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Derivative spectrophotometric method for the determination of Moxifloxacin in pharmaceutical formulations

*V. Amrutha Sindhuja and M. Mathrusri Annapurna

Department of Pharmaceutical Analysis & Quality Assurance, GITAM Institute of Pharmacy, GITAM University, Visakhapatnam, India

A simple precise and accurate derivative spectrophotometric method was developed for the determination of Moxifloxacin in pharmaceutical formulations in ortho phosphoric acid. Moxifloxacin is a synthetic broad spectrum antibacterial agent for oral and intravenous administration. Moxifloxacin, a fluoroquinolone, is available as the monohydrochloride salt of 1-cyclopropyl-7-[(S,S)2,8-diazabicyclo[4.3.0]non-8-yl]-6-fluoro-8-methoxy-1,4-dihydro-4-oxo-3 quinoline carboxylic acid. It is a slightly yellow to yellow crystalline substance with a molecular weight of 437.9. Its empirical formula is $C_{21}H_{24}FN_3O_4$ HCl. A double beam UV-VIS spectrophotometer (UV-1800, Shimadzu) connected to computer loaded with spectra manager software UV Probe was employed with spectral bandwidth of 1nm and wavelength accuracy of ± 0.3 nm with a pair of 10 mm matched quartz cells. Moxifloxacin has shown maxima at 283 nm and minima at 304 nm in first order derivative spectrum in ortho phosphoric acid and therefore the amplitude was chosen for the analytical calculations. A graph was drawn by taking concentration of the drug on the x- axis and the corresponding amplitude values on the y- axis. Moxifloxacin follows Beer-Lambert's law over the concentration range of 0.2-30 µg/ml (r^2= 0.999). The % RSD in precision and accuracy studies was found to be less than 2.0. The proposed methods were validated as per the ICH guidelines. The developed method can be successfully applied for the determination of Moxifloxacin in pharmaceutical formulations.

Nanogels based future delivery system: In-Vitro and In-Vivo evaluation for targeted delivery

Anilkumar.K[1*], Jagathesh Chandra Bose.R[2] and Krishnakumar.D[2]

[1]Department of Pharmaceutics, JNTU, Kakinada, Andhra Pradesh, India
[2]R&D, Vaccine Formulation, Shantha Biotechnics-A Sanofi Company, India

There is a essential need for target specific, competent, biocompatible nano-size carrier, for various drug delivery system. Polymeric nanogels meet this need as they are porous nanosized, water-swellable, cross linked macromolecular networks, made from water-dispersible, biocompatible hydrophilic polymers that are intended to deliver antigens, proteins and nucleic acids (DNA, plasmids).The main objective of this research work is to synthesis and characterisation of OVA loaded acid-labile pH sensitive polyacrylamide nanogels and to evaluate the targeted delivery. To understand the impact of nanogels on the activation of T-cells following uptake by antigen-presenting cells, particles encapsulating a model protein antigen were synthesised by microemulsion based polymerization techniques. Scanning Electron Microscopy demonstrated nanogels particle size with OVA, and ^{1}H- NMR spectra was used to monitor the cross-link hydrolysis. The size distribution was determined by dynamic light scattering using a Zetasizer Nano-ZS instrument (Malvern Instruments, Malvern.). The quantification of the protein was accessed by BCA method. In vivo and in vitro studies were performed to demonstrate the efficacy of nanogels based targeted delivery system.

Keywords: polyacrylamide Nanogels, particle size, targeted delivery