

قسم الأمراض الباطنة والمعدية
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دراسة أثر البيئة والتغذية على الحالة الاكلينيكية

للجمال في صعيد مصر

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أجري البحث على عدد ١٠٨ من الجمال البالغة منهم ٦٤ ذكور ، ٤٤ اناث لدراسة أثر التغذية في الشتاء وال الصيف على الحالة الاكلينيكية للجمال في صعيد مصر وذلك في ثلاث مناطق مختلفة من حيث نوعية الغذاء المعطى للحيوان .

وقد أثبتت الدراسة أن الجمال التي أعطيت غذاء به نسبة منخفضة جدا من المركبات كانت في حالة اكلينيكية سيئة سواء في الشتاء نو الصيف مع فقدان للشهية عند تناول الغذاء بالرغم من حدوث بعض الاحتقانات في الأغشية المخاطية .

أما الجمال التي أعطيت غذاء به نسبة من المركبات بعض الشيء عن المعدلات الأساسية كانت الى حد ما في حالة اكلينيكية لا بأس بها بالرغم من وجود بعض الاضطرابات مثل نقص الشهية للأكل ووجود بعض الاحتقانات في الأغشية المخاطية .

وأخيرا أثبتت الدراسة أن الحيوانات التي أعطيت عليقة متزنة سواء في الصيف أو الشتاء كانت حالتها الاكلينيكية جيدة وشهيتها للأكل ممتازة والغشاء المخاطي لونه وردي محممر والشعيرات الدموية به ممتلئة .

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**THE INFLUENCE OF ENVIRONMENT AND FEEDING
ON THE CLINICAL CONDITION OF CAMELS IN UPPER EGYPT**
(With 6 Tables)

By
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SUMMARY

A total number of 108 adult camels were examined of them 64 males and 44 females. The study was carried in summer and winter in Upper Egypt in 3 main localities to see the effect of feeding and climatic conditions on the clinical signs with special references to body temperature, pulse and respiratory rate.

The study proved that camels fed very low level of concentrates wheather in winter or summer time were in a bad clinical condition with usually lost appetite but mucous membrane was somewhat congested at winter time with pale or rosy mucous membrane. Camels fed medium amount of concentrates which (somewhat below needed standard) showed a fair clinical condition inspite of the presence of some abnormalities manifested in the form of decreased appetite with slightly congested mucous membrane. Animals fed needed standard of food were in a good condition, clinically healthy with good appetite and rosy red mucous membrane and capillaries filled with blood.

INTRODUCTION

The study of the effect of feeding and environmental conditions on healthy camel in Upper Egypt still a matter of argument which lacks information in the available literature.

The body temperature of the camel is variable and when it is deprived of water, daily fluctuations may exceed 6°C (12°F). This physiological characteristic assists the camel in conservation of water and disposal of heat. As body temperature rises during the day, water that would be used for evaporative cooling to keep body temperature down is unexpended and excess heat is stored in the body and dissipated during the cooler night. At the same time the elevated body temperature during the day time reduces the heat environment to the animal's body and further reduces water expenditure.

(F.A.O., 1955) from Australia found that there is some experimental evidence about a correlation between both rectal temperature and respiratory rate with body weight and growth rate, and that there is partial correlation with growth rate when body weight is constant.

The aim of the present investigation is to study the effect of feeding and environment on the clinical conditions of single humped camel in Upper Egypt.

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MATERIAL AND METHODS

A total number of 108 adult camels were examined, of them 64 males and 44 females. The study was carried in summer and winter seasons at 3 main localities at Gena province. The camels in these 3 localities were fed in winter barseem and tibn and summer darawa (replaced barseem). The difference between the three localities was in the amount of concentrates usually offered to the animals. In the first area (El-Shalaila and Ho villages) the given concentrates were considerably very low than normal. In the second area (El-Raiseya, El-Rahmaniya and Nag Hammadi's villages) the concentrates were some what higher than the first area but still below needed standard. The amount of concentrates in the third area (Farshoot, Kom-Yakoob and Abo-Shosha villages) were eventually like the needed standard. According to the big difference in the three areas in the offered amounts of concentrates the study was carried on both adult male and female animals to see the changes in the clinical signs with special references to body temperature, pulse and respiratory rate. Statistical analysis of data was carried out according to SNEDECOR (1956).

RESULTS

In the present study the clinical examination of camels at different areas during winter and summer revealed the following :

I- Camels in the first area :

(a) During summer: Generally they were in a bad clinical condition, heart rate varied from 58-69/minute, mucous membrane was pale and in rare cases it was rosy red and the capillaries were usually engorged with blood. Examination of the skin revealed somewhat dry and rough coat and sometimes there may be easily detached hair. Rumen auscultation was 3 contractions per two minutes. The appetite was usually lost. Faeces was semisolid in consistency. In addition, to this some of the females showed capillaries that were not engorged with blood and the heart rate of these animals was clearly lowered reaching up to 42/minute and in some of them auscultation of the rumen was eventually lowered.

(b) During winter : The picture of the clinical status was nearly the same with the exception of the presence of congested mucous membrane in most of the animals. In addition the appetite was significantly lowered in most of the animals. In some of female camels the capillaries of the eyes were not engorged with blood and sometimes the mucous membrane was pale or rosy red in colour. Some of the animals suffered from fits of diarrhoea, and emaciation was clearly manifested on them.

II- Camels of the second area :

(a) During summer : Generally both male and female animals were in a clinically fair condition in spite of the presence of some abnormalities which were manifested in the form of decreased appetite and in some females there were partial loss of appetite. The heart rate varied from 52-74/minute while auscultation of the rumen was in most animals between 2-3/2 minutes. The faeces were semisolid in most cases. The mucous membrane of the eyes was slightly congested and sometimes rosy red in colour and the capillaries were usually engorged with blood. The skin in most of the animals especially in females was rough and not glissening and in some areas the skin was thickened and rough.

(b) During winter : The condition of animals during winter time was somewhat better if compared with summer time. In spite of this the animals especially females were characterized by the presence of rough tough skin and the appetite was lowered and the mucous

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membrane was also congested but the capillaries of the eyes were not always engorged with blood, while the heart rate was slightly better than in summer time 55-73/minutes. Rumination was more or less within the physiological limits with the exception of some cases in female animals.

III- Animals of the third area :

(a) During summer : Animals in this area were in a good condition, clinically healthy with well appetite and their coats were fine and glissening. The mucous membrane was rosy red and the capillaries were filled with blood. The heart rate ranged between 58 and 68/minute, rumination rate was 2-3/2 minutes and faeces passed in the form of pellets. No clinical abnormalities were noticed on both male and female camels.

(b) During winter : The animals during this period were in a good condition and nearly they had the same clinical parameters as in summer and there were no abnormal clinical signs on both male or female animals.

N.B.: The results concerning pulse, respiration rate and temperature of camels at both summer and winter times and in the three areas are illustrated in tables No. (1,2,3,4,5 & 6).

DISCUSSION

The study of camels is an important line as far as camels are considered one of the most important sources of meat and as a valuable means of transport in many countries especially in our Egyptian villages. The study of the effect of environmental conditions and feeding systems on healthy camels still lack information and still a matter of argument. For all these reasons the direction of this work was oriented to study the effect of such factors on camels in Upper Egypt as an important zone for breeding of such animals. In addition the work was done at Gena province as one of the provinces where the camels population is high.

It is eventually clear that animals in the first and second area were in a bad condition if compared with those of the third area. This was clearly manifested from the rough coat, semisolid faeces and variation in the colour of mucous membrane to be in most cases congested and in some cases pale and in rare cases in the animal of the second area rosy in colour. In addition to this heart rate was somewhat accelerated in animals of the first and second area and the ruminal movement was somewhat sluggish. These manifestations were clearly seen in summer than in winter. These manifestations can be attributed to the change in the feeding system where the amount of concentrates are decreased in both animals of area number one and area number two. In addition the animals must receive a proper amount of concentrate especially proteins. This is because deficiency of protein or feeding incomplete protein diet leads to disturbances in nitrogen balance which eventually will be reflected even on process of digestion and absorption and on the viability and activity of vital organs (Maynard and Loosli, 1956 and Morrison, 1959).

The obtained results concerning body temperature revealed non significant variation among animals of the three areas during summer but at winter time the temperature was higher in camels of the first area which were suffering from deficiency in the amount of needed concentrates. This may be explained by the increase of the amount of catabolic processes inside the animal body (Blood *et al.*, 1979). Further more the study of the pulse and respiration revealed significant decreases among female camels of the first and to a certain extent those of the second area as a result of the occurring decrease of the metabolic rate

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with the consequent reduction in the amplitude of the pulse (Penny and Hill, 1974, and Reichmann and May, 1976). In addition to this the decrease in concentrates will eventually leads to deficiency of energy which will consequently leads to limitation of the performance of animals (Macdonal, 1968).

Finally it could be concluded that animals of both the first and second areas were in a bad clinical status but those of the second area were more or less in a comparatively better condition if compared with those of the first area. At the same time animals in the third area was in a good clinical condition and exhibited ideal parameters if compared with the first and second area. The clinical conditions of the animals in general was better at winter than at summer time.

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Table (1): Statistical analyses of the body temperature of camels at different systems of feeding at summer time

Areas	Male	Female	t value	Mean	t value
1	37.5 ± 0.85	37.6 ± 0.58	0.097 ^{N.s}	37.57 ± 0.69	0.62 ^{N.s}
2	37.48 ± 0.71	37.3 ± 1.4	0.115 ^{N.s}	37.46 ± 0.898	0.416 ^{N.s}
3	37.34 ± 0.5	36.1 ± 0.33	2.07 ^{**}	37.02 ± 0.558	
Mean	37.49 ± 0.714	37.015 ± 0.85	0.428 ^{N.s}		

M.A. MOHAMED *et al.***Table (2):** Statistical analysis of the body temperature of camels at different systems of feeding at winter time

Areas	Male	Female	t. value	Mean	t. value
1	38.17 \pm 1.6	38.33 \pm 0.28	0.099 ^{N.s}	38.25 \pm 1.936	1.055 ^{N.s}
2	37.8 \pm 0.58	37.7 \pm 1.10	0.08 ^{N.s}	37.77 \pm 0.77	0.8 ^{N.s}
3	37.16 \pm 0.47	36.0 \pm 0.66	0.22 ^{N.s}	36.998 \pm 0.58	
Mean	37.487 \pm 0.727	37.26 \pm 0.958	0.189 ^{N.s}		

M.A. MOHAMED *et al.***Table (3):** Statistical analysis of the respiratory rate of camels at different systems of feeding at summer time

Areas	Male	Female	t. value	Mean	t. value
1	15.25 \pm 2.22	8 \pm 1.73	2.58*	12.143 \pm 4.298	0.393 ^{N.s}
2	13 \pm 2.7	12.6 \pm 1.34	0.133 ^{N.s}	12.9 \pm 2.486	0.327 ^{N.s}
3	14.66 \pm 1.82	13.17 \pm 1.64	0.606 ^{N.s}	13.916 \pm 1.86	
Mean	13.88 \pm 2.5	12.25 \pm 2.38	0.472 ^{N.s}		

Table (4): Statistical analyses of the respiratory rate of camels at different systems of winter time

Areas	Male	Female	t. value	Mean	t. value
1	14. \pm 1.27	9.3 \pm 0.94	1.38 ^{N.s}	11.66 \pm 3.669	0.448 ^{N.s}
2	14.8 \pm 1.47	11.14 \pm 2.1	1.195 ^{N.s}	13.61 \pm 2.615	0.0097 ^{N.s}
3	14.4 \pm 2.36	12.7 \pm 2.2	0.527 ^{N.s}	13.645 \pm 2.48	
Mean	14.645 \pm 2.214	11.833 \pm 2.426	0.856 ^{N.s}		

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Table (5): Statistical analyses of the pulse of camels at different systems of feeding at summer time

Areas	Male	Female	t. value	Mean	t. value
1	62.5 ± 6.45	43 ± 6.93	2.0598 ^{N.s}	54.143 ± 12.06	0.163 ^{N.s}
2	58.88 ± 3.1	45.8 ± 7.98	1.528 ^{N.s}	55.909 ± 7.137	0.058 ^{N.s}
3	59.5 ± 3.26	54.23 ± 11.47	0.44 ^{N.s}	56.542 ± 8.377	
Mean	59.545 ± 3.7	50.05 ± 10.32	0.868 ^{N.s}		

Table (6): Statistical analysis of the pulse of camels at different systems of feeding at winter time

Areas	Male	Female	t. value	Mean	t. value
1	61.66 ± 2.89	41.33 ± 1.15	6.54 ^{**}	51.5 ± 11.3	0.402 ^{N.s}
2	59.55 ± 3.5	41.14 ± 3.02	3.98 ^{**}	52.289 ± 9.78	0.369 ^{N.s}
3	61.41 ± 4.14	55.07 ± 9.8	0.596 ^{N.s}	57.194 ± 8.55	
Mean	60.774 ± 3.827	47.54 ± 9.316	1.314		

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Table (2): Statistical analysis of the effect of environment on different aspects of feeding in *Hydra* sp.

Aspect	Factor	F value	P value
Feeding rate	Temperature	10.28	0.001
	Light intensity	15.52	0.0001
	Water pH	12.15	0.0005
Feeding frequency	Temperature	8.75	0.005
	Light intensity	11.32	0.001
	Water pH	9.45	0.002
Mean ± SD (n=10)			

Table (3): Statistical analysis of the effect of environment on different aspects of feeding in *Hydra* sp.

Aspect	Factor	F value	P value
Feeding rate	Temperature	12.55	0.0005
	Light intensity	14.22	0.0001
	Water pH	11.88	0.001
Feeding frequency	Temperature	9.32	0.002
	Light intensity	10.75	0.001
	Water pH	8.95	0.005
Mean ± SD (n=10)			