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NEW SPECIES OF GENUS *EIMERIA (EIMERIA NIKAMAE)* IN BROILER CHICKEN (*GALLUS GALLUS DOMESTICUS*) FROM AURANGABAD (M.S.) INDIA

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ABSTRACT
The objective of this study was first to investigate the prevalence of poultry coccidiosis and to identify the coccidial species occurring in the study area on local strain. The study involved survey, fecal examination, and identification of coccidial species based on their morphology, predilection site in the intestine and sporulation time. Chicken is more susceptible to *Eimeria tenella, Eimeria necatrix, Eimeria brunetti, Eimeria mitis, Eimeria acervulina,* Eimeria praecox, Eimeria maxima. During our investigation three new species i.e. *Eimeria nikamae, Eimeria tarabaie, Eimeria shivpuri,* were recorded in Broiler chicken from Aurangabad district of Maharashtra.

KEY WORDS: Coccidiosis, Eimeria Sp. Poultry,

INTRODUCTION

Coccidiosis is the major problem in poultry worldwide. In our country, it causes serious problem and causing huge economic loss to poultry industry, especially in the production of Broiler chicken. Study of species composition in protozoa is addition to science. Avian coccidiosis, an intestinal disease caused by protozoan parasites of the genus *Eimeria*, occurs worldwide. It is considered to be one of the most economically important diseases of domestic poultry. For many years, prophylactic use of anticoccidial feed additives has been the primary means of controlling coccidiosis in the broiler industry and has played a major role in the growth of this industry, which now can produce about 7.6 billion chickens annually. However, development of anticoccidial resistance has threatened the economic stability of the broiler industry. 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. . For this reason coccidia have attracted the attention of many workers. Tyzzer (1932), Mandal (1966), Krishmurthy and Bhosale (1976), Deb *et.al.,* (1980), Nikam, (1999), Ray (1952), Tyzzer (1929), Etuk Et al. (2004) and Getachew et al., (2008). The study of ultra-structure of coccidia have enhanced its biological and veterinary importance. My study covers survey and species identification of coccidia i.e. various species of genus *Eimeria* from chicken.

MATERIALS AND METHODS

The material for the study of coccidia of Broiler chicken was obtained from various slaughter houses as well as from different fields in Aurangabad district (M.S.). The different parts of the intestine of slaughtered chicken were examined and preceded within 4-5 hours after collection. The samples were examined for the presence of oocyst. Oocysts are separated from fecal material by sieving and centrifugation at 3000 rpm for 10 min. The oocysts collected were spread out in shallow Petri dish in 2.5% potassium dichromate solution for sporulation.

RESULTS AND DISCUSSION

During a period of two years i.e. from June 2006 to May 2008, total number of 2524 samples was examined. 734 of these were positive for coccidial infection, the percentage of prevalence being about 29.08%. During the present study ten species of Eimeria are found in Broiler chicken. Seven species are already described and three are new species. The commonest was *Eimeria tenella, Eimeria necatrix, Eimeria brunetti, Eimeria acervulina, Eimeria maxima, Eimeria praecox, Eimeria mitis, Eimeria nikamae, Eimeria tarabaie,* and *Eimeria shivpuri.*
Eimeria nikamae (n.sp.) was the new species found 11 out of 734 positive samples Representing 1.49% of positive samples and 00.13% of total samples examined.

Description of the oocyst: *Eimeria nikamae* (n.sp.)

The oocysts are oval in shape. Rounded at bottom and narrow towards the polar region and covered by double layered wall. The outer wall is thick and blue to yellowish whereas inner layer is thin and brownish in colour. Wall thickness is about 1.1um. Micropyle and micropylar cap is absent. The unsporulated oocyst shows rounded sporoblast filling near about half portion of the oocyst. The sporulated oocyst shows the presence of prominent polar granule at the anterior end close to the oocyst wall. No Oocystic residuum is seen. The sporocysts are rounded bodies found in rounded posterior region of oocyst. Measure about 10 um. in length and 10um. In length and 10 um in width. Stieda body is absent. Sporocystic residuum is present. Sporozoites are short stumpy and having refractive bodies at both the end.

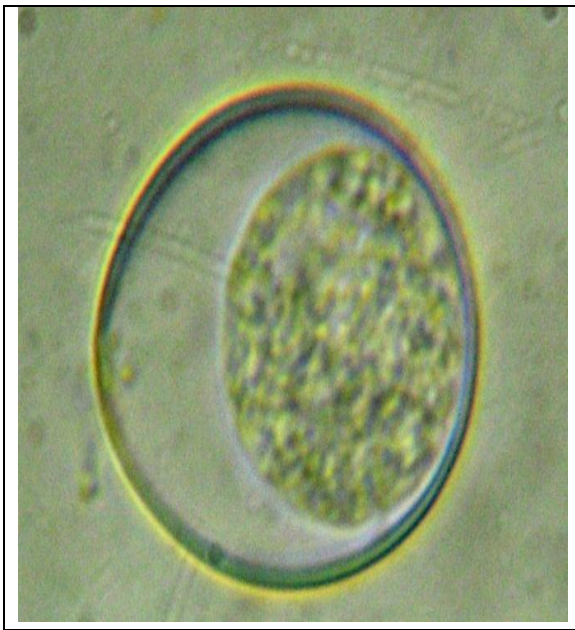

Figure 1. Showing unsporulated oocyst of *Eimeria nikamae*

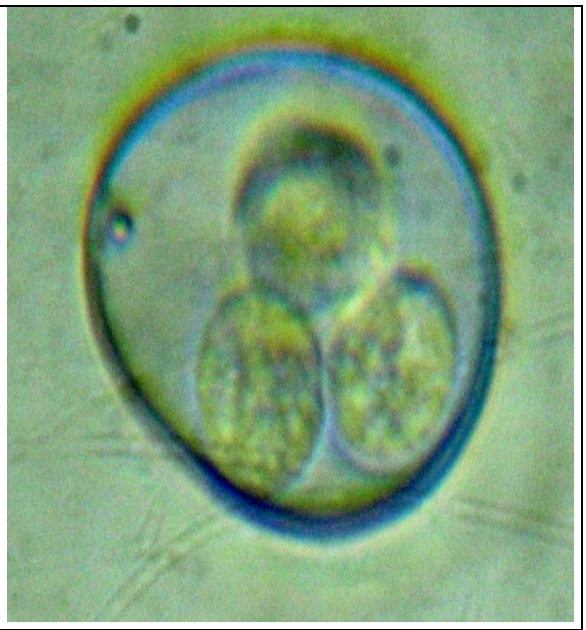

Figure 2. Showing unsporulated oocyst of *Eimeria nikamae*

*The dimensions of the sporulated oocysts are as follows:-
(All measurements are in microns.)

Particulars	Cyst from broiler chicken
Length of the oocyst	**23.5-25.5 (24.1)**
Width of the oocyst	**18.1-19.3 (18.8)**
Length width ratio	**1.2 -1.3 (1.1)**
Length of the sporocyst	**10.0-10.0 (10)**
Width of the sporocyst	**10.0-10.0 (10)**
Length width ratio of the sporocyst	**1.0-1.0 (1.0)**

* **Sporulation time**:- The sporulation time of the oocysts was 14 -18 hours
* **Prevalence:-**The species was found in 00.43% of the 2524 broiler chicken examined from Aurangabad region (M.S.).

Comments

Different Eimerian species are described from *Gallus domesticus* in India as well as in world. This is the first record of Coccidia from broiler chicken in Aurangabad region of the Maharashtra state. Seven species of Eimeria are described from the broiler chicken in Aurangabad region are as follows: *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.

The present species is clearly marked off from all the seven species for its typical round shape sporocysts. The sporocysts are completely different from all above mentioned species of Eimeria in chicken. In other species normally the sporocysts are elongated with stieda body, but here sporocysts are rounded and stieda body is absent. All the sporocysts are concentrated in posterior half portion of the oocysts while in most of the species the sporocysts occupy whole central portion of the oocyst. In the size range, the oocysts of this species come close to *Eimeria tenella* Railliet and Lucet (1891), *Eimeria brunetti* Levine (1942), *Eimeria acervulina* Tyzzer (1929) *Eimeria praecox* Johnson (1930),and *Eimeria maxima* Tyzzer (1929). It is marked of from *Eimeria tenella* by its larger prominent polar granules, and broad ovoid shape.

In view of its distinct identity this species is considered new to science and designated as *Eimeria nikamae* (n.sp.) In honors of my research guide Dr. (Mrs.) S.V. Nikam. Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University Aurangabad.

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