

**VESICLES FORMED IN PORES**

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A method of vesicles preparation in a glass sinter was elaborated in the work. At first, the suspension of aqueous solution of a hydrophilic drug, for example MTX (methotrexate), in solution of lipids in the hydrophobic solvent ( $\text{CHCl}_3/\text{CH}_2\text{Cl}_2$  1:3 v/v) was formed by mechanical mixing. Next, they were slowly dropped into a buffer, in which the final vesicles were to be suspended. The droplets form the double emulsion water/oil/water (w/o/w), i.e. the droplets of aqueous solution of drug coated by a layer of hydrophobic solution of lipids and environmental buffer. The w/o/w suspension was pulled through the G1-G4 glass sinter to a hot ( $50^\circ\text{C}$ ) environmental buffer. The sinter determines the diameter of the w/o/w droplets. In the hot buffer, during the vigorous mixing, the hydrophobic solvent evaporates, while the oil phase forms the lipid bilayer.

The highest encapsulation efficiency was 70% and encapsulation volume 40-80 ml/ $\mu\text{M}$  lipids. The resulting vesicles were unilamellar. By this method the double bilayer vesicles may be similarly prepared.

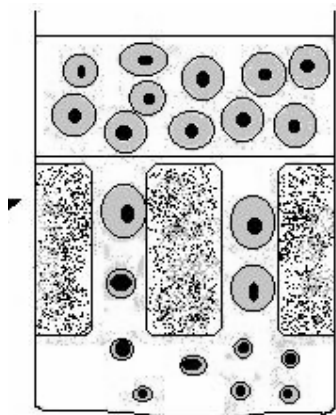


Fig. 1. The scheme of the vesicles creation in the glass sinters (the layer of rectangles). The droplets of double emulsion w/o/w (grey layers-hydrophobic solution of lipids, black circles - the droplets of solution of hydrophilic drug coated with oil phase, both above the sinter) were pulled through the glass sinter into the hot buffer. Then, the organic solvent evaporated while lipids formed the bilayers of vesicles below the sinter (the small grey-black circles).

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