ESRF	**Experiment title:** Influence of anti-cancer drugs on the molecular organization of lipid monolayers	**Experiment number**: SC-1425
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Report:

The experiments were published in the work that was accepted to the European Biophysical Journal in february, 2006 (see abstract below).

Title: Lipid Model Membranes for Drug Interaction Study
Authors: L. P. Cavalcanti, O. Konovalov, I. L. Torriani

ABSTRACT

The present work shows a structural study on the process of incorporation of a hydrophobic drug, Ellipticine (ELPT), into lipid model membranes for drug targeting purpose. The ELPT is an alkaloid that showed an anti-proliferation activity against several types of tumor cells and against the HIV1 virus. We used the zwitterionic lipid dipalmitoyl phosphatidylcholine (DPPC) and four different anionic lipids, cardiolipin (CL), dipalmitoyl phosphatidic acid (DPPA), dipalmitoyl phosphatidylglycerol (DPPG) and dipalmitoyl phosphatidylserine (DPPS), both spread on a Langmuir monolayer and deposited on a solid substrate to mimic a model membrane and study the interaction with the drug ELPT. X-Ray Reflectivity results pointed toward an increase in drug loading efficiency up to 13.5% mol/mol of ELPT into mixed systems DPPC/CL. This increasing in loading efficiency was also accompanied by a slight distortion in the stacking of the bilayers less evidenced after optimization of the molar ratio between the co-lipids. Grazing Incidence X-Ray Diffraction measurements revealed an in-plane lattice distortion due to the presence of hydrocarbon chain backbone ordering in pure systems of DPPC doped with ELPT. The same was not observed in mixed membranes with DPPC/CL and DPPC/DPPA.