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THE EFFICIENCY OF FEED ADDITIVES FROM PEAT IN OSTRICH FARMING IN UKRAINE

Liliya Stepchenko, Dnipropetrovsk State Agrarian University, Voroshilova st., 25, 49000, Dnipropetrovsk, Ukraine

+(038)0563770289, e-mail: stepchenko@rambler.ru

Lyudmila Galuzina, Suzanna Koliada, Elena Goncharova; all Dnipropetrovsk State Agrarian University, Dnipropetrovsk, Ukraine

SUMMARY

Feed additives (Hydrohumate and Humilid) derived from peat in Ukraine is quite widely used for feeding poultry and other farm animals, due to its ability to act as adaptogen, immunomodulator, regulators of metabolism, growth factors (Stepchenko *et al.*, 1995-2011). The purpose of the work was to establish the effectiveness of feed additives based on peat in ostrich farming in the steppe zone of Ukraine.

The experiment was conducted on a large complex of growing ostriches Corporation "Agro-Soyuz". Baby birds of ostriches (from several days to 11 months) and individuals (at the age of 7-8 years) were fed by food with the feed additives. Using the biologically active feed additives based on peat "Hydrohumate" and "Humilid" we can increase performance and safety of the growth rate Hy of baby birds of ostriches, and can get more meat of higher quality. We fed ostriches (at the age of 7-8 years) using of "Hydrohumate" during their reproductive period, and we noticed that the number of ostrich eggs increased on 10-15%. Adding the additives of humic nature into food of ostrich accelerates the formation of the alimentary canal, activation of digestive enzymes, improves metabolism and increases the blood forming organs.

KEYWORDS: peat, feed additives, adaptogens, digestive system, ostriches, productivity.

INTRODUCTION

People have been dealing with the ostrich farming for more than 100 years. Nowadays ostriches are bred in more than 130 countries, including the ostriches from RSA, the USA, China, Poland, Italy, Spain, and Zimbabwe. There are also ostrich farms in Egypt, Australia, New Zealand, Great Britain, France, Belgium, Holland and Scandinavian countries. The ostrich farms are one of the most profitable livestock farm. This branch allows getting some estimable dietary meat, eggs, feather and skin of ostrich. Last 2 decades the ostrich farming is dealt in Ukraine too. PJSC "Corporation "Agro-Soyuz" in Dnepropetrovsk region is the biggest enterprise in farming of the black African ostriches in Ukraine. An ostrich is a stress susceptible animal. In Ukrainian climate the treatment of adaptogens is necessary for realization of genetic potential of ostriches. In fact, bioactive feed additives of humic nature from peat are ecologically safe and possess expressed stress-protective and adaptogene action (Stepchenko *et al.*, 1995-2011). These effects was learnt on the laboratory animals and also on laying hens, broiler chickens, cattle, pigs (Stepchenko *et al.* 2000; Stepchenko *et al.* 2010). Thereby, it is very relevant to determination of influence of bioactive feed additives from peat

on the physiological state of organism, dynamics of growth and development, on survivability and productivity of the black African ostriches in the conditions of Steppe in Ukraine.

MATERIALS AND METHODS

Three experiments were conducted under the conditions of PJSC "Corporation "Agro-Soyuz" of the Dnepropetrovsk region, which works on the base of manufacturing complex on ostrich farming. For realization of every experiment we formed the analogical groups such as: "control" and "experimental" ostriches. On the beginning of our experiment there were for 100 heads in every group. Conditions of keeping and feeding were same in groups. To the general drinking of "experienced" ostriches in the first experiment we had been adding the optimal dose of the feed additives of humic nature that got from low-laying peat "Hydrohumate" and in the second and third experiments we have been adding "Humilid". The selection of peat for the receipt of feed additives was conducted according to the Screening system as evaluated by the biological activity worked out in the Problem laboratory on humic substances named of Professor L.A. Christeva in the Dnepropetrovsk State Agrarian University. (Stepchenko and Syedykh 2010). For the first experiment we used adult ostriches during their reproductive period (at the age of 7-8 years), for whom we applied the feed additives every day.

For realization of the second experiment baby birds of ostriches (from days to 60-daily age) in whose ration we added the feed additives every day. For the third experiment we chose baby birds of ostriches (from days to 11-monthly age) (for slaughter age). We added "Humilid" to the ration of the experimental group three times during two months with an interruption in two months. During experiments we studied the common functional state of ostriches' organism, dynamics and speed of their growth, middle body weight and average daily increase, index of safety of bird, level of their productivity. Additionally in the first experiment during the reproductive period of ostrich we had studied intensity of egg production of females from control and experimental groups, middle mass of eggs, impregnated, conclusion of baby birds, maintenance of vitamin E (ppm) and carotinoids (ppm) in yolk of eggs. During realization of the second experiment in the dynamics of growth of baby birds, we have conducted the linear measuring of different departments of digestive channel and determined in them pH on the generally accepted methodologies.

At the end of the third experiment additionally we have investigated the level of the meat productivity of ostriches. For what after the control slaughter of ostriches commercial muscles were selected from the categories of Fan Filet, Eye Filet, Steak and Dram steak. In them chemical composition and biological value of meat of ostriches were certain on the generally accepted methodologies. The got results of researches are treated statistically with the use of t-criterion of Student.

RESULTS AND DISCUSSION

It is shown that the usage of biologically active additives "Hydrohumate" for ostriches when watering promotes activation of the processes of their adaptation to the technological conditions of breeding, improvement of productivity (increase egg production by an average of 35,1 %, the average weight of eggs - by 9,6%).

Using hydrohumate for growing ostriches in the reproductive period, provides an increase twice in rate of carotenoids in eggs ($p < 0,001$), and tocopherol by 33,1% ($p < 0,01$) compared with the control group. Amendments to the background of positive ostriches from the experimental group the percentage fertility of eggs has increased on average by 4,1% in the control of the against (Stepchenko and Goncharova 2009).

The experimental results suggest that the inherent "Hydrohumate" corrective and adaptogenic effect on the organism spread and ostriches. It is known that in baby birds of ostriches (at the age from days to 60 days) it is the highest death rate and usually there is a subzero indexes of survivability in them, therefore many authors name this period "critical". Adding feed additives based on peat to the ration of the baby birds in this period of growth, assists the increase of middle body weight on 18 % as compared to baby birds that did not get it. Due to application of feed addition the index of survivability of baby birds of ostriches in the experimental group became higher on 22% as compared to control one.

Researches of the digestive system at baby birds of ostriches in this "critical period" showed that as a result of the usage Humilid by them, the processes of digestive of feed become active; and more active suction of nutritive is marked in a digestive channel. Thus length of duodenum in baby birds of ostriches from experimental group in 30-daily age increases on 32,6% for the index of control group. The same dynamics of changes is kept in relation to the sizes of hungry and iliac bowels in the experimental group (the baby birds of ostriches at the age of 30 and 60 daily). For the animals from experimental group in 30-daily age length of blind guts exceeded control on 45 %, and at the age of 60 days - on 27 %. Here in blind guts for the animals of the experimental group acidity was registered below than animals of control group on 12% due to formation of greater number of volatile of fat acids. It gives an opportunity to do supposition, that for the animals of the experimental group a capacity for digestible of cellulose grew more than at earlier age.

Adding the bioactive feed additives based on peat "Humilid" to the ration of baby birds, there is an increase of mass of bird not only in a "critical period" of growth, and during all experiment to 11-monthly age. So on the average weight of body of ostriches from experimental group (at the age of 11-months) was $95,860 \pm 1,161$ kg, and in ones from control group - $79,680 \pm 1,184$ kg, that on 16,4 % ($p \leq 0,001$) less than in experimental group. The number of the diseased bird diminished on a background application of additives Humilid. The number of the diseased bird diminished on a background application of additives Humilid. During the third experiment on the average survivability in the experimental group was 98,0%, that it was higher than in control group on 27,4 %. The usage of feed additives based on peat "Humilid" influences positively also on the indexes of the meat productivity of ostriches, and it also activates the level of metabolism. Application of Humilid assists the increase of exit of meat carcass on 12,3 ($p < 0,05$) and the masses of commercial muscles on 15,4 % ($p < 0,01$). On the average mass of muscles increased on categories. On the category of Filet Prime mass of meat in experimental group made $6,125 \pm 0,108$ kg, that on 21,2 % ($p < 0,01$) more than in control group. In respect of category there are Steaks, then mass of muscles made $13,509 \pm 0,401$ kg in control one, and in experience one was $15,867 \pm 0,434$ kg (Stepchenko and Galuzina 2011).

It is necessary to mark that application of Humilid assists the increase of maintenance of albumen on the average on 2-3% ($p \leq 0,001$), and to the decline of maintenance of fat in ostriches' meat of the experimental group on the average on 26% ($p \leq 0,001$). Thus the biological value of meat rises under the action of Humilid, because correlation of tryptophan

to the hydroxy-proline on the average in Phil increased on 2,6 - 6,0 % ($p \leq 0,01$), and in Steaks on 11,9 % ($p \leq 0,001$).

CONCLUSION

Researches showed that in all flowsheets of growing of ostriches in the conditions of Ukraine bioactive feed additives based on peat positively influence on the physiological state of organism, dynamics of growth and development and on the productivity of the black African ostriches. Addition of humic substances to the basic ration of ostriches assists the increase of body, average daily increases, and speed of growth and survivability of weight of baby birds. It is set that the investigated feed additives based on peat render positive influence on the level of the ostriches' productivity, improve quality of incubation and commodity eggs. As a result of consumption the ostriches of humic substances are marked more active suction of nutrition in a digestive channel and activation of metabolism. Thrice-repeated application of feed additives humic assists the increase of the meat productivity of ostriches. The exit of meat from carcass and mass of commercial muscles increase and a food value and biological value of meat rise. It is recommended for ostrich's acclimatization in new geographical areas to include the feed additives based on peat Hydrogumate and Humilid into the ration as highly effective adaptogens.

REFERENCES

- Stepchenko L.M. and Galuzina L.I. (2011). Influence biologically of active feed addition of "Gumilid" is on the meat productivity of the black African ostrich at his industrial growing. *News of Dnipropetrovsk State Agrarian University* **1**, pp. 165–171.
- Stepchenko L.M. and Goncharova E.V. (2009). The productivity of females of the black African ostrich is at the use biologically of active feed addition of humic nature of "Gidrogumat. *Scientific Messenger of Lviv National University of Veterinary Medicine and Biotechnologies named after S.Z. Gzhytskyj* **11**, № 2 (41), P. 2., pp. 277-281.
- Stepchenko L.M., Loseva E.A., Skorik M.V., Goncharova E.V. and Semidetnay T.V. (2010). Humic additives – factor high productivity and resistance of . *Aktualnie problemy sovremennogo ptitsevodstva. Kharkov, Ukraine, 14-17 September, 2010.* – pp. 207–213.
- Stepchenko, L., Gryban, V., Masjuk, D. and Stoian, V. (2000). Experience in natural humic substances preparation in veterinary medicine. In: A.-M. Beer, G. Luttig, J. Lukana (eds.), *Moortherapie 2000. Peat Therapy on in's way into next Millenium.*, pp. 109-114, Bad Kissingen, Germany.
- Stepchenko, L. (2004) Influence of Natural Preparations on the stage of general adaptation syndrome. *Wise Use of Peatlands. Proceedings of the 12th International Peat Congress, Tampere, Finland, 2004*, pp. 433-435.
- Stepchenko, L., Sedykh, N. and Yefimov, V. (2010) Evaluation of the biological activity of humic substances and raw materials for their production. In: *Humic substances and plant hormones in agriculture. Proceedings of the 5th International conference "Radostim-2010"*, Dnepropetrovsk, Ukraine, 16-18 February, 2010, pp. 56-57.