

Determination of Physical Properties of Mesoporous Silica for the Purification of Paclitaxel from Plant Cell Cultures of *Taxus chinensis*

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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 sylopute and active clay and their major components  $\text{SiO}_2$  and  $\text{MgO}$ , we performed adsorbent treatment and analyzed the paclitaxel precipitates recovered from hexane precipitation. When  $\text{SiO}_2$  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  $\text{SiO}_2$ . 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.