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Studies on prevalence of helminth infection in goats in Barmer district (Rajasthan)

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Abstract

Goat farming is the great economic importance as a major source of income for small and the landless farmers in rural areas. A study on prevalence of helminths of goat in relation to season wise was studied at Barmer district, Rajasthan from May 2018 to January 2019 by faecal examination. Out of 250 faecal samples examined in which 185 (74.00%) in goat were positive for one or more species of helminth parasites. In goat *Strongyles* sp. were most prevalent (29.08%), followed by *Trichuris* sp. (15.20%), *Moniezia* sp. (2.75%) and *Strongyloides* sp. (0.65%). Mixed infection was (20.25%) in goat. In goat, seasonal analysis revealed highest prevalence in rainy season followed by winter and lowest in summer.

Keywords: Faecal samples, summer, prevalence, Rajasthan, Barmer district

Introduction

Goat farming is of excessive economic importance as a major source of income for small and the landless farmers in rural areas. Goat (*Capra*), a member of the Bovidae family and sub-family Caprinae is one of the oldest domesticated species. For thousands of years, they have been used in milk, meat, hair and skin in much of the world. Goats are usually raised for meat, milk and leather. Goats are often considered a poor man's cow. Goat's milk is quite similar to cow's milk and is easier to digest because of the small globules. It is richer in milk content and contains a lot of calcium, phosphorus and chlorine. The manure of goats is a natural source of organic fertilizers with nitrogen and potassium content more than double that of cattle manure, so goat manure is more suitable for increasing soil fertility. The rearing of goat had the added advantage of filling an important ecological niche, being able to graze land on which sheep and cattle simply cannot thrive (Pasha *et al.*, 2000) [7]. Goat farming plays an important role in the economy of Rajasthan in providing a sustainable source of livelihood for the poor, due to the inherent risks associated with farming due to the uncertainty of rainfall and frequent droughts (Misra *et al.*, 2000) [6].

One of the major constraints to small ruminants' production in tropical regions remains Helminth infection (Jones *et al.*, 2001) [3]. Ecological environments like weather, texture of soil, population density, type and amount of vegetation, management system, host species and age of the animals play an important role in the prevalence of parasites (Thomas, 1982) [9]. In western Rajasthan, where pastures are not abundant throughout the year, goats have cumulative infections throughout the year due to their specific grazing habits, so it seems important to investigate seasonal variations in gastrointestinal helminth egg production. Thus, this study investigated the prevalence of helminth infection in goats in Barmer district of Rajasthan. Parasite stages are introduced to the body in animals that have been grazing on an infected pasture and water (Levine *et al.*, 1968) [5].

Materials and Methods

Collection of faecal samples. The study was conducted from the month of May 2018 to January 2019 villages of Barmer district in Southern Rajasthan. Out of 250 goat faecal samples were randomly collected. The samples were packed into sterile polythene bags, labeled carefully with the host's information, the location, and the season of collection, preserved in a refrigerated transport box, and transported to the laboratory for additional analysis.

Coprological examination: By using the flotation method outlined by Soulsby, fecal samples were checked for the presence of helminth parasites infection.

Results and Discussion

Out of a total of 250 faecal samples of goat, 185 (74.00%) samples were found positive for an overall prevalence for helminth infection in goat. The study is in accordance with several other investigators who have reported similar findings from various parts of India with (69.70%) overall prevalence from Ladakh (Kuchai *et al.*, 2011) [4], (68.75%) overall prevalence from Mathura (Singh *et al.*, 2013) [8] and Udaipur (Faran *et al.*, 2017) [1] respectively. In goat were positive for one or more species of helminth parasites. In goat *Strongyles* sp. were most prevalent (29.08%), followed by *Trichuris* sp. (15.20%), *Moniezia* sp. (2.75%) and *Strongyloides* sp.

(0.65%). Mixed infection was (20.25%) in goat. Mixed infection was (20.25%) in goat. In goat, seasonal analysis revealed highest prevalence in rainy season followed by winter and lowest in summer. The increase in *Strongyle* population may be attributed to the fact that the life cycle is direct and they are getting appropriate climatic factors to grow and perpetuate in soil easily.

The variability for overall prevalence of helminth infection in goat was found to be significant ($p < 0.05$). This may be the reason of higher prevalence in rainy season. Higher temperature and rainfall cause stress to the animal which lowers its immunity and predisposes it to a heavy infection (Hawkins *et al.*, 1945) [2]. The variability for seasonal prevalence of helminth infection in goat was not found to be significant ($p < 0.05$).

Table 1: Overall prevalence of helminth infection in goat

Species	Examined	Infected	Mixed	<i>Strongyles</i> sp.	<i>Trichuris</i> sp.	<i>Moniezia</i> sp.	<i>Strongyloides</i> sp.
Goat	250	185 (74%)	38 (20.25%)	54 (29.08%)	28 (15.20%)	5 (2.75%)	1 (0.65%)

Table 2: Season-wise Prevalence of helminths in goat

Season	Examined	Infected	Mixed	<i>Strongyles</i> sp.	<i>Trichuris</i> sp.	<i>Moniezia</i> sp.	<i>Strongyloides</i> sp.
Summer	70	50 (71.42%)	9 (18.0%)	10 (20%)	5 (10%)	1 (2%)	1 (2%)
Rainy	120	108 (90.00%)	22 (20.37%)	40 (37.04%)	20 (18.52%)	3 (2.78%)	0
Winter	60	27 (45.0%)	7 (25.92%)	4 (14.81%)	3 (11.11%)	1 (11.11%)	0
Total	250	185 (74.0%)	38 (20.25%)	54 (29.08%)	28 (15.20%)	5 (2.75%)	1 (0.65%)



Fig 1: Microphotograph of *Moniezia* sp.



Fig 4: Microphotograph of *Strongyles* sp.



Fig 2: Microphotograph of mixed infection



Fig 5: Microphotograph of *Strongyloides* sp.



Fig 3: Microphotograph of *Trichuris* sp.

Conclusion

The present study revealed that the infection status by the various species of helminth parasites was very high. The prevalence of helminth parasite of goat at Barmer district, Rajasthan shows high susceptibility to helminth infection. The overall higher incidence of *Strongyle* sp. infection in the areas surveyed could be attributed to lower immunity of hosts and the life cycle is direct. Therefore, geographical and climatic conditions of this region favors for helminth infection. It is observed that the variation in animal husbandry practices and pasture management of goat in these two different tehsils

where large number of uneducated populations thrives affects prevalence rates. In goat, seasonal analysis revealed highest prevalence in rainy season followed by winter and lowest in summer. Further study should be carried out to determine the economic losses due to helminthiasis of goat and to develop effective control measures against it. It is therefore suggested that two annual anthelmintic treatments would help to minimize the infection and optimum growth and productivity of goat in the region.

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