

Back Extraction and Isolation of Alkaloids from Ionic Liquid-Based Extracts

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Abstract : In continuation of a research project on the application of ionic liquids (ILs) as an alternative to the conventional organic solvents used in the recovery of value added chemicals of industrial interest¹⁻³ we developed a procedure for back extraction and isolation in pure form of the biologically active alkaloid glaucine from IL-based aqueous solutions. One of the approaches applied was the formation of two-phase systems (IL-ATPS) by the addition of kosmotropic salts to the plant extract. The ability of the salts (Na₂CO₃, MgSO₄, (NH₄)₂SO₄, NaH₂PO₄) to induce the formation of two-phase systems and the influence of pH value on the partition coefficients of glaucine was comprehensively studied. As a result, it was found that the target alkaloid is preferably partitioned into the IL-rich phase regardless of the pH value of the medium and thus shows the inapplicability of the approach used for the isolation of the target compound from the ionic liquid. However, the results obtained can be used as a platform for the development of an analytical method for the quantitative determination of low concentrations of glaucine in biological samples. We further examined the ability of a series of organic solvents such as diethyl ether, Tert-butylmethyl ether, ethyl acetate, butyl acetate, toluene, chloroform, dichloromethane to recover glaucine from raw IL-based aqueous extracts. Optimal conditions for quantitative extraction of glaucine into chloroform were found from which, after removal of the solvent and subsequent recrystallization from ethanol, the target compound was isolated in a high purity as a hydrobromide salt - The form in which it entrance as an active ingredient in various medicines.

Keywords : natural products, ionic liquids, solid-liquid extraction, liquid-liquid extraction

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