

A Study on the Development and of Simultaneous Microwave-assisted Extraction and Adsorbent Treatment Process for Separation and Recovery of Paclitaxel from Plant Cell Cultures

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A novel simultaneous microwave-assisted extraction (MAE) and adsorbent treatment process was developed for recovering the anticancer agent paclitaxel from plant cell cultures and removing the plant-derived tar and waxy compounds. Furthermore, the process efficiency was maximized by optimizing the major process variables (extraction time, amount of adsorbent, biomass-to-methanol ratio, extraction temperature). The optimum conditions of the simultaneous process for efficiency of the recovery of paclitaxel and the removal of tar and waxy compounds were 6 min for the extraction time, 4.5 (w/v) for the ratio of adsorbent to crude extract, 1:1 (w/v) for the biomass-to-methanol ratio, and 40°C for the extraction temperature. Performing the simultaneous process under the optimum conditions could recover most (>99%) of the paclitaxel with the purity of ~22% could be recovered from hexane precipitation which was the following process.