

USE OF NATURAL COMPONENTS TO MITIGATE THE ENVIRONMENTAL MICROBIAL POLLUTANTS IN POULTRY PRODUCTS

BY

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Diploma of Agricultural Environmental Sciences, Institute of
Environmental Studies and Research, Ain-Shams University, 2011

A Thesis Submitted in Partial Fulfillment
of
The Requirements for the Master Degree
in
Environmental Science

Department of Environmental Agricultural Science
Institute of Environmental Studies & Research
Ain Shams University

2016

APPROVAL SHEET

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ACKNOWLEDGEMENTS

Appreciations are to ALLAH for the successful completion of this thesis.

Prof. Dr. Mohamed Abdel-Razek El-Nawawy, Professor of food microbiology, Food Sci. Dept., Faculty of Agriculture, Ain Shams University, aside from your vast experience and professionalism, your constant attention and caring far exceeded the scope of your responsibilities as a thesis supervisor. I cannot express my gratitude for all your valuable guidance and patience throughout the whole course of this work.

I would like to thank **Prof. Dr. Moustafa Hassan Ragab**, Professor of Community and Environmental Medicine, and occupational diseases, Department of Environmental Medical Science, Institute of Environmental Studies and Research, Ain Shams University for his valuable advice and cooperation during the investigation. Thank you so much for all of your help and wonderful guidance.

I would like to thank all my colleagues and staff members in Department of Agriculture Sciences, Institute of Environmental Studies & Research, Ain Shams Univ. for their assistance.

I would like to express my appreciation to my colleagues at U.S.NAMRU-3 especially my supervisor **Dr. Momtaz Wasfy**, where I gained all my scientific experience and writing skills throughout my working years with him.

I dedicate this work to the family, **Mother, Father, Sister and Brothers** and to my little stars (sons) **Malik and Adam**.

Last, but not least, I would like to give special appreciation dedicated to my dear wife, **Ms. Reham Abdel-Basset** for her understanding and love during the past years. Her support and encouragement was in the end what made this thesis possible thank you for your continuous support.

ABSTRACT

This study was carried out to investigate the potential effect of using essential oil extracts of Clove (*Syzygium aromaticum*), Lemongrass (*Cymbopogon citratus*) and Allspice (*Pimenta dioica*) as natural antibacterial agents at three different concentrations (10, 20 and 50 ml/L) against 67 human isolates belonging to three different species of Gram negative bacteria including *Salmonella* spp (16), *Shigella* spp (16) and *Campylobacter* spp (18) and one Gram positive bacteria which is *Staph. aureus* (17) isolated from diarrheal and septicemic human cases. The screening was performed by standard disc diffusion method.

Essential oil extract of clove exhibited maximum activity against *Shigella* spp with 11.15 mm mean diameter of inhibition zone. While, the Essential oil extract of lemongrass exhibited maximum activity against *Campylobacter* spp with 59.55 mm mean diameter of inhibition zone. All tested isolates were found resistant to allspice essential oil extract. Accordingly, lemongrass essential oil extract was found to be effectively inhibiting both gram-positive and gram-negative bacteria and can be a good source of antibacterial agents for possible infections in poultry products. Furthermore, in vitro study on 198 chicken breast and minced chicken meat samples were obtained using lemongrass essential oil to determine its efficiency at 4°C. The least tested concentration (10 mL/Kg) was found to be effective without deteriorating the sensory characterizations.

Key Words: *Salmonella*, *Shigella*, *Campylobacter*, *Staph. aureus*, clove, lemongrass, natural antibacterial agents

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