CELLACHROM®

CATALOG

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CELLION BIOMED

CELLACHROM®

The first Polysaccharide Chiral column in Korea

Company Introduction

Chromatography is a vital technology essential for quality assurance in the pharmaceutical, biotechnology, and fine chemical industries. In every industrial sector, it is inevitable that the development of high-quality products depends on accurate and reliable analytical technology.

CellaChrom®, a leading brand in chemical and biomaterials analysis, has independently developed cutting-edge HPLC chiral column manufacturing technology.

CellaChrom® provides reliable, high-quality products at competitive prices with customer satisfaction as a top priority.

Award History of our scientist

Jang Young-Shil Award
(A prestigious award of the Ministry of Science and Technology)

Award from the Ministry of Commerce, Industry and Energy

Award from the Ministry of Health and Welfare

Award from Korean Chemical Society for Achievement

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Product Instruction

CellaChrom® offers a range of chiral columns, including AmyloSil™ and CelluloSil™, which are based on amylose and cellulose, respectively, as well as CrownSil™, based on (+),(-)-18-crown-6 -acid as chiral selectors.

AmyloSil™ and CelluloSil™ are compatible with polysaccharide-based chiral columns, such as Daicel products, and provide efficient separation performance with high theoretical plate numbers, comparable to or exceeding those of other polysaccharide columns.

One of the key advantages of our products is broad resolution spectrum and exceptional versatility in separating wide range of compounds. CelluloSil'"-A01 and AmyloSil™-A01, which are cellulose and amylose derivatized with 3,5-dimethylphenylcarbamate, are the representative products recognized for their outstanding universality. These columns demonstrate powerful and widely applicable separation capabilities, separating more than 80% of existing compounds as reported in Chemical Reviews (2016, 1094).

Due to the complexity of manufacturing chiral columns, many imported products are still supplied at high costs. However, CellaChrom® offers cost-effective chiral columns through our innovative technologies, ensuring high-quality products at competitive prices.

Chiral column list

CellaChrom® products are compatible with CHIRALCEL/CHIRALPAK of Daicel.

Product name	Separation agent	Type	Compatible with
			Daicel
CelluloSil-A01	Cellulose tris-(3,5-dimethylphenylcarbamate)	Coated	CHIRALCEL OD
CelluloSil-A02	Cellulose tris-(3-chloro-4-methylphenylcarbamate)	Coated	CHIRALCEL OZ
CelluloSil-B01	Cellulose tris-(3,5-dimethylphenylcarbamate)	Immobilized	CHIRALPAK IB
AmyloSil-A01	Amylose tris-(3,5-dimethylphenylcarbamate)	Coated	CHIRALPAK AD
AmyloSil-A02	Amylose tris-(3-chloro-4-methylpheylcarbamate)	Coated	CHIRALPAK AZ
AmyloSil-B01	Amylose tris-(3,5-dimethylphenylcarbamate)	Immobilized	CHIRALPAK IA
CrownSil-R(+)	(+)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid	Immobilized	Only from CellaChrom
CrownSil-S(-)	(-)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid	Immobilized	Only from CellaChrom
CrownSil-R(+) ME	(+)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid	Immobilized	Only from CellaChrom
CrownSil-S(-) ME	(-)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid	Immobilized	Only from CellaChrom

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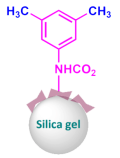
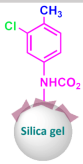
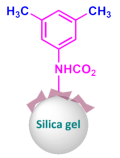
Products

(1) CelluloSil™

CelluloSil™ is compatible with CHIRALCEL/CHIRALPAK series of Daicel.

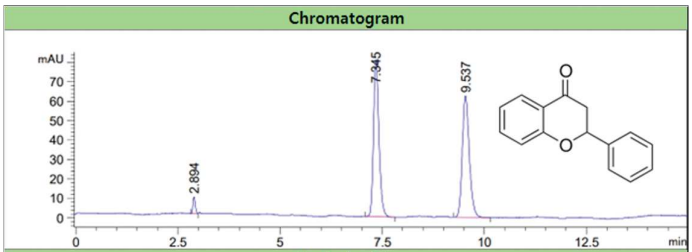
Depending on the cellulose derivative, we supply several product series, including CelluloSil-A01, A02 and A03 as listed below. Depending on the immobillization method of the chiral selectors, we also offer coated type of columns (CelluloSil™-A series) and immobilized type of columns (CelluloSil™-B series).

The coated columns offer superior separation capabilities compared to immobilized columns. Manufactured using our innovative technology, the columns are designed for long life and reproducibility. To maximize lifespan and performance, it is recommended to use limited solvents (acetone, THF).

Product name	Type	Separation agent		USP Code
CelluloSil-A01	Coated	Cellulose tris-(3,5-dimethylphenylcarbamate) (Compatible with CHIRALCEL OD)		L40
CelluloSil-A02	Coated	Cellulose tris-(3-chloro-4-methylphenylcarbamate) (Compatible with CHIRALCEL OZ)		-
CelluloSil-B01	Immobilized	Cellulose tris-(3,5-dimethylphenylcarbamate) (Compatible with CHIRALCEL IB)		-

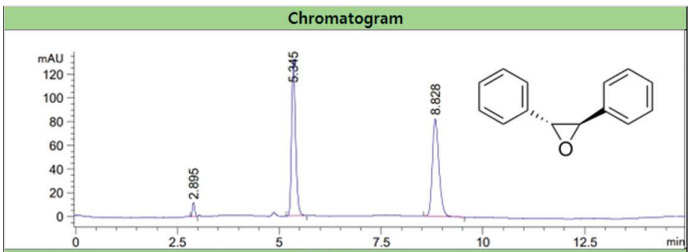
◎ Excellent quality

CellaChrom® provides products of equal or superior quality compared to other imported products, delivering excellent resolution, high theoretical plate numbers, and well-defined peak symmetries.



Analysis data

Components	RT (min)	k	α	Rs
Flavanone	7.345	1.53	1.490	8.010
	9.537	2.29		



Analysis data

Components	RT (min)	k	α	Rs
trans-stilbene oxide	5.345	0.84	2.420	14.950
	8.628	1.98		

◎ Usage of Eluent

For the CelluloSil™-A series (coated type), it is recommended to use the solvents listed in the right table and not recommended for solvents, such as THF and acetone.

Alkane*/IPA	Alkane/EtOH	MeOH/EtOH	MeOH/ACN**
All ratio	All ratio	All ratio	100:0~85:15 15:85~0:100

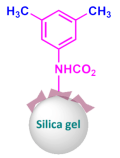
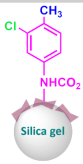
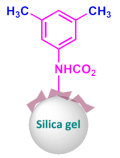
*Alkane : n-Hexane, n-Heptane
**Before using MeOH and ACN, flow IPA first.

(2) AmyloSil™

AmyloSil™ is compatible with Daicel's CHIRALPAK series.

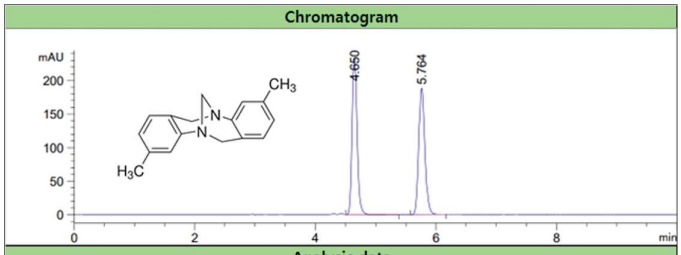
Depending on the amylose derivative, we supply several product series, including AmyloSil™-A01, A02 and A03 as listed below. Depending on the immobillization method of the chiral selectors, we also offer coated type of columns (AmyloSil™-A series) and immobilized type of columns (AmyloSil™-B series).

The coated columns offer superior separation capabilities compared to immobilized columns. Manufactured using our innovative technology, the columns are designed for long life and reproducibility. To maximize lifespan and performance, it is recommended to use limited solvents (acetone, THF).

Product name	Type	Separation agent		USP Code
AmyloSil-A01	Coated	Amylose tris-(3,5-dimethylphenylcarbamate) (Compatible with CHIRALCEL AD)		L51
AmyloSil-A02	Coated	Amylose tris-(3-chloro-4-methylphenylcarbamate) (Compatible with CHIRALCEL AZ)		-
AmyloSil-B01	Immobilized	Amylose tris-(3,5-dimethylphenylcarbamate) (Compatible with CHIRALCEL IA)		L99

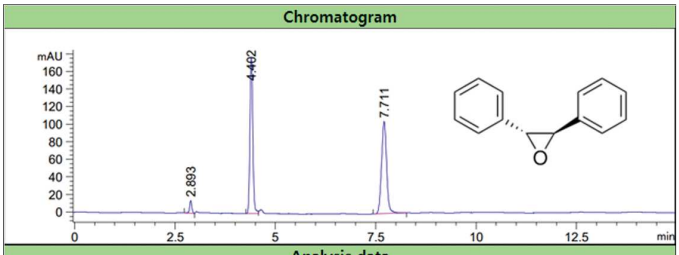
◎ Excellent quality

CellaChrom® provides products of equal or superior quality compared to other imported products, delivering excellent resolution, high theoretical plate numbers, and well-defined peak symmetries.



Analysis data

Components	RT (min)	k	α	Rs
Troger's Base	4.650	0.60	1.640	6.660
	5.764	0.99		



Analysis data

Components	RT (min)	k	α	Rs
trans-stilbene oxide	4.402	0.52	3.203	18.852
	7.711	1.66		

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Products

(3) CrownSil™

CrownSil™ and CrownSil™ ME columns are chiral columns based on (+), or (-)-(18-crown-6)-2,3,11,12-tetracarboxylic acid. CrownSil™ ME column is an N-methylated version of CrownSil™, featuring a methylated amine fuctional group. CrownSil™ ME is complementary to CrownSil™ in its separation capability.

CrownSil™ and CrownSil™ ME are both highly effective for the chiral separation of various natural and unnatural α-amino acids, α-amino esters, primary and secondary amine derivatives, β-aminoacids, and aryl α-aminoketone.

CrownSil™ column was first developed by Professor Myung-ho Hyun of Pusan National University and Professor Won-jae Lee of Chosun University. Our technical team has successfully commercialized this technology, and we now supply these columns to pharmaceutical companies worldwide.

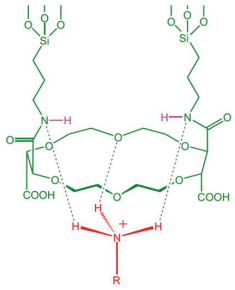
Compared to other columns with similar crown structures, CrownSil™ offers a broader separation range of compounds and superior separation capabilities.

Separation Mechanism

CrownSil™ has two different separation mechanisms.

(1) One mechanism is the primary ammonium group (R-NH3+) formed by protonation of the α-amino acid or amine functional group under acidic conditions inside the cavity of the 18-crown-6 ring of CrownSil™ CSP.

(2) The other mechanism is close proximity on either side of 18-crown-6 ring. CrownSil™ is therefore separated by differences in the interaction between the steric barrier group and the hydrogen bonded donor or acceptor group.

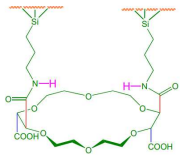
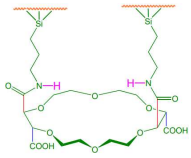
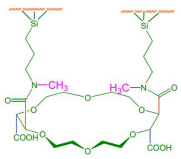
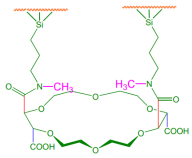


Advantages of CrownSil™

(1) Universal solvent capability
An important advantage of CrownSil™ is that its chiral selector is covalently bonded to silica gel. Therefore, it can be used with a variety of mobile phases without reducing chiral recognition ability. CrownSil™ can be used in both normal and reversed phase solvents. For example, absolute methanol can also be used as a mobile phase to separate racemic compounds in CrownSil™.

(2) Reversibility of retention order
CrownSil™ has two types, R(+) and S(-). By using interchangable chiral columns, you can choose to reverse the retention order of the enantiomers. For amino acids, most L-isomers elute earlier on CrownSil™-R(+) and D-isomers elute earlier on CrownSil™-S(-) columns.

(3) Excellent column durability
CrownSil™ has been tested for stability in highly acidic conditions. There were no observable changes in α and k' after 300 hours of continuous operation. The stability of the column is maintained even when used for a long time.

Product name	Type	Separation agent		USP Code
CrownSil-R(+)	Immobilized	(+)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid		L117
CrownSil-S(-)	Immobilized	(-)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid		L66
CrownSil-R(+) ME	Immobilized	(+)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid		-
CrownSil-S(-) ME	Immobilized	(-)-(18-Crown-6)-2,3,11,12-tetracarboxylic acid		-

Operation method of CrownSil™/CrownSil™ ME

CrownSil™ and CrownSil™ ME columns provide optimal separation under acid conditions.

Recommended acids include acetic acid, percholic acid, sulfuric acid, phosphoric acid, and trifluoroacetic acid. For optimal separation, the type of acid used may vary depending on the sample to be separated. Please refer to the application data to select the optimal acid.

Stabilization of the column

CrownSil™ and CrownSil™ ME columns are supplied packed with 100% methanol. To obtain a stable and optimal separation, it is recommended to flow the mobile phase under acid conditions as specified in the table.

The equilibrium times below represent the typical optimal times. If stabilization is insufficient, the elution times of the peaks may be slightly shorter, and once stabilized, a consistent stabilized retention time is observed.

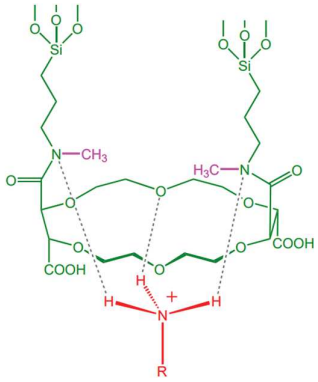
Mode	Before condition	After condition	Flow rate (ID 4.6 mm)	Temp	Time
RP	MeOH 100%	Water + Organic solvent (+Acid)	1.0 mL/min	20℃	7 hrs
	Water + Organic solvent (+Acid)	Water + Organic solvent (+Other acid)			2 hrs
NP	MeOH 100%	EtOH or IPA 30 min -> EtOH + Organic solvent (+Acid)			7 hrs
	EtOH + Organic solvent (+Acid)	EtOH + Organic solvent (+Other acid)			2 hrs

Cleaning of the column

To ensure a long lifespan, it is recommended to wash the column after use and avoid storage in acidic conditions for extended periods. The recommended washing procedure is to elute 20 ml of water and then gradually filling the column with absolute methanol.

CrownSil™ ME

CrownSil™ ME is a column in which the amine group of CrownSil™ is replaced with a methyl group. The basic separation mechanism and solvent conditions are similar to CrownSil™ column.



CrownSil™ ME can be used as a complementary option when satisfactory separation conditions are not achieved with CrownSil™ or to obtain improved separation conditions. For example, while CrownSil™ can separate almost all amino acids, CrownSil™ ME column shows better resolution for arginine, aspartic acid, cysteine, and isoleucine. Additionally, compounds like aminoalcohol, norephedrine, 2-amino-3-phenyl- 1-propanol, and cis-1-amino-2-indanol are difficult to separate on CrownSil™ but exhibit excellent resolutions with CrownSil™ ME.

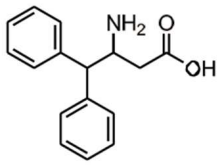
Separation condition development

[1] Effect of organic mobile phase

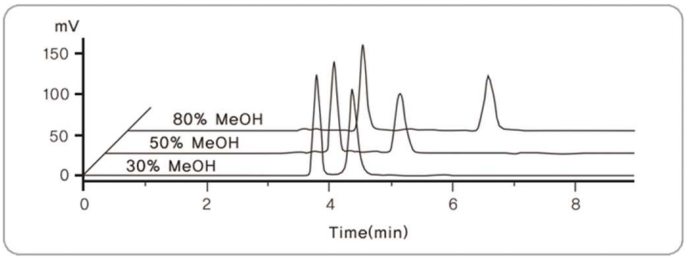
As the content of the organic solvent in the mobile phase increases, the polarity of the aqueous mobile phase decreases while the hydrophobicity increases.

This change is expected to reduce the hydrophilic interaction between the polar-protonated analyte and the mobile phase analyte, resulting in an increase in retention time as the content of the organic mobile phase rises.

As the content of the organic mobile phase increases, the capacity factor (k), separation factor (α), and resolution factor (Rs) generally increase.



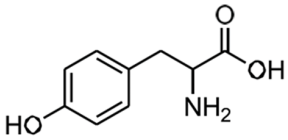
Mobile phase: Methanol in H_2O+ sulfuric acid (10mM)
Column: CrownSil R(+)
Flow rate: 0.5ml/min
Detector: UV 210nm
Sample: 3-amino-4, 4-diphenylbutyric acid



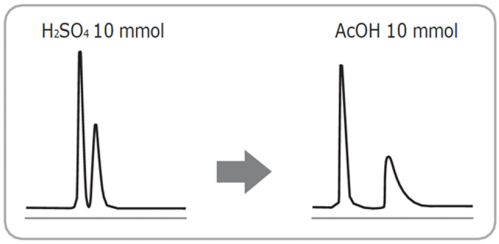
[2] Effect of acid type

Various acids can be used, including acetic acid, perchloric acid, sulfuric acid, phosphoric acid, and trifluoroacetic acid.

Because the enantioselectivity of each acid is different, it is recommended to test and identify the appropriate acid.



Column : CrownSil
Flow rate: 1.0ml/min
Detector : UV 210nm
Sample: Tyrosine

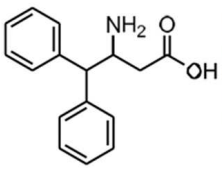


[3] Effect of acid concentration

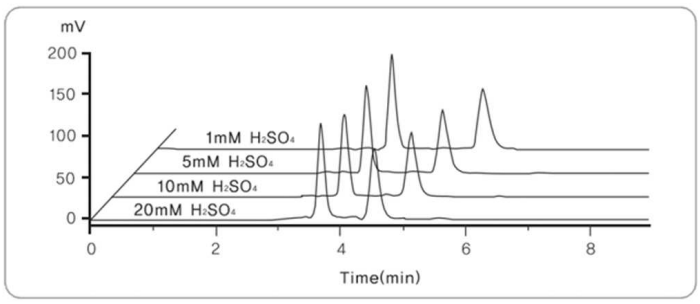
As the acid concentration of the mobile phase increases, polar protonation and hydration or solubilization of the analytes are expected to increase.

In this case, polar protonated analytes elute faster depending on the content of the acidic mobile phase. In general, the capacity factor (k') decreases as the acid concentration of the mobile phase increases.

However, higher acid concentrations do not always provide high resolution, so when analyzing a new sample, it is recommended to start with a low acid concentration and increase the concentration.



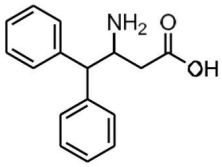
Mobile phase: 50% Methanol in H_2O+ sulfuric acid (10mM)
Column: CrownSil
Flow rate: 0.5ml/min
Detector: UV 210nm
Sample: 3-amino-4, 4-diphenylbutyric acid



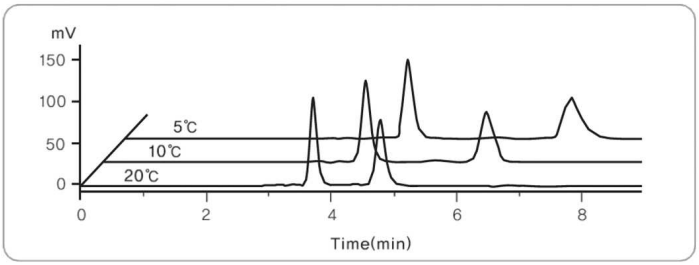
[4] Effect of temperature

At lower temperature, the formation of the two diastereomeric complexes formed by the two enantiomers of racemic compounds inside the cavity of the crown ether ring is expected to be much more favorable than that of the less stable diastereomeric complexes. The difference in the stability of the two diastereomeric complexes increases as the temperature of the column decreases.

The capacity factors (k'), the separation factors (α) and the resolution factors (Rs) are improved as the temperature decreases.



Mobile phase: 50% Methanol in H_2O+ sulfuric acid (10mM)
Column: CrownSil
Flow rate: 0.5ml/min
Detector: UV 210nm
Sample: 3-amino-4, 4-diphenylbutyric acid



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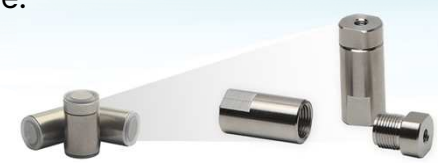
(4) Guard Column

To maintain the lifespan of expensive columns for a long time, we recommend using guard columns.

We supply guard columns for all products at the manufacturer's price.

The specifications of the guard column are 4.6 x 10 mm.



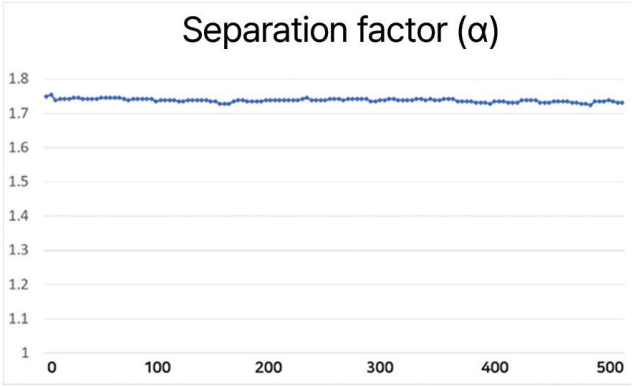
Product name	Separation agent	Type
CelluloSil	Cellulose derivatives	4.6 x 10 mm
AmyloSil	Amylose derivatives	
CellaChrom	Achiral silicagel	
Cartridge Holder	Holder for guard column	

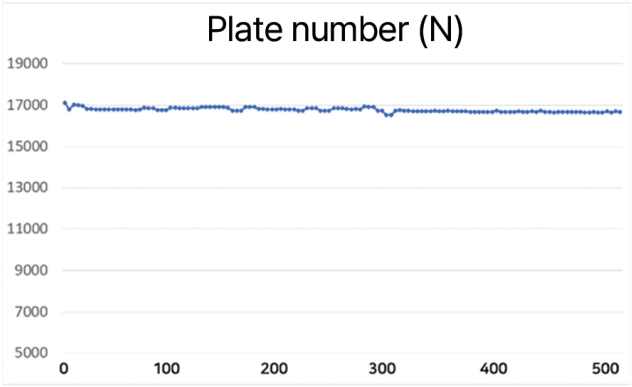
Product Stability

The durability of our chiral columns has been tested for 500 times to confirm that there is little change in separation ability and theoretical plate numbers.

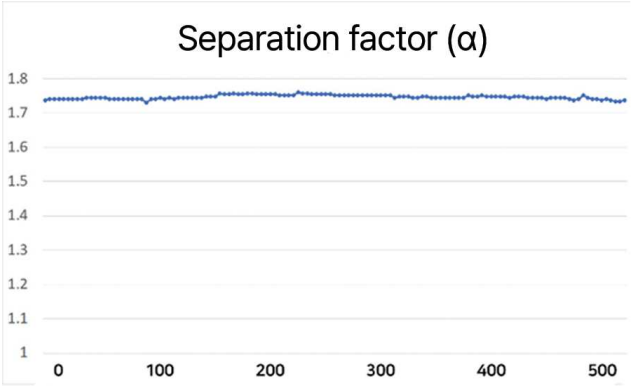
Under normal conditions, our chiral column can be used for more than 500 times.

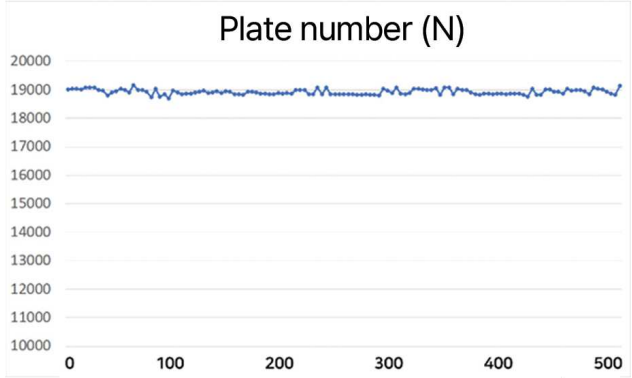
(1) CelluloSil-A01





(2) AmyloSil-A01



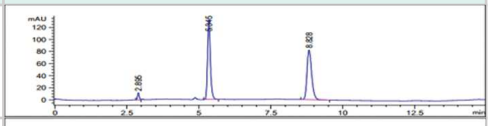
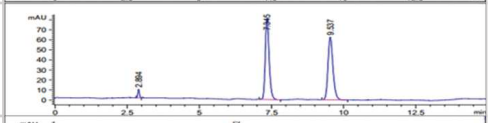
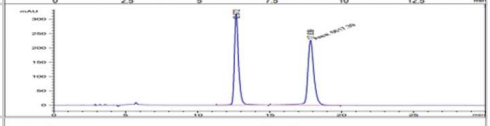
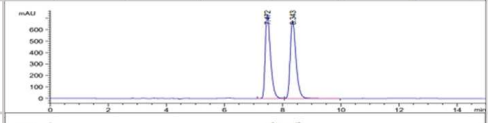
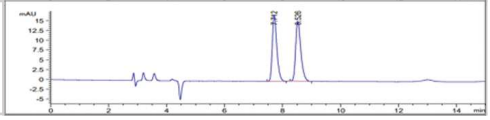


Application data

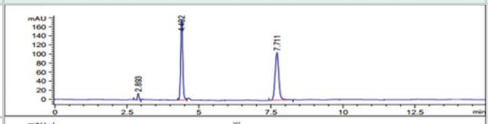
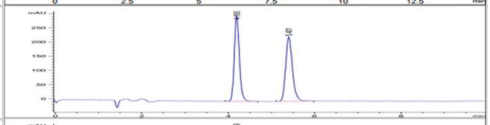
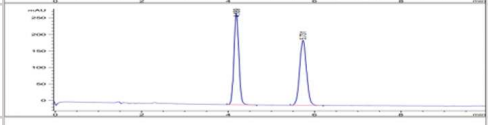
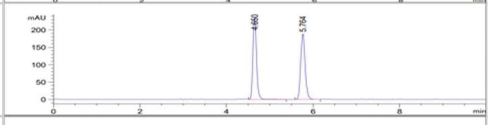
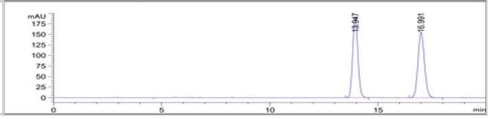
There are various application data of CellaChrom® columns.

*Separation factor (α) : The actual ratio of time between chiral analyte
*Resolution (Rs) : The visual degree separating the analyte peak

(1) CelluloSil-A01

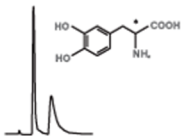
Sample	k1	k2	α	Rs	Chromatogram
trans-stilbene oxide	0.85	2.05	2.42	14.95	
Flavanone	1.54	2.30	1.49	8.01	
Benzoin	3.38	5.16	1.53	8.57	
Troger's Base	1.58	1.88	1.19	2.60	
2-phenylcyclohexane	1.66	1.95	1.17	2.75	

(2) AmyloSil-A01

Sample	k1	k2	α	Rs	Chromatogram
trans-stilbene oxide	0.52	1.67	3.19	18.85	
Modafinil	1.89	2.72	1.44	5.05	
Lauflumide	1.89	2.95	1.56	6.27	
Troger's Base	0.60	0.99	1.64	6.66	
Benzoin	3.50	4.86	1.39	8.03	

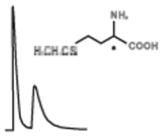
(3) CrownSil

DOPA



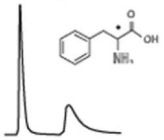
Column : CrownSil (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.5 min α : 2.30

Ethionine



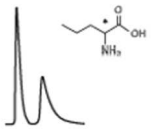
Column : CrownSil (4.6 x 150 mm)
Eluent : 0.02% CH_3COOH : MeOH = 25 : 75
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 6.2 min α : 2.07

Phenylalaine



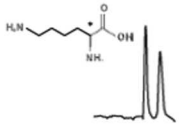
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 30 : 70
Flow rate : 1.5 mL/min Wavelength : 210 nm
Run time : 8.9 min α : 2.57

Norvaline



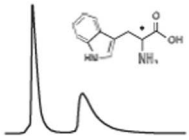
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.3 min α : 1.97

Lysine



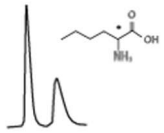
Column : CrownSil (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.3 min α : 1.48

Tryptophan



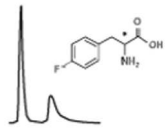
Column : CrownSil (4.6 x 150 mm)
Eluent : 0.02% CH_3COOH : MeOH = 25 : 75
Flow rate : 1.5 mL/min Wavelength : 210 nm
Run time : 11 min α : 2.15

Norleucine



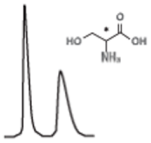
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.6 min α : 1.75

4-Fluorophenylalanine



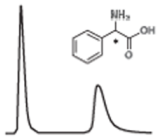
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 30 : 70
Flow rate : 1.5 mL/min Wavelength : 210 nm
Run time : 9.6 min α : 2.56

Serine



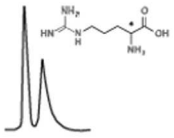
Column : CrownSil (4.6 x 150 mm)
Eluent : 5 mM $HClO_4$: MeOH = 16 : 84
Flow rate : 0.8 mL/min Wavelength : 210 nm
Run time : 6 min α : 1.99

Phenylgycine



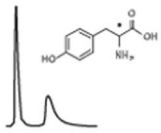
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM H_2SO_4 and 0.1% TEA : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 13.1 min α : 2.60

Arginine



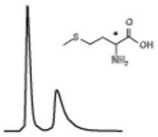
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM H_2SO_4 : MeOH = 16 : 84
Flow rate : 0.8 mL/min Wavelength : 210 nm
Run time : 4.9 min α : 1.64

Tyrosine



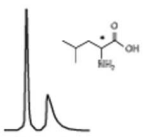
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 30 : 70
Flow rate : 1.5 mL/min Wavelength : 210 nm
Run time : 9.1 min α : 2.38

Methionine



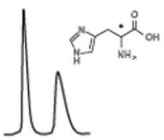
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 7.5 min α : 2.04

Leucine



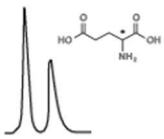
Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.5 min α : 2.14

Histidine



Column : CrownSil (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 26 min α : 1.27

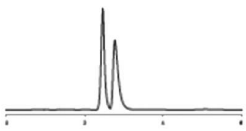
Glutamic Acid



Column : CrownSil (4.6 x 150 mm)
Eluent : 0.05% H_3PO_4 : MeOH = 35 : 65
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 4.5 min α : 2.27

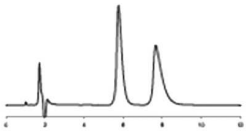
(4) CrownSil ME

Norleucine



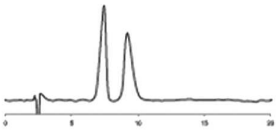
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 6 min α : 1.86

Tryosine



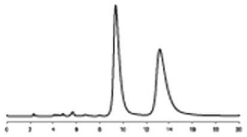
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 15 : 85
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 12 min α : 1.51

Valine



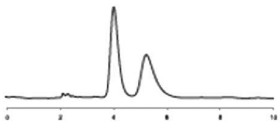
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM H_2SO_4 : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 20 min α : 1.35

Threonine



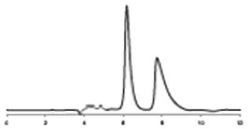
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM $HClO_4$: MeOH = 50 : 50
Flow rate : 0.5 mL/min Wavelength : 210 nm
Run time : 20 min α : 1.68

Arginine



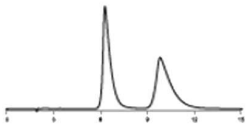
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM $HClO_4$: MeOH = 50 : 50
Flow rate : 0.5 mL/min Wavelength : 210 nm
Run time : 10 min α : 1.40

Alanine



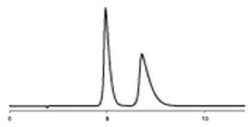
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM $HClO_4$: MeOH = 50 : 50
Flow rate : 0.5 mL/min Wavelength : 210 nm
Run time : 12 min α : 1.65

Homephenylalanine



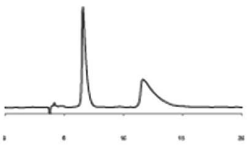
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 15 min α : 1.81

4 - Chloro - phenylalanine



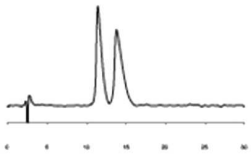
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 40 : 60
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 10 min α : 1.58

Serine



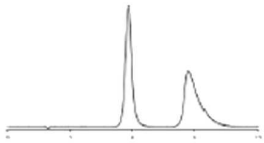
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM $HClO_4$: MeOH = 50 : 50
Flow rate : 0.5 mL/min Wavelength : 210 nm
Run time : 20 min α : 2.82

Asparagine



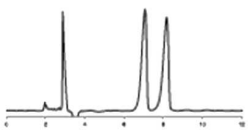
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM H_2SO_4 : MeOH = 20 : 80
Flow rate : 0.5 mL/min Wavelength : 210 nm
Run time : 30 min α : 1.22

Pyridylalanine



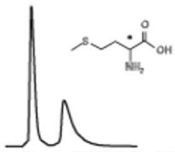
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 0.01% H_3PO_4 : MeOH = 30 : 70
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 12 min α : 1.74

Penicillamine



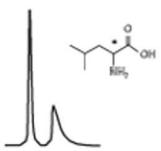
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 10 mM H_2PO_4 : ACN = 10 : 90
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 12 min α : 1.31

Methionine



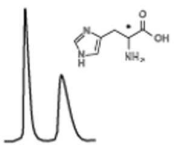
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 5 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 7.5 min α : 2.04

Leucine



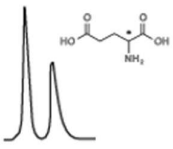
Column : CrownSil ME (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 5.5 min α : 2.14

Histidine



Column : CrownSil ME (4.6 x 150 mm)
Eluent : 10 mM CH_3COOH : MeOH = 55 : 45
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 26 min α : 1.27

Glutamic Acid



Column : CrownSil ME (4.6 x 150 mm)
Eluent : 0.05% H_3PO_4 : MeOH = 35 : 65
Flow rate : 1.0 mL/min Wavelength : 210 nm
Run time : 4.5 min α : 2.27

Additional application data will be updated continuously on the CellaChrom website.

CELLACHROM®

Product List

(1) CelluloSil/AmyloSil

*Prices can be checked on CellaChrom website.

Product name	Compatible Daicel products	Type	Part No.
CelluloSil-A01	CHIRALCEL OD	4.6 x 150 mm	CA01-51546
		4.6 x 250 mm	CA01-52546
		10 x 250 mm	CA01-525100
		4.6 x 10 mm (guard column)	CA01-G3 (3 EA)
			CA01-G5 (5 EA)
CelluloSil-A02	CHIRALCEL OZ	4.6 x 150 mm	CA02-51546
		4.6 x 250 mm	CA02-52546
		10 x 250 mm	CA02-525100
		4.6 x 10 mm (guard column)	CA02-G3 (3 EA)
			CA02-G5 (5 EA)
CelluloSil-B01	CHIRALCEL IB	4.6 x 150 mm	CB01-51546
		4.6 x 250 mm	CB01-52546
		10 x 250 mm	CB01-525100
		4.6 x 10 mm (guard column)	CB01-G3 (3 EA)
			CB01-G5 (5 EA)
AmyloSil-A01	CHIRALCEL AD	4.6 x 150 mm	AA01-51546
		4.6 x 250 mm	AA01-52546
		10 x 250 mm	AA01-525100
		4.6 x 10 mm (guard column)	AA01-G3 (3 EA)
			AA01-G5 (5 EA)
AmyloSil-A02	CHIRALCEL AZ	4.6 x 150 mm	AA02-51546
		4.6 x 250 mm	AA02-52546
		10 x 250 mm	AA02-525100
		4.6 x 10 mm (guard column)	AA02-G3 (3 EA)
			AA02-G5 (5 EA)
AmyloSil-B01	CHIRALCEL IA	4.6 x 150 mm	AB01-51546
		4.6 x 250 mm	AB01-52546
		10 x 250 mm	AB01-525100
		4.6 x 10 mm (guard column)	AB01-G3 (3 EA)
			AB01-G5 (5 EA)

CELLION BIOMED

Product List

(2) CrownSil

Product name	Type	Part No.
CrownSil-R(+)	4.6 x 150 mm	CSR-51546
	4.6 x 250 mm	CSR-52546
	10 x 250 mm	CSR-525100
	4.6 x 10 mm (guard column)	CSR-G3 (3 EA)
		CSR-G5 (5 EA)
CrownSil-S(-)	4.6 x 150 mm	CSS-51546
	4.6 x 250 mm	CSS-52546
	10 x 250 mm	CSS-525100
	4.6 x 10 mm (guard column)	CSS-G3 (3 EA)
		CSS-G5 (5 EA)
CrownSil-R(+) ME	4.6 x 150 mm	CSMR-51546
	4.6 x 250 mm	CSMR-52546
	10 x 250 mm	CSMR-525100
	4.6 x 10 mm (guard column)	CSMR-G3 (3 EA)
		CSMR-G5 (5 EA)
CrownSil-S(-) ME	4.6 x 150 mm	CSMS-51546
	4.6 x 250 mm	CSMS-52546
	10 x 250 mm	CSMS-525100
	4.6 x 10 mm (guard column)	CSMS-G3 (3 EA)
		CSMS-G5 (5 EA)

(3) Guard column cartridge

Product name	Type
Guard column cartridge	4.6 x 10 mm (guard column)

Product List

(4) Achiral column

Product name	Type	Part No.
CellaChrom-C18	4.6 x 150 mm	C18-51201546
	4.6 x 250 mm	C18-51202546
	10 x 250 mm	C18-512025100
	4.6 x 10 mm (guard column)	C18-G3 (3 EA)
		C18-G5 (5 EA)
CellaChrom-C18A	4.6 x 150 mm	C18A-51201546
	4.6 x 250 mm	C18A-51202546
	10 x 250 mm	C18A-512025100
	4.6 x 10 mm (guard column)	C18A-G3 (3 EA)
		C18A-G5 (5 EA)
CellaChrom-C8	4.6 x 150 mm	C8-51201546
	4.6 x 250 mm	C8-51202546
	10 x 250 mm	C8-512025100
	4.6 x 10 mm (guard column)	C8-G3 (3 EA)
		C8-G5 (5 EA)
CellaChrom-C4	4.6 x 150 mm	C4-51201546
	4.6 x 250 mm	C4-51202546
	10 x 250 mm	C4-512025100
	4.6 x 10 mm (guard column)	C4-G3 (3 EA)
		C4-G5 (5 EA)
CellaChrom-Sil	4.6 x 150 mm	Sil-51201546
	4.6 x 250 mm	Sil-51202546
	10 x 250 mm	Sil-512025100
	4.6 x 10 mm (guard column)	Sil-G3 (3 EA)
		Sil-G5 (5 EA)
CellaChrom-APS	4.6 x 150 mm	APS-51201546
	4.6 x 250 mm	APS-51202546
	10 x 250 mm	APS-512025100
	4.6 x 10 mm (guard column)	APS-G3 (3 EA)
		APS-G5 (5 EA)

CelluloSil™

AmyloSil™

CrownSil™

CellaChrom®

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CellaChrom® is the brand name of CellionBioMed, Inc.

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