



A report on occurrence of coccidial infection in sheep



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Abstract

An investigation was carried out in a sheep farm from Bengaluru North region to identify the presence of coccidia species. In a total of 70 sheep, about twenty faecal samples were randomly collected from animals and subjected to faecal examination by concentration methods. All the 20 samples were found positive for oocysts. The oocysts were subjected for sporulation by invitro methods for identification of species respectively. Based on the morphometric studies it revealed five different *Eimeria* oocysts viz., *Eimeria aarkhari* (42x33.6 μ m), *E. ovina* (25.65x33.6 μ m), *E. pallida* (39.9x28.5 μ m), *E. parva* (22.8x19.95 μ m) and *E. faurei* (34.2x22.8 μ m).

Keywords: *Coccidia*, sheep, Bengaluru

The livestock comprise bovine, ovine, caprine, equine and camelus species. The total sheep population in the country is 74.26 million in 2019 according to the 20th livestock census which makes India to stand at third place in the sheep population. Livestock production accounts for up to 40.0 per cent of worldwide agricultural produce and sheep farming is of considerable economic importance through providing meat, skin and wool. However, the health disorders in sheep represent the major problems on their production (Bandyopadhyay, 1999).

Coccidiosis is an important protozoan infection in sheep caused by several species of the genus *Eimeria* which develop in the small and the large intestine, affect young animals in particular. It is a major constraint to the sheep industry and causes significant illness that affects small ruminants in various parts of the world. All breeds and different age groups are vulnerable

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to *Eimeria* infection. However, outbreaks of coccidiosis seem to be most severe in lambs between the age group of 3 weeks and 5 months, with the rest of the flock perhaps acting as carriers. The diagnosis of coccidiosis usually depends on detection of oocysts, morphometric identification of oocysts by light microscopy. Therefore, the aim of this study was to identify the commonly encountered *Eimeria* species in sheep in this region.

A total of 70 sheep at a sheep farm from Bengaluru North region were included in the study. Randomly, About 20 fecal samples were collected from both apparently healthy and ailing animals. The study animals were indigenous breeds reared under traditional management system. The animals were selected by simple random sampling technique. Faecal sample was collected directly from the rectum of selected animal and stored in vials after labeling and transported for laboratory examination to Department of Veterinary Parasitology. The collected samples were examined by both quantitative and qualitative methods for detection of oocysts.

The samples positive for oocysts were kept further for sporulation by adding 2.5% potassium dichromate (w/v-1:3) and examined after 24-48 hours under the microscope. The different species of oocysts were identified based on the oocysts size and morphological characters (shape, colour, form index, presence or absence of micropyle and its cap, presence or absence of residual, polar and stieda bodies) under 40X magnification (Soulsby, 1982; Wang *et al.*, 2010).

During this study, five different *Eimeria* oocysts were encountered and identified as *E. arkhari*, *E. ovina*, *E. pallida*, *E. parva*, and *E. faurei*. The morphometric descriptions of each oocyst has been described (Table. 1 and Fig 1, 2, 3, 4 and 5). Murthy and Rao (2014) had performed coproscopy and reported occurrence of *E. parva* and *E. granulosa* in Telangana region which was in agreement with our study. Owusu *et al.* (2016) conducted study in Ghana and reported the overall infection rates of coccidia oocysts as 51.8 percent. Mohamaden *et al.* (2018) identified ten species of *Eimeria* oocysts (*E. crandallis*, *E. granulosa*,



Fig.1. Oocyst of *E. arkhari*

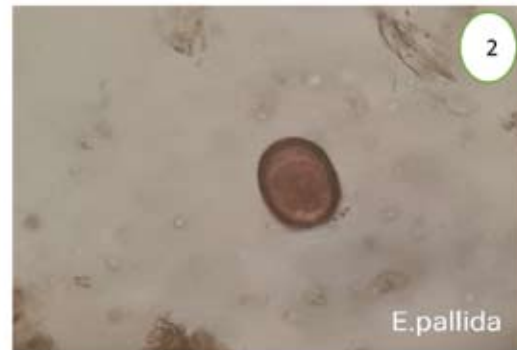


Fig.2. Oocyst of *E. pallida*

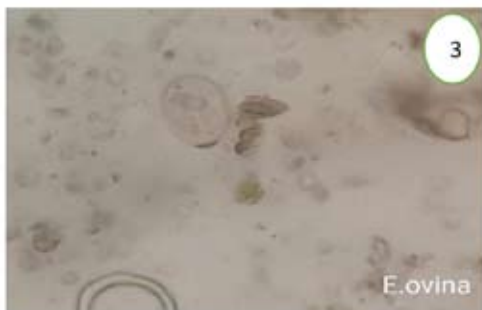


Fig.3. Oocyst of *E. ovina*

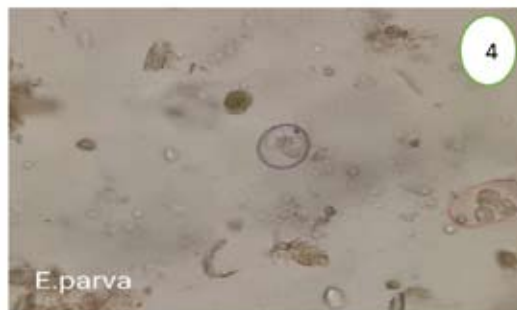


Fig.4. Oocyst of *E. parva*

Table:1. Morphology and morphometry of oocysts of *Eimeria* species

Species	Micrometry measurements of oocysts		Morphological characters
	Length(μm)	Breadth(μm)	
<i>Eimeriaarkhari</i>	42	33.6	Oocyst wall is rough double layered with yellowish tinge and micropyle cap.
<i>Eimeriaovina</i>	25.65	19.95	Oocyst wall is thin, oval shape, and micropyle cap
<i>Eimeria pallida</i>	39.9	28.5	Oocyst wall with rough double layered brown colour and without micropyle.
<i>Eimeria parva</i>	23.4	22.8	Oocyst wall is double layered, transparent colour and without micropyle
<i>Eimeriafaurei</i>	34.2	22.3	Oocyst is oval shape, pink colour and with micropyle

**Fig.5.** Oocyst of *E. parva*

E. ovina, *E. parva*, *E. faurei*, *E. ovinoidalis*, *E. intricate*, *E. pallida*, *E. arloingi*, and *E. ahasta*) in sheep from Egypt which is comparable to our study. Martins *et al.* (2022) from Brazil carried out cross-sectional study to determine the prevalence and associated risk factors among gastrointestinal parasites and sheep herds and reported presence of *Eimeria* species viz., *E. ovinoidalis*, *E. crandallis*, *E. granulosa*, *E. ahsata*, *E. faurei*, *E. bakuensis*, *E. punctata* and *E. pallida*.

The present study provide baseline data regarding the types of *Eimeria* species infecting sheep of Bengaluru North region and also it helps to establish strategic and tactical control measures of these parasites by using suitable livestock management practices.

Summary

This study reports the commonly encountered *Eimeria* species viz., *E. arkhari*,

E. ovina, *E. pallida*, *E. parva*, and *E. faurei* in Bengaluru North region based on morphology and micrometry.

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Conflict of Interests

The authors declare that there is no conflict of interest

References

- Bandyopadhyay, B. 1999. Gastrointestinal parasitic infections of sheep and goats at Salboni, West Bengal. *J. Vet. Parasitol.* **13**(1):79-80.
- Mohamaden, W.I., Sallam, N.H. and Abouelhassan, E.M. 2018. Prevalence of *Eimeria* species among sheep and goats in Suez Governorate, Egypt. *Int. J. Vet. Sci. Med.* **6**:65-72.
- Murthy, G.S.S. and Rao, P.V. 2014. Prevalence of gastro intestinal parasites in ruminants and poultry in Telangana region of Andhra Pradesh. *J. Parasit. Dis.* **38**(2):190-192.
- Martins, N.S., Dos Santos, C.C., da Motta, S.P., da Silva Moreira, A., da Rosa Farias, N. A. and Ruas, J.L. 2022. Gastrointestinal Parasites in Sheep from the Brazilian Pampa Biome: Prevalence and Associated Factors. *Braz. J. Vet. Pathol.*, 44.

- Owusu, M., Sekyere, J.O. and Adzitey, F. 2016. Prevalence and burden of gastrointestinal parasites of Djallonke sheep in Ayeduase, Kumasi, Ghana. *Vet. World* **9**(4):361.
- Soulsby, E.J.L. 1982. *Helminths, Arthropods and Protozoa of Domestic animals*. The English Language Book Society and Bailliere Tindall, London, 778p.
- Wang, C.R., Xiao, J.Y., Chen, A.H., Chen, J., Wang, Y. and Gao, J.F. 2010. Prevalence of coccidial infection in sheep and goats in northeastern China. *Vet. Parasitol.* **174**(3-4):213-217. ■