

## ABSTRACT

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### **SYNTHESIS OF ZINC OXIDE NANOPARTICLES USING PERICARPS AND SEEDS OF MANGOSTEEN AND EVALUATION OF ITS CHARACTERISTICS AND FREE RADICAL SCAVENGING ACTIVITY**

(xiv + 55 pages: 29 figures, 4 tables, 11 appendices)

*The biosynthesis of nanoparticles from plants is one of the current and emerging research in food technology. Mangosteen (Garcinia mangostana L.) has been found to contain various secondary metabolites such as prenylated and oxygenated xanthenes. The aim of this research was to synthesize nanoparticles from mangosteen pericarps and seeds using different types of pure polar solvent; methanol, ethanol and acetone. The extracts were analyzed for the extraction yield, amount of dry matter, total phenolic and flavonoid content, and the free radical scavenging activity to assess the effect of solvent. The extracts were then used for the synthesis of zinc oxide nanoparticles (ZnO-NPs), and then further analyzed for the amount and free radical scavenging activity. Results show that ZnO-NPs synthesized from mangosteen pericarps extracted by methanol had the highest yield of ZnO-NPs (103.8016%g±0.1595) and free radical scavenging activity of 41876.77µg/mL±401.32 with size of 22.32 nm. There was no significant difference after calcination since the free radical scavenging activity decreased as temperature increases. However, the best temperature was 100°C since it produced the highest free radical scavenging activity (71054.96µg/mL±3.09), compared to 300°C and 500°C, with size of 29.82 nm.*

Keywords: Mangosteen, pericarps, seeds, free radical scavenging activity, zinc oxide nanoparticles

References: 35 (1996-2016)