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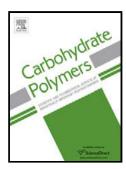
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Synthesis of xanthan gum graft copolymer and its application for controlled

release of highly water soluble Levofloxacin drug in aqueous medium

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Highlights

Developed Xanthan gum based graft copolymers of Poly(N-vinyl pyrrolidone)

Graft copolymers are cross-linked sodium alginate, which form 3 dimensional network

Cross-linked polymers form circular beads which loads highly soluble levofloxacin

Beads deliver highly soluble levofloxacin with very controlled rate at pH 7.4 & 37°C

Abstract

Graft copolymers (XG-g-PNVP-1 to XG-g-PNVP-5) of xanthan gum (XG) and poly(N-vinyl-2-pyrrolidone)

(PNVP) was synthesized by free radical polymerization using peroxymonosulphate/thiourea redox

pair. The synthesized graft copolymers were well characterized by ¹H NMR, FTIR, XRD, SEM, TGA/DTA

and AFM analyses. The optimum conditions for maximum grafting were determined by varying the

concentrations of N-vinyl-2-pyrrolidone (NVP) from 10×10⁻² to 18 × 10⁻² mol dm⁻³; the grafting ratios

increases up to 14 × 10⁻² mol dm⁻³, while thereafter decreased. Graft copolymer (XG-g-PNVP-D) hybrid

was prepared to load levofloxacin drug, about 15 mg drug was loaded; and its release was studied in

phosphate buffer solution (PBS) at pH 7.4 on 37±0.1 °C; About 80% drug was released in 36 hours.

Keywords: Graft Copolymer; Xanthan Gum; N-Vinyl-2-pyrrolidone; Drug Delivery.

Chemical compounds studied in this article

N-vinyl-2-Pyrrolidone (PubChem CID: 6917); Levofloxacin (PubChem CID: 149096);

Levofloxacin (PubChem CID: 5102882)

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