

INTISARI

Salah satu bahan alam yang digunakan sebagai zak aktif dalam tabir surya ialah *Aloe vera*. Penelitian sebelumnya menyatakan bahwa Aloin dari ekstrak *Aloe vera* memiliki absorbansi maksimal pada panjang gelombang 297 nm dengan absorbansi maksimum ekstrak pada panjang gelombang sekitar 294 nm, sehingga dapat digunakan sebagai peredam sinar UV. Hal tersebut menjadi dasar dilakukannya penelitian ini. Penelitian ini bertujuan untuk mengoptimasi formula *lotion* ekstrak *Aloe vera*, uji aktivitas tabir surya secara *in vitro* dengan spektrofotometri UV/Vis dan mengetahui stabilitas fisiknya.

Penetapan formula optimum sediaan *lotion* ekstrak *Aloe vera* menggunakan data uji sifat fisik sediaan dan perbandingan variasi formula *lotion* menggunakan metode *simplex lattice design* menggunakan *software Design Expert*[®] versi 10.0.1. Optimasi dengan modifikasi komposisi TEA-asam stearat 1,5-3% dan setil alkohol 0,5-2% pada sediaan. Uji stabilitas fisik *lotion* dilakukan dengan uji dipercepat dan penyimpanan selama 4 minggu. Data dianalisis menggunakan *one sample t-tets* dan *one-way ANOVA* dengan taraf kepercayaan 95%.

Hasil penelitian kombinasi setil alkohol 1,16% dan TEA-asam stearat 2,34% menunjukkan formula yang optimum dengan sifat fisik berupa organoleptis, pH, daya sebar, daya lekat, viskositas, dan tipe emulsi yang stabil. Formula optimum *lotion* ekstrak *Aloe vera* yang dihasilkan memiliki perlindungan sedang dengan nilai *SPF* $23,86 \pm 1,62$.

Kata kunci : *lotion*, optimasi, *Aloe vera*, tabir surya

ABSTRACT

One of the natural ingredients used as an active substance in sunscreen is Aloe vera. The previous research showed that Aloin in Aloe vera extract has a maximum absorbance in the wavelength of 297 nm, while the maximum absorbance of the extract is in the wavelength of 294 nm. Therefore, it can be used as a UV light reducer. The finding served as the starting point of this research. This research aimed to optimize the formula of Aloe vera extract lotion by conducting an in vitro test on sunscreen activity using UV/Vis spectrophotometer. Further, the sunscreen's physical stability was tested as well.

The optimum formula for Aloe vera lotion preparation was determined through the data of preparation's physical characteristic test and the proportion of the lotion formula variations resulted from the simplex lattice design method using the Software Design Expert® version 10.0.1. To optimize the formula, composition of TEA-stearic acid 1,5-3% and cetyl alcohol 0,5-2% in the preparation was modified. An accelerated test and 4-week storage test was also carried out to evaluate the lotion's physical stability. To analyze data, researcher employed the one sample t-test and one-way ANOVA which has a 95% of confidence level.

The research result indicates that the most optimum formula is produced by cetyl alcohol 1,16% and TEA-stearic acid 2,34% composition. It has stable physical characteristics are organoleptic, pH, spreadability, sticky power, viscosity, and emulsion type. The produced Aloe vera extract lotion in its optimum formula can give a medium protection level. It has an SPF of $23,86 \pm 1,62$.

Keywords: lotion, optimization, Aloe vera, sunscreen