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Development of K-doped ZnO nanoparticles encapsulated crosslinked chitosan based new membranes to stimulate angiogenesis in tissue engineered skin grafts

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Abstract

Nanoparticles are well recognized for their biological applications including tissue-regeneration due to large surface area and chemical properties. In this study, K-doped zinc oxide (ZnO) nanoparticles containing porous hydrogels were synthesized via freeze gelation. The morphology and pore dimensions were studied by scanning electron microscopy (SEM). The chemical structural analysis of the synthesized hydrogels was investigated by Fourier Transform Infrared (FTIR) spectroscopy. In swelling studies, material containing ZnO nanoparticles with 2% potassium dopant concentration (CLH-K_{2.0}) showed greater degree of swelling as compared to all other materials. The degradation studies were tested in three different degradation media,

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