Formulasi Dan Uji Penetrasi In Vitro Emulgel Transfersom Berberin Klorida Untuk Penghantaran Transdermal = Formulation and In Vitro Penetration Test of Emulgel Transfersome Berberine Chloride as Transdermal Delivery

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Abstrak

Berberin klorida (BBR) merupakan golongan alkaloid isokuinolin yang memiliki berbagai aktivitas farmakologis seperti antidiabetes. Berberin klorida (BBR) bersifat hidrofilik, sehingga berberin memiliki penetrasi melalui kulit yang rendah. Tujuan dari penelitian ini adalah untuk meningkatkan penetrasi BBR dengan menggunakan emulgel transfersom sebagai penghantaran transdermal. Empat formula dibuat dengan memvariasikan rasio konsentrasi bahan utama yang digunakan, seperti fosfolipid dan Tween 80. Transfersom dibuat dengan metode solvent evaporation. Selanjutnya semua formulasi diuji ukuran partikel, indeks polidispersitas (IPD), potensial zeta, % efisiensi penjerapan, dan indeks deformabilitas. . Setelah itu, transfersom BBR diformulasikan dalam emulgel dan dievaluasi uji penetrasi secara in vitro menggunakan sel difusi Franz selama 12 jam. Hasil penelitian ini menunjukkan bahwa formula yang terbaik yaitu formula F2 yang kemudian dimasukkan ke dalam sediaan emulgel. Formula tersebut memiliki bentuk yang sferis, ukuran partikel (ZAverage) sebesar 153,90 ± 2,07 nm, nilai IPD sebesar 0,103 ± 0,033, nilai potensial zeta sebesar – 32,47 ± 0,551 mV, efisiensi penjerapan sebesar 93,97 ± 0,31 %, dan memiliki deformabilitas yang baik. Emulgel transfersom berwarna kuning, homogen, dan rentang pH antara 7,2 – 7,4. Semua formulasi memiliki kadar obat dengan rentang antara 98,34 sampai 105,87 %. Emulgel transfersom F2 menunjukkan jumlah kumulatif obat yang dapat terpenetrasi paling tinggi. Nilai fluks emulgel transferom pada formula F2 (31.784 Î¼g/cm2 /jam) lebih besar dari emulgel kontrol (8.503 Î¼g/cm2 /jam). Hal ini dapat disimpulkan bahwa formula yang memiliki profil in vitro yang paling baik yaitu emulgel transfersom F2. Sediaan emulgel transfersom dapat meningkatkan penetrasi berberin klorida.
.....Berberine chloride (BBR) is a natural isoquinoline alkaloid which has a variety of pharmacological activities, such as antidiabetic. Berberine chloride (BBR) has hydrophilic character, so it has low penetration through the skin. This study was aimed to enhance penetration BBR using transfersomes emulgel for transdermal delivery. Four formulations were prepared by varying the ratio of the main ingredient concentrations used, such as phospholipid and tween 80. Transfersomes were prepared by a solvent evaporation method. Furthermore, all formulations were tested for vesicle size, zeta potential, polydispersity index (PDI), entrapment efficiency (% EE), and deformability index. After that, transfersomes BBR was formulated into emulgel and in vitro was performed by Franz diffusion cells for 12 hours. The results showed that the best formulation was F2, then it was incorporated into emulgel dosage form. It has a sperical shape, particle size (ZAverage) was 153.90 ± 2.07 nm, PDI was 0.103 ± 0.033, zeta potential value at - 32.47 ± 0.551 mV, entrapment efficiency of 93.97 ± 0.31 %, and deformable. The transfersomes emulgel BBR showed yellow, good homogeneity, and range pH 7.2 – 7.4. All formulas have drug content with a range from 98.34 - 105.87 %. Tranfersomes emulgel F2 demonstrated the highest cumulative amount of drug penetrated for 12 h across rat skin. The flux of the transfersomes emulgel formula F2 (31.784 Î¼g/cm2 /h) was greater than the control emulgel (8.503 Î¼g/cm2 /h). It can be concluded that the best in

vitro profile was tranfersomes emulgel F2. Transfersomes emulgel dosage form can increase the penetration of berberine chloride.