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RESEARCH ON THE EFFECT OF A PLANT EXTRACT ON SPECIFIC IMMUNITY IN BROILER CHICKS VACCINATED AGAINST INFECTIOUS BURSAL DISEASE

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Abstract: During four experiments, the effect on the specific immunity of two live attenuated vaccines against avian infectious bursal disease, whose composition includes the BIA virus, with an immunosuppressive but also immunogenic effect, namely Biavac and Biaromvac-PA, was tested. Of the four batches, two batches (E2 and E4) were given an aqueous extract of oregano (*Origanum vulgare L.*) in the drinking water. The research was carried out on batches consisting of 12 broiler chickens, aged 14 days, coming from a broiler farm, raised in alternative system (on litter, without outdoor access) and in enriched cage system. In each experiment, the administration of the two vaccines was done only once, regardless of the batch, while the immunomodulatory preparation was administered in the drinking water. To evaluate the effect on the specific immune response, blood samples were collected from each chicken, in each experimental stage and the antibody titer was determined by the immunoenzymatic method (ELISA). Analyzing the obtained results, during the experimental period, differences were found from one chicken to another, as well as from one vaccine to another. The most conclusive results were found in the batches to which the aqueous extract of oregano was also administered, the differences between the batches being significant.

• Introduction

Avian infectious bursal disease (Gumboro disease) is an acute, highly contagious disease, considered one of the most important infectious diseases affecting the immune system of young birds, especially in the first days after hatching. In disease-free flocks, avian infectious bursal disease virus (IBDV) causes almost 100% morbidity and up to 90% mortality. Due to the particular diffusibility of the avian infectious bursitis virus and its high resistance, the general prophylaxis is not sufficient, which requires a specific prophylaxis through vaccination. In this sense, different types of vaccines are used: inactivated, consisting of live germs with various degrees of attenuation, monovalent vaccines or polyvalent vaccines, each of which is indicated in certain circumstances, specified by the manufacturer.

Also, for the stimulation of specific immunity, recently, special attention is paid to various plant extracts and dietary spices, which have the ability to modulate both specific and non-specific immunity.

• Material and method

The immunogen was represented by two BIA vaccines, respectively Biavac and Biaromvac PA 100 DZ. The immunomodulatory substance was represented by an Oregano extract, obtained according to the method modified by Hernandez et al. 1994.

The research was carried out on 48 broiler chickens, grouped into four experimental groups. To determine the antibody titer, blood samples were taken at the following time intervals: at the age of 14 days, on the day of vaccination, and later at the age of 24, 34, 44 and 54 days.

Anti-IBD antibody titer was determined by immunoenzymatic technique (ELISA) using a kit produced by IDEXX Laboratories, USA named "Infectious Bursal Disease Virus Antibody Test Kit".

• Results and discussions

Mean antibody titer values in the four experienced batches

Experimental batches	Antibody Titer					
	Day 14	Day 24	Day 34	Day 44	Day 54	
E1 - Biavac	Media	150.25	1174.6	1725.67	2632.92	3657.08
	C.V.	23.06%	8.35%	5.06%	7.46%	6.18%
E2 - Biavac + extract	Media	260.58	1181.7	1889.50	2979.83	4142.67
	C.V.	14.44%	8.03%	8.45%	5.30%	4.31%
E3 - Biaromvac	Media	214.92	1178.50	1822.00	2802.58	3911.67
	C.V.	9.06%	11.36%	11.23%	7.55%	8.59%
E4 - Biaromvac + extract	Media	278.50	1263.33	2086.67	3103.67	4253.17
	C.V.	7.98%	8.61%	9.41%	9.33%	6.73%

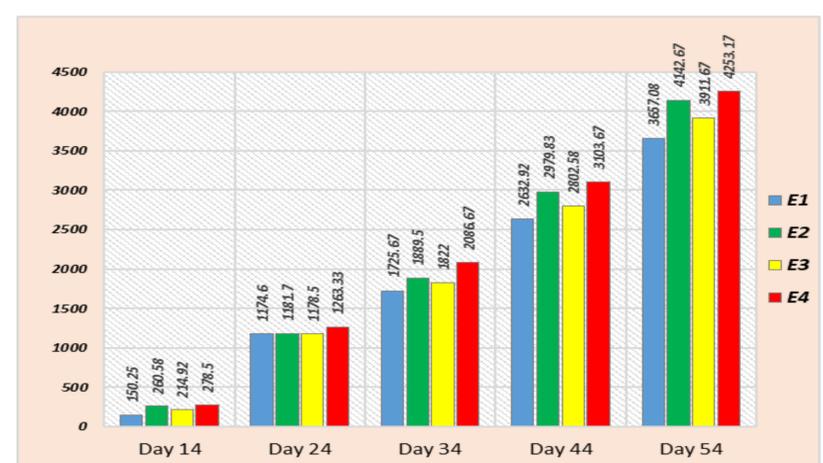


Fig. 1. Antibody titer dynamics in the four experimental batches

• Conclusions

Insignificant differences were found between the antibody titers induced by the Biavac and Biaromvac vaccines.

The aqueous extract of oregano, administered to chickens in drinking water, positively influenced the synthesis of antibodies, with higher titers recorded in both groups to which the oregano extract was administered.

The highest antibody titer values were found 30 days after the administration of the vaccines and the immunomodulatory preparation.

It can be recommended to use biological preparations from *Origanum vulgare L.*, in order to stimulate the immune response in broiler chickens.