

## Research Communications

# Enteroparasites of the families Eimeriidae and Ascarididae in japanese quail (*Coturnix japonica*) in the metropolitan region of the Cuiabá River Valley, State of Mato Grosso, Brazil

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### ABSTRACT

Diseases caused by endoparasites trigger serious health problems, harming the development and production of birds. The objective of this study was to diagnose the presence of eggs and oocysts of Ascarididae and Eimeriidae parasites in Japanese quail excreta using the Willis-Mollay technique in the metropolitan region of the Cuiabá river valey, state of Mato Grosso, Brazil. Eggs and oocysts of the family Eimeriidae was found in 40% of the samples and the family Ascarididae in about 56% of the collected samples. The high parasite rate is a consequence of inadequate management of excreta, as well as lack of use or misuse of coccidiostats as food additives.

**Keywords:** *Coturnix japonica*, Oocysts, Protozoa, Excreta.

## Introduction

Poultry production has evolved significantly in the last decades with the beginning of the industrialization of poultry farming in Brazil. In the same sense, quail farming has shown a very marked development, adapting to the new production technologies, where the subsistence activity came to

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occupy a highly technical activity scenario with promising results for investors (PASTORE *et al.*, 2012).

Coccidiosis is a parasitic disease of the gastrointestinal tract caused by intracellular protozoa of the subphylum Apicomplexa, order Eucoccidiorina, family Eimeriidae, genus *Eimeria* (Pinheiro *et al.*, 2014), and is one of the main parasitic diseases affecting birds, which causes diarrhea, weight loss, worsening feed conversion rates and in some more severe cases, high mortality rates (Yin *et al.*, 2011). In quail, these parasites can provoke severe lesions in the intestinal epithelium leading to intestinal congestion (ANBARASI *et al.*, 2006).

Another disease that commonly affects birds is enteritis caused by parasites of the family Ascarididae, which depending on the age, physical and nutritional status of the bird can lead to death (Machado *et al.*, 2007). This death occurs especially in young birds since they are more susceptible to disease than adult birds (BRITO *et al.*, 2009).

Ascarididae infection affects production birds, such as broilers, quail and native birds. This parasite can cause considerable losses in the performance of birds, preferentially attacking the proventriculus and small intestine of several species (CUBAS and GODOY, 2009), and nematodes of the species *Ascaridia galli* are the ones that represent the highest infestation intensity (SILVA *et al.*, 2015).

In this context, the objective of the present study was to diagnose the presence of eggs and oocysts of parasites of the families Ascarididae and Eimeriidae respectively, in Japanese quail excreta, collected in agricultural stores in the Cuiabá river valey metropolitan region.

## Material and methods

On November 10<sup>th</sup>, 2014, samples were collected from fresh excreta of Japanese quails in the growing phase, housed in cage battery systems for all environments, with

the environments corresponding to different agricultural stores in the municipalities of Cuiabá and Várzea Grande, State of Mato Grosso, Brazil. A total of 06 replicates per environment were taken in 5 different environments, totaling 30 samples of excreta collected in a single visit to each agricultural stores. Samples were collected using a wooden spatula and stored in plastic bags with capacity of 100 mL of feces, identified and stored in a polystyrene box with ice, for approximately 4 hours until sent to the laboratory.

All birds were fed growth feed for quail free of coccidiostats and were provided to quail according to the routine of each agricultural stores. The number of birds per environment was not quantified.

Analyses of the samples were carried out at the Parasitology Laboratory, Faculty of Veterinary Medicine, Federal University of Mato Grosso, Campus Cuiabá. The flotation technique in saturated sodium chloride solution was employed to identify the presence of oocysts and eggs of parasites of the families Eimeriidae and Ascarididae, respectively, where the samples with 1-10 eggs/oocysts were considered to have a low presence, from 11 to 50 eggs/oocysts, moderate presence and with a quantity equal to or greater than 51 eggs/oocysts, presence was considered high (WILLIS-MOLLAY, 1921). Data were analyzed in a descriptive way.

## Results

The presence of oocysts of parasites of the family Eimeriidae was high in environments 4 and 5, accounting for 33% and 50% respectively of the samples in each environment. There was also a high positivity for Ascarididae parasites in environment 3, representing 20% of the total samples (Table 1). The origin of birds from environments 4 and 5 may be responsible for the higher occurrence of parasites, since they were not vaccinated against parasites before leaving the hatchery. For the environment 3, the mismanagement of the excreta, accumulated for more than two days would explain the greater presence of parasites in the excreta, given a possible recontamination.

Table 1. Positivity for oocysts of the family Eimeriidae and eggs of the family Ascarididae in excreta of growing Japanese quails according to the growth environment.

		Environment 1	Environment 2	Environment 3	Environment 4	Environment 5
Repetition 1	Eimeriidae	-	-	-	++	++
	Ascarididae	-	+	+	-	-
Repetition 2	Eimeriidae	-	-	-	+	+
	Ascarididae	-	+	++	+	-
Repetition 3	Eimeriidae	+	-	-	++	+
	Ascarididae	-	+	+++	+	-
Repetition 4	Eimeriidae	+	-	-	-	++
	Ascarididae	-	++	++	+	-
Repetition 5	Eimeriidae	-	-	-	-	++
	Ascarididae	-	+	++	+	-
Repetition 6	Eimeriidae	+	-	-	++	++
	Ascarididae	+	+	+++	+	-

- Negative; + low Presence of Eggs / Oocysts; ++ Moderate Presence of Eggs/Oocysts; +++ high Presence of Eggs/Oocysts.

## Discussion

Similar results were found by Anbarasi et al. (2006), who analyzed fecal samples of 76 Japanese quail, and identified through parasitological examinations three species of Eimeriidae in 12 birds, namely *E. tsunodai*, *E. uzura*, and *E. bateri*.

In the present study, the fact that animals were reared in cages prevented reinfection by contact with contaminated excreta. In addition, an efficient hygienic management with excreta removal on a daily basis promoted the lower occurrence of eggs or oocysts in environments 1 and 2.

The presence of oocysts of the family Eimeriidae was found in 21% samples and eggs of the family Ascarididae were verified in 30% samples. However, none of the birds presented clinical signs of coccidiosis and ascariasis, such as diarrhea, anemia, weight loss, apathy and somnolence. Nonetheless, this infestation rate could have affected birds with lesions of different scores in the intestinal epithelium, which could negatively affect the productivity of the birds, thus requiring a specific study.

## Conclusion

The frequency of occurrence of oocysts and eggs of parasites of the families Eimeriidae and Ascarididae, respectively, was lower for the birds of environments 1 and 2, evidencing that mainly the sanitary management and the adequate use of anticoccidial and anthelmintic additives in feed are techniques that can reduce the presence of parasites of the families Ascarididae and Eimeriidae in Japanese quail, being able to improve feed conversion and zootechnical indices.

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