BIBLIOGRAPHY

SANTIBAN, RELAN L. APRIL 2013. Carcass Characteristics of Native Chicken Given Watercress *(Nasturtium officinale)* and Commercial Feeds. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

The study was conducted to evaluate carcass characteristics of native chickens given commercial feeds, and those given commercial feeds with watercress. Specifically, this study aimed to measure the carcass yield of the sample birds slaughtered in terms of dressing percentage, weight of major cuts, weight of lean, skin and bone component expressed as percent of slaughter weight and weight of minor cuts, and weight of viscera as percent of slaughter; and also to analyze the nutrient composition of the carcasses such as moisture content, ash content, crude fat content, crude protein content, and energy content.

All data in the study were gathered from a total of 12 native chickens, (6 native chickens per treatment) that were picked out at random from a total of 32 native chickens in a previous feeding trial.

Results of the study showed that adding watercress of commercial feeds in the native chickens' diet had no significant effect on the slaughter weight, dressed weight, dressing percentage, major cuts weight, lean yield, bone yield, and skin yield expressed as dressed weight.

INTRODUCTION

Meat contains lean, fat, bones, connective tissues, and other similar elements. The lean is the most important portion of the meat in relation to human nutrition. Meat is a high-quality concentrated and easily digested source of nutrients. It is well balanced in terms of relative amount of nutrients it contains. It is an excellent source of protein, vitamins of the B-complex, and of certain minerals (PCARRD, 2011).

Poultry meat and eggs are nutritious and relatively inexpensive animal products used by humans throughout the world. The white meat from fowl is approximately 33% protein, and the dark meat is about 28% protein. This protein is easily digested and is of high quality, containing every essential amino acid. The fat content of poultry meat is lower than found in many other meats. Poultry meat and eggs are excellent sources of protein, vitamin A, and several B vitamins for human nutrition (Taylor and Field, 2004).

According to Lambio (1990) and Gay (1993) as cited by Bondoc (1998), native chickens serve as a cheap source of animal protein through their meat and eggs. They are commonly sold in the wet market as live chicken or "dressed" with the head and feet on. Although native chickens grow at a slower rate and produce lesser number of eggs than improved commercial breeds, their meat is preferred by many Filipinos because of the taste, leanness pigmentation and their suitability for special dishes.

Meat popularity in our country depends upon its savory characteristics and to a lesser extent, upon its high nutritive value. Tenderness, flavor, juiciness, leanness, and attractiveness, which include color and firmness, appear to be the main criteria the consumer considers. As poultry raiser, one must know what the consumers desire or complain for a maximum satisfaction toward best meeting consumers needs.

Nowadays, consumers are becoming more health conscious and want to consume meat with lesser chemical residues. With this, meat from native chickens could meet this demand since they are generally raised with lesser or no input of synthetic chemicals. Also, native chickens are also used for religious purposes and traditional ceremonies. This is why consumers are willing to pay for their higher price when compared to intensively reared broiler meat.

This study aimed to evaluate the carcass yield of native chickens when fed with commercial feeds and watercress (*Nasturtium officinale*). Results of this study would provide additional reference on the carcass yield of native chickens considering that there are just limited publications on this area of study. This study hopes to promote the use of natural products in improving the carcass characteristics of native chickens. This would also encourage backyard chicken raisers to use organic supplement to their animals if it is proven efficient.

Generally, this study was conducted to evaluate carcass characteristics of native chickens given commercial feeds, and those given commercial feeds with watercress. Specifically, this study aimed to measure the carcass yield of the sample birds slaughtered in terms of dressing percentage, weight of major cuts, weight of lean, skin and bone component expressed as percent of slaughter weight and weight of minor cuts, and weight of viscera as percent of slaughter; and also to analyze the nutrient composition of the carcasses such as moisture content, ash content, crude fat content, crude protein content, and energy content.

This study was conducted at the Meat Laboratory of the Animal Science Department, Benguet State University, Balili, La Trinidad, Benguet on January 2012.

REVIEW OF LITERATURE

Watercress Characteristics

The nutrient composition of watercress from USDA National Database for Standard Reference (2002) as cited by Guinyang (2005) is water- 32.337 g, energy- 3.740 kcal, protein- 0.782 g, total lipid (fat)- 0.034 g, ash- 0.408 g, carbohydrates- 0.439 g, and fibers- 0.170 g.

Various foods are rich in calcium and can be included in your chicken diet. These include many green leafy vegetables herbs that are known to be high in calcium like dandelion, chickweed, mustard greens, cabbage, watercress, etc. Many of these can be served fresh, dried or sprinkled as fresh food. Fresh watercress in particular is highly nutritious, providing 4% calcium, 3% proteins just over 1% phosphorus and very good source of other important vitamins and minerals (Anonymous, n.d.).

Adding feed supplement to animal diet is practiced for the reason of improving feed efficiency, animal appetite, and to lessen production expenses. Francisco (1992) as cited by Lampacan (2004) stated that the reason why poultry and livestock farmers practiced the giving of feed supplements and other substances to the ration of the animals is to maximize productivity.

Native Chicken Characteristics

The native chicken in the Philippines is believed to have descended from the domesticated Red Jungle Fowl (*Gallus bankiva*). Phenotypically, the Philippine native chicken resembles their wild ancestral type. It is usually single-combed and its shank is yellow to gray. The adult size is usually small, with the male weighing an average of 1.3

kg and the female 1 kg. They are nervous and flighty, but the females are broody and can with minimal care and management. Hens lay an average of 30 to 50 eggs in 3 to 4 clutches a year. The eggs are small and brown in color (Arboleda, 1987) as cited by Bondoc (1998).

In 1992, Spradbow and Samuel found out that native chicken are undoubtedly one of the most important domestic animals. These flocks are usually small, consisting of a few (4-6) adult hens per household, plus a male birds and a number of younger birds of various ages. The hens tend to breed all year round and thus the ages and numbers of young birds fluctuated markedly. The villagers consume or sell a small number of eggs but most eggs are incubated by the hens. Early chicken mortality tends to high but most survived once they have reached 6 weeks of age. These young birds are eaten by the owners or sold when over a kilo in body weight (16-20 weeks of age) and constitute an important source of protein or income to the villagers. In many Asian countries, the village chicken is a highly prized meat in great demand for religious and other ceremonies and often commanding a significantly higher price per kilo than intensively reared broiler meat.

Bondoc *et al.* (1997) as cited by Bondoc (1998), the other unique attributes of the native chicken includes adaptability to harsh environments, ability to utilize farm by products and resistance to disease and parasites.

Characteristics of Native Chicken Meat

A research conducted by Lambio *et al*. (2000), on the carcass characteristics of four genetic groups of Philippine native chickens *(Banaba, Paraoakan, Bolinao* and *Camarines)* at 12 weeks of age. The sensory characteristics of the cooked meat of the different genetic groups of Philippine native chickens were compared with 42-day-old broilers in *tinola* and roasted recipes. Dressing percentage of *Bolinao* group with (86.20

%) and without giblet (81.06 %) was higher than the *Camarines* group. The percent cut-up parts based on dressed weight was lowest in the *Bolinao* group. Flavor scores noted in both the *tinola* and roasted recipes were higher in the native chicken groups as compared with broilers although the differences were found to be insignificant (P>0.05). Color scores in the *Banaba, Paraoakan* and *Bolinao* groups were all higher than broilers in the *tinola* group. In the roasted recipe group, the color score was found to be higher than the *Bolinao* group as compared to broiler. Tenderness scores were significantly higher in broilers except in the roasted form where *Paraoakan* obtained a comparable score with that of broilers. No differences (P>0.05) in juiciness and general acceptability of the meat were noted between the native chicken genetic groups and broiler chicken.

Proximate analysis on the nutrient, physic-chemical and sensory evaluation of meat of Philippine native chicken strain *(Darag)* conducted by Fernandez *et al.* (2007) showed that a 100g raw whole *Darag* chicken sample contained 76 g moisture, 114 kcal, 3.7 g fat, 20.1 g protein, 9 mg calcium, 314 mg potassium, and 96 mg cholesterol. The total fatty acid content consisted of 58.1% unsaturated fatty acids and 42% saturated fatty acids.

Importance of Good Quality Meat

Meat quality is a complex concept without a single definition. Fresh meat attributes such as color, quality of fats, tenderness, juiciness and flavor are essential in order to drive the purchase and assure consumers fidelity. In addition, we must not forget the interrelation with other elements of production process, genetic handling and slaughter (Coma, 2000).

According to Martin (1992), visual traits of the carcass are of practical importance once they are the qualities that can be evaluated.

Gill (2000) stated that to produce a good quality of meat, it is best to use organic feeds which are formulated ration without using synthetic chemicals. Formulated ration such as organic feeds are more economical than commercial feeds. Organic chicken refers to animals reared in semi out-door conditions and feed diets without using chemicals.

Meat contribute about a sixth of all protein consumed by humans and, if fish, milk and eggs are included, animal products supply a third. Not only is meat a very concentrated source of protein but this has a high biological value because its composition matches closely that of our own proteins. It contains all the amino acids essential for human health (Warriss, 1999).

Importance of Poultry Meat

One of the main reasons poultry meat has enjoyed an increasing trend of consumption is because of its nutritional value, low fat content, and unsaturated fat type. Poultry meat is rich in high quality protein and low in total fat and saturated fat. Furthermore, because it is mainly associated with the skin, most poultry fat can be easily removed the skin (Pond and Pond, 2000).

Chicken is the most popular among poultry species. It constitutes about 85-90 percent population along with production of poultry industry, as compared to other classes of livestock for converting feed into human food. Poultry meat ranks quite higher than beef and red meat in conversion efficiency, inspite of the use of forage crops by beef cattle and sheep, goat for meat production. Poultry produce, eggs and meat, are cheaper sources of high quality protein us food and are very much useful to fight malnutrition (Jadhav and Siddiqui, 2007).

Chicken meat is healthier than other meat sources for human consumption because of its low cholesterol and fat content (Ponte *et al*., 2004), but several studies have been used to decrease the saturated fatty acids and cholesterol content of broiler meat.

Increasing consumer concern regarding foods has encouraged poultry producers to focus on the production of high quality meat, rather than livability. There is a growing need to provide nutrition, environment, health and management progress that provide an end product which meets retail requirements for fat content, nutritional value, color, taste and texture (Weltzein, 2009).

MATERIALS AND METHODS

Materials

The birds slaughtered for evaluation were taken from a growth study conducted. Experimental birds included those non-descript breeds of colored chicken raised in the backyards. The growth study had two treatments. The birds in the control treatment were given commercial feeds *ad libitum*; while the birds in treatment 1 were given commercial feeds on a restricted time (6am to 8am; 4pm to 6pm) and watercress *ad libitum* (9 am to 3 pm). All of the birds were raised in full confinement until the time of slaughtering.

Slaughtering materials used are scalding vat, knives, and chopping board. Other materials include stove, weighing scale, camera, record book, and ballpen.

Methodology

Pre-slaughter preparation. A total of 12 birds were taken from the two treatments of the growth study. Two sample birds (male + female) represented each of the three blocks per treatment. Before dressing, the birds were fasted for 12 hours but were provided with *ad libitum* water. All slaughtering materials used were thoroughly washed before using.

Slaughtering of the birds. Good hygienic practices were strictly followed during the slaughtering process. At least seven gallons of clean water was allotted for each head of bird slaughtered to ensure a thoroughly clean carcass.

At the time of slaughtering, the birds were secured by a helper holding both shanks with one hand and both wings at its base with the other to prevent struggling. The birds were raised by approximately 45 degrees so that the caudal part is higher than the head to accomplish complete bleeding. Sticking was done just below the mandible of birds. After

bleeding, each bird was immersed in the water for about 10 seconds to loosen the feathers before de-feathering. After, the carcasses were washed thoroughly on running water.

Carcass yield evaluation. The head, neck, feet and viscera of the carcasses were removed and the remaining part was weighed and recorded as dressed weight. The dressed carcasses were fabricated into major cuts namely: breast, wings, thigh and drumstick. Each cut was weighed individually. Next, the skin, lean and bone component of the major cuts were separated from each component and weighed. The viscera which included the internal organs (heart, liver and gizzard) and intestines were weighed, too. The weight of the head, feet and neck were recorded as other cuts.

Proximate analysis. After dressing, approximately 100 g of breast muscle was obtained from the carcasses per treatment and was brought to Department of Science and Technology (DOST-CAR), La Trinidad, Benguet for proximate nutrient analysis.

Data Gathered

1.Slaughter weight (g). This was obtained by weighing the fasted birds prior to slaughter using a digital weighing scale (Figure 1).

2. Dressed weight (g). This was the actual weight of the slaughtered bird after plucking the feathers with the head, neck, feet and entrails off (Figure 2).

3. Weight of major cuts (g). This was the individual weight of the major cuts after dressing and fabrication. Major cuts include the breast, back, wings, drumstick, and thigh (Figure 3).

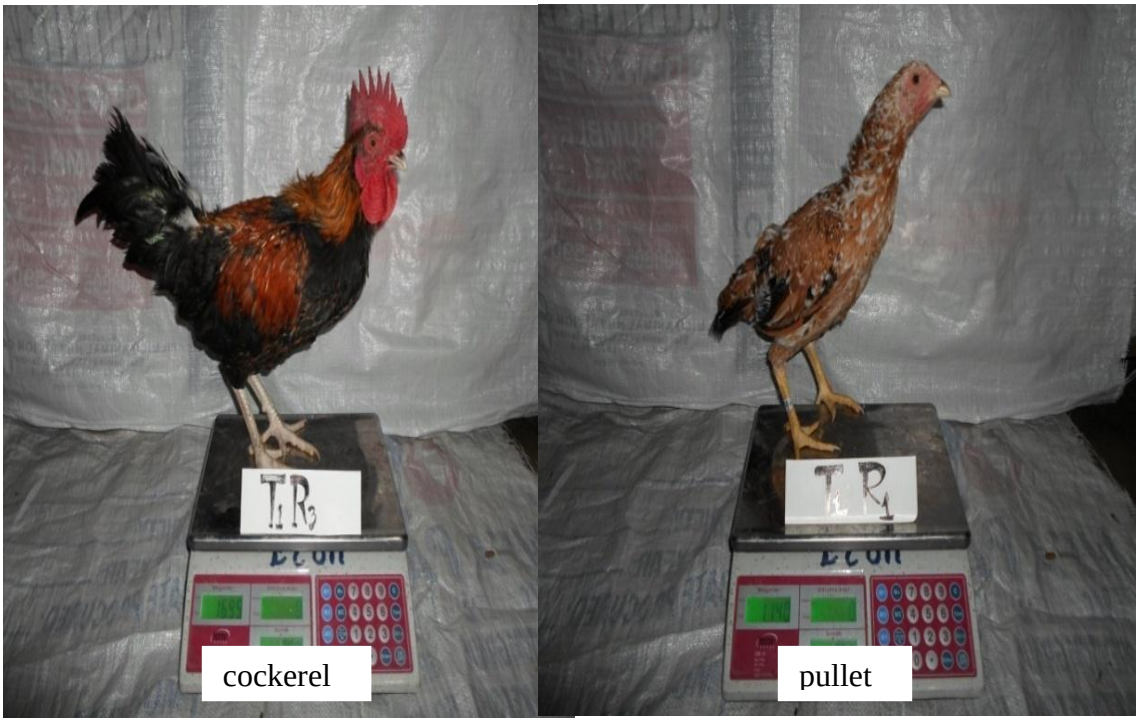

Figure 1. Sample birds for slaughter

Figure 2. Dressed carcass

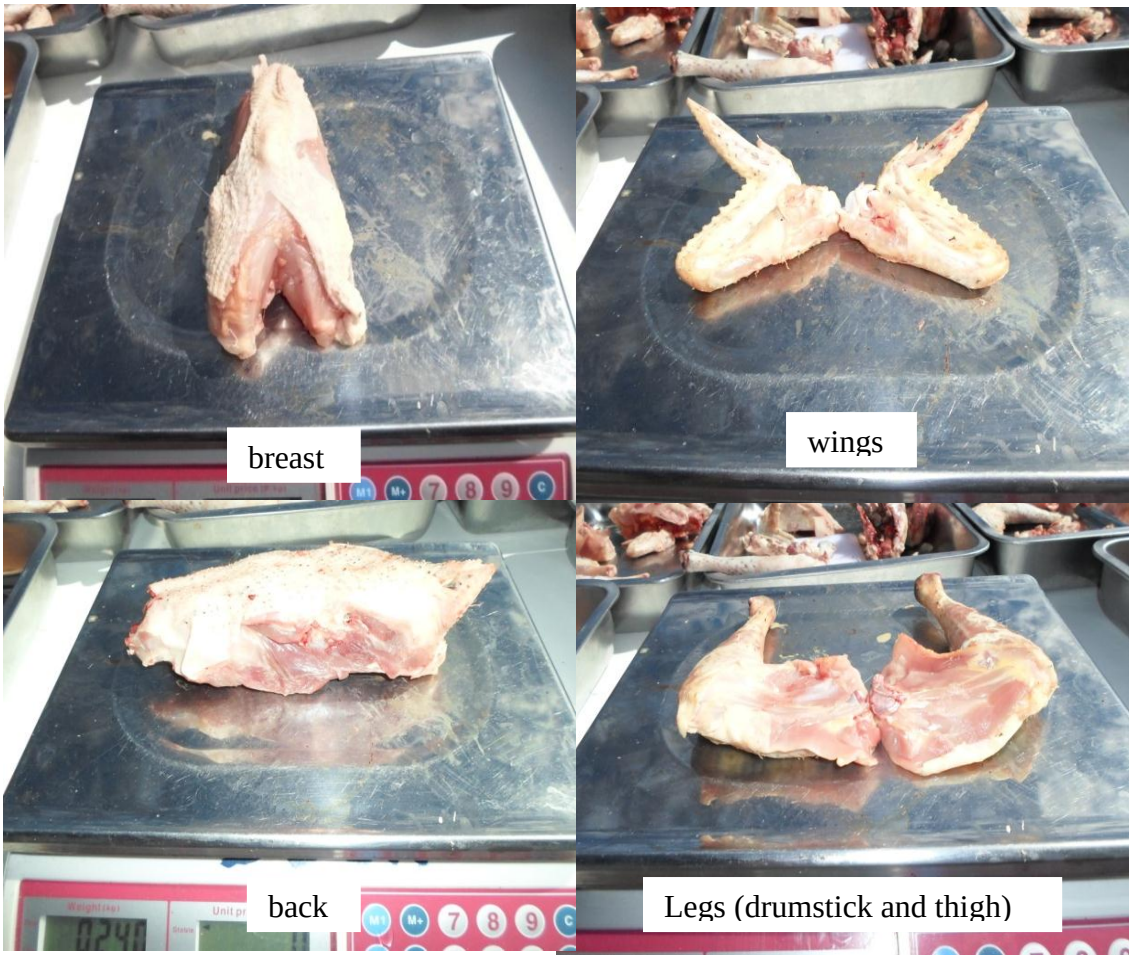

Figure 3. The major cuts

4. Weight of minor cuts (g). This was the individual weight of the minor cuts after dressing and fabrication. Minor cuts include the head, neck, and feet (Figure 4).

5. Weight of viscera (g). This was the weight of the internal organs and intestines.

a. Weight of giblets (g). This was the individual weight of the giblets after dressing and fabrication. Giblets include the liver, heart and gizzard.

b. Weight of the intestines (g). This was the weight of the small and large intestines with ingesta.

6. Weight of lean (g). This was the total weight of the lean obtained from the carcass (Figure 5).

head feet neck

Figure 4. The minor cuts

Figure 5. Lean yield

7. Weight of bone (g). This was the total weight of bones obtained from the carcass (Figure 6).

8. Weight of skin (g). This was the total weight of the skin obtained from the carcass (Figure 7).

Figure 6. Bone yield

Figure 7. Skin yield

Data Computed

1. Dressing percentage. This was obtained by dividing the dressed weight by the slaughter weight then multiplied by 100.

2. Percent major cuts. This was obtained by dividing the weight of the breast, back, thigh, wings and drumstick by the dressed weight then multiplied by 100.

3. Percent minor cuts. This was obtained by dividing the weight of the head, feet and neck by the slaughter weight then multiplied by 100.

4. Percent viscera. This was obtained by dividing the weight of the giblets and intestines by the slaughter weight then multiplied by 100.

5. Lean yield (%). This was obtained by dividing the weight of the lean by the dressed weight then multiplied by 100.

6. Bone yield (%). This was obtained by dividing the weight of the bone by the dressed weight then multiplied by 100.

7. Skin yield (%). This was obtained by dividing the weight of the skin by the dressed weight then multiplied by 100.

Statistical Analysis

All data were analyzed using analysis of variance (ANOVA) appropriate for Randomized Complete Block Design (RCBD). Means were compared using the Duncan's Multiple Range Test (DMRT).

RESULTS AND DISCUSSION

Slaughter Weight, Carcass Weight and Dressing Percentage of Birds

Slaughter weight, carcass weight, and dressing percentage of birds after82 days of feeding trial are shown in Table 1. Statistical analysis revealed no significant differences on slaughter and carcass weight of the native chickens with means of 1.231 kg and 0.736 kg in T_0 – commercial feed and T_1 – commercial feed + watercress, respectively. This implies that the birds have more or less the same body weight when they were slaughtered.

The average dressing percentage obtained from the carcasses was 59.77%. Analysis of variance showed no significant difference in the dressing percentage of birds given commercial feeds ration and those that were given commercial feeds and watercress. The dressing percentage of the native chickens obtained in this study is lower than the average dressing percentage of broilers which is 70%. According to Warriss (1999), fat level affects carcass yield. Broilers tend to carry more fat in their carcass compared to the native chicken.

Table 1. Slaughter weight, carcass weight and dressing percentage of birds

TREATMENT	SLAUGHTER WEIGHT (kg)	CARCASS WEIGHT (kg)	DRESSING PERCENTAGE
Commercial Feeds	1.234[a]	0.734[a]	59.43[a]
Watercress + Commercial Feeds	1.228[a]	0.737[a]	60.12[a]

[*] Means with the same superscripts are not significantly different at 5% DMRT

Weight of the Major Cuts as Percent of Dressed Weight

Presented on Table 2 are the average weight of major cuts which include the breast, back, wings, drumstick and thigh expressed as percent of the dressed weight. DMRT showed that the weights of major cuts from different treatments are the statistically the same. Hence, watercress did not have an effect on the weight of major cuts of the birds.

All percentages of major cuts were within the average range of major cuts in poultry as presented by Acker (2003).

Breast. The percentage breast of birds fed with commercial feeds and watercress + commercial feeds have means of 28.371% and 29.157%, respectively. These values are within the range of the industry standard which is 28.30%.

Back. Percent of back from T_0 (23.331%) and T_1 (22.392%) is comparable to the industry standard which is 20-22% (back and neck).

Wings. Percent of wings from T_0 (13.658%) and T_1 (13.261%), respectively, are apparently within the range of the industry standard which is 12-14%.

Drumstick. The percentage of drumstick for T_0 which is 16.896% and T_1 which is 16.57% are also within the range of the industry standard which is 15-17%.

Thigh. Percentages of 17.87% from T_0 and 18.709% from T_1 are higher than the industry standard which is 15-17%.

Table 2. Weight of major cuts as percent of dressed weight

MAJOR CUTS	TREATMENTS	
	COMMERCIAL	COMMERCIAL FEEDS +

	FEEDS		WATERCRESS	
	Kg	%	kg	%
Breast	0.208	28.371[a]	0.213	29.157[a]
Back	0.171	23.331[a]	0.166	22.392[a]
Wings	0.100	13.658[a]	0.098	13.261[a]
Drumstick	0.125	16.896[a]	0.122	16.572[a]
Thigh	0.131	17.873[a]	0.139	18.709[a]

[*] Means with the same superscripts are not significantly different at 5% DMRT

Weight of Minor Cuts as
Percent of Slaughter Weight

Table 3 shows the obtained weight of minor cuts as percent of slaughter weight. Minor cuts include the head, feet, and neck. Statistical analysis revealed no significant differences on the weights and percentages of these cuts. Mean percentages of the head, feet, and neck for the birds given commercial feeds are 3.308%, 6.068% and 3.073%, respectively. On the other hand, mean percentages of the head, feet and neck for birds given commercials feeds and watercress are 3.391%, 6.083% and 3.162%, respectively.

Weights of Viscera as
Percent of Slaughter Weight

As shown in Table 4, percentage of viscera from native chickens given commercial feeds has no statistical difference with the viscera of the native chickens given watercress + commercial feeds. In the control treatment, the mean percentages of the heart, liver, gizzard and intestines are 0.675%, 2.472%, 2.492%, and 4.043%, respectively. On the other hand, T_1 had 0.528% for the heart, 2.194% for the liver, and 2.194% for the gizzard and for the intestine had 3.492%. This signifies that the weights of treatment diets did not have an effect on these parts.

Lean Yield, Bone Yield,
and Skin Yield

After careful skinning and deboning, the lean, bone, and skin components of the dressed were separated.

Table 3. Weight of minor cuts as percent of slaughter weight

MINOR CUTS	TREATMENTS			
	COMMERCIAL FEEDS		COMMERCIAL FEEDS + WATERCRESS	
	Kg	%	kg	%
Head	0.041	3.308[a]	0.042	3.391[a]
Feet	0.074	6.068[a]	0.076	6.083[a]
Neck	0.038	3.073[a]	0.039	3.162[a]

* Means with the same superscripts are not significantly different at 5% DMRT

Table 4. Weights of viscera as percent of slaughter weight

VISCERA	TREATMENTS			
	COMMERCIAL FEEDS		COMMERCIAL FEEDS + WATERCRESS	
	Kg	%	kg	%
Heart	0.017	0.675[a]	0.013	0.528[a]
Liver	0.030	2.472[a]	0.029	2.194[a]
Gizzard	0.030	2.492[a]	0.026	2.194[a]
Intestines	0.049	4.043[a]	0.042	3.492[a]

* Means with the same superscripts are not significantly different at 5% DMRT

Lean yield. Lean is considered as the most important component of meat is relation to human nutrition (PCARRD, 2011). Native chicken meat is known for its superior leanness over its commercial counterpart.

Table 5 shows the mean weight of lean in proportion to the dressed weight. DMRT shows that there were no significant differences between the treatments. Native chickens fed with commercial feeds had a mean of 73.06 %, and the native chickens fed with watercress + commercial feeds had 74.16%. These values are much higher than the lean yield of broiler which is 40% as cited by the IAS-UPLB (1999).This finding confirms the superior leanness native chicken meat over its commercial counterpart.

Bone yield. As shown in Table 5, native chickens given commercial feeds produced comparable weight of bone as expressed in percent with those given watercress + commercial feeds. Mean percentage of the bone for birds given commercial feeds is 19.540% and 18.784% for the birds given commercial feeds + watercress. These values are apparently higher than the bone yield of broiler which is 15% (IAS-UPLB, 1999).This could be attributed to the age of the birds at slaughter. The native chickens in this study were slaughtered at 16 to 20 weeks old while broilers are commonly slaughtered at 6 weeks or even younger. Older birds have more ossified and compact bones than younger birds, thus heavier weights of the former. Skin yield. Statistical analysis revealed no significant differences between the two treatments in terms of skin yield. Mean percentages of skin for the birds given commercial feeds is 7.397%, while the birds given commercial feeds + watercress is 7.145%.This means that the watercress did not have an effect on the weight of skin.

Table 5. Weight of lean, bone, and skin as percent of dressed weight

TREATMENT	LEAN		BONE		SKIN	
	Kg	%	kg	%	kg	%
Commercial Feeds	0.537	73.063[a]	0.143	19.540[a]	0.054	7.397[a]
Watercress + Commercial Feeds	0.545	74.161[a]	0.139	18.784[a]	0.053	7.145[a]

[*] Means with the same superscripts are not significantly different at 5% DMRT

Other observations

It was observed in both treatments that even if the native chickens were fed with commercial feeds, the leanness of the carcasses was maintained. Only negligible or no amount of fats was taken from the carcasses.

Proximate Nutrient Analysis

About 100g breast muscle from the birds each treatment was taken and was subjected to proximate nutrient composition at the DOST-CAR Regional Service and Testing Laboratory (Appendix Tables 20 and 21). Breast muscle part of the native chicken's carcass was selected because it is so far the most muscle part of the carcass. Only one sample from each treatment was subjected for nutrient analysis, hence, it was not subjected to statistical analysis.

Moisture. Nutrient analysis shows that the moisture content of the control group (commercial feed) is almost the same with the moisture content of treatment one (commercial feed + watercress) group with means of 72.83% to 73.40%, respectively. These data are lower compared to the moisture content of commercial chickens which is 75.30% (Arganosa, (1986) as cited by PCARRD, 2011). This is because the birds were

about 16 weeks to 20 weeks when they were slaughtered. Moisture content of meat decreases as animals mature.

Crude fat. Results on the crude fat content of the samples show a 0% value from the meat of native chickens given watercress. On the other hand, native chickens fed with commercial feed only had 0.21%.Crude fat values from both treatments are lower than the 3.10% crude fat (Arganosa, 1986 as cited by PCCARD, 2011) from meat of commercial chickens.

Crude protein. It shows in Table 6 that the birds fed with and without watercress had almost the same crude protein content of 26.07% and 25.14%, respectively. When these data are compared to the crude protein of commercial chickens which is 20.60% (Arganosa (1986) as cited by PCCARD, 2011), it can be confirmed that the meat from native chickens are definitely better sources of protein when compared to its commercial counterpart.

Ash. The amount of ash represents the mineral content of meat. The ash content of meat from the birds not given watercress is 1.31% and 1.38% for those given watercress. Ash content from commercial chicken is 1% (Arganosa (1986) as cited by PCCARD, 2011). This suggests that meat from native chickens have higher mineral content compared to the commercial ones.

Energy. The energy content of the native chickens fed with commercial feed is the same with the native chickens fed with watercress with a value of 104 kcal. It entails that watercress does not have an effect to the energy content of the carcass.

Table 6. Result of the proximate composition of native chicken meat*

TREATMENT	MOISTURE (%)	CRUDE FAT (%)	CRUDE PROTEIN (%)	ASH (%)	ENERGY Kcal
Commercial feeds	72.83	0.21	25.14	1.31	104
Watercress + commercial feeds	73.40	0	26.07	1.38	104

*Analysis was done at the DOST-CAR Laboratory

SUMMARY, CONCLUSIONS, AND RECOMMENDATION

Summary

The study was conducted to evaluate the carcass characteristics of native chickens given watercress and commercial feeds. Specifically, it aimed to measure the carcass yield of the birds slaughtered in terms of dressing percentage; weights of major cuts, minor cuts and viscera; and the lean, skin and bone component of the carcasses. Further, it aimed to analyze the proximate nutrient composition of the carcasses such as moisture content, ash content, crude fat content, crude protein content, and energy content.

After statistical analysis, it was found that there were no significant difference between the birds fed with commercial feeds and those given watercress plus commercial feed in all the carcass yield parameters evaluated.

On the other hand, results of the proximate composition of the carcasses as represented by the breast muscle were not far from each other. This signifies that the watercress with commercial feed had the same effect with that of the commercial feeds. It was however observed that the crude fat was reduced to 0% and the ash content is higher in the carcasses fed with watercress and commercial feeds.

Conclusions

Based from the results of the research, it is therefore concluded that the yield of the carcasses produced by native chickens fed with watercress plus commercial feeds do not vary significantly from those produced by native chickens fed with commercial feeds only.

Furthermore, it is concluded that the slaughter weight of the birds are directly proportional to the carcass yield parameters.

Recommendation

With the growing demand for highly nutritious meat, the use of watercress with commercial feeds as ration for native chickens on a restricted basis could be recommended, since the carcasses produced lower crude fat, higher ash and protein content.

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