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Disordering of phospholipid headgroups induced by a small amount of polyethylene oxide

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Abstract

We present a 31P NMR spectroscopy study of planar glass-plate-oriented multi-bilayers of dimyristoylphosphatidylcholine (DMPC) with addition of polyethylene oxide (PEO). This work revealed the presence of a new component in the spectra that appeared only with addition of a small fraction of PEO (up to one PEO segment per dimyristoylphosphatidylcholine molecule) and disappeared when larger amounts of PEO were added. We explained this phenomenon as an effect of an inhomogeneous force field induced by the PEO molecules located at a certain depth in the lipid membrane interface region. Copyright © 2012 John Wiley & Sons, Ltd.

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Keywords

31P, biomembranes, lipid bilayers, lipid phase, NMR, polymer adsorption