

Comparisin of the Efficiency of Adsorbents for Separation and Purification of Palcitaxel from Plant Cell Cultures

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In this study, we evaluated the efficiency of different adsorbents for the removal of plant-derived impurities during the pre-purification of paclitaxel from plant cell cultures. Using the synthetic adsorbents and active clay and their major components SiO_2 and MgO , we performed adsorbent treatment and analyzed the paclitaxel precipitates recovered from hexane precipitation. When SiO_2 was used, the highest purity (~58.1%) and yield (~91.5%) of paclitaxel were obtained. We also determined differences in the effectiveness of the adsorbent treatment according to changes in the surface area, pore volume and pore diameter of SiO_2 . Adsorbent treatment was more effective when pore diameter was larger (silica I [2.19 nm] < silica II [4.92 nm] < silica III [9.07 nm]). The highest purity (~74.3%) and yield (~92.9%) of paclitaxel were obtained when silica III was used in the adsorbent treatment. Pore diameter had a greater effect on the removal of plant-derived impurities during the pre-purification of paclitaxel compared with surface area and pore volume.