International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2017): 7.296

Effects of Camel Breed, Age and Season on the Prevalence of Intestinal Cestodes of Camels (Camelus dromedary) at Tumbool Slaughterhouse

Sijoud F. El Hassan*[1], Husna, M. El Bashei R[1], A. M. Majid[2], M.H.M. El Bashir[1]

[1]Tumbool Camel Research Center (TCRC) / Animal Resource s Research Corporation (ARRC), POB: 610 Street1, Building 6, Al-amar at, Khartoum, Sudan.
[21]National Camel Development Council

Corresponding author: eldifainatcrc[at]gmail.com

Abstract: ***This study was conducted to investigate the influence of camel breed, age and season on the prevalence of cestodes infecting small intestine of camels (Camelus dromedary) in Butana Area, Central Sudan. The whole contents of the small intestine were collected once immediately after slaughtering of the camels and brought to Tumbool Camel Research Center for processing the samples. Neither camel breed nor camel ages were found to have a significant linked difference in infection rates or worm burden. Infection rates among camel types and found to be 70%, 73.7%, 70% and 64% in Butana, Kassala, Saied and Western Sudan, respectively whereas their concise worm burden ranges as 6-7; 9-10; 15 and 7, respectively. However, samples collected during winter recorded comparatively high infection rate 81% followed by autumn 69.6% while lowest infection rate (61%) was recorded in summer.***

Keywords: camelus dromedary, cestodes, season, prevalence.

1. Introduction

Camel is a very hardy animal and anatomically as well as physiologically to harsh climatic conditions of desert nevertheless, it suffer constraints in improvement of camel health. The diseases cause substantial economic losses in terms of decrease in working capacity, growth and productivity. However the clinical manifestation of helminthiosis is subclinical or asymptomatic in which animals appear normal but are performing at below their full potential [1].In Sudan, infection may probably originate from grazing dry hay and wet grasses. As known, camels are browsers and used to consume leaves of Acasia spp. and other trees. However, due to extensive erosion of forests in many areas in the country, camels become compelled to feed on ground. This makes the exposure to eggs of helminthes parasites possible. In the Sudan surveys of camel's helminthes are rare and mainly available for nematodes, therefore, this research is the first attempt to survey intestinal cestode of camel in the butane region.

2. Materials and Methods

This study was conducted at Tumbool town in Butana plain area. It lies 150 km south of Khartoum. It is an important camel market in the Sudan. The whole contents of the small intestine were taken from 215 camels at Tumbool slaughterhouse during the period from December 2008 to November 2009. The basic information such as age, sex and breed were record for each animal. The contents were processed individually for identification and classification of intestinal cestodes. The camels purchased from different localities, Kassala, Saied, Western Sudan (Kordfan and Darfour) and Butana plains representing the different types of camel in the Sudan. Camels aged between 1.0 -15 years, the examined camels were 52 male and 163 female. Weekly 5-10 samples were taken from the slaughtered camels at Tumbool slaughterhouse.

Statistical analysis:

The Statistical program me used in analyzing data of this study is the Statistic Package of Social Science (SPSS version -21). Mean percentages were subjected to Chi-square test and significance considered at $P<0.05$.

Results:

The results of this study showed that out of 215 examined camels (Camelusdromedarius), 149 (69.3%) were infected with different intestinal cestodes. Identification of adult worms revealed the presence of seven different helminth parasites from the small intestine: Stilesia spp, Moniezia benedeni, Moniezia expansa, stilesiaspp Thyzaniesia giardi, Aviteillina ssp, Mesocestoides, Thyzanosoma actinoide. According to their localities the infection rates among examined camels are shown in Table (1) Out of 215 camels examined from the four different localities during the period of the study, in Butana area the total number of camels examined was107 out of them 75 (70%) camels were infected, 46 females and 29male camels. while in Kassala 38 camels were examined out of these 28 (73.3%) were infected, 20 females and 8 are males. In Saied area the total number of camels examined was17, out of these 12 (70%) were infected. The number of positive females was 12 and no male was infected. Camels from Western Sudan were 53 camels, out of these 34 (64%) were infected 33 are females and only one male camel was found infected. The worm counts recovered from camels coming from different localities are as follows: (501) worms in Butana (255) in Kassala, (240) in West and (184) worms in Saied camels (Table 2). Mean worm burden reach highest value in Saied camels (15.33), followed by that in Kassala camels (9.11), in West and

Butana camels the worm burdens are (7.6) and (6.68), respectively.

Table 1: Prevalence of cestodes and percentage in camels coming from different localities

Camels localities	No. of +ve female camels (N)	No. of +ve Male camels	Total No. +ve of camels (%)
Butana	46(67) 68%	29(40) 72.5%	75 (70.0%)NS
Kassala	20 (29) 68%	8 (9) 88%	28(73.3%)NS
Saied	12(16) 75%	0(1) 0%	12(70%)NS
West	33(51) 65%	1(2) 50%	34(64%)NS

NS: not significantly different (P>0.05)

Table 2: Worm total counts and mean burder/animal coming from different localities

Localities	Worm total counts	Mean burden/animal
Butana	501	6.68
Kassala	255	9.11
Saied	184	15.33
West	240	7.06
Total	1180	7.92

Table 3: The effect of age on infection rate and worm burden in camels

Age group	Total No. examined	No. of infected camel (%)*	Worm count	Mean burden
1-5 year	87	59(67.8%)ns*	472	8.0
6-10 year	96	68(70.8%)ns	462	6.7
11-15 year	32	22(68.8%)ns	246	11.18
Total	215	149(69.3%)ns	1180	7.9

- Percentage of infected out of no. examined * Ns not significant

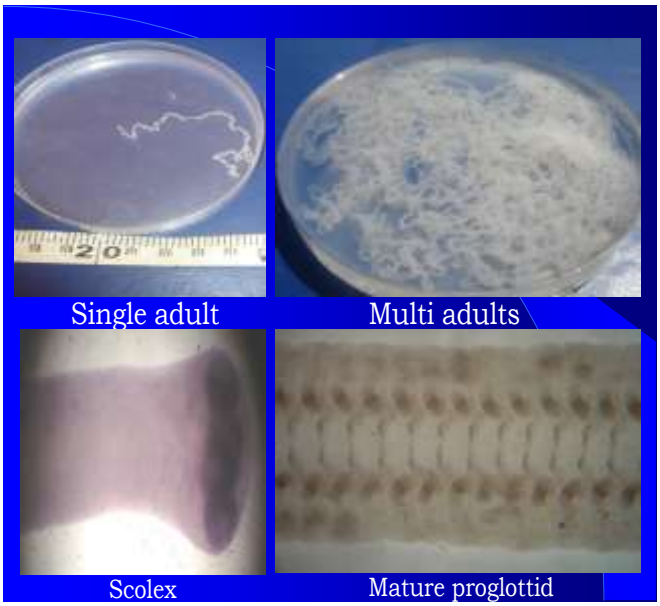
The analysis of infection of camels during all seasons do not recorded any statistically differences (P>0.05). From the 53 samples collected during the winter months, 43 (81%) were found infected which is comparatively higher than that found in autumn (69.6%) and summer (61%) (Table 4). The mean worm burden in winter and summer months are found to be 7.4 and 7.6 worms per head whereas, in autumn it is recorded as 8.7 worm s per head.

Table 4: The effect of season on infection rate and worm burden in camels

Season	No of examined camels	No of infected camels (%)*	Mean burden/animal	Minimum – maximum
Winter	53	43(81%)	7.44	1-100
Summer	72	51(69.6%)	7.63	1-71
Autumn	90	55(61.0%)	8.56	1-56
Total	215	149 (69.3%)	7.92	1-100

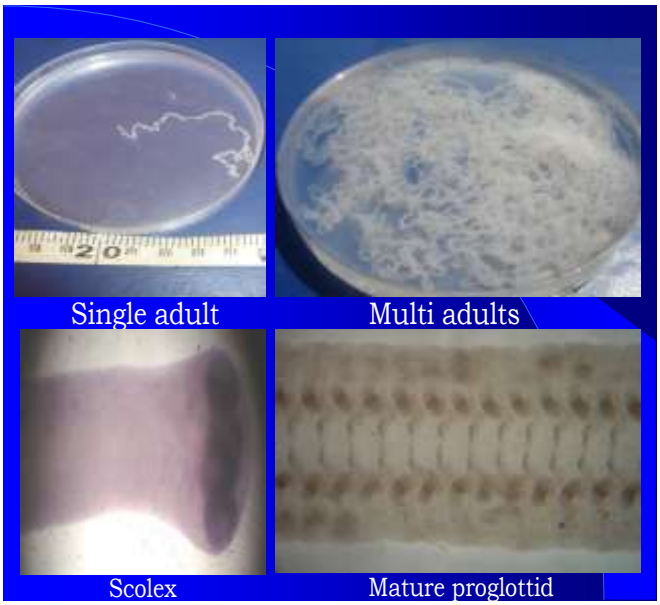
- Percentage of infected out of no. examined

1- Stilesia spp:



Adult are 45-60 cm long and up to 2.5 mm wide. Scolex with prominent suckers and broad neck rostellum is absent. Genital organs: single set. Genital pores: irregularly alternate, testes: 4-6 in number and lie lateral to the excretory canal on either side. Ovary: in poral half of the segment. Uterus: Dumb-bell shaped. Two par uterine organs per segment.

2- Stilesia spp:



Adult are 45-60 cm long and up to 2.5 mm wide. Scolex with prominent suckers and broad neck rostellum is absent. Genital organs: single set. Genital pores: irregularly alternate, testes: 4-6 in number and lie lateral to the excretory canal on either side. Ovary: in poral half of the segment. Uterus: Dumb-bell shaped. Two par uterine organs per segment.

The monthly total number of worms counts in camels at Tumbool slaughter house during December (2008) to January (2009) are shown in Table (2) the highest worm burden was found in March (178) worm, mean burden/ animal (16.18) then November (155) worms and mean worm burden/animal (12.92) while the lowest was recorded in January 21 worms with mean burden/ animal as (2.3).

Table 5: Total monthly worm burden in camel and mean of worm/camel

Month	No +ve (%)	Total worm count	Burden/animal
January	9 (%)	21	2.3
February	7	88	12.13
March	11	178	16.18
April	11	50	4.55
May	11	71	6.45
June	17	90	5.15
July	13	146	11.31
September	13	114	8.77
October	16	138	8.62
November	12	155	12.92
December	15	56	3.73
Total	149	1180	7.92

3. Discussion

The main camel zone in Sudan is a vast area separated into two regions, the Butana in the east enclosed by Atbara River, River Nile and Blue Nile the second one in the West including Darfur and Kordofan states. These two regions differ in their soil composition, temperature range, the amount and duration of rainfall and type of vegetation [2].In Sudan, infection may probably originate from grazing dry hay and wet grasses. As known, camels are browsers and used to consume leaves of Acasia spp. and other trees. However, due to extensive erosion of forests in many areas in the country, camels become compelled to feed on ground. This makes the exposure to eggs of helminthes parasites possible. In the present study (69.3%) of the examined camels at Tumbool slaughterhouse were found to harboring intestinal cestodes including seven species infecting more female camels (74.5%) than males. It is evident that most of the slaughtered female camels are moderately older and brought to be slaughtered as cull animals whereas, male camels slaughtered at Tumbool are mainly younger than 2 years old. This age factor maintain for long exposure to infection. [1] attributed this to stress of females due to pregnancy and lactation. Although there is no clue that males develop more resistance to some gastrointestinal helminthes .The current results showed that infection rates in examined camels are higher in winter season than others. Such high incidence of camel helminthes may be due to infections occurring during the rainy season where environmental conditions for pasture contaminations with egg are optimal in this season, whereas, higher mean worm burden/ animal in autumn (8.56) than in winter (7.44) and summer (7.63), were also reported by [3].In the present study it is obvious that high prevalent rate of intestinal cestodes recorded among camels coming from Kassala, (73.7%), followed by Butana and Saied (70%) while camels from Western Sudan had infection rate (64%). These regions differ in their soil composition, temperature, duration of rainfall and types of vegetations as stated by [2], so the increase infection in the East Sudan may be attributed to the presence of all factors necessary for the development of helminthes parasites such as optimum temperature and humidity, in addition to that, the camels in this area are being more grazers than browsers thus they are subjected to ingestion of the infective stage with grasses. The influence of age of camels in cestodes infections is not quite apparent in this study whereas, the mean worm Burden/ animal are higher in older animals than younger ones. This is may be due to relatively repeated annual exposure to infections. This variation can also be speculative and several possibilities may be considered one of which is that, adult camels were mainly females and in the lactation stage so it is possible as judged by the immunological response is suppressed in lactating camel, that become more vulnerable to gastrointestinal helimnths with respect to the immunological competence of the host and pathogenecity of the infection. Another possibility, is that, the owners do not wean young calves of camels and allow suckle up to one year, thus, this satisfactory milk intake could prevent the buildup of helminthes infections.

References

[1] Bekele, T. (2002). Epidemiological studies on gastrointestinal helminthes of dromedary Envirom (camelus dromedarius) in semi-arid lands of eastern Ethiopia. Vet. P
[2] Babiker, M. M. (1984). Abundance and economic potential of camels in the Sudan.J. Arid.. 7:377 – 394.
[3] Inas, A. E. (2003). Prevalence of gastrointestinal parasites of Camels; with emphasis on validation of different Techniques used for their diagnosis M. Sc. Thesis university of Khartoum