ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

The Efficacy Tests Results Of The Veterinary Drug "Trifuzol 1% Solution For Injection".

Nataliya N Borisenko[1], Inna Ya Gubenko[1], Volodymyr V Parchenko[2], and Inna V Bushueva[3]*.

[1]Cherkasy Medical Academy, Cherkasy, Ukraine.
[2]Department of Toxicological and Inorganic Chemistry, Zaporizhzhya State Medical University, Zaporizhzhya, Ukraine.
[3]Department of Clinical Pharmacy, Pharmacotherapy and MFE, Zaporizhzhya State Medical University, Zaporizhzhya, Ukraine.

ABSTRACT

The purpose of this development is to assess the efficiency of veterinary drug "Trifuzol 1% solution for injection", which shows an antioxidant, immunomodulatory, anti-inflammatory, hepatoprotective and detoxifying effect, normalizes metabolism, enhances the specific immune response, increases the body's resistance to diseases of various etiologies, contributes to the recovery of specific and nonspecific resistance indicators. The drug is planned for the further manufacturing and subsequent sale at the domestic and foreign markets.

Keywords: trifuzol, drug, efficiency, treatment, prophylaxis, calves, piglets, dogs.

Corresponding author

ISSN: 0975-8585

INTRODUCTION

The main focus in increasing meat production in the further years is the intensification of all animal husbandry branches [1].

Diseases of animals which are characterized by lesions of the respiratory tract, gastrointestinal tract, metabolic disorders, are widespread among non-communicable pathology [2-4]. These diseases cause significant economic damage to the national economy by reducing the efficiency of animals, loss of breeding value or death, reducing the number of milk yields etc [5-6].

Use of drugs that have an effect on increasing nonspecific resistance and immune reactivity of the body is envisaged in many treatment schemes of the above pathologies. Real practice shows that it is not always possible and advisible to use them [7-8].

This fact requires the development and use of drugs that have a complex effect which includes a nonspecific immunomodulatory effect, normalizes metabolic processes in the animal body. It is important that 1,2,4-triazole derivatives exhibit a relatively high spectrum of biological activity [9-13].

MATERIALS AND METHODS

Efficiency tests of the veterinary drug “Trifuzol 1% solution for injection” produced by the state enterprise Kharkiv State Biological Factory (Ukraine) were conducted on calves at “Vozrozhdenie” OJSC, Vitebsk region; on piglets – in the conditions of agricultural unitary enterprise “Severny” in the Gorodok district Vitebsk region. Clinical trials of the drug “Trifuzol 1% solution for injection” were conducted on dogs in the conditions of the therapeutic clinic at the Department of Internal Non-infectious Diseases of the educational institution “Vitebsk State Academy of Veterinary Medicine”.

The study of the drug effectiveness was realized against the background of technologies adopted in the farms, feeding and housing conditions, and also schemes for veterinary measures. The tests were conducted in comparison with the basic treatment schemes used in farms.

Serial samples of the veterinary drug "Trifuzol 1% solution for injection" produced by the state enterprise "Kharkiv State Biological Factory" (Ukraine) were used for the experiments.

The volume of conducted research corresponds to the “Instructions on the procedure for veterinary drugs registration”.

“Trifuzol 1% solution for injection” is a colorless, transparent, odorless, non-volatile solution.

1 ml of the solution contains the active ingredient – piperidinium 2-[5-(uran-2-yl)-4-phenyl-1,2,4-triazole-3-ylthio]acetate 10.0 mg. Auxiliary substances are: sodium chloride, water for injections.

The active ingredient of the drug refers to a derivative of 1,2,4-triazole. The mechanism of substance action is the activation of biochemical processes in the tissues cells. The drug renders an antioxidant, immunomodulatory, anti-inflammatory, hepatoprotective and detoxifying effect, normalizes metabolism, strengthens the specific immune response to vaccine administration, increases the body's resistance to viral etiology, helps to restore specific and nonspecific resistance, increases T-cell and β-lymphocyte levels in blood. The active substance is excreted from the body and is not detected in the blood serum 24 hours after last application.

The study of the drug effectiveness in calves was conducted in the conditions of “Vozrozhdenie” OJSC in the Vitebsk region.

Two groups of calves were formed during the study, from one to two months age which suffered from bronchopneumonia. The formation of groups was carried out in compliance with the principle of conditional analogues. Animals with approximately the same severity of the disease were included in one group. Experiments were conducted on 22 calves.

Veterinary drug "Trifuzol 1% solution for injection" manufactured by state enterprise Kharkiv State Biological Factory (Ukraine) was administered to the calves of the experimental group as a stimulant at a dose of 1.5 ml per 10 kg of body weight (1.5 mg per 1 kg of body weight) twice with an interval of 48 hours. Calves of the control group did not take the test drug.

In addition, the experimental and control group animals were treated with Pen-Step antimicrobial drug – complex antibacterial drug, 1 ml of which contains 200,000 IU benzylpenicillin-procaine (benzylpenicillin novocaine) and 200 mg of dihydrostreptomycin sulfate manufactured by "ImmCont GmbH", Germany; expectorants (sodium bicarbonate) and vitamins (oligovit). All calves were under the same feeding and housing conditions. In the process of research, all animals were under constant clinical observation. The disappearance of main symptoms of the disease was conditionally accepted as a recovery.

The study of the prophylactic efficiency of the veterinary drug "Trifuzol 1% solution for injections" in piglets was conducted in the conditions of the agricultural unitary enterprise "Severny" in the Gorodok district Vitebsk region against the background of stable animal husbandry technologies, feeding and housing conditions, schemes of veterinary measures.

Two groups of clinically healthy newborn piglets of one day old were formed during the study – experimental and control. Experiments were conducted on 102 pigs.

Veterinary drug Trifuzol 1% solution for injection produced by state enterprise Kharkiv State Biological Factory (Ukraine) was administered to the piglets of the 1st group with the prophylactic purpose as a stimulant at a dose of 1.0 ml per 10 kg of body weight (1 mg per 1 kg of body weight) intramuscularly. The injection was made twice - on the first and seventh day of life.

Experimental and control groups were administered at a dose of 1.0 ml intramuscularly for 1 animal with Ferrumvet produced by "Belekotehnika" Ltd, Belarus, an iron and vitamin B_{12} drug, which is used in veterinary practice to prevent iron deficiency anemia and to treat animals with diseases caused by iron and vitamin B_{12} deficiency, to normalize metabolism,.

Before administration the drugs were heated to 36°C–38°C, and the injection place was treated with septocide.

The animals of both groups were in the same conditions of feeding and housing. In the process of experiment they were kept under constant clinical observation for 25 days.

The study of the drug effectiveness in dogs with clinical signs of gastroenteritis, which was due to various etiological factors, was carried out in a therapeutic clinic at the Department of Internal Non-infectious Diseases of the "Vitebsk State Academy of Veterinary Medicine" educational institution.

According to this purpose, at different time, two groups of dogs were formed, ranging in age from six months to five years of different breeds. The experimental group included 9 animals, the control group – 8 animals. The formation of animals with disease into groups was carried out gradually, as their incidence and admission to the clinic for treatment, in compliance with the principle of conditional analogues. Groups were formed from animals with approximately the same severity of the pathological process.

Veterinary drug "Trifuzol 1% solution for injection" was administered in a dose of 1.0 ml per 10 kg of animal body weight intramuscularly for 5 days to stimulate the immune system and improve the general condition of the experimental group animals.

Vetacef-50 produced by "Belecotehnika", Belarus which contains cefthiofur, a third-generation cephalosporin antibiotic with a broad spectrum of action, has a bactericidal effect on gram-negative and gram-positive bacteria, including strains that produce lactamase, and some anaerobic strains. The drug was administered to the animals of both groups in a dose of 0.3 ml per 5 kg of animal body weight intramuscularly 1 time per day until recovery. Sick animals were limited in feeding, water was given without restrictions. Bellastezin was administered in case of pronounced pain reactions as a result of spastic bowel colic. It was

given orally at the dose of 1 tab. per 20 kg of animal body weight 3 times a day until recovery. Smecta was used in a suspension form inside as an enveloping agent 3 times per day until recovery. If necessary, electrolyte therapy with “Ringer's solution” or isotonic sodium chloride solution was administered to animals of all groups. Administration was intravenous at a dose of 15-20 ml per 1 kg of animal body weight 1-2 times per day, depending on their condition. In addition, if necessary, the animals were injected with a 10% solution of caffeine sodium benzoate at a dose of 0.1-0.2 cm^3 per 1 kg of animal body weight, subcutaneously, 2 times per day. As an antiemetic, a 0.5% solution of metoclopramide hydrochloride was given at a dose of 2 mg per 1 kg of animal body weight, intravenously, 2-3 times per day.

Parenteral administration of the drugs was conducted using the syringes for single use, systems for injection into small veins, systems for infusions, injection needles for single use. Places for injection were treated with ethanol for veterinary medicine.

RESULTS AND DISCUSSION

The veterinary drug "Trifuzol 1% solution for injection" efficacy when applied to calves

Studies have been conducted against the background of the farm-adopted feeding and housing technology, as well as schemes for veterinary measures for respiratory diseases in calves.

Before the experiment, an examination of young cattle from one to two months age was conducted. A clinical study revealed animals with bronchopneumonia. The clinical picture at the beginning of the disease was characterized by fever, decreased appetite, lying stale, dry cough, which over time became wet and less painful. Fine bubbly and large bubbling rales were revealed by auscultation. Presence of obtrusion focus was detected after percussion of the pulmonary field of animals with bronchopneumonia. One of the characteristic clinical signs was the presence of defluvium from the nasal hiatus. Initially, the egestion was serous, and then catarrhal and purulent-catarrhal.

The investigational drug in the treatment scheme stimulated faster recovery. As an evidence the appetite restored, fever, cough and wheezing came to a full stop.

During the trial of the experimental group animals, clinical recovery was at 5-6 days after the start of treatment, while in the control group – at 8-10 days. The therapeutic efficacy of the measures taken in the experimental group was 81.5%, and in the control group – 73.4%. Complications were not observed after using the investigational drug.

The veterinary drug “Trifuzol 1% solution for injection” efficacy when applied to piglets

The studies were conducted against the background of the adopted at the farm technology of feeding and housing, as well as schemes for veterinary measures in newborn piglets.

Before the experiment, an examination of newborn piglets was conducted. Clinically healthy animals of both groups were in the same conditions of feeding and housing. In the course of trial, they were kept under constant clinical observation for 25 days.

As a result of the research it was defined that the prophylactic efficacy of the veterinary drug "Trifuzol 1% solution for injection" was 88% (9 pigs were culled during the observation period due to the non-infectious diseases). Adverse reactions were not observed after using the investigational drug in animals of all groups.

The veterinary drug “Trifuzol 1% solution for injection” efficacy when applied to dogs

The studies were conducted under the conditions of a therapeutic clinic at the Department of Internal Non-infectious Diseases of the “Vitebsk State Academy of Veterinary Medicine” Educational Institution on dogs with clinical signs of gastroenteritis, which was caused by various etiological factors.

The severity of clinical signs and the general condition of sick animals were determined before the complex treatment order. The disease in dogs was characterized by an increase of body temperature to

39.6°C–39.9°C, general depression, refusal of food, thirst, frequent defecation, tenesmus, tenderness and painfulness of the abdominal wall during palpation. Sometimes the excrements were with blood and mucus, foul-smelling. The smell from the mouth was specific and sour. Helminth infections and protozoal diseases were eliminated when prescribed treatment. Peristaltic noise was brightly pronounced during auscultation of the abdominal wall. Some animals had vomiting. As a rule, animals fell ill when they ate food of various origins. Gastroenteritis of an unknown etiology was observed in some cases.

During the treatment, recovery of dogs of all groups was gradual. A decrease in the clinical signs of gastroenteritis was observed on the experimental group animals on the second or third day from the start of treatment. The absence of a definitive clinical sign of gastroenteritis, named diarrhea, was observed in some animals at the end of the second day from the start of treatment. The animals became more mobile, reacted to external stimulants, began to take food willingly. Painfulness of the abdominal wall was not observed. The intensity of dogs recovery depended on age. So, older animals recovered faster - for 3-4 days (3.5 ± 0.5 days), while puppies recovered 4-5 days, on average recovery was after 4.4 ± 0.8 days.

In some individuals of the control group, the cessation of diarrhea was observed after 4-5 days from the moment of treatment, however, full clinical recovery occurred somewhat later. The recovery rate of dogs in the control group also depended on their age. So, older animals recovered for 3-5 days (4.4 ± 0.3 days). At the same time puppies recovered for 6-7 days, an average recovery was 7.2 ± 0.2 days.

After clinical recovery, the backset of the disease was not marked.

Animals in both groups did not die. Adverse reactions and complications from the use of the investigational drug were not observed.

CONCLUSIONS

- Veterinary drug "Trifuzol 1% solution for injection" produced by the state enterprise "Kharkiv State Biological Factory" (Ukraine) proved itself to be an effective pathogenetic agent.
- Veterinary drug "Trifuzol 1% solution for injection" produced by the state enterprise "Kharkiv State Biological Factory" (Ukraine) in the complex treatment has a pronounced therapeutic effect in the pathologies of the respiratory tract in calves, in the pathologies of the digestive system in dogs, and also has a high prevention efficacy to non-infectious etiology diseases in newborn piglets.
- Complications and negative effects on the animal during the period of research are not determined.

REFERENCES

[1] Svyatogor, A. P., Gorbatovskiy, A. V., Roshchin, D. A. (2014). Effektivnost intensifikatsii molochnogo skotovodstva. Ekon.vopr.razvitiya sel.khoz-va Belarusi, 131-140.
[2] Vikulina, G. V. Maloizuchennyye zven'ya patogeneza bronkhopnevmonii (2012).Vestnik veterinarii, 11-13.
[3] Grieshop, C. M., Flickinger, E. A., Fahey, G. C. (2002). Oral administration of arabinogalactan affects immune status and fecal microbial populations in dogs. Journal of nutrition, 132(3), 478-482.
[4] Mayer, A. (1986). Paraimmunisirungvon Nutztieren//DLG-Mitt, 101(23), 1263-1265.
[5] Swan, H., Godden, S., Bey, R., Wells, S., Fetrow, J., Chester-Jones, H. (2007). Passive transferre of immunoglobulin g and preweaning health in holstein calves fed a commercial colostrum replacer, Journal of Dairy Scince, 90(8), 3857-3866.
[6] Plyashchenko, S.I. (1983). Rezistentnost' organizma zhivotnykh pri razlichnykh tipakh kormleniya i usloviyakh soderzhaniya, Veterinariya, 22-25.
[7] Saychenko, V., Vetrov, G. (2010). Sokhraneniye zdorov'ya molodnyaka – vechno aktual'naya problema obshchestvennogo zhivotnovodstva, Veterinariya sel'skokhozyaystvennykh zhivotnykh, 43-47.
[8] Uteshev, B. S., Bystrova, N. A., Brovkina, I. L. (2001). Immunomoduliruyushcheye i antioksidantnoye deystviye vitaminov A i Ye pri vozdushnom i immersionnom okhlazhdenii, Eksperimental'naya i klinicheskaya farmakologiya, 60-62.
[9] Shcherbyna, R. O., Parchenko, V. V., Safonov, A. A., Bushueva, I. V., Zazharskiy, V. V., Davydenko, P. O., Borovic, I. V. (2018). Synthesis and research of the impact of new derivatives of 4-R-3

(morpholinomethyl)-4H-1,2,4-triazole-5-thiol on cultural attributes of pathogenic M. Bovis. Research Journal Of Pharmaceutical Biological And Chemical Sciences, 9(2), 70-79.

[10] Shcherbyna, R. O., Vashchyk, Y. V. (2018). Histological study of potassium 2-((4-amino-5-(morpholinomethyl)-4H-1,2,4-triazole-3-yl) thio) acetate (PKR-173) corrective influence on the chickens liver state in the condition of tetracycline hepatitis. Zaporožskij Medicinskij Žurnal, 3, 404-412.

[11] Bihdan, O. A., Parchenko, V. V., Shcherbyna, R. O., Safonov, A. A. (2018). 1,2,4-Triazole derivatives with halogen substituted fragments, their synthesis, modification and biological properties. Research Journal Of Pharmaceutical Biological And Chemical Sciences, 9(1), 22-29.

[12] Shcherbyna, R. O., Danilchenko, D. M., Parchenko, V. V., Panasenko, O. I., Knysh, E. H., Hromyh, N. A., Lyholat, Y. V. (2017). Studying of 2-((5-R-4-R-1-4H-1,2,4-triazole-3-yl) thio)acetic acid salts influence on growth and progress of blackberries (Kiowa variety) propagules. Research Journal Of Pharmaceutical Biological And Chemical Sciences, 8(3), 975-979.

[13] Shcherbyna, R. O., Samura, T. O., Kyrychko, B. P., Zvenihorodska, T. V., Hyrenko, I. V. (2017). The research of ammonium 2-((4-amino-5-(morpholinomethyl)-4H-1,2,4-triazole-3-yl)thio) acetate (PKR-177) influence on biochemical indices in rats blood under hepatitis initiated by tetrachloride methane. Zaporožskij Medicinskij Žurnal, 19(6), 819-822.