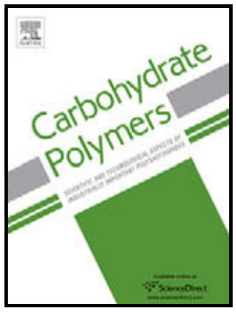

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Crosslinking of poly(vinylpyrrolidone)/acrylic acid with tragacanth gum for hydrogels formation for use in drug delivery applications

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Highlights

- Drug ciprofloxacin release followed non-Fickian diffusion mechanism.
- The release profile of drug is best fitted in Korsmeyer-Peppas kinetic model.
- Hydrogels showed pH responsive swelling behavior.
- Hydrogels are mucoadhesive in nature and can provide site specific drug delivery.
- Mesh size of hydrogels decreased with increase in crosslinker concentration.

Abstract

Tragacanth gum (TG) is generally recognized as safe by the Food and Drug Administration. The present article discusses the design of ciprofloxacin loaded TG based hydrogels for use in drug delivery especially to improve the pharmacotherapy of diverticulitis. The polymers were characterized by SEMs, FTIR, ^{13}C-NMR, XRD, TGA, DSC, gel strength and swelling studies. The polymer network parameters, mucoadhesion, gel strength, drug release mechanism and kinetic model were also determined. The release of drug occurred through non-Fickian diffusion mechanism and best fitted in the Korsmeyer-Peppas model. The pH of the swelling medium has also exerted a strong effect on polymer network structure and mechanical strength. These hydrogels have been observed pH responsive and mucoadhesive in nature and could be utilize for site specific drug delivery.

Keywords: dietary fiber, Mucoadhesive hydrogels, Ciprofloxacin, Slow drug delivery, Diverticulitis.