

Shodex™ C18 Column



Characteristics of Shodex C18 column

Shodex C18 column is packed with high-purity, totally porous, spherical silica gel that is chemically modified with C18 functional group (carbon load 17%). The gel is fully end-capped to suppress residual silanol influences. They are available in two different column sizes.

Product Code	Product Name	Plate Number (TP/column)	Functional Group	Partical Size (μm)	Carbon Loard (%)	Column Size (mm) I.D. x Length	Shipping Solvent
F6651010	C18-4D	≥ 13,000	Octadecyl	5	17	4.6 x 150	H ₂ O/CH ₃ OH=25/75
F6651011	C18-4E	≥ 21,000	Octadecyl	5	17	4.6 x 250	H ₂ O/CH ₃ OH=25/75

Base Material : Silica

Manufactured by

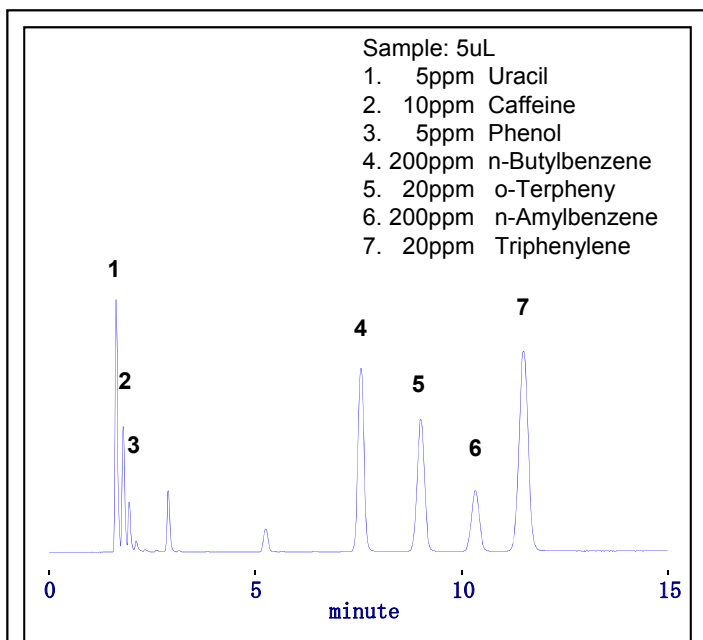


SHOWA DENKO K.K.

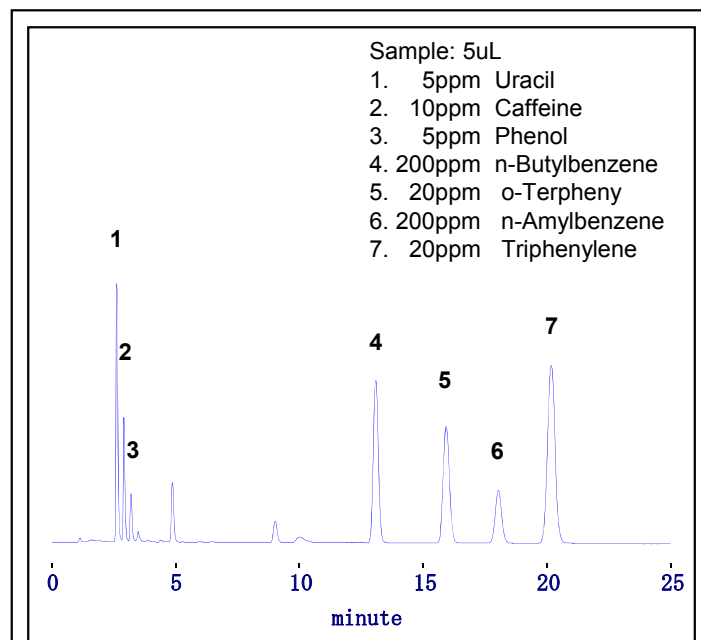
Shodex (Separation & HPLC) Group

13-9 Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518, Japan

Comparison data of C18-4D and 4E



Column: Shodex C18-4D
Eluent:CH₃OH/H₂O= 80/20
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 254nm



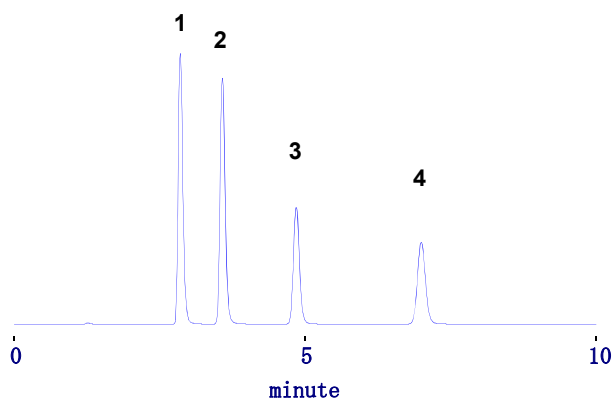
Column: Shodex C18-4E
Eluent:CH₃OH/H₂O= 80/20
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 254nm

Applications on Shodex C18-4D

The elution behavior of the acid sample (1)

Sample: 10uL

1. 10ppm p-Hydroxybenzoate methyl
2. 10ppm p-Hydroxybenzoic acid ethyl
3. 10ppm p-Hydroxybenzoic acid propyl
4. 10ppm p-Hydroxybenzoic acid butyl

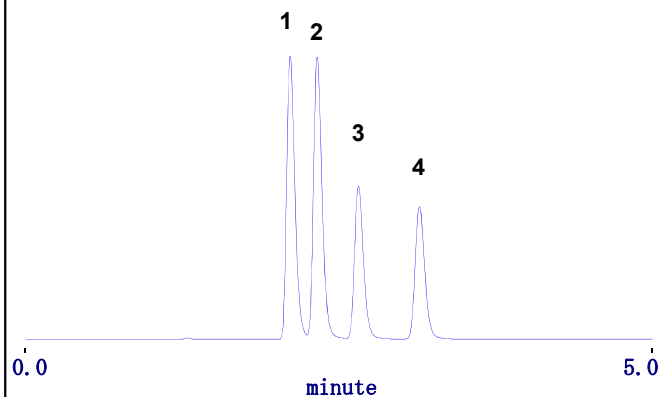


Column: Shodex C18-4D
Eluent: CH₃CN/H₂O = 50/50
Flow rate: 1.0mL/min
Column temperature: 30deg-C
Detector: UV 254nm

The elution behavior of the acid sample (2)

Sample: 10uL

1. 10ppm p-Methyl salicylate
2. 10ppm p-Salicylic acid ethyl
3. 10ppm p-Salicylic acid propyl
4. 10ppm p-Salicylic acid butyl

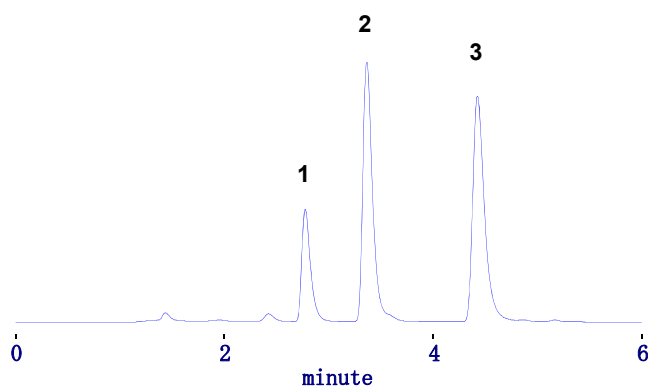


Column: Shodex C18-4D
Eluent: CH₃CN/H₂O = 70/30
Flow rate: 1.0mL/min
Column temperature: 30deg-C
Detector: UV 254nm

The elution behavior of the acid sample (3)

Sample: 10uL

1. 10ppm Benzoic acid
2. 5ppm p-Toluic acid
3. 5ppm p-Ethyl benzoic acid

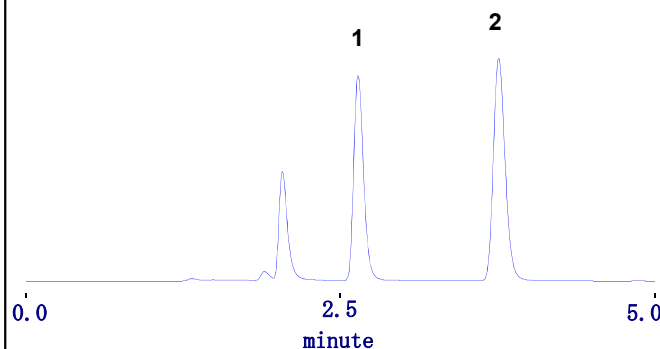


Column: Shodex C18-4D
Eluent: CH₃CN/0.1% Phosphoric acid = 50/50
Flow rate: 1.0mL/min
Column temperature: 30deg-C
Detector: UV 254nm

The elution behavior of the basic sample

Sample: 5uL

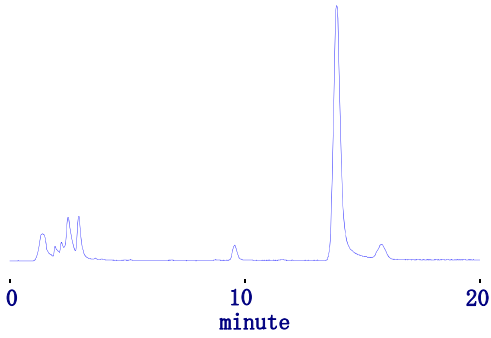
1. 10ppm Scopolamine
2. 10ppm Atropine



Column: Shodex C18-4D
Eluent: 10mM Phosphate buffer (pH 2.6)/CH₃CN = 5/1
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 210nm

The elution behavior of the sample
which forms metal complex (1)

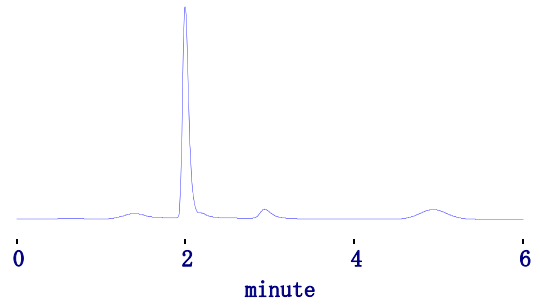
Sample: 10uL
10ppm 1,5-dihydroxyanthraquinone



Column: Shodex C18-4D
Eluent: 20mM Phosphate buffer (pH7.6)/CH₃OH = 30/70
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 240nm

The elution behavior of the sample
which forms metal complex (2)

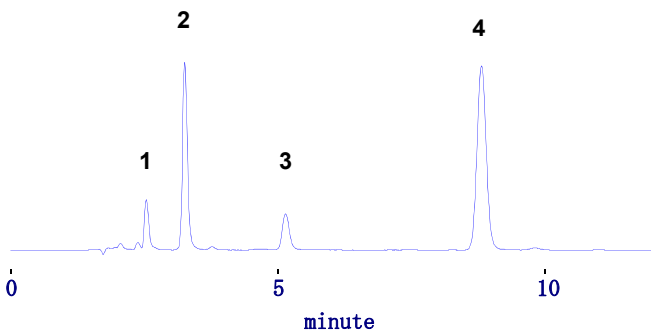
Sample: 10uL
10ppm Acetylacetone



Column: Shodex C18-4D
Eluent: 20mM Phosphate buffer (pH7.6)/CH₃OH= 30/70
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 240nm

Saccharin, Aspartame, Benzoic Acid, Sorbic Acid

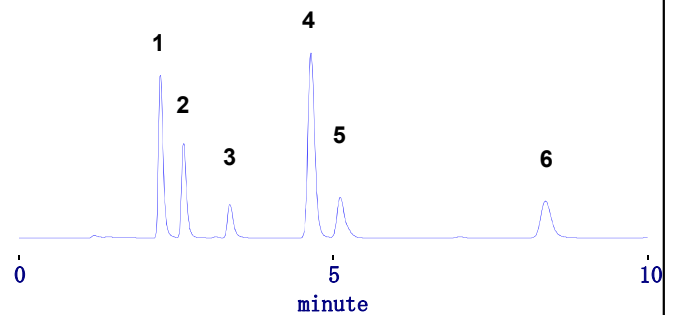
Sample: 10uL
1. 2ppm Saccharin
2. 0.5ppm Benzoic acid
3. 50ppm Aspartame
4. 0.5ppm Sorbic acid



Column: Shodex C18-4D
Eluent: 40mM Acetate buffer (pH4.0)/CH₃OH = 65/35
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 250nm

Organic acids

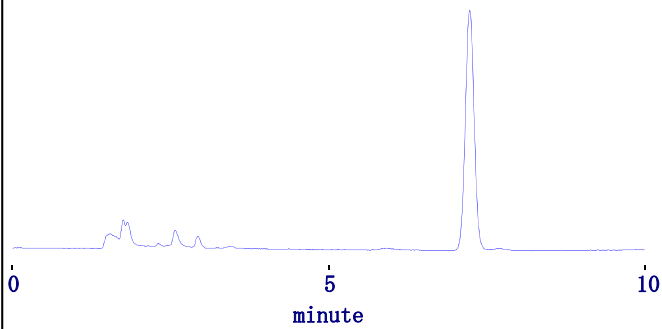
Sample: 10uL
1. 50ppm Tartaric acid
2. 50ppm Malic acid
3. 80ppm Acetic acid
4. 100ppm Citric acid
5. 80ppm Succinic acid
6. 100ppm Propionic acid



Column: Shodex C18-4D
Eluent: 5mM H₃PO₄
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 210nm

Asulam

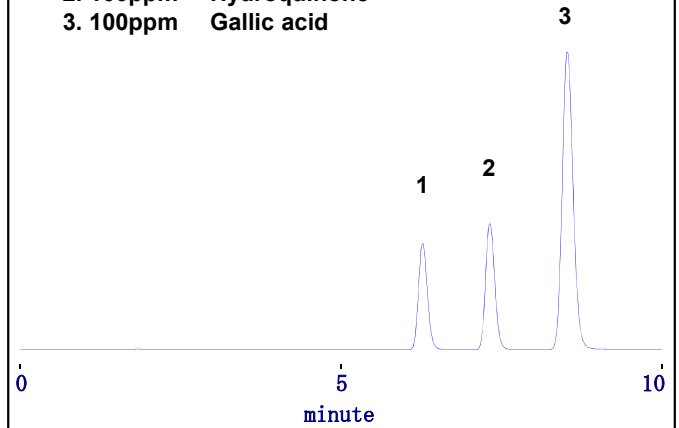
Sample: 5uL
10ppm Asulam



Column: Shodex C18-4D
Eluent: 50mM Phosphate buffer (pH3.3)
/CH₃ CN = 90/10
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 270nm

Arbutin

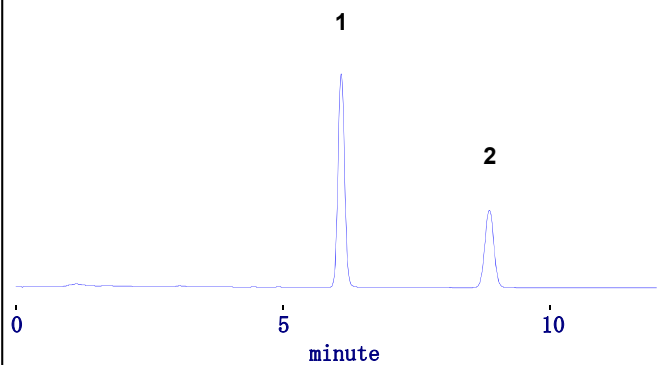
Sample: 20uL
1. 200ppm Arbutin
2. 100ppm Hydroquinone
3. 100ppm Gallic acid



Column: Shodex C18-4D
Eluent: 100mM Phosphate buffer (pH2.1)
/CH₃OH = 40/1
Flow rate: 0.9mL/min
Column temperature: 35deg-C
Detector: UV 280nm

Iprodione, Bensulide

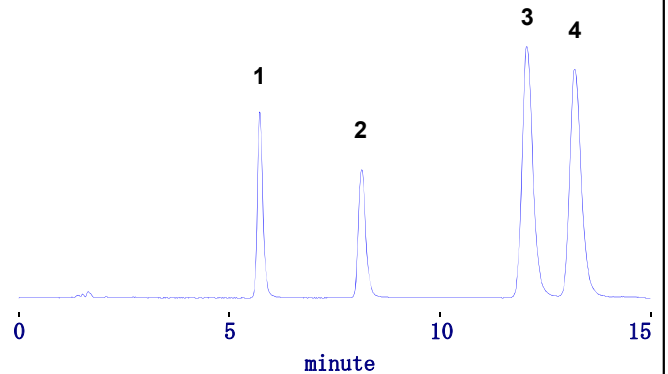
Sample: 5uL
1. 10ppm Iprodione
2. 10ppm Bensulide



Column: Shodex C18-4D
Eluent: CH₃CN/H₂O = 60/40
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 230nm

Hippuric Acid

Sample: 10uL
1. 50ppm Hippuric Acid
2. 100ppm o-Methyl Hippuric Acid
3. 50ppm p-Methyl Hippuric Acid
4. 100ppm m-Methyl Hippuric Acid

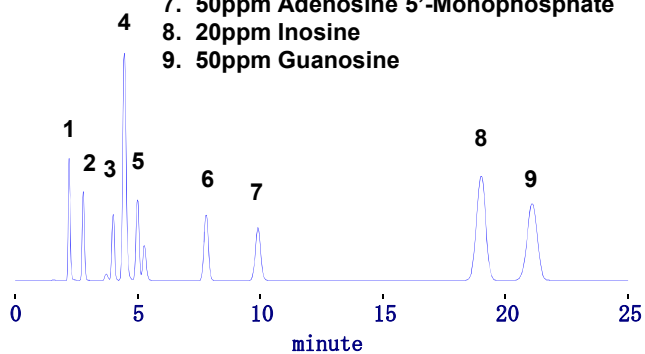


Column: Shodex C18-4D
Eluent: 20mM Phosphate buffer (pH2.5)
+ 10mM β-Cyclodextrin/CH₃CN= 8/1
Flow rate: 1.0mL/min
Column temperature: 50deg-C
Detector: UV 260nm

Nucleoside, Nucleotide

Sample: 10uL

1. 50ppm Cytidine 5'-Monophosphate
2. 10ppm Uridine 5'-Monophosphate
3. 5ppm Guanosine 5'-Monophosphate
4. 20ppm Adenosine 5'-triphosphate
5. 20ppm Cytidine
6. 20ppm Uridine
7. 50ppm Adenosine 5'-Monophosphate
8. 20ppm Inosine
9. 50ppm Guanosine



Column: Shodex C18-4D

Eluent: 0.1M KH₂ PO₄ (pH 5.8) 20mM Na₂SO₄

Flow rate: 1.0mL/min

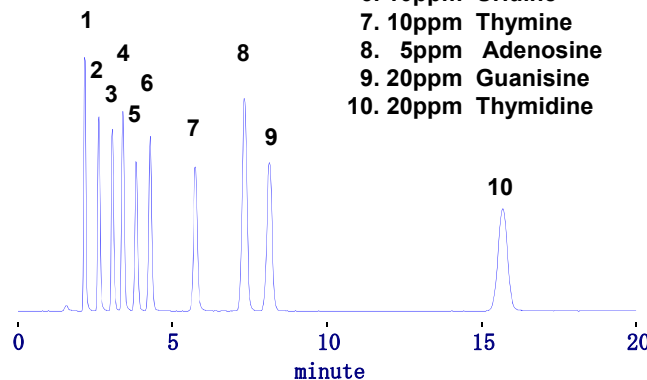
Column temperature: Room temperature

Detector: UV 254nm

Nucleic acid base, Nucleoside

Sample: 10uL

1. 5ppm Cytosine
2. 10ppm Uracil
3. 5ppm Guanine
4. 2ppm Adenine
5. 10ppm Cytidine
6. 10ppm Uridine
7. 10ppm Thymine
8. 5ppm Adenosine
9. 20ppm Guanosine
10. 20ppm Thymidine



Column: Shodex C18-4D

Eluent: 100mM Phosphate buffer (pH2.1)

0.2M NaClO₄

Flow rate: 1.0mL/min

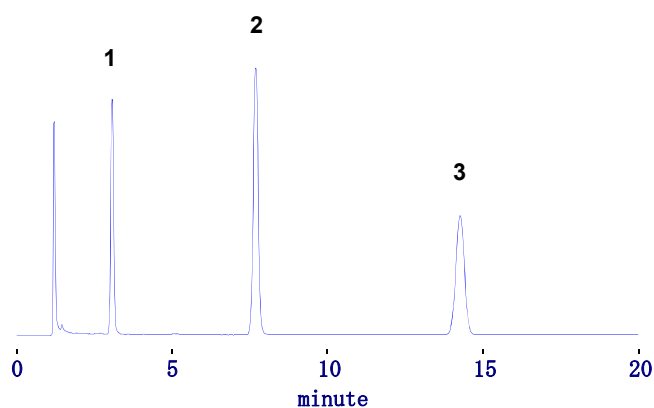
Column temperature: 50deg-C

Detector: UV 260nm

The component of the cold remedy (1)

Sample: 10uL

1. 5ppm Thiamine
2. 20ppm Noscipine
3. 10ppm Dextromethorphan



Column: Shodex C18-4D

Eluent: CH₃CN/H₂O/Phosphoric acid

= 510/490/1: 0.5% Sodium dodecyl sulfate

Flow rate: 1.0mL/min

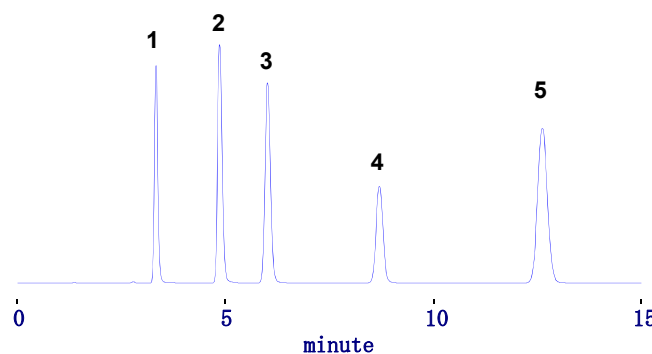
Column temperature: 50deg-C

Detector: UV 210nm

The component of the cold remedy (2)

Sample: 5uL

1. 50ppm Acetaminophen
2. 20ppm Caffeine
3. 20ppm Rivoflavin
4. 50ppm Potassium Guaicol-4-Sulfonate
5. 50ppm Phenol



Column: Shodex C18-4D

Eluent: H₂O/CH₃CN/

50mM Tetrabutylammonium hydrogensulfate=15/2/1
(pH2.7)

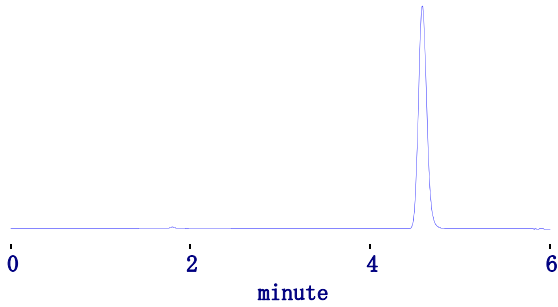
Flow rate: 1.0mL/min

Column temperature: 50deg-C

Detector: UV 280nm

Thiuram

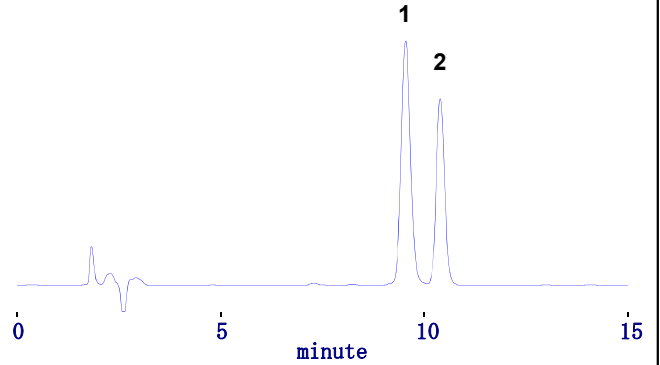
Sample: 5uL
10ppm Thiuram



Column: Shodex C18-4D
Eluent: CH₃CN/H₂O = 50/50
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 280nm

Glycyrrhizin

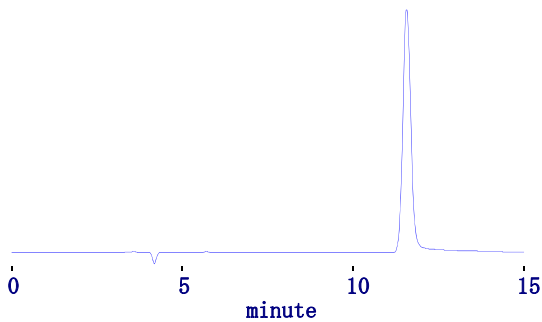
Sample: 10uL
1. 100ppm Glycyrrhizin
2. 10ppm Propyl Paraben



Column: Shodex C18-4D
Eluent: 15 times dilution acetic acid
aqueous solution/CH₃CN = 3/2
Flow rate: 0.7mL/min
Column temperature: 30deg-C
Detector: UV 254nm

Paeoniflorin

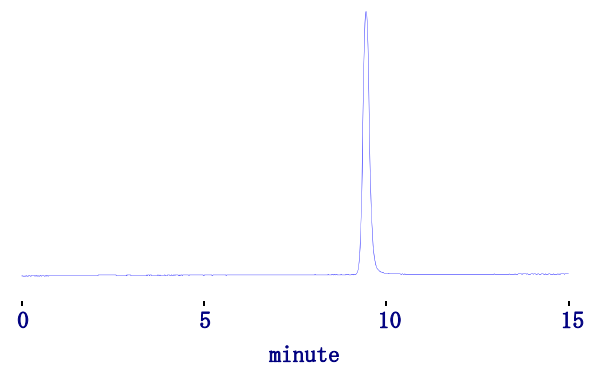
Sample: 20uL
10ppm Paeoniflorin



Column: Shodex C18-4D
Eluent: 10mM Sodium acetate (pH4.8)/CH₃CN= 5/1
Flow rate: 0.5mL/min
Column temperature: 40deg-C
Detector: UV 230nm

Berberine

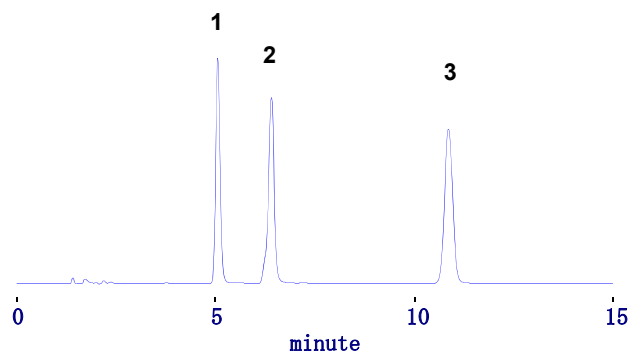
Sample: 20uL
10ppm Berberine



Column: Shodex C18-4D
Eluent:
The result of dissolving potassium dihydrogenphosphate
3.4g and sodium lauryl sulfate 1.7g
at water 1L/CH₃CN=1/1
Flow rate: 0.5mL/min
Column temperature: 40deg-C
Detector: UV 345nm

Water-soluble vitamin

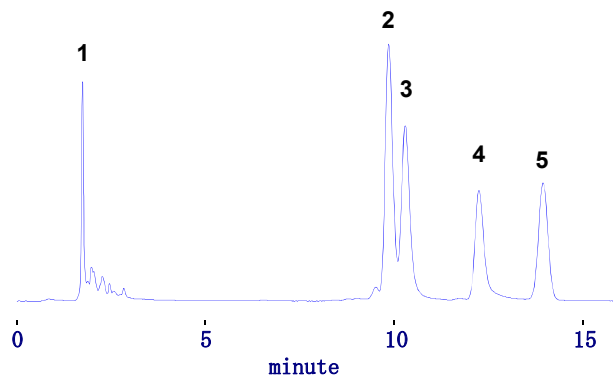
Sample: 10uL
1. 10ppm Pyridoxal
2. 10ppm Pyridoxine
3. 20ppm Pyridoxamine



Column: Shodex C18-4D
Eluent: 100mM Phosphate buffer (pH 2.1)
+50mM Hexane sodium sulphate/CH₃CN = 9/1
Flow rate: 1.0mL/min
Column temperature: 45deg-C
Detector: UV 210nm

Fat-soluble vitamin

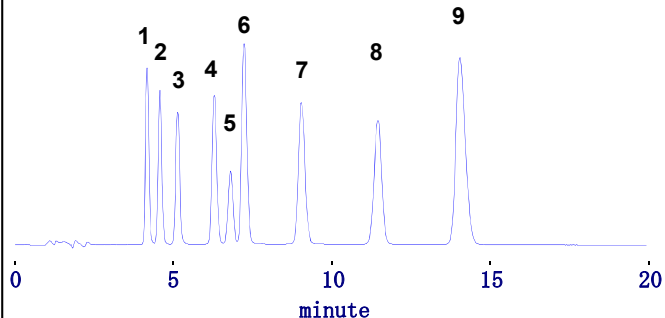
Sample: 20uL
1. 50ppm Vitamin A
2. 25ppm Vitamin D2
3. 25ppm Vitamin D3
4. 100ppm Vitamin E
5. 100ppm Tocopherol Acetate



Column: Shodex C18-4D
Eluent: CH₃CN 100%
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 280nm

Catecholamine

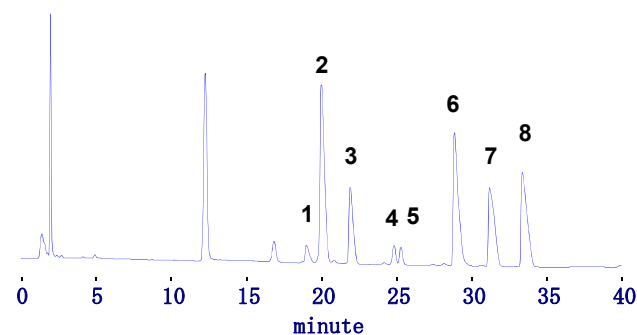
Sample: 10uL
1. 20ppm Norepinephrine
2. 30ppm Epinephrine
3. 30ppm 3,4-Dihydroxyphenylacetic acid
4. 50ppm Normetanephrine
5. 50ppm Dopamine
6. 5ppm 5-Hydroxyindole-3-acetic acid
7. 50ppm Isoproterenol
8. 50ppm Homovanilic acid
9. 50ppm 5-Hydroxytryptamine



Column: Shodex C18-4D
Eluent: 0.1M Citric acid, 0.1M Sodium acetate (pH4)
/17%CH₃OH
1-Octane sodium sulphonate 160mg/L
EDTA 5mg/L
Flow rate: 1.0mL/min
Column temperature: 25deg-C
Detector: UV (280nm)

Bile acid

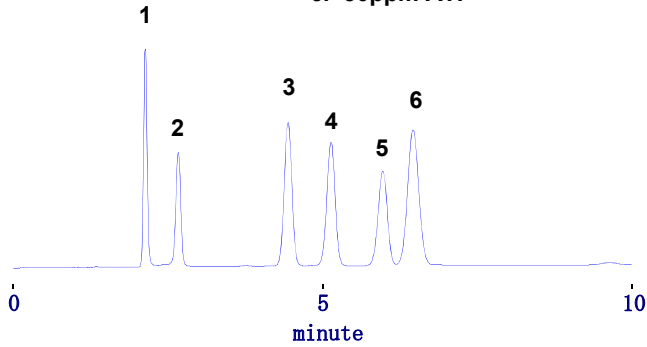
Sample: 20uL, 1000ppm each
1. Cholic acid
2. Glucocholic acid
3. Taurocholic acid
4. Chenodeoxycholic acid
5. Glucochenodeoxycholic acid
6. Deoxycholic acid
7. Taurochenodeoxycholic acid
8. Taurodeoxycholic acid



Column: Shodex C18-4D
Eluent: CH₃CN/30mM (NH₄)₂HPO₄ (pH 7.2 NH₄H₂PO₄)
A=10/90, B=50/50
30%B → 85%B (55 min)
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 217nm

The freshness K value

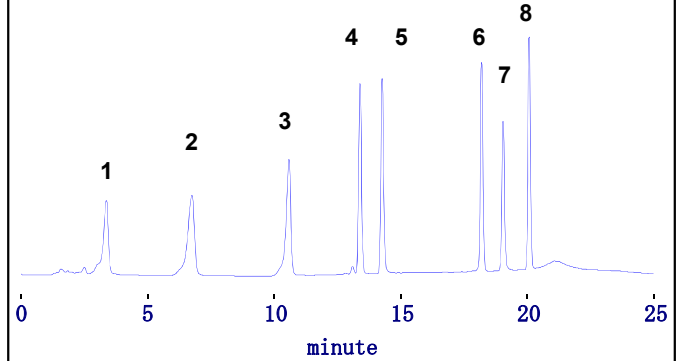
- Sample: 10uL
1. 5ppm Hypoxanthine
 2. 10ppm IMP
 3. 30ppm ADP
 4. 30ppm AMP
 5. 10ppm Inosine
 6. 50ppm ATP



Column: Shodex C18-4D
Eluent: 24mM 2-Diethylaminoethanol is contained
16mM Citric acid aqueous solution
Flow rate: 2.0mL/min
Column temperature: 40deg-C
Detector: UV 250nm

The phenolic system antioxidant

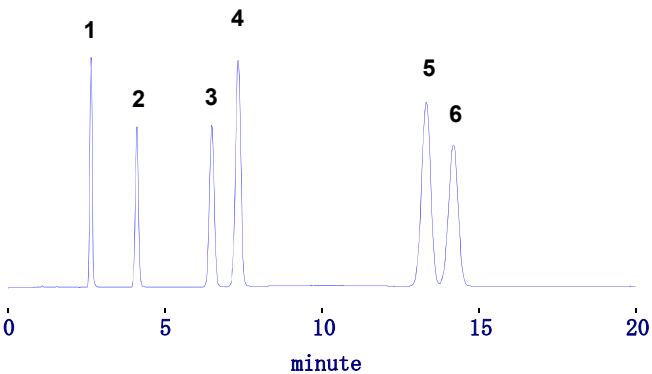
- Sample: 20uL
- | | |
|--------------|--------------|
| 1. 1ppm PG | 2. 5ppm THMB |
| 3. 3ppm NDGA | 4. 5ppm BHA |
| 5. 2ppm OG | 6. 5ppm HMBP |
| 7. 2ppm DG | 8. 5ppm BHT |



Column: Shodex C18-4D
Eluent: A:10mM Phosphoric acid buffer (pH2.6)
B:10mM Phosphoric acid buffer (pH2.6)
/CH3CN=1/9
40%B(0-4min)→73%B(4.01min-10min) →
100%B(10.01min-16min)→40%B(16.01min-25min)
Flow rate: 1.0mL/min
Column temperature: 40deg-C
Detector: UV 280nm

Paraben

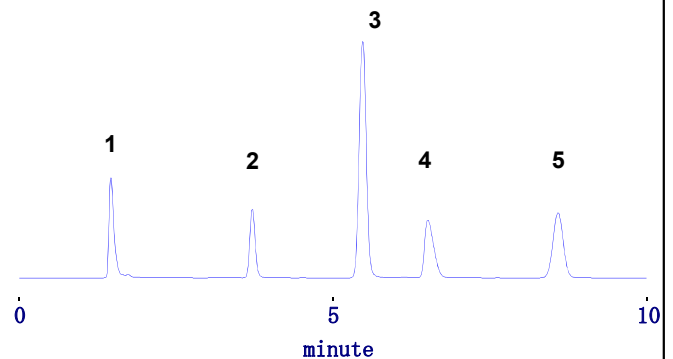
- Sample: 10uL
1. 10ppm Methyl Paraben
 2. 10ppm Ethyl Paraben
 3. 10ppm Isopropyl Paraben
 4. 25ppm Propyl Paraben
 5. 25ppm Isobutyl Paraben
 6. 50ppm Butyl Paraben



Column: Shodex C18-4D
Eluent: 10mM Phosphate buffer (pH 2.6)/CH₃OH = 1/1
Flow rate: 1.5mL/min
Column temperature: 40deg-C
Detector: UV 270nm

The component of the anti-inflammatory agent

- Sample: 10uL
1. 5ppm Salicylic acid
 2. 5ppm Diphenhydramine
 3. 5ppm Methyl Salicylate
 4. 2000ppm dl-Camphor
 5. 5ppm Thymol



Column: Shodex C18-4D
Eluent: 10mM Phosphate buffer (pH2.6)
+ 20mM Heptane sodium sulphonate
/CH₃OH/CH₃CN = 3/2/2
Flow rate: 1.0mL/min
Column temperature: 45deg-C
Detector: UV 210nm