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Research Article

Utilization of Sour Plum *(Lannea Acida)* Stem Bark as Feed Additive on Growth Performance of Broilers at Starter Phase

*I. S. Harande [1], and Fakai M.H [2]

[1] Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, Nigeria.
[2] Department of Crop Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, Nigeria.

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***Corresponding Author: I. S. Harande**
Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, Nigeria.
E-mail: ibrahimshuaibuharande@gmail.com

Abstract

This study was carried out in the Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, Nigeria, to determine the utilizing of Sour plum *(Lannea acida) stem bark as feed additive on growth performance of broilers chicken at starter phase. Three experiment diet were formulated and tagged T_1 (200g ANIP) T_2 (100g LASB, T_3 (200g LASB) One Hundred and Fifty (150) birds were tested in this experiment which were randomly allocate into three dietary treatments each treatment contain 50 chicks each replicated Five times with 10 birds in each replicate. At end of experiment the result revealed significant difference was no observed for all the parameters (FL IBW FBW, FIRD, FIB, BWGB, BWGBD, FCR and ID measured But numerical variations were observed among the treatment values Ty recorded the highest FBW and lowest was recorded in T_2 highest FIB was seen in T_1 followed by T_3 and lowest recorded in T_3. The best BWG was observed in T and lowest in T; however, it is recommended that further investigation should be carried out to determine the optimum inclusion of Lennea acida stem bark in broiler in the diets of broiler chicks. From the result obtained it can be concluded that feeding broilers chicks with Lannea acida stem bark powder can improve their performance.*

Keywords: *Utilization, Sour plum, Stem bark, Feed additive, Growth performance, Broilers.*

Introduction

Poultry is an important source of protein to the world and source of income to the farmer (Pitman, 2020). Broiler starter enterprise according to (Oliver, 2021) is the quickest source of meat and its production involves the least hazardous and arduous process in relation to other livestock enterprise. Therefore, poultry production stands the easiest means of boasting the maximum supply of meat as animal protein source.

The cost of feed is a major constraint in poultry production. The high cost of feed is mainly due to petition between man and livestock for grains and conventional source of protein. The solution to those problems is to search for alternatives which should have comparable nutritive value, but cheaper than the conventional source. Stem bark meals not only serve as protein source but also provide some necessary vitamin such as vitamin A and C, minerals and also oxycarotenoides which cause yellow color of broiler starter skin, shank and egg yolk (Wannan, 2024).

Linnea acida commonly called “Faru” in Hausa belongs to the family Anacardiaceous, a major group of angiosperms (Flowering plants). *Linea acida* is widely used as herbal medicine in West Africa. The bark leaves and roots are used for the management of various ailments such as conjunctivas, sores, stomach, Asher, diarrhea, rheumatism, skin disease, cough and dysentery. This is also used for injuries, inflammation and pain, gastrointestinal problems, fever and malaria Burkill. 2023). Phytochemical compounds identified from the species include alkaloids, cardiac glycosides, flavonoids, phenols, saponins, steroids, tannins and terpenoids. Pharmacological studies revealed that *Lannea acida* extracts have anthelmintic, antibacterial, antidiarrheal, anti-inflammatory, anti-mycobacterial, antioxidant, estrogenic, fertility, phospholipase A, proteolytic and vibriocidalactivites (Djoueche, 2020).

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In View of this abundant potential. Administration of *Lannea Acida* stem bark to broiler birds will possibly supply nutrients to meet all the body's need during a time of challenge.

Materials and Methods

Experimental Site

is research was conducted at Poultry Research Unit of Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, the area is geographically located in the Guinea Savanna Zone of Nigeria. The area lies between latitude $11^{0}35^{0}$ to $11^{0}55$ North and Longitudes 4 $4s^{0}$ to 5° 25^{0} east of the equator (Baba *et al*., 2003).

Source of Experimental Site

The birds to be used for this experiment was sourced from Zarms Tech Farm Ibadan Oyo State Nigeria was purchased at day old rose day old broiler chicks were used for this research.

Sources of Experimental Material and Processing

Linnea acida stem bark was collected in College of Agriculture, Kebbi State, Nigeria and then collected steam bark was shade dried for two weeks, the dried residue will then be crushed into small particles and then grinded into powder, and it will then put into plastic container before the use of it.

Management of the Experimental Birds

The poultry house was cleaned and disinfected properly with a sprayer before the arrival of the birds. Anti-stress and anti-biotic was added to the drinking water. Regular cleaning of the house was observed, when necessary, Birds was vaccinated against Gumboro and Newcastle disease feed and water was served to the birds on daily basis and was not allowed to be wet at all the times.

Prior to the arrival of the birds, the brooder house was washed, cleaned and disinfected. The birds were housed on their arrival at the brooder house of the poultry unit of the college.

Experimental Diets

The experimental diets used for this research was formulated using the available feed ingredients Such as *Linnea acida* stem bark. The diet was fed to the birds throughout the experiment.

Table 1: Gross and calculate chemical composition of the experimental diets

Ingredients	T_1 (0%)	$SLAT_2$ (0.25%)	$SLAT_3$ (0.50%) SLA
Maize	45.00	45.00	45.00
SBM	29.00	29.00	29.00
SLA	0.0	0.25	0.50
GNC	10.00	10.00	10.00
Wheat Offal	8.00	8.00	8.00
Fish Meal	2.00	2.00	2.00
Bone Meal	3.00	3. 00	3. 00
Blood Meal	2.0	2.0	2.0
Lysine	3.00	3.00	3.00
Methionine	0.30	0.30	0.30
Premix	0.30	0.30	0.30
Salt	0.20	0.20	0.20
Total	100	100	100
Calculated Chemical Composition			
Energy (kcal/kg)	2960		
Crude Protein (%)	19.4		
Calcium (%)	1.5		
Phosphorus (%)	1.0		

Experimental Design

One Hundred and fifty (150) day old broiler chicks were used in this experiment, which were randomly allocated into three dietary treatments each treatment was further divided into five (5) replicates with ten (10) chicks per replicates in a completely randomized design. Each treatment was fed and one of the experimental diets for four weeks.

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Data Collection

Feed intake was recorded daily by subtracting the amount offered from the left over of the previous day. Body weight was monitor on weekly basis and mortality was recorded as it occurs.

Data Analysis

The data collected was subjected to analysis of variance (ANOVA) using SPSS statistical software package. Means was separated at 5% level of significance using Duncan multiple range test.

Results and Discussions

This chapter present result and discussion on effect of utilizing *Lannea acida* stem bark as feed additives on growth performance of broilers birds at starter phase.

Table 4: Effect of utilizing *Lannea acida* stem bark for broilers birds at starter phase

Parameter	T_1 (0%) SLA	T_2 (0.25%) SLA	T_3 (0.50%) SLA	SEM±
IBW (g)	48.00	47.00	45.33	0.70
FBW (g/b)	955.66	953.33	955.66	1.51
FIBD (g/d)	29.72	29.22	29.62	0.16
FIBG (g/d)	1782.66	1781.66	1774.33	3.22
BWGBD (g/b/d)	9.04	9.06	9.16	0.01
MTL	1.33	1.00	1.00	0.26
FCR	1.98	1.98	2.07	0.04

Keys:

IBW: Initial body weight

FBW: Final body weight

FIBD: Feed intake bird per day

FIBG: Feed intake gram per birds

BWGBD: Body weight gain gram per birds per day

MTL: Mortality

LASB: *Lannea acida* Stem bark

SEM: Standard error measure

ANTP: Antibiotic growth promoter

Significant difference was not observed for all the parameters (FI, IBW, FBW, FIBD, FIB, BWGB. BWGBD, FCR and MTL) measured. But numerical variations were observed among the treatment values. T3 recorded the highest FBW and lowest was recorded in T2 highest FIB was seen in T1 followed by T2 and lowest recorded in T3. The best BWG was observed in T3 and lowest in T2. There was no significant difference for FBW among the treatment this in agreement to the finding of Mourntzouris et al, (2011) who assess the growth performance of broilers different phytogenic feed additives where he observed decrease in FI among the treatment groups compound to control. The result obtained BWG is contrary to his finding but in agreement to the findings of Ganapathi et al., (2015) who reported no significant improvement for broilers fed digestrom(R) phytogenic feed additive. FCR values recorded in the present study is not in agreement in the present of Ganopathiet al., (2015) which indicated improvement In FCR of broilers fed digestrom(R) phytogenic feed additive it has been reported extract from species and herbs may stimulate digestive secretion and enzymatic activity thus exerting beneficial actions within the digestive tract (Platel and Gabler, 2004). The present finding for their supports the idea that phytogenic feed additives favorably modulate gut functions and digestive activities to stimulate growth in broilers.

Summary, Conclusion and Recommendation

This study was carried out in the Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, to find the effect of Utilizing *Lannea acida* stem bark as feed additive on growth performance of broilers chicken at starter phase. Three experiment diet were formulated and tagged T_1 (200g ANTP) T_2 (100g LASB), T_3 (200g LASB) One Hundred and Fifty (150) birds were used in this experiment which were randomly allocate into three dietary treatments. Each treatment contains 50 chicks each replicated 5 times with 10 birds in each replicate. At end of experiment the result revealed significant difference was not observed for all the parameters (FI, IBW, FBW. FIBD, FIB, BWGB BWGBD ECR and MTL) measured. But numerical variations were observed among the treatment values. T_3 recorded the highest FBW and lowest was recorded in T_2 highest FIB was seen in T_1, followed by T_2 and lowest

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recorded in T_3. The best BWG was observed in T_3 and lowest in T_2. However, it is recommended that further investigation should be carried out to determine the optimum inclusion of *Lannea acida* stem bark in broiler in the diets of broiler chicks. From the result obtained it can be concluded that feeding broilers chicks with *Lanea acida* stem bark powder can improve their performance.

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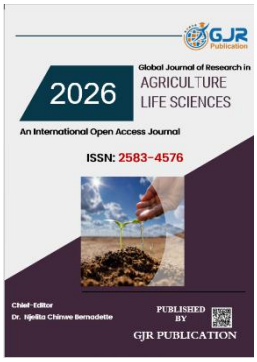

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