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Prevention of psoroptosis of sheep in Dagestan Republic in winter

ABSTRACT

Relevance. Sheep breeding in Dagestan has its own distinctive features compared to other regions, territories and republics of our country. They are associated with extremely diverse natural and climatic conditions of various geographical zones of the republic. Currently, preventive measures against psoroptosis of sheep and goats in the Caspian region of Russia are carried out by practitioners and workers of farms of various forms of ownership using outdated acaricidal agents of past generations. The main peak of psoroptosis of sheep in the Republic of Dagestan falls on the autumn-spring period — from November to mid-December and from March to May. At this time, bathing activities are not possible, the injection method is not always convenient, especially taking into account pregnant queens and young animals, spraying is ineffective and carries the risk of hypothermia of animals. It follows from the above that the search for acaricidal agents capable of preventing psoroptosis of sheep in winter on the territory of the Caspian region of Russia is of great scientific and practical importance.

Results. The experimental data obtained allow us to conclude that the preventive use of the acaricidal agent Delcid 7.5 in a dosage of 10 ml per 50 kg of live weight provides protection against Psoroptes ovis for up to 23 days, Sanofly — up to 18, which is 5 days less. Delcid 7.5 turned out to be 10% more effective in acaricidal action, as well as in the number of new lesions on average per animal with an indicator of 1, whereas after Sanoflaya, this indicator reached 2 after 23 days of the experiment. The reasons for the results obtained are various main active substances and their acaricidal effect against the Psoroptes ovis tick, in Delcid 7.5 it is deltametrin, in Sanoflaya it is cyflutrin.

Key words: delcid 7.5, sanofly, deltamethrin, prevention, sheep, psoroptosis, antiparasitic drugs

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Профилактика псороптоза овец в Республике Дагестан в зимний период

РЕЗЮМЕ

Актуальность. Овцеводство в Дагестане имеет свои отличительные особенности по сравнению с другими областями, краями и республиками нашей страны. Они связаны с крайне разнообразными природно-климатическими условиями различных географических зон республики. Во многих хозяйствах горной и предгорной зон исторически сложилась отгонно-пастбищная система ведения овцеводства, а в равнинной — в основном стационарно-пастбищное содержание овцепоголовья. В настоящее время профилактические мероприятия против псороптоза овец и коз в Прикаспийском регионе России практикующие специалисты и работники хозяйств различных форм собственности проводят с использованием устаревших акарицидных средств прошлых поколений. Основной пик поражения псороптозом овец в Республике Дагестан приходится на осенне-весенний период — с ноября по середину декабря и с марта по май. В это время не представляются возможными купочные мероприятия, инъекционный метод не всегда удобен, особенно с учетом суягных маток и молодняка, опрыскивание малоэффективно и несет риск переохлаждения животных.Из вышеизложенного следует, что изыскание акарицидных средств, способных профилактировать псороптоз овец в зимний период на территории Прикаспийского региона России, имеет важное научное и практическое значение.

Результаты. Полученные экспериментальные данные позволяют сделать вывод, что профилактическое применение акарицидного средства Дельцид 7,5 в дозировке 10 мл на 50 кг живого веса дает защиту от *Psoroptes ovis* сроком до 23 дней, Санофлай — до 18, что на 5 суток меньше. Дельцид 7,5 оказался эффективнее на 10% по акарицидному действию, а также и по количеству новых очагов поражения в среднем на одно животное с показателем 1, тогда как после Санофлая этот показатель после 23 суток эксперимента достиг 2. Причины полученных результатов — различные основные действующие вещества и их акарицидное действие против клеща *Psoroptes ovis*, у Дельцида 7,5 это дельтаметрин, у Санофлая — цифлутрин.

Ключевые слова: дельцид 7,5, санофлай, дельтаметрин, профилактика, овцы, псороптоз, противопаразитарные препараты

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Введение/Introduction

Dagestan is a peculiar, unique region of our country, which is characterized by sharp natural contrasts. The territory of the republic extends from the vast steppes of the Caspian lowland to the snow-white peaks of the Greater Caucasus Range, the area is 50.3 thousand square kilometers.

3349.4 thousand hectares are occupied by agricultural land, including pastures — 1227.6 thousand hectares. Although most of the farms are diversified, sheep breeding occupies a leading place, for farms in the mountainous zone, sheep breeding is the main source of income [1].

Sheep breeding in Dagestan has its own distinctive features in comparison with other regions, territories and republics of our country. They are associated with a variety of natural and climatic conditions of various geographical zones of the republic. In many farms of the mountainous and foothill zones, a transhumance-pasture system of sheep breeding has historically developed [2, 3].

Sheep farms of the republic also use winter pastures on the territory of the Republic of Kalmykia and the Stavropol Territory.

One of the urgent problems of parasitology on the present stage is the fight against arachnoentomosis, including psoroptosis, which causes significant economic damage to the livestock farms of the region [4, 5].

Psoroptosis of sheep and goats is a chronic disease, caused by the *Psoroptes ovis* mite, occurring in subacute, acute, chronic, sometimes generalized forms. It is characterized by lesions in sheep and goats of thick-haired parts of the body, goats — sometimes the auricles. Psoroptosis causes great economic damage to farms due to the culling of raw materials (skins and wool), most importantly — losses in milk and meat productivity [6–8].

Currently, preventive measures against psoroptosis of sheep and goats in the Caspian region of Russia are carried out by practitioners and workers of farms of various forms of ownership using obsolete acaricides of past generations [9, 10]. The main method for the prevention of psoroptosis in sheep and goats, taking into account the vertical zonality of the region and the livestock management system, remains the buying method with the use of acaricidal preparations in swimming baths, spraying, watering and subcutaneous injection methods are less commonly used [11–13]. Do not fully satisfy the needs of business executives, veterinary specialists in the fight against sheep psoroptosis and create certain restrictions on the use, especially in winter [14]. The main peaks of sheep psoroptosis in the Dagestan Republic occur in the autumn-spring periods — from November to mid-December and from March to May. During these peaks of the incidence, it is not possible to purchase measures, the injection method is not always convenient, especially taking into account pregnant queens and young animals, and spraying is ineffective and carries the risk of hypothermia of animals.

Based on the foregoing, it follows that the search for acaricidal agents that can prevent sheep psoroptosis in the winter on the territory of the Caspian region of Russia is of great scientific and practical importance.

Материалы и методы исследований / Materials and methods

The work was carried out in the laboratory of parasitology of the Caspian Zonal Research Veterinary Institute — a branch of the federal state budgetary scientific institution «Federal Agrarian Research Center Dagestan Republic» and the peasant farm «Bukhty» in the Gunibsky district.

When making a diagnosis on psoroptosis, the clinical signs of the disease in sheep were initially taken into account by external examination, taking into account epizootological data.

In order to study the preventive effect of the acaricidal drug Delcid 7.5 (OOO «Agrovetzaschita», Russia), we selected a farm that was unfavorable on sheep psoroptosis. The choice of the drug Delcid 7.5 is determined ovlen for a number of reasons. This is, first of all, the form of application — drip application along the spine, the main active ingredient — deltamethrin, which has proven itself well in preparations, of other forms of application, also played a role, in indications for use.

In order to study the preventive effect of acaricides — Delcid 7.5 and Sanofly (OOO «API-SAN», Russia) — against *Psoroptes ovis*, a farm that was unfavorable on sheep psoroptosiswas chosen. For the experiments, 3 groups of healthy animals were made up, 20 heads each, each group was separately marked. The first group was treated with the acaricide Delcid 7.5 in dosage of 10 ml per 50 kg live weight, the second — with Sanofly at a dosage of 1.5 ml per 50 kg of live weight, according to the manufacturer's instructions. Both products were applied by drip irrigation, without cutting the hair, pushing it to the sides by hand, on intact and dry skin, along the spine of the animal from the withers to the sacrum. The third control group did not undergo any chemoprophylactic treatments.

After the prophylactic treatment with drugs, all three groups were kept together in a common flock with psoroptosis-unfavorable sheep. The duration of the observation period for animals and manifestations of clinical signs of the disease was 25 days. Tests of drugs were carried out in accordance with the «Methodological guidelines the primary selection of new acaricides and comparative study of their activity against sarcoptoidmites» (1982)[1].

Результаты и обсуждение / Results and discussion

The results of experimental experiments after prophylactic treatment of all groups with acaricides Deltsid 7.5 and Sanofly are shown in tables 1 and 2. In experiments with drugs, emphasis was placed on their acaricidal activity against the skin mite *Psoroptes ovis*, which belongs to the permanent parasites of sheep in the Dagestan Republic and parasitizes on the epidermal layer of the skin of animals.

As can be seen from Table 1, the use of Delcid at a dosage of 10 ml per 50 kg of live weight provides protection against *Psoroptes ovis* for up to 23 days, treatment with Sanofly at a dosage of 3 ml per 50 kg of live weight, provides protection up to 18 days. In the control group, not subjected to chemoprophylactic treatments, lesions of *Psoroptes ovis* were observed on the 13th day (Table 1).

Table 1. **Preventive action of acaricides Delcid 7.5 and Sanofly against *Psoroptesovis***

A drug	Dose	Psoroptosis lesions were found after x days											
		1	3	5	10	13	15	18	20	21	22	23	24	25
Delcid 7.5	Drip along the spine, 10 ml / 50 kg fl. masses	–	–	–	–	–	–	–	–	–	–	+	+	+
Sanofly	Drip along the spine, 3 ml / 50 kg fl. mass	–	–	–	–	–	–	+	+	+	+	+	+	+
Control	—	–	–	–	–	–	+	+	+	+	+	+	+	+

[1] Стринадкин П.С.. Методические указания по первичному отбору новых акарицидов и сравнительному изучению их активности против саркоптоидных клещей. Отделение ветеринарии. М. : ВАСХНИЛ. 1982; 12. (P.S. Strinadkin. Guidelines for the primary selection of new acaricides and comparative study of their activity against sarcoptic mites. Department of Veterinary Medicine. M.: VASKHNIL. 1982; 12.)

The number of lesions of *Psoroptes ovis* on average per animal after prophylactic treatment with Delcid 7.5, and Sanofly is shown in Table 2. As follows from the data, after treatment with Delcid 7.5, at a dosage of 10 ml per 50 kg of live weight, the number of lesions on average per animal —1 (Table 2).

After treatment with Sanofly, this indicator was also 1, from 18 to 23 days and then rose to 2. In the control group, from 13 to 21 days, the number of *Psoroptesovis* — 1 foci appeared, from 21 to 25 — increased to 2.

Comparative acaricidal efficacy of Delcid 7.5 and Sanofly preparations is shown in Table 3. Over the 25-days period of production experience for the prevention of psoroptosis, the following result was obtained: after treatment with Delcid 7.5 — on average, new lesions per animal — 1, total sick — 3. After the use of Sanoflyan average of lesions on one animal — 2, all sick — 5 out of 20 in the experimental group. The drug Delcid showed a prophylactic effect against *Psoroptesovis*on 10% higher than that of Sanofly (Table 3).

Table 2. **The number of lesions of *Psoroptes ovis* on average per animal after prophylactic treatment with Delcid 7.5 and Sanofly**

A drug	Dose	Lesions detected on 1 animal after x days												
		1	3	5	10	13	15	18	20	21	22	23	24	25
Delcid 7.5	Drip along the spine, 10 ml / 50 kg fl. masses	–	–	–	–	–	–	–	–	–	–	1	1	1
Sanofly	Drip along the spine, 3 ml / 50 kg fl. mass	–	–	–	–	–	–	1	1	1	1	1	2	2
Control	–	–	–	–	–	1	1	1	1	2	2	2	2	2

Table 3. **Comparative acaricidal efficacy in the prevention of psoroptosis with drugs Ivermek and Santomectin**

A drug	Number of animals per group	Method applications dosage	Lesions per 1 animal in 25 days	Number of diseased animals in 25 days	Acaricidal effect activity, %
Delcid 7.5	20	Drip along the spine 10 ml /50 kg and. mass	1	3	85
Sanofly	20	Drip along the spine 3 ml / 50 kg and. mass	2	5	75.5

Выводы/Conclusion

The experimental data obtained allow us to conclude that the prophylactic use of the acaricide Delcid 7.5, at a dosage 10 ml per 50 kg of live weight, provides protection against *Psoroptes ovis* for up to 23 days, Sanofly up to 18 days, which is on 5 less. Delcid 7.5 turned out to on 10% more effective in terms of acaricidal action, as well as the number of new lesions on average per animal, with an indicator — 1, while after Sanofly this indicator reached 2 after 23 days of the experiment. The reason of the results obtained it is necessary to consider the various main active substances and their acaricidal action specifically against the *Psoroptes ovis*, mite, in Delcid 7.5 it is deltamethrin, Sanofly — cyfluthrin. It should also be taken into account that the manufacturers of Sanofly do not include sarcoptoid mites and proven acaricidal efficacy in the list of indications for use.

Based on the foregoing, we can conclude that Delcid 7.5 at a dosage according to the manufacturer's instructions, is an effective and topical acaricidalagent that allows you successfullyto prevent sheep psoroptosis in the winter, when other methods of treatment are impossible or difficult.

Автор несет ответственность за работу, представленные данные и ответственность за плагиат.

The author is responsible for the work, the data presented and responsibility for plagiarism.

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