

## Detection of endoparasites and hematological parameters changes in (*Gallinula chloropus*)

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### Abstract

Gastro-intestinal parasites and blood parameters were examined in thirty five Moorhen birds *Gallinula chloropus* that hunted in different areas in AL-Diwaniya city during April – August 2016. Endoparasites were examined and diagnosed according to classical standard parasitological methods which revealed 57.14% of moorhen bird were infected endoparasite Protozoal infection with higher infection rate 20% then Cestodal infection 14% and the infection by Nematoda spp and Trematoda spp was 11.42 % respectively. The blood indices related to these parasite intestinal showed significant decrease of RBC count, PCV and Hb concentration, While WBC count increased significantly due to endoparasite infection.

**Key words:** Moorhen, endoparasites, *Gallinula chloropus*, hematological parameters

### Introduction:

Aquatic birds is one of many economic birds that regarded as important food source for Iraqi people Which are vulnerable to Parasitic infection ,there are many aquatic birds which are not found in other parts of the world due to wide water areas (1). The moorhen which belongs to the family of Rallidae ,which spreads widely in the middle and south of Iraq because it's ability to withstand rainfall, humidity, temperature and wind power, these birds feed on frogs, insects ,fish also grasses and plants (2)(3).The quality of aquatic birds' food is a key factor in determining the specific types of parasites that infect the birds, also seasonal variation provides certain types of food that contributes to the presence of parasites.The insect is a necessary food for these birds, which contains an intermediate host and adult worm.(4)(5). Different types of internal parasites prey on the digestive tract of birds such as tapeworms, floss, and perforation. (6) In Iraq, many studies have been conducted on parasites that infect birds such as *Ascaridia* sp. And stripes such as: *Raillietina* sp. Moreover, *Hymenolepis* sp. More common in birds. (7). the current study aimed to evaluate the prevalence of the endoparasitic infections and to study hematological parameters in the infected moorhen birds in Al- Diwaniyah city.

### Materials and Methods:

This study was conducted in Al-Diwaniyah province, Iraq, during the period from April 2016 to August 2016, as it has been hunted a total of 35 specimens of moorhen birds from different places of the city, where their gastrointestinal tract had been examined for the diagnosis of parasites, then saved in alcohol 70%, and acetocarmine was used to stain trematoda and cestoda, after that cestoda was cleared by xylene and nematode was cleared in lactophenol and it was mounted in Canada balsam. Taking a swab of 1g of intestinal contents on slide and a drop of normal saline, and examined under the microscope. Sheathers sugar flotation method was used to diagnose oocysts of *Cryptosporidium* and examine it by microscope (8). To determine the hematological changes in moorhen birds which infected by parasites, we divided birds into two groups:(A) control group contains a healthy birds that were not infected, (B) contains birds that were infected with parasites. (9).

### Statistical Analysis:

The results were analyzed statistically by using completely differences randomized design (CRD), least significant differences randomized design (LSD) (10).

## Results:

The results of this study showed that the total infection rate of endoparasites is 57.14% . Protozoa: *Eimeria .spp* 14.28%, *Cryptosporidium.spp* 5.71% Cestoda :*Railletina cesticillus* 8.57%, *Choanotania infundibulum* 2.85%, *Hymenolepis carioaca* 2.85% .Nematoda *Ascaridia spp.* 11.42% and egg Trematoda 11.42% .As showed in table(1). The results

showed a significant decrease in the concentration of hemoglobin, red blood cells and the packed cells volume in the blood of infected moorhen tapeworm compared to the control group. And for the white blood cells the results showed there is an increase in the number as the severity of the infection increased,as showed in table(2).

Table (1): parasite infection rate in moorhen birds.

Parasites	No. of infect. Moorhen	Percentage
Protozoa spp		
<i>Eimeria .spp</i>	5	14.28
<i>Cryptosporidium.spp</i>	2	5.71
Cestode spp		
<i>Railletina cesticillus</i>	3	8.57
<i>Choanotania infundibulum</i>	1	2.85
<i>Hymenolepis carioaca</i>	1	2.85
Nematod spp		
<i>Ascaridia sp.</i>	4	11.42
Trematoda		
Egg trematoda	4	11.42
Total	20	57.14

Table (2) hematological parameters of moorhen infected with Cestoda.

P.C.V	Hb 100ml/gm	W.B.C Mm <sup>3</sup> 10 <sup>3</sup> /	R.B.C Mm <sup>3</sup> 10/ <sup>3</sup>	Examined birds
37.89±3.96	11.81±0.08	23.09±0.13	5.96±0.041	A
23±0.27	6.88±0.04	31.08±0.59	2.99±0.011	B

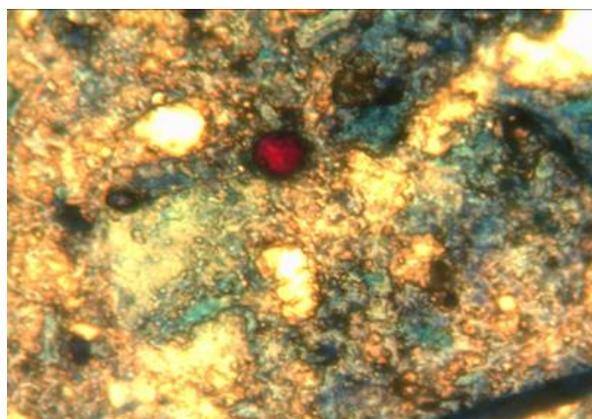


Fig. (1): *Cryptosporidium.spp*

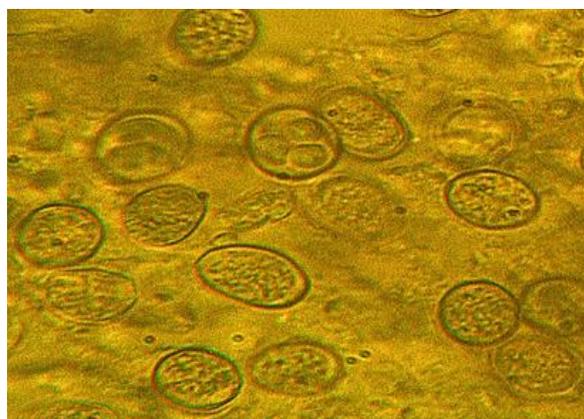


Fig. (2): *Eimeria.spp* 40X



Fig. (3): *Choanotania infundibulu* 40X



Fig. (4):*Railletina cesticillus* 40X



Fig. (5): *Hymenolepis carioca* 40X



Fig. (6): *Ascardia sp.* female 40X

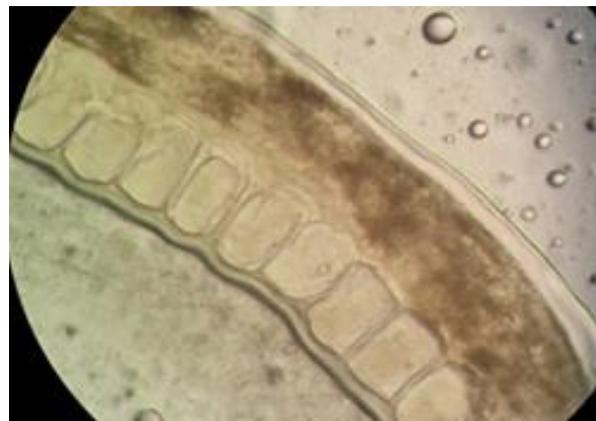


Fig. (7): *Ascardia sp.* female 40X



Fig. (8): *Ascardia sp.* male X40



Fig. (9): Egg trematoda 100X

### Discussion:

The current study had showed 57.14% of *G.chloropus* infected with several types of endoparasites and the infection distributed as follows: two genus of protozoa *Eimeria spp.* and *Cryptosporidium spp.* infection rate of 14.28%,5.715 respectively, and three types of cestoda :*Railletina cesticillus*,*Choanotania infundibulum*,*Hymenolepis carioca* with an

infection rate of 8.67%, 2.85%, 2.85% respectively. While infection rate of trematoda *Ascardia spp.* was 11.42%. As well as the isolation of a group of egg trematoda was with an infection rate of 11.42%.Coccidiosis caused by protozoa *Eimaeria spp.* has been considered as one of the most dangerous parasitic disease that

infect poultry not only in Iraq, but in Arabic countries and whole world, due to terrible economic problems (11). The infection rate with this parasite was the highest compared to the rest of other isolated parasite 14.28%. And this ratio is higher than the recorded ratio by (12) in the wild chicken in England that was 1.24%. And in Iraq by (13). In domestic chicken with a ratio of 11.4%. The variation in the infection rate back to variable ecological circumstances. While the parasite of *Cryptosporidium spp.* is considered a mutual parasite between human and animal, it also infects the birds widely causing the disease of cryptosporidiosis that leads to considerable damage in the respiratory and gastrointestinal tracts of the infected bird (14) with an infection rate of 5.71%, and this was less than that recorded by (15) on wild pigeon in al-Mousel city with an infection rate of 18%, while (16) had noticed in his study on pigeons parasites in Egypt an infection rate of more than 30%. This might be due to the wide use of the pigeon in Egypt, because it's one of the most delicious plates there. Regarding the parasitic worm the current study had showed that the *G.chloropus* was infected with three types of cestoda with a higher infection rate that was recorded by (17) in Al-Najaf city she was able to isolate the genus *Railietina spp.* with a ratio of 2.5%. The results had been declared that *G.chloropus* also infected by one genus of nematode *Ascardia sp.* with a ratio of 11.42% and this was less than the

ratio recorded by (13) and it is 32.9% for the species *A.galli* this type of parasite affecting the weight of the chicken also causing; anemia, intestinal obstruction and less production of egg and meat, while (18) noticed the presence of an infection in *G.chloropus* in Basra marshes with one type of nematode that is *Amidostomum acutum* and one genus that is *Tetrameres spp.* with an infection rate of 35.4% and *Echinostoma chloropodis*, *E.crecci* with an infection rate of 80.6% and this ratio was much higher than the results recorded in the current study, only egg trematoda had been found in a ratio 11.42% and this may be due to the nature of this birds living near marshes with plenty of intermediate host. Also the results showed a significant decrease in the concentration of hemoglobin, red blood cells and the packed cells volume in the blood of infected moorhen tapeworm compared to the control group. The lack of hemoglobin, red blood cells and the packed cells volume increases with the intensity of tapeworm infection. The anemia caused by a deficiency of copper and iron, caused by tapeworm infection by participating the bird in his food as they cause malabsorption of digested nutrients, this was similar to the result of (19). And for the white blood cells observed an increase in the number as the severity of the infection increases and this is similar with (20) in his study: hematological Parameters of *columba livia* in India.

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