

Gastro-intestinal Nematode Infestations in the Black Bengal Goats of Sirajgong District of Bangladesh

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Abstract: Three hundred and sixty intestinal samples were examined at necropsy for gastrointestinal nematode parasites of black Bengal goats of Sirajgong district of Bangladesh. Results showed that among various nematode parasites recovered were *Haemonchus contortus* (67.45 %), *Oesophagostomum columbianum* (43.27 %) and *Gaigeria pachyscelis* (41.85 %). Among other nematode parasites *Trichuris ovis* (28.35 %) and *Bunostomum trignocephalum* (18.25 %) were found. The seasonal variation in nematode infection was determined by monitoring faecal egg counts of 2138 goats during the same period. The mean egg per gram (epg) of faeces was found to maintain high level during October and November that reached the peak in November at post rainy season.

Key words: Gastro-intestinal nematode parasites, black Bengal goats, infestation

Introduction

Nematode parasites play an important role in the sheep and goat production around the world where hot and humid conditions occur simultaneously. The climatic factor may favour the development of nematode parasites during the period of nutritional stress and wet season in the tropical areas of the world. Worm infestations that occur periodically when climatic conditions are favourable for the development of parasites can adversely affect productivity of animals (Albers et al., 1989). The goat plays a significant role in the national economy and rural socio-economic condition of the country. The over all development of the country could not be achieved neglecting the development of the agricultural commodities like goats, cattle, poultry and so on available in rural Bangladesh. Nematode parasites could negatively contribute to the production of small ruminants like sheep and goats (Albers et al., 1989). The infection with gastrointestinal nematodes in sheep prevented the rearing of young sheep in Australia until introducing of the anthelmintic carbon tetrachloride (Clunies-Ross, 1932). The live weight gains of *Merino weaners* increased by around 100 % when anthelmintic was given every four weeks as compared with similar animals that were given anthelmintics only to avert death (Johnstone et al., 1979). A good number of studies have been published on the pathophysiological, haematological and immunological aspects of nematode infections in small ruminants (Qadir, 1967, 1981; Haq and Shaikh, 1968; Islam, 1984). As the effects of parasites in host animals varies between different climatic zones (Ford, 1976), so research is essential in each climatic zone. However, no studies were carried out to determine the nematode parasite infestations of goats of Sirajgong district of Bangladesh. Therefore, the study was undertaken to determine the prevalence of nematode parasites of goats of the district.

Materials and Methods

The study was conducted from September 1999-August 2000 to determine the prevalence of nematode parasites of goats in Sirajgong district of Bangladesh. Thirty viscera of goats collected from the slaughter houses of Shahjadpur upazilla were examined each month for a period of one year. The gastro-intestinal tract was isolated from the carcass and brought to the laboratory for

through investigation. The abomasum, small and large intestine were ligated with thread, cut and separated from each part. Examination of the different organs and collection of parasites were made following the methods of Skerman and Hillard (1966). The collected worms were identified following the procedure of Skrjabin (1978). Faecal samples were collected from 2138 goats in different months of the year that were examined following a modified method of Gordon and Whitlock (1939).

A split-plot-in-time analysis of variance was used to test for differences between different organs by nematode parasite infection, months as time period and egg of faeces by month interaction. Comparison based on the least significant difference at $P < 0.05$ was done between the means of worm burdens at each organ and egg at each month.

Results and Discussion

Mixed infections with two or more species of nematodes were found in most animals. The recovered nematode parasites were arranged in descending order of prevalence as *Haemonchus contortus* (67.45%), *Oesophagostomum columbianum* (43.27 %) and *Gaigeria pachyscelis* (41.85 %), *Trichuris ovis* (28.35 %) and *Bunostomum trignocephalum* (18.25 %). Results indicated that abomasum contained significantly ($P < 0.05$) higher number of parasites than small and large intestine (Table 1).

The highest prevalence (91.27 %) of gastro-intestinal nematodes and the mean epg of 1432 was recorded in November that was significantly ($P < 0.05$) higher than the results obtained in other months of the year (Table 2). This high figure could be attributed to the higher fecundity of the nematode parasites in the study animals during the sampling period. The prevalence rate was also high in October (78.75 %), which fell to low level during December to June. The low level of epg was observed in the month of June that sharply reached in July. The mean faecal egg counts did not show any remarkable seasonal fluctuation in the present study. However, minimum values of epg of faeces were found during December to May and higher values were observed during June to November with irregular patterns. The results revealed that the population of gastro-intestinal nematodes of goats in Shahjadpur upazilla of Sirajgong district represented a few species namely, *Haemonchus contortus*, *Oesophagostomum columbianum*,

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Table 1: Prevalence of gastro-intestinal nematodes of goats of Sirajgong district (n = 360)

Organs	Nematode parasites	incidence	Mean worm burden
Abomasum	<i>Haemonchus contortus</i>	67.45	35.5 ^a
Small intestine	<i>Gaigeria pachyscelis</i>	41.85	13.5 ^b
	<i>Bunostomum trignocephalum</i>	18.25	
Large intestine	<i>Oesophagostomum columbianum</i>	43.27	8.3 ^c
	<i>Trichuris ovis</i>	28.35	

Table 2: Nematode parasite egg count per gram of feces of goats of Sirajgong district

Months	No. sample	% positive	Mean EPG
September	180	89.6	1372.5 ^a
October	175	78.7	1235.5 ^c
November	178	91.3	1432.0 ^d
December	185	41.5	341.0 ^e
January	172	38.2	285.5 ^f
February	179	31.6	236.0 ^f
March	182	28.5	212.0 ^{fg}
April	170	25.5	180.5 ^g
May	184	35.6	241.0 ^g
June	178	37.2	210.0 ^g
July	180	78.5	627.5 ^c
August	175	85.3	921.0
Total	2138	55.1	607.9

Mean in the same column with common superscripts are not significantly ($P > 0.05$)., EPG = Egg per gram

Gaigeria pachyscelis, *Trichuris ovis* and *Bunostomum trignocephalum*. All these species of nematodes had been reported in goats and sheep in different parts of varied climatic regions of the world (Grant, 1981; Chermettle, 1983). However, *Trichostrongylus* spp., a *Cooperi* spp. and *Strongyloides* spp. had been reported as the commonly occurring species found in goats of different regions of the world (Assoku, 1981; Grant, 1981; Islam, 1984) and also from the goats of Bangladesh (Qadir, 1967, 1981; Huq and Shaikh, 1968) which were not consistent with the results of this study. The results were in close agreement with the findings of Yadav and Tandon (1989). It could be concluded that the results obtained from this study might help to plan the chemotherapeutic and prophylactic measures for small and medium scale goat rearing in Sirajgong district and other similar agroclimatic zones of Bangladesh that would tremendously increase the productivity of the goats in this country.

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References

- Albers, G.A.A., G.D. Gray, L.F. Lejambre, L.R. Piper, I.A. Barger and J.S.F. Barker, 1989. The effect of *Haemonchus contortus* on live weight gain and wool growth in young Merino sheep. Aust. J. Agric. Res., 40: 419-432.
- Assoku, R.K.G., 1981. Studies of parasitic helminths of sheep and goats in Ghana. Bull. Anim. Health Prod. Afr., 29: 1-10.
- Chermettle, R., 1983. Helminths of sheep and goats and their pathogenicity. Magreb. Vet., 1: 21-31.
- Clunies-Ross, 1932. Observations on the resistance of sheep to infestations by the stomach worm, *Haemonchus contortus*. J. Coun. Sci. Ind. Res., 5: 73-80.
- Ford, G.E., 1976. Blood pepsinogen estimation and production responses in *Trichostrongylid parasitism* of ruminants. In Pathophysiology of Parasitic Infection. (Ed. E.J.L. Soulsby), pp: 83-97.
- Gordon, H. and H. Whitlock, 1939. A new technique for counting nematode eggs in sheep feces. J. Coun. Sci. Ind. Res., 12: 50-52.
- Grant, J.L., 1981. The epizootiology of nematode parasites of sheep in a high rainfall area of Zimbabwe. J. S. Afr. Vet. Assoc., 52: 33-37.
- Haq, S. and H. Shaikh, 1968. A survey of helminths parasitizing the gastro-intestinal tracts of goats and sheep in East Pakistan. Pak. J. Vet. Sci., 2: 54-62.
- Islam, A.W.M.S., 1984. Helminth parasites of goats in Zambia. Indian J. Parasitol., 8: 57-59.
- Johnstone, I.L., F.M. Darvill, F.L. Bowen, R.W. Butler, K.E. Smart and I.G. Pearson, 1979. The effect of four schemes of parasite control on production in Merino wether weaners in two environments. Australian J. Exp. Agric. Anim. Husb., 19: 303-311.
- Qadir, A.N.M.A., 1967. Investigation on the incidence of gastro-intestinal parasites of the goats in the East Pakistan Agril. Univ. Campus. Ceylon Vet. J., 15: 58-61.
- Qadir, A.N.M.A., 1981. An observation on the seasonal influence on the gastro-intestinal nematode infections in goats under farm condition. Bangladesh Vet. J., 15: 11-15.
- Skerman, K.D. and J.J. Hillard, 1966. A Handbook for Studies of Helminth Parasites of Ruminants. Near East Animal Health Institute. FAO of the United Nations.
- Skrjabin, K.I., 1978. Key to Parasitic Nematodes. Translated by A. Birron and Z.S. Cole, Jerusalem, Isreal Program for Scientific Translation (1961).
- Yadav, A.K. and V. Tandon, 1989. Gastro-intestinal nematode infections of goats in a sub-tropical and humid zone of India. Vet. Parasitol., 33: 135-142.