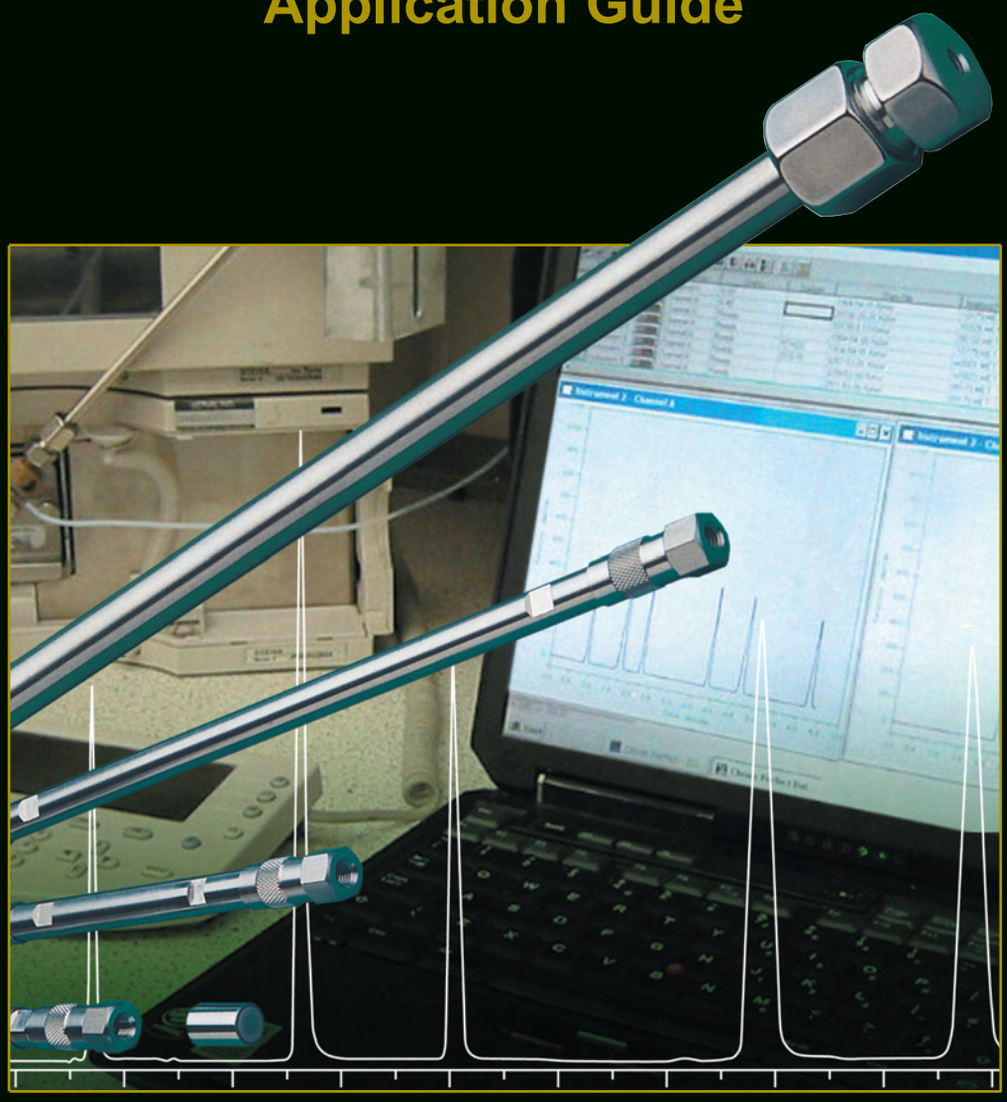
ACE®
HPLC Columns

Application Guide



Guaranteed Reproducibility
High Purity Base Deactivated Silica

ACE®
HPLC Columns

ACE® Ultra Inert Base Deactivated HPLC Columns

Contents

Preface

This ACE HPLC Application Guide contains over 100 applications including pharmaceutical, environmental, food, vitamin and protein/peptide separations. The chromatograms were produced by Advanced Chromatography Technologies and by satisfied ACE customers throughout the world.

The purpose of this guide is to assist chromatographers with the selection of the best HPLC column and conditions for their HPLC methods, by providing good examples of successful separations.

However, the information in this guide is provided for reference purposes only and Advanced Chromatography Technologies assumes no risk or liabilities that may result from its use by others. Furthermore, Advanced Chromatography Technologies makes no representations or warranties that the information provided in this guide will address any particular need or purpose of any user of the Application Guide.

Send us your application and receive a FREE ACE HPLC column

Send us your ACE HPLC application and help us extend our applications database. Your proven method will enable your chromatography colleagues to benefit and if we select your application for publication we'll send you a FREE ACE HPLC column.

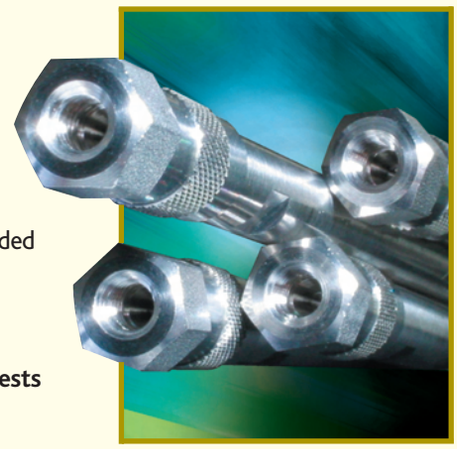
To submit your application contact your local ACE distributor or email us at: info@act-hplc.com

ACE performance guarantee

If ACE does not outperform the column you are currently using, simply contact us for a full refund and keep the ACE column FREE OF CHARGE.

ACE® - Excellent Chromatographic Performance

- **Guaranteed Reproducibility**
- **LC/MS to Preparative Scale Dimensions**
- **Ultra Inert Base Deactivated HPLC Columns**



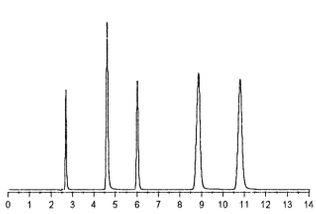
ACE HPLC columns are designed to meet even the most challenging of chromatographic applications, giving excellent performance with acidic, basic and neutral molecules. A wide range of particle sizes, pore sizes, bonded chemistries and column dimensions are available.

Ultra high purity, ultra inert ACE columns also provide unmatched reproducibility and excellent column lifetime. **Independent comparison tests show ACE HPLC columns give outstanding performance.**

Excellent Performance with Acidic, Basic and Neutral Molecules

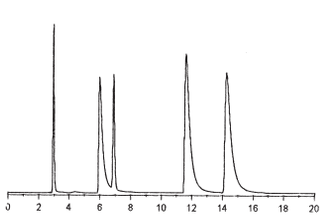
ACE

- Ultra High Purity
- Fully Validated
- Excellent Chromatography
- Guaranteed Reproducibility



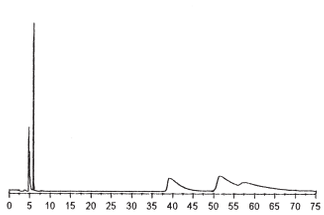
Leading Base Deactivated Silica

- High Purity
- Limited Validation
- Acceptable Chromatography
- Moderate Reproducibility



Leading Conventional Silica

- Low Purity
- No Validation
- Poor Chromatography
- Poor Reproducibility



Basic molecules are commonly used to demonstrate silanol activity on HPLC columns. ACE columns provide measurably better peak shape and column efficiency compared to other popular base deactivated columns.

ACE Ultra Inert Base Deactivated HPLC Columns

ACE columns are available in capillary through to preparative dimensions, with a wide range of particle sizes (3, 5, 10 and 15µm), pore sizes (100Å and 300Å) and surface chemistries (C18, C8, C4, CN, Phenyl, AQ, SIL and C18-HL).

ACE ultra inert HPLC columns are designed to meet even the most challenging of chromatographic applications, giving excellent performance with acidic, basic and neutral molecules. Excellent column performance (up to 200,000 plates/metre) and reproducible chromatography are ensured by the most stringent of validation protocols.

Independent comparison tests show ACE columns give outstanding performance.

ACE® - HPLC Columns

Product Specifications

PHASE	FUNCTIONAL GROUP	ENDCAPPED	PARTICLE SIZE (µm)	PORE SIZE (Å)	SURFACE AREA (m^2/g)	CARBON LOAD (%)	USP CLASSIFICATION
C18	Octadecyl	Yes	3, 5, 10	100	300	15.5	L1
				300	100	9.0	L1
C8	Octyl	Yes	3, 5, 10	100	300	9.0	L7
				300	100	5.0	L7
C4	Butyl	Yes	3, 5, 10	100	300	5.5	L26
				300	100	2.6	L26
CN	Cyano	Yes	3, 5, 10	100	300	5.5	L10
				300	100	2.6	L10
Phenyl	Phenyl	Yes	3, 5, 10	100	300	9.5	L11
				300	100	5.3	L11
AQ	Proprietary	Yes	3, 5, 10	100	300	14.0	L1
SIL	Unbonded	-	3, 5, 10	100	300	-	L3
C18-HL	Octadecyl	Yes	3, 5, 10, 15	90	400	20.0	L1

Independent Comparison of HPLC Columns

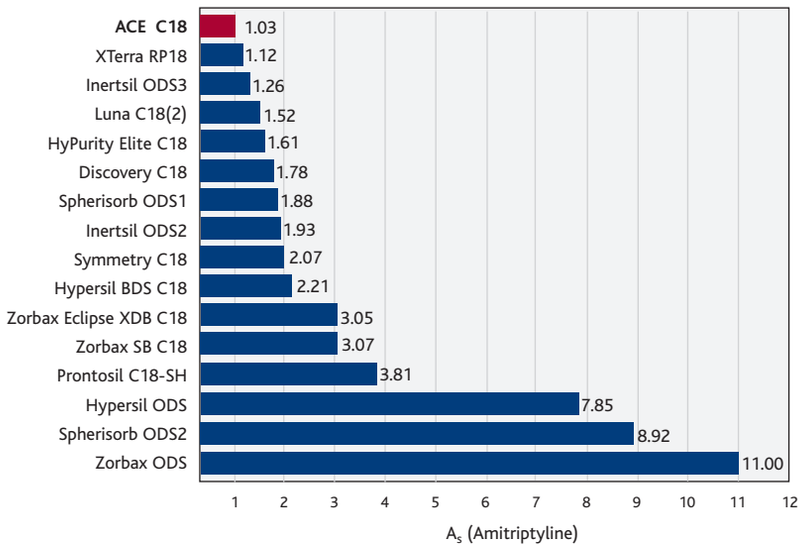
Comparison of Leading 5µm C18 Columns

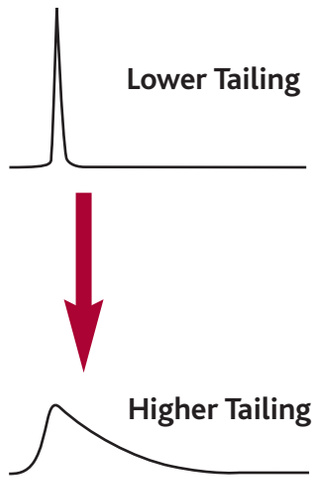
- Data obtained from the National Institute of Standards and Technology (NIST), USA

- Leading 5µm C18 Column Brands
- Basic Molecule Testing
- Peak Asymmetry Investigation

"Elution of organic bases (eg. amitriptyline) with severe peak tailing is often associated with high silanol activity; however, the elution of such compounds with symmetrical peak shape is considered indicative of column deactivation"

Peak Asymmetry Comparison





Column: 150 x 4.6mm, 5µm Mobile Phase: 80:20 MeOH/5mM potassium phosphate buffer (pH 7.0) Flow: 2.0ml/min Temperature: 24°C

The above data was obtained from the National Institute of Standards and Technology (NIST), Certificate of Analysis for Standard Reference Material 870 - "Column Performance Test Mixture for Liquid Chromatography" at the NIST internet site http:/ois.nist.gov/srmcatalog/certificates/870.pdf in September 2002. The NIST test mixture, which is designed to characterize general aspects of HPLC was revised in December 2002.

ACE® - HPLC Columns

Choosing the Bonded Phase that's Best for Your Application

As a general rule, retention increases with chain length of the bonded phase, that is:

RETENTION (R):	
more retentive	C18-HL
↓	C18
	C8, AQ
	Phenyl
less retentive	C4, CN

We recommend starting most method development projects with C18 or C8, knowing that if more retention and hence more resolution is needed, your next choice is C18-HL (Hi-Load). Starting with C8 offers the benefit of shorter analysis times and/or lower organic solvent use. The elution order for most compounds will be the same on the aliphatic (C18, C8, C4) phases. If a different elution order is required for compound verification or to resolve matrix components, changing to a phenyl or CN phase maybe far simpler than trying to change selectivity by mobile phase or temperature changes. In many cases, the ACE CN and ACE Phenyl phases will offer a significant difference in selectivity from the aliphatic phases.

ACE AQ is particularly recommended for applications requiring high aqueous content mobile phases. Improved resistance to retention loss caused by "pore dewetting" is seen compared to standard C18 phases.

Need even more resolution?

- Choose 3 micron ACE columns

With today's increased pace of drug discovery, fast and efficient methods are the rule. Short, narrow-bore columns are replacing the conventional 250 x 4.6mm versions. ACE HPLC columns are available in 3µm, 5µm and 10µm particle sizes. Although 5µm particles are sufficient for most applications, greater efficiency can be obtained by using smaller particles. This increased efficiency enables the use of shorter (<150mm) column lengths, resulting in decreased analysis times. Due to the excellent flow characteristics of ACE silica, you will not experience the high back pressures often encountered with other columns.

Narrow-bore? Rapid analysis? LC/MS? Preparative? - No problem!

ACE bonded phases are available in a range of particle sizes, so regardless of your application, you can scale up or scale down and be assured of the same selectivity. For fast, high resolution preparative chromatography, a range of pre-packed ACE preparative and combinatorial chemistry columns are available.

Analysis of Biomolecules?

- Choose wide pore 300Å ACE columns

When molecular weight > 5000 it is generally recommended to use wide pore materials in preference to small pore (ie. 100Å) materials, although molecular shape and structure can affect this boundary.

The same ultra pure silica as used with the ACE 100Å range is now available in a 300Å pore size for the analysis of proteins, peptides and other biomolecules. A range of bonded phases and particles sizes are available to enable complete assay optimisation.

Application Summary

PHASE	DESCRIPTION	APPLICATION
C18	Optimised for maximum efficiency, superior peak shape and resolution. Utilises the same ultra high purity silica as all ACE phases.	A C18 phase for most HPLC applications. Available in a range of particle sizes, from LC/MS and microbore applications through to preparative scale separations.
C8	Increased bonding density compared to ACE C18. Similarly optimised for maximum efficiency, superior peak shape and resolution.	Recommended starting point for method development. Also suited to high aqueous conditions and for rapid analysis applications.
C4	Combines lower hydrophobicity with excellent chromatographic performance. Improved hydrolytic stability compared to conventional C4 phases.	Use for rapid analysis optimisation, when less retention than C8 or C18 is required. Also suitable for analysis of small proteins.
CN	Suitable for use in both normal- and reversed-phase modes. Greatly improved performance, stability and reproducibility compared to conventional CN phases.	Use to increase retention of polar compounds. Ideal for gradients and rapid screening applications due to fast equilibration capabilities.
Ph	Hydrophobicity between C4 and C8 phases, with increased polar selectivity. Improved performance, stability and reproducibility compared to conventional phenyl phases.	Offers alternative selectivity for aromatic, amine or polar compounds.
AQ	A unique C18 bonded phase with integral polar functionality. Resistant to phase collapse even with 100% aqueous mobile phase.	Recommended for applications where 100% aqueous mobile phases are required. Ideal for fast gradients due to rapid re-equilibration properties.
C18-HL	High surface area, high carbon load phase, leading to increased retention and loading compared to ACE C18.	Suitable for LC/MS due to increased retention characteristics. Availability of particle sizes up to 15µm ensures easy scale-up for preparative and process scale applications.
300Å	The same ultra inert, ultra pure silica as the ACE 100Å columns is now available in a wide pore 300Å format. A range of bonded phases and particle sizes are available.	Analysis of proteins, peptides and other biomolecules. The ultra high purity 300Å silica provides improved peak shapes, especially at very low TFA concentrations which in turn provides increased sensitivity.

Application Index

Analyte Index

Analyte Index (continued)

Acacia Farnesiana - Ethanol Extract from Seed Cover

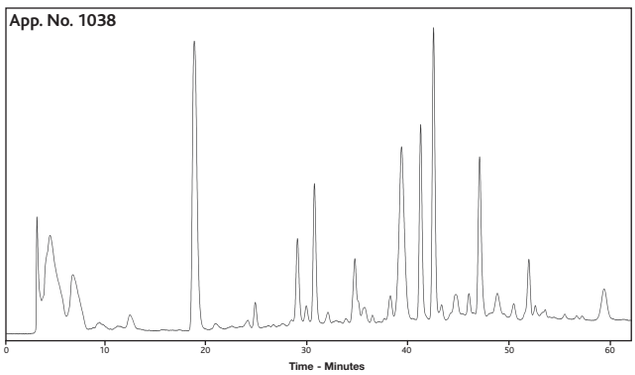
Analytical method development for subsequent scale-up to preparative HPLC

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: A: MeOH
B: H_2O
Flow Rate: 2.0ml/min
Gradient:

T(mins)	0	2.5	60	62.5	70
%A	15	15	50	50	15
%B	85	85	50	50	85

Temperature: Ambient
Detection: UV, 230nm



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Additives and Intense Sweeteners

Conditions

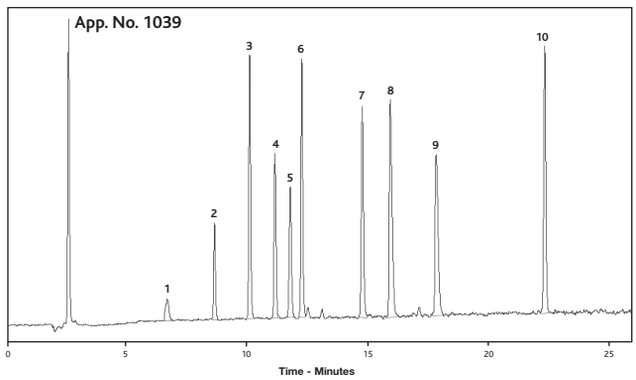
Column: ACE 5 C18, 250 x 4.0mm
Part Number: ACE-121-2504
Mobile Phase: A: H_2O
B: MeCN
C: 1% TFA
Gradient:

T(mins)	%A	%B	%C
0	88	2	10
25	50	40	10
30	30	60	10
35	88	2	10

Flow Rate: 1.0ml/min
Temperature: 30°C
Detection: ELSD

Compounds

1. Acesulfame K
2. Theobromine
3. Theophylline
4. Cyclamate
5. Saccharin
6. Caffeine
7. Sucralose
8. Quinine sulphate
9. Aspartame
10. Neohesperidin dihydrochalcone



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Amino Acids Derivatised with Dabsyl Chloride

Conditions

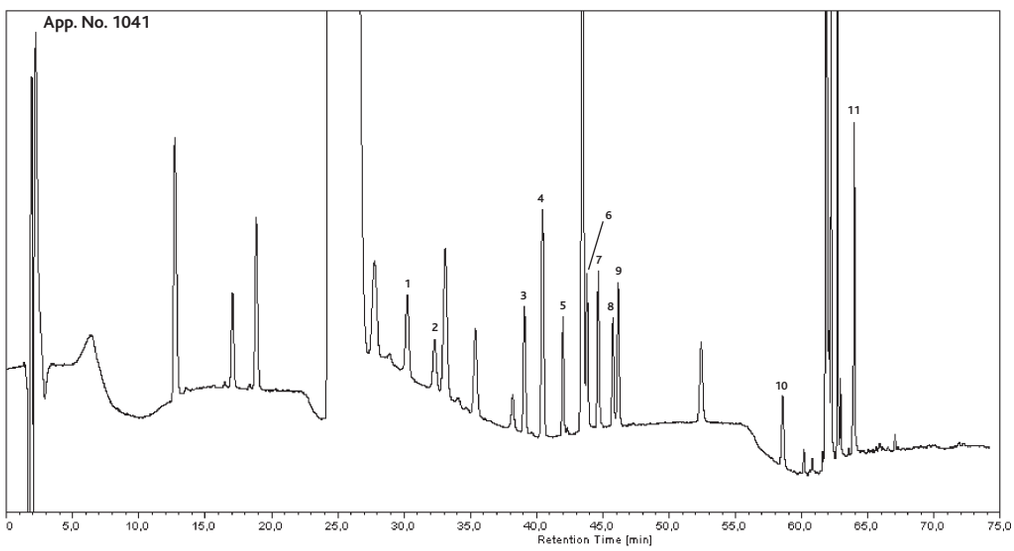
Column: ACE 3 C18, 150 x 3.0mm
Part Number: ACE-111-1503
Mobile Phase: A. 10mM KH_2PO_4 buffer (pH 6.55)
B: 70:30 MeCN/2-Propanol
Flow Rate: 0.5ml/min
Gradient:

T(mins)	%A	%B
0	90	10
3	82	18
17	82	18
27	78	22
35	78	22
50	65	35
57	65	35
70	35	65
70.1	35	65
89	90	10
90	90	10

Temperature: 50°C
Detection: UV, 436nm (PDA detector)
Injection Volume: 20µl

Compounds

1. L-Arginine
2. L-Threonine
3. L-Proline
4. L-Valine
5. L-Methionine
6. L-Isoleucine
7. L-Tryptophan
8. L-Norleucine
9. L-Leucine
10. Ammonium ion
11. L-Lysine



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Amino Acids and Biogenic Amines in Wine and Beer

Conditions

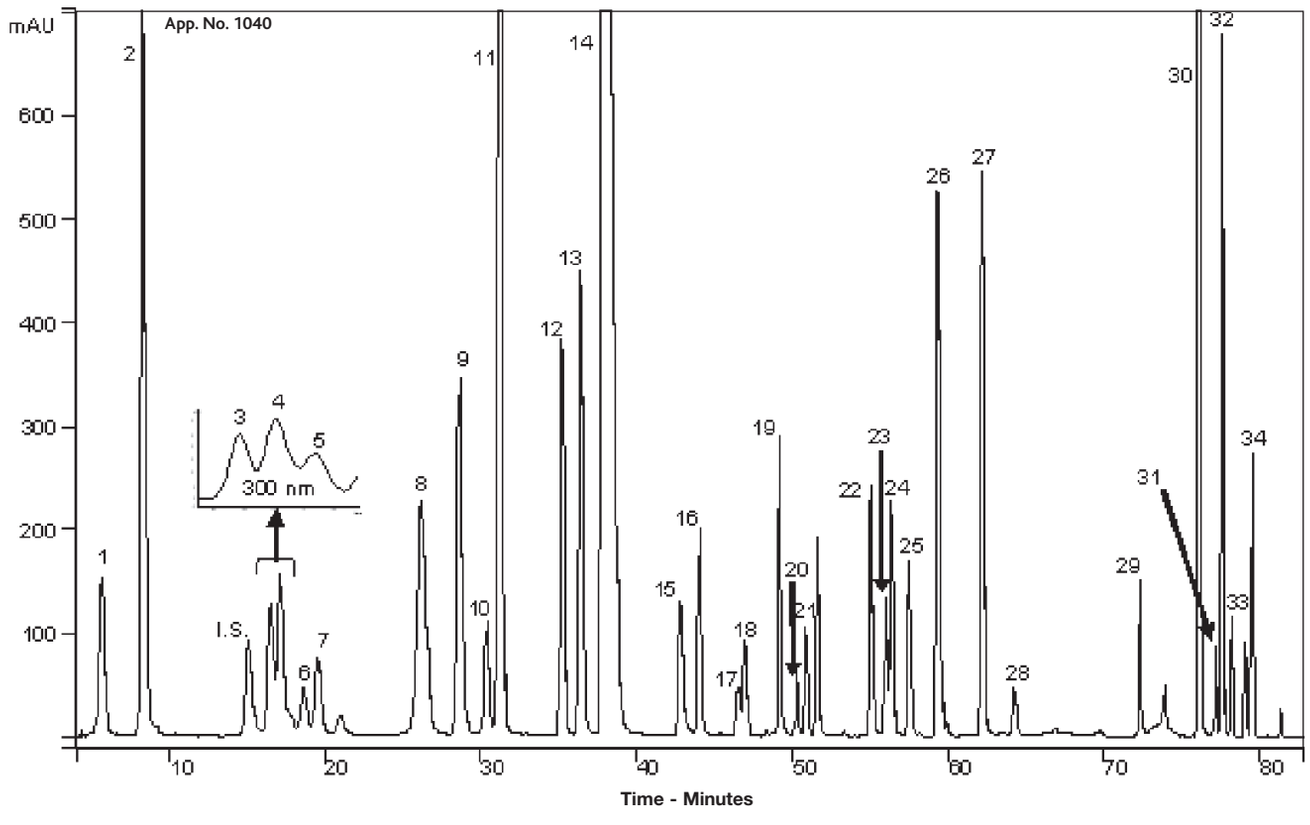
Sample Preparation: Derivatisation with diethyl ethoxymethylmalonate
Column: ACE 5 C18-HL, 250 x 4.6mm
Part Number: ACE-321-2546
Mobile Phase: A. 25mM acetate buffer (pH 5.8)
B: 80:20 MeCN/MeOH
Flow Rate: 0.8ml/min
Gradient:

T(mins)	%A	%B
0	55	45
20	40	60
30.5	83	17
33.5	83	17
65	60	40
73	28	72
78	18	82
82	0	100
85	0	100

Temperature: 16°C
Detection: DAD, 280, 269 and 300nm
Injection Volume: 20µl

Compounds

1. Aspartic acid
2. Glutamic acid
I. S. (L-2-Aminoadipic acid)
3. Asparagine
4. Serine
5. Hydroxyproline
6. Glutamine
7. Histidine
8. Glycine
9. Threonine
10. beta-Alanine
11. Arginine
12. alpha-Alanine
13. GABA
14. Proline
15. Histamine
16. Tyrosine
17. Ammonium ion
18. Agmatine
19. Valine
20. Methionine
21. Cysteine
22. Isoleucine
23. Tryptophan
24. Leucine
25. Phenylalanine
26. Ornithine
27. Lysine
28. Spermidine
29. Tyramine
30. Putrescine
31. Tryptamine
32. Cadaverine
33. Phenylethylamine
34. Isoamylamine



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Angiotensins

Conditions

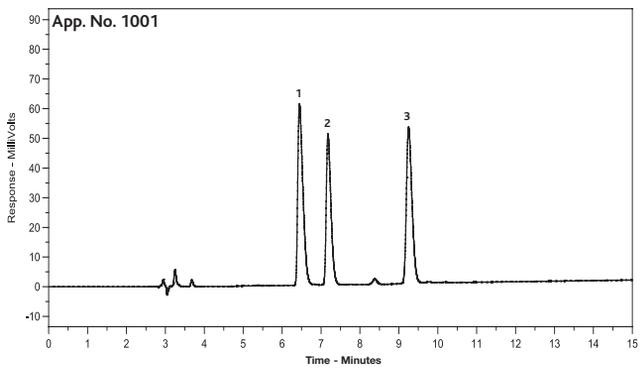
Column: ACE 5 C18-300, 250 x 4.6mm
Part Number: ACE-221-2546
Mobile Phase: A. 0.1% TFA in H_2O
B. 80:20 MeCN/0.1% TFA in H_2O
Flow Rate: 1.0ml/min
Gradient:

T (mins)	%A	%B
0	75	25
15	60	40

Temperature: Ambient
Detection: UV, 215nm

Compounds

1. Angiotensin II
2. Angiotensin III
3. Angiotensin I



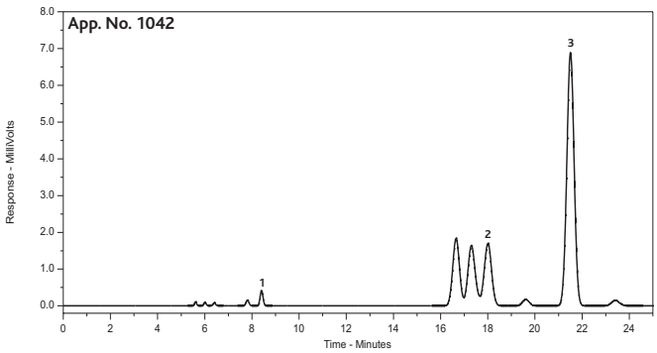
Annatto

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 70:30 MeCN/0.16% CH_3CO_2H in H_2O
Flow Rate: 1.2ml/min
Temperature: Ambient
Detection: UV/VIS, 478nm

Compounds

1. Norbixin
2. 9'-trans-Bixin
3. 9'-cis-Bixin



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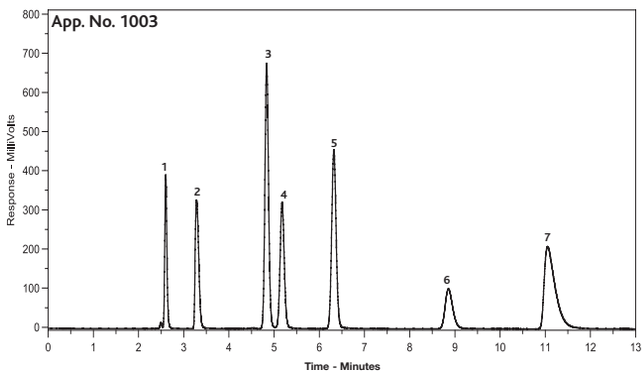
Antihistamines and Expectorants

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 50:50 MeOH/50mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: 22°C
Detection: UV, 220nm

Compounds

1. Maleic acid
2. Norephedrine
3. Salicylamide
4. Guaifenesin
5. Guaiacol
6. Chlorpheniramine maleate
7. Dextromethorphan



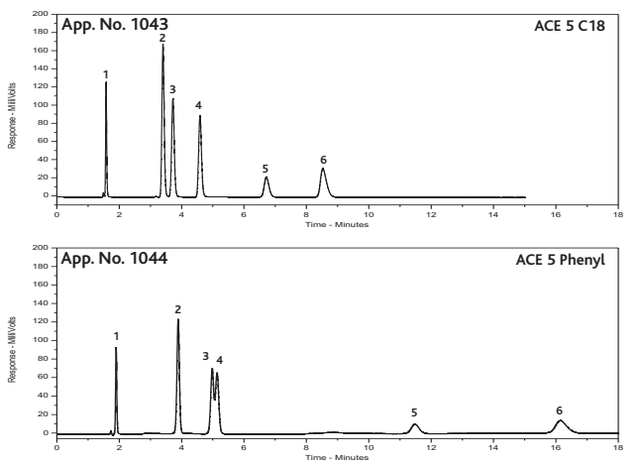
Antihistamines and Expectorants - Bonded Phase Effects

Conditions

Column: ACE 5 C18 and ACE 5 Phenyl
Column Dimensions: 150 x 4.6mm
Part Number: ACE-121-1546 and ACE-125-1546
Mobile Phase: 45:55 MeCN/20mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 220nm
Injection Volume: 0.4µl

Compounds

1. Maleic acid
2. Salicylamide
3. Guaifenesin
4. Guaiacol
5. Chlorpheniramine maleate
6. Dextromethorphan



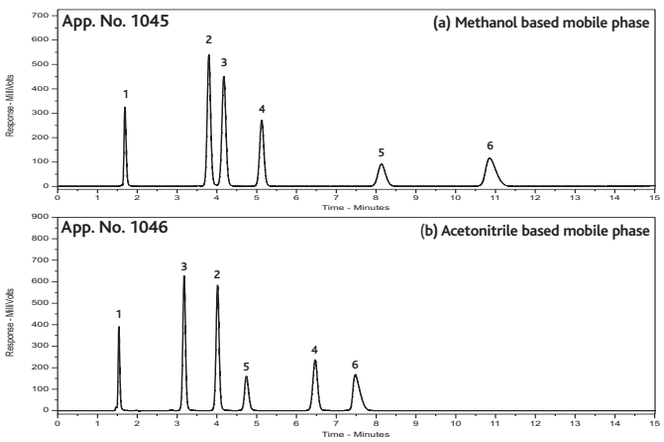
Antihistamines and Expectorants - Mobile Phase Effects

Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: (a) 45:55 MeOH/50mM KH_2PO_4 (pH 3.0)
(b) 28:72 MeCN/50mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 220nm

Compounds

1. Maleic acid
2. Salicylamide
3. Guaifenesin
4. Guaiacol
5. Chlorpheniramine maleate
6. Dextromethorphan



Antihistamines and Expectorants - Rapid Analysis

Conditions (a)

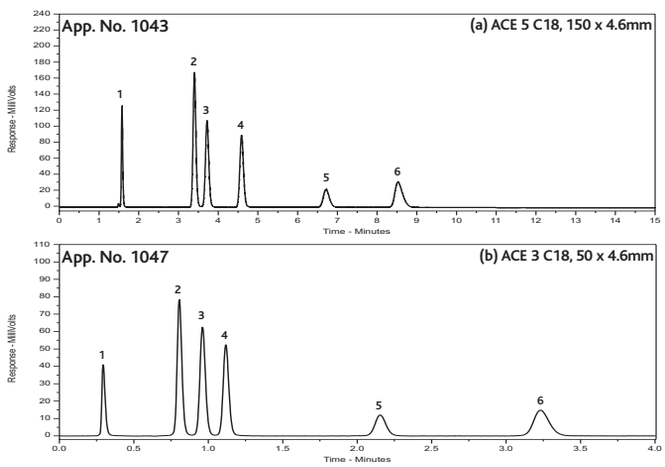
Column: ACE 5 C18, 150 x 4.6mm
Mobile Phase: 45:55 MeOH/20mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 220nm
Injection Volume: 0.4µl

Conditions (b)

Column: ACE 3 C18, 50 x 4.6mm
Mobile Phase: 39:61 MeOH/20mM KH_2PO_4 (pH 3.0)
Flow Rate: 2.0ml/min
Temperature: Ambient
Detection: UV, 220nm
Injection Volume: 0.2µl

Compounds

1. Maleic acid
2. Salicylamide
3. Guaifenesin
4. Guaiacol
5. Chlorpheniramine maleate
6. Dextromethorphan



Artemisinin

Conditions

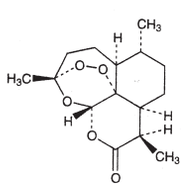
Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: A: H_2O B: MeOH
Flow Rate: 1.0ml/min
Gradient:

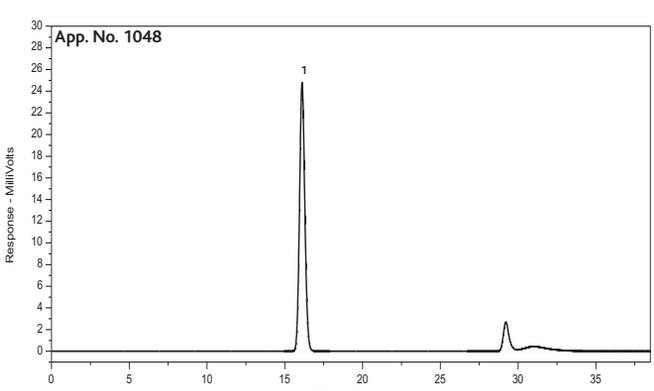
T(mins)	%A	%B
0	50	50
25	0	100
35	0	100

Temperature: 20°C
Detection: ELSD
Injection Volume: 20µl

Compounds

1. Artemisinin





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Artificial Food Colours

Conditions

Column: ACE 3 C18, 100 x 4.6mm
Part Number: ACE-111-1046
Mobile Phase: A. 3.1mM TBAB[1] and 5mM KH_2PO_4 in H_2O
B: 5mM KH_2PO_4 in MeOH
Flow Rate: 0.8ml/min
Gradient:

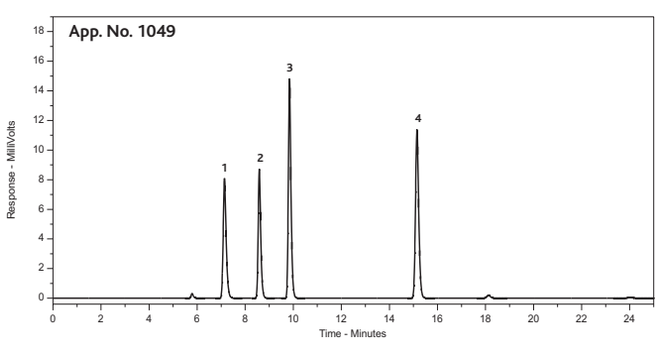
T(mins)	%A	%B	Curve
0	55	45	
12	40	60	6
25	55	45	1

Temperature: Ambient
Detection: UV/VIS, 480nm
Injection Volume: 10µl

[1] Tetrabutylammonium bromide

Compounds

1. Tartrazine
2. Amaranth
3. Sunset Yellow
4. Ponceau 4R



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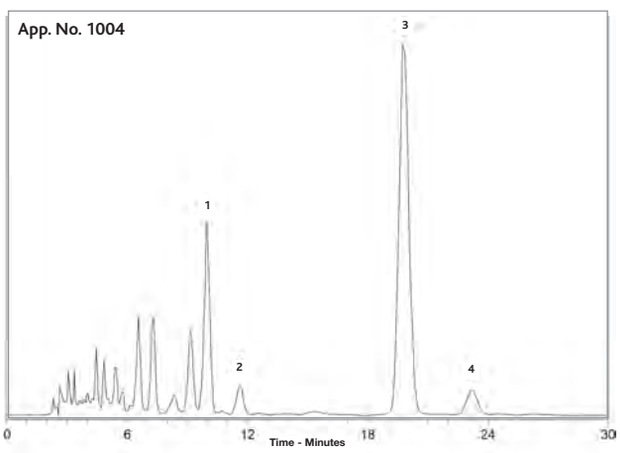
Avenacins

Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	70:30 MeOH/H_2O
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 225nm
Sample:	Partially purified extract from oat root

Compounds

1. Avenacin A-2
2. Avenacin B-2
3. Avenacin A-1
4. Avenacin B-1



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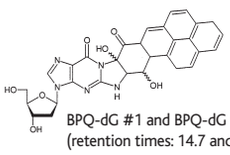
Benzo(a)pyrene-7,8-quinone Derived Deoxynucleotide DNA Adducts

Conditions

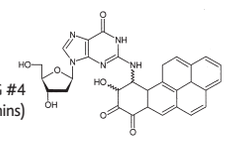
Column:	ACE 3 C18, 150 x 4.6mm		
Part Number:	ACE-111-1546		
Mobile Phase:	A. 0.1% HCO_2H		
	B: MeCN		
Flow Rate:	1.0ml/min		
Gradient:	T(mins)	%A	%B
	0	75	25
	8	45	55
Temperature:	35°C		
Detection:	UV, 285nm		
Injection Volume:	5µl		

Compounds

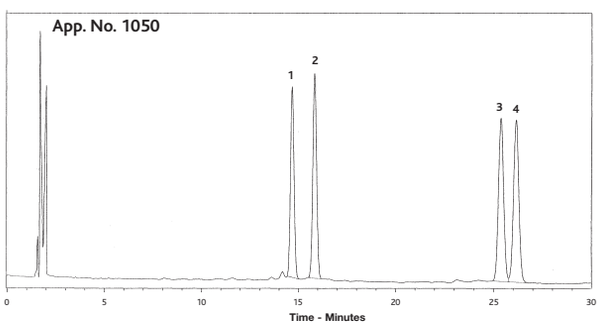
1. BPQ-dG#1
2. BPQ-dG#2
3. BPQ-dG#3
4. BPQ-dG#4



BPQ-dG #1 and BPQ-dG #2
(retention times: 14.7 and 15.8 mins)



BPQ-dG #3 and BPQ-dG #4
(retention times: 25.3 and 26.1 mins)



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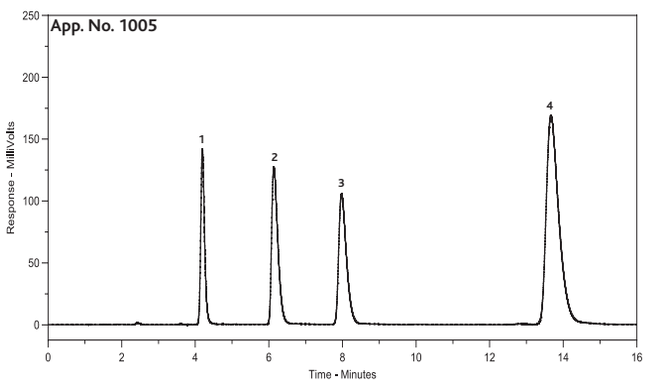
Beta Blockers

Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	65:35 MeOH/50mM 1-methylpiperidine (pH 11.0)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 215nm

Compounds

1. Pindolol
2. Metoprolol
3. Oxprenolol
4. Propranolol



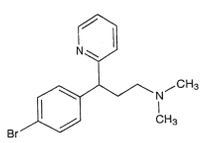
Brompheniramine Maleate

Conditions

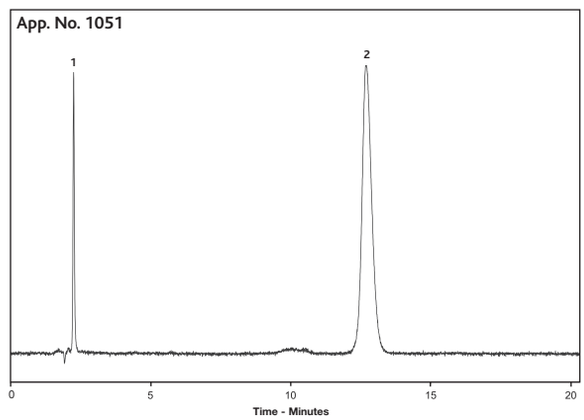
Column:	ACE 5 CN, 150 x 4.6mm
Part Number:	ACE-124-1546
Mobile Phase:	5:95 MeOH/H_2O containing 20mM HCO_2NH_4, pH 3.0 with HCO_2H
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 265nm
Injection Volume:	20µl (0.2mg/ml solution)

Compounds

1. Maleic acid
2. Brompheniramine maleate



Brompheniramine



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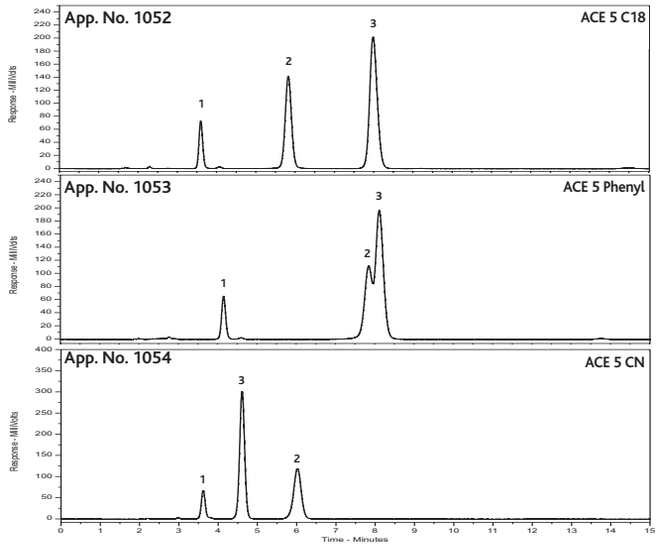
Catechins

Conditions

Columns: ACE 5 C18, ACE 5 Phenyl, ACE 5 CN
Column Dimensions: 150 x 4.6mm
Mobile Phase: 25:75 MeOH/0.1% HCO_2H
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 280nm
Injection Volume: 2µl

Compounds

1. Epigallocatechin
2. (+)-Epicatechin
3. Epigallocatechin gallate



Catecholamines from Plasma

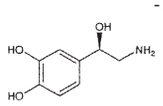
Conditions

Sample Preparation: Ion pair extraction using diphenyl-borate-ethanolamine. Derivatisation using diphenyl-ethylenediamine as fluorescent probe

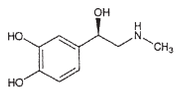
Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 50:35:15 50mM CH_3CO_2Na buffer (pH 7.0)/MeCN/MeOH
Flow Rate: 0.9ml/min
Temperature: Ambient
Detection: Fluorescence - λex 350nm
- λem 480nm

Compounds

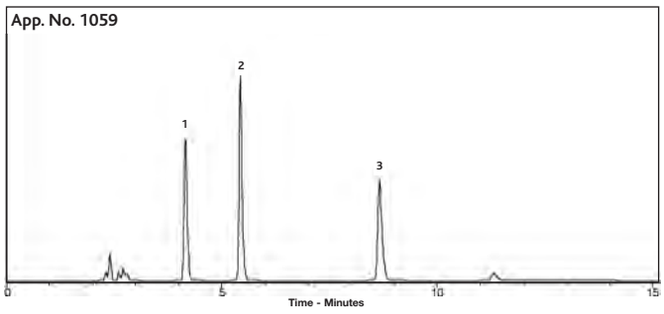
1. Noradrenaline (norepinephrine)
2. 3,4-Dihydroxynorephedrine (I.S.)
3. Adrenaline (epinephrine)



Noradrenaline



Adrenaline



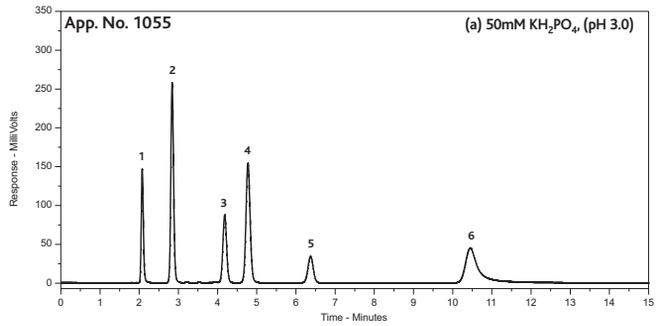
Catecholamines

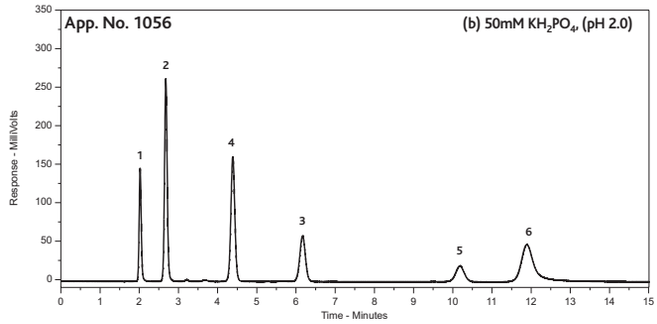
Conditions

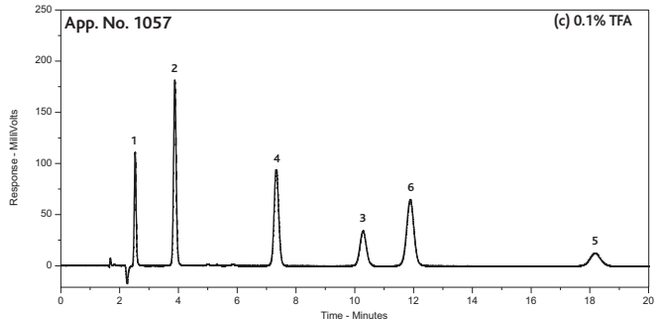
Column: ACE 5 AQ, 150 x 4.6mm
Part number: ACE-126-1546
Mobile Phase: (a) 50mM KH_2PO_4, (pH 3.0)
(b) 50mM KH_2PO_4, (pH 2.0)
(c) 0.1% TFA
(d) 0.1% HCO_2H
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 210nm
Injection Volume: 2µl

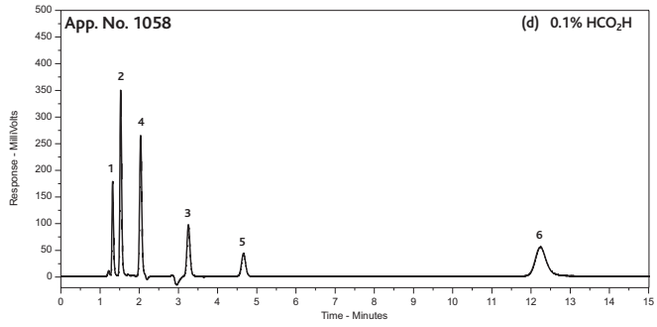
Compounds

1. Noradrenaline
2. Adrenaline
3. L-DOPA
4. Dopamine
5. L-Tyrosine
6. VMA (vanillylmandelic acid)









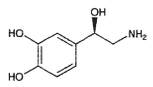
Catecholamines from Urine

Conditions

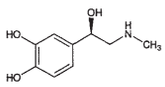
Sample Preparation: Ion pair extraction using diphenyl-borate-ethanolamine. Derivatisation using diphenyl-ethylenediamine as fluorescent probe
Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 50:35:15 50mM CH_3CO_2Na buffer (pH 7.0)/MeCN/MeOH
Flow Rate: 0.9ml/min
Temperature: Ambient
Detection: Fluorescence - λex 350nm
- λem 480nm

Compounds

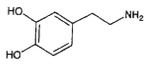
1. Noradrenaline (norepinephrine)
2. 3,4-Dihydroxynorephedrine (I.S.)
3. Adrenaline (epinephrine)
4. Dopamine



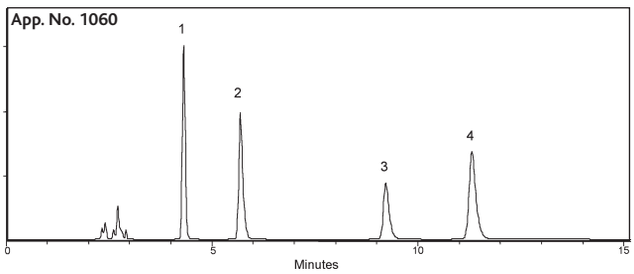
Noradrenaline



Adrenaline



Dopamine



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Cefquinome

Conditions

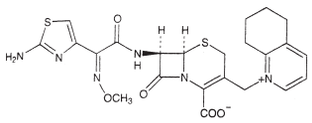
Column: ACE 5 C18, 150 x 2.1mm
Part Number: ACE-121-1502
Mobile Phase: A: 2mM HCO_2H in H_2O
B: 2mM HCO_2H in MeCN
Flow Rate: 0.2ml/min
Gradient:

Time	%A	%B
0	95	5
1	95	5
10	5	95
30	5	95

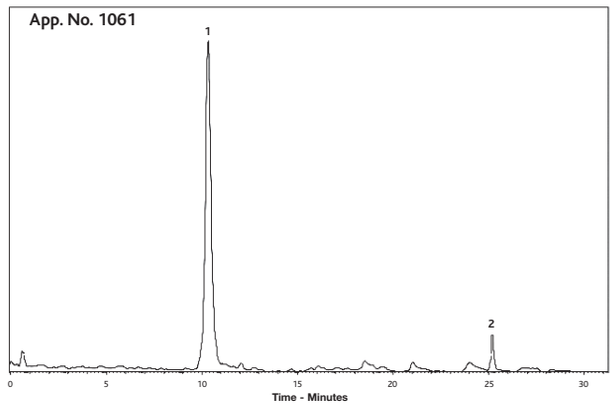
Temperature: 25°C
Detection: ESI-MS (+)

Compounds

1. Cefquinome
2. Excipient



Cefquinome



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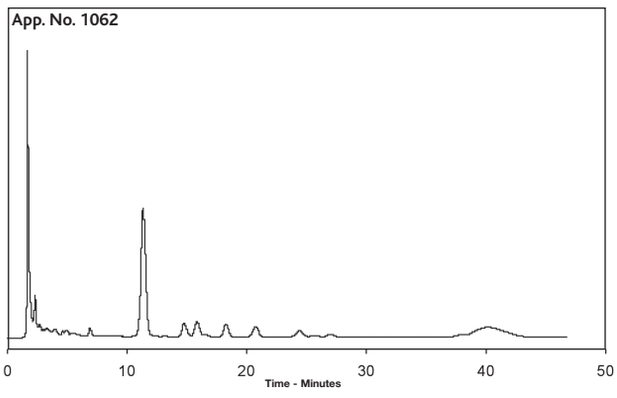
Clausena Excavate - Semi-preparative HPLC of Methanolic Leaf Extract

While it is possible to scale up from analytical (4.6mm i.d.) to preparative (21.2mm i.d.) dimensions, in this case it was convenient to carry out both the method development and the actual isolation of fractions on the semi-preparative column to yield enough material for testing and identification.

Conditions

Column: ACE 5 C18, 250 x 7.75mm
Part Number: ACE-121-2508
Mobile Phase: 20:80 0.5% TFA in MeOH/0.5% TFA in H_2O
Flow Rate: 4.5ml/min
Temperature: Ambient
Detection: UV, 245nm
Injection Volume: 500µl



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Clopidogrel

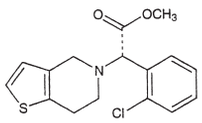
Analysis of clopidogrel and photodegradation products after 3.5 hours exposure to UV light

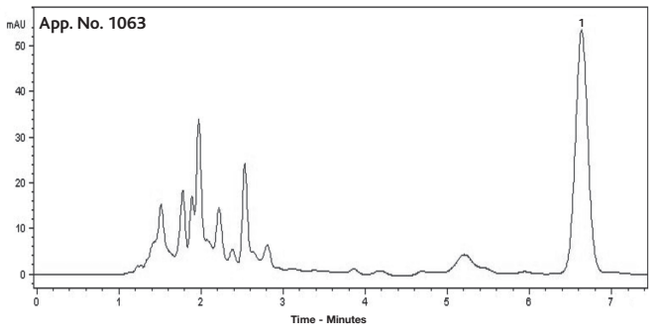
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 75:25 MeOH/aqueous TEA (pH 5.3 with H_3PO_4)
Flow Rate: 1.2ml/min
Temperature: 25°C
Detection: UV, 220nm
Injection Volume: 20µl

Compounds

1. Clopidogrel





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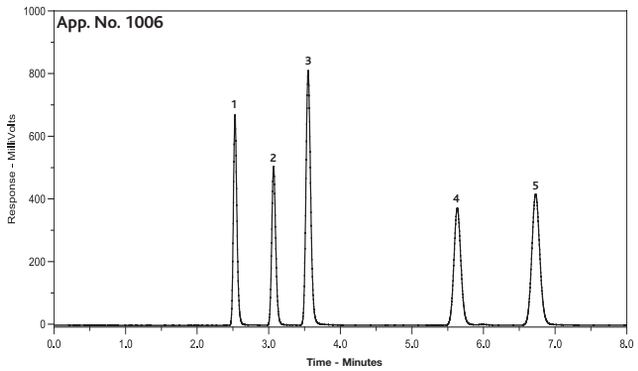
Cold Medicine Components

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 50:50 MeOH/50mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: 22°C
Detection: UV, 220nm

Compounds

1. Vitamin C
2. Acetaminophen
3. Caffeine
4. Aspirin
5. Ethenzamide



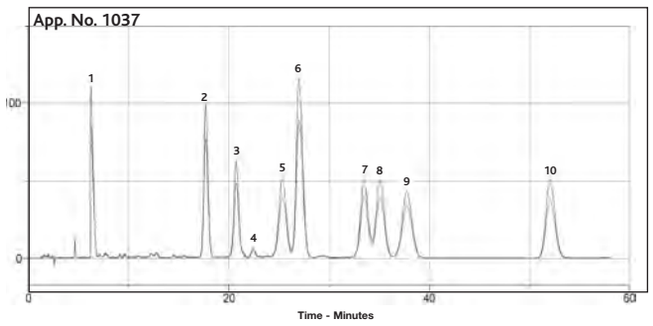
Cyclosporin Mixture

Conditions

Column: ACE 5 C18, 250 x 3.0mm
Part Number: ACE-121-2503
Mobile Phase: 46:51:3:0.1 H_2O/MeCN/MTBE/H_3PO_4
Flow Rate: 0.8ml/min
Temperature: 80°C
Detection: UV, 210nm

Compounds

1. Isocyclosporin A
2. Cyclosporin C
3. Cyclosporin B
4. Cyclosporin L
5. Cyclosporin U
6. Cyclosporin A
7. Dihydrocyclosporin A
8. Cyclosporin G
9. Cyclosporin D
10. Cyclosporin E



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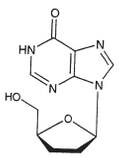
Didanosine

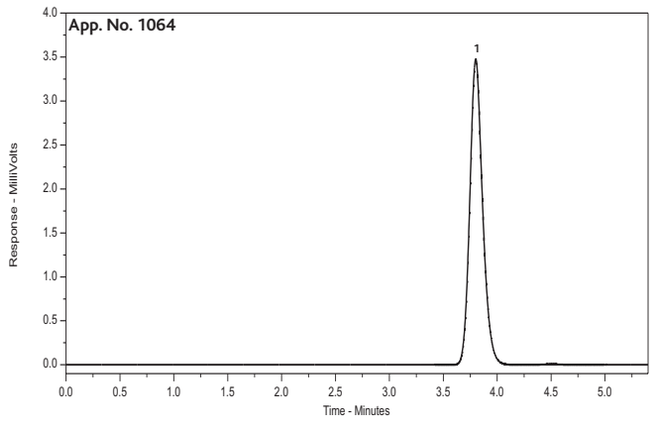
Conditions

Column: ACE 5 C18-HL, 250 x 4.6mm
Part Number: ACE-321-2546
Mobile Phase: 20:80 MeOH/50mM CH_3COONH_4, pH 8.0
Flow Rate: 1.5ml/min
Temperature: Ambient
Detection: UV, 254nm

Compounds

1. Didanosine





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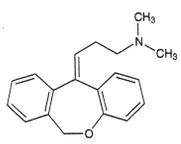
Doxepin (cis and trans isomers)

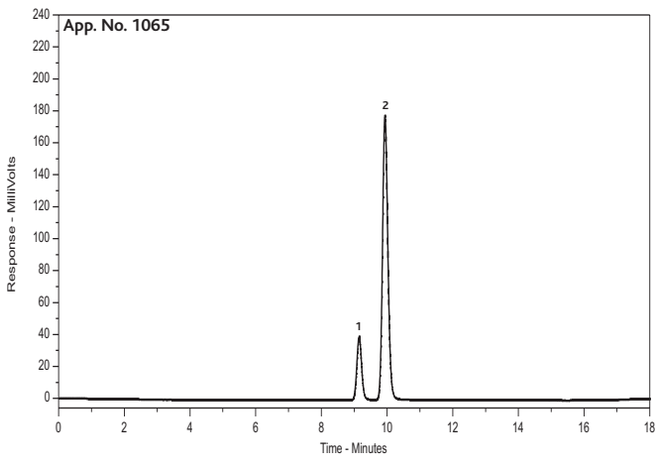
Conditions

Column: ACE 5 SIL, 250 x 4.6mm
Part Number: ACE-127-2546
Mobile Phase: 95:5:0.3 Hexane/ethanol/TEA
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm

Compounds

1. cis-Doxepin
2. trans-Doxepin





Entacapone

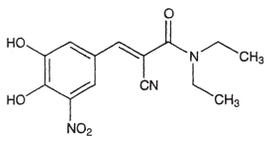
Analysis of entacapone standard in methanol solution after exposure to direct UV radiation (254nm).

Conditions

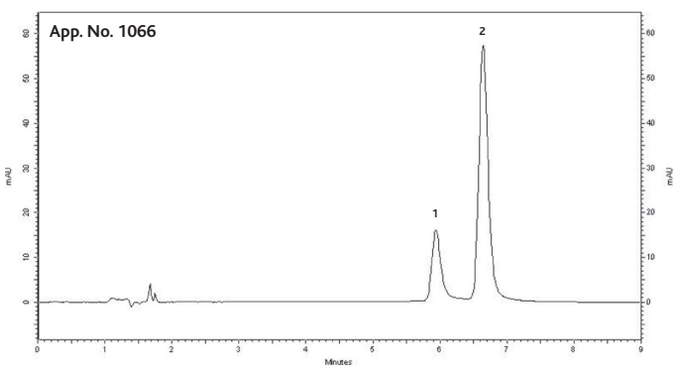
Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	35:65 MeCN/aqueous H_3PO_4 (pH 3.0)
Flow Rate:	2.0ml/min
Temperature:	25°C
Detection:	UV, 305nm
Injection Volume:	20µl

Compounds

1. Degradation product
2. Entacapone



Entacapone



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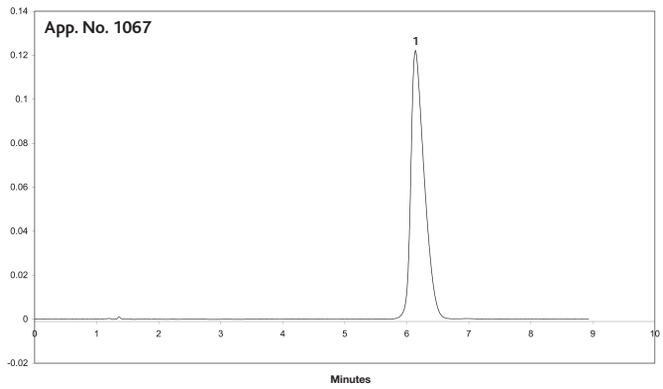
Epanolol

Conditions

Column:	ACE 5 CN, 150 x 4.6mm
Part Number:	ACE-124-1546
Mobile Phase:	15:85 MeOH/H_2O containing 20mM HCO_2NH_4, pH 3.0 with HCO_2H
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm
Injection Volume:	20µl (0.2mg/ml solution)

Compounds

1. Epanolol



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Epinastine

Development and validation of HPLC and UV derivate spectrophotometric methods for determination of epinastine hydrochloride in coated tablets

Conditions

Column:	ACE 5 C18, 150 x 4.6mm
Part Number:	ACE-121-1546
Mobile Phase:	60:40 0.3% aqueous TEA (pH 4.0 with H_3PO_4)/MeOH
Flow Rate:	1.0ml/min
Temperature:	25°C
Detection:	UV, 254nm
Injection Volume:	20µl

Compounds

1. Epinastine

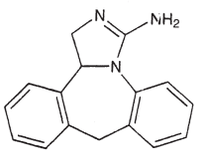


Fig. 1 Epinastine Hydrochloride reference substance (A) before and (B) after 18 hours in a UV254nm chamber

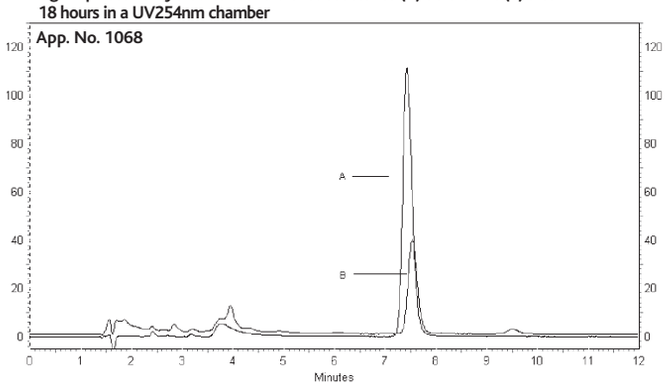
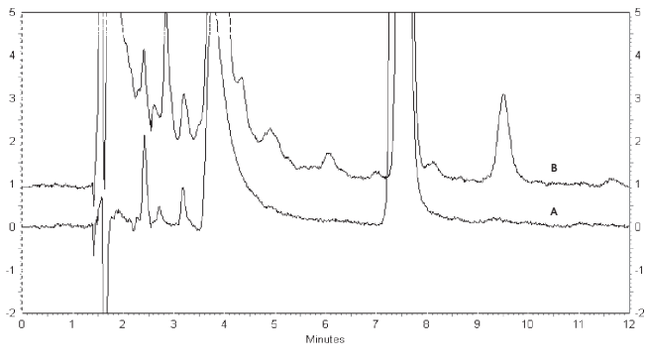


Fig. 2 Magnified version of Fig. 1



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Flavone and Dibucaine - Effect of Temperature

Conditions

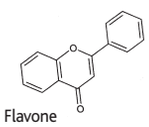
Column: ACE 3 C18, 30 x 4.6mm
Part Number: ACE-111-0346
Mobile Phase: A: 6.5mM $CH_3CO_2NH_4$
B: MeCN
C: MeOH
Flow Rate: 2.0ml/min
Gradient:

Time	%A	%B	%C
0	80	10	10
5.2	0	50	50
5.6	0	0	100

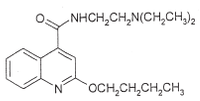
Temperature: 40°C and 60°C
Detection: DAD, 200-450nm

Compounds

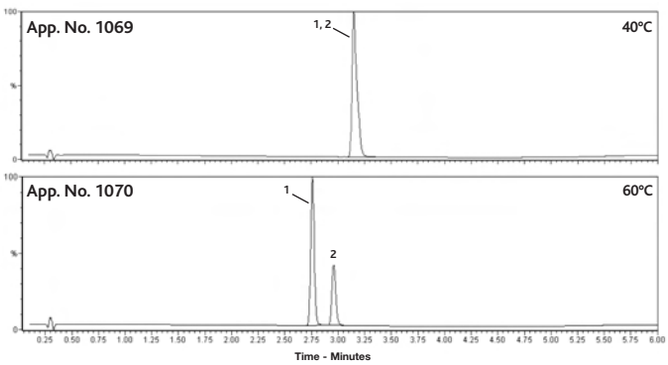
1. Flavone
2. Dibucaine



Flavone



Dibucaine



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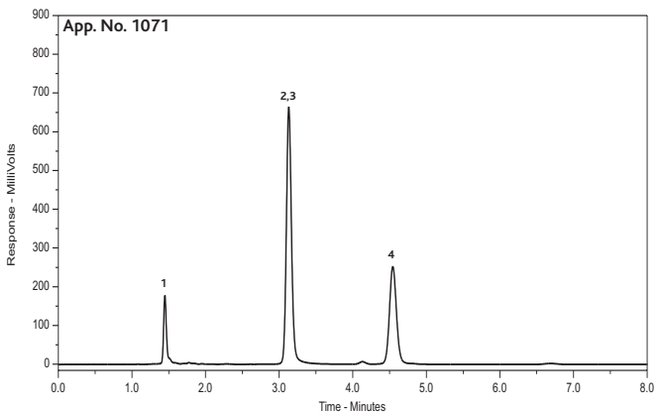
Flavonoids

Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 40:60 MeCN/0.1% HCO_2H
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 1µl

Compounds

1. Rutin
2. Quercetin
3. Quercitrin
4. Kaempferol



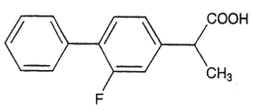
Flurbiprofen and Related Substances

Conditions

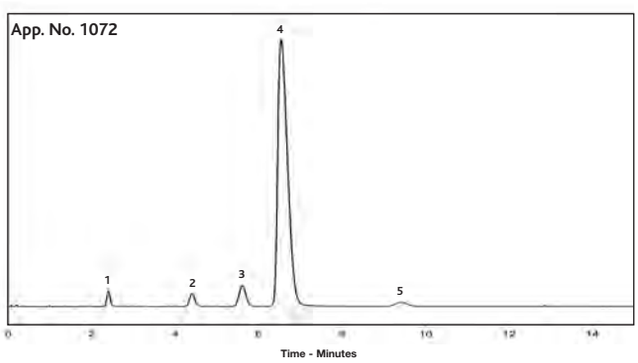
Column: ACE 3 C18, 50 x 4.6mm
Part Number: ACE-111-0546
Mobile Phase: 34:64:0.5 MeCN/H_2O/TFA
Flow Rate: 2.0ml/min
Temperature: 28°C
Detection: UV, 254nm
Injection Volume: 20µl (1mg/ml solution)

Compounds

1. 2-(2-Fluoro-4-biphenyl)-2-hydroxypropionic acid
2. cis-2-(2-Fluoro-4-biphenyl)-2-hydroxypropionic acid
3. 2-Fluoro-4-biphenyl-4-carboxylic acid
4. Flurbiprofen
5. 4-Acetyl-2-fluorobiphenyl



Flurbiprofen



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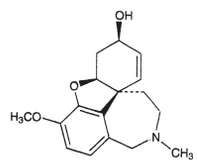
Galanthamine

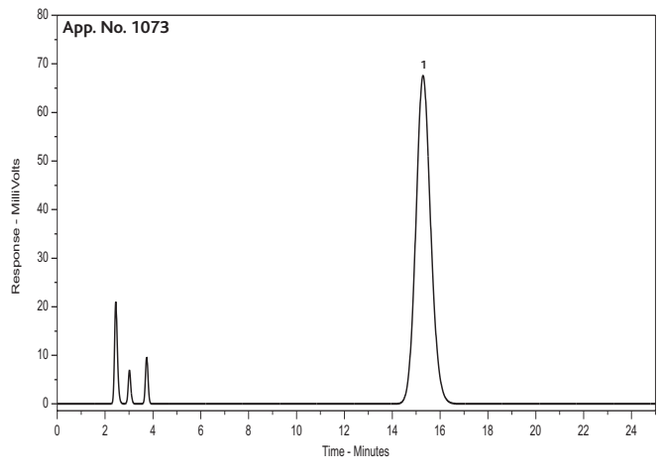
Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 8:92 MeCN/0.1% TFA
Flow Rate: 1.0ml/min
Temperature: 20°C
Detection: UV, 210nm
Injection Volume: 10µl

Compounds

1. Galanthamine





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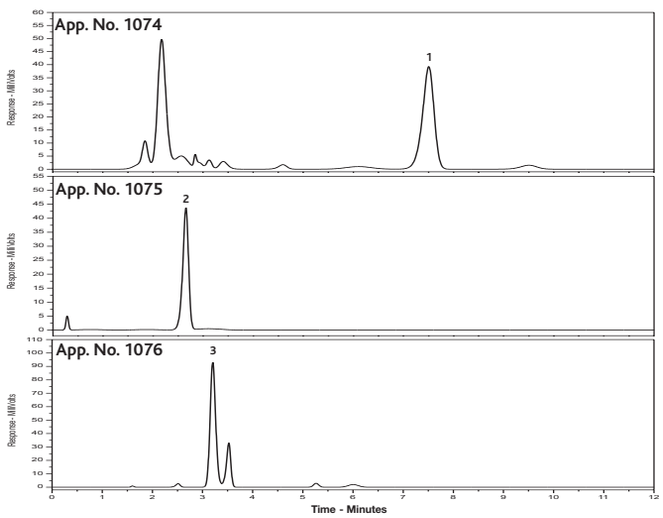
Garlic Analysis 1

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 50:50 MeOH/H_2O
Flow Rate: 1.0ml/min
Temperature: 30°C
Detection: UV, 210nm
Injection Volume: 20µl

Compounds

1. Allicin
2. Alliin
3. Deoxyalliin



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Garlic Analysis 2

Conditions

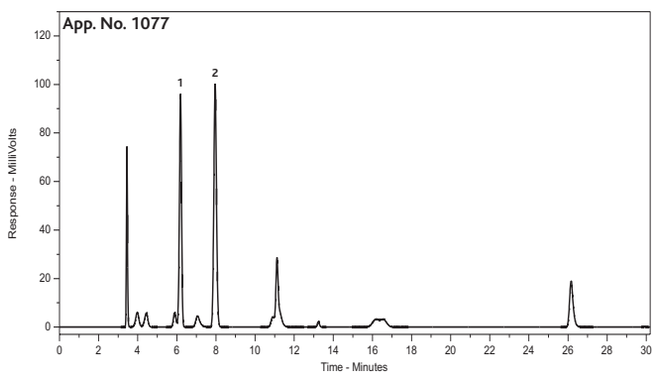
Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: A: H_2O
B: MeCN
Flow Rate: 1.0ml/min
Gradient:

T(mins)	%A	%B
0	60	40
20	0	100
25	0	100

Temperature: 30°C
Detection: UV, 254nm
Injection Volume: 20µl

Compounds

1. Allicin
2. Ajoene



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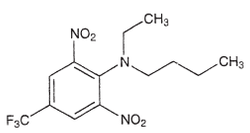
Herbicide - Benfluralin

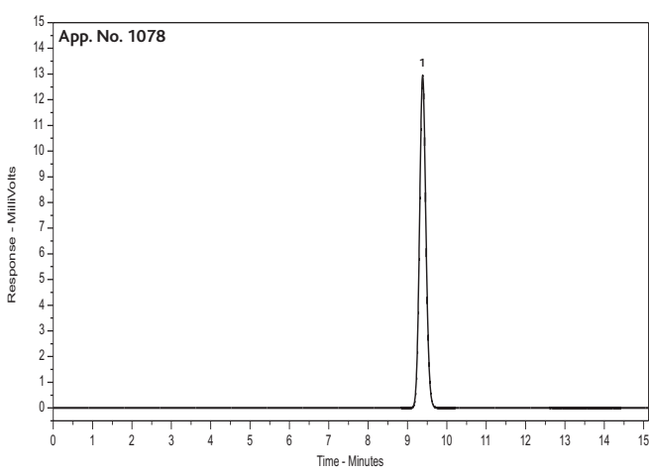
Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 85:15 MeOH/H_2O
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm

Compounds

1. Benfluralin





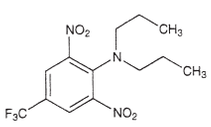
Herbicide - Trifluralin

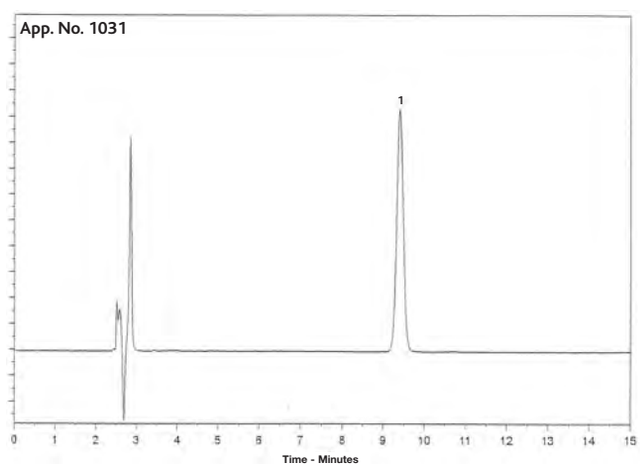
Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 85:15 MeOH/H_2O
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm

Compounds

1. Trifluralin





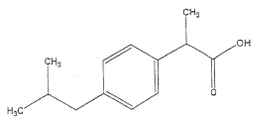
Ibuprofen and Related Impurities

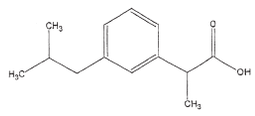
Conditions

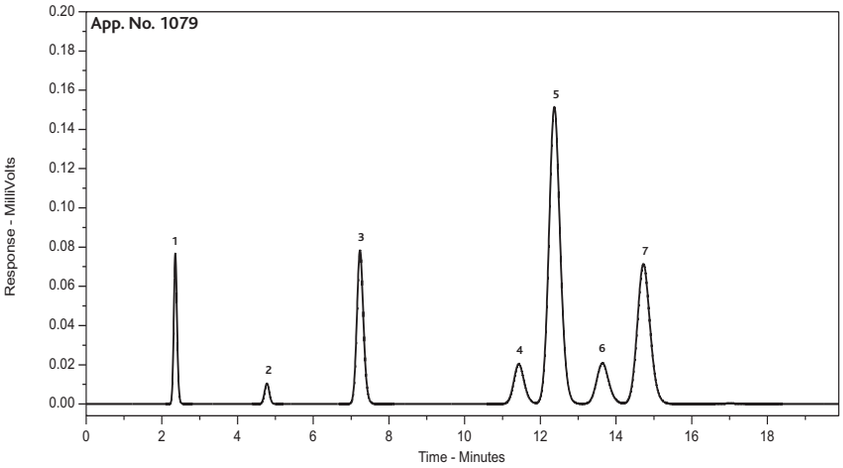
Column: ACE 5 C18, 150 x 3.0mm
Part Number: ACE-121-1503
Mobile Phase: 36:64 0.1% TFA in MeCN/0.1% TFA in H_2O
Flow Rate: 1.5ml/min
Temperature: 40°C
Detection: UV, 214nm

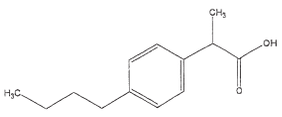
Compounds

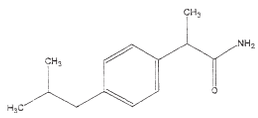
1. 2-(4-Methylphenyl)propanoic acid (Impurity D)
2. 2-(4-Isobutylphenyl)propanamide (Impurity C)
3. Benzophenone (Internal Standard)
4. 2-(3-Isobutylphenyl)propanoic acid (Impurity A)
5. Ibuprofen
6. 2-(4-Butylphenyl)propanoic acid (Impurity B)
7. 1-(4-Isobutylphenyl)ethanone (Impurity E)

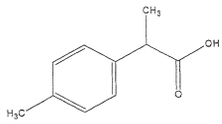

Ibuprofen

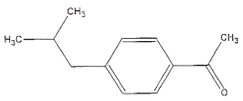

Impurity A




Impurity B


Impurity C


Impurity D


Impurity E

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Illegal Dyes in Spices

Conditions

Column: ACE 3 C18, 100 x 4.6mm
Part Number: ACE-111-1046
Mobile Phase: A: H_2O
B: MeOH
C: 0.06M TBAB[1] and 0.5M KH_2PO_4 in H_2O, pH 2.55
Flow Rate: 1.0ml/min
Gradient:

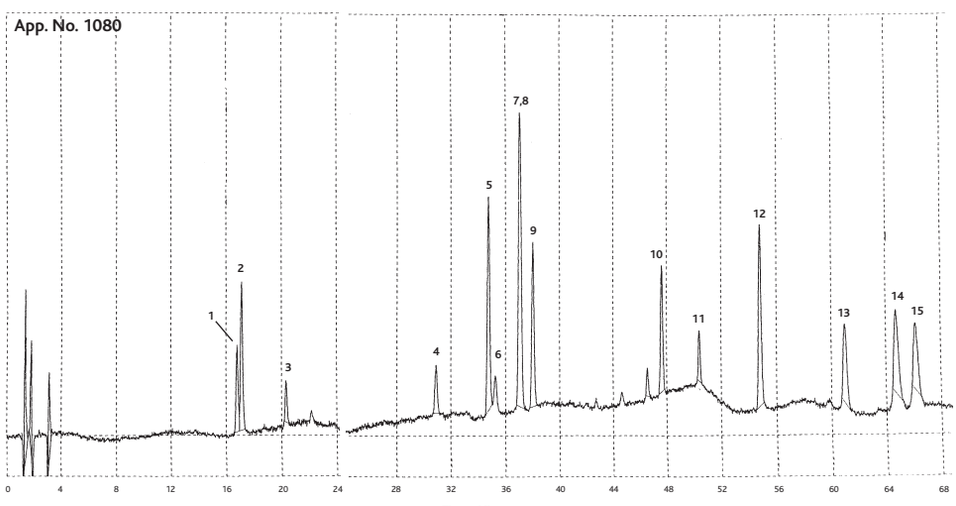
T(mins)	%A	%B	%C	Curve
0	45	50	5	
45	3	92	5	6
65	3	92	5	11
66	45	50	5	1
75	45	50	5	1

Temperature: Ambient
Detection: UV/VIS, 420nm, 520nm and 600nm
Injection Volume: 10µl

[1] Tetrabutylammonium bromide

Compounds

1. Rhodamine B
2. Orange II
3. Metanil Yellow
4. Butter Yellow
5. Para Red
6. Sudan Orange G
7. Toluidine Red
8. Sudan I
9. Sudan Red G
10. Sudan II
11. Sudan Black
12. Sudan III
13. Sudan Red 7B
14. Sudan Red B
15. Sudan IV



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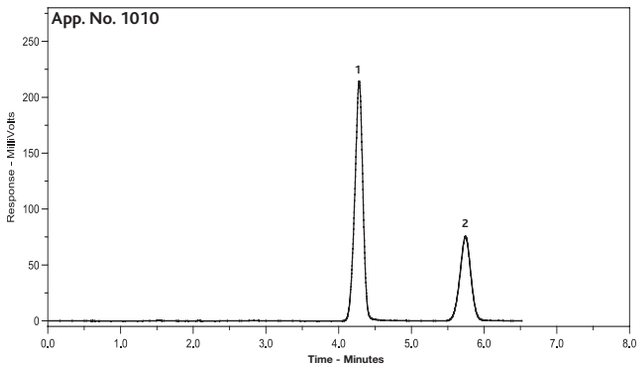
Hippuric Acid

Conditions

Column:	ACE 5 C18, 150 x 4.6mm
Part Number:	ACE-121-1546
Mobile Phase:	85:15 10mM KH_2PO_4 (pH 3.5)/MeCN
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm

Compounds

1. Hippuric acid
2. 2-Methylhippuric acid



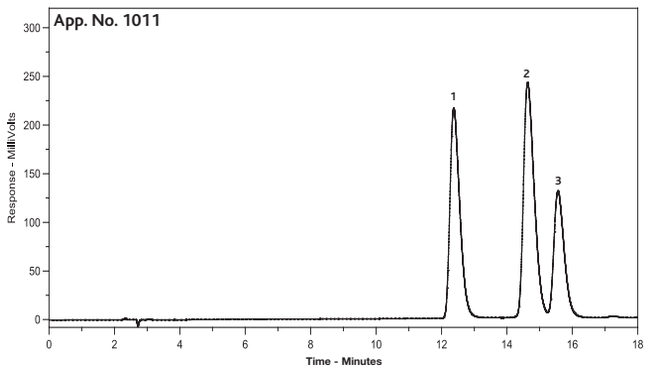
Insulins

Conditions

Column:	ACE 5 C18, 250 x 4.6mm		
Part Number:	ACE-121-2546		
Mobile Phase:	A. 29:71 MeCN/H_2O + 0.1% TFA		
	B. 32:68 MeCN/H_2O + 0.1% TFA		
Flow Rate:	1.0ml/min		
Gradient:	T(mins)	%A	%B
	0	90	10
	16	10	90
Temperature:	Ambient		
Detection:	UV, 215nm		

Compounds

1. Bovine insulin
2. Human insulin
3. Porcine insulin



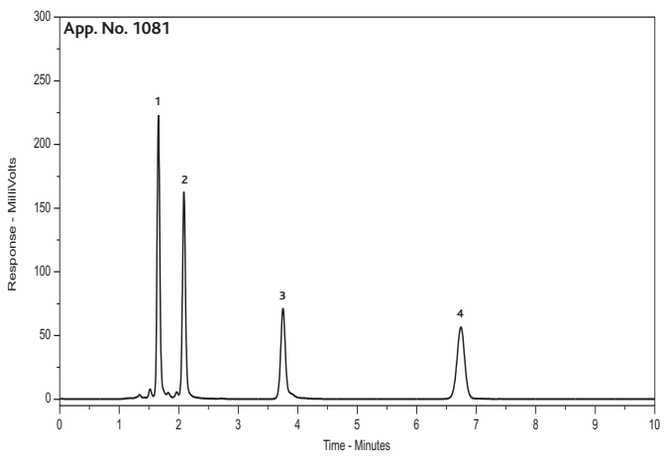
Isoflavones

Conditions

Column:	ACE 5 C18, 150 x 4.6mm
Part Number:	ACE-121-1546
Mobile Phase:	35:65 MeCN/0.1% HCO_2H
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm
Injection Volume:	1µl

Compounds

1. Daidzin
2. Genistin
3. Daidzein
4. Genistein



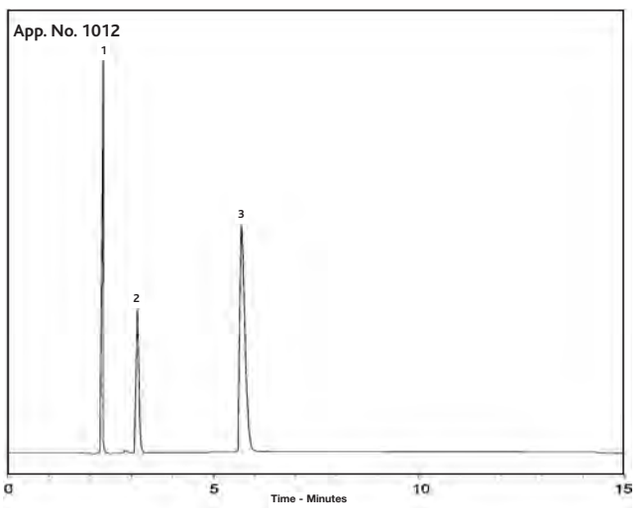
Local Anaesthetics

Conditions

Column:	ACE 5 AQ, 250 x 4.6mm
Part Number:	ACE-126-2546
Mobile Phase:	21:79:0.1 MeCN/H_2O/2.5M H_2SO_4
Flow Rate:	1.5 ml/min
Detection:	UV

Compounds

1. Procaine
2. Lignocaine
3. Cocaine



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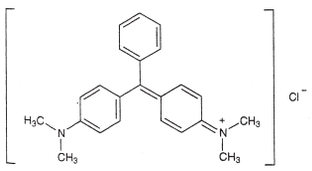
Malachite Green

Conditions

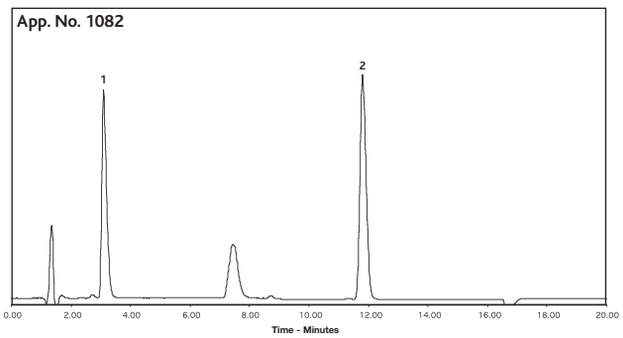
Column:	ACE 5 C18, 150 x 3.0mm
Part Number:	ACE-121-1503
Mobile Phase:	20:80 MeCN/10mM oxalic acid (pH 2.9)
Flow Rate:	0.4ml/min
Temperature:	Ambient
Detection:	UV/VIS, 618nm

Compounds

1. Malachite green
2. Leucomalachite green



Malachite green



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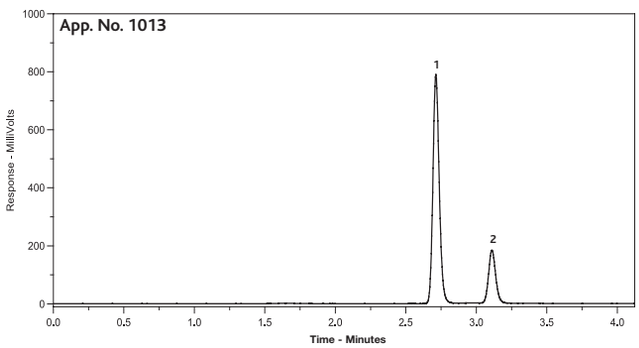
Maleic and Fumaric Acids

Conditions

Column:	ACE 5 AQ, 250 x 4.6mm
Part Number:	ACE-126-2546
Mobile Phase:	50mM KH_2PO_4(pH 7.0)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 210nm

Compounds

1. Fumaric acid
2. Maleic acid



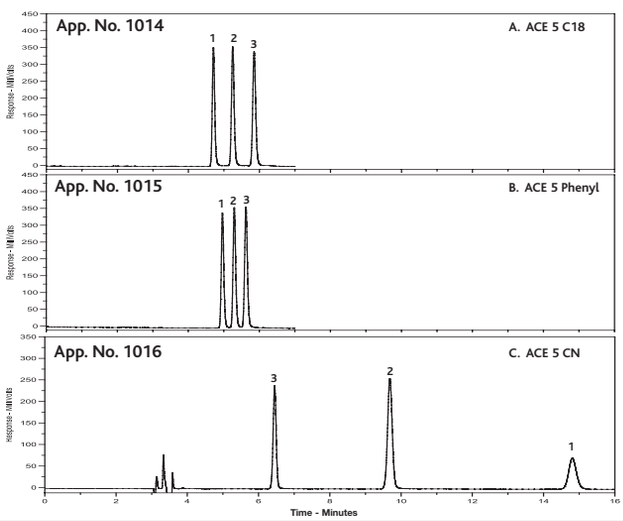
Nitroanilines

Conditions

Columns:	A. ACE 5 C18, B. ACE 5 Phenyl, C. ACE 5 CN
Column Dimensions:	250 x 4.6mm
Mobile Phase:	
Columns A & B:	50:50 MeCN/50mM K_2HPO_4 (pH 3.15)
Column C:	90:10 Heptane/EtOAc
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm

Compounds

1. p-Nitroaniline
2. m-Nitroaniline
3. o-Nitroaniline



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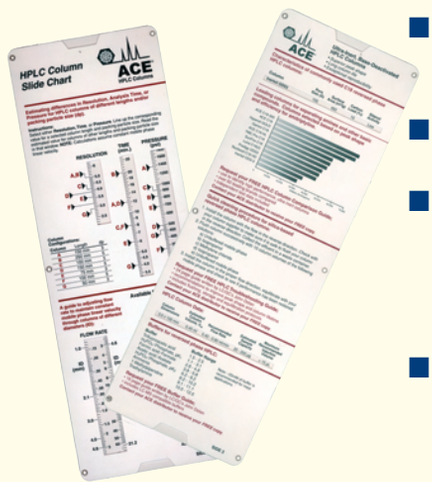

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Nitrofuran metabolites by LC-MS/MS

Nitrofuran veterinary antibiotics are banned in many countries due to potential carcinogenic risks to human health. These nitrofurans are rapidly metabolised in tissue. As a result, the metabolites are used as markers for detection of the parent drug in animal food products. The metabolites are derivatised with 2-nitrobenzaldehyde to form nitrophenyl derivatives, prior to LC-MS analysis.

Conditions

Column:	ACE 3 C18, 50 x 2.1mm
Part Number:	ACE-111-0502
Mobile Phase:	50:50 0.5mM CH_3COONH_4 / MeOH
Flow Rate:	0.2ml/min
Temperature:	Ambient
Detection:	ESI (+) MS/MS
Injection Volume:	20µl

Nitrofuran	Metabolite	Derivative	Parent Ion (m/z)	MRM Transition
Furazolidone	3-amino-2-oxazolidinone (AOZ)	NBAOZ	236	236 ➔ 134
Furaltadone	5-methylmorpholino-3-amino-2-oxazolidinone (AMOZ)	NBAMOZ	335	335 ➔ 291
Nitrofurazone	1-aminohydantoin (AHD)	NBAHD	249	249 ➔ 134

Extracts were assayed by LC-MS/MS using electrospray ionisation in the positive ion mode. Figure 1 shows the MRM transitions used for quantitation of each antibiotic. Figure 2 shows representative chromatograms for different concentration calibration standards of NBAHD. Good limits of quantitation and linearity of detector response (see Figure 3) were obtained.

Figure 1. MRM Chromatograms

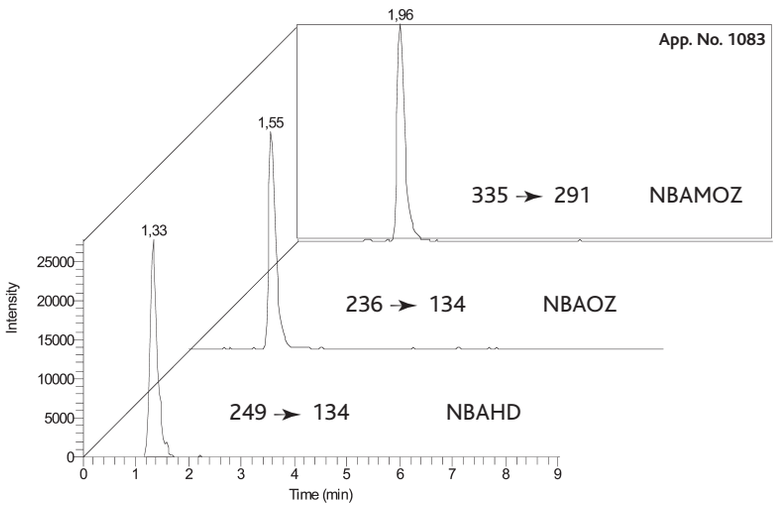


Figure 2. Typical MRM Chromatograms for NBAHD

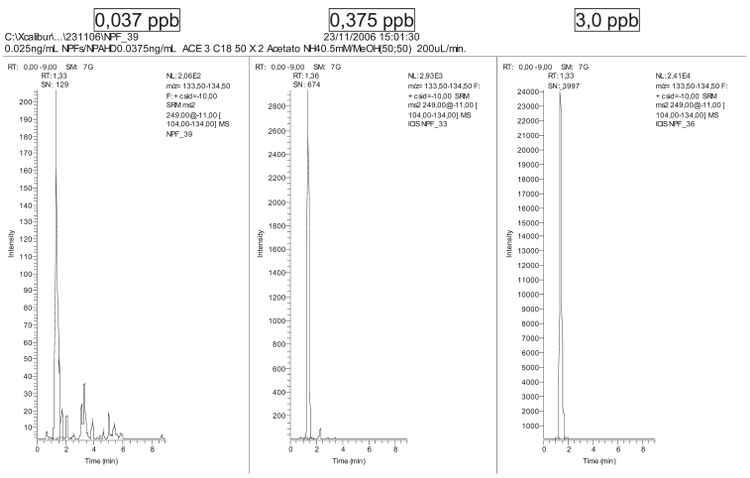
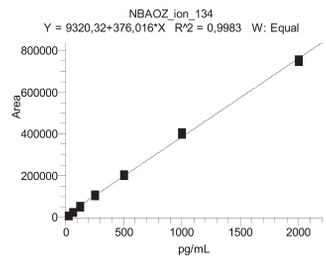
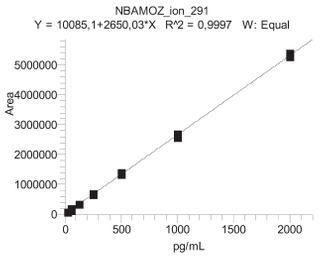
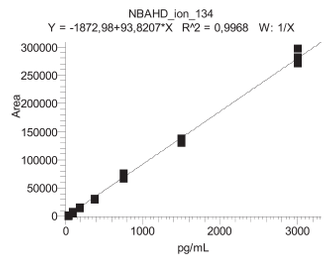


Figure 3. Standard calibration curves







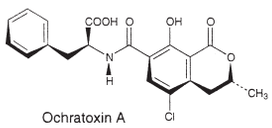
Ochratoxin A

Conditions

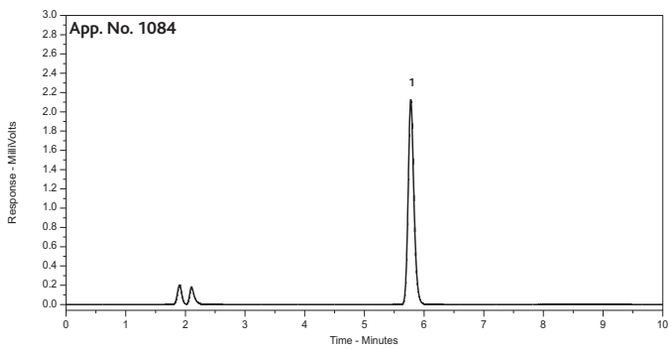
Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 51:47:2 MeCN/H_2O/CH_3CO_2H
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: Fluorescence - λex 333nm
λem 443nm

Compounds

1. Ochratoxin A



Ochratoxin A



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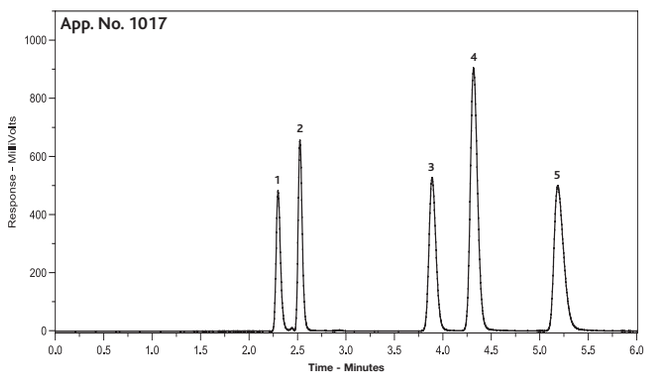
Organic Acids

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 30:70 MeOH/50mM KH_2PO_4 (pH 5.7)
Flow Rate: 1.0ml/min
Temperature: 22°C
Detection: UV, 220nm

Compounds

1. L-Ascorbic acid
2. Maleic acid
3. Acetylsalicylic acid
4. Benzoic acid
5. Salicylic acid



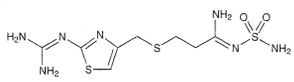
OTC Gastric Drugs

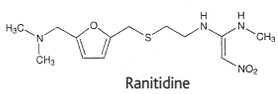
Conditions

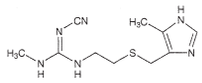
Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 18:82 MeCN/10mM NH_4HCO_3 (pH as specified)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm

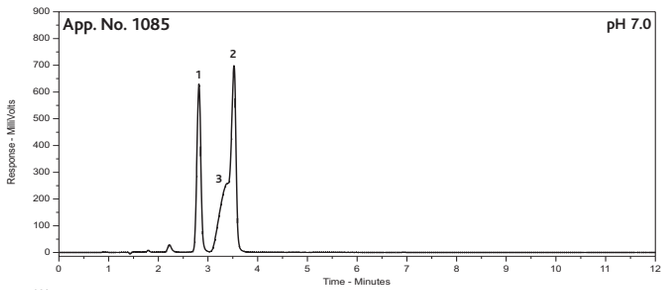
Compounds

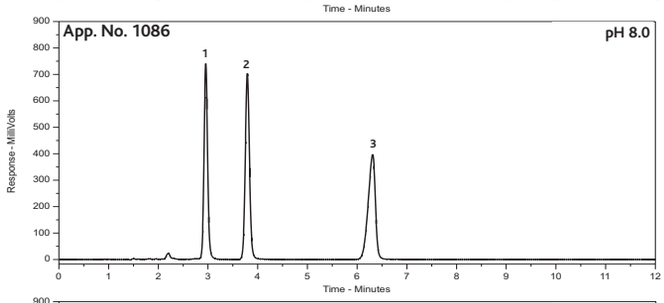
1. Famotidine
2. Cimetidine
3. Ranitidine

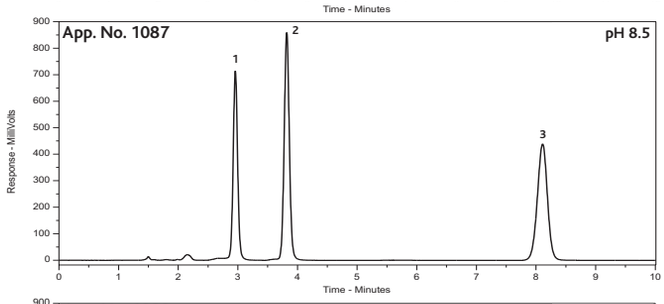

Famotidine

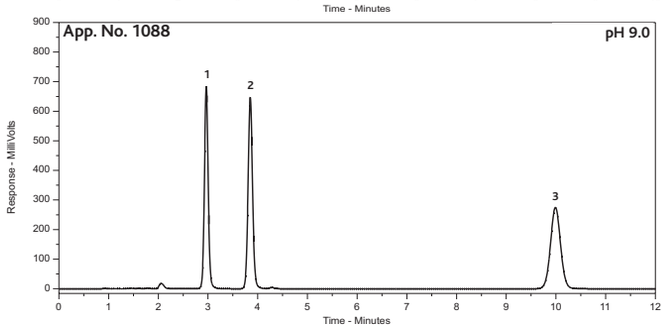

Ranitidine


Cimetidine









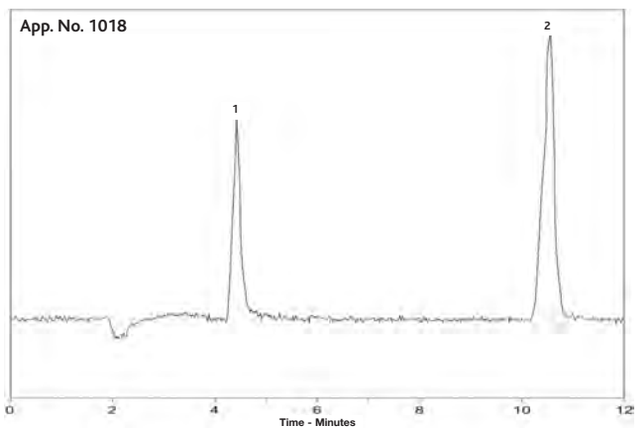
Organotin Compounds

Conditions

Column: ACE 3 C18, 150 x 2.1mm
Part Number: ACE-111-1502
Mobile Phase: 65:23:12:0.05 $MeCN/H_2O/CH_3CO_2H/TEA$
Flow Rate: 0.2ml/min
Detection: ICP-MS

Compounds

1. Dibutyltin
2. Tributyltin



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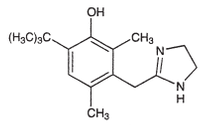
Oxymetazoline in Nasal Spray Formulation

Conditions

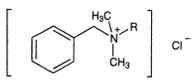
Column: ACE 5 CN, 150 x 4.6mm
Part Number: ACE-124-1546
Mobile Phase: 50:50 MeCN/ aqueous Na_2HPO_4, pH 7.0
Flow Rate: 1.5ml/min
Temperature: 30°C
Detection: UV, 214nm

Compounds

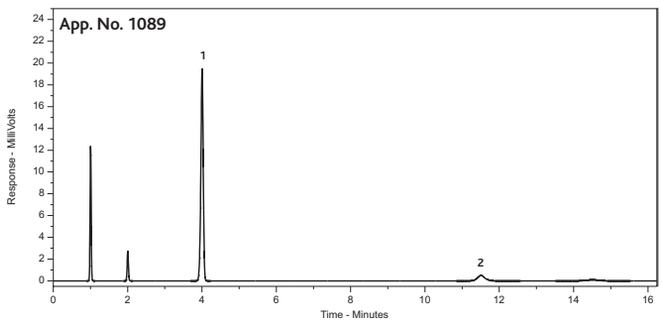
1. Oxymetazoline
2. Benzalkonium chloride



Oxymetazoline



Benzalkonium chloride



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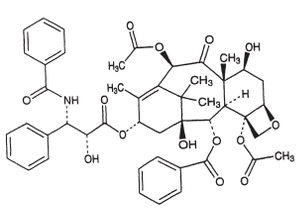
Paclitaxel

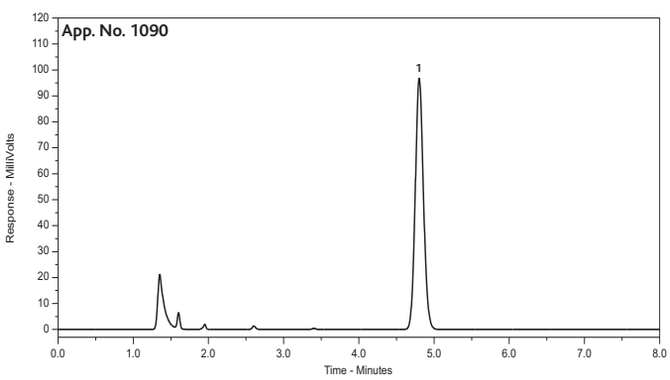
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 55:45 MeCN/ H_2O
Flow Rate: 1.0ml/min
Temperature: 40°C
Detection: UV, 227nm

Compounds

1. Paclitaxel (taxol)





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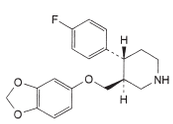
Paroxetine and Desfluoro Analogue

Conditions

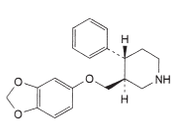
Column: ACE 5 CN, 150 x 4.6mm
Part Number: ACE-124-1546
Mobile Phase: 40:60 MeOH/H_2O containing 20mM HCO_2NH_4, pH 3.0
Flow Rate: 2.0ml/min
Temperature: Ambient
Detection: UV, 295nm
Injection Volume: 20µl (0.05mg/ml solution)

Compounds

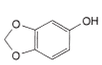
1. Sesamol
2. Desfluoroparoxetine
3. Paroxetine



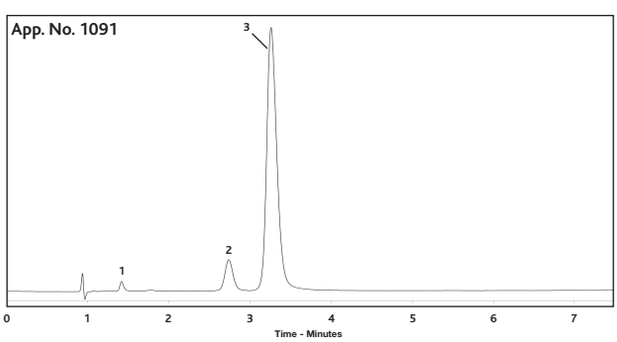
Paroxetine



Desfluoroparoxetine



Sesamol



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Peptides - Selectivity changes with bonded phase and mobile phase

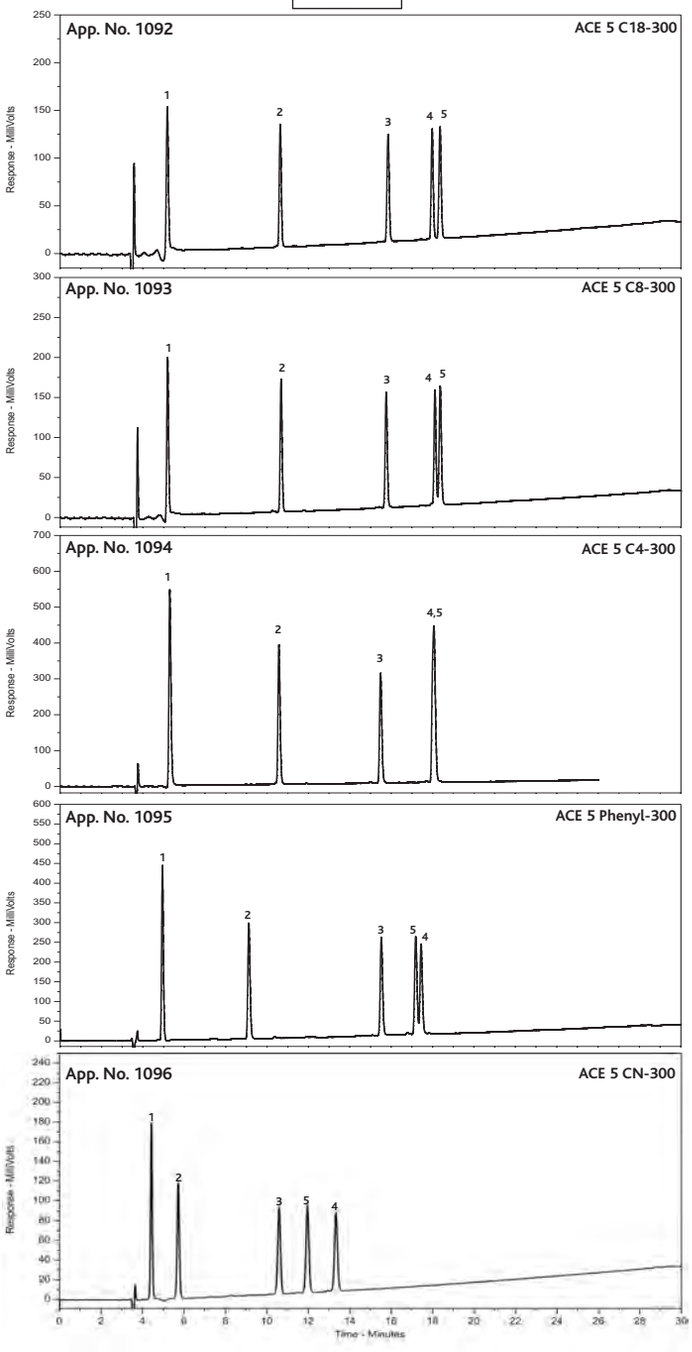
Conditions

Columns:	ACE 5 C18-300, ACE 5 C8-300, ACE 5 C4-300, ACE 5 Phenyl-300, ACE 5 CN-300		
Column Dimensions:	250 x 4.6mm		
Mobile Phase:	A: 0.1% TFA or 0.1% HCO_2H B: MeCN		
Flow Rate:	1.0ml/min		
Gradient:	T(mins)	%A	%B
	0	90	10
	25	60	40
Temperature:	Ambient		
Detection:	UV, 220nm		

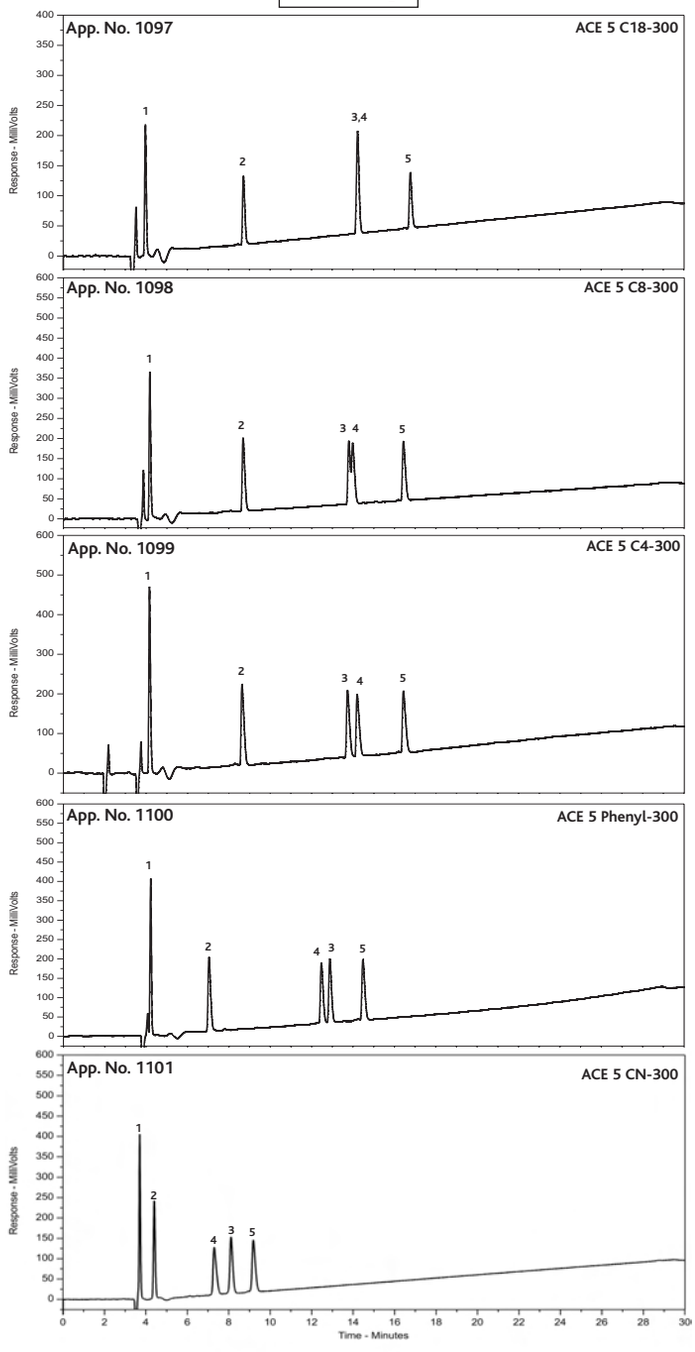
Compounds

1. Gly-Tyr
2. Val-Tyr-Val
3. Methionine enkephalin
4. Angiotensin II
5. Leucine enkephalin

0.1% TFA



0.1% HCO_2H



Peptides - Varying Mobile Phase

Conditions

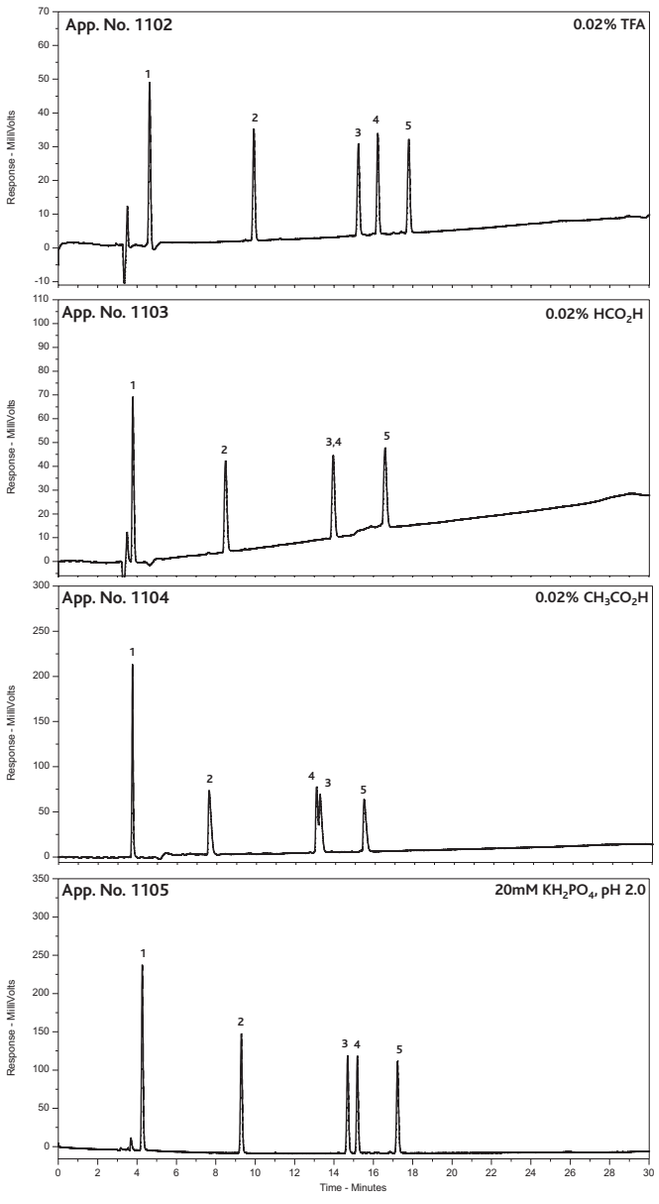
Column: ACE 5 C18-300
Part Number: ACE-221-2546
Column Dimensions: 250 x 4.6mm
Mobile Phase: A: Buffer as indicated
B: MeCN
Flow Rate: 1.0ml/min
Gradient:

T(mins)	%A	%B
0	90	10
25	60	40

Temperature: Ambient
Detection: UV, 220nm

Compounds

1. Gly-Tyr
2. Val-Tyr-Val
3. Methionine enkephalin
4. Angiotensin II
5. Leucine enkephalin



Peptides - Varying pH

Conditions

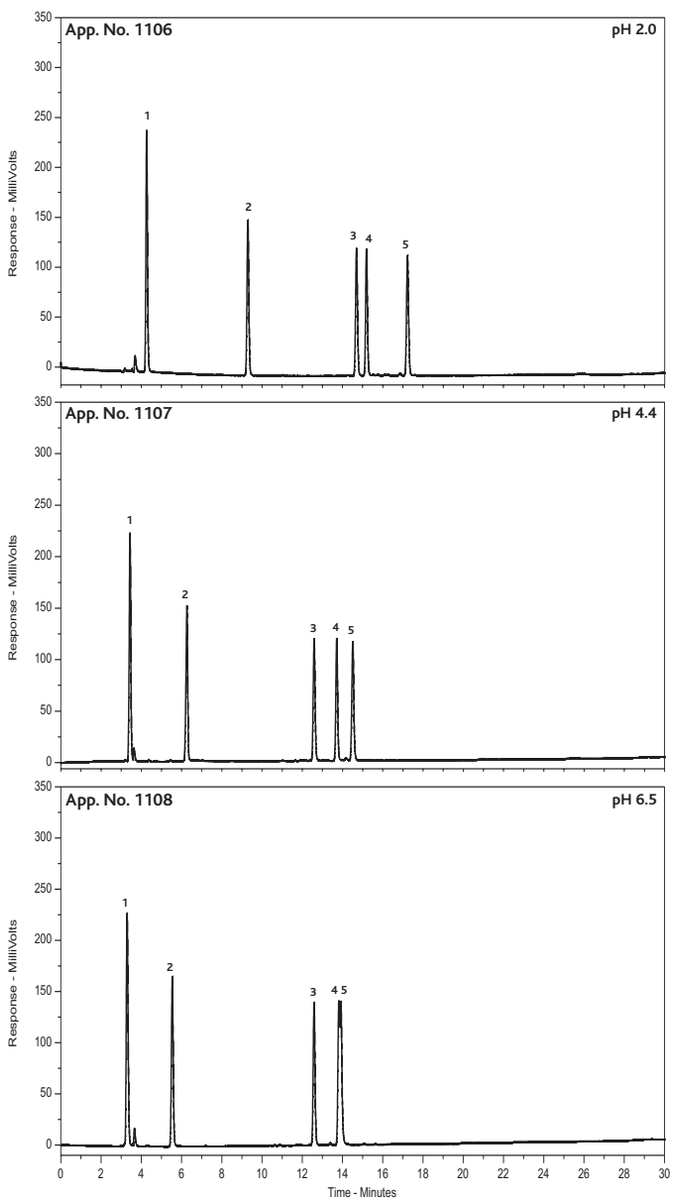
Column: ACE 5 C18-300
Part Number: ACE-221-2546
Column Dimensions: 250 x 4.6mm
Mobile Phase: A: 20mM KH_2PO_4, pH as indicated
B: MeCN
Flow Rate: 1.0ml/min
Gradient:

T(mins)	%A	%B
0	90	10
25	60	40

Temperature: Ambient
Detection: UV, 220nm

Compounds

1. Gly-Tyr
2. Val-Tyr-Val
3. Methionine enkephalin
4. Angiotensin II
5. Leucine enkephalin



Peptide Test Mix

Conditions

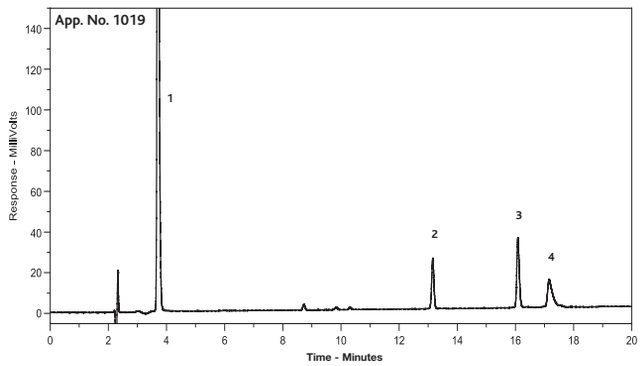
Column: ACE 5 C18-300, 250 x 4.6mm
Part Number: ACE-221-2546
Mobile Phase: A. 0.1% TFA in H_2O
B. 0.1% TFA in MeCN
Flow Rate: 1.0ml/min
Gradient:

T(mins)	%A	%B
0	90	10
25	60	40

Temperature: Ambient
Detection: UV, 220nm

Compounds

1. Gly-Tyr
2. Oxytocin
3. Angiotensin II
4. Neurotensin



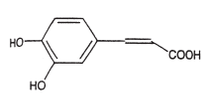
Phenolic acids

Conditions

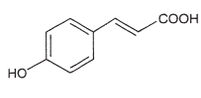
Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 20:80 MeCN/0.1% HCO_2H
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 1µl

Compounds

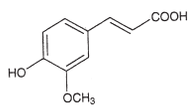
1. Caffeic acid
2. p-Coumaric acid
3. Ferulic acid



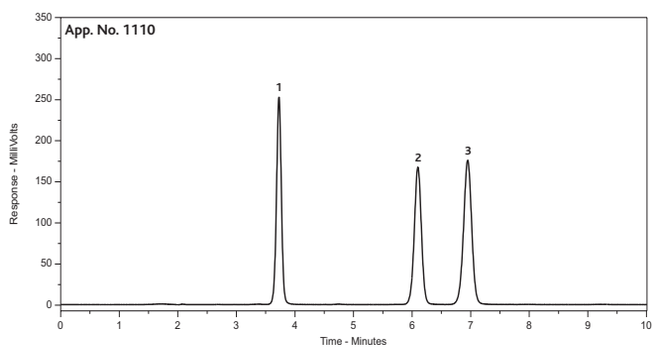
Caffeic acid



p-Coumaric acid



Ferulic acid



Pesticides in Water

Conditions

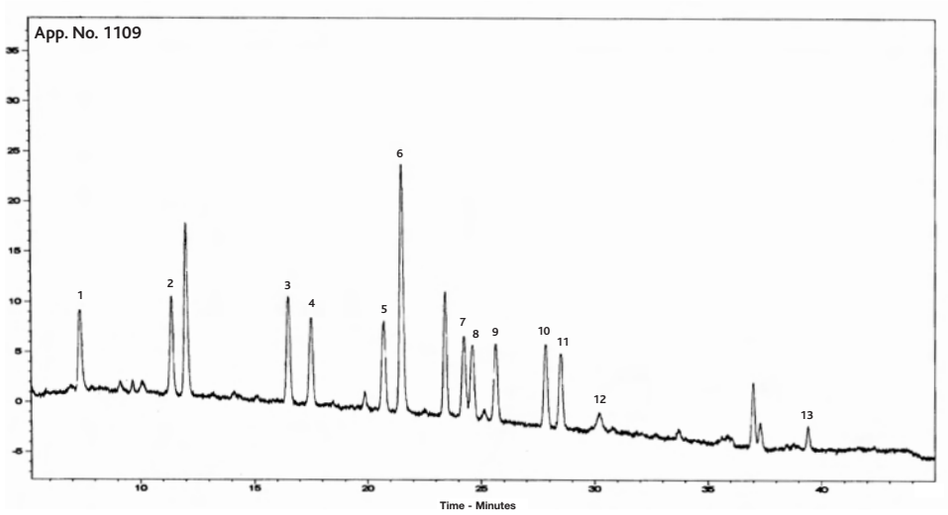
Column: ACE 3 C18, 150 x 2.1mm
Part Number: ACE-111-1502
Mobile Phase: A: 0.1M CH_3COONH_4
B: MeCN
Flow Rate: 0.3ml/min
Gradient:

T(mins)	%A	%B
0	90	10
40	20	80
47	10	90
49	90	10

Temperature: 40°C
Detection: UV, 220nm (pendimethalin at 245nm)
Injection Volume: 25µl
Sample: 0.05µg/l standards in 10:90 MeCN/H_2O

Compounds

1. Desisopropylatrazine
2. Desethylatrazine
3. Simazine
4. Cyanazine
5. Atrazine
6. Internal standard
7. Sebuthylazine
8. Propazine
9. Terbuthylazine
10. Prometryn
11. Terbutryn
12. Alachlor
13. Pendimethalin



Phenols in Purple Coneflower *(Echinacea Purpurea)*

Conditions

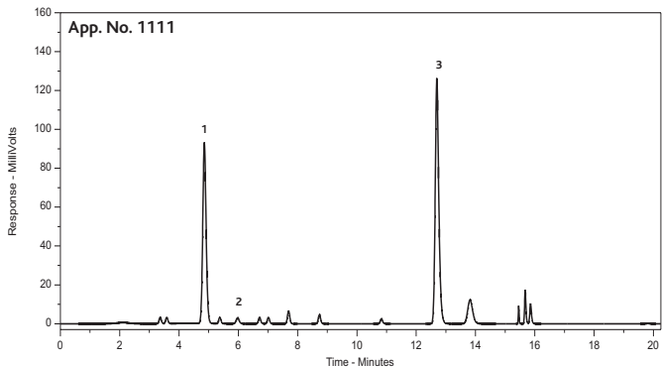
Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.1% H_3PO_4 in H_2O
B: MeCN
Flow Rate: 1.5ml/min
Gradient:

T(mins)	%A	%B
0	90	10
13	78	22
14	60	40

Temperature: 35°C
Detection: UV, 330nm
Injection Volume: 10µl

Compounds

1. Caftaric acid
2. Chlorogenic acid
3. Cichoric acid



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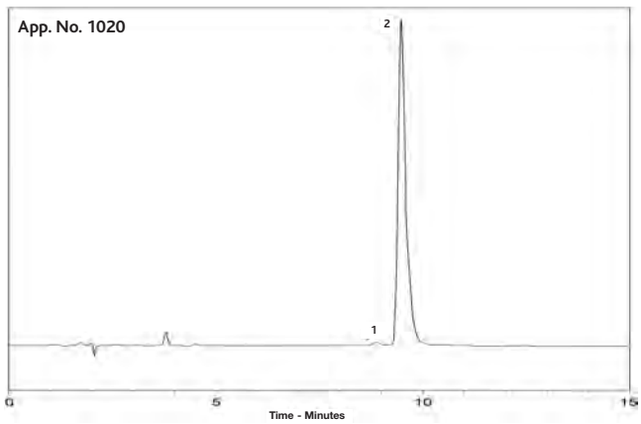
Pilocarpine

Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 15:85 MeCN/2mM tetrabutylammonium dihydrogen phosphate
Flow Rate: 1.0ml/min
Detection: UV, 254nm

Compounds

1. Isopilocarpine
2. Pilocarpine



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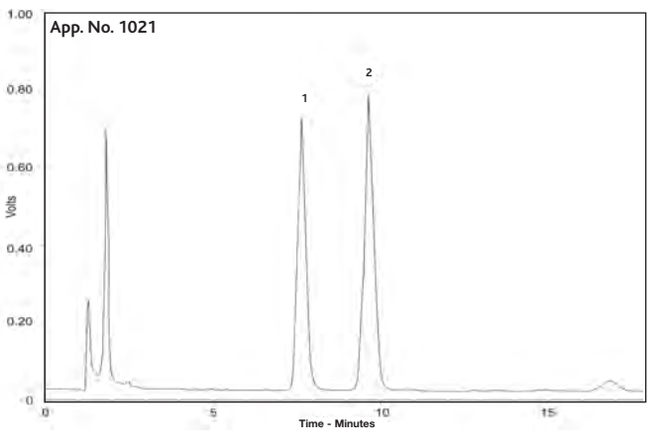
Polyamines

Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 90:10 MeOH/TRIS buffer (pH 7.0)
Flow Rate: 1.2ml/min
Detection: Fluorescence - λex 340nm
λex 450nm

Compounds

1. Putrescine
2. Cadaverine
(as OPA derivatives)



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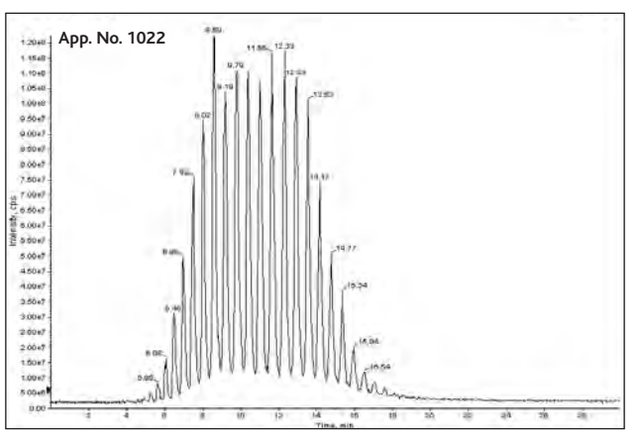
Polyethylene Glycol 1000

Conditions

Column: ACE 3 C8, 150 x 4.6mm
Part Number: ACE-112-1546
Mobile Phase: A. 0.1% HCO_2H in H_2O B. MeOH
Flow Rate: 1.0ml/min
Gradient:

T(mins)	0	45	50	60
%A	50	15	50	50
%B	50	85	50	50

Detection: APCI (negative ion)



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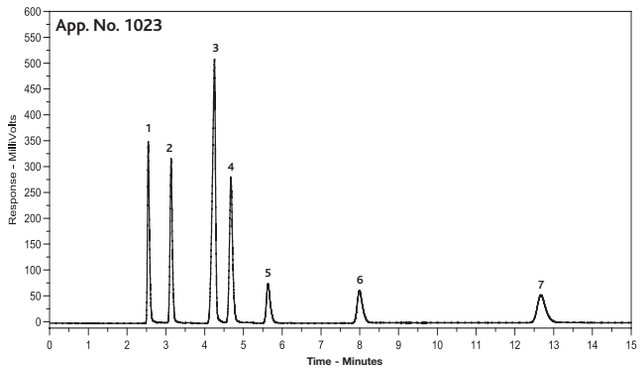
Preservatives

Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	40:60 MeCN/50mM KH_2PO_4 (pH 4.4)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 230nm

Compounds

1. Phthalic acid
2. p-Hydroxybenzoic acid
3. Benzoic acid
4. Sorbic acid
5. Methyl paraben
6. Ethyl paraben
7. Propyl paraben



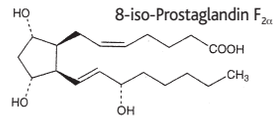
Prostaglandins

Conditions

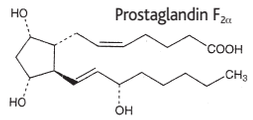
Column:	ACE 3 C18, 50 x 2.1mm			
Part Number:	ACE-111-0502			
Mobile Phase:	A: H_2O B: MeOH C: MeCN			
Flow Rate:	0.2ml/min			
Gradient:	T(mins)	%A	%B	%C
	0	70	20	10
	9	10	60	30
	10	0.1	66.6	33.3
Temperature:	40°C			
Detection:	ESI (-) MS/MS			
Injection Volume:	10µl			

Compounds

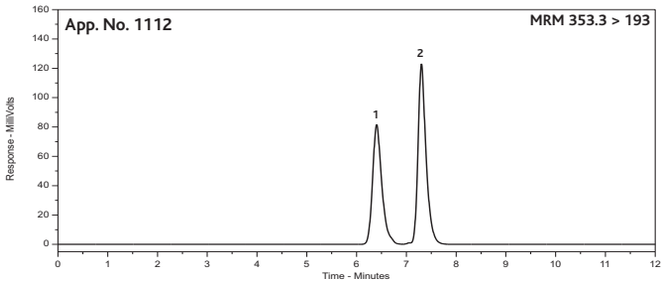
1. 8-iso-Prostaglandin $F_{2\alpha}$
2. Prostaglandin $F_{2\alpha}$



8-iso-Prostaglandin $F_{2\alpha}$



Prostaglandin $F_{2\alpha}$



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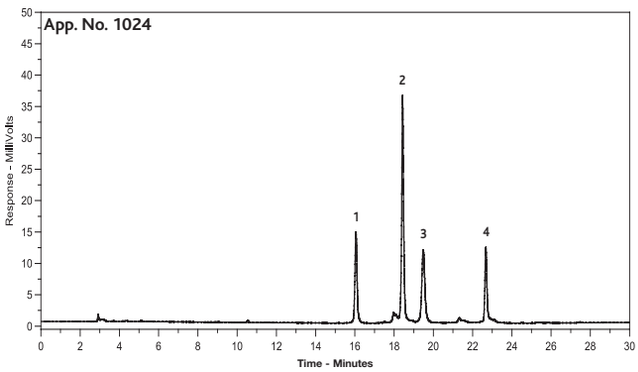
Protein Test Mix

Conditions

Column:	ACE 5 C18-300, 250 x 4.6mm		
Part Number:	ACE-221-2546		
Mobile Phase:	A. 0.1% TFA in H_2O		
	B. 0.1% TFA in MeCN		
Flow Rate:	1.0ml/min		
Gradient:	T(mins)	%A	%B
	0	95	5
	30	30	70
Temperature:	Ambient		
Detection:	UV, 280nm		

Compounds

1. Ribonuclease A
2. Cytochrome C
3. Holo-transferrin
4. Apomyoglobin



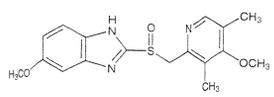
Proton Pump Inhibitors (PPIs)

Conditions

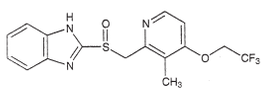
Column:	ACE 5 C18, 150 x 4.6mm
Part Number:	ACE-121-1546
Mobile Phase:	35:65 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm

Compounds

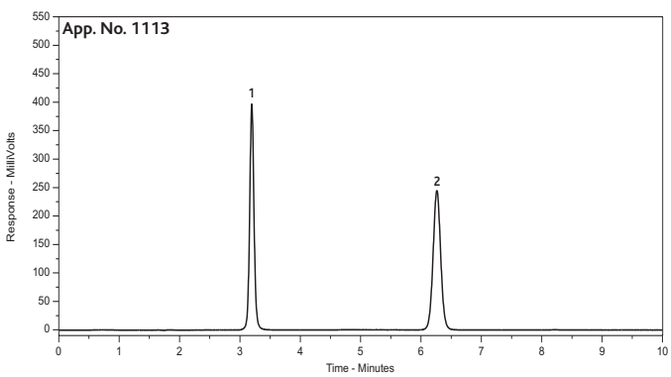
1. Omeprazole
2. Lansoprazole



Omeprazole



Lansoprazole

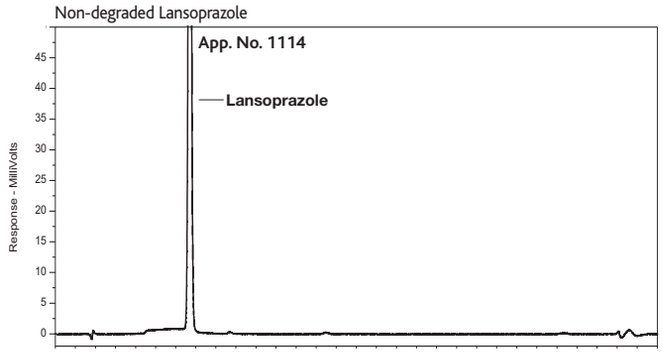


PPI - Lansoprazole Degradation Studies

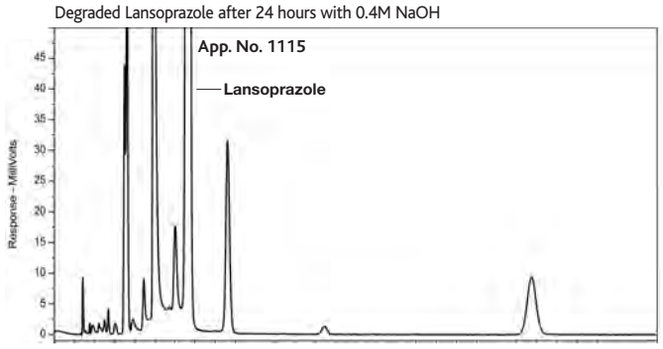
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 33:67 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm

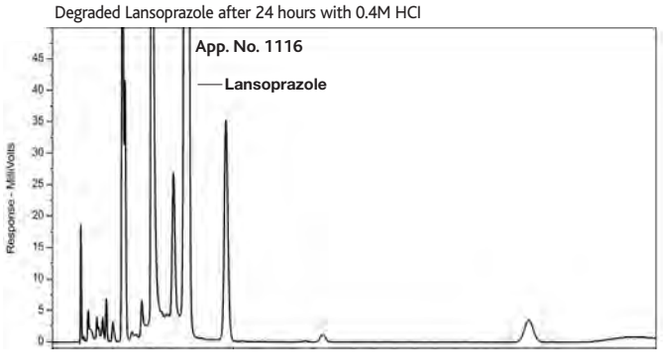
Non-degraded Lansoprazole



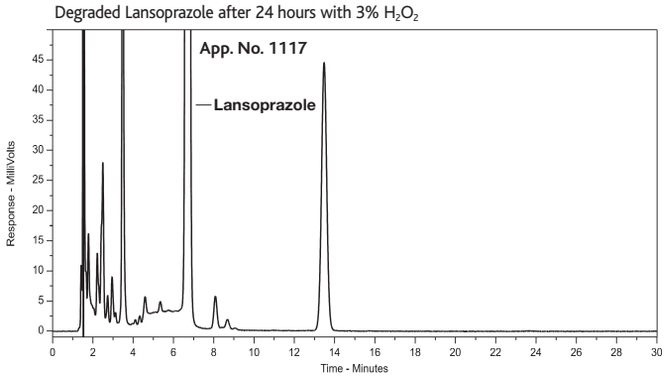
Degraded Lansoprazole after 24 hours with 0.4M NaOH



Degraded Lansoprazole after 24 hours with 0.4M HCl



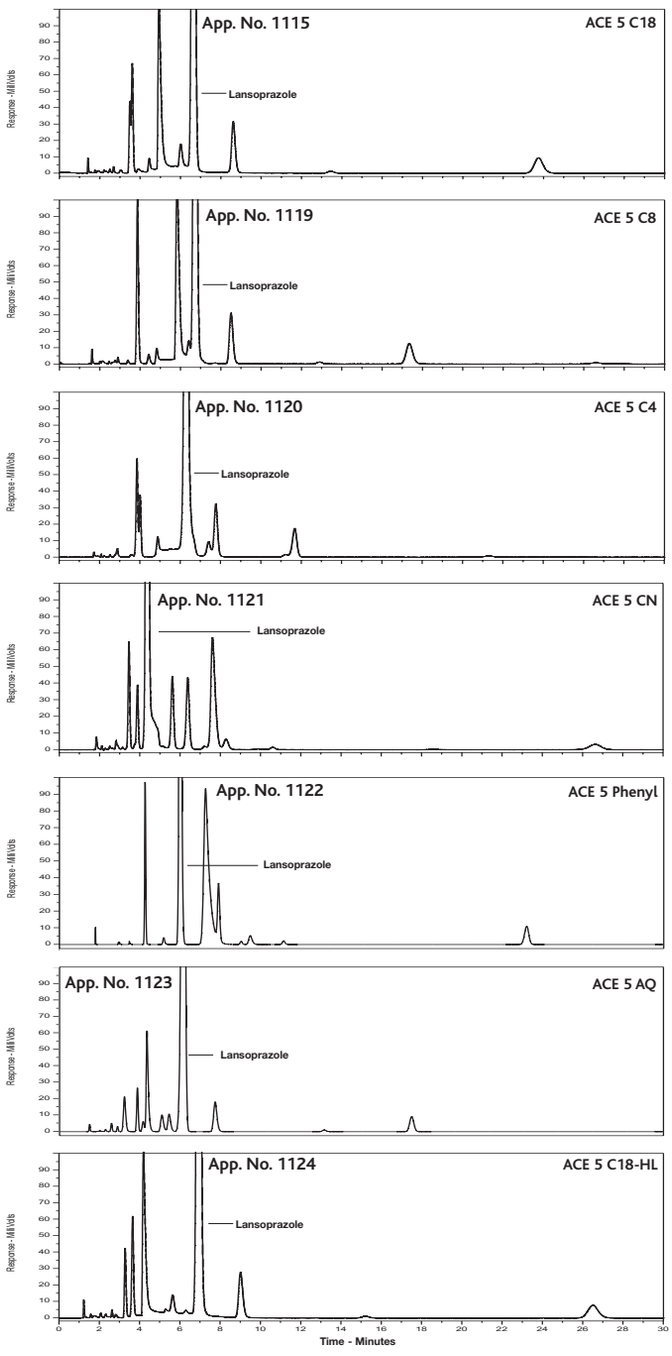
Degraded Lansoprazole after 24 hours with 3% H_2O_2



PPI - Lansoprazole Degradation Studies - Bonded Phase Effects

Conditions

Column: ACE 5 C18, ACE 5 C8, ACE 5 C4, ACE 5 CN, ACE 5 Phenyl, ACE 5 AQ, ACE 5 C18-HL
Column Dimensions: 150 x 4.6mm
Mobile Phase: 33:67 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Sample: Degraded Lansoprazole (24 hours with 0.4M NaOH)



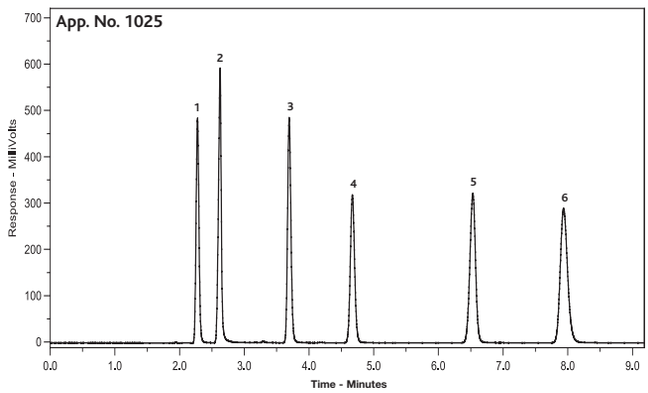
Selectivity Test Mix

Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	60:40 MeCN/50mM KH_2PO_4 (pH 3.2)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm

Compounds

1. Uracil
2. Pyridine
3. Phenol
4. Dimethyl phthalate
5. N,N-Dimethylaniline
6. 4-Butylbenzoic acid



Selectivity Test Mix - High Throughput Analysis

Conditions (a)

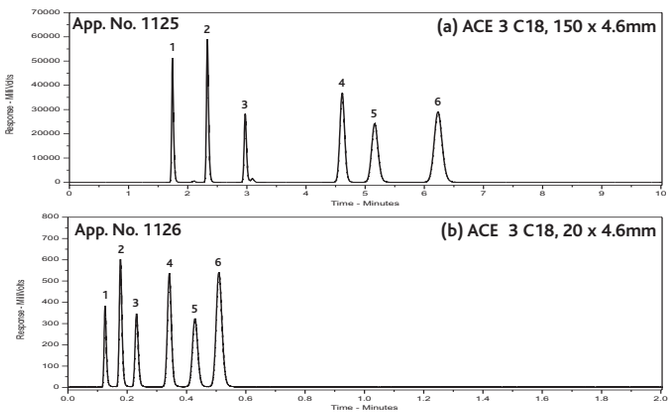
Column:	ACE 3 C18, 150 x 4.6mm
Part Number:	ACE-111-1546
Mobile Phase:	60:40 MeCN/10mM HCO_2NH_4 (pH 3.2)
Flow Rate:	1.0ml/min
Temperature:	23°C
Detection:	UV, 254nm

Conditions (b)

Column:	ACE 3 C18, 20 x 4.6mm
Part Number:	ACE-111-0246
Mobile Phase:	56.5:43.5 MeCN/10mM HCO_2NH_4 (pH 3.2)
Flow Rate:	2.0ml/min
Temperature:	23°C
Detection:	UV, 254nm

Compounds

1. Pyridine
2. Phenol
3. Dimethyl phthalate
4. N,N-Dimethylaniline
5. 4-Butylbenzoic acid
6. Toluene



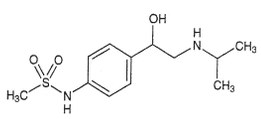
Sotalol

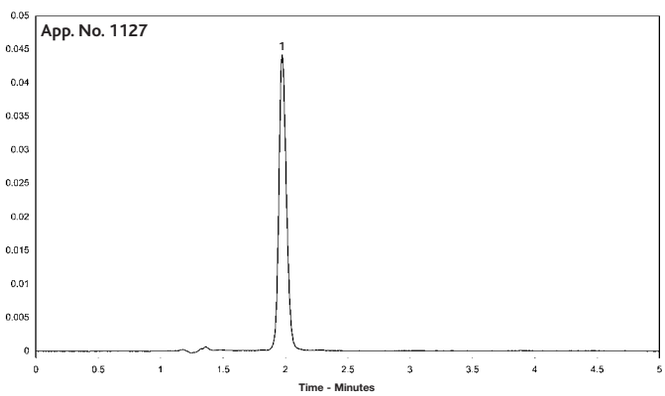
Conditions

Column:	ACE 5 CN, 150 x 4.6mm
Part Number:	ACE-124-1546
Mobile Phase:	15:85 MeOH/H_2O containing 20mM HCO_2NH_4, pH 3.0 with HCO_2H
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm
Injection Volume:	20µl (0.2mg/ml solution)

Compounds

1. Sotalol





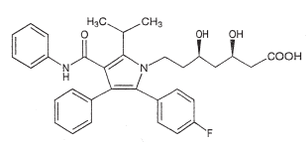
Statins - Atorvastatin

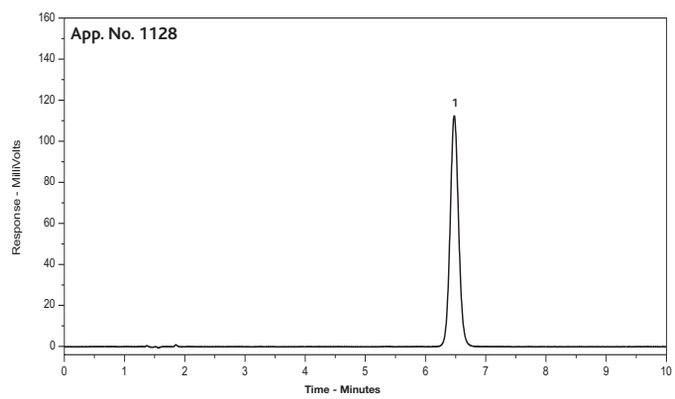
Conditions

Column:	ACE 5 C18, 150 x 4.6mm
Part Number:	ACE-121-1546
Mobile Phase:	53:47 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm
Injection Volume:	5µl

Compounds

1. Atorvastatin





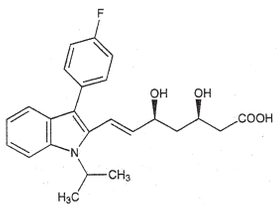
Statins - Fluvastatin

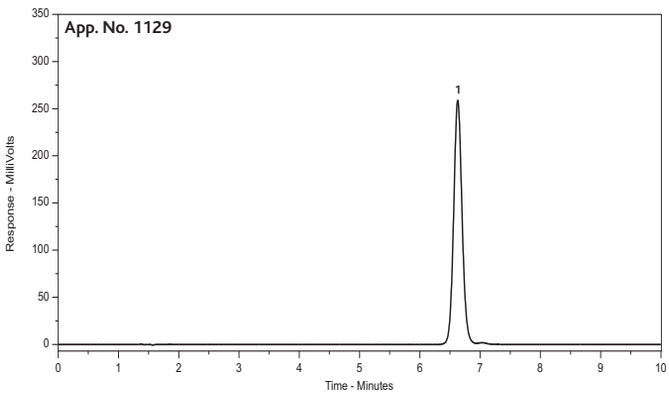
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 53:47 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 5µl

Compounds

1. Fluvastatin





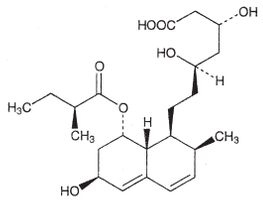
Statins - Pravastatin

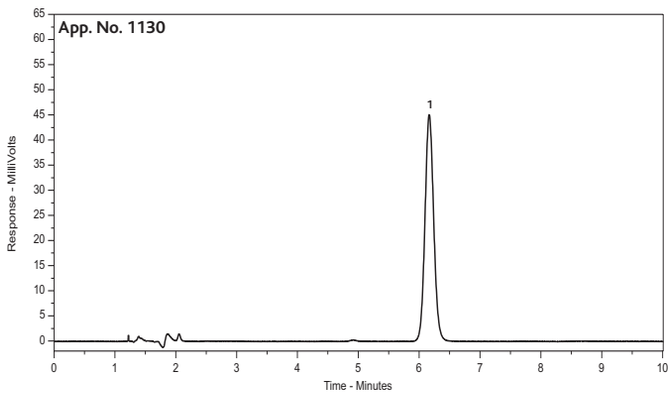
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 32:68 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 5µl

Compounds

1. Pravastatin





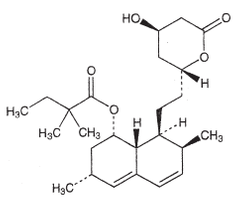
Statins - Simvastatin

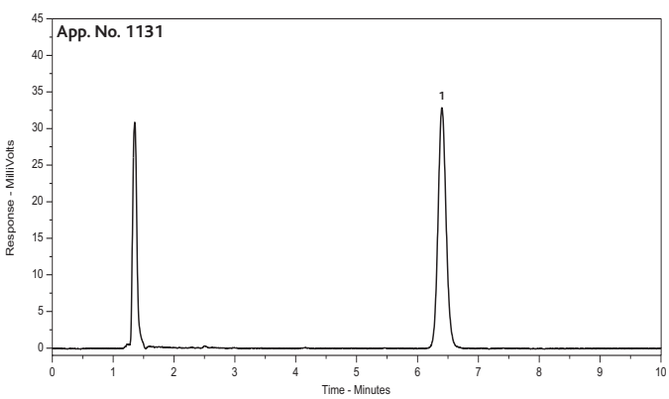
Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 75:25 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 5µl

Compounds

1. Simvastatin





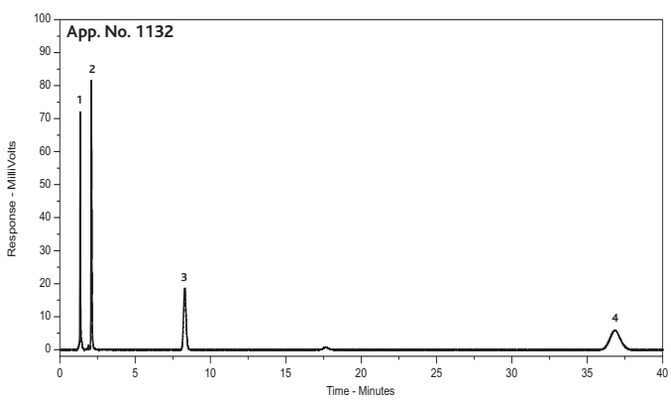
Statin Mixture

Conditions

Column: ACE 5 C18, 150 x 4.6mm
Part Number: ACE-121-1546
Mobile Phase: 50:50 MeCN/10mM HCO_2NH_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 254nm
Injection Volume: 5µl

Compounds

1. Impurity
2. Pravastatin
3. Atorvastatin
4. Simvastatin



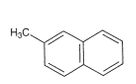
Substituted Naphthalenes

Conditions

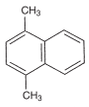
Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	51:49 MeCN/H_2O
Flow Rate:	1.5ml/min
Temperature:	18°C
Detection:	UV, 225nm

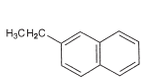
Compounds

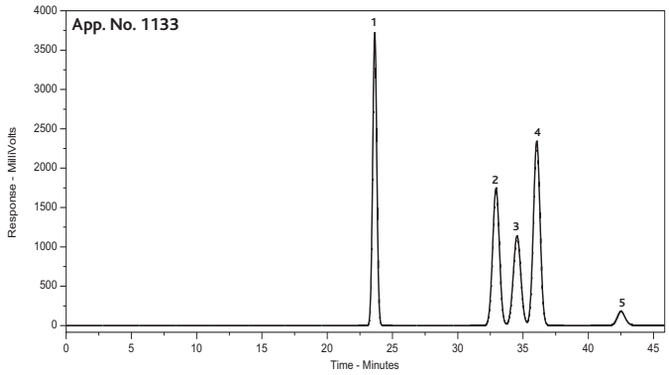
1. 2-Methylnaphthalene
2. 1-Ethylnaphthalene
3. 1,4-Dimethylnaphthalene
4. 2-Ethylnaphthalene
5. n-Butylbenzene


2-Methylnaphthalene


1-Ethylnaphthalene


1,4-Dimethylnaphthalene


2-Ethylnaphthalene



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Telithromycin

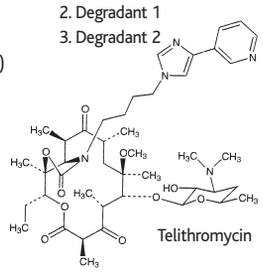
Analysis of telithromycin after 1 hour exposure to 3% H_2O_2

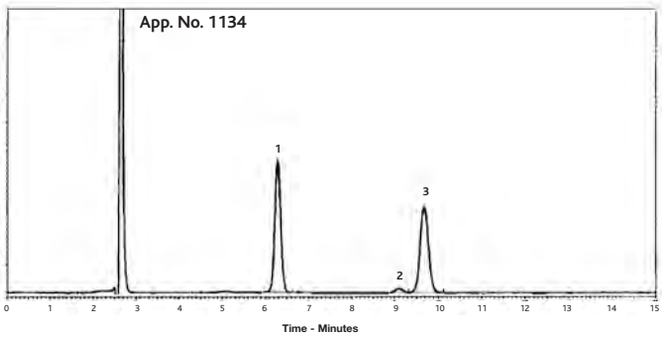
Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	55:45 MeOH/0.05M phosphate buffer (pH 4.0)
Flow Rate:	1.0ml/min
Temperature:	50°C
Detection:	UV, 265nm
Injection Volume:	20µl

Compounds

1. Telithromycin
2. Degradant 1
3. Degradant 2


Telithromycin



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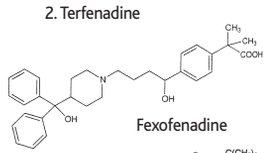
Terfenadine and Fexofenadine in Rat Plasma

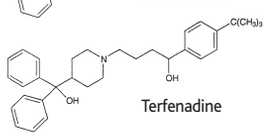
Conditions

Column:	ACE 5 AQ, 50 x 3.0mm
Part Number:	ACE-126-0503
Mobile Phase:	A: 0.1% HCO_2H B: MeOH
Flow Rate:	1.0ml/min
Gradient:	T(mins) %A %B 0 90 10 1.5 10 90 2.0 10 90 3.0 90 10
Temperature:	Ambient
Detection:	Turbo IonSpray MS/MS (+ve) m/z 502.3 ➛466.3 for fexofenadine m/z 472.3 ➛436.3 for terfenadine
Injection Volume:	10µl

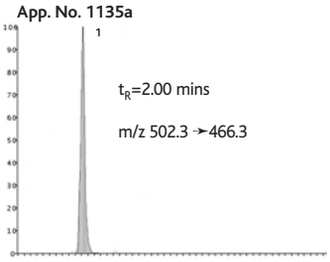
Compounds

1. Fexofenadine
2. Terfenadine

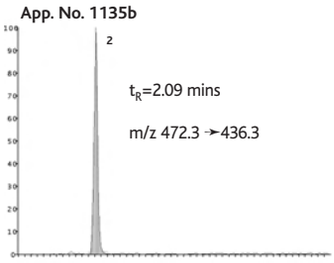

Fexofenadine


Terfenadine

App. No. 1135a



App. No. 1135b



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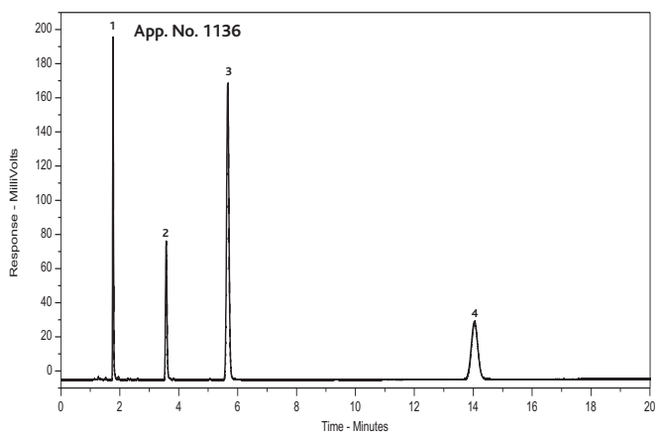
Test Mix - Dolan 1

Conditions

Column:	ACE 3 C18, 150 x 4.6mm
Part Number:	ACE-111-1546
Mobile Phase:	50:50 MeCN/60mM KH_2PO_4 (pH 2.8)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 215nm

Compounds

1. Diethylacetamide
2. Anisole
3. Acetophenone
4. Ethylbenzene



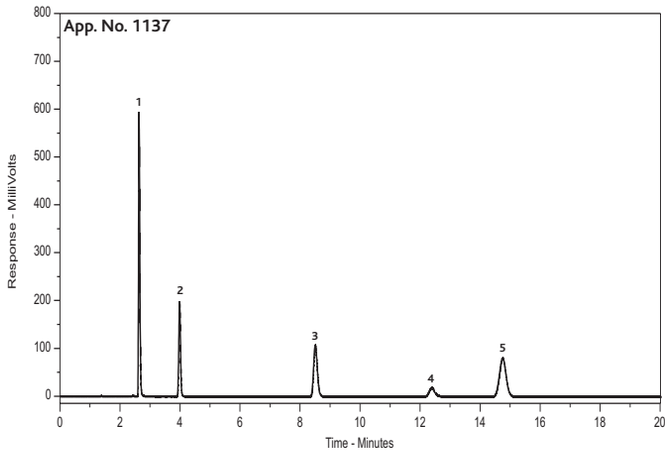
Test Mix - Dolan 2

Conditions

Column:	ACE 3 C18, 150 x 4.6mm
Part Number:	ACE-111-1546
Mobile Phase:	50:50 MeCN/60mM KH_2PO_4 (pH 2.8)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 215nm

Compounds

1. Amitriptyline
2. Benzonitrile
3. Butylbenzoic acid
4. cis-Chalcone
5. trans-Chalcone



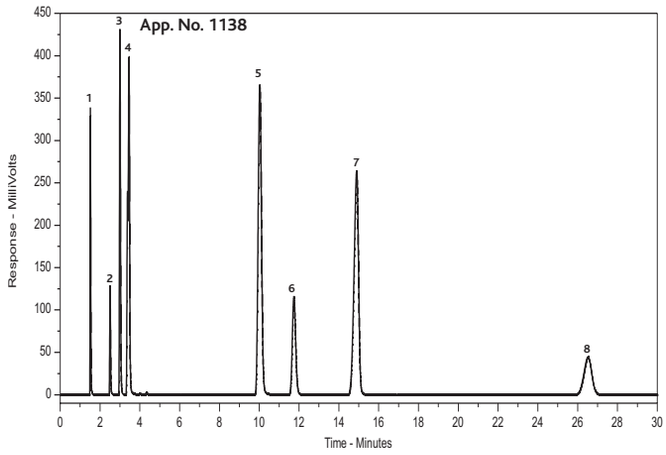
Test Mix - Engelhardt

Conditions

Column:	ACE 3 C18, 150 x 4.6mm
Part Number:	ACE-111-1546
Mobile Phase:	55:45 MeOH/H_2O
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 254nm

Compounds

1. Thiourea
2. Aniline
3. Phenol
4. Toluidine (o,m,p combined)
5. Dimethylaniline
6. Ethyl benzoate
7. Toluene
8. Ethylbenzene



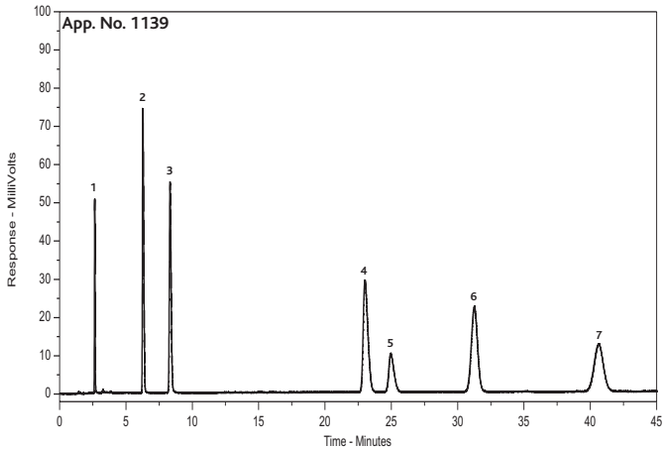
Test Mix - Euerby

Conditions

Column:	ACE 3 C18, 150 x 4.6mm
Part Number:	ACE-111-1546
Mobile Phase:	5:95 MeOH/20mM KH_2PO_4 (pH 2.7)
Flow Rate:	1.0ml/min
Temperature:	Ambient
Detection:	UV, 210nm

Compounds

1. Nicotine
2. Benzylamine
3. Procainamide
4. Terbutaline
5. Salbutamol
6. Phenol
7. Benzyl alcohol



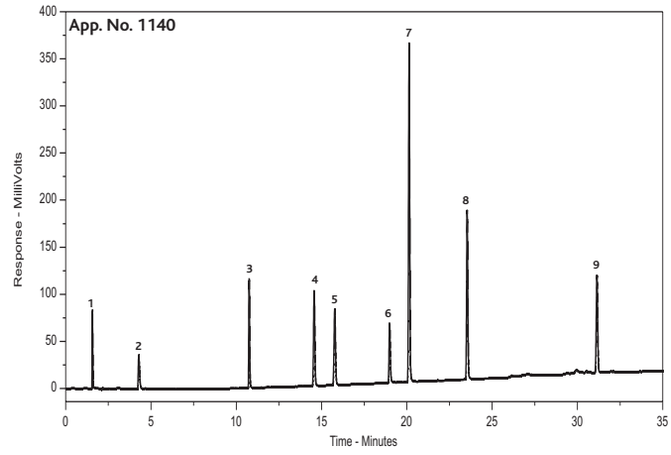
Test Mix - Mutton

Conditions

Column:	ACE 3 C18, 150 x 4.6mm		
Part Number:	ACE-111-1546		
Mobile Phase:	A: 0.1% H_3PO_4 in H_2O		
	B: 0.1% H_3PO_4 in MeCN		
Gradient:	T(mins)	%A	%B
	0	95	5
	35	0	100
Flow Rate:	1.0ml/min		
Temperature:	Ambient		
Detection:	UV, 215nm		

Compounds

1. Pyridine
2. Benzylamine
3. n-Acetylprocainamide
4. Benzyl alcohol
5. Phenol
6. 4-Nitrobenzoic acid
7. 2,3-Dihydroxynaphthalene
8. 4-Chlorocinnamic acid
9. Diphenyl ether



Testosterone

Conditions

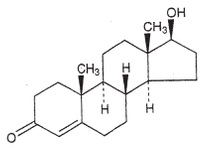
Column: ACE 5 C18, 150 x 0.075mm
Part Number: ACE-121-1500075
Mobile Phase: A: 10:90 0.1% HCO_2H in MeCN/0.1% HCO_2H in H_2O
B: 90:10 0.1% HCO_2H in MeCN/0.1% HCO_2H in H_2O
Flow Rate: 1.0µl/min
Gradient:

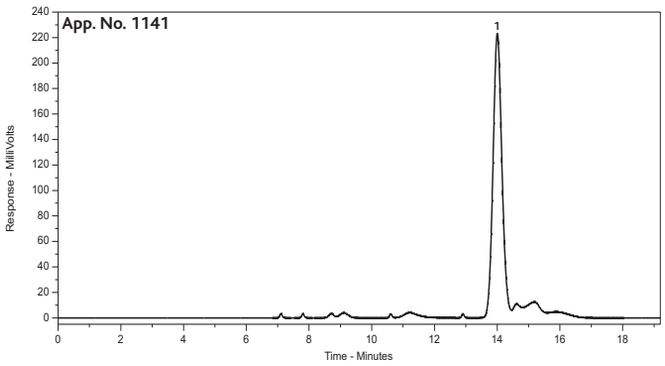
Time	%A	%B
0	60	40
5	60	40
30	5	95

Temperature: Ambient
Detection: ESI (+) MS/MS

Compounds

1. Testosterone





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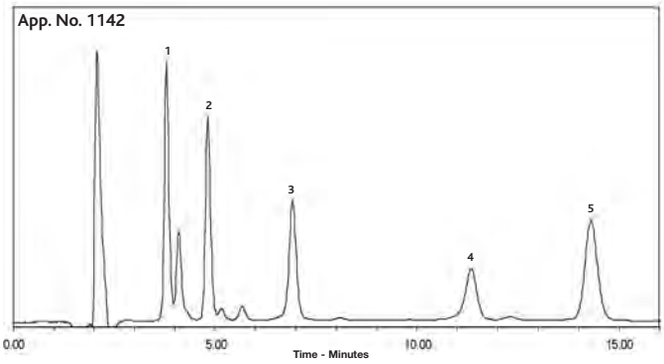
Tetracyclines

Conditions

Column: ACE 5 C18, 150 x 3.0mm
Part Number: ACE-121-1503
Mobile Phase: 20:80 MeCN/10mM oxalic acid (pH 2.9)
Flow Rate: 0.5ml/min
Temperature: Ambient
Detection: UV/VIS, 350nm
Injection Volume: 20µl

Compounds

1. Oxytetracycline
2. Tetracycline
3. Demeclocycline
4. Chlortetracycline
5. Doxycycline



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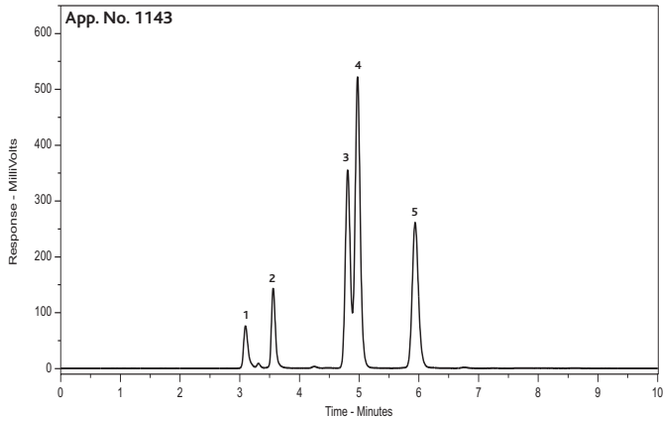
Tocopherols

Conditions

Column: ACE 5 SIL, 250 x 4.6mm
Part Number: ACE-127-2546
Mobile Phase: 98:2 Hexane/IPA
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV/VIS, 450nm
Injection Volume: 1µl

Compounds

1. gamma-Tocopherol
2. alpha-Tocopherol
3. beta-Tocopherol
4. beta-Tocopherol
5. delta-Tocopherol



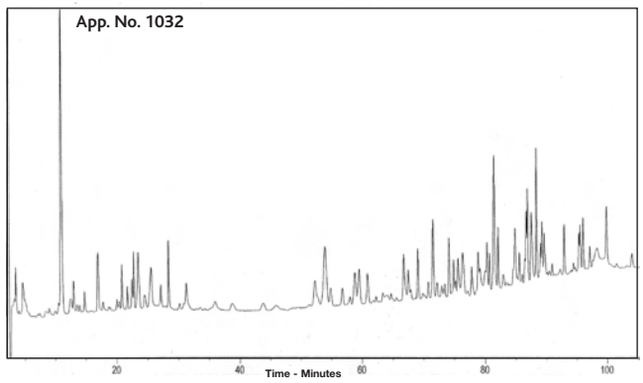
Tryptic Digest of BSA

Conditions

Column: ACE 5 C18-300, 150 x 4.6mm
Part Number: ACE-221-1546
Mobile Phase: A. 1% TFA in H_2O
B. 50:50 1% TFA in MeCN/H_2O
Flow Rate: 1.0ml/min
Gradient:

T(mins)	0	5	25	45	75	95	115	120
%A	96	96	80	80	60	35	30	96
%B	4	4	20	20	40	65	70	4

Temperature: Ambient
Detection: UV, 214nm



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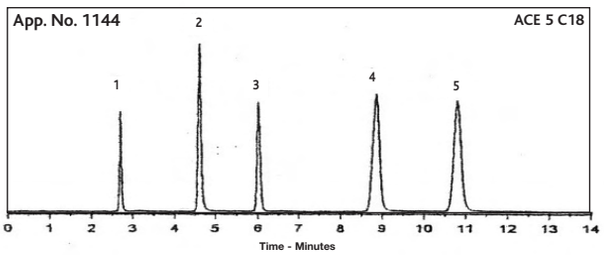
Tricyclic Antidepressants – Bonded Phase Effects

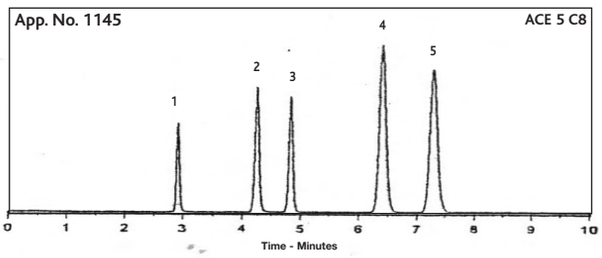
Conditions

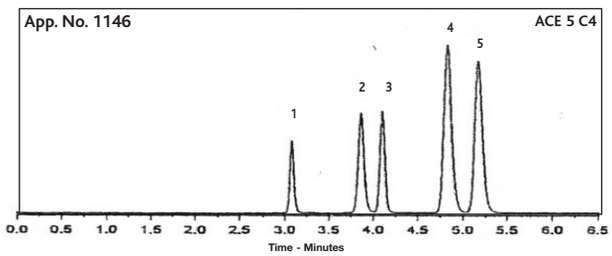
Columns:	ACE 5 C18, ACE 5 C8, ACE 5 C4, ACE 5 CN and ACE 5 Phenyl
Column Dimensions:	250 x 4.6mm
Mobile Phase:	80:20 MeOH/25mM KH_2PO_4 (pH 6.0)
Flow Rate:	1.0ml/min
Temperature:	22°C
Detection:	UV, 215nm

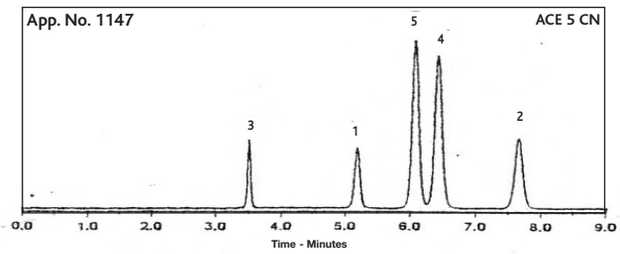
Compounds

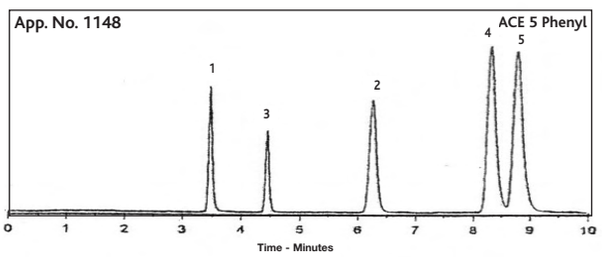
1. Norephedrine
2. Nortriptyline
3. Toluene
4. Imipramine
5. Amitriptyline











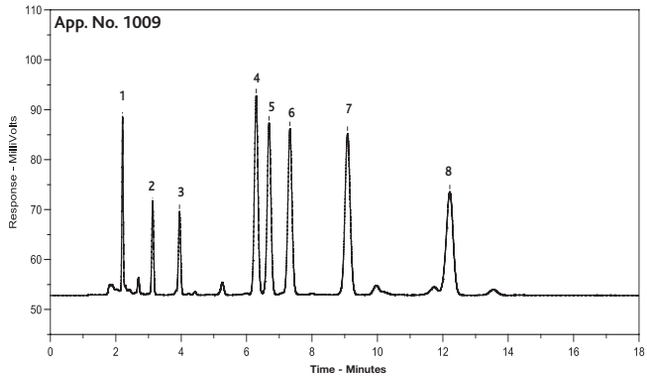
Vitamins – Fat Soluble

Conditions

Column:	ACE 5 C18, 250 x 4.6mm
Part Number:	ACE-121-2546
Mobile Phase:	MeOH
Flow Rate:	1.5ml/min
Temperature:	30°C
Detection:	UV, 280nm

Compounds

1. Vitamin K3
2. Vitamin A
3. Vitamin A acetate
4. Vitamin D2
5. Vitamin D3
6. Vitamin E
7. Vitamin E acetate
8. Vitamin K1



FREE HPLC Technical Guides

- HPLC Column Comparison Guide
- HPLC Protein and Peptide Guide
- HPLC & LC-MS Buffer Selection Guide
- HPLC Troubleshooting Guide

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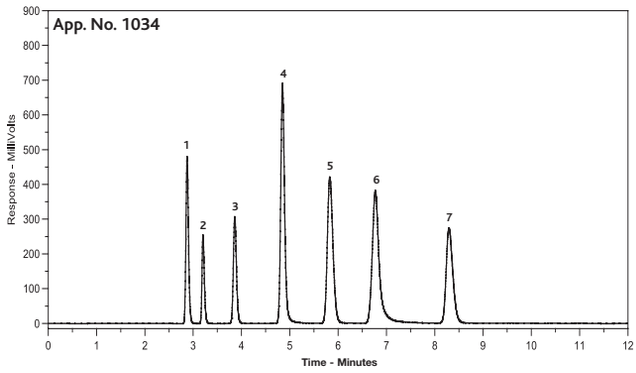
Vitamins – Water Soluble (Isocratic)

Conditions

Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: 3:97 MeOH/50mM KH_2PO_4 (pH 3.0)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 205nm

Compounds

1. Pyridoxamine
2. Thiamine (Vitamin B1)
3. L-Ascorbic acid (Vitamin C)
4. Nicotinic acid
5. Pyridoxal
6. Impurity
7. Pyridoxine



Vitamins – Water Soluble (Gradient)

Conditions

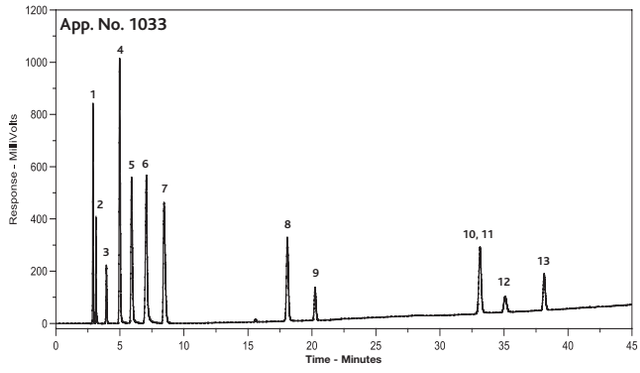
Column: ACE 5 C18, 250 x 4.6mm
Part Number: ACE-121-2546
Mobile Phase: A. 50mM KH_2PO_4 (pH 3.0)
B. MeOH
Flow Rate: 1.0ml/min
Gradient:

T(mins)	%A	%B
0	97	3
5	97	3
45	55	45
50	20	80

Temperature: Ambient
Detection: UV, 205nm

Compounds

1. Pyridoxamine
2. Thiamine (Vitamin B1)
3. L-Ascorbic acid (Vitamin C)
4. Nicotinic acid
5. Pyridoxal
6. Impurity
7. Pyridoxine
8. p-Aminobenzoic acid
9. Pantothenic acid (Vitamin B5)
10. Folic acid (Vitamin M)
11. Cyanocobalamin (Vitamin B12)
12. d-Biotin (Vitamin H)
13. Riboflavin (Vitamin B2)



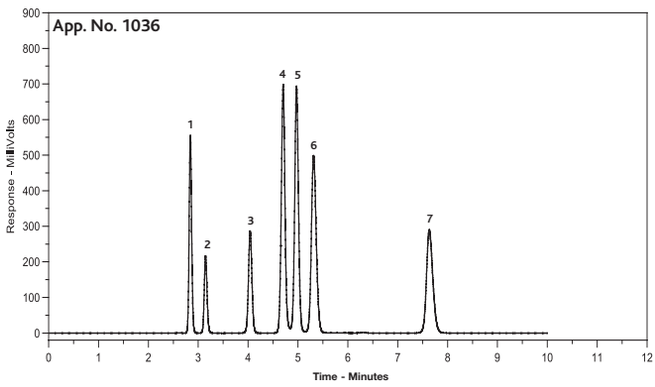
Vitamins – Water Soluble (Isocratic)

Conditions

Column: ACE 5 C8, 250 x 4.6mm
Part Number: ACE-122-2546
Mobile Phase: 3:97 MeOH/50mM KH_2PO_4 (pH 2.5)
Flow Rate: 1.0ml/min
Temperature: Ambient
Detection: UV, 205nm

Compounds

1. Pyridoxamine
2. Thiamine (Vitamin B1)
3. L-Ascorbic acid (Vitamin C)
4. Niacinamide (Vitamin B3)
5. Pyridoxal
6. Nicotinic acid
7. Pyridoxine



Vitamins – Water Soluble (Gradient)

Conditions

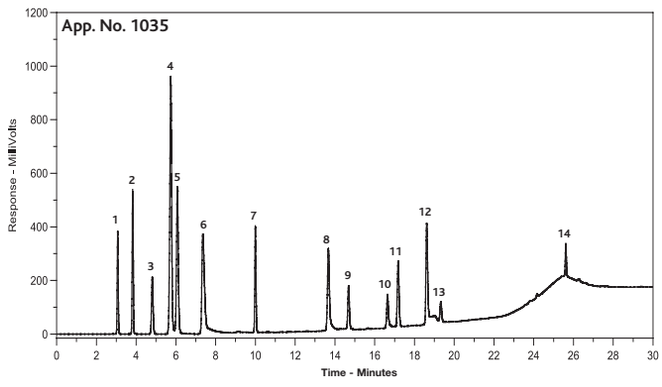
Column: ACE 5 C8, 250 x 4.6mm
Part Number: ACE-122-2546
Mobile Phase: A. 50mM KH_2PO_4 (pH 2.5)
B. MeOH
Flow Rate: 1.0ml/min
Gradient:

T(mins)	0	3	16.5	19.5
%A	100	100	55	20
%B	0	0	45	80

Temperature: Ambient
Detection: UV, 205nm

Compounds

1. Pyridoxamine
2. Thiamine (Vitamin B1)
3. L-Ascorbic acid (Vitamin C)
4. Niacinamide (Vitamin B3)
5. Nicotinic acid
6. Pyridoxal
7. Pyridoxine
8. p-Aminobenzoic acid
9. Pantothenic acid (Vitamin B5)
10. Folic acid (Vitamin M)
11. Cyanocobalamin (Vitamin B12)
12. Riboflavin (Vitamin B2)
13. d-Biotin (Vitamin H)
14. Thioctic acid



Vitamins - Water Soluble (Phase Selectivity)

Conditions

Columns: ACE 5 C18, ACE 5 C8, ACE 5 C4, ACE 5 CN, ACE 5 Phenyl, ACE 5 AQ, ACE 5 C18-HL

Column Dimensions: 150 x 4.6mm

Mobile Phase: A: 20mM KH_2PO_4 (pH 3.0)
B: MeOH

Flow Rate: 1.5ml/min

Gradient:

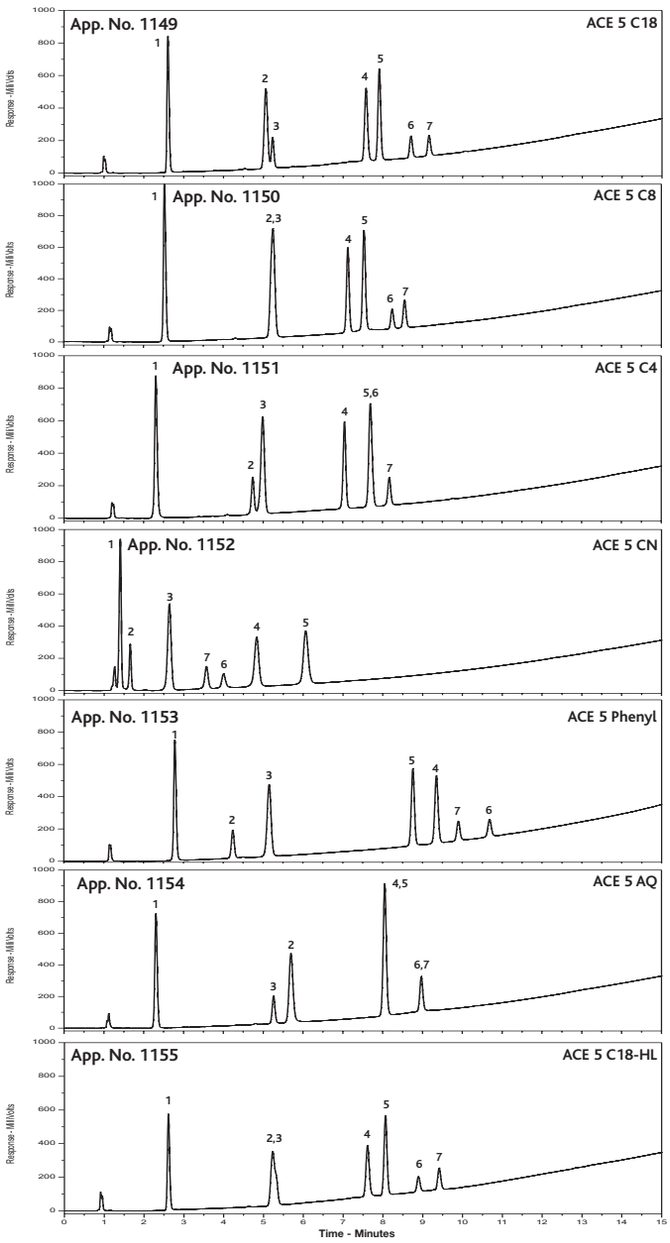
T(mins)	%A	%B
0	95	5
20	5	95

Temperature: Ambient

Detection: UV, 205nm

Compounds

1. Pyridoxine
2. p-Aminobenzoic acid
3. Pantothenic acid
4. Cyanocobalamin
5. Folic acid
6. d-Biotin
7. Riboflavin



Vitamins - Water Soluble (Rapid Analysis)

Conditions (a)

Column: ACE 5 C18, 250 x 4.6mm

Part Number: ACE-121-2546

Mobile Phase: A: 20mM KH_2PO_4 (pH 2.9)
B: MeOH

Flow Rate: 1.0ml/min

Gradient:

T(mins)	%A	%B
0	97	3
5	97	3
45	55	45
50	20	80

Temperature: Ambient

Detection: UV, 205nm

Compounds

1. Pyridoxine
2. p-Aminobenzoic acid
3. Pantothenic acid
4. Cyanocobalamin
5. Folic acid
6. d-Biotin
7. Riboflavin

Rapid Analysis Conditions (b)

Column: ACE 3 Phenyl, 20 x 4.6mm

Part Number: ACE-115-0246

Mobile Phase: A: 20mM KH_2PO_4 (pH 3.0)
B: MeOH

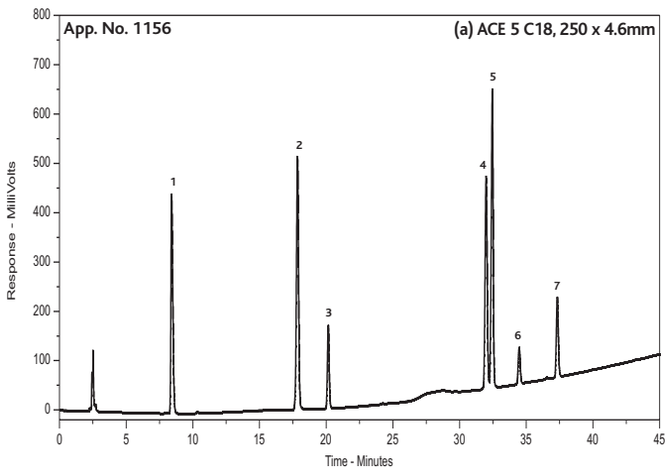
Flow Rate: 1.5ml/min

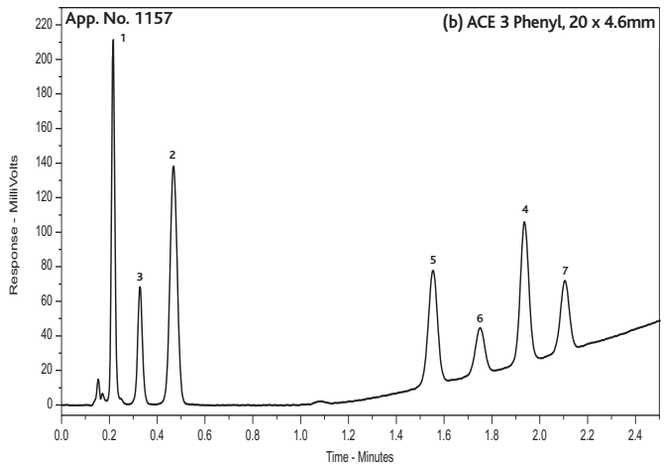
Gradient:

T(mins)	%A	%B
0	81	19
3	32	68

Temperature: Ambient

Detection: UV, 205nm





Water Soluble Artificial Colours

Conditions

Column:	ACE 3 C18, 100 x 4.6mm
Part Number:	ACE-111-1046
Mobile Phase:	A. 3mM TBAB[1] and 5mM KH_2PO_4 in H_2O
	B: 5mM TBAB in MeOH
Flow Rate:	0.8ml/min

Gradient:

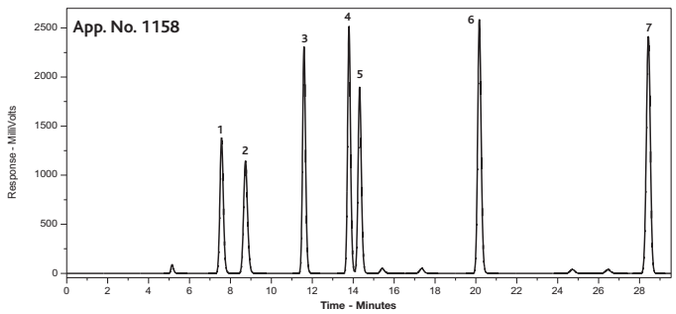
T(mins)	%A	%B
0	55	45
20	30	70
30	55	45
40	55	45

Temperature:	Ambient
Detection:	UV/VIS, 420nm, 520nm and 600nm
Injection Volume:	10µl

[1] Tetrabutylammonium bromide

Compounds

1. Amaranth
2. Sunset Yellow
3. Allura Red
4. Red 2G
5. Ponceau 4R
6. Carmoisine
7. Erythrosine



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Whey Proteins from Whole Milk

Conditions

Column:	ACE 3 C4-300, 150 x 2.1mm
Part Number:	ACE-213-1502
Mobile Phase:	A: 0.5% HCO_2H in H_2O
	B: 0.5% HCO_2H in MeCN
Flow Rate:	0.4ml/min

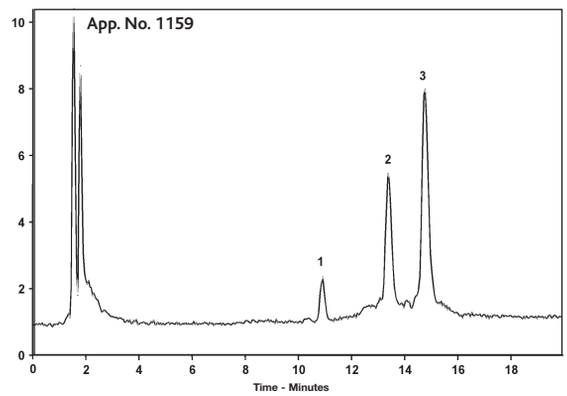
Gradient:

T(mins)	0	16	17	20	21	31
%A	65	57	20	20	65	65
%B	35	43	80	80	35	35

Temperature:	40°C
Detection:	ESI-MS (+ve)
Injection Volume:	10µl

Compounds

1. α-Lactalbumin
2. β-Lactoglobulin B
3. β-Lactoglobulin A



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ACE® - Product Availability

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ACE 3µm HPLC Columns

When ordering replace "X" with the appropriate material code:

PORE SIZE REQUIRED	PHASE							
	3µm C18	3µm C8	3µm C4	3µm CN	3µm Phenyl	3µm AQ	3µm SIL	3µm C18-HL
100Å	ACE-111	ACE-112	ACE-113	ACE-114	ACE-115	ACE-116	ACE-117	ACE-311
300Å	ACE-211	ACE-212	ACE-213	ACE-214	ACE-215	-	-	-

COLUMN DIAMETER	COLUMN LENGTH										GUARD CARTRIDGE
	20 mm	30 mm	35 mm	50 mm	75 mm	100 mm	125 mm	150 mm	250 mm	300 mm	
75µm	-	enquire	-	enquire	-	X -1000075	-	X -1500075	-	-	enquire
100µm	-	enquire	-	enquire	-	X -10001	-	X -15001	-	-	enquire
300µm	-	X -03003	-	X -05003	-	X -10003	-	X -15003	-	-	enquire
500µm	-	X -03005	-	X -05005	-	X -10005	-	X -15005	-	-	enquire
1.0mm	X -0201	X -0301	X -3501	X -0501	X -7501	X -1001	X -1201	X -1501	X -2501[6]	-	X -0101GD[1]
2.1mm	X -0202	X -0302	X -3502	X -0502	X -7502	X -1002	X -1202	X -1502	X -2502[6]	-	X -0102GD[2]
3.0mm	X -0203	X -0303	X -3503	X -0503	X -7503	X -1003	X -1203	X -1503	X -2503[6]	-	X -0103GD[3]
4.0mm	-	-	X -3504	X -0504	X -7504	X -1004	X -1204	X -1504	X -2504[6]	-	X -0103GD[3]
4.6mm	X -0246	X -0346	X -3546	X -0546	X -7546	X -1046	X -1246	X -1546	X -2546[6]	-	X -0103GD[3]

ACE 5µm HPLC Columns

When ordering replace "X" with the appropriate material code:

PORE SIZE REQUIRED	PHASE							
	5µm C18	5µm C8	5µm C4	5µm CN	5µm Phenyl	5µm AQ	5µm SIL	5µm C18-HL
100Å	ACE-121	ACE-122	ACE-123	ACE-124	ACE-125	ACE-126	ACE-127	ACE-321
300Å	ACE-221	ACE-222	ACE-223	ACE-224	ACE-225	-	-	-

COLUMN DIAMETER	COLUMN LENGTH										GUARD CARTRIDGE
	20 mm	30 mm	35 mm	50 mm	75 mm	100 mm	125 mm	150 mm	250 mm	300 mm	
75µm	-	enquire	-	enquire	-	X -1000075	-	X -1500075	X -2500075	-	enquire
100µm	-	enquire	-	enquire	-	X -10001	-	X -15001	X -25001	-	enquire
300µm	-	X -03003	-	X -05003	-	X -10003	-	X -15003	X -25003	-	enquire
500µm	-	X -03005	-	X -05005	-	X -10005	-	X -15005	X -25005	-	enquire
1.0mm	X -0201	X -0301	X -3501	X -0501	X -7501	X -1001	X -1201	X -1501	X -2501	X -3001	X -0101GD[1]
2.1mm	X -0202	X -0302	X -3502	X -0502	X -7502	X -1002	X -1202	X -1502	X -2502	X -3002	X -0102GD[2]
3.0mm	X -0203	X -0303	X -3503	X -0503	X -7503	X -1003	X -1203	X -1503	X -2503	X -3003	X -0103GD[3]
4.0mm	-	-	X -3504	X -0504	X -7504	X -1004	X -1204	X -1504	X -2504	X -3004	X -0103GD[3]
4.6mm	X -0246	X -0346	X -3546	X -0546	X -7546	X -1046	X -1246	X -1546	X -2546	X -3046	X -0103GD[3]
7.75mm	-	-	-	X -0508	X -7508	X -1008	X -1208	X -1508	X -2508	X -3008	X -0110GD[4]
10.0mm	-	-	-	X -0510	X -7510	X -1010	X -1210	X -1510	X -2510	X -3010	X -0110GD[4]
21.2mm	-	-	-	X -0520	X -7520	X -1020	X -1220	X -1520	X -2520	X -3020	X -0110GD[4]
30.0mm[7]	-	-	-	X -0530	X -7530	X -1030	-	X -1530	X -2530	X -3030	X -0220GD[5]

[1] 5 pack - use with cartridge holder H0001 and column coupler C0001
[2] 5 pack - use with integral microbore cartridge holder H0004
[3] 5 pack - use with integral analytical cartridge holder H0005
[4] 3 pack - use with semi-prep cartridge holder H0002 and column coupler C0001
[5] 1 pack - use with prep cartridge holder H0006 and prep column coupler C0002
[6] available to special order (not 300Å columns) - consider operating pressure limitations for maximum column lifetime
[7] not available with 300Å columns

ACE 10µm HPLC Columns

When ordering replace "X" with the appropriate material code:

PORE SIZE REQUIRED	PHASE							
	10µm C18	10µm C8	10µm C4	10µm CN	10µm Phenyl	10µm AQ	10µm SIL	10µm C18-HL
100Å	ACE-131	ACE-132	ACE-133	ACE-134	ACE-135	ACE-136	ACE-137	ACE-331
300Å	ACE-231	ACE-232	ACE-233	ACE-234	ACE-235	-	-	-

COLUMN DIAMETER	COLUMN LENGTH										GUARD CARTRIDGE
	20 mm	30 mm	35 mm	50 mm	75 mm	100 mm	125 mm	150 mm	250 mm	300 mm	
4.6mm	X -0246	X -0346	X-3546	X -0546	X -7546	X -1046	X -1246	X -1546	X -2546	X -3046	X -0103GD[3]
7.75mm	-	-	X-3508	X -0508	X -7508	X -1008	X -1208	X -1508	X -2508	X -3008	X -0110GD[4]
10.0mm	-	-	X-3510	X -0510	X -7510	X -1010	X -1210	X -1510	X -2510	X -3010	X -0110GD[4]
21.2mm	-	-	X-3520	X -0520	X -7520	X -1020	X -1220	X -1520	X -2520	X -3020	X -0110GD[4]
30.0mm	-	-	X-3530	X -0530	X -7530	X -1030	-	X -1530	X -2530	X -3030	X -0220GD[5]
50.0mm[7]	-	-	enquire	enquire	enquire	enquire	enquire	enquire	enquire	enquire	enquire

[3] 5 pack - use with integral analytical cartridge holder H0005
[4] 3 pack - use with semi-prep cartridge holder H0002 and column coupler C0001
[5] 1 pack - use with prep cartridge holder H0006 and prep column coupler C0002
[7] not available with 300Å columns

Custom Packed Columns

For column dimensions not listed and further assistance in selecting the optimum ACE phase for your application, please contact your local distributor. We routinely manufacture columns of unique dimensions that are required for a particular application. Additional column hardware geometries (including bio-inert PEEK) are also available on request. Please contact your local distributor for further details about Custom Packed Columns.

FREE Batch Reservation Service

ACE materials are recognised to offer outstanding reproducibility and have the most stringent batch specifications of any chromatographic silica. However, for particularly challenging applications we also offer a FREE Batch Reservation Service, which completely eliminates batch related reproducibility concerns. Based on your projected column usage, we will reserve the quantity of silica you need and pack columns as and when they are required. Please contact your local distributor for further details about this FREE Batch Reservation Service.

Method Development and Method Validation Column Kits

ACE Method Development Kits contain columns of the same dimensions packed with different bonded phases, allowing the optimum phase to be selected for a specific application. ACE Method Validation Kits are available for all phases and column dimensions and contain three columns of the same bonded phase and dimensions packed from three different batches, enabling a rapid confirmation of separation reproducibility. Please contact your local distributor for further details about ACE Method Development Kits and ACE Method Validation Kits.

Product Specifications

PHASE	FUNCTIONAL GROUP	ENDCAPPED	PARTICLE SIZE (µm)	PORE SIZE (Å)	SURFACE AREA (m^2/g)	CARBON LOAD (%)	USP CLASSIFICATION
C18	Octadecyl	Yes	3, 5, 10	100	300	15.5	L1
				300	100	9.0	L1
C8	Octyl	Yes	3, 5, 10	100	300	9.0	L7
				300	100	5.0	L7
C4	Butyl	Yes	3, 5, 10	100	300	5.5	L26
				300	100	2.6	L26
CN	Cyano	Yes	3, 5, 10	100	300	5.5	L10
				300	100	2.6	L10
Phenyl	Phenyl	Yes	3, 5, 10	100	300	9.5	L11
				300	100	5.3	L11
AQ	Proprietary	Yes	3, 5, 10	100	300	14.0	L1
SIL	Unbonded	-	3, 5, 10	100	300	-	L3
C18-HL	Octadecyl	Yes	3, 5, 10, 15	90	400	20.0	L1

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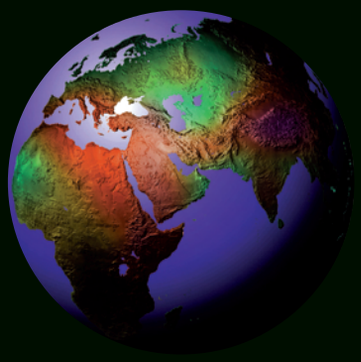

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