Chapter- I

INTRODUCTION

Pet birds are valuable for the owner as the birds are the source of recreation and part of a passing good time in daily activities. Nowadays, people are eagerly adopting birds for releasing their loneliness. In Thakurgaon the culture of adopting pet birds are growing. For maintaining good health of birds routine endoparasite test must be required but this concept has not been established yet in Thakurgaon.

Pigeon are used as pets, cultural and religious symbol. They also have value as a source of food hobby and experimental purposes. Pigeons are affected with several health problems, whereas parasite infections play a major role. Parasite infection can lead to retard growth, low egg production and susceptibility to other infection in birds. Budgerigars and Javas also affected with parasitic infestation.

Bird's parasitism is characterized by some unique, frequently fascinating properties that's why it has a great importance on parasitological studies. Birds parasites are distributed worldwide and the family of Capillariidae and Eimeriidae are distributed in all zoogeographical region. It should be kept in mind, however, geographic location and genetics are the most important factors that determine resistance to bird parasitism, although the age of the birds, strain of the parasite and stress may also play roles in the pathogenesis of the GIT parasite.

Gastrointestinal parasitism is one of the major health problems in the pet birds and is on the top of the list of clinical problems considered for differential diagnosis. Greve (1996) reported that in caged and aviary birds, gastrointestinal parasitism ranked as the most frequent and important one. Ramisz *et al*. (2007) determined the parasitic species composition, prevalence and intensity of infection in selected parrots. Prathipa *et al*. (2013) determined the prevalence of endoparasites in captive psittacine birds belonging to pet shops and private residences in and around Chennai.

There are several signs noticed in endoparasite affected birds. Those symptoms are loss of appetite, blood tinged diarrhea, ruffled plumage, breathing difficulties, inability to survive, changes in vocalization and weight loss. Therefore, we conducted a study by collecting droppings from a variety of pet birds that belonged to various pet shops and private residences in and around Thakurgaon.

The present study was designed with the following objectives:

- To determine the occurrence of gastrointestinal endo-parasitic infections in Pet Birds belonging to Pet Shops and Residences in Thakurgaon.

Chapter- II

METERIALS AND METHODS

A total of 80 samples from droppings (fecal samples) were collected from a variety of companion birds that belonged to pet shops and private residences in Thakurgaon. Samples were collected from different birds- Pigeons (50 samples), Budgerigars (14) and Javas (16). Samples were stored in small containers filled with 10% formalin. The samples were thoroughly examined for the presence of various endoparasites using direct smear, sedimentation and flotation techniques as suggested by Soulsby (1982). The techniques that used to identify parasites from droppings were done into two laboratories. One laboratory is placed in the Upazilla Veterinary Hospital, Sadar, Thakurgaon and another one is placed in Department of Pathology and Parasitology, Chittagong Veterinary and Animal sciences University, Chittagong.

2.1 Examination of Fecal sample:

2.1 (a) Direct Smear:

First we placed a small amount of droppings on a microscope slide and added a drop of saline water to the droppings and mix thoroughly. Then cover with a cover slip and moved the cover slip around until it lays flat. Finally examined the slide using the 10X objective, and then go over it with the 40X objective.

2.1 (b) Simple sedimentation:

Equipment required for simple sedimentation techniques are beaker, a tea strainer Measuring cylinder, stirring rod, test tube, test tube rack, microscope, microscopic slides, coverslips, teaspoon, water.

Procedure:

At first we were transferred 3gm of droppings in a plastic container. Then added 50 ml of tap water into the plastic container by means of measuring cylinder. The droppings was thoroughly mixed with tap water by using a stirring device. Immediately after stirring the fecal suspension was poured through a tea strainer into another plastic container and approximately 10ml of the filtered suspension was transferred to a test tube. Then the test tube was placed in a test tube rack and allowed it to sediment for 10 minutes. After 10 minutes the supernatant was removed carefully. The sediment was then resuspended in tap water and the droppings particles were allowed to sediment for another 10 minutes. The supernatant was removed carefully and small amount of sediment was transferred to a microscopic slide. Finally a coverslip was placed on the slide and examined under the microscope at 10x to 40x magnification.

2.1 (c) Simple test tube flotation:

Equipment required for simple flotation techniques are beaker, a tea strainer Measuring cylinder, stirring rod, test tube, test tube rack, microscope, microscopic slides, coverslips, teaspoon, flotation fluid (saturated salt solution).

Procedure:

At first we putted approximately 3g of feces into Container 1. Then poured 50 ml of flotation fluid into Container 1 and mixed (stir) droppings and flotation fluid thoroughly with a stirring device. Afterthat poured the resulting droppings suspension through a tea strainer into Container 2. Then poured the droppings suspension into a test tube from Container 2 and placed the test tube in a test tube rack or stand. Gently top up the test tube with the suspension, leaving a convex meniscus at the top of the tube and carefully place a coverslip on top of the test tube and let the test tube stand for 20 minutes. After 20 minutes carefully lifted off the coverslip from the tube, together with the drop of fluid adhering to it, and immediately place the coverslip on a microscope slide and examined under the microscope at 10x to 40x magnification.

2.2 Morphology of eggs:

Capillaria eggs are barrel shaped, sometimes equatorially, with polar plugs almost not protruding and wall of eggs two layered; inner layer thin, hyaline, highly refractile; outer layer very thin, slightly thicker near eggs pole only, with very fine net like sculpture on its surface by Moravec *et al.* (1982). In case of coccidial eggs are round and sporulated. Oocysts are generally ovoid to ellipsoid in shape, may contain specialized structures, such as polar caps, micropyles, residual and crystalline bodies by Emma (2010).

Chapter- III

RESULTS

The study revealed the presence of gastrointestinal parasites *Capillaria sp.* (54%) in pigeon and *Eimeria sp.* (42.86%) in Budgerigars. No parasites found in Java. Details are presented in Table 1 and figure 1.

Table 1: Prevalence of gastrointestinal parasites in birds belonging to pet shops and private residences (n=80)

Species of the parasites observed		Pigeons (n=50)	Budgerigars (n=14)
Capillaria sp.	+	27	0
	%	54%	0
Eimeria sp.	+	0	6
	%	0	42.86%

+ = Number of positive samples; % = Percentage of infection; n= No. of samples collected

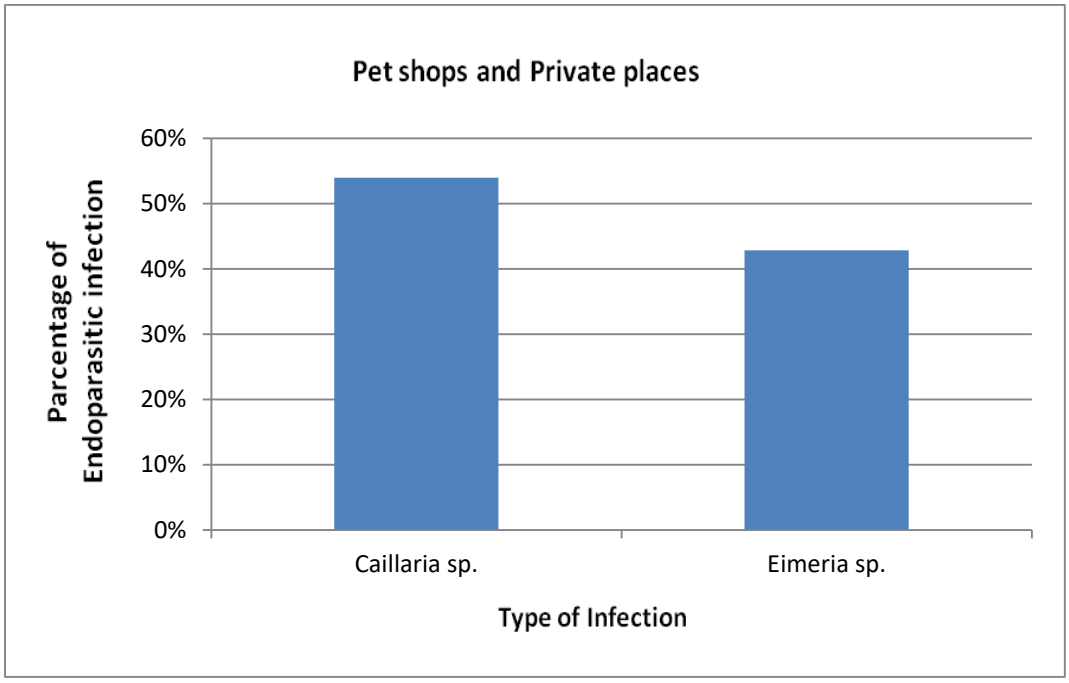

Fig 1: Overall percentage of endoparasites observed in fecal samples from birds that belonged to pet shops and private residences in and around Thakurgaon.

GALLARY

Fig (a): Budgerigars

Fig (b): Pigeon

Fig (c): Collection of sample

Fig (d): Flotation tube method

Fig (e): Microscopic examination

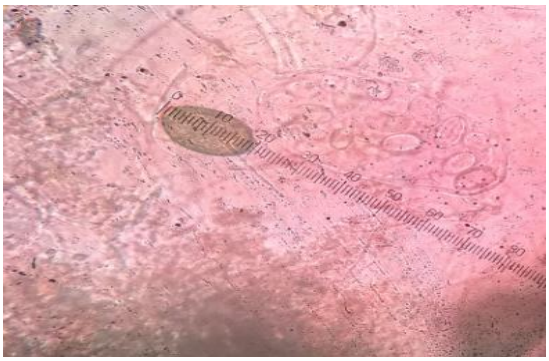

Fig (f): Egg of *Capillaria spp*

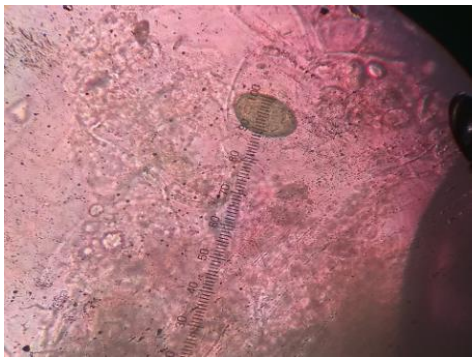

Fig (g): Egg of *Capillaria spp*

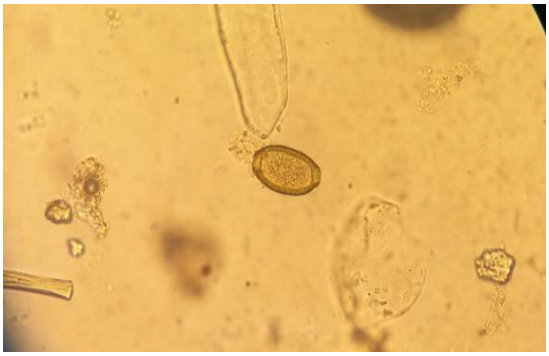

Fig (h): Egg of *Capillaria spp*

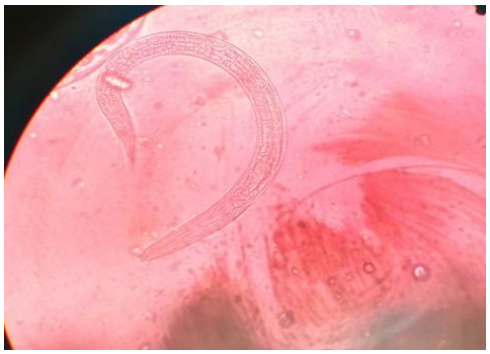

Fig (i): Larvae of *Capillaria spp*

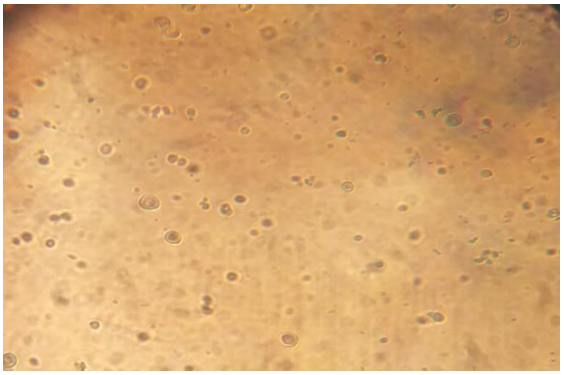

Fig (j): Oocyst of *Eimeria spp*

Chapter- IV

DISCUSSION

The occurence of *Capillaria sp.* Observed in our study was in accordance with the reports of Tully *et al.* (2000), who showed the occurrence of eggs belonging to *Capillaria sp.* in domestic birds. Norton *et al* (2003) explained that Capillarid nematodes of birds, also known as hairworms because of their extreme thinness in size, are divided into 2 groups: those that burrow into the epithelium of the upper digestive tract (the esophagus and the crop) and those that burrow into the epithelium of the lower digestive tract (the small intestine and rarely the ceca). Permin *et al* (1998) stated that Infections with *Capillaria spp.* can be highly pathogenic for birds in deep-litter systems or in free-range systems where big numbers of infective eggs may build up in the litter or in the soil. The finding of egg of *Capillaria sp*. in the birds in this investigation was in accordance with the study of Kajerova and Barus (2005) who stated that the prevalence of Capillarid eggs in coprological examinations of psittacine birds in captivity was relatively frequent.

Burr (1987) showed that numerous species of coccidiae infect the small intestine of birds and these prozoans produced the oocysts that were discharged in the feces. Oocyst of *Eimeria* sp. was identified in the fecal samples tested according to the protocols provided by Soulsby (1982). The sporulated oocysts containing four sporocysts each with two sporozoites were identified in fecal samples. The encountering of coccidial parasites in this study in Budgerigars was supported by the reports from Price (1992) who stated that coccidiosis was a serious diseases of budgerigars and in aviary birds and was shown to cause significant mortality.

Overcrowding of birds, lack of knowledge on proper health-related measures, deficiencies of feeding-related practices, poor overall management-related measures and absence of quarantine facilities can be attributed to the presence of the infections in the samples collected from pet shops and private residences. Our study suggests the need for periodical examination of droppings and accordingly, treatment with anthelmintic. However, the

attending veterinarian needs to take utmost care during the administration of the medicament chosen considering the risk of physical capture and restraining procedures, safety pertaining to the handler as well as the invariably high valued or rare avifauna that is being handled.

Chapter- V

LIMITATION

The laboratory of Upazilla Veterinary Hospital, Sadar, Thakurgaon was not well organized.

Chapter- VI

CONCLUSION

Fecal samples from birds that belonged to the pet shops and private residences revealed the presence of *Capillaria* and *Eimeria*. This finding is alarming and our findings necessitated the need for periodical deworming and proper managemental practices in pet birds.

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BIOGRAPHY

I am Md. Ashaduzzaman Shubho. I born in Dinajpur which is located in the north part of Bangladesh. Now I am an intern student of Chittagong Veterinary and Animal Sciences University, Chittagong. I belong to a small family. We are four members. My father name is Md. Aminur Rahaman and my mother name is Mst. Shahanaz Parvin and one younger brother name is Md. Oly Hasan. I have a plan to involve myself into innovative research project in future and want to admit myself into brainstorming and fruitful works regarding society's development