

## PREVALENCE OF TISSUE PARASITES AFFECTING MEAT PRODUCING ANIMALS

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### ABSTRACT

*A total of 4993 buffaloes, 3456 cows, 962 sheep, 96 goats and 20 camels at abattoirs of Alexandria province were examined by naked eye for detection of tissue parasites of zoonotic importance during the period from January 2007 to December 2007 . The obtained results revealed that the tissue parasites include infection with Fasciola spp . at an incidence of 21.07, 17.3, 9.5 and 19.7 % in buffaloes, Cows, sheep and goat respectively . Hydatid cysts with infectin rate of 0.04 % and 50.6 % in buffaloes and Camels respectively. In addition to the morphological status of adult worms of Echinococcus granulosus infecting dogs was described from specimens prepared from adult worm but Cysticercus spp. The incidence were 0.26 , 3.26 , 11.6 and 8.3 % in buffaloes cows, sheep and goat respectively in the present study we found that camels free from Cysticercus spp. and Fasciola.*

### INTRODUCTION

The Tissue helminth parasites infecting slaughtered animals . are a group of helminth that settle in the tissue or organs . They may produce their pathogenic effect on the host due to severe destruction of the organs or tissues by themselves or their metabolic products or mechanically by exerting a sort of pressure on the surrounding tissue or during their migration.

Hydatid disease is a cyclozoonotic infection caused by the larval stages of several species of the genus *Echinococcus*,. The final definitive host is a carnivora (dog, fox, .....ect) and the larval form (hydatid cyst) occurs in one or more species of herbivorous and omnivorous vertebrate animals and human (*Gordo and Bandera, 1998*). Hydatid disease today constitutes a major public health and economic problem in all contiouries (*Schantz and Schwabe, 1969, Dixon et al, 1973 and Eckert 2007*). In most Mediterranean countries , the disease is hyperendemic in sheep, Camels , goats and donkeys (*Haridy et al ; 2006*).

Liver flukes , (*Fasciola* spp). are known to settle in the bile ducts of animal . In acute Cases the animal die Suddenly but in chronic cases the animal become anaemic and weak, (*Soulsby, 1978* ).

*Cysticercus* spp . is the larval stage of *taenia* spp. As the human taeniasis is based on the Consumption of infected meat with *cysticercus*. A few larvae cause no appreciable damage nor clinical signs but the animal is markedly depressed, weak and appetite is lost (*Soulsby , 1973*).

So, this study is carried out to investigate the prevalence of tissue parasites affecting meat producing animal. Moreover morphological study of adult *Echinococcus granulosus* in dogs (final host) living nearby the slaughter house in EL-Amria and Abo-keir abattoirs in Alexandria province .

## MATERIAL AND METHODS

### Sampling

Examination of slaughtered buffaloes, Cows, sheep, goat and Camels were carried out in slaughter houses of Alexandria province for detection of tissue parasites infection.

**Inspection:**

The routine meat inspection of carcasses for the detection of helminth tissue parasites was based on the naked eye according to (*AL – Barwari; 1977*).

Morphological studies of adult worms of *Echinococcus granulosus* infecting dogs which living nearby the slaughter houses . was done by removing the small intestine of infected dogs justly after killing (as a routine work of hygienic destroying of stray dogs of Alexandria Governarate). the small intestine was removed incised longitudinally and incubated in Hanks balanced salt solution (Hbss) at 37 °c for 30 minutes (*Thompson 1977 and Kumaratilake et al .. (1983)*). Then, they were stained with acetic acid alum Carmine. (Technical bull. No. 18. 1979. Manual of veterinary parasitological laboratory techniques 79.

Morphological studies according to criteria outlined by (*Rauseh and Bennstein ( 1972 )* and (*Thompson et al; 1984*).

**RESULTS**

**Table (1):** Prevalence of infection with *Fasciala* spp. among slaughtered ruminant animals.

Animal spp	No. of examined animals	No. of infected animals	Percentage of infection
Cattle	3456	600	17.3 %
Buffaloes	4993	1052	21.07 %
Sheep	962	92	9.5 %
Goats	96	19	19.7 %
Camels	20	0	0 %

**Table (2):** Prevalence of infection with Fasciala spp. among cattle and buffaloes according to age.

Age group of examined animals	Cattle			Buffaloes		
	No	+ ve	%	No	+ ve	%
1 – 12 months	56	3	5.3	208	16	7.6
1 – 2 years	1100	117	10.6	2400	218	9.0
2 – 5 years	1232	159	12.9	1285	322	25.0
Over 5 years	1068	322	30.1	1100	496	45.0
<b>Total</b>	<b>3456</b>	<b>600</b>	<b>17.36</b>	<b>4993</b>	<b>1052</b>	<b>21.0</b>

**Table (3):** Prevalence of Echinococcus cysts among slaughtered animals.

Host	No. of examined animals	No. of infected animals	Percentage
Cattle	3456	0	0
Buffaloes	4993	2	0.04
Sheep	962	0	0
Goats	96	0	0
Camels	20	10	50.6

**Table (4):** The size and distribution of Echinococcus cysts in the tissue of the organ and their shape.

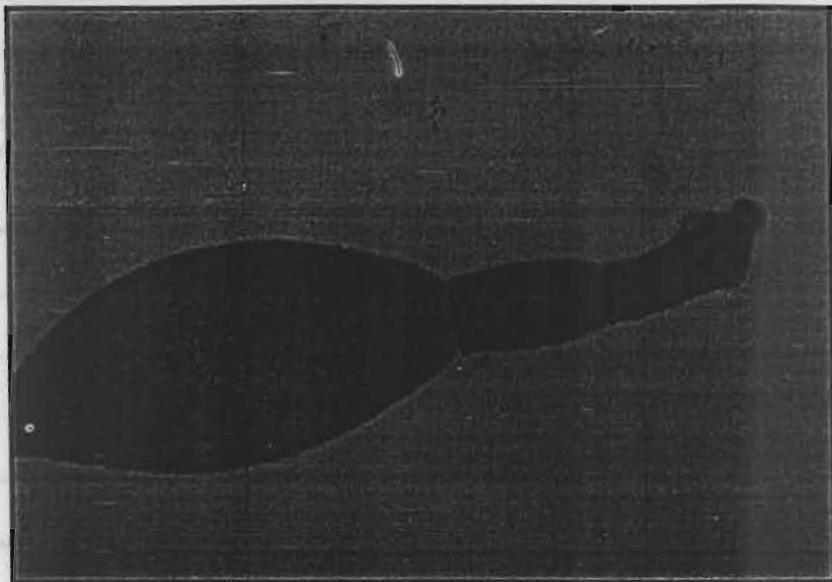
Animal	Organ	Size / m m	Distributin in tissue	Shape
Camel	Lung	5.46 – 193.44	In the parenchyma	Rounded oval variable
	Liver	2.4 – 92.3	On the surface and parenchyma	Round oval multilocular
	Spleen	2.49 – 40.77	Bulged from two surface	Rounded
Buffaloe	Lung	5.04 – 46.51	Embedded in lung tissue	Oval
	Spleen	16.49	On the surface	Oval

**Table (5):** The prevalence of cysticercus spp . among slaughtered animal.

Animal species	No. of examined animal	No. of infected animal	Percentage of infection
Cattle	3456	113	3.26
Buffaloes	4993	14	0.26
Sheep	962	112	11.6
Goats	96	8	8.3
Camels	20	-	0



**Fig .(1):** Echinococcus granulosus showing strobilocyst of 3 segments



**Fig . (2):** E.granulosus showing scolex + strobila of 2 segments (one mature and one gravid) + band.



**Fig. (3):** E.granulosus showing gravid segment with Lateral uterine pouches.

Morphological description of *Echinococcus granulosus* collected from infected dogs.

The whole worm measured 3.5 – 6.1 m mean  $5.15 \pm 0.9$  in length and each consisted of ascolex followed by a narrow neck and strobila being usually of 3 segments one immature, one mature and one gravid (Fig. 1). Worms consisted of a scolex followed by a narrow neck, one mature segment and one gravid ( Fig . 2).

The scolex was 238 – 318 u (mean 273 u) in length and with a prominent rostellum which was 98 – 136 (mean 119 u) in diameter it was provided with 2 rows of hooks an outer and an inner rows the total number of hooks ranged between 28 – 32 (mem 30). the suckers were Identical in shape where they are usually cup shape . the mature segment was longer than broad . the common genital pore located posterior to the middle of the segment . the cirrus sac was pyriform in shape . the ovary consisted of 2 well demarcated lobles connected by a thin isthmus and occupied the area between the junction of the middle and posterior third of the segment . the gravid segment was usually longer than broad 0.64 – 0.90 m m (mean 0.77 m m). the uterus appeared as an irregular elongated sac with 10 – 15 lateral pouches (Fig . 3).

## DISCUSSION

The present study was conducted in order to investigate helminth tissue parasites (*Fasciola* species, Hydatid cyst, and *cysticercus* spp. among slaughtered animals. Examination of 10752 slaughtered ruminant animals showed that the infection rate was higher than that mentioned by *Kenneth and Mauro (1978)*, *Dwinger et al. (1982)* *ueno et al (1982)* and *Purushothaman and Rajan (1986)* on the contrary the prevalence of Fascioliasis during present study was lower than that mentioned by

(*Vean et al. 1980*) *Sheikh et al. (1983)*. on the other hand *Sabarez et al (1981)* mentioned that there was no significant relationship between the age of animals and infection rate. (**Table 1**)

However the infection rate was higher in buffaloes than cattle where the Buffaloes in Egypt are water buffaloes and always in contact with infective stage on the water . (**Table 2**)

Also the prevalence of flukes was higher in females than males and that may be related to males kept in relative low number for fattening purposes so the chance of infection was very low. while females were kept for breeding in small flocks and most of them graze near channels where the snails were prevalent, *Mohamed (2001)*. in addition to *Abd EL-Ghani (1955)* mentioned that the low incidence rate of *Fasciola* species in Camels may be due to their feeding habits or other physiological reasons.

On the other hand the present study showed that the prevalence of hydatidosis was higher than that mentioned by *Hamed (1978)*, *El-Balkemy (1979)*, *Askalany (1981)* and *Jacoub (1988)*; but lower than that recorded by *Islam et al (1977)*. *Deka et al (1983)*, *Shaikh et al (1983)* and *Soad et al (1984)*. On the other hand *Afinding* which is similar to that recorded by *Insaf et al (1980)* and *Mohamed (2001)* who mentioned that the majority of the affection in lungs also *Awad (1981)* mentioned that the cysts were distributed in lungs, liver and spleen.

The dimension, size, distribution and shape of *Echinococcus* in the present study was almost the same of that mentioned by *Mansour (1979)*.

On the contrary with *Atabany (1982)* who observed that the shape of hydatid cysts from lungs was oval, spherical and of variable shapes,



variations in the shape, dimensions and size of hydatid cysts in the present study and other previous workers may be related to the age of cysts and age of the host. (Table 3,4)

While in *Cysticercus* spp. the incidence was higher than that mentioned by *Karim (1979)* and *Hoerchaner (1983)* but it is Comparable or slightly lower than that mentioned by *EL-sadik (1979)* and *Yacoub (1987)*. (Table 5)

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## نسبة الإصابة بطفيليات الأنسجة التي تصيب حيوانات اللحوم

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تعتبر الحيوانات المجترة في مصر من أهم الحيوانات التي يحصل منها الإنسان علي احتياجاته من اللحوم والألبان والجلود والأصواف. هذا ومن الأمراض التي تصيب هذه الحيوانات الطفيليات المختلفة ومن ناحية أخرى فقد اهتم كثير من الباحثين بدراسة الطفيليات المعدية المعوية لذلك وجد أن الطفيليات التي تصيب أنسجة حيوانات اللحوم تحتاج لمزيد من إلقاء الضوء عليها لذلك اشتملت الدراسة علي:

الديدان الكبدية وحوصلات الديدان الشريطية والحوصلات القنفذية المائية.

1- وكانت نسبة الإصابة بالديدان الكبدية 17.3 ، 21.07 ، 9.05 ، 19.7 % بين الأبقار والجاموس والأغنام والماعز علي التوالي.

2- وكانت نسبة الإصابة بحوصلات الديدان الشريطية فقد كانت النسبة 3.2 ، 0.026 ، 11.62 ، 8.3 % في الأبقار والجاموس والأغنام والماعز علي التوالي.

3- أما بالنسبة لحوصلات القنفذية المائية كانت 0.04 % في الجاموس ، 50.6 % في الجمال.

وقد أجريت دراسة مورفولوجية لدودة الاكينوكوكس جرابنولوزس البالغة في الكلاب (كعائل نهائي).

هذا وقد تم مناقشة الأهمية الصحية لهذه الطفيليات وحوصلاتها ومدى تأثيرها علي صحة الحيوان وكذا مدى خطورتها علي صحة المستهلك.