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Occurrence of gastrointestinal parasites among pigeons in Kerala

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Abstract

Pigeon rearing is comparatively easy and profitable when compared to rearing of other exotic birds such as canaries and parrots. As the bird population is on the rise, there is a steady upsurge in the occurrence of diseases too. Parasitic infestation among pigeons can be mild to fatal and thus a major cause of concern. A study was conducted to find out the occurrence of gastrointestinal parasites among pigeons in Kerala. Out of 91 pigeons tested, 79 were found positive for ova of gastrointestinal parasites with a prevalence of 86.8 per cent. Ascaridia spp. (59.3 per cent) and Capillaria spp. (19.7 per cent) were the most common nematodes observed. Oocysts of Eimeria spp. was observed in 39.5 per cent of pigeons screened. Mixed infections were also noticed in 35.1 per cent of birds. This study depicts a very high occurrence of gastrointestinal parasites among pigeons of Kerala which in turn requires intervening measures to reduce the incidence.

Keywords: *Gastrointestinal parasites, pigeons, Kerala*

Pigeon rearing is a blooming arena which encompasses both large scale aviaries and households. They could be affected by a wide variety of endoparasites, *i.e*., nematodes, trematodes, cestodes, acanthocephalans and protozoa. It is important to identify and control the parasites affecting birds. Some bird parasites may have zoonotic potential and thus direct or indirect contact with infected birds can cause diseases in human. Birds which harbour endoparasites exhibit various signs such as anorexia, diarrhoea, loss of body condition and death (Patra *et al*., 2019). El-Dakhly *et al*. (2016) reported various effects caused by parasites such as low growth rate, reduced egg production, malnutrition, high susceptibility to other infections and mortality in young birds. Hence proper diagnosis and timely identification of parasitic infestations can positively contribute to the welfare of birds. Nematodes are considered to be the most detrimental parasites among

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the helminths affecting gastrointestinal system resulting in clinical and subclinical diseases in birds. *Ascaridia galli, Heterakis gallinarum*, *Capillaria* spp. and *Syngamus trachea* were reported from pigeons in Bangladesh by Ghosh *et al.* (2014).

Materials and methods

The present study was conducted to assess the occurrence of gastrointestinal parasites among pigeons of Kerala. Freshly voided faecal samples were collected from 91 pigeons presented in a pigeon show in Thrissur. The birds were brought from different parts of Kerala. All the birds were apparently healthy without any clinical signs. There was no history of regular deworming in the birds screened. Detection of the ova of parasites was done by both direct and concentration techniques. Faecal samples were examined immediately after procurement or stored overnight at 4ºC and examined within 24 hours. Each sample is homogenized using a small quantity of distilled water. Concentration was done either by sedimentation or floatation technique. In sedimentation, homogenised faecal sample was centrifuged at 3000 rpm for 2 min. The supernatant was discarded and the sediment was examined for the detection of ova of parasites. In floatation method, 1 ml of faecal sample solution was taken in a test tube to which saturated sodium chloride solution was added until it forms a convex meniscus. A coverslip was placed above the meniscus for 15 min and the coverslip was removed carefully and placed on a glass slide and examined under the microscope.

Results and discussion

Microscopic examination of faecal samples revealed the presence of ova of parasites in 79 birds with an infection rate of 86.8 per cent (79/91). Ova of *Ascaridia* spp. was detected in fifty-four birds (59.3 per cent) and oocysts of *Eimeria* spp. was detected in 36 (39.5 per cent) birds. Ova of *Capillaria* spp. was detected in 18 (19.7 per cent) birds and tapeworm ova could be detected in four birds (4.4 per cent). Mixed infections were noticed in a total of 32 (35.1 per cent) (Table 1) birds with *Ascaridia- Eimeria* spp., *Capillaria- Eimeria* spp., *Ascaridia-Capillaria* spp., *Capillaria*-tapeworm, *Ascaridia-Capillaria- Eimeria* spp. and *Ascaridia*-tapeworm infestation with a prevalence of 20.8 per cent, 7.7 per cent, 8.8 per cent, 1.09 per cent, 2.2 per cent and 1.09 per cent, respectively (Fig. 1). In severe infection, ova of parasites could be detected by direct examination itself, whereas in mild infection, ova of parasites were detected by concentration techniques.

Sedimentation and floatation techniques revealed mixed infections which were not detected in the direct microscopic examination in some samples. *Capillaria* spp., (Fig..: 2) *Eimeria* spp. (Fig. 3) and tapeworms (Fig. 4) were the major parasitic ova detected by these methods.

Ascaridia spp. (Fig. 5) was the most common nematode ova noticed followed by

Table 1. Occurrence of ova of parasites among pigeons in the current study

Ova of parasites	No. of birds with gastrointestinal parasitic infestation	Percentage of occurrence
Ascaridia spp.	54	59.3
Eimeria spp.	36	39.5
Capillaria spp.	18	19.7
Tapeworm ova	4	4.4
Ascaridia – Eimeria spp.	19	20.8
Ascaridia – Capillaria spp.	8	8.8
Ascaridia spp. – Tapeworm	1	1.09
Capillaria spp. – Tapeworm	1	1.09
Ascaridia – Capillaria – Eimeria spp.	2	2.2
Eimeria – Capillaria spp.	7	7.7

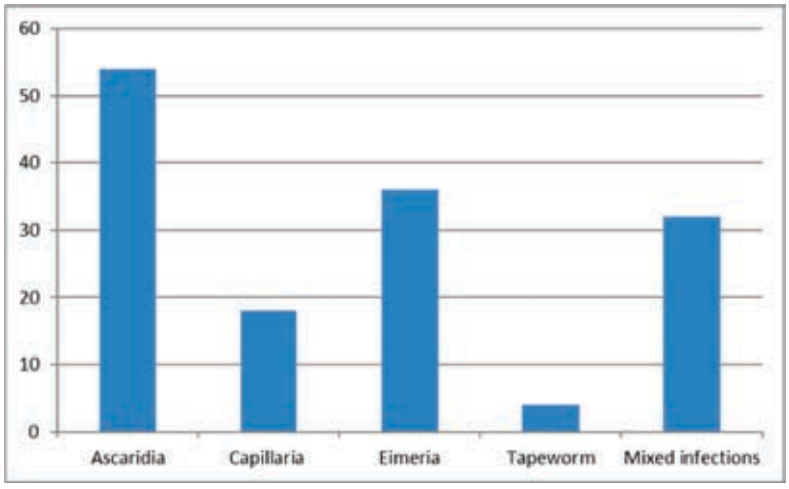

Fig. 1. Parasitic infections noticed among pigeons

Fig. 2. *Capillaria* spp. ova (100X)

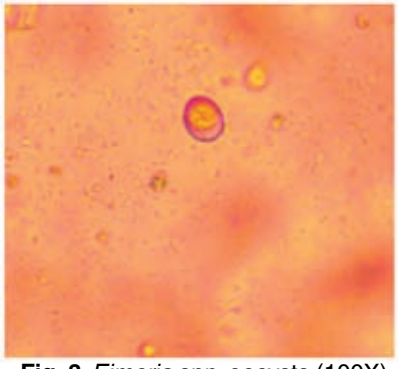

Fig. 3. *Eimeria* spp. oocysts (100X)

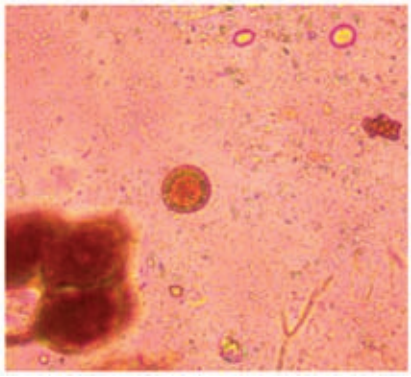

Fig. 4. Tapeworm ova (100X)

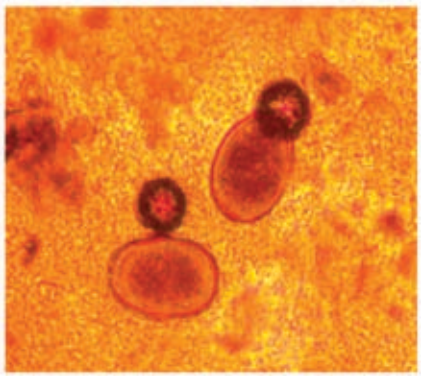

Fig. 5. *Ascaridia* spp. ova (100X)

the *Eimeria* spp. Mixed infections of *Ascaridia-Eimeria* spp. (20.87 per cent) were noticed followed by *Ascaridia-Capillaria* spp. (8.8 per cent) and *Capillaria- Eimeria* spp. (7.6 per cent).

The present study recorded a very high occurrence of gastro intestinal parasites among pigeons across Kerala which is of utmost concern. The accumulation of droppings in the cage or surroundings along with the presence of intermediate hosts could contribute to the high prevalence of GI parasites in pigeons. The semi intensive rearing practice which makes

the pigeons accessible to soil can augment the parasitic infestations, as soil can serve as a source of infection. The occurrence is also affected by the food supply, geographical locations and climatic conditions (Sivajothi and Sudhakara, 2015). Helminth infestation in the present study was found to be in accordance with Parsani and Momin (2010) who detected 88.88 per cent prevalence of GI parasites among pigeons in Gujarat state and Sivajothi and Sudhakara (2015) who observed 75 per cent prevalence among birds in Andhra Pradesh. Sivajothi and Sudhakara (2015) also detected high occurrence of infection with *Ascaridia* spp. and *Capillaria* spp. as in the present study among pigeons in Andhra Pradesh. High occurrence of *Ascaridia* spp. (59.3 per cent) in the present study was similar with the findings of Permin *et al*. (2002) and Wobo and Mafiana (2003). Rabbi *et al*. (2006) reported *Ascaridia galli* as the major nematode affecting pigeon similar to the finding of the present study. Similar prevalence of *Capillaria* spp. was also noticed by Ghosh *et al.* (2014) in pigeons from Bangladesh. Prevalence of coccidiosis in the present study was found in accordance with Saikia *et al*. (2017) who observed a high prevalence of 38.81 per cent among birds from Assam. The prevalence of tapeworm infestation is very low in the present study which was similar to the findings of Solanki *et al.* (2015) who observed occurrence of tapeworms in 3.5 per cent of birds. Absence of trematode ova in the present study was similar to the findings of Abed *et al*. (2014) and Borji *et al.* (2012). This might be due to the low accessibility of birds to intermediate host.

Conclusion

The occurrence of gastrointestinal parasitic infestation among pigeons in Kerala was found to be 86.8 per cent in which major parasitic ova detected belonged to *Ascaridia* spp., *Capillaria* spp., *Eimeria* spp. and tapeworms. *Ascaridia* spp. was the most common nematode whereas *Eimeria* spp. was the most common protozoa noticed in the study. Mixed infections were also highly evident among the birds. Periodic examination of the faeces along with administration of suitable anthelmintics under proper veterinary guidance and maintenance of good hygiene are important for culminating the gastrointestinal parasitism.

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Conflict of interest

The authors declare that they have no conflict of interest.

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