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Comparative study on slaughter characteristics between spent broiler breeder hens and broilers

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Abstract

The present study was conducted to compare the slaughter characteristics between spent broiler breeders and broilers on the basis of carcass weight, dressing percentage, offal weight, commercial cut up parts yield and meat cum bone ratio. The mean pre slaughter weight, carcass weight, dressing percentage, total edible and inedible offal weights were significantly ($p < 0.01$) higher in spent broiler breeder hens when compared to the broilers. When expressed in terms of percentages. Broilers were found to have significantly ($p < 0.01$) higher percentages of gizzard, liver, heart and total giblets, blood, feathers, feet, intestines, crop, lungs, and kidneys except head, in which no significant difference was observed when compared to spent broiler breeder hens. Spent broiler breeder hens found to have significantly ($p < 0.01$) higher percentages of neck, thighs, drumsticks and lower percentages of wings and breast than broilers. Spent broiler breeder hens recorded higher meat and lower bone percentages in neck, wings and drumsticks cutup parts when compared to the broilers where as broilers recorded significantly ($p < 0.01$) higher meat and lower bone percentages in breast, back and thighs than spent broiler breeder hens. Meat cum bone ratio was significantly ($p < 0.01$) higher in neck, wings, drumsticks of spent broiler breeder hens compared to broilers where as for other cutup parts that is breast, back and thighs recorded significantly ($p < 0.01$) higher meat cum bone ratio in broilers than spent broiler breeder hens.

Keywords: Spent breeder, broiler, slaughter, carcass characteristics

Introduction

A growing demand for poultry meat comes mostly from its high nutritive and dietary value and favourable price, as compared with the price of meat of other slaughter animal meat (Augustyńska-Prejsnar and Sokołowicz 2014). An increase in poultry meat production and demand results in increasing efforts to enhance the meat quality. Broiler breeder hens are parents that produce commercial broilers with high hybrid vigor for meat production. They are heavy birds (4 to 6 kg) with satisfactory amount of meat in the breast and thighs. After their production period these spent broiler breeder hens are usually slaughtered and used in feed production and concentrated stock preparations, or sold domestic consumption in soups and stews and also the production of pet food (Ajuyah *et al*, 1992; Voller-Reasonover *et al*, 1997) [1, 16]. Important criterions applied to evaluate the slaughter value of chicken carcasses are dressing percentage, share of culinary parts and carcass muscle content. In the production chain, carcass and parts yields provide useful information to guide farmers as to strain, sex, and slaughter age options that would supply consumers' demands. Consumers prefer chickens with high yield of noble parts, such as breast, drumsticks, and thighs (Hellmeister Filho, 2002; Souza, 2004) [4, 14].

Studies on spent broiler breeders and broilers yield has focused on comparing eviscerated carcass yield and component parts. Broiler chickens demonstrate a high dressing percentage, accounting for 70–71% (Łukaszewicz 2008) [8] that indicator is considered very significant since it determines the amount of material for sale. The trend now worldwide is towards the production of specialized carcass type and composition to meet specific market requirements for boneless meat, choice cuts poultry products. The product specifications are high meat yield in the carcass and low abdominal fat. A superior carcass is characterized by a desirable composition: maximum proportion of muscle, minimum proportion of bone and optimum proportion of fat indicated by specific trade preference. Also, superior carcass must contain high proportion of most valuable muscles (i.e. breast and thigh muscles). Poultry can be purchased in many forms: Whole uncut birds, cut-up mixed parts, or as separate parts (breast, thigh, wings), as well as boneless meat. Because of unique feeding pattern with balanced

Nutrients, spent broiler breeder hens have very good amount of meat in the breast and thigh and comparatively less abdominal and subcutaneous fat. The growing demand for processed poultry products resulted in increased interest from both industry and researchers towards practices that might result in higher yield in broilers, especially cuts with high economical value, such as breast meat.

The present study was conducted to compare the carcass quality parameters between spent broiler breeders and broilers on the basis of carcass weight, dressing percentage, offal weight, commercial cut up parts yield and meat cum bone ratio and also to assess the effect of body weight, age on various cut up parts yields and percentages.

Materials and Methods

The present research was carried out in the Department of Livestock Products Technology, College of Veterinary Science, Tirupati. Carcass characteristics including meat cum bone ratio of spent breeder hens were studied in comparison with broilers.

Salughter and dressing

Spent boiler breeder female birds of 72 weeks age and broilers of 6-7 weeks of age were purchased from Chandragiri local market, transported and slaughtered at the Department of Livestock Products Technology, College of Veterinary Science, Tirupati. Birds were weighed individually and were bled by modified kosher method with a sharp knife without disturbing the spinal cord and wind pipe. Standard bleeding time was allowed to obtain a desirable bleeding. All the carcasses were weighed after wiping off the clotted blood around the neck and cut surface. Difference in weight before and after bleeding was taken as blood weight. The birds were scalded in hot water (at 63 °C for 2 min) and feathers were removed by a rotatory drum type mechanical feather plucker. After plucking, the loose fin feathers were removed by hand finishing. Then the birds were singed to remove the filoplumes (hair like appendages). The weight of the carcasses after defeathering was recorded. Difference in weight before and after defeathering was taken as feather weight. Head was separated by cutting between the first cervical vertebrae and occipital bone and shanks were cut off from the hock joint with the help of a knife. Head weight and feet weight was recorded. The skin of the neck was slit close to the body with a pan of shears, then the crop and wind pipe were removed by pulling. The viscera were exposed by giving horizontal cut at the region of abdomen. All the internal organs were taken out by inserting the fingers inside, when the body was completely devoid of internal organs, the eviscerated weight was recorded as weight of carcass.

The liver (without gall bladder), gizzard (without mucous membrane) and the heart (after removal of blood clot) constitute the giblets. All these portions were taken out properly, carefully and weighed individually to obtain respective individual weights and weighed together and recorded as giblet weight.

Cutup parts

The cut-up operation involves the process of cutting whole carcasses into halves or individual parts. Both the legs were

Cut with the help of a sharp knife at the hip joint. Leg was divided into thigh and drumstick by cutting at the femoro tibial joint and respective weights were recorded. Wings were removed by cutting through the shoulder joint at the proximal end of the humerus and weighed and recorded as wing weight. The breast was then separated from the bone by cutting down on both the sides between the 22 collar bone and back bone towards the tail leaving the pelvic bone and neck intact and breast weight was obtained. The neck and back portions were separated by cutting close to the clavicle as possible and respective weights were recorded.

Meat bone ratio

Each cut up part of a bird was deboned separately and weighed the meat, bone and skin and calculated the percentages of meat, bone, skin respective to the carcass weight of a particular bird.

Results & Discussion

In the first phase of study evaluated the spent broiler breeder hen slaughter characteristics, fresh meat attributes in comparison with broilers.

Weights Pre slaughter, carcass, total edible and inedible offals

The means of pre slaughter weight, carcass weight, dressing percentage, total edible and inedible offal weights (g) were presented in Table 1. The mean±SE values of pre slaughter weight of spent broiler breeder hens and broilers were 5127.5±0.74 and 1930.8±0.64 respectively. The mean±SE values of carcass weight of spent broiler breeder hens and broilers were 4044.5±0.82 and 1336.3±0.95 respectively. The mean±SE values of dressing percentage of spent broiler breeder hens and broilers were 78.88±0.02 and 69.20±0.02 respectively. The mean±SE values of inedible offal weight of spent broiler breeder hens and broilers were 916.4±0.71 and 503.48±0.96 respectively. The mean±SE values of inedible offal weight of spent broiler breeder hens and broilers were 166.03±0.5 and 91.01±0.22 respectively.

The mean slaughter weight, carcass weight, dressing percentage, total edible and inedible offal weights were significantly ($p<0.01$) higher in spent broiler breeder hens when compared to the broilers. This might be due to higher slaughter weight of spent broiler breeder hens than broilers. The trend is in agreement with the results reported by kokoszynski *et al.*, (2016) ^[6] in comparison of spent broiler breeders with broilers. Muthulaxmi *et al.* (2016) ^[11] reported that the body weight has significant influence on the meat yield in culled layer hens. Sogunle *et al.* (2016) ^[13] also observed significant difference in live weight between broilers and spent hens. Carcass weight and dressing percentage increased with an increase in age of bird in this present study, which is in accordance with the findings of Muthukumar *et al.*, (2011) ^[10] in broilers. Omojola *et al.*, (2004) ^[12] reported that the mean weights of most of the offal and primal cuts increased with increasing slaughter weight and the female birds had a better dressing out percentage ($P>0.05$) than the males. Avila *et al.* (1993) ^[2] showed the significantly higher dressing percentage (76.8%) with increasing body weight in male than that in female of Arbor Acres.

Table 1: Carcass characteristics of spent broiler breeder hen and broiler bird (Mean±SE)

S. No.	Parameter	SBBH	Broiler	T-Value
1.	Pre slaughter weight	5127.5±0.74	1930.8±0.64	442.68**
2.	Carcass weight	4044.5±0.82	1336.3±0.95	559.51**
3.	Dressing percentage	78.88±0.02	69.20±0.02	264.76**
4.	Total inedible offal weight	916.4±0.71	503.48±0.96	177.51**
5.	Total edible offal weight	166.03±0.5	91.01±0.22	135.59**

**significant at 0.01 *significant at 0.05 SBBH- spent broiler breeder hen

Inedible offals weights and percentages

The mean inedible offal weights (g) and percentages on slaughter weight including blood, feathers, head, feet, intestines, crop, lungs and kidneys were presented in Table 2. The mean±SE value of blood was 130.78±0.39 (g) in spent broiler breeder hens and 50.53±0.10 (g) in broilers. Mean percentage (%) of blood on slaughter weight basis was found to be 2.54±0.003 and 2.61±0.004 in spent broiler breeder hens and broilers respectively. The mean±SE value (g) of feathers was 217.5±0.57 (g) in spent broiler breeder hens and 196±0.30 (g) in broilers respectively. Mean percentage (%) of feathers on slaughter weight basis was found to be 4.23±0.004 and 10.15±0.01 in spent broiler breeder hens and broilers respectively. The mean±SE value of head was 217.5±0.57 (g) in spent broiler breeder hens and 196±0.30 in broilers Mean percentage (%) of head on slaughter weight basis was found to be 3.57±0.008 and 3.54±0.01 in spent broiler breeder hens and broilers respectively. The mean±SE value of feet was 185.91±0.18 (g) in spent broiler breeder hens and 85.92±0.181 (g) in broilers. Mean percentage (%) of feet on slaughter weight basis was found to 3.62±0.007 and 4.44±0.007 in spent broiler breeder hens and broilers

respectively. The mean±SE value of intestines was 161.76±0.89 (g) in spent broiler breeder hens and 75.01±0.39 (g) in broilers. Mean percentage (%) of intestines on slaughter weight basis was found to be 3.14±0.006 and 3.88±0.01 in spent broiler breeder hens and broilers respectively. The mean±SE value of crop was 6.1±0.02 (g) in spent broiler breeder hens and 6.11±0.0310 (g) in broilers. Mean percentage (%) of crop on slaughter weight basis was found to be 0.11±0.002 and 0.31±0.001 in spent broiler breeder hens and broilers respectively The mean±SE value of lungs was 18.31±0.06 (g) in spent broiler breeder hens and 10.31±0.05(g) in broilers. Mean percentage (%) of lungs on slaughter weight basis was found to be 0.35±0.001 and 0.52±0.003 in spent broiler breeder hens and broilers respectively. The mean±SE value of kidneys was 12.61±0.06 (g) in spent broiler breeder hens and 10.98±0.10 (g) in broilers. Mean percentage (%) of kidneys on slaughter weight basis was found to 0.24±0.001 and 0.56±0.004 in spent broiler breeder hens and broilers respectively. Significant ($P<0.01$) difference was observed in respect to both weights (g) and percentages (%) of all inedible offals between spent broiler breeder hens and broilers. The mean weights of the individual inedible offals were significantly ($p<0.01$) differed between spent broiler breeder hens and broilers and spent broiler breeder hen were recorded significantly ($p<0.01$) higher values than broilers. When expressed in terms of percentages broilers were found to have significantly ($p<0.01$) higher than spent broiler breeder hens with respect to blood, feathers, feet, intestines, crop, lungs, and kidneys except head, in which no significant difference was observed (Table-2). These results were in agreement with kokoszynski *et al.*, (2016) [6] in spent broiler breeders and broilers comparative study and Munira *et al.*, (2006) [9] in spent hens.

Table 2: Inedible offal yield (g) and percentages (%) of spent broiler breeder hen and broiler birds (Mean±SE)

S. No.	Parameter	On Gross Weight (G)			In Terms of Percent (%)		
		SBBH	Broiler	T-Value	SBBH	Broiler	T-Value
1.	Blood	130.7±0.39	50.53±0.10	194.98**	2.54±0.003	2.61±0.004	11.35**
2.	Feathers	217.5±0.57	196±0.30	32.795**	4.23±0.004	10.15±0.01	427.24**
3.	Head	183.4±0.59	68.55±0.23	178.93**	3.57±0.008	3.54±0.01	1.65
4.	Feet	185.9±0.18	85.92±0.18	158.26**	3.62±0.007	4.44±0.007	80.88**
5.	Intestines	161.7±0.89	75.01±0.39	159.97**	3.14±0.006	3.88±0.01	35.86**
6.	Crop	6.1±0.02	6.11±0.03	0.44	0.11±0.002	0.31±0.001	73.80**
7.	Lungs	18.31±0.06	10.31±0.05	96.2**	0.35±0.001	0.52±0.003	46.95**
8.	Kidneys	12.61±0.06	10.98±0.10	13.53**	0.24±0.001	0.56±0.004	61.65**

**significant at 0.01 *significant at 0.05 SBBH- spent broiler breeder he

Edible offals weights and percentages

The mean edible offal weights (g) and percentages on slaughter weight including Gizzard, liver, heart and total giblets were presented in Table 3.

The mean±SE value of gizzard was 72.72±0.20 (g) in spent broiler breeder hens and 38.42±0.10 (g) in broilers. Mean percentage (%) of gizzard on slaughter weight basis was found to be 1.79±0.004 and 1.98±0.006 in spent broiler breeder hens and broilers respectively. The mean±SE value (g) of liver was 73.75±0.24 (g) in spent broiler breeder hens and 41.4±0.10 (g) in broilers respectively. Mean percentage (%) of liver on slaughter weight basis was found to be 1.81±0.004 and 2.13±0.007 in spent broiler breeder hens and broilers respectively. The mean±SE value of heart was 19.56±0.08 (g) in spent broiler breeder hens and 11.2±0.05 in broilers Mean percentage (%) of heart on slaughter weight Basis was found to be 0.47±0.001 and 0.57±0.003 in spent broiler breeder hens and broilers respectively. The mean±SE

value of total giblets was (g) in 245.85±0.48 spent broiler breeder hens and 91.01±0.22 in broilers Mean percentage (%) of total giblets on slaughter weight basis was found to be 4.10±0.009 and 4.70±0.01 in spent broiler breeder hens and broilers respectively. Significant ($P<0.01$) difference was found between spent broiler breeder hens and broilers in respect to both weights (g) and percentages (%) of all edible offals.

The mean weights of the individual edible offals were significantly ($p<0.01$) differed between spent broiler breeder hens and broilers and spent broiler breeder hen were recorded significantly ($p<0.01$) higher values than broilers. Broilers found to have significantly ($p<0.01$) higher percentages of gizzard, liver, heart and total giblets when compared to spent broiler breeder hens (Table-9). This might be due to comparatively lower slaughter weight and less age of broilers than that of spent broiler breeder hens. Percent in edible offal yield decreased significantly ($P<0.05$) with an increase in age

of bird and these findings were similar to the Sogunle *et al.*, (2016) [13] in broilers, spent hens and cockerel comparison

study and Kumar *et al.*, (2012) [7, 15] in Vanaraja chicken.

Table 3: Edible offal yield (g) and percentages (%) of spent broiler breeder hen and broiler birds (Mean±SE)

S.No.	Parameter	On Gross Weight (G)			In Terms of Percent (%)		
		SBBH	Broiler	T-value	SBBH	Broiler	T-value
1.	Gizzard	72.72±0.20	38.42±0.10	145.96**	1.79±0.004	1.98±0.006	25.05**
2.	Liver	73.75±0.24	41.4±0.10	122.41**	1.81±0.004	2.13±0.007	34.44**
3.	Heart	19.56±0.08	11.2±0.05	87.65**	0.47±0.001	0.57±0.003	25.43**
4.	Total Giblets	245.85±0.48	91.01±0.22	289.80**	4.10±0.009	4.70±0.01	34.14**

**significant at 0. *significant at 0.05 SBBH- spent broiler breeder hen

Cut up parts weights and percentages

The cutup parts weights and percentages on the basis of carcass weight of spent broiler breeder hen and broiler birds were presented in table 4. The mean neck weight (g), percentage (%) of spent broiler breeder hen and broiler were recorded as 248.1±0.83, 6.13±0.01 and 68.66±0.21 5.13±0.01 respectively. The mean wings weight (g), percentage (%) of spent broiler breeder hen and broiler were recorded as 499.3±0.80, 12.34±0.009 and 183.3±0.42, 13.71±0.02 respectively. The mean breast weight (g), percentage (%) of spent broiler breeder hen and broiler were recorded as 1227.8±0.90, 30.35±0.02, and 425.66±0.49, 37.85±0.04 respectively. The mean back weight (g), percentage (%) of spent broiler breeder hen and broiler were recorded as 712.5±0.99, 17.61±0.01, and 236.16±0.47, 17.67±0.02 respectively. The mean thighs weight (g), percentage (%) of spent broiler breeder hen and broiler were recorded as 719.8±0.90, 17.79±0.004 and 227.5±0.42, 17.02±0.02 respectively. The mean drumsticks weight (g) percentage (%) of spent broiler breeder hen and broiler were recorded as

636.8±0.98, 15.74±0.01 and 195±0.36, 14.59±0.02 respectively. Observed a significant ($P<0.01$) difference in weights (g) and percentages (%) of all cut up parts except back (%) between spent broiler breeder hens and broilers.

Perusal of table 10 revealed that the mean weights of cutup parts were significantly ($p<0.01$) differed between spent broiler breeder hens and broilers. When compared as percentages, spent broiler breeder hens found to had significantly ($p<0.01$) higher percentages of neck, thighs, drumsticks and lower percentages of wings and breast than broilers. This validates the purpose for which broilers were meant for. Similarly kokoszynski *et al.*, (2016) [6] recorded significantly ($p<0.01$) higher percentage of breast in broilers than spent broiler breeders. Sogunle *et al.*, (2016) [13] found significant difference between broilers and spent hens with respect to the percentages of thighs and drumsticks. Hossain *et al.*, (2012) [5] found highest breast, breast: dark meat in broiler than others. Faria *et al.*, (2010) [3] studied the influence of genetic strain in the yield of broiler cutup parts and found higher breast yield for Paraiso Pedres females.

Table 4: Mean ± SE values of cut up parts weights (g) and percentages (%) of spent broiler breeder hen and broiler birds

S. No.	Parameter	On Gross Weight (G)			In Terms of Percent (%)		
		SBBH	Broiler	T-value	SBBH	Broiler	T-value
1.	Neck	248.1±0.83	68.66±0.21	208.82**	6.13±0.01	5.13±0.01	49.86**
2.	Wings	499.3±0.80	183.3±0.42	348.49**	12.34±0.009	13.71±0.02	51.27**
3.	Breast	1227.8±0.90	425.66±0.49	774.67**	30.35±0.02	37.85±0.04	32.49**
4.	Back	712.5±0.99	236.16±0.47	432.83**	17.61±0.01	17.67±0.02	1.71
5.	Thighs	719.8±0.90	227.5±0.42	489.62**	17.79±0.004	17.02±0.02	25.67**
6.	Drumsticks	636.8±0.98	195±0.36	422.33**	15.74±0.01	14.59±0.02	38.57**

**significant at 0.01 *significant at 0.05 SBBH- spent broiler breeder hen

Meat, bone, skin and Meat: bone ratio of different cut up parts

The mean weights (g) and yield percentages (%) of Meat, bone, skin and Meat: bone ratio for different cut up parts of spent broiler breeder hen and broilers were presented in table 5. Spent broiler breeder hens recorded higher meat and lower bone percentages in neck, wings and drumsticks cutup parts when compared to the broilers. However the difference was statistically significant ($p<0.01$) in neck and breast but found non-significant ($p>0.01$) in wings. On contrary to the above Broilers recorded significantly ($p<0.01$) higher meat and lower bone percentages in breast, back and thighs than Spent broiler breeder hens.

Spent broiler breeder hens recorded significantly ($p<0.01$) higher skin percentages in wings, breast thighs and drumsticks cutup parts than broilers where as broilers showed significantly ($p<0.01$) higher skin percentages in neck and breast than spent broiler breeder hens.

Meat cum bone ratio was significantly ($p<0.01$) higher in neck, wings, drumsticks of spent broiler breeder hens

compared to broilers where as for other cutup parts that is breast, back and thighs recorded significantly ($p<0.01$) higher meat cum bone ratio in broilers than spent broiler breeder hens. Spent broiler breeder hens recorded higher meat and lower bone percentages in neck, wings and drumsticks cutup parts when compared to the broilers (table-5). However the difference was statistically significant ($p<0.01$) in neck and breast but found non-significant ($p>0.01$) in wings. On contrary to the above, broilers recorded significantly ($p<0.01$) higher meat and lower bone percentages in breast, back and thighs than Spent broiler breeder hens. Spent broiler breeder hens recorded significantly ($p<0.01$) higher percentage of skin with respect to wings, breast, thighs and drumsticks than broilers where as broilers showed significantly ($p<0.01$) higher skin percentages in neck and breast than spent broiler breeder hens. Neck, wings, drumsticks cutup parts of spent broiler breeder hens recorded significantly ($p<0.01$) higher meat cum bone ratio when compared to broilers where as breast, back and thighs cutup parts recorded significantly ($p<0.01$) higher meat cum bone ratio in broilers than spent

broiler breeder hens. This trend is in agreement with Smith, (1963), Omojola *et al.*, (2004) [12], Sunil kumar *et al.*, (2012)

[15], Muthulaxmi *et al.*, (2016) [11], Hossain *et al.*, (2012) [5] and Biegniewska *et al.*, (2016) in broilers

Table 5: Mean \pm SE values of yield (g), percentages (%) of meat, bone, skin and meat: bone ratio of different individual cutup parts of spent broiler breeder hen and broiler

S. No.	Parameter	On gross weight (g)			In Terms of Percent (%)		
		SBBH	Broiler	T-value	SBBH	Broiler	T-value
1.		NECK					
	Meat	67.18 \pm 0.26	14 \pm 0.36	718.25**	27.01 \pm 0.02	20.38 \pm 0.50	13.07**
	Bone	71.03 \pm 0.39	22.83 \pm 0.47	77.75**	28.53 \pm 0.08	33.26 \pm 0.77	6.03**
	Skin	110.45 \pm 0.41	31.83 \pm 0.60	107.75**	44.41 \pm 0.09	46.35 \pm 0.78	2.45*
	Meat: Bone	0.94 \pm 0.002	0.61 \pm 0.02	13.67**	-	-	-
2.		WINGS					
	Meat	184.53 \pm 0.26	66.83 \pm 0.87	129.22**	36.95 \pm 0.02	36.45 \pm 0.52	0.93
	Bone	201.05 \pm 0.33	77.5 \pm 0.80	141.73**	40.2 \pm 0.009	42.26 \pm 0.35	5.63**
	Skin	113.75 \pm 0.24	39 \pm 0.44	146.26**	22.78 \pm 0.01	21.27 \pm 0.22	6.78**
	Meat: Bone	0.91 \pm 0.006	0.86 \pm 0.01	2.81*	-	-	-
3.		BREAST					
	Meat	946.8 \pm 0.38	336.1 \pm 0.70	762.63**	77.11 \pm 0.03	78.97 \pm 0.07	22.34**
	Bone	189.63 \pm 0.31	61 \pm 0.25	316.56**	15.44 \pm 0.01	14.33 \pm 0.06	17.16**
	Skin	96.4 \pm 0.42	28.5 \pm 0.34	115.22**	7.44 \pm 0.03	6.69 \pm 0.08	8.25**
	Meat: Bone	4.99 \pm 0.006	5.51 \pm 0.02	19.43**	-	-	-
4.		BACK					
	Meat	239.7 \pm 0.33	88.58 \pm 0.20	388.95**	33.64 \pm 0.02	37.50 \pm 0.06	54.93**
	Bone	398.03 \pm 0.39	122.3 \pm 0.21	611.07**	55.86 \pm 0.05	51.79 \pm 0.04	56.72**
	Skin	74.76 \pm 0.45	25.25 \pm 0.25	95.36**	10.49 \pm 0.05	10.69 \pm 0.09	1.85
	Meat: Bone	0.60 \pm 0.0007	0.72 \pm 0.001	82.22**	-	-	-
5.		THIGHS					
	Meat	469.66 \pm 0.34	168 \pm 0.36	602.79**	65.24 \pm 0.03	73.73 \pm 0.17	47.26**
	Bone	157.56 \pm 0.32	34.75 \pm 0.25	302.4**	21.88 \pm 0.02	15.25 \pm 0.08	73.26**
	Skin	92.6 \pm 0.29	25.08 \pm 0.27	168.9**	12.86 \pm 0.02	11.0 \pm 0.10	16.64**
	Meat: Bone	2.98 \pm 0.004	4.83 \pm 0.03	48.19**	-	-	-
6.		DRUMSTICKS					
	Meat	497.2 \pm 0.48	117.66 \pm 0.3	645.05**	78.08 \pm 0.06	60.34 \pm 0.17	94.96**
	Bone	99.26 \pm 0.32	59.66 \pm 0.42	74.27**	15.58 \pm 0.03	30.59 \pm 0.19	74.65**
	Skin	40.31 \pm 0.28	17.66 \pm 0.21	63.79**	6.33 \pm 0.03	9.05 \pm 0.10	25.22**
	Meat: Bone	5.00 \pm 0.01	1.97 \pm 0.01	130.69**	-	-	-

**significant at 0.01 *significant at 0.05 SBBH- spent broiler breeder hen

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