

CARCASS CHARACTERISTICS OF BROILER CHICKEN FED AFRICAN PARQUETINA

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ABSTRACT

*This study was conducted to determine the effect of *Africana Parquetina* (*Parquetina nigrescens*) as a phytogenic feed additive (PFA) on carcass characteristics of broiler chicken. One hundred and twenty day old Arbor Acres broiler chicken were assigned to four dietary treatment with thirty birds in a Completely Randomized Design with the inclusion level 12.5g of antibiotics, 50g of *Parquetina nigrescens* powdery extract, 75g *Parquetina nigrescens* powdery extract and 100g *Parquetina nigrescens* powdery extract. The thirty chicks were subdivided into 3 replicates of 10 birds each at finisher phase. Feed and water were given appropriately and recorded. Carcass parameters measured were live weight, dead weight, eviscerated weight, primal cuts (thigh, drumstick, breast and wing) and internal organs (gizzard, liver, kidney, heart, proventriculus, ileum, duodenum, jejunum, spleen, back). The result of the carcass parameters of the birds showed that there was no significant differences ($P>0.05$) in the cut parts and primal cuts. This study revealed that the inclusion of *Parquetina nigrescens* has no detrimental effect on the carcass parameter, organ weight and primal cut values of the experimental birds but improved the average body weight and live ability of the birds at the inclusion level at 50g/25kg.*

Keywords: carcass, *Africana Parquetina*, broiler chicken.

INTRODUCTION

Additives to feed have become a necessary part of diets, particularly for animals that are monogastric. Antibiotic usage is not always beneficial to human health due to side effects. Currently, there is a growing interest in phytogenic feed additives, particularly for poultry. Even if the performance of the birds bred with these feed additives was good, their possible adverse consequences became a global public health concern (Donoghue, 2003). The incessant rise in feed cost and the resultant shortage in animal protein supply have encouraged the exploitation of locally available and cheap animal and feed resources to reinstall threat to the future of poultry production (Runjaic *et al.*, 2010). Medicinal ingredient of plant origin have different chemical nature and show a very wide range of pharmacological effects such as antibacterial activity, anti-inflammatory, astringent, anti-diarrhea, digestion stimulating, laxative sedative, spasmolytic and choleretic (Runjaic Antic *et al.*, 2010). *Parquetina nigrescens* also known as bullock is a shrub found in equatorial region of west Africa (Mabberly, 1987) has been in traditional medicine practice for centuries with its leaves, root and latex all in use (Gill, 1992). It has been used traditionally to treat various ailments such as malaria, diabetes and hypertension. Recent studies have shown that *Africa parquetina* has a feed ingredient for livestock animals including broiler chickens. Several studies have investigated the effect of *Africa parquetina* on the growth, performance and carcass characteristics of broiler chicken. For instance, a study by (Ademola *et al.*, 2020) reported that the inclusion of *Africa parquetina* in broiler diets improved the growth performance and carcass characteristics of broiler chickens. One study found that feeding broiler *parquetina nigrescens* leaf meal in the diet did not negatively affect the carcass characteristics of the broiler (Ojediran, 2017).

Another study evaluated the use of the leaf meal as an alternative protein source in broiler chicken diets. The study found that the inclusion of the leaf meal in the diet improve the growth performance and feed conversion ratio of the broiler chickens (Oluwadara *et al.*, 2018). This study is designed to ascertain the carcass characteristics of broiler chicken fed with *Africana Parquetina*.

MATERIALS AND METHODS

The experiment was carried out at the poultry unit, Directorate of Agro service and entrepreneur Farms, Federal Polytechnic Ilaro, Ogun state, Nigeria. This area is situated in the South Western part

of Nigeria. Lies in altitude of 14m above sea level and falls within latitude 6.895550N and longitude 2.977167E (GPS display, 2023). *Parquetina nigrescens* leaves were harvested from Ilaro forest, Ogun state, Nigeria. The leaves sample was identified and authenticated as *Parquetina nigrescens*. The leaves were removed from the stem, debris was removed and soil particles, air dried at room temperature for 7 days and grounded into powder using an electric blender. The powder extracted was mixed with the broilers' feed. Feeding troughs and drinkers were provided in the brooder house, the pen was pre-heated and the temperature and relative humidity was monitored using a digital hygrometer. One hundred and twenty (120) day old broiler chicks were procured from a reputable hatchery and brooded for one week. Birds were fed with commercial feeds, broiler finisher with crude protein of 18% and metabolizable energy of 3000kcal/kg was fed at finishing phase. Feed and water were provided *ad libitum*. All medications were administered and supplementation were carried out where and when necessary. After two weeks of brooding, one hundred and twenty birds were balanced for weight and randomly distributed into experimental treatment.

The experiment was arranged in a one way analysis of variance. The birds were randomly distributed into 4 treatments; 12.5g/25kg, 50g/25kg, 75g/25kg and 100g/25kg each treatment was assigned 30 birds and was grinded to powery form and added in the feed. The treatment was further divided into 3 replicate with each replicate containing 10 birds respectively.

On the 42nd day of the experiment, one bird per replicate was selected. The birds were slaughtered and dressed following conventional procedure by severing the carotid artery and jugular vein. The birds were bled completely followed by skinning. The life weight was also recorded. Dressing percentage (%) = Dressing weight (g)/Life weight (g) × 100.

Organs which include gizzard, liver, kidney, heart, lungs, spleen, proventriculus, ileum, jejunum and duodenum were weighed. Cut parts of the birds such as the breast, wings, shanks, neck, drumsticks, thigh, head and the back were weighed as a percentage of the liveweight.

Cut-part percentage (%) = Cut-part weight (g)/Life weight (g) × 100.

Data obtained was subjected to one way Analysis of Variance (ANOVA) and means was compared using Duncan's Multiple Range test with the aid of SPSS (1997) package.

RESULTS AND DISCUSSION

The result shows (table 1) a significant different in the breast, neck, back, drumstick, thigh, wings and head percentage of carcass. There was a reduction in the head percentage as the days of administration increases. Treatment 1 has the highest head percentage (2.36%) while treatment 3 has the least value (2.13%).

Table 1: Effect of administration of powdery form of *Parquetina nigrescens* on carcass quality of broiler chicken at finisher phase.

Parameters	T1	T2	T3	T4	P value
Live weight (g)	1900 ± 57.735	1933.33 ± 120.18	1766.67 ± 72.65	1733.33 ± 158.99	0.529
Dead weight (g)	1590.33 ± 46.48	1639.33 ± 86.36	1419.33 ± 15.33	1459.67 ± 120.32	0.226
Eviscerated wt (g)	1357.33 ± 43.21	1412.33 ± 81.53	1251.67 ± 59.45	1231 ± 87.031	0.283
Neck (%)	4.126 ± 0.77	3.513 ± 0.57	3.839 ± 0.809	3.486 ± 0.177	0.584
Wings (%)	3.851 ± 0.15	3.777 ± 0.18	3.972 ± 0.347	3.638 ± 0.054	0.732
Drumstick (%)	4.509 ± 0.073	4.709 ± 0.53	4.335 ± 0.302	4.452 ± 0.056	0.855
Thigh (%)	5.1527 ± 0.20	4.894 ± 0.68	4.417 ± 0.135	4.704 ± 0.100	0.564
Breast (%)	21.340 ± 0.43	23.507 ± 3.80	20.447 ± 0.485	21.689 ± 0.627	0.735
Back (%)	12.166 ± 1.46	12.896 ± 1.44	13.236 ± 0.601	12.624 ± 1.151	0.746
Head (%)	2.35833 ± 0.42	2.222 ± 0.26	2.132 ± 0.038	2.219 ± 0.053	0.993

The back percentage significantly increases as the days of administration increases. Treatment 3 has the highest value (13.24%) while treatment 1 has the least back percentage (12.17%). Treatment 1 has the highest neck percentage (4.13%) while treatment 4 has the least number of percentage (3.49%). Treatment 3 has the highest value of wings percentage (3.97%) while treatment 4 has the least value (3.638%). Treatment 2 has the highest drumstick percentage (4.71%) while treatment 3 has the least value (4.34%). Treatment 1 has the highest thigh percentage (5.15%) while treatment 3 has the least

value (4.42%). Treatment 2 has the highest breast percentage (23.51%) while treatment3 has the least value (20.44%).

DISCUSSION

Effect of *Parquetina nigrescens* powdery extract on the carcass characteristics of broiler chicken are presented in Table 4. There was no significant ($P>0.05$) difference in all the parameters observed. The live weight for broiler ranged from 1733.33g – 1933.33g with the second treatment having the highest mean live weight of 1933.33g. Birds in 100g of *Parquetina nigrescens* were statistically smaller than those in 12.5g of antibiotics, 50g of *Parquetina nigrescens* and 75g of *Parquetina nigrescens*. This observation is contrary to the findings of (Denil *et al.*, 2003) who reported that carcass weight were not affected significantly by probiotic ($P>0.05$). This does not agree with Ngoka *et al.*, 2010, who reported carcass weight range of 940 – 1060g. This variation might be associated with individual differences in glycogen stores in the muscle. This report is in line with the findings of Denil *et al.*, 2003 who reported that carcass yield was influenced by probiotic ($P<0.05$). The highest percentage for drumstick is 50g of *parquetina nigrescens* (4.71%) which showed no significant ($P>0.05$) when compared to birds in 12.5g of antibiotics, 75g of *parquetina nigrescens* and 100g of *parquetina nigrescens*. The result further revealed that the highest value for breast is 50g of *parquetina nigrescens* (23.51%) while the least value (20.45%) obtained in 75g of *parquetina nigrescens*. The non-significant of the parameters measured was corroborated by the nutrition, and efficiency of feeding were identified as major determinant for carcass quality. Similarly, the result obtained from this study corroborated that the feeding of birds more frequently can improve feed efficiency and nutrient utilization thereby reducing prolonged rearing of broiler chickens.

CONCLUSION

The findings of the study suggest that incorporating *Parquetina nigrescens* into the diet of broiler chickens can influence certain carcass characteristics. The observed changes in weight, dressing percentage, and organ weight indicate a potential impact on the overall carcass quality. However, further research is needed to fully understand the mechanisms behind these effects and to establish optimal inclusion levels of *Parquetina nigrescens* in broiler diets. It is also essential to consider factors such as feed conversion efficiency and economic viability when evaluating the practicality of using *Parquetina nigrescens* as a feed additive for broiler production.

RECOMMENDATIONS

Based on the results of the study, it is recommended that future research explore the specific nutritional components of *Parquetina nigrescens* that contribute to the observed changes in carcass characteristics. Additionally, investigations into the long-term effects on broiler health, meat quality, and consumer acceptance are crucial for a comprehensive understanding of the potential benefits and drawbacks of incorporating into broiler diets. Furthermore, economic analyses should be conducted to evaluate the cost-effectiveness of using *Parquetina nigrescens* as a feed supplement compared to synthetic feed ingredients. This information will be valuable for both researchers and poultry farmers seeking sustainable and effective ways to enhance broiler production *Parquetina nigrescens* practices.

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