

Prevalence of gastrointestinal parasites in sheep and goats in and around Mathura, India

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Abstract

Aim: To study the prevalence of gastrointestinal parasites in sheep and goats of Mathura region.

Materials and Methods: A total of 240 faecal samples collected from three different farms were examined by direct smear, Willi's floatation and sedimentation techniques. Quantitative examination was done by McMaster's technique.

Results: Out of 240 samples processed 165 samples were found positive for gastrointestinal parasites. The overall prevalence was 68.75%. The most common gastrointestinal parasites were *Haemonchus*, *Moniezia* and *coccidia*.

Conclusions: The results of the present study suggest that *Haemonchus* is the main gastrointestinal parasite of sheep and goats in Mathura region. Necessary steps should be taken in timely manner to improve the productivity from these animals.

Keywords: gastrointestinal parasites, *Haemonchus*, sheep and goats, Mathura

Introduction

Sheep and goats are the earliest ruminants to be domesticated. They can withstand a period of drought better than any other livestock and they can use those pastures, which cannot be used by other livestock. Goats can survive under limited fodder need and they are capable to withstand water scarcity [1]. Sheep and goats are important source of animal protein. Gastrointestinal parasitic infections in sheep and goats are of much economic importance because small ruminants' rearing has been a major source of income especially to the marginal farmers of the country [2]. Recurring losses in productivity due to widely prevalent parasitic infection is an important and common problem for small ruminant production in most parts of the world [3].

Commonly occurring gastrointestinal parasitic diseases in goats and sheep are *Haemonchosis*, *Ostertagiasis*, *Strongyloidosis*, *Oesophagostomiasis*, *Bunostomiasis* and *Trichostrongylosis*. Among the nematodes, *Haemonchus contortus* is the most important. The degree of infestation may be sub clinical or clinical depending on level of parasitic load. Sub clinical infections remain dominant and as such are not recognized by the clinicians and owners. Thus the sub clinical and clinical infection should be tackled timely for better economic return.

Materials and Methods

In the present study faecal samples of 240 sheep and goats from three locations around Mathura were examined to know the prevalence of gastrointestinal

parasites in these animals during the study period 2008-09 (Table-1). The faecal samples were collected directly from the rectum of each animal. Gross examination was done for colour, consistency and for presence of any adult worms. The faecal samples were processed and screened by direct smear method, Willi's floatation and sedimentation techniques. The ova of parasites were identified from their morphological features [4]. Quantitative examination of faeces was conducted to know the intensity of parasitic infestation (EPG) by McMaster's technique. Animals detected positive by faecal examination were classified in to sub clinical (EPG<1600) and clinical (EPG>1600) [5] (Table-2). Further classification was made by type of parasites eggs present and as pure and mixed infections (Table-3).

Results

In the Veterinary college farm, 30 out of 40 goats (75%) were found to be positive for gastrointestinal parasites. In Aurangabad farm, out of 150 faecal samples of goats 101 samples (67.33%) were found positive whereas at the Madhurikund farm, 34 out of 50 sheep (68%) were found to be positive. By EPG values for parasitic infected goat, the prevalence of subclinical infection (<1600) at Veterinary College, was 43.34%, while the clinical infection was 56.66% (Table-4). The prevalence of subclinical infection at Aurangabad goat farm was 39.65% in Barbari goats and 41.87% in Jamunapari goats. While the clinical infection (>1600) was 60.34% in Barbari and 58.14% in Jamunapari goats. At Madhurikund farm the subclinical infection

Table- 1. Animal population studied

Species	Place	Number of Animals
Goats	Goat farm, Veterinary college, Mathura	40
	Goat farm, Aurangabad, Mathura	150
Sheep	Sheep farm, Madhurikund, Mathura	50
Total		240

Table-2. Range of EPG values in sub clinical and clinical gastrointestinal parasites in goats and sheep at different places of Mathura district.

Place	Animal	Range of EPG Value		Average EPG Value	
		Sub clinical	Clinical	Sub clinical	Clinical
Goat Farm Veterinary College, Mathura	Barbari (40)	380-1410	1680-3100	895	2390
Goat Farm Aurangabad, Mathura	Barbari (80)	550-1560	1800-3600	1055	2700
Sheep Farm Madhurikund, Mathura	Jamunapari (70)	540-1520	1750-3540	1030	2645
	Sheep (50)	440-1480	1640-3300	960	2470

Table-3. Prevalence of gastrointestinal parasites in goats and sheep at different places of Mathura district

Place	Animal	Pure infection			Mixed infection			Total	
		Mo	Bur	Coc	Bur+Coc	Bur+Mo	Mo+Coc		Bur+Mo+Coc
Goat Farm Veterinary College, Mathura	Barbari (40)	0	16	7	4	3	0	0	30(75%)
Goat Farm Aurangabad, Mathura	Barbari (80)	6	21	14	7	5	3	2	58(73.5%)
Sheep Farm Madhurikund, Mathura	Jamunapari (70)	5	15	11	4	4	2	2	43(61.43%)
	Sheep (50)	0	16	9	9	0	0	0	34(68%)

Bur = bursate, Coc =Coccidia, Mo =Moniezia

Table-4. Prevalence of clinical and sub clinical gastrointestinal parasites in goats and sheep at different places of Mathura district.

Place	Animal	Prevalence		Over all Prevalence
		Subclinical	Clinical	
Goat Farm Veterinary College, Mathura	Barbari (40)	13(43.34%)	17 (56.66%)	30 (75%)
Goat Farm Aurangabad, Mathura	Barbari (80)	23 (39.65%)	35 (60.34%)	58 (73.5%)
Sheep Farm Madhurikund, Mathura	Jamunapari (70)	18 (41.87%)	25 (58.14%)	43 (61.43%)
	Sheep (50)	14 (41.17%)	20 (58.82%)	34 (68%)

was 41.17%., while the clinical infection in sheep was 58.82% (Table- 4).

Discussion

Infection of gastrointestinal parasites was recorded (75%), the highest in Veterinary college farm. This finding is also in close agreement to early work carried out by Sharma (1998) who reported 29.6 to 100% infection spread over the entire year at college campus [6]. However, higher rates of infection throughout the year in goats were reported by previous workers [7,8]. Various studies have been conducted on prevalence of gastrointestinal parasites in sheep and goats in this country and abroad [2,7-12]. This variation in prevalence of parasitic infestation depends upon difference in agro climatic condition and availability of susceptible host [13]. Out of 30 parasitic infected goats in Veterinary college farm, 16(53.34%) goats harboured bursate worms (*Haemonchus*), 7(23.34%) harboured coccidian worms and 7(23.34%) animals had mixed parasitic infection.

At Aurangabad goat farm, breed wise infection was recorded. Out of 80 Barbari goats, 58(75.5%) goats were found to be positive for parasitic infection, out of which 21 (36.2%) goats harboured bursate worms (*Haemonchus*), 14 (24.13%) coccidian, 6 (10.34%) *Moniezia* and 17 goats contain infections of

bursate worm, composed of *Strongyles spp*, *Bunostomum spp.*, *Oesophagostomum spp.* and *Trichostrongylus spp.* (Table-3). Out of 70 Jamunapari goats in Aurangabad farm, 43(61.43%) goats were found to be positive for G.I.T parasites infection, out of which 15(34.88%) goats harboured bursate worm (*Haemonchus*), 11(25.58%) coccidian worms, 5(11.62%) *Moniezia* and 12 harboured infections of bursate worm composed of *Strongyles spp*, *Bunostomum spp.*, *Oesophagostomum spp.* and *Trichostrongylus spp.* (Table-3). Breed variation have been reported earlier [14].The data revealed highest percentage of bursate worm infection in both Jamunapari and Barbari goats, Further the overall prevalence of parasitism was slightly lower in Jamunapari (61.43%) than Barbari goats (73.5%) (Table-3). Occurrence of *Moniezia* infection along with bursate worm is not uncommon. Other researchers also reported *Moniezia* infection along with bursate worm infections in goats and sheep in India and abroad [15,16,17].

At the unit of Madhurikund farm, out of 50 sheep 34(68%) were found to be positive for gastrointestinal parasitic infection. Out of 34 infected sheep, 16(47%) harboured bursate worms (*Haemonchus*), 9(26.47%) harboured coccidian worms and 9(26.47%) had mixed infections (Table-3). In this study, high prevalence of bursate worm infection in both sheep and goats has

been observed which has also been reported earlier [18,19,20]. The overall bursate worm infections in this study as both pure and mixed infections were 35.71% in Jamunapari goats and 48.34% in Barbari breeds of goats. Variation may be due to change in management practices of different flocks and opportunity of grazing in the infected field. Sharma (1998) also reported about 63.3% infections with *Haemonchus spp.* at the same farm [6]. 27.5% faecal samples of Veterinary college and 36% of sheep at Madhurikund farm and 26.66% of Aurangabad farm were found to be positive for coccidial oocyst. However previous researchers have reported 32-41% prevalence of coccidia in sheep of Mathura region [11].

Conclusions

The results of the present study suggest that *Haemonchus* is the main gastrointestinal parasite of sheep and goats in Mathura region. Necessary steps should be taken in timely manner to improve the productivity from these animals.

Authors' contribution

All the authors contributed equally for this study. All author read and approved the final manuscript.

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Competing interests

Authors declare that they have no competing interest.

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