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**EFFICACY OF PUMPKIN SEEDS AGAINST GASTROINTESTINAL NEMATODES IN  
GOATS**



**BY**

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**DECLARATION AND APPROVAL**

I declare that this dissertation is a result of my research work and has not been submitted to any University or Institution of learning for academic reward.

*B. B. B.* ..... *25<sup>th</sup> / August / 2019*

BABIRYE BLESSED

This dissertation has been submitted with approval of my academic supervisor.

Signature..... Date.....

Dr. AKURUT IMMACULATE



## DEDICATION

I dedicate this report to my parents, siblings and friends for their support during the research study.



## **ACKNOWLEDGEMENT**

I am grateful to my university supervisor Dr. Akurut immaculate for the guidance offered during this research study.

Special thanks go to Mr. Swata for giving me the opportunity to carry out my research study on his farm

I also sincerely thank my parents for their support during the research study.

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## **LIST OF ABBREVIATIONS**

GIN- Gastro Intestinal Nematode

spp-species

GIT-Gastro Intestinal Tract

FEC-Fecal egg count

FECR-Fecal Egg Count Reduction

EPG-Egg per Gram

WAAVP-World Association for the Advancement of Veterinary Parasitology

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## ABSTRACT

Goats are an important livestock species as they are a source of food, income, manure, hide and also used for social and cultural purposes. However Gastrointestinal Nematodes are a main constraint to goat production causing anorexia, condition loss due to reduced feed conversion efficiency, reduced growth, loss of blood and even death thus economic loss. Currently commercial synthetic anthelmintics are used to treat GINs in goats. However there is increasing anthelmintic resistance in goats as well as other negative side effects such as pollution and residues in animal products. Therefore alternative control methods to complement or replace commercially available anthelmintic have been explored, developed and put into practice in order to reduce losses caused by GIN in goats. The aim of this study was to assess the effect of pumpkin seed aqueous extract on gastrointestinal nematodes of goats. Pumpkin seeds aqueous extract was prepared and administered orally to goats for the evaluation of anthelmintic activity. Results were expressed in terms of mean fecal egg count per gram and fecal egg worm reduction test (efficacy) between group A of treated goats and group B which was the control as well as for the different gastrointestinal nematodes under study which were *Haemonchus contortus*, *Oesophagostomum* spp, *Trichuris* spp, *Trichostrongylus* spp, *Cooperia curticei*, *Nematodirus pathiger* and *Strongylides papillosus*. The pumpkin seed aqueous extract showed 54% efficacy against the GINs of goats and showed highest efficacy against *Strongylides papillosus* at 81%, therefore it was the most responsive followed by *Cooperia curticei* at 80%, followed by *Trichuris* spp at 75% then *Trichostrongylus* spp at 74% then *Nematodirus pathiger* at 68%, *Oesophagostomum* spp at 47% and lastly *Haemonchus contortus* at 13%. The mean Fecal egg per gram count reduced in the treated group post treatment while it increased in the control group with the treated group A having a mean fecal egg worm per gram count of 413.04 pre-treatment and 184.47 post treatment and control group having mean fecal egg per gram count of 273.29 pre-treatment and 403.72 post treatment.  $p < 0.05$  showed significant difference between EPG of group A goats before and after treatment. In conclusion pumpkin seeds have anthelmintic activity against gastrointestinal nematodes in goats, However the FECR of 54% found in this study does not meet the proposed minimum standard of 90% for development of a new anthelmintic or even WAAVP's standard of 80% that indicates moderate efficacy, therefore pumpkin seeds aqueous extract would be used more appropriately as an aid in the control of gastrointestinal parasites together with good management practices rather than being used for treatment.

## CHAPTER ONE

### 1.1 INTRODUCTION

Goats are an important livestock species as they are a source of food, income, manure, hide and also used for social and cultural purposes (V & Charles, 1989). The population of goats in Uganda is estimated at about 14.6 million, 90% of this being indigenous (Byaruhanga, Oluka, & Olinga, 2015). The major indigenous breeds in Uganda being Mubende, Kigezi, and Small East African. Farmers have adapted exotic breeds to improve productivity, these include Boer and Toggenberg and their crosses with indigenous breeds (Byaruhanga et al., 2015). Worldwide, goat production is increasing due to economic significance of goats as efficient converters of nutritionally poor forages into quality meat, milk and hide products. Goat meat is the most consumed and more goat milk is consumed more than cow's milk worldwide (Sotiraki, Landau, Jackson, & Beveridge, n.d.).

However Gastrointestinal Nematodes (GIN) are a main constraint to goat production causing mortality, weight loss and production loss in goats (Zeineldin, Abdelmegeid, Barakat, & Ghanem, 2018). GIN infections also cause anorexia, loss of blood, stunted growth and condition loss due to reduced feed conversion efficiency (Tsotetsi & Mbatia, 2006). Currently commercial synthetic anthelmintic are used to treat GIN in goats however over the last five decades there is increasing fault found with use of synthetic anthelmintics due to drug resistance, pollution and residues in animal products (Gopinath, 2012).

Anthelmintic resistance is when susceptibility of a population of parasites to an anthelmintic becomes lower or even ceases to exist. This being favored mainly by genetic features of the helminth due to increase in the frequencies of resistance gene alleles that result by selection through repeated use of an anthelmintic (Fleming et al., 2006). A survey conducted to determine resistance of GINs of goats to most commonly used anthelmintics in Sembabule, Soroti, Mpigi, Mbarara, and Gulu districts of Uganda showed 58%, 52%, and 38% anthelmintic resistance to ivermectin, levamisole and albendazole respectively (Nabukenya, Akiiki, Olila, Muhangi & Hoglund, 2012).

This widespread and increasing helminthic resistance to available synthetic anthelmintic makes parasite management difficult. Therefore alternative control methods to complement or replace

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