

Effective Treatment of Snake Mites

Sara J. Sokolik, DVM
Dan H. Johnson, DVM, DABVP (ECM)
Avian and Exotic Animal Care
Raleigh, North Carolina

In the literature

Fuantes Gámez BA, Romero Núñez C, Sheinberg Waisburd G, et al. Successful treatment of *Ophionyssus natricis* with afoxolaner in two Burmese pythons (*Python molurus bivittatus*). *Vet Dermatol*. 2020;31(6):496-e131.

FROM THE PAGE ...

Ophionyssus natricis is a common mite that affects captive snakes. Mite infestations can lead to irregularities in the scales, dysecidysis, anemia, and clinical signs such as lethargy and decreased appetite. *O natricis* may also be a vector for the arenavirus responsible for boid inclusion body disease.¹ Mites can be transmitted via direct contact with infested snakes or soiled substrate and furniture. Previously documented treatment options included pyrethrins and pyrethroids, fipronil, selamectin, and ivermectin; however, these therapies have associated risks and limitations and may not be recommended for every patient.

Afoxolaner is a commonly used oral treatment for fleas and ticks in dogs. This study evaluated the effectiveness of afoxolaner in the treatment of 2 Burmese pythons with *O natricis* mite infestation. Both snakes were treated with a single dose of afoxolaner (2 mg/kg body weight PO) through an orogastric tube. There was no evidence of live *O natricis* in either snake within 3 days, indicating rapid onset of action. Dead mites were found in the snake enclosures for up to 30 days. No adverse effects were observed.

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IMOXI™ Topical Solution for Dogs and for Cats (imidacloprid + moxidectin)

BRIEF SUMMARY: Before using IMOXI™ Topical Solution for Dogs (imidacloprid + moxidectin) or IMOXI™ Topical Solution for Cats (imidacloprid + moxidectin), please consult the product insert, a summary of which follows:

CAUTION: Federal (U.S.A.) Law restricts this drug to use by or on the order of a licensed veterinarian.

IMOXI™ Topical Solution for Dogs:

WARNING

- **DO NOT ADMINISTER THIS PRODUCT ORALLY**
 - For the first 30 minutes after application ensure that dogs cannot lick the product from application sites on themselves or other treated animals.
 - Children should not come in contact with application sites for two (2) hours after application.
- (See Contraindications, Warnings, Human Warnings, and Adverse Reactions, for more information.)

INDICATIONS:

IMOXI™ Topical Solution for Dogs is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis* and the treatment of *Dirofilaria immitis* circulating microfilariae in heartworm-positive dogs. IMOXI™ Topical Solution for Dogs kills adult fleas and is indicated for the treatment of flea infestations (*Ctenocephalides felis*). IMOXI™ Topical Solution for Dogs is indicated for the treatment and control of sarcoptic mange caused by *Sarcoptes scabiei* var. *canis*. IMOXI™ Topical Solution for Dogs is also indicated for the treatment and control of the following intestinal parasites species: Hookworms (*Ancylostoma caninum*) (*Uncinaria stenocephala*), Roundworms (*Toxocara canis*) (*Toxascaris leonina*) and Whipworms (*Trichuris vulpis*).

IMOXI™ Topical Solution for Cats is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*. IMOXI™ Topical Solution for Cats kills adult fleas (*Ctenocephalides felis*) and is indicated for the treatment of flea infestations. IMOXI™ Topical Solution for Cats is also indicated for the treatment and control of ear mite (*Otodectes cynotis*) infestations and the intestinal parasites species Hookworm (*Ancylostoma tubaeforme*) and Roundworm (*Toxocara cati*).

CONTRAINDICATIONS:

Do not administer this product orally. (See WARNINGS)
Do not use the Dog product (containing 2.5% moxidectin) on cats.

WARNINGS:

IMOXI™ Topical Solution for Dogs: For the first 30 minutes after application: Ensure that dogs cannot lick the product from application sites on themselves or other treated dogs, and separate treated dogs from one another and from other pets to reduce the risk of accidental ingestion.

Ingestion of this product by dogs may cause serious adverse reactions including depression, salivation, dilated pupils, incoordination, panting, and generalized muscle tremors.

In avermectin sensitive dogs,^a the signs may be more severe and may include coma and death.^b

^a Some dogs are more sensitive to avermectins due to a mutation in the MDR1 gene. Dogs with this mutation may develop signs of severe avermectin toxicity if they ingest this product. The most common breeds associated with this mutation include Collies and Collie crosses.

^b Although there is no specific antagonist for avermectin toxicity, even severely affected dogs have completely recovered from avermectin toxicity with intensive veterinary supportive care.

IMOXI™ Topical Solution for Cats: Do not use on sick, debilitated, or underweight cats. Do not use on cats less than 9 weeks of age or less than 2 lbs. body weight.

HUMAN WARNINGS: Not for human use. Keep out of the reach of children. Dogs: Children should not come in contact with the application sites for two (2) hours after application. Cats: Children should not come into contact with the application site for 30 minutes after application.

Causes eye irritation. Harmful if swallowed. Do not get in eyes or on clothing. Avoid contact with skin. Exposure to the product has been reported to cause headache; dizziness; and redness, burning, tingling, or numbness of the skin. **Wash hands thoroughly with soap and warm water after handling.** If contact with eyes occurs, hold eyelids open and flush with copious amounts of water for 15 minutes. If eye irritation develops or persists, contact a physician. If swallowed, call poison control center or physician immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or physician. People with known hypersensitivity to benzyl alcohol, imidacloprid or moxidectin should administer the product with caution. In case of allergic reaction, contact a physician. If contact with skin or clothing occurs, take off contaminated clothing. Wash skin immediately with plenty of soap and water. Call a poison control center or physician for treatment advice. The Safety Data Sheet (SDS) provides additional occupational safety information. To report suspected adverse drug events, for technical assistance or to obtain a copy of the SDS, contact Vetoquinol USA at 1-800-835-9496.

PRECAUTIONS:

Do not dispense dose applicator tubes without complete safety and administration information. Use with caution in sick, debilitated, or underweight animals. The safety of IMOXI™ Topical Solution for Dogs has not been established in breeding, pregnant, or lactating dogs. The safe use of IMOXI™ Topical Solution for Dogs has not been established in puppies and dogs less than 7 weeks of age or less than 3 lbs. body weight.

Cats may experience hypersalivation, tremors, vomiting and decreased appetite if IMOXI™ Topical Solution for Cats is inadvertently administered orally or through grooming/licking of the application site. The safety of IMOXI™ Topical Solution for Cats has not been established in breeding, pregnant, or lactating cats. The effectiveness of IMOXI™ Topical Solution for Cats against heartworm infections (*D. immitis*) after bathing has not been evaluated in cats. Use of this product in geriatric patients with subclinical conditions has not been adequately studied. Several otherwise healthy, thin geriatric cats experienced prolonged lethargy and sleepiness after using imidacloprid and moxidectin topical solution.

ADVERSE REACTIONS:

Heartworm-Negative Dogs: The most common adverse reactions observed during field studies were pruritus, residue, medicinal odor, lethargy, inappetence and hyperactivity.

Heartworm-Positive Dogs:

The most common adverse reactions observed during field studies were cough, lethargy, vomiting, diarrhea (including hemorrhagic), and inappetence.

ADVERSE REACTIONS - Cats:

The most common adverse reactions observed during field studies were lethargy, behavioral changes, discomfort, hypersalivation, polydipsia and coughing and gagging.

To report suspected adverse drug events, for technical assistance or to obtain a copy of the SDS, contact Vetoquinol USA at 1-800-835-9496.

IMOXI™ Topical Solution for Dogs Approved by FDA under ANADA # 200-615

IMOXI™ Topical Solution for Cats Approved by FDA under ANADA # 200-638

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Because this is a single-dose treatment option, it allows for reduced stress due to less handling, lessened chance of toxicity, and elimination of risks associated with compliance failure of at-home treatments. In addition, measuring and administering an oral treatment is typically a more specific administration method as compared with topically applying drugs. Resistance has been reported with older acaricides but not with afoxolaner.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** It is important to verify *O. natrixis* mite infestation with morphometric identification under a microscope.
- 2** Care should be taken when tube-feeding oral medication to snakes. Staff should be comfortable with the procedure, and pet owners should be educated about possible risks, which include mucosal damage, esophageal perforation, regurgitation, and aspiration. When medicating via tube, it is important to flush the tube with enough food or fluid so the intended dose is fully administered to the patient (ie, none of the oral dose remains in the tube).
- 3** Rechecks should be performed 1 month following treatment to ensure no mites remain.

Reference

1. Hetzel U, Sironen T, Laurinmäki P, et al. Isolation, identification, and characterization of novel arenaviruses, the etiological agents of bovid inclusion body disease. *J Virol.* 2013;87(20):10918-10935.

Suggested Reading

- Sojka PA. Therapeutic review: isoxazolines. *J Exot Pet Med.* 2018;27(2):118-122.

Osurnia®

(florfenicol, terbinafine, betamethasone acetate)

Otic gel

For Otic Use in Dogs Only

Do not use in cats

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

BRIEF SUMMARY (for full prescribing information, see package insert)

DESCRIPTION: OSURNIA contains 10 mg florfenicol, 10 mg terbinafine and 1 mg betamethasone acetate per mL and the inactive ingredients propylene carbonate, glycerol formal, hypromellose, phospholipid, oleic acid and BHT in an off-white to slightly yellow translucent gel.

INDICATION: OSURNIA is indicated for the treatment of otitis externa in dogs associated with susceptible strains of bacteria (*Staphylococcus pseudintermedius*) and yeast (*Malassezia pachydermatis*).

DOSE AND ADMINISTRATION: OSURNIA should be administered in the clinic. Clean and dry the external ear canal before administering the initial dose of the product. Administer one dose (1 tube) per affected ear(s) and repeat administration in 7 days. Do not clean the ear canal for 45 days after the initial administration to allow contact of the gel with the ear canal. Cleaning the ear may affect product effectiveness (see **Effectiveness** in the product insert). If alternative otic therapies are required it is recommended to clean the ear(s) before application. Open tube by twisting the soft tip. Insert the flexible tip into the affected external ear canal(s) and squeeze entire tube contents into the external ear canal(s). After application, gently massage the base of the ear to allow the gel to penetrate to the lower part of the ear canal.

CONTRAINDICATIONS: Do not use in dogs with known tympanic perforation (see **Precautions** in the product insert). Do not use in dogs with a hypersensitivity to florfenicol, terbinafine, or corticosteroids.

WARNINGS:

Human Safety Warning:

OSURNIA may cause eye injury and irritation

Not for use in humans. Keep this and all medications out of reach of children. Consult a physician in case of accidental ingestion by humans. In case of accidental skin contact, wash area thoroughly with water.

Avoid contact to the eyes. **In case of accidental eye contact, flush thoroughly with water for at least 15 minutes. If symptoms develop, seek medical advice.**

PRECAUTIONS: Wear eye protection when administering OSURNIA and restrain the dog to minimize post-application head shaking.

Reducing the potential for splatter of product will help prevent accidental eye exposure in people and dogs and help to prevent ocular injury. Do not administer orally. The use of OSURNIA in dogs with perforated tympanic membranes has not been evaluated. The integrity of the tympanic membrane should be confirmed before administering this product. Reevaluate the dog if hearing loss or signs of vestibular dysfunction are observed during treatment. Use of topical otic corticosteroids has been associated with adrenocortical suppression and iatrogenic hyperadrenocorticism in dogs (see **Animal Safety** in the product insert). Use with caution in dogs with impaired hepatic function (see **Animal Safety** and **Adverse Reactions** in the product insert). The safe use of OSURNIA in dogs used for breeding purposes, during pregnancy, or in lactating bitches, has not been evaluated.

ADVERSE REACTIONS: The following adverse reactions were reported during the course of a US field study for treatment of otitis externa in dogs treated with OSURNIA in decreasing order: elevated liver enzymes, vomiting, weight loss (>10% body weight) and hearing loss. To report suspected adverse events, for technical assistance or to obtain a copy of the SDS, contact Dechra Veterinary Products at (866) 933-2472. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS or online at <http://www.fda.gov/AnimalVeterinary/SafetyHealth>.

POST-APPROVAL EXPERIENCE (2020): The following adverse events are based on post-approval adverse drug experience reporting for OSURNIA. Not all adverse events are reported to FDA/CVM. It is not always possible to reliably estimate the adverse event frequency or establish a causal relationship to product exposure using this data.

In humans, accidental exposure leading to corneal ulcers and other ocular injuries such as eye irritation, burning, stinging, and itchiness have been reported to occur when the dog shook its head after application of OSURNIA.

In dogs, the adverse events reported for OSURNIA are presented below in decreasing order of reporting frequency: Deafness, ear discharge, ear irritation and pain, vomiting, head shaking, head tilt, ataxia, vocalization, corneal ulcer, keratoconjunctivitis sicca, nystagmus, tympanic rupture, and facial paralysis.

INFORMATION FOR DOG OWNERS: Owners should be aware that adverse reactions may occur following administration of OSURNIA and should observe dog for signs such as deafness, ear pain and irritation, vomiting, head shaking, head tilt, incoordination, eye pain and ocular discharge (see **Animal Safety** and **Post-Approval Experience** in the product insert). Owners should be advised to contact their veterinarian if any of the above signs are observed.

Owners should also be informed that splatter may occur if the dog shakes its head following administration of OSURNIA which may lead to ocular exposure. As a result, eye injuries in humans and dogs have been reported including corneal ulcers.

EFFECTIVENESS: Effectiveness was evaluated in 235 dogs with otitis externa. The study was a double-masked field study with a placebo control (vehicle without the active ingredients). One hundred and fifty-nine dogs were treated with OSURNIA and seventy-six dogs were treated with the placebo control. All dogs were evaluated for safety. Treatment (1 mL) was administered to the affected ear(s) and repeated 7 days later. Prior to the first administration, the ear(s) were cleaned with saline but not prior to the Day 7 administration. Six clinical signs associated with otitis externa were evaluated: pain, erythema, exudate, swelling, odor and ulceration. Total clinical scores were assigned for a dog based on the severity of each clinical sign on Days 0, 7, 14, 30 and 45. Success was determined by clinical improvement at Day 45. The success rates of the two groups were significantly different (p=0.0094); 64.78% of dogs administered OSURNIA were successfully treated, compared to 43.42% of the dogs in the placebo control group.

STORAGE CONDITIONS: OSURNIA should be stored under refrigerated conditions between 36° - 46° F (2° - 8° C). To facilitate comfort during administration, OSURNIA may be brought to room temperature and stored for up to three months.

MANUFACTURED FOR:

Dechra Veterinary Products
7015 College Boulevard, Suite 525
Overland Park, KS 66211 USA

Product of Great Britain

Approved by FDA under NADA # 141-437

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