

GROWTH PERFORMANCE CHARACTERISTICS OF BROILER CHICKENS FED DIET CONTAINING ONION SCALES

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Abstract

This study was carried out to evaluate the inclusion value of onion scales in the diets of broiler chickens for a period of 8 weeks. One hundred and twenty (120) day old broiler chicks of Anak strain were fed diets tagged diets 1, 2, 3 and 4 containing 4 inclusion levels of onion scales; 0.0g/kg, 2.0g/kg, 4.0g/kg and 6.0g/kg respectively. The chicks were randomly allotted to the 4 treatments diet with 3 replicates having 10 chicks per replicates. Results showed non significant ($p>0.05$) effect in all the parameters measured. However the control diet recorded the highest ($p>0.05$) body weight gain (1988.62g/b) compared to other treatments. The least mortality rate was obtained from birds on diet 3 and diet 4 (1.2%), it decreased ($p>0.05$) as the level of onion scales inclusion increased in the diets. The use of onion scale in the diets of broiler chickens does not have negative effect on the biological activities of the birds.

Key words: growth performance, broiler chickens, onion scale diets.

Introduction

The demand for animal protein is increasing as a result of increased human population and economic growth (Ugwuene, 2003). The challenge in the millennium is to sustain the livestock industry amidst food so as to boost animal protein intake worldwide. In recent years, there has been a growing trend in many regions throughout the developing world to identify potentially important feed additive sources among multipurpose plants and to explore possibility of including them beneficially in monogastric diets. The demand for plant based therapeutic is increasing in both developing and developed countries because of growing recognition that they are natural products, non-narcotic, and easily biodegradable producing minimum environmental hazards, having no side effects and being easily available at affordable prices (Braga, 2005). Researchers are increasingly turning their attention to herbal products, looking for new ways to develop better drugs against resistant strains. Plants are rich in a wide variety of secondary metabolites such as tannins, alkaloids and flavonoids which have been found in onions to have antimicrobial properties (Lewis, 2006). Probiotics, prebiotics and medicinal plants are currently used in poultry diets to enhance the performance and immune response of birds (Rahmatnadjad *et al.*, 2009).

Onion scale is a crop residue of onion bulb and giving the fact that onion is the major capital crop in Aliero LGA and its environs makes it more

abundant in the study area. The onion scale is viewed as a waste during the harvesting, transportation and packaging of the bulbs, therefore the present study is aimed at to determine the growth performance of broiler chickens feed diet containing different levels of onion scales.

Materials And Methods

The study was conducted at the experimental unit of the Department of Animal Science, Kebbi State University of Science and Technology, Aliero, Kebbi State, Nigeria.

Collection and preparation of onion scales in the Experimental Diets

The onion scales were collected from the onion markets in Aliero LGA. The onion scales were screened from unwanted particles and thereafter spread under the sun until complete dryness was achieved. The dried onion scales were then crumbled into smaller particles and incorporated into the prepared diets at four levels of inclusion; 0.0g/kg; 2.0g/kg; 4.0g/kg and 6.0g/kg representing diet 1, 2, 3 and 4 respectively. The gross composition of the diet is shown in Table 1.

Management of birds and Experimental layout

A total of one hundred and twenty (120) day old broiler chicks of the Anak strains were divided into four groups with three replicates containing 10 birds per replicate and randomly allocated to each of the four diets in a Completely Randomized Design (CRD). Feed and water were given ad libitum also medication and vaccination were given at its due time which lasted for a period of 8

weeks. Data on feed intake, body weight gain, feed conversion ratio and mortality rate were recorded.

Statistical Analysis

All data collected were subjected to analysis of

variance using SPSS (2000) software package and means separation were done by Duncan Multiple Range Test (DMRT) as outlined by Steel and Torrie (1980).

Table 1: Gross composition of the Experimental Diets (finisher)

Ingredients (%)	Treatments			
	1 (0.0g/kg)	2 (2.0g/kg)	3 (4.0g/kg)	4 (6.0g/kg)
White maize	58.10	58.10	58.10	58.10
Wheat offal	19.00	19.00	19.00	19.00
Soya bean meal	15.00	15.00	15.00	15.00
Bone meal	0.80	0.80	0.80	0.80
Blood meal	1.50	1.50	1.50	1.50
Fish meal	2.00	2.00	2.00	2.00
Limestone	2.50	2.50	2.50	2.50
Salt	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25
Methionine	0.1	0.1	0.1	0.1
Lysine	0.1	0.1	0.1	0.1
Cal. Values				
Crude protein	17.10	17.40	17.60	17.90
Met. Energy (M/kcal)	2884.14	2874.80	2879.40	2888.90
Crude fiber	4.33	4.41	4.32	4.24

Table 2: Growth performance characteristics of Broiler chickens fed Experimental Diets

Parameters	Treatments				SEM
	1 (0.0g/kg)	2 (2.0g/kg)	3 (4.0g/kg)	4 (6.0g/kg)	
Initial body weight (g/b)	50.50	50.20	50.35	50.50	4.39
Final body weight (g/b)	1988.62	1917.00	1845.07	1951.58	42.57
Ave. weight gain (g/b)	1938.12	1866.80	1794.72	1901.08	51.73
Ave. feed intake (g/b)	4198.16	4094.40	3990.96	4311.44	80.88
Feed conversion ratio (%)	2.11	2.14	2.16	2.21	0.53
Mortality rate (%)	1.30	1.30	1.20	1.20	0.10

Results And Discussion

The growth performance characteristic of broiler chickens is presented in Table 2. Feed intake, body weight gain, feed conversion ratio and mortality were not significantly ($p>0.05$) affected by the dietary treatments. However birds in treatment 4 with 6.0g/kg of onion scales inclusion level had the highest weight (1901.08 g/b) gain compared to treatment 2 and 3 with the exception of the control group (1938.12g/b). The feed intake of the birds increases as the levels of onion scales increases in the diets. Birds in treatment 4 had the highest feed intake (4311.44g/b) compared to treatment 2 and 3. This is followed by the control group with feed intake of (4198.16g/b). The similar feed intake and body weight gain recorded for the birds across the treatments could be due to

the narrow inclusion levels of onion scales in the diets margins between the treatments as compared to Majid *et al.* (2013) who reported an increased in feed intake of broiler chickens from dietary inclusion of 30g/kg of onion. This finding is also in line with the report of Nasir *et al.* (2011) that broilers fed 2% onion extract in water had higher body weight gain. Birds fed the control diet had the best feed conversion ratio (2.11) compared to the birds in treatments 2, 3 and 4. Aji *et al.* (2011) reported a positive influence of feed intake, body weight gain and feed conversion ratio of broiler chickens fed diet containing fresh onion.

However mortality was experienced due to the outbreak of Gumboro disease during the fourth week of the experiment. Mortality ($p>0.05$) was higher in treatment 1 and 2 and lower in treatment 3 and 4.

This reveals that the inclusion of onion scales in broiler diets increases the livability of birds. Bird's mortality increases as the inclusion levels of onion scales decreases. This could be due to the medicinal properties of onion (Lewis, 2006). This report agreed with Nworgu *et al.* (2007) and Durani *et al.* (2008) that application of medicinal plant reduces the number of mortality among birds.

Conclusion

This study has shown that broiler chickens fed diets containing onion scale supplementation particularly at 6.0g/kg inclusion level does not have any adverse effect on their growth performance characteristics with reduced mortality.

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