



STUDY OF *EIMERIA BRUNETTI* IN BROILER CHICKEN IN OSMANABAD DISTRICT, MAHARASHTRA

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ABSTRACT

During a period of two years total number of 2530 sample was examined. 908 of these were positive for coccidial infection, the percentage of prevalence being about 35.88%. The present study seven species of *Eimeria* are found in broiler chicken. These are *Eimeria tenella*, *Eimeria necatrix*, *Eimeria maxima*, *Eimeria brunetti*, *Eimeria acervulina*, *Eimeria praecox* and *Eimeria mitis*.

KEYWORDS: Coccidiosis, *Eimeria* species, oocysts, Broiler chicken.

INTRODUCTION:

Coccidiosis is caused by *Eimeria* species is one of the most serious infectious disease problems for the poultry industry with poultry meat (Broiler) industry losing more than 100 million annually, as extensive breeding promotes the transmission of infectious oocyst in chicken. The species of *Eimeria* that parasitized the intestine of chicken and many of them caused infections, weight loss, poor diet conversion into death.

MATERIAL AND METHODS

The birds (broiler chicken) were sacrificed and various parts of the alimentary canal and caeca were

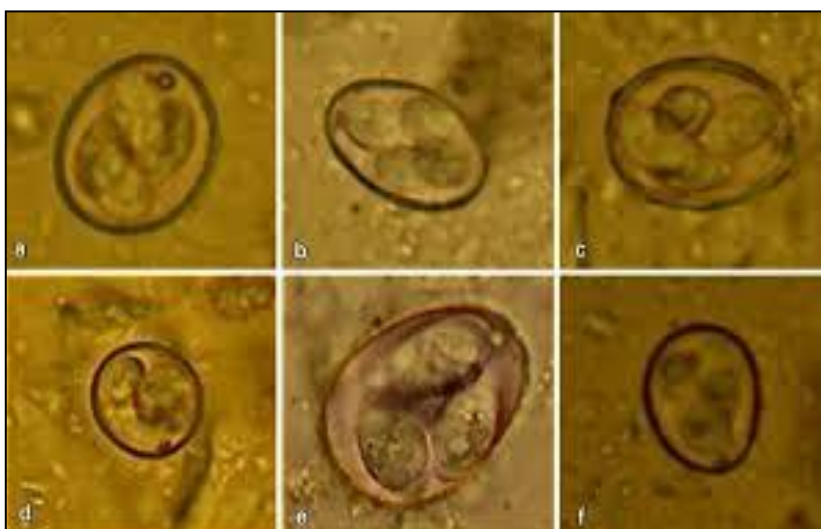
examined. The faecal contents were diluted with water and sieved to remove the large faecal debris, after repeated washing the oocysts were concentrated by centrifugation at 3000 rpm for ten minutes. The oocysts were then spread out in shallow Petri dishes and covered with 2.5% potassium dichromate solution for sporulation. Care was taken to aerate them properly and also to prevent desiccation. The sporulation was carried out in all cases at room temperature (about 28 to 32 °C).

The oocysts were examined regularly to check up, if they are sporulated. The checking was done twice daily in case of species with shorter sporulation

time the checking was done every two hours. The sporulated oocysts were preserved in the 2.5% potassium dichromate solution and examine later. Studies were made on the structure of both unsporulated as well as sporulated oocyst. Measurements were done with an ocular micrometer and photograph were taken with 20.1 mega pixel with 8x optical zoom sony cyber-shot DSC-W830 camera using 100 x oil immersion objective and 10x eye piece. The dimensions of the oocysts were based on a study 15 to 30 oocysts picked at random.

OBSERVATION AND RESULT

During the present study eight species of *Eimeria* are found in Broiler chicken. The commonest was *Eimeria tenella*, it was found in 270 of 908 positive samples, showing a prevalence of 29.73% of the positive samples and 10.67% of the total samples examined.

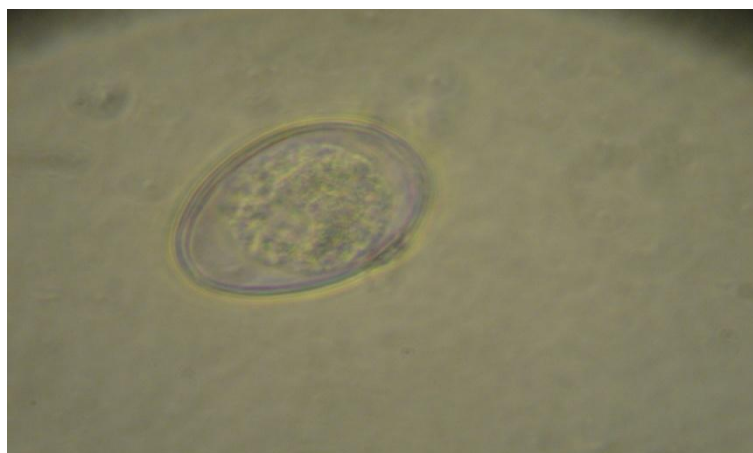


Eimeria necatrix was the second common species found in 159 out of 908 positive samples representing 17.51% of the positive samples and 06.28% of the total samples examined. *Eimeria maxima* was the third species found 134 out 908 positive samples representing 14.75% of the positive samples and 05.29% of the total samples. *Eimeria brunetti* was the fourth found 105 out of 908 positive samples representing 11.56% of the positive and 04.15% of the total samples examined.

Description of the oocyst of *Eimeria brunetti*

The oocysts are spherical to oval in shape, micropyle and micropylar cap is absent. The oocysts are covered with two layered wall which is 1 to 1.5 μm thick. The outer layer is yellowish in colour while inner layer is brown in colour. The sporulated oocyst shows the presence of prominent polar granule at the anterior end close to the oocyst wall. Oocystic residuum is absent.

The unsporulated oocyst shows spherical sporoblast filling the central portion of the oocyst, measuring 12.5 to 18 μm in diameter. The sporulated oocysts contain four sporocysts each with two sporozoite. The sporocysts are elongated in shape, measure about 8.2 to 12.5 μm in length and 4.2 to 6.2 μm in width. Prominent stieda body is present but sporocystic residuum is absent. The sporozoites are long elongated with a refractile globule is visible.



Unsporulated oocyst of *Eimeria brunetti*



Sporulated oocyst of *Eimeria brunetti*

The dimensions of the sporulated oocysts are as follows: -

(All measurements are in microns.)

Particulars	Cyst from broiler chicken
Length of the oocyst	19 - 30 (25.78)
Width of the oocyst	15 - 26 (21.09)
Length width ratio	1.26- 1.15 (1.22)
Length of the sporocyst	13 -16 (14.6)
Width of the sporocyst	8-10 (9.13)
Length width ratio of the sporocyst	1.62 -1.6 (1.59)

Sporulation time -The sporulation time of the oocysts was 18-24 hours

Prevalence: -The species was found in 4.15 % of the 2530 broiler chicken examined from Osmanabad district (M.S.).

Table No.1**Showing the comparative dimensions of *Eimeria brunetti* (based on various authors)**

Sr.no	Authors	Length of oocyst in microns	Width of oocyst in microns	Average
1	Levine (1942)	18-24	21-30	22 x 27
2	Edger(1955)	20.7-30.3	18.1-24.0-.2	26.8 x 21.7
3	Beckers et.al.(1955)	13.8-33.7	12.4-28.3	23.4 x 19.7
4	Research report (1973) Univ. of Georgia	20.7-30.3	18.1-24.2	24.6 x 18.8
5	Jadhav (2009)	20.1-29.9	18.0-24.3	24.9 x19.9
6	Nikam (2011)	22 - 26	16 - 20	23.9 x 18.35
7	Present author	19 - 30	15 - 26	25.78 x 21.09

Comments:

This species was first described by Levine (1942) in U.S.A. It was subsequently recorded by various workers in the different parts of the world. Like Boles and Becker (1954), Edger (1955), Pellerdy (1960), Davies (1963), N. N. Sharma(1964) in University of Georgia, Ahens. L. R. Mc Dougald L. Fuller, and Juan Solis (1986), Long and Johnson (1988) and John R. Batra (1997) in Canada. L. R. Mc Dougald L. Fuller, and R. Mattiello (1997) made a survey of coccidia on 43 poultry farms in Argentina, eight *Eimeria* species were recorded by them, *Eimeria brunetti* was present in that group. R. Mattiello, J.D.Boviez and McDougal L.R (2000) show *Eimeria brunetti* and *Eimeria necatrix* in chicken of Argentina.

In India various workers work on Coccidia of chicken like Ray (1945), describe a species of *Wanyonella* from the gut of the domestic fowl. Gill (1960), Mandal (1966), Bhosale (1977), Tankhiwale et.al. (1982), in Bombay, Rai et.al.(1989), in Andaman, Panda et.al.(1996), in Orrisa. This species is reported for first time by B. N. Jadhav (2009) in Marathwada region.

Comparison of the dimensions of the oocysts described here with those of earlier workers are shown in table no.1. The description of the sporulated oocyst given here agrees in general with those of earlier workers. when present oocyst is compared with those of earlier workers. It shows that average length of the present oocyst is larger than the oocyst of Levine (1942) and smaller than the remaining workers. Average width of the oocyst is smaller the average width of all above workers. Only the species reported by B. N. Jadhav is with single layered oocyst where as in the present species it is double layered. However there are minor variations in the morphometrics. So the species is considered as *Eimeria brunetti* and redescribed here.

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