UNIVERSITI TEKNOLOGI MARA

THE EXTRACTION OF *LAVANDULA* SPECIES AND ITS HERBAL TEABAGS

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Abstract

Lavender is a western herb from *Lavandula* species and it is classified as one of the members of mint family, *Lamiaceae*. This fragrance herb has approximately 20-25 species and mainly cultivated for their essential oil. *Lavandula* herb is widely used in medicinal practices such as treatment of depression, stress and inflammation. The pleasant aroma of this herb produced by the esters is the main reason why it is extensively used in aromatherapy, food and perfumery industry. Most of the studies on *Lavandula* species are focused on two constituents, which are linalyl acetate (**1**) and linalool (**2**) that often contributed to the beneficiaries of lavender. However, only fewer studies were performed on other *Lavandula*'s minor consituents such as camphor (**4**) and cineole (**5**). Therefore, two different extraction methods which include the normal and ultrasound-assisted methods were analysed in extracting camphor (**4**) and cineole (**5**). There are five samples which consist of dried lavender flowers and four lavender herbal teas. The main purpose of selecting different types of *Lavandula* samples is to investigate the presence of the constituents in different brands of lavender tea products. Generally, the lavender tea products in the market contain additional ingredients for a better taste and quality. However, the presence and amount of the *Lavandula* contents is mostly unknown and products are formulated with other herbs. From the results, both extraction methods were not successful in extracting minor compounds i.e.camphor (**4**) and cineole (**5**), probably due to short extraction time. Thus, five days maceration was conducted to extract more compounds. The thin layer chromatographic profile of the extracts obtained from both methods revealed no significant difference, although the lavender herbal teas do not contain 100% *Lavandula*'s constituents. In conclusion, a compound from one of the lavender herbal tea sample was partially characterised and proposed to be a triterpene alcohol. The compound is proposed as uvaol that is present in some *Lavandula* species such as *Lavandula officinalis* and *Lavandula penduculata*. This compound is selected as the chemical of interest due to its presence only in one lavender herbal tea sample and did not present in pure dried lavender flowers.

CHAPTER 1

INTRODUCTION

1.1 Introduction of *Lavandula* species

Lavender is a plant species from *Lavandula* genus. It is classified as one of the members of mint family, Lamiaceae. Lavender consists of about 25-30 species, native to the Mediterranean region south to the tropical Africa and to many regions of Asia (Hui, He, Huan, XiaoLan, & AiGuo, 2010). The illustration of *Lavandula* species is shown in **Figure 1.1** (Koehler's Medicinal-Plants, 1887).

The genus *Lavandula* is mainly cultivated for their essential oil which is obtained from its flowers and leaves by steam distillation. Besides essential oil, these two important parts of genus *Lavandula* are cultivated and widely used as herbal medicine in the form of herbal tea(Jalali-Heravi, Moazeni-Pourasil, & Sereshti, 2015).Currently, lavender essential oil is primarily produced by conventional extraction methods since such methods are simple, low cost and easy to operate. However, these methods have several limitation and an alternative technique has been suggested which is supercritical CO_2 extraction (SCE) (Danh et al., 2012).