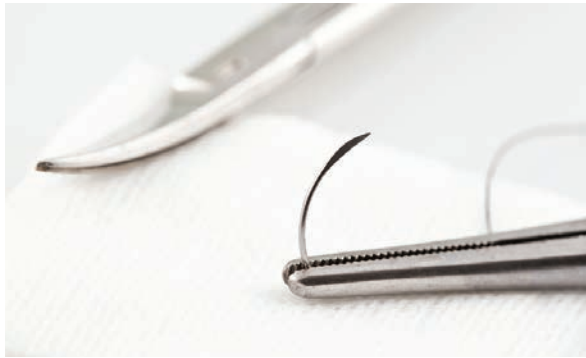


## Cinching Suture Comparisons

Despite widespread use of various suture materials, patterns, and knots, there are few comparisons of basic suture properties and performance. This *in vitro* mechanical study investigated 11 types of absorbable and nonabsorbable suture materials using 3 different knot patterns and 5 different knot sizes tied by 2 individuals of varied experience.



When testing tensile failure load, 1 of 2 braided sutures (lactomer [Polysorb, covidien.com]) was strongest; monofilament polyglytone 6211 (Caprosyn, covidien.com) was weakest. For polyglactin 910 (Vicryl, novartis.ethicon.com), nylon (Ethilon, novartis.ethicon.com; Monosof, covidien.com), polyglytone 6211, and

polypropylene (Surgipro, covidien.com), knots made using 3 throws were statistically as secure as knots using up to 6 throws. For all remaining sutures, polydioxanone (PDS II, novartis.ethicon.com), polypropylene (Prolene, novartis.ethicon.com), polyglecaprone 25 (Monocryl, novartis.ethicon.com), lactomer, and glycomer (Biosyn, covidien.com), knots using 4 throws were similar to 6 throws. There were no significant differences between simple interrupted knots and knots at the beginning of simple continuous patterns; however, both were less likely to fail than knots at the end of simple continuous patterns. Knots tied by a board-certified surgeon were more secure than those tied by a fourth-year veterinary student.

### ■ Commentary

Suture is arguably the most common surgical material; thus, it would seem prudent to have objective data from comparative studies to direct material choice and technique. Interesting differences were noted in the number of throws to create a secure knot; 3 or 4 throws were mechanically similar to 6 throws in all suture types. This contradicts the dogma of 6 to 7 throws for knots of holding layers or continuous patterns. The end knot of a continuous pattern, which uses a loop to tie the knot, was weaker than the start knot and an interrupted knot. This is relevant and readily apparent as it is the most common site for knot failure, particularly for trainees. This, combined with the significant effect of surgeon experience, reinforces the adherence and practice of fundamental principles to minimize preventable surgical errors when tying sutures.—*Jason Bleedorn, DVM, DACVS*

### ■ ■ Source

Knot security and tensile strength of suture materials. Marturello DM, McFadden MS, Bennett RA, et al. *VET SURG* 43:73-79, 2014.

#### Caution

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

#### Indications

SENTINEL<sup>®</sup> SPECTRUM<sup>®</sup> (milbemycin oxime/lufenuron/praziquantel) is indicated for the prevention of heartworm disease caused by *Dirofilaria immitis*, for the prevention and control of flea populations (*Ctenocephalides felis*); and for the treatment and control of adult roundworm (*Toxocara canis*, *Toxascaris leonina*), adult hookworm (*Ancylostoma caninum*), adult whipworm (*Trichuris vulpis*), and adult tapeworm (*Taenia pisiformis*, *Echinococcus multilocularis* and *Echinococcus granulosus*) infections in dogs and puppies two pounds of body weight or greater and six weeks of age and older.

#### Dosage and Administration

SENTINEL SPECTRUM should be administered orally, once every month, at the minimum dosage of 0.23 mg/lb (0.5 mg/kg) milbemycin oxime, 4.55 mg/lb (10 mg/kg) lufenuron, and 2.28 mg/lb (5 mg/kg) praziquantel. For heartworm prevention, give once monthly for at least 6 months after exposure to mosquitoes.

#### Dosage Schedule

Body Weight	Milbemycin Oxime per chewable	Lufenuron per chewable	Praziquantel per chewable	Number of chewables
2 to 8 lbs.	2.3 mg	46 mg	22.8 mg	One
8.1 to 25 lbs.	5.75 mg	115 mg	57 mg	One
25.1 to 50 lbs.	11.5 mg	230 mg	114 mg	One
50.1 to 100 lbs.	23.0 mg	460 mg	228 mg	One
Over 100 lbs.	Administer the appropriate combination of chewables			

To ensure adequate absorption, always administer SENTINEL SPECTRUM to dogs immediately after or in conjunction with a normal meal.

SENTINEL SPECTRUM may be offered to the dog by hand or added to a small amount of dog food. The chewables should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole. Care should be taken that the dog consumes the complete dose, and treated animals should be observed a few minutes after administration to ensure that no part of the dose is lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

#### Contraindications

There are no known contraindications to the use of SENTINEL SPECTRUM.

#### Warnings

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

#### Precautions

Treatment with fewer than 6 monthly doses after the last exposure to mosquitoes may not provide complete heartworm prevention. Prior to administration of SENTINEL SPECTRUM, dogs should be tested for existing heartworm infections. At the discretion of the veterinarian, infected dogs should be treated to remove adult heartworms. SENTINEL SPECTRUM is not effective against adult *D. immitis*.

Mild, transient hypersensitivity reactions, such as labored breathing, vomiting, hypersalivation, 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.

Do not use in puppies less than six weeks of age.

Do not use in dogs or puppies less than two pounds of body weight.

The safety of SENTINEL SPECTRUM has not been evaluated in dogs used for breeding or in lactating females. Studies have been performed with milbemycin oxime and lufenuron alone.

#### Adverse Reactions

The following adverse reactions have been reported in dogs after administration of milbemycin oxime, lufenuron, or praziquantel: vomiting, depression/lethargy, pruritus, urticaria, diarrhea, anorexia, skin congestion, ataxia, convulsions, salivation, and weakness.

To report suspected adverse drug events, contact Novartis Animal Health at 800-637-0281 or the FDA at 1-888-FDA-VETS.

Manufactured for: Novartis Animal Health US, Inc.  
Greensboro, NC 27408, USA

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