

## THE EFFECT OF SELECTED CATIONIC SURFACTANT ON THE STRUCTURE OF HYDRATED DMPC STUDIED BY SMALL ANGLE X-RAY SCATTERING (SAXS)

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In water environment phospholipids are capable of forming different structural phases. Depending on their concentration, pH of the environment and the length of hydrophobic chains, they can form a series of lamellar or micellar phases. In the mixtures with some surfactants or other phospholipids (mixtures of phospholipids of long and short chains) bicellar systems are formed [1-3]. The study has been performed on the model systems of biological membranes obtained on the basis of 1,2-dimyristoyl-sn-glycero-3-phosphocholine (DMPC). The influence of a cationic surfactant from the group of morpholine derivatives on the structure of the model system of biological membranes has been determined by the small angle X-ray scattering method (SAXS).

A series of the SAXS measurements was performed at DESY (EMBL BL X33, Hamburg, Germany) using the synchrotron radiation ( $\lambda=0.15$  nm) and the Pilatus photon counting detector. Measurements were performed at temperatures ranging from 4 to 60°C and for the scattering vector  $0.05 < s < 5.0 \text{ nm}^{-1}$  ( $s = 4\pi\sin\theta/\lambda$ ). The measurements were supplemented with tests of the environmental toxicity of the surfactant used. The SAXS results implied a gradual disappearance of the lamellar

phase typical of DMPC and a probable formation of the bicellar phase.

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