



# Bonna-Agela

Purification Cartridge & Instrument



Official Website

Best Value  
Guaranteed Product Quality  
Innovation to Benefit Customers

**Sample  
Preparation**

**Better  
Solutions for  
Chromatography**

**Chemical  
Analysis**

C  
Pu





## Bonna-Agela Technologies — A Global Supplier for Chromatography Solutions

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As Bonna-Agela is poised to enter its new development stage with confidence and pride in its innovative separation, purification, and sample preparation products, we would like to thank our many loyal customers for your continuous support and trust. With your support and our effort in delivering the highest quality products to you, our company has grown remarkably. This has allowed us to expand our research and development effort, and thus introduce more innovative products to better service your application needs.

We had tremendous accomplishments: We cataloged over one thousand different products. Our manufacturing and R&D operation were certified in compliance with ISO 9001 and passed many quality audits by customers and distributors, including VWR International. As a global wide company, this will allow us to reach higher goals and to provide our customers with even better quality products and faster service in the new year.

Our mission statement and commitment:

- Provide products with our innovative technologies at the best performance to cost ratio.
- Deliver products with guaranteed quality.
- Provide global support with quick responses.

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Our office is open from 9:00 am to 6:00 pm Eastern Standard Time, Monday through Friday.

To place an order or receive a quote, you may choose from the following contacts:

### **Bonna-Agela Technologies US**

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179 South Street, Teda West Zone, Tianjin 300462, China

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Fax: +86(22)25321033

Please include the following information with your order or request: Account number (if you have one), purchase order number, contact name, organization name, shipping and billing address, telephone number, fax number or email address, product number, brief description and quantity, method of payment and preferred method of delivery. A written confirmation will be sent to you by email or fax. We accept business checks, wire transfers and major credit cards as methods of payment.

### **Checks:**

Please make checks payable to:

Bonna-Agela Technologies Inc. and send to:

Bonna-Agela Technologies Inc.

2038A Telegraph Road, Wilmington, DE 19808, USA

### **Wire Transfer:**

Please contact us by phone, fax or email for account information.

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Please include card type and number, expiration date, and card holder name. Due to security concerns, please do not email the information. Please call or send a fax to provide your credit card information.

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PLEASE READ THESE TERMS BEFORE ORDERING. IF YOU HAVE ANY QUESTIONS, PLEASE DO NOT HESITATE TO CONTACT US AND OUR STAFF WILL BE GLAD TO ASSIST YOU.

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Bonna-Agela Technologies reserves the right to change product specifications, quantities, designs or prices without prior notice and without liability for such changes.

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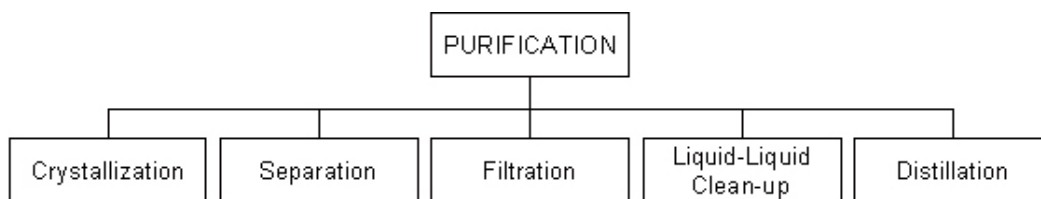


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## Introduction

Purification of compounds has become crucial and a bottleneck due to the ever-increasing molecular diversity and large number of compounds required in drug discovery. In organic synthesis, distillation, re-crystallization, and extraction are all important techniques for the purification of the compounds.



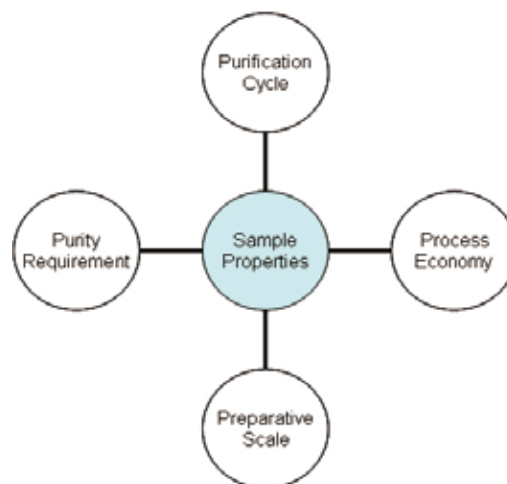
Types of purification techniques

However, these techniques are not sufficient to separate the target compound from the complex matrices and closely related impurities. This is very true in case of purifying natural products. Chromatographic methods are often required to obtain high purity compounds.

## Sample Properties

The properties of sample under separation play a key role to the quality and economy in a purification process. Better understanding of sample properties makes chromatographer's strategy one step ahead in practicing better preparative LC. Sample properties with particular concern in prep LC include the following:

- Solubility
- Concentration of the target component
- Chemical stability
- Matrix complexity
- Sample values



Key factors in a purification process



To gain maximum quantity of the target component within acceptable purity requirement is the goal of purification. Sample property is a determining factor in considering a strategic plan of purification with respect to other factors such as preparative scale, purity requirement, purification cycle and process economy.

Among these properties, sample solubility is a concern when selecting solvent that will be used in the elution system since it will directly affect the capacity of sample loading and purification throughput. Improper selection of solvents for mobile phase may result in sample precipitation or co-elution in the elution process. On the other hand, low concentration sample as a result of too much dilution will cause volume overloading and the loss of sample resolution from adjacent impurities.

## Preparative HPLC

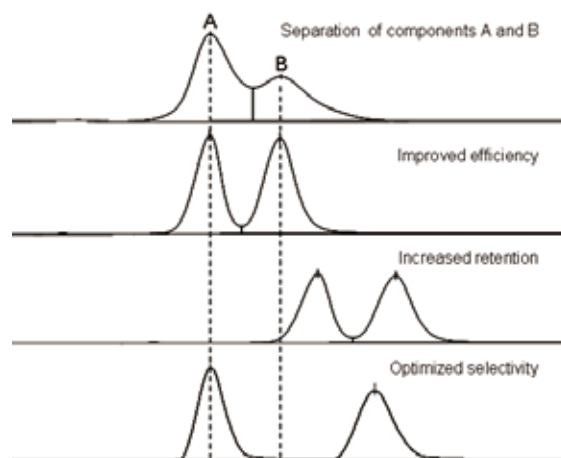
When practicing preparative LC, some fundamental factors need to be taken into consideration. Take the separation of two-component mixture, A and B, for example to illustrate the process.

## Resolution (Rs)

The separation of components A and B is described with the following chromatograms. The degree of the separation is defined as Resolution (Rs):

$$R_s = \left(\frac{\sqrt{N}}{4}\right) \cdot \left(\frac{a-1}{a}\right) \cdot \left(\frac{k}{k+1}\right)$$

Given a purification system, the length of the retention of a substance, factor  $k$ , is affected by the eluting speed of the mobile phase. Sample will be more retarded when it is eluted at a slower speed, but the resolution of components A and B will not be improved. Employing column packed with the same media of smaller particle size will definitely make the separation more efficient, narrower peaks A and B, because of the enhanced column efficiency as the plate count ( $N$ ) gets higher. Using packing of smaller particle size may become necessary when the system selectivity ( $\alpha$ ) is maximized.



Optimizing the separation of components A and B

## Selectivity ( $\alpha$ )

Maximum resolution of compounds A and B is always desired in LC purification in order to obtain higher sample loading and throughput. The key to increase resolution is to increase selectivity. Selectivity  $\alpha$  describes the magnitude of the difference between the relative thermodynamic affinities of analytes A and B to the specified mobile and stationary phase of the purification system. It equals the ratio of compound B's retention factor over compound A's. When  $k_2/k_1 = 1$ , it is co-elution, and no separation is made. The magnitude of selectivity ( $\alpha$ ) can be used to gauge the degree of difficulty of a separation.



Selectivity and the degree of purification difficulty:

If  $\alpha \geq 2$ , easy separation

If  $\alpha \geq 1.5$ , do-able but may require efficient packing material

If  $\alpha \geq 1.3$ , difficult, efficient packing is required

If  $\alpha \leq 1.3$ , very difficult, requires further optimization of selectivity and method

Selecting an appropriate combination of chemistry of packing media and mobile-phase composition for a purification system is the most effective procedure to maximize resolution. Factors of the choice include changing the mode of chromatography, and alteration of mobile-phase composition and modifiers among a range of solvents. As  $\alpha$  is improved, the separation between the peak of interest and the nearest impurity becomes more apart, resulting in higher sample loads with no compromise in product purity. When  $\alpha$  is low, small increases in  $\alpha$  value will enhance purification speed and throughput significantly. Selecting correct mode of chromatography or switching to a different mode of chromatography plays a key role to optimize a purification process.

## Purification Scale Up

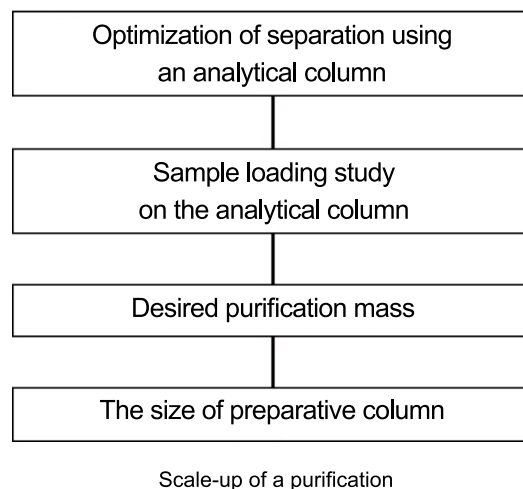
The optimization of a separation always starts from a small scale, and then the separation is scaled up to a large column. The process of purification using prep HPLC is described with the following chart.

In prep-HPLC, optimization of separation is first achieved with an analytical column. When the optimization is finalized, a loading study on the analytical column is followed to determine the capacity of a particular packing media.

When using identical packing material, the degree of the large scale separation should be the same as the small scale separation when the linear velocity of elution is kept the same. Thus the scale-up factor for sample loading can be derived for the prep system from the sample loading study of the analytical system. Certainly, the maximum sample load depends upon the complexity of the sample.

When the loading mass is established, the scale up factor is calculated using the following formula:

$$\text{Scaleup Factor} = \left( \frac{\text{Diameter (Prep)}}{\text{Diameter (Analytical)}} \right)^2 \cdot \left( \frac{\text{Length (Prep)}}{\text{Length (Analytical)}} \right)$$



Multiply the loading capacity of the analytical column with the scale-up factor is the predicted loading mass for the preparative column. Bear in mind that other factors may impact the mass of loading too. Here is a list of factors that also need to be considered:

- Surface chemistry of stationary phase affects loading capacity.
- Strongly retained target component has higher mass loading.
- Simple sample mixture has higher loading capacity.
- pH of mobile phase affects loading capacity of basic or acidic compounds.
- Loading capacity compromises when higher resolution is required.
- Volume overloading reduces resolution and purity.
- Beware the choice of the solvent used to dissolve sample. Strong dissolving solvents will disrupt elution process and degrade resolution.
- Sample solubility affects loading capacity.

Example of scale-up calculation:

When scaling up from an Bonna-Agela XBP C18 4.6x150 mm column to a XBP C18 50x250 mm column, the scale up factor is calculated as following:

$$\text{Scaleup Factor} = \left(\frac{50}{4.6}\right)^2 \bullet \left(\frac{250}{150}\right) = 197$$

If the loading study finds the mass capacity for the analytical column is 10 mg, then the predicted mass loading for the large column is:  $10 \times 197 = 1970$  mg. The linear velocity should be kept the same as that of the analytical column as mentioned earlier when using the preparative column. Thus the flow rate for the prep column is magnified from the analytical elution speed:

$$\text{PrepFlowRate} = \text{AnalyticalFlowRate} \bullet \left(\frac{\text{Diameter(Prep)}}{\text{Diameter(Analytical)}}\right)^2$$

However, some considerations are needed for the system hardware since high flow rate will generate considerable system backpressure as the increase of the column length with the use of small-particle-size packing material.

Linear gradient elution is a commonplace in prep chromatography. When scaling up from an analytical column to a preparative column, the duration of gradient needs to be adjusted accordingly with the following calculation if different lengths are used:

$$\text{Prep Gradient Duration} = \text{AnalyticalGradientDuration} \bullet \frac{\text{Length(Prep)}}{\text{Length (Analytical)}}$$

## Bonna-Agela Preparative HPLC Bulk Media and Columns

Bonna-Agela Technologies have a full line of preparative HPLC columns to meet a variety of application needs for customers.

The preparative columns have the following features:

1. Great scalability
2. Excellent bed stability
3. High loading capacity
4. Broad solvent compatibility, from 100 % aqueous to 100 % organic solvents (Unisol C18(2), Venusil® HILIC and Venusil® ASB C18)
5. Broad pH range, 1.5-12.0 (Durashell)
6. Unique selectivity (Venusil® HILIC and Venusil® ASB C18)



### Unisol C18(2)

Unisol C18 (2) column is an universal reversed phase column with optimized pore size, surface, carbon content, innovative surface modification and unique bonding processes. It has excellent balance of resolution and contamination tolerance. At the same time, the Unisol C18 (2) column demonstrates good retention capability for the polar and non polar compounds. Because it is less affected by the mobile phase pH and buffer concentration, the Unisol C18 (2) column provides excellent reproducibility.

Phase	Particle size	Pore size	Carbon loading	Surface Area	End-capped style	pH range
C18	5,10 µm	110 Å	14 %	340 m <sup>2</sup> /g	Double	1.5-9.0

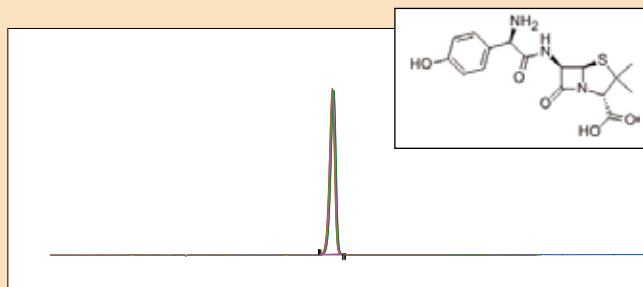
Optimum proper pH range is recommended for long lifetime and better effect: pH 2.0-6.0

## Main Features

- 100 % water compatible and enhanced retention, separation for polar isomer compounds.
- Reduced the quantity of active silicon hydroxyl and blocked metal ions, and show good peaks for basic compounds.
- Reduced the quantity of ion exchange sites and make the methods been less affected by the mobile phase pH and buffer concentration.
- Weakened nonspecific adsorption provide it a good tolerance of biological matrix.

### Amoxicillin

Unisol C18(2), 5  $\mu$ m, 4.6 $\times$ 250 mm, 110 Å,  
Mobile Phase: Acetonitrile:0.05 M monopotassium phosphate  
= 2.5:97.5( KOH pH=5.0)  
Flow Rate: 1.0 mL/min  
Temperature: 30°C  
Injection: 20  $\mu$ L  
Detector: UV 254 nm



## Innoval Series

Innoval series are a cost-effective product providing high loadability and stability. 5 µm and 10 µm particles are provided for high efficiency separation, especially the 5 µm series keep balance of loadability and resolution, which is the best choice for preparation method development.

### Characteristics

Phase	Particle size	Pore size	Carbon loading	Surface Area	End-capped style	pH range
C18 (ODS-2)	5,10 µm	100 Å	14 %	220 m <sup>2</sup> /g	Double	1.5-9.0
C8	5,10 µm	100 Å	8 %	220 m <sup>2</sup> /g	Single	1.5-8.5
Silica	5,10 µm	100 Å	/	220 m <sup>2</sup> /g	/	1.0-7.0

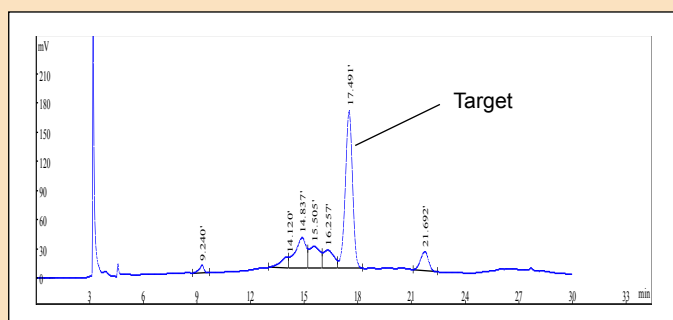
Optimum pH range is recommended for better lifetime: (1) Innoval ODS-2,C8:pH 2.0-6.0; Innoval Silica:pH 2.0-5.0

### Higher Column Efficiency and Resolution

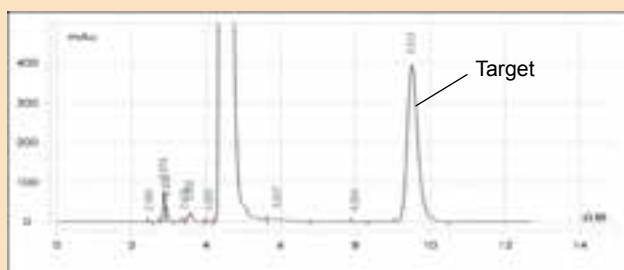
The 10 µm prep column of Innoval ODS-2 has the better selectivity, the higher column efficiency.

Sample: Anthocyanin  
Column: Innoval ODS-2, 10 µm, 100 Å, 10×250 mm  
Mobile Phase: A: Water (0.05%TFA); B: ACN  
Flow Rate: 4.0 mL/min  
Detector: UV 575 nm

Time/min	B%
0	10
20	20
30	60



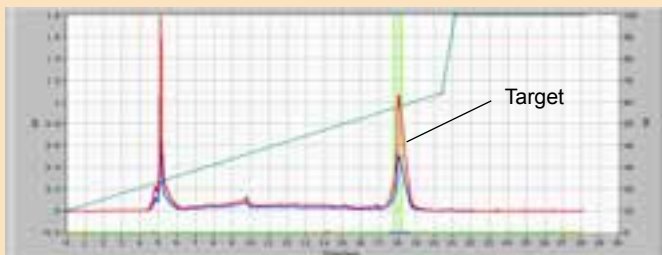
Sample: Citicoline Sodium  
Column: Innoval ODS-2, 10 µm, 100 Å, 10×250 mm  
Mobile Phase: A: Water (0.05%TFA);  
Flow Rate: 4.0 mL/min  
Detector: UV 575 nm  
Injection: 0.04 mL





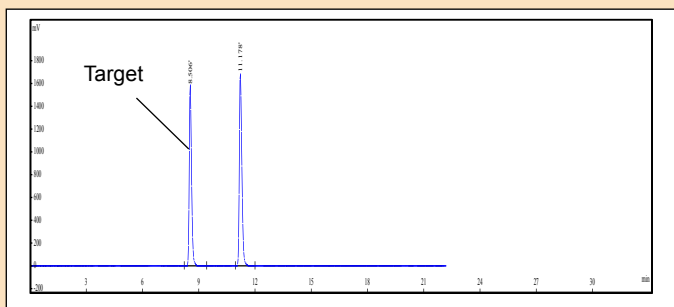
Sample: Propoxy Aildenafil  
 Column: Innoval ODS-2, 10 µm, 100 Å, 50×250 mm  
 Mobile Phase: A: Water (0.05%TFA); B: ACN  
 Flow Rate: 80 mL/min  
 Detector: UV 230/254 nm  
 Injection: 20 mL

Time/min	B%
0.0	10.0
20.4	64.2
21.1	100.0
28.7	100.0



Sample: Imatinib  
 Column: Innoval ODS-2, 10 µm, 100 Å, 10×250 mm  
 Mobile Phase: A: Water (0.05%TFA); B: ACN  
 Flow Rate: 4.0 mL/min  
 Detector: UV 254 nm  
 Injection: 10 mg

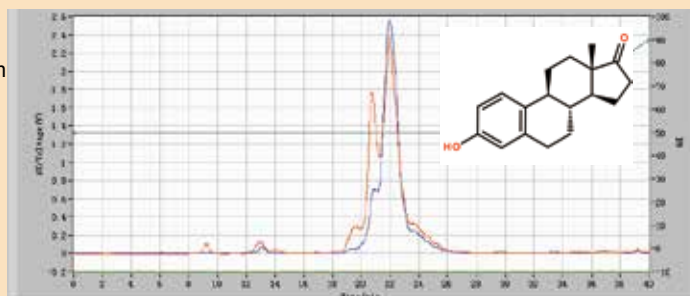
Time/min	B%
0.0	10.0
30.0	90.0





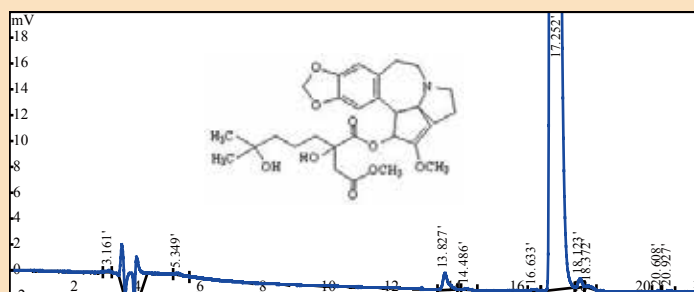
## Estrone

Instrument: CHEETAH® HP 100  
 Column: Venusil® ASB C18, 5 µm, 150 Å, 21.2×250 mm  
 VS952520-0  
 Mobile Phase: Water : ACN=50 : 50  
 Detector: UV 210 nm, 254 nm  
 Flow Rate: 16 mL/min  
 Sample Loading Volumn:10 mg



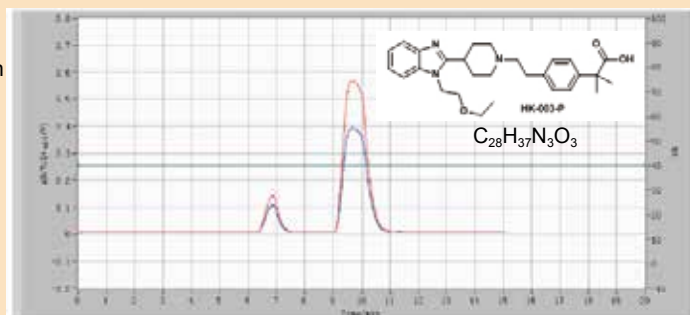
## Homoharringtonine

Instrument: FLEXA™ Series  
 Column: Venusil® ASB C18, 5 µm, 150 Å, 10×250 mm  
 VS952510-0  
 Mobile Phase: 80% A to 50% A in 20 mins  
 A: 0.01M ammonium acetate  
 solution (pH2.5)  
 B: Methanol  
 Detector: UV 288 nm  
 Flow Rate: 4 mL/min  
 Sample Loading Volumn: 5 mg



## Benzimidazole

Instrument: CHEETAH® HP 100  
 Column: Venusil® ASB C18, 5 µm, 150 Å, 21.2×250 mm  
 VS952520-0  
 Mobile Phase: Formic Acid in water (pH 2.45) :  
 Methanol=60:40  
 Detector: UV 275 nm  
 Flow Rate: 15 mL/min  
 Sample Loading Volumn: 50 mg





## Venusil® HILIC

Hydrophilic Interaction Chromatography (HILIC) has been increasingly used for strong hydrophilic substance in drug development to replace the traditional ion-pair methods. Existing stationary phases include silica, aminopropyl, ion-exchange. Issues include surface activity, performance reproducibility and mechanism complexity.

Venusil® HILIC with strongly hydrophilic, hydrogen bonding is more stable and reproducible than NH<sub>2</sub> columns or silica columns. It shows better retention and separation for highly water soluble compounds, also reduce the usage of buffer solution with high concentration of salt.

### Characteristics

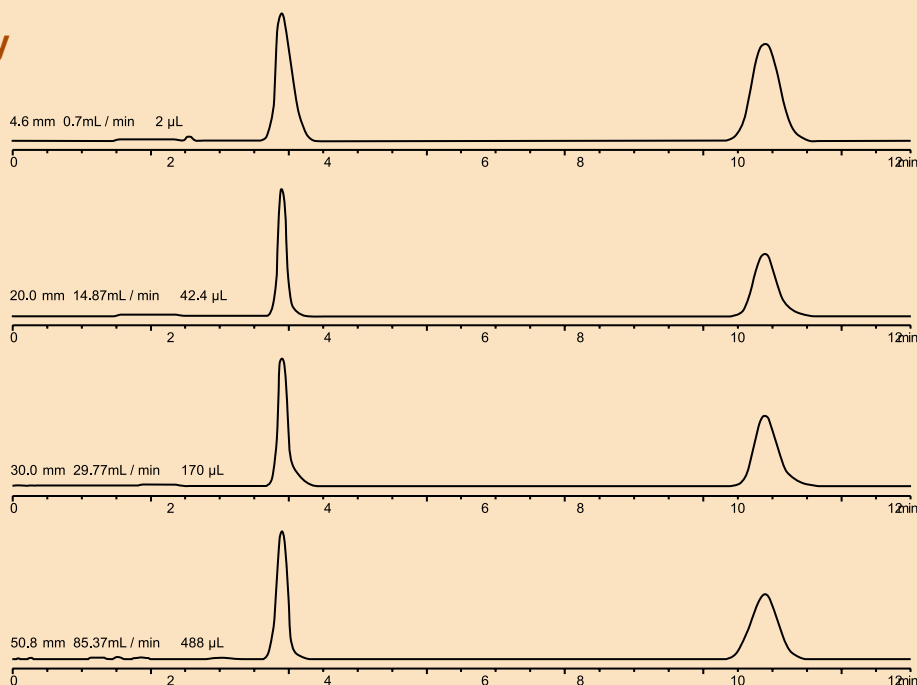
Phase	Particle size	Pore size	Carbon loading	Surface Area	End-capped style	pH range
HILIC	5,10 µm	100 Å	8 %	380 m <sup>2</sup> /g	None	2.0-8.0

Optimum pH range is recommended for long lifetime and better effect: pH 2.0-6.0

### Performance Features

1. 100 % aqueous and 100 % organic solvents compatibility.
2. Strong retention of polar compounds in HILIC mode.
3. Very unique selectivity and highly complementary to conventional reversed phase.
4. Can be used as reversed phase, normal phase or HILIC phase.

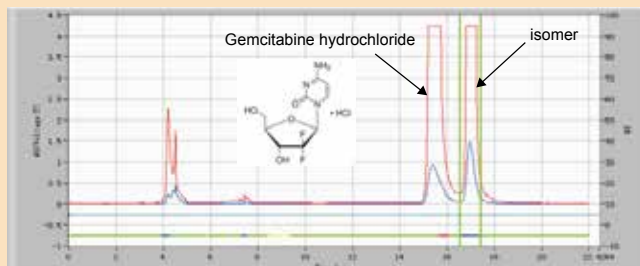
### Scalability



Column: Venusil® HILIC, 4.6×250 mm, 5 µm  
Mobile Phase: ACN/Water = 85/15 to 40/60 in 30 min  
Detector: UV 210 nm

## Gemcitabine Hydrochloride

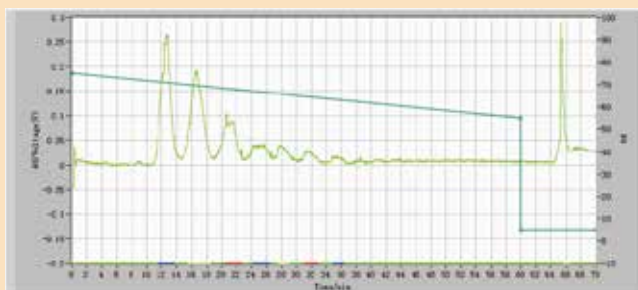
Instrument: CHEETAH® HP 100  
 Column: Venusil® HILIC, 10 µm, 100 Å, 21.2×250 mm  
 VH902520-0  
 Mobile Phase: Dichloromethane:methanol = 95: 5  
 Detector: UV 230 nm  
 Flow Rate: 15 mL/min  
 Sample Loading Volumn: 30 mg



Collection from 15.2-16.0 min is Gemcitabine hydrochloride, and 16.6-17.4 min is the isomer

## Isomaltooligosaccharide

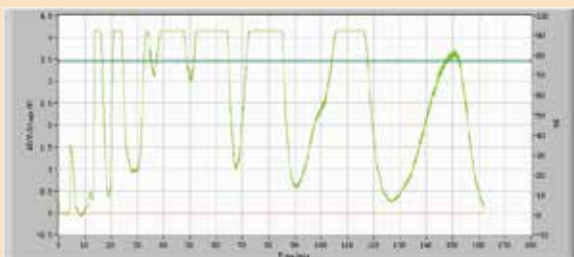
Instrument: CHEETAH® HP 100  
 Column: Venusil® HILIC, 10 µm, 100 Å, 21.2×250 mm  
 VH902520-0  
 Mobile Phase: 25% A increase to 45% in 60 mins,  
 A: Water, B: ACN  
 Detector: ELSD  
 Flow Rate: 18 mL/min  
 Sample Loading Volumn: 40 mg



Collect target compounds at 12.8 min, 16.5 min and 21min

## Fructo Oligosaccharide

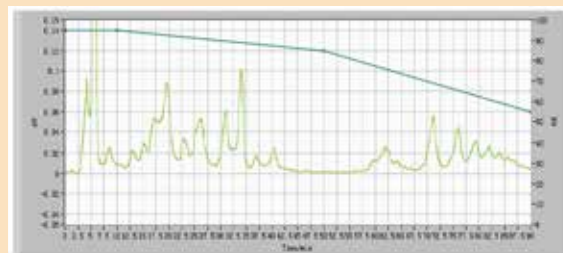
Instrument: CHEETAH® HP 100  
 Column: Venusil® HILIC, 10 µm, 100 Å,  
 50mm DAC column  
 Mobile Phase: 23% Water:77%ACN  
 Detector: ELSD 70°C  
 Flow Rate: 80 mL/min  
 Sample Loading Volumn: 3 g



Collect target compounds at 12.8 min, 16.5 min and 21min

## Xylooligosaccharide

Instrument: CHEETAH® HP 100  
 Column: Venusil® HILIC, 10 µm, 100 Å, 21.2×250 mm  
 VH902520-0  
 Mobile Phase: 5% A keep 10 mins and then increase to  
 15% in 40 mins, and then increase to 45% in 40 mins, A:  
 0.05% TFA in water, B: ACN  
 Detector: ELSD 65°C  
 Flow Rate: 18 mL/min  
 Sample Loading Volumn: 40 mg



## Durashell C18(L)

Bonna-Agela's Durashell series with Agela core-technology of hybrid surface technology, enables the columns show stability in high pH applications. The patented technology produces a strong hydrophobic protection layer over the silica surface, allowing the columns to be used at extremely high and low pH. It also reduces excessive hydrophobic interactions between the stationary phase and the analytes, and yet maintains great interfacial kinetics for high efficiency.

Durashell C18(L) with a 150 Å pore size shows better life-time and tolerance of biological sample matrix. By the same time, it has high efficiency comparable with traditional silica based product. It is a good choice for high pH separation and purification method.

### Characteristics

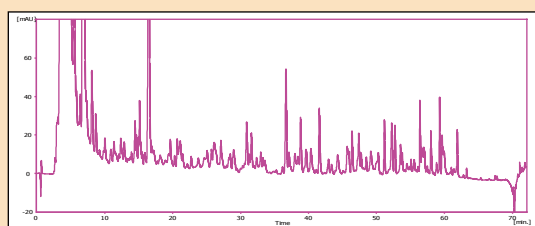
Phase	Particle size	Pore size	Carbon loading	Surface area	End-capped style	pH range
C18(L)	5,10 µm	150 Å	14 %	200 m <sup>2</sup> /g	Double	1.5-12.0

Optimum pH range is recommended for long lifetime and better effect: pH 2.0-10.0

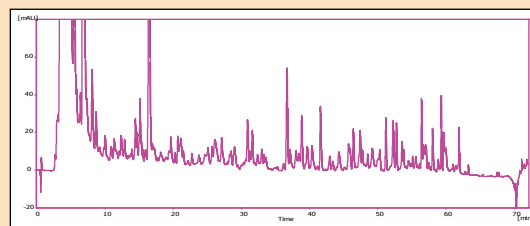
### High pH Stability

Sample: BSA peptide fragment  
Column: Durashell C18(L), 4.6×250 mm, 5 µm, 150 Å  
Mobile Phase: A: 2% ACN (pH=10.0) B: 98% ACN (pH=10.0)  
Flow Rate: 0.7 mL/min  
Temperature: 45°C

Time/min	A%	B%
0	95%	5%
5	92%	8%
40	82%	18%
62	68%	32%
64	5%	95%
68	5%	95%
72	95%	5%



First injection



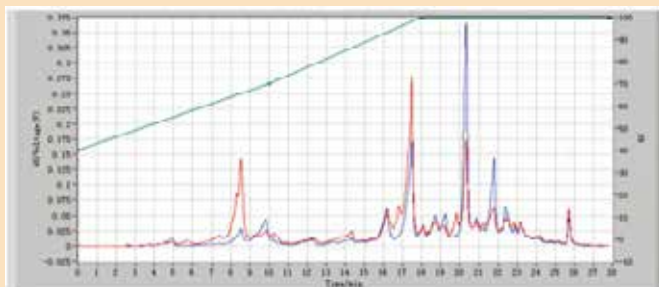
One thousandth injection

## The separation and preparation of natural products

Durashell C18(L), 10×250 mm, 5 µm, 150 Å  
 Mobile Phase: A: Water B: ACN

Time/min	B%
0	40
10	70
18	100
28	100

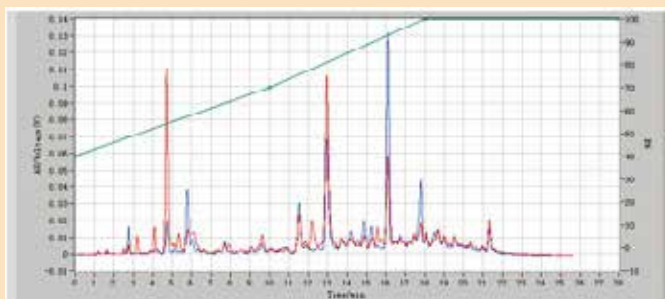
Flow Rate: 4 mL/min; Detector: UV 254 nm;  
 Injection: 50 µL.



Durashell C18(L), 30×100 mm, 5 µm, 150 Å  
 Mobile Phase: A: Water B: ACN

Time/min	B%
0	40
10	70
18	100
28	100

Flow Rate: 35 mL/min; Detector: UV 254 nm;  
 Injection: 500 µL.



## Columns Ordering Information

Average Pore Size: 100 Å

Type	Dimension (mm)	Particle (µm)	Venusil® HILIC	Innoval C8	Innoval Silica	Innoval ODS-2
Semi-preparative	10×150	5	VH951510-0	IX851510-0	ISi951510-0	IX951510-2
	10×250	5	VH952510-0	IX852510-0	ISi952510-0	IX952510-2
Preparative	21.2×50	5	VH950520-0	IX850520-0	ISi950520-0	IX950520-2
	21.2×150	5	VH951520-0	IX851520-0	ISi951520-0	IX951520-2
	21.2×250	5	VH952520-0	IX852520-0	ISi952520-0	IX952520-2
	30×100	5	VH951030-0	IX851030-0	ISi951030-0	IX951030-2
	30×150	5	VH951530-0	IX851530-0	ISi951530-0	IX951530-2
	30×250	5	VH952530-0	IX852530-0	ISi952530-0	IX952530-2
Guard cartridge	10×10	5	VH950110-0S	IX850110-0S	ISi950110-0S	IX950110-2S
	21.2×10	5	VH950120-0	IX850120-0	ISi950120-0	IX950120-2
Semi-preparative	10×150	10	VH901510-0	IX801510-0	ISi901510-0	IX901510-2
	10×250	10	VH902510-0	IX802510-0	ISi902510-0	IX902510-2
Preparative	21.2×50	10	VH900520-0	IX800520-0	ISi900520-0	IX900520-2
	21.2×150	10	VH901520-0	IX801520-0	ISi901520-0	IX901520-2
	21.2×250	10	VH902520-0	IX802520-0	ISi902520-0	IX902520-2
	30×100	10	VH901030-0	IX801030-0	ISi901030-0	IX901030-2
	30×150	10	VH901530-0	IX801530-0	ISi901530-0	IX901530-2
	30×250	10	VH902530-0	IX802530-0	ISi902530-0	IX902530-2
	50×150	10	VH901550-0	IX801550-0	ISi901550-0	IX901550-2
50×250	10	VH902550-0	IX802550-0	ISi902550-0	IX902550-2	
Guard cartridge	10×10	10	VH900110-0S	IX800110-0S	ISi900110-0S	IX900110-2S
	21.2×10	10	VH900120-0	IX800120-0	ISi900120-0	IX900120-2

Average Pore Size: 110 Å

Type	Dimension(mm)	Particle(µm)	UnisolC18(2)
Semi-preparative	10×150	5	UO951510-2
	10×250	5	UO952510-2
Preparative	21.2×50	5	UO950520-2
	21.2×150	5	UO951520-2
	21.2×250	5	UO952520-2
	30×100	5	UO951030-2
	30×150	5	UO951530-2
	30×250	5	UO952530-2
Guard cartridge	10×10	5	UO950110-2S
	21.2×10	5	UO950120-2
Semi-preparative	10×150	10	UO901510-2
	10×250	10	UO902510-2
Preparative	21.2×50	10	UO900520-2
	21.2×150	10	UO901520-2
	21.2×250	10	UO902520-2
	30×100	10	UO901030-2
	30×150	10	UO901530-2
	30×250	10	UO902530-2
	50×150	10	UO901550-2
	50×250	10	UO902550-2
Guard cartridge	10×10	10	UO900110-2S
	21.2×10	10	UO900120-2

Average Pore Size: 150 Å

Type	Dimension(mm)	Particle(µm)	Venusil® ASB C18	Durashell C18(L)
Semi-preparative	10×150	5	VS951510-0	DC951510-L
	10×250	5	VS952510-0	DC952510-L
Preparative	21.2×50	5	VS950520-0	DC950520-L
	21.2×150	5	VS951520-0	DC951520-L
	21.2×250	5	VS952520-0	DC952520-L
	30×100	5	VS951030-0	DC951030-L
	30×150	5	VS951530-0	DC951530-L
	30×250	5	VS952530-0	DC952530-L
Guard cartridge	10×10	5	VS950110-0S	DC950110-LS
	21.2×10	5	VS950120-0	DC950120-L
Semi-preparative	10×150	10	VS901510-0	DC901510-L
	10×250	10	VS902510-0	DC902510-L
Preparative	21.2×50	10	VS900520-0	DC900520-L
	21.2×150	10	VS901520-0	DC901520-L
	21.2×250	10	VS902520-0	DC902520-L
	30×100	10	VS901030-0	DC901030-L
	30×150	10	VS901530-0	DC901530-L
	30×250	10	VS902530-0	DC902530-L
	50×150	10	VS901550-0	DC901550-L
50×250	10	VS902550-0	DC902550-L	
Guard cartridge	10×10	10	VS900110-0S	DC900110-LS
	21.2×10	10	VS900120-0	DC900120-L



## Bulk Media Ordering Information

Type	Particle (µm)	Pore Size (Å)	Pack (g)	Part. No.
Unisol C18(2)	5	110	10	UO950010-2
	5	110	100	UO950100-2
	5	110	1000	UO951000-2
	10	110	10	UO900010-2
	10	110	100	UO900100-2
	10	110	1000	UO901000-2
Venusil® HILIC	5	100	10	VH950010-0
	5	100	100	VH950100-0
	5	100	1000	VH951000-0
	10	100	10	VH900010-0
	10	100	100	VH900100-0
	10	100	1000	VH901000-0
Venusil® PrepG C18	10	120	10	VX900010-A
	10	120	100	VX900100-A
	10	120	1000	VX901000-A
Venusil® ASB C18	5	150	10	VS950010-0
	5	150	100	VS950100-0
	5	150	1000	VS951000-0
	10	150	10	VS900010-0
	10	150	100	VS900100-0
	10	150	1000	VS901000-0
Durashell C18(L)	5	150	10	DC950010-L
	5	150	100	DC950100-L
	5	150	1000	DC951000-L
	10	150	10	DC900010-L
	10	150	100	DC900100-L
	10	150	1000	DC901000-L
Innoval ODS-2	5	100	10	IX950010-2
	5	100	100	IX950100-2
	5	100	1000	IX951000-2
	10	100	10	IX900010-2
	10	100	100	IX900100-2
	10	100	1000	IX901000-2
Innoval Silica	5	100	10	ISi950010-0
	5	100	100	ISi950100-0
	5	100	1000	ISi951000-0
	10	100	10	ISi900010-0
	10	100	100	ISi900100-0
	10	100	1000	ISi901000-0



## Claricep™ Flash Chromatography Media and Columns

Column chromatography has been using as a major purification method for synthetic and natural products. Traditional silica-based flash chromatography columns have many drawbacks: 1) high surface activity that causes instability of certain compounds, 2) unwanted tailing or overly long retention of basic compounds due to acid/base interaction or metal chelating effect, and 3) poor reproducibility.

We provide two types flash columns packed with irregular silica or spherical silica.



### Claricep™ Irregular Flash Columns

### Claricep™ CS Silica Columns

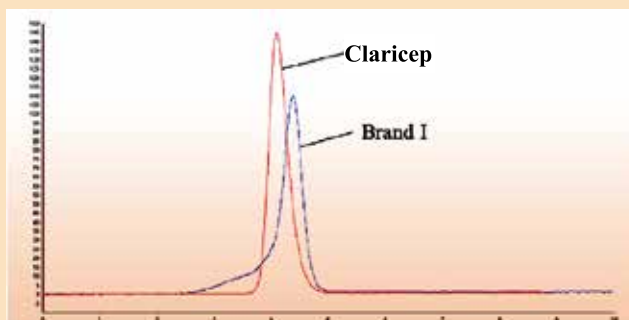
The packing is ultra pure grade silica (specially washed with acid and DI water; narrow particle size and water content control).

#### Column Specification

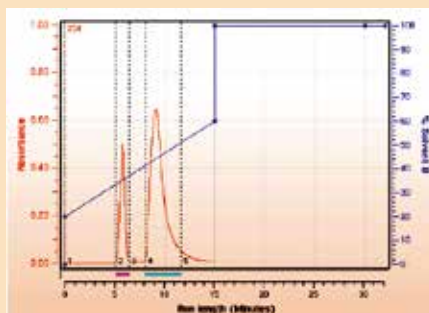
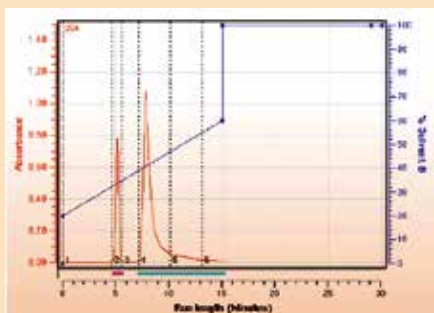
Surface Area: 480 m<sup>2</sup>/g; Surface pH: 6.3-7.2; Water Content: 3.0-5.0 %; Average Particle Size: 40-60 µm; Average Pore Size: 60 Å.

#### Aniline Flash Column Tests Report

Column: Claricep™ CS (40 g), Brand I (40 g Si)  
Mobile Phase: Dichloromethane : methanol = 99 : 1  
Flow Rate: 20 mL/min  
Detector: UV 254 nm  
Temperature: Ambient  
Rt: Brand I: 4.373 min; Claricep™: 4.090 min



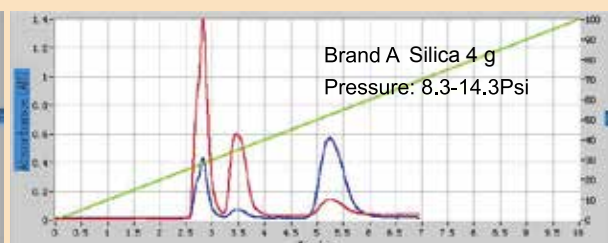
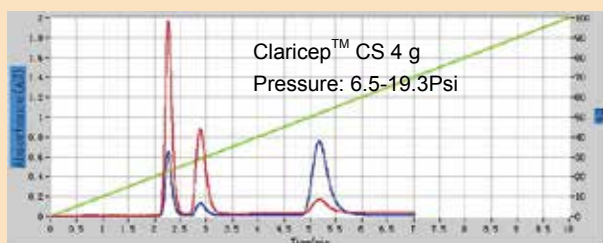
## Chromatography Comparison



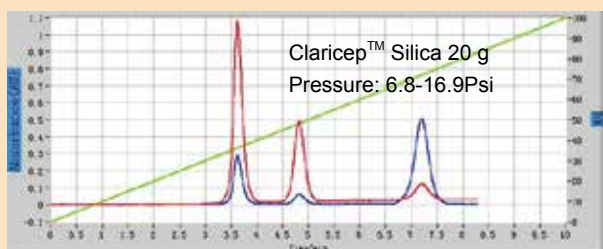
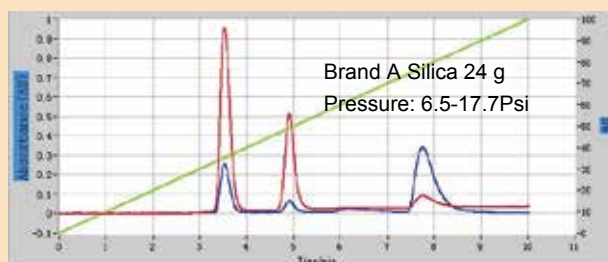
Sample: Phenyl acetone,  
4-aminobenzoic acid  
Mobile Phase: Hexane/ethylacetate  
(gradient)  
Detector: 254 nm  
Temperature: Ambient

## Testing of Different Brand Flash Column

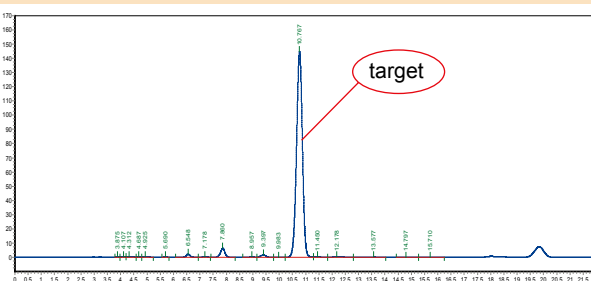
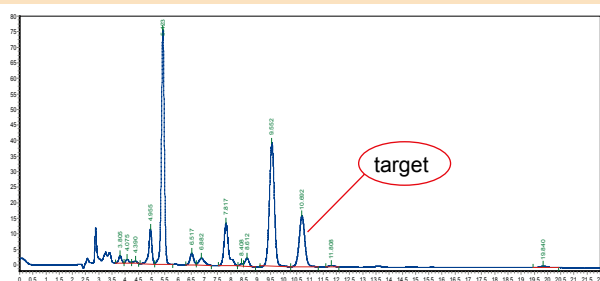
Sample: PABA, Acetylbenzene, Methyl Paraben  
A: Petroleum ether; B: Ethyl acetate  
Flow Rate: 20 mL/min  
Detector: UV 254/280 nm



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

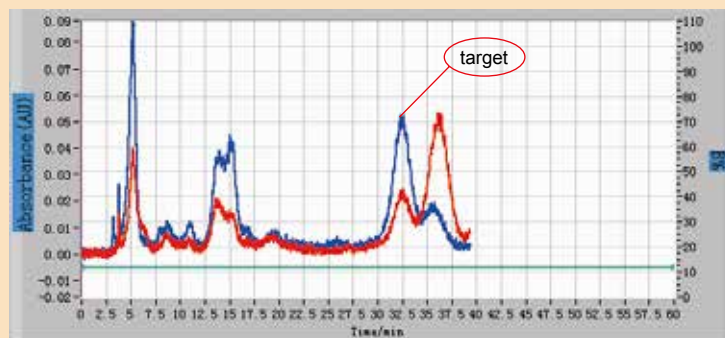


## The Purity of Duantioxidant in Sesame Oil



Column: Venusil® XBP C18, 4.6×150 mm, 5 μm  
Mobile Phase: MeOH: Water=75:25

Instrument: CHEETAH® MP 100  
Column: Claricep™ Silica (CS), 40-60 μm, 60 Å, 12 g  
Mobile Phase: acetic ether:petroleum ether=12:88  
Flow Rate: 18 mL/min  
Sample: 400 mg/20 mL  
Injection: 4 mL



## Claricep™ CM Silica Columns

Bonna-Agela Technologies have developed a technology that can specifically deactivate silica surface. Our columns show significantly improved performance and much less undesirable silica surface activities than the regular flash columns. Claricep™ CM may also provide alternative selectivity for complexity purification requirement.

The following figures present a comparison of column performance for a Bonna-Agela's deactivated silica column vs an unmodified silica flash column.

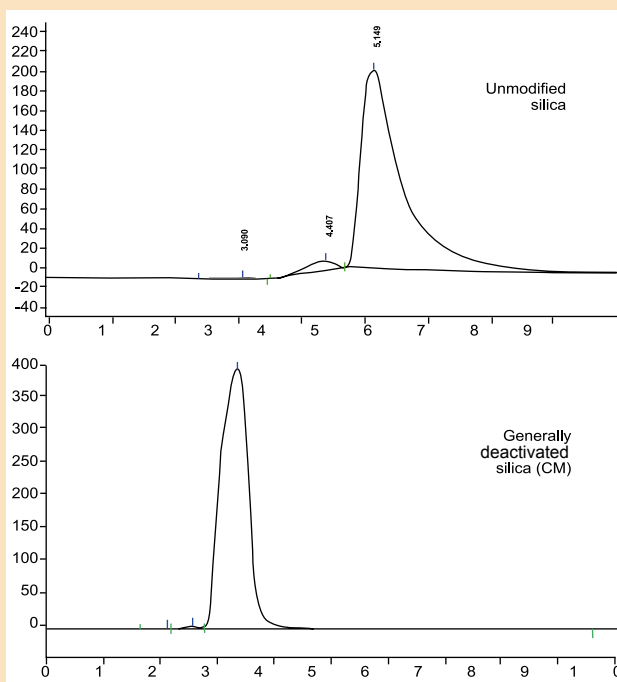
### Chromatogram Comparison of Catechol on Different Silica

**Test:**

The silica to be tested was packed into a stainless steel column of 4.6×150 mm and tested on a HPLC system

**Conditions:**

Sample: Catechol 100 µg/mL in mobile phase  
Mobile Phase: dichloromethane:methanol = 98:2  
Temperature: 30°C  
Detector: UV 254 nm  
Injection: 5 µL



## Claricep™ Spherical Flash Columns

Claricep™ spherical 20 µm Silica series provide higher resolution and purification performance compared with most of the commercial Flash column in the market. Also the 20-35 µm series which has low back pressure enables faster flow rate and viscous solvents.

## Claricep™ Spherical Silica Columns

### Characteristics

20 µm, 100 Å, Water Content: 3.0-5.0 %; Surface Area: 320 m<sup>2</sup>/g

20-35 µm, 60 Å, Water Content: 3.0-5.0 %; Surface Area: 480 m<sup>2</sup>/g

20-35 µm, 100 Å, Water Content: 3.0-5.0 %; Surface Area: 320 m<sup>2</sup>/g

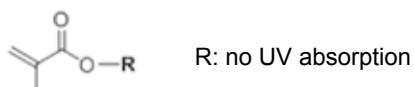
### Purification of Sample with Metacrylic Acid Ester Group

#### Sample Information

The sample is colorless liquid, which is sensitivity to light and the contact of sample is about 60 %.

Dissolve 0.2 mL of sample into 1.5 mL ethanol under ultrasonic.

Structure:



Small molecular weight with UV absorption of metacrylic acid ester

Column: Flash column silica (20-35 µm, 100 Å, 12 g, 2 columns in tandem)

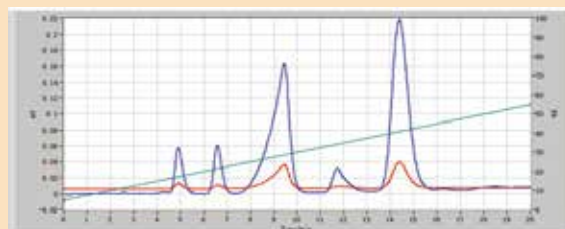
Mobile Phase: A: hexane B: ethanol

Gradient

Time/min	B%
0	5
20	55

Flow Rate: 12 mL/min; Detector: UV 254 nm; 220 nm;

Sample Loading: 0.2 mL



Column: Flash column silica (20 µm, 100 Å, 12 g, 2 columns in tandem)

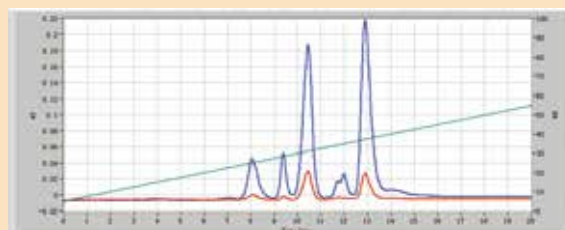
Mobile Phase: A: hexane B: ethanol

Gradient

Time/min	B%
0	5
20	55

Flow Rate: 12 mL/min; Detector: UV 254 nm; 220 nm;

Sample Loading: 0.2 mL



Small particle size with 20 µm is a good choice for complex sample with polarity

## Claricep™ Spherical C18 Columns

The media is chemically bonded with nonpolar alky chains such C4, C8 or C18 groups. The term reversed-phase describes the separation mode that just the opposite of the normal phase chromatography. In reversed-phase mode, non-polar or hydrophobic compounds are strongly retained, and polar samples are weakly retained, moving faster through the packing bed. The use of reversed-phase media for purification is becoming more popular because of its high reproducibility and broad applicability. A blend of water and miscible polar organic solvents such as acetonitrile or methanol is used as mobile phase to ensure the proper interaction of analytes with the non-polar alky packing surface.

C18 or octadecyl silane (ODS) is the most popular type of reversed-phase packing. It applies to the separation of many compounds.

### Characteristics

20 µm, 100 Å, Carbon loading: 14 %;  
20-35 µm, 100 Å, Carbon loading: 14 %;

20-35 µm, 60 Å, Carbon loading: 15 %;  
40-60 µm, 100 Å, Carbon loading: 14 %;

### Better separation performance-- Claricep™ Spherical C18 Columns

### Sample Information

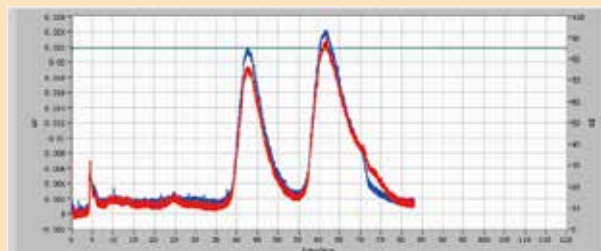
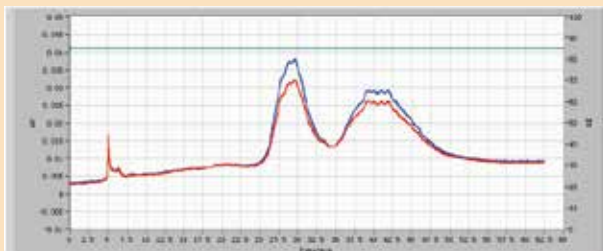
Sample is tetrandrine extracted from natural products, white powder.

Sample: Tetrandrine  
Mobile Phase: A: Water; B Methanol with 0.06% diethylamine  
Detector: UV 254 nm, 282 nm  
Gradient:

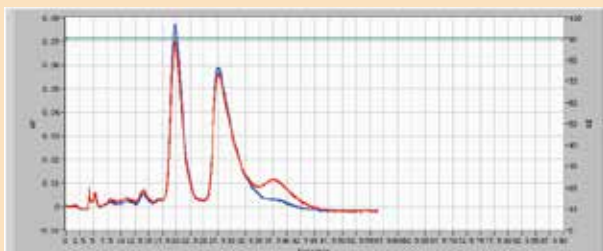
Time/min	B%
0	85
100	85

1) Irregular C18 (40-60 µm, 100 Å, 12 g,  
3 columns in tandem)

2) Claricep™ Spherical C18 (20-35 µm, 100 Å, 12 g,  
3 columns in tandem)



3) Claricep™ Spherical C18 (20 µm, 100 Å, 12 g,  
3 columns in tandem)



### Purification with 20-35 µm column

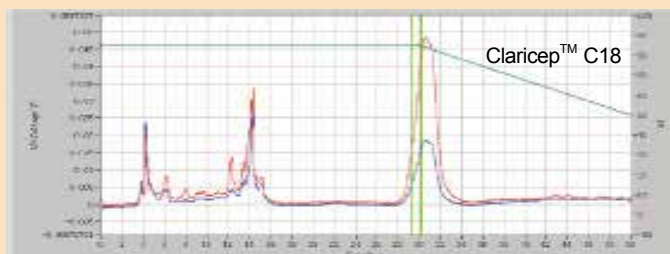
Column: Claricep™ C18, 20-35 µm, 100 Å, 80 g, 2 columns in tandem

Mobile Phase: A: ACN, B: water

Time/min	B%
0	85
30	85
50	50

Detector: UV 254 nm, 280 nm

Flow Rate: 60 mL/min



### Isolation of Polypeptide

Column: Claricep™ Spherical C18, 20-35 µm, 100 Å (12 g/2 columns in tandem)

Flow Rate: 1 mL/min

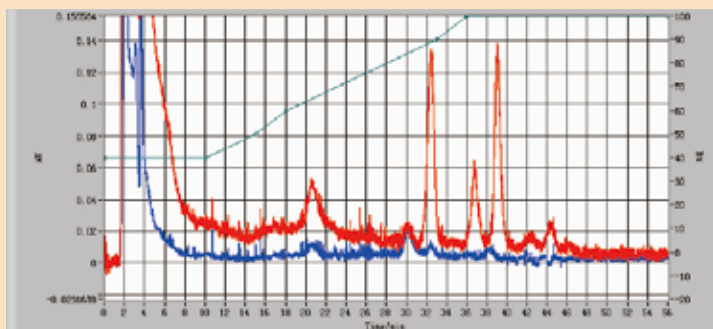
Detector: UV 205 nm, 280 nm

Injection: 10 µL

Temperature: 40°C

Mobile Phase:

Time/min	A (H <sub>2</sub> O+0.01%TFA)	B(ACN)
0	95 %	5 %
3	95 %	5 %
5	70 %	30 %
25	20 %	80 %
30	20 %	80 %
31	10 %	90 %
35	10 %	90 %



## Ink Sample Separation

### Sample Preparation

Take 50  $\mu\text{L}$  of two kinds of raw ink sample separately, 0.5 mL ethyl alcohol and acetone could be added for better resolution., filter the sample with 0.22  $\mu\text{m}$  Nylon Filter and then for sample loading.

### Chromatography Condition

Instrument: CHEETAH<sup>®</sup> MP 200

Flash Column: 2 $\times$ 20 g Flash C18 in tandem

Mobile Phase: A: Water; B: ACN

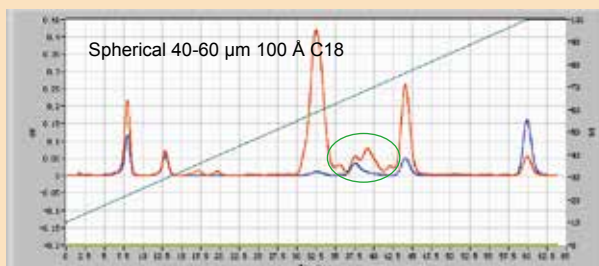
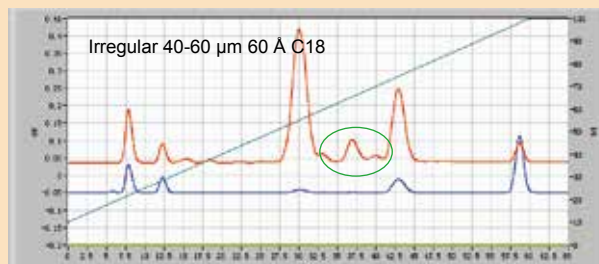
Flow Rate: 26 mL/min

Detector: UV 210 nm(red); 254 nm(blue)

Gradient:

Time/min	B%
0	10
60	100

### Chromatogram





## Claricep™ Spherical AQ C18 Columns

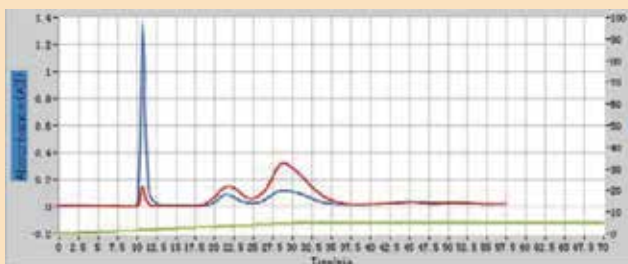
Following the success of Bonna-Agela's Unisol C18 HPLC columns, we now introduce a hydrophilic reversed phase C18 for the flash chromatography applications, which offers unprecedented separation performance for compounds of a wide range of properties from hydrophilic to hydrophobic: polar, semi-polar and non-polar compounds.

### Characteristics

Surface Area: 300 m<sup>2</sup>/g; Surface Average Particle Size: 40-60 µm, Average Pore Size: 100 Å; Carbon Loading: 14 %  
Surface Area: 320 m<sup>2</sup>/g; Surface Average Particle Size: 20-35 µm, Average Pore Size: 100 Å; Carbon loading: 15 %  
Surface Area: 320 m<sup>2</sup>/g; Surface Average Particle Size: 20 µm, Average Pore Size: 100 Å; Carbon loading: 15 %.

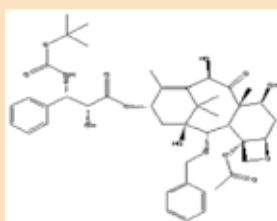
### Isolation of Iridoids Compounds

Sample: Iridoids Compounds  
Column: Claricep™ Spherical AQ C18, 20-35 µm, 100 Å  
Mobile Phase: MeOH : Water : Formic acid  
Detector: UV 231 nm, 214 nm



### Purification of Taxol with AQ C18

#### Sample Information

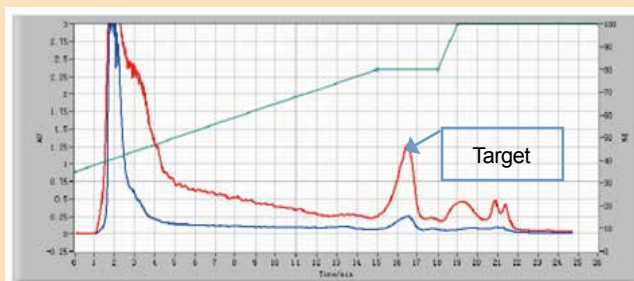


The magenta sample is a extract of Chinese yew. The target is taxol, which applies to ovarian and breast cancer. Dissolve 1 g of sample into 20 mL methanol and filtrate, get a solution with a concentration of 50 mg/mL

#### Flash Condition

Column: Claricep™ AQ C18, 20-35 µm, 100 Å, 120 g  
Mobile Phase: A: Water; B: Methanol  
Flow Rate: 83 mL/min  
Detector: UV 230 nm, 254 nm  
Sample Loading: 20 mL  
Gradient:

Time/min	B%
0	35
15	80
18	80
19	100
25	100



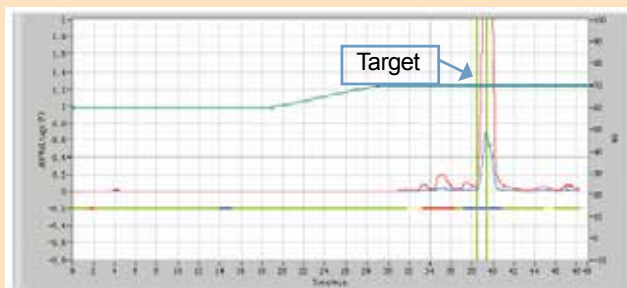
Fraction between 15-17 min

Concentrate the solution with rotating at 40°C, centrifuge and solve the supernatant into methanol, the whole volume is about 11 mL, filtrate and load that on the column.

## High Pressure Preparation

Sample: Taxol Extract  
 Column: Unisol C18, 5 µm, 100 Å, 30×250 mm  
 Mobile Phase: A: Water (0.05 %TFA)  
                   B: Methanol (0.02 %TFA)  
 Flow Rate: 33 mL/min  
 Detector: UV 230 nm, 254 nm  
 Sample Loading: 4 mL  
 Gradient:

Time/min	B%
0	60
19	60
29	70
49	70

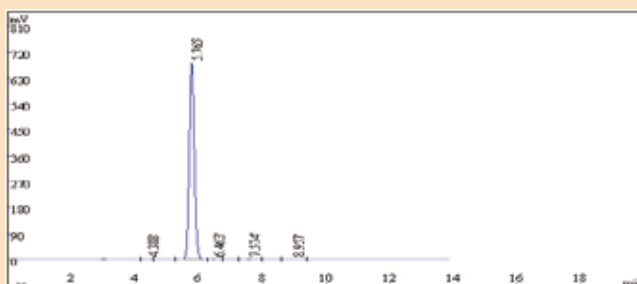


Collect the fraction from 38.5-40.3 min

Concentrate the solution with rotating at 40°C, centrifuge and solve the supernatant into methanol, the whole volume is about 11 mL, filtrate and load that on the column.

## Purity Test

Column: Unisol C18, 5 µm, 100 Å, 4.6×250 mm  
 Mobile Phase: Water(0.05 %TFA): ACN(0.02 %TFA)  
 Flow Rate: 1 mL/min  
 Detector: UV 230 nm



No	Rt	Concentration	Peak area	Peak separation	Count plate	Tails
1	4.388	0.1565	12053	5.29	6255	1.07
2	5.765	98.82	7611512	0.00	6314	1.10
3	6.463	0.2516	19383	0.00	7953	0.99
4	7.574	0.4349	33501	0.00	6899	1.02
5	8.957	0.3382	26049	0.00	7037	1.01

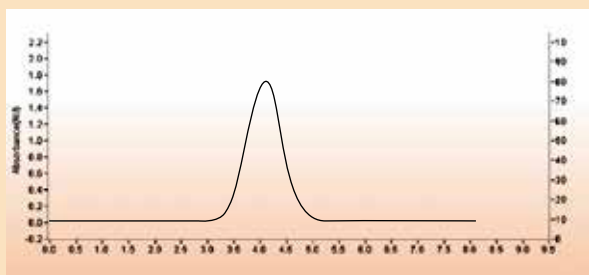
Processed with double-surface modification technology, the Unisol C18 column has a hydrophilic surface and the increased Si-OH group performs well on the retention and separation for taxol sample. The purity of target sample is up to 98.8 %. The sample is a product of biology ferment with high content of impurity. Content of target compounds could be up to 90 % through flash media and the purity is up to 98 % after high pressure column purification.

## Claricep™ HILIC Columns

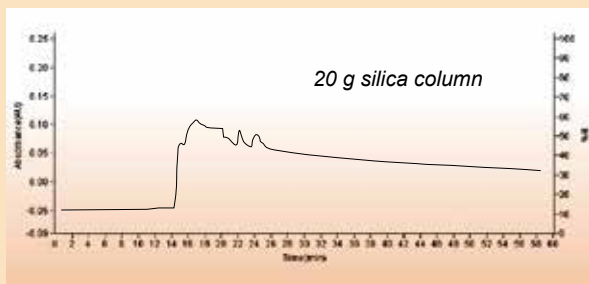
We are now introducing HILIC phases for flash chromatography applications. Bonna-Agela's HILIC columns are compatible with polar and aqueous solvents, such as methanol, acetonitrile and water, which allow much easier solvent handling than conventional normal phase separations. It becomes possible to separate and elute polar compounds that are strongly retained in the regular normal-phase mode or weakly retained in the reversed-phase mode. Moreover, these HILIC packed columns can be reused.

1. Solution for compounds that are not soluble in non- or low polar solvents (hexane, isopropanol, toluene and dichloromethane).
2. Solution for highly polar compounds which have too much retention on silica columns.
3. Solution for a mixture of compounds with a broad range of polarity (non-polar, semi-polar, and high polar) with alternative selectivity.

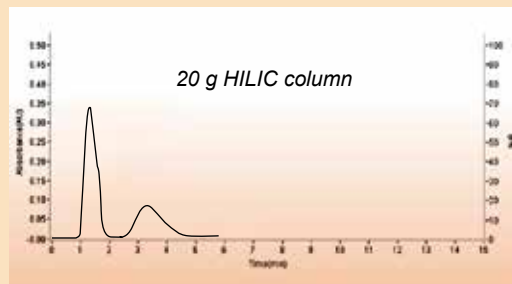
Surface Area: 300 m<sup>2</sup>/g; Water Content: < 5.0 %; Average Particle Size: 40-60 µm;  
Average Pore Size: 100 Å



Sample: 10 mg of uridine in 3 mL hot water  
Column: 20 g HILIC column  
Mobile Phase: water  
Flow Rate: 12 mL/min  
Detector: UV 254 nm



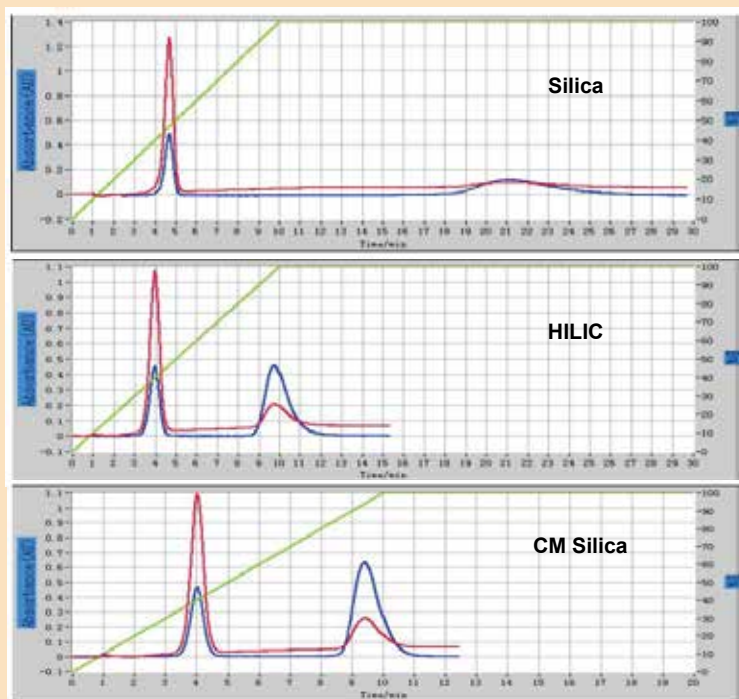
Sample: 100 mg VC and 70 mg VB2, direct solid loading  
Mobile Phase: 0-2 min EtOAc; 2-22 min MeOH (0-100 %);  
22-52 min MeOH  
Flow Rate: 25 mL/min  
Detector: UV 280 nm



Sample: 100 mg VC and 70 mg VB2, direct solid loading  
Mobile Phase: 0.1 % TFA : ACN = 99 : 1  
Flow Rate: 25 mL/min  
Detector: UV 280 nm

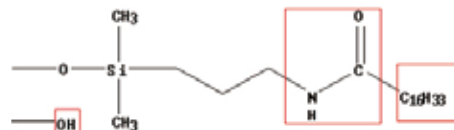
## Separation Comparison of Polar Compounds with Normal Phase Application (Aniline + Caffeine)

Sample: Aniline+Caffeine  
Column: 12 gram  
Mobile Phase: A: Hexane; B: Ethyl acetate  
B: 0-100 % 10 min  
100 %-100 % 20 min  
Detector: UV 254 nm, 280 nm  
Flow Rate: 20 mL/min



## Claricep™ Spherical HLP Columns

Claricep™ HLP column using a synergistic reaction of –Amide, –OH and –R, and shows different selectivity. Greatly improved peak shape for basic compounds, and enhanced retention and separation ability of polar compounds and steric isomers. This material shows much better loading capacity for polar compounds for preparative applications compare with traditional C18 material.



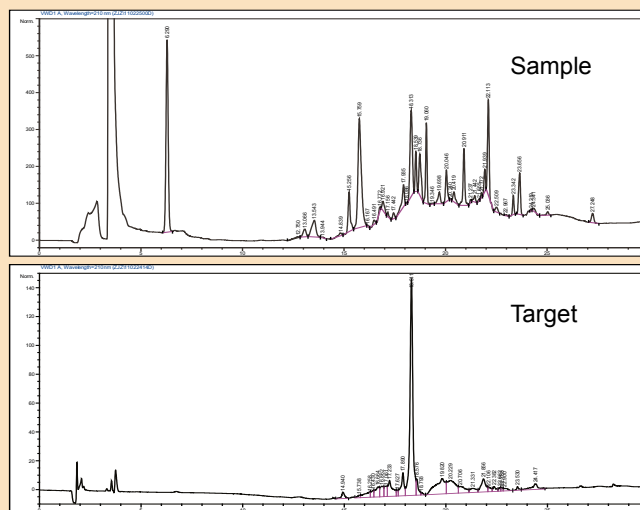
### Characteristics

Surface Area: 320 m<sup>2</sup>/g; Average Particle Size: 20-35 μm, Average Pore Size: 100 Å; Carbon Loading: 12 %.  
Surface Area: 320 m<sup>2</sup>/g; Average Particle Size: 20 μm, Average Pore Size: 100 Å; Carbon Loading: 12 %.

### The Extraction of Small Peptides in Fermentation Product

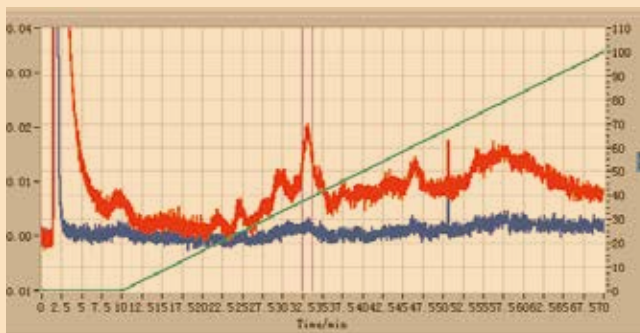
Column: Venusil® HLP, 5 μm, 4.6×250 mm  
Mobile Phase: A: Water, B: Acetonitrile  
Flow Rate: 1.0 mL/min  
Gradient

Time/min	B%
0	5
5	5
10	20
20	80
30	80



Column: Claricep™ Spherical HLP (4 g×3)  
Mobile Phase: A: Water, B: Acetonitrile  
Flow Rate: 18 mL/min  
Monitoring Detector: UV 280 nm  
Collecting Detector: UV 220 nm

B%	Start	End	Duration (min)
1	0	0	5
2	0	0	10
3	0	100	60

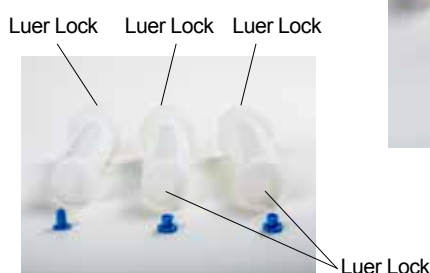




## Claricep™ Screw-on Flash Columns

The Claricep™ series is a new design of flash columns from Bonna-Agela. Besides performance and diversity of chemistry we committed to, the new formats emphasize simplicity of use, convenience of sample loading and adaptability of tubing connectivity across different platforms. This family of flash columns features:

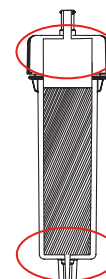
- Hand screw-on head cap
- Higher pressure tolerance (180 psi)
- Choice of solid sample loading
- Conventional or Luer lock fittings



## Claricep™ i-Series

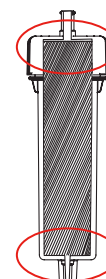
The i-Series features a managed column head space with a secured screw-on lid. This design allows either loading of liquid sample directly onto column head or loading of impregnated solid sample into the space. Using this format, users will benefit from:

- Choice of loading method based on sample properties
- Narrow band for liquid samples because of wide loading area
- Dry-loading of solid impregnated samples minimizes band broadening
- Customized loading method upon user's request



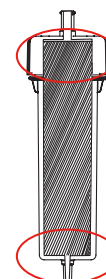
## Claricep™ s-Series

The s-Series columns are fully packed without a head void. But the Luer lock fits for both inlet and outlet and allows easy operation of tandem columns or coupling of loading cartridge. Refer page 55 for the guide to use "Prepacked Solid Load Cartridges".



## Claricep™ c-Series

The c-Series shares the same design, but the column outlet does not have a luer lock structure, which simplifies tubing connection across different flash system of other vendors.



## Claricep™ Column Ordering Information

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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
Silica (CS) Standard Silica				CS140004-0	4	20
	SN-CS140012-0	S-CS140012-0	C-CS140012-0	CS140012-0	12	20
	SN-CS140020-0	S-CS140020-0	C-CS140020-0	CS140020-0	20	20
	SN-CS140040-0	S-CS140040-0	C-CS140040-0	CS140040-0	40	10
	SN-CS140080-0	S-CS140080-0	C-CS140080-0	CS140080-0	80	5
	SN-CS140120-0	S-CS140120-0	C-CS140120-0	CS140120-0	120	5
				CS140220-0	220	1
				CS140330-0	330	1
				CS140800-0	800	1
				CS1401500-0	1500	1
Silica (CM) Deactivated Silica				CM140004-0	4	20
	SN-CM140012-0	S-CM140012-0	C-CM140012-0	CM140012-0	12	20
	SN-CM140020-0	S-CM140020-0	C-CM140020-0	CM140020-0	20	20
	SN-CM140040-0	S-CM140040-0	C-CM140040-0	CM140040-0	40	10
	SN-CM140080-0	S-CM140080-0	C-CM140080-0	CM140080-0	80	5
	SN-CM140120-0	S-CM140120-0	C-CM140120-0	CM140120-0	120	5
				CM140220-0	220	1
				CM140330-0	330	1
				CM140800-0	800	1
				CM1401500-0	1500	1

Spherical Silica; Average Particle Size: 20 µm; Pore Size: 100 Å

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
Spherical Silica				SS120004-0	4	20
	SN-SS120012-0	S-SS120012-0	C-SS120012-0	SS120012-0	12	20
	SN-SS120020-0	S-SS120020-0	C-SS120020-0	SS120020-0	20	20
	SN-SS120040-0	S-SS120040-0	C-SS120040-0	SS120040-0	40	10
	SN-SS120080-0	S-SS120080-0	C-SS120080-0	SS120080-0	80	5
	SN-SS120120-0	S-SS120120-0	C-SS120120-0	SS120120-0	120	5
				SS120220-0	220	1
				SS120330-0	330	1
				SS120800-0	800	1
				SS1201500-0	1500	1



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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
Spherical Silica				SS130004-0	4	20
	SN-SS130012-0	S-SS130012-0	C-SS130012-0	SS130012-0	12	20
	SN-SS130020-0	S-SS130020-0	C-SS130020-0	SS130020-0	20	20
	SN-SS130040-0	S-SS130040-0	C-SS130040-0	SS130040-0	40	10
	SN-SS130080-0	S-SS130080-0	C-SS130080-0	SS130080-0	80	5
	SN-SS130120-0	S-SS130120-0	C-SS130120-0	SS130120-0	120	5
				SS130220-0	220	1
				SS130330-0	330	1
				SS130800-0	800	1
				SS1301500-0	1500	1
Deactivated Silica (CM)				SM230004-0	4	20
	SN-SM230012-0	S-SM230012-0	C-SM230012-0	SM230012-0	12	20
	SN-SM230020-0	S-SM230020-0	C-SM230020-0	SM230020-0	20	20
	SN-SM230040-0	S-SM230040-0	C-SM230040-0	SM230040-0	40	10
	SN-SM230080-0	S-SM230080-0	C-SM230080-0	SM230080-0	80	5
	SN-SM230120-0	S-SM230120-0	C-SM230120-0	SM230120-0	120	5
				SM230220-0	220	1
				SM230330-0	330	1
				SM230800-0	800	1
				SM2301500-0	1500	1

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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
C18				SO240004-0	4	20
	SN-SO240012-0	S-SO240012-0	C-SO240012-0	SO240012-0	12	20
	SN-SO240020-0	S-SO240020-0	C-SO240020-0	SO240020-0	20	20
	SN-SO240040-0	S-SO240040-0	C-SO240040-0	SO240040-0	40	10
	SN-SO240080-0	S-SO240080-0	C-SO240080-0	SO240080-0	80	5
	SN-SO240120-0	S-SO240120-0	C-SO240120-0	SO240120-0	120	5
				SO240220-0	220	1
				SO240330-0	330	1
				SO240800-0	800	1
				SO2401500-0	1500	1
AQ C18				SQ240004-0	4	20
	SN-SQ240012-0	S-SQ240012-0	C-SQ240012-0	SQ240012-0	12	20
	SN-SQ240020-0	S-SQ240020-0	C-SQ240020-0	SQ240020-0	20	20
	SN-SQ240040-0	S-SQ240040-0	C-SQ240040-0	SQ240040-0	40	10
	SN-SQ240080-0	S-SQ240080-0	C-SQ240080-0	SQ240080-0	80	5
	SN-SQ240120-0	S-SQ240120-0	C-SQ240120-0	SQ240120-0	120	5
				SQ240220-0	220	1
				SQ240330-0	330	1
				SQ240800-0	800	1
				SQ2401500-0	1500	1



Spherical Bonded Phase; Average Particle Size: 40-60 µm; Average Pore Size: 100 Å; Specific Surface Area: 300 m<sup>2</sup>/g

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
HILIC				SH240004-0	4	20
	SN-SH240012-0	S-SH240012-0	C-SH240012-0	SH240012-0	12	20
	SN-SH240020-0	S-SH240020-0	C-SH240020-0	SH240020-0	20	20
	SN-SH240040-0	S-SH240040-0	C-SH240040-0	SH240040-0	40	10
	SN-SH240080-0	S-SH240080-0	C-SH240080-0	SH240080-0	80	5
	SN-SH240120-0	S-SH240120-0	C-SH240120-0	SH240120-0	120	5
				SH240220-0	220	1
				SH240330-0	330	1
				SH240800-0	800	1
				SH2401500-0	1500	1
NH <sub>2</sub>				SN240004-0	4	20
	SN-SN240012-0	S-SN240012-0	C-SN240012-0	SN240012-0	12	20
	SN-SN240020-0	S-SN240020-0	C-SN240020-0	SN240020-0	20	20
	SN-SN240040-0	S-SN240040-0	C-SN240040-0	SN240040-0	40	10
	SN-SN240080-0	S-SN240080-0	C-SN240080-0	SN240080-0	80	5
	SN-SN240120-0	S-SN240120-0	C-SN240120-0	SN240120-0	120	5
				SN240220-0	220	1
				SN240330-0	330	1
				SN240800-0	800	1
				SN2401500-0	1500	1
C8				S8240004-0	4	20
	SN-S8240012-0	S-S8240012-0	C-S8240012-0	S8240012-0	12	20
	SN-S8240020-0	S-S8240020-0	C-S8240020-0	S8240020-0	20	20
	SN-S8240040-0	S-S8240040-0	C-S8240040-0	S8240040-0	40	10
	SN-S8240080-0	S-S8240080-0	C-S8240080-0	S8240080-0	80	5
	SN-S8240120-0	S-S8240120-0	C-S8240120-0	S8240120-0	120	5
				S8240220-0	220	1
				S8240330-0	330	1
				S8240800-0	800	1
				S82401500-0	1500	1
SAX				SS240004-AX	4	20
	SN-SS240012-AX	S-SS240012-AX	C-SS240012-AX	SS240012-AX	12	20
	SN-SS240020-AX	S-SS240020-AX	C-SS240020-AX	SS240020-AX	20	20
	SN-SS240040-AX	S-SS240040-AX	C-SS240040-AX	SS240040-AX	40	10
	SN-SS240080-AX	S-SS240080-AX	C-SS240080-AX	SS240080-AX	80	5
	SN-SS240120-AX	S-SS240120-AX	C-SS240120-AX	SS240120-AX	120	5
				SS240220-AX	220	1
				SS240330-AX	330	1
				SS240800-AX	800	1
				SS2401500-AX	1500	1



Spherical Bonded Phase; Average Particle Size: 40-60 µm; Average Pore Size: 100 Å; Specific Surface Area: 300 m<sup>2</sup>/g

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
SCX				SS240004-CX	4	20
	SN-SS240012-CX	S-SS240012-CX	C-SS240012-CX	SS240012-CX	12	20
	SN-SS240020-CX	S-SS240020-CX	C-SS240020-CX	SS240020-CX	20	20
	SN-SS240040-CX	S-SS240040-CX	C-SS240040-CX	SS240040-CX	40	10
	SN-SS240080-CX	S-SS240080-CX	C-SS240080-CX	SS240080-CX	80	5
	SN-SS240120-CX	S-SS240120-CX	C-SS240120-CX	SS240120-CX	120	5
				SS240220-CX	220	1
				SS240330-CX	330	1
				SS240800-CX	800	1
				SS2401500-CX	1500	1
Phenyl				SP240004-0	4	20
	SN-SP240012-0	S-SP240012-0	C-SP240012-0	SP240012-0	12	20
	SN-SP240020-0	S-SP240020-0	C-SP240020-0	SP240020-0	20	20
	SN-SP240040-0	S-SP240040-0	C-SP240040-0	SP240040-0	40	10
	SN-SP240080-0	S-SP240080-0	C-SP240080-0	SP240080-0	80	5
	SN-SP240120-0	S-SP240120-0	C-SP240120-0	SP240120-0	120	5
				SP240220-0	220	1
				SP240330-0	330	1
				SP240800-0	800	1
				SP2401500-0	1500	1
CN				SC240004-0	4	20
	SN-SC240012-0	S-SC240012-0	C-SC240012-0	SC240012-0	12	20
	SN-SC240020-0	S-SC240020-0	C-SC240020-0	SC240020-0	20	20
	SN-SC240040-0	S-SC240040-0	C-SC240040-0	SC240040-0	40	10
	SN-SC240080-0	S-SC240080-0	C-SC240080-0	SC240080-0	80	5
	SN-SC240120-0	S-SC240120-0	C-SC240120-0	SC240120-0	120	5
				SC240220-0	220	1
				SC240330-0	330	1
				SC240800-0	800	1
				SC2401500-0	1500	1
Diol				SD240004-0	4	20
	SN-SD240012-0	S-SD240012-0	C-SD240012-0	SD240012-0	12	20
	SN-SD240020-0	S-SD240020-0	C-SD240020-0	SD240020-0	20	20
	SN-SD240040-0	S-SD240040-0	C-SD240040-0	SD240040-0	40	10
	SN-SD240080-0	S-SD240080-0	C-SD240080-0	SD240080-0	80	5
	SN-SD240120-0	S-SD240120-0	C-SD240120-0	SD240120-0	120	5
				SD240220-0	220	1
				SD240330-0	330	1
				SD240800-0	800	1
				SD2401500-0	1500	1

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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
C18				SO230004-0	4	20
	SN-SO230012-0	S-SO230012-0	C-SO230012-0	SO230012-0	12	20
	SN-SO230020-0	S-SO230020-0	C-SO230020-0	SO230020-0	20	20
	SN-SO230040-0	S-SO230040-0	C-SO230040-0	SO230040-0	40	10
	SN-SO230080-0	S-SO230080-0	C-SO230080-0	SO230080-0	80	5
	SN-SO230120-0	S-SO230120-0	C-SO230120-0	SO230120-0	120	5
				SO230220-0	220	1
				SO230330-0	330	1
				SO230800-0	800	1
				SO2301500-0	1500	1
C8				S8230004-0	4	20
	SN-S8230012-0	S-S8230012-0	C-S8230012-0	S8230012-0	12	20
	SN-S8230020-0	S-S8230020-0	C-S8230020-0	S8230020-0	20	20
	SN-S8230040-0	S-S8230040-0	C-S8230040-0	S8230040-0	40	10
	SN-S8230080-0	S-S8230080-0	C-S8230080-0	S8230080-0	80	5
	SN-S8230120-0	S-S8230120-0	C-S8230120-0	S8230120-0	120	5
				S8230220-0	220	1
				S8230330-0	330	1
				S8230800-0	800	1
				S82301500-0	1500	1
AQ C18				SQ230004-0	4	20
	SN-SQ230012-0	S-SQ230012-0	C-SQ230012-0	SQ230012-0	12	20
	SN-SQ230020-0	S-SQ230020-0	C-SQ230020-0	SQ230020-0	20	20
	SN-SQ230040-0	S-SQ230040-0	C-SQ230040-0	SQ230040-0	40	10
	SN-SQ230080-0	S-SQ230080-0	C-SQ230080-0	SQ230080-0	80	5
	SN-SQ230120-0	S-SQ230120-0	C-SQ230120-0	SQ230120-0	120	5
				SQ230220-0	220	1
				SQ230330-0	330	1
				SQ230800-0	800	1
				SQ2301500-0	1500	1
HILIC				SH230004-0	4	20
	SN-SH230012-0	S-SH230012-0	C-SH230012-0	SH230012-0	12	20
	SN-SH230020-0	S-SH230020-0	C-SH230020-0	SH230020-0	20	20
	SN-SH230040-0	S-SH230040-0	C-SH230040-0	SH230040-0	40	10
	SN-SH230080-0	S-SH230080-0	C-SH230080-0	SH230080-0	80	5
	SN-SH230120-0	S-SH230120-0	C-SH230120-0	SH230120-0	120	5
				SH230220-0	220	1
				SH230330-0	330	1
				SH230800-0	800	1
				SH2301500-0	1500	1



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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
HLP				SHL230004-0	4	20
	SN-SHL230012-0	S-SHL230012-0	C-SHL230012-0	SHL230012-0	12	20
	SN-SHL230020-0	S-SHL230020-0	C-SHL230020-0	SHL230020-0	20	20
	SN-SHL230040-0	S-SHL230040-0	C-SHL230040-0	SHL230040-0	40	10
	SN-SHL230080-0	S-SHL230080-0	C-SHL230080-0	SHL230080-0	80	5
	SN-SHL230120-0	S-SHL230120-0	C-SHL230120-0	SHL230120-0	120	5
				SHL230220-0	220	1
				SHL230330-0	330	1
				SHL230800-0	800	1
				SHL2301500-0	1500	1
NH <sub>2</sub>				SN230004-0	4	20
	SN-SN230012-0	S-SN230012-0	C-SN230012-0	SN230012-0	12	20
	SN-SN230020-0	S-SN230020-0	C-SN230020-0	SN230020-0	20	20
	SN-SN230040-0	S-SN230040-0	C-SN230040-0	SN230040-0	40	10
	SN-SN230080-0	S-SN230080-0	C-SN230080-0	SN230080-0	80	5
	SN-SN230120-0	S-SN230120-0	C-SN230120-0	SN230120-0	120	5
				SN230220-0	220	1
				SN230330-0	330	1
				SN230800-0	800	1
				SN2301500-0	1500	1
Phenyl				SP230004-0	4	20
	SN-SP230012-0	S-SP230012-0	C-SP230012-0	SP230012-0	12	20
	SN-SP230020-0	S-SP230020-0	C-SP230020-0	SP230020-0	20	20
	SN-SP230040-0	S-SP230040-0	C-SP230040-0	SP230040-0	40	10
	SN-SP230080-0	S-SP230080-0	C-SP230080-0	SP230080-0	80	5
	SN-SP230120-0	S-SP230120-0	C-SP230120-0	SP230120-0	120	5
				SP230220-0	220	1
				SP230330-0	330	1
				SP230800-0	800	1
				SP2301500-0	1500	1
CN				SC230004-0	4	20
	SN-SC230012-0	S-SC230012-0	C-SC230012-0	SC230012-0	12	20
	SN-SC230020-0	S-SC230020-0	C-SC230020-0	SC230020-0	20	20
	SN-SC230040-0	S-SC230040-0	C-SC230040-0	SC230040-0	40	10
	SN-SC230080-0	S-SC230080-0	C-SC230080-0	SC230080-0	80	5
	SN-SC230120-0	S-SC230120-0	C-SC230120-0	SC230120-0	120	5
				SC230220-0	220	1
				SC230330-0	330	1
				SC230800-0	800	1
				SC2301500-0	1500	1

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

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
Diol				SD230004-0	4	20
	SN-SD230012-0	S-SD230012-0	C-SD230012-0	SD230012-0	12	20
	SN-SD230020-0	S-SD230020-0	C-SD230020-0	SD230020-0	20	20
	SN-SD230040-0	S-SD230040-0	C-SD230040-0	SD230040-0	40	10
	SN-SD230080-0	S-SD230080-0	C-SD230080-0	SD230080-0	80	5
	SN-SD230120-0	S-SD230120-0	C-SD230120-0	SD230120-0	120	5
				SD230220-0	220	1
				SD230330-0	330	1
				SD230800-0	800	1
				SD2301500-0	1500	1

Alumina; Average Particle Size: 100-200 mesh.

Type	Claricep™ i-Series	Claricep™ s-Series	Claricep™ c-Series	Claricep™	Silica Amount (g)	Quantity (pk)
Alumina Neutral				CA140004-N	8	20
	SN-CA140012-N	S-CA140012-N	C-CA140012-N	CA140012-N	20	20
	SN-CA140020-N	S-CA140020-N	C-CA140020-N	CA140020-N	40	20
	SN-CA140040-N	S-CA140040-N	C-CA140040-N	CA140040-N	80	10
	SN-CA140080-N	S-CA140080-N	C-CA140080-N	CA140080-N	150	5
	SN-CA140120-N	S-CA140120-N	C-CA140120-N	CA140120-N	200	5
				CA140330-N	550	1
				CA140800-N	1300	1
				CA1401500-N	2500	1
	Alumina Basic				CA140004-B	8
SN-CA140012-B		S-CA140012-B	C-CA140012-B	CA140012-B	20	20
SN-CA140020-B		S-CA140020-B	C-CA140020-B	CA140020-B	40	20
SN-CA140040-B		S-CA140040-B	C-CA140040-B	CA140040-B	80	10
SN-CA140080-B		S-CA140080-B	C-CA140080-B	CA140080-B	150	5
SN-CA140120-B		S-CA140120-B	C-CA140120-B	CA140120-B	200	5
				CA140330-B	550	1
				CA140800-B	1300	1
				CA1401500-B	2500	1
Alumina Acidic					CA140004-A	8
	SN-CA140012-A	S-CA140012-A	C-CA140012-A	CA140012-A	20	20
	SN-CA140020-A	S-CA140020-A	C-CA140020-A	CA140020-A	40	20
	SN-CA140040-A	S-CA140040-A	C-CA140040-A	CA140040-A	80	10
	SN-CA140080-A	S-CA140080-A	C-CA140080-A	CA140080-A	150	5
	SN-CA140120-A	S-CA140120-A	C-CA140120-A	CA140120-A	200	5
				CA140330-A	550	1
				CA140800-A	1300	1
				CA1401500-A	2500	1



## Claricep™ Bulk Media Ordering Information



### Bulk Silica Gel Media

Part. No.	Grade	Particle Size	Pack	
CS605001-P	P	200-300 mesh, 60Å	1 kg	
CS605002-P			2.5 kg	
CS605005-P			5 kg	
CS605025-P			25 kg	
CS605001-G			1 kg	
CS605002-G	2.5 kg			
CS605005-G	5 kg			
CS605025-G	25 kg			
CS608001-P	P		100-200 mesh, 60Å	1 kg
CS608002-P				2.5 kg
CS608005-P		5 kg		
CS608025-P		25 kg		
CS608001-G		1 kg		
CS608002-G	2.5 kg			
CS608005-G	5 kg			
CS608025-G	25 kg			

P: Reagent Grade; G: Industrial Grade

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

Type	Part. No.	Particle Size	Pack (g)
Claricep Irregular Silica (CS)	FCS140100-0	40-60 µm, 60Å	100
	FCS1401000-0		1000
	FCS1405000-0		5000
Claricep Irregular Deactivated Silica (CM)	FCM140100-0		100
	FCM1401000-0		1000
	FCM1405000-0		5000

High Efficiency Spherical Silica Series

Type	Part. No.	Particle Size	Pack (g)
Claricep Spherical Silica	FSS240100-0	40-60 µm, 100Å	100
	FSS2401000-0		1000
	FSS2405000-0		5000
	FSS120100-0	20 µm, 60Å	100
	FSS1201000-0		1000
	FSS1205000-0		5000
	FSS130100-0	20-35 µm, 60Å	100
	FSS1301000-0		1000
	FSS1305000-0		5000
	FSS230100-0	20-35 µm, 100Å	100
	FSS2301000-0		1000
	FSS2305000-0		5000

Bonded Phase Series

Type	Part. No.	Particle Size	Pack (g)
Claricep Spherical C18	FSO240100-0	40-60 µm, 100Å	100
	FSO2401000-0		1000
	FSO2405000-0		5000
	FSO120100-0	20 µm, 60Å	100
	FSO1201000-0		1000
	FSO1205000-0		5000
	FSO130100-0	20-35 µm, 60Å	100
	FSO1301000-0		1000
	FSO1305000-0		5000
	FSO230100-0	20-35 µm, 100Å	100
	FSO2301000-0		1000
	FSO2305000-0		5000
Claricep Spherical AQ C18	FSQ240100-0	40-60 µm, 100Å	100
	FSQ2401000-0		1000
	FSQ2405000-0		5000
	FSQ130100-0	20-35 µm, 60Å	100
	FSQ1301000-0		1000
	FSQ1305000-0		5000
	FSQ230100-0	20-35 µm, 100Å	100
	FSQ2301000-0		1000
FSQ2305000-0	5000		

Type	Part. No.	Particle Size	Pack (g)			
Claricep Spherical HILIC	FSH240100-0	40-60 µm, 100Å	100			
	FSH2401000-0		1000			
	FSH2405000-0		5000			
	Claricep Spherical HILIC	FSH120100-0	20 µm, 60Å	100		
		FSH1201000-0		1000		
		FSH1205000-0		5000		
		Claricep Spherical HILIC	FSH130100-0	20-35 µm, 60Å	100	
			FSH1301000-0		1000	
			FSH1305000-0		5000	
	Claricep Spherical NH <sub>2</sub>	FSH230100-0	20-35 µm, 100Å	100		
		FSH2301000-0		1000		
		FSH2305000-0		5000		
Claricep Spherical NH <sub>2</sub>		FSN240100-0	40-60 µm, 100Å	100		
		FSN2401000-0		1000		
		FSN2405000-0		5000		
		Claricep Spherical NH <sub>2</sub>	FSN120100-0	20 µm, 60Å	100	
			FSN1201000-0		1000	
			FSN1205000-0		5000	
			Claricep Spherical NH <sub>2</sub>	FSN130100-0	20-35 µm, 60Å	100
				FSN1301000-0		1000
				FSN1305000-0		5000
	Claricep Spherical Phenyl	FSN230100-0	20-35 µm, 100Å	100		
		FSN2301000-0		1000		
		FSN2305000-0		5000		
Claricep Spherical Phenyl		FSP120100-0	20 µm, 60Å	100		
		FSP1201000-0		1000		
		FSP1205000-0		5000		
		Claricep Spherical Phenyl	FSP130100-0	20-35 µm, 60Å	100	
			FSP1301000-0		1000	
			FSP1305000-0		5000	
			Claricep Spherical Phenyl	FSP230100-0	20-35 µm, 100Å	100
				FSP2301000-0		1000
				FSP2305000-0		5000
	Claricep Spherical C8	FS8240100-0	40-60 µm, 100Å	100		
		FS82401000-0		1000		
		FS82405000-0		5000		
Claricep Spherical C8		FS8130100-0	20-35 µm, 60Å	100		
		FS81301000-0		1000		
		FS81305000-0		5000		
		Claricep Spherical C8	FS8230100-0	20-35 µm, 100Å	100	
			FS82301000-0		1000	
			FS82305000-0		5000	
Claricep Spherical CN		FSC240100-0	40-60 µm, 100Å	100		
		FSC2401000-0		1000		
		FSC2405000-0		5000		
Claricep Spherical Diol	FSD240100-0	40-60 µm, 100Å	100			
	FSD2401000-0		1000			
	FSD2405000-0		5000			



Alumina; Average Particle Size: 100-200 mesh;

Type	Part. No.	Pore Size (Å)	Pack (g)
Claricep Alumina Neutral	FCA140100-N	/	100
	FCA1401000-N		1000
	FCA1405000-N		5000
Claricep Alumina Basic	FCA140100-B		100
	FCA1401000-B		1000
	FCA1405000-B		5000
Claricep Alumina Acidic	FCA140100-A		100
	FCA1401000-A		1000
	FCA1405000-A		5000

## Cross-reference for Columns

Bonna-Agela	ISCO	UCT	Luknova	Biotage	Analogix	Supelco	Grace	Silica (Weight)
CS140004-0	69-2203-304	FUSIL12S-20	FC003004		1368-8		8618502	4 g
CS140012-0	69-2203-312	FUSIL12M-20	FC003012	FSKO-1107-0010	1369-7		8618522	12 g
CS140020-0	69-2203-324		FC003025	FSKO - 1107-0025	1404-6			20 g
CS140040-0	69-2203-340	FUSIL40S-12	FC003040	FSKO-1107-0050	1281-6	97704-u	8618521	40 g
CS140080-0	69-2203-380	FULSIL40M-12	FC003080		1213-6		8618520	80 g
CS140120-0	69-2203-320	FUSIL40L-12	FC003120		1217-4	97706-u	8618509	150 g
CS140330-0	69-2203-330	FUSIL65M-6	FC003330	FSKO - 1107-0340	1219-3	97708-u	8618525	330 g
CS140800-0	69-2203-275							800 g
CS1401500-0	69-2203-277							1500 g

Specification	4g	12g	20g	25g	40g	45g	80g	120g	220g	330g
Cat. No	CS140004-0	CS140012-0	CS140020-0	CS140025-0	CS140040-0	CS140045-0	CS140080-0	CS140120-0	CS140220-0	CS140330-0
Sample loading <sup>1</sup>	0.01-0.02g	0.03-0.06g	0.05-0.1g	0.06-0.12g	0.1-0.2g	0.11-0.22g	0.2-0.4g	0.3-0.6g	0.5-1.0g	0.75-1.5g
Sample loading <sup>2</sup>	0.02-0.08g	0.06-0.24g	0.1-0.4g	0.12-0.5g	0.2-0.8g	0.22-0.9g	0.4-1.6g	0.6-2.4g	1.0-4.0g	1.5-6.0g
Sample loading <sup>3</sup>	0.08-0.4g	0.24-1.2g	0.4-2.0g	0.5-2.5g	0.8g-4.0g	0.9-4.5g	1.6-8.0g	2.4-12.0g	4.0-22.0g	6.0-33.0g
Column Volume	8mL	24mL	40mL	45mL	80mL	85mL	160mL	240mL	400mL	600mL
Min flow rate	5mL/min	8mL/min	10mL/min	12mL/min	20mL/min	20mL/min	25mL/min	35mL/min	45mL/min	50mL/min
Max flow rate	18mL/min	20mL/min	25mL/min	22mL/min	40mL/min	35mL/min	50mL/min	80mL/min	90mL/min	100mL/min
Pressure	Max. pressure 180psi									
Length	7.0cm	9.0cm	11.0cm	19.5cm	14.0cm	24.0cm	21.0cm	23.5cm	15.7cm	23.5cm
ID	1.5cm	2.1cm	2.6cm	2.1cm	3.1cm	2.6cm	3.2cm	4.1cm	5.7cm	5.7cm
ID/length	4.7	4.3	4.2	9.3	4.5	9.2	6.6	5.7	2.8	4.1

\* Sample loading:  $\Delta CV=1/Rf1-1/Rf2$ ; Matrix: silica: 40-60  $\mu m$

Cat.No\*: "CS" represent Silica

Sample loading<sup>1</sup>:  $\Delta CV=1$

Sample loading<sup>2</sup>:  $\Delta CV=2$

Sample loading<sup>3</sup>:  $\Delta CV=6$

## Other Purification Products

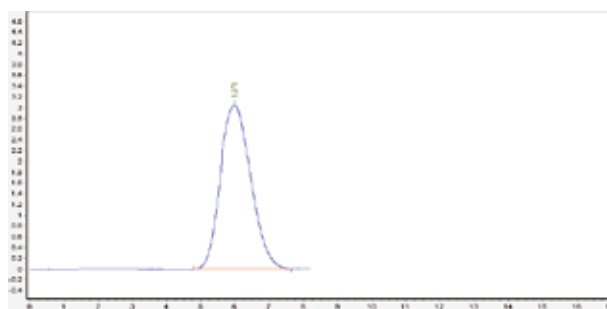
### Glass Columns

The glass chromatography columns manufactured by Bonna-Agela Technologies are in an enhanced format of column housing. A complete line of high quality sorbents provides unique or better separation performance to meet customers' needs. The unique CM silica and HILIC bonded silica extend the application of normal phase to the separation of very polar compounds.



### Features and Benefits

- Good pressure tolerance: can be used at higher flow rate to speed up separation.
- Broad chemical compatibility: convenient for broad applications.
- Polymer coated glass: providing extra safety.
- Special column inlet design improves performance, peak shape and efficiency.
- Fast solid sample loading.



Sample: Dimethyl-o-phthalate  
Glass Column: 26×310mm packed with 40-60 µm Spherical C18 (G31026-1)  
Mobile Phase: MeOH: water = 85:15

### Specification Data Sheet

Part. No.	Pressure (bar)	Column ID(mm)	Column Length(mm)	Packed Silica weight 40-60µm(g)	Loading weight (g)
G31015-1	40	15	310	45	0.45--4.5
G46015-1	40	15	460	70	0.70--7.0
G92015-1	40	15	920	140	1.40--14.0
G31026-1	40	26	310	130	1.30--13.0
G46026-1	40	26	460	200	2.00--20.0
G92026-1	40	26	920	400	4.00--40.0
G31036-1	30	36	310	240	2.40--24.0
G46036-1	30	36	460	350	3.50--35.0
G92036-1	30	36	920	700	7.00--70.0
G31049-1	20	49	310	450	4.50--45.0
G46049-1	20	49	460	650	6.50--65.0
G92049-1	20	49	920	1300	13.0--130.0
G31070-1	10	70	310	880	8.80--88.00
G46070-1	10	70	460	1300	13.0--130.0
G92070-1	10	70	920	2600	26.0--260.0
G31000-1	10	100	310	1900	19.0--190.0
G46000-1	10	100	460	2750	27.5--275.0
G92000-1	10	100	920	5500	55.5--550.0



## Thin Layer Chromatography (TLC)

Bonna-Agela carries a full line of thin layer chromatography (TLC) plates with a variety of chemistries. They are flexible or glass backed for easy use. When matching with Claricep™ flash cartridges, the TLC plates serve as a tool for reaction monitoring and method development based on Rf values for flash chromatography.



### Traditional Silica with a Variety of Selectivity Match

We offer traditional bare silica based products with the best performance to cost value. M series feature an equivalent selectivity to popular EMD plates, while G series have a very good match with most of flash chromatography columns.

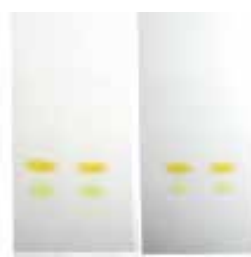
1-Comparison of G-series with EMD plates

2-Comparison of M-series with EMD plates



Agela

Merck



Agala

Merck

### TLC Plate Ordering Information

TLC Plate Type	Part. No.	Specification/mm	Package (pcs/pk)
Silica	T-CS7525-0	25×75 mm, pH=7.0, G, glass back	50
	T-CSF7525-0	25×75 mm, pH=7.0, GF254, glass back	50
	T-CS7525-M	25×75 mm, pH=5.0 (equivalent to EMD) M, glass back	50
	T-CSF7525-M	25×75 mm, pH=5.0 (equivalent to EMD) MF254, glass back	50
	T-CS10050-M	50×100 mm pH=5.0 (equivalent to EMD) M, glass back	40
	T-CSF10050-M	50×100 mm pH=5.0 (equivalent to EMD) MF254, glass back	40
	T-CS100100-M	100×100 mm, pH=5.0 (equivalent to EMD) M, glass back	20
	T-CSF100100-M	100×100 mm, pH=5.0 (equivalent to EMD) MF254, glass back	20
	T-CS200200-0	200×200 mm, G, glass back	10
	T-CSF200200-0	200×200 mm, GF254, glass back	10
	T-CS200200-M	200×200 mm, pH=5.0 (equivalent to EMD) M, glass back	10
	T-CSF200200-M	200×200 mm, pH=5.0 (equivalent to EMD) MF254, glass back	10
	T-CS200200-A	200×200 mm, pH=5.0 (equivalent to EMD) M, aluminum back	20
	T-CSF200200-A	200×200 mm, pH=5.0 (equivalent to EMD) MF254, aluminum back	20

All silica: Particle Size 10-15 µm; Surface Area 480-500 m<sup>2</sup>/g; Pore Size 60 Å; M, MF: pH=5.0; G, GF, pH=7.0; Layer thickness: 200 µm

## Quick Work-up Cartridges

They are specially designed to replace the conventional aqueous work up procedure such as liquid-liquid extraction as a part of organic synthesis and purification. They are used as a filter-through method to quickly work up reaction mixtures or purification.



### How to use

1. A synthetic mixture is directly injected onto a column.
2. Choose a solvent which is not immiscible with water to rinse the desired compounds out of column.
3. Concentrate the collected solution.
4. Add the concentrated mixture to a flash column or a HPLC column for further separation.

### Quick Work-up Cartridge Ordering Information

Part. No.	Phase	Specification	Quantity (PK)
QW9001	C18	1 mL; End-capped	50
QW9003	C18	3 mL; End-capped	50
QW9006	C18	6 mL	30
QWC001	Celite	1 mL; End-capped	50
QWC003	Celite	3 mL; End-capped	50
QWC006	Celite	6 mL	30
QWH001	HILIC	1 mL; End-capped	50
QWH003	HILIC	3 mL; End-capped	50
QWH006	HILIC	6 mL	30
QWS001	SCX	1 mL; End-capped	50
QWS003	SCX	3 mL; End-capped	50
QWS006	SCX	6 mL	30
QWA001	SAX	1 mL; End-capped	50
QWA003	SAX	3 mL; End-capped	50
QWA006	SAX	6 mL	30
QWP001	PEP	1 mL; End-capped	50
QWP003	PEP	3 mL; End-capped	50
QWP006	PEP	6 mL	30
QWM001	Catalyst/metal removal	1 mL; End-capped	50
QWM003	Catalyst/metal removal	3 mL; End-capped	50
QWM006	Catalyst/metal removal	6 mL	30

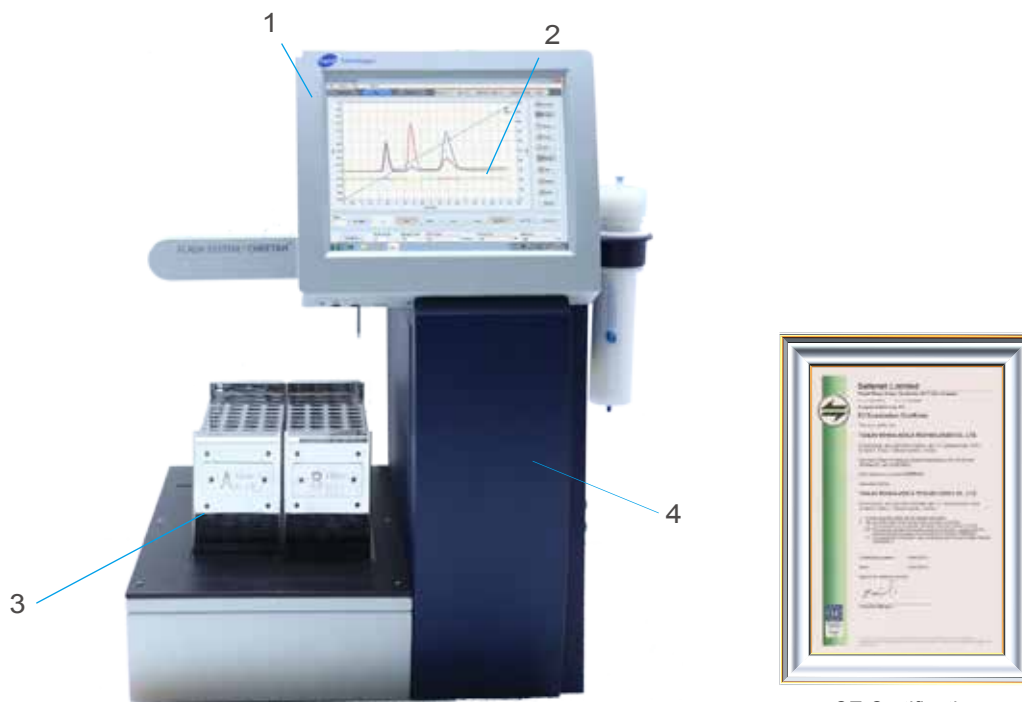
## Purification System

### CHEETAH<sup>®</sup> MP Series Purification Systems

Bonna-Agela Technologies introduces CHEETAH<sup>®</sup> MP Series preparative chromatography system to significantly improve the throughput of purification in synthetic and natural product chemistry. CHEETAH<sup>®</sup> MP Series are designed to automate purification process with online peak detection and fraction collection. The systems are the revolutionized replacement of traditional column chromatography.

#### Features

- ▲ User-friendly interfaces
- ▲ Binary or quaternary gradient elution
- ▲ Built-in method conversion from TLC Rf values to column gradient
- ▲ Fraction management: All/Volume, Knee Point, Slope, Threshold or Time Windows



CE Certification

1. Centered control of purification with 12.1 inch touch screen computer
2. Dual UV wavelength detection and peak-to-tube tracking
3. Oxidized coating to avoid solvent corrosion
4. Integrated design for convenient bench-top operation

## Specifications

CHEETAH® MP				
MP 200	FS-9200	FS-9204T	FS-9200S	FS-9204S
Solvent Delivery Pump	Binary	Quaternary	Binary	Quaternary
	CHEETAH® MP 200: Max.Flow Rate: 200 mL/min; Max. pressure: 200 psi			
Solvent Management	Leakage alarm.			
Gradient	Linear or step or linear/step elution with on-the-fly editing feature			
Detector	Wavelength Range: 200-600 nm; Wavelength Accuracy: ±1 nm; Absorbance Range: ≤5 AU		Wavelength Range: 200-800 nm; Wavelength Accuracy: ±1 nm; Absorbance Range: ≤5 AU	
	UV-Vis / Dual variable wavelength detector(VWD) - ( Standard) Compatible with other detectors such as ELSD and RI			
Light Source	Deuterium Lamp (200-600 nm) and Deuterium-tungsten lamp (200-800 nm)			
System Control	CHEETAH® purification software: Integral instrument control, data acquisition and fraction collection management; Windows 7 operating platform. Computer: 4 GB memory, 12.1 inch touch screen, Processor: 1.8 GHz			
Collector	13, 15, 18 or 25 mm tube; and 100 mL tube rack is optional round-bottomed flask; self defined coordinates for customized collection. No-Limit collection volume; Large volume collection up to 1L.			
Dimensions	59.33 × 60.2 × 69.52 cm			
Weight	60 kg			
Power	110 V /220 V, 50/60 Hz, 360 W			
Certifications	CE Certified			



Column Holder



Injector



## Functions

Description	
Co-solvent	In Quaternary system, a co-solvent can be added at any time during the run (as a fixed or user set percentage) to avoid sample precipitation during purification.
Column History	In built feature in method tab to select column size and stationary phase according to method requirement, this feature enables in all column format like pre -pack, empty or glass columns of Bonna-Agela and other manufacturers.
System protection	Alarm will be triggered if pressure exceeds maximum setting to protect the system.
Multi Detector Option	System has a facility to attach with second detector externally like ELSD (Evaporative Light-scattering), RI(Refractive Index).
Compatibility	Compatible with any flash columns available in the market such as disposable and glass columns from 4 g to 1500 g pre-pack or empty columns depending on sample nature and stationary phase. Cheetah <sup>®</sup> MP is compatible with maximum stationary phases from Bonna-Agela or other manufacturer like Standard Silica, Deactivated Silica, Reverse Phase (C18), HILIC, NH <sub>2</sub> , C8, SAX, SCX, Alumina Neutral, Alumina Basic, Alumina Acidic, AQ C18, Spherical Silica with particle size of 40 - 60 µm and 20 - 35 µm with customized scalability.
System Washing	Washing Step can be added during gradient setting for automated system washing at the end of run according to column specifications ( like Pre-pack, Reusable or Glass columns).
Loading Capacity	Delivers a wide range of sample loading facility from 0.1 g to 80 g (Depending on the sample nature & stationary phase)
Parameters Editing	Maximum parameters can be edited during run like Flow rate, Collection volume, Collection or Fractionation mode, Solvent composition.
Initial Waste	This function is used to directly discharge any left-over fluid from previous experiment to the first test tube known waste to avoid any carryover of fluid or cross contamination to concurrent experiment.



## CHEETAH<sup>®</sup> HP Series Prep HPLC

CHEETAH<sup>®</sup> HP 100 is an automated high pressure preparative LC system from Bonna-Agela Technologies. It is an integrated system featuring binary gradient pump, UV detector and fraction collector. The maximum backpressure of the system is 20 MPa, and the max flow rate is 100 mL/min. The design of the system emphasized small footprint and simple operation. It is a solution to purify complex sample employing high-solutions columns packed with small particle media.

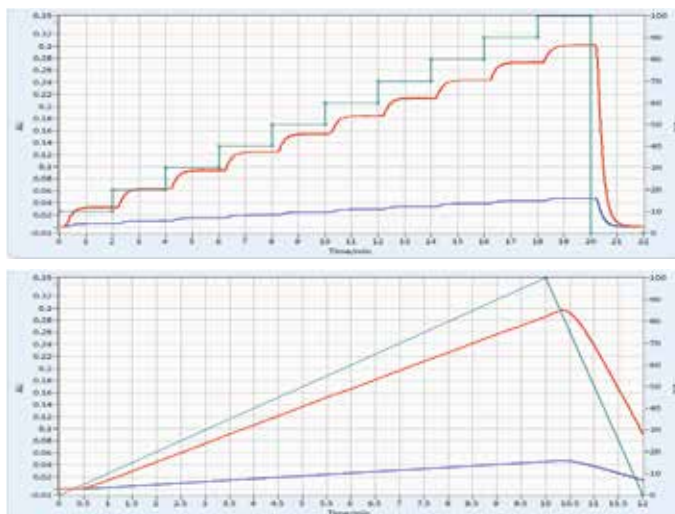
### Main Features

- ▲ One point control via touch screen PC
- ▲ User friendly interfaces
- ▲ Dual wavelength detection/monitor via UV detector, ELSD and RI detector is optional
- ▲ Intelligent fraction collecting: All/Volume, manual, slope/threshold and time windows.

### Applications ▲ Purification of synthetic compounds

- ▲ Purification of complex mixture of synthetic compounds
- ▲ Isolation of biopolymers such as peptides and nucleotides
- ▲ Separation of combichem arrays
- ▲ Purification of natural products

### Pump



- ▲ Cam compensation produces low delivery pulse
- ▲ Multiple-point calibration ensures accurate flow delivery
- ▲ Floating design of plunger extends lifetime of seals

### Injection Valve

- ▲ 6 port manual valve
- ▲ 2 mL Loop (Standard), 1-10 mL is optional
- ▲ Max Presssure 5000 psi, 1/16" tubing





## Specifications

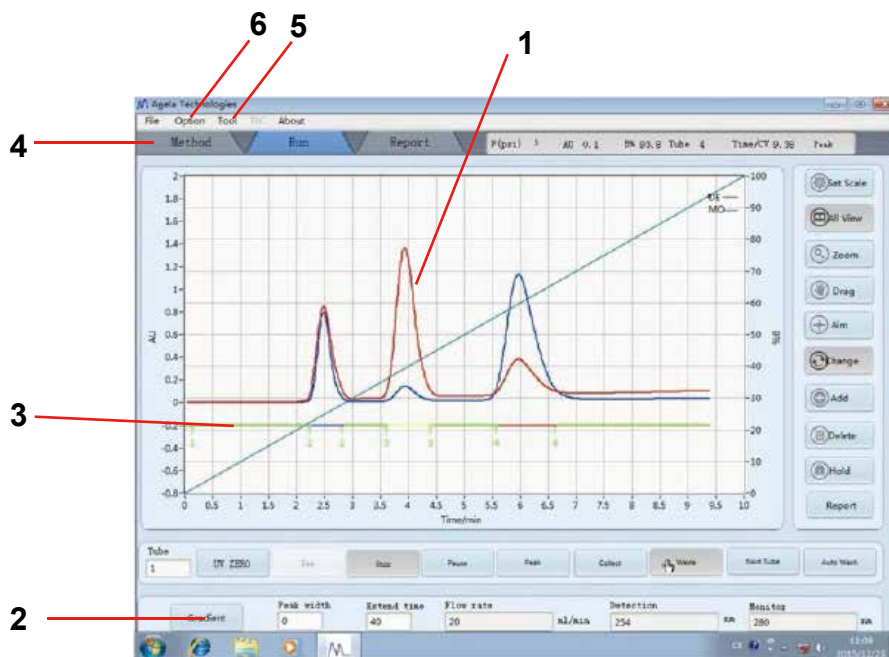
CHEETAH® HP 100		
Cat. No	HS-1000T	HS-1000ST
Solvent Delivery Pump	Binary Flow Rate: 1 -100 mL/min; Max. pressure: 20 MPa Increment:1 mL/min	
Detector	Wavelength Range: 200-600 nm Wavelength Accuracy: ±1 nm; Absorbance Range: ≤5 AU	Wavelength Range: 200-800 nm Wavelength Accuracy: ±1 nm; Absorbance Range: ≤5 AU
Control system	RAM 4 GB, Screen 12.1'	
Collection container	13, 15, 18 or 25 mm tube; and 100 mL round-bottomed flask customized test tube rack is available. No-Limit collection volume; Large volume collection is optional.	
Collection mode	By peak, Volume/All, Window, Manual.	
Safety	Leakage alarm.	



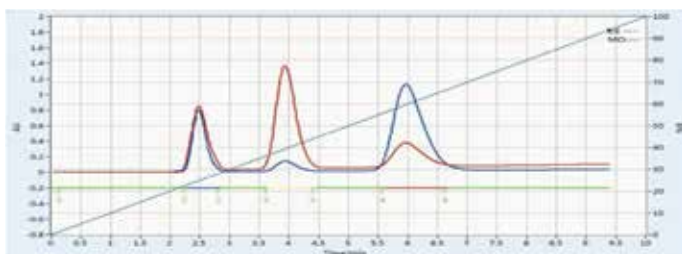
CE Certification

# CHEETAH<sup>®</sup> Software

## Applicable to binary purification system



### 1. Dual-wavelength



The fraction can be collected under detection wavelength or monitoring wavelength. The difference of absorbance from the two channels can also be calculated.

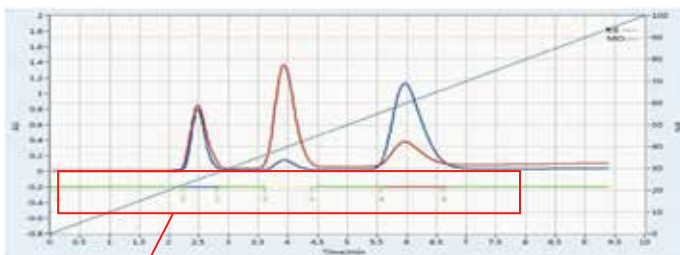
### 2. Rapid Modification of Gradient Curve On Time

During a run, by a simple click, users can easily edit the running gradient profile.

Line	Start	Solvent %	End	Min. Duration
Equ	0	0	5	
1	0.0	100.0	10.0	

Buttons: Add, Insert, Delete, Mod

### 3. Rapid seeking for the components



Collection tube number display on line.

### 4. Various modes for collection and detection



Fraction can be collected through different way.

### 5. Direct Control of Collector by User

Definition of collection coordinates are accessible to users. Besides the default tubes, user can define coordinated for customized applications.

### 6. RI/ELSD

Built-in interface for RI and ELSD detectors for mass-type detection of compounds such as polysaccharides. The collection through a RI/ELSD detector is available.



## FLEXA™ Series Modular Purification Components

Bonna-Agela Technologies offers a line of modular components for LC purification. The FLEXA™ series provides flexibility of choosing a customized system based on user's specification.

The option includes a variety of stand-alone pumps, detectors, autosampler, collector and column switcher.



### FLEXA™ Series Pump

- ▲ Different flow range options;
- ▲ Pressure displaying online;
- ▲ Over-pressure alarm guarantees safety operation.



Cat. No	HP-Q-P010	HP-Q-P050	HP-Q-P100
Max Pressure	42 Mpa	30 Mpa	20 Mpa
Pump Max Flow Rate	10 mL/min	50 mL/min	100 mL/min
Flow Precision	±0.5 %	±1 %	±1 %
Gradient Type	Binary (Double pump)	Binary (Double pump)	Binary (Double pump)
Application	Analytical	Preparation	Preparation



## FLEXA™ Series Detectors

### UV and UV-Vis

- ▲ Different Wavelength Options
- ▲ Auto-Zero and Attenuation Function



	UV Detector	UV-Vis Variable Wavelength Detector
Cat. No	HP-Q-UV100	HP-Q-UV100S
Wavelength	200-400 nm	200-800 nm
Channel	Dual-wavelength	Dual-wavelength
Range	≤5 AU	≤5 AU
Light Source	Deuterium lamp	Deuterium lamp Tungsten lamp
Auto Zero	By Digital	By Digital
Screen	320×240 Pixels	320×240 Pixels

### ELSD

The Evaporative Light Scattering Detector ZAM 4000 is an universal detector for HPLC. It is used to analyze components which does not have UV absorption, cannot be separated with an isocratic solvent and must use a gradient elution, which cannot be used with a refractive index detector.



Cat. No	HP-ELSD4000
Light source	Tungsten lamp, photomultiplier
Temperature	Room temp. ~ 85 °C
Flow Rate for Atomizing Carrier Gas	1.7 L/min
Required Pressure	3~5 bar
Power-saving Mode	programmed shut off

## RI

The RI 2000 Differential Refractive Index Detector series offers the sensitivity, stability and reproducibility required for optimal RI detection.

The thermal isolated optic with a countercurrent heat exchanger and with its programmable temperature control, results in an extremely stable baseline and an optimal Signal / Noise ratio.



Cat. No	HP-RI2000P
Flow range	1.0-50.0 mL/min
Flow Cell Volume	7 µL/5 °C angle
Pressure Tolerance of Flow Cell	6 kg/cm <sup>2</sup>
Dead Volume	Into cell 88 or 353 µL
Liner Range	0-20000 µRIU
Noise	10×10 <sup>-8</sup>

## FLEXA™ Series Fraction Collector

- ▲ Stand-alone operation
- ▲ Time/Volume based triggering
- ▲ Choice of forced collection or waste vending
- ▲ Highlighted collecting position
- ▲ Customized definition of coordinates



Cat. No	FL-C100	FL-C100B
Compatibility	MP series	HP series
Max Flow Rate	200 mL/min	100 mL/min
Collecting Configuration	Preset for 13 mm, 15 mm, 18 mm and 25 mm tubes; self-configuration program available test tube.	
Communication Port	RS 232	RS 232
Collection Mode	By peak (threshold), volume; Forced collection and forced waste	



## ATS Series Auto-sampler

- ▲ Auto wash
- ▲ Continuous sampling (up to a thousand times)
- ▲ Excessive large sampling volume
- ▲ Good compatibility (Compatible with the purification system from most of the manufactures in the market)

ATS Auto-Sampler is an efficient product for sample injection, which provides fast and reliable purification with connecting a prep LC system.



### Compatible with MP series

Cat. No	ATS-051-M10	ATS-051-M25
Single Sample Size	1-10 mL	5-25 mL
Sample Loop	5 mL	20 mL
Pipeline ID	1/8 inch	1/8 inch
Sample Channel	5	5
Cleaning Channel	Automatic/Manual	Automatic/Manual
Communication Port	RS-232	RS-232

### Compatible with HP series

Cat. No	ATS-051-H10	ATS-051-H25
Single Sample Size	1-10 mL	5-25 mL
Sample Loop	2 mL	20 mL
Pipeline ID	1/16 inch	1/16 inch
Sample Channel	5	5
Cleaning Channel	Automatic/Manual	Automatic/Manual
Communication Port	RS-232	RS-232



## FLEXA™ Series Column Switcher

ACQ-06 column switcher allows chemists to switch automatically from one column to another, without evaporating solvents. It also offers multi-stationary phases for a complete chromatography solution. Six channels are available and could be programmed through software.

- ▲ Time Saving  
Start a new run by switching to a new column
- ▲ Efficient Purification  
Further purification can be achieved through tandemed columns
- ▲ Good Compatibility  
Compatible with the purification system from most of the manufacturers in the market



Cat. No: ACQ-06

**Indicator Lamps**  
Show the status of the channels

**Column Support**  
Suitable for columns of different specifications column tandem

**Standard Adaptor**  
Compatible with flash columns from other manufacturers

**Channel Switcher**  
Avoid cross contamination

## Column Oven



Cat. No	CT-100-T	CC-M-500	MODEL9340
Temperature Range	Ambient-100°C	4-80°C	Ambient-100°C
Control Precision	±0.1°C	±0.1°C	±0.1°C
Configuration	4.6 × 250 mm, Max 2 columns	4.6 × 250 mm, Max 2 columns	One of 4.6 × 250 mm analytical column, and 30 × 250 mm preparation column
Collection Mode	Analytical	Analytical	Preparation

## LS-Prep Large Volume Purification System

- ▲ Flexible option for semi-preparative and large volume sample purification;
- ▲ Featured system is configured with binary gradient pumps, dual UV-Vis detector and automatic injection pump, no limit sample collection through valve switcher;
- ▲ 1L pump is available to satisfy purification requirement from grams to hundreds grams.



	UV Detector	UV-Vis Variable Wavelength Detector
Cat. No	HP-Q-UV1000D	HP-Q-UV1000DS
Wavelength	200-400 nm	200-800 nm
Channel	Dual-wavelength	Dual-wavelength
Range	≤5 AU	≤5 AU
Light Source	Deuterium lamp	Deuterium lamp Tungsten lamp

### Featured Optional Combination

Pump	Detector	Sample Loading	Collection
Flow rate: 10-1000 mL/min Max pressure 10Mpa (Optional: 1mL/min)	UV-Vis detector (200-800nm), ELSD, RI detector is optional	Autosample pump	Auto fraction collector



## LS-Prep Series Pump

- ▲ Unique floating piston design to ensure longer seal life;
- ▲ Low pulsation due to electronic damping technology;
- ▲ Anti-particle contamination;
- ▲ Solvent tolerance with RP and HP phase system solvent.



Cat.No	HP-Q-P300	HP-Q-P600	HP-Q-P1000
Max	10 MPa	10 MPa	5 MPa
Pump Head	316L	316L	316L
Flow Rate	≤ 300 mL/min	≤ 600 mL/min	≤ 1000 mL/min
Flow Precision	±2 %	±2 %	±3 %
Gradient Precision	±1 %	±1 %	±1 %

## LS-Prep Series Fraction Collector

### XY axis two-dimension collector

- ▲ Stable electronic control technology supports high precision custom coordinate;
- ▲ S-type collector with adjustable software suit variety of collection container, such as conical flask, flask, beaker, test tube;
- ▲ Easily switch between waste and collection through multi-channel design.



Cat. No	FL-C500
Max Flow Rate	1000 mL/min
Collecting Configuration	Preset for 13 mm, 15 mm, 18 mm, 25 mm and 1000 mm tubes
Communication Port	RS 232
Collection Mode	By peak (threshold), volume; Forced collection and forced waste

## LC-10F High Performance Liquid Chromatography

LC-10F HPLC system applies the Electrical Dump Control technique to minimize the pulsation, and ensures the sensitivity. High flow rate precision is achieved through a multi-point calibration curve; Dual-channel design for dual wavelength provides excellent detection.

### Specification

Cat. No	LC-10F
Flow Rate Range	0.001~9.999 mL/min
Flow Precision	±0.5 %
Flow Repeatability	RSD≤0.1 %
Pressure Precision	≤0.5 %
Max Pressure	≤42 Mpa
Wavelength Range	200-400/200-800 nm
Lamp	Deuterium lamp, Tungsten lamp is optional
Wavelength Precision	±1 nm
Wavelength Repeatability	0.2 nm
Noise	±0.75×10 <sup>-5</sup> AU, 254nm, TC=1S
Baseline Drift	1.5×10 <sup>-4</sup> AU, 254 nm



## Accessories for Flash Purification Products

### Fritted Empty Cartridges for Solid Sample Loading

(One set of empty flash column includes one column, one cap and two frit plates)

Part No.	Column Type & Description	Quantity (PK)
FCH012-C	Full set Empty column for 12 g	20
FCH020-C	Full set Empty column for 20 g	20
FCH040-C	Full set Empty column for 40 g	10
FCH080-C	Full set Empty column for 80 g	5
FCH120-C	Full set Empty column for 120 g	5
FCH012-S	Full set Empty column for 12 g Luer lock	20
FCH020-S	Full set Empty column for 20 g Luer lock	20
FCH040-S	Full set Empty column for 40 g Luer lock	10
FCH080-S	Full set Empty column for 80 g Luer lock	5
FCH120-S	Full set Empty column for 120 g Luer lock	5



Part No.	Column Type & Description	Quantity (PK)
FCH004-H	Full set Empty column for 4 g	20
FCH012-H	Full set Empty column for 12 g	20
FCH020-H	Full set Empty column for 20 g	20
FCH040-H	Full set Empty column for 40 g	10
FCH080-H	Full set Empty column for 80 g	5
FCH120-H	Full set Empty column for 120 g	5
FCH330-H	Full set Empty column for 330 g	1
FCH800-H	Full set Empty column for 800 g	1
FCH1500-H	Full set Empty column for 1500 g	1

### Flash Frit

Part No.	Type & Description	Quantity (PK)
FCS004-S	Polyethylene frit; top; 20µm; 1/8"	20
FCS012-S		20
FCS020-S		20
FCS040-S		10
FCS080-S		5
FCS120-S		5
FCS330-S		1
FCS800-S		1
FCS1500-S		1
FCS3000-S		1



Part No.	Type & Description	Quantity (PK)
FCS004-X	Polyethylene frit; bottom; 10µm; 1/16	20
FCS012-X		20
FCS020-X		20
FCS040-X		10
FCS080-X		5
FCS120-X		5
FCS330-X		1
FCS800-X		1
FCS1500-X		1
FCS3000-X		1
FCS012-SS		Polyethylene frit for screw-on Flash column; top; 20µm; 1/8
FCS020-SS	20	
FCS040-SS	10	
FCS080-SS	5	
FCS120-SS	5	
FCS012-SX	Polyethylene frit for screw-on Flash column; bottom; 10µm; 1/16	20
FCS020-SX		20
FCS040-SX		10
FCS080-SX		5
FCS120-SX		5

## Column Packing Tools

Part No.	Type & Description	Quantity
FGJ-1	For 4/12g column	1
FGJ-2	For 20/40g column	1
FGJ-3	For 80/120g column	1
FGJ-4	For 12/20g column	1

## Wrench for Screw on Columns

Part No.	Type & Description	Quantity
F-BS-12	Wrench for 12g column	1
F-BS-20	Wrench for 20g column	1
F-BS-40	Wrench for 40g column	1
F-BS-80	Wrench for 80g column	1
F-BS-120	Wrench for 120g column	1

## Cleanert<sup>®</sup> Phase Separation Cartridge

Bonna-Agela provides phase separator with a PDPE membrane design, which can separate organic and aqueous phases effectively;

12 mL, 60 mL, 150 mL volume size columns are available; This product can be used to exclude water or to separate solvent phases.

### Advantages

- 1) Easy to operate and time saving;
- 2) Efficient and economic;
- 3) Suitable to automated processing.

### Operation

Operation of this separation cartridge is straightforward by transferring liquid sample to the head space of cartridge that organic portion will pass through but aqueous phase will be retained. This selective filtration works well for separating very small amount aqueous or organic part of a liquid mixture.

### Ordering information

Part Number	Description	Vol	Package
PSC12	Cleanert Phase Separator Cartridge	12 mL	100
PSC60	Cleanert Phase Separator Cartridge	60 mL	50
PSC150	Cleanert Phase Separator Cartridge	150 mL	25

### Drying Cartridges for Quick Work-up

Part. No.	Description	Quantity(PK)
QWD001	MgSO <sub>4</sub> ; 1 mL; IC	50
QWD003	MgSO <sub>4</sub> ; 3 mL; IC	50
QWD006	MgSO <sub>4</sub> ; 6 mL	30





## Pre-packed Solid Loading Cartridges for Other System Vendors



Part No.	Column Type & Description	Quantity (PK)
SLC6050-5025	Silica 5 g/25 mL Prepacked solid load cartridges	20
SLC6050-10060	Silica 10 g/60 mL Prepacked solid load cartridges	16
SLC6050-20060	Silica 20 g/60 mL Prepacked solid load cartridges	16
SLC6050-25060	Silica 25 g/60 mL Prepacked solid load cartridges	16
SLC6050-500150	Silica 50 g/150 mL Prepacked solid load cartridges	8
SLC6050-700150	Silica 70 g/150 mL Prepacked solid load cartridges	8
SLN6050-5025	NH <sub>2</sub> 5 g/25 mL Prepacked solid load cartridges	20
SLN6050-10060	NH <sub>2</sub> 10 g/60 mL Prepacked solid load cartridges	16
SLN6050-20060	NH <sub>2</sub> 20 g/60 mL Prepacked solid load cartridges	16
SLN6050-25060	NH <sub>2</sub> 25 g/60 mL Prepacked solid load cartridges	16
SLN6050-500150	NH <sub>2</sub> 50 g/150 mL Prepacked solid load cartridges	8
SLN6050-700150	NH <sub>2</sub> 70 g/150 mL Prepacked solid load cartridges	8
SL96050-5025	C18 5 g/25 mL Prepacked solid load cartridges	20
SL96050-10060	C18 10 g/60 mL Prepacked solid load cartridges	16
SL96050-20060	C18 20 g/60 mL Prepacked solid load cartridges	16
SL96050-25060	C18 25 g/60 mL Prepacked solid load cartridges	16
SL96050-500150	C18 50 g/150 mL Prepacked solid load cartridges	8
SL96050-700150	C18 70 g/150 mL Prepacked solid load cartridges	8

## Other Format Columns for Solid Sample Loading

### Procedure

1. Open the column
2. Add sample solution
3. Evaporate the solution
4. Cap the column
5. Put the column on the top of main separation column



### Ordering information

Part No.	Description	Quantity (PK)
QW001	Silica; 1 mL	50
QW003	Silica; 3 mL	50
S-CS140012-0	Silica; 12 g	20
S-CS140020-0	Silica; 20 g	20
S-CS140040-0	Silica; 40 g	10
S-CS140080-0	Silica; 80 g	5

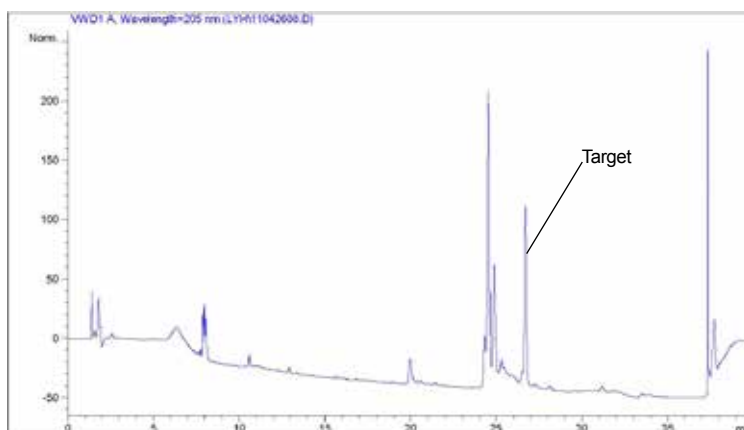
## Applications

### The Extraction of a Polypeptide

APPID: EPB1002

#### HPLC Analysis

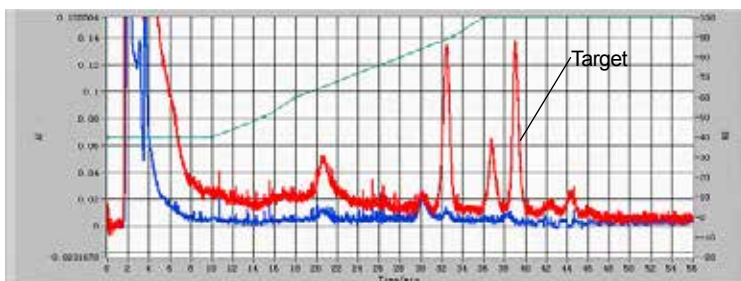
Column: Venusil® XBP C18, 5 µm, 100 Å, 4.6×150 mm  
 Mobile Phase: A (water+0.01 %TFA): B (ACN) =73: 27  
 Flow Rate: 1 mL/min;  
 Detector: UV 205 nm;  
 Sample Injection: 1 µL



HPLC chromatogram of polypeptide

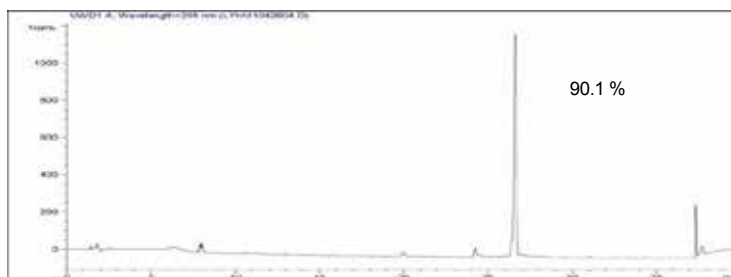
#### Preparation

Column: Claricep™ FLASH C18 12 g, 40~60 µm, 100 Å  
 Mobile Phase: ACN/Water  
 Flow Rate: 15 mL/min  
 Detector: UV 205 nm, 280 nm  
 Sample Injection: 2 mL



Prep chromatogram of the peptide (collection time 36-38 min)

#### Purity Test of The Fraction



Chromatogram of the fraction

#### Conclusions

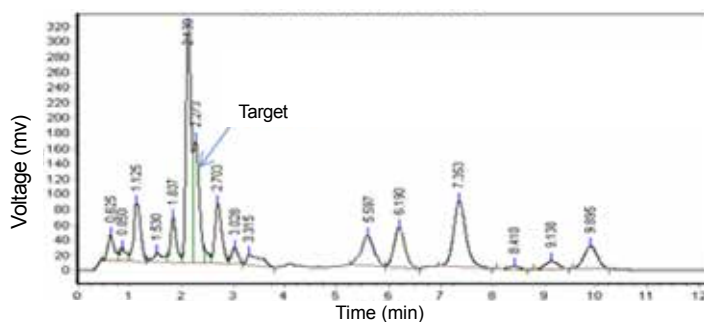
Claricep™ FLASH C18 gives adequate separation of the polypeptide sample with purity up to 90.1 %, and 78 % recovery.

## Separation of an Active Lignin Ingredient

APPID: EPP1002

### HPLC Analysis

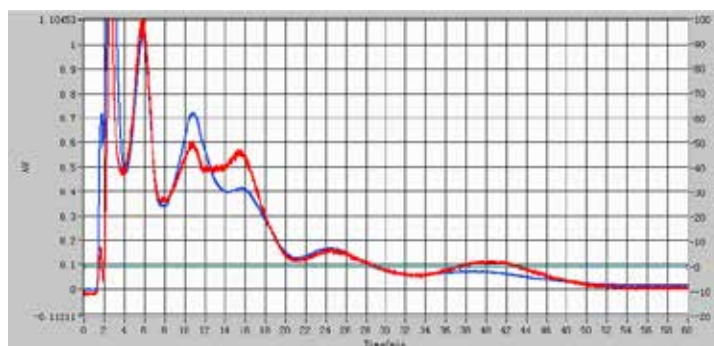
Column: Venusil® XBP C18(L), 5 µm, 150 Å, 2.1×150 mm  
Mobile Phase: A (water+0.01 %TFA): B (ACN)=77:23  
Flow Rate: 0.5 mL/min  
Detector: UV 267 nm  
Sample Injection: 2 µL



HPLC chromatogram of lignin

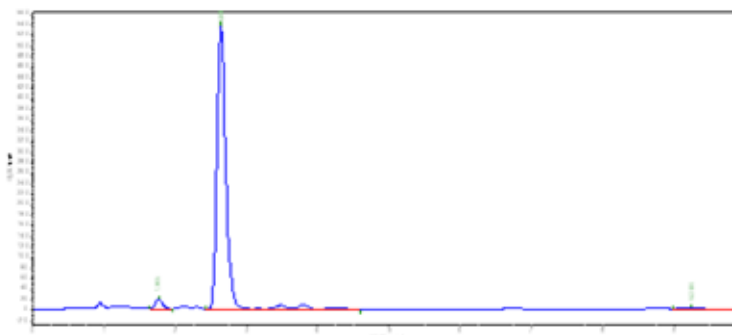
### Preparation

Column: Claricep™ FLASH C18, 12 g, 40~60 µm, 100 Å  
Mobile Phase: ACN  
Flow Rate: 15 mL/min  
Detector: UV 205 nm, 280 nm  
Sample Injection: 2 mL



Prep chromatogram of lignin (collection time 21-32 min)

### Purity Test of The Fraction



Chromatogram of the fraction

### Conclusions

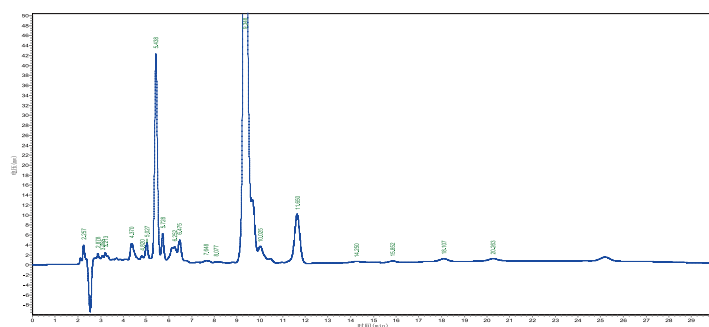
The 12 to 330 g flash columns show good reproducibility, and the recoveries of this application is above 60 %.

## Purification of a Small Bioactive Compound

APPID: EPB1003

### HPLC Analysis

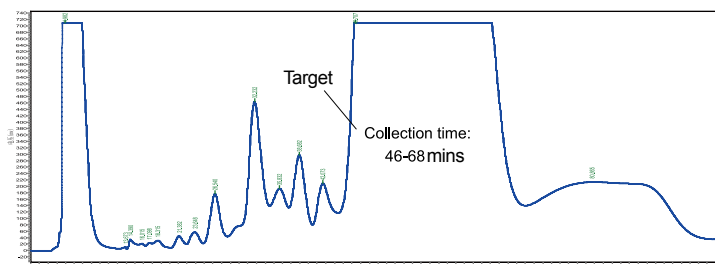
Column: Unisol C18, 4.6×150 mm, 5 μm, 100 Å  
 Mobile Phase: A (water): B (ACN) =75:25  
 Flow Rate: 1.0 mL/min  
 Detector: UV 268 nm  
 Sample Injection: 1 μL



HPLC chromatogram of the sample

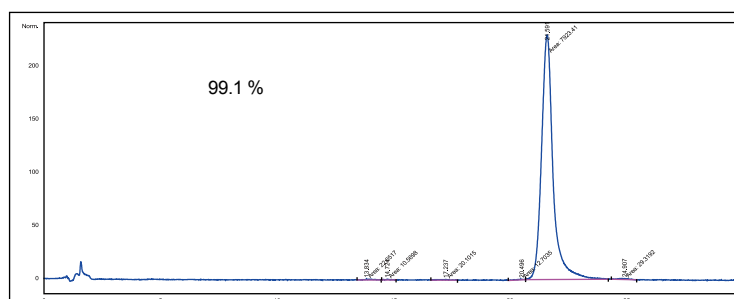
### Preparation

Column: Venusil® XBP Silica, 20×250 mm, 10 μm, 100 Å  
 Mobile Phase: Dichloromethane: methanol: water  
 = 85:20:2;  
 Flow Rate: 23 mL/min  
 Detector: UV 268 nm; Sample Injection: 8.5 mL



Prep chromatogram of the sample (collection time 46-68 mins)

### Purity Test of The Fraction



Chromatogram of the fraction

### Conclusions

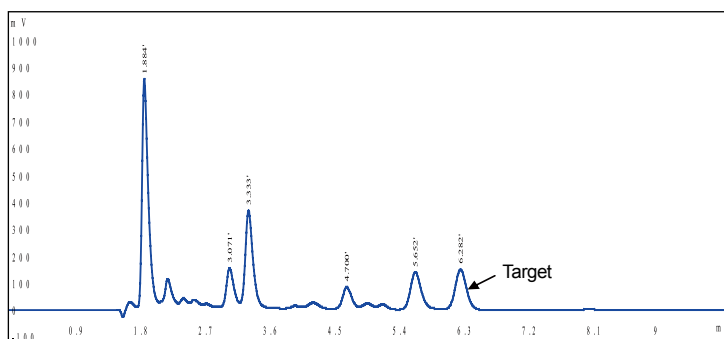
A NP purification procedure was used in this application, followed purity analysis with a reversed-phase method. It was found that loading capacity of the NP procedure was 10 times higher than reversed-phase separation. The recovery of the NP separation was above 90 %, and the purity of the monomer was increased from 62 % to 99 % by the purification method.

## The Separation of Naturally Occurring Phenol

APPID: EPP1004

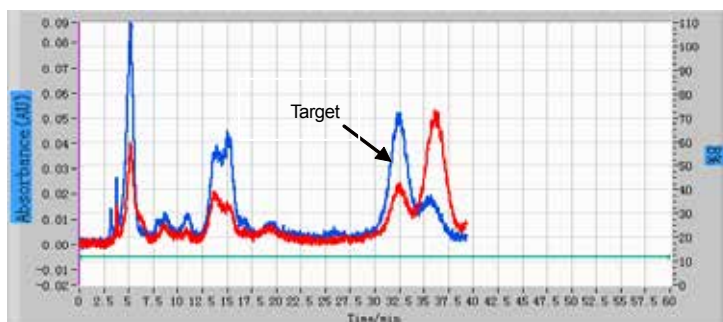
### HPLC Analysis

Column: Venusil® XBP C18, 5 µm, 100 Å, 4.6×150 mm  
Mobile Phase: Methanol: water =75:25  
Flow Rate: 1 mL/min  
Detector: UV 287 nm  
Sample Injection: 20 µL (methanol dissolved)

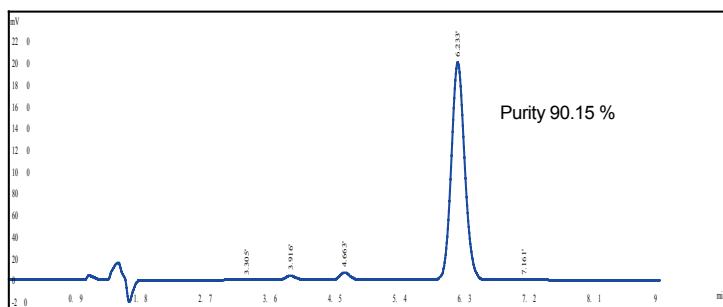


### Preparation

Column: Claricep™ Flash Si, 60 Å, 20 g× 3  
Mobile Phase: Ethyl acetate: petroleum ether =12:88  
Flow Rate: 30 mL/min  
Detector: UV287 nm, 254 nm  
Sample Injection: 2 mL (420 mg)



### Purity Test of The Fraction



### Conclusions

An extraction procedure is established for the natural products. The purity of column extracted target was up to 90 %. A large volume loading method was successful for this application by NP mechanism, and the purity of the compound was detected by RP mode.

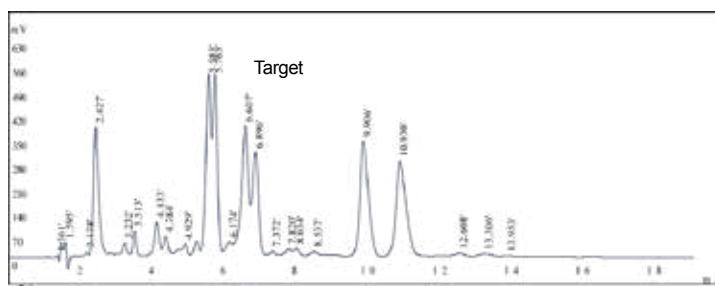


## The Enrichment and Purification of a Oxime Impurity

APPID: EPP1005

### HPLC Analysis

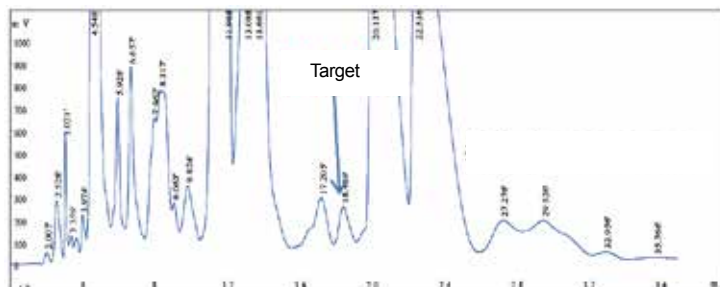
Column: Venusil® XBP C18, 4.6×150 mm, 5 μm, 100 Å  
 Mobile Phase : 0.25 % Tetrabutyl ammonium hydroxide(A): ACN( B) =75:25  
 Flow Rate: 1.3 mL/min  
 Detector: UV 254 nm  
 Sample Injection: 1 μL



HPLC Chromatogram of cefixime sample

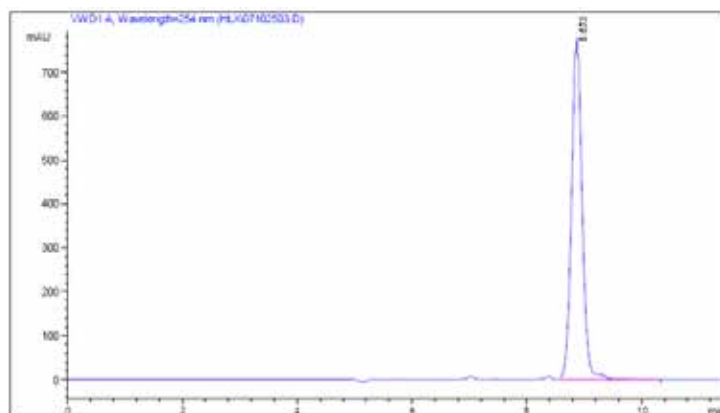
### Preparation

Column: Venusil® XBP C18(2), 20×250 mm, 5 μm, 100 Å  
 Mobile Phase: A: 0.01 %TFA+0.01 %TEA (pH=5.84)  
 B: ACN  
 Gradient: The rate of B increases from initial 10 % to 30 % after 30 min  
 Flow Rate: 18 mL/min  
 Detector: UV 254 nm  
 Sample Injection: 5 mL



The preparation of cefixime sample (collection time 18.2-18.8 mins )

### Purity Test of The Fraction



HPLC chromatogram of the fraction

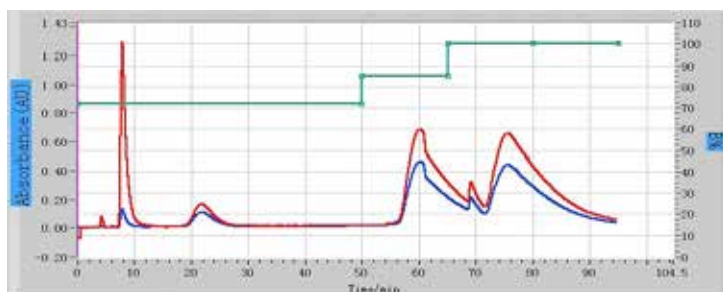
## The Derivatives of a DNA Fragment

APPID: EPB1004

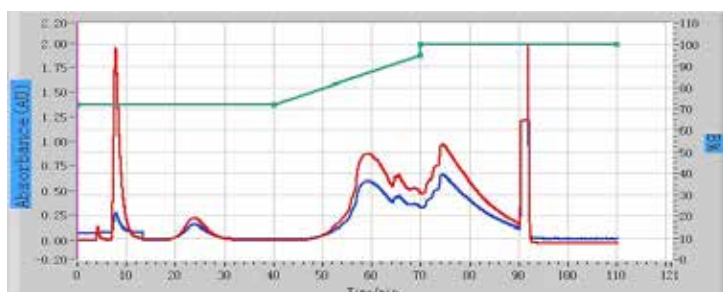
Sample: yellow power, soluble in ACN, molecular weight less than 5000

### Preparation

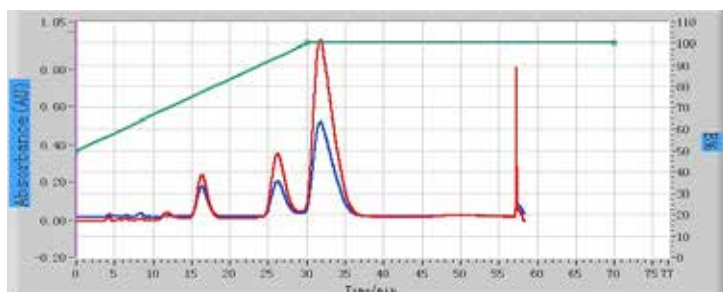
Column: 120 g Hilic Flash column (20-35  $\mu\text{m}$ )  
Instrument: CHEETAH<sup>®</sup> MP 100  
Mobile Phase: Petroleum ether: ethyl acetate =30:70  
Flow Rate: 50 mL/min  
Detector: UV 240 nm, 280 nm



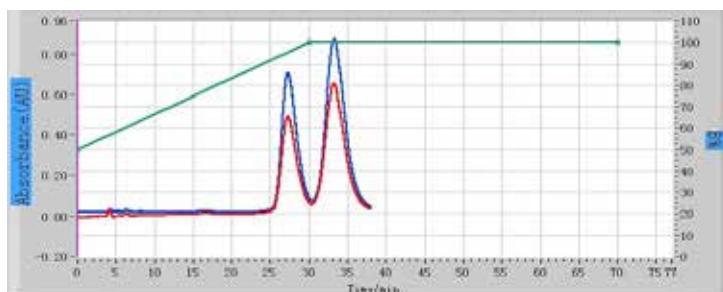
Prep chromatogram of TB-G (120 g Hilic Flash column, sample loading 1.4 g)



Prep chromatogram of TB-G (120 g Hilic Flash column, sample loading: 2.5 g)



Prep chromatogram of TB-U (120 g Hilic Flash column, sample loading: 0.8 g)



Prep chromatogram of TB-A (120 g Hilic Flash column, sample loading: 0.8 g)

### Conclusions

Hilic columns perform well to obtain purified derivatives of the DNA fragment. Three derivatives of the DNA fragment were prepared.

## Clomazone

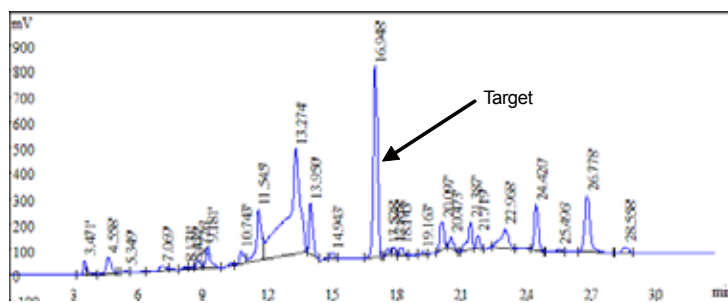
**APPID: EPP1006**

Crude sample is a brownish and viscous liquid with some insoluble white particles. 10 mg of the sample was dissolved in 0.5 mL methanol.

### Impurity: Pyridine

Semi-preparation  
 Column: Venusil® XBP C18, 10×250 mm, 5 µm, 100 Å,  
 S/N: V9510515BI0118b  
 Mobile phase: A: water B: methanol  
 Detector: UV 230 nm  
 Flow Rate: 4 mL/min  
 Sample Injection: 20 µL  
 Gradient

Time	B %
0	60
20	90
30	90

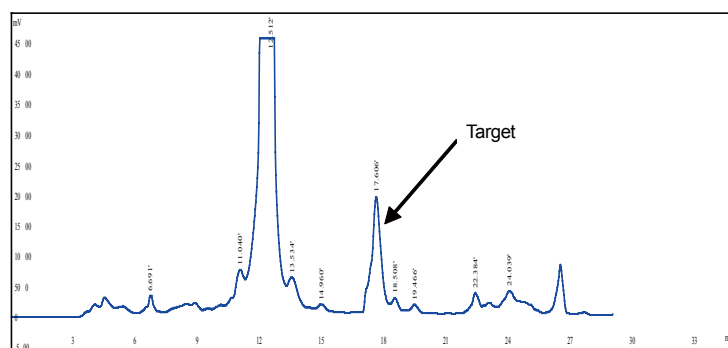


Semi-preparation chromatogram of fraction

### Preparation

Column: Venusil® XBP C18, 20×250 mm, 5 µm, 100 Å  
 S/N: V9510515BI0118b  
 Mobile Phase: A: water B: methanol  
 Detector: UV 230 nm  
 Flow Rate: 16 mL/min;  
 Sample Injection: 1 mL (dissolve 1 g with 5 mL methanol)  
 Gradient

Time/min	B%
0	60
20	90
30	90

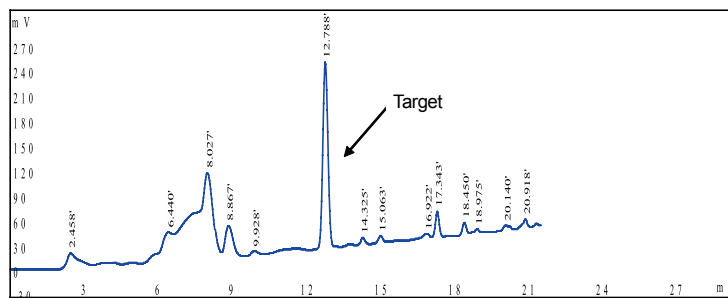


Prep chromatogram of the fraction

### HPLC Analysis

Column: Venusil® XBP C18, 4.6×150 mm, 5 µm, 100 Å  
 S/N: V9510525CK0300  
 Mobile Phase: A: water B: methanol  
 Detector: UV 230 nm  
 Flow Rate: 1 mL/min  
 Sample Injection: 20 µL  
 Gradient

Time/min	B%
0	60
20	90
30	90



HPLC chromatogram of the fraction





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