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## CLINICAL AND BIOCHEMICAL STUDIES OF MINERAL PICTURE IN MANGY CAMELS

(With One Table)

By

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### دراسات اكلينيكيه وبيوكيميائيه لبعض الشوارد والعناصر النادره فى الجمال المصابه بالجرب

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تم دراسة الأعراض الاكلينيكيه والبيوكيميائيه لعدد ٣٠ من الجمال يتراوح اعمارهم بين ٤ - ٧ سنوات ، خمسة عشره منهم كانوا يعانون من الاصابه بالجرب الناتج عن طفيل الساركوتيبس بدرجات متفاوتة حسب انتشارها على جسم الحيوان . أما الخمسة عشره الاخرى فقد تم التأكد من حالتها الصحيه وذلك بالكشف الاكلينيكى والمعملى واستخدمت كضابط للتجربه وقد تم أخذ عينات من مصل دم الجمال السليمه والمصابه وذلك لدراسة تأثير مدى الاصابه على معدلات المعادن والتى تشتمل على الصوديوم والبوتاسيوم والكلوريد والكالسيوم والفسفور الغير عضوى والحديد والنحاس والزنك هذا وقد تمت مناقشة الدور الذى يمكن ان تلعبه هذه الشوارد والعناصر النادره فى الجمال المصابه بالجرب وبصفه خاصه الصوديوم والكلوريدات .

SUMMARY

Mineral picture of 30-one humped camels aged from 4-7 years- belonged to Bani Adi village, Assiut Governorate. 15 of them suffering from mange were used to investigate the clinical signs and some biochemical changes of mineral picture associated with the disease condition. The other 15 animals proved to be clinically healthy by both clinical and laboratory methods of examinations and were used as a control. The clinical signs revealed various degree of alopecia, itching, thickening and corregation of the skin scattered on various areas of the animal body. Biochemical analysis of blood sera for mineral picture revealed a highly significant ( $P < 0.01$ ) decrease in the blood serum sodium, chloride, iron, copper and zinc levels in diseased animals. Meanwhile a non-significant variations in blood serum potassium, calcium and inorganic phosphorus levels were recorded.

Keywords: Clinical, biochemical, mineral status, mangy camels.

INTRODUCTION

It is well known that sarcoptic mange is highly contagious and debilitating skin disease that seriously threaten camels in the Near East. Sarcoptic scabiei var cameli is one of the five definitive forms of *S. scabiei* (FAIN, 1968 and KRANTZ, 1978). In Upper Egypt it is noticed, during the daily routin work in the mobile clinic of the veterinary college, Assiut, that the disease is rather seasonal in nature and sometimes it may be dormant and confirmation of the presence of the disease in skin scrapings is often difficult. Lesions are those of a hypersensitivity reaction with erythema, papules and intense pruritis.

It is well known also that a deficit in extracellular fluid volume can be caused by an abrupt reduction in fluid intake or by an acute loss secretions and excretions through changes in the skin (SNIVELY and SWEENEY, 1956).

Camels in their natural life always face such abnormal reduction following decreased fluid intake. This causes imbalance in electrolyte levels either the extra or intracellular composition. The aim of this work is to

investigate some of the macro and micro elements in the blood of mangy camels to reflect how far this animal can tolerate such changes, consequently such results may help the clinicians in the field, besides the routine treatment, electrolyte infusion may be added.

#### MATERIAL and METHODS

Blood samples and skin scrapings were collected from 15 camels suffering from clinical mange, their age varied from 4 to 7 years. Animals belonged to Bani Adi village, Assiut Governorate. Laboratory investigation proved the presence of the causative mite *Sarcoptes scapiei* var *cameli*. Another 15 camels were proved to be healthy by both clinical and laboratory methods of examination were used as control. Time of sampling was between end of April and May, 1994. The clinical signs of diseased animals were recorded and skin scraping were collected to investigate the causative agent using 10% sodium hydroxide and after the method of KELLY (1974) and HIGGINS (1983). As recommended by the latter separate scalpel blade is used for each animal sampled. Care was also taken to scrap and not to cut the skin, however as recommended by HIGGINS (1983), that scraping covered at least One cm<sup>2</sup> until capillary oozing is evident from the whole of the surface of scraped area. Four scrapings were taken from each animal showing suspect lesions. Once one mite has been identified, the sample is considered positive.

Blood samples were collected through jugular veinpuncture, then the clear non-haemolysed sera were analysed bicochemically for sodium, potassium, using flame- photometer (corning 400). chloride, using chloride analyzer (model 925). Meanwhile chloride level was determined. Blood serum calcium and inorganic phosphorus were determined using standard test-kits supplied from Biomerieux (Bains / France). Sera were analysed for iron, copper and zinc levels using atomic absorption spectrophotometer. Statistical analysis of data were performed according to the method of KALTON (1967).

## RESULTS

Diseased camels showed clinical signs of mange are classified according to the severity of infestation into eight diseased camels having scattered sporadic mangy irregular patches with severe itching on some parts of the body (moderate cases) while seven diseased camels having mangy lesions with severe itching covered all over the body with thickening of the skin, keratinization and alopecia (severe cases). Situations of the lesions were variable; seen in some as bald irregular patches on the axillae, inguinal regions, brisket, neck, around the root of the tail and on the face, but they may be found virtually anywhere on the body (one case only). Mean values of blood serum parameters including macro and micro-elements in healthy and diseased camels are illustrated in Table (1).

Table 1: Blood serum macro and micro elements in clinically healthy and mangy camels.

Examined Animals	Sodium mmol/L	Potassium mmol/L	Chloride mmol/L	Calcium mg %	Inorg. phosphorus	Iron µg%	Copper µg %	Zinc µg %
Healthy camels	135.2 ± 0.38	6.0 ± 0.07	110.2 ± 0.10	9.06 ± 0.7	7.2 ± 0.8	129.5 ± 0.4	131.5 ± 0.9	130.3 ± 3.1
Mangy camels	113.2 ± 0.58 **	5.8 ± 0.04	87.2 ± 0.71 **	8.40 ± 0.95	6.8 ± 0.8	111.0 ± 0.31 **	115.6 ± 0.5 **	105.4 ± 0.6 **

## DISCUSSION

The clinical signs of mange in examined camels coincided with those previously obtained by ROTHORE and LODHA (1974); HIGGINS (1983) and MOURAD et al. (1987). The obtained data of biochemical analysis of blood serum revealed a highly significant ( $P < 0.01$ ) decrease in the level of sodium and chloride in diseased camels when compared with healthy ones. It was evident that blood serum potassium level showed a non-significant variation between healthy and diseased camels.

The obtained data concerning sodium concentration is not so serious but clinical important lies on the fact that some individuals showed severe itching with extensive dermatitis and pruritis. One can't claim that the CNS is involved by such a sodium deficit or effect of the parasite. In man it is described (SNIVELY and SWEENEY, 1956) that early findings of acute deficit in electrolyte concentration of the extracellular fluid are related to disturbance of CNS. This point, in fact, needs further investigation to raise the question about the necessity of similar sick animals and do they specific sodium replacement especially those under 120 mmol/L.

On the same lines and because sodium is the most cation of extracellular fluid, chloride is the leading anion of extracellular fluid amounting in this investigation 87.2 mmol/L and this was a serious drop. In our opinion, and in the absence of specific dangerous signs of sodium and chloride deficit it is not necessary to adopt specific treatment. The camel may tolerate such changes.

There were non-significant variations in both serum calcium and inorganic phosphorus levels in healthy and mangy camels.

The obtained data are in accordance to those previously obtained by EL-MAGAWARY (1983).

Biochemical analysis of blood serum for microelements showed a highly significant ( $P < 0.01$ ) decrease in the level of blood serum iron, copper and zinc levels in mangy camels. Explanation of such changes could be offered on the fact that these animals showed decreased appetite in the presence of the intense pruritis.

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