

MEASUREABLE TICK AVERSION USING VETRI REPEL SPRAY ON DOMESTIC DOGS

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ABSTRACT

This study hypothesized that a unique blend of proprietary plant derived oils found in **Vetri Repel Spray** provides the tick with an aversion response. Seven purebred dogs of various breeds began the trial with a range of body weights from 16 to 44 Kg. Before the trial began each dog was examined thoroughly by trained technicians. All ticks were removed on the initial visit. Dog general health status, weight, BSI (Body Score Index) and BSA (Body Surface Area) were recorded. Plastic templates were used to delineate specific "target" **Vetri Repel Spray** spray and non spray areas on each dog to equal 3.5% of BSA. Dogs were then allowed one hour of free access to a defined area of woodlands and fields known to be infested with ticks. Dogs were examined daily for tick infestation during the 5 day period. Of all the ticks that were collected from the 7 dogs over the trial period, 93.6% were attached to the non-sprayed area and 6.4% were attached to the sprayed area. Results from this study indicate **Vetri Repel Spray** use resulted in a statistically significant ($p < 0.0001$) reduction in tick attachment and therefore demonstrate the product's ability to prevent tick infestation under the conditions of this study.

INTRODUCTION

Vetri Repel Spray is a unique combination of lemongrass oil, cinnamon oil, sesame oil, and castor oil. The successful use of our flea and tick formulation, **Vetri Repel Spray**, has been demonstrated by extensive field evaluation. The study of tick and domestic dog infestation represents a special type of ecology in terms of the host-parasite physiological relationship. An aversion experience for a tick denies the tick the ability to interact with the dog in a genetically preprogrammed beneficial way. VetriScience[®] has conducted over 4 years of in-house laboratory testing on cockroaches as well as practical application on our own pets to establish **Vetri Repel Spray's** efficacy and safety before being launched on the market. This trial focused on the tick aversion qualities of the formula on 7 dogs over a 5 day period.

HYPOTHESIS

This study hypothesized that a unique blend of proprietary plant derived oils found in **Vetri Repel Spray** presents the tick with an aversion experience: the undesirable sensory perception of appropriate feeding area, tastes, and detection of odors when selecting a dog for feeding. The dog is a desirable habitat for tick survival and reproduction. We postulate that the natural properties of the **Vetri Repel Spray** formulation deny a desirable ecosystem for the common ticks known to infect domestic dogs under similar conditions as experienced in this study.

PROCEDURE

Seven purebred dogs of various breeds began the trial with a range of body weights from 16 to 44 Kg. Dog general health, weight and BSI (Body Score Index) were recorded at the beginning of the test. Body surface area (BSA) was recorded for each dog at the beginning of the study using the formula by Rosenthal (1995). Body surface areas in square meters were as follows: 1.2, 1.1, 1.23, 1.27, 1.06, 0.75, and 0.66. Trained technicians examined each dog for any observational abnormalities and for any evidence of ticks and fleas prior to starting the study. All ticks were removed on the initial visit. Only a single skilled technician was used to apply the **Vetri Repel Spray** and to remove the test ticks.

Two plastic templates; 64 square inches and 36 square inches; were used to demarcate the test areas of each dog. The two target test areas were the CD (Cranial dorsal) and the dorsal (D). Each were assigned to the area (3.5% of BSA +/- .35%) over the thoracic vertebra extending equally on both sides of the sagittal plane. The sprayed area was assigned the number 1 and the non sprayed area was assigned the number 2. CD and D assignments (spray vs. non spray) per dog were done randomly.

The individual dog’s template area designated as “1” was sprayed just prior to the allotted free activity time. The exercise area consisted of rolling hills, natural grasslands, certified wetland and partial woodlands. Dogs were allowed one hour unlimited access each day over a 5 day period to the defined area known to be infested with ticks.

RESULTS

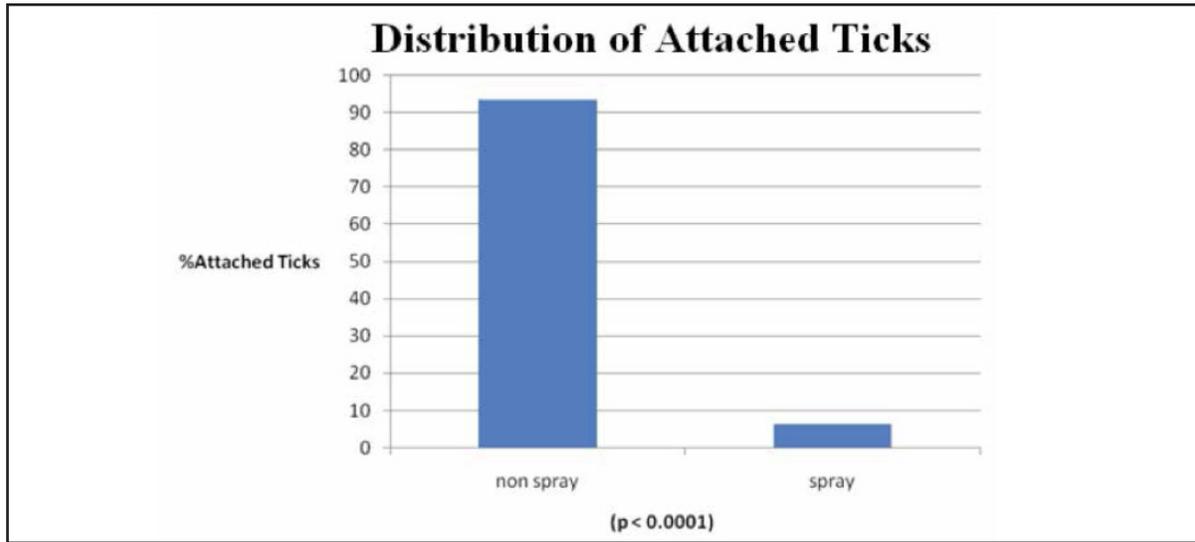
Of all the ticks that were collected from the 7 dogs over the 5 day trial period, 93.6% were attached to the non-sprayed area and 6.4% were attached to the sprayed area (see Table 1 and Graph 1).

Table 1. Tick distribution on test dogs over the trial period.

	Total # of Ticks Collected	Total # of Ticks Collected
	SPRAYED AREA	NON-SPRAYED AREA
Dog 1	1	6
Dog 2	0	8
Dog 3	0	1
Dog 4	0	4
Dog 5	1	4
Dog 6	0	1
Dog 7	0	5
TOTAL	2	29

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Graph 1.



DISCUSSION

Attraction to a host, in this case a dog, is an innate survival mechanism of the tick. Some very specific electrophysiological responses may indicate a mechanism by which insects are able to orient toward and select hosts with the desired specific molecular stimulus (Hummel et al 2008). Ticks perceive their environment and react based on instinct. The **Vetri Repel Spray** formulation provided the ticks in this study with an undesirable sensory perception of what normally would be an appropriate feeding area. This type of adverse sensory input can have a direct effect on a tick's instinctual feeding behavior. Aversion to attachment and feeding on a dog is a reaction registered with the tick's physiology that identifies the dog as constitutionally unsuitable as a habitat and a preferred food source. It has been reported that interneurons link chemical receptors and motor output (Mitchell et al 1999). The impact of the repellent property of **Vetri Repel Spray** can be seen in Table 1.

CLINICAL RELEVANCE

Vetri Repel Spray is a revolutionary approach to achieving flea and tick control using all natural ingredients. Understanding the fundamental mechanisms of the tick's interaction with its host can allow manipulation of the normal feeding response of the tick. The tick must be able to recognize the dog as a host and react to the dog's micro environment in order to attach and feed. As a result of the tick's natural behavior response to the **Vetri Repel Spray** formulation, host resistance was increased. This study concludes that the **Vetri Repel Spray** maximizes host resistance to the tick and minimizes the suitability of the micro environment to the tick. These two important functions of **Vetri Repel Spray** took place without negative consequences to skin, hair, mucus membranes, eyes, nose, mouth, and normal health of the dog. The **Vetri Repel Spray** formulation finally gives the veterinary practitioner and pet owner an effective, natural and safe alternative to other flea and tick products that have noted side effects.

The **Vetri Repel Spray** formulation can be safely used in combination with properly used veterinary provided flea and tick control products, such as Advantage® K9 Advantix®, Bio-Spot®, Preventic®, Capstar® Dermacare-vet®, Frontline Plus®, Program®, Sentinel®.

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