

ABSTRAK

Demam umumnya ditangani dengan pemberian obat oral konvensional, namun kompres masih banyak dipilih sebagai terapi pendukung. Produk kompres yang beredar kebanyakan bersifat sekali pakai sehingga kurang efisien. Belimbing wuluh (*Averrhoa bilimbi L.*) diketahui memiliki aktivitas antipiretik dan mengandung senyawa bioaktif seperti alkaloid, flavonoid, dan saponin yang berpotensi sebagai agen penurun demam alami. Penelitian ini bertujuan mengembangkan formula terbaik berdasarkan variasi PVP K-30 dan kalium klorida (KCl) serta mengevaluasi kualitas hidrogel dan plester hidrogel berbasis belimbing wuluh yang dapat digunakan ulang, tidak mudah hancur, nyaman, dan memiliki efek samping minimal. Metode yang digunakan adalah eksperimental, dengan pembuatan tiga formula plester hidrogel dibuat dengan variasi konsentrasi PVP K-30 dan KCl, lalu dievaluasi sifat organoleptik, homogenitas, daya lekat, pH, fraksi gel, *swelling*, viskositas, ketebalan, daya serap kelembaban, ketahanan lipat, keseragaman bobot, dan akseptabilitas. Seluruh formula memenuhi syarat uji kualitas hidrogel dan plester hidrogel. Sediaan plester memiliki bentuk gel padat, warna hijau, dan bau khas *green tea* dengan pH aman (4,2–6,5). Formula P4K2,5 menunjukkan viskositas paling stabil (16.575,3 cP), sedangkan formula terbaik secara keseluruhan adalah P4,5K3,5. Formula P3,5K1 paling disukai dari segi warna; P4K2,5 dan P4,5K3,5 dari segi aroma; serta P3,5K1 dan P4,5K3,5 dari segi tekstur. Setelah 5 jam penggunaan, responden sangat setuju terhadap formula P4K2,5 dan P4,5K3,5. Formula P4,5K3,5 memberikan sensasi dingin tertinggi setelah penyimpanan di lemari es dan direkomendasikan sebagai kandidat formula plester hidrogel guna ulang dari tanaman belimbing wuluh untuk terapi penurun demam yang nyaman digunakan dan tidak mudah hancur.

Kata kunci: Demam, Belimbing Wuluh, Plester, Hidrogel

ABSTRACT

Fever is commonly managed using conventional oral medications, however, compresses remain a widely preferred adjunctive therapy. Most commercially available compresses are single-use, making them economically inefficient. *Averrhoa bilimbi L.* (*bilimbi*) possesses known antipyretic activity and contains bioactive compounds such as alkaloids, flavonoids, and saponins, which have potential as natural antipyretic agents. This study aimed to develop an optimal formulation based on varying concentrations of PVP K-30 and potassium chloride (KCl), and to evaluate the quality of bilimbi-based hydrogel and hydrogel plaster formulations that are reusable, stable, comfortable to use, and have minimal side effects. An experimental design was employed to prepare three hydrogel plaster formulations using different concentrations of PVP K-30 and KCl. The formulations were evaluated for organoleptic properties, homogeneity, adhesiveness, pH, gel fraction, swelling index, viscosity, thickness, moisture absorption, folding endurance, weight uniformity, and acceptability. All formulations met established quality standards for hydrogel and hydrogel plasters. The resulting plasters exhibited a solid gel consistency, green coloration, and a distinctive green tea scent, with safe pH values ranging from 4.2 to 6.5. The P4K2.5 formulation demonstrated the most stable viscosity (16,575.3 cP), while P4.5K3.5 was identified as the most optimal overall. P3.5K1 was most preferred in terms of color; P4K2.5 and P4.5K3.5 in aroma; and P3.5K1 and P4.5K3.5 in texture. After five hours of use, participants strongly favored P4K2.5 and P4.5K3.5. Notably, P4.5K3.5 also provided the highest cooling sensation after refrigeration and is recommended as a promising candidate for a reusable hydrogel plaster formulation for fever therapy.

Keywords: Fever, *Averrhoa bilimbi L.*, Plaster, Hydrogel