

Micronization of drug particles using supercritical process

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Adefovir dipivoxil is a well-known hepatitis B virus treatment. Adefovir dipivoxil is an orally bioavailable prodrug of adefovir. A tradename of adefovir dipivoxil is Hepsera®. Other hepatitis B virus treatment, Interferon alfa-2b and Lamivudine (Zeffix), has some disadvantage such as depression, HBV resistance, respectively. Thus adefovir dipivoxil have been spotlighted in pharmaceutical industry because adefovir dipivoxil have no adverse effects and HBV resistance.

In this research, we tried to recrystallize adefovir dipivoxil particles for drug delivery system (DDS) using rapid expansion of supercritical solution (RESS) process and supercritical anti-solvent (SAS) process. RESS and SAS technology are generally recognized as a well-established technique for producing nano to micron-sized particles from a single component, especially from organics and polymers. The RESS and SAS process are reducing the particle size using the supercritical CO₂. The size of adefovir dipivoxil particles by RESS and SAS process can be controlled by adjusting experimental parameters.