

# CHP material series

Analytical and preparative chromatography columns and materials for pharmaceutical applications

MCI GEL™ CHP material series are chromatography materials of porous type polymers.

Because polymeric materials are chemically stable, wide pH range, from acidic to alkaline eluents are able to be applied to MCI GEL™ CHP material series.

MCI GEL™ CHP50 series and CHP20 series are both ST/DVB polymers, but they differences in porosity. Pore size of CHP20 series is fairly larger than that of CHP50 series. Appropriate packing material can be selected in accordance with molecular size of injection samples.

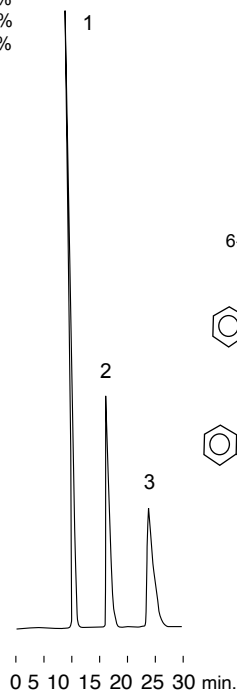
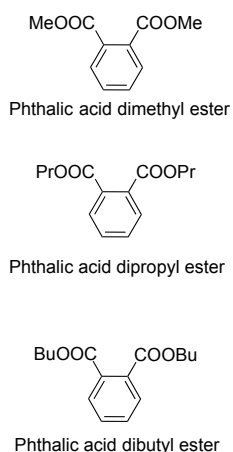
## ● CHP material series

Base polymer	Functional group	Product name	Particle size [μm]	Pore diameter [nm]	Main application	Equivalent HPLC column
Styrene Divinylbenzene	None	CHP20/P20	20	45	drug compounds Peptides Proteins	CHP20/C04 CHP20/C10
		CHP20/P30	30			
		CHP20/P50	50			
		CHP20/P70	70			
		CHP20/P120	120			
	CHP50/P20	20	25	—		
	CHP50/P30	30				
CSP50/P10	10	25	CHP20/C10			
Polymethacrylate	None	CMG20/P10	10	25		CMG20/C04
		CMG20/P30	30			CMG20/C10

# Application data of CHP 50

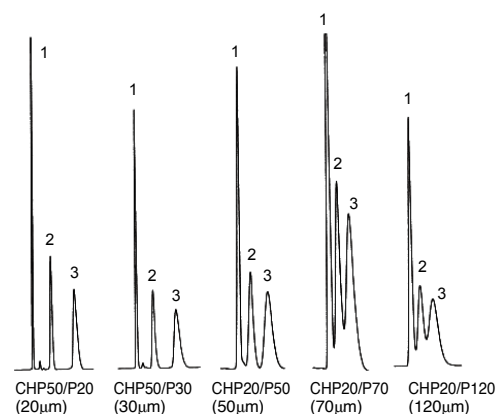
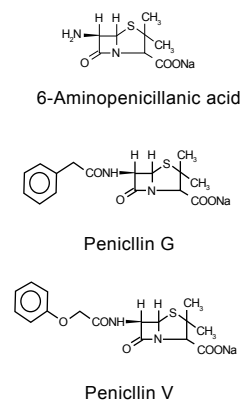
**Fig. 5-34 Phthalic acid esters**

Conditions  
 Column : MCI GEL™ CHP50/P20, 10mm I.D.×250mmL  
 Eluent : H<sub>2</sub>O/CH<sub>3</sub>CN=20/80  
 Flow rate : 0.75mL/min  
 Column temp. : 25°C  
 Detection : 254nm,  
 Sample : 1.Dimethyl phthalate 0.5%  
 2.Dipropyl phthalate 0.5%  
 3.Dibutyl phthalate 0.5%  
 Injection : 100μL



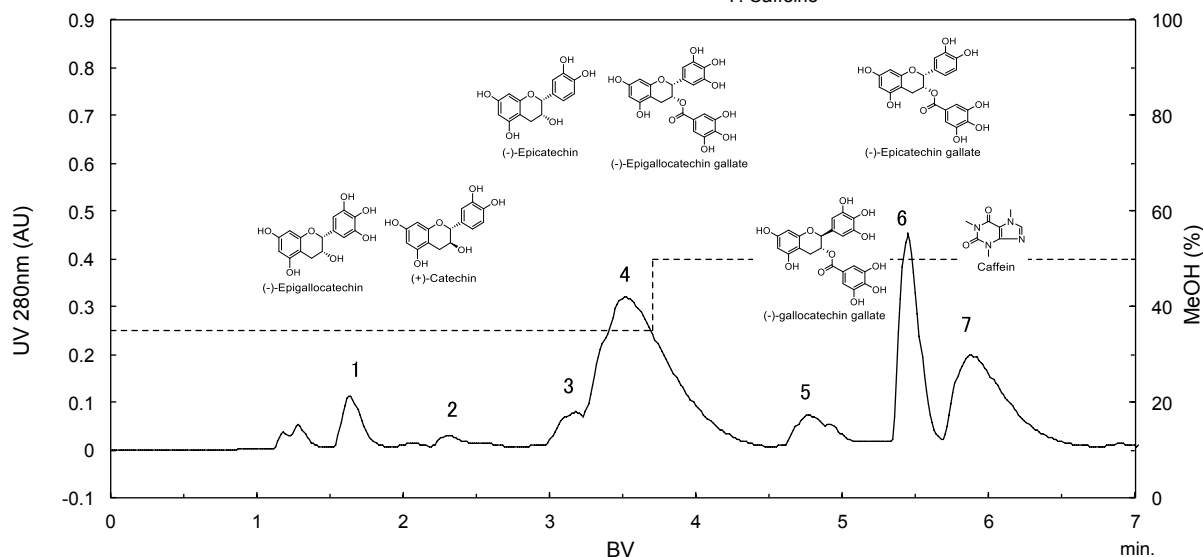
**Fig. 5-35 Penicilin antibiotics**

Conditions  
 Column : MCI GEL™ CHP series, 10mm I.D.×250mmL  
 Eluent : CH<sub>3</sub>OH/0.05M Phosphate buffer (pH8.0)=60/40  
 Flow rate : 2.18mL/min  
 Column temp. : 25°C  
 Detection : 254nm,  
 Sample : 1.6-Aminopenicillanic acid  
 2.Penicillin G  
 3.Penicillin V  
 Injection : 100μL



**Fig. 5-36 Extract of green tea leaves**

Conditions  
 Column : MCI GEL™ CHP50/P20, 32mm I.D.×465mm  
 Eluent : 0–185min, CH<sub>3</sub>OH:0.01M Acetic acid(35:65)  
 185–350min, CH<sub>3</sub>OH:0.01M Acetic acid(50:50)  
 Flow rate : 7.48mL/min  
 Detection : 280nm  
 Sample : extract of green tea leaves, injection volumn 18.7mL  
 1. Epigallocatechin  
 2. Catechin  
 3. Epicatechin  
 4. Epigallocatechin gallate  
 5. Gallo catechin  
 6. Epicatechin gallate  
 7. Caffeine



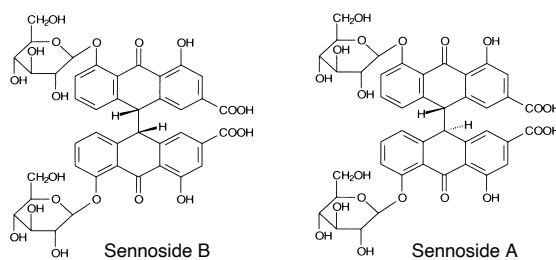
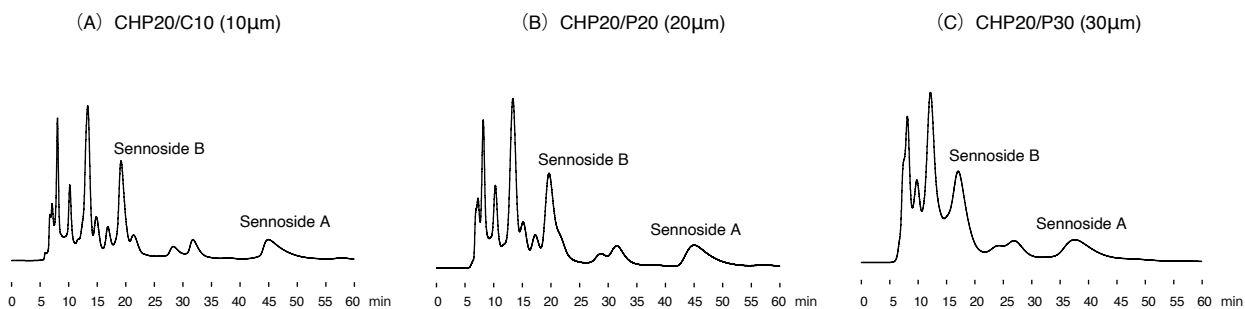
Column selection guide  
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 Ion exchange columns and materials  
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 Ion chromatography columns and materials  
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 Bioseparation columns and materials  
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 Analytical and preparative for pharmaceutical applications  
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 Chiral separation columns  
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 Compounds index  
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# Application data of CHP 20

**Fig.5-37 Senna pulv. extract**

Conditions

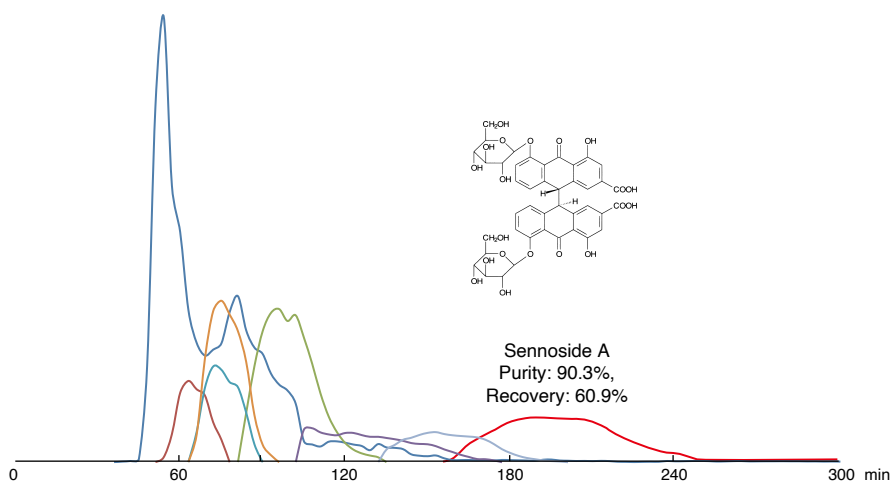
Chromatogram A	Chromatogram B	Chromatogram C
Column : MCI GEL™ CHP20/C10 4.6mm I.D.×250mm	Column : MCI GEL™ CHP20/P20 10.0mm I.D.×250mm	Column : MCI GEL™ CHP20/P30 10.0mm I.D.×250mm
Eluent : CH <sub>3</sub> OH/1% Acetic acid = 60/40 (vol.)	Eluent : CH <sub>3</sub> OH/1% Acetic acid = 60/40 (vol.)	Eluent : CH <sub>3</sub> OH/1% Acetic acid = 60/40 (vol.)
Flow rate : 0.5mL/min	Flow rate : 2.4mL/min	Flow rate : 2.4mL/min
Detection : 270nm	Detection : 270nm	Detection : 270 nm
Sample : Extract of senna pulv. 10μL	Sample : Extract of senna pulv. 80μL	Sample : Extract of senna pulv. 80μL



**Fig. 5-38 Elution profile of senna pulv. extract separated on MCI GEL™ CHP20/P30**

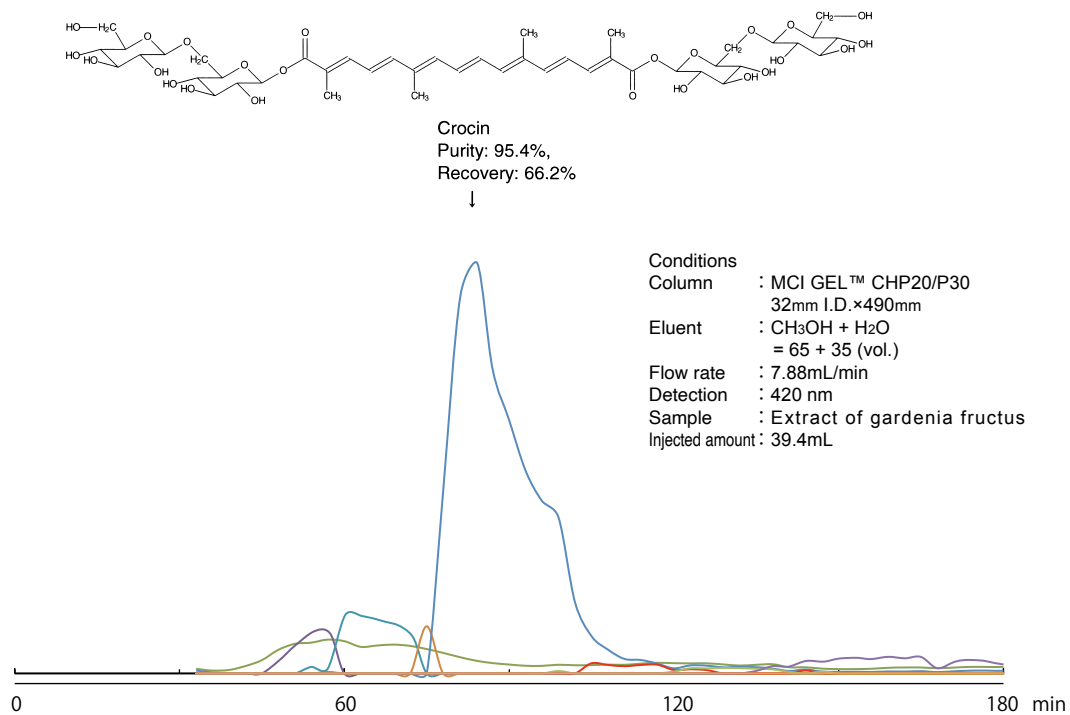
Conditions

Column : MCI GEL™ CHP20/P30 32mm I.D.×490mm
Eluent : CH <sub>3</sub> OH + 1% Acetic acid = 60 + 40 (vol.)
Flow rate : 7.88mL/min
Detection : 270 nm
Sample : Extract of senna pulv., partially purified by Diaion HP20
Injected amount : 39.4mL

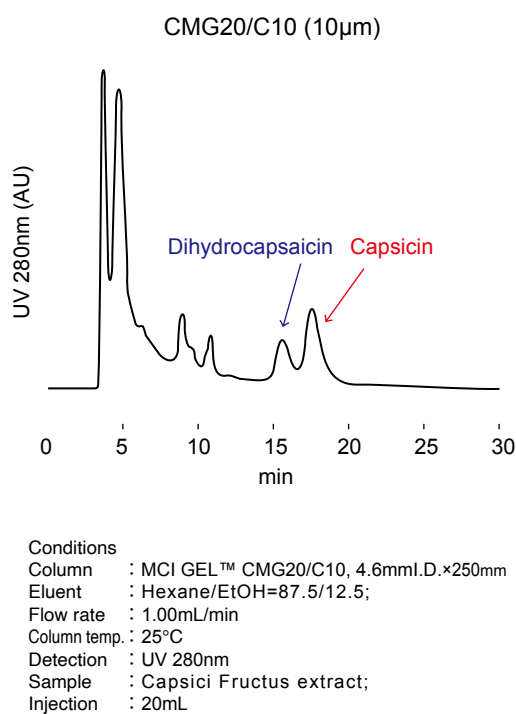


# Application data of CHP series

**Fig. 5-39 Elution profile of gardenia fructus extract separated on MCI GEL™ CHP20/P30**

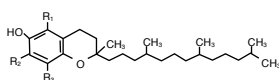


**Fig. 5-40 Capsaicin**



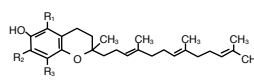
# Application data of CHP series

## Tocopherol



- |                         | R <sub>1</sub>  | R <sub>2</sub>  | R <sub>3</sub>  |
|-------------------------|-----------------|-----------------|-----------------|
| 1. $\alpha$ -tocopherol | CH <sub>3</sub> | CH <sub>3</sub> | CH <sub>3</sub> |
| 2. $\beta$ -tocopherol  | CH <sub>3</sub> | H               | CH <sub>3</sub> |
| 3. $\gamma$ -tocopherol | H               | CH <sub>3</sub> | CH <sub>3</sub> |
| 4. $\delta$ -tocopherol | H               | H               | CH <sub>3</sub> |

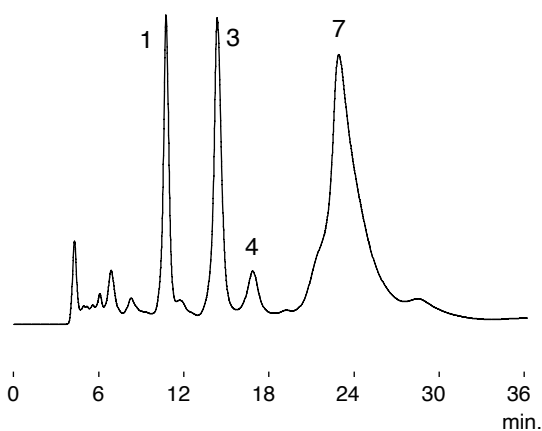
## Tocotrienol



- |                          | R <sub>1</sub>  | R <sub>2</sub>  | R <sub>3</sub>  |
|--------------------------|-----------------|-----------------|-----------------|
| 5. $\alpha$ -tocotrienol | CH <sub>3</sub> | CH <sub>3</sub> | CH <sub>3</sub> |
| 6. $\beta$ -tocotrienol  | CH <sub>3</sub> | H               | CH <sub>3</sub> |
| 7. $\gamma$ -tocotrienol | H               | CH <sub>3</sub> | CH <sub>3</sub> |
| 8. $\delta$ -tocotrienol | H               | H               | CH <sub>3</sub> |

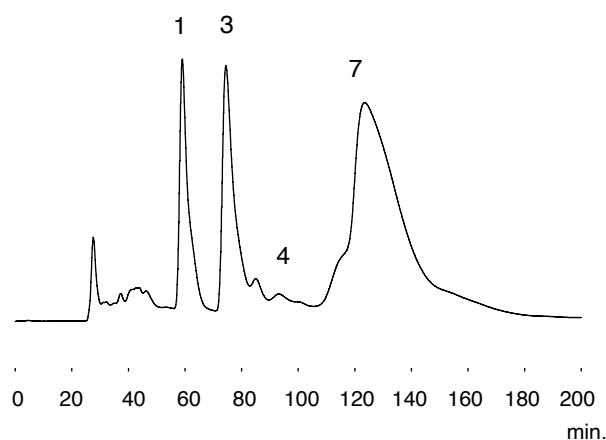
**Fig. 5-41 Vitamin E in Rice Bran Oil**

Conditions  
 Column : MCI GEL™ CMG20/C10  
 4.6mm I.D.×150mm  
 Eluent : Hexane-EtOH = 98/2 (vol.)  
 Flow rate : 0.5mL/min  
 Detection : 295nm  
 Sample : Rice Bran Oil, 50mg/mL  
 Injection : 10 $\mu$ L



**Fig. 5-42 Elution profile of Rice Bran Oil in preparative scale**

Conditions  
 Column : MCI GEL™ CMG20/P30  
 20mm I.D.×500mm  
 Eluent : Hexane/C<sub>2</sub>H<sub>5</sub>OH = 98/2 (vol.)  
 Flow rate : 4.7mL/min  
 Detection : 295 nm  
 Sample : Rice Bran Oil, 50mg/mL  
 Injection : 1260 $\mu$ L



**Fig. 5-43 Mixture of tocopherol and tocotrienol : Comparison with silica gel column**

Conditions  
 Column : 1. Silica gel 5SIL, 4.6mm I.D.×250mm  
 2. MCI GEL™ CMG20/C04, 4.6mm I.D.×150mm  
 Eluent : 1. Hexane/EtOH = 99/1  
 2. Hexane/EtOH = 98/2  
 Flow rate : 1.0mL/min  
 Column temp. : 25°C  
 Detection : UV 292nm  
 Sample : Mixture of tocopherol and tocotrienol  
 Injection : 10 $\mu$ L ( 1mg/mL )

