

تأثير إضافة مسحوق ورق الزيتون (OLIVE LEAVES) الى العلف مع أو بدون تجريع مجموعة فيتامينات AD₃E في بعض صفات الدم الفسلجية لجداء الماعز المحلي.

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الخلاصة

هدفت الدراسة الى توضيح تأثير استخدام إضافة مسحوق ورق الزيتون و/ أو فيتامين AD₃E في بعض الصفات الفسلجية لجداء الماعز المحلي اذ درس مستوى خضاب الدم والنسبة المئوية لحجم خلايا الدم المرصوصة وعدد خلايا الدم البيض , والعد التفرقي لخلايا الدم البيض , ومجموع بروتين السيرم والالبيومين, والكلوبيولين. أجريت هذه الدراسة في حقل كلية الطب البيطري/ جامعة بغداد , للفترة من 2013/12/30 إلى 2014/4/2. اذ استخدم 20 جديا من الماعز المحلي بعمر 4-5 أشهر وزعت عشوائيا إلى أربع مجاميع وبصورة متساوية حيث تركت مجموعة سيطرة بدون أي معاملة, أما المجموعة الثانية تم تجريعها بمجموعة فيتامين AD₃E (فيتامين 60 ملغم وفيتامين 10000IU D₃ وفيتامين 20000IU A) وبشكل محلول عن طريق الفم لكل حيوان وبواقع مرة واحدة كل أسبوعين , أما المجموعة الثالثة أعطيت مسحوق ورق الزيتون (1% من وزن العلف) و فيتامين AD₃E (بنفس الجرعه والتوقيت), أما المجموعة الرابعة أعطيت فقط مسحوق ورق الزيتون (1% من وزن العلف) , غذيت الجداء جميعا على العلف المركز وبواقع 2.5 % من الوزن الحي /رأس/يوم والمتكون من النخالة 35 % والشعير 15% والصويا 30% والذرة 10% ومكمل بروتيني 10% بالإضافة الى دريس الجت بمعدل 1كغم/رأس/يوم واستخدام البلوكات الملحية بشكل حر. أظهرت النتائج ان استخدام ورق الزيتون والفيتامينات AD₃E ادى الى مايلي:-

- 1- لم تظهر اختلافات معنوية بين المجاميع والفترات في النسبة المؤيه لكريات الدم المتراصة. أما خضاب الدم فقد أظهرت المجموعة الرابعة في الاسبوع السادس تفوق معنوي على المجموعة الثانية وهناك اختلاف بين الاسبوع السادس والاسبوع صفر ضمن المجموعه الثالثه.
- 2- أظهرت خلايا الدم البيض في الاسبوع الثاني عشر تفوق معنوي في مجاميع المعاملات مقارنة بمجموعة السيطرة وكذلك تفوق معنوي للمجموعة الثانية خلال الاسبوع الثاني عشر على الاسبوع السادس والصففر, وتفوق معنوي للمجموعة الثالثة خلال الاسبوع الثاني عشر والسداس مقارنة بالاسبوع الصففر.
- 3- أما نسبة الخلايا المتعادلة فقد أظهرت تفوق معنوي للمجموعة الرابعة خلال الاسبوع السادس مقارنة بالمجموعة الثالثة وتفوق معنوي أيضا في المجموعة الثانية خلال الاسبوع الثاني عشر مقارنة بالمجموعة الثالثة ولوحظ تفوق معنوي للمجموعة الثالثة خلال الاسبوع الصففر مقارنة بالاسبوع السادس ولوحظ أن هناك تفوق معنوي في الخلايا اللمفية للمجموعة الثالثة خلال الاسبوع الثاني عشر مقارنة بالمجموعة الثانية. وأما خلايا الدم البيض أحادية النواة فلم تظهر فروق معنوية وبالنسبة للخلايا الحمضية فقد وجد تفوق معنوي في المجموعة الثالثة خلال الاسبوع الثاني عشر مقارنة بالمجموعة الثانية والرابعة وكذلك تفوقت خلال الاسبوع السادس على المجموعة الرابعة, وتفوق معنوي للمجموعة الثانية خلال فترة الاسبوع السادس مقارنة بفترات الاسبوع الثاني عشر والصففر وكذلك تفوق معنوي للمجموعة الثالثة بفترة الاسبوع السادس مقارنة بفترة الاسبوع الصففر ووجد تفوق معنوي في الخلايا القاعدية للمجموعة الثانية خلال الاسبوع الثاني عشر مقارنة بالمجموعة الثالثة والرابعة, وحصل تفوق معنوي في المجموعة الرابعة خلال الاسبوع السادس مقارنة بالاسبوع الثاني عشر.
- 4- أظهرت نتائج بروتين مصل الدم تفوق المجموعة الرابعة معنويا خلال الاسبوع الثاني عشر مقارنة بالمجموعة الثانية وكذلك تفوقت خلال الاسبوع الثاني عشر مقارنة بالاسبوع الأخرى وأما المجموعة الثالثة تفوقت معنويا خلال الاسبوع الثاني عشر مقارنة بالاسبوع الصففر, في حين تركيز الألبومين تفوق في المجموعة الأولى خلال الاسبوع السادس مقارنة بالامجاميع الأخرى وحصل تفوق في المجموعة الثانية والمجموعة الثالثة خلال الاسبوع السادس مقارنة بالاسبوع الأخرى. ولوحظ تفوق الكلوبيولين في المجموعة الأولى بالاسبوع الصففر مقارنة بالمجموعة الثانية وحصل انخفاض معنوي في المجموعتين الأولى والثالثة خلال الاسبوع السادس مقارنة بالاسبوع الأخرى بينما هنا ك تفوق معنوي في المجموعة الرابعة خلال الاسبوع الثاني عشر مقارنة بالاسبوع الصففر.
- 5- وعليه يمكن أن يستنتج من الدراسه أن استخدام مسحوق ورق الزيتون في العلف المركز وبنسبة 2.5% ادى الى تحسين الصفات الفسلجية والصحية لذكور الماعز. وقد عزز استخدام مجموعة فيتامينات AD₃E هذا التحسين في الصفات المدروسة.

البحث مستل من رسالة الماجستير للباحث الاول

EFFECT OF ADDITIVE OLIVE LEAVES POWDER ON DIETS AND /OR VITAMINS AD₃E ON SOME PHYSIOLOGICAL TRAITS IN IRAQI GOAT'S KIDS

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Abstract

This study was designed to evaluate the effect of olive leaves powder and /or vitamins AD₃E supplementation to growing Iraqi Goat Kids on some blood physiological parameters.

Twenty healthy Iraqi goat kids were selected for this study at approximately (4-5) month of age and average body weight (BW) of 19 kg and were reared in the livestock farm of the College of veterinary medicine, University of Baghdad, experimental feeding was continued from 30/12/2013 to 2/4/2014 in addition to 15 day as adaptation period.

After adaptation period, kids were randomly divided into four groups (5 kids/group), The first group used as a control with no treatment, the second group received orally a solution of mixed vitamins (AD₃E) (A 20.000 IU, vitamin D₃ 10.000 IU and vitamin E 60 mg /Kid) biweekly, the third group, used olive leaves powder, (1% of the concentrate diet) and same dose of (AD₃E) and the fourth group, used olive leaves powder (1% of the concentrate diet). However, all groups were fed a concentrate diet (2.5%DM of live body weight) in addition to alfalfa hay (1 kg / head/day). NaCl 1% and calcium bicarbonate were provided as blocks.

Blood samples were collected from jugular vein monthly for blood parameters measurement include: hemoglobin (Hb), packed cell volume (PCV), white blood cells count (WBC) and its differential (Neutrophiles%, Lymphocytes%, Monocytes%, Eosinophiles%, Basophililes%) as well as total serum protein(TSP), Albumine and Globuline were determined.

The results revealed that:-

1- There was no significant difference between groups of Kids in PCV% throughout the experimental period. There was significant increased in Hb concentration of G4 at wk6 compared with G2, while, there were significant differences between wk6 and wk0 in G3.

2- There was a significant increased in WBC count of the treated groups G4, G3, G2 respectively at wk12 compared with G1 and of G2 at wk12 compared with wk0 and wk6 respectively. Also, G3 was significantly increase at wk12 and wk6 compared with wk0.

3- Neutrophile cells % was significantly increase in G4 at wk6 compared with G3 and also, G2 at wk12 compared with G3, while G3 was significant increased at week0 compared with wk6. Lymphocyte cells % was significant increased in G3 at wk12 compared with G2. There was no significant difference in the Monocytes between all groups of Kids during the whole period of experiment. The Eosinophiles of G3 was significant increased at wk12 compared

with G2 and also at wk6 and wk12 compared with G4 at wk6 and wk12. In addition, G2 was significant increased at wk6 compared with wk0 and wk12, also G3 was significant increased at wk6 compared with wk0. Basiophile cells% showed that there was significant increased in G2 at wk12 compared with G3 and G4, while G4 was significant increased at wk6 compared with wk12.

4- The results of TSP showed that there was significant increased between G4 and G2 at wk12, while G4 increased significantly at wk12, compared with other periods wk0 and wk6 respectively, also G3 compared with wk0. Albumine level in G1 was significant increased at wk6 compared with G2, G3 and G4, while at the same week, G2 and G3 were significant increased compared with other two periods. There was significant increased in serum Globuline in G1 compared with G2 at wk0. But, G1 showed a significant decreased at wk6 in comparison with wk0 and wk12. Also, G3 decreased significantly at wk6 in contrast with wk12, while G4 increased significantly at wk12 compared with wk0.

In conclusion, supplementations of the feed with olive leaves and vitamins AD₃E to growing Kids improved blood parameters.

INTRODUCTION

Feed additives are important materials that can improve the efficiency of feed utilization and animal performance. However, the use of chemical products especially those of antibiotics and hormones may cause unfavorable effects. Many attempts in the field of animal nutrition had being done to achieve an increase in animal production and there by it's profit (Abdou, 2001).

Goats disseminated all over the world because their great adapt ability to varying environmental conditions and the different nutritional regimes under which they were evolved and subsequently maintained. In the developing countries; goats make a very valuable contribution, especially to the poor in the rural areas. The importance of this valuable genetic resource is underestimated and its extent of contribution to the livelihood of the poor is inadequately understood. They are often neglected in comparison with cattle and sheep. Part of this attitude towards them can probably be due to cognition of their capability, rather any prejudice against them, as it is believed that goats are intelligent, independent, agile, tolerant to many diseases and parasites and can look after themselves much better than other livestock species (Ensminger and Parker, 1986).

Utilization of olive leaves and some of its products as sheep and goats fed diets carried out by many researchers (Delgado *et al.*, 2000), (Yáñez-Ruiz and Molina-Alcaide, 2008), (Alcaide, 2003). It is well known that olive leaves contain various functional and/or antibacterial substances. These active substances are caused by their anti oxidative characteristics. Antioxidants can protect the cells against degradation and harmful substances, reduce the risk of infection, and have a special effect in intensive production systems and stress situations. The anti oxidative activity from the active substances found in olive is far more effective than a synthetic form of vitamin E (Owen *et al.*, 2000).

Vitamins are classified on the basis of their solubility as fat-soluble like the vitamins A, D, E and K and water-soluble (other vitamins). For ruminants, it is necessary to introduce only fat

soluble vitamins A, D₃ and E with the feedstuffs, as vitamins or in the form of precursors, because in the rumen the vitamins of group B and K are synthesized by the microorganisms, while vitamin C is produced in the same cells of the organism (Federico *et al.*,2005).

Therefore, this study was designed to evaluate the effect of using olive leaves powder and /or vitamins AD₃E on some blood traits of Iraqi goat kids.

MATERIALS AND METHODS:

The Present study was carried out at the Animal farm of located at the college of veterinary medicine / University of Baghdad from 30/12/2013 to 2/4/2014.

1- Experimental design

Twenty healthy Iraqi goat kids were selected for this study from the livestock markets at approximately (4-5) month of age.

After adaptation period, kids were randomly divided equally into four groups (body weight was considered) animals were fed as a groups.

The first group used as a control with no treatment, the second group (AD₃E) received orally vitamin A 20,000 IU, vitamin D₃ 10,000 IU and vitamin E 60 mg /Kid biweekly, the third group, used olive leaves powder (adding 1% of concentrate diet and (AD₃E) received the same dose) and the fourth group, used olive leaves powder (adding 1% of concentrate diet), (Table1).

Table (1) **Type and amount of diet used in the experiment.**

Diet	Type	Amount	Dry matter
Concentrate	pellets contain [a mixture of (barley grain 15% , wheat bran 35%), soybean meal 30 % ,corn grain 10% ,proteins completely 10%]	2.5% of live B.W.	89%
Hay	Alfalfa	1 kg /Kid /day	25%

2-Samples collection:

Blood samples were collected on day zero and thereafter every 45 days interval via sterilized jugular vein puncture, blood samples were distributed into two kinds of tubes:

1. EDTA (Ethylene Diamine Tetra Acetic Acid) tubes for of Hb, PCV and WBC count and its Differential (Nutrophiles%, Lymphocytes%, Monocytes%, Esinophiles%, Basiophiles%), .
2. Tubes (5ml) sterile free of anticoagulant for serum isolation.

Serum was obtained from whole blood samples after incubated at 37°C for 2 h, subsequently centrifuged at 2500 rpm for 10 min and were stored in the deep freeze until analyses of TSP, Albumine and Globuline (Young and Bermes,1999).

3-Parameters measurement:

1-hemoglobin (Hb), packed cell volume (PCV),white blood cells count (WBC) and it's differential were measured by using Auto-analyzer (Ruby –USA).

2-TSP (Alb. And Glob.) concentrations were determined by using the ARCHITECT c Systems and the AEROSSET System.

4- Statistical Analysis

Statistical analysis were carried out using analysis of variance (ANOVA) and using least significant differences (L.S.D) for the purpose to distinguish between the Averages Using Statistical Package for the Social Sciences (SPSS) program .

RESULTS AND DISCUSSION

1-Packed cells volume (PCV %)

Table (2) showed that there was no significant difference between groups of Kids in PCV% throughout the experimental periods; however, G4 was the highest among other groups during wk12.

Table (2): Effect of olive leaves and vitamins AD₃E on blood PCV% (mean ± SE) (n = 5).

Period Treatment	Wk0	Wk6	Wk12
G1	27.60±2.65	27.40±2.80	27.20±1.49
G2	26.20±0.37	25.40±0.81	27.40±1.16
G3	25.40±0.87	28.80±1.15	28.00±1.61
G4	26.40±0.67	28.80±0.58	28.20±0.48

2-Hemoglobin concentration (Hb)

Table (3) showed that there was significant increase ($P < 0.05$) in Hb concentration of G4 (9.30 ± 0.18) at Wk6 compared with G2 (8.22 ± 0.31), and, there was significant difference ($P < 0.05$) in Hb concentration of G3 at Wk6 (9.25 ± 0.38) compared with Wk0 (8.11 ± 0.30).

Table (3): Effect of olive leaves and vitamins AD₃E on Hb concentration (gm/dl) (mean \pm SE) (n = 5).

Different letters vertically denote significant ($P < 0.05$) differences among groups mean

Period Treatment	Wk0	Wk 6	Wk12
G1	9.02 \pm 0.86	8.74 \pm 0.89 AB	8.66 \pm 0.52
G2	8.81 \pm 0.70	8.22 \pm 0.31 B	8.77 \pm 0.37
G3	8.11 \pm 0.30 b	9.25 \pm 0.38 A B a	9.04 \pm 0.53 a b
G4	9.03 \pm 0.13	9.30 \pm 0.18 A	9.15 \pm 0.16

and horizontally between periods.

The results of PCV were in agreement with (Mulei,1991), who indicated that the low number of red blood cells because of metabolic disturbance in the body and which interfere with the processes of digestion and absorption of nutrients necessary for the manufacture of red blood cells.

The results were in disagreement with those outcomes by Dawood,(2005) who observed that high level of PCV% in ewes treated with vitamin E.

The Hb level of G4 and G3 of Kids increased in wk6 period of the experiment, may be indicate that the Kids were in a good health, in addition to, well fed and good husbandry, these results were in agreement with those by (Ahmadvand,2012),who indicated that olive leaves, as oxidation inhibitor, added to the diet lead to an increase in (Hb), this may be due to it's content of oleuropein which is similar to others antioxidants such as vitamin E and coenzyme Q10. Also in agreement with those by (Nadide and Ebru,2005), who concluded that may be due to the effect of vitamin E, to protect and maintain the blood cells from the crash .

The results of Hb concentration were also in agreement with those outcome by (Dawood,2005) who observed that high level of Hb in ewes treated with vitamin E may be due to stimulation of the production centers of red blood cells in the bone marrow. While the results were disagreed with the finding by (Al-Taie,2009) and (Yang *et al.*,2010) who pointed that the level of (Hb) increase with addition of vitamin A to the diets of goat milk.

3-White blood cells count (WBC)

There was a significant increase ($P < 0.05$) of WBCs count in the Kids of the treated groups G4, G3, G2 (10.38 ± 0.49 , 10.97 ± 0.25 , 11.26 ± 0.24) respectively at wk12 compared with G1 (9.13 ± 0.45) and there was a significant increase ($P < 0.05$) in G2 at wk12 (11.26 ± 0.24) compared with wk0 and wk6 (9.06 ± 0.78 , 10.57 ± 0.34) respectively. Also, G3 was significantly increased ($P < 0.05$) at wk12 and wk6 compared with wk0.

Table (4): Effect of olive leaves and vitamins AD₃E on WBCs count (Cell/mm³)(mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	9.07 \pm 0.64	10.02 \pm 0.24	9.13 \pm 0.45 B
G2	9.06 \pm 0.78 ab	10.57 \pm 0.34 b	11.26 \pm 0.24 A a
G3	9.06 \pm 0.65 b	10.54 \pm 0.29 a	10.97 \pm 0.25 A a
G4	9.98 \pm 0.14	10.56 \pm 0.29	10.38 \pm 0.49 A

Different letters vertically denote significant ($P < 0.05$) differences among groups mean and horizontally between periods.

3-1-Neutrophile cells %:

Table (5) showed that there was significant increase ($P < 0.05$) in G4 at wk6 (48.32 ± 0.47) compared with G3 (44.86 ± 1.32) and G2 at wk12 (49.68 ± 0.90) compared with G3 (46.04 ± 1.59). While, G3 was significantly increased ($P < 0.05$) at week0 (47.15 ± 0.79) compared with Wk6 (44.86 ± 1.32).

Table (5): Effect of olive leaves and vitamins AD₃E on Neutrophils % of Kids (mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	47.46 \pm 0.86	46.48 \pm 0.70 AB	48.28 \pm 1.45 AB
G2	49.42 \pm 0.90	47.16 \pm 1.36 AB	49.68 \pm 0.90 A
G3	47.15 \pm 0.79 a	44.86 \pm 1.32 Bb	46.04 \pm 1.59 Bab
G4	48.65 \pm 1.18	48.32 \pm 0.47 A	48.26 \pm 0.37 AB

Different letters vertically denote significant ($P < 0.05$) differences among groups mean and horizontally between periods.

3-2-Lymphocyte cells%:

Table (6) indicated that there was significant increase ($P < 0.05$) in G3 at wk12 (46.06 ± 0.74) compared with G2 (42.72 ± 1.02), while there were no significant differences ($P < 0.05$) between groups during wk0 and wk6. Also there were no significant differences between the three periods in all groups.

Table (6): Effect of olive leaves and vitamins AD₃E on Lymphocytes % of Kids (mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	44.26 \pm 1.12	44.28 \pm 1.01	44.76 \pm 1.64 AB
G2	43.24 \pm 1.08	42.68 \pm 1.98	42.72 \pm 1.02 B
G3	45.22 \pm 0.78	45.06 \pm 1.80	46.06 \pm 0.74 A
G4	44.60 \pm 0.93	42.94 \pm 1,32	45.20 \pm 0.81 AB

Different letters vertically denote significant ($P < 0.05$) differences among groups mean.

3-3-Monocyte cells%:

Table (7) indicated that there was no significant difference in the Monocytes between all groups of Kids during the three periods of the experiment.

Table (7): Effect of olive leaves and vitamins AD₃E on Monocytes % of Kids (mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	5.72 \pm 0.55	5.34 \pm 0.31	4.78 \pm 0.78
G2	4.97 \pm 0.23	4.99 \pm 0.11	5.00 \pm 0.31
G3	5.41 \pm 0.17	4.51 \pm 0.16	5.07 \pm 0.27
G4	4.95 \pm 0.23	5.64 \pm 0.54	5.41 \pm 0.14

3-4-Esinophile cells %:

Table (8) showed that the Esinophiles% of G3 significantly increased ($P < 0.05$) at wk12 (2.12 ± 10.25) compared with G2 (0.56 ± 0.20) and G4 (0.92 ± 0.14), also at wk6 (4.57 ± 1.19) compared with G4 (0.99 ± 0.29). In addition, at wk6, G2 was increased significantly (3.72 ± 1.43) compared with wk0 (1.52 ± 0.99) and wk12 (0.56 ± 0.20), also G3 was significantly increased (4.57 ± 1.19) compared with wk0 (1.10 ± 0.54).

Table (8): Effect of olive leaves and vitamins AD₃E on Esinophiles % of Kids (mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	1.50 \pm 0.57	2.83 \pm 0.58 AB	1.17 \pm 0.57 AB
G2	1.52 \pm 0.99 b	3.72 \pm 1.43 ABa	0.56 \pm 0.20 Bb
G3	1.10 \pm 0.54 b	4.57 \pm 1.19 Aa	2.12 \pm 10.25 Aab
G4	0.98 \pm 0.33	0.99 \pm 0.29 B	0.92 \pm 0.14 Bb

Different letters vertically denote significant ($P < 0.05$) differences among groups mean and horizontally between periods.

3-5-Basophile cells%:

Table (9) indicated that the Basophiles% was significantly increased ($P < 0.05$) in G2 at wk12 (1.24 ± 0.15) compared with G3 (0.69 ± 0.10) and G4 (0.43 ± 5.77). While, G4 was significantly increased ($P < 0.05$) at wk6 (1.12 ± 0.21) compared with wk12 (0.43 ± 5.77).

Table (9): Effect of olive leaves and vitamins AD₃E on Basophiles % of Kids (mean \pm SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	1.04 \pm 0.26	1.08 \pm 0.23	0.98 \pm 0.15 AB
G2	1.11 \pm 0.29	1.43 \pm 0.13	1.24 \pm 0.15 A
G3	1.11 \pm 0.30	0.98 \pm 0.18	0.69 \pm 0.10 B
G4	0.88 \pm 0.18 ab	1.12 \pm 0.21 a	0.43 \pm 5.77 Bb

Different letters vertically denote significant ($P < 0.05$) differences among groups mean and horizontally between periods.

The results of WBCs count showed significant increase ($P < 0.05$) in G4, G3, G2 respectively at wk12 compared with G1. These results were in agreement with (Durlu-Özkaya, 2011), who used feed additive, as anti oxidants e.g. vitamin E-Se and olive leaves which stimulate the animals' immune system as well as improve immune response to vaccination and thereby protect the animals against stress.

The results of this study were in agreement with (Zikri, 2005), who observed that giving vitamin E to Awassi rams led to increase in the differential leukocyte during the experiment, also was in agreement with (Dawood, 2005) who noted an increase in the number of WBCs in Vitamin E and Vitamin E+HCG group compared with control group of Awassi ewes.

The result of Lymphocytes indicated that the significant increase ($P < 0.05$) in G3 (olive leaves & AD₃E) may be due to synergistic effect of vitamin E with olive leaves. The high proportion of lymphocytes in this group maybe due to the effect of vitamin A, which plays an important role in the process of the formation and differentiation of lymphocytes type T&B (Semba, 1998), and in agreement with (Yang *et al.*, 2010), who pointed that an increase in lymphocytes cell in goat milk when adding vitamin A to diets, or may be due to the effect of vitamin D₃ in direct proliferation and differentiation of lymphocytes (Daniel, 2009).

4- Serum proteins

4-1-Total Serum proteins (TSP):

Table (10) showed that there were no significant differences ($P < 0.05$) in TSP concentrations throughout the experimental period except that of G4 (7.62 ± 0.16) at wk12 compared with G2 (6.94 ± 0.15). While, at wk12, G4 increased significantly ($P < 0.05$) compared with other periods wk0 and wk6 ($6.58 \pm 0.08, 6.96 \pm 0.11$) respectively, also G3 (7.42 ± 0.18) compared with wk0 (6.88 ± 0.18)

Table (10): Effect of olive leaves and vitamins AD₃E on Total Serum protein of Kids g/dl (mean \pm SE) (n=5).

Period \ Treatment	Wk0	Wk 6	Wk12
G1	6.86 \pm 0.34	6.82 \pm 0.19	7.22 \pm 0.35 AB
G2	6.60 \pm 7.07	6.72 \pm 0.14	6.94 \pm 0.15 B
G3	6.88 \pm 0.18 b	7.12 \pm 0.23 ab	7.42 \pm 0.18 ABa
G4	6.58 \pm 0.08 b	6.96 \pm 0.11 b	7.62 \pm 0.16 Aa

Different letters vertically denote significant ($P < 0.05$) differences among groups mean and horizontally between periods.

4-2-Albumin level (Alb)

Table (11) showed that the Albumin level in G1 significantly increased at wk6 (3.02 ± 5.83) compared with G2 (2.84 ± 0.10), G3 (2.86 ± 5.09) and G4 (2.76 ± 0.12). While G2 significantly

increased at wk6 (2.84±0.10) compared with other periods wk0 (2.58±9.16), and wk12 (2.64±6.78), also G3 significantly increased at wk6 (2.86±5.09) compared with other periods wk0 and wk12 (2.48±3.74,2.48±3.74) respectively.

Table (11): Effect of olive leaves and vitamins AD₃E on Albumin level of Kids (g/dl) (mean ± SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	2.52± 3.74	3.02±5.83 A	2.50± 3.16
G2	2.58± 9.16b	2.84± 0.10 Ba	2.64± 6.78 b
G3	2.48± 3.74 b	2.86± 5.09 B a	2.48± 3.74 b
G4	2.64± 9.27	2.76± 0.12 B	2.66± 4.00

Different letters vertically denote significant (P < 0.05) differences among groups mean and horizontally between periods.

4-3-Globulin level

Table (12) indicated that there was significant increase (P < 0.05) in serum Globulin in G1 (4.74±0.74) compared with G2 (3.90±0.21) at wk0. But, G1 showed a significant decrease (3.80±0.17) at wk6 in comparison with wk0 (4.74±0.74) and wk 12 (4.72±0.36). Also, G3 decreased significantly (P<0.05) at wk6 (3.86±0.26) in contrast with wk12 (4.90±0.21), while G4 increased significantly (P<0.05) at wk12 (4.96±0.14) compared with wk0 (4.10±0.16).

Table (12): Effect of olive leaves and vitamins AD₃E on Globulin level of Kids (g/dl) (mean ± SE) (n=5).

Period Treatment	Wk0	Wk 6	Wk12
G1	4.74±0.74 Aa	3.80±0.17 b	4.72±0.36 a
G2	3.90±0.21 B	3.88±0.17	4.30±0.20
G3	4.40±0.17 ABab	3.86±0.26 b	4.90±0.21 a
G4	4.10±0.16 ABb	4.20±0.15 ab	4.96±0.14 a

Different letters vertically denote significant (P < 0.05) differences among groups mean and horizontally between periods.

The results of serum proteins indicated that there were significant increased ($P < 0.05$) of TSP G4 in the wk12 compared with G1. These results were in agreement with those by (El-damrawy,2011) Obtained data showed that OLP supplementations increase total proteins and globulin.

It was pointed out that improving of olive leave nutritive value may be supplemented by proteins(Martín *et al.*, 2003, Aerts *et al.*,1999, Silanikove *et al.*,2001).The low nutritive value of this olive by-product could be explained by the presence of phenolics such as tannins, which may limit nutrient availability, due to their capacity to bind proteins and carbohydrates (Silanikove *et al.*,1996). Also in agreement with (El-damrawy,2011) when feeding diets contained OLP was significant decreased albumin to globulin (ALB:GLB) ratios.

References

- Abdou,M.M.(2001).Effect of some medicinal plants in the ration on productive performance of lactating animals. Ph. D. Thesis, Faculty of Agriculture, Ain Shams University.
- Aerts, R.J.; Barry, T.N. and McNabb,W.C. (1999).Polyphenols and agriculture:Beneficial effects of proanthocyanidins in forages. *Agr. Ecosyst.Env.* 75: 1-12.
- Ahmadvand, H.(2012). Effects of coenzyme Q10 on hemoglobin A1C,serum urea and creatinine in alloxan-induced Type 1 diabetic rats. *Iran J. Pharm. Therapeut* . 11(2): 64-67.
- Alcaide, M.D.; Yáñez Ruiz, E.; Moumen, A. and Martín, G.I. (2003).Chemical composition and nitrogen availability of some olive by- products. *Small Ruminant Res.*, 49:329-336.
- Al-Taie, R.N.D., (2009).Dosage effect of vitamin A and folic acid in puberty and some blood and hormones traits of Awassi ewes. MSc. College of Agriculture and Forestry.University of Mosul.
- Daniel, D.(2009). Vitamin D and immune function. National institutes of health Review from the department of veterans Affairs and grant 07 A140 from American institute of cancer Research.pp:27-33.
- Dawood, T.N., (2005). Effect of Vitamin E and HCG Hormone in Blood Traits and Hormones Level of Awassi Ewes. M.Sc. thesis, Colleg of Veterinary medicine,University of Baghdad.
- Delgado, P.M.; Gómez, C.A. and Garrido, A. (2000) Predicting the nutritive value of the olive leaf (*Olea europaea*): Digestibility and chemical composition and *in vitro* studies. *Anim Feed Sci Technol*,187: 187-201.
- Durlu-Özkaya, F. and Özkaya, M.T. (2011).Oleuropein using as an Additive for Feed and Products used for Humans. *J. Food Process Technol*,ISSN:2157-7110 JFPT, an open access journal, Volume 2,Issue 3.
- El-damrawy, S.Z.(2011). Alleviate the oxidative stress in aged rabbit bucks by using olive leave extract. *Egypt. Poult. Sci.*, 31(4): 737-744.

- Ensminger, M.E. and Parker, R.O. (1986): Sheep and Goat Science, Fifth Edition. Danville, Illinois: The Interstate Printers and Publishers Inc.
- Federico, I.; Giuseppe, M.; Monica, I.C. and Fulvia, B., (2005). Vitamin and water requirements of dairy sheep. *Ital. J. Anim. Sci.*, 4 (suppl. 1) p: 75-83, ISSN 1828-051X. Article.
- Martín, G.A.I; Moumen, A.; Yáñez Ruiz, D.R. and Molina Alcaide, E. (2003) Chemical composition and nutrients availability for goats and sheep of two-stage olive cake and olive leaves. *Anim Feed Sci. Tech.*, 107:61-74.
- Mulei, C.M. (1991). Changes in blood chemistry in late pregnancy and early lactation and their relationships to milk production in dairy cows., *Bull. anim. Hlth. Prod. Afr.*; 39:77-81.
- Nadide, N.K. and Ebru, B., (2005). Effects of vitamin A and beta carotene injection on level of vitamin E and Glutathione peroxidase Activity in pregnant tuj sheep. *Turkey J. Vet. Anim. Sci.*, 29: 1033-1038.
- Owen, R.W.; Giacosa, A.; Hull, W.E.; Haubner, R.; Spiegelhalter, B. (2000). Olive oil consumption and health: the possible role of antioxidants. *Lancet Oncol* 1:107-112.
- Semba, R.D. (1998). The role of vitamin A and related retinoids in immune function. *Rev.*, 56(1): 38-48.
- Silanikove, N.; Perevolotsky, A. and Provenza, F.D. (2001). Use of tannin-binding chemicals to assay for tannins and their negative postingestive effects in ruminants. *Anim. Feed Sci. Tech.*, 9:69- 81.
- Silanikove, N.; Shinder, D.; Gilboa, N.; Eyal, M.; Nitsan, Z. (1996). Binding of polyethylene glycol to samples of forage plants as an assay of tannins and their negative effects on ruminal degradation. *J. Agric. Food Chem.*, 44:3230-3234.
- Yáñez-Ruiz, D.R. and Molina-Alcaide, E. (2008). A comparative study of nutrients utilization, alkaline phosphatase activity and creatinine concentration in the serum of sheep and goats fed diets based on olive leaves. *J. Anim. Physiol. Anim. Nutr.*, 92: 141-148.
- Yang, W.; Wang, P.; Jing, Y. and Yang, Z. (2010). Effect of vitamin A on Growth performance, Antioxidation status and blood constituent in lacting Grey Goat. *American J. of Anim. and Vet. Sci.*, 5(4):274-281.
- Young, D.S. and Bermes, E.W. (1999). Specimen collection and processing: Sources of biological variation. In: Burtis, C.A., Ashwood, E.R. (Eds.), *Tietz Textbook of Clinical Chemistry*, 3rd Edition. Saunders, Philadelphia, PA, USA, PP.41-72.
- Zikri A.M., (2005). Effect of vitamin E and injection the hormone human chorionic Gonadotropin HCG in hematological and reproductive traits of the Awassi rams. M.Sc. thesis. College of Veterinary Medicine, university of Baghdad.