



Incidence of gastrointestinal parasites among Chegu goats in Lahaul and Spiti district of Himachal Pradesh

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Abstract

A study was conducted to observe the incidence of gastrointestinal parasitic infections, qualitatively and quantitatively in apparently healthy Chegu goats from the tribal area of Lahaul and Spiti of Himachal Pradesh to generate a baseline data of the natural parasitic infections in that area. The qualitative coprological studies revealed that 76.66 % goats were positive for one or another type of gastrointestinal parasites. The coccidian oocysts, ova of strongyles and amphistomes were found in 71.42%, 17.85% and 3.57%, animals, respectively. The quantitative coprological studies revealed the average egg per gram of faeces (EPG) to be 257.14 ± 62.67 with a range of 100-1200. *Eimeria parva*, *Eimeria ovina* and *Eimeria ninakohlyakimovae* were the species of coccidia that were identified. The average oocyst per gram of faeces was found to be 1010.71 ± 93.72 and it ranged between 300-2300.

Key words: Incidence, gastrointestinal parasites, Chegu goat.

Introduction

Chegu breed of goat is reared in small-sized flocks in the tribal Spiti area of Lahaul and Spiti district and Hangrang valley of Kinnaur district in Himachal Pradesh. The animals are usually found at altitude of more than 8000 ft above MSL in cold desert areas and produce pashmina fibre. The population of chegu goats is very scanty and currently the population is approximately 1500-2000 with the elite animals confined to Spiti areas (Dogra and Thakur, 2010). Gastrointestinal parasitism is a major cause of low productivity, unthriftiness and occasional death in animals (Sood, 1981). The gastrointestinal parasitism has been reported in ruminants by a numbers of workers in different states of India (Krishna *et al.*, 1989; Yadav *et al.*, 2006; Kumari *et al.*, 2010) but much of the published work pertains to breeds other than Chegu (Pandit, 2006; Senthilal *et al.*, 2004). As no significant work has been carried out to study parasitism in Chegu goats of Himachal Pradesh, the present study was planned to generate a baseline data of the natural parasitic infections in Chegu goats of this tribal region. It was also planned to evaluate the susceptibility of these animals for the gastrointestinal parasites under changed altitude and environmental conditions.

Materials and Methods

A total of hundred and five faecal samples were collected per rectally from the chegu goats of either sex (aged between 1-3 years) from Lahaul & Spiti areas and from the chegu goats moved from Lahaul Spiti and Kinnaur districts and kept at University Livestock farm. The samples were subjected to both qualitative and quantitative faecal examinations. For qualitative examination, sedimentation and concentration-flotation technique (MAFF, 1971) and for quantitative studies, egg per gram (EPG) of faeces for helminth ova and oocyst per gram (OPG) for coccidian oocysts were estimated as per the Stoll's method (Soulsby, 1982). The sporulation of the coccidian oocysts, the morphological characterization and species identification was done as per the methods described by MAFF (1971).

Results and Discussion

In the present study, out of thirty samples collected from the goats at Lahaul & Spiti valley, twenty three were found positive for single or mixed parasitic infections indicating the overall incidence of 76.66%. Out of various parasitic infections, the incidence of coccidia was the highest (71.42%) followed by strongyles (17.85%) and amphistomes

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(3.57%). Mixed infection of coccidia with strongyle was recorded in 42.85% and of coccidia and amphistomes in 3.57% of chegu goats. The higher incidence of coccidiosis (71.42%) recorded in the present study could probably be due to the poor hygiene and unawareness of advanced animal husbandry practices in nomadic tribes who usually rear these animals in small groups and mostly keep them in basement of their house. These findings are in corroboration with the findings of Pandit (2006) who also reported the prevalence of coccidiosis to be 72.56% in goats of Kashmir valley which are maintained almost in similar agro-climatic conditions. In the present study, the strongyle infection was found in 17.85% goats. The low prevalence may be due to parasitic response to atmospheric conditions which are not conducive for larval growth. The lower prevalence of strongyles can be attributed to the fact that under these harsh climatic conditions of cold desert where the temperature remains mostly at sub zero level for 8 to 9 months in a year with less precipitation at the same time and unavailability of pastures for grazing, the larva may undergo arrested development or may not develop at all. A less contact between the host and the infective stage larva during this period may also be another cause. Hutchinson *et al.* (1972) have also reported low atmospheric temperature as a cause for the arrested larval development in host and environment. In contrast to our findings, Yadav *et al.* (2006) in a study on goats of Jammu region, reported highest prevalence of strongyles (44.62%) followed by amphistomes (8.07%). Similarly Pal and Bandopadhyay (2004) have also recorded high prevalence of strongyles in goats of Sikkim.

The incidence of amphistomes was found to be the lowest (3.57%) which may be due to less snail population in this area. Mixed infection representing coccidian oocysts with strongyles was found in 42.85% goats, whereas infection of coccidian oocysts with amphistome was 3.57%.

The intensity of infection with strongyles as measured by egg per gram (EPG) of faeces was recorded to be 257.14 ± 62.67 with a range of 100-1200 thus, exhibiting low to moderate infection with strongyles. Jithendran (1998) and Sharma *et al.* (2007) have also reported low faecal egg counts in migratory sheep and goat from North-Western Himalayas during the cold months of the year. The intensity of infection

with coccidia as judged from coprological oocysts count per gram of faeces (OPG) exhibited mild intensity of infection with overall oocyst per gram of faeces to be 1010.71 ± 93.72 which ranged between 300-2300. The three *Eimeria* species identified were –*Eimeria parva*, *Eimeria ovina* and *Eimeria ninakohlyakimovae*. The species of coccidia which have been earlier reported in other breeds of goats are *Eimeria arloingi*, *Eimeria christenseni*, *Eimeria ninakohlyakimovae*, *Eimeria alijeve*, *Eimeria caprina*, *Eimeria apsheronica* and *Eimeria kocharli* in Namakkal area of Tamil Nadu (Kumar *et al.*, 2001), *Eimeria arloingi*, *Eimeria ninakohlyakimovae*, *Eimeria parva*, *Eimeria hirci*, *Eimeria christenseni*, *Eimeria alijeve* in Kashmir by Pandit (2006).

However, when the coprological studies were undertaken on the chegu goats kept at University livestock farm, it was observed that out of 75 animals, 54 were found to be infected with one or the other type of gastrointestinal parasites indicating the overall prevalence to be around 72%. This higher incidence of gastrointestinal parasitism is in general agreement with the findings of Khajuria and Kapoor (2003); Kumari *et al.* (2010); Pal and Bandopadhyay (2004). The animals were found to be positive for strongyles (60%), coccidia (56%), anoplocephalid (6.6%), *Trichuris* sp.(2.6%), amphistomes (4%), and mixed infection of strongyle, coccidia, anoplocephalid, trichuris and amphistomes (41.33%). Similar findings were recorded in goats from Anand where the qualitative examination of faecal samples showed an overall 54.92% of gastrointestinal parasitism and 13.38% goats harboured both coccidia and strongyles (Patel *et al.*, 2001).

The EPG of faeces was found to be 1500 ± 355.72 with a range between 100-6000. Similar to our observation, Pal and Bandopadhyay (2004) from Gangtok have reported the mean EPG of nematodes in goats to be around 1166.7, ranging between 100-6000. The oocyst per gram of faeces was recorded to be 972.22 ± 116.26 with a range of 300-2100. However Sharma *et al.* (1997) reported 2×10^2 to 13×10^3 oocysts per gram of faeces in Pashmina goats over 6 months of age from Mukteshwar.

Conclusion

In the present study, it was observed that at high altitude (more than 8000 feet above MSL) and cold desert climate, coccidia was the predominant species

(71.42%) followed by strongyles (17.85%) and amphistomes (3.57%). However, when coproculture studies were undertaken in chegu goats, maintained at Palampur (around 4500 feet above MSL in sub temperate zone) these not only showed change in pattern of incidence of above mentioned three parasitic diseases but also revealed the presence of anoplocephalids and trichurids. Strongyles were recorded predominant (60%) followed by

coccidia (56%), anoplocephalid (6.6%), amphistomes (4.0%), trichurid (2.6%) and mixed infection (41.33%). The change in incidence and profile of parasitic diseases could be attributed to the diverse agro climatic conditions, animal husbandry practices, pasture management which probably determined the incidence and profile of various parasitic infections in these animals (Arambulo and Moran, 1981).

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