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Effect of Feeding Graded Levels of Carrot Tops Hay on Growth Performance of New Zealand White Rabbits

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ABSTRACT

This experiment was designed to assess the possibility of using graded levels of carrot tops hay (CTH) in rabbit diets and its effect on growth performance, nutrient digestibility, carcass traits, economic efficiency and certain blood constituents. Sixty 6-week-old New Zealand White rabbits were randomly divided into 5 equal experimental groups, each with four equal replications and kept in cages in an open-sided rabbitry. Five experimental diets containing different levels (0.0, 10, 20, 30and 40%) of CTH were formulated and used from6 to14 weeks of age. The experimental animals were fed their experimental diets and clean drinking water *ad libitum.* The criteria of response (body weight, feed consumption, weight gain and efficiency of feed utilization) were estimated weekly on a replicate group basis. During the last week of study, five digestion trials were performed to estimate the nutrient digestibility of the experimental diets. When the rabbits were 14 weeks of age, 5 rabbits from each treatment were randomly selected and fasted for 18 hours before slaughtering. Carcass yield, giblets (liver, heart and kidneys) and total edible parts were estimated relative to LBW at slaughter. Some blood plasma parameters were also determined. The obtained results can be summarized as follows: Dietary inclusion of CTH up to 30% had no adverse effect on all criteria of growth performance of 14-week-old rabbits. However, rabbits fed diet containing 40% CTH had significantly lower final body weight and total gain compared with other experimental treatments. Dietary treatments had no significant effect on total feed intake or efficiency of feed utilization. Rabbits fed diets containing different levels of CTH achieved significantly better economic efficiency of feeding (EEF) compared with those fed on the control diet, the highest mean of EEF was achieved by rabbits received the 30% CTH-diet. There were significant differences in digestibility of dry matter (DM), organic matter (OM) and ether extract (EE) among the experimental treatments, Inclusion of CTH at 40% significantly depressed the digestibility of DM, OM and EE compared with other treatments. Feeding diets containing the CTH up to 30% did not negatively affect digestibility of nutrients. Dietary treatments did not significantly affect carcass traits (carcass yield, giblets and total edible parts) or blood measurements. We can conclude that carrot tops hay can safely be used in growing rabbit diets up to 30% without any adverse effect on their performance or carcass traits.

Keywords: Carrot tops hay, growth performance, rabbits.

INTRODUCTION

Feeding cost of rabbits represents at least 65% of the total production cost. For optimizing the profitability of rabbit production, there is an urgent need to look for alternative plant by-products and evaluate their nutritive value for rabbits. Rabbits are herbivorous animals that consume high forage diets. Feeding rabbits on high fibrous agricultural by-products may be limited if their lignin fraction is high (Galal *et al.*, 2014). Minimizing the feeding cost could be achieved through the use of untraditional cheaper feed ingredients. One possible solution to increase the animal protein production is the use of small ruminants and semi-ruminant species such as rabbits (Mahsoub, 2007). Intensive rabbit production in developing countries has been greatly affected by feeding costs, especially dietary protein and energy sources (Ezea, 2004). The CTH is one of unconventional feed ingredients. Therefore, this experiment was designed to investigate the effects of dietary inclusion of graded levels of CTH on performance, nutrient digestibility, carcass traits and some blood parameters of New Zealand White rabbits.

MATERIALS AND METHODS

Experimental Procedures

The current feeding trial was undertaken in the Rabbit Farm, at the Agricultural Research Center, belonging to Faculty of Agriculture, Mansoura University, during May to July, 2016. Carrot tops hay (CTH) was used at levels of 0, 10, 20, 30 and 40% of the diet. The parameters examined included body weight, weight gain, feed consumption, feed conversion ratio, economic efficiency, nutrient digestibility, carcass traits and some blood constituents of rabbits.

Experimental animals

Sixty growing New Zealand White (NZW) rabbits, at 6 weeks of age, were randomly divided into 5 groups, each of 12 animals in three replicates of 4 rabbits each. All groups of rabbits had approximately equal initial live body weights. Each group of rabbits was fed on one of five experimental diets (Table1).

Experimental diets

The fresh carrot tops was collected and mechanically cut to small pieces, sun dried and used in the experimental diets. The chemical composition (as-fed basis) of carrot tops hay (CTH) was 93% dry matter, 78% organic matter, 18% crude protein, 0.005% ether extract, 12% crude fiber, 15% ash, and 37.99% nitrogen free extract. Five experimental diets in pelleted form were formulated to contain five levels of CTH (0, 10, 20, 30 and 40%). The composition and chemical analysis of the experimental diets are presented in Table1.

Rabbit housing and measurements

Each replication of rabbits was housed in one cage supplied by a feeder and a nipple drinker. The cage dimensions are 50 × 70 × 50 cm. All rabbits received the fresh water and their respective diets (pellets) on an *ad libitum* basis throughout the experimental period from 6 to 14 weeks of age. The experimental rabbits were kept under the same managerial and hygienic conditions. Live body weight and feed intake were recorded weekly on a replicate basis. Economic efficiency of feeding (EEF) was computed as price per one kg weight gain – feed cost/kg gain / feed cost/kg gain)] multiplied by 100. The sale price per unit of weight gain was 25.0 EGP.

Table 1. Ingredients and chemical analyses of the experimental diets

Ingredients	Dietary CTH levels (%)				
	0.00	**10**	**20**	**30**	**40**
Yellow corn	13.0	10.15	7.9	5.70	3.7
Soybean meal, 44% CP	13.1	12.00	10.5	8.75	7.3
Wheat bran	29.0	24.00	19.0	14.00	9.0
Ground barley	16.0	13.00	10.0	7.00	4.0
Alfalfa hay	27.0	29.10	31.1	33.30	34.8
CTH ¶	0.0	10.00	20.0	30.00	40.0
Limestone	1.2	1.00	0.6	0.20	0.00
Common salt	0.3	0.30	0.3	0.30	0.3
Premix*	0.3	0.30	0.3	0.30	0.3
Lysine	0.0	0.00	0.1	0.20	0.3
DL-methionine	0.1	0.15	0.2	0.25	0.3
Total	100	100	100	100	100
Calculated analysis (As-fed basis): (NRC, 1977)					
DE; kcal/kg	2541	2541	2548	2552	2560
Crude protein (CP) %	17.31	17.36	17.36	17.3	17.27
Crude fiber %	12.76	14	15.22	16.47	17.55
Ether extract %	2.75	2.53	2.32	2.12	1.91
Calcium %	0.91	1.04	1.08	1.13	1.25
Total P %	0.6	0.54	0.47	0.41	0.34
Lysine %	0.81	0.74	0.76	0.78	0.8
Methionine %	0.33	0.36	0.38	0.41	0.43
Meth.+Cys. %	0.66	0.66	0.66	0.65	0.65
Price per kg (EGP)	2.61	2.47	2.34	2.2	2.07
Determined analysis (Dry matter basis):					
DM %	93.46	93.92	92.48	92.15	91.78
CP %	18.49	18.43	18.73	18.74	18.70
CF %	13.55	15.12	16.50	17.99	19.00
EE %	2.84	2.65	2.46	3.15	1.96
Ash %	9.90	10.06	10.48	10.81	11.00
OM %	83.56	83.86	82.00	81.33	80.75
NFE %	48.69	47.66	44.30	41.47	40.98

*** Each kilogram contains: Vit.A, 2000000 IU; Vit.D_3, 150000 IU; Vit.E, 8.33 mg; Vit.K, 0.33 mg; Vit.B_1, 1.0 mg; Vit.B_2, 1.0 mg; Vit. B_5, 8.33 mg; Vit.B_6, 0.33mg; Vit. B_{12}, 1.7 mg; Choline chloride 20 g; Niacin, 8.33 mg; Biotin, 33 mg; Folic acid, 0.83 mg Pantothenic acid, 3.33 mg; Zn, 11.79 g; Fe, 12.5 g; Cu, 0.5 g; Co, 1.33 mg; Se, 16.6 mg; Mg, 66.79 mg;; and Mn, 5 g. ¶: CTH = Carrot tops hay.**

Digestion trials

During the last week of the feeding trial, nutrient digestibility was estimated by means of five digestion trials. Four rabbits from each treatment were used in each trial. These rabbits were weighed and kept in metabolic cages. A preliminary period of 3 days was followed by a 3-day collection period of feces during which feed intake was accurately determined and cecotrophy was not prevented. Collection of feces began at 24 hours after offering the feed. The feces of each group of rabbits was collected every day in the morning. Any shaded hair or foreign materials were discarded. The feces was dried at 60 ºC for 16 hours in a forced-drought oven. At the end of the collection period, dried feces for each group was mixed, ground and stored until chemical analysis. Diets and feces were analyzed for dry matter (DM), crude protein (CP), ether extract (EE), crude fiber (CF) and ash according to AOAC (1995) using duplicate samples. Digestibility of nutrients was calculated as follows:

(Nutrient intake – Nutrient excreted) ÷ Nutrient intake × 100.

Slaughter test

At 14 weeks of age, five rabbits from each treatment were randomly chosen and slaughtered after fasting for 12 hours. Rabbits were immediately weighed before and after slaughtering. Then, they were skinned and emptied. The weights of carcass yield, giblets (liver, heart, kidneys) and total edible parts were recorded. Head of each rabbit was included in the carcass weight. All carcass traits were calculated as percentage of the pre-slaughter weight.

Blood constituents

At the end of the experiment (14 weeks of age), 5 rabbits were randomly selected from each treatment for blood sampling. Blood samples were collected during slaughtering into heparinized tubes. Then, plasma was separated by centrifugation at 3000 rpm for 15 minutes. The blood plasma levels of total protein, albumin, globulin, glucose, triglycerides, cholesterol, high density lipoprotein cholesterol (HDL-C) and low density lipoprotein cholesterol (LDL-C), and activity of plasma aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were determined by commercial kits, as described by Doumas *et al.* (1981), Doumas *et al.* (1971), Trinder (1969), Fossati and Prencipe (1982), Allain *et al.* (1974), Sawle *et al.* (2002) and Friedewald *et al.* (1972), respectively.

Statistical analysis

Data were statistically analyzed by one-way analysis of variance using SAS program (SAS, 2006). Significant differences among means were estimated using Duncan's multiple range test (Duncan, 1955).

RESULTS AND DISCUSSION

Growth performance of rabbits

Effects of feeding graded levels of CTH on growth performance of NZW rabbits during the experimental period (6-14 weeks of age) are presented in Table 2. There were no significant differences in initial live body weights among the experimental groups of rabbits. Dietary inclusion of CTH up to 30% had no adverse effect on all criteria of growth performance of 14-week-old rabbits.

However, rabbits fed diet containing 40% CTH had significantly lower final body weight and total weight gain compared with other experimental treatments. Dietary treatments didn't significantly affect total feed consumption or feed conversion efficiency. Rabbits fed diets containing different levels of CTH positively affected the EEF compared with those fed on the control diet; the highest EEF was recorded by rabbits received the 30% CTH-diet.

Table 2.Effect of dietary CTH on growth performance of NZW rabbits from 6-14 weeks of age.

Dietary CTH levels (%)	Initial body weight (g)	Final body weight(g)	Total Weight gain(g)	Total feed intake(g)	FCR (g:g)	EEF (%)
T1 (control)	635	1999^{a}	1356^{a}	5919	4.33	121^{c}
T2 (10.0)	629	2036^{a}	1407^{a}	5879	4.19	142^{b}
T3 (20.0)	637	2027^{a}	1319^{a}	5842	4.20	154^{ab}
T4 (30.0)	625	2017^{a}	1392^{a}	5894	4.23	168^{a}
T5 (40.0)	633	1860^{b}	1227^{b}	5945	4.48	149^{b}
SEM	8.5	20.20	20.95	33.62	0.15	4.86
Significance level	NS	*	*	NS	NS	**

a-c: Means in the same column with different superscripts differ significantly (P≤0.05).
NS = Not significant. SEM = Standard error of the means. FCR = Feed conversion ratio.

The obtained results are in accord with Abdu *et al.* (2012), who found that feeding rabbits on diets containing up to 45% of carrot leaf meal had no significant effects on their final body weight, weight gains or economic efficiency. In addition, Abonyi *et al.*(2012) found that feeding rabbits on diets containing graded levels of sweet potato leaves (SPL) up to 50% had no adverse effect on final body weight, weight gain, feed intake or feed conversion of rabbits but when its level reached 75 or 100% feed intake increased while feed conversion ratio was negatively affected. Also, Genedy *et al.* (2000) suggested that feeding dried watermelon by-product-containing diets up to 12% didn't significantly influence the body weight gain of rabbits compared with the control ones. Our results agree also with the findings of Safwat (2010) that BWG of rabbits was not significantly affected by feeding dietary containing corn cobs and field beans. Similarly, Asar *et al.* (2010) demonstrated that body weight gains of rabbits weren't influenced by either commercial diet or those contained two fiber sources (corn-cob meal and Faba bean straw) during the experimental period. Also, Ibrahim (2005) reported that LBW and BWG of rabbits were improved in response to feeding diets containing medicinal and aromatic plants.

As regards total feed intake of rabbits, it was not affected by the dietary treatments during the fattening period (6-14 week of age). In agreement with the present results, Kagya-Agyemang *et al.* (2013) who observed no significant influence on feed intake when rabbits were fed on dried pito mash as a replacement for maize. Similarly, Rabie*et al.* (2011) demonstrated that neither dietary fiber level nor probiotic addition had a significant impact on feed intake of rabbits during the post wearing period. In addition, Abdu *et al.* (2012) reported that feeding diets containing graded levels of carrot leaf meal up to 60% did not significantly affect daily feed intake of rabbits. On the contrary, Tag El-Din *et al.* (2002) found that rabbits fed 30% *Phaseolus vulgaris*-containing diet from 4-14 weeks of age consumed more feed than did the control group.

In the present study, there were no significant differences in FCR among the experimental groups of rabbits from 6 to 14 weeks of age. This result is in agreement with the findings of Kagya-Agyemang *et al*. (2013) that feeding diets containing up to 20% dried pito mash did not alter the FCR of rabbits. In agreement with the present results, Mohsen *et al.* (2015) found that FCR of rabbits was not affected by replacing a commercial feed with hydroponic green barley forage.

On the contrary, El-Neney*et al.* (2013) reported that FCR of rabbits significantly improved following to increasing dietary crude fiber to 18% compared with the control group. Similarly, Asar *et al.* (2010) reported an improvement in FCR of rabbits due to feeding diets containing corn-cob meal and Faba bean compared with their control rabbits. In addition, Bahnas *et al.* (2009) reported that rabbits fed parsley-containing diets had significantly better FCR compared with their control counterparts. Also, Hamed and Badr (2013) suggested that FCR was improved when berseem hay was replaced by pea straw at different levels.

Our results showed that the best EEF value was recorded for T4 (30% CTH). In a good harmony with the present results, Abdu *et al*. (2012) found that feeding rabbits on diets containing carrot leaves hay led to a decrease in the total cost of the diet. Also, Galal*et al.* (2014) reported that the use of strawberry vine hay in rabbit ration led to an increase in the EEF. Similarly, Asar *et al*. (2010) found significantly better EEF when rabbits were fed on diets containing corn-cob meal compared with their control group. Also, Gaafar *et al*. (2014) obtained the highest total and net revenue values when berseem hay was partially replaced by ensiled and dried sweet potato vines in growing rabbits diets.

Nutrient digestibility of rabbits

The effects of feeding diets containing graded levels of CTH on nutrient digestibility of 13 weeks old rabbits are presented in Table 3. There were significant differences among the experimental treatments in DM, OM, and EE

digestibility. Rabbits fed the diet containing the highest level of CTH (40%) had the lowest digestibility of DM, OM and EE compared with other dietary treatments. But there dietary treatments had no significant impact on CP, CF and NFE digestibility of rabbits.

In partial disagreement with our results, Abd El-Latif *et al.* (2012) reported that when sugar beet pulp was used as replacement of hay in rabbit diets the digestibility of DM, OM, EE and NFE were not affected but CF and CP digestibility were significantly improved due to increasing dietary sugar beet pulp up to 75% compared with those fed the basal diet. On the other hand, Abonyi*et al.* (2012) found that inclusion of sweet potato leaves up to 100% in rabbit diets significantly improved DM digestibility but the CP and EE digestibility were not affected. Also Sherif *et al.* (2008) found that digestibility coefficients of CP and NFE were not affected by feeding rabbits on banana leaves, however CF digestibility was improved compared with the control group.

Table 3. Effects of feeding diets containing different levels of CTH on nutrient digestibility of 13-week-old NZW rabbits

Dietary CTH levels (%)	Digestibility coefficients (%)					
	DM	OM	CP	EE	CF	NFE
T1 (control)	84.78[a]	86.18[a]	85.37	90.42[a]	50.24	94.32
T2 (10.0)	83.98[a]	85.84[a]	85.15	89.36[a]	46.30	94.68
T3 (20.0)	83.78[a]	85.58[a]	84.84	88.47[a]	45.35	93.66
T4 (30.0)	84.15[a]	85.16[a]	85.32	88.24[a]	50.14	94.04
T5 (40.0)	80.89[b]	82.83[b]	85.11	83.86[b]	51.51	93.69
SEM	1.22	1.19	1.12	1.26	2.28	0.27
Significance level	*	*	NS	**	NS	NS

[a-b] **Means in the same column with different superscripts are differ significantly (P≤0.05). NS = Not significant, SEM= Standard error of the means**

Carcass traits

Table 4 shows means of carcass traits of 14-week-old NZW rabbits as affected by dietary CTH level. Dietary treatments didn't affect the relative weights of carcass yield, kidneys, heart and total edible parts of rabbits. But rabbits received the lowest level of CTH had significantly higher percentages of liver and giblets weights than those of other dietary treatments.

Table 4. Carcass traits of NZW rabbits as affected by dietary leaves of CTH at 14 weeks of age

Dietary CTH levels (%)	Fast live weight (g)	Carcass traits (%)					
		Carcass yield	Giblets	Liver	Kidneys	Heart	TEP
T1 (control)	1991	59.57	3.59[b]	2.78[b]	0.58	0.259	63.17
T2 (10.0)	1971	57.69	4.02[a]	3.41[a]	0.62	0.259	61.71
T3 (20.0)	1898	57.87	3.65[ab]	2.80[ab]	0.59	0.254	61.53
T4 (30.0)	1893	57.87	3.65[ab]	2.78[ab]	0.60	0.264	61.32
T5 (40.0)	1936	58.45	3.71[ab]	2.82[ab]	0.62	0.269	62.17
SEM	84.17	0.80	0.12	0.11	0.02	0.02	0.79
Significance level	NS	NS	*	*	NS	NS	NS

[a-b] **Means in the same column having different superscripts are significantly different NS = Not significant, SEM= Standard error of the means, TEP = Total edible parts.**

Our results agree also with those of Ngoshe *et al.* (2013), who observed a significant difference in liver weight of rabbits fed graded levels of carrot leaf meal. In partial agreement with the present findings, Rabie *et al.* (2011) found no significant effect of dietary fiber levels on carcass traits of rabbits. Also Kagya-Agyemang *et al.* (2013) demonstrated that using dried pito mash in place of maize in rabbit diets had no significant effect on the relative weights of heart and kidneys. Also, Sherif *et al.* (2008) reported that carcass traits weren't affected by feeding rabbits with different levels of banana leaves. On the other hand, Amber *et al.* (2002) reported that dressing percentage was significantly lower for rabbits fed diets contained sugar beet pulp, sweet potato tops or mung bean hay than those received the control diet or the diet contained rice straw.

Blood parameters

Table 5 shows means of blood plasma parameters of 14-week-old NZW rabbits as affected by dietary CTH level. There were no significant differences among dietary treatments in blood plasma parameters including total protein, albumin, globulin, glucose, triglycerides, cholesterol, HDL, LDL-C, VLD-L or the activity of AST and ALT enzymes. The obtained results fall in the physiological range for rabbits.

Our results are in harmony with Rabie *et al.* (2011), who showed that the dietary fiber level had no significant effect on all blood plasma constituents. Also, Sherif *et al.* (2008) found that blood plasma parameters were not affected by feeding rabbits with different levels of banana leaves as a source of fiber. In the same line, Abdu *et al.* (2012) found that no significant differences among treatments in the cholesterol values of rabbits fed graded levels of carrot leaf meal. The obtained results of blood plasma constituents fall in the physiological range for rabbits.

Table 5. Some blood plasma constituents for 14-week-old NZW rabbitsas affected by dietary level of CTH

Treatments	Dietary levels of CTH (%)					SEM	Sign. level
	0.0	10	20	30	40		
Total protein (g/dl)	5.62	5.87	5.96	5.68	5.43	0.22	NS
Albumin (g/dl)	3.08	3.24	3.33	3.10	2.99	0.15	NS
Globulin (g/dl)	2.54	2.63	2.63	2.58	2.44	0.10	NS
Glucose (mg/dl)	121.7	116.6	115.5	111.9	117.3	3.53	NS
Triglycerides (mg/dl)	71.67	75.64	77.26	69.49	69.81	3.36	NS
Cholesterol (mg/dl)	87.72	89.52	87.58	86.22	86.31	3.35	NS
HDL-C(mg/dl)	27.46	28.72	32.11	30.45	30.83	1.65	NS
LDL-C (mg/dl)	45.91	45.61	40.01	41.88	41.51	2.13	NS
VLD-L (mg/dl)	14.35	15.13	15.45	13.89	13.96	0.67	NS
ALT (U/L)	12.44	12.14	12.31	12.47	12.43	0.66	NS
AST (U/L)	50.70	48.09	48.15	48.21	48.82	1.91	NS

NS = Not significant, SEM= Standard error of the means.

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تأثير التغذية على مستويات متدرجة من دريس عروش الجزر على الأداء الإنتاجي للأرانب النيوزيلاندى البيضاء

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تم تصميم هذه التجربة لتقييم امكانية استخدام دريس عروش الجزر في عليقة الارانب النيوزيلاندي البيضاءبمستويات متدرجة (0.0%و10.0و20.0%و30.0%و40.0%) وتأثيرها على أداء النمو، معاملات هضم العناصر الغذائية،صفاتالذبيحة وبعض مقاييس بلازما الدم والكفاءة الاقتصادية للتغذية. تم توزيع 60 أرنب عمر 6 أسابيع عشوائيا إلى خمسة مجموعات تجريبية متساوية، بكل منها ثلاث مكررات متساوية (4 أرانب بالمكررة) وتمت التجربة في أقفاص في عنبر مفتوح. تم تغذية الأرانب على خمسة علائق تجريبية تحتوى على مستويات دريس عروش الجزر مع توفير مياه الشرب النظيفة بصورة حرة خلال الفترة التجريبية لمدة ثمانية أسابيع. وتم تسجيل النتائج التالية أسبوعيا (وزن الجسم ، استهلاك العلف، الزيادة الوزنية، معدل التحويل الغذائي). خلال الاسبوع الاخير من الدراسة (الأسبوع الرابع عشر من العمر) تم عمل خمسة تجارب هضم لتقدير معاملات الهضم للعناصر الغذائية وتقدير القيمة الغذائية للعلائق التجريبية. في نهاية التجربة (14 أسبوع من العمر). عند عمر 14 أسبوع تم اختيار خمسة أرانب عشوائياً من كل معاملة تجريبية. تم تصويم الارانب لمدة 12 ساعة قبل الذبح. تم تسجيل نسبة التصافي والحلويات (الكبد والقلب والكليتين) وكذلك مجموع الاجزاء المأكولة وتم حسابها كنسبة مئوية من الوزن قبل الذبح. تم تقدير بعض مكونات بلازما الدم. - ويمكن تلخيص النتائج التي تم الحصول عليها على النحو التالي:تغذية الأرانب علي علائق محتوية علي دريس عروش الجزر حتى نسبة 30% لم تؤثر على كل قياسات الاداء الإنتاجي للأرانب في عمر 14 أسبوع مع أن الارانب المغذاه على علائق محتوية على 40% من دريس عروش الجزر سجلت أقل الاوزان معنويا وكذلك الزيادة الوزنية مقارنة بباقي المعاملات التجريبية. التغذية على مستويات دريس عروش جزر لم تؤثر على استهلاك العلف ومعدل التحويل الغذائي. التغذية على المستويات المختلفة من دريس عروش جزر سجلت كفاءة اقتصادية أفضل من مجموعة الكنترول وكانت أفضل القيم للكفاءة الغذائية للمجموعة المغذاه على 30% من دريس عروش الجزر. يوجد اختلافات معنوية في معاملات هضم المادة الجافة والمادة العضوية والمستخلص الأثيري بين المعاملات التجريبية حيث سجلت المعاملة المغذاه على علائق بها 40% من دريس عروش الجزر سجلت قيم أقل معنوية مقارنة مع باقى المعاملات التجريبية. التغذية على علائق محتوية على دريس عروش الجزر حتى مستوى 30% لم تؤثر سلبيا على معاملات هضم العناصر الغذائية.تغذية الأرانب علي علائق تحتوي علي عروش الجزر لم تؤثر معنويا على مواصفات ذبائح الارانب(نسبة التصافى، الحلويات، الاجزاء الكلية المأكولة) وكذلك لم تؤثر على مقاييس بلازما الدم المأخوذة (البروتين الكلي، الألبيومين، الجلوبيولين، الجلوكوز، الدهون الثلاثية، الكولسترول (HDL-C; LDL-C)، إنزيمات الكبد (ALT; AST)).لذلك يمكن استنتاج أن دريس عروش الجزر يمكن أن تستخدم في تغذية الأرانب حتى نسبة 30٪ من العليقة دون أي تأثير سلبي على أداء النمو أو صفات الذبيحة.