

ABSTRAK

Diabetes melitus merupakan penyakit kronik dengan prevalensi yang terus meningkat dan sering disertai komplikasi berupa ulkus diabetes yang rentan mengalami infeksi, salah satunya oleh bakteri *Staphylococcus aureus*. Penggunaan antibiotik jangka panjang dapat menyebabkan resistensi, sehingga diperlukan alternatif terapi berbasis bahan alam. Daun sambiloto (*Andrographis paniculata*) mengandung senyawa bioaktif seperti andrographolide, flavonoid, dan fenolik yang memiliki aktivitas antibakteri. Formulasi gel dipilih karena mudah diaplikasikan dan sesuai untuk penggunaan topikal pada luka. Penelitian ini merupakan penelitian eksperimental laboratorium. Daun sambiloto diekstraksi dengan metode maserasi menggunakan etanol 96%, kemudian dilakukan fraksinasi bertingkat hingga diperoleh fraksi air. Fraksi air diformulasikan ke dalam sediaan gel dengan konsentrasi 25%, 50%, dan 75%. Uji aktivitas antibakteri terhadap *Staphylococcus aureus* dilakukan menggunakan metode difusi cakram dengan clindamycin sebagai kontrol positif dan basis gel sebagai kontrol negatif. Evaluasi stabilitas fisik meliputi uji organoleptik, homogenitas, pH, dan daya sebar. Hasil penelitian menunjukkan bahwa fraksi air daun sambiloto memiliki aktivitas antibakteri tertinggi dan bersifat konsentrasi-dependent. Konsentrasi 75% menunjukkan daya hambat terbesar, meskipun masih lebih rendah dibandingkan klindamisin. Seluruh sediaan gel memenuhi parameter stabilitas fisik dan berpotensi dikembangkan sebagai sediaan topikal antibakteri.

Kata kunci: *Sambiloto, Andrographis paniculata, Gel Antibakteri, Staphylococcus aureus, Fraksi aktif, Luka Diabetes*

ABSTRACT

Diabetes mellitus is a chronic disease with an increasing prevalence and is often accompanied by complications such as diabetic ulcers, which are highly susceptible to infection, particularly by *Staphylococcus aureus*. Long-term use of antibiotics may lead to bacterial resistance, highlighting the need for alternative therapies based on natural products. Sambiloto leaves (*Andrographis paniculata*) contain bioactive compounds such as andrographolide, flavonoids, and phenolic compounds with antibacterial activity. A gel formulation was selected due to its ease of application and suitability for topical use on wounds. This study was a laboratory experimental study. Sambiloto leaves were extracted using the maceration method with 96% ethanol, followed by successive fractionation to obtain the aqueous fraction. The aqueous fraction was formulated into gel preparations at concentrations of 25%, 50%, and 75%. Antibacterial activity against *Staphylococcus aureus* was evaluated using the disc diffusion method, with clindamycin gel as a positive control and gel base as a negative control. Physical stability evaluations included organoleptic properties, homogeneity, pH, and spreadability. The results showed that the aqueous fraction of sambiloto leaves exhibited the highest antibacterial activity in a concentration-dependent manner. The 75% concentration demonstrated the greatest inhibition zone, although it was still lower than that of clindamycin. All gel formulations met the physical stability parameters and have potential to be developed as topical antibacterial preparations.

Keywords: Sambiloto, *Andrographis paniculata*, Antibacterial Gel, *Staphylococcus aureus*, Active Fraction, Diabetic Wounds

