

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى

أَفَلَا يَنْظُرُونَ إِلَىٰ  
الْأَيْدِي كَيْفَ خَلَقْتُ

( سورة الغاشية, آية 17 )

## **Dedication**

This work is dedicated to:

My mother,

father,

brothers and sisters

who gave me

continuous

support and

encouragement

to continue my studies.

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## Table of Contents

Subjects	Page No.
Aayah	I
Dedication	II
Acknowledgement	III
Contents	IV
List of Tables	VII
Abstract	VIII
Arabic Abstract	IX
<b>Chapter One : Introduction</b>	1
<b>Chapter Two : Literature Review</b>	5
2.1 Importance of camels	5
2.2 Taxonomy and breeds	7
2.3 Camel population in the world	8
2.4 Characteristics of lactation and camel milk	8
2.4.1 Anatomy of the camel udder	8
2.4.2 Characteristics of camel milk	9
2.4.3 Nutritional quality of camel milk	9
2.4.4 Medicinal benefits of camel milk	10
2.5 Bacteria in camel milk	11
2.5.1 Milk Bacterial Diseases	12
2.5.1.1 Brucellosis	12
2.5.1.2 Bovine Tuberculosis	13
2.5.1.3 Para tuberculosis (Johne's disease)	14
2.5.1.4 Q fever	15
2.5.2 The main source of contamination of raw milk	15
2.5.3 Microorganisms associated with disease in camel's raw milk	16
2.5.3.1 Staphylococcus species	16
2.5.3.2 <i>Escherichia coli</i>	17
2.5.3.3 <i>Bacillus cereus</i>	18

2.5.3.4 Salmonella species	19
2.5.3.5 Streptococcus species	19
2.5.3.6 Listeria species	21
2.5.3.7 Haemophilus species	21
2.5.3.8 Pseudomonas species	22
2.5.3.9 Micrococcus species:	24
2.5.3.10 Aerococcus species	25
2.5.3.11Corynebacterium species	26
2.5.3.12 Rothia species	27
<b>Chapter Three : Materials and Methods</b>	29
3.1 Description of the study area	29
3.2 Raw milk sample collection	30
3.3 Microbiological assessment	31
3.3.1 Equipment	31
3.3.2 Sterilization	31
3.3.3 Preparation of media	32
3.3.4 Isolation and identification	32
3.3.4.1 Primary tests:	33
3.3.4.1.1 Morphological appearance	33
3.3.4.1.2 Gram stain	33
3.3.4.1.3 Catalase test	33
3.3.4.1.4 Oxidase test	34
3.3.4.1.5 Motility test	34
3.3.4.1.6 Sugar fermentation test	34
3.3.4.1.7 Oxidation Fermentation (O/F) test	35
3.3.4.1.8 Carbon dioxide requirement	35
3.3.4.2 Secondary Biochemical tests	36
3.3.4.2.1 Tube coagulase test	36
3.3.4.2.2 Methyl red (MR) reaction	36
3.3.4.2.3 Voges-Proskaur (V.P) test	36
3.3.4.2.4 Indole production test	37
3.3.4.2.5 Nitrate reduction	37
3.3.4.2.6 Phenylalanine deamination	37
3.3.4.2.7 Urease activity	37

3.3.4.2.8 Citrate test	38
3.3.4.2.9 CAMP test	38
3.3.4.2.10 Novobiocin sensitivity test	38
3.3.4.2.11 KCN test	39
3.3.4.2.12 Arginine hydrolysis	39
3.4 Total viable bacterial count	39
3.4.1 Preparation of serial dilution	39
3.4.2 Culturing method	40
3.4.3 Incubation of the cultures	40
3.4.4 Counting of colonies	40
3.5 Media used:	41
3.5.1 Nutrient broth	41
3.5.2 Nutrient agar	41
3.5.3 Peptone water	42
3.5.4 Blood agar	42
3.5.5 MacConkey's agar	43
3.5.6 Hugh and Leifson's (O/F) medium	43
3.5.7 Motility medium	44
3.5.8 MR-VP medium	44
3.5.9 Simmons citrate agar	45
3.5.10 Agar	45
3.5.11 MacConkey's broth	46
Statistical analysis	46
<b>Chapter Four : Result</b>	47
4.1 Bacterial isolation	47
4.2 The total viable bacterial count	51
<b>Chapter Five</b>	52
Discussion	52
Conclusion	56
Recommendations	57
References	58

## List of Tables

NO	Description	Page No.
1	Genealogy of the dromedary camel	8
2	Average TBC in camel milk	16
3	Staphylococci in camel milk	17
4	<i>Escherichia coli</i> in camel milk	18
5	<i>Streptococcus spp.</i> in camel milk	20
6	Localities and number of milk samples	31
7	Different bacterial isolates from raw milk of milking camels	47
8	Biochemical reactions of the isolated bacteria	48
9	Biochemical reactions for <i>Staphylococcus aureus</i>	49
10	Biochemical reactions for <i>Rothia dentocariosa</i>	50
11	Bacterial count for udder and tank milk samples	51

## Abstract

This study was aimed to determine the bacteriological quality of raw camels' milk from udder and milking utensils through the assessment of viable bacterial count and identification of bacteria according to their biochemical reactions.

The study was conducted in the period between May and June 2015, in three localities in the State of Khartoum.

Milk samples were collected from 40 she-camels directly from udder in addition to 40 samples collected from milking utensils from the same farm in three localities in Khartoum state namely Khartoum-North, East Nile and Khartoum. 20 samples from 10 she-camels from the farm of Camel Research Center at the University of Khartoum, 20 samples from 10 she-camels from Al-Hadadiya farm and 40 samples from 20 she-camels from West Soba farm.

Thirty eight bacterial isolates were obtained from milking utensils, these are *Staphylococcus* spp. (26.6 %), *Staphylococcus aureus* (4 %), *Acinetobacter* spp. (4 %), *Haemophilus* spp. (2.6 %), *Streptococcus* spp. (2.6 %), *Micrococcus* spp. (2.6 %), *Nocardia* spp. (2.6 %), *Bacillus* spp. (1.3 %), *Aerococcus* spp. (1.3 %), *Neisseria* spp. (1.3 %) and *Rothia dentocariosa* (1.3 %).

The isolates from udder milk samples 37, were *Staphylococcus* spp. (36 %), *Staphylococcus aureus* (8%), *Micrococcus* spp. (2.6%), *Bacillus* spp. (1.3%) and *Enterobacter* spp. (1.3 %).

Twenty three samples (28.7 %) were free of growth of aerobic bacteria

Species of *Streptococcus*, *Acinetobacter*, *Haemophilus*, *Nocardia*, *Aerococcus*, *Neisseria* and *Rothia dentocariosa* were isolated from the milking utensils only.

The average of viable bacterial count (VBC) of the milk samples collected from the milking utensils was  $5.6 \times 10^6$  cfu/ml. For milk samples collected from the udder the average of viable bacterial count was  $6.9 \times 10^5$  cfu/ml.

The difference in viable bacterial load among the two types of specimens was statistically not significant (P-value=0.317).

## ملخص البحث

تهدف هذه الدراسة إلى تحديد الجودة البكتريولوجية لحليب الإبل الخام من الضرع و أواني الحلب من خلال تقييم العد البكتيري الكلي والتعرف على المعزولات البكتيرية وفقا للإختبارات الكيميائية الحيوية.

اجريت الدراسة في الفترة بين مايو الى يونيو 2015، في ثلاث محليات بولاية الخرطوم ، السودان.



عينات اللبن جمعت من 40 ناقة مباشرة من الضرع بالإضافة إلى 40 عينة من أواني الحلب من نفس المزرعة من ثلاث محليات بحري و شرق النيل و الخرطوم ، 20 عينة من 10 نوق من مزرعة مركز بحوث الابل بجامعة الخرطوم (محلية بحري) ، 20 عينة من 10 نوق من مزرعة الحدادية (محلية شرق النيل) ، 40 عينة من 20 ناقة من مزرعة سوبا غرب (محلية الخرطوم) ، كما تم أخذ 40 عينة من أواني الحلب و 40 عينة من الضرع ، ومن ثم إجراء العزل و العد البكتيري الحي.

المعزولات البكتيرية من أواني الحلب ثمانية وثلاثون وهي المكورات العنقودية (26.6٪)، المكورات العنقودية الذهبية (4٪)، الراكدة (4٪)، المستدمية (2.6٪)، السبحية (2.6٪)، المُكْبِرة (2.6٪)، النوكارديا (2.6٪)، العصوية (1.3٪)، الأيروكوكس (1.3٪)، النيسريا (1.3) و روثيا دينتوكاريوزا (1.3٪).

المعزولات البكتيرية من الضرع سبعة وثلاثون وهي المكورات العنقودية (36٪)، المكورات العنقودية الذهبية (8٪)، المُكْبِرة (2.6٪) العصوية (1.3٪) و الأَمْعَائِيَّة (1.3٪).

و كان هناك ثلاثة وعشرون (28.7٪) عينة لم تنمو عند زراعتها.

أنواع البكتيريا الراكدة ، المستدمية ، النوكارديا ، الأيروكوكس ، النيسريا و روثيا دينتوكاريوزا عزلت من أواني الحلب فقط.

العد البكتيري الكلي الحي لعينات الحليب التي جمعت من أواني الحلب كانت  $5.6 \times 10^6$  أما العد البكتيري الكلي الحي لعينات الحليب التي جمعت من الضرع فكانت  $6.9 \times 10^5$ .

اوضحت نتائج التحليل الإحصائي للعد البكتيري الكلي الحي لهذين النوعين من العينات عدم وجود اي فرق معنوي حيث كانت نسبة الفرق المعنوي 0.371 .