

Hookworm Infection Of Goats Sold At Amuzu Regional Cattle And Goats Market In Umuahia South Local Government Area, Abia State, South Eastern Nigeria.

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ABSTRACT

Demand for animal protein is on the increase globally. Goat husbandry is an important contributor to animal protein in Nigeria. Nevertheless, gastrointestinal helminthiasis, especially hookworm infection, depreciates protein content of infected goats. Prevalence of hookworm infection of goats sold at a goat market in Abia State, Southeastern Nigeria, was investigated. Goats Faeces were sampled from August to October, 2013 and the samples were examined for presence of hookworm eggs using direct smear method. The proportion of overall infected goats was 19.46%. A significant association was found between hookworm infection and gender while castration status of the billy goats had no effect on the hookworm infection. We conclude that hookworm infection of goats sold at Amuzu Regional Cattle and Goat market in Umuahia South Local Government Area of Abia State, Nigeria, is minimal and is of less concern. The market should be considered a good source of animal protein for human consumption.

Keywords: Animal protein, goat husbandry, hookworm infection, gastrointestinal helminthiasis

INTRODUCTION

Global geometrical growth in human population along with decline in agricultural productivity has increased demand for animal protein. Animal husbandry is an important contributor to animal protein. Traditional goat husbandry, which is a common practice among rural dwellers in most parts of Nigeria is a major contributor to animal protein and a source of revenue to many families who rear or and trade on goats^[4]. Animal diseases depreciate the protein value of infected animals as well as causes economic loss to the farmers and traders. Whereas gastrointestinal helminthiasis is an important health problem of small ruminants^[9], hookworm infection is a major gastrointestinal helminthiasis of goats in Nigeria^[7] caused by two parasitic nematode species, namely, *Bunostmum phebotozum* and *B. trigonecephela*^[8] Goats get infected when they consume pastures of grasses contaminated with eggs and larvae of the parasitic nematodes. Infection can also be by skin penetration of the larvae through the goats' feet^[2]. The parasitic worms infect goats of all ages, but affect younger ones the most. Parasitism is more a problem in rainy season^[6]. The larvae are very mobile; hence, need rain to basically splash them onto the blades of grasses in the goats' pasture^[5]. Severe hookworm infection causes anaemia, stunted growth, neurological and other health effects in goats, and can result in death of the infected goats if the disease progresses, thereby resulting in loss of revenue^{[10], [11]}.

MATERIALS AND METHOD

Study Site: The present study was carried out at "Amuzu Regional Cattle and Goat Market" in the suburbs of Umuahia (5o33'20" N, 7o28'52"E) the Abia State capital. Amuzu is a community located in Umuahia South Local Government Area of Abia State, Nigeria. It is an agrarian community where there is considerable practice of goat husbandry. The climate in the area is tropical with a marked dry season from November to March. The rainy season extends from April to October with a short break in August. The study site is where buying and selling of goats and cattle are maximal. The presence of abundant green pastures in Amuzu attracted nomads from the northern parts of Nigeria to settle with their goats and cattle in the area.

Stool Collections: Goat faeces were sampled from both living and immediately slaughtered goats (from the slaughter house in the market) using clean and dry specimen bottles. Sampling was carried out from August to October, 2013.

Sample Microscopy: Faecal samples were examined for the presence of hookworm eggs using direct smear method and morphological keys^[3].

Statistical Analysis: Differences in the numbers of positive stool counts according to gender and castration status of the billy goats were analyzed using the Chi-square (X²) test. The significant level was fixed at P<0.05.

All data collected were analyzed using the analysis of variance (ANOVA) using general linear model procedure of the statistical analysis system (SAS Institute, 2003) and means were compared using the least significant difference at (P=0.05).

RESULTS

Association between hookworm infection and gender of goats: Table 1 shows the proportion of hookworm infected goats according to gender. Faecal samples collected from a total of 298 goats made up of 243 (81.54%) billies and 55 (18.46%) nannies were examined for hookworm infection. The proportion of overall infected goats was 19.46%. Out of the number of diseased goats, billy goats accounted for 89.66% while nanny goats had infection rate of 10.34%. There was a significant association between hookworm infection and gender of the infected goats. The billy goats were more infected (89.66%) than the nanny goats (10.34%).

Table 1: Proportion of Hookworm Infected Goats According to Gender during the Study.

S/N	Gender	No. of Goats Examined	No. of Goats Infected	Percentage Infection
1	Male	245(81.54%)	52	89.66%
2	female	55(18.46%)	6	10.34%
	Total	298	58	19.46%

Overall, 19.46% (58/298) comprised billy and nanny goats, 81.54% (243/298) for billy goats, and 10.34% (6/298) for nanny goats. Infection rate between billy goats and nanny goats differed significantly (X² cal = 3.143, d.f = 1, P<0.05).

Effects of Castration on Prevalence of Hookworm Infection of Goats: Table 2 shows the association between hookworm infection and castration status of the billy goats examined during the study. Out of 52 (89.66) billy goats infected with hookworm, 12(23.08%) were castrated while 40(76.92%) were uncastrated. However, chi-square test did not observe any association between hookworm infection and castration status of the male goats. Hookworm infection of both castrated and non-castrated goats were similar. Castration had no effect on hookworm infection of goats in the study.

Table 2: Association between Hookworm infection and Castration status of the goats.

S/N	Castration Status	Number Infected	Number Uninfected	Total
1	Castrated	12(23.08)	59(24.70)	71
2	Not Castrated	40(76.92)	132(54.32)	172
	Total	52(89.66)	191(78.60)	243(81.54)

Figures in parentheses are percentages. There was statistical difference between hookworm infection and castrated status of goats examined (X² cal = 1.21, X² tab = 3.841, d.f = 1, P<0.05).

DISCUSSION

The overall hookworm infection rate of 19.46% recorded in the present study is indeed very low compared to the finding of Ajanusi and Chiezey^[1] who recorded the overall infection rate of 89.1% while working on the prevalence of helminthiasis among goats in Zaria, Nigeria. The big difference in the two findings may be due to the fact that the goats sold at the present study site might have been reared in more hygienic and sanitary environments than the source of Ajanusi and Chiezey's goats. The low infection rate recorded in the study could also be attributed to the fact that the goats might have been dewormed prior to the study period. Although the number of billy goats at the study site was far greater than that of the nanny goats, statistical analysis revealed that hookworm infection was higher among the billy goats (89.66%) than the nanny goats (10.34%).

The difference in infection rates could be attributed to the fact that male goats are often allowed to graze widely while females are often held in confinement for reproduction reason. The rearing of offspring further restricts the nursing nanny goats from extensive wandering in the search for food. The roaming about widely by the billy goats exposes them to feeding on various pastures contaminated with pathogens including parasitic helminthes^[7]. There was no association between hookworm infection and castration status. This observation is probably due to the fact that all billy goats whether castrated or not feed alike as well as wander alike.

CONCLUSION

We conclude that though the rate of hookworm infection of the goats sold at the Amuzu Regional cattle and goat Market is minimal, yet the cleanliness of the market as well as the hygienic condition of the abattoir located in the market should not be compromised. Seasonal or periodic deworming of goats in the market will be beneficial for the prevention of helminthiasis in goats sold in the market.

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