



## Moniezia expansa (Moniex, 1879) in camels (*Camelus dromedarius*) in central Iraq

Anisimova E. I.\* Al-Fatlawi M. A. A.\*\*

\*Scientific and Practical Center of the National Academy of Sciences of Belarus for  
Biological Resources, Minsk, Belarus

\*\*Department of Microbiology, College of vet. Med. , University of Al-Qadissyia, Iraq  
[anis-zoo@yandex.ru](mailto:anis-zoo@yandex.ru)

### Abstract:

This survey was carried out to determine the prevalence of intestinal cestodes in the small intestine of camels in Diwania and Najaf province in the central region of Iraq. A total of 47 camelus dromedarius were examined in September and October 2012. 27.65% of camels harboring *Moniezia expansa*. 13 and 34 camels were examined in Diwania and Najaf abattoir, 2 and 11 of them have *Moniezia* with infections rate 15.38% and 32.35% respectively.

September appear highly infections rate (33.33%) than October (23.07%), during examination 21 and 26 camels in these months.

Infections rate were highly in female (30.55%) than male (18.18%). Rate of infection increase with age, first G1 was (0%), G2 (23%) and G3 (38.88%).

*Moniezia* burden arrange from 1- 7, with mean number 2.9 worm\infected camel.

### شريطية *Moniezia expansa* (Moniex, 1879) في الجمال ذات السنم الواحد (*Camelus dromedarius*) في وسط العراق

أنيسيموفا ألينا أيفانوفنا\* منير عبد الامير الفتلاوي\*\*

\*المركز العلمي التطبيقي في أكاديمية العلوم الوطنية البياروسية للأبحاث البيولوجية، منسك، بيلاروسيا  
\*\*فرع الاحياء المجهرية، كلية الطب البيطري، جامعة القادسية، القادسية، العراق

### الخلاصة:

أجري هذا المسح لتحديد انتشار شريطية الامعاء الدقيقة في الجمال المذبوحه في مجزرة الديوانية والنجف في منطقة وسط العراق، كون لم يعثر على دراسته تطرقت الى انتشار هذه الشريطية في الجمال في العراق. 47 جمل من ذات السنم الواحد فحص خلال شهري ايلول وتشرين الاول لعام 2012. 27.65% منها كانت مصابه بشريطية الـ *Moniezia expansa*. 13 جمل فحص في مجزرة الديوانية كانت 15.38% منها مصابه بالشريطية و 34 جمل فحص في مجزرة مدينة النجف بلغت نسبة الاصابه فيها 32.35%. اظهر شهر ايلول ارتفاع نسبة الاصابه (33.33%) مقارنة مع شهر تشرين الاول (23.07) خلال فحص 21 و 26 رأس من الجمال على التوالي. ارتفعت نسبة الاصابه في الاناث (30.55%) مقارنة مع الذكور (18.18%). ارتفعت نسب الاصابه طرديا مع تقدم عمر الجمال المفحوصه من 0% الى 38.88% للفئات العمرية الاولى والثالثة. تراوحت اعداد الشريطية المعزوله من 1-7 في الجمال المصابة وبمعدل 2.9 شريطية للجمل المصاب، وبلغ مجموع عدد الشريطيات 38.

### Introduction:

The camel has been considered a high economic value by providing meat, milk and wool as well as transportation and labor, the meat is of good quality especially in areas where other meat animals find it difficult to thrive, and the milk quality is of comparable quality to cattle and it provides milk for longer duration compared to other similarly domesticated animals (1).

There are two known species of camels:

1. *Camelus bactrianus* (the two humped camel)
2. *Camelus dromedarius* (the one humped camel) which is also called the trade camel or Arabian camel (2).

*Camelus dromedarius* gets its name from the Greek word *δορομος* meaning (running), and *Camelus bacterianus*, the Bactrian camel named after the area of Bactriana in Central Asia (3).

The camel is the most suitable domestic mammal for use in climatic extremes. Understanding and utilizing this special gift could lead to the development of camel breeding a reduction in human

starvation, pathogenic diseases have restricted their full utilization (4). Gastrointestinal helminthes injure their hosts by a wide variety of mechanisms, mainly reduction in voluntary food intake, loss of productivity and diarrhea. However, the clinical manifestation of helminthiosis is subclinical or asymptomatic in which animals appear normal but are performing at below their full potential (5). Parasitism has been introduced as one of the major problems affecting the productivity and performance of camels (6), It has been suggested that regular anthelmintic treatment increases the productivity of camels (7).

Mukhwana and Mitema, (8) found that the most frequent cestode was *Moniezia* in dromedary camels in Kenya. In Saudi Arabia *Moniezia benedini* was recorded for the first time in camels in Riyadh (9). Banja and Ghandour (10) showed that the occurrence of *Moniezia* spp in Saudi Arabia is very rarely. While Mohammed and Atta (11) not found *Moniezia* spp in camels in Sudan (Table 1).

**Table (1)** Epidemiology of *Moniezia* spp. In different countries.

No.	Researcher	Country	Rate of infections %	Any other minxed infections with <i>M. expansa</i>
1	Al-Ani et al, (12)	Jordan	33	<i>Trichostrongylus, Ascaris, Nematodirus, Cooperia.</i>
2	Anwar and.Hayat,(13)	Pakistan	22.5	<i>Moniezia expansa, Moniezia benedni, Stilesia globipunctata, nematodes, trematodes</i>
3	Mohamad, (14)	Iran	12.3	<i>Nematodirus, Trichostrongylus, chabrtia, oesophagostomum, Trichuris, Stilesia.</i>
4	Radfar, et al., (15)	Iran	5	<i>Haemonchus, trypanposoma, hydatid , cephalopina.</i>
5	Omer et al, (16)	Sudan	0	<i>Trichostrongylus, trypanosome.</i>
6	Farooq, (17)	Pakistan	3	<i>Nematodirus, Trichostrongylus, oesophagostomum, Trichuris, Stilesia.</i>
7	Borji et al, (5)	Iran	3	<i>Trichostrongylus, Trichuris, Nematodirella, Cooperia, Stilesia AND Haemonchus.</i>
8	Bamaiyi and Kalu,(18)	Nigeria	1.9	<i>Coccidia, Trichuria, Ascaris, Balantidium.</i>
9	Tajik et al, (19)	Iran	28	<i>Nematodirella, Trichuris, Marshallagia, Strongyloides, in Bactrian camel.</i>
10	Farooq, et al, (20)	Pakistan	3	<i>Haemonchus, Trichostrongylus, oesophagostomum, Trichuris, Avitellina, cooperia, Nematodirus.</i>

The gastrointestinal helminth parasites adversely affect the nutritional status of the animals (21), whereas the ectoparasites harm the camel due to their parasitic nature and serve as a vector for transmission of a wide variety of pathogens (22).

The study of the parasite species occurring in a host is of paramount importance for planning an efficient control program and to prevent economic loss due to parasitic infection. So, the present study was designed to provide preliminary information on the prevalence rates of cestodes in camels in Iraq.

#### Material and methods:

This study was conducted on 47 dromedaries of different age and sex slaughtered in the Diwania and Najaf abattoir, in the central area of Iraq during September and October 2012. After slaughtering the dromedaries, samples (abomasum, small and large intestine) were collected directly from the carcass and placed in plastic container. Shortly

before and following slaughter, the entire carcasses were inspected. Any lesion, of any origin, was carefully examined and photographed, and samples from it were submitted for parasitological examinations. The samples were preserved in ice during transportation to the parasitology laboratory in veterinary college in Al-Qadissiya University and examined within 2 h after sampling.

Each part was cut longitudinally and the mucosa examined and scraped carefully to remove any adhering worms. The contents of each part were washed into a tray using tap water. The entire washings of the abomasums, and the small and large intestines were completely examined to find the parasites. Identification and counting was conducted based on (23).

#### Results:

Overall, 47 camels were sampled and 13 cases (27.65%) were found positive for *Moniezia expansa* in their small intestine (Figure 1, 2)(Table 2).

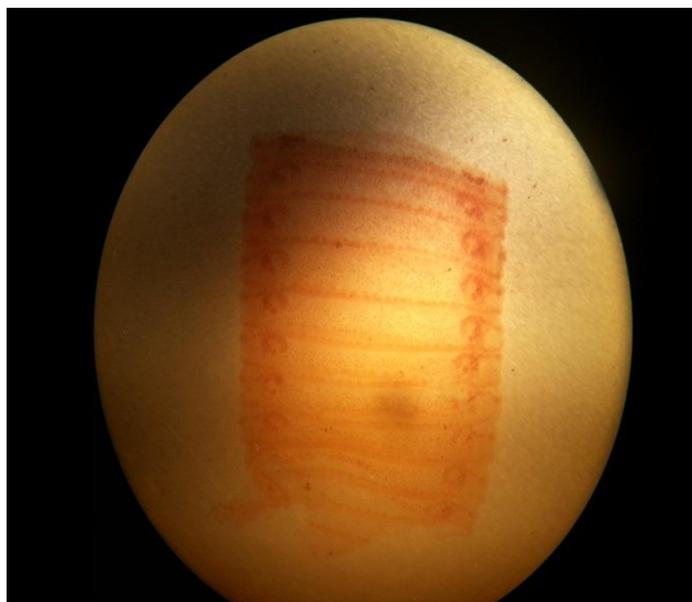


Figure (1) mature segments of *Moniezia expansa*.

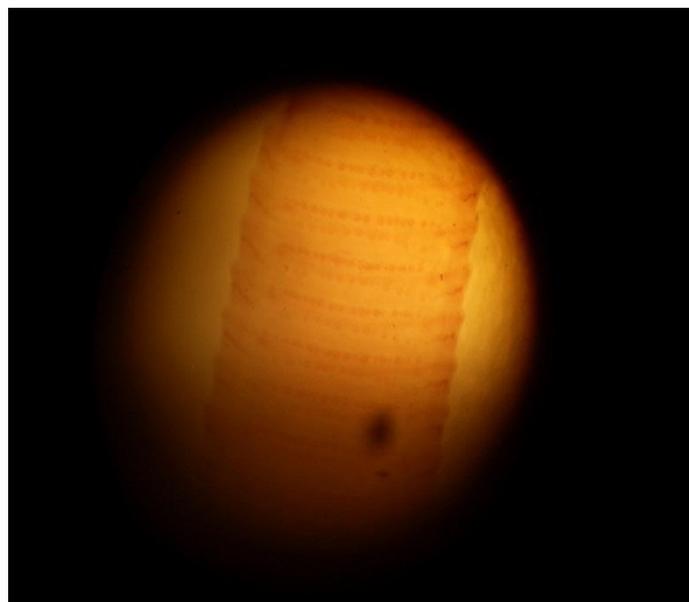


Figure (2) immature segments of *Moniezia expansa*.

**Table (2)** showed the percentage of infections according to province and months of study.

Province	September			October			Total		
	No. of examined camels	No. of infected camels	Rate of infections %	No. of infected camels	No. of infected camels	Rate of infection %	No. of examined camels	No. of infected camels	Rate of infections %
Diwania	6	1	16.66	7	1	14.28	13	2	15.38
Najaf	15	6	40	19	5	26.31	34	11	32.35
<b>Total</b>	21	7	33.33	26	6	23.07	47	13	27.65

Camels were divided into three groups according to their age as, G1 <2 years, G2: >2 and <5, and G3 >5 years. In the G1 group, consisting of 3 camels, none of the sampled camels was infected. In the G2 group, which consisted of 26 camels, six

camels were infected. In the G3 group, which consisted of 18 camels, parasites were recovered from 7 camels. The infection rate of the G3 group was significantly higher than the G1 and G2 groups (Table 3).

**Table (3)** showed infection according to sex and age.

Sex	<2			>2-<5			>5			Total		
	*	**	%	*	**	%	*	**	%	*	**	%
Male	1	0	0	2	1	50	8	1	12.5	11	2	18.18
Female	2	0	0	24	5	20.83	10	6	60	36	11	30.55
<b>Total</b>	3	0	0	26	6	23	18	7	38.88	47	13	27.65

\*Examined. \*\*Infected.

The number of *Moniezia expansa* ranged from 1-7 cestodes with mean number 2.9 cestodes\ infected camels (Table 4).

**Table (4)** showed the number of *Moniezia expansa* in the small intestine of infected camels.

Months	1-2 cestodes	2-4 cestodes	4 cestodes and more	Total
September	1	2	4	7
October	2	2	2	6
<b>Total</b>	3	4	6	13

## Discussion:

Parasitic infections are of big concern to camels in different parts of the world (12). Our study showed that camels in Iraq are infested with *Moniezia expansa*.

Approximately no studies have been conducted on the prevalence of *Moniezia* in dromedary (*Camelus dromedarius*) in Iraq. In the present work, we have carried out a 2 months abattoir survey aimed at determining the prevalence cestodes camel in the abattoir of Diwania and Najaf. From September to October 2012, abomasum, small and large intestine samples were collected from slaughtered camels. From

47 dromedaries examined, 13 were infected by *Moniezia expansa*.

According to our results, 27.65% of the dromedary camels were infected. The prevalence of *Moniezia expansa* in dromedary camels was more than the reported prevalence of 3% in the dromedary camel in Iran (5). And lower than what Al-Ani et al, (12) found in camelus dromedary examined in Jordan (33%). And agreement with what Tajik et al,(19) found in Irans camels (28%).

It seems that infection with the same parasites of sheep is due to grazing on

common pastures. Parasitic infection can affect the performance and productivity of camels or may even result in death (6). On the other hand, camels may have a role in the distribution of *Moniezia expansa* among other sheep, because although dromedary camels live in the desert regions Iraq with or near sheep flock, southwest of Iraq.

The infection rate of the G3 aged group (38.88%) was significantly higher than the G1 (0%) and G2 (23%) groups. This finding is in agreement with that of Tajik, et al.(19) in Bactrian camel in northwest Iran, which appear that the increase in age of the camels is associated with the increase in the chance of parasitic encounter.

Mixed infestations comprised of two or even three parasites present in the same camels were diagnosed (*Stilliezia* spp and *Ostertagia* spp.). These findings were in agreement with the findings of Selim and Rahman (24) in Egypt and Altaif (25) in Iraq.

The results of the current study showed that deworming of Iraq Dromedary camels using anthelmintics is necessary to increase the productivity of camels.

#### **Acknowledgment:**

The authors are grateful to staff which worked in Diwania and Najaf abattoir. And grateful to Dr. Noman Naji Aiz from the Department of microbiology, college of Veterinary Medicine, Al-Qadissiya University, Qadissiya, Iraq for his assistance.

#### **References:**

1- Kadim IT, Mahgoub O, Purchas RW.(2008) A review of the growth, and of the carcass and meat quality characteristics of the one-humped camel (*Camelus dromedaries*). *Meat Science*, 80(3):555-569.

2- Dorman EA.(1986) Aspects of the husbandry and management of the genus

*Camelus*. In: Higgins AJ, editor. *The Camel in Health and Disease*. London: Balliere Tindall, London; p. 3-20.

3- Higgins, N. 1984. *The camel in health and disease*. Bailliere Tindall, 5<sup>th</sup> ed., London, P13.

4- Bekele, T (2002). Epidemiological studies on gastrointestinal helminths of dromedary (*Camelus dromedarius*) in semi-arid lands of eastern Ethiopia. *Vet. Parasitol.*, 105: 139-152.

5- Borji, H.; Razmi, G.H.; Movassaghi, A.R.; Naghibi, A.G.H. and Maleki, M. (2010). A study on gastrointestinal helminthes of camels in Mashhad abattoir, Iraq. *Iranian Journal of veterinary Research*, 11(2): 174-179.

6- Anwar, A.H. & Khan, M.N. (1994). Parasitic fauna of camel in Pakistan. *Proc. 3<sup>rd</sup> Annual Meeting for Animal Production Under Arid Condition*, 2: 69-76.

7- Ballweber, L.R. (2009). Ecto- and endoparasites of New World camelids. *Veterinary Clinics of North America Food Animal Practice* 25: 295-310.

8- Mukhwana, E. J.; Mitema, E. S. (1995).Gastrointestinal helminths of camels (*Camelus dromedarius*) in northern Kenya. *Bulletin of Animal Health and Production in Africa*, V. 43 (3): 215-217.

9- Hussein, S.H. and Hussein, M.F.(1985) The prevalence and pathology of *Haemonchus longistipes* infection in Saudi Arabian camels (*Camelus dromedarius*). *Pro. Saudi Biological Society*, 8:247-257.

10- Banaja, A.A. and Ghandour, A.M. (1994) A review of parasites of camels (*Camelus dromedarius*) in saudi Arabia. *JKAU Sci.*, 6:75-86.

- 11- Mohammed, A.S. and Atta, A.M. (2001). The Gastro-intestinal parasites of some domestic animal species in Damazin District, Blue Nile state, Sudan. Sudan J. Vet. Sc. Anim. Husb., 40:99-106.
- 12- Al-Ani, F.K.; Sharrif, L.A.; Al-Rawashdeh, O.F.; Al-Qudah, K.M. and Al-Hammi, Y. (1998). Camel diseases in Jordan. Proceedings of the Third Annual Meeting for Animal Production Under Arid Conditions, Vol. 2: 77-92.
- 13- Anwar, M.; Hayat, C.S. (1999) Gastrointestinal parasitic fauna of camel (*Camelus dromedarius*) slaughtered at Faisalabad abattoir [Pakistan]. Pakistan Journal of Biological Sciences, v. 2(1): 209-210.
- 14- Mohamad, K.(2001). The Survey Of Intestinal Worms In The Slaughtered Cammels In Yazd Province. Yazd Agricultural and Natural Resources Research journal, 20(4):55.
- 15- Radfar, M.H., Ebrahimi Maimand, A. & Sharify, A. (2006). A report on parasitic infections in camel (*Camelus dromedarius*) of Kerman slaughter house. Journal of Veterinary Research, 61(2): 165-168.
- 16- Omer, M.M.; Ahmed, A.M. and Abusalab, A.(2007). A retrospective study on animal parasitic diseases diagnosis at Kassala veterinary research lab (KVRL), Eastern Sudan. Vet. Res., 1(3): 68-70.
- 17- Farooq,Z.(2009) prevalence of gastro-intestinal helminthes in some ruminant species and documentation of ethnoveterinary practices in Cholistan desert. Ph D thesis, facu;ity of science, University of Agriculture, Faisalabad, Pakistan.
- 18- Bamaiyi, P.H. and Kalu, A.U.(2011) Gastrointestinal parasites infection in one-humped camels (*Camelus dromedarius*) of Nigeria. Veterinary Research Forum. 2011; 2 (4) 278 – 281.
- 19- Tajik, J.; Moghaddar, N.; Nikjou, D. and Taleban, Y.(2011) Occurrence of gastrointestinal helminthes in Bacterian camel in Iran. Tropical Biomedicine, 28(2): 362-365.
- 20- Farooq, Z.; Mushtaq, S.; Iqbal, Z. and Akhtar, S.(2012). Parasitic Helminths of Domesticated and Wild Ruminants in Cholistan Desert of Pakistan. Int. J. Agric. Biol., V 14 (1): 63-68.
- 21- Irfan, M. (1984). Keynote address on effects of parasitism on livestock production. Pakistan Vet. J. 4: 25-27.
- 22- Pegram, R. G. and Higgins. A.J. (1991). A review of camel ectoparasites. Proc. 1st Intl. Camel Conf. UAE, P. 69-78.
- 23- Soulsby, E.J.L (1982). Helminths arthropods and protozoa of domesticated animals. 7th Edn., London, Bailliere Tindall. PP: 231-250.
- 24- Selim, M. K. and M. S. Rahman. 1972. Enteric nematodes of camels in Egypt. Egyptian J. Vet. Sci. 9: 75-80.
- 25- Al-Taif, K. I. 1974. Helminths in camels in Iraq. Trop. Anim. Health Prod. 6: 55-57.