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## **THE RESULT OF MICROELEMENTS INFLUENCE ON POULTRY AND BEEF CATTLE IN ROZTOCHJA (LVIV REGION)**

An important question in development of cattle-breeding is the deep study of physiological-biochemical bases of increase of the productivity of farm animals and poultry, especially study of biochemical processes in organism for the purpose of working out of recommendations on increase of their productivity by the directed influence on intensity of the growth, assimilation of the nutrition's matters of feeds and quality of the received production. Among factors of the feeding, which carry out on important in thence on intensity of passing of the higher-mentioned processes and biological full value of the obtained production an important role belongs to trace elements, and particularly in the west Ukrainian region, where there is the deficiency of them. In the organism of the animal and the poultry the are parts of different biological-active matters: ferments, vitamins, hormones.

One should consider, that either deficiency or oversatiety of the organism by one or several traceelements causes additional waste of feeds on an unit of the made production, to hanges of regulation processes and cascade of biochemical reactions in the organism, which causes breach of the metabolism. With that, Hiffer-ent diseases appear, which are characterized by breaches of the growth and the development of youth of the cattle and the poultry, of reproductive abilities, sexual ripening, farming of skeleton, reduction of the productivity and quality of the production.

Hence, it would be expediently to conduct researches, connected with maintenance of the farm animals and the poultry by traceelements, studies of the influence of additions of the screed traceelements to the ration on productive qualities and some qualitative indices of the obtained production. The experegion on the base of the farms, which are specialized on the poultry-breeding and milk production.

### **Material and methods**

For the arrangement of the experiment on broiler-chickens, fire groups of the chickens of a day-age of a cross "Broiler-6" were formed 100 chickens each. The rearing conducted in group cages to the age of 63 days. Chickens of the fist group obtained a standard ration, which meets heir requirements in protein, energy, macro- and microelements corresponding to norms. The rest ones were given additions according to the groups: the second group were given manganese sulphate (40 mg/kg), the third one - cobalt chloride (2 g/kg), the fourth one - manganese chelate with motionin (20 mg/kg), the fifth one - cobalt chelate with metionin (1 mg/kg), the sixth one - mixture of manganese chelate (10 mg.kg), and cobalt chelate (0,5 mg/kg). The poultry of every group were determined on the average daily increase by the

every week weighing and on confusion of the total number by the Method of poultry quantity control.

**Results of experiments**

Under influence of cobalt and manganese the bio Synthetic processes are made more active in organism and as result the quantity and quality of the production increases (table 1).

Table 1

**Productivity of broiler-chickens**

Indices	Control	Experimental groups				
	I	II	III	IV	V	VI
Live mass during slaughtering	1560,0 ±28,2	* * * * 1738,9 ±38,2	*** 1773,9 ±38,6	* * * * 1908,1 ±43,3	*** 1883,8 ±54,8	*** 1861,7 ±38,4
Categories of carcasses						
I, %	78	84	83	88	87	87
II, %	18	14	15	11	12	12
non-standart	4	2	2	1	1	1
The slaughtering yield, %	79,5 ±0,4 1	* 81,7 ±0,8 1	** 82,1 ±0,9	** 83,3 ±1,4	* 83,5 ±1,8	* 83,1 ±1,6

The stable increase of the live mass during two months in the second group, where the anorganic salt of manganese in dose of 40 mg/kg of feeds were used, is noted and finally, the live mass was higher or 11,47% or 178,99. The increase of the live mass among this group of poultry was in imitis from 4,22 to 14,28%, besides given data were statistically possible during all process of rearing of the chickens. The third experimental group, in which the undernutrition with cobalt chloride went in amount of 2,0 mg/kg of feeds, was characterized by the increase of the live mass in the age of 63 days on 213,9 g of on 13,71% in comparison with the control group. The statistically possible increase of the live mass was noted in the fourth group month were manganese as the chelate mixture with meth was used, at the end of the 2-months term on 348,1 g, or 22,3%. It the fifth group, where cobalt chelate mixture with methionin in dose of 1,0 mg/kg of feeds was used, the live mass increase was on 323,8 g or 20,76% bigger then in the control group. In the sixth experimental group the mixture of chelates (10 mg/kg) and cobalt (0,5 mg/kg) was used and the increase of live mass on 19,34 or 301,7 g was noted. The analysis of yield of the caresses showed, that the category carcasses yield was the biggest in IV group (on 10%), in V and VI groups on 9%, and in II-III was accordingly 6 and 5% in comparison with control one.

Analogically the Second category carcasses yield was the biggest in third group, the last was in the IV group. The yield of II category carcasses in all experimental groups was less then in the control one. The yield of non-standard carcasses in II and III groups was 2% in each, and in the IV-VI groups was 1% in each. The yield of the I category carcasses, was marked especially in IV-VI groups, is

explained by increases of the fat amount and the muscles filling of the carcass the slaughter yield increase was marker in II group on 2,2%, in III group on 2,6%, in IV and V groups accordingly on 3,8% and 4,0% in VI on 3,6%.

The substances, observed by us, influent positively on general<sup>1</sup> increase of the live mass, with that one should notice, that the best influence have chelate forms of cobalt and manganese of the given index, especially in dose, reduced in two times, then in anorganic form, and in a times less quantity in the mixture of the mentioned methionates.

Besides, we conducted experiments on research of the influence of the screed microelements on the milk productivity of the milk bovines and quality of obtained milk. By the experiments, conducted before, on feeds and water, which were used in feeding, on microelements content, the deficiency of iron, copper and manganese adequately 70, 50, 30% was found. The lower level of iron-content was found in green mass - 2,52 mg/kg, copper and manganese in the leaves of mangel-wurzel was adequately 0,34 and 1,46 mg/kg of natural matter.

Taking into consideration the results of the before conducted analysis of feeds, for the next experiments the cows of the black-specked breed of 4-5 lactation, of the same calving period, divided in five groups 10 heads each, were selected (control and I-IV experimental groups). The cows of experimental groups were given mixtures of the scarced microelements to the basic ration every day in form of anorganic saults (I-I!) and their chelate compounds with the animo acid ethionin (IV) rated at a kilogram of the live mass of body in different proportions: I - OP + FeSO<sub>4</sub> (0,05), CuSO<sub>4</sub> (0,1) and MnSO<sub>4</sub> (0,1 mg/kg of l.m.); II - OP + FeSO<sub>4</sub> (0,05), CuSO<sub>4</sub> (0,1), MnSO<sub>4</sub> (0,05); III - OP + FeSO<sub>4</sub> (0,05), CuSO<sub>4</sub> (0,05), MnSO<sub>4</sub> (0,1 mg/kg of l.m.); IV - OP + Fe-mithionate (0,05), Cu-mithionate (0,05), Mn-mithionate (0,05 mg/kg of l.m.) inclusion of the scarced microelements (Fe, Cu, Mn) to the experimental cows" ration was favourable for the increase of the quality (table 2, 3).

Table 2

**Milk productivity of experimental cows during lactation period (average per head). n=10**

Index	Animal groups				
	Control	I	II	III	IV
Quality of milking days	292	286	288	294	290
General milk yield kg of natural fat-content of basis fast-content	3080,6 3062,5	3188,9 3292,1	3133,4 3161,0	3225,2 3282,1	3404,6 3614,9
Milk fat	3,38	3,51	3,43	3,46	3,61
Milk yield daily, kg of natural fat-contents of basis fat-content	104,1 10,55 10,48	111,9 11,15 11,51	107,5 10,88 10,97	111,06 10,97 11,160	122,9 11,74 12,46

So, the general milk yield of natural fat-content per cow was the biggest in IV experimental group - 3404,6 m, hat is on 324 kg higher groups the increase of the

general milk yield of the natural fat-content for all lactation period was less evident and was on 3,5; 1,7; 4,9 higher adequately, then in the control one. One has noticed in all experimental groups an increase of the daily milk yield too. So, when in the control group cows, the daily natural milk yield was 10,55 kg the experimental groups cows (I-IV had on 5,7; 3,1; 4,0 and 11,3% higher. Besides, one should notice an increase of the milk falconet in all experimental group during lactation period on 3,4-18,8 kg in comparison with the control one.

**Table 3 Indices of co milk quality with addition to their ration of scarced traceele- ments, M±m, n=10**

Index	Animal groups				
	Control	I	II	III	IV
Density, °A	28,54 ±0,28	* 29,70 ±0,30	29,24 ±0,27	28,90±0,27	* * 30,70 ±0,27
Dry matter, %	11,54 ±0,21	12,10 ±0,17	11,84 ±0,19	11,94 ±0,26	12,41 ±0,13
Fat, %	3,38 ±0,08	* 3,51 ±0,06	3,43 ±0,11	3,46 ±0,10	* * 3,61 ±0,09
General protein, %	3,26 ±0,05	3,38 ±0,08	3,30 ±0,07	3,34 ±0,06	3,50* ±0,07
Casein, %	2,56 ±0,04	2,66 ±0,03	2,59 ±0,05	2,63 ±0,03	2,75* ±0,04
Lactose, %	4,27 ±0,07	4,49 ±0,05	4,40 ±0,08	4,45 ±0,11	4,55 ±0,08
DDMM, %	8,16 ±0,08	8,59 ±0,15	8,41 ±0,12	8,48 ±0,10	8,81 ±0,09
Ashes, %	0,64 ±0,011	0,72 ±0,007	0,71 ±0,005	0,68 ±0,004	0,76* ±0,009

During conduction of veterinary and sanitary examination of milk, obtained from cows of the experimental groups, which were fed mixtures with the scarced traceelements (Fde, Cu, Mn) in forms of saults, and especially of methionates, the increase of the milk density on 0,36-2,16 A, of the dry-matters-content - 0,30-0,87%, of the fat-content - 0,04-0,24%, of the casein-content - 0,03-0,19%, of the dry degreased matter - 0,25-0,65%, of the ashes - 0,04-0,12%. Beside increase of the higher-mentioned indices the insignificant reduction of acidity and quantity of somatical cells in milk near the end of the lactation period were marked.

It result of conducted economical accountings. It has been found, that under nutrition either broiler-chickens or cows during lactation with the scarced traceelement gave an evident production and economical profit in all experimental groups with out exclusions. So, the introduction of the scarced traceelements to the broiler-chickens' ration helped to reduce of the face cost of a kilogram of increase on 12,5-18,5, the pure profit due to that increased on 3752%, and rentability increased on 16,7-28,6%. Due to under nutrition of the lacving cows by the compound of iron, copper and manganese, the face cost of one hundred kilograms of milk reduced in comparison with the control one on 3,1-17,4%. It has been found the increase of pure profit on 8,7-42,6% and increase of rentability on 4,2-23,5%. One should notice, that the least face cost of the obtained production, the biggest profit and rent-ability were

marked in the groups, where the microelements were added in forms of chelate complexes with the aminoacid-Methionin.

### **Conclusions.**

1 . Addition to the standard combined feeds for broiler-chickens, beginning from one-day age, of the microelements of cobalt and manganese in organic and anorganic forms helps to make higher, the average daily increase, well as to make higher the increase of general live mass of broiler-chicken with help of influence on intensity of metabolism in their organism, the using of the nutritious matters of feeds and keeping of the poultry quantity have a positive influence on intensity of metabolism in their organism, the using of the nutritious matters of feeds and keeping of the poultry quantity have a positive influence on meat qualities of broiler-chicken.

2. Addition to the basic milking cows' ration of the screed microelements (iron, copper, manganese) was good relected on milking productivity of cows and on qualitative indices obtained milk. The application of the microelement in complex with methionin was more effectively, then the using of sulphates of the scarced traceelements. The received milk had better organoleptic indices and was adequate to higher grade according to State Standart of Ukraine (ДСТУ 3662-97 "Cow milk Unskimmed").

3. Using of the methionates of the scared traceelements in the chicluns' Hasion, but also in the cows' ration is more profitable, then of the anorganic saults. Their purchase and using are fully compensated with additional profit.

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