

LIPOSOMES AS DELIVERY SYSTEMS FOR COMPLEX SOURCE OF CAFFEINE AND VITAMINS FOR FOOD AND COSMETIC APPLICATIONS

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Abstract

The presented study was focused on preparation, characterization and application of liposomes as transport systems for active components. Liposomes were prepared from mixture of egg/soy lecithin and cholesterol by sonication and thin layer evaporation methods. As active components complex natural sources of caffeine and fruit extracts were used individually as well as in mixtures.

The efficiency of encapsulation was determined by HPLC/PDA (individual phenolics, caffeine, vitamin C) and by spectrophotometry (phenolics). Long-term stability of particles and amount of released component in model/real foods, in model cosmetic conditions and in a model physiological environment were monitored too. Size of prepared liposomes was determined by dynamic light scattering. Stability of the particles was measured using a zeta potential. All types of prepared liposomes exhibited good stability. Liposomes showed a very good long-term stability mainly in water conditions with neutral pH, too. Liposomes with co-encapsulated active components exhibited relatively high encapsulation efficiency and better stability than liposomes with one type of active component.

Liposome as delivery systems for caffeine enables enhancing of active component permeation through the skin and controlled release. Particles also maintained their integrity during passage through the gastrointestinal tract until they reached their target destination. Prepared particles with encapsulated caffeine as well as other tested antioxidants and vitamins could be used to modern cosmetics products and also to food and beverage industry as active components of energy drinks and food supplements.

Keywords: Caffeine, vitamins, phenolics, liposome, co-encapsulation

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