

Establishment of a Solvent Map for Morphology Control of Paclitaxel by Solvent Evaporation Process

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The solvent treatment of paclitaxel is a convenient method for controlling the morphologies of paclitaxel. Amorphous paclitaxel was simply made by dissolving paclitaxel in methylene chloride/methanol (98/2, v/v) and in relatively non-polar solvents (t-butyl methyl ether, pentane, acetonitrile/hexane (1/2, v/v), methylene chloride, chloroform, toluene). On the other hand, crystalline paclitaxel was made by dissolving paclitaxel in a special polar solvent containing a small amount of water. Thus, polarity of the solvent was an important factor governing the morphology of the paclitaxel. Their physicochemical properties were investigated by X-ray powder diffraction (XRPD), scanning electron microscopy (SEM), and high performance liquid chromatography (HPLC). The initial water content of amorphous paclitaxel and crystalline paclitaxel was determined for 0.65 wt% and 5.85wt%, respectively. The hygroscopic property of crystalline paclitaxel was very changeable in all given humidity (15, 60, 95 RH%) during storage.