Growth response, nutrient digestibility and carcass characteristics of broiler chickens fed dried kitchen waste meal as a partial replacement for corn

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Abstract. This study was conducted to investigate the effect of dry kitchen waste meal (KW) as a partial replacement for maize on the growth performance, nutrient digestibility and carcass characteristics of broiler chickens. A total 160 broiler chicks were used for the study. The broiler chicks were randomly assigned to four dietary treatment groups T1, T2, T3 and T4 of 40 birds of each treatment with 10 birds per replicate in a completely randomized design (CRD). The study was lasted for six weeks. Four experimental diets were formulated with KW replacing maize at levels of 0%, 10%, 20% and 30% representing T1, T2, T3 and T4 respectively for both starter and finisher diets. The results showed that daily and total feed intake showed significant difference among treatment groups. Broilers fed 20% KW showed highest average daily feed intake while those fed 30% KW recorded the least. Nutrients digestibility parameters such as ash and crude fiber were significantly different across treatments. Therefore, KW can replace up to 20% of maize in broilers diet without any negative effect on feed intake and will be suitable for feeding chickens.

1. Introduction
Global poultry production is growing rapidly and uses large amounts of corn and soy for poultry diets. There is need for research on the partial use of alternative feed resources to meet the growing demand of poultry products [1]. The competition between humans and domestic fowl for some feedstuffs greatly hampers the production of quality meat and eggs. The broiler chicken industry has now occupied the second place in volume in the world just after pork [2]. It represents about 29% of the total meat production from farm animals and is rising every year. Thus, the growth of poultry production has been based on strong consumer demand for products that are cheap, safe and healthy. A possible way of increasing the supply of poultry products at cheaper prices is by reducing the cost of production through the use of cheaper, locally available sources of energy source feeds. The major conventional energy source in the diets of poultry is maize. Maize is a staple food for man and confectionary industry; thus, there is a high competition for maize, which invariably leads to increase in the cost of this product.
Global food waste was estimated to be around 1.3 billion tons [3]. This amount to one third of all food produced for humans which is either (not suitable for consumption) or wasted. Food loss /waste is an economic, environmental and social burden as well a threat to food security. Prevention and reduction of these losses, combined with alternate uses of food waste, including food recycling can help to reduce these negative impacts. Feed recycling strategies are more advanced in the animal feed industry: Feeding food losses to animals is a sustainable solution and brings more co-benefits by reducing waste streams, greenhouse gas emissions and supporting circular bio-economy [4]. The best way to recycle unwanted food (food waste) in order to minimize environmental pollution is by converting it to animal feed [5]. Therefore, dried kitchen waste could be used as a supplemental feed/ feed ingredient for swine and poultry diet [6]. Apart from reducing environmental pollution the used of unwanted food also help in decreasing the use of expensive feed ingredients, such as whole grains [7]. Dried leftover food/ kitchen waste were reported to be good source of protein and energy for livestock. Therefore, this study aimed at investigating the effect of dried kitchen waste meal (KW) as a partial replacement for maize on the growth performance, nutrient digestibility and carcass characteristics of broiler chickens.

2. Materials and Methods

2.1 Experimental Site
The study was conducted at the University Teaching and Research Farm, Taraba State University, Jalingo, Nigeria. Jalingo is located between 8.83° North and 11.22° East on Latitude 11.36’ of the equator and possesses a tropical climate. The area is characterized by high temperature throughout the year, because of high radiation which is relatively evenly distributed throughout the year. Maximum temperature of about 40°C has been observed in the area with minimum temperature as low as 18°C between December and January, mean annual temperature ranges between 26.9°C and 27.8°C (Taraba State Diary 2010)

2.2 Experimental Stock and Management
One hundred and sixty (160) day-old unsexed broiler chicks of commercial strain named Marshal was purchased from a reputable Hatchery. The broiler chicks were brooded for a period of two weeks and fed with commercial starter diets before commencement of the experiment, water and anti-stress were provided during the period.

2.3 Feed Source and Preparation
The kitchen waste was collected from household kitchens, neighbours and restaurants with inorganic waste manually removed. The kitchen waste was sun dried and grinded.

2.4 Experimental Diet
The experimental diet consists of T1 (control), T2: Basal diet + 10% KW, T3: Basal diet+ 20% KW and T4: Basal diet+ 30% KW. All diets were formulated to meet the body requirement of broilers according to [8].

2.5 Experimental Design
After two weeks of brooding, the one hundred and sixty (160) broiler chicks were randomly assigned to 4 treatment groups of T1, T2, T3 and T4 of 40 birds each. Each treatment was replicated 4 times with 10 birds per replicate in a Completely Randomized Design (CRD). The study last for a period of 6 weeks. Each treatment groups, except treatment one (control) was assigned to formulated diet with KW partially replacing maize in a levels of 0%, 10%, 20% and 30% representing T1, T2, T3 and T4 respectively for both starter and finisher diet. The experimental diets are shown in table 1 and 2 below;
Table 1. Gross composition of diets containing KW for starter broilers

| Ingredients (%)       | T1 0% KW | T2 10% KW | T3 20% KW | T4 30% KW |
|-----------------------|----------|-----------|-----------|-----------|
| Maize                 | 48.0     | 38.0      | 28.0      | 18.0      |
| Dried kitchen waste meal (KW) | 0.00   | 10.00     | 20.00     | 30.00     |
| Full fat soybean      | 28.0     | 28.0      | 28.0      | 28.0      |
| Groundnut cake        | 2.5      | 2.5       | 2.5       | 2.5       |
| Fishmeal              | 10.0     | 12.0      | 14.0      | 16.0      |
| Wheat offal           | 7.5      | 5.5       | 3.5       | 1.0       |
| Bone meal             | 3.0      | 3.0       | 3.0       | 3.0       |
| Lysine                | 0.2      | 0.2       | 0.2       | 0.2       |
| Methionine            | 0.3      | 0.3       | 0.3       | 0.3       |
| *Vitamin and minerals premix | 0.25 | 0.25      | 0.25      | 0.25      |
| Salt                  | 0.25     | 0.25      | 0.25      | 0.25      |
| Total                 | 100      | 100       | 100       | 100       |

Calculated nutrient composition

| Metabolizable energy (Kcal/kg) | T1 0% KW | T2 10% KW | T3 20% KW | T4 30% KW |
|--------------------------------|----------|-----------|-----------|-----------|
| Crude protein (%)              | 22.59    | 22.43     | 22.27     | 22.27     |
| Ether extract (%)              | 8.02     | 8.22      | 8.42      | 8.64      |
| Crude Fibre (%)                | 3.66     | 3.69      | 3.72      | 3.74      |
| Calcium (%)                    | 0.57     | 0.56      | 0.55      | 0.55      |
| Phosphorus (%)                 | 0.97     | 0.97      | 0.97      | 0.97      |
| Lysine (%)                     | 1.35     | 1.35      | 1.35      | 1.36      |
| Methionine (%)                 | 0.68     | 0.66      | 0.65      | 0.64      |

KW: Dry Kitchen Waste Meal

*vitamin premix composition per ton of diet. Vitamin A: 10,000,000 IU, Vitamin D3: 2,000,000 IU, Vitamin E: 40 mg, Vitamin K3: 2 mg, Vitamin B1: 1.5 mg, Vitamin B2: 5 g, Vitamin B6: 2.5 g, Vitamin B12: 20 mg, Niacin: 25 g, Calpain: 9 g, Folic acid: 1 g, Biotin: 100 mg, Anti-oxidant: 100 g, Manganese: 80 g, Iron: 40 g, Zinc: 60 g, Copper: 8 g, Iodine: 1 g, Cobalt: 300 mg
Table 2. Gross composition of diets containing KW for finisher broilers

| Ingredients                        | T1 0% KW | T2 10% KW | T3 20% KW | T4 30% KW |
|------------------------------------|----------|-----------|-----------|-----------|
| Maize                              | 54.4     | 42.4      | 30.4      | 18.4      |
| Dried kitchen waste meal (KW)      | 0.00     | 10.00     | 20.00     | 30.00     |
| Full fat soybean                   | 36.2     | 38.2      | 40.2      | 42.2      |
| Wheat offal                        | 5.6      | 5.6       | 5.5       | 5.5       |
| Bone meal                          | 3.0      | 3.0       | 3.0       | 3.0       |
| Lysine                             | 0.1      | 0.1       | 0.1       | 0.1       |
| Methionine                         | 0.2      | 0.2       | 0.2       | 0.2       |
| *Vitamin and minerals premix       | 0.25     | 0.25      | 0.25      | 0.25      |
| Salt                               | 0.25     | 0.25      | 0.25      | 0.25      |
| Total                              | 100      | 100       | 100       | 100       |

Calculated nutrient composition

| Calculated nutrient composition   |          |          |          |          |
|-----------------------------------|----------|----------|----------|----------|
| Metabolizable energy (Kcal/kg)    | 3,004.24 | 3,046.18 | 3028.11  | 3,010.05 |
| Crude protein (%)                 | 20.0     | 19.76    | 19.54    | 19.46    |
| Ether extract (%)                 | 8.89     | 9.32     | 9.54     | 10.18    |
| Crude Fibre (%)                   | 3.56     | 3.73     | 3.90     | 4.07     |
| Calcium (%)                       | 0.86     | 0.87     | 0.87     | 0.87     |
| Phosphorus (%)                    | 0.53     | 0.53     | 0.52     | 0.52     |
| Lysine (%)                        | 1.26     | 1.29     | 1.31     | 1.34     |
| Methionine (%)                    | 0.55     | 0.54     | 0.53     | 0.52     |

KW: Dry Kitchen Waste Meal

*Vitamin premix composition per ton of diet. Vitamin A; 10,000,000 IU, Vitamin D3; 2,000,000 IU, Vitamin E; 40 mg, Vitamin K3; 2 mg, Vitamin B1; 1.5 mg, Vitamin B2; 5 g, Vitamin B6; 2.5 g, Vitamin B12; 20 mg, Niacin; 25 g, Calpan; 9 g, Folic acid; 1 g, Biotin; 100 mg, Anti-oxidant; 100 g, Manganese; 80 g, Iron; 40 g, Zinc; 60 g, Copper; 8 g, Iodine; 1 g, Cobalt; 300 mg

2.6 Measurement of Performance

The following parameters were measured: Initial weight, Final weight, Total weight gain, Daily weight gain, Total Feed intake, Daily feed intake, Feed to gain ratio (feed conversion ratio) and Mortality (%).

2.7 Nutrient Digestibility

Digestibility trial was conducted at the 8th week of the study. The birds were weighed and a total of 16 birds were used for this study. Four birds were selected from each treatment with one bird per replicate and each have the average weight of the birds housed in metabolic cages for faecal collection which
lasted for 3 days. The birds were allowed to acclimatize for one-day adjustment period before faecal collection. 200g of the experimental diets were supplied to the birds in each cage daily for 3 days. The total faecal output for each pen was bucked together based on method of [9]. Samples of the diets and faecal droppings from birds were taken to the biochemical laboratory, National Animal Production Research Institute (NAPRI), Shika Zaria for proximate analysis according to the method described by [10].

2.8 Statistical Analysis
Data were analyzed using analysis of variance (Proc ANOVA), and the significant differences among the means were tested using Tukey’s test. The SAS software (Version 9.4) was used for these purposes [11].

3. Results and Discussion

3.1 Proximate Composition of Dried Kitchen Waste Meal (KW)
The proximate composition of dried kitchen waste meal is presented in table 3. The proximate result indicates a 92.4% dry matter (DM) and 7.6%, moisture contents. However, the crude protein (CP) content was only 2.2% which indicate a scarce or low protein in Human diet from the places where the leftover food was collected. The ether extract (EE) content is 5.5%, crude fibre (CF) content was 3.0%, ash content is 3.4% and nitrogen free extract (NFE) was 78.3%. In contrast to what was obtained in the present study. [12] reported a chemical compositions of Dried Leftover Food from Korea to be 93.70% of dry matter (DM), 20.62% of crude protein (CP), 9.99% of crude fat (EE), 8.87% of crude fiber (CF) and 13.67% of crude ash. However, [13] reported 91.21% DM, 9.02% CP, 13.13%EE, 7.7% Ash and 3.62% crude fibre in dried cafeteria leftover food sourced from Addis Ababa, Ethiopia. However, [14] reported a Crude protein (N x 6.25) 15.14%, Crude fat 5.33%, Crude fiber 2.34% and Crude ash 5.26% dried kitchen waste sourced from fresh edible food wastes prepared from a retirement houses in Tokyo Japan. The different observed may be as a result of different in eating habit and what constitute a stable food of the people from the four different countries.

Table 3. Proximate composition of dried kitchen waste meal (KW)

| Components             | Percentage (%) |
|------------------------|----------------|
| Dry matter             | 92.4           |
| Moisture               | 7.6            |
| Crude protein          | 2.2            |
| Ether extract          | 5.5            |
| Crude fibre            | 3.0            |
| Ash                    | 3.4            |
| Nitrogen free extract  | 78.3           |

3.2 Proximate Composition of the Finisher Experimental Diet
The proximate composition of the experimental broiler finisher diets is presented in Table 4. The percent crude protein (CP) of the experimental finisher diets ranges from 19.30 - 23.30% with birds in T1 receiving the highest CP while those in T3 receiving the least. The crude protein percentage of all the treatment diets are within the normal range except T1 which is above the normal CP. The crude fibre (CF) value ranges from 3.53 - 7.93 and 5.13% with T3 and T4 receiving diets with the highest crude fibre contents. The ether extract (EE) values ranges from 16.46 - 19.33% with T1 diet having the highest value and T2 the least. The ash content ranges from 3.37- 8.37% with T1 and T2 having the highest and the
least respectively. The metabolizable energy (ME) value for each of the treatment was calculated using [14] method and the values obtained ranges 2538.74 - 3794.85kcal/kg. The dry matter (DM) content ranges from 89.88 - 90.85%.

Table 4. Proximate composition of the broiler finisher diet containing graded level of KW

| Parameter         | T1 (0%) | T2 (10%) | T3 (20%) | T4 (30%) | SEM  |
|-------------------|---------|----------|----------|----------|------|
| Dry Matte (%)     | 90.85   | 90.78    | 89.88    | 90.11    | 0.24 |
| Ash (%)           | 3.37    | 8.37     | 7.25     | 7.05     | 1.08 |
| Ether extract (%) | 19.33   | 16.46    | 17.78    | 17.25    | 0.60 |
| Crude fibre (%)   | 4.75    | 3.53     | 7.92     | 5.13     | 0.92 |
| Crude protein (%) | 23.30   | 20.20    | 19.30    | 22.30    | 0.92 |

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\text{ME (kcal/kg)} = 37 \times \text{CP (\%)} + 81.8 \times \text{EE} + 35.5 \times \text{NFE(\%)} [12]
\]

3.3 Growth Performance of Broiler Chickens Fed Diets Containing Dried Kitchen Waste Meal

There was significant difference (P < 0.05) on the average daily feed intake across the treatment groups. Birds fed 20% KW had the highest average daily feed intake of 12.060g follow by those fed 10% KW with an average daily feed intake of 11.767g. However, bird fed 30% KW recorded the least average daily feed intake of 9.0500g. This is in agreement with [12] who reported a low average daily feed intake in the treatment group fed diet containing 30% dry leftover food (DLF) in broilers chicken.

The daily weight gains of the experimental bird showed no significant difference (P > 0.05) across all the treatment groups. Bird fed 10% KW recorded the highest daily weight gain when compared to other treatments groups including the control group. This is an indication that KW can replace maize in broilers diet without much effect on the birds. The result from the present study agrees with [12] who reported non-significant differences in body weight gain among those groups fed diets containing different levels of dry leftover food (DLF) in Japan. However, [15] reported a significant decreased in body weight at 5 weeks of age of laying hen fed diet containing 50% dry kitchen waste. Although those fed with diet containing 12.5 and 25% inclusion level of DKW showed increased in body weight during feeding period.

There was no significant difference (P > 0.05) in the final body weight gain between the experimental treatment group with the control group. Although birds in T3 with 20% KW record and appreciable body weight as compare to the other treatments groups. This may be attributed to the significantly high daily feed intake recorded from the same treatment group. However, [16] reported a significant increase in body weight gain at (4-6 weeks of age) of birds fed diets containing 10% dry leftover food (DLF) in contrast to lower body weight recorded in birds fed diets containing 20% DLF.

There was significant difference (P < 0.05) in total feed intake across treatment groups. This showed that, feed intake increases with increase in inclusion of KW up to 20% and then declined. This is in agreement with [17] reported a linear increased (P < 0.05) in feed intake and FCR during 8 to 16 weeks of Taiwan Native Chicken (Taishi No. 13) fed dehydrated kitchen waste product. However, [15] reported a decreased in feed intake with increase in inclusion level of dry kitchen waste.

The highest feed conversion ratio observed in the present study was that of bird fed T1 0% KW (control) and it goes down with increase in inclusion level, this may be attributed to high CF content of KW of 3.0% as compare to 2.0% in maize. This is in contrast to [17] who reported that FCR increase with
increased in inclusion rate of KW. This may be due to some environmental factors that differ in the findings.

Table 5. Growth performances of broiler chickens fed diets containing dried kitchen waste meal (KW)

| Parameters             | T1 (0%) KW | T2 (10%) KW | T3 (20%) KW | T4 (30%) KW |
|------------------------|------------|-------------|-------------|-------------|
| Initial weight (g)     | 278.75±13 a| 285.00±8 a  | 296.25±5 a  | 265.00±6 a  |
| Final weight (g)       | 1010.0±11 a| 830.80±23 a| 1084.0±22 a| 873.50±30 a|
| Total weight gain (g)  | 731.25±96 a| 799.00±73 a| 753.25±30 a| 593.25±17 a|
| Daily weight gain (g)  | 17.500±2 a | 19.250±1 a | 17.750±1 a | 14.000±0 a |
| Total feed intake (g)  | 394.25±32 ab| 494.27±38 ab| 506.51±16 a| 380.02±21 b|
| Daily feed intake (g)  | 9.3850±10 ab| 11.767±1 ab | 12.060±00 a| 9.0500±1 b |
| FCR                    | 1.9475     | 1.6425      | 1.4950      | 1.5700      |
| Mortality (%)          | 0.0000     | 1.0000      | 1.0000      | 0.5000      |

* means in each row with different superscripts are significantly different (P < 0.05)

Table 6. Nutrient digestibility of broiler finisher chickens fed diet containing dried kitchen waste meal (KW)

| Parameters | T1 (0%) KW | T2 (10%) KW | T3 (20%) KW | T4 (30%) KW |
|------------|------------|-------------|-------------|-------------|
| Dry matter | 3.4 Nutrient Digestibility of Broiler Finisher Chickens Fed Diet Containing Dried Kitchen Waste Meal

Dry matter content and fat content showed no significant difference across all the dietary treatments. The highest value of dry matter and fat were recorded in bird fed diet containing T4 (30 % KW) and the least values were recorded in birds fed diet containing T1 (0 % KW) table 6. This is in agreement with [18] who reported that dry matter, crude fat and neutral detergent fiber digestibility for Peking and Muscovy ducks fed food waste were not significantly different from those fed a corn diet. There was no significant difference (P > 0.05) in crude protein content (%). However, the highest CP value was observed in birds fed diet T4 (30 % KW) and the least CP value was observed in bird fed diet T1 (0 % KW) table 6. The crude protein content increases with increase in inclusion level. This is in agreement with [17] who reported a linear increase in the crude protein digestibility and a decrease in gross energy digestibility (P < 0.05) with increase in inclusion level of dehydrated food waste product (DFWP). The digestibility of both nutrients at the 20% inclusion levels were significantly different from the control group (P < 0.05).
Dry matter (%)  79.08±0.31<sup>a</sup>  81.35±1.02<sup>a</sup>  81.61±0.34<sup>a</sup>  81.85±0.64<sup>a</sup>
Ash (%)  59.28±3.30<sup>b</sup>  80.01±0.71<sup>a</sup>  80.59±0.21<sup>a</sup>  81.66±1.20<sup>a</sup>
Fat (%)  80.50±0.22<sup>a</sup>  81.35±0.72<sup>a</sup>  81.49±0.21<sup>a</sup>  81.65±0.85<sup>a</sup>
Crude fibre (%)  67.97±1.65<sup>b</sup>  74.09±3.10<sup>ab</sup>  79.49±0.32<sup>a</sup>  79.52±0.03<sup>a</sup>
Crude protein (%)  77.06±0.11<sup>a</sup>  79.57±1.34<sup>a</sup>  78.80±1.24<sup>a</sup>  79.42±0.67<sup>a</sup>

<sup>a, b</sup> Means with different superscripts within the same column are significantly different (P < 0.05)

There is significant different in percent ash and crude fibre content (P < 0.05). the crude fibre value ranged from 67.97- 79.52%. Crude fibre digestibility increases with an increase in KW, this may be attributed to high CF content of KW of 3.0% as compare to 2.0% in maize. This is in agreement with [17] who reported a relatively higher crude fiber content of the test ingredient, resulting in increasing crude fiber content of the diet as dehydrated food waste product (DFWP) level increased, is suspected to have decreased the energy digestibility similarly to previous findings in chickens and geese[19, 20].

Table 7. Percent live body weight of Carcass characteristics and organs weight of broiler chickens fed diets containing dried kitchen waste meal (KW)

| Parameters (g)       | T1 (0%)      | T2 (10%)     | T3 (20%)     | T4 (30%)     |
|----------------------|--------------|--------------|--------------|--------------|
|                      | KW           | KW           | KW           | KW           |
| Live weight          | 1343±180.5   | 1307±124.2   | 1283±15.25   | 1013±9.949   |
| Plucked weight       | 1227±156.2   | 1182±108.1   | 1174±38.01   | 952±10.14    |
| Eviscerated weight   | 1012±137.3   | 954.8±90.73  | 935.3±24.39  | 757±21.60    |
| Dressing percentage  | 67.41±1.84   | 65.87±1.624  | 65.07±1.574  | 64.90±1.638  |
| Wing                 | 7.872±0.248<sup>ab</sup> | 7.337±0.217<sup>b</sup> | 7.872±0.244<sup>ab</sup> | 8.345±0.163<sup>a</sup> |
| Thigh                | 10.79±0.377  | 10.08±0.546  | 10.74±0.449  | 10.79±0.393  |
| Breast               | 17.39±1.093  | 17.61±0.223  | 17.39±0.618  | 16.35±0.645  |
| Back                 | 12.917±0.253 | 13.22±0.488  | 12.197±0.602 | 12.78±0.297  |
| Neck                 | 5.400±0.344  | 5.157±0.530  | 5.132±0.169  | 4.600±0.254  |
| Shank                | 4.490±0.467  | 4.347±0.241  | 4.542±0.054  | 4.815±0.177  |
| Head                 | 3.237±0.337  | 3.062±0.109  | 3.242±1.32   | 4.630±1.242  |
| Drumstick            | 9.107±0.496  | 8.790±0.089  | 8.625±0.133  | 8.322±0.157  |
| Gizzard              | 12.413±8.503 | 4.023±0.188  | 4.010±0.100  | 3.940±0.471  |
| Liver                | 0.570±0.028  | 0.660±0.065  | 0.660±0.060  | 0.717±0.088  |
| Lung                 | 0.567±0.028  | 0.657±0.064  | 0.660±0.060  | 0.717±0.088  |
3.5 Carcass Characteristics and Organs Weight of Broiler Chickens Fed Diets Containing Dried Kitchen Waste Meal

There was no significant difference (P > 0.05) in the live body weight of the birds across the treatment group with the control group Table 7. Birds fed 0% and 10% KW as a partial replacement for maize tend to have higher live body weight when compare to the other treatment groups. Results from the present study are in agreement with [12] who reported non-significant difference in final body weight of laying hens fed Dry Cafeteria waste (DCW) in Ethiopia. However, [12] reported that birds fed diets containing 10% Dry Leftover Food (DLF) show a significant body weight gain than those fed 20%DLF.

There was decreased in plucked weight with increase in inclusion level of KW across treatment groups although the difference is not up to the level of statistical significance. Birds fed 0% and 10% tend to have higher plucked weight as compare to other treatment groups. This may be attributed to the decreased in the FCR with the increased in KW.

The weight of part namely head, neck, shanks drumstick, breast, back, thigh and wing showed not significant different (P > 0.05) with the control group at 8 weeks. The weight of internal organism namely: Gizzard, liver intestine lungs, kidney, heart and abdominal fat are also showed not significant different (P > 0.05) with the control group at 8 weeks. However, [17] reported a significant decreased in the relative abdominal fat weight but increased in the relative proventriculus and gizzard weight with inclusion of up to 20% dehydrated food waste product at 8 to16 weeks of Taiwan Native Chicken (Taishi No. 13).

4. Conclusions

It is evident from this study that dried kitchen waste meal can be a good source of energy and can partially replace maize in broiler chickens diet. Inclusion level of up to 20% showed no adverse effect on growth performance, nutrient digestibility and carcass characteristics of the birds. Bird fed diet containing 20% KW in place of maize showed increase in feed intake. Therefore, it was concluded that, dried kitchen waste meal (KW) can replace up to 20% of maize in the diet of broiler chickens without any harmful effect on the growth and nutrient digestibility of the chickens.

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