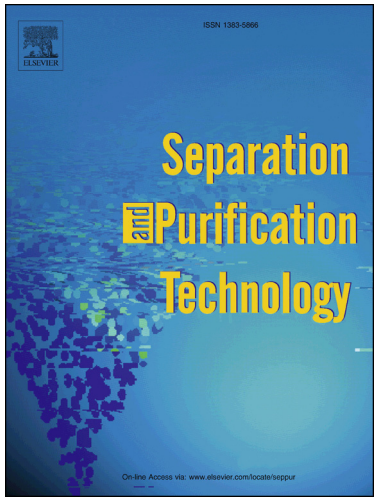

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Chiral separation of mandelic acid enantiomers using an aqueous two-phase system based on a thermo-sensitive polymer and dextran

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Abstract In this study, a thermo-sensitive polymer Poly(MAH-β-CD-co-NIPAAm) was synthesized by the copolymerization of *N*-isopropylazylamide (NIPAAm) with the maleic anhydride (MAH) modified β-cyclodextrin (β-CD). This polymer was both used as chiral selector and phase-forming component of aqueous two-phase system (ATPS). ATPS formed by Poly(MAH-β-CD-co-NIPAAm) and dextran T40 was used for chiral separation of mandelic acid (MA) enantiomers. The influencing parameters of the distribution behavior of MA were studied, viz. concentration of thermo-sensitive polymer, pH, operational temperature, and initial MA concentration. The results showed that this chiral selector preferentially recognizes the (*S*)-enantiomer rather than the (*R*)-enantiomer, the maximum separation factor (α) can reach to 1.27 under the optimum conditions. The thermo-sensitive polymer can be recycled by heating and centrifugation after enantioseparation. This ATPS is a simple, green and economical approach for the chiral separation of MA and other chiral enantiomers.

Keywords: Chiral separation; Thermo-sensitive polymer; Aqueous Two-phase System; Mandenic acid enantiomers

1. Introduction

Chirality is a common phenomenon in the nature, especially some racemic drugs are closely related to the human-being' health. One enantiomer called eutomer can be used as a drug for curing disease, while the other enantiomer called distomer has less

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