

# Treatment of Internal Parasitoses of Cattle with a New Dosage form of Eprinemectin Percutaneously

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## Abstract

A study of the therapeutic efficacy of a new drug form of eprinomectin-Elivec in the strongylatoses of the gastrointestinal tract of young cattle was carried out on spontaneously infested animals in the Moscow Region. Elivec was prescribed in a dose at the rate of 1ml per 10kg of animal weight cutaneous once. The basic drug was Ganamectin in the recommended dose subcutaneously once. According to the results of coproscopic studies, after 10 and 30 days all the treated animals were free of invasion. In the production test, the efficacy of Elivec was cumulative with strongylatoses of the gastrointestinal tract of heifers: EE - 96.7%, IE - 98.86% and of Ganamectin EE - 95%, IE - 98.04%. In the course of the research, to differentiate invasive larvae of strongylatoses up to the genus, 20 samples of feces from the young were cultivated in a thermostat at a temperature of 26 °C for 10 days. Larvae of strongylatoses differed from each other in the number and shape of intestinal cells, as well as in the size of the larvae themselves and their tail end. In the examined samples, invasive larvae of gastrointestinal strangulation belonging to the genera *Trichostrongylus*, *Ostertagia* and *Bunostomum* were examined.

**Keywords:** Cattle; Treatment; Eprinomectin percutaneously; Intensefficacy

## Introduction

A large number of anthelmintics and other antiparasitic drugs have been proposed to combat parasitic diseases, but most of them act on one and only in some cases-on several types of parasites, especially on helminths of different classes [1,4]. Drugs of a wider spectrum of action are currently produced in limited quantities and most of them are produced not in Russia. In recent years, the efforts of many researchers have been aimed at finding new antiparasitic drugs, among which the Russian complex drug santomectin, which has a wide spectrum of action, deserves special attention. The active ingredients of this drug are ivermectin and closantel [5].

Of particular interest was the medicinal form of ivermectin-Ivomek pour-on, intended for cutaneous use against internal parasitosis in cattle, which showed high efficacy in reindeer. The drug at a dose of the active substance (DV) of 0.5mg/kg of body weight proved to be highly effective against the larvae of subcutaneous and nasopharyngeal gadflies, the extens effectiveness (EE) was 100%. In dictyoculosis and strongylatosis of the digestive tract, EE was 100%, nematodyrosis-80% [5]. In recent years, a new dosage form of eprinomectin-elivek, which has not been used in our country, has appeared on the market of veterinary drugs. The aim of the work was to study the effectiveness of the drug elivek for external use in the treatment of spontaneous internal parasitosis in cattle.

## Materials and Method

Studies to test the effectiveness of the drug elivek for external use in the treatment of internal parasitosis (helminthiasis) in cattle were conducted from April to July 2019 in the production conditions of the Moscow region, in 2 farms with helminthiasis problems after approval with veterinary services.

It should be noted that in the gastrointestinal tract of ruminants, a large number of nematode species from the suborder Strongylata, the family Strongylidae (genus *Chabertia*), Trichostrongilidae (genera *Trichostrongilus*, *Ostertagia*, *Cooperia*, *Haemonhus*, *Nematodirus*, *Mecistocirrus*, etc.), Trichonematidae (genus *Oesophagostomum*), Ancylostomatidae (genus *Bunostomum*).

At the first stage of the work, heifers and young animals of the last year of birth were selected for the experience. To establish their initial infection, 5-10g of fecal samples were taken from the rectum of each animal, followed by their placement in plastic containers. Parasitological studies of the samples taken were carried out in the conditions of the laboratory of Institute of Parasitology named after K. I. Scriabin for the presence of strongylates of the gastrointestinal tract and pulmonary strongylates by the methods of Darling and Berman-Orlov. The extensiveness and intensity of strongylatous invasion were established [2].

At the second stage, the effectiveness of a broad-spectrum antiparasitic drug, elivek, was tested. It is a solution for external use for the treatment and prevention of helminthiasis and arachnoentomosis in young cattle. The composition of the drug elivek includes the active substance eprinomectin-5mg/ml [3].

To conduct the experiment, 3 similar groups of heifers of 2.5-year-old Ayrshire breed of 12 heads with the same conditions of maintenance and feeding were formed from among the infected. In the first experimental group, animals were prescribed the drug elivek 0.5% by topical application to the skin in the withers at several points, in the back and lower back at a dose of 1ml per 10kg of animal weight once, which corresponds to 0.5mg of eprinomectin per 1kg of live weight. Animals from the second group were prescribed a well-known antiparasitic drug based on ivermectin-ganamectin 1% (base drug) at a dose of 1ml per 50kg of animal weight subcutaneously, which corresponds to 0.2mg of ivermectin per 1kg of weight. Animals of the third control group remained without treatment.

The assessment of the general condition of experimental animals and the tolerability of prescribing drugs was carried out according to the data of daily clinical observations for 7 days.

The effectiveness of treatment was evaluated based on the results of coproscopic studies of fecal samples using the combined Darling method 10 and 30 days after the administration of elivek and ganamectin.

The production test of the effectiveness of elivek for external use in the treatment of strongylatoses of the gastrointestinal tract was carried out on spontaneously invaded animals, and the effectiveness of the treatment was determined similarly to the previously noted method.

## Research Result

The conducted studies have shown the infestation of young cattle with strongylates of the digestive canal, parasitic protozoa-coccidia, buxtonella. All samples examined for the presence of

pulmonary strongylates by the Berman-Orlov method gave a negative result.

At the preparatory stage, 36 animals were selected from among the infected, which were divided into 3 similar groups of 12 heads. The average number of strongylate eggs of the digestive canal in 1g of feces before treatment ranged from 217 to 236 eggs.

Coproscopic studies conducted 10 and 30 days after treatment with elivek showed that all animals were free of eggs of strongylates of the digestive canal, EE was 100%. As well as animals treated with ganamectin, they were completely freed from the eggs of strongylates of the digestive canal, EE was equal to 100%.

The animals of the control group during the study remained infected with strongylates of the digestive canal at the indicated time, EI-100%. There was a slight increase in the average number of strongylate eggs in 1g of feces of animals of the control group from 217 to 243 eggs.

During the production test, fecal samples from 96 heifers of 1.5-2 years of age were examined using the Darling method and 50 animals infected with strongylates of the gastrointestinal tract were selected, the average number of strongylate eggs in 1g of animal feces of different groups ranged from 254 to 263 eggs. Young animals of the first group (n=30), based on their live weight, which ranged from 250 to 380kg, were prescribed or treated at a dose of 1ml per 10kg of body weight. Second group of animals (n=20) were prescribed the recommended dose of ganamectin at the rate of 1ml per 50 kg of weight subcutaneously once (the base drug).

The treatment of livestock with elivek and ganamectin was carried out with the participation of the veterinary staff of the farm.

The observations carried out during the treatments during the production test or century in comparison with ganamectin showed the absence of any complications. The animals tolerated the treatment by elivek well, whereas when they were injected with ganamectin, they had a painful reaction that passed without complications.

According to the results of parasitological tests after treatment, out of 30 animals of the first group who were prescribed elivek, no strongylates of the gastrointestinal tract were found in 29 eggs, the extensefficiency was 96.7%. The average number of strongylate eggs in 1g of feces in an infected animal was 3 eggs, hence the intensity efficiency of elivek pour-on was 98.86%. The ganamectin used as the base drug subcutaneously provided 95% extensefficiency, and the intensefficiency was 98.04%.

In the course of studies to differentiate invasive larvae of strongylates to the genus, 20 fecal samples from young animals were cultured in a thermostat at a temperature of 26 °C for 10 days. When examined under a microscope, 1-2 drops of 0.2% iodine solution were added to the slide to immobilize the larvae. The larvae of strongylates differed from each other in the number and shape of intestinal cells, as well as in the size of the larvae themselves and their tail end. The examined samples contained invasive larvae of

strongylates of the gastrointestinal tract belonging to the genera *Trichostrongylus*, *Ostertagia* and *Bunostomum*.

### Conclusion

The preparations elivek subcutaneously and ganamectin subcutaneously used by us in the production test for strongylatoses of the gastrointestinal tract of young cattle are highly effective, but due to the ease of use and the absence of stress in animals, elivek is preferable when prescribed.

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