

Prevalence of Gastrointestinal Parasites of Goats in Ibadan, Southwest, Nigeria

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Abstract A prevalence study on the gastro intestinal parasites of goats was carried out for six months from May to October, 2014 in Ibadan, South Western, Nigeria. Four hundred (400) goats' faecal samples comprising of 103 West African Dwarf and 297 Red sokoto breeds were collected from goats in households, market places and abattoir. They were examined for intestinal helminth eggs and protozoan oocysts using direct microscopic examination and sodium chloride floatation technique. Out of the 400 faecal samples examined, 303(75.75%) were positive for gastrointestinal parasites. The Red sokoto breed had a higher prevalence of 217(54.25%) while West African dwarf breed had the lower prevalence of 86(21.5%). Male goat had a prevalence of 163(40.85%) while female had a prevalence of 140(35%). The gastro intestinal parasites observed were *Strongyloides papillosus*, *Moniezia* spp, *Coccidia* spp and *Strongyle* spp. *Strongyle* spp had the highest prevalence while *Moniezia* spp had the lowest prevalence. Of the total 217(54.3%) Red sokoto breeds positive for helminths, 120(30%) had mixed parasitic gastro-intestinal infection while 74(18.5%) of the total 86 (21.5%) WAD goats positive for helminth also had mixed infection. We suggest good management practices, prompt diagnosis and treatment with anthelmintic and antiprotozoa drugs and education of animal owners on bio-security as panacea to reduce the risk of infection and increase productivity of the animals.

Keywords: Gastro-intestinal parasites, mixed infection, goat, prevalence, Ibadan

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1. Introduction

Domestic goat is among the earliest animals domesticated by man. They are distributed worldwide with higher concentrations in tropical areas and in dry zones [4]. Goats are excellent meat producers for human consumption in view of its short generation intervals and the absence of religious taboos associated with their meat as they are rich sources of protein and can help bridge the gap of protein malnutrition among consumers [11]. It has been documented that goats are the principal domesticated small ruminants in terms of total numbers and production of food and fibre products [15].

The intestine of goat is used to make catgut which is still in use as a material for internal human surgical sutures and string for musical instruments. Goat also produces a considerable amount of manure, which is of special importance in those areas where cattle are of lesser importance [9].

Environmental factors and vector abundance have been incriminated in the distribution of most parasitic diseases. Gastrointestinal parasites are common in both temperate and tropical countries, but more prevalent in warm

countries where sanitation is poor and standard of living is low [12]. The continuous drive to increase meat production for the protein needs of the ever increasing world population is faced with a number of constraints [3], among which are diseases caused by intestinal helminths and protozoa [2].

Considering the importance of helminths and protozoan infections in goats and their implication for public health, this study was carried out to determine the prevalence of gastrointestinal parasites of goats in Ibadan so as to educate goat owners on transmission and proper control measures.

2. Materials and Method

2.1. Study Area and Sampling Technique

A total of 400 faecal samples were collected from West African dwarf and Red sokoto breed of goats from Akinyele market in Akinyele local government area, Households at Ido local government area and Bodija abattoir in Ibadan North Local Government area of Oyo State, Nigeria. Faecal samples were appropriately collected from the rectum of goats using protective

disposable gloves into clean and dry universal bottles and taken to Diagnostic parasitology laboratory section of the Department of Veterinary Microbiology and Parasitology, University of Ibadan for processing.

2.2. Laboratory Technique

Direct microscopic examination and sodium chloride floatation technique [14] were used to process the faecal samples. Identification of the eggs and oocysts were made on the basis of morphology and size of eggs. Faecal smears were prepared from fresh faecal samples on glass slides using saturated salt solution and covering with cover slips. The slides were examined microscopically for helminth eggs, oocysts and larvae using 10x and 40x objectives.

Data obtained were analyzed using Chi square on graph pad.

3. Result

Of the total 400 fecal samples collected, 303 (75.85%) were positive for gastrointestinal parasites. The Red sokoto breed had a higher prevalence of 217 (54.25%)

while West African dwarf breed had the lower prevalence of 86 (21.5%). (Table 1).

Out of the total 303(75.75%) positive goats for gastrointestinal parasites, Male goat had a prevalence of 163(40.75%) while female had a prevalence of 140(35%). (Table 2).

The gastro intestinal parasites observed were *Strongyloides papillosus*, *Moniezia* spp, *Coccidia* spp and *Strongyle* spp. *Strongyle* spp had the highest prevalence 192(48%), followed by *Coccidia* spp 154(38.5%), *Strongyloides papillosus* 71(17.75%) and *Moniezia* spp had the lowest prevalence 34(8.5%).

There were mixed parasitic gastro-intestinal helminth infections in 120 (30%) Red sokoto breeds out of the 217(54.25%) positive goats and 74(18.5%) West African Dwarf breed out of the total 86(21.5%) positive goats (Table 3).

The result also showed that 91(22.75%) and 42(10.5%) Red sokoto and WAD breeds respectively had mixed helminths and protozoa infections. (Table 4).

Mixed helminth infections without protozoa infection occurred in 29(7.25%) and 32(8%) Red sokoto breed and West African Dwarf breed respectively.

Table 1. Prevalence of gastro intestinal parasites in relation to breed of goats

Breed	No.(%) Examined	No. (%) Positive	No.(%)Negative
WAD	103(25.75)	86(21.5)	17(4.25)
RED SOKOTO	297(74.25)	217(54.25)	80(20)
Total	400(100)	303(75.75)	97(24.25)

Table 2. Prevalence of gastro intestinal parasites in relation to sex of goats

Sex	No. (%) Examined	No. (%) Positive	No.(%)Negative
MALE	231(57.75)	163(40.75%)	68(17)
FEMALE	169(42.25)	140(35%).	29(7.25)
Total	400(100)	303(75.75)	97(24.25)

Table 3. Mixed infection of helminths in Red sokoto and West African dwarf goats

	No of Positive mixed GIP examined	<i>Strongyle</i> & <i>Moniezia</i>	<i>Strongyle</i> & <i>Strongyloides</i>	<i>Moniezia</i> & <i>Strongyloides</i>	Total Positive mixed helminth Infections
Red sokoto	120	4	23	2	29
%prevalence	30	1	5.75	0.5	7.25
WAD	74	4	25	3	32
%prevalence	18.5	1	6.25	0.75	8

GIP : Gastro-intestinal Parasite

Table 4. Mixed infection of helminths and Protozoa in Red sokoto and West African dwarf goats

	No of Positive mixed PGII examined	<i>Strongyle</i> & <i>Coccidia</i>	<i>Coccidia</i> & <i>Moniezia</i>	<i>Coccidia</i> & <i>Strongyloides</i>	<i>Strongyle</i> , <i>Coccidia</i> , <i>Moniezia</i> & <i>Strongyloides</i>	Positive mixed helminth& Protozoa infections
Red sokoto	120	51	6	19	15	91
%prevalence	30	12.75	1.5	4.75	3.75	22.75
WAD	74	15	1	17	9	42
%prevalence	18.5	3.75	0.25	4.25	2.25	10.5

PGII : Parasitic Gastro Intestinal Infection.

+ve : Positive

4. Discussion

From this investigation, *Strongyloides papillosus*, *Moniezia* spp, *Coccidia* spp and *Strongyle* spp. were among the gastro-intestinal parasites of goats observed in this study. This agrees with the report of [6,10] who noted that the most pathogenic helminths and protozoan parasites in the intestinal tract of small ruminants are *Strongyle species*, *Strongyloides* spp and *Coccidia species*.

Four species of gastro-intestinal parasites were identified in both West African Dwarf breeds and Red sokoto breeds with a total prevalence of 303(75.75%). The

high prevalence of these intestinal parasites observed in these goats is in agreement with the findings of [8,13,10] who in their independent studies reported that helminth parasites are dominant in goats and are among the successful parasites of animals because of their efficient life cycle ranging from the very simple to the extremely complicated stage.

These high prevalence might be due to the system of management that these goats were subjected to as they were always left to wander about scavenging and feeding indiscriminately on anything they come in contact with and then return to their poorly kept sheds. These findings agree with the work of [5] who stated that animals are

exposed to massive helminth infection when they are maintained in an unhygienic and poorly kept ranches and also when fed with contaminated food and water.

The prevalence of protozoan infection recorded in our investigation, may be due to overcrowding, poor management and hygiene. This is in accordance with the work of [7,1,10] who in their different studies reported that increase rate of protozoa infection was as a result of overcrowding and poor hygienic practice which greatly encourage the spread of these parasites, as these animals become carriers of intestinal protozoa parasites and continually contaminate the environment with eggs and oocysts of the parasites.

It is therefore paramount to note that during rainy season in tropical countries like Nigeria, environmental factors like temperature, humidity and moisture are favourable for the survival of the developmental stages of these gastro intestinal parasites. We therefore suggest that preventive measures (bio security), and good managerial practices, prompt diagnosis and treatment with anthelmintic and antiprotozoa drugs be implemented to reduce the risk of infection. However, resistance to the drugs by parasites has recently been observed and this should be avoided by discouraging self medication by animal owners.

5. Conclusion

It is important that some control measures for gastrointestinal parasites in small ruminants be undertaken to reduce parasite burden. Grazing fields should be kept free from contamination with faeces and urine of animals. Education of goat owners on method of transmission and effect of these parasites on the productivity of the animals should be carried out from time to time.

References

- [1] Adejinmi, J.O. and Osayomi, J.O. Prevalence of intestinal protozoan parasites of dogs in Ibadan, south western Nigeria. *Journal of Animal & Plant Sciences*, 2010. Vol. 7, (2): 783-788, 2010.
- [2] Aliaga-Leyton, E., Webster, R., Friendship, C., Dewey, K., Vilaca and Peregrine, A. An observational study on the prevalence and impact of *Isospora suis* in suckling piglets in South Western Ontario and risk factors for shedding oocysts, *Canadian Veterinary Journal*, 52 (2), 184-188, 2011.
- [3] Boes, J., Willingham, A.L., Shi, F.H., Hu, X.G., Eriksen, L., Nansen, P., Stewart, T.B. Prevalence and distribution of pig helminths in the Dongting Lake Region (Human Province) of the People's Republic of China. *J. Helminthol.* 74: 45-52, 2000.
- [4] Di Cerbo, A. R., Manfredi, M. T., Zanzani, S and Stradiotto., K. Gastrointestinal infection in goat farm in Lombardy (Northern Italy): Analysis on community and spatial distribution of parasites. *Small Rumin. Res.* 88: 102-112, 2010.
- [5] Forse, A. M. Where there is no vet. 1st ed. Macmillian press Ltd London and Oxford publisher. Pp: 380, 1999.
- [6] Gadahi, J.A., Arshed, M.J., Ali, Q., Javaid, S.B. and Shah, S.I. Prevalence of Gastrointestinal Parasites of Sheep and Goat in and around Rawalpindi and Islamabad, *Pakistan Veterinary World*, Vol. 2 (2), pp: 51-53, 2009.
- [7] Manson, R.W. and Statham, P. *Aust. Vet J.* 68: 116, 1991.
- [8] Mollah, M. R. R; Islam A.W. M. S. and Islam, M. K. Epidemiology of abomasal helminth of black Bengal goats in Bangladesh. *Indian J. Vet. Med.* 16: 29-31, 1996.
- [9] Nawathe, D. R., Sohael A.S. and Umo, I. Health management of a dairy herd on the Jos Plateau (Nigeria). *Bull. Anim. Hlth. Prod. Africa* 33: 199-205, 1985.
- [10] Nwigwe, J.O., Njoku, O.O., Odikamnor, O. O. and Uhuo, A. C. Comparative study of intestinal helminths and protozoa of cattle and goats in Abakaliki metropolis of Ebonyi State, Nigeria. *Advances in Applied Science Research*, 4 (2): 223-227. 2013.
- [11] Ozung, P. O., Nsa, E. E., Ebegbulem, V. N. and Ubua, J. A. The Potentials of Small Ruminant Production in Cross River Rain Forest Zone of Nigeria: A Review, *Continental Journal of Animal and Veterinary Research* 3 (1): 33- 37, 2011.
- [12] Schmidt, G. D., Roberts, L. S. and Janovy, J. *Foundation of Parasitology*. McGrawhill, Boston, Massachusetts,. Science. pp 670, 2000.
- [13] Symth, J .D. *Introduction to animal parasitol. 3rd ed.* Cambridge University press. Pp: 307-581, 1996.
- [14] Urguhart G. M, Armour J. J., Duncan J.L Dunn A.M. and Jennings F.W. *Veterinary parasitology ELBs*, Bath Press Avon Great Britain pg 275-281, 1987.
- [15] Winrock International. *Sheep and Goats in Developing Countries: Their Present and Potential Role*. A World Bank Technical Paper, Winrock Int Morrilton, Arkansas, U.S.A 72110-9537. (1983).