A STUDY OF ECTOPARASITES OF CANIS LUPUS FAMILIARIS IN MUEANG DISTRICT, KHON KAEN, THAILAND

Choosak Nithikathkul1,4, Ruxsina Polseela2, Jareerat Iamsa-ard3, Chalobol Wongsawad4 and Sathaporn Jittapalapong5

1Department of Biological Science, Faculty of Science and Technology, Huachiew Chalermprakiet University, Samut Prakan; 2Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Phitsanulok; 3Department of Pharmacology and Toxicology, Faculty of Veterinary Medicine, Khon Kaen University, Khon Kaen; 4Department Biology, Faculty of Science, Chiang Mai University, Chiang Mai; 5Department of Parasitology, Faculty of Veterinary Medicine, Kasetsart University, Bangkok, Thailand

Abstract. We studied ectoparasites found on Canis lupus familiaris sampled in five areas in Mueang district, Khon Kaen Province, Thailand. The prevalence of fleas and ticks as well as their density were determined in 100 dogs that did not receive treatments. A total number of 458 ectoparasites was found corresponding to two species: 25.8% Ctenocephalides canis and 74.2% Rhipicephalus sanguineus. R. sanguineus was the most abundant species, and Ct. canis was the only flea species found. The stages of R. sanguineus were larvae (5.3%), nymphs (29.1%) and adults (39.1% in male and 26.5% in female). The stages of Ct. canis were larvae (41.5%) and adults (58.5%). Both species were commonly found on domestic dogs in all areas of the study. Ct. canis was not present on domestic dogs in one sub-district. The prevalence rates of tick-harboring domestic dogs was 80% (R. sanguineus), and flea-haboring domestic dogs was 26% (Ct. canis).

INTRODUCTION

Arthropod ectoparasites are diverse and highly adapted to the domestic animals they inhabit. They may live permanently on their host, or they may occupy the host’s residence and immediate environment, and visit the body of the host periodically. Arthropod ectoparasites are vectors of many important diseases in human (Service, 1996).

Ticks are arthropods in the Acari group and comprise 3 Families; Ixodidae (13 genera, 650 species), Argassidae (5 genera, 150 species) and Nuttalliellidae (1 genera, 1 species). From 1961 to 1980, Tunskul and colleagues studied ticks in 47 provinces of Thailand. A total of 10 genera and 53 species were found: 8 genera and 49 species of hard ticks; 2 genera and 4 species of soft ticks (Tunskul et al, 1983). Ectoparasites of cows and buffalo in Chiang Mai Province were identified as a total of 31 species of arthropods, and ticks (Arithchart, 1983). A strain of Langat virus (LGT), T-1674 was isolated from a pool of Hemaphysalis papuna that Thorell collected in the forest of Khao Yai National Park in Thailand. This was the first report of a natural infection of Hemaphysalis ticks with LGT

Correspondence: Choosak Nithikathkul, Department of Biological Science, Faculty of Science and Technology, Huachiew Chalermprakiet University, 18/18 Bang Na-Trat Road, Samut Prakan 10540, Thailand. Tel; 66 (0) 312630; Fax: 66 (0) 3126237 E-mail: choosak@hcu.ac.th

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The collected ectoparasites were fixed in 70% alcohol in a sample tube. The stages and species of ectoparasites, such as larva, nymph and adult were identified according to the method of Krantz (1978).

RESULTS

The prevalence and density of ectoparasites

Twenty-six dogs were found harboring Ct. canis and 81 dogs with R. sanguineus. The highest prevalence rates of R. sanguineus and Ct. canis harboring in C. lupus familiaris were 100% in Ban Ped and 50% in Mueang Khaw 2, respectively. No Ct. canis were found in Ban Ped area (Table 1).

A total of 458 ectoparasites were collected from 100 domestic dogs in the 5 surveyed areas. The highest numbers of Ct. canis harboring in C. lupus familiaris were 45 (38.1%) in Mueang Khaw 2 area and the numbers of R. sanguineus totaled 100 (29.4%) in Nai Mueang area. The lowest number of Ct. canis and R. sanguineus ectoparasites harboring in C. lupus familiaris were found in Ban Ped area (Table 1). The tick species found in this study was Boophilus microplus.

The number of ectoparasitic stages

Among 118 Ct. canis collected, 49 were larvae and 69 were adults. The stages of R. sanguineus infested dogs were larvae (18), nymph (99) and collected adults (223). The highest number of larva and adult stages of Ct. canis in Mueang Khaw 1 and Mueang Khaw 2 were 25 and 29, respectively. The highest number of Rhipicephalus sanguineus larvae, nymphs and adults in Sira, Sira, and Nai Muang were 12, 43, and 72, respectively (Table 2). The stages of R. sanguineus were larvae (5.3%), nymphs (29.1%) and adults (39.1% in males and 26.5% females). The stages of Ct. canis were: larvae (41.5%) and adults (58.5%).

DISCUSSION

From our survey, both fleas and ticks lived on the bodies of domestic dogs. The highest prevalence rates of R. sanguineus and Ct. canis harboring in C. lupus familiaris were found in the Ban Ped (100%) and Mueang Khaw 2 (50%) areas. No Ct. canis were found in the Ban Ped area. R. sanguineus was the most abundant species, and Ct. canis was the only flea species found. This may be due to the dogs surveyed being exclusively rural animals. Both species were commonly present on domestic dogs in all areas of the study. From this study, the differences in the prevalence of ticks and fleas in each domestic dog may be due to the differences in animal immunity or the different areas of prevalence and density of ticks and fleas. These differences might be due to the dissimilar temperature and/or moisture in each area that affect the growth and reproduction of ectoparasites.

In 2002, we surveyed ticks in domestic animals for three seasons in three districts of Samut Prakan Province, Thailand. Ticks were found in all study areas and in 4 kinds of domestic animals; the highest rate (46%) was obtained in Canis lutus familiaris (Nithikathkul et al, 2002).

A comparative study of ectoparasitic infestation of different breeds of dogs was performed in four veterinary clinics in Nigeria in 1983. Of a total of 820 dogs examined, 246 (30.0%) were infected by ticks, 226 (27.6%) by lice, 212 (25.8%) by fleas and 109 (13.3%) by mites. The species of ectoparasites identified and their prevalence rates were: R. sanguineus (19.5%), Otobius megnini (10.5%), Ct. canis (25.8%), Demodex canis (13.3%) (Ugochukwu and Nnadozie, 1985). In another study, a total of 344

<table>
<thead>
<tr>
<th>Area</th>
<th>Number (%) of dogs harboring ectoparasites</th>
<th>Number of ectoparasites (%) collected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ct. canis</td>
<td>R. sanguineus</td>
</tr>
<tr>
<td>Nai Mueang</td>
<td>4 (2)</td>
<td>16 (80)</td>
</tr>
<tr>
<td>Si Ra</td>
<td>7 (3.5)</td>
<td>16 (80)</td>
</tr>
<tr>
<td>Mueang Khaw 1</td>
<td>5 (2.5)</td>
<td>16 (80)</td>
</tr>
<tr>
<td>Ban Ped</td>
<td>0 (0)</td>
<td>20 (100)</td>
</tr>
<tr>
<td>Mueang Khaw 2</td>
<td>10 (50)</td>
<td>13 (65)</td>
</tr>
<tr>
<td>Total</td>
<td>26 (26)</td>
<td>81 (81)</td>
</tr>
</tbody>
</table>

Table 1
Number of dogs which harbored ectoparasites and number of ectoparasites collected in the 5 areas.
dogs belonging to people in resource-poor communities in North West Province, South Africa, were examined for ectoparasites, it was estimated that the dogs harbored 14,724 ixodid ticks belonging to 6 species, 1,028 fleas belonging to 2 species, and 26 lice. *Haemaphysalis leachi* accounted for 420 and *R. sanguineus* for 14,226 of the ticks. Pure infestations of *H. leachi* were present in 14 dogs and of *R. sanguineus* in 172 dogs (Bryson *et al.*, 2000).

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