The Pharma Innovation Journal 2021; 10(11): 2834-2837

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; 10(11): 2834-2837

www.thepharmajournal.com
Received: 12-09-2021
Accepted: 15-11-2021

U Naseema
Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, Tamil Nadu, India

S Sivaraman
Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal, Tamil Nadu, India

KK Ponnu Swamy
Professor and Head, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, Tamil Nadu, India

S Hamsa Yamini
Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, Tamil Nadu, India

A Elango
Dean, Veterinary College and Research Institute, Salem, Tamil Nadu, India

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

Corresponding Author:
U Naseema
Assistant Professor, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, Tamil Nadu, India

A study on prevalence and factors associated with endo parasitism among goats in Salem, Tamil Nadu, India

U Naseema, S Sivaraman, KK Ponnu Swamy, S Hamsa Yamini, A Elango and K Padmanath

Abstract
The present study was aimed to evaluate the factors associated with prevalence of various endo parasites among goats of Salem district of Tamil Nadu. A total of 200 faecal samples were collected from the clinical cases coming to *adhoc* Veterinary Clinical Complex (which was functioning at the Veterinary Dispensary, Aragalur, Salem, Tamil Nadu), Veterinary College and Research Institute, Salem during the period from January, 2021 to October, 2021. Faecal examination revealed the most common endo parasite *Strongyle* spp. followed by *Coccidial* oocyst, *Moniezia* spp., *Amphistome* spp. and *Strongyloide*s spp. in goats.

Keywords: Salem, endo parasites, goats, livestock population, faecal examination

Introduction
In India, on the report of 20th Livestock Census, the total livestock population is 536.76 million, of which about (27.74%) 148.88 million are goats. Of the total goat population in India, Tamil Nadu constitute about 98.89 lakhs goats, of which about 1,27,925 lakhs are reared in backyard system by the farmers of Thalaivasal block, Salem district. Goats contribute total 3% to milk and 13.35% to meat production in India. The endo parasitism is one of the major health problems affecting productivity and reproductive performance of goats worldwide. The potential impact of parasitism resulting in the reduced population of goats particularly decrease in milk production, reduced feed intake, reduced growth rate of kids and also adversely affect the reproductive efficiency in herds. The epidemiology of parasitism is a prerequisite for the effective management of parasitic diseases. So, the current study is assigned to find out the prevalence of the endo parasitic infections in goats of the Thalaivasal block, Salem district, Tamil Nadu.

Materials and Methods
A total of 200 goats with the history of enteritis were screened for the presence of eggs of internal parasites. The sex and age were attained for each animal. The study included 95 males and 105 females, of them 55 kids (≤6 months), 41 yearlings (>6 months -1 year) and 104 adults (> 1 year). The samples were collected for a period of 10 months from January, 2021 to October, 2021 with a temperature range of 18.1°C-35.3°C and relative humidity of 51-68% in Salem district.

The faecal samples were collected directly from the rectum of each animal using sterile disposable glove. Faecal samples were processed by direct smear, which consists of a small amount of faeces placed directly on microscope slide (Bowman *et al.*, 2003) [4], simple floatation and concentration techniques as the method adopted by Soulsby (1986) [13]. Identification of the different internal parasites was relied on their unique morphological characteristics as reported by Soulsby (1982) [12] and Hanson and Perry (1994) [6] using × 10 and × 40 magnification of compound microscope.

Statistical analysis
The prevalence of endoparasites was estimated as a percentage (%) of number of goats parasitized in the total number of goats examined. Data was statistically analysed using Chi-squared test at $p<0.05$ regarded as statistically significant by SPSS (Version 16 for windows) statistical software.

Results

The faecal examination revealed an overall prevalence of endoparasites was 82.5% (165/200), reaching 44.24% (73/165) males and 55.76% (92/165) females being infected by endoparasites. The overall prevalence of endoparasites in affected kids, yearlings and adults were 27.27% (45/165), 21.82% (36/165) and 50.91% (84/165) respectively. Age wise, sex wise the prevalence of endoparasites showed that there is no significant association in the distribution of parasites in goats (Table 1). However, the proportion of parasitic infections was high in adult females. The clinical signs by endo parasitism in goats were depicted in the Fig.1. The ova of different species of endoparasites such as *Amphistome spp., Monezia spp., Strongyle spp., Strongyloides spp* and *Coccidial oocyst* were identified in the faeces of naturally infected goats using direct smear and simple salt floatation and concentration technique (Fig. 2) in which the highest prevalence was observed with *Strongyle spp.* followed by *Coccidial* oocyst, *Moniezia spp.*, and least with *Amphistome spp., strongyloides spp* in goats (Fig.3). The rate of simultaneous co-infection with three endo parasitic groups (*Strongyle spp., Strongyloides spp* and *Coccidial* oocyst) was low (20.61%). The endoparasites especially coccidian-infected goats were manifested with watery diarrhoea with mucous in kids and pasty in adults and colour of the faeces changed to yellow to brown.

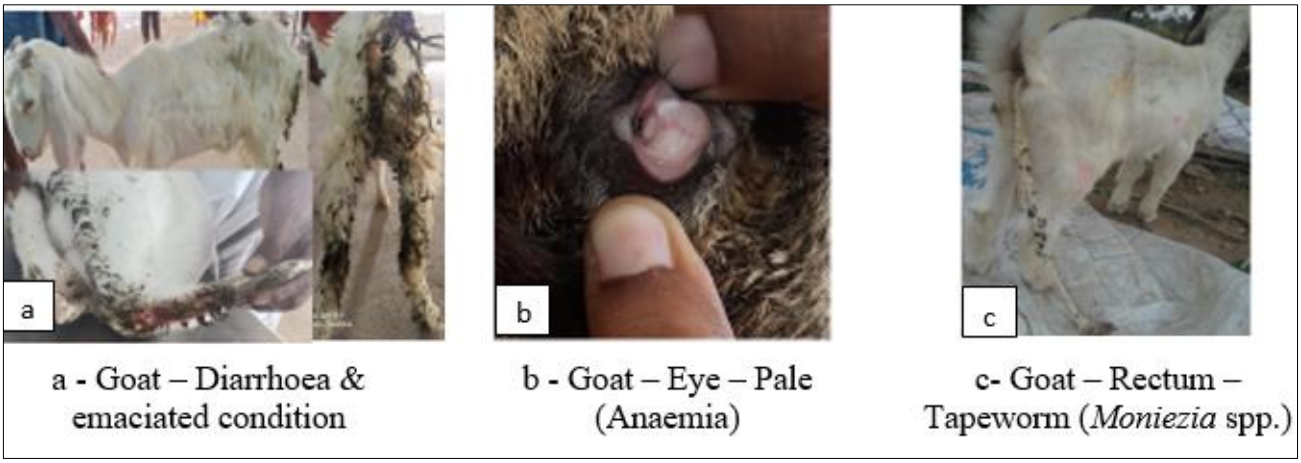

Fig 1: Clinical signs showed by endo parasitism in goats of Salem district, Tamil Nadu

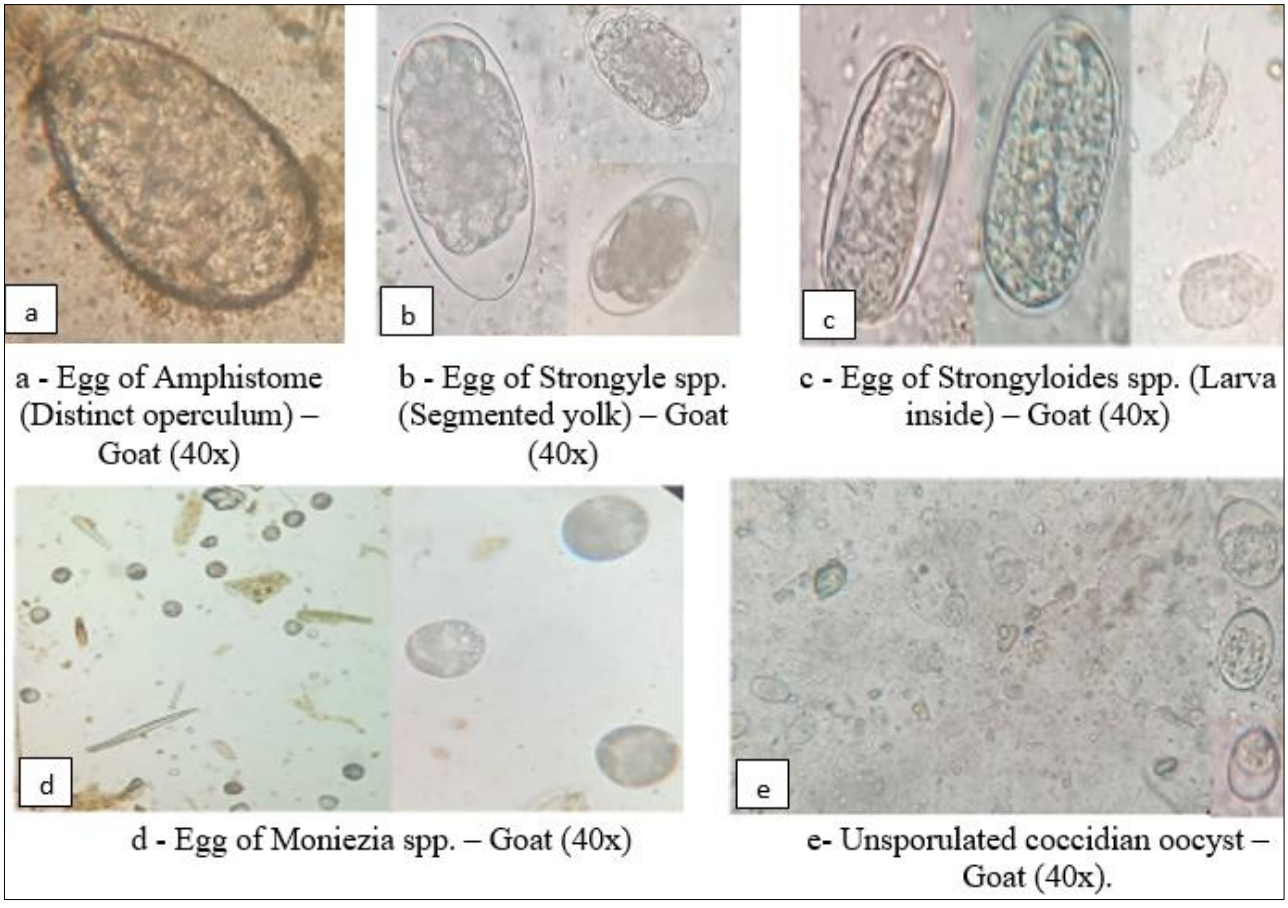

Fig 2: Eggs of endoparasites in goats of Salem district, Tamil Nadu

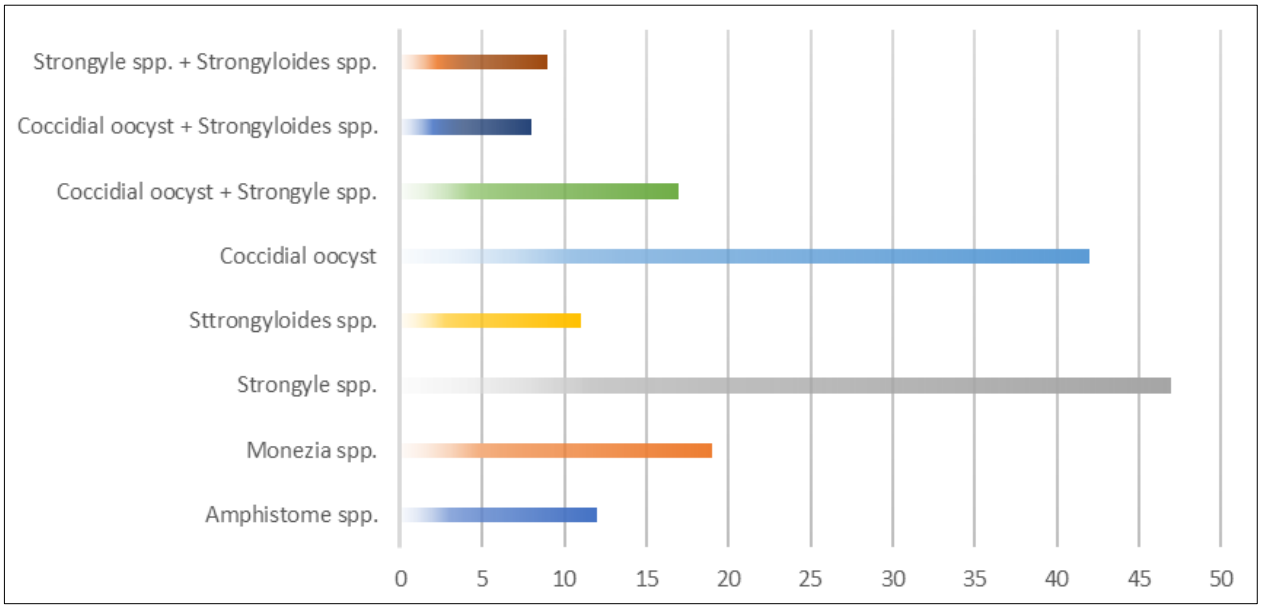

Fig 3: Overall prevalence (%) of endoparasites in goats of Salem district, Tamil Nadu

Table 1: Prevalence of endo parasites in the faeces of naturally infected goats of different age and sex groups in Salem district of Tamil Nadu (N=200)

Parasitic infections	Age groups (N=165/200, 82.5%)										Sex groups (N=165/200, 82.5%)					
	Kids (N=45)		Yearling (N=36)		Adults (N=84)		Chi-square analysis		Total	Prevalence (%)	Male (N=73)		Female (N=92)		Chi-square analysis	
	+	%	+	%	+	%	$\chi 2$ value	*p*			+	%	+	%	$\chi 2$ value	*p*
Amphistome spp	0	0	3	8.33	9	10.71	3.54[x]	0.16	12	7.27	7	9.59	5	5.43	1.04	0.23
Monezia spp	3	6.67	4	11.11	12	14.29	1.68	0.43	19	11.52	8	10.96	11	11.96	0.04	0.84
Strongyle spp	11	24.44	8	22.22	28	33.33	2.02	0.36	47	28.49	22	30.14	25	27.17	0.18	0.67
Strongyloides spp	1	2.22	2	5.56	8	9.52	2.60	0.27	11	6.67	3	4.11	8	8.69	0.73[x]	0.39
Coccidial oocyst	15	33.33	9	25	18	21.43	2.19	0.33	42	25.45	18	24.65	24	26.08	0.04	0.83
Coccidial oocyst + Strongyle spp	7	15.56	5	13.89	5	5.95	2.30	0.31	17	10.30	8	10.96	9	9.78	0.06	0.80
Coccidial oocyst + Strongyloides spp	3	6.67	3	8.33	2	2.38	1.03[x]	0.59	8	4.85	3	4.11	5	5.43	0.00[x]	0.97
Strongyle spp + Strongyloides spp	5	11.11	2	5.56	2	2.38	2.91[x]	0.23	9	5.45	4	5.48	5	5.43	0.11[x]	0.73

[x] – Yates corrected chi-square value, + - Positive, *p* - Significance

Discussion

The types of endo parasites found in this study included *Amphistome spp.*, *Moniezia spp.*, *Strongyle spp.*, *Strongyloides spp.* and *Coccidian oocyst.* This study disclosed that 82.5% of the examined goats are infected with parasitism. This result may be accordance with the report of Satish *et al.*, (2018) [11] who showed that prevalence of 83.41% in and around Chennai, while Velusamy *et al.*, (2015) [14] observed relatively lower prevalence of endo parasitism (35%) in Namakkal, Tamil Nadu. The current study proposed that enteric nematodes, *Strongyle spp.* contribute high parasitic load in the examined goats. It was reached about 28.49%. This result agreed with the findings of Paul Princely Rajkumar *et al.* (2014) [8] who reported the high incidence of *Strongyle* infection and they are highly pathogenic resulted in anaemia, enteritis, reduced growth rates and also leading to high mortalities (Kagira and Kanyari, 2001) [7].

In the current study, it was cleared that next to strongyle infection, coccidian oocyst was more pronounced (25.45%) in the area. These results were in line with those reported by Balasubramaniam *et al.* (2001) who reported that 34.61% *Eimeria* infection in Namakkal district of Tamil Nadu. However, Satish *et al.* (2018) [11] reported much higher prevalence of coccidian oocyst 71.18% in Chennai district of Tamil Nadu. The high prevalence of coccidiosis in goats obtained in this study could be as a result of the poor management system operated by farmers especially during the rainy seasons when animals are overcrowded in the pens, which are not cleaned regularly. Generally, coccidian infections contribute to enteric disease particularly in kids under stress in poor farm conditions, which resulted in high mortality rate.

The adult cestode identified through faecal examination in this study was *Moniezia spp.* with a prevalence of 11.52%. These findings were consistent with those stated by Das *et al.* (2017) [5] and Verma *et al.* (2018) [15] who mentioned that 10% and 18.74% of goats were infected by Moniezia spp. successively.

The least infection of *Amphistome* and *Strongyloides spp* was observed in the study with the prevalence of 7.27% and 6.67% respectively. The low prevalence of *Amphistomes* infections in goats might be due to the presence of less water bodies in the area, which limited the infection through snails. Similarly, Satish *et al.* (2018) [11] observed 13.56% of *Strongyloides spp.* infection in Chennai district of Tamil Nadu.

In this study, mixed infections (20.61%) were less than the single infection (79.39%). Among the mixed infections, 10.30% of *Coccidian* oocyst plus *Strongyle spp.*, 4.85% of *Coccidian* oocyst plus *Strongyloides spp.* and 5.45% of *Strongyle spp* plus *Strongyloides spp*. were observed in the study. It is important to note that there was high prevalence of *Coccidian* oocyst and *Strongyle spp.* in the study, revealed poor body condition and high mortality in the affected goats. This conveyed that faecal contamination of grass land/pastures with the ova/egg of both the parasites in the

area. The associated risk factors with the prevalence of endoparasites in goats showed that females (55.76%) were more infected comparatively than males (44.24%). These results might be due to various stress factors (lactation/pregnancy) which might contribute in the suppression of host immune status and leading more susceptibility to the parasitic infections (Roy *et al.* 2011) [10]. Between the age groups, adults (50.91%) were found more prone to be infected than kids and yearlings (27.27% and 21.82% respectively) in the study. Our finding was in accordance with Yadav *et al.* (2006) [16] who recorded the higher prevalence of infections in adults than young ones. Probably, it might be due to grazing habits of adult goats in grass land which contain more eggs/ova of endo-parasites.

Conclusion

The result of this study clearly shows that single and mixed infections of endo parasites are more prevalent in this region. So, the periodical assessment of endo parasitic infections needed for prevention and control of parasitic infections.

Acknowledgement

The authors wish to thank the Dean, Veterinary College and Research Institute, Salem for the facilities provided to carry out the work.

References

1. 20th Livestock Census. Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India, New Delhi; c2020.
2. Balasubramanium GA, Sudhakar Rao GV, Balachandran C, George V, Vairamuthu S. Incidence of parasitic diseases among domestic animals in Namakkal district of Tamil Nadu. Indian J Anim Sci. 2001;71:340-341.
3. Basic Animal Husbandry Statistics (BAHS). Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India, New Delhi; c2019.
4. Bowman DD, Lynn RC, Bernhard ML, Alcaraz A. George's parasitology for veterinarians. 8th ed. Elsevier, Sounder; c2003. p. 287-302.
5. Das M, Laha R, Goswami A, Goswami A. Gastrointestinal parasitism of goats in hilly region of Meghalaya, India. Vet World. 2017;10(1):81-85.
6. Hanson J, Perry B. The epidemiology, diagnosis and control of helminth parasites of ruminants: A handbook. Food and Agricultural Organization of the United Nations, Rome, Italy; c1994. p. 72-89.
7. Kagira JM, Kanyari PWN. The role of parasitic diseases in causing mortalities in small ruminants in a highly productive area of Central Province, Kenya. JS Afr Vet Assoc. 2001;72:147-149.
8. Paul Princely Rajkumar C, Sreekumar C, Sakthivel PC, Jagadeesan K, Anilkumar R, et al. Prevalence of gastrointestinal parasites in an organized sheep farm in Tamil Nadu. Indian Vet J. 2014;91(06):48-50.
9. Ratanapob N, Arunvipas P, Kasemsuwan S, Phimpraphai W, Panneum S. Prevalence and risk factors for intestinal parasite infection in goats raised in Nakhom Pathom Province, Thailand. Trop Anim Health Prod. 2012;44:741-745.
10. Roy BC, Mondal MMH, Talukder MH, Majumder S. Prevalence of Balantidium coli in buffaloes at different areas of Mymensingh. J Bangl Agric Univ. 2011;9(1):67-72.
11. Satish A, Nagarajan K, Balachandran C, Soundararajan C, Legadevi R. Gross and histopathology of coccidiosis in small ruminants in Tamil Nadu. Int J Livest Res. 2018;9(2):225-235.
12. Soulsby EJL. Helminths, arthropods and protozoa of domesticated animals. 7th Ed. The English Book Society and Bailliere and Tindal, London; c1982. p-767.
13. Soulsby EJL. Helminths, arthropods and protozoa of domesticated animals. 7th Ed. London: Bailliere Tindall; c1986.
14. Velusamy R, Rani N, Ponnudurai G, Anbarasi P. Prevalence of intestinal and haemoprotozoan parasites of small ruminants in Tamil Nadu, India. Vet World. 2015;8(10):1205.
15. Verma R, Sharma DK, Paul S, Gururaj K, Dige M, Saxena VK, et al. Epidemiology of common gastrointestinal parasitic infections in goats reared in semi-arid region of India. J Anim Res. 2018;8(1):39-45.
16. Yadav A, Khajuria JK, Raina AK. Seasonal prevalence of gastrointestinal parasites in sheep and goats of Jammu. Indian Vet J. 2006;20:65-68.