

UNIVERSITI TEKNOLOGI MARA

**PHYTOCHEMICAL AND
ANTIOXIDANT ACTIVITY FROM
FRUIT WASTE (PEEL) OF *Citrus*
hystrix AND *Ananas comosus* BY USING
DPPH ASSAY**

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Citrus hystrix (Kaffir lime) peels and *Ananas comosus* (pineapple) peels are wastes that are usually discarded in a large amount. Since previous studies have reported negative impact of negligible abundant wastes, there has been researches on waste potential. Interest in natural antioxidant from waste has directed this study. The aims of this study are to extract Kaffir lime peels and pineapple peels using Soxhlet extraction and maceration method, detect the phytochemicals using Gas Chromatography-Mass Spectrometry (GC-MS) and determine the antioxidant activity of both extracts singly and in combination. High percentage yield was obtained for both samples. Compounds found in Kaffir lime peels are in accordance with the previous studies which are citronellal, linalool, citronellol, terpinen-4-ol, *iso* Pulegol, and α -cubebene while new components were found in pineapple peels. The compounds are Benzene, 1,3-bis (phenoxyphenoxy), 2-Furancarboxaldehyde, 5-methyl-, 2-Furancarboxaldehyde, 5-(hydroxymethyl)-, and 4H-Pyran-4-one, 2,3-dihydro-3, 5-dihydroxy-6-methyl-. The oxidative scavenging activity of both samples in single effect and combination effect were conducted using DPPH assay. It is found that Kaffir lime peels have higher value for percentage of inhibition and close to Ascorbic Acid which acts as standard in this study. At concentration 100 mg/mL Kaffir lime peels exhibit close value (92.87%) to the standard at concentration 10 mg/mL (92.40%). Pineapple peels have slightly lower value for percentage of inhibition against DPPH even at the highest concentration (89.10%). The combination for both samples were conducted and ratio 1:1 possess the highest value (63.14%) compared to other ratio. However, single effect of each extract is still higher than the combination ratio 1:1. This shows that single sample without combination has more positive value in antioxidant activity. In conclusion, wastes from *Citrus hystrix* peels and *Ananas comosus* peels do have potential to be natural antioxidants.

TABLE OF CONTENTS

	Page
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF SYMBOLS	xi
LIST OF ABBREVIATIONS	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	3
1.3 Significance of Study	4
1.4 Objectives of Study	5
CHAPTER TWO: LITERATURE REVIEW	6
2.1 Oxidative Stress versus Antioxidant	6
2.1.1 Oxidative Stress	6
2.1.2 Antioxidant	7
2.2 Natural Resources of Antioxidant	9
2.2.1 Antioxidant Content in <i>Citrus hystrix</i> (Kaffir lime)	9
2.2.2 Antioxidant Content from <i>Ananas comosus</i> (Pineapple)	10
2.3 Potential Antioxidant derived from Fruit Wastes	10
2.3.1 Potential of <i>Citrus hystrix</i> peels	11
2.3.1.1 Chemical Constituents of <i>Citrus hystrix</i>	12
2.3.2 Potential of <i>Ananas comosus</i> peels	13
2.3.2.1 Chemical Constituents of <i>Ananas comosus</i>	14
2.3.3 Others	15
2.3.3.1 Watermelon rind	15

CHAPTER FOUR: RESULTS AND DISCUSSION ON THE ANTIOXIDANT ACTIVITY OF PEELS OF KAFFIR LIME AND PINEAPPLE	28
4.1 Percentage Yield of Extraction	28
4.1.1 Percentage Yield of <i>Citrus hystrix</i> peels using Soxhlet extraction	28
4.1.2 Percentage Yield of <i>Ananas comosus</i> peels using Maceration method	29
4.2 Phytochemical Components in Peels	29
4.2.1 Compounds in <i>Citrus hystrix</i> peels	31
4.2.2 Compounds in <i>Ananas comosus</i> peels	33
4.3 Analysis of Oxidative Scavenging Activity using DPPH Assay	34
4.3.1 Oxidative Scavenging Activity of <i>Citrus hystrix</i> peels	36
4.3.2 Oxidative Scavenging Activity of <i>Ananas comosus</i> peels	38
4.3.3 Oxidative Scavenging Activity of Combination of both Extracts	38
CHAPTER FIVE: CONCLUSION AND RECOMMENDATION	41
REFERENCES	42
APPENDICES	52
AUTHOR'S PROFILE	72