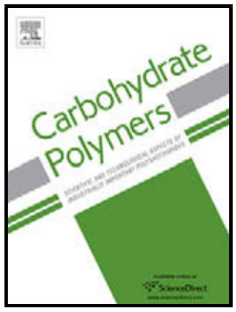

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Synthesis of xanthan gum graft copolymer and its application for controlled release of highly water soluble *Levofloxacin* drug in aqueous medium

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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 ^{1}H 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)