

A NOTE ON EFFECT OF PLOUGHING WORK ON HAEMATO-BIOCHEMICAL PROFILE OF MALE AND FEMALE CAMELS

Sajjan Singh, Rakesh Kumar Poonia and N.V. Patil

National Research Centre on Camel, Bikaner 334001, India

Camel as a source of farm power is advantageous due to its low cost, its timely availability and its capacity to increase cultivation areas (Gefu *et al*, 1990). The dromedary has been used as pack and riding animals only (Raghvendar *et al*, 1998), but their potential as work animals for cultivation is also reported (Harvey, 1984). Camel holders carry out intense ploughing and carting work from their camels and sometimes it reaches up to 12 hrs without a sufficient resting duration during the sowing season of the year (July and November). These types of work can cause drastic changes in blood profile. Haematological and biochemical analysis of blood can provide valuable information regarding health and sickness of animals (Khalid, 2007). The present study was carried out to evaluate the effect of draught work on haemato-biochemical profile in 5 male and 6 female camels engaged in ploughing work.

Materials and Methods

The study was conducted on 5 healthy male and 6 female camels engaged in ploughing work at Doradas, Ranasar and Bisanpura villages of district Jhunjhunu during month of November. These were fed mainly Moth chara, gvar phalgati (*Cyamopsis tetragonaloba*), and chana chara mixed dry leaves of Khejri were offered to them as feed. Blood samples were collected at 0 hrs before starting the work (BW) at 6 am and after completion of the daily routine work (AW) at evening 6 pm for studying the influence of ploughing work on haemato-biochemical parameters. These animals were engaged in work for 12 hours continuously.

Haemoglobin concentration was analysed by coulter haemoglobinometer and total erythrocyte (RBC) by Coulter counter. Packed cell volume was determined using Hawksley microhaematocrit centrifuge as described by Schalm *et al* (1975). The concentration of glucose (Trinder 1969), total protein,

albumin, cholesterol and triglycerides in serum were determined by kit method. The haemato-biochemical parameters were estimated within 2-3 hours of collection of samples.

Standard statistical methods as described by Snedecor and Cochran (1994) were done and ANOVA was obtained by analysing data using SPSS 10.0 software.

Results

The results of various haemato-biochemical parameters have been presented in table 1 and 2. The mean values of all 3 haematological parameters were significantly lower in animals after the work. Mean values of haemoglobin and packed cell volume decreased significantly ($p < 0.05$) in camels after work and RBC values also decreased significantly but at $P < 0.001$ level. All studied biochemical parameters except albumin decreased marginally in camels after the work. These results indicated that in both male and female camels have all the haemato-biochemical parameters were in normal range. Male camels had higher values compared to female animals.

Table 1. Different haematological and biochemical parameters (Mean \pm SE) of the draught male camels before and after work.

Parameters	Before Work	After Work
Haematological		
Hb* (g/dl)	11.68 \pm 0.22	10.76 \pm 0.08
RBC** ($\times 10^6/\mu\text{l}$)	10.6 \pm 0.11	9.98 \pm 0.08
PCV* (%)	33.2 \pm 0.66	31.64 \pm 0.48
Biochemical		
Glucose (mg/dl)	85.4 \pm 2.78	80.2 \pm 0.91
Total Protein (g/dl)	7.57 \pm 0.45	7.14 \pm 0.22
Albumin (g/dl)	4.74 \pm 0.28	4.94 \pm 0.43
Cholesterol (mg/dl)	33.78 \pm 1.89	32.13 \pm 3.13
Triglycerides (mg/dl)	22.86 \pm 4.13	21.07 \pm 5.21

*($P < 0.05$) and **($P < 0.001$)

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Table 2. Different haematological and biochemical parameters (Mean±SE) of the draught female camels before and after work.

Parameters	Before Work	After Work
Haematological		
Hb** (g/dl)	10.91±0.31	10.23±0.35
RBC** (x10 ⁶ /µl)	9.6±0.31	8.65±0.32
PCV* (%)	32.5±0.81	30.5±0.62
Biochemical		
Glucose (mg/dl)	84.33±0.76	81.66±0.42
Total Protein (g/dl)	7.71±0.28	7.43±0.27
Albumin (g/dl)	4.22±0.15	4.72±0.22
Cholesterol (mg/dl)	40.11±2.69	37.89±2.08
Triglycerides (mg/dl)	29.87±5.28	28.48±2.66

* (P<0.05) and ** (P<0.001)

Discussion

During the present study, the lower Hb, PCV, RBC was observed in camels after the ploughing work and differed significantly with values of resting camels. All of these findings were in agreement with earlier observations by Alemayehu and Meron (2009) in donkeys which were also engaged in physical works. Low levels of haemoglobin after the work might be due to dehydration and plasma expansion.

The serum biochemical changes in the present investigation showed that in camels the serum glucose was significantly decreased after the work. The hypoglycaemic condition of camels during the present study is in consistent with the findings of Rai *et al* (1996) who observed low glucose level in camels after four hours carting but contrary to Alemayehu and Meron (2009) who observed high glucose in working donkeys after work. The reduction in serum glucose might be because of the fact that during ploughing work muscles consume glucose to carry out their function.

Total protein levels were marginally decreased in this study which was similar to the findings of Rai *et al* (1995). Alemayehu and Meron (2009) revealed low protein levels in working donkeys after medium work. Long duration of the ploughing work

consumed the blood glucose so as to maintain the adequate supply of energy. Proteins are metabolised hence their levels might be slightly lower after the work. Albumin levels were marginally high in both male and female camels after the work. Concentration of cholesterol and triglycerides were slightly low in both sexes of camels after the work. Rai and Khanna (1994) also observed low levels of triglycerides in camels engaged in safari. So it can be concluded that camel haemato-biochemical parameters are influenced by draught (ploughing) and camels can be utilised up to 12 hours for ploughing without any detrimental effect on haematological and biochemical parameters with adequate rest in between and fed on naturally available feed and fodder in specific area.

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