

Case Report Rapport de cas

Oral fluralaner as a treatment for *Demodex aurati* and *Demodex criceti* in a golden (Syrian) hamster (*Mesocricetus auratus*)

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Abstract — A 16-month-old male hamster was diagnosed with generalized demodicosis with both *Demodex aurati* and *Demodex criceti* and was treated successfully with oral fluralaner at a dose of 25 mg/kg body weight that was repeated on day 60. After the first dose, there was a rapid improvement of the skin lesions, and negative skin scrapings were obtained on day 30. To the author's knowledge, this is the first published report of the use of an isoxazoline to treat demodicosis in a hamster. A single dose long-acting oral drug is advantageous as it reduces stressful handling for pets and owners.

Résumé — Fluralaner oral pour le traitement de *Demodex aurati* et *Demodex criceti* chez un hamster (Syrien) doré (*Mesocricetus auratus*). Un hamster mâle âgé de 16 mois fut diagnostiqué avec une démodécie généralisée à *Demodex aurati* et *Demodex criceti* et fut traité avec succès avec du fluralaner oral à un dosage de 25 mg/kg de poids corporel et qui fut répété au jour 60. Après la première dose, il y eut une amélioration rapide des lésions cutanées, et des grattages cutanés négatifs furent obtenus au jour 30. À la connaissance de l'auteur, il s'agit du premier rapport publié sur l'utilisation d'un isoxazoline pour traiter la démodécie chez un hamster. L'administration d'une dose unique par voie orale d'un médicament à longue action est avantageuse car elle réduit la manipulation stressante pour les animaux et leur propriétaire.

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Case description

A 16-month-old male Syrian hamster was presented to Centre Vétérinaire DMV-Montreal with a history of non-pruritic progressive extensive hair loss affecting the dorsal aspect of the left shoulder and the cervical area for a few weeks. The hamster was the only animal in the household and no zoonotic event was reported. The hamster seemed otherwise healthy with a normal appetite and a normal activity level, and did not present obvious polyuria or polydipsia. No medications had been administered.

On dermatological examination, the hamster had an extensive alopecic area with mild erythema and scaling affecting the left shoulder, the dorsal part and left lateral aspect of the neck up to the left ear (Figure 1). The hamster did not have ear secretion or other skin abnormalities.

Diagnostic tests were performed to investigate common differential diagnoses such as dermatophytosis (*Trichophyton mentagrophytes*, *Microsporum* spp.), bacterial pyoderma, and ectoparasite infestations (1,2). Wood's lamp examination and dermatophyte test medium (DTM) fungal culture were both negative. Cytology samples were evaluated to determine if infectious agents were present. Glass slides were stained with modified Wright's stain (Dip Quick; Jorvet, Loveland, Colorado,

USA) and showed only corneocytes and rare cocci-shaped bacteria. Trichograms and superficial skin scrapings taken with mineral oil confirmed the presence of several *Demodex aurati* and few *Demodex criceti* adult mites. No other life stages (eggs or larval forms) were found.

The hamster was treated with fluralaner (BRAVECTO; Merck Canada, Kirkland, Québec), 25 mg/kg body weight (BW), PO, on day 0. A 112.5-mg canine tablet was fragmented and the 3.3 mg dose required for treatment (0.13 kg BW × 25 mg) was obtained with careful weighing on a laboratory precision scale (Radwag WLC.X2, Radom, Poland). The fluralaner portion was voluntarily eaten by the animal during its regular meal. A follow-up visit was done on day 30 during which skin scraping and trichograms failed to reveal any *Demodex* mites. On dermatological examination, the skin lesions were greatly improved: erythema and scaling had resolved, and a moderate hair regrowth was seen (Figure 2). A second 3.3 (25 mg/kg BW) dose of fluralaner was given orally on day 60. Again, the animal voluntarily ate the drug. E-mail follow-ups with photographs were sent by the owner on days 60, 90, and 120. Complete hair regrowth was observed on day 60 without any sign of recurrence

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Figure 1. Appearance of the hamster on presentation (day 0). There is an extensive alopecic area with mild scaling affecting the left shoulder, the dorsal neck, and behind the left ear.

after that. No adverse effects were observed by the veterinarian and the owner during this period.

Discussion

Demodex criceti and *D. aurati* are the 2 species of *Demodex* reported in Syrian hamsters. *Demodex criceti* is a short-bodied mite that lives in the superficial layer of the epidermis. *Demodex aurati* is a longer bodied mite that lives in pilosebaceous units. Both species can be found on healthy hamsters, although they can also be implicated in clinical infections. *Demodex aurati* is the species implicated most commonly in demodicosis (1,2). To the author's knowledge, mixed demodectic infestation with both mite species has only been reported in 1 Syrian hamster (3). Lesions typically affect the dorsal aspect of the animal and are characterized by alopecic nonpruritic and scaling areas. Clinical demodicosis in hamsters is classically associated with underlying immunosuppressive conditions such as hyperadrenocorticism, neoplasia, kidney or liver disease, inadequate environment/nutrition or even aging (1,2). In the present case, the owner declined further investigation to research an underlying disease and thus it cannot be completely ruled out. However, the patient did not display any classical sign of hyperadrenocorticism (polyuria, polydipsia, polyphagia, pot-bellied appearance, bilateral symmetrical alopecia or cutaneous hyperpigmentation) (2,4).



Figure 2. Appearance of the hamster on day 30. There is significant improvement of skin lesions and moderate hair regrowth.

The hamster was considered elderly, but did live in an environment that was cleaned daily.

Several treatments are suggested to treat clinical demodicosis in hamsters: topical amitraz, topical selamectin, benzoyl peroxide shampoos, and oral, subcutaneous, or topical ivermectin (1,2). All these treatments require multiple applications or administrations. A long-acting oral drug such as fluralaner, which can be given only once, provides an advantageous alternative to reduce stressful handling for both pets and owners. Fluralaner is an isoxazoline insecticide and acaricide that acts on the γ -aminobutyric acid (GABA) and L-glutamate chloride channels (5). It is licensed in Canada for the treatment and control of flea and tick infestations at a minimum dose of 25 mg/kg BW for dogs and 40 mg/kg BW for cats. Its efficacy has also been reported in the treatment of several other types of mite infestations in dogs and cats including demodicosis (6–14). Its safe use and efficacy have also been reported in rabbits, guinea pigs, mice, and pygmy African hedgehogs (15–17). However, to the author's knowledge, this is the first report of the use of fluralaner in hamsters.

Since no investigations were done to find an underlying immunosuppressive condition and given the advanced age of the patient, we could expect a possible relapse of clinical demodicosis in the future. For those reasons and because serial follow-up visits were impractical for the owner, a second dose of fluralaner was given to the patient. At the time of writing, no sign of recurrence was observed 4 mo after the initial diagnosis.

This case report describes an unusual case of mixed demodectic infestation with *D. criceti* and *D. aurati* that was successfully

treated with fluralaner. It is also the first published report of a hamster treated with an isoxazoline. A single oral dose provides the significant advantage of reducing stressful handling for both pets and owners. Further prospective and controlled studies are indicated to document the efficacy and safety of fluralaner in hamsters for the treatment of demodicosis and other ectoparasites.

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