

ETIS-2 COMPLEX DRUG AND SALMONELLA OF OTHER TYPES OF ANTIBIOTICS INFLUENCE ON DRIVERS

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Annotation: This article provides information that the indicators of sensitivity to antibiotics in relation to aqueous and oil emulsions of various concentrations of the drug ETIS-2 to the causative agent of salmonella enteritidis were carried out in laboratory conditions.

Keywords: S.Enteritidis, S.Typhimurium, S.Dublin, antibiotic, strain, GPA (meat peptone agar) and GPQ (meat peptone broth), ETIS-2 complex preparation, susceptibility, resistance, pathogen, concentration, ratio, dilution.

Introduction. Currently, salmonellosis is one of the important problems not only in our republic, but also in the veterinary and medical fields worldwide. Salmonella Enteritidis, Salmonella Typhimurium and Salmonella Dublin pathogens are often found among farm animals and cause damage to livestock. It is scientifically known that these Salmonella serovars cause foodborne outbreaks in animals and humans [1]. For the prevention and treatment of salmonellosis, sulfanilamide, nitrofurantoin preparations and antibiotics of various groups are used. The complex drug "ETIS-2" consisting of pharmacopoeia drugs was developed by the scientists of VITI Tuberculosis Research Laboratory against diseases of bacterial etiology. If the ETIS-2 complex drug is used, there is no need to use other types of antibiotics or other treatment agents [12]. The goal of our research is to determine the sensitivity and resistance of different concentrations of antibiotics and ETIS-2 not only to salmonella species, but also to other types of bacteria. The purpose of the study is to study the effect levels of the ETIS-2 drug and some antibiotics on Salmonella Enteritidis pathogens, to compare the effectiveness of these drugs in the treatment of salmonellosis, and to analyze the hematological changes in the body of treated sheep.

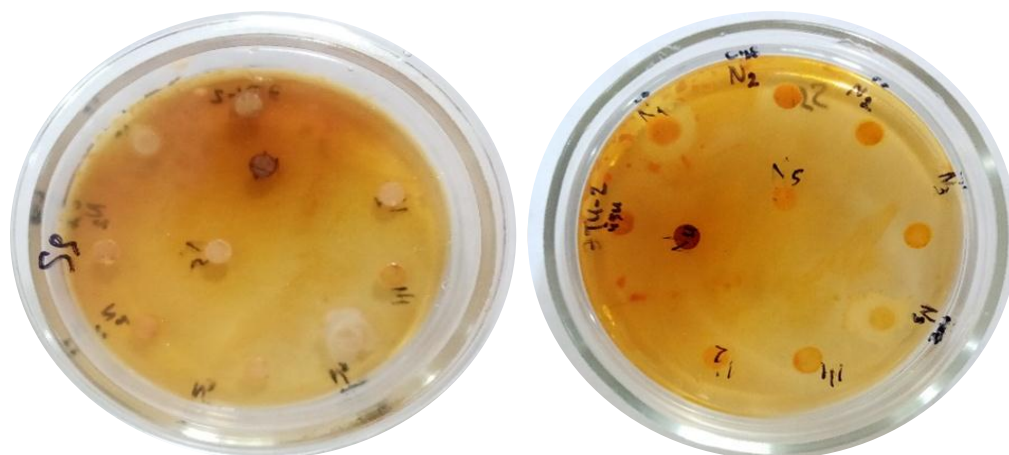
Methods. Salmonellosis is an acute infectious disease of young animals in septic form, characterized by fever, gastrointestinal disturbances, and diarrhea. Calves are infected with salmonellosis mainly from 3-4 weeks to 4 months, piglets to 4 months, sheep at any age, poultry in the first days of life, and mares are infected with specific pathogens (*S. pullorum*, *S. gallinarum*) in the mother's womb [5].

The causative agent belongs to the salmonella group, polymorphism is clearly expressed in the microbial cell, it is well stained with aniline dyes. Good growth in GPA and GPQ. Biochemically, it does not form indole, releases hydrogen sulfide, does not curdle milk. It remains unchanged in lactose and sucrose. Glucose, mannitol, maltose form gas and acid. The microorganism produces a strong poison (endotoxin) from itself. It shows different sensitivity and resistance to antibiotics and sulfonamides[6]. In case of disease, animals are recommended to be divided into the following groups after clinical examination and thermometry:

- 1) healthy;
- 2) a disease is suspected;
- 3) clearly infected;
- 4) animals that have recovered from illness.

Each group should have separate feeders-shepherds and equipment. It will be necessary to establish nutritious and high-quality feeding. Levomycetin, syntomycin, tribrissen drugs are recommended for treatment. When a complication of pneumonia is observed, it gives a good treatment result when it is used in combination with antibiotics, sulfanilamides (norsulfazol, disulfan, etazol, sulfadine, sulfademyzin) [6]. Antitoxin or hyperimmune blood serums used against salmonellosis also give very effective therapeutic results. Always determining the sensitivity of pathogens to various drugs increases the effectiveness of treatment measures. This task is assigned to laboratories working with infectious diseases [7].

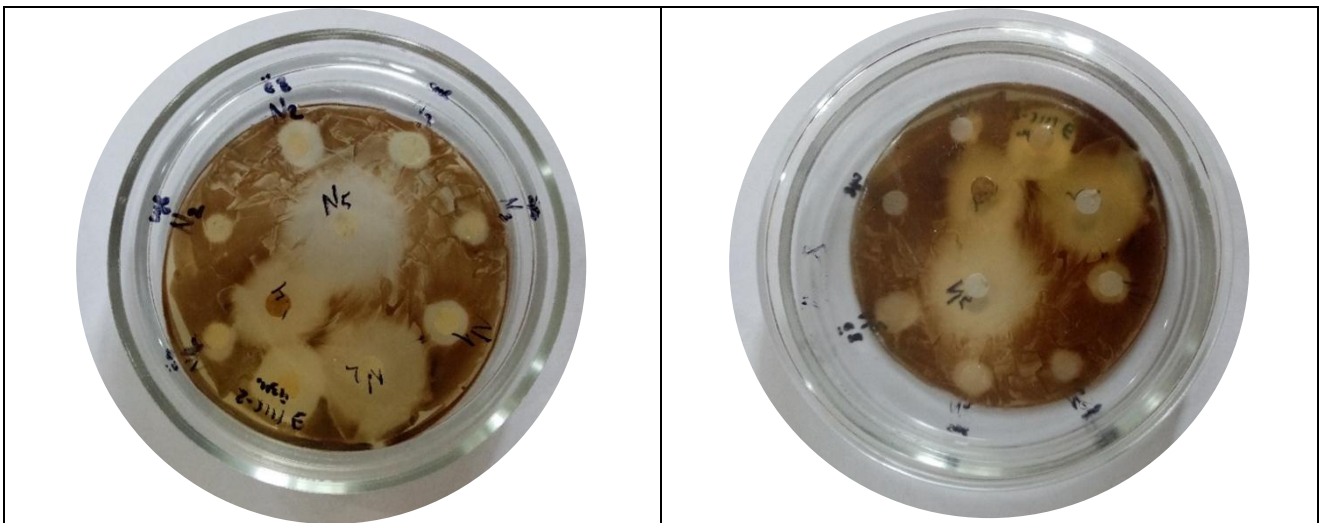
Discussion. In order to recommend antibiotics to sick animals, there should be a number of clinical signs, including the appearance of purulent sputum, changes in blood analysis, that is, an increase in the number of leukocytes and neutrophils, indicators of inflammation, an increase in the amount of C-reactive protein. Bacteriological cultures are grown from body fluids and the results are analyzed. Depending on the type of antibiotic that is effective against the infection, the causative colonies that grow in this process can be recommended one of the antibiotics. In this period, the wrong or mixed antibiotics have an adverse effect on the liver, kidneys and intestines, not on the microorganisms, and lead to various complications [8]. With the help of the complex drug "ETIS-2" composed of pharmacopoeia drugs against diseases of bacterial etiology, many farms in the republic were cured of tuberculosis and the expected economic damage was prevented, as well as the risk of the disease being transmitted to people was eliminated [11]. "ETIS-2" is a combination of the components included in the complex drug, which creates its advantage over other bacteriostatic drugs. Such a combination has a synergistic effect (enhancement of the effect of one drug by another) and prolongation (extending the duration of the effect of the drug). The drug can be used on all types of animals, regardless of their physiological state, from the age of 10 days [12].



- 1) (No. 1) Fat emulsion of ETIS-2 drug in a ratio of 1:10 - sensitive.
- 2) (No. 2) 1:100 aqueous solution of the ETIS-2 drug is less sensitive.
- 3) (№2) 1:100 oil emulsion of the ETIS-2 drug is sensitive.
- 4) (No. 3) 1:50 ratio of ETIS-2 drug (aqueous) - less sensitive.
- 5) (No. 3) 1:50 ratio of ETIS-2 drug (oily) – less sensitive.

- 6) The main concentration of ETIS-2 drug is very sensitive.
- 7) (No. 1 water) 1:10 aqueous solution of ETIS-2 preparation - not sensitive.
- 8) (No. 2 oil) Ot Ditrim 1:10 oil solution - not sensitive.
- 9) (No. 4 water) Nitox 1:10 solution - not sensitive.
- 10) (No. 5 water) Enroflan 1:10 solution - sensitive.

Antibacterial drug discs were incubated at +37°C for 24 hours. According to the categories of sensitivity to antibiotics (susceptible if the growing area of the bacteria on the disc is up to 1.5-2.5 cm, less sensitive up to 1.5 cm and not sensitive if there is no non-growing area of the bacteria) was determined by comparing the growth zone for each colony [3].



RESEARCH RESULTS.

In order to determine antibiotic sensitivity by disk diffusion method, ETIS 2 drug, Ditrim, Nitox and Enroflan antibiotics diluted water and oil emulsions were used in our studies. They were found to be susceptible to *S. enteridis* strain (Table 2).

Susceptibility to ETIS-2 drug and other antibiotics.

N	Name of the drug	Dilution rate	The effect		
			According to the susceptibility of <i>Salmonella</i> pathogens grown on Bismuth Sulphite Agar	According to the susceptibility of <i>Salmonella Shigella</i> to <i>Salmonella</i> pathogens grown in food	Blood agar base (Infusion agar base) according to the sensitivity of <i>Salmonella</i> pathogens grown in the food medium
1	ETIS-2 (oil emulsion)	1:1	Sensitive	Sensitive	Sensitive
		1:10	Sensitive	Less sensitive	Less sensitive
		1:50	Less sensitive	Less sensitive	Less sensitive
		1:100	Not sensitive	Less sensitive	Less sensitive
2	Ditrim	1:10	Sensitive	Sensitive	Sensitive
		1:50	Less sensitive	Less sensitive	Less sensitive
3	Nitoks	1:10	Less sensitive	Less sensitive	Sensitive

		1:50	Not sensitive	Not sensitive	Less sensitive
4	Enroflan	1:10	Sensitive	Sensitive	Sensitive
		1:50	Less sensitive	Less sensitive	Less sensitive

According to the results of Table 2, according to the sensitivity of the strain of *S. enteridis* grown in the food medium with Bismuth Sulphite Agar: the salmonella pathogen is sensitive to the oil emulsion of the ETIS-2 complex preparation in the ratio of 1:1 and 1:10, 1:50 emulsion is less sensitive and 1:100 oil emulsion was found to be insensitive. It was found that the 1:10 oil emulsion of Ditrin drug is sensitive to salmonella, and the 1:50 emulsion is less sensitive. It was found that the 1:10 oil emulsion of the drug Nitox is less sensitive to salmonella, and the 1:50 emulsion is not sensitive. It was found that Enroflan preparation 1:10 oil emulsion is sensitive to salmonella, 1:50 emulsion is less sensitive.

Conclusion.

1. Water and oil emulsions of the ETIS-2 complex drug were found to have a bactericidal and bacteriostatic effect on Salmonella Shigella, Bismuth Sulphite and Blood agar base (Infusion agar base) agars by disc diffusion method.
2. Salmonella pathogen is sensitive to the oil emulsion of ETIS-2 complex drug in the ratio of 1:1 and 1:10. Oil emulsion in the ratio of 1:50 and 1:100 is less sensitive to salmonella.
3. As a result of hematological examinations in sheep treated with ETIS-2, after the animals of experimental group I-II were infected with Salmonella agents, when the clinical symptoms of the disease began to appear, it was found that the amount of hemoglobin, erythrocytes and leukocytes decreased, the amount of lymphocytes increased, and hematocrit decreased. These indicators caused signs of anemia in the sheep.
4. If the ETIS-2 complex drug is used in the treatment of salmonellosis, there is no need to use other types of antibiotics or other therapeutic agents.
5. The mutual combination of the components included in the ETIS-2 complex drug - created its advantage over other bacteriostatics. Such a combination has a synergistic effect (enhancement of the effect of one drug by another) and prolongation (extending the duration of the effect of the drug). The drug can be used on all types of animals, regardless of their physiological state, from the age of 10 days.

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