SIELC Technologies, Inc
Wheeling, IL 60090 USA
P. 847-229-2629 F. 847-655-6079
mail@sielc.com www.sielc.com

CHIRAL ANALYSIS

SIELC

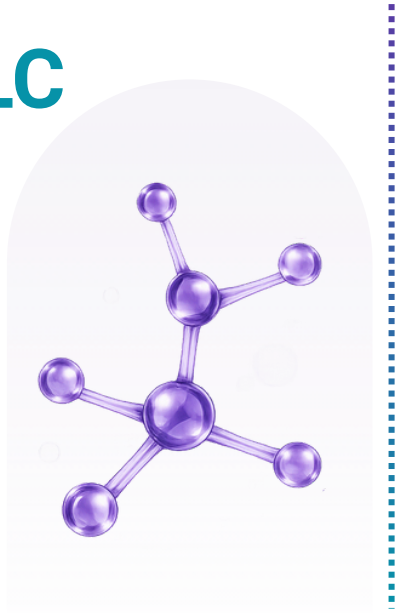
Cyralis™

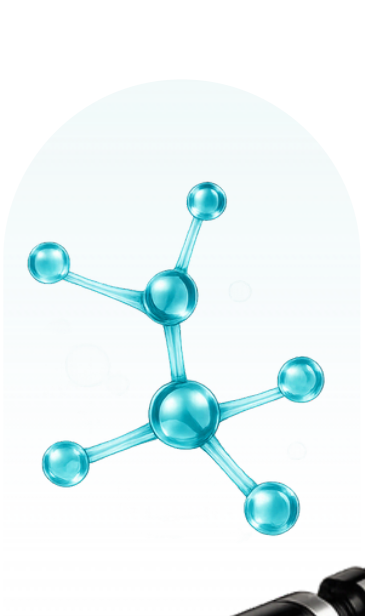
CHIRAL HPLC Columns

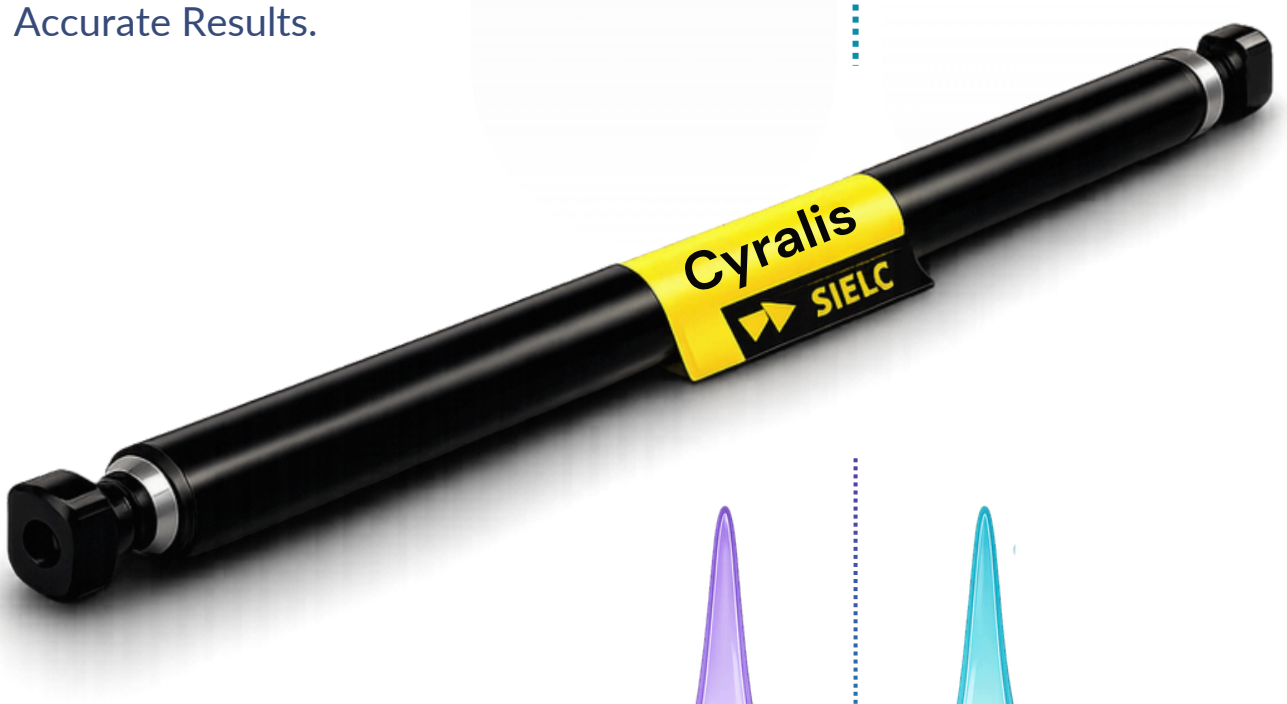
High Selectivity.

Excellent Resolution.

Accurate Results.







Baseline separation of enantiomers

HIGH SELECTIVITY
Superior chiral recognition

EXCELLENT RESOLUTION
Baseline separation of enantiomers

RELIABLE RESULTS
Robust and reproducible performance

Nonporous Cyralis™: Ultrafast Chiral Screening Columns

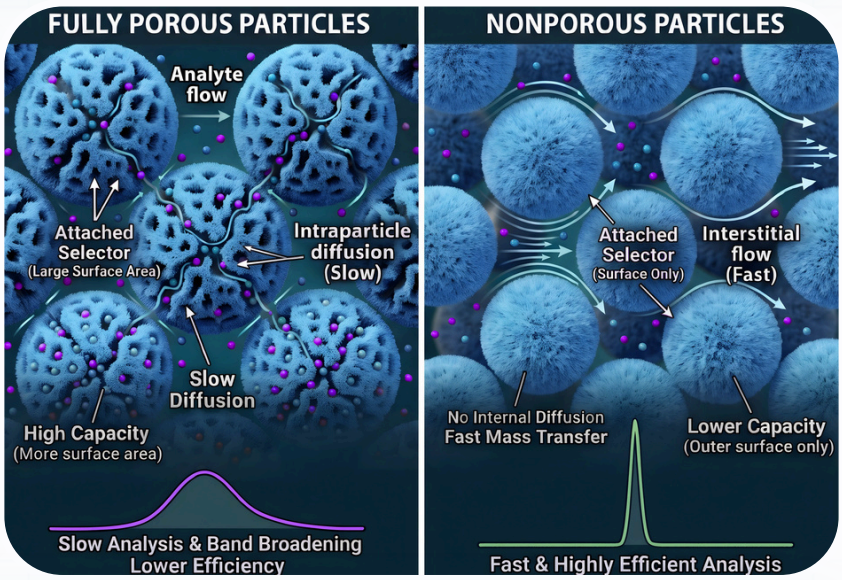
SIELC Technologies introduces the world's first nonporous chiral screening kit, offering a new approach to ultrafast chiral screening. The Cyralis™ Screening Kit combines four polysaccharide-based stationary phases — AM, CM, AL, and CL — with 1.5 µm nonporous particles in a compact 4.6 × 50 mm column format.

Screening extensive libraries of chiral compounds can take days with conventional porous columns measuring 150 mm or longer. The Cyralis™ Screening Kit accelerates initial screening, helping researchers identify stationary phases with promising chiral selectivity for further method development.

The brochure illustrates the workflow: screen one analyte across all four phases under the same selected mobile-phase conditions, compare results, and identify promising hits.

Why nonporous particles?

Analytes interact with the external particle surface without diffusing into and out of internal pores. This reduces intraparticle mass-transfer limitations and supports rapid separations, with the goal of achieving greater resolution per unit time (Rs/t).



The trade-off is lower sample capacity due to the smaller available surface area. These columns are designed for rapid initial screening, where identifying chiral selectivity takes priority over sample loading.

To order a column or ask a question send your message to sales@sielc.com

Ultra Fast Cyralis Screening Kit
Catalog Number: CNP-46.050.0100

Kit includes:
Cyralis™ CM 4.6 x 50 mm, 1.5 µm, 00 Å
Cyralis™ AM 4.6 x 50 mm, 1.5 µm, 00 Å
Cyralis™ CL 4.6 x 50 mm, 1.5 µm, 00 Å
Cyralis™ AL 4.6 x 50 mm, 1.5 µm, 00 Å

CM: The Cellulose-Based Chiral Column, Electron-Rich Carbamate

Cyralis™ CM is SIELC's new chiral column. It is a cellulose carbamate-based column coated onto silica using SIELC's proprietary processes.

The cellulose selector's chemistry permits the use of the column across all major chromatographic modes—HILIC, SFC, RP, NP, and PO—with certain solvent restrictions.

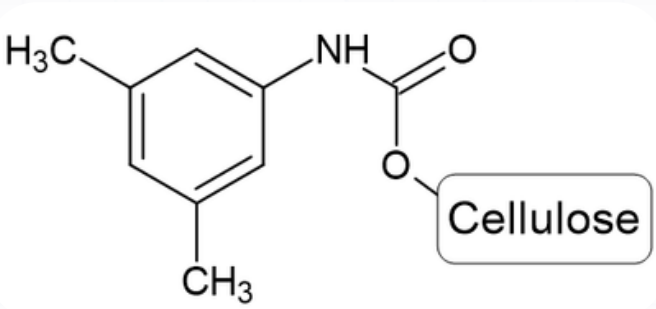
The cellulose selector allows the use of alkanes, carbon dioxide, ethanol, and isopropanol in normal-phase mode, as well as water, acetonitrile, methanol, ethanol, and isopropanol in RP, HILIC, and polar organic modes.

Chiral separation results from specific interactions between analytes and the stationary phase's chiral selector.

The cellulose selector provides chiral cavities in which each enantiomer can interact with the cellulose in subtly different ways, depending on:

- How well it physically fits into the selector's chiral grooves
- How it interacts with the selector's phenyl rings through π–π interactions
- How it interacts with the selector's carbamate NH groups through hydrogen-bonding and dipole–dipole interactions

This combination of interactions produces different retention times for stereoisomers.



Create a Column Part Number Using the Chart Below

CCM - 46.250.0510

Type of Packing

CYRALIS™ CM	CCM
CYRALIS™ AM	CAM
CYRALIS™ CL	CCL
CYRALIS™ AL	CAL

Column ID

22 mm	220
10 mm	100
4.6 mm	46
3.2 mm	32
2.1 mm	21

Column Length

250 mm	250
150 mm	150
100 mm	100
50 mm	050
Guard	G

Particle Size

1.5 µm	01
3 µm	03
5 µm	05

Pore Size

0 Å	00
100 Å	10

To order a column or ask a question send your message to sales@sielc.com

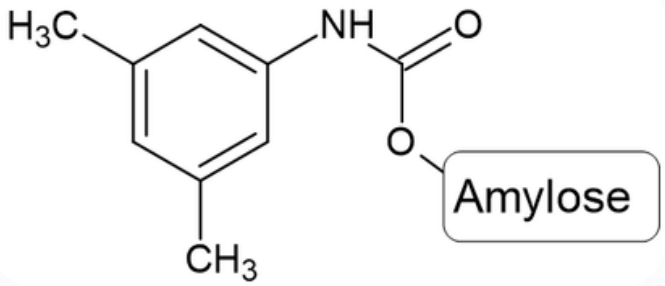
AM: The Amylose-Based Chiral Column, Electron-Rich Carbamate

Cyralis™ AM is a chiral stationary phase based on amylose tris(3,5-dimethylphenyl)carbamate coated onto silica gel. Like Cyralis™ CM, it can be used across all major chromatographic modes: NP, HILIC, RP, and PO.

The amylose selector permits the use of alkanes, carbon dioxide, ethanol, and isopropanol in normal-phase mode and SFC, as well as water, acetonitrile, methanol, ethanol, and isopropanol in RP, HILIC, and PO modes.

The amylose selector has a more helical structure than its cellulose-based counterpart, allowing it to provide enhanced chiral recognition for several broad classes of compounds that cellulose selectors may struggle to separate.

Cyralis™ AM can resolve azole compounds, such as uniconazole and tebuconazole, with significantly greater resolution than Cyralis™ CM. It also provides enhanced selectivity for aryl epoxides and 2-arylpropionic acids, a structural class frequently encountered among several drugs.



Create a Column Part Number Using the Chart Below

CAM - 46.250.0510

Type of Packing	
CYRALIS™ CM	CCM
CYRALIS™ AM	CAM
CYRALIS™ CL	CCL
CYRALIS™ AL	CAL

Column ID	
22 mm	220
10 mm	100
4.6 mm	46
3.2 mm	32
2.1 mm	21

Column Length	
250 mm	250
150 mm	150
100 mm	100
50 mm	050
Guard	G

Particle Size	
1.5 µm	01
3 µm	03
5 µm	05

Pore Size	
0 Å	00
100 Å	10

To order a column or ask a question send your message to sales@sielc.com

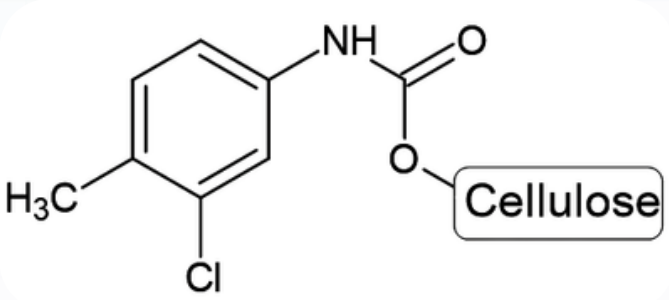
CL: The Cellulose-Based Chiral Column, Electron-Poor Carbamate

Cyralis™ CL is a chiral stationary phase featuring cellulose tris(3-chloro-4-methylphenyl)carbamate coated onto silica gel. Like Cyralis™ CM, it can be used across all major chromatographic modes: NP, SFC, HILIC, RP, and PO.

This cellulose selector permits the use of alkanes, ethanol, and isopropanol in normal-phase mode, as well as water, acetonitrile, methanol, ethanol, and isopropanol in RP, HILIC, and PO modes.

The cellulose selector in Cyralis™ CL is more electron-deficient than the selector used in Cyralis™ CM, making it particularly effective for separating proton pump inhibitors such as pantoprazole and omeprazole. Cyralis™ CL can separate these compounds under reversed-phase conditions, whereas Cyralis™ AM and CM cannot.

Cyralis™ CL can also resolve several general classes of chiral compounds, including 2-arylpropionic acids, beta-blockers, tropines, and certain azoles.



Create a Column Part Number Using the Chart Below

CCL - 46.250.0510

Type of Packing	
CYRALIS™ CM	CCM
CYRALIS™ AM	CAM
CYRALIS™ CL	CCL
CYRALIS™ AL	CAL

Column ID	
22 mm	220
10 mm	100
4.6 mm	46
3.2 mm	32
2.1 mm	21

Column Length	
250 mm	250
150 mm	150
100 mm	100
50 mm	050
Guard	G

Particle Size	
1.5 µm	01
3 µm	03
5 µm	05

Pore Size	
0 Å	00
100 Å	10

To order a column or ask a question send your message to sales@sielc.com

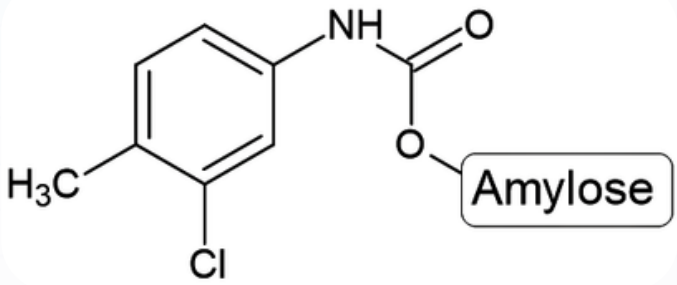
AL: The Amylose-Based Chiral Column, Electron-Poor Carbamate

Cyralis™ AL is a chiral stationary phase featuring amylose tris(3-chloro-4-methylphenyl)carbamate coated onto silica gel. Like Cyralis™ CM, AM, and CL, it can be used across all major chromatographic modes: in RP, SFC, HILIC, and PO.

This amylose selector permits the use of alkanes, ethanol, and isopropanol in normal-phase mode, as well as water, acetonitrile, methanol, ethanol, and isopropanol in RP, SFC, HILIC, and PO modes.

The amylose selector in Cyralis™ AL is more electron-deficient than the selector used in Cyralis™ AM. As a result, it generally provides lower selectivity for compounds with epoxide-containing stereocenters but improved selectivity for certain phenyl-containing amines, such as β-methylphenethylamine.

Cyralis™ AL is designed to complement the other three Cyralis™ phases and serve as an alternative selectivity tool when CM, AM, and CL do not provide sufficient resolution in the tested chromatographic modes.



Create a Column Part Number Using the Chart Below

CAL - 46.250.0510

Type of Packing	
CYRALIS™ CM	CCM
CYRALIS™ AM	CAM
CYRALIS™ CL	CCL
CYRALIS™ AL	CAL

Column ID	
22 mm	220
10 mm	100
4.6 mm	46
3.2 mm	32
2.1 mm	21

Column Length	
250 mm	250
150 mm	150
100 mm	100
50 mm	050
Guard	G

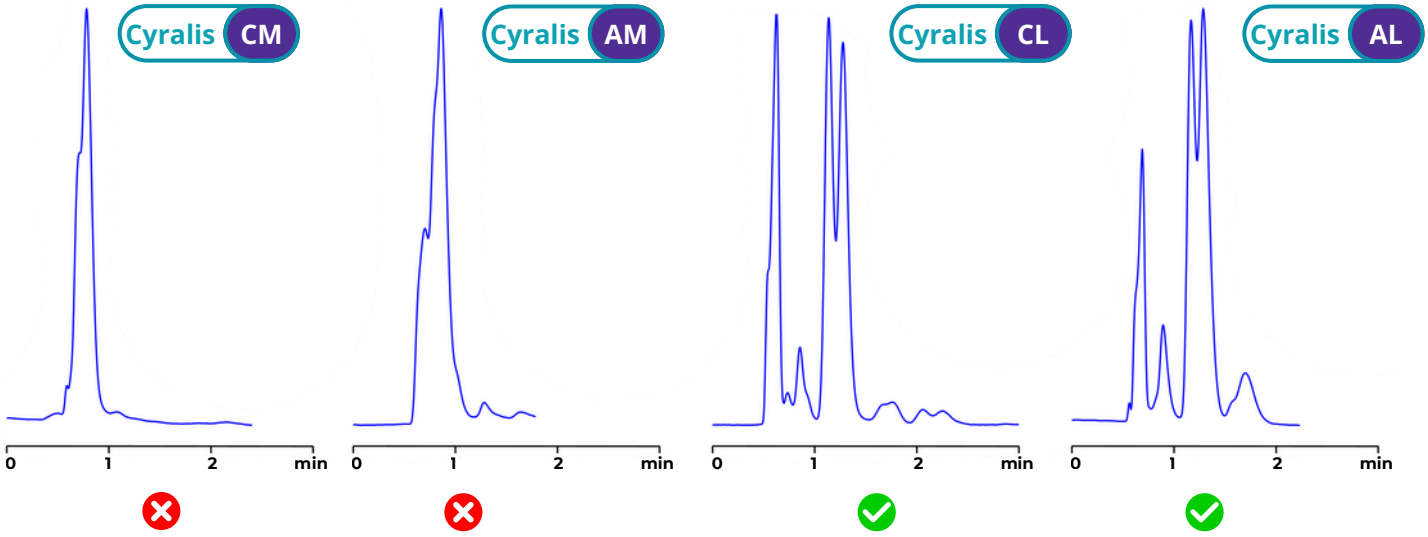
Particle Size	
1.5 µm	01
3 µm	03
5 µm	05

Pore Size	
0 Å	00
100 Å	10

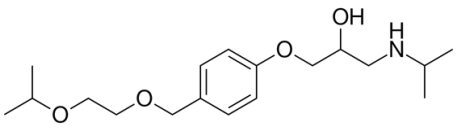
To order a column or ask a question send your message to sales@sielc.com

Nonporous Methods

SEPARATION OF BISOPROLOL

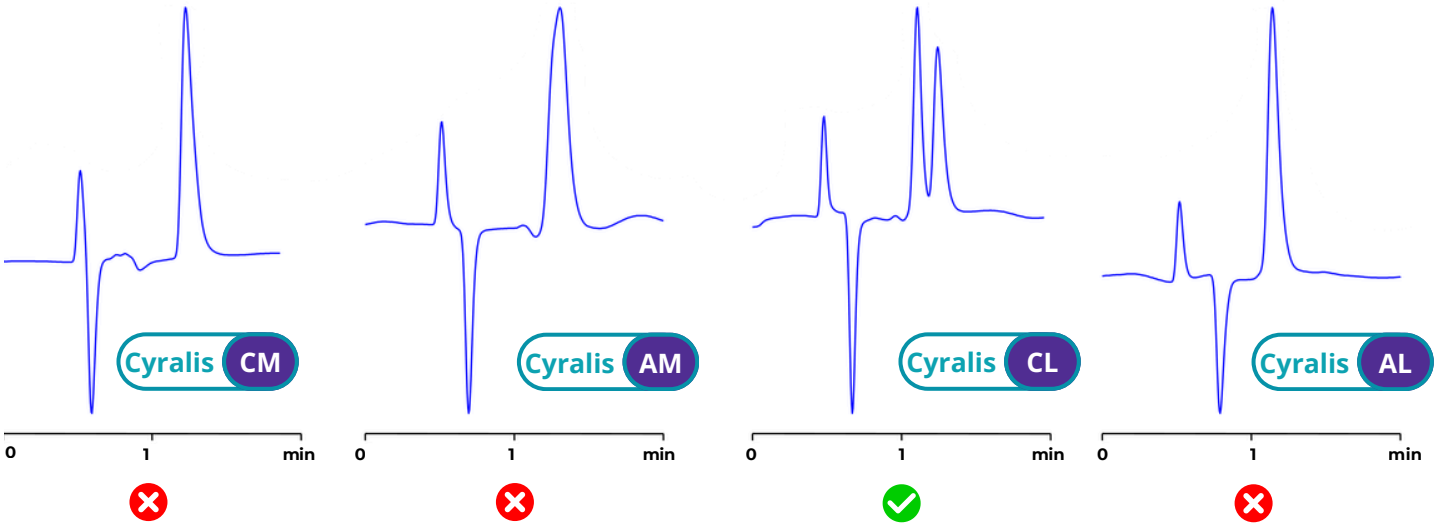


Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/ethanol/DEA - 80/20/0.3%
Flow rate: 0.6 mL/min
Detection: UV 270 nm
Sample: 1 mg/mL in 50/50 heptane/ethanol

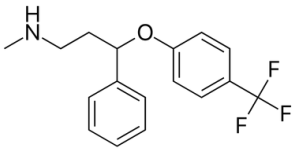


Bisoprolol

SEPARATION OF FLUOXETINE



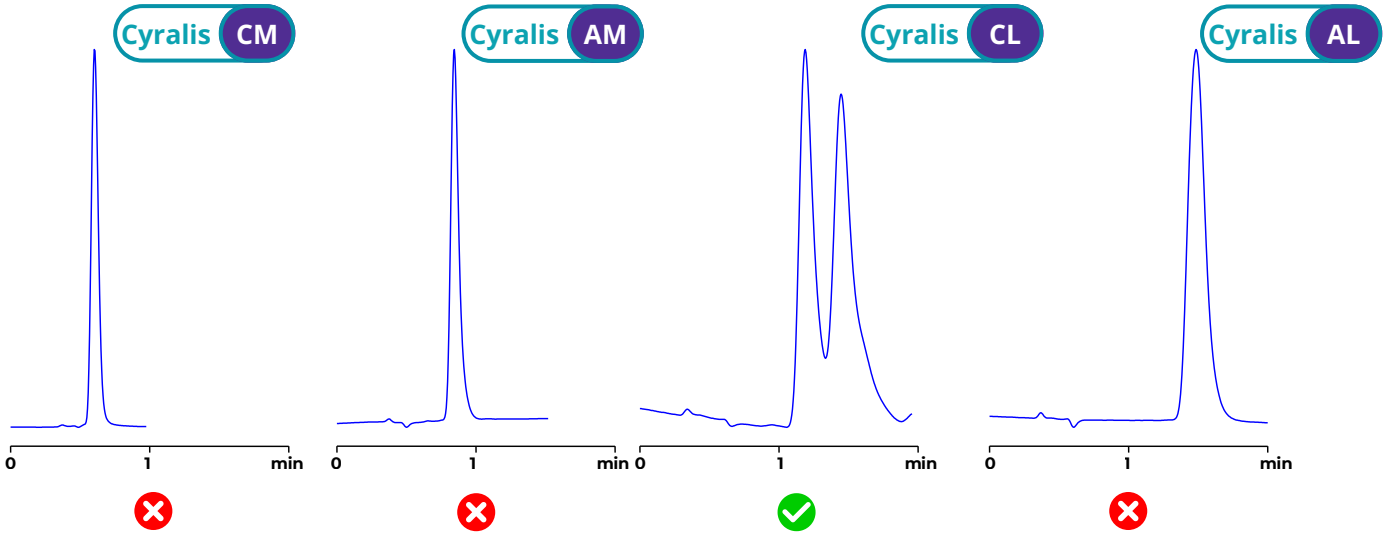
Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/IPA/dea - 98/2/0.3%
Flow rate: 1 mL/min
Detection: UV 270 nm
Sample: 1 mg/mL in IPA



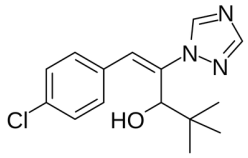
Fluoxetine

Nonporous Methods

SEPARATION OF UNICONAZOLE

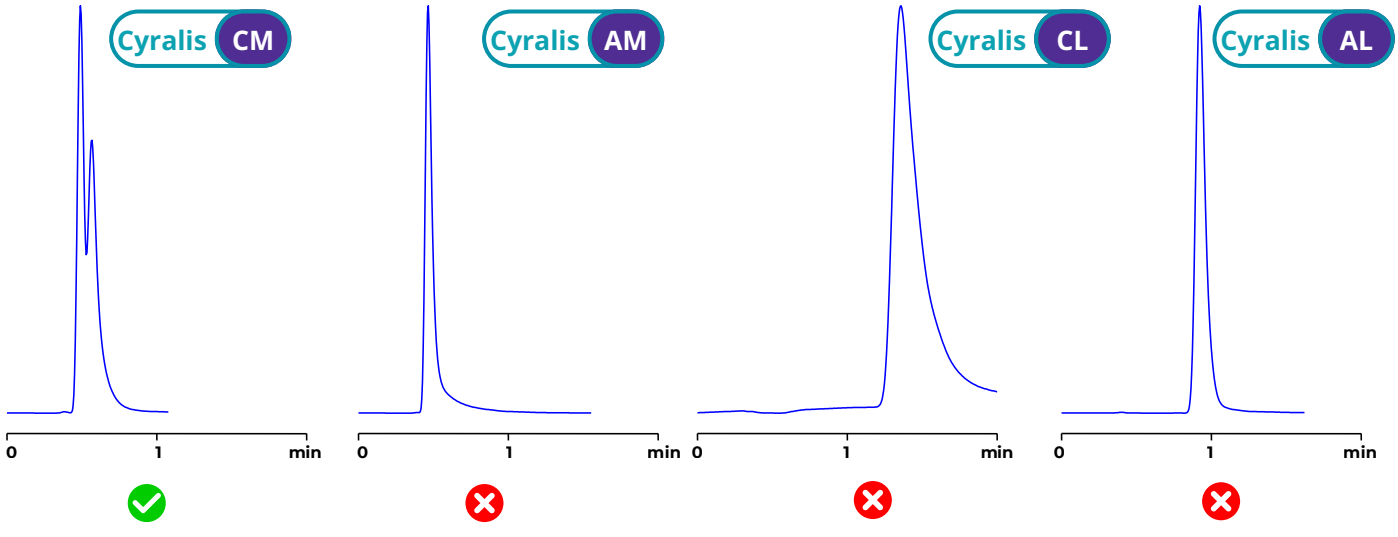


Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/ethanol - 95/5%
Flow rate: 1 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in methanol

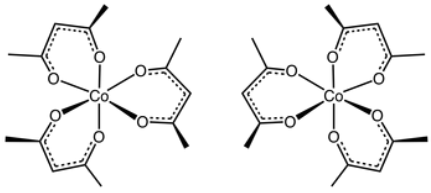


Uniconazole

SEPARATION OF COBALT(III) ACETYLACETONATE



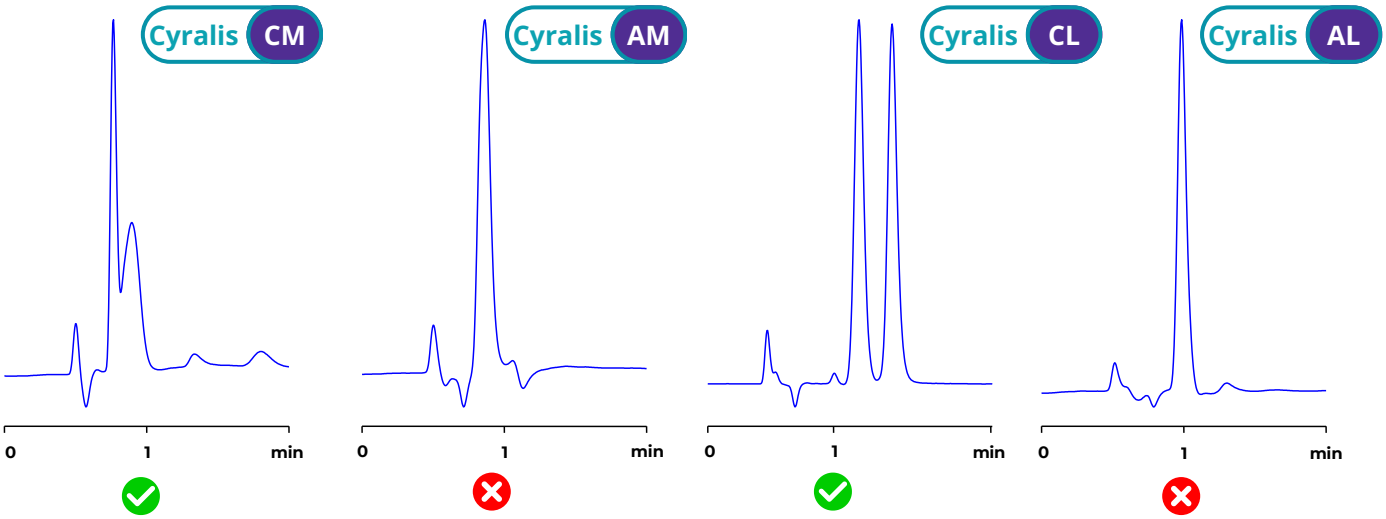
Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/ethanol - 98/2%
Flow rate: 1 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol



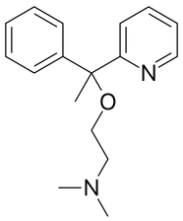
Cobalt(III) acetylacetonate

Nonporous Methods

SEPARATION OF DOXYLAMINE

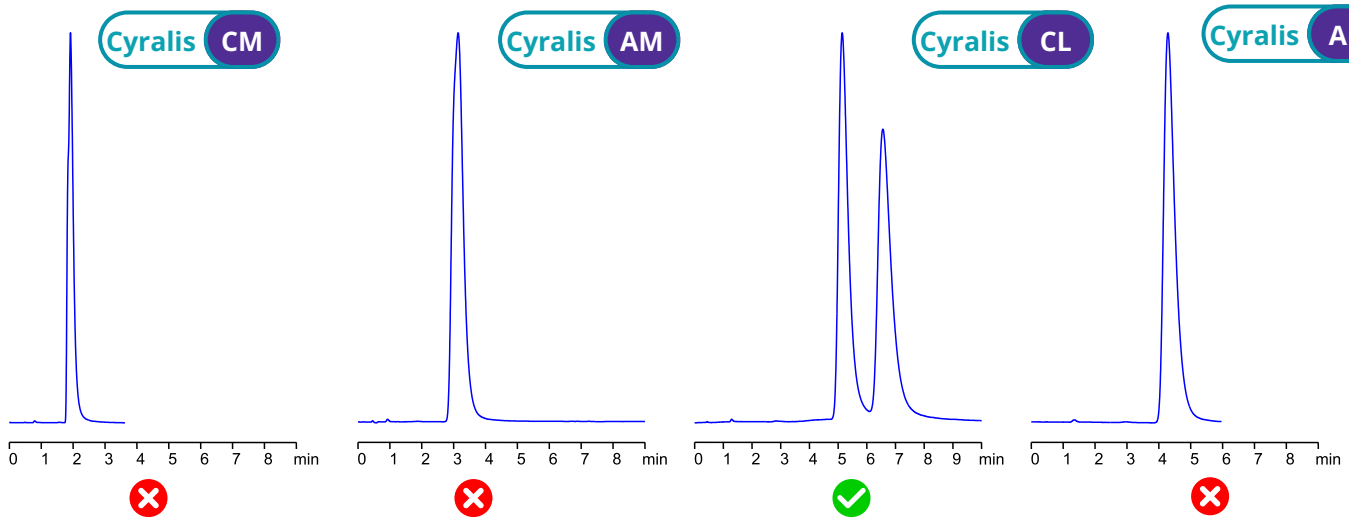


Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/ipa/DEA - 98/2/0.4%
Flow rate: 0.75 mL/min
Detection: UV 260 nm
Sample: 1 mg/mL in ethanol

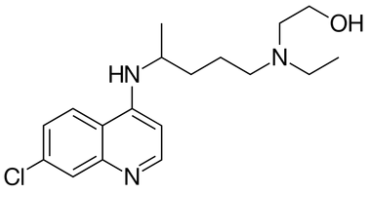


Doxylamine

SEPARATION OF HYDROXYCHLOROQUINE



Column size: 4.6 x 50 mm, 1.5 µm nonporous
Mobile phase: hexane/IPA/DEA - 92/8/0.4%
Flow rate: 0.75 mL/min
Detection: UV 330 nm
Sample: 1 mg/mL in IPA



Hydroxychloroquine

Porous Stationary Phase Chiral Columns

Nonporous stationary phase chiral columns

Nonporous columns provide rapid separations and help identify the stationary phase with the best selectivity for a given optical isomer. Their lower sample capacity can limit sample loading when running the selected separation, particularly during preparative scale-up.

Porous formats for higher sample loading

To accommodate higher sample loads, SIELC also offers its chiral columns with porous packing materials.

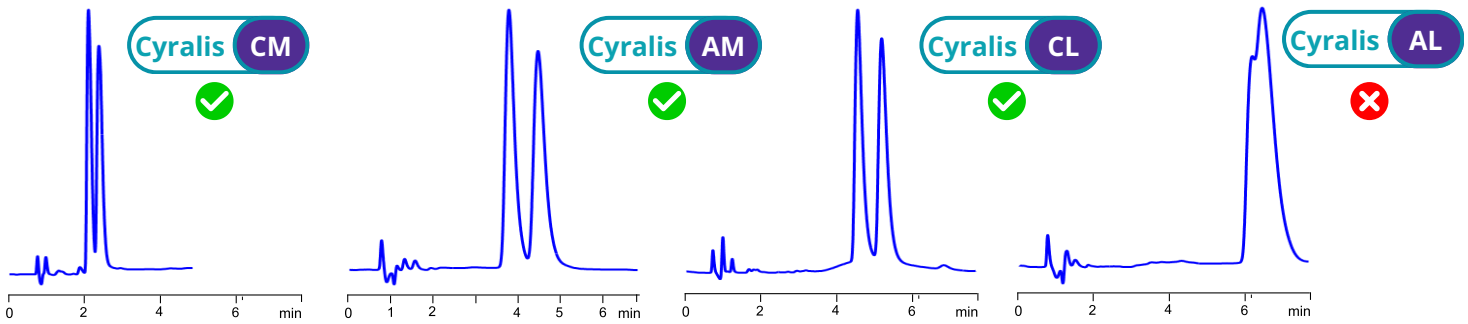
All four Cyralis™ stationary phases (**CM, CL, AM, and AL**) are available on fully porous particles **3 or 5 µm**. Column formats cover a range of standard dimensions, from **2 to 22 mm** in internal diameter and from **50 to 250 mm** in length.

Bulk packing material is also available for customers who pack their own columns.

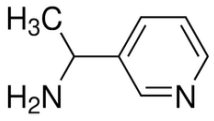
From screening to analytical separations

Having both options—porous and nonporous column stationary supports—allows for optimized method development and wider options for analytical work because, in many cases, a nonporous stationary support column can be used not only for preliminary screening but can also provide sufficient resolution in analytical tests, saving significant time and reducing the amount of solvent used per analysis.

SEPARATION OF 1-PYRIDIN-3-YL-ETHYLAMINE



Column size: Cyralis Kit (nonporous)
Mobile phase: hexane/IPA/DEA - 99/1/0.5%
Flow rate: 0.5 mL/min
Detection: UV 260 nm
Sample: 1 mg/mL in IPA



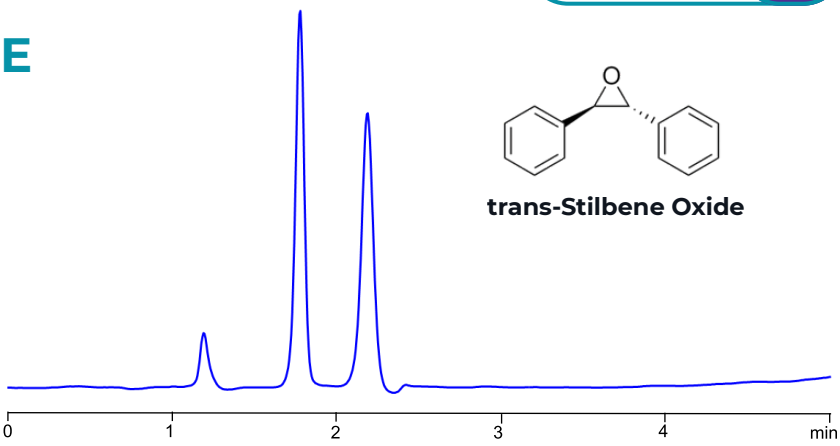
1-pyridin-3-yl-ethylamine

Neutral molecules

SEPARATION OF TRANS-STILBENE OXIDE

Cyralis CM

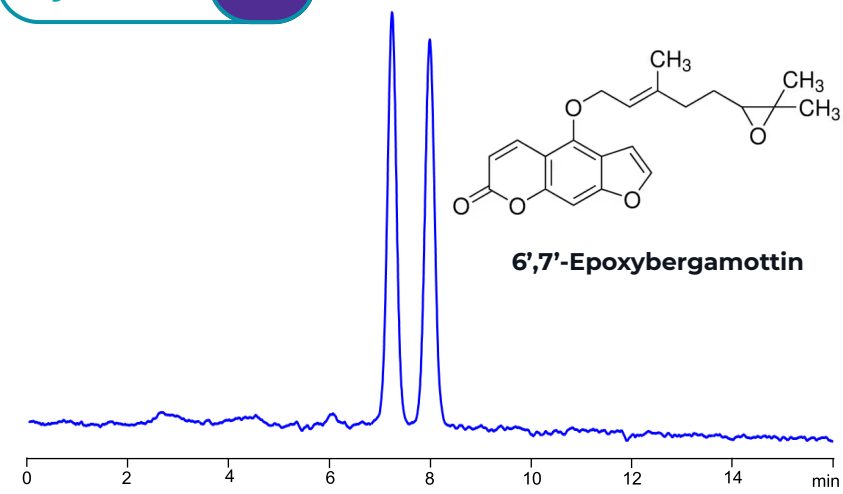
Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/Ethanol - 90/10%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol



trans-Stilbene Oxide

Trans-stilbene oxide is a small, highly hydrophobic probe molecule. Its nearly symmetrical peaks indicate a highly uniform and consistent stationary-phase coating. Excellent separation is achieved even on a short 100 mm column, with a resolution greater than 2.

Cyralis CM



6',7'-Epoxybergamottin

SEPARATION OF 6',7'-EPOXYBERGAMOTTIN

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA – 70/30%
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in IPA

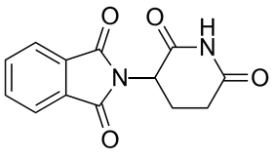
Epoxybergamottin is a coumarin-based natural product found in grapefruit. Its stereocenter is located within an epoxide group, similar to that of trans-stilbene oxide. Despite most of the molecule's steric bulk being located far from the chiral center, the Cyralis™ column provides effective enantiomeric separation.

Neutral molecules

SEPARATION OF THALIDOMIDE

Cyralis CM

Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/IPA - 50/50%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol

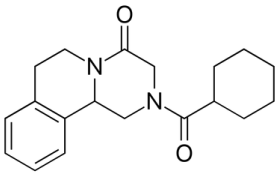


Thalidomide

Thalidomide is a highly polar, neutral pharmaceutical compound containing two imide groups. The Cyralis™ column effectively separates its two enantiomers even under mobile-phase conditions with a very high alcohol content.

Cyralis CM

SEPARATION OF PRAZIQUANTEL



Praziquantel

Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/Ethanol - 70/30%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA

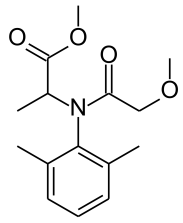
Praziquantel is an anthelmintic drug used to treat parasitic worm infections. Its structure contains two highly polar amide groups. The Cyralis™ column effectively separates its enantiomers even on a short 100 mm column, demonstrating the strong enantioselectivity of its chiral selector for neutral, polar analytes.

Neutral molecules

Cyralis CM

SEPARATION OF METALAXYL

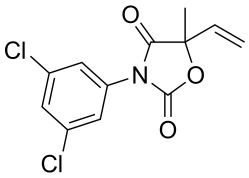
Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510.N
Mobile phase: Ethanol - 100%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA



Metalaxyl

Metalaxyl is a widely used fungicide, and the Cyralis™ column provides efficient enantiomeric separation under polar organic conditions at room temperature. The high selectivity and excellent resolution demonstrate its strong performance for chiral agrochemicals.

Cyralis CM



Vinclozolin

SEPARATION OF VINCLOZOLIN

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA - 90/10%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA

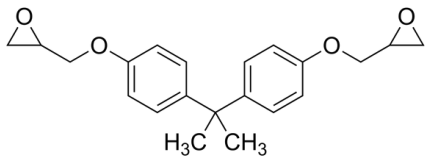
Vinclozolin is a fungicide with a vinyl-substituted stereocenter within an oxazolidine ring. The Cyralis™ column effectively separates its enantiomers under hexane-rich conditions, providing well-defined peaks without significant tailing from the polar ring.

Neutral molecules

SEPARATION OF BISPHENOL A DIGLYCIDYL ETHER

Cyralis AM

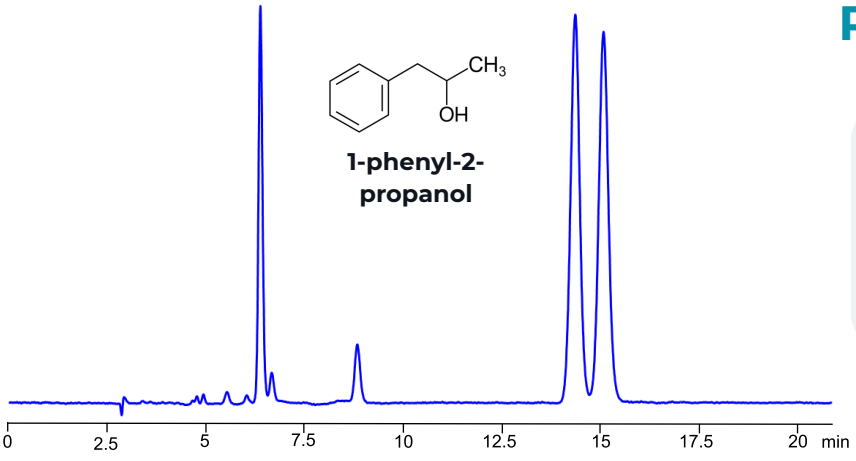
Column: Cyralis™ AM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAM-46.250.0510.N
Mobile phase: Hexane/Ethanol – 98/2%
Flow rate: 1.0 mL/min
Detection: UV 210 nm
Sample: 1 mg/mL in Ethanol



Bisphenol A Diglycidyl Ether

Cyralis™ AM provides excellent chiral recognition of epoxide-containing compounds and effectively separates BADGE, a common epoxy monomer, into its three constituent stereoisomers.

Cyralis CM



1-phenyl-2-propanol

SEPARATION OF 1-PHENYL-2-PROPANOL

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/Ethanol - 99/1%
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in heptane

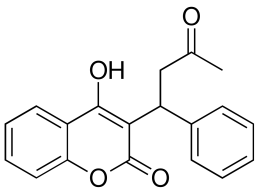
Cyralis™ CM effectively separates the enantiomers of 1-phenyl-2-propanol under normal-phase conditions using a hexane/ethanol mobile phase. This is one of the simplest chiral aromatic alcohols.

Acidic compounds

SEPARATION OF WARFARIN

Cyralis CM

Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Ethanol/AcOH - 100/0.01
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in ethanol

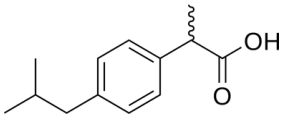


Warfarin

Warfarin is a coumarin anticoagulant. SIELC's column is able to split it with a very small amount of acidic additive, far lower than the normal 0.1–0.5% usually seen for acidic compounds. This is achieved with SIELC's proprietary silica silanization chemistry. Analysis of coumarins must be done with fresh samples to avoid decomposition by ambient light.

SEPARATION OF IBUPROFEN

Cyralis CM



Ibuprofen

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/Ethanol/TFA - 99/1/0.02%
Flow rate: 0.75 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA

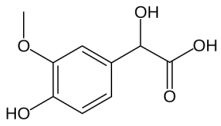
Ibuprofen is a light pain killer and a profen-based 2-aryl-propionic acid. Normally, cellulose-based selectors separate profens with great difficulty. However, ibuprofen was cleanly separated into two baseline-separated enantiomers by Cyralis™ CM.

Acidic compounds

SEPARATION OF VANILLYLMANDELIC ACID

Cyralis CM

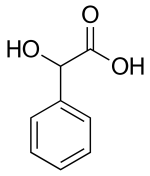
Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/TFA - 70/28.5/1.5%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in ethanol



Vanillylmandelic acid

Vanillylmandelic acid is a metabolite of catecholamines. It is a highly polar acidic compound containing phenolic, hydroxyl, and carboxyl groups that SIELC's column is able to resolve in normal phase. The mobile phase used contains 1.5% TFA showing that SIELC's column is able to tolerate high percentages of acidic additives.

Cyralis CM



Mandelic acid

SEPARATION OF MANDELIC ACID

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/TFA - 70/30/0.5%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA

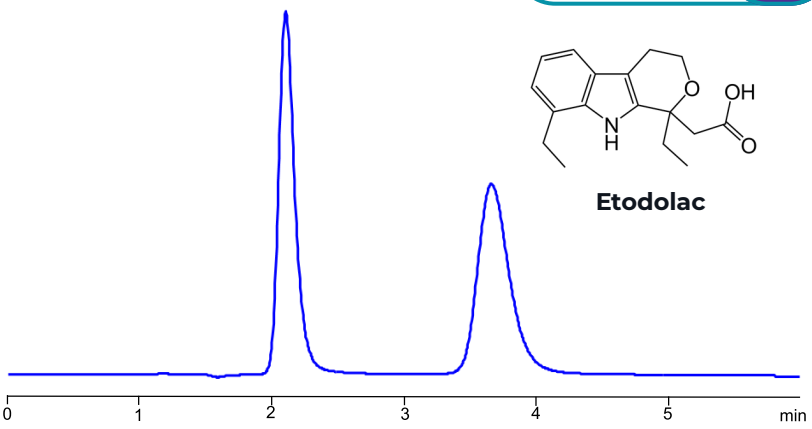
Mandelic acid is a simple aromatic acid commonly used as a probe for acidic compounds. The Cyralis™ column provides reliable enantiomeric separation under normal-phase conditions, delivering well-resolved peaks and strong chiral selectivity.

Acidic compounds

SEPARATION OF ETODOLAC

Cyralis CM

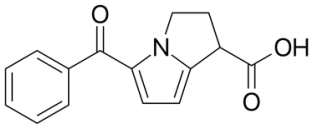
Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/IPA/TFA – 90/10/0.1%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol



Etodolac

Cyralis™ CM provides efficient and reliable separation of lac-type APIs, such as etodolac and ketorolac, while using a compact 100 mm column. The short column format enables high-quality resolution while supporting faster analysis and reduced solvent consumption.

Cyralis CM



Ketorolac

SEPARATION OF KETOROLAC

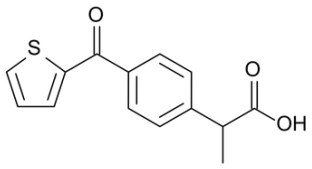
Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510.N
Mobile phase: 85/15/0.1% hexane/ethanol/TFA
Flow rate: 1.0 mL/min
Detection: UV 320 nm
Sample: 1 mg/mL in methanol

Ketorolac is efficiently separated with excellent baseline resolution using a short 100 mm Cyralis™ CM column, demonstrating strong separation performance in a compact column format.

Acidic compounds

SEPARATION OF SUPROFEN

Cyralis AM



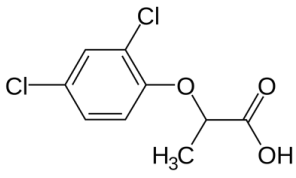
Suprofen

Column: Cyralis™ AM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAM-46.250.0510.N
Mobile phase: Hexane/IPA/TFA – 85/15/0.1%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol

Cyralis™ AM efficiently separates profen compounds such as suprofen, providing excellent chiral selectivity and baseline resolution of the enantiomers. This performance demonstrates the column's strong recognition of structurally complex acidic pharmaceutical compounds.

Cyralis AM

SEPARATION OF DICHLORPROP



Dichlorprop

Column: Cyralis™ AM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAM-46.250.0510.N
Mobile phase: Hexane/IPA/TFA – 85/15/0.1%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol

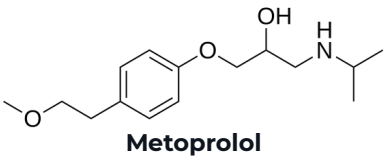
Dichlorprop is an herbicide belonging to the 2-aryloxypropionic acid class, which is structurally related to the profens. Cyralis™ AM effectively separates its enantiomers, demonstrating strong chiral recognition for acidic compounds in this structural class.

Basic molecules

SEPARATION OF METOPROLOL

Cyralis CM

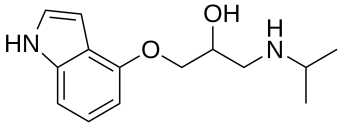
Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/Ethanol/DEA - 75/25/0.5%
Flow rate: 0.7 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in ethanol



Metoprolol

Metoprolol is a widely used beta-blocker. The Cyralis™ column effectively separates its two enantiomers on a short 100 mm column at a reduced flow rate, demonstrating strong chiral selectivity in a compact column format.

Cyralis CM



Pindolol

SEPARATION OF PINDOLOL

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Ethanol/DEA - 99.7/0.3%
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in IPA

Pindolol is a non-selective beta-blocker featuring an indole ring in its molecular structure. The Cyralis™ column effectively separates its two enantiomers, demonstrating strong chiral recognition for this class of pharmaceutical compounds.

Basic molecules

SEPARATION OF DONEPEZIL

Cyralis CM

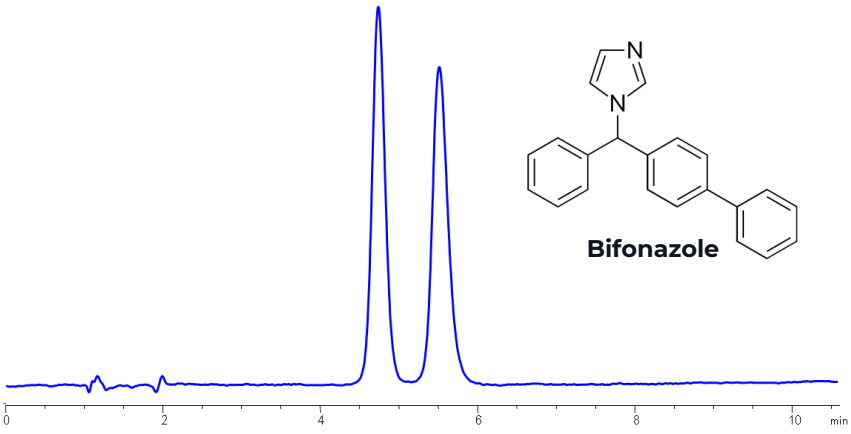


Donepezil

Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/Ethanol/DEA - 90/10/0.2%
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in ethanol

Donepezil is an acetylcholinesterase inhibitor used in the treatment of Alzheimer's disease. Despite its relatively large molecular structure, the Cyralis™ column effectively separates its two enantiomers on a short 100 mm column, demonstrating strong chiral recognition in a compact format.

Cyralis CM



Bifonazole

SEPARATION OF BIFONAZOLE

Column: Cyralis™ CM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCM-46.100.0510
Mobile phase: Hexane/Ethanol/DEA - 85/15/0.5%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in ethanol

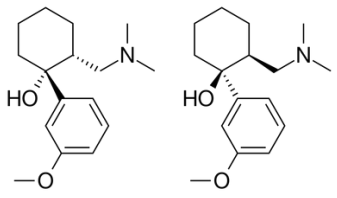
Bifonazole is an antifungal compound featuring an imidazole group and three aromatic rings. Despite its bulky molecular structure, the Cyralis™ column effectively separates its enantiomers on a short 100 mm column, demonstrating strong chiral recognition in a compact format.

Basic molecules

Cyralis CM

SEPARATION OF TRAMADOL

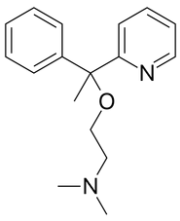
Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/2-(dimethylamino)ethanol – 95/5/0.3%
Flow rate: 1.0 mL/min
Detection: UV 270 nm
Sample: 1 mg/mL in ethanol



Tramadol

Tramadol is readily separated on Cyralis CM but not with traditional additives such as diethylamine or ethylenediamine. EDA yields no separation while DEA only gives partial separation. Matching the analyte's structure (tertiary amine + alcohol) to the additive's structure (2-dimethylaminoethanol) gives baseline resolution.

Cyralis CL



Doxylamine

SEPARATION OF DOXYLAMINE

Column: Cyralis CL (nonporous)
Column size: 4.6 × 50 mm, 1.5 µm
Column part number: CCL-46.050.0100
Mobile phase: Hexane/IPA/DEA – 98/2/0.2%
Flow rate: 0.75 mL/min
Detection: UV 260 nm
Sample: 1 mg/mL in IPA

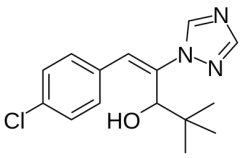
Doxylamine can be completely baseline resolved with just a short nonporous column. While the ultrafast phases are intended for screening, occasionally they are enough to completely resolve certain racemates.

Basic molecules

SEPARATION OF UNICONAZOLE

Cyralis AM

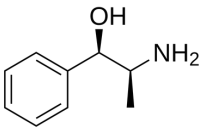
Column: Cyralis™ AM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAM-46.250.0510.N
Mobile phase: Hexane/Ethanol – 95/5%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol



Uniconazole

Uniconazole is a chiral, azole-containing plant growth regulator. Cyralis™ AM effectively separates its enantiomers under normal-phase conditions using a hexane/ethanol mobile phase, demonstrating strong chiral recognition for this analyte.

Cyralis AM



Norephedrine

SEPARATION OF NOREPHEDRINE

Column: Cyralis™ AM
Column size: 4.6 × 100 mm, 5 µm
Column part number: CAM-46.100.0510.N
Mobile phase:
Hexane/Ethanol/Ethanolamine – 50/50/0.1%
Flow rate: 1.0 mL/min
Detection: UV 220 nm
Sample: 1 mg/mL in 50/50 Hexane/Ethanol

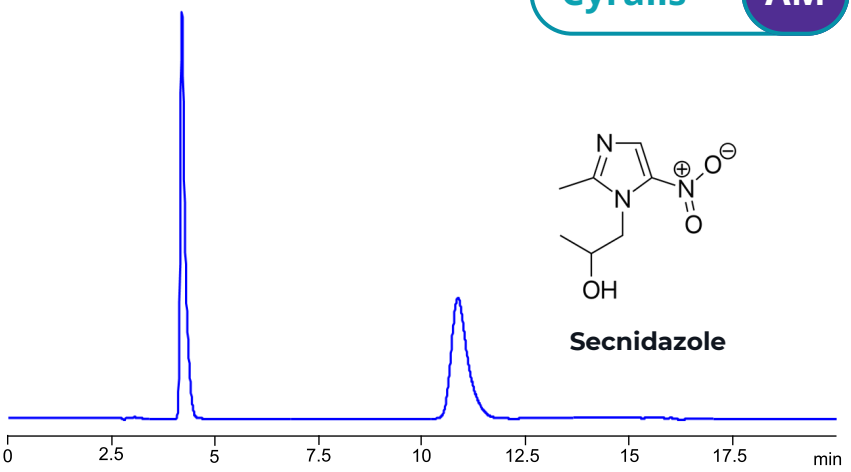
Norephedrine can be efficiently separated on a short 100 mm Cyralis™ column. Ethanolamine is used instead of the conventional DEA additive to better complement the analyte's amino alcohol structure, enabling improved selectivity and well-resolved peaks.

Basic molecules

SEPARATION OF SECNIDAZOLE

Cyralis AM

Column: Cyralis™ AM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAM-46.250.0510.R
Mobile phase: IPA/MeCN – 60/40%
Flow rate: 1.0 mL/min
Detection: UV 320 nm
Sample: 1 mg/mL in IPA

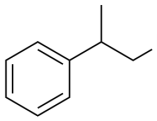


Secnidazole

Secnidazole can be efficiently separated on Cyralis™ AM with excellent selectivity under polar organic conditions. Although the separation shown was performed on a 250 mm column, effective enantiomeric resolution can be achieved even with a compact 50 mm column, demonstrating the strong chiral recognition of the stationary phase.

SEPARATION OF BETA-METHYLPHENETHYLAMINE

Cyralis AL



beta-methylphenethylamine

Column: Cyralis™ AL
Column size: 4.6 × 250 mm, 5 µm
Column part number: CAL-46.250.0510
Mobile phase: Hexane/IPA/1-butylamine – 90/10/0.9%
Flow rate: 1.0 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in IPA

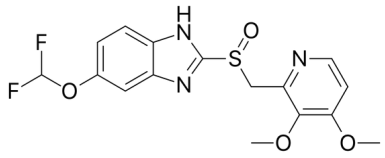
β-Methylphenethylamine is a chiral, phenyl-containing amine commonly used as a representative analyte for basic aromatic compounds. Cyralis™ AL effectively separates its enantiomers, providing the selectivity needed to achieve resolution where the other three Cyralis™ phases do not provide sufficient separation under the tested conditions.

Basic molecules

SEPARATION OF PANTOPRAZOLE

Cyralis CL

Column: Cyralis™ CL
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCL-46.100.0510.R
Mobile phase: MeCN/100 mM Ammonium Carbonate pH 9 – 30/70%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in ethanol

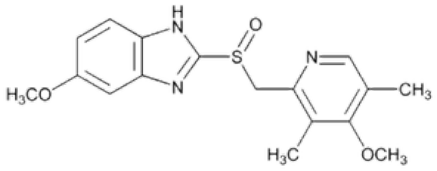


Pantoprazole

Cyralis™ CL efficiently separates proton pump inhibitors, including prazoles such as pantoprazole. The separation is achieved under reversed-phase conditions on a short 100 mm column, demonstrating strong chiral selectivity and reliable performance in a compact format.

SEPARATION OF OMEPRAZOLE

Cyralis CL



Omeprazole

Column: Cyralis™ CL
Column size: 4.6 × 100 mm, 5 µm
Column part number: CCL-46.100.0510.R
Mobile phase: MeCN/100 mM Ammonium Carbonate pH 9 – 50/50%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in ethanol

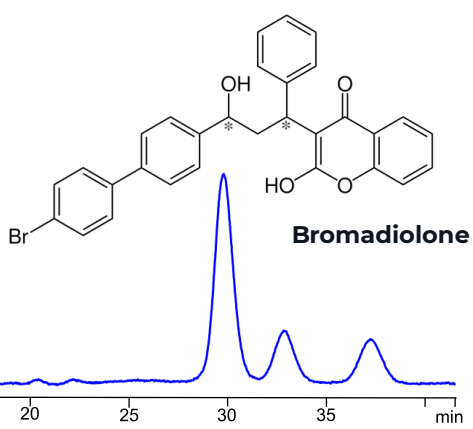
Cyralis™ CL efficiently separates the enantiomers of omeprazole on a short 100 mm column, providing strong chiral selectivity and well-resolved peaks in a compact column format.

Multiple Stereocenters

SEPARATION OF BROMADIOLONE

Cyralis CM

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/TFA - 87/13/0.5%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in isopropanol

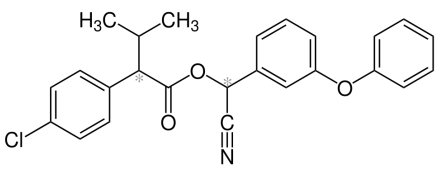


Bromadiolone

Bromadiolone is an anticoagulant rodenticide with two chiral centers. SIELC's column is able to split both pairs of enantiomers and separate all four stereoisomers, which demonstrates the selectivity of the column.

SEPARATION OF FENVALERATE

Cyralis CM



Fenvalerate

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA - 96/4%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in isopropanol

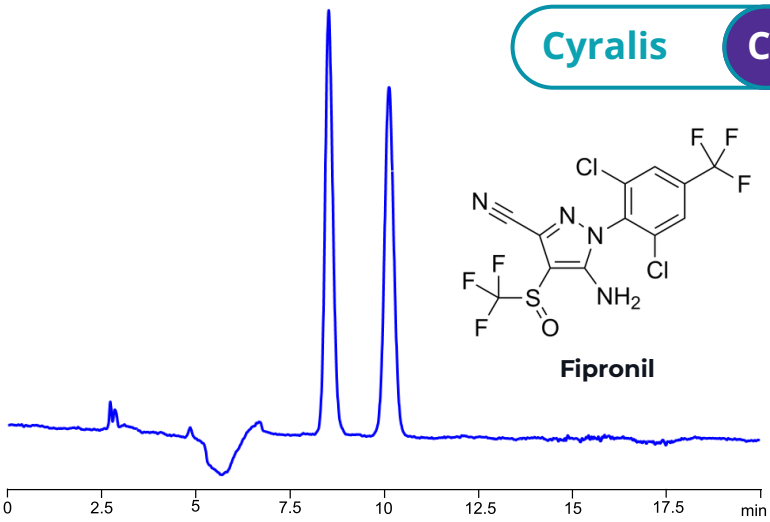
Fenvalerate is an insecticide with two chiral centers. SIELC's column is able to separate all of fenvalerate's stereoisomers. Cyralis CM was able to do it using only hexane and IPA at room temperature unlike literature methods which require ternary mixtures of solvents.

Unusual Stereocenters

SEPARATION OF FIPRONIL

Cyralis CM

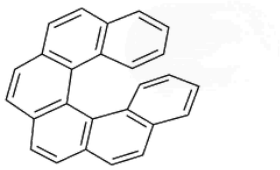
Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/DEA – 85/14/1%
Flow rate: 1.0 mL/min
Detection: UV 280 nm
Sample: 1 mg/mL in IPA



Fipronil

Fipronil is an insecticide. SIELC's column is able to separate the enantiomers without degrading the molecules. Fipronil's chirality comes from the sulfoxide group, not a carbon-based stereocenter. Even so, SIELC's column was able to split the sample into its two enantiomers.

Cyralis CM



Hexahelicene

SEPARATION OF HEXAHELICENE

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Ethanol – 100%
Flow rate: 0.5 mL/min
Detection: UV 250 nm
Sample: 1 mg/mL in Heptane/IPA - 50/50%

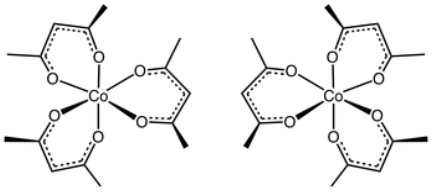
Cyralis CM can separate molecules with helical chirality, such as helicenes. This doesn't have an obvious chiral center and the chirality is instead generated by steric repulsion of the edge rings' hydrogens.

Unusual Stereocenters

Cyralis CM

SEPARATION OF COBALT(III) ACETYLACETONATE

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/Ethanol - 95/5%
Buffer: None
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol

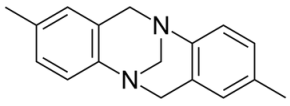


Cobalt(III) acetylacetonate

Cyralis™ CM can separate compounds with a transition-metal stereogenic center, such as cobalt. These compounds exhibit octahedral rather than traditional tetrahedral chirality, demonstrating the column's selectivity for unusual stereogenic centers.

Cyralis CM

SEPARATION OF TRÖGER'S BASE



Tröger's base

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: Hexane/IPA/DEA – 90/10/0.5%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in IPA

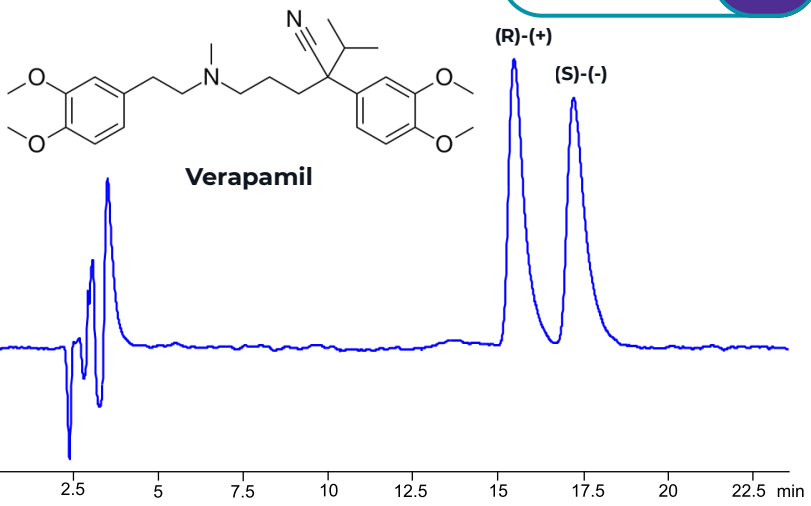
Cyralis™ CM effectively separates compounds featuring rigid, nitrogen-centered chirality, such as Tröger's base. This separation demonstrates the column's strong chiral recognition and selectivity for structurally constrained molecules with unconventional stereogenic centers.

Reversed Phase Methods

SEPARATION OF VERAPAMIL

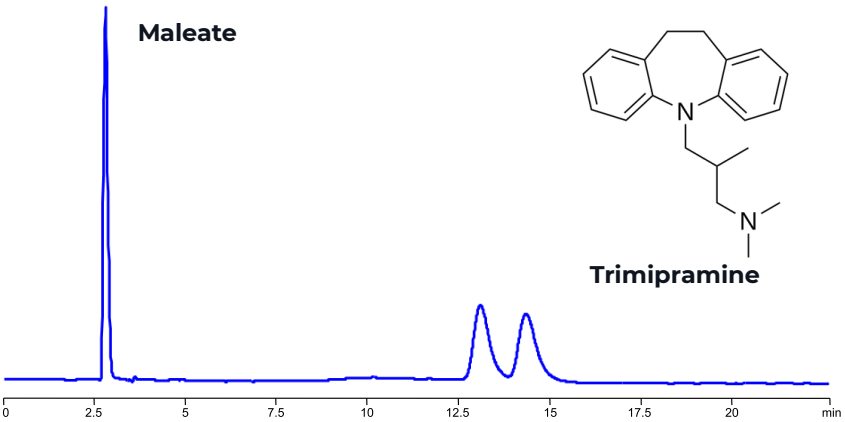
Cyralis CM

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510
Mobile phase: 100 mM AmAc pH 5/MeCN - 65/35%
Flow rate: 1.0 mL/min
Detection: UV 230 nm
Sample: 1 mg/mL in ethanol



This example demonstrates the separation of verapamil under reversed-phase conditions. Depending on the analyte, reversed-phase methods may provide better selectivity and resolution than normal-phase or polar organic modes.

Cyralis CM



SEPARATION OF TRIMIPRAMINE

Column: Cyralis™ CM
Column size: 4.6 × 250 mm, 5 µm
Column part number: CCM-46.250.0510.R
Mobile phase: 0.75 M $NaClO_4$/MeCN – 60/40%
Flow rate: 1.0 mL/min
Detection: UV 220 nm
Sample: 1 mg/mL in ethanol

Trimipramine is separated under reversed-phase conditions as the perchlorate salt, achieving baseline resolution. In contrast, analysis of its sulfate or chloride salts does not provide baseline separation.

Contact Us

We're Here to Help

SIELC'S TEAM IS READY TO SUPPORT YOUR SUCCESS WITH CYRALIS™ COLUMNS AND TAILORED HPLC SOLUTIONS

Product Information

sales@sielc.com

Method Development

research@sielc.com

Accounts Payable

finance@sielc.com

Scan to Learn More

Visit **sielc.com** for more information

Free Method Development

We offer free HPLC method development tailored to your specific compounds, ensuring optimized separations with reliable, reproducible results. Free custom solutions—designed for seamless analytical performance.

Call: 847 229-2629
Fax: 847 655-6079

SIELC Technologies,
804 Seton Ct.
Wheeling, IL USA 60090