

INTISARI

Skincare telah menjadi bagian penting dari rutinitas perawatan diri oleh wanita dan pria. Inovasi terus dilakukan untuk memenuhi permintaan pasar. Tujuan dari penelitian ini adalah mengevaluasi pengaruh komposisi *emulsifying agent* tween 80 dan span 80 terhadap sifat fisik dan stabilitas emulgel kombinasi minyak biji anggur dan gel lidah buaya serta menentukan komposisi formula optimum.

Optimasi dilakukan dengan metode *Simplex Lattice Design* (SLD). Sebanyak 8 formula emulgel diuji sifat fisiknya serta dilakukan analisis *One sample t-test*. Uji stabilitas fisik selama penyimpanan suhu ruang dan *cycling test* dilakukan analisis menggunakan *one-way ANOVA* pada taraf kepercayaan 95%. Formula optimum tersebut kemudian akan diujikan aktivitas antioksidannya menggunakan metode DPPH.

Hasil penelitian menunjukkan bahwa formula optimum yang diperoleh memiliki komposisi span 80 0,299% dan tween 80 5,701% yang menghasilkan respon sifat fisik dengan pH $5,15 \pm 0,017$; viskositas $220,46 \pm 4,025$ dPa·s; dan daya lekat $7,97 \pm 0,343$ detik. Dari pengujian aktivitas antioksidan menggunakan metode DPPH diketahui formula optimum emulgel memiliki kekuatan aktivitas antioksidan sedang dengan nilai IC₅₀ 101,58 ppm. Hasil penelitian dapat disimpulkan bahwa respon sifat fisik formula optimum emulgel adalah stabil selama percobaan, pH tidak stabil namun masih memenuhi rentang yang dipersyaratkan dan memiliki kekuatan aktivitas antioksidan sedang.

Kata kunci: optimasi, span, tween, biji anggur, lidah buaya

ABSTRACT

Skincare has become an essential part of the self-care routine by both women and men. Innovation continues to be carried out to meet market demand. The purpose of this study is to evaluate the effect of the composition of the emulsifying agent tween 80 and span 80 on the physical properties and stability of the emulsifying agent combination of grape seed oil and aloe vera gel and determine the optimal formula composition.

Optimization is carried out using the Simplex Lattice Design (SLD) method. A total of 8 emulgel formulas were tested for their physical properties and analyzed by one sample t-test. Physical stability tests during room temperature storage and cycling tests were analyzed using one-way ANOVA at a confidence level of 95%. The optimum formula will then be tested for antioxidant activity using the DPPH method.

The results showed that the optimum formula obtained had a composition of span 80 0,299% and tween 80 5,701% which resulted in a physical property response with a pH of $5,15 \pm 0,017$; viscosity $220,46 \pm 4,025$ dPa·s; and adhesion of $7,97 \pm 0,343$ seconds. From the antioxidant activity test using the DPPH method, it is known that the optimum emulgel formula has moderate antioxidant activity with an IC₅₀ value of 101,58 ppm. The results of the study can be concluded that the response of the physical properties of the optimal emulgel formula is stable during the experiment, the pH is unstable but still meets the required range and has moderate antioxidant activity.

Keywords: optimization, span, tween, grapeseed, aloe vera