

OPTIMASI KONSENTRASI *HYDROXYPROPYL METHYLCELLULOSE* (HPMC) SEBAGAI POLIMER *HYDROCOLLOID MATRIX DIABETIC WOUND HEALING* DENGAN BAHAN AKTIF IBUPROFEN

Ignasia Handipta Mahardika

Fakultas Farmasi, Universitas Sanata Dharma, Kampus III Paingan,
Maguwoharjo, Depok, Sleman, Yogyakarta, 55282, Indonesia.

Telp. (0274) 883037, Fax. (0274) 886529

ignhandipta@gmail.com

ABSTRAK

Hydrocolloid matrix diabetic wound healing dengan polimer *hydroxypropyl methylcellulose* (HPMC) dan bahan aktif ibuprofen, berpotensi dapat mempercepat penyembuhan luka pada penderita diabetes. Penelitian ini bertujuan mengetahui konsentrasi HPMC optimal dan sifat fisika kimia serta stabilitas dari *hydrocolloid matrix* ibuprofen. *Hydrocolloid matrix* ibuprofen dibuat dalam 3 konsentrasi HPMC yaitu 8,75%, 11%, dan 13,25%. Formula optimal dipilih berdasarkan uji yang dilakukan, yaitu: uji sterilitas; sifat fisik yang meliputi organoleptis, keseragaman bobot, ketebalan sediaan, pH larutan sediaan, persentase *moisture content* dan *absorption*, dan ketahanan pelipatan; sifat kimia yang meliputi keseragaman kandungan obat dan pelepasan obat; iritabilitas serta stabilitas. Formula optimal yang dipilih adalah formula 1 (F1) dimana merupakan sediaan yang memiliki nilai DE 88,86%; CV keseragaman kandungan obat 15,78% dan keseragaman bobot 9,84%; persentase kandungan obat 77,30%; memiliki nilai persentase *moisture content* 12,36% dan *moisture absorption* 14,88%; ketebalan 0,5 mm; pH larutan sediaan 6,70; nilai ketahanan pelipatan 25; steril; tidak berwarna, jernih, dan halus; dan stabil secara kimia. Formula optimal yang dipilih kemudian diuji aktivitas dan uji histopatologi. Uji aktivitas dan histopatologi F1 menunjukkan *hydrocolloid matrix* ibuprofen dapat mempercepat penyembuhan luka diabetes.

Kata kunci: diabetes, HPMC, *hydrocolloid matrix*, ibuprofen, luka diabetes.

ABSTRACT

Hydrocolloid matrix diabetic wound healing with hydroxypropyl methylcellulose (HPMC) as polymer and ibuprofen as active ingredient can potentially accelerate healing in diabetic wound. This study aims to determine the optimal concentration of HPMC and the chemical and physical properties as well as the stability of the hydrocolloid matrix ibuprofen. Hydrocolloid matrix ibuprofen made in 3 HPMC concentration, 8,75%, 11% and 13,25%. Optimal formula selected based on tests conducted, that is: the sterility test; physical properties include organoleptic, weight uniformity, thickness, the pH of matrix solution, the percentage of moisture content and absorption, and folding endurance; chemical properties which include uniformity of drug content and drug release; irritability and stability. The selected optimal formula is Formula 1 (F1) which has DE values 88,86%; CV uniformity of drug content and uniformity of weight 15,78% and 9,84%; the percentage of drug content 77,30%; has a moisture content percentage 12,36% and moisture absorption percentage 14,88%; thickness 0,5 mm; pH of solution 6,70; folding endurance values 25; a sterile hydrocolloid matrix; colorless, clear, and smooth; and chemically stable. The selected optimal formula is then tested the activity and histopathological test. F1 activity and histopathology test showed hydrocolloid matrix ibuprofen can accelerate healing of diabetic wound.

Keywords: diabetes, diabetic wound, HPMC, hydrocolloid matrix, ibuprofen

