



Vabilo na Preglov kolokvij / Invitation to the Pregl colloquium

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Velika predavalnica Kemijskega inštituta /
Great Lecture Hall
National Institute of Chemistry
Hajdrihova 19, Ljubljana, Slovenia

Alginate-based polymeric microspheres for immunoprotection of transplanted insulin-producing cells in diabetes treatment

Currently available insulins, glucose-sensing and insulin delivery technologies enable a precise control of blood glucose levels in diabetes management. However, a substantial number of diabetic patients remain unable to maintain physiological glucose levels, leading to health complications. For these patients, transplantation of functional insulin-producing cells offers a promising therapeutic alternative. In allogeneic transplants, however, immunosuppression is required to prevent immune rejection.

Our approach aims to develop polymeric microspheres that provide long-term immunoprotection while supporting the survival and insulin-secretory function of transplanted cells. Alginate-based microspheres, stabilized by divalent cations, polyelectrolyte complexation, or a combination of both, have been evaluated in animal models with the vision toward clinical trials. Key factors influencing the biocompatibility, stability, and functionality of encapsulated cells, including polymer synthesis, encapsulation techniques, and physical, chemical, and biological characterization, will be discussed.

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Vljudno vabljeni / Kindly invited