COMPARATIVE STUDY OF GASTRO-INTESTINAL HELMINTHS IN FAECAL SAMPLES OF SAVANNA BROWN GOATS RAISED SEMI-INTENSIVELY IN MINNA, NIGERIA

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ABSTRACT

This study was carried out in order to compare the prevalence rates of gastrointestinal helminths in savanna Brown Goats of different age groups managed semi-intensively in the Livestock Research Farm of the Federal University of Technology, Minna, Nigeria. Fifteen goats were assigned into three different age groups comprising of five goats each. faecal samples were analysed using floatation and sedimentation techniques for over a period of 12 weeks in order to detect the presence of nematodes, cestodes and trematodes respectively. Result showed Strongloides papillosus and Haemonchus contortus to have highest prevalence rate of 39.3% and 42% respectively in kids and goats aged 6 - 12 months. Fasciola gigantica had the highest prevalence rate of 11.5% in adult goats above one year while Bunostomum trigonocephalum and Fasciola gigantica were not found in the faecal samples of kids. It is recommended that strategic control programmes for different age groups of goats is imperative towards eradication of gastrointestinal helminths for improved production.

INTRODUCTION

Goats are hardy browsers that survive despite poor nutrition and management; consequently they constitute an important source of essential proteins in many poor regions. However, gastrointestinal parasites are problems militating against their productivity (Radostits *et al*., 2000). Due to parasitism, the animal becomes susceptible to other health problems which can lead to death. Goats harbour a variety of gastrointestinal parasites, some of which are shared by other species of animals. Helminths are the most important gastrointestinal parasites that affect the growth as well as production of the animal. Gastrointestinal nematodes of *Trichostrongyloides* family are perhaps the most important parasites of small ruminants world wide, causing significant morbidity and loss of production (Pawel *et al*., 2004).

The effects of helminths infections on production of particular livestock species depend mostly upon the age of the animals, the breeds, the parasite species involved and the intensity of the worm population within the definitive host (Urquhart *et al*., 1996). Several factors are known to determine the epidemiological patterns of the associated disease conditions. These include weather conditions, husbandry practices and the physiological status of the animal e.g peripaturient rise in nematode egg output (Cheijina and Fakae, 1984; Chatier, 1991). These parasitic agents exert negative influence on goats and other farm animals in various ways. Animals may succumb as a result of heavy parasitic infection especially in circumstances where infections is accompanied by malnutrition and general poor management (Urquhart *et al*., 1996). According to Debela. (2002), gastrointestinal worms in goats cause economic and nutritional hardship in poor farming communities. It is in the light of this that this study seeks to determine the prevalence rate of gastrointestinal helminths in goats of different ages and also to provide pertinent epidermiological information for designing strategic helminths control programmes for goats.

MATERIALS AND METHODS

Study Area: This study was carried out at the Research Farm of Federal University of Technology, Minna, Gidan Kwano Campus in Bosso Local Government Area of Niger State, Nigeria, which is located in the Southern Guinea Savanna zone. Minna has a land mass of 28.5km square and lies between longitude 6° 33°E and latitude 9° 37°N with an average temperature range of 18-39°C and a mean monthly rainfall of 1300 mm (Student's Handbook, 2007).

Experimental Animals and Management: The herd used consist of 25 savanna Brown goats, which were properly identified with number tags. Fifteen animals were selected and assigned into three age groups designated as Group I (Young animals of less than 6 months of age), Group II (animals of 6-12 months of age) and Group III (adult animals aged over 12 months). Their ages were determined by dentition and confirmed by records of birth available in the Research Farm. They were managed semi-intensively, fed with maize bran (Dusa), Locust beans tree (*Parkis biglobosa*) while salt lick and water was given *ad-libitum*.

Sample Collection: Fresh faecal samples were collected weekly from the rectum of each animal once a week for a period of 12 weeks between 7.30 - 8.00 a.m in the morning before the animals were allowed to go out for grazing.

Sample Analysis: Faecal samples collected were immediately taken to Bosso Veterinary Centre, Minna, Niger State for laboratory analysis. The samples were analysed using floatation and sedimentation techniques as described by Urquhart *et al*., (1996). The floatation technique was used to identify nematodes and cestodes while sedimentation technique was used in the case of trematodes. The parasites were examined under the microscope and identified according to the procedure described by Urquhart *et al*.,(1996). .

Statistical Analysis: Prevalence rates were calculated from the data collected using percentages..

RESULTS AND DISCUSSION

The results of this study as presented in Tables 1, 2 and fig .1 revealed that under semi –intensive system of management, the prevalence rate of gastro-intestinal helminths in goats of various age groups within the study period was high showing 46.7% (less than 6 months), 46.7% (6-12months) and 43.3% (over- 1 year old) respectively. These findings agrees with the previous report (Raza *et al;* 2007), in which prevalence rate of 52% was obtained in a similar experiment in goats in southern Punjab.

Tables 1 and 2 indicate that *Haemondus contortus*, *Stronyloides papillosus* and *Ascaris caprine* were the main nematode species observed in goats, cases of *Bunostomum trigonocephalum* were observed only among goats aged 6- 12 months of age. This confirms earlier findings , in which the most prevalent gastrointestinal nematode species infecting goats in the Rift valley of southern Ethiopia were *Haemonchubs contortus, Strongyloides papillosus* and *Trichostrongylus spp*. (Debela, 2002). The variation in the prevalence rate of *Haemonchus contortus* within different age groups as observed in this study is similar to the findings of (Radostits, 2000; Rahamn, 2004; Margo, 2006), where kids in their experiments recorded more problems with internal parasites since they eat closer to the ground and graze on most larvae that had crawled up the plant to about one or two inches from the ground. Similarly, Chaudary *et al* (2007), observed significant differences between different breeds of goats and sheep as they tend to graze much closer to the ground than other animals. This might also be the likely reason for the prevalence rate of 11.5% obtained in the case of *Fasciola gigantica* (Table 2), as the infective stages (metacercariae) attaches to vegetation and subsequently the animals having consume the pasture becomes infected (Margo, 2006).

According to Christensen (2005), Haemonchus larvae become dormant during harsh winters and it becomes too difficult for larvae to survive. However, in this study, the parasitic load increases, which may largely be due to low feed intake at this period, as the experiment was concluded in late dry season to early rainy season when pasture availability is low with a resultant effect on animal immune response to disease. This is in agreement with the report (Scarfe, 1993), that young animals and those with low immune system due to other diseases are more likely to be affected by gastrointestinal helminths which might be attributed to the fact that in young animals (less than a year old), the host – parasite relationship is easily established as such, their resistance to infection becomes minimal. *Moniezia expansa* recovered from goats in this study is the main cestode species which has been previously reported in goats in southern Nigeria (Fagbemi and Dipeolu, 1999).

CONCLUSION

Based on the results of this study, it is clear that goats raised semi – intensively, showed variations in the prevalent rates of gastrointestinal helminths which differs with age. As such strategic control programmes for different age groups could be adopted as a way of curtailing the effects of these parasites on our ruminant population.

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Table 1: Gastro – intestinal helminths recovered from faecal samples of savanna Brown Goats of different age groups

Groups	No of Faecal Samples Collected	No of Positive Samples	No of Negative Samples	As	Bn	Fa	Ha	Mo	St
One (1-6 months)	60	28	32	$1^{(+)}$	0	$1^{(+)}$	$9^{(++)}$	$6^{(+)}$	$11^{(++)}$
Two (6-12 months)	60	28	32	$4^{(+)}$	$2^{(+)}$	0	$12^{(++)}$	$4^{(+)}$	$6^{(+)}$
Three (above 12months)	60	26	34	0	0	$3^{(+)}$	$11^{(++)}$	$4^{(+)}$	$8^{(++)}$
Total	180	82	98	$5^{(+)}$	$2^{(+)}$	$4^{(+)}$	$32^{(+++)}$	$14^{(+++)}$	$25^{(+++)}$

As - *Ascaris caprine* Bn – *Bunostomum trigonocephalum*
Fa - *Fasciola gigantica* Ha – *Haemonchus contortus*
Mo - *Moniezia expansa* St – *Strongloides papillosus*
(+),(++),(+++)---Intensity of **G.i.t** parasites

Tables 2: Prevalence rates of gastrointestinal helminths observed from faecal samples of savanna Brown Goats at the Research Farm, Federal University of Technology Gidan Kwano campus, Minna, Nigeria.

Groups	No of Positive Samples	No of Negative Samples	As	Bn	Fa	Ha	Mo	St
1	46.7	53.3	3.6	0	3.6	32.1	21.4	39.3
2	46.7	53.3	14.3	7.1	0	42.9	14.3	21.4
3	43.3	56.7	0	0	11.5	42.3	15.4	30.8

As - *Ascaris caprine* Bn – *Bunostomum trigonocephalum*
Fa - *Fasciola gigantica* Ha – *Haemonchus contortus*
Mo - *Moniezia expansa* St – *Strongloides papillosus*

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