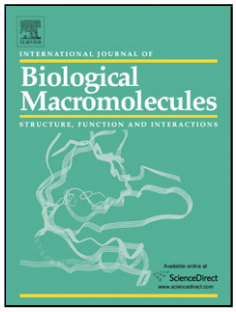

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Preparation and optimization of chitosan-gelatin films for sustained delivery of lupeol for wound healing

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Abstract

Lupeol entrapped chitosan-gelatin hydrogel (LCGH) films were prepared by solution cast method by blending chitosan and gelatin solution using glycerol as plasticizer, followed by crosslinking with glutaraldehyde. LCGH films were characterized by scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), differential scanning calorimetry (DSC), equilibrium water content (EWC), Water vapor transmission rate (WVTR) and *in vitro* release studies. SEM confirmed presence of the uniform porous network of both blank and LCGH films. The incorporation of lupeol in hydrogel was confirmed FTIR and DSC. The LCGH film was smooth, flexible, non-brittle and showed excellent swelling ability. EWC (85.40%) and WVTR (2228 ± 31.8) met the condition of ideal wound dressing. The biological activity of lupeol was assessed by antioxidant and antibacterial assay. Antioxidant assay confirmed that lupeol and LCGH film have excellent antioxidant properties by scavenging both radicals at steady increasing rate which increases with time due to steady release of lupeol. Antibacterial activity of lupeol in LCGH film was found to be retained as assessed by disc diffusion method. Cell viability was