

Antisolvent Crystallization of Roxithromycin and the Effect of Ultrasound

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Antisolvent crystallization was performed to precipitate roxithromycin particles from organic solutions. Roxithromycin was dissolved in acetone at different concentrations and each solution was injected into an aqueous antisolvent leading to prompt particle formation. The effects of various experimental variables (solution injection rate, solution concentration, and temperature) on the particle size of roxithromycin were investigated. In addition to these variables, the effect of ultrasound on the resulting particle size was investigated by changing process parameters such as wave intensity (power output), sonication time and the moment of ultrasonic application. When the drug solution was rapidly injected into the antisolvent, smaller crystals were obtained. Smaller crystals were obtained when solutions with high drug concentrations were used and also when the crystallization took place at lower temperatures. The particle size decreased with the increasing power output of ultrasound and with the increasing sonication time. It was also found that the ultrasonic wave induced the reduction of the particle size only when the ultrasound was applied to the solution at the initial stage of crystallization.