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Part II: From Dermatologicals to Sensory Organ and Various Drugs

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COMMERCIAL CHIRAL STATIONARY PHASES FOR THE SEPARATIONS OF CLINICAL RACEMIC DRUGS

Part II: From Dermatologicals to Sensory Organ and Various Drugs

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Abstract: The enantioseparation of 442 clinically used racemic drugs by high-performance liquid chromatography on commercial chiral stationary phases (CSPs) available in 2006 is reviewed. The CSPs are briefly described in Part I of this work. The data was extracted and compiled from the ChirBase database (Marseille, France). All the drugs included are listed according to the Anatomical Therapeutic Chemical (ATC) classification that defined thirteen therapeutic classes. Only positive results are reported and, for a given CSP type, only the set of analytical conditions providing the best enantioselectivity is provided. The analyst can find at a glance the optimal CSP column and its supplier, as well as the suitable mobile phase allowing for an efficient enantioresolution of a racemic drug. Given the amount of data, Part I of this compilation included the technical and molecular description of exactly one hundred commercial CSPs and the six opening ATC classes with 211 enantiomeric drugs arranged from Class 1: "Alimentary tract and metabolism" to Class 6: "Cardio-vascular system." Part II includes the 231 remaining chiral drugs arranged in the seven remaining classes from Class 7: "Dermatologicals" to Class 12: "Sensory Organs" and Class 13: "Various Drugs." The final index refers to the two parts.

Keywords: Chiral drugs, enantiomers, therapeutic activity, HPLC chiral separations, enantioseparations, Chiral stationary phases

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INTRODUCTION

The key for the table reading is noted here. Full information can be found in the Part I introduction. Only enantioseparations performed on commercially available chiral stationary phases (CSP) are listed. All published separations made on homemade CSPs were discarded. Most single separations found in commercial flyers and application handbooks were also discarded when they were not associated with a peer-reviewed publication.

The tables are arranged following the Anatomical and Therapeutic Chemical (ATC) classification that separated the pharmaceutical active principles in thirteen classes. In the tables, each field is presented as follow. 1-The drug name is written using the ATC spelling; 2-Drug molecular structure; 3-Medical class; 4-The trade name of the CSP used. The CSPs are arranged in the Part I presentation order, i.e., Pirkle type CSPs (I-A), ligand exchange (I-B), organometallic (I-C), crown ether (II-A), cyclodextrin CSPs (II-B), antibiotic (II-C), polysaccharide (III-A), polymer (III-B) and protein CSPs (III-C). 5-The mobile phase used to produce the listed 6-first and 7-second enantiomer retention times and/or the 8-enantioselectivity and 9-enantio-resolution factors is detailed. The rightmost 10-column gives the reference number.

All data was compiled from the ChirBase database (1).

8. DERMATOLOGICAL DRUGS

The eleven enantiomeric drugs found in the ChirBase database and used for dermatological properties were exclusively active drugs with antifungal properties.

The pie figure showing the efficient CSPs is shown (Fig. 1) although it may not be really significant given the small number of enantiomeric pairs. Thus, over 80% of the antifungal enantiomers were successfully separated by polysaccharide CSPs (Table 1).

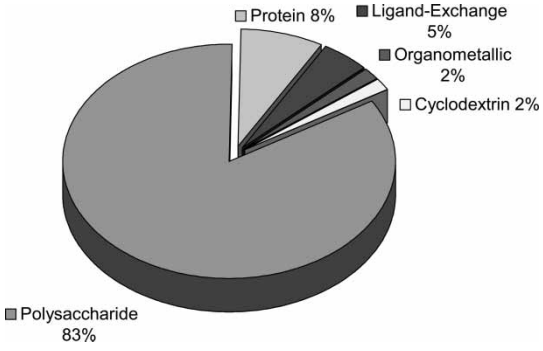
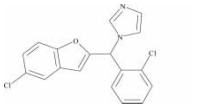
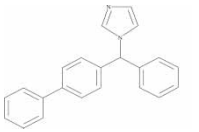
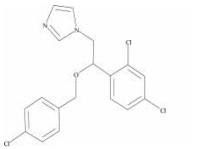


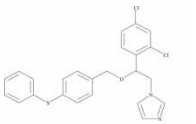
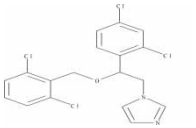
Figure 1. Chiral stationary phases able to separate the enantiomers of dermatological (antifungal) drugs.

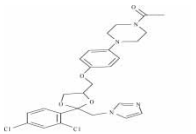
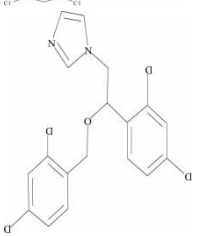
Table 1. ChirBase® enantioseparations of dermatological drugs

Drug Name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Becliconazole		Antifungal	Chiralcel OD	95/5:0.1-Hexane/EtOH/Et_2NH			1.39	3.55	(2)
			Chiralpak AD	87.5/12.5/0.1-Hexane/EtOH/Et_2NH			1.13	2.33	(2)
			Chiralpak AS	97.5/2.5-Hexane/EtOH			1.12	0.96	(2)
Bifonazole		Antifungal	Chiralcel OD	85/15/0.1-Isohexane/EtOH/Et_2NH			1.33	1.19	(3)
			Chiralcel OD	85/15/0.1-Isohexane/EtOH/TFA			1.45	1.07	(3)
			Chiralcel OJ	85/15/0.1-Isohexane/EtOH/TFA			1.47	1.66	(3)
			Chiralcel OJ	85/15/0.1-Isohexane/EtOH/Et_2NH			1.3	1.49	(3)
			Chiralpak AD	85/15/0.1-Isohexane/EtOH/Et_2NH			1.74	3.26	(3)
			Chiralpak AD	90/10-Hexane/i-PrOH	(+)	(−)	1.52		(4)
Econazole		Antifungal	Chiralpak WH	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.5	2.14	(5)
			Chiralcel OB	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.52	0.3	(6)
			Chiralcel OC	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.16	1.6	(6)

(*continued*)

Table 1. Continued

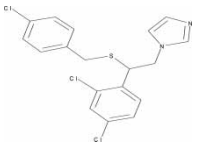
Drug Name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
			Chiralcel OF	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.29	3.78	(6)
			Chiralpak AD	90/10/0.1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.23	1.7	(2)
			Chiralpak AS	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.63	5.32	(7)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 7.4/MeCN	(+) 3.18	(−) 5.31			(8)
			Ultron ES-OVM	70/30-KH_2PO_4 buffer 10 mM, pH = 6.5/MeCN	S	R	1.54	1.69	(9)
			Ultron ES-OVM	80/20-KH_2PO_4 buffer 10 mM, pH = 4.2/EtOH	S	R	1.18	1.18	(9)
Fenticonazole, nitrate		Antifungal	Chiralpak AS	80/20-Isohexane/i-PrOH			1.76		(10)
Isoconazole		Antifungal	Chiralcel OJ	80/20/0.1-Isohexane/i-PrOH/Et_2NH			3.27		(10)

Ketoconazole		Antifungal	Chiralcel OD-H	50/50/0.1-Hexane/EtOH/Et_2NH	2R,4S(+)	2S,4R(−)	1.1	1.36	(11)
			Chiralpak AD	50/50-EtOH/MeOH			2.16	3.21	(3)
			Chiralpak AD	40/60-Hexane/EtOH	(+)	(−)	1.8	3.8	(12)
Miconazole		Antifungal	Ceramospher Chiral Ru-1	99/1-MeOH/Et_3N			1.38		(13)
			Chiralpak WH	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.48	2.07	(5)
			Chiralcel OB	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	2.34	0.17	(6)
			Chiralcel OC	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.16	1.1	(6)
			Chiralcel OD	MeOH			1.07		(14)
			Chiralcel OD	80/20/0.2/0.1-Hexane/i-PrOH/H_2O/$MeCO_2H$			1.11	1.1	(15)
			Chiralcel OD	80/20-Hexane/i-PrOH			1.06	0.5	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O			1.07	0.5	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O, (+)-CamphorSO_3H 1.2 mM			1.04	0.4	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O, (−)-CamphorSO_3H 1.2 mM			1.25	1.9	(15)

(*continued*)

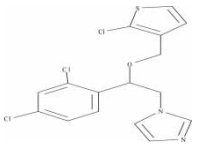
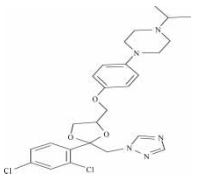
Table 1. Continued

Drug Name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Miconazole			Chiralcel OD	70/30/0.1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.22	1.45	(16)
			Chiralcel OF	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.21	3.3	(6)
			Chiralcel OJ	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.31	0.33	(6)
			Chiralcel OJ	MeOH			1.63	0.6	(14)
			Chiralcel OJ	70/30/0.1-Hexane/i-PrOH/Et_2NH	(+)	(−)	1.93	5.06	(16)
			Chiralcel OJ	100/0.1-EtOH/Et_2NH	(+)	(−)	1.8	4.74	(16)
			Chiralcel OJ	78/22-Hexane/EtOH	S 37.3	R 52.8			(17)
			Chiralcel OK	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.28	0.9	(6)
			Chiralpak AD	MeCN			2.03	1.2	(14)
			Chiralpak AD	MeOH			1.32	0.4	(14)
			Chiralpak AD	5/95/0.1-Hexane/EtOH/Et_3N			1.4	2.6	(18)
			Chiralpak AS	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.56	4.69	(7)
			Ultron ES-OVM	80/20-KH_2PO_4 buffer 10 mM, pH = 4.2/MeCN	S	R	1.47	1.82	(9)

			Ultron ES-OVM	80/20-KH_2PO_4 buffer 10 mM, pH = 4.2/i-PrOH	S	R	1.65	2.3	(9)
Sulconazole		Antifungal	Chiralpak WH	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.68	1.61	(5)
			Chiralcel OB	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	2.64	0.2	(6)
			Chiralcel OD	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.35	3.61	(6)
			Chiralcel OD	MeCN			1.11	0.5	(14)
			Chiralcel OD	80/20/0.2/0.1-Hexane/i-PrOH/H_2O/$MeCO_2H$			1.24	2.7	(15)
			Chiralcel OD	80/20-Hexane/i-PrOH			1.31	3.2	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O			1.23	2.4	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O, (+)-CamphorSO_3H 1.2 mM			1.06	0.5	(15)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O, (−)-CamphorSO_3H 1.2 mM			1.19	1.6	(15)
			Chiralcel OF	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.24	3.8	(6)
			Chiralcel OJ	425/74/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.59	2.39	(6)
			Chiralcel OJ	90/10-Hexane/i-PrOH	(−)	(+)	1.68	1	(19)

(*continued*)

Table 1. Continued

Drug Name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
			Chiralpak AD	MeOH			1.14	0.6	(14)
			Chiralpak AD	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.16	3.6	(7)
			Chiralpak AS	400/99/1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.48	5.68	(7)
Tioconazole		Antifungal	Cyclobond I	4.37/27.50-TEAA pH = 4.27/MeOH				1.21	(20)
Terconazole		Antifungal	Chiralcel OD-H	50/50/0.1-Hexane/EtOH/Et_2NH	2R,4S(+)	2S,4R(−)	1.17	1.56	(21)
			Chiralpak AD	80/20/0.1-Isohexane/i-PrOH/Et_2NH	(+)	(−)	2.76		(22)

9. GENITO-URINARY SYSTEM AND SEX HORMONES

The chiral drugs acting on the genito-urinary system are divided in two classes, the anti-infectives and the urologicals (five enantiomeric pairs). To these classes of drugs the three classes of sex hormones are added. They are: estrogens (five enantiomeric pairs), hormonal contraceptives (three pairs) and progestogens (with a single chiral drug: Norethisterone).

Figure 2 shows that polysaccharides were again the most successful CSPs with 54% of the chiral separations of the fifteen enantiomeric pairs in this therapeutic class (Table 2).

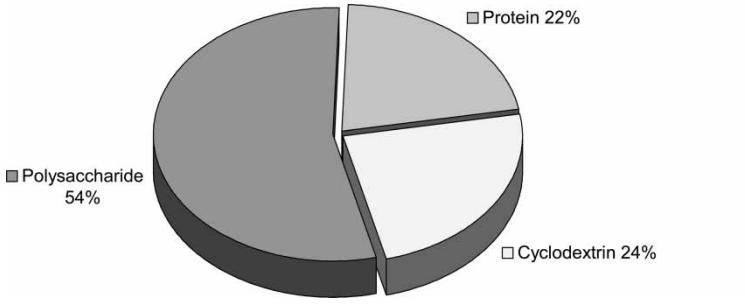
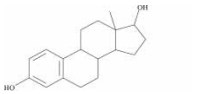
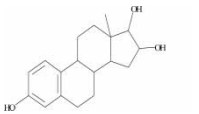
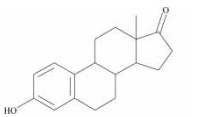
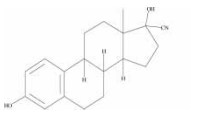
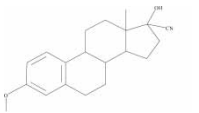
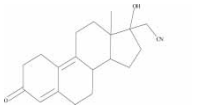
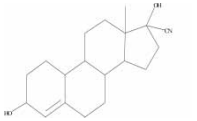
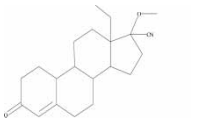


Figure 2. Chiral stationary phases able to separate the enantiomers of genitor-urinary system drugs and sex hormones.

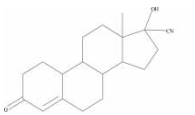
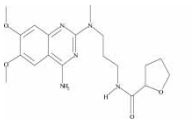
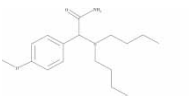
Table 2. ChirBase® enantioseparations of genito-urinary system drugs and sex-hormones

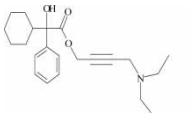
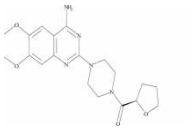
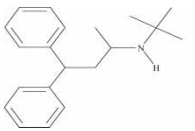
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Estradiol		Estrogen	Cyclobond I	35/65-H_2O/MeOH	(α)	(β)	2.63	1.5	(23)
			Chiralpak AD	90/10-Hexane/i-PrOH	Natural	Ent	1.1	1.5	(24)
			Chiralpak AD	5/95-H_2O/MeOH	Ent	Natural	1.61	1.9	(24)
			Chiralpak AD	5/95-H_2O/MeCN	Ent.	Natural	1.3	0.8	(24)
Estriol		Estrogen	Cyclobond I	40/60-H_2O/MeOH	Epiestriol	Estriol	1.36	1.5	(23)
Estrone		Estrogen	Chiralpak AD	5/95-H_2O/MeCN	Ent	Natural	2.3	2.7	(24)
			Chiralpak AD	5/95-H_2O/MeOH	Ent	Natural	1.74	4.1	(24)
Ethinyles tradiol		Estrogen	Nucleodex beta-PM	30/70-H_2O/MeOH			1.75		(25)
			Chiralpak AD	90/10-Hexane/i-PrOH	Natural	Ent.	1.2	3	(24)
Mestranol		Estrogen	Chiralpak AD	97/3-Hexane/i-PrOH	Natural	Ent	1.1	1.7	(24)
			Chiralpak AD	50/50-H_2O/MeCN	Ent	Natural	1.05	0.8	(24)

Dienogest		Contraceptive	Chiralpak AD	60/40-H_2O/MeCN	Natural	Ent	1.34	3.4	(24)
Ethynodiol		Contraceptive	Nucleodex beta-PM	70/30-H_2O/MeCN	Natural	Ent	1.11	1.3	(26)
			Chiralpak AD	5/95-H_2O/MeCN	Ent.	Natural	2	4.1	(24)
			Chiralpak AD	90/10-Hexane/i-PrOH	Natural	ent	1.41	5.4	(24)
Norgestrel		Contraceptive	Cyclobond II	70/30-H_2O/MeCN	L	D	1.24	1.1	(27)
			Cyclobond I Ac	60/40-H_2O/MeOH	D	L		1	(28)
			Nucleodex beta-PM	70/30-H_2O/MeCN	Natural	Ent	1.08	1.1	(26)
			Nucleodex gamma-PM	70/30-H_2O/MeCN	Ent	Natural	1.12	1.6	(26)
			Chiralcel OJ	MeOH			3.75	1.5	(29)
			Chiralpak AD	70/30-H_2O/MeCN			1.5	1.9	(24)
			Chiralpak AD	90/10-Hexane/i-PrOH	Ent.	Natural	1.08	1.1	(24)
			Chiral-AGP	Acetate buffer 0.06M, pH = 4			1.48		(30)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 4			1.67		(30)

(*continued*)

Table 2. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Norethisterone		Progestogen	Nucleodex beta-PM	70/30-H_2O/MeCN	Ent	Natural	1.09	1.11	(26)
			Nucleodex gamma-PM	70/30-H_2O/MeCN	Ent	Natural	1.1	1.4	(26)
			Chiralpak AD	90/10-Hexane/i-PrOH	Natural	Ent	1.35	4.6	(24)
			Chiralpak AD	40/60-H_2O/MeCN			1.1		(24)
Alfuzosin		Urological	Chiral-AGP	96/4-Potassium Phosphate buffer 0.05M, pH = 7.4, TBAB 0.025M, NaOH 1M/MeCN	R	S	1.35	1.45	(31)
			EnantioPac	98/2-$MeCO_2NH_4$ 0.1M, pH = 7.5/i-PrOH			1.28	1.2	(32)
			EnantioPac	98/2-$MeCO_2NH_4$ 0.1M, pH = 7.5/i-PrOH, $C_7H_{15}CO_2H$ 10 mM			1.16	0.8	(32)
Ambucetamide		Urological	Chiralcel OJ	MeOH			4.1		(29)
			Chiralcel OD	MeCN			8.02	5	(29)
			Chiralcel OD	MeOH			3	0.8	(29)
			Chiralpak AD	MeCN			1.44	1.5	(29)
			Chiralpak AD	MeOH			1.42	1	(29)

Oxybutynin		Urological	Chiralpak AD	90/10-Hexane/i-PrOH	1.43	1.28	(33)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$	2	9.55	(34)
			Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 6, Na_2EDTA 50μM/i-PrOH	2.08	3.42	(35)
			Ultron ES-OVM	88/12-H_2O, Citric acid 40 mM, pH = 5/EtOH		2.19	(36)
Terazosin		Urological	TrichSep-100	Acetate buffer 0.05M, pH = 6.5/i-PrOH 0.065M	1.46	1.63	(37)
			TrichSep-100	Phosphate buffer pH = 6/i-PrOH 0.39M	1.43	0.97	(37)
Terodiline		Urological	Cyclobond I SN	73/23-TEAA buffer (1%) pH = 7.1/MeCN	1.08		(38)
			Chiral-AGP	85/15-Phosphate buffer 0.01M, pH = 7/i-PrOH	1.33	1	(39)

10. MUSCULO-SKELETAL SYSTEM

This family of 33 chiral drugs contains only two classes of compounds, anti-inflammatory and muscle relaxant drugs. They are easily available over-the-counter and prescribed drugs extensively studied. The most important anti-inflammatory class contains the "-fen," such as caprofen, fenoprofen, ibuprofen or ketoprofen, and the "-ac" terminated names such as clidalac, etodolac or ketorolac chiral compounds.

The polysaccharide CSPs were able to separate one enantiomeric pair of this class of drugs over three. The Pirkle or π-complex, protein and antibiotic CSPs separated half of the chiral compounds (Fig. 3). The five remaining types of CSPs separated the 17% remaining chiral compounds (Table 3).

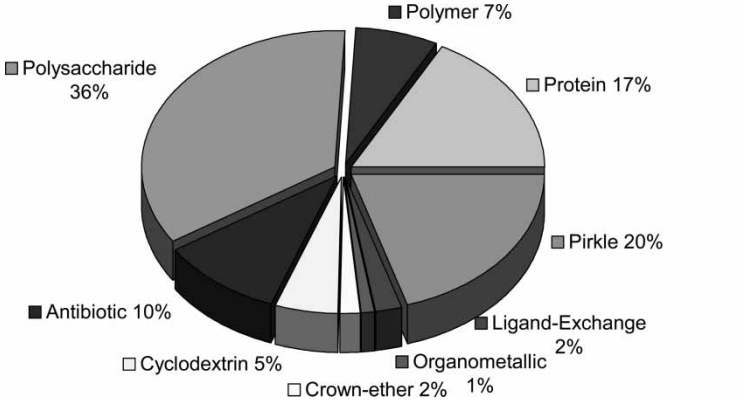
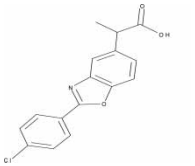
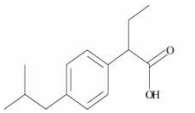
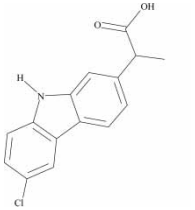


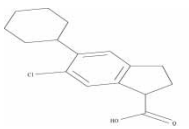
Figure 3. Chiral stationary phases able to separate the enantiomers of musculo-skeletal system drugs.

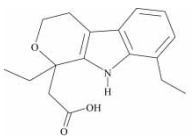
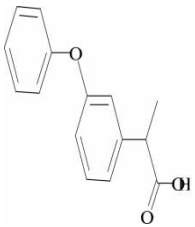
Table 3. ChirBase® enantioseparations of musculo-skeletal system drugs

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Benoxaprofen		Anti-inflammatory	Sumichiral OA-2500	$MeCO_2NH_4$ 0.04M/MeOH	R 10.3	S 11.8			(10)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/TFA			1.13	1.17	(41)
			Chiralcel OJ-R	55/45-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.1	1.92	(42)
			Exp B101	35/65-Perchlorate buffer 0.1M, pH = 2/MeOH			1.16	0.97	(43)
			Chiralpak AD	95/5/1-Hexane/i-PrOH/TFA	R(−)	S(+)	1.82		(44)
			Chiralpak AS	95/5/1-Hexane/i-PrOH/TFA	S	R	1.38		(45)
			Ultron-ES-OVM	90/10-Phosphate buffer 0.02M, pH = 4/EtOH			1.47		(46)
Butibufen		Anti-inflammatory	Chiralcel OD	100/1.2/0.02-Hexane/i-PrOH/TFA	R(−)	S(+)	1.44	2.17	(47)
Carprofen		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ 1 g/l			2.37		(48)
			ChiraDex	50/50-H_2O, Et_3N buffer (0.1%) pH = 3/MeOH			1.07	0.7	(49)

(*continued*)

Table 3. Continued

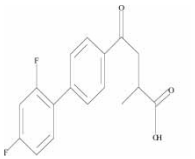
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Carprofen			Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	0.7	(50)
			Chirobiotic V	80/20-TEAA (0.1%) pH = 5/MeOH				0.26	(51)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/$MeCO_2H$			1.38	3.55	(41)
			Chiralcel OJ-R	20/80-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeOH	R	S	1.46	2.46	(42)
			Chiralcel OJ-R	55/45-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN	R	S	1.08	0.99	(42)
			Exp B101	20/80-Perchlorate buffer 0.1M, pH = 2/MeOH			1.07	0.52	(41)
			Chiralcel OD	90/10/0.15-Hexane/EtOH/TFA			1.17	1.32	(52)
			Chiralpak AD	Hexane/i-PrOH 3.42M/TFA 0.00195 mM			1.25	2.11	(52)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/TFA			1.1	2	(53)
			Chiralpak IA	80/20/0.1-Hexane/i-PrOH/TFA			1.2	3.1	(53)
Clidanac		Anti-inflammatory	Sumichiral OA-2500	$MeCO_2NH_4$ 0.02M/MeOH			1.03		(54)
			Sumichiral OA-3100	490/9/1/1-Hexane/CH_2Cl-CH_2Cl/EtOH/$MeCO_2H$			1.19		(54)

			Sumichiral OA-3100	$MeCO_2NH_4$ 0.01M/MeOH			1.56		(54)
			Sumichiral OA-3200	$MeCO_2NH_4$ 0.01M/MeOH			1.55		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.01M/MeOH			1.17		(54)
Etodolac		Anti-inflammatory	(R)-DNBPG covalent	95/5-Hexane/i-PrOH, TFA(0.1%)	R(−)	S(+)	1.08	0.9	(55)
			Chiralcel OD	90/10-Hexane/i-PrOH, TFA (0.1%)	R(−)	S(+)	2.48	6.4	(55)
			Chiralcel OD	90/10-Hexane/i-PrOH	R(−)	S(+)	1.73	4.7	(55)
			Chiral-AGP	95/5-Phosphate buffer 5 mM, pH = 5.5/MeCN	R(−)	S(+)	5	4.89	(56)
			Chiral-AGP	94/6-Sodium phosphate buffer 0.01M, pH = 7/i-PrOH			4.18	5.05	(57)
Fenoprofen		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH			1.84		(48)
			(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ (1 g/L)			1.61		(58)
			Sumichiral OA-2000	80/20/0.05-MeCN/H_2O/TFA	(−)	(+)	1.06		(59)
			Sumichiral OA-2500	$MeCO_2NH_4$ 0.02M/MeOH			1.12		(54)
			Sumichiral OA-3100	$MeCO_2NH_4$ 0.01M/MeOH			1.07		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.01M/MeOH			1.13		(54)

(*continued*)

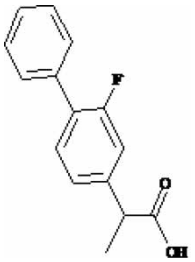
Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Fenoprofen			Chirobiotic MTAG	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/ MeOH			1.13	0.65	(60)
			Chiralcel OD	Hexane/EtOH 0.34M/ $C_4F_7CO_2H$ 0.00195 mM			1.14	0.85	(52)
			Chiralcel OD	98/2/0.15-Hexane/EtOH/ TFA			1.12	1.23	(52)
			Chiralcel OJ	90/10/0.05-Hexane/i-PrOH/ TFA			1.35	1.63	(61)
			Chiralcel OJ-R	55/45-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.12	2.42	(42)
			Chiralpak AD	80/20/0.15-Hexane/EtOH/ TFA			1.35	3.4	(52)
			Chiralpak AD	Hexane/EtOH 0.43M $C_4F_7CO_2H$ 0.00195 mM			1.11	1.42	(52)
			Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOi-Pr/$MeSO_3H$			1.14	2.72	(62)
			Kromasil CHI-TBB	95/5/0.1-Hexane/i-PrOH/ $MeCO_2H$			1.21		(63)
			Chiral-AGP	99/1-Sodium phosphate buffer 0.100M, pH = 7/i-PrOH			1.28		(57)

			Chiral-AGP	50/50-Phosphate buffer 0.01M pH = 7, DMOA 0.001M/i-PrOH, DMOA 0.001M			1.52		(64)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/Propylene glycol 0.25M/NaCl 0.1M			1.31		(65)
			EnantioPac	Phosphate buffer 0.02M, pH = 7.15/DMAO 5 mM, NaCl 0.1M			1.31	2.4	(66)
Flobufen		Anti-inflammatory	(S,S) ULMO	99/1/0.1-Heptane/i-PrOH/TFA	S	R	1.08		(67)
			(S,S) ULMO	99/1-Hexane/i-PrOH	S	R	1.08	1.13	(68)
			(R,R) Whelk-O1	95/5-Hexane/i-PrOH	R(+)	S(−)	1.34	2.98	(67)
			(S,S) Whelk-O1	90/10/0.5-Hexane/i-PrOH/$MeCO_2H$	(−) 7.5	(+) 9			(69)
			Chirobiotic T	80/20-TEAA (1%) pH = 6.6/MeOH			1.16	0.9	(70)
			Chirobiotic V	75/25-TEAA (0.1%) pH = 5/MeOH				0.76	(51)
			Chiralcel OD-H	95/5/0.1-Hexane/i-PrOH/TFA	S	R	1.33		(67)
			Chiralcel OD-H	95/5-Hexane/i-PrOH	S	R	1.33	2.51	(69)
			Chiralcel OD-R	20/80-$NaClO_4$ 1M, pH = 2.31/MeOH	S(−) 15.5	R(+) 16.5			(71)

(*continued*)

Table 3. Continued

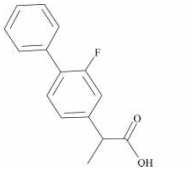
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Flurbiprofen		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ 1 g/l	R	S	1.59		(72)
			(S,S)-Whelk-O1	95/5/0.2-Hexane/EtOH/$MeCO_2H$	R	S	1.26		(73)
			Sumichiral OA-2500	$MeCO_2NH_4$ 0.02M/MeOH			1.09		(54)
			Sumichiral OA-3200	$MeCO_2NH_4$ 0.01M/MeOH			1.02		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.01M/MeOH			1.06		(54)
			Ceramospher Chiral Ru-1	99/1-MeOH/$MeCO_2H$			1.21		(74)
			ChiraDex	30/70-Et_3N buffer (0.1%) pH = 3/MeOH			1.07	0.72	(49)
			Cyclobond I SN	80/20-TEAA buffer (1%) pH = 4.5/MeCN			1.04		(75)
			Chirobiotic R	75/25-TEAA (0.1%) pH = 6/MeOH			1.18	0.93	(76)
			Chirobiotic T	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/MeOH			1.08	0.9	(60)
			Chirobiotic T	75/25-TEAA buffer (0.1%) pH = 6/MeOH			1.16	0.8	(77)

Chirobiotic V	70/30-TEAA (0.1%) pH = 5/ MeOH				0.7	(51)
Chirobiotic V	36/64-NH_4NO_3 20 mM/ MeOH, Vancomycin 3 mM			2.34	3.79	(78)
Chirobiotic V	80/20-NH_4NO_3 20 mM/ MeOH			1.16		(78)
Chirobiotic V	36/64-NH_4NO_3 20 mM/ MeOH, $CHCF_3$ (10 mol) %) Vancomycin 1.5 mM			1.84	3	(78)
Chirobiotic V	65/35-NH_4NO_3 buffer 100 mM, pH = 5/Dioxane			1.35	1.62	(79)
Chirobiotic V	65/35-NH_4NO_3 buffer 100 mM, pH = 5/i-PrOH			1.32	1.17	(79)
Chirobiotic V	85/15-NH_4NO_3 buffer 100 mM, pH = 5/THF			1.47	4.49	(79)
Chirobiotic TAG	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/ MeOH			1.11	1.02	(60)
Chirobiotic MTAG	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/ MeOH			1.11	0.63	(60)
Chiralcel OD	100/1/0.1-Hexane/i-PrOH/ TFA	R	S	1.13	1.83	(80)
Chiralcel OD-R	55.5/44.5-H_2O, $MeCO_2H$ (0.22%),i-PrOH (0.2%), Et_3N (0.22%)/MeCN	R(−) 16.5	S(+) 21.9			(81)

(*continued*)

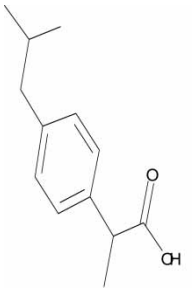
Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Flurbiprofen			Chiralcel OJ	90/10-Hexane/i-PrOH	R 20	S 22			(82)
			Chiralcel OJ-H	90/10-Heptane/EtOH/TFA (0.1 %)			1.13		(83)
			Chiralcel OJ-H	90/10-Heptane/EtOH/CF_3-CO_2NH_4 0.1 mM			1.17		(83)
			Chiralcel OJ-R	55/45-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.09	1.64	(42)
			Chiralcel OJ-R	20/80-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeOH			1.19	2.42	(42)
			Chiralcel OJ-R	60/40-Phosphate buffer 0.2M, pH = 5/MeCN			1.6		(84)
			Chiralcel OJ-R	60/40-$HClO_4$ pH = 2/MeCN			1.06		(84)
			Exp B101	20/80-Perchlorate buffer 0.1M, pH = 2/MeOH			1.14	0.69	(43)
			Chiralpak AD	85/15/0.1-Isohexane/EtOH/TFA			1.81	1.79	(76)
			Chiralpak AD-H	80/20-Heptane/i-PrOH/TFA (0.1 %)			1.72		(83)
			Chiralpak AD-H	80/20-Heptane/i-PrOH/CF_3-CO_2NH_4 0.1 mM			1.69		(83)
			Chiralpak AD-RH	80/20-H_2O, H_3PO_4 pH = 2/MeCN			1.35		(85)
			Chiralpak AD-RH	60/40/0.1-H_2O/MeCN/$MeCO_2H$	(−)	(+)	1.35	1.1	(86)

	Chiralpak AS	95/5/1-Hexane/i-PrOH/TFA	R(−)	S(+)	1.07		(87)
	Chiralpak IA	80/20/0.1-Hexane/i-PrOH/TFA			1.1	1.9	(88)
	Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeCO_2H$			1.32	2.75	(62)
	Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOH/$MeCO_2H$			1.28	0.28	(62)
14C-Flurbiprofen 	Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOi-Pr/$MeSO_3H$			1.05	3.33	(62)
	Chiral-AGP	50/50-Phosphate buffer 0.01M pH = 7, DMOA 0.001M/i-PrOH, DMOA 0.001M			1.55		(64)
	EnantioPac	98/2-Sodium phosphate buffer 8 mM, pH = 5.5, NaCl 0.1M, DMOA 1.3 mM/i-PrOH	R	S	1.6		(89)
	Resolvosil	90/10-Phosphate buffer 50 mM, pH = 7.6/1-PrOH, $C_7H_{15}CO_2H$ 1 mM			1.45		(90)
	Ultron-ES-OVM	Phosphate buffer 0.011M, pH = 5.8/MeOH			1.2		(46)
	Ultron ES-OVM	100/15-Phosphate buffer pH = 3/MeCN	S(+) 16.7	R(−) 19.6			(91)

(*continued*)

Table 3. Continued

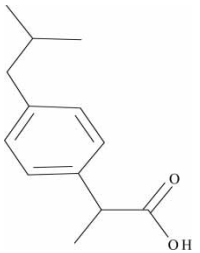
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Ibuprofen		Anti-inflammatory	(R,R) Whelk-O1	99.5/0.5-Hexane/$MeCO_2H$	21.8	28.1			(92)
			(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ 1 g/l	R(−)	S(+)	1.54		(48)
			(S,S)-Whelk-O1	99/1/0.1-Hexane/i-PrOH/$MeCO_2H$			1.23	1.89	(93)
			Sumichiral OA-2500	$MeCO_2NH_4$ 0.01M/MeOH			1.06		(54)
			Sumichiral OA-3100	$MeCO_2NH_4$ 0.01M/MeOH			1.04		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.01M/MeOH			1.08		(54)
			Cyclobond I	30/70-H_2O, TEAA (0.1%) pH = 7.5/MeCN	R(−)	S(+)		0.9	(94)
			Cyclobond I	30/70-H_2O, TEAA (0.1%) pH = 4.1/MeOH			1.1	0.7	(95)
			ChiraDex	15/85-Et_3N buffer (0.1%) pH = 3/MeOH			1.07	1.12	(49)
			Cyclobond I RN	65/35-TEAA buffer (1%) pH = 7.1/MeCN			1.13		(75)
			Cyclobond I SN	60/40-TEAA buffer (1%) pH = 7.1/MeCN			1.11		(75)
			Cyclobond I 2000 SN	70/30-TEAA buffer pH = 4.5/MeCN			1.14	0.6	(96)

Cyclobond I 2000 SN	70/30-Acetate buffer pH = 4.5/MeCN			1.14	0.6	(97)
Ultron ES-CD	85/15-Phosphate buffer 20 mM, pH = 7/MeCN			1.07		(98)
Ultron ES-PhCD	85/15-Phosphate buffer 20 mM, pH = 5/MeCN			1.06		(98)
Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	0.6	(50)
Chirobiotic TAG	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/MeOH			1.09	0.88	(60)
Chirobiotic MTAG	60/40-H_2O, TEAA buffer (1%) pH = 4.1 ($MeCO_2H$)/MeOH			1.17	1.03	(60)
Chiralcel OD	99/1/0.15-Hexane/EtOH/TFA			1.21	1.7	(47)
Chiralcel OD-H	100/1/0.1-Hexane/i-PrOH/TFA	R(−)	S(+)	1.29		(99)
Chiralcel OJ	95/4.975/0.025-Hexane/MeOH/TFA	S	R	1.41	2.7	(100)
Chiralcel OJ	90/10/0.1-Hexane/MTBE/TFA			1.35		(101)
Chiralcel OJ-R	20/80-$NaClO_4$ buffer 0.5M, pH = 2 ($HClO_4$)/MeOH	R	S	1.22	2.49	(42)
Chiralcel OJ-R	30/35/35-$NaClO_4$ buffer 0.5M, pH = 2 ($HClO_4$)/MeCN/MeOH	R	S	1.15	2.04	(42)

(*continued*)

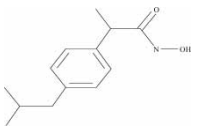
Table 3. Continued

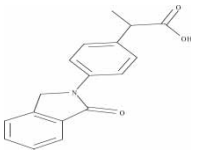
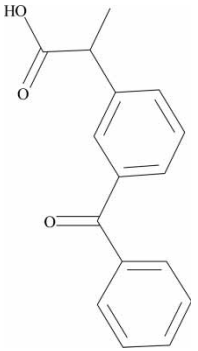
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Ibuprofen			Chiralcel OJ-R	28/72-H_2O, KPF_6 30 mM pH=3 ($HClO_4$)/MeOH	R	S	1.25		(102)
			Chiralcel OJ-R	65/35- H_2O, H_3PO_4-KH_2PO_4, 0.2M/MeCN	S 20.7	R 22.1			(103)
			Exp B101	35/65-Perchlorate buffer 0.1M, pH = 2/MeOH	R	S	1.07	0.38	(43)
			Chiralpak AD	98/2/0.25-Hexane/EtOH/TFA			1.06	1.03	(52)
			Chiralpak AD-RH	60/40-H_2O, H_3PO_4 pH = 2/MeCN			1.1		(85)
			Chiralpak AD-RH	64.85/35/0.1/0.05-H_2O/MeCN/H_3PO_4/Et_3N	R 21.4	S 23.4			(104)
			Chiralpak AD-RH	25/75-H_3PO_4 pH = 3/MeOH	R(−) 11.8	S(+) 13.6			(105)
			Chiralpak AS	95/5/1-Hexane/i-PrOH/TFA	R	S	1.01		(45)
			Kromasil CHI-I	90/10/0.05-Hexane/MTBE/TFA			1.29		(106)
			Kromasil CHI-II	99/1-Hexane/i-PrOH			1.44		(107)
			Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeSO_3H$			1.04	1.14	(62)
			Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOi-Pr/$MeSO_3H$			1.08	5.75	(62)
			Kromasil CHI-DMB	99/1-Hexane/i-PrOH			1.12		(107)

Ibuprofen		Anti-inflammatory	Chiral-AGP	Sodium phosphate buffer 0.1M, pH = 7			1.41	1	(57)
			Chiral-AGP	50/50-Phosphate buffer 0.01M pH = 7, DMOA 0.001M/i-PrOH, DMOA 0.001M	R	S	1.83		(64)
			Chiral-AGP	Phosphate buffer 0.03M, pH = 7			1.52		(108)
			Chiral-AGP	Acetate buffer 0.03M, pH = 7			1.64		(108)
			Chiral-AGP	Phosphate buffer 0.002M, pH = 7/(−)-Terodiline (17-80 μM)			1.5		(109)
			Chiral-AGP	Sodium phosphate buffer 10 mM, pH = 7, DMAO 1 mM	R(−)	S(+)	2.5		(110)
			Chiral-AGP	D_2O, KH_2PO_4 0.01M/ K_2HPO_4 0.01M, pH = 6.5			1.36	1.2	(72)
			Chiral-AGP	NaH_2PO_4 buffer 20 mM, pH = 5.3-5.7/i-PrOH (0.6-1.2%)/DMAO 1.2 mM	R	S	1.35		(112)
			Chiral-AGP	99/1-Phosphate buffer 0.02M, pH = 6.5/i-PrOH			1.28		(113)
			Chiral-AGP	99/1-Phosphate buffer pH = 7/MeCN,DMAO 204μL/L	R(−)	S(+)			(114)

(*continued*)

Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Ibuprofen			EnantioPac	Phosphate buffer 0.02M, pH = 7Me_2NH_2Br 0.1M			1.9		(65)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/Propylene glycol 0.25M, NaCl 0.1M			1.25		(65)
			EnantioPac	99/1-NaH_2PO_4 buffer 6.6-10 mM, pH = 4.95/i-PrOH			1.19		(115)
			EnantioPac	99.5/0.5-NaH_2PO_4 20 mM, pH = 7/i-PrOH,DMAO 10 mM			1.5		(115)
			Resolvosil	90/10-Phosphate buffer 50 mM, pH = 7.6/n-PrOH, $C_7H_{15}CO_2H$ 1 mM			2.44		(90)
			Resolvosil	75/25-Phosphate buffer 20 mM, pH = 8/MeCN	S	R	3.52		(116)
			Resolvosil BSA-7	97/3-Phosphate buffer 50 mM, pH = 8/1-PrOH, $C_7H_{15}CO_2H$ (1 mM)			2.38		(117)
			Ultron ES-OVM	10/1-K_2HPO_4 20 mM, pH = 4.6/EtOH	R(−)	S(+)	1.31	2	(118)
Ibuproxam		Anti-inflammatory	Chiralcel OJ-R	70/30-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.25	2.95	(42)

Indoprofen		Anti-inflammatory	Chirex 3005	$MeCO_2NH_4$ 0.02 mM/MeOH			1.08		(119)
			Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	1	(50)
			Chirobiotic V	90/10-H_2O, TEAA buffer (1%) pH = 4.1/MeCN			1.09		(20)
			Chiralpak AD-RH	60/40-H_2O, H_3PO_4 (0.08%)/ MeCN					(104)
Ketoprofen		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH			1.4		(48)
			(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ 1 g/l			1.29		(58)
			(S,S)-Whelk-O1	90/10/0.1-Hexane/EtOH/ $MeCO_2H$	R	S	1.28		(121)
			Chirex 3005	5/95-H_2O, $MeCO_2NH_4$ 30 mM, pH = 3.5 (HCO_2H)/ MeOH				2.09	(122)
			Chirex 3005	MeOH, $MeCO_2NH_4$ 20 mM			1.1	0.99	(123)
			Sumichiral OA-2000	20/80/20/0.05-H_2O/MeCN/ $MeCO_2H$			1.05		(58)
			Sumichiral OA-2500	60/40-H_2O, $MeCO_2NH_4$ 0.1M/MeOH			1.16		(54)
			Sumichiral OA-2500	MeOH, $MeCO_2NH_4$ 0.02	(−)	(+)	1.12		(54)
			Sumichiral OA-2500	60/40-H_2O, $MeCO_2NH_4$ 0.1M/MeCN			1.12		(54)

(*continued*)

Table 3. Continued

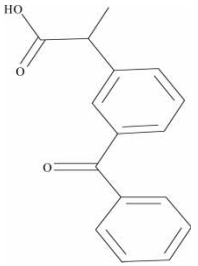
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Ketoprofen			Sumichiral OA-2500	60/40-H_2O, $MeCO_2NH_4$ 0.1M/THF			1.14		(54)
			Sumichiral OA-2500	190/9/1/1-Hexane/CH_2Cl-CH_2Cl/EtOH/$MeCO_2H$			1.03		(54)
			Sumichiral OA-2500S	$MeCO_2NH_4$ 20 mM/MeOH	S	R	1.12		(124)
			Sumichiral OA 2500S	5/95-$MeCO_2NH_4$ buffer 0.03M, pH = 6.2/MeOH	S	R		1	(125)
			Sumichiral OA-3100	$MeCO_2NH_4$ 0.01M/MeOH			1.05		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.01M/MeOH			1.1		(54)
			Cyclobond I	73/27-H_2O, TEAA (1%) pH = 4.1/MeOH			1.06	1.24	(126)
			Chirobiotic R	75/25-TEAA (0.1%) pH = 6/MeOH			1.63	2.85	(76)
			Chirobiotic R	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.16	0.8	(77)
			Chirobiotic T	70/30-TEAA (0.1%) pH = 6.5/MeOH			1.36	0.8	(127)
			Chirobiotic V	80/20-TEAA (0.1%) pH = 5/MeOH				0.44	(57)
			Chirobiotic V	80/20-NH_4NO_3 buffer 10 mM, pH = 5/THF	S	R	2.59	1.33	(79)

Chirobiotic V	65/35 NH_4NO_3 buffer 100 mM, pH = 5/i-PrOH			1.26	1.18	(79)
Chirobiotic V	65/35 NH_4NO_3 buffer 100 mM, pH = 5/Dioxane			1.31	0.92	(79)
Chirobiotic V	90/10-Sodium citrate 20 mM, pH = 6.3/THF			1.11	0.33	(122)
Chiralcel OD	Hexane, EtOH 0.34M, $C_3F_7CO_2H$ 0.00195 mM			1.08	0.65	(52)
Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 9, $NaClO_4$ 250 mM/MeCN				0.81	(128)
Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 9/MeCN				0.78	(128)
Chiralcel OD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN				1.05	(128)
Chiralcel OJ	85/15/0.1-Isohexane/i-PrOH/TFA			1.55	2.24	(76)
Chiralcel OJ	95/5-Hexane/i-PrOH	60	80			(100)
Chiralcel OJ-H	80/20-Heptane/i-PrOH/TFA (0.1 %)			1.52		(83)
Chiralcel OJ-H	80/20-Heptane/i-PrOH/$CF_3CO_2NH_4$ 0.1 mM			1.49		(83)
Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 9/MeCN				0.96	(128)
Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 9, $NaClO_4$ 250 mM/MeCN				0.99	(128)

(*continued*)

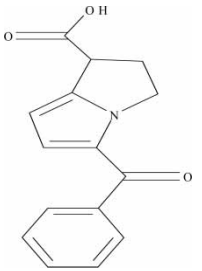
Table 3. Continued

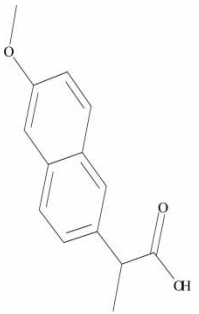
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralcel OJ-R	60/40-Borate buffer 20 mM, pH = 9/MeCN				1.15	(128)
			Chiralpak AD	80/20/0.15-Hexane/EtOH/TFA	R(−)	S(+)	1.28	2.37	(52)
			Chiralpak AD-H	90/10-Heptane/EtOH/$CF_3CO_2NH_4$ 0.1 mM			1.45		(83)
			Chiralpak AD-H	90/10-Heptane/EtOH/TFA (0.1 %)			1.4		(83)
			Chiralpak AD-RH	60/40-Phosphate buffer 50 mM, pH = 9.0/MeCN				0.66	(128)
			Chiralpak AD-RH	60/40-Phosphate buffer 50 mM, pH = 9, $NaClO_4$ 250 mM/MeCN				0.55	(128)
			Chiralpak AD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN				0.73	(128)
			Kromasil CHI-I	95/5/0.1-Hexane/i-PrOH/$MeCO_2H$			1.09		(63)
			Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeCO_2H$			1.07	1.97	(62)
			Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOH/$MeCO_2H$			1.07	0.16	(62)
			Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeSO_3H$			1.36	0.68	(62)

			Kromasil CHI-TBB	95/5/0.1-Hexane/i-PrOH/$MeCO_2H$			1.14		(63)
Ketoprofen		Anti-inflammatory	Chiral-AGP	50/50-Phosphate buffer 0.01M pH = 7, DMOA 0.001M/i-PrOH, DMOA 0.001M			1.82		(64)
			Chiral-AGP	99/1-Potassium phosphate buffer 10 mM, pH = 5.5/i-PrOH	R(−)	S(+)	1.25	1.66	(129)
			Chiral-AGP	Sodium phosphate buffer 10 mM, pH = 7, DMAO 10 mM					(130)
			Chiral-HSA	94/6-Phosphate buffer 10 mM, pH = 5.5, $C_7H_{15}CO_2H$ 5 mM//i-PrOH				1.4	(118)
			EnantioPac	99.5/05-Sodium phosphate buffer 20 mM, pH = 7, DMAO 10 mM/i-PrOH			1.5		(115)
			Resolvosil	90/10-Phosphate buffer 50 mM, pH = 7.8/n-PrOH			1.23		(90)
			Resolvosil BSA-7	90/10-Phosphate buffer 50 mM, pH = 8/n-PrOH			1.25		(117)
			Resolvosil BSA-7	90/10-Phosphate buffer 50 mM, pH = 8/n-PrOH, $C_8H_{15}NH_2$ 2 mM			1.21		(117)
			Ultron ES-OVM	93/7-H_2O, KH_2PO_4 20 mM, pH = 4/THF				0.95	(132)

(*continued*)

Table 3. Continued

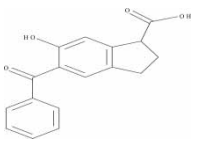
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Ultron ES-OVM	100/16-KH_2PO_4 30 mM/ MeOH			1.68	2.47	(133)
			Ultron-ES-OVM	100/5-KH_2PO_4 20 mM/ MeCN			1.38	1.94	(133)
Ketorolac		Anti-inflammatory	Chirobiotic R	75/25-TEAA (0.1%) pH = 6/ MeOH			1.2	1.06	(76)
			Chiralpak AD	85/5/0.1-Isohexane/EtOH/ TFA			1.16	0.98	(76)
			Chiralpak AD-RH	60/40-H_2O, H_3PO_4 (0.08%)/ MeCN	5.7	8.2			(104)
Tritium, Ketorolac			Chiral-AGP	98/2-Phosphate buffer 10 mM, pH = 6.5, DMAO 1 mM/i-PrOH	R	S	1.9		(134)
Tritium, Ketorolac			Chiral-AGP	99.5/0.5-KH_2PO_4 20 mM, pH = 7/i-PrOH	R	S	1.6	2.5	(135)
Tritium, Ketorolac			Chiral-AGP	Na_2HPO_4 60 mM, pH = 7	R 2.01	S 3.14			(136)
		Ketorolac	Chiral-HSA	90/10-Phosphate buffer 20 mM, pH = 6.5/i-PrOH	S	R	3.7		(137)
			Chiral-HSA	90/10-Phosphate buffer 20 mM, pH = 6.5, C_7H_{15}-CO_2H.5 mM/i-PrOH	S	R	3.7		(137)

			Chiral protein HSA	87/13-NaH_2PO_4-Na_2HPO_4 0.05M, pH = 6.9, $C_7H_{15}CO_2H$ 0.1 mM/MeCN	S	R	4.19	8	(138)
Naproxen		Anti-inflammatory	(R,R) ULMO	98/2/0.1-Hexane/i-PrOH/TFA	S 14.07	R 18.27			(139)
			(S,S) ULMO	95/5/0.1-Heptane/i-PrOH/TFA	R	S	1.46	6.65	(140)
			(R,R)-ß-Gem 1	80/20-Hexane, $MeCO_2H$ (0.10%), Et_3N (0.10%)/i-PrOH	R	S	1.27		(141)
			(R,R)-ß-Gem 1	97.5/2.5-Hexane/i-PrOH	R	S	1.19	0.3	(141)
			(R,R)-ß-Gem 1	97.5/2.5-Hexane/i-PrOH, $MeCO_2H$ (0.10%)	R	S	1.22	1.3	(141)
			(R,R)-ß-Gem 1	30/70-30-H_2O/MeOH	R	S	1.05	0.1	(141)
			(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ 1 g/l	R(−)	S(+)	3.91		(48)
			(S,S)-Whelk-O1	85/15/0.1-Hexane/i-PrOH/$MeCO_2H$			2.06	7.02	(93)
			(S,S)-Whelk-O1	20/80/0.1-H_2O/MeOH/$MeCO_2H$	R 4.1	S 4.9			(142)
			(R,R) Whelk-O2	80/20/0.5-Hexane/EtOH/TFA			1.93	3.76	(143)
			Chirex 3005	$MeCO_2NH_4$ 0.05M/MeOH	(−)	(+)	1.55		(144)
			Chirex 3005	190/9/1/1-Hexane/CH_2Cl-CH_2Cl/EtOH/$MeCO_2H$	(−)	(+)	1.19		(144)
			Sumichiral OA-2500	$MeCO_2NH_4$ 0.05M/MeOH	(−)	(+)	1.55		(54)

(*continued*)

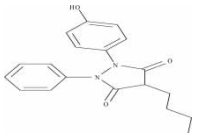
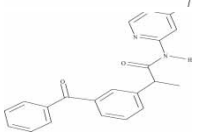
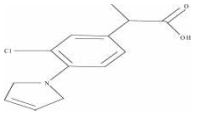
Table 3. Continued

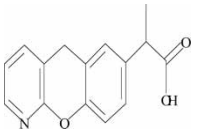
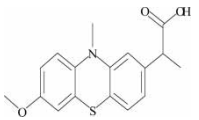
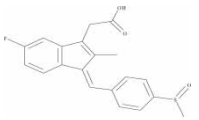
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Naproxen			Sumichiral OA-2500	190/9/1/1-Hexane/CH_2Cl-CH_2Cl/EtOH/$MeCO_2H$	(−)	(+)	1.19		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.02M/MeOH			1.09		(54)
			Chirobiotic R	75/25-TEAA (0.1%) pH = 6/MeOH			1.48	2.06	(76)
			Chirobiotic V	90/10-TEAA pH = 7/THF	S 6.8	R 7.55			(145)
			Chiralcel OD	95/4.95/0.05-Heptane/i-PrOH/TFA	R	S	1.2	1.5	(146)
			Chiralcel OD-H	94/6/0.1-Hexane/i-PrOH/TFA	R 8.8	S 10.1			(147)
			Chiralcel OJ	85/15/0.1-Isohexane/i-PrOH/TFA			1.27	1.47	(76)
			Chiralpak AD	95/5/0.15-Hexane/EtOH/TFA			1.12	1.69	(52)
			Chiralpak AD-RH	60/40-H_2O pH=2 (H_3PO_4)/MeCN			1.16		(85)
			Chiral AGP	99.5/0.5-Phosphate buffer 4 mM, pH = 7/i-PrOH	R	S	1.71	1	(148)
			Chiral-AGP	99.5/0.5-Potassium phosphate buffer 25 mM, pH = 7/i-PrOH, DMAO 1.5 mM	R(−) 4	S(+) 26			(149)

			Chiral-AGP	Sodium phosphate buffer pH = 6.5, DMAO 30 mM, Tween 20, 40 g/l	R(−)	S(+)	3.59	2.7	(150)
			Chiral-AGP	Phosphate buffer 10 mM, pH = 7	R	S	1.96	2.1	(151)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/Propylene glycol 0.25M, NaCl 0.1M			1.2		(65)
			EnantioPac	99.5/0.5-Sodium phosphate buffer 20 mM, pH = 7, DMAO 10 mM/i-PrOH	(−)	(+)	4.5		(115)
			EnantioPac	99/1-NaH_2PO_4 6.6-10 mM, pH = 6.02/i-PrOH	(−)	(+)	1.09		(115)
			EnantioPac	NaH_2PO_4 pH = 6.4, DMAO 1 mM	R	S	1.77	3.1	(150)
			EnantioPac	NaH_2PO_4 pH = 6.4, DMAO 1 mM, laurylsulphate 1 mM	R	S	1.49	2	(150)
			EnantioPac	NaH_2PO_4 pH = 7.5, DMAO 20 mM, Tween 20 40 g/l	R	S	1.44	1.8	(150)
			EnantioPac	Phosphate buffer 10 mM, pH = 7	R	S	1.85		(152)
Oxindanac		Anti-inflammatory	Nucleosil chiral-2	350/455/195/1.4-Heptane/$(i\text{-}Pr)_2O$/CH_2Cl_2/TFA	R 9.8	S 10.5			(153)

(*continued*)

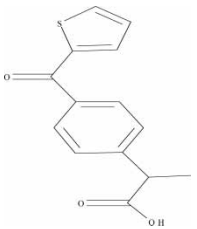
Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Oxyphenbutazone		Anti-inflammatory	Chiralcel OD-R	60/40-$NaClO_4$ 0.25M, pH = 4 ($HClO_4$)/MeCN	13	15.1			(154)
Piketoprofen		Anti-inflammatory	Chiralcel OJ-R	65/35-$NaClO_4$ buffer 0.5M, pH = 2 ($HClO_4$)/MeCN			1.28	3.43	(42)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/TFA			1.2	2.2	(53)
			Chiralpak IA	80/20/0.1-Hexane/i-PrOH/TFA			1.1	1.4	(53)
Pirprofen		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH			2.07		(48)
			(S,S) Whelk-O1	80/20-Hexane/i-PrOH, $MeCO_2NH_4$ (1 g/L)			1.81		(58)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/TFA			1.33	2.62	(41)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/TFA			1.1	2.4	(53)
			Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeCO_2H$			1.22	2.74	(62)
			Kromasil CHI-DMB	75/25/0.1-Hexane/i-PrOH/$MeCO_2H$			1.17	0.32	(62)
			Kromasil CHI-DMB	75/22/3/0.1-Hexane/MTBE/MeOH/$MeCO_2H$			1.85	0.7	(62)

			Kromasil CHI-DMB	75/25/0.1-Hexane/MTBE/$MeSO_3H$			1.17	0.99	(62)
Pranoprofen		Anti-inflammatory	Sumichiral OA 2000	80/20/0.05-MeCN/H_2O/TFA			1.04		(58)
			Sumichiral OA-2500	$MeCO_2NH_4$ 0.02M/MeOH			1.14		(54)
			Sumichiral OA-3200	$MeCO_2NH_4$ 0.01M/MeOH			1.07		(54)
			Sumichiral OA-3300	$MeCO_2NH_4$ 0.02M/MeOH			1.04		(54)
			Chiralcel OD	25/75/0.05-MeCN/H_2O/TFA			1.1		(155)
			Chiralcel OJ	70/40/1-Hexane/i-PrOH/$MeCO_2H$	R(−)	S(+)	1.77	2.51	(156)
			Chiralcel OJ-R	30/70-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeOH			1.81	7.04	(42)
			Chiralcel OJ-R	75/25-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.16	2.74	(42)
Protizinic acid		Anti-inflammatory	Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/$MeCO_2H$			1.25	2.31	(41)
			Exp B101	20/80-Perchlorate buffer 0.1M, pH = 2/MeOH			1.05	0.43	(41)
Sulindac		Anti-inflammatory	(R,R) Whelk-O1	60/40/0:1-Hexane/EtOH/TFA	R(+)10.5	S(−) 12.5			(157)
			Ceramospher Chiral Ru-1	99/1-MeOH/$MeCO_2H$			1.3		(74)

(*continued*)

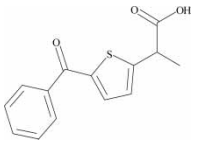
Table 3. Continued

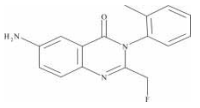
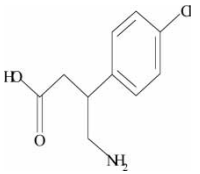
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralpak AD	85/15/0.05-Hexane/EtOH/TFA	S(−)	R(+)	1.43	2.46	(158)
			Chiralpak AD	90/10-Hexane/EtOH			1.39	1.17	(158)
			(S,S)-P-CAP	99/1/0.1-MeCN/MeOH/TFA			1.15	1.85	(159)
			Resolvosil BSA-7	96/4-Sodium phosphate 0.1M, pH = 7.8, $MeCO_2Na$ 0.1M/1-PrOH	10.5	17.5			(157)
Suprofen		Anti-inflammatory	Cyclobond I 2000 RN	95/5/0.2/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			1.1	1	(96)
			Nucleodex beta-PM	MeOH, TEAA buffer (1%) pH = 3.5	S	R	1.12		(160)
			Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	1.1	(70)
			Chirobiotic V	70/30-TEAA (0.1%) pH = 5/MeOH				0.71	(51)
			Chiralcel OD-H	90/10/0.5-Hexane/i-PrOH/TFA	R(−)	S(+)	1.09	1.56	(129)
			Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 9/MeCN				0.77	(128)
			Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 9, $NaClO_4$ 250 mM/MeCN				0.78	(128)

Chiralcel OD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN				0.82	(128)
Chiralcel OJ	100/9/0.5-Hexane/i-PrOH/$MeCO_2H$	R	S	1.58		(161)
Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 2/MeCN				3.33	(128)
Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 2, $NaClO_4$ 500 mM/MeCN				3.8	(128)
Chiralcel OJ-R	60/40-Borate buffer 20 mM, pH = 9/MeCN			1.21		(128)
Chiralpak AD	95/5/1-Hexane/i-PrOH/TFA	S(+)	R(−)	1.16		(43)
Chiralpak AD-RH	60/40-Phosphate buffer 50 mM, pH = 2/MeCN				0.74	(128)
Chiralpak AD-RH	60/40-Phosphate buffer 50 mM, pH = 2, $NaClO_4$ 250 mM/MeCN				0.73	(128)
Chiralpak AD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN				0.75	(128)
Chiralpak AS	95/5/1 Hexane/i-PrOH/TFA	R	S	1.17		(45)
Chiralpak IA	70/30/0.1-Hexane/$MeCO_2$-Et/TFA	11.2	13			(162)
Kromasil CHI-I	95/5/0.1-Hexane/i-PrOH/$MeCO_2H$			1.08		(63)
Kromasil CHI-TBB	95/5/0.1-Hexane/i-PrOH/$MeCO_2H$			1.43		(63)

(*continued*)

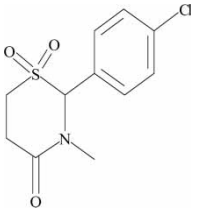
Table 3. Continued

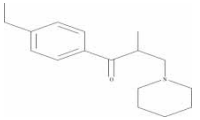
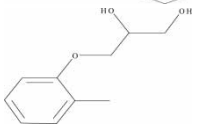
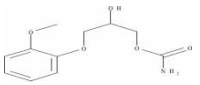
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Tiaprofenic acid		Anti-inflammatory	(S,S) Whelk-O1	80/20-Hexane/i-PrOH $MeCO_2NH_4$ (1 g/L)			1.23		(58)
			Chiralcel OD	98.5/1.5/0.1-Hexane/i-PrOH/TFA			1.18	2.6	(163)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/$MeCO_2H$			1.38	3.55	(164)
			Chiralcel OJ-R	65/35-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.07	1.35	(42)
			Exp B101	35/65-Perchlorate buffer 0.1M, pH = 2/MeOH			1.12	0.63	(43)
			Chiralpak AD	95/5/1-Hexane/i-PrOH/TFA	(−)	(+)	1.42	3.84	(165)
			Chiralpak AD-RH	60/40-H_2O, H_3PO_4 (0.08%)/MeCN	9.6	10.4			(104)
			Kromasil CHI-DMB	60/40/0.1-Hexane/MTBE/MeCO2H			1.02	0.59	(62)
			Chiral-AGP	98/2-Phosphate buffer 0.01M, pH = 6.5/i-PrOH	R 20	S 24.9			(166)
			HSA-CSP	90/10/0.015-NaH_2PO_4-Na_2HPO_4 0.05M, pH = 7/MeCN/$C_7H_{15}CO_2H$	(−)	(+)		1	(167)

Afloqualone		Muscle relaxant	Chiralpak AS	95/5-Hexane/EtOH			1.15	1.2	(168)
			Chiralpak AS-RH	60/40-H_2O, KPF_6 0.1M/MeCN			1.04		(85)
Baclofen		Muscle relaxant	Sumichiral OA-2500S	90/10-$MeCO_2NH_4$ 10 mM	S(+)	R(−)		0.8	(169)
			Chirex D-penicillamin	83/17-$MeCO_2Na$ buffer 20 mM, pH = 5.5/MeCN, $CuSO_4$ 0.4 mM	S(+) 7	R(−) 8.9			(170)
			Crownpak CR(+)	90/10-$MeCO_2NH_4$ 10 mM, pH = 6.8	S(+)	R(−)		6.5	(169)
			Crownpak CR(+)	90/10-$HClO_4$ pH = 2/MeOH	S(+)	R(−)	1.92	8.01	(171)
			Crownpak CR(+)	Perchloric acid pH =)			1.84	10.02	(171)
			Crownpak CR(+)	95/5-KCl 500 mM, pH = 2/MeOH			1.15	1.53	(172)
			Chirobiotic T	545/455/2/2-MeOH/MeCN/$MeCO_2H$/Et_3N			1.2	1.6	(50)
			Chirobiotic T	100/0.1/0.1-MeOH/$MeCO_2H$/Et_3N	R(−)	S(+)	1.32	2.73	(173)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$MeSO_3H$			2.65	8	(174)

(*continued*)

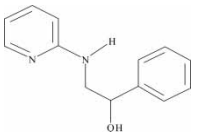
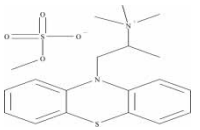
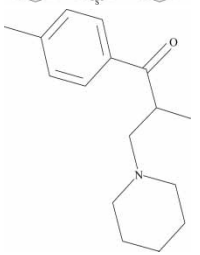
Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Chlormezanone		Muscle relaxant	Ceramospher Chiral Ru-1	MeOH			1.76		(74)
			Chiralcel OB	4/96-H_2O/EtOH	(−)	(+)	1.36		(61)
			Chiralcel OD	50/50/1-Hexane/EtOH/n-$C_3H_7NH_2$	(+)	(−)	2.15		(175)
			Chiralcel OD	50:50 Hexane/EtOH	(+) 19.8	(−) 32.6			(176)
			Chiralcel OJ	4/96-H_2O/EtOH	(−)	(+)	1.47	2.03	(61)
			Chiralpak AD	50/50-MeOH/EtOH			3.63	9.4	(177)
			Chiralpak AD	MeCN			1.62	1.2	(177)
			Chiralpak AS	50/50-MeOH/EtOH			2.17	2.78	(177)
			Chiraspher	70/25/5-Hexane/dioxane/i-PrOH	(+)	(−)		1	(178)
			Kromasil CHI-II	95/5-Hexane/i-PrOH			1.11		(107)
			Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.13		(107)
			Resolvosil	98/2-Phosphate buffer 40 mM, Ph = 6.95/i-PrOH	(−)	(+)	1.34		(180)
			Ultron-ES-OVM	85/15-Phosphate buffer 20 mM, pH = 6/MeOH			2.91		(180)
			Ultron-ES-OVM	75/25-Acetate buffer 20 mM, pH = 6/MeOH			1.63		(180)
			Ultron-ES-OVM	75/25-Borate buffer 20 mM, pH = 6/MeOH			1.68		(180)

			Ultron-ES-OVM	75/25-Tartrate buffer 20 mM, pH = 6/MeOH			1.63		(180)
Eperisone		Muscle relaxant	Chiralpak AD	40/60-H_2O, $Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)/MeCN			1.19		(181)
			Chiralpak AD-RH	40/60-Borate buffer 20 mM, pH = 9/MeCN			1.19		(85)
Mephenesin		Muscle relaxant	Chiralcel OD	80/20/0.1-Hexane/i-PrOH/Et_2NH	(+)	(−)	1.15		(182)
			Chiralpak AD	80/20-Hexane/EtOH			1.31		(183)
			Chiralpak AD	90/5/5-Hexane/EtOH/MeOH			1.24		(183)
			(S,S)-P-CAP	100/0.25/0.05-MeCN/$MeCO_2H$/TEAA			1.05	0.5	(159)
			(R,R)-P-CAP	98/2/0.1-CH_2Cl_2/MeOH/TFA			1.08	0.67	(159)
Methocarbamol		Muscle relaxant	Chirex 3014	77/20/3-Hexane/$ClCH_2CH_2$-Cl/EtOH-TFA (20/1)			1.09		(119)
			Chirex 3020	60/35/5-Hexane/$ClCH_2CH_2$-Cl/EtOH-TFA (20/1)			1.09		(119)
			Chiralcel OD	70/30-Hexane/EtOH	6.9	9.5			(184)
			Chiralcel OD	50/50-Hexane/EtOH/Et_2NH (0.5%)	R	S	2.9	1.3	(185)
			Chiralcel OD-R	80/20-$NaClO_4$ 0.4M/MeCN	R	S	1.37	1.79	(185)

(*continued*)

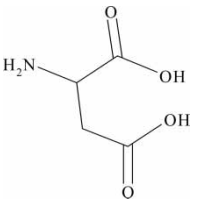
Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Phenyramidol		Muscle relaxant	Chiral-AGP	93.3/6.7-Phosphate buffer 0.01M, pH = 7/EtOH			1.37	1	(186)
			Chiral-AGP	96/4-Sodium phosphate buffer 0.010M, pH = 7/THF			1.27	1	(57)
			EnantioPac	96/4-Phosphate buffer pH = 7.2/i-PrOH			1.28		(187)
Thiazinamium methylsulfate		Muscle relaxant	Chiralcel OJ-R	70/30-$NaClO_4$ 1M/MeCN				3	(188)
			Chiralcel OJ-R	30/70-$NaClO_4$ 0.5M/MeOH/			2.5		(188)
			Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/ MeCN/MeOH			1.98	2.98	(188)
Tolperisone		Muscle relaxant	(S,S) Whelk-O1	99/1/0.1-Hexane/i-PrOH/ Et_3N			1.1		(189)
			Sumichiral OA-4000	240/10/1-Hexane/EtOH/ TFA			1.15		(190)
			Sumichiral OA-4100	240/10/1-Hexane/EtOH/ TFA			1.33		(190)
			Sumichiral OA-4400	240/10/1-Hexane/EtOH/ TFA			1.22		(190)
			Sumichiral OA-4500	240/10/1-Hexane/EtOH/ TFA			2.1		(190)
			Sumichiral OA-4500	200/15/5/2-Hexane/CH_3Cl/ MeOH/$MeCO_2O$	(+)	(−)	1.66	1	(191)

Sumichiral OA-4600	240/10/1-Hexane/EtOH/TFA			1.15		(190)
Sumichiral OA-4700	240/10/1-Hexane/EtOH/TFA			1.36		(190)
Sumichiral OA-4900	240/10/1-Hexane/EtOH/TFA			1.44		(190)
Ceramospher Chiral Ru-1	99/1-MeOH/Et_3N			1.2		(74)
Cyclobond I RN	90/10-TEAA (1%) pH = 4.5/MeCN			1,09		(75)
Cyclobond I SN	80/20-TEAA buffer (1%) pH = 4.5/MeCN			1.11		(75)
Cyclobond I 2000 SN	80/20-TEAA buffer pH = 4.5/MeCN			1.11	0.9	(96)
Cyclobond I 2000 SN	80/20-Acetate buffer pH = 4.5/MeCN			1.11	0.9	(97)
CHIDEX-MKP	40:60-H20, TEAA (1%)/MeOH	8.75	10.33			(192)
CHIDEX-SKP	70/30- Et3 N buffer (1%) pH = 5.11/MeOH			1.31	0.98	(193)
Chiralpak AD	40/60-H_2O $Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)/MeCN			1.25		(181)
Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$EtSO_3H$			2.85	18.06	(174)
Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.11	1.03	(174)

(*continued*)

Table 3. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralpak AD-RH	50/50-Borate buffer 20 mM, pH = 9/MeCN			1.25		(85)
			Chiral-AGP	99/1-$MeCO_2Na$ buffer 0.01M, pH = 5/i-PrOH			1.4	1.69	(194)
Aspartic acid		Roborant	Chiralpak (WH)	$CuSO_4$ 0.25 mM	D 38.85	L 58.49			(195)
			Chirex 3126	5/95-$CuSO_4$ 2 mM/MeCN	L 11.9	D 15.1			(196)
			Chirex D-penicillamin	90/10-H_2O, $CuSO_4$ 2 mM/ MeCN	S 13.8	R 18			(197)
			Sumichiral OA-5000	85/15-$CuSO_4$ 2 mM/MeOH	L	D	1.4		(198)
			Sumichiral OA-5500	H_2O, $CuSO_4$ 1 mM	L	D	1.11		(199)
			Sumichiral OA-6000	H_2O, $CuSO_4$ 1 mM	L	D	1.68		(200)
			Chirosolve D-Pipec.	$MeCO_2H$ 50 mM/ $Cu(MeCO_2O)_2$ 1.25 mM	L	D	1.23	0.43	(201)
			MCI CRS10WD	$CuSO_4$ 2.0 mM	L	D	1.2	1.7	(202)
			MCI CRS10W	H_2O, $CuSO_4$ 2.0 mM, pH = 5.15	D	L	1.18	0.9	(203)
			Crownpak CR(+)	$HClO_4$ 0.01M	D	L	1.7	1.41	(204)
			Crownpak CR(+)	H_2O, $HClO_4$ pH = 1.5	D	L	1.9	3.28	(205)

Opticrown RCA(+)	50/50-H_2O, H_2SO_4 10 mM/MeOH	L	D	1.22	1.25	(206)
Sumichiral OA-8000	85/15/0.5/0.2-Hexane/EtOH/TFA/H_2O			1.29	7.91	(207)
Chirobiotic T	10/50/40-H_2O, TEAA (0.1%)/EtOH/MeOH	10.7	14.4			(208)
Chirobiotic T	40/60-H_2O, $MeCO_2H$ pH = 3.8/MeOH	L	D	1.7	1.2	(209)
Chirobiotic T	100/0.1/0.1-MeOH/Et_3N/$MeCO_2H$			2.02	1.25	(210)
Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM pH = 4.1/MeOH			1.5	0.6	(211)
Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM pH = 4.1/MeOH, $Cu(MeCO_2O)_2$ 5 mM			1.4	1	(211)
Chiralpak AD	90/10-Hexane/EtOH, $EtSO_3H$ (0.2%) cyclobutylamine (0.1%)			1.05	0.62	(212)
Chiralpak AD	90/10-Hexane/EtOH, camphorSO_3H (0.2%)			1.09	0.99	(212)

11. NERVOUS SYSTEM

The clinical drugs acting on the nervous system represent the second most important family in number, just next to the cardiovascular system drugs, with 87 chiral drugs. This family of drugs is divided in twelve subclasses: opioid analgesic, non-narcotic analgesic, general anesthetic, local anesthetic, antidepressant, antiepileptic, antimigraine, antiparkinson (anticholinergic and dopaminergic), antipsychotic, anxiolytic, sedative-hypnotic and psycho-stimulant. Four chiral drugs, N-acetyl leucine, citruline, methadone and nicotine, have mixed effect on the central nervous system and cannot be classified.

Figure 4 shows that the polysaccharide CSP were able to separate the enantiomers of 41% of the chiral nervous system drugs. The four proteins, cyclodextrin, Pirkle (π-complex) and macrocyclic antibiotic CSPs were able to resolve 51% of the enantiomers, leaving the remaining 8% to the four minor types of CSPs (Table 4).

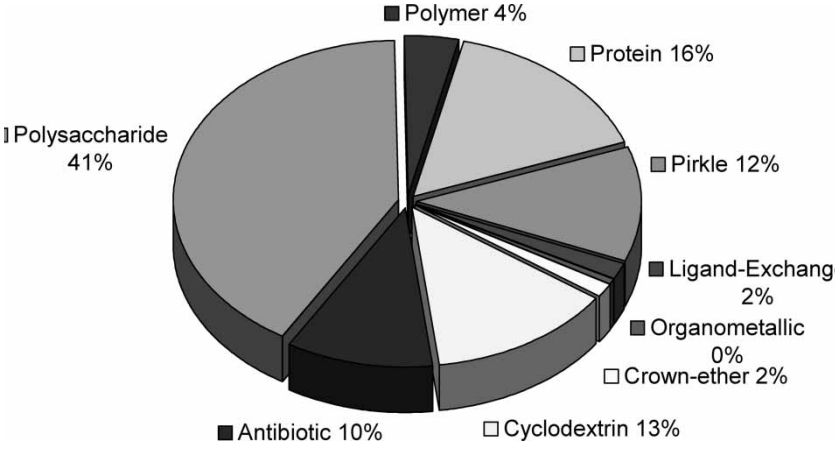
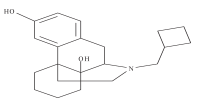
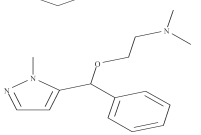
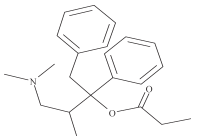


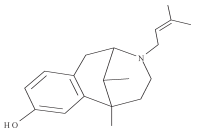
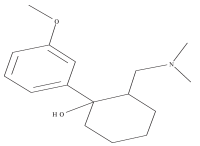
Figure 4. Chiral stationary phases able to separate the enantiomers of nervous system drugs.

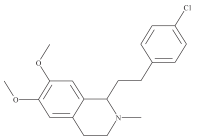
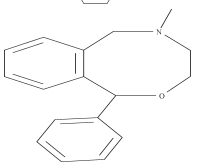
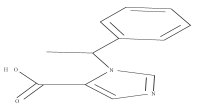
Table 4. ChirBase® enantioseparations of nervous system drugs

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Butorphanol		Opioid analgesic	EnantioPac	Phosphate buffer 0.02M, pH = 7/i-PrOH 0.67M			1.99	7	(213)
Cizolirtine		Opioid analgesic	Chiral-AGP	NaH_2PO_4 100 mM, pH = 7/Et_3N (0.1%)	S(−) 19.2	R(+) 21.3			(214)
Dextropropoxyphene		Opioid analgesic	Cyclobond I 2000	15/85/0.3/0.2-MeOH/MeCN/$MeCO_2H$/Et_3N			1.09	0.69	(215)
			Chirobiotic V	70/30/0.03/0.02-MeOH/MeCN/$MeCO_2H$/Et_3N			1.05	0.89	(215)
			Chiralcel OD	99/1/0.2-Hexane/i-PrOH/Et_2NH	(−) 18.52	(+) 20.19			(216)
			EnantioPac	92/8-Phosphate buffer 0.02M, pH = 7/i-PrOH			2.4		(213)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/i-PrOH 1.33M/NaCl 0.1M			2.3		(213)

(*continued*)

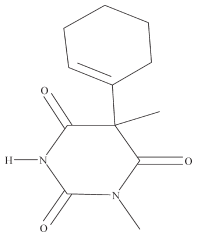
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Pentazocine cis-Pentazocine		Opioid analgesic	EnantioPac	Phosphate buffer pH = 7, DMAO 1.95 mM			1.52		(217)
			Ultron-ES-OVM	74.7/20/5.3-KH_2PO_4 10 mM, pH = 5.8/MeOH/MeCN	R,R,R(−)	S,S,S(+)	1.73	1.8	(218)
Tramadol		Opioid analgesic	Chiralcel OD-R	75/25-Phosphate buffer 50 mM, pH = 7/MeCN			1.14	0.7	(219)
			Chiralcel OD-R	75/25-Phosphate buffer 50 mM, pH = 6, $NaClO_4$ 0.5M/MeCN	(+)	(−)	1.23	2.5	(219)
			Chiralcel OD-R	80/20-H_2O, NaH_2PO_4 50 mM, Et_3N 90 mM, $NaClO_4$ 200 mM, pH = 5.5/MeCN	R,R(+)	S,S(−)		1.5	(220)
			Chiralpak AD	95/5/0.1-Benzine/i-PrOH/Et_2NH			2.1	6.7	(221)
			Chiral-AGP	80/20-KH_2PO_4 10 mM, pH = 7/MeCN	S,S 10.05	R,R 12.42			(222)
S,S/R,R-Tramadol			Ultron ES-OVM	97/3-Phosphate buffer 50 mM, pH = 5/MeCN	(−)	(+)	1.17	1.1	(219)

Metofoline		Non-narcotic analgesic	Chiralcel OD	90/10-Hexane/i-PrOH			1.71	2.92 (223)
Nefopam		Non-narcotic analgesic	Chirex 3018	50/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.14	(224)
			Chirex 3022	58/35/7-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.1	(224)
			Chirobiotic V	MeOH, $CF_3CO_2NH_4$ 0.1%	(+) 9.2	(−) 10.2		(225)
			Chiralpak AD	60/40-H_2O, $Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)/MeCN			1.35	(226)
			Chiralpak AD-RH	40/60-Borate buffer 20 mM, pH = 9/MeCN			1.4	(227)
			Chiral-AGP	99/1-$MeCO_2Na$ buffer 0.010M, pH = 4.5/i-PrOH			1.49	2.02 (228)
Etomidate		General anesthetic	Cyclobond I	90/10-H_2O, TEAA (5%) pH = 7/MeCN	R(+)	S(−)		(229)
			Cyclobond I	95/5-H_2O, Et_2NH (0.01%)/MeCN	R(+)	S(−)	1.7	1.1 (229)

(*continued*)

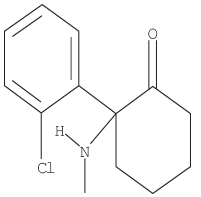
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Hexobarbital		General anesthetic	Sumichiral OA-4700	500/5/0.6-Hexane/EtOH/TFA			1.07		(230)
			Sumichiral OA-4800	500/5/0.6-Hexane/EtOH/TFA			1.08	1.5	(230)
			Sumichiral OA-4900	500/5/0.6-Hexane/EtOH/TFA			1.03		(230)
			Ceramospher Chiral Ru-1	MeOH			1.1		(231)
			Cyclobond I	85/15-H_2O, TEAA (1%) pH = 4.1/MeOH			1.14		(232)
			Cyclobond I	85/15-H_2O/MeOH	(−)	(+)	1.14	1.51	(233)
			Cyclobond I	73/27-H_2O/MeOH	(+)	(−)	1.13	1.21	(234)
			Cyclobond I	95/5-Phosphate buffer 100 mM, pH = 6.9/MeCN			1.15	1.39	(235)
			Ultron ES-CD	85/15-Phosphate buffer 20 mM, pH = 6/MeCN			1.17		(236)
			Cyclobond I SN	80/20-$MeCO_2NH_4$ buffer 1M, pH = 7/MeCN			1.15		(237)
			Ultron ES-PhCD	85/15-Phosphate buffer 20 mM, pH = 6/MeCN			1.11		(236)
			Nucleodex beta-PM	35/65-TEAA (0.1%) pH = 7/MeOH	R(−)	S(+)	1.43		(238)
			Chirobiotic V	50/50-Hexane/i-PrOH			1.62		(239)

Chirobiotic V	90/10-H_2O, NH_4NO_3 18 mM, pH = 4/MeCN	S(+)	R(−)	1.22	0.63	(240)
Chiralcel CA-1	90/10-Hexane/i-PrOH				1	(241)
Chiralcel OC	90/10-Hexane/i-PrOH			1.12		(242)
Chiralcel OD	90/10-Hexane/i-PrOH			1.29	0.94	(223)
Chiralcel OD	80/20/0.1-Heptane/i-PrOH/Et_2NH			1.07		(237)
Chiralcel OD-H	90/10-Hexane/i-PrOH			1.11		(243)
Chiralcel OJ	90/10-Hexane/i-PrOH			1.13	0.9	(244)
Chiralcel OJ	50/50/0.5-Hexane/i-PrOH/$MeCO_2H$			1.2	1.3	(245)
Chiralcel OJ-R	70/30-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.07	0.6	(245)
Chiralcel OJ-R	50/25/25-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN/MeOH			1.05	0.73	(245)
Chiralpak AD-H	95/5-Hexane/i-PrOH			1.62		(243)
Chiralpak IA	MTBE			2.94	7.46	(246)
Chiralpak IA	70/30-Hexane/$MeCO_2Et$			4.09	32.03	(246)
Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.23		(247)
Bioptic AV-1	H_2O, Phosphate buffer 0.1M, pH = 7.5			1.1	0.8	(248)

(*continued*)

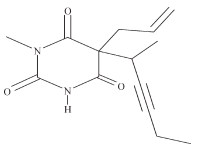
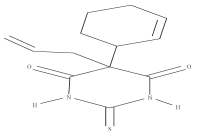
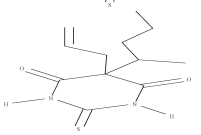
Table 4. Continued

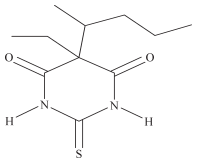
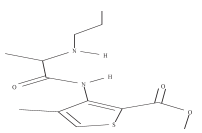
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	97/3-Phosphate buffer 0.01M, pH = 7/i-PrOH			159	1	(249)
			Chiral-AGP	Phosphate buffer 0.03M, pH = 7	S(+)	R(−)	1.86		(250)
			Chiral-AGP	Acetate buffer 0.03M, pH = 7			1.76		(250)
			EnantioPac	99/1-NaH_2PO_4 buffer 6.6-10 mM, pH = 7.02/ i-PrOH (1%)			2.13		(251)
			Ultron ES-OVM	95/5-Phosphate buffer 0.02M, pH = 4.6/EtOH			1.5		(237)
Ketamine		General anesthetic	Sumichiral OA 4400	200/40/0.6-Hexane/ EtOH/TFA			1.03		(230)
			Sumichiral OA-4500	200/40/0.6-Hexane/ EtOH/TFA			1.05		(230)
			Sumichiral OA-4900	200/40/0.6-Hexane/ EtOH/TFA			1.12		(230)
			Sumichiral OA-5500	85/15-H_2O, $CuSO_4$ 2 mM/MeCN			1.26		(252)
			Ceramospher Chiral Ru-1	99/1-MeOH/Et_3N			2.17		(231)
			CHIDEX-MKP	70/30-TEAA buffer (1%) pH = 5.33/MeOH			1.1	0.71	(253)
			Chiralcel CA-1	EtOH	S(−)	R(+)	2.32	3.38	(255)

	Chiralcel OD	98/2-Hexane/i-PrOH	R 11.6	S 13.5			(252)
	Chiralcel OJ	1/1/0.1-Heptane/EtOH/Et_2NH	(+)	(−)	2.3		(256)
	Chiralcel OJ-H	100/0.1-EtOH/Et_2NH	5	7.2			(257)
	Chiralcel OJ-R	99.9/0.1-MeOH/Et_2NH	(+)	(−)	2.76		(256)
	Chiralcel OJ-R	1/1/0.1-EtOH/MeOH/Et_2NH	(+)	(−)	2.5		(256)
	Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$MeSO_3H$			1.57	8.5	(258)
	Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.03	0.4	(258)
Ketamine, HCl	Chiralpak IA	100/0.1-MTBE/Et_2NH			1.97	7.5	(246)
Ketamine, HCl	Chiralpak IA	75/25/0.1-Hexane/CH_2Cl_2/Et_2NH			1.88	9.96	(246)
	Chiral-AGP	97.5/2.5-Phosphate buffer 0.01M, pH = 7/i-PrOH			1.26	1	(249)
	Chiral-AGP	Acetate buffer 0.03M, pH = 5.5	S	R	2.1		(250)
	Chiral-AGP	97/3-Ammonium acetate buffer 10 mM, pH = 7.6/i-PrOH			1.14		(259)
	EnantioPac	Phosphate buffer pH = 7/$Me_2NC_8H_{17}$ 1.95 mM	S(+)	R(−)	2.51		(217)

(*continued*)

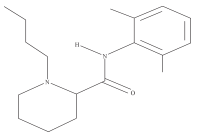
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			EnantioPac	96/4-Na_2HPO_4 buffer 0.008M/i-PrOH	S(+)	R(−)		1.5	(260)
Methohexital		General anesthetic	Cyclobond I	85/15-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.15	0.9	(261)
			ChiraDex	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.57	2.9	(261)
			Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.43	3.6	(261)
Thialbarbital		General anesthetic	Chiralcel OJ-R	70/30-H_2O/MeCN			1.23	1.95	(262)
			Chiralcel OJ-R	50/25/25-H_2O/MeCN/MeOH			1.29	1.67	(262)
Thiamylal		General anesthetic	Cyclobond I	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.07	1	(261)
			ChiraDex	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.08	0.9	(261)
			Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.19	1.8	(261)

			Chiralcel OJ-R	70/30-H_2O/MeCN			1.21	0.99	(262)
			Chiralcel OJ-R	50/25/25-H_2O/MeCN/MeOH			1.13	0.9	(262)
			Chiral-AGP	97/3-KH_2PO_4 20 mM, pH = 4.7/i-PrOH	R(+)	S(−)	1.19	1.4	(263)
Thiopental		General anesthetic	Cyclobond I	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.05	0.5	(261)
			ChiraDex	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.05	0.2	(261)
			Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.17	2.04	(261)
			Nucleodex beta-PM	35/65-TEAA (1%) pH = 4/MeOH	S(−)	R(+)	1.1		(238)
			Chiralcel OJ-R	70/30-H_2O/MeCN			1.12	0.77	(262)
			Chiralcel OJ-R	55/15/30-H_2O/MeCN/MeOH			1.37	0.98	(262)
			Chiral-AGP	95.5/4.5-Phosphate buffer 0.1M, pH = 6.2/i-PrOH	R(+)	S(−)	1.63		(264)
Articaine, HCl		Local anesthetic	Chirobiotic V	5/95-TEAA buffer 7 mM, pH = 6.5/MeCN	(−)	(+)	1.15	1.47	(265)
Articaine, HCl			Chirobiotic V	60/40 Hexane/i-PrOH			1.1	1.1	(265)

(*continued*)

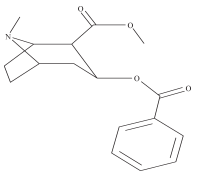
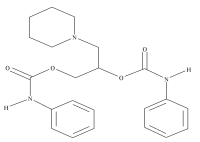
Table 4. Continued

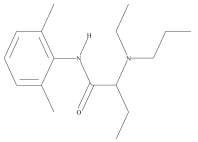
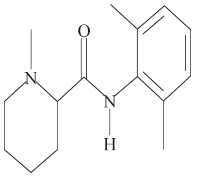
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Articaine, HCl			Chirobiotic V	MeOH/TFA/Et_3N			1.13	1.1	(265)
Articaine			Chiralcel OD	95/5-Hexane/i-PrOH			1.22	2.1	(265)
Bupivacaine		Local anesthetic	(S,S) Whelk-O1	80/20/0.1-Hexane/i-PrOH/Et_3N			1.25		(266)
			CHIDEX-MKP	70/30-TEAA buffer (1%) pH = 5.33/MeOH			1.27	1.22	(253)
			Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	0.7	(267)
			Chirobiotic T	100/0.1/0.1-MeOH/$MeCO_2H$/Et_3N			1.07	0.7	(268)
			Chirobiotic V	90/10-H_2O TEAA buffer (1%) pH = 4.1/MeCN			1.06		(239)
			Chirobiotic V	50/50-Hexane/EtOH			1.26	1	(269)
			Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.18	1.73	(270)
			Chirobiotic V	34/66-MeOH, CF_3CO_2-NH_4 1%/MeOH			1.13	1.26	(271)
			Chiralcel OD	97/3-Hexane/i-PrOH	S	R	1.23	1.45	(272)
			Chiralcel OD-R	60/36/4-$NaClO_4$ 0.025M, pH = 3/MeCN/EtOH	R(+) 7.3	S(−) 12.4			(273)

Chiralpak AD	100/0.1-MeCN/Et_2NH			1.28	1.15	(246)
Chiralpak AD	50/50/0.1-Hexane/CH_2Cl_2/Et_2NH			2.2	8.55	(246)
Local anesthetic	Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO3_H$		1.69	2.04	(258)
Chiralpak IA	100/0.1-MeCN/Et_2NH			1.41	3.14	(246)
Chiralpak IA	90/10/0.1-Hexane/THF/Et_2NH			1.55	8.2	(246)
Chiralpak IA	50/50/0.1-Hexane/CH_2Cl_2/Et_2NH			2.2	8.55	(246)
Chiralpak IA	100/0.1-MTBE/Et_2NH			1.98	10.56	(246)
Chiralpak IA	95/5/0.1-MTBE/EtOH/Et_2NH	5.25	7.5			(274)
Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/1-PrOH 0.75M			1.47		(275)
Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/MeCN 0.75M			1.26		(275)
Chiral-AGP	92/8-Sodium phosphate buffer 0.010M pH = 7/THF			1.23	1	(276)
Chiral-AGP	94/6-Na_2HPO_4 10 mM, pH = 7, DMAO 2 mM/i-PrOH	R(+)	S(−)	1.23		(277)

(*continued*)

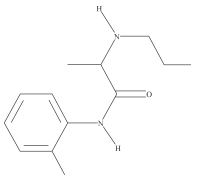
Table 4. Continued

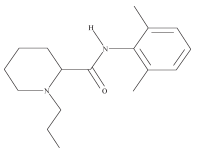
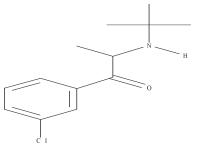
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	94/6-Na_2HPO_4 buffer 10 mM, pH = 6.8/i-PrOH	R(+)	S(−)	1.35		(278)
			Chiral-AGP	96.4/3/0.6-Na_2HPO_4 8 mM, NaCl 0.1M/i-PrOH/Et_2NH	R(+)	S(−)			(279)
			EnantioPac	96/4-Phosphate buffer pH = 7.2/i-PrOH	R(+)	S(−)	1.7		(249)
			EnantioPac	Phosphate buffer pH = 7.06	R(+)	S(−)	1,6		(280)
Cocaine		Local anesthetic	Cyclobond I	96/4-H_2O, TEAA buffer (1%) pH = 4.1/MeCN	(+)	(−)	1.04	0.9	(281)
			Chiralcel OD 1R,2R,3S,5S (−) 5.02	90/10-Hexane/i-PrOH 1S,2S,3R,5R (+) 7.92					(282)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$Me_2NC_8H_{17}$ 1 mM			1.46		(213)
Diperodone		Local anesthetic	Chirex 3014	60/35/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.2		(224)
			Chirex 3020	77/20/3-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.09		(224)
			Chiralcel OD	50/50-MeOH/EtOH			3.86	12.1	(283)

			Chiralcel OD	MeCN		8.14	17.9	(283)
			Chiralcel OD	90/10-MeCN/i-PrOH		8.78	16.13	(283)
			Chiralpak AD	50/50-MeOH/EtOH		2.49	6.49	(283)
			Chiralpak IA	50/50/0.1-Hexane/CH_2Cl_2/Et_2NH		1.58	7.68	(246)
			Chiralpak IA	80/20/0.1-Hexane/THF/Et_2NH		1.24	3.76	(246)
			Chiral-AGP	99.5/0.5-$MeCO_2NH_4$ buffer 2.5 mM, pH = 4.1/i-PrOH		1.51		(228)
			Chiral-AGP	94/6-Sodium phosphate buffer 10 mM, pH = 7/i-PrOH		1,24		(228)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/i-PrOH 0.33M/DMAO 2 mM		1.47		(213)
Etidocaine		Local anesthetic	Chiralcel OD	99/1-Hexane/i-PrOH		1.05	0.81	(272)
			Chiralcel OJ	95/5-Hexane/EtOH		1.41	1.75	(272)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 7/i-PrOH		1.65	1	(249)
Mepivacaine		Local anesthetic	Sumichiral OA-4700	85/10/5-Hexane/$ClCH_2CH_2Cl$/MeOH	R(+) 9.3 S(−) 11.4			(284)
			Chirobiotic T	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N		1.08	0.98	(270)
			Chiralcel OD	95/5-Hexane/EtOH		1.07	0.53	(272)

(*continued*)

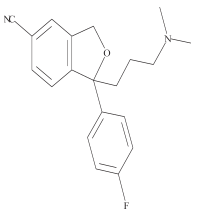
Table 4. Continued

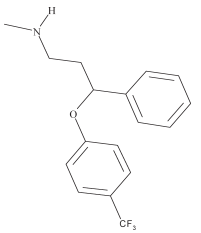
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	94/6-Phosphate buffer 0.01M, pH = 7/i-PrOH			1.43	1	(249)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/n-PrOH 0.75M			1.51		(275)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/MeCN 0.75M			1.17		(275)
			Chiral-AGP	94/6-Na_2HPO_4 10 mM, pH = 7, DMAO 2 mM/ i-PrOH	R(−)	S(+)	1.18		(277)
			EnantioPac	96/4-Phosphate buffer pH = 7.2/i-PrOH	R	S	1.33		(285)
Prilocaine		Local anesthetic	Chirex 3014	75/20/5-Hexane/ $ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.13		(224)
			Chirex 3020	60/35/5-Hexane/ $ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.17		(224)
			Chirex 3022	60/35/5-Hexane/ $ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.14		(224)
			Sumichiral OA-4700	85/10/5/0.1-Hexane/ $ClCH_2CH_2Cl$/MeOH/ TFA			1.13	1.95	(284)

			Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.03	0.2	(270)
			Chiralcel OD	85/15/0.1-Isohexane/i-PrOH/Et_2NH	S	R	1.4	0.67	(270)
			Chiralcel OD	90/10-Hexane/i-PrOH			1.31	1.31	(272)
			Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 7, Na_2-EDTA 50μM/i-PrOH			1.48	2.9	(286)
Ropivacaine		Local anesthetic	Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.17	1.72	(270)
			Chiral-AGP	Phosphate buffer 0.01M, pH 7.2/MeCN 0.75M			1.37		(275)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/1-PrOH 0.75M			1.67		(275)
			EnantioPac	94/6-Phosphate buffer 0.01M, pH = 7.26/i-PrOH	R	S	1.6		(285)
Bupropion, HCl		Antidepressant	Chiralcel OD-H	85/15/0.5/0.5-Heptane/EtOH/Et_3N/TFA				3.6	(287)
			Chiralpak AD	99/1/0.1-Hexane/i-PrOH/Et_2NH	R(−) 4.51	S(+) 5.66			(288)

(*continued*)

Table 4. Continued

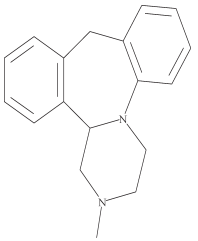
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Bupropion			Chiral-AGP	99.5/0.5-Ammonium acetate buffer 0.010M, pH = 5/i-PrOH			1.4	1.59	(228)
			Chiral-AGP	95/5-Citric acid 20 mM, pH = 5.5/MeOH			1.49	1.4	(289)
			Ultron ES-OVM	87.5/12.5- $MeCO_2NH_4$ 40 mM, pH = 5.5/ MeOH	4.01	5.72			(290)
			Ultron ES-OVM	75/25-Citric acid buffer 40 mM, pH = 5.5/ MeOH	2.6	3.34			(290)
Citalopram		Antidepressant	Cyclobond I 2000	Citrate buffer 0.05M, pH = 6/MeOH (30-40%)	R(−) 29	S(+) 38			(291)
			Cyclobond I-Ac	78/22-$MeCO_2NH_2Et_2$ (1%) pH = 6.1/MeCN	S	R	1.09	1.06	(292)
			Cyclobond I Ac	85/15-Et_2NH buffer (1%) pH=4 ($MeCO_2H$)/ MeCN			1.1	0.8	(293)
			Cyclobond I Ac	35/65-Citrate buffer 145 mM, pH = 4.5/ MeOH	S	R	1.22		(294)

			Cyclobond I 2000 Ac	45/55-Citrate Et_3N buffer 10 mM, pH = 6.3/MeOH	S 15.91	R 17.14			(295)
			Chirobiotic V	99.9/0.055/0.060-MeOH/$MeCO_2H$/Et_3N	R(−) 11.5	S(+) 12.6			(296)
			Chirobiotic V	$CF_3CO_2NH_4$ (0.1%)/MeOH	16.7	18.6			(297)
			Chiralcel OD	93.5/6.5-Hexane/i-PrOH/Et2NH (0.2%)	R(−)	S(+)	1.2	1.4	(293)
			Chiralcel OD	94/6-Hexane/i-PrOH	R(−)	S(+)	1.28	1	(298)
			Chiralcel OD-H	95/5/0.1-Hexane/i-PrOH/Et_3N	R(−)	S(+)	1.29	3.05	(299)
			Chiralpak AD-H	95/5/0.1-Hexane/EtOH/Et_3N			1.15	1.93	(299)
			Chiral AGP	Phosphate buffer pH = 6.5/$Me_2NC_3H_6$-$SO_3N(C_{10}H_{21})_4$ 3.2 mM/$C_5H_{11}CO_2H$ 10 mM	R(−)	S(+)	2.16	6.64	(300)
Fluoxetine		Antidepressant	Cyclobond I	60/40-TEAA buffer (1%) pH = 4.1/MeOH			1.1	0.7	(229)
			Cyclobond I	90/10-TEAA buffer (1%) pH = 5.5/MeCN	S(+)	R(−)	1.06	0.87	(301)
			Cyclobond I Ac	70/30-Et_3N buffer (0.3%) pH = 5.6/MeOH	S 32	R 44			(302)

(*continued*)

Table 4. Continued

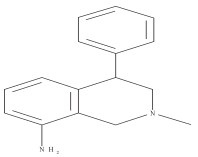
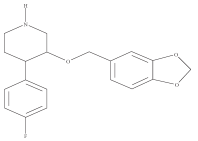
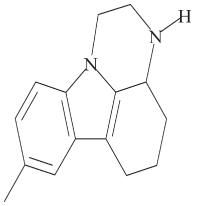
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			CHIDEX-MKP	60/40- TEAA buffer (2%) pH=5 ($MeCO_2H$)/ MeOH	R	S	1.15		(303)
			Chirobiotic V	$CF_3CO_2NH_4$/MeOH (0.005%)	6.2	6.8			(271)
			Chiralcel OD	85/15/0.1-Hexane/i-PrOH/Et_2NH	(+)	(−)	1.16		(304)
			Chiralcel OD	85/15/0.1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.14		(304)
			Chiralcel OD-H	98.5/1.5-Hexane/i-PrOH/Et_2NH	S	R		3.4	(305)
			Chiralcel OD-H	75/25/0.2-Hexane/ MTBE/Et_2NH	R	S		2.8	(305)
			Chiralcel OD-R	65/35-KF_6PO_4 100 mM, pH = 3/MeCN	S 20.1	R 21.3			(306)
			Chiralpak AD-H	85/15/0.1-Hexane/ EtOH/$EtSO_3H$			1.16	1.44	(258)
			Chiralpak AD-H	85/15/0.1-Hexane/ EtOH/Et_2NH			1.14	0.67	(258)
			Ultron ES-OVM	98/2-Phosphoric acid 10 mM, pH = 3.5 (KOH 5M)/MeOH	R	S		1.4	(305)

Mianserin		Antidepressant	Cyclobond I	94/6-TEAA buffer pH=3 (H_3PO_4), Et_3N (1%)/MeCN	S 17.95	R 18.9			(307)
			Chirobiotic T	100/0.15/0.05-MeOH/$MeCO_2H$/Et_3N			1.11	1.8	(268)
			Chirobiotic T	MeOH, $CF_3CO_2NH_4$ (0.05%)	22.01	24.75			(308)
			Chirobiotic V	80/20-TEAA (0.1%) pH = 4.1/MeCN			1.2	1.8	(268)
			Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.66	3.25	(270)
			Chirobiotic V	30/70-$CF_3CO_2NH_4$ (0.1%)/MeOH			1.77	1.78	(271)
			Chiralcel OC	90/10-Hexane/i-PrOH			1.16	0.57	(309)
			Chiralcel OD	100/0.1-EtOH/Et_2NH	(−)	(+)	2.45	5.19	(304)
			Chiralcel OD	90/10-Hexane/i-PrOH			1.1	0.77	(309)
			Chiralcel OD	80/20/0.2/0.34-Hexane/EtOH/CF_3CO_2H/Et_3N	(−)	(+)	1.32		(310)
			Chiralcel OD	95/5/0.1-Hexane/EtOH/Et_3N	R(−)	S(+)	1.38		(311)
			Chiralcel OJ	50/50-MeOH/EtOH			1.68	4.57	(283)
			Chiralcel OJ	90/10-Hexane/i-PrOH			2.13	4.4	(309)
			Chiralcel OJ-R	60/40-$NaClO_4$, $HClO_4$ 0.5M, pH = 2/MeCN			1.17		(312)

(*continued*)

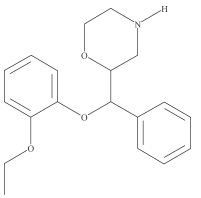
Table 4. Continued

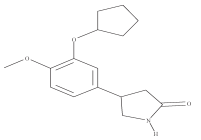
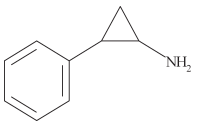
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralcel OJ-R	60/40-$NaClO_4$ 0.5M/MeCN			1,14		(312)
			Chiralpak AD	50/50-MeOH/EtOH			2.78	2.21	(270)
			Chiralpak AD	95/5/0.1-Hexane/EtOH/Et_3N			2.68	6.87	(313)
			Chiralpak AD	100/0.1-i-PrOH/Et_2NH	(−)	(+)	2.77	6.91	(314)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$EtSO_3H$			1.57	8.67	(258)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			2.45	7.16	(258)
			Chiralpak IA	75/25/0.1-Hexane/$CHCl_3$/Et_2NH			1.52	1.72	(246)
			Chiralpak IA	90/10/0.1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.72	2.19	(314)
			Chiralpak IA	100/0.1-i-PrOH/Et_2NH	(−)	(+)	2.02	4.5	(314)
			Chiralpak IA	75/25/1/0.1-Hexane/CH_2Cl_2/i-PrOH/Et_2NH	(−)	(+)	1.34	2.2	(314)
			Chiralpak IA	95/5/1.5/0.1-Hexane/EtOAc/i-PrOH/Et_2NH	(−)	(+)	1.43	3.01	(314)
			Chiralpak OT(+)	MeOH			1.01		(309)
			Chiral-AGP	90/10-Na_2HPO_4 buffer 0.01M, pH = 7.42/PrOH			1.1	0.63	(309)

Nomifensine		Antidepressant	Sumichiral OA-4700	130/12.5/8.5/0.1-Hexane/CH_2Cl_2/EtOH/TFA			1.28	2.23	(315)
Nomifensine Hydrogeno maleate			Cyclobond I	80/20-H_2O, TEAA buffer pH = 3.5, Et_3N (0.1%)/MeOH	S	R	1.46	4.3	(316)
Nomifensine			Chiralcel OD	90/10-Hexane/i-PrOH			1.34	1.67	(315)
Nomifensine			Chiralcel OJ	50/50-MeOH/EtOH			1.65	4.92	(283)
Nomifensine			Chiralcel OJ	MeOH			3	1.2	(317)
trans-Paroxetine		Antidepressant	Chiralpak AD	94/6/0.5-Hexane/EtOH/Et_2NH	(+)	(−)	1.19	2.78	(318)
			Chiralpak AD	94/3/3/0.5-Hexane/i-PrOH/EtOH/Et_2NH	(+)	(−)	1.16	2.02	(318)
			Chiralpak AD	94/5/1/0.5-Hexane/i-PrOH/EtOH/Et_2NH	(−)	(+)	1.17	2.26	(318)
			Chiralpak AD	90/10/0.1-Hexane/i-PrOH/Et_2NH	(−)	(+)	1.21	2.6	(318)
Pirlindole		Antidepressant	ChiraDex	80/20-Phosphate buffer 50 mM, pH = 6/MeOH	R(−)	S(+)	1.15	1.9	(319)
			ChiraDex	95/5-Phosphate buffer 50 mM, pH = 6/MeCN	R(−)	S(+)	1.14	2	(319)
			Chiralcel OD-R	80/20-Phosphate buffer 50 mM, pH = 5/MeCN	S(+)	R(−)	1.58	2.6	(319)
			Chiralcel OD-R	60/40-Phosphate buffer 50 mM, pH = 5, $C_6H_{13}SO_3Na$ 0.1M/MeCN	S(+)	R(−)	1.75	2.7	(319)

(*continued*)

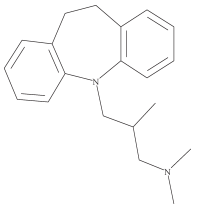
Table 4. Continued

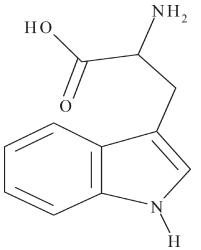
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralcel OD-R	60/40-Phosphate buffer 50 mM, pH = 5, $NaClO_4$ 0.5M/MeCN	S(+)	R(−)	2.05	5.3	(319)
			Chiralcel OD-R	65/35-Phosphate buffer 50 mM, pH=5 (H_2O, NaOH (10%)) $NaClO_4$/MeCN	S	R	1.75	5.2	(320)
			Ultron ES-OVM	Phosphate buffer 50 mM, pH = 5	R(−)	S(+)	1.05	0.7	(319)
			Ultron ES-OVM	95/5-Phosphate buffer 50 mM, pH = 5/MeCN	R(−)	S(+)	1.25	2.8	(319)
			Ultron ES-OVM	85/15-Phosphate buffer 50 mM, pH = 5.5/ MeOH	S(+)	R(−)	1.19	2.1	(319)
			Ultron ES-OVM	90/10-Phosphate buffer 50 mM, pH = 5/MeOH	R(−)	S(+)	1.24	2.3	(319)
Reboxetine, $MeSO_3^-$		Antidepressant	Chiralcel OC	95/5-Hexane/i-PrOH/ Et_2NH (0.2%)			1.33	2.23	(321)
Reboxetine			Chiralcel OD	90/10-Heptane/i-PrOH/Et_2NH (0.2%)			1.98	4.9	(321)

Reboxetine			Chiralcel OD-H	80/20-Hexane/EtOH	R.R(−) 7.2	S.S(+) 8.1		(322)
Reboxetine, $MeSO_3^-$			Chiralpak AD	95/5-Hexane/EtOH/ Et_2NH (0.2%)			1.34 3.37	(321)
Reboxetine, $MeSO_3^-$			Chiralpak AD	95/5-Heptane/EtOH			1.38 3.93	(321)
Reboxetine			Chiral-AGP	88/12-Phosphate buffer 25 mM, pH = 6/MeCN	S,S	R,R	1.91 7.53	(323)
Reboxetine			Chiral-AGP	75/25-Ammonium acetate 10 mM, pH = 5.1/ MeCN	S,S 6.03	R,R 7.08		(324)
Reboxetine			Chiral-CBH	85/9/6-Phosphate buffer 10 mM, pH = 6.1, EDTA 50μM/i-PrOH/ MeCN	R,R	S,S	1.25 1.81	(323)
Rolipram		Antidepressant	CTA-I	5/95-H_2O/EtOH	R(−) 68	S(+) 86		(325)
			Chiralcel OD	93/7-Hexane/4-Methyl-2-pentanol			1.14	(326)
			Chiralcel OD-H	MeCN	S(+) 9.5	R(−) 10.3		(327)
			Kromasil CHI-TBB	75/25-MTBE/ $MeCO_2Et$			1.66	(328)
Tranylcypromine		Antidepressant	Crownpak CR(+)	88/12-$HClO_4$ 0.1 N/ MeOH	1S,2R(+)	1R,2S(−)	1.3 0.69	(329)
			Crownpak CR(+)	H_2O, $HClO_4$ pH = 2	1S,2R(+) 43.71	1R,2S(−) 54.67		(330)
			Chiralpak AD-H	85/15/0.1-Hexane/ EtOH/$EtSO_3H$			1.39 3.53	(249)

(*continued*)

Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Trimipramine		Antidepressant	Sumichiral OA-4700	120/15/10/0.1-Hexane/CH_2ClCH_2Cl/EtOH/TFA			1.18	1.76	(331)
			Chirobiotic V	34/66-$CF_3CO_2NH_4$ (0.1%)/MeOH			1.11	1.5	(271)
			Chiralcel OD	60/40-$NaClO_4$ 1M/MeCN			1.22	1.91	(223)
			Chiralcel OD	85/15/0.2/0.1-Hexane/EtOH/TFA/Et_2NH			1.64		(310)
			Chiralcel OD-R	60/40-H_2O, $NaPF_6$ 0.1M/MeCN			1.19	1	(332)
			Chiralcel OD-R	60/40-CCl_3COONa 0.1M/MeCN			1.17		(333)
			Chiralcel OD-R	58/42-$NaClO_4$ 0.3M/MeCN	R	S	1.19	1.8	(334)
			Chiralcel OJ-R	70/30-$NaClO_4$ 1M/MeCN				1	(335)
			Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/MeCN/MeOH			1.2	0.89	(335)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$EtSO_3H$			1.35	4.31	(258)
			Chiral-AGP	99/1-$MeCO_2Na$ buffer 0.01M, pH = 4/i-PrOH			1.64	2.55	(228)

			Chiral-AGP	98/2-Phosphate buffer 0.01M, pH = 7/i-PrOH, DMAO 8 mM			1.5		(275)
			Chiral-AGP	92/8-Phosphate buffer 0.01M, pH = 6, NaCl 0.1M/i-PrOH	(+)	(−)		1.5	(336)
			Chiral-AGP	NaH_2PO_4 buffer pH = 6.5/Tween 20 (2 g/l)			1.3	1.2	(337)
			Chiral-AGP	NaH_2PO_4 buffer pH = 6.5/Tween 20 8 g/l, $C_7H_{15}CO_2H$ 20 mM			1.41	1.4	(337)
Tryptophan		Antidepressant	Sumichiral OA-4100	50/45/5/0.2-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.09		(230)
			Sumichiral OA 4400	50/45/5/0.2-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.07		(230)
			Sumichiral OA-4500	50/45/5/0.2-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.06		(230)
			Sumichiral OA-4700	50/45/5/0.2-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.08		(230)

(*continued*)

Table 4. Continued

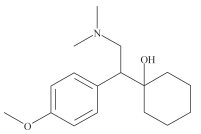
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Tryptophan			Sumichiral OA-4800	50/45/5/0.2-Hexane/CH_2ClCH_2Cl/MeOH/TFA	L	D	1.21		(230)
			Sumichiral OA-5000	70/30 $CuSO_4$ 2 mM/MeOH	L	D	1.09		(338)
			Sumichiral OA-5500	85/15-H_2O, $CuSO_4$ (2 mM)/MeCN	D	L	2.05		(252)
			Sumichiral OA-6000	85/15-H_2O, $CuSO_4$ (2 mM)/MeCN	D	L	1.24		(339)
			MCI CRS10W	85/15-H_2O, $CuSO_4$ 2.0 mM, pH = 5.1/MeOH	D	L	1.71	1.14	(340)
			Nucleosil Chiral 1	10/90-H_2O, $Cu(MeCO_2)_2$ 0.001M pH = 5.8/MeOH	L	D	1.33		(341)
			Nucleosil Chiral 1	70/30-H_2O, $Cu(MeCO_2)_2$ 0.0005M, $MeCO_2$ 0.05M, pH = 4.78/MeOH			1.8		(341)
			Nucleosil Chiral 1	30/70-H_2O, $Cu(MeCO_2)_2$ 0.0005M, $MeCO_2$ 0.05M, pH = 5.88/MeCN			2.2		(341)

Chirosolve D-Pipec.	$Cu(MeCO_2)_2$ 1.25 mM/ $MeCO_2H$ 50 mM			2.93	2.72	(342)
Crownpak CR(−)	$HClO_4$ pH = 1.5	L(+) 15.3	D(−) 18.3			(343)
Crownpak CR(+)	90/10-H_2O, $HClO_4$ pH = 2/MeOH	D	L	1.34	1	(344)
Crownpak CR(+)	$HClO_4$ pH = 1.9	D 24.7	L 30.77			(345)
Crownpak CR(+)	H_2O, $HClO_4$ pH = 2	D	L	1.23	1.2	(346)
Opticrown RCA(+)	50/50-MeOH/H_2O, H_2SO_4 10 mM	L	D	1.44	2.15	(347)
Sumichiral OA-8000	85/15/0.5/0.2-Hexane/ EtOH/TFA/H_2O			1.26	4.47	(348)
Cyclobond III	H_2O, TEAA (1%) pH = 5.1	L	D	1.2	1.9	(349)
Chirobiotic T	60/40-H_2O/EtOH				3.8	(350)
Chirobiotic T	MeOH				3.5	(351)
Chirobiotic T	20/80-H_2O, TEAA (1%) pH = 4.1/MeCN				3	(351)
Chirobiotic T	20/80-H_2O, TEAA (1%) pH = 4.1/MeOH				3.36	(351)
Chirobiotic T	100/0.1/0.1-MeOH/ Et_3N/$MeCO_2H$			1.63	1.5	(352)
Chirobiotic T	15/85-H_2O, $MeCO_2$-NH_4 0.025M/MeOH			1.61	1.7	(352)
Chirobiotic T	15/85-H_2O, $MeCO_2$-NH_4 0.025 M/MeOH			1.83	2.2	(353)

(*continued*)

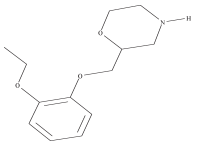
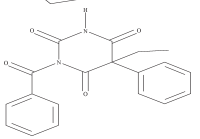
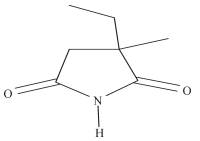
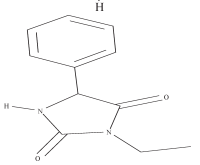
Table 4. Continued

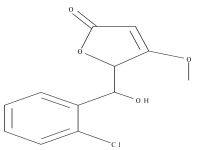
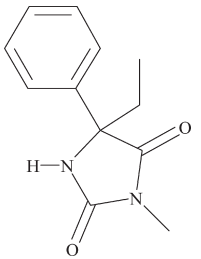
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Tryptophan			Chirobiotic T	100/0.1/0.1-MeOH/TEAA/$MeCO_2H$			1.79	2.1	(353)
			Chirobiotic T	40/60-H_2O, $MeCO_2H$ pH = 3.8/MeOH			1.41	1.5	(353)
			Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1/MeOH			1.5	2.4	(354)
			Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 7.1, $Cu(MeCO_2)_2$ 5 mM/MeOH			1.4	1.1	(354)
			Chirobiotic T	20/80-H_2O/MeCN			1.16	1.5	(354)
			Chirobiotic T	20/80-D_2O/MeCN			1.18	1.5	(354)
			Chirobiotic T	95/5/0.4/0.2-MeOH/EtOEt/$MeCO_2H$/Et_3N			2.02	4.28	(355)
			Chirobiotic T	5/95/0.4/0.2-Petroleum Ether/MeOH/$MeCO_2H$/Et_3N			1.98	3.13	(355)
			Chirobiotic V	H_2O	L	D	1.06		(356)
			Chirobiotic V	20/80-H_2O/EtOH	L	D	1.62		(356)
			Chirobiotic TAG	60/40-TEAA buffer (1%) pH = 4.1 (Et3 N, $MeCO_2H$)/MeOH			1.85	3.59	(357)

			Chirobiotic TAG	55/45/0.3/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			2.16	3.13	(357)
			Chirobiotic TAG	Phosphate buffer 5 mM, pH = 7	L 13	D 15			(358)
			Chirobiotic MTAG	60/40-TEAA buffer (1%) pH = 4.1 (Et3 N, $MeCO_2H$)/MeOH			1.67	3.06	(357)
			Chirobiotic MTAG	55/45/0.3/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			2.74	3.68	(357)
			Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%) cycloheptylamine 0.1%			1.1	1.37	
			Chiralpak AD	18/1/1-Hexane/EtOH/MeOH,camphorSO_3H (0.2%)			1.08	1.02	(359)
			Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%)			1.17	1.95	(359)
			Chiralpak AD	18/1/1-Hexane/EtOH/MeOH, $C_2H_5SO_3H$ (0.2%)			1.2	2.43	(359)
Venlafaxine		Antidepressant	Chirobiotic V	59/20/21-H_2O/NH_4NO_3 20 mM/THF	S 21	R 23.5			(360)

(*continued*)

Table 4. Continued

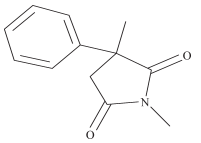
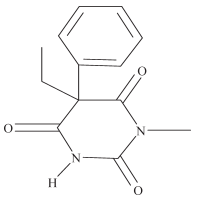
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Viloxazine		Antidepressant	Chiralcel OD	50/50/1-Hexane/EtOH/n-$C_3H_7NH_2$			5.15		(361)
Benzobarbital		Antiepileptic	Resolvosil BSA-7	96/4-Phosphate buffer 50 mM, pH = 7.9/1-PrOH, $C_{10}H_{21}CO_2H$ 0.75 mM			1.5		(362)
			Chiralcel OJ	90/10-EtOH/MeOH			1.21	0.54	(363)
Ethosuximide		Antiepileptic	Chiralcel OJ	90/10-Hexane/i-PrOH	S(+) 12	R(−) 15			(364)
Ethotoin		Antiepileptic	Cyclobond I	94/6-Phosphate buffer 0.067M, pH = 5/MeCN	R(−)	S(+)	1.06	0.95	(365)
			Chiralcel CA-1	95/5-EtOH/H_2O	(+)	(−)		1	(366)
			Chiralcel OJ	90/10-Hexane/i-PrOH			1.36	2.46	(367)
			Chiralcel OJ-R	80/20-H_2O/MeCN			1.1	1.96	(312)
			Chiralcel OK	90/10-Hexane/i-PrOH			1.25	1	(368)
			Chiral-AGP	98.5/1.5-Phosphate buffer 0.01M, pH = 7/i-PrOH			2.45	1	(249)

			EnantioPac	99/1-Sodium phosphate buffer 6-10 mM pH = 3.92/i-PrOH			2.13		(251)
Losigamone		Antiepileptic	ChiraDex	89/7/4-NaH_2PO_4 0.01M, pH = 4.2/MeOH/MeCN	8.54 (+)	9.54 (−)			(369)
R,S-S,R-Losigamone			Chiraspher	850/300/20-Hexane/i-PrOH/MeOH	5S,αR(−)	5R,αS(+)	1.1	1.1	(370)
Mephenytoin		Antiepileptic	(S,S) Whelk-O1	80/20-Hexane/i-PrOH	(−)	(+)	2.94	7.66	(371)
			Cyclobond I	80/20-H_2O/MeOH	R(−)	S(+)	1.48	2.3	(372)
			Cyclobond I	60/40-H_2O, TEAA (1%) pH = 4.1/MeOH			1.33	1.83	(373)
			ChiraDex	86/14/0.1/0.2-H_2O/MeCN/$MeCO_2H$/Et_3N	R 6	S 8			(374)
			Cyclobond I SN	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.1		(237)
			Cyclobond I SN	80/20-$MeCO_2NH_4$ buffer 0.1M, pH = 7/MeCN			1.36		(237)
			Cyclobond I 2000 SN	70/30-TEAA buffer pH = 4.1/MeCN			1.22	1.3	(375)
			Cyclobond I 2000 SN	70/30-Acetate buffer pH = 4.1/MeCN			1.22	1.3	(376)
			Chirobiotic T	70/30-Hexane/EtOH			1.2	0.8	(267)
			Chirobiotic V	90/10-Hexane/i-PrOH			1.3		(239)
			Chirobiotic V	90/10-H_2O, NH_4NO_3 18 mM, pH = 4/MeCN	R(−)	S(+)	1.28	0.79	(240)

(*continued*)

Table 4. Continued

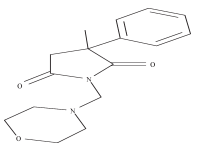
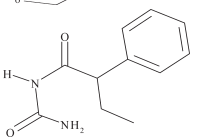
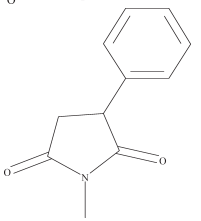
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chirobiotic V	90/10-TEAA buffer (1%) pH = 4/MeCN			1.3	1	(269)
			Chiralcel OD	80/20/0.1-Heptane/i-PrOH/Et_2NH			1.05	0.56	(237)
			Chiralcel OD	96/4-Hexane/i-PrOH			1.1		(377)
			Chiralcel OJ	MeOH	R(−)	S(+)	1.46	0.73	(363)
			Chiralpak AD	96/4-Hexane/i-PrOH			1.37		(377)
			Chiraspher	70/30/0.1-MTBE/i-PrOH/Et_2NH			1.13		(237)
			Chiraspher	80/20-Hexane/Dioxane	R 12.5	S 13			(378)
			Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.35		(247)
			Chiral-AGP	95/5-Phosphate buffer 0.02M, pH = 4.6/i-PrOH			1.25		(275)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/C_2H_5CN 0.14M			1.33		(276)

			Ultron ES-OVM	88/12-Phosphate buffer 0.02M, pH = 4.6/EtOH			2.92		(237)
Mesuximide		Antiepileptic	Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH			1.1	0.9	(239)
			Chirobiotic V	95/5-TEAA (1%) pH = 4/MeCN			1.14	0.8	(269)
			Chiralcel OD	85/15-Hexane/i-PrOH			1.34	1.71	(223)
			Chiralcel OJ	4/96-H_2O/EtOH	(+)	(−)	2.68	7.8	(367)
Methylpheno barbital		Antiepileptic	Cyclobond I	95/5-Phosphate buffer 100 mM, pH = 6.9/MeCN			1.12	1.1	(235)
			Cyclobond I	80/20-H_2O/MeOH or 80/20-H_2O, TEAA (1%)/MeOH	(−)	(+)	1.14	1.6	(379)
			ChiraDex	50/50-H_2O/MeOH			1.11	1.18	(380)
			Cyclobond I SN	70/30/0.1-Heptane/EtOH/Et_2NH			2.73		(237)
			Cyclobond I SN	80/20-$MeCO_2NH_4$ buffer 1M, pH = 7/MeCN			1.05		(237)
			Nucleodex beta-PM	45/55-TEAA (0.1%) pH = 4/MeOH				2	(381)
			Chirobiotic V	50/50-Hexane/i-PrOH			1.62		(239)
			Chirobiotic V	90/10-H_2O, NH_4NO_3 18 mM, pH = 4/MeCN	S(+)	R(−)	1.17	0.52	(240)

(*continued*)

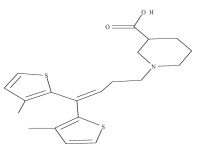
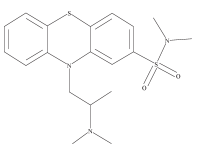
Table 4. Continued

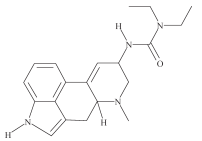
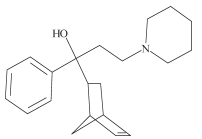
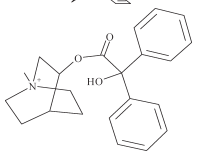
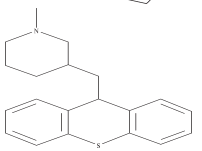
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Methylpheno barbital			Chiralcel OD	80/20/0.1-Heptane/i-PrOH/Et_2NH			1.1	0.89	(237)
			Chiralcel OD	95/5-Hexane/i-PrOH			1.12		(377)
			Chiralcel OJ	50/50/0.5-Hexane/i-PrOH/$MeCO_2H$			2.66	8.94	(245)
			Chiralcel OJ	4/96-H_2O/EtOH	(+)	(−)	5.89	10.8	(367)
			Chiralcel OJ	EtOH			6.47	9.41	(382)
			Chiralcel OJ-R	70/30-MeOH/i-PrOH			3	12.9	(245)
			Chiralcel OJ-R	15/85-H_2O/MeOH			2.78	14.38	(245)
			Chiralcel OJ-R	50/25/25-$NaClO_4$ buffer 0.5M, pH=2 (HClO4)/MeOH/MeCN			2.77	17.18	(245)
			Chiralcel OJ-R	70/30-$NaClO_4$ buffer 0.5M, pH=2 (HClO4)//MeCN			2.16	13.3	(245)
			Chiralcel OJ-R	50/50-H_2O/MeCN			2.18	6.35	(383)
			Chiralcel OJ-R	50/50-Phosphate buffer 50 mM, pH = 5/MeCN	S(+) 8	R(−) 13.2			(384)
			Chiralcel OJ-RH	70/30-Phosphate buffer 50 mM, pH = 5/MeCN	S(+)	R(−)	2.23	13.81	(385)
			Chiralcel OK	90/10-Hexane/i-PrOH			1.86	1	(242)
			Chiralpak AD	92/8-Hexane/i-PrOH			1.46		(377)
			Chiralpak IA	25/75-Hexane/CH_2Cl_2			4.51	25.66	(246)

			Chiralpak IA	30/70-Hexane/$MeCO_2Et$			4.69	16.6	(246)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.2/(R,S)-2-Butanol 0.11M			1.33		(275)
			Chiral-AGP	98/2-Sodium phosphate buffer 0.100M, pH = 7/i-PrOH			1.39	1	(276)
			Ultron ES-OVM	88/12-Phosphate buffer 0.02M, pH = 4.6/EtOH			1.25		(237)
Morsuximide		Antiepileptic	Resolvosil	Phosphate buffer 50 mM, pH = 4.94			1.7		(386)
Pheneturide		Antiepileptic	DNBPG covalent	90/10-Hexane/i-PrOH	(+)	(−)		1.5	(387)
Phensuximide		Antiepileptic	Cyclobond I	90/10-H_2O, TEAA (1%) pH = 4.1/MeCN			1.15	1.54	(373)
			Cyclobond I RN	90/10-Hexane/i-PrOH			1.07	1.5	(388)
			Chirobiotic R	66/34-H_2O, $MeCO_2$-NH_4 (0.1%)/MeOH			1.12	1.74	(271)
			Chirobiotic r	40/60-Hexane/EtOH			1.23	1.3	(389)

(*continued*)

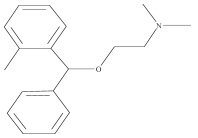
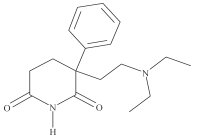
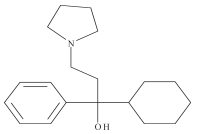
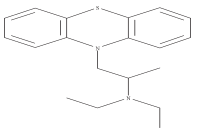
Table 4. Continued

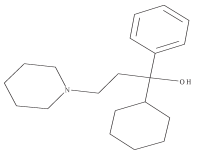
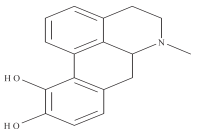
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chirobiotic t	90/10-Hexane/EtOH			1.1	1.2	(389)
			Chirobiotic t	75/25-TEAA buffer (0.1%) pH = 6/MeOH			1.12	1.2	(389)
			Chirobiotic V	90/10-Hexane/i-PrOH			1.26		(239)
			Chirobiotic V	75/25-TEAA buffer (0.1%) pH = 6/MeOH			1.15	0.8	(389)
			Chirobiotic V	95/5-Ethoxynonafluoro-butane (HFE-7200)/ EtOH			1.15	1.41	(390)
			Chiralpak AD-H	90/10-Hexane/i-PrOH	R 18.5	S 21.7			(391)
Tiagabine		Antiepileptic	Chiralcel OD	80/14/6/0.5-Hexane/i-PrOH/EtOH/TFA	S(+) 10.1	R(−) 14.2			(392)
Tiagabine HCl			Chiralcel OJ	90/6/4/0.1-Hexane/i-PrOH/EtOH/TFA				0.4	(392)
Tiagabine HCl			Resolvosil BSA-7	95/5-NaH_2PO_4 0.1M, pH = 6.5/1-PrOH	R(−)	S(+)	1.5	1.1	(393)
Dimetotia zine		Antimigraine	Chiralcel OD	90/10-Hexane/i-PrOH			1.14	0.65	(394)
			Chiralpak AD	90/10-Hexane/i-PrOH			1.25	1.9	(395)

Lisuride		Antimigraine	Chirobiotic T	MeOH			1.1	1.37	(396)
			Chirobiotic T	40/60-TEAA buffer (0.1%) pH = 4/MeOH			1.53	1.56	(396)
			Chirobiotic V	MeOH			1.24	2.42	(396)
			Chirobiotic V	40/60-TEAA buffer (0.1%) pH = 4/MeOH			1.26	2.15	(396)
Biperiden		Anti-parkinson/ Anti-cholinergic	Cyclobond I 2000	95/5/0.5/0.3-MeCN/MeOH/$MeCO_2H$/Et_3N	17.5	22			(397)
Clidinium		Anti-parkinson/ Anti-cholinergic	EnantioPac	Phosphate buffer 0.02 M, pH = 7/i-PrOH 0.33 M			1.21		(213)
Metixene, HCl		Anti-parkinson/ Anti-cholinergic	Chiralcel OD	90/10-Hexane/i-PrOH			1.27	0.77	(395)
			Chiralcel OJ	80/20-Isohexane/EtOH			1.84		(398)
Metixene			Chiralpak AD	60/40-MeCN/H_2O, $Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)			3.26		(226)
			Chiralpak AD	90/10-Hexane/i-PrOH			1.62	2.61	(395)
			Chiralpak AD-RH	70/30-MeCN/Borate buffer 20 mM, pH = 9			3.79		(227)

(*continued*)

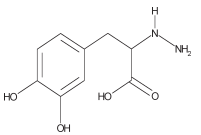
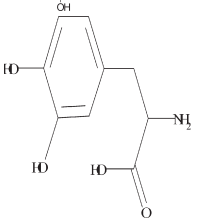
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Orphenadrine		Anti-parkinson/ Anti-cholinergic	Chiralcel OD	90/10-Hexane/i-PrOH	(+)	(−)	1.89	2.11	(399)
Phenglutarimide		Anti-parkinson/ Anti-cholinergic	Chirobiotic V	65/35-H_2O, NH_4NO_3 18 mM, pH = 5.5/ MeCN	S(+)	R(−)	1.13	0.73	(240)
			Chiralcel OD	70/30-Hexane/i-PrOH	S(+)	R(−)	1.5	1.26	(400)
			Chiralpak IA	90/10-MTBE/THF	R(−)	S(+)	2.29	1.93	(401)
Procyclidine		Anti-parkinson/ Anti-cholinergic	Cyclobond I 2000	95/5/0.5/0.3-MeCN/ MeOH/$MeCO_2H$/Et_3N	24	26			(397)
			Chiral-AGP	95/5-Sodium acetate buffer 0.010M, pH = 4.1/MeCN			1.75	2.88	(228)
Profenamine		Anti-parkinson/ Anti-cholinergic	KK-Carnu	80/15/0.2-Hexane/ EtOH/TFA			1.17	1.89	(331)
			KK-Carnu	70/30/10/0.1-Hexane/ CH_2Cl_2/MeOH/TFA			1.14	1.86	(331)
			Spherisorb Chiral 1	45/45/10-Hexane/ CH_2Cl_2/MeOH			1.06	0.4	(402)
			Chiralcel OJ	80/20-Hexane/i-PrOH			1.55	1.04	(331)
			Chiralcel OJ	100/3/0.5-Hexane/t-BuOH/Et_3N	(−)	(+)	1.68	1.81	(403)

			Chiralcel OJ-R	35/65-$NaClO_4$ 1M/MeOH			1.46	1.95	(335)
			Chiralcel OJ-R	70/30-$NaClO_4$ 0.7M/MeCN				2.4	(335)
			Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/MeCN/MeOH			1.38	1.47	(335)
			Chiralpak AD	40/60-H_2O-$Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)/MeCN			1.1		(226)
			Chiralpak AD-RH	40/60-Borate buffer 20 mM, pH = 9/MeCN			1.1		(227)
Trihexyphenidyl		Anti-parkinson/ Anti-cholinergic	Cyclobond I 2000	95/5/0.5/0.3-MeCN/MeOH/$MeCO_2H$/Et_3N	S(+) 18	R(−) 21			(397)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$			1.32	3.4	(258)
			Chiral-AGP	95/5-Sodium acetate buffer 0.01M, pH = 4.1/MeCN			1.33	1.52	(228)
Apomorphine		Anti-parkinson/dopaminergic	Chiralcel OD-R	65/35-H_2O, $NaClO_4$ 0.05M, pH = 2/MeCN	R(−) 9	S(+) 10,8			(404)

(*continued*)

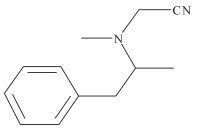
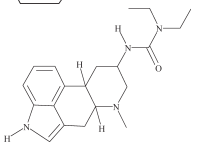
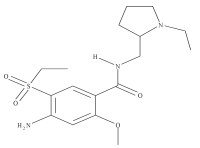
Table 4. Continued

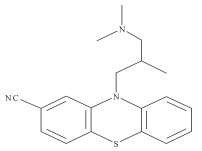
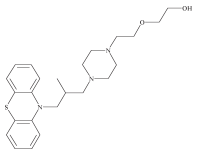
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Carbidopa		Anti-parkinson/ dopaminergic	Chirobiotic T	35/65-H_2O/EtOH	L	D	1.47	1.7	(405)
			Chirobiotic T	1000/0.05/0.05-MeOH/$MeCO_2H$/Et_3N	L	D	1.52	2.6	(405)
Levodopa		Anti-parkinson/ dopaminergic	Sumichiral OA-5000	70/30-$CuSO_4$ 2 mM/ MeOH	L	D	1.27		(338)
			Crownpak CR(−)	$HClO_4$ pH = 1.5	L(+) 12.5	D(−) 16.1			(343)
			Crownpak CR(+)	90/10-$HClO_4$ 0.16M, pH = 1.05/MeOH	R	S	1.88	4.4	(406)
			Crownpak CR(+)	$HClO_4$ pH = 1.9				3.94	(407)
			Crownpak CR(+)	90/10-H_2O, $HClO_4$ 30 mM/MeOH			1.59	1.98	(408)
			Crownpak CR(+)	H_2O, $HClO_4$ pH = 1.9	D	L	1.5	2.2	(409)
			Chirobiotic T	40/60-H_2O, $MeCO_2H$ buffer pH = 3.8/MeOH			2	2.3	(352)
			Chirobiotic T	40/60-H_2O, TEAA (1%) pH = 4.1/MeOH			2.41	1.8	(353)

Chirobiotic T	15/85-H_2O, $MeCO_2$-NH_4 0.025 M			3.05	3.5	(353)
Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1, $(MeCO_2)_2Cu$ 0.5 mM/MeOH			1.6	1.3	(354)
Chirobiotic T	1000/0.05/0.05-MeOH/$MeCO_2H$/Et_3N	L	D	3.21	6.2	(405)
Chirobiotic T	35/65-H_2O/EtOH	L	D	2.67	3.6	(405)
Chirobiotic T	40/60/5-H_2O, $MeCO_2H$ 10 mM, pH = 4.2/EtOH/MeOH	L	D		3.6	(410)
Chiralpak AD	18/1/1-Hexane/EtOH/MeOH, camphorSO_3H (0.2%)			1.04	0.52	(359)
Chiralpak AD	18/1/1-Hexane/EtOH/MeOH, $C_2H_5SO_3H$ (0.2%)			1.1	1.46	(359)
Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%)			1.34	4.41	(359)
Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%) $C_6H_{13}NH_2$ (0.1%)			1.27	3.35	(359)

(*continued*)

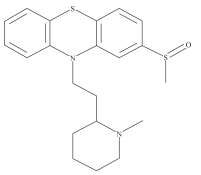
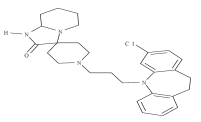
Table 4. Continued

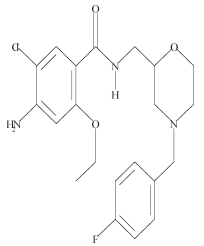
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Selegiline		Antiparkinson/dopaminergic	ChiraDex	H_2O, Et_3N 0.5M, pH = 3.5 (H_2SO_4)	R(−)	S(+)	1.1	1.49	(411)
Terguride		Antiparkinson/ dopaminergic	Chirobiotic T	MeOH			1.06	0.93	(396)
			Chirobiotic T	60/40-TEAA buffer (0.1%) pH = 4/MeOH			1.09	0.58	(396)
			Chirobiotic V	MeOH			1.3	2.38	(396)
			Chirobiotic V	40/60-TEAA buffer (0.1%) pH = 4/MeOH			1.21	1.68	(396)
			Chirobiotic V	30/70-TEAA buffer (0.1%) pH = 4/MeCN			1.05	0.72	(396)
Amisulpride		Antipsychotic	Chiralpak AS	67/33/0.2-Hexane/ EtOH/Et_2NH	S(−) 12	R(+) 13			(412)

Cyamemazine		Antipsychotic	Chiral-AGP	99/1-Sodium acetate buffer 0.01M, pH = 4/i-PrOH	1.84	3.03	(228)
			Chiral-AGP	85/15-Sodium phosphate buffer 10 mM, pH = 7./i-PrOH	1.22	1.72	(228)
			Chiral-AGP	85/15-Phosphate buffer 0.01M, pH = 6/MeCN	1.55	1	(249)
Dixyrazine		Antipsychotic	Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/MeCN/MeOH	1.36	1.02	(335)
			Chiralcel OJ-R	70/30-$NaClO_4$ 1M/MeCN	1.05	0.44	(335)
			Chiral-AGP	99/1-Sodium acetate buffer 0.01M, pH = 4/MeCN	1.45	1.81	(228)
			Chiral-AGP	85/15-Sodium phosphate buffer 10 mM, pH = 7/i-PrOH	1.07		(228)
			Chiral-AGP	98:2-Phosphate buffer 0.01M, pH = 7/i-PrOH, DMAO 2 mM	1.22		(275)

(*continued*)

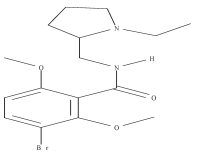
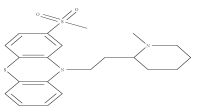
Table 4. Continued

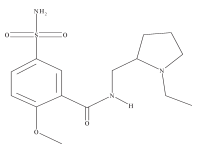
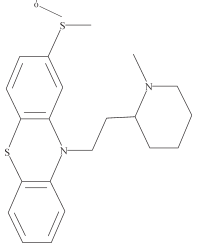
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Mesoridazine		Anti-psychotic	Spherisorb Chiral 1	45/45/10-Hexane/CH_2Cl_2/MeOH			1.12	1	(402)
			Chiralcel OJ	90/10/0.1-Hexane/EtOH/Et_2NH			1.31		(413)
			Chiralpak AD	90/10/0.1-Hexane/i-PrOH/Et_2NH			1.12	1	(413)
			Chiralpak AD	90/7/3/0.2-Hexane/EtOH/i-PrOH/Et_2NH	11	28			(414)
			Chiralpak AS	90/10/0.1-Hexane/EtOH/Et_2NH			2.48	7.07	(413)
			Ultron ES-OVM	95/5-Sodium acetate buffer 100 mM, pH = 3.5/MeCN			1.85		(413)
Mosapramine		Anti-psychotic	Sumichiral OA-2000	300/60/25-Hexane/CH_2Cl_2/MeOH	R(−)	S(+)	1.08		(415)

Mosapride		Anti-psychotic	Chirobiotic V	80/20-TEAA (0.1%) pH = 4.1/MeCN			1.35	2.1	(268)
			Chirobiotic V	100/0.15/0.05-MeOH/ $MeCO_2H/Et_3N$			1.28	1.3	(268)
			Chiralcel OD	80/10/10-Hexane/ EtOH/i-PrOH			1.05	0.49	(416)
			Chiralcel OD	90/10-Hexane/i-PrOH			1.08	0.53	(416)
			Chiralpak AD	75/25-Hexane/EtOH			1.1	1.55	(416)
			Chiralpak AD	80/20/0.3-Hexane/ $EtOH/Et_3N$			1.11	1.6	(416)
			Chiral-AGP	90/10-Acetate buffer pH = 4.9/i-PrOH	R	S	4.2		(417)
			Chiral-AGP	90/10-Acetate buffer pH = 4.9/MeCN	R	S	2.6		(417)
			Chiral-AGP	75/25-Acetate buffer pH = 4.2/MeOH	R	S	2.6		(417)
			Chiral-AGP	75/25-Acetate buffer pH = 5.94/MeOH	S	R	1.35		(417)
			Chiral-AGP	80/20-NaH_2PO_4 0.02M, pH = 9.1/MeOH	S	R		5.8	(418)
			Chiral-AGP	50/30/20-NaH_2PO_4 0.02M, pH = 4.9/Citric acid 0.02M/MeOH	R	S		2,9	(418)
			Ultron ES-OVM	10/1-KH_2PO_4 20 mM pH = 4.6/MeCN	S(−) 10.7	R(+) 19.6			(419)

(*continued*)

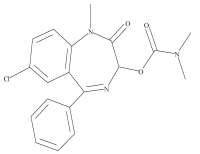
Table 4. Continued

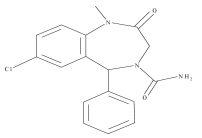
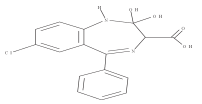
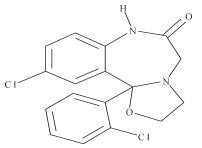
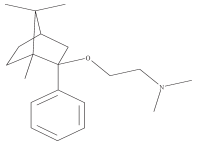
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Remoxipride		Anti-psychotic	Chiralcel OD-R	70/30-KPF_6 0.1M, pH = 3.5/MeCN	R(+) 22.6	S(−) 24.1			(420)
			Chiral-AGP	Sodium acetate buffer 0.030M, pH = 4			1.63	2.5	(228)
			Chiral-AGP	NaH_2PO_4 buffer pH = 6.5/Tween 20 (8 g/l)/$C_6H_{13}CO_2H$ 60 mM			2.04	2.4	(337)
			Chiral-AGP	NaH2PO4 buffer pH = 6.5/Tween 20 (2 g/l)			1.1	0.43	(337)
Sulforidazine		Anti-psychotic	Spherisorb Chiral 1	45/45/10-Hexane/CH_2Cl_2/MeOH			1.1	0.8	(402)
			Chiralcel OD	90/10/0.1-Hexane/i-PrOH/Et_2NH	R 15.4	S 18			(421)
			Chiralcel OD-H	90/10/0.1-Hexane/EtOH/Et_2NH			1.16		(413)
			Chiralcel OJ	90/10/0.1-Hexane/EtOH/Et_2NH			1.9		(413)

			Chiralpak AD	90/10/0.1-Hexane/i-PrOH/Et_2NH			1.05	0.66	(413)
Sulpiride		Anti-psychotic	Chiralpak AD	80/20-Hexane/EtOH	(−)	(+)	1.11		(399)
			Chiralpak AD-H	50/50/0.1-Hexane/EtOH/$EtSO_3H$	10.2	14.3			(258)
Thioridazine		Anti-psychotic	Chirex 3022	58/35/7-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.1		(224)
			Spherisorb Chiral 1	45/45/10-Hexane/CH_2Cl_2/MeOH	(+)	(−)	1.12	1.1	(402)
			ChiraDex	50/50-Phosphate buffer 0.06M, pH = 6.5/MeCN			1.12	1.07	(422)
			Chirobiotic T	15/85-H_2O, $MeCO_2NH_4$ 0.025M/MeOH			1.04	1.4	(352)
			Chiralcel OJ	85/15/0.1-Isohexane/EtOH/Et_2NH			1.18	0.27	(270)
			Chiralcel OJ	85/15/0.1-Isohexane/EtOH/TFA			1.44	1.01	(270)
			Chiralpak AD	98/2/0.1-Hexane/EtOH/Et_2NH			1.15	1.5	(413)

(*continued*)

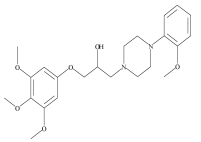
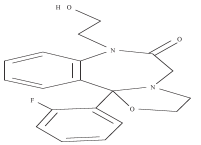
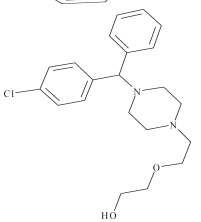
Table 4. Continued

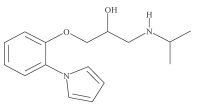
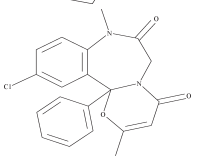
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralpak AD	60/39.9/0.1-Hexane/EtOH/TFA			4		(423)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$EtSO_3H$			2.57		(258)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.05	0.59	(258)
Camazepam		Anxiolytic	Hi-Chrom Pirkle	74/20/6-Hexane/CH_2Cl_2/i-PrOH	R	S	1.1	0.6	(424)
			Rexchrom Pirkle covalent L-leucine	88/10/1.3/0.7-Hexane/dioxane/EtOH/MeCN	R	S	1.06	0.75	(425)
			Sumichiral OA-3100	88/10/2-Hexane/CH_2Cl_2/EtOH	R	S	1.14	1.1	(424)
			Sumichiral OA-3100	78/20/2-Hexane/dioxane/i-PrOH	R	S	1.29	1.8	(425)
			Chiralcel OC	75/25-Hexane/EtOH	R	S	1.13	0.5	(425)
			Chiralcel OJ	70/30-Hexane/i-PrOH			1.17	0.66	(245)
			Chiralcel OJ-R	65/35-H_2O/MeCN			1.41	6.36	(245)
			Chiralcel OJ-R	50/25/25-H_2O/MeCN/MeOH			1.61	5.7	(245)

Carburazepam		Anxiolytic	Cyclobond I	90/10-Phosphate buffer pH = 7/MeCN	R(+)	S(−)	1.11		(426)
			Cyclobond I	90/10-Acetate buffer pH = 4.2/MeCN	R(+)	S(−)	1.1		(426)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 7/MeCN	S	R	2.14		(427)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 7/i-PrOH	S	R	2.05		(427)
Clorazepate		Anxiolytic	Cyclobond I	80/20-TEAA (1%) pH = 4.5/MeOH			1.14		(428)
Cloxazolam		Anxiolytic	Chiralpak AS	90/10-Hexane/EtOH	(+)	(−)	1.45	3.12	(395)
Deramciclane		Anxiolytic	Chiralcel OD	99.5/0.5-Hexane/EtOH	1R,2S,4R 3.36	1S,2R,4S 5.32			(429)

(*continued*)

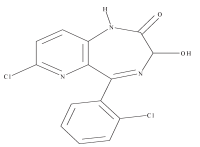
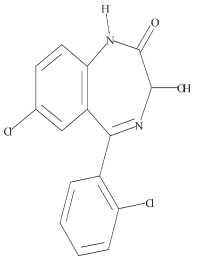
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Enciprazine		Anxiolytic	Chiralcel OD	50/50/0.5-Hexane/ EtOH/Et_2NH	(−)	(+)	2.21	4.99	(430)
Flutazolam		Anxiolytic	Chiralpak AD	90/10-Hexane/i-PrOH			1.3	2.35	(395)
Hydroxyzine		Anxiolytic	Ceramospher Chiral Ru-1	99/1-MeOH/Et_3N			1.46		(231)
			Chiralcel OD	60/40-$NaClO_4$ 1M/ MeCN			1.25	0.92	(223)
			Chiralcel OD	80/20-Hexane/i-PrOH			1.2	1.1	(431)
			Chiralcel OD	80/20/0.2/0.1-Hexane/ i-PrOH/H_2O/$MeCO_2H$			1.4	1.9	(431)

			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(−)-CamphorSO_3H 1.2 mM			1.08	0.4	(431)
			Chiralcel OD-R	40/40-H_2O, $NaPF_6$ 0.1M/MeCN			1.17	1	(332)
			Chiralcel OD-R	60/40-$NaBF_4$ 0.1M/MeCN			1.22		(333)
			Chiralcel OD-R	60/40-CF_3SO_3Na 0.1M/MeCN			1.16		(333)
			Chiralpak AD	90/10-Hexane/i-PrOH			1.3	2.35	(366)
			Chiralpak IA	40/60/0.1-Hexane/$MeCO_2Et$/Et_2NH			2.22	19.64	(246)
Isamoltane		Anxiolytic	Chiralcel OD	95/5/0.5-Hexane/EtOH/Et_2NH	(−)	(+)	1.86	4.26	(430)
Ketazolam		Anxiolytic	Chiralcel OD	60/40-$NaClO_4$ 0.25M/MeCN			1.21	0.59	(223)

(*continued*)

Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Lopirazepam		Anxiolytic	Chiralcel OD	60/40-$NaClO_4$ 0.25M/MeCN			3.44	1.65	(223)
			Chiraspher	60/39/1-Hexane/dioxane/i-PrOH			1.25		(223)
			Kromasil CHI-I	95/5-Hexane/i-PrOH			1.75		(432)
			Kromasil CHI-II	95/5-Hexane/i-PrOH			1.66		(433)
			Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.75		(247)
			Kromasil CHI-TBB	95/5-Hexane/i-PrOH			1.59		(432)
Lorazepam		Anxiolytic	Pirkle 1A covalent	75/25-Hexane/i-PrOH	(−)	(+)	1.21		(434)
			Hi-Chrom Pirkle	75/20/5-Hexane/CH_2Cl-CH_2Cl/i-PrOH	R	S	1.2	1.5	(435)
			Hi-Chrom Pirkle	90/10-Hexane/i-PrOH	R	S	1.2	0.9	(435)
			Hi-Chrom Pirkle	91.5/8.5-Hexane/EtOH-MeCN (2-1)	R	S	1.1	1.1	(435)
			Rexchrom Pirkle	75/20/5-Hexane/CH_2Cl_2/i-PrOH	R	S	1.2	0.8	(435)

Rexchrom Pirkle	91.5/8.5-Hexane/EtOH-MeCN (2-1)	R	S	1.1	1.3	(435)
Chirachrom A1	50/50-Heptane/i-PrOH			1.76	2.96	(436)
Chirachrom A1	63/27/10-Heptane/i-PrOH/MeOH			1.57	3.76	(436)
Chirachrom A1	60/30/10-Heptane/Dioxane/i-PrOH			1.55	3.3	(436)
ChyRoSine-A	88/12-Hexane/EtOH			1.14	1	(437)
(S,S) ULMO	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.37	1.27	(438)
(S,S) ULMO	80/20-Heptane/EtOH			1.21	0.97	(438)
(S,S) ULMO	70/30-Heptane/Dioxane			1.17	0.89	(438)
Sumichiral OA-3100	73/20-Hexane//EtOH	S	R	1.2	1	(435)
Beta-RSP-2000	73/8/19-H2O/$MeCO_2$-$NHEt_3$ (1%) pH = 4.5/MeCN	S(+)	R(−)		2.1	(439)
Cyclobond I SN	80/80-TEAA (1%) pH = 4.5/MeCN			1.04		(440)
OR-Pak CDBS-453	87/13-NaCl 0.2M, $MeCO_2H$ (1%)/MeCN	R(−)	S(+)	1.56	22.8	(441)
Chiralcel OC	75/20/5-Hexane/CH_2Cl-CH_2Cl/i-PrOH	R	S	1.9	4.7	(435)
Chiralcel OD	60/40-$NaClO_4$ 0.25M/MeCN			2.65	2.6	(223)

(*continued*)

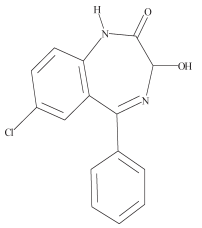
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Lorazepam			Chiralcel OD	MeCN			1.45	0.5	(317)
			Chiralcel OD	5/5/1-Hexane/i-PrOH/EtOH	S(+)	R(−)	1.29		(441)
			Chiralcel OD	100/1/0.1-Hexane/i-PrOH/TFA	R(−)	S(+)	1.47		(441)
			Chiralcel OD	50/50-Hexane/i-PrOH			1.15	1.6	(442)
			Chiralcel OD-R	60/40-$NaClO_4$ 0.25M, pH=4 ($HClO_4$)/MeCN	13	22.9			(443)
			Chiralcel OD-R	20/80/0.1-H_2O/MeCN/$MeCO_2H$	S(+) 4	R(−) 5.8			(444)
			Chiralcel OD-R	40/60-H_2O, $NaClO_4$ 0.5M/MeCN			2.12	6.13	(445)
			Chiralcel OJ-R	65/35-H_2O/MeCN			1.04	0.1	(245)
			Chiralpak AD	MeOH			1.11		(317)
			Chiralpak AD	MeCN			0.6	0.6	(317)
			Chiralpak AS	50/50-Hexane/EtOH	(−)	(+)	1.53	4.32	(442)
			Chiralpak AS	50/50/10-Hexane/i-PrOH/EtOH	(−)	(+)	1.57	3.75	(442)
			Chiralpak IA	MTBE			1.32	2.85	(246)
			Chiralpak IA	95/5-MTBE/EtOH			1.33	4.68	(246)
			Chiralpak IA	50/50-Hexane/$MeCO_2Et$			1.85	13.81	(246)
			Chiraspher	65/34/1-Hexane/dioxane/i-PrOH	(+)	(−)	1.16		(223)

Chiraspher	74/20/6-Hexane/CH_2Cl-CH_2Cl/i-PrOH	S	R	1.1	1.7	(435)
Chiraspher	93/7-Hexane/EtOH-MeCN (2-1)	S	R	1.1	0.7	(435)
Kromasil CHI-I	95/5-Hexane/i-PrOH			1.61		(432)
Kromasil CHI-TBB	95/5-Hexane/i-PrOH			1.61		(432)
(R,R)-P-CAP	97/3-CH_2Cl_2/MeOH			1.58		(446)
(R,R)-P-CAP	50/50-Heptane/EtOH			1.51	4.2	(444)
(R,R)-P-CAP	70/30-MeCN/MeOH/$MeCO_2NH_4$ 20 mM			1.8	5.8	(447)
Chiral-AGP	95/5-Phosphate buffer 0.01M, pH = 6/MeCN			1.62		(427)
Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeCN			1.4		(448)
Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeOH			1.4		(448)
Resolvosil BSA 10	99/1-Phosphate buffer pH = 6.6/n-PrOH			1.48		(449)
Resolvosil BSA-10	99/1-Phosphate buffer pH = 6.6/n-PrOH, CCl_3CO_2H 1.0 mM			1.95		(449)
Ultron ES-OVM	100/10-K_2HPO_4 buffer 0.02M, pH = 4.6/i-PrOH			1.56	1	(450)

(*continued*)

Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Ultron ES-OVM	88/12-Phosphate buffer 0.01M/pH = 6/MeCN	17	24			(451)
Oxazepam		Anxiolytic	(R)-DNBPG covalent	93/7-Hexane/EtOH-MeCN	R	S	1.13	1.56	(452)
			(R)-DNBPG covalent	80/17/2/1-Hexane/Dioxane/EtOH/MeCN	R	S	1.13	1.46	(452)
			(R)-DNBPG covalent	80/17/3-Hexane/Dioxane/i-PrOH	R	S	1.17	1.37	(452)
			(R)-DNBPG covalent	10/90-Hexane/$CHCl_3$	R	S	1.35		(453)
			(R)-DNBPG covalent	85/15-Hexane/EtOH			1.23		(453)
			Pirkle 1A covalent	90/10-Hexane/i-PrOH	R(−)	S(+)	1.2		(434)
			R-DNB phenylglycine Pirkle phase	70/30-Heptane/i-PrOH			1.27	0.81	(454)
			DNBPG covalent	70/25/5-Hexane/Dioxane/MeCN	R	S	1.25	1.5	(455)
			Pirkle 1A ionic	93/7-Hexane/EtOH-MeCN (2/1)	R	S	1.03	0.34	(452)
			Pirkle-Leu covalent	70/25/5-Hexane/Dioxane/MeCN	S	R	1.25	2	(455)
			S-DNBL Covalent	90/10-Hexane/i-PrOH	S	R	1.18	1.22	(452)
			S-DNBL Covalent	85/15-Hexane/EtOH-MeCN (2/1)	S	R	1.15	2.03	(452)

S-DNBL Covalent	80/17/2/1-Hexane/Dioxane/EtOH/MeCN	S	R	1.15	1.53	(452)
S-DNBL Covalent	80/17/3-Hexane/Dioxane/i-PrOH	S	R	1.15	1.06	(452)
Hi-Chrom Reversible-Leucine covalent	63/26/11-Hexane/dioxane/MeCN	S 8	R 9			(456)
Hi-Chrom Pirkle Covalent Leucine	63/26/11-Hexane/dioxane/MeCN	S	R	1.21	1.13	(457)
S-DNBL ionic	93/7-Hexane/EtOH-MeCN (2/1)	S	R	1.01	0.1	(452)
Chirachrom A1	63/27/10-Heptane/i-PrOH/MeOH			1.26	1.79	(436)
Chirachrom A1	60/30/10-Heptane/Dioxane/i-PrOH			1.25	1.47	(436)
ChiraChrom A1	10/90-Hexane/$CHCl_3$			2.55		(453)
ChiraChrom A1	85/15-Hexane/EtOH			1.53		(453)
ChyRoSine-A	85:15 Hexane/EtOH			1.53	4.6	(437)
ChyRoSine-A	10/90-Hexane/$CHCl_3$			1.83		(453)
(R)-Alpha-Burke 1	63/26/11-Hexane/dioxane/MeCN	S	R		1.2	(458)
(R,R) ULMO	70/30-Heptane/i-PrOH/TFA (0.05%)			1.14		(459)
(S,S) ULMO	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.15	0.63	(438)
(S,S) ULMO	80/20-Heptane/EtOH			1.1	0.5	(438)

(*continued*)

Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Oxazepam			(S,S)-Whelk-O1	80/20/0.1-Hexane/t-BuOH/$MeCO_2H$			1.41	1.89	(459)
			Cyclobond I	85/15-Acetate buffer pH = 4.2/MeCN	(−)	(+)	1.17		(426)
			Cyclobond I	90/10-Phosphate buffer pH = 7/MeCN	(−)	(+)	1.2		(426)
			Cyclobond I	80/20-TEAA (1%) pH = 4.5/MeOH			1.4		(428)
			ChiraDex	60/40-NaH_2PO_4 0.01M, pH = 2.8/MeOH			1.99	8.4	(406)
			ChiraDex	80/20-H_2O/MeOH			1.96	1.69	(461)
			Beta-RSP-2000	73/8/19-H_2O/$MeCO_2$-$NHEt_3$ buffer (1%) pH = 4.5/MeCN	R(−)	S(+)		2.7	(439)
			Cyclobond I SN	80/20-$MeCO_2NH_4$ buffer 0.1M, pH = 7/MeCN			1.2		(237)
			Cyclobond I SN	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.08		(237)
			Cyclobond I SN	70/30-TEAA buffer (1%) pH = 4.5/MeCN			1.16		(440)
			Nucleodex beta-PM	60/40-Phosphate buffer 10 mM, pH = 2.6)/MeOH	34.5	43.5			(462)

Chirobiotic T	100/0.05-MeOH/$CF_3CO_2NH_4$	2.1	4.6			(463)
Chiralcel OD	60/40-$NaClO_4$ 0.25M/MeCN			2.11	2.75	(223)
Chiralcel OD	80/20/0.1-Heptane/EtOH/Et_2NH			1.56		(237)
Chiralcel OD	MeOH			2.77	0.59	(317)
Chiralcel OD	85/15-Hexane/i-PrOH			1.37	1.7	(464)
Chiralcel OD-R	40/60-H_2O, $NaClO_4$ 0.5M/MeCN			2.12	6.72	(445)
Chiralcel OD-R	50/50/0.4-Hexane/i-PrOH/Et_2NH			2.86	12.54	(445)
Chiralcel OD-R	55/45-$NaClO_4$ 0.1M pH = 4/MeCN			2.75		(465)
Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 5.5/MeCN				12.61	(466)
Chiralcel OD-RH	60/40-Phosphate buffer 50 mM, pH = 2, KPF_6 100 mM/MeCN				11.65	(466)
Chiralcel OD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN				10.94	(466)
Chiralcel OF	Hexane/i-PrOH (17 or 18%)/Et_2NH (0.1%)			1.37		(467)
Chiralcel OJ	70/30-Hexane/i-PrOH			1.55	1.92	(255)

(*continued*)

Table 4. Continued

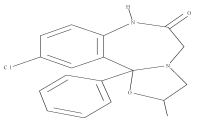
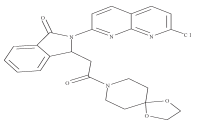
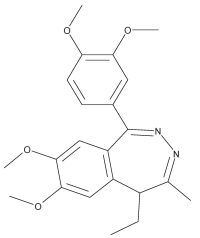
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Oxazepam			Chiralcel OJ	70/30-Hexane/i-PrOH/$MeCO_2H$ (0.5%)			1.55	1.92	(468)
			Chiralcel OJ-R	25/75-H_2O/MeOH			1.24	1.39	(255)
			Chiralcel OJ-R	50/25/25-H_2O/MeCN/MeOH			1.14	1.32	(255)
			Chiralcel OJ-R	80/20-H_2O/MeCN			1.11	1.57	(312)
			Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 5.5/MeCN				0.57	(466)
			Chiralcel OJ-R	60/40-Phosphate buffer 50 mM, pH = 2, KPF_6 100 mM/MeCN				3.74	(466)
			Chiralcel OJ-R	60/40-Borate buffer 20 mM, pH = 9/MeCN				0.35	(466)
			Chiralpak AD	MeOH			1.88	2	(317)
			Chiralpak AD-H	MeOH	6.1	8.43			(469)
			Chiralpak AS	90/10-Hexane/EtOH			1.48	3.62	(395)
			Chiralpak AS-H	90/10-Heptane/EtOH	22.13	42.69			(469)
			Chiralpak AS-H	CH3CN	4.65	6.04			(469)
			Chiralpak AS-H	100/0.1-MeCN/Et_2NH			1.89	6.5	(469)
			Chiralpak IA	90/10-MTBE/Acetone			1.82	8.76	(246)
			Chiralpak IA	50/50-Hexane/$MeCO_2Et$			1.69	10.82	(246)

Chiraspher	70/25/5-Hexane/Dioxane/i-PrOH			1.2		(223)
Chiraspher	60/35/5/0.1-Heptane/dioxane/i-PrOH/Et_2NH			1.24		(237)
Chiraspher	70/30/0.1-Heptane/Dioxane/Et_2NH			1.21		(237)
Chiraspher	80/17/2/1-Hexane/Dioxane/EtOH/MeCN	S	R	1.15	1.58	(452)
Chiraspher	93/7-Hexane/EtOH-MeCN (2-1)	S	R	1.07	0.95	(452)
Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.15		(247)
(R,R)-P-CAP	50/50-Heptane/EtOH			1.52	4.3	(447)
(R,R)-P-CAP	70/30-MeCN/MeOH/$MeCO_2NH_4$ 20 mM			1.66	5.4	(447)
(S,S)-P-CAP	50/50-Heptane/EtOH			1.51	3.62	(390)
(S,S)-P-CAP	40/60-Ethoxynonafluorobutane (HFE-7200)/EtOH			1.45	2.24	(390)
Chiral-AGP	95/5-Phosphate buffer 0.01M, pH = 7/MeCN			1.29		(427)
Chiral-AGP	97.2/2/0.8- KH_2PO_4 0.01M/EtOH/i-PrOH	R	S	1.21	0.8	(470)
Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeCN			4.5		(448)
Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7MeOH			3.2		(448)

(*continued*)

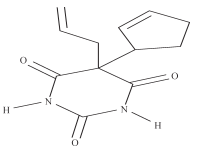
Table 4. Continued

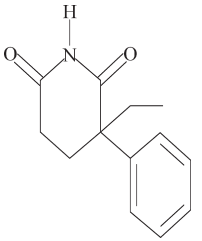
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7MeOH, digoxin 0.1 mM			4.1		(448)
			Resolvosil	98/2-Phosphate buffer 50 mM, pH = 6.7/1-PrOH			6.41		(386)
			Resolvosil BSA-7	97/3-Phosphate buffer 50 mM, pH = 6.5/n-PrOH, $C_5H_{11}CO_2H$ 0.75 mM			3.2		(362)
			Resolvosil BSA-7	97/3-Phosphate buffer 50 mM, pH = 6.5/n-PrOH, $C_6H_{11}NH_2$ 0.75 mM			3.1		(362)
			Resolvosil BSA-7	98/2-Phosphate buffer 10 mM, pH = 6.6/1-PrOH			4.1		(471)
			BSA-300-15sp	97.5/2.5-Phosphate buffer 50 mM, pH = 6.8/i-PrOH			5.58	3.11	(472)

Oxazolam		Anxiolytic	Sumichiral OA-2000	10/1/1-Hexane/CH_2Cl_2/dioxane			1.36	1.23	(473)
			Kromasil CHI-I	95/5-Hexane/i-PrOH			1.27		(432)
			Kromasil CHI-TBB	95/5-Hexane/i-PrOH			1.12		(432)
Pazinaclone		Anxiolytic	Optipak-TA	4/1-Hexane/EtOH	S(+) 18	R(−) 21			(474)
			Chiral-AGP	93.3/6.5-$MeCO_2K$ buffer 50 mM/pH = 3.1/MeCN	R	S		1	(475)
Tofisopam		Anxiolytic	(S,S)-Beta-Gem 1	60/40-Heptane/EtOH			3.63		(476)
			(R,R)-DACH-DNB	60/40-Heptane/EtOH			5.05		(476)
			(R,R) Whelk-O1	MeOH			1.12		(476)
			(R,R) Whelk-O1	60/40-Heptane/EtOH			1.19		(476)
			Ceramospher Chiral Ru-1	MeOH			1.5		(476)
			Chirobiotic V	90/10-MTBE/MeCN	R(+) 6.5	S(−) 8			(477)
			Chiralcel OD	90/10/1-Hexane/EtOH/$C_3H_7NH_2$			1.24		(361)
			Chiralcel OD	MeCN			1.06		(476)
			Chiralcel OD	90/10-Hexane/i-PrOH	S(−)	R(+)			(476)

(*continued*)

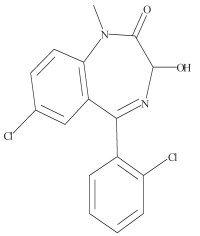
Table 4. Continued

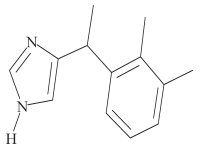
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
(S,P)-(R,M)-Tofisopam			Chiralcel OJ	MeCN			1.11		(476)
(S,P)-(R,M) Tofisopam			Chiralcel OJ	72/1.5/3-Hexane/i-PrOH/MeOH	S.P(−) 36.29	R.M(+) 39.48			(478)
(R,P)-(S,M) Tofisopam			Chiralcel OJ	72/1.5/3-Hexane/i-PrOH/MeOH	R.P(−) 28.8	S.M(+) 32.5			(478)
Tofisopam		Anxiolytic	Chiralpak AD	50/50-MeCN/MeOH			1.47		(476)
			Kromasil CHI-TBB	60/40-Heptane/EtOH			1.36		(447)
Cyclopentobarbital		Sedative-hypnotic	Cyclobond I	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.07	0.9	(261)
			ChiraDex	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.03		(261)
			Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.08	0.74	(261)
			Chiralpak AD	90/10-Heptane/i-PrOH	R(+) 22.33	S(−) 24.33			(479)

Glutethimide		Sedative-hypnotic	Chirasep DNBPG	94.5/5/0.5-Hexane/i-PrOH/MeCN	S(−)	R(+)	1.1	0.89	(480)
			(R,R) Whelk-O2	95/5-Hexane/i-PrOH			1.02		(243)
			Cyclobond I SN	70/30-TEAA buffer (1%) pH = 7.1/MeCN			1.1		(440)
			Chirobiotic V	90/10-H_2O, NH_4NO_3 18 mM, pH = 7/MeCN	S(−)	R(+)	1.17	0.76	(240)
			Chiralcel OB	Hexane/cyclooctanol 1.3M	R(+)	S(−)	1.53		(481)
			Chiralcel OD	MeOH			1.15	0.92	(223)
			Chiralcel OD	65/35-H_2O/MeCN	S(−)	R(+)	1.21	1.33	(480)
			Chiralcel OD	50/50-Hexane/EtOH	S(−)	R(+)	1.19		(482)
			Chiralcel OD-H	90/10-Hexane/i-PrOH			1.21		(243)
			Chiralcel OJ	4/96- H_2O/EtOH	(+)	(−)	2.45	5.9	(367)
			Chiralcel OJ	EtOH	R(+)	S(−)	3.47	5.05	(483)
			Chiralcel OJ	90/10-Hexane/i-PrOH	R(+)	S(−)	2.31	17.3	(484)
			Exp B101	50/50-H_2O/MeOH			1.82	3.83	(485)
			Exp B101	75/25-Hexane/i-PrOH			1.35	2.01	(485)
			Exp B101	70/15/15-H_2O/MeOH/MeCN			1.38	2.71	(485)
			Exp B101	70/30-H_2O/MeCN			1.24	1.31	(485)
			Chiralcel OJ-R	65/35-H_2O/MeCN	R(+)	S(−)	2.14	7.2	(486)
			Chiralcel OK	95/5-Hexane/i-PrOH	R(+)	S(−)	1.6	3.88	(487)

(*continued*)

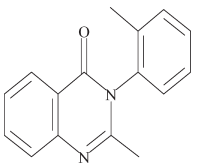
Table 4. Continued

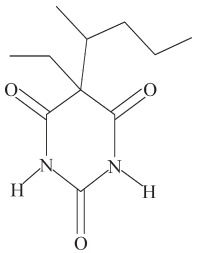
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralpak AD-H	90/10-Hexane/i-PrOH			2.35		(243)
			Chiralpak IA	20/80-THF/EtOH			2.52	12.54	(246)
			Chiralpak IA	90/10-CH_2Cl_2/THF			2.84	11.78	(246)
			Chiralpak IA	$MeCO_2Et$			4	16.37	(246)
			Chiralpak IA	CH3CN	R(+)	S(−)	4.32	4.33	(401)
			Chiralpak IB	CH3CN	S(−)	R(+)	2.05	0.33	(401)
			Resolvosil	Phosphate buffer 50 mM, pH = 4.9			1.24		(386)
Lormeta zepam		Sedative-hypnotic	Chirachrom A1	50/50-Heptane/i-PrOH			1.34	2.12	(436)
			Chirachrom A1	63/27/10-Heptane/i-PrOH/MeOH			1.28	2.15	(436)
			Chirachrom A1	60/30/10-Heptane/Dioxane/2-PrOH			1.3	1.72	(436)
			(R,R) ULMO	70/30-Heptane/i-PrOH/TFA (0.05%)			1.49		(459)
			(R,R) ULMO	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.47	2.22	(488)
			(R,R) ULMO	70/30-Heptane/i-PrOH			1.58	1.85	(489)
			(S,S) ULMO	70/30/0.1-Heptane/i-PrOH/Et_2NH			1.67	2.71	(438)
			(S,S) ULMO	80/20-Heptane/EtOH			1.5	2.72	(438)
			(S,S) ULMO	70/30-Heptane/Dioxane			1.29	1.76	(438)

			Chiralcel OD	70/30-Hexane/i-PrOH			1.28	3.24	(445)
			Chiralcel OD-R	25/75-H_2O, $NaClO_4$ 0.5M/MeCN			1.84	11.21	(445)
			Chiralcel OJ-R	65/35-H_2O/MeCN			1.08	1.32	(245)
			Chiralcel OJ-R	25/75-H_2O/MeOH			1.12	0.9	(245)
			Chiralcel OJ-R	50/25:25-H_2O/MeOH/MeCN			1.09	1.09	(245)
			Chiralpak AD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN			1.66		(227)
			Chiral-AGP	95/5-Phosphate buffer 0.01M, pH = 7/i-PrOH			1.22		(427)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 7/MeCN			1.73		(427)
Medetomidine		Sedative-hypnotic	Chiral-AGP	87.5/12.5-Phosphate buffer 0.03M, pH = 7/MeCN	(−)	(+)	1.93	3.49	(490)
			Chiral-AGP	92/8-Phosphate buffer 0.03M, pH = 7.5/i-PrOH	(−)	(+)	1.84	3.61	(490)
			EnantioPac	98/2-Phosphate buffer 5 mM, pH = 6.5/i-PrOH	(−)	(+)	1.25	1	(490)
			Resolvosil BSA-7	98/2-Phosphate buffer 5 mM, pH = 8/i-PrOH	(−)	(+)	1.16		(490)

(*continued*)

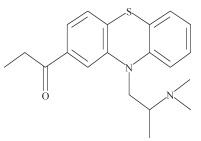
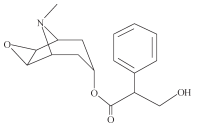
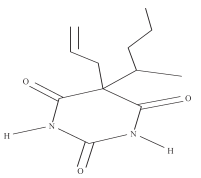
Table 4. Continued

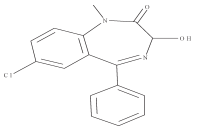
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Methaqualone		Sedative-hypnotic	Chiralcel OB	4/96-H_2O/EtOH	(−)	(+)	1.42		(367)
			Chiralcel OB-H	90/10/5-Hexane/i-PrOH/EtOH	(−)	(+)	1.67		(491)
			Chiralcel OJ	4/96-H_2O/EtOH	(−)	(+)	7.32	10.2	(367)
			Chiralcel OJ-H	MeOH			5.7	19.7	(469)
			Chiralcel OJ-H	MeCN			1.2	2.6	(469)
			Chiralcel OJ-R	80/20-H_2O/MeCN			1.73	6.45	(312)
			Chiralpak AD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN			1.37	3.4	(469)
			Chiralpak AS	99/0.5/0.5-Isohexane/i-PrOH/MeCN			1.84		(398)
			Chiralpak AS-H	90/10-Heptane/i-PrOH			1.6	4	(469)
			Chiralpak IA	75/25-Hexane/CH_2Cl_2			2.36	25.06	(246)
			Chiralpak IA	MTBE			3.35	15.23	(246)
			Chiralpak IA	8020-Hexane/$MeCO_2Et$			1.95	8.2	(246)
			Chiralpak IA	30/70-THF/EtOH			1.82	3.86	(246)
			Chiralpak IA	85/15-Hexane/Acetone			1.33	5.82	(246)
			Chiralpak IA	80/20-Hexane/i-PrOH			1.65	7.08	(246)
			Chiralpak IA	7/:25/5-Hexane/Toluene/EtOH			1.96	9.28	(246)
			Chiralpak IA	95/5-MTBE/EtOH			2.81	13.14	(246)

			Chiralpak IA	85/15-Hexane/THF			1.63	11.26	(246)
			Resolvosil	99/1-Phosphate buffer 50 mM, pH = 8.1/n-PrOH			1.16		(386)
Pentobarbital		Sedative-hypnotic	Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.08	0.94	(261)
			Nucleodex beta-PM	65/35-MeOH/TEAA (0.1%) pH = 4	S(−)	R(+)	1.19		(238)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/$MeCO_2H$			1.74	3.12	(245)
			Chiralcel OJ	EtOH			1.56	0.38	(382)
			Chiralcel OJ-R	30/70-H_2O/MeOH			1.16	1.21	(245)
			Chiralcel OJ-R	50/25/25-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN/MeOH			1.15	1.43	(245)
			Chiralcel OJ-R	30/70-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.15	1.69	(245)
			Chiralcel OJ-R	80/20-H_2O/MeCN			1.15	1.14	(383)
			Chiral-AGP	95.5/4.5-Phosphate buffer 0.1M, pH = 6.2/i-PrOH	R(+)	S(−)	1.52		(264)

(*continued*)

Table 4. Continued

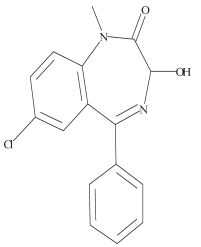
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Propio mazine		Sedative-hypnotic	Chiral-AGP	98/2-Phosphate buffer 0.01M, pH = 7/i-PrOH, DMAO 8 mM			1.8		(275)
			EnantioPac	Phosphate buffer pH = 6.52			1.28		(280)
Scopolamine		Sedative-hypnotic	Cyclobond I	96-4-H_2O, TEAA buffer (1%) pH = 4.1/MeCN	(+)	(−)	1.1	1.8	(281)
			Cyclobond I Ac.	98/2-H_2O, TEAA buffer (0.5%) pH = 4.1/MeCN			1.4	1	(492)
			Chiralcel OD	80/20/0.1-Hexane/EtOH/Et_2NH	R	S	2.06	9.79	(493)
Secobarbital		Sedative-hypnotic	Cyclobond RSP	70/30-Sodium phosphate buffer 0.1M, pH = 4/MeOH			1.09	1.02	(261)
			Chiralcel OJ	80/20/0.5-Hexane/i-PrOH/$MeCO_2H$			1.44	1.77	(245)
			Chiralcel OJ-R	30/70-H_2O/MeOH			1.16	1.05	(245)
			Chiralcel OJ-R	70/30-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN			1.13	1.69	(245)
			Chiralcel OJ-R	50/25/25-$NaClO_4$ buffer 0.5M, pH=2 ($HClO_4$)/MeCN/MeOH			1.12	1.12	(245)

			Chiralpak AS-RH	80/20-H_2O, KPF_6 0.1M/MeCN			1.11		(227)
			Chiral-AGP	99.7/0.3-Sodium phosphate buffer 0.1M, pH = 6/i-PrOH			1.25	1	(276)
Temazepam		Sedative-hypnotic	R-DNB phenylglycine	70/30-Heptane/i-PrOH	S	R	1.16	0.71	(454)
			Chirachrom A1	60/30/10-Heptane/dioxane/i-PrOH			1.18	0.91	(436)
			Chirachrom A1	50/50-Heptane/i-PrOH			1.14	0.99	(436)
			Chirachrom A1	63/27/10-Heptane/i-PrOH/MeOH			1.13	1.03	(436)
			(S,S) ULMO	70/30/0.1-Heptane-/i-PrOH/Et_2NH			1.32	1.66	(438)
			(S,S) ULMO	70/30-Heptane/Dioxane			1.18	1	(438)
			(S,S) ULMO	90/10-Heptane/i-PrOH			1.32	1.35	(454)
			(R,R) Whelk-O2	75/25-Hexane/i-PrOH			1.19		(377)
			Sumichiral OA-3100	63/26/11-Hexane/dioxane/MeCN	S	R		1.5	(458)
			Cyclobond I	80/20-TEAA buffer (1%) pH = 4.5/MeOH			1.1		(428)
			ChiraDex	80/20-H_2O/MeOH			1.47	0.75	(461)
			Beta-RSP-2000	73/8/19-H_2O/$MeCO_2$-$NHEt_3$ buffer (1%) pH = 4.5MeCN	R(−)	S(+)		1.8	(439)

(*continued*)

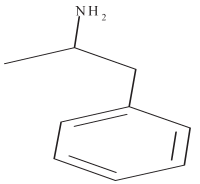
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Cyclobond I SN	80/20-TEAA buffer (1%) pH = 4.5/MeCN			1.03		(440)
			Chirobiotic V	90/10-H_2O, TEAA buffer (1%) pH = 7/MeCN			1.06		(239)
			Conbrio-TAC	2.5/97.5-H_2O/EtOH				0.8	(494)
			Chiralcel OD	MeOH			1.23	0.5	(317)
			Chiralcel OD	MeCN			1.49	1	(317)
			Chiralcel OD	90/10-Hexane/EtOH			1.17		(361)
			Chiralcel OD-R	55/45-$NaClO_4$ 0.1M, pH = 5.5/MeCN			1.47		(445)
			Chiralcel OD-R	30/70-H_2O, $NaClO_4$ 0.5M/MeCN			1.28	1.81	(465)
			Chiralcel OF	Hexane/i-PrOH (17 or 18%)/Et_2NH (.1%)			1.07		(467)
			Chiralcel OJ	70/30-Hexane/i-PrOH			1.16	0.85	(245)
			Chiralcel OJ	70/30-Hexane/i-PrOH/$MeCO_2H$ (0.5%)			1.16	0.85	(468)
			Chiralpak AD	MeCN			1.36	1	(317)
			Chiralpak AS-H	MeOH			2.41	8.2	(469)
			Chiralpak IA	50/50 Hexane/$MeCO_2Et$			1.59	13.44	(246)
			Chiralpak IA	70/30-Hexane/THF			1.68	11.45	(246)
			Kromasil CHI-DMB	95/5-Hexane/i-PrOH			1.17		(247)

			(R,R)-P-CAP	97/3-CH_2Cl_2/MeOH			3.89		(446)
			Chiral-AGP	97.2/0.8/2-KH_2PO_4 0.01M/i-PrOH/EtOH	R	S	1.25	0.8	(470)
			Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeOH, digoxin (0.1 mM)			11.8		(448)
			Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeCN			9.9		(448)
			Chiral-Protein 2	97/3-Phosphate buffer 0.01M, pH = 7/MeOH			7.2		(448)
			Resolvosil	98/2-Phosphate buffer 50 mM, pH = 7.3/1-PrOH			3.3		(386)
			BSA-300-15sp	97.5/2.5-Phosphate buffer 50 mM, pH = 6.8/i-PrOH			4.6	2.1	(472)
			Ultron ES-OVM	85/15- KH_2PO_4 buffer 10 mM, pH = 5/EtOH			2	1	(495)
Zopiclone		Sedative-hypnotic	Cyclobond I	95/5-TEAA (1%) pH = 5.5/EtOH	21.95	24.3			(496)
			Cyclobond I	95/5-TEAA (1%) pH = 5.5/MeCN	20.62	22.73			(496)
			ChiraDex	95/5-TEAA buffer (0.5%) pH = 7.2/MeCN				1.79	(497)
			ChiraDex	90/10-TEAA buffer (1%) pH = 7/MeOH				1.66	(497)

(*continued*)

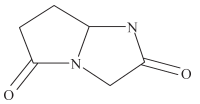
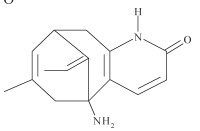
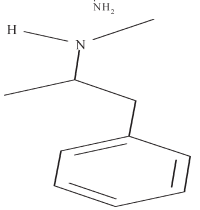
Table 4. Continued

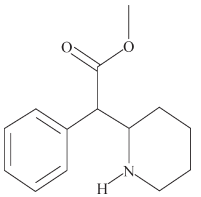
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralcel OD	30/70/1-Hexane/EtOH/$C_3H_7NH_2$			1.87		(361)
			Chiralcel OD	55/30/15-Hexane/EtOH/MeOH, Et_2NH (1%)	(−)	(+)	1.85	3.98	(498)
			Chiralcel OD	40/60-Hexane/EtOH			1.81	4.96	(499)
			Chiralcel OD	EtOH	(−)	(+)	1.5	3.5	(500)
			Chiralcel OD-H	40/60-Hexane/EtOH	(−)	(+)	1.7	4.5	(501)
			Chiralpak AS	60/40/0.1-Hexane/EtOH/Et_2NH	(+)	(−)	1.74	9.8	(502)
			Chiralpak AS	60/35/5-Hexane/EtOH/i-PrOH	S(+) 8.08	R(−) 12.8			(503)
			Ultron ES-OVM	98.8/1.2-Phosphate buffer 0.01M, pH = 5.5/i-PrOH	(+)	(−)	2.6	1	(504)
Amphetamine		Psychostimulant	Crownpak CR(+)	88/12-$HClO_4$ 0.1 N/MeOH	R(−)	S(+)	1.15	0.7	(505)
			Cyclobond I 2000	95/5-H_2O, TEAA (1%) pH = 4/MeOH			1.09	1	(215)
			Cyclobond I 2000	95/5-H_2O, $MeCO_2NH_4$ 100 mM pH = 4/MeOH			1.08	1	(215)

ChiraDex	95/-5-TEAA buffer 0.1M, pH = 7/MeOH	L	D	1.06		(506)
ChiraDex	Phosphate buffer 0.1M, pH = 3	L 9.11	D 9.68			(507)
ChiraDex	80/20-Phosphate buffer 0.1M, pH = 3/MeOH	L 5.34	D 5.5			(507)
Ultron ES-CD	94/6-KH_2PO_4 20 mM/ MeCN	R(−) 23	S(+) 25			(508)
Chirobiotic V	80/20-H_2O, TEAA (1%) pH = 4/MeOH			1.09	1.26	(215)
Chirobiotic V	100/0.03/0.02-MeOH/ $MeCO_2H/Et_3N$			1.08	1.44	(215)
Ultron ES-PhCD	60/40-KH_2PO_4 50 mM/ MeCN	S(+) 9	R(−) 10.3			(509)
Ultron ES-PhCD	30/70-KH_2PO_4 buffer pH = 6/MeOH	D	L	1.87		(510)
Ultron ES-PhCD	90/10-KH_2PO_4 buffer pH = 6/MeCN	D	L	1.06		(510)
Ultron ES-PhCD	56/36/8-KH_2PO_4 buffer pH = 6/MeOH/MeCN	D	L	1.3	1.7	(510)
Ultron ES-PhCD	45/5/50 $MeCO_2NH_4$ 20Mm/MeCN/MeOH				2.15	(511)
Chiralcel OD-RH	56/44-MeCN/H_2O, $NaPF_6$ 0.3M	R(−) 21,6	S(+) 32,4			(512)

(*continued*)

Table 4. Continued

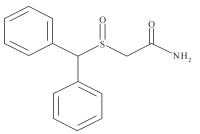
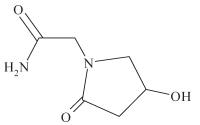
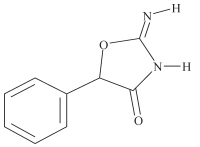
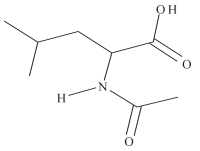
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Dimiracetam		Psycho-stimulant	Chiralcel OC	50/50-Hexane/i-PrOH	S(+)	R(−)	1.38		(513)
Huperzine A		Psycho-stimulant	Cyclobond I	90/10-TEAA buffer (1%) pH = 7/MeCN			1.05	0.8	(229)
			Cyclobond I SN	85/15-TEAA buffer (1%) pH = 7.1/MeCN	(−)	(+)	1.1		(514)
Metamfeta mine		Psycho-stimulant	Cyclobond I 2000	95/5-H_2O, TEAA (1%) pH = 4/MeOH			1.11	1.45	(215)
			Cyclobond I 2000	95/5-H_2O, $MeCO_2NH_4$ 100 mM pH = 4/MeOH			1.1	1.26	(215)
			ChiraDex	H_2O, Et_3N 0.5M, pH = 3.5 (H_2SO_4)	(−)	(+)	1.11		(411)
			ChiraDex	95/5-$MeCO_2NH_4$ buffer 0.1M, pH = 7/MeOH	S(+)	R(−)	1.07		(506)
			ChiraDex	Phosphate buffer 0.1M, pH = 3	L	D			(507)
			ChiraDex	80/20-Phosphate buffer 0.1M, pH = 3/MeOH	L	D			(507)
			Ultron ES-CD	94/6-KH_2PO_4 20 mM/ MeCN	R(−) 27	S(+) 30			(508)
			Chirobiotic V	80/20-H_2O, TEAA (1%) pH = 4/MeOH			1.07	1.02	(215)

			Chirobiotic V	100/0.03/0.02-MeOH/$MeCO_2H$/Et_3N			1.07	1.3	(215)
			Ultron ES-PhCD	60/40-KH_2PO_4 50 mM/MeCN	S(+) 12	R(−) 15.8			(509)
			Ultron ES-PhCD	55/45-MeOH/KH_2PO_4 buffer pH = 6	D	L	1.61		(510)
			Ultron ES-PhCD	56/36/8-KH_2PO_4 buffer pH = 6/MeOH/MeCN	D	L	1.3	2.24	(510)
			Ultron ES-PhCD	90/10-KH_2PO_4 buffer pH = 6/MeCN	D	L	1.24		(510)
			Chiralcel OD-RH	56/44-/MeCN/H_2O, $NaPF_6$ 0.3M	S(+) 39	R(−) 42			(512)
Methylphenidate		Psychostimulant	Cyclobond I	90/10-H_2O, TEAA (1%) pH = 4.1/MeCN			1.14	1.57	(232)
Threo-Methylphenidate			Chirobiotic V	100/0.1-MeOH/$CF_3CO_2NH_4$	l	d	1.35		(515)
Threo-Methylphenidate			Chiralcel OB	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA/$PhCO_2H$ 0.2 mM	(−)	(+)	1.3	1.19	(516)
Threo-Methylphenidate			Chiralcel OB	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA/PhOH 0.2 mM	(−)	(+)	1.24	1.1	(516)
Threo-Methylphenidate			Chiralcel OC	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA	(−)	(+)	1.69	0.4	(516)

(*continued*)

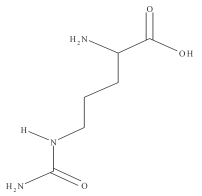
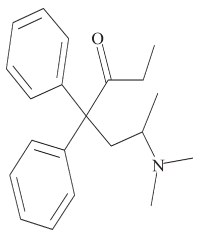
Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Threo-Methylphenidate			Chiralcel OD	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA	(−)	(+)	1.29	1.53	(516)
Methylphenidate			Chiralcel OJ	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA	(−)	(+)	1.12	0.5	(516)
Methylphenidate			Chiralcel OJ	95/5-Hexane/MeOH	(−)	(+)	1.34	0.61	(517)
Methylphenidate			Chiralcel OJ	95/4.975/0.025-Hexane/MeOH/TFA			1.13	1.1	(517)
Threo-Methylphenidate			Chiralpak AD	480/9.75/9.75/0.5-Hexane/EtOH/MeOH/TFA	(−)	(+)	1.34	1.82	(516)
Threo-Methylphenidate			Chiralpak AD	96/2/2/0.1-Hexane/EtOH/MeOH/TFA	2S,2S 13’	2R,2R’15			(518)
Erythro-Methylphenidate			Chiralpak AD	96/2/2/0.1-Hexane/EtOH/MeOH/TFA	2’S,2R 13.5	2’R,2S 16.5			(519)
Methylphenidate			EnantioPac	Phosphate buffer 0.02M, pH = 7/TBAB 3 mM			1.7		(213)

Modafinil		Psycho-stimulant	Cyclobond I 2000	85/15-Phosphate buffer 0.02M, pH = 3/MeCN	(+)	(−)		(520)
			ChiraDex	84/14-Phosphate buffer pH = 3/MeCN	(+) 19	(−) 22		(521)
			Chiral-AGP	250/1.6-H_2O, sodium acetate 0.02M/1-BuOH	(−) 5.5	(+) 7.5		(522)
Oxiracetam		Psycho-stimulant	Chiralcel OC	75/25-Hexane/EtOH	S(−)	R(+)	1.15 1	(523)
Pemoline		Psycho-stimulant	Cyclobond I SN	80/20-TEAA buffer (1%) pH = 4.5/MeCN			1.12	(440)
N-Acetyl-leucine		Antivertigo	Sumichiral OA-3100	$MeCO_2NH_4$ 5 mM/ MeOH			1.04	(524)
			Sumichiral OA-3200	$MeCO_2NH_4$ 5 mM/ MeOH			1.1	(524)
			Sumichiral OA-3300	$MeCO_2NH_4$ 5 mM/ MeOH			1.02	(524)
			Sumichiral OA-5000	70/30-$CuSO_4$ 2 mM/ MeOH			1.35	(338)
			MCI CRS10WD	90/10-$CuSO_4$ 2 mM/ MeCN	D	L	1.42 2.9	(525)

(*continued*)

Table 4. Continued

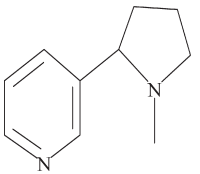
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Citrulline		Treatment of asthenia	MCI CRS10W	H_2O, $CuSO_4$ 0.5 mM, pH = 5.35	D	L	1.75	2.3	(340)
			MCI CRS10WD	$CuSO_4$ 1.0 mM	L	D	1.49	2.9	(525)
			Sumichiral OA-5000	95/5-H_2O, $CuSO_4$ 3 mM/i-PrOH			2	2.55	(526)
			Crownpak CR(+)	$HClO_4$ pH = 1			4.62	3.26	(527)
			Chirobiotic T	40/60-H_2O/MeOH	L	D	1.92	2.5	(528)
			Chirobiotic T	60/40-H_2O/MeOH	L	D	1.67	2.6	(528)
			Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%), cycloheptylamine (0.1%)			1.06	0.66	(359)
			Chiralpak AD	90/5/5-Hexane/EtOH/MeOH, camphorSO_3H (0.2%)			1.06	0.56	(359)
Methadone		Analgesic, Narcotic	Cyclobond I	90/10 to 80/20-H_2O, TEAA (1%) pH = 4.1/MeCN			1.04	0.81	(232)
			Cyclobond I 2000	90/10-Et_3N Phosphate buffer (1%) pH = 4/MeCN	R	S	1.46	1.33	(529)
			ChiraDex	98/2-TEAA (1%) pH = 4.1/MeCN	(−)	(+)	1.13		(530)

Cyclobond I RSP	80/9/11-H_2O, NEt_3 (1%) pH = 6/MeOH/MeCN	R	S			(531)
Cyclobond I RSP	90/10-Et_3N buffer (1%) pH = 3/MeCN	R 7.5	S 8.7			(532)
Beta-RSP-2000	90/10-H_2O, Et_3N Phosphate (0.1%) pH = 4.1/MeCN	l	d	1.4	3.06	(529)
Beta-RSP-2000	72/9/19-H_2O/H_2O, TEAA (1%) pH = 4.5/MeCN	R 14.18	S 16.04			(533)
Chiralcel OJ	90/10-Hexane/EtOH	R	S	1.73	2.95	(529)
Chiralcel OJ	90/10/0.03-Hexane/EtOH/Et_2NH	R	S	3.41	3	(534)
Chiralcel OJ-R	50/50/0.1-H_2O/MeCN/Et_3N	R(−)	S(+)	1.56	3.7	(310)
Chiralcel OJ-R	35/65/0.014-H_2O/MeCN/Et_2NH	R 7.9	S 9.4			(535)
Chiral-AGP	900/100/1-Phosphate buffer 0.01M, pH = 6.6/i-PrOH/DMAO	l	d	1.55	2.49	(529)
Chiral-AGP	91/9-NaH_2PO_4 20 mM, pH = 5.5/MeCN, DMAO 2 mM	R 13	S 16			(532)

(*continued*)

Table 4. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	92/8-Phosphate buffer 10 mM, pH = 6/i-PrOH	R(−)	S(+)	1.64	2.74	(534)
			Chiral-AGP	85/15-$MeCO_2NH_4$ buffer 10 mM, pH = 6.6/i-PrOH, $DMAO_2$ (0.05%)	R	S	1.27	2.45	(536)
			Chiral-AGP	93/7-$MeCO_2H$ 20 mM pH = 7.4/i-PrOH	33.53	63.73			(537)
Methadone			Chiral-AGP	84/16-NaH_2PO_4 10 mM, pH = 6.6/MeCN	l	d	1.2	1.6	(538)
			Chiral-AGP	88/12-$MeCO_2NH_4$ 10 mM/i-PrOH	R 3.54	S 4.55			(539)
			EnantioPac	Phosphate buffer 0.02M, pH = 7, NaCl 0.1M/i-PrOH 1.33M			1.59		(213)
			EnantioPac	92/8-Phosphate buffer 0.02M, pH = 7/i-PrOH			1.53		(213)

Nicotine		Treatment of smoking withdrawal syndrome	Chirex 3014	50/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.1		(224)
			Chiralcel OD	99/1-Heptane/EtOH	(−)	(+)	1.4		(540)
			Chiralcel OD	70/30/0.2-Heptane/EtOH/TFA	(+)	(−)	1.23		(540)
			Chiralcel OD-H	98/2-Hexane/i-PrOH	S(−) 10.9	R(+) 12.9			(541)
			Chiralcel OJ	95/4.975/0.025-Hexane/EtOH/TFA			2.5	6.1	(542)
			Chiralcel OJ	95/5-Hexane/EtOH			1.36	0.84	(542)
			Chiral-AGP	94/6-K_2HPO_4 100 mM, pH = 8.2, $C_9H_{19}CO_2H$ 4.5 mM/MeOH to 93/7 (10 min) and to 94/6 (2 min)	R	S	1.5	1.1	(543)

12. RESPIRATORY SYSTEM

In the ATC classification, the drugs acting on the respiratory system are divided in six sub-categories: 1-Adrenergic, 2-Antihistaminic, 3-Cough suppressant, 4-Decongestant, 5-Expectorant and 6-Stimulant.

Exactly one third of the fifty enantiomers found in this class of active drugs were separated by polysaccharide CSPs (Figure 5). The Pirkle or π-complex CSPs and the protein CSPs separated, respectively, one fourth and one fifth of the enantiomeric pairs (Table 5).

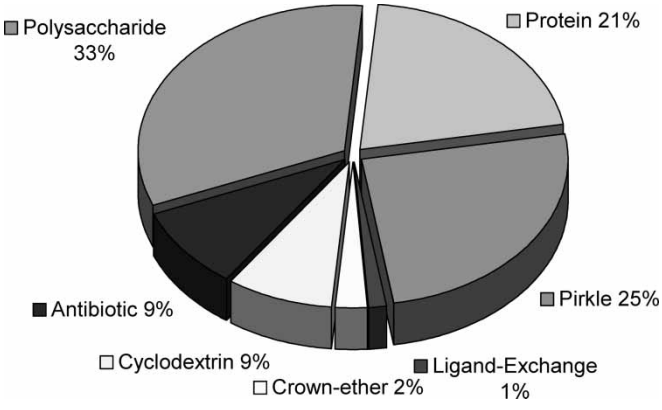
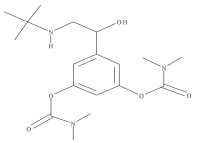
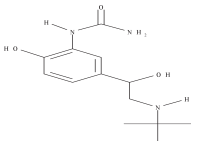


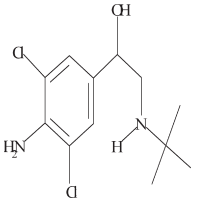
Figure 5. Chiral stationary phases able to separate the enantiomers of drugs acting on the respiratory system.

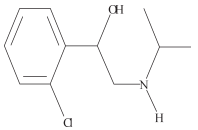
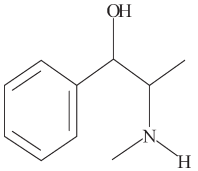
Table 5. ChirBase® enantioseparations of respiratory system drugs

Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Bambuterol		Adrenergic	(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, TFA 2.5 mM, Et_3N 2.5 mM	(+)	(−)	1.35	1.4	(544)
			(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, $MeCO_2NH_4$ (0.5 g/L)			1.21	1.25	(544)
			Opticrown RCA(+)	20/80/0.1/0.5-i-PrOH/MeCN/TFA/Et_3N			2.25	4.93	(545)
			Chirobiotic T	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.28	3.82	(546)
			Chiralcel OD-RH	80/20-KPF_6 buffer 100 mM pH = 4/MeCN			1.09	0.37	(547)
			Chiralpak AD	85/15/0.1-Isohexane/i-PrOH/Et_2NH			1.81	2.91	(546)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$H_2NC_5H_{10}CO_2$-H 0.1M			1.5		(548)
Carbuterol		Adrenergic	Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 7, Na_2-EDTA 50μM/i-PrOH			1.66	4.06	(549)

(*continued*)

Table 5. Continued

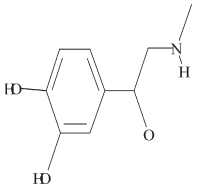
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Clenbuterol		Adrenergic	(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, TFA 2.5 mM, Et_3N 2.5 mM	(+)	(−)	1.32	1.71	(544)
			(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, $MeCO_2NH_4$ (0.5 g/L)			1.27	1.84	(544)
			Pirkle 1-J	19/1-CH_2Cl_2/EtOH, HCO_2H 2.5 mM, i-Pr_2NEt, 2.5 mM	(+)	(−)	1.16	0.64	(544)
			Chirex 3018	50/35/15-Hexane/ $ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.15		(550)
			Chirex 3022	50/35/15-Hexane/ CH_2Cl_2/EtOH, TFA (5%)			1.47	2.7	(551)
			Opticrown RCA(+)	20/80/0.1/0.5-i-PrOH/ MeCN/TFA/Et_3N			1.87	5.46	(545)
			Chirobiotic T	99.5/0.3/0.2-EtOH/ $MeCO_2H$/Et_3N			1.58	1.48	(552)
			Chirobiotic T	60/40/0.3/0.2-MeOH/ EtOH/$MeCO_2H$/Et_3N			1.37	0.95	(552)
			Chirobiotic T	99.8/0.2-MeOH/Et_3N			1.17	0.79	(552)
			Chirobiotic T	70/30/0.3/0.2-MeOH/ MeCN/$MeCO_2H$/Et_3N			1.17	0.93	(552)

			Chirobiotic T	34/66-MeOH, CF_3CO_2-NH_4 (0.1%)/MeOH			1.21	3.08	(553)
			Chirobiotic T	80/20/0.05-MeOH/MeCN/Et_3N			1.2	1.33	(554)
			Chirobiotic V	80/20/0.05-MeOH/MeCN/Et_3N	(−)	(+)	1.12	2.1	(554)
			Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.14	1.2	(555)
			Chirobiotic TAG	80/20/0.05-MeOH/MeCN/Et_3N	(−)	(+)	2.06	1.44	(554)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/$EtSO_3H$			2.38	4.07	(556)
			Chiral-AGP	99/1-Sodium acetate buffer 0.010M, pH = 5/i-PrOH			1.55	2.93	(557)
Chlorprenaline		Adrenergic	Chiralpak AD	60/40-H_2O, $Na_2B_4O_7$ 20 mM, pH=9 (H_3BO_3)/MeCN			1.16		(558)
			Chiralpak AD-RH	60/40-Borate buffer 20 mM, pH = 9/MeCN			1.16		(559)
Ephedrine		Adrenergic	Sumichiral OA-2500	58/30/12-Hexane/$ClCH_2CH_2Cl$/MeOH	1R,2S	1S,2R	1.17		(568)
			Cyclobond I	98/2-TEAA, pH = 7.1/MeOH			1.1	0.8	(561)

(*continued*)

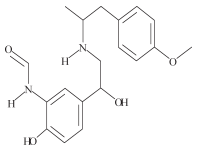
Table 5. Continued

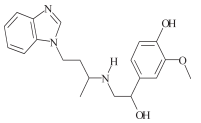
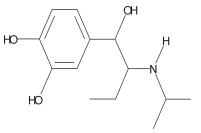
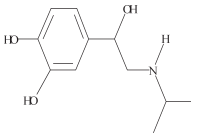
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Ephedrine			ChiraDex	H_2O, Et_3N 0.5M pH = 3.5 (H_2SO_4)	(+)	(−)	1.12	1.38	(562)
			Chirobiotic T	5/95-H_2O, TEAA buffer (1%) pH = 4.5/MeOH			1.2	1.2	(563)
			Chiralcel OD	90/10/0.2/0.1-Hexane/EtOH/TFA/Et_2NH			1.23		(564)
			Chiralcel OD	90/10/0.2-Hexane/EtOH/TFA			1.27		(564)
			Chiralcel OD	90/10/0.1-Hexane/EtOH/Et_2NH			1.25		(564)
			Chiralcel OD	80/20-Hexane/i-PrOH			1.32	0.8	(565)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O			1.27	0.8	(565)
			Chiralcel OD	80/20/0.2/0.1-Hexane/i-PrOH/H_2O/$MeCO_2H$			1.08	0.3	(565)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(+)-CamphorSO_3H 1.2 mM			1.24	1.7	(565)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(−)-CamphorSO_3H 1.2 mM			2.18	6.3	(565)
			Chiralcel OD-R	85/15-H_2O, $NaBF_4$ 0.1M/MeCN			1.12		(559)

			Chiralpak AD	90/10/0.1-Hexane/EtOH/Et_2NH			1.23		(564)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$			2.1	8.31	(556)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.19	1.73	(556)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7/$C_7H_{15}CO_2H$ 0.005M			1.34	1	(566)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$C_3H_7CO_2H$ 0.05M			1.83		(548)
			EnantioPac	Phosphate buffer 0.02M, pH = 7, NaCl 0.1M			1.24		(566)
Epinephrine		Adrenergic	Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2ClEtOH$,TFA (20/1)			1.1		(550)
			Cyclobond I 2000 RSP	Phosphate buffer100 mM, pH = 4	(−) 8.8	(+) 9.4			(567)
			Chirobiotic T	50/50-H_2O/EtOH			1.8	2	(563)
			Chiralcel OD	80/15/5-Hexane/i-PrOH/CCl_3CO_2H			1.1		(568)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$			1.22	2.42	(556)

(*continued*)

Table 5. Continued

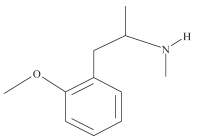
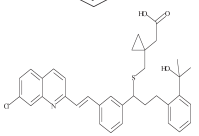
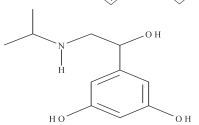
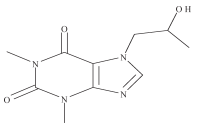
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 6.5, Na_2-EDTA 50μM/i-PrOH			1.69	4	(549)
			Chiral-CBH	NaH_2PO_4 buffer 10 mM, pH = 6, Na_2EDTA 50μM/			1.32	1.62	(549)
			Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 6, Na_2-EDTA 50μM/MeCN			1.33	1.74	(549)
Formoterol		Adrenergic	(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, TFA 2.5 mM, Et_3N 2.5 mM	(+)	(−)	1.08		(544)
			(R)-alpha-Burke 2	19/1-CH_2Cl_2/EtOH, $MeCO_2NH_4$ (0.5 g/L)			1.07		(544)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)	(+)	(−)	1.32	2.6	(569)
			Opticrown RCA(+)	20/80/0.1/0.5-i-PrOH/MeCN/TFA/Et_3N			1.3	1.68	(545)
			Chiralcel OJ	85/15-Hexane/EtOH	R,R(−)	S,S(+)	1.54		(570)
			Chiral-AGP	100/1.5-Phosphate buffer 50 mM, pH = 7, KCl, EDTA 1 mM/i-PrOH	R,R 8.13	S,S 11.3			(571)

			Chiral-CBH	90/10-Sodium phosphate buffer 25 mM, pH = 6.3, EDTA 50μM/i-PrOH	R,R	S,S	3.4		(572)
Imoxiterol (SR,RS)		Adrenergic	EnantioPac	99/1-Phosphate buffer 0.025, pH = 6.88/i-PrOH			3.6		(573)
Imoxiterol (RR,SS)			EnantioPac	99/1-Phosphate buffer 0.025, pH = 6.88/i-PrOH			1.8		(573)
Isoetharine		Adrenergic	Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.21		(550)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.08		(550)
Isoprenaline		Adrenergic	Chirex 3014	43/50/7-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.08		(550)
			Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.21		(550)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (5%)			1.29	1.9	(551)

(*continued*)

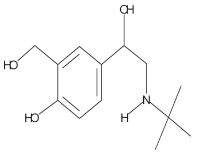
Table 5. Continued

Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Sumichiral OA-4000	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.03		(574)
			Sumichiral OA-4100	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.09		(574)
			Sumichiral OA-4500	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.03		(574)
			Sumichiral OA-4600	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.09		(574)
			Sumichiral OA-4700	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.1		(574)
			Sumichiral OA-4900	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA	(+)	(−)	1.17		(574)
			ChiraDex	98/2-NaH_2PO_4 25 mM, pH = 3.5/MeOH			1.09		(575)
			CHIDEX-MKP	70/30-TEAA 98 mM, pH = 5.3/MeOH			5.06	3.29	(576)
			Chiralcel OD	80/15/5-Hexane/i-PrOH/CCl_3CO_2H	(+)	(−)	1.28	0.56	(568)

Methoxy-phenamine		Adrenergic	Opticrown RCA(+)	50/50/0.1/0.1-MeOH/MeCN/Et_3N/$MeCO_2H$			1.09	1.55	(577)
			Chiralcel OD	98/2-Hexane/i-PrOH	(+)	(−)	1.41	1.66	(568)
Montelukast		Adrenergic	Chiral-AGP	72/28-$MeCO_2NH_4$ 10 mM, pH = 5.5/MeCN	S	R	1.66	1.13	(578)
Orciprenaline		Adrenergic	Chirex 3014	43/50/7-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.1		(550)
			Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.24		(550)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.13		(550)
			ChiraDex	98/2-NaH_2PO_4 25 mM, pH = 3.5/MeOH			1.17	1.85	(575)
Proxyphylline		Adrenergic	Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 7, EDTA 50μM/i-PrOH			1.63	2.47	(549)

(*continued*)

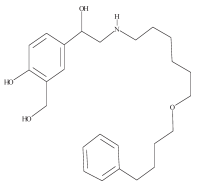
Table 5. Continued

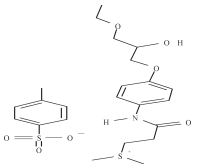
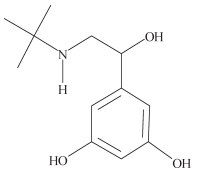
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Salbutamol		Adrenergic	Chirex 3022	176/103/31/0.67-Hexane/$ClCH_2CH_2Cl$/EtOH/TFA			1.31		(579)
			Sumichiral OA-4000	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.05		(574)
			Sumichiral OA-4100	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.09		(574)
			Sumichiral OA-4600	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.13		(574)
			Sumichiral OA-4700	350/410/40/2-Hexane/CH_2Cl_2/MeOH/TFA	S(+)	R(−)	1.21		(580)
			Sumichiral OA 4700	240/140/25/1-Hexane/Cl-CH_2CH_2-Cl/MeOH/TFA	R(−)	S(+)	1.12	1.72	(581)
			Sumichiral OA-4800	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.08		(574)
			Sumichiral OA-4900	240/140/20/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.33	3.3	(574)

Opticrown RCA(+)	50/50/0.1/0.1-MeOH/MeCN/Et_3N/$MeCO_2H$			1.12		(577)
Chirobiotic T	40/60/0.3/0.2-MeOH/MeCN/$MeCO_2H$/Et_2NH	R(−)	S(+)	1.18	1.8	(582)
Chirobiotic T	40/60/0.5/0.5-Heptane/EtOH/TFA/Et_3N				1.3	(583)
Chirobiotic T	1000/5/1-MeOH/$MeCO_2H$/NH_4OH (28%)	2.4	4.6			(584)
Chirobiotic T	60/40-MeOH/HCO_2H (0.02%) HCO_2NH_4 (0.1%)	S 4.6	R 5.1			(585)
Chirobiotic T	100/0.1/0.1-MeOH/$MeCO_2H$/Et_3N			1.2	2.5	(586)
Chirobiotic V	MeOH/Et_3N (0.1%)/$MeCO_2H$ (0.1%)			1.16	2.17	(547)
Chirobiotic V	MeOH/Et_3N (0.02%)			1.11	1.47	(547)
Chirobiotic V	100/0.1/0.1-MeOH/$MeCO_2H$/Et_3N			1.17	1.3	(586)
Chiralcel OJ	95/5-Hexane/EtOH/TFA (0.05%)			1.48	2.62	(547)
Chiral-AGP	99.87/0.13-Phosphate buffer 0.01M, pH = 7.5/MeOH			1.21	0.61	(579)

(*continued*)

Table 5. Continued

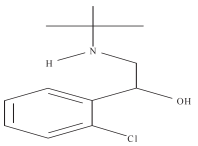
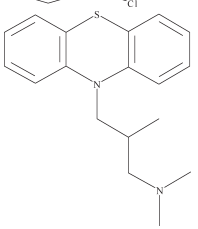
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	99.87/0.13-Phosphate buffer 0.01M, pH = 7.5/MeCN			1.2	0.58	(579)
			Chiral-AGP	Phosphate buffer 0.01M, pH = 7.5			1.21	0.56	(579)
			Chiral-CBH	99.75/0.25-H_2O, phosphate buffer 35 mM, pH = 7, Na_2EDTA 100μM/i-PrOH	S 7.42	R 8.32			(587)
			EnantioPac	Citrate buffer 5.3 mM, pH = 7.2/Et_3N (0.1%)	S(+)	R(−)	1.27		(588)
Salmeterol		Adrenergic	Chirex 3022	480/280/40/2-Hexane/CH_2Cl_2/MeOH/$MeCO_2H$	S	R	1.23		(589)
			Sumichiral OA-4100	240/30/130/1-Hexane/EtOH/CH_2Cl_2/TFA	S	R			(590)
			Sumichiral OA-4700	240/140/25/1-Hexane/$ClCH_2CH_2Cl$/MeOH/TFA	S(+)	R(−)	1.24		(591)
			Sumichiral OA 4700	240/150/210/45/1-Hexane/$MeCO_2Et$/$ClCH_2CH_2Cl$/MeOH/TFA			1.04	1.57	(591)
			Chiralcel OJ	80/20-Heptane/EtOH					(592)

			Chiral-CBH	85/15-Sodium phosphate buffer 25 mM, pH = 6, Na_2EDTA 50μM/i-PrOH	R(−) 17.2	S(+) 24			(593)
Suplatast tosylate		Adrenergic	Chiralcel OD-H	75/25/0.5-Hexane/EtOH/TFA	(+)	(−)	1.31	1.18	(594)
			Chiralcel OD-H	75/25/0.5/0.1-Hexane/EtOH/TFA/Et_2NH	(+)	(−)	1.51	3.39	(594)
			Chiralcel OG	75/25/0.5/0.1-Hexane/EtOH/TFA/Et_2NH	(+)	(−)	1.4		(594)
Terbutaline		Adrenergic	Chirex 3014	75/20/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.11		(550)
			Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.28		(550)
			Chirex 3022	55/35/10-Hexane/CH_2Cl_2/EtOH, TFA (5%)			1.38	2.3	(551)
			Sumichiral OA-4900	240/220/160/35/1-Hexane/$MeCO_2Et$/$ClCH_2CH_2Cl$/MeOH/TFA	S(+)	R(−)	1.22	1.65	(595)
			Sumichiral OA 4900	240/250/25/1-Hexane/$MeCO_2Et$/MeOH/TFA	S	R		1.62	(596)

(*continued*)

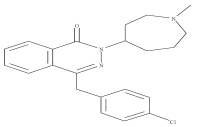
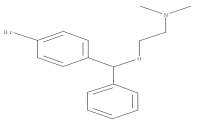
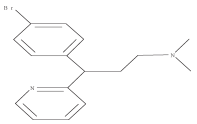
Table 5. Continued

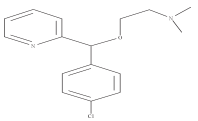
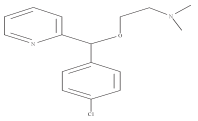
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Sumichiral OA-4900	240/140/20/1-Hexane/CH_2Cl_2/MeOH/TFA	S 14.97	R 17.08			(597)
			Cyclobond I	95/5-Citric acid buffer 0.025M, pH = 6/MeOH	(−)	(+)	1.22		(598)
			Cyclobond I	$MeCO_2NH_4$ 0.1M, pH = 5	(−)	(+)		1	(599)
			Chirobiotic T	34/66-MeOH, CF_3CO_2-NH_4 (0.1%)/MeOH			1.36	2.67	(553)
			Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N			1.08	0.86	(546)
			Chirobiotic V	MeOH, $CF_3CO_2NH_4$ (0.05%)			1.01		(600)
			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$			1.6	4.24	(556)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.08	0.91	(556)
			Chiral-AGP	Sodium phosphate buffer 0.01M, pH = 7			1.28	1	(601)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$H_2NC_5H_{10}CO_2$-H 0.1M			1.33		(548)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/TPAB 0.003M			1.22		(602)

Tulobuterol		Adrenergic	Chiralpak AD-RH	70/30-KPF_6 0.1M, pH = 2/MeCN	1.51		(559)
Alimemazine		Antihistaminic	Sumichiral OA-4700	160/15/10/0.1-Hexane/CH_2ClCH_2Cl/EtOH/TFA	1.18	2.62	(603)
			KK-Carnu	80/15/0.2-Hexane/EtOH/TFA	1.08	1.11	(603)
			Chiralcel OD	60/40-$NaClO_4$ 1M/MeCN	1.08	0.98	(604)
			Chiralcel OJ	90/10-Hexane/i-PrOH	1.21	1.12	(603)
			Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/MeCN/MeOH	1.34	1.5	(605)
			Chiralcel OJ-R	65/35-$NaClO_4$ 1M/MeCN	1.22	2.51	(605)
			Chiralcel OJ-R	30/70-$NaClO_4$ 1M/MeOH	1.08	0.55	(605)
			Chiralpak AD	92.5/7.5/0.2/0.1-Hexane/EtOH/TFA/Et_2NH	1.34		(564)
			Chiralpak AD	92.5/7.5/0.2-Hexane/EtOH/TFA	1.26		(564)
			Chiral-AGP	99/1-Sodium acetate buffer 0.010M, pH = 4/MeCN	1.31	1.55	(557)

(*continued*)

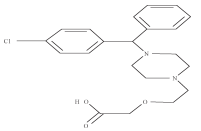
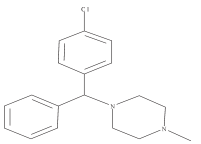
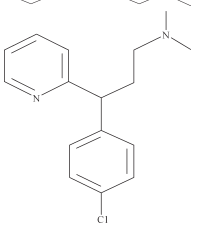
Table 5. Continued

Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	87/13-Phosphate buffer 0.01M, pH = 6/MeCN			1.26	1	(566)
			Chiral-AGP	98/2-Phosphate buffer 0.01M, pH = 7/i-PrOH, DMAO 2 mM			1.4		(606)
Azelastine		Antihistaminic	Chiralpak AD	97/3/0.7-Hexane/EtOH/Et_2NH	R(−) 22.5	S(+) 25			(607)
			Chiral-AGP	KH_2PO_4 125 mM, pH = 4/n-Bu_4NHSO_4 125 mM	(+)	(−)	1.5	1.64	(608)
Bromazine		Antihistaminic	EnantioPac	Phosphate buffer 0.02M, pH = 7/NaCl 0.1M/EtOH 1.74M			1.17		(602)
			EnantioPac	98/2-Phosphate buffer 0.02M, pH = 7/i-PrOH			1.13		(602)
Bromphen-iramine		Antihistaminic	Chirex 3014	50/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.3		(550)
			Chirex 3020	60/35/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.15		(550)
			Cyclobond I	70/30-TEAA buffer (1%) pH = 4.1/MeOH			1.1	0.8	(609)

			CHIDEX-MKP	70/30-TEAA buffer (1%) pH = 5.33/MeOH			1.25	1.77	(610)
			CHIDEX-SKP	70/30-Et_3N buffer (1%) pH = 5.11/MeOH			1.18	0.84	(611)
			EnantioPac	Phosphate buffer 0.02M, pH = 7, TBAB 3 mM			1.5		(602)
			EnantioPac	96/4-Phosphate buffer 0.02M, pH = 7/i-PrOH			1.05		(602)
Carbinoxamine Carbinoxamine maleate		Antihistaminic	Chirex 3014	40/50/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.15		(550)
			Chirex 3020	60/35/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.1		(550)
			Cyclobond I	90/10-TEAA buffer (2%)/MeCN	R(+)	S(−)	1.06		(612)
			Chiralcel OD	90/10-Hexane/i-PrOH			1.39	1.94	(613)
			Chiralpak AD	90/10-Hexane/i-PrOH			1.5	1.6	(613)
Carbinoxamine		Antihistaminic	Chiralpak AD	98/2/0.1-Hexane/i-PrOH/Et_2NH	R 17.5	S 21			(614)
			Chiralpak IA	90/10/0.1-Hexane/Dioxane/Et_2NH	7.95	9.4			(615)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/i-PrOH 0.17M/DMAO 1 mM			1.33		(602)

(*continued*)

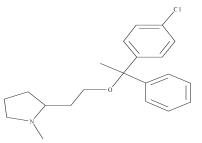
Table 5. Continued

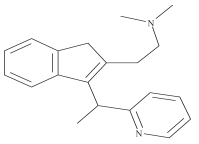
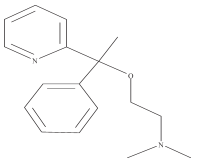
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Cetirizine		Antihistaminic	Chiralcel OD-H	65/35-$HClO_4$ 0.2M, pH = 2.5/MeCN, Et_2NH (0.4%)	S 37.8	R 40.6			(616)
			Chiral-AGP	95/5-phosphate buffer 10 mM, pH = 7/MeCN	(+) 12	(−) 16			(617)
Chlorcyclizine		Antihistaminic	Chiralcel OD	98/2-Hexane/i-PrOH	(+)	(−)	1.21	0.63	(568)
Chlorcyclizine HCl			Chiralpak AD	99/1/0.1-Heptane/i-PrOH/Et_2NH			1.35		(618)
Chlorpheniramine		Antihistaminic	Sumichiral OA-4100	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.21		(574)
			Sumichiral OA-4400	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.11		(574)
			Sumichiral OA-4500	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.37		(574)
			Sumichiral OA-4600	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.03		(574)

Sumichiral OA-4700	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.16		(574)
Sumichiral OA-4800	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.19		(574)
Sumichiral OA-4900	250/140/10/1-Hexane/CH_2ClCH_2Cl/MeOH/TFA			1.05		(574)
Cyclobond I	85/7.5/7.5-Et_2NH buffer (0.25%) pH = 4.4 ($MeCO_2H$)/MeCN/MeOH	R(−)	S(+)	1.12	1.17	(619)
Cyclobond I	85/15-H_2O, TEAA (1%) pH = 4.1/MeCN			1.07	1.51	(620)
Ultron ES-CD	85/15-Phosphate buffer 20 mM, pH = 5/MeCN			1.09		(621)
CHIDEX-MKP	70/30-TEAA buffer (1%) pH = 5.33/MeOH			1.2	1.18	(622)
CHIDEX-SKP	70/30-Et_3N buffer (1%) pH = 5.11/MeOH			1.17	0.74	(623)
Chiralcel OD	98/2-Hexane/i-PrOH	(−)	(+)	1.09	0.61	(568)
Chiralpak AD	90/10-Hexane/i-PrOH			1.38		(613)
Chiralpak AD	98/2/0.1-Hexane/i-PrOH/Et_2NH			1.29	2.11	(622)

(*continued*)

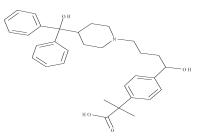
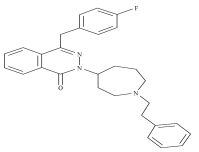
Table 5. Continued

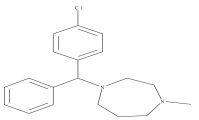
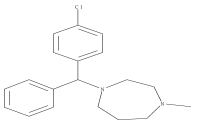
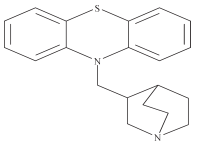
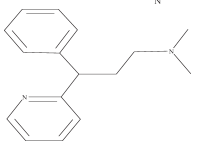
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.12	1.33	(556)
			Chiralpak IA	90/10/0.1-Hexane/THF/Et_2NH			1.37	3.24	(615)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/TBAB 0.003M			2.26		(602)
			EnantioPac	99/1-Phosphate buffer pH = 7.2/i-PrOH			2.34		(623)
			Ultron ES-OVM	90/10-KH_2PO_4 buffer 20 mM, pH = 5.1/EtOH	R	S	2.05	3.09	(624)
			Ultron ES-OVM	10/90-Potassium phosphate buffer 0.05M, pH = 5.6/MeCN	(−)	(+)	1.62	1	(625)
Clemastine		Antihistaminic	Chirex 3014	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			2.86		(550)
			Chirex 3018	50/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.26		(550)
			Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			3.04		(550)

			Chirex 3022	58/35/7-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.35		(550)
Dimetindene		Antihistaminic	Chiralcel OD	90/10/0.1-Hexane/EtOH/Et_2NH	S(+)	R(−)	1.35	1.48	(626)
			Chiralpak AD	90/10-Hexane/EtOH	S(+)	R(−)	1.16	0.83	(627)
			Chiralcel OJ-R	70/30-KPF_6 100 mM/MeCN			1.04		(559)
			Chiral-AGP	90/10-Phosphate buffer 0.01M, pH = 6/i-PrOH			1.3	1	(566)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/NaCl 0.1M/i-PrOH 1.33M			1.53		(602)
			EnantioPac	95/5-Phosphate buffer 0.02M, pH = 7/i-PrOH	R(−)	S(+)	1.63	1	(628)
Doxylamine		Antihistaminic	Chirex 3020	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)			1.07		(550)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O			1.31	0.6	(565)
			Chiralcel OD	80/20/0.2/0.1-Hexane/i-PrOH/H_2O/$MeCO_2H$			1.08	0.3	(565)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(−)-CamphorSO_3H/1.2 mM			1.3	1.7	(565)

(*continued*)

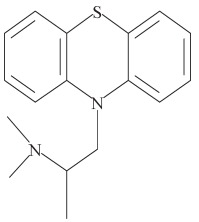
Table 5. Continued

Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(+)-CamphorSO_3H/1.2 mM			1.07	0.4	(565)
			Chiralcel OD	98/2-Hexane/i-PrOH	(+)	(−)	1.27	0.86	(568)
			EnantioPac	Phosphate buffer 0.02M, pH = 6.5/NaCl 0.1M/i-PrOH 0.33M			1.16		(548)
			EnantioPac	Phosphate buffer 0.02M, pH 6/TBAB 3 mM			1.37		(602)
Fexofenadine		Antihistaminic	Chiral-AGP	98.7/1.3-Sodium acetate buffer 0.01M, pH = 4.8/MeOH, DMAO 20 mM	(+) 11.6	(−) 14.2			(629)
			BSA-7	98.5/1.5-Sodium phosphate buffer 0.08M, pH = 8/i-PrOH	S(−)	R(+)	1.4	1	(630)
			Ultron-ES-OVM	88/12-Phosphate buffer 15 mM, pH = 5.2/MeOH	(+) 12	(−) 17			(631)
Flezelastine		Antihistaminic	Chiralpak AD	88/12/0.5-Hexane/i-PrOH/Et_2NH	(−) 14	(+) 17			(632)
			Chiral-AGP	93/7-KH_2PO_4 125M, pH = 4, Bu_4NHSO_4 125 mM/MeCN	(+)	(−)	1.55	1.7	(608)

Homochlorcyclizine		Antihistaminic	Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O			1.22	0.5	(565)
			Chiralcel OD	80/20/0.2/0.1-Hexane/i-PrOH/H_2O/$MeCO_2H$			1.24	0.7	(565)
Homochlorcyclizine		Antihistaminic	Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(−)-CamphorSO_3H/1.2 mM			1.13	0.6	(565)
			Chiralcel OD	80/20/0.2-Hexane/i-PrOH/H_2O/(+)-CamphorSO_3H/1.2 mM			1.12	0.7	(565)
			Chiralcel OD	Hexane/Isopropylamine 0.2M	(+)	(−)	1.33	5.9	(633)
Homochlorcyclizine HCl			Chiral-AGP	85/15-Sodium phosphate buffer 10 mM/MeCN			1.06	0.49	(633)
Homochlorcyclizine			Ultron ES-OVM	75/25-Sodium acetate buffer 20 mM/MeOH	(+)	(−)	1.8	2.84	(634)
Mequitazine		Antihistaminic	Chiralcel OD	96/4-Hexane/EtOH, Et_2NH (2%)	R(−)	S(+)	1.5		(635)
Mequitamium iodide			Ultron ES-OVM	60/40-KH_2PO_4 0.01M, pH = 6.5/EtOH	S(+) 12	R(−) 19			(635)
Pheniramine		Antihistaminic	CHIDEX-MKP	70/30-TEAA buffer (1%) pH = 5.33/MeOH			1.12	0.73	(622)

(*continued*)

Table 5. Continued

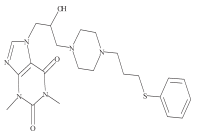
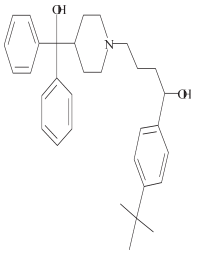
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chiral-AGP	99/1-Sodium acetate buffer 0.010M, pH = 5/MeCN			1.46	2.12	(557)
			Chiral-AGP	93-7-Phosphate buffer 0.01M, pH = 7/MeCN			1.33	1	(566)
Promethazine		Antihistaminic	Chirex 3014	75/20/5-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.12		(550)
			Chirex 3020	60/35/5-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.12		(550)
			Chirex 3022	76/20/4-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.08		(550)
			Sumichiral OA-4700	160/15/10/0.1-Hexane/CH_2Cl_2/EtOH/TFA			1.23	1.7	(603)
			KK-Carnu	80/30/20-Hexane/CH_2Cl_2/EtOH			1.31	1.63	(603)
			KK-Carnu	80/15/0.2-Hexane/EtOHTFA			1.23	2.25	(603)
			KK-Carnu	80/30/20/0.1-Hexane/$CHCl_3$/EtOH/TFA			1.24	2.18	(603)

KK-Carnu	70/30/19/1-Hexane/CH_2Cl_2/EtOH/H_2O	1.15	1.24	(603)
KK-Carnu	80/15/15/10/0.1-Hexane/CH_2Cl_2/$CHCl_3$/EtOH/TFA	1.23	1.85	(603)
KK-Carnu	70/30/10/0.1-Hexane/CH_2Cl_2/$CHCl_3$/TFA	1.22	1.72	(603)
KK-Carnu	80/17/10/0.1-Hexane/CH_2ClCH_2Cl/MeOH/CF_3SO_3H	1.17	1.52	(603)
Spherisorb Chiral 1	45/45/10-Hexane/CH_2Cl_2/MeOH	1.13	0.8	(636)
Chirobiotic R	MeOH	1.08	0.68	(637)
Chirobiotic V	100/0.02/0.01-MeOH/$MeCO_2H$/Et_3N	1.2	2.62	(546)
Chirobiotic V	34/66-MeOH, CF_3CO_2-NH_4 (0.1%)/MeOH	1.2	1.58	(553)
Chirobiotic V	20/80-TEAA (1%) pH = 4.1/MeOH	1.19	1.11	(637)
Chiralcel OD-R	60/40-H_2O, $NaPF_6$ 0.1M/MeCN	1.12	1	(638)
Chiralcel OD-R	60/40-CCl_3CO_2ONa 0.1M/MeCN	1.08		(639)
Chiralcel OD-R	60/40-CF_3SO_3Na 0.1M/MeCN	1.04		(639)
Chiralcel OJ	90/10-Hexane/EtOH	1.27	1.88	(603)

(*continued*)

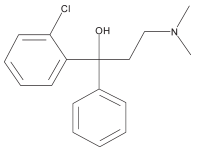
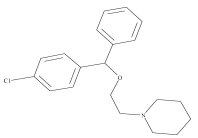
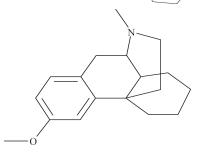
Table 5. Continued

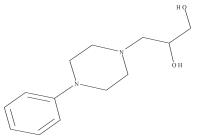
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Promethazine			Chiralcel OJ	99/1/0.1-Isohexane/i-PrOH/Et_2NH			2.56		(618)
			Chiralcel OJ-R	40/15/45-$NaClO_4$ 1M/MeCN/MeOH			2.2	3.7	(605)
			Chiralcel OJ-R	60/40-$NaClO_4$ 1M/MeCN			1.33	2.48	(605)
			Chiralcel OJ-R	30/70-$NaClO_4$ 1M/MeOH			1.91	1.92	(605)
			Chiralpak IA	90/10/0.1-Hexane/THF/Et_2NH			1.59	7.57	(615)
			Chiral-AGP	99/1-Sodium acetate buffer 0.010M, pH = 4/MeCN			1.32	1.56	(557)
			Chiral-AGP	98/2-Phosphate buffer 0.01M, pH = 7/i-PrOH, $C_8H_{17}NMe_2$ 2 mM			1.2		(606)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/NaCl 0.1M/EtOH 1.74M			1.25		(602)

			EnantioPac	92/8-Phosphate buffer pH = 7.1/i-PrOH			1.4		(623)
Tazifylline		Antihistaminic	EnantioPac	85/15-NaCl 10 mM, NaH_2PO_4-Na_2HPO_4 4 mM, pH = 7/i-PrOH	S(+)	R(−)	1.45	1.33	(640)
Terfenadine		Antihistaminic	Cyclobond I	25/75-$NaClO_4$ 0.014M/MeOH	R(+)	S(−)		1	(630)
			Cyclobond I	19/90-TEAA buffer pH = 7/MeOH	S	R	1.15	0.62	(641)
			Cyclobond I	10/90-$MeCO_2NH_4$ buffer pH = 7/MeOH	S	R	1.16	0.76	(641)
			Cyclobond I	90/10-Hexane/EtOH	S	R	1.12	0.37	(641)
			Cyclobond I	90/5/5-Hexane/EtOH/MeOH	S	R	1.22	0.79	(641)
			Chiralcel OD	97/3/0.01-Hexane/i-PrOH/Et_2NH			1.21	1.73	(642)
			Chiralpak IA	100/0.1-MTBE/Et_2NH			1.53	2.85	(615)
			Ultron-ES-OVM	75/25-Phosphate buffer 26 mM, pH = 4.6/MeOH	S	R		1	(643)
			Ultron-ES-OVM	75/25-Phosphate buffer 25 mM, pH = 4.6/MeOH	R(+)	S(−)	2.09	1.5	(644)

(*continued*)

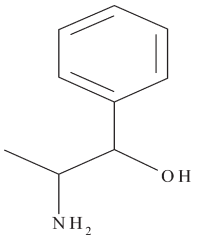
Table 5. Continued

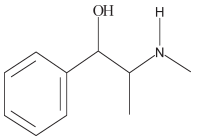
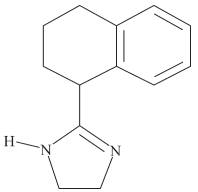
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Clofedanol		Cough suppressant	Chiralcel OD	80/20/0.2/0.34-Hexane/EtOH/TFA/Et_3N	(+)	(−)	1.5		(564)
			Chiralcel OD	80/20/0.34-Hexane/EtOH/Et_3N	(+)	(−)	1.29		(564)
			Chiralcel OJ	90/10-Hexane/i-PrOH			2.82	1	(645)
			Chiralcel OJ	MeCN			2.23	3.85	(646)
			Chiralcel OJ	90/10-MeCN/MeOH			2.4	2.83	(646)
			Chiralcel OJ-R	80/20-H_2O, KPF_6 50 mM/MeCN			1.11		(647)
			Chiralcel OJ-R	80/20-H_2O, $NaClO_4$ 0.2 M, pH = 5.7/MeCN			1.07		(647)
			Chiralpak IA	90/10/0.1-Hexane/THF/Et_2NH			1.24	3.74	(615)
Cloperastine		Cough suppressant	Chiral-AGP	99/1-Sodium acetate buffer 0.010M, pH = 4/MeCN			1.4	1.69	(557)
Dextromethorphan		Cough suppressant	Cyclobond I 2000	85/15-H_2O, TEAA (1.0%) pH = 4/MeCN			1.11	1.3	(648)

			Cyclobond I 2000	90/10/0.03/0.02-MeCN/MeOH/$MeCO_2H$/Et_3N			1.12	1.82	(648)
			Chirobiotic V	10/90-H_2O, TEAA (1.0%) pH = 4/MeOH			1.18	2.58	(648)
			Chirobiotic V	100/0.03/0.02-MeOH/$MeCO_2H$/Et_3N			1.21	3.33	(648)
			Chiralcel OD	99.5/0.4/0.1-Hexane/MeOH/Et_2NH	(+)	(−)	1.2	1.17	(649)
			EnantioPac	Phosphate buffer 0.02M pH = 7/TBAB 0.001M			2.73		(548)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$C_7H_{15}CO_2H$ 0.005M			2.26		(548)
			EnantioPac	98/2-Phosphate buffer 0.02M, pH = 7/i-PrOH			1.15		(602)
Dopropizine		Cough suppressant	Chiralcel OJ	60/40-Hexane/EtOH	S(−)	R(+)	1.63	1.95	(650)
			Chiralcel OD	95/5-Hexane/EtOH	R(+)	S(−)	1.08	1.1	(650)
			Chiralpak AS	96.5/3.0/0.5-Hexane/i-PrOH/Et_2NH	S 22.7	R 26.2			(651)
			Chiral-CBH	95/5-NaH_2PO_4 buffer 10 mM, pH = 7, Na_2-EDTA 50μM/i-PrOH			1.49	2.85	(549)

(*continued*)

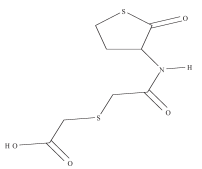
Table 5. Continued

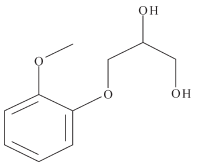
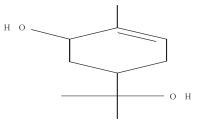
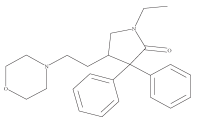
Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Phenyl-propanolamine		Decongestant	Sumichiral OA-2500	58/30/12-Hexane/$ClCH_2CH_2Cl$/MeOH			1.28		(568)
			Sumichiral OA-8000	70/30/0.5/0.2-Hexane/EtOH/TFA/H_2O			1.47	2.3	(652)
			Sumichiral OA-5000	$MeCO_2Na$ buffer 0.05M, pH = 6, $Cu(MeCO_2)_2$ 5 mM			1.84		(653)
			Sumichiral OA-5500	H_2O, $CuSO_4$ 1 mM			1.11		(654)
			Sumichiral OA-6000	H_2O, $CuSO_4$ 1 mM			1.15		(655)
			Crownpak CR(+)	$HClO_4$ pH = 1.9				2.5	(656)
			Crownpak CR(+)	88/12-$HClO_4$ 0.1 N/MeOH	1R, 2S(−)	1S, 2R(+)	1.43	0.81	(657)
			Crownpak CR(+)	H_2O, $HClO_4$ pH = 1	1R,2S 10.6	1S,2R 14.1			(658)
			Chirobiotic T	100/0.1/0.1-MeOH/Et_3N/$MeCO_2H$			1.04	0.7	(659)
			Chiralcel OD	5/95/0.1-H_2O/MeOH/Et_2NH			1.22	7.64	(660)
Phenylpropa-nolamine HCl			Chiralpak AD	50/50-MeOH/EtOH			1.95	2.05	(646)
Phenylpropa-nolamine HCl			Chiralpak AD-H	80/20/0.1-Hexane/i-PrOH/$EtSO_3H$			1.6	3.49	(556)

Phenylpropanolamine HCl			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			2.69	19.2	(556)
Phenylpropanolamine HCl			Chiralpak AD-RH	90/10-MeCN/i-PrOH/Ethanolamine (0.1%)	(+)	(−)	3.84	11.43	(661)
Phenylpropanolamine HCl		Decongestant	Chiralpak AD-RH	MeCN/Ethanolamine (0.1%)	(+)	(−)	1.5	1.97	(661)
Phenylpropanolamine			Chiral-CBH	95/5-KH_2PO_4 10 mM, pH = 6.9, Na_2EDTA 50μM/EtOH	1S, 2R(+) 3.5	1R, 2S(−) 4			(657)
Pseudoephedrine		Decongestant	Sumichiral OA-2500	58/30/12-Hexane/$ClCH_2CH_2Cl$/MeOH			1.37		(568)
			Sumichiral OA-2500	63.91/23.97/11.98/0.001-Hexane/$ClCH_2CH_2Cl$/MeOH/$MeCO_2H$			1.13		(568)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/$C_3H_7CO_2H$ 0.05M			1.34		(548)
Tetryzoline		Decongestant	Chirex 3014	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.11		(550)
			Chirex 3017	55/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.28		(550)
			Chirex 3018	55/35/15-Hexane/$ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.07		(550)

(*continued*)

Table 5. Continued

Drug Name	Structure	Medical property	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Chirex 3020	55/35/10-Hexane/ $ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.07		(550)
			Chirex 3022	55/35/15-Hexane/ $ClCH_2CH_2Cl$/EtOH, TFA (20/1)			1.12		(550)
			Cyclobond I SN	80/20-TEAA buffer (1%) pH = 4.5/MeCN			1.13		(662)
			Chiralpak AD	90/10-Hexane/EtOH, Et_2NH (2%)			1.24	1.08	(663)
			Chiralpak AD-H	85/15/0.1-Hexane/ EtOH/Et_2NH			1.16	0.97	(556)
			Chiral-AGP	$MeCO_2Na$ buffer 0.010M, pH = 5			1.46	1.63	(557)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/Me_2EtNH_4Br (0.1M)			1.66		(548)
Erdosteine		Expectorant	Sumichiral OA 5000	90/10-$CuSO_4$ 5.5 mM/ MeCN			1.06	1.3	(665)

			Sumichiral OA-6000	90/10-$CuSO_4$ 5.5 mM/MeCN			1.22	2.1	(665)
			Chiralpak AD	85/15/0.5-Hexane/EtOH/TFA			1.07	1	(665)
			Chiralpak AS	40/60/0.1-Hexane/i-PrOH/TFA			2.32	5.3	(665)
Guaifenesine		Expectorant	Chiralcel OD	85/15/0.1-Isohexane/EtOH/TFA			2.29	4.15	(546)
			Chiralcel OD	50/50-Hexane/EtOH/Et_2NH (0.5%)	R	S	3.88	1.27	(649)
			Chiralcel OD	80/20-Heptane/EtOH	R(−)	S(+)	3.02	5.98	(666)
			Chiralcel OD	EtOH			1.66		(667)
			Chiralcel OD	50/50-$MeCH_2OCF_2$-$CF(CF_3)_2$, $MeCH_2$-$O(CF_2)_3CF_3$/EtOH			1.85		(667)
			Chiralcel OD-H	95/5-Hexane/EtOH	R 11.18	S 15.21			(668)
			Chiralcel OD-R	80/20-$NaClO_4$ 0.4M/MeCN	R	S	1.3	1.27	(649)
Sobrerol (trans)		Expectorant	Cyclobond I	93/7-TEAA 0.05M, pH = 4.4/MeCN	(+)	(−)	1.08	1.55	(669)
Sobrerol (cis)			Cyclobond I	92.5/7/0.25-TEAA 0.05M, pH = 6.32/MeCN/i-PrOH	(−)	(+)	1.06	0.75	(669)
Doxapram HCl		Stimulant	Chiralcel OJ	90/8/2/0.1-Isohexane/1-PrOH/MeOH/Et_2NH			2.52		(618)

13. SENSORY ORGANS

This class of clinical drugs is a small class, actually only devoted to ophthalmological drugs and included antiglaucoma, miotic and mydriatic agents. Only seven enantiomeric pairs were evaluated (Figure 6).

The small number of separated enantiomers is not very representative of the CSP efficiency. For example, the macrocyclic antibiotic CSPs were not tried with any of these compounds, so this class of CSPs shows up with a undeserved zero score (Table 6).

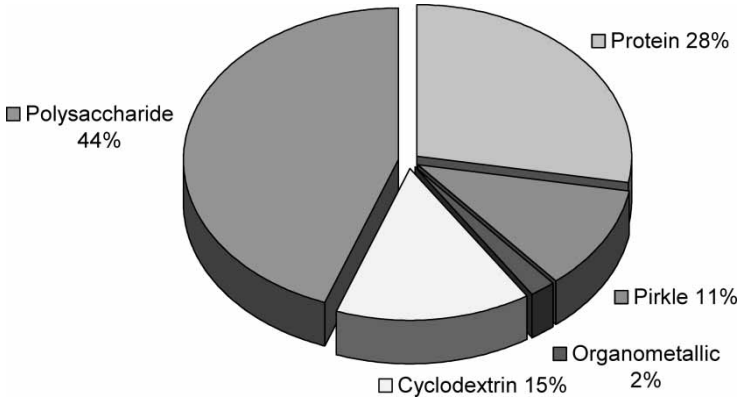
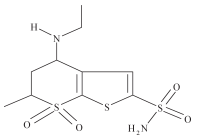
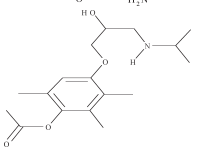
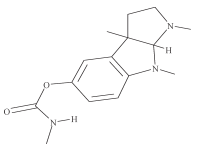


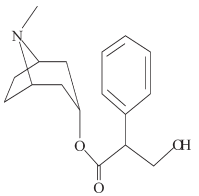
Figure 6. Chiral stationary phases able to separate the enantiomers of drugs acting on the sensory organs.

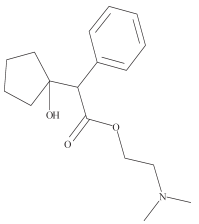
Table 6. ChirBase® enantioseparations of sensory organs and ophthalmologic drugs

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
(4S,6S)-(4S,6R)-14C-6-Dorzolamide		Antiglaucoma	Chiral-AGP	Phosphate buffer 0.1M, pH = 7	4S,6S	4S,6R	1.22		(670)
			Chiral-AGP	Phosphate buffer 0.1M, pH = 7	S,S	R,R	1.22		(671)
Metipranolol		Antiglaucoma	(R)-alpha-Burke 1	95/5-CH_2Cl_2/EtOH, $MeCO_2NH_4$ (0.5 g/l)			1.19	1.8	(672)
			Chiralcel OD	97/1/2-Hexane/EtOH/i-PrOH/Et_2NH (0.1%)			1.11	0.69	(673)
			Chiralcel OD	98/2-Hexane/i-PrOH			1.14	0.26	(673)
			Chiralcel OD	98/2-Hexane/i-PrOH/Et_2NH (0.1%)	R(+)	S(−)	1.25	2	(673)
			Chiral-AGP	95/5-Phosphate buffer 10 mM, pH = 5.5/MeOH			1.35	1.9	(674)
Physostigmine		Miotic	Chiralcel OD	95/5-Hexane/i-PrOH	S	R	1.11	0.7	(675)
			Chiralcel OJ	97/3-Hexane/EtOH	S	R	1.14	1.28	(675)

(*continued*)

Table 6. Continued

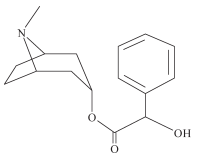
Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
Atropine		Mydriatic	Cyclobond I	98/2-H_2O, TEAA buffer (1%) pH = 4.1/MeCN	(+)	(−)	1.04	0.6	(676)
			CHIDEX-MKP	50/50-TEAA buffer 98 mM, pH = 4.67/ MeOH			5.62	4.46	(677)
			CHIDEX-SKP	70/30-Et_3N buffer (1%) pH = 5.11/MeOH			5.12	3.87	(678)
			Chiralcel OD	80/20/0.1-Hexane/i-PrOH/Et_2NH	(+)	(−)	1.62	2.3	(679)
			Chiralcel OD-H	80/20-Heptane/i-PrOH/Et_2NH (0.1 %)			1.9		(680)
			Chiralcel OD-H	80/20-Heptane/i-PrOH, $CF_3CO_2NH_4$ 0.1 mM			2.5		(680)
			Chiralcel OD-RH	85/15-$NaClO_4$,H_2O 0.5M, pH = 5.5/MeCN	26	29.5			(681)
			Chiralpak AD-H	80/20-Heptane/i-PrOH, $CF_3CO_2NH_4$ 0.1 mM			1.43		(680)
			Chiralpak AD-H	85/15/0.1-Hexane/ EtOH/$EtSO_3H$			1.16	3.14	(682)

			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH	1.29	3.6	(682)
			Chiral-AGP	99/1-Phosphate buffer 0.02M, pH = 7/i-PrOH, $C_7H_{15}CO_2Na$ 0.025 M	1.52	4	(683)
			Chiral-AGP	99/1-Phosphate buffer 0.02M, pH = 6/i-PrOH, R-Phenylbutyrate 0.0005M	1.59	1.9	(683)
			Chiral-AGP	99/1-Phosphate buffer 0.02M, pH = 6/i-PrOH, S-Phenylbutyrate 0.0005M	3.42	3.8	(683)
			EnantioPac	Phosphate buffer 0.02M, pH = 7, $C_7H_{15}CO_2H$ 0.01M	1.64		(684)
Cyclopentolate		Mydriatic	Chirex 3014	75/20/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)	1.13		(685)
			Chirex 3020	60/35/5-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)	1.1		(685)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20/1)	1.07		(685)

(*continued*)

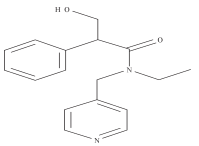
Table 6. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			Ceramospher Chiral Ru-1	99/1-MeOH/Et_3N			1.44		(686)
			Chiralcel OD	90/10-Hexane/i-PrOH			2.83	2.74	(687)
			Chiralcel OD	80/20/0.2/0.1-Hexane/ i-PrOH/H_2O/$MeCO_2H$			1.22	0.4	(688)
			Chiralcel OD	80/20/0.2/0.1-Hexane/ i-PrOH/H_2O/(+)-CamphorSO_3H 1.2 mM			1.44	1.4	(688)
			Chiralcel OD	80/20/0.2/0.1-Hexane/ i-PrOH/H_2O/(−)-CamphorSO_3H 1.2 mM			1.61	2.4	(688)
			Chiral-AGP	97/3-Phosphate buffer 0.01M, pH = 7/1-PrOH			1.5	1	(689)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/TBAP 0.003M			3.86		(684)
			EnantioPac	92/8-Phosphate buffer 0.02M, pH = 7/i-PrOH			1.92		(684)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/NaCl 0.1M/ EtOH 0.44M			1.95		(690)
			EnantioPac	Phosphate buffer 0.02M, pH = 7/NaCl 0.1M/ 1,2-Butanediol 0.25M			1.86		(690)

			EnantioPac	Phosphate buffer 0.02M pH = 7/$C_7H_{15}CO_2H$ 0.05M			1.5		(690)
Homatropine		Mydriatic	Cyclobond I	96/4-H_2O, TEAA buffer (1%) pH = 4.1/MeOH	(+)	(−)	1.07	1.4	(676)
			ChiraDex	90/10/0.4/0.3-MeCN/MeOH/$MeCO_2H$/Et_3N			1.14	0.89	(691)
			Chiralcel OD	80/20/0.1-Hexane/i-PrOH/Et_2NH	(+)	(−)	3.13	5.78	(679)
			Chiralcel OD	50/50-MeOH/EtOH			1.63	3.31	(692)
			Chiralcel OD	MeCN			1.42	2.24	(692)
			Chiralcel OD	90/10-MeCN/i-PrOH			1.51	2.52	(692)
			Chiralcel OJ	95/4.975/0.025-Hexane/EtOH/Et_3N			1.25	0.95	(693)
			Chiralcel OJ	95/4.975/0.0094/0.0156-Hexane/EtOH/TFA/Et_3N			1.15	0.52	(693)
			Chiralcel OJ	95/5-Hexane/EtOH			1.12	0.4	(693)
			Chiralpak AD-H	85/15/0.1-Hexane/EtOH/Et_2NH			1.21	3.69	(681)
			Chiral-AGP	99/1-Phosphate buffer pH = 7/i-PrOH.			1.57	2.2	(683)
			EnantioPac	Phosphate buffer 0.02M, pH = 7, $C_7H_{15}CO_2H$ 0.01M			1.63		(684)

(*continued*)

Table 6. Continued

Drug Name	Structure	Medical Class	CSP Trade Name	Mobile Phase	First	Second	α	Rs	Ref.
			(S,S) Whelk-O1	75/25/0.1-Hexane/i-PrOH/Et_3N			1.42		(694)
			Chirex 3022	55/35/10-Hexane/$ClCH_2CH_2Cl$/EtOH-TFA (20:1)			1.1		(685)
Tropicamide		Mydriatic	Cyclobond I SN	70/30-TEAA buffer (1%) pH = 7.1/MeCN			1.2		(695)
			Cyclobond I 2000 SN	70/30-TEAA buffer pH = 4.5/MeCN			1.22	1.1	(696)
			Cyclobond I 2000 SN	70/30-Acetate buffer pH = 4.5/MeCN			1,22	1,1	(697)

14. VARIOUS DRUGS

This chapter lists all unclassified compounds. The listed drugs are used in thyroid therapy or as poison antidote, antioxidant, detoxifying agent, nutrient and contrast media.

This class of coumpounds has only ten enantiomeric pairs including three natural amino-acids. The macrocyclic CSPs excel in separating the enantiomers of natural aminoacids, which explains the high weight of this class of CSP shown by Figure 7 (Table 7).

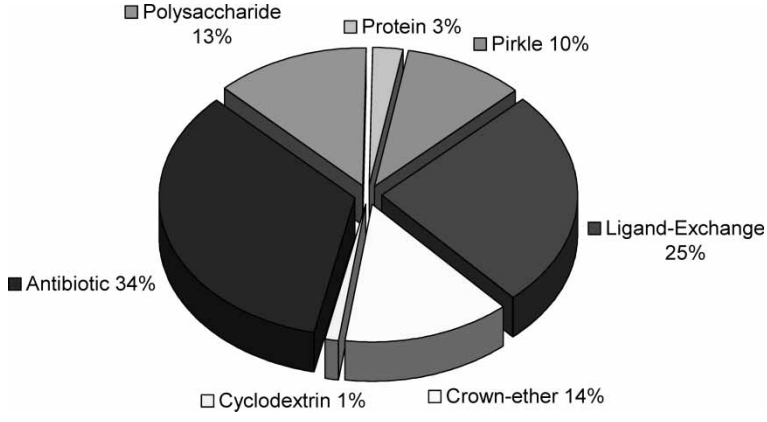
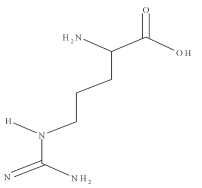
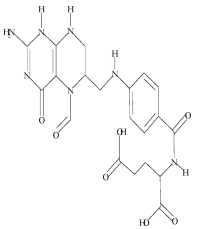


Figure 7. Chiral stationary phases able to separate the enantiomers of the various drugs that could not be filed in other ATC classes.

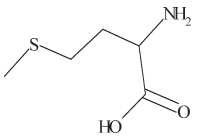
Table 7. ChirBase® enantioseparations of various drugs

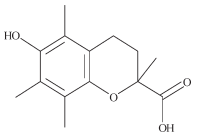
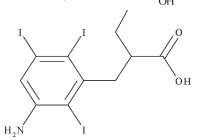
Drug name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Arginine		Antidote	Sumichiral OA-8000	85/15/0.2/0.5-Hexane/EtOH/H_2O/TFA			1.32	1.7	(698)
			Sumichiral OA-5000	$CuSO_4$ 1 mM	L	D	1.9		(699)
			Sumichiral OA 5000	85/15-H_2O/MeOH, $CuSO_4$ 2 mM	L 2.2	D 2.4			(700)
			Sumichiral OA-6000	H_2O, $CuSO_4$ 1 mM	D	L	4.6		(701)
			Chirosolve D-Pipec.	$CuSO_4$ 0.5 mM			1.55	0.91	(702)
			Crownpak CR(+)	$HClO_4$ 0.01M	D	L	2.39	5.01	(703)
			Opticrown RCA(+)	50/50-H_2O, H_2SO_4 10 mM/MeOH	L	D	1.48	1.91	(704)
			Chirobiotic T	40/60-H_2O pH = 3.8, $MeCO_2H$/MeOH	L	D	1.4	2.1	(705)
			Chirobiotic T	70/30-NaH_2PO_4 buffer 50 mM, pH = 5/MeOH				1.5	(706)
Leucovorin		Antidote	Supelcosil-LC-(R)-phenyl urea	56/37.5/6.5-Hexane/Dioxane/MeOH	S	R	1.14	1.3	(707)
			Chirobiotic T	15/85-H_2O, $MeCO_2$-NH_4 0.025M/MeOH			2.36	1.2	(708)

Chirobiotic T	60/40-H_2O/MeOH			1.92	3.4	(708)
Chirobiotic T	40/60-H_2O, TEAA buffer pH = 4.1/MeOH			2.12	3.5	(708)
Chirobiotic T	100/0.1/0.1-MeOH/Et_3N/$MeCO_2H$			1.81	2.8	(708)
Chirobiotic T	40/60-H_2O, $MeCO_2H$ buffer pH = 3.8/MeOH			1.9	3.6	(708)
Chirobiotic T	100/0.1/0.1-MeOH/TEAA/$MeCO_2H$			1.52	1.5	(709)
Chirobiotic T	55/45/0.3/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			4.46	3.44	(710)
Chirobiotic TAG	55/45/0.3/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			4.35	4.1	(710)
Chirobiotic MTAG	55/45/0.3/0.2-MeCN/MeOH/$MeCO_2H$/Et_3N			6.44	4.47	(710)
Chiralcel OC	MeOH	R	S	1.27	2.1	(707)
Chiral-Protein-2	98/2-Na_2HPO_4 0.2M, pH = 6.2/1-PrOH	S,S	R,S	1.5	2.25	(711)
Resolvosil BSA	Sodium Phosphate buffer 5 mM, pH = 7.4	S	R		1.65	(712)
Resolvosil BSA-7	99/1-Na_2HPO_4 buffer 50 mM, pH = 5.2/1-PrOH	S	R	1.43	1.64	(713)
Resolvosil BSA 10	Phosphate buffer 0.2M, pH = 5/Cyclamic acid 7 mM	S	R	1.33	0.91	(714)

(*continued*)

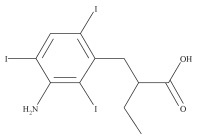
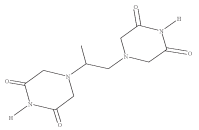
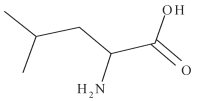
Table 7. Continued

Drug name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Methionine		Antidote	Sumichiral OA-8000	85/15/0.2/0.5-Hexane/EtOH/H_2O/TFA			1.26	3.01	(698)
			Sumichiral OA-5000	85/15-$CuSO_4$ 2 mM/MeOH	L	D	1.28		(699)
			Sumichiral OA-5500	H_2O, CuSO4 1 mM	D	L	1.3		(715)
			Sumichiral OA-6000	85/15-H_2O, $CuSO_4$ 2 mM/MeCN	D	L	2.6		(701)
			Chirosolve D-Pipec.	$CuSO_4$ 0.5 mM			1.32	0.56	(702)
			MCI CRS10WD	$CuSO_4$ 2.0 mM	L	D	1.59	5	(716)
			Crownpak CR(+)	$HClO_4$ 0.01M	D	L	2.65	10.8	(703)
			Crownpak CR(+)	90/10-$HClO_4$ pH = 1.5/MeOH	(+)	(−)		1.3	(717)
			Crownpak CR(+)	H_2O, $HClO_4$ pH = 1.9	D	L	2.1	3.4	(718)
			Opticrown RCA(+)	50/50-MeOH/H_2O, H_2SO_4 10 mM	L	D	1.39	2.06	(704)
			Chirobiotic T	60/40-MeOH/H_2O	L	D	2.2	3.3	(705)
			Chirobiotic T	20/80-$MeCO_2NH_4$ 6.5 mM pH = 5.5/MeCN	21.85	26.67			(719)
			Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1/MeOH			2.1	4.3	(720)

			Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1/MeOH, $(MeCO_2)_2Cu$ 0.5 mM	1.9	2.4	(720)
			Chirobiotic T	20/80-H_2O/MeOH, $CF_3CO_2NH_4$ (1%)	1.57	5.24	(721)
			Chiralpak AD	90/10-Hexane/EtOH, $C_4H_9SO_3H$ (0.2%)	1.29	3.13	(722)
			Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%) cyclohexylamine (0.1%)	1.25	3.3	(722)
			Chiralpak AD	18/1/1-Hexane/EtOH/MeOH, $C_2H_5SO_3H$ (0.2%)	1.19	2.2	(722)
Trolox		Antioxidant	(S.S) Whelk-O1	95/5/0.5-Hexane/i-PrOH/TFA	1.2		(723)
Iopanic acid		Contrast media	Chirobiotic T	80/20-TEAA buffer (0.01%) pH = 4.1/MeOH	1.1	0.6	(724)

(*continued*)

Table 7. Continued

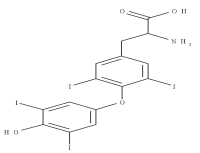
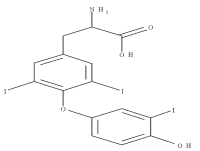
Drug name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Iopanoic acid		Contrast media	Chiralcel OD	96.5/3/0.5-Hexane/ EtOH/$MeCO_2H$	R(−)	S(+)		1.05	(725)
Dexrazoxane		Detoxifying agent	Chiralcel OD	EtOH	R(−)	S(+)	1.17	1.12	(726)
			Chiralcel OD	15/85-Hexane/EtOH,-MeOH,i-PrOH (5,5,90)	R(−) 16.5	S(+) 18.5			(727)
Leucine		Nutrient	Sumichiral OA-8000	85/15/0.2/0.5-Hexane/ EtOH/H_2O/TFA			1.14	1.64	(698)
			Sumichiral OA 5000	85/15-$CuSO_4$ 2 mM/ MeOH	L	D	1.54		(699)
			Sumichiral OA 5000	85/15-H_2O, CuSO4 2 mM/MeOH	L 13.6	D 20.2			(700)
			Sumichiral OA 5500	H_2O. $CuSO_4$ 1 mM	L	D	1.09		(715)
			Sumichiral OA-6000	85/15-H_2O. $CuSO_4$ 2 mM/MeCN	D	L	2.22		(701)
			Chiralpak (WH)	$CuSO_4$ 0.25 mM	L 35.57	D 37.91			(728)
			Nucleosil Chiral-1	$CuSO_4$ 0.005M			2.1		(729)
			Chirex 3126	10/90-$CuSO_4$ 2 mM/ MeCN	L 32.5	D 36.8			[730]
			Chirex D-penicillamin	17/3-H_2O, $CuSO_4$ 2 mM/MeOH	L 11.76	D 14.99			[731]

Chirosolve D-Pipec.	$CuSO_4$ 0.5 mM	D	L	1.67	0.75	(702)
MCI CRS10WD	$CuSO_4$ 2.0 mM	L	D	1.91	7.1	(716)
MCI CRS10W	H_2O. $CuSO_4$ 2.0 mM. pH = 5.15	D	L	1.97	4.6	(203)
Chiralpak MA(+)	$CuSO_4$ 2 mM	D 15.8	L 33			(730)
Crownpak CR(−)	$HClO_4$ pH = 1.5	(+) 4.5	(−) 7			(343)
Crownpak CR(+)	HClO4 0.01M	D	L	1.96	8.1	(703)
Crownpak CR(+)	H_2O, $HClO_4$ pH = 1.5	D	L	2.58	11.99	(205)
Crownpak CR(+)	90/10-$HClO_4$ pH = 1.5/MeOH	D	L		2.9	(717)
Opticrown RCA(+)	50/50-H_2O. H_2SO_4 10 mM/MeOH	L	D	1.32	1.42	(704)
Chirobiotic T	40/60-H_2O, $MeCO_2H$ buffer pH = 3.8/MeOH			2.42	2.6	(708)
Chirobiotic T	40/60-H_2O/MeOH			2.28	2.8	(709)
Chirobiotic T	15/85-H_2O. $MeCO_2NH_4$ 0.025M/MeOH	L	D	3.09	5.5	(709)
Chirobiotic T	20/80-$MeCO_2NH_4$ 6.5 mM pH = 5.5/ MeCN	18.77	23.52			(719)
Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1/ MeOH			2.2	4.4	(211)

(*continued*)

Table 7. Continued

Drug name	Structure	Medical class	CSP Trade Name	Mobile phase	First	Second	α	Rs	Ref.
Leucine			Chirobiotic T	40/60-H_2O, TEAA buffer 18 mM, pH = 4.1 $(MeCO_2)_2Cu$ 0.5 mM			2	2.7	(211)
			Chirobiotic T	20/80-H_2O/MeCN			1.29	2.4	(211)
			Chirobiotic T	20/80-D_2O/MeCN			1.29	2.5	(211)
			Chirobiotic T	MeOH				2.2	(351)
			Chirobiotic T	40/60-H_2O, TEEA (1%) pH = 4.1/MeCN				2.09	(351)
			Chiralpak AD	90/10-Hexane/i-PrOH, $C_2H_5SO_3H$ (0.2%)			1.52	3.91	(722)
			Chiralpak AD	90/10-Hexane/EtOH, $C_2H_5SO_3H$ (0.2%) n-$BuNH_2$ (0.1%)			1.36	2.85	(722)

			Chiralpak AD	18/1/1-Hexane/EtOH/MeOH, $C_2H_5SO_3H$ (0.2%)			1.25	2.02	(722)
Levothyroxine		Thyroid therapy	Chiral AX QN-1	40/60-H_2O, $MeCO_2$-NH_4 buffer 50 mM, pH = 4.5 ($MeCO_2H$)/MeCN	D	L	1.28	2.32	(732)
			Ultron ES-OVM	100/15/5-KH_2PO_4 20 mM. pH = 6.7-6.8/MeCN/MeOH	R(+)	S(−)	1.32	2.2	(733)
			Ultron ES-OVM	100/20-KH2PO4 20 mM pH = 6.7-6.8/MeCN			1.16	1.29	(733)
Liothyronine		Thyroid therapy	Chiral AX QN-1	40/60-H_2O, $MeCO_2$-NH_4 buffer 50 mM, pH = 4.5 ($MeCO_2H$)/MeCN	D	L	1.16	1.28	(732)
			Cyclobond I SP	85/15-TEAA (1%) pH = 4.1/MeCN			1.05	0.65	(734)

CONCLUSION

Figure 8 gathers the results obtained in all ATC classes. The polysaccharide based CSPs are clearly the most efficient CSPs with the broader application spectrum. The Pirkle or π-complex and protein based CSPs follow with similar 16–17% efficiency. The macrocyclic antibiotic and cyclodextrin CSPs are next with more than 10%. The four remaining types of CSPs share the 8% remaining enantio-separations.

New bonded polysaccharide CSPs were recently marketed along with densely grafted antibiotic CSPs. These additions will likely maintain the leading position of the polysaccharide CSP and increase the share of the antibiotic CSPs at the expense of the protein share.

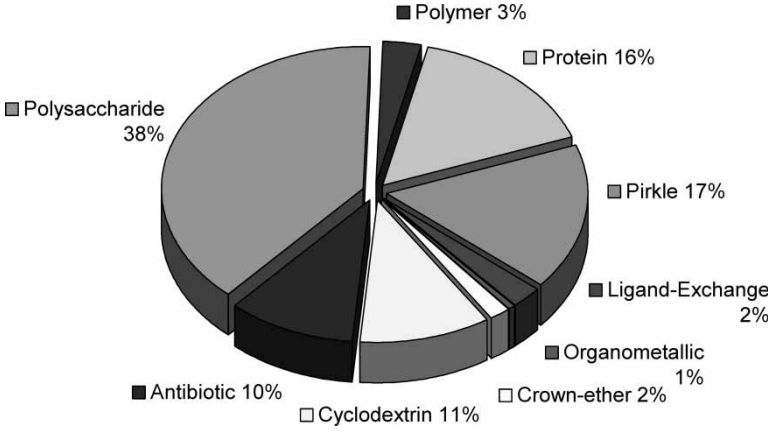


Figure 8. Chiral stationary phases able to separate the enantiomers found in the Chir-Base database and belonging to the thirteen ATC classes.

Table 8. Alphabetic index of enantiomeric drugs (including drugs listed in Part I)

Drug name	Therapeutic category	ATC class	ATC Code
Acebutolol	Beta-blocker	Cardiovascular system	C07AB04
Acenocoumarol	Antithrombotic	Blood and blood forming organs	B01AA07
Acetyl-leucine	Antivertigo	Nervous system	N07CA04
Adenallene	Antiviral	Antiinfectives for systemic use	J05AC
Afloqualone	Muscle relaxant	Musculo-skeletal system	M01A
Alfuzosin	Urological	Genito-urinary system and sex hormones	G04CA01
Alimemazine	Antihistaminic	Respiratory system	R06AD01
Allethrin	Ectoparasiticide	Antiparasitic, insecticides drugs and repellents	P03AC02
Almokalant	Antiarrhythmic	Cardiovascular system	C01B
Alprenolol	Beta-blocker	Cardiovascular system	C07AA01
Altizide	Thiazide diuretic	Cardiovascular system	C04EA04
Ambucetamide	Urological	Genito-urinary system and sex hormones	G04
Amfepramone	Antiobesity	Alimentary tract and metabolism	A08AA03
Aminogluthetimide	Hormone antagonist	Antineoplastic and immunomodulating agents	L02BG01
Amisulpride	Antipsychotic	Nervous system	N05AL05
Amlodipine	Calcium channel blocker	Cardiovascular system	C08CA01
Amphetamine	Psychostimulant	Nervous system	N06BA01
Apomorphine	Antiparkinson/dopaminergic	Nervous system	N04BC07
Arginine	Antidote	Various drugs	B05XB01
Arotinolol	Beta-blocker	Cardiovascular system	C07A
Arotinolol	Alpha, beta-blocker	Cardiovascular system	C07CG
Articaine	Local anesthetic	Nervous system	N01BB08
Aspartic acid	Roborant	Musculo-skeletal system	B03AA09

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Atenolol	Beta-blocker	Cardiovascular system	C07AB03
Atropine	Mydriatic	Sensory organs	S01FA01
Azalanstat	Serum lipid reducing agent	Cardiovascular system	C10A
Azelastine	Antihistaminic	Respiratory system	R06AX19
Baclofen	Muscle relaxant	Musculo-skeletal system	M03BX01
Bambuterol	Adrenergic	Respiratory system	R03CC12
Becliconazole	Antifungal	Dermatological drugs	D01A
Bemetizide	Thiazide diuretic	Cardiovascular system	C03AA
Benazepril	Ace Inhibitor	Cardiovascular system	C09AA07
Bendroflumethiazide	Thiazide diuretic	Cardiovascular system	C03AA01
Benfluorex	Serum lipid reducing agent	Cardiovascular system	C10AX04
Benidipine	Calcium channel blocker	Cardiovascular system	C08CA15
Benoxaprofen	Anti-inflammatory	Musculo-skeletal system	M01AE06
Benzobarbital	Antiepileptic	Nervous system	N03A
Bepridil	Calcium channel blocker	Cardiovascular system	C08EA02
Beraprost	Antithrombotic	Blood and blood forming organs	B01AC19
Betaxolol	Beta-blocker	Cardiovascular system	C07AB05
Bevantolol	Beta-blocker	Cardiovascular system	C07AB06
Bicalutamide	Hormone antagonist	Antineoplastic and immunomodulating agents	L02BB03
Bifonazole	Antifungal	Dermatological drugs	D01AC10
Biotin	Vitamin	Alimentary tract and metabolism	A11HA05
Biperiden	Antiparkinson/Anticholinergic	Nervous system	N04AA02
Bisoprolol	Beta-blocker	Cardiovascular system	C07AB07
Bopindolol	Beta-blocker	Cardiovascular system	C07AA17
Brefanolol	Alpha, beta-blocker	Cardiovascular system	C07CG

Bromazine	Antihistaminic	Respiratory system	R06AA01
Brompheniramine	Antihistaminic	Respiratory system	R06AB01
Bucumolol	Beta-blocker	Cardiovascular system	C07A
Bufuralol	Alpha, beta-blocker	Cardiovascular system	C07CG
Bunitrolol	Beta-blocker	Cardiovascular system	C07A
Bunolol	Beta-blocker	Cardiovascular system	S01ED03
Bupivacaine	Local anesthetic	Nervous system	N01BB01
Bupranolol	Beta-blocker	Cardiovascular system	C07AA19
Bupropion	Antidepressant	Nervous system	N07BA02
Butibufen	Anti-inflammatory	Musculo-skeletal system	M01A
Butizide	Thiazide diuretic	Cardiovascular system	C03AA
Butorphanol	Opioid analgesic	Nervous system	N02AF01
Calanolide	Antiviral	Antiinfectives for systemic use	J05A
Camazepam	Anxiolytic	Nervous system	N05BA15
Carazolol	Beta-blocker	Cardiovascular system	C07A
Carbidopa	Antiparkinson/dopaminergic	Nervous system	N04BA02
Carbinoxamine	Antihistaminic	Respiratory system	R06AA08
Carburazepam	Anxiolytic	Nervous system	N05BA
Carbuterol	Adrenergic	Respiratory system	R03CC10
Carprofen	Anti-inflammatory	Musculo-skeletal system	M01A
Carteolol	Beta-blocker	Cardiovascular system	C07AA15
Carvedilol	Beta-blocker	Cardiovascular system	C07AG02
Celiprolol	Beta-blocker	Cardiovascular system	C07AB08
Cetirizine	Antihistaminic	Respiratory system	R06AE07
Chloramphenicol	Antibacterial	Antiinfectives for systemic use	J01BA01
Chlorcyclizine	Antihistaminic	Respiratory system	R06AE04

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Chlormezanone	Muscle relaxant	Musculo-skeletal system	M03BB02
Chloroquine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BA01
Chlorpheniramine	Antihistaminic	Respiratory system	R06AB02
Chlorprenaline	Adrenergic	Respiratory system	R03C
Chlortalidone	Low-ceiling diuretic	Cardiovascular system	C03BA04
Cianidanol	Antidiarrheal	Alimentary tract and metabolism	A07XA05
Cicletanine	Low-ceiling diuretic	Cardiovascular system	C03BX03
Cicloprolol	Beta-blocker	Cardiovascular system	C07A
Cinchonine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BX
Ciprofibrate	Serum lipid reducing agent	Cardiovascular system	C10AB08
Cisapride	Propulsive	Alimentary tract and metabolism	A03FA02
Citalopram	Antidepressant	Nervous system	N06AB04
Citrulline	Treatment of asthenia	Nervous system	N07
Cizolirtine	Opioid analgesic	Nervous system	N02A
Clemastine	Antihistaminic	Respiratory system	R06AA04
Clenbuterol	Adrenergic	Respiratory system	R03CC13
Clevidipine	Calcium channel blocker	Cardiovascular system	C08C
Clidanac	Anti-inflammatory	Musculo-skeletal system	M01A
Clidinium	Antiparkinson/Anticholinergic	Nervous system	A03CA02
Clinafloxacin	Antibacterial	Antiinfectives for systemic use	J01MB
Clofedanol	Cough suppressant	Respiratory system	R05DB10
Cloperastine	Cough suppressant	Respiratory system	R05DB21
Clopidogrel	Antithrombotic	Blood and blood forming organs	B01AC04
Clorazepate	Anxiolytic	Nervous system	N05BA05
Cloxazolam	Anxiolytic	Nervous system	N05BA22

Cocaine	Local anesthetic	Nervous system	N01BC01
Cromakalim	Peripheral vasodilator diuretic	Cardiovascular system	C04A
Cyamemazine	Antipsychotic	Nervous system	N05AA06
Cyclopenthiazide	Thiazide diuretic	Cardiovascular system	C03AA07
Cyclopentobarbital	Sedative-hypnotic	Nervous system	N05C
Cyclopentolate	Mydriatic	Sensory organs	S01FA04
Cyclophosphamide	Alkylating agent	Antineoplastic and immunomodulating agents	L01AA01
Cyclothiazide	Thiazide diuretic	Cardiovascular system	C03AA09
Cyfluthrin	Insecticide	Antiparasitic, insecticides drugs and repellents	P03BA01
Cypermethrin	Insecticide	Antiparasitic, insecticides drugs and repellents	P03BA02
Cytallene	Antiviral	Antiinfectives for systemic use	J05A
Decamethrin	Insecticide	Antiparasitic, insecticides drugs and repellents	P03BA03
Denopamine	Cardiac stimulant	Cardiovascular system	C01CA
Deramciclane	Anxiolytic	Nervous system	N05BA
Dexpanthenol	Vitamin	Alimentary tract and metabolism	A11HA30
Dexrazoxane	Detoxifying agent	Various drugs	V03AF02
Dextromethorphan	Cough suppressant	Respiratory system	R05DA09
Dextropropoxyphene	Opioid analgesic	Nervous system	N02AC04
Dienogest	Contraceptive	Genito-urinary system and sex hormones	G03FA15
Diltiazem	Calcium channel blocker	Cardiovascular system	C08DB01
Dimetindene	Antihistaminic	Respiratory system	R06AB03
Dimetotiazine	Antimigraine	Nervous system	N02CX05
Dimiracetam	Psychostimulant	Nervous system	N06B
Diperodone	Local anesthetic	Nervous system	N01B
Diprafenone	Antiarrhythmic	Cardiovascular system	C01B
Disopyramide	Antiarrhythmic	Cardiovascular system	C01BA03

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Dixyrazine	Antipsychotic	Nervous system	N05AB01
Dobutamine	Cardiac stimulant	Cardiovascular system	C01CA07
Dopropizine	Cough suppressant	Respiratory system	R05D
Dorzolamide	Antiglaucoma	Sensory organs	S01EC03
Doxapram HCl	Stimulant	Respiratory system	R07AB01
Doxazosin	Antiadregenic agent	Cardiovascular system	C02CA04
Doxylamine	Antihistaminic	Respiratory system	R06AA09
Econazole	Antifungal	Dermatological drugs	D01AC03
Efaroxan	Antiadregenic agent	Cardiovascular system	C02CC
Enciprazine	Anxiolytic	Nervous system	N05BA
Epanolol	Beta-blocker	Cardiovascular system	C07AB10
Eperisone	Muscle relaxant	Musculo-skeletal system	M03B
Epinephrine	Adrenergic	Respiratory system	R03AA01
Epitizide	Thiazide diuretic	Cardiovascular system	C03AA
Erdosteine	Expectorant	Respiratory system	R05CB15
Estradiol	Estrogen	Genito-urinary system and sex hormones	G03CA03
Estriol	Estrogen	Genito-urinary system and sex hormones	G03CA04
Estrone	Estrogen	Genito-urinary system and sex hormones	G03CA07
Ethinylestradiol	Estrogen	Genito-urinary system and sex hormones	G03CA01
Ethosuximide	Antiepileptic	Nervous system	N03AD01
Ethotoin	Antiepileptic	Nervous system	N03AB01
Ethynodiol	Contraceptive	Genito-urinary system and sex hormones	G03A
Etidocaine	Local anesthetic	Nervous system	N01BB07
Etodolac	Anti-inflammatory	Musculo-skeletal system	M01AB08
Etomidate	General anesthetic	Nervous system	N01AX07

Etozolin	High-ceiling diuretic	Cardiovascular system	C03CX01
Fadrozole	Hormone antagonist	Antineoplastic and immunomodulating agents	L02BB
Felodipine	Calcium channel blocker	Cardiovascular system	C08CA02
Fendiline	Calcium channel blocker	Cardiovascular system	C08EA01
Fenfluramine	Antiobesity	Alimentary tract and metabolism	A08AA02
Fenoldopam	Cardiac stimulant	Cardiovascular system	C01CA19
Fenoprofen	Anti-inflammatory	Musculo-skeletal system	M01AE04
Fenticonazole, nitrate	Antifungal	Dermatological drugs	D01AC12
Fexofenadine	Antihistaminic	Respiratory system	R06AX26
Flecainide	Antiarrhythmic	Cardiovascular system	C01BC04
Flezelastine	Antihistaminic	Respiratory system	R06A
Flobufen	Anti-inflammatory	Musculo-skeletal system	M01A
Flosequinan	Vasodilator	Cardiovascular system	C01DB01
Flumecinol	Liver therapy	Alimentary tract and metabolism	A05BA
Fluoxetine	Antidepressant	Nervous system	N06AB03
Flurbiprofen	Anti-inflammatory	Musculo-skeletal system	M01AE09
Flutazolam	Anxiolytic	Nervous system	N05BA
Fluvastatin	Serum lipid reducing agent	Cardiovascular system	C10AA04
Formoterol	Adrenergic	Respiratory system	R03AC13
Gallopamil	Calcium channel blocker	Cardiovascular system	C08DA02
Gemifloxacin	Antibacterial	Antiinfectives for systemic use	J01MA15
Glutamic acid	Digestive	Alimentary tract and metabolism	A09AB01
Glutamine	Diet	Alimentary tract and metabolism	A16AA03
Glutethimide	Sedative-hypnotic	Nervous system	N05CE01
Glycopyrronium	Gastrointestinal disorder	Alimentary tract and metabolism	A03AB02
Guaifenesin	Expectorant	Respiratory system	R05CA03

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Halofantrine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BX01
Hexobarbital	General anesthetic	Nervous system	N01AF01
Homatropine	Mydriatic	Sensory organs	S01FA05
Homochlorcyclizine	Antihistaminic	Respiratory system	R06A
Huperzine A	Psychostimulant	Nervous system	N06B
Hydroxyzine	Anxiolytic	Nervous system	N05BB01
Ibuprofen	Anti-inflammatory	Musculo-skeletal system	M01AE01
Ibuproxam	Anti-inflammatory	Musculo-skeletal system	M01AE13
Idazoxan	Antiadregenic agent	Cardiovascular system	C02CC
Idrapril	Ace Inhibitor	Cardiovascular system	C09AA
Ifosfamide	Alkylating agent	Antineoplastic and immunomodulating agents	L01AA06
Imidapril	Ace Inhibitor	Cardiovascular system	C09AA16
Imoxiterol	Adrenergic	Respiratory system	R03A
Indapamide	Low-ceiling diuretic	Cardiovascular system	C03BA11
Indenolol	Beta-blocker	Cardiovascular system	C07A
Indinavir	Antiviral	Antiinfectives for systemic use	J05AE02
Indobufen	Antithrombotic	Blood and blood forming organs	B01AC10
Indoprofen	Anti-inflammatory	Musculo-skeletal system	M01AE10
Iopanic acid	Contrast media	Various drugs	V08A
Iopanoic acid	Contrast media	Various drugs	V08AC06
Irinotecan	Antineoplatic	Antineoplastic and immunomodulating agents	L01XX19
Isamoltane	Anxiolytic	Nervous system	N05BA
Isoconazole	Antifungal	Dermatological drugs	D01AC05
Isoetharine	Adrenergic	Respiratory system	R03A
Isoprenaline	Adrenergic	Respiratory system	R03AB02

Isoxsuprine	Peripheral vasodilator diuretic	Cardiovascular system	C04AA01
Isradipine	Calcium channel blocker	Cardiovascular system	C08CA03
Ketazolam	Anxiolytic	Nervous system	N05BA10
Ketoconazole	Antifungal	Dermatological drugs	D01AC08
Ketoprofen	Anti-inflammatory	Musculo-skeletal system	M01AE03
Ketorolac	Anti-inflammatory	Musculo-skeletal system	M01AB15
Labetalol A	Alpha, beta-blocker	Cardiovascular system	C07AG01
Labetalol B	Alpha, beta-blocker	Cardiovascular system	C07CG01
Lansoprazole	gastro-oesophageal reflux disease (G.O.R.D).	Alimentary tract and metabolism	A02BC03
Leminoprazole	G.O.R.D.	Alimentary tract and metabolism	A02BC
Lercanidipine	Calcium channel blocker	Cardiovascular system	C08CA13
Leucine	Nutrient	Various drugs	V06B
Leucovorin	Antidote	Various drugs	V03AB
Levamisole	Antinematodal	Antiparasitic, insecticides drugs and repellents	P02CE01
Levocarnitine	Antihyperlipoproteinemic	Alimentary tract and metabolism	A16AA01
Levodopa	Antiparkinson/dopaminergic	Nervous system	N04BA01
Levosimendan	Cardiac stimulant	Cardiovascular system	C01CX08
Levothyroxine	Thyroid therapy	Various drugs	H03AA01
Lifibrol	Serum lipid reducing agent	Cardiovascular system	C10A
Liothyronine	Thyroid therapy	Various drugs	H03AA02
Lisuride	Antimigraine	Nervous system	N02CA07
Lorazepam	Anxiolytic	Nervous system	N05BA06
Lorglumide	Hormone antagonist	Antineoplastic and immunomodulating agents	L02BB
Lormetazepam	Sedative-hypnotic	Nervous system	N05CD06
Losigamone	Antiepileptic	Nervous system	N03A

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Malathion	Ectoparasiticide	Antiparasitic, insecticides drugs and repellents	P03AX03
Mandelic acid	Urinary antiseptic	Antiinfectives for systemic use	J01XX06
Manidipine	Calcium channel blocker	Cardiovascular system	C08CA11
Medetomidine	Sedative-hypnotic	Nervous system	N05CM18
Mefloquine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BC02
Mefruside	Low-ceiling diuretic	Cardiovascular system	C03BA05
Mepenzolate	Gastrointestinal disorder	Alimentary tract and metabolism	A03AB12
Mephenesin	Muscle relaxant	Musculo-skeletal system	M03BX06
Mephenytoin	Antiepileptic	Nervous system	N03AB04
Mepindolol	Beta-blocker	Cardiovascular system	C07AA14
Mepivacaine	Local anesthetic	Nervous system	N01BB03
Mequitamium iodide	Antihistaminic	Respiratory system	R06A
Mequitazine	Antihistaminic	Respiratory system	R06AD07
Mesoridazine	Antipsychotic	Nervous system	N05AC03
Mestranol	Estrogen	Genito-urinary system and sex hormones	G03CA
Mesuximide	Antiepileptic	Nervous system	N03AD03
Metamfetamine	Psychostimulant	Nervous system	N06BA03
Methadone	Analgesic, Narcotic	Nervous system	N07BC02
Methaqualone	Sedative-hypnotic	Nervous system	N05CM01
Methionine	Antidote	Various drugs	V03AB26
Methocarbamol	Muscle relaxant	Musculo-skeletal system	M03BA03
Methohexital	General anesthetic	Nervous system	N01AF02
Methotrexate	Antimetabolite	Antineoplastic and immunomodulating agents	L01BA01
Methoxamine	Cardiac stimulant	Cardiovascular system	C01CA10
Methoxyphenamine	Adrenergic	Respiratory system	R03CB02

Methylchlothiazide	Thiazide diuretic	Cardiovascular system	C03AA
Methylphenidate	Psychostimulant	Nervous system	N06BA04
Methylphenobarbital	Antiepileptic	Nervous system	N03AA01
Metipranolol	Antiglaucoma	Sensory organs	S01ED04
Metixene	Antiparkinson/Anticholinergic	Nervous system	N04AA03
Metofoline	Non-narcotic analgesic	Nervous system	N02B
Metolazone	Low-ceiling diuretic	Cardiovascular system	C03BA08
Metomidate	Immunosuppressive agent	Antineoplastic and immunomodulating agents	L04AA
Metoprolol	Beta-blocker	Cardiovascular system	C07AB02
Mexiletine	Antiarrhythmic	Cardiovascular system	C01B
Mianserin	Antidepressant	Nervous system	N06AX03
Miconazole	Antifungal	Dermatological drugs	D01AC02
Midodrine	Cardiac stimulant	Cardiovascular system	C01CA17
Modafinil	Psychostimulant	Nervous system	N06BA07
Montelukast	Adrenergic	Respiratory system	R03DC03
Moprolol	Beta-blocker	Cardiovascular system	C07A
Morsuximide	Antiepileptic	Nervous system	N03A
Mosapramine	Antipsychotic	Nervous system	N05AX10
Mosapride	Antipsychotic	Nervous system	N05A
Nadolol	Beta-blocker	Cardiovascular system	C07AA12
Nandrolone	Anabolic steroid	Alimentary tract and metabolism	A14AB01
Naproxen	Anti-inflammatory	Musculo-skeletal system	M01AE02
Nebivolol	Beta-blocker	Cardiovascular system	C07AB12
Nefopam	Non-narcotic analgesic	Nervous system	N02BG06
Nicardipine	Calcium channel blocker	Cardiovascular system	C08CA04
Nicergoline	Peripheral vasodilator diuretic	Cardiovascular system	C04AE02

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Nicotine	Treatment of smoking withdrawal syndrome	Nervous system	N07BA01
Nifurtimox	Antiprotozoal	Antiparasitic, insecticides drugs and repellents	P01CC01
Niguldipine	Calcium channel blocker	Cardiovascular system	C08CA
Nilvadipine	Calcium channel blocker	Cardiovascular system	C08CA10
Nimodipine	Calcium channel blocker	Cardiovascular system	C08CA06
Nisoldipine	Calcium channel blocker	Cardiovascular system	C08CA07
Nitrandipine	Calcium channel blocker	Cardiovascular system	C08CA08
Nomifensine	Antidepressant	Nervous system	N06AX04
Norepinephrine	Cardiac stimulant	Cardiovascular system	C01CA03
Norethisterone	Progestogen	Genito-urinary system and sex hormones	G03AC01
Norfenefrine	Cardiac stimulant	Cardiovascular system	C01CA05
Norgestrel	Contraceptive	Genito-urinary system and sex hormones	G03AA06
Octopamine	Cardiac stimulant	Cardiovascular system	C01CA18
Ofloxacin	Antibacterial	Antiinfectives for systemic use	J01MA01
Omeprazole	G.O.R.D.	Alimentary tract and metabolism	A02BC01
Ondansetron	Antiemetic	Alimentary tract and metabolism	A04AA01
Orciprenaline	Adrenergic	Respiratory system	R03CB03
Ornithine	Serum lipid reducing agent	Cardiovascular system	D11AX16
Orphenadrine	Antiparkinson/Anticholinergic	Nervous system	N04AB02
Oxamniquine	Antitrematodal	Antiparasitic, insecticides drugs and repellents	P02BA02
Oxazepam	Anxiolytic	Nervous system	N05BA04
Oxedrine	Cardiac stimulant	Cardiovascular system	C01CA08
Oxindanac	Anti-inflammatory	Musculo-skeletal system	M01A
Oxiracetam	Psychostimulant	Nervous system	N06BX07

Oxodipine	Calcium channel blocker	Cardiovascular system	C08CA
Oxprenolol	Beta-blocker	Cardiovascular system	C07AA02
Oxybutynin	Urological	Genito-urinary system and sex hormones	G04BD04
Oxyphenbutazone	Anti-inflammatory	Musculo-skeletal system	M01AA03
Oxyphencyclimine	Gastrointestinal disorder	Alimentary tract and metabolism	A03AA01
Oxyphenonium	Gastrointestinal disorder	Alimentary tract and metabolism	A03AB03
Pamatolol	Beta-blocker	Cardiovascular system	C07A
Pantoprazole	G.O.R.D.	Alimentary tract and metabolism	A02BC02
Paraflutizide	Thiazide diuretic	Cardiovascular system	C03AA
Paroxetine	Antidepressant	Nervous system	N06AB05
Pazinaclone	Anxiolytic	Nervous system	N05BA
Pemoline	Psychostimulant	Nervous system	N06BA05
Penbutolol	Beta-blocker	Cardiovascular system	C07AA23
Pentazocine	Opioid analgesic	Nervous system	N02AD01
Pentobarbital	Sedative-hypnotic	Nervous system	N05CA01
Permethrin	Ectoparasiticide	Antiparasitic, insecticides drugs and repellents	P03AC04
Pheneticillin	Antibacterial	Antiinfectives for systemic use	J01CE05
Peneturide	Antiepileptic	Nervous system	N03AX13
Phenglutarimide	Antiparkinson/Anticholinergic	Nervous system	N04AA09
Pheniramine	Antihistaminic	Respiratory system	R06AB05
Phenmetrazine	Antiobesity	Alimentary tract and metabolism	A08AA11
Phenothrin	Ectoparasiticide	Antiparasitic, insecticides drugs and repellents	P03AC03
Phenoxybenzamine	Peripheral vasodilator diuretic	Cardiovascular system	C04AX02
Phenprocoumon	Antithrombotic	Blood and blood forming organs	B01AA04
Phensuximide	Antiepileptic	Nervous system	N03AD02
Phenylethanolamine	Cardiac stimulant	Cardiovascular system	C01CA

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Phenylpropanolamine	Decongestant	Respiratory system	R01BA01
Phenyramidol	Muscle relaxant	Musculo-skeletal system	M03B
Phylloquinone K1	Antihemorrhagic	Blood and blood forming organs	B02BA
Physostigmine	Miotic	Sensory organs	S01EB05
Piketoprofen	Anti-inflammatory	Musculo-skeletal system	M01AE
Pimobendan	Cardiac stimulant	Cardiovascular system	C01CA
Pindolol	Beta-blocker	Cardiovascular system	C07AA03
Piperoxan	Antiadregenic agent	Cardiovascular system	C02CC
Piprozolin	Bile therapy	Alimentary tract and metabolism	A05AX01
Pirlindole	Antidepressant	Nervous system	N06A
Pirmenol, HCl	Antiarrhythmic	Cardiovascular system	C01B
Pirprofen	Anti-inflammatory	Musculo-skeletal system	M01AE
Polythiazide	Thiazide diuretic	Cardiovascular system	C03AA
Practolol	Beta-blocker	Cardiovascular system	C07AB01
Pranoprofen	Anti-inflammatory	Musculo-skeletal system	M01AE
Praziquantel	Antitrematodal	Antiparasitic, insecticides drugs and repellents	P02BA01
Prilocaine	Local anesthetic	Nervous system	N01BB04
Primaquine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BA03
Procyclidine	Antiparkinson/Anticholinergic	Nervous system	N04AA04
Profenamine	Antiparkinson/Anticholinergic	Nervous system	N04AA05
Proglumide	G.O.R.D.	Alimentary tract and metabolism	A02BX06
Promethazine	Antihistaminic	Respiratory system	R06AD02
Pronethalol	Alpha, beta-blocker	Cardiovascular system	C07CG
Propafenone	Antiarrhythmic	Cardiovascular system	C01B
Propicillin	Antibacterial	Antiinfectives for systemic use	J01CE03

Propiomazine	Sedative-hypnotic	Nervous system	N05CM06
Propranolol	Beta-blocker	Cardiovascular system	C07AA05
Protizinic acid	Anti-inflammatory	Musculo-skeletal system	M01A
Proxyphylline	Adrenergic	Respiratory system	R03DA03
Pseudo-ephedrine	Decongestant	Respiratory system	R01BA02
Quinacrine	Anticestodal	Antiparasitic, insecticides drugs and repellents	P02DX
Quinethazone	Thiazide diuretic	Cardiovascular system	C03BA02
Quinine	Antimalarial	Antiparasitic, insecticides drugs and repellents	P01BC01
Rabeprazole	G.O.R.D.	Alimentary tract and metabolism	A02BC04
Ranolazine	Antiarrhythmic	Cardiovascular system	C01B
Reboxetine	Antidepressant	Nervous system	N06AX18
Remoxipride	Antipsychotic	Nervous system	N05AL04
Rogletimide	Hormone antagonist	Antineoplastic and immunomodulating agents	L02BB
Rolipram	Antidepressant	Nervous system	N06A
Ropivacaine	Local anesthetic	Nervous system	N01BB09
Roxifiban	Antithrombotic	Blood and blood forming organs	B01A
Salbutamol	Adrenergic	Respiratory system	R03CC02
Salmeterol	Adrenergic	Respiratory system	R03AC12
Saterinone	Cardiac stimulant	Cardiovascular system	C01CA
Scopolamine	Sedative-hypnotic	Nervous system	N05CM05
Secobarbital	Sedative-hypnotic	Nervous system	N05CA06
Selegiline	Antiparkinson/dopaminergic	Nervous system	N04BD01
Semotiadil	Calcium channel blocker	Cardiovascular system	C08C
Shikonin	Phytogenic	Antineoplastic and immunomodulating agents	L01C
Sibutramine	Antiobesity	Alimentary tract and metabolism	A08AA10
Sobrerol	Expectorant	Respiratory system	R05CB07

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Sotalol	Beta-blocker	Cardiovascular system	C07AA07
Sulconazole	Antifungal	Dermatological drugs	D01AC09
Sulforidazine	Antipsychotic	Nervous system	N05A
Sulindac	Anti-inflammatory	Musculo-skeletal system	M01AB02
Sulpiride	Antipsychotic	Nervous system	N05AL01
Suplatast tosylate	Adrenergic	Respiratory system	R03A
Suprofen	Anti-inflammatory	Musculo-skeletal system	M01AE07
Talinolol	Beta-blocker	Cardiovascular system	C07AB13
Tazifylline	Antihistaminic	Respiratory system	R06A
Tegafur	Antimetabolite	Antineoplastic and immunomodulating agents	L01BC03
Temazepam	Sedative-hypnotic	Nervous system	N05CD07
Terazosin	Urological	Genito-urinary system and sex hormones	G04CA03
Terbutaline	Adrenergic	Respiratory system	R03CC03
Terconazole	Antifungal	Dermatological drugs	G01AG02
Terfenadine	Antihistaminic	Respiratory system	R06AX12
Terguride	Antiparkinson/dopaminergic	Nervous system	N04B
Terodiline	Urological	Genito-urinary system and sex hormones	G04BD05
Tertatolol	Beta-blocker	Cardiovascular system	C07AA16
Tetramethrin	Insecticide	Antiparasitic, insecticides drugs and repellents	P03BA04
Tetryzoline	Decongestant	Respiratory system	R01AA06
Thalidomide	Immunosuppressive agent	Antineoplastic and immunomodulating agents	L04AX02
Thialbarbital	General anesthetic	Nervous system	N01AF
Thiamylal	General anesthetic	Nervous system	N01AF
Thiazinamium methylsulfate	Muscle relaxant	Musculo-skeletal system	M03B

Thiopental	General anesthetic	Nervous system	N01AF03
Thioridazine	Antipsychotic	Nervous system	N05AC02
Threo-Chloramphenicol	Antibacterial	Antiinfectives for systemic use	J01BA01
Tiagabine	Antiepileptic	Nervous system	N03AG06
Tiaprofenic acid	Anti-inflammatory	Musculo-skeletal system	M01AE11
Tifluadom	High-ceiling diuretic	Cardiovascular system	C03CX
Timepidium	Gastrointestinal disorder	Alimentary tract and metabolism	A03AB19
Timolol	Beta-blocker	Cardiovascular system	C07AA06
Timoprazole	G.O.R.D.	Alimentary tract and metabolism	A02BC
Tioconazole	Antifungal	Dermatological drugs	D01AC07
Tiprenolol	Beta-blocker	Cardiovascular system	C07A
Tocainide	Antiarrhythmic	Cardiovascular system	C01BB03
Tofisopam	Anxiolytic	Nervous system	N05BA23
Tolamolol	Beta-blocker	Cardiovascular system	C07A
Toliprolol	Beta-blocker	Cardiovascular system	C07A
Tolperisone	Muscle relaxant	Musculo-skeletal system	M03BX04
Tosufloxacin	Antibacterial	Antiinfectives for systemic use	J01MA
Tramadol	Opioid analgesic	Nervous system	N02AX02
Trans-Allethrin	Ectoparasiticide	Antiparasitic, insecticides drugs and repellents	P03AC52
Tranylcypromine	Antidepressant	Nervous system	N06AF04
Trichloromethiazine	Thiazide diuretic	Cardiovascular system	C03AA
Tridihexethyl	Gastrointestinal disorder	Alimentary tract and metabolism	A03AB08
Trihexyphenidyl	Antiparkinson/Anticholinergic	Nervous system	N04AA01
Trimipramine	Antidepressant	Nervous system	N06AA06
Trofosfamide	Alkylating agent	Antineoplastic and immunomodulating agents	L01AA07

(*continued*)

Table 8. Continued

Drug name	Therapeutic category	ATC class	ATC Code
Troglitazone	Antidiabetic	Alimentary tract and metabolism	A10BG01
Trolox	Antioxidant	Various drugs	V06D
Tropicamide	Mydriatic	Sensory organs	S01FA06
Tryptophan	Antidepressant	Nervous system	N06AX02
Tulobuterol	Adrenergic	Respiratory system	R03AC11
Valsartan	Angiotensin II antagonist	Cardiovascular system	C09CA03
Venlafaxine	Antidepressant	Nervous system	N06AX16
Verapamil	Calcium channel blocker	Cardiovascular system	C08DA01
Viloxazine	Antidepressant	Nervous system	N06AX09
Vinburnine	Peripheral vasodilator diuretic	Cardiovascular system	C04AX17
Vincamine	Peripheral vasodilator diuretic	Cardiovascular system	C04AX07
Voriconazole	Antimycotic	Antiinfectives for systemic use	J02AC03
Warfarin	Antithrombotic	Blood and blood forming organs	B01AA03
Zalcitabine	Urinary antiseptic	Antiinfectives for systemic use	J05AF03
Zopiclone	Sedative-hypnotic	Nervous system	N05CF01

ACRONYMS

ATC	Anatomical therapeutic chemical
Bu	Butyl
CSP	Chiral stationary phases
EDTA	Ethylenediaminetetraacetic acid
Et	Ethyl
DAS	9,10-dimethoxyantracene-2-sulfonate sodium
DMAO	N,N-Dimethyloctylamine
GORD	Gastro-oesophageal reflux disease
Pr	Propyl
Me	Methyl
MTBE	Methyl *tertio*-butylether
PBS	Phosphate buffered saline
Ph	Phenyl
TEAB	Tetraethylammonium bromide
TBAB	Tetrabutylammonium bromide
TBAP	Tetrabutylammonium phosphate
TEAA	Triethylammonium acetate
THF	Tetrahydrofuranne
TFA	Trifluoroacetic acid
TPA	Tetrapropylammonium
TPAB	Tetrapropylammonium bromide
Tween 20	Polyoxyethylenesorbitan monolaurate

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