O-03

Influence of selected gemini surfactants and sulfobetaines on structure of BSA and lysozyme

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Protein aggregation is a major problem investigated by scientists nowadays. This phenomenon is directly connected with numerous human neurodegenerative diseases, e.g. Alzheimer disease. Moreover, protein aggregation is often regarded as an undesired effect in biochemistry or biotechnology. Substances that hamper growth of protein agglomerates are of substantial significance and are therefore intensively sought for.

Besides sulfobetaines, dicationic surfactants, called gemini surfactants, are a promising group of aggregation inhibitors. They have very low critical micellar concentration (cmc), exhibit easy adjustment of properties due to their considerable diversity and they also form micelles similar in structure to cell membranes.

Bovine serum albumin (BSA) plays an important role in binding and transporting various substances within bovine blood vessles as well as is often used as model protein. Also lysozyme is a model protein suitable to perform aggregation examination.

Surfactant-protein samples were measured with use of two techniques: small angle X-ray scattering (SAXS) at DESY synchrotron, Hamburg, Germany, and circular dichroism (CD). The results of these experiments will be presented on the conference.

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P-01

Studies of selected gemini surfactants complexes with DNA and siRNA *using biophysical methods*

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Gene therapy is currently the most promised method of treatment for diseases of genetic origin. Unfortunatelly the sucessful transfection of genetic material into the cell is very difficult. Hopes, however, give gene therapy [1].

The promising new class of compounds, capable of forming the structural forms desired for the transport and protection of genetic material are dicationic surfactants (gemini surfactants) [2].

This study aimed to investigate the complexation of ten gemini surfactants C12J-Cn type with DNA and siRNA using the circular dichroism (CD), small angle X-ray scattering (SAXS) and gel electrophoresis methods.

This research found, that the complex formation process occurs as well as demonstrated that these complexes are capable of efficient transfection of live cells [3].

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