Journal of
Dairy & Veterinary Sciences
ISSN: 2573-2196

Research Article
Volume 16 Issue 4 - May 2024
DOI: 10.19080/JDVS.2024.16.555943

Dairy and Vet Sci J

Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks

Sarood S Shawkat*

Department of Animal Science, College of Agricultural Engineering Sciences, University of Sulaimani, Iraq

Submission: March 24, 2024 **Published:** May 27, 2024

***Corresponding author**: Sarood S. Shawkat, Department of Animal Science, College of Agricultural Engineering Sciences, University of Sulaimani, Iraq. E-mail: sarood.shawkat@univsul.edu.iq

Abstract

The purpose of this study was to investigate how the removal of feed affected the productivity of birds at different developmental stages. Three hundred male broilers (Ross 308) hybrid chicks were utilized. The chicks were divided into four treatment groups, each replicated five times. They were then randomly distributed into 20 pens, with each cell containing 15 chicks of similar average body weight. The research was conducted on two-week-old chicks. The experiment employed a fully randomized design, consisting of four treatments: T1: Control, T2: 6 hours of feed removal, T3: 9 hours of feed removal, and T4: 12 hours of feed removal. There were no differences between the groups at 36–42 and overall days of existence, besides the Production Index, Economic Figure, protein, and energy conversion ratio, which showed statistically significant differences (P≤0.05) between the treatments to T4.

Keywords: Male broiler; Productive performance; Feed restriction

Abbreviations: FCR: Feed conversion ratio; PI: Production Index; EF: Economic Figure

Introduction

Broiler chicken growth efficiency is enhanced through genetic development, improved diet, and the implementation of controlled conditions. Unfortunately, providing birds with unrestricted access to food leads to a fast growth rate, which in turn results in the accumulation of body fat, increased Mortality, and a higher occurrence of metabolic disorders such as ascites, sudden death syndrome, and skeletal problems. Adipose tissue is an undesirable substance that augments the prevalence of metabolic disorders and skeletal abnormalities while also leading to issues with feed quality, complications in meat processing, and consumer aversion to meat due to health concerns [1]. According to [2], diet accounts for 70–75% of the total cost of broiler production; limited feeding reduces production costs by preventing feed waste. Feed management practices that improve animal welfare without raising production costs are becoming more important for the poultry sector [3]. Rapid growth generally increases body fat deposition, high incidence of metabolic disorders, high Mortality, and high incidence of skeletal diseases, resulting in continuous genetics and nutritional development [4]. Various feed restriction methods are used in broiler production to increase feed utilization efficiency and weight gain, including intermittent and skip-a-day feeding [5]. [6] identified that restricting feed intake is a practical approach to delay the rapid growth rate in broilers during their early stages of life, thereby reducing the occurrence of associated issues. The primary source of waste residue in the abattoir is abdominal fats, which can affect carcass yields and contaminate the environment if not properly disposed of [7]. Various studies have documented partial body weight capture, enhanced feed efficiency, and decreased body and abdominal fat in broiler chickens of described and non-described strains. These findings have been observed in numerous feed restriction studies conducted in different locations. Several exotic broiler strains, such as the hybrid Ross-308 and Kucbor, have also been identified [8]. The current study aimed to determine the influence of feed removal on male broiler chicks' productive performance at the second week of age (14 days).

Materials and Methods

The experiment was conducted at Sulaimami University/Iraq, specifically at the College of Agricultural Engineering Sciences.

Three hundred male broilers, specifically Ross-308 hybrid chicks, were utilized in the study. The birds were initially provided with ad libitum feeding for the first two weeks, after which they were transitioned to daily feeding restrictions. Four treatments were used in a completely randomized design for the experiment: T1= Control, T2= Remove 9 am-3 pm, T3= Remove 9 am-6 pm, and T4= Remove 9 am-9 pm. There were five replicates, and the chicks were randomly allocated into 20 groups, each containing 15 chicks in each pen. Each experimental diet has been formulated to either slightly surpass or meet the nutritional needs of grilled chickens [9]. Three separate dietary levels were employed to nourish the chicks. (Table 1)

Actual performance between 2 weeks and 42 days

Cumulative attributes were measured weekly, including live body weight, weight gain, feed intake, feed conversion ratio, production Index, and Economic figure, as follows:

Live body weight

Weight gain

Weight gain (g) = Live body weight at the end of the period − Live body weight at the beginning of the period

Feed intake

Feed conversion ratio.

Production Index (P.I.)

Economic Figure (E.F.)

Protein and Energy Intake

Portions were allocated and distributed to the birds for each pen at the start of the week. At the end of the week, the leftover part of each pan's ration was measured and deducted from the original ration. The food eaten was multiplied by the protein % in the ration corresponding to the age stage to determine the protein consumption. To calculate energy intake, multiply the consumed ration by the metabolizable energy in the ration according to the age stage. This process yields weekly protein and energy intake values for specific age ranges (15-21 days, 22-28 days, 29-35 days, and 36-42 days) and the total protein and energy intake for the entire 15–42-day period.

Protein and Energy conversion ratio

Following the computation of feed consumption, evaluation of protein intake, measurement of metabolizable energy intake, and weight gain over a week, the ratio of protein production to energy conversion was determined using the following equation:

Protein and metabolizable energy conversion ratios were computed for several time intervals: 15-21 days, 22-28 days, 29-35 days, and 36-42 days. The overall conversion ratio for protein and metabolizable energy from 15 to 42 days was also determined.

The data collected throughout the experiment were analyzed using Excel software. Parameter computations will be conducted for the different treatments. The data were analyzed using SAS [10]. A mean comparison is performed via the Duncan test to detect significant differences at a significance level 0.05.

Results and Discussion

Table (2) displays broilers' average live body weight (g/bird) for feed removal at various times. No significant differences were obtained in all removal-fed groups at 7-14 and 36-42 days of age. For the 15-21, 22-28, and 29-35 days of age, birds of T_4 had significantly ($P \le 0.05$) lower body weight than birds of $T_{1.}$ At 15-21, 22-28, and 29-35 days of age, birds of T_1 (the control treatment) had significantly heavier ($P \le 0.05$) average body weights throughout the experiment, which were (998, 1696, and 2398.5 g) respectively.

The results show in Table (3) the influence of feed removal on the body weight gain (g/bird) from observing the data in the age periods of (15-21), (22-28), and (29-35) days, with significant variations between different treatments ($P \le 0.05$). There is a difference between the treatments in the amount of feed consumed. On the other hand, there were no differences between the treatments in the two age periods (36-42) and Overall days. Except for the age range of (22-28) days, treatment T0, the comparison treatment lacking removal groups and administered ad libitum, results in more significant weight gain than other treatments. The T1 treatment results in more effective weight gain than the other treatments.

The influence of feed removal on feed intake (g/bird) in broiler chickens in different age periods is reported in Table (4). From observing the data in the age periods of (15-21) and (22-28) days, significant variations between different treatments ($P \le 0.05$), and there is a difference between the treatments in the amount of feed consumed. On the other hand, there were no differences between the treatments in the two age periods (29-35), (36-42) days, and overall. The most significant amount of diet consumed in the age group (15-21) (22-28) days was by birds belonging to treatment T_2, which were (736.06 and 1085.74 g) respectively.

Table (5) shows the effects of feed removal between the treatments at different age points on the feed conversion ratio (g feed intake / g live body weight gain). In the two age groups (15–21) and (22-28) days, there were overall significant differences ($P \le 0.05$) between the treatments; however, in the age groups (29–35) and (36-42) days, there were no significant differences ($P \ge 0.05$) between the treatments. We can infer that the T_4 treatment birds are more efficient than the other treatments based on the age period results, as evidenced by their higher feed conversion ratio (1.60) compared to T_1 (1.66).

Table (6) shows the effect of different feed removals on the production index. The results revealed significant differences ($P \le 0.05$) at every point. The best mean of the production index during the period of (36-42) days of age was (422.05) in T_4, while the lowest norm was (329.20) in T_1. The study's economic figure shows significant differences ($P \le 0.05$) between the treatments;

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

T_2 birds had the highest financial figure, at 39.05, compared to T_1 birds' value of 44.04, which was lower.

The protein consumption for various therapies and age groups is outlined in Table (7). Protein consumption in the control group was substantially different from days 1 to 42 over the study period. Specifically, days 15-21 and 22-28 revealed significant differences with T_1 and T_2 at a significant level of $P \leq 0.05$. In the control treatment, the maximum protein consumption per bird per week was seen in T_1 (134.62 and 213.18), while the lowest protein intake per bird per week was reported in T_4 (113.85 and 185.77).

Table 1: Nutrition composition

Percentage of ingredients on a feed basis	Starter Diet (1-140days) %	Growth Diet (15-280days) %	Finisher Diet (36-420days) %
Wheat	23.6	23	27.5
Corn	35.5	34.8	39.7
Meat and bone. Meal. (40%)	3	0.6	0.4
Soybean. Meal. (%44)	29.9	33.04	23.28
Sunflower seed Oil	4	5	5
Dual-calciumphosphate	2.3	1.94	1.86
Limestone	1.15	1.16	1.11
Salt	0.25	0.25	0.25
Methionine	0.2	0.11	0.8
Premix[1]	0.1	0.1	0.1
Total	100	100	100
Examination of the feed's chemical composition			
** Crude. Protein. %	22	20	17
*Metabolizable. Energy. Kcal/kg	29190	30560	30790
** Ether Extract. %	5.3	6.05	6.12
* Crude Fibre. %	3.57	3.65	4
**Calcium %	1.19	1.11	1.22
**Phosphor %	0.76	0.55	0.57
*Lysine %	1.19	1.2	1.01
* Methionine + Cysteine %	0.89	0.92	0.89

[1]Premix (Vitamin.0A 800.000 IU; Vitamin. D3 170.000 IU; Vitamin. E 980 mg; Vitamin. K 95 mg; Vitamin. B1 13 mg; Vitamin. B2 220 mg; Vitamin. B6 75 mg; Vitamin.0B12 800 mg; Folic.acid 20.mg; Choline.Chloride 12.000 mg; Antioxidant 1.900 mg; Iron 2.5000mg; Copper 400 mg; Zinc 2.600 mg; Selenium 7.5 mg; Calcium 24.00%; Sodium 5.40%; Phosphorus08.40%; Methionine 5.40%; Methionine + Cystine 5.70% and Lysine 5.60%.

The nutritional requirement is. Determined according to (NRC). * Calculated, ** chemical analysis.

Table 2: Influence of feed removal at different times on live body weight (g/bird) of male broiler chicks (Mean ± S.E.):

	Periods (days)				
Treatments	14-Jul	15-21	22-28	29-35	36-42
T1	425.00 ± 02.00^{a}	998.00 ± 02.00^{a}	1696.00 ± 34.00^{a}	2398.50 ± 51.50^{a}	3042.50 ± 152.50^{a}
T2	410.00 ± 10.00^{a}	926.00 ± 09.00^{bc}	1606.50 ± 01.50^{ab}	2281.50 ± 35.50^{ab}	2955.00 ± 035.00^{a}
T3	429.00 ± 10.00^{a}	955.50 ± 09.50^{b}	1554.00 ± 21.00^{bc}	2232.00 ± 43.00^{b}	3040.00 ± 125.00^{a}
T4	430.50 ± 12.50^{a}	896.50 ± 15.50^{c}	1491.00 ± 33.00^{c}	2157.00 ± 20.00^{b}	3017.50 ± 027.50^{a}

Within a column, means that differed by letter revealed a significant difference ($P \leq 0.05$). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

Table 3: Influence of feed removal at different times on body weight gain (g/bird) of male broiler chicks (Mean ± S.E.)

	Periods (days)				
Treatments	15-22	22-28	29-35	36-42	Overall
T1	573.00 ± 02.00[a]	698.00 ± 32.00[a]	702.50 ± 17.50[a]	644.00 ± 101.00[a]	2617.50 ± 150.50[a]
T2	516.00 ± 19.00[b]	680.50 ± 07.50[a]	675.00 ± 34.00[ab]	673.50 ± 070.50[a]	2545.00 ± 025.00[a]
T3	526.50 ± 00.50[b]	598.50 ± 11.50[b]	678.00 ± 64.00[ab]	808.00 ± 082.00[a]	2611.00 ± 135.00[a]
T4	466.00 ± 03.00[c]	594.50 ± 17.50[b]	666.00 ± 31.00[b]	860.50 ± 029.50[a]	2587.00 ± 040.00[a]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

Table 4: The influence of feed removal at different times on male broiler chicks' feed intake (g/bird) (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	673.08 ± 15.39[ab]	1065.87 ± 46.64[ab]	1225.65 ± 41.03[a]	1355.84 ± 060.84[a]	4320.42 ± 133.11[a]
T2	736.06 ± 48.56[a]	1085.74 ± 06.58[a]	1275.19 ± 70.65[a]	1470.00 ± 130.00[a]	4566.99 ± 255.78[a]
T3	637.78 ± 19.92[ab]	0972.62 ± 19.05[bc]	1191.08 ± 91.08[a]	1456.09 ± 097.76[a]	4257.56 ± 149.87[a]
T4	569.24 ± 07.70[b]	0928.85 ± 13.47[c]	1152.09 ± 06.25[a]	1475.38 ± 133.72[a]	4125.54 ± 106.31[a]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

Table 5: Influence of feed removal at different times on feed conversion ratio (g feed intake/ g body weight gain) of male broiler chicks (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	1.18 ± 0.03[b]	1.54 ± 0.01[b]	1.75 ± 0.02[a]	2.15 ± 0.24[a]	1.66 ± 0.05[a]
T2	1.43 ± 0.04[a]	1.60 ± 0.03[ab]	1.89 ± 0.01[a]	2.24 ± 0.43[a]	1.80 ± 0.12[a]
T3	1.22 ± 0.04[b]	1.63 ± 0.03[a]	1.77 ± 0.04[a]	1.82 ± 0.07[a]	1.64 ± 0.03[a]
T4	1.23 ± 0.01[b]	1.57 ± 0.03[ab]	1.74 ± 0.09[a]	1.72 ± 0.10[a]	1.60 ± 0.02[a]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

Table 6: Influence of feed removal at different times on the production index (P.I.) and Economic Figure (E.F.) of male broiler chicks (Mean ± S.E.)

	Periods (days)				Economic Figure
Treat-ments	15-21	22-28	29-35	36-42	
T1	356.35 ± 5.97[a]	411.73 ± 8.71[a]	448.42 ± 12.37[a]	329.20 ± 4.57[c]	44.04 ± 0.58[a]
T2	259.46 ± 5.23[d]	378.38 ± 3.53[b]	355.60 ± 03.21[c]	318.26 ± 2.04[c]	39.05 ± 0.61[b]
T3	316.36 ± 2.24[b]	360.60 ± 6.80[bc]	397.90 ± 05.02[b]	368.47 ± 4.02[b]	44.19 ± 1.12[a]
T4	291.91 ± 3.42[c]	343.95 ± 3.50[c]	370.32 ± 05.29[c]	422.05 ± 2.38[a]	44.43 ± 1.58[a]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

The impact of removing feed at various intervals on energy use during the study period is shown in Table (8). No significant variation was seen in calorie consumption per bird per week across the age groups (29-35, 36-42, and 1-42 days). Significant differences (P≤0.05) exist between T_2 and T_4 in the age periods of 15-21 and 22-28 days. The highest energy intake (Kcal/bird/week) was seen in T_2 at 2249.4 and 3318.02, while the lowest was in T_4 at 1739.6 and 2838.57.

The results in Tables (9 and 10) indicate that there are no significant differences between the treatments in protein and energy conversion ratio in the age periods (15-21, 22-28, and 29-35) days, while the results in (36-42) day, and overall showed that protein and energy conversion ratio significantly (P≤0.05) with T_2, the highest protein conversion ratio recorded in T_2 which was (0.36, and 0.33), in contrast the lowest protein conversion ratio recorded in T_4, it was (0.30, and 0.29), the highest energy conversion ratio recorded in T_2 which was (6.72, and 5.51), in contrast the lowest protein conversion ratio recorded in T_4, it were (5.28, and 4.90).

Table 7: Influence of feed removal at different times on protein intake (g/bird/week) of male broiler chicks (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	134.620 ± 1.74[ab]	213.180 ± 1.61[ab]	208.360 ± 1.93[a]	231.000 ± 1.35[a]	787.160 ± 3.63[a]
T2	147.220 ± 1.06[a]	217.150 ± 1.68[a]	216.790 ± 0.94[a]	249.900 ± 1.41[a]	831.060 ± 2.77[a]
T3	127.560 ± 1.23[ab]	194.530 ± 1.54[bc]	202.490 ± 1.65[a]	247.540 ± 2.22[a]	772.120 ± 4.34[a]
T4	113.850 ± 1.12[b]	185.770 ±1.33[c]	195.860 ± 2.02[a]	250.820 ± 1.74[a]	746.300 ± 3.20[a]

Within a column, means that differed by letter revealed a significant difference (P≤0). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

Table 8: Influence of feed removal at different times on male broiler chicks' energy intake (Kcal/bird/week) (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	2056.930 ± 197.2[ab]	3257.300 ± 378.4[ab]	3773.780 ± 408.33[a]	4183.870 ± 571.21[a]	13271.880 ± 1554[a]
T2	2249.400 ± 213.5[a]	3318.020 ± 411.2[a]	3926.310 ± 504.71[a]	4526.130 ±489.14[a]	14019.860 ± 1618[a]
T3	1949.050 ±206.4[ab]	2972.330 ± 364.87[bc]	3667.330 ± 506.74[a]	4483.300 ± 503[a]	13072.010 ± 1579[a]
T4	1739.600 ± 194.6[b]	2838.570 ± 206.4[c]	3547.280 ± 416.7[a]	4542.700 ± 511.09[a]	12668.150 ± 1330[a]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

Table 9: Influence of feed removal at different times on protein conversion ratio (g protein intake/g body weight gain) of male broiler chicks (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	0.23 ± 0.20[a]	0.31 ± 0.04[a]	0.30 ± 0.01[a]	0.36 ± 0.07[a]	0.30 ± 0.03[ab]
T2	0.28 ± 0.06[a]	0.32 ± 0.10[a]	0.32 ± 0.04[a]	0.36 ± 0.02[a]	0.33 ± 0.12[a]
T3	0.24 ± 0.03[a]	0.32 ± 0.08[a]	0.30 ± 0.11[a]	0.31 ± 0.06[ab]	0.30 ± 0.05[ab]
T4	0.24 ± 0.01[a]	0.31 ± 0.05[a]	0.29 ± 0.09[a]	0.30 ± 0.04[b]	0.29 ± 0.07[b]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

Table 10: Influence of feed removal at different times on energy conversion ratio (Kcal/g body weight gain) of male broiler chicks (Mean ± S.E.)

	Periods (days)				
Treatments	15-21	22-28	29-35	36-42	Overall
T1	3.59 ±0.97[a]	4.67 ±1.63[a]	5.37 ±4.21[a]	6.50 ±3.46[a]	5.07 ±1.72[a]
T2	4.36 ±0.35[a]	4.88 ±0.95[a]	5.82 ±2.11[a]	6.72 ±4.75[a]	5.51 ±1.97[a]
T3	3.70 ±0.42[a]	4.97 ±0.54[a]	5.41 ±3.45[a]	5.55 ±4.13[ab]	5.00 ±2.73[ab]
T4	3.73 ±0.34[a]	4.78 ±1.27[a]	5.33 ±4.09[a]	5.28 ±2.11[b]	4.90 ±2.49[b]

Within a column, means that differed by letter revealed a significant difference (P≤0.05). T1: Control, T2: Remove 9 am-3 pm, T3: Remove 9 am-6 pm, T4: Remove 9 am-9 pm

The feed removal factor, which involves serving and removing food at different times, stimulates compensatory development in chickens [11]. When a bird is hungry, and feed is supplied after hours, the bird will eat the most. As feed intake rises, so does the frequency of gizzard contractions, which leads to faster food grinding and, hence, improved absorption of food by the digestive tract [12]. According to [13], a positive correlation exists between weight gain growth and living body weight, accounting for the treatment's superiority in weight gain value. As demonstrated in treatment 6, where power in the living body led to superior weight gain, higher body weight resulted in higher weight gain [14]. According to [5], the regularity of the fodder given to birds influences the frequency of the digestive process, which results in the development of the gastrointestinal system and, ultimately, increased weight. [15] found that prolonging the skip-a-day feed removal reduced feed intake at the end of the starting feeding period. While [16] claimed that restricting food intake reduces growth during the restriction phase, the lowered growth can be compensated subsequently. [13] reported that feed removal for 6 hours indicates the best result when compared with groups that feed removal for more than 6 hours. The findings of this study correspond with those of [17], who found no significant difference in FCR values between limited and non-restricted chicken. During the trial (15 to 42 days), there was no significant difference in the feed conversion ratio between the treatments [18]. The production index is one of the most critical elements in evaluating the production performance of birds, as a higher production index indicates good breeding. Hence, it depends on the evaluation of the productive efficiency factor in broiler chicken breeding [13]. The superiority of treatment 4's index is the same treatment's superiority in terms of weight gain and increased body weight, both of which are necessary components in determining factor productivity efficiency. The factor removal's contribution to the evolution of body weight may cause an improvement in T2's economic figure. This is because the financial index is based on body weight, and it can be observed that treatments with improved body weight have high economic indicators due to their positive correlation. [19,20]. Dietary energy is the most expensive aspect of poultry production. The use of dietary energy in current broiler lines must be investigated further. The proper protein-to-energy ratio in their diet can be essential for broilers to thrive. Dietary energy density needs to be better understood, even though higher dietary amino acid density has been linked to better performance and processing yield [21,22]. Broilers fed higher M.E. meals (>100% M.E. levels) had lower F.I. and, consequently, consumed less protein than those provided more deficient M.E. diets. This may suggest that diets with higher M.E. content utilized the protein in their food more effectively. Increased protein intake for broilers can be achieved through better utilization of dietary amino acids through high-energy diets. Leucine virtually mediates translation initiation pathways in skeletal muscle protein synthesis, supported by higher SID intake for leucine across dietary M.E. for both lines and seasons [23,24]. [25] investigated how performance was affected by varying the nutrient densities of six different levels of dietary protein (16–36%) and energy (2,600–3,600 kcal/kg). Significant interactions between dietary protein and energy were found, suggesting the significance of preserving a balanced ratio of protein to energy. Every animal, including bird species, has the innate capacity to control F.I. to match energy intake with physiological demands. Less accumulation of carcass fat occurs when calorie intake is decreased because less amino acid is consumed per Mcal [26]. Protein turnover mechanisms give rise to an energy-dependent deposition process [27]. The estimated energy cost of protein synthesis indicates that almost equal amounts of breakdown occur after protein synthesis; however, the exact stoichiometry for breakdown energy cost is still unknown [27, 28]. For every mole of peptide bond, 4 mol ATP + GTP would need at least 0.86 kcal/g of protein with a typical composition [29,30].

References

1. Khurshid A, Khan AA, Banday MT, Ganai AM, Khan HM, et al. (2019) Effect of feed restriction on the performance of broiler chicken. Journal of Entomology and Zoology Studies 7(2): 1054–1056.
2. Mahmood S, Hasan S, Ahmad F, Ashraf M, Alam M, Muzaffar A (2005) Influence of feed withdrawal for different durations on the performance of broilers in summer. International Journal of Agriculture and Biology 7: 975–978.
3. Mateos GG, Jimenez-Moreno E, Serrano MP, azaro RL (2012) Poultry responds to high levels of dietary fibre sources varying in physical and chemical characteristics. J Appl Poult Res. 21: 156–174.

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

4. Saber N, Seyyed N, Maheri-Sis A, Shaddel-Telli K, Hatefinezhad A, et al. (2011) Effect of feed restriction on growth performance of broiler chickens. Annals of Biological Research 2 (6): 247-252.

5. Benyi K, Cheampong-Boateng O, Norris D (2011) Effects of strain and different skip-a-day feed restriction periods on growth performance of broiler chickens. Trop Anim Health Prod 42: 1421-1426.

6. Ozkan S, Plavnik I, Yahav S (2006) Effects of early feed restriction on performance and ascites development in broiler chickens subsequently raised at low ambient temperature. J Appl Poult Res 15: 9-19.

7. Musa HH, Chen GH, Cheng JH, Li BC, Mekki DM (2006) Study on carcass characteristics of chicken breeds raised under intensive conditions. Int J of Poult Sci 5: 530–533.

8. Idahor KO, Yakubu A, Egahi JO, Gwaza DS, Ahmadu GB, et al. (2013) Growth Performance, Carcass Characteristics, and Cost Benefits of Four Broiler Strains on Restricted Feeding Regimen in North Central Nigeria. J Anim Sci Adv 3(9): 449-456.

9. NRC (1994) Nutrient Requirements of Poultry. Nine Revised Edition. National Academy Press. Washington DC.

10. SAS (2012) SAS/STAT User's Guide for Personal Computers.Release 9. 1 SAS Institute Inc Cary N.C USA.

11. McDougald LR, McQuistion TE (1980) Compensatory growth in broilers after withdrawal of ionophores anticoccidial drugs. Poult Sci 59(5): 1001–1005.

12. Acheampong-Boateng O, Benyi K, Norris D, Maake MS (2012) Effects of feed withdrawal periods of different durations on the growth performance of male Hybro broiler chickens. African Journal of Agricultural Research 7(29): 4140–4144.

13. Shawkat SS (2016) Effect of different feeding programs on performance of broiler chicks, M.Sc. thesis, College of the Agricultural Engineering Sciences/University of Sulaimani.

14. Decuypere E, Bruggeman V, Everaert N, Li Y, Boonen, R, et al. (2010) The Broiler Breeder Paradox: ethical, genetic and physiological perspectives, and suggestions for solutions. Brit Int J of Poult Sci 51(5): 569-579.

15. Dozier WA, Lien RJ, Hess JB, Bilgili SF, Gordon RW, et al. (2002) Effects of Early Skip-a-Day Feed Removal on Broiler Live Performance and Carcass Yield. Journal of Applied Poultry Research 11: 297-303.

16. Govaerts T, Room G, Buyse J, Lippens M, De Groote G, Deucypere E (2000) Early and temporary quantitive food restriction of broiler chickens.2. Effcet on algometric growth and growth hormone secretion. Brit Int J of Poult Sci 41: 355-362.

17. Fanooci M, Torki M (2010) Effects of Qualitative Dietary Restriction on Performance, Carcass Characteristics, White Blood Cell Count and Humoral Immune Response of Broiler Chicks. Global Veterinaria 4 (3): 277-282.

18. Rezaei M, Teimouri A, Pourreza J, Sayyahzadeh H, Waldropup PW (2006) Effect of diet dilution in the starter period on performance and carcass characteristics of broiler chicks. Journal of Central European Agriculture. 7: 63-70.

19. Ross (2014) Broiler Management Manual of Ross 308. Aviagen Company.

20. Awad W, Ghareeb K, Abdel-Raheem S, Bôhm J (2009) Effects of dietary inclusion of probiotic and synbiotic on broiler chickens' growth performance, organ weights, and intestinal histomorphology. Int J of Poult Sci 88: 49-55.

21. Tamim S, Chagneau AM, Guillaumin S, Michel J, Peresson R, et al. (1999) Effects of chronic heat exposure and protein intake on broiler chickens' growth performance, nitrogen retention, and muscle development. Reprod Nutr Dev 39: 145-156.

22. Maharjan P, Mullenix G, Hilton K, Caldas J, Beitia A, et al. (2020) Effect of digestible amino acids to energy ratios on performance and yield of two broiler lines housed in different grow-out environmental temperatures. Poult Sci 99: 6884-6898.

23. Norton LE, Layman DK (2006) Leucine regulates the translation initiation of protein synthesis in skeletal muscle after exercise. J Nutr 136: 533–537.

24. Stipanuk MH (2007) Leucine and protein synthesis: mTOR and beyond. Nutr Rev 65: 122-129.

25. Jackson S, Summers J, Leeson S (1982) Effect of dietary protein and energy on broiler performance and production costs. Poult Sci 61: 2232–2240.

26. Leeson S, Caston L, Summers J (1996) Broiler response to energy or energy and protein dilution in the finisher diet. Poult Sci 75: 522-528.

27. Waterlow J (1984) Protein turnover with reference to man. Q J Exp Physiol 69: 409-438.

28. Bergen WG (2008) We are measuring in vivo intracellular protein degradation rates in animal systems. J Anim Sci 86: E3-E12.

29. Teimouri A, Razaei J, Pourreza J, Sayyazadeh H, Waldroup PW (2005) Effect of diet dilution in starter period on performance and carcass characteristics of broiler chicks. Int J of Poult Sci 4: 1006–1011.

30. Vieira S, Angel C (2012) What are the limits of optimizing broiler performance using different amino acid density diets? J Appl Poult Res 21: 149–155.

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943

How to cite this article: Sarood S S. Influence of Feed Removal at Different Times on Productive Performance of Male Broiler Chicks. Dairy and Vet Sci J. 2024; 16(4): 555943. DOI:10.19080/JDVS.2024.16.555943