Polymorphism of API by Anti-solvent Crystallization

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API(Active Pharmaceutical Ingredients) has different physical and chemical properties with changes in crystal form. This helps API work more effectively in the human body. This study is for controlling polymorphism of API by using anti-solvent crystallization. Before the process of crystallization, solubility of some solvents was investigated in order to select anti-solvent. Acetone, methanol, and ethanol were selected as solvents, and ethyl acetate, cyclohexane, and iso-propyl alcohol, which were relatively worse soluble than selected solvent, were selected as anti-solvents. The anti-solvent was added to the solution maintained at a constant temperature. And the polymorph was confirmed by XRD and DSC analysis. In the case of form 1, metastable form, the solvent was acetone and the anti-solvent was ethyl acetate or heptane. In the case of form 2, stable form, the solvents and anti-solvents were ethanol and ethyl acetate, methanol and iso-propyl alcohol. In the case of mixing(form 1 and form 2 and form 3), acetone was used as a solvent, and cyclohexane as an anti-solvent. As a result, the polymorphism of the API occurs due to the difference between the solvent and the anti-solvent.