543g Enantioseparation of D,L-Tryptophan with a New Chiral Selector through Solvent Extraction

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As well known the chiral selectors play the most important roles in the separation efficiency for all the enantiomer separation techniques. In this work, we present a new complex chiral selector of di(2-ethylhexyl)phosphoric acid (D2EHPA) and O,O'-dibenzoyl-(2S,3S)-tartaric acid ((+)-DBTA) and its enantioselectivity on d,l-tryptophan (d,l-Trp). The influence of the initial concentration of d,l-Trp, (+)-DBTA, D2EHPA and pH on the distribution ratio and enantioselectivity were studied. Both the distribution ratio and enantioselectivity of d,l-Trp are greatly improved with the complex extractant instead of (+)-DBTA individually. It was also found that the enantioselectivity of the complex extractant was changed with the D2EHPA content, although pure D2EHPA has no chiral separation ability. By adjusting the equilibrium pH in the aqueous phase, a high chiral separation efficiency with a maxium enantioselectivity of 5.3 and an enantiomeric excess(e.e.) of up to 57% in aqueous phase were reached at PI point. Finally, the most possible extraction mechanisms of the complex to Trp enantiomers have been suggested. Key Words: Enantioseparation , d,l-tryptophan, Enantioselectivity, Solvent extraction