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STUDY OF *EIMERIA* AHSATA IN GOAT AND SHEEP FROM BEED, MAHARASHTRA STATE INDIA

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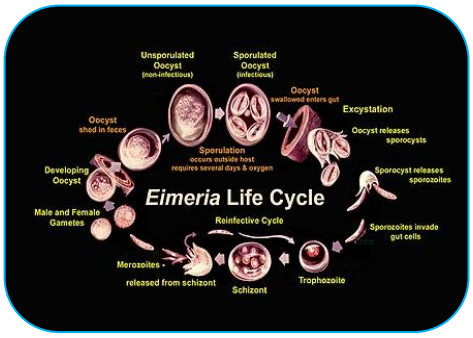
ABSTRACT :

During the present study ten species of Eimeria from sheep and twelve species of Eimeria from goats were found. Out of these, five species of Eimeria were common to both the hosts, and seven different species only in goats and five different species only in sheep. The relative abdunce of the sheep and goats are analysed.



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

INTRODUCTION

Coccidia are obligate intracellular protozoan parasites in the class Conoidasida within the phylum Apicomplexa. The genera *Eimeria* (sporulated oocyst contains four sporocysts) and contain many species that infect a wide variety of birds, mammals and reptiles, but almost all are species host-specific. Infections occur throughout the world.

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 present study twelve species of *Eimeria* are found in goats. Nine species are redescribed and three are new species. The commonest was *E.* arloingi, it was found in 80 of 528 positive samples, showing a prevalence of 15.15% of the positive samples or 3.03% of the total sample examined. *E. ahsata* was the seventh species found in 40 out of 528 positive samples representing 7.57% of the positive samples and 1.51% of the total samples.

During the study ten species of *Eimeria* are found in sheep, eight species are redescribed and two are new species. *Eimeria ahsata* was the sixth species found in 55 out of 594 positive samples, representing 9.25% of the positive samples and 2.23% of the total samples examined.

DESCRIPTION OF THE OOCYST OF *EIMERIA* AHSATA

The oocysts collected from the goats are elongated, ellipsoidal or ovoidal, with a micropyle and micropylar cap. Micropylar cap is dark yellowish in colour which is flattened or dome shaped. The oocyst wall is double layered and about 2.5µm thick.

The outer layer is yellowish or colourless and about 1.3µm thick and inner layer is 1.2µm thick and pinkish yellow in colour. The micropylar cap measures 4.0 to 7.0µm wide and 2.0 to 2.3µm high. No oocystic residuum is seen. The unsporulated oocysts in goat contain a spherical sporoblast measuring 15.0 to 24.0µm in diameter. The sporulated oocysts has four elongate ovoid sporocysts, polar granule may or may not be present. The stieda body is absent. The sporocyst possesses a residuum which is in the form of several granules placed at the center of the sporocyst. Sporozoites lying length wise 'head to tail in the sporocyst. Two refractile bodies, a large one at the broader end and smaller one at the pointed end of the sporocyst. The oocysts of the species collected from the sheep are similar in shape. The oocyst wall is slightly thicker than the oocyst wall of the goat i.e. here wall thickness is 2.7µm where as it is 2.5µm in the goat. Micropylar cap is 6 -9µm wide and 5-7µm high. When micropylar caps of both the hosts are compared, it is observed that the micropylar caps of the sheep are more wide with more height than that of the micropylar caps of the oocysts of the goats. The unsporulated oocyst in sheep contains a spherical large and granular sporoblast, measuring 18-28µm in diameter, filling almost the entire space in the oocyst.

Sporozoites are similar to sporozoites of found in goat oocysts.

The dimensions of the sporulated oocysts of *Eimeria ahsata* from the goats and sheep are as follows:

(All measurements are in microns)

Particulars	Oocyst from goat	Oocyst from sheep
Length of the oocyst	22.4 – 36.2 (29.43)	27.0 – 42.1 (33.10)
Width of the oocyst	19.2 – 26.2 (22.4)	16.0 – 25.1 (20.2)
Length width ratio of the oocyst	1.1 – 1.3 (1.3)	1.6 – 1.6 (1.63)
Length of the sporocyst	10.0 – 16.0 (12.37)	11.0 – 17.1 (14.72)
Width of the sporocyst	4.0 – 9.0 (5.96)	5.0 – 10.0 (7.28)
Length width ratio of sporocyst	1.7 – 2.5 (2.0)	2.2 – 2.7 (2.0)

The frequency distribution of the lengths and widths of the oocysts of *Eimeria ahsata* from goats and sheep shown in fig. 1

Sporulation time:

The sporulation time of the oocyst was 48 hours in the case of goat and 72 hours in the case of sheep.

Prevalence:

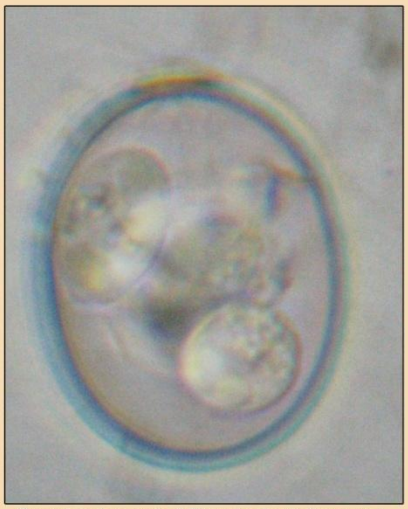
The species was found in 1.51% of the 2636 goats and 2.23% of the 2462 sheep examined from Beed district.

PLATE - 1

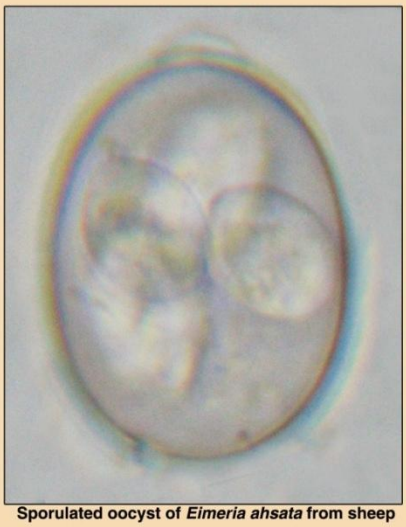
Eimeria ahsata

Unsporulated oocyst of *Eimeria ahsata* from goat

Unsporulated oocyst of *Eimeria ahsata* from sheep



Sporulated oocyst of *Eimeria ahsata* from goat



Sporulated oocyst of *Eimeria ahsata* from sheep

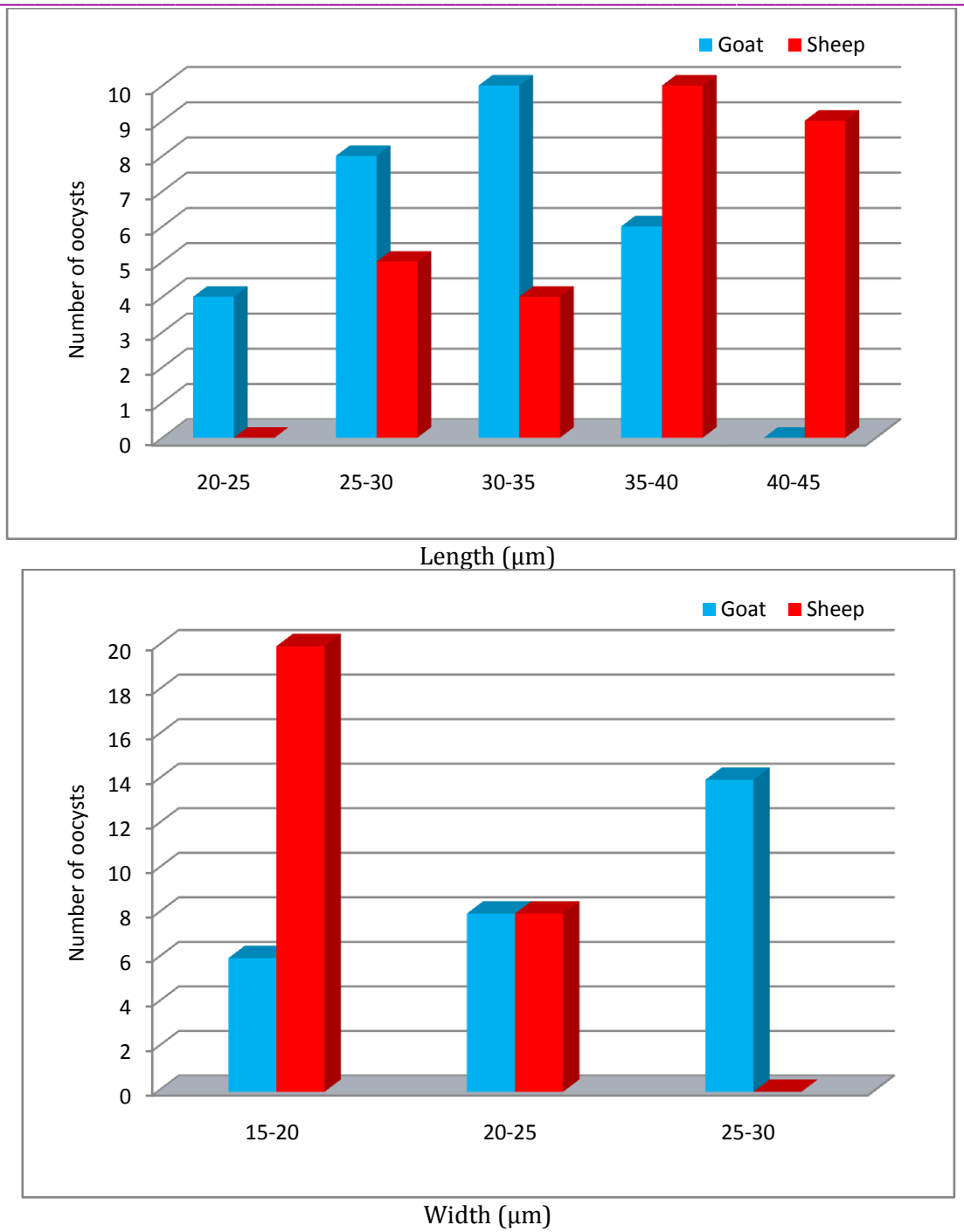


Fig.1 Showing the frequency distribution of the lengths and widths of oocysts of *Eimeria ahasta* from goats and sheep.

Table - 1
Showing the comparative dimensions of oocysts of *Eimeria ahsata* from goats and sheep (based on various authors)
(All measurements are in microns)

COMMENTS

Sr. no	Authors	Length of oocyst	Width of oocyst	Average
1	Levine et.al (1962)	36.0 – 44.0	22.0 – 29.0	40.0 x 26.0
2	Jackson (1964)	34.0 – 47.0	22.0 – 29.0	39.4 x 25.6
3	Chevalier (1965) sheep	32.0 – 39.0	18.0 – 30.0	-
4	Vassiliades (1965) sheep	30.0 – 34.0	18.0 – 24.0	31.2 x 20.1
5	Bhatia and Pande (1970) sheep	37.0 – 45.0	28.0 – 29.0	39.0 x 24.0
6	Rhode and Jungmann (1970) sheep	33.8	22.3	-
7	Nortan et.al (1974)	35.0 – 44.0	23.0 – 26.0	39.0 x 25.0
8	Bawazir (1980) in sheep	28.6 – 44.9	19.4 – 33.7	30.4 x 23.5
9	Nikam(1983) in goat In sheep	25.0 – 27.0 24.0 – 49.0	18.0 – 27.0 18.0 – 30.0	32.75 x 21.46 33.87 x 24.65
10	Jadhav (2002) in goat	26.0 – 37.0	17.0 – 28.0	31.44 x 22.96
11	Present author in goat In sheep	22.4 – 36.2 27.0 – 42.1	19.2 – 26.2 16.0 – 25.1	29.43 x 22.4 33.10 x 20.2

This species was first described by Honess (1942) from sheep. It has subsequently been recorded from the central Asian wild goat *Capra sibirica* by Rysavy (1954), from the domestic goat by Krilov (1961), and Chevalier (1965), and from goats in India by Jha and Subramanian (1966), Nikam (1983), and Jadhav (2002), from goats in Zimbabwe by Chhabra and Pandey (1991). From sheep this species recorded by Kamalapur(1961), Donciu (1964), Chevalier (1965), Vassiliades (1965), Joyner et.al. (1966), Bhatia and Pande (1970), Deb et.al (1980), Sivanarayana and Venkataratnam (1980),

From sheep the species is recorded by Bawazir (1980), Nikam (1983), Varghese and Yayabu (1985), O'Callaghan et.al. (1987), Barutzki et.al.(1990), Dasilva et.al. (1991), Amarante and Barbosa (1992), Maingi and Munyua (1994), Arslan et.al. (1999), Galip Kaya (2004), Fawzia H.Toulah (2007), Gul A (2007), Karl Skirnisson (2007), Yakhchali and Eqbal Golami (2008), and Yakhchali and Zarei (2008).

The description of the sporulated oocyst given here agrees in general with those of earlier workers. There are however minor variations in the morphometries. A comparison of the dimensions of the oocysts given by different workers is shown in Table – 1

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