Solubilization of dodac small unilamellar vesicles by sucrose esters: A fluorescence study

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A fluorescence method was employed to study the solubilizing interactions of several sucrose esters with Dioctadecyldimethylammonium chloride small unilamellar vesicles. In this paper we studied four different alkyl esters of sucrose, saturation and solubilization concentrations (Csat and Csol), the ester-DODAC molar ratio (Re) and bilayer/aqueous partition coefficients (K) were measured by monitoring changes in laurdan generalized polarization values. A new critical surfactant concentration at lower values than saturation concentration was observed. All critical concentrations showed linear dependence with DODAC concentration. The decrease in the length of surfactant alkyl chain (upper cmc) led to an increase in its ability to saturate and solubilize vesicles and to a decrease in its bilayer affinity. Consequently the shorter alkyl chain (lauryl sucrose ester), the higher ability to saturate and solubilize the vesicles, whereas the longer chain (stearyl sucrose ester), exhibited the h