

CARCASS YIELD AND GUT CHARACTERISTICS OF BROILER CHICKENS FED GRADED DIETARY LEVELS OF SUN DRIED SWEET POTATO MEAL DIET.

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ABSTRACT

A feeding trial was conducted at the poultry research and teaching farm of Federal College of Horticulture Dadin- kowa, Gombe state to evaluate the effect of sun dried sweet potato meal on the growth performance of broiler chickens they were fed sun dried sweet potato meal S.S.P.M which replaced maize at 0,20,40,60, and 80% levels designated as diet 1,2,3,4, and 5 respectively. Two hundred day- old broiler chickens were randomly allotted into five dietary treatments with forty chickens per treatment replicated four times in a completely randomized design. Feed and water were supplied ad-libitum and the duration of the trial lasted for eight weeks.

The result indicates that all carcass and gut characteristics measured were not influence by the level of sun dried sweet potato meal S.S.P.M. It was concluded that S.S.P.M can replace maize as energy source in the diet of broiler chickens up to 80% with no adverse effects on the carcass yield and gut characteristic of broiler chickens.

Keyword: Broiler chicken, sun dried sweet potato meal, Ad-libitum , dietary and carcass yield.

INTRODUCTION

Animal protein is essential in human nutrition due to its balanced in amino acid profile and ease of utilization (Tewe, 1997). Inadequate animal protein intake is one of the major problems hindering development in developing countries like Nigeria. (F.O.A 2006) Therefore need to increase this protein intake to a level which compares to that of developed nation (Odunsi et al 2007) this could be done through processing agro- industrial by- product as animal feed in the countries which are currently many un-used or used inefficiently and developed of local crops that can be grown to supply the nutrients. Cereals generally make up between fifty-five and sixty- five percent of most conventional compounded animals feed where they supply a major part of the nutrients. Cereal provides not only the main part of the energy in feed but also a significant part of the total protein, minerals and vitamins (Machin 1991).The plant materials utilized in this study to replace maize is sweet potato roots.

MATERIAL AND METHODS

The study was conducted at the Poultry Research and Teaching Farm of Federal College of Horticulture Dadin-kowa, Gombe State is located in Dadin-kowa along Gombe Biu/ Maiduguri road in Yamaltu-Deba local Government area of Gombe state. Dadin- kowa lie about 35 kilometers away from Gombe and is located in the Sudan Savanna Ecological Zone of Nigeria on latitude of 10° 18E Longitude 11° 31N and on the altitude of 218 meters above sea level.

EXPERIMENTAL DESIGN AND MANAGEMENT OF BIRDS

Two hundred day old broiler chicks were purchased from reputable company branch in Gombe state the chicks were brooded for seven days on deep litter using 200 watts electricity bulbs. After brooding the chicks were randomly assigned to five dietary treatment replicated four times each with ten (10) birds per replicate Feed and water were supplied *adlibitum*. All vaccination schedules were administered to the birds at appropriate time anti stress was also given to the chick on arrival and after every week of weighing.

EXPERIMENTAL DIETS

Five experimental diets were formulated in which sundried sweet potato meal replaced maize at 0, 20, 40, 60 and 80 % levels.Designated as dietary treatment 1, 2, 3, 4 and 5 respectively. for both starter and finisher phase. Bone meal, Salt, Limestone, methionine and lysine were also used in compounding the

feeds. The ingredient chemical composition and calculated analysis of the experimental diets for both starters and finisher phases are shown in table 1 and 2 respectively.

Table 1: Ingredient and nutrient composition (%) of broiler starter diets containing sun dried sweet Potato meal (SSPM)

Ingredient	Diets				
	1	2	3	4	5
Maize	48.70	39.00	29.22	19.50	9.74
Full-fat soya bean	33.10	33.10	33.10	33.10	33.10
SSPM	0.00	9.74	90.50	29.22	39.00
Fish Meal	5.00	5.00	6.00	7.00	8.00
Wheat Meal	10.00	10.00	9.00	8.00	7.00
Bone Meal	2.50	2.50	2.50	2.50	2.50
Vitamin/mineral premix	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25
Methionine	0.10	0.10	0.10	0.10	0.10
Lysine	0.10	0.10	0.10	0.10	0.10
Total	100.00	100.00	100.00	100.00	100.00
Crude Protein	23.10	22.60	22.70	22.70	22.70
ME (Kcal/kg)	30.29	28.35	26.50	24.67	22.83
Crude fiber (%)	3.60	3.60	3.50	3.40	3.30
Ether extract (%)	7.70	7.50	7.30	7.20	7.10
Total Phosphorus (%)	1.10	1.00	1.00	1.00	1.00
Calcium (%)	1.30	1.30	1.30	1.40	1.50

PROCEDURE FOR CARCASS CHARACTERISTICS

At the end of the experiment forty birds (two replicate) were randomly selected and fasted for 12 hours but were supplied water. They were weighed early in the morning to obtain the slaughter weight and then slaughtered by severing the jugular vein. They were processed by manually plucking the feathers after immersion in warm water. The carcass was eviscerated and weighed to obtain carcass weight after which dressing percentage was determined by dividing the carcass weight by live weight and multiplied by 100.

ORGAN MEASUREMENTS

Internal organs were measured in grams using an electric sensitive balance while the lengths of small intestine and large intestine were measured in centimeter using a meter rule. The weight of the various organs measured was expressed as percentage of live weight.

Table 2: carcass yield and gut characteristics of broiler chickens fed graded levels of sun dried sweet potato meal based diets

	Diets					
Parameter	1	2	3	4	5	
Live weight	1884	1889	1882	1961	1807	0.06 ⁰
Plucked weight (g)	1729	1739	1741	1809	1684	0.05 ^{NS}
Carcass weight (g)	1332	1316	1348	1362	1292	0.05 ^{NS}
Dressing Percent (%)	70.5	69.7	71.5	69.4	71.5	1.03 ^{NS}

The carcass yield, and gut characteristic of the birds fed graded level of sun dried sweet potato meals is presented in table 2 and 3. Significant dietary influence were not observed for live weight, slaughter weight, carcass weight and dressing percentage. Live weight ranges from 1807g on diet 5, to 1961 on diet 1 values for plucked weight increased with increasing levels of S.S.P.N. The highest value 1513g of organs weight was obtained on birds fed diet 4 while the lowest (1430g) was recorded for those on diet 5. Value for carcass yield 1292g, 1316, 1332 and 1462g were obtained for birds on diet the following orders diet 5, 2, 1, 3 and 4 respectively. Dressing percentage (69.4 to 71.5%) was lowest for bird fed diet 4 but highest for those fed diet 3 and 5. Results of the various organs of birds fed the experimental diets showed that abdominal fat was affected ($P>0.05$) by dietary treatments. Significant difference ($P>0.05$) was not observed for gut dimension and weights ($P>0.05$).

Table 3: GUT characteristics of broiler chickens fed sundried sweet potato based diets

Parameters	DIETS					SEM
	1	2	3	4	5	
Abdominal fat (g)	2.23 ^a	2.05 ^b	1.55 ^d	1.77 ^{cd}	1.81 ^c	0.17 [*]
Gizzard (g)	2.42	2.47	2.55	2.55	2.47	0.12 ^{NS}
Heart (g)	0.49	0.60	0.56	0.59	0.53	0.03 ^{NS}
Kidney (g)	0.29	0.29	0.29	0.29	0.33	0.03 ^{NS}
Liver (g)	1.91	1.92	2.06	2.03	2.12	0.16 ^{NS}
Lungs (g)	0.68	0.57	0.67	0.66	0.62	0.03 ^{NS}
Pancreas (g)	0.33	0.36	0.40	0.43	0.41	0.03 ^{NS}
Spleen (g)	0.15	0.12	0.12	0.13	0.12	0.02 ^{NS}
Small intestine (g)	3.78	4.21	3.85	4.00	3.90	0.15 ^{NS}
Large intestine (g)	0.19	0.24	0.29	0.24	0.22	0.04 ^{NS}
Caeca (g)	0.66	0.64	0.77	0.79	0.89	0.07 ^{NS}
Small intestine (cm)	157.6	181.6	176.1	191.4	179.5	10.37 ^{NS}
Large intestine (cm)	9.75	10.00	10.50	10.88		11.25
Caeca (cm)	18.62	19.75	19.37	21.19	20.12	0.78 ^{NS}

Note: ^{abc} Means bearing different superscripts within the same row differ.

* - $P<0.05$, SEM = standard error of means, NS – not significant.

There was no significant dietary effect on carcass yield in terms of live weight, slaughter weight, eviscerated weight, carcass weight and dressing percentage. Higher live weight (1961g) was obtained for birds on diet 4 in which 60% of maize was replaced with S.S.P.M. This report confirms the report of Adelina (2002) and Agwunobi (1999). Inclusion of sun dried sweet potato meal had no significant effect on the weight and length of the small intestine and large intestine. This disagrees with the report of Maphosa et al (2003).

CONCLUSION AND RECOMMENDATION

- It was concluded that S.S.P.M can replace maize as energy source in the diet of broiler chickens up to 80% with no adverse effects on the carcass yield and gut characteristics.

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