Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Lipid membrane structure and dynamics in the presence of tamoxifen and antimicrobial peptides[1] SAMUEL HEBENSTREIT, Colorado Mesa University, NAWAL KHADKA, JIANJUN PAN, University of South Florida — Lipids are organic molecules composed of hydrophobic fatty acid tails and hydrophilic head groups that can form a multitude of structures, including lipid vesicles which provides an excellent model representing cell membranes. In this study, we examine the effects of antimicrobial peptides and drugs on lipid vesicles. Fourier transform infrared spectroscopy measurements are performed with and without the antimicrobial peptide. A change in absorbance corresponding to the wavenumber regimes associated with the stretching of the carbonyl and phosphate groups is observed. Also, a dye leakage assay is performed with vesicles composed of neutral and charged lipids. Calcein dye is enclosed within these vesicles in solution. Different concentrations of the active and inactive antimicrobial peptides, and tamoxifen are incubated with the vesicles. Concentration dependent dye leakage is determined by measuring fluorescence intensity before and after the addition of the peptides and tamoxifen. Different leakage behavior is observed for the active and inactive peptides, and the lipid composition of the vesicle is found to have a large effect.

[1]Supported by an NSF grant

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Date submitted: 13 Nov 2014 Electronic form version 1.4