

**DEVELOPMENT OF SUNSCREEN MICROEMULSION LOTION
OF *KAEMPFERIA GALANGA* L OIL USING BRIJ-30 AND ISOPROPANOL**

Teti Indrawati¹⁾, Anny Victor Purba²⁾, Setianti Haryani³⁾

¹⁾ University of Pancasila, Institut Of Sains and Teknologi Nasional, ²⁾ University of
Pancasila, ³⁾ University of Pancasila

ABSTRACT

Sunscreen of *Kaempferia galanga* oil in emulsion and cream forms are unstable. Microemulsion as sunscreen lotion is clear, more stable, and can be prepared easier than ordinary emulsion. The sunscreen microemulsion lotion containing galanga oil has been developed using 30-45% brij-30 as surfactant and 14% isopropanol as cosurfactant. In this research, microemulsion was made in 3 formulas with variety of concentrations (7-21%) galanga oil as active ingredient. Microemulsion was prepared by the spontaneous emulsification method (titration method). Further, the physical and chemical properties of sunscreen microemulsion lotion and stability test were determined. The result showed that galanga oil with concentration 7%, 14% and 21% could be prepared as w/o microemulsion using 30-45% brij-30 as surfactant and 14% isopropanol as cosurfactant and they were having good physical and chemical properties. The microemulsion lotion showed good appearance with yellow-orange color, transparent or translucent with pH in the range of 5.20-5.55, specific gravity in range 0.9371-0.9385 g/ml, viscosity in range 15.4859-17.2140 cps and interface tension in range 11.3737-12.8726 dyne/cm and particle size in the range 608.7-2453.9 nm. Para methoxy cinnamat etil ester (EPMS) in microemulsion lotion containing 7% w/v of galangal oil was identified 1.50%. Increase of galanga oil in microemulsion lotion was found improving SPF from 1.64 to 4.82. The microemulsion lotion with 30-40% of surfactant and 14% cosurfactant was stable at room temperature for 2 years (stable at room temperature ($\pm 28^{\circ}\text{C}$) and at 40°C for 3 months). The microemulsion lotion was found to be transparent, and in formula I and II (microemulsion lotion containing 7% and 14% w/v of galanga oil) showed decreased size particle after storing for 3 months to be 35.3 - 28.4 nm.

Reproduced with permission of copyright
owner. Further reproduction prohibited
without permission.