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Title:	New conformational polymorph of hydrochlorothiazide with improved solubility
Authors:	Khullar, S. (/jspui/browse?type=author&value=Khullar%2C+S.) Mandal, S.K. (/jspui/browse?type=author&value=Mandal%2C+S.K.)
Keywords:	Crystal energy landscape Conformation Crystal structure Differential scanning calorimetry
Issue Date:	2016
Publisher:	Taylor & Francis
Citation:	Pharmaceutical Development and Technology,21(5), pp.611-618.
Abstract:	<p>Context: To characterize a new conformation of hydrochlorothiazide (HCT) with better solubility and establishing its relationship with previously reported form I, obtained during attempted crystallization experiments. Objective: The aim of present investigation is to unveil a new conformational polymorph (form IA) having a higher solubility compared to commercially available form I. Materials and methods: New form (IA) was obtained from slow evaporation as well as by solvent–antisolvent method and was then characterized by DSC, FTIR, PXRD and SCXRD. Equilibrium solubility profile shows that it is more soluble than form I. Results: Appearance of phase transition endotherm at 215.87 °C in DSC spectra indicated the existence of new polymorph which was further confirmed by FTIR and PXRD. Single crystal study showed significant difference in various bond angles and torsion angles of the two forms. The solubility exhibited by form IA was (938 µg/mL) compared to form I (791 µg/mL) in water. Discussion: Complete structural analysis and molecular arrangements in the unit cell along with the DSC and FTIR data confirm the existence of new conformer of HCT. Conclusion: This study reveals the existence of a new conformational polymorph of HCT molecule having higher solubility could prove to be promising in pre-formulation.</p>
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