Haematological Parameters of Adult Dry, Lactating and Camel Calves in Saudi Arabia

K.A. Al-Busadah and T.E.A. Osman
Department of Physiology, Biochemistry and Pharmacology, College of Veterinary Medicine and Animal Resources, King Faisal University, P.O. Box 1757, Al-Ahsa, 31982, Saudi Arabia

Abstract: This study was conducted to determine the normal values of haematological parameters in adult dry, lactating and camel calves. The Hb, PCV, RBC, MCV, MCH and MCHC were lowest in young camels (3-12 weeks old). The above values were generally lower in lactating females as compared to adult dry females. The TLC was highest in young camels and lowest in lactating females. The DLC revealed that the neutrophils were the most predominant cells, followed by the lymphocytes, the eosinophils, the monocytes and finally the basophils. However, statistical analysis of the DLC showed no significant differences between the three groups, with the except of the eosinophils which were significantly lower (p<0.05) in young camels.

Key words: Camel Calves, Lactating, Haematological

Introduction
The population of camels in Saudi Arabia increased steadily during the last two decades from 267000 heads in 1982 to 415000 heads in 1999 (Ministry of Agriculture and Water, 1999). Haematological examination of blood can provide valuable information concerning the general health of animals. Information on haematology of the dromedary camel is available from several African and Asian countries (Lakhota et al., 1964; Holler and Hassan, 1966; Soliman and Shaker, 1967; Barakat and Abdel-Fattah, 1970; Ghosal et al., 1975; Ghodsian et al., 1976; Abdel Gadir et al., 1979; Majeed et al., 1980; Al-Ani et al., 1992; Sarwar et al., 1993; Rezakhani et al., 1997; Sarwar and Majeed, 1997; Nyang’ao et al., 1997). In many of the previous reports information about complete haemogram and the effects of lactation and age of neonates is lacking. The present study was therefore, undertaken on apparently healthy camels a) to determine normal haematological parameters in adult dry, lactating and young animals and b) to compare our results with those reported by other workers.

Materials and Methods
A total of 22 one humped Saudi camels were used in this study. The camels belonged to the Camel Research Centre, College of Veterinary Medicine and Animal Resources, King Faisal University. The camels were kept under reasonable hygienic conditions and veterinary supervision. The animals were fed on hay and barley. Water was available ad libitum. The camels were divided into three groups: (1) Six adult dry (not pregnant female camels, 2-15 years old; (2) Eight lactating females (20.6±2.9 vs. 14.7±0.9), the difference was not statistically significant. The DLC revealed no statistically significant differences between the three groups. The TLC in young camels was significantly higher (p<0.05) when compared with the lactating camels. Although the mean TLC in young camels was higher as compared with adult dry females (20.6±2.9 vs. 14.7±0.9), the difference was not statistically significant. The DLC revealed no statistically significant differences between the three groups, with the except of eosinophils which were significantly lower (p<0.05) in young camels, when compared with either one of the other two groups. The neutrophils were the predominant white cells in all three groups (means ranged between 53.3±5.2 and 61.8±2.3), followed by the lymphocytes (means ranged

Statistical analysis: The data were analyzed statistically using analysis of variance (ANOVA). The statistical differences between the means were estimated by Duncan’s test. The computation was facilitated by statistical package SAS.

Results
The Mean±SE values of the various haematological parameters studied are shown in Table 1 and 2. The Hb concentration was significantly lower (p<0.05) in young camels when compared with lactating or adult dry females. On the other hand, the PCV, ABC, MCV and MCH were significantly lower (p<0.05) in young camels when compared with adult dry females. However, differences in the mean values of these parameters were not statistically significant when compared with the lactating camels. The MCHC showed no significant difference between the three groups.

The TLC of young camels was significantly higher (p<0.05) when compared with the lactating camels. Although the mean TLC in young camels was higher as compared with adult dry females (20.6±2.9 vs. 14.7±0.9), the difference was not statistically significant. The DLC revealed no statistically significant differences between the three groups, with the except of eosinophils which were significantly lower (p<0.05) in young camels, when compared with either one of the other two groups. The neutrophils were the predominant white cells in all three groups (means ranged between 53.3±5.2 and 61.8±2.3), followed by the lymphocytes (means ranged

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between 28.9±2.7 and 36.8±5.8). The percentages of monocytes and eosinophils were low (the means ranged between 1.2±0.4 and 4.5±1.1). The basophils showed the lowest percentage of the DLC the means ranged between 0.4±0.2 and 0.8±0.2).

Discussion

The present data on total RBC count, Hb concentration and PCV were comparable with those reported in previous studies (Custer et al., 1977; Majeed et al., 1980). The figures on MCV obtained in this study were lower than those reported by Rezakhani et al. (1997). However, figures on RBC, Hb and PCV were lower in young camels as compared to adults. This is in accordance with Rezakhani et al. (1997) who reported similar results.

The data on TLC obtained in this study fall within the normal ranges established by previous workers (Soliman and Shaker, 1967; Barakat and Abdel-Fattah, 1970; Ghodsian et al., 1978; Mehrotra and Gupta, 1989; Sarwar and Majeed, 1997; Nyang’ao et al., 1997). However, Higgins and Kock recorded much lower TLC in camels 12.9 to 9.7×10³/µl. The TLC in young camels used in the present study were higher when compared with adults. This finding is in agreement with Rezakhani et al. (1997) who reported that the TLC decreased with advancement of age. The differential leucocyte counts obtained in the present study revealed that relative numbers of neutrophils were dominant, which is not typical of most ruminants. The percentage of lymphocytes came next, followed by eosinophils and monocytes. The basophils were rarely seen. These findings are comparable to those of Higgins and Kock (1984) and Ghodsian et al. (1978). In contrast to the present findings, other workers reported percentages of lymphocytes and neutrophils which are typical of ruminant animals (approximately 2:1 lymphocyte neutrophil ratio: [Barakat and Abdel-Fattah, 1970; Soliman and Shaker, 1967]). A third group of workers reported a nearly 1:1 lymphocyte neutrophil ratio (Majeed et al., 1980; Al-Ani et al., 1992; Rezakhani et al., 1997). These differences could be due to the different breeds of camels used or stress prior to sampling (Higgins and Kock, 1984). In the present study relative numbers of monocytes and basophils showed no differences between the three groups but relative numbers of eosinophils were higher in adult camels. More or less similar results were recorded in cattle (Jain, 1993) and camels (Rezakhani et al., 1997).

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References


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