

Original Article

Solubility Enhancement of an Inadequately Water Soluble Drug (Ketorolac Tromethamine) by using different Vehicles

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Abstract

For poorly soluble, highly permeable drugs, such as ketorolac tromethamine, the rate of oral absorption is often controlled by the dissolution rate in the gastrointestinal tract. The object of the present study is to increase dissolution rate of ketorolac tromethamine using different polymer to prepare liquisolid mixture. Several formulations of liquisolid compacts containing various ratios of drug: propylene glycol (ranging from 1:1 to 1:4) was prepared. In this study the ratio of microcrystalline cellulose (carrier) to silica (coating powder material) was 20:1 in all formulations. The dissolution behavior of ketorolac tromethamine from liquisolid mixture and conventional formulation was investigated by distilled water and phosphate buffer. To enhance the solubility and efficacy of ketorolac tromethamine, we used PG, tween 80, PEG 400, PEG 1500, PEG 6000 polymers in different concentrations. In this study the release pattern was examined of ketorolac tromethamine loaded capsules by using dissolution medium in (water) and phosphate buffer. This work examines the influence of polymers such as Propylene Glycol (PG), tween 80, PEG 400, PEG 1500, and PEG 6000 in different amounts. The experiment provides an acceptable result to predict the solubility of ketorolac tromethamine which has been successfully improved dissolution rate without compromising the physical stability of the systems. These results suggested that, by using propylene glycol, tween 80, PEG 400, PEG 1500 and PEG 6000 the release of ketorolac increased up to 76%, 66%, 81%, 59% and 75% respectively by phosphate buffer where as released of Conventional formulation (DCC) was 27.93%.

Keywords: Ketorolac tromethamine, Solid Dispersion, Surfactants and Carriers.

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