

Article

Determination of the Effectiveness of Anthelmintic Drugs in the Treatment of Moniesiosis of Goats in The Kashkadarya Region

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Abstract: This article identifies the therapeutic efficacy of brontel Plus (made in Ukraine), Monezol (made in Uzbekistan), ivermectin 1% & Praziquantel 2.5% (Made in China) anthelmintics in the treatment of goat moniesiosis.

Keywords: Moniezia expansa, Moniezia benedeni, tsestod, helminth, moniezia, scolex, syllable, brontel plus, monezol, ivermectin 1% & Praziquantel 2.5%.

Introduction

Relevance of the Topic: Monieziosis is a parasitic disease that manifests as a result of animals grazing on large or small pastures and grasslands. The introduction of certain green plants, such as Hawthorn, especially when harvested in wet conditions, can also lead to partial infestation by Moniezia parasites. The intermediate hosts of Moniezia species, primarily oribatid mites, are widespread across all climatic and geographical regions of Uzbekistan, including irrigated plains, upland-mountain areas, and steppe-meadow biocenoses. Consequently, Monieziosis affects all regions where animals are raised, being prevalent among both large and small ruminants on farms, personal holdings, and agricultural land.

Monieziosis is not restricted to any specific season; it can be observed year-round. However, oribatid mites, the intermediate hosts, are particularly active during periods of high humidity and elevated soil temperatures above +10°C. Animals typically become infested with Moniezia cysticeroids when grazing in these favourable field conditions. Our research indicates that Monieziosis peaks in the spring and autumn, with a slight decrease in the summer. Nevertheless, warm winter periods can still present a risk, especially in areas where snow has melted and green plants have emerged.

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During late autumn and early winter, when the air remains warm and humid, green grass covers the meadow surface, creating an environment conducive to the proliferation of oribatid mites. These mites, along with the green grass, are ingested by animals, leading to an increase in Moniezirosis incidence. In contrast, during harsh winter conditions, when the topsoil freezes, the development of Moniezirosis halts. In desert regions, the bodies of annual green plants may dry up during the summer, yet moisture is retained around their living roots, harboring oribatid mites and thereby posing a continued risk.

Our extensive observations have shown that Moniezirosis predominantly affects young lambs and kids under 1.0-1.5 years of age. The disease is observed throughout the year, irrespective of the season. Contrary to the descriptions found in foreign and domestic parasitology textbooks, which suggest that Moniezirosis caused by *Moniezia expansa* peaks in spring and summer while *Moniezia benedeni* is more prevalent in autumn and winter, our research in Uzbekistan has revealed that both species can be found in every season. This is likely due to the fact that the majority of oribatid mites in Uzbekistan serve as intermediate hosts for both species of *Moniezia*, thriving in the same ecological conditions.

In certain regions, specific *Moniezia* species predominate, such as *Moniezia expansa* in the educational and experimental farm of the Institute, where this form of Moniezirosis has persisted for several years. Both *Moniezia expansa* and *Moniezia benedeni* are distributed throughout the Commonwealth of Independent States (CIS), with higher prevalence in Central Asia. In our studies, Moniezirosis caused by *Moniezia expansa* has been observed to infect up to 60% of lambs and 52% of kids in unhealthy farms. Infected lambs, particularly those around five months old, have been found with *Moniezia* parasites up to 6.5 meters in length in their intestines. In the Kashkadarya regions, post-mortem examinations of lambs and kids revealed up to 24 adult and immature *Moniezia* parasites and other cestodes in the small intestine.

Moniezirosis begins to develop in newborn lambs as soon as they start grazing on green grass. As they grow older, typically beyond two months, the segments of the *Moniezia* parasites begin to separate, becoming more noticeable in lambs between three and four months of age. Lambs and kids that are undernourished in breast milk are forced to graze earlier, making them more susceptible to Moniezirosis. The disease typically first appears in lambs around 1.5-2 months old.

The initial clinical signs of Moniezirosis are subtle, including weight loss, reduced activity, and softened stool. As the parasites grow and the infestation becomes more severe, clinical symptoms become more apparent, including thinning, apathy, lagging behind the flock, and frequent lying down. In severe cases, the intestines become filled with food mass and parasites, leading to the accumulation of air, tension in the abdominal cavity, and severe pain. Affected lambs may exhibit restlessness, circular movement, ground-pawing, and head-butting. Without timely intervention, the disease can lead to a comatose state, increased constipation, and ultimately death. In lambs aged 2.5-3.5 months, the intestinal tract may become obstructed, leading to the accumulation of food mass, and in extreme cases, the intestinal wall may rupture, causing peritonitis and sudden death.

Relevance of the Study: In response to the widespread issue of Moniezirosis, a variety of anthelmintics have been tested and recommended for the prevention and treatment of this parasitic disease. Among the most notable are Fenasal, which is administered to lambs and kids either individually in tablet form or as a 5% suspension at a dosage of 0.1 g/kg. For group treatment, it is mixed with feed or ground grain at a dosage of 0.2-0.25 g/kg. Additionally, a 1% solution of copper sulfate (copper cupro) is administered to lambs according to age-specific dosages, ranging from 21-25 ml at 1.5-2 months to up to 100 ml at 8-10 months. Copper cupro is dissolved in distilled or boiled and cooled water in glass containers for administration.

In addition to these treatments, other anthelmintics such as margimush tin, panacur (fenbendazole), Rintal, and Yomezan have been utilized in Uzbekistan.

Through private veterinary pharmacies, a range of drugs developed by various firms are being introduced into the country to combat Monieziosis and other intestinal cestodoses. One of the most effective treatments against Monieziosis has been the use of anthelmintic drugs containing praziquantel. These include Alben, albendazole (2.5% and 10%), Albazen (2.5% and 10%), Bentel-900 (albendazole and praziquantel), Brontel plus (1 ml containing 50 mg clozantel and 50 mg praziquantel), Alben-PRAZ (1 ml containing 50 mg albendazole and 50 mg praziquantel), Iver-PRAZ (1 ml containing 2 mg ivermectin and 50 mg praziquantel), Monizen (1 ml containing 40 mg praziquantel and 1.7 mg ivermectin), Monezol (1 ml containing 2 mg ivermectin and 40 mg praziquantel), among others .

Recent research has highlighted the significant economic impact of Monieziosis, particularly caused by *Moniezia expansa* and *Moniezia benedeni*, on goat farms in Uzbekistan. This necessitates a strengthened approach to combating these parasites and the development of new, improved treatment methods .

Research Materials and Methods. Field experiments were conducted to evaluate the effectiveness of different anthelmintic treatments for goat Monieziosis and to enhance preventive measures. These experiments were carried out on a goat-adapted livestock farm, specifically the "Peasant State Forest Farm, Konsoy Forest Department, Jiydabulok Massif" in the Peasant District of Kashkadarya Region. For the study, 30 naturally infested goats were selected and divided into three groups based on analog rules. The first experimental group was treated with Brontel plus (1 ml containing 50 mg clozantel and 50 mg praziquantel), a product of Ukraine. The second group received Monezol (1 ml containing 2 mg ivermectin and 40 mg praziquantel), an anthelmintic produced in Uzbekistan. The third group, serving as the control group, was administered a Chinese-made combination of ivermectin 1% and praziquantel 2.5% (5 mg praziquantel and 10 mg ivermectin per 1 ml). These experiments aimed to assess the efficacy of these treatments in controlling Monieziosis in goats and to inform future preventive strategies.

To evaluate the effectiveness of the anthelmintic treatments, 24 hours after the administration of the drugs, fecal samples were collected from the experimental goats. These samples were then analyzed using helminthocoprological examination methods, including sequential washing and the Fulleborn method.

The results of the study, detailing the effectiveness of Brontel plus, Monezol, and the combination of Ivermectin 1% & Praziquantel 2.5% against intestinal cestodoses in goats, are presented in Table 1.

Table 1

Results of studies of the effectiveness of anthelmintics in goat moniliasis

bands	Animal head number	Name of the drug	Dosage of administration	Dorie gelmint effects on larga	Effectiveness of the drug in percentage
1st team	10	Drontal plus	Per 10 kg body weight	9 joints of moniesian triggers in the head goat	90 %
2nd team	10	Monezol	1 ml was injected between the muscles.	and the eggs were not found	100 %
3rd team	10	Ivermectin 1% & Praziquantel 2.5%	In the amount of 1 ml per 10 kg of body weight	Joints of intestinal cestodoses	80 %

Results and Discussion: As observed from Table 1, the effectiveness of the anthelmintic treatments varied across the experimental groups. In the first group, which

was treated with Brontel-plus, fecal samples were analyzed 24 hours post-treatment. Of the 10 goats in this group, 9 showed no presence of *Moniezia* segments in their fecal matter, while 1 goat was still found to have *Moniezia expansa* segments. This indicates that the Brontel-plus treatment had a 90% efficacy rate against *Moniezia* triggers.

In the second group, which received Monezol suspension, neither *Moniezia* segments nor eggs were detected in the fecal samples of any of the goats. This suggests that the Monezol anthelmintic had a 100% efficacy rate against *Moniezia* triggers.

In the third group, treated with a combination of Ivermectin 1% and Praziquantel 2.5%, fecal examination revealed that 8 out of 10 goats had no *Moniezia* segments, while 2 goats still showed the presence of *Moniezia expansa* segments. The efficacy of the Ivermectin and Praziquantel combination was thus determined to be 80%.

Conclusion: The study concluded that the anthelmintic drug Ivermectin 1% & Praziquantel 2.5% demonstrated an 80% effectiveness against *Moniezia* triggers in goats. The Brontel-plus drug, produced in Ukraine, showed a 90% effectiveness, while the Monezol drug, produced in Uzbekistan, was found to have a 100% efficacy rate when used against *Moniezia* infestations in goats. These findings suggest that Monezol may be the most effective treatment option among those tested for controlling *Moniezia* in goats.

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