

Clinical and pathologic description of hen's organs in response to introduction of inactivated vaccines against pasteurellosis of birds

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Abstract. The results of proposed inactivated vaccine effect to internal organs of the hens and clinic-pathologic change in internal and other organs are described in the paper. The Analysis of the sectional material of a year-old hens, immunized by inactivated vaccine against pasteurellosis of birds, harmlessness, absence of pronounced clinic-pathologic manifestations both of local and general character in organs and tissues should be noticed. It is established that in immunocompetent organs: spleen and thymus, their size on the first 7 days is increased after immunization without deep destructive changes.

[Umizhanov M., Taubaev U.B., Kushaliev K.Z. **Clinical and pathologic description of hen's organs in response to introduction of inactivated vaccines against pasteurellosis of birds.** *Life Sci J* 2014;11(5s):248-250]. (ISSN:1097-8135). <http://www.lifesciencesite.com>. 47

Keywords: immunogenesis, immune status, immunological changes in the body, change, analysis, injection, vaccine.

Introduction

Tested hens were submitted to biometric studies and testing of the organ mass by regional vaccines: lymphatic nodes, spleen and thymus after slaughter and in dynamics of immunogenesis. Then average indicators on group of the birds are shown.

When studying reactivity characteristics in complex with the other methods of the identification of the influence of biological preparation on organism of the birds [1, 2, 3, 4] and animals biomorphological visual analysis of the sectional material remains one of the valuable evaluation criteria of the birds immune status formation. In this regard we paid attention to macromorphological characteristic of immunocompetent organ, but also other immunomorphological manifestations in internal organs and their immune structure, participating in process of immunological restricting [5, 6, 7].

After 7 days on the site of intramuscular injection, in the right thigh muscle group [8, 9, 10], there were not found clinical signs of disease anxiety in a one-year old experimental birds, except for a small local swelling for 2-3 days, which disappeared by 30 days.

Seven days after immunization there were not found any visual inflammatory processes in the upper respiratory tract, oral cavity and lungs, air sacs in all chickens. By that time, only at the site of injection under fascias of muscles remains of vaccines ranged from 3-4 sm in length in the form of threads grayish-white were detected. There were not found changes in deep layers. Vaccine has been quickly subjected to resorption, which indicates on a satisfactory resorption ability of ingredients and tradeoffs among themselves.

Seven days after immunization, the spleen which is involved in the immunological changes of organism [9, 11, 13], particularly in two birds became roundoval, full-bodied, dark-gray-red with scrapings on the section (Figure 2), increased slightly in the quantity. These birds were significantly increased in determining their weight. Biometric analysis of three medium parameters of the spleen size showed that by this time they will have increased. This process of growth of the average weight of the spleen was detected in three chickens which were slaughtered by this time after vaccination.

Package of several segments of the thymus (two of the three dead chickens) was swollen, gray, bean-shaped, in a state of moderate hyperplasia. At the same time, the process of a chicken immune origin was hardly noticed.

On the 7th day after immunization kidneys were characterized by a slight increase, increased plethora, single mikrohemorrhagy in the submucosal capsules layer with weak flabbiness of parenchyma.

By 15 days after immunization it was available to see the physiological and functional improvement and productive activity, in the rest of chickens after slaughtering, caused by manifestations of the trends to egg production, which is, apparently, due to the drug with biostimulation effect. At the injection site we were unable to identify any of its components with the deep pathology of muscle tissue in the limb. By this time after immunization, generally in three chickens, the average size of spleen weight decreased slightly due to the weaker inflammatory infiltrative processes. By the deadline of vaccination in the thymus also noted an analogy macroscopic parameters

[10, 12, 13], as in the spleen, a reduction of its size, and four hens - complete atrophy of the organ.



Figure 1 - Slightly increased chicken organs №2 seven days after immunization: kidney, spleen, thymus, heart, liver, cecum, thigh muscle group (injection site)



Figure 2 - Pathologoanatomic changes in the thoracic and abdominal organs of chicken cavity № 6 fifteen days after immunization: a plethora in bodies, the intensification of oogenesis, small fat deposits.

By this time bag Fabricius in all experimental and control chickens was exposed to physiological atrophy, making it difficult to detect.

In kidneys, there was increased vessels plethora, sagging consistency, size increase, the structure of the cortex was somewhat wiped out, the cut has no abundant scrape.

30 days after immunization average biometric size of the spleen in the experimental birds, was pointing to different increase its size as compared with the control birds. At the same time, the average weight of the spleen reached the highest scores, which, apparently attributable to growing productive processes and the accumulation of proliferating cells in immunocompetent organs.

One of the three dead chickens had insignificant changes in the liver, which was somewhat different in a light color and a flabbiness of a consistence, a moderate accumulation of fatty deposits in the abdominal cavity was detected in others one.

The volume of the organ was decreased in kidneys and livers at the terminal stage of immune process.

Under the auricle a moderate lipopexia of fat depot was detected.



Figure 3 - Macroscopic picture in the bodies of the chicken № 3 after 30 days of immunization. The complete absence of pathology. The accumulation of fat depots (arrow).

There were no visible changes in other organs and the gastrointestinal tract in all periods of post-vaccinal immunogenesis.

Oogenesis processes, formation of the yolk and the absence of pathological changes were observed in the section of all three chickens.

Analyzing autopsy material of year-old chickens immunized with inactivated vaccine against avian pasteurellosis, it should be noted on the safety, the absence of expressed morphological manifestations in organs and tissues, both local and general. In immunocompetent organs: spleen and thymus, regular increase of their size is detected in the first 7 days after immunization, without extensive destructive changes.

In experiments to study the pathological features of the vaccinated birds, their selection was carried out by analogy. For this purpose, we selected 12 chickens at the age of one year, the Israeli rock "Jaffa", which was kept in a hospital institution, three of them were chickens as a control - intact. According to the vaccine application instructions for the active immunization 9 chickens were injected with experimental series of antipasteurellosis vaccine made in the laboratory

KazNIVI, in a dose of 1,0 cm³ intramuscularly into the right thigh muscle group.

Birds were vaccinated for the clinical observations before and after vaccination, then postmortem examination bodies in sections with the overall reaction to the injection site. Morphological manifestations in the organs and in the dynamics immunogenesis studied in three chickens in each group were killed at 7, 15, 30 days after inoculation of the vaccine. To perform the experiment on the light-optical level, samples from chickens from the spleen, thymus, lymphoid structures of the intestine and other parenchymal organs - liver, kidney, endocrine, respiratory, and with the injection of vaccine, were taken and placed in cold alcohol, then Carnoy's fluid with subsequent posting in alcohols of increasing fluid and fill in paraffin.

Histocuts 3-5 microns thick were stained by conventional methods and histochemical staining: haematoxylin-eosin by Brachet - RNA-containing cells and glycogen - by McManus.

In the studying immunological change [14], we allowed for the character of inflammatory reaction, histoarchitectonic changes of immune structures with a visual assessment of the quantitative and qualitative changes of cell-proliferative and plasmocytic reactions in dynamics, giving algorithm picture of the immune mechanisms caused by protective antigen.

Research and evaluation of immunomorphological and inflammatory infiltrative processes under the influence of immunostimulating specific antigen, immune - prolongators and adjuvant illustrating materials were carried on the digital Swiss microscope, of Leica brand DM 400 B with software "Morphology" together with the candidate of veterinary sciences, Histomorpholog Kashkinbaev Kuanyshbay Abildaevich.

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References

1. Aydarbekova, L.J., M. Umizhanov and B.Sh. Karataev, 2009. Diagnosis of pasteurellosis birds. *Zharshy*, 6: 61-62.
2. Zaerko, V.I., V.I. Sitkov and T. Tutov, 2000. Improvement of specific prophylaxis of pasteurellosis. *Veterinary*, 6: 22-22.
3. Karataev, B.Sh., M. Umizhanov and L.Zh. Aydarbekova, 2009. Preparation pasteurellosis inactivated vaccine. *Proceedings Kaz NIVI. Theory and practice of animal diseases in the Republic of Kazakhstan. Almaty, T.LV.* pp: 35-38.
4. Umizhanov, M., K.Zh. Kushaliev and U.B. Taubaev, 2011. Medium for rapid growth strain *Pasteurella multocida* A 46 number 576. *Khabarshy Izvestia*, 5: 83-85.
5. Umizhanov, M., 2011. Reactogenicity, immunogenicity and adjuvant properties of the vaccine strain protivopasterelleznoy A 46 number 576. *Khabarshy Izvestia*, 5: 86 -89.
6. Ibragimov, A.A., 2007. Atlas. Patomorfologiya and diagnosis of disease in birds. Moscow: Kolos, pp: 120.
7. Turitsyn, E.G., 2009. The morphology and function of organs and tissues state of immunological ensure vaccination of chickens at. Current research trends in animal husbandry. Veterinary medicine: sb.st. Intern. scientific-practical. conf. dedicated to the 100th anniversary of the PG Petskogo. Kirov: Vyatka State Agricultural Academy, pp: 262-264.
8. Turitsyn, E.G., 2010. Influence of endogenous interferon inducer "hold" on the morphology and function of the immune system of chickens. *Herald Crassus. GAC*, 8: 98-103.
9. Eigaard, N.M., A. Permin, J.P. Christensen, A.M. Bojesen and M. Bisgaard, 2006. Clonal stability of *Pasteurella multocida* in free-range layers affected by fowl cholera. *Avian Pathology*, V.35, 2: 165-172.
10. Diallo, I.S. and A.J. Frost, 2000. Characteristics of a haemolytic extract from avian *Pasteurella multocida*. *Veter. Microbiol.*, V.72, 1\2: 37-45.
11. Jonas, M., T.Y. Morishita, E.J. Angrick and J. Jahja, 2001. Characterization of nine *Pasteurella multocida* isolates from avian cholera outbreaks in Indonesia. *Avian Dis.*, V. 45, 1: 34-42.
12. Scott, P.C., J.F. Markham and K.G. Whithear, 1999. Safety and efficacy of two live *Pasteurella multocida* aro-A mutant vaccines in chickens. *Avian Dis.*, V. 43, 1: 83-88.
13. Hopkins, B.A. and L.D. Olson, 1999. Increased left lung consolidation in turkey cholera related to larger left pulmonary artery. *Avian Dis.*, V. 43, 1: 122-124.
14. Subaaharan, S., L.L. Blackall and P.J. Biackall, 2010. Development of a multi-locus sequence typing scheme for avian isolates of *Pasteurella multocida*. *Veterinary Microbiology*, Vol.141, 3\4: 354-361.

3/23/2014