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PREVALENCE OF INTESTINAL PARASITES OF DOMESTIC DUCK IN ASSIUT, EGYPT: WITH SPECIAL REFERENCE FOR COCCIDIAN INFECTION

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ABSTRACT

Background: Although ducks are pathogen-resistant, their preferred habitat is typically a favorable home for parasites' survival and replication, especially in tropical and subtropical areas like Egypt. Many parasites can exploit ducks using them as ultimate and intermediate hosts. **Methods:** This study screened the prevalent intestinal parasites infecting domestic ducks [Native breed and Muscovy ducks (*Cairina moschata*)] and their variability in Assiut, Egypt, from April 2023 to September 2024 to study. One hundred fresh intestinal samples were collected and examined parasitologically using a light microscope. Some coccidia-positive samples were histopathologically examined. **Results:** A total prevalence of 46% parasitic infection was detected in examined ducks, categorized into single (30%) and mixed (16%). The recognized parasites were verified into nematodes and protozoa. Nematodes included *Ascaridia galli* (6%) and *Trichuris spp*. (2%) while protozoa oocysts were the oocysts of *Cryptosporidium* (42%) and coccidian species (10%). The discriminated coccidian was identified as *Eimeria anatis, Tyzerria spp, Eimeria mullardi*, and *Wenyonella anatis*. The histopathological examination revealed their destructive effect on the intestinal tissue. **Conclusion:** the intestinal parasitic infection of domesticated ducks is prevalent and variable in Assiut, Egypt. The current investigation is the first report in Assiut showing the presence of *Cryptosporidium* infection in ducks, which could contribute to assessing their possible role in the dissemination of *Cryptosporidium* species. Some detected parasites are damaging to the intestinal tissue which may seriously cause loss of duck's health and the nutritive value of their meat.

Keywords: Domestic duck, intestinal parasites, *Cryptosporidium, Eimeria spp, Tyzerria, Ascaridia galli,* and *Trichuris spp*.

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INTRODUCTION

Ducks are good scavengers and are considered hardy birds due to their strong immune system (Aboulaila & Hilali, 2014). They are easy to keep needing no elaborate housing. These birds are profitable egg producers with long egg-production lives, valuable heavy eggs, and better prices. Duck meat is palatable meat and is relished by the people (Van der Meulen *et al.*, 2004). There are many breeds of domestic ducks in Egypt; the old breeds include Native, Sudanese, and White Peckin. The new breeds include Muscovy and Campbell, despite ducks being very resistant to being infected, the preferred habitat of ducks is a subtropical climate and stagnant water is also the favorite place for parasite's survival (Larki *et al.*, 2018). Ducks may act as final and intermediate hosts for many parasite species which pose a serious health hazard to the raised ducks and also result in many economic losses owing to body weight loss and egg production reduction (Aboulail *et al.*, 2011). Infected ducks have a variety of signs including retarded growth, egg production reduction, and stop weight gain, (H. Mohammed, 2009).

Intestinal protozoan parasites of ducks such as *Eimeria spp.* or *Cryptosporidium spp.* can lead to enteritis and enteric disorders with malnutrition, decreased feed conversion ratio in the birds then followed by suppressed egg production and weight loss and eventually may cause death (Richter *et al.* 1994). Coccidiosis is a widespread disease caused by the Apicomplexan protozoan parasite in the Eimeriidae family. There are four genera of ducks coccodia, *Eimeria spp., Isospora spp., Tyzzeria spp., and Wenyonella spp*. (Dubey 2019). This protozoan is intracellular in duck's gut cells, the meronts stages and gamonts replicate in the kidney tubules epithelial cells. The damage mainly depends on how many oocysts have been ingested in addition to the favorable environmental conditions. Coccidiosis results in a lot of health adverse effects, including a reduction in nutrient absorption, loss of weight loss, enteritis, and diarrhea which may be severe to be bloody, resulting in mortalities. Ducks infected by *Tyzzeria perniciosa* have severe histopathological changes in small intestines, including distension, filled with blood (hemorrhagic enteritis), and have caseous exudate with a 30% mortality rate, and the survived ducks usually have delayed weight gain. 5-10% of Coccidial oocysts can greatly resist unfavorable environmental stresses as well as disinfectants (Al-Taee, 2022).

Cryptosporidiosis is a zoonotic disease that can be transmitted to almost all mammals such as humans, fish, animals, and birds. This disease could lead to fatalities from diarrhea in young toddlers. *Cryptosporidium spp.* can affect several avian hosts causing morbidities and mortalities, it can inhabit different tissues in the bird, including respiratory, gastrointestinal epithelial cells and bursa of Fabricius (Essam and Dakahlia 2024).

On the other hand, different helminth species can infect ducks; roundworms *(Ascaridia spp., Heterakis* spp.) are one of the most common species infecting ducks. Also, tapeworms like (*Raillietina* spp.), thread nematode worms like (*Capillaria* spp.) and Gape worms (*Syngamus trachea*) can cause disease in different organs of ducks. Previous studies proved that helminthiasis in ducks results in many adverse effects and a significant reduction in weight gain, food conversion, and egg production (Gauthier and Ludlow 2013) (Shrestha *et al.*, 2020), there is poor information on gastrointestinal parasitic diseases of ducks in Assiut Governorate, so the present study was conducted to identify, investigate the prevalence, and highlight the pathology of the common G.I parasites of domestic ducks in Assiut, Egypt.

MATERIALS AND METHOD

1. Ethical Statement

The study design and all bird handling procedures followed the Ethical Committee no (06/2024/0271), Faculty of Veterinary Medicine, Assiut University, regulations.

2. Study Area

The study was carried out in Assiut which is in latitude of 27° 10' 51.46" N and longitude of 31° 11' 1.25" E and has an elevation of 56 meters above sea level and average atmospheric pressure at sea level is 1015 hPa. "Asyūṭhttp://latitude.to/map/eg/egypt /cities/asyut", The climate of Assiut is a desert climate, there is no rainfall during the year, precipitation has averages 2 mm, temperature ranges from 1°C to 45°C, and the average annual temperature is 23 °C "https://en.climate-data.org/location/612/"

3. Sampling

From April 2023 – to March 2024, a total of 100 ducks were collected from house-raised ducks and poultry markets in Assiut Governorate, Egypt. Intestinal samples from each bird were transported in a clean plastic ice box to the laboratory of Parasitology Department of Veterinary Medicine- Assiut University and laboratory of Assiut Animal Health Research Institute (AHRI).

3.1. Demographic data of samples

The collected duck samples included Muscovy ducks (60) and native breed (40), there were 58 males (48 Muscovy and 10 natives) & 42females (12 Muscovy and 30 native breeds), and they were collected and examined in each season.

4. Macroscopic examination:

Intestinal samples were dissected and opened by scissors in Petri dishes with warm saline to allow releasing of adult parasites, samples were grossly inspected for the presence of parasites, gross lesions, or offensive odor (Essam and Dakahlia 2024).

5. Parasitological examination:

Intestinal contents were separately collected, concentrated by formol-ether concentration salt flotation techniques, and microscopically examined by the "Unstained Direct smear method" as described elsewhere (Garcia, 2001). Protozoan oocysts were sporulated at 27º C using potassium dichromate (2.5%) for clear identification.

Intestinal content smears were fixed with absolute methyl alcohol (Et0012, Piochem, Egypt), stained using "Kinyoun's modified acid-fast stain", and microscopically examined for detecting any acid-fast protozoan oocysts of *Cryptosporidium* spp. (Cole, 1997).

Identification of parasite species was made according to morphological features as described by (Gajadhar *et al.,* 1983) Solusby (1982), Levine (1985), Urquhart *et al.* (2003), and Thrall *et al.* (2004), and an ocular micrometer was used for measurements.

6. Histopathological examination

Intestinal specimens (1 cm) from the infected ducks were collected, fixed in neutral buffer formalin (10 %), and processed using routine histopathological practices. The tissue sections were stained with hematoxylin and eosin and then examined by a light microscope (Suvarna, 2018).

Statistical analysis: The chi-square of independence formula was used by the statistical package for the social science (SPSS) version software program 2007 and by the web site: "Social Science Statistics http://www.socscistatistics.com/determined according to (Dubey 2019).

RESULTS

- **Total Prevalence of intestinal parasites:**

Out of 100 samples, 46 tested positive for parasitic infection: 45% (18 out of 40) in the Native breed and 46.7% (28 out of 60) in Muscovy. Examination revealed that 30% of examined ducks were positive for a single infection and 16% of samples were positive for mixed infection (Table 1).

Table 1: Single and mixed parasitic infection in examined ducks.

	Muscovy (t= 60)		Native breed (t= 40)		Total(t=100)		P-value
	Inf.	%	Inf.	%	Inf.	%	
Single	16	26.7%	14	35%	30	30%	0.152
Mixed	12	20%	4	10%	16	16%	0.152
Total	28	46.7%	18	45%	46	46%	

** P value < 0.05 is significant by the Chi-square test of independence**.**

The total infection rate of helminths was 10%, in all duck samples, Muscovy (6%) and native breed (4%). The identified intestinal helminths in ducks were *Ascaridia galli* 6% were dominant, followed by *Trichuris sp.* 2%. The total infection rate of enteric protozoan was 52 % (60% in Muscovy and 40% in native breed). The identified intestinal protozoan in ducks was *Cryptosporidium spp.* was the most prevalent intestinal parasite (42%), in the Muscovy breed (43.3%) and in the native breed (40%). *Eimeria spp.* infection is significantly related to the Muscovy breed, its total infection rate in all examined ducks was (10%), Muscovy breed (16.7%) and not detected in the native breed **(Table 2).**

Table 2: Prevalence rate of all detected parasites in Native and Muscovy ducks.

	Parasite*		Muscovy (t=60)	Native (t=40)	Total (t=100)	P –value
Helminthes	Nematodes	***Ascaris spp***	6(10%)*	2(5%)	8(8%)	0.37
		Trichuris spp	0 (0%)	2(5%)	2(2%)	0.08
	Total helminths		6(10%)	4(10%)	10(10%)	
Protozoa	Apicomplexa	***Eimeria spp***	10(16.7%)	0 (0)	10(10%)	0.01**
		Cryptosporidium spp	26(43.3%)	16 (40%)	42(42%)	0.74
	Total Protozoa		36(60%)	16(40%)	52(52%)	

*data were expressed in number of infected (percentage). ** P value < 0.05 is significant by Chi-square of independence

- **Prevalence of total intestinal parasitic infection in relation to age:**

The present study shows a higher infection rate in young ducklings (52%) than older ducks with no significant difference in Muscovy or Native breeds. However, there is a significant relationship between parasitic infections in Muscovy at 6 month-2 years of age **(Table 3).**

Table 3: Prevalence of total parasitic infection in Muscovy and native breeds in relation to age.

Age of ducks	Muscovy	native	Total	p-value
1week -4 months	16\32 (50%)	8\14 (57%)	24\46 (52%)	0.655421
4-6 months	10/26(38.5%)	8/18(44.4%)	18\44 (40.9%)	0.69147
6 months -2years	2/2(100%)	2\8 (25%)	4\10 (40%)	0.052808
Total	28\60 (46.7%)	18/40 (45%)	46/100(46%)	0.869869
P-value	0.208893	0.344861	0.152928	

n/t (%): number of infected/number of examined (percentage). [&]: Difference in prevalence of parasitic infection between Muscovy and native ducks within the same age. [#]: Difference in prevalence of parasitic infection between different sexes within the same breed. P value < 0.05 is statistically significant by Chi-square of independence**.**

- **Prevalence of total intestinal parasitic infection in relation to sex:**

Considering the sex of the studied cases, the total parasitic infection rate in both duck species was significantly higher in male ducks (51.7%) rather than in females (38%), and highly significant in native breeds 80% in males and 33.3 % in females **(Table 4).**

Table 4: Prevalence of total parasitic infection in Muscovy and native breeds in relation to sex.

	Muscovy n/t (%)*	Native n/t (%)*	Total n/t (%)*	P value[&]
Male	22/48(45.8%)	8/10(80%)	30\58 (51.7%)	0.049
Female	6/12(50%)	10/30(33.3%)	16\42(38%)	0.315
Total	28/60 (46.7%)	18/40 (45%)	46\100 (46%)	0.870
P value[#]	0.796	0.010*	0.177	

n/t (%): number of infected/number of examined (percentage). [&]: Difference in prevalence of parasitic infection between muscovy and balady ducks within the same sex. [#]: Difference in prevalence of parasitic infection between different sexes within the same breed. P value < 0.05 is statistically significant by Chi-square of independence**.**

- **Prevalence of total parasitic infection in relation to seasonal variation**:

Concerning the seasonal variation, there is a highly significant relationship between the total parasitic infection in the two duck species and the autumn season, followed by winter and summer, and the lowest infection rate was in the spring season. However, there is no significant relationship between parasitic infection and duck species within the same season except in winter, where the native showed a higher infection rate (71.4%) than Muscovy (53.8%) (Table 5).

Table 5: Prevalence of total parasitic infection in Muscovy ducks and native breeds in relation to seasonal variation:

Season	Muscovy n/t (%)	Native breed n/t (%)	Total n/t (%)	P-value[&]
Summer	6/10(60%)	6/18(33.3%)	12/28(42.8%)	0.172
Autumn	14\20 (70%)	2\4 (50%)	16/24(66.7%)	0.439
Winter	4/12(33.3%)	10/14(71.4%)	14/26(53.8%)	0.052
Spring	4/18(22.2%)	0/4(0%)	4/22(18%)	0.297
All the year	28/60(46.7%)	18/40(45%)	46/100(46%)	0.870
P-value[#]	0.016	0.041	0.008**	

n/t (%): number of infected/number of examined (percentage). [&]: Difference in prevalence of parasitic infection between muscovy and balady ducks within the same season. [#]: Difference in prevalence of parasitic infection between different seasons within the same breed. P value < 0.05 is statistically significant by Chi-square of independence**.**

2. Recovered helminths eggs:

Two species of eggs were detected: *Ascardia galli* egg: They are ellipsoidal eggs with a thick, smooth outer shell. When laid, they weren't embryonated (one-cell-stage embryo), but the other stages were detected in the present study (four-cell-stage, morula, and larvated eggs) (Fig.1A-D), and *Trichuris spp.* egg: They are barrel-shaped, with a thick brown shell and two mucoid plugs containing a one-cell-stage embryo. Fig.1 (E).

3. Recovered protozoan parasites:
Cryptosporidium spp.

Depending on the shape and site of infection; *Cryptosporidium oocysts*, which were spheroid to oval in shape, and stained bright red by modified acid-fast staining procedure. *Cryptosporidium spp.* was measured at 4.1x4.2 µm in diameter and was seen mainly in the small intestine (Fig. 2 G&H).

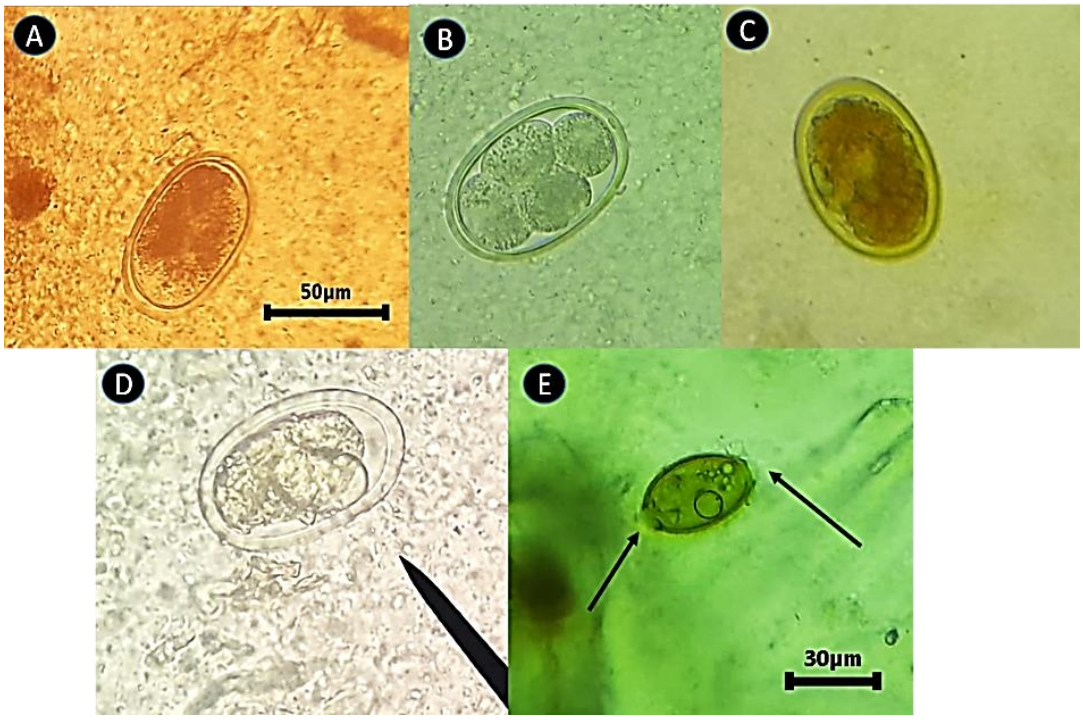

Fig.1: Showing the nematodes infecting ducks. A to D showing different developmental stages of *Ascaridia galli*. A: One cell stage embryo, B: 4 cell stage embryos, C: morula stage. D: egg with larva E: *Trichuris spp.* egg with two mucoid plugs (black arrows).

Recovered unsporulated oocysts:

Despite the unsporulated oocyst is difficult to differentiate the *Eimeria* and *Tyzzeria spp* and the diagnosis is based upon sporulation of the oocyst, some features can help to differentiate some oocyst species, in the present study some oocyst sporont fill almost the oocyst which indicates *Eimeria mullardi* (Fig 2B), while those which never completely fill the oocyst are belonging to *Wenyonella anatis* (Fig 2C). The subspherical oocysts are those of *Tyzzeria pellerdyi* (Fig 2D&E).

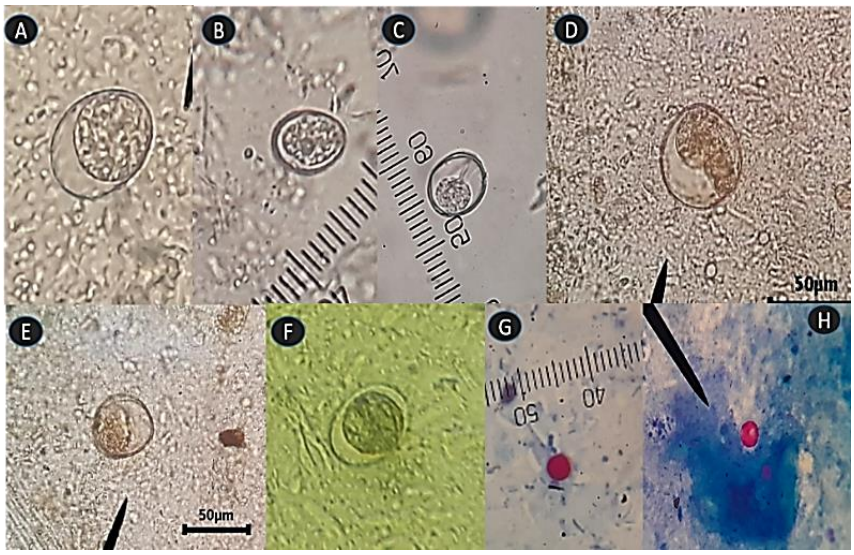

Fig 2: Showing the intestinal protozoan parasites affecting ducks: A to E showing the different shapes of unsporulated oocysts of *Eimeria and Tyzzeria spp.*, G&H are *Cryptosporidium spp.* in Ziehl- Nelssen stained smears.

- **Recovered sporulated oocysts:**

Sporulation of the recovered oocysts revealed one *Tyzzeria spp.* and two species of *Eimeria* (*Eimeria anatis* and *Eimeria mulardi)* and one *Wenyonella spp. (Wenyonella anatis*) infecting ducks in Assiut.

A. Tyzzeria pellerdyi, (Essam and Dakahlia 2024).

Oocysts of ***Tyzzeria pellerdyi*** are sub-spherical with smooth oocyst wall, colorless there is no micropyle and it has eight free, banana-shaped sporozoites lie within the oocyst each with a centrally located nucleus and a prominent globule at the broader end. A 4- to 5-pm oocyst residuum is also present (Fig. 3 E).

B. Eimeria anatis, (Larki *et al.* 2018) [Description based on 20 oocysts and 40 sporocysts; (Fig. 3 A& B)

Oocysts elongate-ovoidal, Oocyst wall thick; outer layer smooth. Micropyle cap absent. Micropyle is present, generally with invagination of the inner layer. Characteristic polar granules are present. Sporocysts 4, ellipsoidal, composed of small, randomly dispersed granules. Sporozoites 2, with robust anterior and posterior refractile bodies and indiscernible nucleus.

C. Eimeria mulardi:

Oocysts are subspherical. In freshly emitted oocysts, the dense, granular sporont fills almost the entire volume (Fig. 3 F). The wall is smooth, colorless, or slightly greenish yellow, it appears to be made up of two layers. The micropyle is topped by a flattened or slightly domed cap (4.0 pm χ 0.8 pm). Neither polar granule nor oocyst remnant is observed (Fig. 1). The sporocyst is ovoid.

D. Wenyonella anatis:

The sporulated oocyst has four sporocysts and a polar granule. The sporocysts as is characteristic of the genus *Wenyonella*, have 4 sporozoites so there are 16 sporozoites per oocyst. The sporocyst residuum consists of dark granules and sporozoites are ovoid and have a distinct globule at the broader end. Disease-None reported (Fig. 3 C & D).

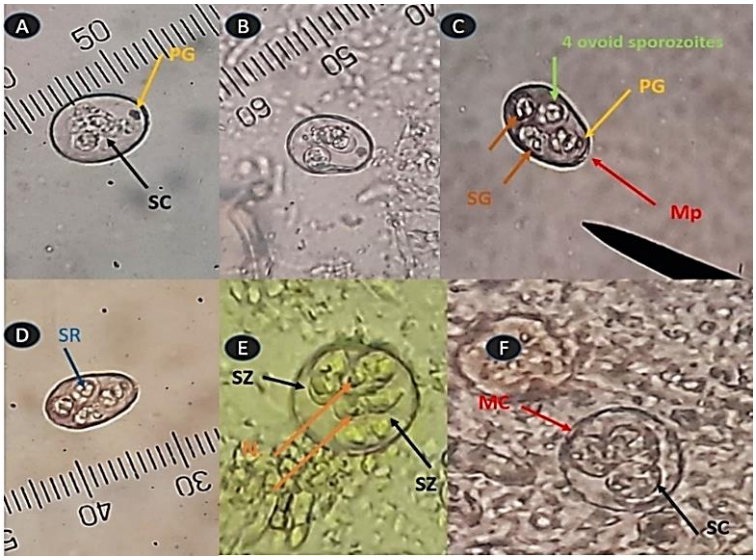

Fig. 3: Showing different spp. of sporulated oocyst: A& B: *Eimeria anatis* with polar granule (PG), spindle-shaped sporocysts (SC), C & D: *Wenyonella anatis*: micropyle (Mp), polar graniole (PG), ovoid sporocysts (green arrow) with 4 sporozoites, sporozoites globiole (SG) and sporocyst residium (SR), E: *Tyzzeria spp*.: Sub spherical oocyst with 8 free sporozoites(SZ) containing nucleus (N), F: *Eimeria mullardi*: flat micropylar cap (MC) and rounded to ovoid sporocysts

6. Histopathological study of *Eimeria-positive* intestinal samples:

The histopathological findings of the infected intestinal samples revealed several degenerative changes, including villous atrophy, desquamation of the intestinal lining epithelium, and diffuse areas of epithelial loss. In addition, intestinal crypt lining epithelium showed cytoplasmic vacuolation and pyknotic nuclei. Moreover, inflammatory cell infiltration was observed in the lamina propria. The intestinal villi had several coccidian stages (Fig.4).

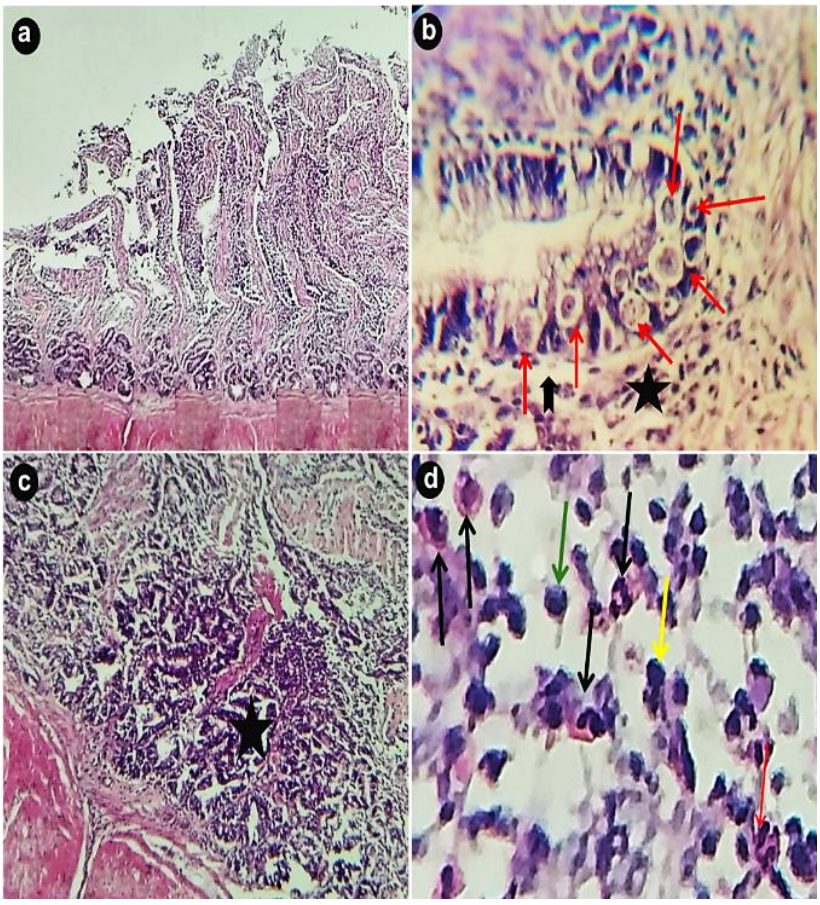

Fig. 4: Intestinal lining have (a) destructed villi with denuded epithelium and (b) variable developmental stages of coccidian protozoa inside enterocytes (red arrows), and sub-epithelial edema (notched arrow). (c) Inflammatory cells (Star) aggregated within lamina propria and submucosa. (d) The inflammatory cells included eosinophils (black arrows), lymphocytes (yellow arrows), macrophages (green arrows), and neutrophils.

DISCUSSION

Intestinal parasitic infection adversely affects the raised household ducks, especially if raised in close to stagnant water which could be polluted with eggs, larvae, and intermediate hosts of different parasite (Hasan, 2021)In the present study, the total infection rate of G.I parasites in examined ducks was 46% (46/ 100), mixed infection with more than one parasite was 16%, and single infection was detected in 30%. The detected parasites were differentiated into helminths (8%), Cryptosporidium spp. (52%), and Coccidian spp. (10%). Unfortunately, little information is available about the intestinal protozoan parasites from Egyptian ducks.

The total prevalence of intestinal parasites in the current study is less than what was mentioned by (*Adejinmi 2011.Pdf*, n.d.) in Nigeria recorded a 95% prevalence rate with single and mixed infection with helminths

and protozoans was 21%, also Larki *et al.* (2018) who recorded a total prevalence of 60.97% in Iran, and, as observed in this work, their results proved the presence of mixed infection (20%) between positive cases. Also, the current results are less than that observed by Shrestha *et al.* (2020) in Nepal who recorded an 81.67% prevalence rate with single and mixed infection, including *Eimeria* 15% which is near to the results obtained in this study. The prevalence rate reached 77.3% in Colombia (Montes-Vergara *et al.,* 2021) and (Chavarro-Tulcán *et al.,* 2021) mentioned high total prevalence rate including *Eimeria spp*. was 78%, followed by helminths with 65.3%. The higher prevalence in previous studies might be associated with the free-range system of management exposing them to greater risk of parasitism.

The low total prevalence rate in this study may be because the duck industry in Upper Egypt depends mainly on domesticated ducks with limited grazing areas, or it may be due to the high temperatures and dryness almost all year, which affect the survival of parasites.

In the present study, the highest parasitic infection rate was detected in young ducklings 52% while the lowest was detected in ducks 6 months to 2 years of age (40%). These results agree with a very old retrospective study by (Islam *et al.,* 1970) who showed that parasitic infection in ducks is significantly higher in the laying stage than pullet stage .While (Aboulaila & Hilali, 2014) showing helminth infection only reported in ducks 8-12 months old. And no infection in ducks either under 8 months or over 12 months old. This may be due to the difference in the immune status of the bird.

Concerning to sex of examined ducks, the infection rate was significantly related to males 51.8% than females 61.6%, unlike a previous study by (Hoque *et al.,* 2014)who mentioned that the frequency of coccidia was significantly affected by sex ($p < 0.05$), being higher in females than males, while helminth infection was not significantly affected by sex.

According to the effect of seasonal variation, the higher infection rate of examined ducks both Muscovy and native breeds was detected in autumn at 66.7 % and the lowest one was detected in spring at 18%. The results come in agreement with (El-Dakhly *et al.,* 2020) in Beni-Suef (Upper Egypt) and mentioned that the highest peak of infection was found in autumn and summer in domestic ducks.

The infection rate of intestinal helminths fluctuates between Egyptian governorates, in the current study the helminths infection rate was 8%, which is less than the result obtained by (El-Dakhly *et al.,* 2020) whose investigations revealed that the prevalence of intestinal helminthiasis in ducks was 13.92% in Beni-Suef, Egypt, and those obtained by (Nagwa *et al.,* 2013) revealed that the prevalence of intestinal helminthiasis in ducks was 38%, however, our result is higher than what revealed by (Aboulaila & Hilali, 2014) in Behera, Egypt where the infection rate was 4.54%. These differences may be due to differences in environmental and rearing conditions between Upper and Lower Egypt. Among the identified gastrointestinal helminths in duck, the most prevalent species in the present study was *Ascaridia galli* 6%, then *Trichuris sp.*2%. These results agree with (Shrestha *et al.,* 2020) who mentioned that *Ascaridia galli* were more dominant than other nematodes detected (*Trichuris sp., Strongyloides sp., Capillaria sp.*).

Examination of impression smears revealed the presence of *Cryptosporidium* infection in 52% of examined duck samples. A high rate of *Cryptosporidium* infection in Egypt was detected by Kalifa *et al.* (2016) 39,9%. While lower results were recorded by Nagwa *et al.* (2013) 13.8%, while 0% of *Cryptosporidium* infection was recorded by Aboulaila & Hilali, (2014) at different localities in Egypt. These results are owed to localities of duck rising if near polluted or clean water.

Four coccidian parasites were infecting ducks in Assiut in the present work; *Tyzzeria spp, Eimeria anatis*, *Eimeria mulardi*, and *Wenyonella spp. (Wenyonella anatis*).

Adejinmi & Oke (2011) in Nigeria recorded protozoan like *Eimeria spp.*, *Tyzzeria spp*., and *Cryptosporidium spp*. in ducks. Also (Larki *et al.,* 2018) found the protozoan parasites in 14 (58.33%) of ducks, those identified as *Tyzzeria spp.* (7.14%), *W. philiplevinei* (64.28%) and *I. mandari* (28.57%) and (50%) were *Cryptosporidium spp.* The histological sections of the intestine of infected ducks in our sections showed eventually highly destructive changes due to *Eimeria spp*. and its different reproductive stages with numerous sloughed epithelial cells.

CONCLUSION

The present study has demonstrated that intestinal parasites are prevalent among examined ducks (Muscovy and native breed) which may cause loss of productivity and total economic losses to farmers. Additionally, domestic ducks may be considered as a reservoir host for *Cryptosporidium spp.* which represents a serious human public health problem.

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مدى انتشار الطفيليات المعوية في البط المنزلي في محافظة أسيوط بمصر: مع إشارة خاصة إلى عدوى الكوكسيديا

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على الرغم من أن البط مقاوم لمسببات الأمراض المختلفة ، إلا أنة قد يكون عائل نهائي او وسيط للعديد من الطفيليات والتى يكون لها تاثير ضارعلى القيمة الغذائية للحومها. هدفت الدراسة الى التعرف على الطفيليات المعوية السائدة التي تصيب البط المنزلي في محافظة اسيوط؛ فى كل من السلالة المحلية والبط المسكوفي خلال الفترة من أبريل ٢٠٢٣ إلى سبتمبر ٢٠٢٤. حيث تم جمع مائة عينة معوية طازجة وفحصها طفيليا باستخدام المجهر الضوئي. بينما تم الفحص الهيستوباثولوجى لبعض العينات الإيجابية للكوكسيديا. بلغ معدل انتشار إجمالي للعدوى الطفيلية للبط ٤٦٪ بلغت في السلالة المحلية ٤٥٪ وفي البط المسكوفي كانت النسبة ٤٦,٧٪. كانت نسبة الاصابة باكثر من طفيل ١٦٪ فى حين بلغت نسبة العدوى المنفردة ٣٠٪. وكانت نسية الاصابة بالديدان الخيطية ١٠٪. واشتملت الديدان الخيطية على الاسكاريا جالى ٦٪ وديدان التركيوريس ٢٪. بينما بلغت العدوى بالبروتوزوا ٥٢٪ وصنفت الى الكريبتوسبوريديم ٤٢٪ والكوكسيديا ١٠٪. تم التعرف مرفولوجيا على اربعة انواع من الكوكسيديا هى : ايميريا انتيس، فصيلة التيزيريا، وايميريا مولاردي، فينيونيلا انتيس. وقد كشف الفحص الهيستوباثولوجى للطيور المصابة عن تأثير عدوى الكوكسيديا المدمر على أنسجة الأمعاء. وخلصت الدراسة الى إن ارتفاع معدل الإصابة بالطفيليات المعوية للبط المستأنس في مدينة أسيوط. وهذه الطفيليات تلحق الضرر بالأنسجة المعوية مما قد يؤثر بشكل خطير على صحة الطيور وانخفاض القيمة الغذائية للحومها. كما كشفت الدراسة على ارتفاع معدل العدوى بطفيل الكريبتوسبوريديم في البط، مما قد يشير الى دورها المحتمل في نشر أنواع الكريبتوسبوريديم والتى قد يكون لها تاثير ضارعلى الصحة العامة .