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Oral bioavailability enhancement of Lornoxicam loaded self-nano emulsifying drug delivery system

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The purpose of this study was to formulate and assess self-nano emulsifying drug delivery system (SNEDDS) of Lornoxicam which is a non-steroidal anti-inflammatory drug with poor water solubility. The thermodynamically stable lornoxicam loaded self-nano emulsifying drug delivery system (SNEDDS) has been developed for enhanced dissolution rate in simulated gastric fluid using formulation by design approach. Firstly, solubility study and emulsification efficiency was performed to investigate the appropriate oil, surfactant and co-surfactant. Capryol-90, Acrysol K-160 and PEG-400 were chosen as a model oil, surfactant and co-surfactant respectively due to their higher solubility and better emulsification efficiency. Simplex lattice design was applied by taking Capryol-90 (X1), Acrysol K-160 (X2), and PEG-400 (X3) and measured response was globule size (Y1) and *in vitro* drug release at 10 min. (Y2). SNEDDS formulations were evaluated for globule size, *in vitro* drug release, % transmittance, physical robustness to dilution, emulsification time and drug content. The optimized formulation composed of 20% Capryol 90, 70% Acrysol K-160 and 10% PEG-400, which gave a globule size 10.27 nm, Cloud point 80-82 °C with no phase separation after study of physical robustness to dilution and 96.03% drug release at 10 min. The *in vivo* pharmacokinetic parameters like C_{max} , T_{max} and AUC were investigated on rats. The results of optimized formulation were found to be significantly different from that of commercial tablets. The study represented great potential for improving the solubility and dissolution rate of lornoxicam with high thermodynamic stability which leads to enhance the oral bioavailability.

Biography

Dhaval Kumar V. Patel is currently working as an Assistant Professor, at Department of Pharmaceutics, B. K. Mody Government Pharmacy College, Rajkot, Gujarat, INDIA. His efforts in research have led to the publication of more than 23 research paper in reputed International and national journals. He is an associate editor of two reputed International journals and an author to a book in subject of Hospital and Community Pharmacy (ISBN 9789351631965). A young teacher at the core, he have presented research paper in International annual meeting of controlled release society, U.S.A. in 2010 and delivered expert lectures in pharmacy department. He presently hold significant positions in esteemed organizations like elected member of Gujarat State Pharmacy Council, Joint Secretary of Gujarat State Pharmacy Teachers Association, Secretary of BKMGPC alumni association & research society, member of Association of Pharmaceutical Teachers of India. His contribution in guiding more than 07 Post graduate and Ph.D. scholars indicate his determination towards the advancement of drug delivery as well as pharmacy studies. He also had organized national symposium with grant received from GUJCOST, Government of Gujarat. Recently, he got financial assistance to deliver an expert talk in Global Pharma Summit 2015, Philadelphia, USA from Department of Science and Technology, Government of India.

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