

Karakterisasi Fisika Kimia Matriks Berbasis Kitosan untuk Pelepasan Senyawa Mangostin di Usus Besar : Efek Penambahan Pelarut Eutektik Alami = Characterization of Physicochemical a Chitosan Based Matrix on The Release Properties of Mangostin in the Colon: Effect of Natural Deep Eutectic Solvent (NADES)

Firliani Manthia, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920524610&lokasi=lokal>

Abstrak

Karakterisasi fisika kimia dilakukan pada matriks hasil freeze drying yang dimuati senyawa bioaktif γ -mangostin berbasis kitosan-alginat-pektin sebagai formulasi lepas lambat untuk pengobatan kanker usus besar. γ -mangostin yang bersifat hidrofobik dilarutkan dalam pelarut eutektik alami yang terdiri dari komponen penerima ikatan hidrogen kolin klorida dan pendonor ikatan hidrogen 1,2 propanediol dengan perbandingan rasio molar 1:5. Berdasarkan hasil karakterisasi spektroskopi infra merah (IR) terjadi interaksi di dalam matriks yaitu antara kitosan-alginat, alginat-pektin, kitosan- γ -mangostin maupun kitosan- pelarut eutektik alami, serta γ -mangostin dan pelarut eutektik alami sehingga mempengaruhi pelepasan γ -mangostin pada larutan simulasi. Karakteristik morfologi mikropartikel berdasarkan hasil uji Scanning Electron Microscope (SEM) struktur matriks dengan adanya pelarut eutektik alami menjadi lebih halus menandakan bahwa seluruh senyawa bioaktif terperangkap dan tertanam di dalam jaringan polimer. Sedangkan menurut hasil uji X-Ray Diffraction (XRD) matriks yang diperoleh dari matriks mengandung pelarut eutektik alami menghasilkan struktur yang lebih semi kristalin dibandingkan matriks tanpa pelarut eutektik alami. Menurut hasil uji melalui metode Brine Shrimp Lethality Test (BSLT) terhadap hewan uji Artemia salina bahwa γ -mangostin dan pelarut eutektik alami yang terbentuk di dalam matriks memiliki potensi sebagai zat antikanker

.....This research will execute physical and chemical characterization of freeze-dried matrix of bioactive compound based on chitosan-alginat-pectin as sustained release formulations in the drug delivery system targeting colon cancer. γ -mangosteen, which is hydrophobic was dissolved in natural deep eutectic solvent which consists of hydrogen bond acceptor chlorine chloride and hydrogen bond donor 1,2 propanediol component with molar ratio of 1:5. Based on the Infra Red Spectroscopy characterization, interactions were observed within the matrix, especially between chitosan-alginate, alginate-pectin, chitosan- γ -mangostin, and chitosan- natural deep eutectic solvent. These interactions, along with those involving γ -mangostin and natural deep eutectic solvent, were found to influence the release of γ -mangostin in simulated solutions). The Scanning Electron Microscope (SEM) revealed the presence of natural deep eutectic solvent resulted in a smoother matrix structure, indicating the entrapment of bioactive compounds within polymer network. Furthermore, the X-Ray Diffraction (XRD) test showed that the matrix containing natural deep eutectic solvent exhibited a more amorphous. According to results using Brine Shrimp Lethality Test (BSLT) on Artemia salina, γ -mangostin and natural deep eutectic solvent formed in the matrix have potential as anticancer agents.