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Pharmaceutical Co-crystal : An Emerging Technique to enhance Physicochemical properties of drugs

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Abstract : Major constraints in development of new product are poor aqueous solubility, stability and low oral bioavailability, low permeability. As majority of drugs marketed worldwide are administered by oral route and about 40% -50% of the new molecular entities were never invade into the market because of such biopharmaceutical issues.So issues related to poor physiochemical property of an active pharmaceutical ingredient (API) can be resolved using co-crystallization approach.Crystallization emerge as potential technique for enhancement of solubility of poorly aqueous soluble drugs also helps to improve physicochemical with preserving the pharmacological properties of the API . Cocrystals are solids that are crystalline single-phase materials composed of two or more different molecular and/or ionic compounds generally in a stoichiometric ratio which are neither solvates/hydrates nor simple salts. It is multicomponent system in which one component is API and another is called coformer. Coformer selection is the main challenging step during cocrystal synthesis , so various screening methods for the selection of coformers was explained . This article also summarizes differences between cocrystals with salts, solvates and hydrates along with the implications and limitations of cocrystals .It also provides a brief review on different methods of cocrystal formation and characterization techniuqes of cocrystals. Lastly this article highlights 85 synthetic and 14 herbal cocrystals along with its method of preparation and coformers used.

Keywords : Pharmaceutical cocrystals, cocrystallization, solubility, stability, bioavailability, dissolution ,supramolecular synthons.

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