

COMPARATIVE STUDY OF ETHANOL INJECTION AND FREEZE–THAW & THIN-FILM LIPOSOMES FOR TROPANOID LOADING

Toskë Kryeziu¹, Venesa Lupçi¹, Aida Loshaj Shala¹, Mimoza Basholli Salihu¹, Simone Carradori², Ufuk Bağcı³, Andreas Zimmer⁴

¹ University of Prishtina, Faculty of Medicine, Bulevardi i Dëshmorëve, Prishtina, Kosovo

² University of Chieti-Pescara, Department of Pharmacy, Via dei Vestini 31, Chieti, Italy

³ University of Trakya, Faculty of Faculty of Engineering, Edirne, Türkiye

⁴ University of Graz, Institute of Pharmaceutical Science, Universitätsplatz 1/EG, Graz, Austria

toske.kryeziu@uni-pr.edu

Liposomes represent one of the most versatile nanocarriers in improving the solubility, bioavailability, and controlled release of bioactive molecules. The current work investigated two liposome preparation methods: ethanol injection and freeze thaw & thin-film hydration for the encapsulation of tropanoid molecules with established antimicrobial and antioxidant activities. The two liposome preparation methods were all optimized in terms of the lipids used, the cholesterol levels, and the proportion of the organic/aqueous phases. The prepared liposomes were analyzed using various techniques including dynamic light scattering (size, polydisperse index, zeta potential), spectrophotometry (encapsulation efficiency, EE%), and optical and transmission electron microscopies (TEM) (morphology). The prepared liposomes underwent stability studies according to the accelerated conditions. The findings showed that among the liposome preparations, freeze thaw & thin-film liposomes showed higher levels of encapsulation efficiency. The ethanol injection liposomes had values that were less optimal, though it led to a more compact bilayer.

References

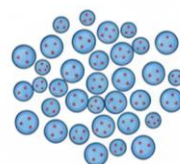
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Figures

Ethanol injection



Freee thaw & Thin film hydration

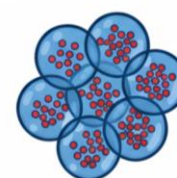


Figure 1. Illustration of liposome preparation methods: (A) Ethanol injection; (B) freeze thaw & thin-film hydration.