GROWTH PERFORMANCE, CARCASS CHARACTERISTICS AND ORGANOLEPTIC PROPERTIES OF BROILER FINISHER FED GRADED LEVELS OF GINGER ROOT MEAL (GRM) BASAL DIETS.

RENDIMIENTO DE CRECIMIENTO, CARACTERÍSTICAS DE CARCASA Y PROPIEDADES ORGANOLÉPTICAS DE LA ACABADO DE BROILER FED GRADED NIVELES DE DIETAS BASALES DE COMBUSTIÓN DE RAÍZ DE GINGER (GRM).

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ABSTRACT

An experiment to compare the effect of varying inclusion levels of ginger root meal (zingiber officianale)on growth performance, carcass and organoleptic qualities of finishing broiler chicken was conducted in the Poultry Unit of the Teaching and Research Farm of Department of Animal Science Ambrose Alli University, Ekpoma, Edo State. 150 ANAK 2000 day old chicks were randomly assigned to five dietary treatments with diet 1 being the control (0%) and diets 2, 3, 4 and 5 contain the inclusion levels of ginger root meal at 0.5, 1.0, 1.5 and 2.0% respectively. In a completely randomized design (CRD), 50 birds were assigned to each treatments with 10 birds per replicate and was replicated three times. Performance parameters, carcass characteristics and organoleptic qualities were assessed. Result on the performance characteristics revealed that average final weight, feed intake, weight gain and feed conversion ratio were significantly ($P<0.05$) higher in control similar to those on 1.5%GRM. Carcass characteristic study revealed that live weight, slaughtered, defeathered, eviscerated weights and dressing percentages were significantly ($P<0.05$) higher in birds fed the control similar to those on 1.5%GRM. Weight of shanks, breast muscles, neck and back were significantly influenced ($P<0.05$) with highest values recorded among birds fed 1.5%GRM. For organoleptic quality, appearance, flavour, juiciness, overall acceptance and calculated overall acceptance were all significantly ($P<0.05$) affected. It is

therefore concluded that the dietary inclusion of ginger root meal in broiler diets at 1.5% inclusion levels had positive effects on the growth performance, carcass characteristics of the birds and organoleptic quality of the chicken meat.

Keywords: Ginger, Broilers, growth performance, carcass characteristics, organoleptic quality.

RESUMEN

Un experimento para comparar el efecto de los diferentes niveles de inclusión de la harina de raíz de jengibre (zingiber officianale) en el rendimiento de crecimiento, las cualidades de la carcasa y organolépticas de los pollos de engorde de acabado se realizó en la Unidad de Aves de la Granja de Enseñanza e Investigación del Departamento de Ciencia Animal de la Universidad Ambrose Alli , Ekpoma, Estado Edo. Se asignaron al azar 150 pollos ANAK de 2000 días a cinco tratamientos dietéticos con la dieta 1 siendo el control (0%) y las dietas 2, 3, 4 y 5 contienen los niveles de inclusión de harina de raíz de jengibre a 0.5, 1.0, 1.5 y 2.0% respectivamente . En un diseño completamente aleatorizado (CRD), se asignaron 50 aves a cada tratamiento con 10 aves por réplica y se replicaron tres veces. Se evaluaron los parámetros de rendimiento, las características de la carcasa y las cualidades organolépticas. El resultado sobre las características de rendimiento reveló que el peso final promedio, el consumo de alimento, el aumento de peso y el índice de conversión de alimento fueron significativamente más altos (P <0.05) en el control, similares a los del GRM de 1.5%. El estudio de características de la canal reveló que los pesos en peso vivo, sacrificados, con plumas, eviscerados y los porcentajes de aderezo fueron significativamente más altos (P <0.05) en las aves alimentadas con el control similar a las de GRM al 1.5%. El peso de los vástagos, los músculos de la pechuga, el cuello y la espalda se vieron significativamente influenciados (P <0.05) con los valores más altos registrados entre las aves alimentadas con 1.5% de GRM. Para la calidad organoléptica, la apariencia, el sabor, la jugosidad, la aceptación general y la aceptación global calculada se vieron significativamente afectados (P <0.05). Por lo tanto, se concluye que la inclusión en la dieta de la harina de raíz de jengibre en las dietas de pollos de engorde a niveles de inclusión del 1.5% tuvo efectos positivos en el rendimiento del crecimiento, las características de la canal de las aves y la calidad organoléptica de la carne de pollo.

Palabras clave: jengibre, pollos de engorde, rendimiento de crecimiento, características de la carcasa, calidad organoléptica.

INTRODUCTION

Nigeria like every other developing country have the challenge of providing feeding adequately for it,s ever increasing population. This results to the low energy and protein that characterize the average Nigerian diet according to FAO (1997) Olaseinde *et al*., (2010) reported that animal protein deficiency among Nigerian especially among the low income earner had led to malnutrition. Poultry product offer considerable potentials to bridge the animal protein intake gap for the fact that poultry grows faster, mature earlier and has greater affordability, easy to raise and absence of taboos of production and consumption than other species of livestock. The quality and quantity of each feed ingredient in a diet determines the performance of the birds. Some poultry farmers feed their animals with whatever is available without recourse to the health and physiological implications on the animals. The use of leaf meals as part of poultry diet is now becoming popular because some medicinal plants can offer alternative therapy for combating poultry diseases. Nutritionally plants produce several substances that aid in protecting farm animals from microbial infections. Holetz *et al.,*(2002) identified some of these substances to be aldelydes, alkaloids, phytates etc which are significantly therapeutic against pathogen. The leaves of these plants as well as the roots have been found to exhibit antibacterial antioxidant, anticarcinogeime, antifungal, analgesiscs and other therapentic against pathogen. The leaves of these plants as well as the roots have been found to exhibit antibacterial antioxidant, anticarcinogeime, antifungal, analgesics and other therapentic properties (Tipu *et al.,*2002). It has been suggested that plant leaf & root meals can offer a good culternations to synthethic drugs because they are cheap, readily available, safe, economical and biodegoadable (Nneka, 2006). They have less drug resistance problem and with minimal residual effect when used as medicinal theraphy in farm animals and consumed by man as livestock products. The production of poultry products such as eggs and meat has been sustained with the use of antibiotics growth promoters used at such therapentic doses in animal feeds in order to improve the quality of the products (N.O.A.H, 2001). Although, birds raised with these feed additives achieved good performance, their potential side effects present a real public health health problem worldwide (Donoghue, 2003) and led to the ban of these products by Eurpoean Union in January 2006. This husled to the use of natural alternative feed additives like ginger, garlic etc in livestock feed and human diet in increasing lauver because of their beneficial health and preservative importance. (Joke and Susan, 2007). This study was therefore conducted to assay the effects of graded levels of ginger in the diet of broiler chicken on the performance and carcass characteristics.

MATERIALS AND METHODS

Location and duration of the experiment: the research was conducted at the poultry until of the Livestock Teaching and Research Farm, Ambrose Alli University, Ekpoma Edo State for the period of eight weeks.

Sourcing and Processing Of the Raw Materials: Ginger used for the feeding trial was purchased from local market in Ekpoma, Esan West Local Government Area of Edo State. It was sundried for about 7 to 14 days to reduce the moisture content to about 10%. The ginger was milled separately into powder. It was then be stored in an air tight container till it was used for the feeding trial. Aliquot were taken from the milled ginger and was taken to the laboratory for proximate analysis.

Experimental Animals, Design & Management: One hundred and fifty (150) day old ANAK 2000 broiler chicks were purchased from a reputable hatchery in Ibadan south west Nigeria. The design of the experiment was a complete randomized design comprising of five (5) treatment diets with Treatment one being the control diet was a commercial diet (Broiler starter) without ginger flour whereas treatments 2-5 had ginger flour inclusion at 0.5, 1.0, 1.5 and 2.0% respectively. Each treatment diets had twenty four birds of eight birds per replicate. Animals were fed commercial for the first two weeks during brooding. All animals were allowed assess to feed and clean drinking water *ad-libitum*. The preparation of ginger flour was done by washing fresh mature ginger roots purchased from the market and slicing before sun drying to reduce the moisture content. Thereafter, the dried slices are milled into flour and stored in clean dry containers to be incorporated into the feeds at the stipulated inclusion levels. Proximate composition of the prepared ginger flour was evaluated at the laboratory to determine the moisture content, protein, fat, fibre etc as reflected in table 1 below.

Experimental diets: Commercial broiler finisher diet (TOPFEED) was used for the experiment and Ginger root meal was added at the inclusion levels of (T1 to T5). Treatment 1 served as the control diet without ginger root meal, treatment 2 had 0.5% ginger root meal (GRM) treatment 3 (1.0% GRM), treatment 4, (1.5% GRM) while treatment 5, (2.0% GRM) respectively. All animals had were fed twice daily at 8:00am and 4.00pm to ensure that there was unrestricted supply of food and water. The vaccination program was planned in accordance with the recommendation of NVRI, Vom (1998) for broiler production.

Performance studies of finishing broiler chickens fed graded levels of Ginger root meal: During the feeding trial, the broiler chickens were weighed at the beginning of the experiment (end of 2wks) and subsequently on a weekly basis. Weight changes and feed consumption was recorded weekly, while weight gain, feed intake, feed conversion ratio (FCR), protein efficiency ratio (PER) were estimated to assess the growth performance of the birds. Feed intake was calculated as weight of feed offered minus weight of left over,

weight gain was calculated as final weight minus initial weight, feed conversion ratio (FCR) as feed intake divided by weight gain.

$$\text{Feed conversion ratio} = \frac{\text{Feed intake (g)}}{\text{Weight gain (g)}}$$

Table 1 Proximate Composition of ginger root meal.

COMPOSITION (%)	VALUES
Moisture	38.02
Protein	6.09
Crude fat	3.92
Crude fibre	28.00
Vitamin C	6.85
Carborhyrate	14.76
crude Ash	2.36

*estimated

Carcass characteristic studies of finishing broiler chickens fed graded levels of Ginger root meal: On the last day of the feeding trial, three (3) birds will be selected based on the overall average weight from each treatment group making a total of 15 broiler chickens. The broilers will be starved overnight of feed, but drinking water will be provided. Each bird will be tagged and weighed before and after slaughtering to determine the live and bled weight respectively. The slaughtered broilers will be dipped in hot water for about two minutes and the feathers will be plucked. The plucked weight will be recorded. The plucked chickens will be eviscerated and the dressed weights will be estimated. The dressed weight refers to the weight of the birds being partially butchered, removing all the internal organs. The carcass will be thereafter cut into parts, such as head, neck, drumstick, shank, breast, back, and wings. The weights of the parts will be recorded and measured relative to the eviscerated weight. The weight of organs such as kidney, lungs, liver, pancreas and spleen will also be recorded and measured relative to the eviscerated weight

The dressing percentage was calculated as:

$$\text{Dressing percentage} = \frac{\text{Eviscerated weight}}{\text{Live weight}} \times 100\%$$

Relative organ weight will be calculated as:

$$\text{Relative organ weight} = \frac{\text{Weight of Organ}}{\text{Eviscerated weight}} \times \frac{100}{1}$$

Organoleptic Qualities of finishing broiler chickens (Thigh muscles) fed with graded levels of Ginger root meal: From the carcass collected during the carcass characteristic study 6 Thighs muscles were collected from each treatments making a total of 48 thigh muscles and was well labelled. The chicken (Thighs) were taken to the Food Science and Technology lab of Animal science department, Ambrose Alli University Ekpoma where they were cured. Treatment one was processed using the common salt and curry while treatment 2, 3 and 4 were processed using salt with varying inclusion levels of the Ginger root meal (1.0, 1.5 and 2.0%) respectively and the resultant products were oven dried. Each of the treatments were served to twelve (12) persons who were randomly selected and trained in sensory perception for the experiment. Samples were scored on the 9-point Hedonic scale ranging from like, extremely like, dislike to extremely (Larmond, 1997) in order to test for the following: Appearance, flavor, juiciness, tenderness and overall acceptability. Before the testing exercise, the panel was asked to eat a piece of cracker biscuit and then rinse their mouth with cold water provided in order to minimize flavor carry over and was also asked to comment freely on each of the samples provided using a score form.

Statistical Analysis: All the data collected were subjected to analysis of variance (ANOVA) and differences between means and treatments were determined using Duncan's multiple range test (DMRT) at 5 percent level of probability. All statistical procedures was according to (Steel and Torrie, 1990) with the aid of SAS (1999) package

RESULTS AND DISCUSSIONS

Performance studies of finishing broiler chickens fed graded levels of Ginger root meal: Performance study revealed that the addition of Ginger Root Meal significantly ($P<0.05$; Table 2) influenced the Performance characteristics of broiler chickens assayed in this study. Average final live weight was significantly ($P<0.05$) highest among birds fed the control (0%GRM) diet with an average value of 4.77kg followed by 3.62kg in those fed (1.5%GRM) while least similar mean value of 3.57 and 3.75kg were recorded among those fed (0.5 and 2.0%GRM) respectively. This findings is in consonance with the findings of George *et al.,(*2013) who recorded a significant difference in the final live weight values of broiler chickens fed ginger root meal. Average weekly feed intake was also significantly ($P<0.05$) highest 1.92kg among birds fed diet containing 1.5%GRM similar to 1.79kg in birds fed the control and lowest in those fed 1.0%GRM with a mean value of 1.59kg. This result is similar to the work of Ademola *et al.*, (2009) who reported higher feed intake of broilers on diet supplemented with ginger. The results were however at variance with the

report of Herawati, (2010) who stated that broilers fed 2% dried supplementary ginger meal had significantly lower feed intake than those on the control diet. High feed intake of birds placed on ginger diets could be attributed to the property of ginger as an appetizer and its components which enhance the activities of gut micro flora, Ademola *et al.,* (2009).

Table 2: Growth performance of broiler chicken fed ginger root meal

Parameters	Inclusion levels of Ginger Root Meal (%)				
	T_1 (0)	T_2 (0.5)	T_3 (1.0)	T_4 (1.5)	T_5 (2.0)
Avg. initial weight (g)	80.00	80.00	80.00	80.00	80.00
Avg. Final weight (kg)	4.77±0.56^{a}	3.57±0.58^{c}	3.17±0.50^{d}	3.62±0.41^{b}	3.57±0.68^{c}
Avg. Wk. Feed Intake (kg)	1.79±0.08^{ab}	1.63±0.06^{b}	1.59±0.07^{b}	1.92±0.10^{a}	1.71±0.08^{ab}
Avg. Wk. Weight gain(g)	490±0.08^{a}	358±0.06^{b}	354±0.06^{b}	452±0.06^{ab}	320±0.06^{c}
Feed conversion ratio	0.62±0.03^{a}	0.60±0.04^{b}	0.61±0.05^{b}	0.62±0.04^{a}	0.59±0.04^{b}
Mortality%	0.00	0.00	0.00	0.00	0.00

SEM: in the same row with different superscript differ (P<0.05) significantly

Average weekly weight gain was also significantly (P<0.05) affected by the treatment diets with highest value 490g in birds fed the control similar to 452g in birds fed 1.5%GRM and lowest 320g in birds fed 2.0%GRM. Increased feed intake in T_1 (0% of ginger/kg of feed) and T_4 (1.5% of ginger/kg of feed) resulted in a corresponding increase in body weight gain whereas the improvement in weight achieved by ginger supplementation in the control similar to T_4 (1.5% of ginger/kg of feed) indicates that ginger has a positive impact on the growth of the birds. This improvement is due to improved gut environment and micro flora achieved with ginger supplementation Ademola *et al*., 2009. This effect is attributed to the fact that the susceptibility of pathogenic gram positive bacteria to the antibacterial components of ginger are higher than that of the physiological desirable intestinal bacteria *(*Reeds *et al., 1993;* Cullen *et al., 2005)*. This observation is in line with the findings of Shi *et al.,* (1999) and Javandel *et al. (2008)*. It is also backed up by the findings of Conley (1997) who observed that ginger acts as stimulant for feed digestion and conversion which increase body weight gain. Its active compounds which improves feed digestion and stimulates enzymes thus enhancing feed conversion ratio which lead to an increase body weight gain as th researchers noticed in during this study.

Table 3: Carcass evaluation of broiler chickens fed ginger root meal

Parameters	Inclusion levels of Ginger Root Meal (%)				
	T_1 (0)	T_2 (0.5)	T_3 (1.0)	T_4 (1.5)	T_5 (2.0)
Live weight (kg)	4.70±0.04^{a}	3.51±0.07^{c}	3.12±0.18^{d}	3.58±0.10^{b}	3.50±0.09^{c}
Slaughtered weight (kg)	4.20±0.14^{a}	3.12±0.07^{c}	2.86±0.16^{d}	3.37±0.10^{b}	3.23±0.07^{c}
Defeathered weight (kg)	3.85±0.12^{a}	3.01±0.07^{c}	2.55±0.16^{d}	3.24±0.12^{b}	3.17±0.07^{c}
Eviscerated Weight (kg)	3.64±0.08^{a}	2.82.±0.04^{b}	2.37±0.18^{d}	3.13±0.08^{b}	2.09±0.11^{c}
Dressing percentage	86.66±2.13^{ab}	80.34±1.24^{b}	75.96±1.09^{b}	87.43±1.32^{a}	59.71±1.22^{c}
Head (g)	56.83±3.81	58.50±1.73	52.83±5.59	55.67±6.71	58.00±3.37
Shanks (g)	95.33±4.03^{c}	102.50±1.29^{b}	103.00±12.3^{b}	124.67±8.95^{a}	99.00±8.65^{c}
Drumsticks(g)	365.83±0.31	368.50±1.29	371.00±27.13	370.17±9.17	369.00±12.90
Thighs (g)	396.33±28.29	392.50±5.74	393.00±42.11	399.67±11.63	393.00±30.19
Wings (g)	228.33±10.29	252.50±5.74	243.00±6.56	289.17±10.96	247.00±34.59
Breast (g)	757.00±18.5^{c}	815.00±19.5^{b}	832.00±26.24^{b}	912.17±5.15^{a}	757.00±34.59^{c}
Neck (g)	172.83±12.3^{b}	134.00±8.35^{c}	158.00±14.61^{c}	190.17±0.02^{a}	175.00±9.10^{b}
Back (g)	449.83±8.72^{c}	496.50±9.47^{b}	462.50±20.28^{c}	702.17±3.27^{a}	495.50±2.32^{b}

Table 4: Organoleptic qualities of broilers chickens fed diets containing ginger root meal

Organoleptic Qualities	T_1(0%)	T_2(0.5%)	T_3(1.0%)	T_4(1.5%)	T_5(2.0%)	SEM±
Appearance	9.14^{a}	7.02^{c}	7.43^{b}	7.80^{ab}	7.50^{b}	1.08
Flavour	7.85^{b}	7.23^{c}	8.74^{a}	8.55^{ab}	7.52^{bc}	1.02
Juiciness	7.93^{bc}	6.83^{c}	9.17^{a}	8.67^{b}	7.46^{bc}	0.83
Tenderness	8.50	8.57	8.55	8.52	8.46	0.14
Overall Acceptability	7.02^{b}	6.13^{c}	7.46^{ab}	7.63^{a}	6.25^{b}	0.32
Cal.Overall Acceptability	7.37^{ab}	6.22^{c}	6.57^{b}	7.41^{a}	6.46^{c}	0.63

Feed conversion ratio was higher significantly (P<0.05) in birds placed on both the control and diet 4 with mean values of 0.62 and 0.62 respectively and lowest in birds maintained on diet 5 (2.0%GRM). The highest feed conversion ratio recorded in diet 1 and 4 indicates a better feed conversion efficiency compare to birds on other treatment diets. This could be attributed to the accumulation of the active ingredients in ginger which gives rise to the formation of more stable intestinal flora and improved feed conversion efficiency as a consequence of better digestion (Tekeli, 2007). These results agree with the work of Moorthy *et al*., (2009) and Onimisi *et al*., (2005) who reported significantly better feed conversion ratio in ginger fed groups of broilers compared to control. However, their was no mortality during the period of the feeding trial and this further clearifies the phytobiotic potency of ginger root meal in broiler diets.

Carcass characteristic studies of finishing broiler chickens fed graded levels of Ginger root meal: Carcass characteristics of broiler chicken revealed that live weight, slaughtered weight, plucked or defeathered weight, eviscerated weight, dressing percentage, shanks, breast muscles, neck and back were all significantly (P<0.05, Table 3) influenced by the dietary treatment, while relative weight of head, drumstick, thigh and wings were not affected significantly (P>0.05) by the dietary treatment (Table 4). Average live weight, slaughtered weight, plucked or defeathered weight, eviscerated weight were numerically highest in birds fed the control diet, followed by those on 1.5% Ginger root meal (GRM) while least value was recorded among birds fed 1.0%GRM. Broiler chickens fed 0%GRM had higher average live weight which translated to higher average slaughtered, defeathered and eviscerated weights. This could be attributed to the fact that the experimental animal performed well on diet formulated with 0% GRM inclusion level as well as the ones on 1.5%GRM. This findings is in consonance with the earlier reports of Duruna *et al.* (2006) reported difference on the live weight, eviscerated weight and dressing percentage of broilers fed varying levels of Anthronata macrophyla seed meal. Dressing percentage showed significant (P<0.05) variation with highest value recorded among birds placed on 1.5%GRM comparable to those fed the control diet while lowest value was observed in those fed 2.0%GRM. The highest dressing percentage value recorded among birds fed 1.5%GRM could be due to the active components present in the ginger which stimulates digestive enzymes and improves overall digestion and thus leads to increased body weight which was obvious in the dressing percentage. This report on dressing percentage was in tandem with the earlier report of Tesfaye *et al.* (2013) who reported a significant difference in the breast muscle of broilers fed cassava root chips. Head, drumsticks, thighs and wings values were similar among birds placed on all the treatment diets. Head, drumsticks, thigh and wings weights of birds did not differ among the treatment diets. The result showed that inclusion of GRM up to 1.5-2.0% had no adverse effect on carcass quality. These comparable weights of some of the cut part of broilers on all the diets support the assertion

that at various levels of inclusion of GRM the birds can perform well without any deleterious effect on performance, since dressed weight of cut part is suggested to be relative value of dressed salable carcass for maximum profit in broiler chicken (Ojo, 2003; Aboki *et al.,* 2013). Shanks, breast muscles, neck and back weight were significantly (P<0.05) highest among broiler chickens fed 1.5%GRM compare to those on other treatment diets. This findings is in tandem with the report of Zhang *et al.,* (2009) who observed significant, (P<0.05) differences in breast muscles of broiler chickens fed certain spices in rations.

Organoleptic Qualities of finishing broiler chickens (Thigh muscles) fed with graded levels of Ginger root meal: The appearance score of the processed chicken thigh was significantly (P<0.05) highest 9.14 among the control (T_1), followed by similar value 7.80 recorded among those processed with 1.5%GRM (T_3) while least appearance score 7.02 was recorded in (T_2). The higher preference given to chicken thighs processed with curry could be due to the fact that the colour of the curry powder is brighter in its original state than ginger root meal and this could have influenced the panelist judgment in recognizing the control (T_1) as being the best with respect to appearance. This takes credence from the report of Teye *et al.,* (2013) who observed a significant variation in the appearance score of meat product spiced with Dawadawa (*Parkia biglobosa*). The flavor score was significantly (P<0.05) highest among chicken thighs processed using 1.0%GRM with a mean value of 8.74, followed by a statistically similar value of 8.55 in those processed with 1.5%GRM and least 7.23 in those seasoned with 0.5%GRM. The flavor of the chicken thighs seasoned with T_2 was more preferred than other treatment. Information on organoleptic quality of broilers fed ginger meal supplemented diets is scarce in literature. Odoemelem *et al*. (2013) reported a significant difference (P<0.05) in flavour of broilers fed diets containing varying levels of scent leaf meal, a spice like ginger. Sensory score for juiciness was significantly (P<0.05) highest 9.17 in chicken thighs spiced with 1.0%GRM, followed by 8.67 in those seasoned with 1.5% Ginger root meal and lowest 6.83 in chicken thighs processed with 0.5% GRM. The highest value recorded in chicken thighs spiced with 1.0%GRM could be due to the fact that the level of inclusion of the ginger powder is easily dissolvable in food when compared to other higher inclusion levels that might takes time for them to blend in equal percentage in the minced meat product . This gets support from the report of Achi, (2005) and also took credence from the report of Odoemelem *et al*. (2013) reported a significant difference (P<0.05) in the juiciness of broilers chicken fed diets containing varying levels of scent leaf meal, a spice like ginger. The tenderness score was not significantly (P<0.05) influenced with the inclusion of the varying inclusion levels of ginger root meal. This implies that the various treatments have the ability to soften the meat due to the aromatic (organic) compound in curry and ginger that aids the softening of the meat. This negates the findings of Agu *et al.,* (2017) who reported a significant variation in the tenderness of broiler chicken fed dietary inclusion levels of ginger root meal. Overall

acceptance score was significantly (P<0.05) highest 7.63 in chicken thighs processed with 1.5%GRM, followed by a similar value 7.46 in chickens seasoned with 1.0%GRM and lowest numerical value of 6.13 recorded in those processed with 0.5%GRM. Highest score recorded among those processed with T3 similar to T2 could be due to the highest score recorded in appearance, flavor and tenderness which are major sensory factors in determining the quality of the meat processed using foreign condiments or local spices. This finding lends support from the report of (Afribiz, 2011). Calculated overall acceptability score was also significantly (P<0.05) influenced with highest value of 7.41, similar to 7.37 in chicken thighs spiced with the control (curry) and least value 6.22 in those spiced with 0.5%GRM. Highest score recorded among those processed with T3 for calculated overall acceptability also could be due to the highest score recorded in appearance, flavor and tenderness which are major sensory factors in determining the quality of the meat processed using foreign condiments or local spices. This finding lends support from the report of (Afribiz, 2011).

Dietary inclusion of ginger root meal in broiler diets at 1.5% inclusion levels in this study had positive effects on the growth performance, carcass and organoleptic quality of meat comparable to the control. It is therefore concluded and recommended that the dietary inclusion of ginger meal at 1.5% levels in broiler diets should be encouraged and adopted by poultry producers. Further research is necessary to investigate the efficacy of ginger meal in prolonging the shelf-life of broiler meat.

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