Salwa Akl

بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني

Salwa Akl

جامعة عين شمس

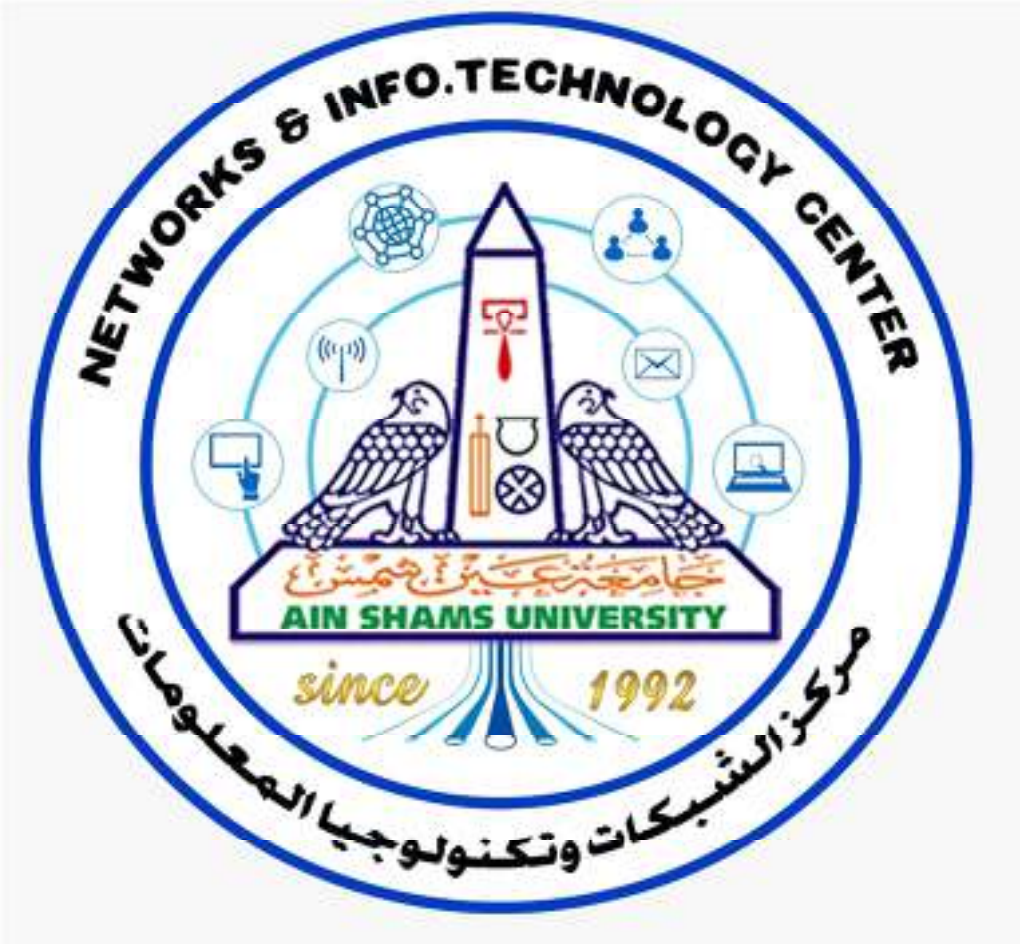
التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

Salwa Akl



بعض الوثائق الأصلية تالفة
وبالرسالة صفحات لم ترد بالأصل

STUDIES ON MASTITIC MILK

By

El-Sayed AHMED MOHAMED Kawady

THESIS
SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENT
FOR THE DEGREE OF
MASTER OF SCIENCE

IN
AGRICULTURE (DAIRYING)

TO
DAIRY SCIENCE AND TECHNOLOGY DEPARTMENT
FACULTY OF AGRICULTURE
MENOFIYA UNIVERSITY
1993

STUDIES ON MASTITIC MILK

By

El-Sayed AHMED MOHAMED Kawady

THESIS

SUBMITTED IN PARTIAL FULFILMENT

OF THE REQUIREMENT

FOR THE DEGREE OF

MASTER OF SCIENCE

IN

AGRICULTURE (DAIRYING)

TO

DAIRY SCIENCE AND TECHNOLOGY DEPARTMENT

FACULTY OF AGRICULTURE

MENOFIYA UNIVERSITY

1993

SUPERVISION COMMITTEE

Prof. Dr. AMAL M. MOUSSA
Professor of Dairy Microbiology
Faculty of Agriculture
Menofiya University

Prof. Dr. ABDOU I. HAMED
Professor of Dairy Chemistry and Technology
Faculty of Agriculture
Menofiya University

Prof. Dr. HAYAM A. EL-GAZZAR
Professor of Dairy Chemistry
Research Institute of Animal Production

APPROVAL SHEET

Title of thesis :

STUDIES ON MASTTIC MILK

Name of student :

EL-Sayed A.M. Kawady

This thesis for the M. Sc. Degree has been approved by :

Prof. Dr. : Anal. M. Mansour.....

Prof. Dr. : A. E. Khader.....

Prof. Dr. : El. Hattem.....

Prof. Dr. : A. Hamed.....

Committee in Charge

Date : 28 / 1 / 1993

ACKNOWLEDGEMENT

I wish to express deep thanks and sincere gratitude to **Prof. Dr. Abdou I. Hamed**, Professor of Dairy Chemistry and Technology; **Prof. Dr. Amal M., Mousa** Professor of Dairy Microbiology; Dairy Science and Technology Department, Faculty of Agriculture, Menofiya University and **Prof. Dr. Hayam A. El-Gazzar** Professor of Dairy Chemistry, Research Institute of Animal Production for their Supervision and guidance, help and facilities they offered during this study.

CONTENTS

INTRODUCTION

INTRODUCTION

The importance of farm as a major source of human welfare is an axiom universally accepted. Therefore, these beneficial creatures have gained much attention of animal breeders to increase their production. Buffaloes in this respect constitute a considerable category among farm animals since in Egypt they support man with meat, milk and other by-products. Animal diseases are among the factors known to affect normal milk yield and composition. The danger of mastitis in Egypt, as well as allover the world became so serious that it would threaten the dairy animal wealth with great damage. The actual cost of this disease to dairymen is difficult to determine. The loss in milk production from even minor cases of mastitis and the reduction of buffaloes' longevity are not so readily calculable. The variations in reported milk-yield losses are due to the severity of the disease as well as the method of reporting. However, no question that mastitis causes an appreciable loss in milk production, even in subclinical mastitis cases, measurable losses in milk yield have been observed. Researches have shown the losses in milk yield caused by mastitis. In Norway, the incidence of mastitis was 70% for herds, 30% for cows in herds and 40% for quarters, and the loss of milk is 450 litres/cow/year (Bratlie, 1970). In Germany, subclinical mastitis accounted for a reduction of 4.3% in milk yield, equivalent to a loss of 369 million DM/yr *(Reichmuth et al., 1970)*. In another study in Germany, milk producers lost an estimated DM 370-450 million in 1970, due to subclinical mastitis alone. 14.22% of all dairy animals are

culled annually because of udder disorders, about 24-27% of all quarters are mastitic. It was estimated that the dairy industry incured annual losses of DM 400 500 million as a result of delivery of milk containing antibiotics *(Hamann, 1975)*; in Hungary in severely affected quarters, milk yield was reduced by 0.1-0.6 kg/milking/quarters, *(Szajko and Kosa, 1971)*. In USA estimates showed that mastitis costs dairy men an annual economic loss of about $ 500.000.000 or an average of $ 23 per cow *(Janzen, 1970)*, while *Haenlein, et al (1973)* found that the cost of subclinical mastitis was estimated to be over $ 55 per cow per year, it has been recorded that the percentage of subclinical mastitis in Egyptian buffaloes is 80.43 *(Mohamed et al., 1981)*. Subclinical mastitis has a considerable commercial interest, since it decreased curd firmness, and lowered heat stability of manufacturing milk for cheese, condensed milk and powder. Relative increases in milk serum, albumin, and globulins changed heat stability responses of milk, [*Tessier and Rose (1964); and Feagan, et al (1969)*]. With the foregoing viewpoints, abnormal buffaloes' milk namely subclinical mastitic which resulted by the animal infection with pathogenic bacteria (streptococci, staphylococci or with both of them together) is subjected for detailed examinations in the present work regarding the physical properties and composition. Results obtained will be not only important for food control authorities but also may be of use in the early diagnosis of subclinical mastitis in buffaloes.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

(I) Microbiological Analysis

Gupta and Joshi (1982), found that of 13000 product samples collected from Ludhiana city (Punjab, India), 300 from mastitic milk, 421 from milk products, 501 from meat and 138 from human pus, the presence of Staphylococcus aureus (157), Corynebacterium Spp. (213), Streptococcus agalactiae (19), Corynebacterium pyogenes (15, Escherichia Coli (45), Klebsiella pneumonia (7), Pseudomonas spp. (36), and Pasteurella multocida. *Higoshi and Hachiman (1983)* reported that organisms were isolated from 159 of 162 quarters milk samples from 93 cow with latent mastitis in 15 farms. Among the 1003 Strains isolated Staphylococcus epidermidis was the commonest (52.6% of strains), followed by streptococci (14.1%), corynebacteria (10%), and S. aureus (8%), yeast accounted for 2.1%. The correlating with CMT scores are presented. *Higoshi and Hachiman (1984)* obtained that of 80 strains of Staphylococcus aureus, 196 of Str. epidermidis, 62 of Streptococcus spp. and 45 of Corynebacterium spp. isolated from mastitic milk. *Erb, et al. (1985)* suggested that mastitis increased with age at calving. Clinical mastitis decreased milk yield by about 250 Kg and doubled the likelihood of being culled. *Park et al. (1985)* concluded that of 2947 cows examined from 204 dairy farms, 2.8% had clinical, and 52.9% subclinical mastitis of the 2128 isolates, 685 (32.2%) were Staphylococcus epidermidis, 630 (29.6%) Staph. aureus 251 (11.8%) micrococcus , 160 (7.5%) Streptococcus. uberis, 130

(6.1%) Str. dysgalactiae, 87 (4.1%) Str. agalactiae and 83 (3.9%) Escherichia coli. *Martel et al. (1985)* found that of 515 streptococcal strains isolated from cattle and tested for drug resistance during 1984-85 in France, 488 (95%) were from mastitic milk. The commonest mastitis strain was Streptococcus uberis (35%), followed by Str. agalactiae (22%), Str. dysgalactiae (20%), enterococci (10%) and Str. bovis (5%). Str. agalactiae infections have decreased over several decades of mastitis control, while Str. uberis is now the predominant streptococcus. *Rao et al. (1986)* noticed that microorganisms from milk samples from 120 crossbred cows with mastitis were identified as 45 strains of Streptococcus agalactiae, 30 of Staphylococcus aureus, 25 of Escherichia coli and 20 of Pseudomonas aeruginosa. Mobilities were higher than in normal milk. Str. agalactiae and Staph. aureus and to a slightly lesser extent E. Coli and B. aeruginosa. *Han et al. (1986)* concluded that these results indicated that cows with beta-Lactoglobulin. A have higher resistance to mastitis than cows with Beta-LGB. *Prata and Oliveira (1986)* compared direct microscopic clump count (DMCC) and standard plate count (SPC). In tests on 215 samples of raw milk, a close correlation (r – 0.89) was shown between direct microscopic clump count (DMCC) and standard plate count (SPC); the correlation was 0.91 for 100 'special' grade and 0.86 for 115 type B milks. Samples classified by SPC as having low (200.000/ ml) medium (600.000 / ml) and high (10 million / ml) level of contamination resp. had mean SPC of 113.000, 408.000 and 5.16 million / ml. and mean DMCC of 160.000,