



Research article

Liposomal carrier systems used to encapsulate garcinia extract, green coffee, and carnitine in a drinkable product

Madrigal-Redondo G^{1,2*}, Vargas-Zúñiga R^{1,2}, Chavarría-Rojas M², Sibaja-Rodríguez S², Chaves-Noguera S.³

¹Laboratorio de Biofarmaciay Farmacocinética (LABIOFAR), Instituto de Investigaciones Farmacéuticas (INIFAR), Facultad de Farmacia, Universidad de Costa Rica, San José, Costa Rica.

²School of Pharmacy, Universidad Latina de Costa Rica, San José, Costa Rica.

³Research Directorate, Universidad Latina de Costa Rica, San José, Costa Rica.

Key words: Carnitine, Phosphatidylcholine, Garcinia, Multivesicular Liposomes, Multilamellar Liposomes, Nutritional Product.

***Corresponding Author: Madrigal-Redondo G.,** Laboratorio de Biofarmaciay Farmacocinética (LABIOFAR), Instituto de Investigaciones Farmacéuticas (INIFAR), Facultad de Farmacia, Universidad de Costa Rica, San José, Costa Rica.

Abstract

In the last decades, the study and development of nutritional products have increased. Garcinia plants, green coffee, and carnitine are natural products that have been investigated due to its beneficial effects on health and pharmacological properties. Liposomes are a very common formulation option to improve the physicochemical properties and increase the bioavailability and stability of natural products.

In this study, a drinkable product with garcinia extract, green coffee, and carnitine encapsulated in liposomal vesicles was characterized. The liposomes morphology and structure were analyzed by light microscopy to determine its shape, size (diameter), and membrane thickness. The formulation was characterized measuring the following parameters: pH, degrees Brix, conductivity, refraction index, and specific gravity.

The obtained results and the execute analysis indicate that liposomes are multivesicular and multilamellar structures, a conformation with higher stability than simple liposomes. The physicochemical parameters measured can be used as quality control tests and as a start point to get better and optimize the formulation in terms of stability and organoleptic properties.