

Dept. of Food Hygiene,
 Fac. of Vet. med. Assiut University
 Head of Dept. Prof. Dr. H. Youssef

BACTERIOLOGICAL QUALITY OF CAMEL'S MILK WITH SPECIAL REFERENCE TO MASTITIS

(With 2 Tables)

By

NAGAH M. SAAD and A.EL-R. THABET

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التقييم البكتريولوجي للبن الجمال مع الاشارة الى التهاب الضرع

نجاح سعد ، غبط الراضى ثابت

يحتل لبن الجمال مكانه مرموقة كغذاء للبدو فى مختلف أنحاء الوطن العربى وكذلك فى جمهورية مصر العربية. ويتم استهلاك هذه الالبان خام دون أى معالجة حرارية مما يعرض المستهلك لبعض الامراض نتيجة تلوثه ببعض الميكروبات والتي قد تكون أيضا سببا فى حدوث التهاب الضرع فى الجمال. لذلك تم فى هذا البحث جمع ٤٠ عينة من البان الجمال بمنطقة الوادى الجديد وتم فحصها بكتريولوجيا وكذلك اختبرت باختبار وايت سايد (WST) وقد وجد تناسب طردى بين اختبار وايت سايد والنتائج البكتريولوجية للعينات المفحوصه وبالفحص البكتريولوجى أمكن عزل الميكروب المكور العنقودى الذهبى Staph. aureus، والمكورات الدقيقة Micrococcus spp. والميكروبات القولونية Coliform organisms، وميكروب الباسيللى سيريوس Bacillus cereus وميكروب Pseudomonas aeruginosa وقد تم فى هذا البحث مناقشة الاحتياطات الواجب اتخاذها لمنع حدوث التهاب الضرع والحفاظ على صحة المستهلك.

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SUMMARY

Fourty milk samples were collected randomly from female camels in the Province of New Valley of Egypt, and examined for bacteriological quality and mastitis. Correlation between whiteside test and the bacteriological findings shwoed a significant agreement percentages between positive white side test and the bacteriological results. Bacteriological examination of collected samples revealed the presence of *Staphylococcus aureus*, *Micrococcus species*, coliform organisms. *Bacillus cereus* and *Pseudomonas aeruginosa*. The public health importance of isolated organisms and the suggestive measures were discussed.

INTRODUCTION

In certain parts of the world animals other than cows are kept for milk for human consumption (AGGARWALA and SHARMA, 1961). These include buffalo, goat, sheep, mares, reindeers and camels. Camel's milk is variable in composition owing to the greater variety in its foods but it is said to be similar to cow's milk, only richer in sugar.

The camel is prone to mastit as are other species, yet the disease is not uncommon. In India, KAPUR et al. (1982) recorded a case of peracute mastitis caused by *Klebsiella spp.* and *E. coli* these organisms gained entry following surgery in a Veterinary college and may be atypical of organisms causing mastitis under field conditions. In the ussr, kospakov (1976) isolated 87 strains of staphylococ from the udders of camels. Bacterial culture were carried out on macroscopically normal milk samples from 140 healthy female camels in central Somalia; *Staphylococci* were isolated from 26 samples (8 strains were coagulase positive) coryneforms from 11 (3 were corynebacterium pyogenes) and streptococci from 7 (ARUSH et al., 1984). While QUANDIL and OUDAR (1984) found that 23 out of camel's milk samples had acute mastitis and 6 had subclinical mastitis. The commenst bacterial isolate was *Bacillus cereus* (7) followed by *Streptococcus uberis* (5) *Strept. agalactiae* (4): *Staphylococcus aureus* (3) and *E.coli* (3). BARBOUR et al. (1985) could isolate *Micrococcus spp.*, *Staphylococcus aureus*, *Streptococcus spp.* and *Corynebacterium spp.* from 205 examined camel's milk samples. The scanty of literature concerning the bacteriological quality as well as mastitis in camel's milk in Egypt initiated us to carry out this research.

MATERIAL and METHODS

Milk samples were collected randomly from 40 individual healthy female camels in the Province of the New Valley, Egypt. The health status of the udder was recorded. Prior to sampling the teat was disinfected with iodine solution. About 20 ml of the fore milk were discarded and the next 20 ml were collected in a sterile bottle. The milk samples were transported to the laboratory in an ice container and tested rapidly on arrival to the laboratory.

Whiteside test was used to give an indication of mastitis as described by *MOURSY and ZAKARYA (1972)*.

Microbial analysis:

- 1- Isolation of staphylococci and coliform organisms. Isolation and identification was determined after *FINEGOLD and MARTIN (1982)*.
- 2- *Bacillus cereus*: Isolation and identification of *B. cereus* was carried out as described by *HOLBROOK and ANDERSON (1980)* and *COWAN & STEEL (1974)*.
- 3- *Pseudomonas seruginosa* was isolated and identified according to *LOWBURY (1951)*.
- 4- Streptococci: Isolation and identification was performed as described by *COWAN and STEEL (1974)*.

RESULTS

The obtained results were recorded in Tables 1 & 2.

DISCUSSION

Correlation between Whiteside test and the bacteriological results was recorded in Table (1). The agreement percentage of score (1 +) as compared with the bacteriological findings was (66.6%) which increased to (100%) when whiteside test score was (3 +).

Although majority of the Whiteside test positive milk samples were positive for bacteriological examination. Whiteside test negative samples also revealed bacterial agents.

Positive whiteside test indicates that camel like cow (*SCHAIM et al., 1971*) has phagocytic cells that constitute one of the essential defences against microbial infection of the mammary gland.

OBIGER (1957) stated that the whiteside test could not be considered alone as a definite test for mastitis diagnosis. On contrary, *SZAKALY (1965)* revealed that the whiteside test

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(Score 2 + or above) was the most reliable procedure for detecting udder abnormalities. The whiteside test detected 94.5% of subclinical mastitis as recorded by POTASHEVSKU (1965).

During the course of this study bacteriological analysis of camel's milk samples (table 2) revealed the presence of *Staphylococcus aureus* 1 (5.88%), *Micrococcus* species 4 (23.53%), coliform organisms 5 (29.41%), *Bacillus cereus* 4 (23.53%) and *Pseudomonas aeruginosa* 3 (17.65%). These pathogenic isolates are similar to that recorded by DANIEL *et al.* (1982), ARUSH *et al.* (1982) in Somalia, QUANDIL and OUDAR (1984) in the united ARAB EMIRATES and BARBOUR *et al.* (1985) in Saudi Arabia. The main difference was the absence of streptococci in this investigation. Coliform organisms were the most common isolates in examined Egyptian camel's milk samples.

As camel's milk is consumed in the raw state by Egyptian nomads and fed to young camels, and the presence of some pathogenic microorganism in such milk may constitute a public health importance, it is possible to recommend a control programme for camel mastitis by taking advantage of present knowledge used for controlling mastitis in cows. Also heat treatment of milk is essential.

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Table 1: Correlation between Whiteside test and the bacteriological results of examined Camel's milk samples.

Score	No. of samples	Bacteriological results		Agreement percentage
		- ve	+ ve	
-	22	20	2	9.1
+	6	4	2	33.3
++	4	2	4	66.6
+++	2	1	3	75
		-	2	100

Table 2: Frequency distribution of isolated bacteria from the examined camel's milk samples.

Isolates	No. of isolates	%
Staphylococcus aureus	1	5.88
Micrococcus species	4	23.53
Coliform organisms	5	29.41
Bacillus cereus	4	23.53
Pseudomonas aeruginosa	3	17.65
Streptococci	-	-
Total	17	