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EFFICIENCY OF METHODS OF FIGHTING RESPIRATORY DISEASES OF CALVES IN “BAYSERKE-AGRO” LLP

Abstract. The article presents the results of clinical and epizootological data, bacteriological and serological studies of biological material from sick calves. As a result of bacteriological examination of feces samples from 3 calves (inv. № 7022, inv. № 70420, inv. № 7886) with clinical signs of salmonellosis (bronchopneumonia, increased body temperature, general depression, lack of appetite, characteristic posture with drooping neck), received for research in 2016, calf salmonellosis pathogen was isolated from fecal samples from all calves *Salmonella dublin*. 3 cultures isolated from calf feces were identical in their cultural-morphological, tinctorial, antigenic and pathogenic properties. Based on the study of the biological properties of the culture identified as *S. dublin*. Specific *Salmonella* antibodies were recorded in the serum of sick calves in RA with salmonella antigen. As a result of science-based veterinary-sanitary and preventive measures in the economy, salmonellosis of calves was eliminated. There were no cases of outbreaks of salmonellosis among calves on the farm, which indicates the effectiveness of methods to control salmonellosis of calves at “Bayserke-Agro” LLP.

Relevance. Currently, the epizootic situation of respiratory infections of calves is worsening. Intense burdened livestock buildings is consistent with the concept of microbial "stress" of animals. The proportion of infection of farm animals with salmonellosis has increased. It is noted that the intensification of the epizootic process entails the complication of the state of the epidemiological environment.

Salmonella infections are infections with a global distribution and represent the most important veterinary and biomedical problem in all countries of the world. *Salmonella*-paratyphoid bacteria pathogens for humans and animals. The genus *Salmonella* is named after the American explorer Salmon (1885). For the first time, Salmon and Smith isolated the first representative of *Salmonella suipestifer*, an extensive group of *Salmonella*, from the body of a pig. Currently, there are more than 1,500 *Salmonella* serotypes.

It is known that the main reservoir of *Salmonella* infection are representatives of the animal world. Carriage of *Salmonella* by clinically healthy animals and birds, the meat of which is most often used in human nutrition, is a significant danger in the occurrence of foodborne diseases. *Salmonella* is contaminated with sewage of food industry enterprises and livestock farms.

Calves are the main source of salmonella (paratyphoid) infection. There is a growing role of animals as sources of human salmonellosis. The clinical course of salmonellosis is characterized by extreme diversity, the presence of a significant number of light, wiped, and atypical forms that make it difficult to make a diagnosis. Calves have asymptomatic carriage of *Salmonella*. *Salmonella* bacteria carriers are infected calves, which, being outwardly healthy, secrete salmonella with feces and urine. In the internal organs of such animals, salmonella is found mainly in the liver (bile, gallbladder mucosa), as well as in the mesenteric lymph nodes. Bacterium carriers are the main reservoir of *Salmonella* infection and represent a particular danger as a source of infection for young farm animals. Bacterial carriers are also a source of toxic infection for people by eating foods from such animals.

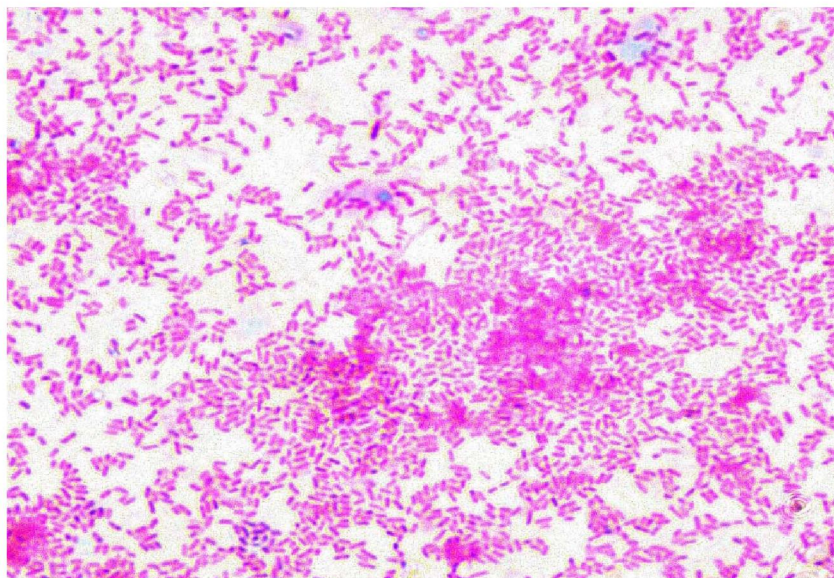
Polypathogenic salmonella is important. Most salmonella pathogens for humans, and for various species of animals and birds. In some cases, salmonella is ubiquitous (*S. typhimurium*), although some are peculiar only to specific regions. Young salmonellosis occurs in all countries of the world, regardless

of climatic and geographical conditions. The stationary deprivation of farms is associated with hidden carrier (release) of *Salmonella* and unfavorable living conditions for animals. The accumulation of the pathogen in the environment contributes to the content with the unsanitary maintenance of farms. The source of the causative agent of salmonellosis are sick and ill animals. Animals are infected by the alimentary route, less often - through the respiratory system, foals and lambs - in utero. *Salmonella*, once in the intestine, multiply and cause an inflammatory process. When a bacterial cell is destroyed in the body, endotoxins are released. From the intestines, salmonella and their metabolic products, especially endotoxins, can penetrate into the lymphatic system, and then into the blood; the disease in such cases proceeds as a septicemia [1, 2].

Salmonellosis affects calves after a detached age - from 10 to 60 days. Unfavorable factors, poor feeding and maintenance contribute to the development of the disease. Salmonellosis is a seasonal disease. There are acute, subacute, chronic course of the disease, as well as asymptomatic bacteriocarrier [2]. The incidence of young salmonella depends on age. Calves suffer from salmonellosis between the ages of 10 and 30 days or over 1.5 months. In calves, salmonellosis occurs with symptoms of bronchopneumonia and arthritis [3].

Research results. As a result of bacteriological examination of samples of faeces from 3 calves (inv. № 7022, inv. № 70420, inv. № 7886) with clinical signs of salmonellosis (bronchopneumonia, increased body temperature, general depression, lack of appetite, characteristic posture with drooping neck), enrolled in a study in 2016, the salmonellosis calf pathogen *Salmonella dublin* was isolated from fecal samples from all calves. Specific *Salmonella* antibodies were recorded in the blood sera of all calves in RA.

A uniform turbidity without a ring and sediment was observed in the seeding of samples from the faeces on the MPB, small convex round bluish translucent colonies with smooth edges in the S-form grew on the MPA. On the Endo medium, colorless round colonies grew, on bismuth sulfite agar - black colonies with metallic luster. In smears prepared from daily agar cultures of *Salmonella* and Gram-stained, small gram-negative rods with rounded ends, typical of the genus *Salmonella*, were observed. On picture shows salmonella isolated from calves.



S. dublin in a gram-stained smear

The picture shows small gram-negative rods with rounded ends.

When sowing crops with an injection on SA, the characteristic mobility of *Salmonella* (mobile sticks) was observed.

Selected cultures agglutinated with polyvalent AVSDE *Salmonella* and monoreceptor *Salmonella* serums O-9 and HHC (g, p) [4]. All cultures isolated from calves are identified as *Salmonella dublin*. White mice infected with salmonella diurnal broth culture subcutaneously in the back area fell on the

following day after infection. An infecting culture of *S. dublin*, not contaminated by extraneous microflora, was sowed from the heart and liver of biotinous mice. Selected cultures were identical in biological properties. Identification of cultures was carried out in accordance with the determinant of bacteria Burgi [5].

Based on the study of cultural-morphological, antigenic properties, as well as the production of culture bioassays, isolated from the feces of three calves, were identified as *Salmonella dublin*, the causative agent of salmonellosis of calves. The sensitivity of isolated salmonella cultures to antibiotics has been studied. The results are presented in table.

The results of the study of the sensitivity of cultures isolated from calves to antibiotics

#	Antibiotics	Calf inv. № 7022	Calf inv. № 70420	Calf inv. № 7886
1	Amikacin	20 mm	20 mm	20 mm
2	Gentamicin	25 mm	25 mm	25 mm
3	Tetracycline	31 mm	27 mm	33 mm
4	Doxycycline	–	–	–
5	Lincomycin	–	–	–
6	Erythromycin	20 mm	20 mm	20 mm
7	Enrofloxacin	30 mm	30 mm	30 mm

From table it can be seen that the highest sensitivity of *Salmonella* cultures isolated from the feces of calves was observed to tetracycline, gentamicin, erythromycin, enrofloxacin.

Patients with symptoms of bronchopneumonia and arthritis were isolated from healthy calves and placed in a warm room. Salmonellosis was administered to calves with antisalmonella antitoxic hyperimmune serum in accordance with the instructions for use (Armavir). Treatment of calves combined with antibiotic therapy. Patients calves were treated with sensitive broad-spectrum antibiotics (gentamicin, tetracycline and enrofloxacin, enrofloxacin). Tetracycline-containing drugs (oxygenating, thread 200, oxytetracycline) and fluoroquinolones (enromic 10%) had a therapeutic effect.

Control measures. Prevention and measures to combat salmonellosis in calves are based on increasing the body's resistance to calves by following the zoohygienic and sanitary rules for the care and maintenance of pregnant cows and calves. In calf houses and in the maternity ward, it is necessary to carry out high-quality mechanical cleaning and routine disinfection of premises, equipment and drinkers. Attention should be paid to vaccination of pregnant cows against salmonellosis and veterinary and sanitary measures [6]. In Bayserke-Agro LLP, the associated vaccine against colibacillosis, salmonellosis and *Klebsiella* disease in cattle (RF) is successfully used to prevent salmonellosis in calves. You can apply monovaccine against salmonellosis calves, calves vaccinated at 10-20 days of age.

Every day, a thorough mechanical cleaning of calves and the maternity ward is carried out. Farms regularly disinfect premises, calves, walking calves with effective disinfectants and disinfect calves and maternity wards using an effective disinfectant (Glutex, Gan, Salvamed), a solution of caustic soda with 2% formalin, caustic soda solution.

Since rodents and mixed feeds are factors of the spread of salmonellosis pathogens, households are regularly (1 time every 2 months) disinfected and examined for feed used in calves. Animals are fed only feed of high sanitary quality, not inseminated by pathogenic microorganisms.

As a result of veterinary - sanitary and preventive measures taken in "Bayserke-Agro" LLP Cases of salmonellosis of calves are not registered.

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«БАЙСЕРКЕ-АГРО» ЖШС-ГІ БҰЗАУДЫҢ РЕСПИРАТОРЛЫҚ АУРУЛАРЫМЕН КҮРЕСУ ӘДІСТЕРІНІҢ ТИІМДІЛІГІ»

Аннотация. Мақалада ауру бұзаулардан алынған биологиялық материалды клиникалық-эпизоотологиялық, бактериологиялық және серологиялық зерттеу нәтижелері келтіріледі. Ауру бұзаулардың қан сарысуында сальмонеллезді антиген бар РА-да арнайы сальмонеллезді анти-денелер тіркелген. Ғылыми негізделген ветеринарлық-санитарлық және алдын алу іс-шараларын жүргізу нәтижесінде шаруашылықта бұзау сальмонеллез жойылды.

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ЭФФЕКТИВНОСТЬ МЕТОДОВ БОРЬБЫ С РЕСПИРАТОРНЫМИ БОЛЕЗНЯМИ ТЕЛЯТ В ТОО «БАЙСЕРКЕ-АГРО»

Аннотация. В статье приводятся результаты клинико-эпизоотологических данных, бактериологического и серологического исследований биологического материала от больных телят. В сыворотках крови больных телят в РА с сальмонеллезным антигеном регистрировались специфические сальмонеллезные антитела. В результате проведения научно-обоснованных ветеринарно-санитарных и профилактических мероприятий в хозяйстве ликвидирован сальмонеллез телят.

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REFERENCES

- [1] Akhmedov A.M. Young salmonella. 2ed edition. corrected and add. M.: Kolos, 1983. 240 p.
- [2] Cherkassky B.L. Salmonella infections // Zoonotic infections. M., 1979. P. 7-12.
- [3] Aleskerov Z.A. Toxigenic properties of Salmonella // Veterinary. 2005. N 8. P. 31-37.
- [4] Antonov B.I. Laboratory studies in veterinary medicine. M.: Agropromizdat, 1986. P. 175-177.
- [5] Determinant Bergey's Manual of Systematic Bacteriology // Department of Microbiology and Molecular Genetics: Michigan State University: USA, 2005. Vol. 2, part B. P. 764-799.
- [6] Avylov Ch.K., Altukhov N.M., Boyko V.D. and others. Reference book of the veterinarian / Comp. Kunakov A.A. Kolos, 2006. 736 p.