

TECHNICAL BULLETIN

Credelio® (lotilaner) kills ticks* faster than Simparica TRIO® (sarolaner, moxidectin and pyrantel) and NexGard® (afoxolaner).¹

Comparative tick* speed of kill analysis: Head-to-head study of Credelio, Simparica TRIO and NexGard finds that Credelio has the fastest initial speed of tick* kill and sustains that advantage throughout the dosing interval.¹

BACKGROUND:

Speed of Kill Matters

Ticks transmit pathogens to their hosts during the feeding process, with longer feeding periods allowing more pathogens to be passed.^{1,2}

Faster kill means:

- May reduce the risk of pathogen transmission
- Greater pet owner satisfaction

Not All Isoxazolines are Created Equal

There are four isoxazolines approved to treat and control lone star ticks - lotilaner, afoxolaner, sarolaner and fluralaner. The initial speed of tick kill can be linked to how rapidly a product is absorbed to reach systemically active blood levels, while a molecule's half-life can impact the sustainability of the speed of kill over the treatment period. The longer half-life of lotilaner (Credelio) following oral administration compared to sarolaner (Simparica TRIO), afoxolaner (NexGard) and fluralaner (Bravecto) suggests that the rapid speed of kill for lotilaner (Credelio) may be maintained longer than the other isoxazoline products.⁴

While a 2021 study demonstrated that lotilaner quickly disrupts tick neuromuscular function, causing irreversible deleterious pre-lethal effects on ticks,⁵ a direct, comparative treatment and efficacy study of lotilaner against other isoxazoline-containing products has not previously been available.⁴

Not All Ticks are Created Equal

Some tick species are more difficult to kill than others.



Amblyomma americanum
(lone star tick) is tough to kill.³



Ixodes scapularis, the vector of Lyme disease, tends to be more susceptible to isoxazolines than *A. americanum*.⁴

HALF-LIFE OF ISOXAZOLINES⁴

PRODUCT	AVERAGE HALF-LIFE (DAYS)**
Credelio® (lotilaner)	~ 30 DAYS
Simparica TRIO (sarolaner)	11-12 DAYS
NexGard (afoxolaner)	~ 16 DAYS
Bravecto (fluralaner)	12-15 DAYS

**in adult dogs

**Amblyomma americanum* (lone star tick)

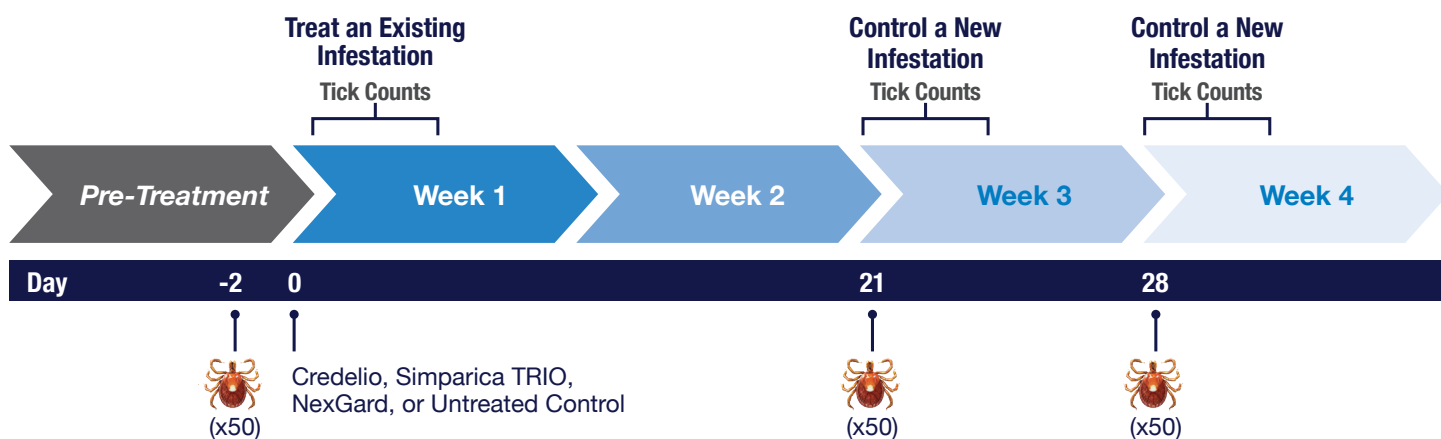
SPEED OF KILL ANALYSIS¹

Study Objective

Compare the relative speeds of kill of the lone star tick following administration of three monthly-use, isoxazoline-containing products for dogs: Credelio, Simparica TRIO and NexGard.




Study Design

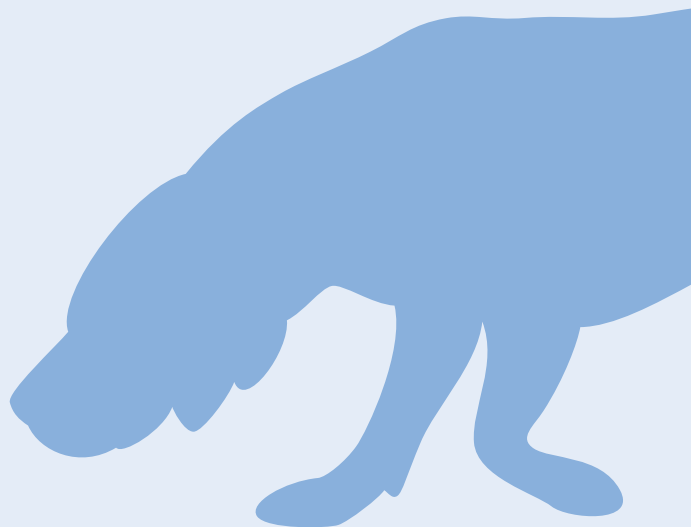
Thirty-two dogs were randomly allocated to one of four treatment groups: Credelio, Simparica TRIO, NexGard or Untreated Control. Two days prior to treatment, every dog had approximately fifty *A. americanum* (lone star ticks) placed on them and ticks were allowed to attach and feed. On Day 0 (treatment day), the groups were treated according to the label with their respective isoxazoline-containing product or received no treatment. Live tick counts were performed on dogs by blinded investigators at 4, 8, 12, 24, 48 and 72 hours post-treatment (Day 0) and post-infestations on Day 21 and Day 28.



Study Results

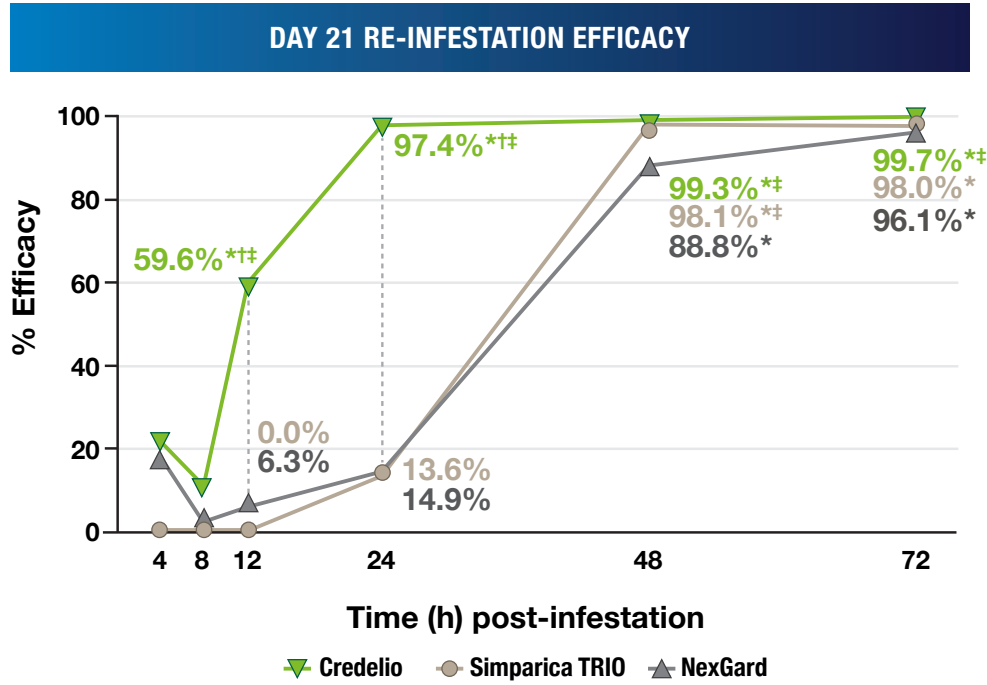
At all 12-hour evaluations, only the Credelio group significantly reduced lone star ticks as compared to the untreated control group.

-  Credelio kills lone star ticks faster than Simparica TRIO and NexGard by reaching a statistically significant** kill of the lone star tick faster than either product.¹
-  The Credelio group was the only treatment group to achieve ≥90% efficacy at every 24-hour evaluation timepoint.
-  Only Credelio significantly reduced lone star ticks at all 12-hour evaluations vs. the untreated control group. Simparica TRIO and NexGard groups were not significantly different from the untreated control group at all 12-hour evaluations.

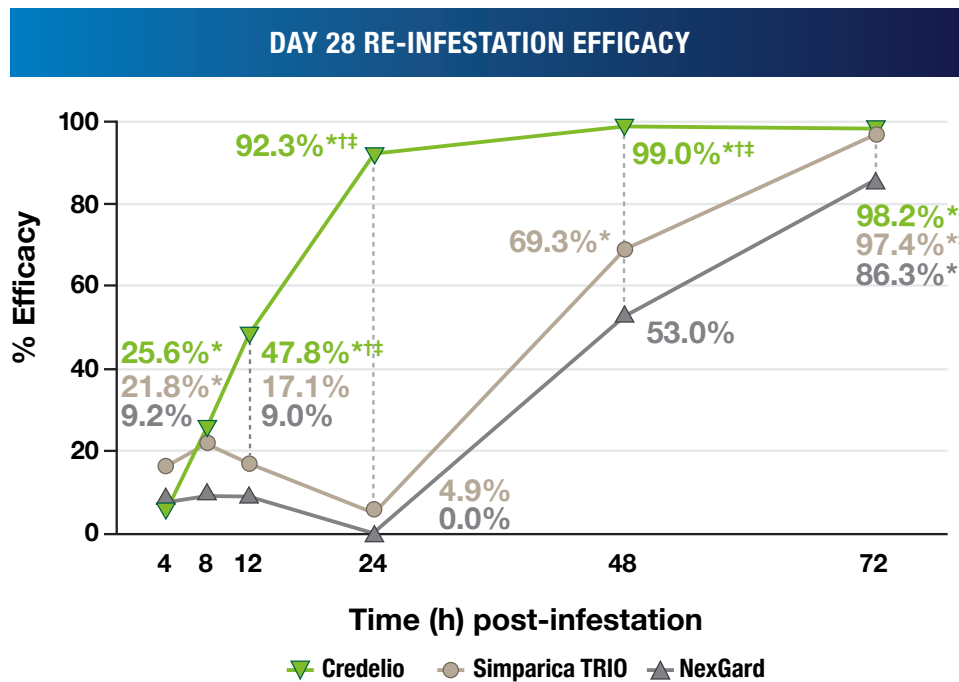


SPEED OF KILL ANALYSIS¹

% Efficacy represents live tick count reductions of product-treated vs untreated group



Significantly different from: *untreated control $P \leq 0.05$; †Simparica TRIO $P \leq 0.05$; ‡NexGard $P \leq 0.05$



Significantly different from: *untreated control $P \leq 0.05$; †Simparica TRIO $P \leq 0.05$; ‡NexGard $P \leq 0.05$

Key Findings

The lone star tick is no match for Credelio®

Credelio kills ticks* fast¹

- This new head-to-head study finds Credelio has the fastest initial speed of tick* kill and continues to grow that advantage throughout the dosing interval¹.
- Credelio's rapid and consistent speed of tick* kill may contribute to reduced risk of tick*-borne pathogen transmission and increasing pet owner product satisfaction.

REFERENCES

¹Reif KE, Kollasch TM, Neilson JC, et al. Comparative speed of kill provided by lotilaner (Credelio™), sarolaner (Simparica Trio™), and afoxolaner (NexGard™) to control *Amblyomma americanum* infestations on dogs. *Parasit Vectors*. 2024;17(1):313.

²Shaw S, Day M, Birtles R, et al. Tick-borne infectious diseases of dogs. *TRENDS in Parasitology*. 2001;17.

³McTier Determination of the effective dose of a novel oral formulation of sarolaner (Simparica™) for the treatment and month-long control of fleas and ticks on dogs. *Vet Parasitol*. 2016.pdf

⁴Zhou X, Hohman A, Hsu W. Current review of isoxazoline ectoparasiticides used in veterinary medicine. *J Vet Pharmacol Therap*. 2021;00:1-15.

⁵Wenger MJ, Kollasch TM, Locklear C, et al. Early onset of pre-lethal effects of lotilaner (Credelio®) on *Amblyomma americanum* ticks on experimentally infested dogs. *Parasite Vector*. 2021;14:322.

**Amblyomma americanum* (lone star tick)

[†]($P \leq 0.05$)

CREDELIO INDICATIONS

Credelio kills adult fleas and is indicated for the treatment and prevention of flea infestations (*Ctenocephalides felis*) and the treatment and control of tick infestations [*Amblyomma americanum* (lone star tick), *Dermacentor variabilis* (American dog tick), *Ixodes scapularis* (black-legged tick) and *Rhipicephalus sanguineus* (brown dog tick)] for one month in dogs and puppies 8 weeks of age and older and weighing 4.4 pounds or greater.

CREDELIO IMPORTANT SAFETY INFORMATION

Lotilaner is a member of the isoxazoline class. This class has been associated with neurologic adverse reactions including tremors, ataxia, and seizures. Seizures have been reported in dogs receiving this class of drugs, even in dogs without a history of seizures. Use with caution in dogs with a history of seizures or neurologic disorders. The safe use of Credelio in breeding, pregnant or lactating dogs has not been evaluated. The most frequently reported adverse reactions are weight loss, elevated blood urea nitrogen, polyuria, and diarrhea. For full prescribing information see Credelio package insert.

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