

KANATLI HAYVAN YETİŐTİRME

II

8. HAFTA

Yumurta Özellikleri

İçeriği embriyo gelişimi için önemli olan kümes hayvanı yumurtaları insanlar için de önemli besin kaynaklarından biridir.

Yumurta akı yumurtanın ana parçasıdır (yaklaşık% 60'ı temsil eder) ve su (% 88), proteinler (% 11), mineraller ve karbonhidratlardan (% 1) oluşur.

Yumurta albümindeki çeşitli proteinler, gıda işleme ve insan tıbbında yumurta albümünün birçok uygulamasına yol açan köpürme, emülsifiye etme ve jelleşme özelliklerinden sorumludur.

Yumurta akının özellikleri ile ilgili mevcut bilgiler çoğunlukla tavuk yumurtası ile sınırlıdır, ancak ördek, kaz, güvercin, bıldırcın ve hindi yumurtalarından elde edilen yumurta albuminide fonksiyonel özelliklerine göre iyi beslenme ve gıda uygulamalarına sahip olabilir.

Table 1. Egg quality traits for six poultry species.

Species	Chicken	Duck	Goose	Turkey	Quail	Pigeon
Egg weight (g)	57.75 ± 2.77 ^d	74.28 ± 4.67 ^c	139.37 ± 10.51 ^a	90.44 ± 9.40 ^b	11.01 ± 0.77 ^f	22.57 ± 1.80 ^d
Albumen Height (mm)	6.68 ± 0.76 ^b	7.36 ± 0.98 ^a	6.43 ± 0.91 ^b	5.68 ± 0.75 ^c	4.07 ± 0.59 ^d	3.91 ± 0.74 ^d
Shape index	1.31 ± 0.04 ^c	1.31 ± 0.05 ^c	1.44 ± 0.06 ^a	1.42 ± 0.06 ^a	1.28 ± 0.06 ^d	1.36 ± 0.05 ^b
Shell strength (kg)	3.73 ± 0.74 ^c	5.00 ± 0.86 ^b	8.04 ± 1.95 ^a	4.97 ± 0.88 ^b	1.42 ± 0.29 ^d	0.91 ± 0.23 ^c
Shell thickness (mm)	0.343 ± 0.024 ^b	0.356 ± 0.024 ^b	0.447 ± 0.047 ^a	0.345 ± 0.024 ^b	0.193 ± 0.022 ^e	0.180 ± 0.013 ^e
Yolk weight (g)	15.90 ± 1.27 ^d	24.06 ± 1.80 ^c	52.79 ± 4.88 ^a	26.93 ± 3.37 ^b	3.32 ± 0.34 ^e	4.35 ± 0.49 ^c
Albumen weight (g)	36.23 ± 1.80 ^d	42.79 ± 3.00 ^c	72.55 ± 6.68 ^a	55.19 ± 6.67 ^b	6.71 ± 0.56 ^f	16.62 ± 1.56 ^c
Eggshell weight (g)	5.63 ± 0.46 ^d	7.43 ± 0.57 ^c	14.03 ± 1.63 ^a	8.31 ± 0.98 ^b	0.98 ± 0.10 ^f	1.60 ± 0.14 ^c
Yolk Percentage	27.52 ± 1.56 ^d	32.40 ± 1.44 ^b	37.91 ± 2.62 ^a	29.83 ± 2.79 ^c	30.19 ± 2.44 ^c	19.33 ± 1.92 ^c
Albumen Percentage	62.74 ± 1.49 ^b	57.60 ± 1.56 ^d	52.03 ± 2.29 ^c	60.98 ± 2.81 ^c	60.95 ± 2.49 ^c	73.56 ± 2.10 ^a
Eggshell Percentage	9.74 ± 0.59 ^a	10.01 ± 0.52 ^a	10.06 ± 0.85 ^a	9.19 ± 0.46 ^b	8.86 ± 0.65 ^c	7.12 ± 0.53 ^d
Yolk/albumen	43.93 ± 3.57 ^d	56.35 ± 4.02 ^b	73.19 ± 8.23 ^a	49.22 ± 6.67 ^c	49.74 ± 5.49 ^c	26.36 ± 3.35 ^c

^{a-f} means with different superscripts within each row differ significantly ($P < 0.05$).

Values are expressed as means ± SD.

Table 4. Nutrition composition of egg albumen for six poultry species.

Species	Moisture (%)	Crude protein (%)	Crude ash (%)
Chicken	87.9 ± 0.60 ^c	10.8 ± 0.59 ^a	0.74 ± 0.030 ^{b,c}
Duck	87.5 ± 0.53 ^d	10.7 ± 0.54 ^a	0.72 ± 0.029 ^d
Goose	89.2 ± 0.66 ^a	8.5 ± 0.55 ^c	0.74 ± 0.023 ^c
Turkey	87.4 ± 0.52 ^d	10.8 ± 0.59 ^a	0.76 ± 0.024 ^a
Quail	87.7 ± 0.57 ^{c,d}	10.6 ± 0.62 ^a	0.76 ± 0.025 ^a
Pigeon	88.4 ± 0.49 ^b	9.1 ± 0.66 ^b	0.75 ± 0.022 ^{a,b}

^{a-d}means with different superscripts within each column differ significantly ($P < 0.05$). Values are expressed as means ± SD.

Table 5. Quantity of amino acids in egg albumen (g/100 g, n = 10).

Amino Acids	Chicken	Duck	Goose	Turkey	Quail	Pigeons
Glu	1.285 ± 0.086 ^{ab}	1.308 ± 0.083 ^{ab}	1.148 ± 0.085 ^c	1.335 ± 0.057 ^a	1.328 ± 0.038 ^{ab}	1.262 ± 0.069 ^b
Asp	1.110 ± 0.072 ^a	0.979 ± 0.068 ^b	0.852 ± 0.074 ^c	1.127 ± 0.051 ^a	1.160 ± 0.056 ^a	0.935 ± 0.051 ^b
Leu	0.916 ± 0.058 ^b	0.849 ± 0.059 ^c	0.752 ± 0.071 ^d	0.995 ± 0.041 ^a	0.993 ± 0.034 ^a	0.888 ± 0.055 ^{b,c}
Ser	0.697 ± 0.042 ^{b,c}	0.775 ± 0.047 ^a	0.664 ± 0.052 ^{c,d}	0.734 ± 0.030 ^b	0.727 ± 0.021 ^b	0.630 ± 0.053 ^d
Ala	0.662 ± 0.043 ^a	0.494 ± 0.030 ^c	0.414 ± 0.037 ^d	0.606 ± 0.032 ^b	0.644 ± 0.018 ^a	0.487 ± 0.029 ^c
Val	0.631 ± 0.040 ^a	0.604 ± 0.031 ^a	0.535 ± 0.036 ^b	0.624 ± 0.030 ^a	0.630 ± 0.015 ^a	0.552 ± 0.039 ^b
Met	0.624 ± 0.042 ^c	0.862 ± 0.073 ^a	0.689 ± 0.091 ^b	0.653 ± 0.043 ^{b,c}	0.496 ± 0.047 ^d	0.594 ± 0.078 ^c
Phe	0.592 ± 0.036 ^{b,c}	0.708 ± 0.039 ^a	0.569 ± 0.051 ^{c,d}	0.599 ± 0.033 ^{b,c}	0.618 ± 0.024 ^b	0.550 ± 0.050 ^d
Lys	0.570 ± 0.038 ^b	0.546 ± 0.033 ^b	0.477 ± 0.073 ^c	0.626 ± 0.029 ^a	0.646 ± 0.018 ^a	0.663 ± 0.057 ^a
Arg	0.545 ± 0.036 ^a	0.408 ± 0.028 ^d	0.343 ± 0.030 ^e	0.504 ± 0.023 ^b	0.467 ± 0.036 ^c	0.390 ± 0.022 ^d
Ile	0.514 ± 0.029 ^b	0.404 ± 0.025 ^d	0.396 ± 0.034 ^d	0.575 ± 0.026 ^a	0.492 ± 0.019 ^b	0.450 ± 0.028 ^c
Thr	0.473 ± 0.032 ^d	0.624 ± 0.035 ^{a,b}	0.567 ± 0.060 ^c	0.593 ± 0.024 ^{b,c}	0.641 ± 0.017 ^a	0.465 ± 0.071 ^d
Pro	0.420 ± 0.061 ^{a,b}	0.392 ± 0.091 ^{a,c}	0.345 ± 0.073 ^c	0.418 ± 0.075 ^{a,b}	0.368 ± 0.076 ^{b,c}	0.448 ± 0.069 ^a
Tyr	0.380 ± 0.023 ^c	0.421 ± 0.018 ^b	0.360 ± 0.032 ^c	0.473 ± 0.025 ^a	0.409 ± 0.018 ^b	0.405 ± 0.029 ^b
Gly	0.350 ± 0.022 ^b	0.349 ± 0.022 ^b	0.286 ± 0.024 ^c	0.395 ± 0.016 ^a	0.403 ± 0.014 ^a	0.264 ± 0.027 ^d
His	0.224 ± 0.015 ^c	0.206 ± 0.011 ^d	0.178 ± 0.013 ^c	0.241 ± 0.015 ^b	0.268 ± 0.008 ^a	0.175 ± 0.019 ^c
EAA	4.32 ± 0.26 ^{b,c}	4.60 ± 0.27 ^a	3.98 ± 0.30 ^d	4.66 ± 0.21 ^a	4.52 ± 0.15 ^{a,b}	4.16 ± 0.27 ^{c,d}
TAA	9.99 ± 0.61 ^{a,b}	9.93 ± 0.65 ^b	8.57 ± 0.66 ^d	10.50 ± 0.45 ^a	10.29 ± 0.36 ^{a,b}	9.16 ± 0.53 ^c
EAA/TAA (%)	43.23 ± 0.42 ^c	46.32 ± 0.45 ^a	46.47 ± 0.72 ^a	44.44 ± 0.44 ^c	43.88 ± 0.33 ^d	45.44 ± 0.72 ^b

^{a-c} means with different superscripts within each row differ significantly ($P < 0.05$). Values are expressed as means ± SD. EAA: quantity of essential amino acids; TAA: quantity of total amino acids.