

Large Bowel Diarrhea in Dogs: What's New?

Dogs with large bowel diarrhea usually have small amounts of feces with mucous and/or fresh blood, frequent defecation with urgency, and tenesmus. The term *canine idiopathic large bowel diarrhea* (CILBD) was coined to describe this syndrome. Previously, many cases were called *irritable bowel syndrome*, but CILBD is more appropriate because studies of GI motility and visceral sensitivity in affected dogs are lacking. Two different groups of canine patients with CILBD have been defined: dogs that are fiber-responsive and those with suspected stress-associated large bowel diarrhea. Diagnostic criteria for CILBD include chronic or chronic recurring diarrhea for at least 4 weeks, diarrhea of large bowel origin, a lack of identifiable cause (such as *Trichuris vulpis* infestation or dietary indiscretion), and minimal or no changes observed during colonoscopy. Most dogs respond to fiber supplementation, but not all—some require behavior modification.

Commentary: CILBD is a diagnosis of exclusion that applies to dogs with chronic or chronic recurring large bowel diarrhea in the absence of any other identifiable disorder. Disorders to be excluded include whipworm infestation, clostridial infection, diet-responsive colitis, inflammatory bowel disease, and granulomatous colitis associated with mucosa adherent-invasive *Escherichia coli* in specific breeds. Dogs affected by CILBD lack evidence of colonic inflammation.

This article reviews the limited published studies on CILBD and presents information on 18 new cases that accounted for 22% of dogs referred for chronic large bowel diarrhea. Most dogs respond to fiber supplementation; other treatment options (eg, motility modifiers, antispasmodics, behavior-modifying drugs) are systematically discussed in this informative article.—*P. Jane Armstrong, DVM, MS, MBA, Diplomate ACVIM*

Chronic idiopathic large bowel diarrhea in the dog. Lecointre P, Gaschen FP. *VET CLIN NORTH AM SMALL ANIM PRACT* 41:447-456, 2011.

Population Structure & Gene Flow for Canine Heartworm

In an effort to examine the population genetic structure of *Dirofilaria immitis*, 192 nematode samples were collected from 9 geographic regions throughout the United States and Mexico. Analysis and comparison of genome sequences demonstrated that the population clusters into 4 genetic groups strongly influenced by geography. Populations are divided east-to-west by the Rocky Mountains but connected north-to-south by the Mississippi River. There is a significant amount of gene flow in the eastern United States and Gulf Coast regions, and the authors warn that should drug resistance alleles arise they would rapidly spread along the East Coast. This study provides the necessary information to create a predictive model of gene flow in canine heartworm that will inform future disease control strategies.



Inference of population structure and patterns of gene flow in canine heartworm (*Dirofilaria immitis*). Belanger DH, Perkins SL, Rockwell RF. *J PARASITOL* 97:602-609, 2011.

TRIFEXIS™

(spinosad + milbemycin oxime)

Chewable Tablets

Before using TRIFEXIS chewable tablets, please consult the product insert, a summary of which follows:

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

Indications:

TRIFEXIS is indicated for the prevention of heartworm disease (*Dirofilaria immitis*). TRIFEXIS kills fleas and is indicated for the prevention and treatment of flea infestations (*Ctenocephalides felis*), and the treatment and control of adult hookworm (*Ancylostoma caninum*), adult roundworm (*Toxocara canis* and *Toxascaris leonina*) and adult whipworm (*Trichuris vulpis*) infections in dogs and puppies 8 weeks of age or older and 5 pounds of body weight or greater.

Contraindications:

There are no known contraindications to the use of TRIFEXIS Chewable Tablets.

Warnings:

Not for human use. Keep this and all drugs out of the reach of children.

Serious adverse reactions have been reported following concomitant extra-label use of ivermectin with spinosad alone, one of the components of TRIFEXIS Chewable Tablets (see **ADVERSE REACTIONS**).

Precautions:

Treatment with fewer than 3 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention (see **EFFECTIVENESS**).

Prior to administration of TRIFEXIS, dogs should be tested for existing heartworm infection. At the discretion of the veterinarian, infected dogs should be treated with an adulticide to remove adult heartworms. TRIFEXIS is not effective against adult *D. immitis*. While the number of circulating microfilariae may decrease following treatment, TRIFEXIS is not indicated for microfilariae clearance. Mild, transient hypersensitivity reactions manifested as labored respiration, vomiting, salivation and lethargy, have been noted in some dogs treated with milbemycin oxime carrying a high number of circulating microfilariae. These reactions are presumably caused by release of protein from dead or dying microfilariae.

Use with caution in breeding females. The safe use of TRIFEXIS in breeding males has not been evaluated. Use with caution in dogs with pre-existing epilepsy. Puppies less than 14 weeks of age may experience a higher rate of vomiting.

Adverse Reactions:

In a well-controlled US field study, which included a total of 352 dogs (176 treated with TRIFEXIS chewable tablets and 176 treated with an active control), no serious adverse reactions were attributed to administration of TRIFEXIS chewable tablets. All reactions were regarded as mild.

Reactions that occurred at an incidence >2% (average monthly rate) within any of the 6 months of observation are presented in the following table:

Average Monthly Rate (%) of Dogs With Adverse Reactions

Adverse Reaction	TRIFEXIS Chewable Tablets ^a	Active Control Tablets ^a
Vomiting	6.13	3.08
Pruritus	4.00	4.91
Lethargy	2.63	1.54
Diarrhea	2.25	1.54

^an=176 dogs

In the US field study, one dog administered TRIFEXIS experienced a single mild seizure 2½ hours after receiving the second monthly dose. The dog remained enrolled and received four additional monthly doses after the event and completed the study without further incident.

Following concomitant extra-label use of ivermectin with spinosad alone, a component of TRIFEXIS, some dogs have experienced the following clinical signs: *trembling/twitching, salivation/drooling, seizures, ataxia, mydriasis, blindness and disorientation*. Spinosad alone has been shown to be safe when administered concurrently with heartworm preventatives at label directions.

In US and European field studies, no dogs experienced seizures when dosed with spinosad alone at the therapeutic dose range of 13.5-27.3 mg/lb (30-60 mg/kg), including 4 dogs with pre-existing epilepsy. Four epileptic dogs that received higher than the maximum recommended dose of 27.3 mg/lb (60 mg/kg) experienced at least one seizure within the week following the second dose of spinosad, but no seizures following the first and third doses. The cause of the seizures observed in the field studies could not be determined.

For technical assistance or to report an adverse drug reaction, call 1-888-545-5873. Additional information can be found at www.TRIFEXIS.com.

Effectiveness:

Heartworm Prevention:

In a well-controlled laboratory study, TRIFEXIS was 100% effective against induced heartworm infections when administered for 3 consecutive monthly doses. Two consecutive monthly doses did not provide 100% effectiveness against heartworm infection. In another well-controlled laboratory study, a single dose of TRIFEXIS was 100% effective against induced heartworm infections. In a well-controlled six-month US field study conducted with TRIFEXIS, no dogs were positive for heartworm infection as determined by heartworm antigen testing performed at the end of the study and again three months later.

Flea Treatment and Prevention:

In a well-controlled laboratory study, TRIFEXIS demonstrated 100% effectiveness on the first day following treatment and 100% effectiveness on Day 30. In a well-controlled laboratory study, spinosad, a component of TRIFEXIS, began to kill fleas 30 minutes after administration and demonstrated 100% effectiveness within 4 hours. In field studies conducted in households with existing flea infestations of varying severity, flea reductions of 98.0% to 99.8% were observed over the course of 3 monthly treatments with spinosad alone. Dogs with signs of flea allergy dermatitis showed improvement in erythema, papules, scaling, alopecia, dermatitis/pyodermitis and pruritus as a direct result of eliminating the fleas.

Treatment and Control of Intestinal Nematode Infections: In well-controlled laboratory studies, TRIFEXIS was ≥ 90% effective in removing naturally and experimentally induced adult roundworm, whipworm and hookworm infections.

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