

Protein polymer hydrogels for bone tissue engineering.

Malgorzata Wlodarczyk-Biegun

Wageningen University, The Netherlands

Hydrogels have found many different applications in modern medicine. Recently, interest in using hydrogels in bone tissue regeneration is arising due to their favourable properties, such as injectability, possibility of bioparticles incorporation and (usually) biocompatibility. In our study we used collagen-inspired telechelic triblock copolymers and silk-collagen-like block copolymers to obtain hydrogel scaffolds. We investigated erosion rate and stability of hydrogels with different composition and proteins concentration in phosphate buffered saline (PBS) at 37 °C - the environment similar to human body. To this end, protein release from the hydrogel was monitored with spectrophotometry as a function of time. Based on the erosion studies we chose materials for biological evaluation and cell growth tests. Further research on biocompatibility and hydrogels mineralization is planned for the near future. In case of positive and satisfactory results in vivo testing can be conducted.