

STUDY ON EFFECT OF DIFFERENT ENERGY LEVELS ON CARCASS TRAITS OF COCKERELS

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Abstract: The present study was carried out to study of different energy levels on carcass traits of white leghorn cockerel (BV-300). Three hundred cockerels were divided in three groups having four replicate of 25 birds. The starter and finisher mash were formulated with three levels of metabolizable energy 2550, 2650 and 2750 Kcal/Kg and 2650, 2750 and 2850 Kcal/Kg respectively. Observation were recorded for carcass traits *viz.* dressed weight, cut-up part yields (breast, thigh, drumsticks, back, neck and wing) and organ weights (liver, heart, gizzard etc.) The result indicated that carcass quality was found better in cockerels receiving 2850 K cal/Kg metabolizable energy in their diet. The dressing percentage, edible meat percentage and giblet percentage was higher in group T₃ followed by group T₂ and T₁ and proportionately influenced by the metabolizable energy concentration fed to the cockerels. Carcass evaluation studies revealed significant differences among different groups.

Introduction

The layer male chicks are hardier than the broiler and the taste, flavor, juiciness and tenderness are almost similar to the indigenous stocks. Excessive abdominal fat particularly in broiler leads to consumer rejection and adds to processing difficulties (Crawford, 1990). Haleemet *al.* (1978) advocated the suitability of male chicks from layer strains for preparation of chicken delicacies due to its desirable flavor, less abdominal fat and juiciness. Consumers choice, lower chick price, lower mortality and morbidity, lower managerial cost, lower financial investment, better market demand, lower abdominal fat, less disease susceptibility, more organoleptic preference, family labor utilization and easy management are strategic advantages for cockerel rearing. Cockerel contains 56 percent water and 320 calories/100g of meat energy whereas, 71 percent water and 151 calories for broiler (Singh, 1990). Hence, the present experiment was proposed to study the effect of different energy levels in the diet on carcass quality of cockerels.

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Material Methods

Three hundred day old commercial cockerels were randomly divided into three groups namely T₁, T₂ and T₃. Each group was further subdivided into four replicate. All the groups were provided similar environmental and managemental conditions throughout experimental period of 10 weeks duration. The starter and finisher mash were formulated with three levels of metabolizable energy 2550, 2650 and 2750 Kcal/Kg and 2650, 2750 and 2850 Kcal/Kg for groups T₁, T₂ and T₃ respectively. The isonitrogenous protein percentage 20 and 18 was provided in starter and finisher diet. At the end of tenth week, eight birds from each dietary treatment were starved for 8 hours before slaughter. The carcass traits *viz.* dressed weight, cut-up part yields (breast, thigh, drumsticks, back, neck and wing) and organ weights (liver, heart, gizzard etc.) were recorded and expressed as percentage of live body weight.

Results and Discussion

The mean dressing percentage among different treatment group was 54.02 ± 0.09 , 55.07 ± 0.05 , 56.14 ± 0.26 percent for groups T₁, T₂ and T₃ respectively. The highest dressing percentage was observed in treatment T₃ followed by T₂, and T₁. There was significant difference in dressing percentage between the treatment groups observed which might be attributed to the different energy levels in all treatments groups. Higher concentration of energy in the diet significantly affect the dressing percentage. The present findings are in agreement with Trindade *et al.* (1982) greatest carcass yield in birds getting higher concentration of energy in diet. Tang *et al.* (2007) reported that dietary ME had important effect on breast muscles growth and meat quality.

Cut up part percentage of organ in white leghorn cockerel birds on live weight basis

Treatments	Dressing (%)	Edible meat								Giblet			
	Dressed wt	Proventriculus	Thigh	Back	Neck	Breast	Wing	Drumstick	Edible meat %	Gizzard	Heart	Liver	Giblet %
T1	54.02 ^c ±0.09	0.54 _a	12.75 _b	18.48 _c	5.16 ^c	23.75 ^b	8.19 _b	18.18 _a	47.58 ±0.23	2.81 ^a	0.45 ^c	2.03 ^c	5.28 ±0.04
T2	55.07 ^b ±0.05	0.47 _b	13.83 _a	19.82 _b	5.92 ^b	26.75 ^a	9.07 ^a	17.92 _a	48.73 ±0.53	2.51 ^b	0.52 ^b	2.17 ^b	5.22 ±0.03
T3	56.14 ^a ±0.26	0.43 _b	14.13 _a	21.40 _a	6.76 ^a	26.35 ^b	9.94 _b	16.97 _b	49.83 ±0.78	2.29 ^c	0.60 ^a	2.27 ^a	5.19 ±0.04

Week Mean	55.07	0.48	13.57	20.62	5.95	25.28	9.07	17.69		2.66	0.58	2.25	
SEM	±0.22	±0.09	±0.16	±0.25	±0.17	±0.34	±0.18	±0.18		±0.03	±0.02	±0.01	
P value	5.706	1.055	7.45	0.029	2.018	0.005	0.005	9.068		4.379	7.392	0.003	

Values bearing different superscripts within column differ significantly (P<0.05)

The highest edible meat percentage was observed in treatment T₃ followed by T₂ and T₁. In treatment T₃ percent weight of proventriculus, thigh, back, breast and drumstick was significantly higher as compared to groups T₁ and T₂. It was observed from the table that the energy levels in diet had significant effect on meat percentage of the cockerels of different groups. The present findings are in agreement with Nguyen and Bunchasak (2010) who reported that higher energy content gives better carcass quality. Araujo et al. (2005) reported that carcass yield and breast weight increased with higher levels of energy and lysine in the diets. Giblet percentage of different groups T₁, T₂ and T₃ was almost comparable. This can also be reflected in statistical analysis of data showing non-significant differences among different groups. Highest heart and liver percentage observed in group T₃ followed by T₂ and T₁. Which might be due to physiological adjustment of the body to carry out vital body function to meet out requirements of increased body mass which differ in percentage of energy in the given diet. The present findings are in agreement with Lin Cheng Yung (2002) who reported that the dietary protein levels did not significantly influence dressing percentage. Thus, results of carcass evaluation study indicated that birds supplied with higher energy in diet showed higher dressing percentage, edible meat and heart and liver percentage.

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