



# Prevalence of Gastrointestinal Parasites Of Goats Slaughtered At Aduwawa Abattior, Benin City, Edo State, Nigeria

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## ABSTRACT

The study of the prevalence of gastrointestinal helminths of goats slaughtered in Aduwawa abattoir, Benin City, Edo state was conducted from March 2013 to February 2014. Four hundred and ninety two (492) goats were examined for the parasites. The gastrointestinal tracts comprising of the small intestine, large intestine, liver, bile duct and rumen were examined. The following gastrointestinal helminth parasites were found in the following prevalence: *Moniezia benedeni* (34.76%) and *Paramphistomum cervi* (21.54%). The overall prevalence of gastrointestinal parasites examined was 61.59% among the goats. Female goats had a higher prevalence (63.64%) when compared to male goats (61.07%). The infection rate was higher in rainy season (73.36%) as compared to the dry season (50%) and there was no significant difference ( $p < 0.05$ ) between the prevalence of parasitic infection among samples examined during the seasons and among the sexes examined. Poor system of animal husbandry was noted to be a significant factor to the prevalence of these parasites among the goats.

**Keywords:** Prevalence, Helminths, Goats, Benin City

## INTRODUCTION

The Goat is an important livestock species all over the globe and especially in tropical and subtropical regions. It has a pivotal place in small scale farming and the rural economy of developing societies by generating employment and supplementing house hold income. Goats are primarily raised for leather, milk and hair production (Hassan *et al.*, 2011). In many parts of the world, goats and cattle production is a profitable enterprise because of the high demand for dietary animal protein (Anaeto *et al.*, 2009). Goats as small ruminants have some advantages over larger animals such as cattle, because of their lower purchase price, higher fecundity and prolificacy, ability to survive on low quality diet in difficult conditions, availability and ease domestication.

Goats harbour a variety of gastrointestinal parasites that affect the growth as well as production of the animal. Goats are known to contribute substantially to the supply of animal protein in most parts of the world particularly in developing nations. Goat keeping is known to increase the economic status of the rural poor. According to Jagram (2012) gastrointestinal parasites have been a major constrain in productivity of goats, especially those that are allowed to roam freely and not properly reared. In many ways, the effects of these parasitic helminthes are more deadly while appearing to be harmless and lead to debilitating digestive and respiratory disturbances with attendant retardation in growth and less of meat production. However, high mortality rates as a result of infections by gastrointestinal parasites remain major constraints to small ruminant production (Perry *et al.*, 2002). Parasitism thrives in livestock in the tropics because of improper care, unhygienic environment.

Some of the gastrointestinal parasites that affect ruminant are nematodes (such as *Ostergia sp.*, *Capillaria sp.*, *Trichuris sp.*) Trematodes (such as *Paramphistome cervi*) and cestodes (such *Moniezia sp.*) Gastrointestinal parasites in goats cause economic hardship in poor farming communities. Intestinal

parasites cause inefficient feed utilization leading to reduced growth rate in young animals, reduced weaning weights, low milk production, enhanced susceptibility to other diseases and poor meat production (Barger, 1997).

Historically, gastrointestinal helminthes infections have been associated with great economic losses to farmers throughout the world, these losses manifest through morbidity in acute cases and in chronic infection reduced weight gains, reduced food conversion, abortion, infertility, reduced meat and milk production (Ogunrinade, 1984; Karki, 1987; Bariajaya, *et al.*, 1995). Attindehou and Salifou (2012) also carried out a study in order to assess the prevalence and seasonal variation of cestodes infections in small ruminants of Benin from December 2010 to November 2011. During the process 756 small ruminants were randomly selected (366 sheep and 390 goats) were slaughtered and autopsied. Surface muscles, viscera and cavities (abdominal, thoracic and pelvic) were inspected for recovering cysts (metacestodes) and adult cestode. It was observed that in both sheep and goats, two larval cestodes have been found. They were *cysticercus* and *cysticercus ovis* with respectively, 55.57 and 3.44% of prevalence. Regarding adult cestodes, only *Monenzia expensa* was diagnosed with an overall prevalence of 29.5%. The whole infections were prevalent all seasons with nevertheless high rate in rainy seasons.

Review of parasitic research in Nigeria has revealed that most of the surveys have been carried out for prevalence of parasites around different areas in Nigeria. However, there are certain geographical regions in which livestock population needs to be examined for the presence of gastrointestinal helminthes. Several studies carried out on gastrointestinal helminthiasis of goats showed that the prevalence of the infections varies from place to place and according to the age groups of goats. Studies in various parts of the world have shown that the high incidence of these infections are seasonally related (Sykes, 1994). Although they occur in all age groups, they are found to be more prevalent in kids when exposed to contaminated feed and water (Waruiru *et al.*, 1994).

Studies have shown that helminth parasites are by far the most serious causes of production losses in farmed ruminants and the nematodes are indisputably the cause of serious production losses to ruminants in sub-Saharan Africa, and indeed worldwide (Ng'ang'a *et al.*, 2004; Odoi, 2007; Kanyari *et al.*, 2009).

Amadi *et al.* 2012 Also carried out a study between June and December 2009 in Umuariaga Ikwuano Umuahia Abia State to determine the prevalence intensity of infection and public health implication of helminth parasite infection of West African dwarf goat in the area. 164 faecal samples were examined for helminth parasites using normal saline method. 133 (81.1%) were infected. The prevalence rate of nematode 86.5%, trematode 73.7% while cestode 6.7% was observed. The infection rate for females reveals high burden of Nematode 96.8%, followed by Trematode 65.6% and a least was 6.3%. The male showed lower Nematode burden of 83.1% when compared with female and higher Trematode of 76.2% while cestode recorded 6.9%. Generally schistosoma species have highest prevalence rate 21.1% followed by *oesophagostomum* 16.7%, *Charbetis ovis* 14.0%. A lower prevalence was recorded in dictyocaulus species 3.1%, *Trichuris* 1.8%, *Dictyocaulus* species of 0.9%, *Nematodirus* 0.7% respectively.

The objectives of this study was to investigate the gastrointestinal helminth parasites present in goats slaughtered at Aduwawa abattoir in Benin City, Edo state, Nigeria.

## **MATERIALS AND METHODS**

### **Study area**

The study was carried out in Ugunwode Local Government Area, which lies north of Benin City, Edo state, Nigeria. It is situated within longitudes 5°45'E, and 6°0'E, and latitudes 6°15'N and 6°45'N. It has an area of 2,033km<sup>2</sup> and a population of about 120,813. This study was conducted between the months of March 2013 to February 2014.

**Sample collection:** Samples were collected between 6am and 9am during which goats were slaughtered at Aduwawa abattoir. During the period of slaughtering, the intestines, livers, bile ducts, were carefully examined for presence of internal parasites. The various parasites were taken from the various organs and washed several times with normal saline and preserved in 70% alcohol as described by Uguahart and

Amour, 1997. While the cestodes and the trematodes were flattened with 10% formalin and also preserved with the same 10% formalin.

## RESULTS

A total of 492 goats were examined between the months of March 2013 – February 2014. 171 were infected with cestodes (*Moniezia sp*), 106 were infected with trematodes (*Paramphistum sp.*). The overall prevalence of gastrointestinal parasites in goats was 61.59% among the goats. From among the 492 examined 171 (34.76%) were infected with *Moniezia benedeni* and 132 (21.55%) infected with *Paramphistum cervi*. *Moniezia benedeni* having the highest prevalence with overall mean intensity of 96.04 while *Paramphistum cervi* have the highest mean intensity of 219.18 as shown in Table 1 below. Table 2 shows the prevalence and mean intensity of gastrointestinal parasites examined according to sex . Among the female examined, 63 were infected and 8078(63.64%) of parasites were found. Among 393 male that were examined, 240 were infected and 26846(61.07%) were recovered. The highest prevalence rate was found in female (63.64%) and mean intensity of 115.26. while table 3 illustrates the seasonal variation of parasites among goats, 124(50%) were infected during dry season as against 179(73.36%) of goats infected during rainy season. The prevalence of parasites was higher during the rainy season (73.36%) as compared to 43.60% during the dry season.

**Table 1: Overall prevalence and mean intensity of gastrointestinal parasites recorded among 492 goats slaughtered at Aduwawa abattoir.**

Parasites	No. infected	Prevalence (%)	Total no. recorded	Mean intensity
<i>Moniezia benedeni</i>	171	34.76	171	1
<i>Paramphistum cervi</i>	132	21.55	28932	219.18
Total	303	61.59	29103	219.18

**Table 2: Prevalence mean intensity of gastrointestinal parasites according to sex of goats.**

Sex	Host examined	No. infected	Prevalence (%)	Total no. recorded	Mean intensity
Female	99	63	63.64	8078	128.22
Male	393	240	61.07	26848	111.86
Total	492	303	61.59	34924	115.26

**Table 3: Seasonal variation and mean intensity of parasites among goats slaughtered at Aduwawa abattoir.**

Seasons	Host examined	No. infected	Prevalence (%)	Total no. recorded	Mean intensity
Rainy	244	179	73.36	23358	130.49
Dry	248	124	50	11566	93.27
Total	492	303	61.59	34924	115.26

## DISCUSSION

According to Kedar *et al.*, (2012) prevalence of gastrointestinal parasites is considerably influenced by the climatic conditions and as far as possible, the evidence of the distribution and prevalence of the diseases is presented by geographical area, roughly corresponding to climatic conditions.

In this present study, trematode (21.54%) were found to be lower than cestodes (34.76%) which is in agreement with the earlier reports by Soulsby (1982) where he observed that trematodes recorded lower rates (73.7%) This is because they require intermediate hosts to complete their life cycle and so transmission is dependent on the availability of intermediate host *Lymnaea* spp (snail).

In this present study there is a significant difference among sex ( $p < 0.05$ ). The high prevalence of infections in relation to sex in this study was found to be higher in female (63.61%) to earlier reports by Lamirioui *et al.*, (2013), where they found that helminth parasites were higher in male (86.6%) and female (73.6%). The higher percentage of infestation in female may be due to the physiological condition of the animals during pregnancy and lactation (production activity) and also the absence of sufficient food required for production which may lead to the lowering of the body resistance of the females. The possible reasons for these differences observed in the prevalence of the gastrointestinal helminth parasites recorded in this study and that recorded by previous researchers may be because of the variation in locations and management practices (Waruiru *et al.*, 1993)

In conclusion, gastrointestinal parasites are prevalent in goats as observed in this study carried out in Aduwawa abattoir, Benin –city, Nigeria and could be implicated in health and production of the animals. Thus, appropriate measure should be implemented in the abattoir in order to reduce the infestation risk.

## REFERENCES

- Amadi, A.N.C., Avoaja, D.A; Essien. EJ (2012): Epidemiology of Helminth Parasites of West African Dwarf Goat (*Capra Hircus*) in Umuariaga in Ikwuano L.G.A, Abia State. *J. Appl. Sci. Environ. Manage.* 16(4) 359-362.
- Anaeto, M.B; Tayo, G.I; Chioma, G.O and Afolabi, A.A. (2009): Comparative study of Albendazole and C.papaya seed on the control of gastrointestinal nematodes in goats. *Journal of life and physical sciences, ACTA SATECH* 3(1): 25-28.
- Attinelehou, S., and Salifou, S. (2012): Epidemiology of cestodes infections in sheep and goats in Benin city. *Veterinary Research* 5(3): 59-62
- Barger, I. A. (1997). Control by Management. *Veterinary Parasitology*, 72: 493 - 506
- Berijaya, D; Estuningsh, E.S; Darmono, M.R; Knox, M.; Stoltz, D.R. and Wilson, A.J. (1995). The use of wormala in controlling gastrointestinal nematode infection in sheep under traditional grazing management. *Indonesia Journal Hmu Termak dan veterineer.* 13: 49-55
- Driss Lamrioui, Taoufik Hassouni, Driss Lamri, Youssef El Madhi, Driss Belghyti<sup>1</sup> and Jaouad Mostafi (2013): Incidence of intestinal nematodes recovered in slaughtered goats in Figuig Province, Morocco. *African journal of Microbiology Research.* Vol.7 (48):5526-5528.

- Hassan MM, Hoque MA, Islam SKMA, Khan SA, Roy K, Banu Q. A prevalence of parasites in black bengal goats in Chittagong, Bangladesh. *Inter J Livestock Prod*; 2(4):40-4
- Kedar K, Bimla KB, Janak RS (2012). A case Study on Seasonal Prevalence of Helminth Parasites in Goats (*Capra Hircus*) in Kalanki (Khasibazzar), Kathmandu Nepal. *Bulletin of Environment, Pharmacology & Life Sciences*. 1(2):11-13
- Kanyari P, Kagira J, Mhoma RJ (2009). Prevalence and intensity of endoparasites in small ruminants kept by farmers in Kisumu Municipality, Kenya. *Vet. Parasitol.* 51(4):137-141.
- Karki, N.P.S. (1987): Sheep resources in Nepal and some constraints in migratory system of production. *Paper presented at the 2<sup>nd</sup> conference of the Nepal veterinary association. 23-25 Journal of Veterinary Research*, 46:31–39.
- Ng'ang'a CJ, Maingi N, Kanyari PWN, Munyua WK (2004). Development, survival and availability of gastrointestinal nematodes of sheep on pastures in a semi-arid area of Kajiado District of Kenya. *Vet. Res. Com.* 28(2):491-501.
- Ogunrinade, A. F (1984). IgA response in natural and experimental infections of cattle with *Fasciola gigantica* in West Africa dwarf sheep and goats. *Tropical Animal Health Production*. 16(3): 161-166
- Perry, B. D., Randolph, R. F., McDmot, J. J., Sones, K. R. and Thomson, P. K. (2002). Investigating in Animal Health Research to Alleviate Poverty. International Livestock Research Institute, Nairobi, Kenya, 148 pp.
- Soulsby EJI (1982). Helminths, Arthropod and Protozoa of Domesticated Animals, 7<sup>th</sup> edn, Bailliere Tindal, London. 136 -778 pp.
- Sykes, A. R. (1994). Parasitism and production in Farm Animals. *Animal Production*, 59: 155 – 172.
- Waruiru, R. M., Gichanga, E.J., Kimoro, C. O. and Karanu, F. N. (1994). The prevalence of gastrointestinal nematodes, coccidia and long worms in 01, mangogo dairy goats. *Bulletin of Animal Health and Production in Africa*, 42: 291 – 295.