**PREVALENCE OF GASTROINTESTINAL PARASITES IN SMALL RUMINANT (SHEEP AND GAOTS)**

**A**

**RESEARCH PROJECT PROPOSAL**

**BY**

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**CHAPTER ONE**

**1.0 INTRODUCTION**

**1.1 BACKGROUND OF THE STUDY**

Gastrointestinal parasites are considered the major diseases causing organisms of small ruminants (sheep and goats) in the Nigeria. Helminths parasite infections in sheep and goats are of the major importance in many agro-ecological zones and a primary factor in the reduction of production and productivity of livestock (Hassan et al., 2013b). Worldwide, intestinal parasites are the major causes of losses in productivity and usually associated with huge economic losses especially in resource poor region of the world. The effect of infestation by gastrointestinal helminths varies according to the parasite concerned, the degree of infestation and other risk factors such as species, age, season and intensity of worm burden (Cernanska et al., 2005; Opara et al., 2005). The main source of animal protein is livestock and their products (Hassan et al., 2013a). Livestock plays a very important role in the economy of most nations. Small ruminants (sheep and goats) are adaptable to several production systems and can be raised with relatively few inputs, but they face huge production challenges (Hassan et al., 2013a).

Control of internal parasites, especially gastrointestinal nematodes is a primary concern for many livestock farmers and is particularly challenging in humid regions. Grazing animals ingest infective larvae from grass and shorter forages. The larvae develop into adult parasites feed on blood in the abomasum and lay their eggs, which are excreted in the ruminants faeces. The life cycle continues when the eggs hatch and larvae develop on pasture, where they can be ingested by grazing ruminants (Blackburn *et al.,* 2011). Intestinal parasites have become more difficult to manage in small ruminants because of the parasite increasing resistance to several antihelminthics (Magona *et al.,* 2011). Parasite problems negativity impact the animal's health, reduce productivity and increase treatment costs. The repercussion of internal parasite infection includes treatment expenses, reduced animal weight gains and performance, and even animal death. The losses caused by parasites can be distinguished into direct and indirect losses (Lüscher *et al.,* 2005). Direct losses include those due to acute illness and death and damage condemnation of organs and cost of dead animal inspection, while indirect losses include the decreases in productive potential such as decreased growth rate, weight loss in young growing animals and late maturity of slaughter stock (Blackburn *et al.,* 2011). The level of environmental contamination is influenced by factors including biotic potential of helminths, host immune status and hypobiosis. These parasites are a worldwide problem for both small and large-scale farmers, but there is a greater instance in sub-Saharan Africa in general and Nigeria in particular due to the availability of a wide range of agro-ecological factors suitable for diversified host and parasite species (Onaga *et al.,* 2009). Important groups of the gastrointestinal parasites known to infect livestock especially include the coccidian parasites, nematodes, cestodes, and trematodes (Onaga *et al.,* 2009; Komaromy, 2010). The conditions they cause result in considerable economic losses owing to mortality, stunted growth and partial or complete condemnations of the carcasses at the slaughter houses (Lüscher *et al.,* 2005). Increasing recognition of the burden of human fascioliasis has occurred and it is now recognized as an emerging zoonosis by the World Health Organization (Poindexter *et al.,* 2009).

**1.2 STATEMENT OF THE RESEARCH PROBLEM**

Control of internal parasites, especially gastrointestinal nematodes is a primary concern for many livestock farmers and is particularly challenging in humid regions like Wukari LGA in Taraba state. Grazing animals ingest infective larvae from grass and shorter forages. The larvae develop into adult parasites feed on blood in the abomasum and lay their eggs, which are excreted in the ruminants feces. The life cycle continues when the eggs hatch and larvae develop on pasture, where they can be ingested by grazing ruminants (Blackburn et al., 2011).

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**1.3 SIGNIFICANCE OF THE STUDY**

The disease has a serious impact on both public health and transmission through infected fomites or ingestion of infected milk and meat (Rautureau et al., 2010). Livestock get exposed to these pathogenic parasitic organisms very early under natural grazing conditions and the effects of infections are influenced by the environment, nutrition, climate and management practices (Lüscher et al., 2005; Blackburn et al., 2011). Therefore the study will provide a prevalence of occurrences and incidence of the parasite which will give good fundamentals of measuring epidemiology within Wukari metropolis by measuring the burden of the parasite that have affected small ruminants within the zone which will be of importance to public health data outbreaks of parasitic infections.

**1.4 AIM OF THE STUDY**

Prevalence of gastrointestinal parasites in small ruminant (sheep and goats)

**1.5 OBJECTIVES OF THE STUDY**

The objectives of the study are to:

1. Evaluate the major types of gastrointestinal parasites that affect ruminants (sheep and goats).
2. Determine the prevalence rate of such parasites affecting ruminants (sheep and goats).

**1.6 RESEARCH HYPOTHESIS**

**H0:** The major types of gastrointestinal parasites that affect ruminants (sheep and goats) will be evaluated

**H1:** The prevalence rate of such parasites affecting ruminants (sheep and goats) will not be determine

**CHAPTER THREE**

**3.1 Study Area**

The study will be conducted at Federal University Wukari. Biological Science Laboratory in Wukari LGA which is located at longitude 9047`0’E and the latitude 7051`0’E The vegetation of the area is predominantly characterized by savannah zone and with major climate seasons of water or rainy seasons, which starts in march or April, and ends in October and the dry season which starts in November and ends in March or April. (Taraba State daily, 2008).

**3.2 Materials**

Stool samples, ice, containers, loop, hand gloves, objectives lens, microscope, water bottles, work bench, spirit, cotton wool.

**3.3 Study population**

A total of 168 sheep and goats will be examined for the prevalence of gastrointestinal parasites. The study population consisted of 76 sheep and 91 goats of both male and female brought to the abattoir for slaughter. The age and gender of both the sheep and goat will be noted.

**3.4 Sample collection**

The fecal samples of both sheep and goat will be collected early in the morning, as from 7am. Hand gloves will be used to collect the samples from the rectum of the animals and dropped into sterilized sample bottles which will be transported to the laboratory (Department of Biology, Federal University Wukari) for parasitological examination. Each sample will be labeled, noting the sex and age (Cheesbrough, 2005).

**3.5 Parasitological examination**

Fecal samples will be examined by flotation techniques for the presence of gastrointestinal parasites. The fecal samples will be crushed and dissolved in saturated salt solution in a beaker. The obtained fecal solutions will be filtered using sieve with minute holes. This will be done so as to trap the large particles or debris. The filtrate will be turned into a sample bottle and covered with cover slip for 10 to 15mins. It will be then mounted and examined under the microscope using objective of X10 to determine the presence of eggs (ova) and objective X40 to determine the Eke et al. 67 morphological structure of the ova of the helminthes seen. This method will be used to examine all samples collected (Cheesbrough, 2005).

**3.6 Data analysis**

The data generated will be subjected to descriptive statistical analysis using percentages and charts (SPSS version 20.0) and Chi – square analysis will be used in determining the prevalence rates in the gender, age and the different types of small ruminants studied.

**REFERENCES**

Blackburn, H. D., Paiva, S. R., Wildeus, S., Getz, W., Waldron, D., Stobart, R., Bixby, D., Purdy, P. H., Welsh, C., Spiller, S., & Brown, M. (2011). Genetic structure and diversity among U. S. sheep breeds: Identification of the major gene pools. Journal of Animal Science,89(8), 2336-2348.

Cernanska, D., Varady, M., & Corba, J. (2005). The occurrence of sheep gastrointestinal parasites in the Slovak Republic. Helminthologia, 42, 205-209.

Cheesbrough, M. (2005). District Laboratory Practice for Tropical Countries. Part 2. Cambridge University Press, UK. p. 434

Hassan, D. I., Musa-Azara, I. S. Mohammed, J. & Zanwa, I. A. (2013b). Influence of age, sex and season on haematology and serum chemistry of Red Sokoto goats in Lafia, Nasarawa State Nigeria. International Journal of Agricultural Science and Veterinary Medicine, 1(4), 57-63.

Komaromy, A. M. (2010). Day blind sheep and the importance of large animal disease models. Veterinary Journal, 185, 241- 242.

Lüscher, A., Häring, D. A., Heckendorn, F., Scharenberg, A., Dohme, F., Maurer, V., & Hertzberg, H. (2005). Use of tanniferous plants against gastro-intestinal nematodes in ruminants. In: Researching Sustainable Systems - International Scientific Conference on Organic Agriculture, Adelaide, Australia. Pp. 21-23.

Mandonnet, N., Aumont, G., Fleury, J., Arquet, R., Varo, H., Gruner, L., Bouix, J., & Khang, J. V. T. (2001). Assessment of genetic variability of resistance to gastrointestinal nematode parasites in Creole goats in the humid tropics. Journal of Animal Science, 79(7), 1706-1712.

Onaga, T., Hara, N., & Shimizu, Y. (2009). Role of nitrergic nerves in the regulation of motility of the omasum and abomasum in healthy sheep (Ovis aries). Veterinary research communications, 33(1), 33-48.

Opara, M. N., Nwaobasi, J. K., & Okoli, I. C. (2005). Occurrence of parasitic helminths among small ruminants reared under traditional husbandry system in Owerri, South East Nigeria. Bulletin of Animal Health Production Africa, 53(4), 226-233.

Rautureau, S., Dufour, B., & Durand, B. (2010). Vulnerability of animal trade networks to the spread of infectious diseases: A methodological approach applied to evaluation and emergency control strategies in cattle, France, 2005. Transboundary and Emerging Diseases, 58(2), 110-120.

Blackburn, H. D., Paiva, S. R., Wildeus, S., Getz, W., Waldron, D., Stobart, R., Bixby, D., Purdy, P. H., Welsh, C., Spiller, S., & Brown, M. (2011). Genetic structure and diversity among U. S. sheep breeds: Identification of the major gene pools. Journal of Animal Science,89(8), 2336-2348.

Mandonnet, N., Aumont, G., Fleury, J., Arquet, R., Varo, H., Gruner, L., Bouix, J., & Khang, J. V. T. (2001). Assessment of genetic variability of resistance to gastrointestinal nematode parasites in Creole goats in the humid tropics. Journal of Animal Science, 79(7), 1706-1712.

Lüscher, A., Häring, D. A., Heckendorn, F., Scharenberg, A., Dohme, F., Maurer, V., & Hertzberg, H. (2005). Use of tanniferous plants against gastro-intestinal nematodes in ruminants. In: Researching Sustainable Systems - International Scientific Conference on Organic Agriculture, Adelaide, Australia. Pp. 21-23.

Onaga, T., Hara, N., & Shimizu, Y. (2009). Role of nitrergic nerves in the regulation of motility of the omasum and abomasum in healthy sheep (Ovis aries). Veterinary research communications, 33(1), 33-48.

Poindexter, B. J., Klein, G. L., Milner, S. M., & Bick, R. J. (2009). Upregulation of defensins in burn sheep small intestine. Eplasty, 10, e6.