

The Influence of Cholesterol on the Interaction between *N*-Dodecyl-*N,N*-dimethyl-*N*-benzylammonium Halides and Phosphatidylcholine Bilayers

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Effects of *N*-dodecyl-*N,N*-dimethyl-*N*-benzylammonium halides (DBeAX) on thermotropic phase behavior of phosphatidylcholine/cholesterol bilayers as well as on ^1H NMR spectra were studied. The surfactants were added either to the water phase or directly to the lipid phase (a mixed film was formed). The benzyl group, opposite to liposomes without cholesterol, is not incorporated into the bilayer in the gel state but only in the liquid state. All the halides DBeAX (particularly the chloride DBeAC) showed greater ability to destabilize the membrane structure in the presence than in the absence of cholesterol. The interaction of DBeAX with DPPC/cholesterol bilayers and subsequent changes in the phospholipid bilayer organization depended on the kind of counterion. The strongest effects were observed for chloride (most electronegative ion) and for iodide (largest ion). The effects of chloride and bromide on phase transition and ^1H NMR spectra in the presence and absence of cholesterol were opposite. This is discussed in terms of the influence of counterions on the pair cholesterol-DPPC interactions.

Key words: DPPC, Cholesterol, *N*-Dodecyl-*N,N*-dimethyl-*N*-benzylammonium Halides