

INTISARI

Asam glikolat berfungsi sebagai *peeling agent* (zat pengelupas). Sediaan gel memberikan efek dingin, penguapan air yang lambat dan mudah dicuci ketika diaplikasikan pada permukaan kulit. HPMC sebagai *gelling agent* menghasilkan gel yang jernih, stabil selama masa penyimpanan dan pada rentang pH 3-11. Propilen glikol sebagai humektan dapat menghasilkan gel dengan daya sebar yang tinggi. Penelitian ini bertujuan untuk mengetahui formula optimum gel asam glikolat dengan kombinasi HPMC dan propilen glikol dan melihat pengaruhnya terhadap sifat fisik dan stabilitas fisik gel.

Delapan formula kombinasi HPMC dan propilen glikol dari *software Design Expert version 7.1.5* diuji sifat fisiknya berupa daya sebar, daya lekat, dan viskositas, kemudian dianalisis dengan metode *Simplex Lattice Design* untuk memperoleh formula optimum. Verifikasi formula optimum dianalisis menggunakan *one sample t-test* dengan taraf kepercayaan 95%. Formula optimum gel asam glikolat selanjutnya diuji stabilitas fisiknya selama 4 minggu. Hasil uji dianalisis secara statistik menggunakan *one-way ANOVA* dan *Kruskal-Wallis* dengan taraf kepercayaan 95%.

Semakin tinggi kadar HPMC, daya lekat dan viskositas meningkat, sedangkan daya sebar menurun, berkebalikan dengan pengaruh kenaikan kadar propilen glikol. Formula optimum gel asam glikolat yang diperoleh mengandung HPMC sebanyak 2,00% dan propilen glikol sebanyak 17,00%. Formula optimum gel asam glikolat stabil secara organoleptis, homogenitas, pH, viskositas, daya sebar dan daya lekat selama 4 minggu penyimpanan.

Kata kunci: Asam glikolat, gel, HPMC, propilen glikol

ABSTRACT

Glycolic acid plays a role as peeling agent. The gel formulation gives a cooling effect, slows down evaporation of water, and is easily washed down when applied to the skin surface. HPMC as a gelling agent, which produces crystal clear gel, is stable during storage and in the pH range of 3-11. Propylene glycol as a humectant can produce gel with a high spread ability. This study aims to determine the optimum formula of glycolic acid gel with a combination of HPMC and propylene glycol and sees its effect on the physical properties as well as on the physical stability of the gel.

Eight formulas of HPMC and propylene glycol combination from Design Expert software version 7.1.5 were tested for its physical properties, such as spread ability, adhesiveness, and viscosity; then they were analyzed by Simplex Lattice Design method for obtaining an optimum formula. The optimum formula was then analyzed using one sample t-test with 95% accuracy level for the verification process. The optimum formula of glycolic acid gel was further tested for its physical stability for 4 weeks. Test results were then being analyzed statistically using one-way ANOVA and Kruskal-Wallis with 95% accuracy level.

Higher level of HPMC experiences an increase in adhesiveness and viscosity while the spread ability decreases, in contrast to the influence of level rising in propylene glycol. The optimum formula of glycolic acid gel that is obtained containing 2.00% HPMC and 17.00% propylene glycol. Optimum formula of glycolic acid gel were stable on its organoleptic, homogeneity, pH, viscosity, adhesiveness and spread ability during 4 weeks of storage.

Key words: Glycolic acid, gel, HPMC, propylene glycol