EXTRACTION OF *VERNONIA CINEREA* VIA MACERATION METHOD AND ITS QUALITATIVE ANALYSIS

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AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as reference work.

I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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SUPERVISOR'S CERTIFICATION

We declared that we read this thesis and in our point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

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ABSTRACT

This study focused on extraction of bioactive compounds from *Vernonia Cinerea* using maceration in solvent extraction. The objective of this studies are to determine the moisture contents at different drying time, the effect of extraction time, types of solvents and ratio of hybrids solvents on extraction yield of *Vernonia Cinerea* plant. Bioactive compounds in *Vernonia Cinerea* extract also was determined using Fourier Transform Infra-red Spectrophotometer. *Vernonia Cinerea* comes from *Asteraceae* family that has the largest group of plant. This kind of plant family contains various types of bioactive compounds that are useful in pharmaceutical industries. Several studies about the phytochemical of *Vernonia Cinerea* have been performed and it is proven that *Vernonia Cinerea* content several of bioactive compound that have tendency in reducing various type of diseases. In phytochemical study, moisture content analysis has been performed first as low content of moisture would acquire good extraction product. It was found that the samples need to be dried in oven for 15 hours to achieve constant rate period. In extraction technique, mixing of water with the solvent gave significant changes to the yield of extraction. For the effect of extraction time on extraction yield, longer maceration extraction would not give positive impact to the extraction yield. The result shown that at 18 hours of extraction, highest extraction yield was obtained compared to 6, 12, 24 and 32 hours which is 15.41%. In the study of hybrid solvent, highest percentage of ethanol to petroleum ether which is at 70:30% in ratio produced highest high extraction yield which is 12% as it involved the polar and non-polar solvent and compound. For the effect of solvent study, ethanol gave the highest extraction yield which is 16.105% compared to methanol, acetone and petroleum ether which are 14.58%, 13.1% and 6.63%, respectively. For the determination of the bioactive compounds contain in the *Vernonia Cinerea* plant by qualitative analysis using FTIR, the result has shown that the extract contain flavonoids, susquirterpene, saponins, lupeol, tannis, polyphenols, terpenoids, steroids and alkalanoids. In summary, it shown that extension of extraction time did not affect the extraction yield. In addition, polarity of solvents played important role in extraction yield. It is also shown that *Vernonia Cinerea* extract contains several of important bioactive compounds such as flavonoids, susquirterpene, saponins, lupeol, tannis, polyphenols, terpenoids, steroids and alkalanoids that are widely used in pharmaceutical industries.