

## Pengaruh formula enkapsulasi dan waktu penyalutan terhadap hasil enkapsulasi ekstrak sambiloto di dalam kasein = Effect of encapsulation formula and time depth of encapsulation on incorporation efficiency of sambiloto extract in casein nanoparticle / Hans Dinata

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### Abstrak

#### [<b>ABSTRAK</b><br>

Pemanfaatan tanaman herbal untuk antidiabetes mulai berkembang selaras dengan ditemukannya senyawa-senyawa potensial potensial sebagai antidiabetes. Herbal sambiloto mengandung senyawa aktif andrografolida yang memiliki aktivitas antidiabetes. Tujuan penelitian ini untuk mempelajari pengaruh formula kandungan obat, penyalut dan cross-linker (kalsium klorida); lama penyalutan; serta tingkat kemurnian sambiloto terhadap incorporation efficiency bahan aktif. Ekstrak sambiloto disalut dengan kasein susu dan dijadikan nanopartikel dengan memberikan gelombang ultrasonik. Incorporation efficiency dianalisis dengan menguji kandungan senyawa aktif dominan, yaitu andrografolida, 14-deoksi-11,12 dihidroandrografolida dan neoandrografolida. Hasil yang didapatkan menunjukkan bahwa rata-rata diameter nanopartikel bervariasi dari 61,41 nm sampai 478,22 nm; loading capacity bervariasi antara 28,89% sampai 89,71%; serta rata-rata incorporation efficiency bervariasi antara 58,43% sampai 85,24%. Hasil menunjukkan bahwa semakin besar jumlah kasein sampai batas tertentu, maka ukuran nanopartikel akan semakin kecil dan incorporation efficiency akan semakin baik. Sambiloto yang dipurifikasi akan menghasilkan nanopartikel yang jauh lebih kecil dengan loading capacity yang jauh lebih baik. Semakin cepat lama penyalutan dan semakin besar konsentrasi cross-linker, maka ukuran nanopartikel akan semakin kecil dan loading capacity serta incorporation efficiency akan meningkat.

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#### <b>ABSTRACT</b><br>

The utilization of herbal plants for anti-diabetic medications began to develop in harmony with the discovery of compounds as potential anti-diabetic. Sambiloto herb contains andrographolide active compound that has anti-diabetic activity. The purpose of this research is to study the effect of formula for drug content, coating and cross-linker (calcium chloride); time depth of encapsulation; and the degree of purity of sambiloto towards incorporation efficiency of active pharmaceutical ingredients. Sambiloto is coated with casein milk and made nanoparticles by giving ultrasonic waves. Incorporation efficiency was analyzed by examining the content of the dominant active compounds, namely andrographolide, 14-deoxy-11, 12 didehydroandrographolide and neoandrographolide. The results obtained showed that the average diameter of the nanoparticles varies from 61.41 nm to 478.22 nm; loading capacity varies from 28.89% to 89.71%; and the average incorporation efficiency varies between 58.43% to 85.24%. The results showed that the greater the amount of casein to a certain extent, the size nanoparticle will be smaller and incorporation efficiency will be better. Purified sambiloto will yield a much smaller nanoparticles with a loading capacity that is far better. The faster the encapsulation time and the greater the concentration of cross-linker, the nanoparticle size will be smaller and the loading capacity and the incorporation efficiency

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