Formulasi beads tetrandrine menggunakan polimer alginat/polivinil alkohol sebagai sediaan kolon tertarget = Formulation of tetrandrine beads using polymer alginate and polyvinyl alcohol as colon targeted dosage form

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Abstrak

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Sistem penghantaran obat ke kolon harus mampu menunda pelepasan obat hingga sistem mencapai tempat targetnya, yaitu kolon. Pada penelitian ini dipilih bentuk sediaan beads menggunakan gabungan dua polimer alginat dan Polivinil Alkohol PVA sebagai sistem pembawa Tetrandrine menuju kolon. Beads diformulasikan ke dalam tiga formula dengan perbandingan konsentrasi alginat:PVA yang berbeda-beda yaitu 2:0,5, 2:0,75 dan 2:1. Kemudian dilakukan karakterisasi meliputi morfologi, distribusi ukuran partikel, efisiensi proses, efisiensi penjerapan, penentuan kadar air, uji termal DSC , Difraksi Sinar X XRD , Spektroskopi FTIR, index mengembang, dan uji pelepasan obat secara in vitro. Formula 3 dengan perbandingan alginat dan PVA 2:1 merupakan formula terbaik dengan diameter rata-rata beads 790,87 75,64 ?m dan efisiensi penjerapan 32,12 0,84 . Uji pelepasan obat dilakukan dalam medium HCl pH 1,2 2jam , dapar fosfat pH 7,4 Tween80 2 3 jam dan dapar fosfat pH 6,8 Tween80 2 3 jam. Profil pelepasan obat in vitro dalam medium HCl pH 1,2 Formula 1, Formula 2, dan Formula 3 secara berurutan adalah 84,13 0,60, 73,12 1,64 , dan 66,57 1,56. Hasil ini menunjukan semua formula belum mampu menghasilkan sediaan kolon tertarget yang ideal.
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ABSTRAK
Colon drug delivery system should be able to maintain drug release until the system reaches its target. In this research, beads was selected as drug carrier system to deliver tetrandrine to colon using combination of two polymers, alginate and Polyvinyl Alcohol PVA . Beads were formulated into three formulas with different alginate PVA concentration 2 0.5, 2 0.75, and 2 1. Each formula were characterized based on morphology beads, particle size distribution, process efficiency, entrapment efficiency, drug loading percentage, moisture content, thermal test DSC , X ray Diffraction XRD , FTIR, swelling analysis and in vitro drug release test. Formula 3 with concentration alginate PVA 2 1 was the best formula with size of beads 790,87 75.64 m and an entrapment efficiency 32.12 0.84 . Drug release test was perform in HCl pH 1,2 2 hours , phosphate buffer pH 7,4 Tween80 2 3 hours , and phosphate buffer pH 6,8 Tween80 2 3 hours . Cumulative drug release of three formulas beads in hydrochloric acid medium was 84.13 0,60 , 73.12 1,64 , and 66.57 1,56 , respectively. Based on those result, all formulas beads are not ideal to be colon targeted dosage form, yet.