

## **Evaluation of Some Hematological and Biochemical Parameters in Mature Female Domestic Cats (Himalayan) at Different Reproductive State**

Mohammed Abdulsalam, Asmaa Sami Madhi, Adel M. Hassen.

Department of Physiology, Pharmacology and Biochemistry, College of Veterinary Medicine  
University of Basrah, Iraq.

Corresponding Author Email Address: [asmaa.mathi@uobasrah.edu.iq](mailto:asmaa.mathi@uobasrah.edu.iq)

ORCID ID: <https://orcid.org/0000-0001-7069-5600>

DOI:

Received: 10 March 2024 Accepted: 17 April 2024.

### **Abstract**

The present study was conducted at College of Veterinary Medicine– University of Basrah. Ten adult's mature female domestic cats (Himalayan) and five mature males were used in the study to investigate the reference value of some hematological and biochemical parameters at different reproductive status. The cats divided into five periods non-pregnant, pregnant at first, second and third trimester and after parturition (lactation) period, the cat housed in special room in a hotel for cats in Basra city. The results showed non-pregnant cats exhibited normal value of hematological parameters like red blood cell, hemoglobin concentration, packed cell volume. Mean corpuscular volume, and mean corpuscular hemoglobin concentration, while red blood cell, hemoglobin concentration, packed cell volume showed significantly decreased with advanced period of gestation and lactation. white blood cell showed increased significantly in late gestation and lactation periods, serum level of liver enzymes ALT increased in lactation period and ALP increased in third trimester and lactation period. Lipid profile like total cholesterol and triglyceride showed increased significantly in third trimester and lactation periods, urea and creatinine appeared increased in third trimester only. It is concluded that some of blood and biochemical parameters are exchange with advanced period of gestation and lactation period.

**Keyword:** Himalayan cats, pregnant cats, hematological parameters, lipid profile.

## Introduction

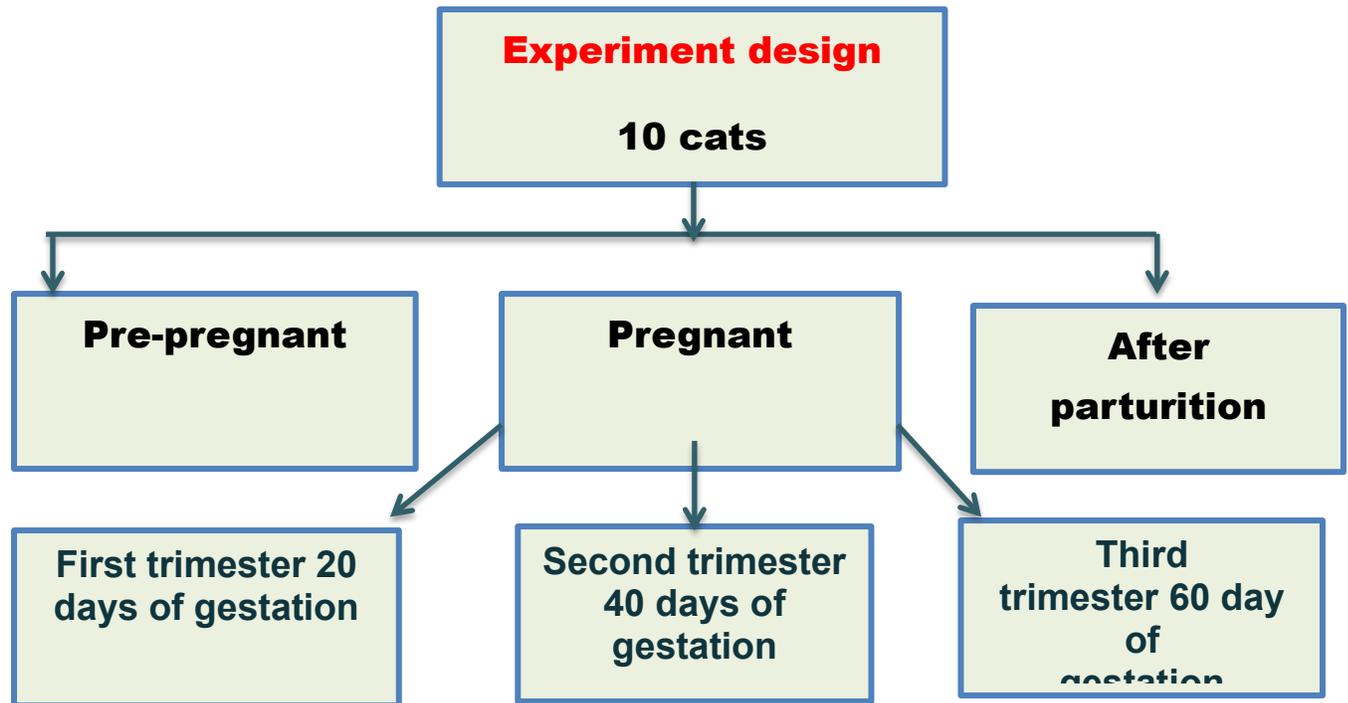
Today, the homegrown feline (*Felis catus*) is perhaps of the most well-known pet on the world (1). Notwithstanding their development in ubiquity, the job of the homegrown feline in human existence has changed lately, going from being viewed as a practically free creature to turning out to be important for the family. A review directed in the Netherlands tracked down that 52% believed their feline to be an individual from the family, 27% thought of it as a youngster and 7% thought of it as their closest companion (2, 3). The choice to permit felines admittance to the outside has not been viewed as related with their age, wellbeing status, or onychectomy status. Be that as it may, felines with outside access are two times as liable to have signs connected with early degenerative joint sickness than those with just indoor access (4). Additionally, felines permitted open air access are bound to be nibbled by different felines, and are very nearly multiple times bound to become tainted with parasites than those inside (5). The way of behaving of felines that live outside contrasted with those that live inside can likewise vary. For instance, open air felines have been found to cover more distance and eat more food than indoor felines, yet show fewer unusual ways of behaving (6). The first indication of taming of felines seems, by all accounts, to be around 4500 B.C. The earliest remaining parts were tracked down in Africa. Overpowering proof focuses to Old Egypt and the African Wildcats (*Felis Sylvestrus libyca*) as the most seasoned genuinely homegrown felines. They were presumably

utilized in cultivating towns to chase the waterway rodents that attacked the storehouses. Most felines progress to a grown-up diet around 10 a year old enough, the domestic cat has been used for many years as a research animal with increase the number of cats as companion animals, A few variables, including age, sex, creature breed, development, nourishment, and season meaningfully affect the changes saw in hematological and biochemical blood boundaries. In veterinary medication, blood boundaries examination is significant in that it supplements clinical discoveries and adds to an exact conclusion. To guarantee a precise understanding of examination results, reference blood values ought to be accessible for every creature species, therefore because the increase in the number of Himalayan cats raised at home the research aimed to investigate a normal reference value of a complete hematological, hormonal and biochemical parameters in nonpregnant, pregnant and after parturition in Himalayan cats.

## Material and methods

Ten of Himalayan female cats and five males were used with an average body weight ( $3 \text{ kg} \pm 250 \text{ g}$ ), and their ages (10-12) month, The animals were housed in hotel royal Veterinary clinic. Animals are exposed to same conditions and acclimation, adaptive on environment, including, diet climate, site for one week before starting the experiments.

**Experimental design :**The present study was conducted at the hotel royal vet clinic. Himalayan Female cats were divided into five periods as follow in the scheme below:



**Blood samples:** Blood samples (10ml) collected from puncture of jugular vein. (3ml) of blood are stored in plastic test tube containing anticoagulant ethylene di amine tetra acetic acid (EDTA) for hematological studies, which done directly after collection in al bayan national investment clinical diagnostic privet lab by using instrument (Huma Counts 5) (RBC, WBC. DWBC, Hb. PCV, MCV, MCH and MCHC), while another portion used tube without anticoagulant and allowed to clot at room temperature, then blood samples were centrifuged at (3000 rpm) for 15 minutes and serum were stored in poly ethylene tubes at (- 20c ) until used for biochemical analysis like TC,TG,LDL-c ,HDL-c ,ALT,AST,ALP, urea and creatinine (7).

## Results

### Hematological parameters

Table (1) demonstrated the value of RBC ,Hb and PCV in pre pregnant, pregnant and after parturition in Himalayan cats ,the results showed decreased significantly ( $P<0.05$ ) in RBC count in pregnant cats at second ,third trimester and lactation periods when compared with pre pregnant and pregnant in first trimester, also the same results showed the Hb and PCV concentration appeared decreased significantly ( $P<0.05$ ) and its more decreased in late pregnant and lactation periods compared with other periods.

The result of MCV, MCH and MCHC indicated in table (2). The table show no

significant in value of MCV in pre pregnant, pregnant and lactation period, also the same table appeared that the value of MCH and MCHC were increased significantly ( $P < 0.05$ ) in pregnant and lactation period when compared with another period. The result of WBC, lymphocyte and monocyte in pre pregnant, pregnant and after parturition are present in table (3). The table show increased significantly ( $P < 0.05$ ) in WBC with advance period of pregnant and after parturition, while the changes in normal value in lymphocyte and monocyte percentage in all period do not reach a significant.

**lipid profile**

The results in table (5) show TC and TG, increased significantly ( $P < 0.05$ ) in Pregnant cats in third trimester and after parturition when compared with other period of pregnant cats. The same table showed that LDL-c concentrations and HDL-c concentrations . slight changes in normal value in all period but not reach a significant.

**Table (1) The normal value of RBC , Hb and PCV in Himalayan cats (Mean± SD ) n= 10.**

Group	RBC 10 <sup>6</sup> cell /ml	Hb gm/l	PCV %
Pre pregnant	8.12 ± 0.61 a	11.33 ± 1.67 a	36.47 ± 2.81 a
Pregnant in first trimester	7.61 ± 0.04 a	11.27 ± 1.46 a	35.77 ± 3.09 a
Pregnant in second trimester	6.83 ± 0.19 b	9.76 ± 1.91 b	32.25 ± 3.16 b
Pregnant in third trimester	5.22 ± 0.43 b	9.15 ± 1.03 b	29.33 ± 2.22 c
Lactation	6.01 ± 0.11 b	9.05 ± 1.13 b	29.70 ± 2.02 c

The different small letters refer to significant differences at ( $p \leq 0.05$ )

**Table (2) The normal value of MCV, MCH and MCHC in Himalayan cats(Mean ± SD ) n= 10.**

Group	MCV (fL)	MCH (pg)	MCHC (%)
Pre pregnant	54.08 ± 2.61 a	16.07 ± 1.14 b	36.11 ± 2.17 b
Pregnant in first trimester	56.51 ± 2.16 a	15.32 ± 1.65 b	35.34 ± 2.10 b
Pregnant in second trimester	57.57 ± 3.10 a	15.03 ± 1.09 b	36.40 ± 1.12 b
Pregnant in third trimester	57.84 ± 2.54 a	35.22 ± 2.19 a	49.74 ± 2.18 a
Lactation	55.01 ± 2.32 a	38.11 ± 2.65 a	53.56 ± 2.09 a

The different small letters refer to significant differences at ( $p \leq 0.05$ )

**Table (3) The normal value of WBC ,Lymphocyte and Monocyte in Himalayan cats (Mean ± SD ) n= 10.**

Group	WBC ( $\times 10^3/\mu\text{L}$ )	Lymphocyte%	Monocyte %
Pre pregnant	7.11 ± 0.19 c	31.25 ± 3.43 a	6.03 ± 0.18 a
Pregnant in first trimester	7.17 ± 0.04 c	31.95 ± 3.11 a	5.89 ± 0.28 a
Pregnant in second trimester	9.62 ± 0.11 b	34.86 ± 3.14 a	5.92 ± 0.44 a
Pregnant in third trimester	13.04 ± 0.08 a	32.64 ± 3.42 a	5.95 ± 0.10 a
Lactation	14.96 ± 0.21 a	33.07 ± 3.12 a	5.75 ± 0.12 a

The different small letters refer to significant differences at ( $p \leq 0.05$ )

**Table (4 ) The normal value of Neutrophil , Acidophil and Basophil in Himalayan cats (Mean ± SD) n= 10.**

Group	Neutrophil %	Acidophil %	Basophil %
Pre pregnant	59.91 ± 2.14 a	3.05 ± 0.13 a	0.57 ± 0.01 a
Pregnant in first trimester	58.15 ± 3.64 a	2.95 ± 0.11 a	0.56 ± 0.00 a
Pregnant in second trimester	57.02 ± 3.71 a	2.16 ± 0.54 a	0.58 ± 0.01 a
Pregnant in third trimester	58.34 ± 3.08 a	2.14 ± 0.42 a	0.55 ± 0.00 a
Lactation	58.07 ± 2.61 a	2.04 ± 0.22 a	0.57 ± 0.00 a

The different small letters refer to significant differences at ( $p \leq 0.05$ )

**Liver enzyme:** The obtained results in table (6) showed ALT, AST and ALP enzyme concentration. The result of ALT revealed decreased significantly ( $P < 0.05$ ) in group of lactation when compared with other groups, the AST showed slight changes do not reach a significant while the ALP appeared increased significantly ( $P < 0.05$ ) in group of Pregnant cats in third and second trimester and decreased significantly ( $P < 0.05$ ) in another period.

**Kidney Function:** Depending on the results in table (7 ) the creatinine concentration significantly increased ( $p < 0.05$ ) in Pregnant cats in third trimester compared with other period while the results of urea concentration in same table appeared a significant increased ( $p < 0.05$ ) in Pregnant cats in third and second trimester and decreased significantly ( $p < 0.05$ ) in other period especially in lactation .

**Table (5) The normal value of lipid profile TC, TG, LDL and HDL in Himalayan cats (Mean  $\pm$  SD ) n= 10.**

Group	TC mg/dL	TG mg/dL	LDL mg/dL	HDLmg/dL
Pre pregnant	118.13 $\pm$ 5.16 c	49.38 $\pm$ 3.55 c	26.81 $\pm$ 2.05 a	81,12 $\pm$ 4.21 a
Pregnant in first trimester	155.55 $\pm$ 5.34 b	63.44 $\pm$ 3.18 b	25.61 $\pm$ 2.00 a	84.01 $\pm$ 3.51a
Pregnant in second trimester	157.00 $\pm$ 6.15 b	38.99 $\pm$ 4.40 d	24.01 $\pm$ 2.51 a	83.31 $\pm$ 3.51 a
Pregnant in third trimester	159.27 $\pm$ 6.09 a	83.36 $\pm$ 4.11 a	24.10 $\pm$ 2.01 a	82.09 $\pm$ 3.51 a
Lactation	161.21 $\pm$ 6.33 a	85.11 $\pm$ 4.17 a	25.43 $\pm$ 1.32 a	83.54 $\pm$ 3.07 a

The different small letters refer to significant differences at (p $\leq$ 05)

**Table (6): The normal value of liver enzyme ALT, AST and ALP in Himalayan cats (Mean  $\pm$  SD ) n= 10.**

Group	ALT (U/L)	AST (U/L)	ALP (IU/L)
Pre pregnant	19.52 $\pm$ 2.04 a	31.11 $\pm$ 2.59 a	42.34 $\pm$ 2.14 c
Pregnant in first trimester	18.12 $\pm$ 2.13 a	29.15 $\pm$ 2.10 a	43.22 $\pm$ 2.69 c
Pregnant in second trimester	19.26 $\pm$ 1.48 a	30.04 $\pm$ 1.18 a	51.03 $\pm$ 2.33 b
Pregnant in third trimester	19.04 $\pm$ 2.44 a	30.35 $\pm$ 2.11 a	62.13 $\pm$ 2.11 a
Lactation	17.10 $\pm$ 1.11 b	30.15 $\pm$ 2.01 a	44.01 $\pm$ 2.30 b

The different small letters refer to significant differences at (p $\leq$ 05) .

**Table (7) The normal value of kidney function creatinine and urea in Himalayan cats, (Mean  $\pm$  SD), n= 10.**

Group	Creatinine Mg/dl	Urea mmol/dl
Pre pregnant	0.72 $\pm$ 0.04 b	23.17 $\pm$ 2.19 c
Pregnant in first trimester	0.71 $\pm$ 0.01 b	22.16 $\pm$ 2.08 c
Pregnant in second trimester	0.74 $\pm$ 0.00 b	31.13 $\pm$ 2.16 b
Pregnant in third trimester	0.83 $\pm$ 0.01 a	36.59 $\pm$ 2.10 a
Lactation	0.73 $\pm$ 0.02 b	12.2 $\pm$ 11.13 c

The different small letters refer to significant differences at ( $p \leq 0.05$ ),

## Discussion

There are many different studies regarding normal hematological values in cats, the results of this study would be important information for the practicing veterinarian as they provide valuable information that can assist in the assessment of health status of the animal and monitoring the prognosis of pathological disorders (8). Several factors, including age, stress, nutrition, gestation, temperature, and disease, affect changes in blood parameters (9).

In the present study, the normal value of RBC, PCV and Hb decreased significantly during the second and third trimesters of gestation and the lactation period compared to the first trimester of gestation and the non-pregnant cats. The decreases in RBC, PCV, and Hb that occur may create a hemodilution effect resulting from an increase in plasma volume. The hemodilution mechanism is particularly important in animals because it increases the supply of oxygen and nutrients to the fetus by decreasing blood flow in the capillaries.

and increase blood flow in the placental capillaries (10, 11).

The results of Hb concentration in the study were in agreement with the study carried out by (12) he noted that the decrease in Hb in pregnant Kangal Sheepdogs compared to non-pregnant dogs was considered to be associated with the increased plasma volume exceeding the erythrocyte mass index in pregnant dogs, Additionally, MCV increased significantly during advanced periods of gestation. The observed increase in MCV could be related to the need to increase the oxygen carrying capacity of the blood resulting from a decrease in the number of red blood cells.

The white blood cell count is one of the most important parameters of the complete blood count (CBC) and is used to identify immune-related disease (13).

The leukocyte count increased significantly during the third trimester of gestation and lactation. The results are consistent with the study by (14) he thought that the leukocyte

count increases around the time of birth. these counts are generally higher than standard values in most domestic animals in later stages of gestation. Increased white blood cell counts may be due to stress occurring during gestation and lactation, the result same with the results of cortisol hormone which increased with advanced gestation. Also, maybe the increased in WBC count in pregnant cats is common due to the body changing for carrying a fetus. Lipid profile parameters are commonly used in veterinary medicine for clinical and metabolic assessment of animals during disease diagnosis. In pregnant cats, biochemical blood parameters differ from values relating to the period preceding pregnancy (15).

The present study demonstrated that serum levels of TC and TG increased at the end of gestation and during the lactation period than before pregnancy in cats. This increase in serum TC is due to the stimulation of estrogens during pregnancy, the results are consistent with the results reported by (16), indicating that an increase in serum TG levels was observed during the last months of gestation [17]The observed increase in serum TG levels in late gestation could be linked to excessive glucose intake to maintain body reserves to meet the energy needs of the fetus (18). The changes in normal value of LDL-c and HDL-c were not reach a significant, there result disagree with the study carried out by (12) on a dog, he reported that plasma LDL-c levels gradually increase during normal pregnancy, and this increase is manifested by increased TC and TG levels. Estrogens are thought to play a major role in these changes in

lipoprotein levels during pregnancy, increased placental lipoprotein lipase activity during pregnancy facilitates the transfer of maternal lipids to the fetus through physiological adaptation.

According to some authors (19, 20) they found that TC, LDL, HDL and TG increased in response to the stimulation of estrogen and resistance to insulin. While the nutritional requirements of the fetus increase significantly during the later period of pregnancy, maternal fat deposits are reduced as free fatty acids and glycerin are used by the liver to synthesize energy-rich fetal compounds. .

In the present study, ALT enzyme decreased during the lactation period only compared to other periods, while AST enzyme activity was within the range of normal reference values for all periods. The results correspond to (21). The available data on ALT and AST activity are unclear on gestation (22). AST enzymes may have been reported to play an important role in the normal continuation of gestation (23) reported that serum ALT activity showed a decrease in late gestation in Angora cats. similarly in the present study, serum ALT activity was found to decrease during the third trimester of gestation, compared to the value measured in the first and second trimesters of gestation.

The ALP level increases significantly with advanced gestation and lactation period. Increased in ALP enzyme may be due to increased bone deposition, intestinal and liver damage, or an increase in the hormone cortisol caused by stress during gestation

.The results in the present study showed that serum urea and creatinine are affected by pregnancy in the first ,second and third trimester and its more effect in the third trimester compared in non -pregnant .The results corresponding with results done by (24) they found that in the advanced period of gestation the glomerular filtration rate (GFR) begin to decrease toward non-pregnant, so that serum urea and creatinine concentration rise during the last weeks of pregnancy ,during this times maybe the tubular reabsorption of urea and creatinine increase which lead to increase serum urea and creatinine concentration ,also the decrease in plasma volume leads to decrease the secretion of urea and creatinine from proximal and more distal parts of tubule .

In contrast to the present study the results of(25) showed that Plasma volume increase during pregnancy, also GFR increase in early pregnancy, the changes in plasma volume and GFR may give a possible explanation for increase the clearance of urea and creatinine ,so the urea and creatinine parameters are slightly decrease in serum during pregnancy , also another study of serum urea and creatinine in the first trimester of pregnancy were significantly lower in pregnant group than non-pregnant (26).

### **Conflicts of interest**

The authors declare that there is no conflict of interest.

### **Ethical Clearance**

This work is approved by The Research Ethical Committee.

## **References**

1. Bradshaw, J. (2018): Normal feline behavior and why problem behaviors develop. *J. Feline Med. Surg.* , 20, 411–421.
2. Bouma, E.M.C.; Reijgwart, M.L.; Dijkstra, A. (2021): Family Member, Best Friend, Child or ‘Just’ a Pet, Owners’ Relationship Perceptions and Consequences for Their Cats. *Int. J. Environ. Res. Public Health* , 19, 193.
3. Merna H. D., Qaes T. Al-Obaidi , Assel A. Al-Naqshabendy ( 2024) Feline Panleukopenia Virus in Duhok, Iraq: Clinical, Hematological and Serum Biochemistry Changes in Clinically and Subclinically Infected Cats. *Bas J Vet Res*, 23(1).
4. Maniaki, E.; Murrell, J.; Langley-Hobbs, S.J.; Blackwell, E.J.(2021) Associations between early neutering, obesity, outdoor access, trauma and feline degenerative joint disease. *J. Feline Med. Surg.* , 23, 965–975.
5. Chalkowski, K.; Wilson, A.E.; Lepczyk, C.A.; Zohdy, S.(2019) Who let the cats out? A global meta-analysis on risk of parasitic infection in indoor versus outdoor domestic cats (*Felis catus*). *Biol. Lett.* 15, 20180840.
6. Parker, M.; Serra, J.; Deputte, B.L.; Ract-Madoux, B.; Faustin, M.; Challet, E.(2022) Comparison of Locomotor and Feeding Rhythms between Indoor and Outdoor Cats Living in Captivity. *Animals* , 12, 2440.
7. Zainab s. Y. and Bushra F. H.(2022) . Evaluation the Effects of Administration Iraqi Dates Kernels Oil (sayer) and Malaysian Palm Kernel Oil on Some Blood Parameters in

Pregnant and Lactated Female Rats *Bas J Vet Res*, , 21(4):11-23.

8. Coles EH.(1986) . *Veterinary Clinical Pathology*, 4th ed. Philadelphia, PA, USA: WB Saunders Co.; 1986.

9. Klinkon M, and Ježek J.(2012) . Values of blood variables in calves. In: Perez-Marin CC, editor. *A Bird's-Eye View of Veterinary Medicine*. Slovenia: Intech; pp. 301–320.

10-Pere MC, Dourmad JY, and Etienne M.(1996) . Variation of uterine blood flow in the sow during gestation. *J La Rech Porc* ; 18: 371– 378.

11-Huda K. Khassaf2024 ) (Sodium Nitrite Effects on Some Blood and Biochemical Parameters in Glutathione Treated Male Rats *Bas J. of vet. Res* , 23(1): 90-96

12-Mustafa K. (2019) . Comparisons of some blood hematological levels and biochemical parameters in pregnant and non-pregnant Kangal shepherd dogs *.VET* ; 4(3): 05-08 ISSN: 2456-2912

13-Gröndahl, G. (2019) .*Veterinary Hematology – An introduction*. Boule Diagnostics, 33267, Edition 4 . (3) eClinpath,

14-Iriadam M(2007). Variation in certain hematological and biochemical parameters during the peri-partum period in Kilis does. *Small Ruminant Res* ; 73: 54–57.

15-Özyurtlu N, Gürgöze SY, Bademkiran S, Şimşek A, Çelik R.(2007). İvesi koyunlarında doğum öncesi ve sonrası dönemdeki bazı

biyokimyasal parametreler ve mineral madde düzeylerinin araştırılması. *F Ü Sag Bil Derg*; 21: 33–36 (in Turkish).

16-Polijcak-Milas N, Marenjak TS, Slavica A, Janicki Z, Filipovic N, Sruk V. (2009) .Comparative hematological and biochemical values in pregnant and non-pregnant red, Cervus elaphus, and fallow deer, Dama dama, females. *Folia Zool* ; 58: 36–44

17-Balıkci E, Yıldız A, Gurdogan F.(2007) . Blood metabolite concentrations during pregnancy and postpartum in Akkaraman ewes. *Small Rumin Res* ; 67: 247–251

18-Atakişi E, Atakişi O, Merhan O, Öğün M, Özcan A, Maraşlı S.(2009) . Koyunlarda gebelik öncesi, gebelik ve doğum sonrası  $\beta$ -hidroksibütirik asit, glukoz ve trigliserid düzeylerinin araştırılması. *Erciyes Üniv Vet Fak Derg*; 6: 37–41 (in Turkish).

19-Ghio, A. Bertolotto, V. Resi, L. Volpe and G. Di Cianni,(2011). Triglyceride metabolism in pregnancy", *Adv Clin Chem*. 55: 133-53.

20-Wong, T.C. Ooi and E. Keely,(2015). Severe gestational hypertriglyceridemia: A practical approach for clinicians, *Obstet Med. Dec*, 8(4), pp. 158

21-Turgut K.( 2000). *Veteriner Klinik Laboratuvar Teshis*. 2. Baskı. Konya: Baçıvanlar Basım Sanayi AŞ; (in Turkish)

22-Gürgöze SY, Zonturlu AK, Özyurtlu N, İçen H.(2009) . Investigation of some biochemical parameters and mineral substance during pregnancy and postpartum period in Awassi ewes. *Kafkas Vet Fak Derg* ; 15: 957–963.

23-Macun H, Çınar M, Erat S, Arıkan S. Ankara ve (2010) .Van kedilerinin gebelik ve laktasyon dönemlerine ait bazı biyokimyasal parametrelerinin karşılaştırılması. *Erciyes Univ Vet Fak Derg* ; 7: 99–108 (in Turkish).

24-Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2003) "Harper's Illustrated Biochemistry" .26th ed., McGrawHill: 243-299.

25-Korda, A.R. and Horvath, J.S. (1979)" Renal Physiology", 2nded.,London, Black Well Scientific Publication:376-409.

26-Kalhan, S.C., (2000) " Protein Metabolism in Pregnancy" *Am. J. of Clinical Nutrition.* 71(5): 1249- 1255.

## تقييم بعض المعايير الدموية والكيموحيوية في إناث القطط المنزلية الناضجة (الهيمالايا) في الحالات التناسلية المختلفة

محمد عبد السلام، اسماء سامي ماضي، عادل موسى حسن الزبيدي.

فرع الفلسفة والادوية والكيمياء، كلية الطب البيطري، جامعة البصرة.

### الخلاصة

أجريت هذه الدراسة في كلية الطب البيطري – جامعة البصرة. حيث استخدمت عشرة قطط اناث بالغة نوع (الهيمالايا) وخمسة ذكور لدراسة القيم الطبيعية لبعض المعايير الدموية والكيموحيوية في الحالات تناسلية مختلفة. قسمت القطط إلى خمس فترات غير حامل، حامل في الثلث الأول والثاني والثالث وفترة ما بعد الولادة (الرضاعة) وضعت القطط في غرف خاصة في فندق للقطط في مدينة البصرة. أظهرت النتائج الدراسة قيم طبيعية لمعايير الدم مثل خلايا الدم الحمراء، تركيز الهيموجلوبين، حجم الخلايا المرصوصة، متوسط حجم الكريات، ومتوسط تركيز الهيموجلوبين في حين ظهر انخفاض معنوي في خلايا الدم الحمراء والهيموجلوبين. تركيز وحجم الخلية المرصوصة في فترات الحمل المتقدمة والرضاعة بينما أظهرت كريات الدم البيضاء زيادة معنوية في أواخر فترات الحمل والرضاعة، كما ارتفعت مستويات إنزيمات الكبد في مصل الدم ALT في فترة الرضاعة وزاد ALP في الثلث الثالث من الحمل وفترة الرضاعة. أظهرت نسبة الدهون مثل الكوليسترول الكلي والدهون الثلاثية زيادة معنوية في الثلث الثالث من الحمل وفترة الرضاعة، كما ظهرت زيادة في اليوريا والكرياتينين في الثلث الأخير من الحمل. نستنتج من الدراسة هناك تغيرات في بعض معايير الدم والكيموحيوية مع تقدم فترة الحمل والرضاعة.

**الكلمات المفتاحية:** قطط الهيمالايا، قطط الحوامل، معايير دموية، صور الدهون.