New species of genus *Eimeria* (*Eimeria shivpuri*) 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.

**Keywords:** Poultry, Coccidiosis, *Eimeria* Sp.

**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. For this reason coccidia have attracted the attention of many workers [1,2,3,4,5,6 and 7].

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 believed 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 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 proceeded 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 mitis*, *Eimeria acervulina*, *Eimeria praecox*, *Eimeria maxima*, *Eimeria shivpuri*. *Eimeria shivpuri* (n.sp.) was the third very important new species found 15 out of 734 positive samples representing 2.04% of positive samples and 0.59% of the total samples examined.

**Description of the oocyst *Eimeria shivpuri* (n.sp.)**

The oocysts are completely rounded in shape, and covered by double layered wall. The outer wall is thick, pale yellow whereas inner wall is thin and brown in colour. Wall thickness is about 1.2μm. Micropyle and micropylar cap are absent. The unsporulated oocysts shows rounded and centrally placed sporoblast. The sporulated oocysts are without polar granule and oocystic residuum. The sporocysts are elongated and slightly narrower at both the ends. Sporocyst measure about 9.2 -14.7 μm in length and 5.3 -7.1μm in width. Short steida bodies are present. Sporocystic residuum is present. Sporozoites are elongated and having very small retractile granules.
*The dimensions of the sporulated oocysts are as follows:-
(All measurements are in microns.)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Cyst from broiler chicken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the oocyst</td>
<td>20.0 - 23.2 (22.4)</td>
</tr>
<tr>
<td>Width of the oocyst</td>
<td>20.0 - 23.4 (22.0)</td>
</tr>
<tr>
<td>Length width ratio</td>
<td>1.0 - 1.0 (1.0)</td>
</tr>
<tr>
<td>Length of the sporocyst</td>
<td>9.2 - 14.7 (12.2)</td>
</tr>
<tr>
<td>Width of the sporocyst</td>
<td>5.3 - 7.1 (6.1)</td>
</tr>
<tr>
<td>Length width ratio of the sporocyst</td>
<td>1.6 - 1.9 (1.7)</td>
</tr>
</tbody>
</table>

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

*Prevalence:-
The species was found in 00.59% 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. In present study seven already described species as well as two new species Eimeria nikamae, Eimeria tarabaie are study in broiler chicken, but present species is clearly marked off from all above mentioned species for shape of the oocyst as well as the sporocyst.

This species described by present author is altogether different from all the species described earlier. Oocysts of the present species are completely spherical; such shape is not seen in previously recorded species. Shape of oocyst of this species resembles with oocysts of Eimeria mitis but oocyst of present species are completely rounded and in Eimeria mitis the oocyst are slightly elongated at anterior end.

Spherical shape of the oocyst resembles with oocysts Eimeria krishnamurthy described by Bhosale [8] from Alaudagulgula (franklin) in Aurangabad. Though the shapes of the oocysts in both species are similar but remaining characters are altogether different from each other. Sporocystic residuum is absent in present species which is present in Eimeria Krishnamurthy. Sporocysts are spindle shaped with small stieda body. In present species such a shape of sporocysts is not seen in earlier described species. Polar granule is present in all the species described earlier except Eimeria Krishnamurthy which is absent here.

After the comparison the species with all the characters with those of earlier species, it is considered as new species. Most important differentiating character is spindle shaped sporocyst, which is never seen in previously described species, so this species is considered as new species and designated as Eimeria shivpuri.

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REFERENCES