

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

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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 (Karthickeyan *et al.*, 2015). 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 was a symbol of royalty and dignity by the rulers of Tirunelveli in medieval periods of history. In 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 (Agnihotri *et al.*, 2008; Pandit *et al.*, 2008; Das *et al.*, 2009; Khante *et al.*, 2009; Godara *et al.*, 2010; Singh *et al.*, 2011; Harkirat *et al.*, 2012; Panigrahi *et al.*, 2014; Sudan *et al.*, 2015; Moudgil *et al.*, 2016; Suganya *et al.*, 2019). 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.

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 classified according to the different ova observed under microscope (10X) to the level of genus or species as described by Solusby (1982).

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

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 %), 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*.

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).

In India, Parasitological examinations have showed variable prevalence of Gastro intestinal parasites, with 52.9 % of dogs being positive in Himachal Pradesh (Agnihotri *et al.*, 2008). Positivity of GI parasites in stray dogs in Kashmir was found to be 88.50 % (Pandit *et al.*, 2008). A prevalence of 66.20 % was detected in stray dogs in Nagpur by Khante *et al.* (2009). Das *et al.* (2009) recorded prevalence of 65.64 % in stray dogs and 23.30 % in pet dogs in Puducherry. A prevalence of 24.71 and 26.09 % was detected in pet dogs in Punjab by Harkirat *et al.* (2012) and Singh *et al.* (2011) respectively. Sawleha *et al.* (2012) reported 27.08 % positivity of GI parasites in dogs in Madhya Pradesh. A comparative prevalence study of GI parasites among the stray and pet dogs in Palampur was found to be 47.29 % and 19.19 % respectively (Moudgil *et al.*, 2016). In a recent study, a prevalence of 23.72 % was reported among pet dogs from Chennai by Suganya *et al.* (2019). In Tamil Nadu very scanty works have so far been documented on GI parasites in dogs and no study is available 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.* (2014) and Agnihotri *et al.* (2008) have also recorded a similar type of prevalence

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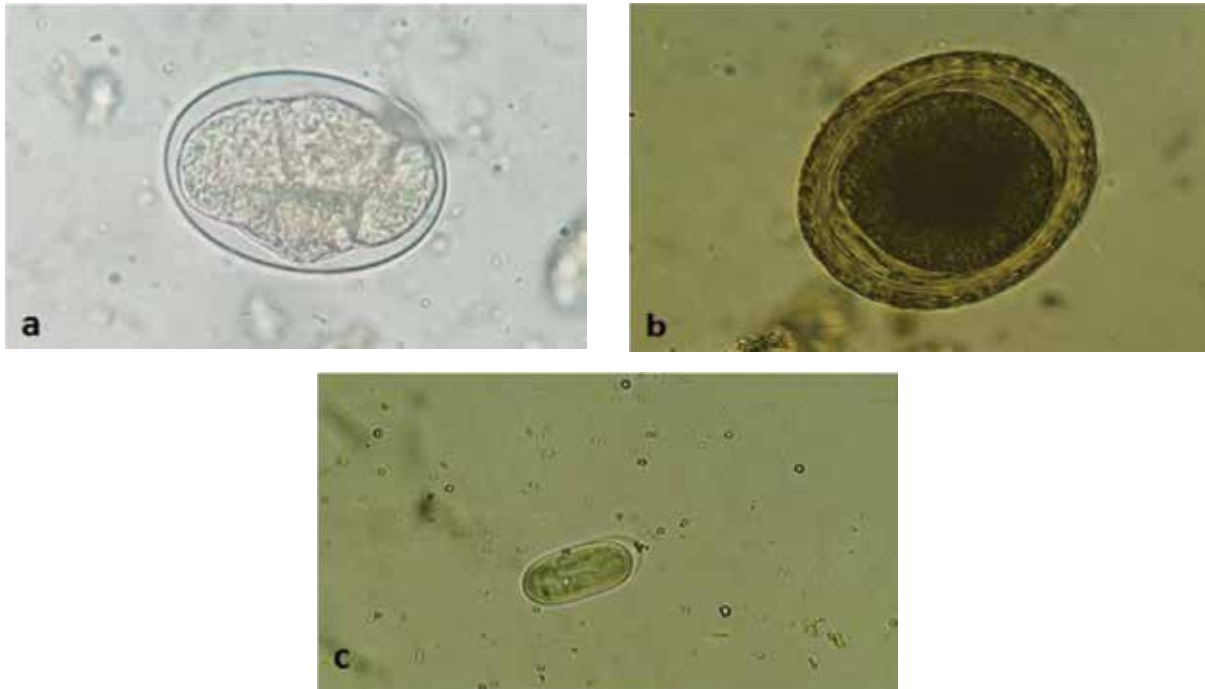


Fig 1: Ova of different species of gastrointestinal parasites in Chippiparai dogs. (a) Egg of *Ancylostoma caninum* (40X), (b) Egg of *Toxocara canis* (40X), (c) Egg of *Spirocerca lupi* (40X).

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 %)

of 41.46% and 52.90% in pet and stray dogs, respectively. Sudan *et al.* (2015), Pandit *et al.* (2008) and Wani *et al.* (2014) 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.* (2015), Traub *et al.* (2014) and Khante *et al.* (2009) 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.* (2009). In Tamil Nadu, Suganya *et al.* (2019) study is also in 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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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		++++	-	-
2.	12		+	-	-
3.	16	< 6 months	++	++	-
4.	27		++	-	-
5.	29		++	-	-
6.	30		+++	-	-
7.	31		++	-	-
8.	4		+++	-	-
9.	13	6 – 12 months	++	-	-
10.	18		-	++++	-
11.	9		++++	-	-
12.	20		-	-	++
13.	11	12 – 18 months	+++	-	-
14.	8		+	-	-
15.	21		+++	-	-
16.	23		++++	-	-
17.	15	> 18 months	+++	-	-
18.	22		+++	-	-

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

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