THE CONTROL OF TICKS, FLEAS AND LICE ON DOGS BY MEANS OF A SENDRAN* — IMPREGNATED COLLAR

I.G. HORAK**

ABSTRACT

Horak I.G. The control of ticks, fleas and lice on dogs by means of a Sendran-impregnated collar. Journal of the South African Veterinary Association 1978 47 No. 1, 17-18 (En) Faculty of Veterinary Science, Onderstepoort, 0110, South Africa.

Plastic collars impregnated with 9.4% Sendran effectively controlled adult Rhipicephalus sanguineus for a period of 49 days and immature ticks for a period possibly in excess of 70 days when fitted to four dogs. Four uncollared dogs served as controls.

Although flea burdens were extremely low the collars were apparently effective for a period in excess of 70 days.

A medicated flea collar killed all the ticks, fleas and lice on a severely parasited dog within a period of 48 hours.

INTRODUCTION

The use of insecticide impregnated collars for the control of ticks and fleas on dogs and cats has been described by various authors1, 2, 4. The mode of action of these collars is by the slow release of small amounts of insecticide in either powder, crystal or gaseous form.

The present paper describes a trial utilising a plastic collar impregnated with 6-Isopropoxyphenyl methylcarbamate (Sendran).

MATERIALS AND METHODS

EXPERIMENT 1

Dogs

Eight dogs, consisting of 3 Dachshunds (short-coated, one dog, two bitches), 1 mongrel (wire-haired, dog), 1 mongrel (silk-coated, dog), 1 Cocker Spaniel (silk-coated, dog), 1 Keeshond (long-haired, dog) and 1 Labrador cross (short-coated, bitch) were housed in separate pens in a kennel.

Kennel

The kennel consisted of 12 separate pens, divided by a wall into two rows of six pens each. Portion of each pen was roofed and these portions were separated by walls that did not reach the roof. The remainder of the pen was open and separated from adjacent pens by wire-mesh.

The bedding in the roofed portion consisted of sacking and the whole kennel had a concrete floor.

Table 1: ECTO-PARASITE RECOVERIES ON COLLARED AND CONTROL DOGS

<table>
<thead>
<tr>
<th>Day</th>
<th>Mean number and range of immature and adult ticks recovered from</th>
<th>Fleas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collared Dogs</td>
<td>Controls</td>
</tr>
<tr>
<td></td>
<td>Immature</td>
<td>Adult</td>
</tr>
<tr>
<td>- 8</td>
<td>15 (2-31)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>33 (8-65)</td>
<td></td>
</tr>
<tr>
<td>+ 1</td>
<td>19 (2-37)</td>
<td></td>
</tr>
<tr>
<td>+ 2</td>
<td>1 (0-3)</td>
<td>8 (0-19)</td>
</tr>
<tr>
<td>+ 7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>+14</td>
<td>0*</td>
<td>0</td>
</tr>
<tr>
<td>+22</td>
<td>20 (0-46)</td>
<td>1 (0-1)</td>
</tr>
<tr>
<td>+28</td>
<td>4 (1-11)</td>
<td>1 (0-3)</td>
</tr>
<tr>
<td>+35</td>
<td>1 (0-3)</td>
<td>1 (0-4)</td>
</tr>
<tr>
<td>+42</td>
<td>0</td>
<td>2 (0-6)</td>
</tr>
<tr>
<td>+49</td>
<td>1 (0-2)*</td>
<td>4 (2-7)*</td>
</tr>
<tr>
<td>+63</td>
<td>0</td>
<td>4 (2-6)</td>
</tr>
<tr>
<td>+70</td>
<td>1 (0-4)</td>
<td>5 (2-8)</td>
</tr>
</tbody>
</table>

* Only three dogs examined

1. Thuron Industries, Inc.
2. Faculty of Veterinary Science, University of Pretoria, Box 12580, Onderstepoort 0110.
3. VET-KEM Tick and Flea Collar: I. LOPIS & SONS
the collar and the sweepings collected and examined, the dog was also examined for parasites at each occasion.

RESULTS

EXPERIMENT 1

All the adult ticks examined were identified as *Rhipicephalus sanguineus*. The results of the ecto-parasite counts are summarised in Table 1.

**Collared Dogs**

The fitting of the collars on Day 0, resulted in a marked reduction in tick numbers during the following two days and no ticks were recovered seven and 14 days after fitting. Twenty-two days after collaring, these dogs harboured a mean number of 20 immature and one adult tick. Thereafter, the immature tick burdens fell markedly while the adult tick numbers rose gradually but constantly until the termination of the trial.

The adult tick numbers on the Labrador cross rose more rapidly than on the other collared dogs.

No fleas were encountered on these dogs throughout the experimental period.

**Controls**

Tick numbers declined on these dogs during the seven days after collaring the other dogs, this decline was largely due to a drop in immature tick burdens. The latter burdens rose rapidly thereafter to reach a peak of 96 immature ticks on Day 22, declining again subsequently. After reaching the lowest level in the trial on Day + 14, the adult tick burdens rose erratically to reach a peak on Day + 63.

Fleas were not always present, but one or more dogs were infested from Day + 28 onwards.

EXPERIMENT 2

The numbers of ecto-parasites recovered from the floor of the cage are summarised in Table 2.

Table 2: NUMBER OF DEAD ECTO-PARASITES RECOVERED AFTER FITTING A SENDRAN-IMPREGNATED COLLAR

<table>
<thead>
<tr>
<th>Period after collaring</th>
<th>Numbers of dead ecto-parasites recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heterodoxus sp.</td>
</tr>
<tr>
<td></td>
<td>Nymphs</td>
</tr>
<tr>
<td>16 hours</td>
<td>4,983</td>
</tr>
<tr>
<td>16-72 hours</td>
<td>5,413</td>
</tr>
</tbody>
</table>

The majority of ecto-parasites was recovered from the floor of the kennel within 16 hours of fitting the collar. All these parasites were dead and no living lice, fleas or ticks were observed on the dog when it was examined on this occasion; dead lice and ticks were, however, present. When the dog was examined 48 and 72 hours after collaring only dead ticks and no other parasites were observed.

DISCUSSION

EXPERIMENT 1

The collars effectively reduced the numbers of ticks on the collared dogs when compared with the controls, and it would appear that the immature stages are particularly susceptible to the acaricide.

The apparent reduction in efficacy that occurred 22 days after collaring must be viewed in the light of the fairly severe challenge with immature ticks which was occurring at that time. Thus although the collars were not keeping the dogs tick-free, they considerably reduced the numbers of ticks under conditions of severe challenge. Similar observations have been made by Polk in the United States.

Efficacy in excess of 60% against adult ticks lasted approximately 49 days, while that against immatures was possibly considerably longer.

The reduction in tick numbers on the control dogs shortly after collaring the other dogs was probably due to the amount of acaricide present in the kennels from the freshly fitted collars, thus reducing the amount of infestation available.

Although the number of dogs infested with fleas was disappointingly low, it can be assumed that the collars were effective against fleas, for not one of the collared dogs became infested, whereas one or more of the control dogs were usually infested. In trials in the United States the efficacy of the collars against fleas lasted for more than 91 days, thus considerably exceeding that against ticks.

EXPERIMENT 2

The lice were highly susceptible to the effects of Sendran and were observed to be dropping from the dog within two hours of fitting the collar. As no untreated control dogs were available no estimation can be made as to the duration of efficacy of the collar against lice.

REFERENCES

3. POLK K.L. 1973 Effectiveness of 10% Sendran collar in reducing fleas on dogs over a 13 week period. Thuron Industries, Inc., Dallas, Texas
4. POLK K.L. 1973 Brown dog tick control using a 10% Sendran collar under high population density. Thuron Industries, Inc., Dallas, Texas