

Laurdan emission study of the cholesterol-like effect of long-chain alkylresorcinols on the structure of dipalmitoylphosphocholine and sphingomyelin membranes.

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Streszczenie

Long-chain alkylresorcinols (ARs) are commonly found in plant and bacteria cells, and they exhibit a wide variety of biological effects, including antifungal, antitumor, and antiphrastic activities. The cholesterol (Chol)-like effect of ARs with hydrocarbon side-chain lengths ranging from C15 to C25 on the structure of pure and Chol-doped dipalmitoylphosphocholine (DPPC) and sphingomyelin (SM) membranes was investigated by Laurdan fluorescence spectroscopy. The Laurdan emission generalized polarization parameter was analyzed as a function of the temperature and excitation wavelength in DPPC (or SM)/Chol, DPPC (or SM)/AR, and DPPC/Chol/AR systems. It was found that AR incorporation into both DPPC and SM bilayers induces an increase in the temperature of the main lipid phase transition, similar to the effect of Chol molecule incorporation. The phase separation, lipid-chain ordering, and membrane hydration are discussed for the AR-mixed membranes and compared with DPPC (or SM)/Chol membranes.

Słowa kluczowe

Laurdan fluorescence, DPPC membranes, Sphingomyelin (SM), Cholesterol, Long chain alkylresorcinols, Lipid main phase transition, hydration of lipid membrane, Lipid chain order

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