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# ORGANOSOMATIC INDICES OF BROILER CHICKENS ADMINISTERED SPOTTED PUMPKIN *(Lagenaria breviflora)* EXTRACT

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**ABSTRACT**
*This study was conducted to evaluate Organosomatic indices of broiler chickens administered Spotted Pumpkin (Lagenaria breviflora) extract as an alternative antimicrobial. A total of One hundred and ninety two (192) day old broiler chicks were used for the experiment. The birds were randomly allotted to four (4) treatment groups having 48 birds per treatment which was further sub-divided into 12birds per replicate. The control groups were administered antibiotics while other groups were administered aqueous extract of Lagenaria breviflora at a dosage of 250g/liter, 500g/liter and 750g/liter respectively for 5days. At the end of the 8 weeks of experiment organosomatic indices of broiler chickens was carried out. All data generated were subjected to one way analysis of variance in a completely randomized design. Results obtained showed that aqueous extract of Lagenaria breviflora had no significant effect on all the parameters measured except for weight of gastrointestinal tract that was significantly affected by (P<0.05) the administration of Lagenaria breviflora extract. It was therefore concluded that aqueous extract of Lagenaria breviflora does not have any negative influence on the carcass characteristics of broiler chickens as it compared favorably with the control groups.*

**Keywords: Phytobiotics, Broiler chickens, carcass characteristics**

## INTRODUCTION

Plants extracts play significant role in the health management system of local African communities which serve as the main source of treatment for the majority of the rural population and its environs (Adewunmi *et al.*, 2001). Plants produce variety of secondary metabolites, which are of great importance when used in animals and are capable of inducing biological and pharmacological actions (Ekunseitan *et al.,* 2016). However, the continued increase in the cost of drugs and the interest by the populace for organic products and safer foods of animal origin completely free from traces of drugs or chemicals necessitated the need to provide a viable alternative to synthetic antibiotics. *Lagenaria* (*Adenopus breviflous*) has been used for the treatment of Newcastle disease and coccidiosis in various animal species, especially poultry (Sonaiya, 1995). It is a perennial climber ascending to the forest canopy, occurring from Senegal to the West Cameroons, and generally wide spread in tropical Africa. Extract of plant which form the basis for all traditional system of medicine have been used for the treatment of various disease as reported by (Kalimuthu, 2010) and the medicinal values of these plants lie in their component photochemicals mostly alkaloids, and tannins. *Lagenaria (Adenopus breviflorus)* is used in animal production due to its anti-microbial property and anti viral property (Nworgu *et al* 2018). It has also been reported that use of *lagenaria* improves the immunity of broiler birds against infection. In Nigeria, the incidence of disease outbreak has been recurrent in poultry industry, resulting in increase in the amount spent on conventional drugs. There is therefore the need to find an alternative that is safer and cost effective in the control of Poultry diseases (Abbas *et al*., 2011). The objective of this study was to evaluate organosomatic indices of broiler chickens administered spotted pumpkin (*Lagenaria breviflora)* extract as an alternative antimicrobial.

## MATERIALS AND METHODS

### *Experimental site*

The experiment was carried out at the Teaching and research 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.

### *Collection of Test Ingredient and Preparation of Aqueous Extract*

*Lagenaria breviflora* was sourced within Abeokuta and its environment. The fresh fruits of *Lagenaria breviflora* were washed with clean water, weighed with a weighing scale and sliced into smaller parts

and soaked for 72 hours at room temperature to obtain aqueous concentrations of 250g, 500g and 750g per litre of water. The extracts were sieved and stored at room temperature to prevent further fermentation.

***Experimental Animal and Management***

One hundred and ninety two (192) day old broiler chicks were purchased from a reputable hatchery in Ibadan, Oyo state. The pen was washed and disinfected 2weeks before the arrival of the birds. The chicks were brooded separately and fed with a formulated straight diet (at starter and finisher phase) as shown in table 1. Feed and water were provided *ad libitum* during the experiment. The administration of the test ingredient started from the commencement of the experiment.

**Table 1: Gross composition of experimental diet fed at both starter and finisher phase**

| **Ingredients (%)** | |
|---|---|
| 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 |
| Salt | 0.25 |
| Total | 100 |
| **Determined Analysis** | |
| Metabolizable Energy (Kcal/kg) | 2713.00 |
| Protein (%) | 20.00 |
| Fats (%) | 3.90 |
| Fibre (%) | 3.70 |
| Calcium (%) | 2.90 |
| Phosphorus (%) | 0.90 |
| Lysine (%) | 1.30 |
| Methionine (%) | 0.60 |

***Experimental Design***

One hundred and ninety two (192) day old broiler chicks were randomly allotted to four (4) treatment groups having 48 birds per treatment which was further sub-divided into 12birds per replicate. 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 every other week. 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

***Carcass Parameters***

At the end of the 56th day of the experiment, 6birds per treatment, making a total of 24 birds per treatment were slaughtered for carcass characterization; the bled weight defeathered weight and eviscerated weight were recorded. Also, the cut up parts such as the head, neck and the shank of the birds were removed in order to get the dressed weight while the weight of the internal organs were expressed as percentage of live weight. Dressing percentage was calculated as:

Dressing percentage = $\frac{Eviscerated\ weight}{Live\ weight}$ x 100

***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 test using SAS (2009).

***Statistical model***

$\gamma ij = \mu + Ti + \varepsilon ij$

γij = Observed response on ij

μ = Overall mean

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

Ɛij = residual error

**RESULTS AND DISCUSSION**

***Effect of Spotted Pumpkin extract (Lagenaria breviflora) on carcass characteristics of broiler chickens.***

The effect of Spotted Pumpkin (*Lagenaria breviflora*) extract on carcass characteristics of broiler chickens is shown in table 2. The result obtained shown that all parameters measured were not significantly affected except gastrointestinal tract that was significantly influenced ($P<0.05$) by aqueous extract of spotted pumpkin. The results obtained on live weight, dressed weight and eviscerated weight in this study though not significant corroborated the findings of Fanimo *et al* 2003 who reported that heavier birds produce a greater eviscerated weight. Higher mean values for gastrointestinal tract weight was obtained from birds administered 500g/L and 250g/L of the aqueous extract compared to lower mean values obtained for gastrointestinal weight obtained for the control groups and 750g/L. The significant ($P<0.05$) difference obtained on the weight of the gastrointestinal tract (G.IT) is in contrast to the findings of Odetola *et al* 2020 who reported no significant difference in the weight of gastrointestinal tract of broiler chickens administered *Petiveria alliacae* Leaf extract. The non significant ($P>0.05$) difference obtained on all parameters measured except for G.I.T corroborates the findings of Odetola *et al* 2020 and Cabuk *et al* 2016, who reported that carcass characterization was not negatively affected by the leaf extract of the phytobiotics that was used for the birds

**CONCLUSION**

Based on the results obtained in this study, it can be concluded that Spotted pumpkin extract (*Lagenaria breviflora)* does not have any negative or detrimental effect on organosomatic indices of broiler chicken as all the cut up parts measured were not significantly influenced by the administration of the test ingredient.

**Table 2: Effect of Aqueous extracts of Spotted Pumpkin (*Lagenaria breviflora*) extract on carcass characteristics of broiler chickens.**

| Parameters | Control | 250g/l | 500g/l | 750g/l | SEM | P-value |
|---|---|---|---|---|---|---|
| Live weight (g) | 1750.76 | 1855.33 | 1950.76 | 1750.00 | 95.91 | |
| Eviscerated weight (%) | 75.75 | 76.13 | 80.03 | 78.93 | 1.12 | 0.55 |
| Dressed weight (%) | 66.72 | 67.65 | 69.40 | 66.40 | 0.75 | 0.38 |
| **Cut up parts (%)** | | | | | | |
| Head | 3.22 | 3.84 | 3.77 | 3.35 | 0.03 | 0.24 |
| Shank | 5.02 | 5.22 | 5.80 | 5.20 | 0.10 | 0.41 |
| Thigh | 11.33 | 11.11 | 12.11 | 11.02 | 0.39 | 0.53 |
| Drumstick | 11.70 | 10.20 | 11.80 | 11.20 | 0.20 | 0.91 |
| Wings | 9.80 | 9.77 | 9.95 | 9.80 | 0.15 | 0.84 |
| Neck | 3.31 | 3.34 | 3.75 | 3.34 | 0.14 | 0.22 |
| Back | 15.13 | 15.61 | 16.50 | 15.20 | 0.40 | 0.07 |
| Breast | 22.51 | 23.40 | 25.45 | 22.71 | 0.53 | 0.29 |
| **Organs (%)** | | | | | | |
| Heart | 0.40 | 0.40 | 0.48 | 0.42 | 0.04 | 0.60 |
| Lungs | 0.40 | 0.44 | 0.59 | 0.45 | 0.46 | 0.40 |
| Liver | 2.85 | 2.32 | 2.51 | 2.85 | 0.07 | 0.75 |
| Kidney | 0.15 | 0.24 | 0.28 | 0.15 | 0.08 | 0.06 |
| Spleen | 0.04 | 0.05 | 0.05 | 0.04 | 0.03 | 0.07 |
| Gizzard | 2.40 | 2.59 | 2.99 | 2.50 | 0.05 | 0.07 |
| G.I.T | $7.49^{b}$ | $8.65^{a}$ | $8.77^{a}$ | $7.17^{b}$ | 0.22 | 0.03 |

$^{a}$, $^{b}$, $^{c}$ Means with different superscripts in the same row are significantly ($p<0.05$) different. SEM: - Standard error of mean, LAG: - *Lagenaria breviflora*

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