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EFFECT OF PLACENTAL EXTRACT INJECTION ON SOME PHYSIOLOGICAL AND PRODUCTIVE TRAITS OF MALE AND FEMALE AWASSI LAMBS

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ABSTRACT

The study was conducted at the Agricultural Research Station for two months. Thirty Awassi lambs were divided into 15 males and 15 females (aged 3 months and 22 kg ±800 g weight). The animal groups were randomly distributed into three transactions (5 lambs of each sex/group). The first group was considered as control group, the second and third were injected with sheep placenta extract (SPE) (2 and 4 ml/head/week), respectively. The first treatment was significantly (P≤0.05) superior to the second treatment in body weight .The results also did not show any significant effect of placental extract treatments on the blood physiological indices and compared to control, except for MCH level, which was significantly (P≤0.05) lower in the first treatment than in the second treatment. A significant (P≤0.05) effect of animal sex was observed with a higher concentration of Hb, RBC, PCV, WBC, and AST enzyme in female lambs than in males. Cholesterol and LDL levels were significantly (P≤0.05) higher in the second treatment compared to the control. In addition, there was a significant (P≤0.05) increase in HDL and glucose levels in the treatment groups compared to the control. The results in this study indicated that the administration of sheep placenta extract did not negatively affect lambs' productive and physiological performance.

INTRODUCTION

The Awassi breed is preferred due to its high adaptability to different environments and ability to produce under various production systems. Numerous studies have been conducted to improve the growth performance, carcass characteristics, reproductive performance, genetic traits and physiological characteristics of this breed (Alkhashab *et al*, 2024; Abdulkareem *et al*, 2023; Ajam *et al*., 2019; Belal and Rana, 2025; Ja'far and Belal, 2024; Yateem *et al*, 2022; and Aljubouri *et al*., 2021). Livestock is an important source of income (Ismael and Omer, 2021), as it is considered one of the most natural resources that support the national economy. Sheep and goats, in particular, are vital sources for producing meat, milk, and wool (Mahmoud *et al.*, 2021). The placenta is one of the most important functional organs in mammals during pregnancy, as it is a source of hormones, nutrients necessary for the fetus, and oxygen (Liu *et al.*, 2019). A change in a certain hormonal system may affect other hormonal systems in the body. Moreover, treatment with certain hormones and mineral elements may play a role in reducing

the negative effects of heat stress, enhancing the digestibility coefficient, and improving the body's total antioxidants, thereby supporting the animal's physiological and productive efficiency and improving its immune status. (Abdullah *et al*, 2024; Ahmed and Abdul-Rahman, 2023; Ali *et al*, 2025; Abbi, 2024; Abdul-Majeed *et al*, 2022 and Rahawi *et al.*, 2022). The placenta also regulates the mother's immune response and contains many vital active ingredients, such as regulating peptides, hormones, growth factors, and Cytokines (Donnelly and Campling, 2014) .The human placenta extract is used in traditional therapy in Asian countries to treat for allergic rhinitis anti-inflammatory agent. It stimulates the compensatory growth of the liver because it contains the active substance for the growth of hepatocytes (Liu *et al.*, 1998). In traditional therapy, the human placenta has been used as a special food and cosmetic material, but this is determined by societal ethical considerations that limit its use. Park *et al* (2011) noted that pig placenta extract has an immune-stimulating effect inside and outside the body. In addition, sheep placenta extract can inhibit the activity of lymphocytes and their response to lectin proteins (Low *et al.*, 1991). Therefore, it is possible that animal placenta extracts such as sheep, pigs and cows can be used instead of human placenta extracts in regulating the immune functions of the body (Liu *et al*, 2019), where atypical traditional medicine, (SPE) has several physiological qualities that have been experimentally confirmed, such as anti-aging effects, wound healing acceleration, antioxidant activity, and anti-inflammatory mechanisms (He *et al*., 2025). Moreover, SPE prevents the harmful effect of Concanavalin-A (Con A) on the liver, as Con A is a derivative of lectin proteins taken from Jack bean legumes, which leads to harm to the liver by increasing the activity of aminotransferase enzymes in blood serum (Tiegs *et al.*, 1992). Liu *et al,* (2019), revealed that treatment with sheep placenta extract removes or reduces the liver-damaging effect of Con A in rats, which is evidenced by a decrease in the activity of Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST) in blood serum, is believed that reason may be due to the proteins and peptides contained in (SPE). In general, this study was conducted to find out the effect of placenta extract injections on the growth and some physiological qualities of male and female sessile lambs.

MATERIALS AND METHODS

Ethical approval

The study and sample collection were carried out with the agreement of the ethical and animal welfare committee under the number Um. Vet . 2023.147 at 15/4/2023 of the College of Veterinary Medicine, University of Mosul.

Experimental Animals

This study was conducted at the Agricultural Research Station for two months, from 1/5/2023 to 30/6/2023, using thirty Awassi lambs represented by (15) males and (15) females of weaning age (3 months) with an average weight of 22 ±0.80 kg. The lambs were randomly distributed into three groups; the first group was a control group, was injected intramuscularly with (1 ml) normal saline (NS). The second and third groups were injected with traditional commercial placenta extract (Placevit Forte) of Ukrainian origin at 2 and 4 ml/ head /Week, respectively, intramuscularly. The lambs were fed on a standard diet shown in Table 1, which contained 13.91 % crude protein and 2477 kcal/ kg metabolize energy. The diet was offered twice daily

ad libitum at 8 a.m. and 4 p.m., as well as mineral salt blocks and fresh water continuously supplied for all animals throughout the study period. The lambs were weighed weekly to monitor the growth of the animals using an EALTER scale with a capacity of 10 kg, English-made. At the end of the experiment, blood samples were drawn from the jugular vein by 10 mm. The sample was divided into two parts, the first section was placed in an amount of 2 ml in test tubes containing an anticoagulant for the purpose of measuring some characteristics of the blood parameters such as hemoglobin concentration (Hb), total number of red blood cells (RBCc), packed cell volume (PCV), total number of white blood cells (WBC) and differential count of white blood cells (WBC), such as the percentage of neutrophilic cells, lymphocytes and mononuclear cells, by using NIHON KOHDEN device Japanese origin. The second section of blood samples (8 ml) was placed in non-anticoagulant selection tubes. They were placed in a centrifuge for 15 minutes at a speed of 3000 cycles/min to separate blood serum from the rest blood components for the purpose of using it to measure some blood biochemical parameters, such as cholesterol concentration (Cho), triglycerides (TG), high density lipoproteins (HDL), low density lipoproteins (LDL), glucose (GLU), total proteins (TP), albumin (ALB), Alanine aminotransferase enzyme (ALT), Aspartate aminotransferase enzyme (AST) and Alkaline phosphatase enzyme (ALP), by using the Fuji device of Japanese origin and using the device's analysis kit.

STATISTICAL ANALYSIS

The statistical analysis was carried out using a complete randomized design (CRD) and using 2-way analysis of variance within the statistical analysis program SAS (2003), and significance differences between all means were tested using Duncan's multiple range test Duncan (1955). The results were considered statistically significant at ($P<0.05$) using the following general statistical model:

$Yijk = \mu + Pi + Sj + PSij + Eijk$

Table (1): Ingredient and chemical composition of basal diet.

Ingredients *	Percentage %
Barley	69.75
Wheat bran	20
Soya bean meal	3
Wheat straw	5
Limestone	0.5
Salt	0.5
Urea	0.75
Sodium carbonate	0.5
Chemical composition	
Crude Protein (C.P %)**	13.91
Metabolizable energy (M.E) (kcal.kg)**	2477

* Ingredient of diet were taken from (NRC, 2007)

** M.E. energy and protein of diet was calculated according to Al-Khawaja (1978)

RESULTS AND DISCUSSION

The results in Table (2) indicated that there was no significant effect of the injection with (SPE) on body weight of lambs during all the experimental weeks

compared with the control group, while the results from the second to eighth week of the study stated that second treatment group injected with 2 ml /animal SPE significantly ($p \leq 0.05$) exceeded in body weight compared to 3rd treatment group injected with 4 ml/animal SPE. An improvement was observed in the weights of the second treatment compared to the control lambs. The results agreed with Chou *et al (2022), who did not obtain a significant effect of SPE treatments on the* body weight of rats. At the same time, the results are inconsistent with Ahmed (2022), who obtained a significant increase in body weight in young goat treated with SPE (4 ml/animal) compared to the control. The differences in the body weight of the animals in this study may be due to the type and age of the animals used. As for the effect of animal sex, no significant differences in body weight of lambs were observed between the treated groups compared with the control group in all weeks of the study. The results agreed with Chou *et al* (2022), who did not obtain a significant effect of sex in the male and female rats treated with SPE.

The relationship between treatment and sex showed different effects on body weight characteristics, where the results indicated no significant difference in body weight in the first week of the study. Still, there was a significant ($P \leq 0.05$) superiority in the body weight of male lambs of the first treatment at the 2nd and 3rd weeks compared with the body weight of female lambs in the second treatment. In the fourth, fifth, sixth, and seventh weeks, it was also noted that there was a significant superiority ($P \leq 0.05$) in male body weight in the first treatment compared to the female body weight in the same treatment. Also, the male body weights in the 1st treatment were significantly superior to the control group males. The body weight of the females in the first and second treatment did not exceed the weight of the females in the control group. The researcher Sultan et al (2023) mentioned a correlation between body weight and certain body hormones. From the results in Table (3), there was no significant improvement of treated groups with SPE compared to the control group in hemoglobin Hb concentration, total number of erythrocytes RBC, total packed cells volume PCV, and MCHC. While the results showed a significant superiority ($p \leq 0.05$) of the second treatment at the MCV level with an average of (32.27 fL / cell) and MCH (9.95 PG/cell) compared with the first treatment (30.38 fL / cell) and (9.56 /PG/cell), respectively, these two treatments did not differ with the values (31.57 fL / cell) and (9.82 PG/cell) in control group, respectively. The results are consistent with Ahmed (2022), who did not obtain a significant effect of injecting SPE for young Goats on Hb concentration and MCV level in blood serum compared to the control, while the results did not agree with him in obtaining significant differences in concentration of RBC, PCV, and MCHC between experimental treatments and the control group. The improvement in blood profiles of lambs' groups treated with placenta extract can be attributed to the fact that the placenta extract contains stimulant factors for the general health condition of the body in general, reflected in the production of erythrocytes and improvement of hematopoietic indices (Padma *et al*., 2011). As for the effect of sex, the results indicated that females were significantly superior ($P \leq 0.05$) in Hb concentration, total number of RBC, and PCV values compared to males. Still, no significant differences were observed between males and females in MCV, MCH, and MCHC values. While the results of the treatment and sex showed that the females of the first and second treatment significantly exceeded

(p≤0.05) in Hb concentration compared to Hb in the males of the first treatment, a significant decrease (P≤0.05) was also observed in Hb concentration in the males of the first treatment compared with the males and females of the control group. In addition, the females of the first treatment significantly exceeded (P≤0.05) the males of the same treatment in the RBC. In contrast, a significant (P≤0.05) decrease in RBC was observed in males of the first and second treatment and females of the second treatment compared with females of the control group.

Table (2): The influence of treatments, sex, and their interaction on body weight (kg) of Awassi lambs.

Treatment groups		1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week
Control (1 ml) (NS)		22.10±0.23 a	22.30±0.26 ab	23.20±0.20 ab	23.60±0.22 ab	24.30±0.30 ab	24.90±0.34 ab	25.30±0.33 ab	25.80±0.41 ab
T_1 (2 ml) (SPE)		22.50±0.22 a	23.00±0.33 a	23.60±0.37 a	24.20±0.38 a	24.90±0.43 a	25.60±0.49 a	26.10±0.48 a	26.50±0.52 a
T_2 (4 ml) (SPE)		21.80±0.41 a	21.900±.43b	22.50±0.40 b	23.00±0.49 b	23.70±0.51 b	24.10±0.64 b	24.70±0.68 b	25.40±0.76 b
Sex effect									
Male		22.26±0.18 a	22.60±0.25 a	23.33±0.33 a	23.86±0.33 a	24.60±0.37 a	25.26±0.41 a	25.66±0.49 a	26.13±0.54 a
Female		22.00±0.30 a	22.20±0.34 a	22.86±0.29 a	23.33±0.31 a	24.00±0.33 a	24.46±0.42 a	25.06±0.37 a	25.66±0.41 a
Treatment and sex interaction									
Control	Male	22.00±0.31 a	22.00±0.31 ab	23.00±0.31 ab	23.20±0.20 b	23.80±0.37 b	24.40±0.24 b	24.60±0.40 b	25.00±0.44 b
	Female	22.20±0.37 a	22.60±0.40 ab	23.40±0.24 ab	24.00±0.31 ab	24.80±0.37 ab	25.40±0.50 ab	26.00±0.31 ab	26.60±0.50 ab
T_1	Male	22.60±0.24 a	23.40±0.40 a	24.20±0.37 a	25.00±0.31 a	26.00±0.31 a	26.80±0.37 a	27.40±0.24 a	27.80±0.37 a
	Female	22.40±0.40 a	22.60±0.50 ab	23.00±0.54 ab	23.40±0.50 b	23.80±0.37 b	24.40±0.50 b	24.80±0.37 b	25.20±0.48 b
T_2	Male	22.20±0.37 a	22.40±0.40 ab	22.80±0.58 ab	23.40±0.74 b	24.00±0.70 b	24.60±0.87 b	25.00±1.09 b	25.60±1.28 ab
	Female	21.40±0.74 a	21.40±0.74 b	20.20±0.58 b	22.60±0.67 b	23.40±0.81 b	23.60±0.97 b	24.40±0.92 b	25.20±0.96 b

a,b, within a column means without a common superscript letter differ at P ≤0.05.

The relationship results also showed a significant superiority (P≤0.05) in the percentage PCV in the females of the second treatment compared with the males of the first treatment. In contrast, there was a significant decrease (P≤0.05) in PCV in the males of the first and second treatment compared with the females of the control group, and a significant superiority (P≤0.05) in the concentration of MCV in the blood serum of the females of the second treatment compared with the females of the first treatment. In contrast, the interaction results had no significant effect in MCHC value between experimental groups.

Table (3): The influence of treatments, sex, and their interaction on blood indices parameters of Awassi lambs.

Treatment groups		Hb gm/ 100 ml	RBC $\times 10^6$/ml	PCV %	MCV fl/cell	MCH pg/cell	MCHC gm/100 ml
Control (1 ml) (NS)		8.37± 0.28 a	8.78± 0.36 a	26.62± 1.13 a	30.38± 0.78 b	9.56± 0.14 b	31.57± 0.52 a
T_1 (2 ml) (SPE)		8.87± 0.33 a	8.90± 0.33 a	28.80± 1.26 a	32.27± 0.38 a	9.95± 0.01 a	30.89± 0.40 a
T_2 (4 ml) (SPE)		9.17± 0.37 a	9.34± 0.38 a	29.56± 1.44 a	31.57± 0.46 ab	9.86± 0.06 ab	31.15± 0.43 a
Sex effect							
Male		8.26± 0.22 b	28.40± 0.23 b	26.18± 0.92 b	31.10± 0.55 a	9.84± 0.09 a	31.72± 0.40 a
Femal		9.43± 0.26 a	9.61± 0.26 a	30.46± 0.92 a	31.71± 0.43 a	9.72± 0.07 a	30.69± 0.27 a
Treatment and sex interaction							
Control	Male	8.28± 0.25 bc	8.41± 0.23 bc	25.92± 0.91 bc	30.83± 0.73 ab	9.85± 0.03 ab	32.01± 0.70 a
	Female	10.06± 0.43 a	10.27± 0.40 a	33.20± 1.41 a	32.32± 0.40 ab	9.79± 0.12 ab	30.29± 0.01 a
T_1	Male	7.68± 0.36 c	7.97± 0.50 c	24.42± 1.67 c	30.68± 1.39 ab	9.67± 0.27 ab	31.64± 0.81 a
	Female	9.06± 0.06 ab	9.58± 0.09 ab	28.32± 0.76 abc	30.07± 0.89 b	9.45± 0.09 b	31.51± 0.74 a
T_2	Male	8.84± 0.40 bc	8.84± 0.41 bc	28.29± 1.87 bc	31.79± 0.73 ab	9.99± 0.01 a	31.50± 0.74 a
	Female	8.90± 0.57 ab	8.97± 0.57 bc	29.38± 1.87 ab	32.75 ±0.03 a	9.92± 0.01 a	30.28± 0.02 a

a,b,c, within a column means without a common superscript letter differ at P ≤0.05.

Results presented in Table 4 showed no significant differences in total WBC, the ratio of neutrophil, lymphoid, and mononuclear leukocytes, and the ratio of neutrophil cells to lymphocytes between the treated groups with SPE and the control group. The results agreed with Mitsui *et al* (2015), who did not obtain a significant effect of dosing pig placenta extract on blood picture indices in male and female rats compared with control. It also agreed with Ahmed (2022) that he did not get significant differences in WB, while our results did not agree with him in obtaining significant differences in the percentage of neutrophil, lymphoid, and mononuclear leukocytes in the treatment groups with SPE compared to the control. As for the effect of Sex, Female lambs were significantly ($p \leq 0.05$) superior to males in WBCs (18.55,12.91) /10^3 /ml, respectively, as well as the ratio of neutrophils to lymphocytes (1.48, 0.88), respectively. At the same time, the interaction results showed no significant differences between the treatment groups and the control group of males and females in WBC, the ratio of neutrophils, lymphocytes, and mononuclear cells, and the ratio of neutrophils to lymphocytes.

Table (4): The influence of treatments, sex, and their interaction on blood parameters of Awassi lambs.

Treatment groups		WBC 10^3/ml	Neutrophil %	Lymphocyte %	Monocyte %	N/L
Control (1 ml) (NS)		15.36± 2.36a	44.46 ±1.86a	47.61± 1.63A	7.93 ±1.52a	0.95 ±0.06a
T_1 (2 ml) (SPE)		16.33 ±1.33a	47.47 ±4.74a	42.58 ±3.73A	9.95 ±4.04a	1.32 ±0.29a
T_2 (4 ml) (SPE)		15.51 ±1.80a	45.18 ±4.91a	44.61 ±4.63A	10.21 ±2.37a	1.28 ±0.29a
Sex effect						
Male		12.91 ±1.14b	41.64 ±3.31a	48.60 ±1.63a	9.74 ±3.02a	0.88 ± 0.08b
Female		18.55 ±1.45a	49.76 ±2.89a	41.26 ±3.51a	8.98 ±1.19a	1.48 ±0.24a
Treatment and sex interaction						
Control	Male	11.36 ±1.74b	43.72 ±1.47a	50.40 ±2.11a	5.88 ±1.79a	0.87 ±0.05a
	Female	19.36 ±3.74a	45.20 ±3.64a	44.82 ±1.90a	9.98 ±2.25a	1.02 ±0.12a
T_1	Male	14.90 ±2.51ab	41.18 ±7.08a	46.92 ±1.56a	11.90 ±8.31a	0.86 ± 0.14a
	Female	17.76 ±0.82ab	53.76 ±5.58a	38.24 ±7.13a	8.00 ±1.65a	1.78 ± 0.51a
T_2	Male	12.48 ±1.64ab	40.04 ±7.81a	48.50 ±4.43a	11.46 ±4.22a	0.91 ±0.23a
	Female	18.54 ±2.70ab	50.32 ±5.85a	40.72 ±8.34a	8.96 ±2.59a	1.65 ±0.52a

a,b, within a column means without a common superscript letter differ at P ≤0.05.

Effect of treatment and sex on blood biochemical parameters

The results of the lipids profile in the blood serum (Table 5) showed a significant ($p \leq 0.05$) increase in cholesterol and LDL levels in the second treatment compared to control group, the first treatment did not show any significant effect of both qualities compared to control, and a significant ($P \leq 0.05$) outperformance of treated group with SPE was observed in the level of HDL compared to control group. At the same time, no significant differences in concentration of triglycerides, total protein and VLDL were observed between the treatments and control groups. This results in agreement with Chou *et al*., (2022), who did not obtain a significant effect of SPE treatments on the levels of triglycerides and VLDL in the blood serum of rats, while our findings are inverse to theirs in not obtaining significant differences in cholesterol, HDL, and LDL levels in treated groups compared to control. The results also agreed with the findings of Ahmed (2022), in obtaining a significant increase in the level of cholesterol and HDL in the blood serum of small Goats in treatment groups supplemented with SPE compared to the control, while our results, in contrast with his in showed a significant difference in triglycerides and in significant level of VLDL. The results also indicated no significant effect of sex between males and females in cholesterol, triglycerides, LDL, HDL, and VLDL levels. Similar results

were found by Chou et al (2022), in not obtaining a significant effect of sex on blood biochemical parameters of male and female rats. The results of the interaction between the treatment and sex also revealed that the males of the first treatment significantly ($p \leq 0.05$) exceeded in the concentration of cholesterol compared to its concentration in males and females of the control group, and the females of the second treatment significantly ($P \leq 0.05$) surpassed the males of the control group. Also, the males of the first treatment were significantly ($P \leq 0.05$) superior to the males and females of the control group in the concentration of triglycerides.

Table (5): The influence of treatments, sex and their interaction on blood biochemical parameters of Awassi lambs.

13		Cholesterol mg/100 ml	TG mg/100 ml	LDL mg/100 ml	HDL mg/100 ml	VLDL mg/100 ml
Control (1 ml) (NS)		60.50±2.64 b	40.40±2.00 a	28.02±2.64 b	24.40±0.70 b	8.08±0.40 a
T_1 (2 ml) (SPE)		68.40±4.38 ab	47.40±3.28 a	29.42±3.73 ab	29.50±0.54 a	9.48±0.65 a
T_2 (4 ml) (SPE)		74.40±3.91 a	44.90±2.74 a	36.42±2.41 a	29.00±1.22 a	8.98±0.49 a
Sex effect						
Male		69.73±3.27 a	46.60±2.06 a	32.24±2.19 a	27.46±0.92 a	9.32±0.41 a
Female		65.80±3.33 a	41.86±2.26 a	29.62±2.85 a	27.80±0.93 a	8.37±0.45 a
Treatment and sex interaction						
Control	Male	58.00±4.47 c	40.00±2.73 b	25.60±3.35 bc	24.40±0.97 b	8.00±0.54 b
	Female	63.00±2.88 bc	40.80±3.23 b	30.44±4.15 abc	24.40±1.12 b	8.16±0.64 b
T_1	Male	78.40±2.37 a	52.60±4.06 a	38.28±1.86 a	29.60±0.97 a	10.52±0.81 a
	Female	58.40±5.56 c	42.20±4.29 ab	20.56±4.46 c	29.40±0.60 a	8.44±0.85 ab
T_2	Male	72.80±5.63 abc	47.20±0.73 ab	34.96±3.76 ab	28.40±1.83 a	9.44±0.14 ab
	Female	76.00±6.00 ab	42.60±4.93 ab	37.88±3.31 a	29.60±1.80 a	8.52±0.98 ab

a,b,c within a column means without a common superscript letter differ at $P \leq 0.05$.

In addition, the males of the first treatment and females of the second treatment were highly significant ($P \leq 0.05$) in the LDL level compared to the males of the control group. The interaction results showed that males and females of the first and second treatment significantly ($P \leq 0.05$) exceeded in HDL compared to males and females of control group. Males of the first treatment were also significantly ($P \leq 0.05$) superior to the males and females of control group in VLDL level. Results listed in Table (6) also indicated that the first treatment was significantly ($P \leq 0.05$) superior to control group in serum glucose level, while the second treatment did not show any significant differences compared to other treatments.

Table (6): The influence of treatments, sex and their interaction on blood biochemical parameters of Awassi lambs.

Treatment groups		Glu mg/100 ml	T.P g/100 ml	Alb g/100 ml	GLO g/100 ml	ALT IU/L	AST IU/L	Alp IU/L
Control (1 ml) (NS)		59.40±3.87 b	4.93± 0.19 ab	3.80± 0.11 a	1.13± 0.15 a	32.45± 2.54 a	104.37± 2.36 a	49.50± 4.62 a
T_1 (2 ml) (SPE)		70.50±2.63 a	4.49± 0.12 b	3.54± 0.11 b	0.95± 0.13 a	30.50± 2.17 a	92.30± 6.29 a	66.60± 4.20 a
T_2 (4 ml) (SPE)		66.90±3.05 ab	5.19± 0.22 a	3.67± 0.08 ab	1.52± 0.27 a	27.73 ± 2.71 a	95.17± 3.64 a	48.00± 8.47 a
sex effect								
Male		68.26±2.57 a	5.01± 0.16 a	3.82± 0.07 a	1.19± 0.20 a	30.18± 2.30 a	90.80± 4.39 b	50.80± 5.52 a
Female		62.93±2.27 a	4.72±0.16 a	3.52 ± 0.08 b	1.20 ± 0.13 a	30.27 ± 1.79 a	103.76 ±1.89 a	58.60± 4.99 a
Treatment and sex interaction								
Control	Male	65.20±6.45 ab	5.20± 0.18 ab	4.04± 0.09 a	1.16± 0.27ab	31.84± 4.99 ab	101.72± 3.85 ab	50.00± 6.40 ab
	Female	53.60±3.02 c	4.66± 0.31 ab	3.56± 0.14 bc	1.10± 0.17ab	33.06 ± 2.02 ab	107.02 ±2.60 a	49.00± 7.42 ab
T_1	Male	65.00±1.64 ab	4.48± 0.22 b	3.80± 0.08 ab	0.68± 0.17 b	26.64± 3.35 ab	83.12± 11.08 c	64.40± 8.41 ab
	Female	76.00±3.67 a	4.50± 0.13 b	3.28± 0.13 c	1.22± 0.11ab	34.36± 1.61 a	101.48± 3.69 ab	68.80± 2.55 a
T_2	Male	74.60±3.17 a	5.36± 0.30 a	3.62± 0.14 bc	1.74± 0.44 a	32.06± 3.83 ab	87.56± 4.21 bc	38.00± 11.02 b
	Female	59.20±1.49 bc	5.02± 0.34 ab	3.72± 0.07 ab	1.30± 0.35ab	23.40± 3.02 b	102.78± 3.62 ab	58.00± 12.31 ab

a,b,c within a column means without a common superscript letter differ at P ≤0.05.

Total protein in the lambs' blood serum of the second treatment was significantly (p≤0.05) higher than in the lambs of the first treatment. Moreover, the results also showed a significant (P≤0.05) decrease in the concentration of albumin in the first treatment compared with the control group. In contrast, the second treatment did not show a significant difference in the albumin concentration between the second and control groups. These findings are inconsistent with Chou et al. (2022), who recorded significant differences in glucose concentration and total protein in the blood serum of rats treated with different levels of SPE. No significant effects were obtained from treatment groups in globulin and ALT, AST, and ALP enzyme concentrations compared with the control group. In addition, the results showed no significant effect of the sex of lambs on the level of serum glucose concentration and the concentration of lipoproteins, albumin, globulin, ALT, AST, and ALP between the treatment groups and the control group. The results agreed with the findings of Chou *et al* (2022), who did not obtain significant differences in the level of ALT and AST enzymes between the groups of male and female rats treated with different levels of SPE compared to the control. The interaction results showed a significant effect of the treatments on the concentration of serum glucose for males and females. As for the total protein concentration, the males of the second

treatment were significantly ($p \leq 0.05$) superior to the males and females of the first treatment. While there was a significant ($p \leq 0.05$) decrease in the concentration of albumin for females of first treatment compared to males of control group, and in the same direction, a significant ($p \leq 0.05$) decrease was observed albumin in blood serum of males of second treatment compared with males of control group, and males of the second treatment. Also, a significant ($P \leq 0.05$) decrease in the ALT concentration in the females of second treatment compared to the females of first treatment, and a significant ($P \leq 0.05$) decrease in AST level was observed in males of the first treatment compared to males and females of control group, as well as a significant ($P \leq 0.05$) decrease the level of AST in blood of males of second treatment compared to females of control group. Moreover, a significant ($P \leq 0.05$) decrease in the concentration of ALP enzyme was observed for males of the second treatment compared with females of the first treatment.

CONCLUSIONS

Through this study, we found that a small dose (2 ml/animal) of sheep placenta extract improved the final body weight of lambs, with no negative effects on the physiological and biochemical indices in the blood serum of males and females of Awassi lambs. However, more research and studies are needed on the use of SPE, possibly at other levels, to better understand the effect of the physiological, chemical, and antioxidant parameters in the blood serum of sheep.

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CONFLICT OF INTEREST

The authors reported no conflict of interest.

تأثير حقن مستخلص المشيمة في بعض الصفات الفسلجية والانتاجية لذكور واناث الحملان العواسية

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الخلاصة

أُجريت الدراسة في محطة البحوث الزراعية لمدة شهرين. تم استخدام ثلاثين حملاً من سلالة العواسي (15 ذكور و15 إناث) بعمر 3 أشهر ووزن 22 كغم ±800 غم. تم توزيع الحيوانات عشوائيًا إلى ثلاث معاملات (5 حملان من كل جنس في كل مجموعة)، اذ اعدت المجموعة الأولى مجموعة سيطرة، بينما حُقنت المجموعتان الثانية والثالثة بمستخلص مشيمة الاغنام بجرعتين (2 و4 مل/رأس/أسبوع) على التوالي. أظهرت نتائج التحليل الإحصائي تفوق المعاملة الأولى معنويًا ($P \leq 0.05$) على المعاملة الثانية في وزن الجسم. كما

لم تُظهر النتائج أي أثر معنوي لمعاملات مستخلص المشيمة على مقاييس الدم مقارنةً بالسيطرة، باستثناء مستوى معدل حجم الكرية الذي كان أقل معنويًا ($P\leq0.05$) في المعاملة الأولى مقارنة بالمعاملة الثانية. كما لوحظ تأثير معنوي ($P\leq0.05$) لجنس الحيوان، اذ سجلت الإناث تراكيز أعلى للهيموغلوبين، وعدد كريات الدم الحمر، وحجم الخلايا المرصوصة، وعدد خلايا الدم البيض، والانزيم الناقل لمجموعة الاسبارتات مقارنةً بالذكور. من جهة أخرى، كانت مستويات الكوليسترول والبروتين الدهني منخفض الكثافة أعلى معنويًا ($P\leq0.05$) في المعاملة الثانية مقارنةً بالسيطرة. بالإضافة إلى ذلك، لوحظ ارتفاع معنوي ($P\leq0.05$) في مستويات البروتين الدهني عالي الكثافة والكلوكوز في المجاميع المعاملة مقارنة بمجموعة السيطرة. تشير نتائج هذه الدراسة إلى أن استخدام مستخلص مشيمة الاغنام لم يكن له تأثيرات سلبية على الأداء الإنتاجي والفسيولوجي للحملان.

الكلمات المفتاحية: وزن الجسم، مقاييس الدم، مستخلص المشيمة.

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