**Production and Evaluation of Chitosan-Coated Nanoliposomes for Caffeine Encapsulation**

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**Abstract**

In this study, chitosan-coated nanoliposomes in ratios of 9-1, 8-2, 7-3 and 6-4 lecithin-cholesterol, were prepared using thin-film hydration method, as a practical delivery system for encapsulation of caffeine. Then, the particle size and zeta potential were measured to determine the characteristics of the produced particles. Average particle size (average hydrodynamic diameter) and particle size distribution for different lecithin-cholesterol ratios were in the range of 135.5-533.5 nm and 0.31-0.41, respectively. Zeta potential values were also obtained in the range of +40.96 to +50.5. After determining the encapsulation efficiency, FTIR method was used to investigate possible reactions between caffeine and nanoliposome wall materials. The morphology of chitosome with 9-1 ratio of lecithin-cholesterol loaded with caffeine, was shown by scanning electron microscopy (SEM). The stability of the chitosomal sample with a ratio of 1-9 lecithin-cholesterol was evaluated through visual observation of precipitation formation and calculation of the amount of release of encapsulated caffeine during 60 days of storage at ambient temperature. The results obtained in this research showed that nanochitosomes are an efficient system in maintaining and releasing caffeine.

**Keywords:** Nanoliposome, Nanochitosome, FTIR, SEM