

UNIVERSITI TEKNOLOGI MARA

**THE EXTRACTION OF PHENOLICS FROM
*HIBISCUS SABDARIFFA LINN***

ATHIRAH BINTI AHMAD LATIF

Dissertation submitted in partial fulfilment of the requirements for the
Bachelor of Pharmacy (Hons.)

FACULTY OF PHARMACY

2017

ABSTRACT

This study is to introduce the phenolic compound in *H. sabdariffa*. The medicinal properties of the phenolic compound were reported as antihypertensive, antigastric ulcer, antioxidant, antimicrobial and antihyperlipidemia. The research objectives are to extract the calyces of *H. sabdariffa* to obtain the crude extract, investigate the components in *H. sabdariffa*, analyse the suitable medium of the extract of *H. sabdariffa* in acidic and basic medium and analyse the structure of phenolic compound in *H. sabdariffa*. From the literature review, the phenolics are the most abundant compound in *H. sabdariffa*. The community pharmacy also provides this herb as nutraceutical and pharmaceutical products. The methodology in this study are the extraction of the *H. sabdariffa*, compound profiling by using the Thin Layer Chromatography technique, testing in acidic and basic medium and detection of the phenolic compound by using UV – VIS spectrometer. The colors of *H. sabdariffa* extracts were changed when HCl and NaOH were added. The UV spectra of the *H. sabdariffa* in acidic medium and basic medium demonstrated a hypochromic shifting. However, the same curve for extract in neutral and acidic medium indicates that it has same structure of compound. The same value of the retention factor in the monograph and laboratory experiment suggests that the sample contains delphinidine-3-sambubioside. Special precautions need to be taken since the stability of the *H. sabdariffa* extract is low. The hypotheses are accepted. More research needs to be performed on *H. sabdariffa*. It is hoped that this study could provide knowledge on *H. sabdariffa*.

ACKNOWLEDGEMENT

First of all, I would like to thank God and to all those who gave me the chance and complete this research as my final year project in completing Bachelor in Pharmacy course in UiTM Puncak Alam. I would like to express my highest gratitude and love to my supervisors Dr Hannis Fadzillah and Dr Ibtisam for giving me suggestion and advice in correcting my thesis. Besides, I also like to acknowledge all those lecturers that involve in PHC 567 for their lectures about this research. Thanks are also extended to the laboratory staff Mr. Rahimi and Mr Syukri for preparing me materials and equipments in the UiTM laboratory. I would also like to thank my parent for their love and encouragement to complete this thesis. Lastly, I would like to acknowledge my friends, Fadzillah, Atty, Amirah, Syaf and Fithri for helping me during my laboratory experiment.

TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATION	x
LIST OF SYMBOLS	xi
CHAPTER ONE: INTRODUCTION	1
CHAPTER TWO: LITERATURE REVIEW	4
2.1 PHARMACOLOGICAL ACTIVITIES OF <i>H. SABDARIFFA</i>	5
2.1.1 Antihypertensive	6
2.1.2 Antigastric ulcer	7
2.1.3 Antioxidant	7
2.1.4 Antimicrobial	8
2.1.5 Antihyperlipidimia	9
2.2 PHYTOCHEMICAL OF <i>H. SABDARIFFA</i>	9
2.2.1 Anthocyanin	10
2.2.2 Flavanoids	10
2.2.3 Phenolic acid	11
2.3 <i>H. SABDARIFFA</i> PRODUCTS IN RETAIL	12

CHAPTER ONE

INTRODUCTION

Malaysia is one of the countries that has many biodiversities because it is full of living heritage. There is a lot of *Hibiscus* species that is widely grown in Malaysia such as *Hibiscus sabdariffa* L. (*H. sabdariffa*), *Hibiscus rosa sinensis*, *Hibiscus cannabinus* L. and so on. According to Da-Costa-Rocha et al., (2014), there are more than 300 species from *Hibiscus* species which is in Malvaceae family. According to the previous work by Puro et al. (2016), the origin of *H. sabdariffa* [Figure 1.1] is actually from West Africa and it is cultivated in Malaysia, Taiwan, India and Sudan. In the early of 1990s, this plant is being introduced in Malaysia.

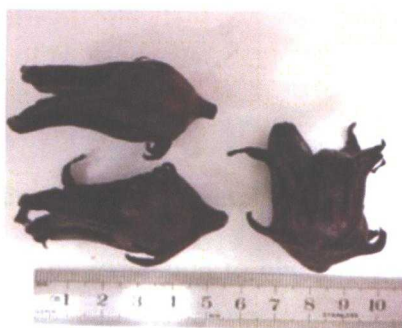


Figure 1.1 : A photograph showing the calyces of *H. sabdariffa* given by Dr. Ibtisam on September 2016.

Anthocyanin, which gives a deep red colour to this plant, has become popular. This is because people believe that it will improve their health when they take