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STUDIES ON MINERAL PICTURE IN THE
BLOOD SERA OF HEALTHY CAMELS
IN UPPER EGYPT

Basic data

(With One Table)

By

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(Received at 7/7/1994)

**دراسات عن صورة المعادن في مصل دم الجمال السليمه
في صعيد مصر**

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شملت هذه الدراسه على عدد ٣٧ رأس من الجمال السليمه والتابعه لقرية بنى عدى بمحافظة
أسيوط - تراوحت أعمارها بين سنتين الى عشر سنوات . تم الكشف الاكلينيكي والمعملى على
جميع الحيوانات للتأكد من حالتها الصحيه . وقد تم تقسيم الحيوانات الى ذكور (صغيره وبالغه)
وأناث (حوامل وغير حامل) .

تم قياس معدلات الصوديوم والبوتاسيوم والكلوريدات والكالسيوم والفسفور الغير عضوى
والحديد والنحاس والزنك وتم عمل التحليلات الأحصائيه المختلفه للعناصر ومدى تأثير العوامل
الفيسيولوجيه على تركيزات المعادن .

SUMMARY

A total number of 37 Egyptian camels belonged to Bani-Adi village, Assiut Governorate constituted the material of this investigation. Animals were proved to be healthy by both clinical and laboratory methods of examinations. Animals were classified into male group (young and adult) and female group (non-pregnant and pregnant). Blood sera were collected from each animal to estimate the macro-elements including sodium, potassium, chloride, calcium and inorganic phosphorus levels. Also estimation of microelements including iron, copper and zinc levels were carried out to evaluate the influence of both sex and reproductive status upon micro and macro-elements in camel's blood.

Keywords: Mineral, blood serum, healthy camel, upper, Egypt.

INTRODUCTION

Amongst domestic farm animals the metabolic diseases achieve their greatest importance in dairy cows and pregnant ewes. In other species these diseases occur only sporadically. Yet published data on camels in Egypt under the various geographical districts is still under discussion.

Camel is now considered as a source of meat and milk production. Therefore, the aim of breeding is nowadays changed in the last decade in some districts in the republic and consequently management practices, housing and nutrition are changed. Much knowledge is still needed when one considers that the continued nutritional strain of a pregnancy or fattening is often exacerbated by an inadequate diet in the dry period for example.

Moreover research during the past few decades has shown that marginal deficiencies or imbalances in mineral are of equal or even greater importance for both productivity and economy of animal husbandry in many parts of the world.

Such borderline conditions are far more difficult to detect and hence to correct than a manifestation deficiency since they often do not provoke any significant clinical signs (WEGGER, 1980).

The requirement of camel for the major elements vary according to their ages and weights as well as being affected to a large extent by factors such as stage of pregnancy or lactation and fetal number or level of milk production (AGRICULTURAL RESEARCH COUNCIL, 1980).

Trace elements play an important role in both nutritional and reproductive conditions in domesticated animals. The effect of trace elements on healthy Egyptian camels was partly studied (BARAKAT and ABD EL-FATTAH, 1970); EL-MAGAWARY, 1983; EL-AMROUSI *et al.*, 1984; SOLIMAN and SHAKER, 1987; MOTTELIB *et al.*, 1989; MANNA, 1990 and AHMED, 1993 and many others).

The aim of the present work was oriented to study the norms of macro and micro-elements in blood sera of camel in Upper Egypt.

MATERIAL AND METHODS

A total number of 37 healthy camels, their age varied from two to ten years old-belonged to Bani-Adi village, Assiut Governorate constituted the material of this study. All animals were proved to be healthy by both clinical and Laboratory methods of examination. Classification of animals was performed according to sex, male group which is subdivided into young (10) and adult ones (10) and female group which was also subdivided into 7 pregnant and ten nonpregnants.

Blood samples were collected from each animal through jugular veinpuncture and the clear, non haemolysed sera were collected and analysed biochemically for sodium, potassium, chloride, calcium, inorganic phosphorus, iron, copper and zinc levels.

Blood serum sodium, and potassium levels were estimated using flame-photometer (Corning 400) and the chloride level was estimated using chloride analyser model 925. Meanwhile blood serum calcium and inorganic phosphorus levels were determined using standard test-kits supplied from Biomerieu (Bains / France).

Also the gained Sera were analysed for iron, copper and zinc level using atom absorption spectrophotometer.

Statistical analysis of data were performed according to the methods of KALTON (1967).

RESULTS

Mean values and standard error of blood serum macro and microelements are illustrated in table 1.

Parameters	Males		Females	
	Adult n= 10	Young n= 10	Pregnant n= 7	Non Pregnant n= 10
Sodium mmol/L	137.3 ± 0.54	136.9 ± 0.57	136.9 ± 0.89	137.9 ± 0.9
Potassium mmol/L	133.0 -145.0 6.12± 0.08 5.1 - 6.9	133 -139 5.9 ± 0.18 5.0 - 6.8	133.0 -139.0 6.0 ± 0.40 5.5 - 6.7	132.0 -143.0 6.03± 0.18 5.2 - 6.9
Chloride mmol/L	131.9 ± 0.86 124 -142	131.4 ± 0.7 128 -135	133.0 ± 0.68 130.0 - 135.0	132.3 ± 0.75 122.0 -139.0
Calcium mg %	9.5 ± 0.13 8.33- 10.13	8.98± 0.20 8.1 - 10.10	8.50± 0.19 7.9 - 9.20	8.8 ± 0.16 8.0 - 9.33
Inorganic phos- phours mg%	7.59± 0.15 6.12- 9.41	7.17± 0.28 6.1 - 8.7	6.78± 0.31 6.10- 8.20	6.85± 0.21 6.0 - 8.65
Iron ug %	121.1 ± 0.79 110.7 -129.6	113.3± 0.79 110.4-116.7	115.2 ± 0.95 111.5 -119.6	117.6 ± 0.64 114.3 -122.1
Copper ug %	127.36± 3.5 97.14-200	112.5± 3.4 107.7-137.1	121.7± 4.6 102.8- 139.5	125.27± 4.1 98.5 -166.2
Zinc ug %	132.12± 4.15 100 -187.5	112.1± 3.7 106.3-143.7	115.0± 5.09 106.3- 143.8	126.3 ± 3.94 106.3 -162.5

* : = Significant (P< 0.05). ** = Highly significant (P< 0.01).

DISCUSSION

Investigation upon reproductive and physiological status of healthy camel still lack information and still being an issue of argument.

Biochemical analysis of blood serum can provide a marketable and valuable informations about metabolic profiles. The concentration of minerals and metabolites in the blood varies with different periods of pregnancy, parturition and puperium.

Blood serum electrolytes (Na, K & Cl) levels in examined camels showed a non-significant variations either due to sex or reproductive status. The obtained data of blood serum electrolytes levels coincided with those previously obtained by (BARAKAT and ABD EL-FATTAH, 1970; EL-AMROUSI *et al.*, 1984; EL-MAGAWARY, 1983 and MANNA, 1990).

Close-inspection of the obtained data-in table (1) showed a highly significant ($P < 0.01$) decrease in the blood serum clacium and phosphorus levels in she-camels or pregnant she-camels. This variation can be attributed to hormonal changes or during the pregnancy the fetus depends entirely upon its dam for supply of nutrients (EL-NAGGAR, 1975).

A highly significant decrease ($P < 0.01$) in the levels of blood serum iron, copper and zinc values in pregnant she-camels, was evident. Such decrease can be referred to the presence of hormonal changes which occurred at that period (UNDERWOOD, 1971). The obtained data of blood serum iron, copper and zinc levels during the different physiological status coincided with those previously obtained by EL-MAGAWARY (1983); EL-AMROUSI *et al.* (1984); MANNA (1990) and AHMED (1993) in camels blood.

Variations in blood serum copper level during physiological status can be explained according to the pastulate mentioned by SPRAY and WIDDOWSON (1951) where newborn and very young animals are normally richer in copper per unit of body weight than adult of the same species.

Finally, the study gives an information about the normal level of both macro elements and micro elements in camels blood and also the effect of reproductive status upon studied paramenters. Furthermore the importance of micro elements (iron, copper and zinc) especially in pregnant she-camels nutrition due to its reduction at such period.

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