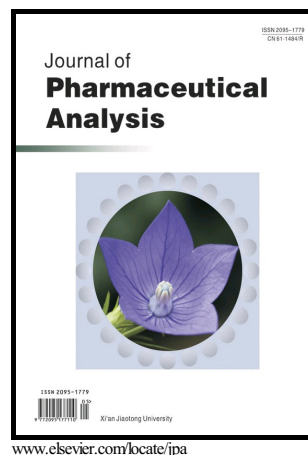


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Taste masking of ofloxacin and formation of interpenetrating polymer network beads for sustained release

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Abstract

The objective of this study was to carry out taste masking of ofloxacin (OfI) by ion exchange resins (IERS) followed by sustained release of OfI by forming interpenetrating polymer network (IPN) beads. Drug-resin complexes (DRCs) with three different ratios of OfI to IERS (1:1, 1:2, 1:4) were prepared by batch method and investigated for in-vivo and in-vitro taste masking. DRC of methacrylic acid-divinyl benzene (MD) resin and OfI prepared at a ratio of 1:4 was used to form IPN beads. IPN beads of MD 1:4 were prepared by following the ionic cross-linking method using sodium carboxymethyl xanthan gum (SCMXG) and SCMXG-sodium carboxymethyl cellulose (SCMXG-SCMC). IPN beads were characterized with FT-IR and further studied for sustained release of OfI at different pH. In vivo taste masking carried out by human volunteers showed that MD 1:4 significantly reduced the bitterness of OfI. Characterization studies such as FT-IR, DSC, P-XRD and taste masking showed that complex formation took place between drug and resin. In vitro study at gastric pH showed complete release of drug from MD 1:4 within 30 min where as IPN beads took 5 h at gastric pH and 10 h at salivary pH for the complete release of drug. As the crosslinking increases the release kinetics changed into non-Fickian diffusion to zero-order release mechanism. MD 1:4 showed better performance for the taste masking of OfI and IPNs beads prepared from it were found useful for the sustained release of OfI at both the pH, indicating a versatile drug delivery system.

Key words: Ion exchange resins, ofloxacin, in vivo & in vitro taste masking, interpenetrating polymer network, sustained release.

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