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**EPIDEMIOLOGICAL INVESTIGATIONS OF PARASITISM IN DOMESTIC  
PIGEONS (*Columba livia domestica*)****Deepa P. M.<sup>1\*</sup>, Muhammed Asif M.<sup>2</sup>, Gayathri S. L.<sup>2</sup> and Sayooj M. R.<sup>2</sup>***Associate Professor<sup>1</sup>, Veterinary Surgeon<sup>2</sup>**Department of Veterinary Epidemiology and Preventive Medicine,**College of Veterinary and Animal Sciences, Pookode-673576**Kerala Veterinary and Animal Sciences University, Kerala, India**\*Corresponding author: deepapm@kvasu.ac.in*

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**ABSTRACT**

The present study aims to assess the occurrence of ectoparasites, gastrointestinal parasites and haemoparasites in domestic pigeons of Kozhikode and Wayanad Districts. A total of 38 nestlings (below 24 weeks old) including 17 males and 21 females and 64 adult pigeons including 31 males and 33 females were examined for ecto, gastrointestinal and haemo parasites. A significantly ( $P \leq 0.01$ ) higher occurrence of ectoparasites was reported in adult pigeons (89.06 per cent) compared with nestlings (28.95 per cent). Four different species of ectoparasites (*Pseudolynchia canariensis* (47.05 per cent), *Menopon gallinae* (13.72 per cent), *Columbinae columbae* (37.25 per cent) and *Dermanyssus gallinae* (6.86 per cent) were identified. Females showed higher occurrence of ectoparasites compared with males and among them, adult females showed high occurrence for *Pseudolynchia canariensis* and *Columbinae columbae*. Overall occurrence of gastrointestinal parasites was significantly higher ( $P \leq 0.05$ ) in adult pigeons (65.6 per cent) than

in nestlings (26.32 per cent). Among the GI parasites, *Ascaridia galli* was reported only in adult pigeons (13.72 per cent), but *Capillaria spp.* and *Raillietina spp.* were demonstrated in both young ones (8.8 per cent; 0.9 per cent) and adults (21.5 per cent; 8.8 per cent). Of the haemoparasites screened, only *Haemoproteus columbae* could be identified. The females showed significantly high ( $P \leq 0.05$ ) prevalence than males. The prevalence of *Haemoproteus columbae* was significantly higher ( $P \leq 0.01$ ) in adults (60.93 per cent) than nestlings (28.95 per cent). Pigeon fly *Pseudolynchia caraniensis* (vector for *H. columbae*) was observed in 23.68 per cent of young and 60.93 per cent adult pigeons, with proven statistically significant association between the vector and blood parasitic bond. From this study, it can be concluded that overall parasitic infestation was significantly higher in adults compared with nestlings and females were more susceptible to parasitic infection than males. Understanding epidemiology for parasitic infestations in domestic pigeons

will help to take appropriate preventive measures to control the infection.

**Keywords:** Northern Kerala, Pigeon, Ectoparasites, Gastrointestinal parasites, Haemoparasites

## INTRODUCTION

Pigeon rearing is comparatively easy and profitable when compared to rearing of other exotic birds such as canaries and parrots. Parasites contribute significantly to devastating effects in pigeon industry. In general, the losses caused by both ecto and endo parasitic infections are in the form of lowered general health condition, retarded growth rate, unthriftiness, production loss, cost associated with therapeutic and preventive measures and also increase susceptibility to other infectious diseases which may ultimately lead to higher mortality of the pigeons. High occurrence of gastrointestinal parasites was reported among pigeons in Kerala with 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 (Juby et al., 2022). The present study aims at the cross-sectional analysis of ectoparasites, gastrointestinal parasites and haemoparasites in domestic pigeons in Kozhikode and Wayanad Districts.

## MATERIALS AND METHODS

A total of 38 nestlings (below 24 weeks old) including 17 males and 21

females and 64 adult pigeons including 31 males and 33 females kept in pigeon lofts in Kozhikode and Wayanad district were randomly selected and examined for ectoparasites, gastrointestinal and haemoparasites. The birds were apparently healthy without any clinical signs. There was no history of regular deworming in the birds. Blood was collected from wing veins and blood smears were prepared, air dried and fixed with methanol and stained with Giemsa. The haemoparasites were identified by examining the blood smear under oil immersion (objective 100 × magnification) as described by Soulsby (2012). The ectoparasites were collected as described by Soulsby (2012), and were preserved in 70 per cent alcohol. Faecal samples were examined immediately after procurement or stored overnight at 4 °C and examined within 24 hours. Each sample was homogenized using a small quantity of distilled water. Concentration was done either by sedimentation or floatation technique and examined under light microscope. Statistical analysis was done using SPSS version 24.

## RESULTS AND DISCUSSION

A significantly ( $P \leq 0.01$ ) higher occurrence of ectoparasites was reported in adult pigeons (89.06 per cent) compared with nestlings (28.95 per cent). Four different species of ectoparasites (*Pseudolynchia canariensis* (47.05 per cent), *Menopon gallinae* (13.72 per cent),

*Columbinae columbae* (37.25 per cent) and *Dermanyssus gallinae* (6.86 per cent) were identified (Fig. 1). Females showed higher occurrence of ectoparasites compared with males and among them, adult females showed high occurrence of *Pseudolynchia canariensis* and *Columbinae columbae* (Table 1).

Overall occurrence of gastrointestinal parasites was significantly higher ( $P \leq 0.05$ ) in adult pigeons than in nestlings (Table 2). Among the GI parasites, *Ascaridia galli* was reported only in adult pigeons, but *Capillaria spp.* and *Raillietina spp.* were demonstrated in both nestlings and adults.

Of the haemoparasites screened, only *Haemoproteus columbae* could be identified. The females showed significantly high ( $P \leq 0.05$ ) occurrence than males. The occurrence of *Haemoproteus columbae* was significantly higher ( $P \leq 0.01$ ) in adults

(60.93 per cent) than nestlings (28.95 per cent). This is likely due to a combination of short nestling periods and long parasite prepatent periods before gametocytes can be detected in peripheral blood. Pigeon fly *Pseudolynchia caraniensis* (vector for *H. columbae*) was observed in 23.68 per cent of young and 60.93 per cent adult pigeons, with statistically significant ( $P \leq 0.01$ ) association between the vector and blood parasitic bond.

This study reports overall parasitic infestation significantly higher in adults compared with nestlings. Msoffe et al. (2010) also reported higher prevalence of gastrointestinal helminths in adult birds than in nestlings. It might be due to constant source of infested droppings or infested intermediate hosts. Although prevalence of ectoparasites was not statistically significant between two age groups, prevalence of *H. columbae* was significantly higher in adults. A higher prevalence in adults might be the

**Table 1.** Occurrence of different ectoparasites in different ages and sex in domestic pigeons

Ectoparasites	Nestling		Adult	
	Male (%)	Female (%)	Male (%)	Female (%)
<i>Pseudolynchia canariensis</i>	5.88	38.09	51.61	69.69
<i>Columbinae columbae</i>	5.88	nil	48.39	66.66
<i>Menopon gallinae</i>	nil	4.76	29.03	12.12
<i>Dermanyssus gallinae</i>	nil	14.29	6.5	6.06

**Table 2.** Gastrointestinal parasites in different age and sex of domestic pigeon in Kozhikode and Wayanad districts

Gastrointestinal parasites	Nestling		Adult	
	Male (%)	Female (%)	Male (%)	Female (%)
<i>Ascaridia galli</i>	nil	nil	16.12	27.27
<i>Raillietina spp.</i>	5.88	0.9	16.12	12.12
<i>Capillaria spp.</i>	23.52	23.8	32.26	36.36

result of a longer time of exposure to the parasites. Similar findings by Salem *et al.* (2022) who revealed helminths and Eimeria infection higher in adults than squabs. Prevalence of *Ascaridia* and *Capillaria* sp infections were in association with the previous records by Ghosh *et al.* (2014) who recorded the occurrence of *Ascaridia galli* (32 per cent) and *Capillaria* sp infections (26 per cent) in pigeons. Further study must be taken to comprehend the association of parasitic infestation with age and sex of birds and adopt necessary preventive measures against these diseases to reduce economic loss.

## CONCLUSION

Screening of gastrointestinal parasites, ectoparasites and haemoprotozoans among domestic pigeons kept in pigeon lofts in Kozhikode and Wayanad districts showed high occurrence in adult pigeons compared with nestlings. Among the ectoparasites, *Pseudolynchia canariensis* and *Columbinae columbae* were mostly reported. Haemoproteus infestation in pigeons showed statistically significant association with the ectoparasite, *Pseudolynchia canariensis*.

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