

## INTISARI

**FALAH, A., 2016, OPTIMASI FORMULA TABLET BUKAL *BILAYER* MELOKSIKAM MENGGUNAKAN MATRIKS NATRIUM ALGINAT DAN HPMC K4M SERTA NATRIUM LAURIL SULFAT SEBAGAI *ENHANCER*, TESIS, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.**

Meloksikam adalah salah satu *non steroid anti inflammatory drug* (NSAID) yang bekerja sebagai inhibitor selektif siklooksigenase-2 (COX-2) yang memiliki aktivitas analgesik, dan antiinflamasi yang banyak digunakan dalam pengobatan *arthritis, osteoarthritis*, penyakit sendi lainnya dan kasus pembedahan mulut. Penelitian ini bertujuan membuat sediaan tablet bukal *bilayer* mukoadhesif meloksikam yang berfungsi sebagai *maintenance* dosis setelah penggunaan secara intravena dengan campuran HPMC K4M, Natrium alginat, Natrium lauril sulfat; mengetahui pengaruh variasi jumlah polimer terhadap sifat fisik dan pelepasan obat, serta mengkaji kemampuan permeasi meloksikam dari formula optimum.

Penentuan formula dengan *factorial design 2<sup>3</sup>* menggunakan *software* Design Expert® sebanyak 8 formula. Pembuatan formula tablet bukal *bilayer* dibuat menggunakan metode *direct compress* terdiri atas *layer* yang mengandung polimer dan obat. *Layer 2* sebagai *backing membrane* dan mengandung bahan tidak larut air. Evaluasi uji meliputi, ketebalan, kekerasan, *swelling*, kekuatan perlekatan, keseragaman kandungan, stabilitas fisik dalam simulasi saliva, pH dan pelepasan obat secara *in vitro*. Formula optimum di uji karakteristik fisik dan permeasi *ex vivo* melewati bukal kambing selama 4 jam.

Hasil uji menunjukkan bahwa Natrium alginat dan Natrium lauril sulfat berpengaruh signifikan meningkatkan *swelling index* dan kekuatan perlekatan. HPMC signifikan menurunkan *swelling index*. Natrium alginat, HPMC dan Natrium lauril sulfat berpengaruh signifikan meningkatkan kekuatan perlekatan. Natrium alginat signifikan meningkatkan pelepasan obat, HPMC dan Natrium lauril sulfat signifikan menurunkan pelepasan obat. Jumlah meloksikam yang tertransport sebesar  $17,45 \pm 0,57\%$  selama 4 jam, *lag time* 0,3 jam, ; *fluks*  $950,33 \mu\text{g} \cdot \text{cm}^{-2} \cdot \text{jam}^{-1}$ .

Kata kunci: meloksikam, *buccal bilayer*, HPMC, Natrium alginat, permeasi

## ABSTRACT

**FALAH, A., 2016, FORMULATION AND OPTIMIZATION BUCCAL MUCOADHESIVE BILAYERED MELOXICAM TABLET USING POLYMER MUCOADHESION SODIUM ALGINATE, HPMC K4M AND SODIUM LAURYL SULFATE AS ENHANCER, THESIS, PHARMACISTS FACULTY, UNIVERSITY OF FAITHFUL BUDI, SURAKARTA.**

*Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) that works as a selective inhibitor of cyclooxygenase-2 (COX-2) activity that has analgesic and anti-inflammatory that is widely used in the treatment of arthritis, osteoarthritis, joint disease and other oral surgery cases. This research aims to create a bilayer mucoadhesive buccal tablet dosage meloxicam which serves as a maintenance dose after intravenous use with a mixture of HPMC K4M, sodium alginate, sodium lauryl sulfate; determine the effect of varying the amount of polymer on the physical properties and drug release, as well as assess the ability of meloxicam permeation of the optimized formulation.*

*The determination of formulas with  $2^3$  factorial design used Design Expert® as 8 formula. Tablets were prepared by direct compression method. The first layer which adheres to mucosa and containing of mucoadhesive polymers and drug. The second layer as backing membran and contain water impermeable agent. Tablets were subjected for physicochemical characterization test such as thickness, hardness, swelling, mucoadhesive strength, content uniformity, physical stability in simulated saliva, pH, in vitro drug release. Optimized buccal mucoadhesive bilayered tablet formulation were subjected for in vitro drug permeation through sheep buccal mucosa on 4 hour.*

*The test results showed that sodium alginate and sodium lauryl sulphate significant increases swelling index and strength of attachment. HPMC significantly decrease the swelling index. Sodium alginate, sodium lauryl sulfate and HPMC significant increases the strength of attachment. Sodium alginate significantly increase drug release, HPMC and sodium lauryl sulfate significantly decreased the release of the drug. Number of meloxicam which is transported by  $17.45 \pm 0.57\%$  for 4 hours, lag time 0.3 hours;  $950.33 \text{ flux } \mu\text{g.cm}^{-2}.\text{jam}^{-1}$ .*

**Key: meloxicam, buccal bilayer, HPMC, natrium alginate, permeation**