Tikrit Journal for Agricultural Sciences (2022) 22 (4):39-44
https://doi.org/10.25130/tjas.22.4.6

IRAQI Academic Scientific Journals
العراقية المجلات الأكاديمية العلمية

ISSN:1813-1646 (Print); 2664-0597 (Online)
Tikrit Journal for Agricultural Sciences
Journal Homepage: http://www.tjas.org
E-mail: tjas@tu.edu.iq

TJAS
Tikrit Journal for Agricultural Sciences

Abdulmalik Abdulrahman Abdulqader ALnajar*
Maysaloon W. Ibrahim

Department of Animal Production College of Agriculture - Tikrit University – Iraq

KEY WORDS:

apricot seed oil, Awassi lambs, Oral dosing

ARTICLE HISTORY:

Received: 19/06/2022

Accepted: 17/07/2022

Available online: 31/12/2022

Tikrit Journal for Agricultural Sciences (TJAS) *Tikrit Journal for Agricultural Sciences (TJAS)*

Effect of dosing Awassi lambs with apricot seed oil on the primary and secondary cuts of their carcasses and the percentage of some fatty acids in their meat

ABSTRACT

This experiment aimed at studying the qualities and carcass of Sheep meat Awassi after a being dose of apricot seed oil to the animals field in the Department of Animal Production at the college of Agriculture - University of Tikrit. This experiment used 16 local sheep , ranging in age from 4-5 months, transaction. animals weighed weekly to adjust the amount of feed provided depend on the new weigh Animals were dosed apricot seed oil daily orally in proportions (0.5 ML and 1.0 ML and1.5 ML) Relative to the weight of the live animal For the second, third and fourth treatment , using the syringe , the proportion of apricot seed oil given per week changed according to the weekly weight gain , At the end of the experiment, 12 lambs were slaughtered

The results of the analysis showed significant differences in the weights of the main cuts and as the weight of the thigh , where the third and fourth treatment recorded a significant rise. The third and fourth treatment recorded a moral rise. The results of the analysis showed significant differences in the weights of the secondary carcass parts in cuts the weight of the for shank , where the third treatment recorded a moral rise. The results of dosing animals with apricot seed oil showed moral differences in the Palmatic fatty acid ratio, where the fourth treatment recorded significant . For The recipe of Linolic fatty acid the fourth treatment recorded significant , The recipe for Lenolinic fatty acid recorded the fourth treatment significant , The characteristic of Stearic fatty acid illustrated the superiority of the fourth treatment by registering significant . The characteristic of Stearic fatty acid illustrated the superiority of the fourth treatment by registering significant.

INTRODUCTION

Meat is undoubtedly not only an important food for man but also an essential part of our lives. Improving meat quality is an important goal in terms of improving the nutritional value of the consumer and sheep and beef have been associated with an increased risk of cardiovascular disease due to its high content of saturated fatty acids (Givens DI, 2005). However, these meats may also be a good food source for some nutrients with health benefits. New studies and research focused on improving sheep production to improve the quality and quantity of red meat production through the use of new nutrition techniques such as the use of herbs and medicinal plants as well as feed supplements

* *Corresponding author: E-mail*: Abdlmalek.a.abdlqader@st.tu.edu.iq

The primary approach to enriching meat with omega-3 fatty acids is by integrating omega-3 sources such as flaxseed, oil, fish flour or oil into animal food. The addition of some oils and medicinal herbs to the relationship of sheep stimulated the work of microscopic biology in the shower and this was reflected positively in some of the animal's productive and physiological qualities (Ar-Rawi ,2013). He discovered the treatment method and followed this system for a long time (Andrew, 2003)

When modern science began replacing these additives with chemicals, there were some cases of health problems caused by the toxicity of these substances used in animal feeding (ARDA, 1988), which encouraged scientific research and the market again to use natural oils and medicinal herbs to feed sheep because of their easy access and low cost (Kamboj v,2000). Carcass is always economically important for producers, and sensory qualities such as color, flavor and texture always play an important role in purchasing options. However, consumers have become increasingly concerned about the health of the food they eat, being influenced by factors such as total fat content and fatty acid composition (Verbeke and Viaene, 2000),(Jiménez-Colmenero et al ,2001).

In addition to processing, transporting and storing meat products continue to play a vital role in the production of commercial meat, making the viability of meat consumed long necessary. It is therefore important that the potential effects, positive and negative, For food flavonoids on post-slaughter production of selected animals, are also identified. On the other hand, many plants (and their extracts) are commonly used in meat processing showing antioxidant activity (suitable for food additives), and at the same time health benefits (Fernandes et al, 2017),(Poojary et al, 2017),(Putnik et al, 2017) ,Many research has been aimed at using vegetable oils and introducing them into the sheep fodder because of their ability to increase affordable food and open the appetite of the animal, as well as increasing the utilization rate of food compounds and has a high role in improving digestion processes, thereby increasing the efficiency of utilizing the affordable feed (Al Jabouri, 2020). One of the natural oils used is apricot seed oil, which is a rich source of unsaturated fatty acids. It is a healthy supplement that is squeezed from apricot oil or apricot nucleus. The apricot grain contains 40-50% oil and is very similar to almond and peach oil. Apricots occupy a distinct position among the nucleus fruits due to their multifaceted synthetic surroundings and important functional potentials as they contain a rich nutritional content of sugars (more than 60%), proteins (8%), raw fiber (11.50%) and raw fat (2%) Total minerals (4%) and vitamins (A, C, K and B. complex) And appropriate quantities of organic acids (citric acid and malic acid) based on dry weight, studies suggest that there are significant amounts of total phenolic compounds and flavonoids in the fruit making them highly valuable as a functional food , Apricot also contains complex sugars, fatty acids, sterol derivatives, carotenoids, clycosides and flying oils . In very small quantities (Fatima, T et al., 2018).

Seed oils from Prunus species contain high amounts of unsaturated mononucleic recommended oleic acid (60-70.9%), moderate content of linoleic acid (20-30%) and few amounts of saturated fatty acids, such as palmtic acid (4.0-4.5%) and fatty acid (1-1.24%), with other secondary fatty acids such as linoacids In addition, apricot nucleus oil contains a range of bioactive substances such as b carotene (61.05 mg/g) tocopherol (50.76 mg/100 g) campesterol 11.8 phenolic compounds (mg/100 g) Stigmasterol (9.8 mg/100 g) and Setosterol (177.0 mg/100 g) and Provetamine A (2017,.Gayas).

MATERIALS AND METHODS

This study was completed in the animal field of the Department of Animal Production of the College of Agriculture - University of Tikrit for a period of 90 days and for a period from 21/9/2021 until 21/12/2021, preceded by an introductory period of 14 days to acclimatize the sheep to the concentrated fodder. this experiment were used 16 local sheep, ranging in age from 4 to 5 months and with a primary weight rate of 21.2 + 0.3 kg. The sheep were divided into four totals, Each group included four sheep. The weight rate of these groups was close (21.45 ± 1.06, 23 ± 1.25, 22.35 ± 1.02 and 20.225 ± 1.04).

The experiment was preceded by a preliminary period of 14 days that prepared it for animals on the concentrated fodder. After fasting the animals for 12 hours and then weighed where such primary

weight of the sheep, the amount of feed provided to the sheep daily 3% of the living body weight is added to the hay spelt by 150g/day/sheep represents dry matter, providing open drinking water. Apricot seed oil was dosed daily by mouth using syringe. The percentage of apricot seed oil given weekly changed according to animals weekly weight increase of according to the treatment system of the animal until the end of the experiment. The experiment was divided into four treatments.

Table (1): of ratios used in feed ingredients

Fodder material	First treatment	Second treatment	Third treatment	Fourth treatment
Barley	57	57	57	57
Wheat Bran	28	28	28	28
Soy beans	10	10	10	10
Vitamins	5	5	5	5
Salt	2	2	2	2
Apricot seed oil	%0	%0.5	%1.0	%1.5

Carcass Cutting

The carcass was cut after taking the cold carcass weight using a hand saw, cutting the sheep lobe and weighing first followed by the neck being separated and weighing thereafter the carcass is divided into right and left helves. (front quarter) and a back quarter (behind quarter) of the ribs 12-13 halves into the main and includes the shoulder (Shoulder), Ribs (Rack), Cotton (Loin), Thigh (Leg) and Secondary Cutting including Neck, Shank, Breast, (Flank) The weight of each cut is taken along the lines of (Bowman et al., 1968).

(Free Faty acid determination)

Extracting fat from the model:

The free fatty acid was calculated according to the method used is that was based on the AOAC 1995 method using the Fat Recovery Device (Soxholet)

Fat ester:

The sample by method approved by (AOAC 1995) and based on fat ester by reacting with potassium hydroxide methanol and prepared from dissolving 11.2 g of potassium hydroxide and dissolving in 100 ml of methanol, then 1 g of fat and add 8 ml of methanol potassium hydroxide with 5 ml of HCH and shake quickly for 30 seconds After that it is left to separate into two layers, taken from the top layer (Hoxan layer) containing ischemic fat and injecting into the device.

Chromotographic analysis of sample

Fatty acid compounds were analyzed using a Japanese-origin Chimadzu Gas Chromotography (GC - 2010) model where an ionized flame detector (FID) was used and a long hair separation column (SE- 30) in lengths (m*0.25mm30).

Statistical Analysis

Statistical Analysis System -SAS 2012 was used to analysis of the data to study the impact of different treatments in the characteristics studied according to a full random design (CRD), comparing the moral differences between averages with the (Duncan 1955) test polynomial.

Mathematical Model

$$Yij = \mu + Ti + eij$$

If:

Yij: viewing value j Returning to treatment i

μ: General average of the recipe studied

Ti: treatment effect i

eij: random error, which is distributed naturally at an average of zero and a variation of σ2e.

RESULTS AND DISCUSSION

primary Cuts

The results of the statistical analysis showed marked differences in the weight of the main parts and as the weight of the groin, where the third and fourth treatment recorded a marked increase of 2394.67 ± 38.92) and 2212.67 ± 156.38) compared to the second treatment (1785.33 ± 109.94) g

For a loin weighing recipe, the third and fourth treatment recorded a marked high of (56.59±664.66) and(62.63±664.66) g compared to the second treatment (39.71±490.00) g
While there were no moral differences between the four treatment in shoulder weight and rib description.

Table (2): Effect of apricot seed oil levels on the weight of primary carcass/g (average ±standard error)

Fourth treatment	Third treatment	Second treatment	First treatment	Qualities
82.05±1001.33 A	24.34±1124.67 A	61.43±956.66 A	53.45±1052.00 A	Shoulder
156.38±2212.67 A	38.92±2394.67 A	109.94±1785.33 B	59.63±2108.00 AB	Thigh
38.68 ± 430.66 A	34.04 ± 559.33 A	79.87 ± 425.33 A	8.81 ± 461.33 A	Ribs
62.63±664.66 A	56.59±664.66 A	39.71±490.00 B	27.43±582.66 AB	Loin

First Treatment: Zero Oil Ratio
Second treatment: oil ratio 0.5 ml of living animal weight
Third treatment: 1 ml oil ratio of living animal weight
Fourth treatment: 1.5 ml oil ratio of living animal weight

Secondary Cuts

The results of the statistical analysis showed significant differences in the weights of the secondary carcass as fore shank weight. The third treatment recorded a significant increase of (634.00 ± 21.57) g compared to the second treatment (515.33 ± 33.79) g.
While there were no discrepancies between the four treatment in the description of neck weight, flank weight and chest weight.

Table (3): Effect of different levels of apricot seed oil on the weight of secondary carcass/g (average ± standard error)

Fourth treatment	Third treatment	Second treatment	First treatment	Qualities
33.72 ± 558.00 AB	21.57 ± 634.00 A	33.79 ± 515.33 B	22.51 ± 591.33 AB	Fore shank
71.52 ± 674.00 A	92.30 ± 666.66 A	35.67 ± 555.33 A	68.45 ± 518.66 A	Neck
5.92 ± 221.33 A	39.56 ± 280.66 A	23.72 ± 209.33 A	22.74 ± 234.00 A	Flank
59.02 ± 794.00 A	31.24±921.33 A	55.47±724.66 A	98.28 ± 799.33 A	Chest

First Treatment: Zero Oil Ratio
Second treatment: oil ratio 0.5 ml of living animal weight

Third treatment: 1 ml oil ratio of living animal weight
Fourth treatment: 1.5 ml oil ratio of living animal weight

Fatty acids

The results of the statistical analysis showed that the dosing of animals with apricot seed oil resulted in moral differences in the ratio of Palmatic fatty acid, where the fourth treatment recorded a marked superiority of (26.99 ± 0.054)% compared to the third, second and first treatment of(25.77 ± 0.038) and (24.69 ± 0.012) and (24.16 ± 00.012)% .

With regard to the recipe of Linolic fatty acid, the fourth treatment recorded a remarkable superiority of(17.95 ± 0.048)% compared to the third, second and first treatment of (17.00 ± 0.049), (15.90 ± 0.025) and (15.31 ± 0.043)%

With regard to the recipe of Lenolinic fatty acid, the fourth treatment recorded a noticeable superiority of(0.610 ± 0.005)% compared to the third, second and first treatment of(0.50 ± 0.008), (0.44 ± 0.007) and 0.36 ± 0.014)%(

The fatty acid characteristic Stearic illustrated the superiority of the fourth treatment, registering a marked outperformance (4.87 ± 0.038%) compared to the third, second and first treatment, registering (4.13 ± 0.027), (3.71 ± 0.01) and (3.24 ± 0.017)%(

There were no significant differences in the recipe of Oleic fatty acid between the four treatment.

Table (4): Estimate fatty acids of animals dosed with apricot seed oil (average ±standard error)

Fourth treatment	Third treatment	Second treatment	First treatment	Qualities
0.054 ± 26.99 A	0.038 ± 25.77 B	0.012± 24.69C	0.027 ± 24.16 D	Palmatic%
3.341 ± 34.54 A	0.046 ± 36.80 A	0.018 ± 35.20A	0.046 ± 34.88A	Oleic%
0.048 ± 17.95 A	0.049 ± 17.00 B	0.025 ± 15.90C	0.043 ± 15.31D	Linolic%
0.005 ± 0.610 A	0.008 ± 0.50 B	0.007 ± 0.44 C	0.014 ± 0.36 D	Lenolinic%
0.038 ± 4.87 A	0.027 ± 4.13 B	0.01 ± 3.71 C	0.017 ± 3.24 D	Stearic%

First Treatment: Zero Oil Ratio
Second treatment: oil ratio 0.5 ml of living animal weight
Third treatment: 1 ml oil ratio of living animal weight
Fourth treatment: 1.5 ml oil ratio of living animal weight

CONCLUSIONS

The ratios used in this experiment were minimal, showing some significant differences between the thoughtful characteristics of the carcass properties but not only at the expense of a single treatment. They range from the third to the fourth, underscoring the need to use higher levels of apricot seed oil to show clear results.

However, the results were apparent and their effect was apparent for fatty acids. It was the superiority of the fourth treatment of the four fatty acids species Palmatic, Oleic, Linolic, Lenolinic.

REFERENCES

Andrew, Chevalier(2003). Alternative medicine. Medication with herbs and medicinal plants. Arab National Academy Printers.

Al Jabouri Haider. (2020) The effect of dosing with flaxseed oil in some quantitative and qualitative qualities of Iraq's sheep awassi and meat. Master's thesis. University of Tikrit. Collage of Agriculture.

Verbeke, W. A., & Viaene, J. (2000). Ethical challenges for livestock production: Meeting consumer concerns about meat safety and animalwelfare. Journal of Agricultural and Environmental Ethics, 12(2), 141-151.

Jiménez-Colmenero, F., Carballo, J., & Cofrades, S. (2001). Healthier meat and meat products: their role as functional foods. Meat science, 59(1), 5-13.

Givens DI(2005). The role of animal nutrition in improving the nutritive value of animal-derived foods in relation to chronic disease. Proc Nutr Soc. 2005;64:395–402. [PubMed] [Google Scholar]

Fernandes, R.P.P.; Trindade, M.A.; Tonin, F.G.; Pugine, S.M.P.; Lima, C.G.; Lorenzo, J.M.; de Melo, M.P(2017). Evaluation of oxidative stability of lamb burger with Origanum vulgare extract. Food Chem. 2017, 233, 101–109. [CrossRef] [PubMed]

Fatima, T., Bashir, O., Gani, G., Bhat, T., & Jan, N. (2018). Nutritional and health benefits of apricots. International Journal of Unani and Integrative Medicine, 2(2), 5-9.

Gayas, B.(2017). Ultrasound assisted extraction of oil from apricot kernels (Prunus armeniaca L.) (Doctoral dissertation), Punjab Agricultural University, Ludhiana.

AOAC (Association of Official Analytical Chemists) (1995). Official Methods of Analysis, 16th Edition. AOAC International, Gaithersburg, MD..

تأثير تجريع الحملان العواسِ بزيت بذور المشمش على القطع الأولية والثانوية لذبائحها ونسبة بعض الأحماض الدهنية في لحومها

عبدالملك عبدالرحمن عبدالقادر النجار ميسلون وائل ابراهيم

قسم الإنتاج الحيواني – كلية الزراعة – جامعة تكريت – تكريت - العراق

الخلاصة

هدفت هذه التجربة لدراسة صفات ذبائح لحوم الحملان العواسية بعد تجريعها بزيت بذور المشمش في الحقل الحيواني التابع لقسم الإنتاج الحيواني في كلية الزراعة – جامعة تكريت. هذه التجربة استخدم فيها (16) حملاً محلياً من سلالة العواسي , تراوحت أعمارها ما بين (4-5) أشهر, وزعت الحيوانات عشوائياً على الاقفاص وكان نظام التغذية نظام الفردية لكل حملان المعاملات التجريبية, كمية العلف المقدمة للحملان يومياً 3% من وزن الجسم الحي. توزن الحيوانات اسبوعياً لتعديل كمية العلف المقدمة على ضوء الوزن الجديد.

تم تجريع الحيوانات زيت بذور المشمش يوميا عن طريق الفم بنسب (0.5 مل و 1.0 مل و1.5 مل) نسبتاً لوزن الحيوان الحي للمعاملات الثانية والثالثة والرابعة , باستعمال محقنة , وتغيرت نسبة زيت بذور المشمش المعطى اسبوعيا حسب الزيادة الوزنية الاسبوعية لكل حيوان وفق نظام المعاملة الموجود بها الحيوان ولغاية نهاية التجربة , ذبح في نهاية التجربة 12 حملاً .اظهرت نتائج التحليل فروقات معنوية في اوزان القطعيات الرئيسة و بصفة وزن الفخذ إذ سجلت المعاملة الثالثة و الرابعة ارتفاعاً معنوياً , لصفة لوزن القطن فقد سجلت المعاملة الثالثة و الرابعة ارتفاعاً معنوياً . اظهرت نتائج التحليل فروقات معنوية في اوزان قطعيات الذبيحة الثانوية بصفة وزن الزند أذ سجلت المعاملة الثالثة ارتفاعاً معنوياً . اظهرت نتائج تجريع الحيوانات بزيت بذور المشمش الى فروقات معنوية في صفة نسبة الحامض الدهني Palmatic حيث سجلت المعاملة الرابعة تفوقاً معنوياً, بالنسبة لصفة الحامض الدهني Linolic سجلت المعاملة الرابعة تفوقاً معنوياً , و لصفة الحامض الدهني Lenolinic فقد سجلت المعاملة الرابعة تفوقاً معنوياً, اوضحت صفة الحامض الدهني Stearic التفوق الحاصل في المعاملة الرابعة اذ سجلت تفوقاً معنوياً , اوضحت صفة الحامض الدهني Stearic التفوق الحاصل في المعاملة الرابعة إذ سجلت تفوقاً معنوياً.

الكلمات المفتاحية:
زيت بذور المشمش ، الحملان العواسي ، تجريع عن طريق الفم