Performance Test of the Drug "Enterocol"

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Abstract
The results of the performance test have demonstrated that the drug "Enterocol" significantly reduces the morbidity of newborn lambs, improves their overall health, and ensures 98-100% safety of young animals in comparison with 26-32% loss of control animals. The obtained results suggest high curative and preventive effectiveness and safety of the drug "Enterocol". This drug can eliminate intestinal infections, increase yield, improve the epizootic situation in enterprises and significantly reduce food poisoning in humans. Having observed the curative and preventive effectiveness of "Enterocol", veterinary specialists of the mentioned regions have moved to the systematic use of this drug to prevent gastrointestinal diseases of newborn lambs. The efficient probiotic product "Enterocol" was proposed for veterinary practice. It possesses etiotropic and pathogenetic effects and is intended for prophylaxis and therapy of intestinal infections in lambs.

Keywords: Enterocol, probiotics, pathogenicity, Escherichia, microbiocenosis, bacteriocinogenic properties, infection.

INTRODUCTION
Acute gastrointestinal diseases of young animals are widely spread in Kazakhstan. According to statistical data, they occupy the first place among currently registered diseases of newborn animals in the country [1-3].

The main method against these diseases is the treatment of sick animals with antibiotics, sulfanilamide and nitrofurans preparations. However, the use of antibacterial agents often leads to the loss of normal microflora, the disruption of gastrointestinal microbiocenosis, the emergence of microorganisms with resistance to medicines and a decrease in the quality of products. In this regard, the creation of environmentally friendly microbial drugs with preventive efficiency is very important [4-7].

Practical experience shows that the prevention and treatment of gastrointestinal diseases of young animals requires substitution therapy aimed at restoring intestinal microbiocenosis through regulatory administration of living bacteria – normal intestinal microflora, i.e. probiotics [8-10].

In this regard, the development of new probiotic strains of Escherichia selected from healthy young farm animals with bacteriocinogenic properties is a very important and relevant task.

MATERIALS AND METHODS
This study was carried out in the laboratory of anti-bacteriological biotechnology, Biological safety department of KazNAU. Performance tests of the drug "Enterocol" from the strain E. coli 64 against gastrointestinal diseases of the lambs were performed in Aqtoe ("Anisan" enterprise), Kyzylorda ("Turtan-Ata" enterprise), Jambyl ("Kalyc-Trans-1" LLC) regions. "Enterocol" was tested on 860 newborn lambs.

EXPERIMENTAL RESULTS
Basing on the accounting documents of the Almaty, Jambyl and Kyzylorda regional veterinary laboratories, as well as our own research and observational data, it has been determined that the nosological profile of the infectious pathology of sheep at these farms includes cases of gastrointestinal diseases of the newborn lambs.

In order to investigate this pathology, we have conducted studies to define the role of opportunistic microorganisms in the diseases of sheep. We have also found several epizootological features: the dynamics of livestock morbidity, the seasonality of decease manifestations, the age barrier; the main causes, factors, ways of emergence and spreading of diseases.

The study of the distribution and incidence of intestinal infections in lambs at the regional farms has demonstrated that this pathology is very common and causes damage to pastures in the region mostly due to entero-infection pathogens, particularly escherichia, salmonella and other bacteria. The average incidence is within 30-40%, while it is only 10.5% and 13.5% according to official statistics.

Our research has shown that colibacillosis and salmonellosis tend to seasonality. The seasonality of manifestations of epizootic process is the element of short-term epizootic forecasting.

The results of our research indicate that these diseases occurred from February to May, which is apparently connected with a complex of contributing conditions (time of mass lambing, feeding level, adverse weather conditions, favourable conditions for the spreading of pathogens, etc.). These diseases were not recorded from July to January in all regions.

The results of the performance test of the drug "Enterocol" on laboratory models and on newborn lambs served as a basis for further tests directly in the working conditions.
For this purpose, a process procedure for manufacturing of the drug "Enterocol" from the strain E. coli 64 was developed at the laboratory of antibacterial biotechnology. Normative and technical documentation (specifications, a temporary instruction on drug manufacturing, and a temporary instruction on the drug usage) has been reviewed and approved by the scientific advisory council of SRIAA KazNAU.

An experimental series for testing under working conditions was manufactured. "Enterocol" was validated with the preventive purpose in Aqtobe ("Anisan" enterprise), Kyzylorda ("Turtan-Ata" enterprise), Jambyl ("Kalyc-Trans-1" LLC) regions with a high incidence of gastrointestinal deceases caused by pathogenic bacteria of intestinal group.

The drug was tested on 860 newborn lambs. The drug "Enterocol" was administered once before the first feeding, not later than 30 minutes after the birth, in a dose of $10^{10}$ CFU (20 ml). The results of performance tests are presented in Table 1.

Experimental animals were clinically observed: the duration of illness, recovery, and livestock livability were taken into account.

Production testing have shown that "Enterocol" significantly reduces the incidence of newborn lambs, improves their overall health, and ensures 98-100% safety of young animals at 26-32% loss of control animals. The administration of the drug with drinking water does not require much labor and costs.

**RESULTS AND DISCUSSION**

The obtained results indicate high curative and preventive effectiveness and safety of the drug "Enterocol".

The economic efficiency of "Enterocol" amounts to 18 tenge per head.

According to the results of the conducted studies, we received a patent for the invention of "Biopreparation "Enterocol'", its manufacturing method, and the way of preventing the intestinal infections in young animals and birds (No. 25918) has been received from the Office for Intellectual Property of the Republic of Kazakhstan.

**REFERENCES**


