Methods of prevention and control of pasteurellosis of ruminants

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Annotation: Laboratory tests of the quality of an experimental aluminum hydroxide vaccine against pasteurellosis, prepared from local strains of pasteurella cultures, with the aim of improving the prevention and control of pasteurellosis in ruminants.

Keywords: Pasteurella, vaccine, Romanovsky Gimza, agglutination, antibody, meat peptone broth, meat peptone agar, Suslo agar, Kitt-Tarossi.

Introduction. Pasteurellosis is a disease common in most agricultural, wild animals and poultry, characterized by septicemia and hemorrhagic-inflammatory processes. Sometimes aggravated by viral and bacterial infections in the form of semi-acute and chronic or secondary disease (3,5,7,8,9,11,16,17).

It is known that pasteurellosis of ruminants causes great economic damage to livestock, high morbidity and mortality, the disease spreads over a large area in a very short time, a lot of money is spent on prevention and control measures (1,3,5,9,11,12,13,14). Therefore, the study of the etiology, epizootiology of the disease in livestock farms, timely and accurate diagnosis, application of modern diagnostic methods, improvement of control measures, prevention and treatment, it is important to identify effective antibacterial drugs (4,8,9,17).

Laboratory testing of the quality of an experimental hydroxyaluminous farmol vaccine against pasteurellosis prepared from local pasteurella cultures in order to improve the prevention and control of ruminant pasteurellosis.

Research materials and methods. In order to improve the prevention and control of ruminant pasteurellosis, we tested in the laboratory the quality of the experimental hydroxycalumin farmol vaccine against pasteurellosis prepared from local pasteurella cultures. We prepared ointments from the vaccine, stained them using Gram and Romanovsky Gimza methods, and studied the morphology of pasteurella under a microscope.
To determine sterility, the vaccine sample was inoculated into meat peptone broth, meat peptone agar, meat peptone broth with 5% serum, meat peptone agar, Suslo agar, Kitt-Tarossi nutrient media, and inoculated at 370°C and 280. We kept it in a thermostat at C for 10 days. To determine its safety, the vaccine was injected subcutaneously in 0.5 ml per 10 white mice and 3 ml subcutaneously in 4 lambs. The experimental animals were observed for 10 days.

**Research results. Harmlessness of the hydroxalyumin formol vaccine against pasteurellosis in farm animals.**

### Table 1

<table>
<thead>
<tr>
<th>Groups</th>
<th>Kind of animal</th>
<th>Amount</th>
<th>Amount of vaccine</th>
<th>Method of input</th>
<th>Period of following</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice</td>
<td>White mouse</td>
<td>10</td>
<td>0.5 ml</td>
<td>Into skin</td>
<td>10 days</td>
<td>Not noticed negative results</td>
</tr>
<tr>
<td>Practice</td>
<td>lamb</td>
<td>4</td>
<td>3 ml</td>
<td>Under skin</td>
<td>10 days</td>
<td>Not noticed negative results</td>
</tr>
</tbody>
</table>

As a result, no adverse changes were observed in the experimental animals for 10 days (Table 1).

We conducted studies to determine the efficacy and immune activity of the vaccine in 6 head of sheep. Dividing the sheep into two groups, we vaccinated the three head sheep in the first group by subcutaneous injection of the experimental pasteurellosis vaccine at a dose of 2 ml for the first time and 3 ml for the second time 14 days later. The second group was controlled and the sheep were not vaccinated (Table 2). During the experiment, the sheep were kept under constant surveillance. Their general condition, body temperature was checked. In vaccinated sheep, body temperature rose slightly (0.5–1.0°C) on the first and second days, the injection site swelled slightly, and these changes returned to normal within 3–4 days of the experiment, returned 360 days after vaccination, he was infected with the pasteurellosis pathogen LD100 (25 billion mt).

From the 2nd day of the disease, the control group showed signs of weakness, hair loss, fever, shortness of breath, and rapid heartbeat after infection with the pathogens. Symptoms included runny nose and eyes, cough, shortness of breath, and bloody diarrhea, and all unvaccinated sheep in the control group died of pasteurellosis during the experiment.

**Table 2

Results of a study of the efficacy of a hydroxalyuminous farmol vaccine against pasteurellosis in farm animals.**

<table>
<thead>
<tr>
<th>T/r</th>
<th>Name of groups</th>
<th>Amount of animals</th>
<th>Amount of vaccine</th>
<th>Method of vacc</th>
<th>harmless</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 time</td>
<td>2 time</td>
<td>Method of vacc</td>
</tr>
<tr>
<td>1</td>
<td>I practice</td>
<td>3 sheep</td>
<td>2 ml</td>
<td>3 ml</td>
<td>Into skin</td>
</tr>
<tr>
<td>2</td>
<td>II research</td>
<td>3 sheep</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
We studied the dynamics of antibody titers against pasteurellosis in the agglutination reaction of vaccinated sheep serum. Blood was taken from experimental sheep on days 10, 20, 60, 180, and 360. To carry out the agglutination reaction, we prepared a pasteurellosis antigen from pasteurella cultures grown on meat peptone agar with 0.2% glucose and 10% normal whey.

Table 3

<p>| Dynamics of antibody titers (AR) against pasteurellosis in vaccinated sheep serum |
|----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>group</th>
<th>sheep №</th>
<th>Till research</th>
<th>Days (after vaccine)</th>
<th>10</th>
<th>20</th>
<th>60</th>
<th>180</th>
<th>360</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-group</td>
<td>1</td>
<td>1:200</td>
<td>1:400</td>
<td>1:800</td>
<td>1:1600</td>
<td>1:2400</td>
<td>1:1600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1:200</td>
<td>1:400</td>
<td>1:800</td>
<td>1:1600</td>
<td>1:1600</td>
<td>1:1600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1:100</td>
<td>1:400</td>
<td>1:800</td>
<td>1:1600</td>
<td>1:2400</td>
<td>1:2400</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>167</td>
<td>400</td>
<td>667</td>
<td>1333</td>
<td>2133</td>
<td>1867</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II-group</td>
<td>1</td>
<td>1:200</td>
<td>1:200</td>
<td>1:200</td>
<td>1:400</td>
<td>1:200</td>
<td>1:200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1:100</td>
<td>1:200</td>
<td>1:200</td>
<td>1:400</td>
<td>1:200</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1:200</td>
<td>1:200</td>
<td>1:100</td>
<td>1:100</td>
<td>1:100</td>
<td>1:100</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>167</td>
<td>200</td>
<td>350</td>
<td>370</td>
<td>395</td>
<td>360</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: Laboratory studies of the immunogenic properties of the hydrooxalyluminous farmol vaccine against pasteurellosis in farm animals have shown that the titer of specific antibodies against pasteurellosis in sheep serum averaged 1: 667 at 20 days and 1: 1333 at 60 days, 1:2133 at 180 days, 1:1867 at 360 days.

Analysis of the literature used.