

## FORMULA KRIM DAN *LOTION* TABIR SURYA DARI HASIL PARTISI DAUN MAHKOTA DEWA {*Phaleria macrocarpa* (Scheff) Boerl}

### INTISARI

Paparan sinar matahari berlebihan dapat menimbulkan efek buruk pada kulit manusia. Dampak buruk sinar matahari dapat dikurangi dengan pemakaian tabir surya. Mahkota dewa {*Phaleria macrocarpa* (Scheff) Boerl} mengandung phalerin dan memiliki aktivitas sebagai tabir surya. Tujuan penelitian ini adalah untuk mengetahui stabilitas fisik *lotion* dan krim hasil optimasi, SPF dan keamanannya secara *in vivo*.

*Lotion* dan krim o/w serta w/o dibuat sediaan untuk penentuan formula optimum yang diperoleh berdasarkan sifat fisik berupa viskositas, daya lekat dan daya sebar dengan metode *Simplex Lattice Design* (LSD) menggunakan *software Design Expert®*. Variasi bahan untuk *lotion* o/w adalah setil alkohol, asam stearat, dan trietanolamin sedangkan *lotion* w/o adalah cera alba, span 80 dan setil alkohol; Formula krim o/w digunakan variasi bahan setil alkohol, minyak mineral dan tween 80, sedangkan krim w/o dengan variasi bahan cera alba, span dan minyak mineral. Berdasarkan hasil optimasi diperoleh formula optimum *lotion* o/w adalah setil alkohol sebesar 2,0%; asam stearat sebesar 6,0%; dan trietanolamin sebesar 2,0%, sedangkan *lotion* w/o adalah cera alba sebesar 12,4%; span 80 sebesar 7,6%; dan setil alkohol sebesar 2,0%. Formula optimum untuk krim o/w adalah setil alkohol 10,0%; minyak mineral 28,5% dan tween 80 sebesar 3,5%. Krim w/o adalah cera alba 17,4%, span 80 6,6% dan minyak mineral 48%. *Lotion* dan krim yang optimum dilakukan uji stabilitas fisik, harga SPF dan uji iritasi primer secara *in vivo*.

Hasil penelitian menunjukkan bahwa hasil uji-t antara respon sifat fisik hasil percobaan dengan prediksi *software* berbeda tidak signifikan, sedangkan viskositas, daya sebar, daya lekat, rasio volume pemisahan *lotion* o/w dan w/o relatif stabil selama penyimpanan, sedangkan *lotion* w/o pada minggu VI kurang stabil dalam penyimpanan suhu ekstrim. Krim o/w dan w/o relatif stabil pada suhu ekstrim. *Lotion* o/w dari hasil partisi, phalerin dan benzofenon memiliki harga SPF sebesar berturut turut 22,13; 32,49 dan 42,45, Sedangkan untuk *lotion* w/o memiliki SPF berturut turut 21,59, 31,95 dan 41, 87. Krim o/w memiliki SPF berturut turut adalah 21,32, 33,12 dan 42,49. Krim w/o memiliki SPF berturut turut 21,04; 32,74 dan 42,40. Sediaan secara kualitatif tidak mengiritasi pada kulit secara *in vivo*.

**Kata kunci :** *Lotion*, krim, stabilitas, *sunscreen*, mahkota dewa.

## FORMULATION OF SUN SCREEN CREAM AND LOTION FROM PARTISION OF MAHKOTA DEWA LEAF {*Phaleria macrocarpa* (Scheff) Boerl}

### ABSTRACT

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Excessive sun exposure can cause adverse effects on human skin . The adverse effects of sunlight can be reduced with the use of sunscreen . Mahkota dewa{ *Phaleria macrocarpa* ( Scheff ) Boerl } contains phalerin and has activity as a sunscreen . This study was aimed to explore the physical stability of optimized formulation of lotion and cream, their SPF values and safety using in vivo test method.

In this study, formulations of lotion and cream o/w and w/o were prepared and tested for their physical characteristics. The physical characteristics were then used to determine the optimum formula. The optimum formula of o/w and w/o lotion and cream were prepared based on *Simplex Lattice Design* (LSD) method using *software Design Expert®*. The formulation of o/w lotion were varied based on the proportion of cetyl alcohol, stearic acid, and trietanolamin; while formulation of w/o lotion were varied based on te proportion of cera alba, span, and cetyl alcohol. The formulation of o/w cream were varied based on the proportion of cetyl alcohol, mineral oil and tween 80; while formulation of w/o cream were varied based on te proportion of cera alba, span, and mineral oil.

The results that the optimum formula of o/w lotion was the formula which consisted of cetyl alcohol 2.0%, stearic acid 6.0%, and trietanolamin 2.0%; while the optimum formula of w/o lotion was the formula which consisted of cera alba 12.4%, span 80 7.6%, and cetyl alcohol 2.0%. The optimum formula of o/w cream was the formula which consisteds of cetyl alcohol 10.0%, mineral oil, 28.5%, and tween 80 3.5%; while the optimum formula of w/o cream was the formula which consisteds of cera alba 17.4%, span 80 6.6%, and mineral oil 48.0%. Based on t-test, there was no significant difference of physical characteristics of optimum and predicted formulation. Viscosity, Spr ead power, Adhesive power, and separation volume ratio of o/w at week 0-4 were relatively stable, while all lotions were less stable at week 4<sup>th</sup> in extreme temperature. The o/w and w/o creams were relatively stable in extreme temperature. The o/w and w/o lotions from partition compounds, phalerine, benzophenone had SPF values of 22.13, 32.49, and 42.45, respectively. Meanwhile, the w/o lotions had have SPF values of 21.59, 31.95, and 41.87, respectively. The o/w creams had SPF values of 21.32, 33.12, and 42.49, respectively. Meanwhile, the w/o creams had SPF values of 21.04, 32.74, and 42.40, respectively. The formulas did not irritate the skin based on in vivo test.

**Key words:** Lotion, cream, stability, sunscreen, *mahkota dewa*.