Performance Characteristics of Indigenous Turkeys Fed Indomie Waste Based Diets

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Abstract. This study evaluated the performance of turkey poults fed indomie waste based diet. A total of ninety six (96) local strain turkey poults were allotted to four dietary treatment in which indomie waste was used to replace maize at 0, 33.33, 66.67 and 100% levels, representing one to four treatments respectively. Each treatment was replicated three times with eight poults per replicate. The study which lasted for eight weeks was a completely randomized design experiment. Results showed that indomie waste significantly increased the average weight gain and improved feed conversion ratio. The cost of feed per kg decreased with increasing levels of indomie waste in the diet. The lowest cost was obtained at 66.67% inclusion level. It was evident that indomie waste could be incorporated into the diet of local strain turkey poults up to 66.67% level without any deleterious effect on the performance of the turkeys. There is also a concomitant reduction in feed cost per kg weight gain.

Key words: performance, characteristics, indigenous, turkey, indomie waste

Abstrak. Penelitian ini mengevaluasi performa peternakan kalkun yang diberi pakan berbahan baku limbah indomie. Sejumlah 96 kalkun diberi empat pakan percobaan menggunakan limbah indomie untuk menggantikan tepung jagung pada level 0, 33.33, 66.67 dan 100%. Setiap percobaan diulang 3 kali menggunakan 8 kalkun. Penelitian selama delapan minggu menggunakan rancangan acak lengkap. Hasil penelitian menunjukkan bahwa limbah indomie secara nyata meningkatkan kenaikan bobot rata-rata dan rasio konversi pakan. Biaya pakan per kg menurun seiring meningkatnya asupan limbah indomie. Biaya terendah diperoleh pada tingkat 66.67%. Limbah indomie dapat digunakan pada pakan kalkun lokal hingga 66.67% tanpa ada efek negatif pada performa kalkun. Biaya pakan per kg bobot badan juga menurun.

Kata kunci: performa, karakteristik, ternak lokal, kalkun, limbah indomie

Introduction

There has been a steady increase in the cost of conventional feed ingredients such as maize, groundnut cake, soybean meal and fish meal in the past years and this has led to increase in the prices of animal protein sources (Adejinmi et al., 2007). Optimal production of monogastrics required balanced diet with all nutrients both quantitatively and qualitatively. Over the years, numerous research works on livestock and poultry production have been on ways to reduce the cost of feeding the animals through the utilization of agro-industrial by products and other materials that seem to be unimportant to man. Various agro-industrial by-products have been investigated and found to be useful for livestock feeding (Farinu, 2004). Brewer's dried grain, wheat offal, corn offal, rice bran, cassava seviate and peels to mention but a few have been widely tested and incorporation into livestock feeding (Ajayi et al., 2005, Aderemi et al., 2006 and Afolaba et al., 2006). These ingredients can be incorporated into the diets of monogastrics without any deleterious effects on the performance and health of the animals and thereby reducing the cost of feeding which takes 60-75% of the total production cost (Akinfala et al., 2001). However, seasonal variations in the availability

of these agroindustrial by products have pushed animal nutritionist into the investigation of non-conventional feed ingredients with the same intention of reducing the cost of production in order to make animal protein affordable to the populace (Omole et al., 2007). Meanwhile, many food factory waste products have been considered as ingredients utilizable by monogastrics like cassava meal, wheat and corn flour, biscuit wastes, sorghum sprout, poultry offal and indomie waste (Eniolorunda et al., 2008). Indomie is very popular fast food for young and adults Nigerian. It has well balanced and reasonable metabolizable energy, digestible protein with good aroma during and after cooking. The major ingredients of indomie are wheat and palm oil which makes it energy rich. The objective of this research was to investigate the substitute value of indomie waste for maize in turkey poults diet in terms of performance and the implications cost.

In order to provide protein in quantity and quality, rearing poultry which covers above 80% of total livestock production in Africa (Gueye, 2000) was a way out to supply the high demand of animal protein in the rapidly growing human population. Accordingly, farmers as well as scientists are searching for domesticated birds with sufficient potentials to grow and to supplement the availability of this essential protein at cheaper cost. Turkey production plays an important role in this sector globally (Aumueller, 2008).

Materials and Methods

The experiment was carried out in poultry unit of Michael Okpara University of agriculture Teaching and Demonstration Farm, Umudike. A total of ninety six day old local strain turkey poults were used in the study, randomly divided into four experimental groups of eight poults each with three time replications.

Experimental diet. The turkeys were fed four experimental diets with graded levels of indomie waste replacing maize at 0,33.33, 66.67 and 100% for eight weeks. Feed and water were provided adlibitum throughout the experimental period. Feed consumption was determined by weighing feed intake and the leftover. The feed conversion and economics of production were calculated during the experimental period. The prevailing cost of ingredients at study time was used to calculate the feed cost.

The experimental poults. The experimental turkeys were weighed weekly. The immunization programmes for the poults were strictly administered.

Data analysis. Data generated from the study were subject to completely randomized design and one way analysis of variance using the SAS package (1999). Differences between significant mean values were subject to Duncan Multiple Range Test (Duncan, 1955).

Results and Discussion

Results

The proximate composition of the test ingredient is shown in Table 1 while the composition of the experimental diet is in Table 2. The average final weight and average weight gain followed similar trend across the treatment levels as shown in Table 3. The average final weight ranged from 1100 to 1250 g with the highest ($P<0.05$) value recorded for turkey poults fed with 66.67% indomie waste based diets. Feed intake increase ($P<0.05$) was paralleled to indomie waste in the diets. Cost per kg of feed and total cost of feed diminished as the level of indomie waste substitute increased in the diet.

Table 1. Proximate analysis of indomie waste–based diet

Nutrient	% Composition
Crude protein	9.50
Ether extract	3.00
Crude fibre	2.50
Ash	1.10
Dry matter	95.50
Cross energy	13.69 MJ/kg

Table 2. Cross composition of starter turkey diets using indomie waste based (0–8 weeks)

Ingredients	Replacement levels of indomie waste (%)			
	0	33.33	66.67	100
Maize	45.00	30.00	15.00	0.00
Indomie waste	0.00	15.00	30.00	45.00
Soybean meal	39.00	39.00	39.00	39.00
Fish meal	10.00	10.00	10.00	10.00
Bone meal	3.00	3.00	3.00	3.00
Oyster shell	1.80	1.80	1.80	1.80
Vitamin premix	0.50	0.50	0.50	0.50
Salt	0.30	0.30	0.30	0.30
Lysine	0.10	0.10	0.10	0.10
Methionine	030	0.30	030	0.30
Total	100.00	100.00	100.00	100.00
Determined analysis				
Crude protein	26.64	27.31	27.42	27.49
Crude fibre	3.69	3.78	3.67	3.84
ME (MJ/Kg)	13.34	13.25	13.27	13.23

Table 3. Growth performance cost benefit of local of strain turkeys fed indomie waste based diets (0 - 8 wks)

Parameters	Replacement levels of indomie waste (%)				
	0	33.33	66.67	100	SEM
Average initial weight (g/bird)	36.67	36.00	36.50	36.00	0.02
Average final weight (g/bird)	1100.00^{c}	1160.00^{b}	1250.00^{a}	1163.33^{b}	1.14
Average weight gain (g/bird)	1062.33^{c}	1125.00^{b}	1212.50^{a}	1128.33^{b}	1.14
Average feed intake (g/bird)	$33.66.67^{bc}$	3356.67^{c}	3370.00^{b}	3403.33^{a}	2.53
Feed conversion ratio	3.17^{d}	2.98^{b}	2.78^{a}	3.02^{c}	0.00
Liveability (%)	100.00	96.67	93.33	89.27	0.19
Cost per kg of feed	107.61^{d}	98.44^{c}	96.26^{b}	94.09^{a}	0.00
Total cost of feed	362.29^{d}	330.43^{c}	324.40	320.22^{a}	0.25
Cost of feed kg weight gain	341.12^{d}	293.35^{c}	267.60^{a}	284.15^{b}	0.44

Values bearing different superscript at the same row shows significant (P<0.05).

Discussion

The final weight and weight gain of the turkey poults fed with indomie waste based diets were significantly higher (P<0.05) compared to that of control diets. The data suggested that wheat was considerably thermolabile, the higher temperature involved in feed processing might have significantly contributed to the reduction of detrimental effect associated with non starch polysaccharides (NSP) contained in wheat or wheat by products. Heat processing had been reported to affect physical characteristics of NSPs (Cowieso et al., 2005, Gonzalez-Alvarado et al., 2008). This observation is in line with the work of Cary et al. (2002) who reported

increased availability of protein, energy and degradation of anti nutritive factors during wheat processing which improved performance of broiler birds. The utilization of wheat in the diet of livestock depended upon its NSP content, the degree and type of NSP present in the diet, whether soluble (Mathlouthi et al., 2002) or insoluble (Jaroni et al., 1999).

Conclusion

Local strain of starter turkeys fed with indomie waste based diets performed better than those fed with the control diet.

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