

Table 4 TLC Separation of D- or L-Phenylalanine Anilide on TLC Plates Containing a Stationary Phase Based on Imprinted Polymer

Print molecule	% Acetic acid ^a	R_f (L)	R_f (D)	α
L-Phenylalanine anilide	0	0.10	0.20	2.0
	5	0.10	0.35	3.5
	10	0.30	0.45	1.5
	15	0.45	0.60	1.3
D-Phenylalanine anilide	5	0.35	0.10	3.5
D,L-(<i>rac</i>)-Phenylalanine anilide	5	0.25	0.25	1.0
None	0	0.30	0.30	1.0
	5	0.65	0.65	1.0
	10	0.90	0.90	1.0
	15	1.00	0.95	1.1

^aMobile phase; acetic acid concentration in acetonitrile.

Suedee et al. used synthetic polymers imprinted with quinine as chiral stationary phases in thin-layer chromatography for the separation of ephedrine and norephedrine (129,130), pseudoephedrine, isoproterenol, salbutamol, nandolol, pindolol, propranolol, and oxprenolol (131) and obtained good separation factors.

VIII. THIN-LAYER CHROMATOGRAPHY BASED ON SILICA GEL BOUND TO OPTICALLY ACTIVE POLY(METH)ACRYLIC ACID AMIDES

Mack and Kinkel (132) described optically active poly(meth)acrylic acid amide bound to silica gel layers with a binding system consisting of a mixture of carboxyl group-containing polyvinyl and acrylic acid polymers. They formed the sorbent by in situ polymerization of the optically active methacrylic acid amides in the presence of diol-, cyano-, or amino-modified silica gel. Typical solvent systems for enantiomeric separations on such layers are various *n*-hexane-dioxane mixtures. Until recently layers of this kind could not be commercialized, so Chiralplate® and CHIR® plates (28), based on ligand exchange chromatography, are the only ready-to-use plates available on the market.

IX. SEPARATION OF ENANTIOMERS USING CHIRAL β -CYCLODEXTRIN

A. Resolution Mechanism

β -Cyclodextrin (β -CD) is a chiral, toroidal molecule consisting of seven glucose units connected via α -1,4 linkages. The enantiomers are selectively retained because they fit differently into the cavity of the oligomer.

B. Survey of Applications of Racemic Separations

Alak and Armstrong (133–136) investigated the influence of different silicas and binders on the separation behavior of β -cyclodextrin TLC plates. Besides nine racemates, three diastereomeric compounds and six structural isomers were separated. Wilson (137) impregnated silica plates with a 1% solution of β -CD in ethanol-dimethylsulfoxide (80:20 by volume); racemic mandelic acid was barely separated, and the antipode separation of β -blockers was not possible.