



Carcass Characteristics And Sensory Evaluation Of Shredded Meat (Dambu) From Different Species Of Poultry

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Received Date: 02/05/2016; Accepted Date: 10/01/2017; Published Date: 03/02/2017

Abstract

The study was designed to assess the carcass yield and sensory evaluation of different species of poultry, comprising of broiler, spent layer, duck, guinea fowl and local chicken. The experimental treatments were conducted in 4 replicates in a completely randomized design. The result showed that broilers had a significantly ($P<0.05$), higher live weight (1.65kg), plucked weight (1.50kg) and eviscerated weight (1.25kg) while the least value was in local chicken. Similarly the weight of primal cuts like the breast, thigh, drum stick and neck of broilers were also significantly ($P<0.05$) heavier than other species of poultry. Most of the organs and gut characteristics measured were not significantly ($P>0.05$) different among the poultry species except the large small intestines and caeca. The sensory evaluation showed that broilers dumb had the highest ($P<0.01$) rating for colour (8.20) and guinea fowl was superior for tenderness (7.85) and palatability (7.85), while local chicken had the highest acceptability scorer. It was concluded that local chicken and guinea fowl were the most preferred poultry product when processed into dambu, however broilers had higher yield of the meat.

Key words: Carcass yield, gut dimension, Sensory evaluation, dambu, poultry species.

Introduction

Nigeria is richly endowed with a wide variety of animal protein sources, but the total production is insufficient to meet the requirement of Nigerians (Ibe, 2000). FAO (2007/2009) report showed that industrialized nations consume about 88.2kg/capita of meat while Nigeria has a per capita meat consumption of 8.8kg in 2009. A publication of NIAS showed that Nigeria is among the top 12 poorest countries in animal protein consumption.

Poultry production however remains one of the potential avenues to achieve sustainable and rapid production of high quality protein to meet the demand for animal protein (Akpata and Ojo, 2000). Poultry meat has some advantages as a source of animal protein over red meat because of

its low percentage of fat which is associated with the prevention of hardening of arteries (Alam and Shaik, 2007). Nutritional habits regarding poultry meat and meal products have recently undergone some major changes (Vukasovic, 2014). He also observed that by 2022 poultry will be the only meat to record positive development both in share and quantity consumed while beef, pig and sheep meat would record decline both in consumption and share. This are all an indication of consumers increasingly interest in functional foods as an alternative to increase their health and well-being (Andrews, 2011). Poultry meat is one of the most favourite meat types, it is tasty, it responds to the requirements of modern and balanced nutrition, it is quick and easy to prepare, healthy, safe, nourishing and is versatile in terms of marinating (Vukasovic, 2014).

Poultry species such as broilers, layers, duck, local chicks and guinea fowl are some of the available and important dietary animal proteins sources for humans. Young et al. (2001) reported that strain, sex, age, health and nutrition affect yield of parts, dressing percentage and organ characteristics of birds. This work was therefore designed to study the carcass characteristics and sensory evaluation of different poultry species when processed in to dambu. Dambu nama (shredded meat is a local delicacy produced in Northern Nigeria to add value to meat and improve it shelf life. The product if properly prepared can store for a whole year without undergoing spoilage.

Materials and Methods

Carcass evaluation: was conducted at the Abubakar Tafawa Balewa University, Bauchi. Four (4) birds from each species of the poultry which included, broilers, spent layers, local chickens' ducks and guinea fowls were purchased from Muda Lawal Market in Bauchi metropolis. The birds were fasted overnight and slaughtered, bled before dipping into hot water for defeathering and eviscerated carcasses were weighed. Similarly weight of cut parts (drum stick thigh, breast, back wing, leg, neck and head) and organ (lung, liver, heart, spleen, pancreases etc. were taken. The organs weights were expressed as percentage of live weight.

Dambu (shredded meat) processing: for each meat type from the drumstick, thigh, breast, back wing and neck were washed, mixed with spices and boiled. The mixture were boiled until tender, pound to shreds and fried using shallow frying method and thereafter allowed to cool down as shown in figure 1.

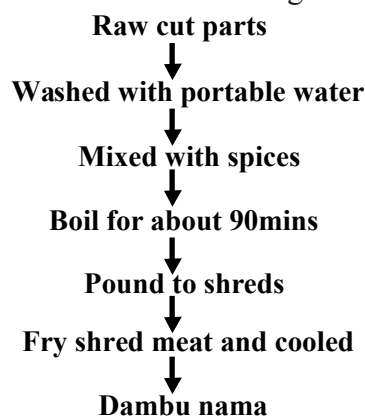


Figure 1: Unit production of dambu meat.

Sensory evaluation: A structured questionnaire was administered to a team of 20 taste panelist using empirical procedure of taste and tells". The panelist were served the different dambu meat coded as A,B,C,D and E for broilers, spent layer, duck, guinea fowl and local chicken respectively. A bottle of water and cracker biscuit each to rinse their mouth after tasting each product. A 9-point hedonic scale corresponding to extremely dislike (1) and extremely liked (9) was used to rate the colour, flavour, juiciness, tenderness, palatability and general acceptability of the processed products.

Statistical analysis

The data collected were subjected to Analysis of variance technique using SPSS (2006) package.

Results and Discussion

Carcass yield and gut characteristics of the different poultry species are presented in Table 1. The mean live weight for broilers, layers, duck, local chicken and guinea fowl were 165, 157, 130, 1.22 and 1.00kg, respectively. The broilers had a significantly ($p < 0.05$) higher live weight compared to duck, local chicken and guinea fowl. Similarly the dressing percentage which is the best index of total edible meat after the visceral organs, blood and feather have been removed (Ugwu and Onyimonyi 2008) showed that broilers have more edible meat or dressed higher than other poultry species. The values were however not significantly different statistically ($P > 0.05$). The weight of visceral organs like the kidney, liver, lungs, heart, gizzard, pancreas as a percentage of the liveweight (Table 1) were similar ($P > 0.05$) for the different species of poultry.

The weight of primal cut of the different species such as the drumstick, thigh, breast, neck, back and wing are very important in the processing dambu meat. So the higher the yield of these parts the more the amount of dambu meat that would be produced. The broiler were observed to have the highest ($P < 0.05$) value of drumstick, thigh and breast. This is an indication of higher yield of meat from broilers and hence more dambu compared to

Parameters	Poultry species					
	Broilers	Spent layers		Duck	Local chicken	
	BRL	LAY	DUC	GFL	LCK	SEM
Live weight (kg)	1.65 ^a	1.57 ^{ab}	1.30 ^{bc}	1.22 ^{cd}	1.0 ^d	0.07*
Pluck weight (kg)	1.50 ^a	1.41 ^{ab}	1.10 ^{bc}	1.10 ^{bc}	0.92 ^d	0.54*
Eviscerated weight (kg)	1250.0 ^a	1225.0 ^{ab}	975 ^c	875 ^{de}	810 ^e	18.97*
Carcass (kg)	1175 ^a	1100 ^b	850 ^c	825 ^c	705 ^d	18.24*
Dressing %	71.16	70.00	65.38	67.00	70.45	1.41NS
Head	2.94 ^{cd}	3.48 ^{bc}	5.42 ^a	2.92 ^{cde}	4.06 ^b	0.14**
Legs	4.31 ^a	3.51 ^b	3.11 ^{bc}	2.48 ^c	4.50 ^a	0.18*
Gizzard	2.03	2.07	2.69	2.49	2.89	0.19NS
Liver	2.56	1.85	2.11	2.26	2.15	0.18NS
Lungs	0.155	0.44	0.61	0.44	0.55	0.06NS
Heart	0.45	0.50	0.93	0.27	0.71	0.08NS
Kidney	0.15	0.06	0.38	0.20	0.15	0.05NS
Pancreas	0.18	0.16	0.19	0.08	0.20	0.03NS
Spleen	0.15	0.10	0.15	0.12	0.20	0.03NS
Large intestine	0.12 ^c	0.26 ^{ab}	0.19 ^{bc}	0.52 ^a	0.10 ^{cd}	0.03**
Small intestine	4.24 ^a	2.63 ^b	2.23 ^b	2.71 ^b	2.68 ^b	0.23*
Caeca	0.81 ^a	0.56 ^{bc}	0.30 ^{cd}	0.73 ^{ab}	0.45 ^{cd}	0.04**
Abdominal fat	0.49 ^b	0.71 ^a	0.10	0.10	0.76 ^a	0.09*
Drum stick	169.00 ^a	133.00 ^{ab}	85.50 ^c	99.50 ^c	124.00 ^d	23.44*
Thigh	175.50 ^a	158.00 ^a	63.00 ^d	111.00 ^{bc}	97.50 ^{cd}	10.87*
Breast	328.5 ^a	273.0 ^{bc}	271.0 ^b	251.50 ^{bc}	126.00 ^d	23.44*
Back	230.00	258.00	183.00	151.00	141.50	16.73NS
Wing	140.50	146.0	158.50	116.0	112.0	6.97NS
Neck	85.00 ^a	80.00 ^a	69.00 ^{ab}	50.50 ^b	50.00 ^b	3.95*

^{abcd} means in a row with different superscript differ significantly (**P<0.01, *p<0.05)

BRL Broilers, LAY, Spent layers, Duc, Duck, GFL Guinea fowl, LCK Local chicken, PLWT, Plucked weight.

Table 1: Carcass yield and gut characteristics (% live weight) of different species of poultry.

others. This result corroborates with the work of Young et al. (2001) who stated that strain and species of animal could affect the yield of carcass after slaughter. They also added that the yield of primal cuts change with the increase in body weight. The sensory evaluation of dambu (shredded meat) from the different species of poultry is presented in Table 2. According to Ihekoronye and Ngoddy (1985) flavour, texture and appearance (colour) are the most important characteristics of food because they are

the attributes the consumer can readily assess. The mean panel rating for colour in all the poultry species showed a generally high score (7.35-8.20) which is an indication that all the poultry species have meat of good quality in terms of colour. James (1993) stated that colour has a powerful influence on consumer acceptance for food product especially meat product and serves as a visual indication of meat quality. In addition the colours of dambu are always enhanced by the use of the sweat red pepper.

Parameter	BRL	LAY	DUCK	GFL	LCK	SEM
Colour	8.20 ^a	7.55 ^{abc}	6.40 ^{abc}	8.00 ^{ab}	7.35 ^{abc}	0.56 ^{***} ^{***}
Flavour	7.70	7.55	7.60	7.75	8.05	0.54NS
Juiciness	7.70	6.90	6.75	7.35	7.20	0.57NS
Tenderness	7.60 ^{ab}	7.45 ^{ab}	6.45 ^{bc}	7.85 ^a	7.60 ^{ab}	0.59 ^{**}
Palatability	7.75	7.70	7.35	7.85	7.65	0.59NS
Acceptance	7.95 ^{ab}	7.85 ^{ab}	6.85 ^{bc}	8.05 ^{ab}	8.15 ^a	0.49 ^{***}

^{abc} means in a row with different superscript differ significantly (**P<0.001, ***p< 0.001)

BRL Broilers, LAY Spent layers, DUC Duck, GFL Guinea fowl, LCK Local chicken.

NS Not significant (P>0.05)

Table 2: Sensory Evaluation of shredded meat (Dambu) from different species of poultry

According to Ihekoronye and Ngoddy (1985) flavour determines the acceptance or rejection of food by consumers even though appearance evokes the initial response. They define flavour as a complex sensation that is derived from food including particularly the sensation of taste and smell. There was no significant difference (P>0.05) in the flavour of dambu from the different species of poultry even though the highest score was recorded in local chicken (8.05) and the least score in broilers (7.55). The palatability of dambu from the different species showed a highly significant (P<0.001) difference. The most acceptable was local chicken followed by guinea fowl, layers, broiler and the lowest acceptability score was found in duck dambu.

Conclusion

Poultry production especially of intensively kept birds is on the increase however the market for these products (broilers and spent layers) except during festive season is a major constraint. As such most small scale poultry farmers have resorted to adding value to their poultry products by processing into shredded meat (dambu). These products can then be packaged and transported to cities for sales. The result of this study has shown that broilers meat has the highest yield of primal cuts that are used for dambu while the local chicken is the most acceptable to consumers. There is need for further works on the yield, economic returns, microbial loads and shelf life of dambu from the different species of poultry.

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