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Prevalence of Gastrointestinal Parasites among the Trade Donkeys in Bauchi State, Nigeria

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ABSTRACT

A prevalence study was carried out to determine the gastrointestinal parasites among trade donkeys brought to the three major donkey markets of Alkaleri, Bauchi and Soro in Bauchi State, Nigeria. A total of 116 donkeys comprising of 69 Idabari, 24 Duni and 23 Auraki breeds were randomly selected and examined for gastrointestinal parasitic ova using flotation technique. The results of this study revealed that Idabari, had 39 (56.52%) cases of mixed infection, 8 (11.59%) cases of *Strongyloides,* 6(8.70%) cases of *Dictyocaulus*, while *Trichonema and Strongyles* were seen in 5(7.25%) and 4(5.80%) donkeys respectively. In the Duni breed 14(58.33%) had mixed infections, 2(8.33%) had *Strongyles* and 1(4.17%) had *Strongyloides* species. *Dictyocaulus* and *Trichonema* species were however not seen. On the other hand Auraki breed however, had mixed infections of 16(69.57%) and 3(13.04%) cases of *Strongyles* species while Strongyloides*, Dictyocaulus and Trichonema* species were seen as 1(4.35%) case each. The result further indicated that location and breed of donkeys did not play significant role ($p>0.05$) on the prevalence of infection. It was concluded that gastrointestinal parasites abound in all the three breeds of donkeys from the study area. The control by anthemintic medication and management would improve the welfare and performance of donkeys especially when the entire health and nutritional needs of donkeys were considered.

Key words: Prevalence, gastrointestinal parasites, trade donkeys

INTRODUCTION

As compared to other domestic animals, donkeys have received little or no attention from their owners and livestock development agencies in spite the fact that they are essential to the subsistence strategy of many communities in semi-arid regions Blench *et al*. (2004). Also despite the various functions of this animal in the rural economy, it is faced with a number of problems which have posed a challenge to its survival. The most common problem in donkeys, both biologically and economically, is infection with internal parasites in some parts of their digestive or respiratory system (FAO, 1992).

Parasitic nematodes directly affect the health and production of hard working and stressed equids, which in turn, results in the reduction of their work output and ultimately in the income of the owner and the community (Krecek *et al.,* 1998).Research about donkeys in Nigeria has not been wide and exhaustive and as a result the records of diseases, parasites and problems faced by this animal is very scanty most especially in the northern part of Nigeria where this animal is believed to be very numerous (Blench, *et al.* 2004). The aim of this study therefore, is to investigate the prevalence of various gastrointestinal parasites of donkey in the study area, with a view to raise awareness on the parasitic health management.

MATERIALS AND METHODS

Location of the study

The study was carried out in Bauchi State, Nigeria, located between longitude 9°0 3/N and 12° 30/N, latitude 8° 41/ and 11° 5/ E with an estimated landmass of 66,000 km^{2,} which is about 690.2 m above sea level. The mean temperature is about 32 to 39°C , while the mean annual rainfall ranges between 100 and 1009 mm, with a relative humidity of about 41%.

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The State is characterized by the two major Nigerian seasons; the dry and the wet seasons. The dry season starts in early October through April, while the wet season starts in early May through late September. The vegetation is characterized by open savannah woodland, with trees usually standing or in small groups with spaces in between (BSADP,2000).

Animals used

The 116 donkeys used for this study were sampled at random from Alkaleri, Bauchi and Soro donkey markets. The ages of the donkeys ranged from 2 years and above and were of both sexes. The breeds of the sampled donkey were determined by the use of their coat colour. Three breeds of donkeys were recognized as Auraki characterized by rust to red coat colour, Duni with black to dark brown colour and Idabari with grey to light brown coat.

Collection and examination of faecal samples

Faecal samples were collected directly from the rectum of each animal into clean disposable hand gloves. The samples were then transported to the Animal Production Laboratory in the School of Agriculture, Abubakar Tafawa Balewa University, Bauchi, Nigeria, for feacal analysis. Samples were processed and examined immediately on arrival .Gastrointestinal parasitic ova were examined by the floatation technique with saturated sodium chloride solution as the floating medium and the morphological identification of the parasitic ova was by the parasitological techniques (Soulsby, 1982).

Data analysis

The data generated from the studies were analyzed using simple descriptive statistic and chi square according to the method of Gomez and Gomez (1984).

RESULTS

Prevalence of gastro intestinal parasitic eggs of trade donkeys and the locations effect is shown in Table 1. Of the 116 donkeys sampled, 49 were from Alkaleri, 27 from Bauchi and 40 from Soro markets. The results of faecal sample analysis indicated that in Alkaleri 33(66.00%) donkeys had mixed infection, 6(12.00%) were infected with *Strongyles*, 5(10.00%) with *Trichonema*, 3(6.00%) with *Strongyloides* and 2(4.00%) with *Dictyocaulus*. In Bauchi, mixed infection encountered were 15(55.56%), 3(11.11%) were infected by Strongyloides, both Strongyles and Dictyocaulus accounted for 2(7.41%) each and Trichonema accounted for 0(0.00%) in the donkeys.In the donkey sampled from Soro market, mixed infection were encountered in 21(52.50%), while *Strongyloides, Strogyles, Dictyocaulus and Trichonema* infections were 1(2.50%), 4(10.00%), 3(7.50%), and 1(2.50%) donkeys respectively. The results of chi square analysis for the effects of location on parasitic eggs was not significant at $p<0.005$.

Table 1. Prevalence of gastrointestinal parasitic infections of trade donkeys according to location

Location	*Strongyle*	*Strongyloides*	*Dictyocaulus*	*Trichonema*	*Mixed	X^2
Alkaleri (n = 49)	6(12.00)	3(6.00)	2(4.00)	5(10.00)	33(66.00)	18.063
Bauchi (n = 27)	2(7.41)	3(11.11)	2(7.41)	0(0.00)	15(55.56)	Ns.
Soro (n = 40)	1(2.50)	4(10.00)	3(7.50)	1(2.50)	21(52.50)	
Total (n =116)	9(7.69)	10(8.55)	7(5.98)	6(5.13)	69(58.92)	

*Mixed infection= Two or more types of helminth ova. Ns = not significant ($p>0.05$)

Table 2 shows the prevalence of gastrointestinal parasitic eggs in trade donkeys and the effect of breeds. Of the 116 donkeys sampled, 69 were Idabari, 24 Duni and 23 Auraki breed of donkeys. Idabari, had 39 (56.52%) cases of mixed infection, 8 (11.59%) with *Strongyloides,* 6(8.70%) with *Dictyocaulus*, while *Trichonema and Strongyles* were seen in 5(7.25%) and 4(5.80%) donkeys respectively. In the Duni breed 14(58.33%) had the mixed infections, 2(8.33%) *Strongyles* and 1(4.17%) *Strongyloides* species. *Dictyocaulus* and *Trichonema* were not seen. Auraki breed however, had mixed infections of 16(69.57%) and 3(13.04%) cases of *Strongyles*.while *Strongyloides, Dictyocaulus and Trichonema* were however not encountered seen as 1(4.35%) case each. The result of the Chi square analysis for breeds was not significant.

DISCUSSIONS

The overall infection rate from the all location was 86.32%. This figure is very high and might be associated with the fact that these donkeys brought to the market may be those animals curled from the main herd of the owners of these animals probably due to age, poor performance and possible signs of ill health which these donkeys might

have shown. Eysker *et.al*. (2008) reported high worm burden in aged donkeys and attributed it to decline in immunity. Wells, *et al.* suggested that level of helminth infections in donkeys could be positively correlated with level of management and stresses. This may be responsible for the non statistical significance between Alkaleri, Bauchi and Soro markets. The high rate of *Strongyles* infection agrees with the works of Eysker and Pandey (1987) and Matthee *et al.* (2002) who reported *Strongyle*s' eggs and larvae as the most abundant in the faeces of donkeys and in their larval cultures. A similar observations were also shown by Eysker and Pandey (1987) and Wells *et al*. (1998).

Table 2. Prevalence of gastrointestinal parasitic infections of trade donkeys according to breeds

	Parasitic ova (%)					
Breed	*Strongyle*	*Strongyloides*	*Dictyocaulus*	*Trichonema*	*Mixed	X^2
Auraki (n = 23)	3(13.04)	1(4.35)	1(4.35)	1(4.35)	16(69.57)	24.996
Duni (n = 24)	2(8.33)	1(4.17)	0(0.00)	0(0.00)	14(58.33)	Ns.
Idabari (n = 69)	4(5.80)	8(11.59)	6(8.70)	5(7.25)	39(56.52)	
Total (n = 116)	9(7.69)	10(8.55)	7(5.93)	6(5.13)	69(58.92)	

*Mixed infection= Two or more types of helminth ova. Ns = not significant ($p>0.05$)

The breeds in this study did not significantly affect the prevalence of parasitic eggs identified. This may be suggestive that breed of donkeys studied might have similar management background with relates to nutrition and probably genetic makeup or immunity against the egg shed by this parasites. It was earlier reported by Thomas and Melanie (1999) that immunity and nutrition are directly related therefore high worm burden is always expected in malnourished donkeys and horses. The environmental conditions and management practice of donkeys in developing countries encourage helminth diseases FAO (1992).

In conclusion gastrointestinal parasites were a bound in all the three breeds of donkeys from the three locations. The control and management of these parasites will go a long way in improving the welfare and the performance of donkey. Enlightenment on the health and nutritional needs of donkeys should also be encouraged.

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