

ABSTRACT:

Mathematical modeling and optimization of the extraction of nimbin from neemseeds using supercritical carbon dioxide with methanol as co-solvent is the subject of this study. At first a correlation for Sherwood number (Sh) as a function of Reynolds number (Re) and Schmidt number (Sc) was proposed using a Genetic Algorithm (GA) technique. This correlation was compared to previous correlations and was found to give the most accurate results. Moreover, optimum conditions (temperature, pressure, solvent flow rate and particle diameter) which maximizes the extraction yield have been determined using GA. At the next step, methanol was used as a co-solvent and the dynamic equilibrium constant of solute between the solid phase and the solvent was estimated. By applying the new determined equilibrium constant, good agreement between the model and experimental data was observed.