



Seasonal prevalence of gastrointestinal parasites in small ruminants of Cuddalore district of Tamil Nadu.

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Abstract

*The study was carried out from October 2013 to September 2014 in both organised and small sheep and goat farms of all the six taluks of Cuddalore district of Tamil Nadu, India. The objective of the present study is to determine the seasonal prevalence of gastrointestinal parasites in small ruminants. A total of 2160 faecal samples (90 from goat and 90 from sheep per month) were collected and subjected for analysis. Among the analysed samples 51.66% of sheep and 48.88% of goats were positive for endoparasites. The prevalence of gastrointestinal parasites was higher in sheep than in goats. The nematodes found in small ruminants were *Haemonchus* spp., *Trichostrongylus* spp., *Oesophagostomum* spp. and *Bunostomum* spp., and *Haemonchus* sp was found to be predominant in both sheep and goat. The results of season wise analysis indicates that the overall infection percentage was higher in rainy season, northeast monsoon (77.03% and 74.07%) followed by winter (58.88% and 55.55%) and in south east monsoon (48.61% and 27.77%) than in summer (25.55% and 22.96%) in sheep and goats respectively.*

[Keywords: prevalence, seasonal variation, gastrointestinal parasites, small ruminants, Tamil Nadu]

I. Introduction

Gastrointestinal parasitic infections in small ruminants are of considerable economic importance because small ruminants' rearing has been a major source of income especially to the marginal farmers and labours of the country [1]. Helminthiasis, especially parasitic gastro-enteritis, pose a serious health threat and a limitation to the productivity of small ruminants due to the associated morbidity, mortality, cost of treatment and control measures [2]. In addition to these threats, infestation with helminthes lowers the animal's immunity and renders it more susceptible to other pathogenic infections; finally this may result in heavy economic losses [3]. The problem is however much more severe in tropical countries due to very favourable environmental conditions for helminth transmission [4].

Several authors [5-11] have explored various aspects of helminth infestation in small ruminants at different localities of Tamil Nadu and other states of India with a range of 25 - 92%. No report is available on prevalence of gastrointestinal helminths in south coastal region of Tamil Nadu viz., Cuddalore district where goat farming is the primordial occupation of the small farmers. Hence, the present study was undertaken to elucidate the prevalence of gastrointestinal parasitosis in smallholder sheep and goats of Cuddalore district in Tamil Nadu.

II. Materials and methods

The sheep and goats maintained by the organized farms, small and marginal farmers in Chidambaram, Kattumannarkoil, Cuddalore, Panruti, Vridhachalam and Tittakudi taluks of Cuddalore district were selected for the study. Six flocks of goat and six flocks of sheep, each flock with 20 – 45 animals were selected for the study. From October 2013 to September 2014, a total of 2160 fresh faecal samples were collected from the selected sheep and goat flocks. The faecal samples were examined for helminth eggs using Direct, Sedimentation, Flootation techniques [12, 13].

III. Results and Discussion

The analysis of faecal samples revealed that among the 2160 samples examined, 558 samples from sheep and 528 samples from goats were found positive for helminth infection with an overall prevalence of 51.66% and 48.88% in sheep and goat respectively. (Table. 1). The flock wise analysis of helminth infection was given in Tab. 1 which showed sheep flock was most affected than the goat flock. The results of species wise analysis of faecal samples are shown in Table. 2 and it was noted that both sheep and goat flocks were affected by nematodes viz. *Haemonchus sp*, *Trichostrongylus spp.*, *Oesophagostomum spp.*, and *Bunostomum spp.* It was found evident that *Haemonchus sp* was the dominant species affecting both sheep and goat flocks. Next to it, the animals were affected with the mixed infections of nematodes. The results of season wise infection of helminthes in both sheep and goat flocks are summarized in Table. 3 and Table. 4 respectively. The gastrointestinal parasitic infection percentage was higher in rainy season, northeast monsoon (77.03% and 74.07%) followed by winter (58.88% and 55.55%) and in south east monsoon (48.61% and 27.77%) than in summer (25.55% and 22.96%) in sheep and goats respectively.

The present study indicated that the infection with gastrointestinal helminthes is a frequent phenomenon among the small ruminants of coastal districts of Tamil Nadu, India. The higher incidence of parasites in different study areas of Tamil Nadu were reported by many researchers [7, 8, 14, and 15]. The observed results were also in agreement with the findings of various authors from other parts of India [9, 10, 11, 16, and 17].

The various species of parasites recorded in the present study coincided with the findings of various authors [18, 19, and 15]. The seasonal occurrence of parasitic infection in small ruminants depicted higher infection of helminthes in rainy season followed by winter than in summer. This is in accordance with findings of other researchers [5, 20]. Heavy rainfall and high relative humidity predisposed to heavy parasitic infection [21]. Climatic factors also influenced dispersion of larvae in the herbage which increased the chance of contact between host and larvae [22, 23]. Higher infection during rainy season may also be attributed to suitable morality of salt present in soil, an important factor for ecdysis [24].

IV. Conclusion

From the above findings it was observed that the infections of gastrointestinal parasites among small ruminants were most prevalent throughout the year in organized and small holding flocks in varying intensity. Hence, appropriate strategic treatment with broad spectrum anthelmintic should be practised during the start and end of rainy season. Such treatment regime is strategic to get rid of the parasitic burden in the small ruminants and also minimize the pasture contamination by reducing faecal egg counts.

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Table 1. The flock wise analysis of gastrointestinal parasitic infection

Flock	Sheep			Goat		
	No.of samples collected	No.found positive	Infection (%)	No.of samples collected	No.found positive	Infection (%)
Chidambaram taluk	180	75	41.66	180	69	38.33
Kattumannarkoil taluk	180	96	53.33	180	89	49.44
Cuddalore taluk	180	102	56.66	180	100	55.55
Panruti taluk	180	87	48.33	180	85	47.00
Vridhachalam taluk	180	99	55.00	180	93	51.66
Tittakudi taluk	180	87	48.33	180	92	51.11
Overall	1080	558	51.66	1080	528	48.88

Table 2. Species wise prevalence of nematodes in sheep and goat

Animal	Total no. Samples examined	<i>Haemonchus spp.</i> ,		<i>Trichostrongylus spp.</i> ,		<i>Oesophagostomum spp.</i> ,		<i>Bunostomum spp.</i> ,		Mixed infection	
		No found positive	Prevalence (%)	No found positive	Prevalence (%)	No found positive	Prevalence (%)	No found positive	Prevalence (%)	No found positive	Prevalence (%)
Sheep	1080	320	29.62	69	6.38	42	3.88	53	4.90	74	6.85
Goat	1080	280	25.92	73	6.75	56	5.18	49	4.53	70	6.48
Both	2160	600	27.77	142	6.57	98	4.53	102	4.72	144	6.66

Table 3. Seasonal prevalence of Parasitic infection in sheep

Season	Chidambaram taluk	Kattumannarkoil taluk	Cuddalore taluk	Panruti taluk	Vridhachalam taluk	Tittakudi taluk	Whole	Infection %
North east monsoon (oct to Dec) n = 45	27	36	35	36	37	37	208	77.03
Winter (Jan and Feb) n = 30	12	18	19	19	16	22	106	58.88
Summer (Mar to May) n = 45	11	13	16	10	7	12	69	25.55
South west monsoon (June to Sep) n = 60	25	29	32	34	27	28	175	48.61

Table 4. Seasonal prevalence of Parasitic infection in Goat

Season	Chidambaram taluk	Kattumannarkoil taluk	Cuddalore taluk	Panruti taluk	Vridhachalam taluk	Tittakudi taluk	Whole dist	Infection %
North east monsoon (oct to Dec) n = 45	27	33	36	32	38	34	200	74.07
Winter (Jan and Feb) n = 30	13	18	18	16	17	18	100	55.55
Summer (Mar to May) n = 45	8	11	14	9	9	11	62	22.96
South west monsoon (June to Sep) n = 60	21	27	32	28	29	29	100	27.77