Carcass Characteristics of the Male and Female Broiler Chicken

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Resumé
Teye, G. A., Munkaila, L. & Dei, H. K. *Les caractéristiques des carcasses du poulet et poulette de chair.* Une étude sur 20 poulettes et 20 poulets de la famille "cob strain" d'un poids similare (2kg) était entamée pour déterminer les caractéristiques des poulets de chair abbatus à l'âge de 8 semaines. Les paramètres consdérés étaient le pourcetage de préparation et de saignement, le poids préparé et saigné et le poids de la cuisse, du pilon, du blanc, de l'aile et l'abats. Les majeures parties coupées, comme la cuisse, le pilon, le blanc et l'aile étaient désossées. Les résultats ont montré qu'il n' y avait pas de différences significatives entre tous les paramètres mésurés pour les poulets et les poulettes de poids similaires. Les paramétres étaient le pourcentage de préparation (66, 69) poids préparé (1.38 kg, 1.44kg) poids saigné (1.93kg, 1.96kg) pourcentage de saignement (93, 94) la cuisse (501g, 510g), le pilon (476g, 492g) le blanc(227g, 208g), l'aile (171g, 173g) la tête (57g, 52g), le cou (105g, 98g) les jambes (100g, 74g) et l'intestin vide (157g, 138g) pour le poulet et la poulette respectivement. Même que les rendements désossés des parties coupées des poulettes pesaient plus que ceux des poulets, les différences n'étaient pas significative ($p>0.05$). L'ordre du rendement croissant de la viande était l'aile, le blanc, le pilon et la cuisse. Il est recommandé que les procésseurs de la viande peuvent procésser soit le poulet ou la poulette à l'âge de 8 ans sans aucune perte financière pour vu que les deux sexes soient à poids de vie similaires.

Mot clés: Le carcasse, le poulet de chair, le sexe, le poids de vie.

Abstract
A study involving 40 Cobb strain broilers (20 females, 20 males) of similar weight (2kg) was conducted to assess the characteristics of broiler chickens slaughtered at 8 weeks of age. Parameters considered were dressing and bleeding percentage, bled and dressed weight and weights of thigh, drumstick, breast, wing and offal. Major cut-up parts like thigh, breast, drumstick and wings were deboned. Results showed that there were no significant differences ($P > 0.05$) between all parameters measured for male and female broilers of similar live weights. The parameters were dressing percentage (66, 69), dressed weight (1.38kg, 1.44kg), bled weight (1.93kg, 1.96kg), bleeding percentage (93, 94); thigh (501g, 510g), breast (476g, 492g), drumstick (227g, 208g), wing (171g, 173g); head (57g, 52g), gizzard (52g, 52g), neck (105g, 98g), legs (100g, 74g) and empty intestine (157g, 138g) for male and female broilers respectively. Even though deboned yields of major cuts of females weighed slightly heavier than those of males, these were not significant ($P>0.05$). The order of increasing yield of meat was wing, drumstick, breast and thigh. It is recommended that

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meat processors can process any sex of broilers at 8 weeks of age without any financial losses provided both sexes are of similar live weight.

Keywords: Carcass, broiler chicken, sex, live weight.

Introduction

Poultry production in developing countries is rising at a fast rate (Silverside *et al.,* 1992), even though still considered expensive (Gueye, 2000). In Ghana, the whole broiler chicken is sold either live or dressed, which is a convenient means of marketing (McNitt, 1983) but makes the birds still expensive for the majority of consumers who are low-income earners. Thus the demand for poultry meat tends to be seasonal. Koney (1993) suggested that to sustain production during off-season, it would be advantageous to process the whole bird into affordable and desirable parts to meet consumers' preferences. It is evident that processing the whole chicken into cut-up parts or boneless meat is more profitable (Lilburn, 1988) and affordable to the consumer. Thus the need to produce chicken meat in the form that will make it possible for all classes of consumers to buy as was observed in the case of imported turkey tails and chicken legs. However, there is dearth of data on the yields of broiler cut-up part locally. This study, therefore, was undertaken to provide data on the carcass characteristics of commercial broiler strains using the Cobb strain.

Materials and methods

Forty 8-week old commercial broiler chickens (Cobb strain, Holland), which comprised 20 males and 20 females of equal weights (2.0 kg) were selected for the study from a stock of 120 birds raised from day-old. They were starved for 12 hr, weighed individually and slaughtered by a ventral neck cut to severe the blood vessels to exsanguinate them. They were bled thoroughly, weighed, defeathered, eviscerated and weighed again. The carcasses were chilled overnight before cutting into parts such as drumstick, thigh, breast, wings, neck and legs and each part weighed. The drumstick, thigh and breast were deboned and the muscles and bones weighed for each part. Bled weight and dressing percentage were determined. The data were analyzed using studentized t-test as described by Campbell (1989) to separate means of the sexes.

Results and Discussion

Results of carcass yields of both male and female broilers are presented in Table 1. There were no significant ($P > 0.05$) differences between male and female broilers in all the parameters measured when they were slaughtered at 8 weeks of age. Yields of major cut-up parts of both sexes (Table 2) were, also, not significant ($P > 0.05$). However, the thigh, breast and wings were slightly heavier in the female except the

Table 1. Mean live weight, bled weight, bleeding and percentages of Cobb broiler slaughtered at 8 weeks of age.

Parameter	*Male (±s.d.)*	*Female (±s.d.)*
Live weight (kg)	2.07 (0.17)	2.08 (0.13)
Bled weight (kg)	1.93 (0.16)	1.96 (0.12)
Dressed weight (kg)	1.38 (0.15)	1.44 (0.17)
Bleeding %	93.2	94.0
Dressing %	66.9	69.7

Sd - Standard deviation.

Table 2. Mean weight or percentage yield of major parts of male and female Cobb broiler chicken slaughtered at 8 weeks of age.

Body parts	*Male (±s.d.) (g)*	*Percentage yield*	*Female(±s.d.) (g)*	*Percentage yield*
Thigh	501 (55)	16.7	510 (33)	15.6
Breast	476 (54)	15.9	441 (65)	15.4
Drumstick	227 (28)	7.2	208 (15)	11.9
Wings	171 (36)	6.0	173 (21)	10.5
Neck	105 (21)	3.5	98 (18)	3.4

drumstick. This result corroborates those of Brake *et al.* (1993), Cahaner (1988) and Ricard and Touraile (1988) when they dissected the carcasses of commercial strain broiler, Cornish and Nouzilly lines respectively. The percentages of all the major cuts in this study were similar to those reported by Adejinmi *et al.* (1998). In all cases, the thigh gave the largest yield.

The deboned yields of thigh, drumstick, breast and wings are shown in Table 3. As observed in the case of the yields of the major cuts (Table 2), the muscle yields of the female broiler with the exception of drumstick muscle were slightly greater than those of their male counterparts. The differences, however, were not significant (P> 0.05). Thus female broilers have more flesh than the male broilers of similar weights because the male have relatively bigger or heavier bones (Table 3). Ricard and Touraile (1998), also, made similar observation. The relatively bigger or heavier bones in the males could be attributed to hormonal differences between the two sexes. For instance, it is known that the growth rate of bones in boars is 15% and 10% greater than in castrates and gilts respectively (English *et al.*, 1996).

Table 3. Means weights (g) of muscles and bones of major parts of broiler chickens slaughtered at 8 weeks of age.

Major cut	*Male (± s.d.) (g)*	*Female (± s.d.) (g)*
Drumstick:		
Muscle	190.4 (23.3)	169.8 (28.2)
Bone	47.4 (12.3)	38.3 (12.7)
Thigh:		
Muscle	371.2 (87.8)	415.0 (100.8)
Bone	104.7 (40.1)	93.4 (12.7)
Breast:		
Muscle	345.2 (82.0)	368.1 (76.3)
Bone	94.6 (37.2)	73.7 (18.2)
Wing:		
Muscle	99.1 (37.5)	112.8 (21.4)
Bone	59.5 (8.5)	49.9 (4.6)

From this result, it seems that female broilers would yield more boneless chicken than their male counterparts at similar live weight. A major contributing factor to the broiler enterprise being extremely profitable elsewhere is partly due to the shift from producing a commodity product to producing food products in the form of cut-up and boneless parts (Lilburn, 1988), since consumers prefer ready-to-cook products. Though the processor makes more profit, the products are priced in such a way that low-income earners can buy what they can afford.

Table 4 shows the offal weights and their percentages of carcass weights. Although the differences observed between males and females were not significant (P> 0.05), males had bigger head and shanks than the females

Table 4. Offal weights and percentages of carcasses of broilers slaughtered at 8 weeks of age.

Offal	*Male (± s.d.)*		*Female (±.s.d.)*	
	Weight (g)	*(%)*	*Weight (g)*	*(%)*
Head	57.0 (23.6)	2.76	52.0 (7.4)	2.58
Gizzard	52.5 (7.16)	2.54	52.0 (4.1)	2.51
Intestine (Empty)	157.5 (45.5)	7.63	138.2 (22.3)	6.66
Shanks	100.5 (17.7)	4.88	74.7 (19.6)	3.60

because these parts by their nature consist of more bones, which are bigger in the males than in the females. The data corroborate those reported by Brake *et al.* (1993).

It is evident from this study that male and female broiler chickens of similar weights produced similar yields of the whole carcass and cut-up parts. Muscle yield of the thigh was the largest. Cut-up parts may serve as function of market demand as well as premium price for high-value parts.

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