

## PREVALENCE OF GASTROINTESTINAL HELMINTHOSES IN BLACK BENGAL GOATS OF ORGANISED FARM IN WEST BENGAL

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The present study was conducted to determine the prevalence of gastrointestinal helminths (GIH) and intensity of gastrointestinal nematode (GIN) infection in Black Bengal goat in organised farm of West Bengal, India. A total of 40 (forty) goats in the age group of three months to one year were screened by Standard coprological technique for a period of one year (from Oct 2012 – September 2013). The overall prevalence of GIH infection was 71.04 %. Highest overall prevalence (80.63%) as well as intensity of GIN infection (402) through eggs per gram (EPG) of faeces was observed in monsoon and lowest prevalence (64.31%) and intensity (315) was recorded in summer. *Haemonchus contortus* was recorded as the predominant species with an overall prevalence of (63.50 %). These findings will encourage and broaden the scope of future strategic management and judicious treatment of animals with the popularly available anthelmintics.

**Key words :** Gastrointestinal parasites, Prevalence, Intensity, Goat, West Bengal.

Profitable animal husbandry in small ruminant livestock with fruitful monetary gains is a major economic source of most of the landless and poor farmers of rural area. Goat rearing as an economic venture has, of late, picked up considerable momentum in rural India including West Bengal, however profitable goat husbandry confronts a variety of constraints of which disease problem is the major hindrance for optimum productivity. Among various diseases,

parasitic disease is the major constraint which leads to significant economic losses attributable to significantly low weight gain, retarded growth and impaired productive along with reduced reproductive efficiency (Waller, 1999; Jas *et al.*, 2007 and Jas and Ghosh, 2009). Parasitic gastroenteritis due to nematode infections has been a major constraint to profitable goat production (Jas *et al.*, 2007) due to increased management cost and associated mortality

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(Barger and Cox, 1984 and Larsen *et al.*, 1995).

Nevertheless, systematic study on gastrointestinal parasites (GIP) in black Bengal goat is lacking and it continues to be a major limiting factor for their optimal productivity. Epidemiological studies in this regard plays an essential role to utilise the disease data for diagnostic purposes, that helps in creating disease control strategies and also assess the relationship between climatological factors and pathogens and thereby health of animals. Therefore, the present study was conducted to determine the prevalence of G. I. helminthes and intensity of GI nematode infection in Black Bengal Goats in organised farm of West Bengal, India.

## MATERIALS AND METHODS

**Study location :** One organized goat farm under the Government of West Bengal was selected for a study period of 12 months (Oct, 2012 – Sept, 2013). Animals of this farm were used to be treated with anthelmintics at three months interval. Animals were maintained in semi – intensive system and were allowed to graze on the available pasture within the farm complex.

**Selection of animals and collection of faecal samples :** A total of 40 goats of either sex in the age group of 3 months to one year old, were selected for the present study. Per-rectal faecal samples from individual goat were collected at monthly

interval during the study period. Pooled samples for culture (without preservative) were also collected for determination of species of different nematode larvae prevalent in those animals.

**Examination of faecal sample :** A part of each sample was subjected to qualitative faecal examination by standard sedimentation technique for the presence of trematode eggs and salt flotation technique for cestode and nematode eggs (Soulsby, 1982). Quantitative faecal examination of the remaining part of the samples was performed by Modified McMaster's Technique (Soulsby, 1982). Coprocultural examination of the faeces pooled from all the goats under study was also performed by honey-jar coproculture technique (Soulsby, 1982) concomitantly with the qualitative and quantitative faecal examinations. The species composition of nematodes (comprising strongyles and *Strongyloides*) in the larval samples obtained by coproculture was determined following the standard guidelines of Anon. (1971).

## RESULTS

The overall prevalence of naturally occurring gastrointestinal helminths (GIH) was recorded as 71.04%. Strongyle group of nematodes (61.88%) was the predominant among all the naturally occurring gastrointestinal parasites. Paramphistome (4.71%) and *Moniezia* sp. (8.34%) were the only trematode and cestode parasite recorded in the present study (Table 1). The overall prevalence of GI helminths was

**Table 1. Overall prevalence of gastrointestinal helminths in Black Bengal goats of organised farm at West Bengal, India.**

Months	Overall prevalence	Strongyle %	Strongyloides %	Trichuris %	Fasciola %	Paramphistome %	Moniezia %
W Nov.	75.00	57.50	5.00	7.50	0.00	5.00	7.50
I Dec.	65.00	52.50	7.50	2.50	0.00	2.50	7.50
T Jan.	67.50	55.00	5.00	2.50	0.00	2.50	10.00
E Feb.	65.00	55.00	5.00	5.00	0.00	2.50	7.50
Average I 68.13	55.00	5.63	4.37	0.00	3.13	8.13	
S Mar.	65.00	57.50	2.50	7.50	0.00	2.50	10.00
U Apr.	62.25	60.00	2.50	5.00	0.00	2.50	7.50
M May	60.00	55.00	2.50	7.50	0.00	2.50	5.00
E Jun	70.00	62.50	7.50	5.00	0.00	5.00	10.00
Average II 64.31	58.75	3.75	6.25	0.00	3.13	8.13	
M Jul	77.50	70.00	5.00	10.00	0.00	5.00	7.50
N Aug	82.50	75.00	7.50	7.50	0.00	7.50	10.00
S Sept	80.00	72.50	7.50	7.50	0.00	7.50	12.50
O Oct.	82.50	70.00	7.50	5.00	0.00	5.00	5.00
Average III 80.63	71.87	6.87	7.50	0.00	6.25	8.75	
Overall	71.04	61.88	5.42	6.04	0.00	4.17	5.00

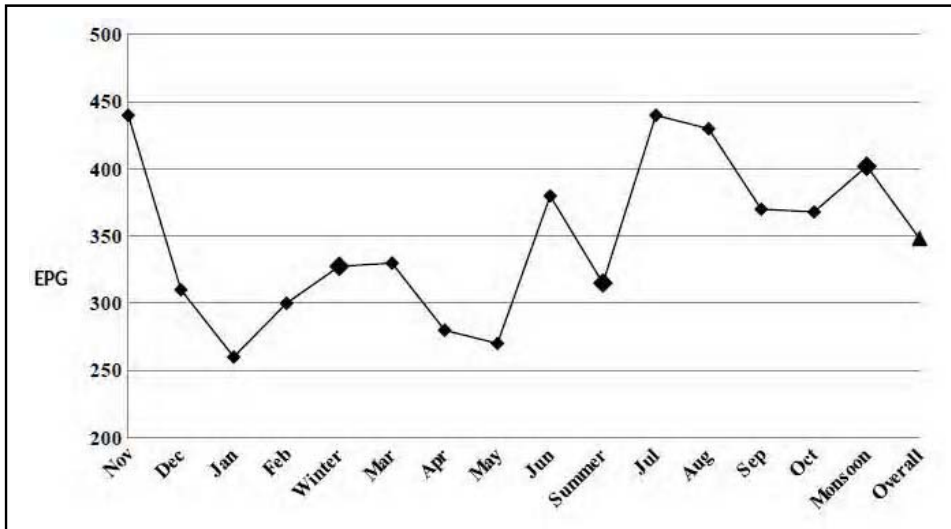


Fig. 1. Seasonal intensity of gastrointestinal helminths in Black Bengal goats of an organised farm in West Bengal, India.

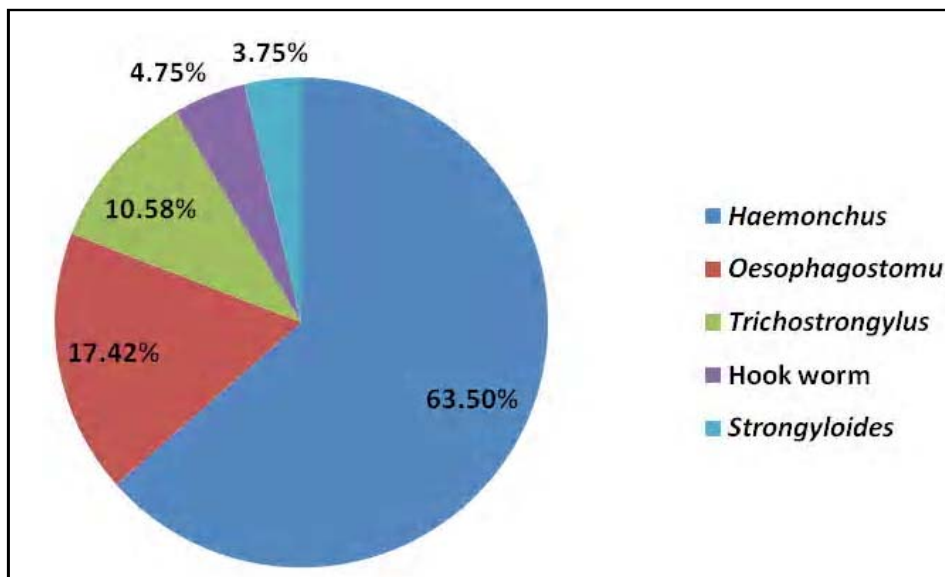


Fig. 2. Identification of infective larvae of gastrointestinal nematodes through coproculture method in Black Bengal goats of an organised farm in West Bengal, India.

highest during monsoon (80.63%) and lowest (64.31%) was recorded during summer (Table 1).

The overall intensity of GI nematode (GIN) particularly Strongyle group of nematode infections in terms of eggs per gram of faeces (EPG) was 348.17 (Fig. 1). Intensity of GIN infections had its peak in monsoon (402) followed by winter (327.5) and lowest recorded in summer (315).

Coprocultural examination revealed that *Haemonchus contortus* was the predominant species with an overall prevalence of 63.5% (Fig. 2) followed by *Oesophagostomum* (17.33%), *Trichostrongylus* (10.58%), Hookworm (4.75%) and *Strongyloides* (3.75%).

## DISCUSSION

Gastrointestinal parasitism is a common occurrence in small ruminants of the world (Dube *et al.*, 2010; Abdelnabi *et al.*, 2011) including India (Yadav *et al.*, 2006; Kumar *et al.*, 2008; Rahman *et al.*, 2012). The agro climatic condition of West Bengal favours an ideal ambience for the development of naturally occurring GI parasites and hence high prevalence of GI parasites have been recorded in the present study. The monthly average temperature, rainfall and relative humidity of West Bengal are optimum for all round the year for survival and translation of free living stages of GI parasites (AINP on GIP, Annual Report, 2009 – 2010).

The high prevalence of GIH parasites in small ruminants of West Bengal is in agreement with the earlier records of Ghosh *et al.* (2012) and Brahma *et al.* (2015). Talukdar (1996) reported low prevalence of GI nematodes (8.15% - 19.25%) in goats of Assam. This discrepancy might be due to the different agro – climatic condition of Assam than that of West Bengal. The prevalence of *Moniezia* (8.34%) as recorded in the present study is in line with the earlier finding in Bengal goats by Pandit *et al.* (2012) and Kar (2003) in West Bengal. The prevalence of Strongyle group of nematodes was highest among all GI parasites and this was in accordance with the finding of Ghosh *et al.* (2012) who recorded 72.91% prevalence of Strongyle in Garole sheep of Sundarban Delta in South 24 Parganas district of West Bengal. Paramphistome was the only trematode species recorded with an overall prevalence of 4.17% and this finding corroborated with earlier report of Brahma *et al.* (2015).

The overall intensity of GI nematode (GIN) infections was 348.17 (EPG) and this findings was in agreement with Brahma *et al.* (2015) and Ghosh *et al.* (2012) who reported 424.5 (EPG) in goats and 422.7(EPG) in sheep of West Bengal. Highest prevalence of GIH as well as intensity of GIN infection was recorded during monsoon followed by winter and lowest in summer (Fig. 1) which corroborated the earlier findings of Jas and Ghosh (2007); Ghosh *et al.* (2012) and Brahma *et al.* (2015).

The species composition of gastrointestinal nematode infection in goat as revealed in the coprocultural examination, in order of preponderances was *H. contortus*, *Oesophagostomum* sp., *Trichostrongylus* sp., hook worm and *Strongyloides* sp. The finding of the present study corroborated with the previous reports in small ruminants of West Bengal (Jas and Ghosh, 2007 and Brahma *et al.*, 2015).

In spite of regular anthelmintic treatment a high prevalence rate and moderate intensity of GI helminths might be due to emergence of anthelmintic resistance in goats of the organised farm of West Bengal. Therefore the epidemiological data obtained in the

present study might be exploited for refinement of worm control programme such as changing of anthelmintic compound at regular interval, selective treatment of animals on the basis of faecal egg count to combat future problem of anthelmintic resistance and also to prevent economic losses in the State Livestock Farm.

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