MEAT COMPOSITION OF INDIGENOUS PIGEONS AS INFLUENCED BY SEX, AGE AND SEASONS

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Summary

One hundred and twenty indigenous pigeons of either sexes of different age groups were sacrificed in different seasons to assess the interactions of sex, age and seasons on the proximate composition and gross energy values of fresh boneless meat. The dry matter and protein contents decreased but the fat, ash and energy contents increased linearly as the birds aged. Seasons and age had significant influences on either of these two performance traits. Meat of growing pigeons of both sexes was found to contain high protein and low fat throughout the year.
(**Key Words**: Pigeons, Carcass, Meat, Proximate, Composition)

Introduction

Indigenous pigeons are well known through Bangladesh for their delicious meat and as another traditional animal protein sources. Das and Roy (1991) compared the proximate components of pigeon meat in terms of different body weight with the findings of Mohan et al. (1987) for Japanese quail meat. There is not any recent published information on the interactions of sex and age with seasons of the year on the proximate composition and calorific values of meat of pigeons. The purpose of the present investigation was to provide information on the proximate components and calorific values of boneless meat of indigenous pigeons of Bangladesh.

Materials and Methods

One hundred and twenty (60 male and 60 female) locally available pigeons (Giribaz) were procured from the pigeon domesticators of neighbouring villages of Mymensingh, Muktagacha and Haluaghat during the period of November, 1991 to October, 1992. Four pigeons were selected for each of the 30 treatment groups formed by the combinations of 2 sexes, 3 seasons and 5 ages (1-2, 4-5, 7-8, 10-11 or above 12 months) at different times of each season. After collection, the birds were fasted for 20 hours (Salah Uddin et al., 1992) for the excretion of faeces and urine before the live weight of the birds was recorded. Then they were reweighted, sacrificed, eviscerated and dressed (Jones, 1984; Salah Uddin et al., 1992). The proximate components (AOAC, 1980) and the gross energy values of the fresh meat (excluding skin and bone) were calculated as per Lushbough and Scheweigert (1960) and Das and Roy (1991). Analysis of variance was undertaken to allow identification of the influence of sex, age or seasons and their interactions on the proximal composition of pigeon meat.

Results and Discussion

The mean values of proximate components and gross energy of pigeon meat are summarized in table 1 and 2. The dry matter content was not influenced by the sex of the birds but slightly higher values were noted for males compared to females. Highest ($p < 0.05$) dry matter percentage was observed in birds studied in summer following the winter and rainy seasons. This might be due to the lower intake of water during the summer season. However, the dry matter content decreased linearly ($p < 0.01$) in either sex with the advancement of age of the birds. Slightly increased fat and water content of the carcass may possibly be

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TABLE I. INTERACTIONS OF SEASONS, AGE AND SEX ON THE PROXIMATE COMPONENTS OF THE FRESH MEAT OF INDIGENOUS PIGEONS OF BANGLADESH

Parameters	Seasons	Sex	Age in months					Mean
			1-2	4-5	7-8	10-11	Above 12	
Dry matter (%)	Summer	Male	29.97 ± 0.19	29.96 ± 0.17	30.07 ± 0.28	28.37 ± 0.71	29.03 ± 0.72	29.48 ± 0.44
		Female	30.47 ± 1.05	29.95 ± 1.30	29.95 ± 1.30	29.50 ± 0.51	28.17 ± 0.51	29.72 ± 0.45
		Mean	30.22 ± 0.44	29.95 ± 0.62	30.01 ± 0.55	28.60 ± 1.04	28.60 ± 1.04	29.47 ± 0.31
	Rainy	Male	28.94 ± 0.33	27.92 ± 0.14	27.74 ± 1.35	28.12 ± 0.98	29.31 ± 1.28	28.41 ± 0.36
		Female	28.80 ± 1.35	28.70 ± 1.21	27.67 ± 0.75	26.37 ± 0.75	26.77 ± 0.64	27.76 ± 0.43
		Mean	28.87 ± 0.57	28.31 ± 0.54	27.71 ± 0.63	27.49 ± 0.62	28.04 ± 0.90	28.08 ± 0.28
	Winter	Male	30.91 ± 0.72	29.05 ± 0.13	28.41 ± 0.52	29.00 ± 0.88	27.69 ± 0.32	29.01 ± 0.41
		Female	29.79 ± 0.37	29.59 ± 1.01	28.26 ± 0.82	28.15 ± 0.93	27.75 ± 1.17	28.71 ± 0.40
		Mean	30.35 ± 0.46	29.32 ± 0.44	28.33 ± 0.40	28.57 ± 0.57	27.69 ± 0.49	28.86 ± 0.28
		Overall	29.87 ± 0.33	29.24 ± 0.35	28.68 ± 0.40	28.33 ± 0.35	28.11 ± 0.45	28.85 ± 0.18
Crude protein (%)	Summer	Male	21.82 ± 0.62	21.80 ± 0.93	21.48 ± 0.84	20.82 ± 0.31	20.48 ± 0.45	21.28 ± 0.29
		Female	22.18 ± 0.38	22.27 ± 0.44	22.00 ± 0.69	20.73 ± 0.34	20.51 ± 0.52	21.54 ± 0.30
		Mean	22.00 ± 0.31	22.04 ± 0.44	21.74 ± 0.46	20.77 ± 0.19	20.49 ± 0.28	21.41 ± 0.20
	Rainy	Male	22.33 ± 0.41	22.70 ± 0.36	21.37 ± 0.64	21.16 ± 0.18	20.80 ± 0.29	21.47 ± 0.22
		Female	22.28 ± 0.11	21.92 ± 0.37	21.54 ± 0.63	21.30 ± 0.53	20.42 ± 0.25	21.49 ± 0.25
		Mean	22.31 ± 0.17	21.81 ± 0.22	21.46 ± 0.37	21.23 ± 0.23	20.61 ± 0.19	21.48 ± 0.16
	Winter	Male	22.84 ± 0.07	21.90 ± 0.14	20.96 ± 0.27	21.10 ± 0.52	21.47 ± 0.43	21.65 ± 0.25
		Female	22.21 ± 0.13	21.86 ± 0.25	22.03 ± 0.11	22.14 ± 0.17	21.93 ± 0.11	22.03 ± 0.07
		Mean	22.52 ± 0.19	21.88 ± 0.12	21.49 ± 0.33	21.62 ± 0.37	21.71 ± 0.23	21.84 ± 0.13
		Overall	22.27 ± 0.14	21.91 ± 0.15	21.56 ± 0.21	21.21 ± 0.18	20.94 ± 0.21	21.58 ± 0.09
Crude fat (%)	Summer	Male	4.43 ± 0.14	4.50 ± 0.07	4.32 ± 0.11	4.66 ± 0.17	4.51 ± 0.27	4.48 ± 0.06
		Female	4.43 ± 0.12	4.36 ± 0.22	4.48 ± 0.20	4.44 ± 0.13	4.70 ± 0.08	4.48 ± 0.06
		Mean	4.43 ± 0.07	4.43 ± 0.10	4.40 ± 0.10	4.55 ± 0.10	4.60 ± 0.12	4.48 ± 0.04
	Rainy	Male	4.36 ± 0.13	4.49 ± 0.09	4.40 ± 0.09	4.28 ± 0.09	4.49 ± 0.01	4.41 ± 0.04
		Female	4.34 ± 0.17	4.42 ± 0.21	4.44 ± 0.06	4.57 ± 0.03	4.60 ± 0.01	4.47 ± 0.05
		Mean	4.35 ± 0.08	4.45 ± 0.09	4.42 ± 0.04	4.43 ± 0.09	4.55 ± 0.03	4.44 ± 0.03
	Winter	Male	4.38 ± 0.14	4.32 ± 0.11	4.51 ± 0.02	4.52 ± 0.01	4.54 ± 0.06	4.46 ± 0.04
		Female	4.28 ± 0.10	4.42 ± 0.12	4.44 ± 0.07	4.40 ± 0.21	4.55 ± 0.01	4.42 ± 0.05
		Mean	4.33 ± 0.07	4.37 ± 0.07	0.47 ± 0.03	4.46 ± 0.09	4.54 ± 0.07	4.44 ± 0.03
		Overall	4.37 ± 0.04	4.42 ± 0.04	4.43 ± 0.03	4.48 ± 0.05	4.56 ± 0.04	4.45 ± 0.02

Parameters	Seasons	Sex	Age in months					Mean
			1-2	4-5	7-8	10-11	Above 12	
Ash (%)	Summer	Male	0.62 ± 0.02	0.64 ± 0.04	0.64 ± 0.02	0.67 ± 0.02	0.66 ± 0.02	0.64 ± 0.01
		Female	0.63 ± 0.05	0.65 ± 0.01	0.64 ± 0.04	0.65 ± 0.02	0.67 ± 0.02	0.64 ± 0.01
		Mean	0.62 ± 0.02	0.64 ± 0.03	0.64 ± 0.02	0.66 ± 0.01	0.66 ± 0.01	0.64 ± 0.01
	Rainy	Male	0.63 ± 0.01	0.63 ± 0.01	0.64 ± 0.05	0.65 ± 0.01	0.66 ± 0.02	0.64 ± 0.01
		Female	0.62 ± 0.02	0.64 ± 0.02	0.65 ± 0.02	0.64 ± 0.04	0.66 ± 0.02	0.64 ± 0.01
		Mean	0.62 ± 0.01	0.63 ± 0.01	0.64 ± 0.02	0.64 ± 0.02	0.66 ± 0.01	0.64 ± 0.01
	Winter	Male	0.63 ± 0.01	0.62 ± 0.03	0.65 ± 0.01	0.63 ± 0.02	0.66 ± 0.02	0.64 ± 0.01
		Female	0.64 ± 0.00	0.64 ± 0.02	0.64 ± 0.04	0.66 ± 0.02	0.66 ± 0.01	0.65 ± 0.01
		Mean	0.63 ± 0.01	0.63 ± 0.02	0.64 ± 0.02	0.65 ± 0.01	0.66 ± 0.01	0.64 ± 0.01
	Overall		0.63 ± 0.01	0.63 ± 0.01	0.64 ± 0.01	0.65 ± 0.01	0.66 ± 0.01	0.64 ± 0.01

Figures with ± signs indicate the ± SE values.

TABLE 2. INTERACTIONS OF SEX AND AGE ON THE PROXIMATE COMPONENTS OF THE FRESH MEAT FROM INDIGENOUS PIGEONS OF BANGLADESH

Parameters	Sex	Age in months					Mean*
		1-2	4-5	7-8	10-11	Above 12	
Dry matter (%)	Male	29.94 ± 0.80	28.98 ± 0.83	28.74 ± 0.99	28.47 ± 0.37	28.68 ± 0.71	28.96 ± 0.44
	Female	29.80 ± 0.82	29.49 ± 0.60	28.63 ± 0.97	28.17 ± 1.07	27.56 ± 0.59	28.73 ± 0.80
Crude protein (%)	Male	22.33 ± 0.42	22.13 ± 0.40	21.27 ± 0.22	21.03 ± 0.15	20.92 ± 0.41	21.47 ± 0.15
	Female	22.22 ± 0.04	22.02 ± 0.18	21.86 ± 0.22	21.39 ± 0.58	20.95 ± 0.69	21.69 ± 0.24
Crude fat (%)	Male	4.39 ± 0.03	4.44 ± 0.08	4.41 ± 0.08	4.49 ± 0.16	4.51 ± 0.02	4.45 ± 0.03
	Female	4.35 ± 0.06	4.40 ± 0.03	4.45 ± 0.02	4.47 ± 0.07	4.40 ± 0.06	4.46 ± 0.03
Ash (%)	Male	0.63 ± 0.00	0.63 ± 0.01	0.64 ± 0.01	0.65 ± 0.02	0.66 ± 0.00	0.64 ± 0.00
	Female	0.63 ± 0.01	0.64 ± 0.01	0.64 ± 0.01	0.65 ± 0.01	0.66 ± 0.01	0.64 ± 0.01
Gross energy (kcal/100 g fresh boneless meat)	Male	130.00 ± 1.69	131.27 ± 2.10	131.73 ± 0.82	132.63 ± 0.70	133.63 ± 0.17	131.87 ± 0.97
	Female	130.23 ± 1.39	131.83 ± 1.79	132.43 ± 0.41	133.67 ± 1.25	134.57 ± 0.98	132.47 ± 0.49

* Mean values for different seasons. Figures with ± signs indicate the ± SE values.

due to decreased dry matter content with the advancement of age of the birds. There were sex X season, and sex X age ($p < 0.05$) interactions on dry matter content. The dry matter content was not interacted by the age and seasons.

The crude protein content of the carcasses was similar for both sexes. This proximate trait was significantly ($p < 0.01$) affected by the seasons of the year. Highest crude protein content was noted for winter season following the rainy and summer seasons. The percentages of carcass crude protein decreased ($p < 0.05$) linearly as the birds aged. This might be due to slightly increased fat content of the older birds. There were significant ($p < 0.05$) sex X season, sex X age and season X age interactions on the carcass crude protein content.

The carcass crude fat (ether-extract) content was not influenced by sex, age and season. There were sex X season and sex X age interactions on fat content of the carcass meat. The fat and ash contents increased slightly as the birds aged. The ash percentages were not affected by the sex, age and season of the year. There was a sex X season interaction on ash content of the fresh meat. The gross energy of the fresh meat was similar for both sexes and all seasons. The gross energy values increased as the birds aged. There were sex X season and sex X age interactions on the energy content of meat.

The values of all the parameters are partially supported by the findings reported by Mohan et al. (1987) and Das and Roy (1991) for Japanese quail and pigeon meat respectively. Due to the paucity of published information on the proximate composition of pigeon meat, our study lacked other data for comparison. However, the relatively constant protein and fat content of the meat suggested that age was not an important factor affecting the composition of pigeon meat.

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