Interaction of amphiphilic oligonucleosides with cell membrane models

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The incorporation of fractions of nucleic acids into cell membranes usually delays the protein synthesis, which has been exploited in several areas of biomedicine. For a stronger interaction with lipid interfaces, hydrophobic groups can be incorporated to the nucleosides that interact with cell membranes without affecting their structure and stability. Also, the adhesion of nucleotides to artificial membranes with pre-adsorbed nucleosides may occur due to specific interaction of paired strips of nucleic acids. Usually, double strips have an α-helix structure similar to that found *in vivo*, and this is strong motivation for studying molecular level interactions between nucleosides and models of cell membrane. In this study, we investigated two hydrophobic modified nucleosides, referred to as OK211 and AD4 [1], which were spread at the air-water interface forming Langmuir monolayers. These films were characterized by surface pressure and surface potential-area isotherms. We also investigated the interaction of the nucleosides with monolayers of dipalmitoylphosphatidylcholine (DPPC), used as simplified model membranes. The isotherms for the mixed films showed that both OK211 and AD4 expand the DPPC monolayer, probably with insertion of the hydrophobic tail into the monolayer. These mixed films could be transferred onto solid substrates, in the so-called Langmuir-Blodgett (LB) films, where the presence of the nucleosides could be confirmed with UV-vis and fluorescence spectroscopy data.

Keywords: Biological Membranes, Langmuir-Blodgett films, Nucleosides, Langmuir Films

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