

**SYNTHESIS OF THE SILVER NANOPARTICLES USING *MORINDA
CITRIFOLIA* ROOTS FROM WARM WATER EXTRACTS AND
THEIR DEGRADATION OF METHYLENE BLUE**

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ABSTRACT

SYNTHESIS OF THE SILVER NANOPARTICLES USING *MORINDA CITRIFOLIA* ROOTS FROM WATER EXTRACTS AND THEIR DEGRADATION OF METHYLENE BLUE

The plant extract-based green chemistry process has recently emerged as one of the active areas of current nanobiotechnological research in view of its simplicity, low cost involvement, higher potential reduction, zero contamination and reduced or lower environmental impact. The objectives of this study are to extract *M. citrifolia* roots using water based and the synthesized of AgNPs was used for methylene blue (MB) degradation. In this study, the *M.citrifolia* extract was prepared in constant temperature at 60 °C. The root extract was added into AgNO₃ solution and the formation of AgNPs was achieved when the yellow change to brown colour. For optimization, parameters that were involved are MCWW concentration, AgNO₃ concentration, reaction time, initial pH and temperature. The optimum condition was achieved at 5 mL of MCWW concentration, 1.0 mM of AgNO₃ concentration, 90 min for reaction time, pH 8.6 and temperature at 85 °C. This synthesized of AgNPs was further characterized by using UV-vis spectrophotometer and FTIR. The photocatalytic activity of the synthesized silver nanoparticles was investigated by methylene blue degradation under sunlight. The obtained nanoparticles were characterized by using UV-vis spectrophotometer with an absorbance peak at 434 nm reveal the formation of AgNPs. The MB spectrum was observed at 660 nm and was degraded to 96.88 % in 240 min under sunlight.