



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.23

TPI 2021; SP-10(11): 2716-2718

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www.thepharmajournal.com

Received: 19-09-2021

Accepted: 21-10-2021

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A survey on the gastrointestinal parasitic infection in Chippiparai dogs in Tamil Nadu, India

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Abstract

A preliminary survey on the gastrointestinal parasite was carried out of 71 Chippiparai dogs, 31 fecal samples were collected from home track areas of Thoothukudi district in Tamil Nadu. Fecal samples were collected per rectum using simple random sampling and screened by sedimentation techniques and flotation method. Through fecal examination revealed positive for helminthes like *Ancylostoma caninum*, *Toxocara canis*, *Spirocerca lupi*. The overall 51% of dogs had a helminthic infection and among the helminthes *Ancylostoma caninum* (81.25%) was highest, followed by *Toxocara canis* (12.50%) and *Spirocerca lupi* (6.25%) which is the first report from Chippiparai dogs in India.

Keywords: chippiparai dogs, endoparasitic infection, *Ancylostoma caninum*, Tamil Nadu

Introduction

The Chippiparai is a medium-sized, native hound breed dog seen in southern parts of Tamil Nadu in India; especially breeding tract of this breed are Thoothukudi, Tirunelveli, Virudhunagar and Madurai districts of Tamil Nadu [3]. Chippiparai is one of the native dog breeds and one among the four indigenous breeds (other breeds are Rajapalayam, Kombai and Kanni). It is a sight-hound type and purpose for rearing is hunting and also it was kept as a symbol of royalty and dignity by the rulers of Tirunelveli in medieval periods of history. Today's modern world dog is one of the important companion animals in human population.

Dogs are definitive hosts for many gastrointestinal (GI) parasites and some with zoonotic potential. Various studies revealed the prevalence of GI parasites in dogs from different parts of the country [1, 7, 4, 2, 5, 9, 8, 13, 11, 6, 14, 12]. Not many of studies have been so far documented about the prevalence of GI parasites in Chippiparai dogs. The present study was carried out to determine the prevalence of GI parasites of veterinary and public health importance in Chippiparai dogs in Thoothukudi (Dt), Tamil Nadu.

Materials and Methods

More than 200 Chippiparai dogs are being reared in the main breeding tract of Thoothukudi districts, in areas such as Pannamparai, Veeravanallur, Veppankadu, Sathankulam and udangudi. Fecal samples of 31 dogs were collected from pack of Chippiparai dogs (71) in Pannamparai village, among these 7 dogs below 6 months of age and 24 dogs 1 to 2 years of age. Fecal samples were collected per rectum using simple random sampling and screened by sedimentation techniques and flotation method. Helminthes was identified based on the morphological characters and classify the different ova observed under microscope (10X) to the level of genus or species as described by Solusby [12].

Results and Discussion

Out of 31 fecal samples examined 18 were found positive for one or more GI parasites (Fig 1).

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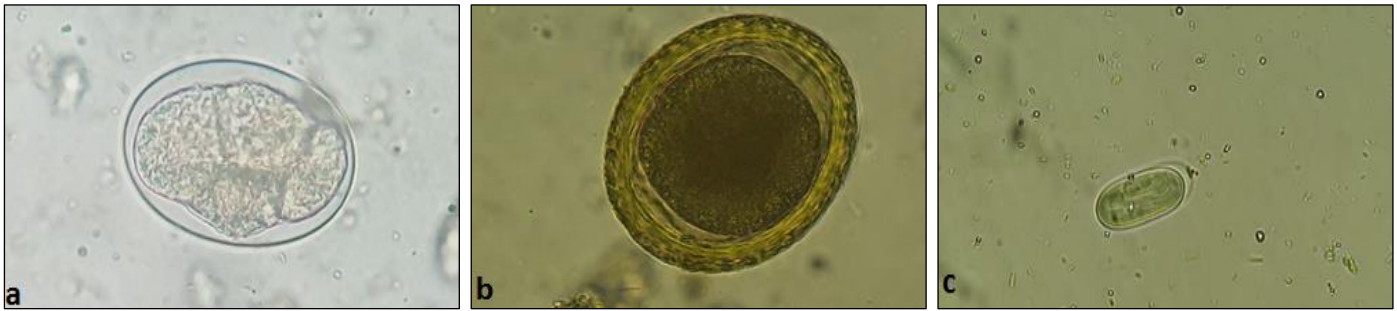


Fig 1: Ova of different species of gastrointestinal parasites in Chippiparai dogs. (a) Egg of *Ancylostoma caninum* (40X), (b) Egg of *Toxocara canis* (40X), (c) Egg of *Spirocerca lupi* (40X)

The overall prevalence of gastrointestinal parasites was found to be 51% (Table 1). The species wise distribution of the GI helminthes encountered was *Ancylostoma caninum* (81.25%) was highest, followed by *Toxocara canis* (12.50%) and

Spirocerca lupi (6.25%) (Table1). Only one dog had a combined infection of *Ancylostoma caninum* and *Toxocara canis*.

Table 1: Prevalence of gastrointestinal parasites in Chippiparai dogs

Samples examined	Samples positives	<i>Ancylostoma caninum</i>	<i>Toxocara canis</i>	<i>Spirocerca lupi</i>	Mixed infection
31	18 (51%)	14 (81.25%)	02 (12.50%)	01 (6.25%)	01 (3.22%)

The distribution of GI parasites in young ones (100%) showed high prevalence compared to adult (45.83%) dogs and the

intensity of GI parasites may vary in infected animals (Table 2).

Table 2: The intensity of GI parasites in infected Chippiparai dogs

	Sample Number	Age of the animals (Month)	<i>Ancylostoma caninum</i>	<i>Toxocara canis</i>	<i>Spirocerca lupi</i>
1.	3	< 6 months	++++	-	-
2.	12		+	-	-
3.	16		++	++	-
4.	27		++	-	-
5.	29		++	-	-
6.	30		+++	-	-
7.	31		++	-	-
8.	4	6-12 months	+++	-	-
9.	13		++	-	-
10.	18		-	++++	-
11.	9	12-18 months	++++	-	-
12.	20		-	-	++
13.	11		+++	-	-
14.	8		+	-	-
15.	21		+++	-	-
16.	23	> 18 months	++++	-	-
17.	15		+++	-	-
18.	22		+++	-	-

* + Mild, ++ Moderate, +++ Medium, ++++ Heavy infection.

In India, Parasitological examinations have showed variable prevalence of Gastro intestinal parasite, with 52.9% of dogs being positive in Himachal Pradesh [1]. Positivity of GI parasites in stray dogs in Kashmir [8] was found to be 88.50%. A prevalence of 66.20% was detected in stray dogs in Nagpur by Khante *et al.* [4]. Das *et al.* [2] recorded prevalence of 65.64% in stray dogs and 23.30% in pet dogs in Puducherry. A prevalence of 24.71% and 26.09 were detected in pet dogs in Punjab by Harkirat *et al.* [6] and Singh *et al.* [11] respectively. Sawleha *et al.* was reported 27.08% positivity of GI parasites in dogs in Madhya Pradesh [10]. A comparative prevalence study of GI parasite among the stray and pet dogs in Palampur [7] was found to be 47.29% and 19.19% respectively. In a recent study, a prevalence of 23.72% was reported among pet dogs from Chennai (14). Tamil Nadu very scanty works have so far been documented in GI parasites in

dogs and no studies in native dog breeds of Tamil Nadu.

In the present study, 51% of fecal samples were positive gastrointestinal parasites by conventional microscopic examination, however similar studies conducted by Panigrahi *et al.* [8] and Agnihotri *et al.* [1] have also recorded a similar type of prevalence of 41.46% and 52.90% in pet and stray dogs respectively. Sudan *et al.* [10], Pandit *et al.* [8] and Wani *et al.* [16] have recorded higher prevalence (88.9%, 88.50% and 89.33% respectively) as reported in stray dogs. The species wise distribution results of our study showed that *Ancylostoma caninum* (81.25%) was the highest, followed by *Toxocara canis* (12.50%) and *Spirocerca lupi* (6.25%) were predominant species identified in the present study. Our results are in concordance with the results of Sudan *et al.* [13], Traub *et al.* [15] and Khante *et al.* [4] who have also identified as *Ancylostoma* and *Toxocara* were more predominant species

in their studies. The results of the study also revealed that prevalence of 100% in pups (0-6 months) similar report (84.06%) was recorded by Khante *et al.* [4]. In Tamil Nadu, Suganya *et al.* [14] study also concordance with our results. This study is a first report from Chippiparai breeds in Tamil Nadu.

Conclusion

In the present study *Ancylostoma* spp. was the most common and followed by *Toxocara* spp. in Chippiparai dogs. *Ancylostoma* spp. and *Toxocara* spp. were found to be predominant zoonotic helminthes which are associated with Cutaneous Larva Migrans and Visceral Larva Migrans in human beings. The pet owners have to be properly educated about deworming protocols and to maintain the proper sanitary conditions to minimize zoonotic transmission.

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