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Article

Effect of date kernels treated in various ways fed to broilers in dilution on some productive traits.

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Abstract
This experiment was conducted at the poultry field, Agricultural Research and Experiments Station, College of Agriculture and the Marshes, Thi Qar University, from 11/1/2021 to 12/12/2021 to determine the effect of diluting the feed with date kernels treated in different ways on some productive traits of broilers. A total of 270, one day, 40 gm chicks of Rose-308 were used. Chicks were randomly distributed to the five experimental treatments with three replicates (18 birds for each replicate); the diets were provided from the beginning of the second week until the end of the sixth week. The treatments were as follows: T1: Standard control diet (without dilution); T2: control diet diluted by 20% regular date seed pods for 7-42 days; T3: basal diet diluted with 20% date kernels, cooked for 7-42 days; T4: basal diet diluted with 20% vinegar-treated seed for 7-42 days; T5: basal diet diluted by 20% seed germinated for 7-42 days. The results indicated a significant improvement when diluting the feed with date kernel powder compared to the control treatment in all the studied productive traits; the dilution of feed with cultivar date kernel powder gave the best results in a significant way compared to the other treatments.

Keywords: feeding dilution, date kernels, productive traits, broilers.

Introduction

The cost of feed in broiler projects constitutes about 70% of the total cost of establishing these projects. Therefore, the attention of specialists and breeders of broilers turned to searching for ways to reduce the amount paid to purchase feed[1]. The high prices of feed made breeders and specialists look for cheap feed alternatives; at the same time, it does not affect the performance of the bird or the final product; some nutritionists think about the optimal use of industrial waste in order to reach the lowest cost to produce feed for birds without affecting their nutritional value[2,3].

This program includes the use of different diluted feed materials, including indigestible or indigestible substances, such as powder of rice husks, feathers, oats, sand, sawdust, oak sawdust and wood charcoal; some of them are digestible materials, but they contain a high fiber content, such as wheat bran. Adding these diluents to a diet reduces energy and protein levels that meet the requirements of permanence only for a short period and at an early age in the life of broilers[4,5].

The increase in the proportion of fiber in the diluted materials will push the bird to consume more feed than feed, as in the case of free feeding, especially in energy consumption, birds fed a diet high in fiber consume more feed than diluted feed to

fill the energy shortage, therefore, the size of the gut of these birds, it is more significant for adapting and adapting it to the large amount of food consumed compared to birds, that feed on a low-fiber diet[6].

Dilution of the feed with date seed powder by 40% at 7-14 days has led to a significant decrease in fatalities with a significant increase in the production index[7]. AL-Gharawi et al.[8] indicate that feeding broilers on feed diluted with dried green bean husk powder at 15% significantly reduced the percentage of quantitative losses with a significant increase in the values of the production index. Al-Jiashi[9] noticed a significant decrease in the percentage of quantitative losses, with a significant increase in the values of the production index when the dilution of the starter diet with date kernel powder was reduced by 20% compared to the control diet.

This study aims to show the effect of diluting the feed with date kernels treated with different methods on some productive traits of broilers.

Materials and Methods

This experiment was conducted at the poultry field of the Agricultural Research and Experiments Station, College of Agriculture and the Marshes, Thi Qar University, from 11/1/2021 to 12/12/2021. A total of 270, one day, 40 gm weight, broiler Rose 308 chicks were used; it was brought from Al-Anwar hatchery at Al-Kifl, Babil Governorate, one-third of the hall was reserved, and the chicks were reared in cages; the area of one cage (1.5×1.5 meters) with sawdust flooring, all birds were fed on the starter diet until the end of the week, then the chicks were randomly distributed to the five experimental treatments with three replications (18 birds for each repeat). The dilution diets were provided from the beginning of the second week until the end of the sixth week. The treatments were as follows:

T1: Standard control diet (without dilution).
T2: control diet diluted by 20% regular date seed pods for 7-45 days.
T3: basal diet diluted with 20% date kernels, cooked for 7-45 days.
T4: basal diet diluted with 20% vinegar-treated seed for 7-45 days.
T5: basal diet diluted by 20% seed germinated for 7-45 days.

Productive traits

Body Weight (BW), Weight Gain (WG), Feed Intake (FI) and Feed Conversion (FC).

Statistical analysis

A Complete Randomized Design (CRD) was used to study the effect of different treatments on the studied traits; significant differences between means were compared with the Duncan[10] multiple range test under significance levels of 0.05 and 0.01. The program SPSS[11] was used in the statistical analysis.

Results and discussion

Table 1 shows the effect of diluting the feed with date kernels treated with different methods on some productive traits of 14-day-old broilers; it was noticed that there are no significant differences between all experimental treatments in the studied productive traits (body weight, weight gain, feed intake and feed conversion factor).

Treatments	Traits			
	Body weight (gm)	Weight gain (gm)	Feed intake (gm)	Feed conversion (gm feed intake/ gm weight gain)
T1	4.58 ±414.00 c	8.74 ±239.67	14.72 ±315.78	0.01 ±1.31
T2	0.48±427.11 b	14.81±249.44	20.49±313.78	0.008±1.25
T3	2.84±423.67 bc	11.60±248.67	14.27±305.01	0.008±1.22
T4	1.85±430.67 b	7.88±243.33	10.03±292.83	0.01±1.20
T5	6.50±447.00 a	21.00±253.00	26.05±302.04	0.01±1.19
Sig.	*	NS	NS	NS

Table 1. Effect of feeding dilution with date kernels treated with different methods on some productive traits of 14-day-old broilers (mean ± standard error).

Table 2 indicates the effect of diluting the feed with date kernels treated with different methods on some productive traits of broilers at the age of 28 days, it was noted that there is a significant effect of diluting the feed with date kernels on the average body weight, the mean body weight increased significantly (P≤0.05) in the T5 treatment compared to the T4, which significantly (P≤0.05) outperformed the T3, which was significantly (P≤0.05) superior to the control treatment, no significant differences were observed between treatments T1 and T2 and treatments T2 and T3, it was also noted that the reduction of feed had a significant effect on weight gain, there was a significant (P≤0.05) increase in the rate of weight gain in treatment T5 compared to treatments T1, T2 and T3, there were no significant differences between the treatments T1, T2, T3 and T4 and the treatments T4 and T5, dilution of date kernels did not have a significant effect on feed intake rate and feed conversion factor.

Treatments	Traits			
	Body weight (gm)	Weight gain (gm)	Feed intake (gm)	Feed conversion (gm feed intake/ gm weight gain)
T1	9.13±1237.77 c	8.91±517.44 b	19.42±867.73	0.008±1.67
T2	13.77±1257.67 bc	11.34±520.33 b	19.69±849.92	0.003±1.63
T3	11.09±1238.67 c	14.09±514.33 b	18.31±829.54	0.008±1.61
T4	7.54±1292.00 b	10.15±548.11 ab	16.77±873.34	0.003± 1.59
T5	15.71±1357.00 a	188.88±578.33 a	25.71±900.02	0.006±1.55
Sig.	*	*	NS	NS

Table 2. Effect of feeding dilution with date kernels treated with different methods on some productive traits of 28-day-old broilers (mean ± standard error).

Table 3 shows the effect of diluting the feed with date kernels treated in different ways on some productive traits of 42-day-old broilers. It was noted that the significant effect of diluting the feed with date kernels on the average body weight showed significant increase (P≤0.05) for treatments T4 and T5 compared to treatment T2, which increased significantly (P≤0.05) at the expense of the control

treatment, there were no significant differences between T1 and T3 and T2 and T3 and T4 and T5 treatments, it was also noted that there is a significant effect of relieving date kernels on weight gain, feed intake and feed conversion factor, there was a significant improvement (P≤0.05) for treatments T4 and T5 compared to treatments T1 and T3, there were no significant differences between the treatments T1, T2 and T3 and the treatments T2, T4 and T5.

Treatments	Traits			
	Body weight (gm)	Weight gain (gm)	Feed intake (gm)	Feed conversion (gm feed intake/ gm weight gain)
T1	60.09±2560.00 c	56.19±724.11 b	115.37±1369.89 b	0.01±1.89 b
T2	28.91±2907.44 b	35.15±991.44 ab	74.92±1795.31 ab	0.01±1.81 ab
T3	6.43±2713.67 bc	9.53±825.00 b	18.63±1463.03 b	0.003±1.77 b
T4	114.04±3224.33 a	124.57±1266.33 a	220.48±2212.51 a	0.006±1.74 a
T5	123.92±3318.00 a	139.56±1251.67 a	234.42±2139.14 a	0.01±1.71 a
Sig.	*	*	*	*

Table 3. Effect of feeding dilution with date kernels treated with different methods on some productive traits of 42-day-old broilers (mean ± standard error).

Table 4 shows the effect of diluting the feed with date kernels processed differently on the total weight gain, feed intake and cumulative feed conversion factor for broilers. It was noticed that there was a significant increase (P≤0.05) in the total weight gain in treatments T4 and T5 compared to treatment T2, which was significantly superior (P≤0.05) compared to the control treatment. There were no significant differences between T1 and T3 and T2 and T3 and T4 and T5 treatments. It was also noted that there was a significant effect of relieving date kernels on feed intake and the cumulative feed conversion factor. There was a significant improvement (P≤0.05) for treatments T4 and T5 compared to treatments T1 and T3, but there were no significant differences between the treatments T1, T2 and T3 and the treatments T2, T4 and T5.

Treatments	Traits		
	Total weight gain (gm)	Cumulative feed intake (gm)	Cumulative feed conversion (gm feed intake/ gm weight gain)
T1	60.09±2520.00 c	125.19±4224.43 b	0.01±1.67 b
T2	28.91±2867.44 b	44.59±4679.62 ab	0.003±1.62 ab
T3	6.43±2673.67 bc	25.36±5065.14 b	0.005±1.59 b
T4	114.04±3184.33 a	207.11±5066.66 a	0.006±1.58 a
T5	123.92±3278.00 a	246.76±4659.62 a	0.01±1.54 a
Sig.	*	*	*

Table 4. Effect of feed dilution with date kernels treated with different methods on total weight gain, cumulative feed intake and feed conversion factor for broilers (mean ± standard error).

Discussion

The dilution of feed with date kernel powder in broiler feed improved significantly in all the studied productive traits. The cultured date kernels have given the best results in a significant way. It may be due to the utilization of nutrients in the powder of date kernels after treatment, which improves the productive performance [12,13,14].

Conclusions

The results indicated a significant improvement when diluting the feed with date kernel powder compared to the control treatment in all the studied productive traits; the dilution of feed with cultivar date kernel powder gave the best results in a significant way compared to the other treatments.

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