

UNIVERSITI TEKNOLOGI MARA

**PHYTOCHEMICAL ANALYSIS,
FREE RADICAL SCAVENING AND
ANTIBACTERIAL ACTIVITY OF
AZADIRACHTA INDICA
(MARGOSA) LEAVES**

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Thesis submitted in fulfilment
of the requirements for the degree of
**Bachelor of Engineering (HONS) Chemical and
Bioprocess**

Faculty of Chemical Engineering

July 2017

ABSTARCT

Azadirachta indica (Margosa) has been used for a long time in agriculture and alternative medicine. Margosa had been proved effective against microbial which could affect human body and high antioxidant to reduce free radical. This is a laboratory-controlled prospective study conducted at Universiti Teknologi Mara. This study aims to analyse qualitative and quantitative phytochemical and evaluate antioxidant properties of various alcoholic leaf extracts of Margosa and demonstrate the antibacterial effect of Malaysian Margosa leaf extracts against *Escherichia coli* and *Bacillus subtilis* at different temperatures and times. Preliminary phytochemical analysis for phenols and flavonoids and quantitative phytochemicals for total phenolics content and total flavonoids content were made by following standard procedures. In vitro antioxidant activity of different leaf extracts was evaluated by assessing DPPH (2,2-diphenyl-1-picrylhydrazyl) method. The antibacterial potential of various alcoholic leaf extracts was tested using Agar well diffusion method. The quantitative phytochemical analysis of this species exhibited the presence of total phenolics content and total flavonoids content. The antioxidant activity of the species, Margosa clearly demonstrated that leaf part has prominent antioxidant properties. The leaf extracts showed inhibition against both bacteria *Escherichia coli* and *Bacillus subtilis*. From this study, it can be concluded that the species *Azadirachta indica* (Margosa) leaf part has the potential to be a powerful antioxidant and antibacterial activity against gram-positive and gram-negative bacteria.

ACKNOWLEDGEMENT

Firstly, I wish to thank Allah Almighty Who giving me the opportunity to board on my degree for completing this long and challenging journey successfully. I revere the moral support and patronage extended with love, by my parents whose financial support and passionate encouragement made it possible for me to complete this project.

My heartiest gratitude and thanks go to my respected supervisor, Pn. Umami Kalthum Ibrahim, the lecturer from Faculty of Chemical Engineering. Thank you for the patience, support and guidance me with ideas with this project. I also would like to express my gratitude to the staff of the laboratory at Faculty of Chemical Engineering for providing the facilities, knowledges and assistance.

My appreciation goes to the Mr. Ahmad who provided the Margosa leaves, the main important for this project. Special thanks to my colleagues and friends for helping me with this project.

I humbly extend my thanks to all concerned person who co-operated with me in this regard.

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CHAPTER 1

INTRODUCTION

1.1 ABSTRACT

Azadirachta indica (Margosa) has been used for a long time in agriculture and alternative medicine. Margosa had been proved effective against microbial which could affect human body and high antioxidant to reduce free radical. This is a laboratory-controlled prospective study conducted at Universiti Teknologi Mara. This study aims to analyse qualitative and quantitative phytochemical and evaluate antioxidant properties of various alcoholic leaf extracts of Margosa and demonstrate the antibacterial effect of Malaysian Margosa leaf extracts against *Escherichia coli* and *Bacillus subtilis* at different temperatures and times. Preliminary phytochemical analysis for phenols and flavonoids and quantitative phytochemicals for total phenolics content and total flavonoids content were made by following standard procedures. In vitro antioxidant activity of different leaf extracts was evaluated by assessing DPPH (2,2-diphenyl-1-picrylhydrazyl) method. The antibacterial potential of various alcoholic leaf extracts was tested using Agar well diffusion method. The quantitative phytochemical analysis of this species exhibited the presence of total phenolics content and total flavonoids content. The antioxidant activity of the species, *Azadirachta indica* clearly demonstrated that leaf part has prominent antioxidant properties. The leaf extracts showed inhibition against both bacteria *Escherichia coli* and *Bacillus subtilis*. From this study, it can be concluded that the species *Azadirachta indica* (Margosa) leaf part has the potential to be a powerful antioxidant and antibacterial activity against gram-positive and gram-negative bacteria.

1.2 BACKGROUND STUDY

A research to study on the active ingredient in dried and powdered Margosa leave is in progressing. Margosa leaves have been choose as the main product in the research is because the production or market for this product have not been expanded in Malaysia. The only benefit that Malaysian know about Margosa leave is it can cure chickenpox or skin ailments. Therefore, through this research can prove that Margosa leaves have content of antioxidant from flavonoids which comes from quercetin (active ingredient) in Margosa leaves. Other than that, there are some others of phytochemicals present in Margosa leaves which are alkaloids, phenols, saponins and tannins.