

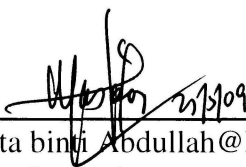
**DETERMINATION OF PHENOLIC COMPOUNDS IN AQUEOUS
EXTRACT OF CASSAVA SHOOTS AND BANANA HEARTS
USING TOTAL PHENOLIC CONTENT (TPC) METHOD**

EDDY MOHD FADIL BIN YUSOF

**Final Year Project Report Submitted in
Partial Fulfillment of the Requirement for the
Degree of Bachelor Science (Hons.) Applied Chemistry
In the Faculty of Applied Sciences
University Teknologi Mara**

MAY 2009

This Final Year Project entitled **“Determination of Phenolic Compounds In Aqueous Extract of Cassava Shoots and Banana Hearts Using Total Phenolic Content (TPC) Method”** was submitted by Eddy Mohd Fadil bin Yusof, in partial fulfillment of the requirement for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Science, and was approved by:



Pn. Hajah Mashita binti Abdullah @ Mohd Noor.

Supervisor

Faculty of Applied Science
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Cik Sabina bte M. Yahya
Project coordinator
B. Sc. (Hons.) Applied Chemistry
Universiti Teknologi MARA
40450 Shah Alam
Selangor



Dr. Yusairie bin Mohd
Head of Programme
B. Sc. (Hons) Applied chemistry
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date: 25 MAY 2009

ACKNOWLEDGEMENTS

I would like to give my sincere gratitude to my dearest supervisor, Pn. Hajah Mashita binti Abdullah@Mohd Noor who had really been supporting, motivating and guiding me during the process of finishing this final year project. She really had give her best not only in term of finding the specific information but also in giving good ideas to be applied in this project in order to get better results for this project.

Finally, I would like to thank all my friends that who been supporting, helping, and giving good ideas during the process of finishing this project proposal. May Allah bless all of you.

Eddy Mohd Fadil

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1 INTRODUCTION	
1.1 Background and problem statement	1
1.2 Significance of study	2
1.3 Objectives	3
CHAPTER 2 LITERATURE REVIEW	
2.1 "Ulam"	4
2.1.1 Cassava shoots	5
2.1.2 Banana hearts	6
2.2 Antioxidants	7
2.2.1 Natural antioxidant	10
2.2.2 Synthetic antioxidant	11
2.2.3 Extraction of antioxidants	11
2.3 Blanching time	12
2.4 Methods of determining antioxidant activities	
13	
2.4.1 Total phenolic content	14
2.4.2 2,2-azinobis (3-ethyl-benzothiazoline-6-sulfonic acid)	15
2.4.3 Ferric thiocyanate method (FTC)	16
CHAPTER 3 METHODOLOGY	
3.1 Materials	17
3.1.1 Raw materials	17
3.1.2 Chemicals	17
3.1.4 Apparatus and instruments	18

ABSTRACT

“ulam” is a group of vegetables that is consumed fresh as salad or slightly blanched or steam which have medicinal properties, lowering the incidence of cancer, and control ageing. Cassava shoots and banana hearts are examples of “ulam” that need to be blanched first before they can be consumed. This project was carried out to determine the total phenolic content in each blanched cassava shoots and banana hearts. Gallic acid was used as the standards thus the total phenolic content was expressed as mg GAE/g fresh sample. The selected blanching time for cassava shoots were 10, 15, and 20 minutes and the total phenolic content were 0.690 ± 0.005 mg GAE/g fresh sample, 0.598 ± 0.019 mg GAE/g fresh sample, and 0.576 ± 0.010 mg GAE/g fresh sample respectively. As for banana hearts, the selected blanching time were 20, 30, and 40 minutes and the total phenolic content were 0.499 ± 0.016 mg GAE/g fresh sample, 0.422 ± 0.014 mg GAE/g fresh sample, and 0.345 ± 0.010 mg GAE/g fresh sample respectively. By comparing total phenolic in both samples, it was founded that blanched cassava shoots contained more phenolic content. Since antioxidants were phenolic compounds and total phenolic content was determined in each sample, the optimal blanching time for optimal antioxidants get consumed can be estimated. Thus, optimal blanching time for cassava shoots and banana hearts was found to be 10 minutes and 20 minutes respectively.