INTISARI

Heksagamavunon-5 (HGV-5) merupakan senyawa analog kurkumin yang memiliki aktivitas antioksidan sehingga dapat melindungi sel-sel kulit dari kerusakan akibat radikal bebas. Terdapat beberapa penelitian terdahulu mengenai pengembangan HGV-5 menjadi formulasi sediaan topikal. Akan tetapi, belum ada pengembangan HGV-5 dalam bentuk sediaan serum. Oleh karena itu, penelitian ini dilakukan untuk mengoptimasi kadar HPMC dan karbopol sebagai *gelling agent* sehingga menghasilkan sifat fisik dan stabilitas fisik yang optimum, serta mengetahui aktivitas antioksidan pada serum HGV-5 secara *in vitro*.

Optimasi *gelling agent* dan penentuan formula optimum basis serum dilakukan dengan metode *Simplex Lattice Design* pada *software Design Expert 13.0*. Setelah optimasi, uji stabilitas fisik dilakukan dengan metode *cycling test* selama tiga siklus. Aktivitas antioksidan senyawa HGV-5 dan serum HGV-5 juga diukur menggunakan metode DPPH. Data hasil penelitian tersebut dianalisis menggunakan *software IBM SPSS Statistic*.

Hasil penelitian menunjukkan senyawa HGV-5 dan serum HGV-5 memiliki nilai IC_{50} berturut-turut 13,65 µM atau 5,84 ppm dan 27,70 µM atau 11,81 ppm. Formula optimum basis serum HGV-5 terdiri dari 0,309% karbopol dan 0,691% HPMC. Respon sifat fisik yang dihasilkan yaitu pH 4,706±0,017, viskositas 40,78±0,070 dPa.s, dan daya sebar 5,027±0,075 cm. Serum HGV-5 memiliki sifat organoleptis dan homogenitas, daya sebar, serta daya lekat yang stabil selama tiga siklus *cycling test*, sedangkan terdapat perubahan pada pH dan viskositas. Akan tetapi, perubahan tersebut masih masuk ke dalam rentang persyaratan serum. Semua respon sifat fisik memenuhi persyaratan sediaan serum selama uji stabilitas.

Kata kunci: Serum, Heksagamavunon-5, antioksidan, *gelling agent*.

ABSTRACT

Hexagamavunon-5 (HGV-5) is a curcumin analog recognized for its antioxidant properties, capable of protecting skin cells from free radical-induced damage. There have been several previous studies on the development of HGV-5 into topical formulations. However, there has been no development of HGV-5 into facial serum. Therefore, this study aims to optimize the concentration of HPMC and carbopol as gelling agents to achieve optimal physical properties and stability, while also determining the antioxidant activity of serum HGV-5 in-vitro.

The optimization of the gelling agent and the identification of the optimal serum base formula were performed with the Simplex Lattice Design method via Design Expert 13.0 software. After optimization, physical stability tests were conducted using the cycling test method for three cycles. The antioxidant activity of the HGV-5 compound and HGV-5 serum was also measured using the DPPH method. The research data were analyzed using IBM SPSS Statistic software.

The research results show that the HGV-5 compound and HGV-5 serum have IC50 values of 13.65 µM or 5.84 ppm and 27.70 µM or 11.81 ppm, respectively. The optimum formula for the HGV-5 serum base consists of 0.309% carbopol and 0.691% HPMC. The response of the resulting physical properties is a pH of 4.706±0.017, viscosity of 40.78±0.070 dPa.s, and spreadability of 5.027±0.075 cm. After optimization, physical stability tests were conducted using the cycling test method for three cycles. Serum HGV-5 has organoleptic properties and homogeneity, spreadability, and adhesion that remain stable over three cycles of the cycling test, whereas there are changes in pH and viscosity. However, these changes still fall within the serum's requirement range. All physical property responses met the serum preparation requirements during the stability test.

Keywords: *Serum, Hexagamavunon-5, antioxidant, gelling agent.*