

Carcass yield and edible component parts of ostriches raised under an intensive system in Malaysia

(Hasil karkas dan bahagian yang boleh dimakan daripada burung unta yang dipelihara dalam sistem intensif di Malaysia)

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Key words: carcass, edible parts, ostrich, intensive, Malaysia

Abstrak

Burung unta dari baka African Black telah dinilai dari segi hasil karkas dan bahagian-bahagian yang boleh dimakan. Ternakan ini dipelihara dalam sistem pemeliharaan intensif dan disembelih pada umur 11–14 bulan. Berat badan seekor ternakan hidup 88.2–90.7 kg manakala berat karkas tanpa bahagian dalaman 53–57% daripada berat hidup. Paha, drumstick dan belakang ialah bahagian utama yang membekalkan daging dan menyumbangkan 29.5–31.4 kg daging seekor, iaitu 33.1–34.7% daripada berat hidup. Bahagian leher yang biasanya tidak diasingkan daging dengan tulangnya, menyumbang 2.0–2.4% daripada berat badan. Bahagian dalaman yang boleh dimakan termasuk hati, jantung, tembolok kosong, buah pinggang dan hempedal; kesemuanya menyumbang 5.3–5.8% daripada berat hidup. Perbezaan antara jantina dalam hasil karkas dan bahagian yang boleh dimakan adalah kecil, tidak konsisten dan juga tidak nyata secara statistik.

Abstract

African Black ostriches raised under an intensive system were evaluated for carcass yield and edible component parts at slaughter ages of 11–14 months. The ostriches weighed 88.2–90.7 kg/bird and yielded eviscerated carcasses in the order of 53–57% of live weight. The thigh, drumstick and back were the main meat-yielding parts, providing 29.5–31.4 kg meat/bird which accounted for 33.1–34.7% of live weight. The neck which is usually not deboned, contributed 2.0–2.4% of live weight. The edible offal including the liver, heart, empty gizzard, kidney and spleen accounted for 5.3–5.8% of live weight. Between sexes, differences in yields of carcass and other edible component parts were small, inconsistent and not significant.

Introduction

The rearing of ostriches for commercial purposes is a new venture in Malaysia. It started in late 1994 with initial and current activity generally geared towards breeding and increasing stock numbers. This newly introduced industry has yet to reach the

level of production for large-scale slaughter. Ostriches in Malaysia are generally raised under an intensive system, unlike in many African countries where the availability of large tracts of land allows the rearing of these birds on range.

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The ostrich is noted for its versatility and multi-usability of its products. Practically every part of the animal's body could be utilized for some useful purposes (Engku Azahan 1995; Noraziah and Engku Azahan 1996). Foremost amongst these products are the skin, meat and feathers. Even the bones, offals, fat deposits, toe nails, eyeballs, tendons and faeces can be utilized. In so far as edibility is concerned, the meat is the only product of major economic significance. Some of the giblets, however, do meet the culinary needs and desires of certain segments of the public.

Ostrich meat and its edible products are considered exotic and of premium quality. With current retail prices fetching between RM30 and RM45 per kilogramme, only the affluent of society could afford it. It is therefore pertinent to know how much yield and edible component parts one can expect from these animals, in particular those raised in the country under an intensive system.

Materials and methods

Five female ostriches and an equal number of male animals were randomly selected from a group of 30 ostriches raised intensively in a 0.2-ha enclosure. These animals were progenies from African Black ostrich parents raised at the MARDI (Malaysian Agricultural Research and Development Institute) experimental farm in Serdang. The birds were slaughtered at ages ranging from 11 months to 14 months which were the usual slaughter ages for ostriches. Throughout the growing period till slaughter, the birds were fed compounded feed containing 17% crude protein and 11% crude fibre. The technique of Muslim slaughter for cattle was employed. Essentially this involved shackling of the animal's legs before restraining it on its side; cutting the jugular vein in the neck immediately posterior to the beak; and draining away the blood. After bleeding the birds for 20 minutes, the feathers were plucked manually while the carcasses were still warm. This was then followed by

skinning, evisceration, removal of giblets, recovery of subcutaneous and abdominal fats, portioning of the parts and deboning.

The empty carcasses were portioned into thighs, drumsticks, backs and necks. The back portion recovered included the back proper, tail and breast with ribs. The thigh, drumstick and back were then deboned to obtain the amount of meat normally harvested for sale. The neck, which is usually sold separately, was not subjected to deboning. The edible offals recorded included the heart, liver, spleen, kidney and empty gizzard. The intestines and other parts of the gastro-intestinal tract were discarded.

Results and discussion

The amount of blood collected averaged 2.09 kg per bird while the mean weight of the feathers was 1.5 kg per bird. These values accounted for 2.34% and 1.65%, respectively of the animal's live weight.

Carcass yields

In the main, results revealed no significant effects of sex on live weight and carcass yields (*Table 1*) even though the mean values for most of the parameters under study were higher for males than females. The sole exception was in the amount of total subcutaneous and abdominal fat which showed that females were 'fatter' than males ($p < 0.05$). The small size of the sample used in the study ($n = 5$) may contribute to the apparent lack of significant effects between sexes in most of the parameters under study, but similar negative sex effects were observed by Morris et al. (1995a, b). In their studies with ostriches of similar age range (10–14 months), Morris and co-workers also obtained comparable yield values.

The total amount of meat recovered which included whole muscles and trimmings represented some 34% of live weight. This figure is relatively low compared to those of many other commercial poultry species (Engku Azahan 1994), the reason being a large portion of

the ostrich body weight is taken up by the legs, skin (hide) and wings which contributed no meat at all to the present evaluation study. However, the amount of meat per kilogramme live weight obtainable from the ostrich exceeded that of the Kedah-Kelantan or Droughtmaster cattle (Mohd. Sukri and Dahlan 1990).

Edible parts

Of the edible parts, the thigh provided the biggest meat portion followed by the drumstick, back and neck in that order (Table 2). Between sexes, the edible parts of the males were generally heavier than the corresponding parts of the females but differences were not significant. As mentioned earlier, the lack of significant differences may be due to the small sample size considered in this study. Overall, the carcass yield data obtained were consistent

with those reported earlier (Morris et al. 1995a, b; Shanawany 1996).

As a percentage of live body weight, the meat yielding parts (thigh, drumstick, back and neck) for the combined sex accounted for 52.6–57.6% (mean 55%) of

Table 3. Mean percentage values of the edible parts of ostriches slaughtered at ages 11–14 months, as proportions of live weight

Edible part	Male (%)	Female (%)
Thigh with bone	22.93	20.98
Drumstick bone	17.09	15.99
Back ⁺ with bone	15.10	13.61
Neck with bone	2.43	2.04
Liver	1.54	1.47
Empty gizzard	1.65	1.36
Heart	0.99	0.91
Kidney	1.54	1.47
Spleen	0.09	0.05

⁺Included the back proper, tail and breast with ribs

Table 1. Carcass yields of African Black ostriches at slaughter ages of 11–14 months (means \pm S.D.)

Parameters	Males	Females
Live weight (kg)	90.68 \pm 13.25	88.20 \pm 22.52
Eviscerated weight (kg)	52.20 \pm 8.62	46.48 \pm 9.37
Dressing percent (%)	57.46 \pm 2.22	53.40 \pm 3.76
Fat weight (kg)	5.72 \pm 3.26	11.24 \pm 2.13*
Total giblets weight (kg)	5.28 \pm 0.63	4.60 \pm 0.52

*Significant difference between sexes ($p < 0.05$)

S.D. = standard deviation

Table 2. Fresh edible parts of ostriches slaughtered at ages 11–14 months (means \pm S.D.)

Edible part	Male (kg)	Female (kg)
Live weight	90.68 \pm 13.25	88.20 \pm 22.52
Thigh with bone	20.80 \pm 3.99	18.48 \pm 3.62
Drumstick with bone	15.50 \pm 2.20	14.14 \pm 2.05
Back ⁺ with bone	13.66 \pm 2.33	12.06 \pm 3.60
Neck with bone	2.24 \pm 0.40	1.80 \pm 0.35
Liver	1.40 \pm 0.17	1.30 \pm 0.25
Empty gizzard	1.50 \pm 0.17	1.20 \pm 0.19
Heart	0.90 \pm 0.13	0.80 \pm 0.91
Kidney	1.40 \pm 0.40	1.30 \pm 0.30
Spleen	0.08 \pm 0.02	0.04 \pm 0.03

⁺Included the back proper, tail and breast with ribs

S.D. = standard deviation

Table 4. Meat yield and meat-to-bone ratios of the main edible parts of the ostrich slaughtered at ages 11–14 months (means \pm S.D.)

	Male		Female	
	Meat (kg)	Meat:bone	Meat (kg)	Meat:bone
Thigh	17.50 \pm 3.53	13.39 \pm 1.35	16.22 \pm 3.18	14.44 \pm 2.53
Drumstick	10.34 \pm 1.87	3.85 \pm 0.49	9.72 \pm 1.77	3.70 \pm 0.62
Back [†]	3.72 \pm 1.24	0.41 \pm 0.14	3.26 \pm 1.23	0.38 \pm 0.09

[†]included the back proper, tail and breast with ribs; S.D. = standard deviation

live weight (Table 3). Morris et al. (1995a) obtained a slightly higher mean figure of 58% for dressed yield, the difference could be attributable to differences in a host of factors such as breed, nutrition, environment and fabrication procedure.

The total weight of edible offal was 5.28 kg for males and 4.64 kg for females, accounting for 5.3–5.8% of live weight. Of the edible offals, the empty gizzard and the liver were the biggest followed by the kidney, heart and spleen.

The thigh represented not only the biggest meat-yielding part of the ostrich but also contained the most amount of meat in relation to bone (Table 4). The drumstick had 3.70–3.85 kg more meat than bone while the back comprised more bone than meat. In total, the ostrich yielded some 30 kg meat which was 33.1–34.7% of the animal's live weight.

Conclusion

Ostriches raised intensively in Malaysia and slaughtered at ages of between 11 months and 14 months, provided between 34.5 kg and 36.8 kg edible parts, which represented 39.1–40.6% of live weight. Of these edible portions, the meat represented about 85.1%, the remaining being the edible offal. Results indicate that sex had no significant effects on carcass yields and on edible component parts.

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