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Research Article

PROBLEMS OF IMMUNOPREVENTION IN INDUSTRIAL POULTRY FARMING

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ABSTRACT

The paper puts forward the concept that the use of the phenomena of immunological resonance and the vaccine function of pathogenic bacteria inactivated by an antibiotic multiple time increases the effectiveness of immunoprophylactic measures in industrial poultry farming. The timing of revaccinations has been established to ensure synchronization of the immunogenic action of the vaccine antigen and anti-idiotypes of immunoglobulins of different classes. The concept is put forward that pinocytosis occurring in the epithelial cells of the small intestine should be considered as non-specific phagocytosis, which increases the overall anti-infective resistance.

KEYWORDS

Microorganism, virus, bacterium, idiomorph, immunological resonance, vaccine function, melanogenesis, genome strategy, immunoprophylaxis strategy.

INTRODUCTION

Today's immunoprophylaxis is based only on lymphoid immunity. Constitutional and nonspecific phagocytic immunity remain out of sight. To substantiate this objection, we first of all refer to the classical

experiments of Louis Pasteur. He found that bathing chickens in cold water would break the constitutional immunity that provides birds with natural immunity to the anthrax pathogen. In addition, it is known that

crosses of colored chickens are more resistant to the causative agent of Marek's disease (3).

Another disadvantage of immunoprophylaxis based only on lymphoid immunity is that the differences in the importance of IgM and IgG antibodies in the development of immunity are not taken into account. It is paradoxical that when determining the timing of vaccinations and revaccinations, the phenomenon of interference, i.e. neutralization of the vaccine antigen by idiotypic antibodies is taken into account, the presence of the opposite phenomenon, i.e. immunological resonance is not taken into account.

Based on the foregoing, we believe that the fight against epizootics is of fundamental importance in solving universal human problems identified by Malthus. Veterinary science and practice should approach their responsibilities from such positions.

The success of any struggle depends on the correctness of the adopted strategy, which in our case is impossible without knowledge of the strategy of the genomes of viruses and bacteria. However, this is an ambiguous task, since biological evolution, based on mutational and recombination variability, is stochastic in nature, i.e. undetermined, nomogenesis absent. However, the emergence of a new thought, which also has a mutational nature, due to its puzzlement and algorithmically rapid flow, is capable of predicting the strategy of the genomes of viruses and bacteria.

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presence of the opposite phenomenon, i.e. immunological resonance is not taken into account. We believe that where interference exists, resonance cannot exist, since this is one of the general laws of nature. In recent years, Russian researchers have been conducting intensive research on the use of electromagnetic resonance in the fight against viral and bacterial infectious agents and even worms. We realized that it is the phenomenon of immunological resonance that illuminates the mechanisms of functioning of the theory of the idiotypic network of K. Erne (10).

The genius of Louis Pasteur is also manifested in the fact that the vaccination schedule he developed for people infected with the rabies pathogen takes into account the phenomenon of immunological resonance, although at that time there were no concepts about idiotypes and anti-idiotypes, covered in the theory of K. Erne (6). Nevertheless, the use of immunological resonance in immunoprophylaxis is difficult, since the difference in the significance of revaccinations on the 14th and 28th days after infection, first used by Louis Pasteur, still remains unclear. Now we know that on the 14th day IgM anti-idiotypes work, and on the 28th day IgG.

The next disadvantage of immunoprophylaxis based only on lymphoid immunity is that when talking about the pathogenicity and virulence of an infectious agent, this is used to characterize only the microorganism. However, if we consider that this is based on invasiveness, i.e. the ability to adhere to the tissues of a macroorganism and, at the same time, the sensitivity of which is also a necessary condition, then the need to find ways to reduce the latter becomes clear. This means that epidemics and epizootics are a kind of payoff for removing obstacles from the road of progressive biological evolution. This means that the

problems of immunoprophylaxis must be approached from the perspective of the microbe, evolution and immunity. (9,11).

Finally, the conceptual disadvantage of immunoprophylaxis based only on lymphoid immunity is the neglect of the importance of nonspecific immunity based on the phenomenon of pinocytosis, sanctified by Ugolev's theory of parietal digestion (8,12), which is manifested in the presence of cross-differences in the resistance of chickens to opportunistic bacteria. Therefore, to correctly determine the immunoprophylaxis strategy, it is necessary to take into account both specific factors of lymphoid and nonspecific parameters of constitutional immunity, as well as phagocytic factors of general anti-infective resistance. In this case, the primary task is to determine the common and different in the strategies of the genomes of viruses and bacteria aimed at winning the right to coexist with the macroorganism.

Viruses, as intracellular parasites, cannot navigate coexistence without pathogenic action. The exception is some viruses that manage to integrate their genome into the host genome and are transmitted from generation to generation of the macroorganism in a hidden form. Only in stressful situations do they extrapolate to show their pathogenicity. Although the duration of coexistence of such viruses with the macroorganism is reliably high, the spread in the populations of the macroorganism is slow. Therefore, the diseases they cause are called slow infections.

As for bacteria, the way of coexistence with a macroorganism has many faces. For obligate pathogens, coexistence is possible only in the presence of a sufficient immune background. In this case, the disease is not eradicated, only the enzootic is curbed. When opportunistic, the immune background is able to prevent enzootic disease, although sporadic cases of

the disease continue to occur. If in obligately pathogenic cases enzootic is the result of the introduction of infection from outside, then in opportunistic cases, enzootic can break out due to the carriage of bacteria.(1)

In cases of coexistence of bacteria and a macroorganism, even tolerant relationships can develop. These include commensalistic and mutualistic relationships. In commensalism, only bacteria have benefit; for the macroorganism it has a neutral meaning. For example, apathogenic serovars of *Escherichia coli*. With a mutualistic relationship, mutually beneficial relationships develop, and they constitute the normal microflora of the macroorganism, acquiring the status of probiotics. Such as lactic acid and bifidum bacteria.

Therefore, in recent years, the replacement of antibiotics with probiotics in the fight against opportunistic bacteria has been increasingly recommended. In Sweden since 1986, in the European Union since 2006 the use of antibiotics has been prohibited.

Moreover, there are results of studies conducted in this direction that antibiotics have a positive effect on the immunobiological parameters of animals. (2,10).

Consequently, in the strategy of anti-infective control, along with the potencies of constitutional and lymphoid immunity, antibiotics and probiotics, it is necessary to include new ways to increase anti-infective resistance, as evidenced by a number of phenomena we have established that are not yet regulated in immunoprophylaxis practices. This required a deeper and more complex interpretation of previously obtained information in the light of the results of subsequent studies.



Materials and methods. The initial material was an analysis of the results of five years of monitoring of immunoprophylaxis of Newcastle disease in chickens in the Uzbekistan-Germany joint venture “Agalyk Lomanparranda”.

The second material was information that in the same “Agalyk Lomanparranda” and in our poultry farm, higher resistance of white chicken crosses to salmonella was observed.

The third material was literary information about the impossibility of infecting chickens nutritionally even with highly virulent strains of Salmonella.

The fourth material was a schedule of all types of vaccinations regulated in industrial poultry farming (4).

The adequacy of the immunoprophylaxis strategy to the strategies of the genomes of viruses and bacteria was assessed by indicators of productivity, safety and frequency of chicken vaccinations. To illuminate the mechanisms of formation of an adequate immune background, serological studies were carried out using the methods of RA, RZGA, RPGA and ELISA. To determine the difference in the importance of immunoglobulins M and G in the development of the immune status of chickens, they were measured by the Mancini diffuse precipitation method.

The studies were carried out in the small poultry farm “Chimkurganparrandalari” in the Ishtykhan district, in the poultry house of the private LLC “MIRONQUL AGROZOOVETSERVIS ILMIIY-AMALIY MARKAZI” in the Samarkand region, at the Department of Epizootology and Infectious Diseases of the Samarkand State University of Veterinary Medicine of Animal Husbandry and Biotechnology, in the microbiology laboratory of the Research Institute of Veterinary Medicine.

Discussion of research results. A conceptually new approach to the problems of immunoprophylaxis in industrial poultry farming is to highlight the role of pinocytosis in ensuring general anti-infective resistance. According to Ugolev’s theory of parietal digestion, pinocytosis, i.e. the ingestion of food microparticles by epithelial cells of the crypts of the small intestine is of great importance in digestion. (7,12) We believe that bacteria are also ingested. Therefore, pinocytosis can be considered as nonspecific phagocytosis. In this light, it becomes clear why chickens cannot be infected nutritionally even with highly virulent strains of Salmonella (4).

Moreover, we believe that pinocytosis is the basis for the phenomenon of greater resistance of white cross chickens to salmonella. To substantiate this, it was necessary to find differences in the intensity of digestion and utilization of nutrients between chicken crosses. For this purpose, we compared the ratios of gizzard mass and ridge area to the live weight of chickens.

Indeed, as expected, these ratios were in favor of crosses of white chickens.

Of course, to strengthen the reliability of such conclusions, it is also necessary to conduct histological, microbiological, and serological studies. We need to calculate the respiratory coefficient, which is our upcoming task.

However, our tests were not taken at random. Long-term observations of the development of egg production in pullets convincingly showed the presence of a clear connection between the beginning of egg production and an increase in ridge area. It was found that chickens that are infantile in comb growth necessarily lag behind in egg production and, as a rule, remain unproductive. As for the gizzard, after repeated

slaughter of chickens, the impression became stronger that the Dekalb cross chickens have a larger gizzard than the Loman Brown cross chickens, although the live weight of the former is lower. (8,12).

Based on the above, we believe that crosses of white chickens have pinocytosis, i.e. nonspecific phagocytosis is more pronounced and this explains their advantages in resistance to Salmonella. This means that these parameters can serve as markers in the selection of chickens for general anti-infective resistance and productivity.

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Nevertheless, the decisive arguments were the presence of cross differences in favor of white crosses in terms of general anti-infectious resistance; antibody titers in the blood serum against Salmonella in RA, against NB in RZGA and against IB in ELISA.

To facilitate the work of lymphoid immunity, along with the phenomenon of immunological resonance, it is necessary to involve the potency of nonspecific phagocytosis in the form of pinocytosis. To do this, priority should be given to crosses of white chickens. Due to this, these crosses are more susceptible to pathological molting. (5). It is necessary to take strict measures against drafts of damp-cold air and use effective anti-inflammatory herbal remedies that facilitate melanogenesis, which increases the overall anti-infective resistance of birds.

Conclusions.

1. Pinocytosis of avian intestinal epithelial cells should be considered as nonspecific phagocytosis.

2. Melanin reduces the affinity of the molecular receptors of the microorganism with those of the cells of the macroorganism.

3. The immunoprophylaxis strategy should take into account both constitutional and lymphoid immunities, as well as nonspecific potencies of general anti-infective resistance in the form of pinocytosis.

REFERENCES

1. Abdullaev M. "General biological aspects of the life strategy of bacteria and problems of modern infectology" Journal "Problems of Biology and Medicine" No. 1, 1997 Samarkand.
2. Abdullayev, S. M., Mirsaidova, R., Abdullayev, M., & Ruzikulov, R. (2022). The Use of the Phenomenon of Immunological Resonance in Immunoprophylaxis of Viral and Bacterial Infectious Diseases of Chickens. European Journal of Agricultural and Rural Education, 3(3), 35-38.
3. Bakulin V.A. Marek's disease. The book "Reference material for a poultry farm doctor" by NPP AVIVAC. St. Petersburg, 2006, pp. 43-53.
4. Bakulin V.A. Salmonellosis. The book "Reference material for a poultry farm doctor" by NPP AVIVAC. St. Petersburg, 2006.
5. Vatti K.V., Alekseevich M.A. Genetic control of melanogenesis. Book "Physiological Genetics" Leningrad "Medicine", 1975, pp. 332-334.
6. Erne N. Internet. <https://ru.wikipedia.org/wiki/>
7. Mirsaidova R.R. Morphophysiological parameters of the digestive organs of chicken crosses imported to Uzbekistan. "Veterinary Medicine" No. 2-2023, p. 26-28.
8. Mirsaidova, R. R. (2022). Physiological Changes in the Parameters of Chicken Crosses Dekalb White and Loman LSL. Eurasian Medical Research Periodical, 6, 197-200.

9. Rumyantsev S.N. Victims of microbial parasitism. The book "Microbes, evolution, immunity." Leningrad "Science", 1984, pp. 6-19.
10. Ruzikulov R.F., Abdullaev Sh.M., Mirsaidova R.R. Vaccinal function of pathogenic bacteria in the body of chickens inactivated by antibiotics in the immunoprophylaxis of salmonellosis in industrial poultry farming. Proceedings of the international scientific and practical conference "State of development and production of biological and veterinary drugs and possibilities for expansion and localization" Samarkand, September 9-10, 2020, 84-88 pp.
11. Ruzikulov, R., Mirsaidova, R. N., & Abdullaev, S. (2016). Immunization Strategy Based on Immuno-adaptability Crosses and Immunological Phenomenon of Resonance Strategy against Viral Genome of Marek's Disease of Chicken (No. 923-2016-72961).
12. Ugolev A. Book "Theory of adequate nutrition and trophology"
<https://www.labirint.ru/books/643500/>.

