Savjani J.K., Pharm Anal Acta 3:1
doi: http://dx.doi.org/10.4172/2153-2435.S1.10

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Pharmaceutics & Novel Drug Delivery Systems

20-22 February 2012 San Francisco Airport Marriott Waterfront, USA

TITLE

Cocrystallizaion Approach: An Innovative Strategy for Poorly Soluble Drugs

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Majority of drugs marketed world wide is administered by oral route. Nearly 40% of the new molecular entities coming from discovery were never brought to the market because of biopharmaceutical issues like low solubility, low dissolution rate, low permeability and first-pass metabolism in the liver. There are a number of methods to improve the dissolution/bioavailability of poorly soluble drugs including, Pro-drug approach, Salt synthesis, Particle size reduction, Complexation, Change in physical form, Solid dispersions, Spray drying, Hot-melt extrusion. Salt formation is one of the most frequently used approaches to improve physiochemical properties of moieties which involve formation of ionic bonds. Major restriction with salt formation approach is that the Active Pharmaceutical Ingredient (API) must possess a suitable (basic or acidic) ionizable site. Co-crystallization is a method of formation of mainly hydrogen bond between the drug molecule and co-former so API regardless of acidic, basic, or ionizable groups, could potentially be co-crystallized. Co-crystallization can improve physiochemical properties like solubility, dissolution rate, chemical stability and melting point. Interactions which are responsible for the formation of co-crystals include hydrogen bonding, π-stacking, and Van der Waals forces. Itraconazol is the reported drug used as antifungal agent is having poor oral bioavailability. Different cocrystals of Itraconazol were prepared using several dicarboxylic acids (tartaric acid, glutaric acid, melonic acid, etc.) by using different methods of cocrystallisation like evaporation method, solvent grinding method etc. Efforts were carried out in order to achieve a suitable method which minimizes the use as well as generation of hazardous substances.