



## Comparative Biochemical Values in Pregnant and non-pregnant Dromedary Camels (*Camelus dromedarius*)

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### ABSTRACT

A study was conducted to evaluate the effect of the reproductive status of she camels (pregnant vs. non-pregnant) on the blood biochemical constituents. Serum samples were collected from fifty female dromedary camels designated into two groups according to the reproductive status of the females; 25 were obtained from pregnant females and 25 were obtained from non-pregnant animals. Obtained results showed that total proteins concentrations was significantly higher ( $P \leq 0.001$ ) in the pregnant group than the non-pregnant ones ( $7.9 \pm 0.82$  and  $7.1 \pm 0.53$  g/dl respectively). Also there was highly significant increase ( $P \leq 0.001$ ) in the globulins concentration during pregnancy ( $4.4 \pm 0.81$  g/dl) in the pregnant group and ( $3.5 \pm 0.49$  g/dl) in non-pregnant females. While, no significant difference in the concentration of albumin and cholesterol was observed between the two groups. Sodium and potassium concentration was also investigated and there was no significant difference between pregnant and non pregnant females. In conclusion, these data indicated that reproductive status in female camels affects blood proteins specially globulins. These results may reflect a positive effect of pregnancy on the camel's immunity.

**Keywords:** Camels, Pregnancy, Blood Biochemistry

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### INTRODUCTION

The knowledge in blood biochemical constituents is important for assessing the physiological status and the health of animals. Pregnancy is physiological condition considered to modify metabolism in animals (Iriadam, 2007). The pregnancy is stressful condition which leads to many metabolic and physiological changes including increasing of basal metabolic rate which increased clearly during pregnancy (Scott, 1994). Duration of pregnancy ranged from 330 to 368 days in camelids, because of this long pregnancy period, it was assumed that energy requirements of pregnant

female camel increase rapidly during the last stage of pregnancy, and this may effect on concentrations of some biochemical parameters and oxidant – antioxidant status (Hayder and Zamely, 2011). During pregnancy some metabolic changes occur that may alter blood constituents (El-Sherif and Assad, 2001; Khan and Ludri, 2002). Pregnancy is a dynamic process characterized by dramatic physiological changes that may influence hormonal functions and biochemical values in the animal. Pregnancy and lactation, especially in the early stages, are very demanding physiological state of the organism

when nutritional requirements are increased (Goff and Horst, 1997).

## MATERIALS AND METHODS

**Experimental animals:** Fifty female dromedary camels were used and divided into two groups according to their reproductive status; 25 were pregnant and 25 were non-pregnant.

**Blood samples collection:** About 10 ml of blood was collected from the jugular vein from each animal. Serum was separated and stored at -20 until analyzed for metabolic contents.

**Biochemical assays:** Spectrophotometric method was adopted for the determination of Total proteins, Albumin and Cholesterol. Serum sodium (Na) and potassium (K) were determined by a flame photometer.

### Statistical Analysis:

Data are presented as means  $\pm$  standard deviation (SD). Significant differences between the pregnant and non pregnant camels were established using the Student's unpaired *t*-test.

**Table 1: The effects of pregnancy on blood metabolites in camels**

Parameters	Pregnant	Non pregnant
Total proteins	7.9 $\pm$ 0.8201 *	7.1 $\pm$ 0.5387
Albumin	3.5 $\pm$ 0.1124	3.6 $\pm$ 0.1835
Globulins	4.5 $\pm$ 0.894 *	3.5 $\pm$ 0.496
Cholesterol	12.32 $\pm$ 88.8	14.05 $\pm$ 95.8

The values represent mean  $\pm$  SD

\* Significantly different (P <0.05) in the same row

Table (2) shows the effect of pregnancy on minerals (Na and K). In this study there was no significant differences between pregnant and non pregnant female camels in related to concentration of Na and K which confirms the result of Al-Sobaiyl (2010) in the goats. The not significant changes in the concentrations of

## RESULTS AND DISCUSSION

Table (1) shows the effect of pregnancy in total protein, albumin and globulins. There were significant increase (P <0.05) in total proteins and Globulins concentrations in pregnant female camels in comparison with non pregnant. Pregnancy has a major influence on the intensity of metabolism and on circulating metabolic parameters. The significant increase in total protein concentrations were found to be close to those reported for donkey (Mori *et al.*, 2004; AL-Busadah and Homeida, 2005) and for ewes (Antunovi *et al.*, 2011).

The increase in globulin concentration during pregnancy may be explained by extra needed for Globulins for a rapid extraction of immunoglobulin from the plasma during the last few months of pregnancy when colostrums' is being formed in the mammary gland (Kaneko *et al.*, 2008).

sodium and potassium during pregnancy may be due to physiological adaptations which take place in camel like its capacity to store both energy and water, camels tolerate dehydration, have ability to lower their resting metabolism (Yagil, 1985).

**Table 2: The effects of pregnancy on Na and K in camels**

Parameters	Pregnant	Non pregnant
Na	0.141 ± 94.6	94.3 ± 0.175
K	0.456 2.5 ±	2.3 ± 0.485

The values represent mean ± SD

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