

**OPTIMIZATION OF SUPERCRITICAL FLUID
EXTRACTION OF *MARIPOSA CHRISTIA*
VESPERTILLONIS LEAVES TO PRODUCE
ANTIOXIDANT COMPONENTS USING RESPONSE
SURFACE METHODOLOGY**

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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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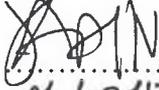
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SUPERVISOR'S CERTIFICATION

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

Mariposa Christia Vespertillonis (MCV) leaves or known as butterfly wing leaves are popular for traditional medicine treatment. The objective of this experiment is to optimize the antioxidant activity from MCV leaves extract using Supercritical Fluid Extraction (SFE) based on different temperature, pressure and particle size by apply Respond Surface Methodology (RSM). Besides that, it is also to evaluate the optimal condition of different extracting antioxidant activity from MCV leaves using design expert software 10. The condition range for both pressure and temperature are between 150- 350 bar and 30-70 °C with constant extraction time. The size of particles sample was between 60µm- 1 mm. Based on previous study, example of conventional methods of extraction are less effective compared to the latest which is favorable in industries because the extract obtained by SFE is higher in quality compared to conventional organic solvent extraction. The antioxidant is analyzed using UV-vis Spectrophotometer (UV-vis). Based on the calculated moisture content, the lowest and highest MC were 5.72% and 9.67%, respectively. The lowest antioxidant activity was 8.20% and higher antioxidant activity was obtained was 49.76%. Lower absorbance indicates higher free radical scavenging activities. Maximum percentage (%) indicated high scavenging activities, thus higher DPPH is good indication for antioxidant. The antioxidant activity was high with higher free radical scavenging abilities. The experimental optimal condition of antioxidant activity was 49.99 % and 50.30 % and predicted antioxidant was 50.29%. The optimization condition temperature was at 50°C, pressure at 282 bar and particle size at 500µm.