

Formulasi Tablet Deksmetason dengan Probiotik Menggunakan Alginat, Eudragit L100, dan Eudragit S100 sebagai Sediaan Tertarget Kolon = Formulation of Dexamethasone Multicoated Tablets with Probiotics Using Alginate, Eudragit L100, and Eudragit S100 as Colon Targeted Dosage Form

Wilson Ricardo, author

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Abstrak

Insiden inflammatory bowel disease (IBD) terus meningkat pada negara berkembang dan dipertimbangkan menjadi penyakit global. Deksmetason dipilih karena memiliki efek glukokortikoid yang poten dan anti-inflamasi. Namun, penggunaan kortikosteroid jangka panjang menimbulkan efek samping sistemik sehingga diperlukan sediaan tertarget kolon. Sediaan tertarget kolon dibuat dengan memformulasikan probiotik pada tablet inti yang kemudian disalut dengan penyalut primer dan sekunder. Probiotik berfungsi untuk menjamin pelepasan obat di kolon. Alginat dipilih sebagai penyalut primer karena memiliki sifat biodegradable pada mikroflora kolon, sedangkan kombinasi Eudragit L100 dan Eudragit S100 dipilih sebagai penyalut sekunder karena mampu melindungi obat dari asam. Formulasi tablet inti dilakukan dengan metode granulasi basah, lalu dikempa menjadi tablet. Tablet disalut menggunakan larutan alginat 3% dan larutan campuran Eudragit 10%. Penyalutan dilakukan hingga diperoleh kenaikan bobot sebesar 6,5% untuk alginat dan 8,7% untuk campuran Eudragit. Berdasarkan hasil evaluasi, tablet multisalut F3 memiliki karakteristik dan profil disolusi terbaik. Tablet multisalut F3 memiliki diameter $7,30 \pm 0,06$ mm; tebal $3,71 \pm 0,06$ mm; bobot $123,25 \pm 1,82$ mg; kandungan $104,59 \pm 1,63\%$; kekerasan $14,24 \pm 1,30$ Kp; keregasan 0,01%, dan kadar $104,18 \pm 0,63\%$. Hasil analisis SEM menunjukkan tablet multisalut memiliki morfologi permukaan dengan pori-pori yang lebih sedikit. Profil uji disolusi menunjukkan tablet multisalut F3 mengalami pelepasan obat yang lebih sedikit pada medium asam dibandingkan formulasi lain.

.....The incidence of inflammatory bowel disease (IBD) increases in developing countries and is regarded as a global disease. Dexamethasone was chosen because it has potent glucocorticoid and anti-inflammatory effects. However, long-term use of corticosteroids causes systemic side effects, so colon-targeted preparations are needed. Colon-targeted drug delivery was made by formulating probiotics in core tablets which are then coated with primary and secondary coatings. Probiotics ensure the release of drugs in the colon. Alginate was chosen as the primary coating because it has biodegradable properties on the colonic microflora. While the combination of Eudragit L100 and Eudragit S100 was selected as the secondary coating because it can protect the drug from acid. Core tablet formulation was carried out by the wet granulation method, then compressed into tablets. Tablets were coated using 3% alginate solution and 10% Eudragit combination solution. Coating was carried out until 6.5% weight gain for alginate, and 8.7% weight gain for Eudragit was obtained. Based on the evaluation results, F3 has the best characteristics and dissolution profile. The multicoated tablet has a diameter of 7.30 ± 0.06 mm, 3.71 ± 0.06 mm of thickness, 123.25 ± 1.82 mg of weight, $104.59 \pm 1.63\%$ of content uniformity, 14.24 ± 1.30 Kp of hardness, 0.01% of friability and $104.18 \pm 0.63\%$ of drug content. SEM analysis showed that the multicoated tablets had fewer pores. Dissolution test showed that F3 multicoated tablets experienced less drug release in acidic medium than other formulations.