

Ultrasound-Assisted Acetone/Pentane Precipitation of Paclitaxel from *Taxus chinensis* Cell Cultures

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Abstract

In this study, we developed an improved acetone/pentane precipitation method by ultrasound treatment for the purification of poorly water-soluble anticancer agent paclitaxel. Ultrasound was applied to liquid antisolvent precipitation using pentane as antisolvent at different temperatures. The effects of ultrasound power (80, 180, and 250 W) and temperature (5, 15, and 25°C) for precipitation were investigated. Higher precipitation rate and shorter precipitation time were found with ultrasound treated solutions than those without ultrasound. The yield of the powder products varied with the power input level and the processing time of the ultrasonic treatment. The present results show that a high yield of high-purity paclitaxel is possible with ultrasound at room temperature after adding all the pentane, which is significantly more economical than the existing precipitation method of storing at a low temperature for a long time after adding all the pentane during precipitation.

Key words: Paclitaxel; Acetone/Pentane Precipitation; Ultrasound; Precipitation Time; Improvement