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Novel and validated spectrophotometric estimation of Indomethacin in bulk and solid dosage formulation using mixed hydrotropic solubilization technique

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Around 40% of New Chemical Entities (NCE's) are poorly water soluble and not well absorbed after oral administration. To overcome the problems associated with oral absorption and bioavailability of these poorly soluble drugs, various strategies have been utilized out of which hydrotropic solubilization has shown promising results. The present study was undertaken on Indomethacin-a water insoluble drug to enhance its solubility using mixed hydrotropic solubilization technique followed by development and validation of UV spectrophotometric method for quantitative estimation of Indomethacin in bulk and pharmaceutical dosage forms. Preliminary solubility studies were carried out with different molarities of hydrotropic agents and from the solubility studies performed, proper blend (1.5 M Sodium citrate and 1.5 M Sodium benzoate) of hydrotropic agents was selected for further study. UV spectrum and calibration curve of Indomethacin was established in selected blend of hydrotropic agents and it was found to exhibit λ_{\max} of 320 nm. Analysis of bulk drug of Indomethacin and marketed samples in chosen blend of hydrotropic agents was done and total drug content was calculated. The developed method was then validated as per ICH guidelines for linearity and range, accuracy, precision, limit of detection (LOD) and limit of quantification (LOQ). There was significant increase in solubility of Indomethacin with increase in molarity of hydrotropic agents and a blend of 1.5 M Sodium citrate and 1.5 M Sodium benzoate showed good results. Thus, it is concluded that the mixed hydrotropic solubilization can be effectively used for solubility enhancement of poorly water-soluble drugs and the proposed UV method which is new, simple, accurate and reproducible can be successfully employed for the routine analysis of Indomethacin in bulk samples as well as other pharmaceutical dosage forms.

Biography

Nisar Ahmad Khan is presently working as Senior Assistant Professor in the Department of Pharmaceutical Sciences, University of Kashmir, India. He has obtained his Bachelor's degree in Pharmacy from University of Kashmir and Master's degree in Pharmaceutics from SGSITS Indore, India. He has obtained his Doctorate degree in Pharmaceutics from University of Kashmir in the field of novel drug delivery systems. He has his expertise in formulation of hydrodynamically balanced drug delivery systems in the form of single unit or multiple units and has expertise in the Gastroretentive DRUG delivery systems (GRDDS). He has also worked in the field of solid dispersion technology, hydrotropic solubilization and cosmetology.

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