

RABBIT PRODUCTIVE PERFORMANCE AS INFLUENCED BY FEEDING HALOPHYTE PLANT (*KOCHIA SCOPARIA*)

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SUMMARY

A feeding trial consists of forty-five unsexed weaning Baladi growing rabbits was conducted to investigate the utilization of halophytes in rabbit's diets. The rabbits were allocated into three groups (15 animals each), first group was fed a basal diet as control one (T1), the second group (T2) was fed a combination of 75% basal diet plus 25% saline water Kochia while the third group (T3) was fed a combination of 50% basal diet plus 50% saline water Kochia. Concerning growth performance parameters, the control group (T1) showed the highest value of average daily gain and body weight ($P \leq 0.05$) compared to the other groups, also T1 had a better value ($P \leq 0.05$) of feed conversion compared with the other groups. Concerning daily feed intake, rabbits fed control diet consumed more feed than those fed the other diets with significant differences ($P \leq 0.05$). Furthermore, the data showed that there weren't any significant ($P \geq 0.05$) differences observed in mortality number among the different treatments. The results showed insignificant differences ($P \geq 0.05$) in plasma total proteins, albumin, globulin, A/G ratio, urea and creatinine between the control and treated groups, while the values of AST and ALT showed significant differences ($P \leq 0.05$). Moreover, results showed that there weren't significant differences between treatments in carcass traits measurements. Also, results revealed that the rabbits fed diets containing saline kochia had the higher values of economic efficiency and relative economic efficiency, whereas performance index and production efficiency factor of rabbits fed control diet were higher than the other treated groups. These results indicate that utilizing saline water to produce halophytes feed (kochia) could be an avenue to recover the feedstuff shortage, minimize feed cost and increase economic efficiency of growing rabbits.

Keywords: halophytes, kochia, rabbits, blood parameters, productive performance, carcass traits, economic efficiency.

INTRODUCTION

Egypt, like other developing countries faces a large deficient in poultry feed resources. Feed cost represents more than 75% of the total production cost. In addition, there is a competition between human and animal with respect to the diminishing traditional resources (Soliman *et al.* 2007). Feed supply is a serious constraint for livestock production in North Africa and the Middle East. A major gap exists between the requirements and supplies of fodders for feeding poultry in Egypt. In order to alleviate this shortage, it is essential to utilize some non-conventional feed resources. For many years, some halophytes and salt tolerant feedstuffs have been used in feeding large animals. Data on using halophytes and salt tolerant feedstuffs in non-ruminant nutrition, especially for poultry, is not well documented but such non-conventional feedstuffs could be considered as a promising solution for non-ruminant feeding to reduce the nutrition cost. Water is the basic substance of life on earth, and it is increasingly in short supply, water shortages affect developing countries that are home to half of the world's population (Miller, 2003). Hamdy (2001) reported that increasing and developing the usage of non-conventional water sources in agricultural sector helped and will further help in the conservation of the good quality water, as well as minimizing the stress on groundwater, while maintaining economical agricultural production. Egypt has already exhausted its fixed Nile water share, and the groundwater requires expensive energy to abstract more and costs to transport. Research has indicated the potential of many halophytes to withstand high soil salinity and saline water irrigation, some even with seawater (Aronson, 1989).

El-Shereef (2012) demonstrated that kochia contains different types of anti-nutritional factors like Oxalates, Flavonoids, Tannins, Alkaloids and Saponins as it was in fresh form, while those anti -nutritional factors decreased in dry and silage forms. Kafi *et al.* (2014) illustrated that Kochia (*Kochiascoparia*) have recently been considered as forage and fodder crop in marginal lands. Kochia produce 90 % biomass at 75 % water application in comparison to 100 % water application. Therefore, deficit irrigation is a useful management technique for Kochia even under saline conditions. Rabbits are suitable to fatten for meat production due to its high feed conversion efficiency, rabbits use protein more efficiently than broilers and up to 20% roughages can be included in their diets (Eleraky and Mohamed, 1996). Semioshkina *et al.*, (2007) illustrated that small animals such as rabbits or chickens are an important source of protein for a large number of people around the world. The requirements for their husbandry concerning capital and feed are low, and they are especially popular with people on low incomes. The objective of this study was to examine halophytes fodder to be an appropriate solution to solve the problems of feed deficiency and feed cost furthermore water shortage especially in arid and semi-arid regions and to evaluate the productive performance, some blood constituents and economic efficiency of rabbits fed (*Kochiascoparia*) as a halophytic plant in rabbit's diet.

MATERIALS AND METHODS

This study was carried out at Rabbits Production Unit, Poultry Production Department, Faculty of Agriculture, Ain Shams University, Shoubra El-Kheima, Cairo, Egypt.

Experimental Feeds

1- Kochia

Kochia scoparia belongs to the family Chenopodiaceae. It was established in America in the early 1900's. Kochia grows well in a great variety of climates and soils. Kochia is an annual, reproduces by seeds. Stems are erect, light green and highly branched (Undersander *et al.*, 2004).

Field kochia was found in El Fayom desert road in Dahshour area. It was planted by agriculture sowing method using mixture of sand water resources with saline water 10.000 ppm from saline well and non-fertilizer was added.

2- Basal diet

The basal diet is formulated according to NRC (1977) recommendation as presented in Table (1).

Table (1): Composition of basal diet.

Ingredient	%
Barley	32.00
Soybean meal 44%	15.00
Wheat bran	17.45
Clover hay	30.00
Bone meal	2.00
Soybean oil	2.60
DL-Methionine	0.15
Premix *	0.30
Salt (NaCl)	0.50
Total	100

*Each 3 kg Vit. & Min. Premix contains: Vit.A, 12,000,000IU; Vit.D3, 2,500,000IU; Vit.E, 10g; Vit.K, 2.5g; Vit.B2, 5 g; Vit.B6, 1.5 g; Vit.B12, 10 mg; Biotin, 50 mg; Folic acid, 1.0 g; Nicotinic acid, 30 mg; Pantothenic acid, 10 g; Antioxidant, 10 g; Mn, 60 g; Cu, 10 g; Zn, 55 g; Fe, 35 g; I, 1.0 g; Co, 250 mg and Se, 150 mg.

The chemical analysis of the basal diet and Kochia are illustrated in Table (2).

Table (2) Chemical composition of basal diet and Kochia

Item	DM	OM	CF	CP	EE	NFE
Basal diet	89.64	79.69	14.10	15.98	1.99	47.62
Kochia	87.8	78.35	27.48	8.50	1.58	40.79

Experimental animals:

Unsexed forty-five weaning Baladi rabbits aged 4 weeks were allocated to three experimental treatments of 15 rabbits each, in 5 replicates. Rabbits were kept for 6 weeks. The experimental treatments were described as following:

T1: were fed 100% basal diet as control group.

T2: were fed a combination of 75% basal diet plus 25% Kochia.

T3: were fed a combination of 50% basal diet plus 50% Kochia.

The experimental rabbits were housed in galvanized metal wire cages. Each cage was 60 x 50 x 40 cm for length, width and height, respectively, and provided with feeders and automatic watering system, with three rabbits per each cage, representing a replicate. The cages were located in a naturally ventilated and lighting building. The experimental diets were offered to rabbits ad libitum and fresh water was available all the time during the experimental period. All experimental rabbits were also vaccinated against rabbit Pasteurellosis at the beginning of the experimental period.

Productive performance parameters:

Live body weights (LBW) were individually recorded to the nearest 1.0 gram at weekly intervals. The average daily body weight gain (DBWG) was individually calculated. Daily feed intake (DFI) was determined for each replicate of a treatment by the difference between the weakly offered feed and the weakly residual one. The average DFI was obtained by dividing the total feed consumption by the number of rabbits and the number of days of each stage. Feed conversion ratios were obtained by dividing the amount of feed consumption per rabbit by the corresponding weight gain in a certain stage.

Carcass characteristics and blood samples:

At the end of the experimental period, five rabbits from each treatment were randomly taken, individually weighed and slaughtered. After complete bleeding, pelt and viscera were removed and then carcass and giblets (liver, heart, and kidneys) were weighed. Dressing percentage included relative weights of carcass, giblets and head were estimated according to Steven *et al.* (1981). Blood samples were collected at slaughtering time in heparinized glass tubes. Blood plasma was separated by centrifugation at 3000 rpm for 15 minutes. The collected plasma was stored at -20°C until assay. Plasma total protein was determined according to Gornall *et al.* (1949) and albumin was estimated according to Doumas *et al.*, (1971). Plasma globulins values were obtained by subtracting albumin values from total protein values. Plasma total lipids, urea, creatinine and plasma transaminases were determined according to Zollner and Kirsch (1962), March (1965), Husdan (1968) and Reitman and Frankel (1957), respectively by suitable commercial kits.

Chemical analysis:

The chemical composition of the feedstuffs was analyzed according to the A.O.A.C (1995) methods to determine moisture, DM, OM, CP, CF, EE, and ash contents, while NFE content was calculated by difference.

Economic efficiency:

The economic efficiency was calculated according to the price of local market at the time of carrying out the experiment as follows: Economical efficiency = $(A-B/B) \times 100$.

Where: A = Price of kg gain in Egyptian pounds B = Feed cost / kg gain in Egyptian pounds.

Performance index (PI) was calculated according to North (1981) as follows:

PI = [live body weight (kg) / feed conversion ratio] $\times 100$.

The production efficiency factor (PEF) was calculated according to Emmert (2000) as follows:

$$PEF = [\text{Livability} \times \text{Mass} / \text{FCR} \times \text{Age in days}] \times 100$$

Where: Livability = 100 – Mortality rate (%), Mass (Kg) = Final live body weight.

Statistical Analysis:

Data were statistically analyzed by using SAS program (SAS, 2001) according to the following model. $Y_{ij} = \mu + T_i + e_{ij}$; Where: Y_{ij} = the observation on the i th treatment, μ = Overall mean, T_i = Effect of the i th treatment and e_{ij} = Random treatment error. Duncan's Multiple Range test (Duncan, 1955) was also used for the comparison among means of the experimental treatments.

RESULTS AND DISCUSSION

Productive performance

Data in Table (3) showed that daily body gain, body weight and mortality number of experimental rabbits recorded significant ($P \leq 0.05$) differences in average daily gain due to treatments between different groups at all experimental periods. The overall values of average daily gain were 24.78, 17.62 and 15.92 (g/day) for T1, T2 and T3, respectively.

Regarding to initial and final weight, data showed insignificant ($P \geq 0.05$) differences in initial weight among the different groups. The highest value ($P \leq 0.05$) of final weight (Table 3) was recorded for (T1) group. The mean values of final weight were 1647.00, 1334.92 and 1269.91g for T1, T2 and T3, respectively.

Mortality number for experimental treatments was the same without any treatments effects.

Concerning daily feed intake, results in Table (4) showed that overall daily feed intake was higher ($P \leq 0.05$) for T1 group (control group) than the other groups. The values of were 95.76, 72.88 and 67.53 (g/day) for T1, T2 and T3, respectively. Regarding feed conversion ratio, data in Table (4) indicated that averages feed conversion ratio were better ($P \leq 0.05$) for T1 group than the other groups (T2 and T3).

Evidence on the effect of incorporating halophytes into diets for poultry and rabbits on body weight, daily gain, feed consumption and feed conversion ratio is contradictory.

In this respect Abdel Samee *et al.* (1992) and El-Gendy (1999) found that rabbit's body weight gain and feed utilization did not change by feeding Acacia leaf meal ad lib. Whereas, El-Eraky and Mohamed (1996) found that the body weight and daily gain of rabbits fed diet containing 15% Acacia leaves was significantly higher than those fed the control diet or containing 30% Acacia leaves. However, Abd El-Galil and Khidr (2000) found that feeding rabbits on 20% Acacia leaf meal resulted in 5.4% higher body weight than that of the control. On the other hand, increasing Atriplex leaf meal levels (halophytes) was followed by a decrease in feed intake of layer hens than those of the control treatment (Abd El-Galil *et al.* 2014b).

Table (3): Effect of experimental treatments on daily weight gain, body weight and mortality number.

Item	T1	T2	T3	MSE #	Sig.
Daily body gain (g/d)					
7 weeks	19.93 ^a	14.62 ^b	14.12 ^b	1.02	*
9 weeks	24.73 ^a	17.43 ^b	15.17 ^b	0.92	*
11 weeks	29.67 ^a	20.81 ^b	18.48 ^b	1.18	*
Overall period	24.78 ^a	17.62 ^b	15.92 ^b	1.32	*
Body weight g					
Initial weight	606.38	594.88	601.13	40.11	NS
7 weeks	885.40 ^a	799.56 ^b	798.81 ^b	66.98	*
9 weeks	1231.62 ^a	1043.58 ^b	1011.19 ^b	95.88	*
11 weeks	1647.00 ^a	1334.92 ^b	1269.91 ^c	90.15	*
Mortality number					
Overall period	1	1	1	-	-

^{a, b} Means within the same row with different superscripts are significantly different at $P < 0.05$, Sig.= Significance, NS= Not significant and * = ($P \leq 0.05$). # Pooled SE.

The reduction in feed intake of halophyte treatments may explain the decrease occur in body weight and body weight gain. This reduction in feed intake may be linked to low palatability of Kochia diets, as well as high fiber content of Kochia that lead to increase digesta density and water holding capacity.

The drop in body gain of treated animals that fed halophyte plant might be attributed to the tannins content which was found to reduce the digestibility of protein and dry matter (Priolo *et al.*, 2000 and El-Shaer, 2010). A combination of reduced intake and low true digestibility of protein cause the negative effect of tannins on growth rate (Ben Salem *et al.*, 2010, and El- Shaer, 2010).

Table (4): Effect of experimental treatments on daily feed intake and feed conversion ratio.

Item	T1	T2	T3	MSE #	Sig.
Daily feed intake (g/d)					
5 weeks	74.79 ^a	56.35 ^b	54.89 ^b	5.86	*
7 weeks	104.17 ^a	74.81 ^b	67.86 ^b	8.12	*
9 weeks	108.33 ^a	87.47 ^b	79.84 ^b	9.13	*
Overall period	95.76 ^a	72.88 ^b	67.53 ^b	7.14	*
Feed conversion ratio(feed/gain)					
5 weeks	3.75	3.85	3.89	0.32	NS
7 weeks	4.21 ^b	4.29 ^{ab}	4.47 ^b	1.01	*
9 weeks	3.65 ^b	4.20 ^a	4.32 ^a	1.02	*
Overall period	3.87 ^b	4.14 ^a	4.24 ^a	0.63	*

^{a, b} Means within the same row with different superscripts are significantly different at $P < 0.05$, Sig.= Significance, NS= Not significant and * = ($P \leq 0.05$). # Pooled SE.

Carcass characteristics

Carcass traits and dressing percentage of growing rabbits as affected by halophyte treatments are presented in Table (5). No significant differences ($P \geq 0.05$) were observed in all carcass traits. Total non-carcass fat was decreased significantly by increasing halophyte levels from 25% to 50% in diet. These results were in harmony with those obtained by El-Gendy (1999) who established that the different percentages of Acacia and Atriplex leaves meal (halophytes) in rabbit diets revealed no significant ($P \geq 0.05$) effects on all chemical compositions as well as slaughter parameters. It means that using Acacia leaf meal and Atriplex leaves meal (halophytes) didn't adversely affect dressing percentage and edible giblets. Similar results were obtained by Abd El-Galil and Khidr (2000) in feeding growing rabbits on Acacia saligna as a halophyte plant.

Table (5): Effect of experimental treatments on carcass traits.

Traits	T1	T2	T3	MSE #	Sig.
Dressing (%)	59.48	59.34	59.73	1.15	NS
Hot carcass weight (%)	53.25	52.97	53.92	1.06	NS
Giblets weight (%)	4.80	4.32	4.56	0.35	NS
Liver weight (%)	3.74	3.28	3.35	0.27	NS
Kidney weight (%)	0.67	0.72	0.81	0.03	NS
Heart weight (%)	0.38	0.31	0.38	0.01	NS
Body skin weight (%)	17.19	17.29	16.61	0.86	NS
Total non-carcass fat (%)	1.52 ^a	1.35 ^b	1.24 ^b	0.11	*

^{a, b} Means within the same row with different superscripts are significantly different at $P < 0.05$, Sig.= Significance, NS= Not significant and * = ($P \leq 0.05$). # Pooled SE.

Blood parameters

Data of blood plasma constituents are presented and illustrated in Table (6). Plasma values of total protein, albumin, globulin, A/G ratio and total lipids concentration were not significantly affected due to adding Kochia to rabbit's diet.

However, rabbits fed on control diet having numerically the highest total protein value. The values of total plasma protein and its fractions are within the normal ranges reported by Melby and Altman (1974) who found that, normal values of some blood components in rabbits being, total protein (g/dl) ranged from

4.9 to 7.20, albumin (g/dl) from 3.3 to 5.1 and globulin (g/dl) from 1.85 to 2.7 or 1.9 to 3.6. Total protein in the blood may reflect the nutritional status of the animal (O'Kelly, 1973).

Generally, the obtained results of blood components in the present study were within the normal values reported by Hillyer and Quesenberry (1994). These results are in harmony with those obtained by Abd El-Galil *et al.* (2014a) who found that using *Atriplex nummularia* leaf meal (ALM) halophyte plant as a source of alternative feed resources on Sina laying hens fed a diet containing 12% ALM showed decreased ($P \leq 0.05$) serum total protein (30.5, 30.8 and 28.4%) and globulin (45.7, 53.9 and 51.9%) as compared to control 4 and 8% ALM, respectively.

Table (6): Effect of experimental treatments on blood plasma parameters of rabbits at 11 weeks of age.

Item	T1	T2	T3	MSE #	Sig.
Total proteins (g/dl)	7.38	7.09	7.29	0.56	NS
Albumin (g/dl)	4.16	4.57	4.02	0.32	NS
Globulin (g/dl)	3.22	2.51	3.28	0.24	NS
A / G ratio	1.42	1.89	1.30	0.08	NS
Total lipids (g/dl)	409.47	387.05	419.25	32.12	NS
Urea (mg /dl)	48.25	43.32	33.74	2.55	NS
Creatinine (mg /dl)	1.30	1.30	1.02	0.01	NS
AST (unit /L)	39.14 ^b	38.23 ^b	89.47 ^a	5.14	*
ALT (unit /L)	31.74 ^b	37.68 ^b	95.20 ^a	7.10	*

^{a, b} Means within the same row with different superscripts are significantly different at $P < 0.05$, Sig. = Significance, NS = Not significant and * = ($P \leq 0.05$). # Pooled SE.

However, A/G ratio increased ($P \leq 0.05$) in diet of 12% ALM than that of other treatments. Moreover, Ahmed (1996) and Morsy *et al.* (2012) postulated that this decrease in total protein (TP) was due to either the insignificant decrease in feed intake or the increase in water intake and consequently dilution of the blood components.

Adding halophyte (kochia) in rabbit's diet had no significant effect ($P \geq 0.05$) on plasma urea concentration as showed in Table (6). The mean values of blood plasma urea presented herein were 48.25, 43.32 and 33.74(mg /dl) for T1, T2 and T3, respectively. In this connection, Bush (1991) stated that plasma urea concentration increases as a result to the increase in rate of protein breakdown and carbohydrate deficiency, a decrease of renal perfusion as renal azotaemia and bladder rupture. The values of urea concentrations were within the normal range and the differences were not significant ($P \geq 0.05$) during the entire experimental period.

Insignificant differences ($P \geq 0.05$) were observed in blood plasma creatinine concentration, the values presented in this study are within the normal range from 0.5 to 2.6 mg/dl (Jones, 1975).

Regarding to plasma AST and ALT (Table 6), the values of AST presented in this study are in line with the normal values of those reported by (Jones, 1975) who found that the values of serum AST activity of normal healthy rabbits ranged from 10 to 98 units/L.

The values of serum ALT presented in this study are also within the normal range from 55 to 260 for ALT (Jones, 1975). There was significant increase in plasma transaminases due to Kochia supplementations, these results are in a good agreement with those obtained by Abd El-Galil *et al.* (2014a) who stated that ALT and AST increased ($P \leq 0.05$) in the hens fed *Atriplex nummularia* leaf meal (ALM) as a halophyte plant. This increase may be due to the direct effect of tannins on the liver function. The liver and kidney suffer serious damage from feeding tannins. Tannins cause liver polyribosome disaggregation, inhibition of microsomal enzymes, and inhibition of protein and nucleic acid synthesis, fibrosis, coagulation and necrosis in the liver cells (Singleton, 1981).

Economic efficiency:

Using Kochia in rabbit feeds in relation to its total feed cost and growth performance are presented in Table (7). Rabbits fed 50% Kochia (T3) showed the highest economic efficiency percentage (271.16) followed by rabbits fed 25% Kochia (140.63) and at last the control rabbits (122.00). Also, economic

efficiency relative to control group reach 115.27% for 25% Kochia and 222.26% for 50% Kochia. These results are attributed to lower total feed cost of these treatments with acceptable weight gain.

On contrary manner, higher performance index, production efficiency factor and net return values were observed with the group fed basal diet (control, T1).

Table (7): Effect of experimental treatments on economic efficiency.

Item	T1	T2	T3
Average of feed consumed (Kg/rabbit)	4.02	3.06	2.84
Price/kg feed (L.E)	3.75	3.04	2.33
feed cost (L.E)	14.06	9.23	5.41
Average weight gain (Kg/rabbit)	1.04	0.74	0.67
Price/kg live body weight (L.E)	30.00	30.00	30.00
Total return (L.E)	31.22	22.20	20.06
Net return (L.E)	17.16	12.97	14.66
Economic efficiency ¹	1.22	1.40	2.71
Relative economic efficiency (%) ²	100.00	115.27	222.26
Performance index (%)	42.56	32.24	29.95
Production efficiency factor (PEF) (%)	51.59	39.09	36.31

¹ *Economical efficiency*= net return/total feed cost. Whereas net revenue= total return - total feed cost.

² Assuming that the relative economic efficiency of the control diet equals 100.

Conclusion:

The present study clearly indicated that using kochia as a halophyte plant had no destructive consequences for rabbit's health. In addition, using kochia as a rabbits feed led to decrease feed cost and generally improve feed efficiency. However, more studies are required to investigate the effect of kochia as a halophyte on physiological and immunological response of rabbit.

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الأداء الإنتاجي للأرانب وتأثره بالتغذية على نباتات ملحية (نبات الكوخيا)

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في تجربة لدراسة تأثير إضافة نبات الكوخيا المروي بمياه مالحة كنموذج لأحد النباتات الملحية إلى علائق الأرانب، ومن ثم دراسة تأثيرها على الأداء الإنتاجي للأرانب وتأثيرها على بعض مكونات الدم، ومردود ذلك على الكفاءة الاقتصادية للعملية الإنتاجية، تم تقسيم 45 أرنب بلدي إلى 3 مجموعات كل مجموعة مكونة من 15 أرنب في عمر 4 أسابيع وذلك حسب نسب خلط العليقة المقدمة وهي المجموعة (T1) عليقة أساسية (كونترول) 100%، المجموعة (T2) الكوخيا 25% + 75% عليقة كونترول، المجموعة (T3) الكوخيا 50% + 50% عليقة كونترول. أظهرت النتائج أن أعلى قيمة سجلت لمتوسط الزيادة الوزنية اليومية ومتوسط المأكل اليومي وأفضل قيمة في كفاءة التحويل الغذائي وفروق معنوية عند مستوى 5% كانت للمجموعة الأولى T1 (المقارنة) والتي تغذت على عليقة قاعدية 100%. كما أظهرت النتائج أنه لا توجد فروق معنوية في نسبة النفوق في المجاميع التجريبية الثلاث. أظهرت النتائج الخاصة بقياسات بلازما الدم أنه لا توجد تأثيرات معنوية للإضافات المستخدمة على كل من البروتينات الكلية، الألبومين، الجلوبيولين، نسبة الألبومين إلى الجلوبيولين A/G Ratio، اليوريا، الكرياتينين بينما أظهرت النتائج فروق معنوية عند مستوى 5% لقيم ALT, AST. أظهرت النتائج أيضا عدم وجود فروق معنوية في قياسات الذبيحة بين المعاملات التجريبية الثلاث. وبشكل عام أظهرت النتائج أن استخدام الكوخيا في علائق الأرانب قد أدى إلى خفض تكلفة التغذية اليومية / أرنب مما انعكس بالإيجاب على تحسين الكفاءة الاقتصادية للعملية الإنتاجية مقارنة بتغذية الأرانب على العلف المركز فقط. مما سبق يتضح أن استخدام الكوخيا كنبات ملحي لا يؤثر بالسلب على الصحة العامة للأرانب، كما يؤدي إلى تقليل نفقات التغذية وتحسين الكفاءة الاقتصادية، مما يجعله إضافة جديدة في قائمة الأعلاف غير التقليدية في السوق المصري. والكفاءة الاقتصادية بدون التأثير على صفات الذبيحة.