

Enhancing dissolution of simvastatin by surface solid dispersion technique

Ebtessam A. Essa

Tanta University, Egypt

In the last two decades many strategies have been developed to enhance the dissolution of poorly water soluble drugs. In this work, a recent technique namely surface solid dispersion (SSD) was adopted to enhance the *in vitro* dissolution of simvastatin (Class II drug). The drug was solubilized in organic solvent and then deposited over the surface of a carrier having a large surface area. The effect of water soluble (mannitol and lactose) and insoluble but hydrophilic (Avecil PH101) carriers was investigated. The effect of the addition of polymeric wetting agent (Poloxamer 188, PEG6000, Myrj 52 and PVP K-30) to the drug/Avecil composite was studied. All formulations were characterized by *in vitro* dissolution studies. The best formula, regarding dissolution, was further characterized by differential scanning calorimetry (DSC), X-ray powder diffraction (XRPD) and infrared spectroscopy (FTIR). All SSD formulations enhanced drug dissolution rate compared to pure drug, with the superiority of the water soluble carrier. The addition of wetting agent to the water insoluble carrier greatly improved drug dissolution compared to that without wetting agent. PVP K-30 was superior in improving drug release showing a rapid release of about 50% of the drug in the first 10 min., and a dissolution efficiency of 81% that was comparable to the marketed drug product. Physical characterization showed marked reduction in drug crystallinity. These results indicated that SSD may serve as a successful strategy for enhancing drug dissolution by proper manipulation of the carrier and additives.

Biography

Ebtessam A. Essa has completed her Ph.D. from School of Pharmacy, Bradford University, Bradford, UK. She works as an Assistant Professor at the Department of Pharmaceutics, Faculty of Pharmacy, Tanta University, Egypt. She is also working temporarily as an Assistant Professor at Faculty of Pharmacy, Umm Al Qura University, Saudi Arabia. She has published over 13 papers in reputed journals and 18 conference presentations and book chapter.

eessa35@hotmail.com