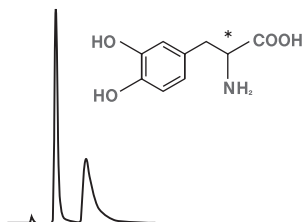


7-6. Enantiomer separations-ChiroSil

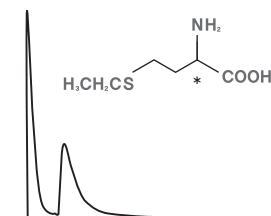
• α -Amino Acids

DL - DOPA



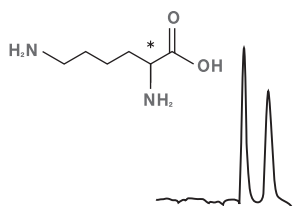
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 0.01% H₃PO₄ / MeOH = 30 / 70
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 5.5 min
 k_1 : 0.97 α : 2.30

DL - Ethionine



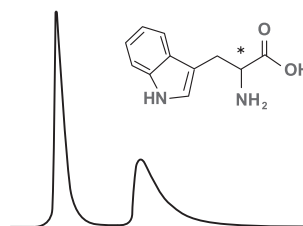
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 0.02% Acetic acid / MeOH = 25 / 75
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 6.2 min
 k_1 : 1.29 α : 2.07

DL - Lysine



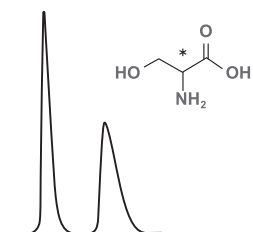
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 0.01% H₃PO₄ / MeOH = 30 / 70
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 5.3 min
 k_1 : 1.44 α : 1.48

DL - Tryptophan



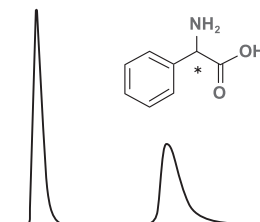
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 30 / 70
Flow Rate : 1.5 ml/min
Detection : UV 210nm
Run time : 11.0 min
 k_1 : 4.06 α : 2.15

DL - Serine



Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 5mM HClO₄ / MeOH = 16 / 84
Flow Rate : 0.8 ml/min
Detection : UV 210nm
Run time : 6.0 min
 k_1 : 1.37 α : 1.99

DL - Phenylglycine

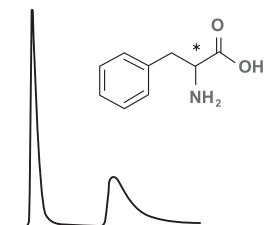


Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM H₂SO₄ and 0.1% TEA / MeOH = 30 / 70
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 13.1 min
 k_1 : 3.14 α : 2.60

7-6. Enantiomer separations-ChiroSil

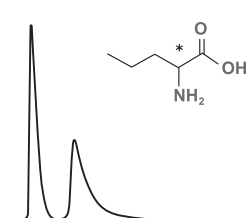
• α -Amino Acids

DL - Phenylalanine



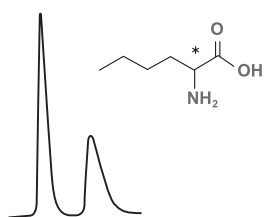
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 30 / 70
Flow Rate : 1.5 ml/min
Detection : UV 210nm
Run time : 8.9 min
 k_1 : 2.66 α : 2.57

DL - Norvaline



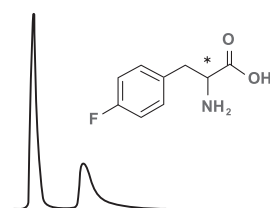
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 55 / 45
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 5.3 min
 k_1 : 1.15 α : 1.79

DL - Norleucine



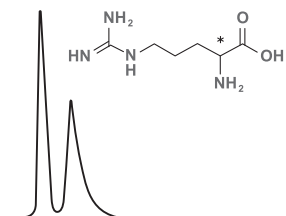
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 55 / 45
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 5.6 min
 k_1 : 1.28 α : 1.75

DL-4-Fluorophenylalanine



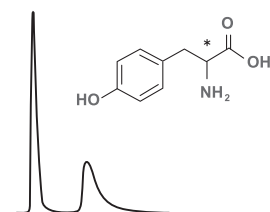
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 30 / 70
Flow Rate : 1.5 ml/min
Detection : UV 210nm
Run time : 9.6 min
 k_1 : 2.92 α : 2.56

DL - Arginine



Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM H₂SO₄ / MeOH = 16 / 84
Flow Rate : 0.8 ml/min
Detection : UV 210nm
Run time : 4.9 min
 k_1 : 1.21 α : 1.64

DL - Tyrosine

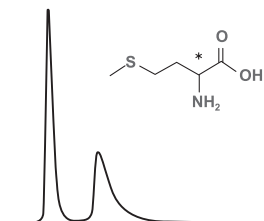


Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 30 / 70
Flow Rate : 1.5 ml/min
Detection : UV 210nm
Run time : 9.1 min
 k_1 : 2.95 α : 2.38

7-6. Enantiomer separations-ChiroSil

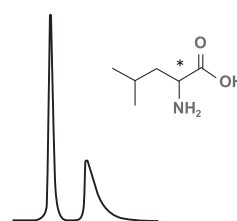
• α -Amino Acids

DL - Methionine



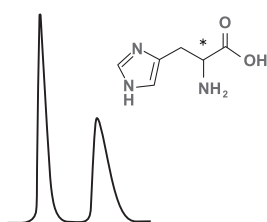
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 55 / 45
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 7.5 min
 k_1 : 1.64 α : 2.04

DL - Leucine



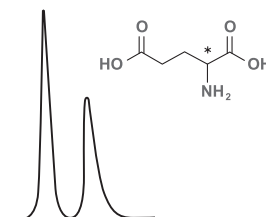
Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 55 / 45
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 5.5 min
 k_1 : 1.03 α : 2.14

DL - Histidine



Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 10mM Acetic acid / MeOH = 55 / 45
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 26.0 min
 k_1 : 10.96 α : 1.27

DL - Glutamic Acid



Column : ChiroSil RCA(+) or SCA(-)
150 X 4.6mm
Mobile Phase : 0.05% H₃PO₄ / MeOH = 35 / 65
Flow Rate : 1.0 ml/min
Detection : UV 210nm
Run time : 4.5 min
 k_1 : 0.71 α : 2.27


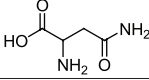
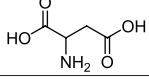
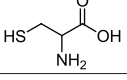
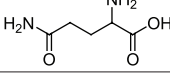


DL - Thyroxine^[8]



Column: ChiroSil Type
Mobile phase: 5mM H₂SO₄ / MeOH = 20 / 80
Flow rate: 0.5 ml/min
Detection: 210 nm UV
Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• Other α -Amino Acids[1]

α -Amino Acids	Structure	k_1	α	R_S
Alanine		1.37	1.28	1.33
Asparagine		1.31	1.10	0.63
Aspartic acid		1.51	1.22	1.25
Cysteine		1.32	1.10	0.30
Glutamine		1.31	1.32	1.72
Threonine		0.24	1.42	1.30
Valine		0.40	1.31	1.14

Condition

Column: ChiroSil Type

Mobile phase: 10mM H₂SO₄ / MeOH = 20 / 80

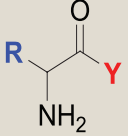
Flow rate: 0.5 ml/min

Detection: 210 nm UV

Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• α -Amino amides and esters^[1]

		k_1	α	R_s
R	Y			
CH ₃	NH(CH ₂) ₃ CH ₃	1.60	1.41	2.34
	NHC(CH ₃) ₃	1.39	1.42	2.32
	NHCH ₂ C ₆ H ₅	2.58	1.38	2.33
	OCH ₃	1.36	1.10	0.48
CH(CH ₃) ₂	NH(CH ₂) ₃ CH ₃	0.28	1.64	1.32
	NHC(CH ₃) ₃	0.25	1.59	1.11
	NHCH ₂ C ₆ H ₅	0.46	1.48	1.50
	OCH ₂ CH ₃	0.39	1.33	0.80
CH ₂ CH(CH ₃) ₂	NH(CH ₂) ₂ CH ₃	1.07	2.48	8.15
	NH(CH ₂) ₃ CH ₃	1.03	2.71	8.30
	N(CH ₂ CH ₃) ₂	0.42	1.24	0.94
CH ₂ C ₆ H ₅	NH(CH ₂) ₂ CH ₃	1.94	2.45	6.99
	NHC(CH ₃) ₃	2.06	2.28	7.36
C ₆ H ₅	NH(CH ₂) ₂ CH ₃	1.55	2.46	7.27
	NHC(CH ₃) ₃	1.28	2.67	6.32
	N(CH ₂ CH ₃) ₂	1.40	3.15	9.77
	OCH ₃	2.10	2.09	6.85
4-CH ₃ O-C ₆ H ₅	NHCH ₃	1.73	2.39	8.63
	NH(CH ₂) ₂ CH ₃	1.59	2.43	7.27
	NHC(CH ₃) ₃	1.35	2.62	7.47

Condition

Column: ChiroSil Type

Mobile phase: 10mM H₂SO₄ / MeOH = 20 / 80

Flow rate: 0.5 ml/min

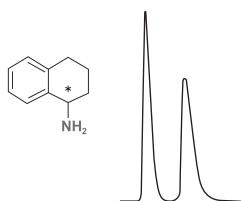
Detection: 210 nm UV

Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

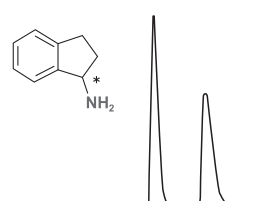
• Amines^[2] [10]

1,2,3,4-Tetrahydro-1-naphthylamine



Column : ChiroSil RCA(+) or SCA(-)
 150 X 4.6mm
 Mobile Phase : 10mM H₂SO₄ and 0.1% TEA / MeOH = 16 / 84
 Flow Rate : 1.0 ml/min
 Detection : UV 210nm
 Run time : 3.5 min
 k_1 : 0.82 α : 1.76

1-Aminoindan



Column : ChiroSil RCA(+) or SCA(-)
 150 X 4.6mm
 Mobile Phase : 10mM H₂SO₄ and 0.1% TEA / MeOH = 16 / 84
 Flow Rate : 1.0 ml/min
 Detection : UV 210nm
 Run time : 4.8 min
 k_1 : 1.44 α : 1.91

Amines	k_1	α	R _s	Condition
	2.45	1.10	0.80	A
	1.90	1.28	2.57	A
	1.38	1.84	5.23	A
	2.86	1.11	1.05	A
	1.40	1.11	1.02	A
	0.42	1.22	0.82	B
	0.41	1.11	0.38	B
	0.51	1.39	1.69	A
	5.21	3.46	12.00	A

Condition A

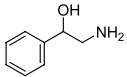
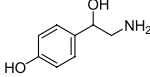
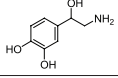
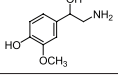
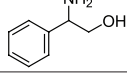
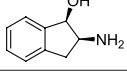
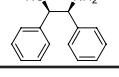
Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

Condition B

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• Amino Alcohols^{[2] [10]}

Amino Alcohols	Structure	k_1	α	R_S	Condition
2-amino-1-phenylethanol		1.10	1.40	1.52	B
4-(2-amino-1-hydroxyethyl)phenol		0.92	1.19	1.41	B
4-(2-amino-1-hydroxyethyl)benzene-1,2-diol		0.90	1.15	1.00	B
4-(2-amino-1-hydroxyethyl)-2-methoxyphenol		1.25	1.18	1.23	B
2-amino-2-phenylethanol		1.44 (S)	1.35	2.18	A
2-amino-2,3-dihydro-1H-inden-1-ol		1.98 (1R, 2S)	1.78	0.80	A
2-amino-1,2-diphenylethanol		0.29 (1S, 2R)	1.53	1.48	C

Condition A

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

Condition B

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

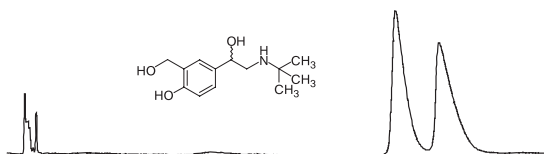
Condition C

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

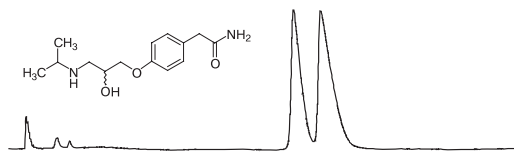
• β -Blockers^[9]

Albuterol



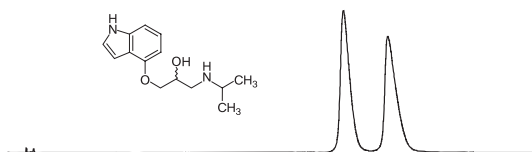
Column: ChiroSil Type
 Mobile phase: Acetic acid / TEA / MeOH / ACN
 = 0.1 / 0.1 / 50 / 50
 Flow rate: 1 ml/min
 Detection: 260 nm UV
 Temperature: 20 °C
 k_1 : 21.34 α : 1.2

Atenolol



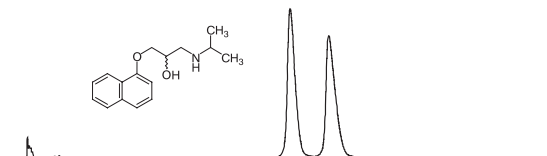
Column: ChiroSil Type
 Mobile phase: Acetic acid / TEA / MeOH / ACN
 = 0.1 / 0.1 / 50 / 50
 Flow rate: 1 ml/min
 Detection: 260 nm UV
 Temperature: 20 °C
 k_1 : 15.86 α : 1.10

Pindolol



Column: ChiroSil Type
 Mobile phase: Acetic acid / TEA / MeOH / ACN
 = 0.1 / 0.1 / 50 / 50
 Flow rate: 1 ml/min
 Detection: 260 nm UV
 Temperature: 20 °C
 k_1 : 18.99 α : 1.14

Propranolol



Column: ChiroSil Type
 Mobile phase: Acetic acid / TEA / MeOH / ACN
 = 0.1 / 0.1 / 50 / 50
 Flow rate: 1 ml/min
 Detection: 260 nm UV
 Temperature: 20 °C
 k_1 : 15.16 α : 1.15

7-6. Enantiomer separations-ChiroSil

Other β -Blockers^[19]

β -Blockers	Structure	k_1	α	R_S
Alprenolol		29.35	1.26	2.12
Oxprenolol		24.61	1.22	2.29
Acebutolol		45.60	1.29	2.90
Bambuterol		22.52	1.85	4.21
Clenbuterol		53.61	1.59	4.37
Clenpropol		48.61	1.13	1.58
Fumoterol		98.08	1.23	1.36
Mabuterol		43.07	1.64	5.79

Condition

Column: ChiroSil Type

Mobile phase: TFA / TEA / EtOH / ACN = 0.1 / 0.5 / 20 / 80

Flow rate: 1 mL/min

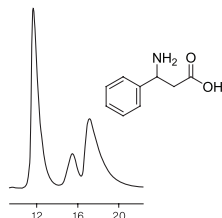
Detection: 260 nm UV

Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

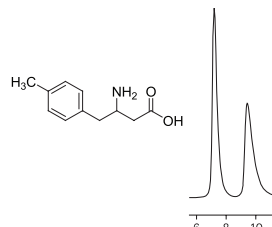
• β -Blockers Acids^[6]

3-amino-3-phenylpropanoic acid



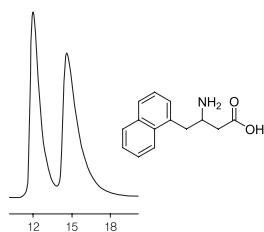
Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 3.60 α : 102

3-amino-4-(4-methylphenyl)butanoic acid



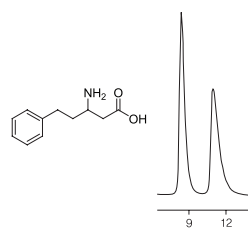
Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 1.26 α : 1.40

3-amino-4-(1-naphthyl)butanoic acid



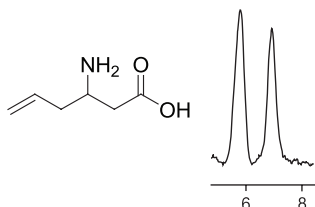
Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 3.72 α : 1.28

3-amino-5-phenylpentanoic acid



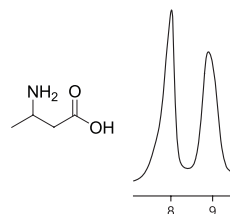
Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 2.30 α : 1.44

3-amino-5-hexenoic acid



Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 1.02 α : 1.37

3-aminobutyric acid

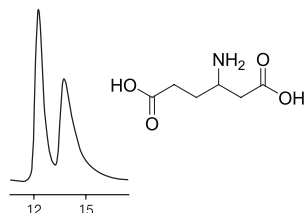


Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20°C
 k_1 : 2.16 α : 1.16

7-6. Enantiomer separations-ChiroSil

• β -Blockers Acids^[6]

3-aminoadipic acid



Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C
 k_1 : 3.83 α : 1.16

• Other β -Amino Acids^[11]

β -Blockers	Structure	k_1	α	R_S
3-amino-4-(2-furyl)butyric acid		1.33	1.33	1.66
3-amino-4-(2-naphthyl)butyric acid		2.38	1.53	2.07
3-amino-4,4-diphenylbutyric acid		0.67	1.34	1.38

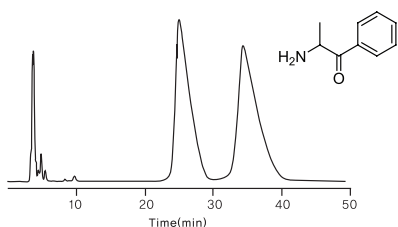
Condition

Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• Aryl α -Amino Ketones^[15]

Cathinone



Column: ChiroSil Type
 Mobile phase: 10mM Acetic acid / MeOH = 50 / 50
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C
 k_1 : 3.83 α : 1.16

		k_1	α	R_S
Ar	R			
C ₆ H ₅	CH(CH ₃) ₂	0.11	2.12	2.13
C ₆ H ₅	CH ₂ CH(CH ₃) ₂	0.34	1.95	3.11
C ₆ H ₅	CH ₂ CH ₂ SCH ₃	0.84	1.57	2.29
C ₆ H ₅	CH ₂ C ₆ H ₅	1.03	1.55	3.55
4-CH ₃ C ₆ H ₄	CH ₃	1.22	1.55	2.80
4-CH ₃ C ₆ H ₄	CH(CH ₃) ₂	0.16	2.08	1.89
4-CH ₃ C ₆ H ₄	CH ₂ CH(CH ₃) ₂	0.31	1.99	2.88
4-CH ₃ C ₆ H ₄	CH ₂ CH ₂ SCH ₃	0.78	1.65	2.98
4-CH ₃ C ₆ H ₄	CH ₂ C ₆ H ₅	0.86	1.58	3.09
1-Naphthyl	CH(CH ₃) ₂	0.25	2.20	3.87
2-Naphthyl	CH(CH ₃) ₂	0.26	2.19	3.77

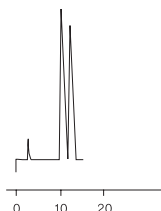
Condition

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / EtOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• Tocainide's Analogues

Tocainide



Column: ChiroSil Type
 Mobile phase: 5mM H₂SO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

Tocainide's Analogue	Structure	k_1	α	R _S
2-amino-N-phenylpropanamide		1.82	1.73	2.52
2-amino-N-benzylpropanamide		1.38	1.44	2.10
2-amino-3-methyl-N-phenylbutanamide		0.34	2.10	2.56
2-amino-N-benzyl-3-methylbutanamide		0.30	1.42	1.00
2-amino-4-methyl-N-(2,6-dimethylphenyl)pentanamide		0.25	1.17	0.25
2-amino-4-methyl-N-phenylpentanamide		1.35	5.00	4.00
2-amino-N-benzyl-4-methylpentanamide		1.07	2.39	5.50
2-amino-N,3-diphenylpropanamide		2.29	3.72	5.33
2-amino-N-benzyl-3-phenylpropanamide		2.08	2.19	3.29
2-amino-N-(2,6-dimethylphenyl)-2-phenylacetamide		1.49	2.05	3.52
2-amino-N,2-diphenylacetamide		1.55	3.50	5.50
2-amino-N-benzyl-2-phenylacetamide		1.60	2.58	4.89

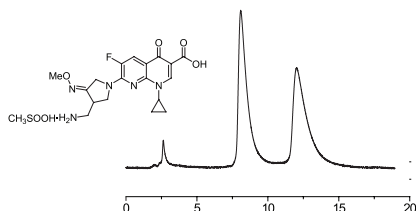
Condition

Column: ChiroSil Type
 Mobile phase: 10mM H₂SO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 210 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

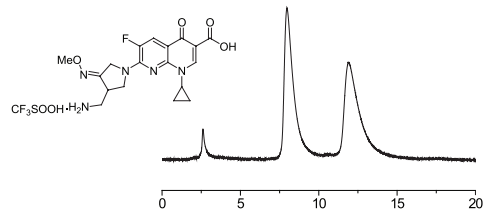
• Gemifloxacin^[7]

Gemifloxacin mesylate



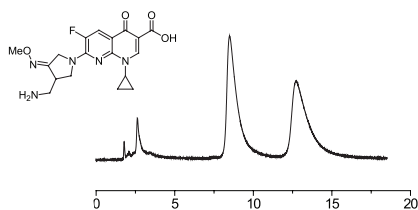
Column: ChiroSil Type
 Mobile phase: 10mM HClO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 254 nm UV
 Temperature: 20 °C
 k_1 : 3.55 α : 1.62

Gemifloxacin triflate



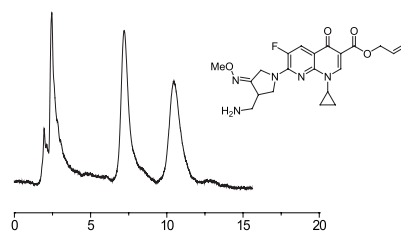
Column: ChiroSil Type
 Mobile phase: 10mM HClO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 254 nm UV
 Temperature: 20 °C
 k_1 : 3.49 α : 1.63

Free form of Gemifloxacin



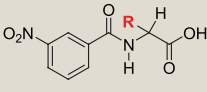
Column: ChiroSil Type
 Mobile phase: 10mM HClO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 254 nm UV
 Temperature: 20 °C
 k_1 : 3.78 α : 1.63

Allyl ester of Gemifloxacin



Column: ChiroSil Type
 Mobile phase: 10mM HClO₄ / MeOH = 20 / 80
 Flow rate: 0.5 ml/min
 Detection: 254 nm UV
 Temperature: 20 °C
 k_1 : 3.05 α : 1.60

• N-benzyl- α -Amino Acids^[18]

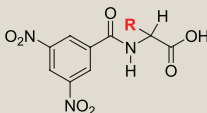
	k_1	α	R_S
R			
(CH ₃) ₂ CH	3.35	1.11	0.41
(CH ₃) ₂ CHCH ₂	3.68	1.14	0.55

Condition

Column: ChiroSil Type
 Mobile phase: Acetic acid / TEA / ACN = 0.05 / 0.25 / 100
 Flow rate: 0.5 ml/min
 Detection: 254 nm UV
 Temperature: 20 °C

7-6. Enantiomer separations-ChiroSil

• N-(3, 5-dinitrobenzoyl)- α -Amino Acid^[18]

 R	k_f	α	R_S
CH ₃	6.81	1.20	0.76
(CH ₃) ₂ CH	3.22	1.81	2.81
(CH ₃) ₂ CHCH ₂	4.56	1.57	2.01
C ₆ H ₅	3.56	1.47	1.49
C ₆ H ₅ CH ₂	5.11	1.61	1.78
HOCH ₂	21.25	1.06	0.54
CH ₃ (OH)CH	8.85	1.23	0.74
4-OH-C ₆ H ₄ CH ₂	36.20	1.27	0.73

Condition

Column: ChiroSil Type

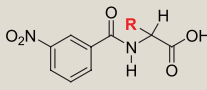
Mobile phase: Acetic acid / TEA / ACN = 0.05 / 0.25 / 100

Flow rate: 0.5 ml/min

Detection: 254 nm UV

Temperature: 20 °C

• N-(3-dinitrobenzoyl)- α -Amino Acids^[18]

 R	k_f	α	R_S
CH ₃	5.71	1.14	0.60
(CH ₃) ₂ CH	3.06	1.46	1.40
(CH ₃) ₂ CHCH ₂	4.26	1.45	1.68
C ₆ H ₅	2.86	1.25	0.97

Condition

Column: ChiroSil Type

Mobile phase: Acetic acid / TEA / ACN = 0.05 / 0.25 / 100

Flow rate: 0.5 ml/min

Detection: 254 nm UV

Temperature: 20 °C