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The effect of dyes on the interaction of HSA with monoclonal antibody

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Proteomic analysis of human samples and protein identification has an increasing impact on life sciences, biomedical and diagnostic applications. The human plasma contains large number of proteins with different size and functions. The peptidome is thought a rich source of biomarkers that can be used to examine organ functions, get information about status of diseases or analyze clinical samples during the IVF procedures. Usually these biomarkers have low abundance or small molecular weight that makes difficult to detect especially at the presence of high abundance proteins such as serum albumin and immunoglobulins. Thus prior fractionations or other enrichment procedures are applied that makes the analysis time consuming process. The main goal of our project is to produce nanoparticles with immobilized antibody that can be applied in on-line depletion/digestion of serum albumin from human plasma or cell cultures from IVF procedures. Antibody-antigene interactions are usually strong enough to form large stability associates that make these nanoparticles single use devices. Organic dyes with specific interaction with the albumin molecules might be good candidates to compete in these reactions, so the strong interaction between the HSA and its monoclonal antibody might break without destroying the structure of the antibody. Dye molecules such as procion red or cybacron blue are shown to form associates with the HSA so they are good candidates in these competeing reactions. NMR and electrophoretic measurements will be discussed in this paper to study the effect of the presence of these dye molecules on the antibody-antigene systems.

Biography

Sandor Viski has started his Chemical Engineering BSc study at the University of Debrecen in 2015. He joined to the Colloid Chemistry group at the Department of Physical Chemistry Department as a first year student and started to work with Zoltan Nagy on the field of proteomic studies. His goal is to find a specific molecule that is able to break the strong HSA-antibody interaction, to regenerate HPLC monolithic columns with immobilized antibodies. Using NMR and electrophoretic techniques he is trying to find out the proper experimental conditions, where the specific molecules can enter into a competition reaction with the HSA along with its monoclonal antibody.

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