The efficacy of sarolaner (Simparica™ Chewable Tablets) for the treatment of induced *Dermacentor reticulatus* infestations compared to afoxolaner (NexGard® Chewable Tablets) and imidacloprid + permethrin (Advantix® Spot-on) in dogs

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Two randomised, placebo-controlled, double blinded, studies were conducted to evaluate the speed of kill of sarolaner (Simparica™ Chewable Tablets) against induced *Dermacentor reticulatus* infestations in dogs compared with afoxolaner (NexGard® Chewable Tablets) or imidacloprid + permethrin (Advantix® Spot-on).

In one study, dogs received placebo, sarolaner or afoxolaner orally. In the other, dogs received placebo and sarolaner orally or imidacloprid + permethrin topically. Dogs (n=8/group, 3 groups/study) were treated once on Day 0. Dogs were infested with 50 ticks on days -2, 7, 14, 21, 28, and 35. Percent reduction (efficacy) of mean live tick counts in different groups was calculated 8, 12 and 24 hours after treatment and after each post-treatment infestation versus

placebo. A mixed linear model for repeated measures was used to compare tick counts among treatment groups.

Tick counts were significantly lower than placebo for sarolaner and afoxolaner at 8 hours post-treatment and >99% efficacy was achieved within 24 hours. Tick counts for imidacloprid+permethrin were no different than placebo at 8 and 12 hours but were significantly lower at 24 hours after treatment compared to placebo.

At the post-treatment re-infestations, sarolaner significantly reduced tick counts compared to placebo, by 12 hours to Day 28, and by 24 hours to Day 35. Afoxolaner counts were no different to placebo 8 hours after any post-treatment re-infestations and significant reductions occurred by 12 hours only on Days 21 and 28, and by 24 hours on all days.

Sarolaner provided significantly better efficacy than afoxolaner at 24 hours after re-infestations on Days 22, 29 and 36. Compared to imidacloprid+permethrin, sarolaner resulted in significantly greater efficacy at all three timepoints immediately after treatment, and at 24 hours after each re-infestation up to 35 days. Imidacloprid + permethrin treatment resulted in significantly greater efficacy at 8 hours after infestations on Day 7, and 8 and 12 hours after infestation on Day 21 vs. sarolaner.

The oral isoxazoline ectoparasiticides, sarolaner (Simparica™) and afoxolaner (NexGard®) significantly reduced tick counts within 8 hours after treatment, while imidacloprid + permethrin spot-on (Advantix®) only had an effect 24 hours after treatment. Compared to afoxolaner, sarolaner killed significantly more ticks 24 hours after re-infestations from three to five weeks after treatment. Sarolaner killed significantly more ticks within 24 hours of treatment and re-infestations than topical imidacloprid+permethrin for 5 weeks after treatment.

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