Research Article

BASJVETRES

*BASRAH JOURNAL OF VETERINARY RESEARCH, 2024, 23(4):196-206.*
*https://bjvr.uobasrah.edu.iq/*

# Evaluation of Some Metabolic Parameters in Mid-Lactating and Dry Period of Buffaloes in North Basrah Governorate

Fatima Basil A. Abbas, Muna H. AL-Saeed, Jinan A. Hilal.

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

**Corresponding Author Email Address**: muna.mahmood@uobasrah.edu.iq

**ORCID ID: https://orcid.org/0000-0002-3057-4238**

**DOI:** https://doi.org/10.23975/bjvr.2024.155075.1155

**Received: 8 November 2024 Accepted: 9 December 2024.**

## Abstract

The goal of the current study is to analyze the current findings. The current study aims to analyze the effects of the mid-stage of lactation and the dry period on various physiological and metabolic alterations in buffaloes (Up until now, no reference values have been established for various metabolic physiological parameters during the mid-stage of lactation in buffaloes. ion in buffaloes. The researchers examined the animals at farms located in the northern region of Basrah Governorate, Iraq. Based on selection criteria, 40 clinically healthy female buffaloes (2-7 years old) were divided into thirty lactating buffaloes and ten dry buffaloes. This study involved the collection of serum samples for biochemical analyses, including lipid profiles. The samples included glucose, CK, urea, creatinine, BUN, alanine transferase, and aspartate. We measure transferase, total protein, albumin, globulin, alkaline phosphatase, calcium, and phosphor. The established values will be a useful guide for interpreting serum metabolic parameters in lactating buffaloes. The results showed increased total cholesterol and CK significantly compared with dry buffaloes. Simultaneously, there was a significant decrease in serum glucose between the mid-lactation and dry stages. However, the serum globulin decreased significantly in lactation compared to dry buffaloes. The results of ALT and ALP showed a significant increase in mid-lactation compared with dry buffaloes, while the results of serum AST showed a significant decrease.

**Keyword:** Metabolic Parameters, Lactation, Buffaloes.

## Introduction

Lactation in female mammals is a special reproductive function. In order to meet the high energy and water expenditure required for milk production in rodents (1- 3) and ruminants (4- 6), dams during lactation adapt by increasing their food and water intake. They also inhibit ovarian function in rodents (7- 10), ruminants (11, 12), and primates, including humans (13- 17). In the species indicated above, breastfeeding significantly inhibits follicular growth and subsequent ovulation. This suppression, also known as "lactational anestrus," prevents pregnancy during nursing, serving as a tactical adaptation to ensure survival.

One unique reproductive function in female mammals is breastfeeding. During lactation, ruminants (4- 6) and rodents (1- 3) adjust by consuming more food and water to meet the high energy and water expenditure required for milk production. Additionally, in ruminants (11, 12), primates, including humans (13- 17) and rodents (7- 10), they suppress ovarian function. Breastfeeding causes a considerable inhibition of follicular expansion and subsequent ovulation in the species mentioned above. This suppression (also called "lactational anestrus") would be a tactical modification to ensure survival by preventing conception from occurring while breastfeeding.

Thanks to improved nutrition, management, and genetic selection, dairy cows are now able to produce large amounts of milk over about 300 days.

Because of their exceptional output and milk quality, buffaloes, the second largest dairy cattle, produce 14.4% of the world's milk (15). Compared to the milk of Holstein cows, buffalo milk has more total solids, fat, and minerals (16). Despite numerous research studies exploring the composition of buffalo colostrum (17, 18), there is a dearth of published data on colostrum and its yield. Buffalo milk, a necessary milk source, satisfies nutritional needs. Buffalo milk products, including ghee, yoghurt, and mozzarella, are also well-liked.

Colostrum production is influenced by several variables, including breed, parity, calf sex, calving month, and health status (19). Furthermore, parity, a crucial component influencing colostrum properties, has been investigated in Holstein cows (20, 21) but not in buffaloes. Conversely, content disparities were caused by the significant metabolic abnormalities in buffaloes during the early stages of lactation.

Since numerous genes regulate buffaloes' milk production qualities, finding potential genes linked to these traits is crucial to improve the precision of breeding initiatives (22). The most significant breed for milk production is the Murrah buffalo, whose genetic diversity and milk production features are being studied.

Since numerous genes regulate buffaloes' milk production qualities, finding potential genes linked to these traits is crucial to improve the precision of breeding initiatives (22). The most significant breed for milk production is the Murrah buffalo, whose genetic diversity and milk production features are being studied. In addition, genetic diversity is important for the sustainable use, development, and conservation of animal genetic resources

(23). This work aimed to evaluate 'is work aimed to evaluate the metabolic parameters in dairy buffaloes'' buffaloes' blood associated with milk production.

## Materials and Methods

**Animals and Experimental Design:** In the experimental setting, forty female buffaloes were collected from the north part of Basrah city. Samples of blood were taken before feeding at 8:00 a.m. To obtain serum for biochemical analysis, blood samples were drawn from the jugular vein of every buffalo in the study and placed in simple vacuolating tubes. Following collection, samples were sent straight to the College of Veterinary Medicine's Physiology, Pharmacology, and Biochemistry research laboratory in an ice tank. BBlood samples were manufactured (blood serum) or examined (whole blood). Following a 15-minute centrifugation at 3000 rpm, serum was extracted from blood samples in plain tubes using standard procedures (24, 25). The serum was then separated into four equal portions in Eppendorf tubes and kept at -20°C.

Blood was collected in plastic Eppendorf tubes using various techniques to analyze biochemical analytes to estimate glucose, and serum biochemical variables were measured using a UV spectrophotometer (Opti Zen 3220 UV, Mecasys Co. Ltd, Korea). Reagents and chemicals were provided with the commercial kits that were purchased. Following centrifugation, blood plasma was extracted, and the levels of prolactin, lipid profile, glucose, TSH, T3, T4, GH, and TSH were measured using an ELIZA kit.

**Analysis of Statistics**: Analysis was done on the results (26). To ascertain the significance of the shift from control, the findings were statistically evaluated using the t-test in SPSS software (27).

## Results

**Effect of Lactation on Metabolic parameters in buffaloes in North Basrah Governorate.**The results presented in Table (1) illustrate the metabolic parameters during the mid-lactation and dry period of buffaloes. The results showed a significant increase ($p < 0.05$) in total cholesterol (TC) and CK compared with dry buffaloes, while serum glucose decreased significantly ($p < 0.05$) between mid-lactation and dry.

**Effect of Mid Lactation on Total protein, Albumin, Globulin, and Alb/Glo in female buffaloes:** Table (2) demonstrated a significant increase in total protein, albumin, and globulin in mid-lactation buffaloes when compared to their dry counterparts. The results showed a significant difference ($p > 0.05$) in total protein (TP) compared with dry buffaloes, while serum albumin was observed to increase significantly ($p < 0.05$) between mid-lactation and dry. However, the serum globulin level decreased significantly ($p < 0.05$) in mid-lactation compared with dry buffaloes

**Table (1): Effect of Mid Lactation and dry period of TC, Glucose, and CK in female buffaloes.**

| Groups | N | Parameters | | |
|---|---|---|---|---|
| | | TC Mmol/L | Glu Mmol/L | CK U/L |
| **Mid Lactation** | 30 | 4.08 ± 0.46a | 2.39 ± 0.60b | 37.11±1.68 a |
| **Dry** | 10 | 2.09 ± 0.52b | 4.69 ± 0.91a | 29.62± 1.23b |

**N =number of animals, small letters indicate differences between groups at level p<0.05.**

.**Table (2): Effect of Mid Lactation on Total protein, Albumin, Globulin, and Alb/Glo in female buffaloes.**

| Groups | N | Parameters | | | |
|---|---|---|---|---|---|
| | | TP (g/L) | ALB (g/L) | GLOB (g/L) | ALB/GLOB |
| **Mid Lactation** | 30 | 78.57 ± 13.11NS | 33.62 ± 4.88a | 44.95± 9.83b | 0.77 ± 0.15a |
| **Dry** | 10 | 78.92 ± 6.35NS | 30.02 ± 2.45b | 46.90± 9.12a | 0.61 ± 0.04b |

**N =number of animals, small letters indicate different between groups at level p<0.05.**

**Effect of Mid Lactation on Ca and P in female buffaloes.**

Table (3) displays the concentration of serum Ca and P in mid-lactation buffaloes when compared to their dry counterparts. The results showed no significant ($p > 0.05$) changes in the concentration of serum Ca in mid-lactation compared with dry buffaloes .

**Table (3): Effect of Mid Lactation on Ca and P in female Buffaloes.**

| Groups | N | Parameter | |
|---|---|---|---|
| | | Ca | P |
| | | Mmol/L | Mmol/L |
| **Mid Lactation** | 30 | 2.86 ± 0.10NS | 3.04 ± 0.43a |
| **Dry** | 10 | 2.87 ± 0.07NS | 2.17 ± 0.72b |

**N=number of animals, small letters indicate differences between groups at level p<0.05.**

**Effect of Mid Lactation on BUN, CRE, T-BIL, and BUN/CR in female Buffaloes.**

Table 4 showed that the concentrations of BUN, CRF, and BIL in the serum of mid-lactation buffaloes were higher than those of dry buffaloes. The results showed a significant increase ($p < 0.05$) in serum concentrations of BUN, CRE, and BIL in mid-lactation compared with dry buffaloes. Dry was increased regarding Bun/CR.

**Effect of Mid Lactation on ALT, AST AST/ALT, and ALP in female buffaloes.**

The results presented in Table 5 indicate a significant decrease in AST, ALT, and ALP in mid-lactation buffaloes when compared to their dry counterparts. The results decreased significantly ($p < 0.05$) in ALT and ALP in mid-lactation compared with dry buffaloes. In contrast, the results of serum AST showed a significant decrease ($p < 0.05$) compared between mid-lactation and dry buffaloes. No differences were observed regarding AST/ALT.

**Table (4): Effect of Mid Lactation on BUN, CRE, T-BIL, and BUN/CR in female Buffaloes.**

| Groups | N | Parameter | | | |
|---|---|---|---|---|---|
| | | BUN (mmol/L) | CRE (umol/L | T-BIL (umol/L | BUN/CR |
| **Mid Lactation** | 30 | 5.32 ± 0.90a | 4.55 ± 101.79a | 8.52± 0.04a | 2.95 ± 0.40b |
| **Dry** | 10 | 4.85 ± 0.70b | 2.37 ± 167.99b | 6.05± 0.48b | 6.58 ± 2.46a |

**N =number of animals, small letters indicate differences between groups at level p<0.05.**

**Table (5): Effect of Mid Lactation on ALT, AST AST/ALT, and ALP in female buffaloes.**

| Groups | N | Parameters | | | |
|---|---|---|---|---|---|
| | | ALT U/L | AST U/L | AST/ALT | ALP U/L |
| **Mid Lactation** | 30 | 56.65 ± 4.48b | 54.47±1.32 a | 2.60 ± 0.53 NS | 41.27± 1.28b |
| **Dry** | 10 | 66.10 ± 5.92a | 27.45± 1.35 b | 2.17 ± 0.47 NS | 45.16± 4.40a |

**N =number of animals, small letters indicate differences between groups at level p<0.05.**

## Discussion

The metabolic profiles are considered important in evaluating the health status of animals. The estimates of biochemical constituents are the prerequisites to diagnose several pathophysiological and metabolic disorders in cattle (28, 29).

The transition period, which is the most stressful time for cows, is three weeks prior to and following parturition. Physiological events in the neurohormonal system occur during parturition, resulting in immunological and metabolic problems (30). The productive and reproductive performance of cows is negatively impacted by haematological and serum biochemical alterations during the transition phase, resulting in significant financial losses (31). Evaluating the blood biochemical profiles is a crucial component in determining the animals' overall health (31).

Physiological parameters like respiration rate (RR), hematological parameters like red blood cell (RBC), hematocrit, hemoglobin (Hb), and mean cell Hb concentration (MCHC), biochemical parameters like alanine aminotransferase (ALT), Na, K, creatinine, blood urea nitrogen, Mn, Cu, and Zn, hormones like cortisol, and oxidative stress parameters like glutathione peroxidase (GPx), superoxide dismutase (SOD), lipid peroxide (LPO), and total antioxidant status (TAS) were found to increase with an increase in THI significantly. Additionally, there was a significant decrease in glucose, cholesterol, and triiodothyronine (T3) (32-36).

The increase in protein concentration likely resulted in an excess of protein in patients whose protein needs had previously been satisfied (trial 1), which in turn caused the raised glycemia levels (P<0.01) in P2. The diet's energy levels were insufficient to meet P2's increased milk supply, which led to a relative calorie loss for the animals in trial 2. The higher levels of lipoproteins and β-hydroxybutyrate and the lower body condition score values in P2 compared to P1 and P3 corroborate this theory.

Regarding the protein/energy ratio, the findings of multiple regression analysis indicated a substantial correlation (R2=0.769; P<0.01) between MU and BU. Additionally, the MFP was impacted by MU values (R2=0.685; P<0.01). The increase in protein concentration likely resulted in an excess of protein in patients whose protein needs had previously been satisfied (trial 1), which in turn caused the raised glycemia levels (P<0.01) in P2. The diet's energy levels were insufficient to meet P2's increased milk supply, which led to a relative calorie loss for the animals in trial 2. The higher levels of lipoproteins and β-hydroxybutyrate and the lower body condition score values in P2 compared to P1 and P3 corroborate this theory (37).

Given the current correlation between MU and the protein/energy ratio, buffalo, like cattle, may benefit from using MU as a reliable indicator to show changes in the diet's protein/energy ratio. The MFP normalizes as the CP/DM ratio rises, suggesting that a high fermentable energy diet necessitates an increase in dietary protein concentration to meet requirements and prevent physical anomalies in the milk's physical characteristics. Elevated hepatic fat content on gluconeogenic activity and glucose output in the liver of dairy buffaloes is conflicting and needs further clarification (12, 38).

## Conclusion

The results of this work indicate that the metabolic parameters in dairy buffaloes' blood are associated with milk production characteristics.

## Conflicts of interest

The authors declare that there is no conflict of interest.

## Ethical Clearance

The Research Ethical Committee approves this work

## References

1-FAO (Food and Agriculture Organization) (2000). Water Buffalo: An Asset Undervalued. https://openknowledge.fao.org/server/api/core/bitstreams/5da8b3bb-9753-48d8-94e1-cff0e64d45e0/content

2-IUCN (3018). Asian Wild Cattle Specialist Group, Water Buffalo (Bubalusarnee) Retrieved from https://iucn.org/sites/default/files/2023-09/2018-asian-wild-cattle-sg-report-publication.pdf

3- Alsaedy, J. K. M., & Al Fartosi, K. (2017). Mesopotamian buffaloes: Endangered genetic resource, review. *Journal of Buffalo Science*, *6*(3), 81-84. https://doi.org/10.6000/1927-520X.2017.06.03.3

4-Richardson CJ, Hussain NA. (2011). Restoring the Garden of Eden, An ecological assessment of the Marshes of Iraq. *Bioscience 56*: 477-489. https://doi.org/10.1641/0006-3568(2006)56[477:rtgoea]2.0.co;2

5-Al-Saedy JKM. (2014). Mesopotamian Buffaloes: The Origin. *Journal of Buffalo Science, 3*: 30-33. https://doi.org/10.6000/1927-520x.2014.03.01.6

6-Fazaa NA. (2007). Interim Draft Report on Water Buffalo in Chubayish, *Nature Iraq*; 1-9. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.505.6107&rep=rep1&type=pdf.

7-Abu Tabeekh MA, Maktoof AS, Abdul Mohsen AM. (2017*)*. Solutions or alternatives to protect livestock, especially buffalo from the risk of drought in Basra Governorate. *Canadian Journal of Agriculture and Crops 2*(2): 84-89. https://doi.org/10.20448/803.2.2.84.89

8-McDowell, L.R. (2003): Minerals in animal and human nutrition. Academic Press, Inc San Diego, California. xvi+-644. https://doi.org/10.1016/b978-0-444-51367-0.x5001-6

9-Al-Saeed, M.H. (2024). Evaluation of Haematological and Biochemical Values in Local Buffalo in Basrah Governorate. *Laboratory Diagnostics. Eastern Europe, 13*(2), 70–74.

10-Cozzi, G., L. Ravarotto, F. Gottardo, A.L. Stefani, B. Contiero, L. Moro, M. Brscic and P. Dalvit. 2011. Reference values for blood parameters in Holstein dairy cows: Effects of parity, stage of lactation, and season of production. *J. Dairy Sci*., *94*(8): 3895-3901. https://doi.org/10.3168/jds.2010-3687

11-Reddy, B.S.S., K.N. Kumari, B.S. Reddy and Y.R. Reddy. 2014. Therapeutic management of ketosis associated with sub-clinical mastitis in transition cows. *Intas Polivet*, 15(2): 504-506.

12-Abd Ellah, M. R., Hamed, M. I., Derar, D. R., & Rateb, H. Z. (2015). Reference values for serum biochemical and haematological constituents in lactating pregnant buffaloes. *Journal of Advanced*

*Veterinary Research*, *5*(4), 186-196. https://doi.org/10.21608/avmj.2013.192537
13-Chaudhary, S. S., Singh, V. K., Upadhyay, R. C., Puri, G., Odedara, A. B., & Patel, P. A. (2015). Evaluation of physiological and biochemical responses in different seasons in Surti buffaloes. *Veterinary World*, *8*(6), 727. https://doi.org/10.14202/vetworld.2015.727-731
14-Tripathi, P. M.; Ingole, S. D.; Deshmukh, B. T.; Nagvekar, A. S. and Bharucha, S. V. (2010). Serum lipid profile during lactation in buffalo. *Indian Journal of Animal Sciences*, *80*, 3, . 217-219.

15-Hagawane, S. D.; Shinde, S. B.; Rajguru, D. N. (2009). Haematological and Blood Biochemical Profile in Lactating Buffaloes in and around Parbhani city. *Veterinary World*, *2*, 12: 467-469, 2009.

16-Monteiro, B. M., Yasuoka, M. M., Pogliani, F. C., Ayres, H., Viana, R. B., & Junior, E. H. B. (2012). Lipid and glucose profiles of dairy buffaloes during lactation and dry period. *Revista de Ciências Agrárias Amazonian Journal of Agricultural and Environmental Sciences*, *55*(1), 33-39. https://doi.org/10.4322/rca.2012.034
17-Mejares, C. T., Huppertz, T., & Chandrapala, J. (2022). Thermal processing of buffalo milk–A review. *International Dairy Journal*, *129*, 105311. https://doi.org/10.1016/j.idairyj.2021.105311
18-Iwata H., (2012). Factors affecting the primary sex ratio in cows. *J. Mamm. Ova Res. 29*, 96–102. https://doi.org/10.1274/jmor.29.96
19-Yilmaz I., Eyduran E.A., Kaygisiz A., (2010). Determination of some environmental factors related to sex ratio of Brown Swiss calves. *J. Anim. Plant Sci. 20*, 164–169.
20-Sawa, A., Jankowska, M., & Glowska, M. (2014). Effect of some factors on sex of the calf born, and of sex of the calf on performance of dairy cows. *Acta Scientiarum Polonorum. Zootechnica*, *13*(3).
21-Hamad MNE, Baiomy A.A. (2010). Physical Properties and Chemical composition of Cow's and Buffalo's Milk in *Qena* Governorate. *J. Food and Dairy Sci Mansoura Uni, 1*(7):397-403. https://doi.org/10.21608/jfds.2010.82466
22-Abd El-Salam MH, El-Shibiny S. (2011). A comprehensive review on the composition and properties of buffalo milk. *Dairy Sci and Technol, 91*:663–699. https://doi.org/10.1007/s13594-011-0029-2

23-Xue Han, Frank L Lee, Lanwei Zhang, Guo MR. (2012). Chemical composition of water Buffalo milk and its low-fat symbiotic yogurt development, *Functional Foods in Health and Disease, 2*(4):86-106. https://doi.org/10.31989/ffhd.v2i4.96

24-Hamad, M. N. F., & El-Moghazy, M. M. (2015). Influence of sex and calf weight on milk yield and some chemical composition in the Egyptian buffaloes. *Journal of Animal and Veterinary science*, *2*, 22-27.
25-Amle M, Patodkar V, Shelar R, Birade H. (2014). Serum biochemical levels of repeat breeder cross bred cows under rural condition of Satara district of Maharashtra. *International Journal of Advanced Veterinary Science and Technology.3*:109-

113. https://doi.org/10.23953/cloud.ijavst.193

26-Cigliano L, Strazzullo M, Rossetti C, Grazioli G, Auriemma G, Sarubbi F, *et al*. (2014). Characterization of blood redox status of early and mid-late lactating dairy cows. *Czech Journal of Animal Science. 59*:170–181. https://doi.org/10.17221/7341-cjas

27-Tanmaie, K., Rao, K. A., Teja, A., Ravi Kumar, M., Reddy, C. S. A., Sivani, K., & Amarnath, M. (2022). Effect of stage of lactation on haematological and serum biochemical profile in Murrah buffalo (*Bubalus bubalis). The Pharma Innovation Journal, SP-11(12):* 668-674

28-Boro, P., Debnath, J., Das, T. K., Naha, B. C., Debbarma, N., Debbarma, P., ... & Devi, T. G. (2018). Milk composition and factors affecting it in dairy Buffaloes: A review. *J. Entomol. Zool. Stud*, *6*(3), 340-343.

29-- Kron, G. (2014). Animal husbandry. *The Oxford handbook of animals in classical thought and life*, 109-35.

30-Barros, C.C., Oliveira, D.P., Hurtado-Lugo, N.A., Aspilcueta-Borquis, R.R. and Tonhati, H. (2020). Estimates of genetic parameters for economic traits in dairy buffalo**.** Proceedings, 10th World Congress of Genetics Applied to Livestock Production**.**

31-Othman, O. E., Zayed, F. A., El Gawead, A. A., & El-Rahman, M. R. (2011). Genetic polymorphism of three genes associated with milk trait in Egyptian buffalo. *Journal of Genetic Engineering and Biotechnology*, *9*(2), 97-102. https://doi.org/10.1016/j.jgeb.2011.09.002

32-Vohra, V., Chhotaray, S., Gowane, G., Alex, R., Mukherjee, A., Verma, A., & Deb, S. M. (2021). Genome-wide association studies in Indian Buffalo revealed genomic regions for lactation and fertility. *Frontiers in Genetics*, *12*, 696109. https://doi.org/10.3389/fgene.2021.696109

33-El-Komy, S. M., Saleh, A. A., Abdel-Hamid, T. M., & El-Magd, M. A. (2020). Association of GHR polymorphisms with milk production in buffaloes. *Animals*, *10*(7), 1203. https://doi.org/10.3390/ani10071203

34-Sanchez, M.P.; Govignon-Gion, A.; Ferrand, M.; Gele, M.; Pourchet, D.; Amigues, Y.; Fritz, S.; Boussaha, M.; Capitan, A.; Rocha, D.; et al. (2016). Whole-genome scan to detect quantitative trait loci associated with milk protein composition in 3 french dairy cattle breeds. *J. Dairy Sci*, *99*, 8203–8215. https://doi.org/10.3168/jds.2016-11437

35-Viale, E.; Tiezzi, F.; Maretto, F.; De Marchi, M.; Penasa, M.; Cassandro, M. (2017). Association of candidate gene polymorphisms with milk technological traits, yield, composition, and somatic cell score in Italian Holstein-Friesian sires. *J. Dairy Sci.*, *100*, 7271–7281. https://doi.org/10.3168/jds.2017-12666

36-Jayamanne VS, Adams MR. (2004). Survival of Probiotic bifidobacteria in buffalo curd and their effect on Sensory properties. *Int J Food Sci Tech, 39*:719-725. https://doi.org/10.1111/j.1365-2621.2004.00835.x

37. Akbar, H., Grala, T. M., Riboni, M. V., Cardoso, F. C., Verkerk, G., McGowan, J., ... & Loor, J. J. (2015). Body condition score at calving affects systemic and hepatic transcriptome indicators of inflammation and nutrient metabolism in grazing dairy cows. *Journal of dairy science*, *98*(2), 1019-1032. https://doi.org/10.3168/jds.2014-8584

38. Al-Saeed, M. H., Haidar, K. A., & Ghadhbam, R. F. (2009). Selective evaluation of certain blood and biochemical parameters of local cattle during winter and summer seasons. *Basrah Journal of Veterinary Research*, *8*(1), 138-43. https://doi.org/10.33762/bvetr.2009.55437

## تقييم بعض المؤشرات الأيضية في منتصف فترة الرضاعة وفترة الجفاف للجاموس في شمال محافظة البصرة

فاطمة باسل عبد الزهرة ، منى حميد السعيد، جنان عبد الخضر هلال.

فرع الفسلجة البيطرية والصيدلة والكيمياء الحيوية، كلية الطب البيطري، جامعة البصرة، العراق

## الخلاصة

الهدف من الدراسة الحالية هو تحليل تأثير المرحلة المتوسطة من الرضاعة وفترة الجفاف على بعض التغيرات الأيضية الفسيولوجية في الجاموس *Bubalus bubalis*. لا توجد حتى الآن قيم مرجعية للفسيولوجية الأيضية المختلفة خلال المرحلة المتوسطة من الرضاعة في الجاموس. تم فحص الحيوانات في مزارع الجاموس التابعة لشمال محافظة البصرة، العراق. بناءً على معايير الاختيار، تم تقسيم إجمالي 40 أنثى جاموسة تتمتع بصحة جيدة سريريًا (2-7 سنوات) إلى ثلاثين جاموسة مرضعة وعشرة جاموسات جافة. شملت هذه الدراسة عينات من المصل للتحليل البيوكيميائي مثل تحليل الدهون. الجلوكوز، CK. اليوريا، الكرياتينين، BUN، ترانسفيراز ألانين، الأسبارتات. ترانسفيراز، البروتين الكلي، الألبومين، الجلوبيولين الفوسفاتيز القلوي الكالسيوم، الفوسفور. ستكون القيم المحددة دليلاً مفيدًا لتفسير المعلمات الأيضية في الدم في الجاموس المرضعات. أظهرت النتائج زيادة معنوية في نسبة الكولسترول الكلي والكوليسترول مقارنة بالجاموس الجاف بينما انخفض مستوى الجلوكوز في الدم معنويا بين منتصف الرضاعة والجاف، لكن الجلوبيولين في المصل انخفض معنويا في منتصف الرضاعة. أظهرت نتائج ALT و ALPزيادة معنوية في منتصف الرضاعة مقارنة بالجاموس الجاف، بينما أظهرت نتائج مصل AST انخفاضاً معنوياً.

**الكلمات المفتاحية:** المؤشرات الأيضية, الرضاعة, الجاموس.