OPTIMASI *PATCH* EKSTRAK ETANOL BUNGA TELANG (*Clitoria ternatea* L.) DENGAN KOMBINASI POLIMER HIDROKSIPROPIL METIL SELULOSA (HPMC) DAN POLIVINIL ALKOHOL (PVA) MENGGUNAKAN METODE *SIMPLEX LATTICE DESIGN*

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INTISARI

Latar Belakang: Salah satu penyebab jerawat adalah adanya bakteri *Staphylococcus aureus*. Jerawat dapat diatasi dengan penggunaan *patch* yang mengandung ekstrak bunga telang yang memiliki aktivitas antibakteri. Sediaan *patch* mengandung komponen penting dalam pembuatannya yaitu polimer. Hidroksipropil metil selulosa (HPMC) dan Polivinil Alkohol (PVA) dapat digunakan sebagai polimer dengan konsentrasi yang berbeda untuk menghasilkan bentuk sediaan *patch* yang optimal. Optimasi campuran polimer HPMC dan PVA dilakukan menggunakan metode *Simplex Lattice Design*.
Tujuan Penelitian: Untuk memperoleh perbandingan HPMC dan PVA yang menghasilkan formula optimum *patch* dan mengetahui pengaruh kombinasi polimer HPMC dan PVA dalam formula *patch* ekstrak bunga telang (*Clitoria ternatea* L.) terhadap karakteristik fisik *patch* yang baik.
Metode Penelitian: Ekstrak bunga telang didapatkan melalui proses maserasi dengan pelarut etanol 96%. Kemudian dilakukan optimasi *patch* ekstrak etanol bunga telang dengan jumlah 8 *run* menggunakan metode *Simplex Lattice Design*. *Patch* dievaluasi sifat fisik meliputi organoleptis, ketahanan lipatan *patch*, kelembaban, keseragaman bobot *patch*, ketebalan *patch*, dan pH. Penentuan formula optimum dilakukan berdasarkan nilai *desirability* yang paling besar. Verifikasi formula optimum dianalisis dengan uji *one sample T-test* dengan membandingkan hasil pengujian sifat fisik *patch* pada formulasi optimum dengan hasil reaksi optimum yang diprediksi oleh *Desain Expert*.
Hasil Penelitian: Tidak terdapat perbedaan yang signifikan (*p-value* >0,05) antara hasil prediksi *software Design Expert* versi 13 dengan hasil observasi terhadap respon uji ketahanan pelipatan, % kelembaban dan nilai pH. Formula optimum *patch* menghasilkan nilai ketahanan pelipatan sebesar 413, % kelembaban sebesar 2,28% dan pH sebesar 5,667.
Kesimpulan: Formula optimum *patch* ekstrak bunga telang dengan kombinasi polimer HPMC : PVA diperoleh pada perbandingan 172,5 mg: 227,5 mg. Perbedaan proporsi HPMC dan PVA dapat mempengaruhi karakteristik fisik *patch* ekstrak bunga telang meliputi ketahanan pelipatan *patch*, % kelembaban *patch*, dan nilai pH**.** Kenaikan proporsi PVA dapat menaikkan ketahanan pelipatan, % kelembaban, dan pH *patch*.
Kata kunci: Bunga Telang, *Clitoria ternatea* L., *Patch*, HPMC, PVA, *Simplex Lattice Design*.

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PATCH OPTIMIZATION OF BUTTERFLY PEA FLOWER ETHANOL EXTRACT (*Clitoria ternatea* L.) WITH A COMBINATION OF HYDROXYPROPYL METHYL CELLULOSE (HPMC) AND POLYVINYL ALCOHOL (PVA) POLYMERS USING SIMPLEX LATTICE DESIGN METHODS

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ABSTRACT

Background: One of the causes of acne is the presence of *Staphylococcus aureus* bacteria. Acne can be treated with topical preparations such as patches. Patch preparations contain important components in their manufacture, namely polymers. HPMC and PVA can be used as polymers with different concentrations to produce optimal patch dosage forms. Optimization of Hydroxypropyl Methyl Cellulose (HPMC) and Polyvinyl Alcohol (PVA) polymer combination was carried out using the Simplex Lattice Design method.
Objective: To obtain the ratio of HPMC and PVA that produces the optimum patch formula and determine the effect of the combination of HPMC and PVA polymers in the patch formula of butterfly pea flower extract (*Clitoria ternatea* L.) on the physical characteristics of good patches.
Methods: Butterfly pea flower extract was obtained through maceration process with 96% ethanol solvent. Then, the patch optimization of butterfly pea flower ethanol extract was carried out with a total of 8 runs using the Simplex Lattice Design method. Patches were evaluated for physical properties including organoleptic, patch fold resistance, moisture, patch weight uniformity, patch thickness, and pH. Determination of the optimum formula was based on the greatest desirability value. Verification of the optimum formula was analyzed by one sample T-test by comparing the results of testing the physical properties of patches on the optimum formulation with the results of the optimum reaction predicted by Design Expert.
Results: There was no significant difference (p-value>0.05) between the prediction results of Design Expert software version 13 and the observation results of the folding resistance test response, % moisture and pH value. The optimum patch formula produced a folding resistance value of 413, % moisture of 2,28% and pH of 5,667.
Conclusion: The optimum formula of butterfly pea flower extract patch with polymer combination HPMC : PVA was obtained at a ratio of 172,5 mg: 227,5 mg. The difference in the proportion of HPMC and PVA can affect the physical characteristics of telang flower extract patches including patch folding resistance, patch moisture %, and pH value. Increasing the proportion of PVA can increase the folding resistance, % moisture, and pH of the patch.
Keywords: Butterfly pea, *Clitoria ternatea* L., Patch, HPMC, PVA, Simplex Lattice Design

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