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Prevalence of gastro-intestinal nematodiasis in Black Bengal goat of Sylhet Govt. Goat Development Farm, Bangladesh

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ABSTRACT:

A survey on the prevalence of gastro-intestinal tract (GIT) parasites in 20 black Bengal goats (*Capra hircus*) of 18 months of age was conducted in Sylhet Govt. Goat Development Farm, Bangladesh during the period of February to May of 2011. Irrespective to sex, using McMaster method for egg per gram of feces (EPG) disclose that the percentage of *Haemonchus contortus, Strongyloides papillosus, Trychuris ovis, Trychostrongylus vitrinus., Oesophagostomum columbianum* and mixed infections were prevalent as 30, 16.67, 10, 6.67, 13.33, and 23.33 respectively. Study surveys suggest, appropriate parasitic control approach be explored and tried in order to alleviate the problem of worm saddle.

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INTRODUCTION

Goat rearing is becoming more and more popular in Bangladesh. Parasitism has been considered as one of the major constraints of livestock production. Goat rearing contributes greatly to the poverty stricken rural people, especially to small and marginal farmers and landless laborers holding less than 2 acres of land (Husain *et al*., 1998; SAIC, 1995). Among the constraints, helminthiasis especially parasitic gastro-enteritis (PGE) constitutes a serious health problem and limitation to the productivity of small ruminants (Goats and Sheep) throughout the world due to the associated morbidity, mortality and cost of treatment and control measures (Silvestre *et al*., 2000). They cause the animals to be unthrifty which may include the loss of weight, low birth weight, and difficulty in kidding. Parasitisms are important limiting factors that are responsible for deteriorating the health and productivity of livestock. Parasitic infestations exert adverse effects on the health and productivity of animals (Rehman *et al*., 2009). These effects are varied and more pronounced in sheep and goats compared to those seen in other species of livestock (Iqbal *et al*., 1993). Many species of parasites are seen in sheep and goats and usually include *Haemonchus, Oesophagostomum, Ostertagia, Cchabertia, Nematodirus, Trichuris, Moniezia* and *Fasciola*. The most important of these is *Haemonchus contortus* (Husnain and Usmani, 2006). It is an important blood sucking parasite of the ovines and causes an insidious drain on production (Asanji and Williams, 1987; Ijaz, *et al*., 2008), weight losses and even mortality in young animals (Husnain and Usmani, 2006). The disease caused by various gastro- intestinal nematodes is prevalent wherever sheep and goats are raised, but it exerts the greatest economic losses in temperate and tropical regions (Blood *et al*., 1979; Raza *et al*., 2009; Ijaz *et al*., 2009).

Gastrointestinal parasites pretense the greatest challenge to goat health and production in humid areas (Perry *et al*., 2002; Sahlu *et al*., 2009). The prevalence of anthelmintic resistance is a serious constraint to goat production globally (Howell *et al*., 2008; Kaplan *et al*., 2004). The use of sustainable, integrated parasite control systems, using scientifically proven non-chemical methods and limited use of drugs is being considered to ensure animal health and food safety (Waller, 2006).

MATERIALS AND METHODS

This work was carried out in Government Goat Development Farm, Sylhet located at 24.8917°N 91.8833°E, Bangladesh from February to May, 2011. Twenty (20) goats were selected irrespective to sex and the fresh fecal sample (near to 5 gm) collected from each black Bengal goat (*C. hircus*) early in the morning on weekly interval with aseptic precautions and transferred that immediately to the laboratory of Department of Physiology and Pharmacology, Sylhet Agricultural University. All samples kept in refrigerator at 4°C temperature for onward examination. Egg per gram of feces (EPG) from the naturally infested goats was monitored at weekly intervals. EPG was recorded just prior to treatment from each group. EPG of experimental goat was determined by McMaster method. In this method a known volume of feces (5gm) was thoroughly suspended in a known volume of (50ml) saturated salt solution. The suspension was stirred through a 150 mm mesh sieve to remove the course particles. A portion of the suspension was withdrawn with the help of Pasteur pipette and allowed to run into the chambers of the McMaster slide. The slide was allowed to stand for 5 minutes to allow the eggs to float.

The eggs in the two chambers were counted using low power objectives (′10). The number of eggs per gram of feces was calculated by using the following formula.

$$\text{Number in one gm} = \frac{\text{Number in two chambers}}{0.3} \times \text{dilution factor}$$

$$\text{Dilution factor} = \frac{\text{Total volume of suspension in ml}}{\text{Total volume of feces}}$$

Weekly EPG count was also done on day 7, 14, 21 and 28 post treatment by McMaster egg counting technique.

Statistical analysis

Descriptive statistics were used to analyze the mean EPG of the helminth egg count, prevalence, and pre-treatment and post-treatment results. Linear correlation was used to analyze differences between body condition scores and EPG counts, and EPG of different body scores were analyzed by pair-wise mean comparisons using SPSS v.15 for Windows (SPSS, Inc., Chicago, IL, USA).

RESULTS AND DISCUSSIONS

In the present study, *Haemonchus, strongyloides, Trichuris, Oesophagostomum*, *Trichostrongylus* and mixed infestations were observed before treatment. Among the parasite the prevalence was highest for *Haemonchus* (30.00%) and this was followed by mixed infestation (23.33%) *strongyloides* (16.67%), *Oesophagostomum* (13.33%), *Thichuris* (5.77%) and *Trichostrongylus* (3.85%). Prevalence of different parasitic infestation in goat is shown in **Table 1**. More or less similar prevalence of gastrointestinal parasites have been reported earlier by Tariq *et al*., (2010), Lindqvist *et al*., (2001); Iqbal *et al*., (1993); Mcculloch *et al*., (1986) and Khalid *et al*., (2004).

In this study the dominant nematodes sp. was *Haemonchus* (30.00%) which was in agreement with earlier reports by Iqbal *et al*., (1993); Yadav and Tandon (1989); Ahmad and Ansari (1987) and Cantreras *et al*., (1976). The prevalence of *Oesophagostomum* (13.33%) is in conformity with the report of Ijaz *et al*., (2008). However, on the other hand, present finding of *Oesophagostomum* is much lower than those reported by Gupta *et al*., (1987). The prevalence of *strongyloides sp*. (16.67%) is in conformity with the result observed by Waruiru *et al*., (2003).

Seasonal variations of gastro-intestinal nematodes should be considered due to their distribution and frequency of larval stages. Our findings observed from February to May and this is naturally a time between late winters to initiation of summer in Bangladesh. This finding also corroborated with Mazid *et al*., (2006) and Zong *et al*., (1997) investigated the gastro-intestinal nematodes larvae of *Haemonchus contortus*, *Nematodirus and Oesophagostomum* were higher in January, February and December.

In a column figures with same letter or without letter do not differ significantly whereas figures with dissimilar letter differ significantly (as per DMRT)

Similarly, the prevalence of *Trichuris* (10.00%) observed in the present study is also in conformity with result observed by Fivaz *et al*., (1990) and Broomker *et al*., (1989) in Angora goats though Samanta and Santra (2009) found *Trichuris spp* only as 2.15%. On the contrary, the prevalence of *Trichostrongylus sp.* (6.67%) observed in the present study was lower than the findings made by Gupta *et al*., (1987). The prevalence of mixed infection was found to be (23.33%) which Similar with

Table 1. Prevalence of gastro-intestinal nematodiasis in goat

Sl. No.	Name of Parasites	Number of goat affected	Prevalence (%)
1	*Haemonchus contortus*	9	30.00[a]
2	*Strongyloides papillosus*	5	16.67[c]
3	*Trichuris ovis*	3	10.00[e]
4	*Trichostrongylus vitrinus*	2	6.67[f]
5	*Oesophagostomum columbianum*	4	13.33[d]
6	Mixed infection	7	23.33[b]
Total		30	100.00
LSD/Level of sig.		-	2.15/**

*** = Significant at 5% level of probability**
**** = Significant at 1% level of probability**
NS = Not significant

the results recorded by Tariq *et al*., (2010).

The differences in the prevalence of various gastrointestinal parasitic infections in goats are thought to be due to sex variation, time of studies, risk factors and determinants, environmental condition (Mcculloch *et al*., 1986) and frequency of examination of the animal, management of helminthes status of a group of goats and concurrent topography (Tariq *et al*., 2010). So, it is obviously a basic need to analyze the GIT in goats in this farm through cross-sectional studies to construct a valuable epidemiological figure so that effective management and treatment can be introduced.

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