

THE EFFECTS OF FEED ADDITIVES (DEL-CA-MAG, ACIDS AND SELENIUM SUPPLEMENTS) ON PRODUCTION PERFORMANCE, METABOLIC AND IMMUNE STATUS OF BROILERS

IONITA CARMEN, IONITA L., TRAMBITAS B., NEATA GABRIELA

University of Agronomical Sciences and Veterinary Medicine Bucharest

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ABSTRACT

Feed additives are substances or products, added in small quantities, leading to complement and balance the ration. Organic acids are responsible for maintaining a balanced bacterial microcultures digestiv tract. La broilers, using Del-Ca-Mag, veterinary mineral supplement, 100% naturally improves performance and efficiency, it is an amorphous dolomite extracted from Delnita Harghita area. Mineral Antioxidants are particularly important in maintaining a rapid and effective. This concept is based on understanding the contribution of minerals in reducing the negative effects of free radicals and toxic metabolites on immune processes in the animal organism. It can be appreciated that feed additives cannot be easily removed from the diet of broiler chickens, as they have contributed to the improvement of feed conversion index and maintaining good health of offspring, given the conflicting results obtained consider the use of feed additives above) is absolutely necessary broiler growth stages as positively influence food consumption, health and weight.

INTRODUCTION

Nowadays world – wide biotechnology investigations intend to use microorganisms such as alternative natural bioresources useful in bioavailability fodders managed in animals food as well as: different bacterial culture, feculence or enzymatic preparation to achieve a various range of fodders additives (11, 12).

In our country our first trials were at the beginning monobacterial culture achieved since 1959-1963 by C. Berbinschi and his co-workers/assistants and then in 1998 they achieved polibacterial cultures some genus being sorted by M. Vintila and his co-workers. Subsequently they go on with the reserch and achieved various range of natural bioadditives fodders using sorted strains of acidolactic bacterial from two genus: Lactobacillus and Enterococcus receiving probiotics denomination (1, 2, 8).

At present in Romania are used imported bioadditives fodders with probiotic and enzymatic role. They are from a very large range achieved with ultramodern technology acidolactic bacterial culture which is quite very expensive.

Natural bioadditives used in animals food realized a biological protection to host body and in certain cases they stimulated digestive and immune functions.

Probiotics can replace synthesis substance from antibiotic series and this is why they were appreciated. They were appreciated especially when OMS decided to ban antibiotics such as increasing promotor and UE decided to exclude a large range of antibiotics used in profilactic and curative purpose. Antibioresistence and antibiotics remanent effects pointed out a lot of disputations. Worlds scientifically community suggest immune and natural provisions profilactics effects with incidence towards animal production quality, food security and uman health (3, 4, 5, 6, 7).

Dolomita de Delnița is a natural source of calcium and magnesium that assure nutritive support for mammals and birds. Dolomita was named after Deodat de Dolomieu, a french mineralogist. It is found as sedimentary rock named dolomitic limestone. Dolomita contains 10-20% ions of magnesium which is different than calcium carbonate. Both

calcium and magnesium are important in bone structure. They also transmit nervous impulse and are implicated in muscular contracts (9, 10, 13, 14).

MATERIAL AND METHODS

There were made two investigations:

First investigation. We use acidifiants to improve chicken productive performance and to measure metabolic status.

Experimental scheme

Chicken development: 55 days

The first lot contains 10 chicken (10 days old) feed with aggregate fodder (obtained from S.C.Viva Bihor- witness lot) until they get 55 days old.

The second lot contains 10 chicken (10 days old) feed with the same aggregate fodder until they are 55 days old plus water.

Novimin Antistres(polivitamins)- for a best start. Dose: 0,5 ml/l water, in first 3 days and then 3 days in every 2 week period.

Chicken were raised in well-managed extensive system.

Acidifiant Nutrisure (natural product) – has an antibiotic and growth role through digestive improving.

Second lot–experimental lot. Chicken were well-managed raised in extensive system.

Second investigation. Research in well-managed system is looking forward to attain „ecologic-yard-chicken”. We add Del-Ca-Mag in their meal in order to attain „ecological – yard-chicken” in well-managed system. Our researches are due to raise chicken in a private well-managed system and add Del-Ca-Mag in their meal.

In our experiment we used 30 Ross 308 chicken. They were increased until they got 14 days old. They were separated in 2 lots (a witness lot and an experimental lot) each one including 15 chicken. In the experimental lot chicken received 2g/chicken/day of Del-Ca-Mag day by day until they were 60 days old.

Chicken from both lots had been nourishing with 20% wheat, 40% corn, 20% sunflower, 20% pea. All of them were our own fodders that we achieved in household. We didn't made researches for fodders recipes. All day long, chicken had a lot of food and water. They derived advantage from green fodders (spanish trefoil, salad, spinach etc), sun and movement.

Broadly speaking we managed 10 kg fodders daily in both lots. Damages are wide so in well-managed system we can't estimate our economical indicator.

Del-Ca-Mag is a mineral supplement. Composition: 32,02% calcium oxide and 20,27% magnesium oxide. It is made out of dolomite which has been extracted from Delnita, Harghita district.

RESULTS AND DISCUSSIONS

Experimental case 1

In well-managed household system we chose body weight as quality-marker and made a biochemical study in order to find out the metabolic origin of different causes that damages our production and to cure it as fast as we can. We have a weight of our chicken at 10 days, 25 days, 45 and 55 days.

Table 1

Chickens weight at different ages

Weight	UM	Witness lot	Experimental lot
10 days	g	234	232
25 days	g	1,189	1,282
45 days	g	1,750	1,860
55 days	g	2.280	2,486

We established the fact that chickens average weight from experimental lot is bigger than chicken from witness lot. This indicates that acidifiants keep up a healthy microflora in bowel which is essential in healthy digestion and growth. The metabolic profile test was made at 55 days when chicken were sacrificed/killed

Total protein is similar to the references values. At experimental lot we can see a wide increase of uric acid and urea. Vigour profile (organic nitrogenous substance) show whenever glucide is in excess comparing with specialized literature values.

By killing 55 days old chicken we can mollify the possibility of hepatorenal seborrhagia appearance which appears whenever glucide is in excess.

The mineral profile with elementary minerals for our life: calcium, phosphorus and magnesium, reflects phosphorus and magnesium deficiency. This deficiency caused by digestive absorption of calcium and magnesium decrease and because oxalated and greased food.

Table 2

Metabolic profile of 55 days old chicken

Index	UM	Witness lot	Experimental lot	Value references
Total protein	g/dl	3,64	3,92	3,50 +/- 0,5
Uric acid	g/dl	4,78	7,60	4,0 +/- 1,5
Urea	g/dl	3,90	6,5	3,9 +/- 1,9
GOT	UI	64,0	115,0	70 +/- 40
GPT	UI	18,0	21,0	12 +/- 8
GGT	UI	13,0	15,5	10 +/- 5
Alkaline phosphatase	UI	180,0	210,0	150 +/- 100
Glucose	mg/dl	170,0	192,0	130 +/- 27
Total lipide	mg/dl	650,0	700,0	620 +/- 150
Cholesterin	mg/dl	90,0	115,0	105 +/- 15
Triglyceride	mg/dl	70,0	84,0	60 +/- 20
Calcium	mg/dl	9,2	12,3	9,3 +/- 1,2
Phosphorus	mg/dl	6,2	6,8	6,8 +/- 0,80
Magnesium	mg/dl	1,9	2,12	2,15 +/- 0,1

Experimental case 2

We are investigating in order to attain „ecologic-chicken –yard,, in well-managed household system by adding Del-Ca-Mag in their meal.

We were looking for the evolution of their body weight and weight of main organs. After the sacrifice we took over blood and appreciated the mineral level from their tibia (3 chicken from each lot).

Del-Ca-Mag product is managed in fodders (aggregate fodder, bran, flour) in this way:

-farm chicken – first 10 days of life: 1,8% , between 11-22 days: 1,66g%, between 23-42 days: 1,51%

-country chicken: between 1-150 days: 2 g/day.

We must specify that chicken were weighed after their removal of lungs (boil mechanism) without removing the organs and gastro-intestinal mass.

Table 3

Weight evolution

Weight	UM	Witness lot	Experimental lot
At 15 days	g	341	343
At 30 days	g	1,242	1,257
At 50 days	g	2,180	2,350

In the fourth table we can see that after 30 days the differences between weight average was 15 g at the experimental lot. After 60 days there were wide differences: 170g.

By-products are given by: vertebral column, neck, liver and maw.

As regards to their main organs weight we can see considerable differences between chicken chest from experimental lot and 100g to their wings. The other limbs had the same weight. Hence both calcium and magnesium are elementary for their bones and their muscular tissue.

Table 4

Weight of main organs

Organ	UM	Witness lot	Experimental lot
Chest	g	570	610
Legs	g	600	600
Wings	g	270	300
By-products	g	550	560

CONCLUSIONS

Because of the contradictory results, fodders additives can't be removed carelessly from broiler chicken. We think that fodders additives (enzyme, probiotics, minerals etc) are absolutely necessary in broiler chickens breed because they have positive results in: feed, health and weight.

Adding acidifiants in chicken feed confirm positive results. This parameter - productive production - is the most sensible indicator of calcium in chickens feed.

Biochemical analysis at broiler chicken proved the fact that there weren't significant influences by calcium. According to their weight and age experimental value lots were close enough to witness lots in normal fiziological limits.

In conclusion, using DEL-CA-MAG mineral in chickens feed is really healthy and not dangerous at all. DEL-CA-MAG helps nutritious to melt in chicken digestive juice, offer a good assimilation and improves chicken health and development.

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