

**SYNTHESIS, CHARACTERIZATION,  
TOXICITY OF SILVER NANOPARTICLES  
REDUCED BY ETHANOL EXTRACT OF  
BEIJING GRASS**

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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, unless otherwise indicated or acknowledge 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

Recently, with arising concern in regards with some drawbacks from chemical and physical methods to synthesize silver nanoparticles (AgNPs), plant mediated silver nanoparticles (AgNPs) have garnered such a considerable attention from many researchers due to its beneficial approach that are environmental in nature as well as the attractiveness of its cost-cutting approach in which the established method from chemical and physical are pale in comparison to biological approach. In this present study, the ethanol extract of Beijing Grass will acts as bio-reducing agent for the synthesis of AgNPs where the setting parameter such as concentration and volume ratio in this research to find the optimized parameter for Bg-AgNPs. The optimized parameter are set up from 0.5 mM to 5.0 mM with volume ratio  $\text{AgNO}_3$  /Beijing Grass from 9: 1 and 5: 5. The as-synthesized AgNPs are the characterized using UV-Vis Spectroscopy in the range of 400 nm - 800 nm. The results showed a successful synthesized via biological approach utilizing the parameter mentioned, where basing on the UV-Vis absorption spectra, a distinguishable peak at 469 nm at optimized concentration of 2 mM silver ion ( $\text{Ag}^+$ ) and at volume ratio 9: 1 are observed. Next, a schematic review highlighting on *in-vitro* cytotoxicity effect of aquatic species are done as the rapid proliferation of AgNPs aligned to exponential growth on increasing demand of AgNPs in many sector arised concern from many people. Referring to SCOPUS database, there still not enough documented paper to get a tangible conclusion on the idea of AgNPs toxicity risk and mechanism underlying it.