

PILOT STUDY ON PARASITIC FAUNA OF FREE-RANGING INDIAN PEAFOWL (*PAVO CRISTATUS*)

K.S. Subramanian, Mathew C. John and M. Raman

Veterinary University Training and Research Centre, Rajapalayam, Tamil Nadu 626117, India.

Abstract

A survey on endoparasitism among free-ranging peafowl was carried out. Screening of the faecal samples revealed a wide spectrum of nematodes, an unidentified species of cestode egg and two species of coccidian oocysts. The seasonal prevalence of parasites in peafowl are also discussed.

Keywords

Parasites, peafowl, pilot study

Introduction

Hamilton and Zuk (1982) opined that Indian Peafowl (*Pavo cristatus*) females select the males by assessing the quality of their ornamentation since these characters were good indicators of parasitic load which indirectly revealed the health status of the male. This study has been formulated to understand the prevalence of parasitic fauna among free-ranging peafowls in southern Tamil Nadu.

Materials and Methods

The study was carried out at two places in southern Tamil Nadu viz., Deer Park, Tirunelveli (77.45°E and 8.44°N) and Vivekananda Kendra, Kanyakumari (77.30°E and 8.5°N) during various seasons from April 1999 to March 2000. Faecal samples collected at weekly intervals were screened by sedimentation technique (Soulsby, 1982) for the presence of parasitic ova. The intensity of endoparasitic infection was assessed as e.p.g (eggs per gram of faeces) using McMaster egg counting chamber as outlined by Roberts and Sullivan (1949). Morphometry of the parasitic ova were measured with an ocular eyepiece scale calibrated by means of a stage micrometer. The droppings containing oocysts of Coccidian were allowed to sporulate in 2% potassium dichromate solution at room temperature and the time taken for 50% of the oocysts to complete the sporulation process was recorded as sporulation time (Norton & Chard, 1973).

Results and Discussion

The droppings of peafowl were blackish-green in colour, semi-solid with mild streaks of urates. The faecal samples revealed a wide spectrum of nematodes, cestode and coccidian oocysts along with other unidentified intestinal protozoan cysts. Among the nematodes observed, higher density was recorded in *Heterakis*, followed by *Ascarid*, *Capillarid*, *Syngamus*, *Strongyloides* and *Acanthocephalan*. In addition to this, *Strongyle* ova and an unidentified species of *Cestode* egg were also recorded but in lower densities.

The intensity of helminths were highest during southwest monsoon and lowest during summer, while that of intestinal protozoan was highest during northeast monsoon in both the study areas. Among helminths, ova of *Ascarid*, *Heterakid* and *Strongyloides* were noticed throughout the study period while *Capillarid* and *Syngamus* appeared during all seasons except summer. The presence of *Heterakid*, *Syngamus* and *Capillarid* ova throughout the study period could be attributed to the abundance of earthworms which acts as intermediate host for these parasites. The consistent presence of *Strongyloides* ova throughout the study period might be due to its characteristic heterogenetic lifecycle.

In the present study, the incidence of *Strongyle* ova was restricted only to southwest monsoon which might be due to the direct life cycle of this parasite that would have limited the availability of third stage infective larvae. Further the incidence of *Cestode* eggs only during southwest monsoon period might be attributed to the unusual biology of *Cestodes* in liberating fewer number of eggs inspite of their moderate presence in the intestinal tract as described by Noble and Noble (1964).

Soulsby (1982) reported that the ova of *Heterakid* from peafowl measured 65-80 x 35-46µ which coincided with the observations of the present study. Sloss *et al.* (1994) opined that it was very difficult to differentiate *Ascaridia* and *Heterakid* ova in avian species since both were oval shaped, but could be identified by

Table 1. Morphology of parasitic ova of peafowl (mean value of 100 ova measured)

Parasitic ova	Morphometry (in microns)		Shape and characteristics
	Length	Breadth	
Heterakid	88	50	Oval, smooth shelled with parallel sides
Ascarid	59.5	52.5	Spherical to sub-globular shaped and thick shelled
<i>Ascaridia</i>	90	54	Oval, smooth shelled, barrel shaped sides
<i>Syngamus</i> sp.	49	28	Segmented egg, ellipsoidal with thick operculum at both ends
<i>Capillaria</i> sp.	64	34	Oval, unsegmented egg with bipolar plug
<i>Strongyloides</i> sp.	54	28	Oval, thin shelled egg with larva
<i>Acanthocephalan</i>	68.5	42	Oval, four layered egg with brownish pitted shell
<i>Cestode</i>	62.5*		Striated thick shelled embryophore with hooklets in onchosphere
Oocysts of Coccidia <i>Eimeria</i> sp.	23.8	16.2	Four sporocysts each containing two sporozoites
<i>Isospora</i> sp.	23.9	19.2	Two sporocysts each containing four sporozoites

* Diameter

the barrel like sides of *Ascaridia* and parallel sides of *Heterakid* which concurred with the observations of the present study. In addition to this, spherical-shaped, thick-shelled *Ascarid* ova measuring 59.5 x 52.5 μ were also noticed in the droppings of peafowl from both the study areas which might be due to the ingestion of small rodents or invertebrates like earthworms, cockroaches etc. that act as paratenic hosts in the life of *Ascarid* infection.

Soulsby (1982) reported that the *Syngamus* ova from domestic fowl, turkey and guineafowl measured 70-100 x 43-46 μ where as the *Syngamus* ova of peafowl observed in the present study were 50 x 30 μ in size which might be host specific. The unidentified *Cestode* eggs isolated from the droppings of both the study areas measuring 62.5 μ in diameter resembled the findings reported by Sloss *et al.* (1994).

The incidence of *Acanthocephalan* eggs in the droppings of peafowl might be attributed to the insectivorous feeding habits of peafowl since the larval stages of beetle being the usual invertebrate host, birds would have contracted *Acanthocephalan* eggs by ingestion of such infected larval beetles.

The mean length and width of *Eimeria* oocysts in the present study was measured to be 23.8 x 16.2 μ which resembled the findings of Bhatia and Pande (1996) while the *Isospora* oocysts measured 23.9 x 19.3 μ that coincided with the observations of Williams (1978). Patnaik (1965) reported that the oocysts of *Isospora* species were sporulated in 72 hours whereas in the

present study the *Eimeria* and *Isospora* species of oocysts were found to sporulate in 60-72 hours and 72-80 hours respectively.

Conclusion

This study has provided a preliminary database on endoparasitism of peafowl which is an indirect indicator of the health status of the bird. Further region-wise systematic epidemiological studies are needed to record the prevalence of various parasitic fauna among peafowl and to forecast a parasitic map for effective implementation of different control measures.

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Table 2. Seasonal incidence of endoparasitism among peafowls at Deer Park, Tirunelveli

Season	Mean EPG	Mean OPG	A	H	SY	Helminthic ova					IP	
						AC	S	SL	C	CE	CO	I
Summer (Apr. to Jun.)	2600	270	1180	1050	0	0	70	300	0	0	200	70
Southwest Monsoon (Jul. to Sep.)	6470	1370	1200	2030	670	400	130	470	1330	230	1060	300
North East Monsoon (Oct. to Dec.)	6300	1730	1200	2100	1000	0	0	630	1370	0	1470	270
Winter (Jan. to Mar.)	3070	270	800	1270	270	0	0	130	530	0	230	30

A - ascarid; H - heterakid; SY - syngamus; AC - acanthocephalan; S - strongyle; SL - strongyloides; C - capillarid; CE - cestode; CO - coccidia; I - intestinal protozoan cyst

Table 3. Seasonal incidence of endoparasitism among peafowls at Vivekananda Kendra, Kanyakumari

Season	Mean EPG	Mean OPG	A	H	SY	Helminthic ova					IP	
						AC	S	SL	C	CE	CO	I
Summer (Apr to Jun)	2830	300	1100	630	0	0	0	470	630	0	230	70
South West Monsoon (Jul to Sep)	9200	1670	1500	2430	1670	330	130	630	2170	330	1300	370
North East Monsoon (Oct to Dec)	8730	1970	1530	2630	1800	0	0	1000	1770	0	1530	430
Winter (Jan to Mar)	3200	330	500	1330	570	0	0	200	600	0	270	70

A - ascarid; H - heterakid; SY - syngamus; AC - acanthocephalan; S - strongyle; SL - strongyloides; C - capillarid; CE - cestode; CO - coccidia; I - intestinal protozoan cyst

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