

ABSTRAK

Diabetic ulcer merupakan salah satu komplikasi kronis diabetes melitus yang sulit disembuhkan dan memiliki risiko tinggi terhadap infeksi bakteri, sehingga memerlukan penanganan yang efektif dan aman. Daun brotowali (*Tinospora crispa*) diketahui mengandung berbagai metabolit sekunder yang berpotensi sebagai antibakteri dan agen penyembuh luka. Penelitian ini bertujuan untuk memformulasikan gel fraksi etil asetat daun brotowali serta mengevaluasi karakteristik fisik dan aktivitas antibakterinya sebagai kandidat sediaan topical untuk *diabetic ulcer*. Penelitian ini menggunakan desain ekperimental. Fraksi etil asetat diperoleh melalui metode fraksinasi cair-cair menggunakan pelarut n-heksana, etil asetat, dan aquadest. Fraksi yang diperoleh kemudian diformulasikan menjadi sediaan gel dengan basis Carbopol 940 dalam tiga variasi konsentarsi, yaitu 25%, 50%, dan 70%. Evaluasi sediaan meliputi uji organoleptic, pH dan daya sebar. Aktivitas antibakteri diuji menggunakan difusi cakram. Hasil penelitian menunjukkan bahwa seluruh formula gel memiliki karakteristik fisik yang baik, stabil, dan memenuhi persyaratan sediaan topikal. Nilai pH berada dalam rentang yang sesuai untuk kulit, serta daya sebar menunjukkan bahwa gel fraksi etil asetat daun brotowali mampu menghambat pertumbuhan bakteri uji, dengan diameter zona hambat yang meningkat seiring bertambahnya konsentrasi fraksi. Berdasarkan hasil tersebut, gel fraksi etil asetat daun brotowali berpotensi dikembangkan sebagai sediaan topical pendukung penanganan *diabetic ulcer*.

Kata kunci: antibakteri, daun brotowali, *diabetic ulcer*, fraksi etil asetat, gel

ABSTRACT

Diabetic ulcer is one of the chronic complications of diabetes mellitus that is difficult to heal and has a high risk of bacterial infection, thus requiring effective and safe treatment. Brotowali leaves (Tinospora crispa) are known to contain various secondary metabolites with potential antibacterial and wound-healing properties. This study aimed to formulate a gel containing the ethyl acetate fraction of brotowali leaves and to evaluate its physical characteristics and antibacterial activity as a topical preparation candidate for diabetic ulcer. This research employed an experimental design. The ethyl acetate fraction was obtained through liquid-liquid fractionation using n-hexane, ethyl acetate, and distilled water as solvents. The resulting fraction was then formulated into a gel using Carbopol 940 as the base at three concentration variations, namely 25%, 50%, and 70%. Evaluation of the gel preparations included organoleptic tests, pH measurement, and spreadability assessment. Antibacterial activity was evaluated using the disk diffusion method. The results showed that all gel formulations exhibited good physical characteristics, were stable, and met the requirements for topical preparations. The pH values were within the acceptable range for skin application, and the spreadability indicated good distribution ability. Furthermore, the antibacterial activity test demonstrated that the ethyl acetate fraction gel of brotowali leaves was able to inhibit the growth of test bacteria, with an increase in inhibition zone diameter corresponding to higher fraction concentrations. Based on these findings, the ethyl acetate fraction gel of brotowali leaves has potential to be developed as a topical supportive therapy for the management of diabetic ulcer.

Keywords: antibacterial, brotowali leaves, *diabetic ulcer*, ethyl acetate fraction, gel