

ABSTRAK

Muhammad Ilham Hardiansyah. 2026. Formulasi dan Uji Aktivitas Antibakteri Sediaan Film Ekstrak Kunyit (*Curcuma longa* L.) Terhadap Bakteri *Acinetobacter baumannii*. Program Studi Farmasi., Fakultas Ilmu Kesehatan dan Sains, Universitas PGRI Madiun. Pembimbing (I) Dra. Arum Suproborini, M. Si. Pembimbing (II) apt. Desi Kusumawati, S.Farm, M.Farm-Klin.

Penelitian ini berfokus pada formulasi dan uji aktivitas antibakteri sediaan film ekstrak kunyit (*Curcuma longa* L.) terhadap *Acinetobacter baumannii*, bakteri patogen penyebab komplikasi infeksi pada luka luar. Tujuan penelitian ini adalah untuk mengetahui pengaruh variasi konsentrasi ekstrak kunyit terhadap karakteristik fisik sediaan film berbasis kombinasi kitosan-PVA, mengevaluasi daya hambat antibakterinya, serta menentukan formula sediaan yang paling optimal. Metode yang digunakan adalah penelitian eksperimental laboratorium menggunakan Rancangan Acak Lengkap (RAL) dengan empat variasi formula: F0 (basis tanpa ekstrak), F1 (konsentrasi 0,1%), F2 (konsentrasi 0,2%), dan F3 (konsentrasi 0,3%). Evaluasi sediaan mencakup pengujian parameter mutu fisik (organoleptis, homogenitas, bobot, pH, ketebalan, *swelling index*, kadar lembab, dan daya lipat) serta pengujian aktivitas antibakteri menggunakan metode difusi cakram. Hasil penelitian menunjukkan bahwa peningkatan konsentrasi ekstrak kunyit memengaruhi karakteristik fisik film secara signifikan. Seluruh formula memenuhi parameter organoleptis, homogenitas, ketebalan, kadar lembab, dan daya lipat. Formula F1, F2, dan F3 memenuhi rentang acuan pH 4,5-6,5, sedangkan F0 memiliki pH 6,8 sehingga sedikit berada di atas rentang acuan. Pada uji aktivitas antibakteri, formula F0 merupakan formula terbaik secara keseluruhan karena memiliki karakteristik fisik yang baik dan menghasilkan zona hambat terbesar dibandingkan formula F1, F2, dan F3, yaitu sebesar $5,66 \pm 1,13$ mm, meskipun nilai pH F0 sebesar 6,8 sedikit berada di atas rentang acuan pH 4,5-6,5. Formula F1 menghasilkan zona hambat sebesar $2,43 \pm 1,31$ mm, sedangkan F2 dan F3 tidak menghasilkan zona hambat. Hasil tersebut mengindikasikan bahwa aktivitas antibakteri lebih dipengaruhi oleh biopolimer basis kitosan dibandingkan ekstrak kunyit akibat pelepasan senyawa yang belum optimal dari matriks. Penelitian ini menunjukkan bahwa basis film kitosan-PVA memiliki karakteristik fisik yang baik dan aktivitas antibakteri terhadap *Acinetobacter baumannii*, sedangkan penambahan ekstrak kunyit pada konsentrasi 0,1%, 0,2%, dan 0,3% tidak meningkatkan aktivitas antibakteri sediaan serta cenderung menurunkan zona hambat dibandingkan formula basis tanpa ekstrak.

Kata Kunci: Sediaan Film, Ekstrak Kunyit, Kitosan, Aktivitas Antibakteri, *Acinetobacter baumannii*

ABSTRACT

Muhammad Ilham Hardiansyah. 2026. Formulation and Antibacterial Activity Test of Turmeric (*Curcuma longa* L.) Extract Film Preparation Against *Acinetobacter baumannii*. Pharmacy Study Program, Faculty of Health and Sciences, Universitas PGRI Madiun. Advisor (I) Dra. Arum Suproborini, M. Si. Advisor (II) apt. Desi Kusumawati, S.Farm, M.Farm-Klin.

This study focuses on the formulation and antibacterial activity test of turmeric (*Curcuma longa* L.) extract film preparation against *Acinetobacter baumannii*, a pathogenic bacterium causing infection complications in external wounds. The purpose of this research is to determine the effect of varying concentrations of turmeric extract on the physical characteristics of chitosan-PVA combination-based films, to evaluate their antibacterial inhibitory power, and to determine the most optimal formulation. The method used was a laboratory experimental study utilizing a Completely Randomized Design (CRD) with four formula variations: F0 (base without extract), F1 (0.1% concentration), F2 (0.2% concentration), and F3 (0.3% concentration). Evaluation of the preparations included testing physical quality parameters (organoleptic, homogeneity, weight, pH, thickness, swelling index, moisture content, and folding endurance) as well as testing antibacterial activity using the disc diffusion method. The results showed that increasing the concentration of turmeric extract significantly affected the physical characteristics of the films. All formulations met the criteria for organoleptic properties, homogeneity, thickness, moisture content, and folding endurance. Formulations F1, F2, and F3 were within the reference pH range of 4.5-6.5, whereas F0 had a pH of 6.8 and was therefore slightly above the reference range. In the antibacterial activity test, formula F0 was identified as the best overall formulation because it showed good physical characteristics and produced the largest inhibition zone compared with formulas F1, F2, and F3, with a value of 5.66 ± 1.13 mm, although its pH of 6.8 was slightly above the reference pH range of 4.5-6.5. Formula F1 produced an inhibition zone of 2.43 ± 1.31 mm, whereas F2 and F3 did not produce any inhibition zone. These results indicate that the antibacterial activity was more strongly influenced by the chitosan-based biopolymer than by the turmeric extract due to the suboptimal release of compounds from the matrix. This study shows that the chitosan-PVA film base had good physical characteristics and antibacterial activity against *Acinetobacter baumannii*, whereas the addition of turmeric extract at concentrations of 0.1%, 0.2%, and 0.3% did not improve the antibacterial activity of the film and tended to reduce the inhibition zone compared with the base formulation without extract.

Kata Kunci: Film Preparation, Turmeric Extract, Chitosan, Antibacterial Activity, *Acinetobacter baumannii*