

Formulation of chitosan alginate matrix loaded with oleoresin extract of red ginger using freeze drying method = Formulasi matriks kitosan-alginat dimuati ekstrak oleoresin dari jahe merah menggunakan metode pengeringan beku

Ashilla Safiya, author

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Abstrak

Metode pengering beku dilakukan untuk preparasi matriks kitosan-alginat yang dimuati ekstrak oleoresin dari jahe merah untuk administrasi oral. Metode ini memiliki keuntungan dimana hilangnya zat aktif dalam proses preparasi dapat diminimalisir serta dapat menghasilkan persentase yield dan loading yang tinggi. Jahe telah diteliti mempunyai peran dalam pengobatan kanker, termasuk kanker kolon. Komponen [6]-gingerol dalam jahe telah diidentifikasi mempunyai peran dalam penekanan terhadap proses transformasi, hiperproliferasi, dan inflamasi di tahapan karsinogenesis, angiogenesis, serta metastasis. Scanning Electron Microscopy, X-Ray Diffraction, dan Infrared Spectroscopy digunakan untuk mengkarakterisasi matriks. Simulasi pelepasan obat in vitro juga dilakukan dalam simulated gastrointestinal fluids yang menghasilkan profil rilis untuk mempelajari efek komposisi kitosan-alginat terhadap rilis dari oleoresin. Alginate terbukti dapat menahan pelepasan oleoresin pada 2 jam pertama. Komposisi rasio kitosan:alginate terbaik yang didapatkan adalah 1:0.5. Profil rilis dari matriks mengindikasikan adanya potensi matriks dapat menjadi sistem penghantar obat terkendali dengan kolon sebagai target hantaran dan metode pengeringan beku telah terbukti untuk menghasilkan persentase yield dan loading yang tinggi.

.....Freeze drying method was used for preparing chitosan alginate matrices loaded with oleoresin extract of red ginger for oral administration. This method has the benefit of minimalizing the loss of active substance during preparation and was also expected to give a high yield and loading result. Ginger has been researched to act as an active substance in the treatment of cancer, including colon cancer. The 6 gingerol content of ginger has been identified to have a role in suppression of transformation, hyperproliferation and inflammation process in carcinogenesis, angiogenesis, and metastasis steps. Scanning Electron Microscopy, X Ray Diffraction, and Infrared Spectroscopy was used to characterize the matrices.

An in vitro drug release simulation was done in simulated gastrointestinal fluids to obtain profile release in order to study the effect of chitosan alginate composition towards oleoresin release. Alginate was able to suppress the release of oleoresin in the first 2 hours. The best composition of chitosan to alginate ratio in matrix obtained was 1 0.5. The release profile obtained indicates the potential of these matrices being used as a controlled drug carrier for colon targeted delivery and freeze drying method was also proven to produce high yield and loading percentage of matrix. Controlled Release of Drugs, Ginger Oleoresin, Chitosan, Alginate, Colon Cancer, Matrix, Freeze Drying