Journal of Research in Chemistry

E-ISSN: 2709-9423
P-ISSN: 2709-9415
JRC 2022; 3(1): 24-26

www.chemistryjournal.net
Received: 02-10-2021
Accepted: 06-12-2021

P Sree Krishna Sai
MVSc Scholar, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Devadevi N
Assistant Professor, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Rajkumar K
Professor and Head, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Abiramy Prabavathy A
Professor, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Vijayalakshmi P
Professor and Head, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Vijayalakshmi V
MVSc Scholar, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Corresponding Author:
P Sree Krishna Sai
MVSc Scholar, Department of Veterinary Medicine, Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Pondicherry, India

Efficacy of oral fluralaner in the treatment of canine generalized demodicosis

P Sree Krishna Sai, Devadevi N, Rajkumar K, Abiramy Prabavathy A, Vijayalakshmi P and Vijayalakshmi V

DOI: https://doi.org/10.22271/reschem.2022.v3.i1a.53

Abstract
The aim of the study was to assess the effectiveness of the fluralaner in the treatment of canine generalized demodicosis. Dogs presented with skin lesions were subjected to detailed clinical examination, skin scraping subjected for microscopic examination. Dogs turned positive for *Demodex* species were treated with single oral dose of fluralaner @ 30 mg/ kg body weight. After four weeks of treatment, the dogs showed complete clinical recovery and successive skin scraping was negative for mite infestation. Treatment with fluralaner gave 100 per cent recovery in canine generalized demodicosis and clinically no adverse effect was recorded.

Keywords: Generalized demodicosis, fluralaner and dogs

Introduction
Demodicosis is an intense puritic and severe inflammatory parasitic disease affecting the hair follicle and sebaceous glands of the skin of the dogs (Mueller *et al*., 2020) [6]. *Demodex* is a cigar shaped and eight legged parasite under microscopic examination. Common species of demodex affecting dogs are *Demodex canis*, *Demodex cornei*, and *Demodex injai* (Fourie *et al*., 2015) [2]. It is a normal commensal on canine skin, highly proliferating and producing generalized disease in immunocompromised dogs irrespective of breed, sex and age (Shipstone, 2000) [8]. Clinical signs of generalized demodicosis were defined as more then five infected areas or pododemodicosis involving two or more feet or an entire body region (Petersen *et al*., 2020) [1]. The drugs of choice for the treatment of canine demodicosis are ivermectin and amitraz (Scott *et al*., 1995) may cause decrease in the recovery rate. Fluralaner is a systemic insecticide and acaricide belonging to the isoxazoline class of parasiticide group which inhibits γ-aminobutyric acid (GABA)-gated chloride channels ($GABA_A$ receptors) and L-glutamate-gated chloride channels (GluCls) in the parasites that potently inhibit the arthropod nervous system resulting in paralysis and death of ticks, mites and fleas and is administered as single dose orally for the treatment of canine demodicosis (Mueller *et al*., 2020) [6]. Hence, the study was conducted to assess the efficacy of oral fluralaner as an alternative drug in the treatment of canine generalized demodicosis.

Materials and Methods
Dogs presented to Small Animal Medicine Unit, Veterinary Clinical Complex of Rajiv Gandhi Institute of Veterinary Education and Research Puducherry with the history and clinical manifestations of skin disease were subjected to detailed dermatological examination and skin scraping examination. Clincal signs and dermatological examination revealed presence of persistent pruritus, alopecia, greasy seborrhoeic dermatitis on the dorsal trunk and erythematous lesions all over the body (Fig.1&3). Skin scrapings were taken from the affected sites and subjected to microscpoic examination. Microscopic examination of the skin scraping which were positive for *Demodex canis* were included under study (Fig.2). *Demodex canis* was identifed based on the morphology described by Fourie *et al*., (2015) [2]. The generalized demodecosis dogs were treated with single dose of oral fluralaner (Bravecto™) @ 30 mg/kg body weight. Secondary bacterial infection of skin was treated with Tab. Cephalexin (Lixen palatable™) @ 15 mg/kg body weight twice daily for one week, oral skin and coat vitalizer (Vitabest derm™) 10 ml SID PO to improve skin immunity and hair growth and shampoo benzoyl peroxide (Petben™) was used to reduce the secondary bacterial infection and cleanse the hair follicle and sebaceous glands of the skin.

Animals were subjected to detailed dermatological investigation and succesive skin scraping examination which was carried out on 8th and 12th week of post treatment.

Result and Discussion

The study was conducted over a period of 3 months with evaluation of about 89 dogs with dermatological lesions which were presented to the Small Animal Medicine Unit of Veterinary Clinical Complex, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry suspected for demodicosis. Upon microscopic examination of skin scrapings on 89 suspect dogs for Demodex mite infestation, nine were found positive for *Demodex spp*., out of which six were given single oral dose of fluralaner @ 30mg/kg b.wt.

Dogs with generalized demodicosis almost always may be associated with secondary bacterial infection and hence a course of antibiotic may become essential is addition to fluralaner for the effective management of demidicosis infection in dogs. Proliferation of mites within hair follicle interferes with normal flushing mechanisms of follicles and predisposes to bacterial infection predominantly with *Staphlococcus intermedius*. Predominant skin lesions observed in demodicosis was erythematous papular eruption with alopecia, pruritis, greasy seborrhea, crusty lesions and secondary pyoderma (Petersen *et al*., 2020) [1] which is in agreement with the present study. Morphology of *Demodex canis* is longer than *Demodex cornei* but shorter than *Demodex injai* and this species majorly may differ in their length. Mite identified in the present study was *D. canis* which is concurrance with Fourie *et al*., 2015 [2].

Fig 1: Dog showing Erythematous lesions with alopecia in generalized demodicosis.

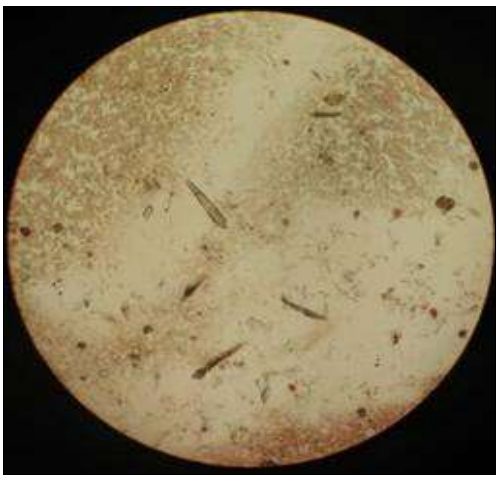

Fig 2: Cigar shaped Demodex canis mite under 10X

Fig 3: Dog showing Greasy seborrhea on dorsal trunk

Fluralaner is a novel systemic ectoparasiticide for dogs providing long protection Aganist flea and tick control after a single oral dose. In the present study, the dog were treated with fluralaner @ 30mg/kg bw orally as single dose was found to be effective in the treatment of generilazed demodicosis which is agreement with Matricoti, 2017 [3]. Taenzlar *et al*., 2014 [9] reported that the animals showed clinical improvement within two weeks of post treatment and skin srapings were negative for demodex on four, eight and tweleth weeks which is in agreement with the present study (Fig4A&4B). Scott *et al*., 2001[7] reported that benzyl peroxide shampoo are often recommended for demodicosis because of their keratolytic and follicular flushing activity.

In the present study, the efficacy of oral fluralaner in the treatment of generalized demodicosis was found to be 100 per cent effective as also reported by Duangkaew *et al*. (2018) [4]. All the dogs very well tolerated oral fluralaner therapy and clinically no adverse effects have been noticed during entire course of treatment which is agreement with Petersen *et al*., 2020 [1].

Fig 4A: Dogs with generalized demodicosis before treatment

Fig 4B: Dogs showing complete recovery after fluralaner treatment (Day 84)

Conclusion

The present results are, however, encouraging that the administration of fluralaner chewable tablets offers the potential to provide sustained control of *Demodex* mite infestation in suspected dogs for at least three months after a single treatmentt

Acknowledgements

The authors are grateful to the Dean, Rajiv Gandhi Institute of Veterinary Education, Puducherry and Head, Department of Veterinary Medicine for providing necessary facilities of the work.

References

1. Ivo Petersen, Rafael Chiummo, Eva Zschiesche, Joanna Karas-Tecza, Dhimiter Rapti, Rainer Roepke, *et al*. A European feld assessment of the efficacy of furalaner (Bravecto®) chewable and spot-on formulations for treatment of dogs with generalized demodicosis. Parasites and Vectors. 2020;13:304.
2. Fourie JJ, Julian E Liebenberg, Ivan G Horak, Janina Taenzler, Anja R Heckeroth, Regis Frénai. Efficacy of orally administered fluralaner (Bravecto TM) or topically applied imidacloprid/moxidectin (Advocate®) against generalized demodicosis in dogs. Parasites and Vectors. 2015;8:187.
3. Matricoti I, Maina E. The use of oral fluralaner for the treatment of feline generalized demodicosis: a case report. Journal of Small Animal Practice. 2017;58(8):476-479.
4. Duangkaew L, Lawan Larsuprom, Pojnicha Anukkul, Chalermpol Lekcharoensuk, Charles Chen. A field trail in Thailand of the efficacy of oral fluralaner for the treatment of dogs with generalized demodicosis. Veterinary Dermatology. 2018;29(3):208-74.
5. Dzikri Nurma'rifah Takariyanti, I Wayan Gorda, Palagan Senopati Sewoyo. Treatment of transmissible venereal tumor without metastasis in mixed local Balinese dog by surgery and vincristine sulfate: A case report. Int J Vet Sci Anim Husbandry 2021;6(3):25-29.
6. Mueller RS, Wayne Rosenkrantz, Emmanuel Bensignor, Joanna Karas-Tecza, Tara Paterson, Michael A Shipstone. Diagnosis and treatment of demodicosis in dogs and cats. World Association for Veterinary Dermatology. 2020;31:4-e2.
7. Scott DW, Miller WH, Griffin CE. Dermatologic therapy. In: Mueller and Kirks Small Animal Dermatology. Edn 6, W.B Saunders, Philadelphia, 2001.
8. Shipstone M. Generalized demodicosis in dogs, Clinical perspective. Aust. Vet. J. 2002;78:240-42.
9. Taenzler J, Christina Wengenmayer, Heike Williams, Josephus Fourie, Eva Zschiesche, Rainer, *et al*. Onset of activity of fluralaner (BRAVECTO) against Ctenocephalides felis on dogs. Parasites and vectors. 2014;7(1):1-4.