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Influence of Nature of Functional Groups on Interaction of Tetrasubstituted at Lower Rim p-tert-Butyl Thiacalix[4]arenes in 1,3-Alternate Configuration with Model Lipid Membranes

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Abstract

The influence of p-tert-butyl thiacalix[4]arenes (1,3-alternate) functionalized by N-propyl morpholine, N,N-dipropyliden-amine and aminodiacetate fragments on dynamic structure of liposomal membranes prepared from dipalmitoyl phosphatidylcholine was investigated by means of electron spin resonance spin-probe technique and Fourier transform infrared spectroscopy. Nuclear magnetic resonance and transmission electron microscopy techniques were applied to characterize the interacting systems. The obtained results have shown that all studied calixarenes interact with polar domains of bilayer. Depending on functional groups and hydrophobic/hydrophilic properties of calixarenes they can dip into bilayer, locate close to the surface of bilayer or form bridges between positively charged groups of adjacent lipid molecules, thus assisting to disordering or putting in order the lipid molecules. © 2011 Springer-Verlag.

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