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Enhancement of oral bioavailability of ketoprofen by liquisolid compaction technology

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Liquisolid compaction technique is novel concept for enhancement of bioavailability of drugs through oral route. This approach of delivering drugs is mostly suitable for lipophilic drugs and poorly water soluble BCS Class II Drugs. It involves dissolving water insoluble drug in non volatile solvents and converting into acceptably flowing and compressible powders. The main objective of present investigation was to enhance the dissolution rate of water insoluble drug and hence oral bioavailability of ketoprofen by using liquisolid compaction technique. Several liquisolid tablets were prepared by using different carrier materials such as microcrystalline cellulose, and dicalcium phosphate, and coating material such as colloidal silica. Polyethylene glycol, cremophor EL, Poloxamar 188 and propylene glycol were used as non volatile water miscible liquid vehicles. The ratio of carrier to coating material was kept constant in all formulations at 20 to 1. All the prepared formulations were compressed using 12mm punch after addition of 5 % Sodium starch glycolate to each formulation. In vitro dissolution studies were conducted by using USP six basket dissolution testing apparatus. In vitro skin permeation studies were conducted by using goat intestinal skin membrane and in vivo oral bioavailability studies were conducted to the optimized formulation, marketed formulation and pure drug sample in healthy rats by balanced block incomplete design. Plasma samples were analyzed by RP-HPLC method. X-Ray Diffraction and Fourier-Transform Infrared Spectroscopy and Differential Scanning Calorimetry were performed to know the drug excipient compatibility. It was observed that liquisolid formulation prepared with PEG and MCC has shown improved bioavailability when compared to marketed formulation and pure drug. Based on all results obtained, it can be concluded that liquisolid compaction technology is one the most promising novel approach to enhance the oral bioavailability of poorly soluble BCS class II drugs.

Biography

Mr. Vijaykumar Nagabandi has completed his M.Pharm (Pharmaceutics) at the age of 24 years from Osmania University and Submitted Ph.D thesis to JNTU, Hyderabad in Department of Pharmaceutics at the age of 28 years. He is the assistant professor in department of pharmaceutics, St. Peter's Institute of Pharmaceutical Sciences, Hanamkonda, A.P, India. He has published more than 10 papers in reputed international and national journals and presented papers in more than 30 conferences. He is having five years of teaching experience in the field of pharmaceutics.

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