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RADIO VACCINES AGAINST COLIBACTERIOSIS, SALMONELLOSIS AND PASTEURILLOSIS

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ABSTRACT

This article describes the development of radio vaccines for the prevention of infectious diseases of agricultural animals. As a result of the action of accelerated electrons on the causative agents of pasteurilosis, salmonella and colibacteriosis, and after vaccination of small cattle, a vaccine against these diseases was created in a year later.

KEYWORDS: *Radio Vaccines, Colibacteriosis, Salmonellosis, Pasteurellosis, Vaccination.*

INTRODUCTION

Justification. The continuation of applied radiobiology is radiation-biological technology, it includes the development of techniques and methods for using the energy of ionizing radiation in various fields of scientific research, which are aimed at obtaining biological products useful in veterinary medicine (D.A. Kaushansky, AM Cousin, 1984).

It is known that physical and chemical effects are used to obtain vaccines in medicine and veterinary medicine. But at the same time, the antigenic structure of the bacteria responsible for the creation of the immune system is destroyed. At the present stage, the use of ionizing radiation makes it possible to create vaccines with minimal destruction. antigenic structure of microorganisms.

Purpose of work. A team of the radiological laboratory at SamIVM created several radio vaccines using the indicated radiation bio-technology against colibacteriosis, salmonellosis and pastrellosis of farm animals, for which patents were obtained and which are widely used in veterinary practice (R.U. Bulkhanov et. Al.). And since the power used to create a radio vaccine for the GUBE-6000 gamma installation at the laboratory is not enough to satisfy the needs for these radio vaccines. In this regard, the task was set to find an alternative substitute for gamma radiation. One of these areas was the study of the effect of accelerated electrons on the bacterial mass with the goal of creating radio vaccines that are not inferior in effectiveness to preparations obtained with gamma radiation power.

MATERIALS AND METHODS

To obtain a radio vaccine, the prepared bacterial mass of *Escherichia coli*, *Salmonella* and *Pasteurella* were irradiated with accelerated electrons at the MT-22C installation. After checking the received biological product for safety, a double vaccination of six lambs was carried out. A control group of six lambs was left unvaccinated. After six and twelve months of vaccinated and unvaccinated three, six lambs were experimentally infected with a mixture of pathogens of colibacteriosis, salmonellosis and pasteurellosis. Based on the results of an experiment using accelerated electrons, conclusions were drawn about the effectiveness of the new radio vaccine.

RESULTS AND DISCUSSION

After vaccination, the experimental lambs experienced an increase in the number of leukocytes, lymphocytes in the blood, percentage and absolute contents of T and B lymphocytes, an increase in the titer of specific antibodies, bactericidal and lysocin activity of blood serum. These indicators reached their maximum after 1-1.5 months after vaccination and then began to gradually decrease. To determine the effectiveness of immunization at the sixth and twelfth month, three vaccinated and three unvaccinated animals were infected with a mixture of causative agents of colibacteriosis, salmonellosis and pasteurellosis by intraperitoneal administration.

In vaccinated animals, the body temperature increased insignificantly, but there were no signs of the disease. Unvaccinated animals after infection developed a classic picture of mixed infection, with a fatal outcome. With a post-mortem autopsy, the diagnosis of mixed infection was confirmed.

An experiment conducted in the radiology laboratory at SamIVM showed that the use of an experimental radio vaccine obtained using accelerated electrons protects small cattle for a year from the disease of colibacteriosis, salmonellosis and pasteurellosis.

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