Original Research Article

New species of genus *Eimeria(Eimeria tarabaie)* in broiler chicken from Aurangabad Maharashtra state India

ABSTRACT

Chicken coccidiosis cause huge economic loss in poultry industry. Genus Eimeria from phylum Apicomplexa shows extensive damage in poultry industry. In our investigation ten species of Eimeria was recorded among seven was previously recorded from various parts of the world. Three new species of Eimeria were recorded from Aurangabad district of Maharashtra. *Eimeria tarabai* is one of the species recorded as a new species due to its distinctness.

KEY WORDS: -Broiler Chicken, Coccidia, *Eimeria Sp.*

INTRODUCTION

Coccidiosis among commercial broiler poultry cause huge destruction and great economic loss. Study of such parasite is one of the challenge among veterinary and parasitologist and it is kind of addition to science. [1]Study of intestinal protozoan parasites and disease caused by Eimeria are studied all over world.[33]Now a day, billions of chickens produced annually and growth of poultry industry play a crucial role in fulfillment of food need of growing population of the world. For many years, anticoccidial feed and drugs has been a primary means of the controlling coccidiosis among poultry. ~~now~~ Now a day, many anticoccidial drugs and vaccines come in the market control the threat of coccidia in some instance. But total eradication of this disease is quite impossible due to lot of environmental conditions and microscopic nature of parasites. So, study of such medically important species is must for science.[1]. Since 17th century work on Coccidiosis is carried out by number of researchers.[2],[4], [5], [8], [10], [11], [14], [23], [24],[31], [32].My research investigation work covers survey and species identification of coccidia i.e., various species of genus *Eimeria* from chicken.

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MATERIAL AND METHODS

Chicken intestine were obtained from various slaughter shops of different tehsil of Aurangabad district. Various parts of chicken intestine were examined for coccidial infection in Protozoa laboratory of department of Zoology Dr. BAMU Aurangabad every day after collection.

The fecal materials from chicken intestine were examined for the presence of oocyst. If sample is positive for infection, oocyst is separated by centrifugation method and preserved in $K_2Cr_2O_7$ at NTP. Regular checkup for sporulation time and morphometric measurement is carried out every day after every 2 hr. [1],[23], [24].

RESULTS AND DISCUSSION

A total of 2524 ~~total~~ samples were examined for a two-year ~~study of~~ coccidial investigation from ~~two year [~~2006 to 2008~~]~~. Among 2524 samples, 734 tested ~~were~~ positive for coccidial infection,resulting in a ~~and percentage~~ prevalence rate of ~~is~~ 29.08 percent~~ages~~.All positive samples show prevalence of *E.tenella*,*E.necatrix, E.brunetti*,*E.acervulina, E.maxima, E.praecox, E.mitis, and three new species E.nikamae, E.tarabaie*, and*E.shivpuri.*Out of 734 positive samples 14 samples shows presence of new species E. *tarabaie*. Percentage prevalence is 1.90%.

DESCRIPTION OF THE OOCYSTS~~:~~

The oocyst of *Eimeria tarabaie* is cylindrical, both end are rounded and covered with double layered wall. The outer wall is thick and inner is thin whereas outer is brown and inner is bluish to brown in colour and measured about 0.9 um thick. Oocyst is without micropyle and micropylar cap. Oval to sub spherical sporoblast fulfill the central portion of the unsporulated oocyst. At the anterior end of the sporulated oocyst, prominent polar granule is present close to oocyst wall. Oocystic residuum is absent but sporocystic residuum is present. Sporocyst are completely rounded and placed in the middle of the oocyst.Sporozoites are small bean shaped with very small refractive granules. Sporulation time is 14 to 18 hr.

Measurements of the sporulated oocysts:

1. Lengthof sporulated oocysts: 22.5-27.1 um (24.1um)
2. Width of sporulated oocyst: 18.1-19.3um (18.8um)
3. Length width ratio : 1.2-1.3 um (1.1um)
4. Length of sporocyst: 10-10 um (10um)
5. Width of sporocyst: 10-10 um (10um)
6. Length width ratio: 1-1 um (1um)

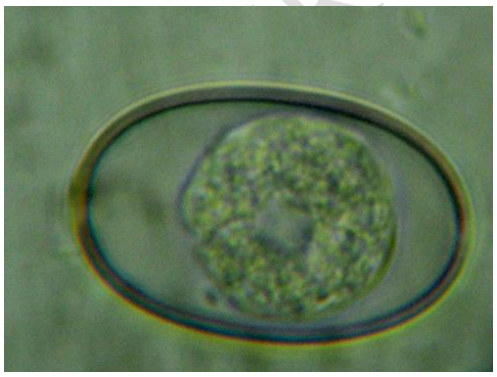

Fig 1: *Eimeriatarabaie*(n.sp.) (Unsporulated)

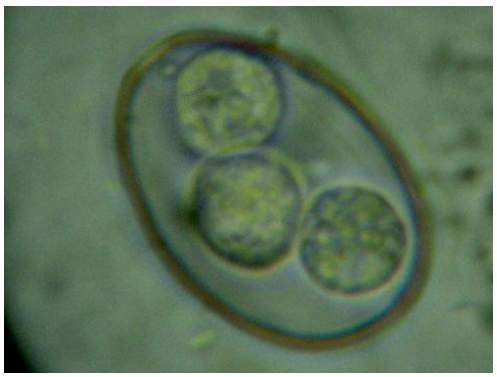

Fig 2:*Eimeriatarabaie*(n.sp.) (Sporulated)

COMMENTS:

Different Eimeria species are described from *Gallus gallusdomesticus* in India as well as in various parts of the world. Eight species of *Eimeria* are described from the broiler chicken along with one new species are as follows:-

*E.tenella*Railliet and Lucet 1891, *E.necatrix*Johnson, 1930, *E.brunette*Levine 1942, *E.acervulina*Tyzzer 1929, *E.praecox*Johnson 1930, *E. maxima*Tyzzer 1929, *E.mitis*Tyzzer 1929 and *Eimeria tarabaie*(n. sp.)by present author.

Eimeria tarabaie species is clearly distinct from previously described eight species.The shape of the oocyst and arrangement of sporocyst is completely differing from all above described species.Oocyst shape and size of *E.tarabaie* shows resemblance with *E. acervulina* but *E.tarabaie* is narrower than these species.Centrally placed spherical to sub spherical sporoblast is the key distinct character of unsporulated oocyst 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 by author except new species *Eimeria nikamae*.

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.

CONCLUSION

From all distinctness recorded from unsporulated and sporulated oocysts, it is considered as *Eimeria tarabaie* (n. sp.) after Mrs. Tarabai Namdev Jadhav (The beloved mother of the current ~~present~~ author).

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COMPETING INTERESTS

No any conflict of interest

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