

SORPSI DAN PELEPASAN KURKUMIN DARI *BEADS* KARAGINAN-KITOSAN DENGAN EMULSIFIER ASAM STEARAT

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INTISARI

Telah dilakukan penelitian mengenai laju pelepasan kurkumin dari *beads* karaginan-kitosan dengan penambahan asam stearat sebagai emulsifier. Penelitian ini bertujuan untuk mengetahui efektivitas *beads* dalam melepaskan kurkumin di dalam larutan buffer:etanol (v/v). Pengaruh komposisi kurkumin, asam stearat, etanol, dan variasi pH terhadap laju pelepasan kurkumin telah dipelajari dalam penelitian ini.

Beads dibuat dengan cara menambahkan asam stearat dalam larutan kitosan 1,5% kemudian dicampurkan ke dalam larutan karaginan. Larutan NaOH/KCl digunakan sebagai agen pembentukan *beads* yang kemudian disalut kurkumin dengan cara adsorpsi. *Beads* yang dihasilkan kemudian dikarakterisasi dengan spektrometer IR. Laju pelepasan kurkumin pada *beads* dilakukan dengan merendam *beads* dalam buffer:etanol selama 6 jam, kemudian dianalisis menggunakan spektrofotometer UV-Vis. Kinetika pelepasan kurkumin dianalisis dengan persamaan laju orde nol, orde satu, model Higuchi dan model Korsmeyer-Peppas.

Hasil penelitian menunjukkan bahwa penambahan kurkumin 50 ppm persentase pelepasannya adalah yang paling sedikit dibandingkan kurkumin 100 dan 150 ppm. Penambahan etanol pada media pelepasan menyebabkan persentase pelepasan kurkumin semakin besar. Pada variasi pH, nilai pelepasan kurkumin berturut-turut adalah pH 4 > pH 1 > pH 7. Pada variasi asam stearat pada penambahan asam stearat 15 mg adalah yang paling besar nilai pelepasannya dibandingkan dengan penambahan asam stearat 5 dan 10. Pelepasan optimum diperoleh pada penambahan asam lemak 5 mg pada dengan k yaitu sebesar 48,6519 menit^{0,0580} dengan mekanisme pelepasan secara difusi.

Kata kunci: asam stearat, *beads* karaginan, kitosan, pelepasan kurkumin

**SORPTION AND RELEASE OF CURCUMIN FROM
CARRAGEENAN-CHITOSAN BEADS USING EMULSIFIER
STEARIC ACID**

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ABSTRACT

The rate release of curcumin from carrageenan-chitosan beads using stearic acid as emulsifier has been done. The aim of this research was to identify effectiveness of the beads for the curcumin released in a buffer:ethanol solution (v/v). The effect of the amount of curcumin, the amount of stearic acid, the amount of ethanol, and the variation of pH to the rate of curcumin release had been studied in this research.

The beads has been prepared with adding stearic acid into chitosan solution 1.5% and then mixing it to the carrageenan solution. NaOH/KCl solution is used as gelling agent and then it is encapsulated by curcumin with the adsorption method. The beads were characterization using IR spectrometer. The rate of curcumin release was soaked it in buffer:ethanol solution for 6 hours, and then it was measured with UV-Vis spectrophotometer. The kinetics of curcumin release was analyzed using the equation models of pharmacokinetics such as zeroth order, first order, Higuchi and Korsmeyer-Peppas models.

The result of this research was showed that the addition of 50 ppm percentage of curcumin release is the least compared to curcumin 100 and 150 ppm. The addition of ethanol to the media release causes the greater percentage of curcumin release. In the variation of pH, the value of the curcumin release in a row is pH 4 > pH 1 > pH 7. The addition of stearic acid 15 mg is the greatest value of its disposal compared to the addition 5 and 10 mg. The optimum release of curcumin was occurred in the addition of 5 mg of stearic acid that has rate constant (k) of 48.65 menit^{0.06} with the release mechanism was followed by diffusion process.

Keywords: stearic acid, carrageenan beads, chitosan, the release of curcumin