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Research Article

Redescription of *Eimeria tarabaie*in Broiler chicken in Osmanabad District, (MS) India

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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.

INTRODUCTION:

Domestic poultry has gained a much greater importance in animal production and constitutes a major factor in overall economy. It is realized that sum total of ravages occasioned by various parasitic infections in poultry can in no way be considered less significant than other ethiological agents. Amongst these, Coccidia can cause serious diseases in domestic animals i.e. coccidiosis. Coccidiosis is belived to be a commonest depreciator or even a potential killer of our poultry. So medical point of view their study is very important.

My study covers survey and species composition of coccidia i.e. various species of genus Eimeria from chicken.

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 0^0c).

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.

RESULTS AND DISCUSSION

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. ***Eimeria acervulina***was the fifth found in 90 out of 908 positive samples, representing 9.91% of the positive samples 03.55% of the total samples. ***Eimeria praecox*** was the sixth species found in 83 out of 908 positive samples, representing 09.14% of the positive samples and 03.28% of the total sample examined.

Eimeria mitis *was* the Seventh species found 35 out of 908 positive samples representing 03.85% of positive samples and 01.38% of total samples examined. ***Eimeria tarabaie***was the Eighth species found 32 out of 908 positive samples, representing 03.52% of the positive samples and 01.26% of the total samples examined.

Description of the oocyst of *Eimeria tarabaie*

The oocysts of this species are long and cylindrical without Micropyle and micropylar cap. oocyst wall is double layered and about 0.7 um thick. Outer layer and an inner layer is brownish in colour. The sporulated oocyst shows the presence of polar granule near oocyst wall.oocystic residuum is abscent.

The unsporalated oocyst shows spherical sporoblast situated at middle portion measuring 10 to 12 um in diameter. The sporulated oocyst contains four rounded sporocysts.The sporocyst are rounded and placed in the middle of the oocyst, measuring about 8 to 11 um in length and 5 to 9 um in width. Sporocystic residuum is present but stieda body is absent. Sporozoites are small, bean shaped with a small refractile globules.

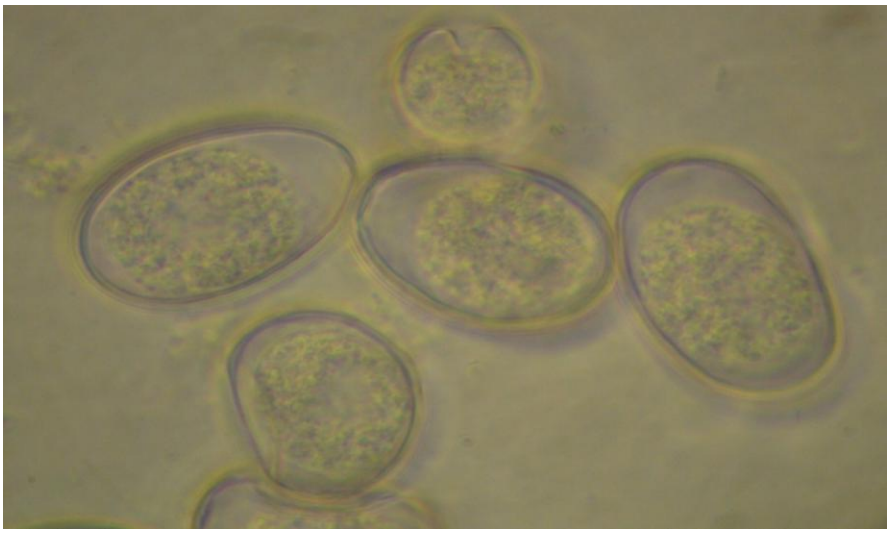

Fig. 1: Unsporulated oocyst of *Eimeria tarabaie*

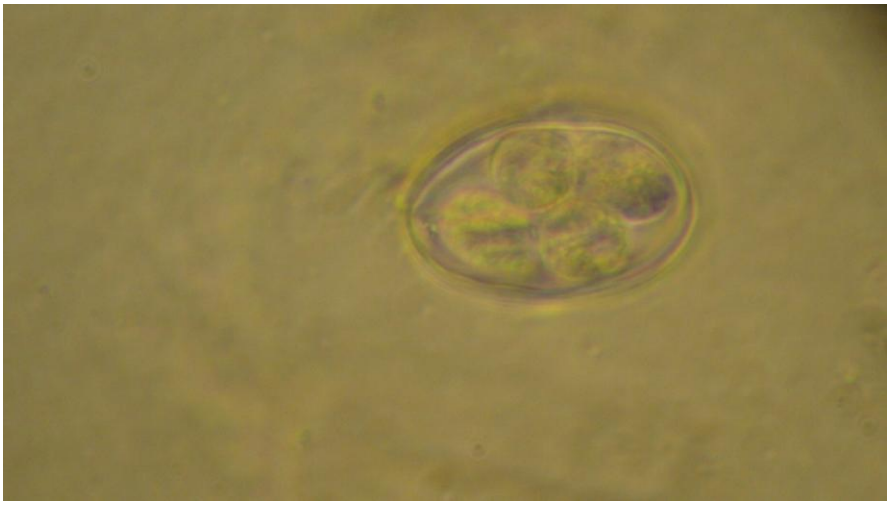

Fig. 2: sporulated oocyst *of Eimeria tarabaie*

Table 1: The dimensions of the sporulated oocysts are as follows:
(All measurements are in microns)

Particulars	Cyst from broiler chicken
Length of the oocyst	15 - 28 (21.15)
Width of the oocyst	12 -19 (16.48)
Length width ratio	1.25 - 1.47 (1.28)
Length of the sporocyst	5 – 9.4 (5.50)
Width of the sporocyst	4 - 8 (4.20))
Length width ratio of the sporocyst	1.25 - 1.17 (1.30)

Sporulation time: -
The sporulation time of the oocysts was 14 -18 hours
Prevalence: -
The species was found in 1.26 % of the 2530 broiler chicken examined from Osmanabad district (M.S.).

Table 2: **Showing the comparative dimensions of *Eimeria tarabaie* (based on various authors)**

Sr. no.	Authors	Length of oocyst in microns	Width of oocyst in microns	Average
1	Jadhav (2009)	22.5-27.1	18.1-19.3	24.1 x18.8
2	Nikam (2011)	16 - 29	14 - 20	22.49 x 15.48
3	Present author	15 - 28	12 - 19	21.15 x 16.48

Different Eimerian species are described from Gallus domesticus in India as well as in various parts of the world. Eight species of Eimeria are described from the broiler chicken are as fallows-
Eimeria tenella Railliet and Lucet 1891
Eimeria necatrix Johnson, 1930
Eimeria brunetti Levine 1942
Eimeria acervulina Tyzzer 1929
Eimeria praecox Johnson 1930
Eimeria maxima Tyzzer 1929
Eimeria mitis Tyzzer 1929 and
Eimeria nikamae (n. sp.) by B. N. Jadhav 2009
The present species is clearly marked off from all the species above mentioned for the shape of the oocyst as well as for the shape and arrangement of the sporocyst. Shape and size of oocyst of these species resemblances with the oocyst of *Eimeriaacervulina,* but oocysts of present species are narrower than that of *Eimeria acervulina*.
The unsporulated oocyst shows centrally placed spherical to sub spherical sporoblast which is not seen in previously recorded species. In sporulated oocyst sporocysts are placed vertically one above another in the middle of the oocyst.
Sporocysts are completely rounded and without stieda body. This feature is altogether different from the other previously recorded species. Though the shape and size of sporocysts of *Eimeria nikamae* and present species are same but the shape of the oocyst are altogether different from each other. The shape of oocysts in *Eimeria nikamae* is broad, oval with rounded base and narrow top where as in present species oocyst is cylindrical with equally rounded ends.
So, the species is *Eimeria tarabaie* which described as a new species by B. N. Jadhav (2009) and it is redescribed here, only the present species is slightly smaller in size than previous species. A comparison of the dimensions of the oocysts described here with those of earlier worker are shown in table no.2. The description of the sporulated oocyst given here agrees in general with those of earlier worker. There are however minor variations in the morphometrics. So the species is considered as *Eimeria tarabaie* and redescribed here.

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