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Prevalence of gastro intestinal parasites in Pulikulam cattle reared in Southern India

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Abstract

The study was carried out with the objective of investigating gastro intestinal parasite present in the Pulikulam cattle reared in Sivaganga, Madurai and Virudhunagar districts of Tamil Nadu State, India under grazing system of management. A total of 90 samples viz., 30 samples from each district were collected and examined for eggs and oocyst count per gram of faeces to identify the gastro intestinal parasite. Results revealed that mixed *Strongyle* spp and *Eimeria* spp were the predominant gastro intestinal parasites and scarce Amphistome were also present in the Pulikulam cattle reared under grazing system of management.

Keywords: *Eimeria* spp, GI parasites, prevalence, Pulikulam cattle, *Strongyle* spp.

Introduction

Gastro intestinal parasitic infection is a major problem which affect the productivity of animals thereby causes economic loss to the dairy farmers. Cattle reared by grazing system of management parasitized by different gastro intestinal parasites. Controlling of Gastro intestinal parasites is a major constraints in cattle reared in grazing and semi intensive system which affect health and causes heavy economic losses to the cattle rearers. (Bary *et al.*, 2018; Rinaldi *et al.*, 2011) [2, 11]. The parasitic infections affect general health, reduced feed in take, retarded growth, reduced work efficiency and lowered production performance. (Radostits *et al.*, 1994 and Silvestre *et al.*, 2000) [10, 12]. Further, these GI parasites increase susceptibility to other infections like bacterial and viral infections which affects internal organs of the cattle (Gunathilaka *et al.*, 2018) [5]. The parasitic diseases of cattle mainly affected by adverse climatic condition, management practice and quality of grazing land present in the particular region. This GI infections are more in tropical countries due to environmental condition suitable for transmission of helminth (Singh *et al.*, 2013) [13]. Gastro Intestinal parasitism may be caused by helminths and protozoa *Eimeria* infections especially in young cattle causes coccidiosis which may lead to diarrhoea and morbidity and mortality is high (Volpato *et al.*, 2017; Leon *et al.*, 2019) [20, 7]. *Strongyloides* spp is one of the nematodes which lives in gastrointestinal tract of some species which may able to affect multiple host. In general each *Strongyloides* spp has specific host. *Trichuris* is a nematode lives in cecum and colon causes diarrhoea, weakness leading to death of animal (Wideman, 2004) [21].

Pulikulam Cattle is a native cattle breed of Southern Tamil Nadu, Mainly reared in Madurai, Sivaganga and Virudhunagar districts of Tamil Nadu. This breed of cattle is reared by nomadic grazing system of management (Srinivasan *et al.*, 2023) [15]. Pulikulam cattle are reared as a herd with the average size of 100 to 500 animals. Bulls of this cattle breed are mainly reared for bull baiting game conducted after paddy harvest season. Gastrointestinal parasitism causes huge losses and problems in cattle. It is important to study the prevalence of gastrointestinal parasites and their control in Pulikulam cattle. Presently there is no such data available in Pulikulam cattle. Hence, the objective of this study was to investigate the prevalence of gastrointestinal parasites in Pulikulam cattle reared in southern part of Tamil Nadu.

Materials and Methods

The study was conducted in Pulikulam Cattle Breeding tract ie Sivaganga, Madurai and Virudhunagar Districts of Tamil Nadu from June to August 2023.

A total 90 faecal samples (30 samples from each district) were collected and examined for gastro intestinal parasites. To slow down the process of egg development the samples were transported in refrigeration condition. The faecal samples were examined grossly for presence of adult nematode. The faecal samples were processed and examined by direct smear method and ova of Gastro intestinal parasites were identified from their morphological features (Soulsby, 1982) [14]. The results of GI infection expressed as percentage among the

total samples collected.

Results and Discussion

Prevalence of GI parasite in Pulikulam cattle reared in Sivaganga, Madurai and Virudhunagar district are presented in table 1. In this study, overall 77 sample were infected with any one of the GI parasite infection among the 90 samples which constitutes 85.55% of the Pulikulam cattle infected with any one of the GI parasites.

Table 1: Prevalence of GI parasite in Pulikulam cattle reared in Sivaganga, Madurai and Virudhunagar district are presented

| S. No | Gastro intestinal parasite | Prevalence (%) | | |
|-------|---|----------------|-------------|--------------|
| | | Sivaganga | Madurai | Virudhunagar |
| 1 | Amphistome | - | 1(n=3) | 1(n=3) |
| 2 | Eimeria oocyst and <i>Strongyloides</i> mixed infection | 63.33 (n=19) | 53.33(n=16) | 60(n=18) |
| 3 | <i>Eimeria</i> oocyst | 23.33(n=7) | 20.0(n=6) | 16.66(n=5) |
| 4 | <i>Trichuris</i> species | - | - | - |

In general four types of nematode eggs were found in cattle. They are Strongyle, *Strongyloides*, *Toxocara* and *Trichuris*. In Sivaganga district 86.66 percent samples from Pulikulam cattle infected with any one of the GI parasites. A total of 63.33 percent samples from Pulikulam cattle infected with mixed *Eimeria* oocyst and Strongyle ovae. A total of 23.33 percent samples infected with *Eimeria* oocyst alone. There were no samples infected with Amphistomes, *Toxocara* and *Trichuris* species. In Madurai district 83.33 percent samples from Pulikulam Cattle infected with any one GI parasites. Out of this 1 percent of the sample from Pulikulam cattle infected with Amphistomes, 53.33 percent samples infected with mixed *Eimeria* oocyst and Strongyle ovae. *Eimeria* oocyst alone was present in 20 percent of the samples. In Virudhunagar district overall 86.66 percent samples from Pulikulam cattle infected with any one of the GI parasites. Majority (60 percent) samples infected with mixed *Eimeria* oocyst and Strongyle ovae, 16.66 percent samples infected with *Eimeria* oocyst alone and same like Madurai District 1 percent samples were infected with amphistomes. During the study *Trichuris* species were not found in any of the faecal samples of Pulikulam cattle from three districts. The main nematodes found in the samples from Pulikulam cattle from the present study was *Strongyle* species. Similar to the finding of this study Biu *et al.* 2009 [3] reported that Strongyle species is the most common nematode found in the ruminants. Swarnakar *et al.* 2015 [16] reported that nematode infection highly prevalent in cow and buffalo of Udaipur district, India in comparison to trematode and cestode. They also reported that Strongyle species was the main nematodes followed by *Strongyloides* species, *Toxocara* species and *Trichuris* species. Further they reported high prevalence of amphistomes species commonly called as rumen flukes in Udaipur district cow and buffalo compared to *Fasciola* species (Awraris *et al.*, 2012; Pfukenyi *et al.*, 2006) [1, 9]. Terfa *et al.* 2023 [18] reported that gastro intestinal strongyles and coccidian were the major and ample GI parasites in cattle in three districts of central Ethiopia. Molento *et al.* 2016 [8] reported that prevalence of GI parasites depends on temperature, humidity, average rain fall, local vegetation and local weather and climatic condition. In Ethiopia prevalence of *Coccidia* in cattle ranged from 20 percent to 48 percent (Hailu *et al.*, 2022; Diriba *et al.*, 2018; Tamrat *et al.*, 2020) [4, 17]. In the present study prevalence of *Eimeria* infection alone ranged from 16 to 23 percent in the sample collected from Pulikulam cattle in its breeding tract. Thanasuwan *et al.* 2021 [19] reported that Strongyles were the most prevalent

compared with GI in parasites in cattle in n Kalasin Province, Thailand. Gunathilaka *et al.* 2018 [5] reported that comprehensive knowledge of the parasitic epidemiology local climatic condition and pasture management is required to control the GI parasites in cattle.

Conclusion

From the study it is concluded that Strongyle and *Eimeria* were the predominant gastro intestinal tract parasite present in the Pulikulam cattle reared under grazing system of management.

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