

## **Influence of the hybrid materials used for immobilization of fungal cells for lactic acid production**

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The sol-gel materials belong the hybrid materials containing organic and inorganic components and possessing nanoscaled structure, multifunctional properties and possibilities for application in optics, electronics, medicine, pharmacology and biotechnology. [1]. In recent years the interest towards the microbial production of lactic acid is constantly increasing due to its broad application [2]. New biotechnological approaches are being sought to intensify the lactic acid production, one of them being the use of immobilized cells.

In this work the research results on the sol-gel synthesis and structure of silica nanocomposites, containing carrageenan and their application as carriers for cell immobilization were described. The samples were prepared at room temperature by replacing quantity of the inorganic precursor with  $\kappa$ -carrageenan and HEMA. For studying the structure of the synthesized hybrids the following methods were used: FT-IR, XRD, BET-Analysis, EDS, SEM, AFM and roughness analysis.

The obtained materials were applied for immobilization of spores of the model strain *R. oryzae*, performing fermentation of glucose aerobically to obtained lactic acid and tested at repeated batch and fed batch experiments. The production of lactic acid was estimated for both matrices with immobilized spores.

### **References**

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2. V. Kitpreechavanich, T. Maneeboon, Y. Kayano, K. Sakai, *J. Biosci. And Biotech.* 106 (2008) 541.