

BODY COMPOSITION OF BROILER CHICKENS FROM HATCH TO 35 DAYS FOR MODEL PREDICTION

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Body compositions of broiler chickens at final weight are commonly reported. However, for system simulation, there is at present a lack of data on the weekly changes from hatch. Data developed 15-20 years ago are also inappropriate for the current situation due to genetic change (Perreault and Leeson 1992). The aim of this study was to obtain data for a better understanding in body development of broilers and a more reliable basis for model prediction.

The experiment was undertaken during February to March 1997. Data were observed from three strains of commercial broilers (Ingham, Cobb and Steggle). Twenty chickens of each strain were reared in each cage at the density of 0.034 m²/bird from day old. Chickens were fed a commercial starter diet for the first 21 days and a grower diet for the last 14 days. The starter and grower diets contained 26.7 and 23.8% protein and 11.7 and 12.5 MJ ME/kg respectively. Feed and water were supplied *ad lib*. At day old and then every seven days, two chickens from each strain were randomly selected and starved for four hours prior to killing in a CO₂ chamber. Liveweight, feather, visceral organs (alimentary tract, liver and heart), eviscerated body and cut up weight were recorded. The cut up parts resulted in two drumsticks, two thighs, two wings, two feet, neck, head, and the rest as breast and back. Statistical analysis was carried out using ANOVA and Duncan's Multiple Range Test.

On the liveweight basis, the percentage contributions of all portions were found to change significantly with age ($P < 0.01$). The mean values for these characteristics are shown in Table 1.

Table 1. Changes in body composition of broiler chickens from hatch to 35 days of age

	day 0	day 7	day 14	day 21	day 28	day 35
Liveweight starved (g)	38 ^a	170 ^b	371 ^c	710 ^d	1127 ^e	1679 ^f
% LW starved						
Feather	2.6 ^a	2.0 ^a	3.5 ^b	3.7 ^{bc}	4.3 ^c	5.5 ^d
Visceral organs	30.3 ^a	24.3 ^b	19.6 ^c	17.8 ^d	16.6 ^{de}	14.9 ^e
Eviscerated body	67.1 ^a	73.7 ^b	76.9 ^c	78.5 ^{cd}	79.1 ^d	79.6 ^d
Drumsticks	8.6 ^a	8.8 ^a	9.1 ^b	9.8 ^{bc}	9.7 ^{bc}	10.1 ^c
Thighs	15.7 ^a	18.5 ^b	18.7 ^{bc}	19.1 ^{cd}	20.3 ^d	21.0 ^d
Wings	4.6 ^a	6.8 ^b	7.8 ^c	8.5 ^d	8.7 ^d	8.5 ^d
Neck	6.3 ^a	5.0 ^b	6.0 ^a	4.5 ^b	4.6 ^b	4.4 ^b
Head	13.7 ^a	6.3 ^b	4.8 ^c	3.6 ^d	3.1 ^{de}	2.8 ^e
Feet	5.3 ^a	4.6 ^{ab}	4.8 ^{bc}	4.5 ^{bc}	4.7 ^{bc}	4.3 ^c
Breast and back	11.7 ^a	21.8 ^b	23.8 ^b	27.5 ^c	27.2 ^c	27.6 ^c
Breast meat	1.7 ^a	7.8 ^b	10.2 ^c	11.3 ^d	11.5 ^d	13.5 ^e

Mean within the same row with different superscripts are significantly different ($P < 0.01$)

The result from this study indicated an increase over time in the proportion of eviscerated body and economic cut up parts (drumsticks, thighs, wings and breast meat). The proportion of visceral organs on the other hand decreased, similar to the result reported by Iji and Tivey (1997) from work on the Steggle x Ross strain. It is concluded that data on body composition based on final weight could not represent value at the early ages.

IJI, P.A. and TIVEY, D. R. (1997). *Proc. Aust. Poult. Sci. Sym.* **9**, 171-174.

PERREAULT, N. and LEESON, S. (1992). *Can. J. Anim. Sci.* **72**, 919-929.