

Formulation, Characterization, and Sunscreen Potential Evaluation of Nutmeg Leaf Essential Oil Nanoemulsions (*Myristica fragrans* Houtt.)

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Abstract	Nutmeg leaf essential oil (<i>Myristica Fragrans</i> Houtt.) is one of the natural ingredients which have antioxidant activity and potential as a sunscreen. The research aims to formulate nutmeg leaf essential oil nanoemulsion, characterize, and determine its potency as a sunscreen. Nutmeg leaf essential oil nanoemulsion was formulated with 1; 3; and 5 mL of oil content with two variations of surfactant. The characterization included organoleptic, pH, viscosity, %T, nanoemulsion type, droplet size, thermodynamic and centrifugation stability tests. Evaluation was conducted using UV-Vis spectrophotometer at a wavelength range of 290-400 nm with ethanol as a blank and non-nano-emulsified as a comparison. The result showed that the nutmeg leaf essential oil nanoemulsion had clear and stable appearance, safe for skin, viscosity values of <200 mPas, %T values of near 100%, nanoemulsions type of o/w, and particles size of <200 nm. The evaluation showed that the sunscreen activities of nutmeg leaf oil nanoemulsion was higher than non-nano-emulsified. The highest sunscreen activity was the formula A nanoemulsion which an oil content of 5 mL and had an SPF value of 1.475; %Te value of 50.571%; and %Tp value of 77.218%. The nanoemulsion sunscreen activity of formula A was categorized as a regular suntan
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Author	Dr. UNDRI RASTUTI, S.Si, M.Si