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STUDY OF *EIMERIA WEYBRIDGENSIS* IN SHEEP FROM BEED, MAHARASHTRA STATE INDIA

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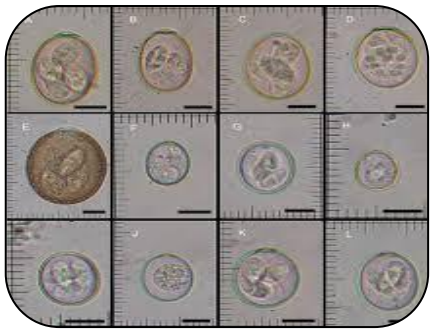
ABSTRACT

During the study ten species of Eimeria are found in sheep, eight species are redescribed and two are new species.

KEYWORDS: *Eimeria, Coccidia, oocyst, sporocyst, sporozoite.*



INTRODUCTION

Coccidiosis is a parasitic disease affecting a variety of animals, especially mammals and birds. The causative organism is a microscopic, spore – forming, single – cell protozoa called coccidia. Coccidia are from the same class of organisms (sporozoa) that cause malaria. Coccidia are sub-classified in to many genera.

In sheep and goats, coccidiosis is caused by the genus *Eimeria*. Within this genus, there are more than ten species of coccidia that are known to infect sheep and goats. Not all of the species are pathogenic or have the same level of pathogenicity. In fact, only a few are usually responsible for disease outbreaks.

MATERIAL AND METHODS

The material for the study of coccidia of goats and sheep was obtained from various slaughter houses as well as from different fields in and around Beed (M.S.). Different parts of the intestine of slaughtered goats were examined and processed within 4-5 hours after collection.

The faecal contents were diluted with distilled water and sieved to remove the large faecal debris. After repeated washing the oocysts were concentrated by centrifugation at 3000 rpm for 10 minutes. The oocysts were then spread out in shallow petri dishes and covered with 2.5% solution of potassium dichromate for sporulation.

OBSERVATION AND RESULTS

During the study ten species of *Eimeria* are found in sheep, eight species are redescribed and two are new species. *Eimeria crandallis* was the most frequent, being found in 108 out of 594 positive samples (18.18%) or 4.38% of the total samples. *Eimeria parva* was the second common species found in 90 out of

594 positive samples, representing 15.15% of the positive samples and 3.65% of the total samples examined. *Eimeria weybridgensis* was the third species found in 82 out of 594 positive samples, representing 13.80% of the positive samples and 3.33% of the total samples examined.

DESCRIPTION OF THE OOCYST OF *EIMERIA WEYBRIDGENSIS*

This species was found only in sheep. The oocysts are ellipsoidal to ovoidal in shape and have smooth double layered wall, which is 2.8µm thick. The outer layer is smooth, yellowish brown in colour, 1.8µm thick. The inner layer is light blue, 1.0µm thick. A micropyle and micropylar cap are present. The micropyle is 6 to 9µm wide, and covered with well developed micropylar cap, flattened or dome shaped and measures 6 to 11µm wide and 2 to 4µm in high. Polar granule and oocystic residuum are absent.

The unsporulated oocyst shows vacuolated sporoblast, it is placed somewhat horizontally in the middle of the oocyst and measures 14 to 18µm in diameter. The sporulated oocyst shows four sporocysts, these are typically elongate in shape and without stieda body. The sporocystic residuum is in the form of a spherical or oval granular mass in between two sporozoites. The sporozoites are arranged head to tail in the sporocyst, occupying the entire space. The sporozoites possess a large refractile body at the broader end.

The dimensions of the sporulated oocysts of *Eimeria weybridgensis* from sheep are as follows:

(All measurements are in microns)

Particulars	Oocyst from sheep
Length of the oocyst	25.2 – 45.4 (35.0)
Width of the oocyst	20.3 – 33.1 (26.0)
Length width ratio of the oocyst	1.2 – 1.3 (1.34)
Length of the sporocyst	8.4 – 16.2 (12.11)
Width of the sporocyst	5.2 – 12.2 (8.52)
Length width ratio of the sporocyst	1.3 – 1.6 (1.42)

The frequency distribution of the lengths and widths of the oocysts of *Eimeria weybridgensis* from sheep shown in **fig.13**

Sporulation time:

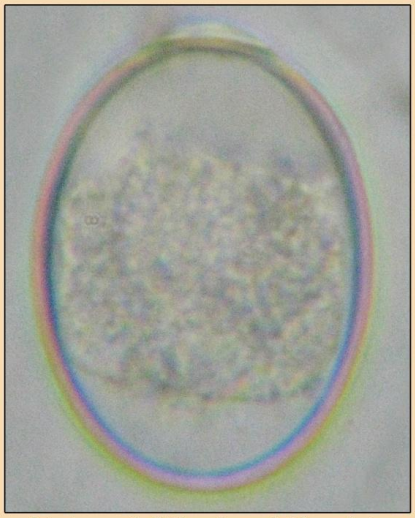
The sporulation time of the oocysts was 96 hours.

Prevalence:

The species was found in 3.33% of the 2462 sheep examined from Beed district.

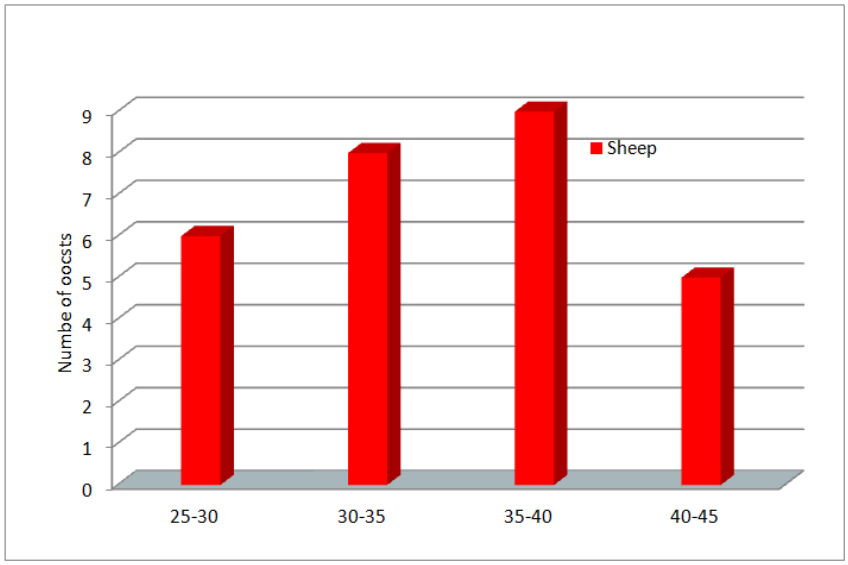
PLATE - 13

Eimeria weybridgensis

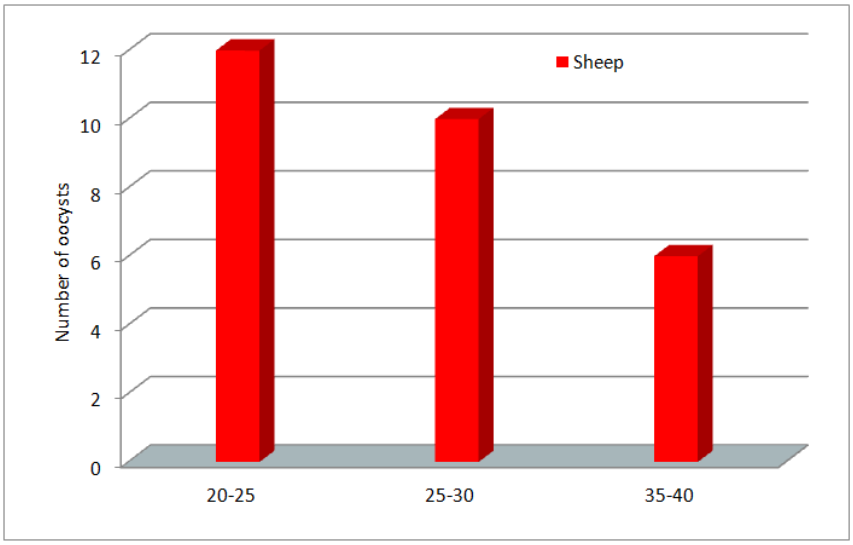


Unsporulated oocyst of *Eimeria weybridgensis* from sheep

Sporulated oocyst of *Eimeria weybridgensis* from sheep



Length (µm)



Width (µm)

Fig.13 Showing the frequency distribution of the lengths and widths of oocysts of *Eimeria weybridgensis* from sheep.

Table - 13
Showing the comparative dimensions of oocysts of *Eimeria weybridgensis* from sheep (based on various authors)

(All measurements are in microns)

Sr. no.	Author	Length of the oocyst	Width of the oocyst	Average
1	Norton et.al (1974)	17.1 – 30.6	14.4 – 19.0	24.4 x 16.9
2	Bawazir (1980)	24.48 – 32.64	19.38 – 25.5	28.31 x 21.54
3	Nikam (1983)	22.0 – 40.0	17.0 – 30.0	24.0 x 20.9
4	Present author	25.2 – 45.4	20.3 – 33.1	35.0 x 26.0

COMMENTS

This species was first described by Norton, Joyner and Catchpole (1974), and then described by Bawazir (1980), and Nikam (1983). It is also reported by O'Callaghan et. al. (1987), Barutzki D et. al. (1990), Amarante and Barbosa (1992), Galip kaya (2004), Karl skirnisson (2007), and Gauly et.al. (2008). Norton Joyner and Catchpole (1974), differentiated this species from *Eimeria crandallis* and *Eimeria ovina*. Oocysts collected here are larger than those described by Norton et. al (1974), Bawazir (1980) and Nikam (1983). The sporulation time relatively more 96 hours as against 48 to 78 hours recorded by Bawazir (1980) and 24 to 72 hours recorded by Nikam (1983). A comparison of the dimensions by different workers is shown in **Table – 13** after the comparision of body dimension and morphological characters it is concluded that the species is *E. weybridgensis* and redescribed here.

Host - *Ovis aries*
Habitat- Oocyst found in intestinal content
Locality- Beed, (M.S)

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