colloquium-journal

ISSN 2520-6990

Międzynarodowe czasopismo naukowe

Medical sciences
Technical science
Biological sciences
Agricultural sciences
Physics and mathematics

№10(97) 2021
Część 1

colloquium-journal

ISSN 2520-6990

ISSN 2520-2480

Colloquium-journal №10 (97), 2021

Część 1

(Warszawa, Polska)

«Colloquium-journal»
Wydawca «Interdruk» Poland, Warszawa
Annopol 4, 03-236
E-mail: info@colloquium-journal.org
http://www.colloquium-journal.org/

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ml per 1 kg of live weight of chickens per day contributed to an increase in the concentration of total lipids in the blood by 29.4% (P <0.05) and a slight decrease in cholesterol. It can be assumed that the maximum concentration of the experimental feed additive promotes the stimulation of lipid metabolism, which promotes the transformation of fats digested from feed not into cholesterol, but into neutral triglyceride forms.

CONCLUSIONS

1. The wormwood extract use for young chicken feeding of does not delay their growth and does not affect the safety of livestock.
2. The introduction of wormwood extract in the amount of up to 0.9 ml / kg per day in the composition of compound feeds for young animals contributes to the strengthening of erythropoiesis and leukopoiesis.
3. It has been experimentally proved that the inclusion of wormwood extract in the feed from 0.36 to 0.9 ml per kg of live weight per day causes the intensification of nitrogen, protein and lipid metabolism in the body of young chickens.

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UDC: (591.11:636.053.5):615.322

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DOI: 10.24412/2520-6990-2021-1097-37-39

HEMATOLOGICAL PARAMETERS OF CHICKENS FED BY CLOVER YELLOW

Abstract.
The article includes research results on the morphological and biochemical blood parameters of the Lohmann Brown breed chickens fed by rations enriched with a new biologically active supplement of yellow clover during the growing period.

Keywords*: replacement young, Lohmann brown, erythrocytes, leukocytes, leukocyte formula, biochemical composition of blood, yellow clover.*

Feeding chickens by biologically active substances is one of the main tasks of producers. However, in recent years the situation with the poultry provision with highly effective feed additives has deteriorated somewhat due to their high costs. Therefore, there is a need to find non-traditional feed additives that would help improve metabolism and nutrients efficient absorption.

It is known that natural phytocomplexes do not differ from complexes made on the basis of synthetic compounds. However, they are much cheaper. Some scientists recommend the widespread application of eastern purple coneflower in poultry feeding to improve growth and prevent disease. Its use in poultry feeding improves the preservation and increases the egg production of laying hens [3]. Other scientists are for using the biomass of spirulina [4] and chlorella [5] in poultry feeding, observed an increase in the intensity of growth by 10.7%, a decrease in feed consumption by 11.7%.

The introduction of eleutherococcus extract into the diet increased the survival of livestock by 3.7% and improved the broilers growth by 11.7% [6] increasing the activity of alanine and aminotransferase in their blood [7].

Taking into account the chemical composition, biological and therapeutic properties of yellow clover [8], we propose it use in the diets of Lohmann brown egg chickens.

Research methodology. The research was conducted at the Tulchyn Poultry Farm, Tulchyn District, Vinnytsia Region. The equalization period lasted 15 days, the main one was 105 days. Daily Lohmann brown chickens were selected for the experiment. The four groups were formed on the analogue principle. Feeding patterns for young animals are presented in Table 1.

1. Feeding patterns

Groups	Duration of the period, days		Number of birds in the group, heads	Особливості годівлі
	equalizing	basic		
I - control	30	105	150	BD
II - experimental	30	105	150	BD +4.4 ml/kg per 1 kg of live weight per day of yellow clover supplement
III - experimental	30	105	150	BD +6.6 ml/kg per 1 kg of live weight per day of yellow clover supplement
IV - experimental	30	105	150	BD+8.8 ml/kg per 1 kg of live weight per day of yellow clover supplement

Chickens were fed by complete feed, taking into account the live weight, age, according to feeding standards. The aqueous tincture of yellow clover was mixed with filler (feed) and dried to primary humidity at a temperature of 45-60°C. The dynamics of growth of chickens was determined by the results of individual weighings in the morning before feeding every month.

Blood for research was taken from animals (four from each group) at the end of the main period. Blood sampling was performed from the blood vessels of the wing in the morning before feeding. Heparin was used as an anticoagulant.

Morphological, biochemical parameters of blood, enzyme activity, i.e. aspartate aminotransferase (KF.2.6.1.1.) (AST), alanine aminotransferase (KF.2.6.1.2.) (ALT), alkaline phosphatase (K.F. 3.1.3.1.) in blood serum were determined by generally accepted methods [9, 10].

Biometric processing of digital experimental data was performed according to M.O. Plokhinskyi [11]. The results of the mean values were considered statistically significant at $P < 0.05$ - *; $P < 0.01$ - **; $P < 0.001$ - ***. If the probability criterion was less than 0.1, the difference was interpreted as a tendency to increase or decrease.

Research results. It was found that the growth intensity of the young of the fourth experimental group exceeded the replacement chickens of the first control group by 11.25% ($p < 0.1$). The chickens of the second and third groups were characterized by lower live weight at the end of the main period, respectively 989.50 ± 43.00 g and 863.20 ± 22.50 g against 1000.75 ± 43.00 g in control.

Blood analysis showed that the experimental chickens exceeded the birds of the control group by leukocytes and erythrocytes. Thus, the third experimental group erythrocytes content was $5.66 + 0.51 \times 10^{12}$/l, it is 1.35 times higher than the control values ($p < 0.05$). This fact may indicate an intensification of erythropoiesis in chickens under the influence of a new feed factor.

2. The content of formed elements in the chicken blood of, M ± m, n=4

Groups	Leukocytes number, 10^9 / liter	Index of leukocytes quantitative shift	Erythrocytes number, 10^{12} / liter	Index of erythrocytes quantitative shift
I – control	11.73±1.00	0.98±0.08	4.20±0.02	1.20±0.006
II – experimental	11.9±1.29	0.99±0.11	3.75±0.33	1.07±0.09
III – experimental	13.6±1.13	1.13±0.09	5.66±0.51**	1.62±0.15*
IV – experimental	12.38±1.01	1.03±0.08	4.45±0.13	1.27±0.04

Contradictory results were obtained as a result of the blood leukogram research. Thus, additionally feeding chickens by a biologically active yellow clover feed additive in the amount of 6.6 ml/kg per day led to a significant increase in the concentration of segmental neutrophils and a decrease in the proportion of lymphocytes leading to lower physiological levels of lymphocytes to neutrophils (L / N) and the shift of the neutrophil nucleus. The introduction of the maximum dose of clover supplementation in the chicken diets increased the concentration of immature forms of neutrophils and shifted their nuclear shift to the left (Table 3), which may indicate a corrective effect of different doses of biologically active substances of yellow clover on the leukopoiesis chicken mechanism.

3. Leukocyte formula of chicken blood, %

Indicators		Groups			
		I-control	II-experimental	III- experimental	IV- experimental
Basophils		2.96±0.2	3.07±0.23	2.99±0.08	2.57±0.46
Eosinophils		3.53±0.25	2.56±0.49	2.83±0.14	3.46±0.14***
Neutrophils	rod-shaped	5.27±0.12	5.70±0.38	4.94±0.16	7,0±0,3***
	segmental	20.48±0.29	24.73±0.79***	18.67±1.32	19,68±0,79
	total	25.75±0.4	34.44±0.94***	23.61±1.45	28,42±1,4
Lymphocytes		56.6±0.67	52.59±1.14*	59.32±2.15	56.66±0.85
Monocytes		11.17±0.94	12.8±1.39	11.26±1.87	10.31±0.15
L / N		2.20±0.06	1.72±0.02***	2.54±0.23	2.00±0.10
Displacement of the neutrophil nucleus		0.26±0.002	0.23±0.02	0.27±0.02	0.36±0.02**

The chicken biochemical blood parameters proved that the birds of the experimental groups were characterized by a higher concentration of residual nitrogen and total blood protein. According to the author, such changes are due to the intensification of enzymes of reamination and oxidative phosphorylation in chickens under the action of a new feed factor (Table 4).

4. Activity of AST, ALT, alkaline phosphatase in the chicken blood, M±m, n=4

Groups	AST activity, mmol / l / h		ALT activity, mmol / l / h		Alkaline phosphatase, mmol / l / h	
	in serum	per 1 kg of live weight	in serum	per 1 kg of live weight	in serum	per 1 kg of live weight
I - control	0.36±0.08	0.37±0.09	0.16±0.2	0.17±0.02	0.44±0.16	0.45±0.18
II-experimental	0.37±0.13	0.39±0.15	0.33±0.02	0.31±0.04	0.61±0.17	0.60±0.13
III-experimental	0.61±0.02*	0.70±0.04**	0.24±0.04	0.28±0.04*	0.13±0.002	0.15±0.02
IV-experimental	1.17±0.34	1.16±0.34	0.36±0.09	0.36±0.09	0.17±0.09	0.17±0.04

The effect of biologically active additives from clover on lipid metabolism was the most striking (Table 5). However, the consumption of the minimum dose of the supplement by chickens caused a significant increase in the concentration of total lipids and β-lipoproteins in the blood ($p < 0.001$), which may indicate better absorption of fat from the feed and acceleration of liponeogenesis in experimental chickens.

5. Total lipids, lipoproteins and cholesterol content in the chicken blood, M±m, n=4

Groups	Total lipids content, g / l	β-lipoproteins content,		Cholesterol content, mmol / l
		g / l	% total lipids	
I control	4.111±0.367	0.06±0.007	1.55±0.22	3.88±0.26
II experimental	5.86±0.17***	0.17±0.01***	2.90±0.16***	3.90±0.39
III experimental	6.12±0.21	0.12±0.02	3.32±0.16	3.31±0.67
IV experimental	4.56±0.3	0.08±0.008	1.79±0.2	4.47±0.10

Conclusion. The addition of yellow clover extracts in doses from 4.4 to 8.8 ml / kg per day affects the hematopoietic system and regulatory mechanisms of re-amination in the body of growing chickens, contributing to the intensification of metabolism, the formation of protective functions as a prerequisite for future high egg productivity.

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