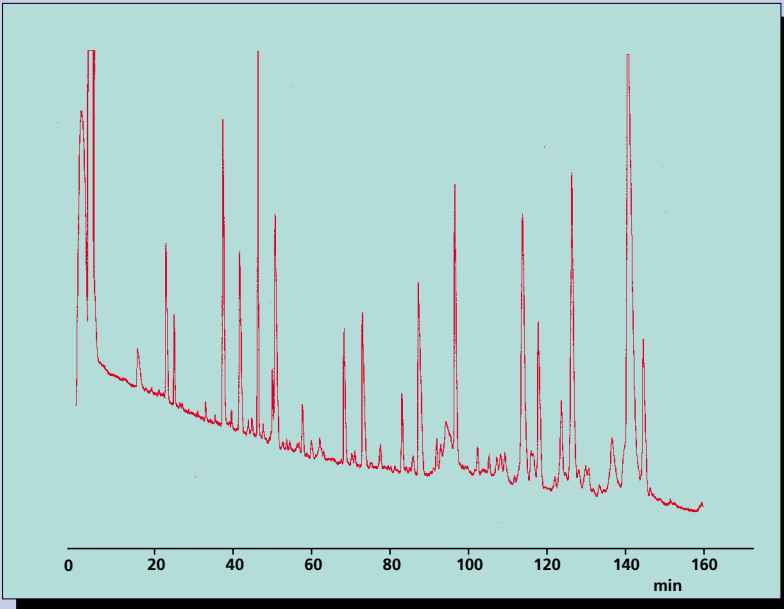


# List of Applications - analysed samples -

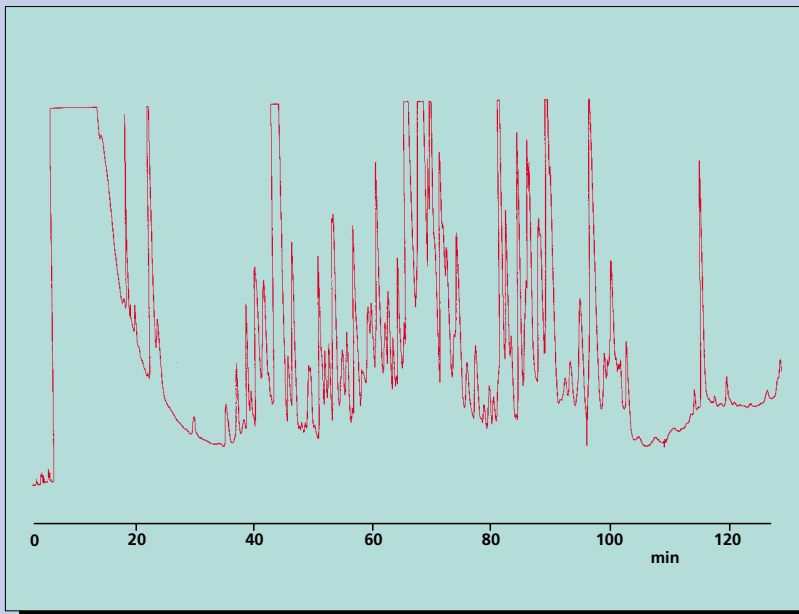
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## 01 170 Tryptic Digest of $\beta$ -Casein (bovine)



**Column phase:** GROM Ruby C18, 2  $\mu$ m  
**Column size:** 125 mm x 300  $\mu$ m  
**Eluent A:** 0.1 % TFA, 99.9% H<sub>2</sub>O  
**B:** 60% ACN, 0.1% TFA, 39.9% H<sub>2</sub>O  
**Gradient:** 0% B (0-3 min), 0-25% B (3-50 min),  
 25-60% B (50-140 min),  
 60-100% B (140-160 min)  
**Flow rate:** 5  $\mu$ l/min  
**Pressure:** 10.5 MPa  
**Temperature:** RT  
**Detection (UV):** 214 nm  
**Injection:** 10  $\mu$ l (= 100 pmol)

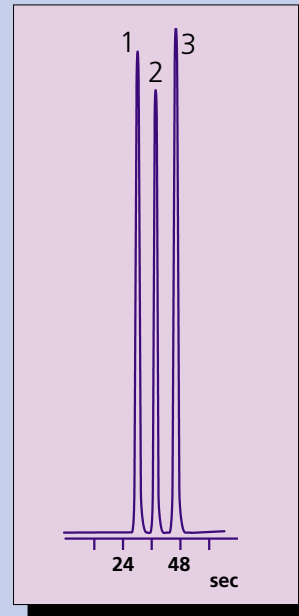
## 01 171 Tryptic Digest of Human Insulin Receptor ( $\beta$ -subunit)



**Column phase:** GROM Ruby C18, 2  $\mu$ m  
**Column size:** 125 mm x 300  $\mu$ m  
**Eluent A:** 0.05 % TFA, 99.95% H<sub>2</sub>O  
**B:** 80% ACN, 0.05% TFA, 19.95% H<sub>2</sub>O  
**Gradient:** 0-5% B (0-11 min), 5 - 5% B  
 (11-20 min),  
 5-45% B (20-100 min),  
 45-95% B (100-130 min)  
**Flow rate:** 5  $\mu$ l/min  
**Pressure:** 10 MPa  
**Temperature:** RT  
**Detection (UV):** 214 nm  
**Injection:** 100  $\mu$ l (~ 40 pmol)

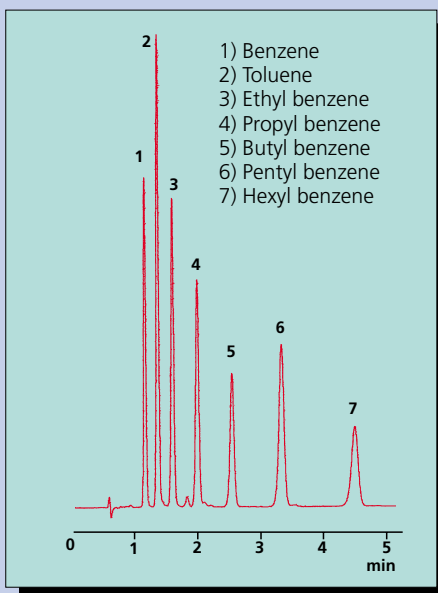
## 10 183 High Speed Analysis of Drugs

- 1) Hypoxanthine
- 2) Theobromine
- 3) Theophyllin



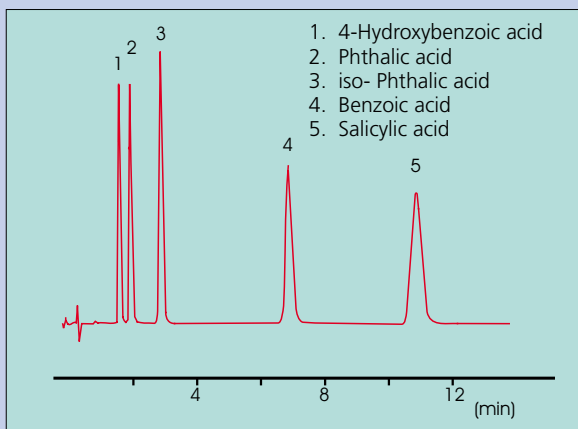
**Column phase:** GROM-Ruby C18, 2  $\mu$ m  
**Column size:** 50 x 1 mm  
**Eluent:** 20 mM Na-Phosphate,  
 pH 2.5 / ACN = 90 / 10  
**Flow rate:** 50  $\mu$ l / min  
**Pressure:** 8 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm  
**Injection:** 1  $\mu$ l (0.5 ng of each)

## 01 155 Separation of n-Alkylbenzenes



**Column phase:** GROM- Sapphire 110 C18, 5  $\mu$ m  
**Column size:** 125 x 2 mm  
**Eluent:** H<sub>2</sub>O / ACN = 20 / 80  
**Flow rate:** 0.4 ml/min  
**Pressure:** 7 Mpa  
**Temperature:** RT  
**Detection (UV):** 254 nm  
**Injection:** 2  $\mu$ l (~3 mg/ml of each)

## 01 156 Separation of Organic Acids by Reversed Phase HPLC



**Column phase:** GROM- Sapphire 110 C18, 5  $\mu$ m  
**Column size:** 125 x 4 mm  
**Eluent:** H<sub>2</sub>O / ACN (+ 0.1% TFA) = 85 / 15  
**Flow rate:** 2 ml/min  
**Pressure:** 13 MPa  
**Temperature:** RT  
**Detection (UV):** 210 nm  
**Injection:** 10  $\mu$ l (0.01 to 2 mg/ml)

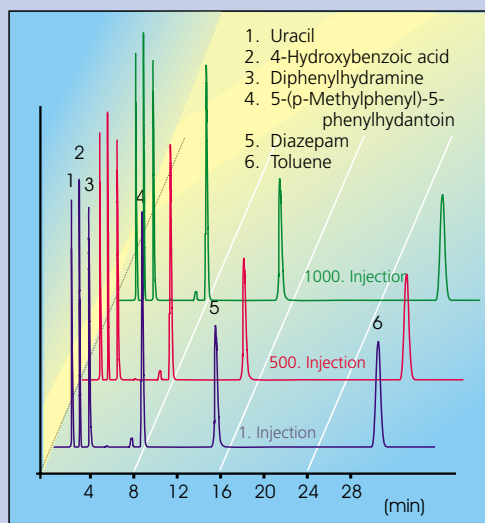
## 01 157 Drug Analysis (Antidepressives) by HPLC



1. Doxepin  
 2. Imipramine  
 3. Nortriptyline  
 4. Amitriptyline

**Column phase:** GROM- Sapphire 110 C18, 5  $\mu$ m  
**Column size:** 125 x 4 mm  
**Eluent:** H<sub>2</sub>O / ACN (+ 0.1% TFA) = 70 / 30  
**Flow rate:** 2 ml/min  
**Pressure:** 13 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm  
**Injection:** 10  $\mu$ l (0.4  $\mu$ g/ml of each)

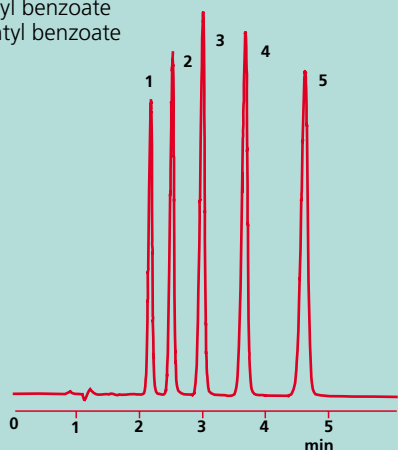
## 01 158 Stability of GROM-Sapphire Packings (Daldrup)



**Column phase:** GROM- Sapphire 110 C18, 5  $\mu$ m  
**Column size:** 125 x 4 mm  
**Eluent:** 50 mM Na-phosphate buffer, pH 2.3 / ACN = 58 / 42  
**Flow rate:** 1 ml/min  
**Pressure:** 8 MPa  
**Temperature:** RT  
**Detection (UV):** 230 nm  
**Injection:** 10  $\mu$ l (1-100 mg/ml of each)

**01 159 Analysis of Benzoates**

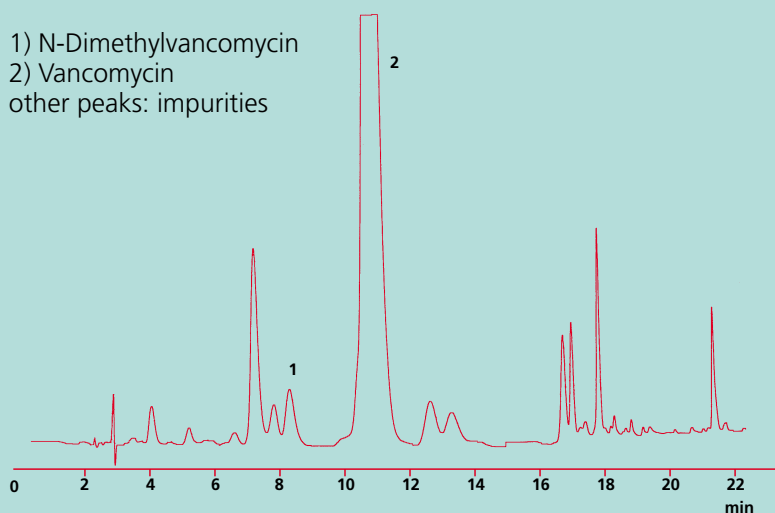
- 1) Methyl benzoate
- 2) Ethyl benzoate
- 3) Propyl benzoate
- 4) Butyl benzoate
- 5) Pentyl benzoate



**Column phase:** GROM- Sapphire 100 C18, 5  $\mu$ m  
**Column size:** 125 x 2 mm  
**Eluent:** H<sub>2</sub>O / ACN = 20 / 80  
**Flow rate:** 0.2 ml/min  
**Pressure:** 2.6 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm (1.2  $\mu$ l flow cell)  
**Injection:** 2  $\mu$ l (50-150  $\mu$ g/ml of each)

**01 133 Analysis of Vancomycin by HPLC**

- 1) N-Dimethylvancomycin
  - 2) Vancomycin
- other peaks: impurities

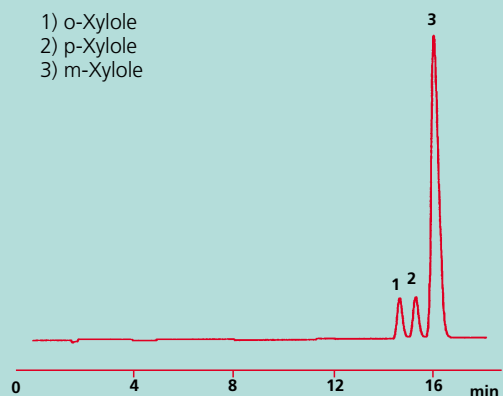


**Column phase:** GROM- Sapphire 100 C18, 5  $\mu$ m  
**Column size:** 125 x 2 mm  
**Eluent:** H<sub>2</sub>O / MeOH = 45 / 55 (v/v)  
**Flow rate:** 0.2 ml/min  
**Pressure:** 12.8 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm (1.2  $\mu$ l flow cell)  
**Injection:** 5  $\mu$ l (Uracil 30  $\mu$ g/ml, others 600  $\mu$ g/ml)

**Column phase:** GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
**Column size:** 250 x 4 mm  
**Eluent :** 0.1% H<sub>3</sub>PO<sub>4</sub> / ACN = 15 / 85  
**Flow rate:** 1.0 ml/min  
**Pressure:** 13 MPa  
**Temperature:** ambient  
**Detection (UV):** 210 nm  
**Injection:** 10  $\mu$ l (10  $\mu$ g/ml)

**01 138 Xylole (Dimethylbenzene) Isomers**

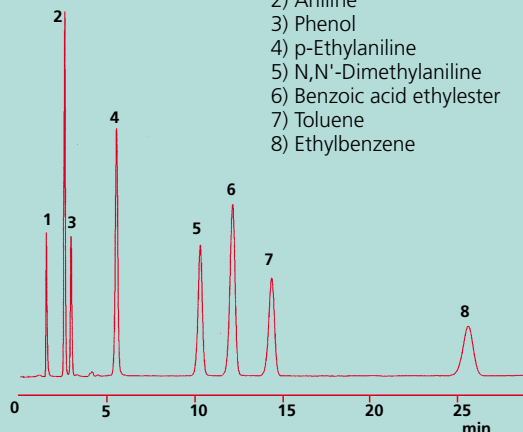
- 1) o-Xylole
- 2) p-Xylole
- 3) m-Xylole



**Column phase:** GROM-SIL 60 ODS-5 ST, 5  $\mu$ m  
**Column size:** 250 x 4 mm  
**Eluent:** H<sub>2</sub>O / ACN = 40 / 60  
**Flow rate:** 1.0 ml/min  
**Pressure:** 14 MPa  
**Temperature:** ambient  
**Detection (UV):** 254 nm  
**Injection:** 1  $\mu$ l (10  $\mu$ g/ml)

**01 160 Selectivity of GROM-Sapphire Packings (M.Arangio, H.Engelhardt)**

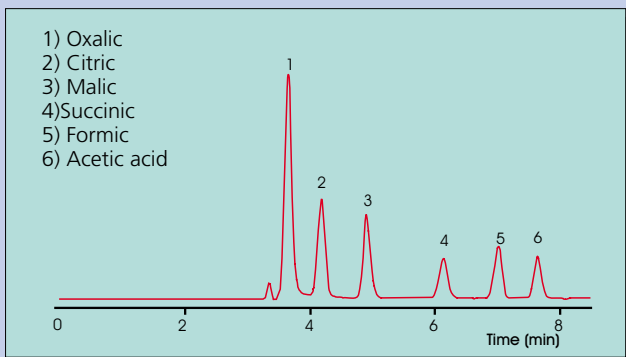
- 1) Uracil
- 2) Aniline
- 3) Phenol
- 4) p-Ethylaniline
- 5) N,N'-Dimethylaniline
- 6) Benzoic acid ethylester
- 7) Toluene
- 8) Ethylbenzene



**Column phase:** GROM- Sapphire 100 C18, 5  $\mu$ m  
**Column size:** 125 x 2 mm  
**Eluent:** H<sub>2</sub>O / MeOH = 45 / 55 (v/v)  
**Flow rate:** 0.2 ml/min  
**Pressure:** 12.8 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm (1.2  $\mu$ l flow cell)  
**Injection:** 5  $\mu$ l (Uracil 30  $\mu$ g/ml, others 600  $\mu$ g/ml)

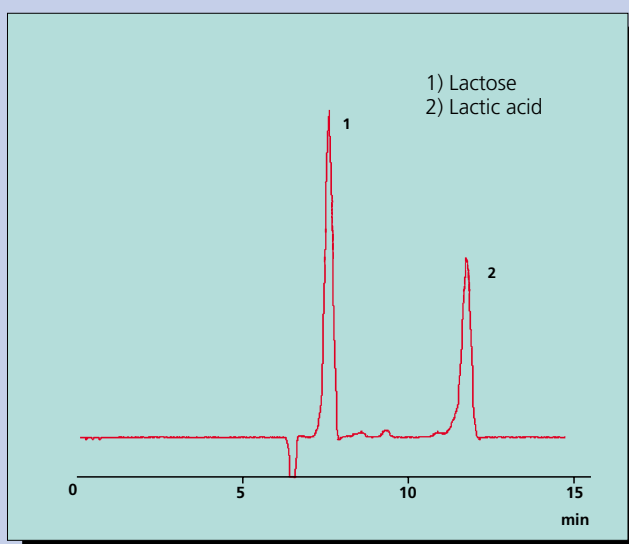
**Column phase:** GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
**Column size:** 250 x 4 mm  
**Eluent :** 0.1% H<sub>3</sub>PO<sub>4</sub> / ACN = 15 / 85  
**Flow rate:** 1.0 ml/min  
**Pressure:** 13 MPa  
**Temperature:** ambient  
**Detection (UV):** 210 nm  
**Injection:** 10  $\mu$ l (10  $\mu$ g/ml)

### 09 139 Analysis of Organic Acids



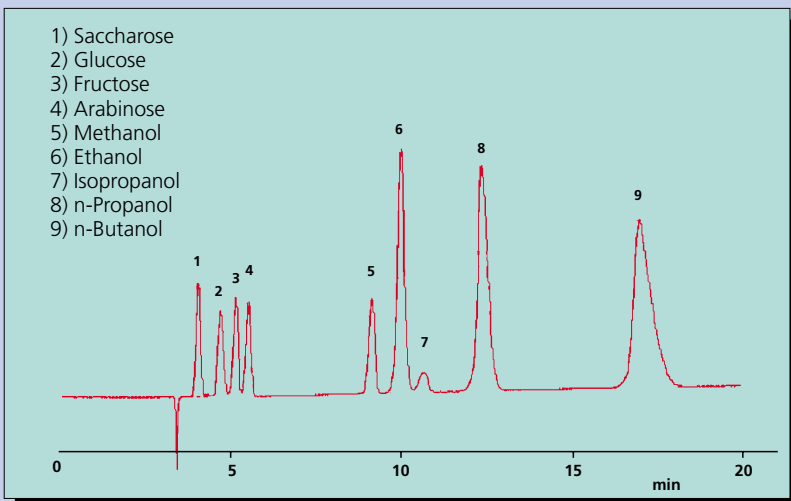
**Column phase:** GROM- RESIN H<sup>+</sup>IX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 1 ml/min  
**Pressure:** 9 MPa  
**Temperature:** 25°C  
**Detection (UV):** 210 nm  
**Injection:** 20 µl

### 09 142 Determination of Lactose and Lactic Acid



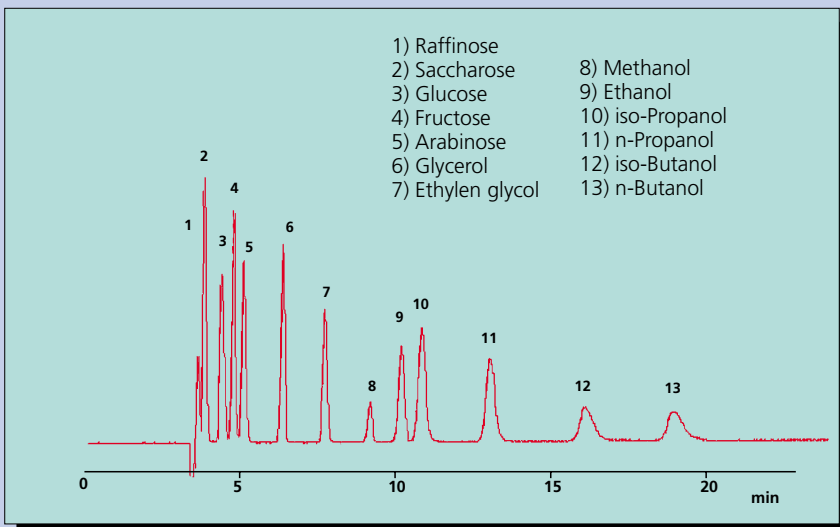
**Column phase:** GROM- RESIN H<sup>+</sup>IX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 0.5 ml/min  
**Pressure:** 4.5 MPa  
**Temperature:** ambient  
**Detection (UV):** 210 nm  
**Injection:** 10 µl

### 09 140 Separation of Sugars and Alcohols by HPLC



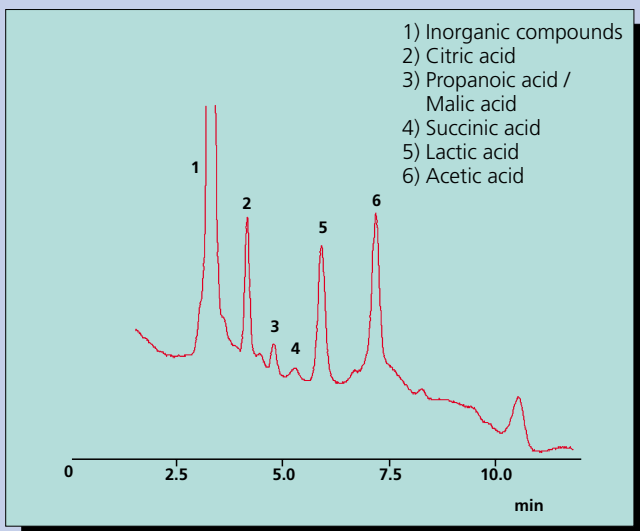
**Column phase:** GROM- RESIN H<sup>+</sup>IX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 1.0 ml/min  
**Pressure:** 9.0 MPa  
**Temperature:** ambient  
**Detection:** RI  
**Injection:** 5 µl

### 09 141 Analysis of Alcohols and Sugars



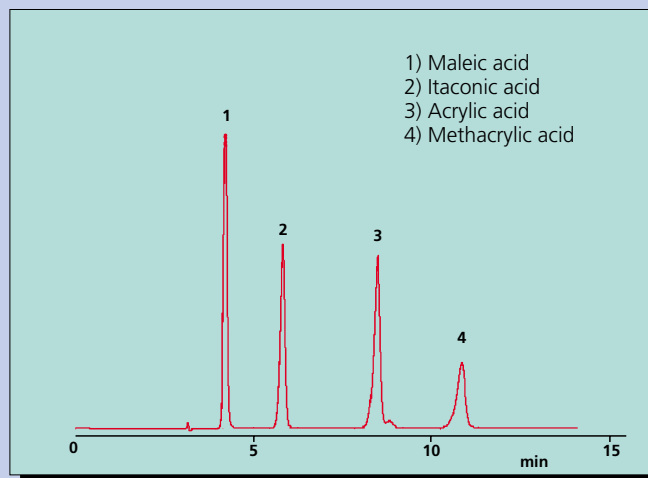
**Column phase:** GROM- RESIN H<sup>+</sup>IX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 1.0 ml/min  
**Pressure:** 9.0 MPa  
**Temperature:** 25°C  
**Detection (UV):** 210 nm  
**Injection:** 20 µl

### 09 143 Determination of Organic Acids in Trichomonas foetus extract



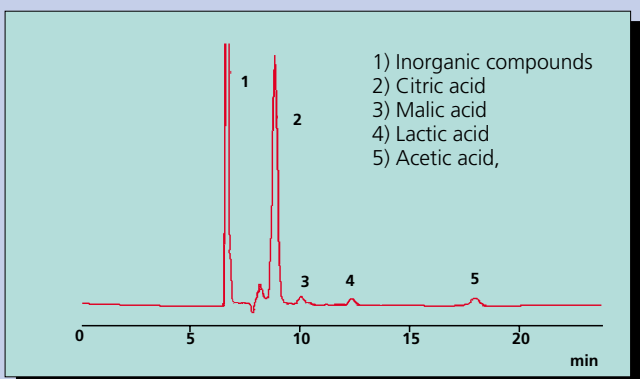
**Column phase:** GROM- RESIN H<sup>+</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 0.5 ml/min  
**Pressure:** 4.5 MPa  
**Temperature:** ambient  
**Detection (UV):** 210 nm  
**Injection:** 10 µl

### 09 144 Separation of Organic Acids



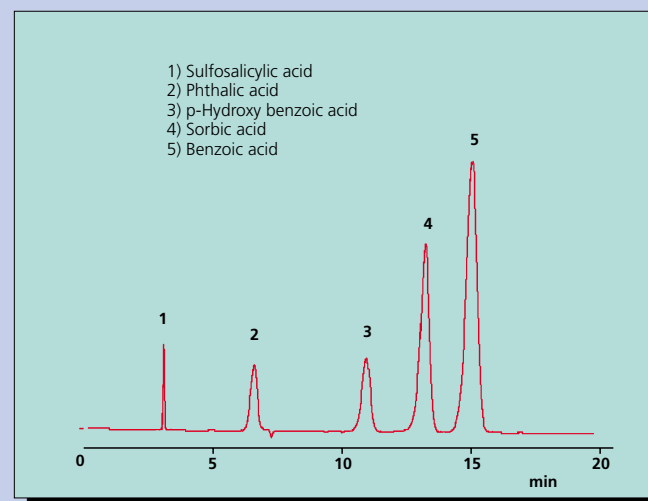
**Column phase:** GROM- RESIN H<sup>+</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 1.0 ml/min  
**Pressure:** 5 MPa  
**Temperature:** 80°C  
**Detection (UV):** 210 nm  
**Injection:** 5 µl

### 09 145 Analysis of Organic Acids in Soft Drinks



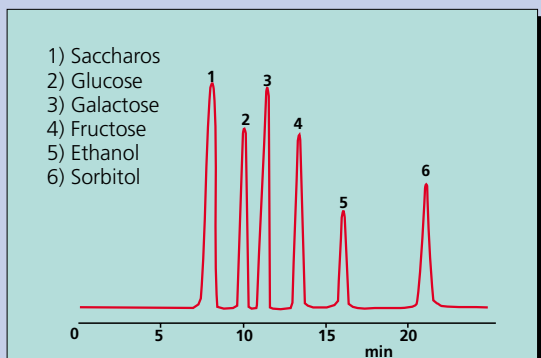
**Column phase:** GROM- RESIN H<sup>+</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent :** 9 mM sulfuric acid  
**Flow rate:** 0.5 ml/min  
**Pressure:** 9 MPa  
**Temperature:** ambient  
**Detection (UV):** 210 nm  
**Injection:** 20 µl (degassed soft drink)

### 09 146 Analysis of Aromatic Acids



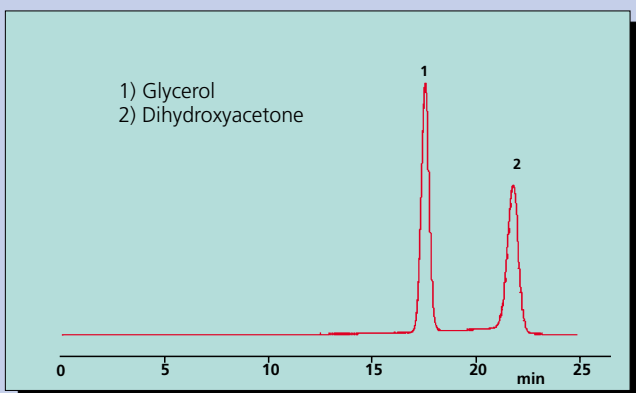
**Column phase:** GROM- RESIN H<sup>+</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** 9 mM sulfuric acid  
**Flow rate:** 1.0 ml/min  
**Pressure:** 9 MPa  
**Temperature:** 80°C  
**Detection (UV):** 240 nm  
**Injection:** 20 µl

### 09 147 Sugar Analysis



**Column phase:** GROM- RESIN Ca<sup>++</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.5 ml/min  
**Pressure:** 3.5 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 20 µl

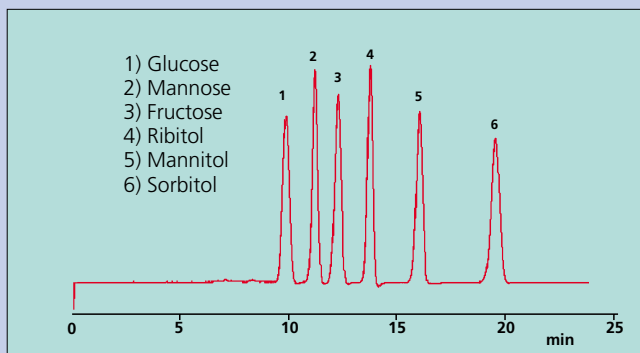
### 09 148 Determination of Glycerol and Dihydroxyacetone



**Column phase:** GROM- RESIN Ca<sup>++</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.5 ml/min  
**Pressure:** 3.5 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 20 µl

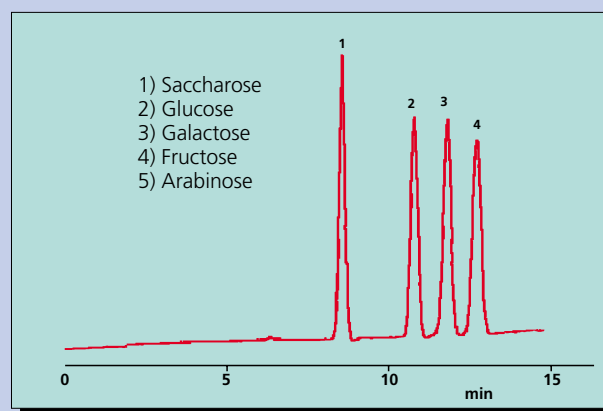
**Column phase:** GROM- RESIN Na<sup>+</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.5 ml/min  
**Pressure:** 3.0 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 10 µl

### 09 149 Analysis of Alcohol Sugars

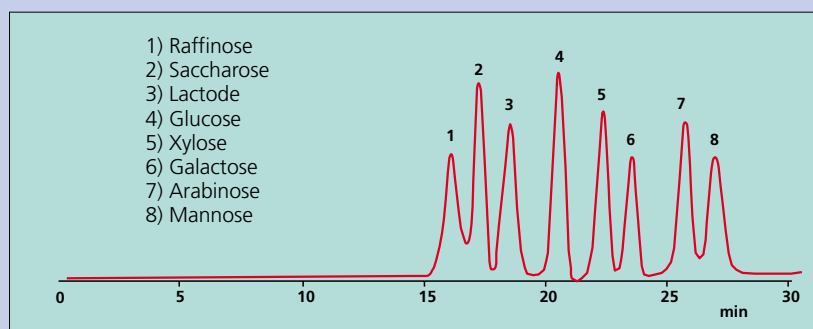


**Column phase:** GROM- RESIN Ca<sup>++</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.5 ml/min  
**Pressure:** 3.5 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 10 µl

### 09 150 Saccharides Analysis

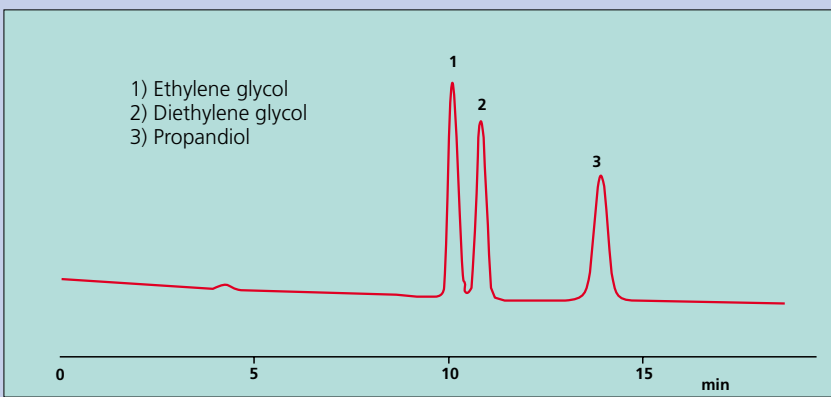


### 09 151 Analysis of Saccharides by HPLC



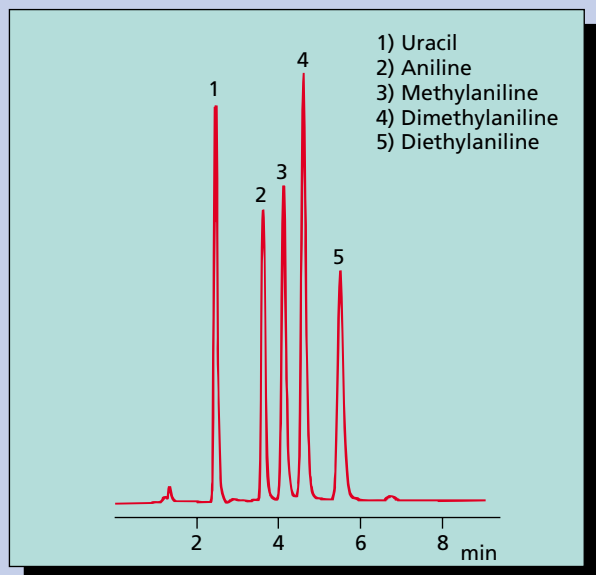
**Column phase:** GROM- RESIN Pb<sup>++</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.3 ml/min  
**Pressure:** 1.0 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 5 µl

### 09 152 Analysis of Glycols by HPLC



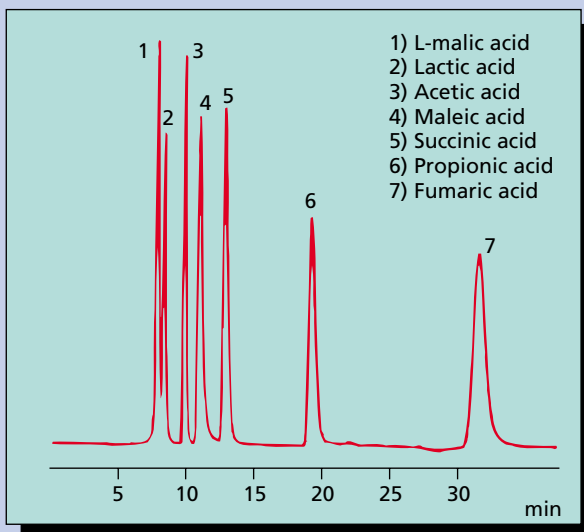
**Column phase:** GROM- RESIN Pb<sup>++</sup>IEX, 8 µm  
**Column size:** 250 x 8 mm  
**Eluent:** water  
**Flow rate:** 0.3 ml/min  
**Pressure:** 1.0 MPa  
**Temperature:** 80°C  
**Detection:** RI  
**Injection:** 5 µl

## 01 153 Analysis of Basic Compounds by HPLC



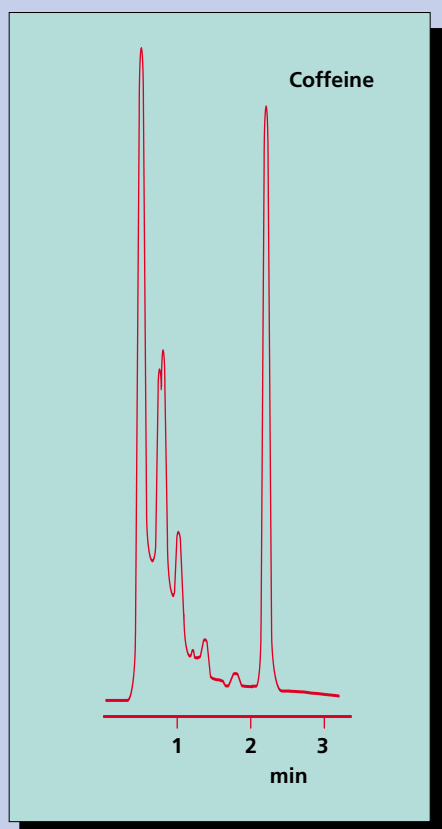
**Column phase:** GROM- Polymer C18, 5  $\mu$ m  
**Column size:** 250 x 4 mm  
**Eluent:** H<sub>2</sub>O / ACN = 20 / 80  
**Flow rate:** 0.5 ml/min  
**Pressure:** 4.5 MPa  
**Temperature:** 25°C  
**Detection (UV):** 254 nm  
**Injection:** 4  $\mu$ l (10 -15  $\mu$ g/ml of each)

## 01 154 Analysis of Organic Acids by HPLC



**Column phase:** GROM- Polymer C18, 5  $\mu$ m  
**Column size:** 250 x 4 mm  
**Eluent:** 20 mM H<sub>3</sub>PO<sub>4</sub>  
**Flow rate:** 0.4 ml/min  
**Pressure:** 5.2 MPa  
**Temperature:** 30°C  
**Detection (UV):** 254 nm  
**Injection:** 10  $\mu$ l (10-100  $\mu$ g/ml of each)

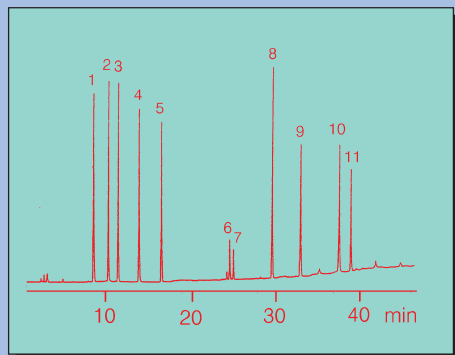
## 02 168 HPLC Analysis of Coffee



**Column phase:** GROM-SIL 120 Octyl-5 CP, 3  $\mu$ m  
**Column size:** 75 x 3 mm  
**Eluent:** Water/Methanol = 85/15  
**Flow rate:** 0.8  $\mu$ l/min  
**Pressure:** 9 MPa  
**Temperature:** RT  
**Detection (UV):** 254 nm  
**Injection:** 10  $\mu$ l Coffee



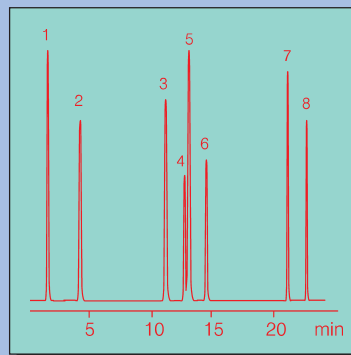
## 01 001 Color Additives - Dyes



- 1) Tartrazine
- 2) Amaranth
- 3) Indigo Carmine
- 4) New Coccine
- 5) Sunset Yellow
- 6) Fast Green
- 7) Brilliant Blue
- 8) Erythrosine
- 9) Acid Red
- 10) Phloxine
- 11) Rosé Bengale

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 10 mM  $\text{NH}_4$ -phosphate, pH 6.0 / MeOH = 90 / 10  
 B: 10 mM  $\text{NH}_4$ -phosphate, pH 6.0 / MeOH = 20 / 30  
 Gradient: 0 - 100% B (0 - 40 min, linear), 100% B (40-60 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 11 MPa  
 Temperature: 30°C  
 Detection (UV): 254 nm, 0.32 AUFS  
 Injection: 80  $\mu$ l (5 mg / ml)

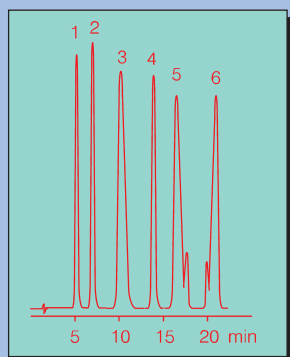
## 01 004 Water-soluble Vitamins



- 1) L-Ascorbic acid (Vit. C)
- 2) Nicotinic acid
- 3) Pyridoxine HCl (Vit. B6)
- 4) Nicotinamide,
- 5) Thiamine hydrochloride (Vit. B1)
- 6) Folic acid
- 7) Cyanocobalamin (Vit. B12)
- 8) Riboflavin

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 20 mM K-phosphate, pH 6.6  
 B: 20 mM K-phosphate, pH 6.6 / ACN = 80 / 20  
 Gradient: 0% B (0-5 min), 0-100% B (5-20 min, linear), 100% B (20-25 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 9 MPa  
 Temperature: 30°C  
 Detection (UV): 254 nm, 0.32 AUFS  
 Injection: 10  $\mu$ l (0.04 - 0.3 mg/ml)

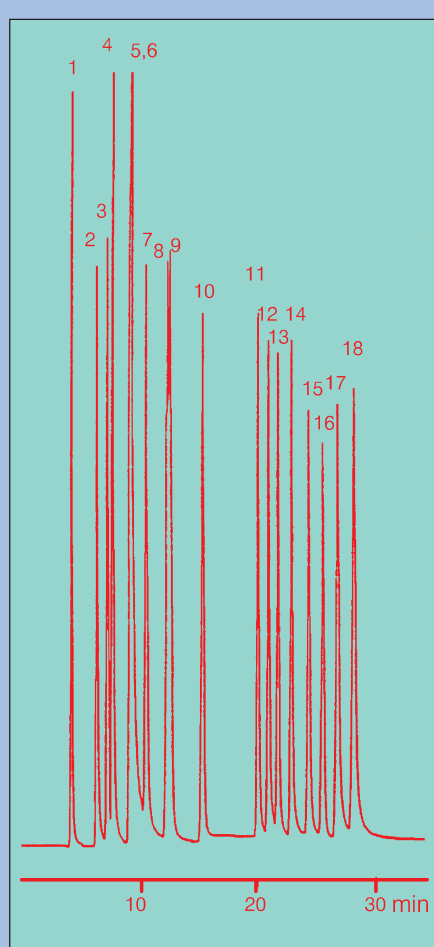
## 01 002 Peptides and Proteins



- 1) Met-Enkephalin
- 2) Leu-Enkephalin
- 3) Bovine Serum Albumin
- 4)  $\alpha$ -Mating-Factor
- 5) Insulin
- 6) Ovalbumin

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: ACN /  $\text{H}_2\text{O}$  / TFA = 20 / 80 / .05  
 B: ACN /  $\text{H}_2\text{O}$  / TFA = 45 / 55 / .05  
 Gradient: 0 - 100% B, (0-30 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 10 MPa  
 Temperature: 30°C  
 Detection (UV): 220 nm, 0.32 AUFS  
 Injection: 30  $\mu$ l (0.5-2  $\mu$ g)

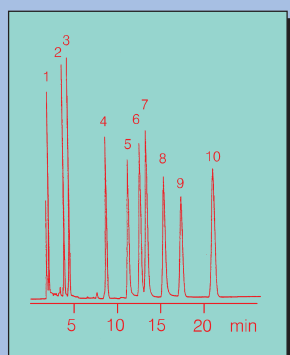
## 01 005 Nucleosides and Bases



- 1) Cytosine
- 2) Cytidine
- 3) Uracil
- 4) Deoxycytidine
- 5) Guanine
- 6) Adenine
- 7) Hypoxanthine
- 8) Uridine
- 9) Xanthine
- 10) Thymine
- 11) Inosine
- 12) Guanosine
- 13) Deoxyinosine
- 14) Deoxyguanosine
- 15) Xanthosine
- 16) Thymidine
- 17) Adenosine
- 18) Deoxyadenosine

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: 20 mM  $\text{NH}_4$ -acetate, pH 3.5  
 B: 20 mM  $\text{NH}_4$ -acetate, pH 3.5 / MeOH = 90 / 10  
 Gradient: 30% B (0-5 min), 30-100% B (5-13 min), 100% B (13-40 min)  
 Flow rate: 0.5 ml/min  
 Pressure: 8.5 MPa  
 Temperature: 30°C  
 Detection (UV): 260 nm, 0.08 AUFS  
 Injection: 12  $\mu$ l (10-50  $\mu$ g/ml)

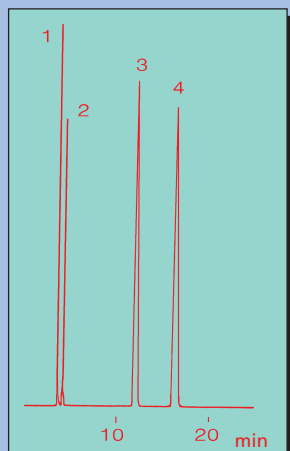
## 01 003 Fat-soluble Vitamins



- 1) Menadione (Vit. K3)
- 2) Retinol (Vit. A)
- 3) Retinol acetate
- 4) Menaquinone (Vit. K2)
- 5) d-Tocopherol
- 6) Ergocalciferol (Vit. D2)
- 7) Cholecalciferol (Vit. D3),
- 8)  $\alpha$ -Tocopherol (Vit. E),
- 9)  $\alpha$ -Tocopherol acetate,
- 10) Phylloquinone (Vit. K1)

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: acetonitrile  
 Flow rate: 0.8 ml/min  
 Pressure: 7 MPa  
 Temperature: 30°C  
 Detection (UV): 280 nm, 0.08 AUFS  
 Injection: 15  $\mu$ l (0.01-0.2 mg/ml)

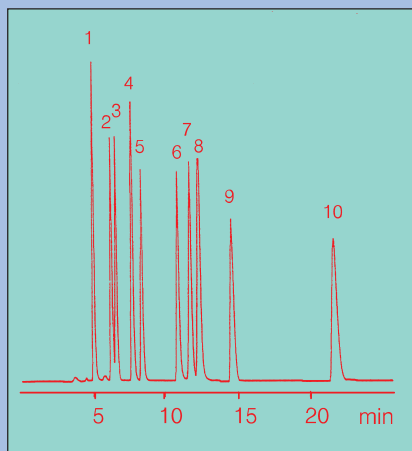
## 01 006 Antineoplastics and related compounds



- 1) Uracil
- 2) 5-Fluorouracil
- 3) Deoxyuridine
- 4) 5-Fluoro-2'-deoxyuridine

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 10 mM  $\text{NH}_4\text{H}_2\text{PO}_4$   
 Flow rate: 0.8 ml/min  
 Pressure: 8 MPa  
 Temperature: 37°C  
 Detection (UV): 254 nm, 0.16 AUFS  
 Injection: 10  $\mu$ l (25-200  $\mu$ g/ml)

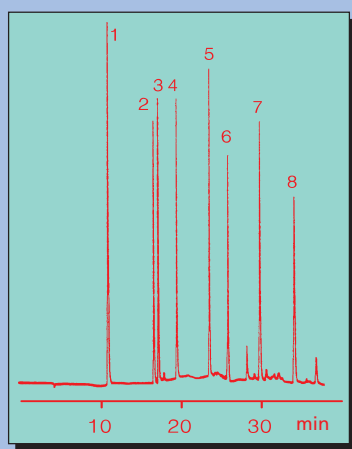
## 01 009 Organic Acids



- 1) Glycolic acid
- 2) L-Malic acid
- 3) Malonic acid
- 4) Lactic acid
- 5) Acetic acid
- 6) Maleic acid
- 7) Citric acid
- 8) Fumaric acid
- 9) Succinic acid
- 10) Propionic acid

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 20 mM Na-phosphate, pH 2.8  
 Flow rate: 0.5 ml/min  
 Pressure: 7 MPa  
 Temperature: 30°C  
 Detection (UV): 220 nm, 0.08 AUFS  
 Injection: 10  $\mu$ l (0.01-2 mg/ml)

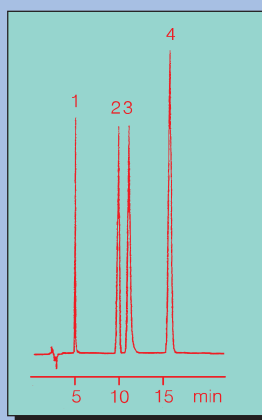
## 01 007 Crude Drugs - Glycosides



- 1) Arbutin
- 2) Salicin
- 3) Esculine
- 4) Strophantin G (Ouabain)
- 5) Baicalein
- 6) Barbaloin
- 7) Glycyrrhizin
- 8) Digitoxin

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: 20 mM  $\text{NH}_4\text{H}_2\text{PO}_4$  / MeOH = 95 / 5  
 B: 20 mM  $\text{NH}_4\text{H}_2\text{PO}_4$  / MeOH = 20 / 80  
 Gradient: 0-100% B (0-20 min, linear), 100% B (20-40 min)  
 Flow rate: 0.5 ml/min  
 Pressure: 9 MPa  
 Temperature: 30°C  
 Detection (UV): 250 nm, 0.08 AUFS  
 Injection: 15  $\mu$ l (10-500  $\mu$ g/ml)

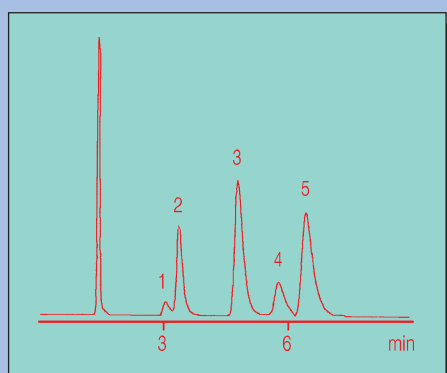
## 01 010 Water-soluble Vitamins



- 1) p-Aminobenzoic acid
- 2) Biotin (Vit. H)
- 3) Cyanocobalamin (Vit. B12)
- 4) Riboflavin (Vit. B2)

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 50 mM  $\text{NH}_4\text{H}_2\text{PO}_4$  / ACN = 90 / 10  
 Flow rate: 0.8 ml/min  
 Pressure: 7 MPa  
 Temperature: 37°C  
 Detection (UV): 210 nm, 0.16 AUFS  
 Injection: 10  $\mu$ l (20-300  $\mu$ g/ml)

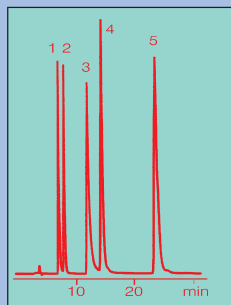
## 08 008 Regioisomeric Fullerene Derivatives



- 1) trans-1-C62(COOEt)<sub>4</sub>
- 2) trans-2-C62(COOEt)<sub>4</sub>
- 3) trans-3-C62(COOEt)<sub>4</sub>
- 4) trans-4-C62(COOEt)<sub>4</sub>
- 5) e-C62(COOEt)<sub>4</sub>

Column phase: GROM-SIL 100 Norm Ph-1 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: toluene  
 Flow rate: 1.5 ml/min  
 Pressure: 12 MPa  
 Temperature: RT  
 Detection (UV): 340 nm, 0.08 AUFS  
 Injection: 5  $\mu$ l (50  $\mu$ g/ml)

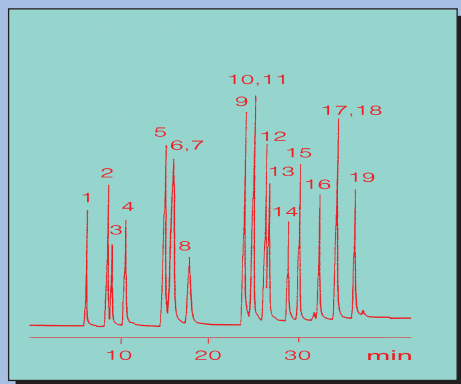
## 01 011 Angiotensins - Peptide Hormones



- 1) Angiotensin III - RVYIHPF
- 2) Angiotensin II - DRVYIHPF
- 3) [Asn1, Val15]-Angiotensin I - NRVYVHPFHL
- 4) [Val15]-Angiotensin I - DRVYVHPFHL
- 5) Angiotensin I - DRVYIHPFHL

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 20 mM  $\text{KH}_2\text{PO}_4$  / ACN = 80 / 20  
 Flow rate: 0.4 ml/min  
 Pressure: 4.5 MPa  
 Temperature: 30°C  
 Detection (UV): 220 nm, 0.08 AUFS  
 Injection: 8  $\mu$ l (50-150  $\mu$ g/ml)

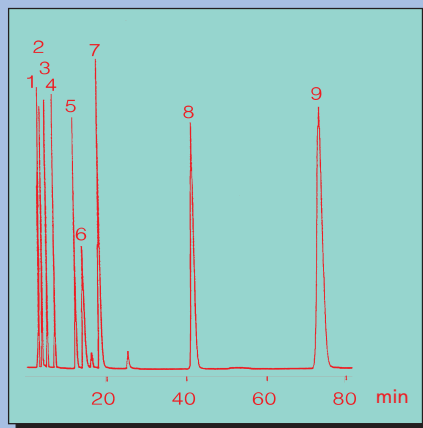
## 01 012 Nucleotides



- 1) 5'-CMP
- 2) 5'-UMP
- 3) 5'-dCMP
- 4) 5'-CDP
- 5) 5'-GMP
- 6) 5'-UDP
- 7) 5'-IMP
- 8) 5'-CTP
- 9) 5'-UTP
- 10) 5'-GDP
- 11) 5'-TMP
- 12) 5'-AMP
- 13) 5'-dGMP
- 14) 5'-GTP
- 15) 5'-TDP
- 16) 5'-ADP
- 17) 5'-TTP
- 18) 5'-dAMP
- 19) 5'-ATP

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4mm  
 Eluent A: 0.2 M TEAA, pH 6.6  
 B: 0.2 M TEAA, pH 6.6 / ACN = 95 / 5  
 Gradient: 4% B (0-10 min), 4-100% B (10-35 min), 100% B (35-50 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 12 - 13 MPa  
 Temperature: 30°C  
 Detection (UV): 260 nm, 0.16 AUFS  
 Injection: 15  $\mu$ l (30-150  $\mu$ g/ml)

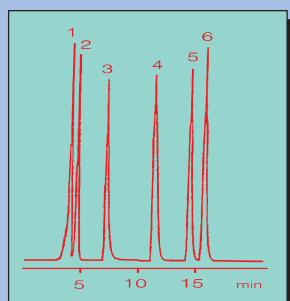
## 01 013 Alkaloids



- 1) Hordenine sulfate
- 2) Pilocarpine chloride
- 3) Scopolamine bromide
- 4) Atropine sulfate
- 5) Quinine
- 6) Sparteine sulfate
- 7) Cinchonine
- 8) Papaverine chloride
- 9) Narcotine chloride

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 20 mM  $\text{KH}_2\text{PO}_4$  / ACN = 83 / 17  
 B: 20 mM  $\text{KH}_2\text{PO}_4$  / ACN = 60 / 40  
 Gradient: 0-100% B (0-30 min), 100% B (30-40 min)  
 Flow rate: 0.5 ml/min  
 Pressure: 5.4 MPa  
 Temperature: 30°C  
 Detection (UV): 210 nm, 0.16 AUFS  
 Injection: 5  $\mu$ l (0.03 - 2 mg/ml)

## 01 014 Ingredients in a Cough/Cold Medication



- 1) Acetaminophen
- 2) Caffeine
- 3) Chlorpheniramine malate
- 4) Narcotine
- 5) Ethenzamide
- 6) Bucetine

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 0.1% phosphoric acid / MeOH / ACN = 77 / 15 / 18  
 Flow rate: 0.8 ml/min  
 Pressure: 15 MPa  
 Temperature: 30°C  
 Detection (UV): 254 nm, 0.08 AUFS  
 Injection: 10  $\mu$ l (20 - 200  $\mu$ g/ml)

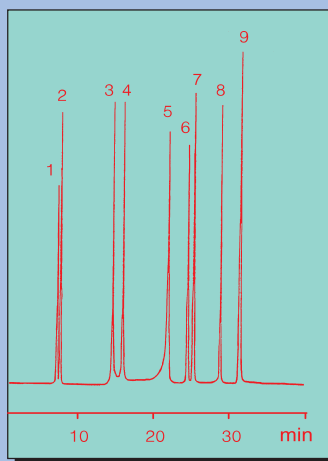
## 01 015 Water-soluble Vitamins



- 1) Nicotinic acid
- 2) Pantothenic acid
- 3) Pyridoxine hydrochloride (Vit. B6)
- 4) Nicotinamide,
- 5) Thiamine hydrochloride (Vit. B1)

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 20 mM Na-phosphate, pH 6.5  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: 30°C  
 Detection (UV): 210 nm, 0.08 AUFS  
 Injection: 10  $\mu$ l (20 - 600  $\mu$ g/ml)

## 01 016 Antibiotics

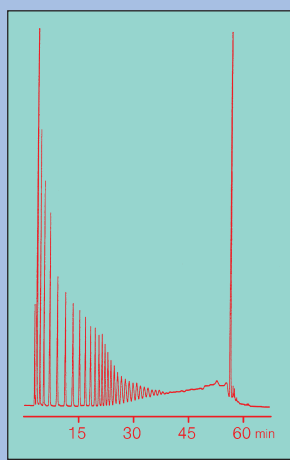


- 1) Ampicillin
- 2) Cephalixin
- 3) Oxytetracycline hydrochloride
- 4) Tetracycline
- 5) Chlorotetracycline
- 6) Chloramphenicol
- 7) Oxolinic acid
- 8) Doxorubicine hydrochloride
- 9) Nalidixic acid

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 50 mM  $\text{NH}_4\text{H}_2\text{PO}_4$  / ACN = 90 / 10  
 B: 50 mM  $\text{NH}_4\text{H}_2\text{PO}_4$  / ACN = 50 / 50  
 Gradient: 0-55% B (0-30 min), 55% B (30-40 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 10 MPa  
 Temperature: 30°C  
 Detection (UV): 250 nm, 0.16 AUFS

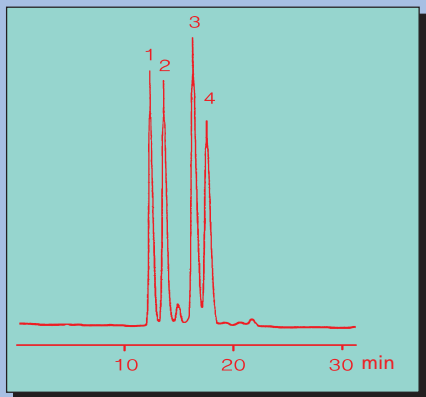
Injection: 15  $\mu$ l (10 - 150  $\mu$ g/ml)

## 01 017 Poly(A) Oligomers



Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 0.1 M Na-phosphate, pH 7.0  
 B: 0.1 M Na-phosphate, pH 7.0 / ACN = 75 / 25  
 Gradient: 20-27% B (0-15 min), 27-35% B (15-90 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 8 MPa  
 Temperature: RT  
 Detection (UV): 260 nm  
 Injection: 10  $\mu$ l

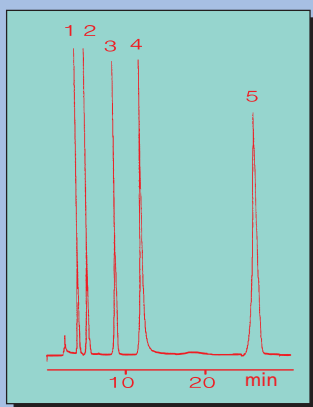
## 01 018 Insulins from different species



- 1) Insulin (Bovine)
- 2) Insulin (Sheep)
- 3) Insulin (Human)
- 4) Insulin (Porcine)

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: 0.01 N HCl / ACN = 72 / 28  
 B: 0.01 N HCl / ACN = 65 / 35  
 Gradient: 0-100% B (0 - 60 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 9 MPa  
 Temperature: 30°C  
 Detection (UV): 220 nm, 0.16 AUFS  
 Injection: 50  $\mu$ l (100 - 200  $\mu$ g/ml)

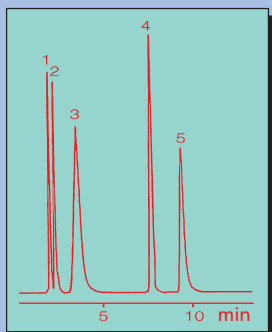
## 01 019 Polyphenols - I



- 1) Phloroglucinol
- 2) Hydrochinone
- 3) Resorcinol
- 4) Catechol
- 5) Phenol

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 50 mM phosphoric acid / ACN = 90 / 10  
 Flow rate: 0.8 ml/min  
 Pressure: 15 MPa  
 Temperature: 30°C  
 Detection (UV): 280 nm, 0.32 AUFS  
 Injection: 20  $\mu$ l (5 - 15  $\mu$ g)

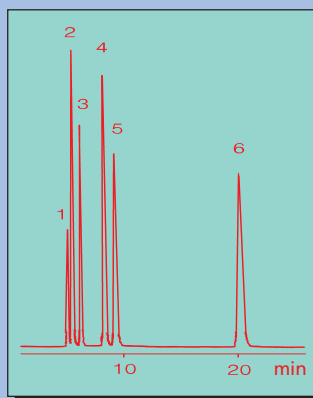
## 01 020 Water-soluble Vitamins



- 1) L-Ascorbic acid
- 2) Orotic acid
- 3) Pyrroloquinoline quinone
- 4) Pyridoxine hydrochloride
- 5) Nicotinamide

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 100 mM ammonium acetate, pH 5.1  
 Flow rate: 0.8 ml/min  
 Pressure: 8 MPa  
 Temperature: 37°C  
 Detection (UV): 254 nm, 0.16 AUFS  
 Injection: 10  $\mu$ l (40 - 200  $\mu$ g/ml)

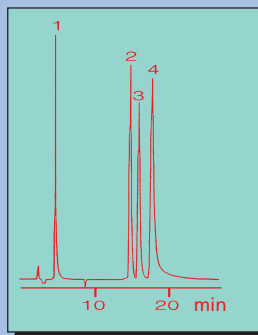
## 01 021 Nucleosides



- 1) 2,6,8-Trihydroxypurine (Uric acid)
- 2) Hypoxanthine
- 3) Xanthine
- 4) Inosine
- 5) Guanosine
- 6) Adenosine

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 10 mM Na-acetate, pH 5.0 / ACN / THF = 955 / 30 / 5 (v/v)  
 Flow rate: 0.4 ml/min  
 Pressure: 4 MPa  
 Temperature: 30°C  
 Detection (UV): 254 nm, 0.08 AUFS  
 Injection: 10  $\mu$ l (30 - 100  $\mu$ g/ml)

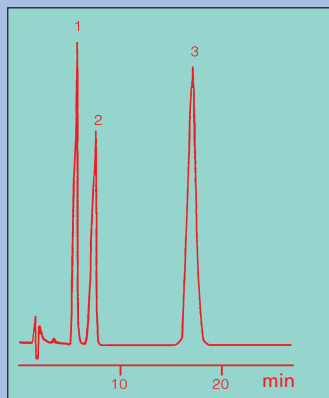
## 01 022 Metal chelates of 1-(2-Pyridylazo)-2-naphthol (PAN)



- 1) Cu II-PAN
- 2) Ni II-PAN
- 3) Fe III-PAN
- 4) Zn II-PAN

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 10 mM tetrabutylammonium bromide, 0.01% PAN / ACN = 30 / 70 (v/v)  
 Flow rate: 0.4 ml/min  
 Pressure: 40 MPa  
 Temperature: 30°C  
 Detection (VIS): 565 nm, 0.08 AUFS  
 Injection: 12  $\mu$ l (25 - 95  $\mu$ g/ml)

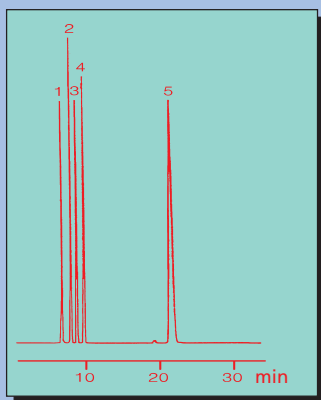
## 01 023 Cyclodextrins



- 1)  $\gamma$ -Cyclodextrin
- 2)  $\alpha$ -Cyclodextrin
- 3)  $\beta$ -Cyclodextrin

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: water / methanol = 95 / 5 (v/v)  
 Flow rate: 0.8 ml/min  
 Pressure: 8.8 MPa  
 Temperature: 30°C  
 Detection: RI  
 Injection: 5  $\mu$ l (20 - 60  $\mu$ g)

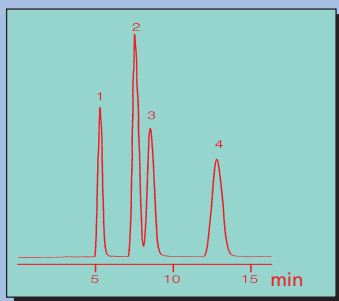
## 01 024 Sugar Nucleotides



- 1) CDP-D-glucose
- 2) UDP-D-glucose
- 3) UDP-N-acetyl-D-glucosamine
- 4) GDP-D-mannose
- 5) ADP-D-glucose

Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 250 x 4mm  
 Eluent: 20 mM triethylammonium acetate,  
 pH 5.7 / ACN = 99 / 1  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: 37°C  
 Detection (UV): 260 nm, 0.16 AUFS  
 Injection: 5  $\mu$ l (30 - 70  $\mu$ g/ml)

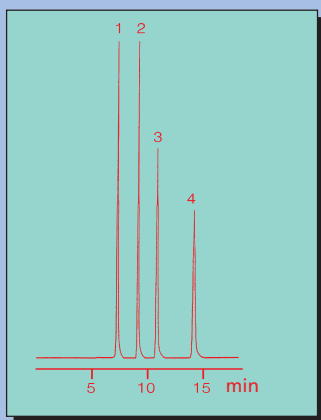
## 01 025 Herbicides - Residue Analysis by HPLC



- 1) 3,6-Dichloro-2-MGTH-oxybenzoic acid
- 2) p-Bromophenol
- 3) 2,4-Dichlorophenoxyacetic acid
- 4) (+)-2-(4-Chloro-2-MGTH-yl phenoxy) propionic acid

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 22.5 mM K-phosphate, pH 2.9 / ACN = 75 / 25  
 Flow rate: 1 ml/min  
 Pressure: 8.5 MPa  
 Temperature: 35°C  
 Detection (UV): 280 nm  
 Injection: 20  $\mu$ l (1 - 2 mg/ml)

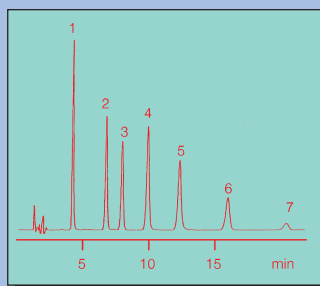
## 01 026 Catecholamines I



- 1) Noradrenaline
- 2) Adrenaline
- 3) 3,4-Dihydroxyphenylalanine (DOPA)
- 4) Dopamine

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 250 x 4mm  
 Eluent: 0.1 M Na-phosphate, pH 3.0 / ACN = 97 / 3  
 Flow rate: 0.4 ml/min  
 Pressure: 6 MPa  
 Temperature: RT  
 Detection (UV): 210 nm, 0.08 AUFS  
 Injection: 10  $\mu$ l (0.1 - 0.35  $\mu$ g)

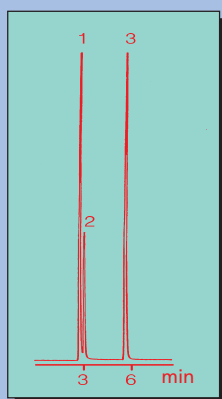
## 01 027 Catecholamines II



- 1) Noradrenaline
- 2) 3,4-Dihydroxyphenylacetic acid
- 3) 3,4-Dihydroxyphenylalanine
- 4) Dopamine
- 5) Epinine
- 6) Homovanillic acid
- 7) 3-O-Methyl dopa

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 6.9 g  $\text{NaH}_2\text{PO}_4$  + 37 mg EDTA + 150 mg Na-octane sulfonate + 60 ml ACN + 5 ml THF, make up to 1 000 ml with  $\text{H}_2\text{O}$   
 Flow rate: 0.8 ml/min  
 Pressure: 13 MPa  
 Temperature: RT  
 Detection: electrochemical  
 Injection: 20  $\mu$ l (200 ng/ml)

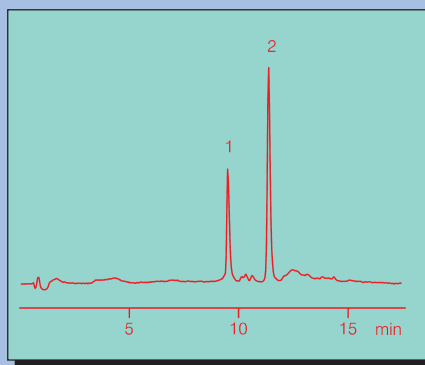
## 01 028 Sulfur-Containing Native Amino Acids



- 1) Cystine
- 2) Cysteine
- 3) Methionine

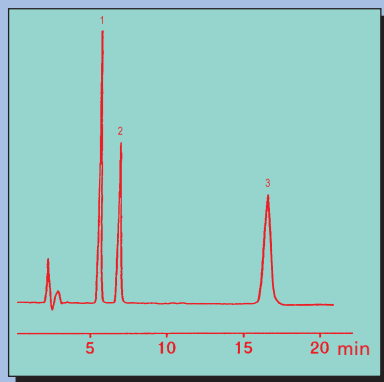
Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: water  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: RT  
 Detection (UV): 210 nm  
 Injection: 20  $\mu$ l (50 ppm)

## 01 029 Rubicines - Chemotherapeutics



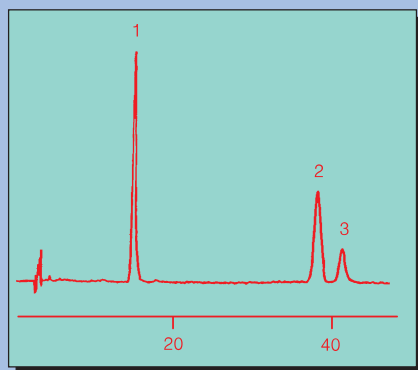
- 1) Doxorubicine
- 2) Daunorubicine

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 125 x 3mm  
 Eluent A: 25 mM Na-phosphate, pH 2.2  
 B: ACN  
 Gradient: 0-60% B (0-12 min), 60% B (12-20 min)  
 Flow rate: 0.45 ml/min  
 Pressure: 19 MPa  
 Temperature: 28°C  
 Detection (Fluor): 480 nm (exc.), 560 nm (em.)  
 Injection: 100  $\mu$ l (100 ng/ml human plasma)

**01 030 a Seditatives - Benzodiazepins**

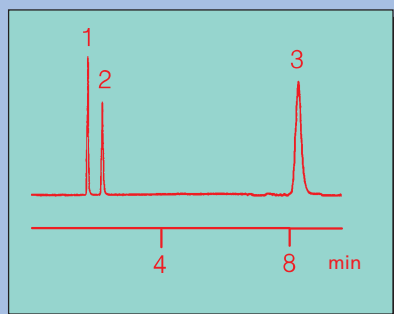
- 1) Benzyl alcohol
- 2) Clonazepam
- 3) Diazepam

Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: ACN / 0.1% TFA in H<sub>2</sub>O = 35 / 65  
 Flow rate: 1.1 ml/min  
 Pressure: 13 MPa  
 Temperature: RT  
 Detection (UV): 254 nm  
 Injection: 2  $\mu$ l (100  $\mu$ g/ml)

**01 031 a Nonsteroid Antiinflammatory Drugs**

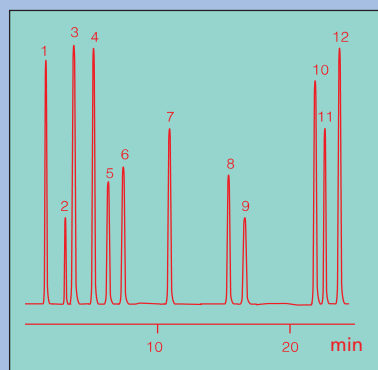
- 1) Ketoprofen
- 2) Diclofenac
- 3) Ibuprofen

Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: ACN / 0.1% TFA in H<sub>2</sub>O = 35 / 65  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: RT  
 Detection (UV): 254 nm  
 Injection: 2  $\mu$ l (100  $\mu$ g/ml)

**01 032 a Analgesics / Antipyretics - HPLC Analysis of a Pill**

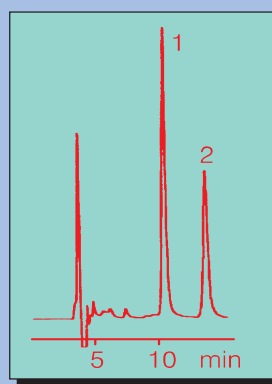
- 1) Paracetamol
- 2) Caffeine
- 3) Acetylsalicylic acid

Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 125 x 4,6 mm  
 Eluent: ACN / 0.1% TFA in H<sub>2</sub>O = 15 / 85  
 Flow rate: 1.1 ml/min  
 Pressure: 13 MPa  
 Temperature: RT  
 Detection (UV): 274 nm, after 3 min 227 nm  
 Injection: 0.5  $\mu$ l (0.5 - 2 mg/ml)

**01 033 Biological Amines, Catecholamines and Amino Acids**

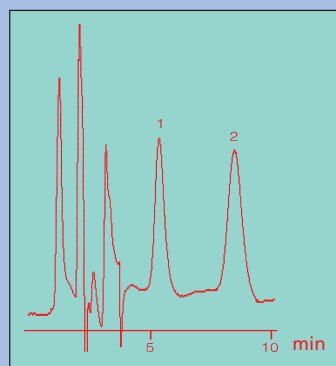
- 1) Noradrenaline
- 2) Adrenaline
- 3) D,L-3,4-Dihydroxymandelic acid
- 4) D,L-3,4-Dihydroxyphenylalanine
- 5) Dopamine
- 6) Tyrosine
- 7) D,L-4-Hydroxy-3-methoxymandelic acid
- 8) Phenylalanine
- 9) 4-Hydroxy-3-methoxyphenylglycol
- 10) 5-Hydroxyindole-3-acetic acid
- 11) Vanillic acid
- 12) Homovanillic acid

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: 100 mM Na-phosphate, pH 3.0  
 B: ACN  
 Gradient: 1% B (20 min), 15% B (15 min) - stepwise  
 Flow rate: 1.1 ml/min  
 Temperature: RT  
 Detection (UV): 210 nm, 0.64 AUFS  
 Injection: 10  $\mu$ l (70 -200  $\mu$ g/ml in 20 mM HCl)

**06 034 Neuroleptics**

- 1) Chlorpromazine
- 2) Promazine

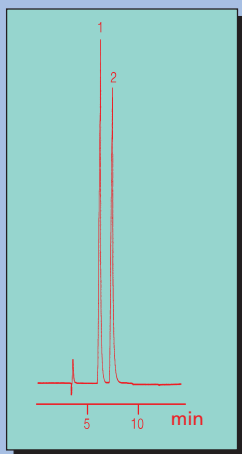
Column phase: GROM-SIL 120 CN-3 CP, 5  $\mu$ m  
 Column size: 50 x 4 mm  
 Eluent: 0.1 M Na-acetate, pH 5.0 / ACN = 36 / 64  
 Flow rate: 0.75 ml/min  
 Pressure: 14 MPa  
 Temperature: RT  
 Detection: electrochemical, 850 mV  
 Injection: 100  $\mu$ l (250, resp. 100 ng/ml) rabbit plasma

**01 035 Antibiotics**

- 1) Aureomycine
- 2) Doxycycline

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: 10 mM oxalic acid / ACN = 75 / 25  
 Flow rate: 0.75 ml/min  
 Pressure: 7 MPa  
 Temperature: 28°C  
 Detection (UV): 340 nm  
 Injection: 100  $\mu$ l (50  $\mu$ g/ml) human plasma

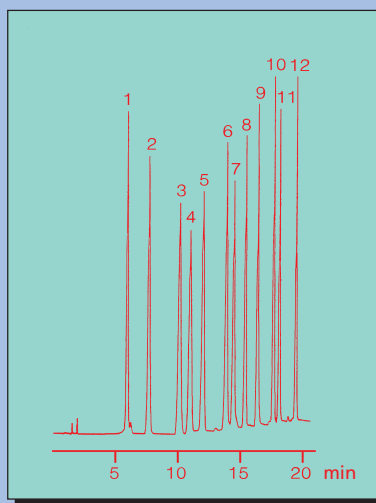
## 03 038 Fullerenes



- 1) Buckminsterfullerene (C<sub>60</sub>)
- 2) (5,6)-Fullerene (C<sub>70</sub>)

**Column phase:** GROM-SIL 120 Phenyl-1 FE, 5 μm  
**Column size:** 150 x 4 mm  
**Eluent:** n-hexane / 2-propanol = 50 / 50  
**Flow rate:** 0.4 ml/min  
**Pressure:** 3 MPa  
**Temperature:** 25°C  
**Detection (UV):** 350 nm, 0.08 AUFS  
**Injection:** 5 μl (120 μg/ml)

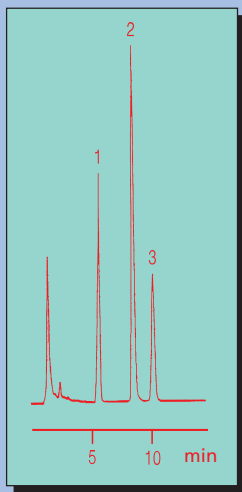
## 04 041 2,4-Dinitrophenylhydrazone Derivatives of Aldehydes and Ketones



- 1) Formaldehyde-2,4-DPNH
- 2) Acetaldehyde-2,4-DPNH
- 3) Acetone-2,4-DPNH
- 4) Acrolein-2,4-DPNH
- 5) Propionaldehyde-2,4-DPNH
- 6) Crotonaldehyde-2,4-DPNH
- 7) Methyl ethyl ketone-2,4-DPNH
- 8) Isobutyraldehyde-2,4-DPNH
- 9) Benzaldehyde-2,4-DPNH
- 10) n-Valeraldehyde-2,4-DPNH
- 11) Toluvaldehyde-2,4-DPNH
- 12) Capronaldehyde-2,4-DPNH

**Column phase:** GROM-SIL 120 Butyl-1 ST, 5 μm  
**Column size:** 150 x 4 mm  
**Eluent** A: H<sub>2</sub>O / THF = 90 / 10  
 B: ACN  
**Gradient:** 35% B (0-7 min), 35-65% B (7-18 min), 65-100% B (18-20 min)  
**Flow rate:** 1.1 ml/min  
**Pressure:** 8 MPa  
**Temperature:** 30°C  
**Detection (Vis):** 360 nm, 0.01 AUFS  
**Injection:** 10 μl (25-30 μg/ml)

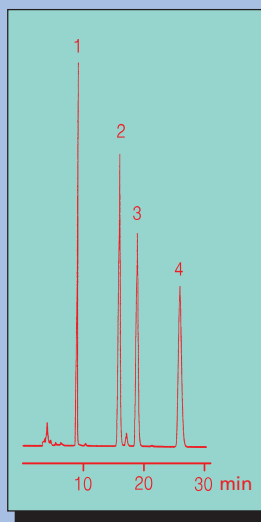
## 03 039 Analysis of Aspartame in Soft Drinks



- 1) Benzoic acid
- 2) Caffeine
- 3) Aspartame

**Column phase:** GROM-SIL 120 Phenyl-1 FE, 5 μm  
**Column size:** 150 x 4 mm  
**Eluent:** 50 mM KH<sub>2</sub>PO<sub>4</sub> / ACN / MeOH = 84 / 3 / 13  
**Flow rate:** 1.1 ml/min  
**Pressure:** 12 MPa  
**Temperature:** 30°C  
**Detection (UV):** 214 nm, 0.64 AUFS  
**Injection:** 10 μl

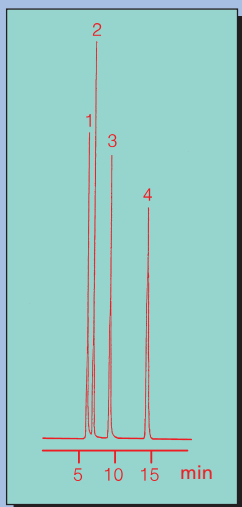
## 07 042 Analysis of Tocopherols



- 1) a-Tocopherol
- 2) b-Tocopherol
- 3) g-Tocopherol
- 4) d-Tocopherol

**Column phase:** GROM-SIL 120 Amino-2 PA, 5 μm  
**Column size:** 250 x 4 mm  
**Eluent:** hexane / ethyl acetate = 70 / 30  
**Flow rate:** 0.8 ml/min  
**Pressure:** 2 MPa  
**Temperature:** 30°C  
**Detection (UV):** 295 nm, 0.08 AUFS  
**Injection:** 7 μl (250 μg/ml, each)

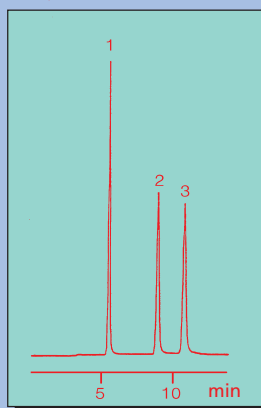
## 03 040 Analysis of Polyphenols II



- 1) Pyrogallol
- 2) Hydroquinone
- 3) Catechol
- 4) Phenol

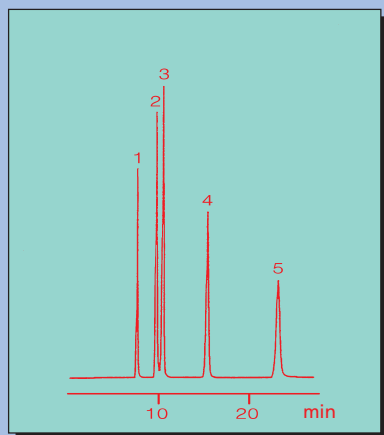
**Column phase:** GROM-SIL 120 Phenyl-1 FE, 5 μm  
**Column size:** 250 x 4 mm  
**Eluent:** 5 mM acetic acid  
**Flow rate:** 0.8 ml/min  
**Pressure:** 9.5 MPa  
**Temperature:** 25°C  
**Detection (UV):** 280 nm, 0.32 AUFS  
**Injection:** 20 μl (4-7 μg, each)

## 07 043 Analysis of Water-Soluble Vitamins



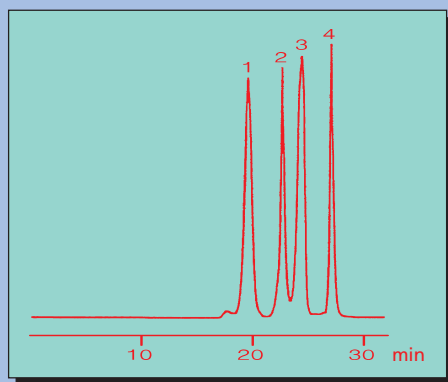
- 1) Nicotinic acid
- 2) Isoascorbic acid
- 3) L-Ascorbic acid

**Column phase:** GROM-SIL 120 Amino 2 PA, 5 μm  
**Column size:** 250 x 4 mm  
**Eluent:** 50 mM NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> / ACN = 30 / 70  
**Flow rate:** 0.8 ml/min  
**Pressure:** 5 MPa  
**Temperature:** 40°C  
**Detection (UV):** 250 nm, 0.16 AUFS  
**Injection:** 10 μl (50-100 μg/ml)

**07 044 Separation of Nucleotides by HPLC**

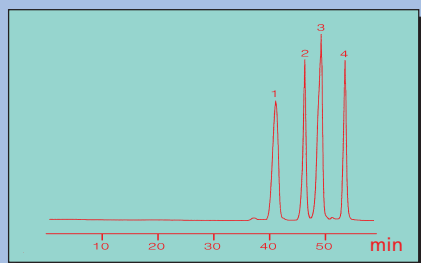
- 1) 5'-CMP
- 2) 5'-AMP
- 3) 5'-UMP
- 4) 5'-IMP
- 5) 5'-GMP

Column phase: GROM-SIL 120 Amino-2 PA, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 50 mM  $\text{KH}_2\text{PO}_4$ , pH 3.5  
 Flow rate: 0.8 ml/min  
 Pressure: 6 MPa  
 Temperature: 30°C  
 Detection (UV): 260 nm, 0.16 AUFS  
 Injection: 10  $\mu$ l (50 - 100  $\mu$ g/ml)

**09 045a Steric Exclusion Chromatography of Peptides - I**

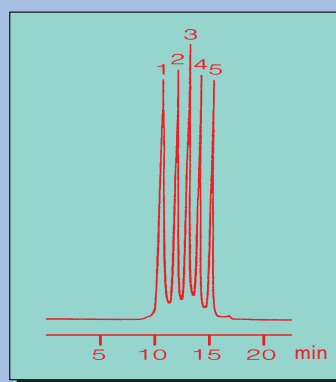
- 1) Insulin (Bovine)
- 2) Neurotensin
- 3) Angiotensin-II
- 4) Glycine

Column phase: GROM-SIL 60 SEC, 5  $\mu$ m  
 Column size: 500 x 8 mm  
 Eluent: 0.1 M K-phosphate, 0.2 M NaCl, pH 7.0 / ACN = 70 / 30  
 Flow rate: 0.7 ml/min  
 Pressure: 6 MPa  
 Temperature: 25°C  
 Detection (UV): 215 nm, 0.16 AUFS  
 Injection: 25  $\mu$ l (0.07- 5.3 mg/ml)

**09 045 b Steric Exclusion Chromatography of Peptides - II**

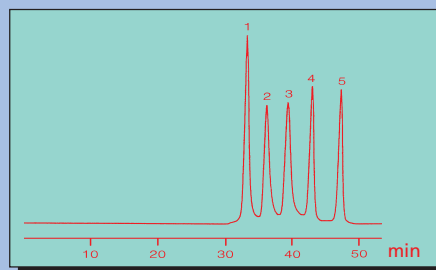
- 1) Insulin (Bovine)
- 2) Neurotensin
- 3) Angiotensin-II
- 4) Glycine

Column phase: GROM-SIL 120 SEC, 5  $\mu$ m  
 Column size: 500 x 8 mm  
 Eluent: 0.1 M K-phosphate, 0.2 M NaCl, pH 7.0 / ACN = 70 / 30  
 Flow rate: 0.7 ml/min  
 Pressure: 5 MPa  
 Temperature: 25°C  
 Detection (UV): 215 nm, 0.16 AUFS  
 Injection: 25  $\mu$ l (0.07- 5.3 mg/ml)

**09 046 a Steric Exclusion Chromatography of Proteins - I**

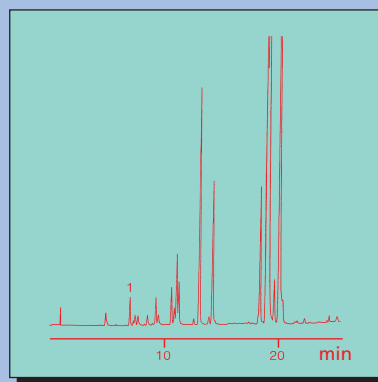
- 1) Glutamate dehydrogenase (MW 290,000)
- 2) Lactate dehydrogenase (MW 142,000)
- 3) Enolase (MW 67,000)
- 4) Adenylate kinase (MW 32,000)
- 5) Cytochrome C (MW 12,000)

Column phase: GROM-SIL 120 SEC, 5  $\mu$ m  
 Column size: 500 x 8 mm  
 Eluent: 0.1 M K-phosphate, 0.2 M NaCl, pH 7.0 / ACN = 70 / 30  
 Flow rate: 0.7 ml/min  
 Pressure: 4.5 MPa  
 Temperature: 26°C  
 Detection (UV): 280 nm, 0.08 AUFS  
 Injection: 15  $\mu$ l (~10 mg/ml, each)

**09 046 b Steric Exclusion Chromatography of Proteins - II**

- 1) Glutamate dehydrogenase (MW 290,000)
- 2) Lactate dehydrogenase (MW 142,000)
- 3) Enolase (MW 67,000)
- 4) Adenylate kinase (MW 32,000)
- 5) Cytochrome C (MW 12,000)

Column phase: GROM-SIL 200 SEC, 5  $\mu$ m  
 Column size: 500 x 8 mm  
 Eluent: 0.1 M K-phosphate, 0.2 M NaCl, pH 7.0 / ACN = 70 / 30  
 Flow rate: 0.7 ml/min  
 Pressure: 5.2 MPa  
 Temperature: 26°C  
 Detection (UV): 280 nm, 0.08 AUFS  
 Injection: 15  $\mu$ l (~10 mg/ml, each)

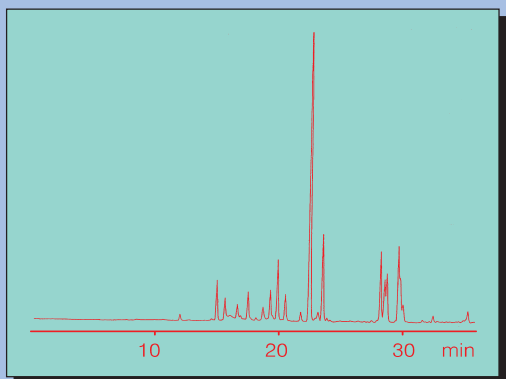
**01 047 Limonene in Grapefruit Oil**

- 1) Limonene

Column phase: GROM-SIL 80 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A:  $\text{H}_2\text{O}$  / MeOH = 50 / 50  
 B: ACN  
 Gradient: 0 - 100% B (0-20 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 16 MPa  
 Temperature: RT  
 Detection (UV): 254 nm, 1.0 AUFS  
 Injection: 2  $\mu$ l oil

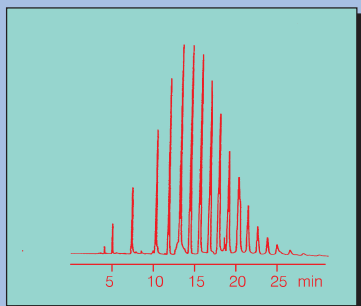


## 01 048 Analysis of Grapefruit Oil by HPLC - fingerprint



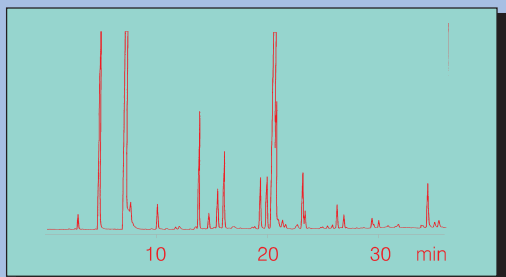
Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: H<sub>2</sub>O  
 B: ACN  
 Gradient: 25 - 100% B (0-30 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 17 MPa  
 Temperature: RT  
 Detection (UV): 254 nm, 1.0 AUFS  
 Injection: 2  $\mu$ l oil

## 08 049 Nonylphenylethoxylates - Nonionic Surfactants



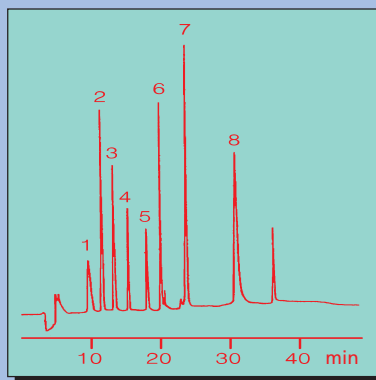
Column phase: GROM-SIL 100 Norm Ph-1 ST, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: H<sub>2</sub>O / ethyl acetate = 1 / 99  
 B: H<sub>2</sub>O / THF = 5 / 95  
 Gradient: 0 - 50% B (0-20 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 16 MPa  
 Temperature: RT  
 Detection (UV): 254 nm  
 Injection: 2  $\mu$ l nonylphenol-10-EO

## 01 050 Rose Essence - HPLC fingerprint



Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: water  
 B: acetonitrile  
 Gradient: 25 - 100% B (0-30 min, linear)  
 Flow rate: 0.8 ml/min  
 Pressure: 17 MPa  
 Temperature: RT  
 Detection (UV): 254 nm, 1.0 AUFS  
 Injection: 1  $\mu$ l essence

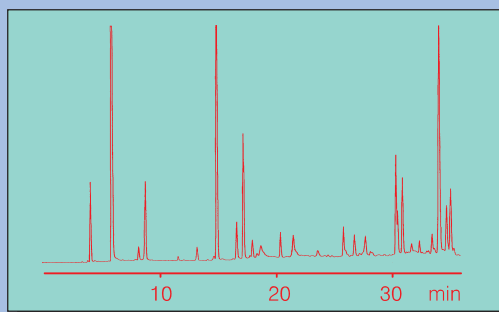
## 02 051 Separation of Peptides and Proteins



- 1) Bradykinin
- 2) Met-Enkephalin
- 3) Angiotensin I
- 4) Leu-Enkephalin
- 5) Substance-P
- 6) Insulin
- 7) Lysozyme
- 8) Myoglobin

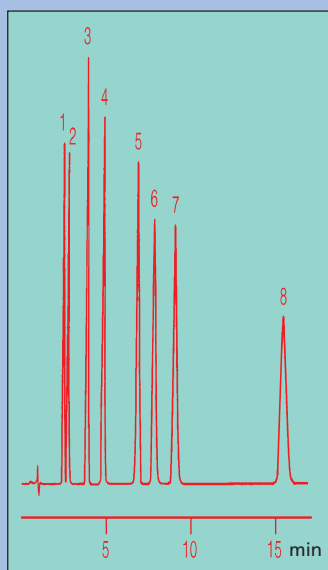
Column phase: GROM-SIL 120 Octyl-6 MB, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: 0.1% TFA  
 B: ACN  
 Gradient: 20-50% B (0-30 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: RT  
 Detection (UV): 200 nm  
 Injection: 10  $\mu$ l

## 01 052 Rosenta Analysis by HPLC



Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: water  
 B: acetonitrile  
 Gradient: 25 - 100% B (0-30 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 17 MPa  
 Temperature: RT  
 Detection (UV): 254 nm, 1.0 AUFS  
 Injection: 1  $\mu$ l rosenta

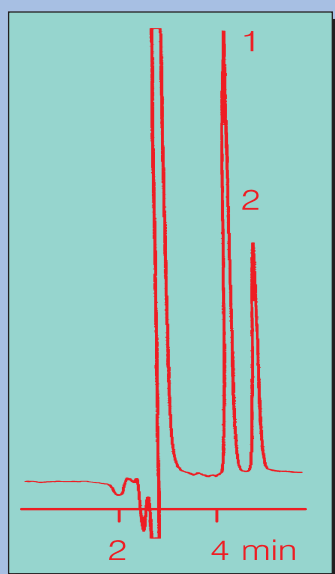
## 01 072 Alcohols, Aldehydes, Ketones



- 1) Benzyl alcohol
- 2) 2-Phenoxyethanol
- 3) Anisaldehyde
- 4) Acetophenone
- 5) p-Tolualdehyde
- 6) p-Methylacetophenone
- 7) Anisole
- 8) Phenetole

Column phase: GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: H<sub>2</sub>O / ACN = 60 / 40  
 Flow rate: 0.5 ml/min  
 Pressure: 8 MPa  
 Temperature: RT  
 Detection (UV): 254 nm  
 Injection: 10  $\mu$ l

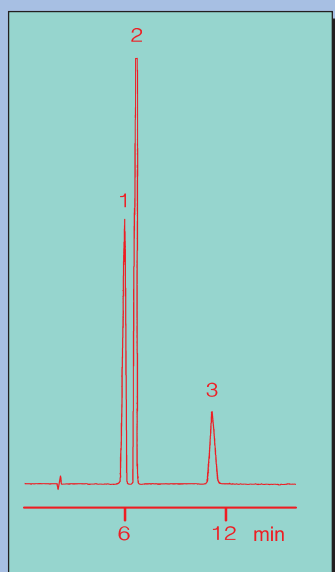
### 01 073 Determination of $\beta$ -Blockers in Human Plasma



- 1) N-Hydroxymethylatenolol
- 2) Atenolol

**Column phase:**  
GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
**Column size:**  
125 x 4 mm  
**Eluent:**  
50 mM  $\text{KH}_2\text{PO}_4$ , pH 2.2 /  
ACN = 81 / 19  
**Flow rate:**  
0.75 ml/min  
**Pressure:**  
14 MPa  
**Temperature:**  
RT  
**Detection (Fluor.):**  
265 nm (exc.), 295 nm (em.)  
**Injection:**  
1  $\mu$ l human plasma  
(~ 500 fmol)

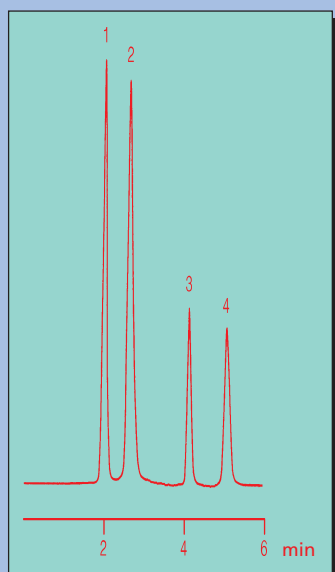
### 01 074 Sweeteners in beverages



- 1) Sorbic acid
- 2) Benzoic acid
- 3) Saccharin

**Column phase:**  
GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
**Column size:**  
125 x 3 mm  
**Eluent:**  
12 mM TBAH, 0.2 M Na-phosphate,  
pH 3.6 /  $\text{H}_2\text{O}$  / ACN = 32 / 60 / 8  
**Flow rate:**  
0.4 ml/min  
**Pressure:**  
12 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
230 nm  
**Injection:**  
20  $\mu$ l (50  $\mu$ g/ml)

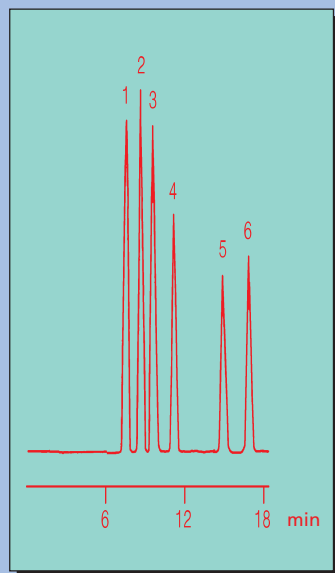
### 01 075 Analysis of Aflatoxins by HPLC



- 1)  $G_2a$
- 2)  $B_2a$
- 3)  $G_2$
- 4)  $B_2$

**Column phase:**  
GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
**Column size:**  
125 x 4mm  
**Eluent:**  
acetic acid / MeOH /  $\text{H}_2\text{O}$  = 2 / 2 / 8  
**Flow rate:**  
0.6 ml/min  
**Pressure:**  
7 MPa  
**Temperature:**  
RT  
**Detection (Fluor.):**  
360 nm (exc.), 425 nm (em.)  
**Injection:** 10  $\mu$ l (100  $\mu$ g/ml)

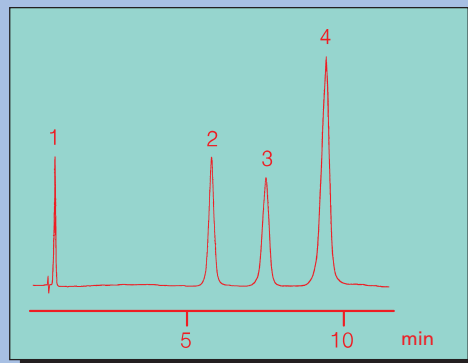
### 08 076 Analysis of Trinitrotoluene Isomers



- 1) 2, 4, 6 - TNT
- 2) 2, 3, 6 - TNT
- 3) 2, 3, 5 - TNT
- 4) 2, 4, 5 - TNT
- 5) 2, 3, 4 - TNT
- 6) 3, 4, 5 - TNT

**Column phase:**  
GROM-SIL 100 Normal PH-1 ST,  
3  $\mu$ m  
**Column size:**  
125 x 4 mm  
**Eluent:**  
n-hexane / methylene chloride =  
87.5 / 12.5  
**Flow rate:**  
0.6 ml/min  
**Pressure:**  
18 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
254 nm  
**Injection:**  
10  $\mu$ l

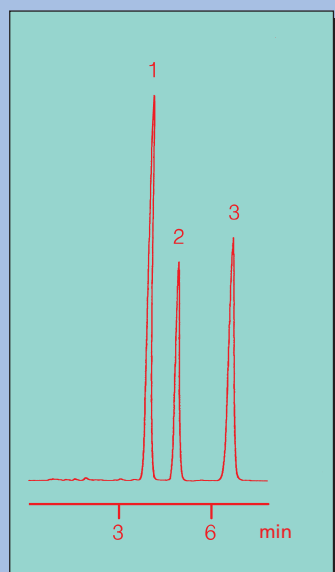
### 01 077 Analysis of Pesticides - Organochlorines



- 1) Dieldrin
- 2) Heptachlor
- 3) DDT
- 4) Aldrin

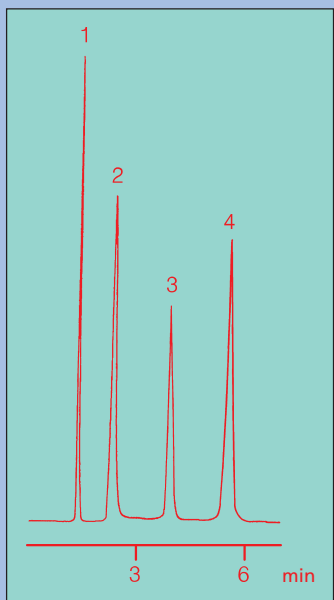
**Column phase:** GROM-SIL 100 ODS-2 FE, 3  $\mu$ m  
**Column size:** 125 x 4 mm  
**Eluent:**  $\text{H}_2\text{O}$  / MeOH = 20 / 80  
**Flow rate:** 1.5 ml/min  
**Pressure:** 20 MPa  
**Temperature:** RT  
**Detection (UV):** 220 nm, 0.04 AUFS  
**Injection:** 10  $\mu$ l (2-4  $\mu$ g, each)

### 01 078 Analysis of Pesticides - Organophosphates



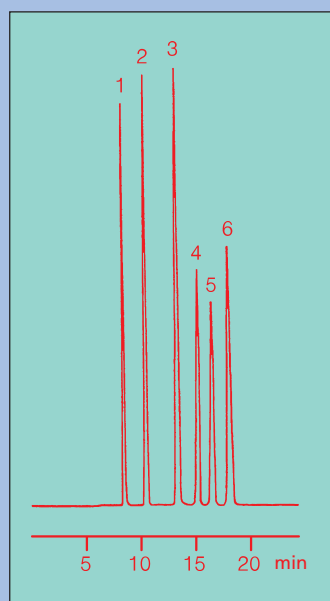
- 1) Methylparathion
- 2) Malathion
- 3) Ethylparathion

**Column phase:**  
GROM-SIL 100 ODS-2 FE, 3  $\mu$ m  
**Column size:**  
125 x 4mm  
**Eluent:**  
 $\text{H}_2\text{O}$  / MeOH = 20 / 80  
**Flow rate:**  
1.5 ml/min  
**Pressure:**  
20 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
220 nm, 0.04 AUFS  
**Injection:**  
10  $\mu$ l (2-4  $\mu$ g, each)

**01 080 HPLC Separation of Phenolic Acids**

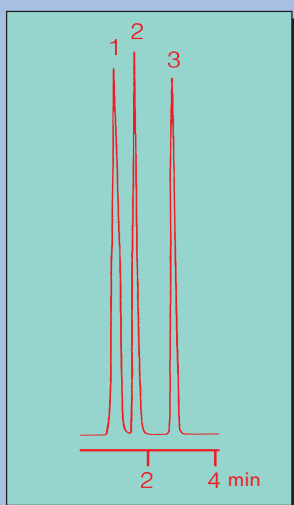
- 1) Gallic acid
- 2) p-Hydroxybenzoic acid
- 3) o-Hydroxyphenyl acetic acid
- 4) Ferulic acid

**Column phase:**  
GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
**Column size:**  
125 x 4 mm  
**Eluent:**  
1% triethylammonium acetate  
pH 4.0 / ACN = 15 / 85  
**Flow rate:**  
1.5 ml/min  
**Pressure:**  
19 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
254 nm, 0.08 AUFS  
**Injection:**  
10  $\mu$ l (1-5  $\mu$ g each)

**06 087 Normal Phase Separation of Steroids**

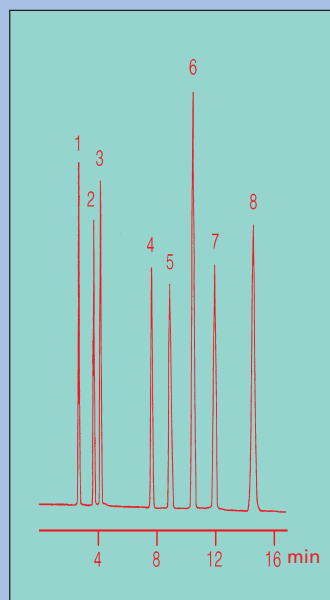
- 1) Progesterone
- 2) Deoxycorticosterone
- 3) Corticosterone
- 4) Cortisone
- 5) Prednisone,
- 6) Prednisolone

**Column phase:**  
GROM-SIL 120 Cyan-1 ST, 5  $\mu$ m  
**Column size:**  
125 x 4 mm  
**Eluent:**  
hexane / methylene chloride /  
2-propanol = 100 / 10 / 2  
**Flow rate:**  
0.4 ml/min  
**Pressure:**  
6 MPa  
**Temperature:**  
21°C  
**Detection (UV):**  
254 nm  
**Injection:**  
10  $\mu$ l (~25  $\mu$ g, each)

**01 081 Analysis of Food Preservatives**

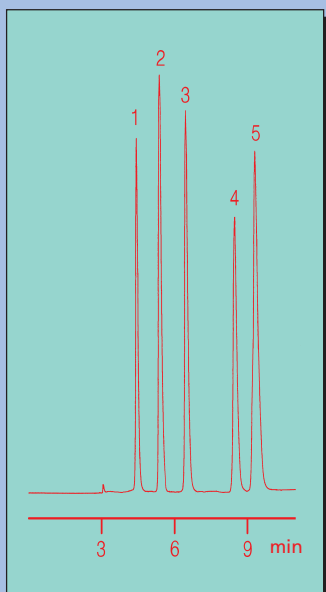
- 1) p-Hydroxybenzoic acid
- 2) Methylhydroxybenzoic acid
- 3) Propylhydroxybenzoic acid

**Column phase:**  
GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
**Column size:**  
125 x 4 mm  
**Eluent:**  
H<sub>2</sub>O / ACN = 50 / 50 (v/v)  
**Flow rate:**  
1.5 ml/min  
**Pressure:**  
15 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
254 nm, 0.1 AUFS  
**Injection:**  
10  $\mu$ l (~4  $\mu$ g each)

**01 088 HPLC Analysis of Cough/ Cold Preparations**

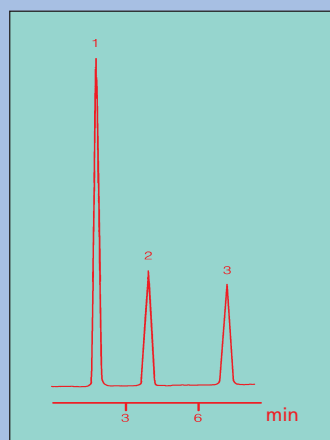
- 1) Potassium gulacol sulfonate
- 2) Acetaminophen
- 3) Caffeine
- 4) Salicylamide
- 5) Maleic acid chlorophenylamine
- 6) Phenol
- 7) Aspirin
- 8) Ethenzamide

**Column phase:**  
GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
**Column size:**  
250 x 4 mm  
**Eluent:**  
0.05 M NaH<sub>2</sub>PO<sub>4</sub>, pH 2.5 /  
ACN = 20 / 80  
**Flow rate:**  
0.8 ml/min  
**Pressure:**  
9 MPa  
**Temperature:**  
40°C  
**Detection (UV):**  
280 nm  
**Injection:** 5  $\mu$ m (150 - 600  $\mu$ l/ml)

**01 086 Analysis of Broncholytics - Xanthines - by HPLC**

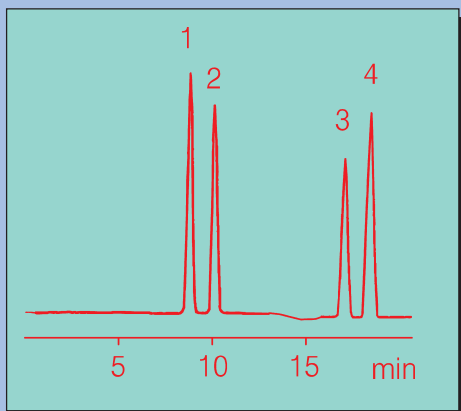
- 1) Theobromine
- 2) Theophylline
- 3)  $\beta$ -Hydroxyethyltheophylline
- 4) 7- $\beta$ -Hydroxypropyltheophylline
- 5) Caffeine

**Column phase:**  
GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
**Column size:**  
250 x 4 mm  
**Eluent:**  
0.4% Na-acetate /  
ACN = 85 / 15  
**Flow rate:**  
0.8 ml/min  
**Pressure:**  
16 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
254 nm, 0.01 AUFS  
**Injection:**  
10  $\mu$ l (10  $\mu$ g, each)

**02 089 HPLC of Cardiac Glycosides**

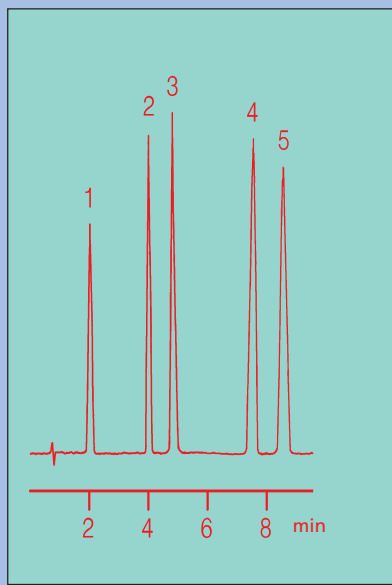
- 1) Esculin
- 2) Strophantin G
- 3) Digitoxin

**Column phase:**  
GROM-SIL 120 Octyl-5 CP, 5  $\mu$ m  
**Column size:**  
250 x 4 mm  
**Eluent:**  
water / acetonitrile = 60 / 40  
**Flow rate:**  
2.3 ml/min  
**Pressure:**  
15 MPa  
**Temperature:**  
RT  
**Detection (UV):**  
220 nm, 0.04 AUFS  
**Injection:**  
10  $\mu$ l (50  $\mu$ g/ml, each)

**01 090 HPLC Analysis of Corticosteroids**

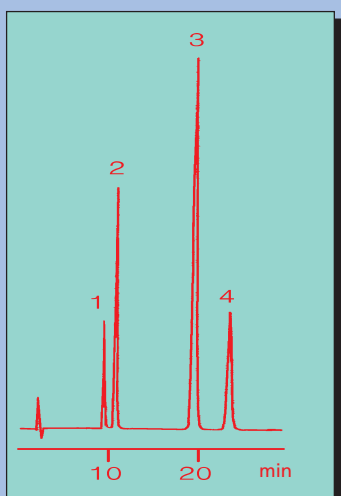
- 1) Cortisone
- 2) Hydrocortisone
- 3) Corticosterone,
- 4) Cortisone acetate

**Column phase:** GROM-SIL 120 ODS-4 HE, 5 µm  
**Column size:** 250 x 4 mm  
**Eluent:** water / methanol = 40 / 60  
**Flow rate:** 0.8 ml/min  
**Pressure:** 20 MPa  
**Temperature:** 21°C  
**Detection (UV):** 230 nm, 0.02 AUFS  
**Injection:** 10 µl (~10 µg/ml, each)

**01 093 Analysis of Anticonvulsant Drugs**

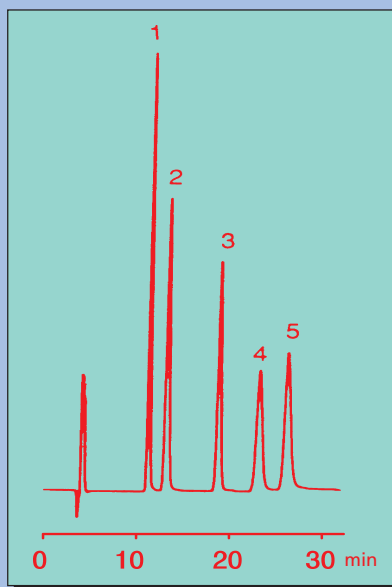
- 1) Primidone
- 2) Phenobarbitone
- 3) Butobarbitone
- 4) Carbamazepine
- 5) Phenytoin

**Column phase:** GROM-SIL 120 ODS-4 HE, 3 µm  
**Column size:** 125 x 4 mm  
**Eluent:** 5 mM Na-phosphate, pH 5.6 / ACN = 70 / 30  
**Flow rate:** 0.8 ml/min  
**Pressure:** 10 MPa  
**Temperature:** RT  
**Detection (UV):** 210 nm  
**Injection:** 10 µl (20 - 50 µg, each)

**01 091 Analysis of Anti-inflammatory Drugs**

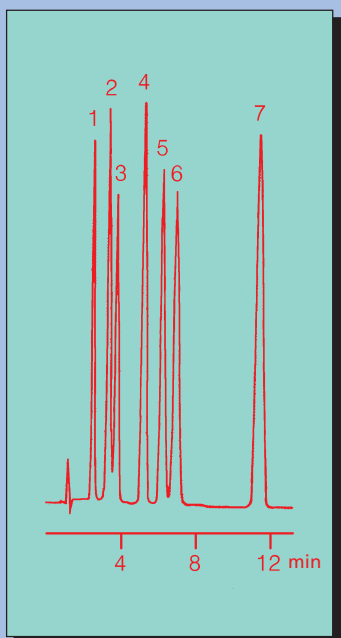
- 1) Isopropylmethylphenol
- 2) Lidocaine
- 3) Diphenhydramine
- 4) Hexanophenone

**Column phase:** GROM-SIL 120 ODS-3 CP, 5 µm  
**Column size:** 250 x 4 mm  
**Eluent:** 5 mM SDS, pH 2.2 (with H<sub>3</sub>PO<sub>4</sub>) / ACN = 50 / 50  
**Flow rate:** 0.8 ml/min  
**Pressure:** 10 MPa  
**Temperature:** 40°C  
**Detection (UV):** 230 nm, 0.32 AUFS  
**Injection:** 20 µl (4 - 40 µg/ml)

**07 094 Oligosaccharide Analysis**

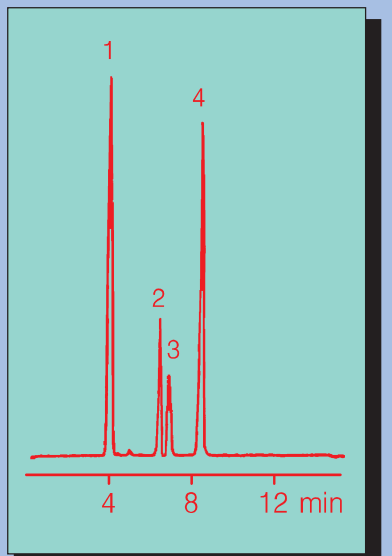
- 1) Fructose
- 2) Glucose
- 3) Saccharose
- 4) Maltose
- 5) Lactose

**Column phase:** GROM-SIL 120 Amino-2 PA, 5 µm  
**Column size:** 250 x 4 mm  
**Eluent:** H<sub>2</sub>O / ACN = 25 / 75  
**Flow rate:** 0.8 ml/min  
**Pressure:** 13 MPa  
**Temperature:** 21°C  
**Detection:** RI  
**Injection:** 20 µl

**01 092 Steroid Separation by HPLC**

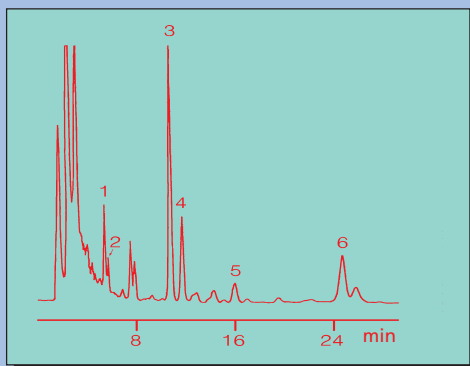
- 1) Prednisolone
- 2) Fluocinolone acetoneide
- 3) Hydrocortisone acetate
- 4) Dexamethasone acetate
- 5) Hydrocortisone butylate
- 6) Fluocinonide
- 7) Clobetazol propionate

**Column phase:** GROM-SIL 120 ODS-3 CP, 5 µm  
**Column size:** 250 x 4 mm  
**Eluent:** H<sub>2</sub>O / MeOH / ACN = 10 / 40 / 23  
**Flow rate:** 0.8 ml/min  
**Pressure:** 11 MPa  
**Temperature:** 21°C  
**Detection (UV):** 243 nm  
**Injection:** 10 µl

**08 095 Analysis of Retinoids by HPLC**

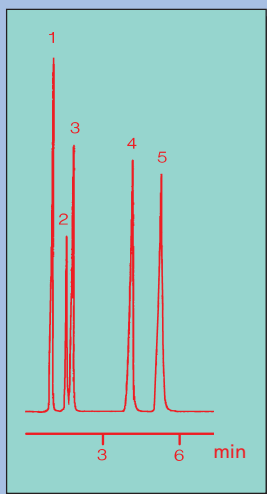
- 1) Vitamin A palmitate
- 2) 13-cis-Retinoic acid
- 3) all-trans Retinoic acid
- 4) Acitretin

**Column phase:** GROM-SIL 120 Norm Ph-3 PV, 5 µm  
**Column size:** 250 x 4 mm  
**Eluent:** hexane / THF / acetic acid = 90 / 10 / 0.01  
**Flow rate:** 1.2 ml/min  
**Pressure:** 12 MPa  
**Temperature:** RT  
**Detection (VIS):** 365 nm  
**Injection:** 20 µl

**01 096 HPLC Analysis of Saikosides**

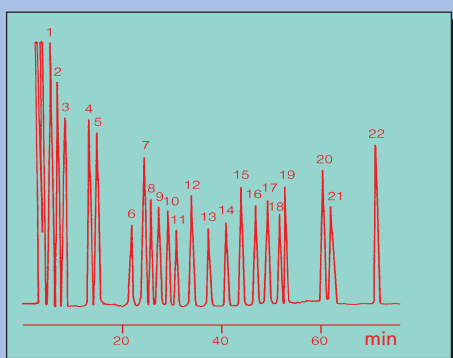
- 1) Saikosaponin c
- 2) Saikosaponin f
- 3) Saikosaponin a
- 4) Saikosaponin b2
- 5) Saikosaponin b1
- 6) Saikosaponin d

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: H<sub>2</sub>O / MeOH / ACN = 45 / 15 / 40  
 Flow rate: 0.8 ml/min  
 Pressure: 8 MPa  
 Temperature: 40°C  
 Detection (UV): 210 nm  
 Injection: 5  $\mu$ l (~30  $\mu$ g of each)

**01 097 HPLC of Quinones**

- 1) p-Benzoquinone
- 2) 2,5-Dimethylbenzoquinone
- 3) 1,4-Naphthoquinone
- 4) Duroquinone
- 5) Anthraquinone

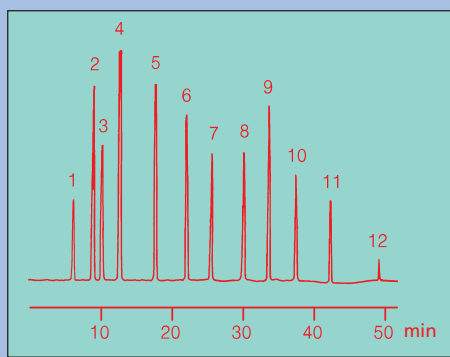
Column phase: GROM-SIL 120 ODS-4 HE, 3  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: 20 mM KH<sub>2</sub>PO<sub>4</sub>, pH 2.0 / ACN = 50 / 50  
 Flow rate: 1.1 ml/min  
 Pressure: 19 MPa  
 Temperature: 21°C  
 Detection (UV): 254 nm, 0.10 AUFS  
 Injection: 10  $\mu$ l (1 - 5  $\mu$ g, each)

**01 098 Analysis of Phenacyl Derivatives of Fatty Acids in Blood by HPLC**

- |          |            |
|----------|------------|
| 1) 6:0   | 12) 15:0   |
| 2) 8:0   | 13) 18:2 t |
| 3) 10:0  | 14) 20:3   |
| 4) 12:0  | 15) 16:0   |
| 5) 14:1  | 16) 18:1 c |
| 6) 18:3  | 17) 18:1 t |
| 7) 14:0  | 18) 20:2   |
| 8) 22:6  | 19) 17:0   |
| 9) 16:1  | 20) 18:0   |
| 10) 20:4 | 21) 20:1   |
| 11) 18:2 | 22) 22:1   |

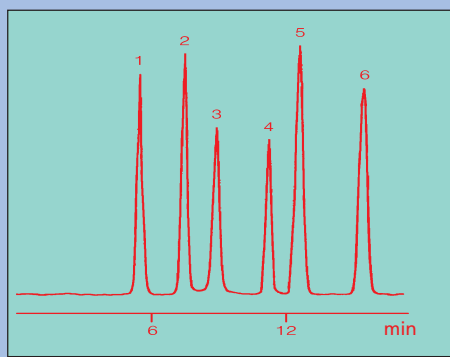
number of carbons :  
 number of double  
 bonds; c = cis-  
 t = trans position -

Column phase: GROM-SIL 100 ODS-0 AB, 3  $\mu$ m + guard column  
 Column size: 250 x 4 mm  
 Eluent: A: MeOH  
 B: ACN  
 C: H<sub>2</sub>O  
 Gradient: 40% A + 40.5% B + 19.5% C (0 min), 80.5% A + 19.5% C (0-25 min), 90% A + 10% C (25-60 min), 100% A (60-70 min)  
 Flow rate: 1.0 ml/min  
 Pressure: 16 MPa  
 Temperature: 40°C  
 Detection (UV): 242 nm  
 Injection: 10  $\mu$ l

**01 099 Fatty Acid Analysis by HPLC - p-Bromophenacylestere of Fatty Acids**

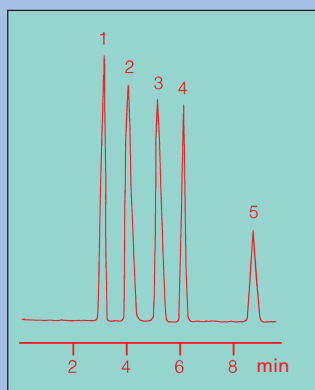
- 1) Pentanoic acid
- 2) Hexanoic acid
- 3) Heptanoic acid
- 4) Octanoic acid
- 5) Nonanoic acid
- 6) Decanoic acid
- 7) Dodecanoic acid
- 8) Tetradecanoic acid
- 9) Hexadecanoic acid
- 10) Octadecanoic acid
- 11) Eicosanoic acid
- 12) Docosanoic acid

Column phase: GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: H<sub>2</sub>PO<sub>4</sub> / H<sub>2</sub>O / ACN = 1 / 70 / 30  
 B: ACN  
 Gradient: 0% B (0-5 min), 0-100% B (5-25 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: 30°C  
 Detection (UV): 254 nm  
 Injection: 20  $\mu$ l

**01 102 HPLC Analysis of Barbiturates**

- 1) Barbital
- 2) Phenobarbital
- 3) Butobarbital
- 4) Hexobarbital
- 5) Amobarbital
- 6) Secobarbital

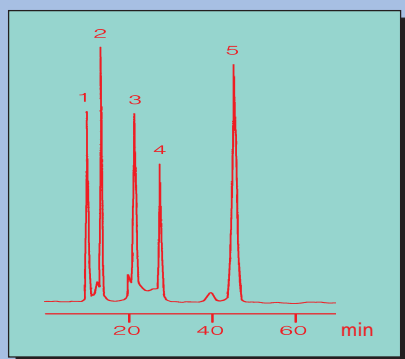
Column phase: GROM-SIL 120 ODS-5 ST, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: water / methanol = 40 / 60  
 Flow rate: 0.6 ml/min  
 Pressure: 16 MPa  
 Temperature: RT  
 Detection (UV): 230 nm, 0.01 AUFS  
 Injection: 30  $\mu$ l (30 -50  $\mu$ g each)

**01 104 HPLC of Alkaloids**

- 1) Caffeine
- 2) Codeine
- 3) Atropine sulfate
- 4) Papaverine
- 5) Eupaverin chloride

Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 0.05 M KH<sub>2</sub>PO<sub>4</sub>, pH 2.8 + 0.04 M octane-1-sulfonate / MeOH = 40 / 60  
 Flow rate: 1.0 ml/min  
 Pressure: 14 MPa  
 Temperature: 21°C  
 Detection (UV): 220 nm  
 Injection: 10  $\mu$ l

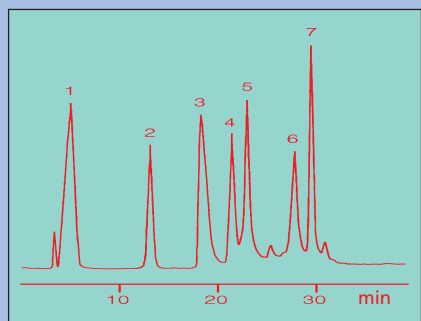
## 09 105 Separation of Proteins by Ion exchange HPLC



- 1) Trypsinogen
- 2) Ribonuclease A
- 3) Cytochrome C
- 4) Chymotrypsinogen
- 5) Lysozyme

Column phase: GROM-SIL 300 WCX, 7  $\mu$ m  
 Column size: 250 x 4.6 mm  
 Eluent A: 0.05 M  $\text{NaH}_2\text{PO}_4$ , pH 6.4  
 B: 0.5 M  $\text{NaH}_2\text{PO}_4$ , pH 6.4  
 Gradient: 0-18% B (0-21 min), 18% B (21-26 min),  
 18-60% B (26-70 min)  
 Flow rate: 1.0 ml/min  
 Pressure: 7 MPa  
 Temperature: RT  
 Detection (UV): 280 nm  
 Injection: 100  $\mu$ l

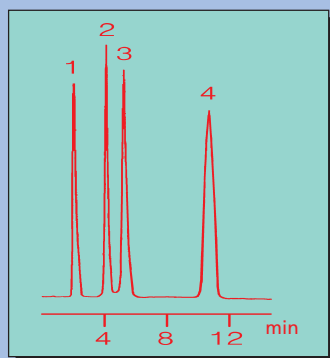
## 09 106 Hydrophobic Interaction Chromatography of Proteins



- 1) Cytochrome C
- 2) Myoglobin
- 3)  $\beta$ -Lactoglobulin
- 4) Ribonuclease A
- 5) Lysozyme
- 6)  $\alpha$ -Chymotrypsin
- 7) Chymotrypsinogen

Column phase: GROM-SIL 300 HIC, 7  $\mu$ m  
 Column size: 250 x 4.6 mm  
 Eluent A: 2.0 M  $(\text{NH}_4)_2\text{SO}_4$  - 0.1 M  $\text{KH}_2\text{PO}_4$ , pH 6.8  
 B: 0.1 M  $\text{KH}_2\text{PO}_4$ , pH 6.8  
 Gradient: 0-100% B (0-30 min)  
 Flow rate: 1.0 ml/min  
 Pressure: 8 MPa  
 Temperature: RT  
 Detection (UV): 280 nm  
 Injection: 100  $\mu$ l

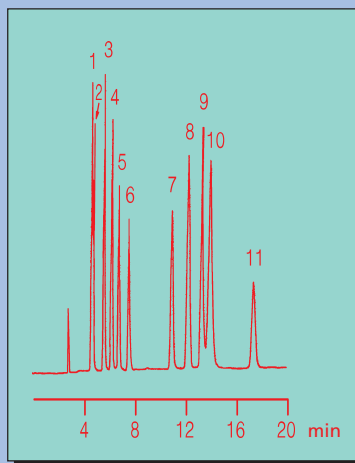
## 01 107 HPLC Separation of Antibiotics



- 1) Amoxicillin
- 2) Penicillin V
- 3) Penicillin G
- 4) Nafcillin

Column phase: GROM-SIL 100 ODS-0 AB, 5  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: 0.1 M  $\text{NaH}_2\text{PO}_4$  / ACN = 70 / 30  
 Flow rate: 1.3 ml/min  
 Pressure: 20 MPa  
 Temperature: RT  
 Detection (UV): 220 nm, 0.02 AUFS  
 Injection: 10  $\mu$ l (2-4  $\mu$ g of each)

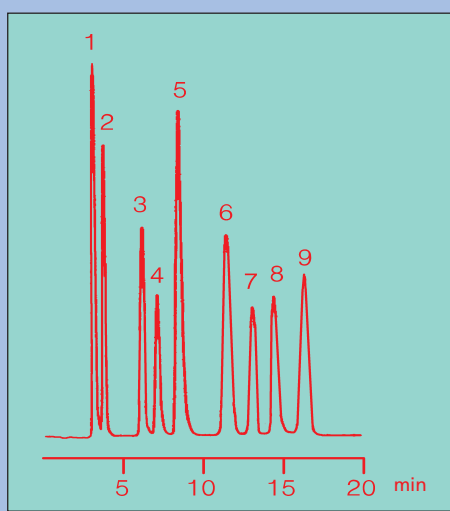
## 01 108 Analysis of UV-Absorbers



- 1) Isopropyl-p-methoxy cinnamate
- 2) 2-Hydroxy-4-methoxy benzophenone
- 3) 2-Phenylbenzimidazol-5-sulfonic acid
- 4) 2-Hydroxy-4-methoxy benzophenone-5-sulfonic acid
- 5) Isoamyl-p-methoxy cinnamate
- 6) Anthracene
- 7) Ethyl-2,4-diisopropyl cinnamate
- 8) 2-Ethylhexyl-p-(dimethyl-amino) benzoate
- 9) 2-Ethylhexyl-p-methoxy cinnamate
- 10) 1,2-(Di-p-methoxycinnamyl)-3-(2-ethylhexyl)glyceride
- 11) 3,3,5-Trimethylcyclohexyl-2-hydroxybenzoate

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 3 mM trimethylstearylammmonium chloride /  
 ACN = 15 / 85  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: 40°C  
 Detection (UV): 280 nm  
 Injection: 5  $\mu$ l

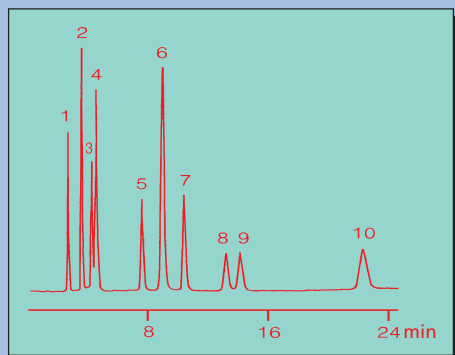
## 01 109 Determination of Food Additives



- 1) DHA
- 2) Ethyl PHBA
- 3) Isopropyl PHBA
- 4) n-Propyl PHBA
- 5) SOA
- 7) Isobutyl PHBA
- 8) n-Butyl PHBA
- 9) SA

Column phase: GROM-SIL 100 ODS-2 FE, 3  $\mu$ m  
 Column size: 100 x 4 mm  
 Eluent: 0.05 M  $\text{NaH}_2\text{PO}_4$ , pH 4.5 + 2.5 mM cetyltrimethyl-  
 ammonium chloride / MeOH / ACN = 31 / 15 / 10  
 Flow rate: 0.8 ml/min  
 Pressure: 8 MPa  
 Temperature: 21°C  
 Detection (UV): 233 nm  
 Injection: 20  $\mu$ l

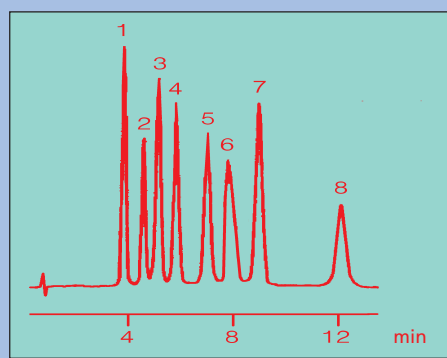
## 01 110 Analysis of Preservatives



- 1) Methylparaben
- 2) p-Hydroxybenzoic acid
- 3) Ethylparaben
- 4) Dehydroacetic acid
- 5) n-Propylparaben
- 6) Sorbic acid
- 7) Benzoic acid
- 8) Isobutylparaben
- 9) n-Butylparaben
- 10) Salicylic acid

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 0.05 M  $\text{NaH}_2\text{PO}_4$ , pH 4.5 + 4 mM cetyltrimethylammonium chloride / MeOH / ACN = 50 / 35 / 15  
 Flow rate: 0.8 ml/min  
 Pressure: 14 MPa  
 Temperature: 21°C  
 Detection (UV): 235 nm  
 Injection: 10  $\mu$ l (5  $\mu$ g/ml)

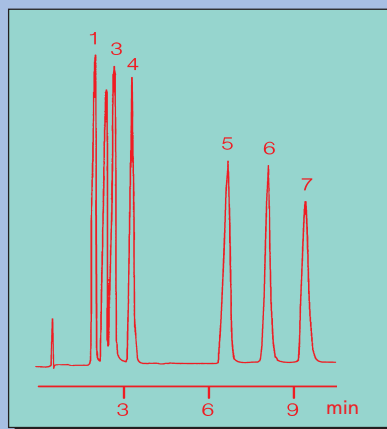
## 02 113 Determination of Benzodiazepines by HPLC



- 1) Demoxepam
- 2) Nitrazepam
- 3) N-Desmethyl-chlordiazepoxide
- 4) Oxazepam
- 5) Chlordiazepoxide
- 6) N-Desmethyl-diazepam
- 7) Temazepam
- 8) Diazepam

Column phase: GROM-SIL 100 Octyl-2 AB, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 0.1 M  $\text{NH}_4$ -acetate, pH 6.0 / MeOH / ACN = 57 / 26.5 / 16.5  
 Flow rate: 1.5 ml/min  
 Pressure: 12 MPa  
 Temperature: 30°C  
 Detection (UV): 245 nm, 0.02 AUFS  
 Injection: 10  $\mu$ l (~20 ng, each)

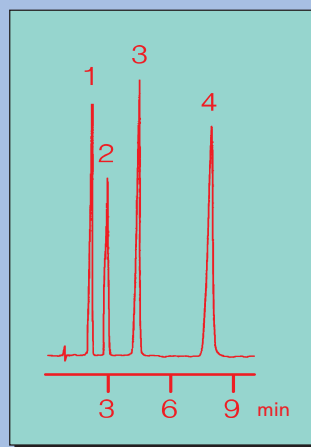
## 06 111 Determination of tricyclic Antidepressants by HPLC



- 1) Trimipramine
- 2) Doxepine
- 3) Amitriptyline
- 4) Imipramine
- 5) Nortiptyline
- 6) Desipramine
- 7) Protriptyline

Column phase: GROM-SIL 120 Cyan-3 CP, 5  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent: 0.012 M  $\text{KH}_2\text{PO}_4$ , pH 6.7 / MeOH / ACN = 17 / 43 / 40  
 Flow rate: 1.7 ml/min  
 Pressure: 15 MPa  
 Temperature: RT  
 Detection (UV): 215 nm  
 Injection: 20  $\mu$ l

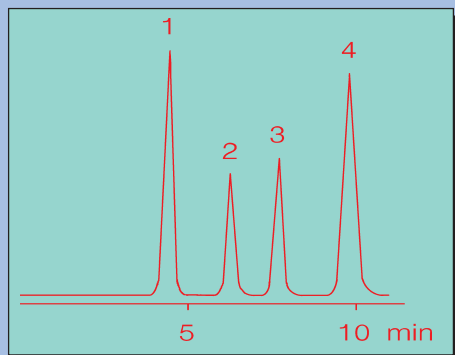
## 01 114 Analysis of Antibiotics



- 1) Ampicillin
- 2) Oxacillin
- 3) Coxacillin
- 4) Dicloxacillin

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 125 x 4mm  
 Eluent: 1% triethylammonium acetate, pH 4.0 / ACN = 70 / 30  
 Flow rate: 1.5 ml/min  
 Pressure: 18 MPa  
 Temperature: 21°C  
 Detection (UV): 220 nm, 0.05 AUFS  
 Injection: 20  $\mu$ l (3-5  $\mu$ g, each)

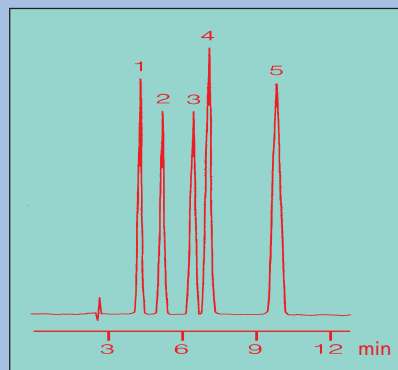
## 01 112 Analysis of Sulfonamides



- 1) Sulfaguandine
- 2) Sulfathiazole
- 3) Sulfapyridine
- 4) Sulfamethazine

Column phase: GROM-SIL 100 ODS-2 FE, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: water / methanol = 60 / 40  
 Flow rate: 0.8 ml/min  
 Pressure: 16 MPa  
 Temperature: RT  
 Detection (UV): 230 nm, 0.02 AUFS  
 Injection: 10  $\mu$ l (20  $\mu$ g/ml)

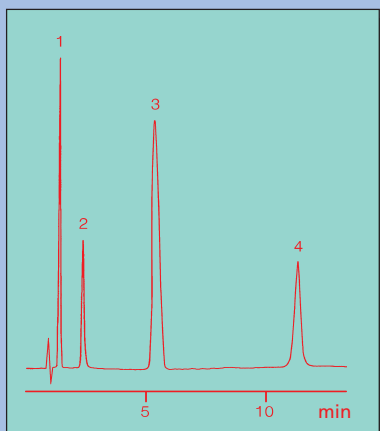
## 03 115 HPLC of Bile Acids



- 1) Ursodeoxycholic acid
- 2) Cholic acid
- 3) Chenodeoxycholic acid
- 4) Deoxycholic acid
- 5) Lithocholic acid

Column phase: GROM-SIL 120 Phenyl-2 CP, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 0.05 M  $\text{NaH}_2\text{PO}_4$ , pH 7.0 / MeOH / EtOH = 40 / 50 / 10  
 Flow rate: 0.8 ml/min  
 Pressure: 12 MPa  
 Temperature: 40°C  
 Detection (UV): 200 nm  
 Injection: 10  $\mu$ l (20 - 100  $\mu$ g/ml)

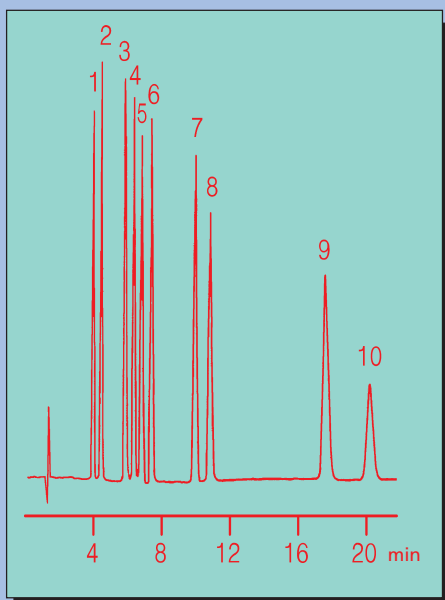
## 01 116 HPLC Analysis of Antiarythmics



- 1) Procaine
- 2) Lidocaine
- 3) Quinidine sulfate
- 4) Benzocaine

Column phase: GROM-SIL 120 ODS-3 CP, 5  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: 0.05% triethylammonium acetate, pH 4.0 / ACN = 80 / 20  
 Flow rate: 1.2 ml/min  
 Pressure: 14 MPa  
 Temperature: 21°C  
 Detection (UV): 220 nm, 0.05 AUFS  
 Injection: 5  $\mu$ l (4 - 10  $\mu$ g, each)

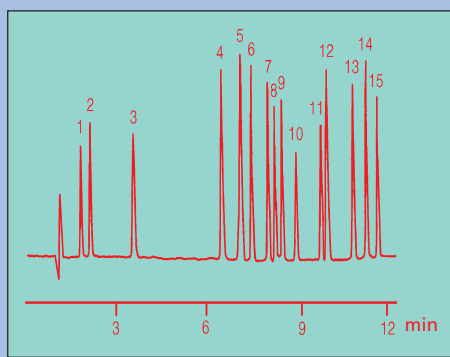
## 02 117 Analysis of Triazine Pesticides



- 1) Simazine
- 2) Atrazine
- 3) Simetryn
- 4) Atrazine
- 5) Secbumetone
- 6) Prometone
- 7) Ametryn
- 8) Promazine
- 9) Prometryn
- 10) Terbutryn

Column phase: GROM-SIL 120 Octyl-3 BA, 3  $\mu$ m + guard column  
 Column size: 150 x 4 mm  
 Eluent: 0.1 M NH<sub>4</sub>-acetate, pH 6.0 / ACN = 67 / 33  
 Flow rate: 1.2 ml/min  
 Pressure: 21 MPa  
 Temperature: 0°C  
 Detection (UV): 220 nm, 0.05 AUFS  
 Injection: 10  $\mu$ l (20 - 30 ng, each)

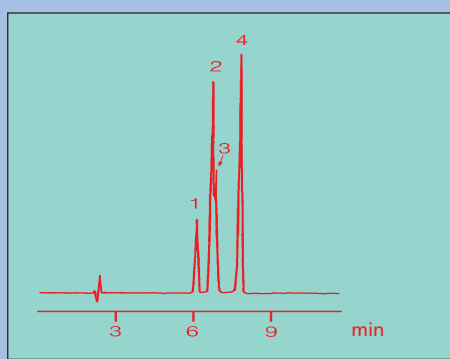
## 02 118 Analysis of Pesticides



- 1) Methomyl
- 2) Oxamyl
- 3) Fenurone
- 4) Monurone
- 5) Carburone
- 6) Propoxur
- 7) Carbaryl
- 8) Fluometurone
- 9) Diurone
- 10) Propham
- 11) Sidurone
- 12) Linurone
- 13) Chlorpropham
- 14) Barban
- 15) Neburone

Column phase: GROM-SIL 100 Octyl-4 FE, 3  $\mu$ m  
 Column size: 150 x 4 mm  
 Eluent A: water  
 B: ACN  
 Gradient: 18% B - 65% B (0-9 min), 65% B (9-12 min)  
 Flow rate: 1.5 ml/min  
 Pressure: 19 MPa  
 Temperature: 35°C  
 Detection (UV): 240 nm, 0.05 AUFS  
 Injection: 10  $\mu$ l (20 - 200 ng, each)

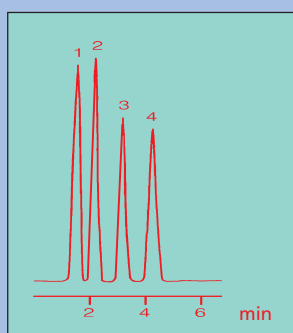
## 05 119 Determination of Bradykinins by Reversed Phase Chromatography



- 1) Lys-Bradykinin
- 2) Bradykinin
- 3) Met-Lys-Bradykinin
- 4) Des-Arg-Bradykinin

Column phase: GROM-SIL 300 TMS-2 CP, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A: 0.1% TFA in H<sub>2</sub>O  
 B: 0.1% TFA in ACN  
 Gradient: 15-60% B (0-15 min)  
 Flow rate: 1.2 ml/min  
 Pressure: 15 MPa  
 Temperature: 40°C  
 Detection (UV): 214 nm  
 Injection: 15  $\mu$ l

## 01 120 Analysis of Antihistamines

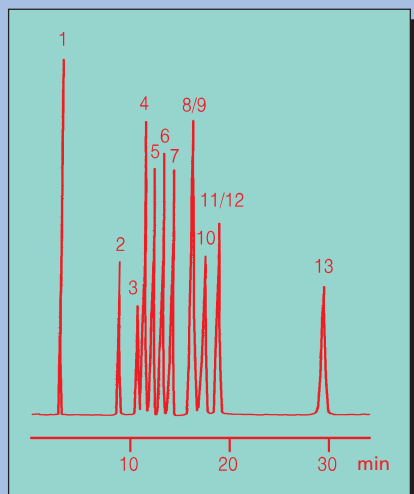


- 1) Phenylpropranolamine
- 2) Diphenylhydramine
- 3) Pseudoephedrine
- 4) Promethazine

Column phase: GROM-SIL 120 ODS-4 HE, 5  $\mu$ m  
 Column size: 125 x 4 mm  
 Eluent: 0.1% triethylammonium acetate, pH 4.0 / ACN = 40 / 60  
 Flow rate: 1.2 ml/min  
 Pressure: 16 MPa  
 Temperature: 21°C  
 Detection (UV): 220 nm, 0.02 AUFS  
 Injection: 10  $\mu$ l (1 - 10  $\mu$ g, each)



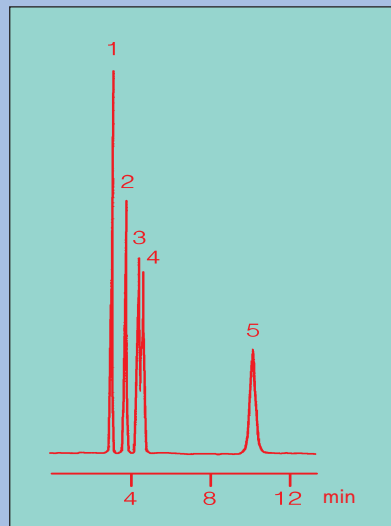
## 01 121 HPLC of Surface Active Detergents



- 1) Lauryldimethylaminoacetic acid betaine
- 2) 2-Lauryl-N-carboxymethyl-N-hydroxyethylimidazolium betaine
- 3) Lauryldimethylaminoxide
- 4) Na-N-Lauroylmethylaurate
- 5) Na-N-Lauroyl-L-glutamate
- 6) Laurinic acid diethanolamide
- 7) Lauric acid monoethanolamide
- 8) Na-Laurylsulfonate
- 9) Na-Laurylsulfate
- 10) Na-N-Lauroylsarcosinate
- 11) Na-β-Laurylamino propionate
- 12) Na-N-Lauroylsulfosuccinate
- 13) Na-Laurate

Column phase: GROM-SIL 120 ODS-3 CP, 5 μm  
 Column size: 250 x 4 mm  
 Eluent: 0.25 M NaClO<sub>4</sub>, pH 2.5 (with H<sub>3</sub>PO<sub>4</sub>) / MeOH = 30 / 70  
 Flow rate: 0.8 ml/min  
 Pressure: 16 MPa  
 Temperature: 50°C  
 Detection: RI  
 Injection: 20 μl

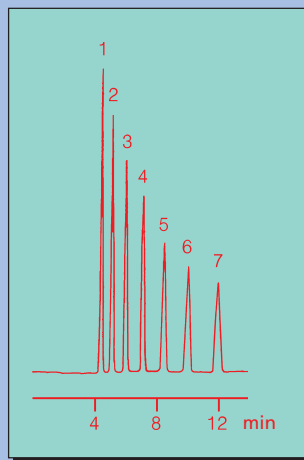
## 06 124 HPLC of Steroids



- 1) Progesterone
- 2) Estrone
- 3) β-Estradiol
- 4) Ethynylestradiol
- 5) Prednisolone

Column phase: GROM-SIL 120 Cyan-3 CP, 5 μm  
 Column size: 250 x 4 mm  
 Eluent: EtOH / n-hexane = 5 / 95  
 Flow rate: 1.5 ml/min  
 Pressure: 15 MPa  
 Temperature: 21°C  
 Detection (UV): 220 nm  
 Injection: 20 μl

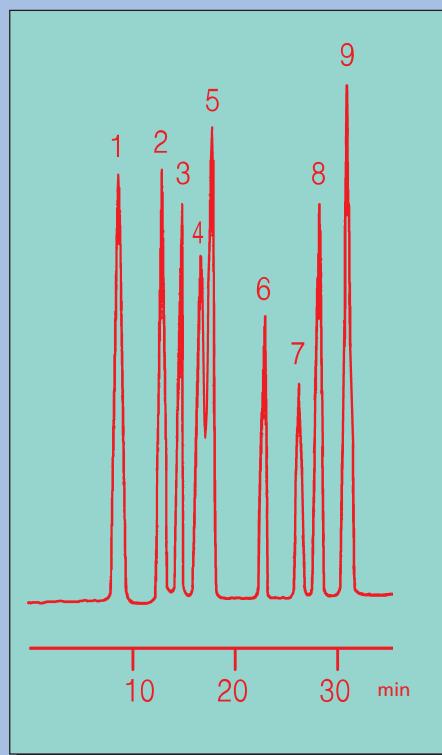
## 07 122 Analysis of Oligosaccharides



- 1) Glucose
- 2) Maltose
- 3) Maltotriose
- 4) Maltotetraose
- 5) Maltopentaose
- 6) Maltohexaose
- 7) Maltoheptaose

Column phase: GROM-SIL 120 Amino-3 CP, 5 μm  
 Column size: 250 x 4 mm  
 Eluent: water / ACN = 35 / 65  
 Flow rate: 0.8 ml/min  
 Pressure: 11 MPa  
 Temperature: 40°C  
 Detection: RI  
 Injection: 20 μl

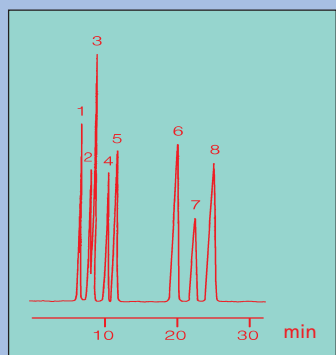
## 01 125 Analysis of Polyphenols by HPLC



- 1) Gallic acid
- 2) Protocatechinic acid
- 3) Catechin
- 4) Chlorogenic acid
- 5) Epicatechin
- 6) Rutin
- 7) Fisetin
- 8) Quercetin
- 9) Campferol

Column phase: GROM-SIL 120 ODS-5 ST, 5 μm  
 Column size: 250 x 4 mm  
 Eluent A: 0.5% H<sub>3</sub>PO<sub>4</sub> / MeOH = 10 / 90  
 B: ACN  
 Gradient: 0-100% B (0-30 min)  
 Flow rate: 0.8 ml/min  
 Pressure: 16 MPa  
 Temperature: 21°C  
 Detection (UV): 254 nm  
 Injection: 10 μl

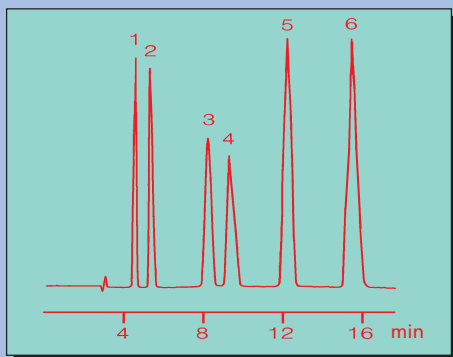
## 07 123 Separation of Mono- and Disaccharides



- 1) Rhamnose
- 2) Xylose
- 3) Fructose
- 4) Mannose
- 5) Glucose
- 6) Sucrose
- 7) Lactose
- 8) Maltose

Column phase: GROM-SIL 120 Amino-3 CP, 5 μm  
 Column size: 250 x 4 mm  
 Eluent: water / ACN = 15 / 85  
 Flow rate: 0.8 ml/min  
 Pressure: 10 MPa  
 Temperature: 40°C  
 Detection: RI  
 Injection: 20 μl

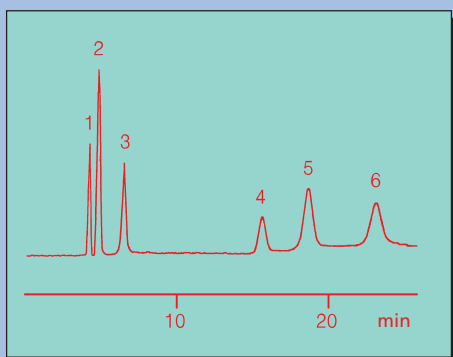
## 06 126 HPLC Analysis of Opium Alkaloids



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

Column phase: GROM-SIL 100 Cyan-2 PR, 5  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent: 1%  $\text{NH}_4$ -acetate, pH 5.8 / ACN / dioxane = 80 / 10 / 10  
 Flow rate: 1.2 ml/min  
 Pressure: 15 MPa  
 Temperature: 21°C  
 Detection (UV): 254 nm  
 Injection: 10  $\mu$ l

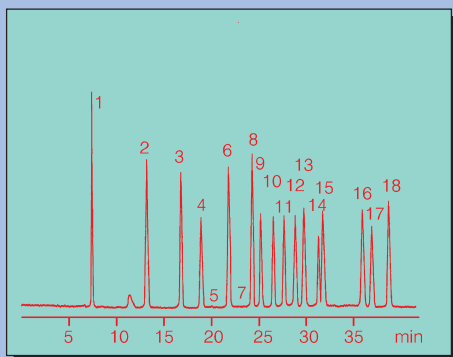
## 07 127 Separation of Nucleotides



- 1) GMP
- 2) AMP
- 3) IMP
- 4) GDP
- 5) ADP
- 6) IDP

Column phase: GROM-SIL 120 Amino-3 CP, 5  $\mu$ m  
 Column size: 250 x 4.6 mm  
 Eluent A: 5 mM  $\text{KH}_2\text{PO}_4$ , pH 2.9, 15% ACN  
 B: 500 mM  $\text{KH}_2\text{PO}_4$ , pH 4.0, 15% ACN  
 Gradient: 40 - 100% B (0-20 min), 100% B (20-25 min)  
 Flow rate: 2 ml/min  
 Pressure: 14 MPa  
 Temperature: RT  
 Detection (UV): 254 nm  
 Injection: 10  $\mu$ l (160  $\mu$ g/ml)

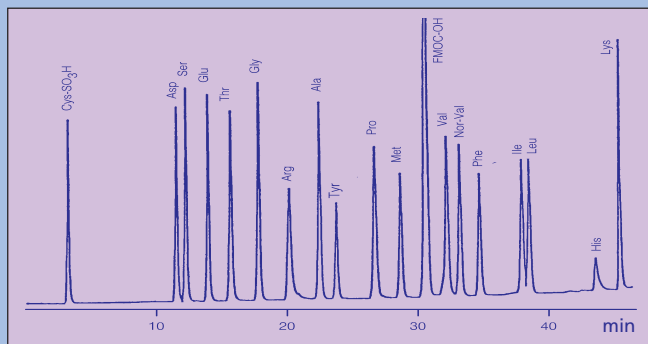
## 01 128 HPLC Analysis of Explosives



- 1) HMX
- 2) RDX
- 3) TNB
- 4) 2-Am-4-NT
- 5) 1,2-DNB
- 6) DNB
- 7) 3,5-DNA
- 8) Tetryl
- 9) NB
- 10) TNT
- 11) 3,4-DNT
- 12) 4-Am-2,6-DNT
- 13) 2-Am-4,6-DNT
- 14) 2,6-DNT
- 15) 2,4-DNT
- 16) 2-NT
- 17) 4-NT
- 18) 3-NT

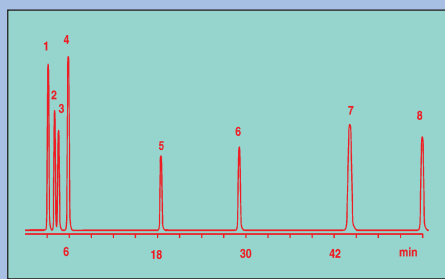
Column phase: GROM-SIL 80 ODS-7 pH, 4  $\mu$ m  
 Column size: 250 x 4 mm  
 Eluent A:  $\text{H}_2\text{O}$  + 0.3% THF (v/v)  
 B: methanol + 0.3% THF (v/v)  
 Gradient: 40% - 80% B (0-40 min)  
 Flow rate: 1 ml/min  
 Pressure: 19 MPa  
 Temperature: RT  
 Detection (UV): 240 nm  
 Injection: 10  $\mu$ l (10 - 100  $\mu$ g/ml)

## 10 130 Amino Acid Analysis employing Precolumn Derivatisation with FMOc followed by Pentane Extraction



Column phase: GROM-SIL FMOc 1  
 Column size: 250 x 4.6 mm  
 Eluent A: 50 mM Na-acetate, pH 4.2 / ACN = 80 / 20  
 B: 50 mM Na-acetate, pH 4.2 / ACN = 20 / 80  
 Gradient: 0-40% B (0-35 min), 40-70% B (35-45 min), 70-100% B (45-50 min)  
 Flow rate: 1 ml/min  
 Pressure: 17 MPa  
 Temperature: 40°C  
 Detection (Fluor.): 263 nm exc., 313 nm em.  
 Injection: 10  $\mu$ l (10  $\mu$ M each)

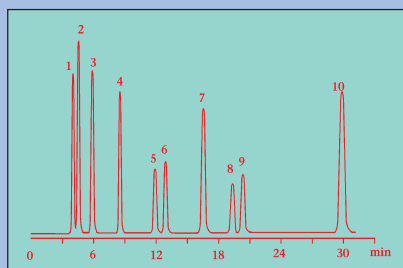
## 01 166 Drug Analysis (Calcium Channel)



- 1) Diltiazem
- 2) Verapamil
- 3) Methoxyverapamil
- 4) Nicardipine
- 5) Phenylamine lactate
- 6) Bepridil
- 7) Niguldipine
- 8) Nifedipine

Column phase: GROM-SIL ODS-7 pH, 4  $\mu$ m  
 Column size: 150 x 4.0 mm  
 Eluent A: 20 mM  $\text{KH}_2\text{PO}_4$ , pH 3.0 (85%) /  $\text{H}_2\text{O}$   
 B: ACN  
 C: THF  
 D: TBA-Br  
 isocratic: 74.5% A, 15% B, 10% C, 0.5% D -  
 Flow rate: 0.6 ml/min  
 Pressure: 8.7 MPa  
 Temperature: 30°C  
 Detection (UV): 270 nm  
 Injection: 5  $\mu$ l (0.05 to 1.5 mg/ml of each)

## 01 167 Penicillin Antibiotics



- 1) Bacampicillin
- 2) Methicillin
- 3) Benzylpenicillin
- 4) Phenoxymethylpenicillin
- 5) Phen-oxethylpenicillin
- 6) Phenoxypropylpenicillin
- 7) Cloxacillin
- 8) Propicillin
- 9) Proicillin
- 10) Dicloxacillin

Column phase: GROM-SIL ODS-7 pH, 4  $\mu$ m  
 Column size: 150 x 4.0 mm  
 Eluent: 50 mM  $\text{NaH}_2\text{PO}_4$ , pH 2.3  
 Flow rate: 0.75 ml/min  
 Pressure: 17 MPa  
 Temperature: 37°C  
 Detection (UV): 220 nm  
 Injection: 8  $\mu$ l (~ 0.13 mg/ml of each)