

# Prevalence of gastro-intestinal parasite in Donkeys in and around Maiduguri metropolis, Borno state, Nigeria

Direct Research Journal of Agricultural and Food Science (DRJAFS) Vol.3 (4), pp. 70-73, April, 2015

Available online at [directresearchpublisher.org/drjafs](http://directresearchpublisher.org/drjafs)

ISSN 2354-4147 ©2015 Direct Research Journals Publisher

## Research Paper

\*Sugun, M. Y<sup>1</sup>, Bresibe, F, <sup>2,3</sup>, Mailafiya, S<sup>2</sup>, Muhammad, M<sup>1</sup>, Suleiman, I<sup>1</sup>, Abechi, A. S<sup>1</sup>

<sup>1</sup>Bacteriology Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria.

<sup>2</sup>Departments of Veterinary Public Health and Preventive Medicine, University of Maiduguri, Nigeria.

<sup>3</sup>Faculty of Veterinary Medicine Department of Veterinary Microbiology. University of Abuja, Nigeria.

\*Corresponding Author E-mail: [sugunm@gmail.com](mailto:sugunm@gmail.com)

Accepted 31 March, 2015

One hundred and one fecal samples from donkeys in different locations within and around Maiduguri metropolis (Cattle market, Zoo and Dalori farm) were examined in order to ascertain the prevalence of gastrointestinal helminthes. Forty one (48.8%) of these infections were mixed, with the contribution of *strongyles* and *strongyloides* being highest (35.79%) and least was *dictyocaulus* and *strongyles* (1.2%). A total of 8 (11.4%) of the 70 infections in donkeys from cattle market were heavy (3+ and 4+), 2 (8%) and

7(21.2%) from the Zoo and Dalori respectively were also heavy. Donkeys examined from the cattle market had the highest frequency of gastrointestinal parasite infections 50(86.2%). And least frequency of infection was observed from the Zoo 16 (72.1%).

**Key words:** Gastrointestinal Parasites, Donkey, Maiduguri, Nigeria.

## INTRODUCTION

Donkeys (*Ass-Equus-assinus*) in Nigeria estimated at 7 million are mainly owned by low income earners and peasant farmers (Kyewalabye et al., 1988). The animal however, seem to receive little or relatively no Veterinary care. This is supported by records from the large animal unit of Veterinary Teaching Hospital, Ahmadu Bello University Zaria, Nigeria where in two years, 1995 and 1996 only one donkey was received in an area where there are many donkeys (Kyewalabye and Lawal, 1988). From the large animal unit, Veterinary Teaching Hospital of Maiduguri, no donkey was received from 1988 to 1995, following investigation from the records.

The donkey has been an example of unrestrained liberty, but in bondage after object slavery over laden, underfed and ill used. It was estimated that 55 million donkeys and mules serving key roles in the agricultural economy of the world (FAO, 1994).The heyday of the donkey and its near relative, the mule in the western

world was the 19<sup>th</sup> century, where in the united kingdom the poor man was used for all manner draught purposes (Soulsby, 1986). The sore footed servant have been constantly plagued by parasite throughout this long period of servitude, however, only recently has there been an attempted to study this parasites and to establish what effect this parasitism have on the well being of donkeys. Nematode infection was the main problem reported in donkeys admitted to Veterinary clinics. A heavy internal parasite burden can adversely affect the health of a donkey particularly when it is called upon to work and as it is often the case, is undernourished and stressed (Sonja et al., 2000). The control of gastrointestinal and haemoparasites in horses and ponies, on the other hand, has been extensively studied throughout the world. Vast amount of money are spent each year for purchase of anthelmintics, Veterinary care and pharmaceutical research of horses which were

**Table 1.** Distribution of different species of parasites among young and adult donkeys.

Age Range	Strongyle	Strongly-loides	Ascaris	Anaploce-phala	Trichon-ema	Gastro-Discus	Paranoplo-cephala	Dictyocaulus	Total
	No (%)	No. (%)	No. (%)	No. (%)	No.(%)	No. (%)	No. (%)	No (%)	
Young 24	7 (29.1)	8 (33.3)	1 (4.16)	0 (0.0)	1 (4.16)	0 (0.0)	0 (0.0)	1 (4.16)	18
Adult 77	52 (67.5)	35(45.5)	9 (11.6)	4 (5.2)	5 (6.5)	2 (2.6)	2 (2.6)	1 (1.3)	110
Total 101	59 (58.4)	43(42.5)	10 (9.9)	4 (3.9)	6 (5.9)	2 (1.9)	2 (1.9)	2 (1.9)	128

Values in brackets are percentages of the various parasites in both young and adult donkey.

raised mostly for pleasure in developed countries, while donkeys, despite their key role in as labour force for millions of peasant families throughout the world, remain somewhat neglected, often abused and over laden with little attention being paid to their health. Horses and donkeys at all ages can be affected by gastrointestinal parasites, although the young are affected most severely (Fowler and Donald, 1986). Foals can infect themselves from the faeces of the dam only by means of infective larvae derived from egg in the dam's faeces, not by the eggs themselves. Older equines develop a high resistance and may carry heavy infection with severe effect, thus may be dangerous source of infection to younger animals (Soulsby, 1986).

However, there is paucity of information on the parasite of equine in Nigeria. It therefore became necessary to provide preliminary information on the gastrointestinal parasites of donkeys in and around Maiduguri metropolis owned mostly by peasant farmers and low income owners. This work is aimed at determining the prevalence of gastrointestinal in donkeys and will serve as a base line for more elaborate work.

## MATERIALS AND METHODS

Maiduguri, the capital of Borno State is located in north-eastern Nigeria and lies between latitude 11° 51'N and longitude 13° 05'E at an altitude of 354 m above sea level. This area is known for its

dryness, with Semi-arid Climate, Savanna or Tropical grasslands Vegetation, light annual rainfall of about 300-500 mm and the daily average temperature ranging from 22-35°C, with mean of the daily maximum temperature sometimes exceeding 40°C between March and June before the onset of the rains in July to September. It has mainly sandy loam soils (Arku et al., 2012). Samples were collected during both dry season (October to March) and (rainy season April to September). The abattoir market in Maiduguri serves as a focal point where animals (cattle, sheep goat etc) are brought from nearby villages for sale. The age and sex of the donkeys were determined before faecal samples were collected from these market donkeys and other donkeys from Dalori village behind the university, and those from the zoo area of the metropolis. The ages and the sexes of these donkeys were also determined. One hundred and one faecal samples were collected from donkey's per-rectum using polythene hand gloves. Each samples was labeled using details such as source, age, sex and general condition of animal for easy identification (Table 1). The samples were taken to the parasitology laboratory of University of Maiduguri for analysis. All samples were examined within twenty four hours after collection to avoid larval development. One gram of faecal sample was taken in to a clean spatula and was thoroughly titrated with pestle. Three hundred (300 mls) of water was slowly added and it was strained with a clean tea strainer in a clean plastic

cup and allowed to sediment for five minutes. The suspension was discarded gently and same quantity of water was again added and allowed to sediment for another five minutes. The process was repeated four times till the supernatant was clear. After discarding the supernatant two to three drops of sediment was taken with a Pasteur pipette on a clean glass slide. A cover slip was placed over it and the smear was examined under low power of the microscope for the different types of helminthes eggs. Intensity of infection was determined according to Benjamin, (1977).

## RESULTS AND DISCUSSION

One hundred and one faecal samples from donkeys were examined, out of which 84 (83%) were positive for different helminth eggs. Species most commonly found were *strongyles*, 59 (58%) and least incriminated were *Dictyocaulus 2* (2%), *Paranoplocephala 2* (2%) and *Gastrodiscus 2*(2%). Forty one (48.8%) out of the 84 infections were mixed. *Strongyle* and *Strongyloides* accounted for 30 (35.8%) of the 84 infection. Others were *Strongyles* and *Ascaris* 5(5.9%), *Anoplocephala*, *Ascaris* and *Strongyloides* 1(1.2%), *Trichonema* and *Strongyle* 3(3.5%). *Dictyocaulus* and *Strongyles* 1(1.2%). Donkeys from the cattle market had the highest frequency of gastrointestinal parasites infection. Out of the 58 faecal samples examined from the cattle market 50 (86.2%) were found positive for

**Table 2.** Parasites burden according age.

Young	Adult	Total
+13	71	84
-4	-64	
+11	6	17
-4	13	
Total	24	77
		101

$\chi^2 = 19.0$ , Total of parasites in the young, adult and grand total of parasites in both young and adult donkey.

**Table 3.** Parasites burden according to sex.

Sex	+ve	-ve	Total
Male	44 (15)	8 (15)	52
	43.2	8.8	
Female	40 (82)	9 (18)	49
	40.8	8.2	
Total	84 (83)	17 (17)	101

$\chi^2 = 0.16$ , Values in the brackets are the calculated values used in 2 by 2 chi square ( $\chi^2$ ).

observed in the zoo donkeys, out of 22 faecal samples 16 (72.7%) were positive for helminthes eggs. Out of 21 faecal samples examined from Dalori village 18 (85.7%) were positive for helminthes eggs. Infection was more in older animals with 71 (92) out of 77 animals being infected (Tables 2 and 3). Out of 52 male donkeys 44 (85%) were positive for helminthes eggs. This result was comparable with the 40 (82%) positive result observed in 49 female donkeys (Table 3). Eight (11.4) of the 70 infection in donkeys from the cattle market were heavy (3+ and 4+), and 62 (88.6%) were of mild infection (1+ and 2+). Seven (21.2%) of the 33 infection in donkeys from Dalori village were heavy (3+) and 26 (78.8%) were of mild infection (1+ and 2+). Strongyles and Strongyloides species were mainly responsible for infections with 57 (81.6%) of these being responsible for the 70 infection from the cattle market, and 16 (64%) being responsible for the 25 infection from the zoo, and 29 (87.8%) being responsible for the 33 infections observed from Dalori village. Most commonly encountered helminthes in this study were Strongyles and Strongyloides (Table 4). This is in agreement with the finding of Nwosu et al. (1990), while working in rural communities in Borno state.

The soil and climatic conditions were the same for both studies. Grabber, 1970, while working in Chad republic between 1954 to 1969 reported incidence of 84% helminthes infections in an unusually dry year in donkeys in which over 74% were Strongyles. Chad is an adjoining country to Maiduguri and has the same type of climate and soil. The 83% prevalence of helminthic infection in this study indicates the lack of proper Veterinary care of the animals and constitutes a serious challenge in area. It was confirmed from the owners that the donkeys were

**Table 4.** Percentage Distribution of positive species of parasites in the sampled areas.

Sampled area	Samples	Positive	Percentage positive %
Cattle market	58	50	86.2
Zoo	22	16	72.7
Dalori	21	18	85.7
Total	101	84	83.2

never dewormed nor had been treated and were kept under free range conditions. The result showed that the overall prevalence of helminthics infections in donkeys (83%) was lower than that reported by Okon, (1976), Ajayi and Ajayi (1983) in which 93.5% and 98% prevalence were reported respectively. This may be due to climatic difference between Ibadan, Jos and Maiduguri. The vegetation of Maiduguri is sahel savannah type with long dry season. Moreover samples were collected during dry season, during which larval migration was low. Helminth infection rates were significantly higher in adult than young animals ( $\chi^2 19.6$ ), the difference could be due to length of period of challenge by the parasite maternal immunity and therefore resist the infection or the young animals may become debilitated from the infection and die as a result of other infections. Infection encountered in male (83%) and female (82%) were comparable, and there was no significant difference in infection rates ( $\chi^2 0.16$ ). Controlling all gastrointestinal parasites in donkeys requires strategic dosing with ivermectin because of its efficacy against larvae. This regimen should be backed up by good stable hygiene, proper pastuer management, rotational grazing, isolation and immediate treatment of newly acquired animals, and regular faecal testing. Where such strategy is impracticable, dosing at six weekly intervals interchanging the various types of anthelmintics is advocated. Considering the socio-economic importance of donkeys in the society, the government should include the purchase of Veterinary drugs in the budget to cover both urban and rural communities. The government should also use the various media and provide extension workers to educate the public about the importance of regular deworming of donkeys and general Veterinary care of the animals.

## ACKNOWLEDGMENTS

The authors of this manuscript are grateful to the Executive Director, National Veterinary Research Institute (NVRI) Vom, Nigeria, Dr M.S Ahmed for granting the permission to publish this research.

## REFERENCES

Ajayi SA, Ajayi ST (1983). Incidence of blood and gastrointestinal

- parasite in domestic animals on Jos Plateau, Nigeria. In Proceedings National Workshop on Disease of Livestock and Poultry, held at NVRI Vom, pp.17-21.
- Arku AY, Musa SM, Mofoke AE (2012). Determination of water requirements for irrigating hibiscus (*rosa sinensis*) in maiduguri metropolis. *Journal of Applied Phytotechnology in Environmental Sanitation*, 1:37-42.
- Benjamin MM (1977). Outline of Veterinary Clinical and Pathology in Tanzania. *Bull. Anim. Health Produc. In Arica*. 3, 299-306.
- FAO (1994). In svendsen E.D (ed): The professional handbook of the donkey. The donkey Sanctuary, England pp.4-5.
- Fowler JN, Donald HB (1986). Parasites in U.K Donkeys. In svendsen E.D. (ed); The professional Handbook of the Donkey. The Donkey sanctuary England, Pp 77-90.
- Grabber (1970). Helminth and helminthiasis in domestic equines in Chad. *Rev. Dev. Med. Pays. Trop.* 23:207-222.
- Kyewalabye KE, Lawal EA (1989). Babasia equi and Typanosoma vivax infection in donkeys. *Rev. Elev. Med. Vet. Pays Trop* 42:205-207.
- Kyewalabye KE, Kwari HD, Ajayi MO, Shingu P (1988). Clinical parameters of donkeys before and after *Trypanosoma vivax*. *Rev. Elev. Med. Vet. Pays. Trop* 41: 265-267.
- Nwosu CO, Strivastava GG, Abdullahi ANG (1990). Helminth parasites of equines in Borno state, Nigeria. *Trop. Anim. Prod.* 1:9-13.
- Okon ED (1976). Helminth parasites of Horses in Ibadan Nigeria. *Veterinary Medical Journal* 1: 32-34.
- Sonja M, Rosina CK, Susan AM (2000). Prevalence and Biodiversity of helminth parasites in donkey from South Africa. *The journal of parasitology*, 86:756-762.
- Soulsby E.J.L (1986). Helminth, Arthropods, and Protozoa of domestic animals. Bailliere Tindal, and Cassel Ltd London, pp.192-200.