ABSTRACT

Guava leaves (*Psidium guajava* L.) contain tannin and quercetin as sources of natural antioxidant. CMC-Na is a gelling agent which can produce cloudy gel with minimum spreadability. Meanwhile, carbomer is also a gelling agent which has better clarity and wider spreadability than CMC-Na. The combination between carbomer and CMC-Na as gelling agent in guava leaves extract gel is predicted to produce better physical properties and stability on the gel. The study aims to get the best formula of guava leaves extract gel by using combination of carbomer and CMC-Na as gelling agent as well as to observe its physical properties and stability.

Guava leaves were macerated with ethanol 70%. In addition, there were 8% of guava leaves extract on the gel (w/w). The variation of concentration comparisons of carbomer and CMC-Na were recommended by software Design Expert using Simplex Lattice Design method. Moreover, the recommended eight gel formulas which were made by software was formed as gel and the physical properties were evaluated to get the optimum formula. The optimum formula was verified by using one sample t-test with 95% confidence level and the physical stability was tested for 4 weeks at temperature of 27,8-29,7^{o} Celcius. Physical stability of the gel was analyzed by using one way ANOVA with 95% confidence level.

Optimum physical properties of gel were obtained from combination of carbomer and CMC-Na 2,00% and 3,00% (w/w). There were no significance between the results of tested physical properties and the predicted results yielded by sofware. The optimum gel formula has good clarity, good pH value, good spreadability, good retention time and good stability upon storage.

KEYWORDS : guava leaves extract, carbomer, CMC-Na, gel

INTISARI

Daun jambu biji (*Psidium guajava* L.) mengandung tanin dan kuersetin yang merupakan senyawa antioksidan alami. CMC-Na merupakan *gelling agent* yang sering digunakan namun dapat menghasilkan gel yang keruh dengan kemampuan penyebaran kecil. *Gelling agent* karbomer mampu menghasilkan gel dengan kejernihan yang baik dan kemampuan penyebaran lebih besar. Kombinasi karbomer dan CMC-Na sebagai *gelling agent* dalam formula gel ekstrak daun jambu biji diprediksi dapat memperbaiki sifat fisik dan stabilitas fisik gel. Penelitian ini bertujuan untuk menentukan formula terbaik gel ekstrak daun jambu biji menggunakan kombinasi karbomer dan CMC-Na sebagai *gelling agent* serta melihat pengaruhnya terhadap sifat fisik dan stabilitas fisik gel.

Daun jambu biji diekstraksi menggunakan metode maserasi dengan pelarut etanol 70%. Kadar ekstrak daun jambu biji yang digunakan sebesar 8% terhadap bobot gel. Variasi perbandingan konsentrasi karbomer dan CMC-Na dalam formula gel direkomendasikan oleh *software Design Expert* metode *Simplex Lattice Design*. Delapan formula hasil rekomendasi *software* kemudian dibuat sediaan gel dan dievaluasi sifat fisiknya untuk memperoleh formula optimum. Formula optimum diverifikasi dan diuji stabilitas fisiknya selama 4 minggu pada suhu 27,8-29,7^{o}C. Verifikasi formula optimum dilakukan menggunakan analisis statistik *one sample t-test* dengan taraf kepercayaan 95%. Stabilitas fisik gel dianalisis dengan uji *one way ANOVA* taraf kepercayaan 95%.

Gel dengan sifat fisik optimum didapat dengan kombinasi karbomer dan CMC-Na sebesar 2,00% dan 3,00% terhadap bobot gel. Tidak terdapat perbedaan yang bermakna antara hasil pengujian sifat fisik gel dengan hasil prediksi *software*. Gel formula optimum memiliki kejernihan, nilai pH, daya sebar, dan daya lekat yang baik serta stabil selama penyimpanan.

KATA KUNCI : Ekstrak daun jambu biji, karbomer, CMC-Na, gel