



**NSAP**

**47<sup>th</sup> Annual Conference**  
(JOS 2022)

**CONFERENCE PROCEEDINGS**

THEME  
SECURING ANIMAL AGRICULTURE AMIDST GLOBAL CHALLENGES

## **EFFECT OF SANDPAPER (*Ficus exasperata*) LEAF MEAL ON PERFORMANCE, CARCASS AND ORGAN CHARACTERISTICS OF FINISHER BROILERS**

**Adetutu O. I., \* Olabode A. D., Okechukwu S. O., Onyishi P. I. and Opoke M. C.**

*Department of Animal Production Technology, Federal College of Agriculture, P.M.B. 7008, Ishiagu, Nigeria.*

*\*Corresponding author's e-mail: [adetutuoi@fcaishiagu.edu.ng](mailto:adetutuoi@fcaishiagu.edu.ng) (08136869695)*

### **Abstract**

The trial evaluates effect of sandpaper leaf meal on performance, carcass and organ characteristics of finisher broiler chicks. *Ficus exasperata* leaf meal was included in the diets of the birds at 0% (control), 1%, 2% and 3% of 100kg feed in treatment 1, 2, 3 and 4 respectively. A total of ninety-six (96) day old broiler chicks was used for this trial. The birds were randomly divided into four (4) treatments of three (3) replicates containing eight (8) birds each. Results; Highest ( $P<0.05$ ) mortality value of 8.33% was recorded from the control group (T4) while 0% mortality was recorded from the birds that received 2% (T3) and 3% (T4). Highest feed conversion ratio value of 2.50 was recorded from the control group while least value of 2.25 was recorded from 3% (T4). Highest dressing percentage value of 79.06% was recorded from 3% (T4) while least value of 75.09% was recorded from 2% (T3). Values ( $P<0.05$ ) recorded from primal cuts; drumstick, breast muscle, wings, back and neck did not follow any definite sequence and thus might not have been influenced by inclusion levels. Lower ( $P<0.05$ ) liver values recorded from 1% (T2), 2% (T3) and 3% (T4) could be attributed to non-toxicity of sand paper leaf meal. From the findings of this study, performance of the birds was dose dependent as the group that received highest inclusion level (3%) T4 recorded the best performance in terms of weight gain, feed conversion ratio, mortality and meat yield.

**Key words:** Sandpaper, Serum, Haematology, Extract, Broiler.

### **INTRODUCTION**

Poultry is a general term for birds of several species such as chicken or domestic fowls, ducks, geese, guinea fowls, pigeons, ostriches and other game birds (Okunade *et al.*, 2010). In Nigeria, different poultry species contribute significantly to the animal protein supply of the populace in terms of eggs laid (Orunmuyi *et al.*, 2006) and meat produced. Proteins of animal origin such as poultry meat and eggs provide a concentrated source of readily assimilable amino acids in suitable proportions for human needs. However, poultry especially broiler production is greatly affected by the feed costs, which account for about 75% of the total cost of production (Kekeocha, 1984). Insufficiency of feed frequently imposes a major constraint on development of animal production in many developing countries. The shortage and cost of conventional food ingredients for poultry diets is forcing producers to look for alternative raw materials.

### **Materials and Methods**

The experiment was carried out at the Poultry Unit of the Teaching and Research Farm, Federal College of Agriculture Ishiagu, Ebonyi state. The plant was selected for this study based on its ethno-medicinal use. Fresh leave of Sandpaper (*Ficus exasperata*) leaf was harvested (without stock) from middle aged green trees. The leaf was washed in running water and then air dried (to prevent bleaching) for 14 days until crispy but still retaining the greenish tint. The turning of leaf was carried out on regular intervals (daily) to prevent uneven drying and possible decay of leaves. The leaf was hammer milled and converted into ground form which was stored in an air tight container prior to usage. Four (4) experimental diets were formulated for based on the nutritional requirements of the birds and such that additive values of *Ficus exasperata* leaf in the diets of the birds were 0% (control), 1%, 2% and 3% in treatment 1, 2, 3 and 4 respectively. The composition of the diets was as presented below.

**Table 1: Composition of Experimental Broiler Finisher Diets**

<b>Ingredients</b>	<b>T1 (0%)</b>	<b>T2 (1%)</b>	<b>T3 (2%)</b>	<b>T4 (3%)</b>
Maize	56.00	56.00	56.00	55.00
Wheat offal	4.50	3.50	3.50	3.50
Soybean	18.00	18.00	18.00	18.00
Groundnut cake	16.00	16.00	15.00	15.00
Fish	1.50	1.50	1.50	1.50
Bone	2.00	2.00	2.00	2.00
Limestone	1.00	1.00	1.00	1.00
Salt	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25
SLM	-	1.00	2.00	3.00
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
<b>Calculated values</b>				
ME (kcal/kg)	3030.49	3029.49	3028.48	3027.48
Crude protein (%)	20.42	20.34	20.27	20.20
Ether extract (%)	6.67	6.67	6.67	6.67
Crude fibre (%)	3.30	3.46	3.69	3.85
Lysine (%)	1.24	1.24	1.24	1.24
Methionine (%)	0.57	0.57	0.57	0.57
Calcium (%)	1.12	1.12	1.12	1.12
Phosphorus (%)	0.59	0.59	0.59	0.59

ME = Metabolisable Energy

A total of ninety-six (96) day (post-hatch) old broiler chicks (Cobb-500 strain) from a reputable commercial farm was used for this trial. The birds were randomly divided into four (4) treatments of three (3) replicates and each replicate contained eight (8) birds, which made it a total of twenty-four (24) birds per treatment. Vaccinations and Medication (Antibiotics and Extract) were done concurrently as at when due (at first, third and fifth week respectively). Feed and water were given *ad-libitum*. The trial lasted for 8 weeks. Data were collected on feed intake, weight gain which was used to calculate feed conversion ratio. At the end of the experiment (56<sup>th</sup> day), one bird from each replicate with body weights closest to the group average weight were selected, tagged and fasted for 12 hours. The birds were subsequently sacrificed by severing the jugular vein and allowed to bleed thoroughly, after which they were de-feathered and properly dissected. The primal cuts were expressed as percentage of carcass weight and organs a percentage of live weight. The experiment was laid down in a Completely Randomized Design (CRD). Data collected were analysed by One Way Analysis of Variance using SPSS (23) software and means were compared using Duncan's Multiple Range Test of the same package and considered significant when  $P < 0.05$ .

**Results and Discussion**

Improved feed conversion ratio recorded in the present study with increase in sandpaper leaf meal contradicts the report of Ubua *et al.*, 2019 where the control group recorded least feed conversion ratio using neem leaf meal. Reduction in feed intake recorded with increasing sandpaper levels across the treatment might have been influenced by the antimicrobial activity of sandpaper leaf meal thus aiding the activities of the gut gram positive microbes, decline in feed intake as also been reported by Bonsu *et al.* (2012); Obun *et al.* (2013) for neem leaf meal. Progressive decline in mortality rate recorded in this



research might be a collective activity of hypoglycemic, antibacterial and antioxidative properties of sandpaper, this report corroborates the report of Ubuia *et al.* (2019).

**Table 2: Effect of Sandpaper (*F. exasperata*) Leaf Meal on Growth Performance of Finisher Broilers**

Parameters	T1 (0%)	T2 (1%)	T3 (2%)	T4 (3%)	SEM
Initial body weight (g)	149.64	148.85	146.50	148.95	
Final body weight (g)	2161.11 <sup>b</sup>	2162.50 <sup>b</sup>	2229.16 <sup>ab</sup>	2250.00 <sup>a</sup>	<b>13.84</b>
Weight gain (g)	2011.46 <sup>b</sup>	2013.4 <sup>b</sup>	2082.66 <sup>a</sup>	2101.04 <sup>a</sup>	<b>13.66</b>
Av daily weight gain (g)	35.91 <sup>b</sup>	35.95 <sup>b</sup>	37.19 <sup>ab</sup>	37.51 <sup>a</sup>	<b>0.24</b>
Av total feed intake (g)	5019.88 <sup>a</sup>	4986.33 <sup>b</sup>	4820.78 <sup>c</sup>	4732.30 <sup>d</sup>	<b>14.02</b>
Av. daily feed intake (g/d)	102.44 <sup>a</sup>	101.76 <sup>b</sup>	98.38 <sup>c</sup>	96.57 <sup>d</sup>	<b>0.28</b>
Mortality (%)	8.33 <sup>a</sup>	4.16 <sup>ab</sup>	0.00 <sup>b</sup>	0.00 <sup>b</sup>	<b>0.88</b>
Feed conversion ratio	2.50 <sup>a</sup>	2.47 <sup>a</sup>	2.32 <sup>b</sup>	2.25 <sup>b</sup>	<b>0.01</b>

<sup>abcd</sup> Means with similar superscripts along the same row are not significantly (P > 0.05) different

**Table 3: Effect of Sandpaper (*F. exasperata*) Leaf Meal on Carcass and Organ Characteristics of Finisher Broilers**

Parameters	T1 (0%)	T2 (1%)	T3 (2%)	T4 (3%)	SEM
Live weight (g)	2113.66 <sup>b</sup>	2166.66 <sup>b</sup>	2237.00 <sup>a</sup>	2259.66 <sup>a</sup>	<b>13.20</b>
Bled weight (g)	2057.33 <sup>c</sup>	2101.66 <sup>bc</sup>	2163.33 <sup>ab</sup>	2191.00 <sup>a</sup>	<b>15.23</b>
Defeathered wt (g)	1960.66 <sup>c</sup>	2054.33 <sup>ab</sup>	2005.66 <sup>bc</sup>	2074.83 <sup>a</sup>	<b>11.71</b>
Eviscerated wt (g)	1745.33 <sup>b</sup>	1798.00 <sup>b</sup>	1809.33 <sup>b</sup>	1898.50 <sup>a</sup>	<b>14.71</b>
Carcass wt (g)	1620.66 <sup>b</sup>	1658.00 <sup>b</sup>	1680.33 <sup>b</sup>	1782.85 <sup>a</sup>	<b>13.44</b>
Dressing %	76.63 <sup>ab</sup>	76.60 <sup>ab</sup>	75.09 <sup>b</sup>	79.06 <sup>a</sup>	<b>0.48</b>
<b>Primal cut (% Carcass weight)</b>					
Drum stick	14.52 <sup>a</sup>	13.29 <sup>c</sup>	14.29 <sup>ab</sup>	13.91 <sup>b</sup>	<b>0.10</b>
Thigh	15.46 <sup>b</sup>	15.81 <sup>ab</sup>	15.92 <sup>a</sup>	16.13 <sup>a</sup>	<b>0.07</b>
Breast Muscle	32.86 <sup>a</sup>	32.66 <sup>a</sup>	32.86 <sup>a</sup>	31.25 <sup>b</sup>	<b>0.18</b>
Wing	11.54 <sup>ab</sup>	10.43 <sup>c</sup>	11.95 <sup>a</sup>	11.15 <sup>b</sup>	<b>0.11</b>
Back	18.55 <sup>b</sup>	20.65 <sup>a</sup>	18.51 <sup>b</sup>	20.32 <sup>a</sup>	<b>0.17</b>
Neck	7.00 <sup>b</sup>	7.14 <sup>ab</sup>	6.81 <sup>c</sup>	7.26 <sup>a</sup>	<b>0.03</b>
<b>Offals</b>					
Shank	4.78 <sup>a</sup>	4.09 <sup>b</sup>	4.79 <sup>a</sup>	4.54 <sup>a</sup>	<b>0.71</b>
Head	2.85	2.72	2.87	2.73	<b>0.03</b>
<b>Organs</b>					
Heart	0.49 <sup>b</sup>	0.46 <sup>b</sup>	0.55 <sup>a</sup>	0.57 <sup>a</sup>	<b>0.11</b>
Gizzard (intact)	2.08 <sup>b</sup>	2.48 <sup>a</sup>	2.04 <sup>b</sup>	2.17 <sup>a</sup>	<b>0.04</b>
Gizzard (empty)	1.49	1.56	1.51	1.53	<b>0.02</b>
Liver	1.91 <sup>a</sup>	1.68 <sup>b</sup>	1.59 <sup>b</sup>	1.84 <sup>a</sup>	<b>0.02</b>
Proventriculus	0.55 <sup>a</sup>	0.46 <sup>b</sup>	0.47 <sup>b</sup>	0.56 <sup>a</sup>	<b>0.00</b>
Small intestine weight	2.80 <sup>c</sup>	3.05 <sup>b</sup>	2.61 <sup>d</sup>	3.61 <sup>a</sup>	<b>0.04</b>
Small intestine length	3.66 <sup>bc</sup>	3.78 <sup>b</sup>	3.55 <sup>c</sup>	4.14 <sup>a</sup>	<b>0.04</b>
Large intestine Weight	0.15 <sup>b</sup>	0.17 <sup>ab</sup>	0.17 <sup>ab</sup>	0.21 <sup>a</sup>	<b>0.00</b>
Large intestine Length	0.20	0.20	0.21	0.19	<b>0.00</b>
Caecum weight	0.42 <sup>c</sup>	0.56 <sup>b</sup>	0.58 <sup>b</sup>	0.70 <sup>a</sup>	<b>0.01</b>
Caecum length	0.33 <sup>c</sup>	0.38 <sup>b</sup>	0.38 <sup>b</sup>	0.41 <sup>a</sup>	<b>0.00</b>

<sup>abc</sup> Means with similar superscripts along the same row are not significantly (P > 0.05) different



**NSAP**

**47<sup>th</sup> Annual  
Conference  
(JOS 2022)**

**CONFERENCE  
PROCEEDINGS**

THEME  
SECURING ANIMAL  
AGRICULTURE AMIDST  
GLOBAL CHALLENGES

Eviscerated and carcass weight recorded increased ( $P < 0.05$ ) with increase in inclusion levels. Highest ( $P < 0.05$ ) carcass weight of 1782.85g was recorded from 3% (T4) while least value of 1620.66g was recorded from 0% (T1). Highest dressing percentage value of 79.06% was recorded from 3% (T4) while least value of 75.09% was recorded from 2% (T3), however dressing percentage values recorded from 0%, 1% and 2% were statistically comparable. Values ( $P < 0.05$ ) recorded from primal cuts; drumstick, breast muscle, wings, back and neck did not follow any definite sequence and thus might not have been influenced by inclusion levels. Thigh muscle value increased with increase inclusion levels. Increased heart values ( $P < 0.05$ ) recorded from the group that received higher inclusion levels could not be explained. Higher empty gizzard value recorded from the group that received inclusion levels of sand paper leaf meal when compared to the control group could be attributed to higher crude fibre in the diets. Lower ( $P < 0.05$ ) liver values recorded from 1% (T2), 2% (T3) and 3% (T4) could be attributed to non-toxicity of sand paper leaf meal. The result of the carcass characteristics in this study corroborates the report of Obun *et al.*, 2013 who had also recorded significant different in carcass characteristics of broiler chicken but disagreed with the report of Ubua *et al.*, 2019 who reported no significant different in carcass characteristics. Result of this research negates the report of Bonsu *et al.* (2012) that reported no significant different in organ characteristics across the dietary treatments.

### **Conclusion and Recommendation**

The results show that Sandpaper Leaf Meal (SLM) when included at different levels pose positive effect on the performance, carcass and internal organ characteristics of broiler chickens. However, performance of the birds was dose dependent as the group that received highest inclusion level (3%) T4 recorded the best performance in terms of weight gain, feed conversion ratio, mortality and meat yield. The advantage of using SLM is that the plant is readily available, the leaves can easily be harvested and the basic preparation involves air drying and milling at relatively no cost.

### **References**

- Bonsu, F.R.K., Kagya-Agyemang, J.K., Kwenin W.K.J. and Zanu, H.K. (2012). Medicinal response of broiler chickens to diets containing neem (*Azadirachta indica*) leaf meal, haematology and meat sensory analysis. *World Applied Science Journal*, 19: 800-805.
- Kekeocha, C.C. (1984). Poultry Production Handbook. Published by Pfizer Corporation, Nairobi, in association with MacMillan Publishers London and Basingstoke. Chapters 1 and 6.
- Obun, C.O., Ukim, C.I., Olatunji, E.A. and Kehinde, A.S. (2013). Health and carcass implications of dietary inclusion of graded level of sun-cured neem (*Azadirachta indica*, A. Juss) leaf meal for broilers. *Greener Journal of Agricultural Sciences*, 3: 48-54.
- Okunnade, S.A., Kehinde, A.S., Olafadehan, O.A. and Salihu, I.S. (2010). Assessment of nutrient composition of broiler and broiler breeder feeds in Ilorin, Kwara State, Nigeria. Proc of the 44th Annual Conf of Agric Soc of Nig., 718.
- Orunmuyi M., Bawa G. S., Adeyinka F. D. (2006). Effects of Graded Levels of Palm-Kernel Cake on Performance of Grower Rabbits. *Pakistan Journal of Nutrition* 5(1):71-74
- Ubua, J.A., Ozung, P.O. and Inagu, P.G. (2019). Dietary Inclusion of Neem (*Azadirachta indica*) Leaf Meal Can Influence Growth Performance and Carcass Characteristics of Broiler Chicken. *Asian Journal of Biological Sciences*. 180-186.