EFFECT OF ORAL ADMINISTRATION OF JUSTICIA CARNEA ON GROWTH PERFORMANCE OF BROILER CHICKEN

Olorunsogbon, B. F., Sangosina, M, I. and Olorunsogbon, A.M
(Agricultural Technology Department, The Federal Polytechnic, Ilaro. ✉
sangosina.moruf@federalpolyilaro.edu.ng)

Abstract

This study was conducted to evaluate the effect of oral administration of *Justicia carnea* on growth performance of broiler chicken. One hundred and twenty day old chicks were used for this study. Chicks were randomly allotted to four treatment groups in a complete randomized design having three replicate with ten (10) birds each. Birds were housed in a deep litter system where water and feed were provided ad-libitum for six weeks. The extract was administered at different days, T1 (Control), T2 (Extract of *Justicia carnea* (EJC) for twice/ week, T3 (EJC three consecutive days/ week), T4: EJC for five consecutive days/ week. Data obtained were subjected to one way Analysis of Variance (ANOVA). Findings obtained from this study shows that there was significant ($P < 0.05$) difference on feed conversion ratio of the birds. It can be concluded from this study that *Justicia carnea* extract can be used as a growth promoter in broiler chicken production.

Keyword: Broiler, Herbs, *Justicia carnea,* Water

Introduction

The domestication of birds began many years ago. This involves collection of their eggs and young ones of birds such as chicken, duck, quail, turkey, geese with the intent of rearing them for meat, egg production as well as using their product (Stiles, 2017). Broiler chickens are reared especially for meat and the enterprise has short production cycles. According to Nwajiuba and Nwoke, (2000), most commercial broiler reaches slaughter weight between 5 – 7 weeks of age. However, they are constrained by rising cost of inputs, particularly feed and medication Umeh and Odo, (2002).

Poultry producers use synthetic growth promoters especially antibiotics to improve growth and general health of the birds. However, the prolonged use of these synthetic growth promoters has been reported to exhibit detrimental effects in the birds and humans who consume their products. (Achilonu *et al*., 2018).

Consequently, there is a demand for better and more effective growth promoters, which herbs have been detected to be a comparative alternative. Herbs like *Justicia carnea (family: Acanthaceae, common name:* Brazilian plume flower, flamingo flower) contains photobiotic compounds which can improve livestock productivity through amelioration of feed properties, improvement of nutrient digestibility, absorption and elimination of pathogens in the gut (Kikusato, 2021).
This research therefore aims to evaluate the effect of oral administration of *Justicia carnea* aqueous extract on growth performance of broiler chicken.

MATERIALS AND METHODS

Experimental Site

The experiment was carried out at the Poultry unit of Agricultural Technology Department, The Federal Polytechnic Ilaro, Ogun State, Nigeria. This area is situated in the South Western part of Nigeria.

Sources and preparation of Justicia Carnea plant aqueous extract

Justicia carnea plant was harvested from the Ilaro forest, Ogun State, Nigeria. It was rinsed and

reduced into smaller sizes afterwards 400g of the plant soaked in 4 litres of water for 72 hours and stir vigorously at 12hours intervals. After 72 hours, it was filtered; the filtrate was stored in the refrigerator to avoid fermentation and made in batches when needed.

Experimental animals and management

Few days before the arrival of the chicks, the brooder house was thoroughly cleaned and disinfected. Wood shaving was spread on the ground and was constantly changed at different interval during brooding to avoid dampness. 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 day old broiler chicks of Arbor Acre strain were procured from a reputable hatchery and brooded for one week. Birds were fed with commercial feeds, broiler starter and broiler finisher. Feed and water/extract was provided *ad libitum.*

Experimental Design

The experiment was arranged in a Complete Randomized Design. The birds were randomly distributed into 4 treatments; each treatment has 3 replicates with each replicate containing 10 birds.
Treatment 1 (T1): Water and synthetic antibiotic when necessary (control).
Treatment 2 (T2): Extract of *Justicia Carnea* (EJC) in 4litre of drinking water for two consecutive days/ week.
Treatment 3 (T3): EJC in 4litre of drinking water for three consecutive days/ week.
Treatment 4 (T4): EJC in 4litre of drinking water for five consecutive days/ week.

DATA COLECTION

Production performance

- Feed intake

A known quantity of feed was given to the birds in each replicate, while the leftover feed was weighed the following morning. The weight of the leftover feed was then subtracted from the feed given to determine the feed intake.

Feed intake (g) = Feed given (g) – Feed leftover (g)

- Water intake

Water offered and left over was recorded daily in order to calculate water intake.
Water intake (l) = Water given (l) – Water leftover (l)

- Weight gain

Initial weights of the birds were taken at day old, and the subsequent body weight was taken at the end of every week.
Weight gain (g) = final weight (g) – initial weight (g)

- Feed conversion ratio

This is the amount of feed consumed to produce 1kg of muscle by the birds.

$$FCR = \frac{Feed\ intake}{\text{Weight gain}}$$

STATISTICAL ANALYSIS

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

RESULTS AND DISCUSSION

Result

Table 1. Shows that Treatment 2 has the least value (1.48) of FCR and it is significantly ($P<0.05$) different form other treatments. Treatment 4 has the highest value FCR (1.70).

Table 1: Effect of oral administration of ***Justicia carnea*** on growth performance of broiler chicken.

Treatment	Feed/bird (g/b)	Water intake (lit/b)	Initial weight (g/b)	Final weight (g/b)	Weight gained/bird (g/b)	FCR
1	2008.88	3673.99	713.88	1977.03	1263.14	1.59[ab]
2	2127.56	4108.33	675.00	2104.44	1429.44	1.48[b]
3	2163.51	3807.80	679.16	1960.74	1281.57	1.69[a]
4	2254.50	3804.26	683.33	2010.00	1326.66	1.70[a]
SEM	41.52	81.68	11.30	31.95	29.01	0.03
P VALUE	0.21	0.30	0.67	0.43	0.16	0.02

[a,b,c] Means in the same column by factor with different superscripts are significantly (P<0.05) different

DISCUSSION

The effect of *Justcia carnea* on growth performance of broiler chicken shows there was a significant difference in the feed conversion ratio (FCR) of the broiler chicken given *Justicia carnea*. Bird given *Justicia carnea* twice a week 'T2' had the least FCR value (1.48) and it is significantly (P<0.05) different from other groups and thereby utilizing the feed efficiently. This result agrees with the work of Akintunde *et al.* (2021) who observed a better feed conversion ratio in broiler chicken fed soaked and fermented herbal leaf. This result also corroborates the findings of Akinlade and Okusanya (2021) who reported better feed conversion ratio in broiler chicken given oral aqueous herbal extracts. This may be due to the phytobiotic component of *Justcia carnea* which have enhanced the gut nutrient assimilation and utilization of feed.

CONCLUSION AND RECOMMENDATION

CONCLUSION

It can be concluded from this study that birds offered *Justicia carnea* extract twice a week had a better performance.

RECOMMENDATION

It is recommended that *Justicia carnea* extract can be included to drinking water of broiler chicken twice in a week as growth promoter.

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