

Canine Parasite Preventives (Parasiticides)

Risks Versus Benefits

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Definition of Parasiticides

Parasites are organisms that live in or on an organism of another species (its host) and benefits by deriving nutrients at the host's expense. Parasites include fleas, ticks, worms, and mosquitoes that cause heartworm. Pesticides are chemicals that kill pests (parasites). Insecticides are a type of pesticide that kills insects.

A parasiticide is a type of pesticide used to **kill** parasites. Many products exist for dogs that help prevent parasite infestations, most of which are registered as pesticides and regulated by the EPA, not the FDA who regulates pharmaceuticals given by injection or orally.

Deer tick (Lyme disease), normal and engorged



American Dog Tick (wood tick)

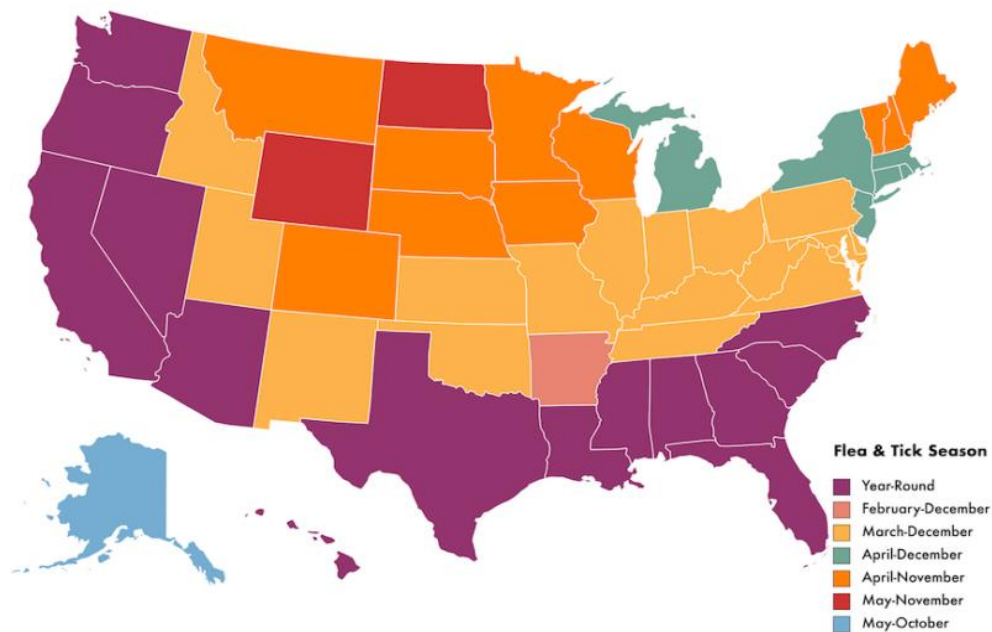


Fleas in Coat



Significance

Knowing the risks versus the benefits of the parasiticides allows you to be an advocate for your dogs while discussing preventives with your veterinarian. Consider the risk of exposure in your location and dogs that spend time in wooded areas, especially hunting and tracking dogs. Heartworm and tick-borne diseases can cause serious and debilitating illnesses in humans and dogs: heart failure (heartworm from mosquitoes and Chagas disease from kissing bugs), Lyme disease, Ehrlichiosis, Anaplasmosis, Rocky Mountain Spotted Fever, Babesiosis, Bartonellosis, Rickettsia, Hemotropic Mycoplasmosis, and Hepatozoonosis. However, safe **preventive** alternatives are available to avoid the risks of parasiticides as we observe that parasite seasons have expanded, parasites are becoming more resistant to the parasiticides, and the incidence of tick-borne infection is rising.



https://www.akc.org/expert-advice/health/whats-your-states-flea-and-tick-season/?sc_src=email_31205&sc_lid=2227543&sc_uid=Us7BU4Twqo&sc_lid=58490&utm_campaign=20230526_prcomms_communicates&utm_source=emarsys&utm_medium=email&utm_term=READ+MORE

Consider that white-coated breeds are more sensitive to medications as compared to other breeds. The EPA cautions against the application spot-on parasiticides to pets known to be sensitive to pesticide products. It is feasible that a dog can become more ill or die due to the adverse reactions to parasiticides than if the dog contracted parasite infestation. **Prevention is key!**

Parasites prey on the weak! Puppies, elderly dogs, pregnant dogs, and chronically ill dogs are at the greatest risk for developing adverse reactions from parasiticides and being infested by parasites. Being proactive by boosting your dog's health and immune system is the best and safest method to prevent bites and infestations of parasites.

If you are a breeder, remember that parasiticides can cause reproductive issues, birth defects, endocrine disruption of thyroid and reproductive hormones, as well as chronic diseases.

Food for thought: Advice from the FDA safety data sheet – if ingested by humans, advised to contact a medical provider immediately. Does this mean it's safe for a 10 pound dog to take the medication but not a 100-200 pound human? Some spot-on parasiticides direct the owner to wear gloves prior to application on the dog, to avoid contact with a pregnant or ill dog, and for pregnant women and children to use caution when touching the dog. FDA recommends caution with puppies, and states "Talk to your veterinarian before using a product on weak, old, medicated, sick, pregnant, or nursing pets, even if they have been fine with previous uses of the product." <https://www.fda.gov/consumers/consumer-updates/safe-use-flea-and-tick-products-pets>

Canine Potential Adverse Reactions to Parasiticides

As you and your veterinarian consider giving one of the parasiticides to your dogs, know that they are potentially toxic pesticides. These pesticides can be given topically on the skin (spot-on or sprays), dips, infused into collars that contact the skin, or taken internally as a pill.

Active Ingredients in Flea-Control Products

From Whole Dog Journal: <https://www.whole-dog-journal.com/health/what-is-the-best-flea-control-for-dogs/>

Afoxolaner, Fluralaner, Lotilaner, and Sarolaner are all isoxazolines, the newest class of insecticides that are selectively toxic to insects (fleas) and acarines (mites and ticks) in a way that is not supposed to pose a risk to mammals. However, they have been associated with neurologic adverse reactions and are contraindicated for dogs who are prone to seizures.

Fipronil is a broad use insecticide first registered in 1996. Fleas die when they come into contact with it on the dog's skin and coat; they don't have to bite the dog.

Imidacloprid is a neonicotinoid insecticide first registered for use for topical applications in 1994; recently it was registered for oral use. Imidacloprid spreads over the skin and coat to kill fleas on contact.

Indoxacarb kills all stages of fleas, including eggs and larvae on contact.

Lufenuron, Pyriproxyfen, and (S) Methoprene are insect growth regulators (IGRs), a class of chemicals that do not kill fleas; they prevent flea eggs and larvae from developing.

Milbemycin oxime, Praziquantel, and Pyrantel are used to kill internal parasites.

Milbemycin oxime kills a developing stage of the heartworm, as well as hookworms, roundworms, and whipworms.

Praziquantel is used to eliminate tapeworms, which infect dogs via the flea, an intermediate host.

Pyrantel is used to eliminate roundworms and hookworms.

Moxidectin is absorbed through the skin into the subcutaneous fat and bloodstream; it kills hookworms, roundworms, and whipworms, as well as a developing stage of heartworms; it also treats sarcoptic mange.

Permethrin kills fleas, tick, and lice and is said to repel mosquitoes and flies. Permethrin may be more likely to cause problems for small dogs and is overrepresented in adverse incidents. It is extremely toxic to cats and aquatic animals. **Spinosad** is a natural substance made by a soil bacterium that can be toxic to insects. It is a mixture of two chemicals called spinosyn A and spinosyn D. Spinosad has been registered for use in pesticides since 1997.

To reduce the risk of adverse reactions, give heartworm preventive medication alone or with preventives for worms only, avoiding the combination medications that contain a flea/tick

preventive along with a heartworm preventive. Combining heartworm medication with only worm prevention is less risky.

Parasiticides attack the nervous system of the parasites to kill them while the parasiticides can also attack the nervous system of the dog. Be advised that topical parasiticides can lower the seizure threshold (increased risk of seizures). Potential side effects/adverse reactions to parasiticides:

- Nervous system: headache, tremors, seizures, weakness, difficulty walking, degenerative brain disease, behavior issues
- Reproductive issues: infertility, reabsorption of puppies, miscarriages, birth defects
- Skin issues: irritation, eruptions, hot spots, hair loss, rashes, cancer
- Endocrine disruption: thyroid and reproductive hormones
- Respiratory irritation: coughing, shortness of breath
- Blood disorders: immune mediated hemolytic anemia (IMHA), bleeding, bruising
- Chronic gastrointestinal issues: nausea, vomiting, diarrhea, weight loss, IBS
- Liver damage
- Kidney damage
- Diabetes
- Cancer: breast, prostate, leukemia, lymphoma, skin at site of application
- Autoimmune diseases
- Allergic reactions and shock
- Compromised immune system

Prevention of Parasite Infestations, Recipes, and Strategies

The most important strategy for prevention is to provide a lifestyle for your dog that promotes a strong immune system, including an optimal diet and regular exercise. The more natural products are based on **prevention *by repelling the pests instead of killing the pests***. Safe alternatives to prevent bites from mosquitos (heartworm), fleas, and ticks are available on the Internet.

Heartworm Prevention of heartworm from mosquitoes, a serious canine illness, is important for the health of your dog. Some dog owners use natural alternatives to prevent mosquito bites, while some give smaller doses of heartworm preventives to small dogs or give the standard dose less often. For example, the FDA recommends a dose of .5mg/kg of Interceptor (Milbemycin Oxime) per month. For a dog weighing 13 pounds, this would equal 3 mg per month. The tablets are available in 2.3 mg for toy breeds and 5.75 mg for breeds 11-25 pounds. Therefore, the correct dose for a dog weighing 13 pounds would be about ½ tablet per month of the 5.75 mg tablet or give one whole tablet spaced out to every 6 weeks instead of monthly.

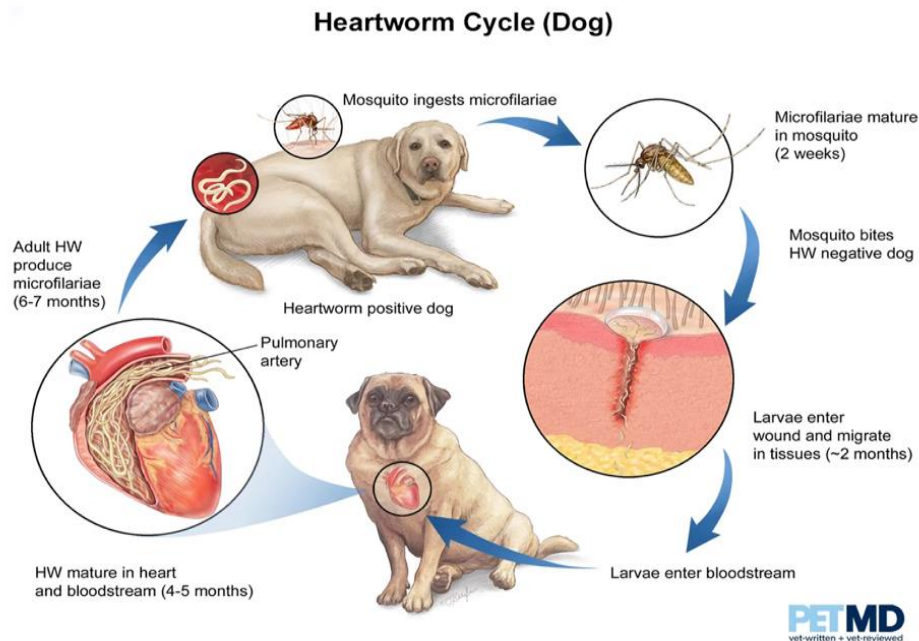
Heartworm preventive medications are also indicated for treatment of actual heartworm infestations. **They kill the heartworms that are present in the dog's body instead of preventing the worms.**

Heartworm infestation is difficult to achieve while mosquitoes are becoming resistant to the heartworm preventive medications. It is a rare occurrence when a specific species of mosquito ingests the heartworm microfilariae (minute larvae) when it bites an animal infested with heartworm. Then the larvae in the mosquito (immature form of the adult heartworm) will not survive if the ambient temperature at any time is below 55 degrees. Plus, the environmental

temperature must be consistently high enough for several weeks for the specific mosquito species to survive. Of note is that about **5 to 6 months is required for heartworm larvae to mature and travel to the heart.**

Consider the safer option of blood tests for heartworm instead of giving your dog the parasiticide monthly during the mosquito season. If the dog tests positive for heartworm, the heartworm preventive medication can be prescribed before the heartworm larvae mature and reach the heart. To determine the frequency of heartworm blood tests, calculate the mosquito season in your area:

- Test every 4 months in climates warm year around
- 2 tests in middle and end of mosquito season in climates warm for 4-8 months per year.
- Test yearly (in the fall) in climates with 4 months or less of warm weather per year.



Natural strategies and recipes: If using a bug spray, shake the bottle before each use. Mist or apply it on the dog prior to walks or working outside, and work into the coat with your hands concentrating on legs, ears, neck, and underbelly. Avoid spraying near the eyes and genitals. Reapply as needed. Can also be used for human adults and children. Mix recipes in **dark glass** spray bottles since essential oils can dissolve some plastics and the oils need to be protected from light.

1. In a dark glass 16-ounce spray bottle add:
 - 10 ounces distilled water
 - 30 drops orange essential oil
 - 30 drops peppermint or spearmint essential oil
 - 20 drops of citronella essential oil
 - 10 drops cedarwood essential oil
 - 10 drops lemongrass essential oil
 - 5 drops eucalyptus essential oil
 - 5 drops rosemary essential oil

2. Purification essential oil <https://www.youngliving.com/us/en/product/purification-essential-oil-blend> : Add 25-30 drops to a 10-15 oz. glass spray bottle filled with water. Purification oil is safe for dogs, a therapeutic grade A oil that can be taken internally by both animals and humans. It is a Young Living blend of these essential oils: citronella, lavandin, lemongrass, myrtle, rosemary and tea tree oil.
3. **No More Bugs Blend** (Makes 1 oz/30 ml) by Amy Williams DeLong: Fill 1 oz bottle with ingredients. This is a dog safe blend at a 1% concentration. Lasts about 1 hour, can reapply. Safe for pets, kids, and adults.
 - 2 Tablespoons (30 ml) Fractionated Coconut Oil (FCO). Double FCO but not the essential oils for dogs that are sensitive or under 10 pounds
 - 2 drops Geranium
 - 1 drop Lemongrass
 - 1 drop Lemon Eucalyptus
 - 1 drop Catnip
 - 1 drop Cedarwood
 - Consider 1 drop of spearmint that may be stronger than DEET
4. Espana product called Bug Spray contains these essential oils: Eucalyptus, marigold, lemongrass, rosemary, cedarwood, peppermint, citronella, and pine
<https://www.espanaproducts.com>
5. Shampoos and conditioners can play a major role in repelling pests as well. Chose products that are free of toxic chemicals and contain eucalyptus -- soothes the skin and provides a scent that repels fleas, ticks, and mosquitoes. An example is Espana Protein Antiseptic/Healing Shampoo:
<https://www.espanaproducts.com/itemdetail.php?sku=ESP0110DC&=>
6. Add garlic to their diet that gives them a scent that repels pests. Garlic can be toxic to dogs in large quantities, but all that is needed is ¼ tsp of fresh garlic per 10 pounds given daily with a meal. Minced garlic can be purchased in a jar in the grocery store. Start gradually to avoid intestinal issues. Start 1 month prior to mosquito season or give year around since garlic is a healthy supplement. In cooler climates start with smaller doses in early spring, ramp it up as mosquito season arrives, ramp it back down during the fall, and stop over the winter.
7. Add probiotics to their meal daily: Kefir (cultured milk) can be found near milk in grocery stores, or raw Sauerkraut, or alternate. These are fermented foods rich in probiotics, which augment the immune system by improving the beneficial bacteria in the gut that provide around 80% of immunity. Also, they kill worms and many bacteria and viruses that cause illness. Give 1 tsp per 10 pounds daily with a meal.
8. Boost your dog's immune system by feeding an optimal diet of fresh whole foods (cooked or raw) with added probiotics, garlic, and fish oil (omega-3 fatty acids).
9. When walking in the woods, try to stay on the trail.

Summary

Balancing the risks versus benefits of giving your dogs parasiticides versus natural preventive strategies is a difficult decision for you and your veterinarian, knowing the major health issues caused by parasites and the potential adverse reactions to parasiticides. Keep in mind that fleas, ticks, and mosquitoes are more likely to bite unhealthy dogs that have a weakened immune system. This author believes in **repelling parasites, rather than trying to kill the parasites once they invade the dog's body**. For about 20 years I avoided the use of parasiticides for my dogs, with no incidence of Lyme disease or other tick-borne diseases. I

live in Minnesota where we encounter high levels of mosquitoes, ticks, and fleas. My dogs are frequently outside in my back yard, and on walks in the woods near my house. I bathe my dogs with Espana Protein Antiseptic Healing Shampoo that contains eucalyptus. To maintain the health and immunity of my dogs, I feed a biologically appropriate diet for carnivores, raw food with added supplements. Plus, I add garlic to their meals spring through fall and utilize essential oil bug sprays. The scent of garlic, eucalyptus, and other essential oils assists in repelling bites from fleas, ticks, and mosquitoes.

Vickie Halstead RN has been actively involved in breeding and showing Bichons Frises since 1990 and Portuguese Water Dogs since 2017, producing 36 litters and >50 AKC champions, one of which achieved Best in Show at the 2005 Bichon national specialty. She has been a member of the Bichon Frise Club of America (BFCA) since 1997, a member of BFCA's Health Committee since 2001 & chairwoman 2003-2010, plus was a member of the Board of Directors of BFCA 2005-2007. She published articles in the Bichon Frise Reporter, dog magazines, newspapers, and on www.bichonhealth.org. She is a member of the Portuguese Water Dog Club of America (PWDCA) and its health committee since 2018. Vickie has been practicing as a Registered Nurse since 1973, retired in 2017 after previous experience in ICU (adult & pediatric), flight nursing (helicopters & fixed-wing aircraft), ER for 25 years, legal nurse consultant, speaker for nursing classes/seminars, and lastly as a Coumadin (blood thinner) Nurse at a clinic. Currently she operates a healing service primarily for dogs, but also humans, that offers energy healing (reiki, healing touch) and aromatherapy <https://www.victoireshealingandbreeding.com>.

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