

CHARACTERIZATION OF MULTILAMELLAR LIPID VESICLES

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Biological membrane is responsible for multiple physiological functions, so its research is very important. However, due to membrane complexity, these studies are a serious challenge. Model membrane system is used to make it easier. The most common model is tethered bilayer lipid membrane. Tethered bilayer lipid membrane can be formed using multilamellar lipid vesicles. This technique is new and there is not much information about the effect of multilamellar lipid vesicles on tBLM formation [1].

The aim of this work was to find sizes of various multilamellar lipid vesicles and check their ability to form tethered bilayer lipid membrane using electrochemical impedance spectroscopy.

The results have shown that when the concentration of cholesterol and the total concentration of both lipids (DPPC and cholesterol) is increasing multilamellar lipid vesicle size is getting bigger. The size of multilamellar lipid vesicle is decreasing when the concentration of DOPC is rising. Number of defects in tethered membrane depends on cholesterol concentration [2]. Also, tethered bilayer membrane can be formed when DOPC concentration is 0,25 mM and bigger. The size of liposomes is independent from time and they are suitable to use for 2 weeks.

[1] G. Valincius, T. Meskauskas, F. Ivanauskas, Electrochemical Impedance Spectroscopy of Tethered Bilayer Membranes, *Langmuir* **28**, 977-990 (2011).

[2] R. Budvytyte, M. Mickevicius, D.J. Vanderah, F. Heinrich, G. Valincius, Modification of Tethered bilayers by Phospholipid Exchange with Vesicles, *Langmuir* **29**, 4320-4327 (2013).