

UNIVERSITI TEKNOLOGI MARA

**CHROMATOGRAPHIC PROFILING OF
SECONDARY METABOLITES IN *PANDANUS*
AMARYLLIFOLIUS VIA HIGH PERFORMANCE
LIQUID CHROMATOGRAPHY (HPLC)**

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TABLE OF CONTENT

	PAGE
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
LIST OF TABLES & FIGURES	v
LIST OF ABBREVIATIONS & SYMBOLS	vi
CHAPTER 1: INTRODUCTION	1
1.1 Introduction to HPLC	1
1.1.1 Equipment for HPLC	1
1.2 Problem Statement	4
1.3 Objectives of Study	5
1.4 Significance of Study	5
1.5 Hypothesis	5
1.6 Scope and Limitation	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 Study on <i>Pandanus amaryllifolius</i>	6
2.1.1 Preparation and Isolation of Flavonoids by HPLC	6
2.1.2 Preparation and Isolation of Phenolic Acid by HPLC	7
2.1.3 Preparation and isolation of Alkaloids by HPLC	10
2.2 Study on <i>Pandanus tectorius</i>	11
2.2.1 Preparation and Isolation by HPLC	11
2.3 Study on <i>Pandanus conoideus</i> Lam.	14
CHAPTER 3: METHODOLOGY	15
3.1 Sample preparation of <i>Pandanus Amaryllifolius</i> ' leaves	15
3.2 Separation by Reversed-Phase HPLC	16
CHAPTER 4: RESULTS AND DISCUSSION	18
4.1 First Attempt on Separating <i>Pandanus amaryllifolius</i> Methanolic Extract via HPLC	18

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ABSTRACT

Secondary metabolites in plants have numerous medicinal properties which are health beneficial. These secondary metabolites can be found in a variety of plants around the world including the *Pandanus* species. *Pandanus amaryllifolius* is well known in the South East Asia countries such as Malaysia, Indonesia and Thailand. In Malaysia, the leaves are commonly used as a flavouring and colouring agent in dishes by the locals. However, few information are available about the usage of the secondary metabolites containing in the *Pandanus amaryllifolius* leaves. Therefore, this study was conducted to obtain the chromatographic profile of secondary metabolites in *Pandanus amaryllifolius*. The leaf sample was extracted with methanol and subjected to the reverse-phase HPLC for separation with water and acetonitrile as the mobile phase. Gradient elution was conducted and the separation was observed by using diode array detector at $\lambda = 220 - 260$ nm and analysed via ChemStation B.01.01 Sr1. The chromatograms had shown significant peaks which could indicate the presence of secondary metabolites, but was unable to be identified as there were absence of standards. Upon comparison, the best chromatographic profile was shown by the sample obtained from Bandar Utama, Kuala Lumpur.

CHAPTER 1

INTRODUCTION

1.1 Introduction to HPLC

High Performance Liquid Chromatography (HPLC) has been used in the pharmaceutical analysis after it was developed in the late 1960s (Shrivastava and Gupta, 2012). HPLC has created a revolution in method of analysis especially in the biological and pharmaceutical chemistry. Basically, HPLC is an analytical instrument which is more sophisticated than the classical liquid chromatography (Christian, 2007). HPLC provides a rapid and versatile analytical method in separating biological or pharmaceutical compounds and thus, becoming a vital analytical method in the pharmaceutical field (Shrivastava and Gupta, 2012). Understanding each components of the HPLC system is important to obtain a better understanding of the system.

1.1.1 Equipment for HPLC

a) Mobile-Phase Supply System

The major role of the mobile phase supply system is to provide a pump which can produce high pressure for the separating purposes. Gradient elution can be controlled depending on the user's preferences (Christian, 2007). Basically, gradient elution will provide a shorter period of analysis compared to isocratic but the time taken for separation is longer due to the time spent on flushing the column (Shrivastava and Gupta, 2012). The mobile phases are kept inside a reservoir and they contain solvents of various polarities. In addition, these solvents must be