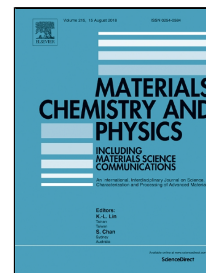


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Synthesis and characterization of hydroxyapatite-alginate nanostructured composites for the controlled drug release

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Abstract

Bone scaffolds should exhibit antimicrobial activity against bacteria, which is one of the problems in the treatment and regeneration of bone tissue in orthopedics and dentistry. Chlorhexidine (CHX) is very common in practical medicine as an antibacterial agent. We have developed a composite biomaterial based on hydroxyapatite (HA), sodium alginate (Alg) and CHX, which can be used as carrier system for local drug delivery, in particular for dental application. The suitability of HA/Alg/CHX composite to act as slow release drug delivery systems was evaluated in phosphate-buffered saline (PBS) using a high-performance liquid chromatography. The dependence of drug release from the content of Alg and the method of the material preparation (drying at 37 °C, lyophilization at -55 °C and annealing at 1100 °C, in form ceramic scaffolds) was investigated. The presence of Alg in the composite increased the volume of adsorbed and released CHX by 2

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