



The effect of using two different concentration of Ground Olive leaves on production traits of male Rabbits

Ahmed M.M. Zakri

Department of Veterinary Public Health/Veterinary Medicine College/
University of Baghdad

[E-mail:zakri2010@yahoo.com](mailto:zakri2010@yahoo.com)

Abstract

The present work was designed to demonstrate the effect of two different concentration of Olive leaves (5% and 10%) in diet on production traits in male rabbits .Twenty one male rabbits with body weight average 1.1 – 1.3 kg and 4-5 months age were bought from Local Markets, and they were divided randomly into three equal groups with equal weight , put in metal cages were fed on concentrate pellets diet with green roughage ,The male rabbits were divided to three equal groups and by 7 animals / group with equal weights .The 1st group (T1) (control group)was offered drinking water and fed concentrate pellets without ground olive leaves , the 2nd one (T2) (5% olive leaves)offered drinking water and fed concentrate pellets with 5% ground olive leaves /diet , while the 3rd one (T3) (10% olive leaves)offered drinking water and fed concentrate pellets with 10 % ground olive leaves /diet and the nutrition were continue for 8 weeks . Animals were weight every week to see weekly weight gain and measured of some production traits such as total weight gain, feed consumption rate and the coefficient of food conversion,slaughtered all animals of groups to study some carcass characteristics which include, hot and cold carcass weight, and percentage of edible and non-edible and external parts and dressing and different carcass cuts. The results showed significant decrease ($P<0.05$)for the final weight , Body weight gain , relative growth rate , feed intake and coefficient of feed conversion in T2 , T3 in compare with T1 control group .While the observed significant ($P<0.05$) decrease in carcass weight, dressing out percentage , percentage of fat around viscera and percentage of fat on shoulder in T2 ,T3 group in compare with T1 and significant raising in carcass cuts (shoulder , Cotton) in T2,T3 in compare with T1.Notied that there was arithmetic difference in all groups in (Cold carcass weight , Internal edible visceral and Internal non – edible visceral and External visceral percentage and carcass cuts such as ribs and chest).the results conclude that the addition of olive leaf by 5% or 10% in the diets of rabbits may have contributed to the improvement of carcass quality and reduce the level of fat on the viscera or shoulders in the carcasses and reduce feed costs where possible bringing it about place of alfa alfa economic as interest and we recommend using the highest levels may be 15% or 20% of olive leaves in rabbits diets due to the economic feasibility and lack of toxicity.

Keyword: Olive , Male Rabbits , Olive leaves , Production traits , carcass

تأثير استخدام تركيزين مختلفين من مسحوق ورق الزيتون في الصفات الانتاجية في ذكور الارانب

م. أحمد محمد محمد زكري

جامعة بغداد/ كلية الطب البيطري / فرع الصحة العامة البيطرية

الخلاصة

صممت التجربة لمعرفة تأثير تركيزين مختلفين (5% و 10% من ورق الزيتون) مع العليقة على الصفات الانتاجية في ذكور الارانب. تم شراء واحد وعشرين أرنب ذكر محلي مع معدل وزن 1.1 و 1.3 كغم وبعمر 4-5 أشهر من السوق المحلية ، وقسمت بصورة عشوائية وبوزن متقارب ووضعت في اقفاص معدنية ، غذيت الحيوانات على العلف المركز (Pellets) مع العلف الاخضر وقسمت الارانب الى ثلاث مجاميع متساوية وبواقع 7 حيوانات بالمجموعة ومتقاربة بالوزن. المعاملة الاولى (T1) (مجموعة السيطرة) قدم لها ماء الشرب والغذاء العلف المركز (Pellets) غير المخلوط مع ورق الزيتون المطحون ، المعاملة الثانية (T2) (5% ورق الزيتون) قدم لها ماء الشرب وغذيت على العلف المركز المخلوط مع 5% ورق الزيتون المطحون/ علف مركز ، في حين المعاملة الثالثة (T3) (10% ورق الزيتون) حيث قدم لها ماء الشرب وغذيت على العلف المركز المخلوط مع 10% ورق الزيتون المطحون/ علف مركز حيث استمرت التغذية للمجاميع لمدة ثمانية أسابيع.

تم وزن الحيوانات اسبوعيا لمعرفة الزيادة الوزنية الاسبوعية وحساب بعض الصفات الإنتاجية مثل الزيادة الوزنية الكلية ومعدل استهلاك العلف ومعامل التحويل الغذائي، تم ذبح جميع الحيوانات ودراسة بعض صفات الذبيحة التي تشمل وزن الذبيحة الحار والبارد ، ونسب الأجزاء المأكولة وغير المأكولة والخارجية و الت صافي وقطعيات الذبيحة المختلفة. وأشارت النتائج الى انخفاض معنوي ($P < 0.05$) للوزن النهائي ، الزيادة الوزنية الكلية ، معدل النمو النسبي ، كمية العلف المستهلك ومعامل التحويل الغذائي في مجموعتي T2 و T3 مقارنة بمجموعة السيطرة T1 في حين لوحظ انخفاض معنوي ($P < 0.05$) في وزن الذبيحة ونسبة التصافي ونسبة الدهن حول الاحشاء ونسبة الدهن على الاكتاف في مجموعتي T2 و T3 مقارنة بمجموعة السيطرة T1 ولوحظ ارتفاع في معنوي ($P < 0.05$) قطيعات الذبيحة (الاكتاف ، القطن) في T2 و T3 مقارنة مع T1 ولوحظ فروق حسابية في كل المجاميع في الصفات (وزن الذبيحة الباردة ونسبة الاحشاء الداخلية المأكولة وغير المأكولة ونسبة الاحشاء الخرجية وقطيعات الذبيحة مثل الاضلاع والصدر).

نستنتج ان اضافة اوراق الزيتون بنسبة 5% او 10% في علائق الارانب قد ساهمت في تحسين نوعية الذبائح وخفض مستوى الدهون حول الاحشاء او الاكتاف في الذبائح وتقليل تكاليف الاعلاف حيث ممكن احلاله محل الشعير كفاءة اقتصادية ونوصي باستخدام مستويات اعلى قد تكون 15% او 20% من اوراق الزيتون المضافة الى العلف للارانب نظرا لاجودها الاقتصادية وقله سميتها.

Introduction

In the last decade commonly used plants and herbs in the treatment of many diseases, hence the call medical herbs (1), which led to the proliferation of used very widely because they contain active ingredients with the knowledge of how they work within the body of the organism (2).

The addition of medicinal plants new trend in the field of animal production, goal is to improve production efficiency to increase production and increase the immune experiments and research has shown that it can be used medicinal plants in the diets of rabbits safely without any negative impact caused on the general health of the animal (3).

Rabbits did not need to pasture or to the large areas in the halls of husbandry compared to other farm animals, rabbit meat are classified within the white meat such as poultry meat, which excels them in terms of nutritional value because they contain a high-protein ratio and content of less fat and fiber, also excelled morally on Meat of other animals such as cattle and sheep in my recipe tenderness and juiciness (4).

Scientific research began to pay great attention to the medical benefits of the olive tree leaves, fruits and other plant parts, especially where discovered that the most important active substances in the olive leaf are

phenols which is one of the important antioxidants in the blood (5).

The most important of these phenols impact in improving the immune response and physiological substance called (Oleuropein) The olive leaf richest source of this material compared to other parts of the olive tree, as per kilogram of olive paper will contain 2 gm of Oleuropein, where they found that the toxicity of olive leaf, especially Oleuropein material (olive phenols) are almost non-existent (6).

The addition of small amounts of diet containing a high amount of fiber reference to olive leaves enough to prevent digestive problems in developing rabbits (7).

The objective of research is to find out the effect of using two levels of 5% and 10% of olive ground leaves in the diets of rabbits in some of productive traits in rabbits males.

Materials and methods

The research conducted in animal house / college of veterinary medicine / university of Baghdad, where used 21 male rabbits local rate weight 1.1 and 1.3 kg with age of 4-5 months, They have been purchased from a local market and put in metal cages, rabbits were fed on concentrated food (Pellets), in addition to providing green diet, they were divided into three groups:

The first treatment (T1) control group (Control) which gave it water and feed intensive-free of olive ground leaves Pellets, The second group (T2) Provided with water and the diet contain (5% olive ground leaves) by mixed 50 grams of olive ground leaf with 1 kg of Pellets (concentrated feed), and group C (T3) provided with water and the diet contain (10% olive ground leaves) where they mixed 100 grams of

olive ground leaf with 1 kg of pellets (concentrated feed).

The olive leaf drying at room temperature and then milled using electric grinding machine and made of olive leaves powder where it were mixed with wet Pellets were macerating with water and create a paste mixed and placed in the electric grinding machine to produce a new pellets mixed with olive leaves where feed manufactured in the form of pellets mixed with powder of olive leaves . they mixed 50 g of olive ground leaf with 1 kg of Pellets (concentrated feed) group of (5% olive) and 100 g of ground olive leaves with 1 kg of pellets (10% olive) (concentrated feed) .

They calculated the amount of feed consumption for each observation weekly, all animals were weighted at the end of each week in the morning and before the submission of the diet. They were calculate the growth rate by account referred to by the equation (8). At the end of the experiment we cut the diet from the animals for 6 hours before the date of slaughter with clean water availability for animals, and weighted all the rabbits, considered the final weight before slaughter, and then slaughtered all the animals (21 animals) and took all carcass measurements included: hot carcass weights ,Internal edible visceral weight (liver, heart, kidneys and spleen), Internal non-edible visceral weight (trachea, lungs, parts of the digestive system and the reproductive system) and external parts (head, foot, skin) .weight of visceral fatty tissues and on shoulders.

Dressing percent was calculated and then left the carcass to dry at room temperature for a period of (1-2 hours) and they put the carcass in bags of polyethylene and placed in frozen

temperature (-20 m °) for 24 hours after the end of the period took out the frozen carcasses and left at room temperature, and then weighted again to calculate the cold carcass weight then cut the carcass and, according to a shredder followed by (10) , The fat percentages account or visceral or blood by applying the following equations:

Fat ratio = weight of fat / carcass weight × 100

Visceral Ratio = Total summation of viscera/ final weight before slaughter × 100

Dressing percentage = Carcass weight / body weight × 100

Food conversion factor =The amount of feed intake / increase the weight weekly× 100

Statistic :

SAS software used as a statistical analysis of the data has been compare the significant differences between the averages by less significant difference test LSD (Least significant differences) (11).

Results and Discussion

The results suggest in the table (1) significant decrease (P <0.05) in the final weight and total weight gain, growth rate , feed intake and the coefficient of feed conversion in the two groups(T2 and T3) compared with (T1) .The decline in the two groups (T2, T3) in productivity qualities that mentioned due to contain olive leaf on phenols (Polyphenole called Oleuropein) an effective antioxidant that cause decline in palatability of

diet(low palatability) (12) and thus lower rabbits consumption of diet followed by a decrease in the rate of body weight and total body weight gain and the coefficient of feed conversion, as well as that of the olive leaf susceptibility to impact negatively on the effectiveness of the enzymes Endogenous Enzymes where it has the ability to inhibit the action of metabolic enzymes and digestive such as (Trypsin, glycerol dehydrogenase, glycerol phosphate dehydrogenase, glycerokinase and Lipase) (13). As the high content of fiber and Oleuropein in olive leaves contribute significantly to reducing Feed: Gain ratio in rabbits fed with diet contain olive leaves compare with rabbits fed on a diet free from olive leaf (13). These results agreed with the study revealed that addition of olive leaf to the diets of rabbits with 5% may reduce the feed consumption rate and the rate of Feed intake and body weight, carcass weight, and dressing percentage dressing out percentage compared with the control group (14). While it was observed significant increase (P <0.05) in the control group (T1) in productivity traits that given the diet good in terms of providing concentrated feed (Pellets) containing the necessary nutritional requirements for rabbits as well as the provision of green diet and daily contributed to the provision of elements and vitamins important to the needs of rabbits (15,16).

Table (1):Effect of Olive leaves on Productive traits of Rabbits males:

Traits	Groups		
	T1(Control)	T2(Olive 5%)	T3(Olive 10%)
Primary weight	1100±31.24 A	1200±27.56A	1150±59.36 A
Secondary weight	2000±70.38 A	1500±68.12B	1450±68.38 B
Total body weight gain	810.28±25.76 A	604.86±25.49 B	619.00±16.78 B
Growth rate	117.00±4.17 A	105.00±4.28B	104.00±3.46 B

Feed consumption	4700±191.99 A	3750±167.28 B	3900±103.03 B
coefficient of food conversion	8.80±0.24 A	4.20±0.12 B	4.30±0.13B

Different letters showed significant differences among treatments at the level (P<0.05)

It was observed that there is a significant decrease (P <0.05) in carcass weight and the percentage of fat and on viscera and on the shoulders in the two groups T2 and T3 compared to (T1) control group.

Table(2): Effect of Olive leaves on carcass traits of Rabbits Males :

Traits	T1(Control)	T2(Olive 5%)	T3(Olive 10%)
Hot carcass weight	53.36±1200.00 A	32.10±752.00 B	28.35±733.00 B
Cold carcass weight	31.62±790.00 A	26.63±720.00 A	38.95±738.94 A
Internal edible visceral	0.90±5.6 A	0.58±4.93 A	0.24±5.12 A
Internal non – edible visceral	0.96±21.81 A	1.29±23.60 A	1.05±23.80 A
External visceral percentage	0.72±29.13 A	1.30±26.30 A	0.72±26.30 A
Dressing percentage	3.59±60.00 A	2.63±50.00 B	1.72±50.5 B
Percentage of fat around the viscera	0.09±0.35 A	0.05±0.22 B	0.07±0.25 B
Percentage of fat on shoulders	0.04±0.37 A	0.07±0.24 B	0.03±0.21 B
Carcass cut			
Thighs	0.73±29.40 A	0.80±25.10 B	0.94±25.60 B
Shoulder	0.81±24.20 B	1.23±28.00 A	1.34±28.10 A
Lumber	0.62±23.20 B	1.43±28.80 A	0.94±28.90 A
Ribs	1.03±17.10 A	1.30±18.60 A	0.87±19.00 A
Chest	0.95±9.00 A	0.33±5.00 A	0.31±4.80 A

Different letters showed significant differences among treatments at the level (P<0.05)

The Oleuropein that present in olive leaf considered as antioxidant where the rabbits fed on a diet containing on olive leaf be oxidative stable and the carcasses quality with high nutritional value specifications (17).

The Oleuropein known as a catalyst Immediate precursor of hydroxytyrosol, which is a type of plant phenols antioxidants It is located in olive leaves and olive oil in the form

of Elenolic acid ester Oleuropein and is important in the removal of the roots (Scavenge aqueous peroxy radicals) near the surface of the membrane of cell, while Oleuropein work on the block and inhibit the spread of Chain propagation lipid peroxy radicals) (18).

Since the oxidation of unsaturated fats lead to damage the cell membranes, olive leaves contain

antioxidants such as the Oleuropein they work to protect the membranes and a decrease in the proportion of fat in the carcass in addition to a lack of carcass weight and high quality offerings as compared to control fed on food free from olive leaf (19), where studies have shown that the use of 5% and 10% of the olive leaf in the diets of rabbits led to lower carcass weight compared to the control group (19).

In other studies have shown that the addition of olive leaf by 5% and 10% in the diets of rabbits did not affect the pH level and the color of carcasses, and there is no Black spots ,no solid and dehydration (20) The Rabbits fed on diets containing on the olive leaf the carcass meat in a good condition before slaughter (pre slaughter condition) in addition to the decline in lipid peroxidation in rabbit meat.

In a study of pigs indicated that the added of olive leaves to the swine diets are important in improving the quality of carcasses (21).

References

1-Mossa, J. S. (1987). Medicinal plants of Saudi Arabia King Saud University, Riyadh.P.244.
2-Health Tools (2005). Real Age Medical . Encyclopedia Monographs – Parsley . (Natural Remedy)(Internet). [http : // www. Healthsite Map @ com.](http://www.HealthsiteMap.com) Pp:1-4.
3-Newall,C.A.(2001). Herbal Medicines .A Guide for health care professionals.The pharmaceutical Press , London P:135-136.
4-Templeton , G.S. (2002) . Domestic Rabbits Production. Fourth ed. Printed in U.S.A. Feed Requirement of rabbits.P:82-83.
5-Philips,J.(2011). Olive tree and raw leafy greens shown to reduce information Hawkes health forum version,4(1):1-6.

6-Al-Kinzawi,A,K.(2008). Effect of (Oleuropein) in some physiological traits and productivity in rabbits .Olive leaves, future pharmacy to treat the most dangerous diseases, Desert Research Institute-Cairo, Egypt: Volume (3): 117-118.

7-De Blas, C., Garcia, J., Carabaño, R., (2005). Role of fibre in rabbit diets.A review. Ann. Zootech. 48, 3-13.

8-Ismail, H. I. (1980). Possibilities of indirect selection for some quantitative characters in poultry. M.Sc. Thesis, Faculty of Agriculture. Ain Shams.Univ., Egypt .

9-Al-Dahal,Emad

A.M.;Shihab,A.Z;AbdAlminum,M.S.(1998). Study productive traits of domestic rabbits. 2. The effect of the level of protein diet and sex on meat palatability and some carcass traits factors. AlRafidien Agriculture J. 30 (3): 63-68.

10-Shams Alddine ,K.Z.;Elham,A.A.;Mufak,M.Y.(2011) . Production efficiency of local male rabbits fattened on different types of gain. Magazine cultivation of Mesopotamia (accepted for publication).

11-SAS(2012). Statistical Analysis System, User'sGuide. Statistical.Version 9.1th ed. SAS.Inst. Inc. Cary.N.C. USA.

12-Gidenne,T.;Pinheiro,V. & Falco (2000). A comprehensive approach of the rabbit digestion :consequence of reduction in dietary fiber supply .Livestock Production Science ,64:225-237.

13-Polzonetti, V., Egidi, D., Vita, A., Vincenzetti, S., & Natalini, P. (2004). Involvement of oleuropein in (some) digestive metabolic pathways. Food Chemistry, 88, 11–15.

14-Dal Bosco ,A., Mourvaki ,E., Cardinali ,R.,andServili M. (2012) .

Effect of dietary supplementation with olive pomaces on the performance and meat quality of growing Rabbits. *J. Meat Sci.* 2012 Dec;92(4):783-8.

15-Ameen, A. F. and Rabea, A. (2006). Rabbit rearing in modern methods. Dept. of Agriculture Exten. Moraco.

16-Kadhim, Q. M. (2013). Effect of adding ground *Coriandrum sativum* and/or *Trigonella foenum-graecum* seeds in the diet on some productive, reproductive and biochemical traits of local male rabbits. M.Sc. Thesis. Veterinary medicine Baghdad University.

17-Servili, M., Selvaggini, R., Esposito, S., Taticchi, A., Montedoro, G. F., & Morozzi, G. (2004). Health and sensory properties of virgin olive oil hydrophilic phenols: Agronomic and technological aspects of production that affect their occurrence in the oil. *Journal of Chromatography. A*, 1054, 113–127.

18-Saija, A., Trombetta, D., Tomaino, A., Lo Cascio, R., Trinci, P., Uccella, N., et al. (1998). In vitro

evaluation of the antioxidant activity and biomembrane interaction of the plant phenols oleuropein and hydroxytyrosol. *International Journal of Pharmaceutics*, 166, 123–133.

19-Monahan, F. J., Gray, J. I., Asghar, A., Haug, A., Strasburg, G. M., Buckley, D. J., et al. (1994). Influence of diet on lipid oxidation and membrane structure in porcine muscle microsomes. *Journal of Agriculture and Food Chemistry*, 42, 59–63.

20-Savournin, C., Baghdikian, B., Elias, E., Dargouth-Kesraoui, F., Boukef, K., & Balansard, G. (2001). Rapid high-performance liquid chromatography analysis for the quantitative determination of oleuropein in *Olea europaea* leaves. *Journal of Agriculture and Food Chemistry*, 49, 618–621.

21-Mortensen, M., Andersen, A. J., Engelsen, S. B., & Bertram, H. C. (2006). Effect of freezing temperature, thawing and cooking rate on water distribution in two pork qualities. *Meat Science*, 72, 34–42.