Formulasi dan Uji Penetrasi Sediaan Mikroemulsi Piroksikam dengan Pembawa Minyak Kelapa Sawit (Palm Oil) dan Virgin Coconut Oil = Formulation and Penetration Test of Piroxicam Microemulsion Preparation with Palm Oil and Virgin Coconut Oil as Oil Phase Carrier

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Abstrak

Piroksikam merupakan obat non steroid antiinflamasi dengan efek antipiretik dan analgesik. Obat digolongkan ke dalam sistem BCS (Biopharmaceutical Classification System) kelas II yang memiliki tingkat kelarutan rendah namun permeabilitas tinggi. Pada penggunaannya, obat ini memiliki efek samping dapat mengiritasi mukosa gastrik. Untuk mengatasi permasalahan ini, penelitian bertujuan untuk memformulasikan piroksikam dalam bentuk mikroemulsi dengan minyak pembawa virgin coconut oil dan palm oil yang diadministrasikan secara transdermal. Pada penelitian, dilihat kumulatif obat terpenetrasi secara in vitro dengan sel difusi Franz menggunakan membran kulit abdomen tikus betina galur sprague-dawley. Formulasi mikroemulsi yang digunakan ialah minyak kelapa sawit (palm oil) atau virgin coconut oil, etanol 96% sebagai kosurfaktan, span 80 serta tween 80 sebagai surfaktan, propilparaben dan metilparaben sebagai antimikroba, dan butylated hydroxytoluen sebagai antioksidan. Evaluasi dilakukan dengan pengukuran globul sediaan, tegangan permukaan, pH, viskositas, bobot jenis, pengamatan uji stabilitas fisik pada suhu 40±2oC, 28±2oC, dan 4±2oC, cycling test, dan uji sentrifugasi. Uji penetrasi obat kumulatif terpenetrasi pada formulasi virgin coconut oil adalah 2469,037 ± 41,483 g/cm2 dan jumlah fluks sebesar 4,317 ± 71,845 g/cm2.jam dengan persentase kadar sebesar 55,347% sedangkan, pada formulasi palm oil sebesar 2030,907 ± 37,713 g/cm2 dan jumlah fluks sebesar 3,498 ± 67,363 g/cm2.jam dengan persentase kadar sebesar 40,881%. Berdasarkan hasil penelitian dapat disimpulkan bahwa mikroemulsi yang dihasilkan jernih dan stabil. Pada hasil uji penetrasi obat kumulatif, tingkat penetrasi mikroemulsi dengan pembawa virgin coconut oil memberikan jumlah penetrasi zat aktif lebih banyak dibandingkan mikroemulsi dengan pembawa palm oil.

.....Piroxicam is a non-steroidal anti-inflammatory drug with antipyretic and analgesic effects. Drugs are classified into the BCS (Biopharmaceutical Classification System) class II system which has low solubility but high permeability. Piroxicam has side effect can irritate the gastric mucosa. To overcome this problem, the aim of the study is to formulate piroxicam in the form of microemulsion with carrier of virgin coconut oil and palm oil which administered transdermally. In this study, the calculation of cumulative drug penetrated done by in vitro with Franz diffusion cells using the skin abdominal membrane of female sprague-dawley rats. The microemulsion formulations used were palm oil or virgin coconut oil, 96% ethanol as cosurfactant, span 80 and tween 80 as surfactants, propylparaben and methylparaben as antimicrobials agent, and butylated hydroxytoluene as antioxidants. Evaluation was carried out by measuring the globule of microemulsion, surface tension, pH, viscosity, specific gravity, observing physical stability tests at three different temperature of 40±2oC, 28±2oC, and 4±2oC, cycling test, and centrifugation mechanical stability test. The cumulative drug penetration test penetrated in the virgin coconut oil formulation was 2469,037 ± 41,483 g/cm2 and the total flux was 4,317 ± 71,845 g/cm2.hour with a percentage level of 55,347% while, in the palm oil formulation it was 2030, 907 ± 37,713 g/cm2 and the amount of flux was 3,498 ± 67,363

g/cm2.hour with a percentage content of 40,881%. Based on results, it concluded formulation used form microemulsion that was clear and stable. In the cumulative drug penetration test results, the penetration rate of microemulsions with virgin coconut oil carrier provides more penetration of piroxicam substances than microemulsions with palm oil carriers.