Bioresonance technology to improve the nutritional quality of chicken eggs

A.G. Avakova, Yu.A. Kovalev, D.Yu. Lotnikova

About% (North Caucasian Research Institute of Animal Husbandry, Krasnodar, Russia)

The data of the Institute of Nutrition of the Russian Academy of Medical Sciences indicate significant changes in the nutritional structure of the modern population towards the exacerbation of the imbalance of the main components of the diet: insufficient intake of vitamins, macro- and microelements, polyunsaturated fatty acids, essential amino acids against the background of excessive intake of animal fat [1].

Many essential trace elements are available to humans in the form of tablets, capsules, produced by the pharmaceutical industry. At the same time, experts confirm that the most optimal consumption of these vital substances in the form of natural complexes that are part of food. Bird eggs are one of the most suitable foods for solving this problem.

Currently, in most countries of the European Union, in the USA and Japan, eggs with new functional properties are being produced on an industrial scale, with an increased content of omega-3 polyunsaturated fatty acids, vitamins A and E, selenium and iodine.

The egg composition is provided through the feed ration, in which the claimed bioelements are additionally introduced, however, it is possible to further stimulate their penetration into the eggs by exposing the hen to a weak electromagnetic field in the radiation spectrum of the desired bioelements.

Since resonance can and is desirable with evolutionarily adapted substances of natural origin, biologically active additives for humans, manufactured by Nutrifarma Ltd, France, were used as matrices for removing information, these are the drugs "Senior", "Artemida" and "Antiox".

The work was carried out at OOO Krasnodarskaya Poultry Farm, Krasnodar, on laying hens.

Purpose of work: to study the effect of bioresonance effects of various compositions of minerals, vitamins and herbs on the biochemical composition of eggs.

Methodology

The first composition was the vitamin-mineral complex of the dietary supplement "Senior", which includes macro- and microelements (calcium hydrogen phosphate, magnesium carbonate, ferrous gluconate, copper sulfate, manganese carbonate, zinc oxide sodium selenite, chromium orotate), β-carotene, vitamins E, C, $B_{1,2,5,6,9,12,}$ RR, N.

The tests were carried out in the same production buildings - experimental and control, under equal conditions of feeding and keeping on a livestock of 30 thousand laying hens. The bird in the experimental building was exposed to the electromagnetic frequency spectrum (EFS) of the hormones insulin, estradiol and the vitamin-mineral complex from 18 to 78 weeks of age. Moreover, the effect of the vitamin-mineral complex was suspended at the age of 26 weeks of the bird and continued from the 50th week.

The first selection of eggs for biochemical studies was carried out at the beginning of the peak of laying, at the age of 28 weeks of laying hens. The second selection in the middle of oviposition was at 34 weeks of age (without exposure to the SES of the vitamin-mineral complex). The third selection - at the decline of the peak of laying, at the age of hens - 52 weeks. The selection of eggs for biochemical studies was carried out in accordance with GOST - food eggs, and the average sample of at least 30 eggs was examined for biochemical composition.

The impact was carried out from the device "IMEDIS-BRT-A", through water for feeding poultry [2].

results

Under equal feeding conditions - the same composition of the compound feed and free access to it, the eggs obtained under the bioresonance effect were distinguished by an increased content of minerals. Table 1 shows the biochemical composition of eggs sampled at 28 and 52 weeks of age of chickens and their average values.

It should be noted that the eggs collected at intervals of 24 weeks had practically the same biochemical composition. Table 2 shows the biochemical composition of eggs collected at 28 and 52 weeks of productivity and their average values.

The level of minerals in eggs, during the period of cessation of exposure to the SES of the vitamin-mineral complex, from 30 to 34 weeks, did not differ from the level of the control group.

Table 1

Content of macro- and microelements in eggs, mg /%

Indicators	an experience			the control			Experience / control %
	28 weeks	52 weeks	Average	28 weeks	52 weeks	Average	
Water,%	75.14			75.43			99.9
Ash,%	0.90			0.90			100
Protein, %	13.38			13.30			100.6
Fat,%	8.27			8.80			106.1
Carotene, mg /%	0.08			0.08			100
Calcium	58.0	57.6	57.8	55.0	55.1	55.0	102
Phosphorus	225	223	224	200	197	198	112
Sodium	103	93	98	89	85	87	112
Potassium	196	191	194	149	147	148	113
Magnesium	fifteen	fifteen	fifteen	fifteen	fifteen	fifteen	100
Iron	3.76	3.74	3.75	1.49	1.48	1.49	250
Manganese	0.024	0.024	0.024	0.003	0.003	0.003	800
Copper	0.077	0.078	0.078	0.061	0.060	0.060	129
Zinc	1.22	1.23	1.22	0.88	0.87	0.87	136

It follows from the table that the content of all the presented microelements in eggs obtained with the use of bioresonance technology is to varying degrees higher than without it. The highest difference is determined in the level of manganese content, - 0.024 mg in 100 grams of egg mass, which is eight times higher than the level in the control, however, even this content of manganese in eggs provides only 5-10% of the daily requirement, the recommended level of manganese consumption is 2, 5-5 mg. It should be noted that manganese as a food product is 100% available with an egg, in contrast to alternative sources - cereals, legumes, nuts, which contain a large amount of this trace element, moreover, with an increase in the degree of their purification, the content of manganese in them progressively decreases. Manganese-rich coffee and tea also carry negative elements,

Other elements that are high in eggs are metals: iron, copper and zinc. The biological significance, metabolism, absorption pathways, the forms of these elements most accessible for assimilation are well studied and it is reliably known that metals compete with each other during absorption [3]. Therefore, it is difficult to obtain their joint accumulation in eggs using traditional technologies. We managed to get a one-step increase in the content of metals such as iron, copper, zinc in a production environment and on a scale.

The level of iron in the eggs of chickens from the experimental group is 3.75 mg /%, which is 2.5 times higher than its level in the control. The zinc content in eggs was 1.22 mg versus 0.88 mg in the control, which is 36% higher. The level of copper in the eggs of the control group is 0.060 mg, that of the experimental group is 0.078, which is 29% higher. With a significant increase in the content of iron, manganese, copper and zinc and a moderate increase in calcium, phosphorus, magnesium, potassium and sodium, eggs obtained using bioresonance technology are distinguished by an increased level of trace elements.

Thus, the following points have been established, of fundamental importance when obtaining eggs using bioresonance technology:

- the factor of increasing the mineral component of eggs is a more effective assimilation of macro- and microelements from feed by the bird;
- the biochemical composition of eggs under the bioresonance effect of the same spectrum of electromagnetic oscillations is reproducible;
- when the bioresonance effect is terminated, the mineral component of the eggs returns to the control level.

Study of the effect of SES BAA "Artemis" on the biochemical composition of eggs

Until recently, doctors (nutritionists) and, especially, cardiologists in the United States believed that the yolk of eggs contains an excess amount of cholesterol for humans. Today most of them have changed their minds. The American Heart Association has not only made eggs a healthy food item, but it recommends eating 12 eggs a week as part of a well-balanced diet. Nevertheless, an excess intake of cholesterol with food is undesirable, and it is not easy to significantly change its content in the yolk, as well as to reduce the concentration of cholesterol in the blood.

Together with the SES of insulin and estradiol, we used the effect on the laying hens of the SES BAA "Artemida", this drug is recommended to increase the body's nonspecific resistance to the effects of adverse environmental factors, as well as to regulate the balance of sex hormones. The composition of the dietary supplement "Artemis": AngelicaChinese (angelica); (Angelica sinensis (Oliv). Diels); Black cohosh (Cimicifuga racemosa (L.) Nutt.); Common Bearberry (Arctostaphylos uva-ursi (L.) Sprengel); Common wormwood (Artemisia vulgaris L.); Vitamin A (500,000

IU / g) 2 mg (1000 IU); Vitamin E (4).

Methodology

At the age of 17 weeks, the laying hens were placed in two identical buildings (respectively, in the experimental and control), where, under the same conditions of keeping, on the same compound feed, their productive cycle began. Observations of the productive period lasted 12 weeks.

results

The effect of insulin, estradiol and dietary supplements "Artemida" on the laying hens affected the biochemical composition of the eggs, the main feature of this effect was the decrease in fat in the eggs of the experimental birds; the amount of lipids decreased by half and amounted to 6.1%. At the same time, an increase in the protein content in the experiment was noted by 17.2%, ash by 6.8%. The increase in the content of macro- and microelements within 15–53%, while the content of cobalt is reduced by 275% and selenium is 14.5 times, the lead content is 3.3 times. The content of calcium, magnesium, manganese remained unchanged (Table 2).

table 2

Biochemical composition of eggs when exposed to SES BAA "Artemida"

Indicators	The control	An experience	Difference, %
Moisture,%	74.6	78.1	+ 4.6
Ash,%	0.88	0.94	6.8
Crude protein,%	11.0	12.9	17.2
Fat,%	12.0	6.1	196.7
Carotene	1.74	2.07	18.9
Macro-microelements, mg / 100 g			
calcium	33.00	32.00	-
phosphorus	135.00	163.00	20,7
potassium	1409.88	1795.57	27.3
magnesium	8.88	8.89	-
sodium	152.34	233.16	53.2
iron	1.52	2.05	34.8
copper	0.032	0.069	15.6
zinc	0.83	1.26	45.8
manganese	0.02	0.02	-
cobalt	0.0044	0.0016	- 275
selenium	0.0277	0.019	- 1457
iodine	0.00	0.00	-
Toxic elements, mg / kg			
Cadmium	<0.01	<0.01	
Lead	0.0046	0.0014	328
Arsenic	<0.0025	<0.0025	
Mercury	<0.005	<0.005	

As noted, the main feature of this composition of the biochemical composition of the egg is a low fat content, an additional feature is an increased content of macro- and microelements (except for selenium and cobalt).

A general pattern has been revealed that with an increase in the content of useful microelements, the content of toxic elements decreases. The same pattern can be traced in the works of authors engaged in the study of trace elements both in the field of nutraceuticals and in zootechnics [5, 6].

Study of the effect of SECh BAA "Antiox" on the selenium content in egg yolks

According to the State Research Institute of Nutrition of the Russian Academy of Medical Sciences [1] and the results of clinical studies, a lack of selenium in the diet is observed in more than 80% of Russians, and it is possible to reduce or eliminate this deficiency with the consumption of selenium in organic form. The most readily available of these foods are selenium-fortified eggs. In turn, the level of selenium in eggs can be increased by feeding organic selenium compounds to the bird. For the production of selenium-enriched eggs, laying hens receive the Sel-Plex preparation (selenium-methionine) in the amount of 300 g per ton with the main balanced diet. According to the technical specifications, such

the diet provides food eggs with a selenium content in the yolk of at least 316 μg / kg.

The aim of the study was to study the changes in the content of selenium, vitamin E, carotene, zinc in eggs when exposed to the SES preparation "Antiox" containing these elements.

Methodology

For this, the eggs of the same laying hens, constantly fed with Sel-Plex, were selected and examined. After the first selection of eggs on the chickens, a bioresonance effect was performed in the frequency spectrum of the dietary supplement "Antiox", composition: extract of grape pomace, ginkgo biloba L., β-carotene, vitamin C, zinc oxide, yeast with selenium. Two weeks after the start of exposure to the SCE BAA "Antiox", the eggs were re-analyzed.

The results of egg analyzes carried out before and after bioresonance exposure are presented in table. 3.

Table 3

The content of some trace elements and vitamins in chicken eggs

Indicators	Before exposure	After exposure	Difference
Selenium, mcg / kg: in the yolk in	362	627	+ 265
the protein	172	90	- 82
Zinc, mg / kg	10.2 ± 3.4	11.3 ± 3.7	+1.1
Carotenoids, μg / kg	14.7	15.3	±
Vitamin A, μg / g	10.2	9.6	±
Vitamin E, mg /%	3.8	3.6	±

From those given in table. 3 results show a significant 73.2% increase in selenium content in egg yolks after exposure. However, the protein content decreased from 172 to 90 μg / kg.

Before exposure, the ratio of selenium content in yolk and protein was 2.1 / 1, after exposure - 7/1, i.e. an increase in its content in the whole egg occurred by 31.6%. The zinc content increased by 9.8%.

No differences were found in the content of carotene, vitamin A and vitamin E; a slight decrease in these substances after exposure was shown. The chemistry of such transformations may be explained by biological expediency, in which the overall balance of elements in the antioxidant defense system is important, where an increase in one of the components can to some extent compensate for other components of the system and does not lead to an increase in their content.

Literature

1. Tutelyan V.A. Biologically active food additives: past, present, future // Abstracts second International Symposium. Nutrition and health. - M., 1996. - S. 164-166.

2. Avakova A.G., Kovalev Yu.A., Podolskaya V.S. Bulletin of RAAS No. 5. - 2009. - P. 67–71.

3. Vrzhesinskaya O. A., Filimonova I. V. Kodentsova O. B. et al. II. Vopr. nutrition. - 2005. - No. 3. - WITH. 28-31.

4. Shtele A.L. Modern methods of improving the quality of edible eggs // Materials XVI conference VNAP. - Sergiev-Posad, 2009. - S. 265–268.

5. Surai, PF, Speake, BK, Noble, RC and Sparks, NH'c. (1999b) Tissue-specific antioxidant profiles and susceptibility to lipid peroxidation of the newly hatched chick. Biological Trace Element Research 68: 63-78.