

## ABSTRACT

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### **PHYSICAL PROPERTIES, ANTIOXIDANT ACTIVITY, AND STABILITY OF CURCUMINOIDS TURMERIC (*CURCUMA LONGA* L.) EXTRACT EMULSION AND LOW ENERGY NANOEMULSION**

(xiv + 117 pages: 17 figures, 11 tables, and 12 appendices)

*The turmeric (Curcuma longa L.) extract has been researched to have bioactive compounds called curcuminoids that has beneficial effects, such as antioxidant activity. This research was aimed to compare the physical properties, antioxidant activity, and stability of emulsion and low energy nanoemulsion of curcuminoids from turmeric extract. Turmeric was extracted using maceration method with ethanol. The extract was identified as curcuminoids by spectrophotometry and thin layer chromatography. The curcuminoids extract was applied in emulsion with different HLB value of 9, 11, 13, and 15 and different ratio of oil to surfactant of 1:2, 1:4, and 1:6. Physical properties (viscosity and turbidity), antioxidant activity, and stability of emulsion were observed. Emulsion with HLB 15 and ratio of 1:6 has highest antioxidant activity, lowest turbidity, and highest stability. This formulation was considered as the best formulation and was continued analyzed into nanoemulsion. Emulsion and low energy nanoemulsion was made using the best formulation. Comparison of physical properties (viscosity, turbidity, particle size, and solubility), antioxidant activity, and stability were observed. Low energy nanoemulsion has higher stability, lower turbidity, particle size, viscosity, and higher solubility, but lower antioxidant activity compare to emulsion.*

**Keywords:** Antioxidant activity, curcuminoids, low energy, nanoemulsion, O/W emulsion, physical properties, turmeric

**References:** 79 (2001-2016).