

# Improvement of immune system and productions parameters of breeding-stocks with natural zinc-humate

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Intensive breeding conditions and solid surfaces of stables cause several immune-system related problems. The treatment of these diseases is getting more and more difficult because more and more antibiotics and chemical residues absorbed into the animals. On the long term therefore we have to calculate with resistance and toxic side-effects and allergy formation, and stress and other immune-systems problems. The application of the alternative preventive ingredients and natural ingredients without side effects will have importance. The new regulations of the European Union restrict the application of the antibiotics. Considering the new alternative ingredients the important question is not only the bactericide or virucide effects, but these ingredients must be non-toxic and side-effects free. The alternative ingredients and their metabolites must not cause harmful immune and allergic reactions. All above mentioned requirements are fulfilled by the natural humic acid based product called COLISTOP which is a natural zinc-humate chelate.

The COLISTOP-pulvis is an animal feed-additive produced by Biopol Ltd. The product contains 12,5 % zinc and 70 % humic acid.

## Materials and methods

We carried out our trial with COBB-500 chicken breeding stocks from Denmark. We analyzed the parameters of two experimental chicken-houses (15300 pullets and 2346 roosters) feed continuously with Colistop and of two chicken-houses (18360 pullets and 2754 roosters) we used as control. Both the control and the experimental groups got the same basic feed (own excellent quality product controlled in our laboratory), and the same vaccines. Into the experimental group's feed we mixed the Colistop in 0,3%-calculated to the total feed-(from the 2nd week to the 21st week). The experiment started at 25<sup>th</sup> of May, 2001 in Bakonypölöske, Hungary on the No. II and III. chicken farms of Gallus Ltd.

### 1. Examination of the efficiency of vaccines

The experimental and the control groups got the same vaccines at the same periods as follows:

1st. week-coccidiosis, 2nd. week-NDV, IBV; 3rd. week-IBV; 6th. week-live REO; 8th. week-NDV, IBV; 9th. week-IBD; 10th. week-AE; 12nd. week- chicken pox and Salmonella Enteritidis inactivated, 16th. week-Salmonella+REO+EDS, IBV, NDV, IBV inactivated.

We followed the efficiency of vaccines with the examination of the antibody-levels of *fowl-plague*, *infectious bronchitis* and *Gumboro-disease*. We measured the antibody-levels in the own laboratory of Gallus Ltd with ELISA-methods. The kits made by KPL (Kirkegaard & Perry Laboratories, USA). We analyzed 20-20 blood-samples from all chicken-houses on the 4th, 9th, 14th, 19th, 28th, and on the 40th life-weeks. The results are summarized on **Figures-1-2-3**.

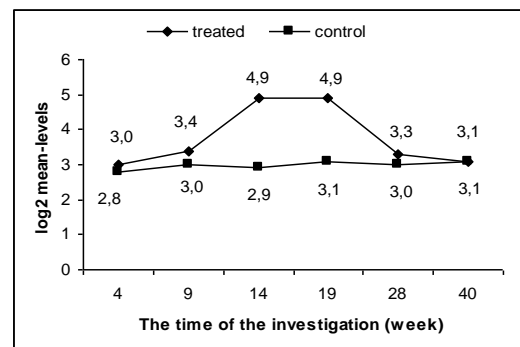


Figure 1. Antibody-level against Anti-Fowl plague (ND)

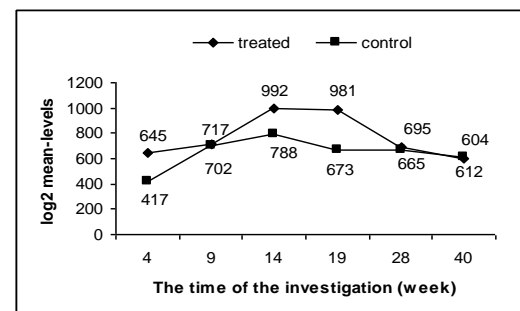


Figure 2. Antibody-level against Infectious bronchitis

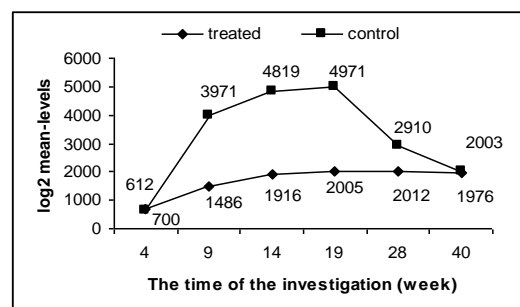


Figure 3. Antibody-level against disease of Gumboro (IBD).

After adding the vaccine against Gumboro disease the antibody-level significantly increased at the experimental group which was treated with humic acid. This increased antibody level shows a stronger immune system comparing to the control group.

We moved the birds into a new house on the 21st week. In the new house we separated the control and the experimental groups, but we did not add the COLISTOP-supplement any more. We measured the antibody-levels continuously to see how long the effect of the COLISTOP supplement last.

As it can be seen on the Figures 1-2-3. the antibody-levels of the experimental group decreased to the levels of the control groups until 40<sup>th</sup> week that is 2 weeks after we stopped adding Colistop.

## 2. The mortality

The characteristic of mortality shows the state of health and resistance of the animals, (Figures-4-5.)

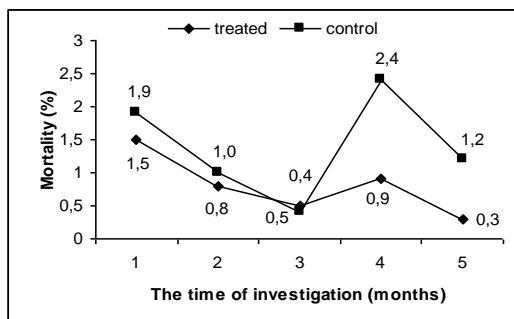


Figure 4. Mortality curve

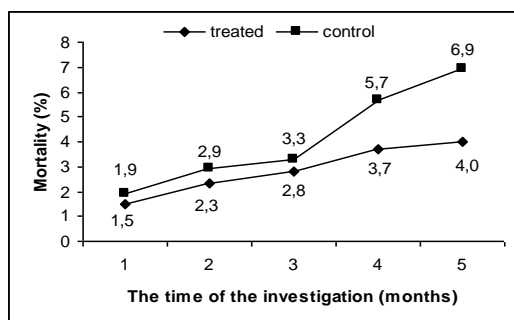


Figure 5. The total mortality

On the 3rd week all groups got a Clostridium infection so antibiotics-treatment was necessary (Estreptovall). The antibiotics treatment was much more effective in the experimental group, than in the control group. In the control group the infection-period was longer and more animals died and finally the antibiotics treatment we had to repeated. But it must be emphasised that even the 2<sup>nd</sup> antibiotics treatment was not so effective than the Colistop -supplement. Moreover the extra-cost of the medicines the mortality caused serious losses as well.

Birds were transferred to a new house on the 21<sup>st</sup> week. The survival rate of the transferred birds from the experimental group-house was 93,4 % while in the control group-house was 90,1 %.

The immune system intensifying efficiency of the product is convincing if we consider these transferring percentages. The increased resistance and stronger general health-state improve safety of breeding in a great extent.

## 3. Body weight

Opposite to broiler-breeding, in our case the target of breeding is not focused on the big body weight. Birds must be kept between the technology weight limits with restricted nutrition. The overweight birds were sorted out. During the experiment we concluded that the bodyweight of the treated birds was more easily regulated. The standard deviation of body weight was much better in case of experimental group so we could use more birds for production after transferring to the new house. This improvement in body weight deviation can also be seen in the transferring percentage numbers. All groups got the same feed so the increased body weight prove the significant improve of the feed utilization index of Colistop. (Table 1.)

This feed utilization improvement effect is related to humates (humic acids) that we concluded in other experiments with different animals (pig, chicken, calf) as well.

	Time, weeks								
	1.	2.	3.	4.	5.	10.	15.	19.	20.
Prescription	115	230	400	580	770	1545	2095	2495	2600
Experimental	120	241	420	609	807	1623	2199	2623	2725
Control	113	227	392	569	760	1517	2056	2465	2551

Table 1. Average body weight of birds (g)

During last years more and more attention is focused on the immune system stimulating products. Among these products the humic acid based products have special interest. Our results during this experiment proved that Colistop (Zn-humate) improved the immune system and general health state and production of antibodies not only in the case when health problems occurred but even when the general health state and production parameters were excellent.

Experiments we carried out prove a promising future for Colistop and other natural humates as animal feed supplements (not medicines) to successfully intensify the immune system and improve the efficiency of antibiotics and even decrease the dose of antibiotics.

## References of humic substances in veterinary medicine

- 1., CSICSOR J.: *Application of the humic substances in the animal medicine I., Hungarian Veterinary Journal, 1998. 120. 762-763.*
- 2., CSICSOR J.: *Application of the humic substances in the animal medicine II., Hungarian Veterinary Journal, 1999. 121. 88-89.*
- 3., FLAIG, W.: *Chemische Untersuchung an Huminstoffen. Z. Chem., 1964. 4. 253-265.*
- 4., KLOCKING, R.: *Humic substances as potential therapeutics. In: SENESI, N.: Humic Substances in the Global Environment Elsevier. Amsterdam, 1994.*
- 5., KÜHNERT, VON M. – FUCHS, V. – GOLBS, S.: *Pharmakol. Toxikologische Eigenschaften von Huminsäuren. Dt. Tierärztl. Wschr., 1989. 96. 3-10.*