

Abstract

This diploma thesis deals with the application of two permanently positively charged monosubstituted β -cyclodextrin derivatives (PEMEDA- β -CD, PEMPDA- β -CD) as chiral selectors in capillary electrophoresis. Use of PEMPDA- β -cyclodextrin in capillary electrophoresis has not been reported in literature. Properties of PEMEDA- β -cyclodextrin are already known, but its application for separation of amino acid enantiomers has not been published yet.

Cyclodextrin derivatives were tested as additives in different buffers of different pH and with eventual addition of organic modifier. As suitable background electrolyte 15 mmol·l⁻¹ borate buffer, pH = 9.5 without organic modifier was chosen. Furthermore the influence of chiral selector on separation and eventual enantioseparation of chosen analytes was evaluated. Addition of cyclodextrin derivatives in concentration range 0.0 – 5.0 was tested. Fourteen anionogenic analytes, including native amino acids, *N*-blocked amino acids and profens, were detected with UV-VIS detector at optimal wavelength 214, 254 or 280 nm.

Both chiral selectors were suitable for enantioseparation of *N*-*boc*-D,L-tryptophan, which was baseline separated at concentration of selector as low as 0.5 mmol·l⁻¹. Tested amino acids blocked with *tert*-butoxycarbonyl and D,L-ketoprofen were partially separated. Both selectors were not suitable for use in capillary electrophoresis, due to their influence on electroosmotic flow and their low stability.