

Fabrication and evaluation of pH dependent polymeric microspheres of ivabradine and their in vitro and in vivo studies



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Abstract

Aim of this work was the development and evaluation of controlled release formulations consisting of methacrylate derivatives and ethyl cellulose (EC) were synthesized using oil-in-oil (O/O) solvent evaporation method. Drug release studies were performed in different dissolution media. Maximum drug released was observed at pH 7.4. Fourier transform infrared spectroscopy (FTIR) spectra, SEM, and thermal analysis showed compatibility between drug and polymers. Pharmacokinetic parameters were calculated by Phoenix WinNonLin® Version 6.3 software. The average AUC_{0-t} was found to be 2483.71 ± 13.173 ng/ml.h, 5954.37 ± 12.110 ng/ml.h, 6400.82 ± 19.131 ng/ml.h and 7427.4 ± 49.322 ng/ml.h for group 1-4 respectively. The maximum concentration (C_{max}) of IBH for all groups predicted from pharmacokinetics data were 880.38 ng/ml, 718.43 ng/ml, 721.87 ng/ml and 805.11 ng/ml respectively. Thus, in-vitro and in-vivo drug release studies of polymeric microspheres proved their controlled release behavior with preferential delivery for an extended period of time.

Speaker Publications:

1. "In vitro and In Vivo Evaluation of Immediate Release Tablets of Domperidone Maleate"; Latin American Journal of Pharmacy / Vol 39, 2020, 22-30.
2. "Development and Evaluation of Physiologically Based Pharmacokinetic Drug–Disease Models for Predicting Rifampicin Exposure in Tuberculosis and Cirrhosis Populations"; Pharmaceutics / Vol 11 (2019) 1-20.
3. "Application of Box-Behnken Design for Simultaneous Monitoring of Pantoprazole and Domperidone in Plasma by High Performance Liquid Chromatography"; Latin American Journal of Pharmacy / Vol 38, 2019, 1636-1644.
4. "Preparation, Swelling and Drug Release Study of Hydrogels Based on Different Composition of Acrylamide/Acrylic Acid"; Latin American Journal of Pharmacy / Vol 32, 2019, 259-270.
5. "Fabrication and evaluation of pH-dependent polymeric microspheres of ivabradine and their in vitro and in vivo studies"; Polymer Bulletin / Vol 26, 2018.

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Biography:

Abdul Majeed currently works at the Faculty of Pharmacy, Bahauddin Zakariya University. Abdul does research in Pharmaceutics, controlled drug release and clinical pharmacy. Their most recent publication is 'Acute Respiratory Distress Syndrome: Bench-to-Bedside Approaches to Improve Drug Development'.

