



## INTISARI

Paparan sinar matahari berlebihan tidak mampu ditahan sistem perlindungan alamiah. Senyawa kalkon ( $C_{15}H_{12}O$ ) merupakan kelompok flavonoid yang mampu menyerap sinar ultraviolet B (UV B) sehingga mengurangi intensitasnya pada kulit. Penelitian ini bertujuan untuk memperoleh formula optimum krim minyak dalam air (M/A) serta mengkaji stabilitas fisik dan aktivitas dari formula optimum sebagai tabir surya secara *in vitro*.

Variasi konsentrasi karbopol, tween 80, dan setil alkohol dalam formula krim dioptimasi dengan *software Design Expert*® metode *Simplex Lattice Design*. Tiga belas formula hasil rekomendasi dibuat sediaan krim M/A dan dievaluasi agar diperoleh formula optimum. Formula optimum diuji stabilitas dan aktivitasnya. Aktivitas krim ditentukan secara *in vitro* menggunakan metode spektrofotometri untuk mengetahui nilai *Sun Protection Factor* (SPF). Data dianalisis menggunakan *software* SPSS.

Hasil penelitian menunjukkan konsentrasi karbopol 0,35%, tween 80 1,14%, dan setil alkohol 3,4% dapat menghasilkan formula optimum krim M/A senyawa kalkon sebagai tabir surya yang stabil selama penyimpanan 4 minggu pada suhu ruang. Aktivitas krim M/A konsentrasi 2,5 % yang mengandung senyawa kalkon 0,0125 % memiliki aktivitas tabir surya secara *in vitro* yang ditunjukkan dengan nilai SPF sebesar 36,43.

**KATA KUNCI** : formula, krim M/A, kalkon, tabir surya, *in vitro*



## **ABSTRACT**

*Excessive sunlight exposure cannot be retained by natural protection systems. Chalcone compound (C<sub>15</sub>H<sub>12</sub>O) is a group of flavonoids that can absorb ultraviolet B (UV B) light, thus reducing the intensity on the skin. This research aimed is to obtain optimum formula of oil in water (O/W) cream and to study the physical stability and the activity of optimum formula as sunscreen by in vitro.*

*Variations of carbopol, tween 80, and cetyl alcohol concentrations in cream formulas are optimized with Design Expert® software Simplex Lattice Design method. Thirteen recommended formulas were made in O/W creams preparation and evaluated to obtain the optimum formula. The optimum formula is tested for stability and activity. The cream activity was determined by in vitro using spectrophotometric method to determine the value of Sun Protection Factor (SPF). Data were analyzed using SPSS software.*

*The results showed that carbopol concentration 0,35%, tween 80 concentration 1,14%, and cetyl alcohol concentration 3,4% can produce the optimum formula of chalcone compound O/W cream as a stable sunscreen during 4 weeks storage at room temperature. The concentration of 2,5% O/W cream which contains 0,0125% compound chalcone has sunscreen activity by in vitro that indicated by SPF value of 36,43.*

**KEYWORD** : formula, O/W cream, chalcone, sunscreen, in vitro