

## OCCURRENCE OF GASTROINTESTINAL HELMINTHES IN COMMERCIAL AND FREE-RANGE CHICKENS IN GAZA STRIP, PALESTINE

By

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**Abstract:** *The present study compared the prevalence of helminthes parasites in two chicken breeds in Gaza strip, the commercial and the free-range indigenous. Gastrointestinal tracts of 100 commercial growers and 90 free-range indigenous chickens collected from Gaza city were examined for helminthes during 2007–2008. The commercial chickens were free of helminthes while the indigenous chickens were encountered five helminthes, three nematodes and two cestodes. The nematodes identified were *Ascaridia galli* (75.6%), *Heterakis gallinarum* (68.9%) and *Capillaria spp.* (2.2%). The cestodes were, *Raillietina echinobothrida* (57.8%) and *Choanotaenia infundibulum* (26.7%). No trematode was found. The intensity of parasites was low except for *H. gallinarum*. It was concluded that the indigenous chickens were infected with some types of cestodes and nematodes in Gaza markets. Sanitations and public health should be of concerned for both health authorities, consumers and farmers owners.*

## INTRODUCTION

Gaza city is a very important market for the commercial poultry industry and to many small rural homesteads that raise chickens for subsistence. North Gaza is the main source of dealing with the indigenous breed of chickens for Gaza city, where they participate strongly in this industry in the city. Many people are seeking for the tasty meat of the indigenous poultry because they don't trust the food, provided for the commercial breed.

The indigenous (Baladi) chickens usually rose in free-range type of management, which is certainly an acceptable type of husbandry practice, but there are some special health considerations to keep in mind, especially in the area of parasite control. Free-ranging birds have an increased opportunity to encounter the infective eggs, larvae, and intermediate hosts of parasites that can cause serious debilitating infections. (1, 2). This study, is the first one concerning helminthes parasites of chickens in Gaza strip.

The present study was conducted to determine the species of gastrointestinal helminthes associated with the chickens in the Gaza strip. It studies the occurrence of such parasites in terms of their prevalence and intensity, since many people complain that they usually see worms inside the viscera of the chickens and they don't know the nature of these worms that infect the chickens in Gaza city.

## MATERIALS AND METHODS

Gastrointestinal tracts of 100 commercial growers and 90 indigenous (Baladi) chickens were collected from different local markets in Gaza strip during 2007 -2008. In the laboratory, the gastrointestinal tracts were separated into gizzard, crop, small intestine, large intestine and caecum after which each region was cut open by dissection. All worms visible to the naked eye were removed using thumb forceps.

All the adult worms were identified directly under the stereomicroscope using the characteristics described by Soulsby, (3) and Permin & Nansen, (4). Scrapings were also taken from the mucosae of the upper, middle and lower intestine and caecum examined under the microscope.

Standard statistical computations (prevalence, mean intensity and standard deviation) were carried out by using Microsoft Excel (Office 2007). Prevalence was calculated by dividing the number of infected hens by the total number of examined ones and was expressed as a percentage.

The mean intensity was determined by dividing the total number of recovered worms by the number of infected chickens.

## RESULTS

In this study, as shown in Table 1, and Figure 1. five helminthes species were diagnosed from the indigenous chickens, three nematodes and two cestodes. The following species were found: *Ascaridia galli* (75.6%), *Heterakis gallinarum* (68.9%), *Capillaria spp.* (2.2%), *Raillietina echinobothrida* (57.8%) and *Choanotaenia infundibulum* (26.7%). The commercial hens were not to be by helminthes. The mean intensity of the helminthes species was relatively low except for the nematode *Heterakis gallinarum*, which was  $42.65 \pm 8.95$  (Table 1).

## DISCUSSION

Since there were no previous researches concerned with the parasites of chickens in Gaza, the species found in this study were considered the first record regarding the parasites of chickens in Gaza Strip. The commercial chickens free of parasites might be explained in accordance to growing awareness of the modern farming practices of poultry industry and the supplementary commercial food. In contrast, the indigenous chickens in Gaza rose in the backyards of the houses without cages where the chickens scavenge around the houses during daytime so they have free access to the open air and the ground, from which they have greater contact with feces and host organisms such as the earthworm where they get infections. A number of prevalence studies on the nematode helminthes have been conducted on free-range chickens in different countries all over the world. In Denmark, Permin *et al.* (5) reported that 63.8% of the free-range/organic systems hens were infected with *Ascaridia galli* and 72.5% infected with *Heterakis gallinarum* Figure 1. In Tanzania, Magwisha *et al.* (6) found that 69 % of the chickens were infected with *A. galli* and 1% was harbored *Capillaria spp.* In the Goromonzi District in Zimbabwe, Permin *et al.* (7) showed that prevalence of *A. galli* and *H. gallinarum* in the free-range chickens were 48. 24% and 64.62% respectively. A study carried out by Irungu *et al.* (8) in Kenya showed that 10 % of the examined intestinal tracts were infected with *A. galli* and 21.33 % were infected with *H. gallinarum* while only 1.5 % harbored *Capillaria spp.* In Bangladesh, Islam *et al.* (9) reported that 62.7%, 54.6% and 4.5% of the scavenging chickens were infected with *A. galli*, *H. gallinarum* and *Capillaria spp.* respectively. More recent studies by Phiri *et al.* (10) in Zambian villages revealed that 28.8% and 32.8% of the chickens were infected with *A. galli* and *H. gallinarum* respectively.

In this study, prevalence of *Ascaridia galli* (75.6%) in the indigenous chickens was very high compared to those reported from Denmark, Zimbabwe, Tanzania, Kenya, Bangladesh and Zambia (5-10).

The prevalence of *Heterakis gallinarum* (68.9%) recorded in this study was high similar to that recorded from Denmark and Zimbabwe by Permin *et al.* (5, 7), and still higher than those reported from Kenya and Zambia (10-11).

The relatively lower prevalence of *Capillaria* spp. recorded in this study agrees with the results of Magwisha *et al.*, (6), Irungu *et al.*, (8) and Islam *et al.*, (9). In this study, no trematodes or *Syngamus trachea* were found, also these were not reported in Zambia (10).

Concerning the prevalence of the cestodes, *Raillietina echinobothrida* has a cosmopolitan distribution as a parasite of poultry. The prevalence of *R. echinobothrida* (57.8%) recorded in the indigenous chickens in Gaza was higher than that recorded in Morocco by Hassouni & Belghyti, (11) which was (5.7 %).

*Choanotaenia infundibulum* recorded a prevalence of (26.7%) in the present study which was relatively high compared to the (3.3%) reported by Permin *et al.*, (5) in Denmark.

Generally, the intensity of infection was not high except for infection with *Heterakis gallinarum* where its intensity was  $42.65 \pm 8.95$ . The range of infection of the two cestodes detected was 2-5 worms in infected chickens; this range is similar to that reported by Hassouni & Belghyti (11) in Morocco.

In order to contribute to the knowledge of poultry diseases in the area and to undertake improvements in traditional poultry farming, a periodical parasitological investigation based on samplings and analyses of faeces has to be carried out.

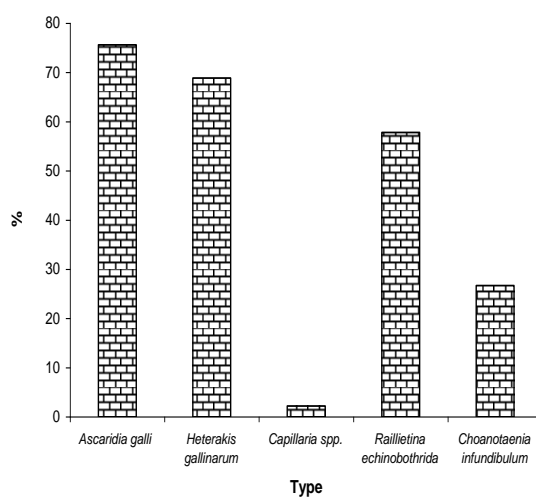


Figure. Prevalence of nematodes and cestodes in the indigenous chickens in Gaza

**Table 1.** The prevalence, mean intensity and intensity range of the helminth species found in the indigenous chickens in Gaza (2006-2007). (N) Number of infected chickens.

Parasites	Prevalence		Mean intensity $\pm$ SD	Intensity range
	(N)	%		
<i>Ascaridia galli</i>	(68)	75.6	5.32 $\pm$ 1.87	4 –11
<i>Heterakis gallinarum</i>	(62)	68.9	42.65 $\pm$ 8.95	27–60
<i>Capillaria</i> spp.	(2)	2.2	2.5 $\pm$ 0.7	2–3
<i>Raillietina echinobothrida</i>	(52)	57.8	2.67 $\pm$ 0.92	2–5
<i>Choanotaenia infundibulum</i>	(24)	26.7	2.70 $\pm$ 0.90	2–5

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