EFFECT OF USING VITAMIN E-SELENIUM OR MULTI VITAMINS AD_3EON PRODUCTIVE PERFORMANCE AND SOME PHYSIOLOGICAL TRAITSIN IRAQI GOAT'S KIDS.

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Abstract

A study was designed to evaluate the effect of vitamin E-Selenium or multivitamins AD_3E supplementation to Iraqi goat's kids growing as an antioxidant on productive performance and some physiological parameters,Eighteen healthy Iraqi goat's kids were used, around (2-3) months of age, with an average live weight of 17 kg and were reared in the livestock farm , experimental feeding was continued for a period of 90 days from 1/8/2020 to 1/11/2020 in addition to 20 day as adaptation period.After adaptation period, kids were randomly divided into three groups (6 kids /group), the first group (AD_3E) supplemented with vitamin A,200,000 IU, vitamin D_3 40,000 IU and vitamin E 40 mg , the second group supplemented with vitamin E 400 mg and selenium 1.2 mg / kids / biweekly, and the third group as a control, each main group were subdivided into two groups, three kids in each for determination of feed intake and all groups were fed a concentrate diet (%2.25dry matter (DM) of live body weight) in addition to alfalfa (1 kg / head). Nacl 1% and calcium bicarbonate were provided as blocks, whole blood were collected from jugular vein monthly for measurement blood parameters include: hemoglobin (Hb), packed cell volume (PCV) and white blood cells (WBC) as well as lipids profile was determined in serum and weekly feed intake, body weight (BW). The results revealed that there were significant improvements of vitamin E-Se group on productive performance (body weight in the weeks 13 and 15, feed intake.The results revealed that there were significant improvements of vitamin E-Se group on PCV% was significantly higher in vitamin. E-Se group than that of other groups on the 1^{st} and 2^{nd} months, while there were no significant differences between groups in Hb concentration and there was significant effect in WBCs count on the 1^{st} month.There was a significant difference in high density lipoprotein cholesterol (HDL-C) concentration of the E-Se group compared with AD_3E and control groups.In conclusion that supplementation of vitamin E-Se or vitamins AD_3E to growing kids improve the productive performance, in addition to, synergistic action between vitamin E with selenium work as a good antioxidant the role of multi vitamins AD_3E are improve body weight.

Keywords: vitamin E-selenium, kids, productive performance, physiological traits.

Introduction

Goats were among the first farm animals to be domesticated. As indicated by the archaeological evidence, they have been associated with man in a symbiotic relationship for up to 10,000 years (Ensminger and Parker, 1986).Feed additives are important materials that can improve the efficiency of feed utilization and animal performance (Abdou, 2001).

Fat soluble vitamins A, D_3 and E are play important roles in the improvement of goats performance and productivity, in recent years, many studies were conducted on effects of dietary vitamins supplementation on various animal performances (Dufrasne*et al*., 2000 and Macit*et al*., 2003a).Oxidative stress due to increase production of free radicals and reactive oxygen species, and/or a decrease in antioxidant defenses, leads to damage of biological macromolecules and disruption of normal metabolism and physiology, when reactive forms of oxygen were- produced faster than they can safely be neutralized by antioxidant mechanisms (Tervisan*et al*., 2001). Vitamin E (α-tocopherol) has a role as an effective antioxidant promotes oxidative stability and meat conservation products, its helps to prevent diseases, stimulate the immune system and it is believed to play a key role in delaying the pathogenesis of a variety of degenerative diseases such as cancer, inflammatory diseases, neurological disorders, cataract and age-related cell degeneration (Bramley*et al*., 2000 and Packer, 1991). Vitamin A is essential for the regeneration of the visual purple necessary for dim light vision, for normal bone growth, wool production and for maintenance of normal epithelial tissues (Radostits*et al*., 2007). Vitamin D_3 has long been known to be important, as a direct or indirect effect on the uptake of calcium and phosphorus from the gut and into bone to prevent rickets (Weaver and Fleet, 2004) .The antioxidative properties of Selenium have been well documented (Duntas, 2006 and Molnar *et al*., 2008). Adequate dietary Se is necessary for proper growth, reproduction, and performance, and Se deficiency results fatal disease conditions in human and animals (Levander and Burk, 1986), whereas excessive intake of Se causes toxicity (Neville *et al*., 2008).

Materials and Methods

1.Experimental design

Present study was carried out at the goats farm located at livestock failed from1/8/2020 to 1/11/2020 in addition to 20 day as adaptation period.Eighteen healthy Iraqi goat's kids were selected for this study from the livestock farm at approximately (2-3) month of age and average body weight (BW) of 17 kg after adaptation period, kids were randomly divided into three groups, (body weight was considered) each were equally divided into two sub groups .

The first group (AD_3E) received vitamin A 200.000 IU, vitamin D_3 40000 IU and vitamin E 40 mg kid / 2week, the second group E-Se received vitamin E 400 mg and Selenium 1.2 mg (vitamin E 340 mg as capsules plus vitamin E 60 mg with 1.2 mg as solution kid/ 2week, and the third groupas a control with no treatment.

2.Measurements and samples collection

2.1Productive performances

2.1.1Body weights

The body weights of all kids were estimated weekly using a farm digital balance in order to find out the weight gain throughout the experimental period.

2.1.2Feed intake

Feed intake was calculated weekly based on 2.25% concentrate feed of live body weight and estimated as follow:

(gm) feed intake / lamb/ day = [concentrate diet (%2.25 of live bodyweight) × 0.90 [*]] + green grass(1000 g ×0.20 [**]). (Goetsch, 1998).

[*] 0.90 = dry matter percentage from concentrate.

[**] 0.20 = dry matter percentage from Alfalfa green grass.

2.2Blood samples

Blood samples were collected on day zero and thereafter every 30 days interval via sterilized jugular vein puncture, blood samples were distributed into two tubes containing:

1. EDTA (Ethylene Diamine Tetra acetic Acid) tubes for measurement of Hb, PCV and WBC count.
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 freezing –16 °C until analyses of lipid profile (Cholesterol, Triaceylgecerol, LDL-C and HDL-C)Youngand Bermes., (1999).

2.2.1Hemoglobin concentration (Hb)

Hemoglobin concentration was measured as (g /dl) and carried out by Spectrophotometric method according to the method described by John and Lewis, (1984). Blood were diluted by potassium fercyanide (Drabkin's solution) and in turn oxidized hemoglobin to met-hemoglobin with light brown color, by mixing 5ml of Drabkin''s solution with 0.2ml of the blood sample, after 10 minutes the color density was measured by using a spectrophotometer. The absorption was measured by spectrophotometer at the wavelength 540 nm after reset the device using Drabkin's solution. The amount of hemoglobin was calculated as following:

$$\text{Hb concentration gm/dl} = {}^{*}\frac{\text{O.D. sample}}{\text{O.D. standard}} \times \text{Hb standard conc. (18 gm/dl)}$$

[*]O.D. = Spectrophotometer Optical Density

2.2.2Packed Cells Volume (PCV %)

PCV can be determined by centrifugingheparinized blood in opened capillary tubes on both sides, (also known as a microhematocrit tube), contains a layer of anti-clotting (heparin) passed sample blood through capillaries and mediated capillary up to 75% of its size with the closure of one of their slots mediated artificial mud and centrifuged at a preset speed of 10,000 to12,000 rpm for 5 minutes, the three layers

contain, plasma, red blood cells and buffuy coat cells. The results were read using the blood scale Hematocrite Reader (John & Lewis, 1984).

2.2.3White blood cells count (WBCs)

The total WBCs were measured in thousands per cubic milliliter of blood by hemocytometer; the pipette was filled to the 11 mark with crystal violet diluents (Turkey's Solution*, reduces Red blood cells while preserving the WBCs, easily can be counted),with sealed the end by a finger, to mix the contents, the tube was shacked well, 1/2 of pipette were removed into waste container, a small amount of the diluted blood was spread on the chamber of the hemocytometer, Figure: 1

The slide left for 2 minutes for the stability of the blood cells (WBCs) in the four squares Figure: 1 of the chip census under the low-power magnification. (John and Lewis, 1984)

$$WBCs\ count = (Total\ cell \times 50\ /mm^3)(\ Cell \times mm^3)$$

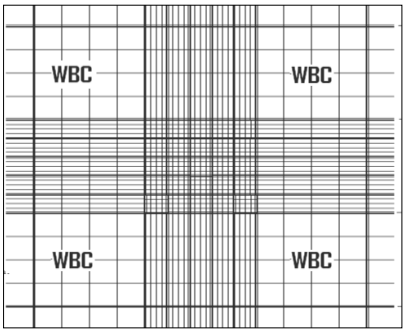

***Figure: (1) Chamber of the hemocytometer.**

Turkey's Solution composed of Glacial acetic acid 1.5 ml + 1 ml Gentian violet 1% + Distilled water 47.5 ml (Coles, 1986). (Vaccine & Sera Institute/ Iraq- Baghdad).

2.2.4Lipids profile determination

The following analyses were calculated by using colorimetric assay kit (Syrbio Co.).

2.2.5Total cholesterol concentration

Serum total cholesterol (mg/dl) was estimated enzymatically (Enzymatic colorimetric test) using kit manufactured by Syrbio Co. (National Cholesterol Education Program NCEP, 2001).

Procedure

Cholesterol concentration was measured in serum of lambs, one ml of reagent was taken with 10 micro litter of blood serum in a clean test tube, and one ml of reagent as blank, as follow:

Material	Blank	Standard	Serum sample
Standard	**-**	**10µl (200 mg/dl)**	**-**
Serum Sample	**-**	**-**	**10µl**
Working Reagent	**1ml**	**1ml**	**1ml**

The contents were mixed well, incubated at 37 ºC for 10 minutes; the quinineimine complex formed was measured by spectrophotometer at 500 nm wave length.

Calculation:

Cholesterol (mg/dl) = O.D. Sample X Concentration of Standard. 200 mg/dl
O.D. Standard

2.2.6Triaceylglycerol (TAG)

Triaceylglycerol were estimated enzymatically (mg/dl), using determination kits from Syrbio reagents Co. according to (NCEP, 2001).

Procedure

Triaceylglycerol concentrations were measured in serum of kids, one ml of the reagent was mixed with 10 micro litter of blood serum using micropipette in a clean test tube and one ml of reagent as blank, as follow:

Material	Blank	Standard	Serum sample
Standard (TAG)	**-**	**10µl (200 mg/dl)**	**-**
Serum Sample	**-**	**-**	**10µl**
Working Reagent	**1ml**	**1ml**	**1ml**

The contents were mixed well, incubated at 37 ºC for 10 minutes. The quinineimine complex formed was measured by spectrophotometer at 520 nm wave length.

Calculation

Triaceylglycerol (mg/dl) = O.D Sample X Concentration of standard
O.D Standard (200mg/dl)

2.2.7 Low density lipoproteins-cholesterol (LDL –C)

LDL are precipitated by heparin at their isoelectric point (pH 5.0) after centrifugation (HDL) and very density lipoprotein (VLDL) remain in supernatant (NCEP, 2001).

Procedure

LDL-C level (mg/dl) were measured in serum of kids, one ml of the LDL-C reagent was mixed with a 100 micro litter of blood serum using micro pipette in a clean test tube The contents were mixed well, allowed to stand for 10 minutes at room temperature and centrifuged at 5000 rpm for 10 minutes to separate a clear supernatant as follow:

Serum sample	**100µl**
LDL Reagent	**1ml**

Material	Blank	Standard	Serum Sample

LDL Standard	**-**	**50µl (50mg/dl)**	**-**
Supernatant	**-**	**-**	**50µl**
ReagentCholesterol	**1ml**	**1ml**	**1ml**

LDL cholesterol was estimated by adding 50µl of clear supernatant, with 1ml of cholesterol kit reagent, and 50µl of standard LDL with 1ml of reagent cholesterol kit Syrbio for the reading of the standard optical density and one ml of cholesterol kit reagent as blank, as follow:

The contents were mixed well, incubated at 37ºC for 10 minutes, after that the optical density (O.D) was read. The color is stable for 30 minutes.The serum LDL levels were measured by spectrophotometer using colorimetric assay for cholesterol reagent kit (Syrbio) at 500 nm wave length.

Calculation

LDL -C = Total Cholesterol – <u>O.D. Sample</u> X 11 X 50 ***
O.D. Standard

11 = dilution factor.50 = standard concentration.*

2.2.8High density lipoproteins- cholesterol (HDL-C)

It was estimated according to NCEP (2001). (LDL), (VLDL) and Chylomicrons are specifically precipitated by Phosphotungestic acid and Magnesium ions and can be removed by centrifugation. (HDL) remain in the supernatant which will be determined by enzymatic method using HDL kit from (Syrbio reagents Co.).

Procedure

HDL-C Concentration (mg/dl) was measured in serum, one ml of HDL-C reagent (R_1) was mixed with 500 micro litter of blood serum using micro pipette in a clean test tube, and the contents were mixed well, allowed to stand for 10 minutes at room temperature then centrifuged at 5000 rpm for 10 minutes to separate a clear supernatant as follow:

Serum sample	**500µl**
HDL-C Reagent (R1)	**1ml**

HDL-Cholesterol determined by adding 50µl of clear supernatant with 1ml of cholesterol kit reagent, and 50µl of standard HDL with 1ml of reagent cholesterol Kit Syrbio for the reading of the standard optical density and one ml of cholesterol kit reagent as blank as follow:

Material	Blank	Standard	Serum sample
HDL-standard	**-**	**50µl (50 mg/dl)**	**-**
Supernatant	**-**	**-**	**50µl**
Cholesterol Reagent	**1ml**	**1ml**	**1ml**

The contents were mixed well, incubated at 37 ºC for 10 minutes then the optical density (O.D) has been read, the color is stable for 30 minutes. The serum

HDL-C levels were measured by spectrophotometer using colorimetric assay for cholesterol reagent kit (Syrbio) at 500 nm wave length.

Calculation

$$HDL\text{-}C\ (mg/dl) = \frac{O.D.\ Sample}{O.D.\ Standard} \times 50 \times 3\ (dilution)$$

2.3. Statistical Analysis

Statistical analysis were carried out using analysis of variance (ANOVA) and using least significant differences (L.S.D) for the purpose of distinguish between Averages Using Statistical Package for the Social Sciences (SPSS) program (Snedecor& Cochran,1980).

3.Results and Disussion:

3.1Productive performance

3.1.1 Body weight

Table (1) showed that the body weights were increased in all kids with age progress, the first few weeks (1 to 12) of the experiment, body weight did not differ among treatments, but there was significant differences ($P < 0.05$) in body weight of E–Se group in the weeks
(13&15) (26.21±1.07 & 31.31±1.30) compared with AD_3E (24.96±1.31 & 29.15±1.53) and the control group (24.10±2.26 & 27.85±2.09) respectively.

Table (1): Effect of vitamins AD_3E and vitamin E-Se on body weight and total weight gain (kg) (mean ± SE) (n=6).

Week	Control	E-Se	AD_3E
W1	17.83±0.531	18.05±0.802	17.62±0.671
W2	19.56±1.33	19.96±1.04	19.36±0.67
W5	20.41±1.38	20.86±0.56	19.81±0.65
W9	22.00±1.47	23.95±0.90	22.73±0.82
W13	24.10±2.26B	26.21±1.07A	24.96±1.31B
W14	26.21±1.97	28.70±1.33	27.15±1.53
W15	27.85±2.09B	31.31±1.30A	29.15±1.53AB
W16	28.01±2.19	31.16±1.17	29.30±1.92
W17	29.25±2.19	32.41±1.29	30.36±2.06
W18	29.25±2.20	33.06±1.33	31.08±1.81
Total weight gain	11.42±1.94B	15.01±0.92A	13.46±1.95AB

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

While, no significant difference among treatments during weeks (16-18) was shown. The total gains in all groups recorded were 11.42±1.94, 15.01±0.92 and 13.46±1.95 for the control, E-Se and AD_3E groups respectively, however totals body weight gain of E-Se group was significantly higher ($P < 0.05$) than that of the control group during the experimental period.

3.1.2Feed intake

Table (2) showed that the feed intake kids in weeks (1 to 11) was gradually increased with progress of experiment but these increases were not significant, the vitamin E-Se group was significantly increase ($P < 0.05$) in feed intake at weeks (13,17and 18) (833±20.00, 855.5±26.5& 868±33.0) respectively in comparison with other groups.

Table (2): Effect of vitamin E-Se and vitamins AD_3E on dry matter (DM) feed intake (gm) /kid/ day for a week. (mean ± SE) (n=6).

Week	Control	E-Se	AD_3E
W1	560.5±17.50	565.5±28.50	553.5±20.50
W3	595.5±9.50	603.5±44.50	590.5±27.50
W5	612.5±11.50	620±22.00	600.5±26.50
W7	644.5±3.50	688.5±29.50	667.5±22.50
W9	687.5±4.50	730.5±27.50	690±4.00
W11	730±10.00	780.5±31.50	749±17.00
W13	763±4.00B	833±20.00A	789.5±24.50AB
W15	767±5.00	804±11.00	792.5±25.50
W17	792±11.00B	855.5±26.50A	792±11.00B
W18	792±10.00B	868±33.00A	829±29.00B

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

The results of the gain in body weight of all groups during the experimental period indicated that those kids were at growth stage, and according to that, feed intake of all kids were increased, these results are consistent with (Al-Musawey.,2009 ; Ramzi .,2010) in their studies on Awassi, karadi lambs and local black does respectively. The results of treated groups revealed that vitamins nutrition should be considered important not only for preventing signs of deficiency, but also for optimizing animal health, productivity and product quality (Federico *et al*., 2005).Feed intake results showed that there was a significant increase ($P < 0.05$) in the E-Se compared with control and AD_3E groups in weeks 13, 17 and 18, according to (Van Soest ., 1994), feed consumption increase with the development of the kid's body, due to increase daily feed intake of dry matter. Additionally, this result may due to the administration of vitamin E which may be lead to an improvement of the appetite of goats, and increase the amount of feed intake (Al-Tamemmy, 2001). In contrast, control group was significantly ($P < 0.05$) lower feed intake, this may reflect low palatability to feed consumption (Collier *et al*., 2005) or may be related to the metabolic disturbance of enzyme, water and hormones in control group of kids (Marai*et al*., 2006).

3.2 Blood parameter

3.2.1Blood hemoglobin (Hb)

Table (3) showed that there was no significant difference between groups of kids in Hb concentration throughout the experimental period, however, E-Se group kids was the highest among other groups.

Table (3): Effect of vitamin E-Se and vitamins AD_3E on Hbgm/dl (mean ± SE) (n = 6).

Period / Treatment	1month	2month	3month	4Month
Control	22.33±1.74B	23.66±0.61B	29.83±2.71	29.00±0.85
E-Se	25.33±1.68A	25.33±0.84A	28.50±0.56	29.33±0.66
AD3E	20.50±0.50B	22.00±1.71B	28.16±2.78	28.66±1.11

3.2.2Packed cells volume (PCV %)

Table (4) showed that there were significant differences ($P < 0.05$) in PCV% of vitamin E-Se group (25.33±1.68 & 25.33±0.84) at 1st and 2nd months of the experiment compared with AD_3E group (20.50±0.50 & 22.00±1.71) and control group (22.33±1.74 & 23.66±0.61), while, there were no significant differences ($P > 0.05$) among groups in the 3rd and 4th months.

Table (4): Effect of vitamin E-Se and vitamins AD_3E on blood PCV% (mean± SE) (n =6)

Period / Treatment	1 month	2 month	3 month	4 Month
Control	7.33±0.58	6.00±0.25	10.50±0.84	8.83±0.42
E-Se	8.00±0.68	6.83±0.16	9.83±0.30	9.16±0.27
AD3E	7.05±0.20	6.66±0.44	9.50±0.61	8.83±0.42

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

The result of PCV% indicated that the significant increase ($P < 0.05$) in E-Se group may be due to vitamin E synergism with Se protects the platelets and red blood cells of kids from the hemolytic resulting from the oxidation process, which leading to maintain the PCV% (NRC, 1985b ; Can, 1997).The Hb level of all groups of kids increased gradually from 2nd month until the end period of the experiment, may be indicate that the kids were in a good health, in addition to, well fed and well husbandry and may be due to the effect of fat soluble vitamins on AD_3E and E-Se groups, which serves to protect and maintain the blood cells from the crash (Nadide&Ebru., 2005).

3.2.3White blood cells count (WBC)

There was a significant increase ($P < 0.05$) of WBCs count in the kids of the control group (17.94±1.88) in the first month compared with E-Se and AD_3E groups (10.52±1.34 & 7.29±2.10) respectively, while the WBCs counts in last three months was not significant table (5).

Table (5): Effect of vitamin E-Se and vitamins AD_3E on WBCs count Cell/mm^3 (mean ± SE) (n=6).

Period / Treatment	1 month	2 month	3 month	4 Month
Control	17.94±1.88A	11.88±1.01	9.34±0.81	10.04±1.44
E-Se	10.52±1.34B	9.90±1.05	8.11±1.76	8.50±0.29
AD_3E	7.29±2.10B	10.45±1.21	9.77±1.06	9.60±1.11

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

There is a significant increase ($P < 0.05$) in WBCs count of the control group compared with E-Se and AD_3E groups in the 1st months of the experiment, may be the effect of transmission, environmental and climatic conditions stress on kids during the first month, lead to increase of free radicals production, thyroid gland activity, metabolic rate and increase WBCs as a response of immune system, or could be the action of the lipids soluble vitamins which overcome the effect of stress factors that affecting on health of kids and maintain the level of WBCs in E-Se and AD_3E groups (Morigochi&Murga, 2000 ;Binev*et al*., 2006 ; Oystein*et al*., 2010).

3.3Serum lipids profile

3.3.1Cholesterol

Table (6) indicated that there was no significant difference in the serum cholesterol between groups of kids during the whole period of experiment, but the control group showed an increase from the 3rd month up to the end of the experiment, while the treated groups exhibit a fluctuation values during the experimental period.

Table (6): Effect of vitamin E-Se and vitamins AD_3E on serum Cholesterol of kids mg/dl (mean ± SE) (n=6).

Period / Treatment	1 month	2 month	3 month	4 month
Control	38.69±6.78	48.13±8.67	57.40±8.09	69.87±8.70
E-Se	46.61±4.42	61.56±4.35	41.64±6.22	67.37±3.51
AD_3E	37.79±7.50	55.16±13.24	53.52±4.47	64.33±4.57

3.3.2Triaceylglycerol(TAG)

Table (7) showed that there was significant difference ($P<0.05$) in the serum triacylglycerol in the kids of control group (35.57±5.20) in the 3rd month compared with E-Se group (22.32±4.31), while there were no significant ($P > 0.05$) differences between groups during the other months, however, all groups showed an increase in TAG toward the end of the experiment.

Table (7): Effect of vitamins AD_3E and vitamin E-Se on serum triacylglycerol of kids mg/dl (mean ± S) (n=6).

Period / Treatment	1month	2 month	3 month	4 month
Control	18.12±3.98	23.74±2.82	35.57±5.20A	46.26±3.49
E-Se	10.13±2.15	23.21±2.70	22.32±4.31B	45.71±3.13
AD_3E	19.29±8.08	14.66±2.68	29.51±3.56AB	39.38±7.05

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

3.3.3Low density lipoprotein cholesterol (LDL-C)

There were no significant differences in the serum LDL among groups of kids through the whole experimental period (Table 8), while E-Se group showed a slight decrease during the last two months.

Table (8): Effect of vitamins AD_3E and vitamin E-Se on serum LDL of kids mg/dl (mean ± SE) (n=6).

Period / Treatment	1 month	2 month	3 month	4 month
Control	21.23±3.72	26.46±4.75	31.38±4.42	28.64±6.58
E-Se	25.40±2.30	34.19±3.00±	21.94±2.68	23.94±4.02
AD_3E	20.75±4.12	30.26±7.28	29.26±2.44	24.37±4.27

3.3.4High density lipoprotein cholesterol (HDL-C)

Table (9) showed that there was no significant differences in the serum HDL between groups of kids in the 1st, 2nd and 4th months of the experimental period, while in the 3rd month, the E-Se group (47.26±5.56) was significantly higher than those of control (33.01±7.54) and AD_3E (37.07±3.25) groups.

Table (9): Effect of vitamins AD_3E and vitamin E-Se on serum HDL of kids mg/dl (mean ± SE) (n=6).

Period / Treatment	1 month	2 month	3 month	4 month
Control	31.96±3.02	34.55±3.79	33.01±7.54B	45.34±9.89
E-Se	41.93±4.39	33.54±2.32	47.26±5.56A	50.34±3.63
AD_3E	31.23±2.30	35.91±3.66	37.07±3.25AB	56.97±7.20

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

It is a fact that improvement of the lipids profile achieved by decreasing the serum levels of total cholesterol, triacylglycerol and LDL-C, and increasing of HDL-C level (Almeida *et al*., 2012).

The results of the serum cholesterol and LDL levels showed no significant increase ($P > 0.05$) between groups of kids along the experiment, but on the 3rd month serum triacylglycerol was significantly higher in the control than those of other treated groups, this could be attributed to the effect of vitamin E-Se supplementation, as antioxidants on lipids profile of kids by reducing serum lipids oxidation. Besides, the significant increase of HDL in the 3rd month of period in E-Se group may be reflect the role of vitamin E and Se combination in prevention of oxidation of the serum lipids profile of kids.

Mirosław*et al*., (2007) who demonstrated that administration of Se (1ml 0.1% Na2SeO4), Zn (3ml 10% ZnSO4) and vitamin E 60 mg) daily orally to growing Polish Merino ram lambs for 42 day induced a decrease of blood plasma total cholesterol of lambs and HDL fraction level increased compared with control group. Also, Falkowska*et al*., (2000) showed that supplementation of a diet with Se and vitamin E significantly increased HDL fraction in blood of cows. Li *et al*. (2010) thought that multivitamins and mineral supplementation has been shown to have

beneficial effect on lipid profile.Lipids profile results of kids were in agreement with those found by (Hidiroglou&Charmley.,1990) who showed that dietary supplementation of various vitamin E sources has no overall treatment effects for total cholesterol, triaceylglycerol in sheep and were in agreement with Mudgal*et al*., (2008) whom also did not find any effect on cholesterol values in the Se supplemented male buffalo calves, also in accordance with Soliman*et al*. (2012) whom showed that the total lipids of treated ewes and their lambs were not significant, when ewes and their lambs were injected intramuscularly with 1.0ml /head contained 150mg vitamin E acetate and 1.67mg sodium selenite biweekly starting at 4 weeks late gestation and during suckling period for 12 weeks.The supplementation with vitamin E has previously been positively correlated with decreased total cholesterol and triaceylglycerol concentrations (Hamilton *et al*., 2000 ;Merzouk*et al.*, 2004), whereas, Baydas*et al*,. (2002) reported a negative association between vitamin E and serum cholesterol and triaceylglycerol levels in rats.

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