
FECAL OOCYST AND EGG COUNT OF BROILER BIRDS ADMINISTERED SPOTTED PUMPKIN (*LAGENARIA BREVIFLORA*) EXTRACTS

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ABSTRACT

This study was conducted to investigate the efficacy of spotted pumpkin (*Lagenaria breviflora*) extract on fecal oocyst and egg count of broiler chicken. A total of One hundred and sixty (160) day old broiler chicks were used for the experiment. The birds were randomly allotted to four (4) treatment (T) groups having 40 birds per treatment which was further sub-divided into -10birds per replicate. The control groups (T1) were administered antibiotics while other groups were administered aqueous extract of *Lagenaria breviflora* at a dosage of 250g/liter (T2), 500g/liter (T3) and 750g/liter (T4) respectively for 5days. At the end of the experiment fecal sample analysis of broiler chickens was carried out using standard procedures. All data generated were subjected to one way analysis of variance in a completely randomized design using (SAS 2009). Results obtained showed significantly highest oocyst (1000cfu/g) was observed from the control groups compared to other dietary treatment groups administered aqueous extract of *Lagenaria breviflora* which recorded lowest or no oocyst count. Significantly higher egg per gram (17epg) was noticeable in the control groups and birds administered 750g/litre of the test ingredient while no egg per gram was recorded for birds administered 250 and 500g/litre of the test ingredient. Therefore, it can be concluded that aqueous extract of *Lagenaria breviflora* at 250, 500 and 750g/litre respectively contains bioactive substances capable of eradicating and suppressing oocyst count while, *Lagenaria breviflora* aqueous extract at 250g/l and 500g/l is capable of eradicating Egg per gram in broiler chickens.

Keywords: Gut microbial, fecal oocyst, Phytobiotics, Broiler chickens

INTRODUCTION

Medicinal plants and their extracts play immune-modulatory roles in the treatment of various livestock diseases, bacterial, protozoan and fungal infections. Medicinal plants are not only used as a growth promoter in the livestock industry but also as immune booster which has protective effects against many diseases (Hajiaghapour and Rezaeipour, 2018). Research findings by Ekundayo 2010, stated that the use of available medicinal plants in the therapeutic and prophylaxis management of diseases would help maintaining gut environment which will in turn improve performance of broiler birds. The fruit of *Lagenaria breviflora* is used in traditional medicine as herbal remedy for the treatment of wound antiseptics and other digestive disorders in man. Research by Sonaiya 1995 and Tomori *et al.*, 2007 reported the efficacy of the fruit extract in the treatment of Newcastle disease and coccidiosis diseases in various animal species, especially poultry. Several phytochemical screening on *Lagenaria breviflora* have established that the fruit contained triterpenoids, saponins, phenols, alkaloids, anthraquinone, flavonoids, tannins and terpenoids (Elujoba *et al.*, 1990). Different Antimicrobial and antiviral properties of the fruit extract have been reported by Tomori *et al.*, 2007. When Soxhlet methanolic extraction was carried out on *Lagenaria breviflora*, the extracts exhibited stronger activities against pathogenic bacteria isolates (*Salmonella typhi*, *Salmonella paratyphi*, *Pseudomonas fluorescens*) which resides in the gut of poultry birds Tomori *et al.*, 2007. *Lagenaria breviflora* fruits applied as phytobiotics has been reported to improve the growth performance of broiler chickens and exhibited excellent control of *Eimeria* oocyst and *Ascaris galli* (ABSTRACTs, 2015). There is therefore the need to find safer and medicinal plants extracts that are capable of maintaining the gut environment of broiler chickens for better productivity. The objective of this study was to investigate the effect of spotted pumpkin (*Lagenaria breviflora*) extracts on fecal oocyst and egg count of broiler chickens.

MATERIALS AND METHODS

Experimental site

The experiment was carried out at the Directorate of university farms of College of Animal science and Livestock production, Federal university of Agriculture, (Latitude 7°10'N and Longitude 3°E) Abeokuta, Ogun State, Nigeria. The area has a tropical climate characterized with annual rainfall of about 1037mm, minimum and maximum temperatures of 20.66°C and 35.48°C respectively. (Google earth 2021)

Collection of Test Ingredient and Preparation of Aqueous Extract

Lagenaria breviflora was sourced within the university environment after which it was taken to the botany department for identification. The fresh fruits of *Lagenaria breviflora* were washed, weighed and sliced into smaller parts. The sliced fruit was soaked in water for 72 hours at room temperature to obtain aqueous concentrations of 250, 500 and 750g/L of water. The extracts were sieved and stored at room temperature to prevent further fermentation.

Experimental Animal and Management

One hundred and sixty (160) 1-day-old broiler chicks were purchased from a reputable hatchery in Ibadan, Oyo State. The pen was washed and disinfected 2 weeks before the arrival of the birds. The chicks were brooded separately and fed with a formulated straight diet (at starter and finisher phase). Feed and water were provided *ad libitum* during the experiment. The administration of the test ingredient started from the commencement of the experiment and the experiment lasted for 8 weeks. The composition of the experimental diet is listed below: All birds except the control were given aqueous extract of *Lagenaria breviflora* for 5 days at a dosage of 250g/liter, 500g/liter and 750g/liter respectively. The test ingredient was administered in water.

Maize 46.00, Groundnut cake 15.00, soyabean meal 23.00, Wheat offal 7.00, Bone meal 5.00, limestone 3.00, Lysine 0.25, Methionine 0.25, Premix 0.25 and Salt 0.25.

Experimental Design

One hundred and sixty (160) day old broiler chicks were randomly allotted to four (4) treatment groups having 40 birds per treatment which was further sub-divided into 10 birds per replicate. The test ingredient was administered every other week in order to prevent toxicity of the test ingredient. Standard vaccination procedure was observed for all birds.

Treatment 1: (Control) Antibiotics, Treatment 2: 250g/l concentration of *Lagenaria breviflora* extract, Treatment 3: 500g/L concentration of *Lagenaria breviflora* extract, Treatment 4: 750g/L concentration of *Lagenaria breviflora* extract.

Data Collection

Faecal Sample collection

Faecal sample was collected by spreading a paper on the litter early in the morning for fresh faeces to be dropped on. After which the fresh samples were collected immediately and put into a sample bottle and taken to the laboratory for analysis. Bacteria colonies were counted using a colony counter while oocyst and egg worm count was determined using the MacMaster method.

Intestinal microbial count

On the 56th day of experiment birds close to the average mean weight from each replicate were slaughtered, defeathered without hot water and eviscerated, after which the small intestine content was collected into plain sample bottles and taken to the laboratory for analysis.

Statistical Analysis

All data collected were subjected to One-way analysis of variance (ANOVA) in a completely randomized design. Significant means were separated using Duncan multiple range test using SAS (2009).

Statistical model

$$\gamma_{ij} = \mu + T_i + \epsilon_{ij}$$

γ_{ij} = Observed response on ij

μ = Overall mean

Ti = effect of ith (*Lagenaria breviflora*) treatment

εij = residual error

RESULTS AND DISCUSSION

Fecal oocyst and egg count of broiler chickens as affected by administration of Spotted Pumpkin extract (*Lagenaria breviflora*)

The effect of Spotted Pumpkin (*Lagenaria breviflora*) extract on fecal oocyst and egg count of broiler chickens is shown in Figure 1. The result obtained show that spotted pumpkin extract highly influenced oocyst count of broiler chickens across the dietary treatment. Higher (1000cfu/g) oocyst count was obtained from the control groups compared to lower (50cfu/g) oocyst count obtained at 250g/litre while no oocyst count was obtained at 500g/litre and 750g/litre of *Lagenaria breviflora* extracts. This result showed that as the levels of *Lagenaria breviflora* extract increases the oocyst count was greatly reduced - eradicated in the gut of broiler chickens. This result support the findings of Ekunseitan *et al* 2016, who reported best oocyst reduction in birds administered 150g/l of the extract in pullet birds.

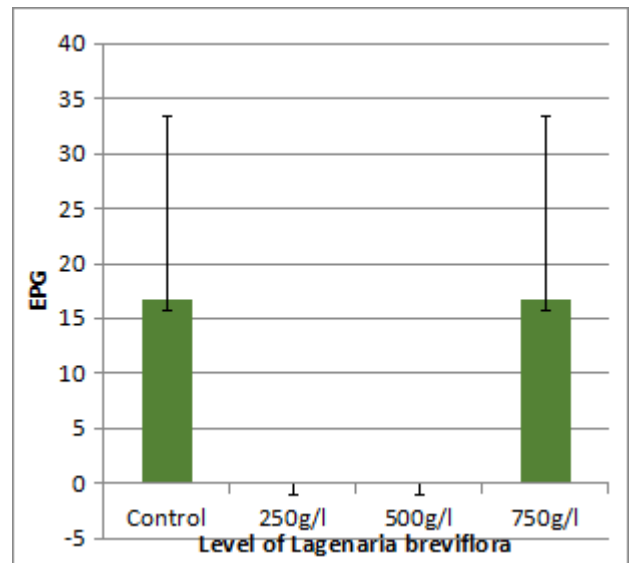
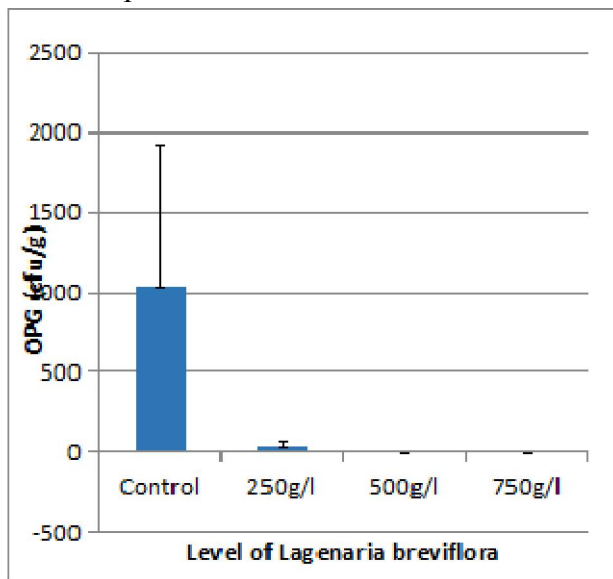


Figure 1. Shows the effect of *Lagenaria breviflora* extract on the fecal oocyst and egg count (Oocyst per gram and Egg per gram) of broiler chicken.

The reduction and suppression of the oocyst by the extracts of *Lagenaria breviflora* could be attributed to the presence of bioactives substances like phenolic compound (Adeyemi *et al.*, 2017)

that have been linked with eradication of oocysticides as reported by (Williams, 1997) in chickens.

Result obtained on egg count of broiler chickens showed that control groups and birds administered 750g/ litre of *Lagenaria breviflora* extract had the highest egg count compared to no egg count obtained for 250g/l and 500g/l of *Lagenaria breviflora* extract. This result showed that the levels of *Lagenaria breviflora* at 250g/l and 500g/l highly eradicated the egg count in broiler chickens. This result could be attributed to presence of phytochemicals such as saponins, flavonoids, and tannins in the extracts of *Lagenaria breviflora* that is capable of eradicating the worms by causing oxidative stress as reported by John *et al.*, 2009 who reported positive effect of helminthic property of cassia tora leaves extracts owing to its phytochemicals interfering with the glycoprotein of the cuticle and leading to the death of the worms.

CONCLUSION

Based on the results obtained in this study, it can be concluded that Spotted pumpkin extract (*Lagenaria breviflora*) is capable of eradicating or suppressing the presence of *Eimeria* species in the gut of broiler chickens as the test ingredient has proven to be anti oocyst. Administration of *Lagenaria breviflora* at 250g/l and 500g/l can serve as anti-helminthic since total eradication of egg count was observed at this level.

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