

PREVALENCE OF *HAEMONCHUS CONTORTUS* IN KALAHARI RED GOAT HERD
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Abstract

This study was carried out in Institute of Food Security, Environmental Resources and Agricultural Research (IFSERAR), Federal University of Agriculture Abeokuta (FUNAAB), Nigeria. The research was aimed at determining the prevalence of *Haemonchus contortus* in the Kalahari Red Goat herd reared in the Institute of Food Security, Environmental Resources and Agricultural Research (IFSERAR) Farm in the hot humid tropics through faecal egg count. One hundred and ten faecal samples were collected from 110 individual animals of mixed sex from Kalahari Red goat herd. Using parasitological methods for the worm isolation, identification and worm load determination; Flootation and Mac Master Techniques were used for quantitative and qualitative analysis respectively. The results obtained from this study revealed the prevalence rate of *Haemonchus contortus* as 31.82% in the goat population. The mean egg count was 728.57 ± 177.07 per gram of faeces (EPG) with a range of 100 – 4900 EPG as an overall analysis. The mean egg count amongst the female goats was 783 ± 203.42 with a range of 100-4900 EPG which was the same with the overall range while the mean egg count in the male goats was 400 ± 184.40 with a range of 100 – 900 EPG. Thus, the females had a higher EPG than the males. The prevalence rate of 31.82% is of economic importance and should be of concern in the goat herd health management operations. Strict control of parasite both on pastures and animal host has to be adopted through browse plant and hay introduction to break parasite life-cycle, selection of parasite resistant does for breeding, continuous general hygiene, boosting of dietary nutrients of the concentrate feeds and the use of conventional dewormers alternated with forages with proven anthelmthic properties.

Key words: *Haemonchus contortus*, prevalence, Kalahari Red goats, hot humid tropics.

Introduction

Africa has a goat population of 174 million which represents 31% of the world total. Nigeria's goat population is 34.5 million according to Onakpa *et al.*, 2010. Goat is the second most import livestock in Nigeria due to its high population.

Endo-parasitism has been identified by Chiezey *et al.* 2008 as a complex disease hindering efficient and profitable livestock production especially in goats worldwide. Amongst several endo-parasites of goats, *Haemonchus contortus* is the most important and has been reported to be the cause of most outbreaks of acute and subacute parasitic gastroenteritis of goats by Fakae, 2004.

It is important to evaluate the parasitic infestation levels as an indicator of health since gastrointestinal parasitism has been noted to be a serious cause of loss in productivity and death in goats (Githiori *et al.*, 2006). According to Akhtar *et al.*, 2000, high prevalence of endo-parasites is primarily due to high temperature in the hot-humid south western Nigeria which facilitates parasite multiplication and transmission.

Mahusoon *et al.*, 2004 and Nwosu *et al.*, 2007 have noted that helminth infestations in goats have negative impacts on productivity and health which is manifested through morbidity, mortality, treatment and control of the disease.

This study was carried-out to identify and determine the prevalence of *Haemonchus contortus* infestation in the Kalahari Red goats reared in the Institute of Food Security, Environmental Resources and Agricultural Research (IFSERAR), Federal University of Agriculture, Abeokuta Nigeria which is situated in the hot humid tropics.

Materials and Methods

Study site: The study was carried out in the Institute of Food Security, Environmental Resources and Agricultural Research (IFSERAR), Federal University of Agriculture, Abeokuta (FUNAAB), Nigeria. One hundred and ten faecal samples were collected from Kalahari Red goats raised in IFSERAR Farm in the month of August 2013 for the identification of prevalent endo-parasites in the goat herd. The faecal samples were analysed in the parasitology laboratory in the College of Veterinary Medicine, FUNAAB Abeokuta, Nigeria.

Gastrointestinal data collection: About 5g of fresh faecal sample was collected from each goat under aseptic condition. The samples were labelled, then transferred to the Parasitology Laboratory of the College of Veterinary Medicine, Federal University of Agriculture Abeokuta

(FUNAAB) and kept in a refrigerator at 4°C until further examinations were carried out. Both the McMaster egg count and floatation methods as described by Urquhart *et al.* 1996 were performed to screen the samples for quantitative and qualitative analysis, respectively.

Floatation method was conducted as follows: Water and salt (KOH) solution was prepared as floatation medium, and poured into the faecal sample in a beaker. It was filtered and the faecal debris discarded. The filtrate was then poured into a test-tube, filled to the brim and covered with the cover slip. The filtrate was allowed to stay for 30 minutes. The cover slip was then removed, placed on a clean slide and viewed under the microscope at a magnification of $\times 40$.

Quantitative analysis (McMaster Egg Count Technique): About 3g of faecal sample was added to 42ml of water and mixed thoroughly. It was filtered into a test-tube to about 15ml. The solution in the test-tube was then centrifuged in a bench centrifuge machine for 45 minutes at 1500 Revolutions per Minute (RPM) and the supernatant was discarded. The sediment was mixed thoroughly, after which there was an addition of salt to the sediment. The two chambers of McMaster slide were filled with the sediment and viewed under the microscope. The number of eggs was counted for a single chamber and multiplied by 100 to give the total egg load.

Statistical Analysis: Data was generated was analysed using SAS Statistical Package in a General Linear Model (GLM) and significant means were separated using Duncan Multiple Range Test of the same package at ($p < 0.05$) level of significance.

Results and Discussion

The prevalence rate of *Haemonchus contortus* was 31.82%. Out of the 110 faecal samples examined, 35 were found to be positive with *Haemonchus contortus* infection according to Figure 1. The mean egg count was 728.57 ± 177.071 per gram of faeces (EPG) with a range of 100–4900 EPG as an overall analysis.

The mean egg count amongst the female goats was 783 ± 203.42 which is the same range as the overall while the mean egg count in the male goats was 400 ± 184.40 within the range of 100–900 EPG according to Figure 2. The higher prevalence rate recorded in the female animals than in the males in this study is in agreement with the reports of Okwelum *et al.*, 2012 who reported a higher prevalence rate of gastrointestinal parasite infestation in the female animals than in the males and also Onyenwe *et al.*, 2005 who reported a higher prevalence rate of *Haemonchus contortus*

infestation in the female Red Sokoto breed of goat in the dry season.

Conclusion

The prevalence rate of 31.82% recorded is of economic importance and so adequate control measures has to be put in place to obtain a minimum worm load both on the pastures and the animals. Resistant does are to be selected for breeding as resilience is genetic and this will give rise to healthier breeding flock from resistant progenies. Allowing animals to feed on browse plant paddocks, feeding of hay, and high quality diets will help control the worm infestation. Regular deworming programmes with conventional anthelmithics and alternative medicinal forages of proven anthelthic value has to be adopted. The periodic use of anaemia detection kits such as FAMACHA will also be very useful in the diagnosis of the worm infestation and thus assist in early detection and prompt useful treatment. FAMACHA is a calibrated card used by the Veterinarians to detect anaemia in goats from the colour or pigmentation of the ocular membranes.

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Figure 1: PREVALENCE OF *Haemonchus contortus*

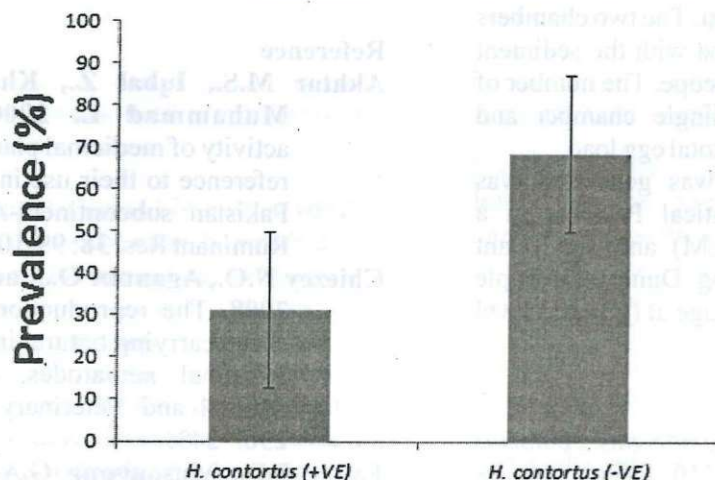


Figure 2: *Haemonchus contortus* load amongst sexes

