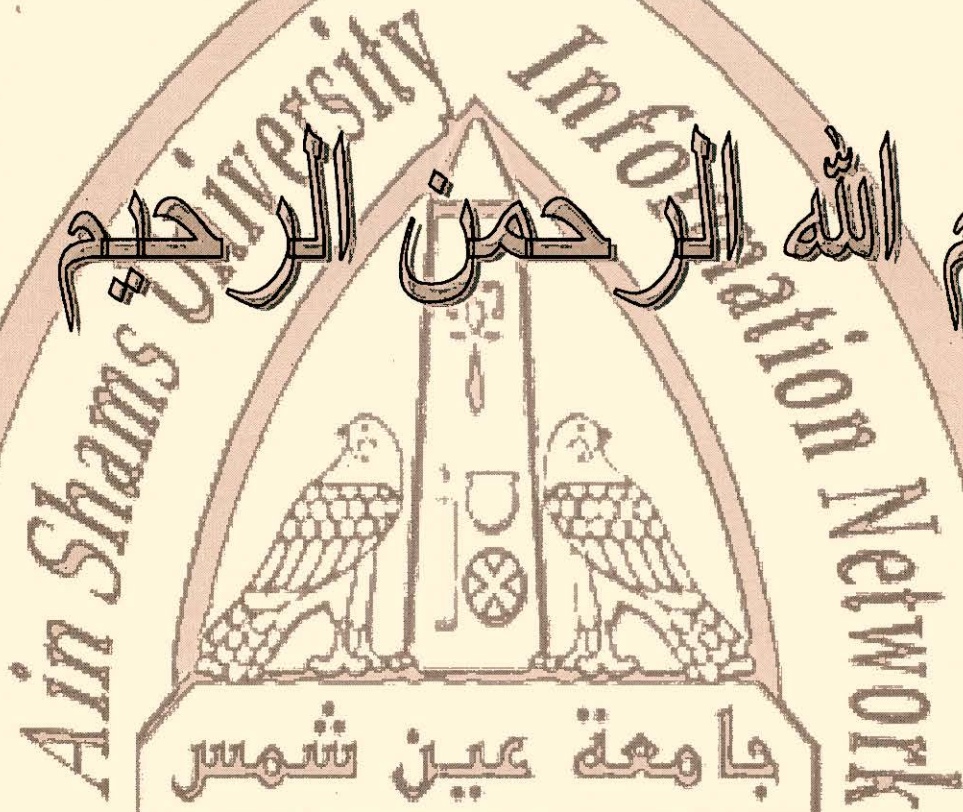




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**Antimicrobial characteristics of a bacteriocin produced by
Lactobacillus delbrueckii against food-borne pathogens and
pathogenic organisms**

Presented by

Doaa Helmy Abdel Baky

B.SC. (2004)

**Thesis Submitted to
Faculty of Science**

**In Partial Fulfillment of the
Requirements for
the Degree of
master of Science
(MICROBIOLOGY)**

**Botany Department
Faculty of Science
Cairo University
2010**

CCY9
CP

Abstract

Abstract

Student Name: Doaa Helmy Abdel Baky.

Title of the thesis: Antimicrobial characteristics of a bacteriocin produced by *Lactobacillus delbrueckii* against food-borne pathogens and pathogenic organisms.

Degree: Master (Microbiology).

Five lactic acid bacteria isolated from traditional fermented foods were tested for antimicrobial activity towards food poisoning and pathogenic indicators.

One isolate showed the widest range of antimicrobial activity and was identified as *Lactobacillus delbrueckii*. The kinetics of bacteriocin production by LAB in relation to process factors have been studied in detail.

Bacteriocin produced by *Lactobacillus delbrueckii* had maximal activity in MRS medium at initial pH 7.0, and 24h incubation period at 30°C, it was found that supplementation with glucose, lactose, peptone, yeast extract and meat extract enhanced the production of bacteriocin.

The purified antimicrobial agent had heat stability where the activity remained constant after heating at 60°C for 60 min, and at autoclaving temperature 121°C for 30 min.

The maximum antimicrobial activity was retained within a wide pH range (4.0-8.0) and sharply decreased at pH 3.0 and 9.0.

The active principle was proteinaceous in nature since the bacteriocin was inactivated by proteolytic enzymes. Surfactants and organic solvents (acetone and chloroform) and UV light did not affect the activity of bacteriocin. The bacteriocin kept its activity on storing for 60 days at 4°C.

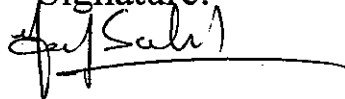
Keywords: Lactic acid bacteria; Bio-preservation; *Lactobacillus delbrueckii*; Inhibitory activity; Bacteriocin; Bacteriocin purification; Pathogenic and food poisoning organisms.

Supervisors:

1- Prof. Dr. Youssry El-said Saleh

2- Prof. Dr. Hanaa Ali El-shafei

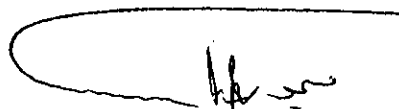
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APPROVAL SHEET FOR SUMISSION

Thesis Title: Antimicrobial characteristics of a bacteriocin produced by *Lactobacillus delbrueckii* against food-borne pathogens and pathogenic organisms.

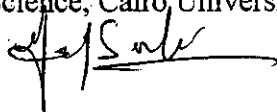
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Prof. Dr. Maimona Abd El Azez Kord

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At first, I would like to thank our god that allowing me to achieve this work, without his bless any great effort is invaluable.

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With all my love I would like to extend my deepest gratitude and thanks to my brother, sister and my husband.

Dedication

*I would like to dedicate this work
to my parents, that seeded my
curiosity and desire for knowledge
and thanking them for their
unlimited effort, patient and
invocation that is unquestionable
honored.*

To Whom It May Concern

The present thesis is submitted to the Faculty of Science, Cairo University in partial fulfillment for the requirements of the degree of Master of Science in Botany (Microbiology).

Beside the research work materialized in this thesis, the candidate attended eleven postgraduate courses for one academic year in the following topics:

1. Soil Microbiology
2. Bacteriology
3. Applied microbiology
4. Virology
5. Hydrobiology
6. Analytical chemistry
7. Radiobiology
8. Tissue culture
9. Host-parasite relationships
10. Biostatistics.
11. German Language

The candidate has successfully passed the final examination in these courses held in October 2005.

Prof. Dr. Maimona Abd El Azez Kord

Chairman of the Botany Department
Faculty of Science, Cairo University

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