



Research article

Moniezia benedeni in camels (*Camelus dromedarius*) in Iraq

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Abstract

The purpose of the herein study was to explore the infestation prevalence of the gastrointestinal helminths that affect Iraqi camels. For such reason, intestines from 120 camels obtained that were directly searched for the occurrence of such infestation. Among all samples, 15(12.5%) were recorded infected with *Moniezia benedeni*. 48 and 72 camels examined in Al-Diwaniyah and Najaf abattoir from September to December 2012, which have *Moniezia benedeni* 8.3% and 15.2% respectively. First and second age groups (G1, G2) showed a rate of infection at 12.5% and 11.5%, while the third group (G3) was 13%. Female appears highly infection a rate than male (13.6%, 9.4%). A number of isolated *Moniezia benedeni* were 1-6, with range 2.6 cestodes per infected camel. Measurement of *Moniezia benedeni* was 48.9 length and 2.76 cm width.

Keyword: *Moniezia benedeni*, Camels, Dromedarius, Iraq.

Introduction

In the areas of the world that are considered as desert-based environment, camels play important roles in serving the needs of various economic purposes. These purposes are ranged from supplying people with efficient sources of food, milk and meat, to a terrain-suitable and inexpensive way of transportation. An economic-destroying problem that facing the camel herds in the world is the high incidence of parasitic infestation (1). Wide ranges of creatures are susceptible to gastrointestinal helminthes and are strongly weakened by those parasites. High mortalities and economical-insufficient production are the main results that such parasitic infestations do. The most affected areas in the world by these helminthes are the tropical-based regions (2). These high mortalities and economic-destroying parasitism are linked to the wide-spread of nematodes (3-8). There are multiple effects that these helminthes could apply on the affected hosts which include but not limited to lowering of appetite, decreasing of nutrient

uptake, disturbance of gastrointestinal motility, and inefficient milk and meat productions. There are no clear clinical signs that are related to the parasitic infestation; however; the above-mentioned effects could be recognized (9). When look at the environment that camels live in; it would not be believable that these worms could cause infestation in such conditions. However, these conditions and their animals increase the incidence of infestation by 77 species (10). *Moniezia benedeni* is a tapeworm that causes low-incident infestation when compared to that for *M. expansa*. The infestation by this worm is more prevalent in Africa. Sub-acute or chronic catarrhal gastritis is the main condition that this worm could induce. To apply more and effective protection processes, epidemiological information should be available from different animal hosts to keep tracking these infestations. In order to introduce such efficient prevention criteria, spring-prophylactic treatment by anthelmintic



medicines advised to eliminate any opportunities for these worms to cause infestations. Increasing the effectiveness of any prevention protocols should follow merging between various procedures such as the use of anthelmintic medicines, feeding-based criteria, bio-controlling applications, and vaccination-related programs (11).

However, the incorporation between increasing resistance of these worms against some anthelmintic medicines and lacking of effective protection protocols has led for the incidence and the prevalence of the infestation by these worms to be elevated (12, 13), Table (1).

Table (1) epidemiology of *Moniezia benedeni* in camels around the world

No.	Researcher	Country	Rate of infection %	Notes
1	14	Ethiopia	31	
2	15	Saudi Arabia	First time record	Occasional
3	16	Egypt	First time record	
4	17	Pakistan	7.8	
5	18	Abu Dhabi	First time record	<i>Moniezia</i> Spp.
6	9	Iran	4	

It has been recognized that females have more infestation/tapeworm burden than that in males (19). On the other hand, workers have revealed that males have higher rates than females in the cases of severity of infestation (number of eggs in a fecal sample) and its prevalence (20). These rates might go down during the seasons of parturition and with increasing age of animals. Predisposing effectors such as weathered- and environmental-based conditions increase the rates of preserving eggs and or larvae and infesting animals by these parasitic agents. For such reasons, seasonal variations might be introduced to affect the infestation and prevalence rates (21). The intended aim of the current investigational study was to explore the infections of camels with *Moniezia benedeni*, and this is the first study in this direction in Iraq.

Results

Table (2) shows the collected results that are related to the infestation rates. The total rate of *Moniezia benedeni* was 12.5%. In Najaf was highly infection rate (15.2%) than in Al-Diwaniyah (8.3%). September showed

Materials and Methods

Ethical approval

The Animal Ethical Committee of Veterinary Medicine College, University of Al-Qadisiyah, Iraq, has approved the present study under permission No: 338

For this study and from Al-Diwaniyah and Al-Najaf city slaughter houses, various ages and sexes of 120 dromedaries were engaged after slaughtering to obtain separated gastrointestinal parts via ligation processes and placed them in labeled containers. The collected samples were then iced-transferred to a Lab where they were processed within 2 hrs. after the collection of the samples. The process of Cestoda collection was mentioned in (22). In a brief, the collected parts of the gastrointestinal tract were open and searched for the presence of these tapeworms. The intestinal parts were also rinsed down into a tray to use the contents for further examination. Ethanol at a concentration of 10% was used to preserve the specimens for later examination.

14.3%, October was 14.7%, November 11.11% and December lowest infection rate (10.3%) Figures (1) (2). Differences between aging groups appear highly infection rate in third age group (5 year and more) (13%) than



first and second age groups (less than 2 years and 2 to less than 5 years) (12.5% and 11.4%) Table (3). Female has highly infection rate (13.6%) than male (9.4%) Table (4). Number of cestodes were arranged

from 1-6 and with mean 2.6 *Moniezia benedeni* per infected camel Table (5). The measurement of *Moniezia benedeni* isolated in this study was 48.9*2.76cm Table (6).

Table (2) the rate of infections in camels with *Moniezia benedeni* according to months and provinces

No.	Months	Al-Diwaniyah			Al-Najaf			Total		
		Exam	Infected	%	Exam	Infected	%	Exam	Infected	%
1	September	6	1	16.6	15	2	13.3	21	3	14.3
2	October	14	2	14.3	20	3	15	34	5	14.7
3	November	16	1	6.3	20	3	15	36	4	11.11
4	December	12	0	0	17	3	17.6	29	3	10.3
Total		48	4	8.3	72	11	15.2	120	15	12.5

Table (3) the number of infected camels with *Moniezia benedeni* according to age

No.	Months	<2			>2-<5			5 and more			Total		
		Exam.	Inf.	%	Exam.	Inf.	%	Exam.	Inf.	%	Exam.	Inf.	%
1	Sep.	4	0	0	6	1	16.6	11	2	18.1	21	3	14.3
2	Oct.	5	1	10	10	2	20	19	2	10.5	34	5	14.7
3	Nov.	5	0	0	13	1	7.7	18	3	16.6	36	4	11.11
4	Dec.	2	1	50	6	0	0	21	2	9.5	29	3	10.3
total		16	2	12.5	35	4	11.4	69	9	13	120	15	12.5

Table (4) the rate of infections of camels with *Moniezia benedeni* according to sex

No.	Months	Male			Female			Total		
		Exam.	Infect.	%	Exam.	Infect.	%	Exam	Infect.	%
1	September	5	1	20	16	2	12.5	21	3	14.3
2	October	10	1	10	24	4	16.6	34	5	14.7
3	November	8	0	0	28	4	14.3	36	4	11.11
4	December	9	1	11.11	20	2	10	29	3	10.3
Total		32	3	9.4	88	12	13.6	120	15	12.5

Table (5) the number of *Moniezia benedeni* in the infected camels

No.	Months	1-2	3-4	5 and more	Total
1	Sep.	2	1	0	3
2	Oct.	3	1	1	5
3	Nov.	2	1	1	4
4	Dec.	1	2	0	3
Total		8 (53.3%)	5 (33.33%)	2 (13.3%)	15

Table (6) the length and breadth of isolated *Moniezia benedeni* from infected camels

No.	Months	10-30cm Length*breadth	31-60cm Length*breadth	61-96cm Length*breadth	Total Length*breadth
1	Sep.	2 (24.5*2.35cm)	1 (56*2.2cm)	2 (74.5*3.15cm)	5 (50.8*2.64cm)
2	Oct.	3 (24*2.83cm)	5 (46.8*2.92cm)	5 (76.2*2.74cm)	13 (52.8*2.6cm)
3	Nov.	4 (29.5*2.67cm)	5 (40.6*2.82cm)	5 (74.4*2.86cm)	14 (49.5*2.79cm)
4	Dec.	3 (24.6*2.63cm)	3 (36.6*2.76cm)	2 (69*2.7cm)	8 (40.2*2.7cm)
Total		12 (26*2.64cm)	14 (43*2.79cm)	14 (74.2*2.83cm)	40 (48.9*2.76cm)



Figure (1): *Moniezia benedeni* isolated from camels small intestine

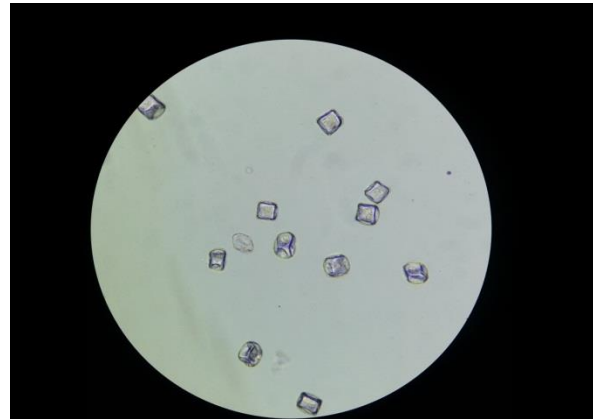


Figure (2): *Moniezia benedeni* egg from camels.

Discussion

To the best of our knowledge, the literatures indicated that there have been no studies that investigated the prevalence rates of gastrointestinal infestation by *Moniezia benedeni* in dromedary, *Camelus dromedaries*, of Iraq. Slaughterhouse-based survey was purposed to investigate the occurrence rates of gastrointestinal cestodes in the intestines of slaughtered camels from Al-Diwaniyah and Najaf cities. From 21 September to 11 December 2012, intestinal parts were separated by ligation and sent to a Lab. The rate of the infestation by *Moniezia benedeni* in these camels was 12.5%. This rate is considered as lower than that of (14)

in Ethiopian dromedaries 34%, but high than camels in Iran 4% (9), and Pakistan 7.8% (14). A possible explanation for this difference is that the immunological stat of camel different. The rates of infestation by these tapeworms might be varied according to different reasons such as age of animals. The severity and burden of infestation by these tapeworms were revealed to be the highest in young camels (19), and this could go back to the fact that older camels have more efficient immune responses, due to recurrent attacks of worms, than that in young camels (23).

References

- 1-Ibrahim MA, N Nwude, RA Ogunsusi, YO Aliu. Screening West African plants for anthelmintic activity. *ILCA Bull.*, (1984); 17:19-23.
- 2-Waller PJ. Anthelmintic resistance and the future for roundworm control. *Vet. Parasitol.* (1987); 25: 177-191.
- 3-Ashraf M. Some pathological studies of lungs and regional lymph nodes in sheep and goats. M.Sc. Thesis, Dept. Vet. Parasitol. Univ. Agriculture, Faisalabad, Pakistan. (1985).
- 4-Kochapakdee S, W Pralomkarn, S Choldumrongku, S Saithanoo. Change in live-weight gain, blood constituents and worm egg counts in Thai native and crossbred goats raised in village environments in southern Thailand. *Asian-Austral. J. Animal Sci.*, (1995); 8: 241-247.
- 5-Perry BD, Randolph TF. Improving the assessment of the economic impact of parasitic diseases and of their control in production animals. *Vet. Parasitol.* (1999); 84:145-168.
- 6-Sykes AR. Parasitism and Production in farm ruminants. *Anim. Prod.*, (1994); 59: 155-172.
- 7-Irfan M. Effects of parasitism in lowering livestock production. *Pakistan Vet. J.*, (1984); 4: 25-27.
- 8-Iqbal Z, Akhtar M, Khan MN, Riaz M. Prevalence and economic significance of haemonchosis in sheep and goats slaughtered at Faisalabad Abattoir. *Pakistan J. Agri. Sci.*, (1993); 30: 51-53.
- 9-Borji H, Razmi Gh, Movassaghi AR, Naghibi AGh, Maleki M. A study on gastrointestinal helminths of camels in Mashhad abattoir, Iran. *Iranian Journal of Veterinary Research*, (2010); 11(2): 174-179.
- 10-Dakkak A, Ouhelli H. Helminths and helminthiasis of the dromedary. A review of the literature. *Rev. Sci. tech. Off. Int. Epiz.* (1987); 6 (1), 447-461.
- 11-Waller PJ. International approaches to the concept of integrated control of nematode parasites of livestock. *Int. J. Parasitol.*, (1999); 29: 155-164.



- 12-Chartier C, Soubirac F, Pors I, Silvestre A, Hubert J, Couquet C, Cabaret J. Prevalence of anthelmintic resistance in gastrointestinal nematodes of dairy goats under extensive management conditions in southwestern France. *J. Helminth.*, (2001); 75:325-330.
- 13-Leathwick DM, Pomroy WE, Heath ACG. Anthelmintic resistance in New Zealand. *New Zealand Vet. J.*, (2001); 49(6): 227-235.
- 14-Bekele T. Epidemiological studies on gastrointestinal helminthes of dromedary (*Camelus dromedarius*) in semi-arid lands of eastern Ethiopia. *Vet Parasitol.* (2002); 105(2):139-52.
- 15-Hussein SH, Hussein MF. The Prevalence and Pathology of *Haemonchus longistipes* Infection in Saudi Arabian Camels (*Camelus dromedarius*). *Proc. Saudi Biol.* (1985); 2:8.
- 16-Shalaby IMI, Amer SAM. Preliminary Molecular Identification of Two Helminthes (*Moniezia* sp. and *Paramphistomum* sp. In the Province of Taif, Saudi Arabia. *World Applied Sciences Journal* (2012); 17 (8): 986-991.
- 17-Anwar M, Hayat CS. Gastrointestinal parasitic Fauna of camel (*Camelus dromedarius*) slaughtered at Faisalabad abattoir. *Pakistan J of Biological Sciences*, (1999); 2(1):209-210.
- 18-Kayum A, Afzal M, Salman R. Gastrointestinal parasites in racing camels: Prevalence and evaluation of different methods of fecal examination. *Proc. Ist. Int. Camel Conf.*, Dubai, (1992); P. 85-87.
- 19-Maqsood M, Iqbal Z, Chaudhry AH. Prevalence and intensity of *Haemonchosis* with reference to breed, sex and age of sheep and goats. *Pakistan Vet. J.*, (1996); 124: 177-195.
- 20-Gulland FMD, M Fox. Epidemiology of nematode infections of Soay sheep (*Ovis aries* L.) on St. Kilda. *Parasitol.* (1992); 105(3): 481-492.
- 21-Silverman PH, Campbell JA. Studies on parasite worm of sheep in Scotland. I. Embryonic and larval development of *Haemonchus contortis* at constant conditions. *Parasitol.* (1959);49: 23-38.
- 22-Soulsby EJJ. *Helminths arthropods and protozoa of domesticated animals.* 7th Ed., London, Bailliere Tindall. (1982); PP: 329.
- 23-Silverman PH, Patterson JE. Histotrophic (Parasites) stages in *Haemonchus contortis*. *Nature* (London), (1960); 185: 54-55.