

A New Fluorescent Squaraine Probe for the Measurement of Membrane Polarity

Valeriya M. Ioffe,^{1,5} Galyna P. Gorbenko,¹ Yegor A. Domanov,¹ Anatoliy L. Tatarets,²
Leonid D. Patsenker,² Ewald A. Terpetsching,³ and Tatyana S. Dyubko⁴

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The present study was undertaken to evaluate the sensitivity of newly synthesized squaraine dye **1** to the changes in lipid bilayer physical properties and compared it with the well-known dye **2**. Partitioning of the dye **1** into lipid bilayer was found to be followed by significant increase of its fluorescence intensity and red-shift of emission maximum, while intensity of the dye **2** fluorescence increased only slightly on going from aqueous to lipidic environment. This suggests that dye **1** is more sensitive to the changes in membrane properties as compared to dye **2**. Partition coefficients of the dye **1** have been determined for the model membranes composed of zwitterionic phospholipid phosphatidylcholine (PC) and its mixtures with positively charged detergent cetyltrimethylammonium bromide (CTAB), anionic phospholipid cardiolipin (CL), and sterol (Chol). The spectral responses of the dye **1** in different liposome media proved to correlate with the increase of bilayer polarity induced by Chol and CL or its decrease caused by CTAB. It was concluded that dye **1** can be used as fluorescent probe for examining membrane-related processes.

KEY WORDS: Squaraines; liposomes; degree of lipid bilayer hydration.