

UNIVERSITI TEKNOLOGI MARA

**OPTIMIZATION OF HIGH PERFORMANCE
LIQUID CHROMATOGRAPHY (HPLC)
METHODS FOR THE ALCOHOLIC EXTRACTS
OF *PANDANUS*.**

MUHAMMAD FAXRURRAZY BIN SADIRAN

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ABSTRACT

There are two main objectives of this research. The objectives include the review of various liquid chromatography methods and high performance liquid chromatography method's optimization for *Pandanus* species. The chromatography method is a method used to separate compounds that exist in a particular sample. Various liquid chromatography methods reviewed include the Thin Layer Chromatography (TLC), Medium Pressure Liquid Chromatography (MPLC), Vacuum Liquid Chromatography (VLC), High Performance Thin Layer Chromatography (HPTLC) and High Performance Liquid Chromatography (HPLC). The reviewed studies shows different separation of compound obtained from various liquid chromatography method performed. For the HPLC method optimization, there are three samples involved. Samples are subjected into reverse phase HPLC (RP-HPLC) for analysis are the *Pandanus amaryllifolius*, *Pandanus monotheca* and *Pandanus sanderi*. The samples were dissolved and filtered before introduced to the RP-HPLC for analysis. The best chromatogram can be obtained by optimizing the parameters involved in the analysis. Optimization of the methods on the parameters such as the flow rate, time of analysis, solvent's gradient system, and absorbance wavelength were done. The results were promising due to the presence of single isolated peak indicating presence of pure compound. Therefore, it is suitable to be further studied to improve the understanding on the *Pandanus* species.

CHAPTER 1

INTRODUCTION

1.1 Introduction to liquid chromatography (LC) performed to *Pandanus* extract

Chromatography is a technique that is widely used in the separation of compound. This chromatography technique holds to a principle which is based on the establishment of an equilibrium between the stationary phase and the mobile phase (Christian, Dasgupta, & Schug, 2013). There are many different types of chromatography methods that arises from this same principle. The chromatography technique can be classified based on the stationary phase. The stationary phase involves two types which are the planar and column stationary phase. These two types of stationary phases lead to the development of different types of chromatography methods. These methods include the thin layer chromatography (TLC), medium pressure liquid chromatography (MPLC), vacuum liquid chromatography (VLC), and high performance thin layer chromatography (HPTLC).

Differences in each chromatography method enables better performances and results. Various liquid chromatography methods had been performed to the *Pandanus* species. Firstly, the chromatography method performed to the *Pandanus* species is the thin layer chromatography (TLC). Various *Pandanus* species had been performed with the TLC. This chromatography method can be both preparative and quantitative TLC. The species involved included the *Pandanus tectorious* and *Pandanus odoratus* (Al-Ghamdi & Su-Chee, 2013; Hoa, Dien, & Quang, 2014; Peungvicha et al., 1998; Tan et al., 2008).

The chromatography method then is proceeded to the medium pressure liquid chromatography (MPLC). This MPLC was developed to assist in the chromatography technique. Several *Pandanus* species have been known to perform to the MPLC. Species