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PROGESTERONE PROFILES AND HEMATOLOGY OF THE OPEN AND PREGNANT ONE HUMPED SHE CAMELS IN FIRST AND SECOND TRIMESTERS

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ABTRACT

Very few studies have been carried out on the progesterone level in the different stages of gestation in one humped camels in northern Nigeria. The aim of the present study was to study and determine the levels of progesterone in the open and pregnant camels in first and second trimesters as well as the associated hematological changes. Total of 60 blood samples were collected from 10 she-Camels (3 open, 3 in first and 4 in second trimesters) in 6 weeks for the study and ELISA kit was used for the determination of progesterone levels while automatic hematology analyzer was used for the haematological analysis. The progesterone values showed significant ($P < 0.05$) increase of 2.21 ± 0.34 and 3.61 ± 0.37 ng/mL for the first (up to 4 months) and second (4 to 8 months) trimester she-camels respectively compared to the open which had 0.46 ± 0.12 ng/mL. The haematological parameters showed no significant difference in the values for other hematological parameters except for the lymphocyte count that showed a decreasing pattern of 9.80 ± 1.28, 7.83 ± 1.06, 5.59 ± 0.92 (10^9/L) for the open camels, first and second trimester respectively. In conclusion, pregnant camels in first trimester have higher level of Progesterone than the open camels, which also increases significantly in second trimester. There was also a significant decrease in lymphocyte count as pregnancy progresses.

INTRODUCTION

Progesterone plays a central role in reproduction, being involved in implantation and pregnancy. Progesterone is essential for the development of decidual tissues, and if fertilization occurs, high circulating progesterone levels are important not only in facilitating implantation, but also for the maintenance of pregnancy by stimulating uterine growth and opposing the actions of factors involved in myometrial contraction (Patela *et al.*, 2015). Increasing human population in the world has brought the challenge of food security, particularly animal protein and other related products. In order to combat this challenge, there is need to explore other alternative sources of animal protein and related products. Camel can serve as very good alternative and or additional source to the food supply chain in terms of milk, meat and other products (Tan and Ngan, 2020). Camels are of vital socio-economic importance in Nigeria as people use it for drawing water from wells, ploughing and leveling land, working mini-mills for oil extraction, grinding wheat, corn and other grains and for crushing sugarcane, and pulling carts for the transportation of goods as well as people. Well-fed camel can yield 10 to 15 L milk per day and. Camel milk can also be used for making yogurt, kurth, butter, ghee, rabbri and khoa. In addition, meat, hides and hair are useful products of camel (Ahmad *et al*., 2010). Camels have a long gestation period of about 13-14 months (around 410 days).Estrous cycle is dependent on coitus for completion. Camels are at the verge of extinction (Ming et al., 2021). Little attention has been given to their reproduction. Pregnancy detection methods such as ultrasonography look somewhat difficult due to the uneasy nature of Camel restrain which require the animal to have a full bladder which the veterinarian or farmer does not have a control over. Rectal palpation on the other hand requires restrain and also has limitations in detecting early pregnancy without the risk of causing abortion.

Therefore, the objectives of this study are;

- to determine the progesterone concentration in the non-pregnant camels and the pregnant camels in first and second trimesters
- To determine the haematological parameters of the non-pregnant and pregnant camels in first and second trimesters

MATERIALS AND METHODS

A total of 10 (3 open, 3 in first and 4 in second trimesters), apparently healthy one humped she-camel from the Equine and Camel Research Programme of NAPRI Shika-Zaria were used for this study. The camels aged between 4-6 years, weighing 280.0 to 350 kg, with an average body condition score of 3.5 using the 0 - 5 scale from most emaciated to fattest (Pearson and Quassat, 2000). They were subjected to routine clinical examination. Ear tagged for easy identification. The animals were allowed to go for grazing and concentrate was provided as supplementary feed. Water was also provided *ad-libitum.* The ELISA kit for the assay was obtained from Monobind® Inc. (100 North Pointe Drive Lake Forest, CA, *USA), intended* for a quantitative determination of progesterone concentrations in serum using ***ELISA*** microplate reader. Ethylenediamine tetereacetic acid (EDTA) bottles, plain sample bottles, disinfectants, cotton wool, needles and syringes were used during blood sample collection. A total of Five (5) mL (3 for serum, 2 mL for hematology) of blood was collected weekly for six weeks through the jugular venipuncture. Data obtained were expressed as mean ± standard error of mean (± SEM). One way analysis of variance (ANOVA) was used. Tukey post hock was also used to compare the difference between means. Graph pad Prism version 10.0 for Windows was used for all data analysis. P-values < 0.05 was considered significant.

RESULTS AND DISCUSSION

Although, pregnancy may be confirmed by different methods such as ultrasound and tail raising. Restrain in this species seem to be very tedious in the former while accuracy remains a challenge with the later. Hormonal assay also overrides rectal palpation in diagnosing early pregnancy in camels. Present study showed significant difference in progesterone levels between the groups (Table 1.)

Table 1: Progesterone level for the open, first and second trimester pregnant She-Camels in ng/mL

Categories (n)	N (total number of samples)	Mean ± SE
Open she-camels (3)	18	0.46 ± 0.174^{a}
First trimester (3)	18	2.21 ± 0.079^{b}
Second Trimester (4)	24	3.61 ± 0.076^{c}

Different superscripts (^{a,b,c}) between columns mean significant difference ($P < 0.05$)

The progesterone level in this study was < 1.00 ng/mL^{-1} for the open Camels which agrees with Homeida *et al.* (1988) and Skidmore *et al*. (1996) who reported that plasma progesterone level remained < 1.00 ng/mL throughout the follicular wave. The increasing pattern of progesterone levels as shown in table 1 is in agreement with the findings of Ali and Hassan, (2020). In addition, the present study showed a higher increase in the progesterone level among the pregnant groups by ≥ 1.0 ng/mg in individuals within the same group. This variations could be due to the sex of the foetus as on an average the Camels carrying a male fetus had higher progesterone levels than those carrying female fetus (Agarwal *et al.,* 1987). This could also be due to the different assay techniques used for this study as against the assay method used by Ali and Hassan, (2020).

Table 2 below shows the lymphocyte count between the groups. The lymphocyte count that showed significant decrease as pregnancy progressed which is in agreement with the findings of Ayoub *et al.*

(2003). This finding could be attributed to the stress the dam is exposed to during pregnancy leading to suppression of immunity thus the low levels of lymphocytes. All other hematological parameters as presented in the were statistically insignificant between the groups as they remained unchanged for the open, as well as first and second trimester pregnant Camels which is also in agreement with the findings of Ayoub *et al.* (2003). Except that he recorded that the pregnant Camels showed higher levels of neutrophils and eosinophils though he worked with third trimester pregnant camels.

Table 2: Other hematological parameters

PARAMETERS	OPEN SHE-CAMELS	FIRST TRIMESTER	SECOND TRIMESTER
PCV	29.08± 0.77	28.75 ± 1.34	28.75 ± 1.34
HB	13.36 ± 0.46	11.61 ± 0.66	12.12 ± 0.65
TP	7.15 ± 0.14	7.22 ± 0.18	7.63 ± 0.16
TWBC	19.75 ± 2.39	16.56 ± 1.98	13.73 ± 2.27
NEUTROPHILS	9.00 ± 1.28	7.93 ± 1.23	7.37 ± 1.38
BAND	0.31 ± 0.15	0.13 ± 0.40	0.26 ± 0.80
LYMPHOCYTE	9.80 ± 1.28a	7.83 ± 1.06b	5.59 ± 0.92c
MONOCYTES	0.35 ± 0.87	0.34 ± 0.11	0.22 ± 0.66
EOSINOPHILS	0.29 ± 0.07	0.33 ± 0.09	0.31 ± 0.11

Different superscripts (^{a,b,c}) between rows mean significant difference ($P < 0.05$)

CONCLUSION AND RECOMMENDATION

Present study showed significant difference in progesterone levels between the open, first and second trimester one humped camel (0.46 ± 0.12, 2.21 ± 0.34 and 3.61 ± 0.37 ng/mL, respectively). There was also a significant decrease in the lymphocyte count as pregnancy progresses (9.80 ± 1.28, 7.83 ± 1.06, 5.59 ± 0.92 10^9/L for the open, first and second trimester pregnant camels respectively). Meanwhile, there was no difference in other hematological parameters between the groups.

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