Liquid-Liquid Extraction for Recovery of Paclitaxel by Adding Inorganic Salts

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We developed a liquid-liquid extraction method using an inorganic salt to dramatically improve the recovery efficiency of the anticancer agent paclitaxel from plant cell cultures. As a result of liquid-liquid extraction using a diverse types of inorganic salt (NaCl, KCl, K2HPO4, NaH2PO4, NaH2PO4•2H2O), NaCl gave the highest yield (~96%) and lowest partition coefficient (0.053) of paclitaxel. The optimal NaCl/solvent ratio, methylene chloride/MeOH ratio, and pure paclitaxel content for liquid-liquid extraction using NaCl were 1% (w/v), 26% (v/v), and 0.066% (w/v), respectively. Under the optimal conditions developed in the present method, most of the paclitaxel (~96%) was recovered from biomass by a single extraction step. In addition, this method facilitated 3-fold higher recovery efficiency of paclitaxel in a shorter extraction number than the conventional liquid-liquid extraction method. Acknowledgment This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education, Science and Technology (Grant Number: 2015016271).