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## Seasonal Occurrence of Gastrointestinal Parasitic and Protozoan Infestation of Domestic Animals in Wayanad District

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**ABSTRACT:** Gastrointestinal parasitism not only affect the health but also disturbs the feed intake, feed conversion and feed utilization as well as growth of the animals there by severely affects the productivity and reproductive performance of animals. Fecal samples from 172 cattle, 208 goats and 112 dogs were collected from different panchayats belonging to three taluks of Wayanad district with complaints of weakness, emaciation, diarrhoea, inappetance, rough hair coat, pale mucus membrane during the period from April 2014 to August 2018 were examined grossly with naked eye followed by microscopic examination by direct smear method, floatation and sedimentation technique. Samples were collected during three season of the district namely Rainy season (June - September), Winter season (October – February) and Summer season (March - May). The overall prevalence of gastrointestinal parasitism was found to be 54.06% in cattle, 49.51% in goats and 48.21% in dogs. Highest parasitic infestation was noticed during winter season in cattle, summer season in goats and dogs. Gastrointestinal parasites commonly noticed in cattle and goats were amphistome, schistosome, strongyle, monezia, strongyloid, toxocara and trichuris. Ancylostome, toxocara and Dipylidium caninum was noticed in dogs. Among the gastrointestinal protozoa, coccidian was commonly noticed in all species. The parasitic infestation in different species during different seasons of Wayanad district will be discussed in detail. These findings stress the need and time for anthelmintic medication for domestic animals.

**KEY WORDS:** Parasitism, cattle, goats, dogs, season

### I. INTRODUCTION

The gastrointestinal tract of animals harbors wide variety of parasites which causes clinical and subclinical parasitism. Gastrointestinal parasites not only affect the health but also disturb the feed intake, feed conversion and feed utilization as well as growth of the animals thereby severely affects the productivity and reproductive performance of animal which can result in loss of body weight, poor productive performance, digestive disturbance, emaciation and increased susceptibility of animals to other infections.

### II. RELATED WORK

Retrospective study of parasitic diseases in domestic and wild animals in Northern Kerala revealed strongylosis as predominant cause of gastrointestinal parasitosis in cattle and goats with prevalence rates of 11.35 percent and 36.63 per cent respectively. Ancylostomosis was predominant in dogs with prevalence rate of 18.23 per cent reported by Nimisha et al. [1]. Abraham et al. [2] conducted survey on gastrointestinal parasites of dairy cattle in Wayanad and identified strongyle (17.56 per cent) and amphistome (11.86 per cent) were most prevalent followed by strongyloides

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(1.86 per cent), monezia(0.3 per cent), trichurid (0.2per cent) and schistosoma(0.1 per cent). Singh et al. [3] reported overall prevalence of 83.08 percent of parasitic infections in small ruminants in Western zone of Punjab. The most relevant risk factors for prevalence of gastrointestinal parasitism in ruminants were sex, age and season.

### III. MATERIALS AND METHODS

Fecal samples from 172 cattle, 208 goats and 112 dogs were collected from different panchayats belonging to three taluks of Wayanad district (table 1) with complaints of weakness, emaciation, diarrhoea, inappetance, rough hair coat, pale mucus membrane during the period from April 2014 to August 2018 were examined grossly with naked eye followed by microscopic examination by direct smear method, floatation and sedimentation technique. Samples were collected during three seasons of the district namely Rainy season (June - September), Winter season (October – February) and Summer season (March - May).

### IV. RESULT

#### Gastrointestinal parasitism of cattle

The overall prevalence of gastrointestinal parasitism in cattle during the study period was found to be 54.06 percent (93/172). Seasonal analysis revealed highest occurrence of parasitic infestation in cattle was during winter season (50 per cent). Seasonal distribution of parasitic infestation in cattle during the study period was shown in table 2. Among different gastrointestinal parasites, highest incidence was found to be with strongyle (25 per cent) followed by amphistome (20.8 per cent), schistosoma(12.5 per cent), trichuris(8.5 per cent), monezia(4.5 per cent), strongyloid(4.1 per cent) and toxocara(4.1 per cent) during rainy season. Prevalence of coccidia was found to be 20.8 per cent.

Highest occurrence was observed with amphistome(30.4 per cent) and strongyle (30.4 per cent) followed by strongyloid (10.8 per cent), schistosoma(4.3 per cent), toxocara(2.1 per cent), trichuris (2.1 per cent) during winter season. Prevalence of coccidia was recorded as 19.5 per cent. During summer season, coccidia(36.3 per cent) infestation was found to be highest followed by strongyle(31.8 per cent), amphistome(18.1 per cent) and schistosoma(13.6 per cent).

#### Gastrointestinal parasitism of goats

The overall prevalence of gastrointestinal parasitism in goats during the study period was found to be 49.51 percent (103/208). Seasonal analysis showed highest occurrence of parasitic infestation during rainy season (46.07 per cent) followed by summer season (34.31 per cent) and then winter season (18.63 per cent)(Table 3).

During rainy season, highest prevalence was with strongyle (56.2 per cent) followed by trichuris (10.4 per cent) and strongyloid (6.5 per cent). Prevalence of coccidian was found to be 22.9 per cent.

Strongyle (68.4 per cent) and strongyloid (15.7 per cent) was reported during winter season. Coccidia were found to be 15.7 per cent.

During summer season, strongyle (45.7 per cent) has the highest prevalence followed by strongyloid (14.2 per cent) monezia(6.5 per cent) and trichuris(2.1 per cent). The prevalence of coccidia was found to be 14.2 per cent.

#### Gastrointestinal parasitism of dogs

The overall prevalence of gastrointestinal parasitism in dogs during the study period was found to be 48.21 percent (54/112). Highest occurrence of parasitism was reported during summer season (38.9 per cent) followed by winter (29.62 per cent) and rainy season (27.8 per cent). Seasonal distribution of parasitic infestation in dogs during the study period was shown in table 4.

During Rainy season, highest prevalence was with ancylostoma (58.8 per cent) followed by toxocara (41.2 per cent).

During winter season, highest prevalence was with ancylostoma (87.5 per cent) followed by toxocara(12.5 per cent).

During summer season, highest prevalence was with ancylostoma(47.6 per cent) followed by toxocara(19 per cent) and *Dipylidium caninum*(9.5 per cent). The prevalence of isospora was found to be 14.2 per cent.

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Table:1 Sampling Distribution

Vythiri Taluk	Sulthan Bathery Taluk	Mananthavady Taluk
Kaniyampatta Kottathara Meppadi Muttill Pozhuthana Thariode Vythiri Padinjarathara	Ambalavayal Meenangadi Noolpuzha Poothadi Pulpally	Panamaram Vellamunda Mananthavady

Table:2 Gastrointestinal parasitism in cattle

Parasite	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
	Coccidia	5	20.8	9	19.5	8
Amphistome	5	20.8	14	30.4	4	18.1
Schistosoma	3	12.5	2	4.3	3	13.6
Strongyle	6	25	14	30.4	7	31.8
Monezia	1	4.1	-	-	-	-
Strongyloid	1	4.1	5	10.8	-	-
Toxocara	1	4.1	1	2.1	-	-
Trichuris	2	8.3	1	2.1	-	-
Total	24	100	46	100	22	100

Table 3 Gastrointestinal parasitism in goat

Parasite	Infestations reported					
	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
Coccidia	11	23.40	3	15.7	5	14.7
Strongyle	27	57.44	13	68.4	16	45
Strongyloid	4	8.51	3	15.7	5	14.7
Trichuris	5	10.63	-	-	5	14.7
Monezia	-	-	-	-	3	8.8
Total	47	100	19	100	34	100

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Table 4 Gastrointestinal parasitism in dog

Parasite	Infestations reported					
	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
Ancylostoma	10	58.8	14	87.5	12	57.1
Toxocara	7	41.17	2	12.5	4	19
Dipylidium caninum	-	-	-	-	2	9.5
Isospora	-	-	-	-	3	14.2
Total	17	100	16	100	21	100

## V. DISCUSSION

Parasitism, mainly endoparasitism produces various ill effects like emaciation, weakness, inappetance and predisposes to various other potential pathogens reported by Allwin et al.[4]. The rate of morbidity and mortality due to parasites are increasing, thus it is high time to give more emphasis on systematic control of parasitic diseases (Vanisri et al. [5]). From the study, it can be inferred that cattle were mainly infected by nematodes, followed by trematodes. The occurrence of cestode infections among cattle was relatively low. Similar findings were observed by Vanisri et al. [5] and Nimisha et al. [1]. Strongyles were the predominant gastrointestinal parasites of cattle. Amphistomes were the second most important helminths identified. Abraham et al. [2] also identified strongyles as the most predominant cattle parasites followed by amphistomes in Wayanad. Moniezia spp. was the only cestode parasite infecting cattle encountered in the present study. According to Keyyu et al. [6] the occurrence of cestode species is comparatively less in cattle. Highest parasitic infestation in cattle was noticed during winter season an amphistome was reported highest during this season. But Nimisha et al. [1] reported high incidence of intestinal parasitosis in cattle during rainy season and least during summer. Marskole et al. [7] also observed the high prevalence of parasitism during wet season. High moisture content along with temperature prevailed during winter season in Wayanad district favours the growth and development of larvae may be the reason behind highest prevalence of GI parasitic infections during this season.

Gastrointestinal parasites in goats are of significant importance as they cause heavy morbidity and mortality rates. In the present study, out of 208 fecal samples from goats examined, 103 were positive for intestinal parasitosis, indicating a high prevalence of 49.51per cent. Strongyles were the predominant parasite. *Haemonchus contortus* is the important strongyle worm present in the abomasum of goats resulting in severe gastroenteritis, poor growth rate and even heavy mortality (Kagira and Kanyari,[8] ; Singh et al. [9] ). Coccidia were the most important protozoan parasite detected in goats. Moniezia spp., Strongyloides spp. and Trichuris spp. were also identified. The seasonal prevalence of intestinal parasitosis was highest in monsoon and lowest during winter season. Similar reports by Velusamy et al. [10] and Nimisha et al.[1].. Overcrowding, poor management and increased humidity during rainy season can predispose to increased incidences of parasitic infection. Low prevalence of intestinal parasitism in winter season was due to reduced grazing hours of the animals, which helped in reducing the chances of contact between host and parasites reported by Katoch et al.[11].

Faecal sample examination of dogs revealed highest incidence of ancylostomosis. Hookworms were the most commonly identified parasite in dogs (Nimisha et al.[1] ;Vatsya et al.[12]; Das et al.[13]; Taub et al.[14]. *Toxocara canis* was the second most predominant helminthic infection in dogs. Incidence of intestinal parasitosis was highest during summer. In contrary to this finding, highest incidence of parasitism in dogs was notice during rainy season and least during summer (Vatsya et al. [12] ; Nimisha et al.[1]. *Dipylidium caninum* and isospora were identified during summer.

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## VI. CONCLUSION

The overall prevalence of gastrointestinal parasitism was found to be 54.06% in cattle, 49.51% in goats and 48.21% in dogs. Gastrointestinal parasitism was more during winter in cattle, rainy season in goats and summer in dogs. Strongylosis was the predominant cause of gastrointestinal parasitosis in cattle and goats. Higher incidence of amphistome was observed during winter in cattle and coccidiosis in calves during summer. *Ancylostoma caninum* was most frequent among dogs. These findings warrant strategic anthelmintic treatment of domestic animals in accordance with season.

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