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## Sugar-binding potential of the zeolite clinoptilolite pre-treated water

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Zeolite clinoptilolite is a natural aluminosilicate material with a porous structure where the negative net charge of the material is counter balanced by cations. The main clinoptilolite physical-chemical properties include ion-exchange and molecular sieve properties that enable ion-exchange and/or adsorption of different molecules in the pores of the material and on the surface. These properties are relevant for biological effects of clinoptilolite materials in oral applications as well. We therefore tested the affinity of different clinoptilolite materials for sugar molecules *in vitro*. We hypothesized that sugars will bind to clinoptilolite surface either through adsorption or covalently by forming the Al(Si)-O-sugar bond. For this purpose, we prepared a suspension of different clinoptilolite materials and water, incubated for 24 hours. Supernatant was separated from the precipitate by centrifugation at 3700 rpm. Three different sugars (sucrose, glucose and fructose at 100 g/l) were added both to the supernatants and precipitates and incubated for 48h. Centrifugation was then conducted at 1,400,000 rpm to completely remove zeolite particles from the sugar solution. Obtained results showed a decrease in the sugar amounts in the supernatant by an average of 20-30% for different clinoptilolite materials, while in the precipitate the sugar amount was increased by an average of 8-15%. This shows a potential of zeolites for the *in vivo* control of sugars entrance from the intestine into the bloodstream.

### Biography

Rumenka Markoska is working as a Chemistry Teacher. Her current scientific interest and PhD thesis subject is in the field of zeolites applications in health. Her focus is on the analyses of physical-chemical properties of different zeolite clinoptilolite materials and their correlation with biological effects

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