Bioresonance stimulation of egg production of poultry

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The chicken ovary contains more than 5 thousand eggs, and only 500 of them can be converted into an egg during the period of use of the bird. Such a margin of reproductive strength gives reason to think about its fuller implementation. However, further breeding progress in egg production may lead to undesirable concomitant phenomena, such as a decrease immunity and live weight of chickens below the biological limits, it is sti, so we were exposed necessary to study the possibility of increasing egg productivity when to the spectrum electromagnetic frequencies (EFS) of estradiol and insulin.

The level of egg production is directly related to the level of metabolic processes. The rhythm of the reproductive system - ovulation and egg-laying - is controlled by an extremely sensitive neuroendocrine system, and estradiol plays an important role in this function. Insulin is indirectly involved in the regulation of reproductive function, through the activation of metabolic processes in the liver and an increase in the synthesis of yolk precursors (Advis, Contigoch, 1993; Ioshimura, Tomura, five; Bahl, Palmer, 1989; Tolpinskaya, Zhuravlev, Fisinin, 1999; Zhuravlev, 198 Fisinin, 2000, etc.).

Experimental work on the study of bioresonance stimulation of egg productivity was carried out on quails, as on the most convenient model object. A control and two experimental groups of quails were formed. The control group received plain drinking water; 2 - the experimental group received the bioinformatic effect of estradiol (2 - the experience of the SES estradiol); 3 - the experimental group received the bioinformatic effect of insulin (3 - the experience of the SES insulin). The spectrum of the electromagnetic frequencies of estradiol and insulin was transferred to drinking water using a Transfer-P apparatus. Transfer time - 1 liter per hour. Exposure to poultry through water was started 7–10 days before the start of oviposition and was carried out for 8 hours a day.

Table 1 shows the results of the experiment obtained under the influence of the spectrum of electromagnetic frequencies of estradiol (group 2) and insulin (group 3). The largest number of eggs was obtained in the second group - 1097 eggs in total, or 15.7 pieces per initial hen; in the third group - 1006 and 14.4 and in the control group - 846 and 12.1, respectively, the difference is highly significant.

Table 1

Egg productivity of quails under bioresonance exposure

Indicators	1 - control	2 - SES experience estradiol	3 - SES experience insulin
At the beginning of the experiment			
Heads	70	70	70
Live weight, g	114.8 ± 2.6	114.1 ± 2.3	113.6 ± 2.0
At the end of the experiment			
Heads	66	67	68
Safety,%	94.3	95.7	97.1
Live weight, g % to control	189.3 ± 13.1 100	179.3 ± 12.7 94.8	181.6 ± 12.6 96.1
Number of eggs: total, PC. % to control	 846 100	 1097 *** 129.7	 1006 *** 118.9
For the initial laying hen, pcs.	12.1	15.7	14.4
Average egg weight: PC. % to control	 10.0 ± 0.05 100	 10.6 ± 0.05 ** 106	 10.9 ± 0.03 ** 109
Total egg mass, g % to control	8460 100	11628 137.4	10965 129.6

* * R 0.01; *** R 0.001

A significant difference was obtained in terms of the average egg weight: control - 10 g, the second group - 10.6 g, or 106% to the control, and the third group - 10.9 g and 109%, respectively. Obviously, the total egg mass in the experimental groups was significantly higher: the control group - 8460 g, the second group - 11628 g and the third group - 10965 g. These values are 137.3% and 129.6% of the control level.

By the end of the experiment, the live weight of poultry in the control group was the highest and amounted to 189.3 g, in the most productive group the live weight was the smallest - 179.3 g, or 94.8%, in the group under the influence of SES insulin the indicator for live weight took intermediate position and amounted to 181.6 g.

The response of poultry to the effect of SEP of estradiol and insulin in biological manifestations is similar to the response to the action of the hormones themselves and is described in a number of scientific works of the All-Union Agricultural Academy (1977), in the book "Hormones and Cell Reproduction" by O.I. Epifanova (1965) and in other scientific publications related to the study of hormones.

With greater contrast in productivity differences between layers, it is possible to more accurately establish the biological characteristics associated with these differences. The determination of the mass of organs, after the anatomical cutting of the bird, revealed a number of distinctive features characteristic of the effects of estradiol and insulin.

The masses of the liver and ovary in relation to live weight are indicators of the biological effectiveness of vitellogenic and folliculogenic functions, respectively, and the relative weight of the oviduct is the effectiveness of the formation of secondary shells of the egg, protein and shell.

In our studies, there was a decrease in the relative weight of the liver in the insulin and estradiol group - 3.0% and 3.2%, respectively, while in the control - 3.8%. A decrease in liver mass may be the reason that a high level of metabolic processes should be accompanied by intensive growth processes of a network of small blood vessels - revascularization, which ensures rapid transportation of yolk precursors synthesized in the liver to growing follicles (Table 2).

table 2

Results of anatomical cutting of laying quails (n = 10)

Indicators	1 - control		2 - SES experience estradiol		3 - experience of SES insulin	
	G	% to w.m.	g	% to w.m.	g	% to w.m.
Live weight, g % to control	189.3 ± 2.6 100	-	179.3 ± - ± 2.3 * 94.8		181.6 ± - ± 2.0 * 96.1	
Liver weight, g	7.2 ± 0.3	3.8	5.8 ± 0.2 **	3.2	5.5 ± 0.2 **	3.0
Heart mass, g	1.4 ± 0.09	0.7	1.3 ± 0.03	0.7	1.3 ± 0.06	0.7
Intestinal mass nick, g	20.6 ± 0.9	10.9	21.6 ± 0.3	12.1	22.8 ± 0.9	12.6
Ovary weight, g	7.3 ± 0.2	3.9	8.4 ± 0.3 *	4.7	7.0 ± 0.3	3.9
Oviduct mass, G	9.6 ± 0.3	5.1	11.3 ± 0.3	6.3	11.0 ± 0.2	6.1
Mass of podzhlu-mammary gland, g	0.78 ± 0.05	0,4	0.79 ± 0.04	0,4	0.84 ± 0.04	0.5
Attitude ovarian mass to liver mass	1.01	1.02	1.45	1.46	1.27	1.30

* R 0.05; ** R 0.01

It is well known that the yolk precursors synthesized in the liver are transported through the bloodstream to the growing follicles. The most developed and severe were the ovaries in birds of the second group - 4.7% g, or 15% more than in the control, this fact provides additional confirmation that an effect occurred, to which the ovary reacted first. Strengthening the functions of the ovary determines the state of homeostasis, in which all organs work more intensively to ensure its increased productivity.

If we evaluate the general vitellogenic function of the liver through the ratio of ovarian mass to liver mass, it turns out that 1 gram of liver without stimulation produces only 1.02 g

follicular mass, with stimulation of estradiol SES - 1.46 g and insulin SES - 1.3 g. estrogens in this group.

The biochemical composition of blood allows both to objectively assess the general condition of the bird and to predict the development of the adaptation process. The biochemical composition of blood at the beginning and end of the experiment is presented in table. 3. The highest hemoglobin level was noted in the second group and amounted to 157.7 g / l, in the third group hemoglobin was 134 g / l, while in the control group this indicator was at the lower limit of the norm for an adult bird and amounted to 112.7 g / l. l, the difference is reliable. Also, in the second group, which received the effect of SEP estradiol, the highest level of total protein in the blood - 70.0 g / l. The combination of a high level of total protein and hemoglobin suggests that in this group the bird was distinguished by a more intense level of metabolic processes than the bird in the control group.

Table 3

Biochemical parameters of the blood composition of laying quails (n = 10)

Indicators	At the beginning of the experiment	At the end of the experiment		
		1 - control role	2 - experience SES estradiol	3 - experience SES insulin
Hemoglobin, g / l	108.5 ± ± 3.8	112.7 ± 1.2	157.7 ± ± 2.4 ***	134.7 ± ± 6.9 *
Total protein, g / l	31.8 ± 1.8	67.7 ± 0.9	70.0 ± 2.2	44.3 ± 0.8
Albumin, g / l	16.7 ± 1.2	47.0 ± 3.1	44.0 ± 3.5	29.3 ± 1.3 *
Globulins, g / l	15.1 ± 1.2	20.7 ± 0.8	26.0 ± 1.6	15.0 ± 0.7
A / G	1,3	2,3	1.7	2.0
Glucose, mol / l	18.9 ± 0.6	12.3 ± 0.8	12.3 ± 1.1	8.6 ± 0.0 **

* R 0.05; ** P 0.01; *** R 0.001

A distinctive feature of the biochemical composition of the blood of quails under the influence of SES insulin is a decrease in the level of total protein and glucose, the difference in these indicators is reliable. As you know, insulin accelerates the transport of glucose and protein from blood to tissue, which is clearly demonstrated in studies of the biochemical composition of blood.

The A / G ratio in the experimental groups tends to increase the globulin fraction, to a greater extent in the estradiol group.

As noted visually, and also confirmed by primary zootechnical analysis, the droppings of the experimental groups were drier - 65.9% and 68.8%, in the control - 71.4% moisture.

The protein content in the litter of the experimental groups was 2.5–3.4% lower than in the control. When comparing the qualitative and quantitative parameters of the litter in the third group, it becomes obvious that the effect of SES insulin promoted a better assimilation of feed, including fiber. In the SEP group of estradiol, there was an increase in the amount of droppings, but with a lower protein content.

Table 4 shows the calculation of the efficiency of conversion of utilized protein to egg protein. Analysis of the data shows that poultry under the influence of SEP estradiol uses 17.7% of the assimilated protein for egg production, in the control only 11.6%, the difference is 34.4%. The conversion of feed protein to egg protein in this group is 7.3%, in the control - 5.1%. The poultry of the third group uses the assimilated protein for egg production also more efficiently than in the control - 12.4%, but much less efficiently than in the second group.

Table 4

Conversion of feed protein and assimilated protein to egg protein

Indicators	1 - control	2 - SES experience estradiol	3 - SES experience insulin
Assimilated Protein			
Kg	8.77	8.23	10.95
%	43.85	41.15	54.75
Egg mass produced, Kg	2.15	3.35	2.97
Egg protein, kg	1.02	1.46	1.36
Conversion of digested protein to egg protein			
kg / kg	8.60 5.64		8.05
%	11.6 17.7		12.4
Conversion of feed protein to egg protein			
kg / kg	19.8	13.9	14.9
%	5.1	7.3	6.8

Thus, summing up the analysis of the productivity of laying quails, the results of a biochemical study of blood, carcasses, eggs and balance experience, the following conclusions can be drawn:

1. An increase in egg productivity under the influence of ESP of estradiol occurs due to more efficient redistribution of energy and protein, the starting point of which is to strengthen the function of the ovary of birds.

2. Material support for increasing productivity occurs by increasing conversion of assimilated protein into egg protein by 53%, enhancement of metabolic processes and reserves of the poultry itself - a decrease in poultry live weight by 4.1%, a decrease in the level of protein in the carcass by 8.6%.

3. An increase in productivity under the influence of SES insulin occurs when more efficient use of feed nutrients, as well as enhancing metabolic processes.

It is likely that the combined effect of insulin and estradiol SES will give a more significant and sustained effect, since the bird will better absorb feed and have a high level of exchange aimed at obtaining eggs.

Thus, with the same livestock and feed costs, a different level of egg productivity was obtained, the lowest feed costs were obtained when using ESP estradiol - 6.32 kg per kg of egg mass, with the use of SES insulin - 6.70, while in the control - 8.68 kg / kg.

According to the results of calculating the economic efficiency of the production of quail eggs, an increase in net income and profitability of production in the groups of bioresonance impact was obtained. Further development of these areas will be conditioned, mainly, by the creation of hardware methods for large-scale poultry farming.

Literature

1. Tolpinskaya G.I., Zhuravlev I.V., Fisinin V.I. Features of follicular growth in chickens layers with different lengths of egg production cycle // Reports of the Russian Academy of Agricultural Sciences. - 1999. - No. 6. - P. 38–40.

2. Zhuravlev, Fisinin // In collection. scientific. Proceedings of VNIITIP. - M .: Sergiev-Posad, 2000 .-- S. 66-83.

3. Advis JP and Contigoch AM The median eminence as a site for neuroendocrine control of reproduction in hens // Poultry Sci., 1993. 72: 932-939.

4. Bahl IV, Palmer SS The influence of aging on ovarian function. Crit. rev. // Poultry Biol. 1989. - 2: 641.

5. Ioshimura I., Tomura T. Histological and histochemical observation on the artetic follicles induced by adenohypophysectomy in the hen. // Jpn. Poultry Sci. 1985 22: 134-141.