## New methods of study of reactivity and barrier properties of biocolloids

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The main aim of this work was the study on reactivity, transport and barrier properties of biocolloidal and synthetic polymeric substances by simple diffusion techniques. It was studied mainly the influence of basic physic-chemical parameters (temperature, concentration, pH and modification of material [1]) on the reactivity and barrier ability of chosen compounds. Further substances were chosen as a model compounds: biocolloids (humic acids, alginate, chitosan, hyaluronate) and synthetic polymer (polystyrenesulfonate). Reactivity, barrier and transport properties of chosen substances were studied by interactions with oppositely charged basic organic dyes (methylene blue, rhodamine 6G, amido black 10B respectively) in non-reactive hydrogels matrix based on linear polysaccharide (agarose). The attention was also paid to basic physic-chemical characterisation (infrared spectroscopy, rheology, elemental analysis, thermogravimetry and scanning electron microscopy) of chosen materials and also hydrogels. Key part of the whole work was the optimization of selected diffusion techniques (diffusion cell technique [2] and nonstationary diffusion in cuvettes [3]) designated for the study on reactivity and barrier properties of wide range compounds (optimized method should be used as an universal method for simple and fast determination of reactivity of different compounds at given or changing conditions). The rate of reactivity and barrier properties was determined based on fundamental diffusion parameters such as diffusion coefficients, break-through time so called lag time, interfacial concentration of chosen organic dye, apparent equilibrium constant, tortuosity factor, partition coefficient.

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