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Growth performance of rabbits fed date pits in north Sinai

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ABSTRACT

The present research was designed to study the effects of partial replacement of barley grains by ground date pits (GDP) in the diets of growing rabbits on growth performance, digestibility coefficients of nutrients, some blood constituents, carcass traits and economical efficiency of growing rabbits. Thirty six weaned New Zealand White rabbits were divided into three groups (12 rabbits/ group). They were assigned to receive three treatments in which ground date Pits replaced 0, 20 or 30% of barley grains. Carcass traits and blood metabolites were determined by slaughtering 5 rabbits from each group at the end of the growth trial (6 weeks). The digestibility of dry matter, organic matter, crude protein and crude fiber significantly ($P<0.05$) decreased with increasing GDP level (up to 30%). Daily weight gain, feed intake, carcass weight, dressing percentage were not significantly ($P\geq0.05$) affected by (GDP). Serum total protein, albumin and globulin significantly ($P<0.05$) decreased with increasing GDP up to 30%. Serum glucose, cholesterol, urea-N, SAST and SALT were insignificantly ($P\geq0.05$) affected with GDP inclusion. Rabbits fed diets containing GDP recorded lower feed costs to produce one kg gain.

Accordingly, ground date pits could be used successively and safely in feeding growing rabbits up to 30% without adverse effects on growth performance and carcass traits as well as reducing feed cost in North Sinai.

Keywords: Rabbits, date pits, growth performance, carcass traits, blood metabolites.

INTRODUCTION

In Egypt, there is a serious problem of feed shortage for livestock especially for rabbits. There are also continuous increases in the prices of the traditional feed ingredients (El-Adawy *et al.,* 2005). The gap between available and required amounts of animal feeds in Egypt was calculated to be 9 million tons of dry matter equivalent to almost 4 million tons of total digestible nutrients per year (El-Talty *et al.,* 2009). In addition, prices of corn grain had recently dramatically increased. Since most of corn grains used in animal feeding in Egypt is imported from abroad, searching and using non traditional feed resources must be achieved for decreasing the dependence on traditional ones in order to fill the gap and to decrease feeding costs (Zaza, 2005) Increasing animal production in Egypt is likely to depend more upon the possibility of using all possible and available feed resources and unconventional by – products in animal feeding (Hamza, Akila *et al.,* 2009). Rabbits provide an excellent source of protein for human consumption and may play a significant role in solving a part of meat shortage in Egypt (Restogi , 2001). Rabbits meat is high in protein of excellent quality and low in total lipids, saturated fatty acids, cholesterol and sodium (Cheeke *et al.,* 1987).

Rabbits are characterized by small size, short genediet interval , high reproductive potential, rapid growth rates, genetic diversity and ability to utilize forages and plant by – products as a major diet component (El-Basiony

et al., 2005). Feeding costs are the most significant expenses in animal production including rabbits and reaches 70% of the total costs of rabbits industry (El-Sayaad, 2002).

Date palm trees are considered to be the major crop under dry and semi- arid areas in new reclaimed regions in Egypt (Abd El-Zaher, 2008). In Egypt, there are 11.2 million date palm trees, which produced about 1.17 million tons of date and 174.93 thousand tone of seeds which increased the supply of agro – industrial by products for livestock feeding (Ministry of Agriculture, 2004). Diets of sheep containing 40 or 60% (Soliman *et al.*, 2006) or 30% (Suliman and Moustafa, 2008) date seeds had better digestibility, daily gain and economical efficiency as compared with the control diets. Moreover, Al-Ani and Farhan (2009) reported that using date stones is more efficient than using barley grain in fattening diets of Awassi lambs, Also, Mousa (2012) reported that diets containing 20 and 30% date pits for goat kids had no adverse effects on digestibility, daily gain and economic efficiency as compared with the control diet. On the other hand, Toson *et al.* (1995) reported that the inclusion date stone meal to replace up to 20% of rabbits basal diets has no adverse effect on growth performance, carcass traits and economic efficiency of growing rabbits.

In light of these reports, the present study was carried out to investigate the effects of partial substitution of barley grains by ground date pits (GDP) in growing rabbit's diets on growth performance, some blood parameters, carcass traits and economical efficiency of growing rabbits.

MATERIALS AND METHODS

The present study was carried out at rabbit research farm of Animal Production Department, Faculty of Environmental Agric. Sci., El-Arish, Suez Canal University. The climatic characteristics of this region (Long. , 33.75E and Lat. 31.27N) is semi- arid with an average annual rain fall of about 94 mm and average ambient temperature of about 20.47°C (from 2000 to 2008) in El-Arish, North Sinai (CLAC, 2008).

The experimental work of this study was carried out to study the effect of partial substitution of barley grains by ground date pits in growing rabbit's diets, on growth performance, some blood metabolites, carcass traits and economical efficiency.

Experimental animals and design:

Thirty six weaned New Zealand white rabbits were divided according to body weight into three similar groups of twelve rabbits each. The three groups were assigned at random to receive the three experiments diets for 6 weeks. The average initial body weights of rabbits for diet 1 (control), 2 and 3 were 840.0±14.76, 841.70±23.33 and 850.0±19.27g, respectively. The first group was fed the basal diet as a control (diet 1). While the other two groups were fed diets containing either 20 or 30% ground date pits to substitute 66.67 and 100% of the barley in the control diet. Ingredients of the experimental diets are presented in Table (1). Crushed date pits were purchased from Kaha Food Processing Plant Factory in Qurin City. The

experimental diets were pelleted in El-Rehab Factory for Animal and Poultry Feeds, EL-Dakahlia Governorate, Egypt.

Digestibility trails:

Three digestibility trails (3 buck/group) were carried out using nine New Zealand white bucks with an average live body weight of 2.67+0.03 kg. Rabbits were kept in individual metabolic cages. The digestibility trial consisted of 14 days preliminary period followed by 7 days as a collection period. During the collection period, samples from feed, faces and urine of each animal were taken daily for chemical analysis which was carried out according to A.O.A.C. (2010). Digestible energy (DE) of on one kilogram of each experimental diet was calculated according to the equation described by Schiemann *et al.* (1972), cited by El-kerdawy *et al.* (1998) as follows:

DE (kcal/kg) =5.29 (DCP, g/kg) +9.51 (DEE, g/kg)+ 4.2 (DCF+DNFE, g/kg) $\pm$ 0.30 Where DCP, DEE, DCF and DNFE= digestible CP, EE, CF and NFE, respectively

Management, growth performance and feed utilization:

The rabbits were housed in galvanized cages with two rabbits each. Cages are commercial type measured (40 x 40x 25 cm) and raised 120 cm from the concrete floor. The cages were provided with feeders and automatic nipple drinkers. Food and water were available ad libitum. All rabbits were kept under the same managerial, hygienic and environmental conditions. Individual live body weight and feed consumption throughout the experimental period were weekly recorded. Body weight gain and feed conversion ratio were also calculated.

Carcass traits:

At the end of the growth trial (after 6 weeks), 5 random rabbits from each group were slaughtered and carcass traits were estimated and recorded.

Blood metabolities:

Blood samples were collected at slaughtering within one hour of collection, the sample were centrifuged at 3000 r.p.m for 15 minutes. The serum was separated and stored at -20°C until analysis. Serum total proteins, albumin, glucose, cholesterol, urea, creatinine, serum glutamic pyrovic transaminase (ALT), and serum glutamic oxaloacetic transaminase (AST) levels were determined calorimetrically using commercial kits and spectrophotometer. The globulin values were obtained by subtracting albumin values from total protein values.

Economical evaluation:

The economical efficiency (y) was calculated according to equation of El-Kerdawy (1997) and Mousa and Abd El-Samee (2002) as fellows:

$$Y = A-B/B * 100,$$

Where : A is the selling cost of the obtained gain, and

B is the feeding cost of this gain

Economical efficiency based on the prices of one kg of diet being, 1.600, 1.408 and 1.321 Egyptian pounds (L.E) for diets 1, 2 and 3, respectively and price of one kg of live body weight at selling was 25.00 L.E.

Table (1): Formulation of the experimental diets (% of ingredients on DM basis).

Ingredients %	Levels of date pits		
	0%	20%	30%
Barley grains	30	10	0
Date pits	0	20	30
Wheat bran	25	25	25
Soybean meal	15	16	16
Un-decorticated cottonseed meal	5	5.50	7.00
Clover hay	20	18.5	17
Molasses	3	3	3
Premix*	0.30	0.30	0.30
Limestone	1.30	1.30	1.30
Sodium chloride	0.30	0.30	0.30
Dl-Methionine	0.10	0.10	0.10
Total	100	100	100

*** One kg premix provided: Vit.A , 200.000 IU , D3 150.000 IU , E 8.33g, Vit. K0.33 g; Vit., B_1 0.33 g; Vit. B_2 1.0 g ; Vit. B_6 0.33Gg; Vit. B_5 8.33 g ; Vit. B_{12} 1.70mg; Pantothenic acid 3.33 mg; Biotine 0.33 g; Folic acid 0.83 g; Choline chloride 200g ; Mg 66.70g and Mn 5 g.**

The price of one tone of diets 1, 2 and 3 = 1600, 1408 and 1321, respectively

Statistical analysis:

Data were subjected to statistical analysis by the **SAS (2004)** computer program using the general linear models (GLM). Significance among treatment means were tested using Duncan's multiple range test (Duncan, 1955).

RESULTS AND DISCUSSION

Chemical composition of the ingredients and experimental diets:

The chemical composition of the ingredients used to formulate the experimental diets are presented in Table (2). Their nutrients contents were within the normal ranges published in Egypt also (Abou-Raya, 1967 and Ministry of Agriculture, 1997). In addition, nutrients contents of the date pits used to replace barley grains in the experimental diets (Table 2) were within the normal ranges published in Egypt (Shawket *et al.,* 2001; Abd El-Rahman *et al.,* 2003 ; Abou El-Nasar and El-Kerdawy, 2003; Suliman and Moustafa, 2008 and Mousa , 2012). Date pits is relatively lower in crude protein (CP) and nitrogen free extract (NFE) as compared with barley grains but had higher ether extract (EE) than barely grains. The proximate analysis of the consumed experimental diets are also shown in Table (2). The control diet had higher NFE than diets 2 and 3, but lower EE and CF than other diets , because of the higher NFE (79.27%) and lower EE (1.85%) and CF (7.05%) in barley grains than date pits. The EE and CF contents of diets increased and NFE contents decreased by increasing the proportion of date pits in the tested diets compared to the control diet because of the higher EE and CF and lower NFE contents in date pits than those of barley grains.

Table (2): Chemical composition of the ingredients and the experiment diets (% on DM basis).

Ingredients	DM	Composition of DM					
		OM	CP	EE	CF	NFE	Ash
Date seeds	90.87	96.04	7.15	7.30	16.00	65.59	3.96
Barley grains	90.43	97.02	9.10	1.85	7.05	79.02	2.98
Diet 1	90.55	92.02	16.43	2.37	12.93	60.29	6.98
Diet 2	90.63	92.91	16.42	3.44	14.50	58.55	7.09
Diet 3	90.82	92.65	16.41	4.03	15.32	56.59	7.35

Nutrients digestibility:

Digestibility coefficients of the experimental diets are presented in Table (3). Incorpodiet of date pits in the diet at the rate of 20% did not significantly (P≥0.05) affect DM, OM, CP, CF and NFE digestibilities. While, increasing the proportion of date pits in the diet to 30% significantly (P<0.05) decreased DM, OM, CP and CF and significantly (P<0.05) increased EE digestibilites compared with control. The high EE digestibility (72.03 to 78.75%), attested to good ability to utilize dietary fat (Beyen, 1988; Igwebuike *et al.,* 2008 and Mehrez and Mousa, 2011). These results are generally in agreement with those reported by El-Sayed (1994), Umunna *et al.* (1994), Abd El-Gawad *et al.* (1995), Ahmed *et al.* (1999), Al-Owaimer *et al.* (2010), Chanjula *et al.* (2010) and Mousa (2012). Moreover, these results confirm those found by Ahmed *et al. (*1999) and Mousa (2012) replaced 50% or 100% of yellow corn in the concentrate mixture by ground date pits had no significant (P≥0.05) effect on most nutrients digestibility. Chanjula *et al.* (2010) found that the digestion coefficient of DM, OM, CP, NDF and ADF were not significantly affected by dietary inclusion of palm kernel cake up to 35% of the diet; while, increasing the inclusion level of PKC more than 35% in the diets decreased the digestibility of DM, protein and fibrous fractions.

The present results of CP digestibility are in agreement with the results of Al-Owaimer *et al.* (2010) who reported no significant difference in digestibility of CP among all groups , while DM and OM digestibility were significantly higher (P<0.05) in the control diet than that of the diet containing date pits.

However, Allam *et al.* (1997) found a decrease in nutrients digestibility of diets fed to cows in which date seeds substituted yellow corn 100% level (20% of the concentrate mixture). On the other hand, Souliman and Moustafa (2008) found that digestibility of CP, CF and NFE were significantly (P<0.05) increased for diets containing date pits than control diet. Moreover, Alhomidy *et al.* (2011) found that digestibity of EE, DM, and CP was significantly (P<0.05) higher in the diet containing 30% discarded dates than in the control diet in sheep.

Table (3): Digestion coefficients and nutritive values of the experimental diets (means ± SE).

Items	Levels of date pits		
	(control) 0%	20%	30%
Digestion coefficients %			
DM	69.01±0.50^{a}	68.42±0.68^{a}	65.70±0.43^{b}
OM	70.20±0.82^{a}	69.85±0.51^{a}	67.14±0.18^{b}
CP	73.08±0.53^{a}	72.14±0.71^{ab}	70.62±0.40^{b}
EE	72.08±0.53^{b}	77.68±0.85^{a}	78.75±0.38^{a}
CF	35.96±0.77^{a}	35.32±1.15^{a}	31.63±0.88^{b}
NFE	75.41±0.55	76.11±1.01	72.98±1.00
Nutritive values %			
TDN	66.67±0.32	67.21±0.89	64.88±0.76
DE (Kcal/kg DM)	2930.97±12.70	2956.07±34.06	2852.22±32.42
DCP	12.01±0.12^{a}	11.84±0.08^{ab}	11.58±0.06^{b}

Means in the same row followed by different letters differ significantly (P< 0.05).

In contrast, El-Kerdawy *et al.* (1998) reported that substitution of barley grains in rabbit's diets with ground date seeds (GDS) at 60% level (15% GDS) significantly decreased the digestibility coefficients of CP and NFE while digestibilities of DM, OM, CF and EE were insignificantly decreased compared with other diets.

Table (3) shows the nutritive value of the experimental diets in terms of TDN%, DE (Kcal / kg) and DCP%. The nutritive values as TDN or DE were insignificantly affected when ground date pits (GDP) represented 30% of the diet. However, these values decreased when the diet including 30% GDP (replacing 100% barely grains by date pits). This may be attributed to the depression in digestibilities of all nutrients (except EE) occurred in this treatment. While, the nutritive value expressed as DCP significantly (P< 0.05) decreased as GDP inclusion rate reached 30% of the diet The present findings are in agreement with those reported by Allam *et al.* (1997), El-Kerdawy *et al.* (1998), Ahmed *et al.* (1999), Awadalla *et al.* (2002) and Mousa, (2012). El-Kerdawy *et al.* (1998) reported a significant decrease in TDN, DCP and DE (Kcal/kg) when rabbits were fed diet including 15% GDS; however, no significant differences were observed with rabbits fed diets including 5 or 10% GDS. Also, Allam *et al.* (1997) found a slight decrease in TDN of the diets of Friesian calves due to substitution of yellow corn by GDS at 50% level. Moreover, Awadalla *et al.* (2002) reported significant decreases in TDN, DCP and GE (kcal /g DM) when 25 and 50% of yellow corn was replaced by GDS for Rahmani lambs . The same trend was reported by Mousa (2012) who reported non significant differences in TDN and DCP for kids fed diets containing 0 or 20% GDP but were reduced with 40% GDP diet.

Growth performance and economical efficiency:

Growth performance of growing rabbits fed diets with different levels of GDP is given in Table 4. The average initial body weight of the growing rabbits ranged from 840 to 850 g and their final body weight ranged from 1660 to 1683g. Final body weight, total body weight gain, daily body weight gain, feed consumption and feed conversion (feed/ gain) of growing NZW

rabbits did not differ significantly due to the difference in GDP percentage in the used diets. These findings are in good agreement with those reported by Toson *et al.* (1995) reported that feeding rabbits on diets including date seed meal up to 20% has no significant effect on body weight, daily gain and feed conversion. Moreover, Mousa (2012) found a slight insignificant increase in average daily gain of goat kids due to replacing 50 or 100% ground maize of the diet by GDP plus 1.5% urea.

Table (4): Growth performance ($\bar{\chi}$ ± SE) and economical efficiency of growing rabbits as affected by dietary treatments.

Items	Levels of date pits		
	(control) 0%	20%	30%
Initial body weight (g)	840.0±14.76	841.70±23.33	850.0±19.27
Final body weight (g)	1683.33±51.46	1683.30±39.85	1660.0±29.58
Total body weight gain (g)	843.32±31.80	841.87±24.33	810.0±25.56
Daily body weight gain (g)	20.08±0.94	20.04±0.57	19.29±0.61
Daily feed intake (g)	83.83	81.95	81.50
Feed cost /kg gain (g)	6.68	5.76	5.58
Feed conversion ratio	4.17	4.09	4.17
Economic efficiency*	274.27	334.31	353.34
Improvement %	100	121.89	128.83

Differences among treatments were not significant.

***Economic efficiency = (selling price of one kg - feed cost / kg gain) / (feed cost /kg gain) X 100**

Addition of GDS to the growing lambs' diets improved the productivity and had positive effect on animal performance (Abd El-Rahman *et al.,* 2003; Soliman *et al*., 2006 and Suliman and Moustafa, 2008). Also, Al-Ani and Farhan (2009) found that using date stones was more efficient than using grains in the fattening diets of Awassi lambs. In other studies, Al-Owaimer *et al.* (2010) found that the highest average daily gain was observed in Najdi lambs fed a diet containing 30% date pits, followed by control and those fed a diet containing 15% date pits and the lowest value was for lambs fed atriplex with 45% date pits diets ($P<0.05$).

In the same line, Al-Ani *et al.* (1991) found that when Awassi lambs were fed on barley with 0, 15, 30 and 45% date pits for 60 days, the highest ADG was achieved by the lambs fed on barley with 30% date pits and the lowest value was the group fed on barley with 45% date pits. Also, Al-Dosari *et al.* (1995) found that ADG of Awassi sheep was linearly increased as levels of date pits increased in the diets compared to the control barley diet.

On the other hand, Abou El-Naser and El-Kerdawy (2003) and Abdel Rahman *et al.* (2003) found that total weight gain and daily weight gain of the growing ram lambs did not differ significantly when they were fed the agro-industrial by – products diet (olive pulp and ground date pits) compared with control diet. Also, Ahmed *et al.* (1999) found a slight insignificant decrease in average daily gain of Friesian calves due to replacing half or all the corn of the concentrate mixture by date seeds. The same trend was reported by Orunmuyi *et al.* (2006) who reported non significant differences in daily weight gain and feed efficiency for rabbits fed diets containing 0, 10, 20 and 30% palm kernel cake. In this connection, Alhomidy *et al.* (2011) reported

that Najdi lambs fed on the diet containing 30% discarded dates gained significantly (P<0.05) more average daily gain than animals fed on the control diet. Suliman and Moustafa (2008) found that replacing the dietary yellow corn grains with GDS up to 30% in the concentrate feed mixture resulted in better digestibility, daily gain, feed conversion and economical efficiency as compared with the control diet.

The positive effects of diets containing dates on the weight gain and fattening of animal were attributed to the presence of growth – promoting compounds in dates (Ismail, 2000).

From the economical point of view, feeding growing rabbits on diets containing 20 and 30% date pits decreased feed cost /kg gain by about 14.00 and 17.50 %, while the economic efficiency values were raised with date pits supplementation by 21.89 and 28.83%, respectively compared with rabbits fed the commercial diet. The fact that the cost/kg gain in weight was higher for rabbits fed control. The total cost of the diet decreased by increasing the portions of date pits in diets. The same trend was noticed for the improvement %, the values were 100, 121.89 and 128.83, respectively. These findings are in agreement with Abd El-Rahman *et al.* (2003); Abou El-Naser and El-Kerdawy (2003) and Mousa (2012).

Carcass traits:

Table (5) shows insignificant differences in carcass weight, dressing %, kidney weight, liver weight and empty gut weight among the treated groups (20 and 30% date pits) and the control. Results obtained in this work indicated no significant effect of date pits inclusion up to 30% of rabbit's diet on carcass traits for growing rabbits.

Dressing percentage ranged within a narrow range from 61.25 to 63.16%. Such small variation was a reflection of the small differences in weights of liver, kidney and head. Although, fur weight in the control group was significantly (P<0.05) higher than treated groups; yet, the magnitude was small to be reflected on dressing. The present results are in agreement with those obtained by Mousa and Abd El-Samee (2002) and Mehrez and Mousa (2011) who reported not significant differences in all carcass traits except fur weight for rabbits consumed diets including 20, 25 and 30% olive pulp compared with those fed the commercial diet.

Table (5): Carcass traits of growing rabbits fed on date pits diets ($\bar{X}$ ± SE).

Items	Levels of date pits		
	(control) 0%	20%	30%
Pre- slaughter weight (g)	1856.0±75.91	1736.67±34.69	1736.67±24.15
Carcass weight (g)	1163.33±57.04	1098.33±31.8	1064.03±18.41
Dressing %*	61.85±0.20	63.16±0.56	61.25±0.24
Fur weight (g)	301.67±8.71^{a}	250.0±5.47^{b}	293.33±4.83^{a}
Liver weight (g)	54.33±2.01	52.0±1.09	48.33±2.19
Kidney weight (g)	17.67±0.66	15.67±0.18	16.33±1.01
Empty gut weight (g)	150.0±8.36	156.67±3.98	145.0±2.04
Head weight (g)	117.33±0.79	111.67±5.14	110.0±1.58

Means bearing different superscripts within the same row are significantly different at P<0.05

*** Dressing percentage were calculated: Carcass + Giblets weight (liver + heart + kidneys) / (Fasting body weight) X 100**

Similarly, Toson *et al.* (1995) reported that the inclusion of date stone meal to replace up to 20% of rabbits basal diet has no adverse effect on growth performance, carcass traits and economic efficiency of growing rabbits. Also, Osman *et al.* (1995) indicated that dressing percentage was not significantly affected by level of date stone meal in broiler diets.

Blood serum metabolites:

Results illustrating the effects of partial substitution of 66.6 or 100 barley grains with date pits on some metabolites in blood serum of growing rabbits are shown in Table 6. Concentdiets of serum total protein, albumin and globulin for growing rabbits significantly (P<0.05) decreased by 30% date pits inclusion compared with those fed control or 20% date pits diets. This might be due to the lower digestibility of CP in the diet (Mehrez and Mousa, 2011). Concentdiets of serum glucose, cholesterol, urea -N; and activity of SAST and SALT did not differ significantly among the three experimental group, due to date pits. Similarly, El-Sayed (1994) reported that replacing 25, 50 and 75% of the concentrate mixture in the control diet of sheep by date seeds had no marked effect on urea – N, cholesterol and serum enzymes (AST and ALT). Although there were differences in the values of some of the blood metabolites among the treatment groups in this investigation, yet these values were still within the normal levels of rabbits recorded by (El-Kerdawy *et al.,* 1998; Abdel Ghaffar, 2002; Mousa and Abd El-Samee, 2002 and Mehrez and Mousa, 2011).

Table (6): Some blood constituents of growing rabbits as fed on date pits diets ($\bar{\chi}$ ± SE).

Items	Levels of date pits		
	(control) 0%	20%	30%
Total protein (g/dl)	7.65±0.14^{a}	7.55±0.18^{a}	6.65±0.25^{b}
Albumin (g/dl)	4.17±0.13^{a}	4.03±0.19^{a}	3.62±0.15^{b}
Globulin (g/dl)	3.48±0.18^{a}	3.52±0.28^{a}	3.04±0.19^{b}
Glucose (mg/dl)	80.0±4.60	84.0+1.26	86.40±2.71
Cholesterol (mg/dl)	84.94±14.06	83.36±15.83	86.24±5.12
Urea – N (mg/dl)	53.04±3.75	46.53±4.51	50.81±4.94
SAST (u/ml)	11.62±1.48	12.50±1.66	16.67±1.45
SALT (u/ml)	18.0±1.61	16.60±2.25	16.40±1.47

Means bearing different superscripts within the same row are significantly different at P<0.05

In conclusion, the obtained results herein showed that the inclusion of GDP to replace up 30% of growing rabbit's basal diet has no adverse effects on apparent digestion coefficients, feeding value, growth performance, carcass traits, economic efficiency but reduced feed cost under North Sinai condition.

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أداء النمو للأرانب المغذاة على نوى التمر فى شمال سيناء

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أجرى هذا البحث في مزرعة الأرانب التابعة لقسم الإنتاج الحيواني بكلية العلوم الزراعية البيئية بالعريش وذلك بهدف دراسة الإحلال التدريجى لنوى التمر محل الشعير فى علائق الارانب النامية على أداء النمو، معاملات الهضم، بعض مكونات الدم، وصفات الذبيحة والكفاءة الإقتصادية للأرانب النامية. استخدم فى هذه التجربة سته وثلاثون أرنب نيوزيلندى أبيض قسمت الى ٣ مجاميع (كل مجموعة ١٢ أرنب). كانت نسبة مسحوق نوى التمر فى الثلاث معاملات صفر و ٢٠ و ٣٠% استبدالا من الشعير.

فى نهاية تجربة النمو تم ذبح خمسة أرانب من كل مجموعة لتقدير مقاييس الذبيحة وبعض نواتج التمثيل الغذائي في الدم. ولقد أظهرت نتائج تجارب الهضم انخفاضا معنويا لمعاملات هضم كل من المادة الجافة، والمادة العضوية، والبروتين الخام والألياف الخام عند احتواء العليقة على ٣٠% مسحوق نوى التمر. لاتوجد فروق معنوية فى كل من الزيادة اليومية، الغذاء المأكول، وزن الذبيحة ونسبة التصافى فى العلائق المحتوية على مسحوق نوى التمر. انخفض معنويا كل من البروتين الكلى، والألبيومين والجلوبيولين فى سيرم الدم بزيادة نسبة نوى التمر فى العليقة حتى ٣٠%. لم يتأثر معنويا كل من تركيز الجلوكوز والكوليسترول ونتروجين - اليوريا وإنزيمات الكبد ALT & AST بوجود نوى التمر فى العليقة. انخفضت تكلفة إنتاج كجم اللحم الحى فى العلائق المحتوية على نوى التمر مقارنة بمجموعة الكنترول. من هذه النتائج يوصى بإستخدام مسحوق نوى التمر بنجاح وبصورة آمنه واقتصادية فى علائق الأرانب النامية حتى مستوى ٣٠% بدون حدوث أى تأثيرات ضارة على مقاييس النمو وصفات الذبيحة كما أنه ادى الى خفض تكاليف التغذية وعليه يمكن استخدام مسحوق نوى التمر كمكون من مكونات العلائق الغي تقليدية للأرانب النامية فى المناطق الصحراوية خاصه فى شمال سيناء.

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