KL_4 SELECTIVITY IN PENETRATION OF SATURATED LUNG SURFACTANT LIPID COMPONENTS AND MODIFICATION OF BILAYER PROPERTIES

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Abstract KL_4 is a synthetic peptide that has been shown to have similar functionality to that of surfactant protein B, an essential component for lowering the surface tension of the alveoli, restoring lung compliance and promotion of oxygen exchange. A mechanistic understanding of its ability to affect lipid dynamics and modify “fluidic” properties was studied using fluorescence pyrene excimer to monomer ratios and anisotropy. Visible differences between the emission spectra of our two-lipid model systems (POPC:POPG and DPPC:POPG) containing a pyrene-labeled phospholipid analog were recorded with varying concentrations of the peptide. The results showed dynamic changes in its interaction with the DPPC:POPG system, which is in agreement with previous work that demonstrated it deeply inserts into DPPC:POPG MLVs versus its peripheral association with POPC:POPG MLVs in the fluid phase. When we measured the anisotropy of DPH in our model lipid systems, we observed unexpected trends, which could be indicative of phase separations in the lipid systems.