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Effect of Selamectin in feline sarcoptic mange of Wayanad district, Kerala

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Abstract

Mange is a common dermatological infection in felines. It is contagious and could be transmissible to human beings. The majority of the infectious dermatological condition in felines is related to mite mainly *Notoedres cati*. Cats presented with clinical signs of mange such as pruritus, erythema, scabs, alopecia, hyperpigmentation were selected for the study. The skin scrapings examination was carried out. As per the results of skin scrapings, the range of infection was graded as per the plus system of microscopy. Twelve cats positive for *Notoedrus* mites were treated with Selamectin as spot on behind the neck at the rate of 6 mg/kg body weight. On the first day of presentation, three cats were heavily (++++) infected (25%), four cats were moderately (+++) infected, three cats were comparatively less infected (++) , and two cats were less infected (+) with *Notoedrus* mites. After the first week, the animals showed marked recovery and six cats showed negative results in skin scrapings examination. During the second week, ten cats were recovered with negative skin scrapings results. By third week almost all the scabs were healed and by fourth week all the cats were clinically recovered.

Keywords: Selamectin, cat, *Notoedrus cati*, treatment

Introduction

Mange is a common infectious dermatological disease in animals. Some mange infections are zoonotic. There is a vast variety of mites, which are arthropods that comes under class Arachnida. There are more than fifty thousand species in this class. Subclass acari comprises two major lineages, parasitiforms and acariforms. Trombidiformes and Sarcoptiformes lineages within the Acariformes contain mange mites. Trombidiformes includes the major suborder Prostigmata, which contains many families, five of which contain mange mites. Sarcoptiformes Psoroptidia contains mange mites (OIE manual 2019) [9].

The majority of the infectious dermatological condition in felines in Kerala is related to mites mainly *Notoedrescati* (Kumar *et al.* 2013). Feline scabies seems to be a highly contagious disease of dermatological importance. Ivermectin is extensively used against this condition. But increasing resistance and a great level of contraindications cause more limitations to the usage of this medicine. Selamectin is a semi-synthetic antiparasitic drug of avermectin group. This is structurally similar to ivermectin but fewer contraindications and greater safety make selamectin an ideal drug to treat cats with scabies and other parasitic skin disorders (Bishop *et al.* 2000) [1].

Hence the present study aims to study the effect of Selamectin against mite origin skin disorders in domestic cats of Wayanad.

Materials and Methods

The present study was carried out in the Department of Veterinary Epidemiology and Preventive Medicine, between May 2018 and April 2019. A total of twelve crosses bred cats presented at Teaching Veterinary Clinical Complex, CVAS, Pookode, Wayanad district affected skin disorders showing the clinical signs of pruritus, erythema, scabs, alopecia, and hyperpigmentation were selected for the study. Skin scrapings were collected and microscopical examination of skin scrapings was done to identify mite. Grading of infection was done as per Plus System represented in Table 1 (Kosacket *al.* 2013) [5].

Procedure: The area to be scraped should be free of hair or clipped to remove excess hair. The skin should be squeezed gently and released. A few drops of mineral oil are placed on a glass slide. It is helpful to scoop some of the oil onto the blade prior to scraping, as the oil helps scale and debris to adhere to the blade.

The surface of the skin is then gently scraped while holding the blade perpendicular to the skin surface to avoid excessive trauma. Each scraping should cover an area of approximately 1.5 x 1.5 cm. The material collected is transferred from the blade to the slide and examined under 10x objective and 40x objective of a microscope.

Treatment: Topical application of Revolution® (Selamectin) at a rate of 6mg per kg body weight is applied to the skin behind the neck region as a single dose. If necessary repeated after one month. Nutricat advance syrup one tsp BID orally for one month was also given. Weekly skin scraping examination was done to identify recovery.

Table 1: Grading of mite infestation

No of mites per Microscopic field at 40x Magnification	Interpretation
>10 per field	++++
1-10 per field	+++
10-99 per 100 fields counted	++
1-9 per 100 fields counted	+
0 per 100 fields counted	-

Results and Discussion

Severe scabs were the lesions when cats were presented to the clinic. Anorexia and tiredness were also observed. No abnormalities in body temperature were observed. Skin scrapings examination showed positive results of *Notoedrus* mites.



First Week

Second week

Third week

Fourth Week

Within the first week of treatment, clinical signs were alleviated. Results of diagnosis and treatment are depicted in table 2. and Chart 1

Table 2: +++++ : >10 per field, +++: 1-10 per field, ++: 10-99 per 100 field counted, and +: 1-9 per 100 field counted, -: 0 9 per 100 field counted.

ID Number	1 st Day	1 st Week	2 nd week	3 rd week	4 th week	Interpretation
1	++++	++	+	-	-	Negative since 4 th week
2	+++	+	-	-	-	Negative since 3 rd week
3	+++	++	-	-	-	Negative since 3 rd week
4	++++	+	-	-	-	Negative since 3 rd week
5	++	-	-	-	-	Negative since 2 nd week
6	+++	+	-	-	-	Negative since 3 rd week
7	+	-	-	-	-	Negative since 2 nd week
8	+++	-	-	-	-	Negative since 2 nd week
9	++++	++	+	-	-	Negative since 4 th week
10	++	-	-	-	-	Negative since 2 nd week
11	++	-	-	-	-	Negative since 2 nd week
12	+	-	-	-	-	Negative since 3 rd week

On the first day of presentation, skin scrapings results of three cats were +++++ for *Notoedrus* (25%), four cats were +++ for *Notoedrus*, three cats were ++*Notoedrus*, and two cats were + *Notoedrus*. The first week itself marked recovery was observed, six cats showed negative results on skin scrapings

examination. During the second week, ten cats were recovered with negative skin scrapings results. Review testing during the third week all the cats showed negative results on skin scrapings examination. The pattern of recovery is represented in chart 1.

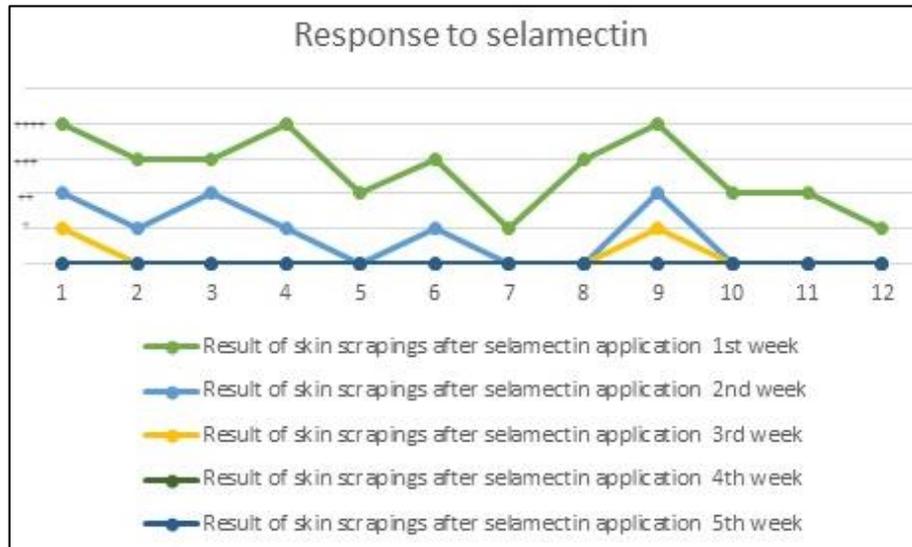


Table 1.

Selamectin irreversibly binds to glutamate-gated chloride channels in the nervous system of mites which leads to the continuous opening of the channels. This causes an increased concentration of chloride ion in the nerve cell and prevents neurotransmission and causes hyperpolarization. But Selamectin doesn't have much effect in mammals so it is safe (Gupta *et al*, 2019)^[4]. This may be the reason for the safety of drugs in the current study even in pregnant animals as two out of twelve cats were pregnant and no adverse effects were observed.

Conclusion

In Wayanad, a district of Kerala, cat mange is mostly caused by *Notoedrus* mites. Severe scab lesions in affected skin area and severe itching is the typical skin lesion in this condition. In the current study, twelve cats with scab lesions were selected for selamectin treatment. On the first day of presentation, skin scrapings results of three cats were ++++ for *Notoedrus* (25%), four cats were +++ for *Notoedrus*, three cats were ++ *Notoedrus*, and two cats were + *Notoedrus*. First-week itself marked recovery was observed, six cats showed negative results in skin scrapings examination. During the second week, ten cats were recovered with negative skin scrapings results. Review testing during the third week all the cats showed negative results on skin scrapings examination. Single-dose of Selamectin was enough to control mange in all the twelve cats. Comparing with Ivermectin, selamectin is safe and can be easily applied to the skin. In conclusion, selamectin can be used in cats to control *Notoedrus* mites with fewer side effects even in the time of pregnancy.

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