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"The effect of solvent and crystallization conditions on habit modification of Carbamazepine "

"Bolourtchian N, Nokhodchi A, Dinarvand R "

Abstract:

Physical characteristics of carbamazepine crystals grown from pure ethanol or acetone under different conditions were studied for the morphology of crystals by scanning electron microscope, x-ray powder diffraction and FT-IR, and for thermodynamic properties by differential scanning calorimeter. Also the dissolution behavior and compaction properties of crystals were studied. The results showed that crystallization of carbamazepine using watering-out method produced needle shape crystals while by the other methods such as reducing temperature or solvent evaporation produced polyhedral crystals in alcohol and thin plate-like crystals in acetone. The crystals which were grown from acetone were larger than those from alcohol. Differential scanning calorimetery and x-ray powder diffraction showed no evidence of poly-morphism for carbamazepine crystallized by reducing the temperature or by the solvent evaporation in contrast with the crystals produced by the watering out technique. Crystallization of carbamazepine by different methods especially watering-out technique improved its dissolution rate and compactibility and produced high crushing strength compacts without capping.

Keywords:

Crystallization . Crystal habit . Crystal shape . Dissolution rate . Compaction

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