

Pembuatan dan karakterisasi protein kedelai tersuksinilasi sebagai matriks pada mikrosfer lepas lambat propranolol hidroklorida = Preparation and characterization of succinylated soybean protein as matrix for sustained release microspheres containing propranolol hydrochloride/ Lutfi Abdul Karim, Author

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Abstrak

ABSTRAK

Protein kedelai tersuksinilasi merupakan protein kedelai yang termodifikasi secara kimia dan berpotensi dimanfaatkan sebagai pembentuk matriks mikrosfer. Protein kedelai disuksinilasi dengan suksinat anhidrida 100% b/b dalam suasana basa. Protein kedelai tersuksinilasi yang diperoleh memiliki derajat suksinilasi $35,74\pm 0,38\%$, menunjukkan peak pada bilangan gelombang 1653 cm^{-1} mengindikasikan gugus karbonil amida yang terbentuk, memiliki nilai uji daya larut pada pH 1,2 sebesar $0,21\pm 0,010\text{ gram}/100\text{ ml}$ dan pada pH 7,5 sebesar $0,35\pm 0,003\text{ gram}/100\text{ ml}$, serta memiliki kemampuan mengembang pada pH 1,2 sebesar $33,21\pm 2,04\%$ dan pada pH 7,5 sebesar $66,36\pm 2,12\%$. Mikrosfer lepas lambat propranolol hidroklorida dibuat dengan eksipien konsentrat protein kedelai dan protein kedelai tersuksinilasi sebagai matriks menggunakan alat spray dryer dan dihasilkan mikrosfer dengan ukuran partikel $11,54\text{-}16,79\ \mu\text{m}$, nilai presentase rendemen $36,46\text{-}58,91\%$, dan nilai efisiensi penjerapan $95,75\text{-}99,81\%$. Formula 2 menahan pelepasan obat paling baik dalam medium pH 1,2 dengan nilai pelepasan obat kumulatif $14,44\pm 0,10\%$ selama 1 jam dan $63,05\pm 0,40\%$ jika dilanjutkan dalam medium pH 7,5 hingga jam ke-12.

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ABSTRACT

Succinylated soybean protein was chemically-modified soybean protein that could be used as matrix for sustained release microspheres containing propranolol hydrochloride. Soybean protein was succinylated with anhydride succinic 100% w/w in basic condition. Succinylated soybean protein had degree of succinylation $35.74\pm 0.38\%$, showed peak in wave numbers 1653 cm^{-1} on IR spectrum which was indicating formed amide carbonyl group, had solubility index $0.21\pm 0.010\text{ gram}/100\text{ ml}$ in aqueous medium pH 1.2 and $0.35\pm 0.003\text{ gram}/100\text{ ml}$ in aqueous medium pH 7.5, and had swelling index $33.21\pm 2.04\%$ in aqueous medium pH 1.2 and $66.36\pm 2.12\%$ in aqueous medium pH 7.5. Sustained release microspheres containing propranolol hydrochloride were made by using spray dryer and obtained microspheres had particle diameters $11.54\text{-}16.79\ \mu\text{m}$, had yield values $36.46\text{-}58.91\%$, and had encapsulation efficiency values $95.75\text{-}99.81\%$. Second formula was the best formula that could sustain drug release in the aqueous medium pH 1.2 with the value of cumulative drug release $14.44\pm 0.10\%$ for 1 hour and $63.05\pm 0.40\%$ if it was continued in aqueous medium pH 7.5 up to 12 hours.