



ISSN: 2456-2912

VET 2024; SP-9(1): 310-312

© 2024 VET

[www.veterinarypaper.com](http://www.veterinarypaper.com)

Received: 01-10-2023

Accepted: 09-11-2023

**M Kalaivanan**

Assistant Professor, Veterinary  
Clinical Complex, Veterinary  
College and Research Institute,  
Theni, TANUVAS, Tamil Nadu,  
India

**E Madhesh**

Assistant Professor,  
Department of Veterinary  
Medicine, Veterinary College and  
Research Institute, Tirunelveli,  
TANUVAS, Tamil Nadu, India

**M Balagangatharathilagar**

Professor and Head,  
Department of Veterinary  
Clinical Complex, Veterinary  
College and Research Institute,  
Tirunelveli, TANUVAS, Tamil  
Nadu, India

**V Vijayanand**

Professor and Head,  
Department of Veterinary  
Medicine, Veterinary College and  
Research Institute, Tirunelveli,  
TANUVAS, Tamil Nadu, India

**M Ranjithkumar**

Assistant Professor,  
Department of Veterinary  
Clinical Complex, Veterinary  
College and Research Institute,  
Theni, TANUVAS, Tamil Nadu,  
India

**JP Anisha**

Assistant Professor,  
Department of Veterinary  
Clinical Complex, Veterinary  
College and Research Institute,  
Tirunelveli, TANUVAS, Tamil  
Nadu, India

**Corresponding Author:**

**M Kalaivanan**

Assistant Professor, Veterinary  
Clinical Complex, Veterinary  
College and Research Institute,  
Theni, TANUVAS, Tamil Nadu,  
India

## Prevalence of gastrointestinal parasites of small ruminants in southern part of Tamil Nadu

**M Kalaivanan, E Madhesh, M Balagangatharathilagar, V Vijayanand, M Ranjithkumar and JP Anisha**

### Abstract

An epidemiological study was conducted to investigate the prevalence of gastrointestinal parasites of small ruminants in the Southern part of Tamil Nadu. Faecal samples were collected from a total of 205 goats and sheep brought to the Veterinary Clinical Complex, Tirunelveli. Out of 205 samples, 173 samples were collected from goats (Male 74 & Female 99) and 32 were sheep (Male 19 & Female 13) in which, the overall prevalence of gastrointestinal helminth infestation was found to be 61.46%. The variable prevalence on microscopical examination was found with, *Strongyle* sp.(15.12%), *Strongyloides* sp.(7.31%), *Trichuris* sp.(4.39%), *Monezia* sp. (2.43%), *Amphistome* sp. (0.97%), *Eimeria* sp.(16.09%) and mixed infection (14.63%). *Eimeria* sp., was observed with a high prevalence rate which was followed by mixed infection. A higher prevalence was found in females (63.39%) compared to males (58.06%). In this study, the prevalence was found higher in the group of animals greater than 2 years of age (64.10%) followed by 1-2 years (61.67%) and less than 2years (59.43%).

**Keywords:** GI parasites, prevalence, small ruminants, southern part of Tamil Nadu

### Introduction

In the livestock sector, sheep and goats are of great importance as they serve as a major source of income for small and landless farmers in rural areas (Pathak *et al.*, 2008) [1]. As per the 20<sup>th</sup> Livestock Census in our country, the population of sheep and goats were 74.26 million and 148.88 million respectively, and the contribution of livestock in total agriculture and allied sector GVA (at constant prices) has increased from 24.32 percent (2014-15) to 30.13 percent (2020-21) (Ministry of Fisheries, Animal Husbandry & Dairying, India, 2023) [2]. As largest exporter, 14,128.85 MT of sheep & goat meat worth Rs. 646.69 crores was exported from India in 2019-20 (Lata *et al.*, 2021) [3]. One of the major limitations in productivity of small ruminants is gastrointestinal parasites. These parasites are associated with high morbidity along with mortality rates, as well as increased therapeutic cost and control measures (Varadharajan *et al.*, 2015) [4]. The favourable environmental conditions in tropical countries promote the increased transmission of helminths (Velusamy *et al.*, 2015) [5].

Several studies of Gastrointestinal parasitic prevalence have been documented from different parts of India (Khajuria *et al.*, 2013, Sutar *et al.*, 2010, Om *et al.*, 2010, Singh *et al.*, 2013, Singh *et al.*, 2017, Anugrah *et al.*, 2018) [6-11] including Tamil Nadu (Varadharajan *et al.*, 2015, Velusamy *et al.*, 2015) [4, 5]. The rational study of the prevalence of Gastrointestinal parasites is effective for control and preventive measures and at the same time reports on the prevalence in southern Tamil Nadu are scarce. Hence, the present study was undertaken to assess the Gastrointestinal parasitic infection in small ruminants which are the major source of income for marginal farmers in southern region of Tamil Nadu.

### Materials and Methods

Faecal samples were collected from small ruminants brought to the Veterinary Clinical Complex, Tirunelveli, which is located in the Southern part of Tamil Nadu. Fresh faecal samples were collected per rectum from a total of 205 animals (32sheep and 173goats) from the period of November 2022 to May 2023 and examined. Data related to Breed, Sex, Age, and Clinical signs of the animals were also documented.

Faecal samples were processed by direct smear examination, sedimentation and flotation techniques (Soulsby1982) [12] for studying the prevalence of parasitic eggs and oocysts.

**Results and Discussion**

Out of 205 samples screened, 125 animals were harbouring GI parasites with an overall prevalence of 60.97%. The prevalence in goats was 63% and in sheep was 50%. A similar study by Islam *et al.* (2017) [17] and Gadahi *et al.*(2009) [18] described an overall prevalence of GI parasites in small ruminants as 74.8% and 63.5% in Bangladesh and Pakistan, respectively. In other parts of India, the reported prevalence rates are 83.08%, 68.75% and 91.27% in Punjab, Mathura and Andhra Pradesh respectively (Singh *et al.*, 2013, Singh *et al.*, 2017, Bhavanam *et al.*, 2018) [9, 10, 19].

On microscopical examination, *Strongyle sp.*, *Strongyloides sp.*, *Trichuris sp.*, *Monezia sp.*, *Amphistome sp.*, and *Eimeria sp.* were identified from this region and their prevalence were found to be 15.12%, 7.31%, 4.39%, 2.43%, 0.97% and 16.09% respectively along with 14.63% prevalence of combined infection (Table. 1& Fig. 1). The *Eimeria sp.*, were observed with high prevalence rate and followed by mixed infection, *Strongyle sp.*, *Strongyloides sp.*, *Trichuris sp.*, *Monezia sp.*, and least with *Amphistome sp.* The Higher prevalence of *Eimeria sp.*, in the present study is correlated with the findings of Velusamy *et al.*, (2015) [5] from Northwestern part of Tamil Nadu. The management system of small ruminants with overcrowded populations and monsoon season predisposes them by exposure to coccidial infection. The more prevalence rate of GI nematodes observed in this

study is consistent with the findings of Anugrah *et al.* (2018) [11] and Velusamy *et al.*, (2015) [5]. This high prevalence rate may be due to wide pasture areas and grazing with various flocks as well as the prevailing climatic conditions. Our findings indicate a low incidence of the Amphistome, which may be due to limited accessibility of intermediate hosts such as snails. This is similar to the findings of Anugrah *et al.* (2018) [11].

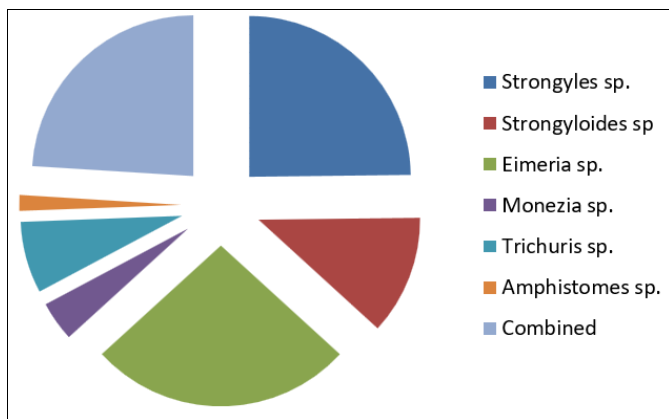
In the present study, a higher overall prevalence was recorded in females (63.39%) compared to males (58.06%) (Table. 2 & Fig. 3). Similar findings were reported by Singh *et al.* (2017) [10], Mir *et al.* (2013) [15] and Bashir *et al.* (2012) [16]. According to their research, the differences insusceptibility to infection between males and females can be attributed to various physiological factors such as pregnancy and lactation which can cause stress and reduce immunity. The animals in this study were divided into three age groups as <1 year, 1-2 years and >2 years. In the present study, the overall prevalence was found to be higher in the group >2 years of age (64.10%) followed by 1-2 years age group (61.67) and <1year age group (59.43%) (Table. 2 & Fig. 2). The current study revealed that the parasitic infections are more common in adult animals than the other young age groups. The higher prevalence in adults might be due to larger areas of grazing pastures along with stress conditions (transport, pregnancy etc.). Our findings were in concordance with Yadav *et al.* (2006) [13] and Emiru *et al.* (2013) [14], who also recorded a higher prevalence of infection in adult animals compared to young ones.

**Table 1:** Prevalence of Gastro Intestinal Parasites of Small Ruminants

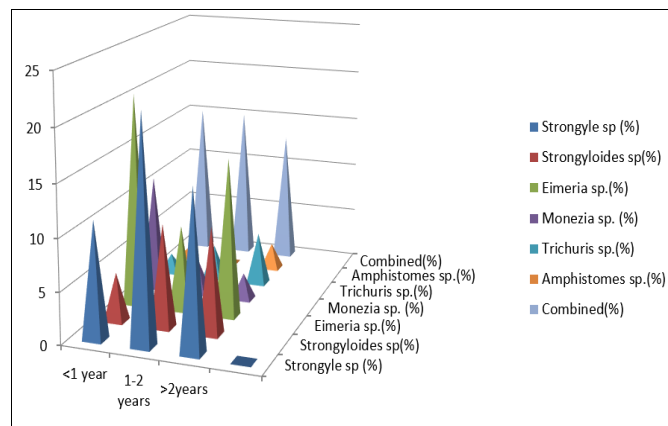
Overall Prevalence	Strongylesp (%)	Strongyloides sp (%)	Eimeria (%)	Monezia (%)	Trichuris (%)	Amphistomes (%)	Combined (%)	Total (%)
Sheep (32)	7 (21.87)	2(6.25)	5(15.62)	1(3.12)	-	-	1(3.12)	16(50.0)
Goat (173)	24(13.87)	13(7.51)	28(16.18)	4(2.31)	9(5.2)	2(1.15)	29(16.76)	109(63.0)
Total (205)	31(15.12)	15(7.31)	33(16.09)	5(2.43)	9(4.39)	2(0.97)	30(14.63)	125 (60.97)

**Table 2:** Age and Sex wise Prevalence of GI parasite in Small Ruminants

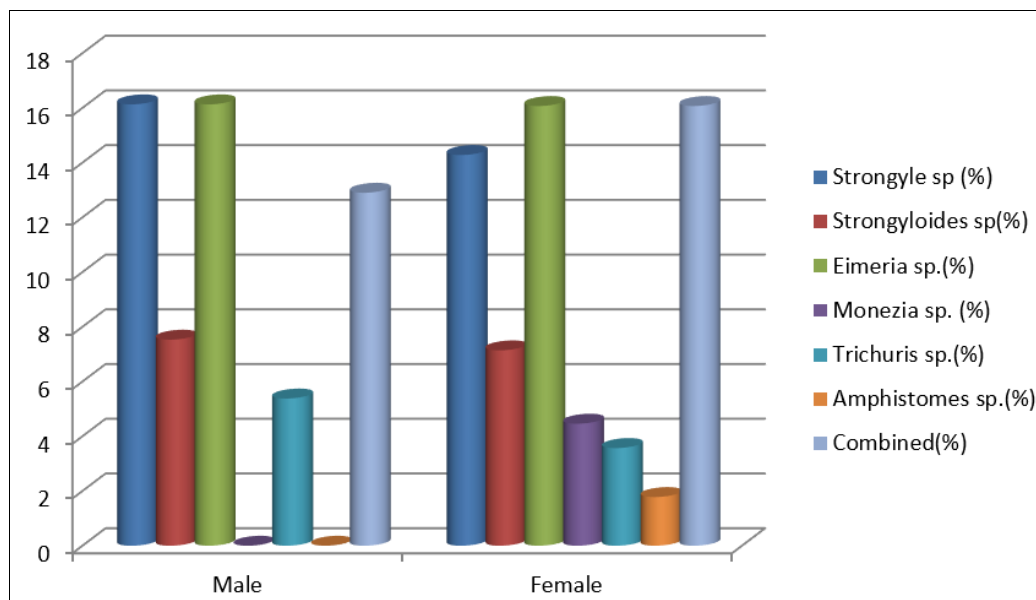
Epidemiological determinants	Category	Total (n=205)	Strongylesp (%)	Strongyloides sp (%)	Eimeria (%)	Monezia (%)	Trichuris (%)	Amphistomes (%)	Combined (%)	Total (%)
Age	<1 year	106	12(11.32)	5(4.71)	22(20.75)	2(11.32)	5(1.89)	1(0.94)	16(15.09)	63(59.43)
	1-2 years	60	13(21.67)	6(10.0)	5(8.33)	2(3.33)	2(3.33)	0(0)	9(15.0)	37(61.67)
	>2years	39	6(15.38)	4(10.26)	6(15.38)	1(2.56)	2(5.13)	1(2.56)	5(12.82)	25(64.10)
Sex	Male	93	15(16.13)	7(7.53)	15(16.13)	0(0)	5(5.38)	0(0)	12(12.9)	54(58.06)
	Female	112	16(14.28)	8(7.14)	18(16.07)	5(4.46)	4(3.57)	2(1.78)	18(16.07)	71(63.39)



**Fig 1:** Prevalence of Gastro Intestinal Parasites of Small Ruminants



**Fig 2:** Age wise Prevalence of GI parasite in Small Ruminants



**Fig 3:** Sex wise Prevalence of GI parasite in Small Ruminants

### Conclusion

The study concluded that the present climatic region is conducive to parasitic populations, so periodic deworming should be encouraged and control measures should be enforced. Additionally farmers should adopt management systems like rotational grazing to enhance productivity and profitability.

### References

- Pathak AK, Pal S. Seasonal prevalence of gastrointestinal parasites in goats from Durg district of Chhattisgarh. *Veterinary World*. 2008;1(5):136-137.
- Ministry of Fisheries, Animal Husbandry & Dairying- Brief note on 9 Years' achievement of Department of Animal Husbandry & Dairying. PIB, Delhi; c2023. p. 1-14.
- Lata M, Mondal BC. Role of Goats in Indian Economy: Major constraints and Routine Management Practices for their Well-being. *Vigyan Varta*. 2021;2(4):41-46.
- Varadharajan A, Vijayalakshmi R. Prevalence and seasonal occurrence of gastrointestinal parasites in small ruminants of coastal areas of Tamil Nadu. *International Journal of Scientific and Research Publications*. 2015;5(2):1-6.
- Velusamy R, Rani N, Ponnudurai G, Anbarasi P. Prevalence of intestinal and haemoprotozoan parasites of small ruminants in Tamil Nadu, India. *Veterinary World*. 2015;8(10):1205-1209.
- Khajuria JK, Katoch R, Yadav A, Godara R, Gupta SK, Singh A. Seasonal prevalence of gastrointestinal helminths in sheep and goats of middle agro-climatic zone of Jammu province. *Journal of Parasitic Disease*. 2013;37(1):21-25.
- Sutar AU, Kengar SB, Patil SS, Khan MR. Prevalence of gastrointestinal Parasites in Goats of Ahmednagar district of Maharashtra. *Veterinary World*. 2010; 3(10): 456-457.
- Om H, Kumar S, Singh P. Prevalence of Coccidia in Mathura Region of Uttar Pradesh. *Veterinary World*. 2010;3(11):503-505.
- Singh V, Varshney P, Dash SK, Lal HP. Prevalence of gastrointestinal parasites in sheep and goats in and around Mathura, India. *Veterinary World*. 2013;6(5):260-262.
- Singh E, Kaur P, Singla LD, Bal MS. Prevalence of gastrointestinal parasitism in small ruminants in western zone of Punjab, India. *Veterinary World*. 2017;10(1): 61-66.
- Anugrah, Singh SV, Singh JP, Ramakant, Singh NV, VarunVK. Epidemiology of gastrointestinal parasites in goats of Kumarganj region of Uttar Pradesh. *Journal of Pharmacognosy and Phytochemistry*. 2018;SP4:16-20.
- Soulsby E JL. *Helminths, Arthropods & Protozoa of Domesticated Animals*. 7th Ed, ELBS, Bailliere; c1982. p. 66-354.
- Yadav A, Khajuria JK, Raina AK. Seasonal prevalence of gastrointestinal parasites in sheep and goats of Jammu. *Journal of Veterinary Parasitology*. 2006;20(1):65-68.
- Emiru B, Amede Y, Tigre W, Feyera T, Deressa B. Epidemiology of gastrointestinal parasites of small ruminants in Gechi District, Southwest Ethiopia. *Advance in Biological Research*. 2013;7(5):169-174.
- Mir MR, Chishti MZ, Majidah R, Dar SA, Katoch R, *et al*. Incidence of gastrointestinal nematodosis in sheep of Jammu. *Trends in Parasitology Research*. 2013;2(1):1-4.
- Bashir AL, Chishti FA, Hidayatullah T. A Survey of Gastrointestinal Helminthes Parasites of Slaughtered Sheep and Goats in Ganderbal, Kashmir. *Global Veterinaria*. 2012;8(4):338-341.
- Islam MS, Hossain MS, Dey AR, Alim MA, Akter S, Alam MZ. Epidemiology of gastrointestinal parasites of small ruminants in Mymensingh, Bangladesh *Journal of Advanced Veterinary and Animal Research*. 2017;4(4):356-362.
- Gadahi JA, Arshed MJ, Ali Q, Javaid SB, Shah SI. Prevalence of gastrointestinal parasites of sheep and goat in and around Rawalpindi and Islamabad, Pakistan. *Veterinary World*. 2009;2:51-53.
- Bhavanam SS, Reddy S. Seasonal Prevalence of Gastrointestinal Parasites of Small Ruminants in YSR Kadapa District of Andhra Pradesh, India. *International Journal of Animal Research*. 2018;8(1):184-189.