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THE IMPACTS OF FEEDING TIME ON PERFORMANCE AND CARCASS PARAMETERS BROILER

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ABSTRACT

The impacts of feeding time on the performance of broiler chicks at 28,35 and 42 days has been proceeded. A total 120 one day old broiler chicks (Ross 308) were reared on feed having 21.8% protein and 3049 kcal metabolizable energy/kg for 14 days. At the beginning of the third week, the chicks were assigned to four treatments through four grops. Each group contains 30 chicks and have three replieates. The first group (T1) was fed *ad libitum* and considered as control, while the second group (T2) was fed at 3.30 pm (once daily for 1 hour). The third group (T3), was fed at 8.30 pm (once daily for 1 hour) and the fourth group (T4) was fed at 3.30 and 8.30pm. Four chickens had been slaughtered (2 male and female) aged 28, 35 and 42 days for each replicate in each treatment. Per slaughter live weight, the weights of the carcass and weights of each of the breast, thigh, wings, heart, liver and gizzard and finally the legs were taken away proportion of dressing, breast, thigh, wings, heart, liver and gizzard and attributed to the weights of the carcass and extract Alenci percentage legged forgotten weight to the neighborhood. The result revealed that no significant differences were noticeable in the final body weight, carcass weight and dressing proportion at 28<35 and 42 day of age. At, 35d, group 2had superior ($P \leq 0.05$) breast proportion yields and control had superior ($P \leq 0.05$) heart Percentage.

Key words: Feeding Time, Performance, Broiler

INTRODUCTION

Trade of nutritional ingredients tends to fluctuate it is the fact offree market economy. Over the past decade, theprices of poultry feed ingredients had been increased dramatically. An increasing in the price of feed may be attribute to the little supply and according to huge industrial and human needs. The cost of poultry dietswith the growing prices of feed ingredients, managing, is beingsubstantial. Poultry diets cost is a major problem as nutrition cost ranges from 50 to 60% and 65 to 75% of the total cost of production in the developed countries, respectively (Tackie and Flenscher, 1995 and Nworgu *et al.*, 1999), but for many producers this number is now higher. Poultry feedhave intensified the needed for utilizing substitutions nutrition ingredients other than human, agriculture and industrial uses (Fanimo *et al.,* 2007; Al-Ruqaie *et al.,* 2011 and Shafey *et al.*, 2011). Overwhelmingly, these ingredients are obtainable locally at relatively low prices. Substitutions feed ingredients may offer more options for poultry nutritionists to formulate diets.

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Genetic improvement, as well as maximizing live performance inpoultry production, let a reduction of age to market. Thedefinition of genetic line and market age is connected to marketdemands for various product types, in addition to production costs. Over the last decades, eating behavior have changed, with anintense priority for meat cuts and processed meat, and as a resultthe market of chicken cuts has surpassed the entire bird market. This has lead to later-finishing birds for the production of trade cuts because larger birds shows higher yield (Mendes *et al.*, 2001). There is a stringent requirement to increase efforts of reducing nutrition cost without compromising the final product. One possible nutrition AL strategy of reducing nutrition cost is to keep under control, nutrition amount of the birds in the early phase of life. (Novel, 2009). Even though some studies have specified the effect of early nutrition restriction on carcass fat contents and feed efficiency (Plavnik and Hurwitz, 1991), Legproblems and total mortality (Robinson *et al.,* 1992 and Saleh *et al.*, 1996) and metabolic diseases (Arce *et al.*, 1992) in broiler chickens, there is few or limited information concerning the usage of early feed restriction as nutritional approach to reduce cost of poultry feed.

To reduce these problemsfeed restriction has been suggestion, so. Early feedrestriction programs usingto reducing abdominal and carcass fat in broiler chickens depend onthe phenomenon called compensatory development or catch up growth to manufacture market body weight comparable to control groups, Compensatory evolution or catch-up growth is defined as abnormally speedy growth close to age. Food restrictionin poultry has been usually used to decrease metabolic disorders (e.g., ascents), control body weight, and reducereproductive problems in both meat-type and egg-typechickens (Zubair and Leeson, 1994; Fassbinder and Karasov, 2006).

The disapproval of this study was to find out the impact of Feeding time on performance, carcass parameters and economics at various market age.

MATERIALS AND METHODS

This study was precededat the Bakrajo Poultry Breeding Field, Animal Production Department, Faculty of Agricultural Sciences, University of Sulaimani. 120 one day old Ross 308 broiler chicks were housed in well ventilated room alreadyantiseptic. at the first two weeks, all chicks were fed a regular starter diet contains 21.8% crude protein and 3049 kcal metabolizable energy/kg feed. At the start of the third week, all chicks were weighed and divided randomly into four experimental groups, each with 3- replicates (10 birds per replicate). The first group was control (*ad libitum* feeding) while the second group (T1) was feed at 3.30 pm for one hour. The third group (T2) was fed at 8.30 pm for one hour, and the fourth group (T3) was fed at 3.30 and 8.30 pm for one hour per each period. The light was kept at 16 L: 8d. All the birds were fed a regular standard feed as described in recommended protocol (NRC, 1994).

Studied characteristics

Four randomaly selected birds (2 male and female) aged 28, 35 and 42 days for each replicate were slaughtered. Pre-slaughter weight, weight of dressing, breast, lenght, wings, heart, liver, legsand gizzard were recorded, the proportion of, breast, lenght, wings, heart, liver, legsand gizzard were calculated.

Statistical analysis

Data were analyzed using XLStat (Version 7.5, 2004). The following model was used: Yij = μ+ Ti+ eij

Where:

μ = The overall means of traits

Ti = The impact of treatments (C, T1, T2 and T3)

eij= Random error, assumed to be equal to zero and

variance is б2e (N~ 0, б2e)

The considerable differences between means of traits included in this study were specified using Duncan's multiple range test under the probability (P<0.05) (Duncan, 1955).

RESULTS

Table 1 shawed that the affect of feeding time on production indexat 28, 35 and 42 day of age. At 28 day, there was significant difference (*P* ≤0.05) btween different treatment group in production index and was high in T2 at 28 day, T1 at 35 day and T3 at 42 day.

Table 1: Impact of feeding time on production index (g; mean ± SE)

production index	28	35	42
control	314.44^{c}±64.84	472.71^{b}±122.95	663.34^{b}±54.71
T1	964.57 ^{ab}±122.99	801.27 ^{a}±25.12	950.71 ^{ab}±26.95
T2	1129.25^{a}±11.31	661.65 ^{ab}±179.64	992.28 ^{ab}±117.69
T3	654.21^{bc}±7.64	606.51 ^{ab}±222.21	1054.84^{a}±76.54

C: control group; T1: feeding at 3.30 pm, T2: feeding at 8.30 pm; T3: feeding at 3.30 and 8.30 pm; a,b Values within columns.
followed by different letters differ significantly (P≤0.05).

Table 2,3 and 4 illustrated the impact of feeding time on final body weight, carcass weight and dressing proportion of broilers at 28, 35 and 42 d. No considerable differences were foundin final body weight, carcass weight and dressing percentage.

Tble 2: Impact of feeding time on body weight (g; mean ± SE)

Body weight	28	35	42
control	1455.00[a]±114.07	2156.67[a]±163.22	2806.50[a]±179.98
T1	1329.33[a]±39.16	2106.25[a]±159.67	2864.00[a]±264.32
T2	1309.00[a]±32.52	2052.00[a]±234.12	3127.00[a]±120.85
T3	1400.00[a]±23.33	2020.25[a]±311.75	2808.00[a]±269.89

At 28 day, chicken in the second treatmet had superior (P≤0.05) production index. At 35 days of age, the production index of the first treatment had signficantly increased than other treatment. Production index in the third treatment was signficantly higher at 42 days of age.

Table 3: Impact of feeding time on carcass weight (g; mean ± SE)

Carcass weight	28	35	42
control	1226.50[a]±94.49	1771.33[a]±118.41	2410.75[a]±148.04
T1	1210.00[a]±74.92	1770.75[a]±138.84	2502.50[a]±234.84
T2	1111.33[a]±10.69	1673.00[a]±20.01	2733.25[a]±126.92
T3	1180.67[a]±61.34	1566.25[a]±237.17	2489.50[a]±257.10

Table 4: Impact offeedingtime ondressing percentage (%; mean ± SE)

dressing percentage	28	35	42
control	84.34[a]±0.47	82.27[a]±1.27	85.96[a]±0.67
T1	91.24[a]±3.62	84.07[a]±0.32	87.36[a]±0.54
T2	84.92[a]±1.42	77.52[a]±7.28	87.34[a]±1.09
T3	84.31[a]±3.43	83.01[a]±1.89	88.52[a]±0.92

Feet propotionin relation to body weight thight of broilers at 28, 35 and 42 d are shown in Table 5. At35 d, treatment 3 had superior (*P*≤0.05) feet propotion, At 28 d, there was no significant difference in feet percentage with body weight (*P*≥0.05) across treatments. No significant differences were foundin feet propotion of carcass weight across treatments at 42 d of age.

Table 5: Impact offeeding timeonfeet percentage (%; mean ± SE)

Percentage of feet	28	35	42
control	3.78[a]±0.16	3.91[ab]±0.29	4.15[a]±0.38
T1	3.66[a]±0.10	3.73[b]±0.45	3.86[a]±0.31
T2	3.47[a]±0.34	4.46[ab]±0.51	3.61[a]±0.12
T3	3.99[a]±0.41	4.93[a]±0.48	4.11[a]±0.39

Table 6 and 7 showed the impact of feeding time on wing andthigh propotion of 28, 35 and 42 d. There was no significant difference between different treatment groups in percentages of wing and thigh.

Table 6: Impact of feeding timeonwing percentage (%; mean ± SE)

Wing Percentage	28	35	42
control	10.86 [a]±2.12	9.51 [a]±0.62	8.85 [a]±0.12
T1	9.38 [a]±0.33	8.28 [a]±0.64	8.73 [a]±0.41
T2	9.50 [a]±0.20	8.93 [a]±0.12	8.28 [a]±0.30
T3	9.64 [a]±0.17	8.57 [a]±1.18	8.94 [a]±0.51

Table 7: Impact of different feeding timeonthigh percentage (%; mean ± SE)

Thighpercentage	28	35	42
control	12.35 [a]±1.80	12.12 [a]±0.12	12.15 [a]±0.16
T1	11.59 [a]±0.45	11.69 [a]±0.42	11.56 [a]±0.15
T2	11.87 [a]±0.47	12.47 [a]±4.44	11.51 [a]±0.67
T3	11.55 [a]±0.33	15.53 [a]±0.94	12.15 [a]±0.21

Breast percentage of broilers at 28, 35 and 42 d are shown in Table 8. At 35 day, birds in the treatment 1 had superior ($P \leq 0.05$) breast percentage yields. At 28 and 42 day, there was no considerable difference in breast meat yield ($P \geq 0.05$) across treatments.

Table 8: Impact of feeding timeonbreast percentage (%; mean ± SE)

Breast percentage	28	35	42
control	26.91 [a]±2.01	27.10 [ab]±1.75	28.73 [a]±0.79
T1	27.34 [a]±2.12	29.72 [a]±0.41	29.00 [a]±1.37
T2	25.38 [a]±0.35	27.17 [ab]±1.26	27.41 [a]±1.91
T3	25.38 [a]±1.40	26.27 [b]±2.13	29.95 [a]±1.10

Table 9,10 and 11 revealed theimpact of feeding time on heart, liver and gizzardpercentages in relation towith carcass weight at 28, 35 and 42 days. No considerable differences were observed in heat, liver and gizzard percentages at 28 days of age. At 35 day, t1 group had superior ($P \leq 0.05$) heart and gizzardpercentages. No considerable differences were noticed in heart, gizzard and liver percentages of carcass weight among treatments at 42 d of age.

Table 9: Impact of feeding time onheart percentage (%; mean ± SE)

heart Percentage	28	35	42
control	0.76 [a]±0.10	0.75[ab]±0.07	0.56 [a]±0.04
T1	0.72 [a]±0.04	0.87 [a]±0.05	0.57 [a]±0.04
T2	0.69 [a]±0.05	0.64 [b]±0.03	0.54 [a]±0.01
T3	0.62 [a]±0.07	0.65 [b]±0.03	0.58 [a]±0.02

Table 10: Impact of feeding time onliverpercentage (%; mean ± SE)

liver Percentage	28	35	42
control	3.18 [a]±0.40	2.60 [a]±0.24	2.80 [a]±0.13
T1	3.03 [a]±0.17	2.89 [a]±0.59	2.39 [a]±0.22
T2	2.84 [a]±0.08	3.43 [a]±0.30	2.69 [a]±0.10
T3	3.19 [a]±0.23	2.59 [a]±0.96	2.60 [a]±0.25

Table 11: Impact of feeding timeongizzard percentage (%; mean ± SE).

Gizzardpercentage	28	35	42
control	3.27 [a]±0.08	3.26 [a]±0.47	2.46 [a]±0.25
T1	3.39 [a]±0.13	2.23 [a]±0.16	2.60 [a]±0.31
T2	3.83 [a]±0.09	2.51 [a]±0.22	2.82 [a]±0.22
T3	3.44 [a]±0.10	2.68 [a]±0.18	2.53 [a]±0.32

DISCUSSION

Feeding time influenced body weight, and most carcass characteristics. The degree of change in these parameters rely on the stage of feed restriction used. In the current study, it was noticed that intermittent feeding system given either once daily or twice day produced better results in compared to *ad libitum* feeding. Furthermore, it was noticed that the two intermittent system of feeding used in this study had no considerable difference.

Concerning tocarcass weight there was no considerable differences in this study. Similarly, other workers were incapable to demonstrate whole compensatory growth of broiler chickens which had been subjected to similar degrees of feed restriction (Pinchasov *et al.,* 1985; Plavnik *et al.,* 1986; Calvert *et al.,* 1987; Pinchasov and Jensen, 1989 and Yu *et al.,* 1990). Leeson *et al*. (1991), reported that totalbody weight recovery by all treatment groups by 42 days of age with no change in total efficiency. Carcass characteristics were also not influenced by early life under nutrition. Jones and Farrell (1992) restricted broiler chickens to only 2.9 KJ/kg0.67, a level much more severe than that recommended by Plavnik and Hurwitz (1989) and reported total body weight recovery at 48 days of age.

Breast proportion of carcass weight decreased linearly at 42 d in response to restriction. No considerable differences were notice in breast proportion of carcass weight across treatments at 42 d of age. Similar results were obtained by (Urdaneta-Rincon and leson, 2002).

CONCLUSION

Production index and quantitative breast were significantly reduced by feed restriction.leg, and wing yields expressed as a proportion of the carcass werenot significantly influenced by feed restriction.

REFERENCES

Duncan, DB. (1955): Multiple range and multiple F tests. Biometrics, 11: 1-42.

Fassbinder-Orth, CA. and Karasov, WH. (2006): Effects of feed restriction and re alimentation ondigestive and immune function in the leghorn chick. Poultry Science 85:1449–1456.

Zubair, A.K. and Leeson, S. (1994): Effect of varying period of early nutrient restriction on growthcompensation and carcass characteristics of malebroilers. Poult. Sci. 73:129–136.

Novel, D.J.; Ng'ambi, J.W.; Norris, D. and Mbajiorgu, C.A. (2009): Effect of Different Feed Restriction Regimes During the Starter Stage onProductivity and Carcass Characteristics of Male and Female Ross 308 Broiler Chickens. International Journal of Poultry Science 8 (1): 35-39. ISSN 1682-8356.

Plavnik, I. and Hurwitz, S. (1991): Response of broilerchickensand turkey poults to food restriction ofvaried severity during early life. Br. Poult. Sci., 32: 343-352.

Robinson, F.E.; Classen, H.L.; Hanson, J.A. and Onderka, D.K. (1992): Growth performance, feed efficiency and the incident of skeletal and metabolic diseasein full-fed and feed-restricted broiler and rosterchickens. J. Applied Poult. Res., 1: 33-41.

Saleh, K.; Attia, Y.A. and Young, H. (1996): Effect of feed restriction and breed on compensatory growth, abdominal fat and some production traits of broiler chicks. Archiv fur Geflugelkunde, 60: 153-159.

Arce, J.; Berger, M. and Coello, C.L. (1992): Control of ascites syndrome by feed restriction techniques. J. Applied. Poult. Res., 1: 1-5.

Mendes, AA. (2001): Rendimento e qualidade da carcaça de frangosdecorte. Anais da Conferência Apinco de Ciência e Tecnologia Avícola; Campinas, São Paulo. Brasil. p.79-100.

Novele, D.J.; Ng'Ambi, J.W.; Norris, D. and Mbajiorgu, C.A. (2009): Effect of different feedrestriction regimes during the starter stage onproductivity and carcass characteristics of male andfemale Ross. 308 broiler chickens. Int. J. Poult. Sci.,8(1): 35-39.

National Research Council. (1994): Nutrient Requirements of Poultry. 9th rev. ed. Natl. Acad. Press, Washington, DC.

Nworgu, F.C.; Adebowale, E.A.; Oredein, O.A. and Oni, A. (1999): Prospects and economics of broiler chicken production using two plant protein sources. Trop. J. Anim. Sci., 2: 159–166.

Tackie, A.M. and Flenscher, J.E. (1995): Nutrient value of wild sorghum fortified with (Leucanaleucocepphala) (Wh. Lam). Bull. Anim. Afr., 47: 223–375.

Fanimo, A.O.; Adebayo, A.J.; Oduguwa, O.O. and Biobaku, W.O. (2007): Feeding value of cashew nut testa for broiler chickens. Nig. J. Anim. Prod., 34: 83–93.

Al-Ruqaie, I.M.; Swillam, S.A.; Al-Batshan, H.A. and Shafey, T.M. (2011): Performance, nutrient utilization and carcass characteristics and economic impact of broiler chickens fed extruded bakery waste. JAVA, 10: 2061–2066.

Shafey, T.M.; Alodan, M.A.; Al-Batshan, H.A.; Abouheif, M.A.; Alamriand, M.S.; Al-Ruqaie, I.M. (2011): Performance, Egg Characteristics and Economic Impact of Laying Hens Fed Extruded Bakery Waste. JAVA, 10: 2248–2252.

Urdaneta-Rincon, M. and Leeson, S. (2002): Quantitative and Qualitative Feed Restriction on Growth Characteristics of Male Broiler Chickens Poultry Science 81: 679–688.

Pinchasov, Y.; Nir, I. and Nitsan, I. (1985): Metabolic and anatomical adaptations of heavy-bodied chicks to intermittent feeding. I Food intake, growth rate, organ weight and body composition. Poult. Sci., 64: 2098-2109.

Pinchasov, Y. and Jensen, L.S. (1989): Comparision of physiological and chemical means of feed restriction in broiler chicks. Poult. Sci., 68: 61-69.

Plavnik, I.; McMurtry, J.P. and Rosebrough, R.W. (1986): Effect of early feed restriction in broilers. I. Growth performance and carcass composition. Growth, 50: 68-76.

Plavnik, I. and Hurwitz, S. (1989): Effect of dietary protein, energy and feed pelleting on the response of chicks to early feed restriction. Poult. Sci., 68: 1118-1125.

Calverl, C.C.; McMurtry, J.P.; Rosebrough, R.W. and Campbell, R.G. (1987): Effect of energy level on the compensatory growth response of broilers following early feed restriction. Poult. Sci., 66: 75.

Leeson, S.; Summers, J.D. and Caston, L.J. (1991): Diet dilution and compensatory growth in broilers. Poult. Sci., 70: 867-873.

Jones, G.P.D. and Farrell, D.J. (1992): Early life food restriction of the chicken. I. Methods of application, amino acid supplementation and the age at which restriction should commence. Br. Poult. Sci., 33: 579-587.

Yu, M.E.; Robinson, F.E.; Clandini, M.T. and Bodnar, L. (1990): Growth and body composition of broiler chickens in response to different regimes of feed restriction. Poult. Sci., 69: 2074-2081.

تاثير وقت تقديم العلف على الاداء الانتاجي وصفات الذبيحة لفروج اللحم

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تم دراسة تغير اوقات اعطاء العلف على الاداء الانتاجي لفروج اللحم ، استخدم في التجربة عدد ١٢٠ فرخة بعمر يوم واحد، من نوع (Ross 308) ووتمت تغذيتها على عليقة مكونة من بروتين ٢١.٨٪ و ٣٠٤٩ كيلو كالوري الطاقة ممثلة / كغ لمدة (أسبوعين) ١٤ يوما. في بداية الأسبوع الثالث، تم توزيع الافراخ على اربعة معاملات وثلاث مكررات لكل معاملة. تحتوي كل مجموعة ٣٠ فرخة في كل معاملة. وكانت المجموعة الأولى معاملة السيطرة (T1) وتمت التغذية بشكل حر، المجموعة الثانية (T2) تم تغذية العلف في الساعة ٠٣:٣٠ (مرة واحدة يوميا لمدة ١ ساعة)، والمجموعة الثالثة (T2) ، وكان وقت التغذية ٠٨:٣٠ (مرة واحدة يوميا لمدة ١ ساعة) والمجموعة الرابعة (T3) وكان وقت التغذية في ٣.٣٠ و ٨:٣٠ . تم ذبح الدجاج باعمار ٢٨ و ٣٥ و ٤٢ يوما ولكل مكرر ٤ طيور(٢ذكر و٢انثى). تم قياس الاوزان الحية، واوزان الذبيحة وأوزان كل من الصدر والفخذ، وألاجنحة والقلب والكبد نسبة الى اوزان الذبيحة والأحشاء الغير ماكولة والساقين نسبة الى الاوزان الحية. تأثير تغير اوقات التغذية على وزن الجسم النهائي، وزن الذبيحة ونسبة تصافي فروج اللحم باعمار ٢٨ و ٣٥ و ٤٢ يوما. لم يظهر فروقات معنوية للاوزان الحية والذبيحة ونسبة التصافي ولكن هناك فروقات معنوية لدليل الانتاجي ونسبة الصدر ($P \leq 0.05$) ، وكان هناك فروقات معنوية لنسبة القلب. في ٣٥ يوما كانت هناك فروقات معنوية ($P \leq 0.05$) لنسبة القانصة بين المعاملات.