

INTISARI

Biji anggur (*Vitis vinifera* L.) yang merupakan limbah produksi anggur memiliki banyak manfaat. Minyak biji anggur mengandung antioksidan yang dapat berperan sebagai pelembab, tabir surya, *anti-aging*, dan anti jerawat sehingga berpotensi besar untuk dikembangkan di dalam bidang *skincare*. Minyak ini dapat diformulasikan menjadi gel yang penggunaannya mudah dan disukai masyarakat. Na-CMC dan karbopol merupakan *gelling agent* yang sering digunakan dalam formulasi gel karena aman dan kompatibel dengan berbagai bahan. Keduanya dikombinasikan untuk menutupi kekurangan masing-masing. Penelitian ini bertujuan untuk mengevaluasi pengaruh kombinasi Na-CMC dan karbopol terhadap sifat fisik dan stabilitas sediaan gel minyak biji anggur, serta menentukan formula optimumnya.

Penelitian dilakukan dengan mengoptimasi kadar Na-CMC (2-2,5%) dan karbopol (0,5-1%) menggunakan *software Design Expert* dengan metode *Simplex Lattice Design*. Delapan *run* formula yang dihasilkan dibuat menjadi sediaan gel dan diuji sifat fisiknya untuk menentukan formula optimum. Formula optimum yang didapat diverifikasi menggunakan analisis statistik *one sample t-test* dan diuji stabilitas fisiknya menggunakan metode *freeze-thaw* selama 3 siklus. Data uji stabilitas dianalisis menggunakan *one-way ANOVA* dengan taraf kepercayaan 95%.

Formula optimum yang diperoleh memiliki konsentrasi Na-CMC 2,220% dan karbopol 0,780%, dengan pH 6,246, daya sebar 12,96 cm², daya lekat 6,33 detik, serta viskositas 166,00 dPa.s. Tidak terdapat perbedaan signifikan antara prediksi *software* dengan hasil penelitian. Formula optimum gel memiliki sifat fisik yang baik dan stabil selama penyimpanan 3 siklus.

Kata Kunci: anggur, Na-CMC, Karbopol, gel, SLD

ABSTRACT

*Grape seeds (*Vitis vinifera* L.), which are a waste of wine production, have many benefits. Grapeseed oil contains antioxidants that can act as moisturizers, sunscreens, anti-aging, and anti-acne. Therefore, it has great potential to be developed in the skincare field. This oil can be formulated into a gel which is easy to use and loved by the public. Na-CMC and carbopol are gelling agents that are often used in gel formulations due to its safety and compatibility with various materials. Both are combined to cover each other's weaknesses. This study aims to evaluate the effect of Na-CMC and carbopol combination on the physical properties and stability of grapeseed oil gel preparations, and to determine the optimum formula.*

The research was conducted by optimizing the concentration of Na-CMC (2-2.5%) and carbopol (0.5-1%) using Design Expert software and Simplex Lattice Design method. Eight runs of the resulting formula were made into gel preparations and tested for their physical properties to determine the optimum formula. The optimum formula obtained was verified using one sample t-test statistical analysis and its physical stability was tested using freeze-thaw method for 3 cycles. The stability test data were analyzed using one-way ANOVA with a 95% confidence level.

The optimum formula obtained had a concentration of 2.220% Na-CMC and 0.780% carbopol, with a pH of 6.246, a spreadability of 12.96 cm², an adhesion of 6.33 seconds, and a viscosity of 166.00 dPa.s. There is no significant difference between software predictions and research results. The optimum gel formula has good physical properties and is stable during 3 storage cycles.

Keywords: *grape, Na-CMC, Carbopol, gel, SLD*