Evaluasi Karakteristik Fisikokimia dan Potensi Penghambatan Denaturasi Protein Formula Serum Ekstrak
Gliserin Bunga Telang (Clitoria ternatea L.) secara In Vitro
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

EVALUASI KARAKTERISTIK FISIKOKIMIA DAN POTENSI PENGHAMBATAN DENATURASI PROTEIN FORMULA SERUM EKSTRAK GLISERIN BUNGA TELANG (*Clitoria ternatea* L.) SECARA *IN VITRO*

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INTISARI

Inflamasi wajah merupakan kondisi kulit yang umum terjadi sehingga diperlukan pengembangan bahan aktif antiinflamasi alami sebagai alternatif penggunaan obat antiinflamasi non-steroid. Bunga telang (*Clitoria ternatea* L.) memiliki kandungan senyawa bioaktif seperti flavonoid, antosianin, dan senyawa fenolik yang berpotensi memberikan aktivitas biologis terkait proses inflamasi. Penelitian ini bertujuan mengevaluasi karakteristik fisikokimia formula serum ekstrak gliserin bunga telang pada berbagai variasi konsentrasi ekstrak, serta mengetahui pengaruh variasi konsentrasi ekstrak gliserin bunga telang terhadap potensi penghambatan denaturasi protein pada formula serum secara *in vitro.* Ekstrak bunga telang diperoleh melalui ekstraksi menggunakan pelarut gliserin dan akuades (1:1), kemudian diformulasikan menjadi lima formula serum (F0 – F4) dengan variasi konsentrasi ekstrak. Evaluasi mutu fisik dan kimia sediaan mencakup pengujian organoleptik, homogenitas, pH, daya sebar, dan daya lekat. Potensi penghambatan denaturasi protein diuji secara *in vitro* menggunakan metode inhibisi denaturasi protein BSA pada konsentrasi 3000-9000 ppm dengan natrium diklofenak sebagai kontrol positif. Data dianalisis menggunakan ANOVA dua arah dan uji Dunnet pada tingkat kepercayaan 95%. Hasil penelitian menunjukkan bahwa peningkatan konsentrasi ekstrak gliserin bunga telang memengaruhi karakteristik fisik serum, seperti perubahan tekstur, warna, dan penurunan nilai pH, meskipun seluruh formula tetap homogen. Tidak seluruh formula memenuhi persyaratan mutu pada parameter pH, daya sebar, dan daya lekat. Persentase inhibisi meningkat seiring peningkatan konsentrasi sampel, dengan nilai tertinggi pada konsentrasi 9000 ppm (20,097 – 24,430%). Namun, variasi konsentrasi ekstrak gliserin bunga telang belum menunjukkan pengaruh yang signifikan terhadap penghambatan denaturasi protein secara *in vitro.*

Kata kunci: *Bovine Serum Albumin*, bunga telang, denaturasi, ekstrak gliserin

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EVALUATION OF THE PHYSICOCHEMICAL CHARACTERISTICS AND *IN VITRO* PROTEIN DENATURATION INHIBITION POTENTIAL OF A SERUM-BASED FORMULA CONTAINING GLYCERIN EXTRACT FROM BUTTERFLY PEA FLOWERS (*Clitoria ternatea* L.)

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ABSTRACT

Facial inflammation is a common skin condition, making it necessary to develop natural anti-inflammatory active ingredients as an alternative to nonsteroidal anti-inflammatory drugs. The butterfly pea flower (*Clitoria ternatea* L.) contains bioactive compounds such as flavonoids, anthocyanins, and phenolic compounds that have the potential to exert biological activity related to inflammatory processes. This study aims to evaluate the physicochemical characteristics of blue pea flower glycerin extract serum formulations at various extract concentrations, as well as to determine the effect of varying blue pea flower glycerin extract concentrations on the potential to inhibit protein denaturation in the serum formulations *in vitro*. The butterfly pea flower extract was obtained through extraction using a glycerin and distilled water solvent (1:1), then formulated into five serum formulations (F0–F4) with varying extract concentrations. The evaluation of the physical and chemical quality of the preparations included organoleptic testing, homogeneity, pH, spreadability, and adhesion. The potential to inhibit protein denaturation was tested in vitro using the BSA protein denaturation inhibition method at concentrations of 3,000–9,000 ppm, with diclofenac sodium as the positive control. Data were analyzed using two-way ANOVA and the Dunnet test at α 95% confidence level. The results showed that increasing the concentration of butterfly pea flower glycerin extract affected the serum's physical characteristics, such as changes in texture and color and a decrease in pH, although all formulations remained homogeneous. Not all formulations met the quality requirements for pH, spreadability, and adhesion. The percentage of inhibition increased as the sample concentration increased, with the highest values observed at a concentration of 9,000 ppm (20.097–24.430%). However, variations in the concentration of the butterfly pea flower glycerin extract did not show a significant effect on the inhibition of protein denaturation *in vitro*.

Keywords: Bovine Serum Albumin, butterfly pea flower, denaturation, glycerin extract