OPTIMASI KONSENTRASI *POLYVINYL PYRROLIDONE K30* (PVP K30) SEBAGAI POLIMER *HYDROCOLLOID MATRIX DIABETIC WOUND HEALING* DENGAN BAHAN AKTIF IBUPROFEN

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ABSTRAK

Hydrocolloid matrix dengan zat aktif ibuprofen memiliki karakteristik yang sesuai untuk penggunaannya sebagai diabetic wound healing. Penelitian ini bertujuan untuk mengoptimasikan konsentrasi PVP K30 pada formula hydrocolloid matrix diabetic wound healing ibuprofen. Ditetapkan 3 variasi konsentrasi PVP K30 pada formula hydrocolloid matrix, yaitu 1,5%, 2%, dan 2,5%. Penentuan formula optimal dilakukan melalui pengujian organoleptis, sterilitas, uji sifat fisik yang meliputi keseragaman bobot, ketebalan, persentase moisture content dan moisture absorption, uji pH larutan sediaan, serta folding endurance, uji sifat kimia yang meliputi keseragaman kandungan dan pelepasan obat selama 6 jam, uji iritabilitas, serta uji stabilitas. Formula optimal terpilih diuji aktivitas serta histopatologinya. Hasil penelitian menunjukan adanya pengaruh konsentrasi PVP K30 terhadap uji sifat fisika dan kimia. Formula optimal dengan PVP K30 konsentrasi 2%, menghasilkan hydrocolloid matrix yang lentur, dengan nilai moisture content 5,90% dan moisture absorption 6,30%. Bobot dan kadar dalam formula seragam, dengan nilai CV berturut-turut 4,50% dan 4,82%. Nilai DE_{360} sebesar 92,60%, dengan 108,50% ibuprofen terlepas dari formula selama 6 jam. Hydrocolloid matrix optimal menunjukan aktivitas penyembuhan luka selama 14 hari dan berbeda signifikan terhadap kontrol.

Kata kunci: diabetic wound healing, hydrocolloid matrix, ibuprofen, PVP K30

OPTIMIZATION OF POLYVINYL PYRROLIDONE K30 (PVP K30) CONCENTRATION AS POLYMER OF HYDROCOLLOID MATRIX DIABETIC WOUND HEALING WITH IBUPROFEN AS ACTIVE INGREDIENT

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ABSTRACT

Hydrocolloid matrix ibuprofen has characteristics that compatible with diabetic wound healing. The purpose of this study was optimizing concentration of PVP K30 in hydrocolloid matrix ibuprofen as a diabetic wound healing. Three variations concentration PVP K30 (1,5%, 2%, and 2,5%) were formulated into hydrocolloid matrix. Optimizing concentration through several assay, including physical assay such as organoleptic, sterility test, weight uniformity, thickness test, percentage of moisture content and moisture absorption, pH solution of matrix and folding endurance, chemical assay such as uniformity of drug content and drug release for 6 hours, irritability, and stability. The activity and histopathology of selected optimum formula, was then tested. The results showed that concentration of PVP K30 affect the physical and chemical properties of matrix. The optimum formula with 2% of PVP K30 producing flexible hydrocolloid matrix with percentage of moisture content 5,90% and moisture absorption 6,30%. The optimum formula also has a good uniformity in weight and drug content, with percentages of CV, respectively are 4,50% and 4,82%. The dissolution efficiency was 92,60%, which is, 108,50% ibuprofen was released during 6 hours. Hydrocolloid matrix optimum shows the velocity of diabetic wound healing activity for 14 days and was significantly different to the control.

Keywords: diabetic wound healing, hydrocolloid matrix, ibuprofen, PVP K30