

Effect of temperature and pH on fractional precipitation for pre-purification of paclitaxel

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Abstract

Fractional precipitation is a simple, efficient method for pre-purifying paclitaxel from plant cell cultures. The storage temperature and pH of fractional precipitation were optimized in terms of the yield and purity of paclitaxel with a fixed methanol concentration in water (61.5%, v/v), paclitaxel content in the crude extract (0.5%, w/v), and storage time (3 days). The greatest yield (~84%) was obtained with storage at a constant temperature (0°C) for 3 days. Conversely, the highest purity (~79%) was obtained with stepwise reduction in temperature over 3 days. For a constant storage temperature, the maximum purity (~67%) was obtained at 0°C. There was little difference in the yield of paclitaxel between -20 and 12°C. At a constant storage temperature (0°C), both the precipitate yield and purity increased rapidly up to 18 h, and then increased more slowly. This pre-purification process serves to minimize solvent usage, and the size and complexity of the high-performance liquid chromatography (HPLC) operation required for paclitaxel purification.

Reference

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