

### Performance evaluation of silica adsorbents 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 SiO<sub>2</sub> and MgO, we performed adsorbent treatment and analyzed the paclitaxel precipitates recovered from hexane precipitation. When SiO<sub>2</sub> 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<sub>2</sub>. 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. This result could be confirmed by HPLC analysis of the adsorbent after treatment and TGA of the organic substances that were bonded to the adsorbent.