

CLARICEP™ FLASH Chromatography

Application Guide

Fermentation Products

Natural Products

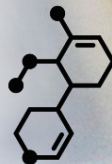
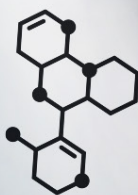
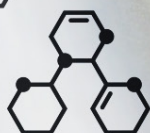
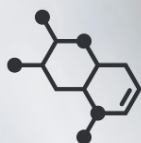
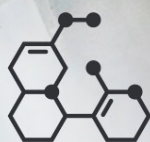
Synthetic Drugs

Pesticide Impurities Concentrate

Synthetic Intermediate

Large Scale Preparation

+ More!



CLARICEP™ FLASH

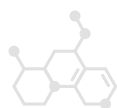
Irregular & Spherical Silica Columns

QUALITY GUARANTEED!



Bonna-Agela Technologies have developed a technology that effectively deactivates the silica surface. As a result, CLARICEP Flash columns have less surface activity than ordinary silica columns and demonstrate significantly improved chromatographic performance.

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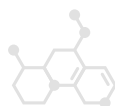
Phenomenex.com/Chat

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Fermentation Products

Cucurbitenol

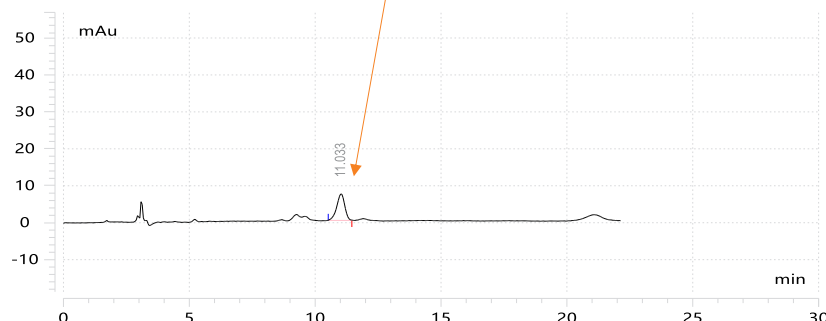
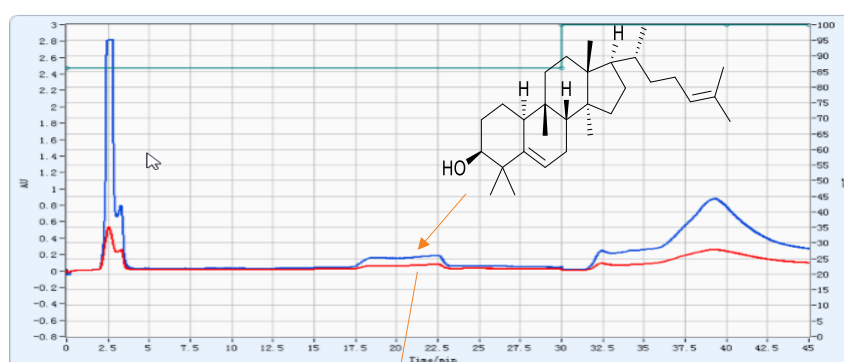
The quantity of target analytes in such fermentation samples is low. In addition, the impurities in these samples will contaminate the column. Therefore, it is not recommended to separate this type of samples directly with high-pressure preparation method. It is necessary to first concentrate the target analytes with a medium-pressure chromatography method such as Claricep™ flash, and then further purify it using high-pressure purification method.

Flash Purification conditions:

Column: Claricep™ Spherical, AQ C18, 20-35 μm , 100 \AA , 20 g, Two Flash columns in series
Part No.: SQ230020-0
Mobile Phase: Water/ Acetonitrile/ Ethanol (14:43:43)
Flow Rate: 25 mL/min
Wavelength: 203 nm, 210 nm
Injection Volume: 5 mL of Fermentation mixture

HPLC conditions:

Column: ODS-2, 7 μm , 100 \AA
Dimensions: 250 x 4.6 mm
Mobile Phase: Water/ Acetonitrile/ Ethanol (10:45:45)
Flow Rate: 1 mL/min
Wavelength: 203 nm



Purity confirmation

High Quality

The use of a cost effective and high quality Claricep flash column is very efficient in concentrating the target analytes. A Claricep flash column is a great purification method suitable for high pressure preparation process.

Fermentation Products

Paclitaxel

Flash Purification conditions:

Column: Claricep™ Spherical, AQ C18, 20-35 µm,
100 Å 120 g

Part No.: SQ230120-0

Mobile Phase: A: Water

B: Methanol

Flow Rate: 80 mL/min

Wavelength: 230 nm, 254 nm

Injection Volume: 10 mL

HPLC conditions:

Column: C18, 5 µm, 100 Å MP

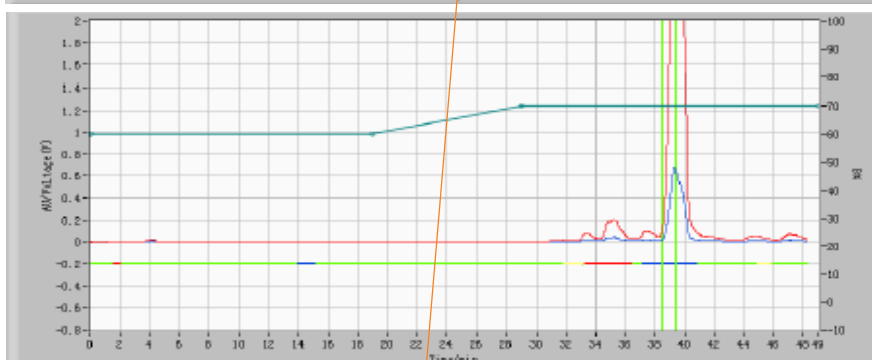
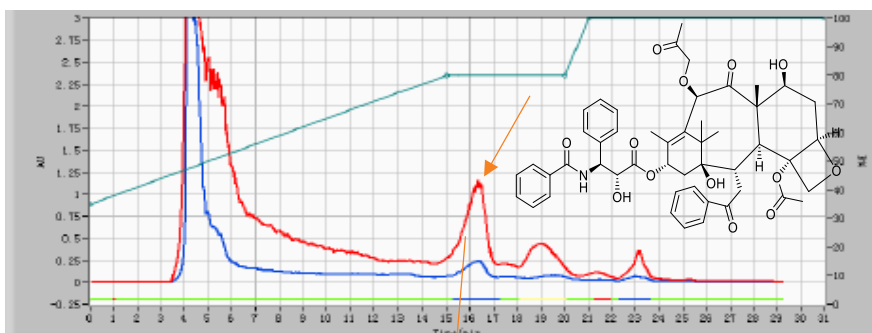
Dimensions: 250 x 30 mm

Mobile Phase: A: Water (0.05 % TFA)

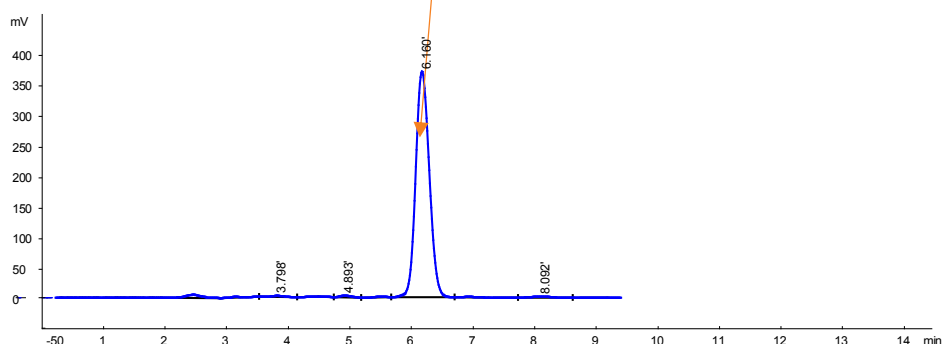
B: Methanol (0.02 % TFA)

Flow Rate: 1 mL/min

Wavelength: 230 nm, 254 nm



Purity confirmation



99% Purity Confirmation

The combination of low pressure (Claricep Flash) and high pressure method preparation is key to obtain 99% purity confirmation of the analyte.

Fermentation Products

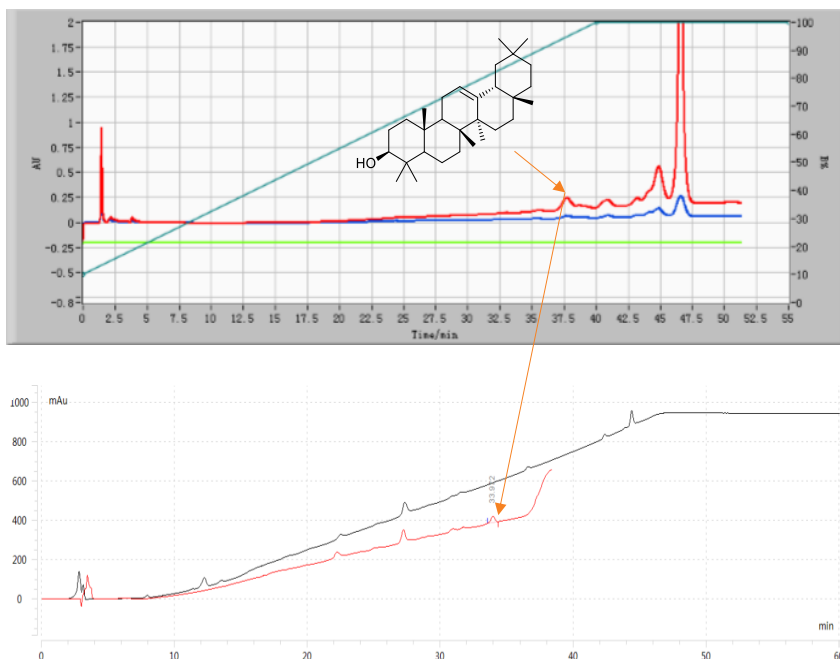
β -Amyrin

Flash Purification conditions:

Column: Claricep™ Flash Spherical C18, 20-35 μm , 100 Å, 12 g, three columns in series
Part No.: S0230012-0
Mobile Phase: A: Water B: Methanol (20% B -100% B for 40 min)
Flow Rate: 16 mL/min
Wavelength: 205 nm, 215 nm
Injection Volume: 15 mL Fermentation mixture

HPLC conditions:

Column: ODS-2, 10 μm , 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
B: Methanol (20% B -100% B for 40 min)
Flow Rate: 1 mL/min
Wavelength: 205 nm



The use of a cost effective and high quality Claricep flash column is very efficient in concentrating the target analytes. A Claricep flash column is a great purification method suitable for high pressure preparation process.

Natural Products

Ganoderma Acid

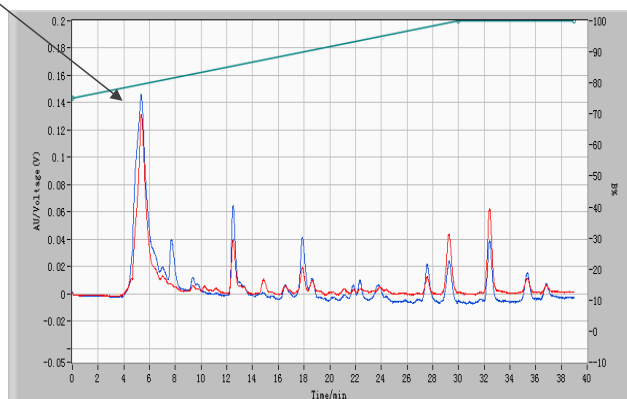
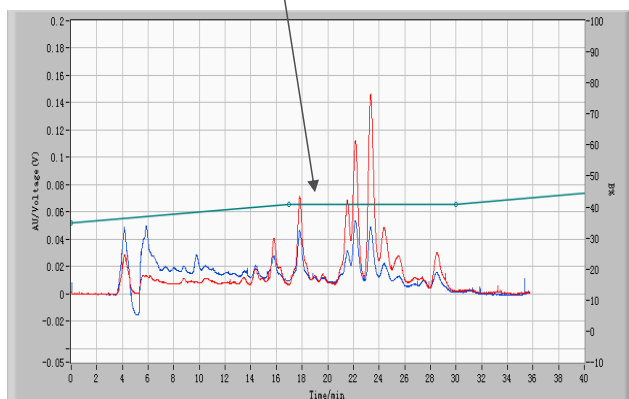
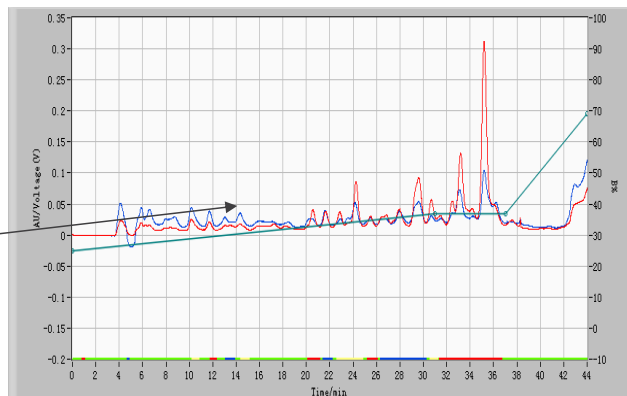
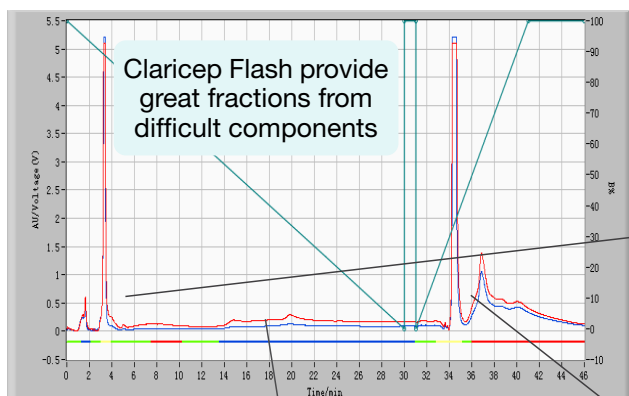
These types of samples are crude product. It is directly extracted from plants that have complex matrix and often contaminate chromatography column sorbent. Natural product samples should be processed by medium pressure chromatography method first, and then further purify each fraction using high pressure chromatography.

Flash Purification conditions:

Column: Claricep™ Flash Irregular Silica, 40-60 µm, 60 Å, 12 g, three columns in series
Part No.: CS140012-0
Mobile Phase: Dichloromethane/ Acetonitrile/ Methanol
Flow Rate: 15 mL/min
Detection: 254 nm, 280 nm
Injection Volume: 200 mg

HPLC conditions:

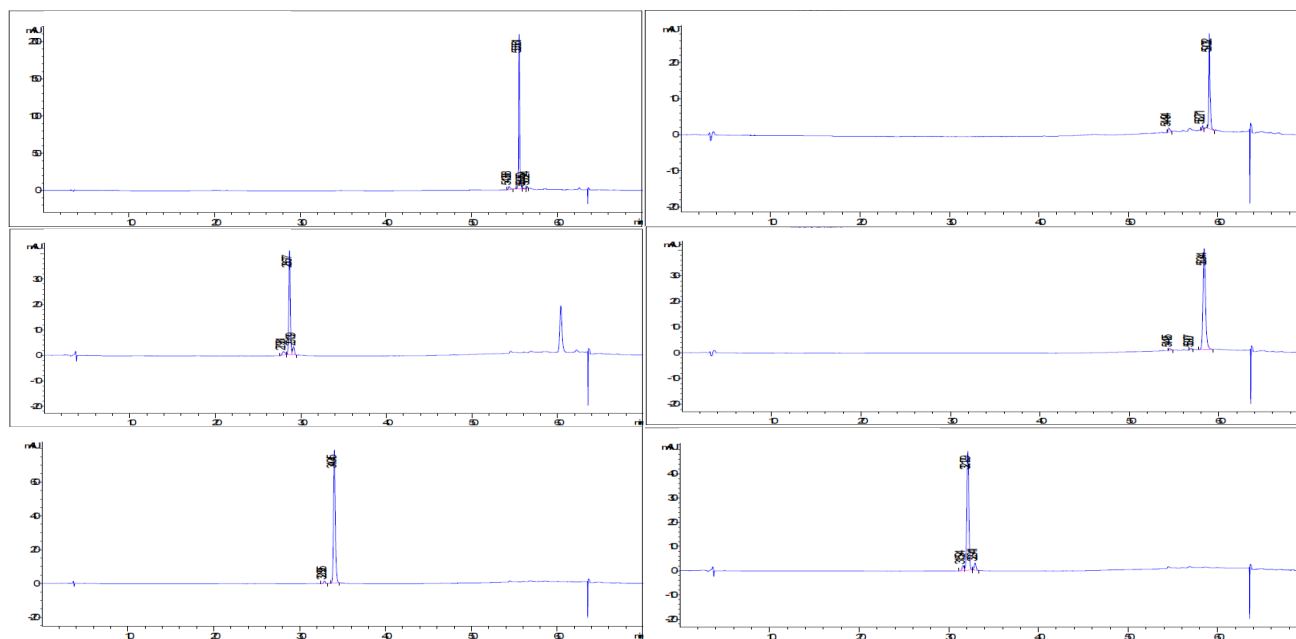
Column: ODS-2, 10 µm, 100 Å
Dimensions: 250 x 30 mm
Mobile Phase: 0.01 % TFA in Water/Acetonitrile (73:27)
Flow Rate: 30 mL/min
Wavelength: 254 nm, 280nm



Natural Products

Ganoderma Acid (cont'd)

Purity confirmation



In natural products, Claricep flash chromatography is considered a very effective purification method for difficult components and highly contaminating such as ganoderma acid.

Natural Products

Ligustrum

Flash Purification conditions:

Column: Claricep™ Flash C18, irregular 40-60 µm, 60 Å, 40 g, two columns in series

Part No.: CS140040-0

Mobile Phase: A: Deionized water
B: Acetonitrile

Flow Rate: 40 mL/min

Detection: 210 nm (red signal line)
220 nm (blue signal line)

Injection Volume: 2 mL

Instrument: Agela Cheetah® Medium pressure instrument

HPLC conditions:

Column: ODS-2, 10 µm, 100 Å

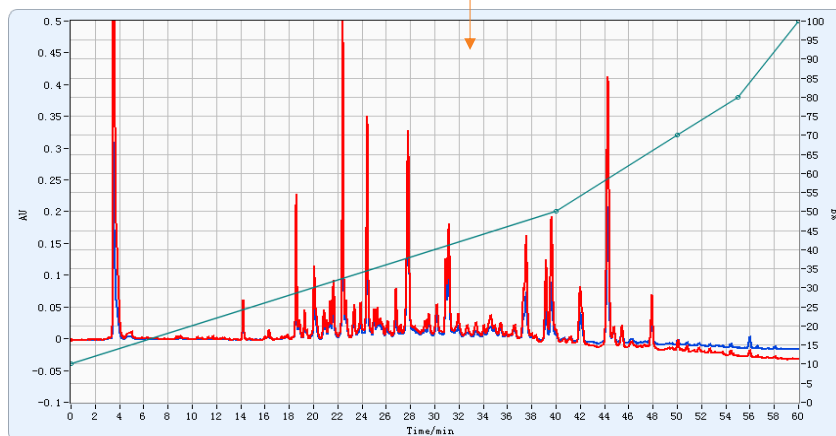
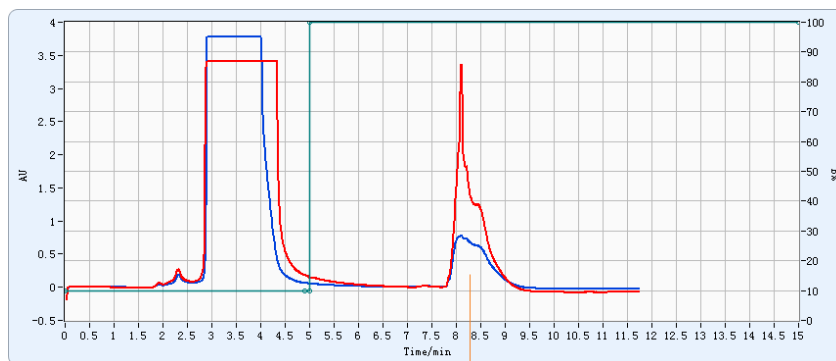
Dimensions: 250 x 21.2 mm

Detection: 210 nm (red signal line)
220 nm (blue signal line)

Mobile Phase: A: Deionized water (0.05% TFA)
B: Acetonitrile

Flow Rate: 18 mL/min

Injection Volume: 5 mL (concentrate Medium pressure prep fraction to 5 mL)



High pressure chromatography method is usually used after the medium or low pressure chromatography method (Flash chromatography) to obtain monomers.

Natural Products Clematis

Flash Purification conditions:

Column: Claricep™ Flash C18, 20-35 µm, 100 Å, 12 g,
three columns in series

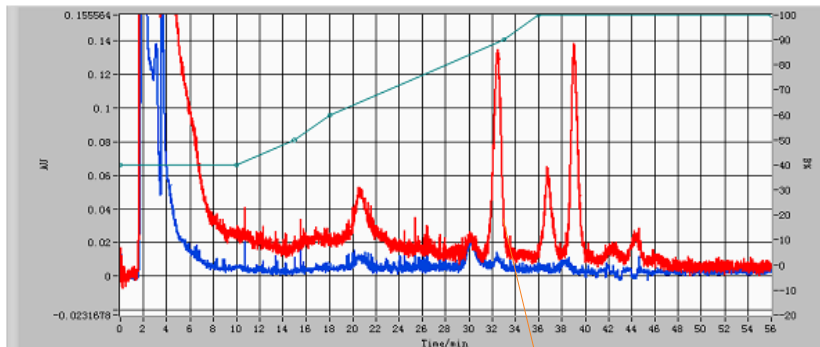
Part No.: S0230012-0

Mobile Phase: 0.1% TFA in Acetonitrile

Flow Rate: 15 mL/min

Detection: 254 nm, 205 nm

Injection Volume: 50 mg



HPLC conditions:

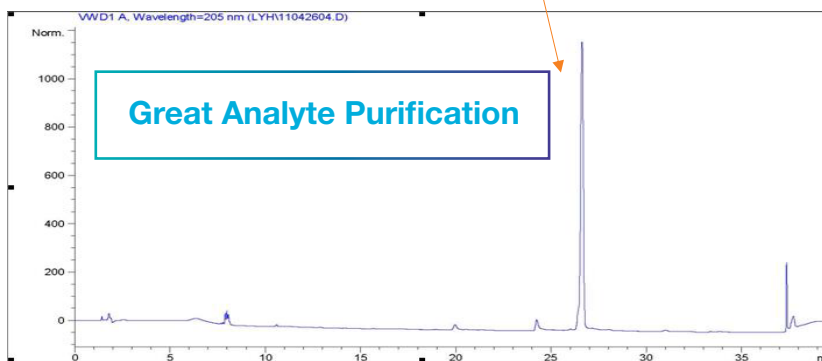
Column: C18, 5 µm, 100 Å

Dimensions: 250 x 4.6 mm

Mobile Phase: 0.01 % TFA in Water/Acetonitrile (73 : 27)

Flow Rate: 1 mL/min

Wavelength: 205 nm



**Purity
confirmation**

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Natural Products

25-Methoxyprotoxin

Flash Purification conditions:

Column: Claricep Flash AQ C18, 20-35 μm , 100 \AA , 20g, two columns in series

Part No.: SQ230020-0

Mobile Phase: A: Water
B: Ethanol (20 % B - 90 % B for 30 min)

Flow Rate: 25 mL/min

Wavelength: 210 nm ELSD

Injection Volume: 500 mg

HPLC conditions:

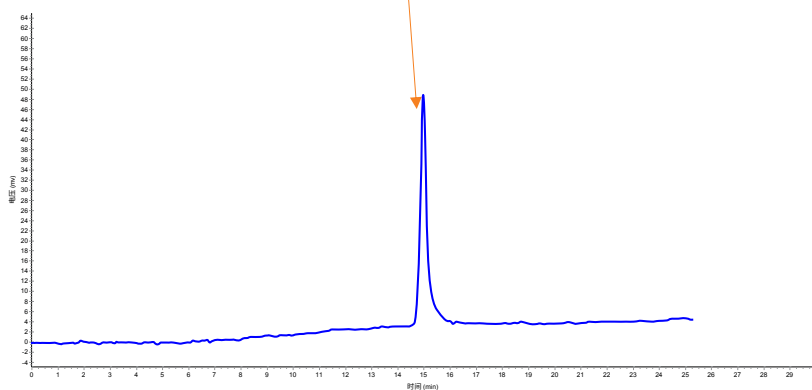
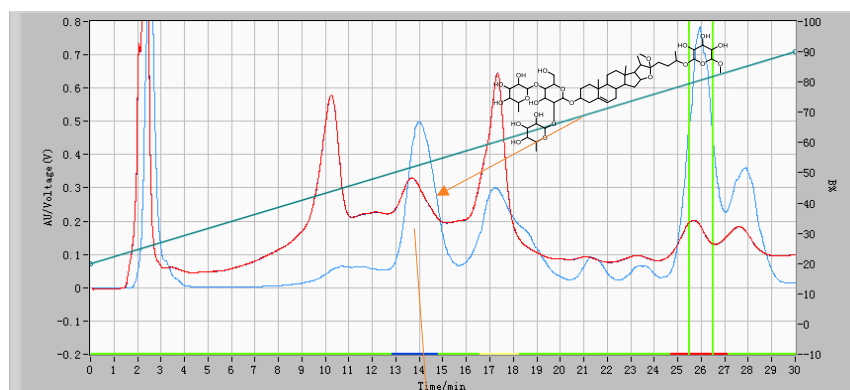
Column: ODS-2, 10 μm , 100 \AA

Dimensions: 250 x 4.6 mm

Mobile Phase: A: Water
B: Ethanol (20 % B - 90 % B for 30 min)

Flow Rate: 1 mL/min

Wavelength: ELSD



Purity confirmation

Using External Evaporative Light Scattering (ELSDs) and Ultraviolet (UV) detectors in parallel with Claricep flash column will provide the ability to monitor all non-volatile compounds in the mobile phase and allows for a better detection for compounds that do not absorb UV radiation.

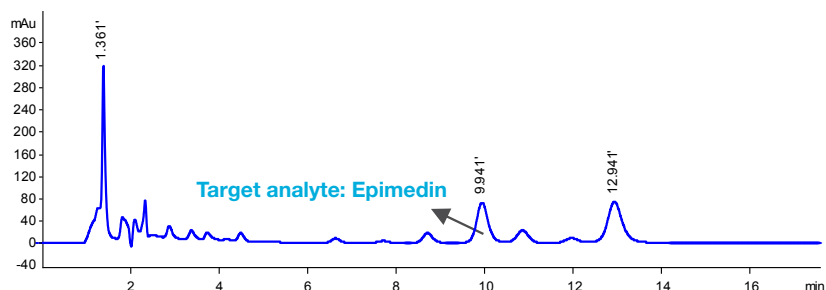
Natural Products

Epimedin in Epimedium

Sample analysis chromatogram

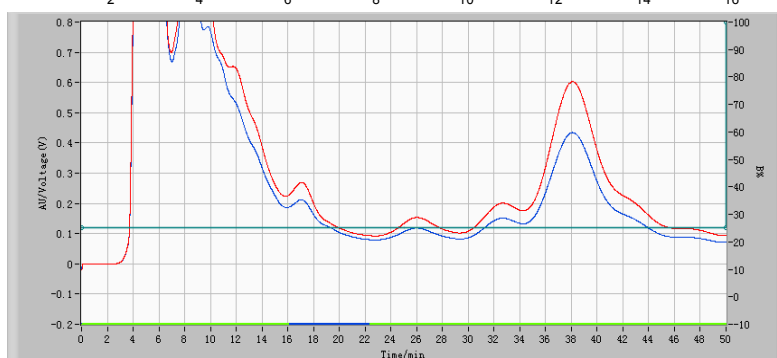
Flash Purification conditions:

Column: Claricep™ Flash Irregular C18, 20-45 µm, 100 Å, 800 g
Part No.: CS140800-0
Mobile Phase: Water/ Acetonitrile (75:25)
Flow Rate: 240 mL/min
Wavelength: 270 nm
Sample Load: 20 g

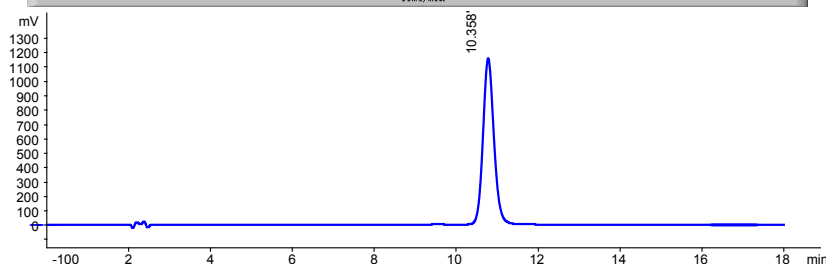


HPLC conditions:

Column: C18, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: Water/ Acetonitrile (70:30)
Flow Rate: 1 mL/min
Wavelength: 270 nm
Injection Volume: 5 µL



Purity confirmation



Good separation was achieved with a single load and 800 g Claricep flash column for a medium pressure purification application.

Synthetic Drug

Aztreonam

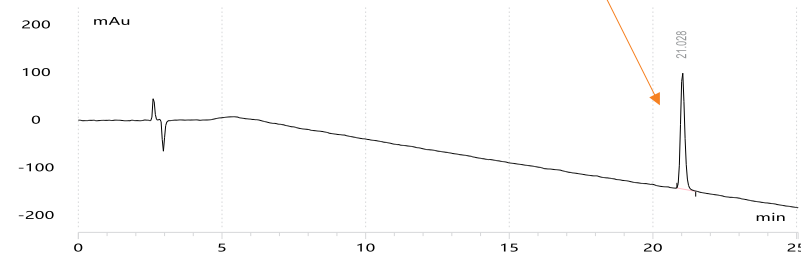
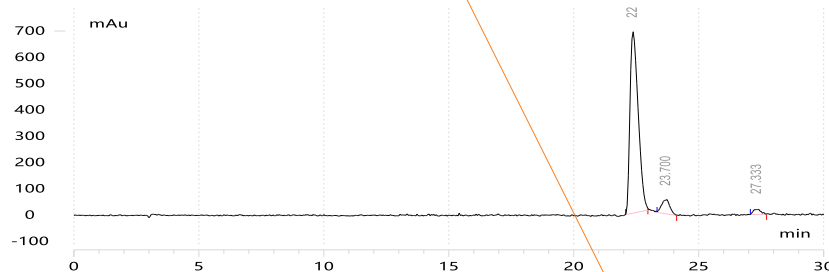
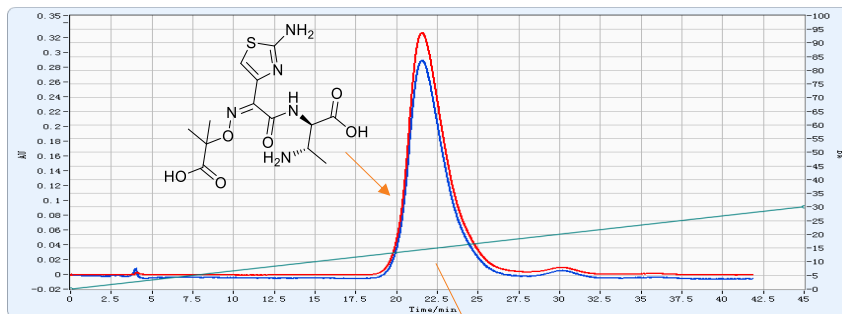
Flash Purification conditions:

Column: Claricep™ Flash AQ C18, 20-45 µm, 100 Å, 12 g
Part No.: SQ230012-0
Mobile Phase: A: (0.1% TFA) Water;
B: Methanol (0% B-30% B for 30 min)
Flow Rate: 12 mL/min
Wavelength: 220 nm, 254 nm
Sample load: 50 mg

HPLC conditions:

Column: ODS-2, 10 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: (0.1% TFA Water);
B: Methanol (0% B-30% B for 30 min)
Flow Rate: 1 mL/min
Wavelength: 254 nm

Purity confirmation



Claricep Flash small particle size is very effective in meeting separation requirements for difficult samples

Synthetic Drug

Fourstamen Stephania Root

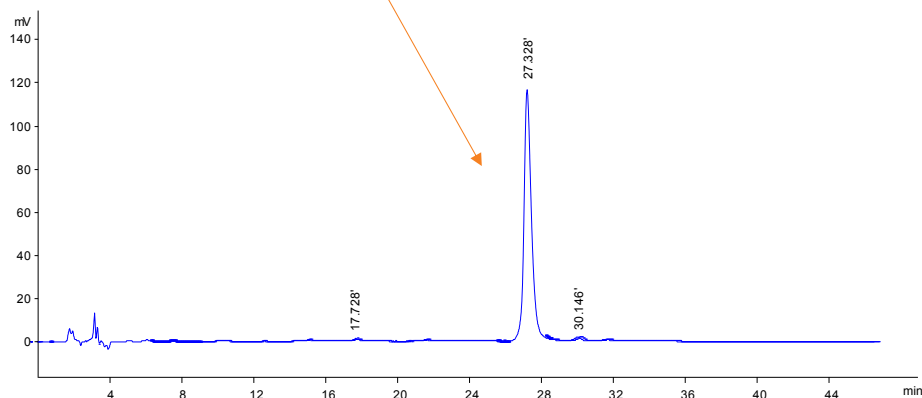
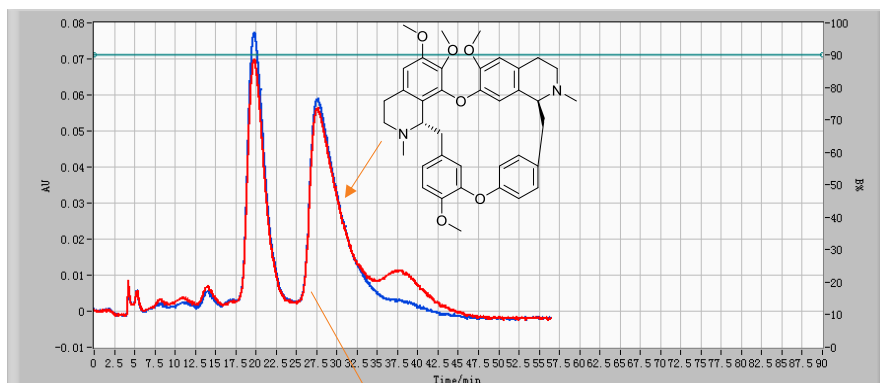
Flash Purification condition:

Column: Claricep™ Flash AQ C18, 20 µm, 100 Å, 12 g, three columns in series
Part No.: SQ230012-0
Mobile Phase: Water / 0.06% Diethylamine Acetonitrile (10:90)
Flow Rate: 12 mL/min
Wavelength: 254 nm, 282 nm
Sample Load: 20 mg

HPLC conditions:

Column: C18(2) 5 µm, 150 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
B: 0.06 % Diethylamine Acetonitrile
50 % B - 90 % B for 30 min
Flow Rate: 1 mL/min
Wavelength: 282 nm

Purity confirmation



This sample requires the use of regulated separation methods. This experiment demonstrated that Claricep Flash AQ C18 is able to meet the separation requirements and provide 99% purity confirmation from the crude product.

Synthetic Drug

Profenofos

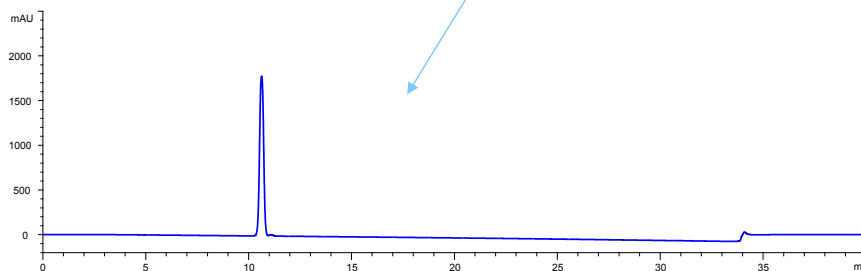
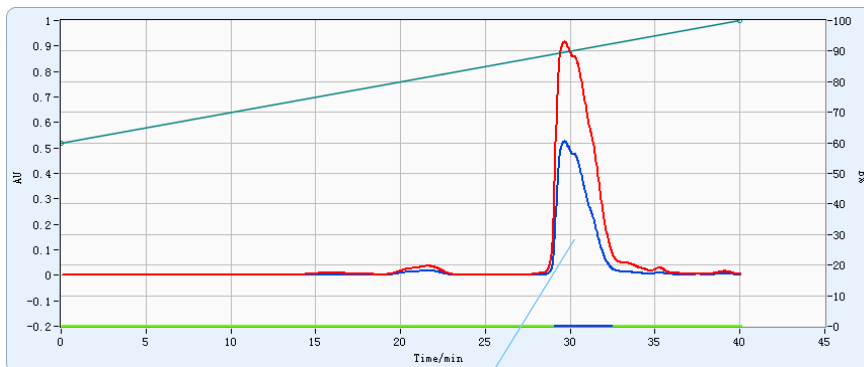
Flash Purification conditions:

Column: Claricep™ Flash C18(2), 20-35 µm, 100 Å, 800 g
Part No.: S0230800-2
Mobile Phase: A: Water
B: Methanol
Flow Rate: 160 mL/min
Wavelength: 240 nm, 280 nm
Sample Load: 15 g

HPLC conditions:

Column: ODS-2, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
B: Acetonitrile
Flow Rate: 1.0 mL/min
Wavelength: 240 nm

Purity confirmation



Claricep Flash C18(2) column is a very effective purification method, can directly obtain 99% purity of the samples from the crude product.

Find more Claricep flash products at
www.phenomenex.com/CLARICEP

Synthetic Drug

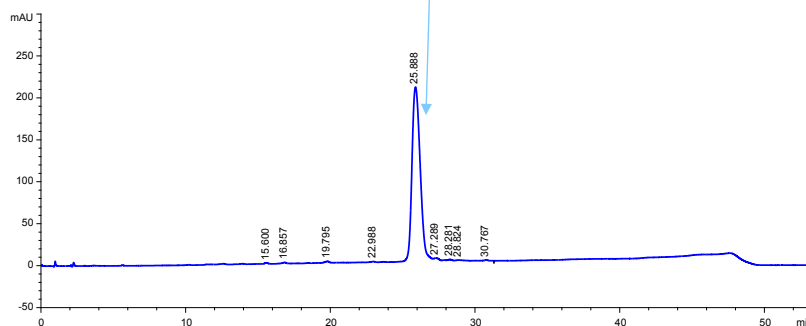
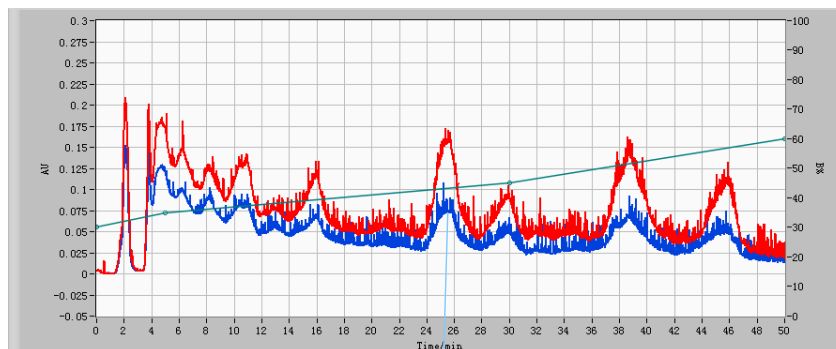
Gynostemma Pentaphyllum

Flash Purification Conditions:

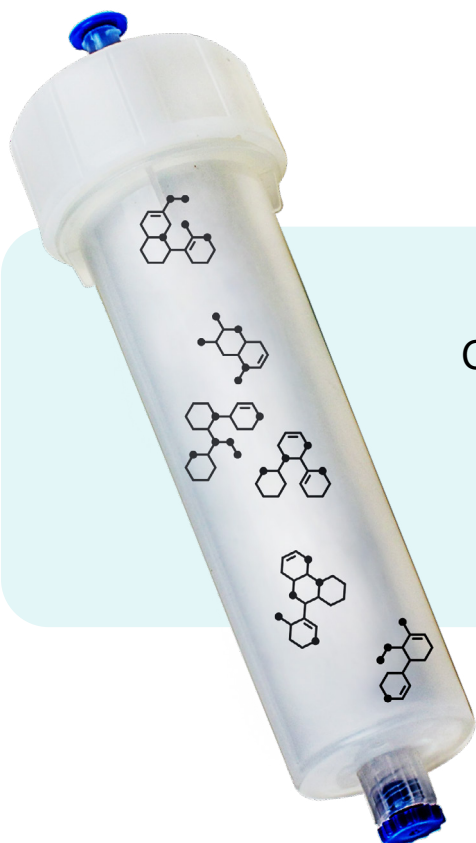
Column: Claricep™ Flash Spherical C18 (2),
20-35 µm 100 Å, 80 g column
Part No.: S0230080-2
Mobile Phase: A: Water
B: Acetonitrile
Flow Rate: 40 mL/min
Wavelength: 203 nm, 210 nm
Sample Load: 0.3 g

HPLC conditions:

Column: ODS-2, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile phase: A: Water
B: Acetonitrile
Flow Rate: 1.0 mL/min
Wavelength: 203 nm



Purity confirmation

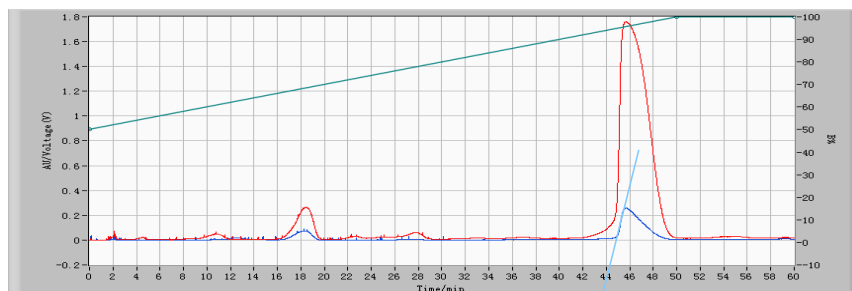


Claricep Flash C18 (2) columns offer high resolution that meets the requirements for separation of complex samples.

Synthetic Drug Fulvestrant

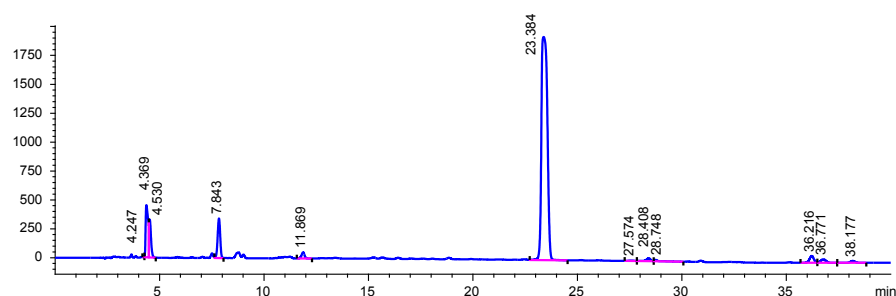
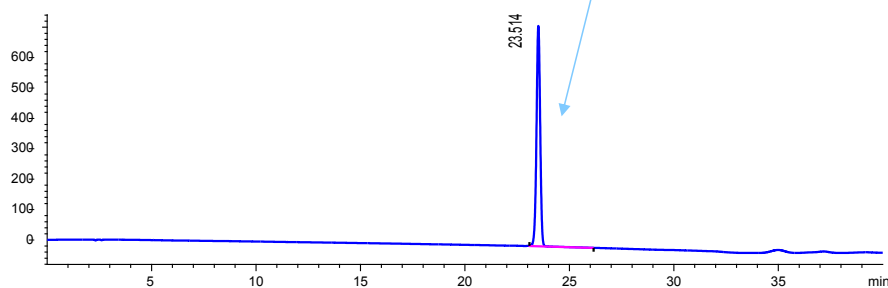
Flash Purification Conditions:

Column: Claricep™ Flash AQ C18, 20-35 µm, 100 Å, 20 g column
Part No.: SQ230020-0
Mobile Phase: A: Water
B: Acetonitrile
Flow Rate: 24 mL/min
Wavelength: 225 nm, 260 nm
Sample Load: 0.2 g



HPLC conditions:

Column: ODS-2, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
B: Acetonitrile
Flow Rate: 1.0 mL/min
Wavelength: 225 nm



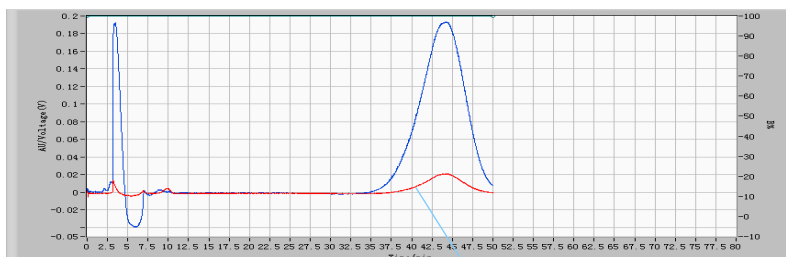
Purity confirmation

By using Claricep AQ C18 flash column, 99% sample purity can be obtained. In addition, Claricep will allow for low cost purification methods that can scale up production and reduce separation cost.

Synthetic Drug Latanoprost

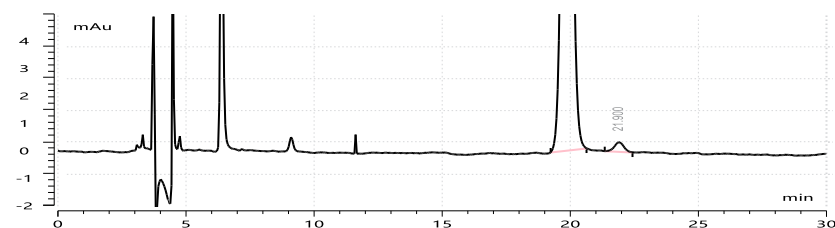
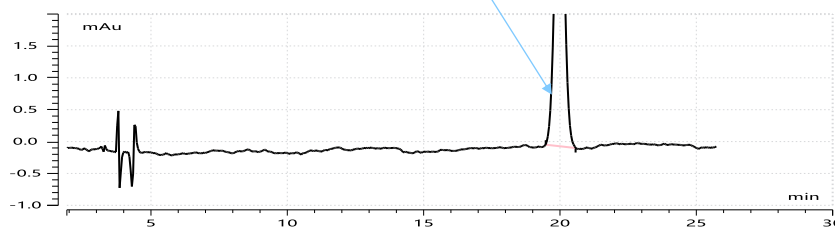
Flash Purification conditions:

Column: Claricep™ Flash Silica 20-35 µm, 60 Å, 20 g column
Part No.: SS130020-0
Mobile Phase: Hexane / Ethanol (94: 6) (0.1% Acetic acid)
Flow Rate: 20 mL/min
Wavelength: 220 nm, 254 nm
Sample Load: 0.1 g



HPLC conditions:

Column: Silica, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: Hexane / Ethanol (94: 6) (0.1% Acetic acid)
Flow Rate: 1.0 mL/min
Wavelength: 254 nm



**Purity
confirmation**

For small molecule polar sample such as prostaglandin, Claricep Flash silica can yield a final product of 98% purity.

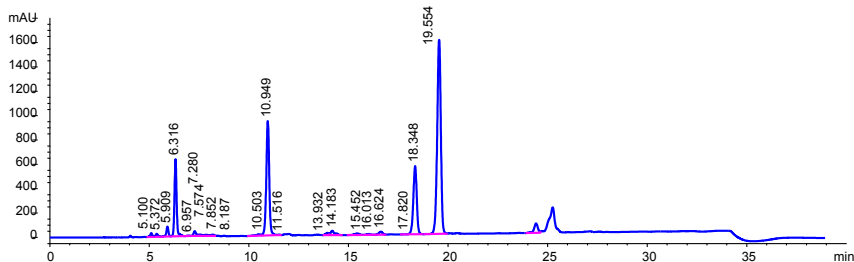
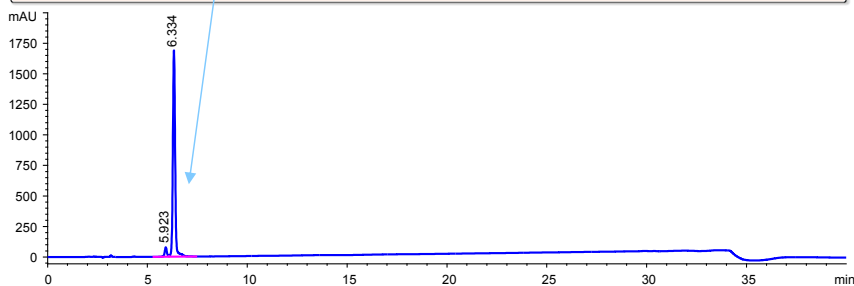
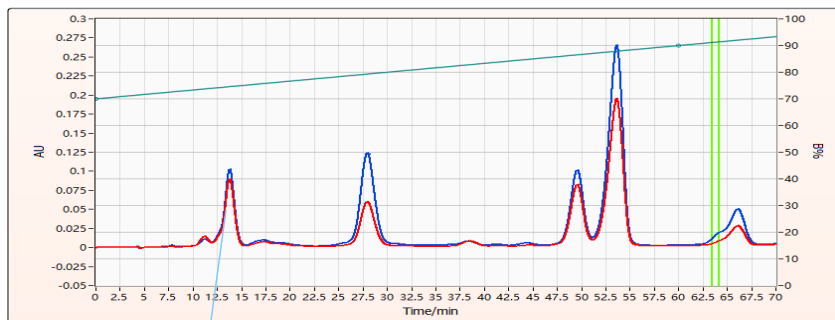
Synthetic Drug Curcuma oil

Flash Preparation conditions:

Column: Claricep™ Flash Spherical C18 (2),
 20-35 µm, 100 Å, 80 g column
Part No.: S0230080-2
Mobile Phase: A: Water
 B: Methanol
Flow Rate: 36 mL/min
Wavelength: 230 nm, 216 nm
Sample Load: 0.3 g

HPLC conditions:

Column: Luna® C18(2), 5 µm, 100 Å
Part No.: 00G-4252-E0
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
 B: Acetonitrile
Flow Rate: 1.0 mL/min
Wavelength: 216 nm



**Purity
confirmation**

Claricep Flash C18(2) columns offer high resolution that meet the requirements for separation of complex samples.

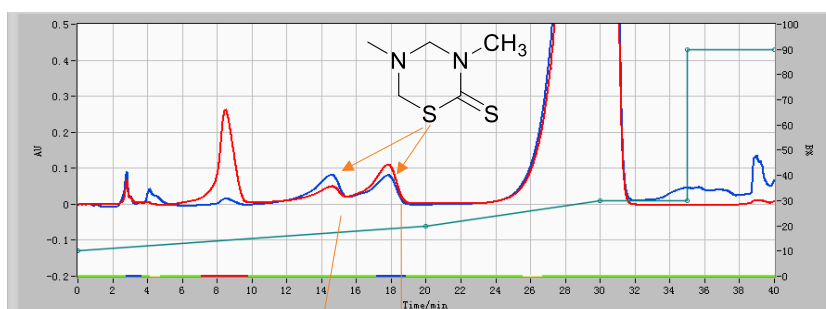
Pesticide Impurities Concentrate

Medron

The main goal for this type of sample is to study the impurity component. Due to the low concentration of target analytes and high sample loading, it is necessary to first concentrate the component with medium pressure media such as Claricep flash chromatography before further preparation.

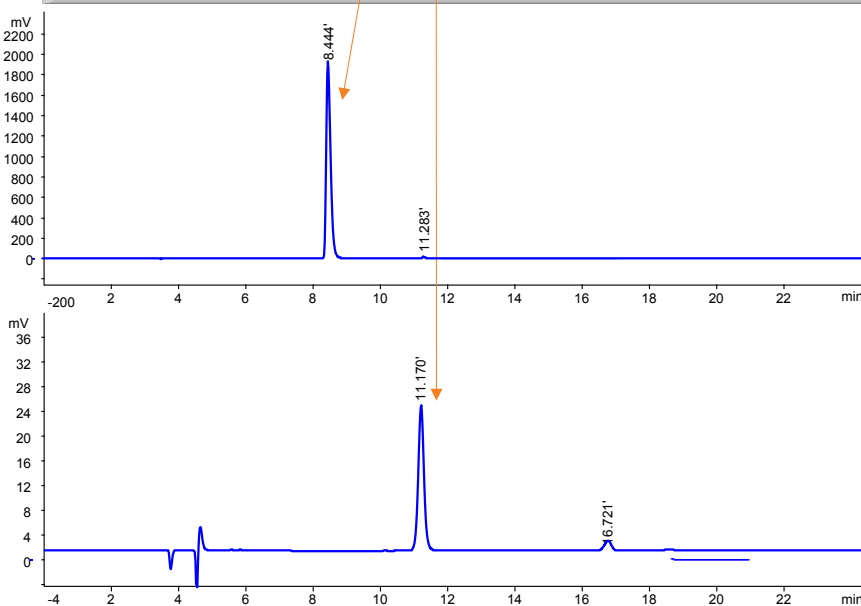
Flash Purification conditions:

Column: Claricep™ Flash Phenyl 20-35 µm 100 Å 40 g,
two columns in series
Part No.: SP230040-0
Mobile Phase: A: 0.1% Formic acid in Water
B: Acetonitrile (10 % B-30 % B for 30 min)
Flow Rate: 40 mL/min
Wavelength: 254 nm, 215 nm
Sample Load: 100 mg



HPLC conditions:

Column: XBP Phenyl, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: 0.1% Formic acid in Water
B: Acetonitrile (10 % B-30 % B for 20 min)
Flow Rate: 1 mL/min
Wavelength: 245 nm



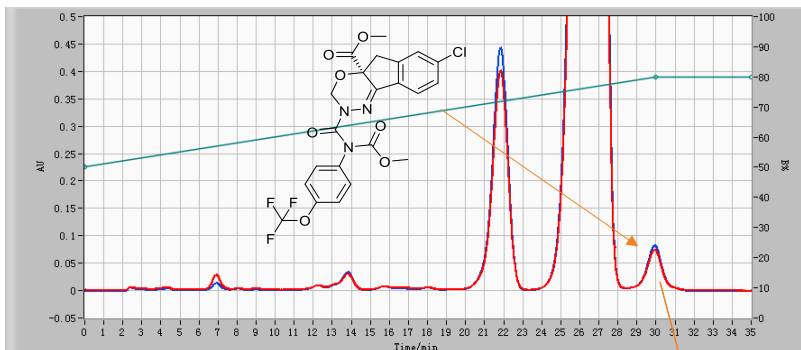
**Purity
confirmation**

The identification of impurities in pesticides has low analyte concentration and therefore requires high sample load. Claricep Flash columns will provide a complete separation of pesticide impurities.

Pesticide Impurities Concentrate Indoxacarb

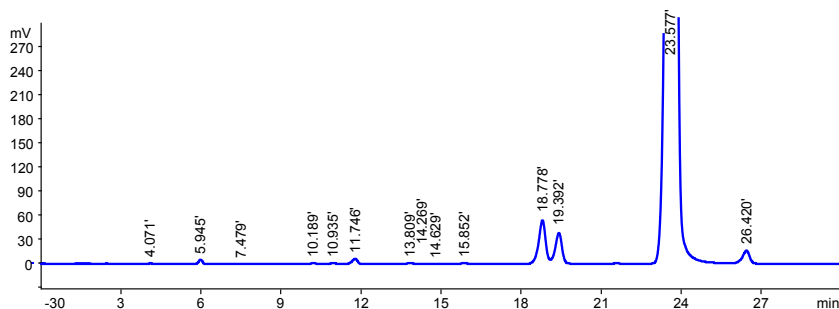
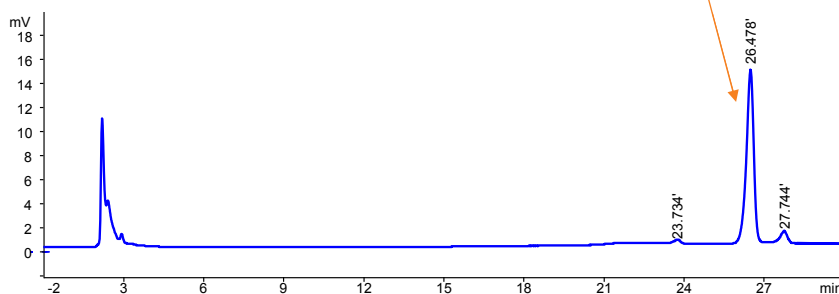
Flash Purification conditions:

Column: Claricep™ Flash Spherical C18, 20-35 µm, 100 Å, 12 g, three columns in series
Part No.: S0230012-0
Mobile Phase: A: 0.1% Formic acid in Water
 B: Acetonitrile (50 % B- 80 % B for 30 min)
Flow Rate: 15 mL/min
Wavelength : 271 nm, 215 nm
Sample Load: 50 mg



HPLC conditions:

Column: ODS-2, 10 µm, 100 Å, 4.6 x 250 mm
Dimensions: 250 x 4.6 mm
Mobile Phase: A: 0.1% Formic acid in Water
 B: Acetonitrile (50 % B- 80 % B for 20 min)
Flow Rate : 1 mL/min
Wavelength: 271 nm



**Purity
confirmation**

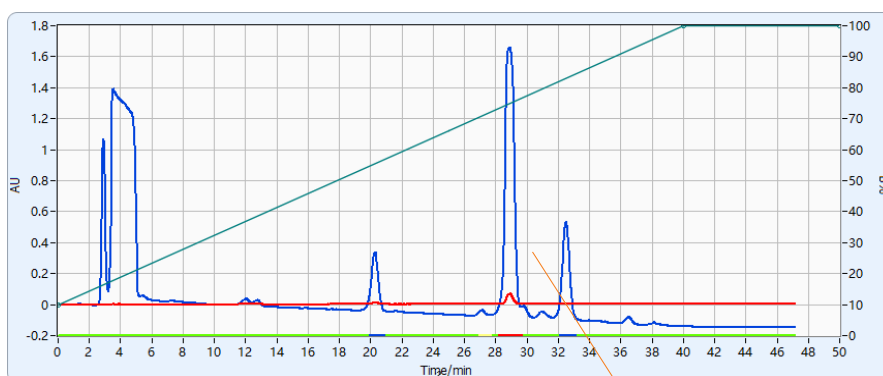
Synthetic Intermediate

Fullerene Ester

Claricep Flash provides a very effective purification method for separation of the most complex mixtures such as Fullerene Ester in which the column samples are very versatile, and the separation of special samples can still be achieved.

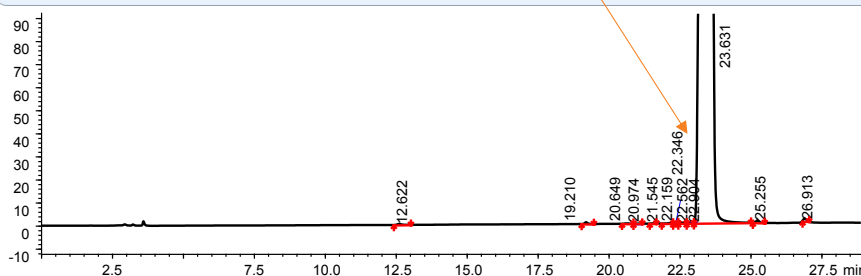
Flash Purification conditions:

Column: Claricep™ flash spherical AQ C18, 20-35 μm , 100 \AA , 20 g, three columns in series
Part No.: SQ230020-0
Mobile Phase: A: 0.1% TFA in Water
B: Acetonitrile (10 % B - 100 % B for 30 min)
Flow Rate: 25 mL/min
Wavelength: 200 nm, 300 nm
Sample Load: 50 mg

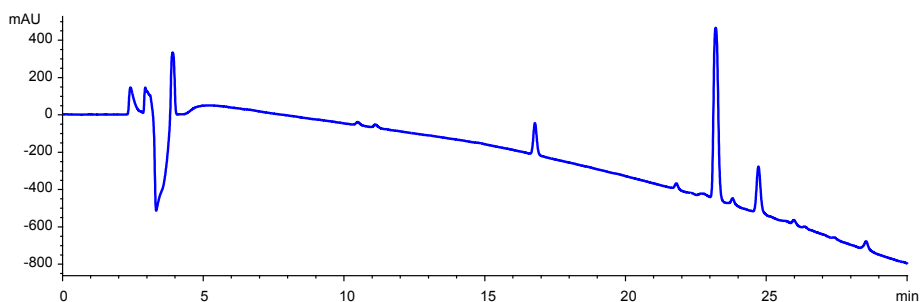


HPLC conditions:

Column: ODS-2.5 μm 100 \AA
Dimensions: 250 x 4.6 mm
Mobile Phase: A: 0.1 % TFA in Water
B: Acetonitrile (10 % B - 100 % B for 30 min)
Flow Rate: 1 mL/min
Wavelength: 200 nm



Purity confirmation



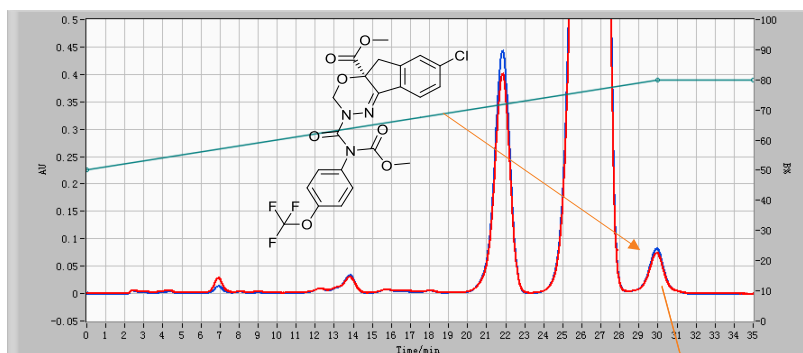
Synthetic Intermediate

Benzocyclohexanone

Claricep Flash C18(2) packing can completely reproduce the resolution of the analysis packing, suitable for complex sample separation.

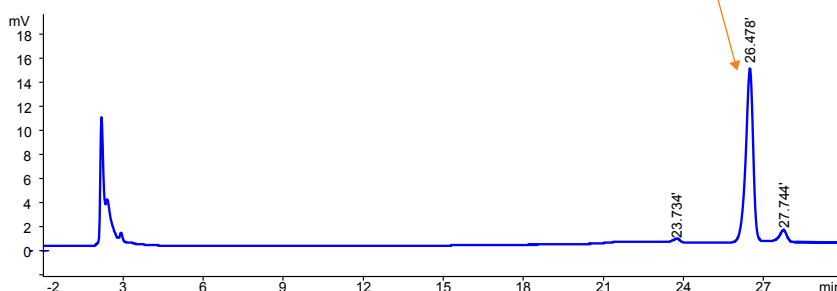
Flash Purification conditions:

Column: Claricep™ Flash spherical C18(2),
20-35 µm, 100 Å 12 g, two columns in series
Part No.: S0230012-2
Mobile Phase: A: Water,
B: Acetonitrile (40 % B-100 % B for 30 min)
Flow Rate: 12 mL/min
Wavelength: 254 nm, 230 nm
Sample Load: 200 mg

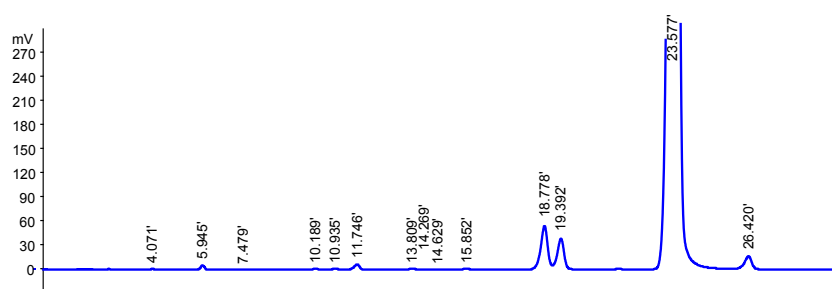


HPLC conditions:

Column: ODS-2, 5 µm, 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water,
B: Acetonitrile (40 % B-100 % B for 30 min)
Flow Rate: 1 mL/min
Wavelength: 254 nm



**Purity
confirmation**



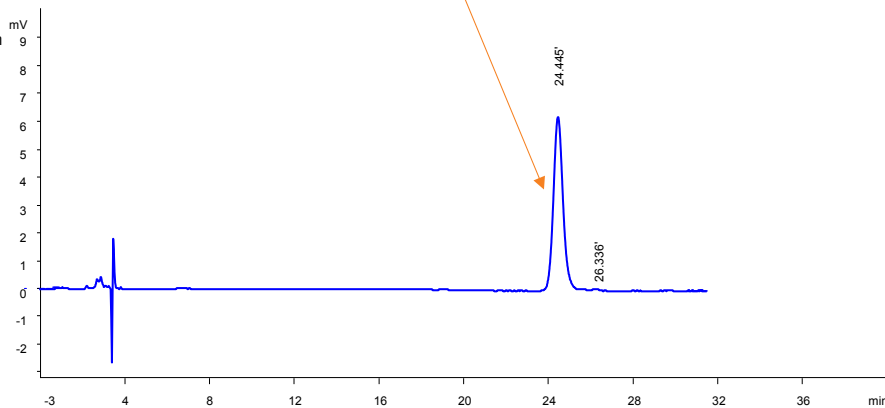
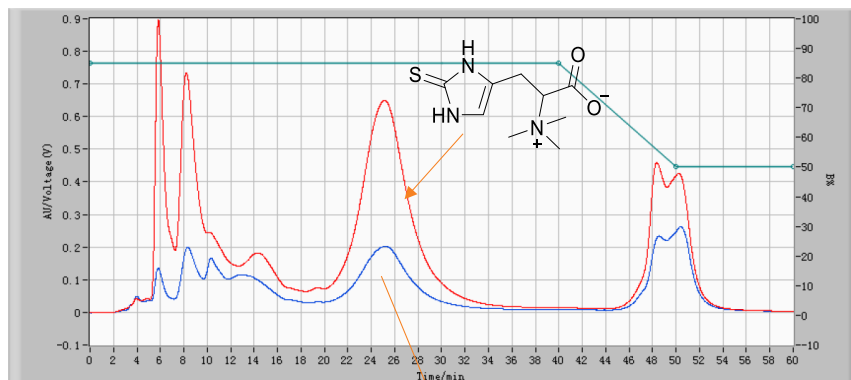
Large Scale Preparation Ergothioneine

Medium pressure conditions:

Column: Claricep™ Flash spherical HILIC, 20-35 µm, 100 Å, 50 mm 270 g DAC
Part No.: FSH230100-0 (media, 100 g)
Mobile Phase: Water/ Acetonitrile (15:85)
Flow Rate: 80 mL/min
Backpressure: 1.4-1.6 Mpa
Wavelength: 254 nm, 280 nm
Injection Volume: 100 µL (add 200 µL Acetonitrile, Centrifuge at 3560 r / min after sonication, Take the supernatant at 40-45 °C and concentrate to 15 µL)

HPLC conditions:

Column: HILIC 5 µm 100 Å
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
 B: Water / Acetonitrile (15:85) (20 mM Ammonium acetate, adjust to pH 6.0 with acetic acid)
Flow Rate: 1 mL/min
Wavelength: 254 nm
Temperature: 40 °C



**Purity
confirmation**

High polar compounds can be separated by HILIC Claricep flash media



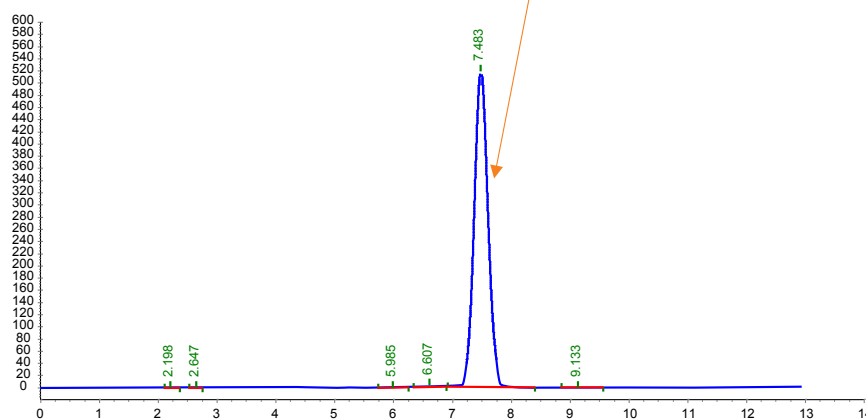
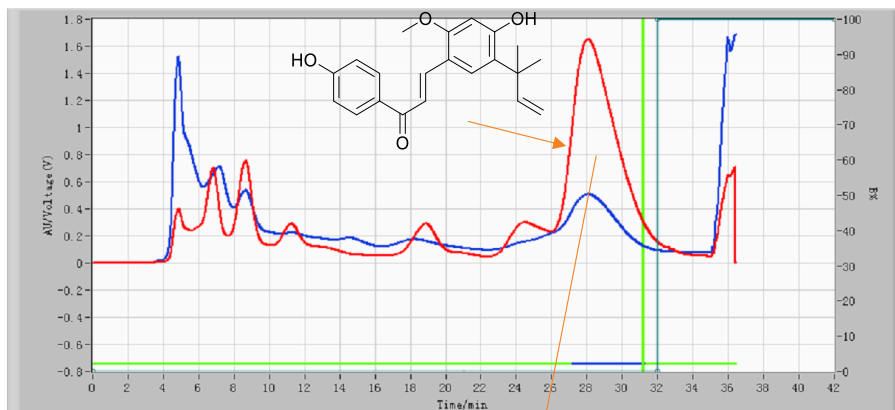
Large Scale Preparation Chalcone A in Licorice

Flash Purification conditions:

Column: Claricep™ Flash spherical C18, 20-35 µm, 100 Å, 300 g media packed in glass column
Part No.: FSO230100-0 (media, 100g)
Mobile Phase: Water/Methanol/Acetic acid (30:70:1)
Flow Rate: 80 mL/min
Wavelength: 377 nm, 280 nm
Sample Load: 1.5 g

HPLC conditions:

Column: C18, 5 µm, 100 Å
Dimensions: 150 x 4.6 mm
Mobile Phase: Water/ Methanol (30 :70)
Flow Rate: 1 mL/min
Wavelength: 377 nm



**Purity
confirmation**

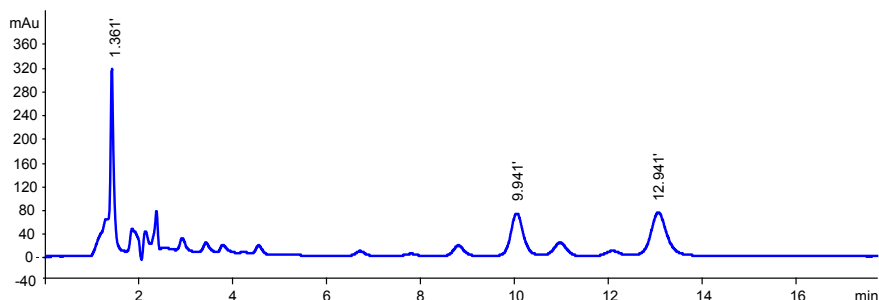
Claricep flash media packed in a glass column provides great separation for large scale preparation.

Large Scale Preparation

Epimedium Sibiricum

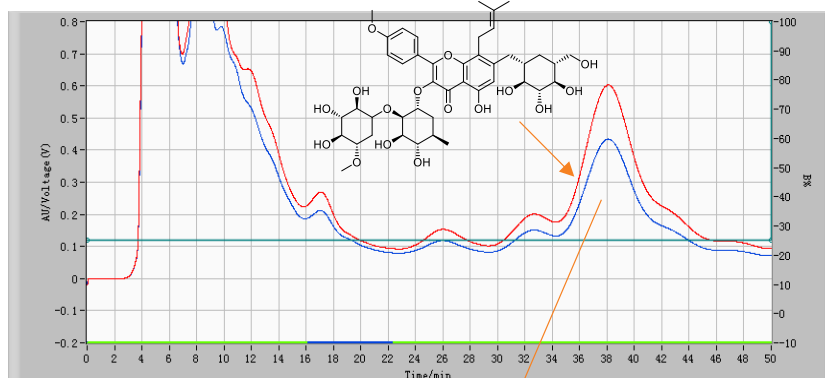
HPLC conditions:

Column: C18, 5 μm , 100 \AA
Dimensions: 250 x 4.6 mm
Mobile Phase: Water/ Acetonitrile (70:30)
Flow Rate: 1 mL/min
Wavelength: 270 nm
Injection Volume: 5 μL

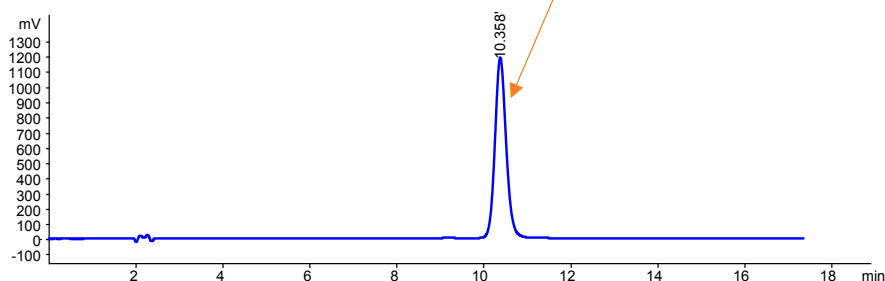


Flash Purification conditions:

Column: Claricep™ Flash Spherical C18, 20-35 μm , 100 \AA , 800 g column
Part No.: S0230800-0
Mobile Phase: Water/ Acetonitrile (75:25)
Flow Rate: 240 mL/min
Wavelength: 270 nm
Sample Load: 20 g



Purity confirmation

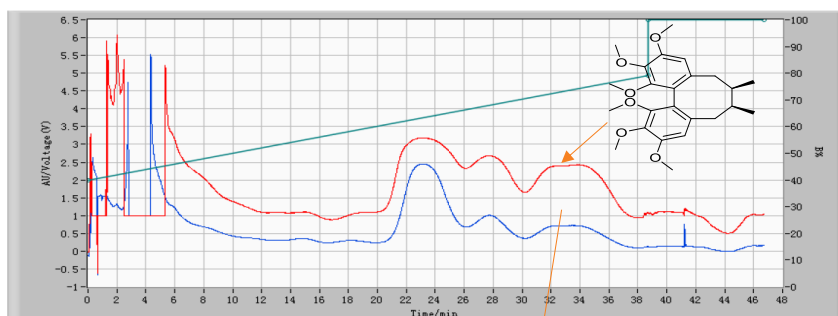


Claricep flash C18 column 800 g column can load up to 20 g of sample, providing great analytes separation.

Large Scale Preparation Gomisin in Schisandra

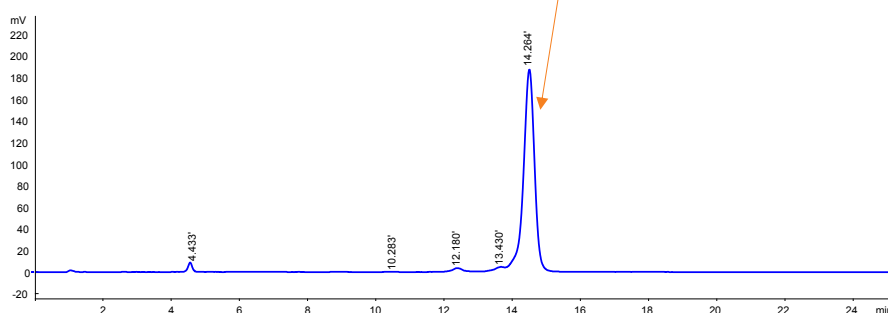
Flash Chromatography conditions:

Column: Claricep™ Flash Spherical C18, 20-35 µm, 60 Å, 150 mm dynamic axial compression (DAC), 2.5 kg column
Part No.: FSO2301000-0 (media, 1000 g)
Mobile Phase: Water/ Acetonitrile
Flow Rate: 380 mL/min
Wavelength: 218 nm, 254 nm
Sample Load: 88.5 g



HPLC conditions:

Column: C18, 5 µm, 100 Å
Dimensions: 150 x 4.6 mm
Mobile Phase: Water/ Acetonitrile
Flow Rate: 1 mL/min
Wavelength: 218 nm



**Purity
confirmation**

Claricep Flash media is suitable for dynamic axial compression (DAC), which allows for industrial mass production.

Other Industries

Surfactant Samples

Flash Purification conditions:

Column: Claricep™ Flash AQ C18, 20 µm, 100 Å 120 g

Part No.: SQ230020-0

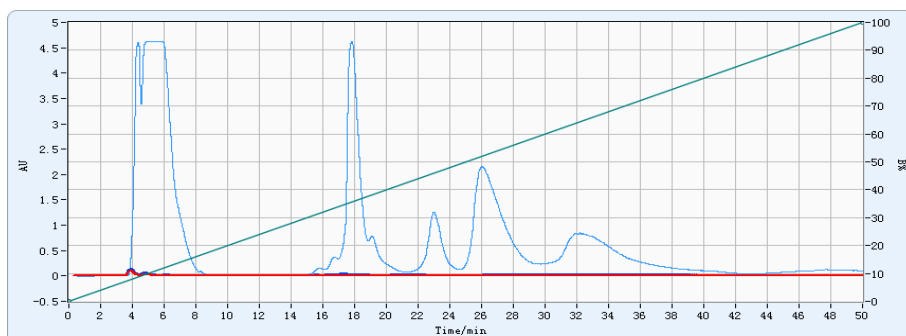
Mobile Phase: A: 0.05 % TFA in Water

B: Acetonitrile (0 % B-100 % B for 50 min)

Flow Rate: 12 mL/min

Detection: ELSD

Sample Load: 10 mg



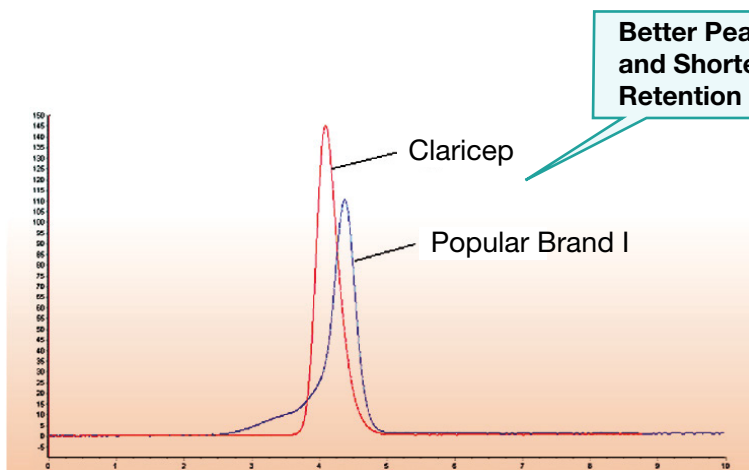
Special samples, such as surfactants,
can be separated by the Claricep flash column.



Other Industries

Aniline / Iridoid Compounds

Aniline Peak Symmetry and Retention Test

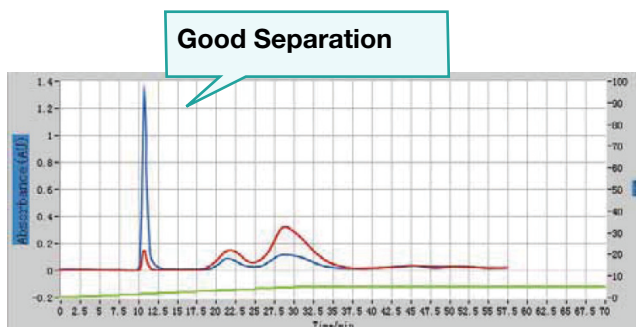


Flash Purification conditions:

Column: Claricep™ Irregular Silica CS (40-60 µm, 60 Å, 40 g)
Part No.: CS140040-0
Brand I: Flash Irregular Silica (40 g)
Mobile Phase: Dichloromethane/ Methanol (99 : 1)
Flow Rate: 20 mL/min
Detector: UV @ 254 nm
Temperature: Ambient
Retention Time: CLARICEP CS: 4.090 min
 Brand I: 4.373 min
Sample: Aniline

Comparative separations may not be representative of all applications.

High Resolution Separation of Iridoids



Flash Purification conditions:

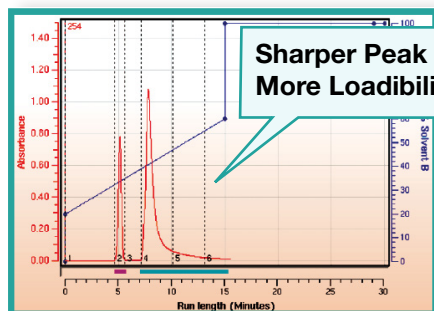
Column: Claricep Spherical AQ C18 (20-35 µm, 100 Å)
Mobile Phase: Methanol/ Water/Formic Acid
Flow Rate: 26 mL/min
Detector: UV @ 231/214 nm
Sample: Iridoids Compounds



Other Industries

Acidic Compounds

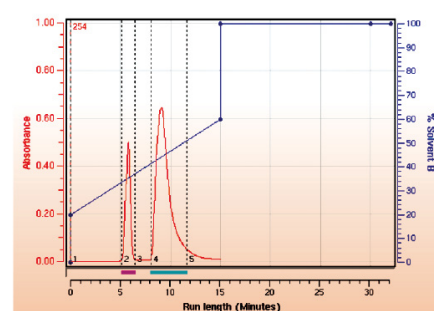
CLARICEP™ CS 40 g



Flash Purification conditions:

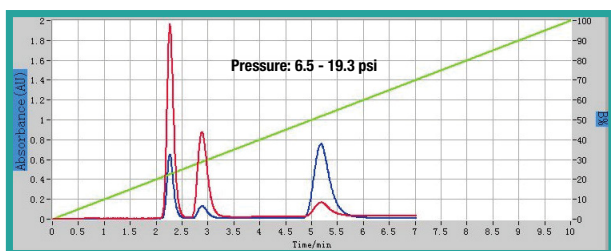
Column: Claricep™ Irregular Silica CS (40-60 µm, 60 Å, 40 g)
Part No.: CS140040-0
Brand I: Flash Irregular Silica Column (40 g)
Mobile Phase: A: Hexane
 B: Ethyl acetate
Detector: UV @ 254 nm
Temperature: Ambient
Sample: Phenyl acetone, 4-aminobenzoic acid

Popular Brand I 40 g



Better Peak Shape Across Different Formats

CLARICEP CS 4 g

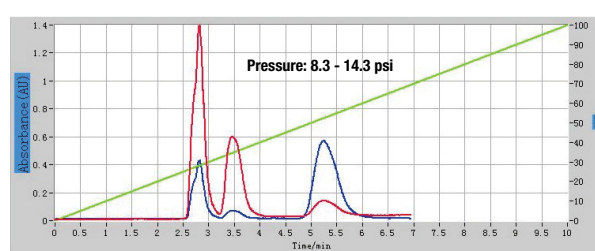


Flash Purification conditions:

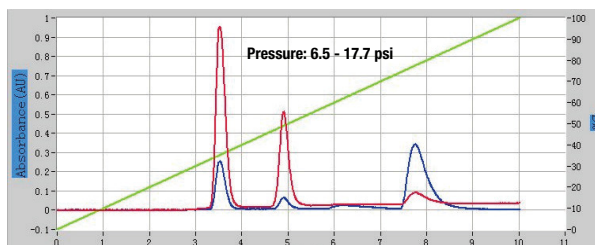
Column: Claricep Irregular Silica CS (40-60 µm, 60 Å, 4 g)
Part No.: CS140004-0
Brand A: Irregular Silica Column (4 g)
Mobile Phase: A: Petroleum ether
 B: Ethyl acetate
Flow Rate: 20 mL/min
Detector: UV @ 254/280 nm
Temperature: Ambient
Sample: PABA, Acetylbenzene, Methyl Paraben

Better Overall Peak Shape

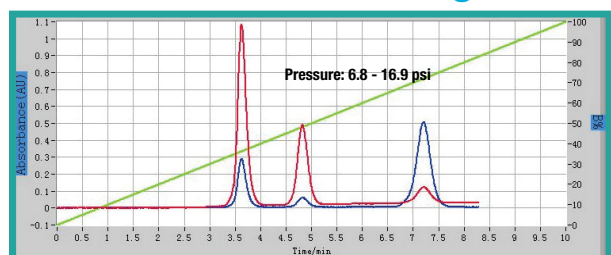
Brand A Silica 4 g



Brand A Silica 24 g



CLARICEP CS Silica 20 g

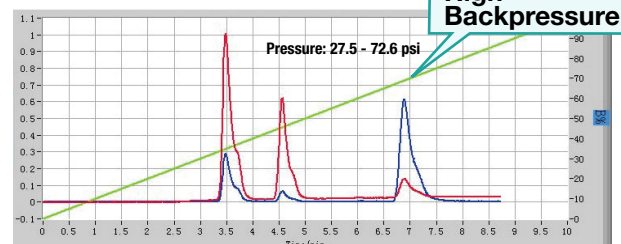


Flash Purification conditions:

Column: Claricep Irregular Silica CS (40-60 µm, 60 Å, 20 g)
Part No.: CS140020-0
Brand A: Flash Irregular Silica (24 g)
Brand B: Flash Irregular Silica (25 g)

Mobile Phase: A: Petroleum ether
 B: Ethyl acetate
Flow Rate: 35 mL/min
Detector: UV @ 254/280 nm
Sample: PABA, Acetylbenzene, Methyl Paraben

Brand B Silica 25 g



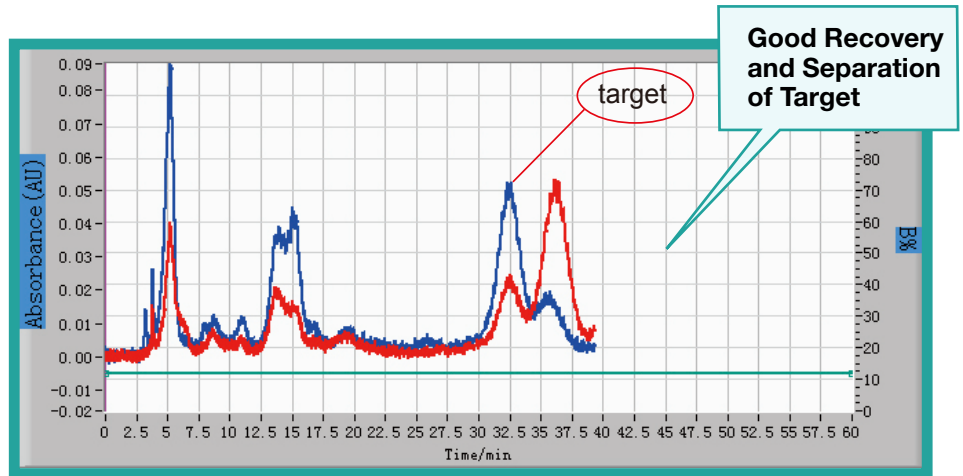
Comparative separations may not be representative of all applications.

Other Industries

Duantioxidant in Sesame Oil

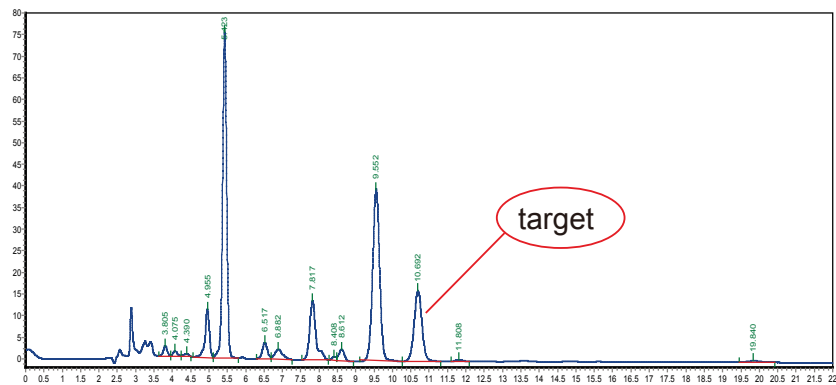
Flash Purification conditions:

Column: Claricep™ Irregular Silica CS
 (40-60 µm, 60 Å, 12 g)
Part No.: CS140012-0
Mobile Phase: Acetic ether/ Petroleum ether (12:88)
Flow Rate: 18 mL/min
Injection Volume: 4 mL
Sample Concentration: 400 mg/20 mL
Instrument: CHEETAH™ MP 100

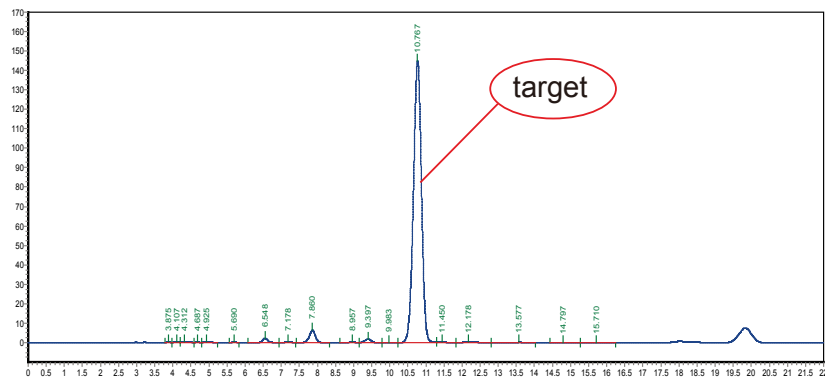


HPLC conditions:

Column: Fully Porous, 5 µm, C18 Column
Dimensions: 150 x 4.6 mm
Mobile Phase: Methanol/Water (75:25)



Purity Confirmation



Other Industries Other Industries

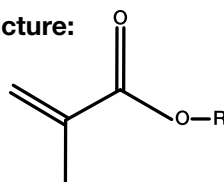
Methacrylic Acid Ester

Sample Information:

The sample is colorless liquid, with about 60 % target compound by weight.

Dissolve 0.2 mL of sample into 1.5 mL ethanol sonication.

Structure:



Small molecular weight
with UV absorption of
methacrylic acid ester
R: no UV absorption

Flash Purification conditions:

Column A: Claricep™ Spherical Silica (20-35 µm, 100 Å, 12 g, 2 columns in tandem)

Part No.: SS130012-0

Column B: Claricep Spherical Silica (20 µm, 100 Å, 12 g, 2 columns in tandem)

Part No.: SS120012-0

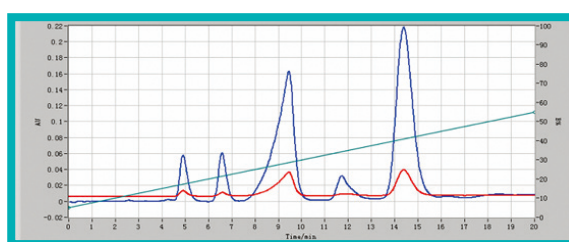
Mobile Phase: A: Hexane B: Ethanol

Gradient:	Time (min)	B %
	0	5
	20	55

Flow Rate: 12 mL/min

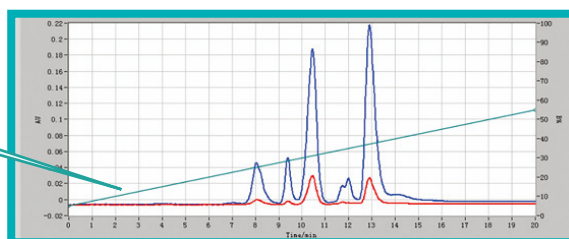
Detector: UV @ 254/220 nm

Sample Loading 0.2 mL



Column A: Claricep 20-35 µm

Claricep Flash Silica 20 µm is a better choice for complex sample polarity. It provides higher resolution and better purification performance.



Column B: Claricep 20 µm

Other Industries

Tetrandrine from Natural Products

Flash Purification conditions:

Column A: Brand X Flash Irregular C18 (40-60 μm 100 \AA , 12 g, 3 columns in tandem)

Column B: Claricep™ Spherical C18 (20-35 μm 100 \AA , 12 g, 3 columns in tandem)

Column C: Claricep Spherical C18 (20 μm 100 \AA , 12 g, 3 columns in tandem)

Mobile Phase: A: Water

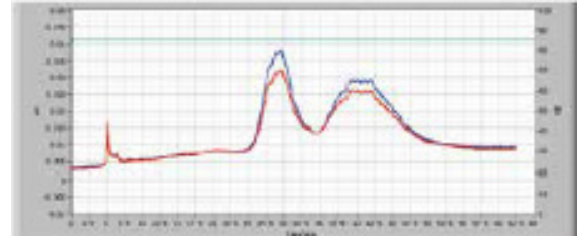
B: Methanol with 0.06 % Diethylamine

Gradient:	Time (min)	B %
	0	85
	100	85

Detector: UV @ 254/282 nm

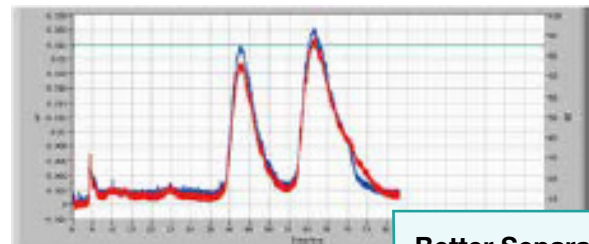
Sample: Tetrandrine

Column A:
Brand X Irregular C18,
40-60 μm



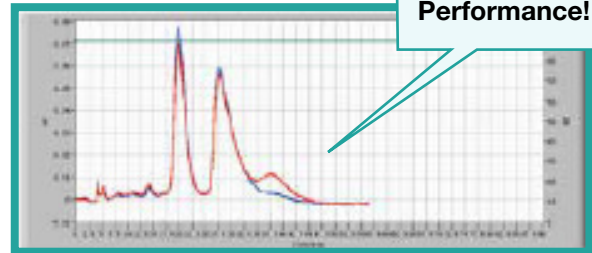
Good

Column B:
CLARICEP Spherical,
C18, 20-35 μm



Better

Column C:
CLARICEP Spherical,
C18, 20 μm



Better Separation Performance!

Best

Comparative separations may not be representative of all applications.

Did You Know?

Flash Chromatography

also known as medium pressure chromatography is:

- A pressure driven hybrid for medium and short column chromatography optimized for rapid separation
- Popularized years ago by Clark Still of Columbia University
- An alternative to slow and inefficient gravity-fed chromatography



Other Industries

Ink Sample Interference / Irregular vs. Spherical

Sample Separation:

Take 50 μL of two kinds of raw ink samples separately, filter through with a 0.22 μm Nylon Filter and then load onto individual Flash columns.

Flash Purification conditions

Column A: Claricep™ Irregular C18 (40-60 μm , 60 \AA , 20 g, 2 columns in tandem)

Part No.: C0140020-0

Column B: Claricep™ Spherical C18 (40-60 μm , 100 \AA , 20 g, 2 columns in tandem)

Part No.: S0240020-0

Mobile Phase: A: Water
B: Acetonitrile

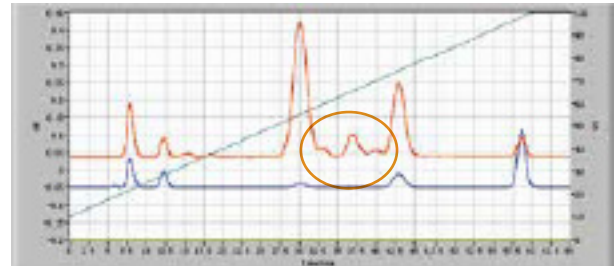
Gradient:	Time (min)	B%
	0	10
	60	100

Flow Rate: 26 mL/min

Detector: UV @ 254 nm (red), @ 220 nm (blue)

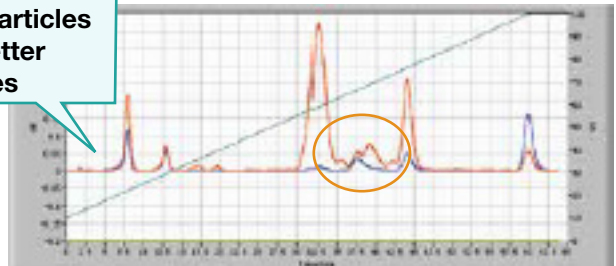
Instrument: CHEETAH™ MP 200

CLARICEP Irregular C18, 40-60 μm 60 \AA



CLARICEP Spherical C18, 40-60 μm 100 \AA

Spherical Particles
Produce Better
Peak Shapes



Comparative separations may not be representative of all applications.

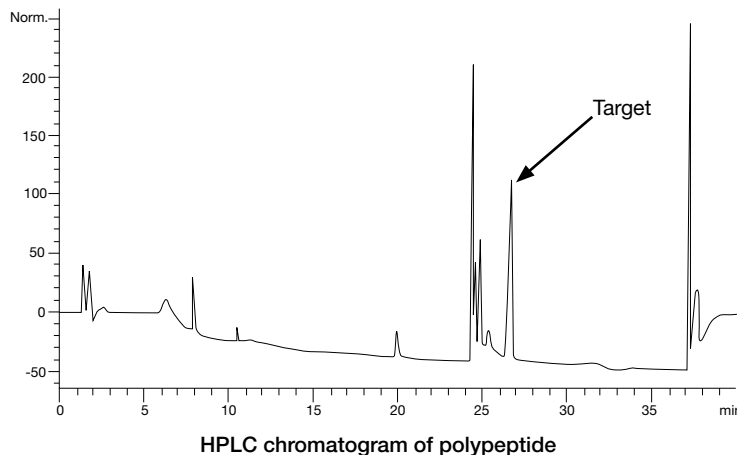
Other Industries

Polypeptide Isolation

HPLC conditions

HPLC conditions:

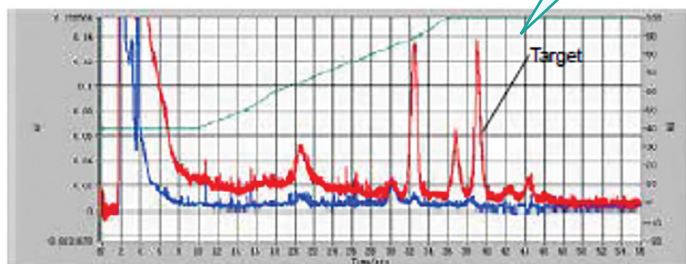
- Column:** C18, 5 μ m, 100 \AA
- Dimensions:** 150 x 4.6 mm
- Mobile Phase:** A: Water + 0.01 % TFA
B: Acetonitrile (73:27)
- Flow Rate:** 1 mL/min
- Detector:** UV @ 205 nm
- Sample Injection:** 1 μ L



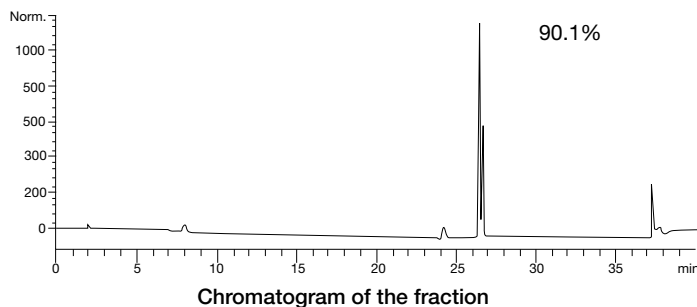
Excellent Separation and Resulting Sample Purity

Flash Purification conditions:

- Column:** Claricep™ C18 (40-60 μ m, 100 \AA , 12 g)
- Part No.:** S0240012-0
- Mobile Phase:** Acetonitrile/Water
- Flow Rate:** 15 mL/min
- Detector:** UV @ 205/280 nm
- Sample Injection:** 2 mL



Purity Test of the Fraction



Other Industries

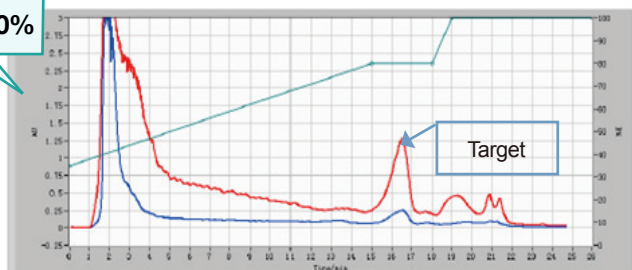
Purification of Taxol

Sample Separation:

The sample is an extract of Chinese yew. The target is Taxol. Dissolve 1 g of sample in 20 mL methanol and filter to give a solution with a Taxol concentration of 50 mg/mL.

Concentrate the solution by rotary evaporation rotating at 40°C, centrifuge and dissolve the supernatant into methanol, to give a final volume of 11 mL. Filter and load onto the column.

Excellent Isolated
Target Purity of ~90%



Fraction between 15-17 min

Flash Conditions:

Column: Claricep™ Spherical AQ C18 (20-35 µm, 100 Å, 120 g)

Part No.: SQ230120-0

Mobile Phase: A: Water B: Methanol

Gradient:	Time (min)	B %
	0	35
	15	80
	18	80
	19	100
	25	100

Flow Rate: 83 mL/min

Detector: UV @ 230/54 nm

Sample Loading: 20 mL

Chinese Yew Tree



Other Industries

THC Remediation from CBD Extract

Column Descriptions for Flash, Analytical, and Prep

Flash Column: Claricep™ Screw-on Spherical C18
Dimensions: I-Series, 20 g/column
Part No.: [SN-S0230020-0](#)
HPLC Prep Column: Luna® 5 µm C18(2)
Dimensions: 100 x 21.2 mm
Part No.: [00D-4252-PO-AX](#)
HPLC Analytical Column: Luna 5 µm C18(2)
Dimensions: 100 x 4.6 mm
Part No.: [00D-4252-EO](#)

Conditions for Flash, Analytical, and Prep

Columns: As listed above
Mobile Phase: Isocratic: 10% Water with 0.1% Acetic Acid / 90% Acetonitrile
Flow Rate: 20 mL/min (unless specified)
Injection Volume: 100 µL (unless specified)
Temperature: Ambient
Detection: UV @ 220 nm
 Hemp Extract, 500 mg/mL in 1-1-1
Sample: Tetrahydrofuran Acetonitrile Water

Conditions for Fraction Analysis

Columns: Kinetex® 2.6 µm C18
Dimensions: 150 x 4.6 mm
Part No.: [00F-4462-EO](#)
Mobile Phase: Isocratic: 24% Water with 0.1% Formic Acid / 76% Methanol
Flow Rate: 0.75 mL/min
Injection Volume: 5 µL
Temperature: Ambient
Detector: UV @ 228 nm
Sample: Fractions directly from the fraction collector

Scalability: Analytical, Prep, and Flash

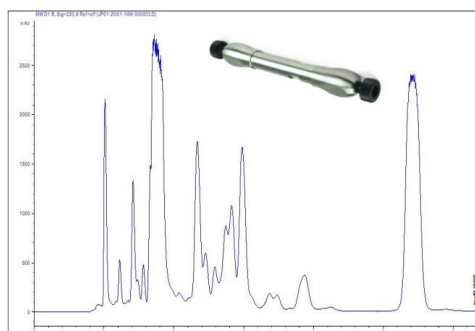


Figure 1
 Chromatogram of CBD extract on analytical scale
 Luna® 5 µm C18(2) 100 Å, 100 x 4.6 mm Flow Rate = 1 mL/min Injection Volume = 5 µL

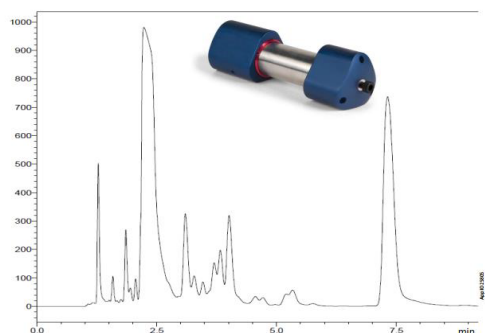


Figure 2
 Chromatogram of CBD extract on prep scale
 Luna® 5 µm C18(2) 100 Å, 100 x 21.2 mm Flow Rate = 20 mL/min Injection Volume = 100 µL

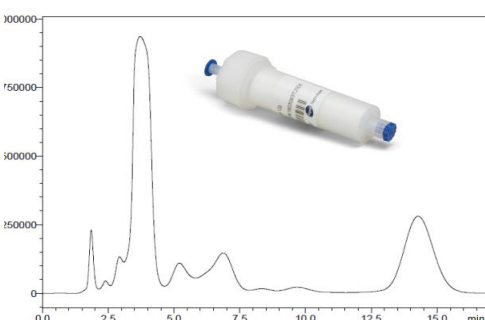


Figure 3
 Chromatogram of CBD extract on flash Claricep™ Screw-on Spherical C18, 20 - 35 µm, 100 Å, 20 g Flow Rate = 20 mL/min Injection Volume = 100 µL

Conclusion

Any chromatography system that can pump eluent can be used with Flash Chromatography columns. There are fittings and adapters that can connect the different types of tubing and components. This allows for greater versatility. One word of caution is to be aware of the operating pressure when using plastic flash cartridges.

Flash Chromatography can be very useful when the resolution of peaks is not very demanding. Prep Chromatography is very powerful. If a separation can be done at the analytical scale it can scaled to prep.

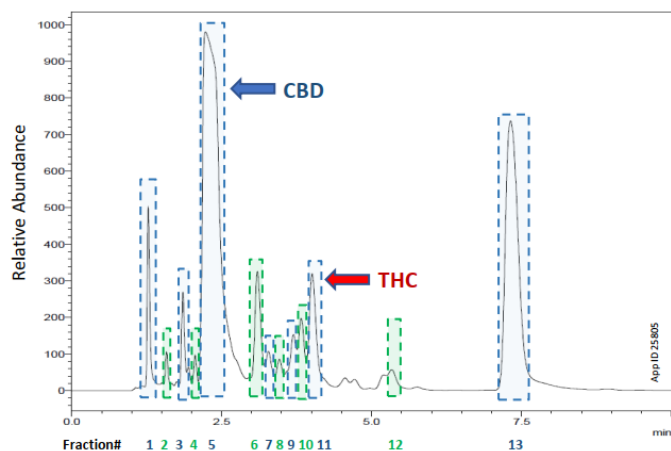
Chromatography (HPLC or Flash) can be used for THC remediation from hemp extracts. This work was done with acetonitrile but the chromatography can easily be converted to another strong eluent such as ethanol.

Other Industries

THC Remediation from CBD Extract (cont'd)

Fractions Collected from Axia™

From a single injection of the crude sample run on an Axia prep column, 13 different fractions were collected.



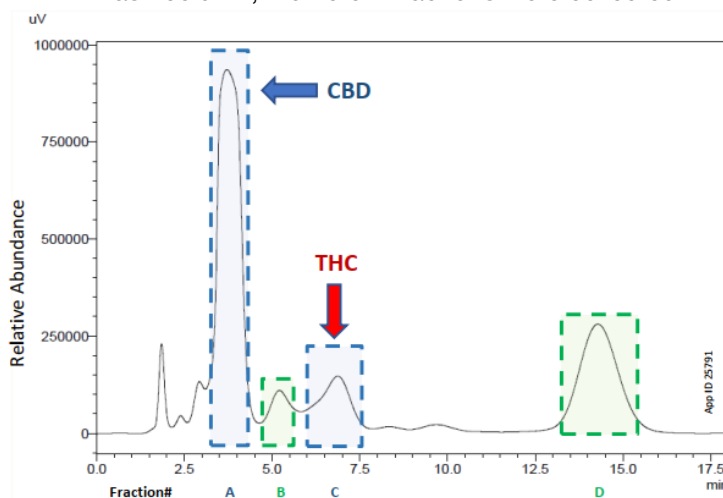
Chromatogram showing fraction collection
From CBD extract on 100 x 21.2 mm, Axia prep column
Flow Rate = 20 mL/min
Injection Volume = 100 µL



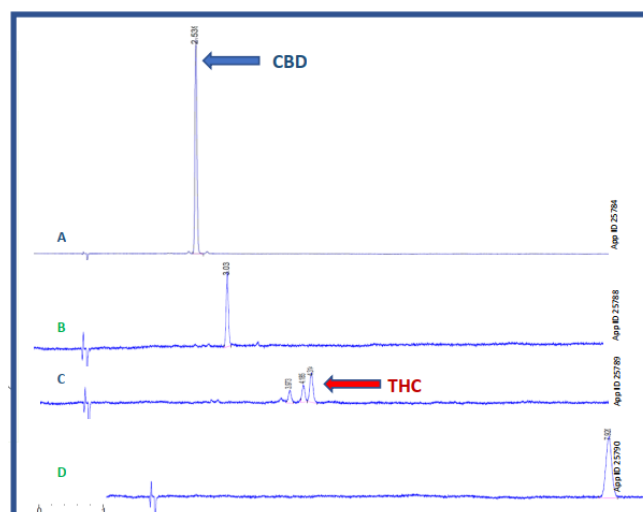
Chromatograms of collected fractions
From CBD extract on 100 x 21.2mm, Axia prep column
Flow Rate = 20 mL/min
Injection Volume = 100 µL

Fractions Collected from Flash

From a single injection of the crude sample run on a flash column, 4 different fractions were collected.



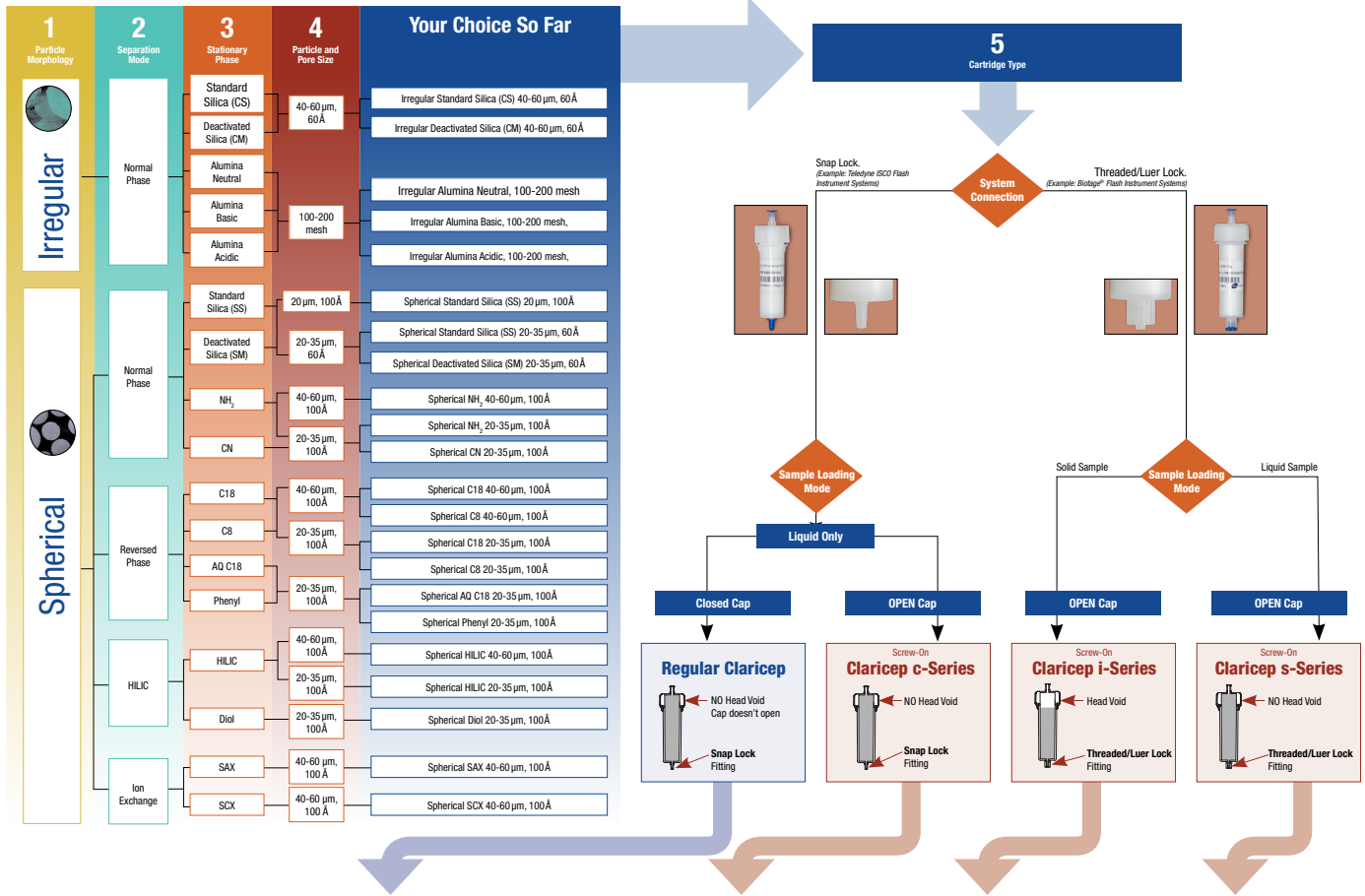
Chromatogram showing fraction collection
From CBD extract on 20 g Flash column
Flow Rate = 20 mL/min
Injection Volume = 100 µL



Chromatograms of collected fractions
From CBD extract on 100 x 21.2 mm, Axia prep column
Flow Rate = 20 mL/min
Injection Volume = 100 µL

Select your Flash Column in a Few Minutes!

Introducing the Flash column selection tool



6 Select Your Part Number		Regular Claricep										c-Series				i-Series				s-Series		
		4g	12g	20g	40g	80g	120g	330g	800g	1500g	12g	20g	40g	80g	120g	12g	20g	40g	80g	120g		
Irregular	Normal Phase	Standard Silica (CS)	CS140004-0	CS140012-0	CS140020-0	CS140040-0	CS140080-0	CS140120-0	CS140250-0	CS140500-0	CS1401000-0	C-CS140012-0	C-CS140020-0	C-CS140040-0	C-CS140080-0	C-CS140120-0	SN-CS140012-0	SN-CS140020-0	SN-CS140040-0	SN-CS140080-0	SN-CS140120-0	
		Deactivated Silica (CM)	CM140004-0	CM140012-0	CM140020-0	CM140040-0	CM140080-0	CM140120-0	CM140250-0	CM140500-0	CM1401000-0	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	
		Alumina Neutral	CA140004-N	Inquire	CA140020-N	CA140040-N	CA140080-N	CA140120-N	CA140250-N	CA140500-N	CA1401000-N	C-CA140012-N	C-CA140020-N	C-CA140040-N	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
		Alumina Basic	CA140004-B	Inquire	CA140020-B	CA140040-B	CA140080-B	CA140120-B	CA140250-B	CA140500-B	CA1401000-B	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
		Alumina Acidic	CA140004-A	CA140012-A	CA140020-A	CA140040-A	CA140080-A	CA140120-A	CA140250-A	CA140500-A	CA1401000-A	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
	Normal Phase	Standard Silica (SS)	SS120004-0	SS120012-0	SS120020-0	SS120040-0	SS120080-0	SS120120-0	SS120250-0	SS120500-0	Inquire	C-SS120012-0	C-SS120020-0	C-SS120040-0	C-SS120080-0	C-SS120120-0	SN-SS120012-0	SN-SS120020-0	SN-SS120040-0	SN-SS120080-0	SN-SS120120-0	
		Deactivated Silica (SM)	SM130004-0	SM130012-0	SM130020-0	SM130040-0	SM130080-0	SM130120-0	SM130250-0	SM130500-0	SM1301000-0	C-SM130012-0	C-SM130020-0	C-SM130040-0	C-SM130080-0	C-SM130120-0	SN-SM130012-0	SN-SM130020-0	SN-SM130040-0	SN-SM130080-0	SN-SM130120-0	
		NH ₂	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	
		CN	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	
		C18	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	
Spherical	Reversed Phase	C8	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		AO C18	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		Phenyl	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		HILIC	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		Diol	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
	HILIC	HILIC	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		Diol	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		Phenyl	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		C18	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
		AO C18	S2230004-0	S2230012-0	S2230020-0	S2230040-0	S2230080-0	S2230120-0	S2230250-0	S2230500-0	S22301000-0	C-S2230012-0	C-S2230020-0	C-S2230040-0	C-S2230080-0	C-S2230120-0	SN-S2230012-0	SN-S2230020-0	SN-S2230040-0	SN-S2230080-0	SN-S2230120-0	
Ion Exchange	SAX	SS240004-AX	SS240012-AX	SS240020-AX	SS240040-AX	SS240080-AX	SS240120-AX	SS240250-AX	SS240500-AX	SS2401000-AX	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire		
	SCX	SS240004-CX	SS240012-CX	SS240020-CX	SS240040-CX	SS240080-CX	SS240120-CX	SS240250-CX	SS240500-CX	SS2401000-CX	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire		

CLARICEP™

Ordering Information

Irregular Silica; Particle Size: 40-60 µm; Average Pore Size: 60 Å

Type	CLARICEP™	Silica Amount (g)	Quantity (pk)
Silica (CS) Standard Silica	CS140004-0	4	20
	CS140012-0	12	20
	CS140020-0	20	20
	CS140040-0	40	10
	CS140080-0	80	5
	CS140120-0	120	5
	CS140330-0	330	1
	CS140800-0	800	1
	CS1401500-0	1500	1

Also available in i-series, s-series & c-series (12 g, 20 g, 40 g, 80 g, & 120 g) per request (Contact your Sales Rep)

Spherical Silica; Average Particle Size: 20-35 µm; Pore Size: 60 Å

TYPE	CLARICEP	Silica Amount (g)	Quantity (pk)
Spherical Silica	SS130004-0	4	20
	SS130012-0	12	20
	SS130020-0	20	20
	SS130040-0	40	10
	SS130080-0	80	5
	SS130120-0	120	5
	SS130330-0	330	1

Also available in i-series, s-series & c-series (12 g, 20 g, 40 g, 80 g, & 120 g) per request (Contact your Sales Rep)

Spherical Bonded Phase; Average Particle Size: 40-60 µm; Pore Size: 100 Å

Type	CLARICEP	Silica Amount (g)	Quantity (pk)
C-18	SO240004-0	4	20
	SO240012-0	12	20
	SO240020-0	20	20
	SO240040-0	40	10
	SO240080-0	80	5
	SO240120-0	120	5
	SO240330-0	330	1
	SO240800-0	800	1
	SO2401500-0	1500	1

Also available in i-series, s-series & c-series (12 g, 20 g, 40 g, 80 g, & 120 g) per request (Contact your Sales Rep)

CLARICEP™

Ordering Information (cont'd)

Spherical Bonded Phase; Particle Size: 20-35 µm; Pore Size: 100 Å

TYPE	CLARICEP™	Silica Amount (g)	Quantity (pk)
C18	SO230004-0	4	20
	SO230012-0	12	20
	SO230020-0	20	20
	SO230040-0	40	10
	SO230080-0	80	5
	SO230120-0	120	5
	SO230330-0	330	1

Also available in i-series, s-series & c-series (12 g, 20 g, 40 g, 80 g, & 120 g) per request (Contact your Sales Rep)

Spherical Bonded Phase; Average Particle Size: 20-35 µm; Pore Size: 100 Å

TYPE	CLARICEP	Silica Amount (g)	Quantity (pk)
AQ C18	SQ230004-0	4	20
	SQ230012-0	12	20
	SQ230020-0	20	20
	SQ230040-0	40	10
	SQ230080-0	80	5
	SQ230120-0	120	5
	SQ230330-0	330	1

Also available in i-series, s-series & c-series (12 g, 20 g, 40 g, 80 g, & 120 g) per request (Contact your Sales Rep)

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