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Improving the Prevention and Control of Newcastle Disease in Birds

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Abstract: *This article provides information on Newcastle disease in birds, its pathogenesis, epizootiology, the use of various vaccines to improve disease prevention and control measures, testing the immunogenic activity of the vaccine in the serum of vaccinated birds in response to hemagglutination, in poultry an analysis of the results of determining the strength of the generated immunity is given.*

Keywords: *Poultry, Newcastle disease, vaccine, La sota, virus, reservoir, prophylaxis, strain, paramyxovirus, titer, antibody.*

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Introduction. In addition to livestock, the country pays great attention to the intensive development of poultry, one of its most lucrative industries. Better meeting the demand of the population for meat, milk, eggs, honey, other livestock and food products depends in many ways on the further development of animal husbandry and increasing production. Infectious diseases in poultry, especially Newcastle disease, have been a major obstacle to the rapid development of poultry in recent years. When the disease is acute and first reported, young chicks die up to 100%. Mother hens also die about 70-100 percent of the time. In addition, large quantities of vaccines are required to carry out vaccinations, and large sums of money are required to carry out quarantine measures. All of this is causing huge economic damage to poultry farms.

Relevance of the topic. The problem of Newcastle disease is of global importance. According to the International Office of Epizootics, Newcastle disease is on the "A" list and is a very dangerous disease. In order to combat this disease, it is necessary to choose a vaccine, properly vaccinate birds, taking into account the passive immunity, vaccination methods, natural resistance and the epizootiological situation of infectious diseases. Despite the constant vaccination of chickens and hens with various vaccines against Newcastle disease, the problem of protecting birds from this disease remains relevant.

Newcastle disease is a highly contagious, acute chickenpox infection characterized by respiratory, digestive, and central nervous system injuries.

The causative agent is a virus belonging to the RNA paramyxoviridae family and the paramyxovirus family. The virus passes through Zeitz, Berkfeld filters, 120-180 nm in size, appears

in a circle under an electron microscope and hemagglutinates erythrocytes of chickens, pigeons, turkeys, guinea pigs, rams, cats. This feature of the virus is used to determine the level of immunity to the disease and to identify the virus in the GATR. Isolated virus strains in regions of countries around the world are immunologically close to each other, but their virulence is different. Therefore, the clinical manifestations of the disease are different. Many researchers believe that many species of animals (cattle, mice, seals, blackbirds, etc.), humans, wild birds (crows, hawks, swallows, peacocks, penguins, eagles, ravens, seagulls, cormorants) , parrots, etc.), insects (canals, woodpeckers, feather eaters, flies), and even ascarids and eimeria have been found to be carriers of the virus.

As the virus multiplies in the cells, it produces G-antigen and hemagglutinin (V-antigen). The virus kills the embryo when it is injected into the allantois and amniotic cavities of a 9-12 day old chicken embryo. In it the virus titer reaches 10-7 - 10-9 and the hemagglutinin titer reaches 1: 200 - 1: 2000. The virus develops well in 9-10-day-old chicken embryos. In nature, there are naturally weakened lentogenic strains of virulence: V1, La-Sota, Bor-74 and mesogenic strain - N. They are used in the manufacture of vaccines.

The causative agent of the disease is the virus carriers (2-4 months) of the patient and the patient recovered. The virus is excreted from sick birds with all secretions, excretions and eggs. The virus begins to spread during the latent period of the disease, 24 hours after the bird is infected. The virus is transmitted by poultry, eggs, feathers, feathers, slaughtered meat, bedding, food, water, inventory, and transportation. When an infected egg is incubated, septicemia develops in the embryo and kills it. The dead embryo becomes red, swollen, and bleeding from the head and legs. The virus, which escapes through a fan from the building where the sick birds are, travels for 3-5 km with the wind. On the farm, the virus is transmitted mainly through aerogenesis, water and eggs. Wild and synanthropic birds, ducks and geese serve as reservoirs of the virus. The disease is observed mainly in the absence of epizootics.

Incubation eggs, synanthropic birds, processors, inventory, feed and bedding should be monitored to prevent the spread of the Newcastle disease virus on the farm. Poultry farms are only allowed to import poultry and eggs from healthy farms for the disease. Poultry farm should be closed, visitors should have access to the sanitary facilities, there should be dezogilams at the entrance to the building, the building should be regularly cleaned of manure and regularly disinfected, disinsected, deratized, poultry should be kept at the level of zoohygienic standards. as well as feeding with vitamin nutrients, which increases their natural resistance, helps to prevent this disease. Vehicles entering the farm must be disinfected.

Feeds and barns should be kept away from all kinds of wild birds. After each batch of chickens is removed, it is necessary to disinfect and study the epizootic situation of the disease in the surrounding farms. Vaccination is required as planned. Poultry should be housed according to their age, and buildings where they are not kept should be cleaned, disinfected and sanitized 3 times.

The following vaccines are used to prevent specific diseases:

- Dry virus vaccine prepared from the virus strain "V1". In healthy farms, chickens are vaccinated with this vaccine every 20-25, 45-60, 140-150 days, and then once every 6 months. Vaccination is given by intranasal or aerosol administration according to the Vaccine Guide;
- The dry virus vaccine prepared from the La Sota strain of the virus is used intranazole in healthy and unhealthy farms. In healthy farms, chickens are vaccinated at 20-25, 45-60, 140-150 days, in unhealthy farms at 10-15, 35-40, 120-140 days, and then every 6 months. Water is injected into the nose before instilling 2 drops of the vaccine. Chickens can be watered 1.5 hours after vaccination. When the vaccine is taken with water, 500 nasal doses are dissolved in 1 liter of distilled water and given to 5 chickens in the morning for 2 days. It is forbidden to give food

and water 6 hours before vaccination. Feeding and watering are allowed 1-1.5 hours after immunization. Immunity develops after 7-8 days;

- The dry virus vaccine prepared from the "N" strain of the virus is used in clinically healthy adult chickens. 1 ml of vaccine (0.5 ml of viral mass) is dissolved in 500 ml of sterile saline. The solution is injected intramuscularly in a volume of 1 ml. Immunity develops after 48 hours and lasts for a year.

Immunized chicks are tested for GATR. In GATR, immunity is considered adequate if the titer is less than 1:10 in 80% of birds. The strength and duration of immunity depends on the factors that keep and feed the birds at the level of zoohygienic standards. Therefore, 5-7 days before and after vaccination of vaccinated birds should be given foods rich in vitamins (groups A, C, D, E, B). Poultry should not be given antibiotics and sulfonamides 3-5 days before and 5-7 days after vaccination.

Immunity is formed in vaccinated birds. After the birds are vaccinated in the serum, antibodies are formed, the titer of which depends on the age of the bird, the number, duration and method of vaccination.

Immunized birds are tested for hemagglutination. In 80% of vaccinated birds in this reaction, immunity is considered sufficient if the titer is not less than 1:10.

Materials and methods. The dry virus vaccine, prepared from the La Sota strain of the virus, has been used as a nasal drip in healthy farms. In healthy farms, chicks were vaccinated at 20-25, 45-60, 140-150 days, and then once every 6 months. Water was injected into the nose before instilling 2 drops of the vaccine. Chickens can be watered 1.5 hours after vaccination. When the vaccine is taken with water, 500 nasal doses are dissolved in 1 liter of distilled water and given to 5 chickens in the morning for 2 days. It is forbidden to give food and water 6 hours before vaccination. Feeding and watering are allowed 1-1.5 hours after immunization. Immunity develops after 7-8 days and lasts for 6 months. The immunogenic activity of the vaccine in the serum of vaccinated birds was determined in the virology laboratory. Poultry serum was determined by the hemagglutination inhibition test (GATR). In Plexiglass tablets, the serum was tested in a series of double ratios of 1: 2 to 1: 1024, and so on.

Research results and their analysis. As a result of determining the level of immunity formed against Newcastle disease in vaccinated birds, the organization of rapid immunization in immunocompromised birds on farms allows to prevent the disease in an improved way. In our study, GATR testing of selective blood serum from birds vaccinated with La Sota vaccine against Newcastle disease kept in various workshops and departments of poultry farms and small private farms revealed immune activity in birds (Table 1).

Table 1. Results of the study of immune activity in birds vaccinated against Newcastle disease

Poultry factory and farm	Number of birds examined	Vibration of titers	Average antibody titer
№1	24	1:0-1:256	1:36,92
№1 (2)	18	1:2-1:256	1:53,67
№3	25	1:4-1:512	1:108,16
№4	25	1:0-1:256	1:36,32

The titer of antibodies formed in vaccinated birds on №1 poultry farm averaged group immunity in GATR was 1: 36.92. Antibodies were not detected at all in 4 heads (16.67%) of the examined birds, and 1: 2 to 1: 8 (less than 1:10) in 6 heads (25%) was found to be insufficient immunity. In the remaining 14 heads (58.33%), the antibody titer ranged from 1:16 to 1: 256. In Section 2 of the same poultry farm, antibody titers were found to be 1: 53.67, i.e., higher in the average group of 18

vaccinated chickens. In 4 out of 18 hens (22.22%), the titer of titers ranged from 1: 2 to 1: 8, and in the remaining 77.78% of birds, the rate ranged from 1:16 to 1: 256.

№3 Poultry farms had an average serum serum titer of 1: 108.16. In 13 (52%) of the 25 birds tested, the antibody titer was found to be above normal, ranging from 1:16 to 1: 256, but in the remaining 12 (48%), the antibody titer was below normal. lib was 1: 4-1: 8. This means that 12 (48%) head of poultry should be vaccinated against Newcastle disease. Therefore, there is a risk of disease on this farm, despite the fact that birds are vaccinated against Newcastle disease.

In 4 poultry farms, antibody titers averaged 1: 36.32 when 25 serum samples were tested on a competitive basis. Although this average was 3.6 times higher than normal, in 11 heads (44%) of the 25 chickens examined, the antibody titer was found to be much higher than normal, ranging from 1:16 to 1: 256. However, while 2 head (8%) had a titer of 1: 8, 12 head (48%) chickens were found to have no antibody titers at all. This requires the organization of vaccination of birds against Newcastle disease.

Conclusion.

1. Newcastle disease in birds is one of the most dangerous and widespread diseases. Improving the prevention and control of Newcastle disease in poultry is important for the intensive development of poultry. Poultry farms need to drastically reduce the incidence and mortality of chickens from Newcastle disease. This can be achieved by prophylactically vaccinating all birds before the onset and spread of the disease.

2. The results of testing the immunogenic activity of the vaccine in selective blood serum of poultry vaccinated against Newcastle disease virus "La Sota" in poultry farms by the method of hemagglutination inhibition test (GATR) to inform veterinarians about group immunity against this disease. ‘provides information and demonstrates the need to improve disease prevention and control measures by monitoring immunity and vaccinating in immunocompromised units.

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