# STUDIES ON SOME GASTROINTESTINAL PARASITES AFFECTING ZOO ANIMALS IN ALEXANDRIA GOVERNORAT

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## *ABSTRACT*

*In the present study 34 different animals at Alexandria Zoo were examined parasitologicaly for detection of Gastrointestinal parasites.*

*The investigation of zoo animals( 3 Adult Common Zebra*

*12 Barbary sheep 4 Bactrian camels 1Nilgai ,5African Lions 2Chimpanzees 1Giraffe 1 Elephant, 4 Lama and 1 Gazelle) revealed that the overall prevalence of parasitic infection was 43%, Seven species of parasites.*

*Were 4 helminthes from which Trichostrongyluscolumriformis Ostertagia circumcincta from lama at 35.3% & 33.2% respectively.*

*Strongyloides papillosus ,from Barbary sheep 78% and Toxocara cati from African lions (23%) .*

*And 3 protozoa Eimeria species from Bactrian camels (21.1%), Entamoeba histolytica cysts and Cryptosporidium oocysts from Chimpanzees at an incidence of 43.5% and 23.4% respectively.While the collected samples from common zebra, Nilgai, Gazalle, Giraffe and Elephant were free from any intestinal parasites.*

## *INTRODUCTION*

The importance of zoo animals has a special attention of many workers all over the world who studied their behavior and diseases under captive condition. Recentaly in Egypt much attention was applied to the parasites especially the endo parasites of zoo animals due to wide distribution of the infective pathogens **(Fowler 1978, 1986)**.

Although parasitic diseases are quite common frequently occurring in association with other etiological agents in cases of enteric disorders, few workers were interested in the Ocurrance, Identification and Pathogenesis of parasites of Egyptian wild life.

Wild animals are exposed to numerous species of internal and external parasites which irritate, injure and debilitate them. The evaluation of parasitic diseases and their effecting wild animals is difficult because few workers are able to observe clinical symptoms of the diseases under complete natural conditions.

Infection with parasites can lead to serious diseases and is after seen in captive animals **(Okaeme, 1985)**. Parasitic burdens constitute one of the major manage mental problems in

wild animals in captivity, causing high mortality mostly among the young ones. In addition to they considered as a carriers or reservoir for many dangerous parasites (**Dovgalev and Posokhov, 1987**). Their role in transmission of parasitic diseases to domesticated animals and man was previously studied by some authors **El-Azazy, 1981; Amer, 1984; Abd El- Aal, 1990 and Essawi-Halla, 1993**.

The present investigation aimed to through the light on the parasite burdens of the wild animals at Alexandria zoo to elucidate their role in the biological contamination of the environment

## *MATERIAL AND METHODS*

Faecal samples were collected from the different zoo animals in a clean sterile polyethylene bags labeled with a different data as species and date then transferred immediately to the laboratory for parasitological examination. The collected faecal samples of each animals were examined by direct smear techniques The negative one were subjected for further examination by Concentration floatation technique using saturated salt solution and sugar solution as well as sedimentation technique as described by (**Kruse and Pritchard, 1982**). in addition, the samples were also examined for the presence of protozoan parasites by Modified Zeihl Neelsen technique according to (**Henriksen and Pholenz, 1981**). Faecal culture was performed for larval identification as mentioned by (**Echert, 1960**) and the lugol solution was added before the microscopical examination as stated by (**Georgi and Georgi, 1990**). The recovered larvae was identified according to (**Soulsby, 1982**).

## *RESULTS*

Obtained results showed that the overall prevalence of parasitic funna among different species of the wild animals at Alexandria zoo was 43% and the prevalence of each parasites was summarized in the Tables.

Seven species of parasites were identified 4 Helminths.

Trichtrongylus columriformis, Ostertagia circumcincta from lama 35.3% and 33.3% respectively. Strongyloides papillosus, from Barbary sheep 78% Toxocara cati from African lion, 23% and 3 protozoa

Eimeria species from Bactrian camels 21.1% and Cryptosporidium species and Entamoeba histolytica 43.5 & 23.4 respectively from Chimpanzees.

The morphological characters of each stage of the recorded parasites were summarized in tables. 1, 2 & 3.

**Table (1) : showing morphological characters of the recovered parasites**

| Remarks | Width(u) | Length(u) | Host | species |
|---|---|---|---|---|
| Thin-shelled, Broad ellipse with Barrel-shaped side wall and the blastomeres are vary in number. | 20-30 | 80 | Lama | **Strongyloides eggs** |
| Broad oval has a slightly flattened poles,thin shell,colourless, Embryonated containing larvae. | 25-26 | 47-65 | Barbary sheep | **Strongyloides eggs** |
| Subglobular in shape with thick albuminous shell and granular content with fine pitted surface to the shell. | 60-77 | 69-95 | African lion | **Toxocara cati eggs** |

**Table (2)showing some morphological characters of the recovered nematode larvae**

| Remarks | Extension of Tail sheath(u) | Body Length(u) | No. of Gut cell | Host | Species |
|---|---|---|---|---|---|
| Head tapered, tail form a short cone posterioly. | 25 | 700 | 16 | Lama | **Trichostrongylus colubriformis** |
| Head square,Sheath tail forms short cone. | 33.4 | 800 | 16 | Lama | **Ostertagia circumcincta** |
| Oesophagus extends nearly half length of body. | Absent | 600 | Not clear | Barbary sheep | **Stongyloides papillosus** |

**Table (3)Showing morphological characters of identified protozoan parasites**.

| Remarks | Size | Host | Species |
|---|---|---|---|
| Spherical in shape containing single nucleus with central endosome and regularly distributed chromatin is visible | 8-18um(15um) | Chimpanzees. | **Entamoeba histolytica cyst** |
| Small in size spherical in shape smooth wall the cyst appear red on green background | 4-8um(5.5um) | Chimpanzees. | **Cryptosporidium oocyst.** |
| Ovoid in shape thick wall dark brown ,micropyle and micropylar cap are present | 45-54um | Bactrian camels | **Eimeria spp.** |

**Table (4) : showing the prevalence of parasites in wild zoo animals at Alexandria zoo.**

| Animals | Total no. of examined sample | Helminthes eggs | | | | | | Protozoan parasites | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Nematode eggs | | | Toxocara eggs | | | E. histolytica cyst | | | Cryptosporidial oocyst | | | Eimeria spp. oocyst | | |
| | | Positive | No. | % | Positive | No. | % | Positive | No. | % | Positive | No. | % | Positive | No. | % |
| African lions | 72 | - | - | | + | 16 | 23 | - | - | - | - | - | - | - | - | |
| Chimpaneezs | 24 | - | - | | - | - | - | + | 11 | 43.5 | + | 6 | 23.4 | - | - | |
| Llama | 96 | + | 32 | 33.2 | - | - | - | - | - | - | - | - | - | - | - | |
| *Barbary sheep* | 120 | + | 93 | 78 | - | - | - | - | - | - | - | - | - | - | - | |
| Bactrian camels | 96 | - | - | | - | - | - | - | - | - | - | - | - | 20- | - | 21.1 |

**Eimeria spp OocystX500**

**Cryptosporidium spp. Oocyst (X1000).**


**(A) (Strongyle eggs (x 500).**


**(B) Strongyloides papillosus eggs (x500).**

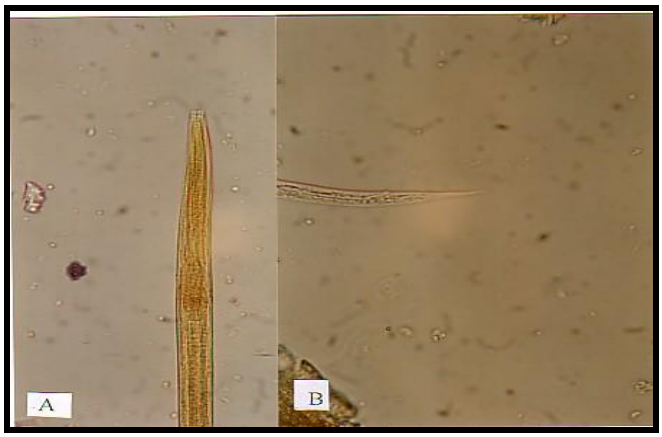

**(C) Toxocara cati eggs (x 500).**


**Trichostrongylus colubriformis**

**(A)Anterior end (B)Posterior end**


**Ostertagia circumcincata(x500)**

**A) Anterior end (B)Posterior end**




**Strongyloides papillosus.**

## *DISCUSSION*

The present study was carried out to identify the parasite which infecting some wild animals at Alexandria zoo via coprological examination.

In the present study the overall prevalence of parasitic burdens among wild animals at Alexandria zoo was 43%. [Seven parasite species were recorded 4 helminthes (Trichostrongylus colubriformis, Ostertagia circumcincta in Lama, Strongyloides papillosus in Barbary sheep And Toxocara cati eggs in African lions and 3 protozoan parasites, Entamoeba histolytica cyst, Cryptosporidium oocyst in Chimpanzees.and Eimeria species in Bactrian camels these results were agreed with those obtained by **Dollinger & Ruedi (1974); Anderson (1984); Hird et. al. (1984)** in **Calfornia; Selim (1988); Ahmed-Madeha (1992), Ghandour et. al. (1995) in Saudi Arabia, and I. S. EL-Shahawy et. al. (2006)**.

The present study found that the prevalence of Toxocara cati eggs among African lions was 24.4%. This result were agreed with those obtained by **El-Shahawy & Abdel Razek (2006)**, but varied with that obtained by **Kathe et. al. (2000)** who recorded that the prevalence of Toxocara cati among wild lions (Panthera leo) in northern Tanzania was 9%. This variation might be attributed to locality and hygienic measures.

In Lama, the present work recorded 2 nematode species larvae (Trichostrongylus colubriformis and Ostertagia circumcincta) depending up on the faecal culture with an infection rate of 43.5, 23.4. This result were agreed with those obtained by **El-Shahawy & Abdel Razek (2006)** but, disagre-ed with that obtained by **Fakae (1990)** who found that the prevalence of Trichostrongylus species among Lama in eastern Nigeria was 63.8%, this might be attributed to the nature of pasture and difference in the environmental condition. On the other hand the prevalence of Strongyloides papillosus larvae among Barbary sheep in the present study was 78%. slightly similar results were obtained by **Selim, (1988)** from Sambars, Aryal Egyptian deers and Barbary sheep examined from Giza Zoological gardens. but lower than that obtained by **El-Shahawy & Abdel Razek (2006)**.

In the present work the prevalence of Entamoeba histolytica cyst and Cryptosporidium oocyst among .

Chimpaneezs were 43.5 % 23.4% respectively. This results were nearly similar to those obtained by **El-Shahawy and Abdel Razek (2006)** but varied with that obtained by **Munene et. al. (1998)**; **Legesse and Erko (2004)** and **Takano et. al. (2005)** who reported that the prevalence of Entamoeba histolytica and Cryptosporidium oocyst was 24.8% in Kenya for Entamoeba histolytica; 16.9% and 11.9% among Pabio anubis (baboons) in Ethiopia and 37.5% in China respectively. This variation could be due to the difference in the environmental condition and hygienic measures. As well as the present study recorded that the prevalence of Eimeria species oocyst among Bactrain camels was 21,1%. This results were similler to those obtained by **Omar et. al. (2000)** who concluded that the infection rate of Eimeria species in camels was 22.2% in Egypt. but varied with . **El-Shahawy & Abdel Razek (2006)** .

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# الملخص العربى

## دراسة عن بعض الطفيليات المعدية المعوية التى تصيب حيوانات حديقة الحيوان بالإسكندرية

كريمـــه محمد البكـرى

معهد بحوث صحة الحيوان – فرع الإسكندرية

أجريت هذه الدراسة على عدد ٣٤ حيوان برى موجودة فى حديقة الحيوان بالإسكندرية وبيانها كالآتى : عدد ١٢ كبش أروى، ٤ جمل ذو سنامين، ٥ أسود أفريقية، ٢ شمبانزى، ١ زرافة ، ١ فيل أفريقى، ٤ لاما، ١ غزالة، ١ نالجاى، ٣ حمار وحشى، وذلك للتعرف على إصابتهم بالطفيليات المختلفة وذلك بواسطة طرق الفحص المختلفة لعينات البراز، وأوضحت النتائج أن نسبة الإصابة العامة بالطفيليات المخلفة فى الحيوانات المفحوصة كانت ٤٣٪ وتم تعريف سبع أنواع من الطفيليات أربعة منها تنتمى إلى الديدان وهى ترايكوسترونجياس كولابريفرميز واسترتاجيا سيركمستكاتا من اللاما واسترونجلويدس بابيلوزس من الكبش الأروى وتوكسوكاراكاتى من الأسود الأفريقية وثلاثة أنواع تنتمى إلى الأوليات وهى إنتاميبا هستوليتيكا ونوع كربتوسبورديم من الشمبانزى بالإضافة إلى نوع من الأيميريا من الجمال ذات السنامين، كما تم توصيف الطفيليات التى تم تسجيلها وصفاً ظاهرياً دقيقاً، وهذه الدراسة تلقى الضوء على الدور الذى تلعبه الحيوانات البرية فى التلوث البيولوچى للبيئة وكذلك فى نقل الطفيليات المشتركة إلى الإنسان خاصة المتعاملون معها فى حدائق الحيوان، ولنشر الوعى بين الزائرين كى يراعى الحذر فى التعامل مع هذه الحيوانات.