

NUTRIENT INTAKE OF PULLET CHICKS FED VARIOUS LEVELS OF MAIZE AND MAIZE OFFAL BASED DIETS

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Abstract

A study was carried out for 49 days to determine the nutrient intake of pullet chicks fed maize and maize offal based diets. Ninety day old pullet chicks were randomly divided into five treatments of 18 birds per treatment. Each treatment was replicated three times with six birds per replicate. The five treatments T1, T2, T3, T4, and T5 were fed five diets in which maize offal replaced maize at 0%, 25%, 50%, 75% and 100% respectively. The samples of the five experimental diets were analyzed for their proximate composition using the methods of AOAC (2000). The nutrient was calculated from the proximate values of the feeds and the feed intake values. The experimental design was a completely randomized design (CRD). Data were subjected to a one-way analysis of variance (ANOVA). Significant treatment means were separated using Duncan's multiple range test. The proximate composition shows that there were significant ($P > 0.05$) differences in the values for all the parameters. The values for dry matter and nitrogen free extracts intakes ranged from 23.60 – 34.00g/day and 13.98 – 22.10g/day respectively. It was concluded that maize offal can replace maize in diets for pullet chicks at 25% without adverse effects on nutrient intake. Further research focusing on other replacement levels as well as other classes of poultry was recommended.

Key Words: Maize, Maize Offal, Nutrient Intake, feed Intake, Pullet Chicks

Introduction

The consumption of poultry meat is constantly increasing and the meat nutritional quality depends on the composition of poultry feeds (Kafi *et al.*, 2017). To counter the high cost of conventional feedstuff and produce poultry products at affordable prices, the use of agro-industrial by-products in poultry feeding must be exploited in Nigeria. There is evidence in literature that the use of agro-industrial by-products reduces the cost of feed as they attract little pricing (Onuh, 2005). One of such readily available agro-industrial by-products is maize offal. According to Ukah (2004) maize offal contains 13.92% crude protein, 7.20% crude fibre and 63.21% nitrogen free extracts while maize meal contains 10.82% crude protein, 4.27% crude fibre and 76.98% nitrogen free extracts.

The search for cheaper and nutritionally adequate alternative feedstuffs continues to be very central to the research efforts of animal nutritionists in the tropics. The aim of this study therefore was to evaluate the

nutrient intake of pullet chicks fed maize and maize offal based diets

Materials and Methods

The feeding trial was carried out at the Poultry Unit of Kogi State University Livestock Teaching and Research Farm, Anyigba. Anyigba is located in the derived Guinea Savannah zone of Nigeria on latitude 7°15' and 7°29' N of the equator and longitudes 7°11' and 7°32' E of the Greenwich meridian. The zone lies in the warm humid climate of the tropics with clearly marked wet and dry season in April to October and November to March respectively with annual rainfall ranging from 1400-1500mm and an ambient temperature of about 25°C with the highest in March and April. The average altitude is 420 meters above sea level (Ifatimehin and Ufuah, 2006).

Ninety (90) day old pullet chicks were purchased and used for the feeding trial. The day old chicks were brooded using kerosene stove, metal hovers and electric bulbs as sources of heat and light in a deep litter house. The birds were randomly allotted to five treatment diets after brooding for three weeks. There were 18 birds in each treatment. Each treatment was replicated three times with each replicate having 6 birds. Feeds and water were provided *ad libitum*.

The five dietary treatments had maize offal replacing maize at 0%, 25%, 50%, 75% and 100% as shown in table 1.

Samples of feeds were analyzed for their proximate composition using standard procedure (AOAC, 2000). Data collected were subjected to a one-way analysis of variance (ANOVA) and significant differences between treatment means were tested using Duncan's Multiple Range Test (DMRT) contained in SPSS version 23 (2015) edition.

Table 1: Composition of Experimental Diets.

Ingredients	Treatments				
	T1	T2	T3	T4	T5
Maize	60.00	45.00	30.00	15.00	0.00
Maize Offal	0.00	15.00	30.00	45.00	60.00
Bambara Nut Offal	37.00	37.00	37.00	37.00	37.00
Bone Meal	2.00	2.00	2.00	2.00	2.00
Table Salt	0.50	0.50	0.50	0.50	0.50
Premix	0.50	0.50	0.50	0.50	0.50
Total	100	100	100	100	100

Results and Discussion

Proximate Composition of Experimental Diets

The Proximate compositions of the experimental feeds are summarized in Table 2

The crude protein value range of 20.50 – 22.00% were within values recommended for pullet chicks (NRC, 1996). The crude fibre values were also in line with the recommendations of Smith, (2001)

Table 2: Proximate Composition of Experimental Diets (%)

Ingredients	Treatments				
	T1	T2	T3	T4	T5
Crude Protein	20.50	20.80	21.30	21.80	22.00
Crude Fibre	6.50	6.70	6.90	7.25	7.45
NFE	60.52	60.35	60.29	59.60	59.25
Ash	5.00	5.30	5.70	5.90	6.25
Ether Extracts	4.70	4.50	4.30	4.20	4.01

*NFE – Nitrogen Free Extracts

Nutrient Intake of Pullet Chicks fed Diets Containing Varying Levels of Maize and Maize Offal

The values for all the nutrients were significantly ($P<0.05$) different, the values for dry matter and nitrogen free extracts ranged from 23.60 – 34.00g/day and 13.98 to 22.10g/day respectively. all the values increased steadily from T1 to T5. The intakes of the various nutrients were adequate for pullet chicks (Ocheja et al (2012)

The dry matter intake per day was sufficient for the pullet chicks (NRC, 1996)

Table 3: Nutrient Intake of Pullet Chicks fed Diets Containing Varying Levels of Maize and Maize Offal (g/day)

Parameters	Treatments					
	T ₁	T ₂	T ₃	T ₄	T ₅	SEM
Dry Matter Intake	34.00 ^a	33.80	30.10	30.55	23.60	2.01
Crude Protein Intake	6.97 ^a	7.03 ^a	6.41 ^b	6.66 ^b	5.19 ^c	0.09
Crude fibre Intake	2.21 ^a	2.26 ^a	2.08 ^b	2.21 ^a	1.75 ^b	0.01
Nitrogen Free Extract Intake	22.1 ^a	21.97 ^a	18.15	18.82 ^c	13.98 ^c	0.98
Ether Extracts Intake	1.60 ^a	1.52 ^a	1.29	1.28 ^b	0.94 ^c	0.01

Ash Intake 1.70^a 1.79^a 1.72 1.80^a 1.48^b 0.02

a,b,c, = Treatment means on the same row with different super scripts differ significantly ($P<0.05$)

SEM = Standard Error of Mean

Conclusion

Twenty five (25%) Maize offal can replace maize in diets for pullet chicks without adverse effects on nutrient intake

Recommendations

Further research should explore other levels of replacement as well as other classes and breeds of poultry

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