PHARMACOKINETIC AND DISSOLUTION ENHANCEMENT OF EFAVIRENZ VIA SOLID DISPERSIONS WITH PEG 4000 AND GELUCIRE® 44/14

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ABSTRACT

The study aimed to enhance the dissolution and bioavailability of efavirenz, a BCS Class II drug, through solid dispersions (SDs) using PEG 4000 and Gelucire® 44/14 as hydrophilic carriers. The Gibbs free energy values (ΔG°_{tr}) were negative, and decreased with increasing carrier concentration. SDs were prepared at varying drug to carrier ratios by different methods. Dissolution studies using USP apparatus type II in media containing 0.5 % SLS in aqueous medium revealed that SDs prepared using gelucire 44/14 at a 1:1.5 ratio exhibited a ~75 % drug release in 45 min compared to 42 % from pure drug. Characterization via FTIR and DSC indicated no drug-carrier interactions and partial amorphization, respectively. Pharmacokinetic (PK) parameters were calculated using PK Solver software after performing the *in vivo* studies of the selected SD formulation in rats. The study showed an approximately threefold increase in AUC value when compared to pure efavirenz.