

Interactions of dihydrochloride fluphenazine with DPPC liposomes: ATR-IR and ^{31}P NMR studies.

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The influence of dihydrochloride fluphenazine (FPh) on the dipalmitoylphosphatidylcholine (DPPC) bilayer structure was investigated using ATR-IR and ^{31}P NMR methods. The ATR-IR results indicate an increase in conformational disorder in the hydrophobic part compared with pure DPPC liposomes and a decrease in temperature of the chain-melting phase transition in FPh/DPPC liposomes. These effects depended on the concentration of the drug in the DPPC bilayer. The dihydrochloride fluphenazine molecules form H-bonds with the proton-acceptor carbonyl groups of DPPC molecules. At a higher concentration of the drug, the lipid bilayer structure is destroyed, and an isotropic phase is observed using ^{31}P NMR spectroscopy. The interactions between FPh and the lipid bilayer have a crucial role in MDR (multidrug-resistant) activity of this drug. These results improve one possible strategy of cancer chemoprevention with FPh accompanied by fluidization and destabilization of the model lipid bilayer structure.

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<https://www.acs.org/content/acs/en.html>