

INFLUENCE OF DIFFERENT OILS, ORGANIC AND INORGANIC SELENIUM AND VITAMIN E ON LAYING HENS' PRODUCTIVITY AND BLOOD PARAMETERS

Vilija Buckiūnienė¹, Romas Gružasuskas¹, Asta Racevičiūtė-Stupelienė¹, Vilma Kliševičiūtė¹, Michael Grashorn²

¹Lithuanian University of Health Sciences, Veterinary Academy

Tilžės st. 18, LT-47181 Kaunas, Lithuania, tel/fax: +370 37 363505, e-mail: gruzauskas@lva.lt

²Institute of Animal Science WG Poultry Science Dept. Population Genomics

(470C) University of Hohenheim Garbenstrasse

17 70599 Stuttgart, Germany, tel. +49 711 459 22484, e-mail:

Abstract. In this study, effects of using different oil sources (sunflower oil, rapeseed oil and linseed oil), organic and inorganic selenium and vitamin E on laying hens' productivity and blood parameters of 22–30 weeks of age were evaluated. A total of 60 Lohmann Brown laying hens, which were 22 weeks old, were assigned to 6 treatment groups (10 hens per each treatment group) and fed experimental diets for 8 weeks. They were fed diets containing 5% sunflower oil + 0.5 mg Na₂SeO₃ + 40 mg/kg vit. E (Control group 1), 5 % rapeseed oil + Na₂SeO₃ 0.5 mg + 40 mg/kg vit. E (Control group 2), and linseed oil 5% + Na₂SeO₃ 0.5 mg + vitamin E 40mg/kg (Control group 3). Diet in Experimental group 1 was supplemented with 5% sunflower oil + Alkosel®R397 0.5 mg + 40 mg/kg vit. E, Experimental group 2 – rapeseed oil 5% + Alkosel®R397 0.5 mg + 40 mg/kg vit. E, and Experimental group 3 – linseed oil 5% + Alkosel®R397 0.5 mg + 40 mg/kg vit. E. Laying hens were kept in similar conditions. They were fed with 125 g of compound feed per day. All eggs were calculated and weighed daily, and every 14 days feed conversion ratio, egg production intensity and egg numbers dynamics were calculated. Cholesterol, HDL-cholesterol, triglycerides, GOT and GPT amount in the blood were determined by analyser INTEGRA 400/700/800.

No statistically significant effect was observed on productive performance of laying hens at the trial period ($P>0.05$). Egg production capacity of laying hens during the whole trial period (22–29 weeks) did not differ significantly; only in Group 1, it increased by 4% ($P>0.05$) compared with Control group 1. The average egg weight of the whole period (22–29 weeks) increased by 1% in Group 1 and by 3% in Group 2 but decreased by 1% in Group 3 compared with the control groups ($P>0.05$). In the last period (28–29 weeks), the food consumption ratio per 1 kg of egg weight gain decreased by 8% in Group 3 compared with Control group 3 ($P>0.05$). In other groups, this parameter did not differ significantly.

According to our results, the amount of cholesterol in the laying hens' blood increased from 13% to 27% ($P<0.05$) in all the experimental groups compared with the control groups. The use of selenomethione in compound feed increased HDL-cholesterol concentration in the blood from 4% to 16% ($P>0.05$) compared with the control group. The triglycerides concentration also had a tendency to increase from 11% to 37% compared with the control group. The GOT amount in the laying hens' blood had a tendency to decrease by 14% and 3% ($P>0.05$) in Groups 1 and 3, but in Group 2 it increased by 31% ($P<0.05$) compared with the control group. The GPT amount in the blood increased in all the experimental groups from 7 to 11 times ($P<0.05$) compared with the control groups; only in Group 1, this parameter decreased by 33% ($P<0.05$) compared with the control group.

Keywords: organic and inorganic selenium, laying hens productivity, blood parameters