FORMULASI DAN KARAKTERISASI FILM *WOUND DRESSING* EKSTRAK ETANOL DAUN MATOA (*Pometia pinnata* J.R & G.Forst) SEBAGAI ANTI-BAKTERI *Staphylococcus aureus*

ABSTRAK

Infeksi luka akibat bakteri *Staphylococcus aureus* dapat menghambat proses penyembuhan sehingga diperlukan pengembangan wound dressing berbasis bahan alam. Daun matoa (*Pometia pinnata*) diketahui mengandung flavonoid, tanin, saponin, dan triterpenoid yang berpotensi sebagai antibakteri. Penelitian ini bertujuan untuk memformulasi dan mengevaluasi aktivitas antibakteri film wound dressing berbasis ekstrak etanol daun matoa. Ekstraksi dilakukan dengan metode maserasi menggunakan etanol 96% selama 3×24 jam dan menghasilkan rendemen 19,8%. Skrining fitokimia menunjukkan adanya senyawa metabolit sekunder berpotensi antibakteri dengan parameter mutu ekstrak memenuhi standar (kadar air 4% dan kadar abu total 9,2%). Uji aktivitas antibakteri ekstrak terhadap *Staphylococcus aureus* menunjukkan daya hambat kategori sedang hingga kuat pada konsentrasi 1–2%. Ekstrak kemudian diformulasikan menjadi film menggunakan metode solvent casting dalam empat formula (F0–F3). Evaluasi menunjukkan film memiliki ketebalan 0,11–0,16 mm, transparansi baik, serta kemampuan swelling yang menurun seiring peningkatan konsentrasi ekstrak akibat pembentukan ikatan silang dalam matriks polimer. Sifat mekanik terbaik diperoleh pada formula F2 dan F3 yang mendekati karakteristik pembalut luka ideal. Namun, film yang mengandung ekstrak daun matoa tidak menimbulkan zona hambat, yang diduga disebabkan oleh terbatasnya pelepasan zat aktif dari matriks polimer sehingga senyawa antibakteri tidak dapat berdifusi secara optimal ke media uji. Dengan demikian, ekstrak etanol daun matoa dapat diformulasikan menjadi film wound dressing dengan karakteristik fisik yang baik, tetapi belum menunjukkan aktivitas antibakteri dalam bentuk sediaan film sehingga diperlukan optimasi formulasi lebih lanjut untuk meningkatkan pelepasan zat aktif.

Kata kunci; Film, ekstrak etanol daun matoa, pembalut luka

FORMULATION AND CHARACTERIZATION OF WOUND DRESSING FILM CONTAINING ETHANOLIC EXTRACT OF MATOA LEAVES (*Pometia pinnata* J.R. & G.Forst) AS AN ANTIBACTERIAL AGAINST *Staphylococcus aureus*

ABSTRACT

Wound infections caused by *Staphylococcus aureus* can delay the healing process, highlighting the need for the development of natural-based wound dressing materials. Matoa leaves (*Pometia pinnata*) are known to contain secondary metabolites such as flavonoids, tannins, saponins, and triterpenoids that possess potential antibacterial activity. This study aimed to formulate and evaluate the antibacterial activity of a wound dressing film containing ethanolic extract of matoa leaves. Extraction was performed using the maceration method with 96% ethanol for 3×24 hours, yielding an extract with a rendement of 19.8%. Phytochemical screening confirmed the presence of antibacterial secondary metabolites, while extract quality parameters met acceptable standards, with a moisture content of 4% and total ash content of 9.2%. Antibacterial testing of the extract against *Staphylococcus aureus* showed moderate to strong inhibitory activity at concentrations of 1–2%. The extract was subsequently formulated into films using the solvent casting method in four formulations (F0–F3). Evaluation results demonstrated that the films had thicknesses ranging from 0.11–0.16 mm, good transparency, and decreasing swelling capacity with increasing extract concentration due to cross-link formation within the polymer matrix. The best mechanical properties were observed in formulations F2 and F3, which closely approached the characteristics of an ideal wound dressing. However, films containing matoa leaf extract did not produce inhibition zones, which was likely due to limited release of active compounds from the polymer matrix, preventing optimal diffusion of antibacterial agents into the testing medium. Therefore, the ethanolic extract of matoa leaves can be successfully formulated into a wound dressing film with good physical characteristics, although antibacterial activity was not observed in the film dosage form, indicating that further formulation optimization is required to enhance active compound release.

Keywords: Film, ethanolic extract of matoa leaves, wound dressing