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Karakteristik dan profil disolusi teofilin dalam matriks hidrogel poli(vinil alkohol)-ko-N-isopropilakrilamida

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Abstrak

Sediaan obat lepas terkendali merupakan sediaan yang dapat melepaskan kandungan obatnya secara terkendali. Kopolimerisasi poli(vinhl alkohol)(PVA) 10% dengan N-isopropitakrilamida (NIPAAm) 5% meriggunakan radiasi sinar gamma C060 dosis 30 kGy dengan laju dosis 8 kGy/jam dapat menghasilkan hidrogel. Hidrogel PVA-ko-NIPAAm yang memiliki sifat fisik yang baik yaltu elastis clan peka suhu ml, dipelajari pula rasio 'swelling'nya pada berbagai suhu. Imobilisasi teofilin kedalarn hidrogel dilakukan dengan metode absorbsi clan simultan, dengan dosis 50, 100, clan 150 mg per sediaan hidrogel (berat 1 000 mg, diameter 30,67 mm pada 28°C) clan diuji penglepasannya pada pH 1,2; 6,8; 7,4; clan 10,0 menggunakan alat uji disolusi. Hasil penelitian menunjukkan bahwa hidrogel PVA-ko-NIPAAm memiliki pola raslo 'swelling' yang mengecil dengan meningkatnya suhu. Adanya variasi dosis teofilin clan pH media disolusi dapat mempengaruhi profil penglepasannya, yang pada suhu 37°C mengikutl model difusi non-Fickian orde satu clan menunjukkan suatu sistem matriks 'swelling'terkendali (kombinasi difusi-disolusi). Dari hasil penelitian liii dapat dikembangkan suatu sistem penyampahan obat yang memanfaatkan hidrogel PVA-ko- NIPAAm sebagai matniks sediaan dengan penglepasan terkendali.
..... Controlled release dosage form is a dosage form which , releases its contents in a controlled manner. Copolymerization of poly(vinyl alcohol) (PVA) 10% with N-isopropylacrylamide (NIPAAm) 5% by irradiated by C060 gamma-ray from with a dose of 30 kGy (dose rate 8 kGy/h) has been carried out, in order to obtain a hydrogel. Hydrogels PVA-co-NIPAAm have produced elastic properties and thermoresponsive properties. The swelling ratio of the PVA-co-NIPAAm hydrogels were measured in various temperatures. Immobilization of theophylline with doses of 50, 100, and 150 mg were loaded into hydrogel dosage form (weight 1000 mg, diameter 30.67 mm at 28°C) by absorption and simultaneous methods. The release of theophylline from hydrogels was tested using dissolution tester apparatus in pH 1.2; 6.8; 7.4; and 10.0. The results showed that hydrogels with increasing temperature will decrease their swelling ratio . The release profile of theophylline at 37 °C from hydrogel matrix was influenced by theophylline doses and the pH of dissolution media. The release profile followed first order non-Fickian diffusion model and represented as a swelling-controlled matrix system (combination by diffusion-dissolution). From those results, it is possible to develope drug delivery system that used PVA-co-NIPAAm hydrogel as a matrix for the controlled release dosage form. 'V