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A Review On The Solubility Enhancement Technique For Pharmaceutical Formulations

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Abstract

Several properties of potential drug molecules such as the solubility of the drug molecule must be determined prior to developing dosage forms as the solubility of a drug molecule is one of the key criteria in achieving an effective drug concentration. Solubility is expressed as the number of parts by volume of solvent necessary to dissolve one part by weight of a solid or one part by volume of a liquid according to pharmacopoeias. Poor water solubility is a critical issue in the formulation development with more than 40% of the novel chemical entities being insoluble in water. Different strategies have been used to enhance the solubility of poorly soluble drugs which include physical and chemical modifications of drug and other methods like particle size reduction, crystal engineering, salt formation, solid dispersion, use of surfactant and so. The properties of a drug, site of absorption, and required dosage form characteristics helps in the selection of solubility enhancing techniques.

1.0 Solubility

Solubility is defined in terms of the number of parts by volume of solvent required to dissolve one part by weight of a solid or one part by volume of a liquid according to pharmacopoeias. Solubility occurs under dynamic equilibrium and results from the simultaneous and opposing processes of dissolution and phase joining. Solubility equilibrium occurs when dissolution and phase joining processes proceed at a constant rate. IUPAC defines solubility as the analytical composition of a