



**Research Article**

## **EFFECTIVENESS OF SAROLANER AGAINST SARCOPTIC, OTODECTIC AND DEMODECTIC SCABIES IN NATURALLY INFESTED DOGS IN ARGENTINA**

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### **ABSTRACT**

Thirteen canines, naturally infested with sarcoptic, otodectic, or demodectic mange, of different breeds or mongrels, and of both sexes, were treated; a dermatological examination, analogous pruritus evaluation, and identification of lesions and the presence of ectoparasites were performed. The canines were treated with a sarolaner chewable tablet at a dose of 2 mg/kg (range 2–4 mg/kg). They were evaluated on days 14, 30, 44, and 60 post-treatment, and all patients showed significant improvement at the different evaluation days, showing no adverse effects.

#### **Key words:**

Dogs, ectoparasites, treatment, Isoxazolines

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### **INTRODUCTION**

Dogs can harbor a large number of ectoparasites of clinical and zoonotic importance (Ehlers *et al.*, 2020). For this reason, it is important that antiparasitic treatments are effective. Antiparasitic drugs used in dogs have evolved in terms of active ingredients (Beugnet and Franc, 2012). Some studies have evaluated the chemical compatibility, safety, and efficacy of sarolaner as a treatment for parasites such as *Sarcoptes Scabiei*, *Otodectes Cynotis* and *Demodex Canis* (Becskei *et al.*, 2016; Six *et al.*, 2016). Sarcoptic mange is a zoonotic disease caused by a burrowing mite, called *S.scabiei*, that affects dogs, cats, sheep, pigs, and humans. It is a contagious parasitosis, without predilection for sex or age, described as one of the most pruritic pathologies and usually produces secondary pyoderma, which further exacerbates the pruritus picture. Otodectic scabies is a pruritic pathology, very contagious and can be considered zoonotic; the causative agent is *O.cynotis*. It is located on the surface of the skin in the vertical and horizontal portion of the outer ear, although it can also be isolated from the skin of the head, neck, and tail of both dogs and cats. Demodectic mange is a parasitic inflammatory disease, caused by the presence of a higher-than-normal number of mites considered normal inhabitants of the skin (Muller and Kirk, 2013). Medications approved for the treatment of these conditions have varied over the years and include imidacloprid/moxidectin spot-on, selamectin, amitraz, macrocyclic lactones such as moxidectin and ivermectin, and recently isoxazolines. The objective of this report was to

evaluate the efficacy of sarolaner in dogs naturally infected with *S.scabiei*, *O.cynotis* and *D.canis*.

### **MATERIALS AND METHODS**

The present study was developed from February to September 2019 at the Centro Integral de Actividades Veterinarias, Argentina.

Thirteen naturally infested canines were treated: five with sarcoptic mange, four with ear mange, and four with demodectic mange, of different breeds or mongrels and of both sexes, older than 8 weeks of age and weighing more than 1.3 kg. They had not received treatment with ectoparasiticide during the 30 days prior to the start of the study, and those responsible signed the informed consent. All dogs underwent a dermatological examination, analogous evaluation of pruritus, and identification of lesions and the presence of ectoparasites using the following techniques: acetate test (Pereira *et al.*, 2012), deep and superficial skin scraping and swabbing (Diesel *et al.*, 2012) and trichogram (Marques *et al.*, 2013), as well as direct visualization of ectoparasites with a light source and magnifying glass. The itching visual analog scale used was that described by Hill *et al.* (2007). To evaluate itching, this scale was scored from 0 to 10: from 0, "no itching, scratching, chewing, rubbing or licking" to 10, "constant itching, scratching, chewing, rubbing or licking". The injury scale was scored by recording the clinical evaluation of 62 body sites; each sign was scored on a scale of 0–5 as follows: (0) none, (1) mild, (2–3) moderate, and (4–5) severe. In this evaluation the

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highest achievable score was  $62 \times 4 \times 5 = 1240$ . All dogs were evaluated on days 0, 14, 30, 44, and 60.

The animals that presented sarcoptic and otodectic mange were treated on days 0 and 30 with sarolaner chewable tablet (Simparica®) to provide the minimum recommended dose of 2 mg/kg (range 2–4 mg/kg). The animals presenting demodectic mange were treated in the same way on day 0 and every 30 days until obtaining two negative scrapings separated by 30 days.

In cases with secondary bacterial skin infections, the principal investigator evaluated the possibility of applying a shampoo containing chlorhexidine and miconazole. The dogs were kept in their homes, with walks, and the offer of food and water according to the usual management by the owner.

## RESULTS

The five dogs with sarcoptic mange and the four with ear mange presented a parasitological cure of 100% from day 14, with no evidence of parasitic forms in the evaluations on days 30, 44, and 60. Of the animals positive for demodectic mange treated with sarolaner, on day 14 of evaluation three of the four patients presented mites; the parasitological cure on day 14 was 25%, and by day 30 it was 50% (two positive patients). Parasitological cure was achieved from day 60, maintaining it until day 144 of the evaluation with four monthly applications of sarolaner.

The patients with sarcoptic mange presented on day 0 of the study erythema (80%), papules (60%), scabs (80%), alopecia (100%), and pruritus (100%). The clinical signs improved throughout the study. At day 60, the patients presented a decrease or absence of erythema (0%), papules (0%), scabs (20%, mild), alopecia (20%, mild), and pruritus (0%). Similar results were presented in canines with ear scabies: on day 0 of the study, 100%, 100%, 100%, and 75% of the patients presented erythema, inflammation of the external auditory canal, ear discharge, and pruritus, respectively. By day 30 post-treatment, 0%, 0%, 25% (mild in one ear) and 0% of patients showed erythema, inflammation of the external auditory canal, ear discharge, and pruritus, respectively, at day 60 of the study no patient presented clinical signs.

The clinical signs of demodectic mange improved throughout the study: At day 60, 0%, 0%, 0%, 0%, and 50% of the patients presented erythema, papules, comedones, pustules, and alopecia, respectively. On day 102 of the study, only one of the three patients who remained in treatment presented recurrent mild erythema. As of day 74, only one of the patients showed continued alopecia. This patient no longer had alopecia from day 130. After the final treatment (performed after obtaining two negative scrapings separated by 1 month), 0%, 0%, 0% and 0% of the patients presented erythema, papules, comedones, and pustules, respectively, until the final reading, which was carried out 60 days later. Alopecia was presented for a longer period, a 100% absence of this clinical sign being observed in all cases at day 60 after the final treatment (the day the patient was discharged). No adverse reactions were observed in any of the patients involved in the study.

## CONCLUSION

Oral treatment with sarolaner, administered at a dose of 2–4 mg/kg, was safe and effective against sarcoptic mange (*Sarcoptes scabiei*), ear scabies (*Otodectes cynotis*) and demodectic mange (*Demodex canis*), in naturally infested canines, with decreasing clinical signs, pruritus, and the presence of parasites with no adverse effects being presented.

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