PREPARATION OF UNIFORM UNILAMELLAR RICH CHOLESTEROL NANOVESICLES USING CO_2-EXPANDED ACETONE

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Nowadays, uniform and small unilamellar vesicle (SUV) systems are attracting a great deal of interest as intelligent materials since they can be used as containers sensitive to external stimuli -pressure, pH, temperature or concentration changes in the medium- triggering modifications in their supramolecular structures. The control of the supramolecular organization of these systems is of profound importance for applications in material science and for drug delivery purposes. Therefore, the development of reproducible, efficient, environmental friendly and easy to scale-up methodologies for the production of vesicular systems with controlled sizes and supramolecular organizations are of great industrial interest.[1]

Herein we present a novel method for the preparation of aqueous dispersed vesicular systems of water non-soluble compounds, which uses compressed CO_2 as a co-solvent.[2,3] Particularly in this work, we show the efficiency of this new methodology for preparing in a single-step, nanoscopic sized, stable, uniform shaped and unilamellar rich in cholesterol vesicles, unachievable by conventional procedures. The resulting nanoscopic vesicular systems were characterized using dynamic light scattering, zeta potential, turbidity and by cryogenic transmission electron microscopy.

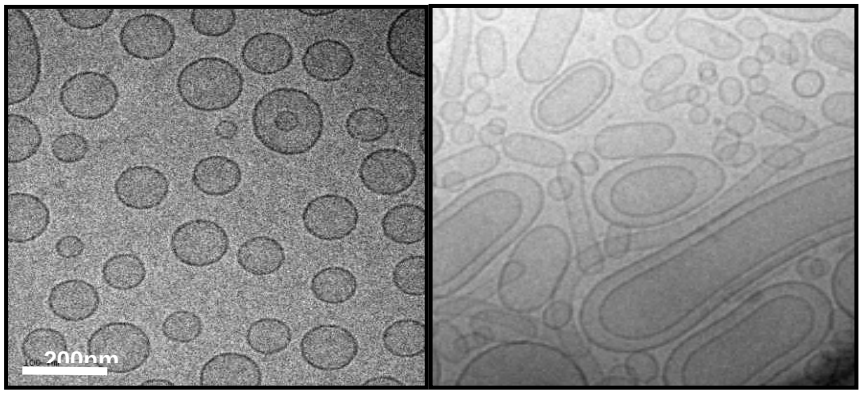

Figure 1. Cryo-TEM micrograph images of cholesterol vesicular systems obtained through the DELOS-SUSP process (left) and the conventional mixing method (right).

References

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