



SURVEY OF HELMINTH PARASITES AFFECTING SMALL RUMINANTS IN RESEARCH AND TRAINING FARM, OYO STATE COLLEGE OF AGRICULTURE AND TECHNOLOGY IGBOORA

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Abstract

The aim of the research work was to identify the helminths parasitizing sheep and goats at the Research and Training farm, Oyo State College of Agriculture and Technology, Igboora and to find out the mean egg per gram (mepg) of the helminths identified. A total number of 40 faecal samples were collected from sheep and goats, 20 faecal samples from each. The West African Dwarf (WAD) breed of goats and sheep was used for this study. Data collected were subjected to descriptive analysis. Result revealed that 75.6% of the entire samples collected were positive for helminth parasites (Goat 80% and sheep 75%). The following helminth parasite were detected; Strongyle species, Strongyloides papillosus and Moniezia species. Their prevalence was as follows: Goat (Strongyle sp 50% and Moniezia sp 31.25%, and sheep (Strongyle sp is 73.3%, and Moniezia sp 6.7%). Mixed infection was also noticed for Strongyloides papillosus and Strongyle sp; Strongyle sp and Moniezia sp. Goat had 12.5% and 6.25% and sheep had 6.7% and 13.3% prevalence of occurrence of the listed mixed infection respectively. Sheep showed the highest prevalence of helminths infestation when compared to goat but the highest egg count was recorded in sheep. From this study, Strongyle sp was the most prevalent helminth observed both in sheep and goat, followed by Moniezia sp then Strongyloides papillosus.

Keywords: Ruminants, Helminths, Prevalence, Egg count

Introduction

Ruminants are animals that chew cud and having cloven hoofs, such as cattle, deer, antelopes, sheep and goat. Animals that fall under ruminant regurgitates, have complex stomach of four compartments: the rumen, reticulum, omasum and the abomasum (Agyei, 2007; Harrison *et al.*, 1996). Sheep and goats are of great importance in food chain and livelihood of rural dwellers where these animals are always owned by women and children. These animals plays significant roles in the nation's economy by supplying meat, milk, cash income, savings, manure and employment for family members, as well providing hide and skin as means of foreign exchange for the nation (Fikuru *et al.*, 2006). They also have some advantages over other animals such as high reproductive performance, requirement of low capital investment and they are more readily available and domesticated (Fikuru *et al.*, 2006; Sisay *et al.*, 2007 and Aneto *et al.*, 2009). Traditionally in Africa, sheep and goats have served as means of ready cash and a reserve against economic and agricultural production hardship. In spite of these advantages, sheep and goats are also infested with gastrointestinal helminthes which seriously affect the

health and productivity of the animals (Pathak and Pal, 2008).

According to Ogunrinade (1984), internal parasites have been reported of causing severe losses to farmers throughout the world. This losses manifest through morbidity in acute cases and in chronic infection, loss of weight, reduced feed conversion ratio, abortion, infertility, reduced meat and milk production occur. According to Zahid *et al.* (2005), helminth infections could be caused by some of these species of nematodes (*Ostertagia sp.*, *Capillaria sp.*, *Trichuris sp.*, *Strongyliodes sp.*), cestodes (*Moniezia sp* *Taenia sp.*) and Trematodes (*Dicrocoelium sp.*, *Fasciola gigantica*, *Amphistomes*). Regassa *et al.*, (2006), stated that about 95% of goat is reported to be infected with helminths worldwide with *Haemochus* and *Trichostrongylus* being the key genera involved.

As reported by Rey (1991), internal parasites infections affect the health of animals, causing irreversible damage or even death to the animal, and reduced performance and huge economic loss to the farmer. Therefore, this research work aimed at identifying the different type of helminth parasites that are presently affecting small ruminants (sheep and goats), ranges of fecal egg/oocyst per samples and to

determine the Mean egg per gram (MEPG) of the genera involved, in Research and Training Farm, Oyo State College of Agriculture and Technology, Igbo-Ora, Igbo-Ora, Oyo State, Nigeria.

Materials and methods

Experimental site

The experiment was conducted at sheep and goat unit of Teaching and Research Farms, Oyo State College of Agriculture and Technology, Igbo-ora, in derived savanna zone of Nigeria. The college is located between the latitude $7^{\circ}15'N$ and longitude $3^{\circ}30'E$ equator with average annual rainfall of 1278mm and average temperature of 27° .

Experimental animals and design

Forty (40) faecal samples were collected at random from sheep and goats with the population of one hundred and twenty (120) and forty (40), respectively. 20 samples each were collected from goats and sheep unit. West African Dwarf (WAD) breed of goats and sheep was used for this study. The experimental animals under consideration were reared under semi intensive system grazed together on the same grazing land with college cattle.

Experimental procedures

The faecal samples for experimental examination were collected directly from the rectum using disposable nylon hand gloves into sample bottle. Samples collected were kept in cooler with iced packs and transported to the Department of Veterinary Parasitology Laboratory, University of Ibadan, Ibadan.

Sample examination

Both qualitative and quantitative techniques were used. The qualitative technique was used to check for the presence or absence of helminth eggs using simple sedimentation technique. This technique was used together with Mac-Master technique (quantitative) to detect the number of eggs present (100 eggs per gram) in each faecal sample.

$\frac{\text{Number infected}}{\text{Total number screened}} \times 100$

Data analysis

Data were subjected to descriptive statistical analysis using percentages in determining the prevalence rates in the animals,

Results and discussion

Table 1 showed the prevalence of faecal ova in sheep and goats. From the 20 goats screened, a prevalence of 80% was recorded while 75% infectivity was recorded among 20 sheep screened. This is in agreement with other studies carried out in Nigeria by Eke *et al.* (2019) in Minna modern abattoir and Berssia (2011) in central Oromia Ethiopia who recorded 75.0%, 63.16%, and 83% 81.5% in goat and sheep, respectively. Furthermore, this result contradicted Olafadunsin and Ibitoye (2017) who recorded helminthosis higher in sheep (78.8%) and lower in goat (52.9%) in Osun state of Nigeria. The high prevalence might be due to the system of management that these goats were subjected to (extensive rearing system), as they were always let loose to wander about scavenging and feeding without caution on anything they come across with and then return to their poorly kept sheds. Forse, (1999) and Adejinmi *et al.* (2015) also stated that animals are exposed to heavily parasitic infections when they are kept in poor ranches conditions and also when they are fed with contaminated food and water.

Three (3) genera of helminths were observed in sheep and goat screened namely: *Strongyle sp*, *Moniezia sp.* and *Strongyloides papillosus*. In goat: *Strongyle sp* (50%) and *Moniezia sp* (31.25%) under single infection. Moreover, under mixed infection, a prevalence of 12.50% was recorded for *Strongyloides papillosus* + *Strongyle sp* and 6.25% for *Strongyle* + *Moniezia*.

However, the result from the sheep screened recorded helminths prevalence of 75%. Single infection revealed *Strongyle sp* 73.33%, followed by *Moniezia sp* 6.67%. In the mixed infection however, a prevalence of 6.67% was recorded for *Strongyloides papillosus* + *Strongyle* and 13.33% for *Strongyle* + *Moniezia* (Table 1). Our finding were similar to those of some other studies conducted in Africa and abroad, which described strongyle infection as a major problem in small ruminants (Dappawar, *et al.*, 2018; Takalani *et al.*, 2020). Out of the species of helminths identified, *Strongyle* species had the highest percentage both in goats and sheep, 68% and 93%, respectively. This was followed by *Moniezia species* which recorded 37% in goats and 20% in sheep while the least of them was *Strongyloides papillosus* which had 2% in goats and 6.7% in sheep. The helminth genera detected in this work is related to the research of Eke *et al.* (2019); Takalani, *et al.*, (2020) and Tesfaheywet (2012) who recorded *Strongyles*, *Strongyloides* and *Moniezia* among species of Helminth detected in their work.

Table 2 showed the range of egg per gram value for infested samples in goat and sheep which was as *Moniezia sp* 300-6500, 1400-6500, *Strongyloides papillosus* + *Strongyle sp* 1200-3400, 50-2400, *Strongyle sp* + *Moniezia sp* 700-4400, 1500-4800.

Findings from this study on range of egg per gram value for infested samples in goat and sheep were similar to earlier studies which described strongyle infection as a major problem in small ruminants (Dappawar *et al.*, 2018 and Takalani, 2012). Out of the species of helminths identified, *Strongyle* species had the highest percentage both in goats and sheep 68% and 93%, respectively. This was followed by *Moniezia species* which recorded 37% in goats and

follows; The genera with the highest frequencies was *Strongyle sp* egg count ranges 100-5500, 200-4500, 20% in sheep while the least was *Strongyloides papillosus* which had 2% in goats and 6.7% in sheep. The helminth genera detected in this work was related to the research of Berssia (2011); Tesfaheywet (2012) who recorded *Strongyles*, *Strongyloides* and *Moniezia* among species of Helminth detected in their works.

Table 2 showed range of EPG value and MEPG of the infected animals, most of the infection fell under clinical ranges (Singh *et al.*, 2013). Singh *et al.* (2013) reported epg lesser than 1600 to be sub clinical and epg greater than 1600 to be clinical.

Table 1: Prevalence of occurrence faecal ova in sheep and goats

Parasite ova	No. of animals infected (%)	
	Goat (N=20)	Sheep (N=20)
Overall number of animal infected	16 (80.00)	15 (75.00)
<i>Strongyle sp</i>	8 (50.00)	11 (73.30)
<i>Moniezia sp</i>	5 (31.25)	1 (6.67)
<i>Strongyloides passillosus</i> + <i>Strongyle sp</i>	2 (12.50)	1 (6.67)
<i>Strongyle sp</i> + <i>Moniezia sp</i>	1 (6.25)	2 (13.33)

Table 2: Range of EPG value and MEPG of the infected animals

Parasite ova	Range of EPG value		Mean egg per gram (MEPG)	
	Goat	Sheep	Goat	sheep
<i>Strongyle sp</i>	100 – 5,500	200 – 4,500	2,800	2,350
<i>Moniezia sp</i>	300 – 6,500	1,400 – 6,500	3,400	3,950
<i>Strongyloides passillosus</i> + <i>Strongyle sp</i>	1200– 3,400	500 – 3,400	2,300	1,950
<i>Strongyle sp</i> + <i>Moniezia sp</i>	700 – 4,400	1,500– 4,800	2,550	3,150

Conclusion

The overall prevalence of helminth parasites in this study showed that helminthosis is an important health challenge to small ruminants. The nematoda classes of helminths were predominant, both in sheep and goats screened for helminth infection, followed by the cestoda. Some of the sheep and goats showed mixed infection of the parasites. There should be strategic deworming of animals when conditions are most favourable using broad spectrum anti-helminthics, because of mixed infection.

Furthermore, high plane of nutrition should be given to the animals so as to improve resistance to infection, make them very healthy, enable them to utilize their feed properly and increase their productivity.

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