



Interactions in the pre-AD mimicking model membranes

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The Alzheimer's disease (AD) is a devastating neurodegenerative disease caused by the formation of senile plaques, primarily consisting of Amyloid-beta peptides. The crucial role in this process at its pre-clinical stage is likely imparted by peptide-membrane interactions [1], though the further details are yet to be understood. Our recent experimental data for example revealed several intriguing structural properties of biomimetic membranes. First, it is their sensitivity to the charge present in the surrounding environment. The structure of membranes changes with increasing concentration of ions, which appears to be an effect born by peculiar properties of ions and lipid themselves [2]. Interestingly, the differences in lipid interactions with ions have been noted to be underlined by the hydration properties of the ions. The hydration interactions appear to determine also the location of other membrane constituents, such as cholesterol. Moreover, cholesterol increases the order of lipid hydrocarbon chains while increasing the stiffness of membrane, in the contrary to the fluidizing effect of melatonin [3]. Both of the latter effects have been correlated recently with the development of AD. We are particularly interested in investigating the effect of membrane fluidity, that can be controlled by the two additives, on the interactions taking place in such pre-AD mimicking model membranes [4].

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Primary authors: KUCERKA, Norbert (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research in Dubna, Russia and Department of Physical Chemistry of Drugs, Faculty of Pharmacy, Comenius University in Bratislava, Slovakia); KONDELA, T. (Department of Physical Chemistry of Drugs, Faculty of Pharmacy, Comenius University in Bratislava, Slovakia and Department of Nuclear Physics and Biophysics, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Slovakia)

Co-authors: MURUGOVA, T. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research in Dubna, Russia and Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russia); IVANKOV, Olexandr (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research); ERMAKOVA, E. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research in Dubna, Russia); DUSHANOV, E. (Laboratory of Radiation Biology, Joint Institute for Nuclear Research in Dubna, Russia and Department of Chemistry, New Technologies and Materials, Dubna State University in Dubna, Russian Federation); KHOLMURODOV, K. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research in Dubna, Russia and Department of Chemistry, New Technologies and Materials, Dubna State University in Dubna, Russian Federation)

Presenter: KUCERKA, Norbert (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research in Dubna, Russia and Department of Physical Chemistry of Drugs, Faculty of Pharmacy, Comenius University in Bratislava, Slovakia)

