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Evaluation of the Efficacy of an Imidacloprid 10% / Moxidectin 2.5% Spot-on against *Sarcoptes scabiei* var *canis* on Dogs

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OBJECTIVES

The objectives of the study were firstly to determine whether two treatments with a novel formulation of Imidacloprid 10% plus Moxidectin 2.5%, administered four weeks apart, would be effective against *Sarcoptes scabiei* var *canis* on dogs. Secondly to compare the results with that of a positive control group of dogs treated with Selamectin.

STUDY DESIGN AND METHODS

This study was performed in compliance with VICH GL9 "Good Clinical Practice, June 2000" at ClinVet International (Pty) Ltd, situated in Bloemfontein, Republic of South Africa. Thirty dogs naturally infested with *Sarcoptes scabiei* var *canis* were allocated to two groups of 15 dogs each, according to randomisation through minimization with Day –1 body weight as primary criterion. One group was treated with the Imidacloprid/ Moxidectin Spot-on at 0.1 ml/kg body weight and the second group with Selamectin (Stronghold®) at 0.05 ml/kg (6 mg/kg) body weight. Treatments were blinded and were administered as topical applications on Day 0 and + 28. All the dogs were housed individually in pens, under strict quarantine conditions and no contact between the dogs was possible.

The presence or absence of mites was assessed by taking skin scrapings from five body regions suspected of being infested on each dog, and mite counts were done on these. Clinical symptoms and the extent of sarcoptic lesions and pruritus were assessed and recorded. Comprehensive photographic documentation was done (Fig. 1). The schedule followed is summarized in Table 1.

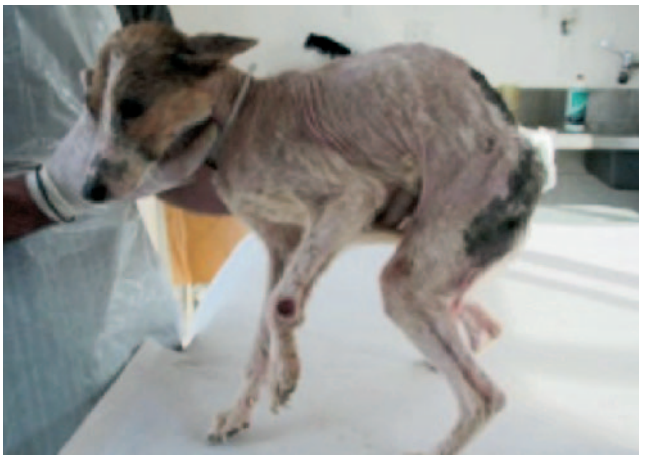
The primary assessment variable used in this study was the presence or absence of live mites or eggs on the dogs on each assessment day following treatment. The success rate for each group was calculated as follows:

$$\text{Success rate (\%)} = \frac{x}{y} \cdot \frac{100}{1}, \text{ where}$$

x = number of dogs observed with no live mites / eggs
y = total number of dogs in the group

Due to the nature and uncertainty factor of the mite count assessment, false negatives could have been recorded, resulting in an overestimation of the success rate. Consequently, clinical symptoms as well as the frequency of pruritus were used to confirm the success rate described above. The above-mentioned parameters were used to categorize a dog as an "overall success" or "failure". An overall success in terms of treatment was defined as a dog who complied with all of the >>

Fig. 1 A dog naturally infested with *Sarcoptes scabiei* var *canis* before (Day –3) (left) and after (Day +50) (right) treatment (Imidacloprid 10% / Moxidectin 2.5% applied four weeks apart at a dose of 0.1 ml/kg body weight)



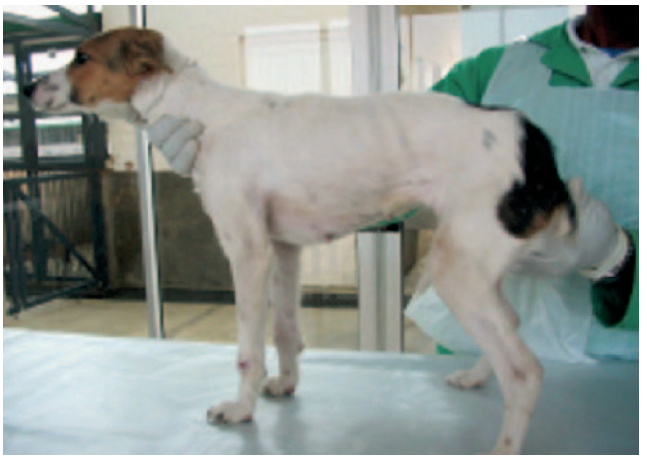


Table 1 Synoptic overview of the study layout

* Only five dogs retained for extended periods of observation

Acclimatization	Allocation to Groups	Treatment	Pre- and Post-treatment assessments		
			Pruritus Index	Mite counts and clinical assessments	Photographic Documentation
Day –7	Day –1	Day 0; Day + 28	Day –1; +7; +21; +35; +42; +57*; +63*	Day –3; +8; +22; +36; +50; +64*	Day –3; +22; +50; +64*

Table 2 Summary of the treatment and overall treatment success rates (%) for the study groups

* Pooled data for Days +50 and +64

	Group 1: Treated with Selamectin			Group 2: Treated with Imidacloprid/Moxidectin		
	Day +22	Day +50	Day +64*	Day +22	Day +50	Day +64*
Treatment Success rate (%)	100	100	100	100	100	100
Overall Treatment Success rate (%)	6.7	66.7	66.7	7.1	92.9	100

following conditions: No live mites or eggs; a complete resolution of papules and crusts as assessed on Day +22 and +50 or +64; a marked (> 80%) reduction in body areas showing alopecia; and the frequency of pruritus not consistently high.

RESULTS

The treatment success rate and overall treatment success rate for the two study groups are summarized in Table 2. On Day +8 *S. scabiei* was found in skin scrapings of two dogs treated with the Imidacloprid / Moxidectin solution and of three dogs treated with Selamectin. From Day +22 and onwards, no *S. scabiei* mites were detected in the skin scrapings of any of the dogs, giving 100% treatment success rates for both groups. Based on the criterion defined above, 7.1%, 92.9% and 100% of the dogs treated with the Imidacloprid / Moxidectin solution were categorized as an overall success in terms of treatment on Days +22, +50 and +64, respectively. Five dogs in the Selamectin treated group displayed prominent alopecia and two of these displayed localized areas with crusts on Day +64. Three of these dogs were infested with *Demodex* spp. mites, which may have been the cause of the alopecia.

CONCLUSION

The Imidacloprid / Moxidectin solution applied twice (four weeks apart) at a dosage of 0.1 ml/kg body weight, was highly efficacious in curing *Sarcoptes scabiei* var *canis* infestations on all the treated dogs, and resulted in an almost complete resolution of clinical symptoms within 50 to 64 days after the first treatment.