

FTIR-ATR study of the influence of the pyrimidine analog of fluphenazine on the chain-melting phase transition of sphingomyelin membranes.

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Streszczenie

The membrane perturbing potency of the highly effective anti-multidrug resistance (MDR) pyrimidine analog of fluphenazine (FPh-prm), has been studied using attenuated total reflectance Fourier-transfer infrared spectroscopy (FTIR-ATR). The temperature- and FPh-prm-dose-dependent evolutions of the infrared spectra of FPh-prm/sphingomyelin (SM) mixtures were analyzed using principal component analysis (PCA). It has been postulated that the distinct anti-MDR activity of FPh-prm could be related to its ability to affect the modification of SM membranes. A reduction in the temperature of the chain-melting phase transition was observed in FPh-prm-mixed SM membranes together with the loosing of the phase transition cooperativity. Increasing the temperature led to the trans to gauche isomerization of FPh-prm-rich lipid membranes, which resulted in the gradual release of FPh-prm from the lipid membrane to the water phase.

Słowa kluczowe

Sphingomyelin bilayer, Membrane solubilization, Principal component analysis, Analogs of fluphenazine, FTIR-ATR spectroscopy

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