Faculty of Veterinary Medicine
Cairo University
Department of Microbiology

Study on the antimicrobial activity of some plants

A Thesis Presented By

Doaa Mohamed Moawad El-Tahan

(B.V.Sc. Faculty of Vet. Medicine, Cairo University 2009)

For The Degree of
Master in Veterinary Medical Science
(Microbiology)

Under Supervision of

Prof. Dr. Heidy Mohamed Shawky Abo El-Yazeed

Professor of Microbiology
Faculty of Veterinary Medicine, Cairo University

Dr.
Sherin Ibrahim Ibrahim

Lecturer of pharmacology
Faculty of Veterinary Medicine
Cairo University

Prof. Dr.
Ashraf Mohamed Barakat

Head of Zoonoses Department
National Research Centre

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Supervision sheet

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Prof. Dr. Heidy Mohamed Shawky Abo El-Yazeed
Professor of Microbiology
Faculty of Veterinary Medicine, Cairo University

Dr. Sherin Ibrahim Ibrahim
Lecturer of pharmacology
Faculty of Veterinary Medicine, Cairo University

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كلية الطب البيطرى
جامعة القاهرة
قسم الميكروبيولوجيا

لجنة الإشراف

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ط.ب. دعاء محمد معوض الطحان

بكالوريوس العلوم الطبية البيطرية-جامعة القاهرة (2009)

تحت إشراف

أ.د. هايدى محمد شوقى أبو اليزيد

أستاذ الميكروبيولوجيا
كلية الطب البيطرى - جامعة القاهرة

د. شيرين إبراهيم إبراهيم

مدرس الأدوية
كلية الطب البيطرى
جامعة القاهرة

أ.د. أشرف محمد بركات

رئيس قسم الأمراض المشتركة
المركز القومى للبحوث

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Name: Doaa Mohamed Moawad El-Tahan **Birth date:** 17/1/1987
Nationality: Egyptian
Scientific degree: Master degree (Microbiology)
Title of Thesis: Study on the antimicrobial activity of some plants
Prof. Dr. Heidy Mohamed Shawky Abo El-Yazeed
Professor of Microbiology - Faculty of Veterinary Medicine - Cairo University
Dr. Sherin Ibrahim Ibrahim
Lecturer of pharmacology- Faculty of Veterinary Medicine - Cairo University
Prof. Dr. Ashraf Mohamed Barakat
Head of Zoonoses Department- National Research Centre

ABSTRACT

Many edible plants have been used since ancient time to control microbial infections. This study was designed for evaluating the antibacterial effect of the crude extracts of the tested herbal plants (*Citrillus colocynthis* fruits and seeds, *Cucurbita pepo* fruits and seeds, *Moringa oleifera* leaves) against some bacterial pathogens, namely methicillin resistant *Staphylococcus aureus* (MRSA), *Salmonella* Typhi, *Pseudomonas aeruginosa*, *Escherichia coli* and *Klebsiella pneumoniae.* Extraction method was applied for previously mentioned plants using methanol 70% then fractionation of these crude extracts was done by solubilization in water. The broth microdilution method was used to determine the minimum inhibitory concentrations (MIC) of the studied extracts. Also the minimum bactericidal concentration (MBC) was determined by subculturing on antibiotic free nutrient rich agar plates. It was found that, MIC results of *Citrullus colocynthis* fruits and seeds extract revealed that the butanol and methanol extracts had the highest inhibition effect but hexane extract had the lowest one. Concerning MBC results of *Citrullus colocynthis* fruits and seeds extract it revealed that the methanol extract had the highest cidal effect but hexane and chloroform extracts had the lowest one. MIC results of *Cucurbita*

pepo fruits and seeds extract revealed that the butanol extract had the highest inhibition effect but hexane extract had the lowest one. Concerning MBC results of *Cucurbita pepo* fruits, it revealed that the methanol, hexane and butanol extracts had the highest cidal effect but chloroform extract had the lowest one. While MBC results of *Cucurbita pepo* seeds revealed that the chloroform extract had the highest cidal effect but hexane extract had the lowest one. MIC results of *Moringa oleifera* leaves revealed that the butanol extract had the highest inhibition effect specifically against *Pseudomonas aeruginosa* with MIC 160 µg/ml but hexane extract had the lowest one. Concerning MBC results, it revealed that the methanol and hexane extracts had the highest cidal effect while chloroform and butanol extracts had the lowest one. These results confirm the traditional claims and provide promising baseline information for the potential use of the tested extracts against bacterial infections.

Keywords:

Antibacterial, MRSA, *Salmonella* Typhi, *Pseudomonas aeruginosa*, *E.coli*, *Klebsiella pneumoniae*, Extract, MIC, MBC, *Moringa oleifera*, *Citrillus colocynthis*, *Cucurbita pepo*.

To

My beloved Mother,

My Father,

My husband Hegazy,

My mother in law

And my brothers

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome.
ANOVA	Analysis of variance
ATCC	American Type Culture Collection
CFU	Colony Forming Unit.
DMSO	Dimethyl Sulfoxide.
HIV	Human Immunodeficiency Virus.
MBC	Minimum Bactericidal Concentration.
MDR	Multidrug Resistance.
MFC	Minimum Fungicidal Concentration.
MHA	Mueller-Hinton Agar.
MHB	Mueller-Hinton Broth.
MIC	Minimum Inhibitory Concentration.
mm	Millimeter.
mM	Millimolar.
M.O.	Microorganism
MRSA	Methicillin Resistant *Staphylococcus aureus*
NOAEL	No Observed Adverse Effect Level.
SDS	Sodium Dodecyl Sulfate.
SM	Secondary Metabolites
WHO	World Health Organization.