

## A Survey of Gastrointestinal Helminth Parasites of Slaughtered Sheep and Goats in Ganderbal, Kashmir

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**Abstract:** The aim of the study was to compare prevalence of infections with flukes, tape worms and nematodes parasitizing gastrointestinal tract in small ruminants from various regions of District Ganderbal Kashmir. Visceral examinations of 284 sheep and 318 goats indicated a marked variation in the level of parasitism in animals raised in different geographic areas. It was found that the prevalence of gastrointestinal helminthic infections was higher in goats than in sheep. The most common prevalent nematodes were *Haemonchus* (82%), *Trichuris* (74%), *Nematodirus* (60%), *Trichostrongylus* (58%), *Chabertia* (52%), *Strongyloides* (42%) and *Oesophagostomum* (46%). Among cestodes, *Moneizia* (48%), *Avitellina* (42%) and *Thysenezia* (28%) were reported. Among trematodes, *Fasciola* (60%), *Dicrocoelium* (52%) and *Paramphistomum* (46%) were most prevalent. The study indicates the prevalence of gastrointestinal helminthic infections varies in different seasons and in different age groups.

**Key words:** Cestodes • Goats • Nematodes • Prevalence • Sheep • Trematodes

### INTRODUCTION

The sheep plays a significant role in national economy and rural socioeconomic conditions in the country. The overall development of the rural hilly areas could not be achieved by neglecting the development of the agricultural commodities like sheep and goats. Helminths play an important role in decreasing the sheep and goats production in the world. Goats and sheep have numerous gastrointestinal helminth parasites, many of which are shared by both species. Compared to sheep, which develop a strong natural immunity around 12 months of age, goats acquire a lower level of immunity to gastrointestinal parasites [1]. This can result in goats having greater populations of adult parasites with high egg output [2]. The prevalence of gastrointestinal nematode infection is very high in Kashmir valley [3]. The principal aim of the present study was to investigate the prevalence and to identify species diversity of gastrointestinal helminth parasites of goats and sheep in District Ganderbal Kashmir.

### MATERIALS AND METHODS

Viscera of 284 sheep and 318 goats were collected from different slaughter houses of District Ganderbal.

The viscera were thoroughly examined and the Trematode and Cestode parasites were washed with physiological saline and fixed in Cornoy's fixative then kept in 70% alcohol. The Nematode parasites were fixed in hot 70% alcohol and preserved in 70% alcohol and glycerin. The nematodes were then cleared in Lactophenol and identified with reference to Soulsby [4]. Like wise trematodes and cestodes were processed for permanent mounts in DPX and identified.

**Statistical Analysis:** Statistical analyses was conducted using the chi-square test. The data was analyzed using Statistical packages SPSS software version 17. In all the analyses, confidence level was held at 95% and  $P < 0.005$  was set for significance.

### RESULTS

Of the total examined 284 sheep and 318 goats viscera, 182 (64.08%) sheep and 266 (83.64%) goats were found to be positive for one or more genera of Nematodes, Trematodes and Cestodes. The most common helminth parasites encountered were summarized in table 1 and similar results were found in visceral and faecal examinations. Nematodes were found most prevalent in both species of small ruminants

Table 1: Prevalence of helminthic infections in sheep and goats

Parasite	Location	Prevalence (%) in Goats	Prevalence (%) in Sheep	Overall Prevalence (%)
<i>Haemonchus</i>	Abomasum	48.45	33.55	82.00
<i>Trichuris</i>	Large intestine	41.80	32.20	74.00
<i>Nematodirus</i>	Small intestine	32.40	27.60	60.00
<i>Trichostrongylus</i>	Abomasum	32.60	25.40	58.00
<i>Chabertia</i>	Large intestine	28.00	24.00	52.00
<i>Strongyloides</i>	Small intestine	20.45	21.55	42.00
<i>Oesophagostomum</i>	Large intestine	26.00	20.00	46.00
<i>Moneizia</i>	Small intestine	18.90	29.10	48.00
<i>Avitellina</i>	Small intestine	24.25	17.75	42.00
<i>Thysaneizia</i>	Small intestine	17.85	10.15	28.00
<i>Fasciola</i>	Liver	30.65	29.35	60.00
<i>Dicrocoelium</i>	Small intestine	32.00	20.00	52.00
<i>Paramphistomum</i>	Stomach	22.45	23.55	46.00

Table 2: Age wise distribution of GI helminth parasites in sheep and goats

Age group	Sheep P = 0.002		Goats P = 0.125	
	No. Examined	Positive (%)	No. Examined	Positive (%)
0-1	38	36 (94.73)	45	44 (97.77)
1-2	32	29 (90.62)	42	40 (95.23)
2-3	36	31 (86.11)	37	34 (91.90)
3-4	40	28 (70.00)	38	32 (84.10)
4-5	30	18 (60.00)	40	32 (80.00)
5-6	38	21 (55.26)	39	27 (69.23)
6-7	36	12 (33.33)	38	22 (57.89)
7-8	34	10 (29.41)	39	20 (51.28)
Total	284	182 (64.08)	318	251 (78.93)

Table 3: Seasonal prevalence of helminth infection in sheep and goats

Seasons	Sheep P = 0.008		Goats P = 0.12	
	No. Examined	Positive (%)	No. Examined	Positive (%)
Spring	66	40(60.60)	74	65(87.83)
Summer	82	74(90.24)	84	80(95.23)
Autumn	78	51(65.38)	88	80(90.90)
Winter	58	18(31.03)	72	38(52.77)

where the prevalences were; *Haemonchus* (82%), *Trichuris* (74%), *Nematodirus* (60%), *Trichostrongylus* (58%), *Chabertia* (52%), *Strongyloides* (42%), *Oesophagostomum* (46%). Among cestodes, *Moneizia* (48%), *Avitellina* (42%) and *Thysaneizia* (28%) were reported. Among the trematodes, *Fasciola* (60%), *Dicrocoelium* (52%) and *Paramphistomum* (46%) were found most prevalent.

The age wise prevalence of helminthic parasites is presented in Table 2. The most infected age group was 0-1 years in both sheep and goats in which percentage of infection was 94.73% and 97.77% respectively. The least percentage of helminthic infection was found in older age

group (29.41% and 51.28% in sheep and goats respectively) however, the sheep observations are significant (P = 0.008) but goat observations are not significant (P = 0.12). The intensity of helminthic infection was greater in older age groups as revealed by high worm load in adults.

The seasonal prevalence of helminthic infection in sheep and goats is depicted in Table 3. There was a gradual increase in the prevalence rate from spring to summer with a maximum infection during summer and the lowest prevalence in winter. There was a significant effect of seasons on prevalence of helminthic infections.

## DISCUSSION

It is well understood that epidemiology forms the foundation on which the edifice of control of parasitic diseases can be constructed. The present study indicates that the infection with gastrointestinal helminthes is a frequent phenomenon among the small ruminants of Kashmir Valley as previously documented [3, 5-7]. The high prevalence of helminthic infections observed in present study was previously reported [8-11]. In the present study nematode infections were high prevalent followed by trematodes and cestodes. Similar type of results has been indicated by the works conducted by Vlasoff [1].

The high level of infection recorded from April onwards is due to favorable conditions for the development of larvae in the host and environment also the availability of intermediate host [12, 13]. High rain fall in spring also helps in providing suitable molarity of salt present in soil, which is an important factor for ecdysis [4]. The low level of helminth infection reported in adult sheep is attributed to development of the significant immune capability. Following the elimination of the major part of their worm burden when they are 11-12 months of age, sheep tend to remain relatively resistant to serious reinfection, however, they require constant exposure to some level of infections to maintain their resistant status [11, 14]. The present observations may initially be of great help to understand the epidemiology of the GI nematodes in sheep of Kashmir Valley and will certainly be of potential significance planning Pasture and grazing management and other prophylactic strategies for sheep and goats in the study area. In conclusion, various gastrointestinal parasites have been found in goats. Regular control measures should be practiced to reduce the parasitic burdens in the affected areas.

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