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THE PHYTOCHEMICAL STUDY ON THE LEAVES EXTRACT OF *LAURUS NOBILIS*

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ABSTRACT

This research was conducted to determine the phytochemical compounds in the leaves extract of *Laurus nobilis*. From the literature review, this plant is traditionally used to treat hysteria and emmenagogue. The infusion form of powdered fruits has shown diuretic and carminative properties. Fatty oil from the fruit is used externally to heal and relieve boils, sprains, bruises and rheumatism. Scientists all over the world performed the research on which compound that gives those effects. However, the major chemical composition of bay leaf extract has not yet fully discovered. Therefore, in this research the phytochemical compounds of leaves extract of *L. nobilis* were reviewed. The major compounds were isolated and identified from the leaves extract of *L. nobilis*. Four procedures were utilized in this study including extraction, identification and detection of compounds with Thin Layer Chromatography (TLC), purification with preparative TLC and analyzing organic compound with proton Nuclear Magnetic Resonance ^{1}H-NMR. Three compounds were then successfully being isolated and further analyzed with ^{1}H-NMR. However, only one compound (Compound 2) gave significant chemical shift that can be analyzed. Meanwhile, the spectra for another two compounds only showed the solvent peak. It was suggested that compound 2 is a monoterpene which is a derivative of a terpenoid group. This suggestion was performed after referring with 9-hydroxy-α-terpineol, a compound which was also a monoterpene. The comparison showed that there are some similarities with regards to the NMR peaks for both compounds. The only difference was the peak between 6.218 ppm to 6.250 ppm which was present only for compound 2. There might be another side chains or isolated hydrogens in compound 2 which partially resemble 9-hydroxy-α-terpineol. It is recommended that a larger scale of sample extraction can be conducted to obtain higher percentage of compound. It is also recommended that other method can be used to conduct this study such as Gas Chromatography.

TABLE OF CONTENT

CHAPTER ONE

INTRODUCTION

1.1 *Laurus nobilis* L.

Laurus nobilis L.which is also known as bay, sweet bay, bay laurel, Grecian laurel, true bay and Mediterranean bay is the only representative of *Lauraceae* family in Europe (Caredda, Marongiu, Porcedda, & Sorro, 2002). It is also can be found in the countries with moderate and subtropical climates such as Iran, Mediterranean region and America (Di Leo Lira et al., 2009 and Zolfaghari, Samsam, & Ghannadi, 2013). *Lauraceae* is one of the flowering plant families that consist of 52 genera and more than 3000 species (Zolfaghari et al., 2013). This species can be recognized as shrubs or small trees with height between 2 to 20 m as shown in **Figure 1** and have small lobed flowers in which the male has 8 to 12 stamens and female has 2 to 4 staminodes (Conforti, Statti, Uzunov, 2006). The flower is white-yellowish in color and gives out aromatic odor as shown in **Figure 2**. These flowers can be seen during spring season which is from April to May (Kilic, Altuntas, & Ertugrul, 2005). Their fruit is 10 to 15 mm, ovoid (egg-shaped) and black when ripe (**Figure 3**) (Conforti et al., 2006). Meanwhile, their leaves are coriaceous (leather-like), alternate and narrowly oblong-lanceolate in shape (**Figure 4**) (Conforti et al., 2006). They are shiny dark green leaves with length of about 10 cm (**Figure 5**). When the leaves are broken into pieces, they give a very fragrant and aromatic aroma (Kilic et al., 2005).