ANTIMICROBIAL ACTIVITY OF BIOSYNTHESIS SILVER NANOPARTICLES FROM *CHRISTIA VESPERTILIONIS* PLANT EXTRACT

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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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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

Christia Vespertilionis plant has gained a lot of attention among traditional practitioners and researchers as an alternative to be used as anti-cancer agent as an alternative for modern medicinal. Biosynthesis of silver nanoparticles (AgNPs) from this plant is important to study its potential that will play a major role in the development of nano technology. The study of its antimicrobial activity shall enhance the development of pharmaceutical and medicinal fields as an alternative of modern drugs. The objective of this study is to characterize physical and chemical properties of silver nanoparticles biosynthesized from *Christia Vespertilionis* plant extracted using supercritical fluid extraction (SFE) and hot extraction method. Besides that, this study also aims to determine antimicrobial activity of AgNPs from *Christia Vespertilionis* plant extract. Method used for this study is the synthesis of AgNPs from *Christia Vespertilionis* plant extract based on two methods which are SFE and hot extraction method. Results obtained from the study shows that there are physical changes on the solution colour that indicates the formation of AgNPs which is from brownish yellow to dark brown for hot extraction method and from pale green to golden yellow for SFE method. Uv-Vis analysis confirmed that the increment of the absorption spectrum is because of the reaction in the solutions that lead to the formation of AgNPs which is caused by the existence of amide C=O stretch and amine N-H stretch in protein of the plant extract. Morphological study using TEM determined that the size, concentration and distribution of particles from both extraction method are dissimilar. Study of antimicrobial activity also concludes that AgNPs from both method has the antibacterial characteristics. For the conclusion, AgNPs are possible to be synthesized from *Christia Vespertilionis* plant extract that has been extracted using both method of SFE and hot extraction. Thus, this study has the potential implementation for modern medicinal and in nanotechnology development.