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Formulation preparation and *in vitro* evaluation of Simvastatin self- nanoemulsifying systems

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The aim of this work was to improve the dissolution of poorly water-soluble drug, simvastatin, through its formulation as self-nanoemulsifying drug delivery system (SNEDDS) and then its incorporation into liquisolid tablets combining the advantages of SNEDDS (i.e. enhanced solubility and bioavailability) with those of solid dosage forms (e.g. low production cost, convenience of process control, high stability, and better patient compliance) thus overcoming the drawbacks of liquid formulations. Various modified oils, surfactant and cosurfactant mixtures were used to prepare different systems and the composition of the formed SNEDDSs was optimized using drug-solubility, pseudo-ternary phase diagram, system stability and particle size studies. Furthermore, SNEDDSs that have acceptable surfactant ratio (ranging from 30% to 60% w/w), acceptable stability (minimum two hours) and show particle size in nano-range (< 100 nm) upon dilution with simulated gastric fluid (SGF, pH 1.2) under conditions of gentle agitation were loaded onto liquisolid powders using different loading factors (Lf), where the ratio of Vivapur® PH 102 (carrier) to Aerosil® 200 (coating powder material) was kept constant in all formulations. Liquisolid powders with acceptable physical properties were compressed to form self-nanoemulsifying liquisolid tablet and the *in vitro* performance of the prepared liquisolid tablets in simulated gastric fluid (SGF, pH 1.2) was investigated. Prepared self-nanoemulsifying liquisolid tablet demonstrated significantly higher dissolution rates, compared to tablets prepared by the direct compression method and conventional tablet (Zocor®) and expected to increase the bioavailability of simvastatin. Particle size upon tablet dilution was not significantly affected by converting the SNEDDSs to liquisolid tablets.

Biography

Hanaa Elsaghir is currently a professor and vice chairman of the pharmaceutics and pharmaceutical technology department at King Saud University. Professor Hanaa has completed her Ph.D. from Cairo University through a joint Ph.D. program with school of pharmacy, Munster University, Germany. She had a post doctor fellowship at the University of Georgia, Athens, USA in1989. She has published more than 45 scientific papers in national and international scientific journals. In addition, she serves as a reviewer for several journals. Her research interest in the area of micro and nano encapsulation of pharmaceutical preparations, solubilization of drugs, targeted drug delivery, controlled release dosage form

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