Lebedeva I.A.,
State Educational Institution of Higher Professional Training
"The Ural State University named after Gorky"
Burun V.G.,
Chief Veterinary Physician, State Unitarian Enterprise "Poultry Factory Sverdlovskaya"
Novikova M.V.,
Drozdova L.I.,
State Educational Institution of Higher Professional Training
"Ural State Agricultural Academy"

"MONOSPORIN" IMPACT ON THE STATE OF FABRICIUS BURSA IN POULTRY

Immunity is the body's ability to protect its own integrity and biological individuality.

Biological products being a product of microorganisms activity producing a variety of biologically active proteins become increasingly popular in animal and poultry production and veterinary medicine. Monosporin, a probiotic product based on spore-forming aerobic bacteria *B.subtilis* is recommended for the prevention of immunodeficiency in poultry as well as prevention and treatment of a number of combined gastrointestinal diseases.

The study of the impact of probiotics on the immune organs in poultry was carried out at Poultry Farm “Sverdlovskaya”, Sverdlovsk region, in June 2008, on the replacement industrial chicken flocks of Lohmann white cross laying hens.

The hens were given "Monosporin" with water after antibiotic treatment starting from the 6^{th} day of life during 10 days at the rate of 3 ml per 100 hens (experimental group) with the basic ration. The hens of the control group received the basic diet (no probiotics). Housing and feeding conditions of both groups were similar. There were 22015 hens in control group and 20315 hens in the experimental group. The total volume of "Monosporin" applied during the experiment was 10 l.

At the age of 36 days 3 control hens from each group were slaughtered and Fabricius bursa - the birds main body of immunogenesis - was taken for histological analysis. Fabricius bursa is the source of B-cells that cause the production of circulating antibodies against the pathogens. B-cells migrate from Fabricius bursa to the spleen, intestinal lymphoid formations where specific immunoglobulins against the antigen are synthesized.

The following was identified while comparing bursa products of control and experimental chicken groups:

- in the hens of the control group the boundaries of the cortical and medullary follicle are not clearly contoured. The follicles are large, enlightened. The epithelium is not uniform, from thinned to hypertrophied. The layers of connective tissue are narrow and not clearly defined.
- in the hens of the experimental group the follicles are uniformly developed, the layer boundaries are well defined. The cortical layer is compact, medullary layer is sparse. The layers of connective tissue of the follicle are clearly separated one from another. The epithelium is uniformly developed, the nuclei of epithelial cells are located at the basal region and the apical region is clearly defined.
- The pectoral muscles of hens from experimental and control groups were taken for analysis to study the meat biochemical composition and value (Table 1).

Table 1

Biochemical composition of pectoral muscles in Lohmann white cross hens, age 36 days, %

Key values	Control	Experiment	+\-, %
Dry matter	24,92	26,11	+1,19
Residual fat	0,61	0,75	+0,14
Protein	23,4	24,9	+1,5
Ash	1,42	1,44	+0,02
Oxyproline	0,054	0,038	-0,013
Triptophane	0,148	0,154	+0,006
Triptophane/oxyproline ratio or biological value	2,74	4,05	+1,31

In the experimental group a positive trend in the accumulation of dry matter, residual fat, protein, ash, high-grade amino acids in meat was observed during the study of meat biochemical parameters and value. Tryptophan/oxyproline ratio suggests that the muscle fibers of the hens from experimental group accumulated more high-grade amino acids.

The analysis of the zootechnical indices revealed the following results (Table 2).

Table 2

Zootechnical indices of replacement hens (from 1 to 90 day)

Key values	Units of measurement	Groups	
		Control	Experimental (Monosporin)
Received hens	head	22015	20315
Rejected	%	0,96	0,91
Mortality and culling	%	1.7	1,49
Viability	%	98,3	98,51
Output	%	97,5	98,3
Monosporin expenses	rubles	-	4 263

With the commercial costs of an industrial hen (e.i. 110 rubles/head) 1 ruble of «Monosporin» investment preserves for the factory 3,73 rubles due to hens higher viability and output in experimental group even without taking into account future profit as laid and sold eggs.

The use of probiotic preparation "Monosporin" at "Sverdlovsk" poultry farm has a positive effect on all the aspects under consideration. The study of Fabricius bursa histological section of the experimental hen group showed no deviations from the physiological norm, whereas the control group of hens display bursa pathological changes that ultimately weaken the protective properties of the organism. Analysis of the biochemical composition of the pectoral muscles shows a positive trend in hens of the experimental group for all studied parameters. Zootechnical data analysis of the replacement hens shows that the probiotics application for poultry is feasible.

Conclusions. Use of probiotic product "Monosporin" has curative effect on the Fabricius bursa - the main organ of the bird immune system at the age from the 1st to the 3rd month of hens' life. It improves poultry zootechnical performance, and ultimately has a positive effect on the farm economics.

This article can also be read:
- In the magazine "Belgorod Agromir» № 7 (46), 2008;
- In the magazine "Poultry", December 2008.