

Applications Journal

V7801

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This Applications Journal was designed to provide you with detailed information on the chromatographic conditions used with a variety of HPLC applications. With our extensive line of HPLC products and expert technical service we are positioned to fulfill all of your separation needs.

We invite requests for support with collaborative studies and method validation projects in cooperation with our application laboratory. We look forward to discussing with you how we can support your applications with our HPLC columns and HPLC equipment.

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Environmental Applications

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1 Determination of multiple Additives in cosmetics

Method
HPLC

Matrix
cosmetics

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol / Water (35:65), adjusted to pH 2.5 with Phosphoric Acid
 Gradient: 26 min linear gradient to Methanol / Phosphoric Acid (1000:1)
 12 min final elution
 Flow rate: 1.0 ml/min
 Temperature: RT
 Volume: 20 µl (50 µg/ml of each component)

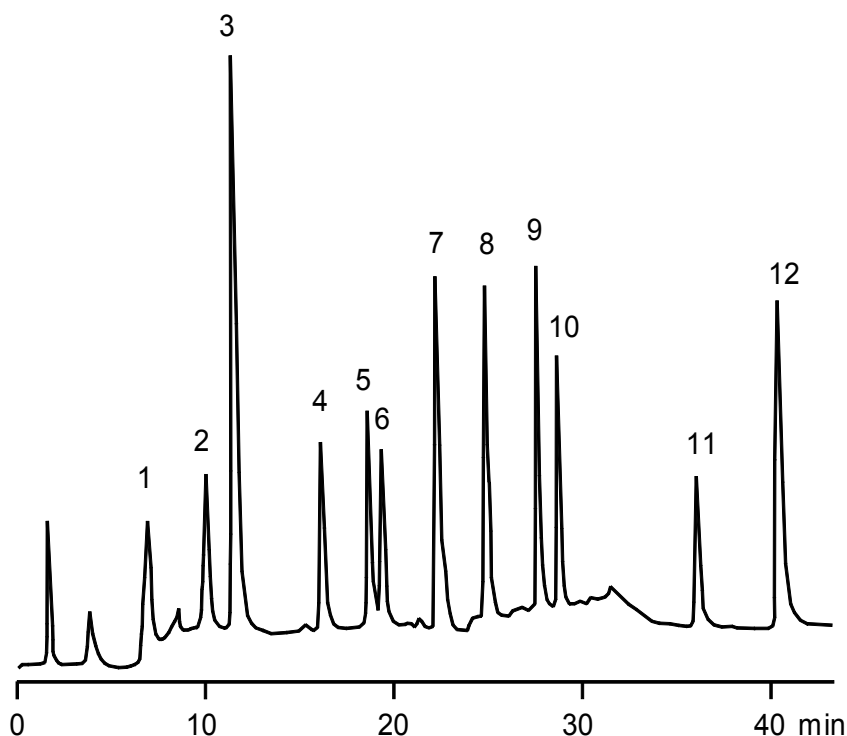
Detection: UV at variable wavelengths (205 nm, 230 nm, 255 nm, 285 nm)

Substances: Benzyl nicotinate, Butyl p-hydroxybenzoate, 2,6-Di-tert.-butyl-4-methylphenol, 4-Isopropyl-3-methylphenol, Methyl p-hydroxybenzoate, Monoammonium glycyrrhizinate, Pantothenylethylether, Pyridoxine dioctanoate, Salicylic acid, Stearyl glycyrrhetinate, Trichlorocarbanilide, Tocopheryl acetate

Keywords: Additives

Chromatogram:

1. Pantothenyl ethyl
2. Methyl p-hydroxybenzoate
3. Salicylic acid
4. Benzyl nicotinate
5. 4-Isopropyl-3-methylphenol
6. Butyl p-hydroxybenzoate
7. Monoammonium glycyrrhizinate
8. Trichlorocarbanilide
9. 2,6-Di-tert.-butyl-4-methylphenol
10. Pyridoxine dioctanoate
11. Tocopheryl acetate
12. Stearyl glycyrrhetinate

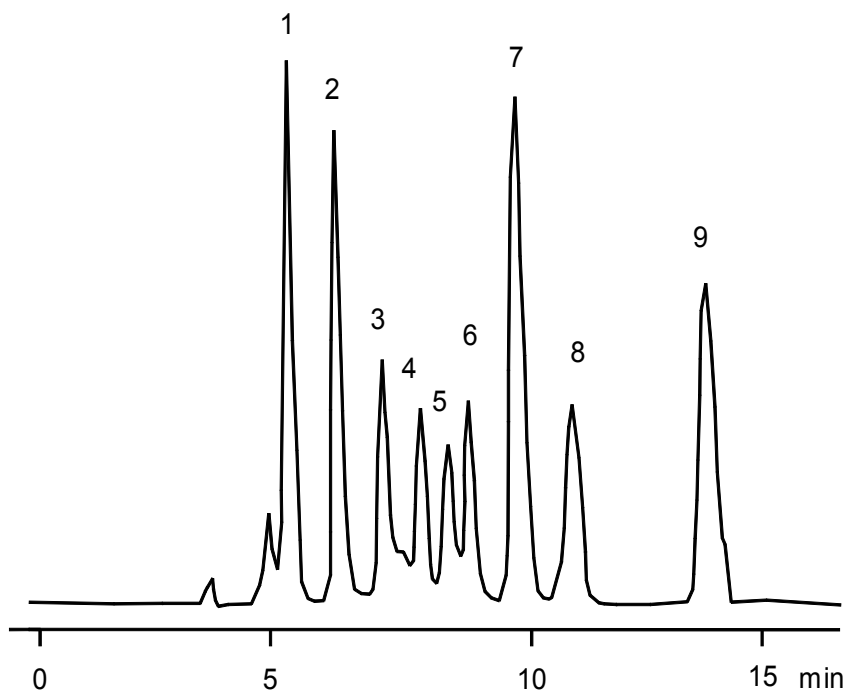


2 Determination of Aldehydes and Ketones as DNPH derivatives

Method	Matrix	
HPLC	natural gas	
	Collection on a DNPH coated solid phase cartridge, elution with methanol	
Column:	Eurospher 100-5 C18, 250 x 4 mm ID	Order No. 25DE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: Methanol / Water (84:16) Gradient: isocratic Flow rate: 0.7 ml/min Temperature: 30 °C Volume: 10 µl	
Detection:	UV at 365 nm	
Substances:	DNPH derivatives of Formaldehyde, Acetaldehyde, Acrolein, Propionaldehyde, Acetone, Butyraldehyde, Methacrolein, Methyl ethyl ketone, Pentanone, Cyclohexanone	
Keywords:	Aldehydes, Carbonyl compounds, Ketones	

Chromatogram:

1. DNPH
2. Formaldehyde
3. Acetaldehyde
4. Acrolein
5. Propionaldehyde
6. Acetone
7. n-Butyraldehyde and Methacrolein
8. Methyl ethyl ketone
9. 2-Pentanone and Cyclohexanon



3 Ion pair chromatography of Alkyl Sulphates and Alkyl Sulphosuccinates

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: 0.01 M aqueous Tetrabutylammonium Sulphate / Methanol (23:77), adjusted to pH 3.0 with 0.01 M HCl
Gradient: isocratic
Flow rate: 2.0 ml/min
Temperature: ambient
Volume: 50 µl

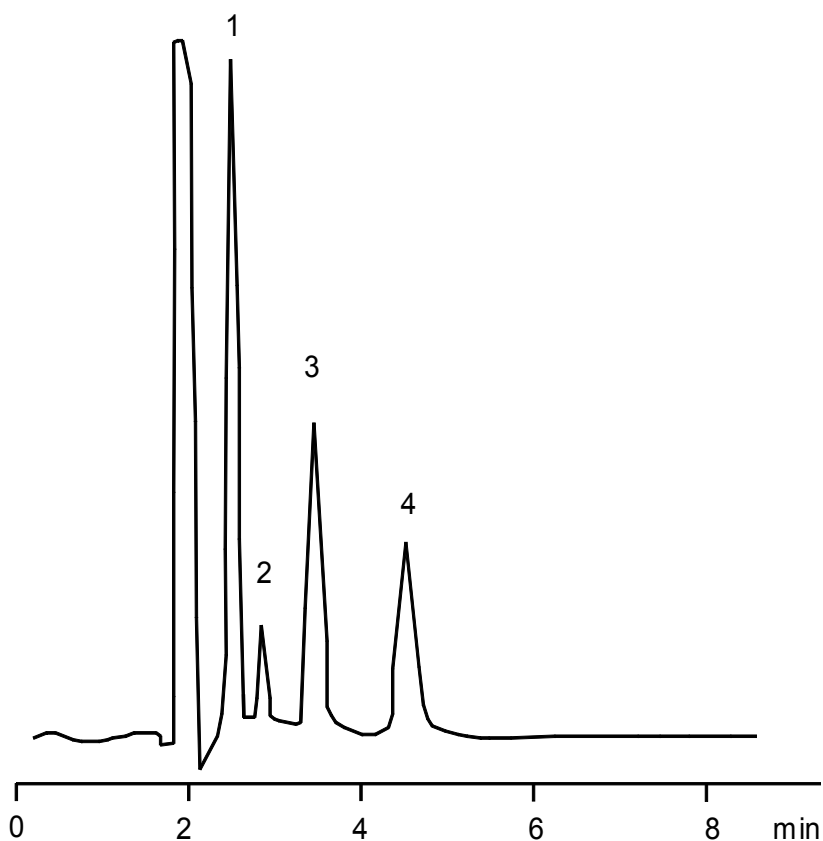
Detection: Refractive Index

Substances: Octyl Hydrogen Sulphate, C10 Sulphosuccinate, C12 Sulphosuccinate, C14 Sulphosuccinate

Keywords: Surfactants

Chromatogram:

1. Octyl hydrogen sulphate
2. C10 Sulphosuccinate
3. C12 Sulphosuccinate
4. C14 Sulphosuccinate



4 Anion determination according to U.S. EPA Method 300.0 / 317.0 and 326.0 with suppressed conductivity

Method
HPLC

Matrix

Column: Novosep A-2 Anion, 5 µm, 250 x 4 mm ID

Order No. B92

Phase: Novosep A-2 Anion

Conditions: Eluent: 3.6 mM Sodium Carbonate (Na₂CO₃)
Gradient: isocratic
Flow rate: 0.8 ml/min
Temperature: 45 °C
Volume: 50 µl (Chromatogram for a mixture of anions with concentration of 0.25 ppm)

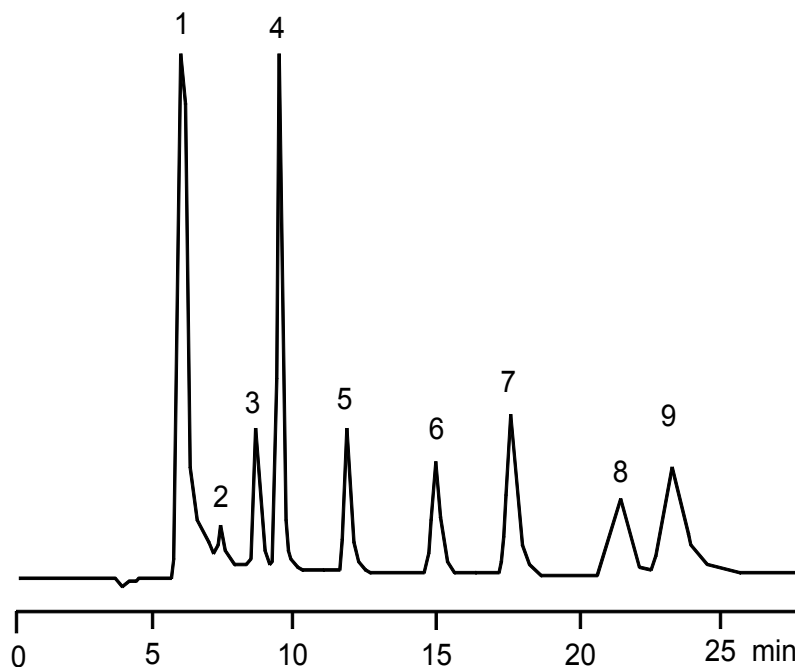
Detection: suppressed Conductivity (Alltech Model 650), Range 0.5 µS

Substances: Fluoride, Bromate, Chloride, Nitrite, Bromide, Nitrate, Phosphate, Sulfate

Keywords: Anions

Chromatogram:

1. Fluoride
2. n.n.
3. Bromate
4. Chloride
5. Nitrite
6. Bromide
7. Nitrate
8. Phosphate
9. Sulfate



5 Determination of Anions with Ion pair chromatography and indirect UV detection

Method
HPLC

Matrix

Column:

Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase:

Eurospher 100-5 C18

Conditions:

Eluent: 0.11 % Acetyl trimethylammonium p-toluenesulphonate +
0.002 M p-Toluenesulphonate in Acetonitrile / Water (39:61),
adjusted to pH 5.5 - 6 with Ammonium hydroxide
Temperature: ambient
Flow rate: 1.5 ml/min
Volume: 10 µl

Detection:

UV at 236 nm and 254 nm,
Chromatograms for a mixture of anions (1µg each, S.P. = system peak)

Substances:

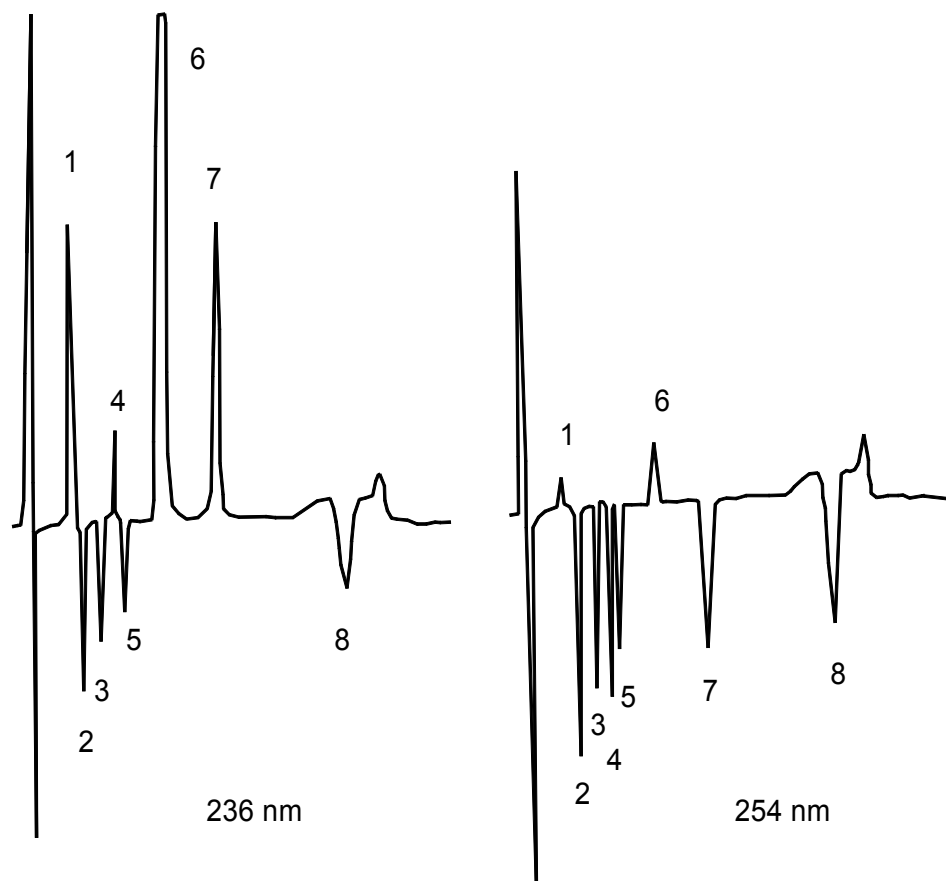
Cl⁻, ClO₃⁻, SO₄²⁻, NO₃⁻, I⁻, IO₃⁻, SCN⁻, Br⁻

Keywords:

Anions

Chromatogram:

1. IO₃⁻
2. Cl⁻
3. Br⁻
4. NO₃⁻
5. ClO₃⁻
6. I⁻
7. SCN⁻
8. SO₄²⁻



6 Determination of Carbamate Insecticides by HPLC with post-column derivatization

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: A: Water B: Methanol
 Gradient: 0 – 0.5 isocratic, 82 % A
 0.5 – 29 linear, 82 – 30 % A
 29 – 31 isocratic, 100 % B, column rinsing
 31 – 36 isocratic, 82 % A, re-equalibration
 Flow rate: 1.0 ml/min
 Temperature: 42 °C
 Volume: 10 µl

Post-column derivatization two step reaction
 1st Reactor (500 µl): 100 °C for first derivatization step with NaOH
 2nd Reactor (150 µl): ambient with OPA and 2-mercaptoethanol derivative

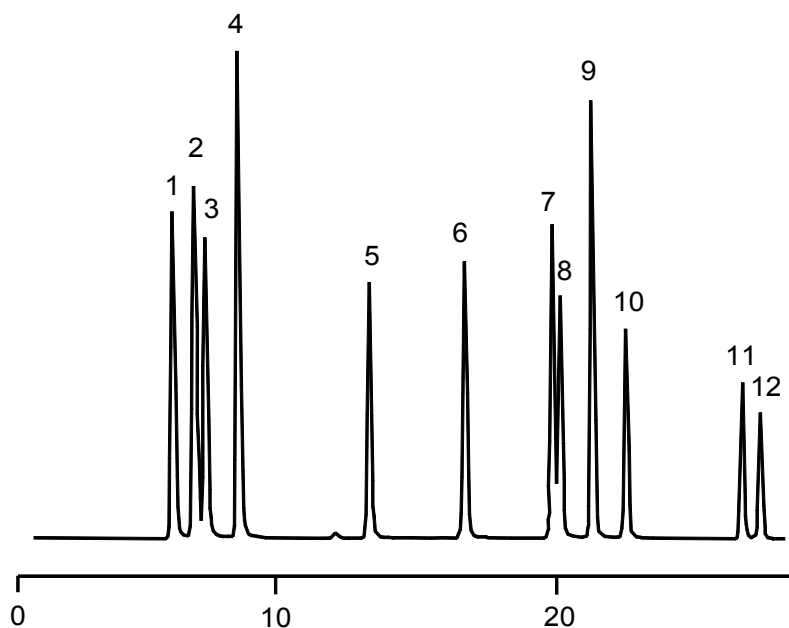
Detection: Fluorescence: excitation 330 nm, emission 465 nm

Substances: Aldicarb, Aldicarb sulphoxide, Aldicarb sulphone, BDMC, Carbaryl, Carbofuran, 3-Hydroxycarbofuran, Methiocarb, Methomyl, 1-Naphtol, Oxamyl, Propoxur

Keywords: Carbamates, Insecticides

Chromatogram:

1. Aldicarb sulphoxide
2. Aldicarb sulphone
3. Oxamyl
4. Methomyl
5. 3-Hydroxycarbofuran
6. Aldicarb
7. Propoxur
8. Carbofuran
9. Carbaryl
10. 1- Naphtol
11. Methiocarb
12. BDMC



7 Determination of monovalent Cations

Method **Matrix**
HPLC

Column: PRP-X 200, 150 x 4.1 mm with Precolumn

Order No. B89

Phase: PRP-X 200, cation exchange resin

Conditions: Eluent: 4 mM Nitric Acid in 30 % MeOH
 Gradient: isocratic
 Flow rate: 1.7 ml/min
 Temperature: 35 °C
 Volume: 20 µl

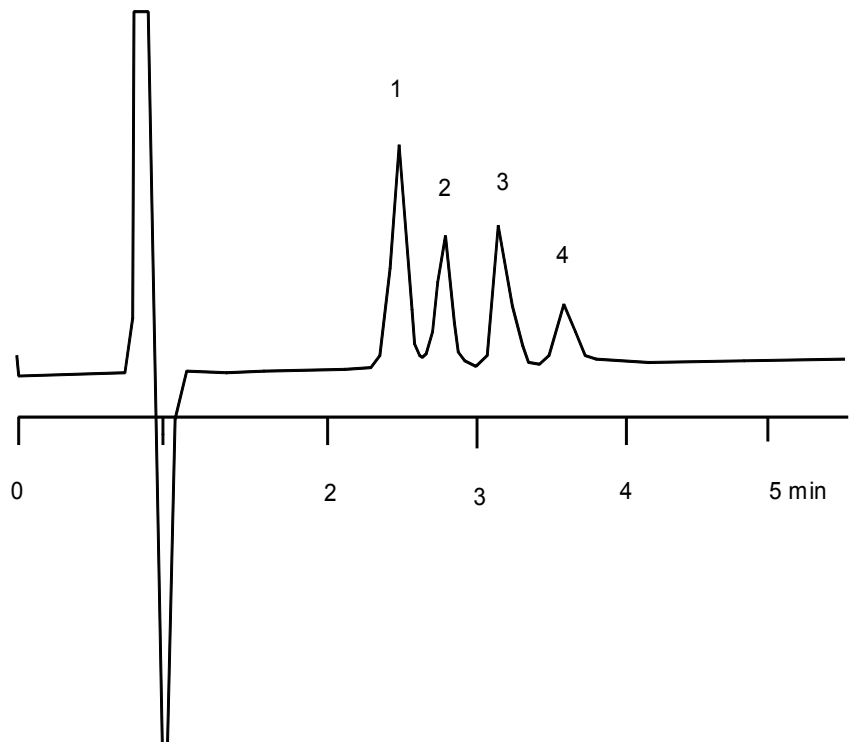
Detection: Conductivity (negative Polarity)

Substances: Ammonium, Lithium, Potassium, Sodium

Keywords: Cations, monovalent

Chromatogram:

1. Lithium (5.0 ppm)
2. Sodium (10.0 ppm)
3. Ammonium (10.0 ppm)
4. Potassium (10.0 ppm)



8 Determination of divalent Cations

Method **Matrix**
HPLC

Column: PRP-X 200, 150 x 4.1 mm with Precolumn

Order No. B89

Phase: PRP-X 200, cation exchange resin

Conditions: Eluent: 1.5 mM Ethylene Diammonium Dichloride
 Gradient: isocratic
 Flow rate: 2.0 ml/min
 Temperature: 35 °C
 Volume: 10 µl

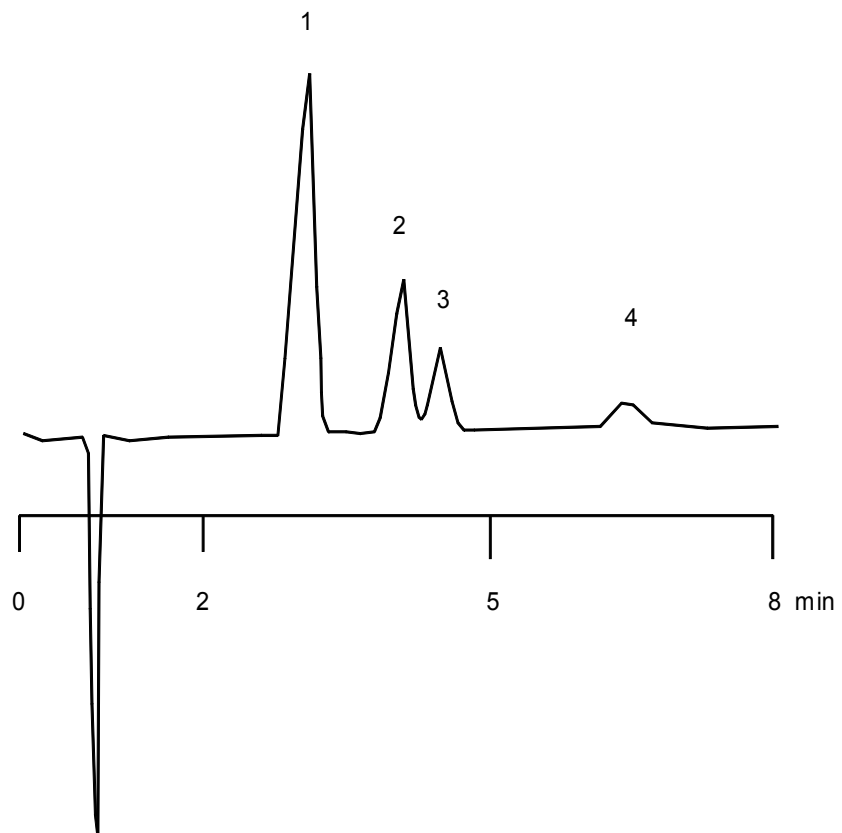
Detection: Conductivity (negative Polarity)

Substances: Barium, Calcium, Magnesium, Strontium

Keywords: Cations, divalent

Chromatogram:

1. Magnesium (20.0 ppm)
2. Calcium (20.0 ppm)
3. Strontium (20.0 ppm)
4. Barium (20.0 ppm)



9 Separation of Explosives

Method HPLC

Matrix

Column:

Ultra Sep ES EX, 250 x 3 mm ID

Order No. I0034

Conditions:

Eluent: A: Methanol B: Water
 Gradient: linear, 25-60 % Methanol in 40 min,
 5 min hold and equilibrate column
 5 min with 25 % A for next injection
 Flow rate: 0.8 ml/min
 Temperature: 40 °C
 Volume: 10 µl

Detection:

UV at 235 nm

Substances:

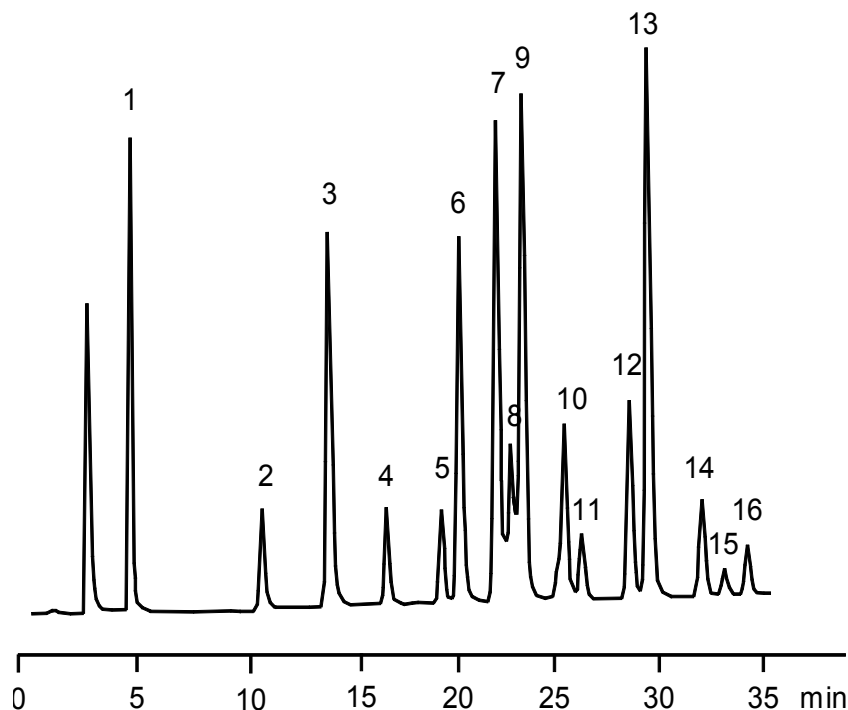
2-Amino-4,6-dinitrotoluene, 4-Amino-2,6-dinitrotoluene, 2-Amino-4-nitrotoluene, 2-Amino-6-nitrotoluene, 1,3-Dinitrobenzene, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Hexogen, Nitrobenzene, 2-Nitrotoluene, 4-Nitrotoluene, 3-Nitrotoluene, Octogen, Tetryl

Keywords:

Explosives, EPA 8330

Chromatogram:

1. Octogen
2. Hexogen
3. 1,3,5-Trinitrobenzene
4. 2-Amino-6-nitrotoluene
5. 2-Amino-4-nitrotoluene
6. 1,3-Dinitrobenzene
7. Tetryl
8. Nitrobenzene
9. 2,4,6-Trinitrotoluene
10. 4-Amino-2,6-dinitrotoluene
11. 2-Amino-4,6-dinitrotoluene
12. 2,6-Dinitrotoluene
13. 2,4-Dinitrotoluene
14. 2-Nitrotoluene
15. 4-Nitrotoluene
16. 3-Nitrotoluene



10 Biomonitoring of Hydroxypyrene

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: A: ACN B: H₂O
Gradient: linear 60 % A in 28 min to 100 % A, 5 min hold, equilibrate column
10 min with 60 % A for next injection
Flow rate: 1.0 ml/min
Temperature: 30 °C
Volume: 10 µl

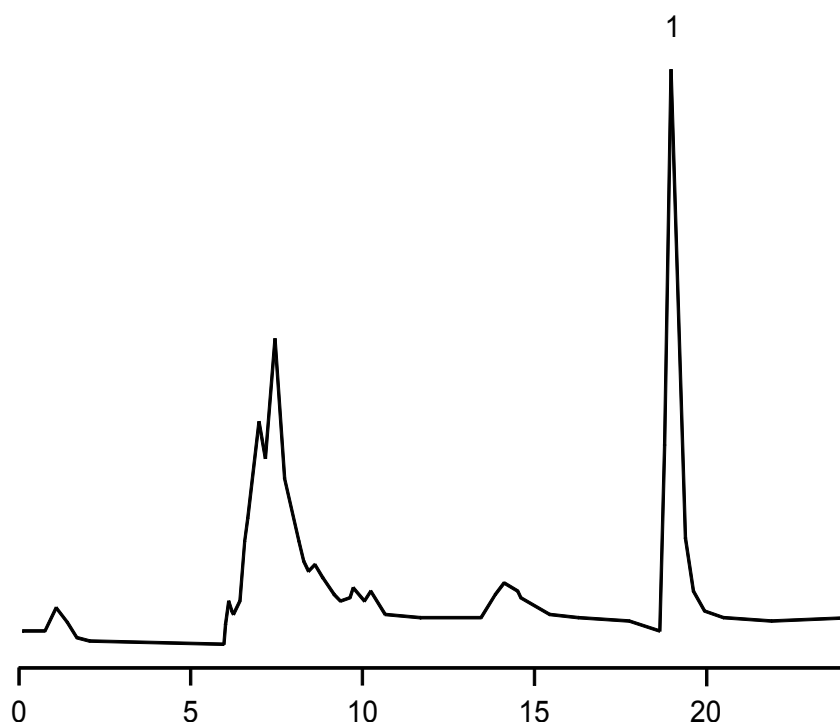
Detection: Fluorescence: excitation 242 nm, emission 388 nm

Substances: Hydroxypyrene, Biomarker of PAH contamination

Keywords: Hydroxypyrene

Chromatogram:

1. Hydroxypyrene



11 Determination of Ketones as DNPH Derivates

Method
HPLC

Matrix

Column: ProntoSIL 120-3 C18 AQ, 250 x 3 mm ID

Order No. 15DF080PSJ

Phase: ProntoSIL 120-3 C18 AQ

Conditions: Eluent: A: Water B: Acetonitrile
Gradient: 10 – 100 % B in 18 min
Flow rate: 0.35 ml/min
Temperature: 30 °C
Volume: 2 µl

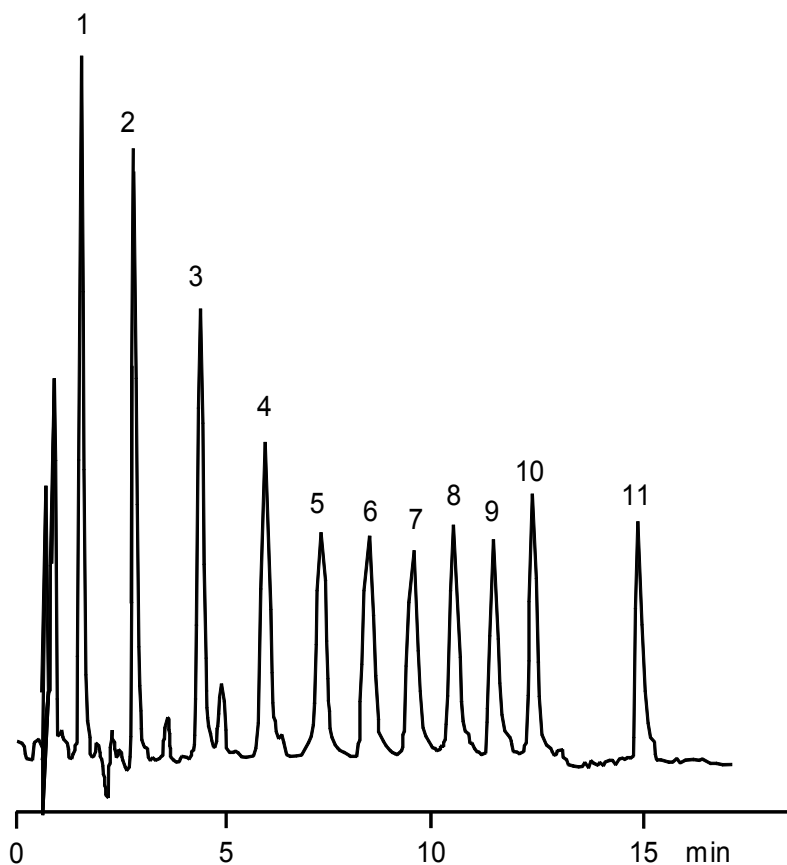
Detection: UV at 270 nm

Substances: DNPH derivates of Formaldehyde, Acetaldehyde, Acrolein, Propionaldehyde, Acetone, Butyraldehyde, Methacrolein, Methyl ethyl ketone, Pentanone, Cyclohexanone

Keywords: Aldehydes, Carbonyl compounds, Ketones

Chromatogram:

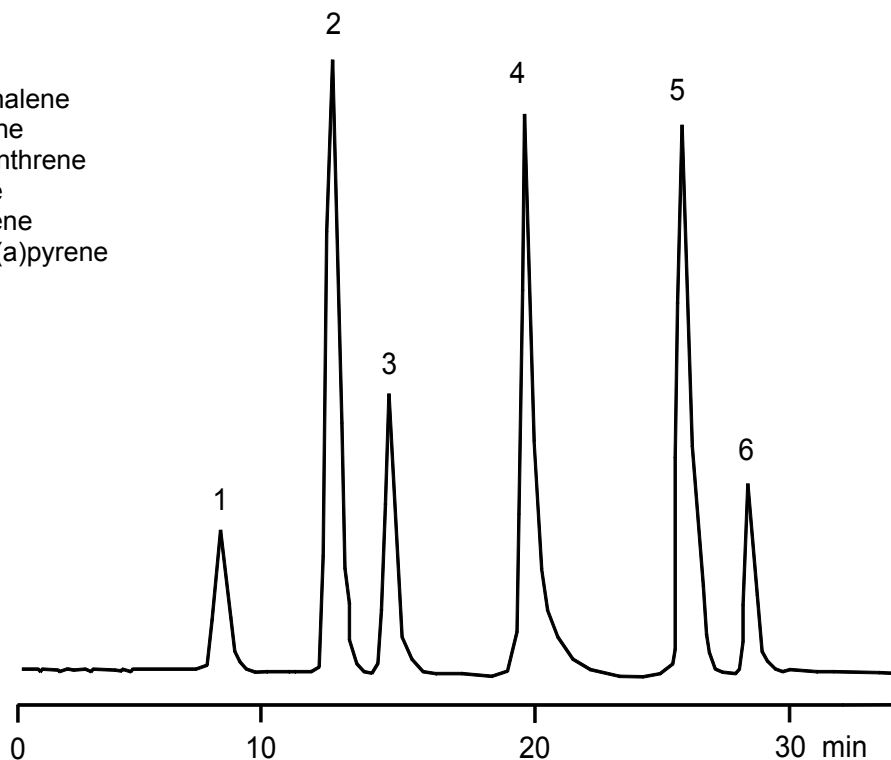
1. Tetramethylketone
2. 2-Pentanone
3. 2-Hexanone
4. 2-Heptanone
5. 2-Octanone
6. 2-Nonanone
7. 2-Decanone
8. 2-Undecanone
9. 2-Dodecanone
10. 2-Tridecanone
11. 2-Hexadecanone



12 Analysis of Nitro Polycyclic Aromatic Hydrocarbons

Method
HPLC**Matrix****Column:** ProntoSIL 120-3 Phenyl, 125 x 4 mm ID **Order No.** 12DF050PSG**Phase:** ProntoSIL 120-3 Phenyl**Conditions:** Eluent: A: Methanol / Water (60:40) B: Methanol
Gradient: 100 % A for 13 min
0 – 100 % B in 29 min
Flow rate: 0.8 ml/min
Temperature: 25 °C
Volume: 2 µl**Detection:** Fluorescence (wavelength program)**Substances:** 2-Nitro-Naphthalene, 2-Nitro-Fluorene, 9-Nitro-Phenanthrene,
1-Nitro-Pyrene, 6-Nitro-Chrysene, 6-Nitro-Benzo(a)pyrene**Keywords:** Nitro-PAH**Chromatogram:**

1. Nitro-Naphthalene
2. Nitro-Fluorene
3. Nitro-Phenanthrene
4. Nitro-Pyrene
5. Nitro-Chrysene
6. Nitro-Benzo(a)pyrene



13 Separation of ortho-, nitro- para Nitroaniline

Method **Matrix**
HPLC

Column: Eurospher 100-5 Si, 120 x 4 mm ID

Order No. 11DE000ESJ

Phase: Eurospher 100-5 Si

Conditions: Eluent: A: Heptan B: Ethanol
 Gradient: isocratic (85 % A / 15 % B)
 Flow rate: 1.0 ml/min
 Temperature: 30 °C
 Volume: 10 µl

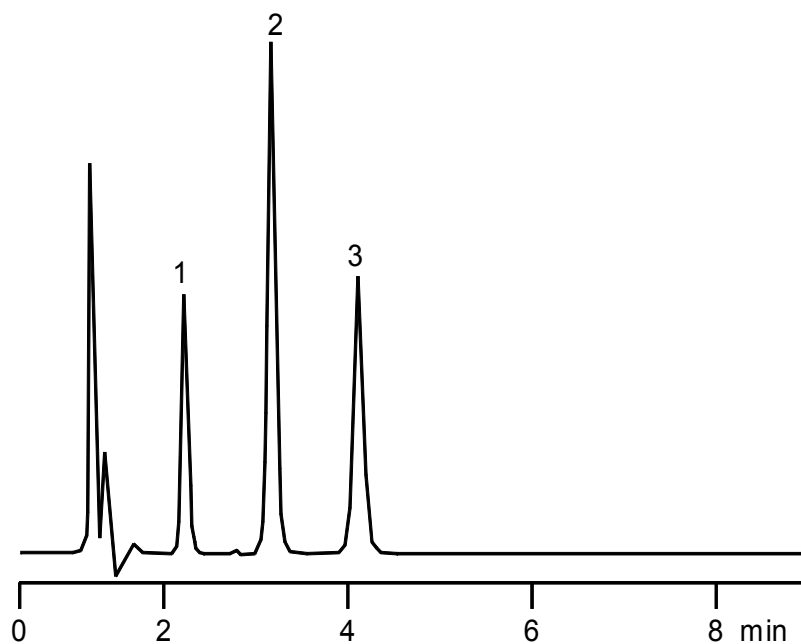
Detection: UV at 225 nm

Substances: 2-Nitroaniline, 3-Nitroaniline, 4-Nitroaniline

Keywords: Nitroaniline

Chromatogram:

1. 2-Nitroaniline
2. 3-Nitroaniline
3. 4-Nitroaniline

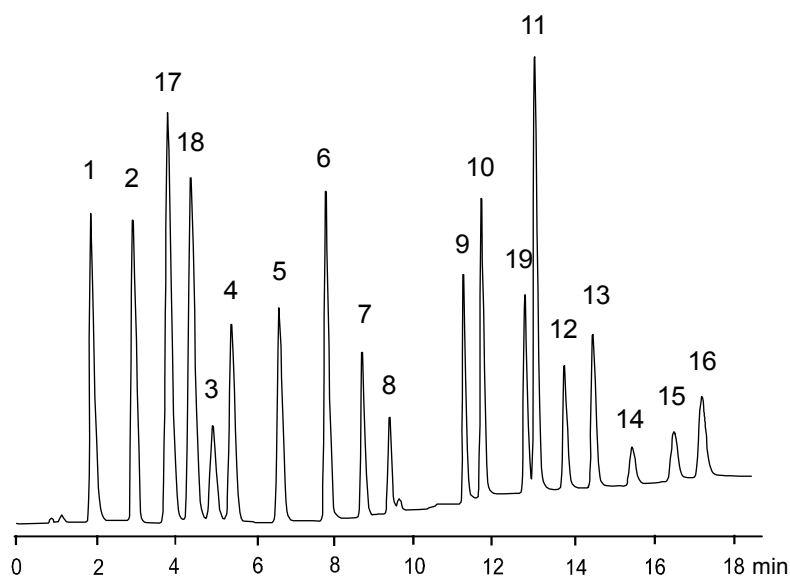


14 Fast Determination of PAH

Method	Matrix	
HPLC		
Column:	UltraSep ES PAH QC, 60 x 2 mm ID	Order No. I0019
Phase:	UltraSep ES PAH QC	
Conditions:	Eluent: A: Water / B: Acetonitrile Gradient: 55 % B at start; 55 % B 0-5 min; 100 % B from 5-12 min, 8 min hold Flow rate: 0.7 ml/min Temperature: 30 °C	
Detection:	UV at 254 nm and/or Fluorescence (wavelength program)	
Substances:	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyrene, 1-Methylnaphthalene, 2-Methylnaphthalene, Benzo(e)pyrene	
Keywords:	Polycyclic aromatic hydrocarbons	

Chromatogram:

1. Naphthalene
2. Acenaphthylene
3. Acenaphthene
4. Fluorene
5. Phenanthrene
6. Anthracene
7. Fluoranthene
8. Pyrene
9. Benzo(a)anthracene
10. Chrysene
11. Benzo(b)fluoranthene
12. Benzo(k)fluoranthene
13. Benzo(a)pyrene
14. Dibenzo(a,h)anthracene
15. Benzo(g,h,i)perylene
16. Indeno(1,2,3-cd)pyrene
17. 1-Methylnaphthalene
18. 2-Methylnaphthalene
19. Benzo(e)pyrene

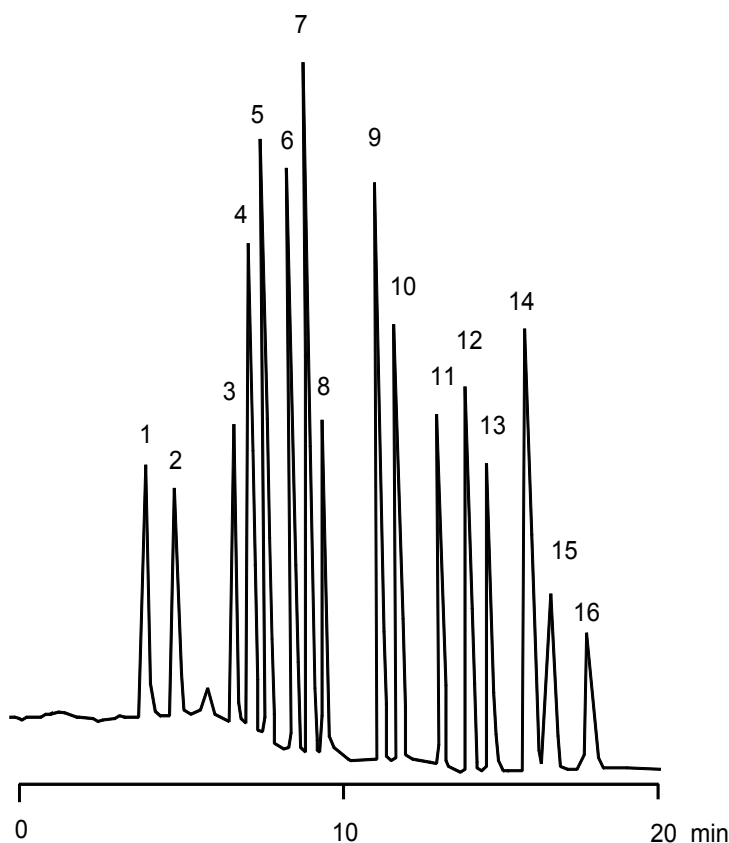


15 Fast Separation of PAHs on a 2 mm ID column

Method	Matrix	
HPLC		
Column:	Eurospher 100-3 C18, 250 x 2 mm	Order No. 25BE181ESG
Conditions:	Eluent: A: MeOH / Water (80:20) B: ACN / THF (93:7)	
	Gradient: linear 0-100 % B in 15 min, 5 min hold; equilibrate column 10 min with 100 % A for next injection	
	Flow rate: 0.2 ml/min	
	Temperature: 30 °C	
	Volume: 5 µl	
Detection:	Fluorescence, wavelength program (excitation / emission): 1. 275/350 nm, 2. 260/390 nm, 3. 260/420 nm, 4. 290/430 nm, 5. 300/500 nm UV at 254 nm	
Substances:	Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyren	
Keywords:	16 PAH's according to EPA (550.1 / 610 / 8310)	

Chromatogram:

1. Naphthalene
2. Acenaphthylene
3. Acenaphthene
4. Fluorene
5. Phenanthrene
6. Anthracene
7. Fluoranthene
8. Pyrene
9. Benzo(a)anthracene
10. Chrysene
11. Benzo(b)fluoranthene
12. Benzo(k)fluoranthene
13. Benzo(a)pyrene
14. Dibenzo(a,h)anthracene
15. Benzo(g,h,i)perylene
16. Indeno(1,2,3-cd)pyrene



16 Separation of Parabens

Method
HPLC

Matrix

Column: ProntoSIL 120-3 Phenyl, 125 x 4 mm ID

Order No. 12DF050PSG

Phase: ProntoSIL 120-3 Phenyl

Conditions: Eluent: 20 mM Potassium Hydrogen Phosphate (KHPO₄) / Acetonitrile (50:50)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 40 °C
Volume: 10 µl

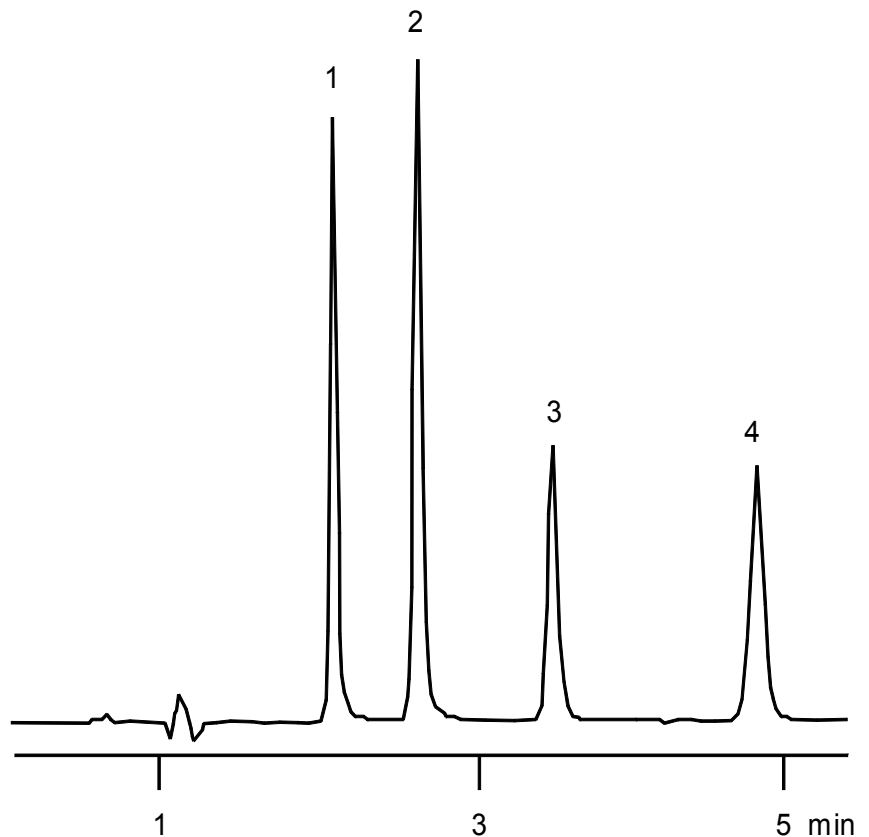
Detection: UV at 254 nm

Substances: Methylparabene, Ethylparabene, Propylparabene, Butylparabene

Keywords: Parabenes

Chromatogram:

1. Methylparabene
2. Ethylparabene
3. Propylparabene
4. Butylparabene



17 Chromatographic determination of Pesticides

Method
HPLC

Matrix

Column:

UltraSep ES PEST, 250 x 3 mm ID

Order No. I0025

Phase:

UltraSep ES PEST

Conditions:

Eluent: ACN / Water
 Gradient: from 20 to 26 % ACN within 5 min,
 26 to 30 % ACN within 19 min
 30 to 60 % within 12 min
 Flow rate: 0.9 ml/min
 Temperature: 30 °C
 Volume: 10 µl

Detection:

UV at 215 nm and 230 nm

Substances:

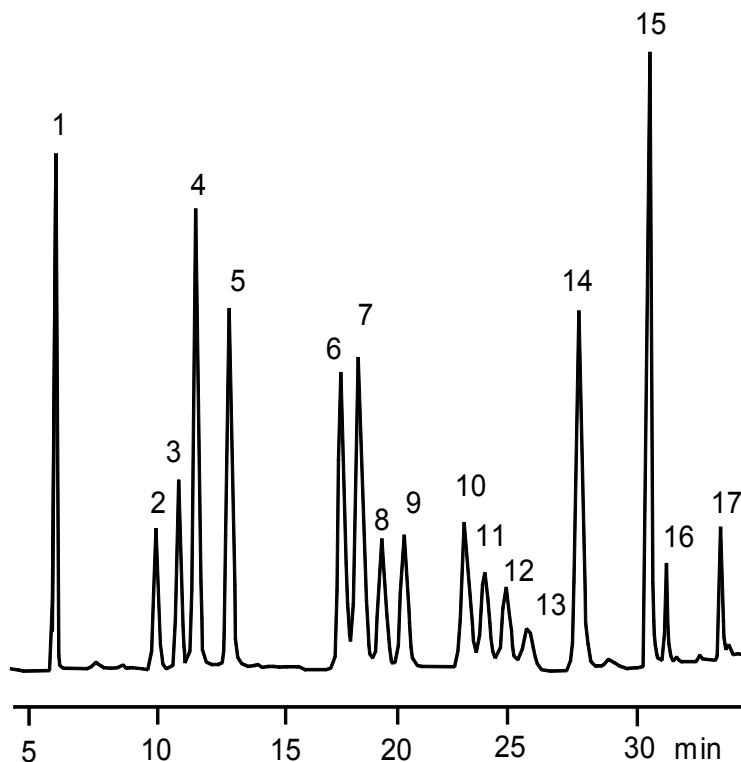
Atrazine, Chlortoluron, Cyanazin, Desethylatrazine, Diuron, Hexazinon, Isoproturon, Linuron, Metoxuron, Methabenzthiazuron, Metolachlor, Metobromuron, Metazachlor, Monolinuron, Sebuthylazin, Simazin, Terbutylazine

Keywords:

Pesticides

Chromatogram:

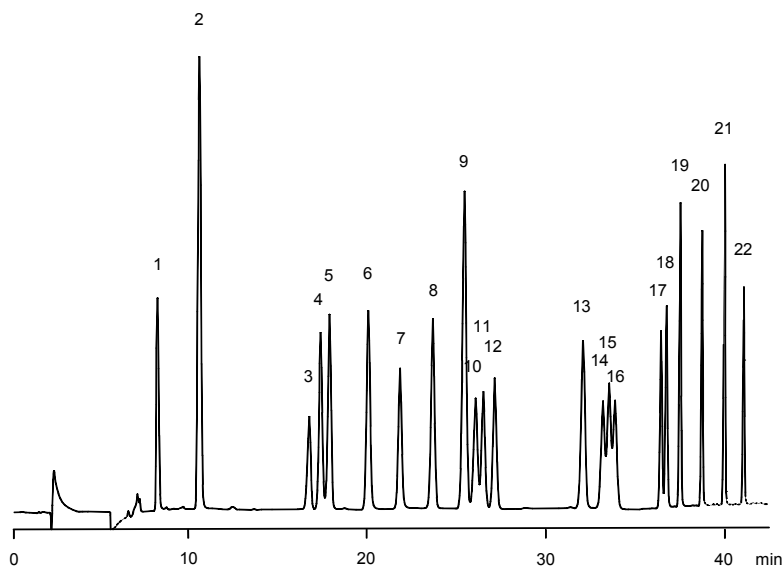
1. Desethylatrazin
2. Hexazinon
3. Metoxuron
4. Simazin
5. Cyanazin
6. Methabenzthiazuron
7. Atrazine
8. Chlortoluron
9. Monolinuron
10. Isoproturon
11. Metobromuron
12. Diuron
13. Metazachlor
14. Sebuthylazin
15. Terbutylazine
16. Linuron
17. Metolachlor



18 Determination of Phenoxy acid herbicides

Method	Matrix	
HPLC		
Column:	UltraSep ES PHENOXYCARB, 250 x 2 mm ID	Order No. I0202
Phase:	UltraSep ES PHENOXYCARB	
Conditions:	Eluent: A: Water (TFA adj. pH 2.5) B: Acetonitrile Gradient: 0 % B at start; 0-20 % B in 2 min; 20-35 % B in 28 min; 35-100% B in 15 min; 5 min hold Flow rate: 0.3 ml/min Temperature: 60 °C	
Detection:	UV at 224 nm	
Substances:	Clopyralid; Quinmerac ; Nicosulfurone ; Dicamba; Fluroxypyr; Mesotrione; Sulcotrione; Bentazone; Bromoxynil; DNOC (4,6-Dinitro-o-cresol); 2,4-D (2,4-Dichlorophenoxy acetic acid); MCPA (4-Chloro-o-tolyloxy acetic acid); Ioxynil ; Dichlorprop; Mecoprop; 2,4,5-T (2,4,5-Trichlorophenoxy acetic acid); 2,4-DB (4-(2,4-Dichlorophenoxy)butyric acid); MCPB (4-(4-Chloro-o-tolyloxy)butyric acid); Fluazifop-p; Fenoxypop-p; Haloxyfop; Dinoterb	
Keywords:	Phenoxy acid herbicides	

1. Clopyralid
2. Quinmerac
3. Nicosulfurone
4. Dicamba
5. Fluroxypyr
6. Mesotrione
7. Sulcotrione
8. Bentazone
9. Bromoxynil
10. DNOC (4,6-Dinitro-o-cresol)
11. 2,4-D (2,4 -Dichlorophenoxy acetic acid)
12. MCPA (4-Chlor-o-tolyloxy acetic acid)
13. Ioxynil
14. Dichlorprop
15. Mecoprop
16. 2,4,5-T (2,4,5-Trichlorophenoxy acetic acid)
17. 2,4-DB (4-(2,4-Dichlorophenoxy)butyric acid)
18. MCPB (4-(4-Chlor-o-tolyloxy) butyric acid)
19. Fluazifop-p
20. Fenoxypop-p
21. Haloxyfop
22. Dinoterb

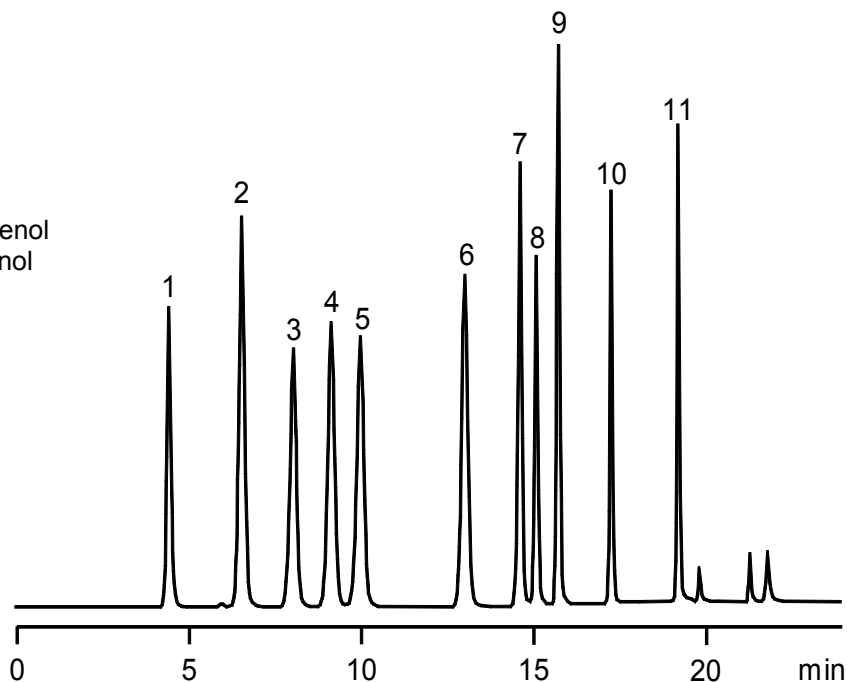


19 Determination of Priority Pollutant Phenols

Method	Matrix	
HPLC		
Column:	Eurospher 100-5 C18, 125 x 4 mm ID	Order No. 12DE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: A: MeOH + 1 % Acetic Acid B: Water plus 1 % Acetic Acid Gradient: 30 % A in 9 min to 40 % A 40 % A in 7 min to 100 % A, 6 min hold Flow rate: 1.0 ml/min Temperature: 40 °C Volume: 5 µl	
Detection:	UV at 280 nm	
Substances:	2-Chlorophenol, 4-Chloro-3-methylphenol, 2,4-Dichlorophenol, 2,3-Dimethylphenol, 2,4-Dinitrophenol, 2-Methyl-4,6-dinitrophenol, 2-Nitrophenol, 4-Nitrophenol, Pentachlorophenol, Phenol, 2,4,6-Trichlorophenol	
Keywords:	Phenols	

Chromatogram:

1. Phenol
2. 4-Nitrophenol
3. 2,4-Dinitrophenol
4. 2-Chlorophenol
5. 2-Nitrophenol
6. 2,3-Dimethylphenol
7. 2-Methyl-4,6-dinitrophenol
8. 4-Chloro-3-methylphenol
9. 2,4-Dichlorophenol
10. 2,4,6-Trichlorophenol
11. Pentachlorophenol



20 Determination of non-ionic Surfactants using HPLC

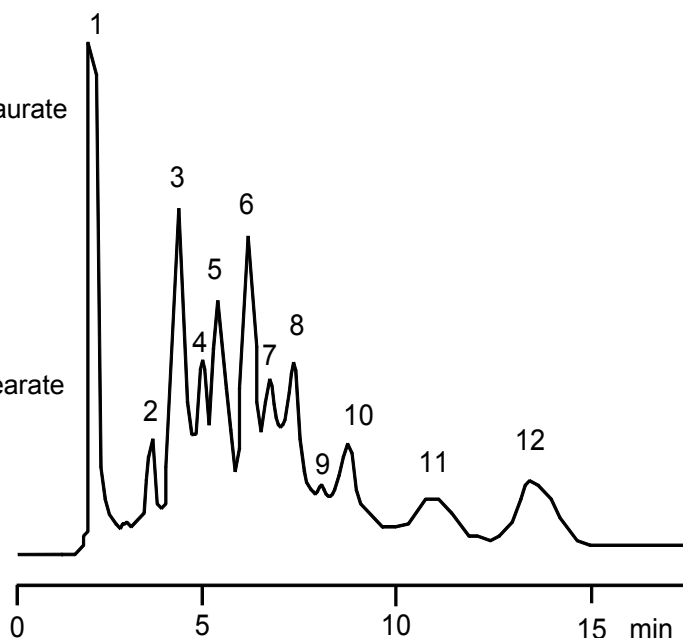
Method HPLC

Matrix

Column:	Eurospher 100-5 C18, 250 x 4 mm ID	Order No. 25DE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: MeOH / Water (90:10) Flow rate: 1.5 ml/min Temperature: 25 °C Volume: 20 µl	
Detection:	Refractive Index	
Substances:	Polyethylene glycol, Polyoxyethylene sorbitane monolaurate, Nonylphenol polyglycol ether, Lauryl alcohol, Lauryl alcohol polyglycol ether, Oleic acid diethanolamide, Oleic amide polyglycol ether, Myristyl alcohol, Myristyl alcohol polyglycol ether, Palmitic acid polyglycol ester, Polyoxyethylene glycerol monostearate, Stearic acid polyglycol ester	
Keywords:	Surfactants	

Chromatogram:

1. Polyethylene glycols
2. Polyoxyethylene sorbitane monolaurate
3. Nonylphenol polyglycol ether
4. Lauryl alcohol
5. Lauryl alcohol polyglycol ether
6. Oleic acid diethanolamide
7. Oleic amide polyglycol ether
8. Myristyl alcohol
9. Myristyl alcohol polyglycol ether
10. Palmitic acid polyglycol ester
11. Polyoxyethylene glycerol monostearate
12. Stearic acid polyglycol ester.



21 Analysis of Surfactants in toothpastes by HPLC

Method
HPLC

Matrix
toothpaste

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions:
 Eluent: MeOH / Water (90:10) + 0.25 M NaClO₄
 Gradient: isocratic
 Flow rate: 1.5 ml/min
 Temperature: 25 °C
 Volume: 20 µl

Detection: Refractive Index

Substances: Sodium soap (C8 - C18),
Sulpho fatty acid- α -methyl esters (C10 - C18)

Keywords: Surfactants

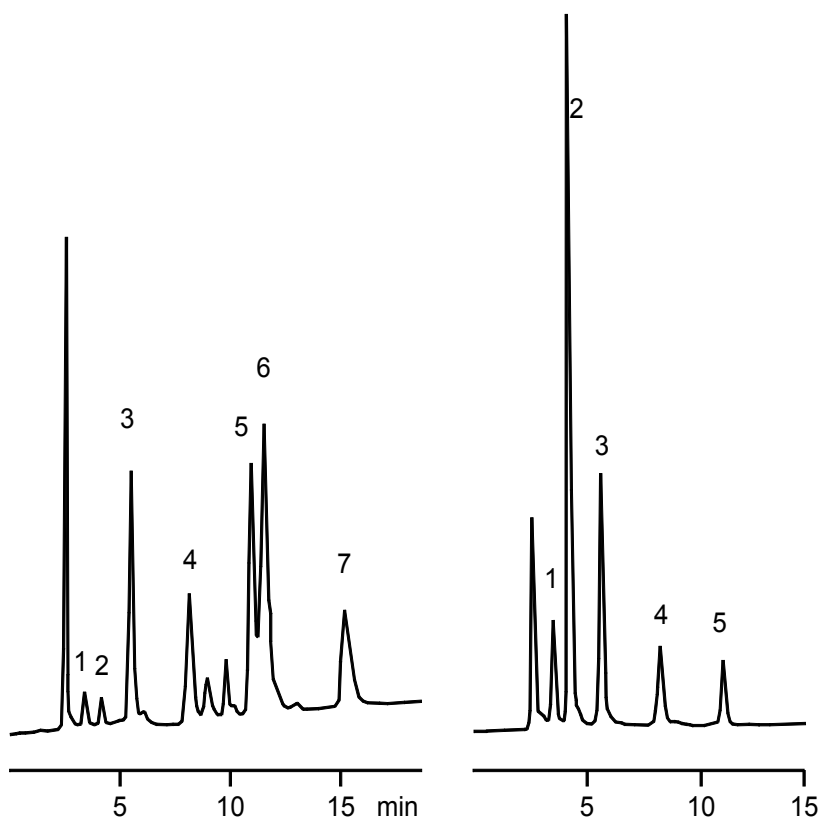
Chromatogram:

Sodium soaps:

1. (C8)
2. (C10)
3. (C12)
4. (C14)
5. (C16)
6. (C18 =)
7. (C18)

α -sulpho fatty acid methyl esters:

1. (C10)
2. (C12)
3. (C14)
4. (C16)
5. (C18)



22 Determination of aromatic Hydrocarbon types in middle distillates acc. to prEN 12916:2006

Method Matrix diesel fuel

HPLC

Sample preparation: dilution with n-heptane

Column: Ultrasep ES AP, 5 µm, 250 x 4 mm ID

Order No. 25DE450USJ

Phase: Ultrasep ES AP 5 µm

Conditions: Eluent: n-Heptane (dried with molecular sieve)
 Gradient: isocratic
 Flow rate: 0.5 ml/min
 Temperature: 25 °C
 Volume: 10 µl

Detection: RI

Substances: MAH: phenyldodecane; 1,2 dimethylbenzene; hexamethylbenzene
 DAH: naphthalene, fluorene
 T-AH: dibenzothiophene; phenanthrene, 9-methylanthracene

Keywords: MAH (mono-aromatic compounds); DAH (di-aromatic compounds);
 T+AH (tri+-aromatic compounds)

Chromatogram:

Retention time standard

1. Cyclohexane
2. Phenyldodecane
3. 1,2 Dimethylbenzene
4. Hexamethylbenzene
5. Naphthalene
6. Dibenzothiophene
7. 9-Methylanthracene

Calibration standard

8. 1,2 Dimethylbenzene
9. Fluorene
10. Phenanthrene

Sample

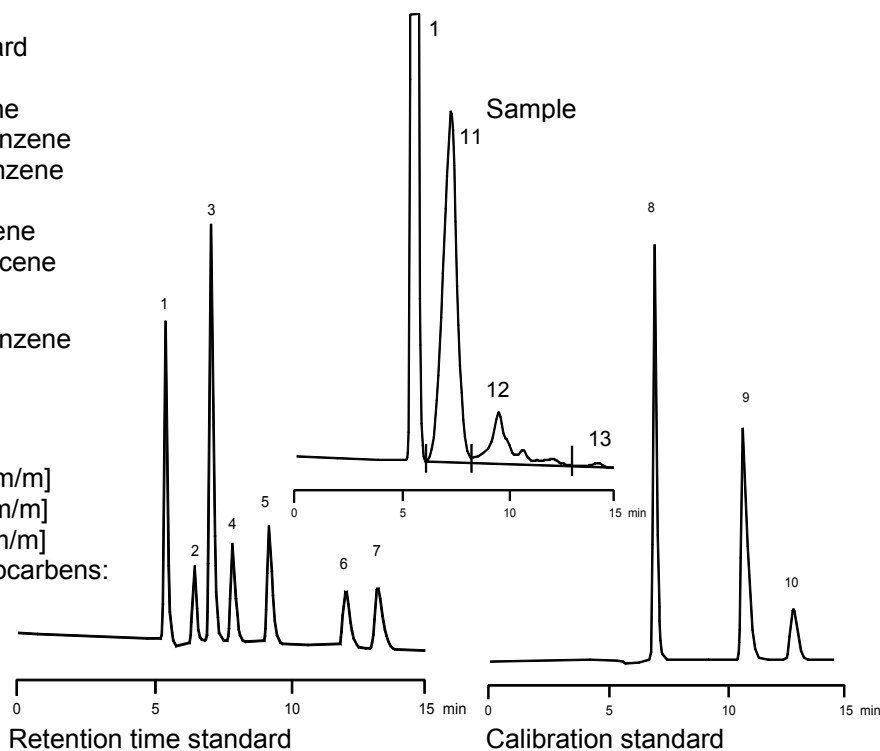
11. MAH 20.14% [m/m]

12. DAH 2.33% [m/m]

13. T+AH 0.11% [m/m]

Total aromatic hydrocarbons:

22.59 % [m/m]



Food Applications

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1 Separation of Additives in soft drinks

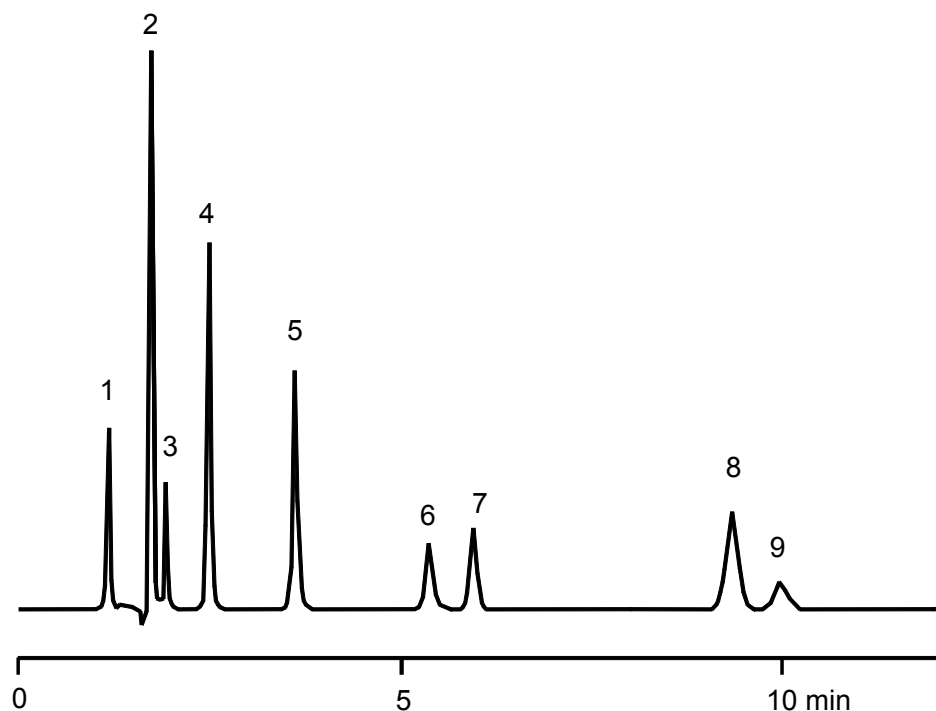
Method HPLC

Matrix

Column:	ProntoSIL 120-5 C8 SH, 150 x 4 mm ID	Order No.	15DF080PSJ
Phase:	ProntoSIL 120-5 C8 SH		
Conditions:	Eluent: 20 mM KH ₂ PO ₄ (pH 3) / Acetonitrile (5:1) Gradient: isocratic Flow rate: 1.2 ml/min Temperature: 30 °C Volume: 10 µl		
Detection:	UV at 220 nm		
Substances:	Acesulfam K, Ascorbic acid, Aspartame, Benzoic acid, Caffeine, Saccharin, Sorbic acid, Quinine, Vanilin		
Keywords:	Sweeteners, Additives		

Chromatogram:

1. Ascorbic acid
2. Acesulfam K
3. Saccharin
4. Caffeine
5. Aspartame
6. Quinine
7. Vanilin
8. Sorbic acid
9. Benzoic acid



2 Determination of Aflatoxins by HPLC with post column derivatization

Method
HPLC

Matrix
food

Column: UltraSep ES TOX 1 / UltraSep ES TOX 2; 125 x 3 mm ID

Order No. I0200 / I0201

Phase: UltraSep ES TOX 1 / UltraSep ES TOX 2

Conditions:
 Eluent: Methanol / Water (60 / 40) / (35 / 65)
 Gradient: isocratic
 Flow rate: 0.7 ml/min
 Temperature: ambient
 Volume: 20 µl / 3 µl

Detection: postcolumn derivatization with 1.3 mM bromine solution at a flow rate of 0.18 ml/min, fluorescence: excitation 375 nm, emission 455 nm to get a detection limit of 0.5 ppm

Substances: Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2

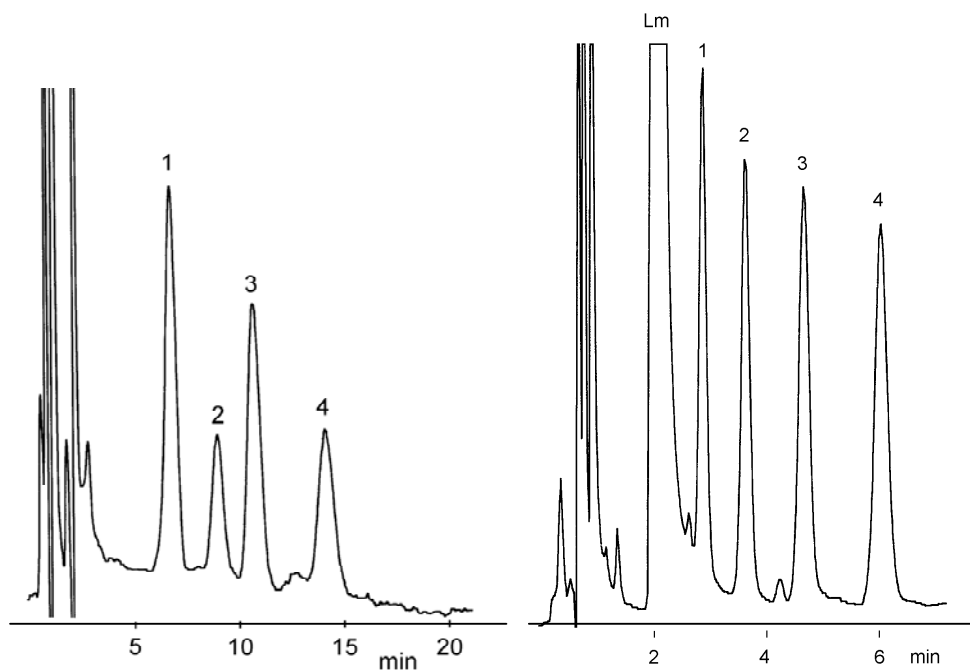
Keywords: Aflatoxins

Chromatogram:

UltraSep ES TOX 1

UltraSep ES TOX 2

1. Aflatoxin G2
2. Aflatoxin G1
3. Aflatoxin B2
4. Aflatoxin B1

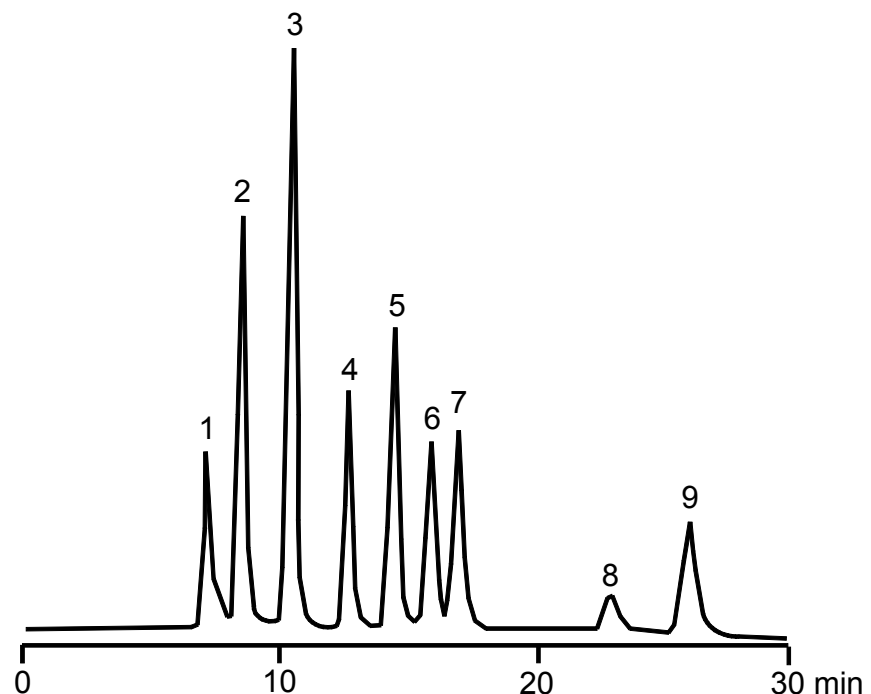


3 Simultaneous determination of Alcohols, Carbohydrates and Organic Acids

Method	Matrix	
HPLC	beverage	
Column:	Eurokat H 10 µm, 300 x 8 mm ID	Order No. 30GX340EKN
Phase:	Eurokat H 10 µm	
Conditions:	Eluent: 0.01 M Sulfuric acid	
	Gradient: isocratic	
	Flow rate: 0.4 ml/min	
	Temperature: 80 °C	
	Volume: 10 µl	
Detection:	Refractive Index	
Substances:	Maltose, Glucose, Succinic acid, Lactic acid, Formic acid, Acetic acid, Methanol, Ethanol	
Keywords:	Carbohydrates, Organic acids, Alcohols	

Chromatogram:

1. Higher carbohydrates
2. Maltose
3. Glucose
4. Succinic acid
5. Lactic acid
6. Formic acid
7. Acetic acid
8. Methanol
9. Ethanol



4 Determination of Alcohols, Carbohydrates and Organic Acids II

Method
HPLC

Matrix

Column: Eurokat H 10 µm, 300 x 8 mm ID

Order No. 30GX340EKN

Phase: Eurokat H 10 µm

Conditions: Eluent: 0.00125 N Sulfuric Acid (pH 2)
Gradient: isocratic
Flow rate: 0.4 ml/min
Temperature: 90 °C
Volume: 10 µl

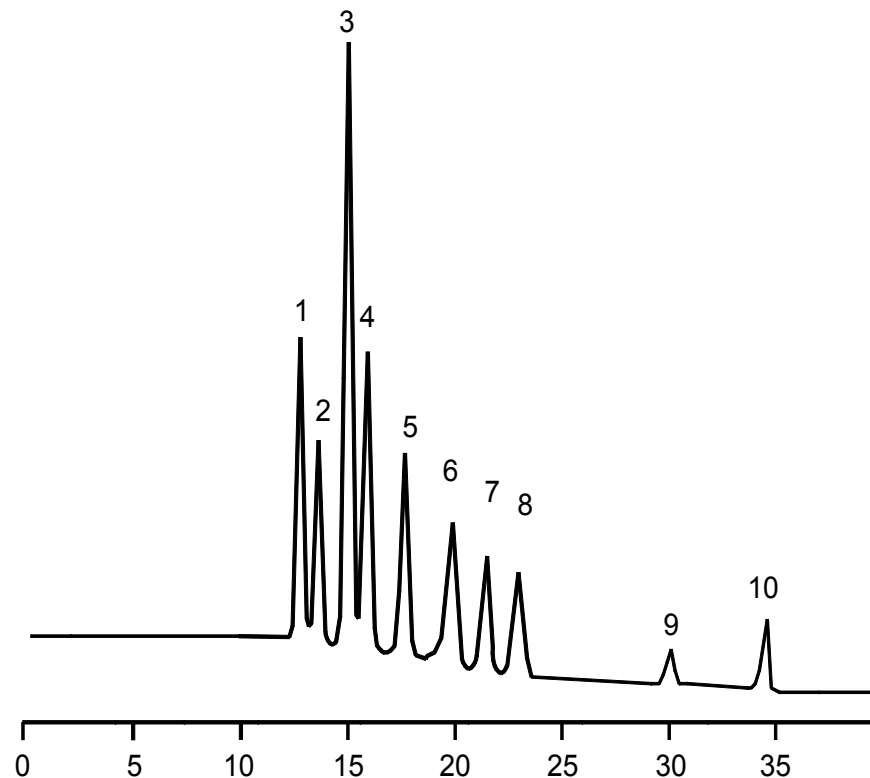
Detection: Refractive Index

Substances: Acetic acid, Butandiol, Citric acid, Ethanol, Fructose, Glucose, Lactic acid, Malic acid, Succinic acid, Tartaric acid

Keywords: Organic acids

Chromatogram:

1. Citric acid
2. Tartaric acid
3. Glucose
4. Malic acid
5. Fructose
6. Succinic acid
7. Lactic acid
8. Acetic acid
9. Butandiol
10. Ethanol



5 Separation of Amines in wine with precolumn derivatization (DANSYL)

Method
HPLC

Matrix
wine

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: ACN / Water (30:70)
Gradient: over 40 min to 60 % ACN and 15 % Ethanol in water, 10 min hold
Flow rate: 1.0 ml/min
Temperature: ambient
Volume: 20 µl

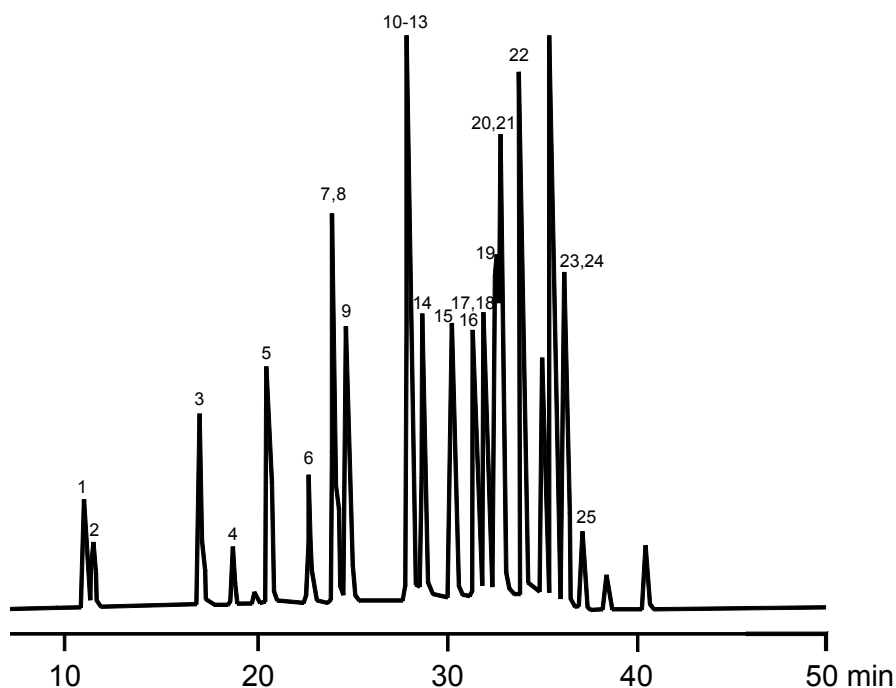
Detection: Fluorescence: excitation 338 nm, emission 455 nm

Substances: Ethanolamine, Ammonia, Methylamine, Serotonin, Ethylamine, Morpholine, Isopropylamine, Dimethylamine, Propylamine, Pyrrolidine, Pyrrolidone, Octopamine, Indole, Butylamine, Diethylamine, Phenethylamine, Methylbutylamine, Isopentylamine, Pentylamine, Piperidine, Diaminopropane, Diaminobutane, Hexylamine, Diaminopentane, Histamine

Keywords: Amines

Chromatogram:

1. Ethanolamine,
2. Ammonia,
3. Methylamine,
4. Serotonin,
5. Ethylamine,
6. Morpholine,
7. Isopropylamine,
8. Dimethylamine,
9. Propylamine
10. Pyrrolidine,
11. 2-Pyrrolidone,
12. Octopamine,
13. Indole
14. Butylamine,
15. Diethylamine,
16. Phenethylamine,
17. 2-Methylbutylamine,
18. Isopentylamine,
19. Pentylamine,
20. Piperidine,
21. 1,3-Diaminopropane,
22. 1,4-Diaminobutane,
23. Hexylamine,
24. 1,5-Diaminopentane,
25. Histamine

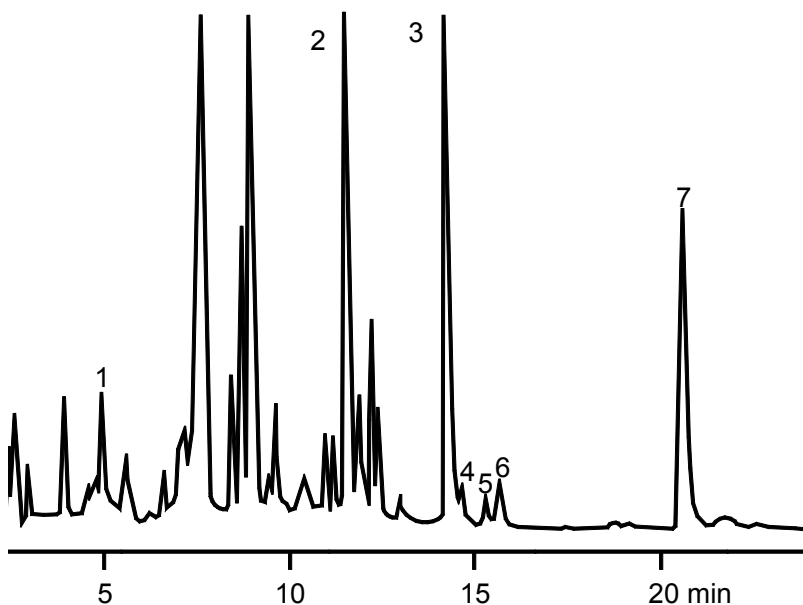


6 HPLC determination of Amines in wine with precolumn derivatization (OPA)

Method HPLC	Matrix wine	
Column:	Eurospher 100-5 C18, 250 x 4.6 mm ID	Order No. 25EE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: 0.08 M Acetic Acid / Acetonitrile (70:30) 3 min Gradient: in 6.5 min to 65 % Acetonitrile, in 11 min to 72 % Acetonitrile, in 1 min to 80 % Acetonitrile, 3 min hold Flow rate: 1.0 ml/min Temperature: ambient Volume: 20 µl	
Detection:	Fluorescence: ex 230 nm, em 440 nm	
Substances:	Cadaverine, Heptylamine, Histamine, Isoamylamine, Pentyl-i-amine, Phenethylamine, Putrescine	
Keywords:	Amines	

Chromatogram:

1. Histamine
2. Tyramine
3. Putrescine
4. Phenethylamine
5. Cadaverine
6. Isoamylamine
7. internal Standard IS



7 Determination of Amino Acids in beer with precolumn derivatization (OPA)

Method
HPLC

Matrix
beer

Column: OPA column B801, 300 x 4 mm ID

Order No. B801

Phase: OPA Column

Conditions:

Eluent:	A: 0.05 M Acetate / Methanol (81:19) pH 7.2 B: 0.05 M Acetate / Methanol (25:75)
Gradient:	28 min 100 % A, in 7 min to 70 % A, in 15 min to 100 % B (5 min hold), in 5 min 100 % A
Flow rate:	1.0 ml/min
Temperature:	40 °C
Volume:	10 µl

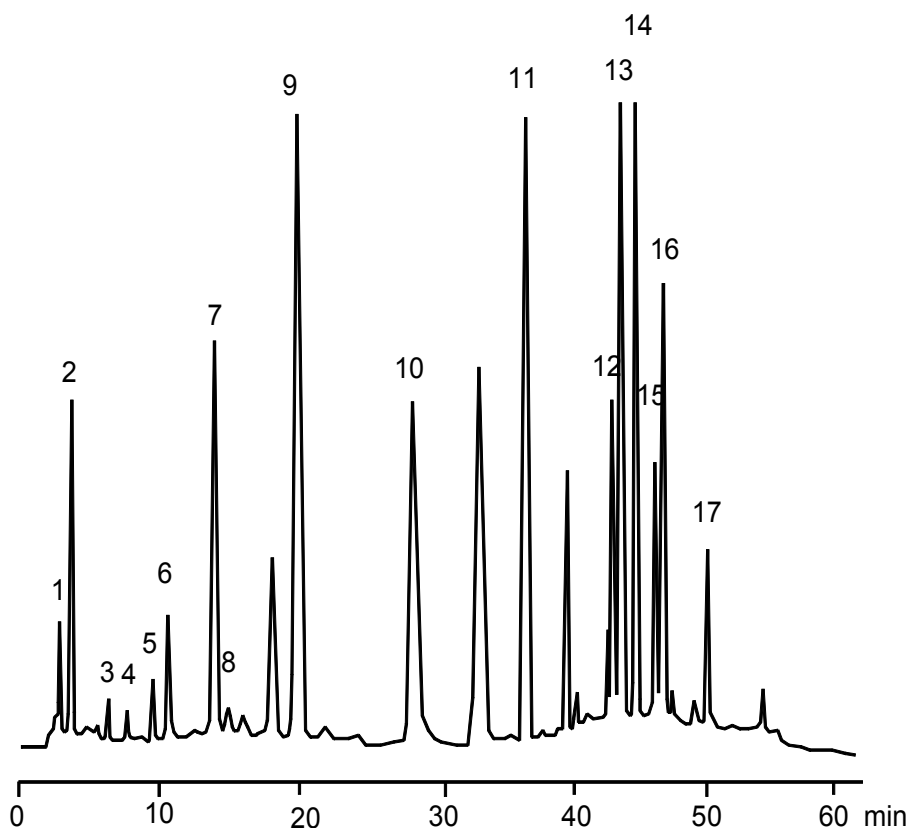
Detection: Fluorescence: excitation 330 nm, emission 450 nm

Substances: Aspartic acid, Glutamic acid, Asparagin, Serine, Glutamin, Histidine, Glycine, Threonine, Arginin, Alanine, Tyrosine, Methionine, Valine, Phenylalanine, Isoleucine, Leucine, Lysine

Keywords: Amines

Chromatogram:

1. ASP
2. GLU
3. ASN
4. SER
5. GLN
6. HIS
7. GLY
8. THR
9. ARG
10. ALA
11. TYR
12. MET
13. VAL
14. PHE
15. ILE
16. LEU
17. LYS



8 Inorganic and Organic Anions in beer

Method
HPLC

Matrix
beer

Column: Allsep Anion, 100 x 4.6 mm ID

Order No. B90

Phase: Allsep Anion

Conditions: Eluent: 0.85 mM Sodium Hydrogen Carbonate (NaHCO₃)
Gradient: isocratic
Flow rate: 1.2 ml/min
Temperature: 35 °C
Volume: 100 µl

Detection: suppressed Conductivity (Alltech Model 650), Range 10 µS

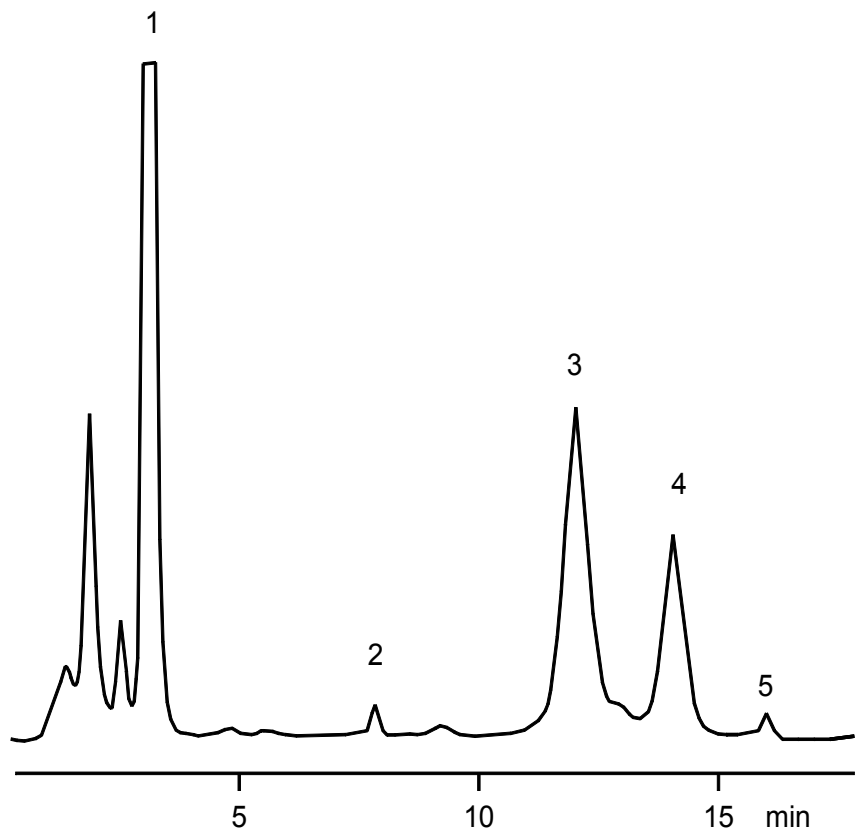
Substances: Chloride, Nitrate, Phosphate, Sulfate, Oxalate

Keywords: Anions, inorganic and organic

Chromatogram:

Chromatogram of beer sample
(dilution 1:10)

1. Chloride
2. Nitrate
3. Phosphate
4. Sulfate
5. Oxalate



9 Anthocyanins in red and rose wine

Method
HPLC

Matrix
wine

Column:

ProntoSIL 120-3 C18 SH, 250 x 4 mm
ID

Order No. 25DF180PSG

Phase:

ProntoSIL 120-3 C18 SH

Conditions:

Eluent: A: Water / Formic Acid / Acetonitrile (87:10:3)
B: Water / Formic Acid / Acetonitrile (pH 1.3)
Gradient: 0 min 94 % A 6 % B, 15 min 70 % A 30 % B,
30 min 50 % A 50 % B, 35 min 40 % A 60 % B,
41 min 94 % A 6 % B (2 min hold)
Flow rate: 0.8 ml/min
Temperature: 40 °C
Volume: 20 µl

Detection:

UV at 518 nm

Substances:

Group 1: nonacylated anthocyanidin-3-glycosides
Group 2: acylated anthocyanidin-3-glycosides
Group 3: coumarylated anthocyanidin-3-glycosides

Keywords:

Anthocyanins

Chromatogram:

Group 1

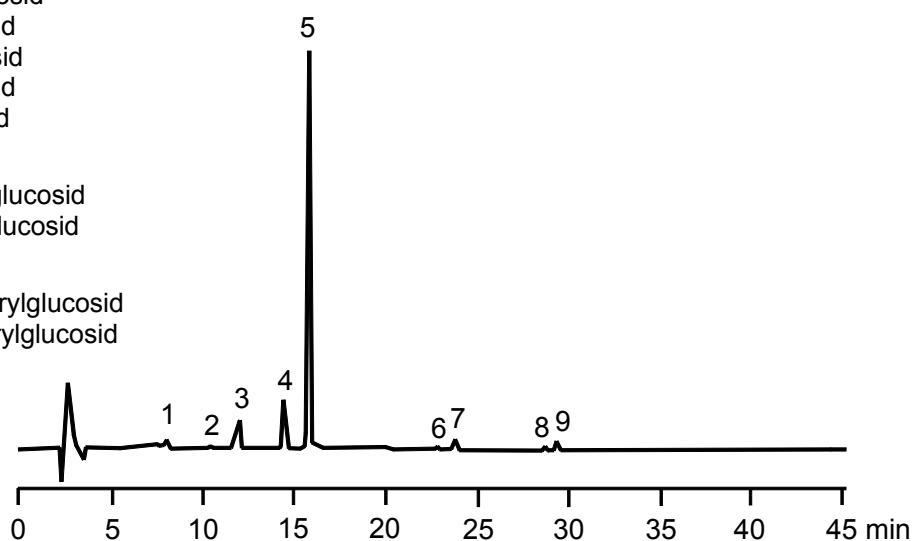
1. Delphinidol-3-glucosid
2. Cyanidol-3-glucosid
3. Petunidol-3-glucosid
4. Peonidol-3-glucosid
5. Malvidol-3-glucosid

Group 2

6. Peonidol-3-acetylglucosid
7. Malvidol-3-acetylglucosid

Group 3

8. Peonidol-3-coumarylglucosid
9. Malvidol-3-coumarylglucosid

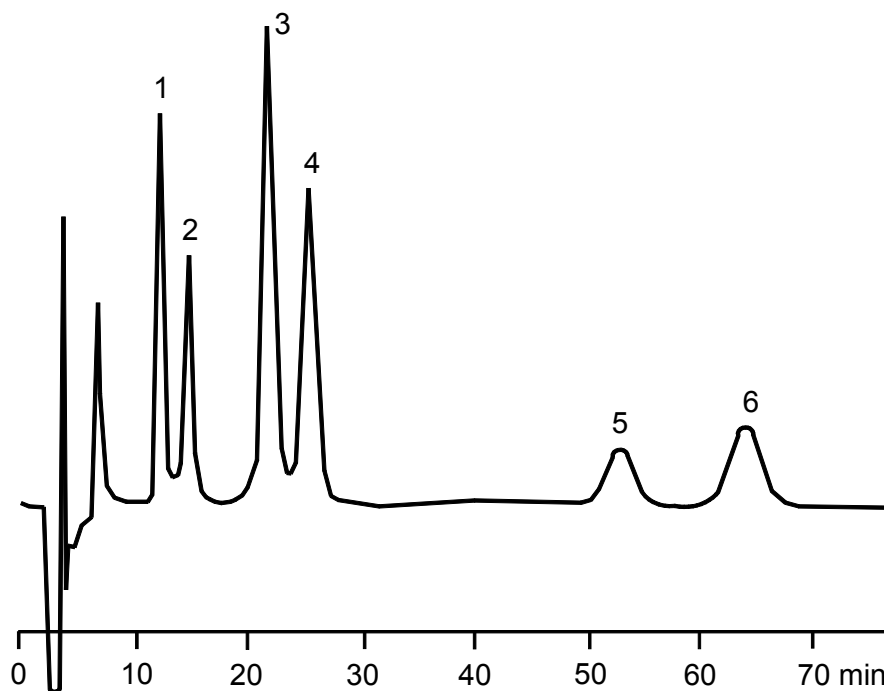


10 Determination of Biogenic Amines in food products by HPLC in combination with ninhydrin derivatization

Method HPLC	Matrix Food	
Column:	Eurospher 100-5 C18, 120 x 4 mm ID	Order No. 11DE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: 16 g Ninhydrin and 1.2 g Hydrindantin, dissolved in 322 ml Dimethyl sulphoxide (DMSO) by sonication, plus 350 ml 2.8 M Sodium acetate buffer pH 5.0, mixed with a solution of 2 g Sodium dodecyl sulphate in 618 ml DMSO - 710 ml Water	
	Gradient: isocratic	
	Flow rate: 1.0 ml/min	
	Temperature: ambient	
	Volume: 10 µl	
Detection:	UV-VIS at 546 nm	
Substances:	Tyramine, Histamine, Putrescine, Cadaverine, Tryptamine, Phenylethylamine	
Keywords:	Amines, Histamine	

Chromatogram:

1. Tyramine
2. Histamine
3. Putrescine
4. Cadaverine
5. Tryptamine
6. Phenylethylamine



11 Separation of β -Carotene isomers

Method
HPLC

Matrix

Column: ProntoSIL 200-3 C30, 250 x 4.6 mm ID

Order No. 25EH300PSG

Phase: ProntoSIL 200-3 C30

Conditions: Eluent: MeOH / TBME (80:20)
Gradient: isocratic
Flow rate: 1.4 ml/min
Temperature: 25 °C
Volume: 5 μ l

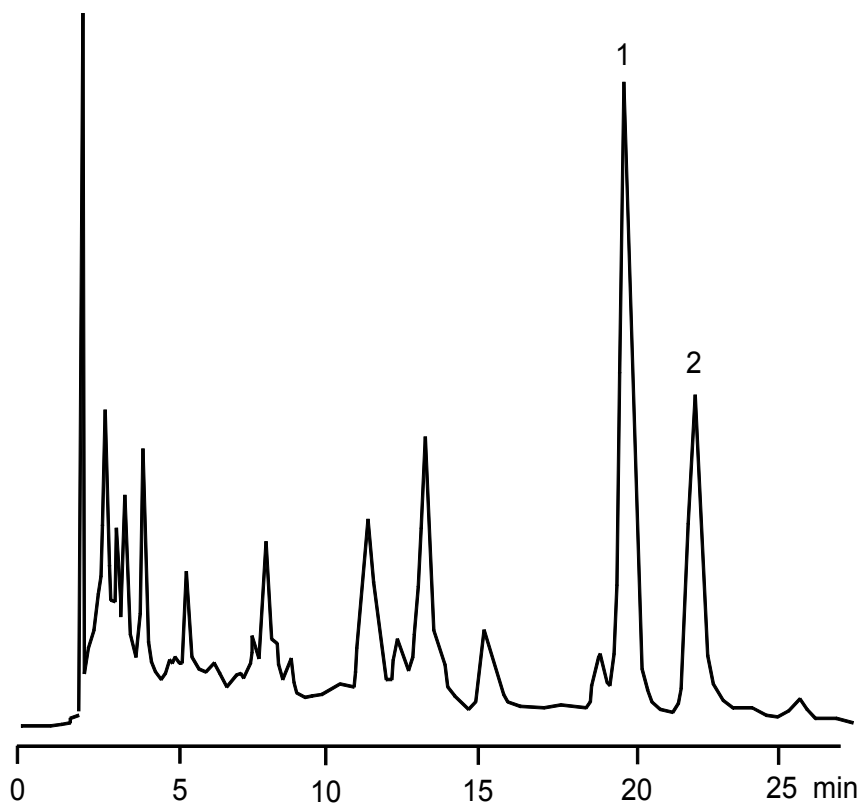
Detection: UV at 450 nm

Substances: β -Carotene

Keywords: Vitamins, fat soluble

Chromatogram:

1. all-trans β -Carotene
2. 9-cis β -Carotene



12 Determination of Diketopiperazine in soft drinks

Method
HPLC

Matrix
soft drink

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: 10 mM KH_2PO_4 / ACN (85:15), adjusted to pH 4.0
Gradient: isocratic
Flow rate: 0.7 ml/min
Temperature: 30 °C
Volume: 10 μl

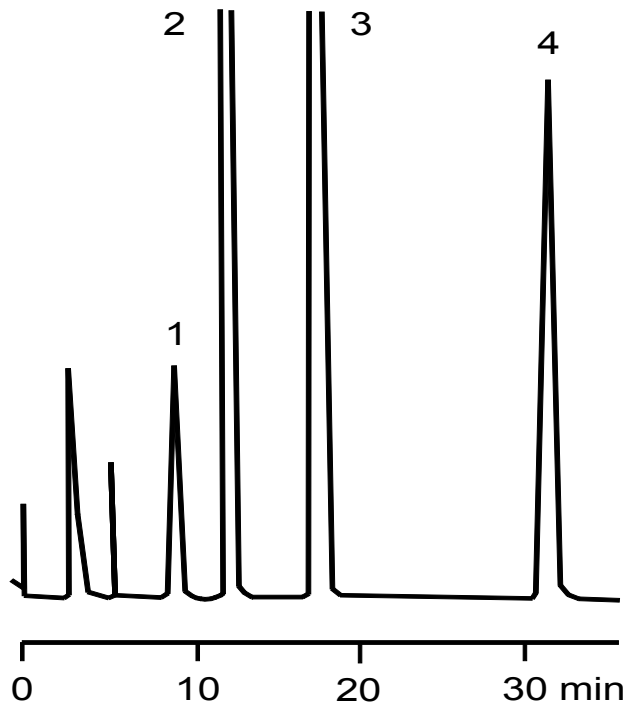
Detection: UV at 210 nm

Substances: Diketopiperazine, Caffeine, Aspartame, Benzoate

Keywords: Additives, Sweeteners

Chromatogram:

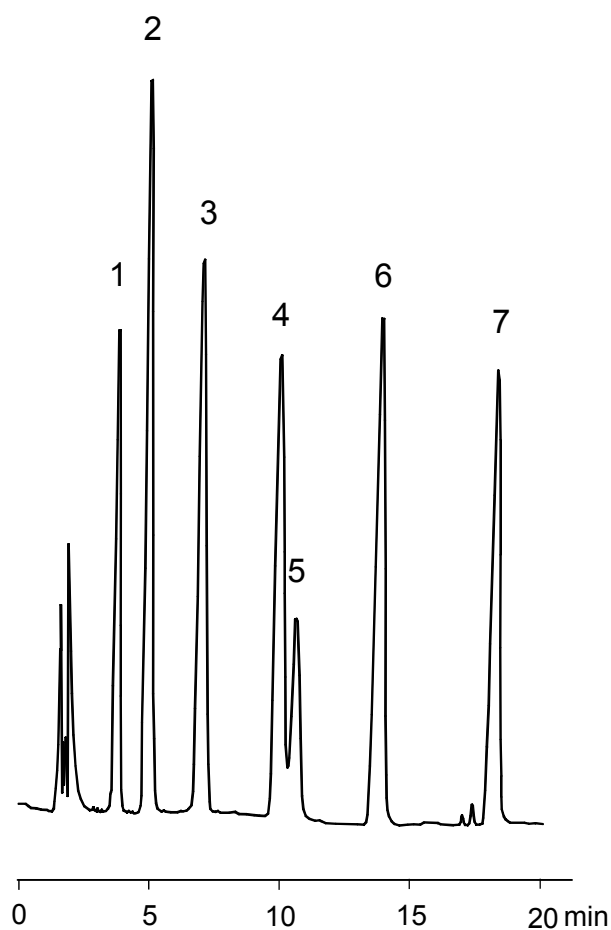
1. DKP = diketopiperazine
2. Caf = caffeine
3. APM = aspartame
4. BA = Na benzoate



13 Determination of Fatty acids

Method
HPLC**Matrix****Column:** UltraSep ES FS, 250 x 3 mm ID**Order No. I0046****Phase:** UltraSep ES FS**Conditions:** Eluent: A: 10 mM Phosphoric acid pH 2.9 (NaOH)
B: Acetonitrile
Gradient: 70 % B at start; 70-98 % B in 30 min
Flow rate: 0.55 ml/min
Temperature: 30 °C**Detection:** UV at 210 nm**Substances:** Capric acid; Lauric acid; Myristic acid; Palmitinic acid; Elaidinic acid; Stearic acid;
Arachidonic acid**Keywords:** Fatty acids**Chromatogram:**

1. Capric acid
2. Lauric acid
3. Myristic acid
4. Palmitinic acid
5. Elaidinic acid
6. Stearic acid
7. Arachidonic acid



14 Analysis of Flavonoids in fruit juice

Method
HPLC

Matrix
Beverage (orange juice sample)

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions:

Eluent:	5 mM Ammonium acetate / ACN (75:25) (pH 4,45; adjusted with conc. acetic acid)
Gradient:	isocratic
Flow rate:	1.0 ml/min
Temperature:	40 °C
Volume:	5 µl

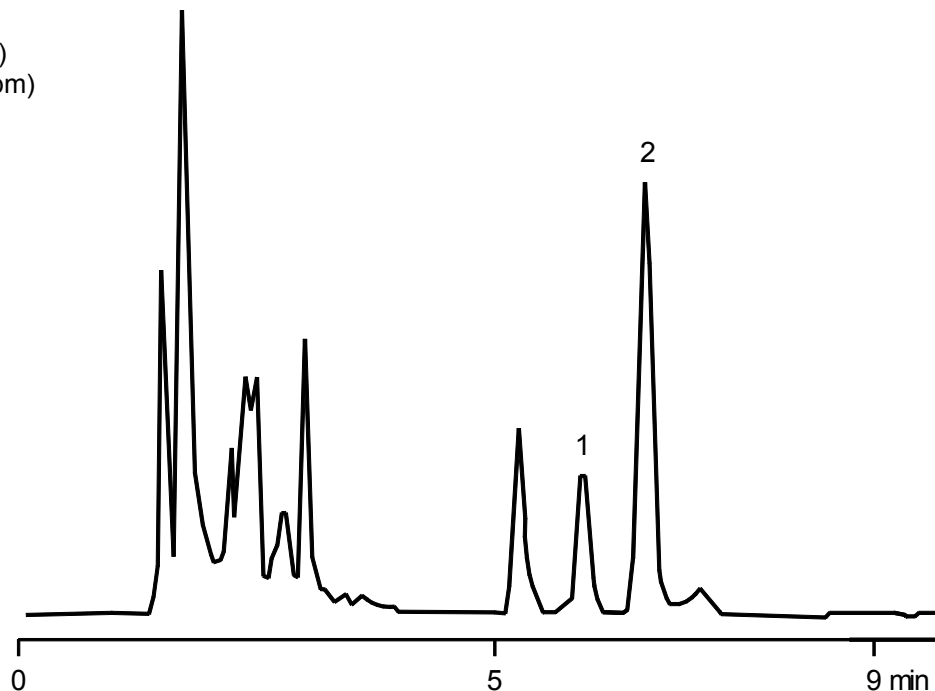
Detection: UV at 285 nm

Substances: Naringin, Hesperidin

Keywords: Flavonoids

Chromatogram:

1. Naringin (28.03 ppm)
2. Hesperidin (79.25 ppm)



15 Stilbene and Flavonoids in red wine samples

Method
HPLC

Matrix
wine

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions:

Eluent:	A: MeOH / H ₂ O (50:50) (pH 3 with TFA)
	B: MeOH / H ₂ O (80:20) (pH 3 with TFA)
	C: MeOH / H ₂ O (20:80) (pH 3 with TFA)
Gradient:	0 – 5 min 90 % A 10 % C → 100 % A
	5 – 8 min 100 % A → 70 % A 30 % B
	8 - 12 min 70 % A 30 % B → 20 % A 80 % B
	12 - 14 min 20 % A 80 % B → 100 % B
	14 - 16 min 100 % B isocratic
Temperature:	40 °C
Flow rate:	1.0 ml/min
Volume:	20 µl

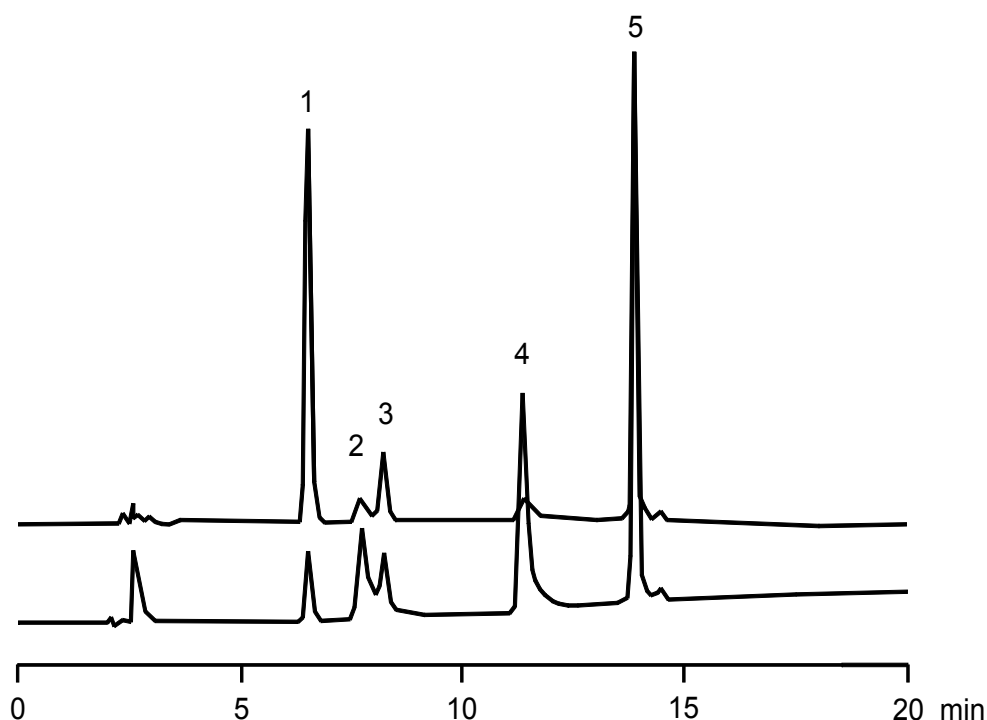
Detection: UV at different wavelength
(Resveratrol: 305 nm, Myrcetine: 254/365nm, Quercetine: 365 nm, Caempferol: 265/365 nm)

Substances: trans-Resveratrol, cis-Resveratrol, Myrcetine, Quercetine, Caempferol

Keywords: Stilbene, Flavonoids

Chromatogram:

1. trans Resveratrol
2. Myrcetine
3. cis Resveratrol
4. Quercetine
5. Caempferol



16 Analysis of Flavonoid Glycosides

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: ACN / H₂O, adjusted to pH 2.5; with Phosphate buffer
 Gradient: 17 - 23 % ACN over 35 min
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 µl

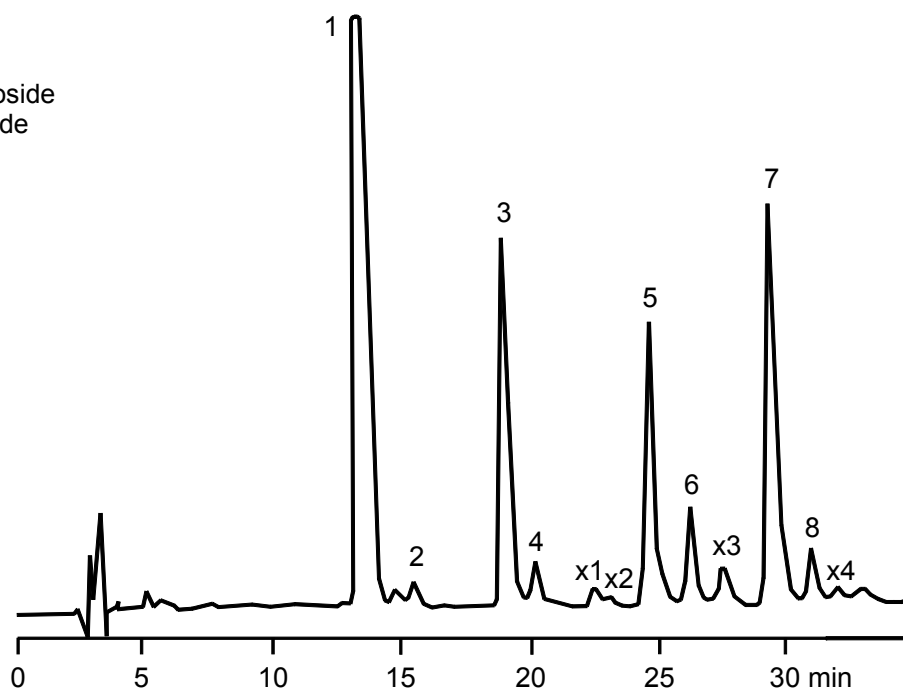
Detection: UV at 280 nm

Substances: Eriocitrin, Eriodictyol 7-O-glucoside, Luteolin 7-O-rutinoside, Narirutin, Hesperidin, Isorhoifolin, Rosmarinic acid, Diosmin

Keywords: Flavonoid Glycosides

Chromatogram:

1. Eriocitrin
2. Eriodictyol 7-O-glucoside
3. Luteolin 7-O-rutinoside
4. Narirutin
5. Hesperidin
6. Isorhoifolin
7. Rosmarinic acid
8. Diosmin
- X1-4 unknown



17 Separation of Methylfurfural and Hydroxyfurfural in beer

Method
HPLC

Matrix
beer

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

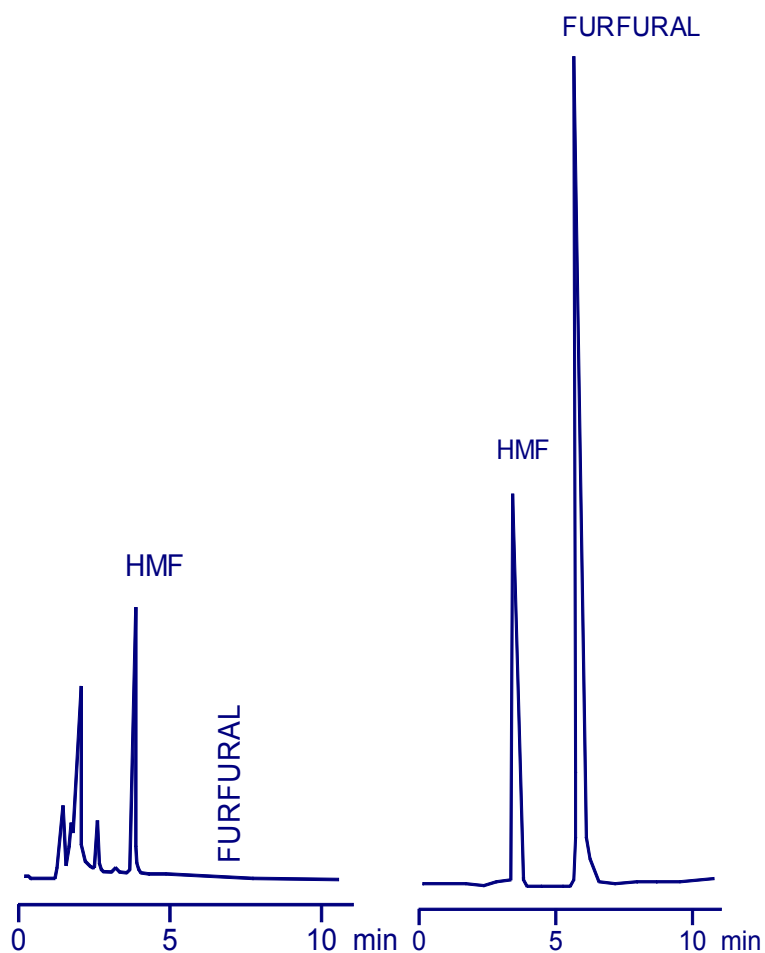
Conditions: Eluent: H₂O / ACN (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 30 °C
Volume: 20 µl

Detection: UV at 277 nm

Substances: Furfural, Hydroxymethylfurfural (HMF)

Keywords: HMF

Chromatogram:



18 Determination of Mono- and Disaccharides

Method
HPLC

Matrix

Column: Eurospher 100-5 NH₂, 125 x 4 mm ID

Order No. 12DE190ESJ

Phase: Eurospher 100-5 NH₂

Conditions:
Eluent: ACN / Water (75:25)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 5 µl

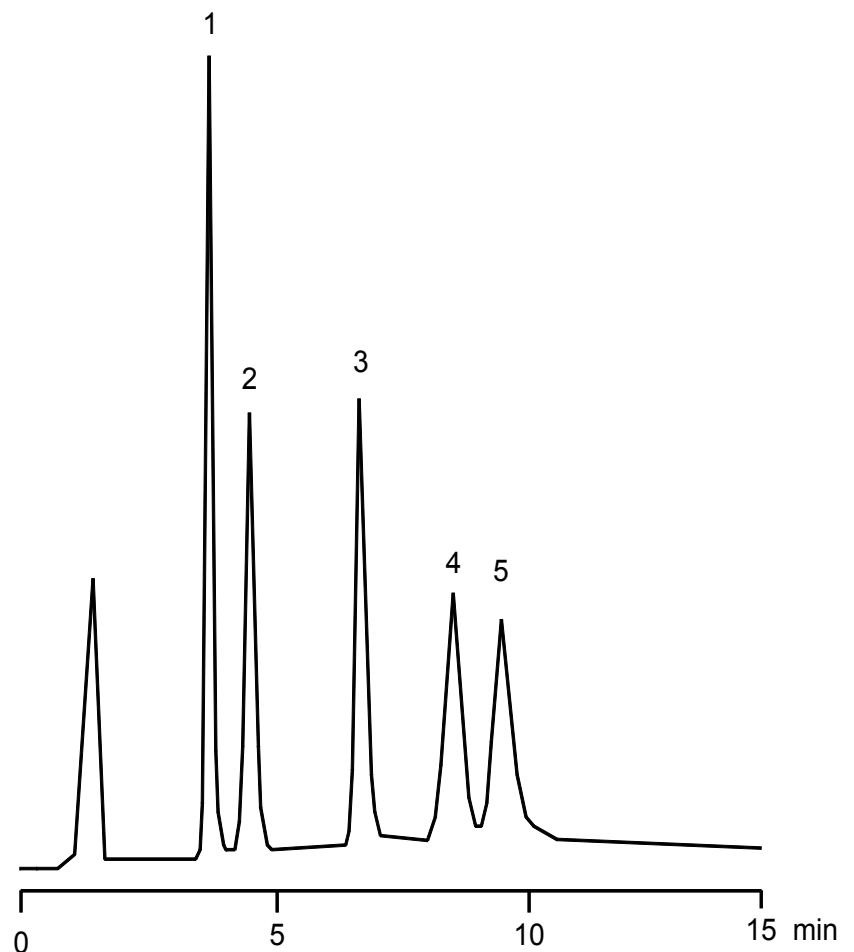
Detection: Refractive Index

Substances: Fructose, Glucose, Lactose, Maltose, Saccharose

Keywords: Saccharides

Chromatogram:

1. Fructose
2. Glucose
3. Saccharose
4. Maltose
5. Lactose



19 Determination of Deoxynivalenol (DON)

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 150 x 4 mm ID

Order No. 15EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Water / Acetonitrile (90:10)
Gradient: isocratic
Flow rate: 0.6 ml/min
Temperature: 30 °C
Volume: 20 µl

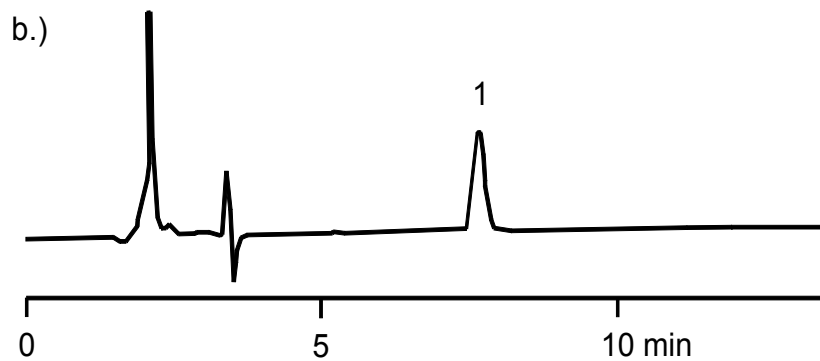
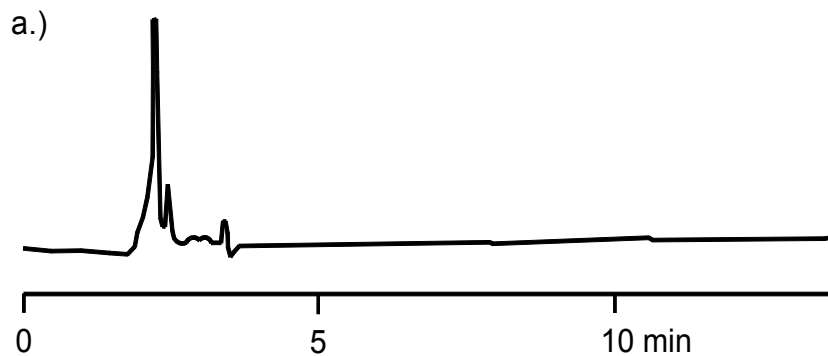
Detection: UV at 218 nm

Substances: Deoxynivalenol (DON)

Keywords: Mycotoxins, Trichotecenes

Chromatogram:

- a) blank wheat sample
b) spiked wheat sample



20 Determination of Nivalenol (NIV) and Deoxynivalenol (DON) with postcolumn derivatisation

Method
HPLC

Matrix
fungus

Column: ProntoSIL 120-5 C18 AQ, 250 x 3 mm ID

Order No. 25CF184PSJ

Phase: ProntoSIL 120-5 C18 AQ

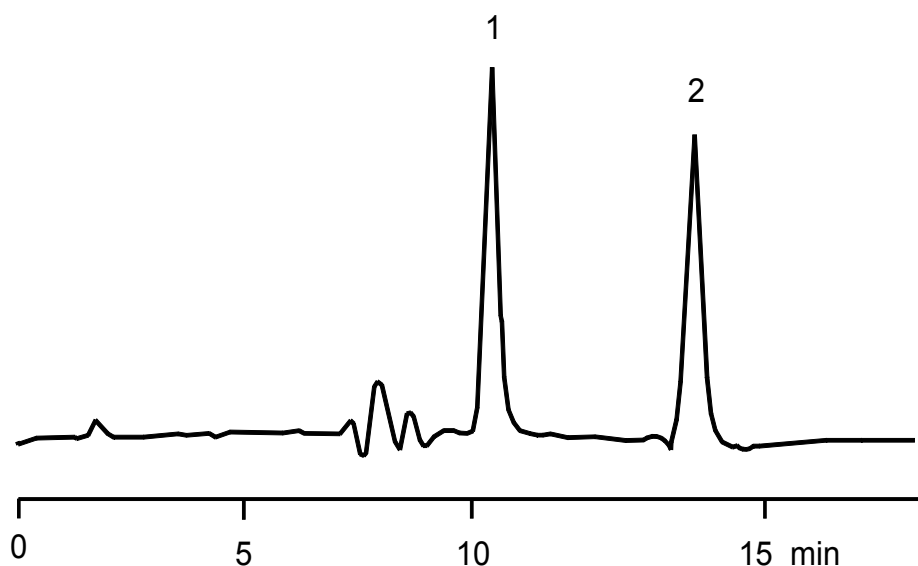
Conditions: Eluent: A: ACN B: 0.01 M Acetic Acid
Gradient: 0-16 min 10 % A
16-22 min 90 % A
22-40 min 10 % A
Flow rate: 0.4 ml/min
Temperature: 25 °C
Volume: up to 200 µl
2 channel postcolumn derivatization, flow rate of 0.25 ml/min, temperature of 115 °C
Reactor Coil 1 : 1.2 ml, 0.15 M sodium hydroxide
Reactor Coil 2 : 1.6 ml, 0.03 M methyl acetoacetate and 2 M ammonium acetate
Detection: Fluorescence: ex at 360 nm, em at 470 nm

Substances: Deoxynivalenol (DON), Nivalenol (NIV)

Keywords: Mycotoxins, Trichothecens

Chromatogram:

1. Nivalenol (NIV)
2. Deoxynivalenol (DON)



21 Analysis of Fusarium Mycotoxines

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions:

Eluent:	A: ACN	B: Water / ACN (90:10)
Gradient:	0 – 28 min	8 % A
	28 – 32 min	20 % A
	32 – 36 min	100 % A
	36 – 40 min	99 % A
	40 – 45 min	8 % A
Flow rate:	0 – 7 min	0.65 ml/min
	7 – 40 min	0.75 ml/min
	40 – 45 min	0.65 ml/min
Temperature:	25 °C	
Volume:	10 µl	

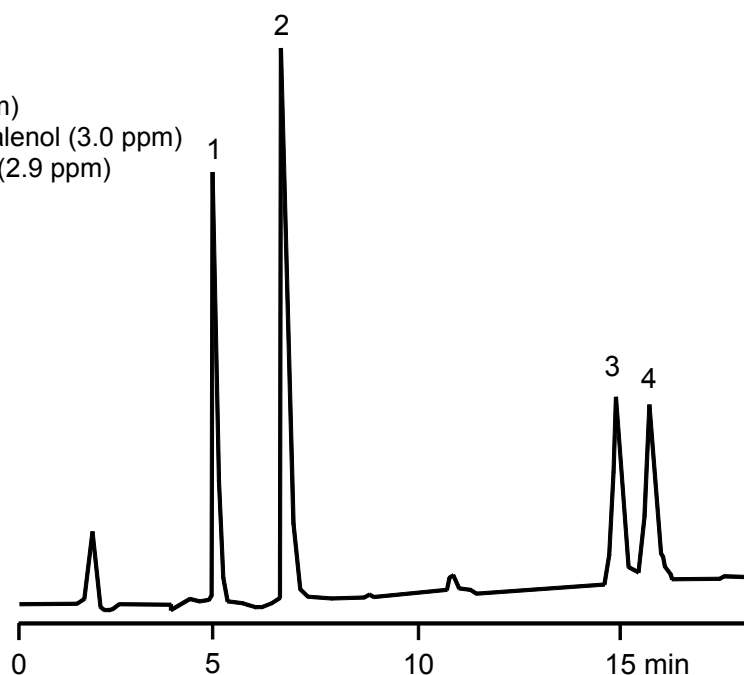
Detection: DAD at 220 and 230 nm

Substances: Nivalenol, Deoxynivalenol (DON), 15-o-Acetyl-4-deoxynivalenol, 3-Acetyldeoxynivalenol

Keywords: Fusarium Mycotoxines

Chromatogram:

1. Nivalenol (2.8 ppm)
2. Deoxynivalenol (2.9 ppm)
3. 15-o-Acetyl-4-deoxynivalenol (3.0 ppm)
4. 3-Acetyldeoxynivalenol (2.9 ppm)



22 Ion chromatography for determination of NO₂⁻ and NO₃⁻ in beverages

Method
HPLC

Matrix

Column: Novosep A-2 Anion, 250 x 4 mm ID

Order No. B92

Phase: Novosep A-2 Anion

Conditions: Eluent: 3.6 mM Sodium carbonate (Na₂CO₃)
Gradient: isocratic
Flow rate: 0.4 ml/min
Temperature: 45 °C
Volume: 5 µl, Chromatogram for a mixture of anions with concentration of 1 ppm

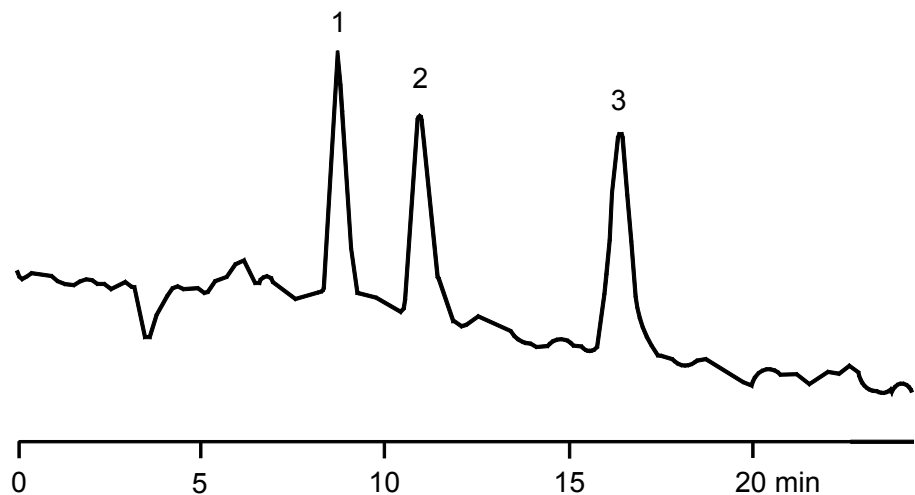
Detection: suppressed Conductivity (Alltech Model 650), Range 1 µS

Substances: Chloride (Cl⁻), Nitrite (NO₂⁻), Nitrate (NO₃⁻)

Keywords: Anions

Chromatogram:

1. Chloride 1 ppm
2. Nitrite 1 ppm
3. Nitrate 1 ppm



23 Determination of Organic Acids

Method
HPLC

Matrix

Column: ProntoSIL 120-3 C18 AQ, 300 x 3 mm ID

Order No. 30CF184PSG

Phase: ProntoSIL 120-3 C18 AQ

Conditions: Eluent: 5 mM Li₂SO₄ / H₂SO₄ (pH 2.81)
 Gradient: isocratic
 Flow rate: 0.56 ml/min
 Temperature: 20 °C
 Volume: 10 µl

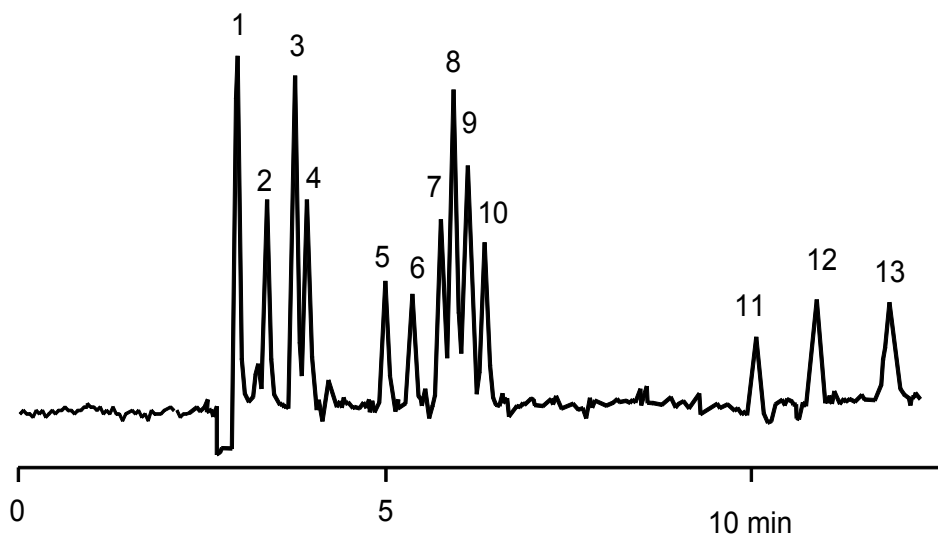
Detection: Refractive Index

Substances: Acetic acid, Ascorbic acid, Citric acid, Fumaric acid, Lactic acid, Malic acid, Malonic acid, Oxalic acid, Quinic acid, Shikimic acid, Succinic acid, Tartaric acid

Keywords: Organic Acids

Chromatogram:

1. Oxalic acid
2. not identified
3. Tartaric acid
4. Quinic acid
5. Malic acid
6. Malonic acid
7. Shikimic acid
8. Lactic acid
9. Ascorbic acid
10. Acetic acid
11. Citric acid
12. Fumaric acid
13. Succinic acid



24 Determination of Organic Acids II

Method
HPLC

Matrix

Column: Eurokat H, 300 x 8 mm ID

Order No. 30GX340EKN

Phase: Eurokat H (polymer phase)

Conditions:
Eluent: 0.01 N Sulfuric Acid
Gradient: isocratic
Flow rate: 0.4 ml/min
Temperature: 75 °C
Volume: 20 µl

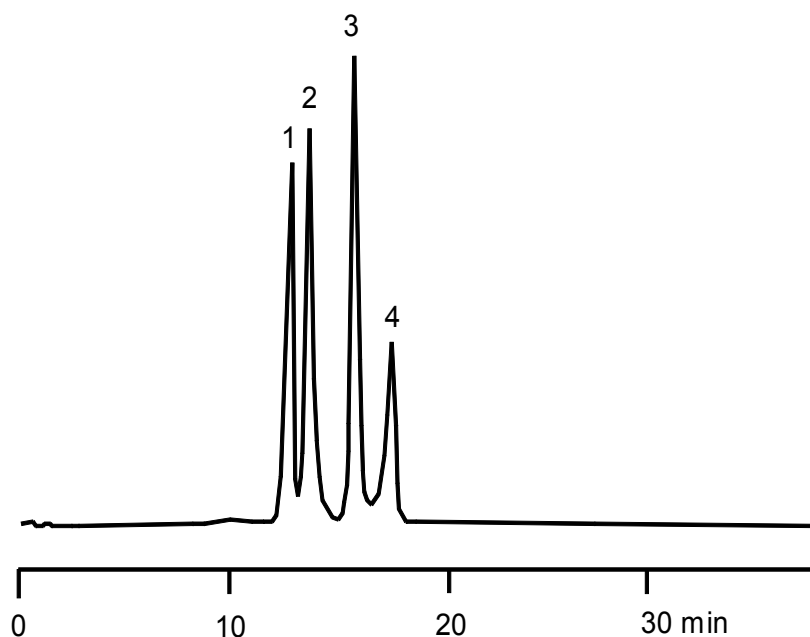
Detection: Refractive Index

Substances: Malic Acid, Lactic Acid, Quinic Acid, Shikimic Acid

Keywords: Organic Acids

Chromatogram:

1. Malic acid
2. Quinic acid
3. Shikimic acid
4. Lactic acid



25 Determination of Patulin in apple juice

Method HPLC
Sample preparation: **Matrix** Apple juice
extraction of apple juice with ethyl acetate (3x), extraction of the combined phases with Na₂CO₃ solution, extraction of the separated aqueous phase with ethyl acetate, addition of glacial acetic acid, reduction of ethyl acetate, redissolution of the dry residue in mobile phase

Column: Eurospher 100-5 C8, 250 x 4 mm ID

Order No. 25DE081ESJ

Phase: Eurospher 100-5 C8

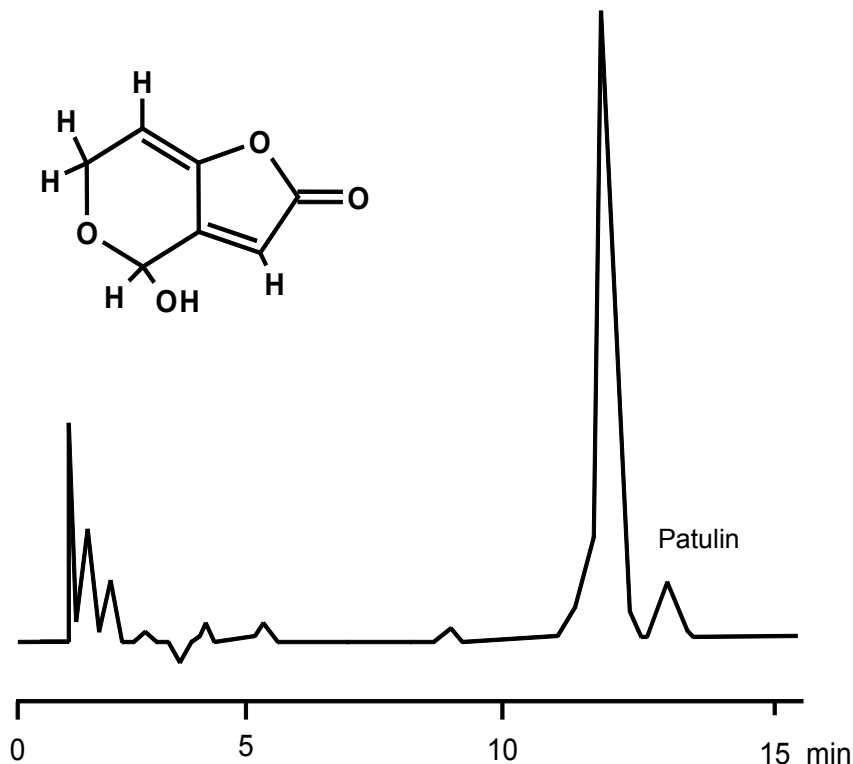
Conditions: Eluent: ACN / Water (3:97)
Gradient: Isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 µl

Detection: UV (DAD) at 275 nm

Substances: Patulin

Keywords: Mycotoxins

Chromatogram:



26 Separation of Preservatives

Method
HPLC

Matrix

Column: Eurospher 100-5 C8, 125 x 4 mm ID

Order No. 12DE081ESJ

Phase: Eurospher 100-5 C8

Conditions: Eluent: A: Buffer / Methanol (50:20) B: Buffer / Methanol (50:70) Buffer:
0.4 ml Formic Acid, 0.8 ml NH₃ (25 %) filled with Water to 1l
Gradient: 0 – 15 min: 100 % A to 100 % B
15 – 20 min: 100 % B
Flow rate: 1.0 ml/min
Temperature: 30 °C
Volume: 20 µl

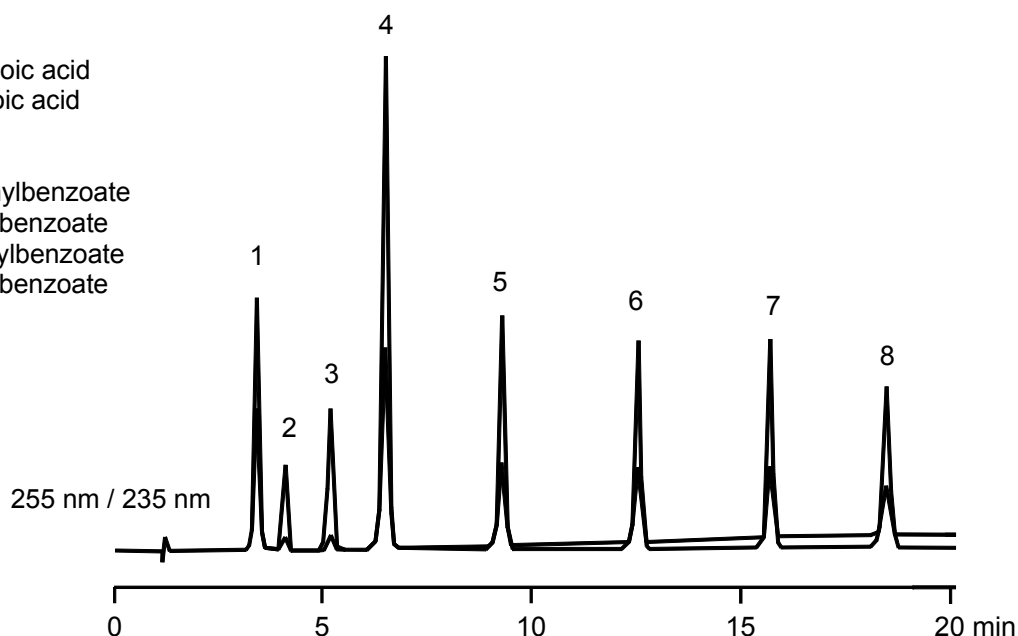
Detection: UV at 235 nm and 255 nm

Substances: Benzoic acid, 4-Hydroxy-benzoic acid, p-Hydroxy methylbenzoate, p-Hydroxy ethylbenzoate, p-Hydroxy propylbenzoate, p-Hydroxy butylbenzoate, 2-Methoxy benzoic acid, Sorbic acid

Keywords:

Chromatogram:

1. 4-Hydroxy benzoic acid
2. 2-Methoxy benzoic acid
3. Benzoic acid
4. Sorbic acid
5. p-Hydroxy methylbenzoate
6. p-Hydroxy ethylbenzoate
7. p-Hydroxy propylbenzoate
8. p-Hydroxy butylbenzoate



27 Determination of various Sterols

Method
HPLC

Matrix

Column: Eurospher 100-5 C8, 250 x 4 mm ID

Order No. 25DE081ESJ

Phase: Eurospher 100-5 C8

Conditions: Eluent: A: Water B: Acetonitrile / Methanol (99:1)
Gradient: isocratic 10 % A and 90 % B
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 2 µl

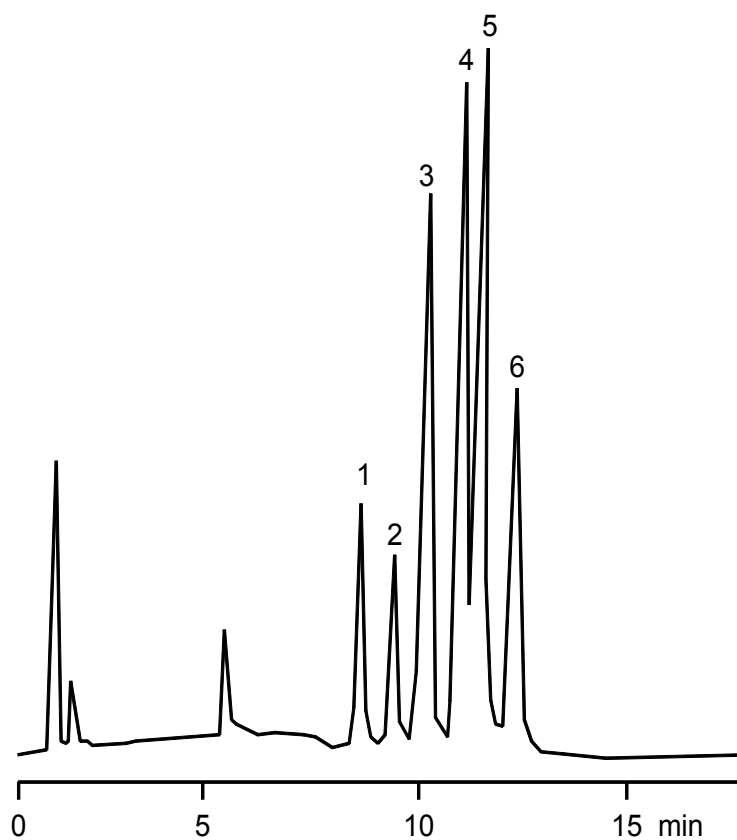
Detection: UV at 205 nm

Substances: Ergosterol, Lanosterol, Cholesterol, Campesterol, Stigmasterol, Sitosterol

Keywords: Steroids, Steroles

Chromatogram:

1. Ergosterol
2. Lanosterol
3. Cholesterol
4. Campesterol
5. Stigmasterol
6. Sitosterol



28 Separation of water soluble Vitamins

Method
HPLC

Matrix

Column: ProntoSIL 120-3-C18 AQ, 250 x 3 mm

Order No. 25CF184PSG

Phase: ProntoSIL 120-3-C18 AQ

Conditions:

Eluent:	A: 50 mM H ₃ PO ₄ in Water	B: Acetonitrile
Gradient:	0 – 3 min	100 % A
	3 – 6.66 min	100 – 70 % A
	6.66 - min	70 % A
Flow rate:	0.7 ml/min	
Temperature:	25 °C	
Volume:	5 µl	

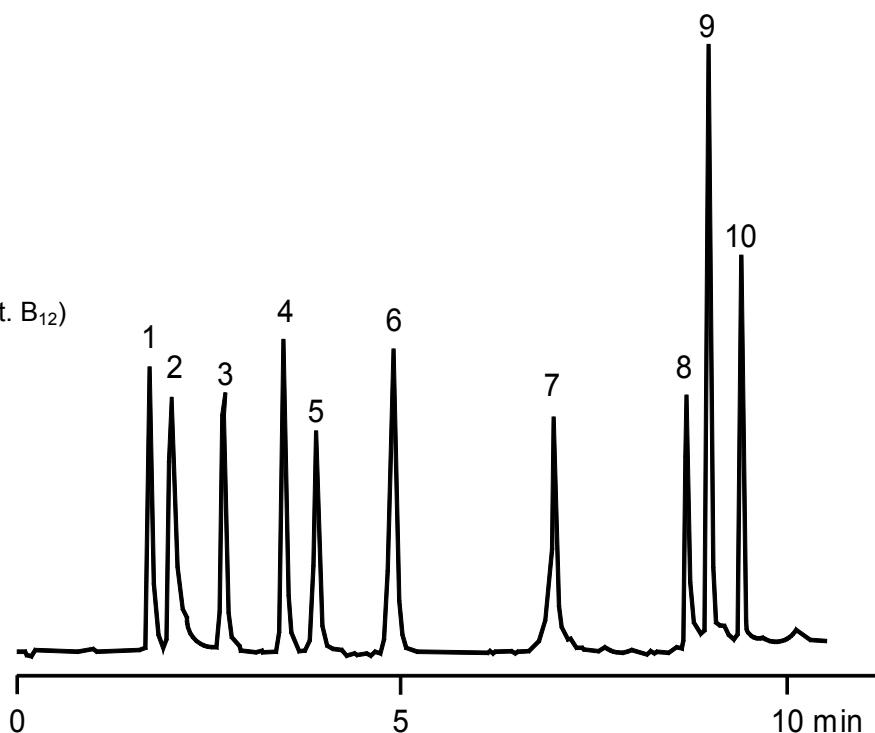
Detection: UV at 230 nm

Substances: Pyridoxamine, Thiamine (Vit. B₁), Ascorbic acid (Vit. C), Nicotinic acid (Niacin) Nicotinamide (Vit. B₃), Pyridoxale, Pyridoxine (Vit. B₆), Folic acid, Cyanocobalamine (Vit. B₁₂), Riboflavine (Vit. B₂)

Keywords: Vitamins, water soluble Vitamins

Chromatogram:

1. Pyridoxamine
2. Thiamine (Vit. B₁)
3. Ascorbic acid (Vit. C)
4. Nicotinic acid
5. Nicotinamide (Vit. B₃)
6. Pyridoxale
7. Pyridoxine (Vit. B₆)
8. Folic acid,
9. Cyanocobalamine (Vit. B₁₂)
10. Riboflavine (Vit. B₂)



29 Separation of Tocopherols and Vitamin D2

Method
HPLC

Matrix

Column: Eurospher 100-5 Si, 150 x 4 mm ID

Order No. 15DE000ESJ

Phase: Eurospher 100-5 Si

Conditions: Eluent: Hexan / 2-Butanol (1000:4)
Gradient: isocratic
Flow rate: 2.0 ml/min
Temperature: 25 °C
Volume: 20 µl

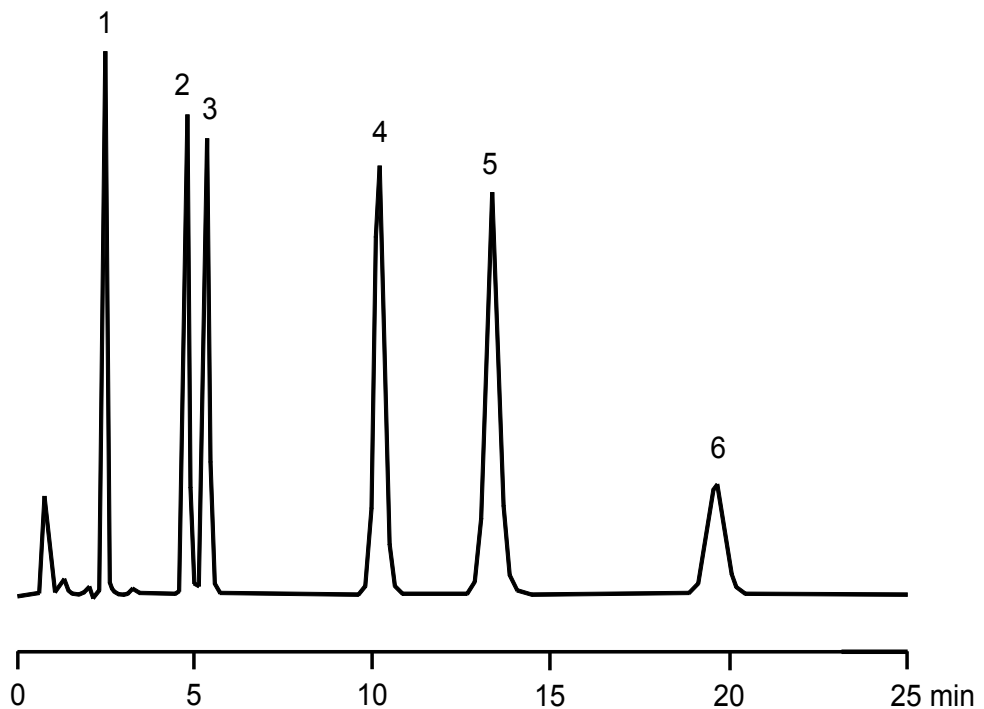
Detection: UV at 280 nm

Substances: Tocopherols (alpha, beta, gamma, delta), Vitamin D2

Keywords: Vitamins, fat soluble

Chromatogram:

1. alpha-Tocopherol
2. beta-Tocopherol
3. gamma-tocopherol
4. delta-Tocopherol
5. Vitamin D2
6. trans-Retinol



30 Separation of fat soluble Vitamins

Method
HPLC

Matrix

Column: ProntoSIL 120-3-C18 SH, 250 x 3 mm ID

Order No. 25CF180PSG

Phase: ProntoSIL 120-3-C18 SH

Conditions: Eluent: Methanol
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: ambient
Volume: 5 µl (50 – 300 ppm each substance)

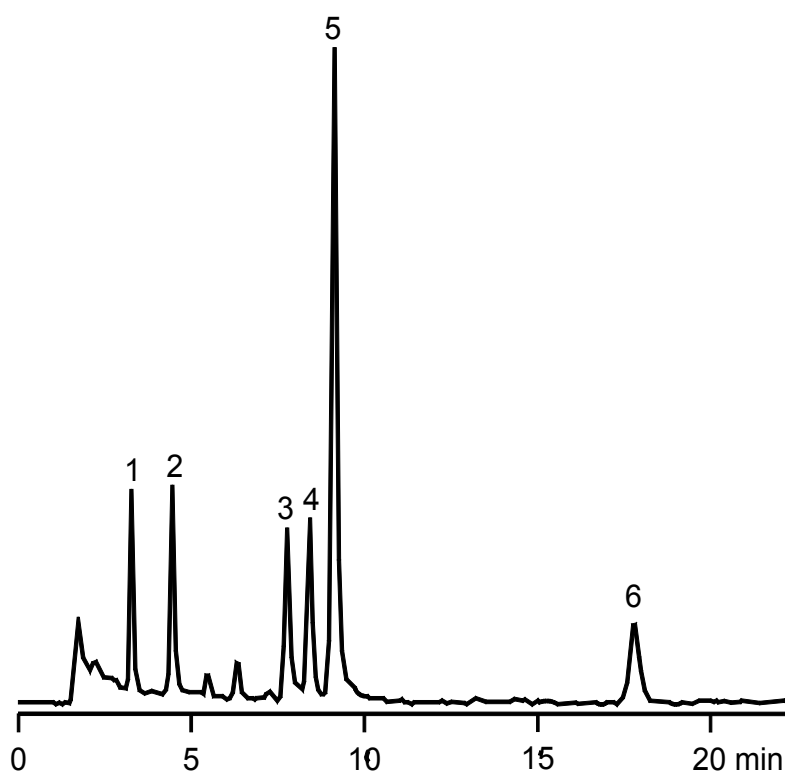
Detection: Evaporated Light Scattering Detector (T: 33 °C) / UV at 280 nm

Substances: Vitamin A acetate, Vitamin D3, Vitamin K1, Vitamin A alcohol, Vitamin D2, Vitamin E

Keywords: Vitamins, fat soluble

Chromatogram:

1. Vitamin A acetate
2. Vitamin D3
3. Vitamin K1
4. Vitamin A alcohol
5. Vitamin D2
6. Vitamin E



31 Fat soluble Vitamins by HPLC with electrochemical detection

Method
HPLC

Matrix
carrot juice

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Sample Preparation: vitamins in carrot juice, extracted with methanol

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol with 2 g/l LiClO₄ and 1 g/l Acetic Acid
Gradient: isocratic
Flow rate: 1.5 ml/min
Temperature: 25 °C
Volume: 10 µl (20 ng of each standard)

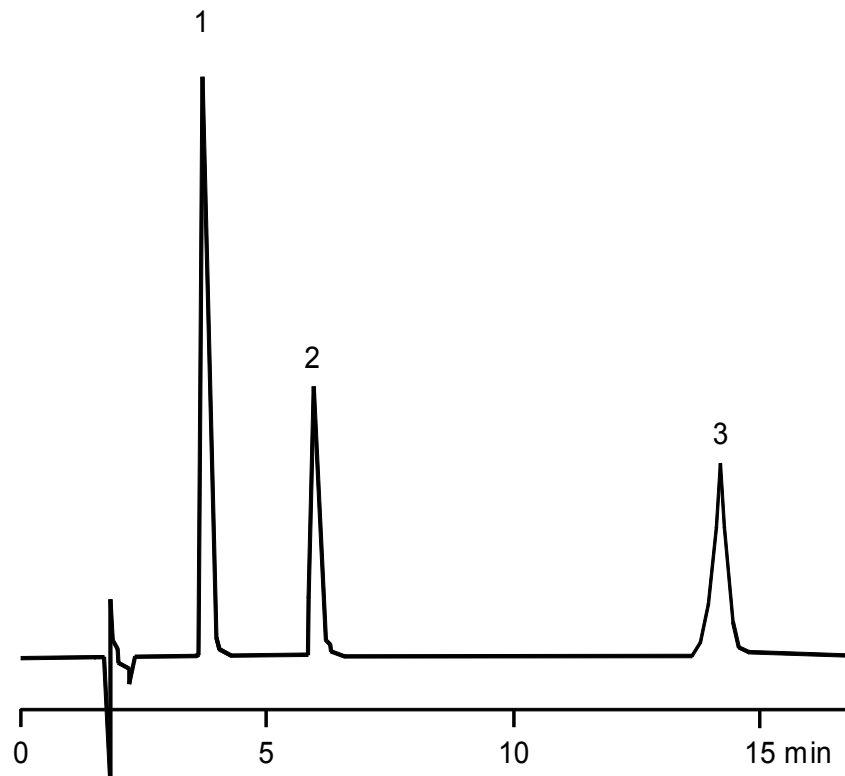
Detection: electrochemical, glassy carbon working electrode,
left +1000 mV, right +800 mV

Substances: Vitamin A Acetate, α-Tocopherol, β-Carotene

Keywords: Vitamins

Chromatogram:

1. Vitamin A Acetate
2. α-Tocopherol
3. β-Carotene



Pharmaceutical Applications

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2 Separation and determination of Opium Alkaloids

Method
HPLC

Matrix
opium

Column: Eurospher 100-5 C18, 250 x 4mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: 1 % Ammonium Acetate pH 5.8 / Acetonitrile (65:35)
Gradient: isocratic
Flow rate: 1.5 ml/min
Temperature: 25 °C
Volume: 20 µl

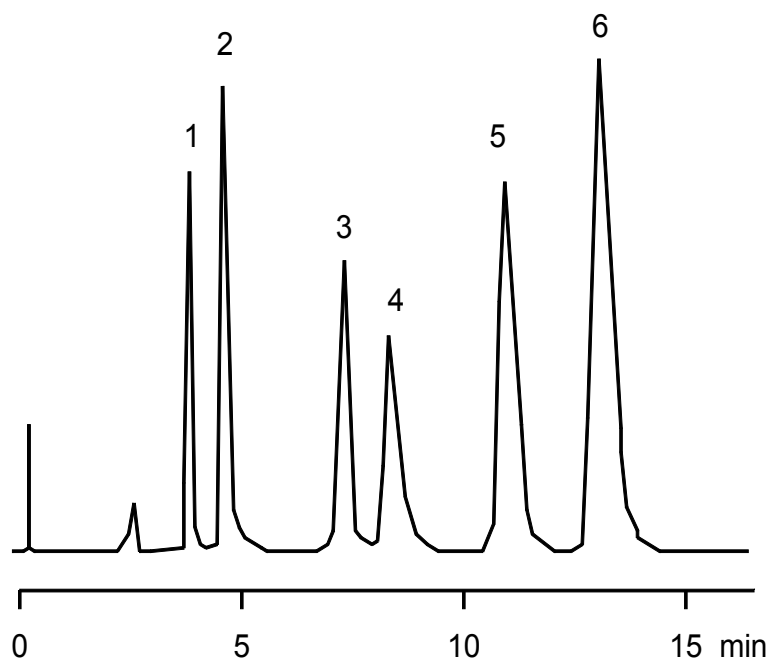
Detection: UV at 254 nm

Substances: Morphine, Codeine, Cryptopine, Thebaine, Papaverine, Narcotine

Keywords: Alkaloids

Chromatogram:

1. Morphine
2. Codeine
3. Cryptopine
4. Thebaine
5. Papaverine
6. Narcotine



3 HPLC method for the determination of Amineptine and its main Metabolite in human plasma

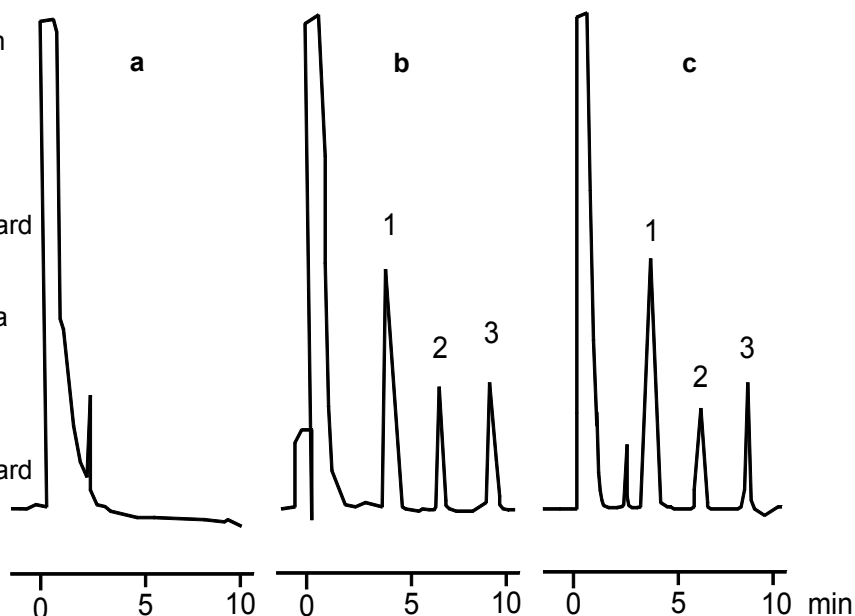
Method	Matrix	
HPLC	plasma	
Column:	Eurospher 100-5 C18, 150 x 4.6 mm ID	Order No. 15EE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: Aqueous phase containing 1.2 g/l heptane sulphonate adjusted to pH 3.0 with H ₃ PO ₄ / Acetonitrile (62:38)	
	Gradient: isocratic	
	Flow rate: 1.0 ml/min	
	Temperature: 30 °C	
	Volume: 20 µl	
Detection:	UV at 220 nm	
Substances:	Amineptine	
Keywords:	Drugs, Antidepressant drugs	

Chromatogram:

Chromatograms of extracts from
a) blank plasma

b) plasma spiked with:
1. 250 ng/ml metabolite
2. 250 ng/ml amineptine
3. 500 ng/ml internal standard

c) a patient plasma sample
obtained 45 min after taking a
100 mg oral dose of
amineptine, spiked with
1. 230 ng/ml metabolite
2. 180 ng/ml amineptine
3. 500 ng/ml internal standard



4 Determination of Amino Acids with OPA

Method
HPLC

Matrix

Column:

ProntoSIL 120-3-C18 H, 250 x 3.0 mm ID

Order No. 25CF185PSG

Phase:

ProntoSIL 120-3-C18 H

Sample Preparation:

Amino Acid standard with OPA precolumn derivatization

Conditions:

Eluent: A: 20 mM CH₃COONa in H₂O / ACN, (97:3)
B: 20 mM CH₃COONa in H₂O / ACN, (50:50)
Gradient: 5 – 28 % B, 0 – 144 s
28 – 45 % B, 145 – 560 s
45 – 82 % B, 561 – 896 s
82 – 90 % B, 897 – 1215 s
Flow rate: 0.6 ml/min
Temperature: 30 °C
Volume: 1 µl

Detection:

Fluorescence: excitation 330 nm emission 450 nm
UV at 330 nm

Substances:

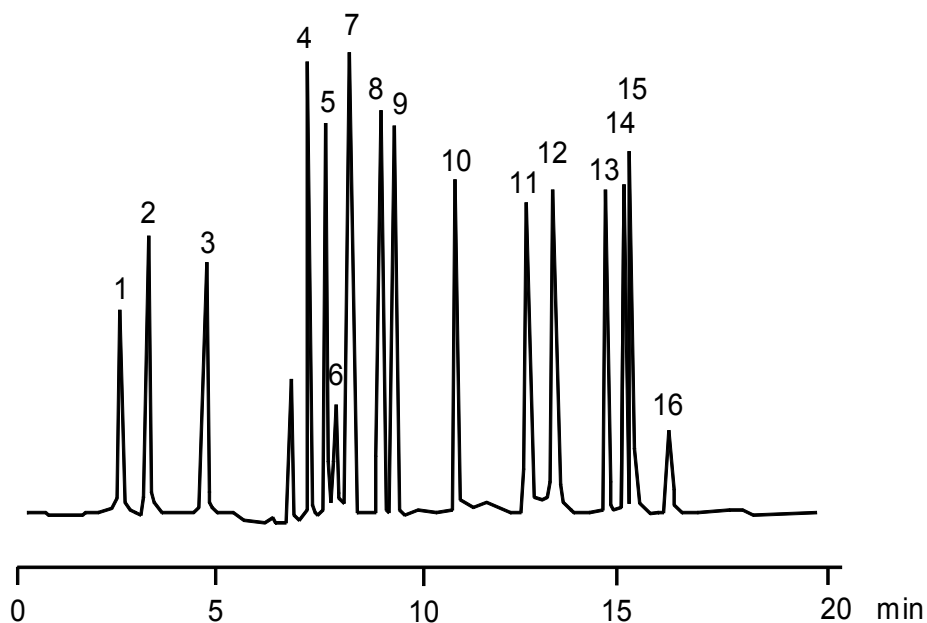
Aspartic acid, Glutamic acid, Serine, Glutamin, Histidine, Glycine, Threonine, Arginine, Alanine, Tyrosine, Methionine, Valine, Phenylalanine, Isoleucine, Leucine, Lysine

Keywords:

Amino Acids

Chromatogram:

1. Asp
2. Glu
3. Ser
4. Gly
5. Thr
6. His
7. Ala
8. Arg
9. Tyr
10. Val
11. Cys
12. Met
13. Ile
14. Phe
15. Leu
16. Lys



5 Separation of Aniline derivatives with electrochemical detection

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4.6 mm ID

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol / Water (1:1) with 2 g/l KNO₃ and 0.05 g/l H₂SO₄
Gradient: isocratic
Flow rate: 0.7 ml/min
Temperature: ambient
Volume: 20 µl

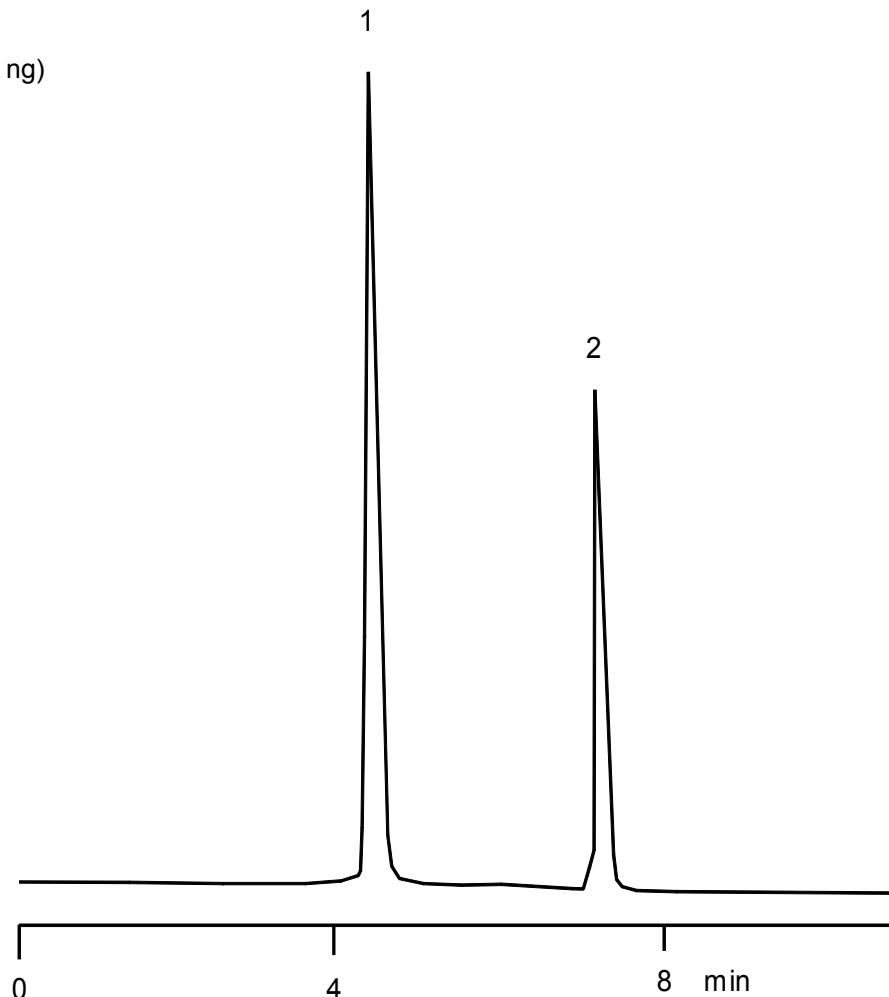
Detection: Amperometric detection, glassy carbon 1000 mV / 800 mV, 100 nA

Substances: Phenylene diamine, Chloroaniline

Keywords: Amines

Chromatogram:

1. p-Phenylene diamine (20 ng)
2. 3-Chloroaniline (25 ng)

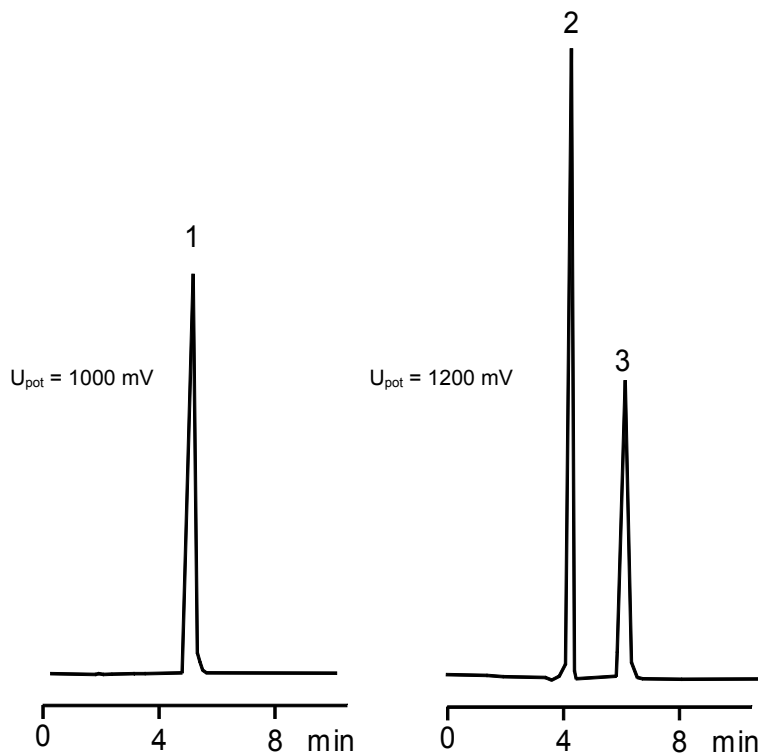


6 Separation of Anilines and Sulfonamides by HPLC with electrochemical detection

Method	Matrix	
HPLC		
Column:	Eurospher 100-5 C18, 250 x 4 mm ID	Order No. 25DE181ESJ
Phase:	Eurospher 100-5 C18	
Conditions:	Eluent: Methanol / Water (1:1) with 2 g/l KNO ₃ and 0.05 g/l Sulfuric Acid	
	Gradient: isocratic	
	Flow rate: 0.7 ml/min	
	Temperature: 25 °C	
	Volume: 10 µl	
Detection:	Amperometric detection, glassy carbon electrode, range 100 nA +1000 mV for o-Toluidine / 1200 mV for sulfonamides,	
Substances:	Toluidine-o, Sulfanilamide, Sulfamethoxydiazine	
Keywords:	Drugs, Antibiotics	

Chromatogram:

1. o-Toluidine
2. Sulfanilamide
3. Sulfmethoxydiazone



7 Separation of Trimethoprim and Sulfamethoxazol

Method
HPLC

Matrix

Column: ProntoSIL 120-5 C18 SH, 250 x 4 mm ID

Order No. 25DF180PSJ

Phase: ProntoSIL 120-5 C18 SH

Conditions: Eluent: Methanol / Water with 1 % formic acid (15:85)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 30 °C
Volume: 10 µl

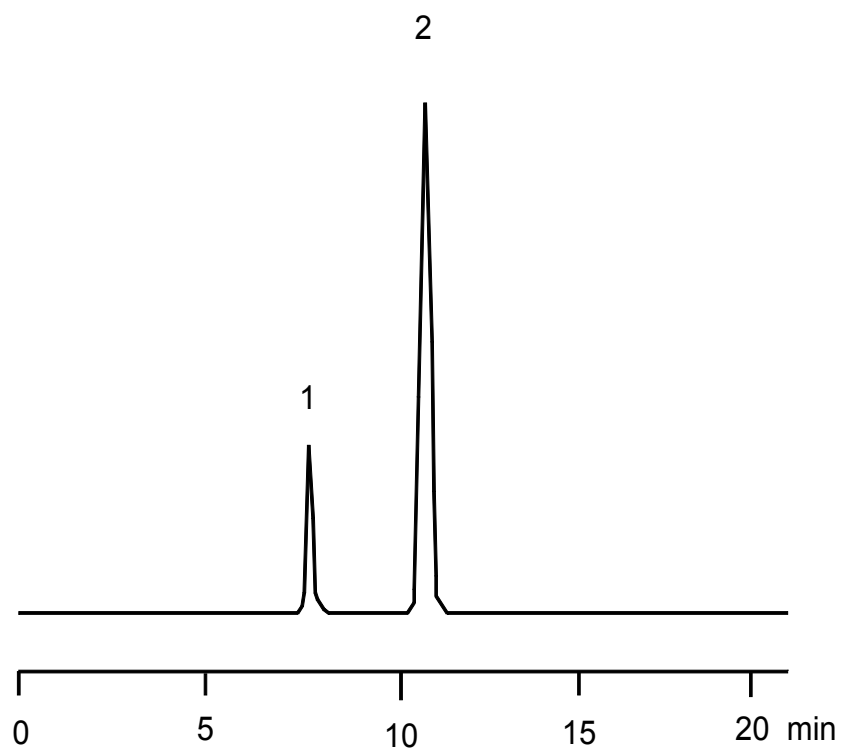
Detection: UV at 220 nm

Substances: Trimethoprim, Sulfamethoxazol

Keywords: Drugs, Antibiotic

Chromatogram:

- 1 Trimethoprim
- 2. Sulfamethoxazol



8 Determination of Anticonvulsant drugs and Methyl Xanthine derivatives in serum

Method
HPLC
Sample preparation:

Matrix
serum
Precolumn loading and washing with Eluent A

Column: Eurospher 100-5 C18, 150 x 4.6 mm ID

Order No. 15EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: A: 14 mM NaH₂PO₄ - 6mM Na₂HPO₄
B: Eluent A / Acetonitrile / Methanol (6.5:1.5:2)
Gradient: isocratic
Flow rate: 0.8 ml/min
Temperature: 25 °C
Volume: 20 µl

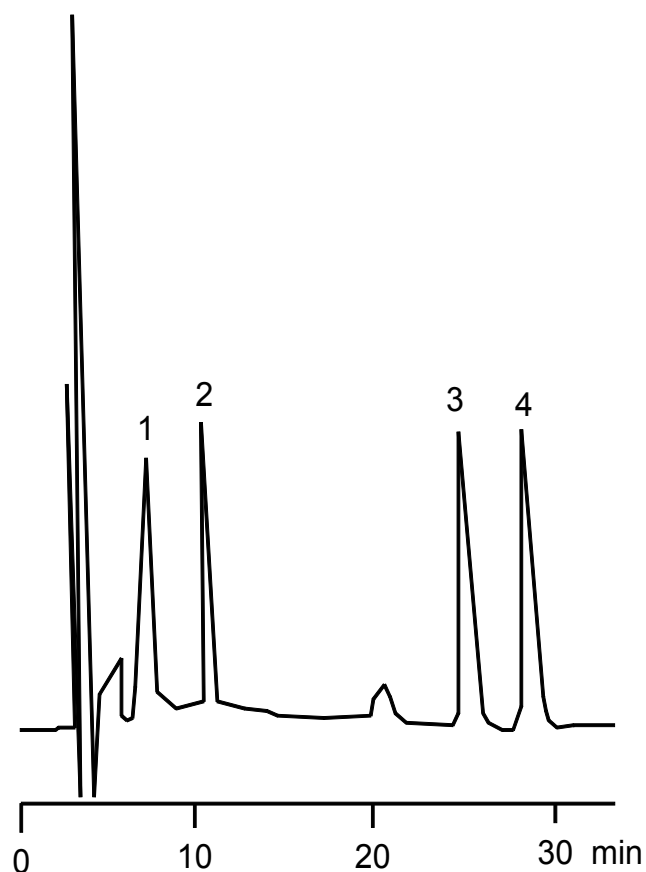
Detection: UV at 230 nm

Substances: Primidone, Phenobarbital, Phenytoin, Carbamazepine

Keywords: Drugs, Anticonvulsant drugs

Chromatogram:

1. Primidone (10 µg/ml)
2. Phenobarbital (10 µg/ml)
3. Phenytoin (20 µg/ml)
4. Carbamazepine (5 µg/ml)



9 Separation of Antiepileptics in serum

Method
HPLC

Matrix

Column: Eurospher 100-5-C18, 100 x 4.0 mm ID

Order No. 10DE181ESJ

Phase: Eurospher 100-5-C18

Conditions: Eluent: Recipe eluent: Antiepileptics in serum (Order no. 15010)
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 55 °C
 Volume: 10 µl

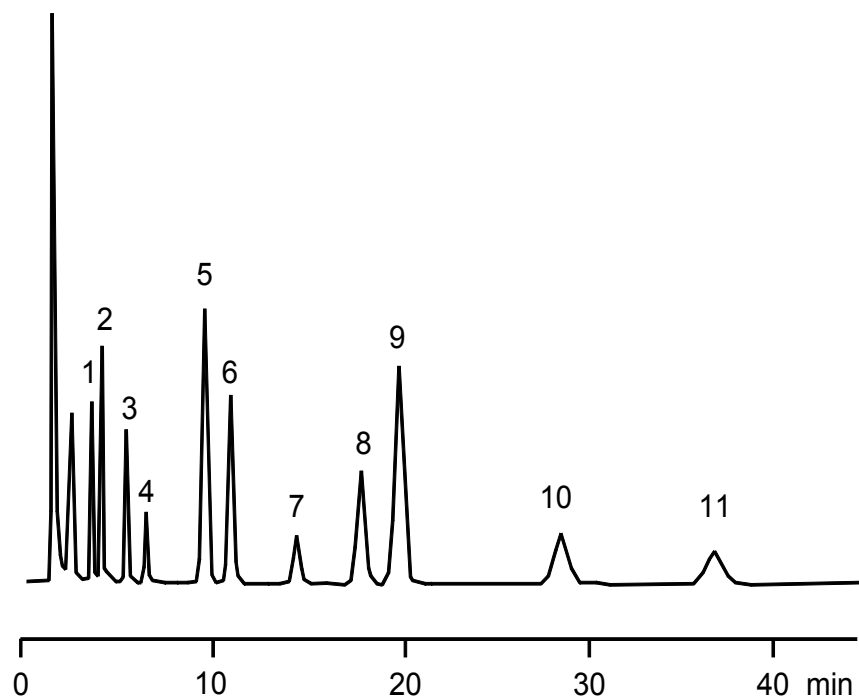
Detection: UV at 205 nm

Substances: PEMA, Ethosuximide, Primidone, Carbamazepine-diol, 10-OH-Carbamazepine, Phenobarbital, Carbamazepine-epoxide, Oxcarbazepine, DPH, Carbamazepine

Keywords: Antiepileptics, Drugs

Chromatogram:

1. PEMA
2. Ethosuximide
3. Primidone
4. Carbamazepine-diol
5. 10-OH-Carbamazepine
6. Phenobarbital
7. Carbamazepine-epoxide
8. Oxcarbazepine
9. Internal Standard (IS)
10. DPH
11. Carbamazepine



10 Separation of Antirheumatic drugs

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol / Water (70:30), 0.1 % Acetic Acid with 6 g/l Ammonium Acetate and 1.5 g/l Sulfuric Acid
Gradient: isocratic
Flow rate: 0.9 ml/min
Temperature: 20 °C
Volume: 20 µl

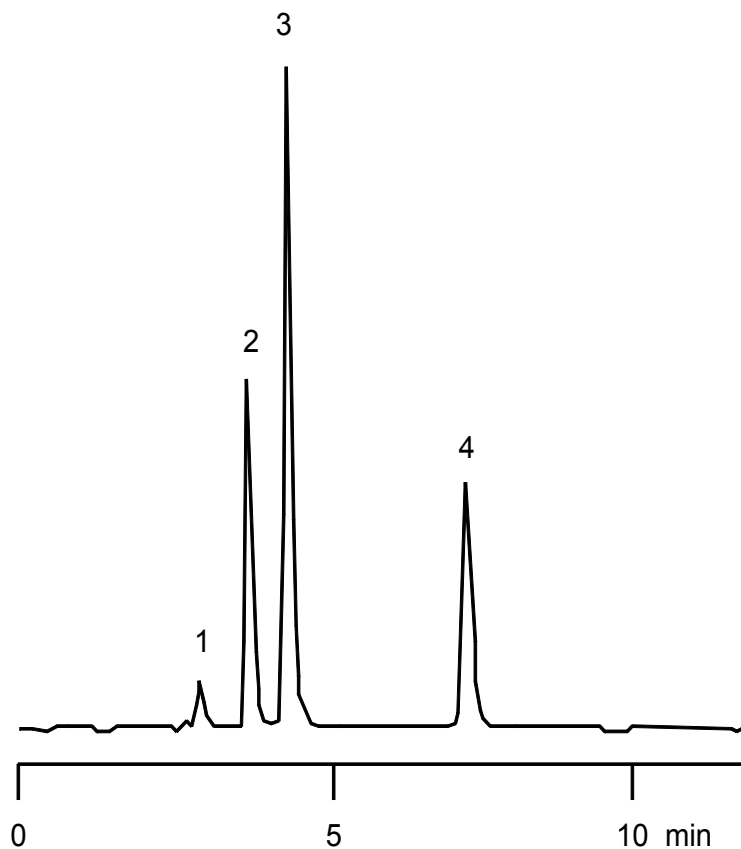
Detection: UV at 254 nm

Substances: Camphor, Ethylenglycolmonosalicylate, Nicotinic acid methyl ester, Nicotinic acid benzyl ester

Keywords: Antirheumatic drugs

Chromatogram:

1. Camphor
2. Nicotinic acid methyl ester
3. Nicotinic acid benzyl ester
4. Ethylenglycolmonosalicylate



11 Separation of Catecholamines

Method HPLC

Matrix

Column: UltraSep ES CAQC, 125 x 3 mm ID

Order No.I0203

Phase: UltraSep ES CAQC

Conditions: Eluent: prepared standard eluents: CA
 Gradient: isocratic
 Flow rate: 1 ml/min
 Temperature: 25 °C
 Volume: 5 µl

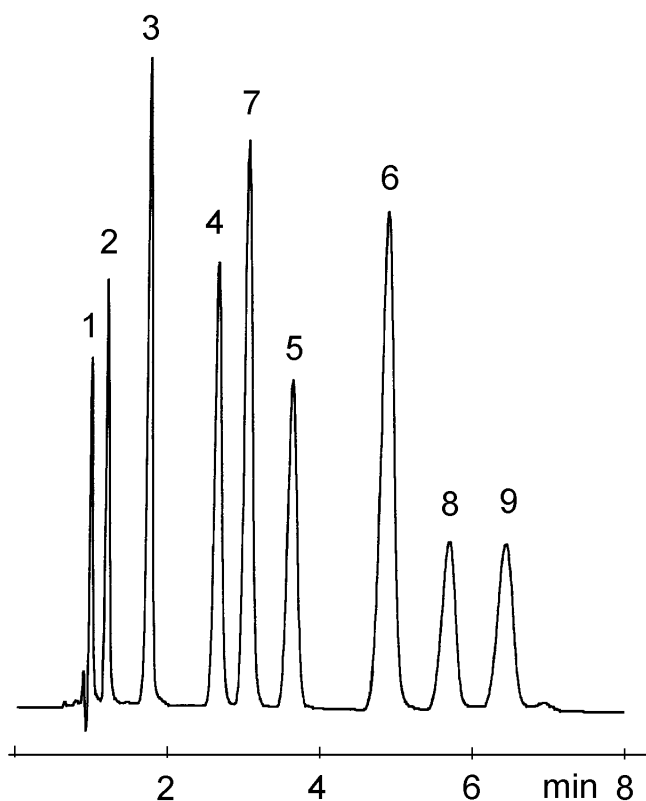
Detection: UV at 280 nm

Substances: Vanillyl mandelic acid (VMA); Iso-VMA; 3,4-Dihydroxyphenylic acetic acid (DOPAC); 5-Hydroxyindolyl acetic acid (5-HIAA); Homovanillic acid (HVA); 5-HICA; Dopamine; 3-Methoxytyramine (3-MT); 5-Hydroxytryptamine (Serotonine)

Keywords: Catecholamines

Chromatogram:

1. Vanillyl mandelic acid (VMA)
2. Iso-VMA
3. 3,4-Dihydroxyphenylic acetic acid (DOPAC)
4. 5-Hydroxyindolyl acetic acid (5-HIAA)
5. Homovanillic acid (HVA)
6. 5-Hydroxyindol-2-carboxylic acid (5-HICA)
7. 3-Hydroxytyramine (Dopamine)
8. 3-Methoxytyramine (3-MT)
9. 5-Hydroxytryptamine (Serotonine)



12 Determination of Catecholamines II

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: prepared standard eluent "Urinary catechoamines"
Gradient: isocratic
Flow rate: 0.3 ml/min
Temperature: 60 °C

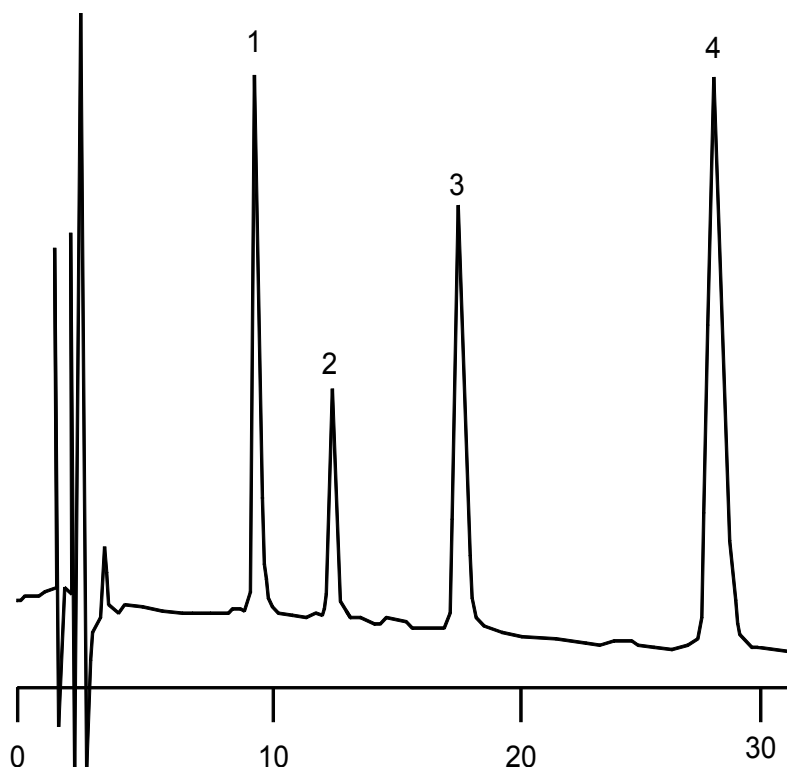
Detection: Amperometric, Cell potential 0.55 V, 10 nA/V, glassy carbon electrode

Substances: Adrenaline, Noradrenaline, Dihydroxybenzylamine (IS); Dopamine

Keywords: Catecholamines

Chromatogram:

1. Noradrenaline
2. Adrenalina
3. Dihydroxybenzylamine (IS)
4. Dopamine



13 Clinical analysis of Chloramphenicol

Method
HPLC

Matrix
serum

Column: Eurospher 100-5 C18, 100 x 2mm ID

Order No. 10BE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: 0.1 N Acetate buffer (pH 6.0) / Acetonitrile (8:2)
Gradient: isocratic
Flow rate: 0.2 ml/min
Temperature: ambient
Volume: 0.5 µl

Detection: UV at 254 nm

Substances: Chloramphenicol

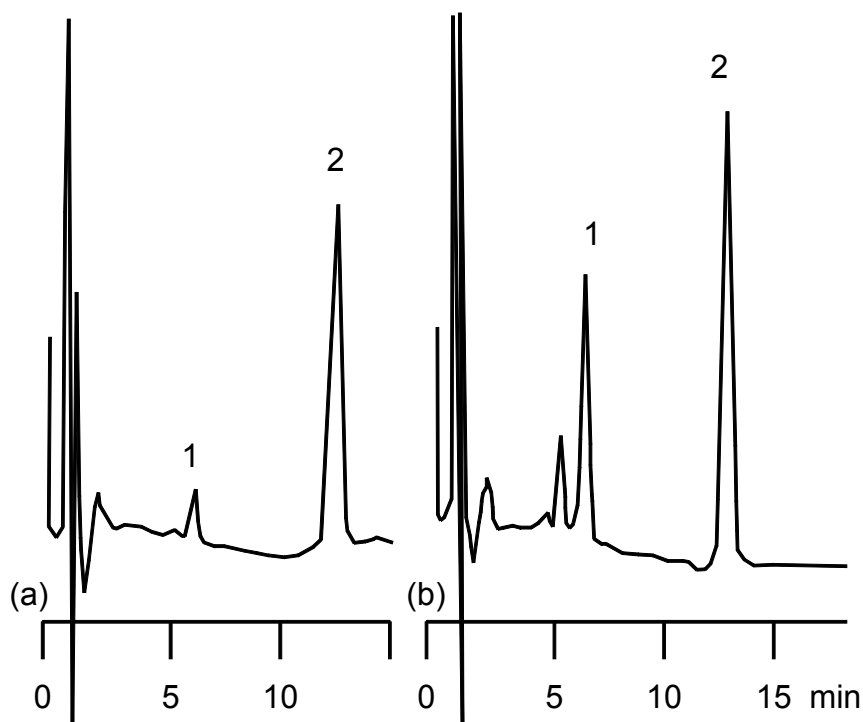
Keywords: Drugs, Antibacterial drugs

Chromatogram:

(a) 10 mg/l Chloramphenicol

(b) 25mg/l Chloramphenicol

1. Chloramphenicol
2. Internal Standard



14 Determination of Citrate and Oxalate in human urine

Method
HPLC

Matrix
urine

Column: Novosep A-2 Anion, 5µm, 250 x 4 mm ID

Order No. B92

Phase: Novosep A-2 Anion

Conditions: Eluent: 15 mM Sodium Carbonate (Na₂CO₃)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 50 °C
Volume: 5 µl, urine sample 1:20 (blue)

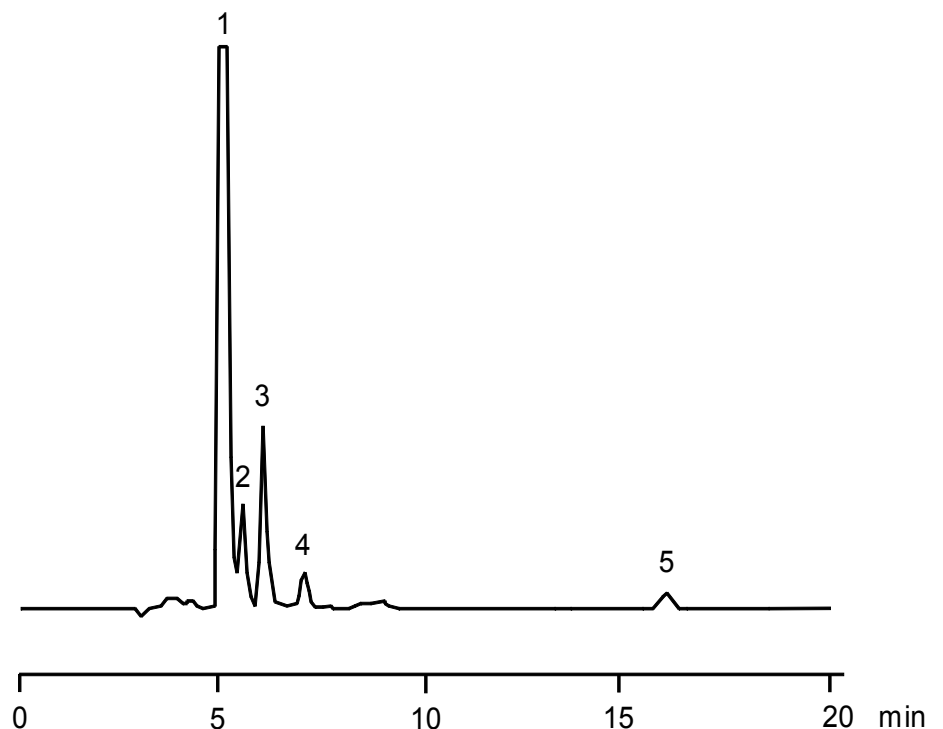
Detection: suppressed Conductivity (Alltech Model 650), Range 5 µS

Substances: Citrate, Oxalate

Keywords: Organic Anions

Chromatogram:

1. Chloride
2. Phosphate
3. Sulfate
4. Oxalate
5. Citrate



15 Determination of Guaifenesin, Codein and Pseudoefedrin in cough syrup

Method
HPLC

Matrix
cough syrup

Column: ProntoSIL 120-3 C18 SH, 250 x 4 mm ID
25EK185PSJ

Order No. 25EK185PSJ

Phase: ProntoSIL 120-3 C18 SH

Conditions: Eluent: Water / Methanol (70:30) with 0.1 % TFA (pH 1.87)
Gradient: isocratic
Flow rate: 0.8 ml/min
Temperature: 40 °C
Volume: 5 µl

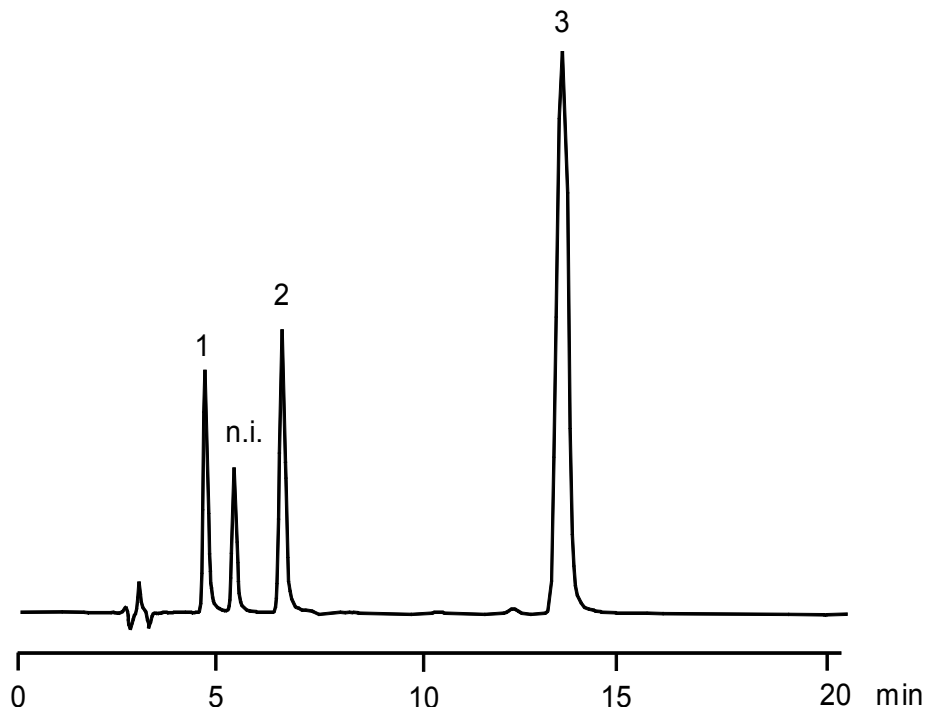
Detection: UV at 210 nm

Substances: Codein, Guaifenesin, Pseudoefedrin

Keywords: Codein, Guaifenesin, Pseudoefedrin

Chromatogram:

1. Codein
2. Pseudoefedrin
3. Guaifenesin



16 Isocratic separation of the Digoxin and Digitoxin series of Glycosides

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Acetonitrile / Methanol / Water (30:30:40)
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 30 °C
 Volume: 10 µl

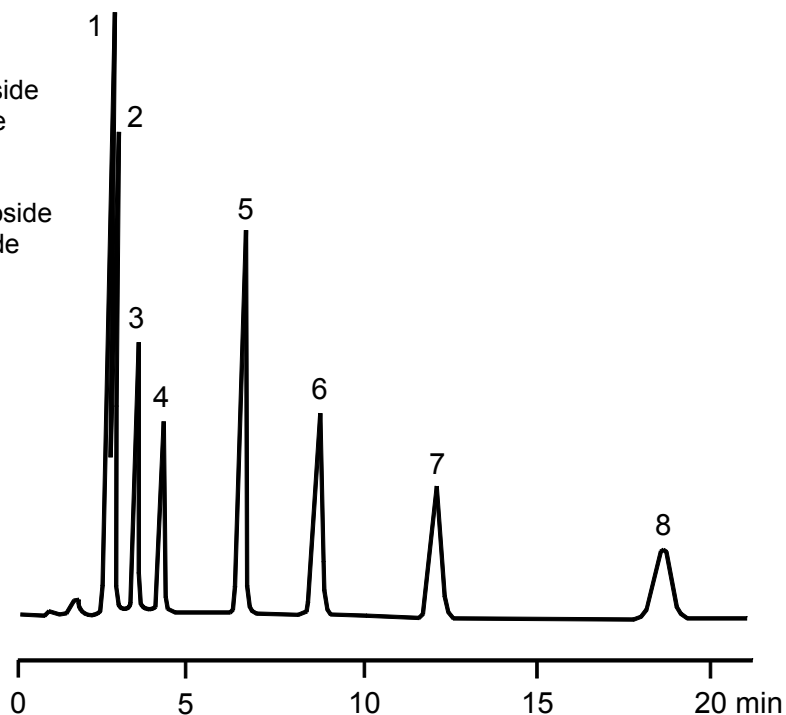
Detection: UV at 220 nm

Substances: Digoxigenin, Digoxigenin monodigitoxoside, Digoxigenin bisdigitoxoside, Digoxin, Digitoxigenin, Digitoxigenin monodigitoxoside, Digitoxigenin bisdigitoxoside, Digitoxin

Keywords: Drugs, Glycosides, Digitalis Glycosides

Chromatogram:

1. Digoxigenin
2. Digoxigenin monodigitoxoside
3. Digoxigenin bisdigitoxoside
4. Digoxin
5. Digitoxigenin
6. Digitoxigenin monodigitoxoside
7. Digitoxigenin bisdigitoxoside
8. Digitoxin



17 Separation of Narcotics

Method
HPLC

Matrix

Column: Eurospher 100-3 C18, 150 x 4 mm ID

Order No. 15DE181ESG

Phase: Eurospher 100-3 C18

Conditions: Eluent: Water / ACN (45:55)
Gradient: isocratic
Flow rate: 1.0 ml/min,
Temperature: 40 °C
Volume: 2 µl

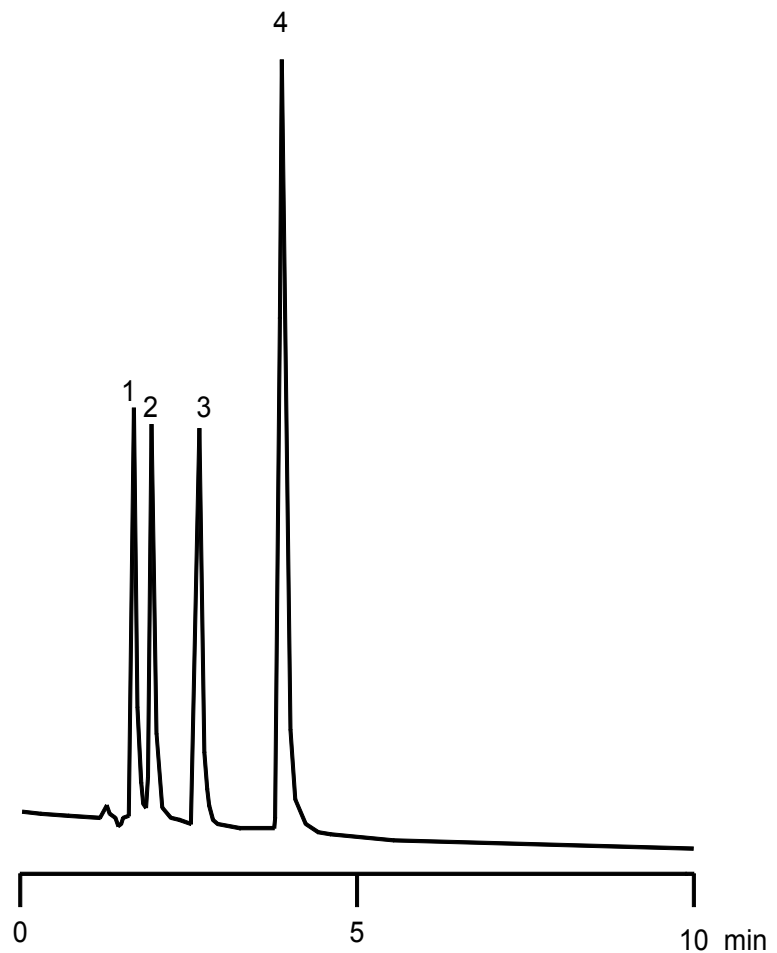
Detection: UV at 230 nm

Substances: Veronal, Luminal, Prominal, Revonal, Thiogental

Keywords: Drugs, Narcotics

Chromatogram:

1. Barbitol
2. Luminal
3. Prominal
4. Revinal



18 Analysis of β -Lactam Antibiotic (Moxalactam)

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 300 x 4 mm ID

Order No. 30DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol / 0.05 M Kalium phosphate (5:95) adjusted to pH 6.5
Gradient: isocratic
Flow rate: 2.0 ml/min
Temperature: 20 °C
Volume: 10 μ l

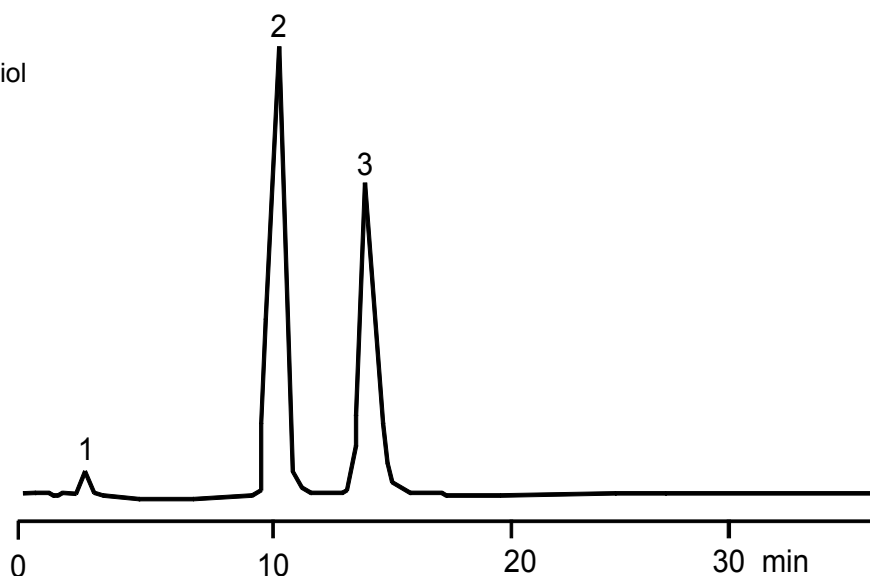
Detection: UV at 254 nm

Substances: Moxalactam, Methyl-1H-tetrazole-5-thiol

Keywords: Drugs, Antibiotics

Chromatogram:

1. 1-Methyl-1H-tetrazole-5-thiol
2. R-Moxalactam
3. S-Moxalactam

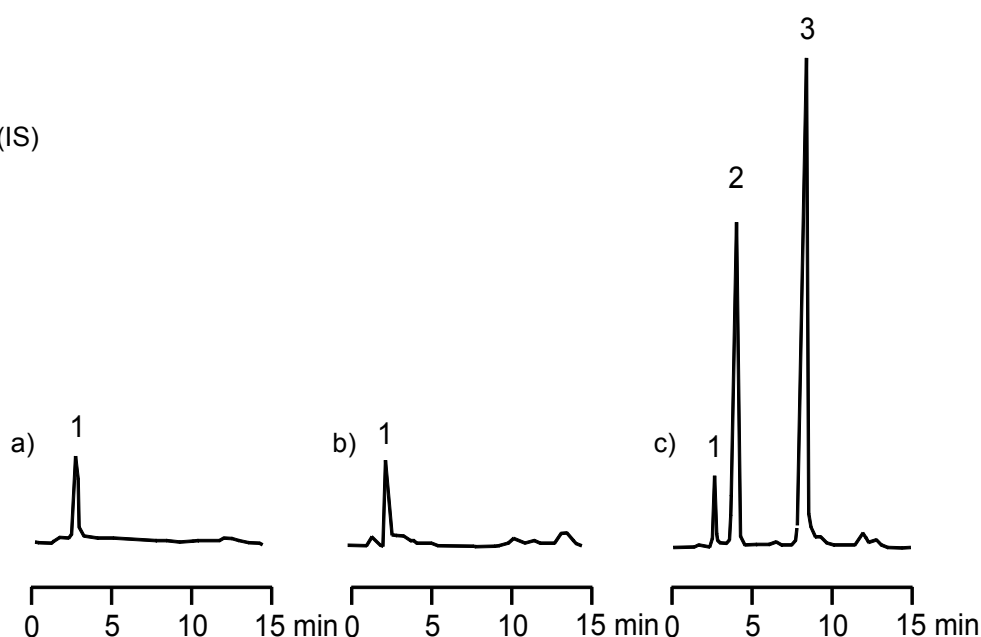


19 Analysis of Bisphosphonate Pamidronate Disodium by precolumn derivatization and fluorescence detection

Method	Matrix
HPLC	urine
Column:	Eurospher 100-5 C18, 250 x 4 mm ID
	Order No. 25DE181ESJ
Phase:	Eurospher 100-5 C18
Conditions:	Eluent: A) 1 mM aqueous Na ₂ EDTA, adjusted to pH 6.5 with 1 M NaOH B) Methanol (97:3) Gradient: isocratic Flow rate: 1.0 ml/min Temperature: ambient Volume: 20 µl
Detection:	Fluorescence: excitation 395 nm, emission 480 nm a. drug-free human urine b. drug-free dog urine c. urine from a dog receiving a single intravenous injection of 5 mg of pamidronate disodium in 0.15 M saline
Substances:	Pamidronate disodium, Disodium 3-amino-1-hydroxypropylidenebisphosphonate pentahydrate (IS)
Keywords:	Drugs

Chromatogram:

1. Injection Peak
2. Pamidronate
3. Internal Standard (IS)



20 Determination of Paracetamol and by-products

Method
HPLC

Matrix

Column: ProntoSIL 120-5 C8 ace-EPS, 250 x 3 mm ID

Order No. 25CF08APSJ

Phase: ProntoSIL 120-5 C8 ace-EPS

Conditions:

Eluent:	A: ACN	B: H ₂ O (pH 2.75 with H ₃ PO ₄)
Gradient:	0 – 0.65 min	10 % A
	0.65 – 6.4 min	10 → 60 % A
	6.4 – 10.4 min	60 % A
	10.4 - 12 min	10 % A
Flow rate:	1.3 ml/min	
Temperature:	50 °C	
Volume:	5 µl	

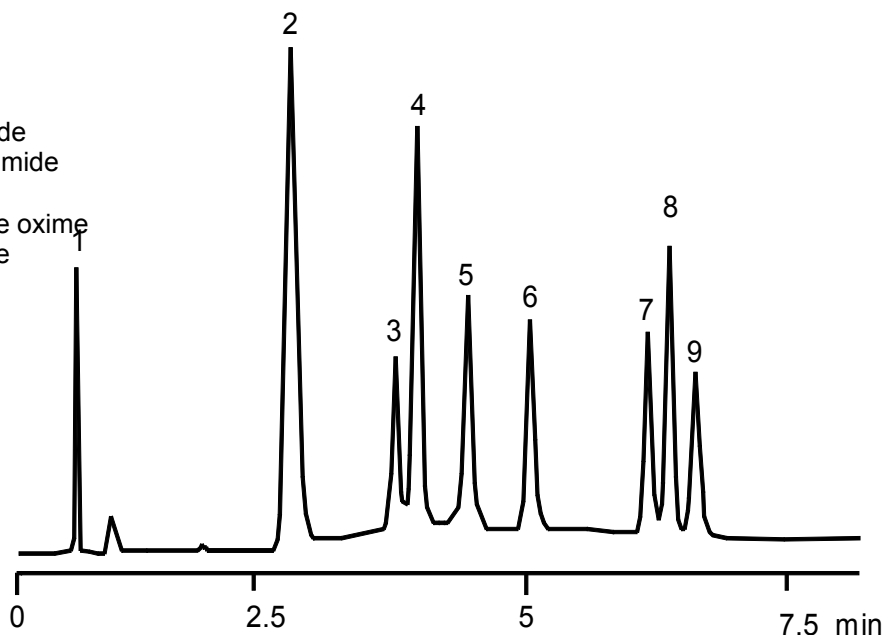
Detection: UV at 245 nm

Substances: Paracetamol, N-(2-hydroxyphenyl)acetamide, N-(4-hydroxyphenyl)propanamide, N-phenylacetamide, Chloracetanilide, 1-(4-hydroxyphenyl)ethanone oxime, 1-(2-hydroxyphenyl)ethanone, 4-Aminophenol, 4-Nitrophenol

Keywords: Paracetamol

Chromatogram:

1. 4-Aminophenol
2. Paracetamol
3. N-(2-hydroxyphenyl)acetamide
4. N-(4-hydroxyphenyl)propanamide
5. N-phenylacetamide
6. 1-(4-hydroxyphenyl)ethanone oxime
7. 1-(2-hydroxyphenyl)ethanone
8. Chloracetanilide
9. 4-Nitrophenol



21 Separation of Penicillin Antibiotics

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID
25DE181ESJ

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: ACN / H₂O (0.1 % TFA) (50:50)
Gradient: isocratic
Flow rate: 1.8 ml/min
Temperature: 25 °C
Volume: 1 µl

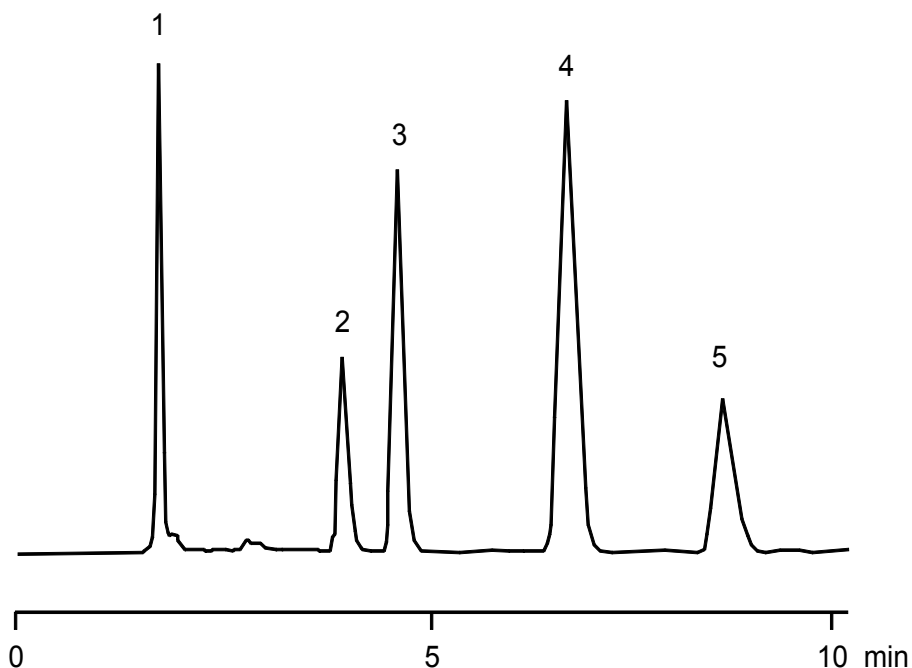
Detection: UV at 254 nm

Substances: Ampicillin, Penicillin G, Penicillin V, Nafcillin, Dicloxacillin

Keywords: Drugs, Antibiotics, Penicillines

Chromatogram:

1. Ampicillin
2. Penicillin G
3. Penicillin V
4. Nafcillin
5. Dicloxacillin



22 Separation of Peptides

Method
HPLC

Matrix

Column: ProntoSIL 300-5 C18 SH, 250 x 4.6 mm ID

Order No. 25EK185PSJ

Phase: ProntoSIL 300-5 C18 SH

Conditions: Eluent: A: H₂O / 0.1 % TFA B: ACN / H₂O (70:30) + 0.1 % TFA
Gradient: 20-100 % B in 30 min
Flow rate: 1.5 ml/min
Temperature: 30 °C
Volume: 5 µl

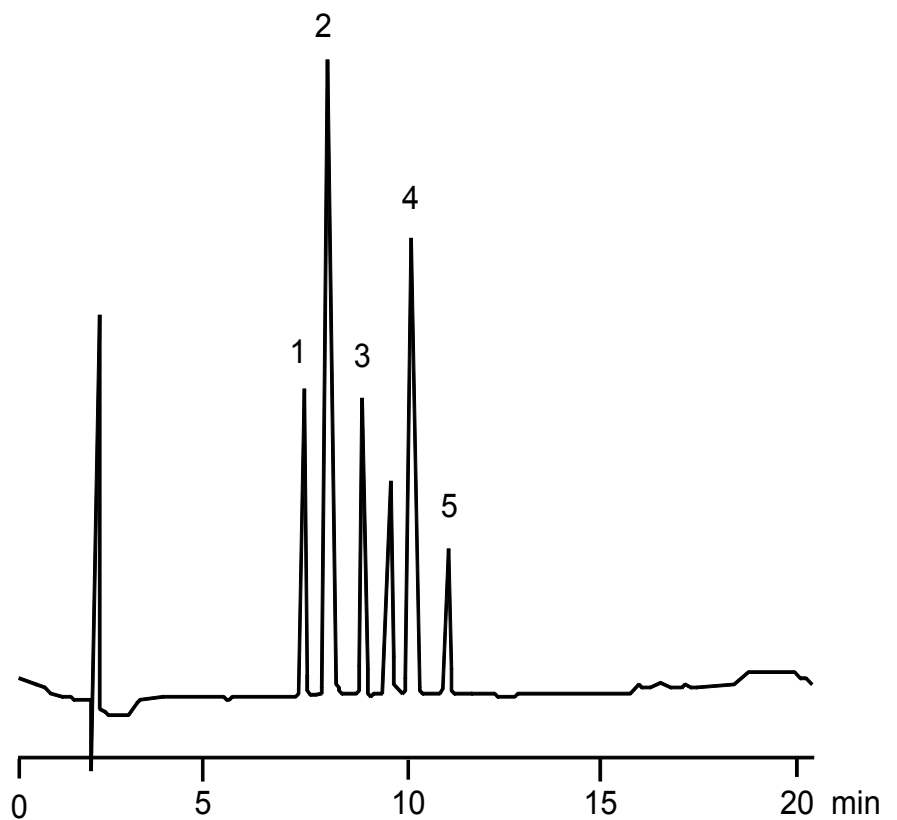
Detection: UV at 220 nm

Substances: Angiotensin I und II, Bradykinin, Eledoisin, Neurotensin, Oxytocin

Keywords: Peptides

Chromatogram:

1. Oxytocin
2. Bradykinin
3. Angiotensin II
4. Eledoisin
5. Neurotensin
6. Angiotensin I



23 Fast separation of Proteins

Method
HPLC

Matrix

Column: ProntoSIL 300-3 C18 SH, 75 x 4.6 mm ID

Order No. 0746K185PS030
(*B)

Phase: ProntoSIL 300-3 C18 SH

Conditions: Eluent: A: H₂O / 0.1 % TFA B: ACN / H₂O (95:5) + 0.1 % TFA
 Gradient: 0-25 s 29 - 48% B
 25-65 s 48 - 100% B
 Flow rate: 4.0 ml/min
 Temperature: 30 °C
 Volume: 5 µl

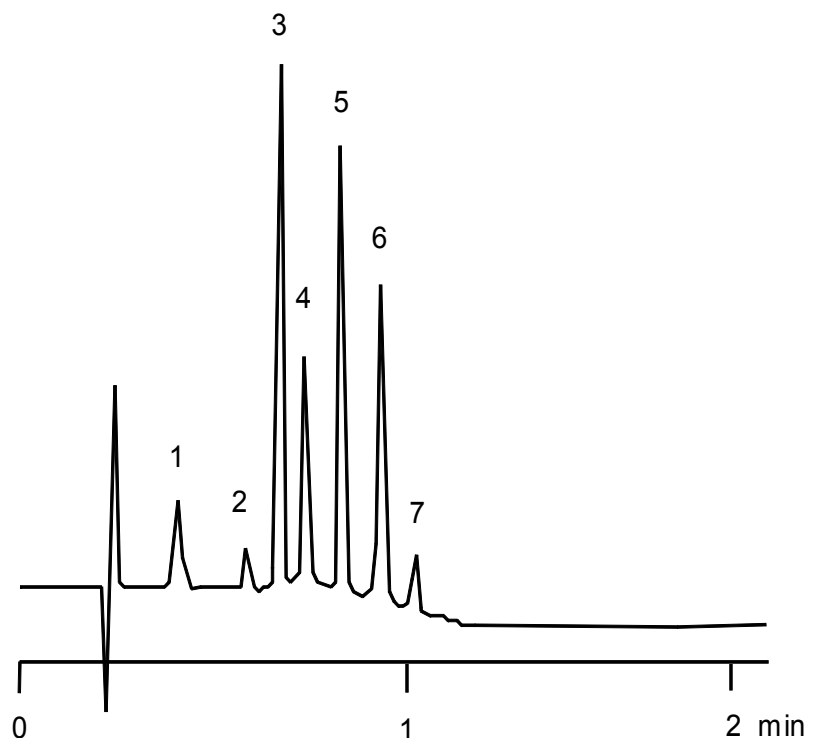
Detection: UV at 220 nm

Substances: BSA, Insulin bovine, Lysozyme, Myoglobin, Ovalbumin, Ribonuclease A

Keywords: Proteins

Chromatogram:

1. Ribonuclease A
2. Insulin bovine
3. Lysozyme
4. BSA
5. Myoglobin
6. Ovalbumin
7. Not identified



24 Separation of Sedative

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4.6 mm

Order No. 25EE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: A: Methanol B: Water (60:40)
Gradient: isocratic
Flow rate: 0.5 ml/min
Temperature: ambient
Volume: 10 µl

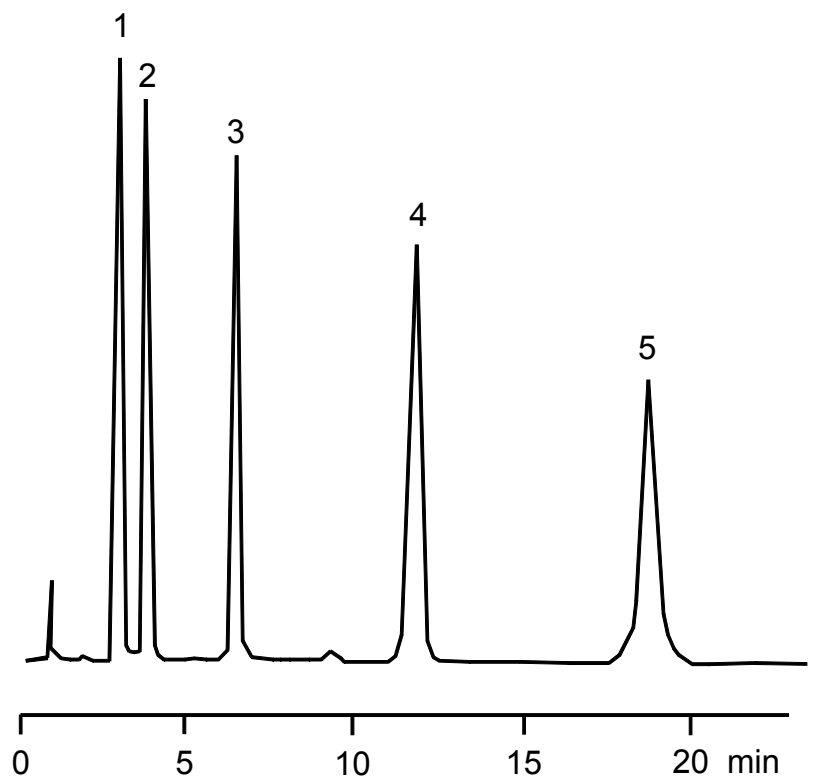
Detection: UV at 220 nm

Substances: Barbital, Luminal, Prominal, Revonal, Thiogenal

Keywords: Sedativa

Chromatogram:

1. Barbital
2. Luminal
3. Prominal
4. Revonal
5. Thiogenal



25 Separation of Steroids

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions:

Eluent:	A: Methanol	B: Water
Gradient:	0 - 35 min	50 % → 95 % A
	35 - 45 min	95 % → 50 % A
Flow rate:	1.0 ml/min	
Temperature:	30 °C	
Volume:	10 µl	

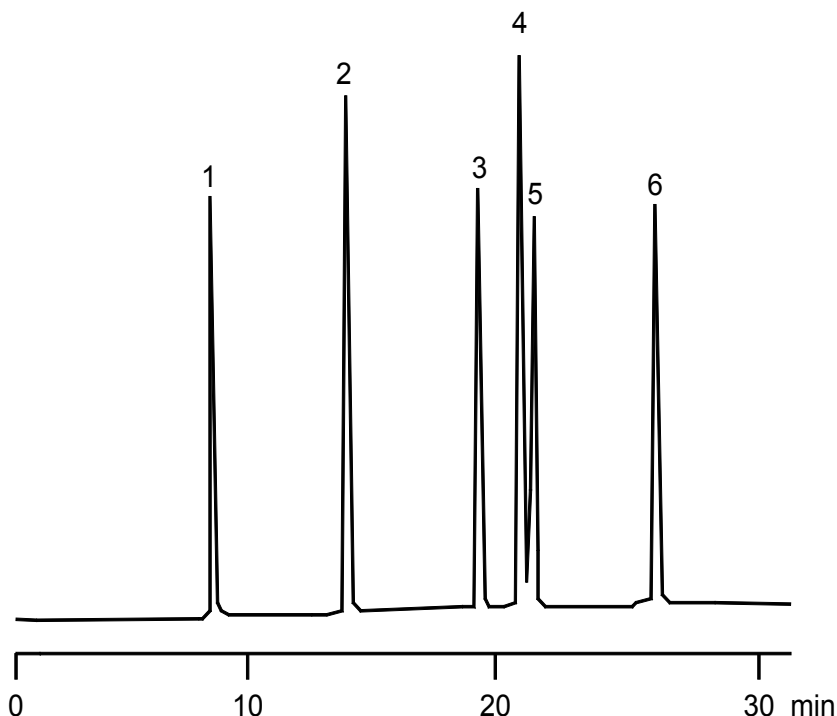
Detection: UV at 240 nm

Substances: Cortisone, Corticosterone, Desoxycorticosterone, Testosterone, Norgestrel, Progesterone,

Keywords: Steroids

Chromatogram:

1. Cortisone
2. Corticosterone
3. Desoxycorticosterone
4. Testosterone
5. Norgestrel
6. Progesterone



26 Separation of Steroids II

Method
HPLC

Matrix

Column: ProntoSIL 120A-5 C8 SH, 125 x 4 mm ID

Order No. 12DF08PSJ

Phase: ProntoSIL 120A-5 C8 SH

Conditions:

Eluent:	A: H ₂ O	B: MeOH
Gradient:	80 % A (1 min hold), 65 % A in 10 min, 65 % A (3 min), 40 % A in 6 min, 40 % A 4 min hold	
Flow rate:	1.0 ml/min	
Temperature:	30 °C	
Volume:	10 µl	

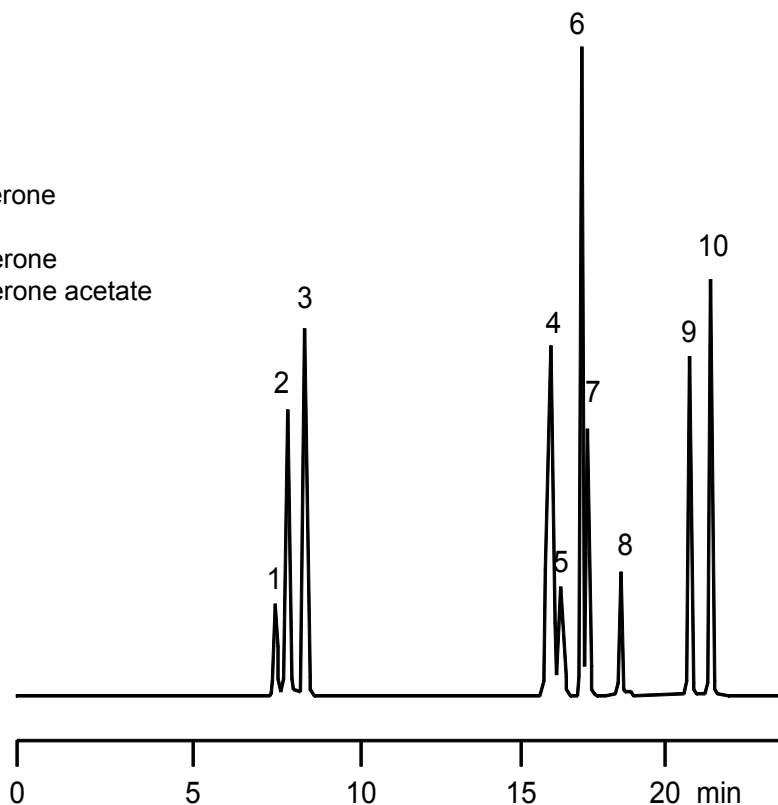
Detection: UV at 230 nm

Substances: Esteriol, Prednisolone, Cortisone, Testosterone, Methyl-6 α -hydroxy-11 β -progesterone, Methyl-6 α -hydroxy-17 α -progesterone, Methyl-6 α -hydroxy-17 α -progesterone acetate, Estradiol, Estrone, Progesterone

Keywords: Steroids

Chromatogram:

1. Esteriol
2. Prednisolone
3. Cortisone
4. Testosterone
5. Methyl-6 α -hydroxy-11 β -progesterone
6. Estradiol
7. Methyl-6 α -hydroxy-17 α -progesterone
8. Methyl-6 α -hydroxy-17 α -progesterone acetate
9. Estrone
10. Progesterone



27 Separation of Sulfa drugs

Method
HPLC

Matrix

Column: ProntoSIL 120-5 C18 ace-EPS, 150 x 4.6 mm ID **Order No. 15CE181ESG**

Phase: ProntoSIL 120-5 C18 ace-EPS

Conditions: Eluent: Methanol / Water / Acetic Acid (20:79:1) with
6 g/l Ammonium Acetate and 1.5 g/l Sulfuric Acid
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 3 µl

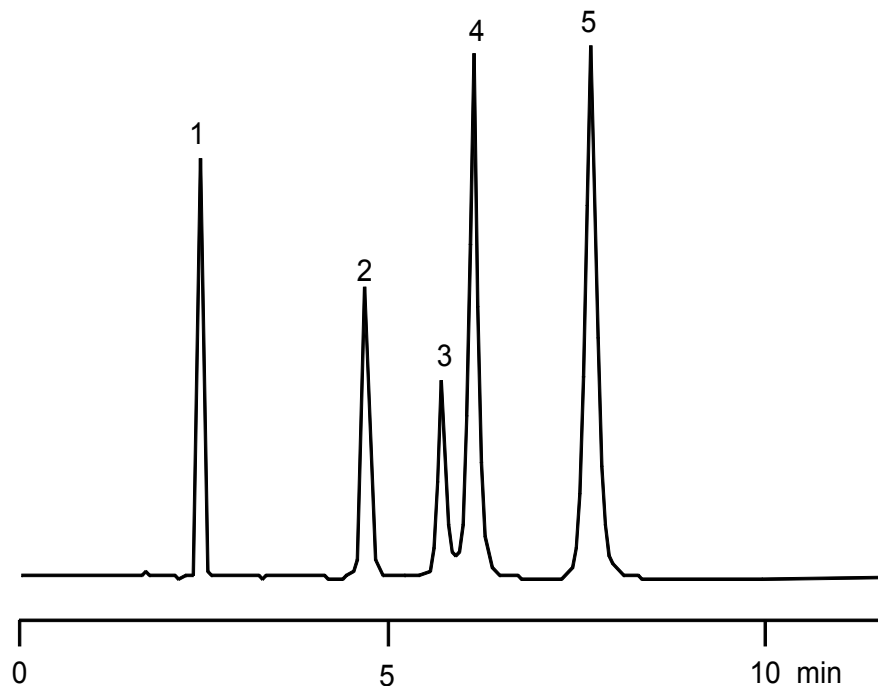
Detection: UV at 254 nm

Substances: Sulfanilamide, Sulfadiazine, Sulfathiazole, Sulfamerazine, Sulfamethazine

Keywords: Sulfa drugs

Chromatogram:

1. Sulfanilamide
2. Sulfadiazine
3. Sulfathiazole
4. Sulfamerazine
5. Sulfamethazine



28 Separation of Sulfa drugs II

Method
HPLC

Matrix

Column: Eurospher 100-3 C18, 150 x 3 mm ID

Order No. 15CE181ESG

Phase: Eurospher 100-3 C18

Conditions:

Eluent:	A: ACN B: 0.2 g NaH ₂ PO ₄ in 1000 ml H ₂ O (pH 4 with H ₃ PO ₄)
Gradient:	22 % A 0 – 3.5 min 30 % A 3.5 – 4.5 min 90 % A 4.5 – 6 min, 2 min hold
Flow rate:	0 - 3.5 min 0.2 ml/min, 3.5 - 10 min 0.4 ml/min
Temperature:	40 °C
Volume:	10 µl

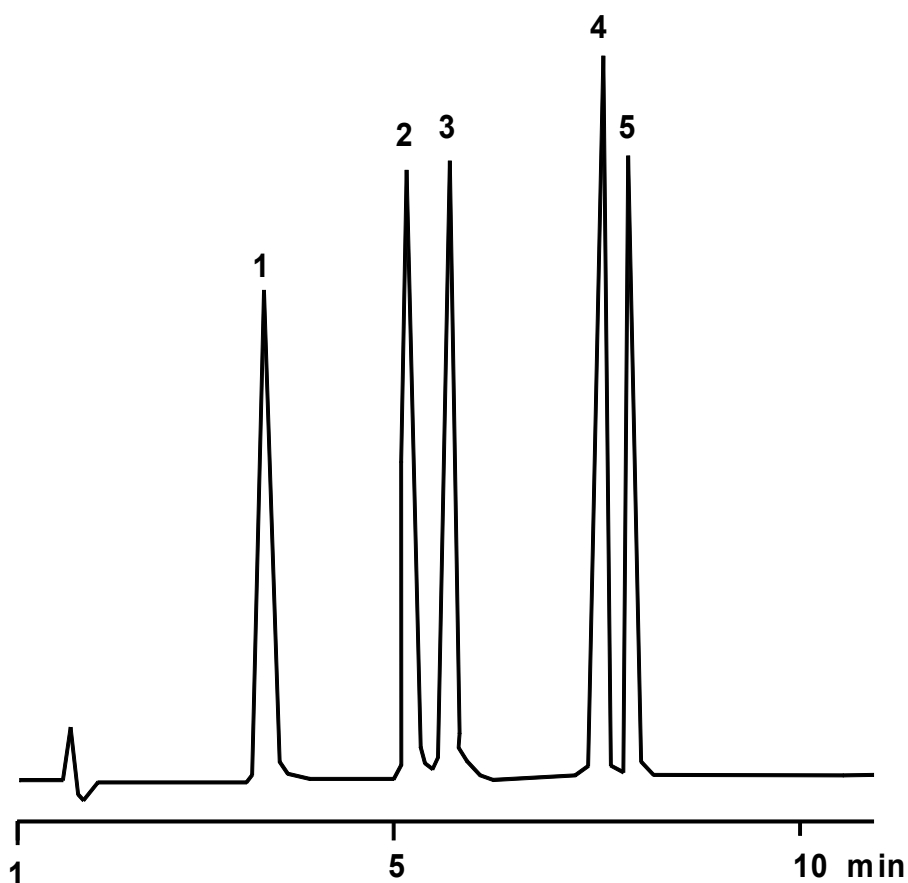
Detection: UV at 265 nm

Substances: Sulfadiazine, Sulfamethiazole, Sulfamethoxypyridazine, Sulfamethoxazole, Sulfadimethoxine

Keywords: Sulfa drugs, antibiotics

Chromatogram:

1. Sulfadiazine
2. Sulfamethiazole
3. Sulfamethoxypyridazine
4. Sulfamethoxazole
5. Sulfadimethoxine



29 Separation of Tricyclic Antidepressant drugs

Method
HPLC

Matrix

Column: ProntoSIL 120-3-C18 AQ, 60 x 4.0 mm ID

Order No. 06DF184PSG

Phase: ProntoSIL 120-3-C18 AQ

Conditions: Eluent: ACN / MeOH / 10 mM Phosphate Buffer (62:13:25)
Gradient: isocratic
Flow rate: 0.7 ml/min
Temperature: 20 °C
Volume: 5 µl

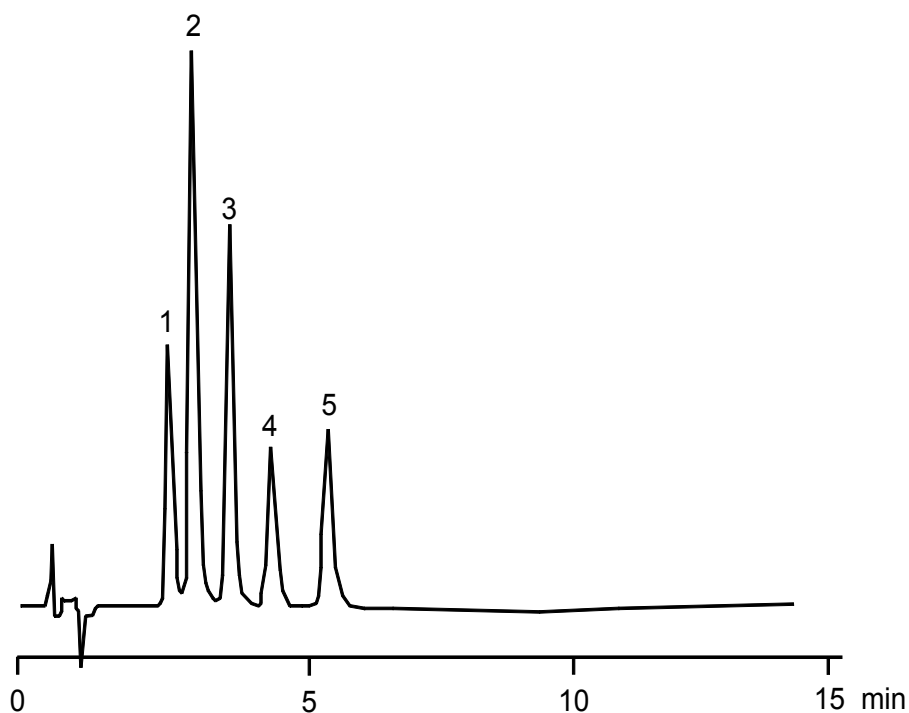
Detection: UV at 254 nm

Substances: Amitriptyline, Doxepin, Imipramine, Nortriptyline, Trimipramine

Keywords: Antidepressant, Drugs

Chromatogram:

1. Doxepin
2. Imipramin
3. Nortriptyline
4. Amitriptyline
5. Trimipramine



30 Separation of D,L-Tryptophan and Aromatic Acids

Method
HPLC

Matrix

Column: Eurospher 100-5 C18, 250 x 4 mm ID

Order No. 25DE181ESJ

Phase: Eurospher 100-5 C18

Conditions: Eluent: Methanol / Water (30:70)
with 6 g/l Ammonium Acetate and 1.5 g/l Sulphuric Acid
Gradient: isocratic
Flow rate: 0.7 ml/min
Temperature: 25 °C
Volume: 10 µl (40 ng each)

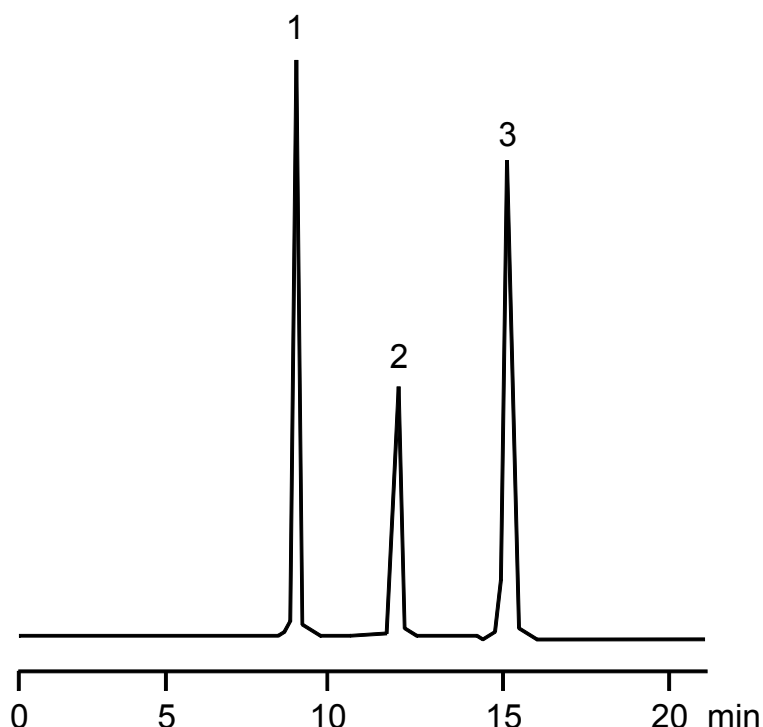
Detection: Amperometric detection, +1000 mV / 800 mV, range 100 nA

Substances: Dihydroxyphenylacetic acid, Tryptophan, Homovanillic acid

Keywords: Biogenic amines, aromatic acids

Chromatogram:

1. 3,4-Dihydroxyphenylacetic acid,
2. D,L-tryptophan,
3. Homovanillic acid



Chiral Applications

(HPLC)

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1 Chiral separation of Abscisic Acid (4-Oxo-2-Cyclohexen-1-yl)-3-Methyl-2,4-Pentadienoic Acid)

Method
HPLC

Matrix
Reversed Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Methanol / Water (50:50) + 0.1 % TFA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 5 µl

Detection: UV at 230 nm

Substances: Abscisic acid (4-Oxo-2-Cyclohexen-1-yl)-3-Methyl-2,4-Pentadienoic Acid)

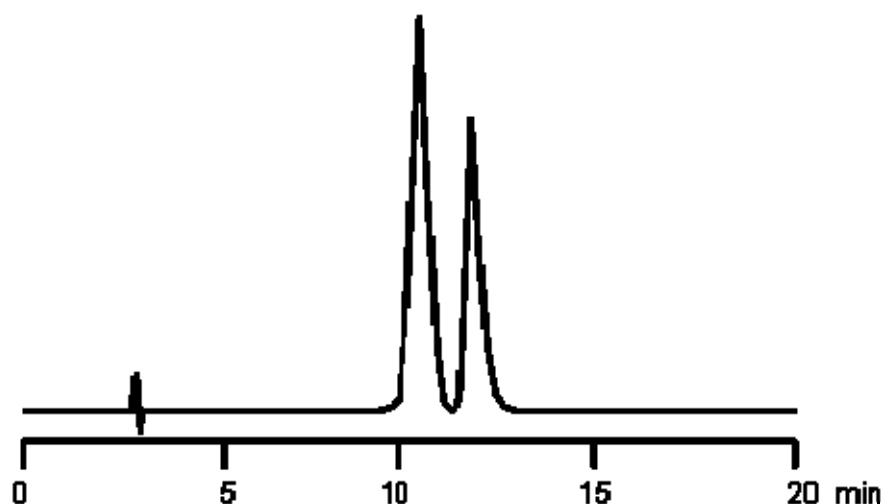
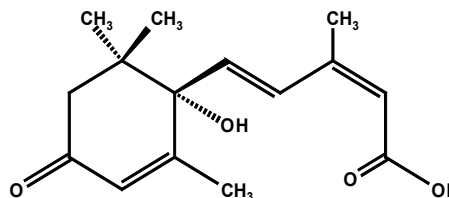
Keywords: plant hormone, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.67$

$k'2 = 3.19$

$\alpha = 1.19$



2 Chiral separation of 3-Amino-2(2-Naphtyl)-1-Phenyl-Propanol

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Heptane / 2-Propanol (90:10) + 0.1 % TFA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μ l

Detection: UV at 230 nm

Substances: 3-Amino-2(2-Naphtyl)-1-Phenyl-Propanol

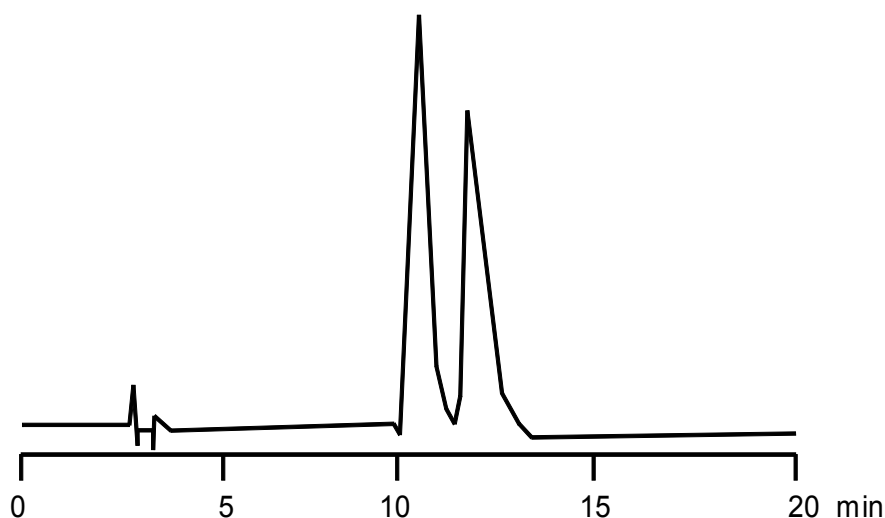
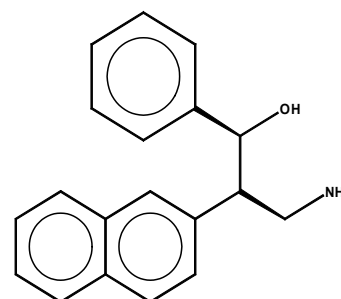
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.46$

$k'2 = 3.13$

$\alpha = 1.27$



3 Chiral separation of Atenolol (2-[4-[2-Hydroxy-3-(1-Methylethylamino)Propoxy]Phenyl]Ethanamid)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (80:20) + 0.1 % EtOA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 µl

Detection: UV at 230 nm

Substances: Atenolol (2-[4-[2-Hydroxy-3-(1-Methylethylamino)Propoxy]Phenyl]Ethanamid)

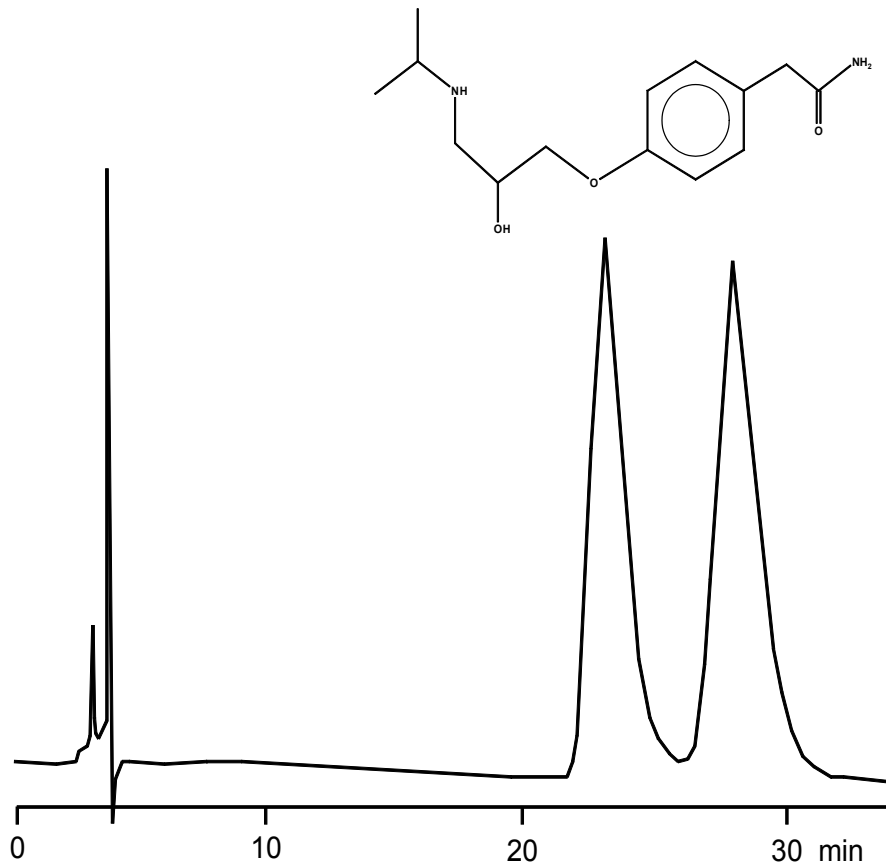
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 6.53$

$k'2 = 8.17$

$\alpha = 1.25$



4 Chiral separation of Atropine (rac-Hyoscyamin)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexane / 2-Propanol (80:20)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 218 nm

Substances: Atropine

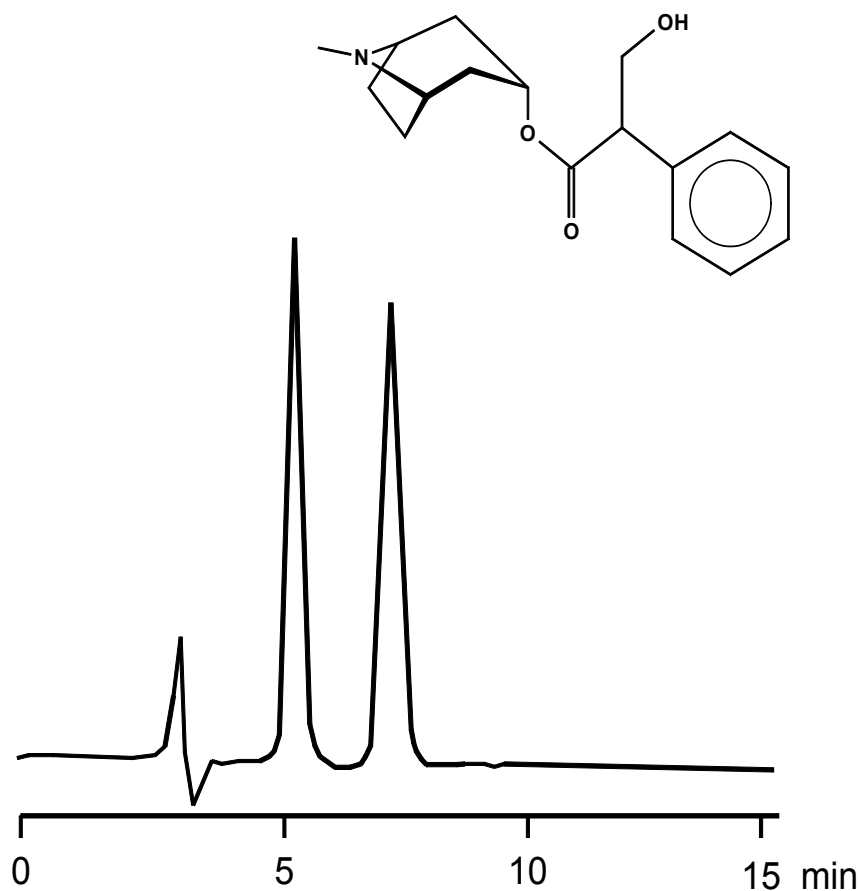
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.54$

$k'2 = 0.89$

$\alpha = 1.65$



5 Chiral separation of 1-Aza[6]Helicene

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Heptane / 2-Propanol (75:25)
Gradient: isocratic
Flow rate: 0.8 ml/min
Temperature: ambient
Volume: 20 μl

Detection: UV at 254 nm

Substances: 1-Aza[6]Helicene

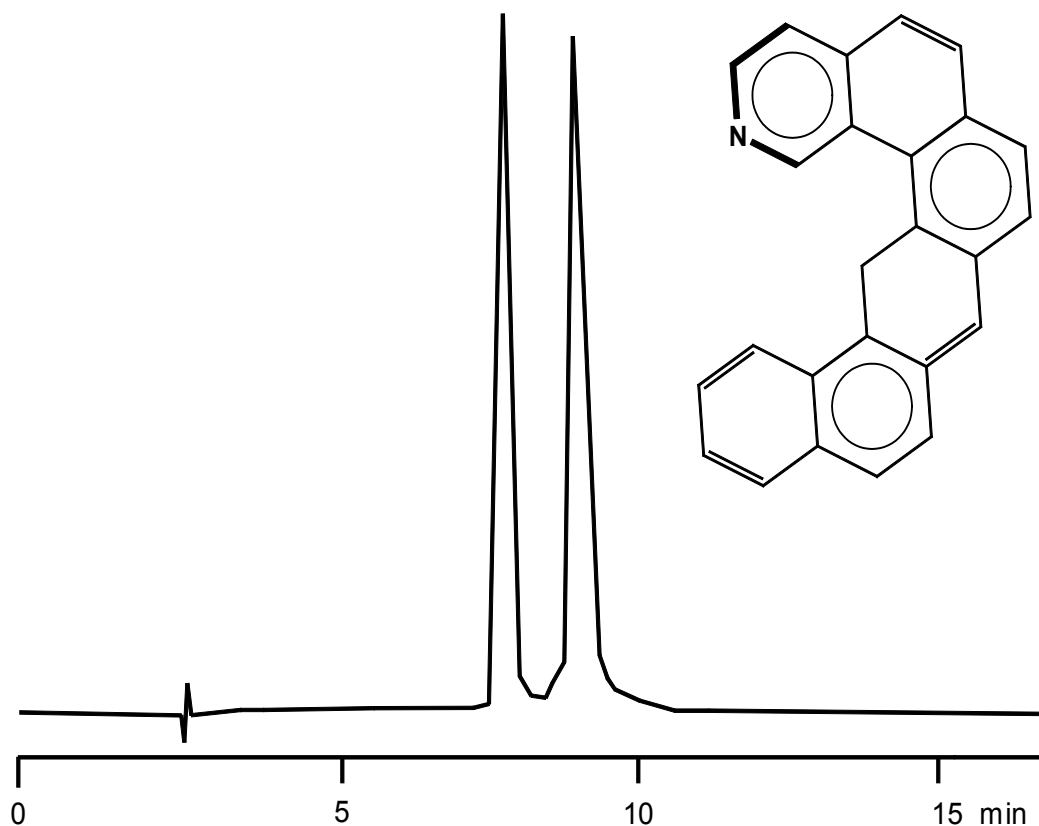
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.28$

$k'2 = 1.59$

$\alpha = 1.24$



6 Chiral separation of 1-Benzene-2-Naphthene-3-Amino Propan(1)ol

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Heptane / 2-Propanol (90:10) + 0.1 % TFA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: ambient
Volume: 10 μl

Detection: UV at 230 nm

Substances: 1-Benzene-2-Naphthene-3-Amino Propan(1)ol

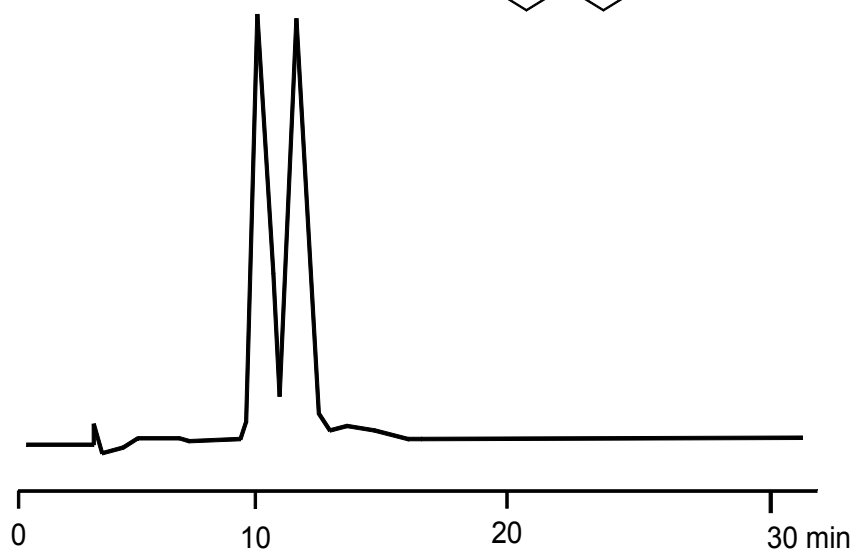
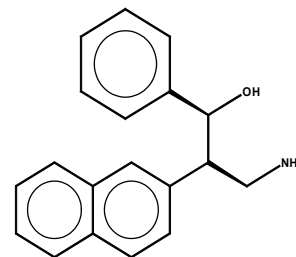
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$$k'1 = 2.46$$

$$k'2 = 3.13$$

$$\alpha = 1.27$$



7 Chiral separation of Benzoin (α -Hydroxy- α -Phenylacetophenon)

Method HPLC
Matrix Normal Phase Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexane / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: ambient
Volume: 10 μ l

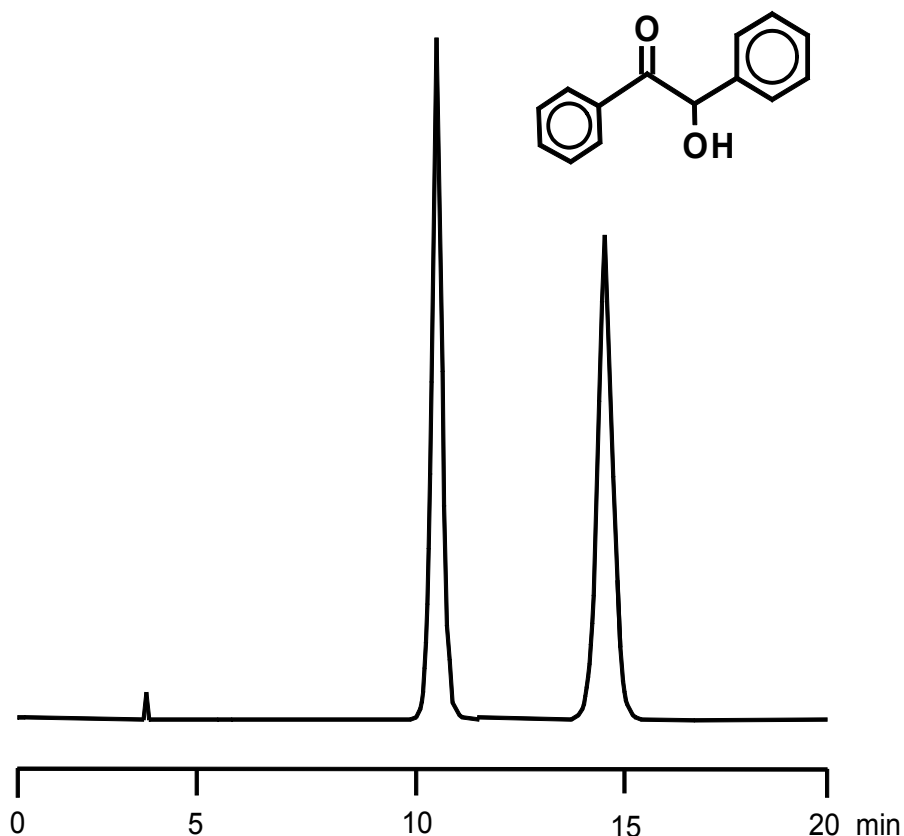
Detection: UV at 254 nm

Substances: Benzoin, (α -Hydroxy- α -Phenylacetophenon)

Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 7.18$
 $k'2 = 11.33$
 $\alpha = 1.58$



8 Chiral separation of Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

Method
HPLC

Matrix
Polar organic mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Methanol + 0,1 % TFA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 210 nm

Substances: Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

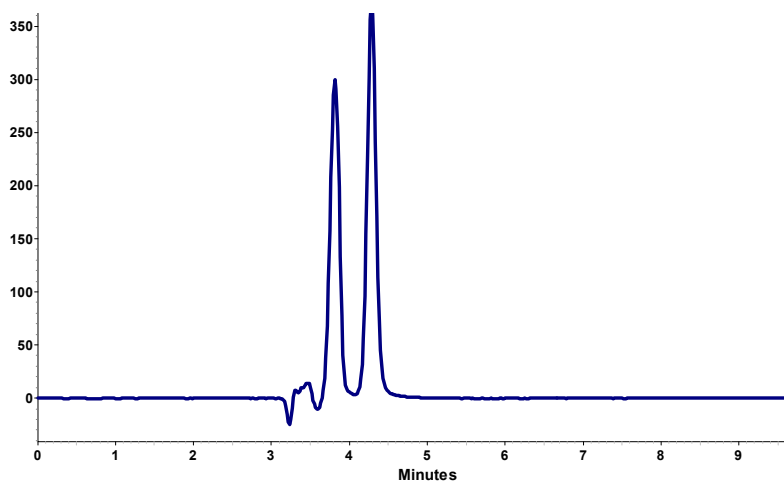
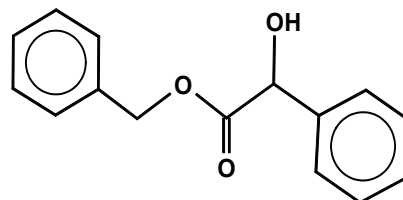
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.31$

$k'2 = 0.40$

$\alpha = 1.29$



9 Chiral separation of Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Hexane / 2-Propanol (70:30)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 210 nm

Substances: Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

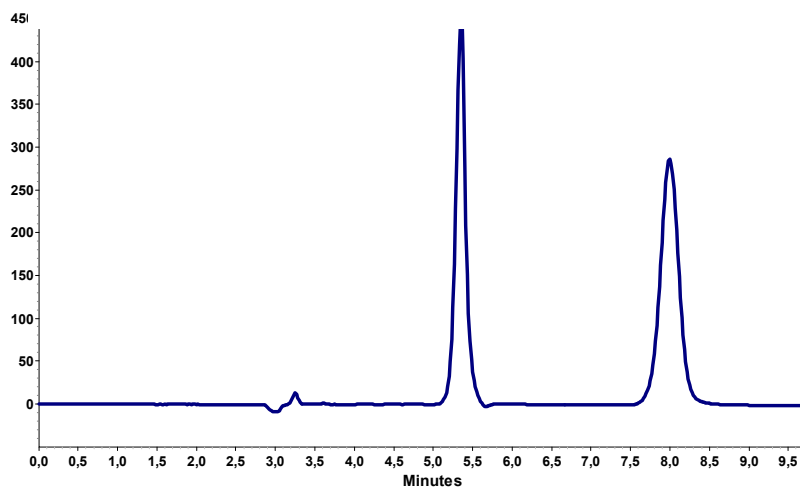
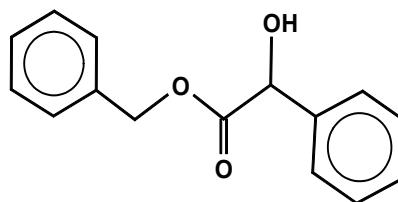
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.75$

$k'2 = 1.62$

$\alpha = 2.16$



10 Chiral separation of 2,2′Bis(Diphenylphosphinoxid)3,3′Bibenzo[b]Thiophene

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Hexan / 2-Propanol (85:15)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 µl

Detection: UV at 240 nm

Substances: 2,2′Bis(Diphenylphosphinoxid)3,3′Bibenzo[b]Thiophene

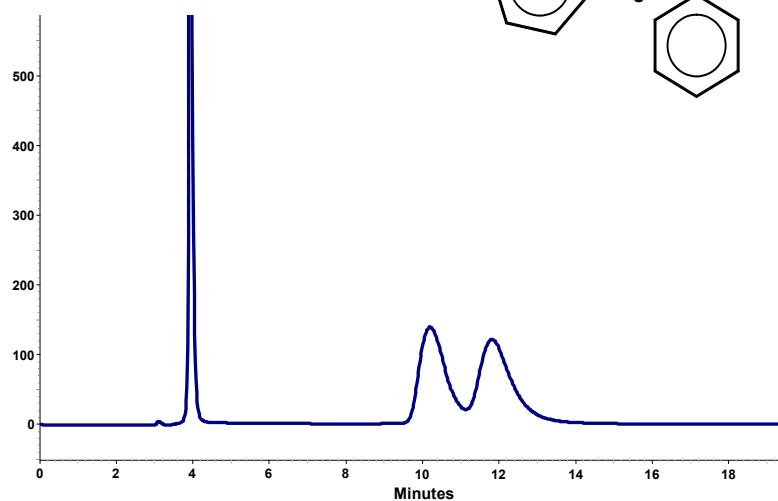
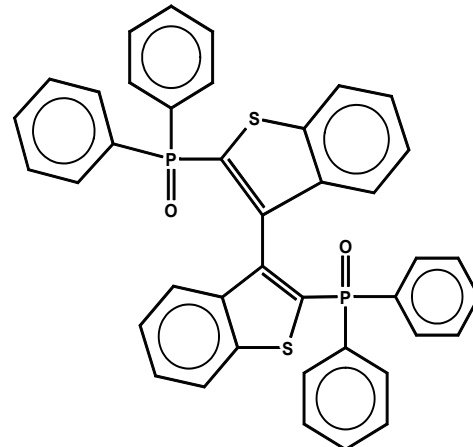
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.45$

$k'2 = 2.99$

$\alpha = 1.22$



11 Chiral separation of BITIANP 2,2′Bis(Diphenylphosphino)3,3′Bibenzo[b]Thiophene

Method
HPLC

Matrix
Polar Organic Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Methanol
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 µl

Detection: UV at 240 nm

Substances: BITIANP (2,2′Bis(Diphenylphosphino)3,3′Bibenzo[b]Thiophene)

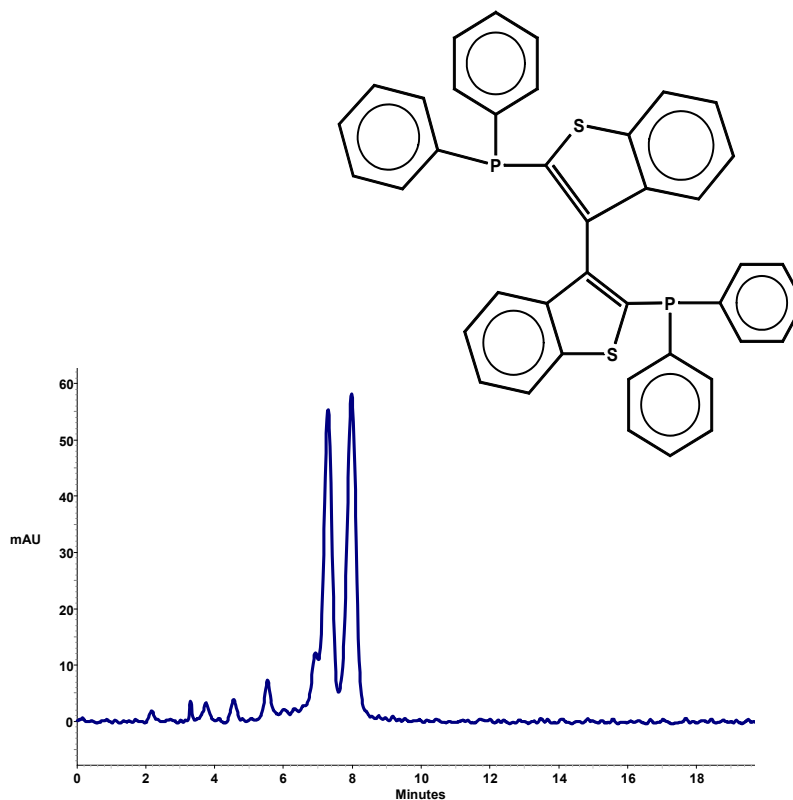
Keywords: BITIANP, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.47$

$k'2 = 1.71$

$\alpha = 1.16$



12 Chiral separation of 4-Bromphenyl-Glycinamid (2-(4-Bromphenyl)-2-Amino Acetamid)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (90:10) + 0.1 % DEA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: ambient
Volume: 10 μ l

Detection: UV at 230 nm

Substances: 4-Bromphenyl-Glycinamid (2-(4-Bromphenyl)-2-Amino Acetamid)

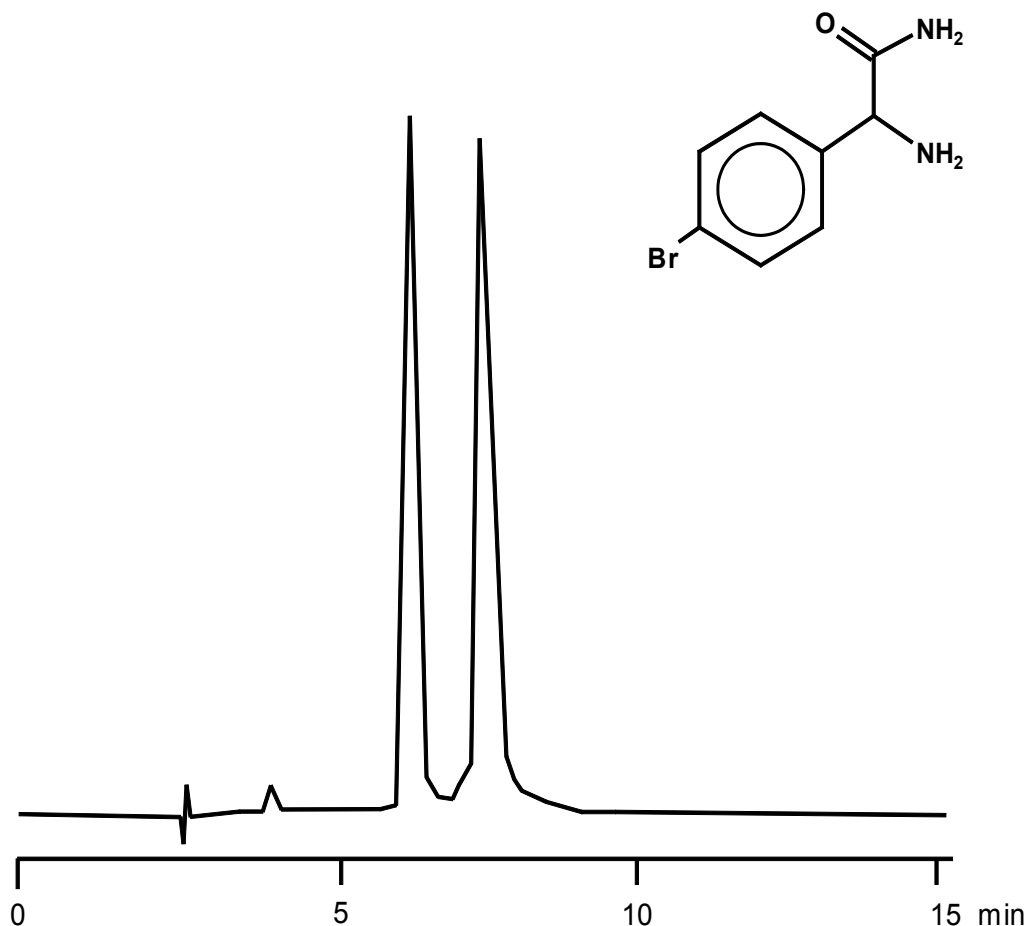
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 3.09$

$k'2 = 4.54$

$\alpha = 1.47$



13 Chiral separation of Carbinoxamine (2-[(4-Chlorophenyl)-Pyridin-2-yl-Methoxy]-*N,N*-Dimethyl-Ethanamine)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (90:10) + 0.1 % DEA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 μl

Detection: UV at 230 nm

Substances: Carbinoxamine (2-[(4-Chlorophenyl)-Pyridin-2-yl-Methoxy]-*N,N*-Dimethyl-Ethanamine)

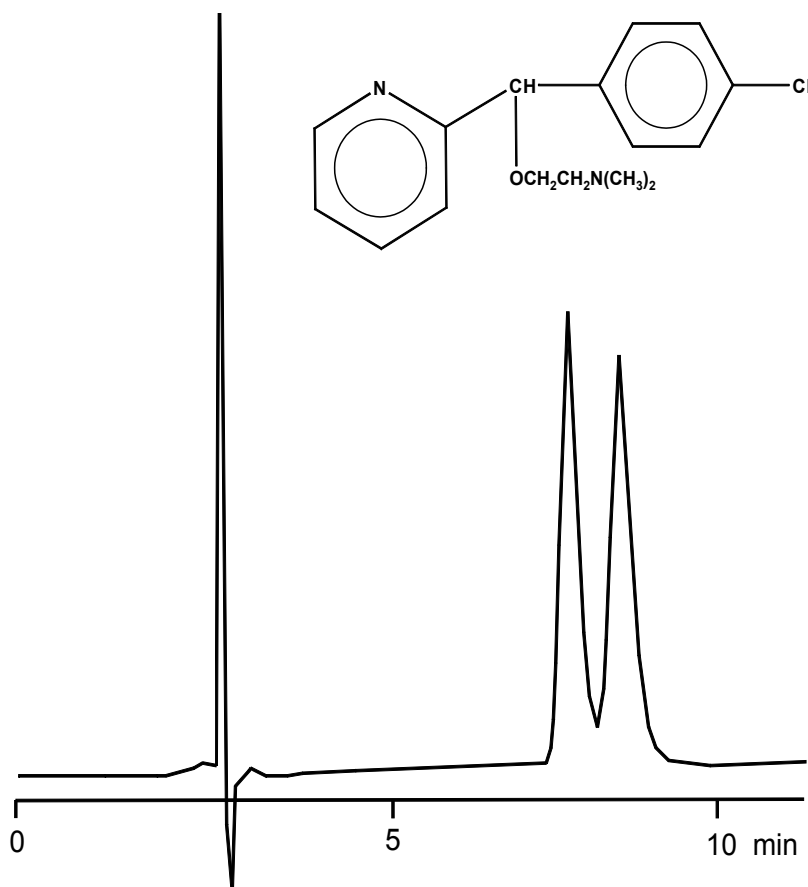
Keywords: antihistamine, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.69$

$k'2 = 1.94$

$\alpha = 1.14$



14 Chiral separation of Citalopram (1-(3-Dimethylaminopropyl)-1-(4-Fluorophenyl)-3H-2-Benzofuran-5-Carbonitrile)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Heptane / 2-Propanol (96:4) + 0.1 % DEA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 250 nm

Substances: Citalopram (1-(3-Dimethylaminopropyl)-1-(4-Fluorophenyl)-3H-2-Benzofuran-5-Carbonitrile)

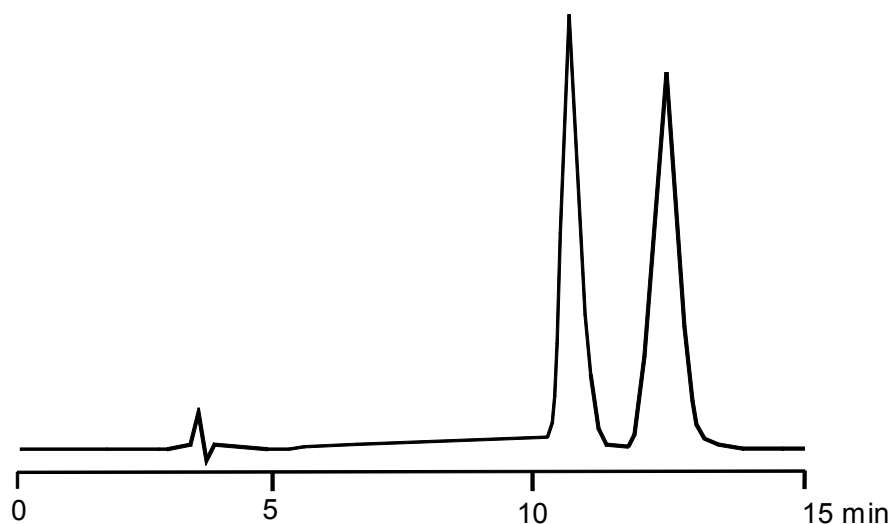
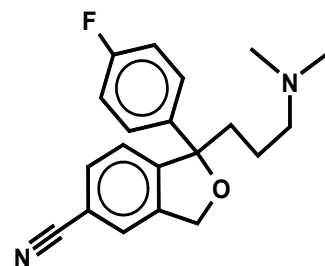
Keywords: therapeutical drug, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.67$

$k'2 = 3.27$

$\alpha = 1.23$



15 Chiral separation of Dilactid

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions:
 Eluent: n-Hexane / Ethanol (90:10)
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 μl

Detection: UV at 220 nm

Substances: Dilactid (D-, L-, meso)

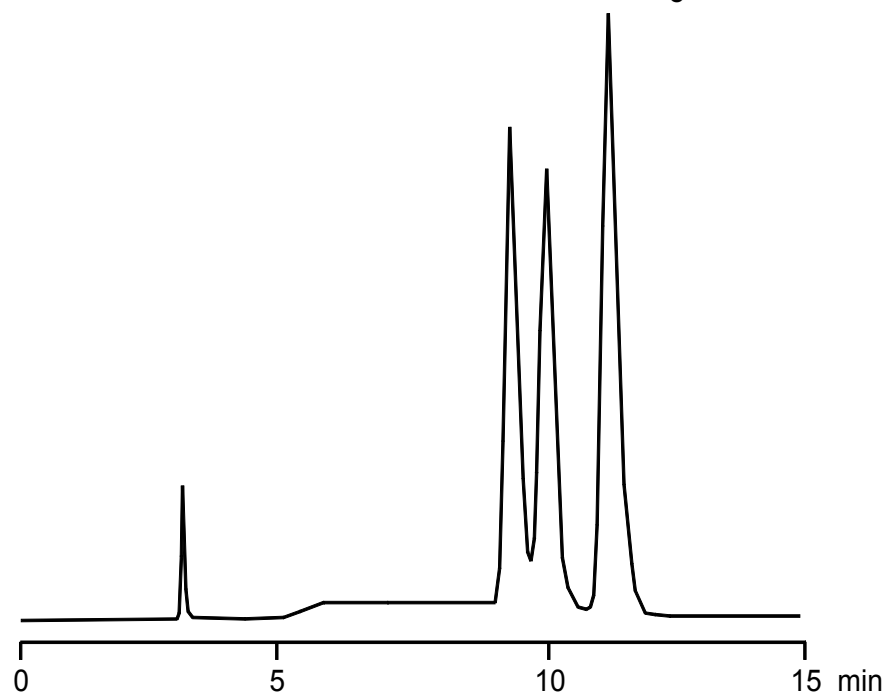
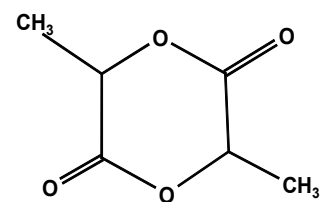
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.01$

$k'2 = 2.22$

$\alpha = 1.10$



16 Chiral separation of 1,2-Diphenyl-2-(Tosylamino)Ethaneone

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexane / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 254 nm

Substances: 1,2-Diphenyl-2-(Tosylamino)Ethaneone

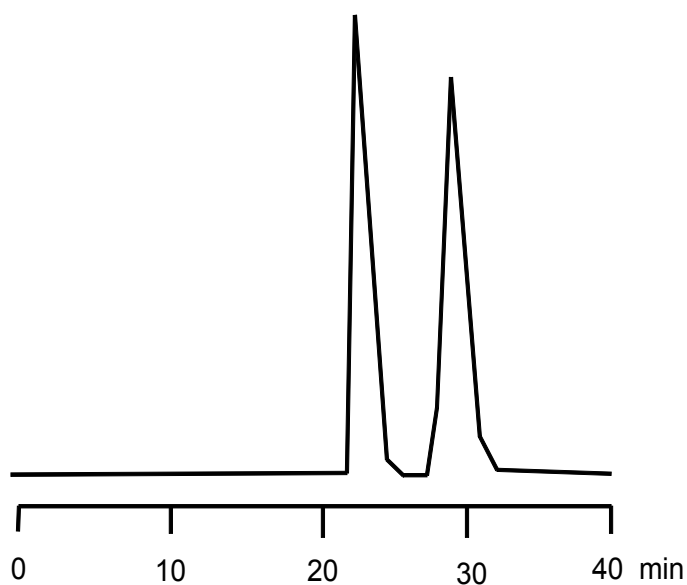
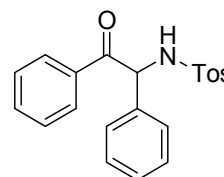
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 7.66$

$k'2 = 8.66$

$\alpha = 1.13$



17 Chiral separation of Ethyl-Mandelate

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Hexane / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 220 nm

Substances: Ethyl-Mandelate

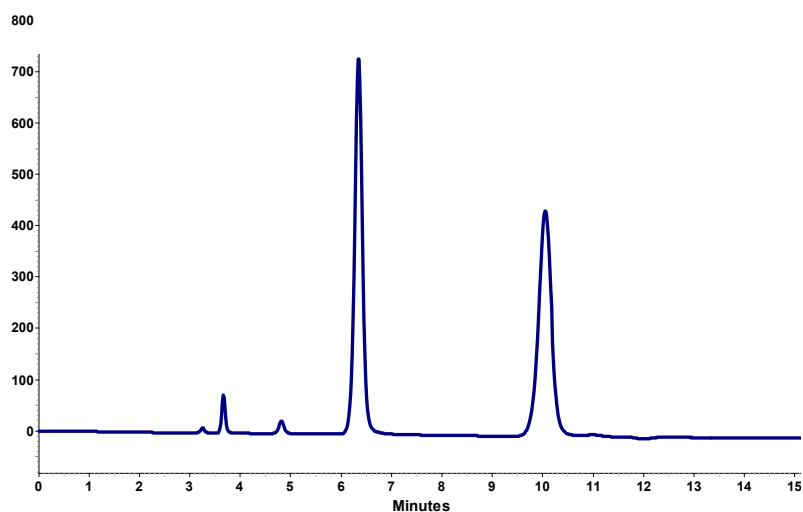
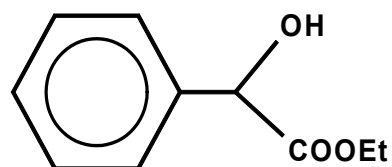
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.10$

$k'2 = 2.32$

$\alpha = 2.11$



18 Chiral separation of Etozolin (Ethyl(3-Methyl-4-Oxo-5-Piperidinothiazolidin-2-ylidene)Acetate)

Method
HPLC

Matrix
Polar Organic Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions:
Eluent: Methanol
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 220 nm

Substances: Etozolin (Ethyl(3-Methyl-4-Oxo-5-Piperidinothiazolidin-2-ylidene)Acetate)

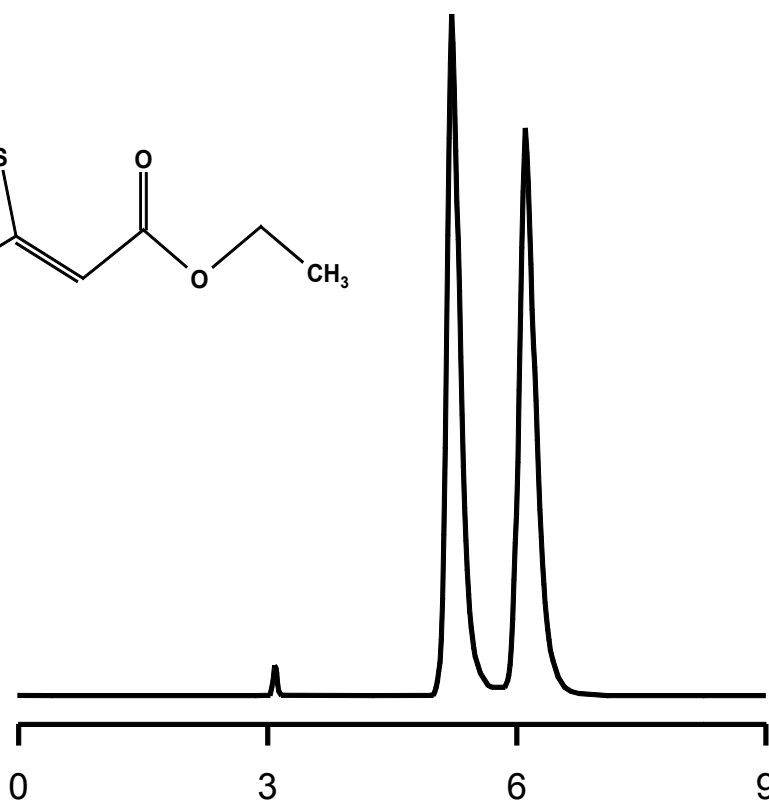
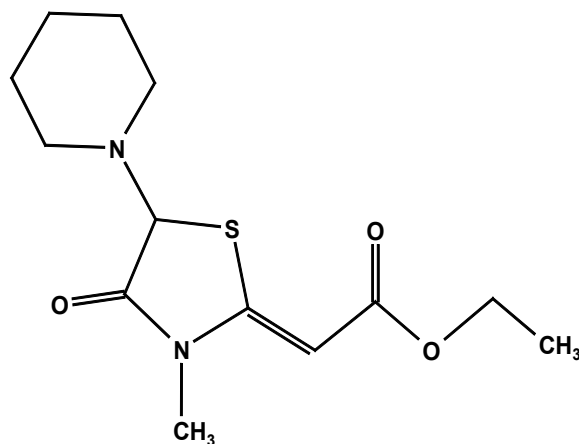
Keywords: diureticum, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.68$

$k'2 = 1.05$

$\alpha = 1.54$



19 Chiral separation of Flavanone (2-Phenyl-1,4-Benzopyrone)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 µl

Detection: UV at 254 nm

Substances: Flavanone (2-Phenyl-1,4-Benzopyrone)

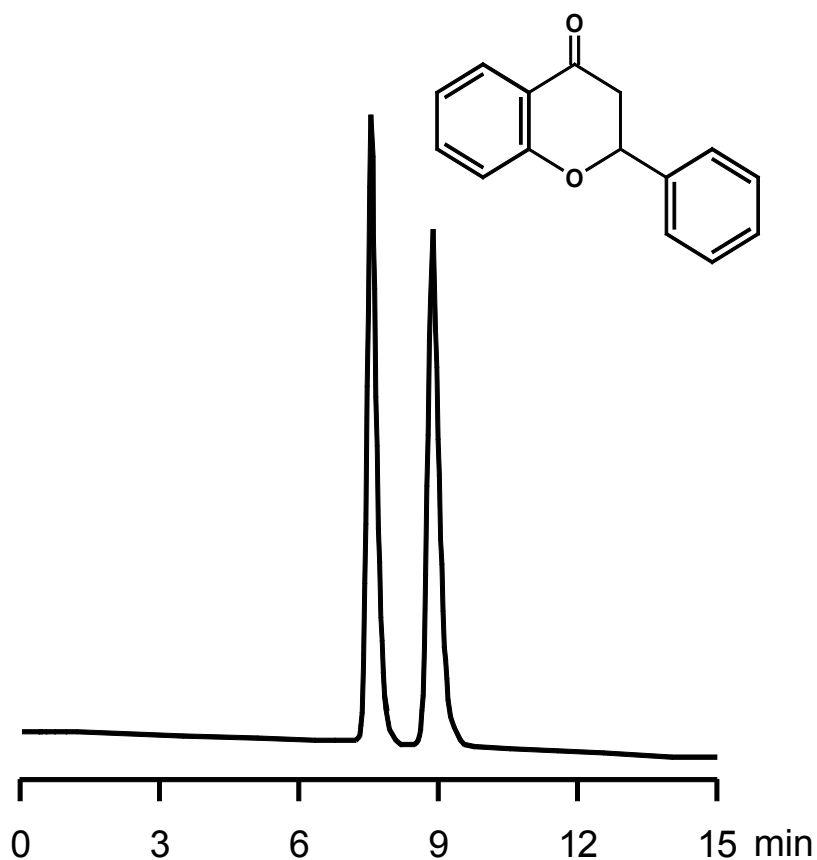
Keywords: antioxidants, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.41$

$k'2 = 1.83$

$\alpha = 1.30$



20 Chiral separation of Hexahydro-6,6-Dimethyl-2-Tosylpyrrolo [1,2-e]imidazol-3-one

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexan / 2-Propanol (75:25)
Gradient: isocratic
Flow rate: 0.5 ml/min
Temperature: 25 °C
Volume: 10 µl

Detection: UV at 220 nm

Substances: Hexahydro-6,6-Dimethyl-2-Tosylpyrrolo[1,2-e]imidazol-3-one

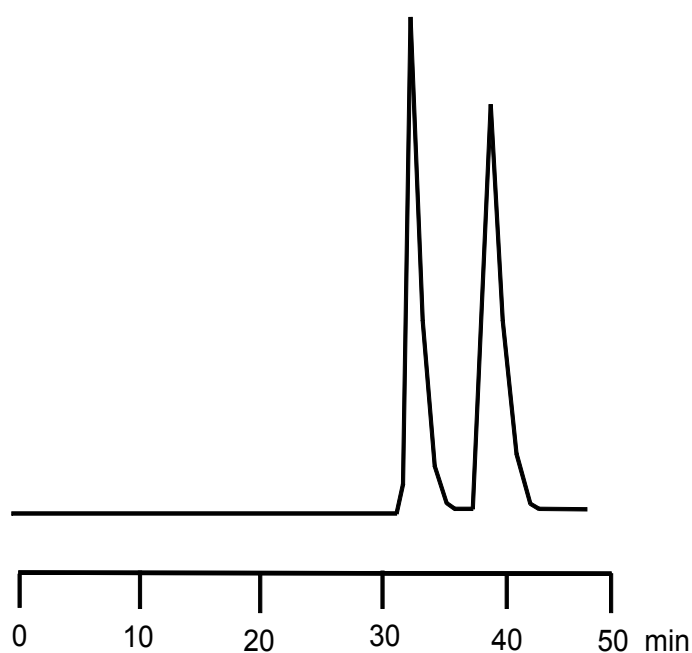
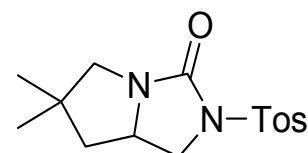
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 3.92$

$k'2 = 4.92$

$\alpha = 1.25$



21 Chiral separation of Hydroxyzine

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (90:10) + 0.1 % DEA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μ l

Detection: UV at 230 nm

Substances: Hydroxyzine

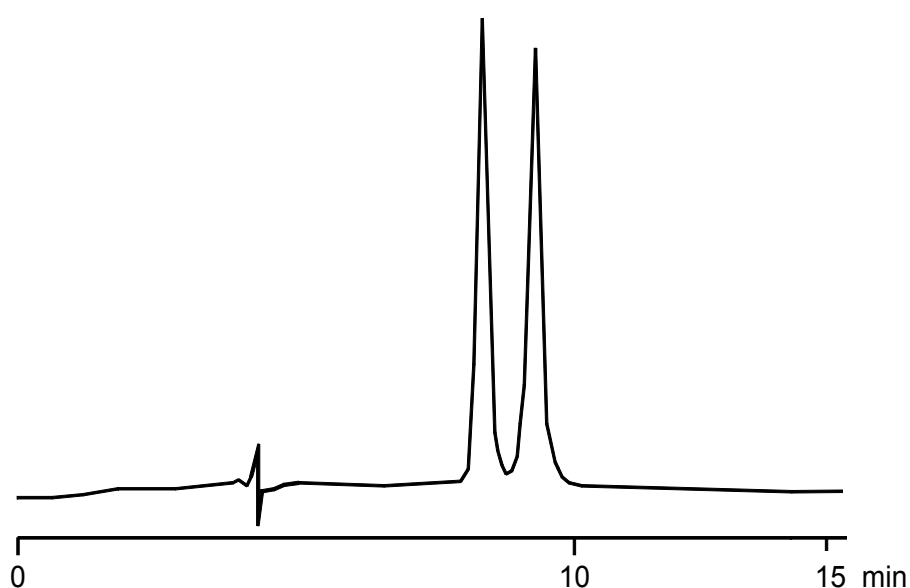
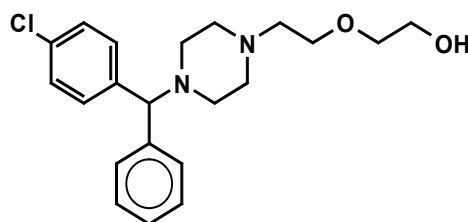
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.88$

$k'2 = 2.15$

$\alpha = 1.14$



22 Chiral separation of Lactic Acid

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Heptane / 2-Butanole (95:5)+ 0.1 % TFA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 210 nm

Substances: Lactic Acid

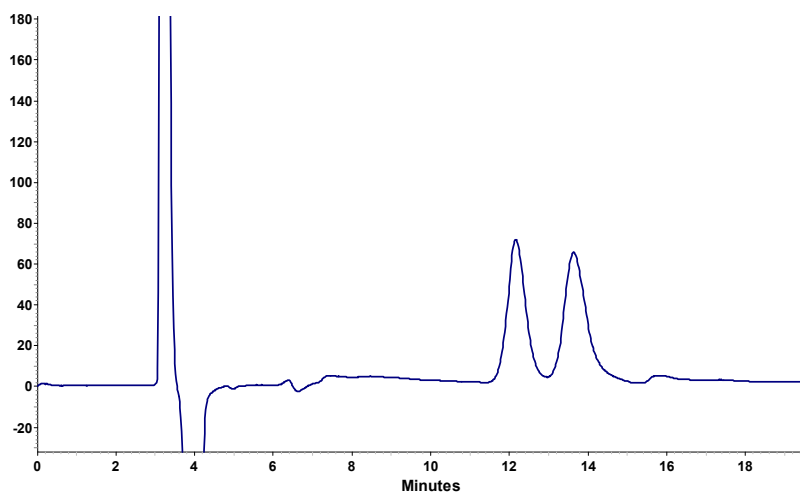
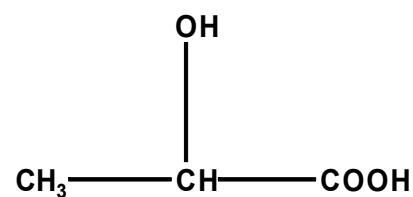
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.99$

$k'2 = 3.47$

$\alpha = 1.16$



23 Chiral separation of n-Methylephedrin (2-Dimethylamino-1-Phenyl-Propanol)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Heptane / 2-Propanol (80:20) + 0.1 % DEA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 210 nm

Substances: N-Methylephedrin (2-Dimethylamino-1-Phenyl-Propanol)

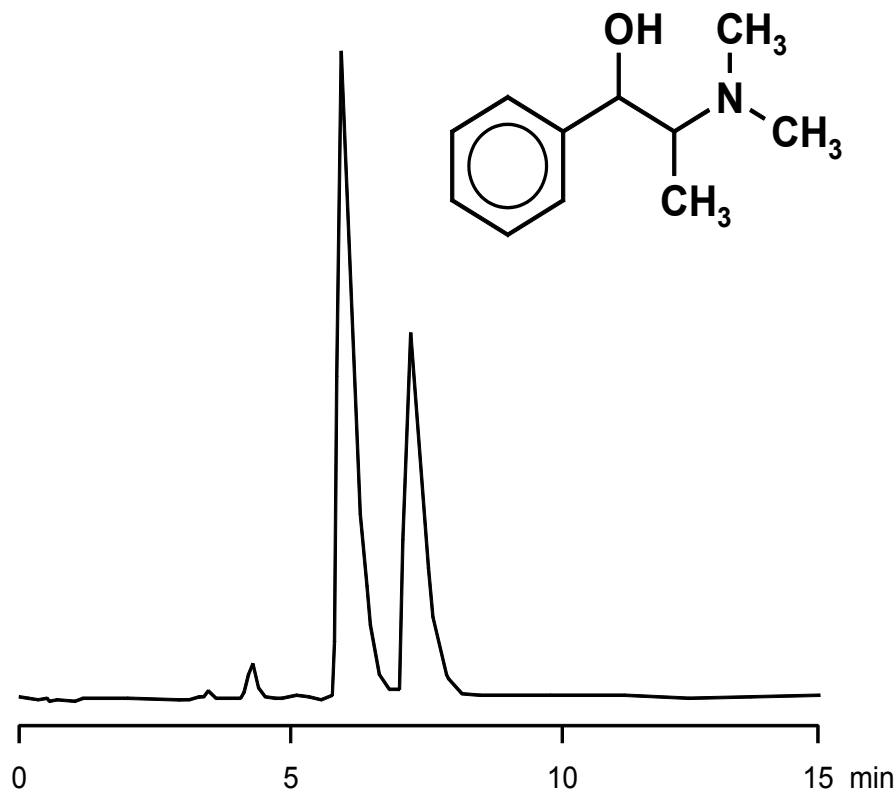
Keywords: amphetamine, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.88$

$k'2 = 1.25$

$\alpha = 1.42$



24 Chiral separation of Methyl phenyl sulfoxide

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 3 μm , 250 x 4.6 mm ID

Order No. 25EM370ECG

Phase: Eurocel 01

Conditions: Eluent: Hexane / Ethanol (90:10)
Gradient: isocratic
Flow rate: 1 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 220 nm

Substances: Methyl phenyl sulfoxide

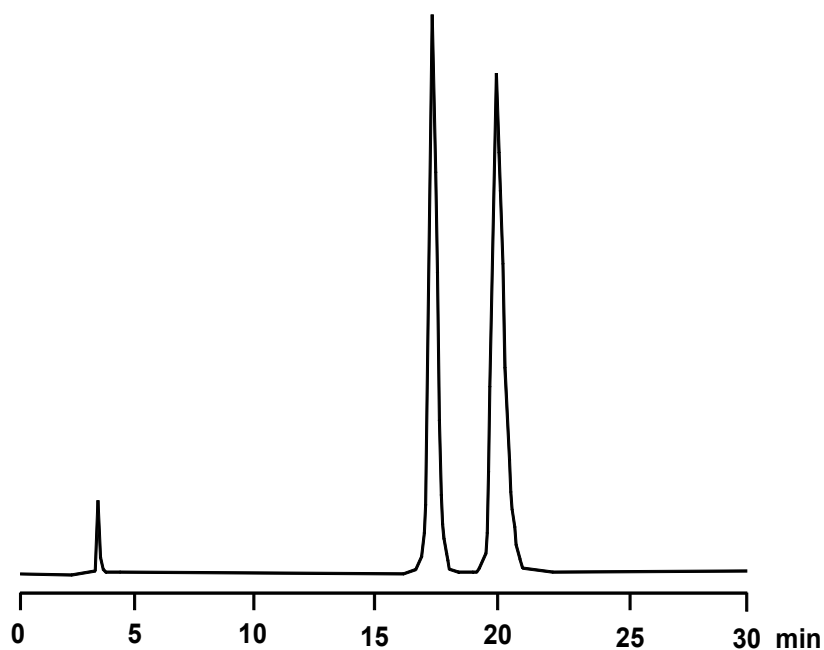
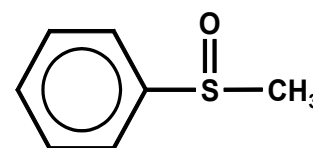
Keywords: Chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 4.65$

$k'2 = 5.52$

$\alpha = 1.18$



25 Chiral separation of Methyl phenyl sulfoxide II

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 02, 5 μm , 250 x 4.6 mm ID

Order No. 25EM390ECJ

Phase: Eurocel 02

Conditions: Eluent: Hexane / Ethanol (75:25)
Gradient: isocratic
Flow rate: 1 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 220 nm

Substances: Methyl phenyl sulfoxide

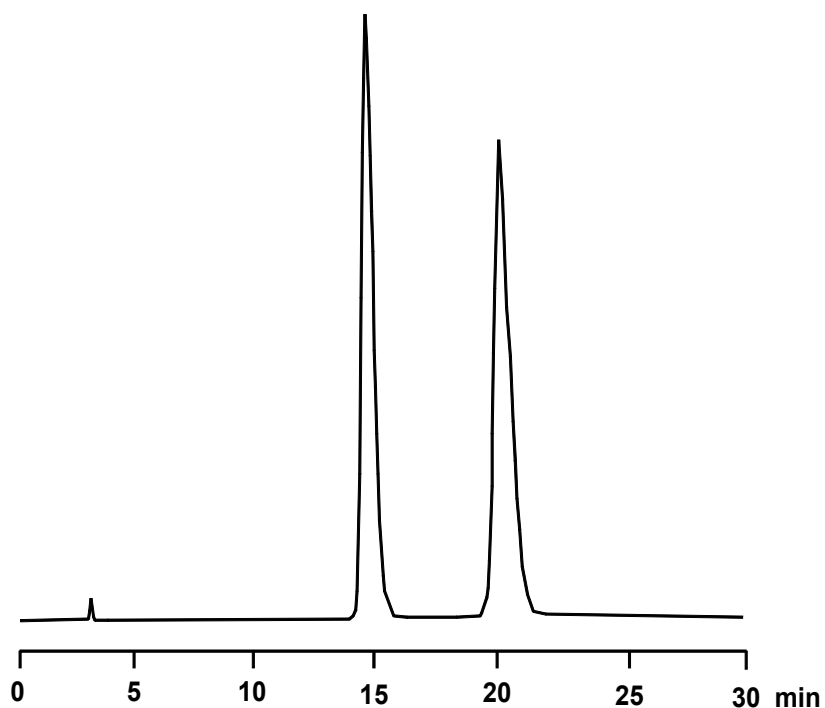
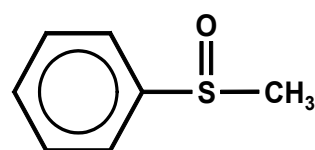
Keywords: Chiral separation, Eurocel 02, cellulose based chiral selector

Chromatogram:

$k'1 = 3.77$

$k'2 = 5.35$

$\alpha = 1.42$



26 Chiral separation of Metoprolol (1-(Isopropylamino)-3-[4-(2-Methoxyethyl)Phenoxy]Propan-2-ol)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions:
 Eluent: n-Heptane / Ethanol (90:10) + 0.1 % DEA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 µl

Detection: UV at 230 nm

Substances: Metoprolol (1-(Isopropylamino)-3-[4-(2-Methoxyethyl)Phenoxy]Propan-2-ol)

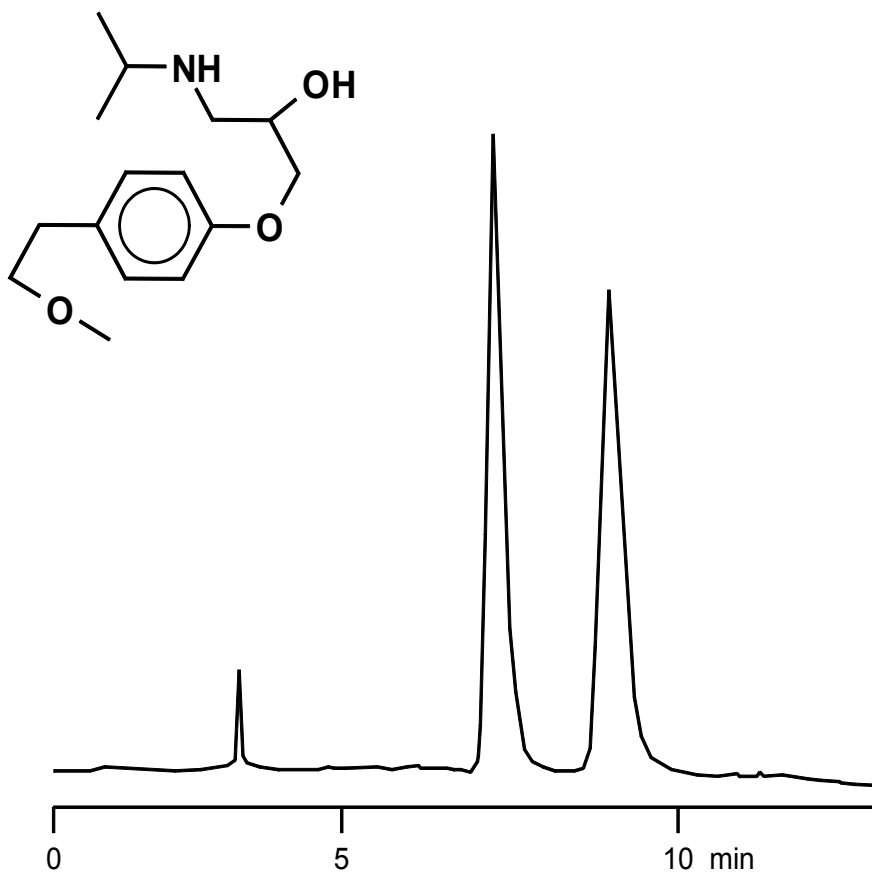
Keywords: beta blocker, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.34$

$k'2 = 1.96$

$\alpha = 1.46$



27 Chiral separation of 1-(Naphthalene-6-yl)Ethane-1,2-diol

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexan / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 254 nm

Substances: 1-(Naphthalene-6-yl)Ethane-1,2-diol

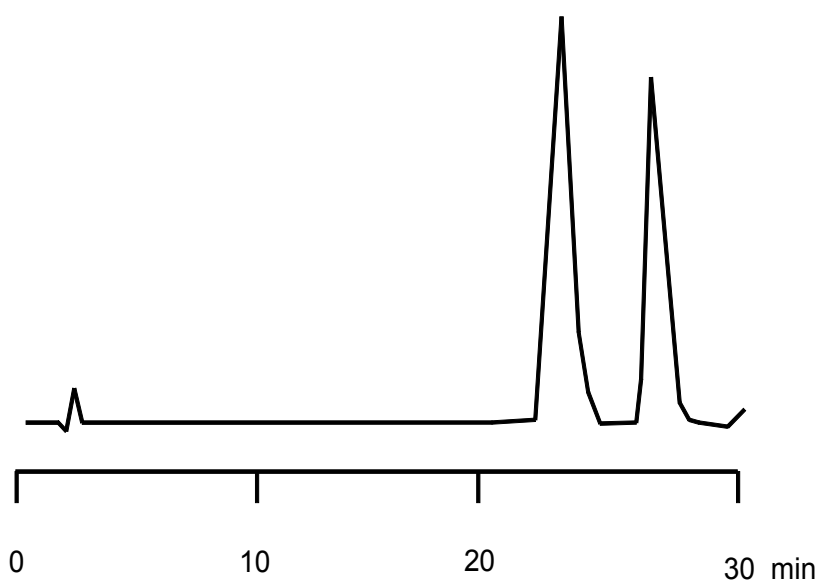
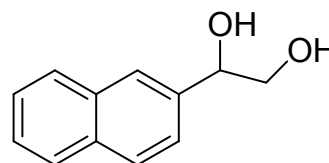
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 7.98$

$k'2 = 6.63$

$\alpha = 1.20$



28 Chiral separation of Naproxen (6-Methoxy- α -Methyl-2-Naphthylelessigsäure)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Hexan / 2-Propanol (90:10) + 0.1 % TFA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 μ l

Detection: UV at 230 nm

Substances: Naproxen (6-Methoxy- α -Methyl-2-Naphthylelessigsäure)

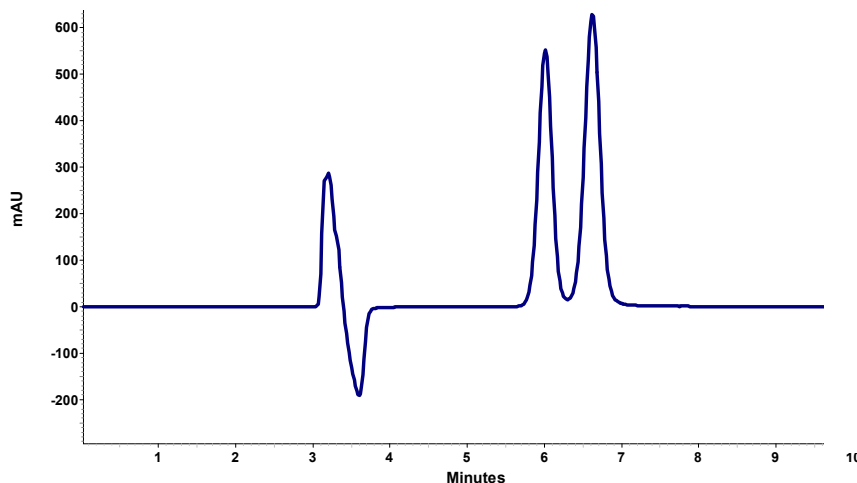
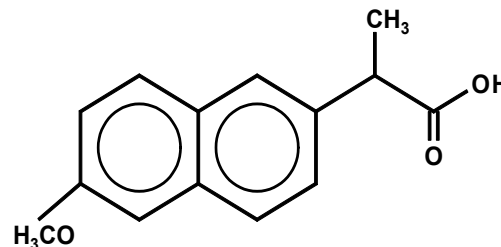
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.97$

$k'2 = 1.17$

$\alpha = 1.21$



29 Chiral separation of 1-Phenylethylenglycol (1-Phenylethane-1,2-diol)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexan / 2-Propanol (75:25)
Gradient: isocratic
Flow rate: 0.5 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 254 nm

Substances: 1-Phenylethylenglycol (Styrolglycol, 1-Phenylethane-1,2-diol)

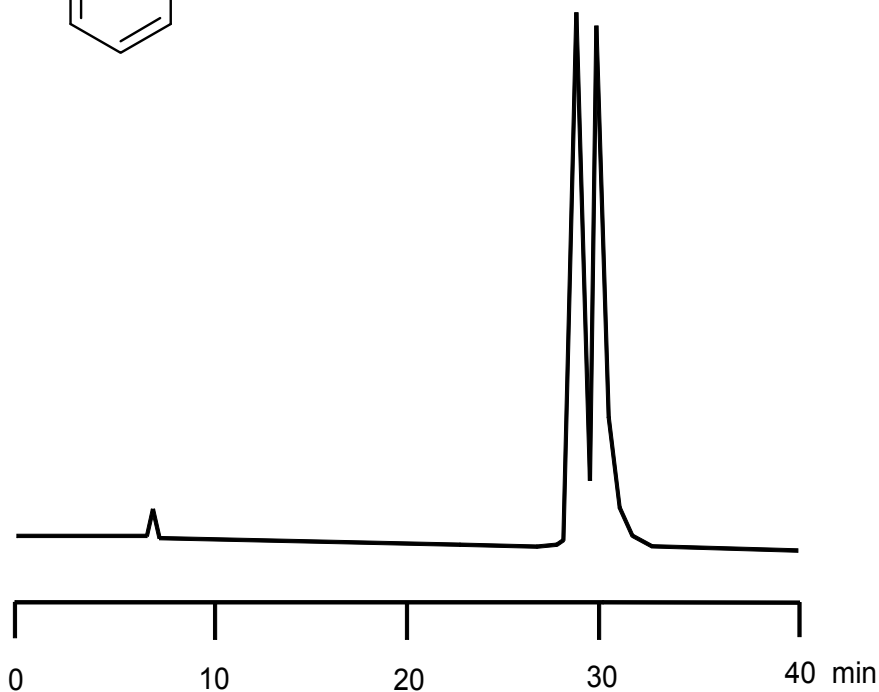
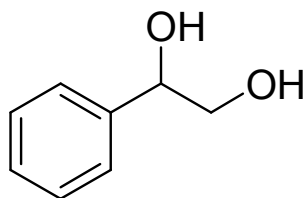
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 3.65$

$k'2 = 3.98$

$\alpha = 1.09$



30 Chiral separation of 1-Phenylpropane-1,2-diol

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: n-Hexan / 2-Propanol (90:10)
Gradient: isocratic
Flow rate: 0.5 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 254 nm

Substances: 1-Phenylpropane-1,2-diol

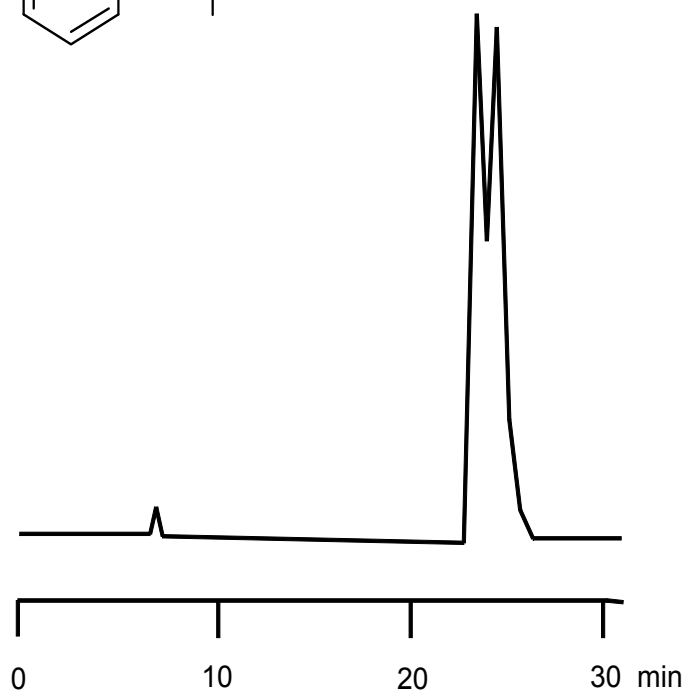
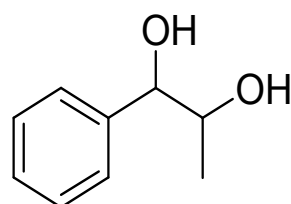
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.76$

$k'2 = 2.93$

$\alpha = 1.06$



31 Chiral separation of Pindolol (1-(1H-Indol-4-yloxy)-3-(1-Methylethylamino)Propan-2-ol)

Method
HPLC

Matrix
Reversed Phase Mode

Column: Eurocel 01, 5 µm, 125 x 4 mm ID

Order No. 12DM370ECJ

Phase: Eurocel 01

Conditions: Eluent: 20 mM Sodium borate buffer / ACN (60:40)
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 µl

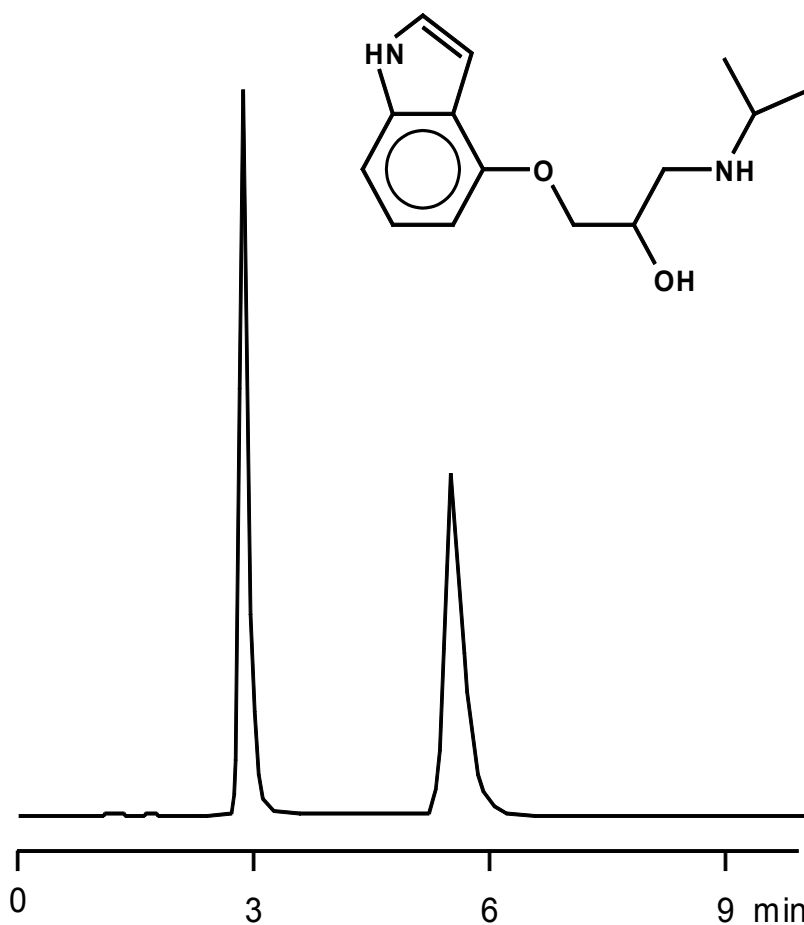
Detection: UV at 263 nm

Substances: Pindolol (1-(1H-Indol-4-yloxy)-3-(1-Methylethylamino)Propan-2-ol)

Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.43$
 $k'2 = 3.68$
 $\alpha = 2.57$



32 Chiral separation of Pindolol (1-(1H-Indol-4-yloxy)-3-(1-Methylethylamino)Propan-2-ol)

Method
HPLC

Matrix
Polar Organic Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions:
Eluent: Acetonitrile + 0.1 % EtOA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μ l

Detection: UV at 263 nm

Substances: Pindolol (1-(1H-Indol-4-yloxy)-3-(1-Methylethylamino)Propan-2-ol)

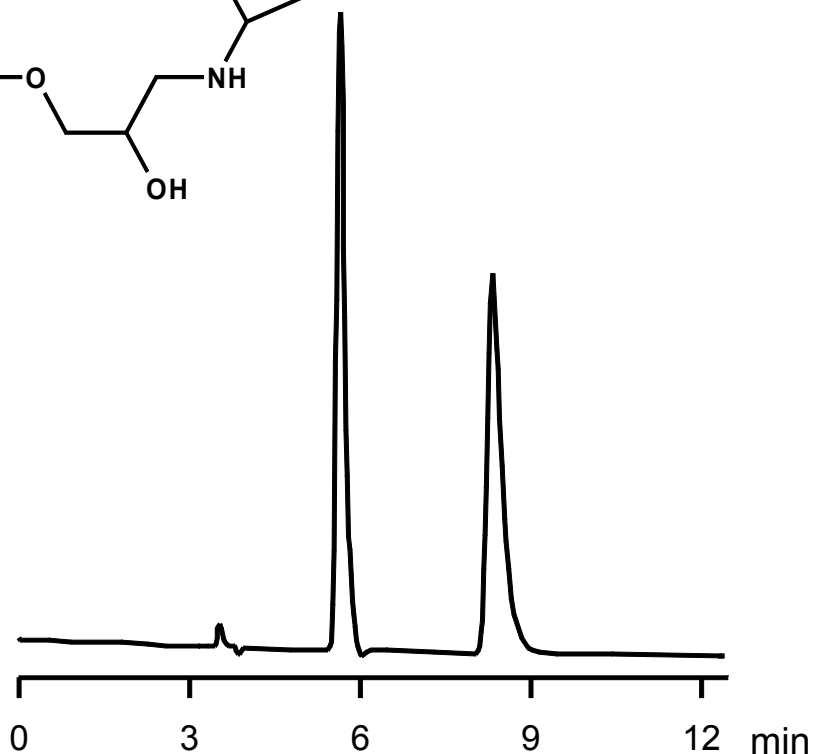
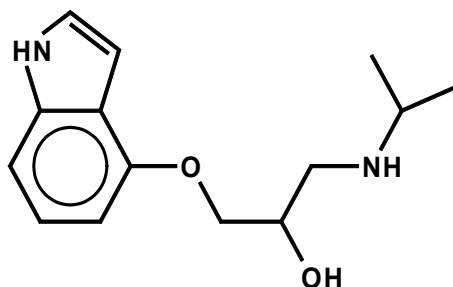
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 0.6$

$k'2 = 1.37$

$\alpha = 2.28$



33 Chiral separation of Propranolol (1-Isopropylamino-3-(1-Naphthyloxy)-2-Propanol)

Method
HPLC

Matrix
Reversed Phase Mode

Column: Eurocel 01, 5 μ m, 125 x 4 mm ID

Order No. 12DM370ECJ

Phase: Eurocel 01

Conditions:
 Eluent: Acetonitrile / Water (32:68) + 0.1 % DEA
 Gradient: isocratic
 Flow rate: 1.0 ml/min
 Temperature: 25 °C
 Volume: 10 μ l

Detection: UV at 230 nm

Substances: Propranolol (1-Isopropylamino-3-(1-Naphthyloxy)-2-Propanol)

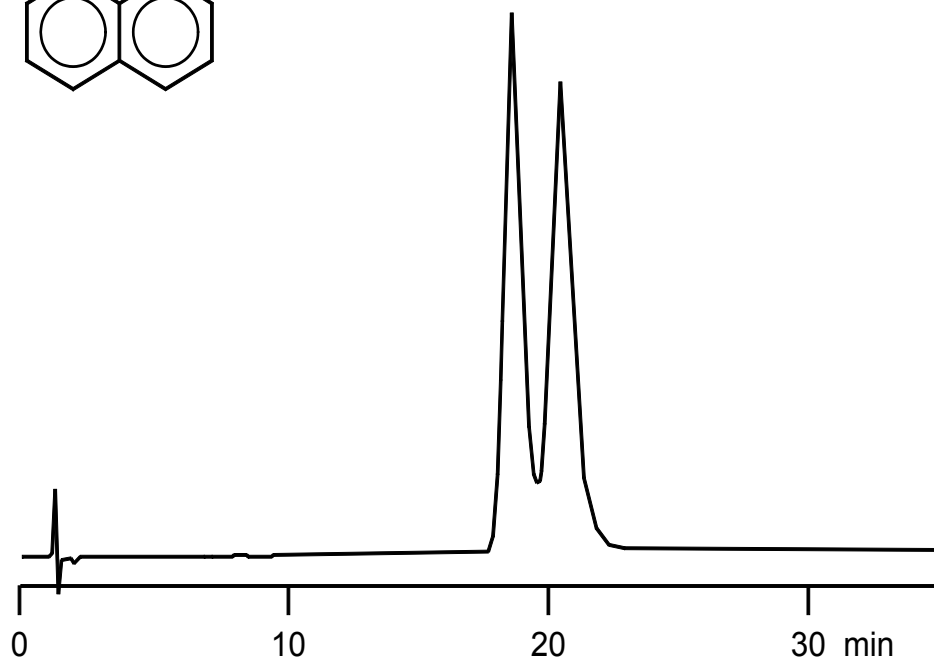
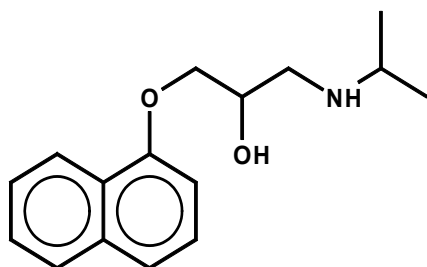
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 12.8$

$k'2 = 14.32$

$\alpha = 1.12$



34 Chiral separation of Propranolol (1-Isopropylamino-3-(1-Naphthoxy)-2-Propanol)

Method
HPLC

Matrix
Normal Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions:
Eluent: n-Heptane / 2-Propanol (80:20) + 0.1 Ethanolamine
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 230 nm

Substances: Propranolol (1-Isopropylamino-3-(1-Naphthoxy)-2-Propanol)

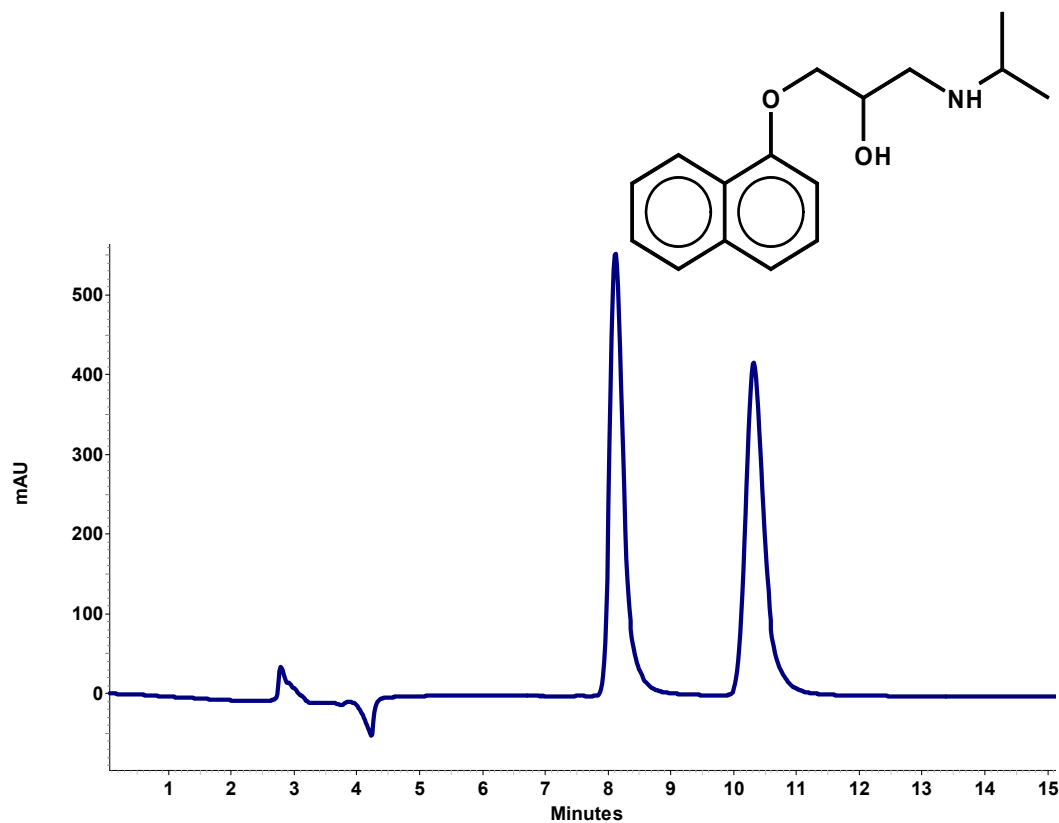
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 1.75$

$k'2 = 2.49$

$\alpha = 1.42$



35 Chiral separation of Warfarin (4-Hydroxy-3-(3-Oxo-1-Phenyl-Butyl)-Cumarin)

Method
HPLC

Matrix
Reversed Phase Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: Acetonitrile / Water (50:50) + 0.1 % TFA
Gradient: isocratic
Flow rate: 1.0 ml/min
Temperature: 25 °C
Volume: 10 μl

Detection: UV at 270 nm

Substances: Warfarin (4-Hydroxy-3-(3-Oxo-1-Phenyl-Butyl)-Cumarin)

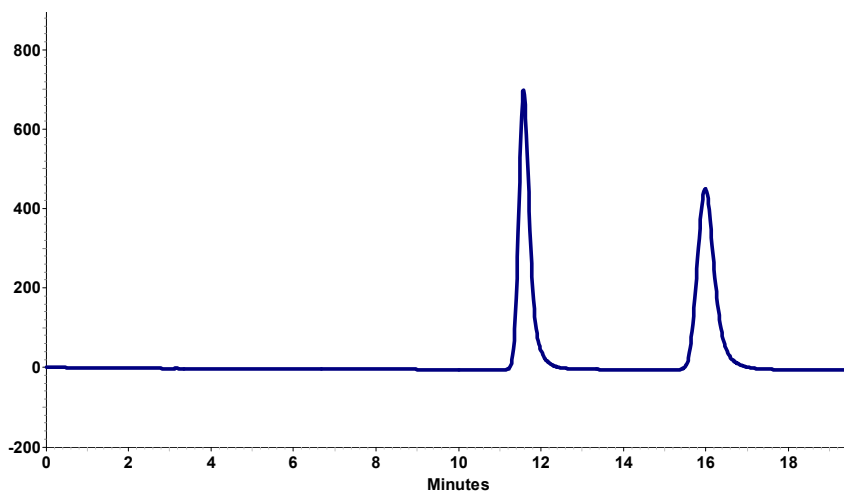
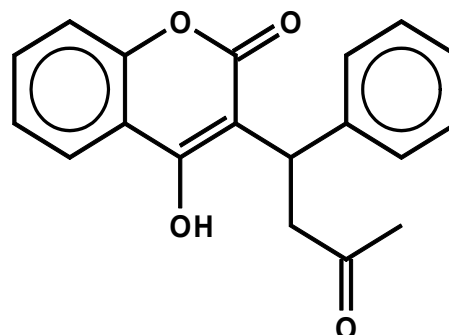
Keywords: chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

$k'1 = 2.88$

$k'2 = 4.39$

$\alpha = 1.53$



Chiral Applications

(SFC)

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1 Chiral separation of Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO₂ + 20 % Methanol
Gradient: isocratic
Flow rate: 2.4 ml/min CO₂ / 0.6 ml/min Modifier (Backpressure: 150 bar)
Temperature: 40 °C
Volume: 10 μ l

Detection: UV at 220 nm

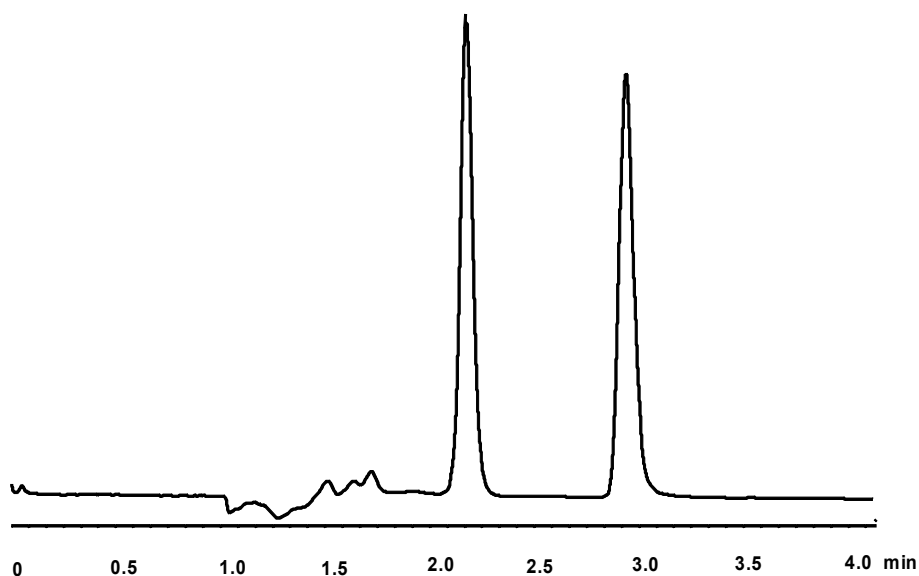
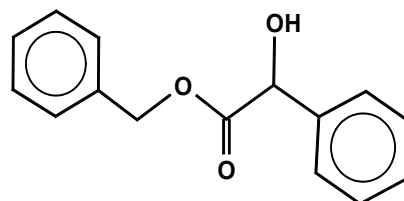
Substances: Benzyl-Mandelate (Benzyl-2-Hydroxy-3-Phenylpropionate)

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 2.23 min

t_{R2} = 2.96 min



2 Chiral separation of 1,1'-Bi-2-Naphthol (BINOL)

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO₂ + 20 % Methanol
Gradient: isocratic
Flow rate: 2.4 ml/min CO₂ / 0.6 ml/min Modifier (Backpressure: 149 bar)
Temperature: 40 °C
Volume: 10 µl

Detection: UV at 220 nm

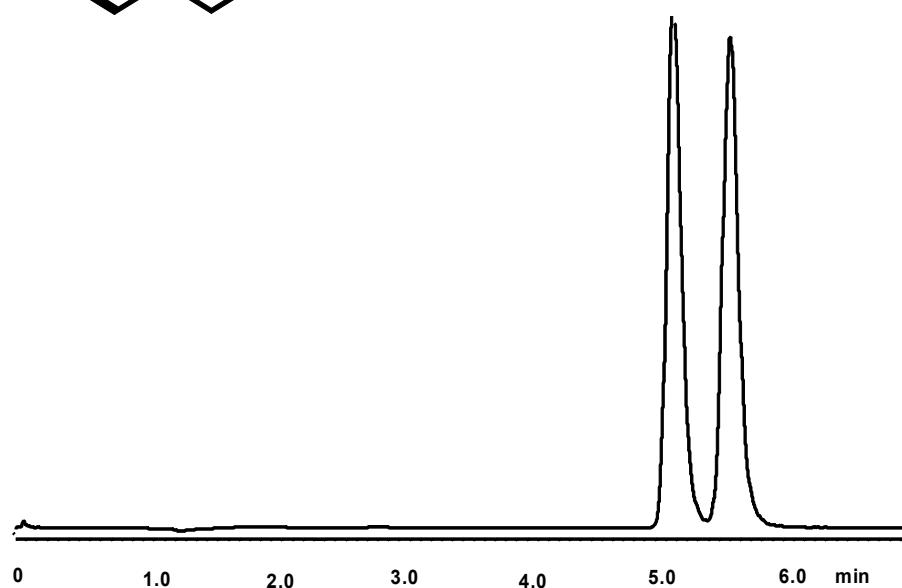
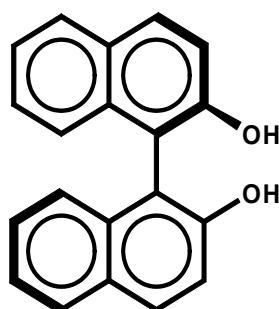
Substances: 1,1'-Bi-2-Naphthol (BINOL), 1,1'-Binaphthalene-2,2'-diol

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 5.19 min

t_{R2} = 5.71 min



3 Chiral separation of Ethyl-Mandelate

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 μ m, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO₂ + 10 % Methanol
Gradient: isocratic
Flow rate: 2.7 ml/min CO₂ / 0.3 ml/min Modifier (Backpressure: 151 bar)
Temperature: 40 °C
Volume: 10 μ l

Detection: UV at 220 nm

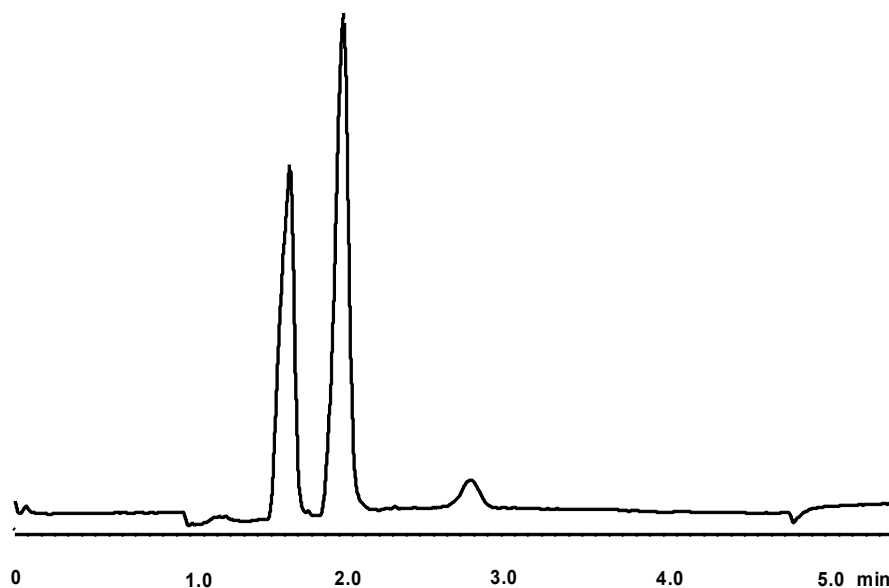
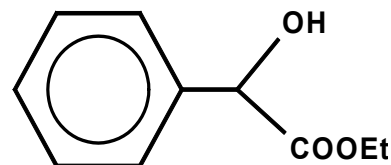
Substances: Ethyl-Mandelate

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 1.71 min

t_{R2} = 2.04 min



4 Chiral separation of Hydrobenzoin (1,2-Diphenylethane-1,2-diol)

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO₂ + 20 % Methanol
Gradient: isocratic
Flow rate: 2.4 ml/min CO₂ / 0.6 ml/min Modifier (Backpressure: 149 bar)
Temperature: 40 °C
Volume: 10 µl

Detection: UV at 220 nm

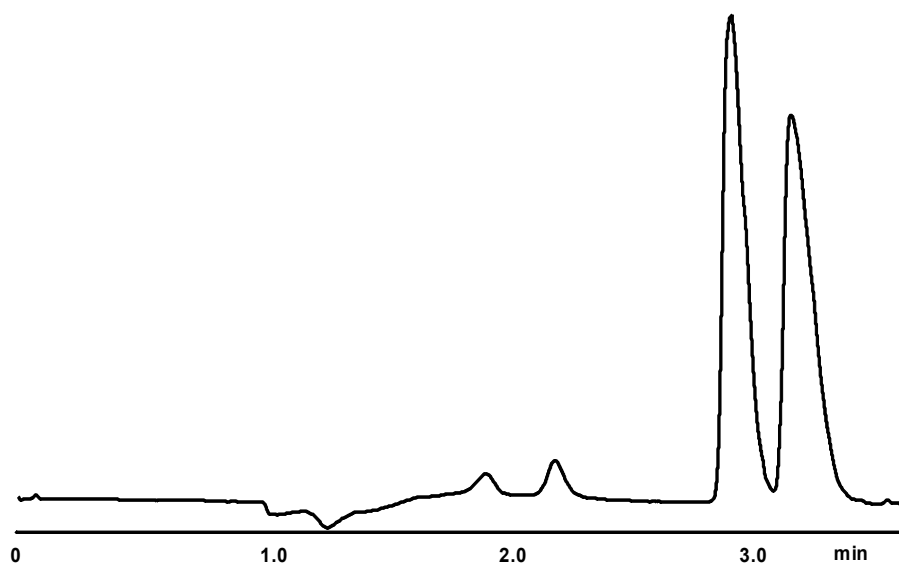
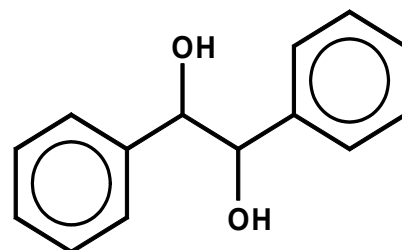
Substances: Hydrobenzoin (1,2-Diphenylethane-1,2-diol)

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 2.95 min

t_{R2} = 3.24 min



5 Chiral separation of trans Stilbene Oxide

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 μm , 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO_2 + 20 % Methanol
Gradient: isocratic
Flow rate: 2.4 ml/min CO_2 / 0.6 ml/min Modifier (Backpressure: 148 bar)
Temperature: 40 °C
Volume: 10 μl

Detection: UV at 220 nm

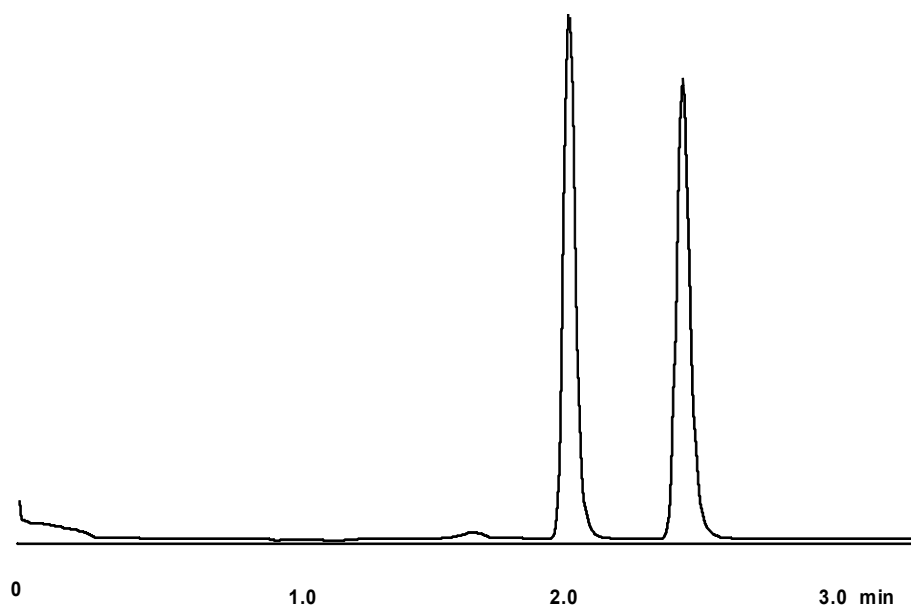
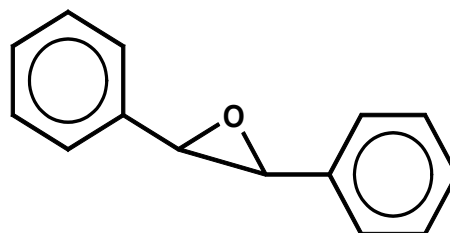
Substances: trans Stilbene Oxide

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 2.12 min

t_{R2} = 2.52 min



6 Chiral separation of Warfarin (4-Hydroxy-3-(3-Oxo-1-Phenyl-Butyl)-Cumarin)

Method
SFC

Matrix
SFC-Mode

Column: Eurocel 01, 5 µm, 250 x 4.6 mm ID

Order No. 25EM370ECJ

Phase: Eurocel 01

Conditions: Eluent: CO₂ + 20 % Methanol
Gradient: isocratic
Flow rate: 2.4 ml/min CO₂ / 0.6 ml/min Modifier (Backpressure: 149 bar)
Temperature: 40 °C
Volume: 10 µl

Detection: UV at 220 nm

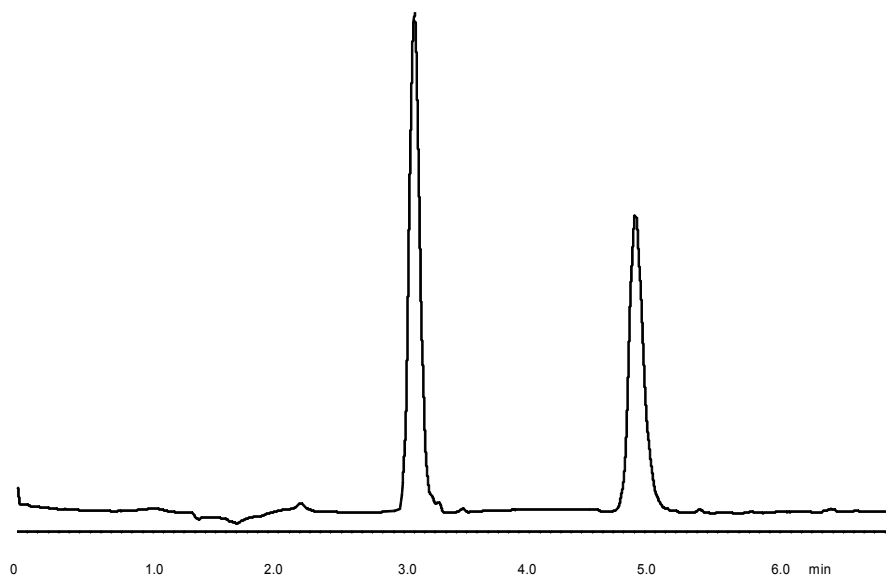
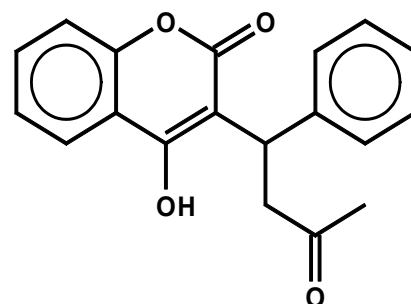
Substances: Warfarin (4-Hydroxy-3-(3-Oxo-1-Phenyl-Butyl)-Cumarin)

Keywords: SFC, chiral separation, Eurocel 01, cellulose based chiral selector

Chromatogram:

t_{R1} = 3.26 min

t_{R2} = 4.98 min



Substance and Keyword Index

1-(1H-Indol-4-yloxy)-3-(1-methylethylamino)-propan-2-ol	122, 123	Acenaphthene	18, 19
1-(3-Dimethylaminopropyl)-1-(4-fluorophenyl)-3H-2-benzofuran-5-carbonitrile	105	Acenaphthylene	18, 19
1-(Isopropylamino)-3-[4-(2-methoxyethyl)-phenoxy]propan-2-ol	117	Acesulfam K	28
1-(naphthalene-6-yl)ethane-1,2-diol	118	Acetaldehyde	6, 15
1,1'-Bi-2-naphthol	129	Acetic acid	30, 31, 50
1,1'-Binaphthalene-2,2'-diol	129	Acetone	6, 15
1,2-Dimethylbenzene	26	Acetyl cystein	60
1,2-Diphenyl-2-(tosylamino)ethanone	107	Acetyldeoxynivalenol	48
1,2-Diphenylethane-1,2-diol	131	Acids	
10-OH-Carbamazepine	68	aromatic	89
1-Aza-[6]helicene	96	organic	50, 51, 60
1-Benzene-2-naphthene-3-amino propan(1)ol	97	Acrolein	6, 15
1-Isopropylamino-3-(1-naphthylloxy)-2-propanol..	124, 125	Additives	5, 28, 39
1-Methylnaphthalene	18	Adipic acid	60
1-Phenylethane-1,2-diol	120	Adrenaline	71
1-Phenylethylenglycol	120	Aflatoxin	29
1-Phenylpropane-1,2-diol	121	Alanine	34, 63
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2,4,5-Trichlorophenoxy acetic acid	22	sulphone	10
2,4-Dichlorophenoxy acetic acid	22	sulphoxide	10
2,6-Di-tert.-butyl-4-methylphenol	5	Alkaloids	61
2-[(4-chlorophenyl)-pyridin-2-yl-methoxy]-N,N-dimethyl-ethanamine	104	Amineptine	62
2-[4-[2-Hydroxy-3-(1-methylethylamino)propoxy]-phenyl]ethanamid	94	Amines	32, 33, 34, 37, 64
2-Dimethylamino-1-phenyl-propanol	114	Amino acids	63
2-Methylnaphthalene	18	Amino-dinitrotoluene	13
2-Phenyl-1,4-Benzopyrone	110	Amino-nitrotoluene	13
3-Amino-2(2-naphtyl)-1-phenylpropanol	93	Aminophenol	79
4-(2,4-Dichlorophenoxy)butyric acid	22	Amitriptyline	88
4-(4-Chloro-o-tolyloxy)butyric acid	22	Ammonia	32
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