*Sc. Parasit., 2009, **1-2**, 101-105*

Prevalence of Endoparasites in Peacocks (*Pavo cristatus*)

Prevalența endoparazitozelor la Păuni (*Pavo cristatus*)

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ABSTRACT

During October 2007 and April 2008, 90 faeces samples were collected from 3 months-old to 8 years-old peacocks (Pavo cristatus) which belonged to a household farm (60 peacocks) from Bacău county in order to evaluate the endoparasites in peacocks (Pavo cristatus). There were observed infection with the following parasites: E. pavonis (21.39±1.96X16.25±1.39µm; 16.7%); E. pavonina (20.67±2.38X16.43±1.47µm; 48.3%); E. patnaiki (17.58±2.16X15.91±1.35µm; 32.3%); I. mayuri (22.3X20.3µm; 3.3%); Cryptosporidium meleagridis (4.96±0,524X4.58±0.580; 60.6%); Ascaridia/Heterakis (59.9%); Singamus trachea (64.5%); Capillaria spp. (35.3%) and Strongyloides pavonis (51%). The number of oocysts/eggs per gram faeces had a decreasing trend during the winter time, being much obvious for Eimeria spp.

Key words: peacocks, endoparasites, prevalence.

Introduction

The peacock is of Indian origin where it is designated as a national bird and it still lives today as a wild bird in this country. Nowadays peacocks are raised as ornamental birds, being introduced in Europe during VIth – Vth century B.C. through Greece, and then Italy.

The pathology in peacocks and especially parasitic diseases are less known in our country, but it is accepted the fact that the most diseases resemble the ones encountered in turkeys. The purpose of our research was to evaluate the endoparasites in peacocks (*Pavo cristatus*).

Materials and methods

During October 2007 and April 2008, 90 faeces samples were collected from 3 months-old to 8 years-old peacocks which belonged to a household farm (60 peacocks) from Bacău county. The faecal samples were collected randomly every month and examined using parasitological procedures (flotation method with saturated sodium chloride solution, McMaster technique for counting eggs per gram faeces and modified Ziehl-Nielsen stain for *Cryptosporidium* spp.). Oocysts of *Cryptosporidium* spp. (20) and *Eimeria* spp. (60) were measured on photographs made with Olympus BX40 microscope at 400 magnifications. Oocysts of *Eimeria* spp. were first sporulated in 2.5% aqueous potassium dichromate solution and then identified morphologically according with Table 1.

Table 1. Oocysts morphology of *Eimeria* and *Isopsora* species from peacocks (*Pavo cristatus*)

Species	*Shape*	*Size (µm)*	*Micropyle*	*Residuum*	*Colour*	**References**
E. mandali	Spherical	14-20X14-18	+	-	Blue-pink	Pellerdy, 1974
E. mayurai	Ellipsoid	23-27X13-16	+	-	-	
E. patnaiki	Spherical	17-19X13-17	-	+	-	
E. pavonina	Ovoid	20-28X16-20	+	+	Briht blue	
E. pavonis	Ovoid	20-25X18	+	-	-	
Isospora mayuri	Spherical	20-27X18-24	-	-	Yellowish	

Results and discussions

7 parasite species with different prevalence were detected in peacocks from Bacău county. They were represented by *Eimeria* spp. (Fig. 1), *Cryptosporidium* spp (Fig. 2), *Ascaridia* spp. (Fig. 3), *Heterakis* spp. (Fig. 4), *Singamus trachea* (Fig. 5), *Capillaria* spp. (Fig. 6) and *Strongyloides pavonis* (Fig. 7, 8). In most of the cases the prevalence was over 50%, with the exception of *Capillaria* (Table 2). In case of O/E.P.G. was observed a decreasing trend during the winter time, being much obvious for *Eimeria* spp. (Fig. 9). Oocysts of *Cryptosporidium* spp. had 4.96±0,524X4.58±0.580 in size, with a length/width ratio 1.08. Primele oochisturi sporulate au fost identificate la 48-72 de ore, aceasta fiind completă la 144 de ore (6 zile).

According with the morphology, the eimerian species identified were *E. pavonis* (21.39±1.96X16.25±1.39µm; length/width ratio 1.32±0.17) (Fig. 10), *E. pavonina* (20.67±2.38X16.43±1.47µm; length/width ratio 1.26±0.09) (Fig. 11), *E. patnaiki* (17.58±2.16X15.91±1.35µm; length/width ratio 1.10±0.08) (Fig. 12) and *I. mayuri* (22.3X20.3µm; length/width ratio 1.09) (Fig. 13). The most prevalent was *E. pavonina* (48.3%), followed by *E. patnaiki* (32.2%), *E. pavonis* (16.2) and *I. mayuri* (3.3%) (Fig. 14).

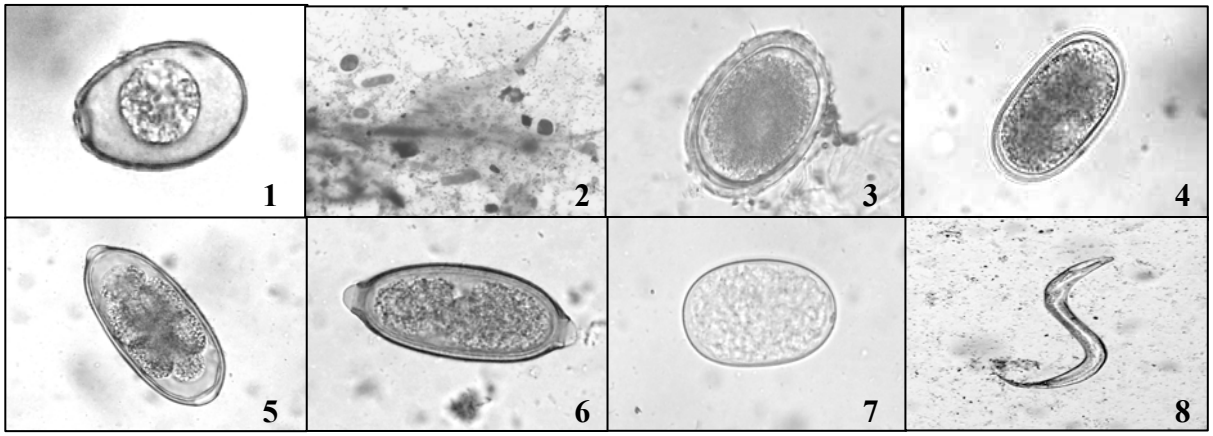

Fig. 1: Oocyst of *Eimeria* spp. (X400) **Fig. 2:** Oocysts of *Cryptosporidium meleagridis* (X1000) **Fig. 3: Egg of** *Ascaridia* spp. (X400) **Fig. 4:** Egg of *Heterakis* spp. (X400) **Fig. 5:** Egg of *Syngamus trachea* (X400) **Fig. 6:** Egg of *Capillaria* spp. (X400) **Fig. 7:** Egg of *Strongyloides pavonis* (X400) **Fig. 8:** Larva of *Strongyloides pavonis* (X200)

Table 2. Prevalence of endoparasites identified in peacocks to parasitological exams of faecal samples

Month/Parasite	***Eimeria n(%)***	***Cryptosporidium n(%)***	***Ascaridia/Heterakis n(%)***	***Syngamus n(%)***	***Capillaria n(%)***	***Strongyloides n(%)***
October (*n*=15)	9(60)	8(55)	15(100)	12(80)	5(30)	5(30)
November (*n*=15)	14(93)	10(66.6)	5(33)	13(86.6)	3(20)	7(46.6)
February (*n*=15)	6(40)	4(26.6)	12(80)	3(20)	6(40)	7(46.6)
March (*n*=15)	10(66.6)	14(93.3)	8(53.3)	12(80)	6(40)	13(86.6)
April (*n*=30)	21(70)	26(87)	18(60)	17(56)	14(46.6)	9(30)
Total (*n*=90)	**60(64.4)**	**62(60.6)**	**58(59.9)**	**57(64.5)**	**34(35.3)**	**41(51)**

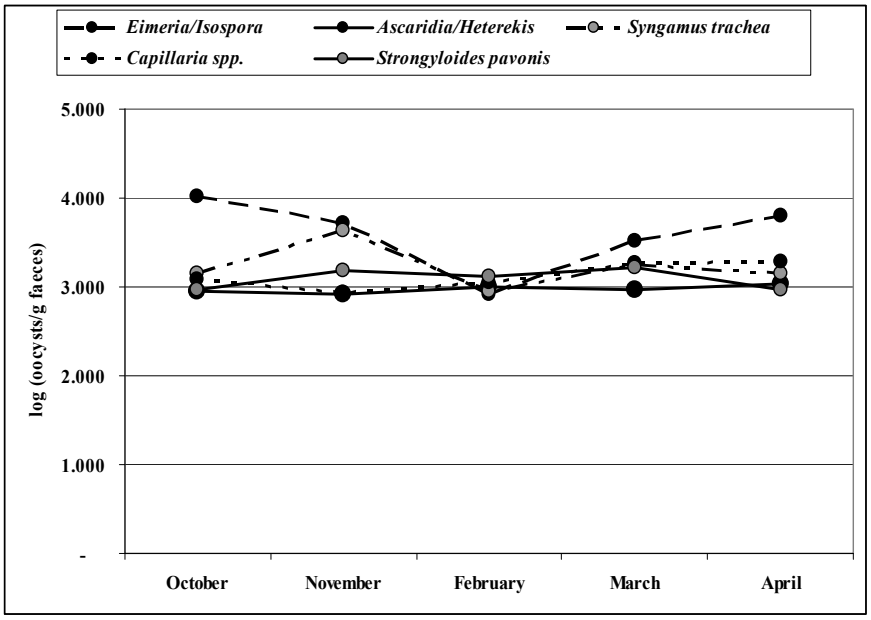

Fig. 9: Oocysts and eggs-shedding in peacocks from Bacău county (household farm) during October 2007 and April 2008

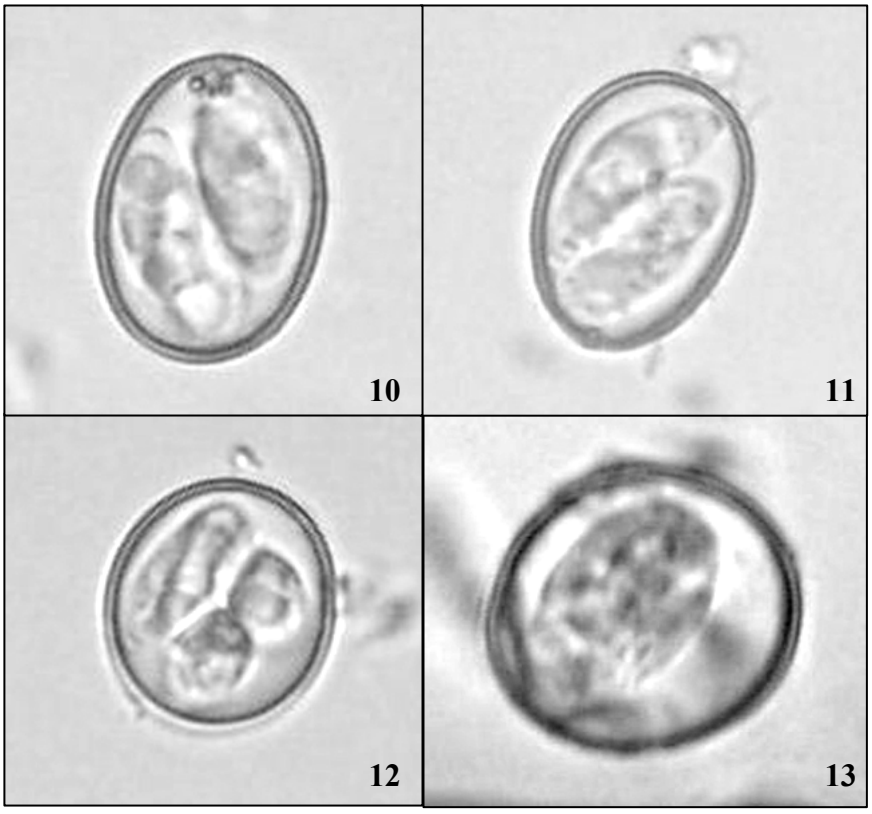

Fig. 10: *E. pavonis* (X400); **Fig. 11:** *E. pavonina* (X400) ; **Fig. 12:** *E. patnaiki* (X400); **Fig. 13:** *I. mayuri* (X400)

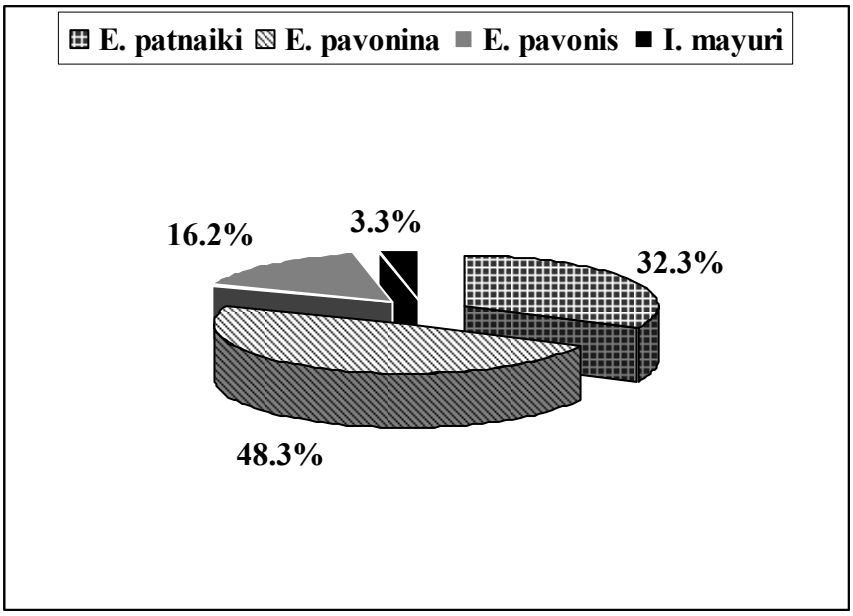

Fig. 14: The structure of eimerian population in peacocks from Bacău county

During the epidemiological study performed in 5 months (October 2007 - Aprile 2008), it was noticed mixed infection with protozoan parasites (*Eimeria* spp. and *Cryprosporidium meleagridis*) and nematodes parasites with a high prevalence (>50%). The lower prevalence was observed in case of infection with *Capillaria* spp. (35.3%).

Musaev et al. (1998) found in Azerbaijan infection with *Eimeria* spp. (53.3%) and with *Cryprosporidium* spp. (12.9%). In our study the prevalence was between 26.6% in February and 93.3% in March. It is well known that cryptosporidiosis in birds causes digestive and respiratory disorders mainly in chicks and in immunocompromised birds (Şuteu and Cozma, 2004). In our case, there wasn't noticed any clinical signs in peacocks, but the increasing of prevalence was correlated with spring season when the number of chicks increase and also the ambiental temperature. The species of *Cryptopsoridium* was *C. meleagridis* according with morphological features. The birds are infected by two species, the other one being *C. bailey.* According with the size of oocysts and index shape is easy to identify the species (*C. bailey* 5,6-7,5X4,8-5,7µm, index shape 1,1-1,4; *C. meleagridis* 4,5-6X4,2-5,3µm, index shape 1-1,3) (Lindsay et al., 1989; Sreter et al., 2000). There are 2 studies that pointed out the possibility of mammal infection with *C. meleagridis* from poultry (Dărăbuş, 1997; Sreter et al., 2000), but not with *C. parvum* to poultry (Dărăbuş and Olariu, 2003). AlYousif and Al-Shawa (1999) in Saudi Arabia isolated the same species of *Eimeria* as as (*E. pavonina, E. pavonis, E. mayurai* and *I. pellerdy*) but in peacocks with diarrhoea.

We found also infection with nematode parasites as *Ascaridia* spp., *Heterakis* spp., *Singamus trachea*, *Capillaria* spp. and *Strongyloides pavonis* (Fig. 7, 8). Sakamoto and Yamashita (1970) noticed in peacocks with diarrhoea and appetite looses infection with *Strongyloides* spp., *Heterakis* spp., *Capillaria* spp and cestodes parasites.

Conclusions

The study regarding the prevalence of endoparasites in peacocks (*Pavo cristatus*) performed during October 2007 – April 2008 in a household farm (60 peacocks, 3 months-old – 8 years-old) from Bacău county, pointed out:

- ✓ mixed infection with protozoan (*Eimeria* spp. and *Cryptosporidium* spp.) and nematode (*Ascaridia/Heterakis*; *Syngamus trachea*; *Capillaria* spp. and *Strngyloides pavonis*) parasites;
- ✓ infection with 4 eimerian species (*E.*

- ✓ *pavonis* 16.2%; *E. pavonina* 48.3%; *E. patnaiki* 32.2% and *I. mayuri* 3.3%) and with one species of *Cryptosporidium* (*C. meleagridis*).

Acknowledgments. This study was financially supported by the Ministry of Education, Research and Inovation from Romania (grant PNII PC 51-034/2007).

REZUMAT.

În perioada Octombrie 2007-Aprilie 2008 au fost recoltate 90 probe de fecale de la păuni (*Pavo cristatus*) în vârstă de 3 luni-8 ani, apartinând unei gospodării din județul Bacău. Probele au fost prelucrate prin metode coproparazitologice în vederea evaluării infestațiilor parazitare. Au fost identificate infecții cu *E. pavonis* (21.39±1.96X16.25±1.39µm; 16.7%), *E. pavonina* (20.67±2.38X16.43±1.47µm; 48.3%), *E. patnaiki* (17.58±2.16X15.91±1.35µm; 32.3%), *I. mayuri* (22.3X20.3µm; 3.3%) şi cu *Cryptosporidium meleagridis* (4.96±0,524X4.58±0.580; 60.6%) şi infestații cu *Ascaridia/Heterakis* (59.9%), *Singamus trachea* (64.5%), *Capillaria* spp. (35.3%) şi *Strongyloides pavonis* (51%). Numărul elementelor parazitare (oochisturi/ouă)/g fecale a scăzut în perioada de iarnă, fiind mai evident în cazul infcției cu *Eimeria* spp.

***Cuvinte cheie*:** păuni, endoparaziți, prevalență.

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