



Interactions in two-component liposomes studied by 2D correlation spectroscopy.

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The effect of dipping amphiphilic ICPANs (1-Alkylaminium, N-[2-[3-[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy]ethyl]-N,N-dimethyl-, bromide) homologues, characterized by varying alkyl chain length ($n = 8, 10, 12$, and 16), into large multilamellar vesicles (MLVs) of dipalmitoylphosphatidylcholine (DPPC) was studied. Attenuated total reflectance infrared (ATR-IR) spectroscopy combined with ^{31}P -NMR enabled observing a cut-off effect for the longest homologue. By employing two-dimensional correlation spectroscopy (2DCOS) for monitoring spectral changes induced by the heating process, detailed information about structural changes was obtained. They confirmed the substantial reorganization in the structure of the interfacial region in the ICPAN-C16/DPPC vesicles compared with the shorter homologues, where mainly the alkyl chains experience significant trans-to-gauche reorganization. Absorbance changes around 1400 cm^{-1} assigned to the symmetric deformation mode $\delta_{\text{sym}}(^+\text{N}(\text{CH}_3)_3)$ are a good marker of changes in vesicle shape and are sensitive to the percentage of DPPC molecules directly interacting with the surface of the ATR crystal. This study clearly demonstrates the potential of 2DCOS in investigating interactions in two-component liposomes.

Słowa kluczowe

DPPC, Phenosan derivatives, Liposome, ATR-IR, Two-dimensional correlation spectroscopy (2DCOS), Cut-off effect

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