Prevalence of Gastro-intestinal Parasitism in Poultry in and Around Navsari Area of South Gujarat

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Abstract

A total of 3773 fresh droppings of poultry were subjected to coprological examination during the year 2012-13. These birds were reared in deep litter, cage system and backyard farming in and around Navsari district of South Gujarat. Out of a total of 3773 faecal samples examined, 1194 (31.65%) samples were found to be positive for intestinal parasitism. Out of 1194 positive samples, 40.87% were found positive for nematodes, 58.04% for Eimerian oocysts and the remaining 1.92% was having mixed infection. Nematode infection (40.87%) comprised of Ascaridia galli eggs (11.98%), Strongyloides eggs (4.61%), Capillaria eggs (3.02%) and other nematode eggs (21.27%). Cestode infection (3.52%) included Hymenolepis diminuta eggs (0.75%), Choanotaenia infundibulum eggs (0.59%) and other tape worm segments (2.8%). Coccidial infections were noted in 58.02% birds. The prevalence of parasitic infections were highest in winter (35.91%) followed by monsoon (36.20%) and in summer (24.68%).

Key words: Cestode, Mixed infection, Nematode, Prevalence.

1. Introduction

Gastrointestinal parasitism in poultry has adverse economic effects on production parameters, more so among in backyard or farmyard flocks in comparison to confinement rearing is being adopted in modern commercial farming. Helminths eg. roundworms (Ascarids), caecal worms (Heterakis), hairworms (Capillaria) and tapeworms having invertebrate intermediate hosts or mechanical vectors play significant roles in poultry production. In addition, coccidiosis is one of the most important diseases of economic importance among chickens and turkey industry, as is evident by the fact that millions of rupees are spent annually on its control (Chapman, 2008). India ranks third in egg production and sixth in broiler meat production (USDA, 2011). Infection with intestinal roundworms have been estimated to cause production losses in the range of 10 to 20% due to impaired feed conversion, reduced growth and egg production, and increased mortality (Seddiek et al., 2007). Agroclimatic condition of Navsari and its surrounding is more congenial for parasitic infection. In the absence of authentic scientific information on the role played by intestinal parasitism in poultry in this area among backyard/field yard poultry farming, an attempt has been made to report the intestinal and ecto-parasitism in poultry in and around Navsari district of South Gujarat.

2. Materials and Methods

A total of 3773 freshly laid droppings of poultry were collected from backyard/farmyard poultry farming. A dropping from each bird was collected in properly labeled polythene bags for about two year period (2012-13). The droppings were examined in the laboratory for the detection of helminthes eggs following routine coprological method (Soulsby, 2006). Birds died of unknown reasons were also screened for helminthes infection and coccidiosis. For ecto-parasites examination, randomly two poultry farms were screened and the ectoparasites were collected and identified up to species level (Soulsby, 2006).

3. Results and Discussion

Results of the gastro-intestinal parasitic infections in poultry included cestodes, nematodes and coccidian has been presented in Table 1. A total of 3773 samples were screened and 1194 (31.65%) samples were found to be positive for ova of various parasites.
infection as recorded by Puttalakshmamma and supports the lower prevalence rate of mixed Capillaria diminuta other three had infection of oocysts were recorded in 9 samples, 3 had mixed infection of Ascaridia galli, Strongyloides spp. were observed in remaining 7 samples (4.61%), Capillaria spp. 36 (3.02%) and other nematodes (21.27%). However, Nadkal et al. (1972) and puttalakshmmamma et al. (2008) reported highest prevalence rate of cestodes found to be less compared to nematodes and trematodes in desi birds. But in the present study, none of the birds harbor trematode parasites might be due to non accessibility of infected snails as stated by Puttalakshmmamma et al. (2008). However, Negesse et al. (1991) and Bhat et al. (2014) reported 34% and 20% prevalence of Ascaridia galli, respectively. The prevalence of cestodes found to be less compared to nematodes and eimerian oocysts, and the common types were Hymenolepis diminuta (0.75%), Choanotaenia infundibulum (0.59%) and other tapeworm segments (2.8%).

The prevalence of infection was highest in monsoon (36.20%) followed by winter (35.91%) and summer (24.68%) season indicating that humidity and lower temperature hastened the gastrointestinal parasitic infection in poultry supports the findings of Soulsby, (2006). Bhat et al. (2014) also observed highest prevalence rate of endoparasites of poultry in monsoon in northern region of India. High rainfall during rainy season helps in providing suitable molarity of salts in soil which is an important factor for ecdysis (Soulsby, 1966).

Total 23 samples showed mixed infections of Ascaridia galli, Hymenolepis diminuta, Strongyloides spp. Capillaria spp. and oocyst of Eimeria species. Among mixed infection Ascaridia galli and eimerian oocysts were recorded in 9 samples, 3 had mixed infection of Ascaridia galli and Strongyloides spp., other three had Ascaridia galli and Hymenolepis diminuta and Ascaridia galli, Strongyloides spp. and Capillaria spp. were observed in remaining 7 samples and supports the lower prevalence rate of mixed infection as recorded by Puttalakshmmamma et al. (2008) in and around Bangalore. Contrary to this, Raote et al. (1991) reported higher mixed infection (50.97%) in desi birds in Aklola regions of Maharashtra.

Highest rate (38.64%) of prevalence of gastrointestinal parasitism was recorded in backyard farming system followed by deep litter (28.86%) and cage system (21.42%). Highest rate of infection in poultry and backyard system might be due to unhygienic practices followed with poor nutritional practices. Birds reared on cage and deep litter system showed lower rate of infection due to modernization in poultry farming and biosecurity measures. These results were in agreement with the finding of earlier workers both from India and abroad (Hange et al., 2007; Katoch et al., 2012; Sonune, 2012; Bhat et al., 2014). Among all the parasites encountered, highest prevalence (36.84%) of Ascaridia galli was observed in backyard poultry and that might be due to free ranging birds still remain highly susceptible to parasitic infection via litter droppings and availability of intermediate hosts due to their scavenging habits. Highest prevalence rate (66.28%) of eimerian oocyst was observed in poultry reared under deep litter system indicating that favourable humidity and temperature hastened sporulation. Oocysts survive best in shaded moist condition with proper moisture and warmth condition (Soulsby, 2006). Tapeworms of Raillietina spp. and worms of Ascaridia galli were recovered on post-mortem examination of dead birds. Ectoparasites included Liperus caponis and Gonioides gigas.

### 4. Conclusion

Although modern housing methods have largely prevented helminthes infestations from becoming a major problem today, continued improvements in management, biosecurity and sanitation practices are important. Controlling pests that serve as intermediate hosts to species with indirect lifecycles as well as pests that serve as mechanical vectors is vital. It should be remembered that parasitism in poultry is a flock problem, what happens to an individual bird is of little economic importance.

### Acknowledgment

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**Table 1: Prevalence of gastro-intestinal parasitic infections in poultry**

<table>
<thead>
<tr>
<th>Nematodes</th>
<th>Cestodes</th>
<th>Coccidia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascaridia galli</td>
<td>Hymenolepis diminuta</td>
<td>Choanotaenia infundibulum</td>
</tr>
<tr>
<td>Other Nematode eggs</td>
<td>Tapeworm segment</td>
<td></td>
</tr>
<tr>
<td>Capillaria spp.</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>Strongyloides spp.</td>
<td>9</td>
<td>693</td>
</tr>
<tr>
<td>143 (11.98%)</td>
<td>55 (4.61%)</td>
<td>(58.04%)</td>
</tr>
<tr>
<td>254 (21.27%)</td>
<td>26 (2.18%)</td>
<td>(58.04%)</td>
</tr>
<tr>
<td>36 (3.02%)</td>
<td>9 (0.75%)</td>
<td>(58.04%)</td>
</tr>
</tbody>
</table>
The authors are thankful to the poultry farmers of South Gujarat for their help in collection of samples to conduct this study.

References


