IMMUNOLOGICAL EFFICIENCY OF VACCINE STRAINS USED IN IMUNIZATION AGAINST AVIAN INFECTIOUS BRONCHITIS

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Abstract
The article includes the serological investigation about maternal and post vaccination level of specific antibodies titers against bronchitis diseases virus. For vaccination were used "H-120" strains and "Ma5+Clon30" strains, administrated by spray method separate and in combination with the the hydroalcohlic solution of propolis. The level of antibody titers was established with ELISA test. On result was established that the chickens which was vaccinated with vaccine strain "H-120" had lower level of antibody titers which were between 1: 815.727 and 1: 1189.27 comparative with of antibody level of chicken which was vaccinated with vaccine strain "Ma5+Clon30" (1: 1603.02 and 1: 2011.86).

Key words: Infectious bronchitis virus, Chickens, ELISA test, Serological investigation, Antibody titers, Vaccine strains.

Introduction

Infectious bronchitis virus, which was isolated more than 75 years ago, so far remains to be one of the most pathogenic viruses that cause respiratory infections in birds of all ages and all races. The emergence of new types of field of the pathogen further complicates diagnosis of infectious bronchitis. (Kasparieanţ S. A., Cekmariov A. D.,2009).

Avian infectious bronchitis was first introduced in Moldova in 1994 through hatching eggs and chicks aged one day. Infectious bronchitis in most cases affect the young until the age of 40 days with prominent appearance of clinical and pathological changes. Vaccination of chickens with live vaccine 25-30 days before laying period of exacerbation of this infection removed, however, has not been fully . (Scutaru I., Spataru T., Starciuc N., 2009).

Vaccines against respiratory infections such Newcastle disease and infectious bronchitis, are used successfully long times at poultry ferms. However administration of live vaccines, especially those that are intended for the same target organs, can cause negative effects. Often can be seen to decrease the activity of one or two components (interference), unexpected results and increase the response to vaccination. It is necessary to appreciate the elements compatipilitatea vaccine recommended for use associated. (Aris Malo, 2009; Muhamedşina A. R., 2009)

Anatomoclinic diagnosis is very difficult or even impossible, because the disease has many similarities with other respiratory disease of birds: avian infectious laryngo-tracheitis, Newcastle disease, avian mycoplasmosis, avian cholera and chronic difterovariola. Some primary bacterial diseases such as those produced by Mycoplasma and Ornithobacterium rhinotraheale can be included as potential differences. Other bacteria are able to infect the respiratory tract once it has been damaged primarily by a virus which can lead to difficulty establishing a clear diagnosis. (Perianu T., 2005; Grgić H.; et al., 2009; Shen C.I.; et. al., 2009).

Materials and methods

The purpose of these investigations was to ascertain the effectiveness of vaccines and immunological methods used in preventing infectious bronchitis of chickens.

This study was conducted on six experimental groups under race chicken „Hi Land" for 25 chicks in each group. Were formed 5 experimental groups of chicken and a control group. In groups of chicken vaccines were administered by drinking water and spray methods. It has been used the vaccine strain H-120 and vaccine Ma5 + Clon30, attenuated virus strain (Ma5) avian infectious bronchitis and strain (Clon30) Newcastle disease. One of the experimental groups was revaccinated at the age of 21 days with vaccine strain La-Sota (table 1).

Before vaccination and at the age 7, 10, 15, 20, 30 and 40 days from each chikens group were sacrificed 3 chicks and were collected blood serum samples to determine the antibody titres, and lungs for histological investigations. The antibody titres was assessed by immunoassay test (ELISA). All six groups of chickens were kept under analog conditions and nutrition.

The chicks were fed fodder well balanced, age appropriate, that is home to one day feed (no. 5). Of 100% corn is 65%, wheat 10%, macuh-2%, -14% soie meal, bone meal -5%, fish meal-2%, premix fortified 2%.

At the age of 3 weeks was administered combined fodder no. 6. Of 100% corn is 60%, wheat 14%, macuh -7%, -10% soie meal, bone meal -5%, fish meal-2%, premix fortified 2%.

Sampling was performed traditional conservation known.

Table 1. Vaccination of chickens against avian infectious bronchitis

No. group	Vaccine strain	No. of chickens	Age of the chickens (days)	
			I	II
1	control group	25	-	-
2	H-120	25	1	-
3	H-120	25	3	-
4	Ma5+Clon30	25	3	-
5	Ma5 + Clon30 in combination with propolis hydroalcoholic solution of 10%	25	5	-
6	H-120	25	1	21

Vaccines were administered as follows:

The first group of chicks served as control group.

Second group of chickens was vaccinated with strain H-120, once of the age one day, method - with drinking water.

The III group - with the vaccine strain H-120, at the age of 3 days, method - spray.

The Fourth group - the vaccine "Ma5 + Clon30" the age of 3 days, method - spray;

The V group - the vaccine "Ma5 + Clon30" in combination with propolis hydroalcoholic solution, at the age of 5 days, method - spray;

VI group - with the vaccine strain "H-120", at the age of 1 day, spray administration method, with revaccination chickens at the age of 21 days -Lasota strain, method - with drinking water.

After vaccination and during the examination did vaccinated chickens showed adverse reactions.

Results and discussion

The result of investigations after vaccination are presented in the table 2. In the control group the antibody titres to the first day were 1: 1304.9. In the following investigation of antibody titres were found in the report 1: 792.19 the 7-th day, in the report 1: 950.04 to the 10-th day and 1: 949.06 at the 15-th day, by failing to following examination.

After administration of strain H-120 vaccine in chickens of group II antibody titres in serum is 1: 815,72 at its 10-th day, narrowing - is up to 1: 108,82 on the 20-th day after vaccination, major-be up to 1: 437,27 at the 30-th day after vaccination with further increase of antibody titres to 1: 1189.27 on the 40-th day.

In the offspring of any third group who were vaccinated with the same strain (H-120), after the vaccine was antibody titres 1: 2894.26 on the 10-th day, narrowing to 1: 108,82 at the 20-th day, with subsequent reduction of antibody titres to other examinations.

In the offspring of the fourth group, which were vaccinated with strain Ma5 + Clon30 after vaccination antibody titres were 1: 528,45 at the 10-th day and reducing them to other examinations.

The fifth group where chickens were vaccinated with strain Ma5 + Clon30 in combination with 10% hydroalcoholic solution of propolis after vaccination antibody titres were 1: 1603.02 on the 10-th day. The highest antibody levels were set at the 30-th and 40-th day after vaccination, representing 1: 2108.51 on the 30-th and 1: 2011.86 on the 40-th day.

Offspring from this group for 5 days before vaccination and 5 days after vaccination, were administered with drinking water or hydroalcoholic solution propolius 10%. Administer each 10 ml 10% hydroalcoholic propolius per liter of drinking water.

In the offspring of Group VI, which were vaccinated with strain H-120 at the age of 1 day, with revaccination chickens at the age of 21 days after vaccination the antibody titres was 1: 1714.79 the 10-th day, narrowing to 1: 321,58 on the 20-th day, with considerable reduction of antibody titres in the 30-th and 40- th day.

The highest antibody levels were set at the 30-th and 40-th day after vaccination, representing respectively 1: 2108.51 in the group vaccinated with strain chicks Ma5 + Clon30 in combination with 10% hydroalcoholic solution of propolis. In the group of the chicks vaccinated with strain H-120 the highest antibody levels were detected at 10-th days after vaccination, representing respectively 1: 2894.26.

The results obtained allow to state that all vaccines used in experimental groups were stimulated offspring antibody titres wich satisfactory protect chikens from contamination with infectious bronchitis virus.

Table 2. The antibody titres after vaccination

No. gr.	No. of chickens	Age of vaccinated chickens (days)	Vaccine strain	Antibodi level after vaccination (days)						
				1	7	10	15	20	30	40
I	25	-	Control group	813.76578 22217.885 1304.9666	4238.4452 698.074 792.19	1037.30 950.047 845.14	139.223 419.629 949.067	-39.2176 798.079 -23.5306	-16.6675 -10,7848 12.7457	-28.4328 2.94132 -19.6088
II	25	1	H-120	-	-	2242.27 815.727 360.802	-	108.829 20.5893 -10.7848	437.277 9.80441 -38.2372	174.518 1189.27 802
III	25	3	H-120	-	-	1323.59 2894.26 121.575	-	584.343 111.77 24.511	108.829 -23.5306 -35.2959	-20.5893 0 -38.2372
IV	25	3	Ma5+Clon30	-	-	528.458 426.492 462.768	-	-35.2959 150.007 129.418	-22.5501 -29.4132 -41.1785	-27.4523 -39.2176 17.6479
V	25	5	Ma5+Clon30 in combination with propolis hydroalcoholic solution of 10%	-	-	1603.02 330.409 392.176	-	59.8069 -42.159 150.007	250.993 2108.51 375.509	696.113 996.128 2011.86
VI	25	1	H-120	-	-	390.215 1190.26 1714.79	-	321.585 23.5306	-20.5893 45.1003 1.96088	48.0416 -30.3937 -16.6675

Conclusion

1. Ma5 + Clon30 vaccine administered by spray method in combination with 10% propolis hydroalcoholic solution and drinking water showed a positive antibody titres to increase the difference in value compared to the group that was vaccinated only with vaccine.
2. The 10% propolis hydroalcoholic solution is a biological product that can be used successfully as immunity stimulator on vaccination of poultry flocks.

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