

Carcass yield and meat chemical composition of Tufted Guineafowl in the Sudan

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SUMMARY

Carcass characteristics and meat chemical composition were determined for 38 tufted guineafowl *Numida — meleagris meleagris* (22 males and 16 females). The mean live weight for the whole batch was 900.41 ± 124.7 (g) and the dressing percentage 74.18% (N= 38). There was significant correlation between the dressed carcass weight and the individual weights of the carcass components e.g. dressed carcass weight and breast ($r = 0.79$ at $p < 0.05$, $N = 38$). The crude protein of tufted guineafowl meat averaged $29.13 \pm 1.31\%$ for ten randomly selected birds. The means for ether extract, dry matter, ash content of the carcass for *N.M. meleagris* were $13.64 \pm 2.23\%$, $31.25 \pm 3.95\%$, and $5.15 \pm 1.31\%$ (same above 10 birds) respectively.

INTRODUCTION

Various surveys executed by different research workers have shown that guineafowl meat is socially accepted (Angus and Wilson, 1976., Aynda, 1983., Ayeni 1980 and Mohamed, 1994). It was also reported that guineafowl has been reared on semi-domestic production line by some of the rural citizens in the Sudan (Mohamed, 1994).

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However, there is limited information on carcass yield and meat composition of tufted guineafowl in the Sudan. The present paper addresses the determination of the carcass yield and meat chemical composition of tufted guineafowl *N m. meleagris*.

MATERIALS AND METHODS

Thirty eight guineafowl (22 males and 16 females), of the dry season (April 1993), were randomly selected from a batch of a hundred birds captured at the Dinder National Park. An electronic digital balance was used to determine the live weight of each bird to the nearest 0.01 g.

The birds were slaughtered after being deprived of food and water overnight. Birds were killed by severing the carotid artery and jugular veins. The slaughtered birds were immersed in warm water (63 °C) for 5 minutes and the feathers were then removed, air-dried overnight and

weighed. After evisceration, the dead, legs, neck, wings, gizzard and blotting paper. The main body was portioned into ribs, breast, drumstick, chest, thighs, neck and back. Each portion was weighed separately to the nearest 0.01 g.

Samples from the thigh and breast were randomly selected for ten males and ten females, then dried, weighed and chemically analyzed for the determination of crude protein, ash content, ether extract and moisture content. Meat proximate analysis was carried out according to the Association of Official Analytical Chemists methods (AOAC 1980).

A personal computer, Model (Raven 386, SAS package, version 6, was used for correlation coefficients of edible carcass portions.

RESULTS AND DISCUSSION

Table 1 gives the mean weight (g), standard deviation (S.D), for the whole birds and components for 38 guinea fowls. Live weight ranged from 0.577 to 1.144 kg. With a mean of 900.41 ± 124.79 g, $N = 38$. The edible carcass weight (667.93 g) represented 74.18% of the live weight. The dressed carcass components constituted the breast (29.5%), thighs (15.4%), drumstick (13.6%), ribs (7.4%) and back (12%). Ayeni *et al.*, (1983) reported a live weight of 0.95 ± 0.16 kg. and the dressed carcass being 71.5% of the live weight for helmet guinea fowl *Numida meleagris galeata* in Nigeria. It appears that the average helmet guinea fowl weighed more than did the tufted

Table 1. Mean weights (g) $\pm$ SD, minimum and maximum weights (g) for whole birds and carcass components of guinea fowl.

Parameter	Mean weight (g) $\pm$ SD
Live weight	900.41 ± 124.79
Carcass weight	875.09 ± 120.38
Dressed Carcass wt.	667.93 ± 108.19
Head	25.03 ± 2.57
Drumstick	91.09 ± 16.72
Thighs	102.09 ± 20.02
Breast	196.91 ± 38.33
Wings	105.23 ± 23.67
Ribs	49.64 ± 15.66
Back	80.19 ± 21.25
Neck	36.27 ± 5.91

Table 2. Correlation coefficients between dressed carcass weight and weights of individual ‘ carcass portions of tufted guineafowl.

Dressed carcass weight	drumstick thighs	breast	wing	rib	back	neck	
dressed carcass weight	1.00						
drumstick	. 89	1.00					
thigh	. 92	. 83	1.00				
breast	. 79	. 71	. 74	1.00			
wing	. 75	. 67	. 67	NS . 34	1.00		
rib	. 62	. 48	. 57	NS . 19	. 65	1.00	
back	. 66	. 55	. 51	NS . 27	. 65	. 60	1.00
neck	. 48	. 49	. 52	. 56	NS . 25	NS . 02	NS . 80
P	0.05						
NS = Not significant.							

N = 38

Table 3. Mean weights (g) $\pm$ SD of the different carcass components and the effect of sex of male and female guineafowl*

Parameter	Males $\pm$ SD	Females $\pm$ SD	Overall	Mean
	Mean	Mean	Mean	of live
			weight %	
Live weight	954.49 ^a $\pm$ 112.4	826.06 ^c $\pm$ 96.08	9000.41	—
Carcass weight	928.08 ^a $\pm$ 107.74	802.25 ^c $\pm$ 98.10	875.09	97.2
Dressing weight 714.80 ^a $\pm$ 98.78	603.43 $\pm$ 86.7	667.93 74.2		
Head	25.705 ^a $\pm$ 2.78	24.094 ^a $\pm$ 1.97	25.03	2.78
Drumstick	98.15 ^a $\pm$ 14.77	81.18 ^c $\pm$ 29.3	91.01	10.11
Thighs	110.30 ^a $\pm$ 18.57	92.76 ^b $\pm$ 15.87	102.91	11.43
Breast	212.81 ^a $\pm$ 32.03	175.04 ^a $\pm$ 30.4	196.91	21.27
Wings	112.39 ^a $\pm$ 21.45	95.44 ^b $\pm$ 13.59	105.23	11.69
Ribs	52.06 ^b $\pm$ 15.79	46.32 ^b $\pm$ 14.22	49.64	5.51
Back	87.30 ^a $\pm$ 21.12	70.41 ^b $\pm$ 14.41	80.19	8.91
Neck	37.33 ^b $\pm$ 4.58	34.83 ^b $\pm$ 5.45	36.27	4.3
Legs	34.40 $\pm$ 3.99	27.34 $\pm$ 3.87	29.11	3.23
Gizzard	28.59 $\pm$ 9.82	25.70 $\pm$ 3.87	27.37	3.61
Liver	13.51 $\pm$ 4.46	11.26 $\pm$ 3.74	12.56	1.39
Heart	4.89 $\pm$ 0.95	4.14 $\pm$ 0.99	4.57	0.50
Lungs	6.60 $\pm$ 1.83	6.26 $\pm$ 1.93	6.45	0.72
Blood lost in				
Killing	26.61 $\pm$ 5.18	24.25 $\pm$ 6.81	25.61	2.84
Feathers	59.100 $\pm$ 16.12	25.02 $\pm$ 15.43	58.22	6.47
Intestines	30.74 $\pm$ 9.43	28.318 $\pm$ 9.76	29.34	3.26

22 males and 16 females.

a, b, c, means with different superscripts are significantly correlated.

guineafowl (Ayeni *et al.*, 1983). However, the latter had a higher dressing percentage which might be due to less internal parasitic load of the tufted guineafowl, which are few species with low infestation level (Mohamed, 1994).

It was reported by Ayeni *et al.*, (1983) that the carcass of the Nigirian helmet guineafowl was composed of breast (37%), thighs (17%), wings (14%), drumstick (13%), ribs (10%) and back (9%). The results of the carcass constituent parts, for both subspecies show little variation, but there is considerable difference in the case of weight of breast, ribs and back. Ayorindi (1989) studied the carcass yield and chemical composition of four indigenous guineafowl varieties in Nigiria. He reported the average edible percentage as 67, 79, 70.71, 74.01 and 70.65 at 16, 20, 24 and 52 weeks of age respectively.

Table 2 shows the correlation coefficients between the carcass weights and weights of the individual carcass cuts. The dressed carcass weight, drumstick, thigh, breast, wings, ribs, back and neck were significantly correlated ($p < 0.05$, $N = 38$). The results also revealed positive correlations between the different components with the exception that there was no significant correlation between wings and ribs.

The carcass characteristics of 22 male and 16 female guineafowls were determined (Table 3). The live weight for the males averaged 954.49 ± 112.40 (g) and the females live weight mean 826.0 ± 96.08 (g), while the dressed carcass weight averaged 714.80 ± 98.78 (g) for the male and 603.48 ± 86.70 (g) for the female tufted guineafowl. The variation between the male and the female guineafowl, as for live weight, dressed carcass weight and the weights of the different components is shown in table 3. The dead weight, dressed carcass weight, drumstick, thighs, breast, wings and back also showed a significant variation between the two sexes at $p < 0.001$ for the dead weight, dressed carcass weight and drumstick. $P < 0.01$ for thighs and breast and $p < 0.005$ for wings and back. The results of the effect of sex on carcass component weight were based on birds of the same (dry) season rather than on birds of the same age, so there is the effect of age variation. Ayorindi (1989) reported that the only weights affected by age were the live weights and weights of the abdominal fats.

Results of the proximate analysis of tufted guineafowl meat gave a mean percentage for crude protein of $29.13 \pm 1.31\%$. The mean percentage for ether extract was 13.64 ± 2.23 . The dry matter content averaged $31.25 \pm 3.95\%$ and mean ash content averaged $.515 \pm 1.31\%$.

Ayeni and Coworkers (1983) reported mean values for helmet guineafowl as $28.8 \pm 5.76\%$, $22.5 \pm 176\%$, $30.0 \pm 4.02\%$ and $13.64 \pm 2.00\%$ for crude protein, ether extract, dry matter and ash content respectively. Results of the proximate analysis for tufted guineafowl *N. m. meleagris* and helmet guineafowl *N. m. galeata* were almost the same for crude protein and dry matter content, while they showed a remarkable variation in the case of ether extract and ash content which might be due to variation in food composition.

The results of the present study has revealed that tufted guineafowl has good meat attributes. It can be raised on a semi-domesticated level to satisfy some of the protein requirements of the rural sector.

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