

UNIVERSITI TEKNOLOGI MARA

***IN VITRO AND IN VIVO* ANTIOXIDANT STUDIES
OF CURCUMINOIDS EXTRACT AND
FRACTIONS**

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ABSTRACT

Curcuminoids was extracted from local *Curcuma longa* (turmeric). Three fractions of the curcuminoids extract (CE) were separated and isolated by column chromatography as Cur I, Cur II and Cur III. The three fractions were identified by thin layer chromatography and characterized by UV-Vis and FTIR spectroscopy. The *in vitro* antioxidant activities of Cur I, Cur II Cur III and CE were evaluated by 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging method, reducing activity assay and linoleic acid-thiocyanate method. Cur I demonstrated the highest DPPH radical scavenging activity (95.4% at 80µg/ml) and the highest lipid peroxidation (91.3% at 80 µg/ml on day 4 incubation) and the lowest IC₅₀ for DPPH radical scavenging activity among the three curcuminoids fractions. These studies also showed that Cur I and CE exhibited stronger radical scavenging activity compared with α-tocopherol. The reducing power of CE and Cur I were also higher than Cur II and Cur III. In the *in vivo* study, the curcuminoids diet had shown an effect on the body weight of rats for a feeding period of about 16 days. It is likely that the curcuminoids diet has improved the appetite of rats. Overall results of MDA showed that the concentration of lipid peroxides were found to be the lowest in all tissues for the high dose of CE (500 mg/kg bw) treated rats as compared to those low dose of CE (50 mg/kg bw) treated and control rats. High dose CE treated groups showed significantly greatest reduction in lipid peroxides (MDA) level, especially in liver and kidney. For the low dose group (50 mg/kg), there is no significant difference in lipid peroxides concentrations in all tissues studied compared to the control group. Histopathological examination of most of the tissues showed degeneration injury of tissues when fed with 50 mg/kg and 500 mg/kg of dietary of CE but brain tissues did not show any change physically.

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