

UNIVERSITI TEKNOLOGI MARA

THIN LAYER CHROMATOGRAPHY (TLC) AND

ULTRAVIOLET VISIBLE (UV-Vis)

SPECTROSCOPY CHEMICAL PROFILE OF

HERBS

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ABSTRACT

Thin layer chromatography (TLC) has been developed for the chemical profile of methanolic extract of *Strobilanthes crispus*, *Pereskia bleo* and *Ficus deltoidea*. The separations of the samples using hexane and ethyl acetate (1:1) solvent system are compared among the plant extract samples with regards to their retention factor (R_f) values. The patterns of chemical profiles for each plant extract are found to be differed significantly from each other. The pattern of chemical profiles between unadulterated plants samples are compared with adulterated plant samples. Results show that the chemical profiles of adulterated plant of samples are different from the chemical profiles of unadulterated plant of samples with either presence of additional band or absence of band. The profiles of plant samples are also observe with using ultraviolet visible (UV-Vis) spectrophotometry. Each of the measured plant samples of 0.1 mg/ml are also mixed with adulterant plant to make the sample adulterated. The pattern of spectrum of each sample is compared with each other and it is found that each plant sample, unadulterated and adulterated has its own spectrum with different number of maximum peaks and wavelength. The spectra are then analyzed with using chemometric method which is Principal Component Analysis (PCA) to observe that the samples are different and not of the same species. The study successfully demonstrated the potential of TLC and UV-Vis spectroscopy methods as a rapid chemical profile for the quality control and authenticity of *S. crispus*, *P. bleo* and *F. deltoidea* as well as other herbs.

CHAPTER 1

INTRODUCTION

1.1 General Introduction on Herbal Plants

Herbal plants are used extensively nowadays either in developing or developed country as many had realized that they have many therapeutic uses and benefits in treating diseases or medical conditions. The reasons people are now shifting to herbal remedies as an alternative medication is because they are all natural and safe with lesser adverse reactions and side effects as compared to conventional medicine. Their uses are also encouraged, recommended and promoted by World Health Organization (WHO) in health care program because these drugs are easily available and people have faith in them (Rasheed et al., 2012)

According to The Herb Society of America's New Encyclopedia of Herbs and Their Uses by Bown (2011), the term herbs have more than one definition. Botanists describe a herb as a small, seed bearing plant with fleshy, rather than woody parts (from the term herbaceous). In addition to herbaceous perennials, herbs include trees, shrubs, annuals, vines, and more primitive plants, such as ferns, mosses, algae, lichens, and fungi. They