

Prevalence of Gastrointestinal Parasitic Infections in Barbari Goat under Semi-Arid Region

Rupesh Verma, D. K. Sharma, Souvik Paul,
 K. Gururaj, Parth Sarthi

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Abstract Gastrointestinal parasitic infections are serious problem in young goats and have a higher prevalence under conditions of intensive husbandry. The present study, preliminary in nature, deals with prevalence of various gastrointestinal parasitic infections in Barbari goats at CIRG Makhdoom in natural condition. A total of 115 fecal samples collected and brought to divisional laboratory for testing revealed coccidia (99%), strongyles (82%) and *Moniezia* spp. (20%) infection. While Eimerian infection involved was of mixed nature, strongyles infection showed

preponderance of *Haemonchus* spp. infection. The most common Eimerian infection seen was *Eimeria christensenii* and *Eimeria ninakohlyakimovae*. The Moniezial infection involved two common species. The study deals with epidemiology of these infections in details with respected to various climate condition.

Keywords Goat, Gastrointestinal parasites, OPG/EPG.

Introduction

The domestic goat is among the earliest animals domesticated by humans. They are distributed worldwide with higher concentrations in tropical areas and in dry zones [1]. It is one of the most resourceful and efficient ruminants. Easy handling, efficiency of conversion of limited food resources into good quality meat, milk and high quality hides and wool favors goat as a stock animal for small-scale farmers. Gastrointestinal parasitic infections remain one of the most important diseases limiting small ruminant production in India. Single or mixed infections with *Eimeria* and GI nematodes had been reported to constrain goat production worldwide [2]. They lead to problems like anorexia, general weakness, gastritis, enteritis, diarrhea, anemia which are manifested through lower production in goats which is significant of economic importance. The objective of this study, deals with prevalence of various gastrointestinal parasitic infections in Barbari goats at CIRG Makhdoom in natural condition.

Rupesh Verma*

Teaching Associate, Department of Veterinary Parasitology, College of Veterinary Science & AH, South Civil Lines, Jabalpur 482001, MP, India e-mail: vrupesh77@gmail.com

D. K. Sharma

Principal Scientist, Division of Animal Health, ICAR-Central Institute for Research on Goats, Makhdoom, Mathura 281122, Uttar Pradesh, India e-mail: lkofwb@gmail.com

Souvik Paul

Scientist, Division of Animal Health, ICAR-Central Institute for Research on Goats, Makhdoom, Mathura 281122, Uttar Pradesh, India e-mail: drsouvik.cirg@gmail.com

K. Gururaj

Scientist, Division of Animal Health, ICAR-Central Institute for Research on Goats, Makhdoom, Mathura 281122, Uttar Pradesh, India e-mail: guruvet@gmail.com

Parth Sarthi

PhD Scholar, Parasitology Division, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly 243122, Uttar Pradesh, India e-mail: parthu020@gmail.com

*Correspondence

Materials and Methods

Samples collection and processing

A total 115 fecal samples from the Barbari goats farm were collected over a period August to October (Post rainfall) 2015 and age of animal less than 1 year (100 sample female and 15 sample male), CIRG Makhdoom Mathura UP. Samples were collected directly from the rectum and examined qualitatively using floatation for evaluating the incidence of infections. The eggs per gram of the strongyle and oocyst per gram of coccidian in each positive sample were determined by modification of the McMaster technique. Identification of the eggs or cysts made on the basis of morphology and size of eggs.

Identification of *Eimeria* species and Helminths eggs

Each fecal sample was examined for the presence or absence of coccidian oocysts by a flotation technique using saturated saline. Coccidian oocysts per gram (OPG) of feces were quantified using a modification of the McMaster technique and positive fecal sample dilute with distilled water and sieved to remove the large fecal debris. After repeated washing the oocysts are concentrated by centrifugation at 3000 rpm for 10 minutes. The oocysts then spread out in shallow Petri dishes and covered with thin layer of 2-2.5% solution of potassium dichromate at room temperature for 7-10 days until the oocysts sporulated. The coccidian oocysts to examine and identify oocysts, the sample was shaken and mixed well and then a proportion of it was put into a glass slide by a pipette, covered by a cover slip and examined under 400 × magnifications (one 10 × ocular lens and one 40 × objective lens) to identify the species based on their sizes and morphological characteristics (shape, color, form index, presence or absence of micropyle and its cap, presence or absence of residual, polar and stieda bodies) of the oocysts and sporocysts. Helminths eggs present were identified using standard parasitological criteria.

Results and Discussion

From this investigation, coccidia species, strongyle species and *Moniezia* species were among the gastro-

Table 1. Prevalence of gastrointestinal parasites in Barbari goats.

Species	Total fecal sample	Total positive sample	Prevalence
Coccidia	115	114	99%
Strongyle	115	95	82%
Moniezia	115	23	20%

intestinal parasites of goats observed in this study. A total of 115 fecal samples collected and brought to divisional laboratory for testing revealed coccidia (99%), strongyles (82%) and *Moniezia* spp. (20%) infection (Table 1). This agrees with the report of Singh et al. [3] who noted that the most pathogenic helminths and protozoan parasites in the intestinal tract of small ruminants are coccidia, strongyle and *Moniezia*. Seven species of *Eimeria* spp. were identified in the fecal sample. *Eimeria christenseni* (42%) predominated in the affected goats and was followed by *E. ninakohlyakimovae* (25%), *E. arloingi* (15%), *E. alejevci* (11%), *E. caprina* (2.7%), *E. caprovina* (1.7%) and *E. hirci* (0.6%) (Table 2). The average OPG 4020.5283 and highest OPG 40,200 were noticed. Similar findings have been documented by Faizal and Rajapakse [4]. Strongyle infection showed preponderance of *Haemonchus contortus* infection and *Moniezia* infection involved two common species *Moniezia expansa* and *Moniezia benedeni*. The average EPG 2810 and highest 21,000 in strongyle infection whereas in moniezial infection was average 1842.827 and highest 11,000 recorded. This finding agrees with Emiru et al. [5]. These high prevalence might be due to the system of management that these goats were subjected to as they were always left to wander about scavenging and feeding indiscriminately on anything they come in contact with and then return to their poorly kept sheds. These findings agree with the earlier work in which it was stated that animals are exposed to massive helminths infection when they are maintained in an unhygienic and poorly kept ranches and also when fed with contaminated food and water. The prevalence of protozoan infection recorded in our investigation, may be due to overcrowding, poor management and hygiene. This is in accordance with the work of Nwigwe et al. [6] who in their different studies reported that increase rate of protozoa infection was as a result of over-

Table 2. Prevalence of *Eimeria* species in Barbari goats.

Sl. No.	<i>Eimeria</i> species	Prevalence
1	<i>Eimeria christenseni</i>	42%
2	<i>Eimeria ninakohlyakimovae</i>	25%
3	<i>Eimeria arloingi</i>	15%
4	<i>Eimeria alijevi</i>	11%
5	<i>Eimeria caprina</i>	2.7%
6	<i>Eimeria caprovina</i>	1.7%
7	<i>Eimeria hirci</i>	0.6%

crowding and poor hygienic practice which greatly encourage the spread of these parasites, as these animals become carriers of intestinal protozoa parasites and continually contaminate the environment with eggs and oocysts of the parasites. It is therefore paramount to note that during rainy season in tropical countries like India, environmental factors like temperature, humidity and moisture are favorable for the survival of the developmental stages of these gastrointestinal parasites. We therefore suggest that preventive measures (bio security) and good managemental practices, prompt diagnosis and treatment with anthelmintic and antiprotozoal drugs be implemented to reduce the risk of infection. However, resistance to the drugs by parasites has recently been observed

and this should be avoided by discouraging self medication by animal owners.

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