

Preparation of Acetaminophen Micro-Particles for Dissolution Rate Enhancement

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Acetaminophen micro particles were produced by Aerosol Solvent Extraction System (ASES) using supercritical carbon dioxide. The experiments were conducted to investigate the effects of various solvents, temperatures, and pressures on particle size and morphology. It seems that the choice of solvent is very important for getting specific shape and size of the particle. The result shows that when THF and ethyl acetate were used as a solvent, the particle size and morphology have the remarkable change. The raw material which has irregular and acicular morphology has been recrystallized to be a new crystal structure that was regular and monoclinic. Especially when use THF as a solvent, the particle size (x_{50}) was the smallest that was 3.59 μ m. The XRD data of processed particle was quite different with raw material. New crystalline form of acetaminophen was prepared using ASES process with sc-CO₂. The dissolution rate of processed material increased compare to the raw acetaminophen. The ASES process system has possibility to enhance the solubility and bioavailability with high dissolution rate.