

Ethanol- and trifluoroethanol-induced changes in phase states of DPPC membranes : prodan emission-excitation fluorescence spectroscopy supported by PARAFAC analysis.

Autorzy

Martyna Horochowska
Katarzyna Cieřlik-Boczula
Maria Rospenk

Rok wydania

2018

Czasopismo

Spectrochimica Acta Part A-
Molecular and Biomolecular
Spectroscopy

Numer woluminu

192

Strony

16-22

DOI

10.1016/j.saa.2017.10.071

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

It has been shown that Prodan emission-excitation fluorescence spectroscopy supported by Parallel Factor (PARAFAC) analysis is a fast, simple and sensitive method used in the study of the phase transition from the noninterdigitated gel ($L_{\beta'}$) state to the interdigitated gel ($L_{\beta I}$) phase, triggered by ethanol and 2,2,2-trifluoroethanol (TFE) molecules in dipalmitoylphosphatidylcholines (DPPC) membranes. The relative contribution of lipid phases with spectral characteristics of each pure phase component has been presented as a function of an increase in alcohol concentration. It has been stated that both alcohol molecules can induce a formation of the $L_{\beta I}$ phase, but TFE is over six times stronger inducer of the interdigitated phase in DPPC membranes than ethanol molecules. Moreover, in the TFE-mixed DPPC membranes, the transition from the $L_{\beta'}$ to $L_{\beta I}$ phase is accompanied by a formation of the fluid phase, which most probably serves as a boundary phase between the $L_{\beta'}$ and $L_{\beta I}$ regions. Contrary to the three phase-state model of TFE-mixed DPPC membranes, in ethanol-mixed DPPC membranes only the two phase-state model has been detected

Słowa kluczowe

PAFARAC analysis, Prodan emission-excitation spectra,
Interdigitated phase, phase transition, Alcohol molecules,
Fluorous compounds

Adres publiczny

<https://doi.org/10.1016/j.saa.2017.10.071>

Strona internetowa wydawcy

<http://www.elsevier.com>

