

with saturated sodium bicarbonate and freshly prepared 20% potassium iodide solution. The liberated iodine was titrated with 0.01 N sodium arsenite solution. Partition coefficient calculated from these results was found to be 1.66. Enantioseparation was monitored by determining absorbance values at λ_{\max} of 220 nm for mandelic acid after acidification to dissociate borate complexed mandelic acid. For borate complexed mandelic acid λ_{\max} is shifted to a higher wavelength side i.e., 240 nm.

3. Result and Discussion

Chiral quaternary ammonium salts have been used for a long for stereo selective synthesis of enantiomers. Mandelic acid is one of the most common racemate with behavior like that of the 1,2-dihydroxy compounds forming borate complex under alkaline conditions. The stoichiometry of the borate-diol complexes can either be 1:1 with two free -OH groups or a 1:2 spiro type.¹⁹⁻²¹ When forming an ion-pair with chiral benzylquininium chloride, one of the two borate complexed mandelic acid corresponding to two enantiomer make a relatively strong ion pair as compared to another one. This causes stereo selective difference in mobility and extraction of one of the two borate complexed enantiomer-benzylquininium chloride ion pair into organic phase.

Davankov and et.al,²² have established that the formation constants (hence the thermodynamic stability) of borate complexes is large enough to give a good separation of diol-borate complexes. Stereo selective formation of mandelic acid-borate complex and subsequent resolution on a chiral polygalactomannan has also been reported. Borate complexing for optical resolution of amino acids with diol type structure on polygalactomannan impregnated silica gel thin-layer chromatographic plates has also been reported by our group.²³ Partition coefficient data and optical purity data of the experiment too suggest a promising stereo selective extraction through borate complexing.

Selective extraction was monitored by optical purity data which showed a maximum value of 82% for (+) mandelic acid after equilibration.

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