the intestinal mucosa and evoke inflammatory changes, known as coccidiosis (Gassal, 2003).

In this study the aim of the experiment was to reduce the incidence frequency of *coccidia* oocysts in the intestinal tract of pheasants while administering different additives. Chosen additives were homeopaths, probiotics and prebiotics.

Homeopathy usually uses medicaments extremely diluted. Their effectiveness depends on bio-energy mechanisms. It uses extracts of plants and minerals for their medicine and adds derivatives of various modern drugs and chemicals in extreme dilution. It is also to be used in the fight against infectious diseases (Rocha and Pacheco, 2006).

Prebiotics are non-digestible food ingredients that promote the growth or activity of intestinal microflora and improve the health of the consumer. This usually involves hardly digestible or non-digestible oligosaccharides. These ones become in the colon a substrate for certain

desirable bifidobacteria, which ferment them – main waste products are butyric, propionic and acetic acid (Kalac, 2003).

Probiotics are live microorganisms that beneficially affect the health status of intestine by modifying of intestinal microflora, especially in young animals (Streitz, 2006).

2 Material and methods

The experiment took place from April 2014 to July 2014. The experiment included a total of 180 pieces of *Phasianus colchicus*. These pheasants were involved in the experiment continuously. In April 2014, the first group of pheasants created, that was divided into four subgroups of 15 pieces – the first group *Ascophyllum nodosum* (prebiotic), the second group of homeopathy – PVB wormhole statum (*Ascaris*, *Oxyuris*, *Taenia Saginata*, *Cina*, *Sabadilla*, *Spigelia*, *Anthelmia*, *Cuprum*, *Oxydatum*, *Granatum* and *Sulfur*), the third group *Lactobacillus thermophilus* (probiotic) and the control group. The same groups and subgroups were created in May and June 2014. The feed supplements received all *Phasianus colchicus* from the first to the thirtieth day after birth. The pheasants were kept in outdoor aviaries. BŽ diet composition from Velas a. s. company was follows: 36% corn, 32% wheat, 10% soybean meal toasted, 10% wheat bran, 4% fish meal, 2% yeast, 2% lucerne

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Table 1 The mean power of infection oocysts coccidia in the intestines of *Phasianus colchicus*

Groups	N	±s.d.	P	Significance
<i>Ascophyllum nodosum</i>	45	2.00 ±0.00	0.214	–
<i>Lactobacillus thermophilus</i>	45	1.50 ±0.47	0.034*	2 : 4*
Homeopathy	45	1.00 ±0.00	0.012*	3 : 4*
Control	45	3.33 ±0.47	M	–

*P < 0.05

meal, 1.2% ground limestone, 0.5% dicalcium phosphate, 0.3% sodium chloride, vitamins A, D3 and E. Methodology for determining the number of oocysts coccidia was carried scatology examination of samples flotation in Sheather sugar solution. Determining the number of coccidia oocysts was performed in microscopically.

The first group "*Ascophyllum nodosum*" was administered orally with 40 ml of the hydrolyzate from brown seaweed in water for four weeks daily. The second experimental group "homeopathics - PVB" received orally 20 ml homeopathics mixed in water for four weeks daily. The third group "*Lactobacillus thermophilus*" was given one tablet of probiotics in water for four weeks daily. The fourth group was a control one and received a feed ration unchanged.

After 56 days, all pheasants from each of the group were weighed, then slaughtered and then in their intestines the frequency of coccidia oocysts' occurrence was analyzed. Differences between results were evaluated by program Statistica 1.0, using two-way ANOVA.

3 Results and discussion

Based on the processed data, we can confirm that after three repetitions performed from April to July 2014 statistically positive effects of homeopathic were proved compared with the control group. The incidence rate of oocysts of coccidia in the intestinal mucosa of pheasants reduced $P < 0.05$. The positive effect of homeopathic remedies on health status and reduction of pathogens incidence confirm also studies in poultry (Velkers et al., 2005; Berchieri et al., 2006) and sheep (Rocha and Pacheco, 2006).

Statistically significant was also the influence of probiotic *Lactobacillus thermophilus* $P < 0.05$. Improving health by means of probiotics administration confirm in their studies (Ayed and Chaoui, 2011; Dibaji et al., 2012; Panda et al., 2003; Houndonougbo et al., 2011; Khan et al., 2012; Fuller, 1989; Sojoudi et al., 2012).

In the group with prebiotic product *Ascophyllum nodosum* a positive trend of its efficacy on incidence of coccidia oocysts in the digestive tract of *Phasianus*

colchicus was observed ($P > 0.05$), but the effect did not reach any statistical significance. *Ascophyllum nodosum* demonstrated a positive influence on the creation of natural immunity during the whole period of feces testing. Coccidia infection was at very low level and therapeutic breaks did not have any effect on the extent of infection.

4 Conclusions

When testing designated biopreparations a beneficial effect on the incidence of oocysts was demonstrated in two out of three samples. It shows the possibilities for further use in *Phasianus colchicus* breeding and it is a promise even for rearing of more resistant individuals and improvement of the overall status of *Phasianus colchicus* in natural conditions because the administration of homeopathic and probiotics appear to promote the creation of natural immunity of reared *Phasianus colchicus*. These preparations should also gain popularity for other reasons, one of which is a lower purchase price, whether prebiotics and homeopathic remedies. The other reason could be ecological breeding of *Phasianus colchicus* and subsequent production of *Phasianus colchicus* meat in "bioquality".

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References

- AYED, M.H. and GHAOUI, F. (2011) Efficiency of supplementing *Saccharomyces cerevisiae* var. *ellipsoideus* for improved growth performance and carcass yield in broilers. *Research Opinions in Animal and Veterinary Sciences*, vol. 1, pp. 371–374.
- BERCHIERI, A. et al. (2006) Evaluation of isopathic treatment of *Salmonella enteritidis* in poultry. *Homeopathy*, vol. 95, pp. 4–97.
- DIBAJI, S.M., SEIDAVI, A. and ASADPOUR, L. (2012) Effect of dietary inclusion of the synbiotic Biomin IMBO on broilers' some blood metabolites. *Research Opinions in Animal and Veterinary Sciences*, vol. 2, pp. 10–13.
- FULLER, R. (1989) Probiotics in man and animals. *Journal of Applied Bacteriology*, vol. 66, pp. 365–378. doi: <http://dx.doi.org/10.1111/j.1365-2672.1989.tb05105.x>

GASSAL, S. (2003) Untersuchungen zum Ekto- und Endoparasitenbefall von Fasanhähnen (*Phasianus colchicus*). Dissertation, Veterinärmedizinische Fakultät der Universität Leipzig, p 255.

HOUNDONUGBO, M.F., CHRYSOSTOME, C.A.A.M. and AMOUSSA, Z.L.A.O. (2011) Tchoukoutou residue and yogurt as feed additives in broilers feed. *Research Opinions in Animal and Veterinary Sciences*, vol. 1, pp. 597–600.

KALAC, P. (2003) Functional foods – Steps to Health. Czech Budejovice, Dona, p. 130 (in Czech).

KHAN, R.U., RAHMAN, Z., JAVED, I. and MUHAMMAD, F. (2012) Effect of vitamins, probiotics and protein on semen traits in post-molt male broiler breeders. *Animal Reproduction Science*, vol. 135, no. 4, pp. 85–90.

PANDA, A.K. et al. (2003) Production performance, serum/ yolk cholesterol and immune competence of white leghorn

layers as influenced by dietary supplementation with probiotic. *Tropical Animal Health and Production*, vol. 35, pp. 85–94.

ROCHA, D.R.A. and PACHECO, R.D.L. (2006) Amarante AFT, Efficacy of homeopathic treatment against natural infection of sheep by gastrointestinal nematodes. *Brasilia Journal Parasitology Veteterinaria*, vol. 16, no. 1, pp. 24–27.

SOJOURI, M.R., DADASHBEIKI, M. and BOUYEH, M. (2012) Effects of different levels of symbiotic. *Research Opinions in Animal and Veterinary Sciences*, vol. 2, pp. 243–248.

STREITZ, E. (2006) Alternative additives – an area with great potential. *DGS Magazin*, vol. 26, no. 1, pp. 30–33.

VELKERS, F.C. et al. (2005) Isopathic and pluralist homeopathic treatment of commercial broilers with experimentally induced colibacillosis. *Research Veterinary Science*, vol. 78, pp. 77–83. doi:<http://dx.doi.org/10.1016/j.rvsc.2004.06.005>