

## EFFECT OF VITAMIN E AND SELENIUM INJECTION ON SOME PHYSIOLOGICAL CHARACTERISTICS AND BIOCHEMICAL PARAMETERS IN LOCAL RAM LAMB

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### ABSTRACT

The aim of present study was to investigate the response of vitamin E and selenium injection in local ram lambs on the hematological aspect, thyroid hormones, biochemical parameters, and growth rate. Twenty-four weaned (3-4 month old) ram lambs and averaged  $20.827 \pm 0.5$  kg in weight were used. The lambs were divided randomly into three groups (8 lambs each). 1st group was served as the control, the lambs were injected with 1.0 ml/head of physiological saline solution (0.9%), 2nd group (T1), lambs were injected intramuscularly with vitamin E 2.5 mg/kg of body weight and sodium selenite 25 $\mu$ g/kg of body weight and 3rd group (T2), the lambs were injected intramuscularly with vitamin E 5 mg/kg of body weight and sodium selenite 50 $\mu$ g/kg of body weight. The injection administered at weekly interval for 12 weeks. Results showed that T1 significantly increased packed cell volume (PCV %) and lymphocytes. The result of current study did not show a significant change between the test group in growth rate, ESR, thyroid hormones, biochemical parameter including (glucose, total protein, albumin, globulin, cholesterol, and triglyceride and aspartate aminotransferase). In conclusion, injection of vitamin E and selenium has positive effect on some physiological parameters in local ram lamb.

**KEY WORDS:** Lambs, vitamin E, selenium, hematological value, thyroid hormones, biochemical parameters

### INTRODUCTION

Sheep is an important element of the agricultural economy (Pandian *et al.*, 2015), with its multi aspect utility (Chaudhary *et al.*, 2015). Nutrition is considered the most important factor influence the rate of production of sheep (Rinehart, 2008; Yami, 2008). It has been widely documented that minerals and vitamins have an important role in the growth and reproductive performance of animals (Koyuncu and Yerlikaya, 2007). Vitamin E is the most important fat soluble vitamin and also antioxidant, which is found in the body tissues (Lewis *et al.*, 2019), and is considered as the first line of defense against lipid peroxidation, and for normal function of immune cells (Pekmezci, 2011). Also, Selenium is an important essential mineral for numerous physiological processes, particularly for the functions of the reproduction, immune system, thyroid hormones metabolism as well as the defense of antioxidants in animals (Hosnedlova *et al.*, 2017). Furthermore, Selenium and vitamin

E together have a related biological function in that selenium is an essential ingredient in Glutathione peroxidase enzyme (Meschy, 2000). Lack of selenium and vitamin E will lead to muscular dystrophy or white muscle disease in small ruminant (Ghanem *et al.*, 2016, Rodriguez *et al.*, 2018).

Researches have been undertaken to improve beneficiary understanding effects of selenium and vitamin E on the growth and performance of lambs (NRC, 2007). It has been reported that injection of selenium and vitamin E had a positive effect on growing Ossimi lambs, enhancing their immune function and antioxidant status (Soliman, 2015). Also, vitamin E and Selenium supplementation had a positive effect on the metabolic and antioxidant status in Ossimi ewes and their lamb performance (Abdel-Raheem *et al.*, 2019). On the other hand, vitamin E and selenium injection had not affect on the total weight gain and average daily gain of Baloochi lambs was observed (Mohri *et al.*, 2011). Thus, this study aimed to determine the effect of injection of

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vitamin E and selenium on growth rate, some physiological functions and biochemical parameters in local ram lambs.

## MATERIALS AND METHODS

This experiment was conducted at the Animal Production Project, Department of Animal Production, College of Agricultural Engineering Sciences, University of Duhok from 15<sup>th</sup> of March to 16<sup>th</sup> of June 2019.

**Design of the experiment:** A total of twenty-four weaned (3-4 month old) and weighing  $20.827 \pm 0.5$  kg local ram lambs were divided equally into three groups. The 1<sup>st</sup> group was served as control; the lambs were injected with 1.0 ml of physiological saline solution (0.9%). The 2<sup>nd</sup> group (T1), lambs were injected intramuscularly with vitamin E 2.5 mg/kg together with sodium selenite  $25\mu\text{g/kg}$  of body weight. The 3<sup>rd</sup> group (T2), the lambs were injected intramuscularly with vitamin E (5mg/kg of body weight) and sodium selenite ( $50\mu\text{g/kg}$  of body weight). The injection was administered at weekly interval and continued for 12 weeks.

**Feeding Program:** Each group of lambs was housed in a separate pen (2.7 x 6 m) during the experimental period. The lambs were allowed 30 days to adapt for the experimental condition prior to the start of the study. Concentrate mixture (barley 10%, corn 40%, soybean meal 10%, wheat bran 30% and wheat straw 10%) containing crude protein 14.21%, fat 3.1, crude fiber 13.7%, NDF 36.08 and ADF 22.64 was offered *ad libitum*. All lambs had free access to water and mineral blocks. The chemical analysis of feed was carried out at laboratories of New Standard Company for testing and quality control, Ibrahim Khalil international boarder using NIR Food Da 7250 from Peten Company.

**Blood sample preparation:** Blood samples were collected from jugular vein of each animal at 8:00 am before feeding or drinking at 30, 60, 90 days of the experiment, with approximately 10ml for each sample. Sub sample (3ml) of collected blood was emptied into test tube containing ethylene diamine tetra acetic acid (EDTA) as an anticoagulant for analyzing Erythrocyte sedimentation rate (ESR), and packed cell volume (PCV%) and differential leukocyte count (DLC), another sub sample (7ml) was emptied into sterile test tube without anticoagulant and left in the room temperature for 2 hrs. and then centrifuged (3000 rpm) for

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fifteen minutes, the serum was immediately obtained and stored at  $-20\text{ C}^\circ$  for further analysis for serum blood biochemical traits. Packed cell volume was determined using microhematocrit tubes with a micro-hematocrit centrifuge at 10000 rpm for three minutes, for the differential DLC count. Stained blood smears with Lieshman's stain were prepared (Dacie and Lewis, 1991). Thyroid hormones (triiodothyronine, thyroxine and thyroid stimulating hormone) were determined by using kits from Snibe Diagnostic Company by automated method using biochemistry auto analyzer (CLIA) Sinbe -Maglumi 800, Shenzhen, China, at Private laboratory in Duhok province. Serum blood biochemical traits (glucose, total protein albumin, triglyceride, cholesterol and Aspartate Aminotransferase) were determined by using kits from Roche Diagnostics Company by automated method using biochemistry auto analyzer COBAS INTEGRA® 400 plus, Switzerland at Private laboratory in Duhok province. Serum globulin (g/dl) was determined by the difference between serum total protein and serum albumin. All lambs were weighed at weekly interval before offering the feed in the morning at 8:00 a.m. using balance ( $\pm 50\text{gm}$  sensitivity).

**Statistical analysis:** General Linear Model was used to estimate Best Linear Unbiased Estimates effects (SAS, 2007) to study the effect of vitamin E and selenium doses and period of treatment on some hematological parameter, thyroid hormones, and biochemical parameter. Also, Duncan multiple test (1955) within SAS (2007) was used to detect differences among least square means within each factor.

## RESULTS AND DISCUSSION

**Hematological Parameters:** In the current study, ESR, and PCV averaged  $11.97 \pm 0.62$  mm/24hr, and  $31.82 \pm 0.32\%$  respectively (Table 1). It seems from the table that neither treatment nor period had an effect ( $P > 0.05$ ) on ESR of lambs. To the authors knowledge no studies have been carried out on ruminants for comparison.

Results of the current study revealed that packed cell volume increased significantly ( $P < 0.05$ ) in T1 ( $32.88 \pm 0.63\%$ ) as compared with control group ( $30.71 \pm 0.45\%$ ). Also, a higher level ( $P < 0.05$ ) of PCV was found at the third month ( $32.79 \pm 0.56\%$ ) as compared with the

first month ( $30.79 \pm 0.57\%$ ). The higher level of PCV may be due that selenium and vitamin E protect the cell membrane from degradation and destruction, and consequently resulted in an

increase in RBC and finally PCV (Pond *et al.*, 1995). This result agrees with that reported in lamb by Soliman *et al.* (2012 and 2001) and on dairy calves (Mohri *et al.*, 2005).

**Table (1):** Effect of injection of vitamin E and selenium of some haematological parameters of lambs (Mean  $\pm$  SE).

Effect	No. of samples	ESR mm/24hr	PCV %
Overall mean	72	11.97 $\pm$ 0.62	31.82 $\pm$ 0.32
Treatments			
Control	24	12.79 $\pm$ 1.31 a	30.71 $\pm$ 0.45 b
T1	24	12.04 $\pm$ 1.08 a	32.88 $\pm$ 0.63 a
T2	24	11.08 $\pm$ 0.77 a	31.88 $\pm$ 0.51 ab
Period(months)			
1	24	12.83 $\pm$ 1.47 a	30.79 $\pm$ 0.57 b
2	24	11.79 $\pm$ 0.99 a	31.88 $\pm$ 0.48 ab
3	24	11.29 $\pm$ 0.61 a	32.79 $\pm$ 0.56 a
P value			
Treatments		0.5377	0.0168
Period (months)		0.5919	0.0298

Means with different letters within each column differ significantly ( $P < 0.05$ )

**Differential Leucocyte Count (DLC):** The result of differential leucocyte count (DLC) is given in Tables (2 and 3). The overall means were  $58.47 \pm 1.10$ ,  $39.67 \pm 1.06$ ,  $0.61 \pm 0.12$ ,  $1.20 \pm 0.13$  and  $0.04 \pm 0.03\%$  for lymphocytes, neutrophils, eosinophils, monocyte, and basophils respectively. The leucocytes profile showed a marked decrease ( $P < 0.05$ ) in Eosinophils, for lambs received T1 ( $0.41 \pm 0.16\%$ ) and T2 ( $0.46 \pm 0.13\%$ ) as compared to control ( $0.96 \pm 0.29\%$ ). Neither Monocyte nor basophils percentages differed between treatments.

Also showed that injection of vitamin E (2.5mg/kg of body weight) and sodium selenite

(25 $\mu$ g/kg of body weight) significantly ( $P < 0.01$ ) increase lymphocytes% ( $62.86 \pm 1.83\%$  vs.  $54.21 \pm 2.03\%$ ) as compared to control group.

The higher lymphocyte cell counts due to Se and vitamin E administration could be related to the protection of cell membrane and intracellular organelles by the antioxidant effects of Se and vitamin E and thus increase their lifespan (Moeini and Jalilian, 2014). This result is agreeing with those reported earlier in Awassi rams (Ali *et al.*, 2009), Ossimi sheep (Soliman *et al.*, 2001), and buffaloes (Qureshi *et al.*, 2001). A significant decrease ( $P < 0.01$ ) of Neutrophils% ( $35.55 \pm 1.81\%$  vs.  $43.54 \pm 1.89\%$ ), were seen in T1 as compared to control.

**Table (2):** Effect of injection of vitamin E and selenium on Eosinophils, Monocyte and Basophils (%) in lambs (Mean  $\pm$ SE)

Effect	No. of samples	Eosinophils%	Monocyte%	Basophils%
Overall mean	70	0.61 $\pm$ 0.12	1.20 $\pm$ 0.13	0.04 $\pm$ 0.03
Treatments				
Control	24	0.96 $\pm$ 0.29a	1.21 $\pm$ 0.21a	0.08 $\pm$ 0.08a
T1	22	0.41 $\pm$ 0.16b	1.14 $\pm$ 0.21a	0.05 $\pm$ 0.05a
T2	24	0.46 $\pm$ 0.13b	1.25 $\pm$ 0.24a	0.00 $\pm$ 0.00a
Period (months)				
1	24	1.33 $\pm$ 0.27a	1.33 $\pm$ 0.25a	0.13 $\pm$ 0.09a
2	23	0.17 $\pm$ 0.08b	1.00 $\pm$ 0.21a	0.00 $\pm$ 0.00a
3	23	0.30 $\pm$ 0.13b	1.26 $\pm$ 0.20a	0.00 $\pm$ 0.00a
P value				
Treatments		0.0328	0.9229	0.5624
Period (months)		<0.0001	0.4810	0.1884

Means with different letters within each column differ significantly ( $P < 0.05$ ,  $P < 0.01$ ).

Data pertaining to neutrophil: lymphocyte ratio (N\L) studied in this experiment is presented in Table (3). The overall mean of the N\L ratio was  $0.72 \pm 0.03$ . The result revealed that injection of vitamin E and selenium caused a significant ( $p < 0.01$ ) decrease in N\L ratio, which was  $0.59 \pm 0.05$ ,  $0.70 \pm 0.04$  and  $0.87 \pm 0.07$  for T1 and T2 and control group, respectively. Furthermore, lower ( $p < 0.05$ ) level ( $0.63 \pm 0.04$ ) of N\L ratio was recorded in the last month compared to the first ( $0.83 \pm 0.07$ ). As the N\L

ratio is applied as an indicator of stress response (Hong *et al.*, 2019), and as indication of the activity of the hypothalamus-adenohypophyseal adrenocorticotisol-axis, and it increase with the degree of stress and last indicators of physiological stress in goats and calves. Therefore, from our result it can be concluded that injection of vitamin E and selenium lead to decrease of stress on the lambs (Fraser and Broom 1990).

**Table (3):** Effect of injection of vitamin E and selenium on Lymphocytes, Neutrophils and N\L ratio (%) in lambs (Mean  $\pm$ SE)

Effect	No. of samples	Lymphocytes%	Neutrophils%	N\L ratio
Overall mean	70	58.47 $\pm$ 1.10	39.67 $\pm$ 1.06	0.72 $\pm$ 0.03
Treatments				
Control	24	54.21 $\pm$ 2.03b	43.54 $\pm$ 1.89a	0.87 $\pm$ 0.07 a
T1	22	62.86 $\pm$ 1.83a	35.55 $\pm$ 1.81b	0.59 $\pm$ 0.05 b
T2	24	58.71 $\pm$ 1.47ab	39.58 $\pm$ 1.48ab	0.70 $\pm$ 0.04 b
Period (months)				
1	24	54.75 $\pm$ 1.92b	42.46 $\pm$ 1.80a	0.83 $\pm$ 0.07 a
2	23	59.65 $\pm$ 2.10ab	39.17 $\pm$ 2.02ab	0.70 $\pm$ 0.06 ab
3	23	61.17 $\pm$ 1.46a	37.26 $\pm$ 1.58b	0.63 $\pm$ 0.04 b
P value				
Treatments		0.0029	0.0059	0.0028
Period (months)		0.0222	0.0854	0.0316

Means with different letters within each column differ significantly ( $P < 0.05$ ,  $P < 0.01$ ).

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### Thyroid Hormones

It appears from table 4 that injection of vitamin E and selenium to lambs had no significant effect on triiodothyronine, thyroxin and thyroid stimulating hormone. This result was similar to those studies reported earlier in lamb (Naziroglu *et al.*, 1998; Musa *et al.*, 2018b). On the contrary, result reported in sheep (Shakirullah *et al.*, 2018) showed that vitamin E and selenium had significantly increase serum thyroxin and triiodothyronine hormone. Also, the period of collection had no significant effect on T<sub>3</sub> and T<sub>4</sub>, however, TSH was increased significantly at 2nd and 3rd as compared with 1st period third period.

Results revealed a non-significant effect of injection of vitamin E and selenium on the concentration of TSH of the T1 and T2 as compared with normal control value, which averaged 0.07, 0.05 and 0.05 $\mu$ IU/ml respectively (Table 4). Similar response of TSH to selenium was found in ewes by Guerra *et al.* (2019) who observed a non-significant difference was in TSH level in the blood serum of ewes grazing natural pasture compared to those supplemented with selenium and iodine or selenium alone. On the other hand, results revealed a significant ( $P < 0.01$ ) increase from the lowest value at the first month (0.01 $\pm$ 0.002 $\mu$ IU/ml) to the highest value at the third month (0.11 $\pm$ 0.02 $\mu$ IU/ml).

**Table (4):** Effect of injection of vitamin E and selenium on thyroid hormone concentration (Mean $\pm$ SE).

Effect	No. of samples	T <sub>3</sub> ng/ml	T <sub>4</sub> ng/ml	TSH $\mu$ IU/ml
Overall mean	72	1.6 $\pm$ 0.05	73.52 $\pm$ 1.87	0.05 $\pm$ 0.01
Treatments				
Control	24	1.64 $\pm$ 0.09 a	70.81 $\pm$ 4.01 a	0.07 $\pm$ 0.02 a
T1	24	1.56 $\pm$ 0.08 a	76.72 $\pm$ 3.00 a	0.05 $\pm$ 0.01 a
T2	24	1.60 $\pm$ 0.08 a	73.02 $\pm$ 2.55 a	0.05 $\pm$ 0.01 a
Period (months)				
1	24	1.58 $\pm$ 0.07 a	71.61 $\pm$ 2.98 a	0.01 $\pm$ 0.002 c
2	24	1.66 $\pm$ 0.08 a	78.83 $\pm$ 3.36 a	0.05 $\pm$ 0.01 b
3	24	1.56 $\pm$ 0.09 a	70.11 $\pm$ 3.21 a	0.11 $\pm$ 0.02 a
P value				
Treatments		0.8126	0.4429	0.6499
Period (months)		0.6678	0.1420	<0.0001

Means with different letters within each column differ significantly ( $P < 0.05$ ,  $P < 0.01$ ).

### Biochemical Metabolite

In the present study, it seems from table (5) that glucose, total protein and both fractions of albumin and globulin was not affected by injection of vitamin E and selenium. Such results for glucose level were in accordance with Soliman, (2015) and Soliman *et al.*, (2012) in lambs with (Abraham *et al.*, 2019 and Al-mallah, (2012) in sheep and in goat with Ziaei, (2015). For total protein with Asadi *et al.* (2018) in lambs, Hamam and Abou-Zeina (2007) in Baladi sheep and Ziaei 2015, and Siddig (2014) in goat, for albumin with Soliman *et al.* (2012) in ewes and (Ziaei, 2015) in Raieni goats, and for globulin with Abraham *et al.* (2019) in

Awassi ewes and in male lambs with Kumar *et al.* (2008).

It appears from table 5. that the serum glucose concentration was decreased significantly ( $p < 0.01$ ) with the progress periods of treatment throughout the experiment. However, no significant changes on the serum total protein during the whole experimental periods was observed, while results revealed that the period of blood collection had a significant ( $P < 0.05$ ) increase on serum albumin with advancing experimental period (Table 5). Similarly, results also shown a significant ( $P < 0.05$ ) decline in globulin concentration from the highest value (2.9 $\pm$ 0.09 g/dl) recorded at the first month to the lowest value (2.6 $\pm$ 0.08 g/dl) at the third month.

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**Table (5):** Effect of vitamin E and selenium on serum Glucose, Total Protein, Albumin and Globulin in local lambs (Mean± SE).

Effect	No. of samples	Glucose mg/dl	Total Protein g/dl	Albumin g/dl	Globulin g/dl
Overall mean	72	77.81±1.54	6.12±0.06	3.31±0.04	2.81±0.06
Treatment					
Control	24	74.29±2.68 a	5.95±0.09 a	3.29±0.08 a	2.66±0.07 a
T1	24	78.92±2.99 a	6.20±0.12 a	3.32±0.05 a	2.88±0.12 a
T2	24	80.21±2.21 a	6.20±0.10 a	3.31±0.07 a	2.89±0.09 a
Period(months)					
1	24	86.67±1.68 a	6.04±0.09 a	3.14±0.05 b	2.90±0.09 a
2	24	78.38±2.97 b	6.29±0.14 a	3.36±0.08 a	2.93±0.10 a
3	24	68.38±1.73 c	6.01±0.08 a	3.41±0.06 a	2.60±0.08 b
P value					
Treatments		0.1401	0.1928	0.9631	0.1553
Period(months)		<0.0001	0.1338	0.0151	0.0266

Means with different letters within each column differ significantly (P<0.05, P<0.01).

Injection of vitamin E and selenium had no significant effect on serum triglyceride level (table 6). This result consistent with those on ewes (Tayeb *et al.* 2020; Abrahem *et al.* 2019; Musa *et al.* 2018 a; Al-Mallah 2012; Al-Mallah 2011 and goat (Ahmed, 2014). In respect to influence of period (Table 6), the triglyceride concentration significantly increases (P<0.001) in the second and third month of treatment (28.79±1.76 and 31.04±1.59 mg/dl) compared to the first month (19.33 ± 0.96). Such increase may be due to the increase in age as indicated by Ashour *et al.* (2015) who mentioned that the

concentrations of triglyceride in the blood plasma of the lambs and kids have been increased with the advanced age.

No significant effect of vitamin E and selenium was observed in serum cholesterol (Table 6). The means were 54.71±2.67, 55.5±1.95 and 54.92±3.23 mg/dl for control, T1 and T2 respectively. Similarly, other workers have noted that administration of selenium and vitamin E did not affect serum concentration of total cholesterol of yankasa ewes (Musa *et al.*, 2018 a ), Awassi ewes (Tayeb *et al.*, 2020 and Al-Mallah, 2012) and lambs (Asadi *et al.*, 2018).

**Table (6):** The effect of injection of vitamin E and selenium on serum Triglyceride, Cholesterol, and AST in local lambs (Mean± SE).

Effect	No. of samples	Triglyceride mg/dl	Cholesterol mg/dl	AST U/L
Overall mean	72	26.39±1.03	55.04±1.52	121.44±5.75
Treatments				
Control	24	27.75±1.87 a	54.71±2.67 a	118.96±12.88 a
T1	24	25.58±1.68 a	55.50±1.95 a	133.71±8.73 a
T2	24	25.83±1.86 a	54.92±3.23 a	111.67±7.28 a
Period(months)				
1	24	19.33±0.96 b	46.58±1.96 b	98.79±3.73 b
2	24	28.79±1.76 a	58.08±2.96 a	137.63±9.69 a
3	24	31.04±1.59 a	60.46±1.99 a	127.92±12.76 a
P value				
Treatments		0.5514	0.9707	0.2485
Period (months)		<0.0001	0.0002	0.0135

Means with different letters within each column differ significantly (P<0.05, P<0.01).

In the current study, overall mean of the aspartate aminotransferase (AST) was ( $121.44 \pm 5.75$  U/l), as shown in table (6) which was within normal range (60–280 units/L) as reported by Jackson and Cockcroft (2002). No significant differences were observed between the control group and other treatment in this trait. Similar observations have been reported in lamb (Soliman 2015) and sheep (Tayeb *et al.* 2020). The lowest AST was attained during the first month ( $98.79 \pm 3.73$  U/L) and increased toward the highest value at second ( $137.63 \pm$

$9.69$  U/L) and third month ( $127.92 \pm 12.76$  U/L). The reason of this rise of AST may be attributed to greater muscle mass and metabolic activity (Santo da Cruz *et al.*, 2017). However, De-Souza Meira *et al.* (2009) observed that this enzyme increased gradually with age of sheep.

#### Body weight

The overall mean of initial, final and daily weight gain was  $20.83 \pm 0.50$ ,  $36.30 \pm 1.24$  and  $0.166 \pm 0.011$  respectively, with no significant differences among them as shown in table 7.

**Table (7):** Effect of injection of vitamin E and selenium on body weight and daily weight gain of lambs (kg) (mean  $\pm$  SE).

Traits	Overall mean	Treatment		
		Control	T1	T2
Animal No.	24	8	8	8
Initial weight	$20.83 \pm 0.50$	$20.84 \pm 0.79$ a	$20.74 \pm 1.04$ a	$20.89 \pm 0.86$ a
Final weight	$36.30 \pm 1.24$	$35.74 \pm 3.09$ a	$35.98 \pm 1.91$ a	$37.20 \pm 1.34$ a
Daily weight gain	$0.166 \pm 0.011$	$0.160 \pm 0.027$ a	$0.164 \pm 0.015$ a	$0.175 \pm 0.011$ a

Means with different letters within each column differ significantly ( $P < 0.05$ ).

Similar results have been reported in lamb by (Mohri *et al.*, (2011); and Alimohamady *et al.*, 2013). Also, Zhao *et al.*, (2013) found that supplementation of vitamin E had no impact on final weight gain in Tan sheep. In contrast to this study, average daily weights gain of vitamin E and selenium treated lambs were significantly greater than the lambs of the control group (Soliman *et al.*, 2012 ; Soliman 2015; Abdel-Raheem *et al.*, 2019 and Dhari and Kassim, 2019).

#### CONCLUSION

In conclusion, lambs treated with vitamin E and selenium significantly increased packed cell volume, but had no effect on erythrocyte sedimentation rate (ESR), thyroid hormone (triiodothyronine, thyroxin and thyroid stimulating hormone), and serum biochemical parameters (glucose, total protein, albumin, globulin, cholesterol, and triglyceride and aspartate aminotransferase) and growth performance.

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## تأثير حقن فيتامين هـ والسيلينيوم في بعض الصفات الفسلجية والمعايير الكيموحيوية في الحملان المحلية

### الخلاصة

هدفت التجربة للتقصي عن استجابة الحملان المحلية لحقن فيتامين هـ والسيلينيوم في الصفات الدموية، وهرمونات الدرقية، والمعايير الكيموحيوية، ومعدل النمو. استخدم أربعة وعشرون حملاً محلياً مفلوماً بعمر (3-4) أشهر وبمعدل وزن  $20.827 \pm 0.5$  كغم. وزعت الحملان وبصورة عشوائية إلى ثلاث مجاميع (8 حملان لكل مجموعة). مجموعة السيطرة حقنت بمحلول الملح الفسلجي (0.9%) أما المجموعة الثانية (T1) فقد حقنت بفيتامين هـ بمقدار 2.5 ملغم/كغم وزن الجسم وسيلينات الصوديوم 25 مايكروغرام / كغم وزن، فيما حقنت المجموعة الثالثة (T2) بفيتامين هـ بمقدار 5 ملغم/كغم وزن الجسم وسيلينات الصوديوم 50 مايكروغرام / كغم وزن الجسم. أظهرت النتائج زيادة معنوية في حجم الخلايا المرصوصة، وفي المئوية للخلايا اللمفية لدى المجموعة الثانية (T1). ولم تكن هناك تأثير للمعاملة في هرمونات الغدة الدرقية (النايوكسين، والترايايودوثايرونين، والهرمون المحفز للغدة الدرقية). ولم تؤثر المعاملة في وزن الجسم وتراكيز مصلي الدم الكيموحيوية من الكلوكون والبروتين الكلي والالبومين والكلوبيولين والكوليستيرول والكليسريدات الثلاثية الاسبارتيت ناقل الامين. استنتجت هذه التجربة إن فيتامين هـ والسيلينيوم لها تأثير إيجابي على بعض الصفات الفسلجية في الحملان المحلية .