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*Full Length Research Paper*

## **The Health Problems, Gastrointestinal and Blood Parasites Commonly Associated With Donkeys in the Upper East Region of Ghana**

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### **ABSTRACT**

The report on the disease conditions in donkeys in most West African countries is scanty in literature. This study was conducted to identify the health related problems including gastrointestinal and blood parasites of donkeys at the Bolgatanga livestock market in the Upper East region of Ghana from July to December, 2012. 190 donkeys comprising 86 females and 104 males were clinically examined while faecal and blood samples were aseptically taken from 60 donkeys. Faecal samples were processed using the floatation technique and examined using light microscopy for eggs of parasites while thin blood smears were stained in Giemsa and examined for the blood parasites. PCV was measured using a micro-hematocrit reader. Young donkeys weighed  $87.0 \pm 20.0$  kg, while adults weighed  $150 \pm 30.0$  kg. Out of a total of 190 donkeys examined, 73.0 (38.4%) were found to be clinically healthy while the common animal health problems identified included: Wound (18.6%), Emaciation (15.9%), Conjunctivitis (14.20%), Mange (11.5%), Respiratory disease (9.70%), Ascites (7.10%), Sarcoid (6.20%), Tetanus (4.40%), Skin nodules (3.50%), Diarrhoea (3.50%), Lameness (3.50%), Hoof problems (0.95%) and Dental disease (0.95%). Infection rate was 37.2% comprising single infections with strongyle (6.7%), *Eimeria* Spp (10.3%) while mixed infections of both parasites occurred in 20.2% cases. Trypanosome spp (3.33%) was the only blood parasite observed. This study reported for the first time, the major animal health problems commonly observed in donkeys in Ghana. It also revealed the need for a national policy on the control of some of the identified blood and gastrointestinal parasites of importance in donkeys in Ghana.

**Keywords:** blood, disease conditions, donkey, gastrointestinal, parasite, prevalence

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### **INTRODUCTION**

The donkey which belongs to the family equidae, species *Equus asinus* continued to be an important draft

animal which plays a major role in the transportation of farm produce, water and building materials in the rural areas of many developing countries in sub-Saharan Africa including Ghana. The donkey population in Ghana is estimated to be 13, 100 with the majority in the northern part of Ghana (FAO, 1997). Despite the

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economic importance of the animal especially to the rural populace, there is scanty information on the health status and welfare of donkeys in West Africa (Yakubu and Chafe 2008, Sow et al 2012). This investigation documented for the first time the health related conditions including gastro intestinal and blood parasites associated with donkeys in the Upper East region of Ghana.

## METHODOLOGY

### *Study Area:*

The study was conducted in Bolgatanga, the regional capital of the Upper East region of Ghana. It is located approximately 815 km from Accra, the national capital of Ghana. In the Bolgatanga market, a daily average of forty donkeys is brought for sale at the donkey section of the livestock market. These animals originate from other districts in the region as well from neighbouring countries such as Niger, Burkina Faso and Mali. The study period was from July to December 2012.

**Animals:** The study animals included a total of 190 donkeys brought for sale at the market comprising 86 females and 104 males. The live body weight for five young and five old donkeys was estimated by measuring the hearth girth and body length with a tape measure and matching to a normogram developed for working donkeys (Pearson and Ouassat 1996). Young donkeys were defined as those under the age of two years as determined by their dentition, while adults were above two years.

**Clinical Examination:** An average of 20 donkeys were randomly selected and clinically examined during each visit giving a total of 190 donkeys comprising 86 females and 104 males.

**Parasitological and Haematological Examination:** Faecal and blood samples were taken from 60 randomly selected donkeys with an average of 6 samples per visit. Faecal sample was collected aseptically from the rectum and placed into bill boxes.

The samples were stored in an ice chest and transported to the Central Veterinary Laboratory at Pong Tamale for analysis. : techniques was adopted by placing 10 gm faeces in a saturated solution of sodium chloride and the helminth ova observed under 10x 10 magnification under a light microscope (Urquhart et al 1996)

Blood samples collected aseptically from the jugular vein using heparinized capillary tubes and the packed cell volume (PCV) were determined by standard techniques and read using a microhaematocrit reader (Daclie and Lewis 1991). Thin blood smears were also made, processed, stained with Giemsa and examined under oil immersion light microscopy at 10 x 100 magnification for the identification of blood parasites (Soulsby 1982).

**Statistical Analysis:** Descriptive statistics was used for the disease conditions which were expressed in percentages. The worm burden and PCV of the infected was compared using Chi Square. The significance was placed at <0.05.

## RESULTS

### *Live Body Weight*

The average live body weight for young donkeys ranged from 70.0 - 115 kg while adults weighed from 115-180 kg.

### **Clinical Examination:**

Out of a total of 190 donkeys examined 73.0 (38.4%) were found to be clinically healthy. The remaining 117 donkeys suffered from a variety of conditions. These conditions included: Wound (18.6%), Emaciation (15.9%), Conjunctivitis (14.2%), Mange (11.5%), Respiratory disease (9.70%), Ascites (7.10%), Sarcoid (6.20%), Tetanus (4.40%), Skin nodules (3.50%), Diarrhoea (3.50%), Lameness (3.50%), Hoof problems (0.95%) and Dental disease (0.95%). Figure 1 showed some of the health related conditions observed which includes wounds, skin lesions and emaciation.

**Table 1:**

The average packed cell volume and parasite load of infected and non infected donkeys in the Upper East region of Ghana

Parasite groups	infected	Number of Donkeys	Average Packed Cell Volume	Gastro-intestinal parasites load
Strongles	4		28.8 ± 4.00	100 ± 0.00
Eimeria	7		28.7 ± 7.00	314 ± 64.0
Mixed infection	13		28.7 ± 3.00	<sup>©</sup> 492.3 ± 256.0 ; 661.5 ± 345
Strongles : Eimeria				
Non infected	34		29.0 ± 6.00	-
Trypanosomes	2		29.0 ± 4.00	-

means with superscript are significantly different ( $p < 0.05$ )



Figure A-I: Some of the disease conditions observed in the Donkeys at the Bolgatanga livestock market in the Upper East region of Ghana includes figures A-F with cutaneous wounds on the shoulder, neck, coronet, thigh, rump, flank. Figures G and H showed donkeys with skin lesion and facial cutaneous nodules respectively while figure I showed an emaciated donkey with prominent ribs.

**Faecal parasitological examination:**

The strongyles (6.70%), Eimeria 11.6% and mixed infections (strongyles and Eimeria) 21.7% were identified in the faecal samples. The mean eggs per gram (EPG) for single Strongyle infection was 100 while that of Eimeria was  $314 \pm 64.0$ . The EPG for mixed infection (strongyles and Eimeria) was  $492.3 \pm 256$  and  $661.5 \pm 345$  respectively as showed in the table 1.

**Haematological Examination:**

Trypanosome Spp was identified in 3.3% of the cases. The average PCV of the infected animals was  $29.0 \pm 4.00$  and the average value was not significantly different from the non infected group. The PCV of the single and mixed gastro intestinal parasitic infection

was not significantly different from the non- infected group as shown in Table 1

**DISCUSSION**

This study enumerates the various disease conditions often encountered in donkeys in Ghana. The common conditions includes wound (18.6%), emaciation (15.9%), conjunctivitis (14.2%), mange (11.5%), respiratory disease (9.70%), ascites (7.10%), sarcoid (6.20%), tetanus (4.40%), skin nodules (3.50%), diarrhoea (3.50%), lameness (3.50%), hoof problems (0.95%) and dental disease (0.95%).

The wounds were mainly bruises, bite wounds and other injuries associated with trauma. Often the wounds were localized in the head, neck, wither, girth, tail and flank regions as well as in the limbs. These wounds are suggestive of poor housing, harnessing, transportation

stress and lack of animal welfare practices as opined by Mekuria and Abebe (2010). The lack of appropriate veterinary attention to these wounds may be responsible for some cases of Tetanus (4.40%) observed in this study. These findings are similar to other reports that wounds and injuries are among the main health problems of donkeys (Saul et al 1997, Mekuria and Abebe 2010).

Another common health issue was emaciation, which may be due to malnutrition and helminthiasis. Often in sub Saharan Africa, not much attention is paid to prophylactic deworming of donkeys as done in ruminants and other food animals. Most of the anthelmintics on the market are not usually appropriate for equines, including donkeys.

The high prevalence of respiratory disease (9.7%) in this study calls for concern as some of the donkeys were presented with nasal discharges, coughing and respiratory distress. The need to evaluate the aetiology and transmission dynamics of respiratory infection in donkeys in Ghana is expedient.

Some of the cases of diarrhea may be due to helminthiasis. In this study, the predominant endoparasites were strongyles and Eimeria spp with most of the donkeys examined having mixed infection. The prevalence of strongyles corroborated the reports of other workers that helminthiasis is the major disease in donkeys (Ayele et al 2006, Siham et al 2008, Desalegne et al 2011, Zerihun et al 2011, Bogale, et al 2012). There is no significant difference in the PCV of the infected and non infected animals in this study despite various reports on the relationship between worm burden and anaemia. This could be related with worm burden observed which was lower in the Eimeria than that reported by Desalegne et al (2011) who reported a mean EPG 433.6 and 777.2 for strongyles and Eimeria spp respectively. Malnutrition could also play a significant role in the lower PCV observed.

Although this study did not establish a relationship between worm burden and body condition, Yoseph et al (2005) showed a direct relationship between the worm burden and the body condition (BCS) score of animals and it was suggested that a body condition score of 3 or less could be used as a simple means of identifying donkeys requiring anthelmintic treatment while such correlation was not established by Burden et al (2011) in Mexico.

The PCV values of non infected and infected donkeys in this study were lower than those reported by other workers in Nigeria (Yakubu and Chafe 2008) and Burkina Faso (Sow et al 2012). The lower PCV especially in infected donkeys is suggestive of persistent anaemia in some of the animals which could be associated with the trypanosomes and the strongyles observed in some, this observation was similar to

findings of some workers (Parsani et al 2011) that donkeys infected with strongyle had reduced PCV values, haemoglobin concentration and total erythrocyte count.

The percentage prevalence of Trypanosome Spp infection in this study is higher than that reported by Bedada et al (2012) in Ethiopia. The identification of the trypanosome to species level was not attempted in this study but *Trypanosoma brucei*, *T.evansi* and *T.equiperdum* are known to be the causative agents of Trypanosomiasis in donkeys (Ravindran et al 2008). This study documented for the first time, the major animal health problems commonly observed in donkeys in Ghana. It also revealed the need for a national policy on the control of some of the identified blood and gastrointestinal parasites of importance in donkeys in Ghana.

In conclusion, this study outlined for the first time, the major animal health problems commonly observed in donkeys in Ghana. It also revealed the need for a national policy on the control of some of the identified blood and gastrointestinal parasites of importance in donkeys in Ghana.

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#### REFERENCES

- Ayele G, Feseha G, Bojia E and Joe A (2006):** Prevalence of gastro-intestinal parasites of donkeys in Dugda Bora District, Ethiopia. *Livestock Research for Rural Development. Volume 18, Article #136*. Retrieved May 29, 2013, from <http://www.lrrd.org/lrrd18/10/ayel18136.htm>
- Bedada H and Dagnachew S (2012):** Study on the prevalence of donkey Trypanosomiasis in Awi zone north west Ethiopia. *Ethiopian Veterinary Journal*. 16 (2): 65-76
- Bogale B, Sisay Z and Chanie M (2012):** Strongyle Nematode Infections of Donkeys and Mules in and Around Bahirdar, Northwest Ethiopia *Global Veterinaria* 9 (4): 497-501, 2012 DOI: 10.5829/idosi.gv.2012.9.4.65180
- Burden F A, Du Toit N, Hernandez-Gil M, Prado-Ortiz O and Trawford A F (2010):** Selected health and management issues facing working donkeys presented for veterinary treatment in rural Mexico: some possible risk factors and potential intervention strategies. *Tropical Animal Health Production* 42(4): 597-605 doi: 10.1007/s11250-009-9462-0
- Desalegne A, Bojia.E and Ayele G (2011):** Status of parasitism in donkeys of project and Control areas in the central region of Ethiopia: A comparative study. *Ethiopian Veterinary Journal* 15(2): 45-55

- Food and Agricultural Organisation, FAO (1997):** .www.fao/agp/AGPC/doc/counprof/Ghana/Ghana.htm .Accessed 30<sup>th</sup> May, 2013.
- Fieding D and Kraus P (1998):** Donkeys CTA publication, Tropical Agriculturalist, Macmillan Publications
- Tefera M, Worku A, Tolosa T and Bitew M (2011):** Prevalence and Risk Factors for Donkey Babesiosis in and Around Debre Zeit, Central Ethiopia. *Veterinary Research* 4(2): 56-60
- Mekuria S and Abebe R (2010):** Observation on major welfare problems of equine in Meskan district, Southern Ethiopia. *Livestock Research for Rural Development*. Volume 22, Article 48. Retrieved October 23, 2013, from <http://www.lrrd.org/22/3meku22048.htm>
- Parsani H R, Momin R R, Lateef A and Das H (2011):** Haemato-biochemical alterations in helminths infected donkeys. *Wayamba Journal of Animal science* 112-114.
- Pearson R A. and Ouassat M (1996):** Estimation of the live weight and body condition of working donkeys in Morocco. *The Veterinary Record* 138: 229-233.
- Ravindran R, Rao J R, Mishra A K, Pathak K M L, Babu N, Sathesh C C and Rahul R (2008):** *Trypanosoma evansi* in camels, donkeys and dogs in India: comparison of PCR and light microscopy for detection. *Veterinarski Arhiv* 78(1): 89-94.
- Saul C, Siefert L and Opuda-Asibo J (1997):** Disease and health problems of donkeys: a case study from eastern Uganda. Proceedings of an ATNESA workshop, 5-9 May, Debre Zeit, Ethiopia. Pp 58-63
- Siham E S, Abdalla M A, Amel O B, Rabab M A (2008):** Investigation of major diseases affecting donkeys (*Equus asinus*) in Khartoum State-Sudan. Proceedings of the 13<sup>th</sup> Scientific Conference, Faculty of Veterinary Medicine , Assiut University, Egypt.
- Daclic S J V and Lewis S M (1991):** Determination of packed cell volume. In *Practical Haematology*. Churchill Livingstone, Medical Division of Longman Group UK Limited., 48-51
- Soulsby E (1982):** Helminths, Arthropods and Protozoa of Domestic Animals. 7<sup>th</sup> edition, 790p. Balliere Tindall, 1<sup>st</sup> Annes Road, East Bourne, East Sussex BN21
- Sow A, Kalandi K M, Ndiaye N P, Bathily A and Sawadogo G J (2012):** Clinical and biochemical parameters of Burkinabese local donkey breeds. *International Research Journal of Biochemistry and Bioinformatics* 2 (4): 84-89
- Urquhart G M, Armour J, Duncan J L, Dunn A M and Jennings F W (1996): *Veterinary Parasitology*. 2nd ed. 307p. Black Well Science Limited, London.
- Yoseph S, Smith DG, Mengistu A, Teklu F, Firew T, Betere Y (2005):** Seasonal Variation in the Parasite Burden and Body Condition of Working Donkeys in East Shewa and West Shewa Regions of Ethiopia. *Tropical Animal Health and Production*, 37 (1): 35-45
- Yakubu A S and Chafe U M (2008):** Haematological studies of donkeys in Sokoto state, Nigeria *Sokoto Journal of Veterinary Sciences*, 7 (1): 41-45.
- Zerihun A, Bersissa K, Bojia E, Ayele G, Tesfaye M and Etana D (2011):** Endoparasites of donkeys in Sululta and Gefersa Districts of Central Oromia, Ethiopia. *Journal of Animal and Veterinary Advances*, 10, (14): 1850-1854