SHORT COMMUNICATION

PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE EGGS OF FOUR INDIGENOUS GUINEA FOWLS (*Numida meleagris galeata*, Pallas) IN NIGERIA.

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A few publications are available on the characteristics and quality of eggs from both local and exotic chickens in Nigeria (Olomu, 1975a & b, Carew *et al* 1983) but there is presently not much information on the guinea fowl egg. This is inspite of the remarkable contribution (53.36%) of the guinea fowl to the total egg consumption between 1977 and 1978 in Nigeria (Akinwumi *et al* 1979). In commercialising guinea fowl in Nigeria, information on the growth rate, reproductive performance, carcass and egg characteristics of the existing varieties would be needed in determining which is most suitable for either meat or egg production. The present study reports a comparative work on the physical and chemical characteristics of the four helmeted guinea fowl varieties (Ash, Black, Pearl and White) found in Nigeria and an exotic domestic fowl egg laying strain (Shaver).

A total of 396, 449, 1225, 198 and 720 eggs was collected from 24 Ash, 42 Black, 80 Pearl and 11 White guinea hens between the ages of 36 and 44 weeks and 20 domestic fowl layers between 25 and 33 weeks of age. The birds were fed a commercial layers mash containing

16.9% Protein, 7.5% Ash, 6.0% fibre, 1.9% fat and ME of 2712 Kcal/Kg ration.

Parameters taken included egg weight, length, width and component parts (shell, yolk, albumen and membrane, yolk index, Haugh unit and shell thickness) using the methods of Card and Nesheim (1976). Ten eggs randomly chosen weekly from each variety were used in determining component parts, shell thickness, yolk index and haugh unit. During the last three weeks of experimentation three random samples of the egg contents were taken for chemical analysis using the methods of AOAC (1980).

All the percentages were transformed into arc-sine ($\sin^{-1}$) values and statistically analysed using the split-plot design (Sokal and Rohlf, 1969). Statistical difference among means determined by the student t-test at 5% level.

There were no significant ($P > 0.05$) differences in the physical characteristics of the five groups (Table 1). The guinea fowl eggs were slightly more pointed at one end than the domestic fowl egg. The guinea fowl egg tended to have a higher percentage of shell, and yolk but lower

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Table 1.

**PHYSICAL COMPOSITION AND QUALITY OF EGGS OF FOUR INDIGENOUS
GUINEA FOWL VARIETIES AND AN EXOTIC DOMESTIC FOWL**

<i>Parameter</i>	<i>Ash</i>	<i>Black</i>	<i>Pearl</i>	<i>White</i>	<i>Sex</i>	<i>Domestic mean</i>	<i>Fowl sex</i>
Egg wt. (g)	37.40	36.95	37.63	36.86	3.88	58.90	3.98
Egg length (cm)	4.75	4.68	4.78	4.73	1.51	5.10	1.50
Egg index	10.80	0.82	0.80	0.81	0.14	0.76	0.22
Shell wt. (g)	4.50	3.61	4.02	5.40	0.83	5.61	0.89
Shell (% egg)	12.80	10.4	10.68	14.65	2.85	9.52	2.90
Shell thickness (mm)	0.48	0.55	0.48	0.52	0.14	0.36	0.14
Yolk wt. (g)	12.80	11.85	12.61	10.13	1.36	17.60	1.85
Yolk (% egg)	34.23	32.96	33.51	27.49	2.84	29.88	3.81
Yolk index	0.40	0.44	0.43	0.47	0.08	0.52	0.09
Albumen wt. (g)	19.51	20.09	20.46	20.72	1.56	34.70	2.45
Albumen (% egg)	52.17	55.88	54.37	56.22	2.44	58.91	3.83
Haugh unit	89.66	89.10	90.05	91.15	4.25	90.90	5.40
Membrane wt. (g)	0.63	0.58	0.64	0.62	0.04	1.1	0.22
Membrane (% egg)	1.68	1.61	1.70	1.68	0.15	1.86	0.38

albumen and membrane than the domestic fowl egg. The domestic fowl egg also had better internal egg qualities (yolk index and Haugh unit) than the guinea fowl egg. The domestic fowl egg was significantly ($P < 0.05$) larger in size than guinea fowl egg. The eggs of the indigenous fowls were about 62.58 – 63.89% of the egg of domestic fowl. The outstanding physical qualities of the guinea fowl egg lie in its higher shell component, shell thickness and strength

and longer shelf-life. According to Petersen and Tiler (1967) the guinea fowl egg shell is about five times stronger than that of the domestic fowl. The guinea fowl egg may thus be more suitable for transportation on poor roads as slightly lower losses or breakages are likely to occur.

Table 2 reveals that the mineral and dry matter contents of the eggs of both guinea fowl and domestic fowl were similar. However, the guinea fowl egg

Table 2.

**THE CHEMICAL COMPOSITION OF THE EDIBLE PORTION
OF THE EGG OF FOUR LOCAL GUINEA FOWL VARIETIES AND
AN EXOTIC DOMESTIC FOWL.**

Parameter	Variety					
	Ash	Black	Pearl	White	Domestic fowl	Sex
Water (%)	72.9 ^a	73.1 ^a	74.7 ^a	77.3 ^a	69.3 ^a	4.30
Ash (%)	4.9 ^b	5.3 ^{ab}	5.5 ^{ab}	5.9 ^{ab}	6.2 ^a	0.21
Crude Protein (%)	51.2 ^a	51.8 ^a	56.1 ^a	54.4 ^a	45.9 ^b	3.42
Ether extract (%)	8.1 ^b	8.3 ^b	7.2 ^b	7.6 ^b	10.9 ^a	1.69
Ca (%)	0.25 ^a	0.24 ^a	0.26 ^a	0.28 ^a	0.21 ^a	0.05
P (%)	0.03 ^a	0.03 ^a	0.03 ^a	0.03 ^a	0.04 ^a	0.00
K (%)	0.39 ^a	0.33 ^a	0.35 ^a	0.30 ^a	0.28 ^a	0.02
Na (%)	0.74 ^a	0.08 ^b	0.08 ^b	0.80 ^b	0.11 ^b	0.06
Mg (g)	0.05 ^a	0.05 ^a	0.04 ^a	0.04 ^a	0.03 ^a	0.00
Fe (ppm)	5.48 ^b	5.22 ^b	9.65 ^a	0.79 ^c	3.22 ^b	1.48

Figures in the same row bearing different letter superscripts (a,b, c) differed significantly ($P < 0.05$).

contains significantly ($P < 0.05$) higher crude protein and lower ether extract than that of the domestic fowl. One disadvantage of the guinea fowl egg however (Ekpenyong, 1983) is its higher cholesterol level (75.9 vs 62.8mg/100ml egg yolk) than the domestic fowl egg.

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