



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

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بالرسالة صفحات

لم ترد بالأصل



Cairo University
Faculty of Veterinary Medicine
Department of Food Hygiene and Control

***NOVEL TRENDS FOR RAPID DETECTION OF SOME
FOOD-BORNE PATHOGENS IN MILK AND SOME
DAIRY PRODUCTS***

A Thesis Presented By
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For the degree of
Ph. D.
***(Hygiene and Control of Milk & Dairy Products,
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﴿ وقل اعملوا فسيرى الله عملكم
ورسوله والمؤمنون ﴾



**NOVEL TRENDS FOR RAPID DETECTION OF SOME FOOD-BORNE
PATHOGENS IN MILK AND SOME DAIRY PRODUCTS.**

**Hamdy Ahmed Dardir, Cairo Univ. Fac. of Vet. Med. – Thesis; Ph. D.; Food
Control and Hygiene, 1999**

Abstract

Two hundred and fifty samples (100 raw milk and 50 each of Domietta cheese, Kariesh cheese and ice-cream) collected from Cairo and Giza Governorates were examined bacteriologically for prevalence of EHEC (*E. coli* O157: H7), *Staphylococcus aureus*, its toxins and *Listeria monocytogenes*. EHEC was presumptively detected in (34, 15, 7 and 18) and (20, 9, 5 and 16) of the examined samples by usings SMA and GUD respectively. While (3, 6,0 and 2) and (2, 4, 0 and 2) were confirmed serologically to be *E. coli* O157: H₇ by Latex and tube agglutination tests respectively. *S. aureus* was detected in 32, 42, 42 and 12% of raw milk, Domietta cheese, Kariesh cheese and ice-cream respectively. By using of RPLA kits (oxid) enterotoxins were detected in 9.3, 10.2, 7.4 and 11.1% of the tested strains revealed from examined samples respectively. *Listeria* species proved to be present in 10, 12, 8 and 2% of examined samples respectively using of Fung-Yu tube and Oxyrare enzyme, while *L. monocytogenes* could be isolated in 4, 4, 4 and 2% from the examined samples respectively. 3,2 and 2% *L. monocytogenes* isolates revealed from rawmilk, Domietta cheese and Ice-cream were belonged to serotype I.

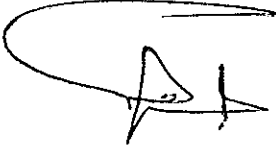
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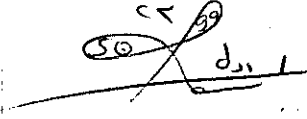
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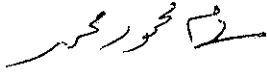
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ACKNOWLEDGEMENT

Prayerful thanks to God for power, endurance and unlimited gifts.

I would like to express my deepest gratitude and sincere thanks to my supervisor *Prof. Dr. Seham Mahmoud Mohamed*, professor of milk hygiene, Faculty of Veterinary Medicine, Cairo University for her interest, helpful advice and criticism which have made possible for completion of this work.

Sometimes words are not enough to express my feeling of great appreciation towards my supervisor *Prof. Dr. Ragaa Shehata Hafez*, professor of milk hygiene, Faculty of Veterinary Medicine, Cairo University for her help, criticism, unflinching efforts and valuable assistance.

The author wishes to express sincere thanks to *Dr. H. M. Abd El-Hady*, Assistant professor of milk hygiene, Faculty of Veterinary Medicine, Cairo University for his great help and supplying facilities required for this study.

I would like to thank heartily the staff members of food hygiene department, Faculty of Veterinary Medicine, Cairo University for their cooperation and continuous help.

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INTRODUCTION

1. INTRODUCTION

Fluid milk and dairy products are highly perishable commodities. They have special importance as principle components of young and elderly diets. So, great emphasis has been placed upon the safety of milk and dairy products than most other foods as the immune system of individuals in these groups is not sufficiently responsive to prevent infection by pathogenic bacteria.

The nutritional attributes of dairy products which make them important part of human diet are the same that support the growth of many pathogenic bacteria. Contaminated milk and dairy products have been associated with foodborne illness caused by pathogenic *E. coli* with regarded to *E. coli* O₁₅₇: H₇, *Staphylococcus aureus* and *Listeria monocytogenes* (Sharp, 1987 and Vassavada, 1988).

E. coli O₁₅₇ has emerged with increasing frequency in the past decade as an important foodborne pathogen causing hemorrhagic colitis and hemolytic uremic syndrome (HUS). The organism was first recognized as a foodborne pathogen in 1982 (Wells *et al.*, 1983).

The dairy industry is implicated in *E. coli* O₁₅₇:H₇ risk because dairy cattle may harbour the organism. The pathogen has been found in raw milk and milk tankers as well as heat treated milk, it can survive refrigeration temperature and grow slowly at 44°F. Moreover, frozen storage will not destroy the organism and it can

persist low pH of dairy products (*Hedberg and Pokarney, 1993; Susan and Cameron, 1994 and Upton and Coia, 1994*).

Enterohemorrhagic *E. coli* O₁₅₇:H₇ (or verocytotoxigenic *E. coli*) is recognized as an important and common human pathogens, particularly of young children and the elderly, causing diarrhea and hemorrhagic colitis and the life-threatening post-diarrheal disorders as hemolytic uraemic syndrome (HUS) (*Tarr, 1994*), acute kidney failure in children (*Weagant et al., 1994*) and thrombotic thrombocytopenic purpura (TTP) (*Doyle, 1991*). In addition, it could lead to central nervous system complications (*Doyle, 1985*).

Staphylococci are widely distributed in nature as they can grow in any food article if the conditions are suitable for their growth and multiplication. Coagulase positive strains of *S. aureus* are considered the most important species of staphylococci due to their pathogenicity and enterotoxin production causing food intoxication (*Tsung and Huang, 1993*).

Staphylococcus aureus continues to be a significant cause of foodborne intoxication in many areas of the world (*Roberts, 1982 and Genigeorgis, 1989*) in which handlers play a significant role (*Gilbert, 1983*).

Staphylococcal enterotoxin is a toxic extracellular metabolite produced by *S. aureus* cells. There are six serologically distinct

types designated A, B, C, D, E and F and all have been implicated in foodborne intoxication (*Bergdoll, 1979*).

Many attempts have therefore been made to relate enterotoxin production and pathogenicity to other metabolic products of staphylococci like coagulase, thermonuclease and clumping factor (*Tatini, 1981*).

Listeriosis is the infectious disease associated with the listeria organism. It has only recently been described in man as a disease transmitted by food (*Schlech et al., 1983*).

Listeria monocytogenes is potentially dangerous foodborne pathogen, causes very serious types of illness, including meningitis, septicaemia and abortion in pregnant women. Some of the recent outbreaks of listeriosis associated with the consumption of milk and dairy products reflect a great public health importance as it cause nearly 30% overall mortality rate of these outbreaks (*James et al., 1985; Griffiths, 1989* and *Bille, 1990*).

It is recognized that milk may become contaminated directly since *L. monocytogenes* is shed as a consequence of listeric mastitis or from asymptomatic cow (*Hird and Genigeorgis, 1990*). Contaminated milk by *Listeria monocytogenes* has been incriminated in outbreak from Mexican-style cheese (*Hird, 1987*).