

## Effect of Polyethylene Glycol on Physiochemical Properties of Spherical Agglomerates of Pioglitazone Hydrochloride

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**Abstract :** Spherically agglomerated crystals of Pioglitazone hydrochloride (PGH) with improved flowability and compactibility were successfully prepared by emulsion solvent diffusion method. Plane agglomerates and agglomerates with additives: polyethylene glycol 6000 (PEG), polyvinyl pyrrolidone (PVP) and  $\beta$  cyclodextrin ( $\beta$ -CD) were prepared using methanol, chloroform and water as good solvent, bridging liquid and poor solvent respectively. Particle size, flowability, compactibility and packability of plane, PEG and  $\beta$ -CD agglomerates were preferably improved for direct tableting compared with raw crystals and PVP agglomerates of PGH. These improved properties of spherically agglomerated crystals were due to their large and spherical shape and enhanced fragmentation during compaction which was well supported by increased tensile strength and less elastic recovery of its compact. X-ray powder diffraction and differential scanning calorimetry study were indicated polymorphic transition of PGH from form II to I during recrystallization but not associated with chemical transition indicated by fourier transforms infrared spectra.

**Keywords :** spherical crystallization, pioglitazone hydrochloride, compactibility, packability

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