

## ABSTRACT

Curcuma extract contains curcumin compound that acts as a sunscreen. Curcumin is less soluble in water therefore it requires the combination of cosolvent and emulsifying agent to improve the solubility. The purpose of this study is to determine the effect of the variation of cetyl alcohol as emulsifying agent and propylene glycol as cosolvent to the characteristic and the physical stability of the o/w cream of curcuma extract.

The o/w cream of curcuma extract with the extract concentration amounted 0.06% are made 8 formulas using the variation of cetyl alcohol and propylene glycol concentration. The o/w creams of curcuma extract were conducted the organoleptic test, pH test, homogeneity test, viscosity test, spreadability test, and stickness test. The data were analyzed using the 9<sup>th</sup> version of Design Expert<sup>®</sup> software to get the optimum formula and the optimum formula were conducted the physical stability test of cyclic temperature stress testing for 6 cycles.

Cetyl alcohol dominant influence is to improve the viscosity and stickness response of the cream while propylene glycol dominant influence is to improve the spreadability response. The optimum formula of the cream obtained with the combination of 2.04% of cetyl alcohol, 6.96% of propylene glycol, and the SPF value of 9.83. The optimum formula of the cream stable in organoleptic, homogeneity, pH, viscosity, and stickness, but the spreadability of the cream was unstable during the 6 cycles storage.

Keywords : curcuma cream, cetyl alcohol, propylene glycol, characteristic and physical stability

## INTISARI

Ekstrak temulawak mengandung senyawa kurkumin yang berperan sebagai tabir surya. Kurkumin bersifat kurang larut dalam air sehingga membutuhkan kombinasi kosolven dan emulgator untuk meningkatkan kelarutannya. Tujuan dari penelitian ini yaitu untuk melihat pengaruh variasi setil alkohol sebagai emulgator dan propilen glikol sebagai kosolven terhadap sifat dan stabilitas fisik krim *o/w* ekstrak temulawak.

Sediaan krim *o/w* ekstrak temulawak dengan kadar ekstrak sebesar 0,06% dibuat 8 formula menggunakan variasi kadar setil alkohol dan propilen glikol. Krim *o/w* ekstrak temulawak dilakukan uji organoleptis, uji pH, uji homogenitas, uji viskositas, uji daya sebar, dan uji daya lekat. Data yang diperoleh dianalisis dengan *software Design Expert*<sup>®</sup> versi 9 untuk mendapatkan formula optimum dan dilakukan uji stabilitas fisik *cyclic temperature stress testing* terhadap formula optimum sebanyak 6 siklus.

Setil alkohol memberi pengaruh dominan dalam meningkatkan respon viskositas dan daya lekat krim sedangkan propilen glikol memberi pengaruh dominan dalam meningkatkan respon daya sebar krim. Formula optimum krim yang diperoleh yaitu dengan kadar setil alkohol 2,04%, propilen glikol 6,96%, dan nilai SPF 9,83. Formula optimum krim stabil secara organoleptis, homogenitas, pH, viskositas, dan daya lekat namun daya sebar krim tidak stabil selama penyimpanan 6 siklus.

Kata kunci : krim temulawak, setil alkohol, propilen glikol, sifat dan stabilitas fisik