Effects of the phenolic lipid 3-pentadecylphenol on phospholipid bilayer organization.

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Streszczenie

3-Pentadecylphenol (PDP) belongs to a natural group of amphiphilic phenols and plays a lot of different interesting functions. Effects on the phase behavior of bilayer mixtures of DPPC (dipalmitoyl phosphatidylcholine) or MPPC (l-myristoyl-2-palmitoyl-phosphatidylcholine) and PDP has been investigated using electron microscopy, differential scanning calorimetry (DSC) and fluorescence spectroscopy. Addition of 3-pentadecylphenol increases the phase transition temperature T_m. Above 20 mole % PDP in DPPC the phase behavior becomes increasingly complex. Coexistence of various phases within the bilayer with different composition and structural properties is suggested and is responsible for the changes of the physico-chemical properties of the lipid bilayer. Excellent analogy between fluorescence and calorimetric data demonstrate that phase effects are primarily caused by the abundance of the large phenolic headgroup. DPPC and MPPC bilayers are similarly affected but MPPC is more sensitive to added PDP.

Słowa kluczowe

Phenolic lipids, Liposomes, Differential scanning calorimetry, Fluorescence, Electron microscopy

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