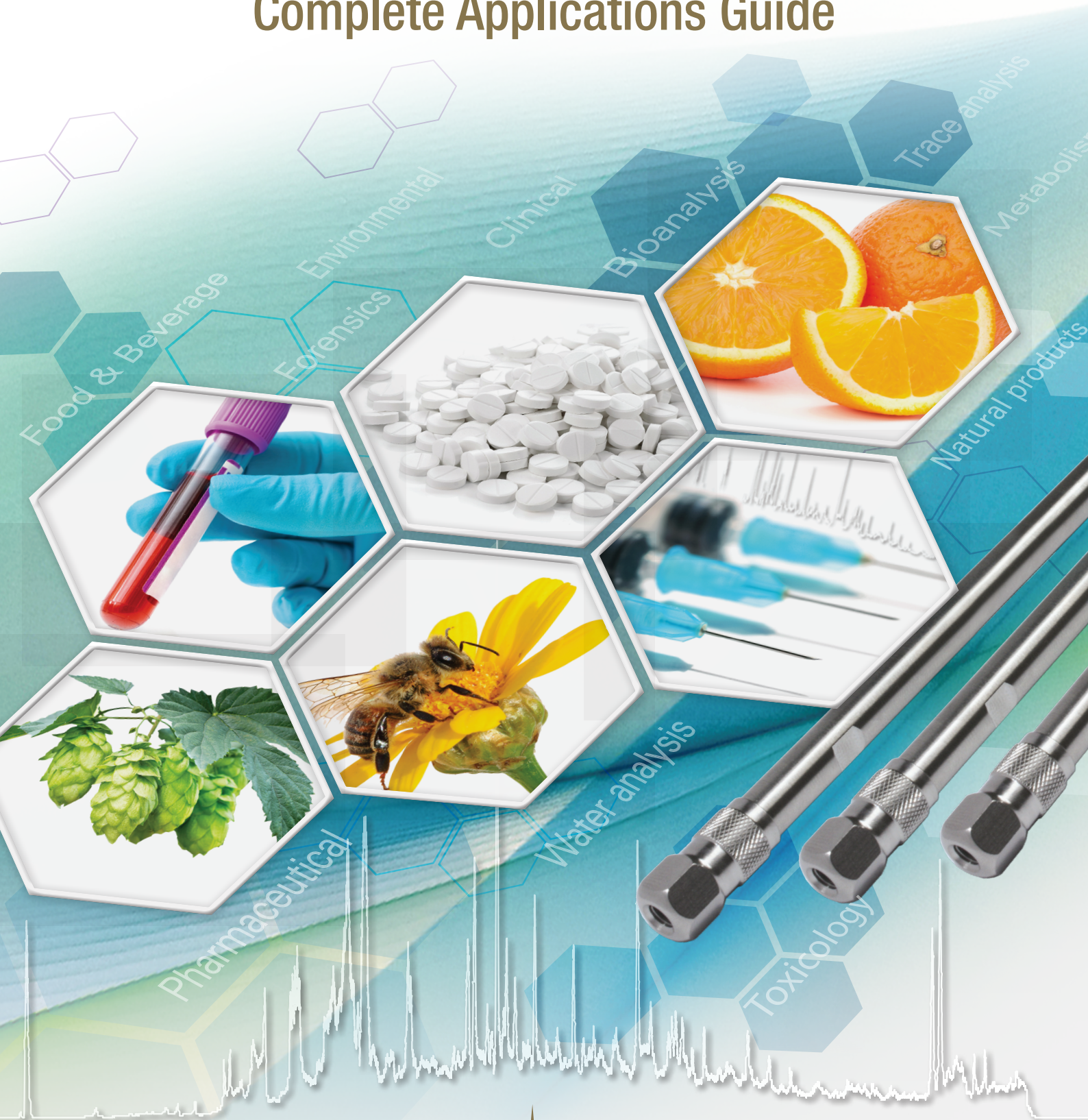


ACE[®]

UHPLC and HPLC Columns

Complete Applications Guide



ACE[®]

UHPLC and HPLC Columns

ACE Ultra-Inert, Base Deactivated HPLC and UHPLC columns give you the choices you need to achieve successful separations

Preface

This ACE UHPLC/HPLC Applications Guide contains over 300 applications including pharmaceutical, environmental, food, beverage, clinical, forensics and bioanalysis 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 UHPLC/HPLC column and conditions for their methods, by providing good examples of successful separations.

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 UHPLC/HPLC column**

Send us your ACE UHPLC/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 UHPLC/HPLC column**.

To submit your application contact your local ACE distributor or email us at: info@ace-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**.



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Explore Selectivity

2 and 3 column kits
available for the
same price as a
single column

ACE Method Development Kits

Not sure which ACE phase to select for your application?
ACE Method Development Kits offer up to 3 columns for the same price as a single column.

For additional advice on the best kit to choose see page 5 or
email: info@ace-hplc.com



Can't find the application you need?

Contact us today at info@ace-hplc.com and our technical experts will assist you, free of charge, to find the application that meets your needs.

We are continually updating our applications database and have many more applications available.

ACE Portfolio Specifications

Choices you need to achieve successful separations

15 PHASES

C18 | C18-AR | C18-PFP | C18-Amide |
CN-ES | SuperC18 | SuperPhenylHexyl |
AQ | C8 | C4 | Phenyl | Amino | CN |
C18-HL | Silica | *

3 PORE SIZES

90 Å | 100 Å | 300 Å

*New phases - launching soon.

8 PARTICLE SIZES

Six fully porous particles: 1.7 µm |
2 µm | 3 µm | 5 µm | 10 µm | 15 µm |
and two superficially porous particles:
2.5 µm | 5 µm

11 STANDARD COLUMN LENGTHS

20 mm | 30 mm | 35 mm | 50 mm |
75 mm | 100 mm | 125 mm | 150 mm |
200 mm | 250 mm | 300 mm

12 STANDARD COLUMN IDS

0.075 mm | 0.10 mm | 0.30 mm | 0.50 mm |
1.0 mm | 2.1 mm | 3.0 mm | 4.0 mm |
4.6 mm | 10.0 mm | 21.2 mm | 30.0 mm

Phase	USP Listing	Functional Group	Endcapped	Particle Size (µm)	Pore Size (Å)	Surface Area (m²/g)	Carbon Load (%)	pH Range	100% AQ Compatible
UltraCore SuperC18 (solid core)	L1	Octadecyl encapsulated	Encapsulated	2.5 5	95	95	7.0 5.4	1.5 – 11.0	-
UltraCore SuperPhenylHexyl (solid core)	L11	Phenyl Hexyl encapsulated	Encapsulated	2.5 5	95	95	4.6 3.6	1.5 – 11.0	-
C18	L1	Octadecyl	Yes	1.7, 2, 3, 5, 10	100	300	15.5	2 – 8	-
C18-AR	L1	Octadecyl with integral phenyl	Yes	1.7, 2, 3, 5, 10	100	100	15.5	2 – 8	Yes
C18-PFP	L1	Octadecyl with integral PFP	Yes	1.7, 2, 3, 5, 10	100	100	14.3	2 – 8	Yes
SuperC18	L1	Octadecyl encapsulated	Encapsulated	1.7, 2, 3, 5, 10	90	90	14.8	1.5 – 11.5	-
C18-Amide	L1 / L60	Polar embedded amide	Yes	1.7, 2, 3, 5, 10	100	100	17.0	2 – 8	Yes
CN-ES	L10	Cyano with extended alkyl spacer	Yes	1.7, 2, 3, 5, 10	100	100	12.6	2 – 8	Yes
NH ₂	L8	Proprietary aminopropyl	Proprietary	1.7, 3, 5	100	100	4.0	2 – 7	Yes
C18-HL	L1	Octadecyl	Yes	3, 5, 10, 15	90	90	20	2 – 8	-
C8	L7	Octyl	Yes	2, 3, 5, 10	100	300	9.0	2 – 8	-
C4	L26	Butyl	Yes	2, 3, 5, 10	100	300	5.5	2 – 8	-
CN	L10	Cyano	Yes	2, 3, 5, 10	100	300	5.5	2 – 7	-
Ph	L11	Phenyl	Yes	2, 3, 5, 10	100	300	9.5	2 – 8	-
AQ	L1	Proprietary	Yes	2, 3, 5, 10	100	100	14	2 – 8	Yes
SIL	L3	Unbonded	No	2, 3, 5, 10	100	100	N/A	2 – 7	-
C18-300	L1	Octadecyl	Yes	3, 5, 10	300	100	9.0	2 – 8	-
C8-300	L7	Octyl	Yes	3, 5, 10	300	100	5.0	2 – 8	-
C4-300	L26	Butyl	Yes	3, 5, 10	300	100	2.6	2 – 8	-
CN-300	L10	Cyano	Yes	3, 5, 10	300	100	2.6	2 – 7	-
Ph-300	L11	Phenyl	Yes	3, 5, 10	300	100	5.3	2 – 8	-

ACE Method Development Kits

Intelligent Solutions for Method Development

- Highly cost effective - ACE Method Development Kits are available for the same price as a single column!
- 1.7 μm to 5 μm particle size kits available
- 4 different ACE Method Development Kits available from microbore (0.5 mm id) through to analytical 4.6 mm id) dimensions for rapid, systematic method development.
- Each kit contains carefully selected ACE phases which enable the power of selectivity to be fully exploited.
- Each ACE phase provides different selectivity due to differing interactions.

		Bonded Phase	Separation Mechanism and Relative Strength ¹				
			Hydrophobic Binding	π-π Interaction	Dipole-Dipole	Hydrogen Bonding	Shape Selectivity
1	ACE Advanced Method Development Kit (see page 6)	ACE C18	****	-	-	*	**
		ACE C18-AR	****	*** (donor)	*	**	***
		ACE C18-PFP	****	*** (acceptor)	****	***	****
2	ACE Extended Method Development Kit (see page 8)	ACE SuperC18	****	-	-	-	**
		ACE C18-Amide	****	-	**	****	**/**
		ACE CN-ES	***	*	***	**	*
3	ACE UltraCore Method Development Kit (see page 10)	ACE UltraCore SuperC18	***	-	-	-	**
		ACE UltraCore SuperPhenylHexyl	**	*** (donor)	*	**	***
4	ACE Bioanalytical 300 Å Method Development Kit (see page 11)	ACE C18-300	**	-	-	*	*
		ACE C4-300	*	-	-	-	-
		ACE Phenyl-300	*	** (donor)	*	**	**

¹ Approximate value – determined by semi-quantitative mechanism weightings and/or by reference to other ACE phases using >100 characterising analytes.

FREE Method Development Support!

- Not sure which ACE phase or kit will work best for your application?
- FREE Application Support and FREE Method Development Service
- Trust your method development to our experts and free up time for your other projects!
- Contact our expert method development team via info@ace-hplc.com or contact your local distributor

Learn More: www.ace-hplc.com





ACE Advanced Method Development Kit

- Contains ACE C18, ACE C18-AR and ACE C18-PFP phases
- Ideal starting point for routine method development
- Available from microbore (0.5 mm id) through to analytical (4.6 mm id) dimensions
- Particularly recommended for compounds containing aromatic rings

Phase	Functional Group	Endcapped	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	Recommended pH Range	100% Aqueous Compatible	USP Listing
ACE C18	Octadecyl (C18)	Yes	1.7, 2, 3, 5, 10	100	300	15.5	2.0-8.0 ^a	No	L1
ACE C18-AR	C18 with integral Phenyl	Yes	1.7, 2, 3, 5, 10	100	300	15.5	2.0-8.0 ^a	Yes	L1
ACE C18-PFP	C18 with integral PFP	Yes	1.7, 2, 3, 5, 10	100	300	14.3	2.0-8.0 ^a	Yes	L1

^a For optimum column lifetime, a pH range of 2-8 is recommended. To increase column lifetime at higher pH, organic buffers, low buffer concentrations, high % organic solvent and low temperatures must be considered. Further information is contained within "A Guide to HPLC and LC/MS Buffer Selection" by John Dolan – please contact your distributor to request your FREE copy or visit www.ace-hplc.com

ACE C18	ACE C18-AR	ACE C18-PFP
ACE C18 remains the "go-to" column of choice for HPLC and UHPLC separations. With an excellent reputation for performance, reproducibility and lifetime, ACE C18 provides a rugged, reproducible starting point for method development. Recommended Applications • Analytes differing in hydrophobicity • Polar, moderately polar and non-polar analytes • Uncharged acids and bases • Ionized acids or bases using ion-pairing • Ideal starting point for method development	ACE C18-AR combines the excellent performance and advantages of the ACE C18 phase with the added selectivity of an integral phenyl group. Recommended Applications • Analytes with π-bonding and conjugated systems • Analytes with electron delocalization and electron withdrawing groups, such as halogens, nitro groups, ketones, esters and acids • Analytes with different dipole moments • Analytes differing in hydrophobicity • Stereoisomers, steroids, substituted aromatics and sulphur containing compounds • Fully wettable - 100% aqueous buffer compatible • Applications where C18 does not provide adequate separation • Applications where conventional phenyl phases provide insufficient retention, poor stability, or significant bleed.	ACE C18-PFP brings together the stability, reproducibility and low bleed of the ACE C18 phase with the additional selectivity of an integral pentafluorophenyl (PFP) group. Recommended Applications • Analytes with π-bonding • Analytes with electron donating groups, such as phenols, aromatic ethers and amines • Analytes with proton donor groups • Analytes with different dipole moments • Analytes differing in hydrophobicity • Structural isomers, steroids, substituted aromatics and taxanes • Fully wettable - 100% aqueous buffer compatible • Applications where C18 does not provide adequate separation • Applications where conventional PFP phases provide insufficient retention, poor stability or significant bleed.

Additional Information

Product bulletins containing further details on the ACE C18, C18-AR and C18-PFP columns contained within the Advanced ACE Method Development Kit are available to download at www.ace-hplc.com. Alternatively, please contact our technical support team via info@ace-hplc.com or contact your local distributor.

Learn More: www.ace-hplc.com



ACE Advanced Method Development UHPLC/HPLC Column Kits

(Contains 3 columns: ACE C18, ACE C18-AR and ACE C18-PFP of specified dimensions)

(UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)				
Column Dimensions	1.7 μ m	2 μ m	3 μ m	5 μ m
2.1 x 20 mm	MDKA-17-0202U	MDKA-2-0202U	MDKA-3-0202U	MDKA-5-0202U
2.1 x 30 mm	MDKA-17-0302U	MDKA-2-0302U	MDKA-3-0302U	MDKA-5-0302U
2.1 x 35 mm	MDKA-17-3502U	MDKA-2-3502U	MDKA-3-3502U	MDKA-5-3502U
2.1 x 50 mm	MDKA-17-0502U	MDKA-2-0502U	MDKA-3-0502U	MDKA-5-0502U
2.1 x 75 mm	MDKA-17-7502U	MDKA-2-7502U	MDKA-3-7502U	MDKA-5-7502U
2.1 x 100 mm	MDKA-17-1002U	MDKA-2-1002U	MDKA-3-1002U	MDKA-5-1002U
2.1 x 125 mm	-	MDKA-2-1202U	MDKA-3-1202U	MDKA-5-1202U
2.1 x 150 mm	-	MDKA-2-1502U	MDKA-3-1502U	MDKA-5-1502U
2.1 x 250 mm	-	-	MDKA-3-2502U	MDKA-5-2502U
3.0 x 20 mm	MDKA-17-0203U	MDKA-2-0203U	MDKA-3-0203U	MDKA-5-0203U
3.0 x 30 mm	MDKA-17-0303U	MDKA-2-0303U	MDKA-3-0303U	MDKA-5-0303U
3.0 x 35 mm	MDKA-17-3503U	MDKA-2-3503U	MDKA-3-3503U	MDKA-5-3503U
3.0 x 50 mm	MDKA-17-0503U	MDKA-2-0503U	MDKA-3-0503U	MDKA-5-0503U
3.0 x 75 mm	MDKA-17-7503U	MDKA-2-7503U	MDKA-3-7503U	MDKA-5-7503U
3.0 x 100 mm	MDKA-17-1003U	MDKA-2-1003U	MDKA-3-1003U	MDKA-5-1003U
3.0 x 125 mm	-	MDKA-2-1203U	MDKA-3-1203U	MDKA-5-1203U
3.0 x 150 mm	-	MDKA-2-1503U	MDKA-3-1503U	MDKA-5-1503U
3.0 x 250 mm	-	-	MDKA-3-2503U	MDKA-5-2503U
4.6 x 20 mm	-	MDKA-2-0246U	MDKA-3-0246U	MDKA-5-0246U
4.6 x 30 mm	-	MDKA-2-0346U	MDKA-3-0346U	MDKA-5-0346U
4.6 x 35 mm	-	MDKA-2-3546U	MDKA-3-3546U	MDKA-5-3546U
4.6 x 50 mm	-	MDKA-2-0546U	MDKA-3-0546U	MDKA-5-0546U
4.6 x 75 mm	-	MDKA-2-7546U	MDKA-3-7546U	MDKA-5-7546U
4.6 x 100 mm	-	MDKA-2-1046U	MDKA-3-1046U	MDKA-5-1046U
4.6 x 125 mm	-	MDKA-2-1246U	MDKA-3-1246U	MDKA-5-1246U
4.6 x 150 mm	-	MDKA-2-1546U	MDKA-3-1546U	MDKA-5-1546U
4.6 x 250 mm	-	-	MDKA-3-2546U	MDKA-5-2546U

ACE Advanced Method Development Microbore HPLC Column Kits

(Contains 3 columns: ACE C18, ACE C18-AR and ACE C18-PFP of specified dimensions)

(HPLC hardware format with 400 bar/6000 psi recommended pressure limit)						
Column Dimensions	2 μ m		3 μ m		5 μ m	
	1/16" port	1/32" port	1/16" port	1/32" port	1/16" port	1/32" port
0.5 x 30 mm	MDKA-2-0300S	MDKA-2-0300SS	MDKA-3-0300S	MDKA-3-0300SS	MDKA-5-0300S	MDKA-5-0300SS
0.5 x 50 mm	MDKA-2-0500S	MDKA-2-0500SS	MDKA-3-0500S	MDKA-3-0500SS	MDKA-5-0500S	MDKA-5-0500SS
0.5 x 75 mm	MDKA-2-7500S	MDKA-2-7500SS	MDKA-3-7500S	MDKA-3-7500SS	MDKA-5-7500S	MDKA-5-7500SS
0.5 x 100 mm	MDKA-2-1000S	MDKA-2-1000SS	MDKA-3-1000S	MDKA-3-1000SS	MDKA-5-1000S	MDKA-5-1000SS
0.5 x 125 mm	MDKA-2-1200S	MDKA-2-1200SS	MDKA-3-1200S	MDKA-3-1200SS	MDKA-5-1200S	MDKA-5-1200SS
0.5 x 150 mm	MDKA-2-1500S	MDKA-2-1500SS	MDKA-3-1500S	MDKA-3-1500SS	MDKA-5-1500S	MDKA-5-1500SS
0.5 x 250 mm	-	-	-	-	MDKA-5-2500S	MDKA-5-2500SS
1.0 x 30 mm	MDKA-2-0301	MDKA-2-0301S	MDKA-3-0301	MDKA-3-0301S	MDKA-5-0301	MDKA-5-0301S
1.0 x 50 mm	MDKA-2-0501	MDKA-2-0501S	MDKA-3-0501	MDKA-3-0501S	MDKA-5-0501	MDKA-5-0501S
1.0 x 75 mm	MDKA-2-7501	MDKA-2-7501S	MDKA-3-7501	MDKA-3-7501S	MDKA-5-7501	MDKA-5-7501S
1.0 x 100 mm	MDKA-2-1001	MDKA-2-1001S	MDKA-3-1001	MDKA-3-1001S	MDKA-5-1001	MDKA-5-1001S
1.0 x 125 mm	MDKA-2-1201	MDKA-2-1201S	MDKA-3-1201	MDKA-3-1201S	MDKA-5-1201	MDKA-5-1201S
1.0 x 150 mm	MDKA-2-1501	MDKA-2-1501S	MDKA-3-1501	MDKA-3-1501S	MDKA-5-1501	MDKA-5-1501S
1.0 x 250 mm	-	-	-	-	MDKA-5-2501	MDKA-5-2501S

Important Note: ACE microbore columns (1.0 mm id and 0.5 mm id) are available with either standard 1/16" (10-32 thread) connections or 1/32" (6-40 thread) connections. For use with Eksigent micro and nano LC systems, order columns with 1/32" connections and use either ACE 6-40 fittings (part number ACE-MC3210, 10 pack) or Eksigent 6-40 fittings (part number 5019621).

For 1/16" HPLC column connections up to 6000 psi, PEEK™ 1/16" fingertight fittings (part number ACE-CC10, 10 pack) are recommended. For 1/32" microbore HPLC column connections up to 6000 psi, PEEK™ 1/32" (6-40 thread) fingertight fittings (part number ACE-MC3210, 10 pack) are recommended. For 1/16" UHPLC column connections up to 25000 psi, reusable 1/16" fittings (part number EXL-CC10, 10 pack) are recommended. To further extend UHPLC and HPLC column lifetimes, ACE pre-column filters are recommended. For further details please contact your distributor or visit www.ace-hplc.com



ACE Extended Method Development Kit

- Contains ACE SuperC18, ACE C18-Amide and ACE CN-ES phases
- Use ACE SuperC18 to exploit selectivity changes at low, intermediate and high pH
- Available from microbore (0.5 mm id) through to analytical (4.6 mm id) dimensions
- ACE C18-Amide and ACE CN-ES phases both offer alternative selectivity, especially for polar molecules

Phase	Functional wGroup	Endcapped	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	Recommended pH Range	100% Aqueous Compatible	USP Listing
ACE SuperC18	Octadecyl (C18)	Encapsulated bonding	1.7, 2, 3, 5, 10	90	400	14.8	1.5-11.5 ^a	No	L1
ACE C18-Amide	C18 with integral amide polar group	Yes	1.7, 2, 3, 5, 10	100	300	16.4	2.0-8.0 ^b	Yes	L1/L60
ACE CN-ES	CN with proprietary extended alkyl spacer	Yes	1.7, 2, 3, 5, 10	100	300	12.6	2.0-8.0 ^b	Yes	L10

^a ACE SuperC18 is designed for use with LC/MS compatible buffers. Further information is contained within "ACE SuperC18 - A Guide to Buffer Selection" – please contact your distributor to request your FREE copy or visit www.ace-hplc.com.

^b For optimum column lifetime, a pH range of 2-8 is recommended. To increase column lifetime at higher pH, organic buffers, low buffer concentrations, high % organic solvent and low temperatures must be considered. Further information is contained within "A Guide to HPLC and LC/MS Buffer Selection" by John Dolan – please contact your distributor to request your FREE copy or visit www.ace-hplc.com

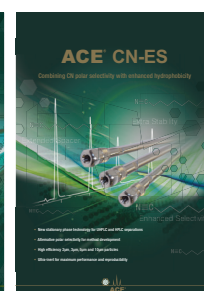
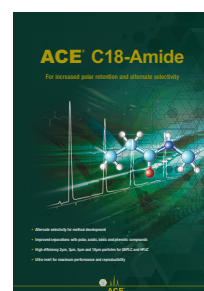
ACE SuperC18	ACE C18-Amide	ACE CN-ES
ACE SuperC18 is a uniquely bonded, EBT™* endcapped C18 phase which offers unprecedented inertness, excellent efficiency and uncompromising durability over an extended pH range of 1.5 – 11.5. Recommended Applications • Analytes differing in hydrophobicity • Polar, moderately polar and non-polar analytes • Uncharged acids and bases • Ionized acids or bases using ion-pairing • Recommended starting point for developing methods at intermediate and high pH to exploit selectivity changes	ACE C18-Amide is a uniquely designed polar-embedded phase that offers enhanced retention and resolution of polar acidic, phenolic and hydroxy-substituted analytes. The extended spacer ligand technology provides extended column lifetime. Recommended Applications • Small water soluble analytes and polar molecules - especially acidic species • Analytes with H bond donors, acids, bases and phenolic compounds • Small peptides • Analytes differing in hydrophobicity • Fully wettable - 100% aqueous buffer compatible • Applications where C18 does not provide adequate separation • Applications where conventional amide/polar embedded phases provide insufficient retention, poor stability, or significant bleed	ACE CN-ES is a unique phase having an extended alkyl chain with a terminal cyano group. It provides C18 levels of retention and stability compared to commercial cyano propyl phases which typically exhibit low retentivity and poor stability. Recommended Applications • Mixtures of very polar, polar and non-polar analytes • Analytes with double and triple bonds • Analytes differing in hydrophobicity • Suitable for NP and RP separations • Fully wettable - 100% aqueous buffer compatible • Applications where a typical C18 column does not provide adequate separation • Applications where traditional CN bonded phases provide insufficient retention, poor stability or significant bleed • An orthogonal phase for method development

*Encapsulated Bonding Technology

Additional information

Product bulletins containing further details on the ACE SuperC18, C18-Amide and CN-ES columns contained within the Extended ACE Method Development Kit are available to download at www.ace-hplc.com. Alternatively, please contact our technical support team via info@ace-hplc.com or contact your local distributor.

Learn More: www.ace-hplc.com



ACE Extended Method Development UHPLC/HPLC Column Kits

(Contains 3 columns: ACE SuperC18, ACE C18-Amide and ACE CN-ES of specified dimensions)

(UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)				
Column Dimensions	1.7 μ m	2 μ m	3 μ m	5 μ m
2.1 x 20 mm	MDKE-17-0202U	MDKE-2-0202U	MDKE-3-0202U	MDKE-5-0202U
2.1 x 30 mm	MDKE-17-0302U	MDKE-2-0302U	MDKE-3-0302U	MDKE-5-0302U
2.1 x 35 mm	MDKE-17-3502U	MDKE-2-3502U	MDKE-3-3502U	MDKE-5-3502U
2.1 x 50 mm	MDKE-17-0502U	MDKE-2-0502U	MDKE-3-0502U	MDKE-5-0502U
2.1 x 75 mm	MDKE-17-7502U	MDKE-2-7502U	MDKE-3-7502U	MDKE-5-7502U
2.1 x 100 mm	MDKE-17-1002U	MDKE-2-1002U	MDKE-3-1002U	MDKE-5-1002U
2.1 x 125 mm	-	MDKE-2-1202U	MDKE-3-1202U	MDKE-5-1202U
2.1 x 150 mm	-	MDKE-2-1502U	MDKE-3-1502U	MDKE-5-1502U
2.1 x 250 mm	-	-	MDKE-3-2502U	MDKE-5-2502U
3.0 x 20 mm	MDKE-17-0203U	MDKE-2-0203U	MDKE-3-0203U	MDKE-5-0203U
3.0 x 30 mm	MDKE-17-0303U	MDKE-2-0303U	MDKE-3-0303U	MDKE-5-0303U
3.0 x 35 mm	MDKE-17-3503U	MDKE-2-3503U	MDKE-3-3503U	MDKE-5-3503U
3.0 x 50 mm	MDKE-17-0503U	MDKE-2-0503U	MDKE-3-0503U	MDKE-5-0503U
3.0 x 75 mm	MDKE-17-7503U	MDKE-2-7503U	MDKE-3-7503U	MDKE-5-7503U
3.0 x 100 mm	MDKE-17-1003U	MDKE-2-1003U	MDKE-3-1003U	MDKE-5-1003U
3.0 x 125 mm	-	MDKE-2-1203U	MDKE-3-1203U	MDKE-5-1203U
3.0 x 150 mm	-	MDKE-2-1503U	MDKE-3-1503U	MDKE-5-1503U
3.0 x 250 mm	-	-	MDKE-3-2503U	MDKE-5-2503U
4.6 x 20 mm	-	MDKE-2-0246U	MDKE-3-0246U	MDKE-5-0246U
4.6 x 30 mm	-	MDKE-2-0346U	MDKE-3-0346U	MDKE-5-0346U
4.6 x 3 mm	-	MDKE-2-3546U	MDKE-3-3546U	MDKE-5-3546U
4.6 x 50 mm	-	MDKE-2-0546U	MDKE-3-0546U	MDKE-5-0546U
4.6 x 75 mm	-	MDKE-2-7546U	MDKE-3-7546U	MDKE-5-7546U
4.6 x 100 mm	-	MDKE-2-1046U	MDKE-3-1046U	MDKE-5-1046U
4.6 x 125 mm	-	MDKE-2-1246U	MDKE-3-1246U	MDKE-5-1246U
4.6 x 150 mm	-	MDKE-2-1546U	MDKE-3-1546U	MDKE-5-1546U
4.6 x 250 mm	-	-	MDKE-3-2546U	MDKE-5-2546U

ACE Extended Method Development Microbore HPLC Column Kits

(Contains 3 columns: ACE SuperC18, ACE C18-Amide and ACE CN-ES of specified dimensions)

(HPLC hardware format with 400 bar/6000 psi recommended pressure limit)						
Column Dimensions	2 μ m		3 μ m		5 μ m	
	1/16" port	1/32" port	1/16" port	1/32" port	1/16" port	1/32" port
0.5 x 30 mm	MDKE-2-0300S	MDKE-2-0300SS	MDKE-3-0300S	MDKE-3-0300SS	MDKE-5-0300S	MDKE-5-0300SS
0.5 x 50 mm	MDKE-2-0500S	MDKE-2-0500SS	MDKE-3-0500S	MDKE-3-0500SS	MDKE-5-0500S	MDKE-5-0500SS
0.5 x 75 mm	MDKE-2-7500S	MDKE-2-7500SS	MDKE-3-7500S	MDKE-3-7500SS	MDKE-5-7500S	MDKE-5-7500SS
0.5 x 100 mm	MDKE-2-1000S	MDKE-2-1000SS	MDKE-3-1000S	MDKE-3-1000SS	MDKE-5-1000S	MDKE-5-1000SS
0.5 x 125 mm	MDKE-2-1200S	MDKE-2-1200SS	MDKE-3-1200S	MDKE-3-1200SS	MDKE-5-1200S	MDKE-5-1200SS
0.5 x 150 mm	MDKE-2-1500S	MDKE-2-1500SS	MDKE-3-1500S	MDKE-3-1500SS	MDKE-5-1500S	MDKE-5-1500SS
0.5 x 250 mm	-	-	-	-	MDKE-5-2500S	MDKE-5-2500SS
1.0 x 30 mm	MDKE-2-0301	MDKE-2-0301S	MDKE-3-0301	MDKE-3-0301S	MDKE-5-0301	MDKE-5-0301S
1.0 x 50 mm	MDKE-2-0501	MDKE-2-0501S	MDKE-3-0501	MDKE-3-0501S	MDKE-5-0501	MDKE-5-0501S
1.0 x 75 mm	MDKE-2-7501	MDKE-2-7501S	MDKE-3-7501	MDKE-3-7501S	MDKE-5-7501	MDKE-5-7501S
1.0 x 100 mm	MDKE-2-1001	MDKE-2-1001S	MDKE-3-1001	MDKE-3-1001S	MDKE-5-1001	MDKE-5-1001S
1.0 x 125 mm	MDKE-2-1201	MDKE-2-1201S	MDKE-3-1201	MDKE-3-1201S	MDKE-5-1201	MDKE-5-1201S
1.0 x 150 mm	MDKE-2-1501	MDKE-2-1501S	MDKE-3-1501	MDKE-3-1501S	MDKE-5-1501	MDKE-5-1501S
1.0 x 250 mm	-	-	-	-	MDKE-5-2501	MDKE-5-2501S

IMPORTANT NOTE: ACE microbore columns (1.0 mm id and 0.5 mm id) are available with either standard 1/16" (10-32 thread) connections or 1/32" (6-40 thread) connections. For use with Eksigent micro and nano LC systems, order columns with 1/32" connections and use either ACE 6-40 fittings (part number ACE-MC3210, 10 pack) or Eksigent 6-40 fittings (part number 5019621).

For 1/16" HPLC column connections up to 6000 psi, PEEK™ 1/16" fingertight fittings (part number ACE-CC10, 10 pack) are recommended. For 1/32" microbore HPLC column connections up to 6000 psi, PEEK™ 1/32" (6-40 thread) fingertight fittings (part number ACE-MC3210, 10 pack) are recommended. For 1/16" UHPLC column connections up to 25000psi, reusable 1/16" fittings (part number EXL-CC10, 10 pack) are recommended. To further extend UHPLC and HPLC column lifetimes, ACE pre-column filters are recommended. For further details please contact your distributor or visit www.ace-hplc.com



ACE UltraCore Method Development Kit

- Contains ACE UltraCore SuperC18 and SuperPhenylHexyl phases
- Use to exploit selectivity changes at low, intermediate and high pH
- Available from microbore (0.5 mm id) through to analytical (4.6 mm id) dimensions
- Ultra inert core-shell particles and Encapsulated Bonding Technology (EBT™) provide excellent peak shape

Phase	Functional Group	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	Maximum pH Range	USP Listing
ACE UltraCore 2.5 SuperC18	Octadecyl encapsulated	2.5	95	130	7.0	1.5-11.0 ^a	L1
ACE UltraCore 2.5 SuperPhenylHexyl	Phenyl-Hexyl encapsulated	2.5	95	130	4.6	1.5-11.0 ^a	L11
ACE UltraCore 5 SuperC18	Octadecyl encapsulated	5	95	100	5.4	1.5-11.0 ^a	L1
ACE UltraCore 5 SuperPhenylHexyl	Phenyl-Hexyl encapsulated	5	95	100	3.6	1.5-11.0 ^a	L11

^a ACE UltraCore columns are designed for use with LC/MS compatible buffers. Further information is contained within "ACE UltraCore – A Guide to Buffer Selection" - please contact your distributor to request your FREE copy or visit www.ace-hplc.com.

ACE UltraCore Method Development UHPLC/HPLC Column Kits

(Contains 2 columns: ACE UltraCore SuperC18 and ACE UltraCore SuperPhenylHexyl of specified dimensions)

(UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)		
Column Dimensions	2.5 µm	5 µm
2.1 x 20 mm	MDKU-25-0202U	MDKU-5-0202U
2.1 x 30 mm	MDKU-25-0302U	MDKU-5-0302U
2.1 x 35 mm	MDKU-25-3502U	MDKU-5-3502U
2.1 x 50 mm	MDKU-25-0502U	MDKU-5-0502U
2.1 x 75 mm	MDKU-25-7502U	MDKU-5-7502U
2.1 x 100 mm	MDKU-25-1002U	MDKU-5-1002U
2.1 x 125 mm	MDKU-25-1202U	MDKU-5-1202U
2.1 x 150 mm	MDKU-25-1502U	MDKU-5-1502U
2.1 x 250 mm	-	MDKU-5-2502U
3.0 x 20 mm	MDKU-25-0203U	MDKU-5-0203U
3.0 x 30 mm	MDKU-25-0303U	MDKU-5-0303U
3.0 x 35 mm	MDKU-25-3503U	MDKU-5-3503U
3.0 x 50 mm	MDKU-25-0503U	MDKU-5-0503U
3.0 x 75 mm	MDKU-25-7503U	MDKU-5-7503U

(UHPLC/HPLC hardware format with 1000 bar/15000 psi pressure limit)		
Column Dimensions	2.5 µm	5 µm
3.0 x 100 mm	MDKU-25-1003U	MDKU-5-1003U
3.0 x 125 mm	MDKU-25-1203U	MDKU-5-1203U
3.0 x 150 mm	MDKU-25-1503U	MDKU-5-1503U
3.0 x 250 mm	-	MDKU-5-2503U
4.6 x 20 mm	MDKU-25-0246U	MDKU-5-0246U
4.6 x 30 mm	MDKU-25-0346U	MDKU-5-0346U
4.6 x 35 mm	MDKU-25-3546U	MDKU-5-3546U
4.6 x 50 mm	MDKU-25-0546U	MDKU-5-0546U
4.6 x 75 mm	MDKU-25-7546U	MDKU-5-7546U
4.6 x 100 mm	MDKU-25-1046U	MDKU-5-1046U
4.6 x 125 mm	MDKU-25-1246U	MDKU-5-1246U
4.6 x 150 mm	MDKU-25-1546U	MDKU-5-1546U
4.6 x 250 mm	-	MDKU-5-2546U

ACE UltraCore Method Development Microbore HPLC Column Kits

(Contains 2 columns: ACE UltraCore SuperC18 and ACE UltraCore SuperPhenylHexyl of specified dimensions)

(HPLC hardware format with 400 bar/6000 psi recommended pressure limit)				
Column Dimensions	2.5 µm		5 µm	
	1/16" port	1/32" port	1/16" port	1/32" port
0.5 x 30 mm	MDKU-25-03005	MDKU-25-03005S	MDKU-5-03005	MDKU-5-03005S
0.5 x 50 mm	MDKU-25-05005	MDKU-25-05005S	MDKU-5-05005	MDKU-5-05005S
0.5 x 75 mm	MDKU-25-75005	MDKU-25-75005S	MDKU-5-75005	MDKU-5-75005S
0.5 x 100 mm	MDKU-25-10005	MDKU-25-10005S	MDKU-5-10005	MDKU-5-10005S
0.5 x 125 mm	MDKU-25-12005	MDKU-25-12005S	MDKU-5-12005	MDKU-5-12005S
0.5 x 150 mm	MDKU-25-15005	MDKU-25-15005S	MDKU-5-15005	MDKU-5-15005S
0.5 x 250 mm	-	-	MDKU-5-25005	MDKU-5-25005S
1.0 x 30 mm	MDKU-25-0301	MDKU-25-0301S	MDKU-5-0301	MDKU-5-0301S
1.0 x 50 mm	MDKU-25-0501	MDKU-25-0501S	MDKU-5-0501	MDKU-5-0501S
1.0 x 75 mm	MDKU-25-7501	MDKU-25-7501S	MDKU-5-7501	MDKU-5-7501S
1.0 x 100 mm	MDKU-25-1001	MDKU-25-1001S	MDKU-5-1001	MDKU-5-1001S
1.0 x 125 mm	MDKU-25-1201	MDKU-25-1201S	MDKU-5-1201	MDKU-5-1201S
1.0 x 150 mm	MDKU-25-1501	MDKU-25-1501S	MDKU-5-1501	MDKU-5-1501S
1.0 x 250 mm	-	-	MDKU-5-2501	MDKU-5-2501S



ACE Bioanalytical 300 Å Method Development Kit

- Contains ACE C18-300, ACE C4-300 and ACE Phenyl-300 phases
- Ideal starting point for protein and peptide method development
- Available from microbore (0.5 mm id) through to analytical (4.6 mm id) dimensions
- Ultra-inert 300 Å phases provide excellent peak shape and reproducibility

Phase	Functional Group	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	Recommended pH Range	USP Listing
ACE C18-300	Octadecyl (C18)	3, 5, 10	300	100	9.0	2.0-8.0	L1
ACE C4-300	Butyl (C4)	3, 5, 10	300	100	2.6	2.0-8.0	L26
ACE Phenyl-300	Phenyl	3, 5, 10	300	100	5.3	2.0-8.0	L11

ACE Bioanalytical 300 Å Method Development HPLC Column Kits

(Contains 3 columns: ACE C18-300, ACE C4-300 and ACE Phenyl-300 of specified dimensions)

(HPLC hardware format with 275 bar/4000 psi pressure limit)		
Column Dimensions	3 µm	5 µm
2.1 x 20 mm	MDKB-3-0202	MDKB-5-0202
2.1 x 30 mm	MDKB-3-0302	MDKB-5-0302
2.1 x 35 mm	MDKB-3-3502	MDKB-5-3502
2.1 x 50 mm	MDKB-3-0502	MDKB-5-0502
2.1 x 75 mm	MDKB-3-7502	MDKB-5-7502
2.1 x 100 mm	MDKB-3-1002	MDKB-5-1002
2.1 x 125 mm	MDKB-3-1202	MDKB-5-1202
2.1 x 150 mm	MDKB-3-1502	MDKB-5-1502
2.1 x 250 mm	-	MDKB-5-2502
3.0 x 20 mm	MDKB-3-0203	MDKB-5-0203
3.0 x 30 mm	MDKB-3-0303	MDKB-5-0303
3.0 x 35 mm	MDKB-3-3503	MDKB-5-3503
3.0 x 50 mm	MDKB-3-0503	MDKB-5-0503
3.0 x 75 mm	MDKB-3-7503	MDKB-5-7503

(HPLC hardware format with 275 bar/4000 psi pressure limit)		
Column Dimensions	3 µm	5 µm
3.0 x 100 mm	MDKB-3-1003	MDKB-5-1003
3.0 x 125 mm	MDKB-3-1203	MDKB-5-1203
3.0 x 150 mm	MDKB-3-1503	MDKB-5-1503
3.0 x 250 mm	-	MDKB-5-2503
4.6 x 20 mm	MDKB-3-0246	MDKB-5-0246
4.6 x 30 mm	MDKB-3-0346	MDKB-5-0346
4.6 x 35 mm	MDKB-3-3546	MDKB-5-3546
4.6 x 50 mm	MDKB-3-0546	MDKB-5-0546
4.6 x 75 mm	MDKB-3-7546	MDKB-5-7546
4.6 x 100 mm	MDKB-3-1046	MDKB-5-1046
4.6 x 125 mm	MDKB-3-1246	MDKB-5-1246
4.6 x 150 mm	MDKB-3-1546	MDKB-5-1546
4.6 x 250 mm	-	MDKB-5-2546

Note: 4.0 mm id ACE Bioanalytical 300 Å Method Development Kits also available – please enquire

ACE Bioanalytical 300 Å Method Development Microbore HPLC Column Kits

(Contains 3 columns: ACE C18-300, ACE C4-300 and ACE Phenyl-300 of specified dimensions)

(HPLC hardware format with 275 bar/4000 psi recommended pressure limit)				
Column Dimensions	3 µm		5 µm	
	1/16" port	1/32" port	1/16" port	1/32" port
0.5 x 30 mm	MDKB-3-03005	MDKB-3-03005S	MDKB-5-03005	MDKB-5-03005S
0.5 x 50 mm	MDKB-3-05005	MDKB-3-05005S	MDKB-5-05005	MDKB-5-05005S
0.5 x 75 mm	MDKB-3-75005	MDKB-3-75005S	MDKB-5-75005	MDKB-5-75005S
0.5 x 100 mm	MDKB-3-10005	MDKB-3-10005S	MDKB-5-10005	MDKB-5-10005S
0.5 x 125 mm	MDKB-3-12005	MDKB-3-12005S	MDKB-5-12005	MDKB-5-12005S
0.5 x 150 mm	MDKB-3-15005	MDKB-3-15005S	MDKB-5-15005	MDKB-5-15005S
0.5 x 250 mm	-	-	MDKB-5-25005	MDKB-5-25005S
1.0 x 30 mm	MDKB-3-0301	MDKB-3-0301S	MDKB-5-0301	MDKB-5-0301S
1.0 x 50 mm	MDKB-3-0501	MDKB-3-0501S	MDKB-5-0501	MDKB-5-0501S
1.0 x 75 mm	MDKB-3-7501	MDKB-3-7501S	MDKB-5-7501	MDKB-5-7501S
1.0 x 100 mm	MDKB-3-1001	MDKB-3-1001S	MDKB-5-1001	MDKB-5-1001S
1.0 x 125 mm	MDKB-3-1201	MDKB-3-1201S	MDKB-5-1201	MDKB-5-1201S
1.0 x 150 mm	MDKB-3-1501	MDKB-3-1501S	MDKB-5-1501	MDKB-5-1501S
1.0 x 250 mm	-	-	MDKB-5-2501	MDKB-5-2501S

IMPORTANT NOTE: ACE microbore columns (1.0 mm id and 0.5 mm id) are available with either standard 1/16" (10-32 thread) connections or 1/32" (6-40 thread) connections. For use with Eksigent micro and nano LC systems, order columns with 1/32" connections and use either ACE 6-40 fittings (part number ACE-MC3210, 10 pack) or Eksigent 6-40 fittings (part number 5019621).

For 1/16" HPLC column connections up to 6000 psi, PEEK™ 1/16" fingertight fittings (part number ACE-CC10, 10 pack) are recommended. For 1/32" microbore HPLC column connections up to 6000 psi, PEEK™ 1/32" (6-40 thread) fingertight fittings (part number ACE-MC3210, 10 pack) are recommended. For 1/16" UHPLC column connections up to 25000psi, reusable 1/16" fittings (part number EXL-CC10, 10 pack) are recommended. To further extend UHPLC and HPLC column lifetimes, ACE pre-column filters are recommended. For further details please contact your distributor or visit www.ace-hplc.com

Please enquire for details of our
chromatography training, technical advice,
applications support, batch reservation
service and custom packing facility

email: info@ace-hplc.com



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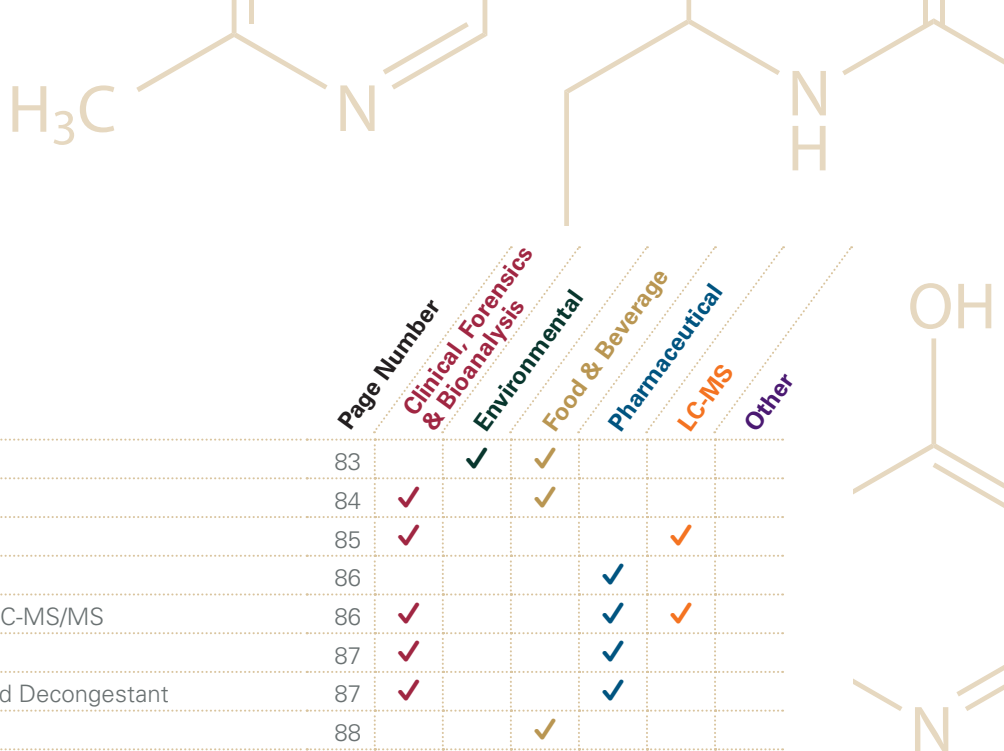
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Ibuprofen in Combination with Antihistamine and Decongestant	87	✓			✓		
Illegal Dyes in Spices	88			✓			
Insulin Analogues in Clinical and Post-Mortem Analyses	88	✓				✓	
Insulins	89	✓		✓			
Isoflavones	89			✓			
Isoflavones in Red Clover and Soy Extract	89			✓			
Itraconazole and Hydroxyitraconazole in Human Whole Blood by LC-MS/MS	90	✓			✓	✓	
Lansoprazole and Degradation Products after Acidic Hydrolysis in 0.1 M HCl	91				✓		
Lapatinib Anticancer Drug in Human Plasma by LC-MS/MS	91	✓			✓	✓	
Lidocaine in Saliva by LC-MS/MS	92	✓			✓	✓	
Lincosamide Antibiotics	92	✓			✓		
Lipid Classes Separation from <i>Drosophila Melanogaster</i>	93	✓				✓	
Liquorice Extracts Fingerprint	93			✓			
Local Anaesthetics	94				✓		
15-Hydroxy Lubiprostone in Human Plasma	94	✓			✓	✓	
Lubricant Additives: ADPA/OPNA Antioxidants	95		✓				
Lurbinectedin in Plasma by LC-MS/MS	95	✓			✓	✓	
Malachite Green	96			✓			
Maleic and Fumaric Acids	96						✓
MDMA (Ecstasy) and PMA (Dr Death) Separation	96	✓					
Melamine using Ion-Pairing Reagent	96			✓			
Metabolomic Analysis of Extracted Jurkat T Cells by LC-HRMS	97	✓				✓	
Metabolomic Biomarkers in Ethylmalonic Encephalopathy	97	✓				✓	
Metabolomics and Biochemical Genetics - Acylglycines	98	✓				✓	
Metabolomics – C4 & C5 Hydroxy and Dicarboxylic Acids	98	✓				✓	
Metabolomics – C4 Hydroxy Acids	99	✓				✓	
Metabolomics – C6 & C7 Hydroxy and Dicarboxylic Acids	99	✓				✓	
Methotrexate in K_2EDTA Human Plasma by LC-MS/MS	100	✓			✓	✓	
17 α -Methyltestosterone in Freshwater Tilapia Aquaculture	100	✓					
mGluR5 PET Tracer by Radio HPLC Analysis	101	✓					
Microbial Extract by LC-MS	101	✓				✓	
Microcystins from Blue/Green Algae in Drinking Water	102	✓	✓	✓		✓	
Milk Proteins	102	✓		✓			
Mycotoxins/Aflatoxins from Peppers	103			✓			
Mycotoxins by LC-MS/MS	103			✓		✓	
Naphthalenes (Substituted)	104						✓
Neonicotinoids in Honey by LC-MS/MS	104			✓		✓	

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		Page Number	Clinical, Forensics & Bioanalysis	Environmental	Food & Beverage	Pharmaceutical	LC-MS	Other
Neurotransmitters and Metabolites from Rat Brain by LC-MS/MS	105	✓					✓	
Nitroanilines (I)	106					✓		
Nitroanilines (II)	106					✓		
Nitrofuran Metabolites by LC-MS/MS	106			✓		✓	✓	
Nitrosamines European Toy Standard Method by LC-MS/MS	107		✓				✓	
Non-Steroidal Anti-Inflammatory Drugs by LC-MS/MS	108	✓				✓	✓	
Non-Steroidal Anti-Inflammatory Drugs – Fast Analysis	108	✓				✓		
Non-Steroidal Anti-Inflammatory Drugs (I)	107	✓				✓		
Non-Steroidal Anti-Inflammatory Drugs (II)	107	✓				✓		
Non-Steroidal Anti-Inflammatory Drugs (III)	108	✓				✓		
Nucleic Acids / Disease Biomarker Profiling (I)	109	✓						
Nucleic Acids / Disease Biomarker Profiling (II)	109	✓						
Nucleosides and Vitamins	109			✓				
Ochratoxin A	110			✓				
Olanzapine in Human Plasma by LC-MS/MS	110	✓				✓	✓	
Omeprazole and Degradation Products after Acidic Hydrolysis in 0.1 M HCl	110					✓		
Opiates from Drugs of Abuse Screen (#AN2190)	111	✓				✓	✓	
Opiates in Urine by LC-MS/MS	111	✓				✓	✓	
Organic Acids	112			✓				
Organic Acids – Fast Separation	112			✓				
Organophosphorus Flame Retardants in Water by LC-MS/MS	113		✓	✓			✓	
Organophosphorus (Isomeric) Flame Retardants in Water	113		✓	✓			✓	
Organotin Compounds	114		✓				✓	
OTC Gastric Drugs	114					✓		
Oxymetazoline in Nasal Spray Formulation	115					✓		
Oxysterols by LC-MS/MS	114	✓					✓	
Paclitaxel	115					✓		
<i>Paeonia Lactiflora</i> Extract HPLC Fingerprint	115	✓						
Paraben Preservatives	116			✓		✓		
Paracetamol and Related Compounds	116					✓		
Paracetamol and Related Substances – Enhanced Resolution	117					✓		
Paracetamol and Related Substances – Fast Analysis (I)	116					✓		
Paracetamol and Related Substances – Phase Selectivity	117					✓		
Paralytic Shellfish Poisoning (PSP) Toxins	118	✓	✓	✓				
Parotoid Macrogland Secretions from South American Toads	118	✓						
Paroxetine and Desfluoro Analogue	119					✓		
Peptides – Selectivity Changes with Bonded Phase and Mobile Phase	120	✓						
Peptides – Varying pH	119	✓						
Peptide Test Mix	119	✓						
Perfluorinated Compounds in Water by LC-MS/MS	122		✓	✓			✓	
Perfluoro Acids by LC-MS/MS	121		✓	✓			✓	
Perfluoroalkyl Substances by Ion-Pairing LC-MS/MS	121		✓	✓			✓	
250 Pesticide Screen by LC-MS/MS	123		✓	✓			✓	

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300 Pesticide Screen by LC-MS/MS	127	✓	✓			✓	
Pesticides by LC-MS/MS	132	✓	✓			✓	
Pesticides in Water	132	✓	✓				
Pharmaceutically Relevant Compounds (II)	133				✓		
Pharmaceutically Relevant Compounds (III)	133				✓		
Pharmaceutically Relevant Compounds (IV)	133				✓		
Pharmaceutically Relevant Compounds (V)	134				✓		
Pharmaceutically Relevant Mixture (I) – Different Selectivity Using pH	134				✓		
Pharmaceutically Relevant Mixture (II) – Different Selectivity Using pH	135				✓		
Phenelzine in Human Plasma by LC-MS/MS	135	✓				✓	
Phenol and Phenoxy Acid Herbicides	136		✓	✓			
Phenolic Acids	136			✓			
Phenolic Compounds from Red Grape Seed Extract	137			✓			
Phenolic Compounds in Ground Water & Landfill Leachates	136		✓				
Phenols in Purple Coneflower (<i>Echinacea Purpurea</i>)	137			✓			
Phosphatidylethanol Biomarker Analysis by UHPLC-MS/MS	138	✓				✓	
Phytoestrogens from Hop Extract by LC-MS/MS	138			✓		✓	
Pilocarpine	139				✓		
Plant Hormones Involved in Abiotic Stresses	139	✓	✓			✓	
[¹⁴ C]Pomalidomide and Metabolites in Human Plasma and Urine	141	✓				✓	
Polar Compounds Separation	140						✓
Polyamines	140	✓					
Polycyclic Tetracarboxylic Acids	140		✓			✓	
Polyethylene Glycol 1000	141		✓			✓	
Porphyrins in Oral Bacteria by LC-MS/MS	142	✓				✓	
Pravastatin and Isomers by LC-MS/MS	142	✓			✓	✓	
Pravastatin in Cell Lysate Samples by LC-MS/MS	143	✓				✓	
Prednisolone, Prednisone, Cortisol and Cortisone in Serum by LC-MS/MS	144	✓			✓	✓	
Preservatives (I)	144			✓			
Preservatives (II)	144			✓			
Pristinamycin Components in Plasma by LC-MS/MS	145	✓			✓	✓	
Proanthocyanidins from Cinnamon Bark Extract	145	✓		✓			
Procaine and p-Aminobenzoic Acid Separation	146				✓		
Propolis Phenolic Acids Applied to Human Skin	146	✓				✓	
Prostaglandins using LC-MS/MS	147	✓				✓	
Protein Test Mix	147	✓					
Proton Pump Inhibitors (PPIs)	147				✓		
Psychoactive Substances in 'Synthacaine' by LC-UV	148	✓			✓		
Quinidine, Quinine and their Hydroderivatives Separation	148	✓			✓		
Ranitidine Hydrochloride and Related Impurities	149	✓			✓		
Recombinant hGMCSF Purified from <i>Escherichia Coli</i>	149	✓					
Rifamycin Anti-tubercular Antibiotics in Human Plasma	150	✓				✓	
Sennosides in Traditional Chinese Medicine	151			✓	✓		

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Snake Venom from <i>Crotalus Durissus Terrificus</i>	151	✓						
Sotalol	151				✓			
Stability Indicating Method for HIV Injection Treatment	152				✓			
Statins – Atorvastatin	154	✓			✓			
Statins – Fluvastatin	154	✓			✓			
Statins in Lactone and Hydroxy Acid Forms by HPLC-UV	153				✓			
Statins – Pravastatin	155	✓			✓			
Statins – Simvastatin	155	✓			✓			
Steroid Hormones (Endogenous) by LC-MS/MS	155	✓					✓	
Steroid Mixture Separation	156	✓			✓			
Steroids Separation using Enhanced Polar Selectivity	157	✓			✓			
Steroids UHPLC-UV Analysis and Comparison	156				✓			
Steroids (Veterinary) by LC-MS/MS	157	✓			✓		✓	
St John's Wort	158			✓				
Substituted Methoxybenzene Isomers	159							✓
Sugars – Cola vs Diet Cola	159			✓				
Sugars – Disaccharides	159			✓				
Sugars – Lactulose	159			✓	✓			
Sugars – Maple Syrup	160			✓				
Sugars – Monosaccharides	160			✓				
Sugars – Orange Juice	161			✓				
Sugars Separation	161			✓				
Sulfonamides	161	✓		✓	✓			
Sulfurous Analytes Separation Comparison	162							✓
Sumatriptan and Promethazine by LC-MS/MS	162	✓			✓		✓	
Sunscreen Agents	163							✓
Synthetic Cannabinoids (SPICE) from Oral Fluid	164	✓			✓		✓	
Taxol in Fungal Extract by LC-MS/MS	165	✓					✓	
Telithromycin Analysis	165	✓			✓			
Terfenadine and Fexofenadine in Rat Plasma	166	✓			✓		✓	
Testosterone	166	✓					✓	
Tetracyclines	166				✓			
Thyroid Hormones by LC-MS/MS (I)	167	✓					✓	
Tocopherols	168	✓		✓				
Tocopherols Mixture Separation	167	✓		✓				
Toxins from <i>Amanita Phalloides</i> Mushrooms by LC-HRMS	168			✓			✓	
Tricyclic Antidepressants	168	✓			✓			
Tricyclic Antidepressants (Gradient)	169	✓			✓			
Tricyclic Antidepressants (Isocratic)	169	✓			✓			
Tricyclic Antidepressants (Isocratic Rapid Analysis)	170	✓			✓			
Triple API Pharmaceutical and Related Substances using Ultra Resolution	171				✓			
Tyrosine, Tryptophan and Tramadol by HPLC with Fluorescence Detection	172	✓						
USP Monograph – 17 α -Ethinylestradiol	172				✓			

Application Index

	Page Number	Clinical, Forensics & Bioanalysis	Environmental	Food & Beverage	Pharmaceutical	LC-MS	Other
USP Monograph – Amlodipine Besylate	172			✓			
USP Monograph – Budesonide	173			✓			
USP Monograph – Doxepin	173			✓			
USP Monograph – Estradiol	173			✓			
USP Monograph – Glimepiride	173			✓			
USP Monograph – Guaifenesin	174			✓			
USP Monograph – Hydrocortisone	174			✓			
USP Monograph – Hydroquinone	174			✓			
USP Monograph – Indomethacin	174			✓			
USP Monograph – Metronidazole	175			✓			
USP Monograph – Naproxen	175			✓			
USP Monograph – Paracetamol/Aspirin/Caffeine	175			✓			
Vanilla Flavourings – Natural and Artificial	176		✓				
Vanillins	177		✓				
Vanillins – Fast Analysis	177		✓				
1,25-Dihydroxyvitamins D2 and D3 in Serum by LC-MS/MS	179	✓				✓	
25-Hydroxy Vitamin D in Serum by LC-MS/MS	178	✓		✓		✓	
Vitamin D2/D3	178	✓		✓			
Vitamins – Fat Soluble	180	✓		✓			
Vitamins – Water Soluble (Gradient I)	180	✓		✓			
Vitamins – Water Soluble (Gradient II)	180			✓			
Vitamins – Water Soluble (Gradient III)	181			✓			
Vitamins – Water Soluble (Gradient IV)	181			✓			
Vitamins – Water Soluble (Isocratic I)	182			✓			
Vitamins – Water Soluble (Isocratic II)	182			✓			
Vitamins in Fruit Juice by Fast LC-MS	182			✓		✓	
Vitamins in Green Vegetables by LC-MS/MS - Water Soluble	183			✓		✓	
Vitamins and Polar Molecules - Water Soluble	184			✓			
Water Soluble Artificial Colours	184			✓			
Whey Proteins from Whole Milk	184	✓		✓		✓	
Wine Acid Analysis	185			✓			

For further applications

visit: www.ace-hplc.com

or

email: info@ace-hplc.com

Acylcarnitines by LC-MS/MS

Application #AN1150

Conditions

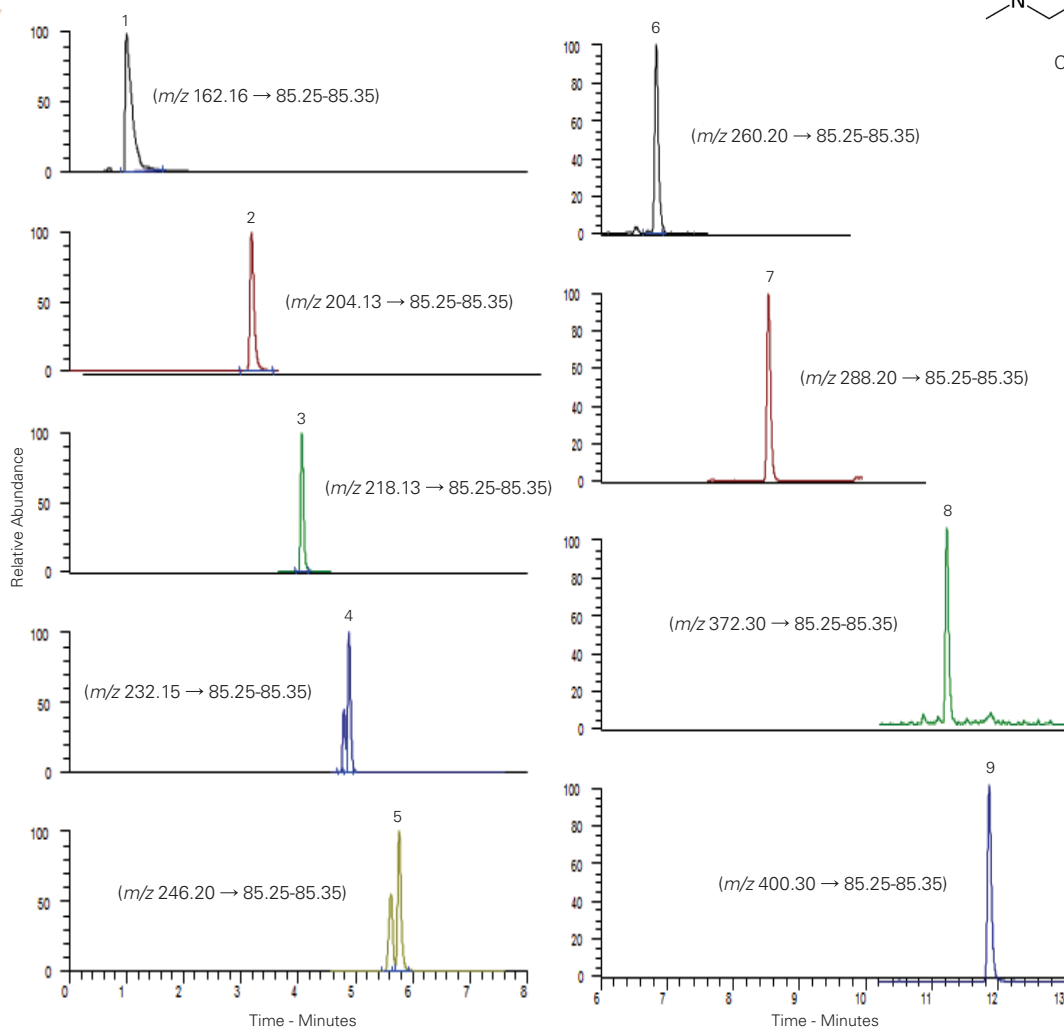
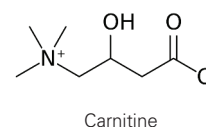
Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	0.5
0.5	0.5
9.0	90.0
13.0	90.0

Flow Rate: 0.3 mL/min
Sample: Dried serum extract
Detection: Positive mode ESI

Analytes

1. Carnitine
2. Acetylcarnitine
3. Propionylcarnitine
4. Butyrylcarnitine & Isobutyrylcarnitine
5. Isovalerylcarnitine & 2-Methylbutyrylcarnitine
6. Hexanoylcarnitine
7. Octanoylcarnitine
8. Myristoylcarnitine
9. Palmitoylcarnitine



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Additives and Intense Sweeteners

Application #AN2950

Conditions

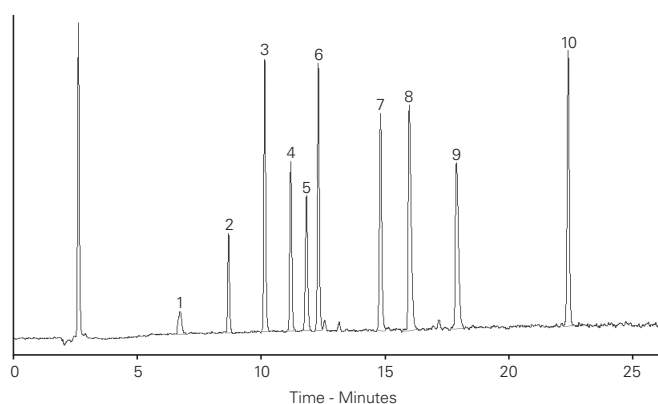
Column: ACE 5 C18
Dimensions: 250 x 4.0 mm
Part Number: ACE-121-2504
Mobile Phase: A: H₂O
 B: MeCN
 C: 1% TFA in H₂O
Gradient:

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

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

Analytes

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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Alcohol Biomarkers by UHPLC-MS/MS

Application #AN1910

Conditions

Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 1 mM ammonium fluoride
 B: MeCN
Gradient:

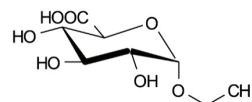
Time (mins)	%B
0.0	0
0.5	20
1.5	20
2.0	100
4.0	100
4.5	0

Flow Rate: 0.4 mL/min
Injection: 1 µL
Temperature: 40 °C
Detection: AB SCIEX triple quad 5500
 Negative ESI MRM
 Source temperature: 750 °C
 IonSpray voltage: -4500 V

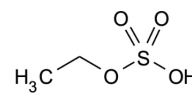
Fluoride counter-ion thought to enhance negative ESI response
 Detection limit ~ 1 ng/mL in oral fluid

Analytes

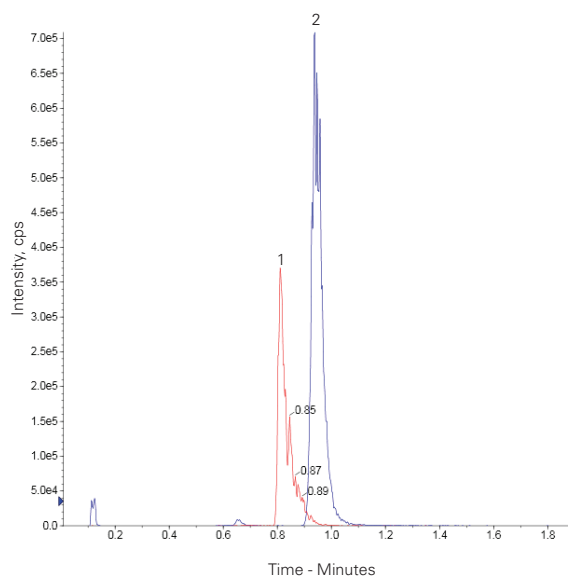
1. Ethyl glucuronide (EtG)
2. Ethyl sulphate (EtS)



Ethyl glucuronide (EtG)



Ethyl sulphate (EtS)



Transitions

Quantifiers
 EtS m/z 124.8 → 79.9
 EtG m/z 221 → 85
Qualifiers
 EtS m/z 124.8 → 97
 EtG m/z 221 → 75

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Alternative Selectivity Provided by ACE CN-ES

Application #AN2450

Conditions

Column: ACE Excel 3 CN-ES

ACE Excel 3 CN

ACE Excel 3 C18

Dimensions: 50 x 2.1 mm**Part Number:** EXL-1113-0502U (ACE Excel 3 CN-ES),
EXL-114-0502U (ACE Excel 3 CN),
EXL-111-0502U (ACE Excel 3 C18)**Mobile Phase:** A: 0.1% formic acid in H₂OB: 0.1% formic acid in MeOH/H₂O (90:10 v/v)**Gradient:****Time (mins)** **%B**

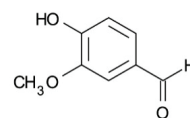
0 3

5 100

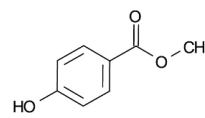
Flow Rate: 0.6 mL/min**Injection:** 1 µL**Temperature:** 40 °C**Detection:** UV, 254 nm

Analytes

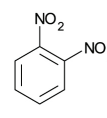
1. Metronidazole
2. Benzyl alcohol
3. Hydrochlorothiazide
4. Vanillin
5. Methyl paraben
6. 1,2-Dinitrobenzene



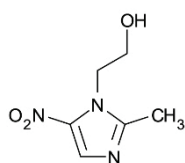
Vanillin



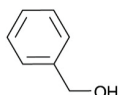
Methyl paraben



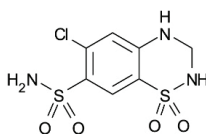
1,2-Dinitrobenzene



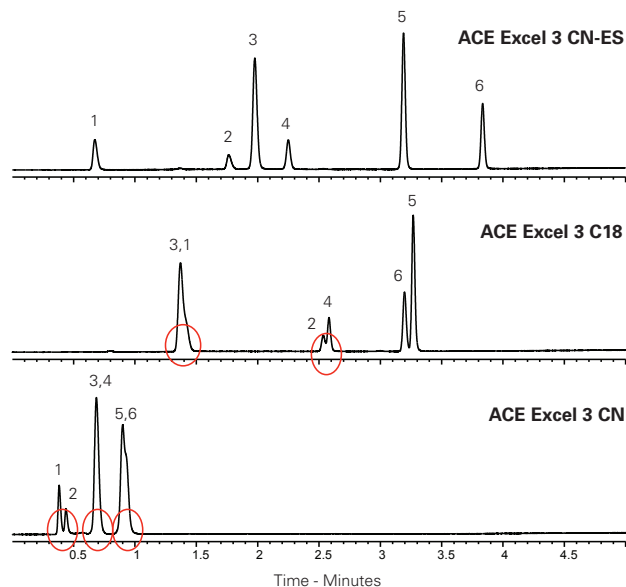
Metronidazole



Benzyl alcohol



Hydrochlorothiazide



Amino Acid Profile of Edible Stink Bugs by LC-MS

Application #AN3530

Conditions

Column: ACE 5 C18**Dimensions:** 250 x 4.6 mm**Part Number:** ACE-121-2546**Mobile Phase:** A: 0.01% formic acid in H₂O

B: 0.01% formic acid in MeCN

Gradient:**Time (mins)** **%B**

0.0 5

3.0 30

6.0 30

7.5 80

10.5 80

13.0 100

18.0 100

20.0 5

22.0 5

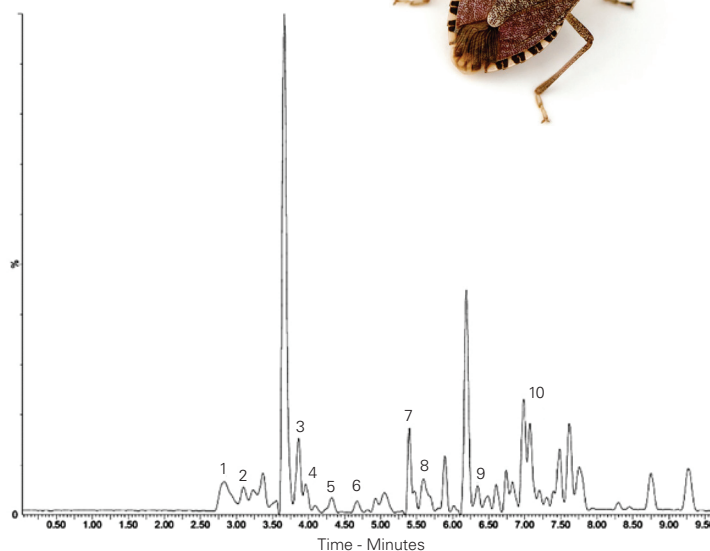
Flow Rate: 0.7 mL/min**Injection:** 1 µL**Detection:** Waters QToF-MS

ESI in positive ion mode

Scan range: *m/z* 100-700**Sample:** Profile of edible stink bugs
(*Encosternum delegorguei* Spinola)
after acid hydrolysis of extracted proteins

Analytes

1. Arginine
2. Isoleucine
3. Leucine
4. Proline
5. Valine
6. Methionine
7. Hydroxyproline
8. Tyrosine
9. Lysine
10. Phenylalanine



Musundire R, Osuga IM, Cheseto X, Irungu J, Torto B (2016) Aflatoxin Contamination Detected in Nutrient and Anti-Oxidant Rich Edible Stink Bug Stored in Recycled Grain Containers. PLoS ONE 11(1): e0145914. doi:10.1371/journal.pone.0145914



Amino Acid Enantiomer Separation of Seawater Samples

Application #AN3880

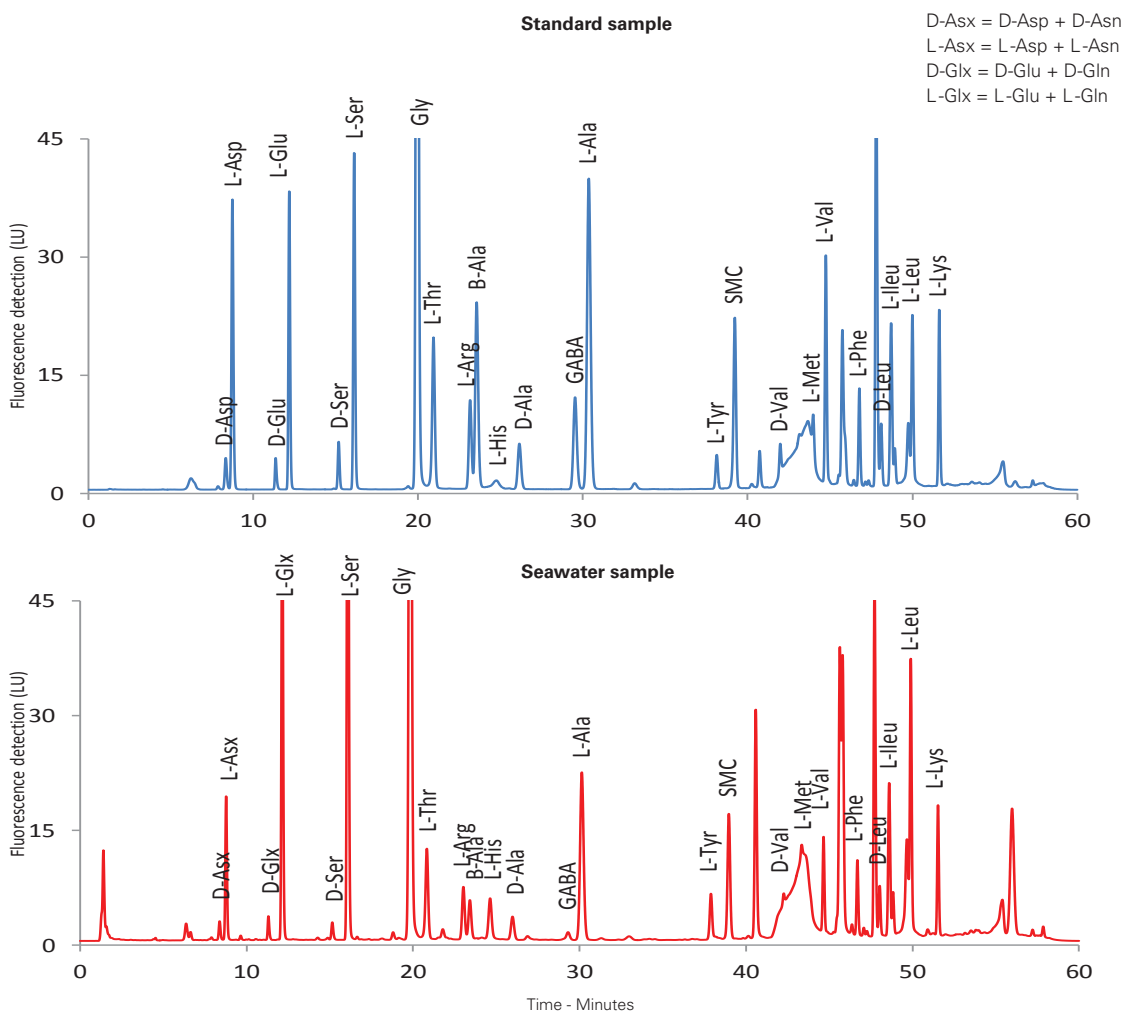
This method enables the quantification of free, dissolved combined, particulate and total amino acid enantiomers from seawater. After hydrolysis, hydrolysates are evaporated, dissolved in borate buffer (pH 10) and centrifuged to remove flocculates. Samples are derivatised with OPA/IBDC (N-isobutyrYL-D-cysteine) and SMC (S-methyl-L-L-cysteine) added as internal standard. Enantiomer elution order can be reversed by using IBLC (N-isobutyrYL-L-cysteine)

Conditions

Column: ACE UltraCore 5 SuperC18
Dimensions: 250 x 3.0 mm
Part Number: CORE-5A-2503U
Mobile Phase: A: 95% 40 mM KH_2PO_4 pH 6.15 in H_2O + MeOH/MeCN (93:7 v/v)
 B: 62% MeOH/MeCN (93:7 v/v) + 38% A
Gradient:

Time (mins)	%B
0.0	0
13.0	27
33.0	36
38.0	58
54.0	92
55.0	100
57.5	0
60.0	0

Flow Rate: 0.7 mL/min
Temperature: 45 °C
Detection: Fluorescence, λ_{ex} 330 nm λ_{em} 450 nm



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Amino Acids and Biogenic Amines in Wine and Beer

Application #AN2800

Conditions

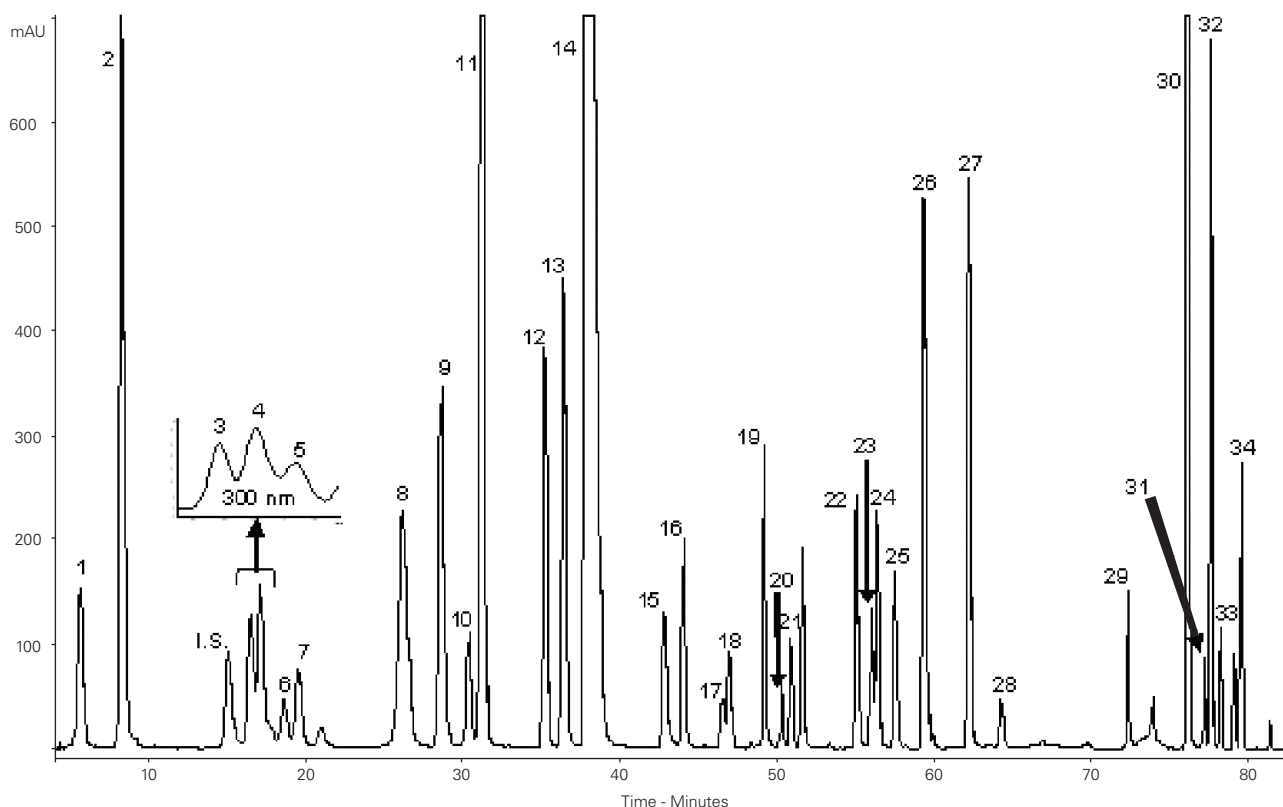
Column: ACE 5 C18-HL
Dimensions: 250 x 4.6 mm
Part Number: ACE-321-2546
Mobile Phase: A: 25 mM acetate buffer (pH 5.8)
 B: MeCN/MeOH (80:20 v/v)
Gradient:

Time (mins)	%B
0.0	45
20.0	60
30.5	17
33.5	17
65.0	40
73.0	72
78.0	82
82.0	100
85.0	100

Flow Rate: 0.8 mL/min
Injection: 20 µL
Temperature: 16 °C
Detection: DAD, 269, 280 and 300 nm
Sample: Derivatisation with diethyl ethoxymethylmalonate

Analytes

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



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Please contact us for further information and advice on
 specific applications or for method development support



Amino Acids in Extracellular Matrix

Page 1 of 2

Application #AN4410

Conditions

Column: ACE 3 AQ
Dimensions: 150 x 0.5 mm
Part Number: ACE-116-15005
Mobile Phase: A: 0.1% (v/v) formic acid in H₂O
 B: 0.1% (v/v) formic acid in MeCN
Gradient:

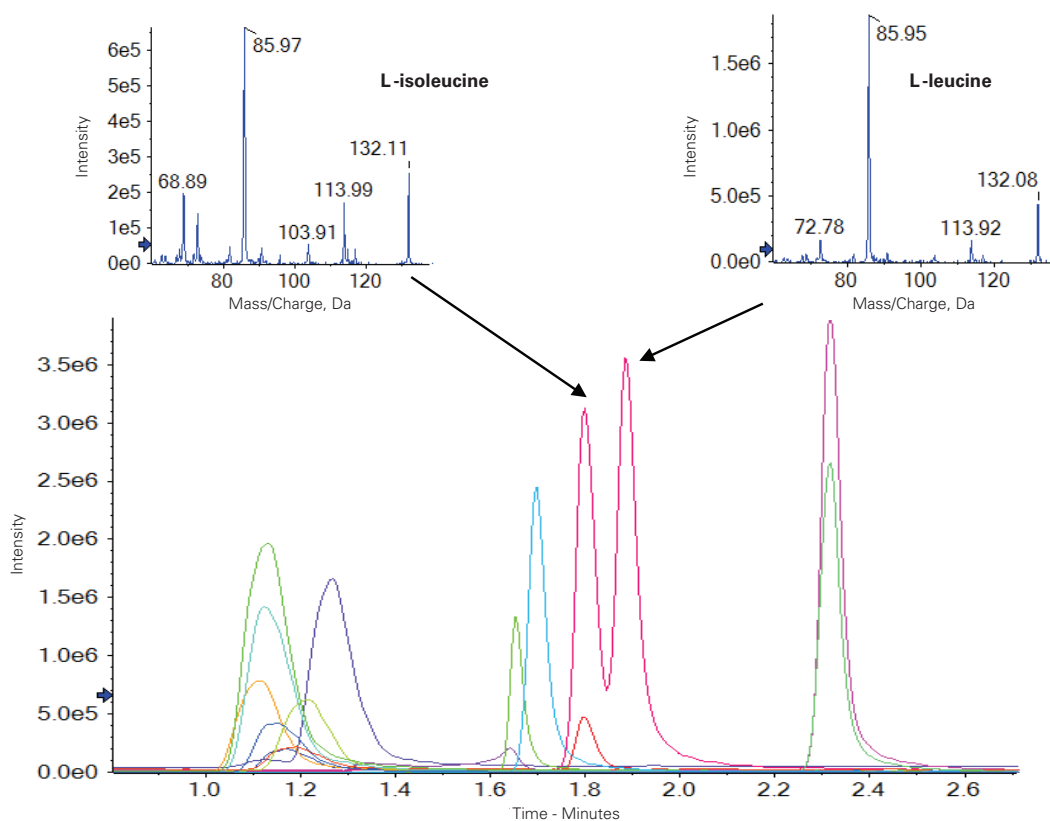
Time (mins)	%B
0	2
5	20

Flow Rate: 20 µL/min
Injection: 2 µL
Detection: SCIEX QTRAP 6500 LC-MS/MS system
 IonDrive Turbo V source
 Positive ion MRM mode
Sample: Standard solution containing 2.5 µmol/mL each amino acid (1.25 µmol/mL cysteine).
 0.5 pmol on-column (except for cysteine, 0.25 pmol on-column).
 Method also applied to analysis of cell supernatant from purified peripheral blood mononuclear cells (PBMCs)

Peak	Analyte	Rt (mins)	MRM Transition (m/z)	LOD (fmol)	PBMC cell conc. (fmol/µL)
1	Lys	1.094	147.1 → 84	5	305
2	His	1.111	156.1 → 110	5	23
3	Arg	1.117	175.2 → 70	2.5	220
4	Gly	1.129	76.1 → 30	<1000	<LOD
5	Cys	1.140	241.2 → 152.1	1.25	36
6	Asp	1.155	134.1 → 74	10	26
7	Ser	1.156	106.1 → 60	50	21
8	Ala	1.189	90.1 → 44	<1000	<LOD
9	Glu	1.208	148.1 → 84	5	55
10	Pro	1.262	116.1 → 70	2.5	96
11	Val	1.630	118.1 → 55	25	105
12	Met	1.645	150.2 → 104	1	3
13	Tyr	1.669	182.2 → 165.2	1	97
14	Ile	1.773	132.1 → 86, 69	2.5	329
15	Leu	1.858	132.1 → 86	2.5	338
16	Phe	2.273	166.1 → 103	1	100
17	Thr	2.275	120.1 → 103.2	1	97

MRM transitions and limits of detection (LODs) for 17 free amino acids and their concentrations measured in diluted PBMC cell supernatant

Full scan linear ion trap MS/MS data can distinguish isobaric amino acids L-isoleucine and L-leucine.

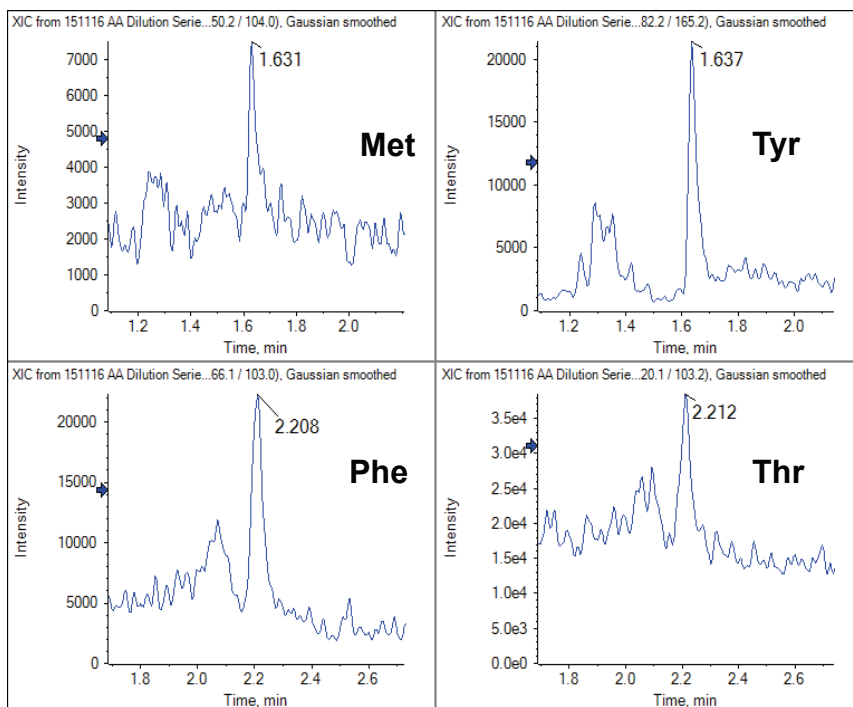


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Amino Acids in Extracellular Matrix (Continued)

Page 2 of 2
Application #AN4410

MRM extracted ion chromatograms for four amino acids each at 1 fmol on-column



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Amino Acids Derivatized with Dabsyl Chloride

Application #AN3420

Conditions

Column: ACE 3 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-111-1503
Mobile Phase: A: 10 mM KH_2PO_4 buffer (pH 6.55)
B: MeCN/2-Propanol (70:30 v/v)

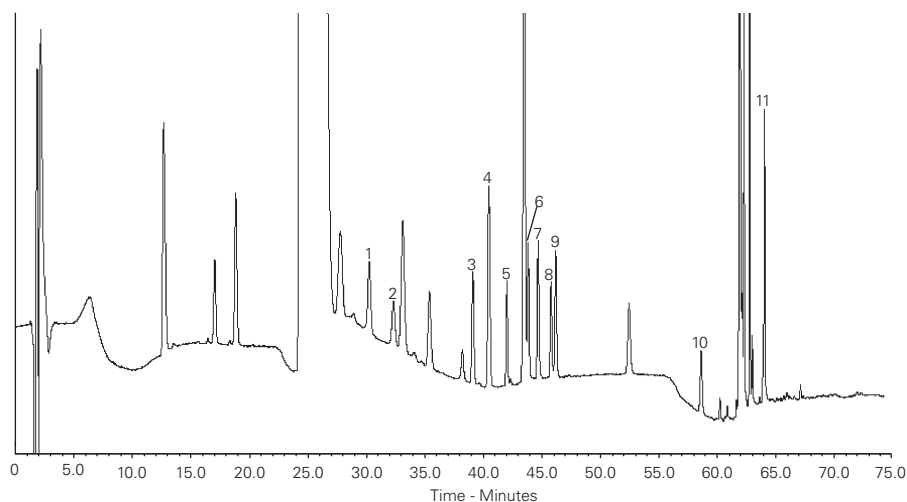
Gradient:

Time (mins)	%B
0.0	10
3.0	18
17.0	18
27.0	22
35.0	22
50.0	35
57.0	35
70.0	65
70.1	65
89.0	10
90.0	10

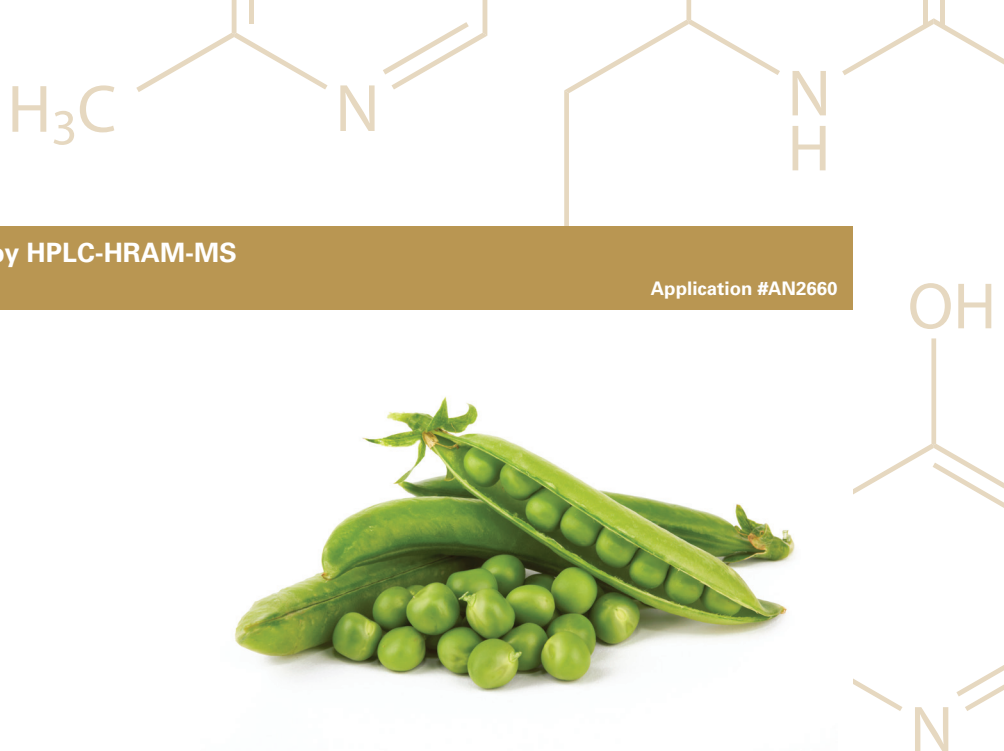
Flow Rate: 0.5 mL/min
Injection: 20 μL
Temperature: 50 $^{\circ}\text{C}$
Detection: UV, 436 nm (PDA detector)

Analytes

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



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Amino Acids in Peas (*Pisum Sativum*) by HPLC-HRAM-MS

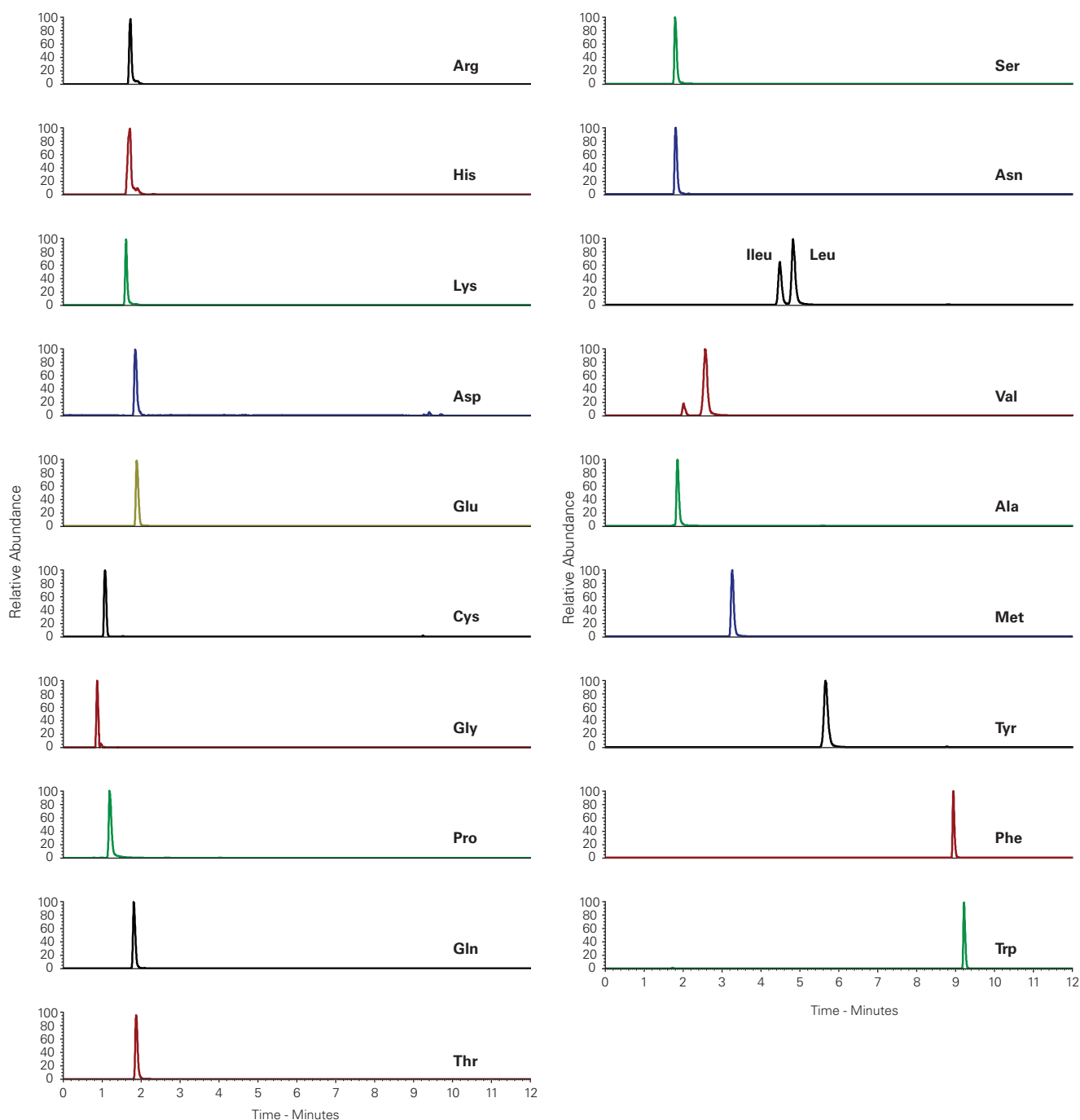
Application #AN2660

Conditions

Column: ACE 3 AQ
Dimensions: 150 x 3.0 mm
Part Number: ACE-116-1503
Mobile Phase: A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	0
10	100

Flow Rate: 0.4 mL/min
Injection: 5 µL
Temperature: 30 °C
Detection: Exacte Orbitrap high resolution MS
ESI positive ion mode
Capillary temperature: 350 °C



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Aminoglycosides in Eggs

Application #AN1920

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 20 mM HFBA in H₂O/MeCN (98:2 v/v)
 B: 20 mM HFBA in MeCN/H₂O (98:2 v/v)
Gradient:

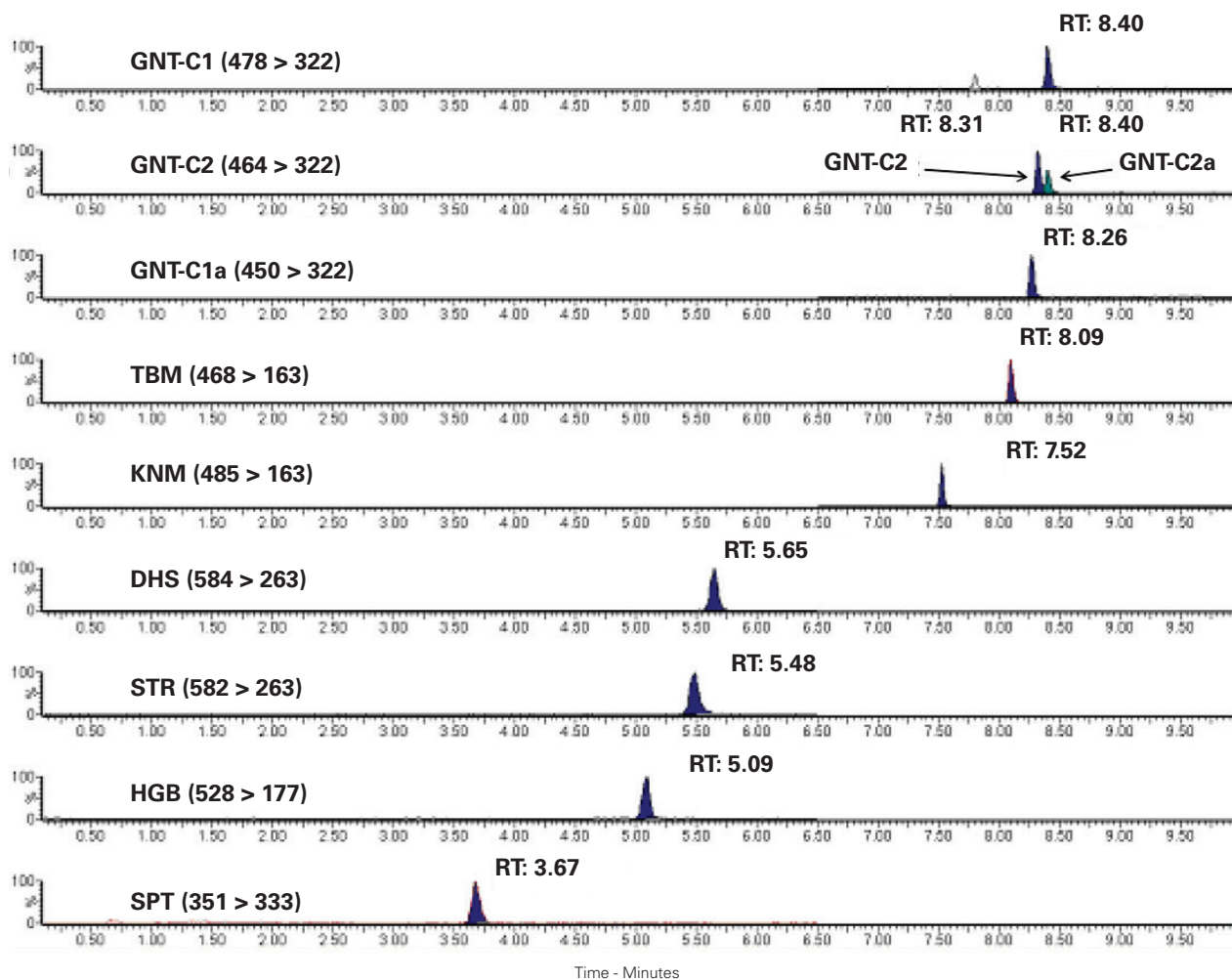
Time (mins)	%B	Curve
0.0	5.0	-
2.0	15.0	6
4.5	19.0	6
5.5	19.5	8
6.0	22.0	6
7.0	35.0	6
9.0	48.0	8
9.5	5.0	6

Flow Rate: 0.4 mL/min**Temperature:** 40 °C**Detection:** Positive ESI MRM (transitions as shown)**Sample:** Extraction at low pH, clean up with WCX SPE cartridge

Egg sample spiked at 100 µg/kg (CCα)

Analytes

GNT Gentamicin
 TBM Tobramycin
 KNM Kanamycin
 DHS Dihydrostreptomycin
 STR Streptomycin
 HGB Higmomycin-B
 SPT Spectinomycin



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Amoxicillin Metabolites in Human Liver Microsomes

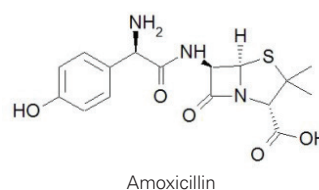
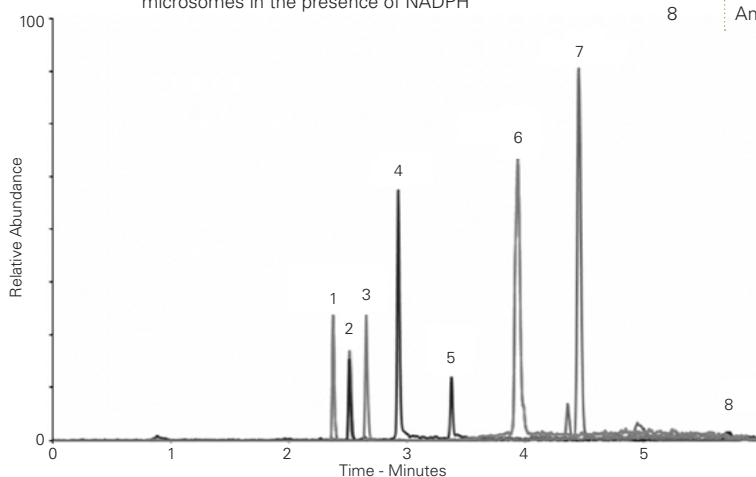
Application #AN4400

Conditions

Column: ACE 5 C18-300
Dimensions: 150 x 4.6 mm
Part Number: ACE-221-1546
Mobile Phase: 0.1% (v/v) formic acid in H₂O/MeCN (35:65 v/v)
Flow Rate: 0.4 mL/min
Injection: 15 µL
Temperature: 21 °C
Detection: Agilent 6410 triple quad MS
 ESI in positive ion mode
 Full scan MS and MS/MS data obtained

Sample: *In vitro* incubation of amoxicillin with human liver microsomes in the presence of NADPH

Peak	Analyte	[M+H] ⁺	Elemental Composition	Metabolic Reaction
1	M1	382	C ₁₆ H ₂₀ N ₃ O ₆ S	Hydroxylation
2	M2	379	C ₁₇ H ₁₉ N ₂ O ₇ S	Oxidative deamination
3	M3	382	C ₁₆ H ₁₉ N ₃ O ₆ S	Oxidation of aliphatic chain
4	M4	380	C ₁₆ H ₁₈ N ₃ O ₆ S	Oxidation of aliphatic chain
5	M5	396	C ₁₆ H ₂₀ N ₃ O ₇ S	Oxidation of aliphatic chain
6	M6	322	C ₁₅ H ₁₉ N ₃ O ₅ S	Decarboxylation
7	M7	542	C ₂₅ H ₂₈ N ₃ O ₁₁ S	Glucuronidation
8	Amoxicillin	366	C ₁₆ H ₂₀ N ₃ O ₅ S	



Szultka M, Krzeminski R, Jackowski M, Buszewski B. (2014) Identification of *in vitro* Metabolites of Amoxicillin in Human Liver Microsomes by LC-ESI/MS, Chromatographia, 77, 1027-1035. doi 10.1007/s10337-014-2648-2

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Amphetamines from Drugs of Abuse Screen (#AN2190)

Application #AN2350

Conditions

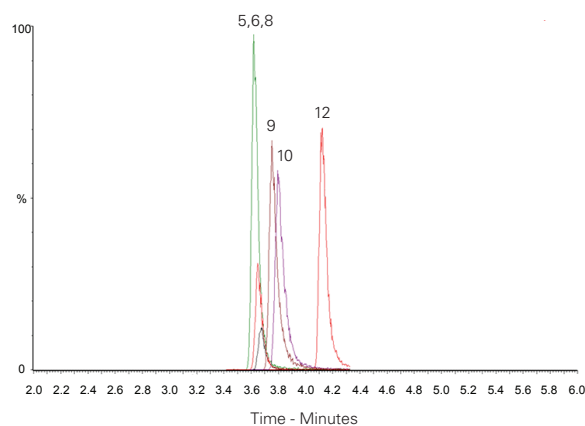
Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 5 mM ammonium acetate in H₂O
 B: 5 mM ammonium acetate in MeOH
Gradient:

Time (mins)	%B
0.0	10
10.0	90
11.9	90
13.4	10
15.5	10

Flow Rate: 0.3 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS Quattro Premier XE triple quad
 MRM, positive and negative ESI mode
 Desolvation temperature: 450 °C
 Ion source temperature: 150 °C
 Collision gas pressure: 3.5 x 10⁻³ mbar

Analytes

- Amphetamine-d5
(*m/z* 141.0 → 123.9)
- Amphetamine
(*m/z* 136.0 → 118.9)
- MDA
(*m/z* 180.1 → 105.0)
- MDMA
(*m/z* 194.1 → 163.0)
- Methamphetamine
(*m/z* 150.0 → 90.9)
- MDEA
(*m/z* 208.2 → 163.0)



Amphetamines in Urine by LC-MS/MS

Application #AN1010

Conditions

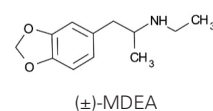
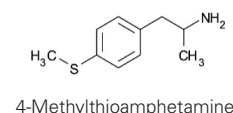
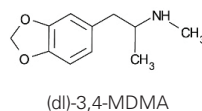
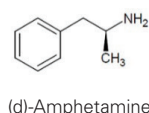
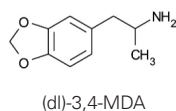
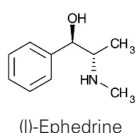
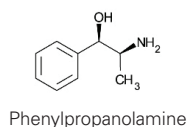
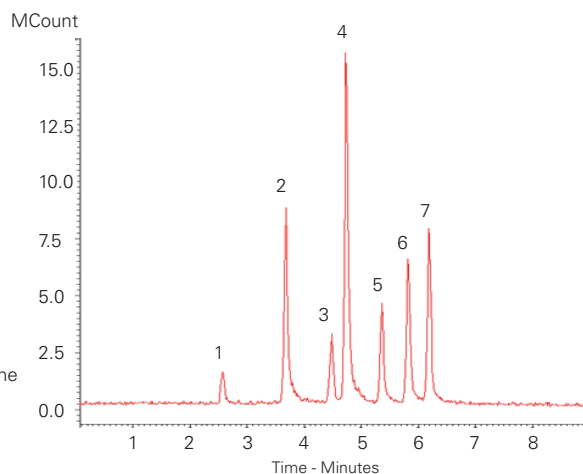
Column: ACE Excel 3 SuperC18
Dimensions: 75 x 2.1 mm
Part Number: EXL-1111-7502U
Mobile Phase: A: 5 mM ammonium hydroxide
 pH 10.8 in H₂O
 B: 5 mM ammonium hydroxide pH 10.8
 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	30
8	95

Flow Rate: 0.6 mL/min
Injection: 2 µL
Temperature: 60 °C
Detection: Varian 320 Triple Quadrupole MS
 Electrospray voltage: +5 kV
 Inlet capillary voltage: 30 V
 CID with argon at 1.5 mTorr
 Collision cell potential ranges
 from 5 to 17 V
 Drying gas (nitrogen) temperature: 325 °C
 Nebulizing gas (nitrogen) pressure: 35 psi
 Extended Dynamic Range

Analytes

- Phenylpropanolamine
LOD (est) 4 ppb
(*m/z* 151.6 → 134.0)
- (l)-Ephedrine
LOD (est) 2 ppb
(*m/z* 166.2 → 148.0)
- (dl)-3,4-MDA
LOD (est) 30 ppb
(*m/z* 179.7 → 163.0)
- (d)-Amphetamine
LOD (est) 4 ppb
(*m/z* 135.8 → 90.9)
- (dl)-3,4-MDMA
LOD (est) 2 ppb
(*m/z* 193.7 → 163.0)
- 4-Methylthioamphetamine
LOD (est) 10 ppb
(*m/z* 182.2 → 165.0)
- (±)-MDEA
LOD (est) 1 ppb
(*m/z* 207.7 → 165.0)





Anabolic Steroids from Horse Urine by LC-MS/MS

Application #AN2360

Conditions

Column: ACE Excel 2 C18
Dimensions: 50 x 2.1 mm
Part Number: EXL-101-0502U
Mobile Phase: A: 2 mM ammonium acetate, 0.1% formic acid in H₂O
 B: 2 mM ammonium acetate, 0.1% formic acid in MeOH

Gradient:

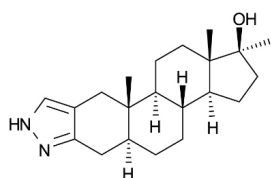
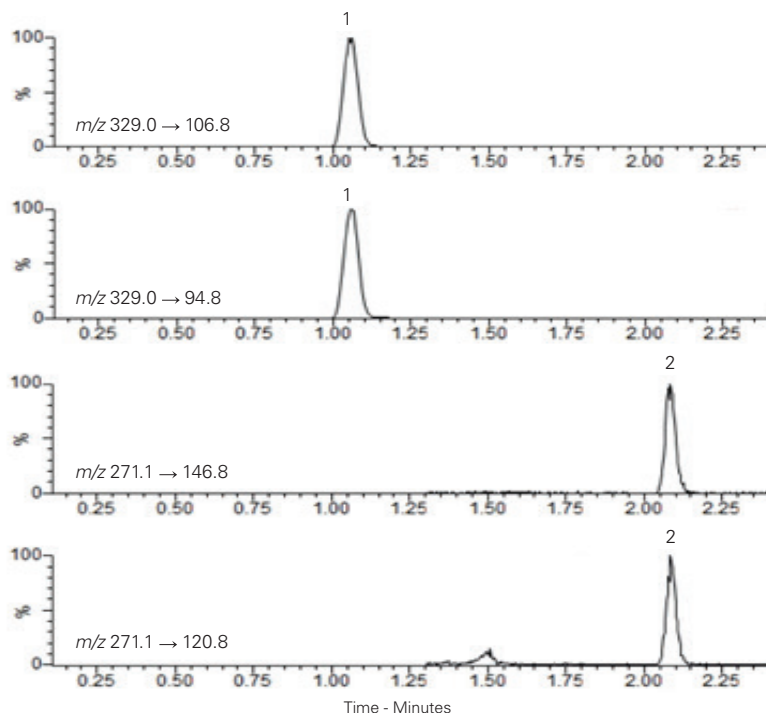
Time (mins)	%B
0.00	75
0.25	75
1.50	90
1.51	100
3.50	100
3.51	75
4.00	75

Flow Rate: 0.4 mL/min**Injection:** 10 µL**Temperature:** 40 °C

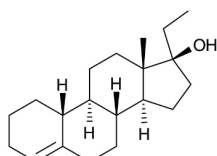
Detection: Premier XE triple quad MS
 MRM positive ion mode
 Desolvation temperature: 450 °C
 Ion Source temperature: 120 °C

Analytes

1. Stanazolol
2. Ethylestrenol



Stanazolol



Ethylestrenol

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Analgesic Rapid Separation

Application #AN1370

Conditions

Column: ACE Excel 2 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: EXL-1011-0502U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN

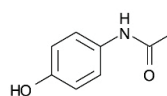
Gradient:

Time (mins)	%B
0.0	5
1.0	100
1.5	100
1.6	5
3.1	5

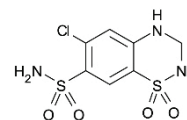
Flow Rate: 1.2 mL/min**Injection:** 0.5 µL**Temperature:** 50 °C**Detection:** UV, 214 nm

Analytes

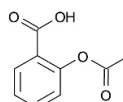
1. Paracetamol
2. Hydrochlorothiazide
3. Aspirin
4. Bendroflumethiazide
5. Ketoprofen
6. Flurbiprofen
7. Ibuprofen



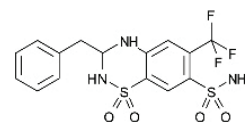
Paracetamol



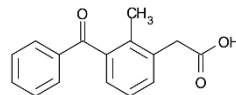
Hydrochlorothiazide



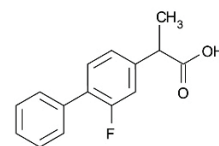
Aspirin



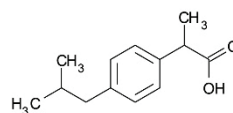
Bendroflumethiazide



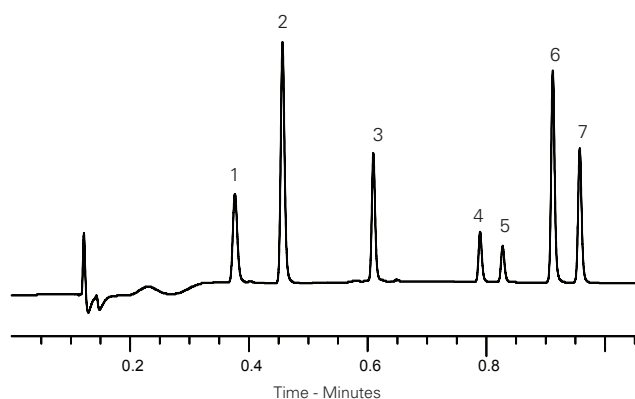
Ketoprofen



Flurbiprofen



Ibuprofen



Analgesic Separation

Application #AN2490

Conditions

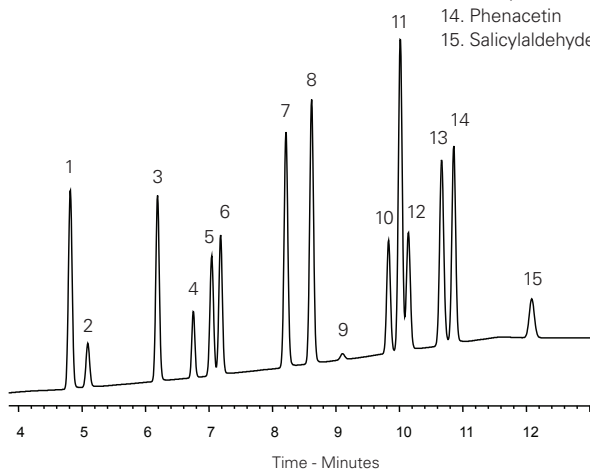
Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	5
9	35
14	35

Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: UV, 240 nm

Analytes

1. 4-Acetamidophenol
2. 4-Aminobenzoic acid
3. 4-Hydroxybenzoic acid
4. Caffeine
5. 2-Acetamidophenol
6. 3-Hydroxybenzoic acid
7. Salicylamide
8. Acetanilide
9. Phenol
10. Acetylsalicylic acid
11. Benzoic acid
12. Sorbic acid
13. Salicylic acid
14. Phenacetin
15. Salicylaldehyde



**For additional
column dimensions**

Please enquire
email: info@ace-hplc.com

Analgesics / Cough & Cold Medicine Ingredients

Application #AN1930

Conditions

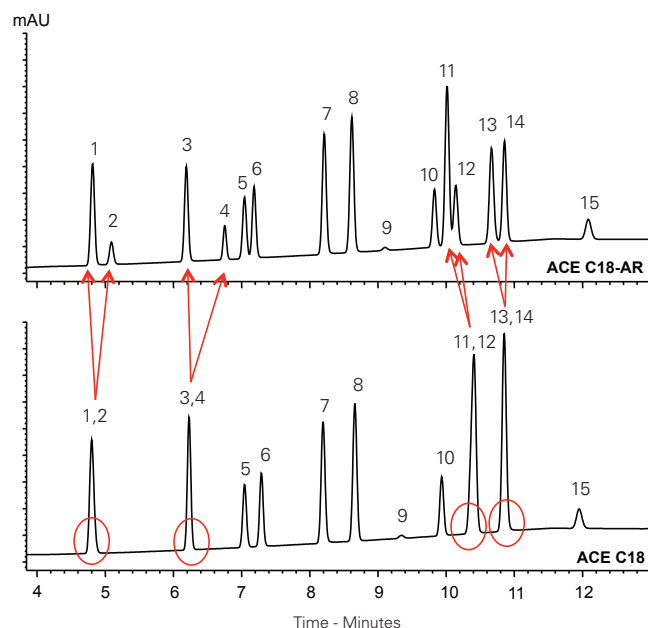
Column: ACE 3 C18-AR
 ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Numbers: ACE-119-1546
 ACE-111-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	5
9	35
14	35
15	5

Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: UV, 240 nm

Analytes

1. Paracetamol
2. 4-Aminobenzoic acid
3. 4-Hydroxybenzoic acid
4. Caffeine
5. 2-Acetamidophenol
6. 3-Hydroxybenzoic acid
7. Salicylic acid
8. Acetanilide
9. Phenol
10. Aspirin
11. Benzoic acid
12. Sorbic acid
13. Salicylic acid
14. Phenacetin
15. Salicylaldehyde





Andrographis Paniculata Fingerprint Profile by RRLC-TOF-MS

Application #AN3770

Conditions

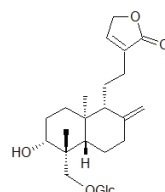
Column: ACE Excel 3 SuperC18
Dimensions: 100 x 2.1 mm
Part Number: EXL-1111-1002U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	30
2.0	40
8.0	75
9.0	100
9.5	30
15.5	30

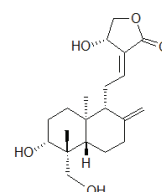
Flow Rate: 0.2 mL/min
Injection: 2 µL
Temperature: 35 °C
Detection: Waters Premier Q-TOF-MS
 ESI in positive ion mode
 Scan Range *m/z* 100-1000 Da

Analytes

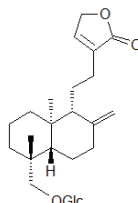
1. 14-Deoxyandrographiside
2. Andrographolide
3. Neoandrographolide
4. 14-Deoxyandrographolide
5. Dehydroandrographolide



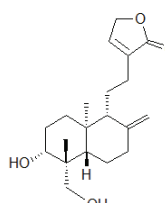
14-Deoxyandrographiside
(*Tentative assignment)



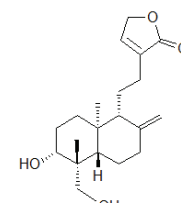
Andrographolide



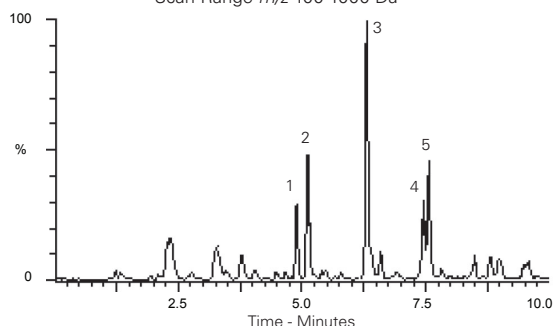
Neoandrographolide



14-Deoxyandrographolide
(*Tentative assignment)



Dehydroandrographolide



Andrographis Paniculata -
used in Chinese medicine.



Song Y-X, Liu S-P, Jin Z, Qin J-F, Jiang Z-Y (2013) Qualitative and quantitative analysis of *Andrographis Paniculata* by rapid resolution liquid chromatography/time-of-flight mass spectrometry. Molecules 189, 12192-12207 doi:10.3390/molecules181012192

Angiotensin II Receptor Antagonists by LC-UV

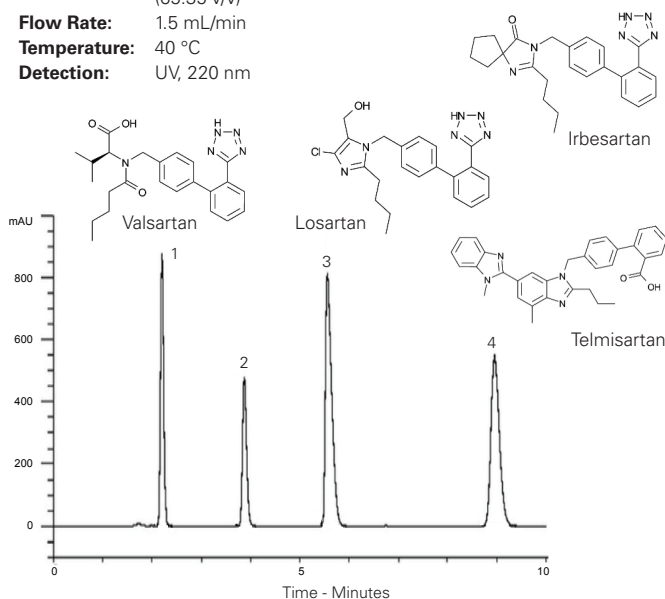
Application #AN3460

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 0.025 M KH₂PO₄ pH 6.0/MeCN
 (65:35 v/v)
Flow Rate: 1.5 mL/min
Temperature: 40 °C
Detection: UV, 220 nm

Analytes

1. Valsartan
2. Losartan
3. Irbesartan
4. Telmisartan



For further applications

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Elshanawane AA, Abdelaziz LM, Hafez HM (2012) Stability Indicating HPLC Method for Simultaneous Determination of Several Angiotensin-II Receptor Antagonists in Their Dosage Forms. Pharmaceut Anal Acta 3:175. doi:10.4172/2153-2435.1000175

Angiotensin Peptides

Application #AN2150

Conditions

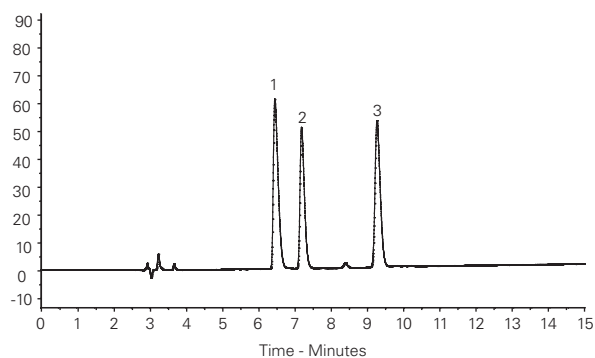
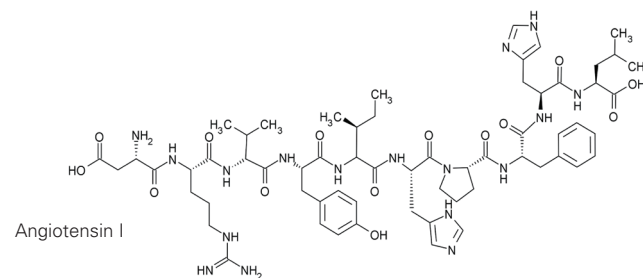
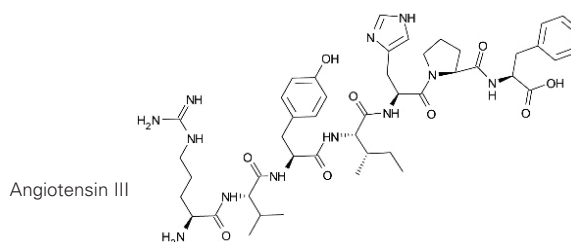
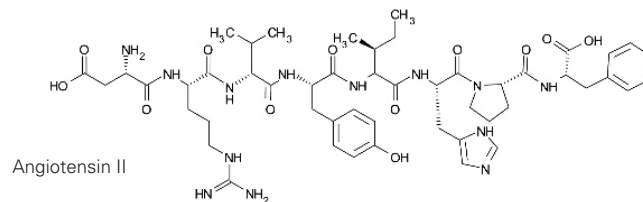
Column: ACE 5 C18-300
Dimensions: 250 x 4.6 mm
Part Number: ACE-221-2546
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in H₂O/MeCN (80:20 v/v)
Gradient:

Time (mins)	%B
0	25
15	40

Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV, 215 nm

Analytes

1. Angiotensin II (MW 1046.2)
2. Angiotensin III (MW 931.1)
3. Angiotensin I (MW 1296.5)



Annatto

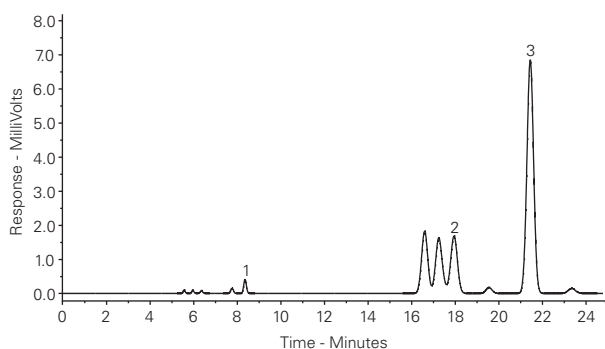
Application #AN2840

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: MeCN/0.16% acetic acid in H₂O (70:30 v/v)
Flow Rate: 1.2 mL/min
Temperature: Ambient
Detection: UV-VIS, 478 nm

Analytes

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



Annatto - An orange-red condiment and food colouring derived from the seeds of the achiote tree.

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Anthocyanins from *Sambucus Nigra* (Elderberry)

Application #AN2750

Conditions

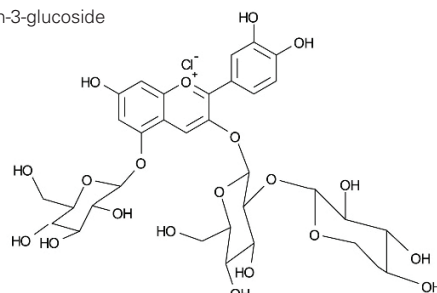
Column: ACE UltraCore 5 SuperC18**Dimensions:** 150 x 4.6 mm**Part Number:** CORE-5A-1546U**Mobile Phase:** A: 5% formic acid in H₂O
B: MeOH

Gradient:	Time (mins)	%B
	0	5
	35	10
	55	65
	65	65

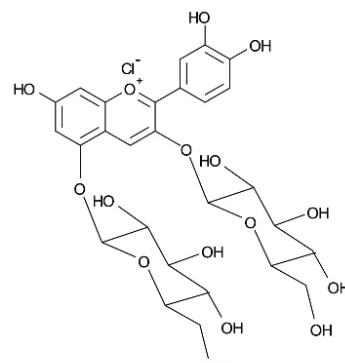
Flow Rate: 1 mL/min**Temperature:** 40 °C**Detection:** UV-Vis, 525 nm

Analytes

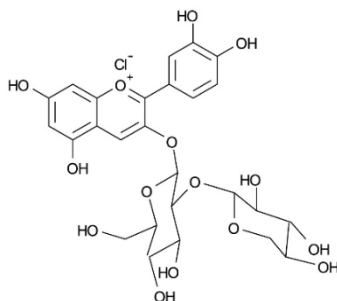
1. Cyanidin-3-sambubioside-5-glucoside
2. Cyanidin-3,5-diglucoside
3. Cyanidin-3-sambubioside
4. Cyanidin-3-glucoside



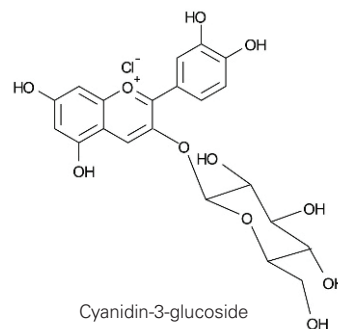
Cyanidin-3-sambubioside-5-glucoside



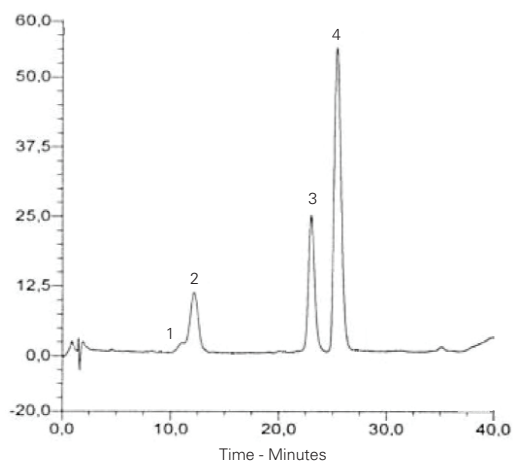
Cyanidin-3,5-diglucoside



Cyanidin-3-sambubioside



Cyanidin-3-glucoside



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Antihistamines

Application #AN1400

Conditions

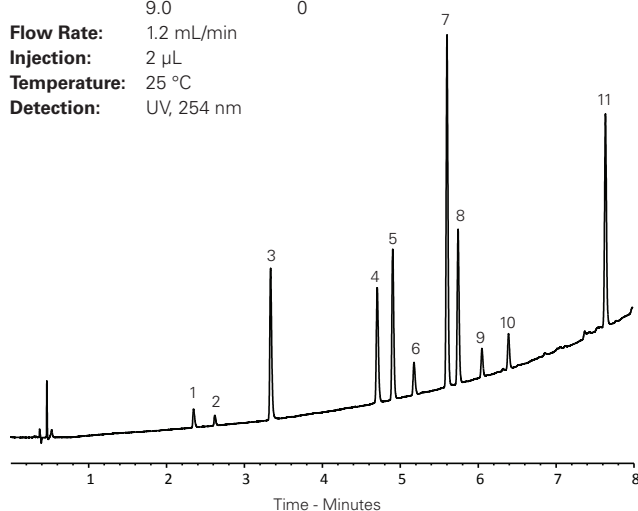
Column: ACE UltraCore 2.5 SuperC18**Dimensions:** 100 x 3.0 mm**Part Number:** CORE-25A-1003U**Mobile Phase:** A: 20 mM ammonium formate
pH 3.0 in H₂O
B: 20 mM ammonium formate
pH 3.0 in MeOH/H₂O (9:1 v/v)

Gradient:	Time (mins)	%B
	0.0	0
	7.5	100
	8.5	100
	9.0	0

Flow Rate: 1.2 mL/min**Injection:** 2 µL**Temperature:** 25 °C**Detection:** UV, 254 nm

Analytes

1. Pseudoephedrine
2. Scopolamine
3. Doxylamine
4. Chlorpheniramine
5. Triprolidine
6. Diphenhydramine
7. Acrivastine
8. Promethazine
9. Fexofenadine
10. Cetirizine
11. Loratadine



Antihistamines and Expectorants

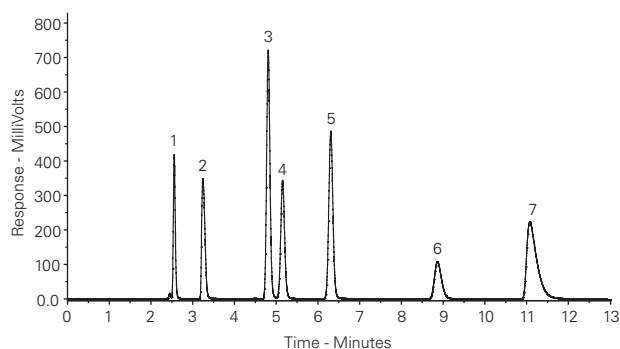
Application #AN3190

Conditions

Column: ACE 5 C18**Dimensions:** 250 x 4.6 mm**Part Number:** ACE-121-2546**Mobile Phase:** MeOH/50 mM KH₂PO₄
(pH 3.0) (50:50 v/v)**Flow Rate:** 1.0 mL/min**Temperature:** 22 °C**Detection:** UV, 220 nm

Analytes

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



Antihistamines and Expectorants – Mobile Phase Effects

Application #AN3960

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: (a) MeOH/50 mM KH₂PO₄ (pH 3.0) (45:55 v/v)
 (b) MeCN/50 mM KH₂PO₄ (pH 3.0) (28:72 v/v)

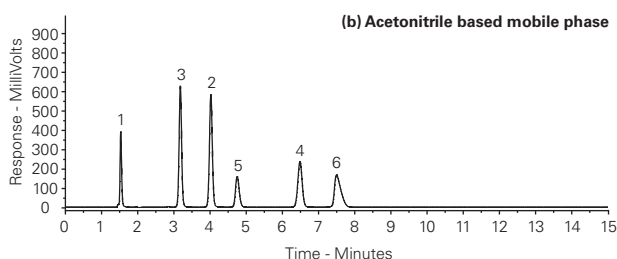
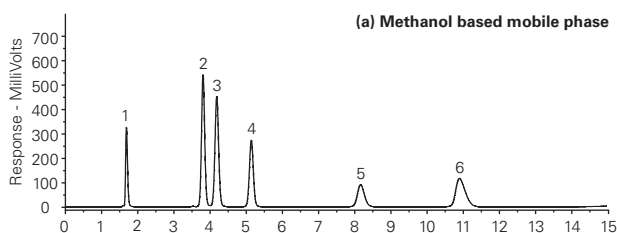
Flow Rate: 1.0 mL/min

Temperature: Ambient

Detection: UV, 220 nm

Analytes

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



Antihistamines – Fast Analysis

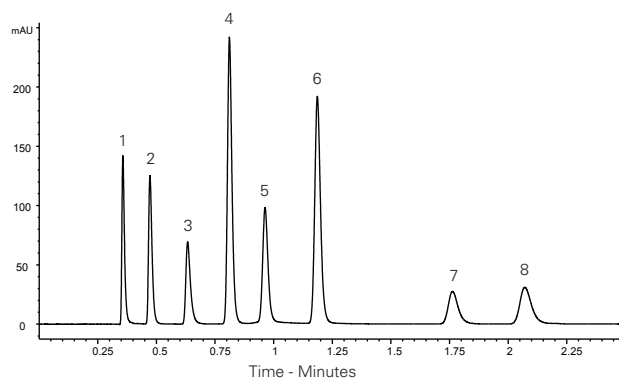
Application #AN4290

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: CORE-25A-0503U
Mobile Phase: 30 mM KH₂PO₄ pH 2.7 in H₂O/MeOH (60:40 v/v)
Flow Rate: 0.85 mL/min
Injection: 0.9 µL
Temperature: 30 °C
Detection: UV, 214 nm

Analytes

1. Maleic acid
2. Norephedrine
3. Doxylamine
4. Salicylamide
5. Guaifenesin
6. Guaiacol
7. Chlorpheniramine
8. Triprolidine



Anti-Ulcer Drugs in Basic Mobile Phase Conditions

Application #AN1950

Conditions

Column: ACE 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: EXL-1211-1546U
Mobile Phase: A: 0.1% ammonia in H₂O
 B: 0.1% ammonia in MeCN/H₂O (90:10 v/v)

Gradient:

Time (mins)	%B
0	10
5	90

Flow Rate: 1 mL/min

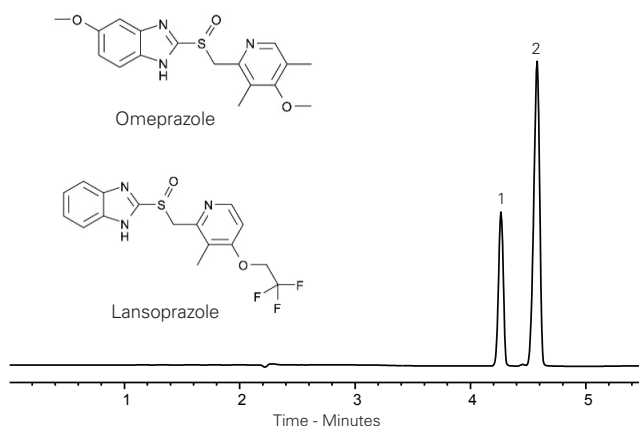
Injection: 5 µL

Temperature: 30 °C

Detection: UV, 280 nm

Analytes

1. Omeprazole
2. Lansoprazole



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Antimycins from Marine Sponge *Streptomyces* sp. by LC-HRMS

Application #AN4380

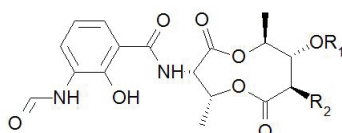
Conditions

Column: ACE 5 C18
Dimensions: 75 x 3.0 mm
Part Number: ACE-121-7503
Mobile Phase: A: 0.1% (v/v) formic acid in H₂O
 B: 0.1% (v/v) formic acid in MeCN
Gradient:

Time (mins)	%B
0	10
30	100
35	100

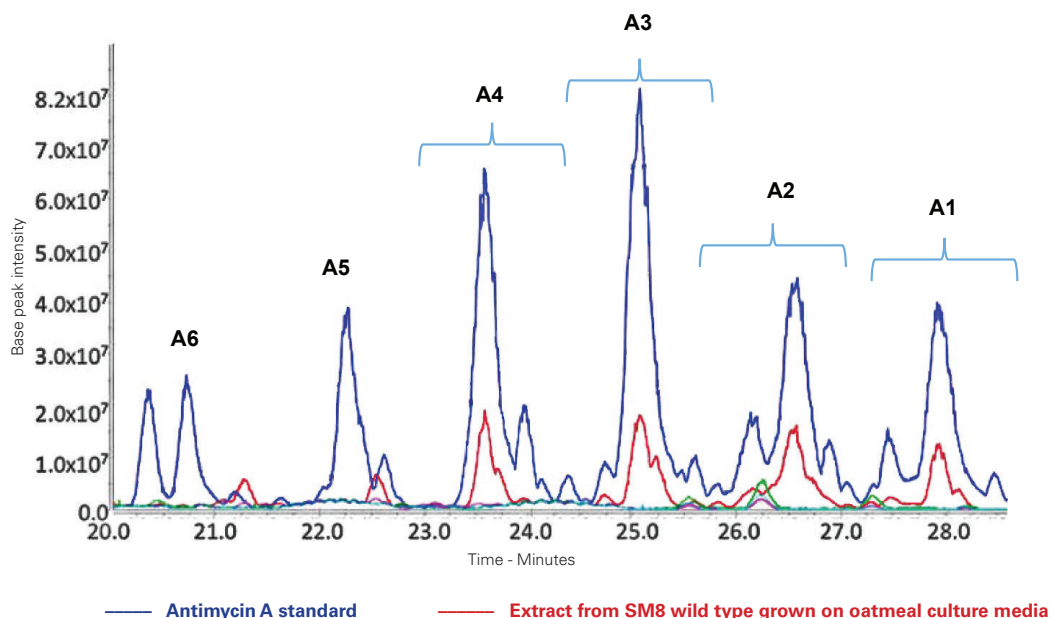
Flow Rate: 0.3 mL/min
Injection: 10 µL
Detection: Thermo Exactive Orbitrap
 High resolution (15,000)
 ESI in positive ion mode
 Spray Voltage: 4.5 kV
 Capillary Temperature: 268 °C
 Capillary Voltage: 30 V

Sample: Antifungal fraction from *Streptomyces* sp.
 SM8 extract from *Haliclona simulans* marine sponge



Antimycin A

Antimycin	R ₁	R ₂
A1a	C=OCH(CH ₃)CH ₂ CH ₃	(CH ₂) ₅ CH ₃
A1b	C=OCH ₂ CH(CH ₃) ₂	(CH ₂) ₅ CH ₃
A2a	C=OCH(CH ₃) ₂	(CH ₂) ₅ CH ₃
A2b	C=OCH ₂ CH ₂ CH ₃	(CH ₂) ₅ CH ₃
A3a	C=OCH(CH ₃)CH ₂ CH ₃	(CH ₂) ₅ CH ₃
A3b	C=OCH ₂ CH(CH ₃) ₂	(CH ₂) ₅ CH ₃
A4a	C=OCH(CH ₃) ₂	(CH ₂) ₅ CH ₃
A4b	C=OCH ₂ CH ₂ CH ₃	(CH ₂) ₅ CH ₃
A5	C=OCH ₂ CH(CH ₃) ₂	CH ₂ CH ₃
A6	C=OCH ₂ CH ₂ CH ₃	CH ₂ CH ₃



Viegelmann C, Margassery LM, Kennedy J, Zhang T, O'Brien C, O'Gara F, Morrissey JP, Dobson ADW, Edrada-Ebel R. Metabolomic profiling and genomic study of a marine sponge-associated *Streptomyces* sp. *Marine Drugs* 12, 3323-3351 (2014). doi:10.3390/md12063323

Appetite Suppressants by LC-MS

Application #AN1960

Conditions

Column: ACE Excel 2 SuperC18
Dimensions: 100 x 2.1 mm
Part Number: EXL-1011-1002U
Mobile Phase: A: 10 mM ammonium acetate
 pH 9.35 with ammonium hydroxide
 B: 10 mM ammonium acetate
 pH 9.35/MeCN (10:90 v/v)

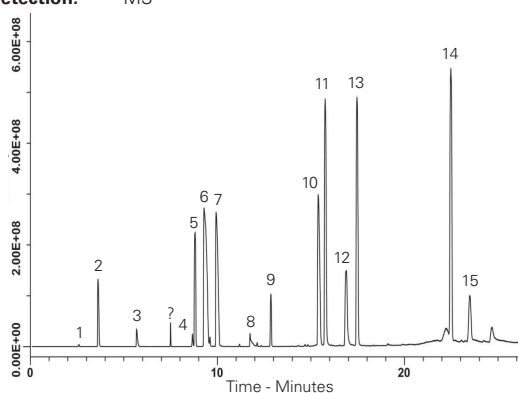
Gradient:

Time (mins)	%B
0.0	11.11
1.0	11.11
21.0	100.00
23.0	100.00

Flow Rate: 0.5 mL/min**Injection:** 2 µL**Temperature:** 25 °C**Detection:** MS

Analytes

1. Caffeine
2. Ephedrine
3. Phentermine
4. Phenolphthalein
5. Chlordiazepoxide
6. Lorcaserin
7. Fenfluramine
8. Fluoxetine
9. Diethylpropion
10. Sertraline
11. Didemethylsibutramine
12. Rimonabant
13. N-Desmethylsibutramine
14. Sibutramine
15. Orlistat



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Aromatic Nitrobenzenes

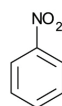
Application #AN2480

Conditions

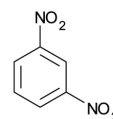
Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: H₂O/MeOH (50:50 v/v)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: UV, 210 nm

Analytes

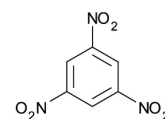
1. Nitrobenzene
2. 1,3-Dinitrobenzene
3. 1,3,5-Trinitrobenzene
4. Toluene



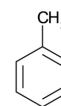
Nitrobenzene



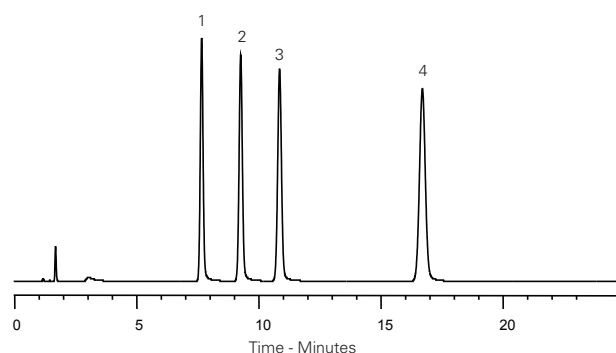
1,3-Dinitrobenzene



1,3,5-Trinitrobenzene



Toluene



Antiretrovirals in Human Mononuclear Cell Extracts by LC-MS/MS

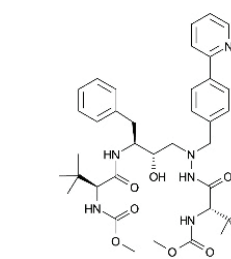
Application #AN3470

Conditions

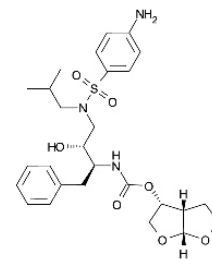
Column: ACE 3 C18
Dimensions: 100 x 3.0 mm
Part Number: ACE-111-1003
Mobile Phase: MeCN/H₂O/formic acid (60:40:0.1 v/v/v)
Flow Rate: 0.5 mL/min
Injection: 40 µL
Temperature: 40 °C
Detection: SCIEX API 6500 triple quad MS
 Positive ion mode ESI (negative mode for efavirenz)
 Ion spray voltage: +5500 V (-4500 V for efavirenz)
 Temperature: 450 °C (650 °C for efavirenz)

Analytes

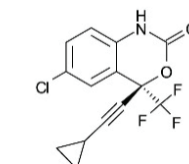
1. Atazanavir
 (*m/z* 705.4 → 168.2)
 LLOQ: 0.04 fmol/sample
2. Darunavir
 (*m/z* 548.3 → 392.3)
 LLOQ: 1.0 fmol/sample
3. Efavirenz
 (*m/z* 313.9 → 244.0)
 LLOQ: 4.0 fmol/sample
4. Lopinavir
 (*m/z* 629.4 → 447.3)
 LLOQ: 1.0 fmol/sample
5. Ritonavir
 (*m/z* 721.4 → 268.2)
 LLOQ: 1.0 fmol/sample



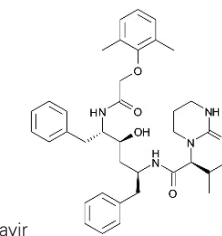
Atazanavir



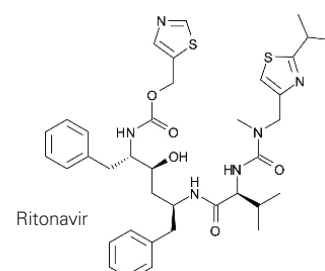
Darunavir



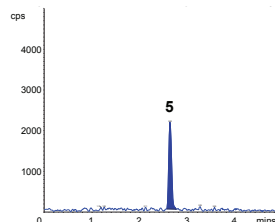
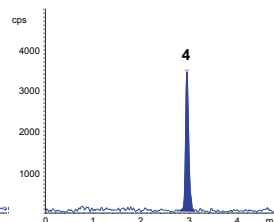
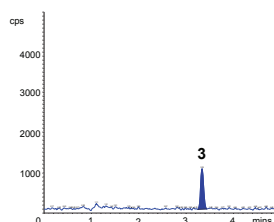
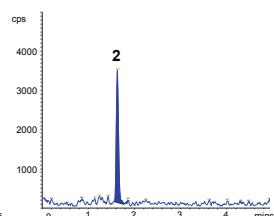
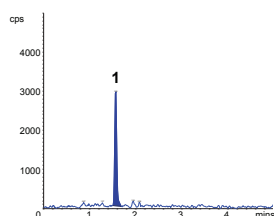
Efavirenz



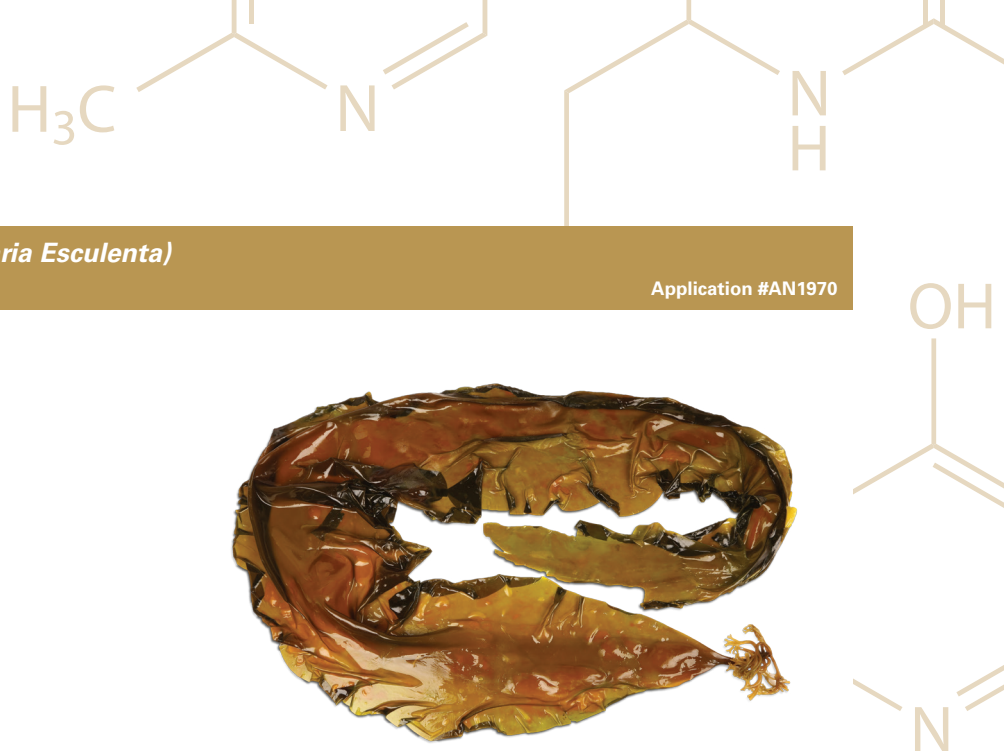
Lopinavir



Ritonavir



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Arsenolipids from Edible Seaweed (*Alaria Esculenta*) by LC-ICP-MS and LC-ESI-MS

Application #AN1970

Conditions

Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0	0
20	100
45	100

Flow Rate: 1 mL/min
Injection: 100 µL
Temperature: 45 °C
Detection: Split ratio: 75% ESI-MS; 25% ICP-MS
 Thermo Scientific Element 2 ICP-MS
 Mode: Organic mode
 Medium resolution
 Thermo Scientific Orbitrap Discovery
 Positive ESI mode
 Spray voltage: 4.5 kV
 Capillary temperature: 320 °C
 Capillary voltage: 42 V



Alaria esculenta is an edible seaweed. It is a traditional food found along the coasts of the far north Atlantic Ocean.

Arsenic-containing hydrocarbon:

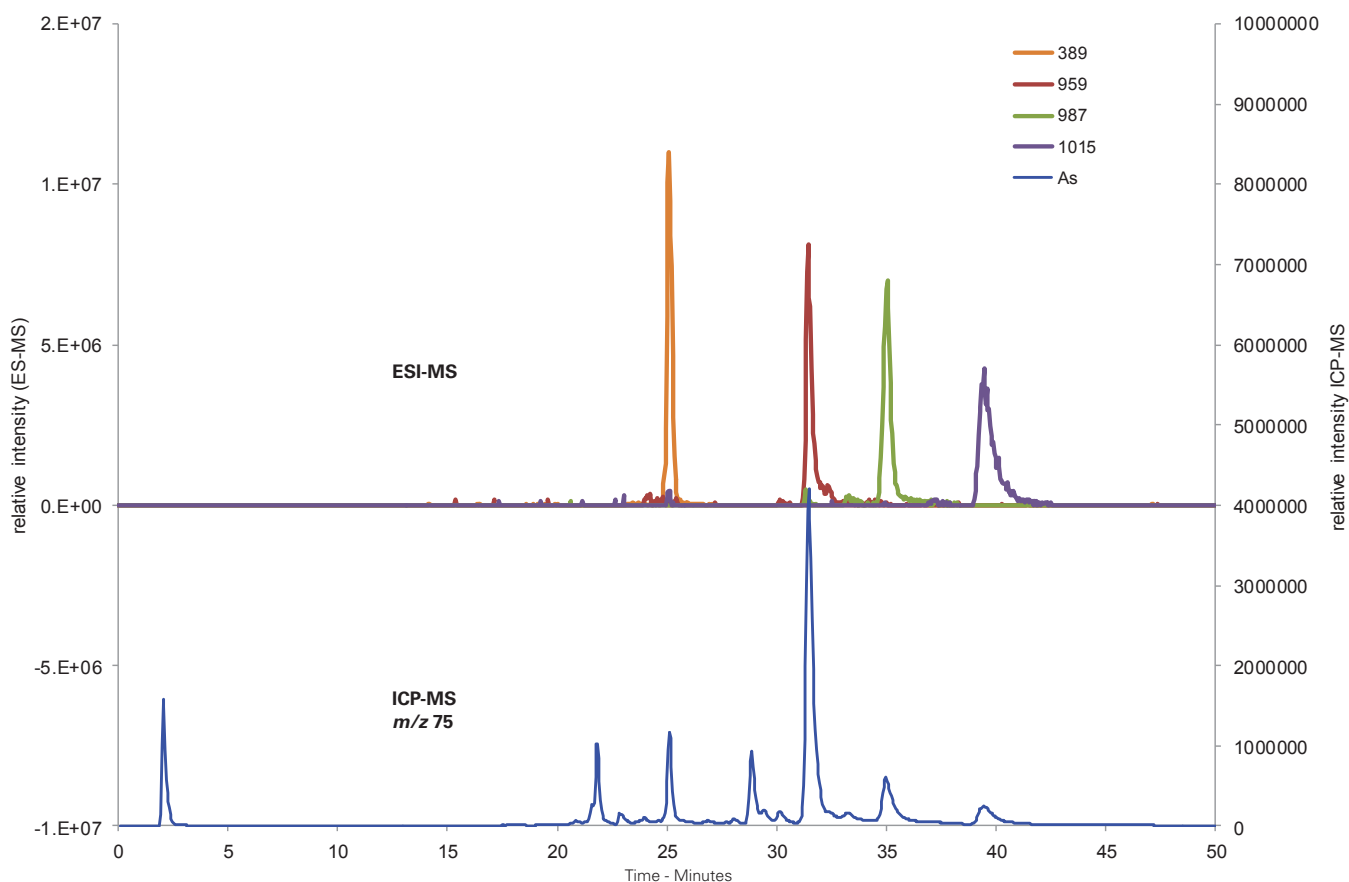
m/z 389 [M + H]⁺ for C₂₁H₄₆AsO

Arsenic-containing phospholipids:

m/z 959 [M + H]⁺ for C₄₅H₈₉AsO₁₄P (C16:0/C16:0)

m/z 987 [M + H]⁺ for C₄₇H₉₃AsO₁₄P (C18:0/C16:0)

m/z 1015 [M + H]⁺ for C₄₉H₉₇AsO₁₄P (C20:0/C16:0)



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Artemisinin

Application #AN3140

Conditions

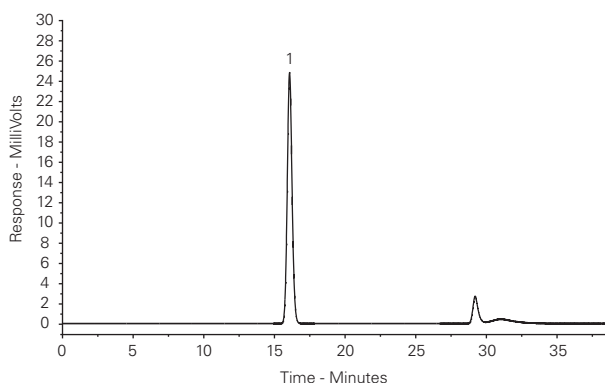
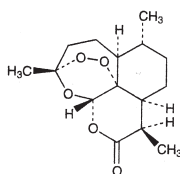
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0	50
25	100
35	100

Flow Rate: 1.0 mL/min
Injection: 20 µL
Temperature: 20 °C
Detection: ELSD

Analyte

1. Artemisinin



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Artificial Food Colours

Application #AN2960

Conditions

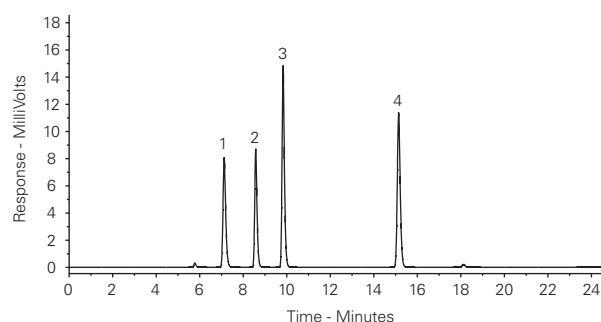
Column: ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-111-1046
Mobile Phase: A: 3.1 mM TBAB¹ and 5 mM KH₂PO₄ in H₂O
 B: 5 mM KH₂PO₄ in MeOH
Gradient:

Time (mins)	%B
0	45
12	60
25	45

Flow Rate: 0.8 mL/min
Injection: 10 µL
Temperature: Ambient
Detection: UV-VIS, 480 nm
¹ Tetrabutylammonium bromide

Analytes

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



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Artificial Sweeteners Global Method

Application #AN1980

Conditions

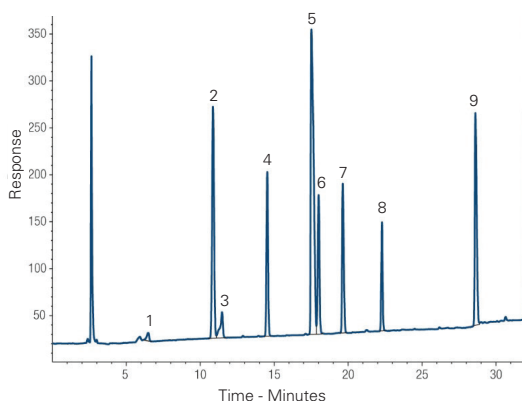
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: H₂O
 B: MeCN
 C: 0.1% TFA
Gradient:

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

Flow Rate: 1 mL/min
Injection: 50 µL
Temperature: 30 °C
Detection: Corona CAD

Analytes

1. Acesulfame K
 2. Cyclamate
 3. Saccharin
 4. Sucralose
 5. Aspartame
 6. Neotame
 7. Alitame
 8. Neohesperidin dihydrochalcone
 9. Dulcin



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 applications support, batch
 reservation service and
 custom packing facility

email: info@ace-hplc.com



Artificial Sweeteners (Stevia Glycosides)

Application #AN1020

Conditions

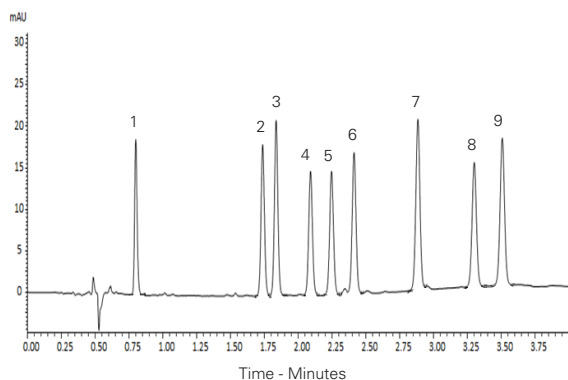
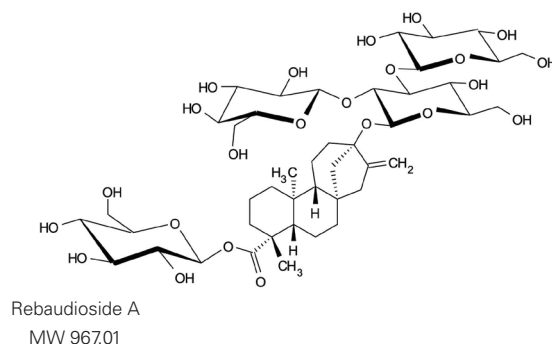
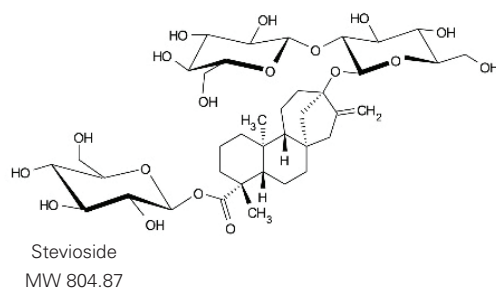
Column: ACE Excel 2 SuperC18
Dimensions: 150 x 2.1 mm
Part Number: EXL-1011-1502U
Mobile Phase: A: 10 mM sodium dihydrogen phosphate pH 2.8 in H₂O
 B: 10 mM sodium dihydrogen phosphate pH 2.8 in H₂O/MeCN (20:80 v/v)
Gradient:

Time (mins)	%B
0	39.5
4	48.0

Flow Rate: 0.6 mL/min
Injection: 1 µL
Temperature: 50 °C
Detection: UV, 200 nm

Analytes

1. Rebaudioside D
2. Rebaudioside A
3. Stevioside
4. Rebaudioside F
5. Rebaudioside C
6. Dulcoside A
7. Rubusoside
8. Rebaudioside B
9. Steviolbioside



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Aspirin and Related Substances (I)

Application #AN1050

Conditions

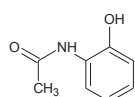
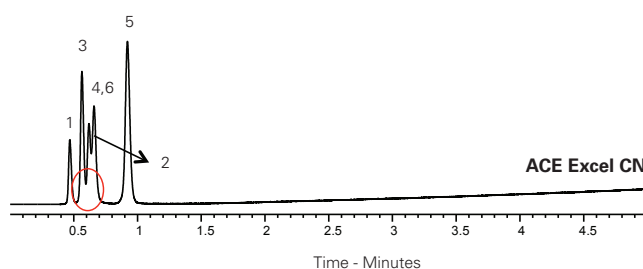
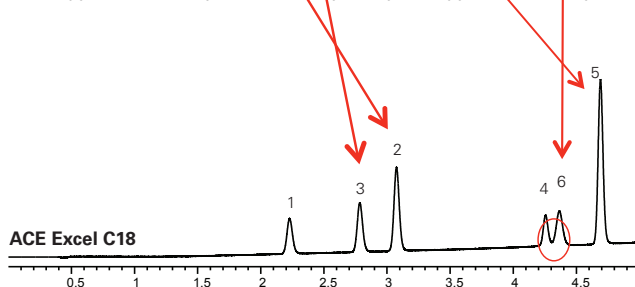
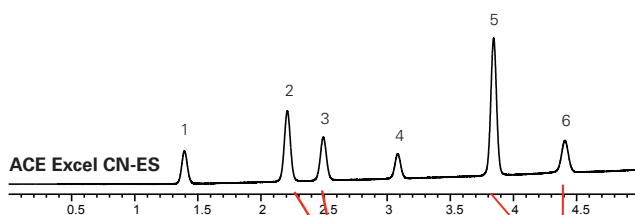
Column: ACE Excel 3 CN-ES
 ACE Excel 3 C18
 ACE Excel 3 CN
Dimensions: 50 x 2.1 mm
Part Numbers: EXL-1113-0502U,
 EXL-111-0502U,
 EXL-114-0502U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.00	5
3.75	38
5.00	38

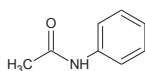
Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV, 240 nm

Analytes

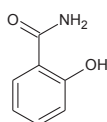
1. 2-Acetamidophenol
2. Acetanilide
3. Salicylamide
4. Aspirin
5. Phenacetin
6. Salicylic acid



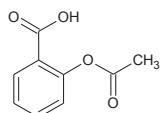
2-Acetamidophenol



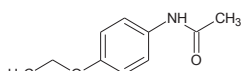
Acetanilide



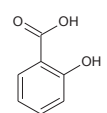
Salicylamide



Aspirin



Phenacetin



Salicylic acid

Aspirin and Related Substances (II)

Application #AN2280

Conditions

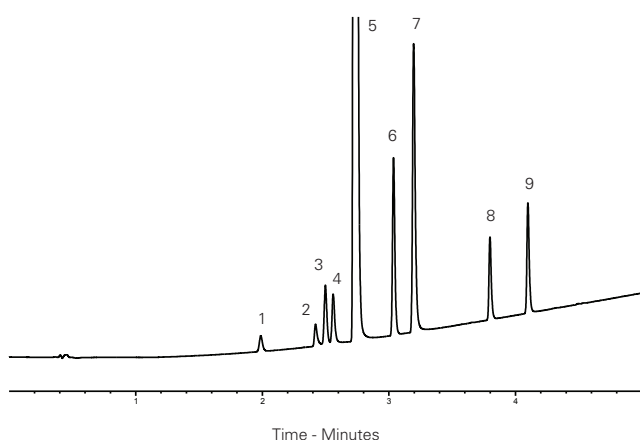
Column: ACE Excel 1.7 CN-ES
Dimensions: 50 x 3.0 mm
Part Number: EXL-1713-0503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	5
5.0	90
6.0	90
6.5	5

Flow Rate: 0.7 mL/min
Injection: 0.5 µL
Temperature: 30 °C
Detection: UV, 240 nm

Analytes

1. 2-Acetamidophenol
2. 4-Hydroxyisophthalic acid
3. Acetanilide
4. Salicylamide
5. Aspirin
6. Phenacetin
7. Salicylic acid
8. Acetylsalicylsalicylic acid
9. Salsalate



Avenacins

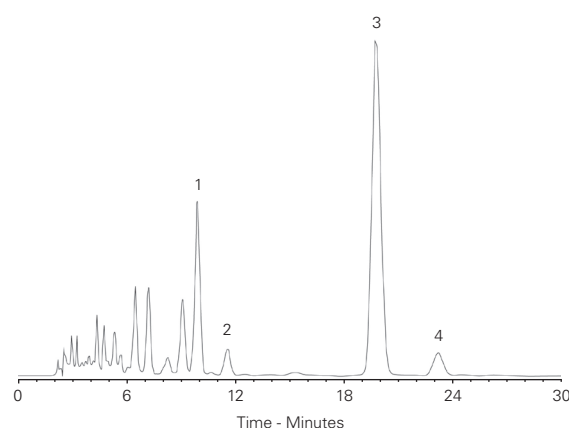
Application #AN2740

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: H₂O/MeOH (30:70 v/v)
Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV, 225 nm
Sample: Partially purified extract from oat root

Analytes

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



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β-Antagonists and Diuretics

Application #AN1410

Conditions

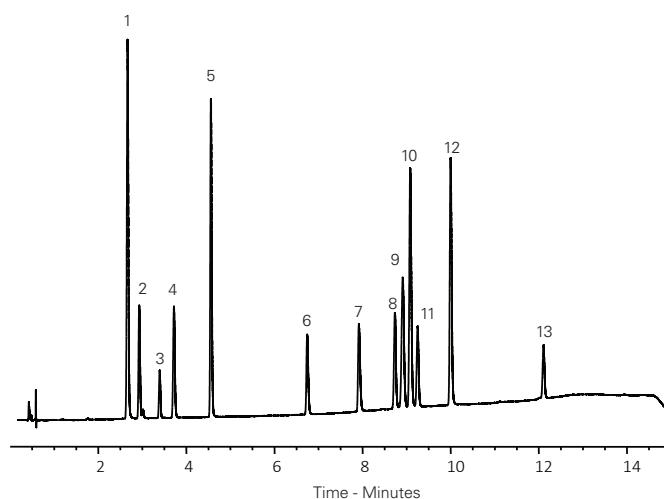
Column: ACE 3 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-111-1002
Mobile Phase: A: 20 mM KH₂PO₄, pH 2.7
 B: 20 mM KH₂PO₄, pH 2.7
 in MeCN/H₂O (65:35 v/v)
Gradient:

Time (mins)	%B
0	5
1	5
12	95
13	95
14	5
17	5

Flow Rate: 0.6 mL/min
Injection: 2 µL
Temperature: 36 °C
Detection: UV, 214 nm

Analytes

1. Hydrochlorothiazide
2. Sotalol
3. Amiloride
4. Atenolol
5. Pindolol
6. Metoprolol
7. Oxprenolol
8. Furosemide
9. Indapamide
10. Propranolol
11. Bendroflumethiazide
12. Carvedilol
13. Spironolactone



**β-Blockers at High pH**

Application #AN1420

Conditions

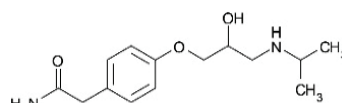
Column: ACE Excel 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: EXL-1211-1546U
Mobile Phase: A: 0.1% ammonia in H₂O
 B: 0.1% ammonia in MeCN
Gradient:

Time (mins)	%B
0.0	30
5.0	90
7.0	90
7.5	30
22.5	30

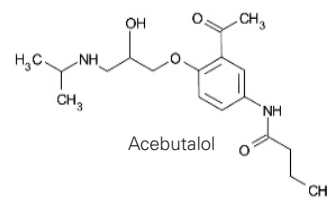
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 35 °C
Detection: UV, 230 and 254 nm

Analytes

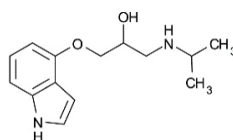
1. Atenolol
2. Acebutalol
3. Pindolol
4. Metoprolol
5. Oxprenolol
6. Carvedilol
7. Propranolol



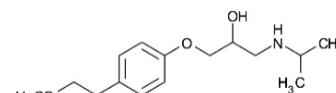
Atenolol



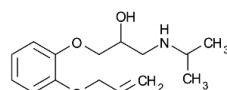
Acebutalol



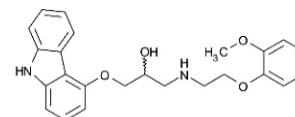
Pindolol



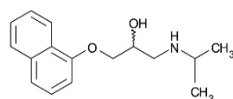
Metoprolol



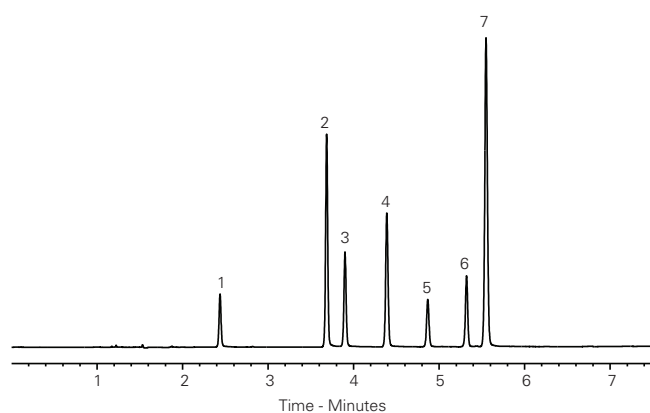
Oxprenolol



Carvedilol



Propranolol

**β-Blockers at High pH – Fast Analysis**

Application #AN2160

Conditions

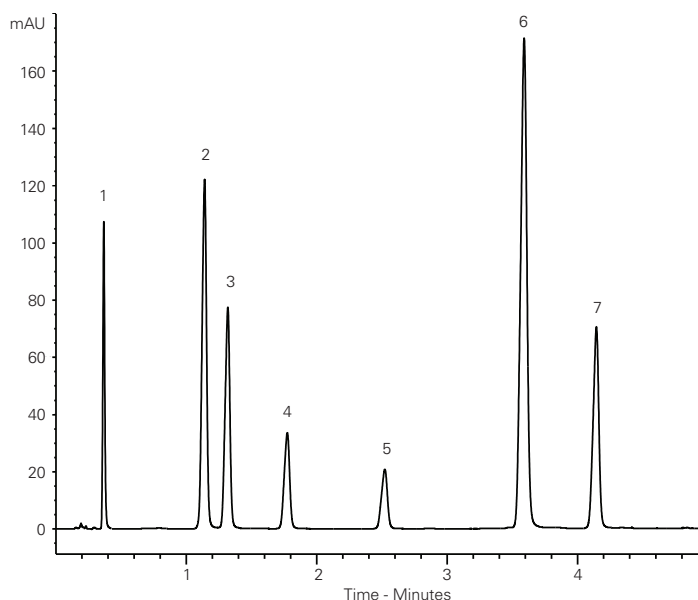
Column: ACE Excel 1.7 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: EXL-1711-0503U
Mobile Phase: A: 0.1% ammonia in H₂O
 B: 0.1% ammonia in MeCN
Gradient:

Time (mins)	%B
0.0	30
4.3	55
5.0	55
6.0	30
9.0	30

Flow Rate: 1 mL/min
Injection: 0.7 µL
Temperature: 20 °C
Detection: UV, 230 nm

Analytes

1. Atenolol
2. Acebutalol
3. Pindolol
4. Metoprolol
5. Oxprenolol
6. Carvedilol
7. Propranolol



β-Blockers by LC-MS/MS

Application #AN2620

Conditions

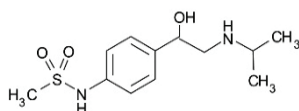
Column: ACE Excel 2 C18
Dimensions: 50 x 2.1 mm
Part Number: EXL-101-0502U
Mobile Phase: A: 2 mM ammonium acetate + 0.1% formic acid in H₂O
 B: 2 mM ammonium acetate + 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	10
3.0	50
3.1	10

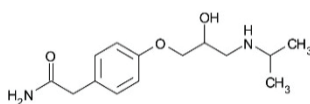
Flow Rate: 0.4 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS/MS ESI in positive ion mode
Sample: 2.5 pg/µL

Analytes

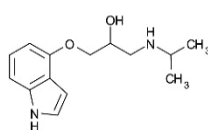
- Sotalol
(*m/z* 272.9 → 212.8)
- Atenolol
(*m/z* 267.0 → 189.8)
- Pindolol
(*m/z* 248.9 → 115.8)
- Nadolol diastereomers
(*m/z* 310.0 → 253.9)
- Metoprolol
(*m/z* 268.0 → 115.8)
- Labetalol
(*m/z* 329.1 → 161.8)
- Propranolol
(*m/z* 260.0 → 115.7)
- Alprenolol
(*m/z* 250.0 → 115.8)



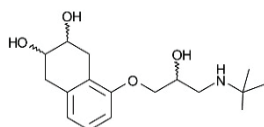
Sotalol



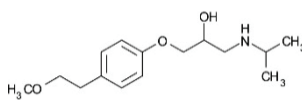
Atenolol



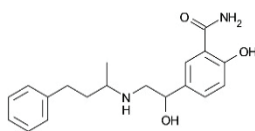
Pindolol



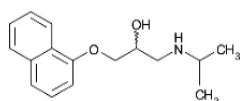
Nadolol diastereomers



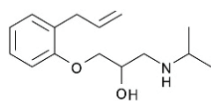
Metoprolol



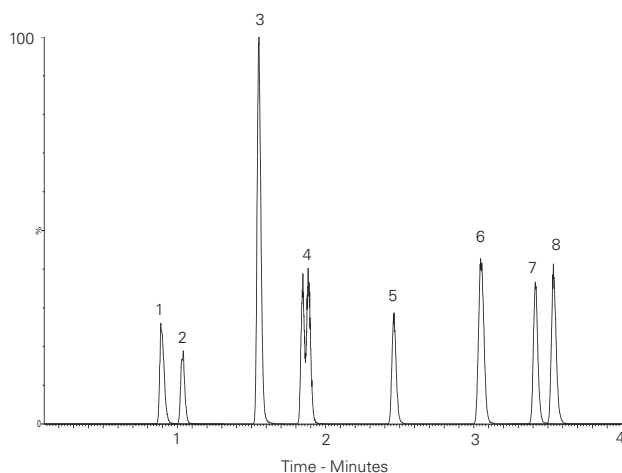
Labetalol



Propranolol



Alprenolol



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β-Blockers

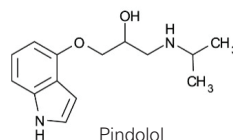
Application #AN3160

Conditions

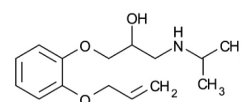
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 50 mM 1-methylpiperidine pH 11/MeOH (35:65 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 215 nm

Analytes

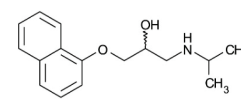
- Pindolol
- Metoprolol
- Oxprenolol
- Propranolol



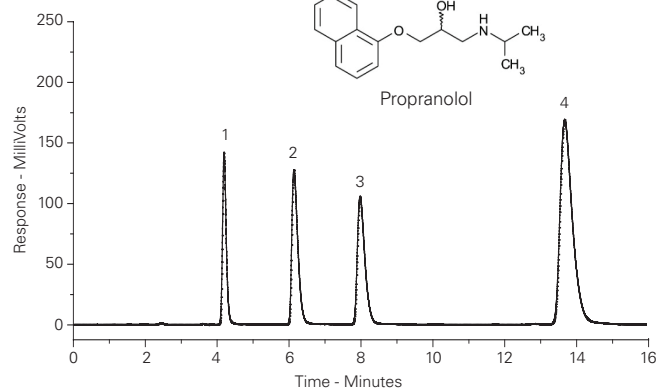
Pindolol



Oxprenolol



Propranolol

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

Application #AN3170

Conditions

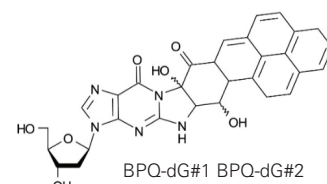
Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	25
8	55

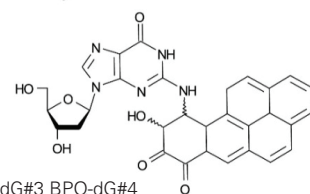
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 35 °C
Detection: UV, 285 nm

Analytes

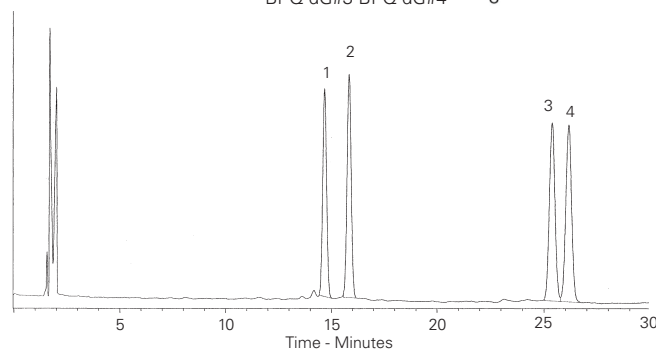
- BPO-dG#1
- BPO-dG#2
- BPO-dG#3
- BPO-dG#4



BPO-dG#1 BPO-dG#2



BPO-dG#3 BPO-dG#4



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Benzodiazepines from Drugs of Abuse Screen
(#AN2190)

Application #AN2370

Conditions

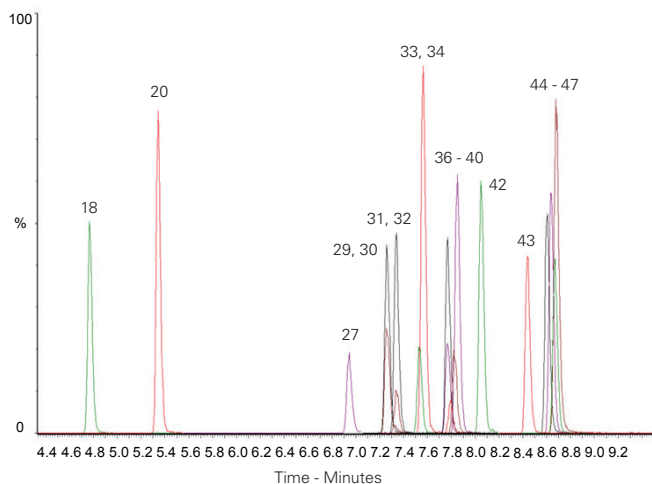
Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 5 mM ammonium acetate in H₂O
 B: 5 mM ammonium acetate in MeOH
Gradient:

Time (mins)	%B
0.0	10
10.0	90
11.9	90
13.4	10
15.5	10

Flow Rate: 0.3 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS Quattro Premier XE triple quad
 MRM, positive and negative ESI mode
 Desolvation temperature: 450 °C
 IonSource temperature: 150 °C
 Collision gas pressure: 3.5 x 10⁻³ mbar

Analytes

18. 7-Amino-clonazepam (*m/z* 286.2 → 121.0)
20. 7-Amino-flunitrazepam (*m/z* 284.2 → 135.0)
27. Bromazepam (*m/z* 316.1 → 182.1)
29. Clonazepam (*m/z* 316.1 → 270.1)
30. Nitrazepam (*m/z* 282.2 → 236.1)
31. α-Hydroxytriazolam (*m/z* 359.1 → 331.1)
32. Flunitrazepam (*m/z* 314.2 → 268.2)
33. α-Hydroxyalprazolam (*m/z* 325.2 → 297.1)
34. Estazolam (*m/z* 295.2 → 267.2)
36. Triazolam (*m/z* 343.0 → 308.1)
37. 2-Hydroxyethylflurazepam (*m/z* 333.2 → 109.0)
38. Lorazepam (*m/z* 321.1 → 275.1)
39. Oxazepam (*m/z* 287.2 → 241.0)
40. Alprazolam (*m/z* 309.2 → 281.2)
42. Temazepam (*m/z* 301.1 → 255.1)
43. Nordiazepam (*m/z* 271.1 → 139.9)
44. Midazolam (*m/z* 326.2 → 291.2)
45. Diazepam-d5 (*m/z* 290.2 → 154.0)
46. Diazepam (*m/z* 285.2 → 154.0)
47. Flurazepam (*m/z* 388.2 → 315.1)



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Biomarker Analysis for Gaucher Disease
by LC-MS/MS

Application #AN3490

Conditions

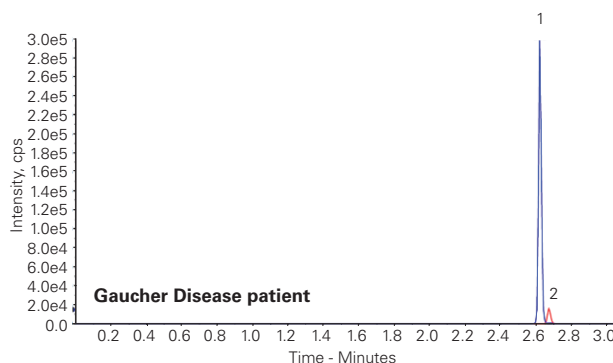
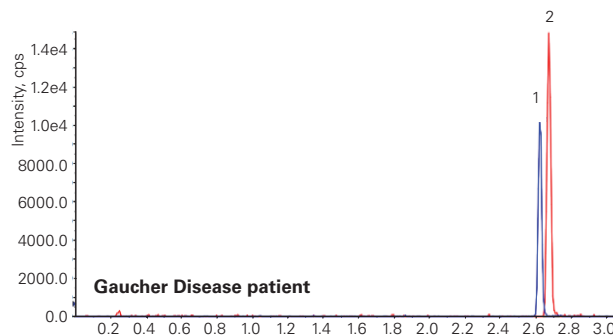
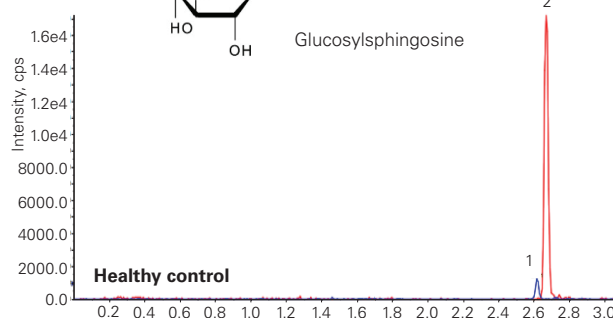
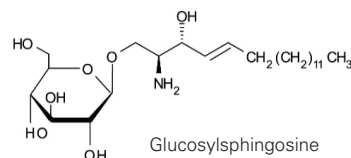
Column: ACE 3 C8
Dimensions: 50 x 2.1 mm
Part Number: ACE-112-0502
Mobile Phase: A: 50 mM formic acid in H₂O
 B: 50 mM formic acid in MeCN/acetone (1:1 v/v)
Gradient:

Time (mins)	%B
0.0	5
4.0	66
4.1	100
5.1	100
5.9	5

Flow Rate: 0.9 mL/min
Injection: 5 µL
Temperature: 60 °C
Detection: API 4000 triple quad MS
 ESI in positive ion mode
 Temperature: 500 °C

Analytes

1. Glucosylsphingosine (*m/z* 462 → 282)
2. Lyso-Gb2 (IS) (*m/z* 624 → 282)



Rolfs A, Giese AK, Grittner U, Mascher D, Elstein D, et al. (2013) Glucosylsphingosine Is a Highly Sensitive and Specific Biomarker for Primary Diagnostic and Follow-Up Monitoring in Gaucher Disease in a Non-Jewish, Caucasian Cohort of Gaucher Disease Patients. PLoS ONE 8(11): e79732. doi:10.1371/journal.pone.0079732

Biomarker for Niemann-Pick Type C1 Disease by LC-MS/MS

Application #AN3480

Conditions

Column: ACE 3 C8
Dimensions: 50 x 2.1 mm
Part Number: ACE-112-0502
Mobile Phase: A: 50 mM formic acid in H₂O
 B: 50 mM formic acid in MeCN/acetone (1:1 v/v)
Gradient:

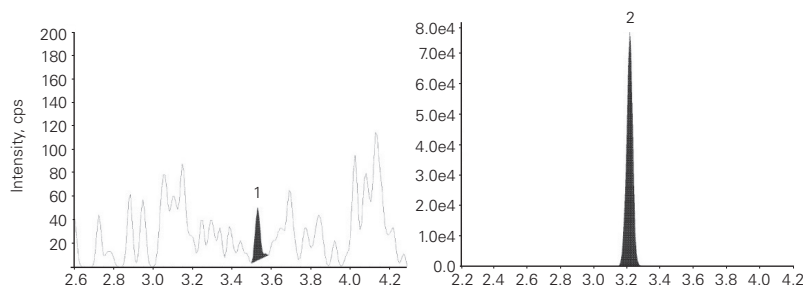
Time (mins)	%B
0.0	5
4.0	66
4.1	100
5.1	100
5.9	5

Flow Rate: 0.9 mL/min
Injection: 5 µL
Temperature: 60 °C
Detection: API 4000 triple quad MS
 ESI in positive ion mode
 Temperature: 500 °C

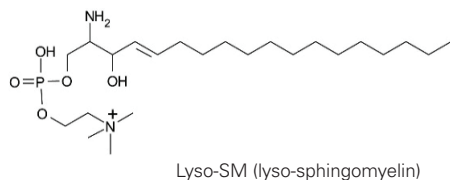
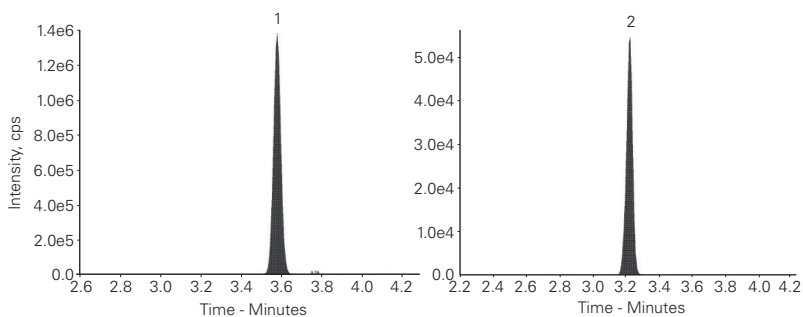
Analytes

1. Lyso-SM-509
(*m/z* 509 → 184)
2. Lyso-Gb2 (IS)
(*m/z* 624 → 282)

Human Control Plasma



Niemann-Pick Patient Sample



Giese A, Mascher H, Grittner U, Eichler S, Kramp G, Lukas J, te Vrugte D, Eisa N, Cortina-Borja M, Porter F, Platt F, Rolfs A. Orphanet Journal of Rare Diseases (2015) 10:78 A novel, highly sensitive and specific biomarker for Niemann-Pick type C1 disease. DOI 10.1186/s13023-015-0274-1

Biomarker Profiling

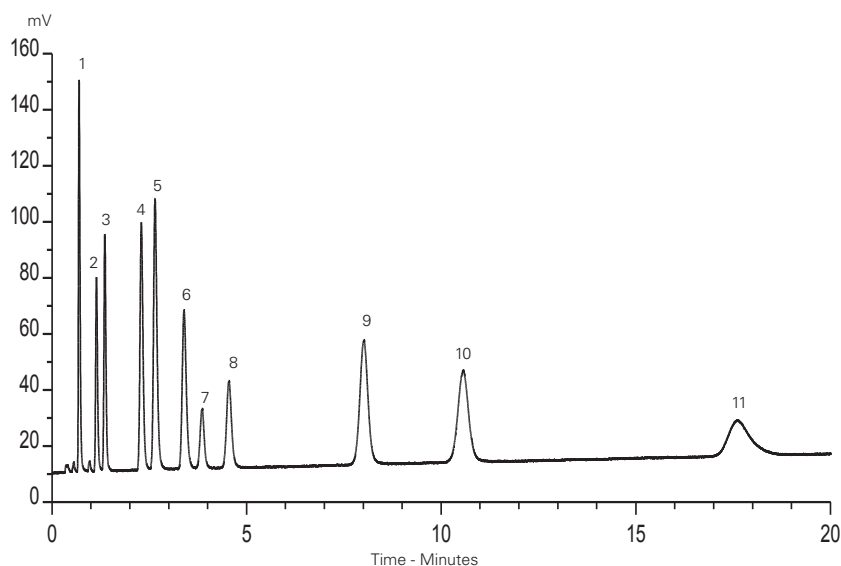
Application #AN1990

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: CORE-25A-0502U
Mobile Phase: A: 7% methanol, 2.1 mM tetrabutylammonium bisulfate + 84 mM KH₂PO₄, pH 6 with KOH
 B: 7% methanol, 2.1 mM tetrabutylammonium bisulfate + 8.4 mM KH₂PO₄, pH 6 with KOH
 A/B: (90:10 v/v)
Flow Rate: 0.4 mL/min
Injection: 2 µL
Temperature: Ambient
Detection: UV, 260 nm

Analytes

1. Deoxyuridine
2. Deoxyguanosine
3. Deoxythymidine
4. Adenosine
5. Deoxyadenosine
6. 2-Fluoro-2'-fluoroadenine arabinoside
7. 2-Fluorodeoxyadenosine
8. 2-Fluoroadenosine
9. 2-Chlorodeoxyadenosine
10. Clofarabine
11. Methylthioadenosine



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Brazilian Red Propolis Biomarkers by LC-FTMS

Application #AN3370

Conditions

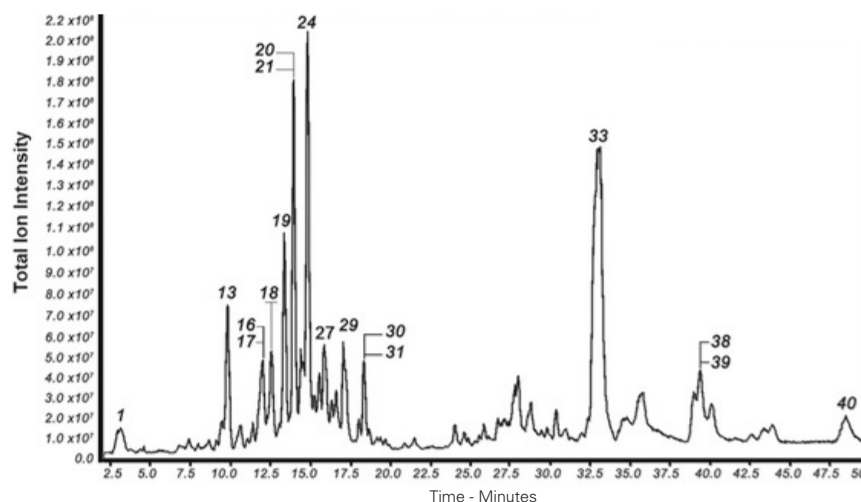
Column: ACE 5 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-121-1046
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	30
6	45
10	60
14	75
18	90
22	100
47	100
52	30
58	30

Flow Rate: 0.3 mL/min
Injection: 10 µL
Detection: Thermo Scientific LC-Orbitrap FTMS
 Negative ion mode
 Scan range 50-1200 amu
Sample: Ethanolic extract of red propolis

Analytes

- | | |
|---|--|
| 1. Caffeic acid | 29. 3',4'-di-O-benzyl-7-O-(2-hydroxyethyl)-3-O-methylquercetin |
| 13. Liguiritigenin | 30/31. (3S)-7-O-methylvestitol/Calycosin/7,3'-dihydroxy-4'-methoxy-8-methylflavane |
| 16/17. Naringenin/Pinobanksin | 33. Cycloartenol/α-amyrin/β-amyrin |
| 19. Isoliquiritigenin | 38/39. Guttiferone C/Guttiferone D |
| 20/21. Formononetin/isoformononetin | 40. 19-nor-10-keto-25-hydroxyvitamin D3 |
| 24. Vestitol | |
| 27. 2',6'-dihydroxy-4'-methoxydihydrochalcone | |



Reference: de Mendonca et al, BMC Complement Altern Med. 2015; 15: 357. Published online 2015 Oct 14, doi:10.1186/s12906-015-0888-9

Brompheniramine Maleate

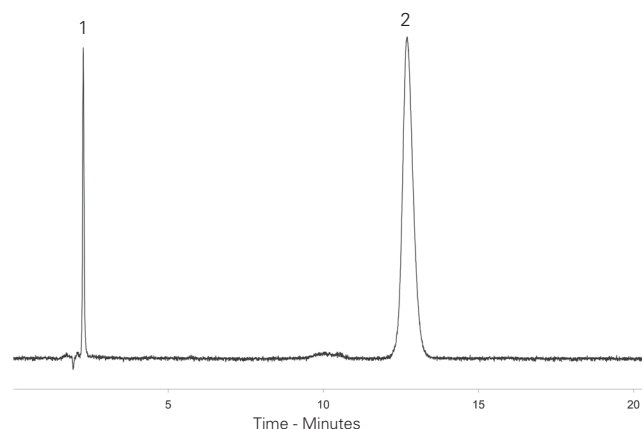
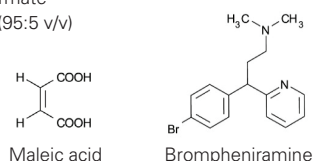
Application #AN3150

Conditions

Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: 20 mM ammonium formate
 pH 3.0 in H₂O/MeOH (95:5 v/v)
Flow Rate: 1.0 mL/min
Injection: 20 µL
Temperature: Ambient
Detection: UV, 265 nm

Analytes

- Maleic acid
- Brompheniramine



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BSA Tryptic Digest Profiling

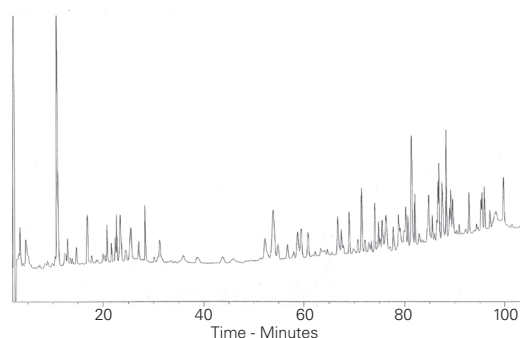
Application #AN2000

Conditions

Column: ACE 5 C18-300
Dimensions: 150 x 4.6 mm
Part Number: ACE-221-1546
Mobile Phase: A: 1% TFA in H₂O
 B: 1% TFA in MeCN/H₂O (1:1 v/v)
Gradient:

Time (mins)	%B
0	4
5	4
25	20
45	20
75	40
95	65
115	70
120	4

Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV, 214 nm



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Bufotenine Extract from *Rhinella Jimi* Toad Skin Secretions

Application #AN3800

Conditions

Column: ACE 5 C18
Dimensions: 250 x 7.75 mm (semi-preparative separation) and 250 x 4.6 mm (analytical)
Part Number: ACE-121-2508 and ACE-121-2546
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in H₂O/MeCN (10:90 v/v)

Gradient:	Semi-Preparative	Analytical
	Time (mins) %B	Time (mins) %B
	0 10	0 13
	35 70	15 15

Flow Rate: 1.7 mL/min (semi-preparative) and 1.1 mL/min (analytical)

Temperature: 4 °C

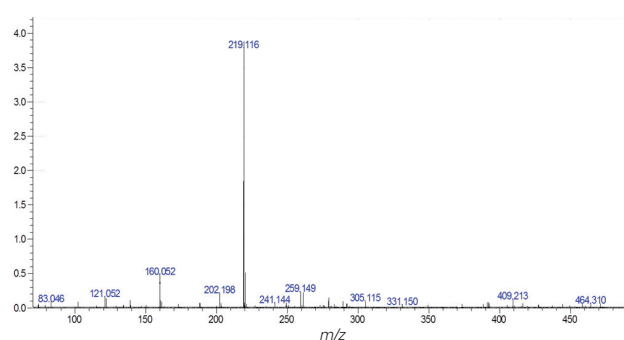
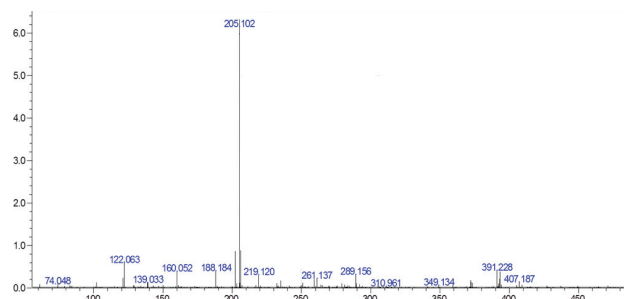
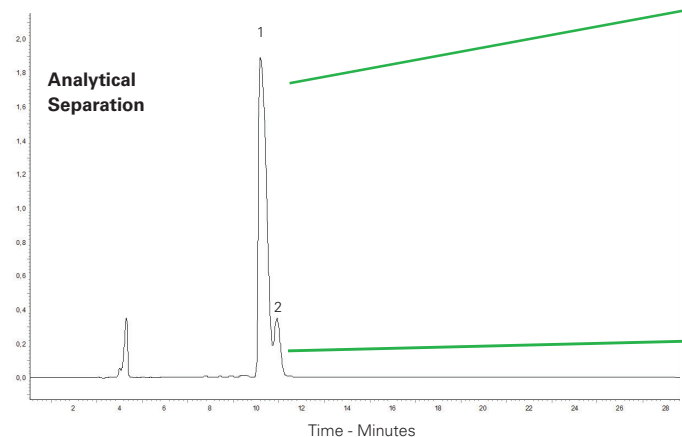
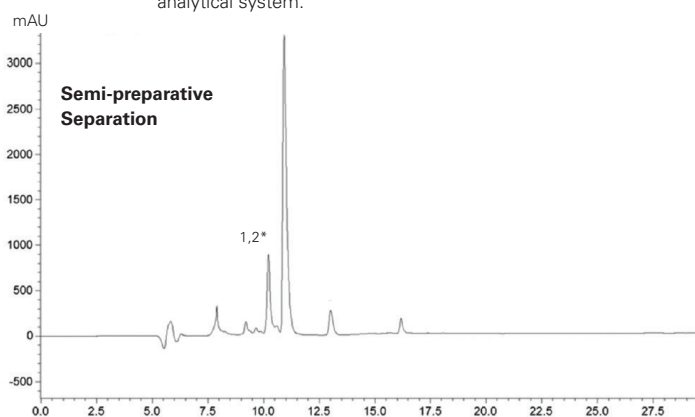
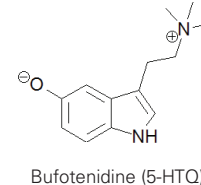
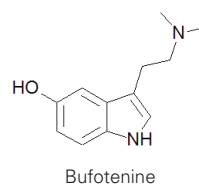
Detection: UV, 214 nm

MS positive ESI mode for peak identification

Sample: Aqueous extract from liquid-liquid partition of toad skin secretion
 Fraction* from semi-preparative separation injected into analytical system.

Analytes

1. Bufotenine
 ([M+H]⁺ m/z 205)
2. Bufotenidine (5-HTQ)
 ([M+H]⁺ m/z 219)



Vigerelli H, Sciani JM, Jared C, Antoniazzi MM, Caporale GMM, Rodrigues da Silva A, Pimenta DC. Bufotenine is able to block rabies virus infection in BHK-21 cells. Journal of Venomous Animals and Toxins including Tropical Diseases 2014, 20:45. doi:10.1186/1678-9199-20-45



Caffeine and Metabolites

Application #AN2010

Conditions

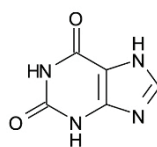
Column: ACE Excel 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: EXL-1211-1546U
Mobile Phase: A: 20 mM ammonium acetate pH 7.0 in H₂O
 B: 20 mM ammonium acetate pH 7.0 in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	2
45	15
48	15
49	2
59	2

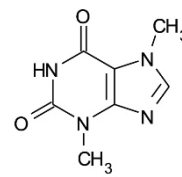
Flow Rate: 1 mL/min
Injection: 1 µL
Temperature: 60 °C
Detection: UV, 273 nm

Analytes

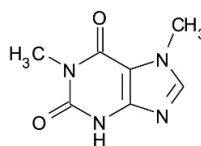
1. Xanthine
2. Theobromine
3. Paraxanthine
4. Theophylline
5. Caffeine



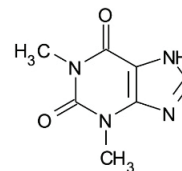
Xanthine



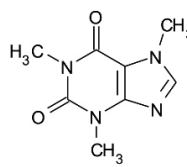
Theobromine



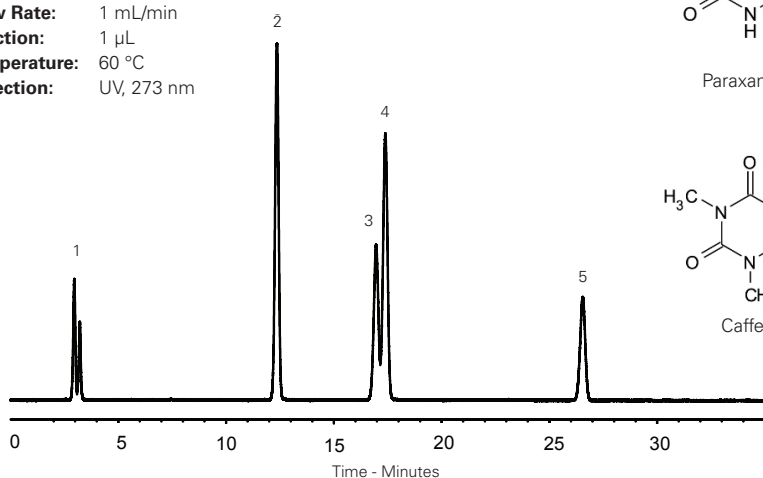
Paraxanthine



Theophylline



Caffeine



Caffeoylquinic and Dicafeoylquinic Acids

Application #AN3520

Conditions

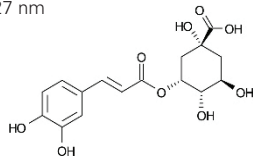
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 4.6 mm
Part Number: CORE-25A-1046U
Mobile Phase: A: 0.2% phosphoric acid in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	5
1	5
9	18
14	28
15	70

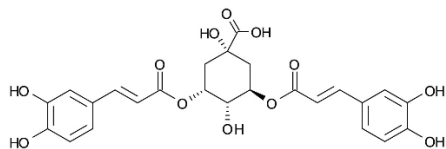
Flow Rate: 0.8 mL/min
Temperature: 35 °C
Detection: UV-Vis, 327 nm

Analytes

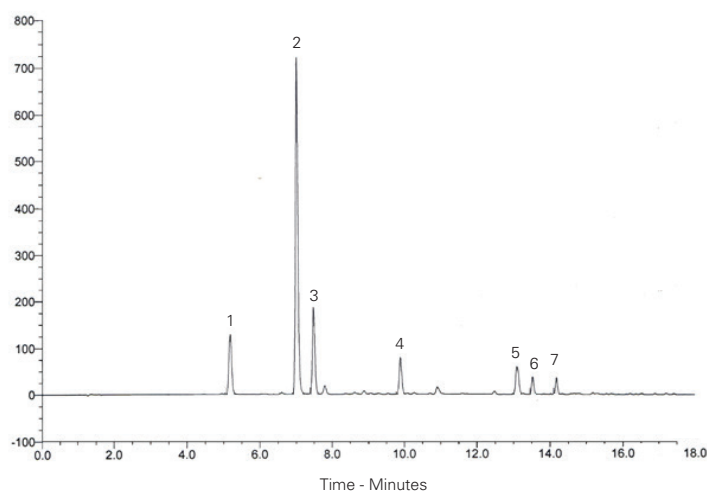
1. 3-Caffeoylquinic acid (chlorogenic acid)
2. 5-Caffeoylquinic acid (neochlorogenic acid)
3. 4-Caffeoylquinic acid (cryptochlorogenic acid)
4. Feruloylquinic acid
5. 3,4-Dicafeoylquinic acid (isochlorogenic acid B)
6. 3,5-Dicafeoylquinic acid (isochlorogenic acid A)
7. 4,5-Dicafeoylquinic acid (isochlorogenic acid C)



5-Caffeoylquinic acid (neochlorogenic acid)



3,5-Dicafeoylquinic acid (isochlorogenic acid A)



Cannabinoids (Synthetic) by LC-MS/MS

Application #AN2540

Conditions

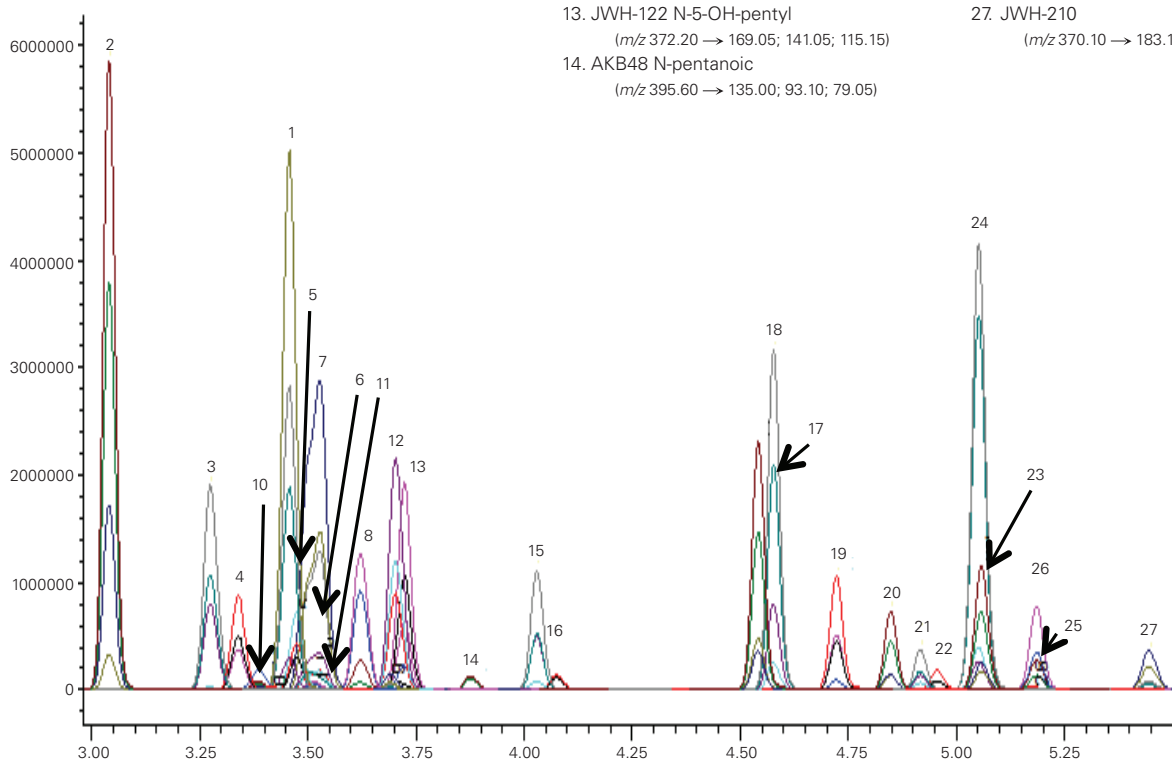
Column: ACE Excel 3 C18-AR
Dimensions: 100 x 3.0 mm
Part Number: EXL-119-1003U
Mobile Phase: A: 15 mM ammonium formate pH 4.0 in H₂O
 B: 0.1 % formic acid in MeCN
Gradient:

Time (mins)	%B
0.00	40
3.74	90
8.00	90
8.50	40

Flow Rate: 0.5 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: Shimadzu LCMS 8040 MS
 Positive ion ESI

Analytes

- | | |
|--|---|
| 1. JWH-018 N-5-OH-pentyl-d5
(<i>m/z</i> 362.90 → 155.05; 127.00; 128.05) | 15. JWH-018 5-OH-indole
(<i>m/z</i> 358.20 → 155.00; 127.05; 230.05) |
| 2. JWH-250 N-5-OH-pentyl
(<i>m/z</i> 352.20 → 121.15; 91.10; 186.05) | 16. AKB48 N-5-OH-pentyl
(<i>m/z</i> 381.60 → 135.10; 93.10; 79.05) |
| 3. JWH-073 N-4-OH-butyl
(<i>m/z</i> 344.20 → 155.00; 127.10; 54.95) | 17. JWH-210 5-OH-indole
(<i>m/z</i> 386.10 → 183.05; 153.10; 155.05) |
| 4. JWH-018 N-pentanoic
(<i>m/z</i> 372.20 → 155.05; 127.10) | 18. PB-22
(<i>m/z</i> 358.80 → 214.05; 144.05; 116.00) |
| 5. JWH-018 N-5-OH-pentyl
(<i>m/z</i> 357.80 → 155.05; 127.05) | 19. JWH-073
(<i>m/z</i> 328.20 → 127.10; 155.05; 200.10) |
| 6. AM2201 N-4-OH-pentyl
(<i>m/z</i> 376.40 → 155.00; 127.00; 144.00) | 20. EAM2201
(<i>m/z</i> 387.70 → 183.10; 232.10; 155.10) |
| 7. AM2201 5/6-OH-indole
(<i>m/z</i> 375.90 → 155.05; 127.05; 248.10) | 21. JWH-122 N-4-pentenyl
(<i>m/z</i> 353.70 → 169.05; 141.10; 115.10) |
| 8. JWH-081 N-5-OH-pentyl
(<i>m/z</i> 388.20 → 185.05; 157.05; 114.15) | 22. JWH-018
(<i>m/z</i> 341.70 → 155.00; 127.05; 214.10) |
| 9. MAM2201 N-4-OH-pentyl
(<i>m/z</i> 389.60 → 169.00; 141.05; 115.15) | 23. JWH-081
(<i>m/z</i> 372.10 → 185.05; 157.15; 127.10) |
| 10. AB-CHMINACA
(<i>m/z</i> 356.70 → 241.05; 312.20; 340.15) | 24. AKB48F
(<i>m/z</i> 384.30 → 135.15; 107.10; 93.10) |
| 11. UR-144 N-pentanoic
(<i>m/z</i> 341.60 → 125.10; 55.05; 57.10) | 25. THJ-018
(<i>m/z</i> 342.60 → 215.10; 145.05; 90.00) |
| 12. JWH-019 N-6-OH-hexyl
(<i>m/z</i> 371.80 → 155.05; 127.00; 144.00) | 26. JWH-122
(<i>m/z</i> 356.30 → 169.05; 141.10; 115.15) |
| 13. JWH-122 N-5-OH-pentyl
(<i>m/z</i> 372.20 → 169.05; 141.05; 115.15) | 27. JWH-210
(<i>m/z</i> 370.10 → 183.10; 155.10; 153.10) |
| 14. AKB48 N-pentanoic
(<i>m/z</i> 395.60 → 135.00; 93.10; 79.05) | |



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Cannabinoids in Rat Plasma

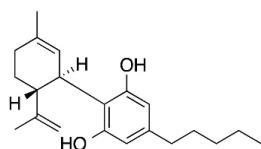
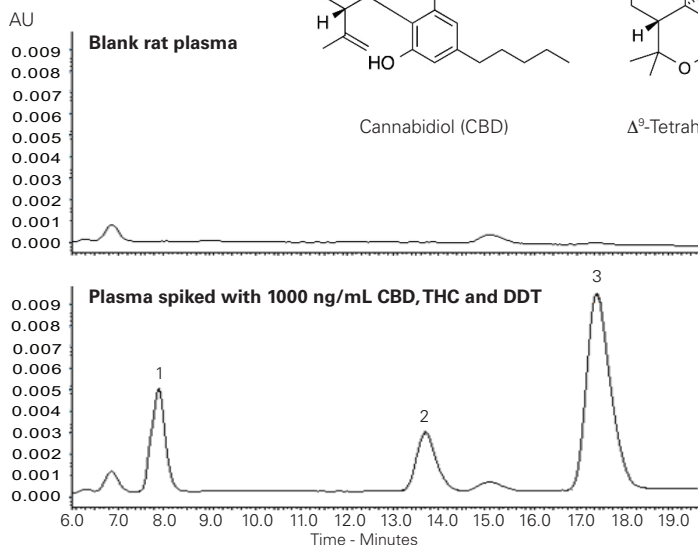
Application #AN2310

Conditions

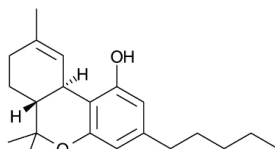
Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: H₂O/MeCN (38:62 v/v)
Flow Rate: 1 mL/min
Injection: 30 µL
Temperature: 55 °C
Detection: UV, 220 nm

Analytes

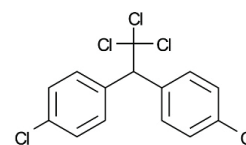
1. Cannabidiol (CBD)
2. Δ⁹-Tetrahydrocannabinol (THC)
3. 4,4-Dichlorodiphenyltrichloroethane (DDT) (IS)



Cannabidiol (CBD)



Δ⁹-Tetrahydrocannabinol (THC)



4,4-Dichlorodiphenyltrichloroethane (DDT) (IS)

LLOQ 10 ng/mL for both cannabinoids
Method linearity 10 – 10,000 ng/mL



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Carglumic Acid in Human Plasma by LC-MS/MS

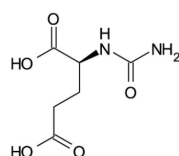
Application #AN3750

Conditions

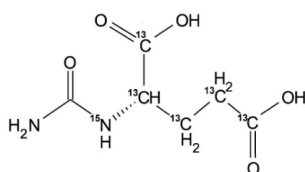
Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: MeCN/MeOH/0.1% acetic acid pH 3.2 (40:40:20 v/v/v)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: MDS Sciex API-4000 triple quad MS
 Negative ion mode ESI
 Ion source temperature: 500 °C
 Ion spray voltage: -4500 V
 20% split flow to ion spray interface

Analytes

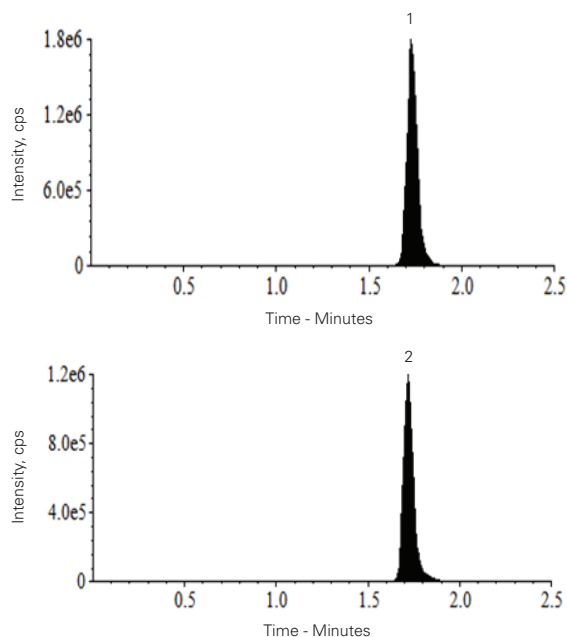
1. Carglumic acid
 $(m/z\ 189 \rightarrow 146)$
 (LLOQ 6.0 ng/mL)
2. Carglumic acid-¹³C ¹⁵N (I.S.)
 $(m/z\ 195 \rightarrow 152)$



Carglumic acid



Carglumic acid-¹³C ¹⁵N (I.S.)



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Catechins

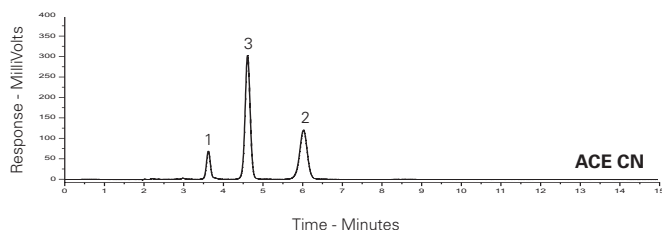
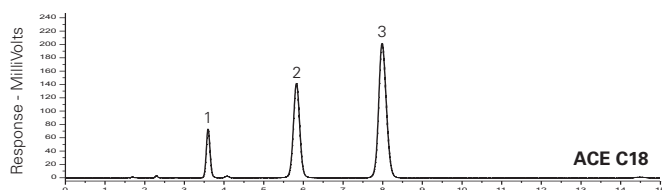
Application #AN3950

Conditions

Column: ACE 5 C18, ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546, ACE-124-1546
Mobile Phase: MeOH/0.1% formic acid in H₂O (25:75 v/v)
Flow Rate: 1 mL/min
Injection: 2 µL
Temperature: Ambient
Detection: UV, 280 nm

Analytes

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



Catecholamine Analysis (I)

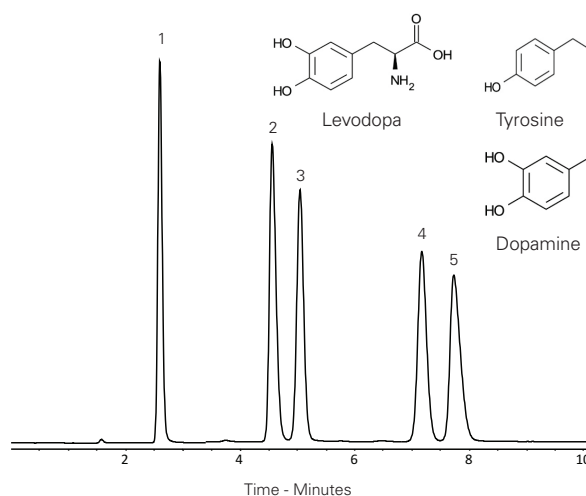
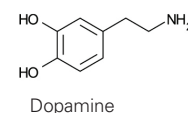
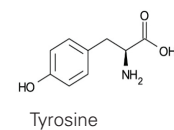
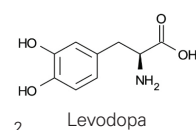
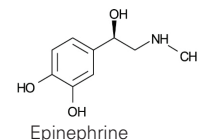
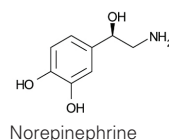
Application #AN2020

Conditions

Column: ACE 5 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1210-1546
Mobile Phase: 12.5 mM ammonium formate pH 3.0 in H₂O
Flow Rate: 1 mL/min
Temperature: 22 °C
Detection: UV, 266 nm

Analytes

1. Norepinephrine
2. Epinephrine
3. Levodopa
4. Tyrosine
5. Dopamine



Catecholamine Analysis (II)

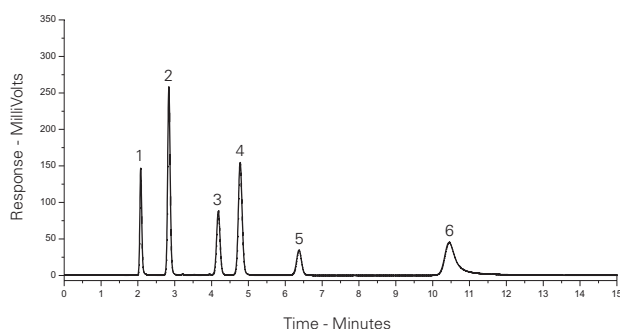
Application #AN3910

Conditions

Column: ACE 5 AQ
Dimensions: 150 x 4.6 mm
Part Number: ACE-126-1546
Mobile Phase: 50 mM KH₂PO₄ pH 3.0 in H₂O
Flow Rate: 1 mL/min
Injection: 2 µL
Temperature: Ambient
Detection: UV, 210 nm

Analytes

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



Catecholamines by LC-MS/MS

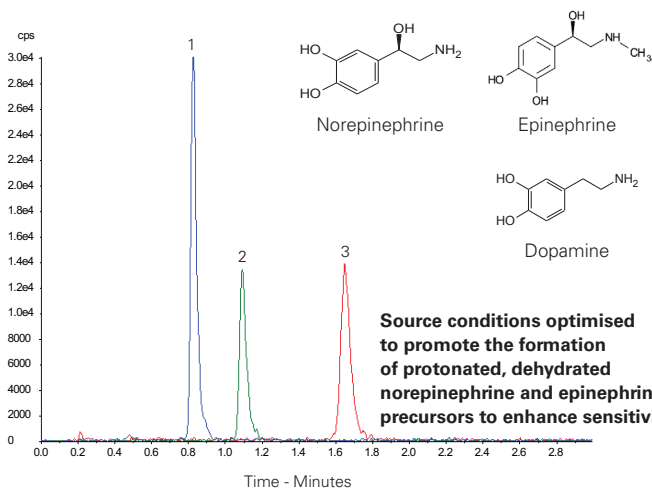
Application #AN2320

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: 2 mM ammonium formate pH 3.2/MeOH (98:2 v/v)
Flow Rate: 0.4 mL/min
Injection: 20 µL
Temperature: 40 °C
Detection: AB SCIEX triple quad 5500
 Positive ESI mode
 Source temperature: 700 °C
 IonSpray voltage: 5500 V

Analytes

1. Norepinephrine (m/z 152.1 → 107.1)
2. Epinephrine (m/z 166.1 → 107.1)
3. Dopamine (m/z 154.1 → 91.1)



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Catecholamines and their Metabolites in Urine by LC-MS/MS

Application #AN4040

Conditions

Column: ACE UltraCore 2.5 SuperPhenylHexyl

Dimensions: 100 x 2.1 mm

Part Number: CORE-25B-1002U

Mobile Phase: A: 2 mM ammonium formate + 0.05% formic acid in H₂O
B: 2 mM ammonium formate + 0.05% formic acid in MeOH

Gradient:

Time (mins)	%B
0.00	0
1.00	70
1.10	70
1.11	0
4.50	0

Flow Rate: 0.3 mL/min

Injection: 10 µL

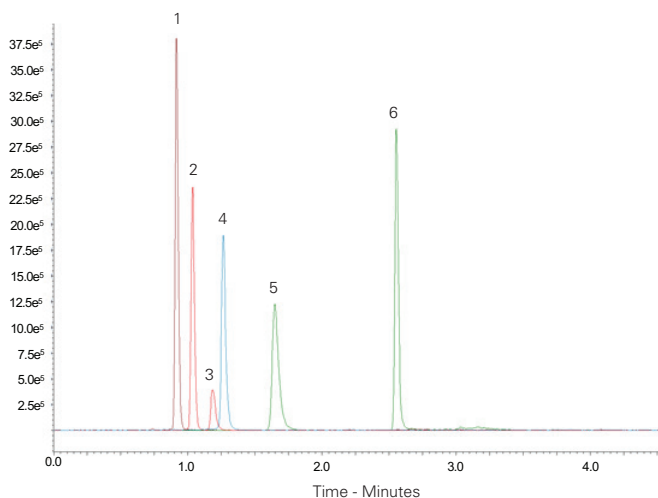
Temperature: 30 °C

Detection: Shimadzu LCMS-8040
ESI in positive ion mode

Sample: Standard 100 ng/mL in urine (after SPE purification)

Analytes

1. Norepinephrine (m/z 170 → 107)
2. Epinephrine (m/z 184 → 166)
3. Normetanephrine (m/z 184 → 166)
4. Dopamine (m/z 154 → 91)
5. Metanephrine (m/z 198 → 180)
6. 3-Methoxytyramine (m/z 181 → 91)



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Catecholamines and Metanephrines Separation (Gradient)

Application #AN1480

Conditions

Column: ACE 5 C18-PFP

Dimensions: 150 x 4.6 mm

Part Number: ACE-1210-1546

Mobile Phase: A: 20 mM ammonium formate pH 3.0 in H₂O
B: 20 mM ammonium formate pH 3.0 in MeOH/H₂O (90:10 v/v)

Gradient:

Time (mins)	%B
0	0
5	40
6	40
7	0
17	0

Flow Rate: 1 mL/min

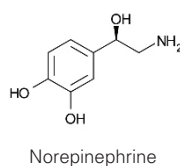
Injection: 5 µL

Temperature: 25 °C

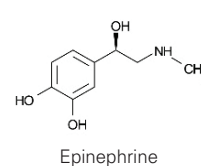
Detection: UV, 260 nm

Analytes

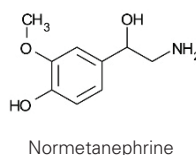
1. Norepinephrine
2. Epinephrine
3. Normetanephrine
4. Dopamine
5. Metanephrine



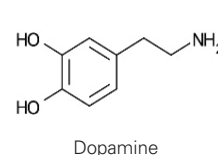
Norepinephrine



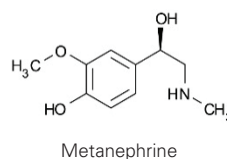
Epinephrine



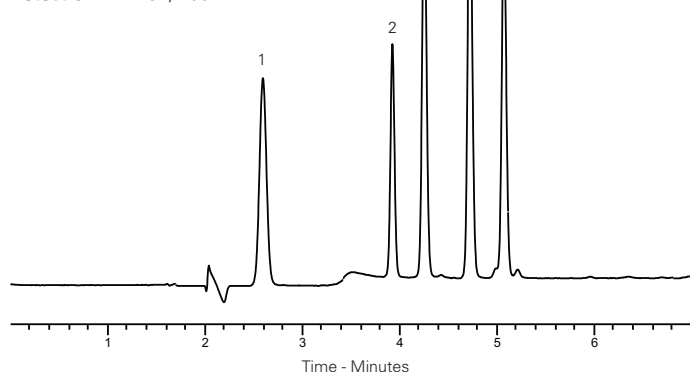
Normetanephrine



Dopamine



Metanephrine



Catecholamines and Metanephrines Separation (Isocratic)

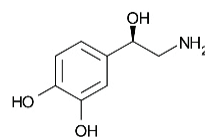
Application #AN1490

Conditions

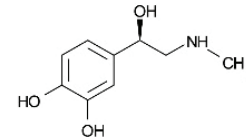
Column: ACE 5 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1210-1546
Mobile Phase: 20 mM ammonium formate pH 3.0 in H₂O
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: UV, 260 nm

Analytes

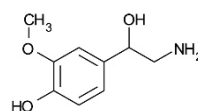
1. Norepinephrine
2. Epinephrine
3. Normetanephrine
4. Dopamine
5. Metanephrine



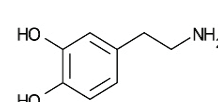
Norepinephrine



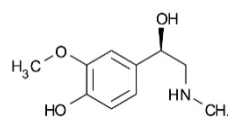
Epinephrine



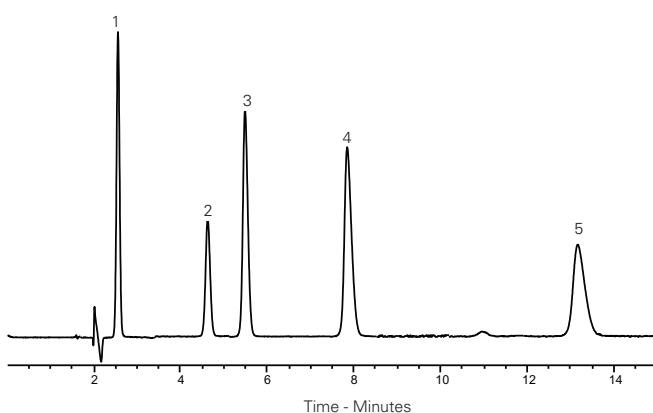
Normetanephrine



Dopamine



Metanephrine



Catecholamines from Plasma

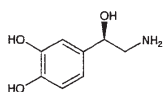
Application #AN3210

Conditions

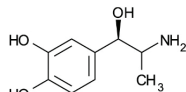
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 50 mM sodium acetate
 pH 7.0/MeCN/MeOH (50:35:15 v/v/v)
Flow Rate: 0.9 mL/min
Temperature: Ambient
Detection: Fluorescence – λ_{Ex} 350 nm, λ_{Em} 480 nm
Sample: Ion pair extraction using diphenyl-borate-ethanolamine.
 Derivatisation using diphenyl-ethylenediamine as
 fluorescent probe

Analytes

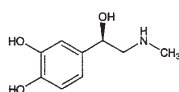
1. Noradrenaline (Norepinephrine)
2. 3,4-Dihydroxynorephedrine (I.S.)
3. Adrenaline (Epinephrine)



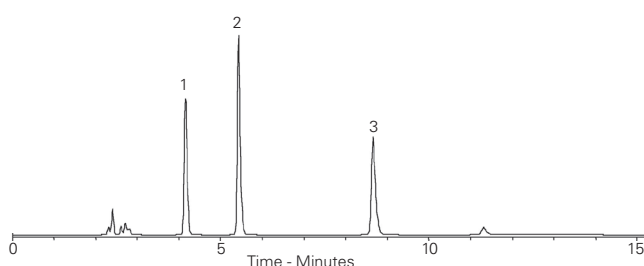
Noradrenaline



3,4-Dihydroxynorephedrine (I.S.)



Adrenaline



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Catecholamines from Urine

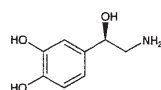
Application #AN3200

Conditions

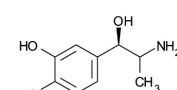
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 50 mM sodium acetate
 pH 7.0/MeCN/MeOH (50:35:15 v/v/v)
Flow Rate: 0.9 mL/min
Temperature: Ambient
Detection: Fluorescence – λ_{Ex} 350 nm, λ_{Em} 480 nm
Sample: Ion pair extraction using diphenyl-borate-ethanolamine.
 Derivatisation using diphenyl-ethylenediamine as
 fluorescent probe

Analytes

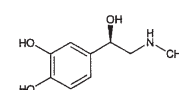
1. Noradrenaline (Norepinephrine)
2. 3,4-Dihydroxynorephedrine (I.S.)
3. Adrenaline (Epinephrine)
4. Dopamine



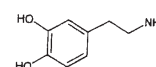
Noradrenaline



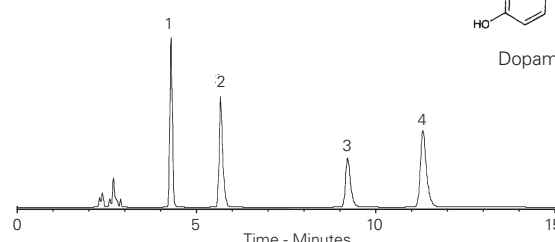
3,4-Dihydroxynorephedrine (I.S.)



Adrenaline



Dopamine



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Catechols Mixture Separations (I) and (II)

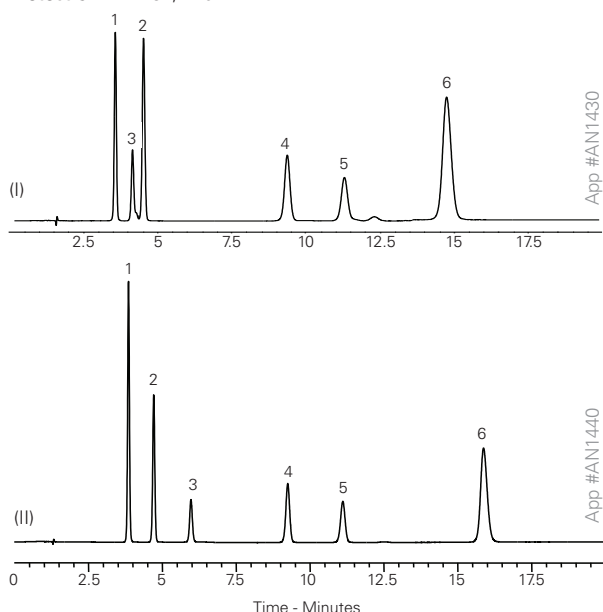
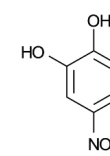
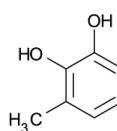
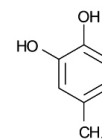
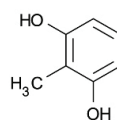
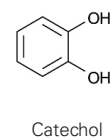
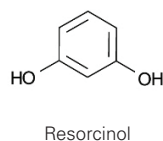
Application #AN1430 and #AN1440

Conditions

Column: (I) ACE Excel 3 CN-ES (II) ACE Excel 3 C18-Amide
Dimensions: 150 x 4.6 mm
Part Number: (I) EXL-1113-1546U (II) EXL-1112-1546U
Mobile Phase: (I) 20 mM H₃PO₄ in MeCN/H₂O (25:75 v/v)
 (II) 20 mM H₃PO₄ in MeCN/H₂O (10:90 v/v)
Flow Rate: 1.5 mL/min
Injection: 5 µL
Temperature: 30 °C
Detection: UV, 270 nm

Analytes

1. Resorcinol
2. Catechol
3. 2-Methylresorcinol
4. 4-Methylcatechol
5. 3-Methylcatechol
6. 4-Nitrocatechol



Cathinone Psychoactive Substances by LC-UV and LC-Amperometry

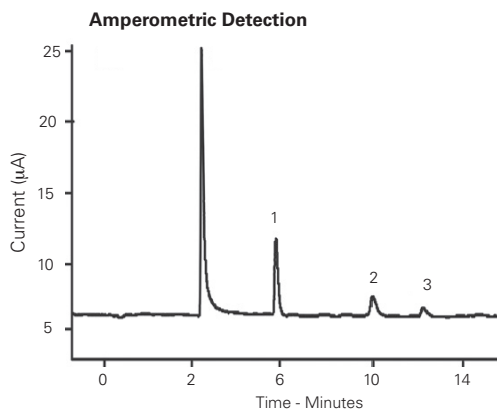
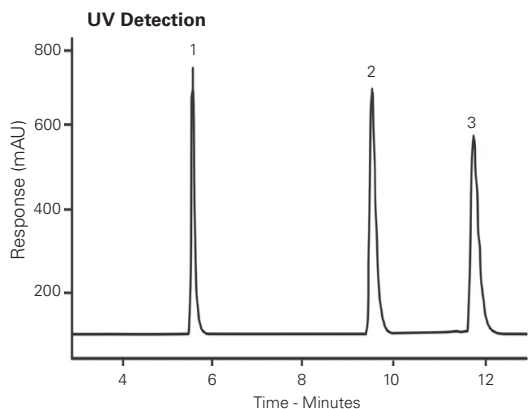
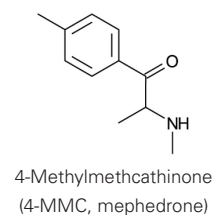
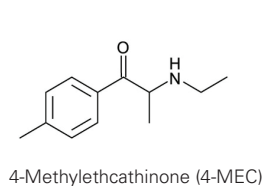
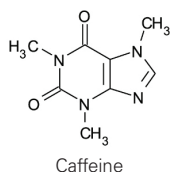
Application #AN3500

Conditions

Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: 10 mM ammonium acetate-100 mM KCl pH 4.3/MeOH (70:30 v/v)
Flow Rate: 0.8 mL/min
Injection: 10 µL
Temperature: 22 °C
Detection: UV, 264 nm
 Amperometric Potential +1.4 V

Analytes

1. Caffeine
2. 4-Methylmethcathinone (4-MMC, mephedrone)
3. 4-Methylethcathinone (4-MEC)



Zuway K, Smith J, Foster C, Kapur N, Banks C, Sutcliffe O, (2015) Detection and quantification of new psychoactive substances (NPSs) within the evolved 'legal high' product, NRG-2, using high performance liquid chromatography-amperometric detection (HPLC-AD). Analyst 140, 6283. doi:10.1039/c5an01106j

Cefquinome by LC-MS

Application #AN3130

Conditions

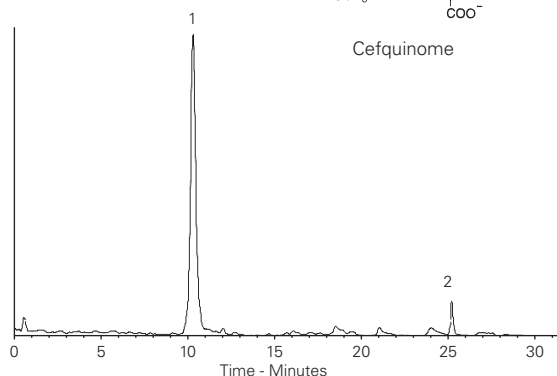
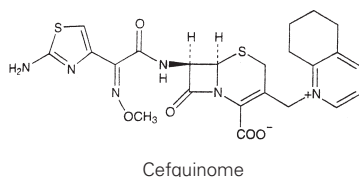
Column: ACE 5 C18
Dimensions: 150 x 2.1 mm
Part Number: ACE-121-1502
Mobile Phase: A: 2 mM formic acid in H₂O
 B: 2 mM formic acid in MeCN

Gradient:	Time (mins)	%B
	0	5
	1	5
	10	95
	30	95

Flow Rate: 0.2 mL/min**Temperature:** 25 °C**Detection:** ESI-MS (+)

Analytes

1. Cefquinome (m/z 529.2)
2. Excipient



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University of Reading, UK

Ciprofibrate from Human Plasma by LC-MS/MS

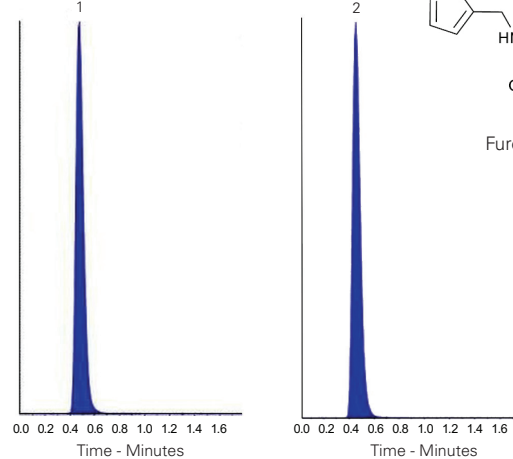
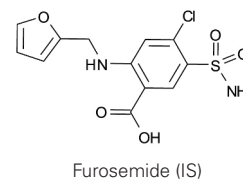
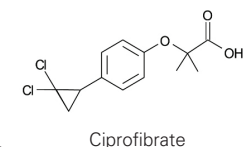
Application #AN2670

Conditions

Column: ACE 5 C18
Dimensions: 50 x 4.6 mm
Part Number: ACE-121-0546
Mobile Phase: 0.001% ammonia in MeOH/
 MeCN/H₂O (70:20:10 v/v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: Ambient
Detection: API 3200 triple quad MS
 ESI in negative ion mode
 Ion source temperature: 550 °C
 Ion spray voltage: 4500 V

Analytes

1. Ciprofibrate (m/z 287.0 → 85.0)
2. Furosemide (IS) (m/z 328.9 → 204.9)



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New Vallabh Vidyanagar, Gujarat, India

Chloramphenicol in Milk by LC-MS/MS

Application #AN2030

Conditions

Column: ACE 3 C18
Dimensions: 50 x 2.1 mm
Part Number: ACE-111-0502
Mobile Phase: A: H₂O
 B: MeOH

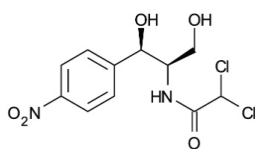
Gradient:	Time (mins)	%B
	0.00	10
	0.05	10
	2.50	95
	3.00	95
	3.10	10
	4.50	10

Flow Rate: 0.5 mL/min**Injection:** 10 µL

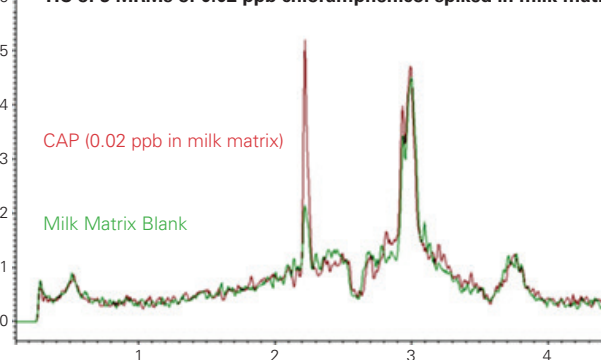
Detection: Bruker EVOQ Elite triple quad MS
 VIP heated-ESI temperature: 400 °C
 Cone gas temperature: 350 °C
 Spray voltage: -4500 V

Analyte

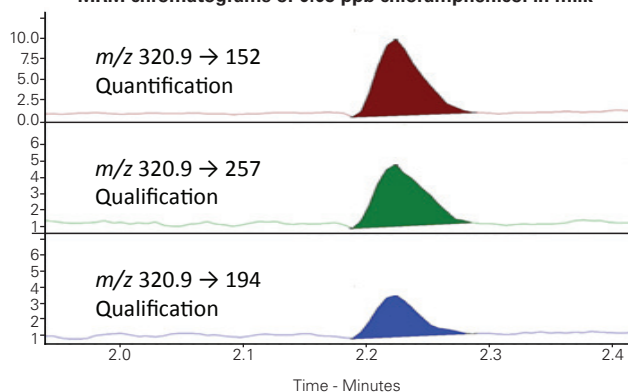
1. Chloramphenicol



TIC of 3 MRMs of 0.02 ppb chloramphenicol spiked in milk matrix



MRM chromatograms of 0.05 ppb chloramphenicol in milk



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Chocolate Analysis

Application #AN2040

Conditions

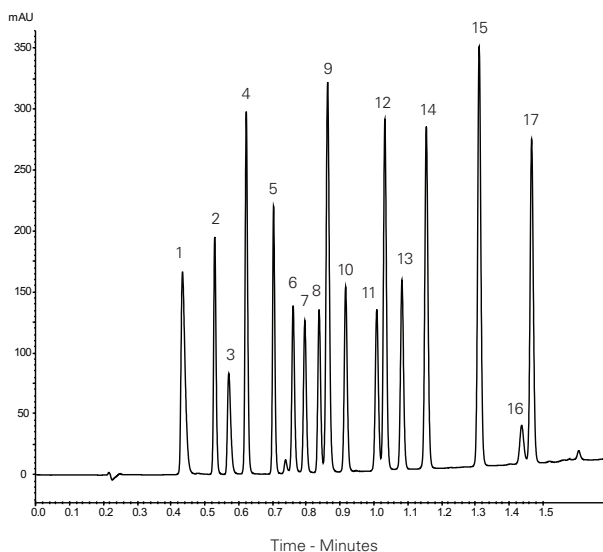
Column: ACE Excel 2 C18-Amide
Dimensions: 100 x 2.1 mm
Part Number: EXL-1012-1002U
Mobile Phase: A: 10 mM ammonium formate pH 2.8 in H₂O
 B: 10 mM ammonium formate pH 2.8 in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.0	5
1.5	85

Flow Rate: 1.2 mL/min
Temperature: 42 °C
Detection: UV, 254 nm

Analytes

1. Acesulfame K
2. Theobromine
3. Saccharin
4. Theophylline
5. Caffeine
6. Chlorogenic acid
7. Catechin
8. Epicatechin
9. 4-Hydroxybenzoic acid
10. Vanillin
11. Guaiacol
12. Sorbic acid
13. Ethylvanillin
14. Methyl paraben
15. Ethyl paraben
16. Quercetin
17. Propyl paraben



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Clenbuterol in Equine Plasma by LC-MS/MS

Application #AN2050

Conditions

Column: ACE 3 C18
Dimensions: 100 x 2.1 mm
Part Number: ACE-111-1002
Mobile Phase: A: 0.2% formic acid in H₂O
 B: 0.2% formic acid in MeCN
Gradient:

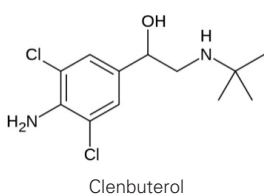
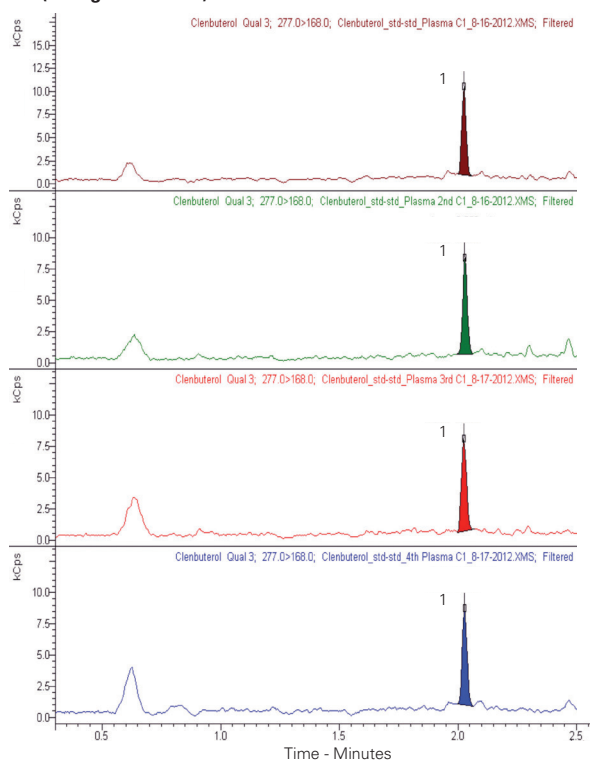
Time (mins)	%B
0.0	10
0.3	10
2.5	95
2.8	10
4.5	10

Flow Rate: 0.45 mL/min
Injection: 30 µL
Detection: Bruker EVOQ Elite triple quad MS
 VIP heated-ESI temperature: 300 °C
 Cone gas temperature: 300 °C
 Spray voltage: +3500 V

Analyte

1. Clenbuterol
 (m/z 277.1 → 168)
 d9-Clenbuterol (IS)
 (m/z 286.1 → 204)

Representative MRM chromatograms of 5 ppt clenbuterol (150 fg on-column)



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Clonidine Hydrochloride Oral Solution
Containing Preservatives

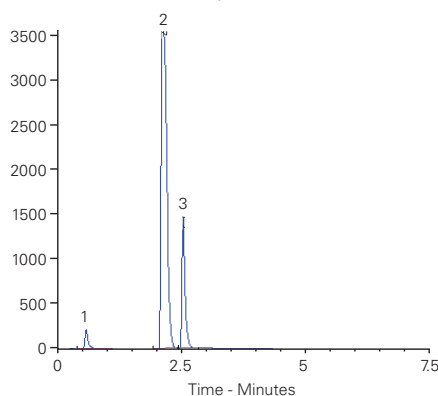
Application #AN2060

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 4.6 mm
Part Number: CORE-25A-0546U
Mobile Phase: A: 0.2% w/v phosphate buffer/
 MeOH/MeCN (80:10:10 v/v/v)
 B: MeCN

Gradient:	Time (mins)	%B
	0.0	0
	0.8	0
	2.1	70
	3.4	70
	3.5	0

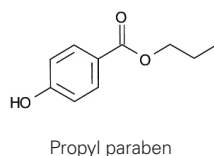
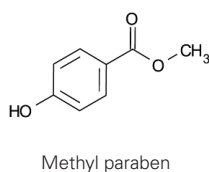
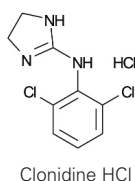
Flow Rate: 2 mL/min
Injection: 100 µL
Temperature: 20 °C
Detection: UV, 220 nm



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Analytes

1. Clonidine HCl
(10 µg/mL)
2. Methyl paraben
(1.5 g/mL)
3. Propyl paraben
(1.5 g/mL)



Clopidogrel and Photodegradation Products

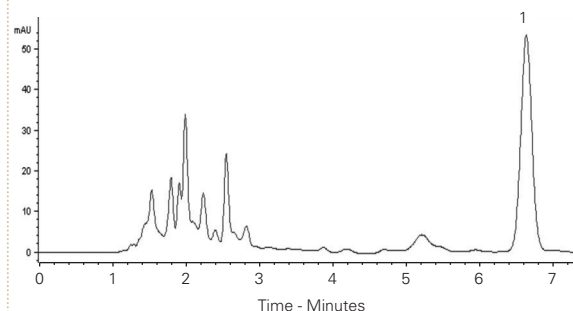
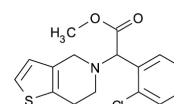
Application #AN3110

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeOH/aqueous TEA
 (pH 5.3 with H₃PO₄) (75:25 v/v)
Flow Rate: 1.2 mL/min
Injection: 20 µL
Temperature: 25 °C
Detection: UV, 220 nm
Sample: Exposed to UV light for 3.5 hours

Analyte

1. Clopidogrel



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Please contact us for further
 information and advice on
 specific applications or for
 method development support

email: info@ace-hplc.com



Coffee Metabolite Profiling by LC-MS

Application #AN2590

Conditions

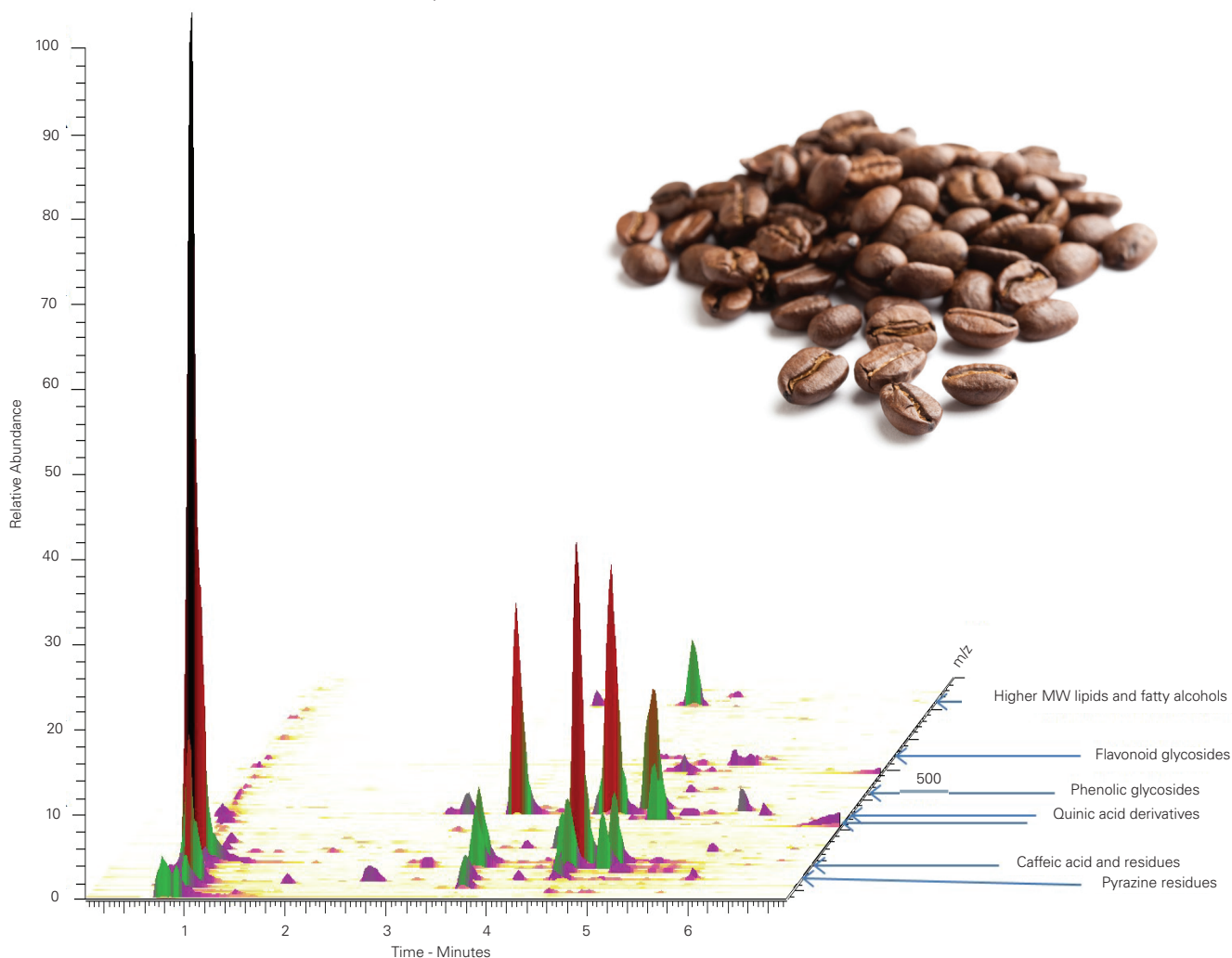
Column: ACE Excel 1.7 C18-Amide**Dimensions:** 100 x 2.1 mm**Part Number:** EXL-1712-1002U**Mobile Phase:** A: 0.01% formic acid in H₂O

B: 0.01% formic acid in MeCN

Gradient:	Time (mins)	%B
	0.0	3
	2.5	10
	8.0	100
	8.5	3
	10.0	3

Flow Rate: 0.5 mL/min**Detection:** Exactive accurate mass MS system

ESI in negative ion mode

Analytes between *m/z* 70-800 monitored**Sample:** Metabolites from coffee extracted into cold water by vortexing for 20 mins. Samples filtered prior to injection onto column and modular Accela LC system.

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Cold Medicine Analytes (I) and (II)

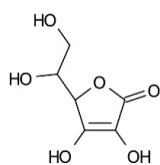
Application #AN1940 and #AN2410

Conditions

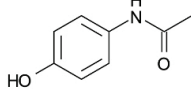
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: (I) 20 mM phosphoric acid in MeOH/H₂O (25:75 v/v)
 (II) 0.1% formic acid in MeOH/H₂O (55:45 v/v)
Flow Rate: (I) 1.5 mL/min (II) 1.0 mL/min
Injection: 5 µL
Temperature: (I) 40 °C (II) 25 °C
Detection: (I) UV, 280 nm (II) UV, 275 nm

Analytes

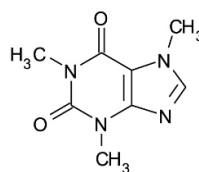
1. Ascorbic acid
2. Paracetamol
3. Caffeine
4. Aspirin
5. Ethenzamide
6. Salicylic acid



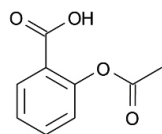
Ascorbic acid



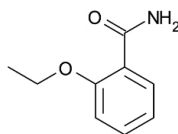
Paracetamol



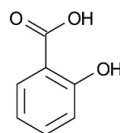
Caffeine



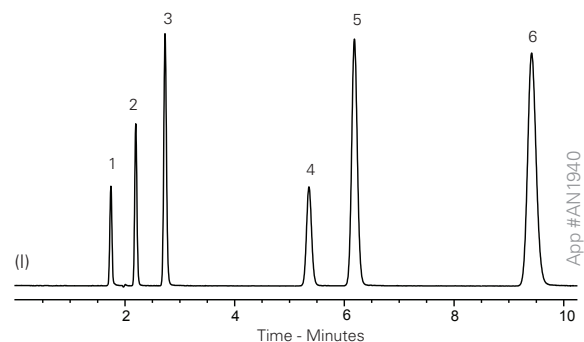
Aspirin



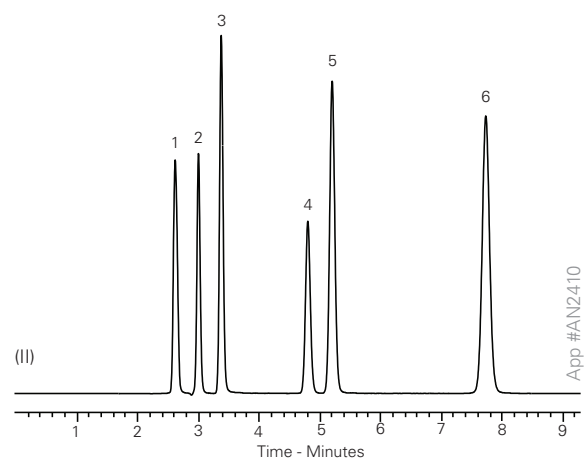
Ethenzamide



Salicylic acid



App #AN1940



App #AN2410

Corticosteroids by LC-MS/MS

Application #AN1030

Conditions

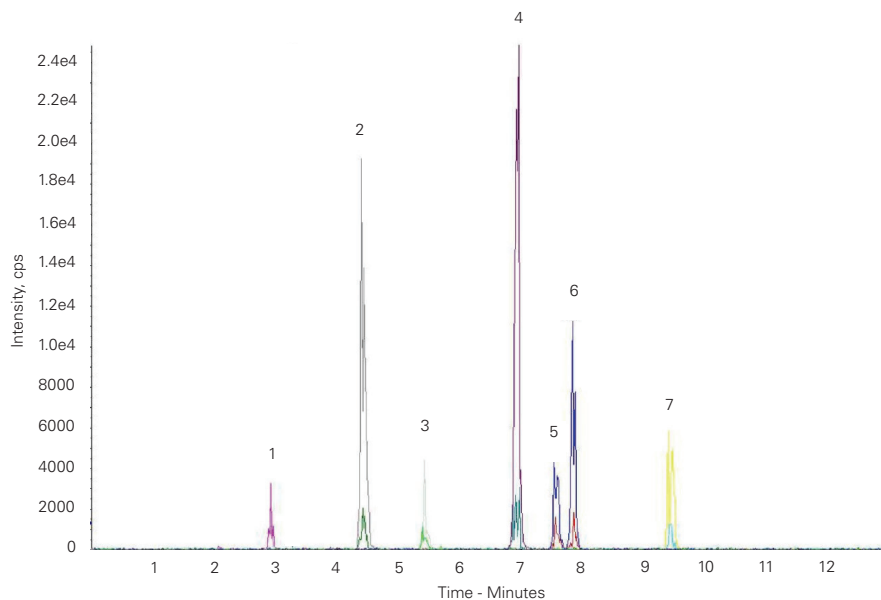
Column: ACE 3 C18-PFP
Dimensions: 150 x 2.1 mm
Part Number: ACE-1110-1502
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeCN/0.1% formic acid in H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	30
14	50
17	95
20	30

Flow Rate: 0.3 mL/min
Injection: 25 µL
Temperature: 15 °C
Detection: Turbospray, MRM

Analytes

1. Triamcinolone
2. Prednisolone
3. Fluoroprednisolone
4. Methylprednisolone
5. Betamethasone
6. Dexamethasone
7. Flumethasone



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Cortisol in Urine by LC-MS/MS

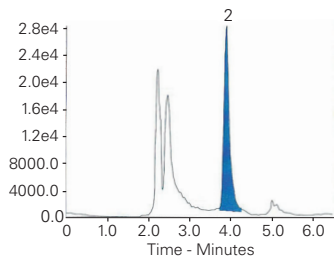
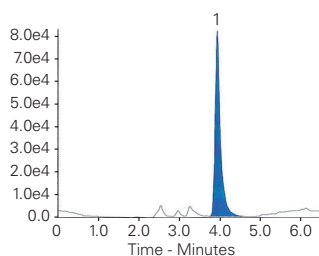
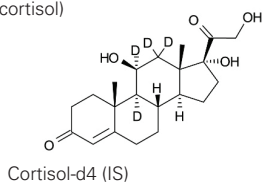
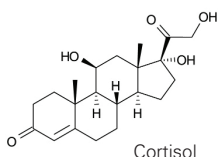
Application #AN2680

Conditions

Column: ACE Excel 2 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-101-1002U
Mobile Phase: 4 mM ammonium acetate in H₂O/0.2% (v/v) formic acid in MeOH (71.5:28.5 v/v)
Flow Rate: 0.7 mL/min
Injection: 50 µL
Temperature: 50 °C
Detection: Applied Biosystems 5000 MS/MS
 APCI in positive ion mode
Sample: BioRad Liquichek Urine Quality
 Control standard (16 nmol/L cortisol)

Analytes

1. Cortisol
(m/z 363.5 → 121.3)
2. Cortisol-d4 (IS)
(m/z 367.3 → 331.3)



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Cyclosporin Mixture

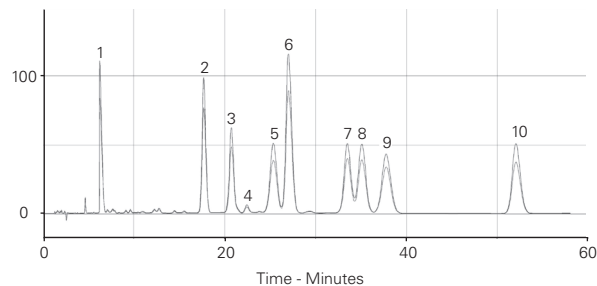
Application #AN3270

Conditions

Column: ACE 5 C18
Dimensions: 250 x 3.0 mm
Part Number: ACE-121-2503
Mobile Phase: H₂O/MeCN/MTBE/H₃PO₄ (46:51:3:0.1 v/v/v/v)
Flow Rate: 0.8 mL/min
Temperature: 80 °C
Detection: UV, 210 nm

Analytes

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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Cyclodextrin-Encapsulated Flavour Compounds in Beer

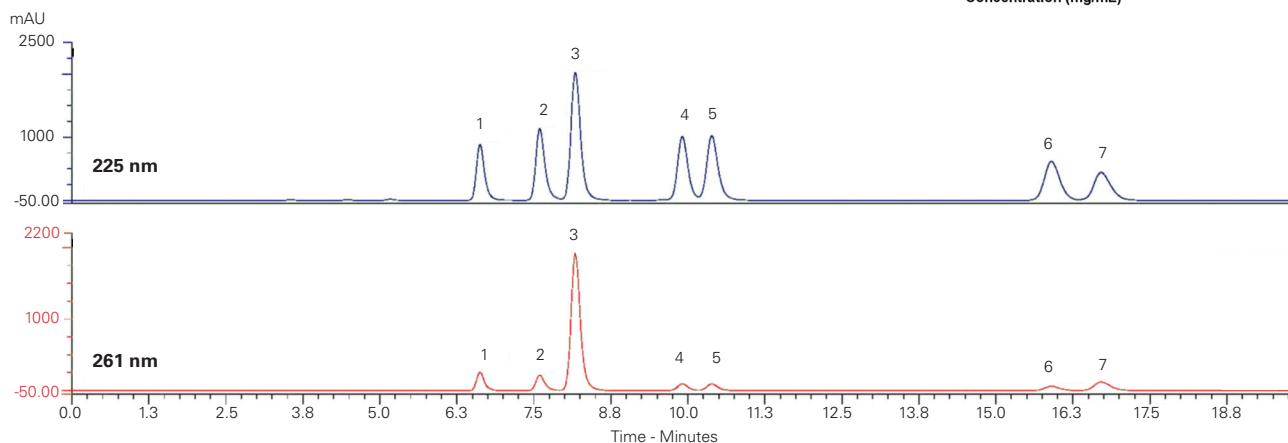
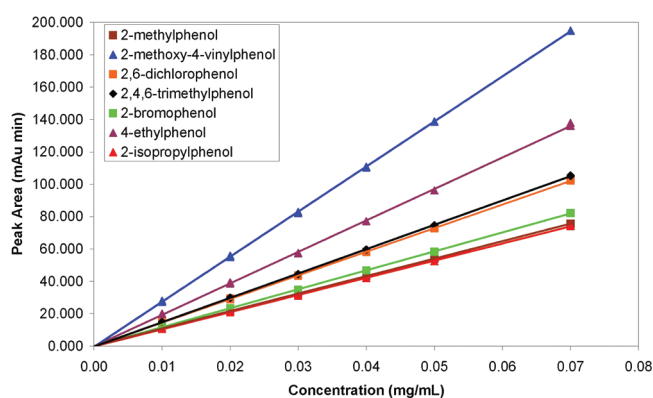
Application #AN2300

Conditions

Column: ACE 3 C18
Dimensions: 150 x 4.0 mm
Part Number: ACE-111-1504
Mobile Phase: 0.1% phosphoric acid in MeOH/H₂O (53:47 v/v)
Flow Rate: 0.5 mL/min
Injection: 20 µL
Temperature: 35 °C
Detection: UV, 225 nm and 261 nm

Analytes

1. 2-Methylphenol
2. 2-Bromophenol
3. 2-Methoxy-4-vinylphenol
4. 4-Ethylphenol
5. 2,4-Dichlorophenol
6. 2,4,6-Trimethylphenol
7. 2-Isopropylphenol



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Cytarabine Analogues by Ion-Pairing LC-MS/MS

Application #AN2070

Conditions

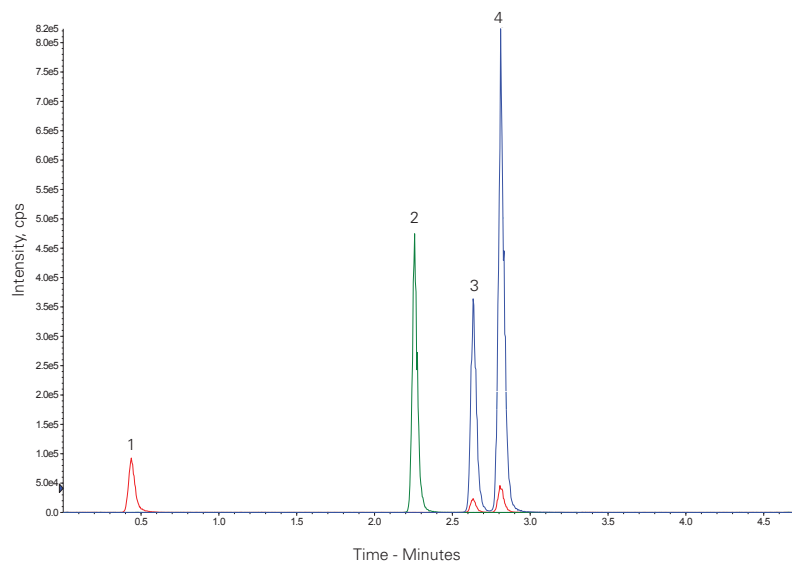
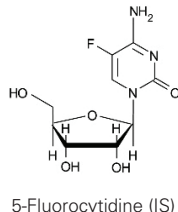
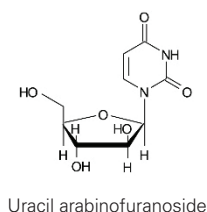
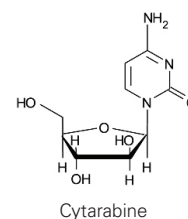
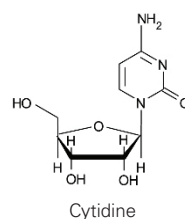
Column: ACE 3 C18
Dimensions: 50 x 2.1 mm
Part Number: ACE-111-0502
Mobile Phase: A: 0.1% perfluoropentanoic acid + 0.1% formic acid in H₂O
 B: 0.1% perfluoropentanoic acid + 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	0
0.5	0
3.0	13
4.0	90
5.0	0

Flow Rate: 0.7 mL/min
Detection: API 4000 MS
 TurbolonSpray, positive mode
 Source Temperature 550 °C

Analytes

1. Uracil arabinofuranoside
(*m/z* 245 → 113)
2. 5-Fluorocytidine (IS)
(*m/z* 262 → 130)
3. Cytidine
(*m/z* 244 → 112)
4. Cytarabine
(*m/z* 244 → 112)



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Cytotoxic Agents by UHPLC-MS/MS

Application #AN1070

Conditions

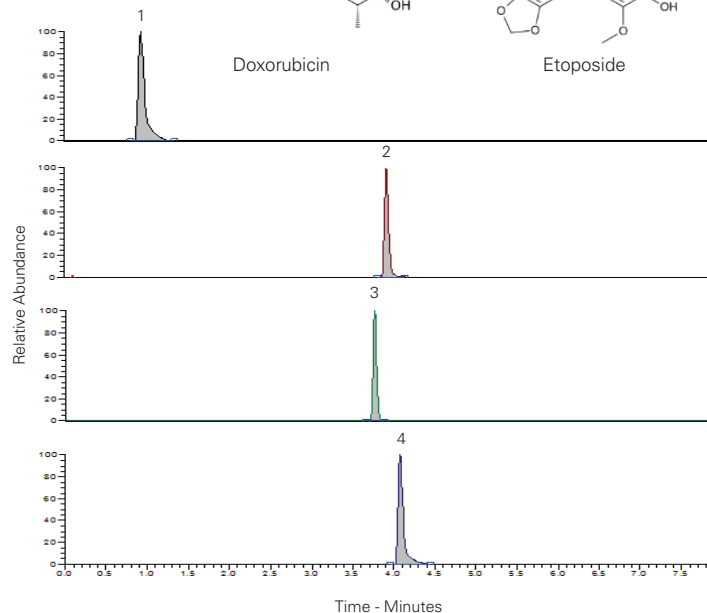
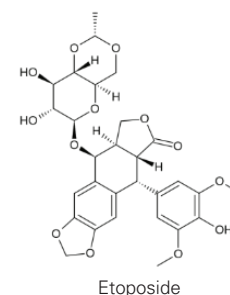
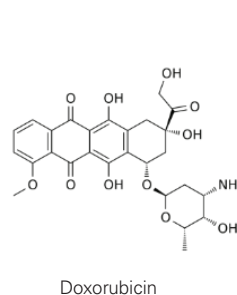
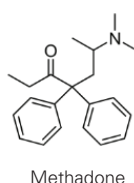
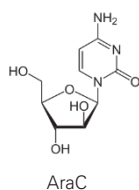
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 2.1 mm
Part Number: CORE-25A-1002U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	2
1.0	2
3.0	80
5.0	80
5.1	2
8.0	2

Flow Rate: 0.25 mL/min
Detection: Thermo Vantage triple quadrupole MS
 MRM +ve ESI mode
 Spray voltage: 3500 V
 Nitrogen sheath and auxiliary gas
 CID with argon: 1.5 mTorr

Analytes

1. AraC
(*m/z* 244.1 → 112.2)
2. Methadone
(*m/z* 310.2 → 265.3)
3. Doxorubicin
(*m/z* 544.2 → 361.2)
4. Etoposide
(*m/z* 589.2 → 185.1)



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Decarboxylation of Sirohaem by Sirohaem Decarboxylase

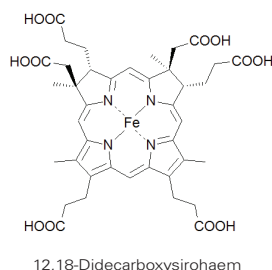
Application #AN3830

Conditions

Column: ACE 5 AQ
Dimensions: 150 x 2.1 mm
Part Number: ACE-126-1502
Mobile Phase: A: 0.1% TFA in H₂O
 B: MeCN
Gradient:

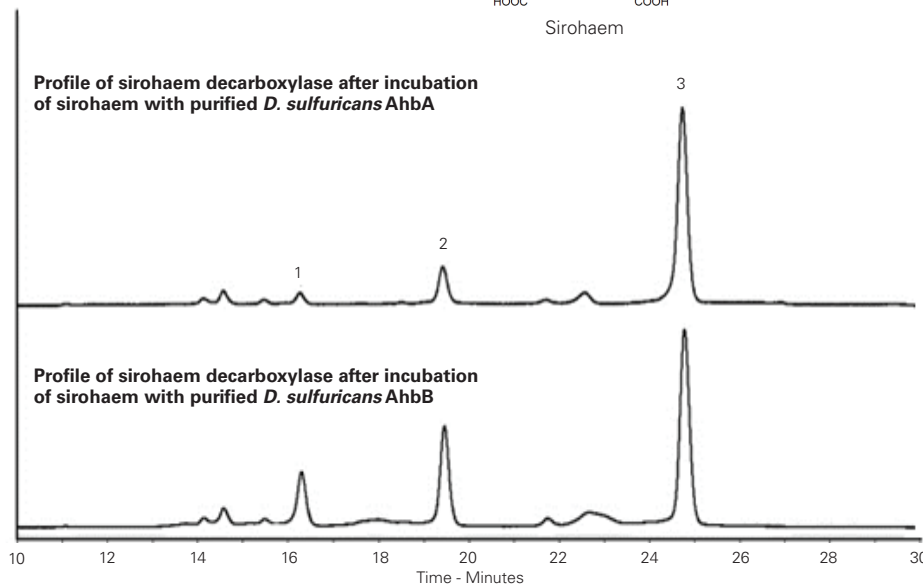
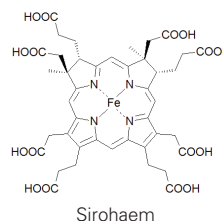
Time (mins)	%B
0	5
6	20
25	30
35	100
40	100

Flow Rate: 0.2 mL/min
Detection: DAD, 380 nm



Analytes

1. Sirohaem
2. Monodecarboxysirohaem
3. 12,18-Didecarboxysirohaem



Palmer DJ, Schroeder S, Lawrence AD, Deery E, Lobo SA, Saraiva LM, McLean KJ, Munro AW, Ferguson SJ, Pickersgill RW, Brown DG, Warren MJ. The structure, function and properties of sirohaem decarboxylase – an enzyme with structural homology to a transcription factor family that is part of an alternative haem biosynthesis pathway. *Molecular Microbiology* (2014) 93(2), 247-261. doi:10.1111/mmi.12656

Defensins (Human) in Saliva Matrix

Application #AN1270

Conditions

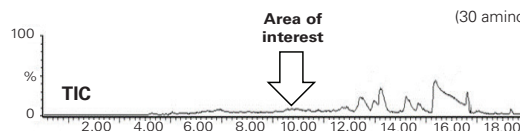
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: CORE-25A-0503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	2
2	2
17	50
19	95
20	95

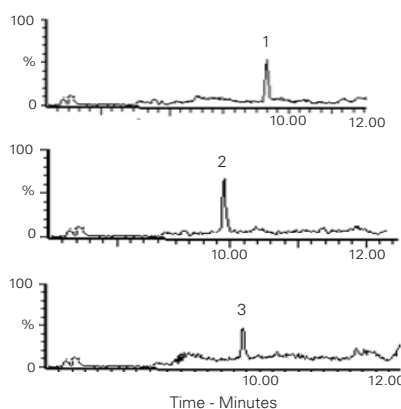
Flow Rate: 0.6 mL/min
Detection: Synapt G1 QToF +ESI MS
 Sampling cone voltage: 40 V
 Source temperature: 150 °C
 Capillary voltage: 4.8 kV
 Extraction cone voltage: 41 kV
 Desolvation temperature: 500 °C
 Acquisition: 100-2000 *m/z*
Sample: SPE on C18

Defensin Human Neutrophil Peptides

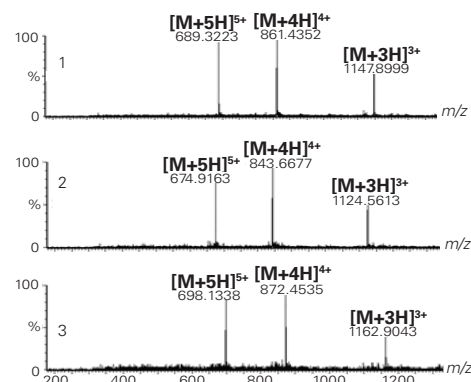
1. HNP-1
(30 amino acid residues)
2. HNP-2
(29 amino acid residues)
3. HNP-3
(30 amino acid residues)



Extracted ion current chromatograms (sum of multiply protonated ions [M+3H]³⁺, [M+4H]⁴⁺ and [M+5H]⁵⁺)



Mass spectra



Dermorphin in Equine Urine by LC-MS/MS

Application #AN1040

Conditions

Column: ACE 3 C18
Dimensions: 100 x 2.1 mm
Part Number: ACE-111-1002
Mobile Phase: A: 0.2% formic acid in H₂O
 B: 0.2% formic acid in MeCN

Gradient:	Time (mins)	%B
	0.00	5
	0.20	5
	8.00	95
	8.50	95
	8.51	5
	12.50	5

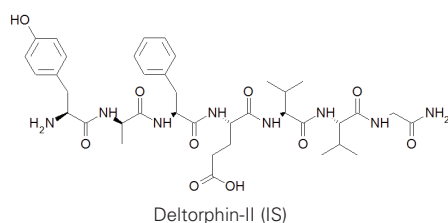
Flow Rate: 0.4 mL/min

Injection: 40 µL

Detection: Bruker EVOQ Elite triple quad MS
 VIP heated-ESI temperature: 350 °C
 Cone gas temperature: 250 °C
 Spray voltage: +4000 V

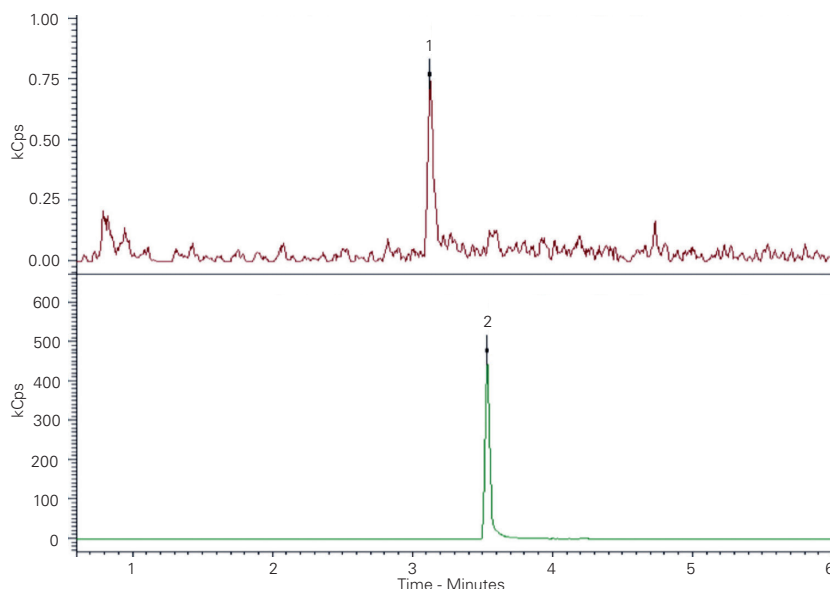
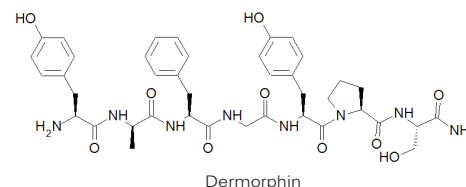
Accurate quantification of dermorphin in equine urine
 in range 0.05 – 100 ng/mL

LLOQ = 0.05 ng/mL



Analytes

1. Dermorphin
 $(m/z\ 803.4 \rightarrow 602\ (\text{Quantifier ion}))$
 $(m/z\ 803.4 \rightarrow 202\ (\text{Qualifier ion}))$
2. Deltorhin-II (IS)
 $(m/z\ 783 \rightarrow 277)$



Reproduced with permission of Bruker UK Ltd (Bruker Application Note #704423)

Didanosine

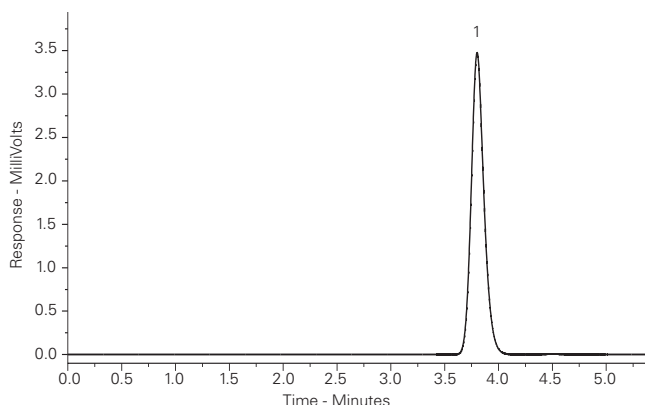
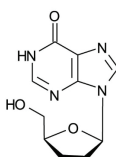
Application #AN3590

Conditions

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

Analyte

1. Didanosine



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Diuretics (Isocratic)

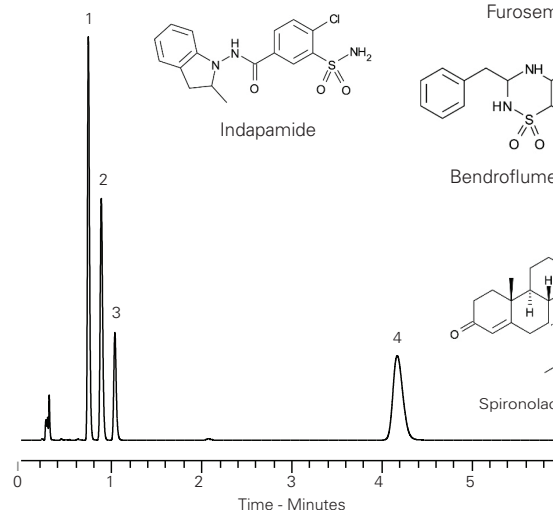
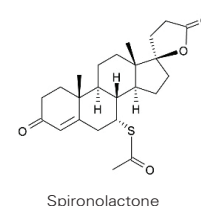
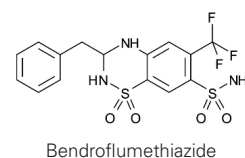
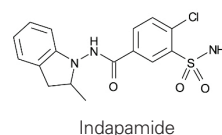
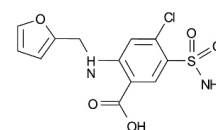
Application #AN2140

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 50 x 3.0 mm
Part Number: EXL-1010-0503U
Mobile Phase: 10 mM ammonium formate
 pH 3.0 in MeOH/H₂O (45:55 v/v)
Flow Rate: 1 mL/min
Injection: 2 µL
Temperature: 60 °C
Detection: UV, 254 nm

Analytes

1. Furosemide
2. Indapamide
3. Bendroflumethiazide
4. Spironolactone





Diuretics

Application #AN1450

Conditions

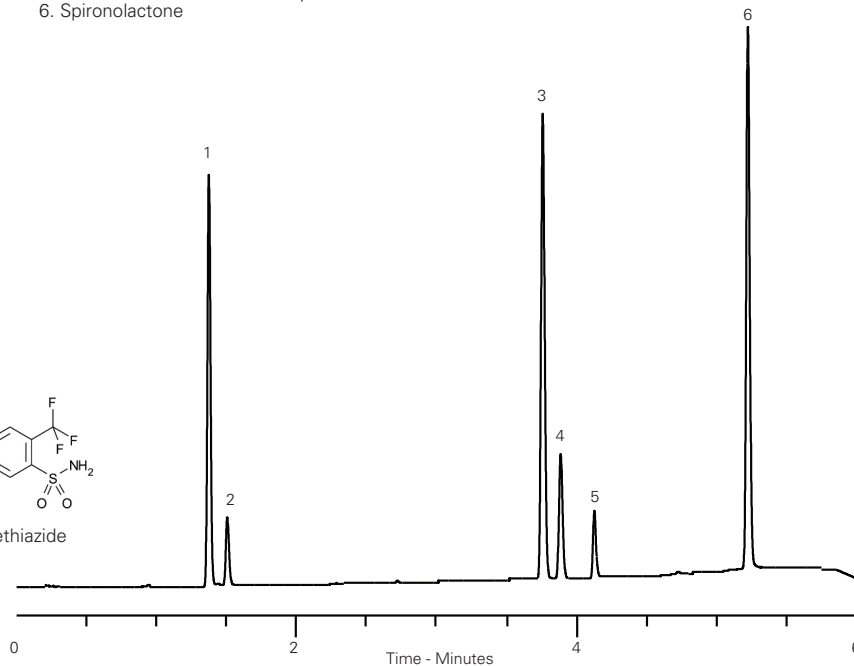
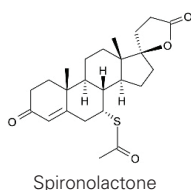
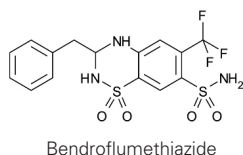
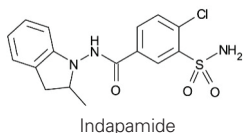
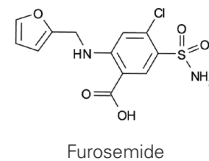
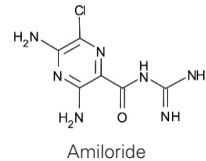
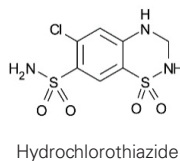
Column: ACE Excel 2 C18-PFP
Dimensions: 50 x 3.0 mm
Part Number: EXL-1010-0503U
Mobile Phase: A: 10 mM ammonium formate
pH 3.0 in H₂O
B: 10 mM ammonium formate
pH 3.0 in MeOH/H₂O (9:1 v/v)
Gradient:

Time (mins)	%B
0.0	5
0.5	5
5.0	70
5.5	70
6.0	5

Flow Rate: 1 mL/min
Injection: 2 µL
Temperature: 60 °C
Detection: UV, 254 nm

Analytes

1. Hydrochlorothiazide
2. Amiloride
3. Furosemide
4. Indapamide
5. Bendroflumethiazide
6. Spironolactone



DOTATATE and Octreotide

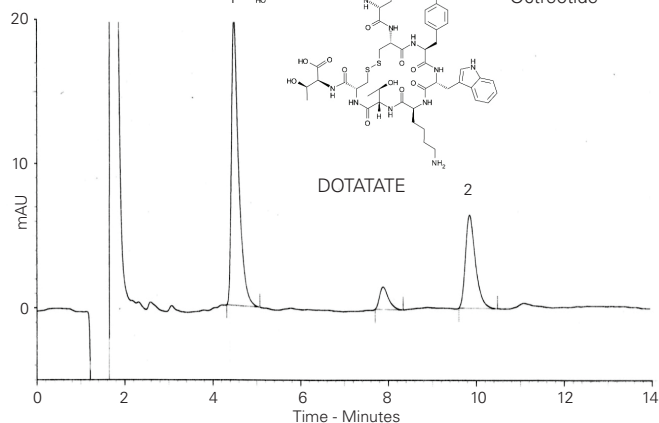
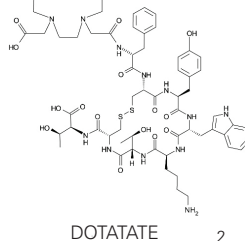
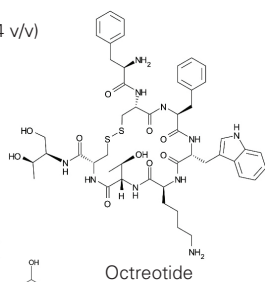
Application #AN2730

Conditions

Column: ACE 3 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-111-1503
Mobile Phase: 0.1% TFA in H₂O/MeCN (76:24 v/v)
Flow Rate: 0.6 mL/min
Injection: 20 µL
Detection: UV, 220 nm

Analytes

1. DOTATATE
2. Octreotide



⁶⁸Ga-DOTATATE QC Analysis by Radiometric Detection

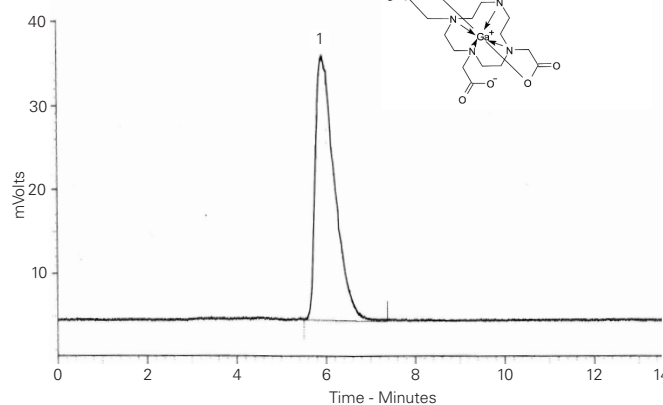
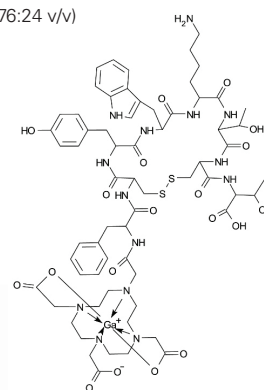
Application #AN2720

Conditions

Column: ACE 3 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-111-1503
Mobile Phase: 0.1% TFA in H₂O/MeCN (76:24 v/v)
Flow Rate: 0.6 mL/min
Injection: 20 µL
Detection: Radiometric

Analyte

1. ⁶⁸Ga-DOTATATE



⁶⁸Ga-DOTATATE PET Tracer by LC-MS/MS

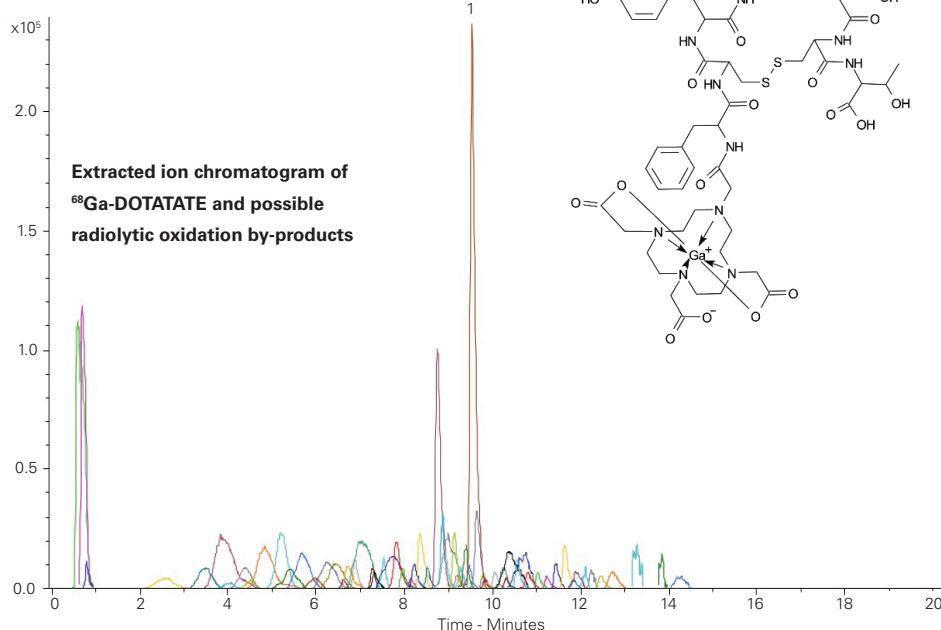
Application #AN2710

Conditions

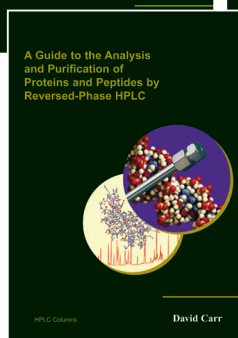
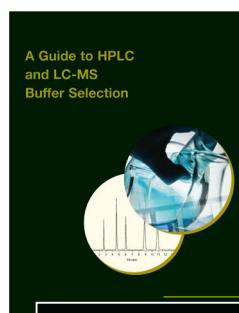
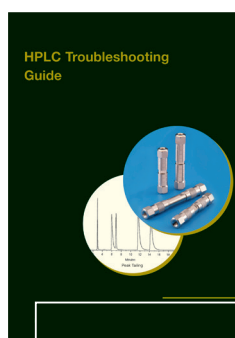
Column: ACE 3 C18
Dimensions: 50 x 4.6 mm
Part Number: ACE-111-0546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	2
10	25
20	25

Flow Rate: 1 mL/min
Injection: 10 µL
Detection: Bruker ESI-Q-TOF
 ESI positive ion mode

Analyte1. ⁶⁸Ga-DOTATATE

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Drugs of Abuse Screen by UHPLC-MS/MS

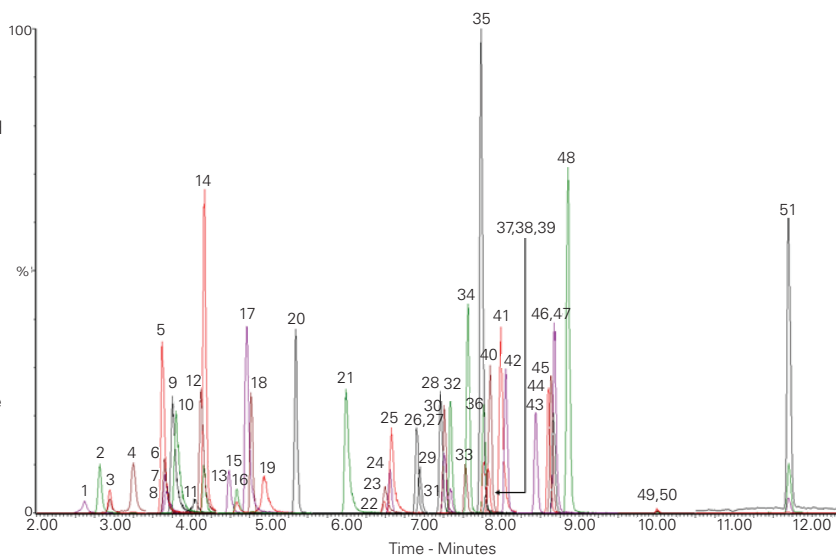
Application #AN2190

Conditions

Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 5 mM ammonium acetate in H₂O
 B: 5 mM ammonium acetate in MeOH
Gradient:

Time (mins)	%B
0.0	10
10.0	90
11.9	90
13.4	10
15.5	10

Flow Rate: 0.3 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS Quattro Premier XE triple quad
 MRM, positive and negative ESI mode
 Desolvation temperature: 450 °C
 Ion source temperature: 150 °C
 Collision gas pressure: 3.5 x 10⁻³ mbar



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Peak	Analyte	R _t (Mins)	Q1 (Da)	Q3 (Da)	Peak	Analyte	R _t (Mins)	Q1 (Da)	Q3 (Da)
1	Oxymorphone	2.62	302.2	198.1	27	Bromazepam	6.95	316.1	182.1
2	Morphine-d3	2.82	289.2	201.0	28	Ketamine	7.21	238.1	124.9
3	Morphine	2.95	286.2	201.0	29	Clonazepam	7.26	316.1	270.1
4	Hydromorphone	3.25	286.2	185.1	30	Nitrazepam	7.26	282.2	236.1
5	Amphetamine-d5	3.62	141.0	123.9	31	α-Hydroxytriazolam	7.34	359.1	331.1
6	Amphetamine	3.65	136.0	118.9	32	Flunitrazepam	7.34	314.2	268.2
7	Dihydrocodeine	3.66	302.2	199.1	33	α-Hydroxylprazolam	7.54	325.2	297.1
8	MDA	3.67	180.1	105.0	34	Estazolam	7.56	295.2	267.2
9	MDMA	3.75	194.1	163.0	35	Zolpidem	7.73	308.2	235.1
10	Methamphetamine	3.80	150.0	90.9	36	Triazolam	7.77	343.0	308.1
11	Oxycodone	4.03	316.2	241.2	37	2-Hydroxyethylflurazepam	7.77	333.2	109.0
12	MDEA	4.12	208.2	163.0	38	Lorazepam	7.80	321.1	275.1
13	BZE-d3	4.15	293.1	171.0	39	Oxazepam	7.82	287.2	241.0
14	BZE	4.17	290.1	168.0	40	Alprazolam	7.85	309.2	281.2
15	6-MAM	4.48	328.2	165.1	41	Methadone	7.99	310.2	265.2
16	Codeine	4.59	300.3	215.1	42	Temazepam	8.05	301.1	255.1
17	Norfentanyl	4.71	233.1	84.0	43	Nordiazepam	8.44	271.1	139.9
18	7-Amino-clonazepam	4.77	286.2	121.0	44	Midazolam	8.61	326.2	291.2
19	Hydrocodone	4.94	300.2	199.1	45	Diazepam-d5	8.63	290.2	154.0
20	7-Amino-flunitrazepam	5.34	284.2	135.0	46	Diazepam	8.67	285.2	154.0
21	Cocaine	5.99	304.2	182.0	47	Flurazepam	8.68	388.2	315.1
22	Norbuprenorphine	6.47	414.3	101.0	48	Fentanyl	8.85	337.3	105.0
23	PCP	6.49	244.2	159.9	49	THC-COOH-d3	9.98	348.2	302.2
24	Zaleplon	6.55	306.2	264.2	50	THC-COOH	10.01	345.2	299.2
25	EDDP	6.58	278.2	234.2	51	Buprenorphine	11.70	468.3	101.0
26	Norketamine	6.90	224.1	124.9					

Drugs of Abuse Screen (250 Analytes) in Urine by LC-MS/MS

Page 1 of 3

Application #AN4140

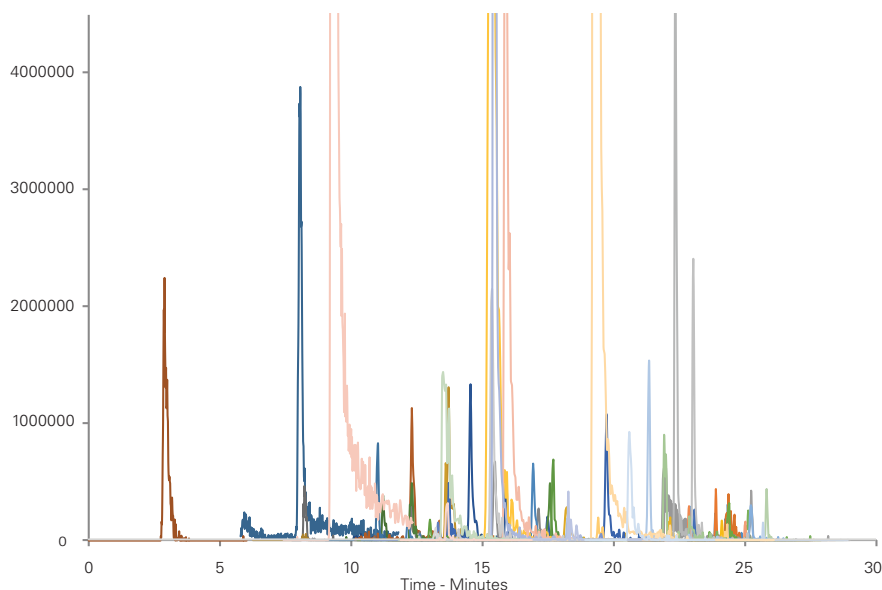
Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 2 mM ammonium acetate + 0.1% formic acid in H₂O
 B: 2 mM ammonium acetate + 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0	2
4	2
34	100
38	100
40	2

Flow Rate: 0.3 mL/min
Injection: 10 µL
Temperature: 37 °C
Detection: Thermo Quantum Ultra MS
 ESI in positive ion mode

Analytes in blue are included in
 Extracted Ion Chromatogram



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Analyte	R _t (Mins)	MRM Transitions (m/z)	Analyte	R _t (Mins)	MRM Transitions (m/z)
6-Acetylcodeine	16.9	342.2 > 165.1	Buphedrone	14.2	178.2 > 160.1
Alfentanil	21.1	417.4 > 197.2	Buphedrone ephedrine	13.5	180.4 > 162.2
Alprazolam	23.3	309.11 > 205.1	Bupivacaine	19.5	289.2 > 84.2
Aminoclonazepam	13.9	286.2 > 222.3	Buprenorphine glucuronide	18.1	644.4 > 468.4
Aminodesmethylflunitrazepam	20.0	270.1 > 121.1	Bupropion	19.5	240.1 > 131.1
Aminoflunitrazepam	16.2	284.1 > 135.1	Butylone	14.7	222.1 > 131.1
Aminonitrazepam	10.9	252.1 > 94.1	Caffeine	13.1	195.1 > 110.1
Aminorex	12.2	163 > 120.1	Camfetamine	18.7	202.2 > 67.1
Amiodarone	31.3	646.2 > 100	Carbamazepine	21.5	237.1 > 192.2
Amisulpride	16.2	370.1 > 242	Carbamazepine 10,11-Epoxide	18.6	253.2 > 180.1
Amitriptyline	24.4	278.2 > 91.1	Cathine	20.0	134.2 > 91.1
Amlodipine	25.3	409.3 > 238.2	Cathinone	9.5	150.2 > 117.1
Amlodipine met	22.9	407 > 318	2C-B-FLY	20.1	286 > 269.1
Amphetamine	11.6	136.1 > 65.2	Chlordiazepoxide	19.5	300.1 > 227.1
Amphetamine-d6	11.6	142.2 > 67.2	Chloroquine	18.5	320.1 > 142.1
Anhydroecgonine methyl ester	9.8	182.2 > 91.1	Chlorpheniramine	20.4	275.1 > 167.2
Aripiprazole	25.5	448.1 > 285.1	Chlorpromazine	25.9	319.2 > 58.1
Atenolol	10.7	267.1 > 145.1	Citalopram	22.2	325.1 > 246.1
Atomoxetine	23.1	256.2 > 44.1	Clobazam	22.8	301.1 > 259.2
Atomoxetine metabolite	22.5	242.2 > 44.1	Clomethiazole	17.3	161.9 > 113
Benzedrone	21.7	254 > 65.1	Clomipramine	27.0	315.1 > 86.1
Benzoylecgonine	15.6	290.1 > 77.2	Clonazepam	23.1	316.1 > 214.2
Benzoylecgonine-d3	15.6	293.2 > 77.2	Clonidine	13.2	230 > 44.2
Benzylpiperazine	5.1	177.2 > 65.1	Clozapine	21.7	327.1 > 192.1
Bisoprolol	19.9	326.3 > 116.1	Cocaethylene	19.5	318.2 > 82.2
Bromazepam	20.4	316 > 182.1	Cocaine	18.0	304.2 > 82.2



Drugs of Abuse Screen (250 Analytes) in Urine by LC-MS/MS

Page 2 of 3

Application #AN4140

Analyte	R _t (Mins)	MRM Transitions (m/z)	Analyte	R _t (Mins)	MRM Transitions (m/z)
Codeine	11.9	300.2 > 153.2	4-Fluoromethcathinone	20.0	182 > 148.1
Cotinine	2.5	177.1 > 80.1	Fluoxetine	25.3	310.1 > 44.2
Creatinine	1.3	114 > 44	Fluphenazine	28.1	438.3 > 143.1
Cyclizine	22.5	267.1 > 167.1	Flurazepam	21.6	388 > 315
D2PM (Diphenylprolinol)	7.3	254.1 > 130.1	Fluvoxamine	26.0	319.1 > 71
Dehydroaripiprazole	25.3	446.1 > 285.1	Gabapentin	10.5	172.1 > 67.2
Desipramine	24.3	267.1 > 72.2	Glibenclamide	28.2	494.1 > 168.9
N-Desmethylozapine	21.0	313 > 192.1	Gliclazide	24.6	324.1 > 110
Desmethyloitalopram	22.4	311.1 > 109.1	Glimepiride	28.4	491.1 > 126
Desmethyflunitrazepam	22.5	300.1 > 254.2	Glipizide	24.5	446.1 > 286
Desmethyfluoxetine	25.4	296.2 > 134.1	Haloperidol	23.1	376.1 > 95.1
N-Desmethyloirtazapine	16.1	252.1 > 195.1	Hippuric acid	10.9	180 > 77
Desmethyloanzapine	12.6	299.1 > 198.1	Hydrocodone	13.1	300.1 > 199.1
N-Desmethylotramadol	16.7	250.1 > 44.2	Hydromorphone	10.4	286.2 > 185.1
O-Desmethylotramadol	12.8	250.1 > 58.2	Hydroxypazepam	22.4	325.1 > 216.1
Desmethyloenlafaxine	15.5	264.3 > 58.1	4-Hydroxyamphetamine	5.4	152.1 > 107.1
N-Desmethylopiclone	20.0	375.1 > 245.1	Hydroxybupropion	18.5	253.1 > 130.1
Desomorphine	13.1	272.1 > 152.1	4-Hydroxymethamphetamine	20.0	166.1 > 107.1
Desoxypropadol	20.5	252.1 > 91.1	8-Hydroxymirtazapine	15.6	282.1 > 211
Dextromethorphan	20.0	272.2 > 171.1	7-Hydroxymirtazapine	18.2	415.3 > 175.1
Diamorphine	16.9	370.1 > 165.1	3-Hydroxyphenazepam	23.3	366.9 > 320.8
Diazepam	25.5	285.1 > 154.1	7-Hydroxyquetiapine	15.3	400.3 > 208.1
Didesmethyloitalopram	22.2	297 > 262.1	9-Hydroxyrisperidone	19.5	427.2 > 69.1
Digoxin	24.2	781.2 > 97	Imipramine	24.2	281.1 > 86.2
Dihydrocodeine	11.7	302.2 > 128.1	5-Iodo-2-aminoindane	18.4	260.1 > 115.1
Diltiazem	22.7	415.1 > 178.1	Ketamine	15.4	238.1 > 125.1
Dimethocaine	16.3	279.3 > 92.1	Lamotrigine	16.8	256.1 > 211.1
Dinitrophenol	18.4	183 > 109	Levamisole	13.3	205.1 > 91.1
Diphenhydramine	21.2	256.1 > 167.1	Levetiracetam	8.9	171.2 > 126.1
Dipipanone	25.0	350.2 > 265.2	Lidocaine	14.8	235.1 > 86.2
Donepezil	22.2	380.1 > 91	Lorazepam	22.8	321 > 229.1
Dothiepin	23.7	296.2 > 202.2	Lormetazepam	23.8	335 > 289.1
Ecgonine ethyl ester	2.5	214.1 > 196.1	LSD	20.1	324.3 > 223.1
Ecgonine methyl ester	1.0	200.1 > 182.1	MCAT	5.4	164.2 > 130.1
EDDP	21.4	278.2 > 219.2	mCPP	17.0	197.1 > 118.1
Estazolam	22.5	295.1 > 267.1	MDA	13.4	180.1 > 133.1
Ethylamphetamine	14.5	164.1 > 91.2	MDAI	12.3	178.19 > 161.1
Ethylmethcathinone	15.8	192.2 > 131.2	MDEA	15.2	208.1 > 135.1
Ethylphenidate	19.2	248.1 > 56.2	MDMA	14.1	194.1 > 135.2
Etizolam	23.5	343.1 > 314.2	MDPV	18.1	276.1 > 135.1
Fenfluramine	20.3	232.1 > 159.1	MEGX	13.4	207.1 > 58.1
Fentanyl	21.4	337.2 > 105.1	MeOPP	13.3	193.2 > 133.1
Flubromazolam	23.2	371.1 > 223.1	Mephedrone	14.6	178.1 > 144.2
Flunitrazepam	23.5	314.1 > 269.3	Mescaline	12.7	212.1 > 165.1
2-Fluoroamphetamine	13.2	154.1 > 83.1	Metformin	2.5	130 > 60.1
Fluoroamphetamine interferent	10.6	154 > 67.1	Methadone	24.0	310.2 > 105.1
3-Fluoromethcathinone	20.0	182.1 > 149.1	Methadone-d3	24.0	313.2 > 268.2

Drugs of Abuse Screen (250 Analytes) in Urine by LC-MS/MS

Page 3 of 3

Application #AN4140

Analyte	R _t (Mins)	MRM Transitions (m/z)	Analyte	R _t (Mins)	MRM Transitions (m/z)
Methamphetamine	12.8	150.1 > 91.2	Paracetamol	7.8	152.1 > 65.1
Methaqualone	22.8	251.2 > 91.1	PCP	20.5	244.3 > 86.2
Methedrone	13.9	194.1 > 146.1	Pentazocine	19.5	286.3 > 175.2
Methiopropamine	10.6	156.1 > 97	Pentedrone	16.0	192.2 > 131.1
Methocarbamol	16.8	242.1 > 118.1	Phenazepam	24.5	350.9 > 206
Methoxetamine	17.2	248.2 > 121.1	Pheniramine	15.1	241.2 > 196.2
3-Methoxytyramine	6.6	168 > 91	Phenytoin	20.0	253.1 > 77
Methylethcathinone	20.0	192.1 > 144.2	Pholcodine	9.2	399.2 > 114.1
Methylhexanamine	13.4	116.1 > 57.3	PMA	13.8	149.2 > 91.1
Methylone	12.7	208.1 > 132.1	PMMA	14.6	180.2 > 121.1
Methylphenidate	16.5	234.1 > 56.2	Powder 20140730	18.7	248.3 > 84.2
5-Methyltryptamine	16.9	175.1 > 143	Prazepam	27.0	325 > 140
Metoclopramide	17.2	300.1 > 227.1	Pregabalin	10.4	160.1 > 97.2
Midazolam	20.9	326.1 > 249.1	Procyclidine	22.4	288.3 > 42
Mirtazapine	16.6	266.1 > 72.2	Promethazine	20.0	285.1 > 86.2
Mitragynine	22.6	399.3 > 174.1	Propofol	23.9	179 > 137
Modafinil	21.1	296.1 > 129	Propofol glucuronide	20.1	372.2 > 148.1
6-Monoacetylmorphine	12.9	328.1 > 165.1	Propoxyphene	23.6	340.2 > 58.2
Mono-N-desethylamiodarone	30.8	618.2 > 547.2	Propranolol	23.0	260.1 > 157.1
Morphine	7.7	286.1 > 152.2	Quetiapine	21.7	384.1 > 221.1
Morphine glucuronide	2.7	462.2 > 201.1	Remifentanyl	18.4	377.3 > 113.1
Morphine-d3	7.7	289.2 > 152.2	Risperidone	20.4	411.1 > 190.8
Naloxone	20.0	328.3 > 212.1	Ritalinic acid	14.4	220.2 > 56.1
Naphyrone	23.2	282.2 > 141.1	Sertraline	25.6	306.1 > 159
Nefopam	19.5	254.9 > 166.1	Sildenafil	23.6	475.4 > 58.1
Nifoxipam	20.9	316.05 > 298.1	Sildenafil N-oxide	23.9	491.4 > 312.3
Nimetazepam	23.6	296.1 > 250.2	Sufentanil	22.9	387.3 > 140.2
Nitrazepam	22.8	282.1 > 236.1	Temazepam	24.2	301.1 > 177.1
Noralfentanil/sufentanil	19.4	277.1 > 245.1	Temazepam-d5	24.1	306.1 > 260.2
Norbuprenorphine glucuronide	15.5	590.3 > 414.3	Tetrazepam	24.5	289.2 > 225.2
Norcyclizine	21.9	253.2 > 167.1	TFMPP	7.9	231.1 > 118.1
Nordiazepam	24.4	271.1 > 140.1	Theophylline	11.2	181.1 > 124.1
Nordothiepin	24.4	282.1 > 202.1	Tramadol	16.9	264.2 > 58.2
Norfentanyl	15.6	233.2 > 56.2	Trazodone	23.9	372.2 > 179.2
Norketamine	14.8	224.1 > 125.1	Trifluoperazine	28.8	408.2 > 113.2
Normorphine	3.8	272.1 > 165.2	Trihexyphenidyl	23.7	302.1 > 70.1
Normefopam	19.7	240.9 > 166.1	Varenicline	12.3	212.2 > 168.1
Noroxycodone	13.0	302.1 > 284.1	Venlafaxine	19.1	278.2 > 58.2
Norpropoxyphene	23.0	308 > 44.2	Verapamil	23.9	455.2 > 150.1
Norsertaline	20.0	275.3 > 159	Vigabatrin	2.5	130.1 > 71.1
Nortriptyline	24.6	264.1 > 91.1	Warfarin	25.7	309.1 > 251.1
Olanzapine	13.4	313.1 > 84.1	Zaleplon	21.5	306.1 > 236.2
Orphenadrine	23.4	270.1 > 181.1	Zolpidem	18.8	308.2 > 235.2
Oxazepam	23.5	287.1 > 104.1	Zolpidem phenyl COOH	15.3	338 > 265.1
Oxybutynin	24.6	358.1 > 141.9	Zopiclone	16.5	389.1 > 217.1
Oxycodone	12.9	316.1 > 241.1	Zopiclone N-oxide	17.6	405.2 > 217.1
Oxymorphone	20.0	302 > 227			



Echinacea

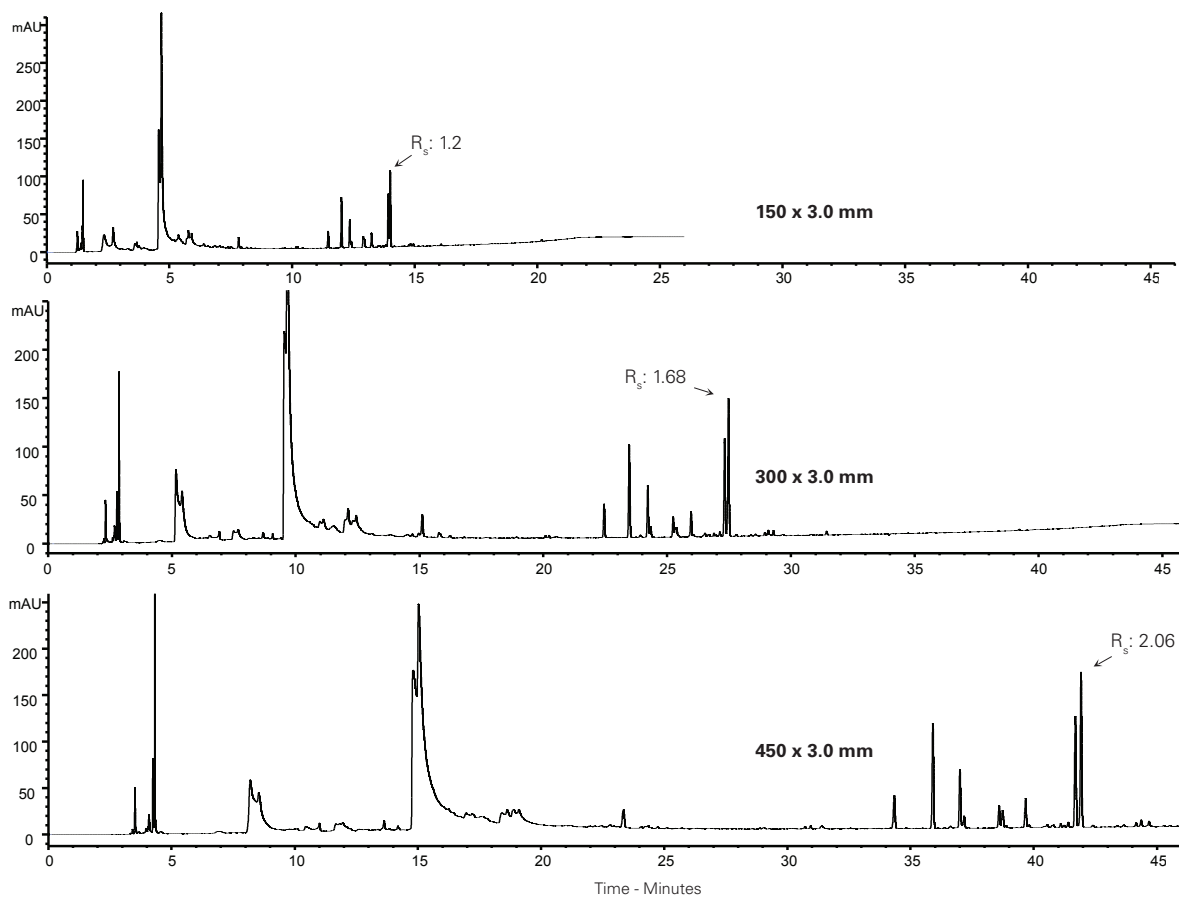
Application #AN4270

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 3.0 mm; 2 x 150 x 3.0 mm (coupled); 3 x 150 x 3.0 mm (coupled)
Part Number: CORE-25A-1503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

	Time (mins)			
	150 x 3.0 mm	300 x 3.0 mm	450 x 3.0 mm	%B
-	0.00	0.00	0.00	5
0.00	0.47	0.94	0.94	5
20.00	40.47	60.94	60.94	100
25.00	45.47	75.94	75.94	100
26.00	46.47	76.94	76.94	5
46.00	86.47	136.94	136.94	5

Flow Rate: 0.43 mL/min
Temperature: 80 °C
Detection: UV, 254 nm



Entacapone

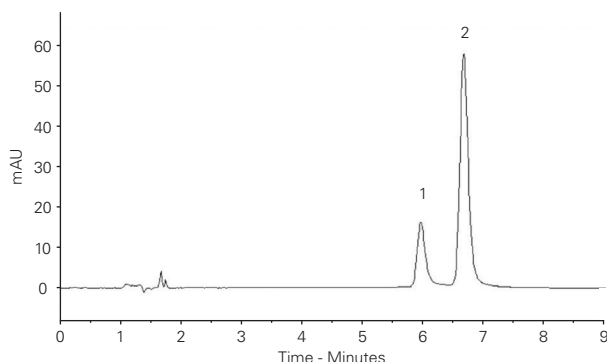
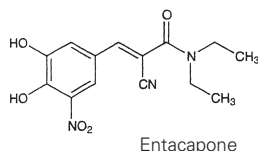
Application #AN3600

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: Phosphoric acid pH 3.0/MeCN (65:35 v/v)
Flow Rate: 2.0 mL/min
Injection: 20 µL
Temperature: 25 °C
Detection: UV, 305 nm
Sample: Entacapone standard in MeOH solution exposed to direct UV radiation (254 nm)

Analytes

1. Degradation Product
2. Entacapone



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Epanolol

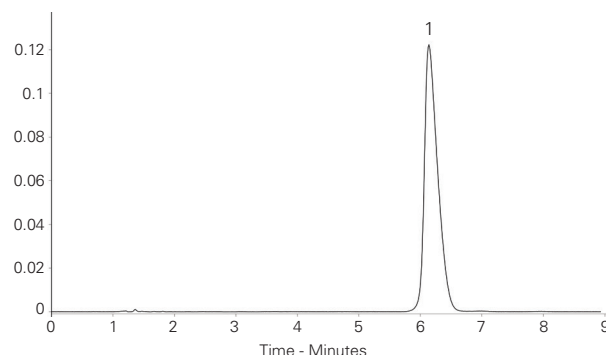
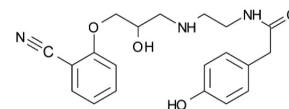
Application #AN3610

Conditions

Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: 20 mM ammonium formate pH 3.0/MeOH (85:15 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Epanolol



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Epinastine

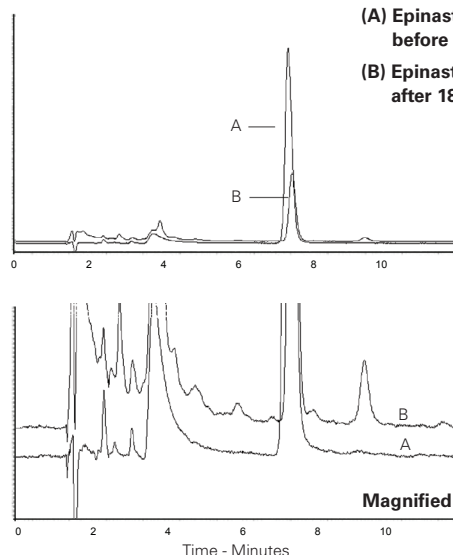
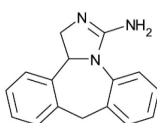
Application #AN3620

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 0.3% TEA pH 4.0 with phosphoric acid/MeOH (60:40 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 25 °C
Detection: UV, 254 nm

Analyte

1. Epinastine



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Ethanol Extract from Seed Cover
(*Acacia Farnesiana*)

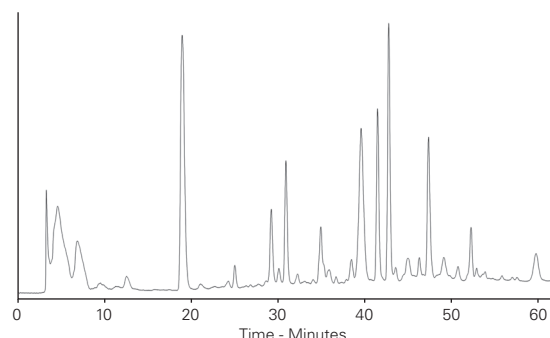
Application #AN2900

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: MeOH
 B: H₂O
Gradient:

Time (mins)	%B
0.0	85
2.5	85
60.0	50
62.5	50
70.0	85

Flow Rate: 2.0 mL/min
Temperature: Ambient
Detection: UV, 230 nm



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Ethyl Glucuronide in Water by LC-MS/MS

Application #AN1100

Conditions

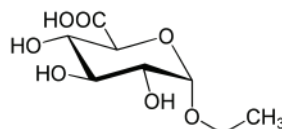
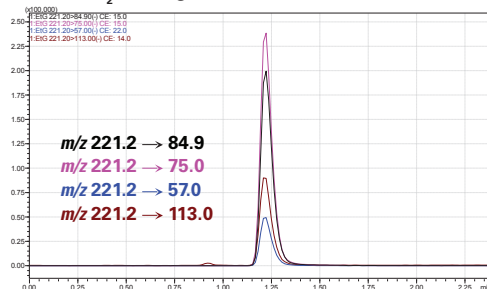
Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 0.05% formic acid in H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0.00	5
4.00	70
6.00	95
7.00	95
7.01	5

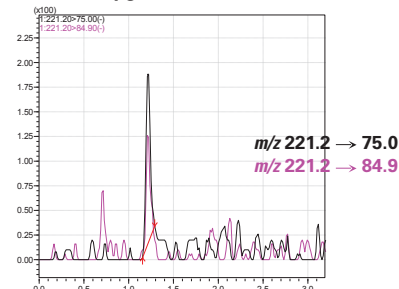
Flow Rate: 0.4 mL/min
Injection: 3 µL
Temperature: 40 °C
Detection: Shimadzu LCMS-8050
 ESI voltage: -3 kV
 Desolvation line: 250 °C
 Interface heater: 380 °C
 Nebulizing gas: 3 L/min
 Heat block: 400 °C

Analyte

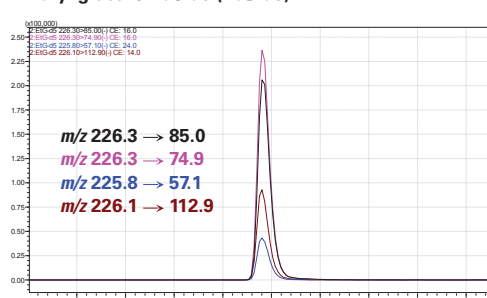
1. Ethyl glucuronide

Ethyl glucuronide (EtG)
LOQ in H₂O 300 fg on-column

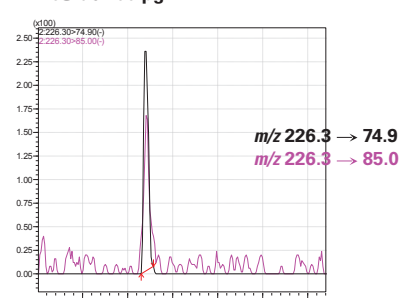
EtG 100 pg/mL



Ethyl glucuronide-d5 (EtG-d5)



EtG-d5 100 pg/mL



Reproduced with permission of Shimadzu Europa GmbH. Analysed on Shimadzu Nexera X2

Exploiting Selectivity by Adjusting pH

Application #AN2440

Conditions

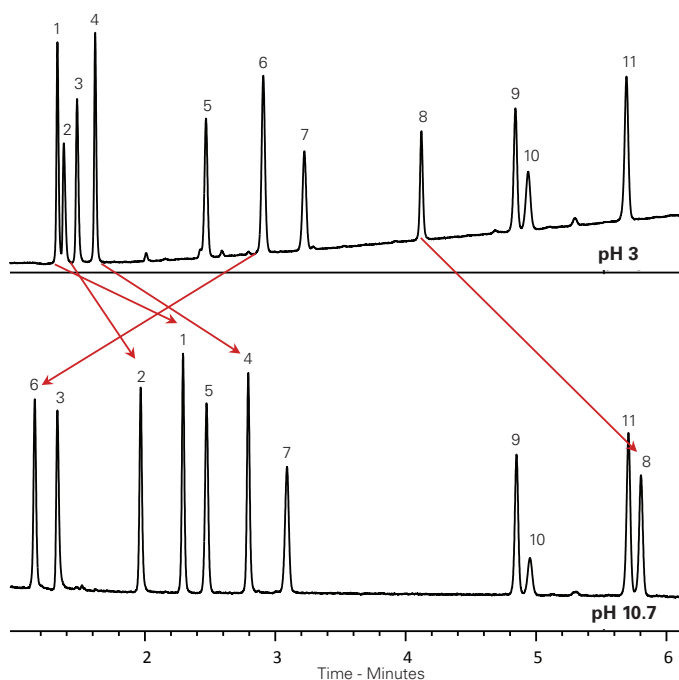
Column: ACE Excel 2 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: EXL-1011-0502U
Mobile Phase: A1: 10 mM ammonium formate pH 3.0 in H₂O
 A2: 0.1% ammonia pH 10.7 in H₂O
 B1: 10 mM ammonium formate pH 3.0 in MeCN/H₂O (90:10 v/v)
 B2: 0.1% ammonia pH 10.7 in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.0	3
7.0	100
8.0	100
8.5	3
12.5	3

Flow Rate: 0.42 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Nizatidine
2. Salbutamol
3. Amiloride
4. N-Acetylprocainamide
5. Quinoxaline
6. Methyl paraben
7. p-Cresol
8. Reserpine
9. Piperine
10. Toluene
11. Felodipine



Explosive Analytes (I)

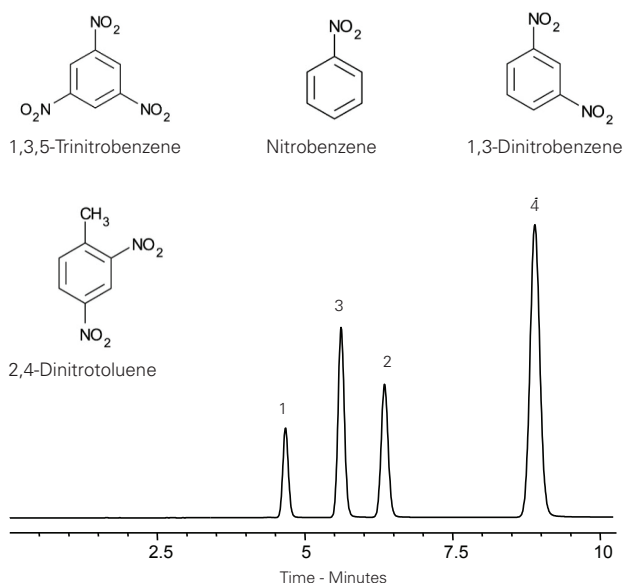
Application #AN1460

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeOH/H₂O (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 20 °C
Detection: UV, 254 nm

Analytes

- 1,3,5-Trinitrobenzene
- Nitrobenzene
- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene



Explosive Analytes (II)

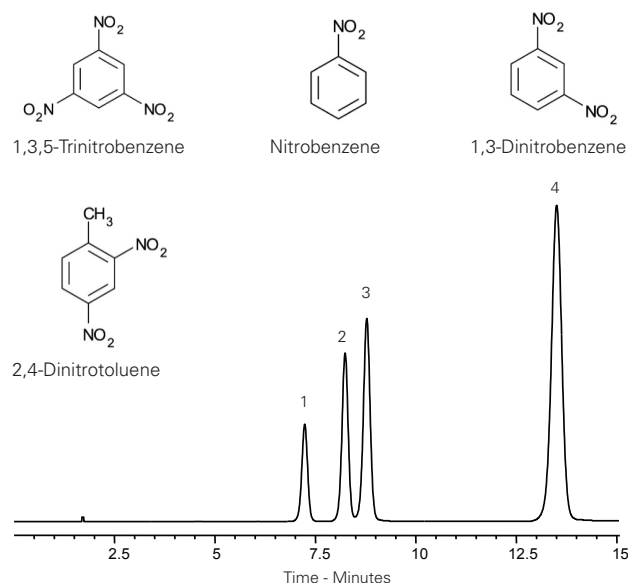
Application #AN1470

Conditions

Column: ACE 5 CN-ES
Dimensions: 150 x 4.6 mm
Part Number: EXL-1213-1546U
Mobile Phase: MeOH/H₂O (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 20 °C
Detection: UV, 254 nm

Analytes

- 1,3,5-Trinitrobenzene
- Nitrobenzene
- 1,3-Dinitrobenzene
- 2,4-Dinitrotoluene

Fingerprinting of *Cuscuta Chinensis* Flavonoids

Application #AN4250

Conditions

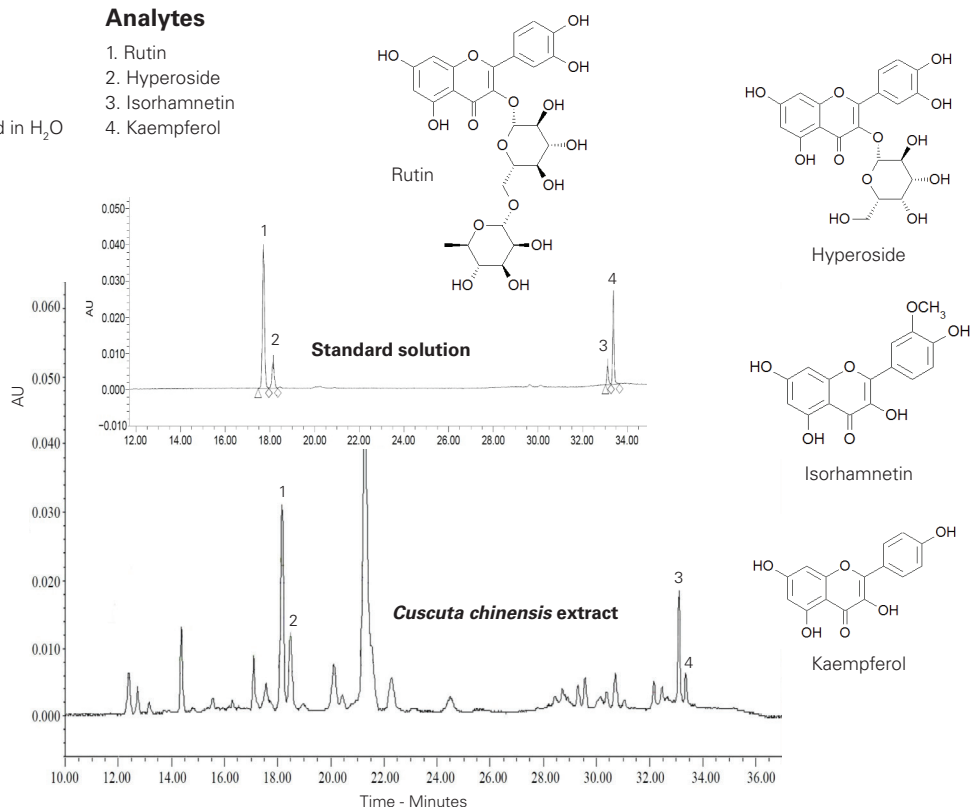
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.25% o-phosphoric acid in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	5
2	5
7	10
10	15
23	20
28	30
32	50

Flow Rate: 1 mL/min
Injection: 10 µL
Detection: UV, 360 nm

Analytes

1. Rutin
2. Hyperoside
3. Isorhamnetin
4. Kaempferol



Cuscuta chinensis is used in traditional medicines in eastern and southern Asia

Shekarchi M, Kondori BM, Hajimehdipoor H, Abdi L, Naseri M, Pourfarzib M, Amin G. (2014) Finger Printing and Quantitative Analysis of *Cuscuta chinensis* Flavonoid Contents from Different Hosts by RP-HPLC. Food and Nutrition Sciences, 5, 914-921. <http://dx.doi.org/10.4236/fns.2014.510101>

Flavone and Dibucaïne

Application #AN2850

Conditions

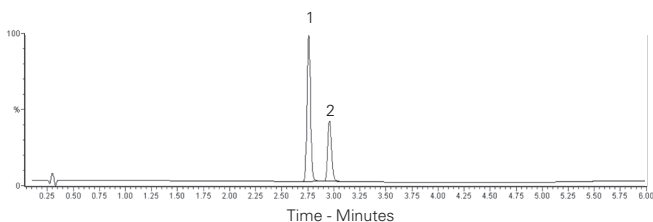
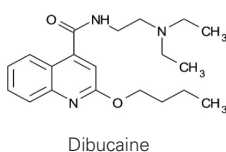
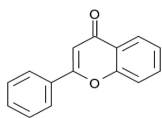
Column: ACE 3 C18
Dimensions: 30 x 4.6 mm
Part Number: ACE-111-0346
Mobile Phase: A: 6.5 mM ammonium acetate in H₂O
 B: MeCN
 C: MeOH
Gradient:

Time (mins)	%A	%B	%C
0.0	80	10	10
5.2	0	50	50
5.6	0	0	100

Flow Rate: 2 mL/min
Temperature: 60 °C
Detection: UV, 200-450 nm

Analytes

1. Flavone
2. Dibucaïne



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Flurbiprofen and Related Substances

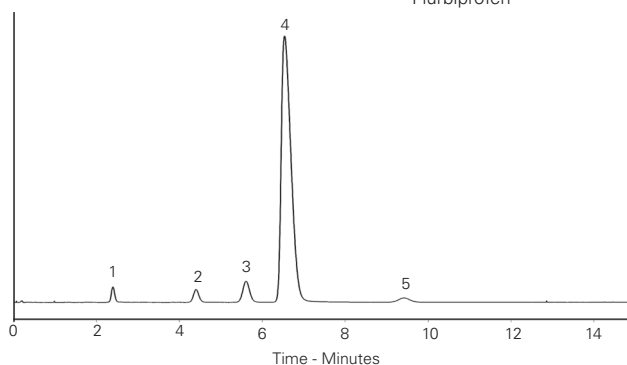
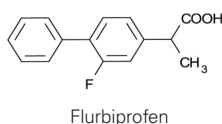
Application #AN3630

Conditions

Column: ACE 3 C18
Dimensions: 50 x 4.6 mm
Part Number: ACE-111-0546
Mobile Phase: H₂O/MeCN/TFA (64:34:0.5 v/v/v)
Flow Rate: 2 mL/min
Injection: 20 µL
Temperature: 28 °C
Detection: UV, 254 nm

Analytes

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



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Flavonoids

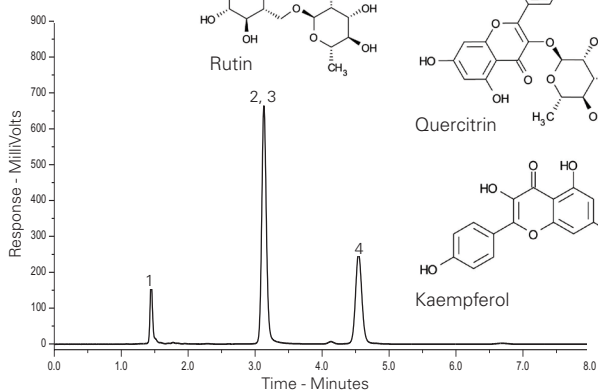
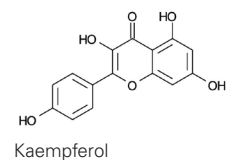
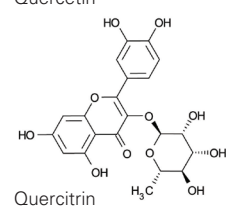
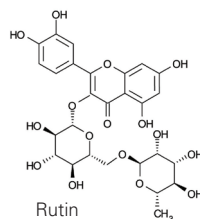
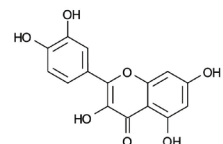
Application #AN2810

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeCN/0.1% formic acid in H₂O (40:60 v/v)
Flow Rate: 1 mL/min
Injection: 1 µL
Temperature: Ambient
Detection: UV, 254 nm

Analytes

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



Formoterol from Human Plasma by LC-MS/MS

Application #AN3100

Conditions

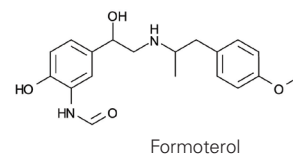
Column: ACE Excel 2 C18-AR
Dimensions: 50 x 2.1 mm
Part Number: EXL-109-0502U
Mobile Phase: A: 0.02% formic acid in H₂O
 B: 0.02% formic acid in H₂O/MeOH (2:98 v/v)

Analyte

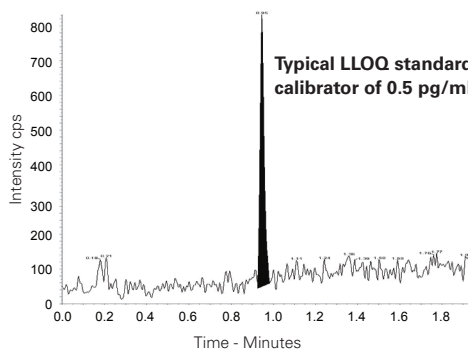
1. Formoterol
(m/z 345 → 149)

Gradient:

Time (mins)	%B
0.00	10
0.20	10
2.00	40
2.01	100
3.50	100
3.51	10
4.00	10



Flow Rate: 0.75 mL/min
Temperature: 60 °C
Detection: AB SCIEX QTRAP 5500 LC-MS/MS system
Sample: Extracted by mixed mode cation exchange SPE



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Galanthamine

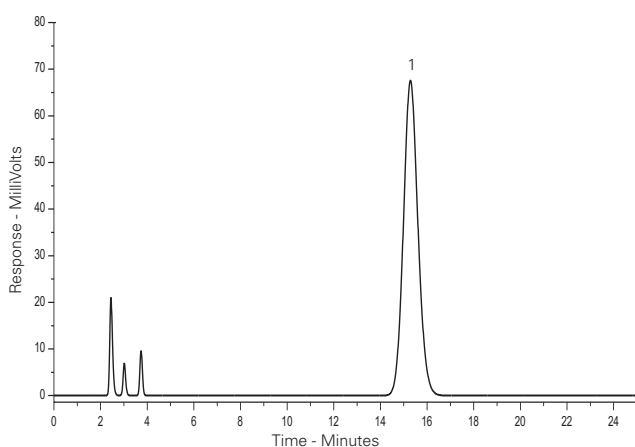
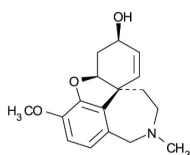
Application #AN3640

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 0.1% TFA/MeCN (92:8 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 20 °C
Detection: UV, 210 nm

Analyte

1. Galanthamine



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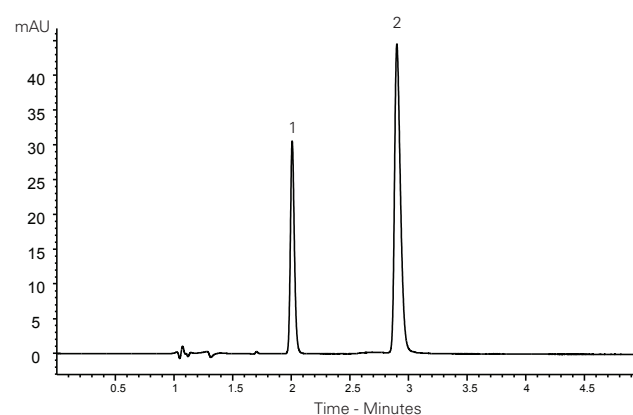
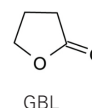
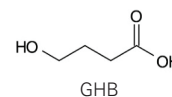
Gamma Hydroxybutyric Acid (GHB) and Gamma Butyrolactone (GBL) Separation

Application #AN1500

Conditions

Column: ACE Excel 2 C18-AR
Dimensions: 100 x 3.0 mm
Part Number: EXL-109-1003U
Mobile Phase: 20 mM KH₂PO₄ pH 2.5
 in H₂O/MeCN (98:2 v/v)
Flow Rate: 0.43 mL/min
Injection: 2 µL
Temperature: 30 °C
Detection: UV, 215 nm

Analytes

1. GHB
2. GBL

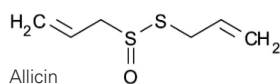
Garlic Analysis (I)

Application #AN2820

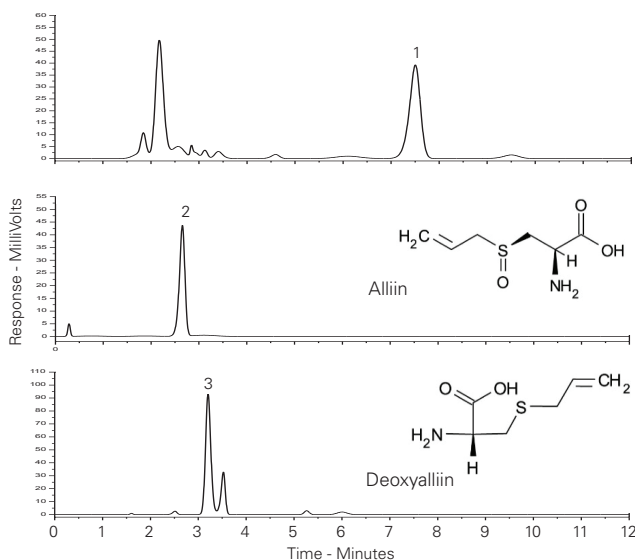
Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: H₂O/MeOH (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 30 °C
Detection: UV, 210 nm

Analytes

1. Alliin
2. Alliin
3. Deoxyalliin

Alliin



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Garlic Analysis (II)

Application #AN2830

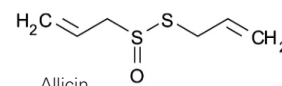
Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: H₂O
 B: MeCN
Gradient:

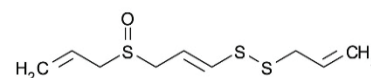
Time (mins)	%B
0	40
20	100
25	100

Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 30 °C
Detection: UV, 254 nm

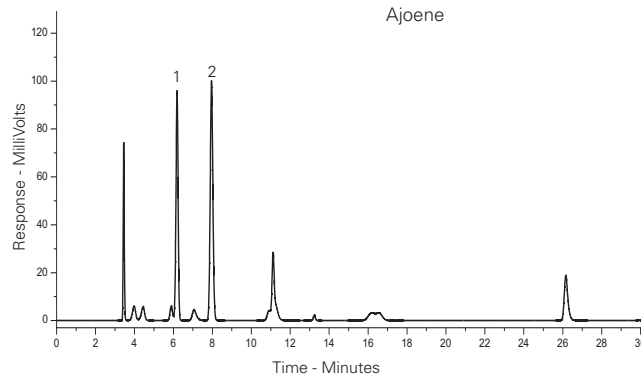
Analytes

1. Alliin
2. Ajoene

Alliin



Ajoene



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**Ginkgo Biloba – Ultra Resolution**

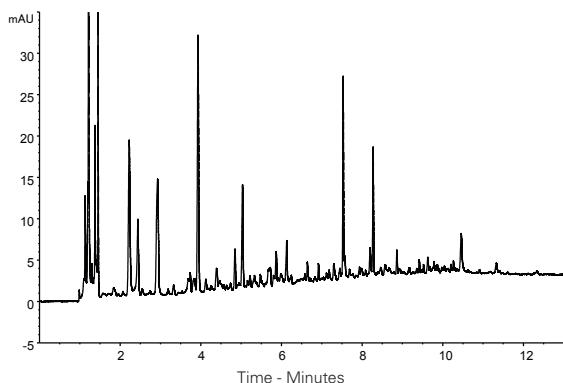
Application #AN2270

Conditions

Column: ACE Excel 1.7 C18-PFP
Dimensions: 2 x 100 x 3.0 mm (coupled)
Part Number: 2 x EXL-1710-1003U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.00	5
0.72	5
15.72	50
18.72	100
20.72	100
22.72	5

Flow Rate: 0.8 mL/min
Injection: 2 µL
Temperature: 80 °C
Detection: UV, 254 nm
Sample: Extract of *Ginkgo Biloba*



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*Ginkgo Biloba - Used in traditional
medicine and as a source of food*

Ginsenosides from Chinese Medicine by UHPLC-MS/MS

Application #AN3540

Conditions

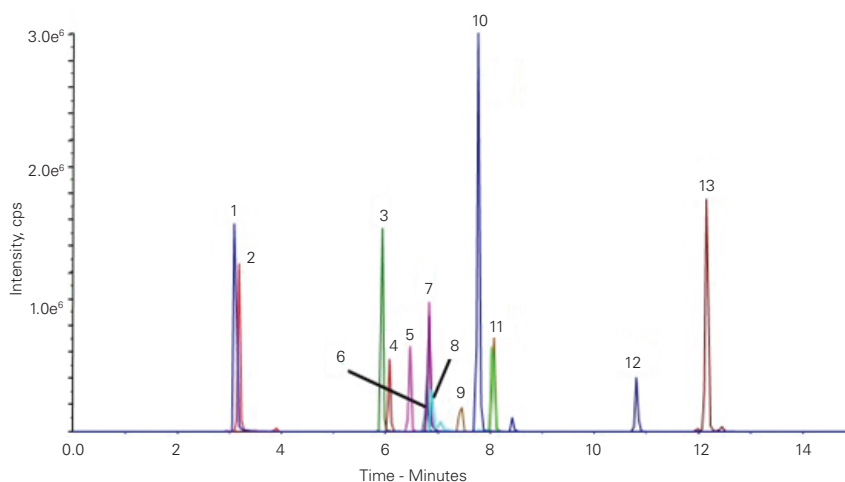
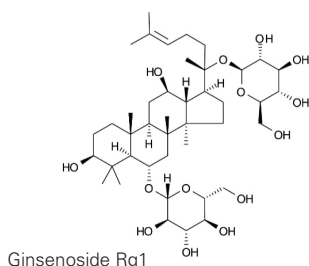
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 3.0 mm
Part Number: CORE-25A-1503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	25
13	60
15	95
17	95

Flow Rate: 0.4 mL/min
Injection: 2 µL
Temperature: 45 °C
Detection: AB SCIEX 5500 Qtrap MS
 ESI in negative ion mode
 Source temperature: 450 °C
 Sprayer voltage: -4500 V
 Stepwise MRM mode for
 [M + HCOO]⁻ > [M - H]⁻ ion transitions
 Mass range 501 – 1250 u (step size 2 u)

Analytes

- | | | |
|---|---|--|
| 1. Ginsenoside Re
(<i>m/z</i> 991 → 945) | 6. Ginsenoside Ro
(<i>m/z</i> 1001 → 955) | 11. Ginsenoside F1
(<i>m/z</i> 683 → 637) |
| 2. Ginsenoside Rg1
(<i>m/z</i> 845 → 799) | 7. Ginsenoside Rb2
(<i>m/z</i> 1123 → 1077) | 12. Ginsenoside F2
(<i>m/z</i> 829 → 783) |
| 3. Ginsenoside Rf
(<i>m/z</i> 845 → 799) | 8. Ginsenoside Rg2
(<i>m/z</i> 829 → 783) | 13. Ginsenoside Rg3
(<i>m/z</i> 829 → 783) |
| 4. Ginsenoside Rb1
(<i>m/z</i> 1153 → 1107) | 9. Ginsenoside Rh1
(<i>m/z</i> 683 → 637) | |
| 5. Ginsenoside Rc
(<i>m/z</i> 1123 → 1077) | 10. Ginsenoside Rd
(<i>m/z</i> 991 → 945) | |



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Ginseng Extract

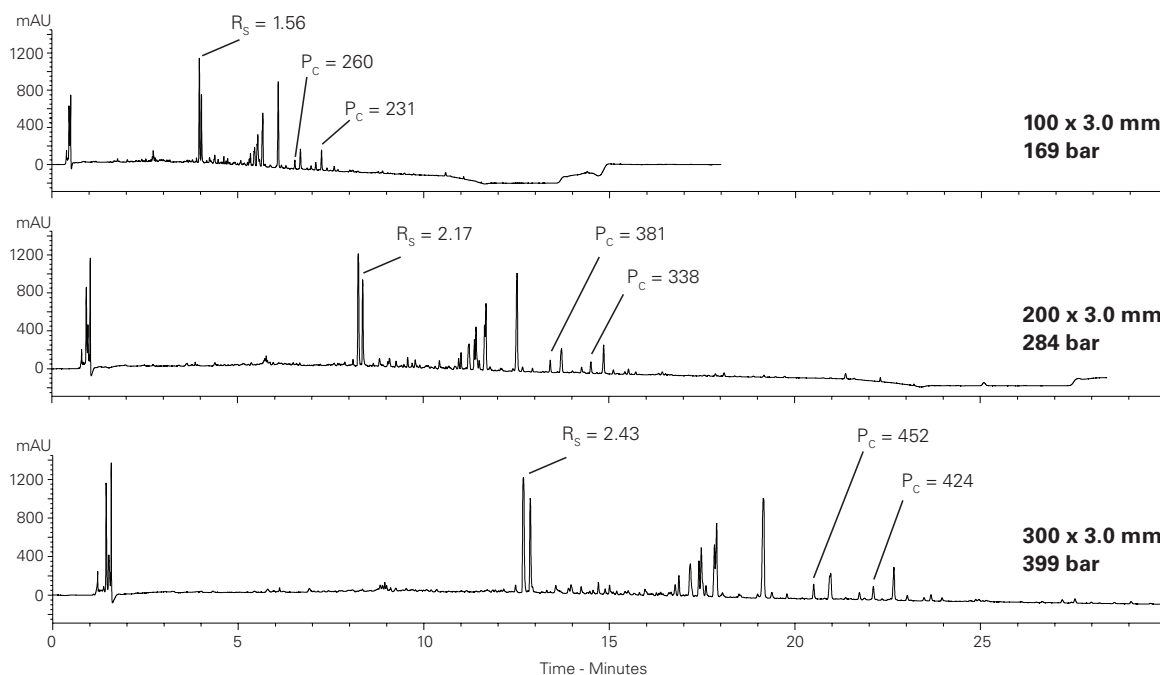
Application #AN4260

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 3.0 mm; 2 x 100 x 3.0 mm (coupled); 3 x 100 x 3.0 mm (coupled)
Part Number: CORE-25A-1003U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

	Time (mins)			%B
Gradient:	100 x 3.0 mm	200 x 3.0 mm	300 x 3.0 mm	
	-	0.00	0.00	5
	0.00	0.36	0.71	5
	10.00	20.36	30.71	70
	11.00	22.36	33.71	95
	13.00	26.36	39.71	95
	14.00	28.36	42.71	5
	22.00	44.36	66.71	5

Flow Rate: 0.8 mL/min
Injection: 2 µL (100 x 3.0 mm); 4 µL (200 x 3.0 mm); 6 µL (300 x 3.0 mm)
Temperature: 80 °C
Detection: UV, 203 nm
Sample: 5 x 75 mg tablets ground to fine powder and extracted with 10.0 mL MeCN/H₂O (1:1 v/v) for 15 minutes with ultrasonication. 100 µL supernatant diluted with 300 µL water and filtered using a Whatman Mini-Uniprep syringeless filter
System: Chromaster Ultra Rs



Gliotoxin from *Aspergillus Fumigatus* Liquid Culture

Application #AN3780

Conditions

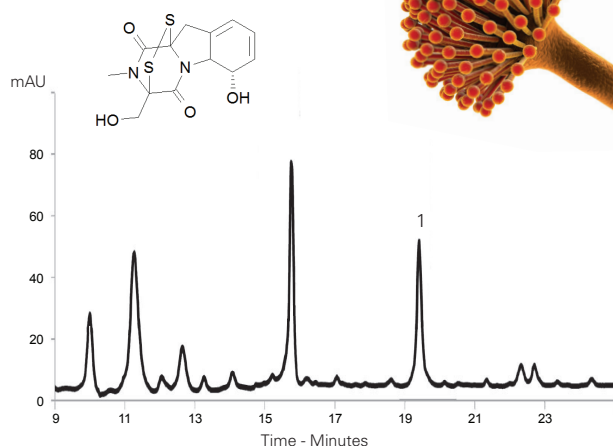
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.05% TFA in H₂O/MeCN (90:10 v/v)
 B: 0.05% TFA in H₂O/MeCN (40:60 v/v)
Gradient:

Time (mins)	%B
0	10
21	100

Flow Rate: 1 mL/min
Detection: UV, 254 nm

Analyte

1. Gliotoxin



Svahn KS, Goransson U, Chryssanthou E, Olsen B, Sjolin J, Stromstedt A. Induction of Gliotoxin Secretion in *Aspergillus fumigatus* by Bacteria-Associated Molecules. PLoS ONE 9(4): e93685. doi:10.1371/journal.pone.0093685

Glyphosate and Related Compounds as FMOG Derivatives (Gradient)

Application #AN3850

Conditions

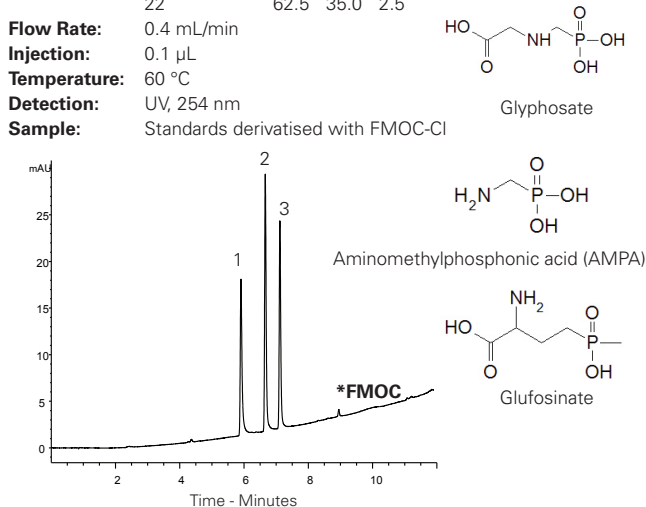
Column: ACE Excel 3 SuperC18
Dimensions: 150 x 2.1 mm
Part Number: EXL-1111-1502U
Mobile Phase: A: H₂O
 B: MeOH
 C: 200 mM ammonium formate pH 3.0
Gradient:

Time (mins)	%A	%B	%C
0	62.5	35.0	2.5
10	2.5	95.0	2.5
11	2.5	95.0	2.5
12	62.5	35.0	2.5
22	62.5	35.0	2.5

Flow Rate: 0.4 mL/min
Injection: 0.1 µL
Temperature: 60 °C
Detection: UV, 254 nm
Sample: Standards derivatised with FMOG-Cl

Analytes

1. Glyphosate
 2. Aminomethylphosphonic acid (AMPA)
 3. Glufosinate



Glyphosate and Related Compounds as FMOG Derivatives (Isocratic)

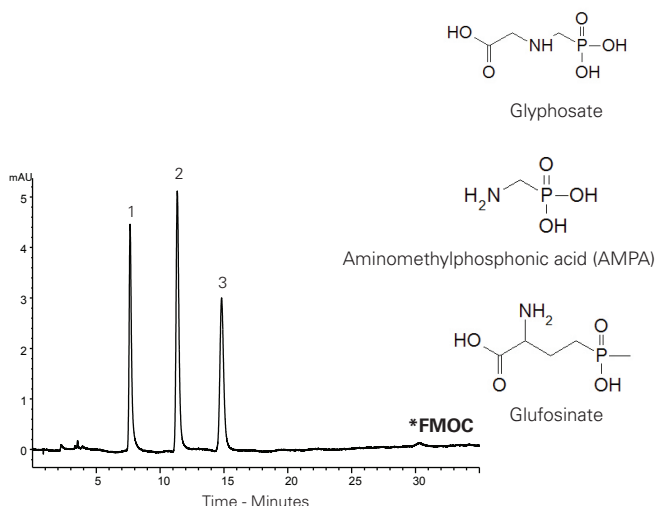
Application #AN3860

Conditions

Column: ACE Excel 3 SuperC18
Dimensions: 150 x 2.1 mm
Part Number: EXL-1111-1502U
Mobile Phase: 5 mM ammonium formate pH 3.0 in H₂O/MeOH (55:45 v/v)
Flow Rate: 0.4 mL/min
Injection: 0.1 µL
Temperature: 25 °C
Detection: UV, 254 nm
Sample: Standards derivatised with FMOG-Cl

Analytes

1. Glyphosate
 2. Aminomethylphosphonic acid (AMPA)
 3. Glufosinate



Green Tea Extract

Application #AN4280

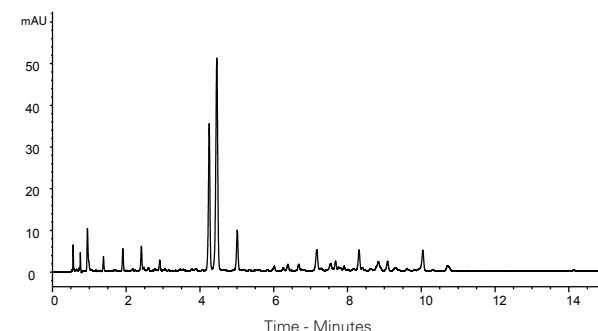
Conditions

Column: ACE Excel 1.7 SuperC18
Dimensions: 100 x 3.0 mm
Part Number: EXL-1711-1003U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	5
15	20
17	95
18	95
20	5
27	5

Flow Rate: 0.8 mL/min
Injection: 2 µL
Temperature: 80 °C
Detection: UV, 260 nm
Sample: Tablet ground to fine powder and extracted with MeCN/H₂O (1:1 v/v) with ultrasonication. Supernatant diluted with H₂O and filtered using Whatman Mini-Uniprep syringeless filter Chromaster Ultra Rs

System:



Green Tea Metabolite Profiling by LC-MS

Application #AN2580

Conditions

Column: ACE Excel 1.7 C18-Amide**Dimensions:** 100 x 2.1 mm**Part Number:** EXL-1712-1002U**Mobile Phase:** A: 0.01% formic acid in H₂O
B: 0.01% formic acid in MeCN**Gradient:**

Time (mins)	%B
0.0	3
2.5	10
8.0	100
8.5	3
10.0	3

Flow Rate: 0.5 mL/min**Detection:** Exactive accurate mass MS system

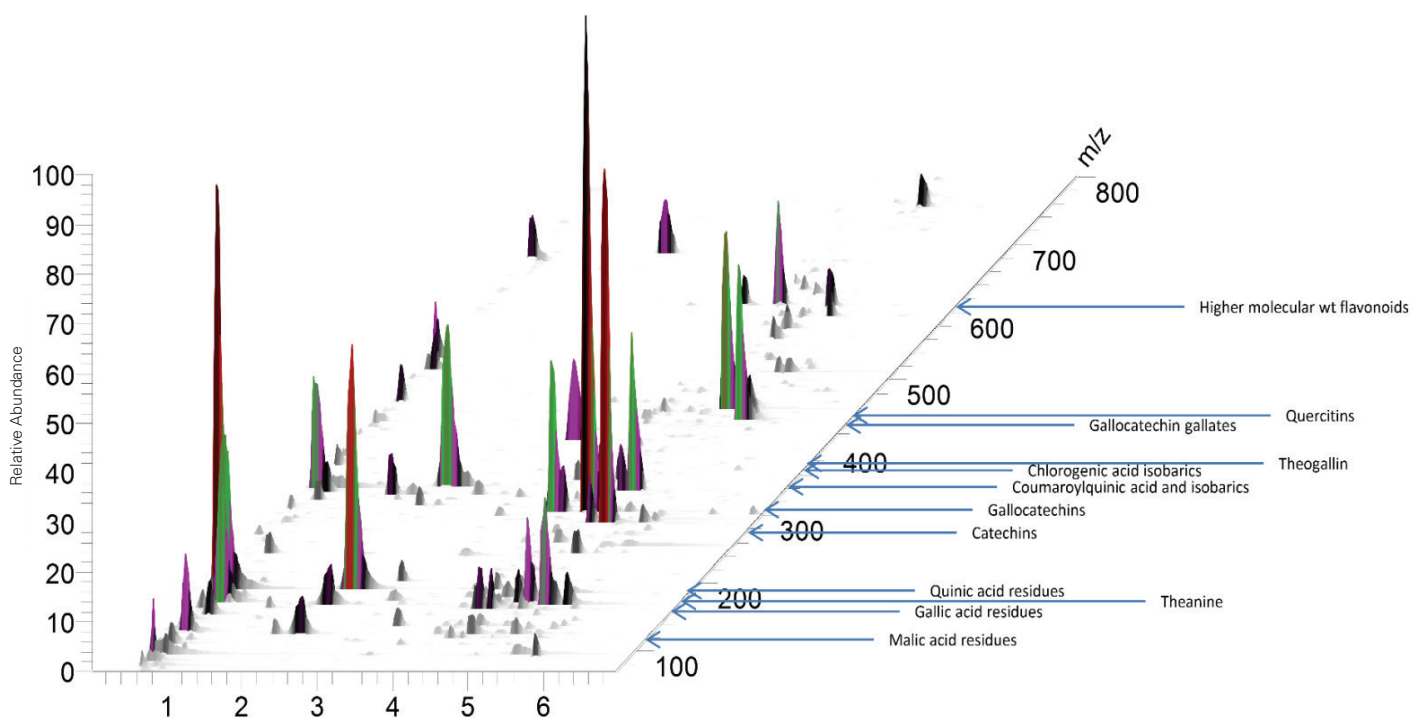
ESI in negative ion mode

Analytes between *m/z* 70-800 monitored**Sample:** Metabolites from green tea extracted into

cold water by vortexing for 20 mins.

Samples filtered prior to injection onto

column and modular Accela LC system



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Hair Dye Restricted Components (I)

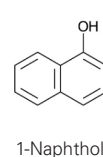
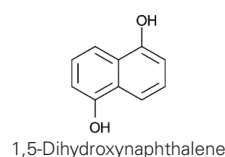
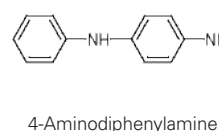
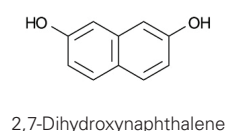
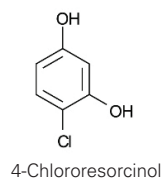
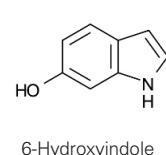
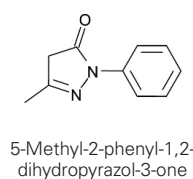
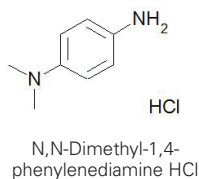
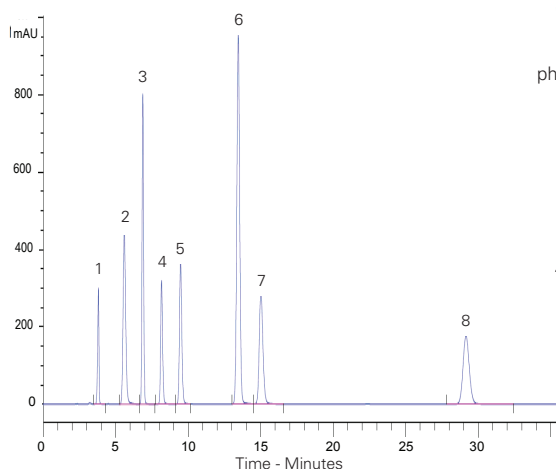
Application #AN2100

Conditions

Column: ACE Excel 5 C18-Amide
Dimensions: 250 x 4.6 mm
Part Number: EXL-1212-2546U
Mobile Phase: 1.8 g disodium phosphate dodecahydrate + 2.8 g potassium dihydrogen phosphate + 1.0 g sodium 1-heptanesulfonate (all diluted to 1.0 L with water)/ MeCN (60:40 v/v)
Flow Rate: 1 mL/min
Temperature: 60 °C
Detection: UV, 280 nm

Analytes

1. N,N-Dimethyl-1,4-phenylenediamine HCl
2. 5-Methyl-2-phenyl-1,2-dihydropyrazole-3-one
3. 6-Hydroxyindole
4. 4-Chlororesorcinol
5. 2,7-Dihydroxynaphthalene
6. 4-Aminodiphenylamine
7. 1,5-Dihydroxynaphthalene
8. 1-Naphthol



Hair Dye Restricted Components (II)

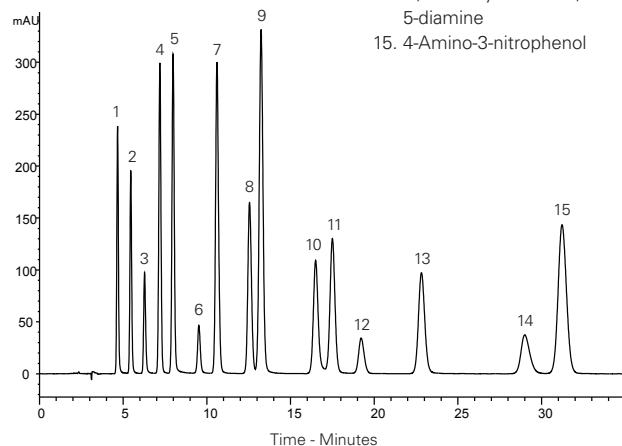
Application #AN2110

Conditions

Column: ACE Excel 5 C18-Amide
Dimensions: 250 x 4.6 mm
Part Number: EXL-1212-2546U
Mobile Phase: 1.8 g disodium phosphate dodecahydrate + 2.8 g potassium dihydrogen phosphate + 1.0 g sodium 1-heptanesulfonate (all diluted to 1.0 L with water)/MeCN (60:40 v/v)
Flow Rate: 1 mL/min
Temperature: 25 °C
Detection: UV, 280 nm

Analytes

1. p-Phenylenediamine
2. p-Aminophenol
3. Toluene-2,5-diamine
4. m-Aminophenol
5. o-Phenylenediamine
6. 2-Chloro-p-phenylenediamine
7. o-Aminophenol
8. Resorcinol
9. 2-Nitro-p-phenylenediamine
10. Toluene-3,4-diamine
11. 4-Amino-2-hydroxytoluene
12. 2-Methylresorcinol
13. 6-Amino-m-cresol
14. N,N-Diethyltoluene-2,5-diamine
15. 4-Amino-3-nitrophenol



Halogenated Positional Isomer Separations

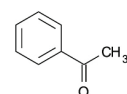
Application #AN1510

Conditions

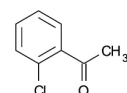
Column: ACE 5 C18
 ACE 5 C18-AR
 ACE 5 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546,
 ACE-129-1546,
 ACE-1210-1546
Mobile Phase: H₂O/MeOH (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 254 nm

Analytes

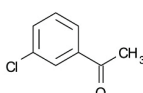
1. Acetophenone
2. o-Chloroacetophenone
3. m-Chloroacetophenone
4. p-Chloroacetophenone



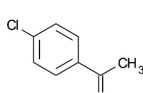
Acetophenone



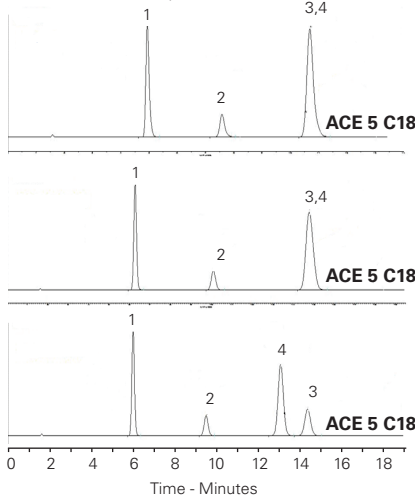
o-Chloroacetophenone



m-Chloroacetophenone



p-Chloroacetophenone



Hepcidin-25 and Truncated Isoforms by LC-HRMS

Application #AN3090

Conditions

Column: ACE 3 C18
Dimensions: 100 x 2.1 mm
Part Number: ACE-111-1002
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

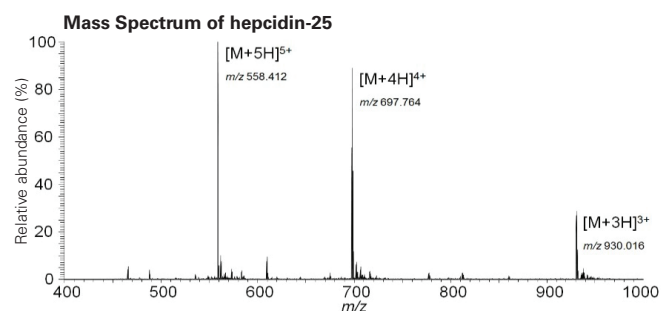
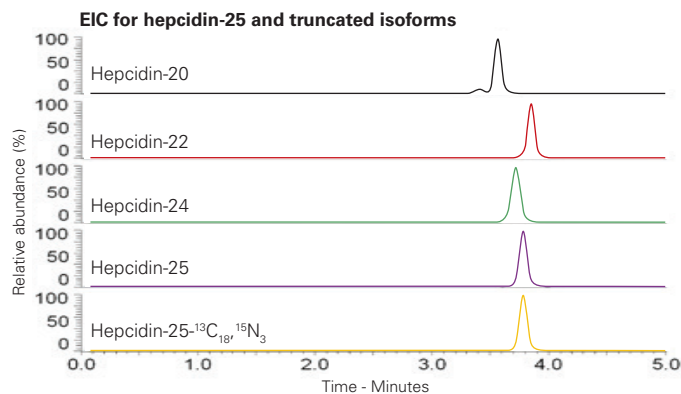
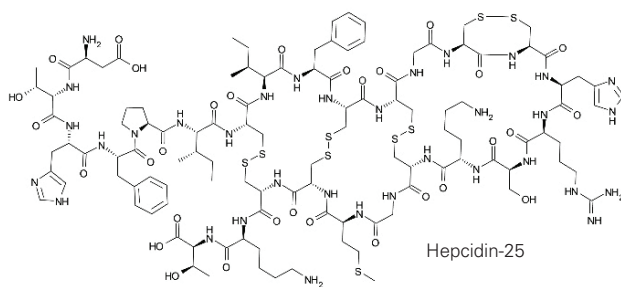
Time (mins)	%B
0	15
5	100
6	100

Flow Rate: 0.25 mL/min**Injection:** 100 µL**Temperature:** 60 °C

Detection: ThermoFisher Scientific Q-Exactive™ high resolution MS
 Heated electrospray ionisation (positive mode)
 Spray voltage: 4.5 kV
 Vaporiser temperature: 200 °C
 Capillary temperature: 320 °C
 Detection: Full scan m/z 400 – 1000
 Extracted ion chromatogram from sum of 6 most abundant isotopes of +3, +4 and +5 charge states

Analyte

1. Hepcidin-25
 (MW 2789)



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Herbicide – Benfluralin

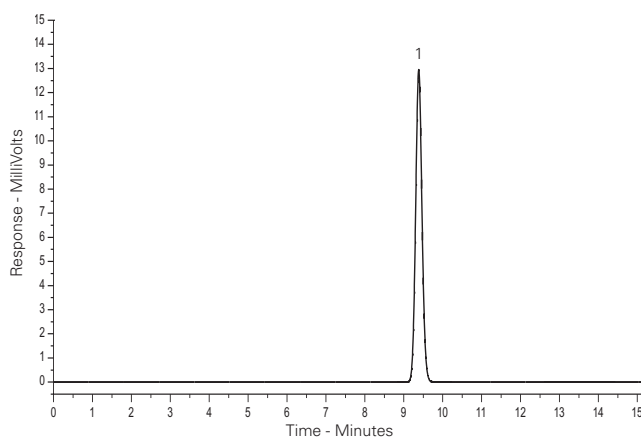
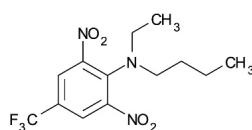
Application #AN2880

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: H₂O/MeOH (15:85 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Benfluralin



Herbicide – Trifluralin

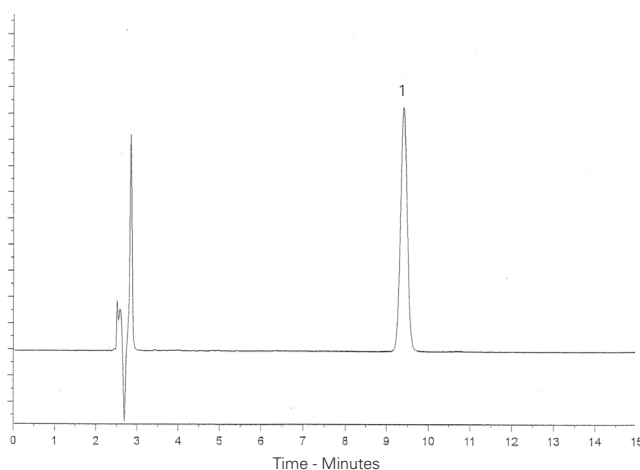
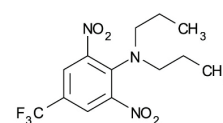
Application #AN2890

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: H₂O/MeOH (15:85 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Trifluralin





Herbicide Impurity Profile

Application #AN2130

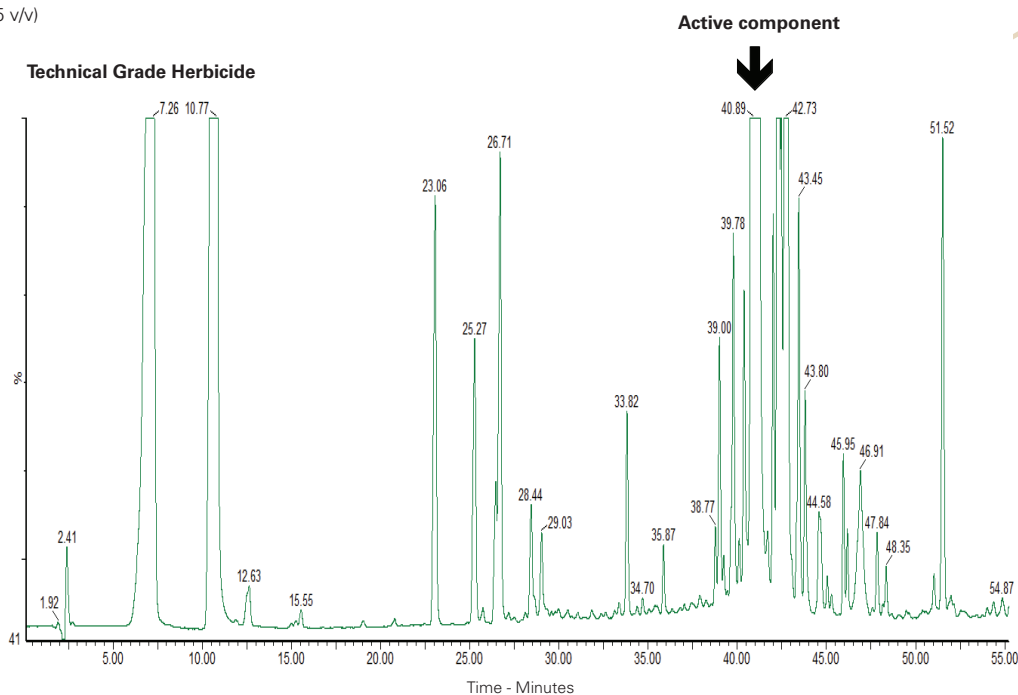
Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: CORE-25A-1546U
Mobile Phase: A: MeCN/H₂O/TFA (5:95:0.05 v/v/v)
 B: MeCN/TFA (99.9:0.05 v/v)

Gradient:

Time (mins)	%B
0	10
3	10
35	100
55	100
56	10
60	10

Flow Rate: 0.6 mL/min
Injection: 10 µL
Temperature: 25 °C
Detection: UV, 240 nm



Hippuric Acid

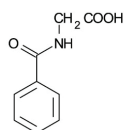
Application #AN2760

Conditions

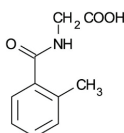
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM KH₂PO₄ pH 3.5 in H₂O/MeCN (15:85 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analytes

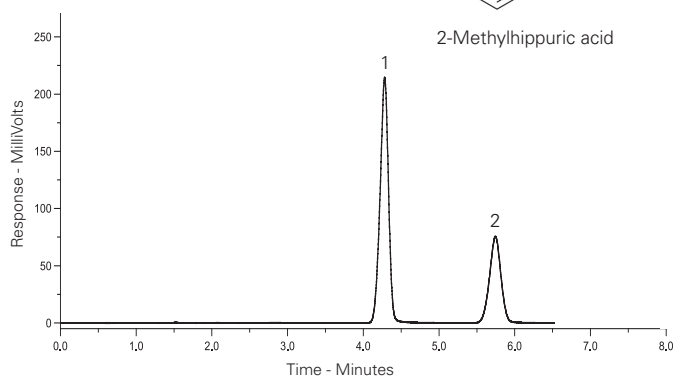
1. Hippuric acid
2. 2-Methylhippuric acid



Hippuric acid



2-Methylhippuric acid



Please enquire for details of
 our chromatography training,
 technical advice, applications support,
 batch reservation service and custom
 packing facility

email: info@ace-hplc.com

Human Urine Metabolite Profiling by LC-MS

Application #AN2600

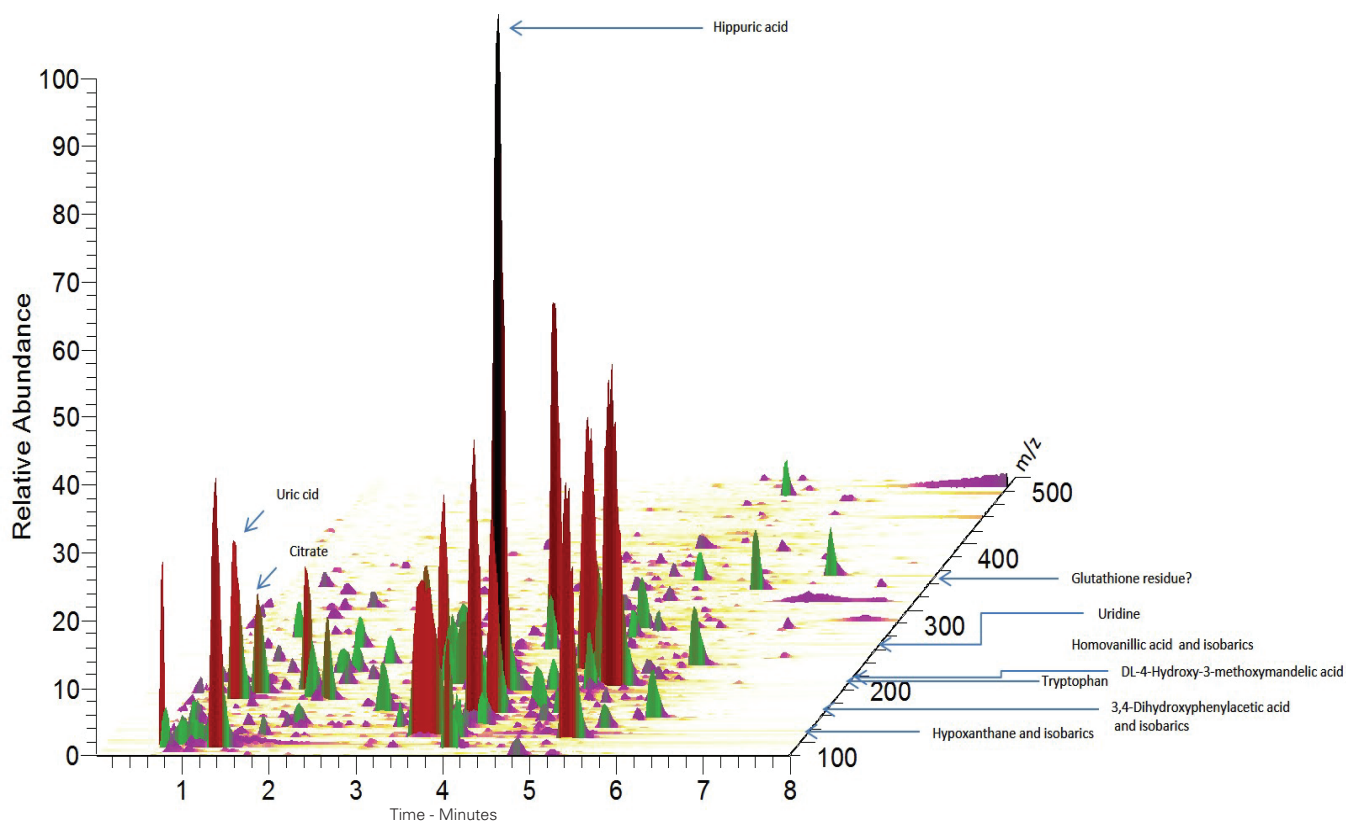
Conditions

Column: ACE Excel 1.7 C18-Amide**Dimensions:** 100 x 2.1 mm**Part Number:** EXL-1712-1002U**Mobile Phase:** A: 0.01% formic acid in H₂O
B: 0.01% formic acid in MeCN**Gradient:**

Time (mins)	%B
0.0	3
2.5	10
8.0	100
8.5	3
10.0	3

Flow Rate: 0.5 mL/min**Detection:** Exactive accurate mass MS system

ESI in negative ion mode

Analytes between m/z 70-800 monitored**Sample:** Urine of healthy adult volunteer, filtered prior to injection onto column and modular Accela LC system.

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Hydroxychloroquine in Whole (EDTA) Blood by LC-MS/MS

Application #AN1120

Conditions

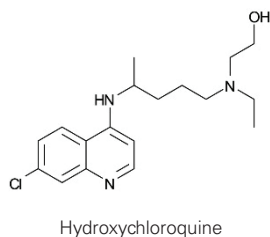
Column: ACE Excel 2 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: EXL-1011-0502U
Mobile Phase: A: 0.5% Ammonium hydroxide pH 10 in H₂O
 B: 0.5% Ammonium hydroxide in MeCN
Gradient:

Time (mins)	%B
0.00	30
1.50	100
2.50	100
2.51	30

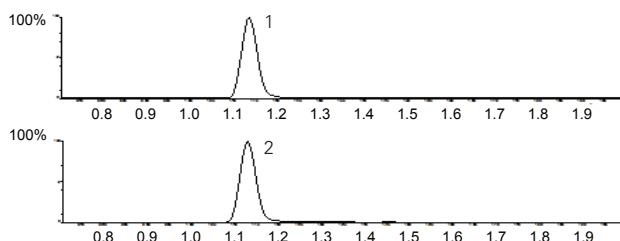
Flow Rate: 0.4 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: MS/MS detection with Waters TQD
 ESI +ve ion mode

Analytes

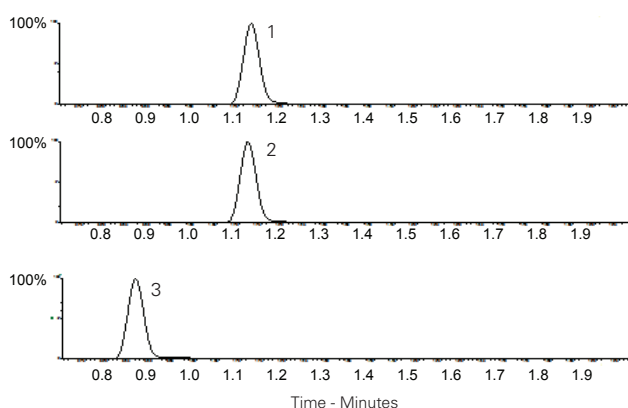
1. Hydroxychloroquine
(*m/z* 336 → 247)
2. d4-Hydroxychloroquine (IS)
(*m/z* 340 → 251)
3. Desethylhydroxychloroquine
(*m/z* 308 → 247)



Typical chromatogram for lowest calibrator (0.09 mg/L hydroxychloroquine)



Typical chromatogram for whole (EDTA) blood samples from patient with systemic lupus



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Combined Hypertension Therapy Drugs

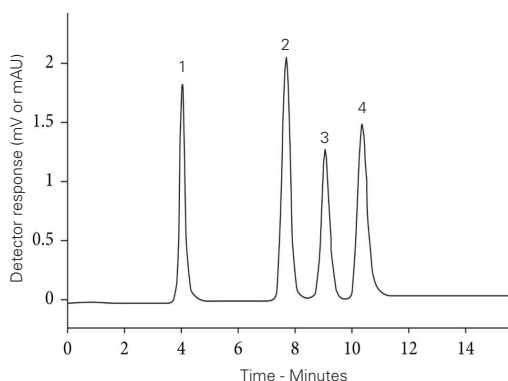
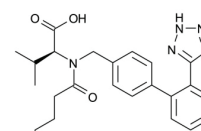
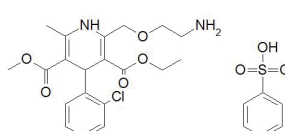
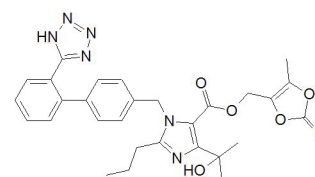
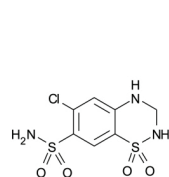
Application #AN4210

Conditions

Column: ACE 5 CN
Dimensions: 200 x 4.6 mm
Part Number: ACE-124-2046
Mobile Phase: 10 mM phosphoric acid in H₂O,
 pH 2.5/MeCN/MeOH (80:7:13 v/v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 30 °C
Detection: UV, 235 nm
Sample: 1 µg/mL each analyte

Analytes

1. Hydrochlorothiazide
2. Olmesartan medoxomil
3. Amlodipine besylate
4. Valsartan



Tekkeli SEK. Development of an HPLC-UV Method for the Analysis of Drugs used for Combined Hypertension Therapy in Pharmaceutical Preparations and Human Plasma. Journal of Analytical Methods in Chemistry (2013) <http://dx.doi.org/10.1155/2013/179627>

Ibuprofen and Related Impurities

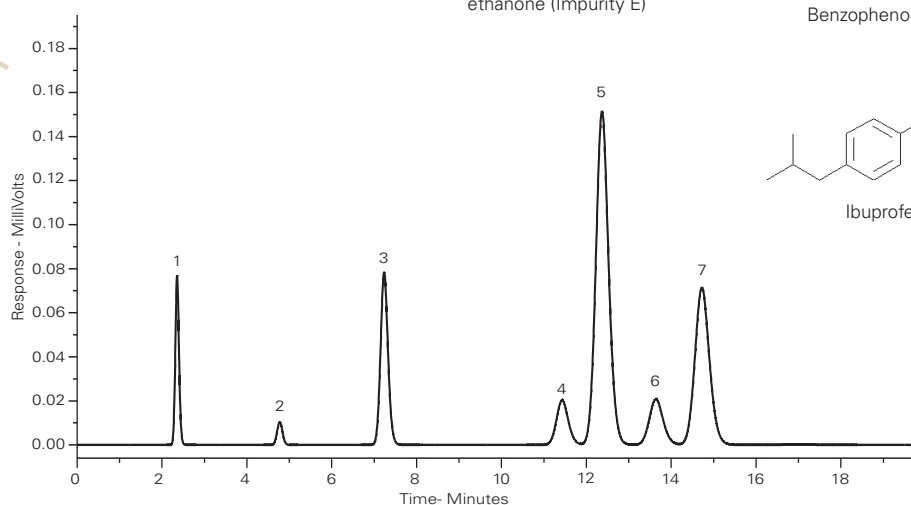
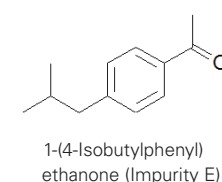
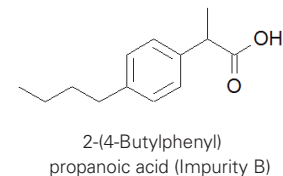
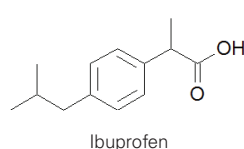
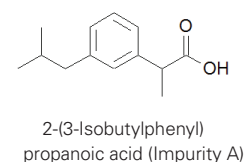
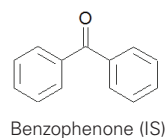
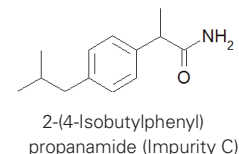
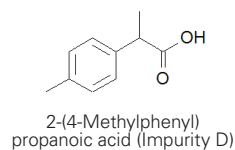
Application #AN4000

Conditions

Column: ACE 5 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-121-1503
Mobile Phase: 0.1% TFA in H₂O/MeCN (64:36 v/v)
Flow Rate: 1.5 mL/min
Temperature: 40 °C
Detection: UV, 214 nm

Analytes

- 2-(4-Methylphenyl) propanoic acid (Impurity D)
- 2-(4-Isobutylphenyl) propanamide (Impurity C)
- Benzophenone (IS)
- 2-(3-Isobutylphenyl) propanoic acid (Impurity A)
- Ibuprofen
- 2-(4-Butylphenyl) propanoic acid (Impurity B)
- 1-(4-Isobutylphenyl) ethanone (Impurity E)



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Ibuprofen in Combination with Antihistamine and Decongestant

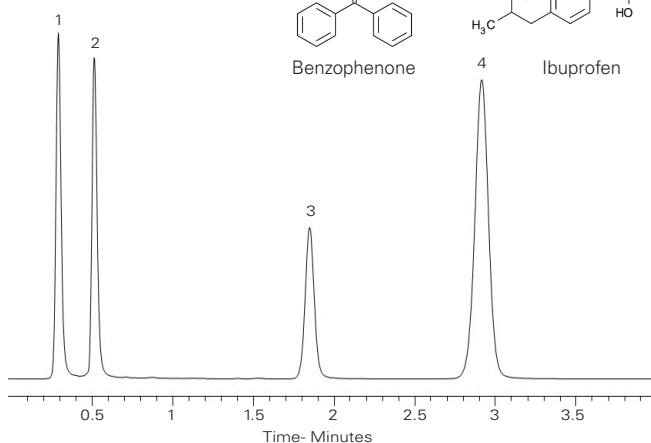
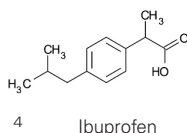
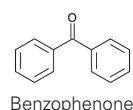
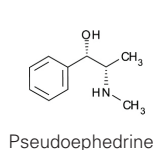
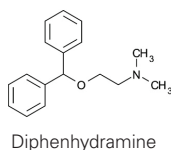
Application #AN2120

Conditions

Column: ACE Excel 3 C18-Amide
Dimensions: 150 x 4.6 mm
Part Number: EXL-1112-1546U
Mobile Phase: 0.01% potassium dihydrogen phosphate/MeCN (60:40 v/v)
Flow Rate: 0.6 mL/min
Injection: 0.5 µL
Temperature: 45 °C
Detection: UV, 214 nm

Analytes

- Diphenhydramine
- Pseudoephedrine
- Benzophenone
- Ibuprofen



Alternative column dimensions available

Please enquire
 email: info@ace-hplc.com



Illegal Dyes in Spices

Application #AN2910

Conditions

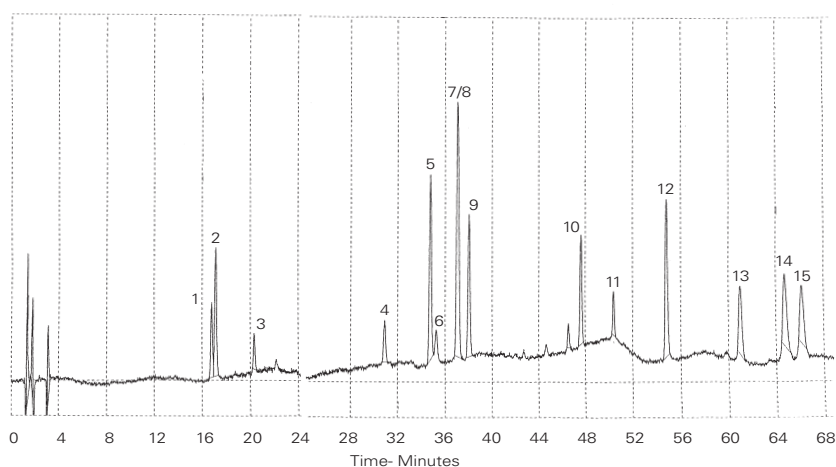
Column: ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-111-1046
Mobile Phase: A: H₂O
 B: MeOH
 C: 0.06 M Tetrabutylammonium bromide and 0.5 M KH₂PO₄ in H₂O pH 2.55

Gradient:	Time (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

Flow Rate: 1 mL/min**Injection:** 10 µL**Temperature:** Ambient**Detection:** UV-Vis, 420 nm, 520 nm and 600 nm

Analytes

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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Insulin Analogues in Clinical and Post-Mortem Analyses

Application #AN3350

Conditions

Column: ACE 5 C18-300
Dimensions: 50 x 2.1 mm
Part Number: ACE-221-0502
Mobile Phase: A: 0.1% acetic acid in H₂O
 B: 0.1% acetic acid in IPA/MeCN (25:75 v/v)

Gradient:	Time (mins)	%B
	0.0	22
	0.5	22
	1.0	34
	3.0	36
	4.0	98
	6.2	98
	6.3	22

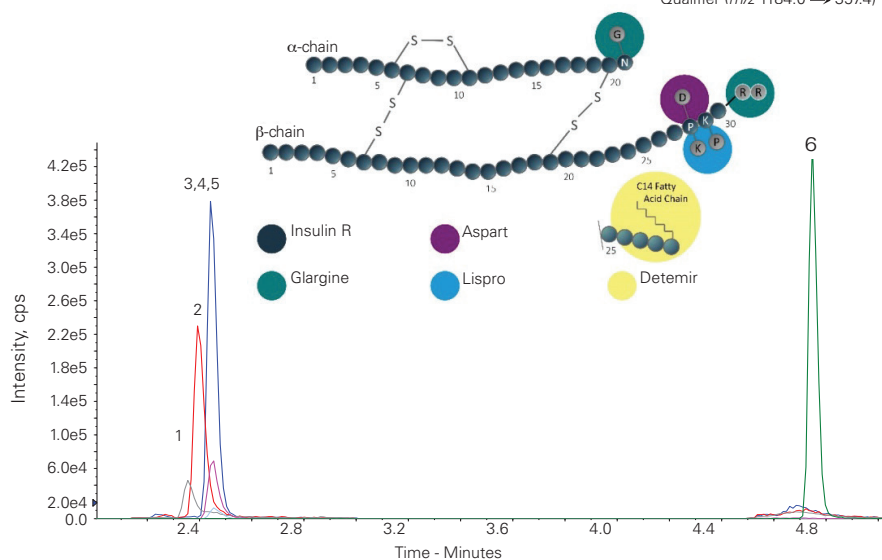
Flow Rate: 0.55 mL/min**Injection:** 40 µL

Detection: AB Sciex QTRAP 5500
 ESI positive ion mode
 Ion spray voltage: 5500 V
 Temperature: 600 °C

Sample: 100 µU/mL insulin analogues
 in steroid-free serum

Analytes

1. Glargine
MW 6063
Quantifier (m/z 867.2 → 136)
Qualifier (m/z 1011.4 → 1164.2)
Qualifier (m/z 1011.4 → 1179.4)
2. Bovine insulin (IS)
MW ~5800
Quantifier (m/z 956.5 → 136.1)
Qualifier (m/z N/A)
3. Aspart
MW 5826
Quantifier (m/z 971.7 → 136)
Qualifier (m/z 1166 → 219)
Qualifier (m/z 971.7 → 226.1)
4. Lispro
MW 5808
Quantifier (m/z 1162.4 → 217)
Qualifier (m/z 968.6 → 217)
5. Insulin R
MW 5808
Quantifier (m/z 1162.4 → 345.2)
Qualifier (m/z 1162.3 → 65.2)
Qualifier (m/z 1162.4 → 226.1)
6. Detemir
MW 5917
Quantifier (m/z 1184 → 454.4)
Qualifier (m/z 987 → 454.4)
Qualifier (m/z 1184.0 → 357.4)



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Insulins

Application #AN2770

Conditions

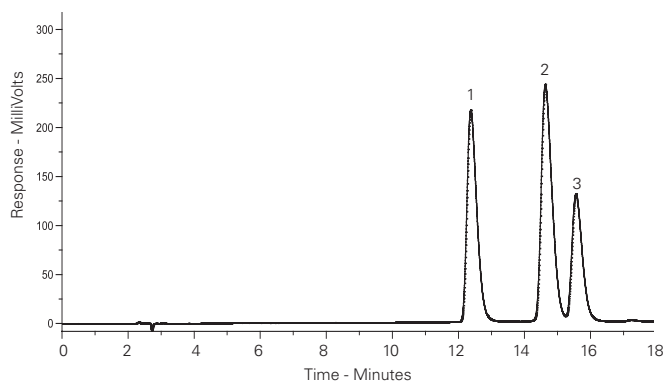
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.1% TFA in H₂O/MeCN (71:29 v/v)
 B: 0.1% TFA in H₂O/MeCN (68:32 v/v)
Gradient:

Time (mins)	%B
0	10
16	90

Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 215 nm

Analytes

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



Isoflavones

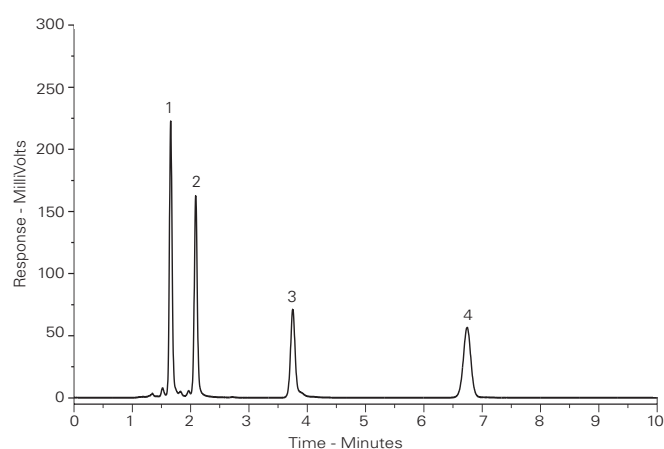
Application #AN2970

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeCN/0.1% formic acid in H₂O (35:65 v/v)
Flow Rate: 1 mL/min
Injection: 1 µL
Temperature: Ambient
Detection: UV, 254 nm

Analytes

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



Isoflavones in Red Clover and Soy Extract

Application #AN1130

Conditions

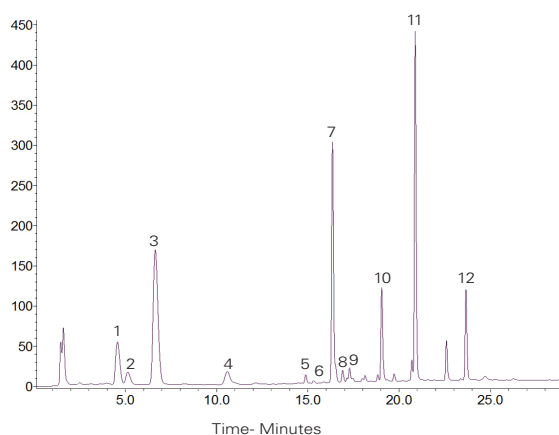
Column: ACE 3 C18-AR
Dimensions: 150 x 2.1 mm
Part Number: ACE-119-1502
Mobile Phase: A: Acetic acid in H₂O pH 2.8
 B: 0.6% Acetic acid in MeCN
Gradient:

Time (mins)	%B
0	15
7	15
27	75

Flow Rate: 0.35 mL/min
Injection: 3 µL
Temperature: 25 °C
Detection: UV, 254 nm

Analytes

1. Daidzin
2. Glycitin
3. Rutin (Int. Standard)
4. Genistin
5. Acetyldaidzin
6. Acetylglycitin
7. Daidzein
8. Glycitein
9. Acetylgenistin
10. Genistein
11. Formononetin
12. Biochanin A



Red clover is a perennial herb that commonly grows wild in meadows throughout Europe and Asia.

K. Weinfurter et al. Forsch. Komplementmed. 21 (Suppl.1): 45 (2014)

Itraconazole and Hydroxyitraconazole in Human Whole Blood by LC-MS/MS

Application #AN3380

Conditions

Column: ACE 3 C18-AR
Dimensions: 50 x 2.1 mm
Part Number: ACE-119-0502
Mobile Phase: A: 10 mM ammonium acetate in H₂O
 B: 10 mM ammonium acetate in MeOH

Gradient:

Time (mins)	%B
0	75
2	98
3	98

Flow Rate: 0.7 mL/min**Temperature:** 45 °C**Detection:** AB Sciex 4000

ESI positive ion mode

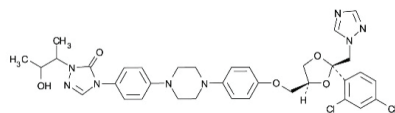
Sample: 1.0 ng/mL human whole blood (LLOQ)

Analytes

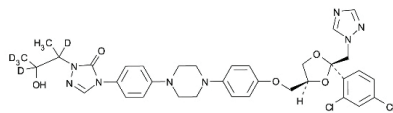
1. Itraconazole
(*m/z* 705.3 → 392.3)
2. Itraconazole-d5
(*m/z* 710.4 → 397.4)
3. Hydroxyitraconazole
(*m/z* 721.3 → 408.2)
4. Hydroxyitraconazole-d5
(*m/z* 726.4 → 413.3)

Itraconazole

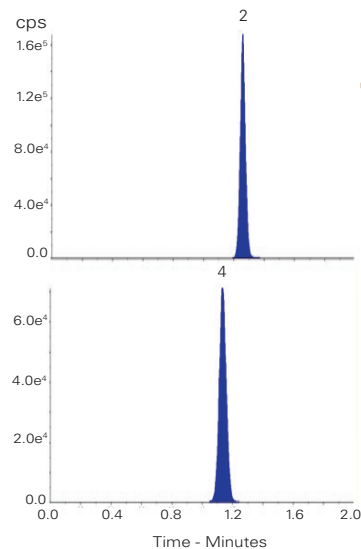
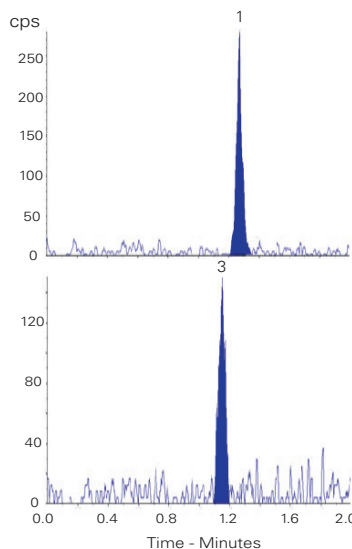
Itraconazole-d5



Hydroxyitraconazole



Hydroxyitraconazole-d5



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 training, technical advice,
 applications support, batch
 reservation service and
 custom packing facility

email: info@ace-hplc.com

Lansoprazole and Degradation Products after Acidic Hydrolysis in 0.1 M HCl

Application #AN1520

Conditions

Column: ACE Excel 5 SuperC18

Dimensions: 150 x 4.6 mm

Part Number: EXL-1211-1546U

Mobile Phase: A: 0.1% ammonia in H₂OB: 0.1% ammonia in MeCN/H₂O (90:10 v/v)

Gradient: Time 1 (mins) Time 2 (mins) Time 3 (mins) %B

0.0 0.0 0.0 10

15.0 30.0 45.0 90

15.5 30.5 45.5 90

18.0 33.0 48.0 10

Post time 10 minutes

Flow Rate: 1 mL/min

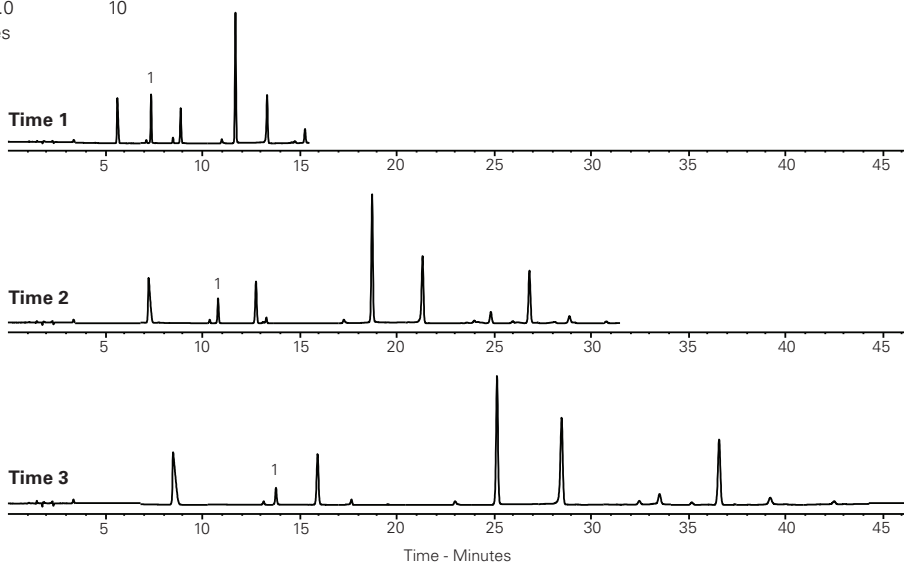
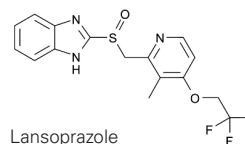
Injection: 5 µL

Temperature: 30 °C

Detection: UV, 280 nm

Analyte

1. Lansoprazole



Lapatinib Anticancer Drug in Human Plasma by LC-MS/MS

Application #AN3360

Conditions

Column: ACE 5 C18

Dimensions: 100 x 4.6 mm

Part Number: ACE-121-1046

Mobile Phase: 10 mM ammonium formate
pH 3.5/MeCN (10:90 v/v)

Flow Rate: 1 mL/min

Injection: 0.5 µL

Temperature: 40 °C

Detection: API 4000 triple quad MS

Positive ion mode ESI

Ion spray voltage: 5500 V

Temperature: 400 °C

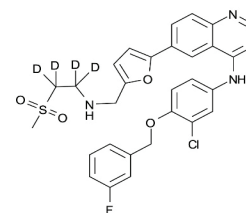
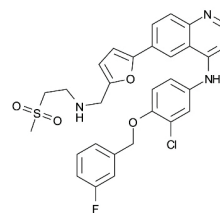
Sample: Extracted from 100 µL plasma
using liquid-liquid extraction

Analytes

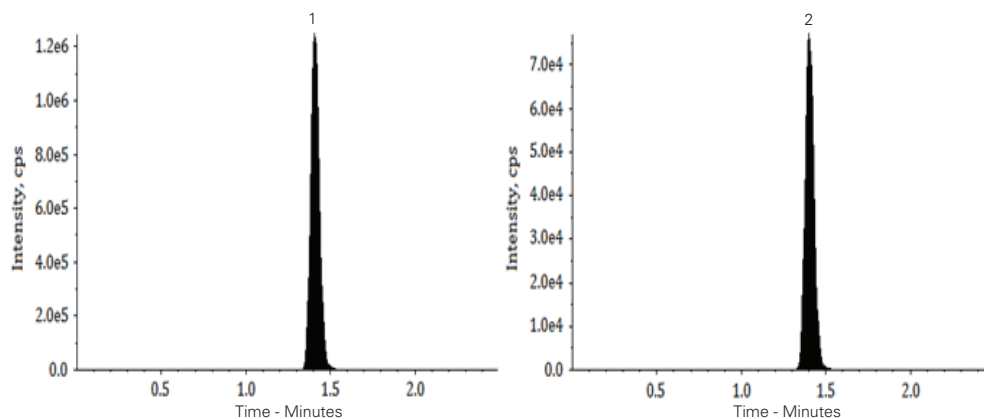
1. Lapatinib

(m/z 581.1 → 365.2)
Concentration 1000 ng/mL

2. Lapatinib-d4 (IS)

(m/z 585.1 → 365.0)
Concentration 100 ng/mL

LLOQ 2.5 ng/mL
LOD 1.0 ng/mL
Method Linearity 2.5 – 2500 ng/mL



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Lidocaine in Saliva by LC-MS/MS

Application #AN2570

Conditions

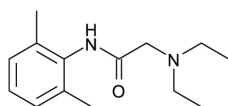
Column: ACE 3 C18
Dimensions: 100 x 3.0 mm
Part Number: ACE-111-1003
Mobile Phase: A: 0.1 % formic acid in MeCN/H₂O (20:80 v/v)
 B: 0.1 % formic acid in MeCN/H₂O (80:20 v/v)
Gradient:

Time (mins)	%B
0.0	20
1.0	20
3.0	80
4.5	80

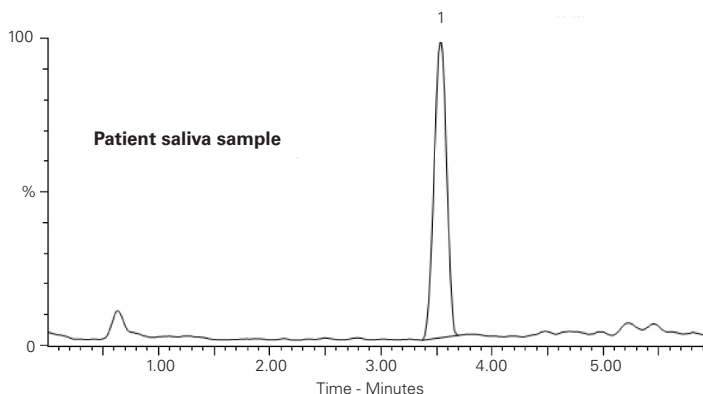
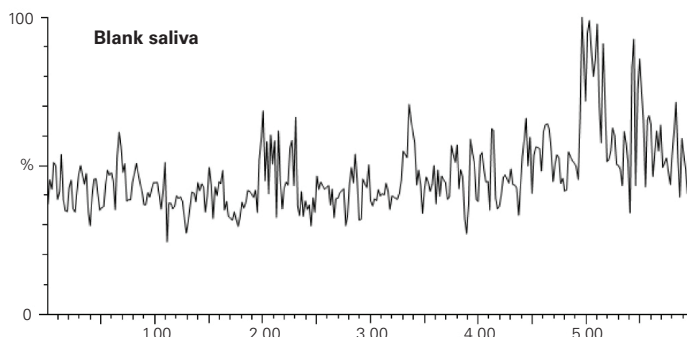
Flow Rate: 0.3 mL/min
Injection: 10 µL
Detection: Quattro-Micro triple quad MS
 Positive ion mode ESI

Analyte

1. Lidocaine
 (*m/z* 235 → 86)



1. Lidocaine



Saliva samples taken after "Emla 5 %" application to skin

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Lincosamide Antibiotics

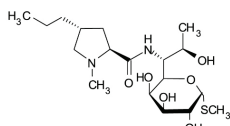
Application #AN2650

Conditions

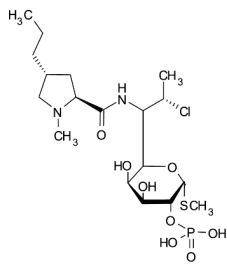
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 0.02 M sodium phosphate dibasic pH 3.0/MeCN (70:30 v/v)
Flow Rate: 1 mL/min
Injection: 25 µL
Temperature: 25 °C
Detection: UV, 205 nm

Analytes

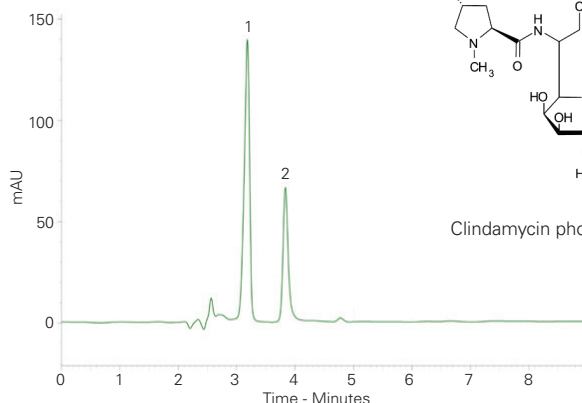
1. Lincomycin HCl
 2. Clindamycin phosphate



Lincomycin HCl



Clindamycin phosphate



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Lipid Classes Separation from *Drosophila Melanogaster*

Application #AN1530

Conditions

Column: ACE 3 SIL
Dimensions: 150 x 3.0 mm
Part Number: ACE-117-1503
Mobile Phase: A: IPA/MeCN (20:80 v/v)
 B: IPA/0.02 M ammonium formate (20:80 v/v)
Gradient:

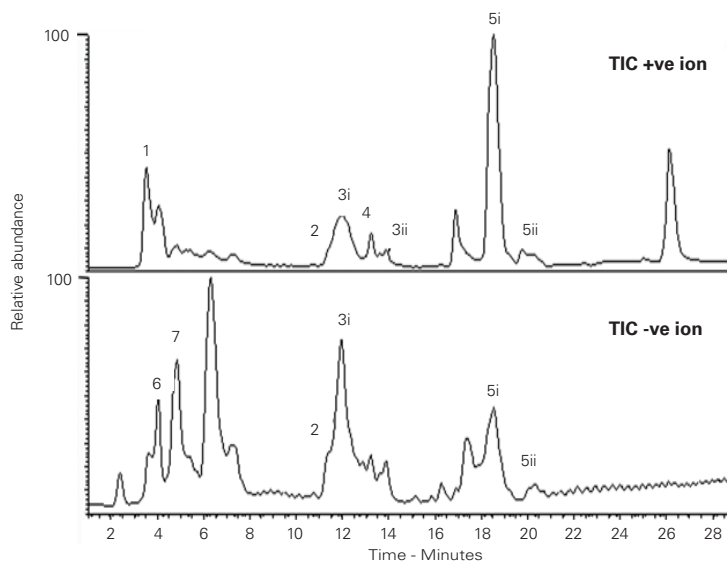
Time (mins)	%B
0.0	8
1.0	8
5.0	9
10.0	20
16.0	25
23.0	35
26.0	8

Flow Rate: 0.3 mL/min
Detection: LTQ Orbitrap MS
 Positive and negative ion mode

*Drosophila Melanogaster*

Analytes

1. Triglyceride (TG)
2. Phosphoserine (PS)
- 3i. Phosphoethanolamine (PE)
- 3ii. Lyso phosphoethanolamine (Lyso PE)
4. Sphingomyelin phosphoethanolamine (SMPE)
- 5i. Phosphatidylcholine (PC)
- 5ii. Lyso phosphatidylcholine (Lyso PC)
6. Glycerophosphoglycerol (GPG)
7. Phosphoinositol (PI)



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Liquorice Extracts Fingerprint

Application #AN2090

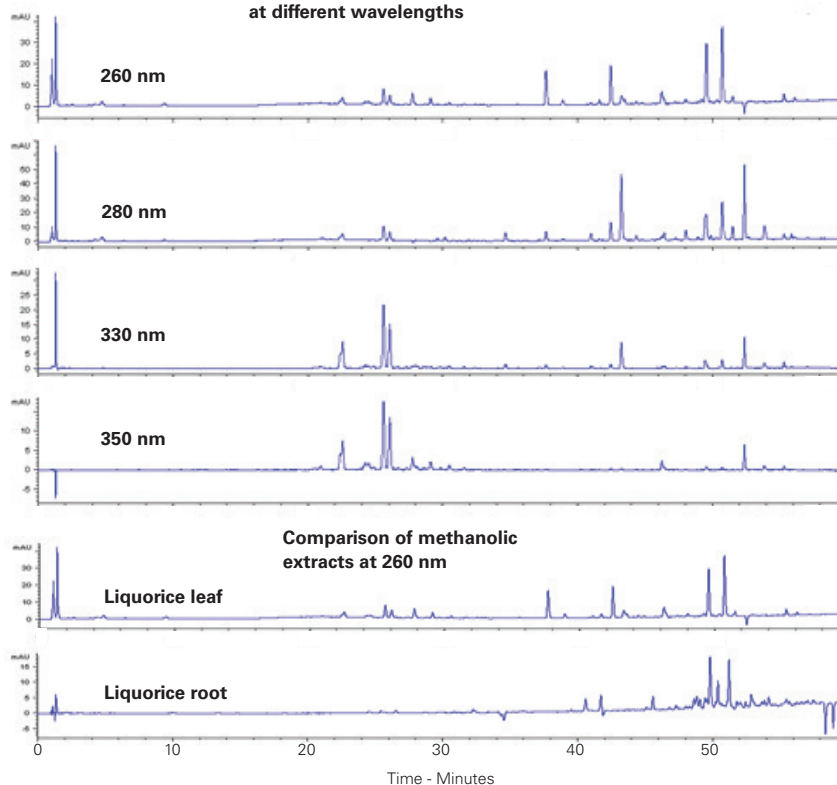
Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 2.1 mm
Part Number: ACE-1110-1502
Mobile Phase: A: Ammonium acetate in H₂O pH 4
 B: MeOH
Gradient:

Time (mins)	%B
0	10
1	10
11	15
55	90
60	100

Flow Rate: 0.4 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: UV, 260, 280, 330 and 350 nm
Sample: Plant material ground to a fine powder in pestle and mortar. Powdered material extracted into methanol by ultrasonification for 30 minutes, followed by centrifugal filtration.

Methanolic liquorice leaf extract at different wavelengths



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Local Anaesthetics

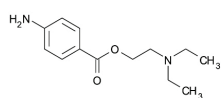
Application #AN3220

Conditions

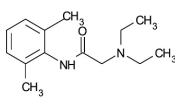
Column: ACE 5 AQ
Dimensions: 250 x 4.6 mm
Part Number: ACE-126-2546
Mobile Phase: MeCN/H₂O/2.5 M H₂SO₄
 (21:79:0.1 v/v/v)
Flow Rate: 1.5 mL/min
Detection: UV

Analytes

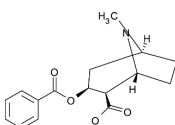
1. Procaine
2. Lignocaine
3. Cocaine



Procaine



Lignocaine



Lubricant Additives: ADPA/OPNA Antioxidants

Application #AN1170

Conditions

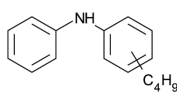
Column: ACE UltraCore 2.5 SuperC18**Dimensions:** 150 x 4.6 mm**Part Number:** CORE-25A-1546U**Mobile Phase:** A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN/IPA (1:2 v/v)**Gradient:**

Time (mins)	%B
0.0	65.0
15.0	97.5
25.0	97.5
25.1	65.0

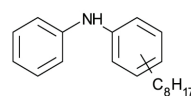
Flow Rate: 1 mL/min**Temperature:** 60 °C**Detection:** UV, 220 nm

Analytes

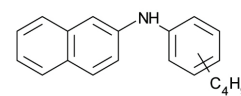
1. C4-ADPA
2. C8-ADPA
3. C4-OPNA
4. C12-ADPA
5. C16-ADPA



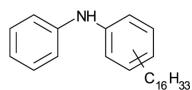
C4-ADPA



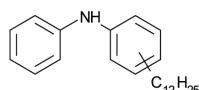
C8-ADPA



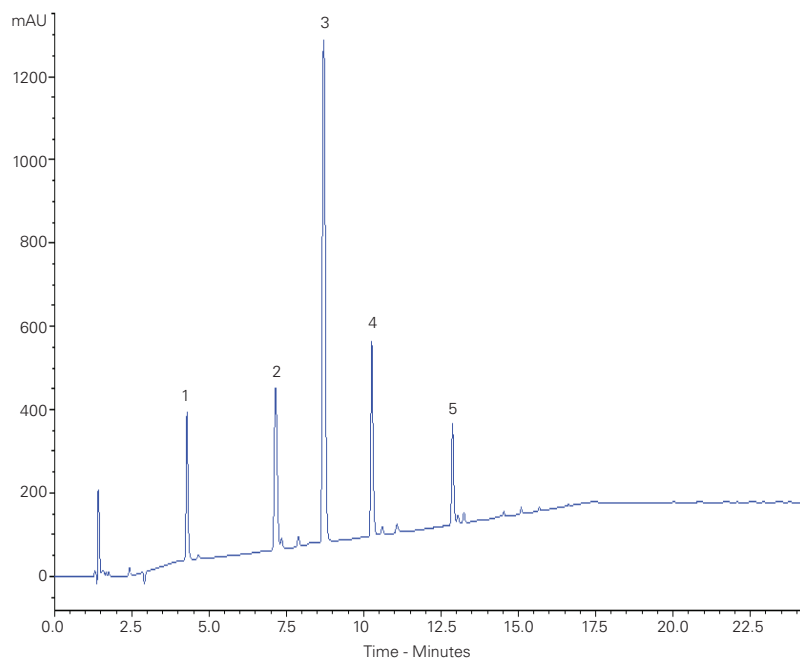
C4-OPNA



C16-ADPA



C12-ADPA



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Lurbinectedin in Plasma by LC-MS/MS

Application #AN3810

Conditions

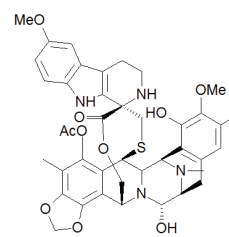
Column: ACE 3 C18-PFP**Dimensions:** 30 x 2.1 mm**Part Number:** ACE-1110-0302**Mobile Phase:** A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN**Gradient:**

Time (mins)	%B
0.0	10
2.5	90
3.5	90
3.6	10
5.0	10

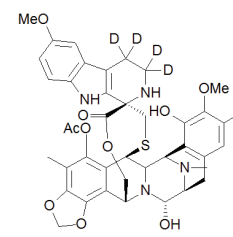
Flow Rate: 0.6 mL/min**Injection:** 5 µL**Temperature:** 50 °C**Detection:** API 4000 triple quad
TurboIonSpray, ESI positive ion mode
Turbo Temperature: 650 °C
Ion Spray Potential: 5000 V

Analytes

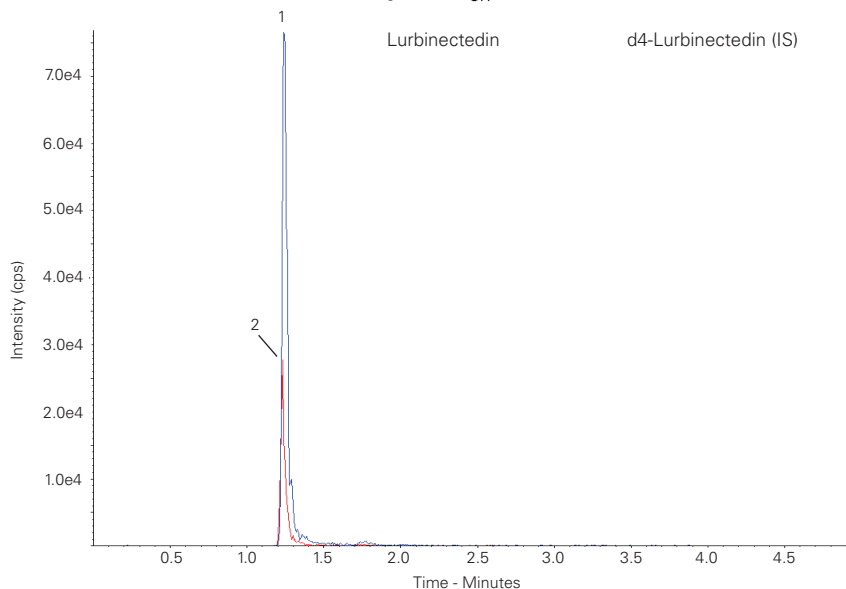
1. Lurbinectedin
(*m/z* 767.3 → 273.0)
(LLOQ 0.1 ng/mL)
2. d4-Lurbinectedin (IS)
(*m/z* 771.4 → 277.0)



Lurbinectedin



d4-Lurbinectedin (IS)



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Malachite Green

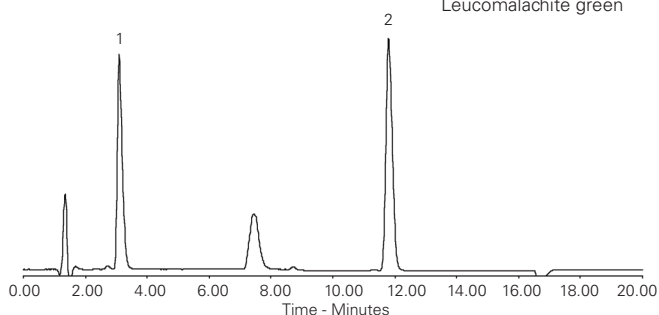
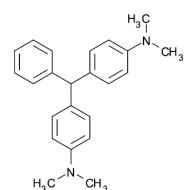
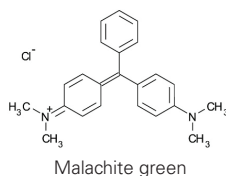
Application #AN2860

Conditions

Column: ACE 5 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-121-1503
Mobile Phase: 10 mM oxalic acid pH 2.9 in H₂O/MeCN (80:20 v/v)
Flow Rate: 0.4 mL/min
Temperature: Ambient
Detection: UV-Vis, 618 nm

Analytes

1. Malachite green
2. Leucomalachite green



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Maleic and Fumaric Acids

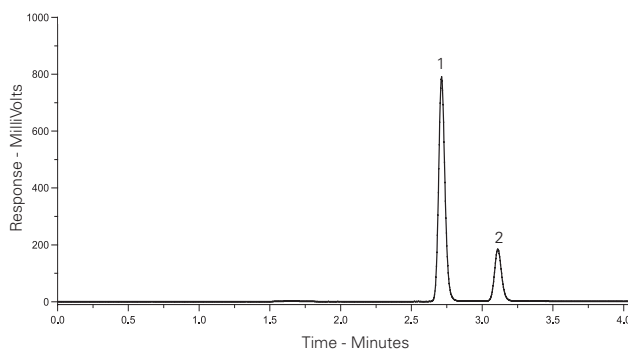
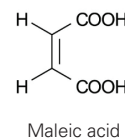
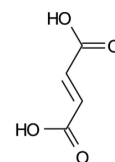
Application #AN3230

Conditions

Column: ACE 5 AQ
Dimensions: 250 x 4.6 mm
Part Number: ACE-126-2546
Mobile Phase: 50 mM KH₂PO₄ pH 7.0 in H₂O
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 210 nm

Analytes

1. Fumaric acid
2. Maleic acid



MDMA (Ecstasy) and PMA (Dr Death) Separation

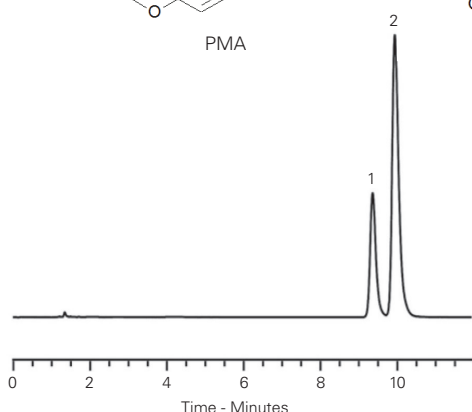
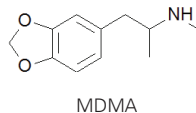
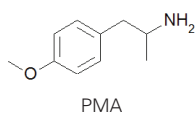
Application #AN4220

Conditions

Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: 0.05 M KH₂PO₄ pH 3.2 in H₂O/MeCN (90:10 v/v)
Flow Rate: 1.2 mL/min
Injection: 10 µL
Temperature: 22 °C
Detection: UV, 210 nm

Analytes

1. PMA (4-Methoxyamphetamine)
LOD 0.08 µg/mL
LOQ 0.26 µg/mL
2. MDMA (3,4-Methylenedioxy methamphetamine)
LOD 0.04 µg/mL
LOQ 0.12 µg/mL



Cumba LR, Smith JP, Zuway KY, Sutcliffe OB, do Carmo DR, Banks CE. Forensic electrochemistry: simultaneous voltammetric detection of MDMA and its fatal counterpart 'Dr Death' (PMA). Anal. Methods, 8, 142-152 (2016) doi: 10.1039/c5ay02924d

Melamine using Ion-Pairing Reagent

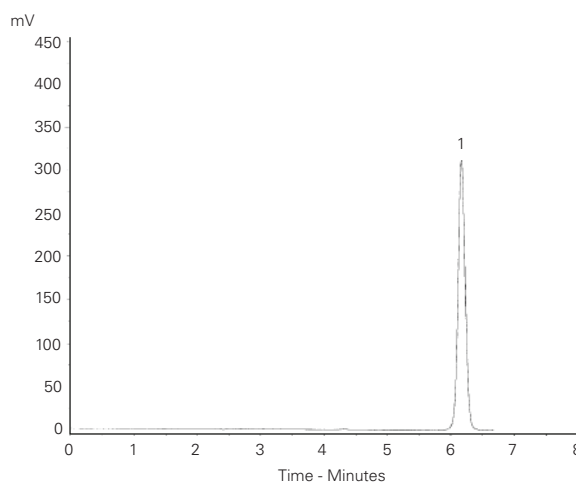
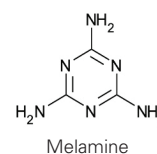
Application #AN2510

Conditions

Column: ACE 5 C8
Dimensions: 150 x 4.6 mm
Part Number: ACE-122-1546
Mobile Phase: 5 mM heptafluorobutyric acid/MeCN (95:5 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 240 nm

Analyte

1. Melamine



Metabolomic Analysis of Extracted Jurkat T Cells by LC-HRMS

Application #AN3980

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN

Gradient:	Time (mins)	%B
	0	0
	1	0
	11	65
	13	65
	18	95
	20	95

Flow Rate: 0.35 mL/min

Injection: 5 µL

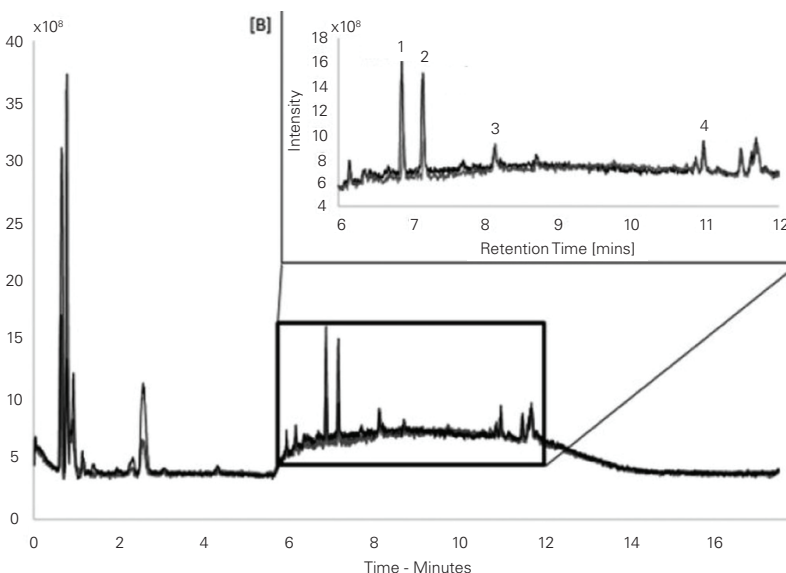
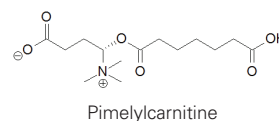
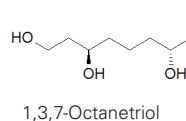
Temperature: 35 °C

Detection: Thermo Scientific Q Exactive Orbitrap MS
 Heated electrospray ionisation in positive mode
 Spray Voltage: 3.3 kV
 Capillary Temperature: 300 °C
 Heater Temperature: 350 °C
 Mass Scan Range: *m/z* 70-1000
 Resolution: 70,000

TIC overlay for Jurkat T-lymphocyte cells rinsed with either 0.3% ammonium formate (darker line) or 0.3% ammonium acetate.

Analytes

1. Caffeine-d3 (IS)
2. Tryptophan-d3 (IS)
3. 1,3,7-Octanetriol
4. Pimelylcarnitine



Ulmer CZ, Yost RA, Chen J, Mathews CE, Garrett TJ. Liquid-Chromatography-Mass Spectrometry Metabolic and Lipidomic Sample Preparation Workflow for Suspension-Cultured Mammalian Cells using Jurkat T Lymphocyte Cells, J. Proteomics Bioinform, (2015), 8(6), 126-132. doi:10.4172/jpb.1000360

Metabolomic Biomarkers in Ethylmalonic Encephalopathy

Application #AN4130

Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 2.1 mm
Part Number: ACE-1110-1502
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN

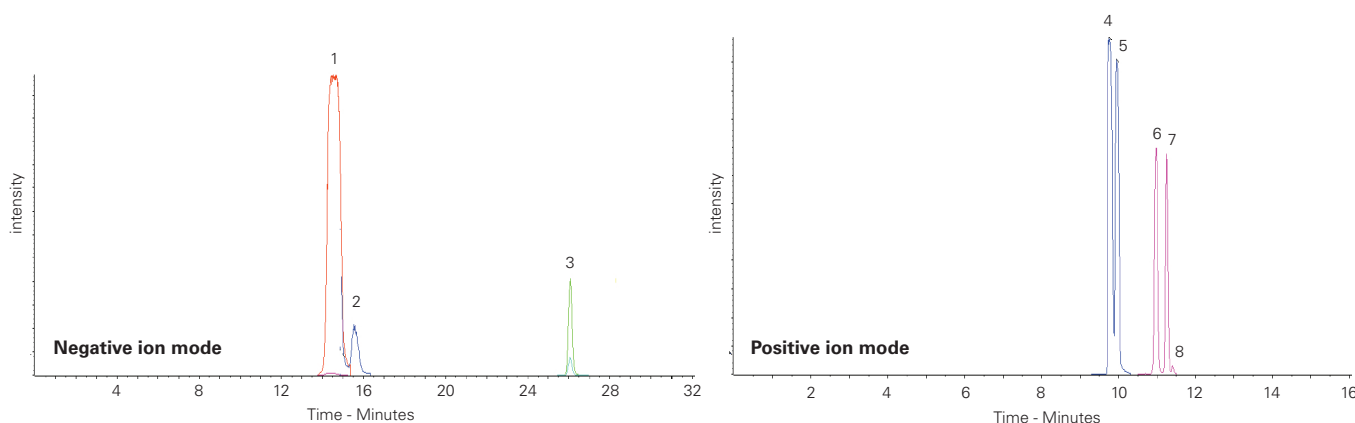
Detection: Sciex API 4000 triple quad MS
 ESI in negative ion mode

Sample: Urine sample from patient with ethylmalonic encephalopathy is filtered and extracted with ice-cold methanol, evaporated to dryness and reconstituted in 0.1% formic acid in water

Analytes

- | | | |
|--|---|--|
| 1. Ethylmalonic acid
(<i>m/z</i> 131 → 87) | 4. Isobutyrylcarnitine
(<i>m/z</i> 232 → 85) | 7. Isovalerylcarnitine
(<i>m/z</i> 246 → 85) |
| 2. Methylsuccinic acid
(<i>m/z</i> 131 → 87) | 5. Butyrylcarnitine
(<i>m/z</i> 232 → 85) | 8. Valerylcarnitine
(<i>m/z</i> 246 → 85) |
| 3. Adipic acid
(<i>m/z</i> 145 → 83) | 6. 2-Methylbutyrylcarnitine
(<i>m/z</i> 246 → 85) | |

Please contact info@ace-hplc.com for additional information on the chromatographic conditions used for this analysis.



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Metabolomics and Biochemical Genetics - Acylglycines

Application #AN4080

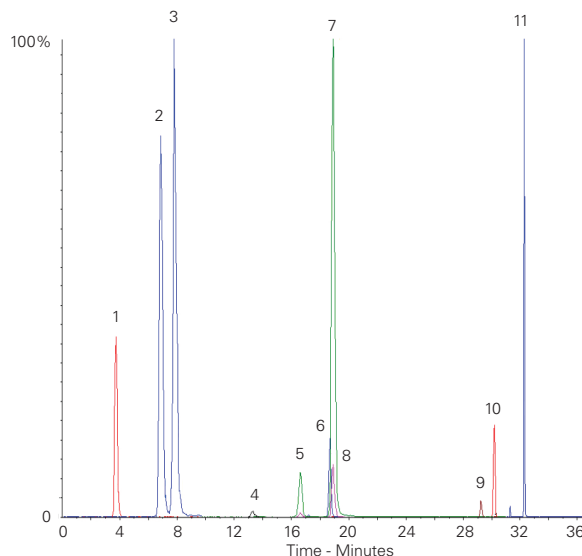
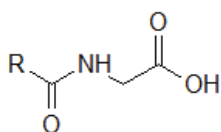
Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 2.1 mm
Part Number: ACE-1110-1502
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Detection: Sciex API 4000 triple quad MS
 ESI in negative ion mode
Sample: Urine / plasma sample is filtered and extracted with ice-cold methanol, evaporated to dryness and reconstituted in 0.1% formic acid in water

Analytes

- | | | |
|---|--|---|
| 1. Propionylglycine
(<i>m/z</i> 130 → 74) | 5. Isovalerylglycine
(<i>m/z</i> 158 → 74) | 9. Suberylglycine
(<i>m/z</i> 230 → 74) |
| 2. Isobutyrylglycine
(<i>m/z</i> 144 → 74) | 6. Tiglylglycine
(<i>m/z</i> 156 → 112) | 10. Hexanoylglycine
(<i>m/z</i> 172 → 74) |
| 3. Butyrylglycine
(<i>m/z</i> 144 → 74) | 7. Valerylglycine
(<i>m/z</i> 158 → 74) | 11. Trans-Cinnamoylglycine
(<i>m/z</i> 204 → 160) |
| 4. 2-Methylbutyrylglycine
(<i>m/z</i> 158 → 74) | 8. 3-Methylcrotonylglycine
(<i>m/z</i> 156 → 74) | |

Please contact info@ace-hplc.com for additional information on the chromatographic conditions used for this analysis.



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Metabolomics – C4 & C5 Hydroxy and Dicarboxylic Acids

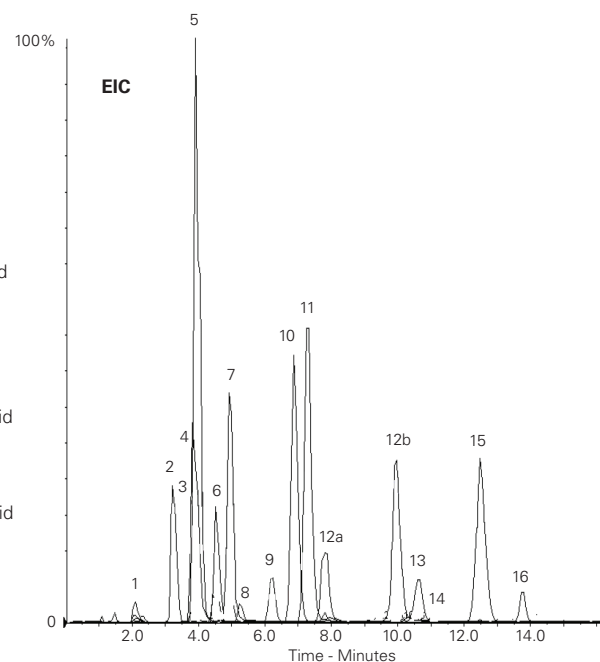
Application #AN4110

Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 2.1 mm
Part Number: ACE-1110-1502
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Detection: Sciex API 4000 triple quad MS
 ESI in negative ion mode
Sample: Urine / plasma sample is filtered and extracted with ice-cold methanol, evaporated to dryness and reconstituted in 0.1% formic acid in water

Analytes

1. Isocitric acid
(*m/z* 191 → 111)
2. 2-Hydroxyglutaric acid
(*m/z* 147 → 129)
3. 3-Hydroxyglutaric acid
(*m/z* 147 → 85)
4. Maleic acid
(*m/z* 115 → 71)
5. Citric acid
(*m/z* 191 → 111)
6. Fumaric acid
(*m/z* 115 → 71)
7. Succinic acid
(*m/z* 117 → 73)
8. Methylmalonic acid
(*m/z* 117 → 55)
9. 3-Hydroxy-3-methylglutaric acid
(*m/z* 161 → 99)
10. 2-Hydroxyadipic acid
(*m/z* 161 → 143)
11. 3-Hydroxyisovaleric acid
(*m/z* 117 → 59)
12. 3-Hydroxy-2-methylbutyric acid
(*m/z* 117 → 73)
13. Glutaric acid
(*m/z* 131 → 87)
14. 2-Ethyl-3-hydroxypropionic acid
(*m/z* 117 → 87)
15. Ethylmalonic acid
(*m/z* 131 → 87)
16. Methylsuccinic acid
(*m/z* 131 → 87)



Please contact info@ace-hplc.com for additional information on the chromatographic conditions used for this analysis.

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Metabolomics – C4 Hydroxy Acids

Application #AN4120

Conditions

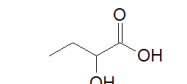
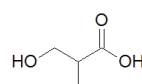
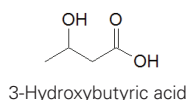
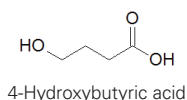
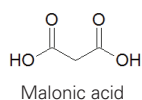
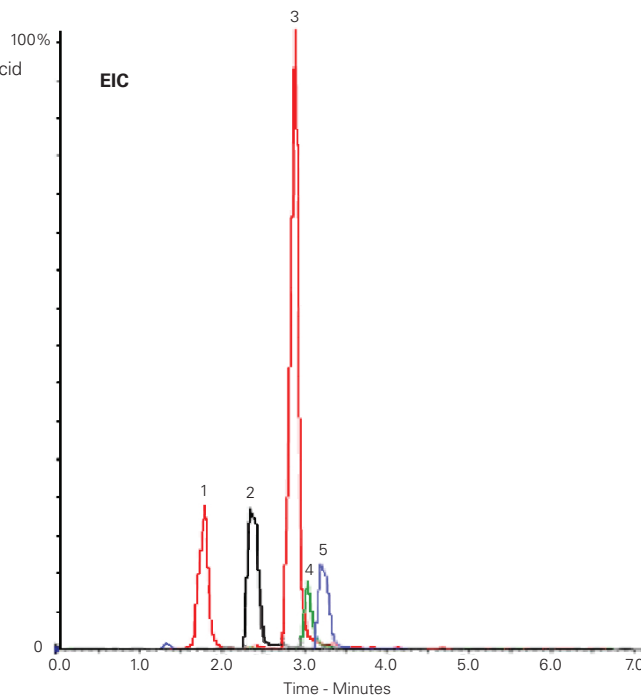
Column: ACE 3 C18-PFP**Dimensions:** 150 x 2.1 mm**Part Number:** ACE-1110-1502**Mobile Phase:** A: 0.1% formic acid in H₂O

B: 0.1% formic acid in MeCN

Detection: Sciex API 4000 triple quad MS
ESI in negative ion mode**Sample:** Urine / plasma sample is filtered and extracted with ice-cold methanol, evaporated to dryness and reconstituted in 0.1% formic acid in water

Analytes

1. Malonic acid
(*m/z* 103 → 59)
2. 4-Hydroxybutyric acid
(*m/z* 103 → 57)
3. 3-Hydroxybutyric acid
(*m/z* 103 → 59)
4. 3-Hydroxyisobutyric acid
(*m/z* 103 → 73)
5. 2-Hydroxybutyric acid
(*m/z* 103 → 57)



Please contact info@ace-hplc.com for additional information on the chromatographic conditions used for this analysis.

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Metabolomics – C6 & C7 Hydroxy and Dicarboxylic Acids

Application #AN4100

Conditions

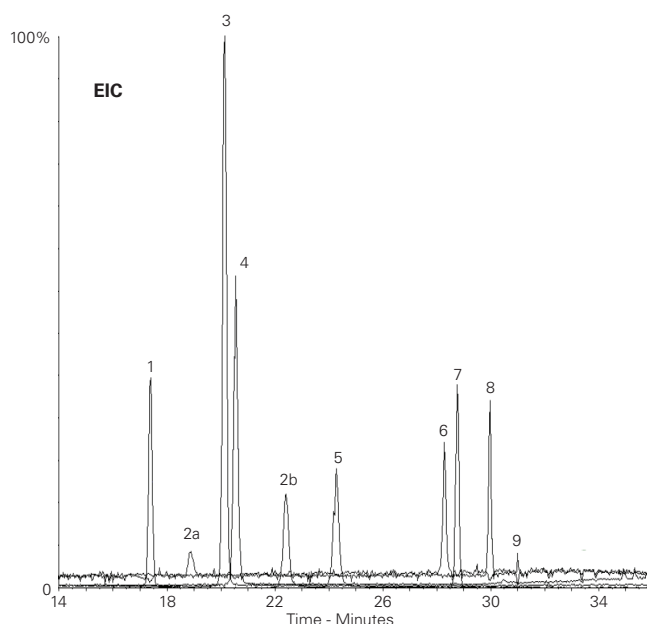
Column: ACE 3 C18-PFP**Dimensions:** 150 x 2.1 mm**Part Number:** ACE-1110-1502**Mobile Phase:** A: 0.1% formic acid in H₂O

B: 0.1% formic acid in MeCN

Detection: Sciex API 4000 triple quad MS
ESI in negative ion mode**Sample:** Urine / plasma samples filtered and extracted with ice-cold methanol, evaporated to dryness and reconstituted in 0.1% formic acid in water.

Analytes

1. 5-Hydroxyhexanoic acid
(*m/z* 131 → 85)
2. 2-Hydroxy-3-methylvaleric acid
(*m/z* 131 → 73)
3. 3-Methylglutaric acid
(*m/z* 145 → 101)
4. Adipic acid
(*m/z* 145 → 83)
5. 2-Hydroxyisocaproic acid
(*m/z* 131 → 85)
6. 3-Methyladipic acid
(*m/z* 159 → 115)
7. Pimelic acid
(*m/z* 159 → 97)
8. 4-Hydroxyphenylacetic acid
(*m/z* 151 → 107)
9. 2-Hydroxyphenylacetic acid
(*m/z* 151 → 107)



Please contact info@ace-hplc.com for additional information on the chromatographic conditions used for this analysis.

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Methotrexate in K₃EDTA Human Plasma by LC-MS/MS

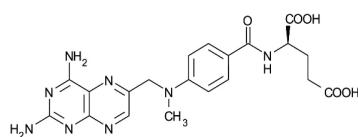
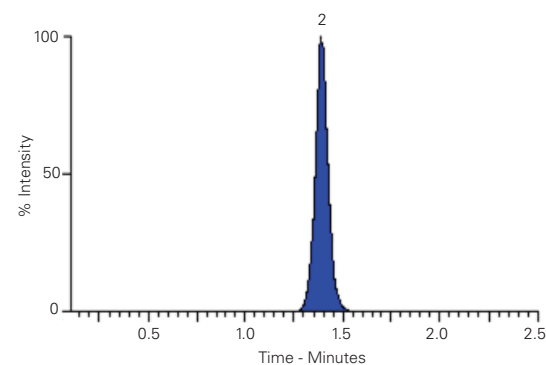
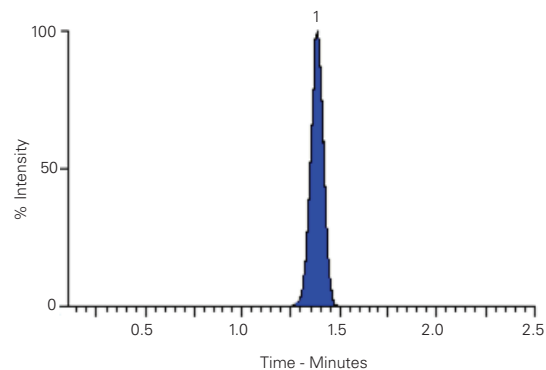
Application #AN3760

Conditions

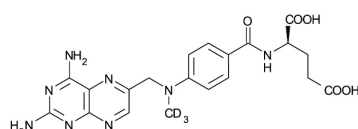
Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: 10 mM ammonium formate
 pH 7.0/MeOH (60:40 v/v)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: Quattro Premier XE triple quad MS
 Positive ion mode ESI
 Ion source temperature: 120 °C
 Desolvation temperature: 450 °C
Sample: Methotrexate and methotrexate-d3
 extracted using solid phase extraction

Analytes

1. Methotrexate
 (m/z 455 $\rightarrow$ 308)
 (LLOQ 1.0 ng/mL)
 (Concentration 100 ng/mL)
2. Methotrexate-d3 (I.S.)
 (m/z 458 $\rightarrow$ 311)
 (Concentration 50 ng/mL)



Methotrexate



Methotrexate-d3 (I.S.)

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17 α -Methyltestosterone in Freshwater Tilapia Aquaculture

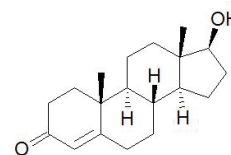
Application #AN4340

Conditions

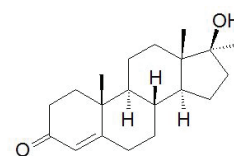
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: MeCN/H₂O (45:55 v/v)
Flow Rate: 1 mL/min
Injection: 20 μ L
Temperature: 25 °C
Detection: UV, 245 nm

Analytes

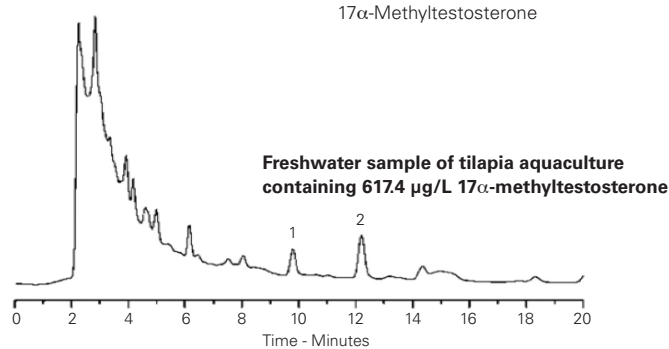
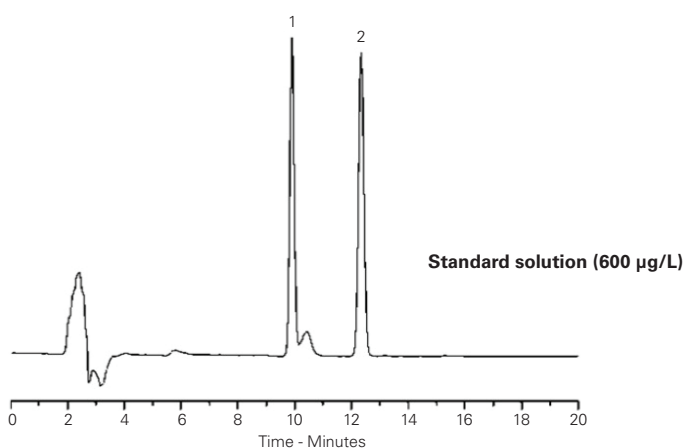
1. Testosterone (IS)
2. 17 α -Methyltestosterone



Testosterone (IS)

17 α -Methyltestosterone

17 α -Methyltestosterone is used for sex reversal of tilapia fish in order to avoid overpopulation in ponds. It therefore has to be monitored in aqueous matrices to prevent release into the environment.



Barbosa IR, Lopes S, Oliveira R, Domingues I, Soares AMVM, Nogueira AJA. Determination of 17 α -Methyltestosterone in Freshwater Samples of Tilapia Farming by High Performance Liquid Chromatography, American Journal of Analytical Chemistry, (2013), 4, 207-211. <http://dx.doi.org/10.4236/ajac.2013.44026>

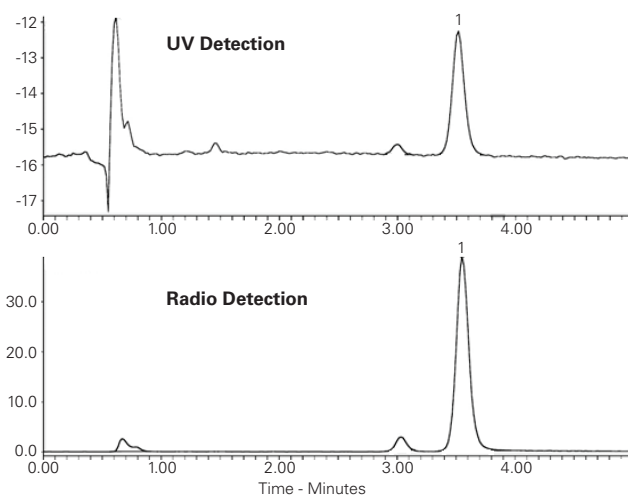
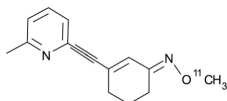
mGluR5 PET Tracer by Radio HPLC Analysis

Application #AN2700

Conditions

Column: ACE 3 C18
Dimensions: 50 x 4.6 mm
Part Number: ACE-111-0546
Mobile Phase: 0.1% TFA in H₂O/MeCN (55:45 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Detection: UV, 254 nm
 Radio detection

Analyte

1. ¹¹C-ABP688

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 University Hospital Zurich, Switzerland

For additional
 column dimensions

Please enquire
 email: info@ace-hplc.com

Microbial Extract by LC-MS

Application #AN1180

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 2.1 mm
Part Number: CORE-25A-1502U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN

Gradient:

Time (mins)	%B
0.0	5
5.0	5
20.0	100
25.0	100

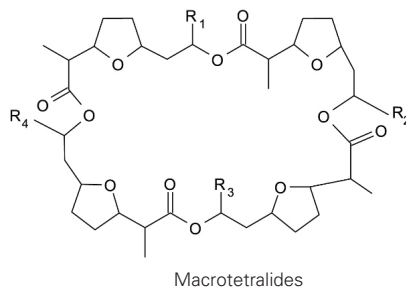
Flow Rate: 0.2 mL/min

Detection: Dionex 3000RS UHPLC system
 coupled with Bruker MaXis Q-TOF MS
 Electrospray MS positive mode
 Source end plate offset -500 V
 Nebuliser gas (N₂) 1.6 bar
 Drying gas (N₂) temp 180 °C
 Collision energy 5.0 eV
 Collision RF 600 Vpp

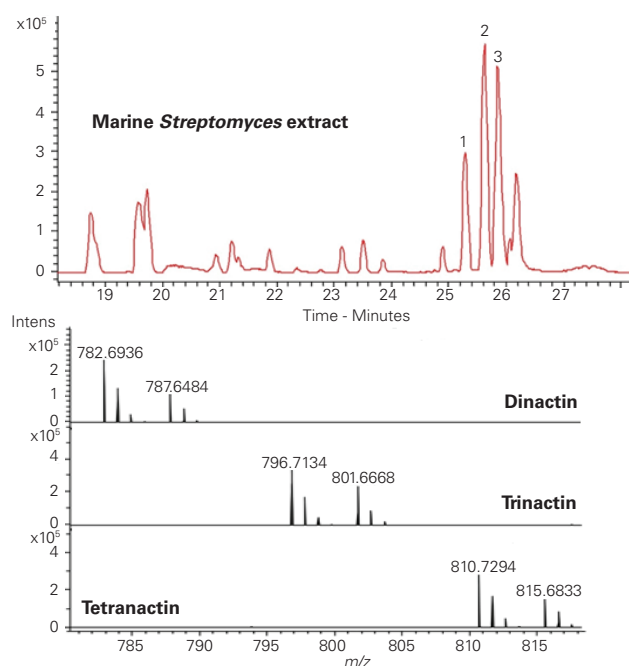
Analytes

Macrotetralides

1. Dinactin R₁ = R₃ = CH₂CH₃, R₂ = R₄ = CH₃
2. Trinactin R₁ = R₂ = R₃ = CH₂CH₃, R₄ = CH₃
3. Tetranactin R₁ = R₂ = R₃ = R₄ = CH₂CH₃



Macrotetralides



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Microcystins from Blue/Green Algae in Drinking Water

Application #AN1190

Conditions

Column: ACE Excel 2 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-101-1002U
Mobile Phase: A: 0.1 % formic acid in H₂O
 B: MeCN

Gradient:

Time (mins)	%B
0.0	30
1.0	30
7.0	95
7.1	30
10.0	30

Flow Rate: 0.4 mL/min

Injection: 50 µL

Temperature: 40 °C

Sample: 0.05 ppb

Detection: Bruker EVOQ Elite triple quad MS
 VIP heated-ESI temperature: 350 °C
 Cone gas temperature: 200 °C
 Spray voltage: 4500 V (+)
 Collision gas: argon 1.5 mTorr

Analytes

1. Microcystin RR (MW 1038)
(*m/z* 520 → 135)
2. Microcystin LR (MW 995)
(*m/z* 498 → 135)
3. Microcystin YR (MW 1045)
(*m/z* 523 → 135)

Variants

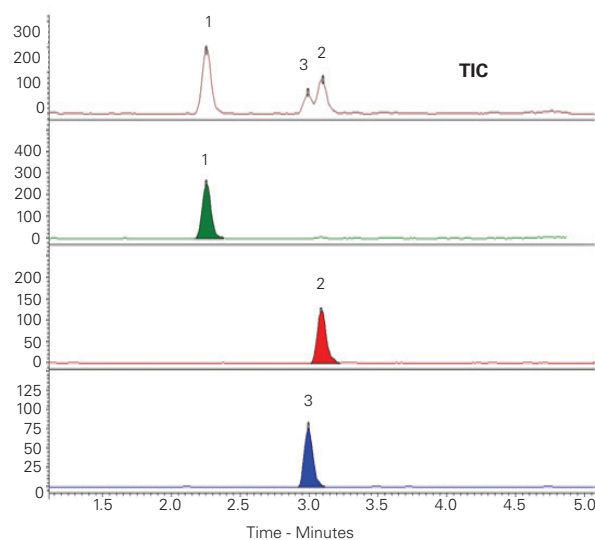
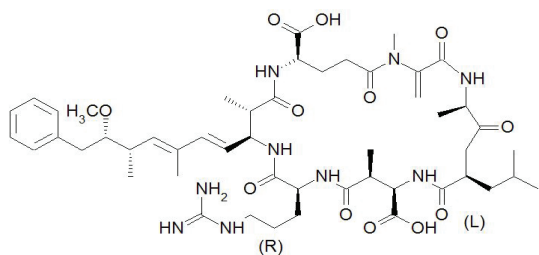
Microcystin-LR
 Microcystin-RR
 Microcystin-YR

R

Leucine
 Arginine
 Tyrosine

L

Arginine
 Arginine
 Arginine



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Milk Proteins

Application #AN1540

Conditions

Column: ACE 5 C18-300
Dimensions: 150 x 2.1 mm
Part Number: ACE-221-1502
Mobile Phase: A: 0.01 % TFA in H₂O
 B: 0.01 % TFA in MeCN

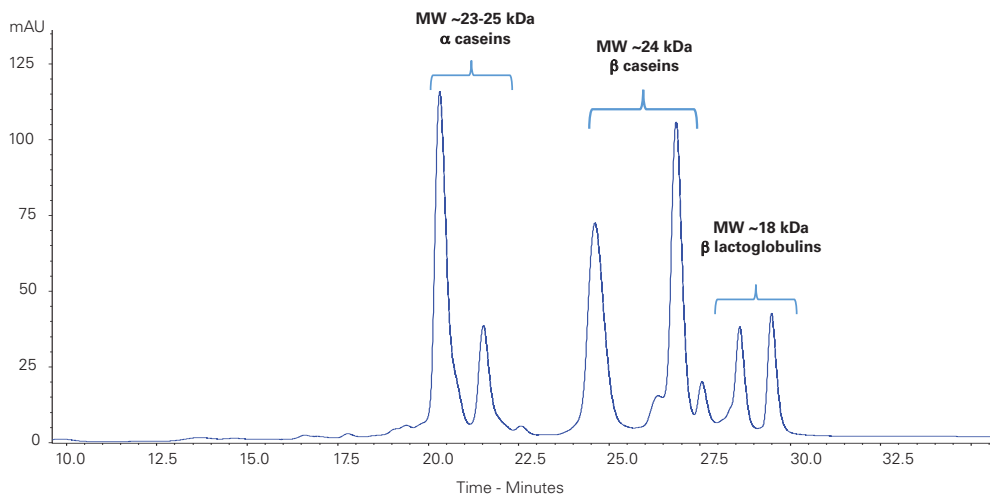
Gradient:

Time (mins)	%B
0.0	33
5.0	33
9.0	35
18.0	37
22.0	40
27.5	41
28.0	41
43.0	43

Flow Rate: 0.2 mL/min

Temperature: 45 °C

Detection: UV, 214 nm



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Mycotoxins by LC-MS/MS

Application #AN2330

Conditions

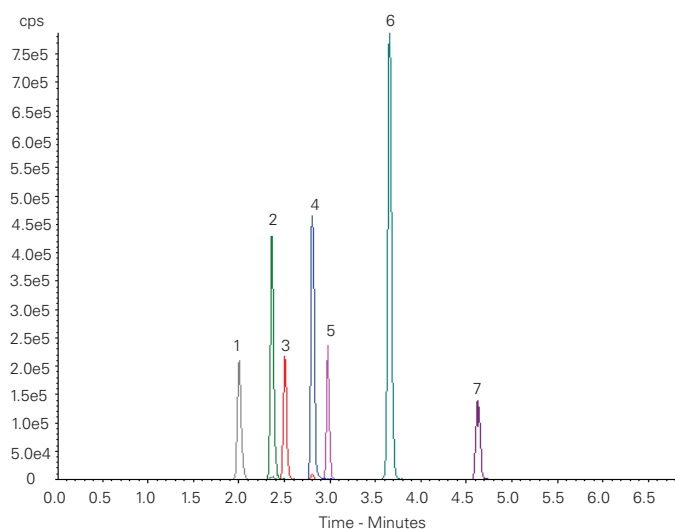
Column: ACE Excel 2 C18-AR
Dimensions: 50 x 2.1 mm
Part Number: EXL-109-0502U
Mobile Phase: A: 1 mM ammonium acetate, 0.5% acetic acid in H₂O
 B: 1 mM ammonium acetate, 0.5% acetic acid in 95% MeOH
Gradient:

Time (mins)	%B
0.0	40
1.0	40
2.4	60
6.8	87

Flow Rate: 0.6 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: AB SCIEX triple quad 5500
 Positive ESI mode
 Source temperature: 500 °C
 IonSpray voltage: 5500 V

Analytes

1. Aflatoxin G2
(*m/z* 331.1 → 313.1)
2. Aflatoxin G1
(*m/z* 329.0 → 243.1)
3. Aflatoxin B2
(*m/z* 315.1 → 287.0)
4. Aflatoxin B1
(*m/z* 313.1 → 285.0)
5. HT-2-toxin
(*m/z* 442.2 → 263.1)
6. T-2-toxin
(*m/z* 484.2 → 305.1)
7. Ochratoxin A
(*m/z* 404.1 → 239.0)



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Mycotoxins/Aflatoxins from Peppers

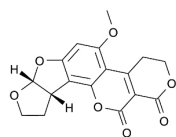
Application #AN1200

Conditions

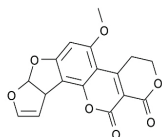
Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: H₂O/MeOH (60:40 v/v)
Flow Rate: 1 mL/min
Injection: 100 µL
Temperature: 45 °C
Detection: Fluorescence, λ_{Ex} 362 nm, λ_{Em} 425 nm

Analytes

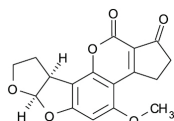
1. Aflatoxin G2
2. Aflatoxin G1
3. Aflatoxin B2
4. Aflatoxin B1



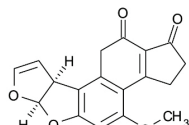
Aflatoxin G2



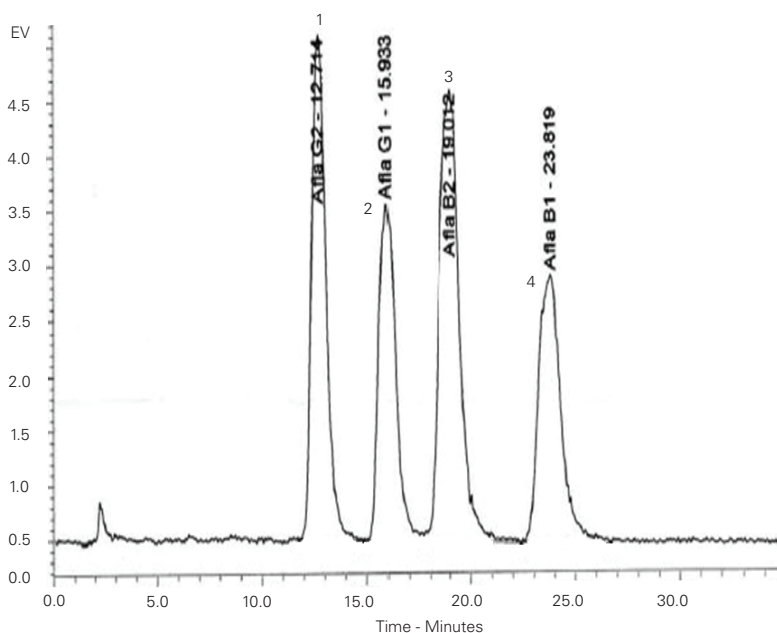
Aflatoxin G1



Aflatoxin B2



Aflatoxin B1



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Naphthalenes (Substituted)

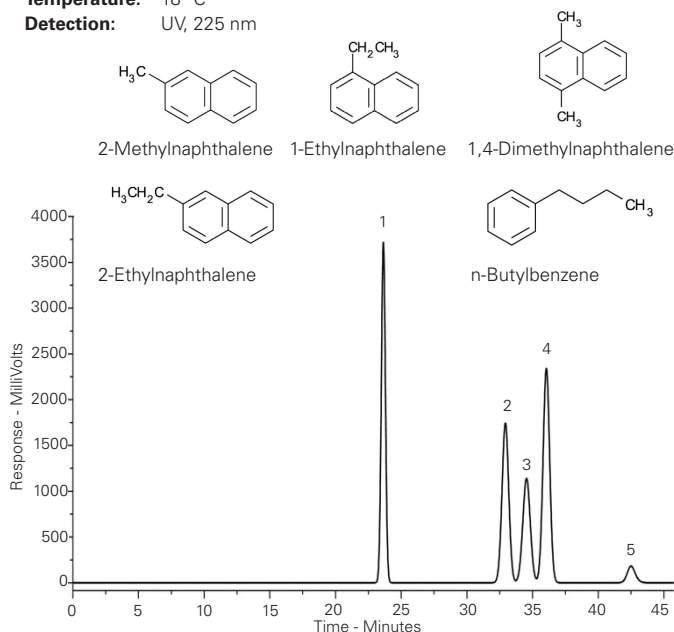
Application #AN3690

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: MeCN/H₂O (51:49 v/v)
Flow Rate: 1.5 mL/min
Temperature: 18 °C
Detection: UV, 225 nm

Analytes

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



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email: info@ace-hplc.com

Neonicotinoids in Honey by LC-MS/MS

Application #AN4050

Conditions

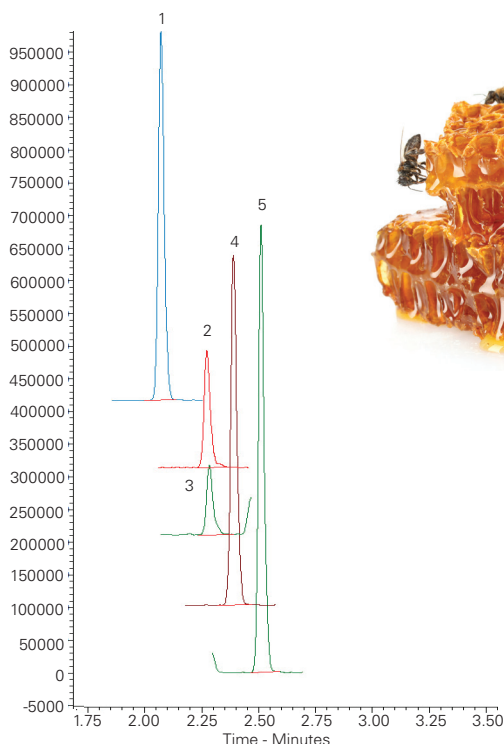
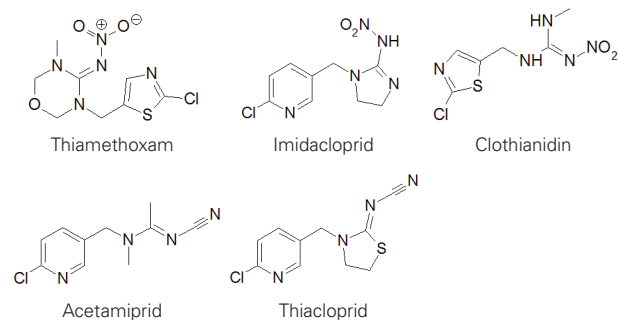
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 2.1 mm
Part Number: CORE-25A-1002U
Mobile Phase: A: 0.05% ammonia in H₂O
 B: 0.05% ammonia in MeOH
Gradient:

Time (mins)	%B
0	5
3	100

Flow Rate: 0.6 mL/min
Injection: 1 µL (POISe mode)
Temperature: 30 °C
Detection: Shimadzu LCMS-8060
 Positive ion mode HESI
Sample: Honey spiked at 0.1 ppb (QuEChERS extract)

Analytes

1. Thiamethoxam (m/z 292 → 211)
2. Imidacloprid (m/z 256 → 175)
3. Clothianidin (m/z 250 → 169)
4. Acetamiprid (m/z 223 → 126)
5. Thiacloprid (m/z 253 → 126)



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Neurotransmitters and Metabolites from Rat Brain by LC-MS/MS

Application #AN3870

Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: A: 0.2% formic acid in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	5
2	5
5	90
8	90
10	5
14	5

Flow Rate: 0.6 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: Agilent 6410 triple quad
 ESI in positive ion mode (negative ion mode for MHPG)
 Capillary Voltage: 1950 kV
Sample: Rat brain samples homogenised in aqueous formic acid, centrifuged and proteins removed by precipitation with acetonitrile

Analytes

1. Adrenaline
2. Noradrenaline
3. Glutamic acid
4. GABA
5. Dopamine
6. MHPG
(3-Methoxy-4-hydroxyphenylglycol)
7. Isoprenaline (IS)
8. 5-Hydroxyindoleacetic acid
9. Serotonin

Quantifier

m/z 184.2 → 166.2
 m/z 170.2 → 107.1
 m/z 148.1 → 84.1
 m/z 104 → 45
 m/z 154.1 → 137.1
 m/z 263 → 165.1
 m/z 212.2 → 194.1
 m/z 192 → 145.9
 m/z 177.2 → 160.2

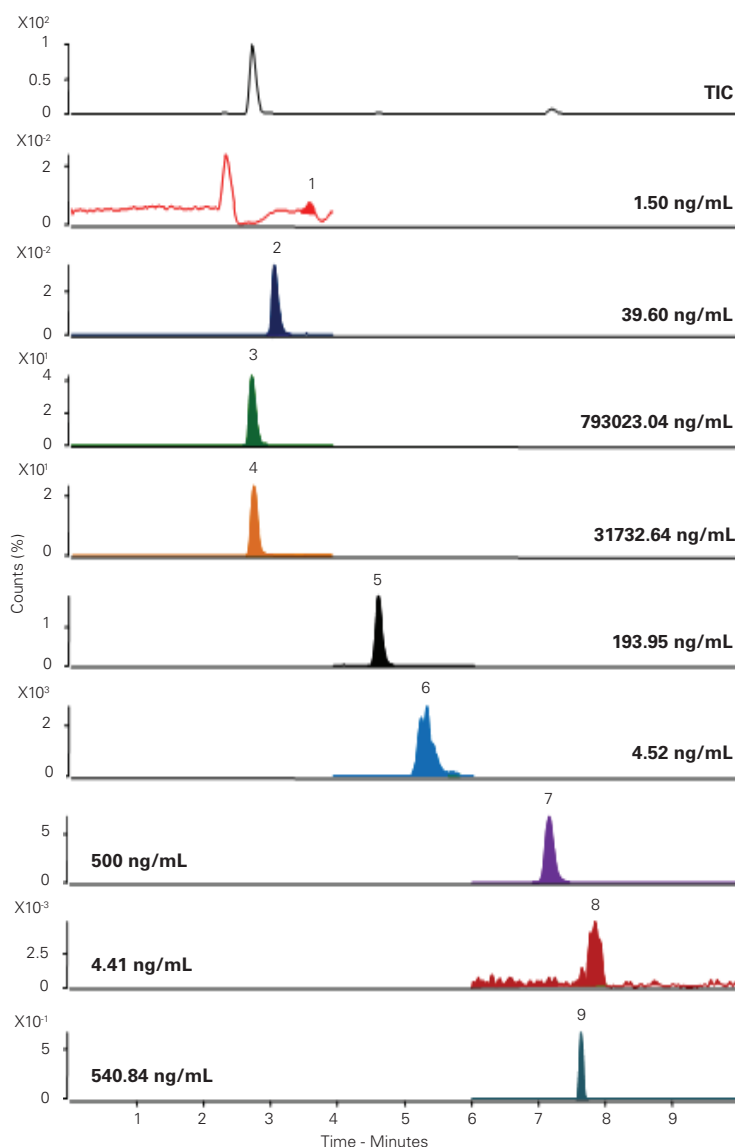
Qualifier

m/z 184.2 → 57.1
 m/z 170.2 → 152.1
 m/z 148.1 → 130.1
 m/z 104 → 87
 m/z 154.1 → 91.1
 m/z 263 → 165.1
 m/z 192 → 90.9
 m/z 177.2 → 132.1

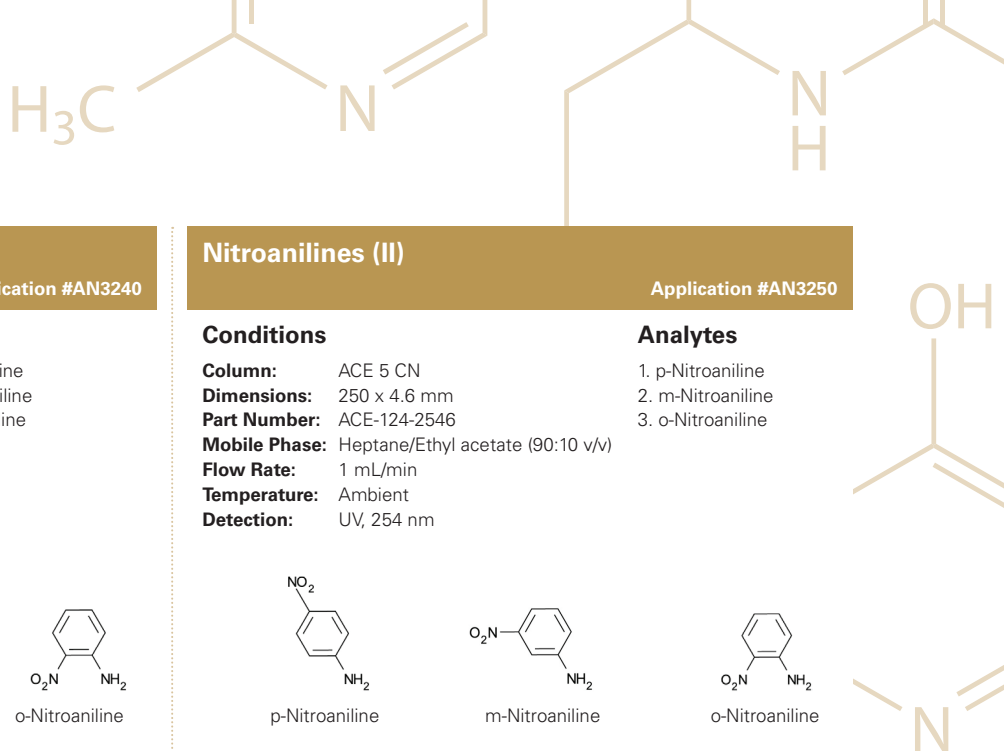
LLOQ (ng/mL)

0.25
 0.5
 250
 250
 0.25
 1

 1
 10



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Nitroanilines (I)

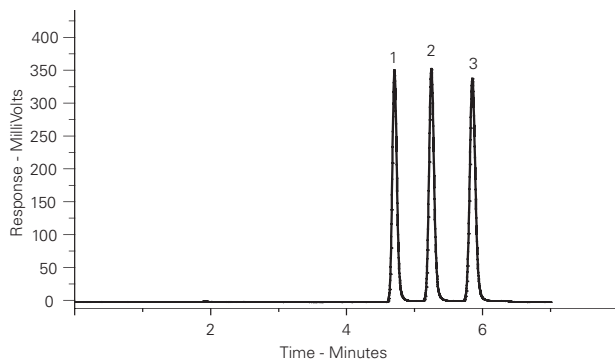
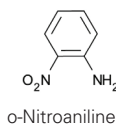
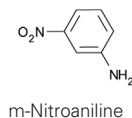
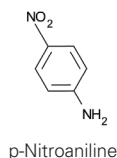
Application #AN3240

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 50 mM KH_2PO_4 pH 3.15/
 MeCN (50:50 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analytes

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



Nitroanilines (II)

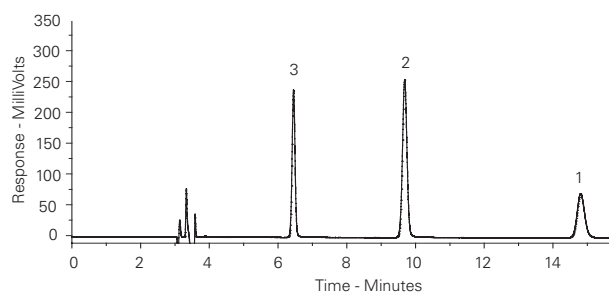
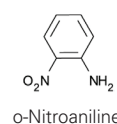
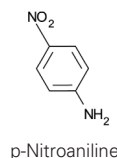
Application #AN3250

Conditions

Column: ACE 5 CN
Dimensions: 250 x 4.6 mm
Part Number: ACE-124-2546
Mobile Phase: Heptane/Ethyl acetate (90:10 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analytes

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



Nitrofuran Metabolites by LC-MS/MS

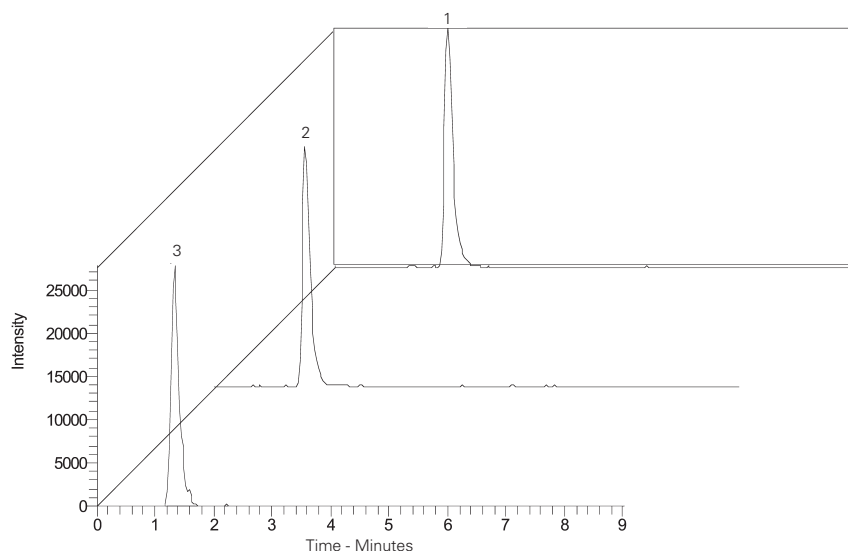
Application #AN3050

Conditions

Column: ACE 3 C18
Dimensions: 50 x 2.1 mm
Part Number: ACE-111-0502
Mobile Phase: MeOH/0.5 mM ammonium
 acetate in H_2O (50:50 v/v)
Flow Rate: 0.2 mL/min
Injection: 20 μL
Temperature: Ambient
Detection: ESI MS/MS (+ve mode)
Sample: Metabolites derivatised with
 2-nitrobenzaldehyde to form
 nitrophenyl derivatives, prior to
 LC-MS analysis

Analytes

1. 5-Methylmorpholino-3-amino-2-oxazolidinone derivative (NBAMOZ)
 (metabolite of furalfadone)
 (m/z 335 $\rightarrow$ 291)
2. 3-Amino-2-oxazolidinone derivative (NBAOZ)
 (metabolite of furazolidone)
 (m/z 236 $\rightarrow$ 134)
3. 1-Aminohydantoin derivative (NBAHD)
 (metabolite of nitrofurazone)
 (m/z 249 $\rightarrow$ 134)



Nitrosamines European Toy Standard Method by LC-MS/MS

Application #AN1110

Conditions

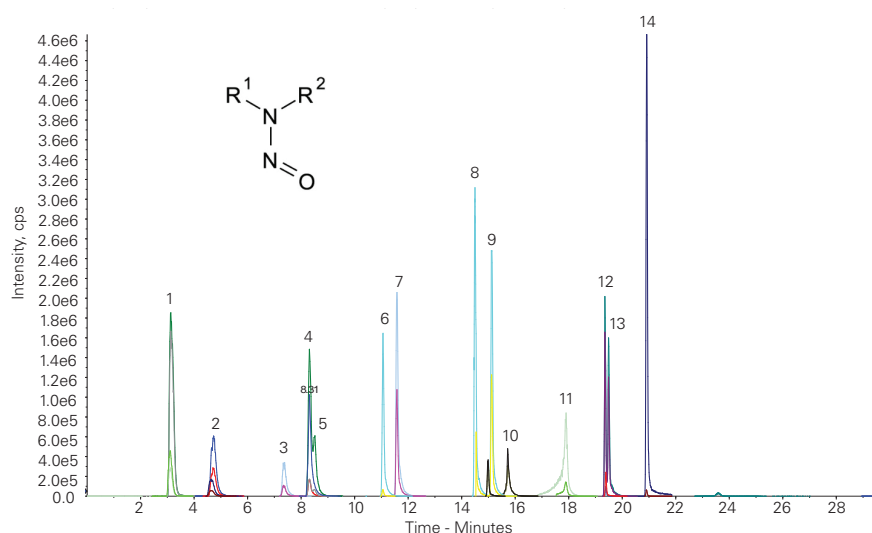
Column: ACE Excel 2 C18-PFP
Dimensions: 150 x 3.0 mm
Part Number: EXL-1010-1503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	5
1.0	5
10.0	65
14.0	65
15.0	90
20.0	90
21.0	5
30.0	5

Flow Rate: 0.35 mL/min
Injection: 20 µL
Temperature: 40 °C
Sample Temperature: 4 °C
Detection: Applied Biosystems 4000 Q-Trap MS
 Source: APCI (positive mode)
 Collision energy: 10-30 V
 Source temperature: 300 °C

Analytes

- | | | |
|---|---|--|
| 1. NDELA
(m/z 135.2 → 74.2, 135.2 → 104.2) | 6. NDEA
(m/z 103.1 → 75.2, 103.1 → 47.2) | 11. NEPhA
(m/z 151.1 → 77.1, 151.1 → 95.3) |
| 2. NDMA
(m/z 74.9 → 43.2, 74.9 → 58.2) | 7. NPIP
(m/z 115.1 → 69.1, 115.1 → 41.2) | 12. NDiBA
(m/z 159.3 → 57.2, 159.3 → 103.2) |
| 3. Nmorp
(m/z 117.1 → 86.3, 117.1 → 73.3) | 8. NDnPA
(m/z 131.2 → 89.2, 131.2 → 43.3) | 13. NDnBA
(m/z 159.3 → 103.2, 159.3 → 57.2) |
| 4. Npyrr
(m/z 101.2 → 55.3, 101.2 → 59.2) | 9. NdiPA
(m/z 131.2 → 89.2, 131.2 → 43.3) | 14. NDBzA
(m/z 227.2 → 91.1, 227.2 → 181.2) |
| 5. NMEA
(m/z 89.2 → 61.1, 89.2 → 43.3) | 10. NMPPhA
(m/z 137.2 → 107.2, 137.2 → 66.1) | |



European Union EN 71-12 Safety of Toys:
 N-Nitrosamines and N-nitrosatable substances e.g.
 Analysis of nitrosamines in balloon extracts

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Non-Steroidal Anti-Inflammatory Drugs (I)

Application #AN1210

Conditions

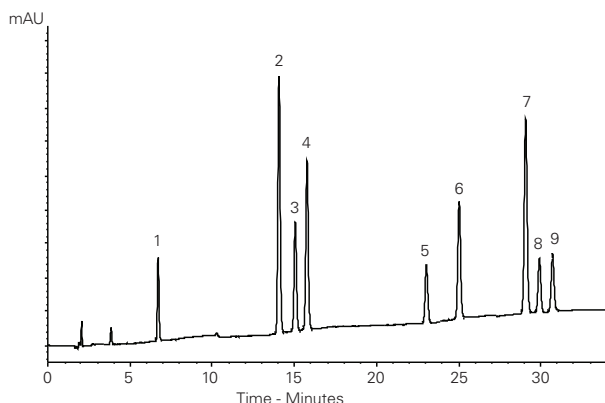
Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0	52
28	74
33	74
38	52
48	52

Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Bendroflumethiazide
2. Ketoprofen
3. Naproxen
4. Sulindac
5. Ibuprofen
6. Diclofenac
7. Indomethacin
8. Meclofenamic acid
9. Mefenamic acid



Non-Steroidal Anti-Inflammatory Drugs (II)

Application #AN1220

Conditions

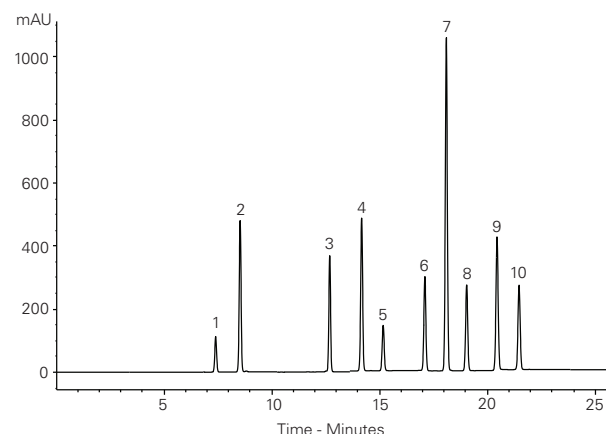
Column: ACE Excel 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: EXL-1211-1546U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	20
20	70
25	70
36	20

Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Aspirin
2. Phenacetin
3. Sulindac
4. Tolmetin
5. Naproxen
6. Nimesulide
7. Flurbiprofen
8. Diclofenac
9. Phenylbutazone
10. Meclofenamic acid





Non-Steroidal Anti-Inflammatory Drugs (III)

Application #AN3570

Conditions

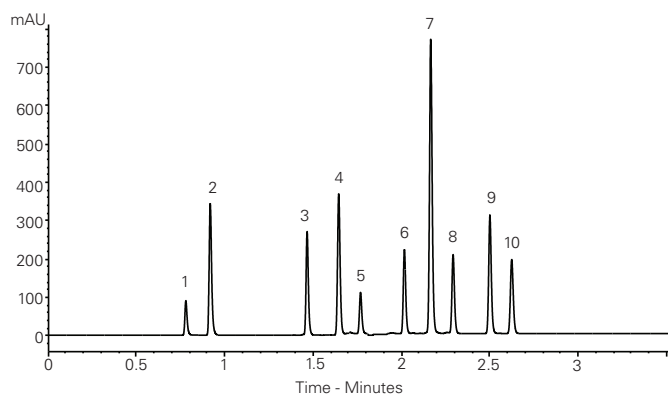
Column: ACE UltraCore 2.5 SuperC18**Dimensions:** 50 x 3.0 mm**Part Number:** CORE-25A-0503U**Mobile Phase:** A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN

Gradient:	Time (mins)	%B
	0.02	20
	2.71	70
	3.39	70
	3.52	20

Flow Rate: 0.85 mL/min**Injection:** 1.04 µL**Temperature:** 40 °C**Detection:** UV, 254 nm

Analytes

1. Aspirin
2. Phenacetin
3. Sulindac
4. Tolmetin
5. Naproxen
6. Nimesulide
7. Flurbiprofen
8. Diclofenac
9. Phenylbutazone
10. Meclofenamic acid



Non-Steroidal Anti-Inflammatory Drugs – Fast Analysis

Application #AN2080

Conditions

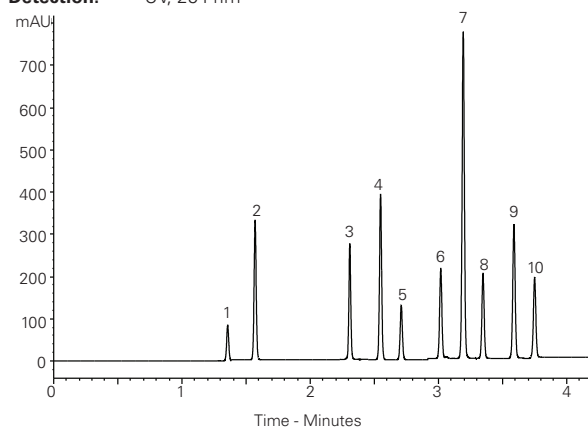
Column: ACE Excel 2 SuperC18**Dimensions:** 50 x 3.0 mm**Part Number:** EXL-1011-0503U**Mobile Phase:** A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN

Gradient:	Time (mins)	%B
	0.00	20
	0.25	20
	3.50	70
	4.00	20
	4.25	20

Flow Rate: 0.86 mL/min**Injection:** 1.4 µL**Temperature:** 40 °C**Detection:** UV, 254 nm

Analytes

1. Aspirin
2. Phenacetin
3. Sulindac
4. Tolmetin
5. Naproxen
6. Nimesulide
7. Flurbiprofen
8. Diclofenac
9. Phenylbutazone
10. Meclofenamic acid



Non-Steroidal Anti-Inflammatory Drugs by LC-MS/MS

Application #AN2630

Conditions

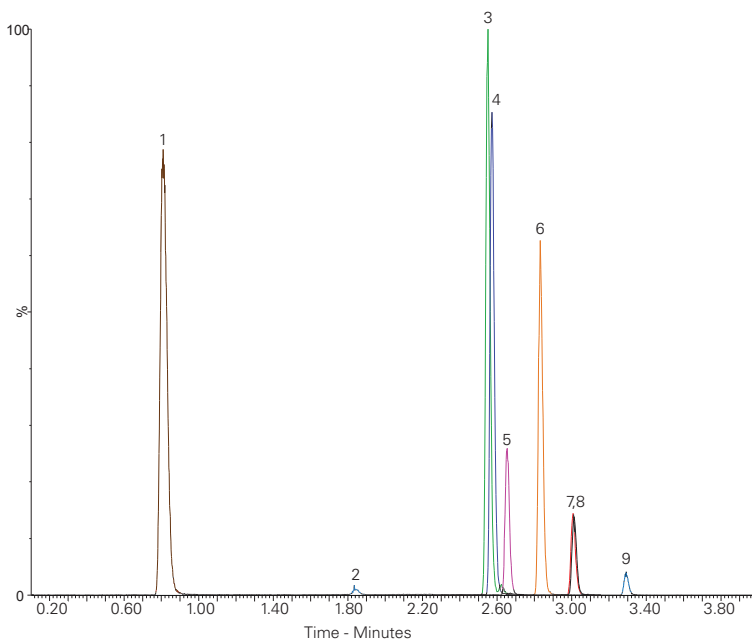
Column: ACE Excel 2 C18**Dimensions:** 50 x 2.1 mm**Part Number:** EXL-101-0502U**Mobile Phase:** A: 2 mM ammonium acetate,
0.1% formic acid in H₂O
B: 2 mM ammonium acetate,
0.1% formic acid in MeOH

Gradient:	Time (mins)	%B
	0.0	15
	2.0	70
	3.0	90
	3.3	15

Flow Rate: 0.4 mL/min**Injection:** 10 µL**Temperature:** 40 °C**Detection:** MS/MS**Sample:** ESI in positive ion mode**Sample:** 10 pg/µL

Analytes

- | | | |
|---|--|--|
| 1. Acetaminophen
(<i>m/z</i> 151.7 → 109.7) | 4. Ketoprofen
(<i>m/z</i> 255.0 → 209.0) | 7. Indomethacin
(<i>m/z</i> 357.9 → 138.7) |
| 2. Salicylic acid
(<i>m/z</i> 136.7 → 92.7) | 5. Naproxen
(<i>m/z</i> 231.0 → 184.9) | 8. Diclofenac
(<i>m/z</i> 295.8 → 213.9) |
| 3. Sulindac
(<i>m/z</i> 357.0 → 233.1) | 6. Phenylbutazone
(<i>m/z</i> 309.1 → 119.8) | 9. Mefenamic acid
(<i>m/z</i> 242.0 → 208.8) |



Nucleic Acids / Disease Biomarker Profiling (I)

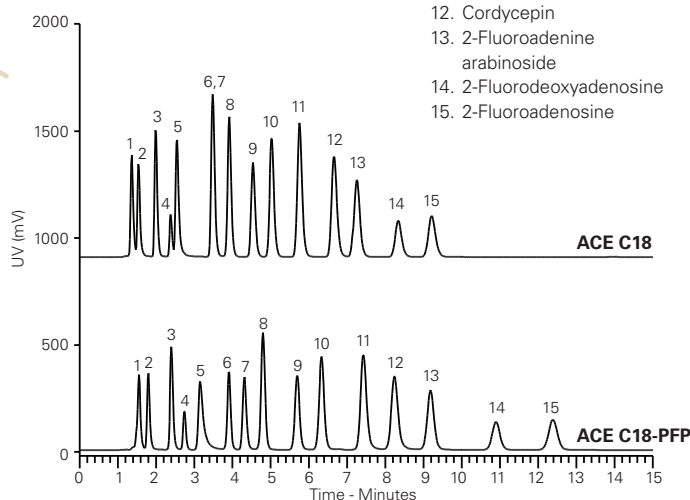
Application #AN1080

Conditions

Column: ACE 3 C18-PFP
ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-1110-1046, ACE-111-1046
Mobile Phase: 33 mM potassium phosphate
pH 6.2 with KOH/MeOH
(88:12 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 260 nm

Analytes

1. dATP
2. dADP
3. dAMP
4. 5-Fluorodeoxyuridine
5. Adenine
6. Thymine
7. 2-Fluorodeoxyuridine
8. Adenine arabinoside
9. 2'-C-methyladenosine
10. Adenosine
11. Deoxyadenosine
12. Cordycepin
13. 2-Fluoroadenine arabinoside
14. 2-Fluorodeoxyadenosine
15. 2-Fluoroadenosine



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Nucleosides and Vitamins

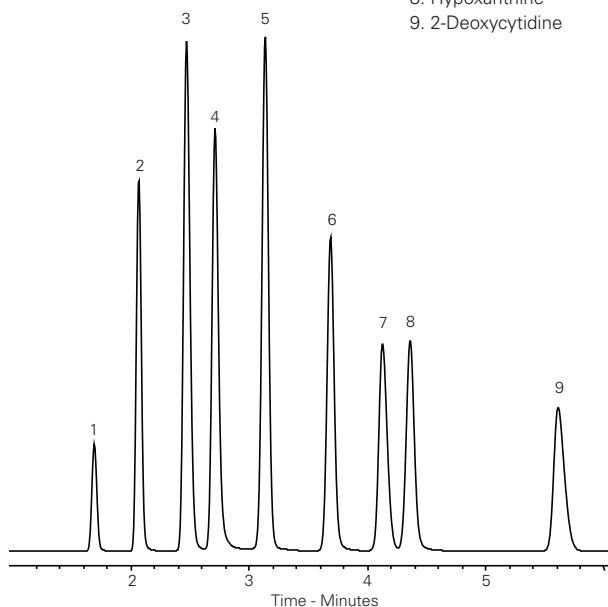
Application #AN1330

Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: 20 mM H₃PO₄ in H₂O
Flow Rate: 1 mL/min
Temperature: 22 °C
Detection: UV, 254 nm

Analytes

1. Pyridoxamine (Vitamin B6)
2. Cytosine
3. Thiamine (Vitamin B1)
4. Nicotinamide
5. L-Ascorbic acid (Vitamin C)
6. Uracil
7. Cytidine
8. Hypoxanthine
9. 2-Deoxycytidine



Nucleic Acids / Disease Biomarker Profiling (II)

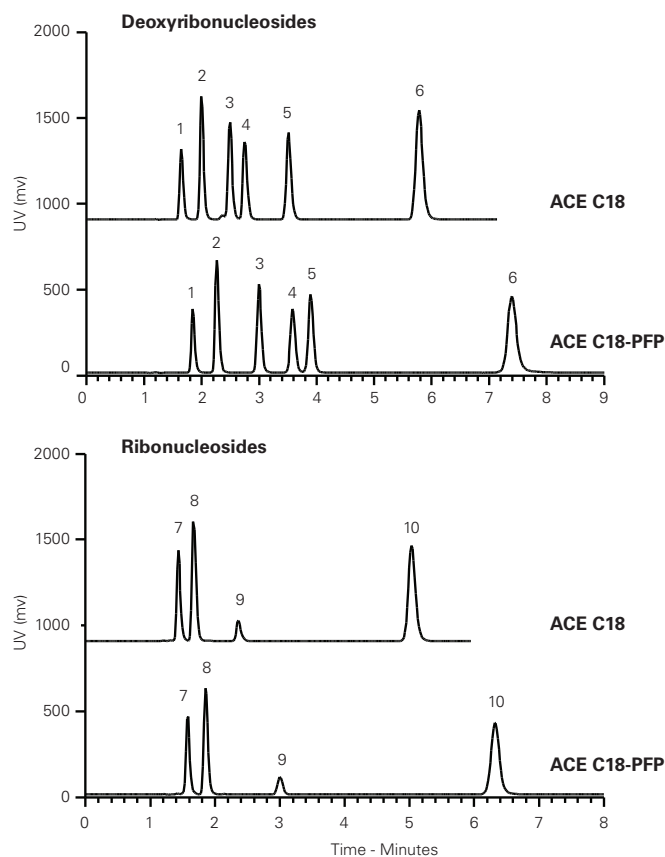
Application #AN1090

Conditions

Column: ACE 3 C18-PFP
ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-1110-1046, ACE-111-1046
Mobile Phase: 33 mM potassium
phosphate pH 6.2 with
KOH/MeOH (88:12 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 260 nm

Analytes

1. Deoxycytidine
2. Deoxyuridine
3. Deoxyinosine
4. Deoxyguanosine
5. Thymidine
6. Deoxyadenosine
7. Cytidine
8. Uridine
9. Guanosine
10. Adenosine



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Ochratoxin A

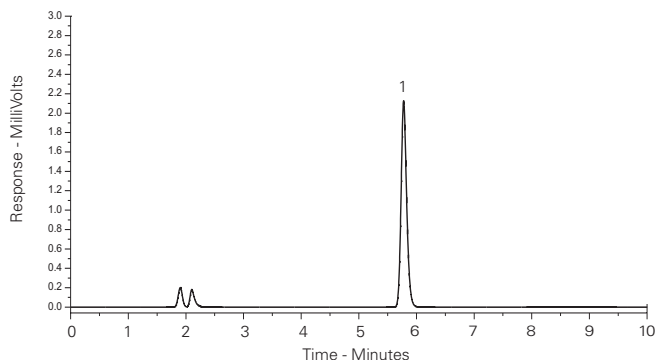
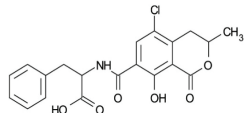
Application #AN2870

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeCN/H₂O/Acetic acid (51:47:2 v/v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: Fluorescence – λ_{ex} 333 nm, λ_{em} 443 nm

Analyte

1. Ochratoxin A



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Olanzapine in Human Plasma by LC-MS/MS

Application #AN2520

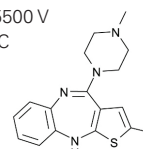
Conditions

Column: ACE 5 C18-300
Dimensions: 100 x 4.6 mm
Part Number: ACE-221-1046
Mobile Phase: MeCN/0.01 % ammonia in 2 mM ammonium formate pH 6.6 (85:15 v/v)
Flow Rate: 0.9 mL/min
Injection: 5 μ L
Detection: API 4000 triple quad MS
 Turbo Ion Spray in positive mode
 Ion Spray voltage: 5500 V
 Temperature: 550 °C

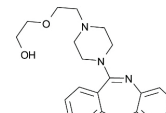
Analytes

1. Olanzapine
 (m/z 313.2 $\rightarrow$ 256.2)
 2. Quetiapine (IS)
 (m/z 384.2 $\rightarrow$ 253.2)

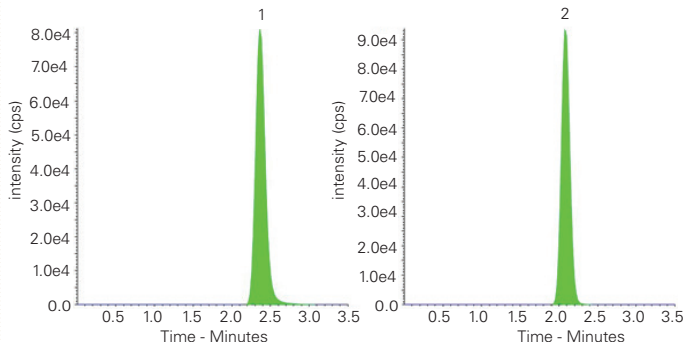
MRM chromatograms of plasma sample after administration of 5 mg dose of olanzapine



Olanzapine



Quetiapine (IS)



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Omeprazole and Degradation Products after Acidic Hydrolysis in 0.1 M HCl

Application #AN1560

Conditions

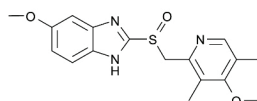
Column: ACE Excel 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: EXL-1211-1546U
Mobile Phase: A: 0.1 % ammonia in H₂O
 B: 0.1 % ammonia in MeCN/H₂O (90:10 v/v)
Gradient:

Time 1 (mins)	Time 2 (mins)	Time 3 (mins)	%B
0.0	0.0	0.0	10
15.0	30.0	45.0	90
15.5	30.5	45.5	90
18.0	33.0	48.0	10

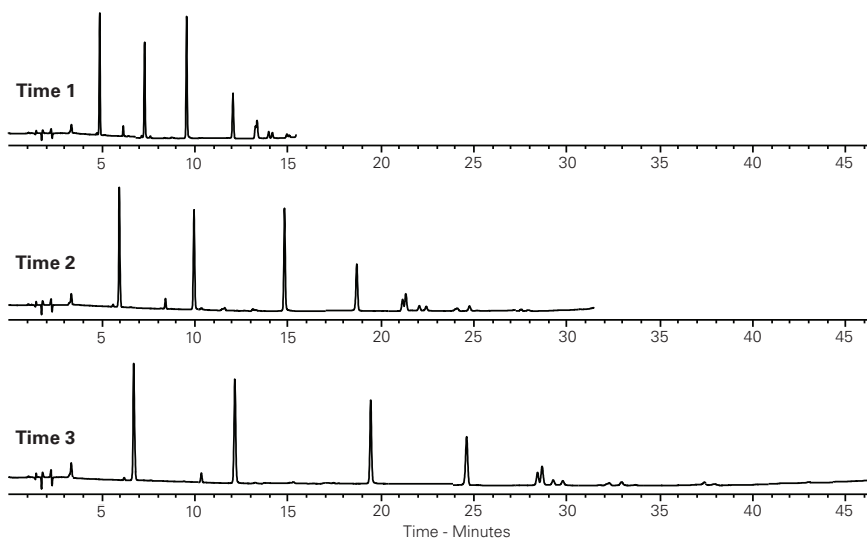
Post time 10 minutes

Analyte

Omeprazole



Flow Rate: 1 mL/min
Injection: 5 μ L
Temperature: 30 °C
Detection: UV, 280 nm



Opiates from Drugs of Abuse Screen (#AN2190)

Application #AN2340

Conditions

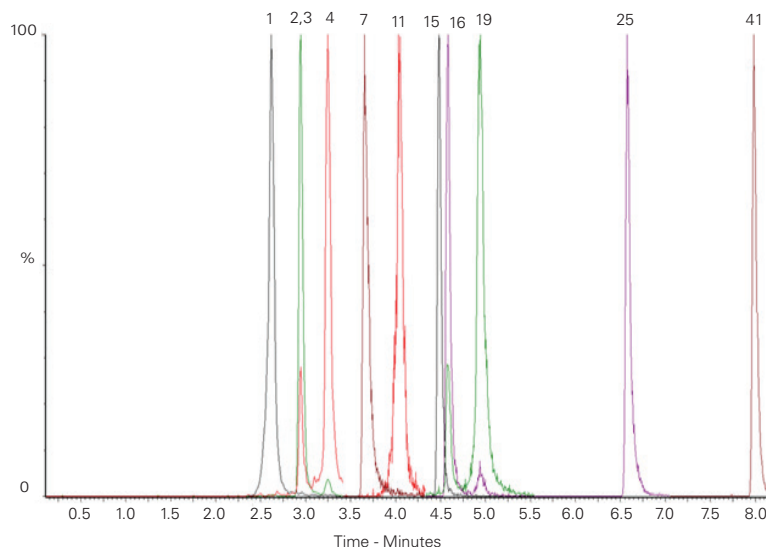
Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 5 mM ammonium acetate in H₂O
 B: 5 mM ammonium acetate in MeOH
Gradient:

Time (mins)	%B
0.0	10
10.0	90
11.9	90
13.4	10
15.5	10

Flow Rate: 0.3 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS Quattro Premier XE triple quad
 MRM, positive and negative ESI mode
 Desolvation temperature: 450 °C
 IonSource temperature: 150 °C
 Collision gas pressure: 3.5 x 10⁻³ mbar

Analytes

- | | | |
|---|--|--|
| 1. Oxycodone
(<i>m/z</i> 302.2 → 198.1) | 7. Dihydrocodeine
(<i>m/z</i> 302.2 → 199.1) | 19. Hydrocodone
(<i>m/z</i> 300.2 → 199.1) |
| 2. Morphine-d3
(<i>m/z</i> 289.2 → 201.0) | 11. Oxycodone
(<i>m/z</i> 316.2 → 241.2) | 25. EDDP
(<i>m/z</i> 278.2 → 234.2) |
| 3. Morphine
(<i>m/z</i> 286.2 → 201.0) | 15. 6-MAM
(<i>m/z</i> 328.2 → 165.1) | 41. Methadone
(<i>m/z</i> 310.2 → 265.2) |
| 4. Hydromorphone
(<i>m/z</i> 286.2 → 185.1) | 16. Codeine
(<i>m/z</i> 300.3 → 215.1) | |



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Opiates in Urine by LC-MS/MS

Application #AN1230

Conditions

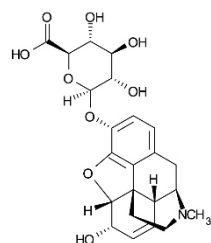
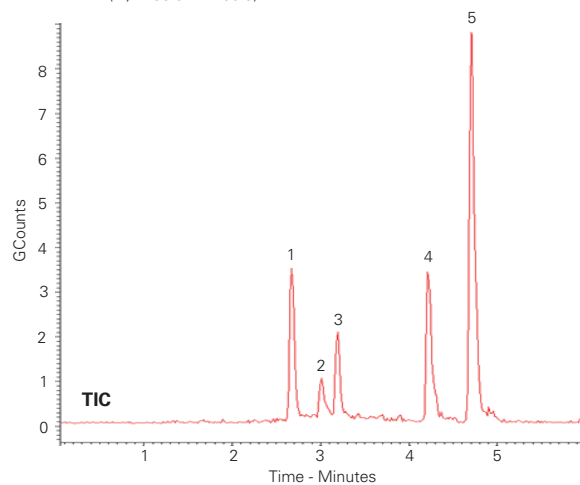
Column: ACE Excel 3 SuperC18
Dimensions: 75 x 2.1 mm
Part Number: EXL-1111-7502U
Mobile Phase: A: 5 mM ammonium hydroxide pH 10.8 in H₂O
 B: 5 mM ammonium hydroxide pH 10.8 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	30
5	95

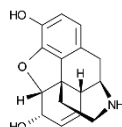
Flow Rate: 0.6 mL/min
Injection: 2 µL
Temperature: 60 °C
Detection: Varian 320 Triple Quadrupole MS
 Electrospray voltage: +5 kV
 Inlet capillary voltage: 30 V
 CID with argon at 1.5 mTorr
 Collision cell potential ranges from 5 to 17 V
 Drying gas (nitrogen) temperature: 325 °C
 Nebulizing gas (nitrogen) pressure: 35 psi
 Extended Dynamic Range

Analytes

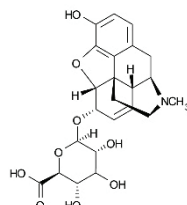
- | | | |
|---|---|--|
| 1. Morphine 3-β-D-glucuronide
LOD (est) 100 ppb
(<i>m/z</i> 462.0 → 285.9) | 3. Morphine 6-β-D-glucuronide
LOD (est) 100 ppb
(<i>m/z</i> 462.0 → 285.9) | 5. 6-Acetylmorphine
LOD (est) 10 ppb
(<i>m/z</i> 328.0 → 164.9) |
| 2. Normorphine
LOD (est) 100 ppb
(<i>m/z</i> 272.0 → 165.0) | 4. Morphine
LOD (est) 20 ppb
(<i>m/z</i> 286.0 → 200.9) | |



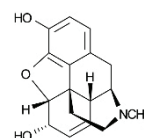
Morphine 3-β-D-glucuronide



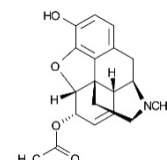
Normorphine



Morphine 6-β-D-glucuronide



Morphine



6-Acetylmorphine



Organic Acids

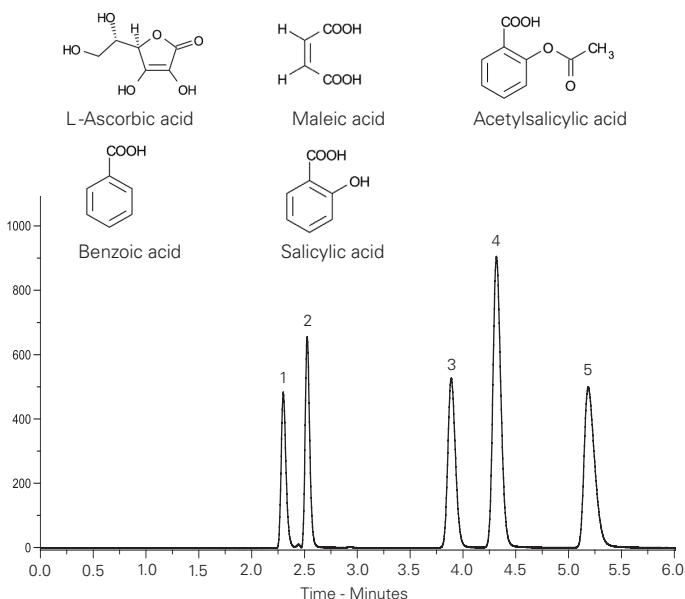
Application #AN2780

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 50 mM KH_2PO_4 pH 5.7 in $\text{H}_2\text{O}/\text{MeOH}$ (70:30 v/v)
Flow Rate: 1 mL/min
Temperature: 22 °C
Detection: UV, 220 nm

Analytes

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



For further applications

visit: www.ace-hplc.com

or

email: info@ace-hplc.com

Organic Acids – Fast Separation

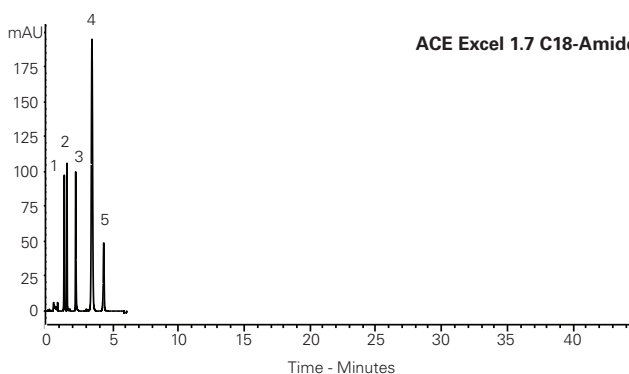
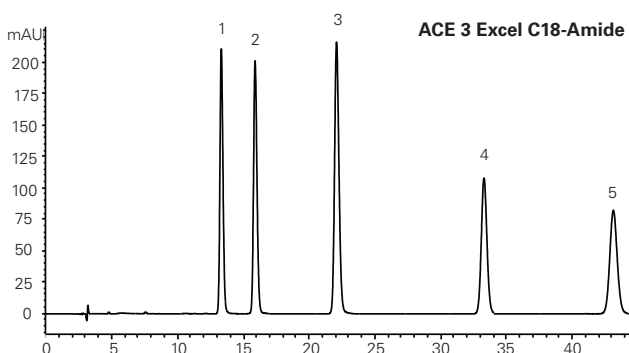
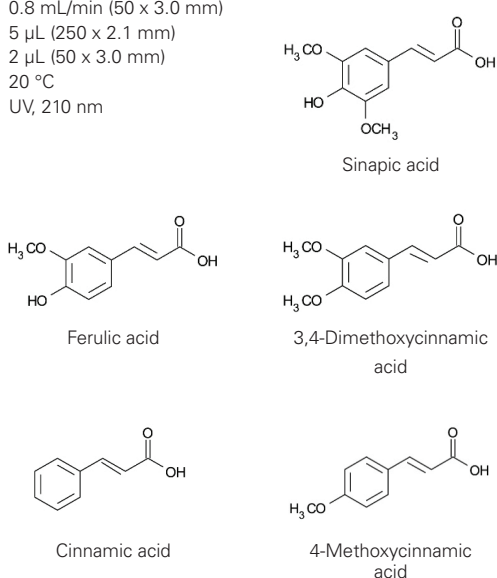
Application #AN2200

Conditions

Column: ACE Excel 3 C18-Amide
 ACE Excel 1.7 C18-Amide
Dimensions: 250 x 2.1 mm, 50 x 3.0 mm
Part Number: 250 x 2.1 mm (EXL-1112-2502U),
 50 x 3 mm (EXL-1712-0503U)
Mobile Phase: 20 mM H_3PO_4 in $\text{MeOH}/\text{H}_2\text{O}$ (40:60 v/v)
Flow Rate: 0.21 mL/min (250 x 2.1 mm)
 0.8 mL/min (50 x 3.0 mm)
Injection: 5 μL (250 x 2.1 mm)
 2 μL (50 x 3.0 mm)
Temperature: 20 °C
Detection: UV, 210 nm

Analytes

1. Sinapic acid
2. Ferulic acid
3. 3,4-Dimethoxycinnamic acid
4. Cinnamic acid
5. 4-Methoxycinnamic acid



Organophosphorus Flame Retardants in Water by LC-MS/MS

Application #AN1240

Conditions

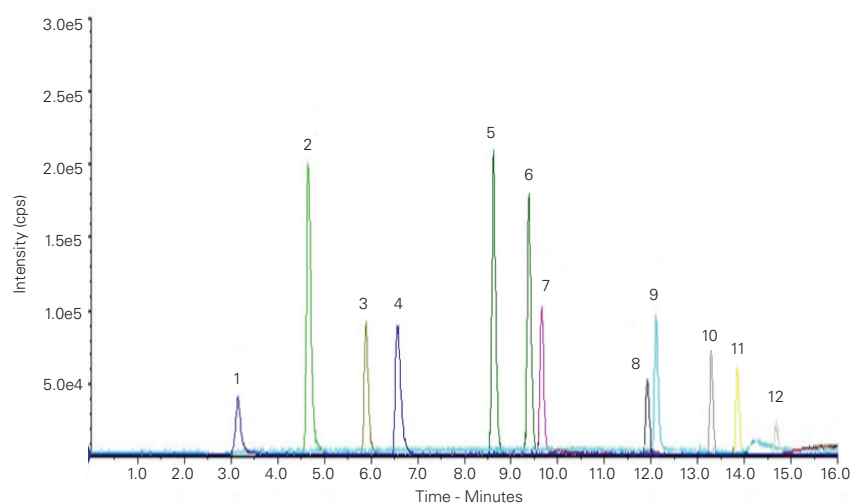
Column: ACE 3 C18
Dimensions: 100 x 2.1 mm
Part Number: ACE-111-1002
Mobile Phase: A: 0.05 mM ammonium formate + 0.005% formic acid in H₂O
 B: MeOH/MeCN (95:5 v/v)
Gradient:

Time (mins)	%B
0.1	50
12.0	90
13.0	100
15.0	100
15.1	50
20.0	50

Flow Rate: 0.25 mL/min
Injection: 80 µL
Temperature: 25 °C
Detection: MS/MS

Analytes

	Q1 Mass	Q3 Mass
1. Trimethyl phosphate (TMP)	141	109
2. Triethyl phosphate (TEP)	183	127
3. Tris(2-chloroethyl) phosphate (TCEP)	285	223
4. Bis(1,3-dichloro-2-propyl) phosphate (BDCP)	321	99
5. Triisopropyl phosphate (TiPP)	225	99
6. Tri-n-propyl phosphate (TPnP)	225	99
7. Tris((2R)-1-chloro-2-propyl) phosphate (TCPP)	327	99
8. Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	431	99
9. Triphenyl phosphate (TPP)	327	215
10. Tri-n-butyl phosphate (TBP)	267	211
11. Tris(2-butoxyethyl) phosphate (TBEP)	399	299
12. Bis(2-ethylhexyl) phosphate (BEHP)	323	99



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Organophosphorus (Isomeric) Flame Retardants in Water

Application #AN1140

Conditions

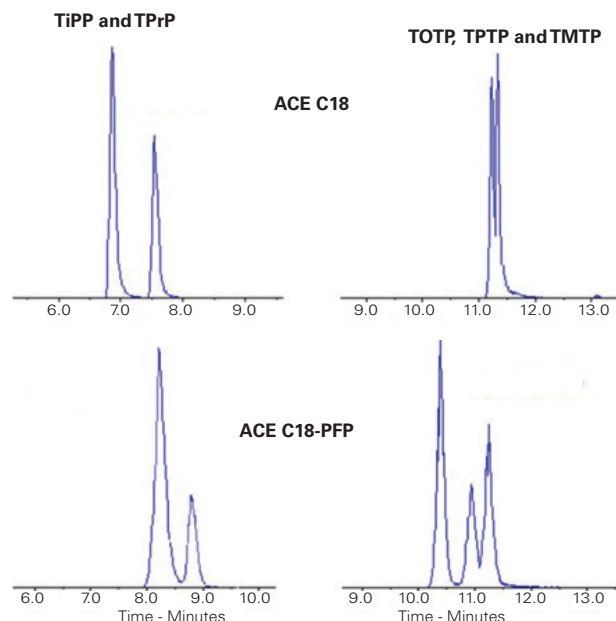
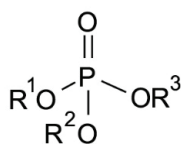
Column: ACE 3 C18
 ACE 3 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: ACE-111-1002, ACE-1110-1002
Mobile Phase: A: 0.05 mM ammonium formate + 0.005% formic acid in H₂O
 B: MeOH/MeCN (95:5 v/v)
Gradient:

Time (mins)	%B
0.1	50
12.0	90
13.0	100
15.0	100
15.1	50
20.0	50

Flow Rate: 0.25 mL/min
Injection: 80 µL
Temperature: 25 °C
Detection: MS/MS

Analytes

Triisopropyl phosphate (TiPP)
 (*m/z* 225 → 99)
 Tri-n-propyl phosphate (TPnP)
 (*m/z* 225 → 99)
 Tri-o-tolyl phosphate (TOTP)
 (*m/z* 369 → 91)
 Tri-p-tolyl phosphate (TPTP)
 (*m/z* 369 → 91)
 Tri-m-tolyl phosphate (TMTP)
 (*m/z* 369 → 91)



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Organotin Compounds

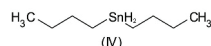
Application #AN3650

Conditions

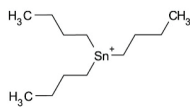
Column: ACE 3 C18
Dimensions: 150 x 2.1 mm
Part Number: ACE-111-1502
Mobile Phase: H₂O/MeCN/acetic acid/TEA
 (23:65:12:0.05 v/v/v/v)
Flow Rate: 0.2 mL/min
Detection: ICP-MS

Analytes

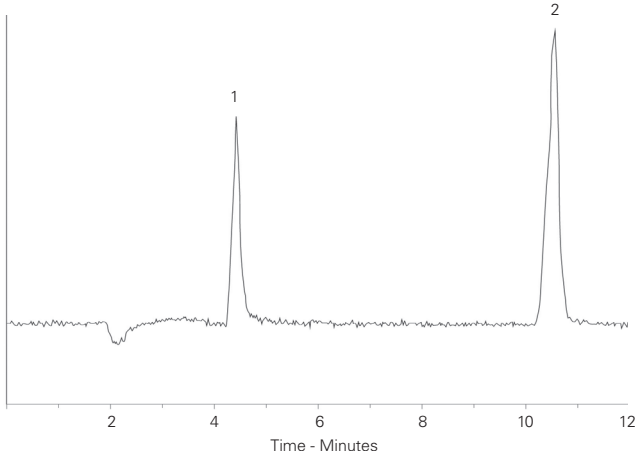
1. Dibutyltin
2. Tributyltin



Dibutyltin



Tributyltin



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OTC Gastric Drugs

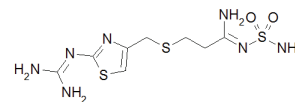
Application #AN3940

Conditions

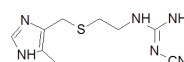
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeCN/10 mM ammonium
 bicarbonate pH 8.0
 in H₂O (18:82)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analytes

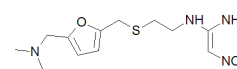
1. Famotidine
2. Cimetidine
3. Ranitidine



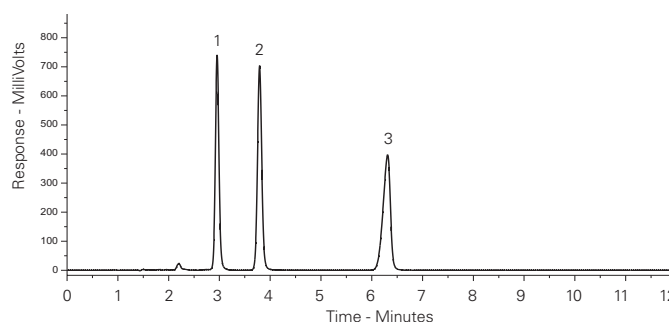
Famotidine



Cimetidine



Ranitidine



Oxysterols by LC-MS/MS

Application #AN2380

Conditions

Column: ACE 3 C18-AR
Dimensions: 150 x 2.1 mm
Part Number: ACE-119-1502
Mobile Phase: A: 0.1% formic acid in H₂O/
 MeOH (70:30 v/v)
 B: 0.1% formic acid in MeOH
Gradient:

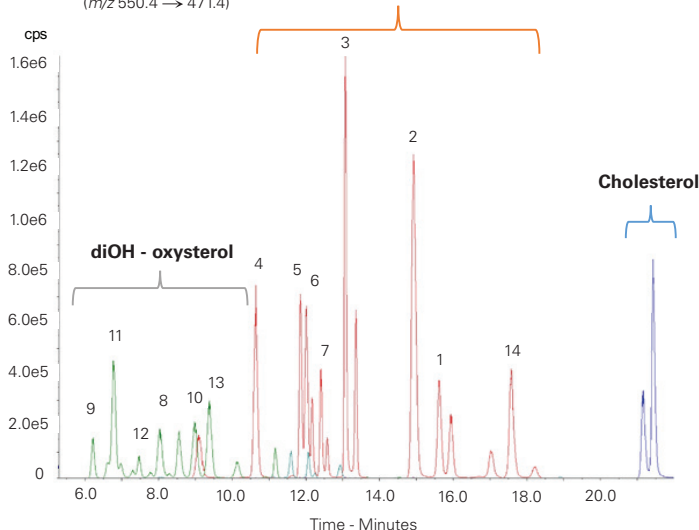
Time (mins)	%B
0.0	20
1.0	20
3.5	60
8.5	60
11.5	80
16.5	80
20.0	90
22.5	90
25.0	20

Flow Rate: 0.3 mL/min
Temperature: 40 °C
Detection: AB SCIEX API 4000 MS
 Turbo IonSpray, positive
 mode MRM
Sample: Derivatized with Girard
 P reagent

Analytes

1. 7 α -Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.4)
2. 7 β -Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.4)
3. 22(S)-Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.4)
4. 22(R)-Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.3)
5. 24(S)-Hydroxycholesterol
(*m/z* 534.5 $\rightarrow$ 455.4)
6. 25-Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.4)
7. 27-Hydroxycholesterol
(*m/z* 534.4 $\rightarrow$ 455.4)
8. 7 α ,25-Dihydroxycholesterol
(*m/z* 550.4 $\rightarrow$ 471.4)
9. 7 β ,25-Dihydroxycholesterol
(*m/z* 550.4 $\rightarrow$ 471.4)
10. 7 α ,27-Dihydroxycholesterol
(*m/z* 550.4 $\rightarrow$ 471.4)
11. 7 β ,27-Dihydroxycholesterol
(*m/z* 550.4 $\rightarrow$ 471.4)
12. 3 β ,25-Dihydroxy-5-cholesten-7-one
(*m/z* 550.4 $\rightarrow$ 471.4)
13. 3 β ,27-Dihydroxy-5-cholesten-7-one
(*m/z* 550.4 $\rightarrow$ 471.4)
14. 5 α ,6 α -Epoxycholestanol
(*m/z* 534.4 $\rightarrow$ 455.4)

OH - oxysterol



Reproduced from supplement (pnas.org/content/suppl/2014/08/01/1322807111) to 'Oxysterols are agonist ligands of ROR γ t and drive Th17 cell differentiation', PNAS, 111 (33), 12163-12168 (2014)

Oxymetazoline in Nasal Spray Formulation

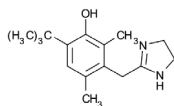
Application #AN3660

Conditions

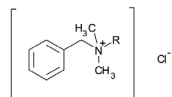
Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: aq. Na₂HPO₄ pH 7.0/MeCN (50:50 v/v)
Flow Rate: 1.5 mL/min
Temperature: 30 °C
Detection: UV, 214 nm

Analytes

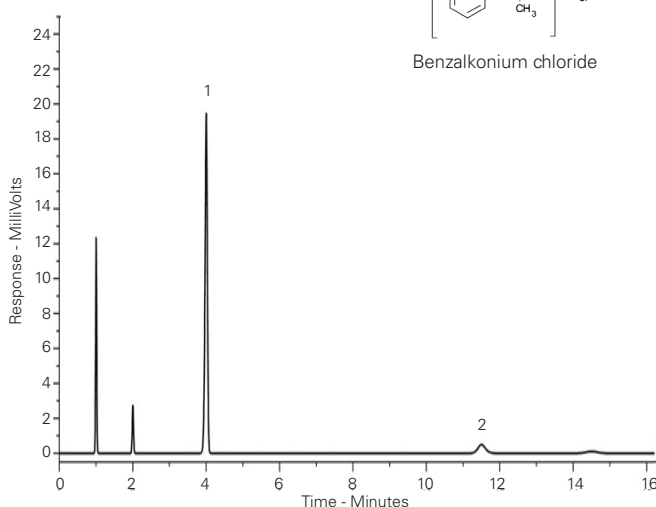
1. Oxymetazoline
2. Benzalkonium chloride



Oxymetazoline



Benzalkonium chloride



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Paclitaxel

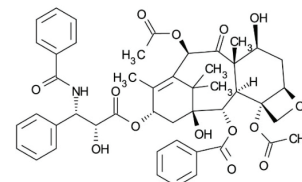
Application #AN3670

Conditions

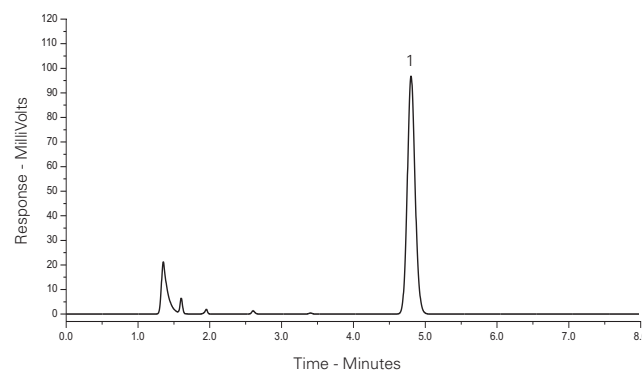
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: H₂O/MeCN (45:55 v/v)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: UV, 227 nm

Analyte

1. Paclitaxel



Paclitaxel



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Paeonia Lactiflora Extract HPLC Fingerprint

Application #AN3820

Conditions

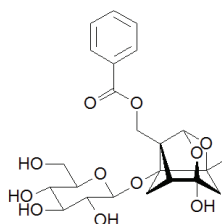
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.1% phosphoric acid in H₂O
 B: MeCN

Gradient:	Time (mins)	%B
	0	10
	5	15
	25	22
	45	70
	46	80
	50	80

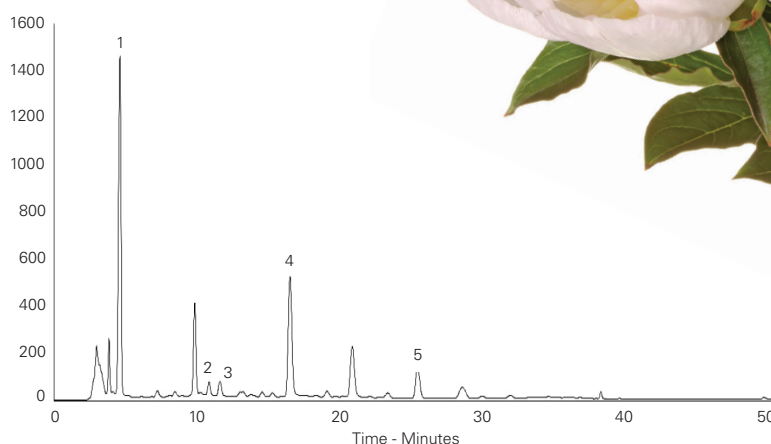
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 25 °C
Detection: UV, 254 nm
Sample: *P. lactiflora* root extracted with boiling water and polysaccharides removed by precipitation

Analytes

1. Gallic acid
2. Catechin hydrate
3. Methyl gallate
4. Paeoniflorin
5. Benzoic acid



Paeoniflorin





Paraben Preservatives

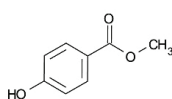
Application #AN1250

Conditions

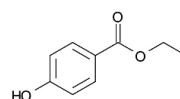
Column: ACE 3 Phenyl
Dimensions: 150 x 2.1 mm
Part Number: ACE-115-1502
Mobile Phase: 25 mM ammonium acetate pH 6.8 in H₂O/MeOH (50:50 v/v)
Flow Rate: 0.2 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: UV, 240 nm

Analytes

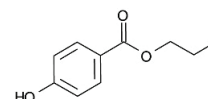
1. Methyl paraben
2. Ethyl paraben
3. n-Propyl paraben
4. i-Butyl paraben
5. n-Butyl paraben
6. Benzyl paraben



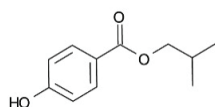
Methyl paraben



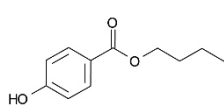
Ethyl paraben



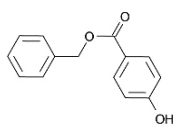
n-Propyl paraben



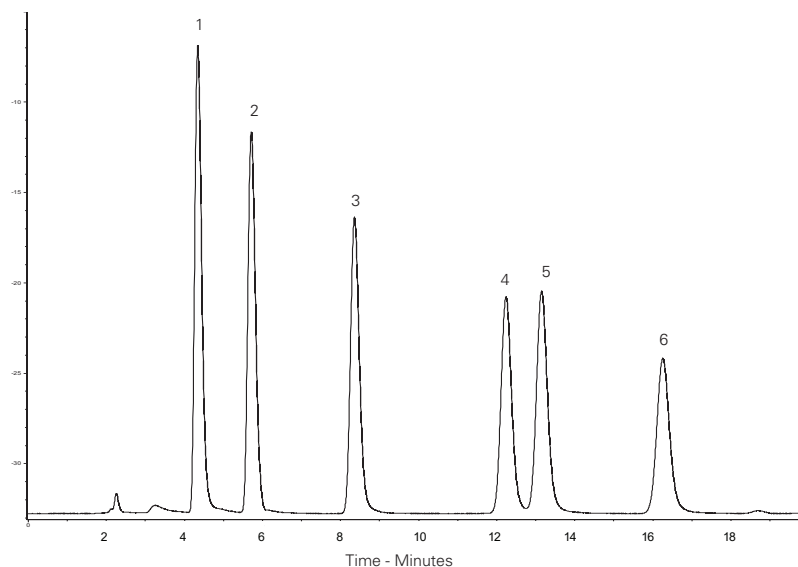
i-Butyl paraben



n-Butyl paraben



Benzyl paraben



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Paracetamol and Related Compounds

Application #AN1260

Conditions

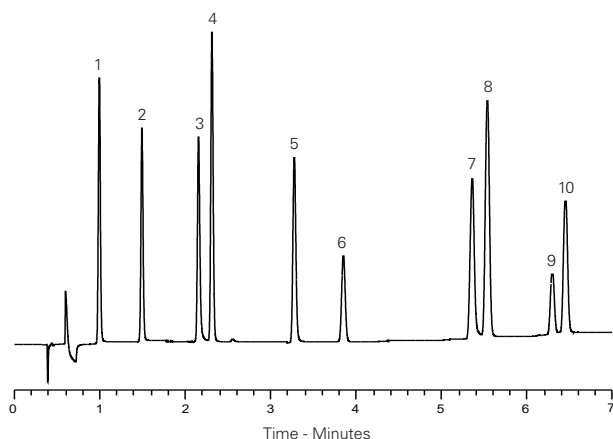
Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 3.0 mm
Part Number: EXL-1010-1003U
Mobile Phase: A: 20 mM ammonium acetate pH 6.0 in H₂O
 B: 20 mM ammonium acetate pH 6.0 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.0	6
5.5	63

Flow Rate: 1.2 mL/min
Injection: 2 µL
Temperature: 27 °C
Detection: UV, 220 nm

Analytes

1. 4-Aminophenol
2. Hydroquinone
3. 2-Aminophenol
4. Paracetamol
5. 2-Acetamidophenol
6. Phenol
7. 4-Nitrophenol
8. 2-Nitrophenol
9. 4-Chloroacetanilide
10. 4-Chlorophenol



Paracetamol and Related Substances – Fast Analysis (I)

Application #AN2210

Conditions

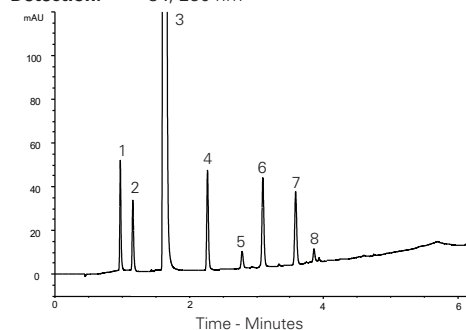
Column: ACE Excel 1.7 C18
Dimensions: 50 x 3.0 mm
Part Number: EXL-171-0503U
Mobile Phase: A: 10 mM ammonium acetate pH 6.0 in H₂O
 B: 10 mM ammonium acetate pH 6.0 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.00	5
0.08	5
5.08	95
6.76	95
7.09	5
10.00	5

Flow Rate: 0.51 mL/min
Injection: 0.7 µL
Temperature: 40 °C
Detection: UV, 230 nm

Analytes

1. 4-Aminophenol
2. Hydroquinone
3. Paracetamol
4. 2-Acetamidophenol
5. Phenol
6. 4-Nitrophenol
7. 2-Nitrophenol
8. 4-Chloroacetanilide



For enhanced resolution of paracetamol and related compounds, see AN2220.

Paracetamol and Related Substances – Enhanced Resolution

Application #AN2220

Conditions

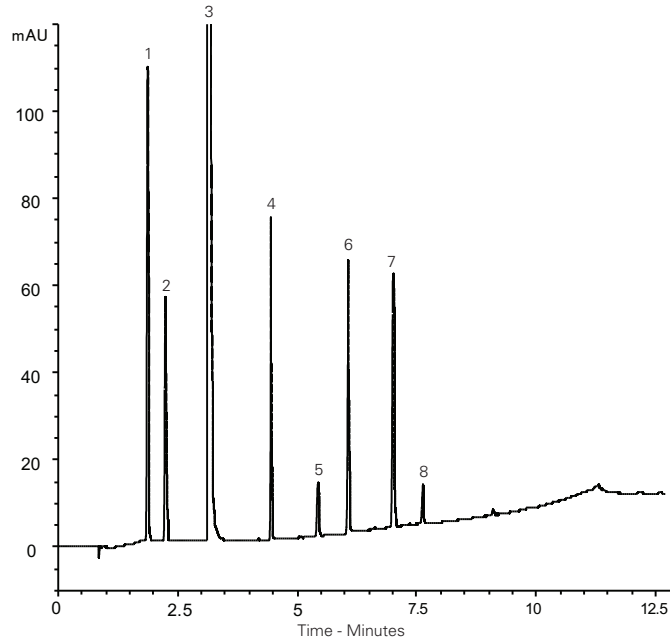
Column: ACE Excel 1.7 C18
Dimensions: 100 x 3.0 mm
Part Number: EXL-171-1003U
Mobile Phase: A: 10 mM ammonium acetate
 pH 6.0 in H₂O
 B: 10 mM ammonium acetate
 pH 6.0 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.00	5
0.21	5
10.23	95
13.56	95
14.16	5
20.24	5

Flow Rate: 0.51 mL/min
Injection: 1.4 µL
Temperature: 40 °C
Detection: UV, 230 nm

Analytes

1. 4-Aminophenol
2. Hydroquinone
3. Paracetamol
4. 2-Acetamidophenol
5. Phenol
6. 4-Nitrophenol
7. 2-Nitrophenol
8. 4-Chloroacetanilide



For enhanced speed of paracetamol and related compounds, see AN2210.

Paracetamol and Related Substances – Phase Selectivity

Application #AN3580

Conditions

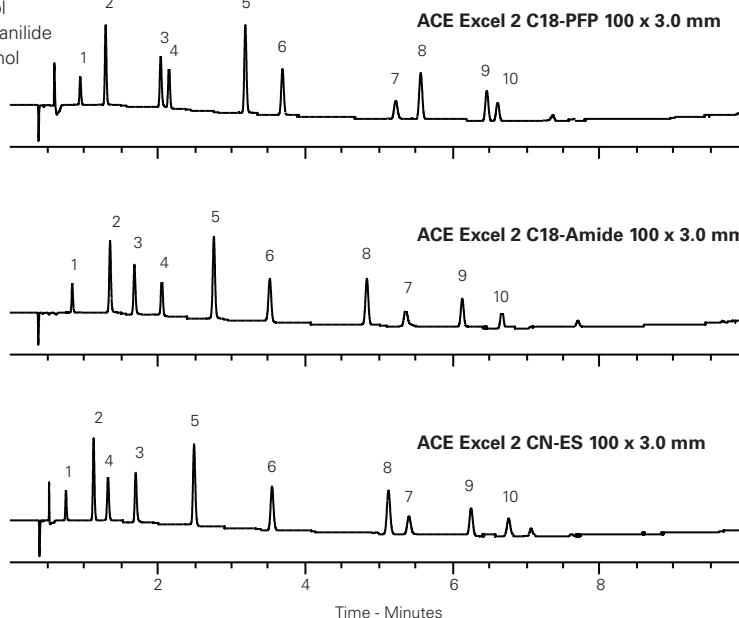
Column: ACE Excel 2 C18-PFP,
 ACE Excel 2 C18-Amide,
 ACE Excel 2 CN-ES
Dimensions: 100 x 3.0 mm
Part Number: EXL-1010-1003U,
 EXL-1012-1003U,
 EXL-1013-1003U
Mobile Phase: A: 20 mM ammonium acetate
 pH 6.0 in H₂O
 B: 20 mM ammonium acetate
 pH 6.0 in MeOH/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0.0	5
10.0	95
12.5	95
13.0	5

Flow Rate: 1.2 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: UV, 210 nm

Analytes

1. 4-Aminophenol
2. Hydroquinone
3. 2-Aminophenol
4. Paracetamol
5. 2-Acetamidophenol
6. Phenol
7. 4-Nitrophenol
8. 2-Nitrophenol
9. 4-Chloroacetanilide
10. 4-Chlorophenol





Paralytic Shellfish Poisoning (PSP) Toxins

Application #AN3180

Conditions

Column: ACE UltraCore 5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: CORE-5A-1546U
Mobile Phase: A: 0.1 M ammonium formate in H₂O
 B: 0.1 M ammonium formate in H₂O/MeOH (95:5 v/v)
Gradient:

Time (mins)	%B
0.00	0
2.00	0
4.00	80
5.50	80
5.51	0
7.00	0

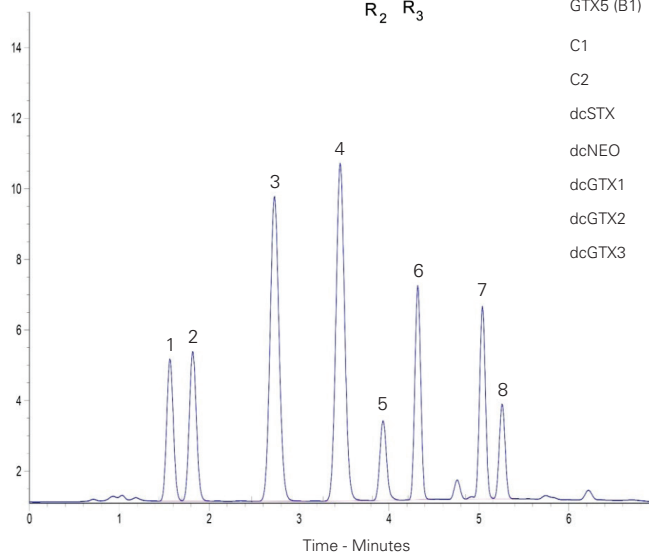
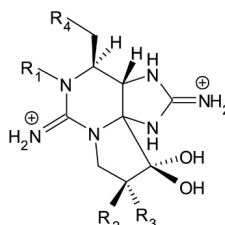
Flow Rate: 2 mL/min**Injection:** 30 µL**Temperature:** 20 °C

Detection: Fluorescence λ_{ex} 340 nm,
 λ_{em} 395 nm

Sample: Prechromatographic oxidation
 with hydrogen peroxide and
 periodate

Analytes

1. dcGTX2,3
2. GTX1/4 + dcGTX2,3
3. C1,2
4. dcSTX + dcNEO
5. dcSTX + NEO
6. GTX2/3 + GTX1/4
7. GTX5
8. STX + NEO



PST Variant

PST Variant	R1	R2	R3	R4
STX	H	H	H	H ₂ N-COO
NEO	OH	H	H	H ₂ N-COO
GTX1	OH	H	OSO ₃ ⁻	H ₂ N-COO
GTX2	H	H	OSO ₃ ⁻	H ₂ N-COO
GTX3	H	OSO ₃ ⁻	H	H ₂ N-COO
GTX4	OH	OSO ₃ ⁻	H	H ₂ N-COO
GTX5 (B1)	H	H	H	O ₃ S-NH-COO
C1	H	H	OSO ₃ ⁻	O ₃ S-NH-COO
C2	H	OSO ₃ ⁻	H	O ₃ S-NH-COO
dcSTX	H	H	H	OH
dcNEO	OH	H	H	OH
dcGTX1	OH	H	OSO ₃ ⁻	OH
dcGTX2	H	H	OSO ₃ ⁻	OH
dcGTX3	H	OSO ₃ ⁻	H	OH

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Parotoid Macroglan Secretions from South American Toads

Application #AN3970

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.1 % TFA in H₂O
 B: 0.1 % TFA in MeCN/H₂O (90:10 v/v)

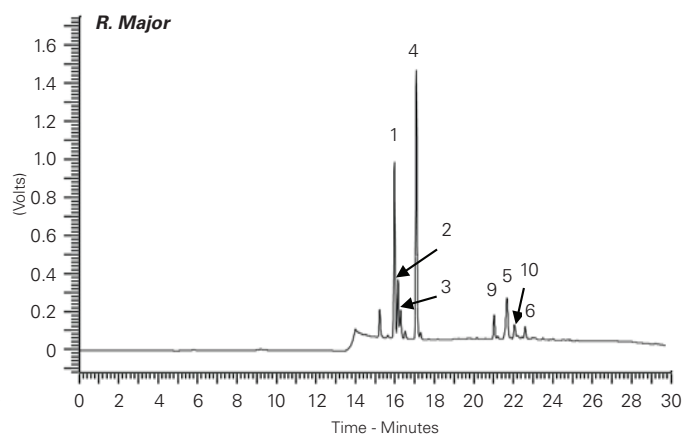
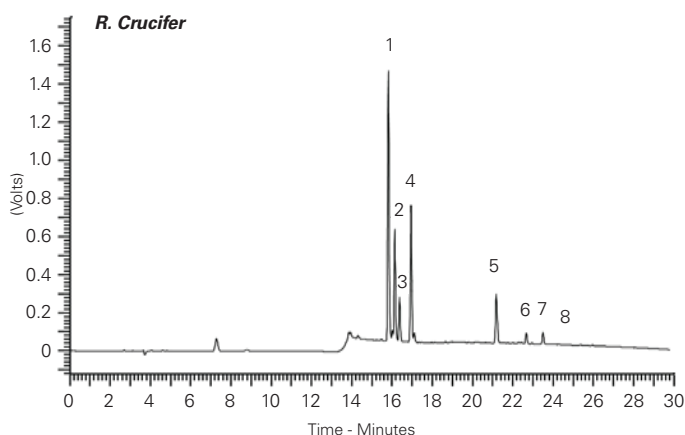
Gradient:

Time (mins)	%B
0	0
5	0
25	100

Flow Rate: 1 mL/min**Detection:** PDA, 214 nm (Scanning 200-500 nm)

Analytes

1. Serotonin
2. N-Methylserotonin
3. N,N-Dimethylserotonin (bufotenine)
4. Dehydrobufotenine
5. Hellebrigenin
6. Marinobufagin
7. Telocinobufagin
8. Bufalin
9. Hellebrigenol-3-O-sulphate
10. Desacetylcinobufagin



Sciani JM, Angeli CB, Antoniazzi MM, Jared C, Pimenta DC. Differences and Similarities among Parotoid Macroglan Secretions in South American Toads: A Preliminary Biochemical Delineation. The Scientific World Journal 2013, <http://dx.doi.org/10.1155/2013/937407>

Paroxetine and Desfluoro Analogue

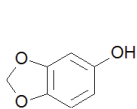
Application #AN3890

Conditions

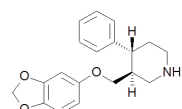
Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: 20 mM ammonium formate
 pH 3.0/MeOH (60:40 v/v)
Flow Rate: 2 mL/min
Injection: 20 µL
Temperature: Ambient
Detection: UV, 295 nm

Analytes

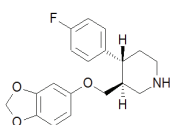
1. Sesamol
2. Desfluoroparoxetine
3. Paroxetine



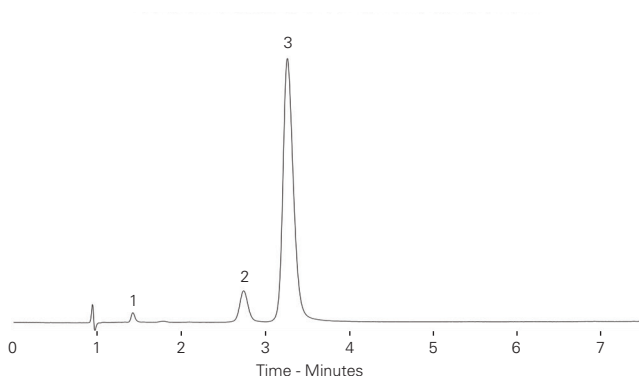
Sesamol



Desfluoroparoxetine



Paroxetine



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Peptide Test Mix

Application #AN3930

Conditions

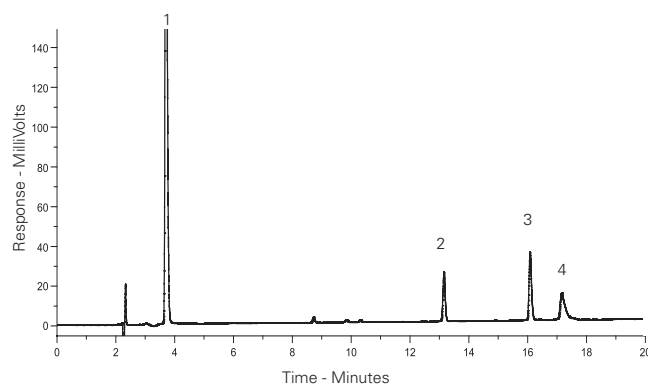
Column: ACE 5 C18-300
Dimensions: 250 x 4.6 mm
Part Number: ACE-221-2546
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in MeCN
Gradient:

Time (mins)	%B
0	10
25	40

Flow Rate: 2 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 220 nm

Analytes

1. Gly-Tyr (MW: 238.34)
2. Oxytocin (MW: 1007)
3. Angiotensin II (MW: 1046.18)
4. Neurotensin (MW: 1672.92)



Peptides – Varying pH

Application #AN3990

Conditions

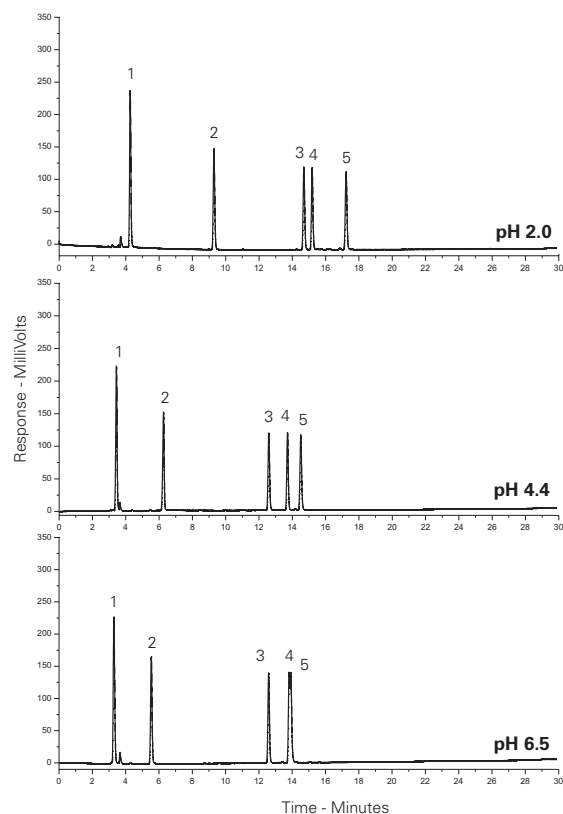
Column: ACE 5 C18-300
Dimensions: 250 x 4.6 mm
Part Number: ACE-221-2546
Mobile Phase: A: 20 mM KH₂PO₄ in
 H₂O (pH as indicated)
 B: MeCN
Gradient:

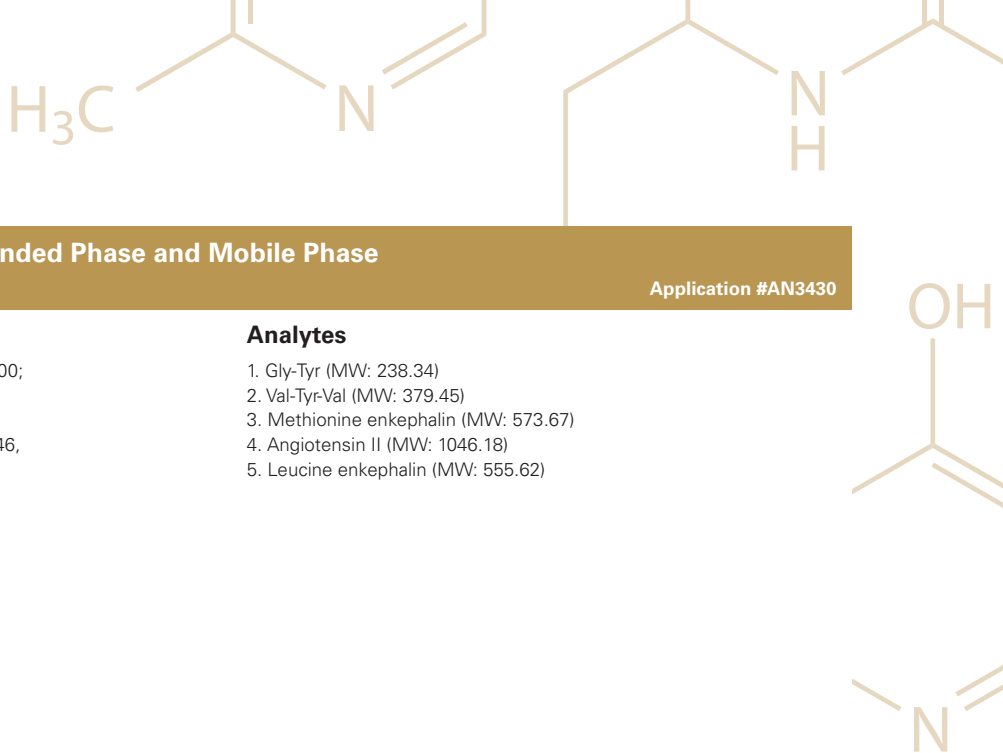
Time (mins)	%B
0	10
25	40

Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 220 nm

Analytes

1. Gly-Tyr (MW: 238.34)
2. Val-Tyr-Val (MW: 379.45)
3. Methionine enkephalin (MW: 573.67)
4. Angiotensin II (MW: 1046.18)
5. Leucine enkephalin (MW: 555.62)





Peptides – Selectivity Changes with Bonded Phase and Mobile Phase

Application #AN3430

Conditions

Column: ACE 5 C18-300; ACE 5 C8-300; ACE 5 C4-300;
ACE 5 Phenyl-300; ACE 5 CN-300

Dimensions: 250 x 4.6 mm

Part Number: ACE-221-2546, ACE-222-2546, ACE-223-2546,
ACE-225-2546, ACE-224-2546

Mobile Phase: A: 0.1% TFA or 0.1% formic acid in H₂O
B: MeCN

Gradient: Time (mins) %B
0.0 10
25.0 40

Flow Rate: 1 mL/min

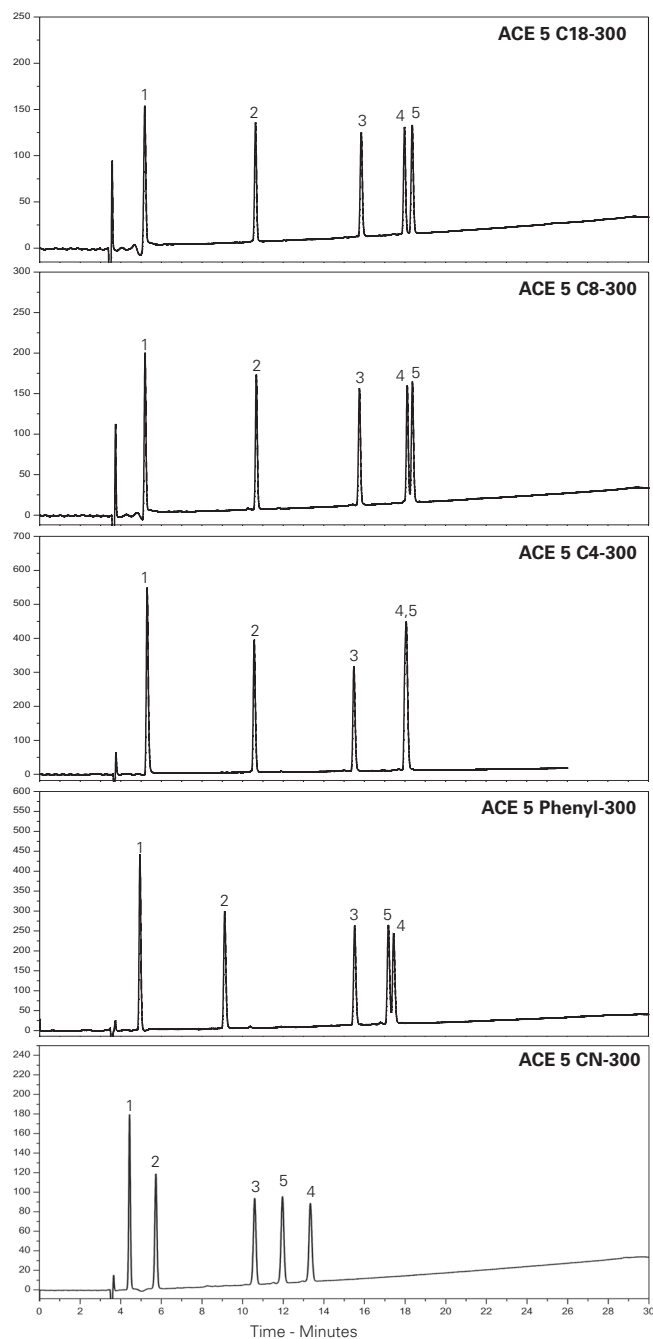
Temperature: Ambient

Detection: UV, 220 nm

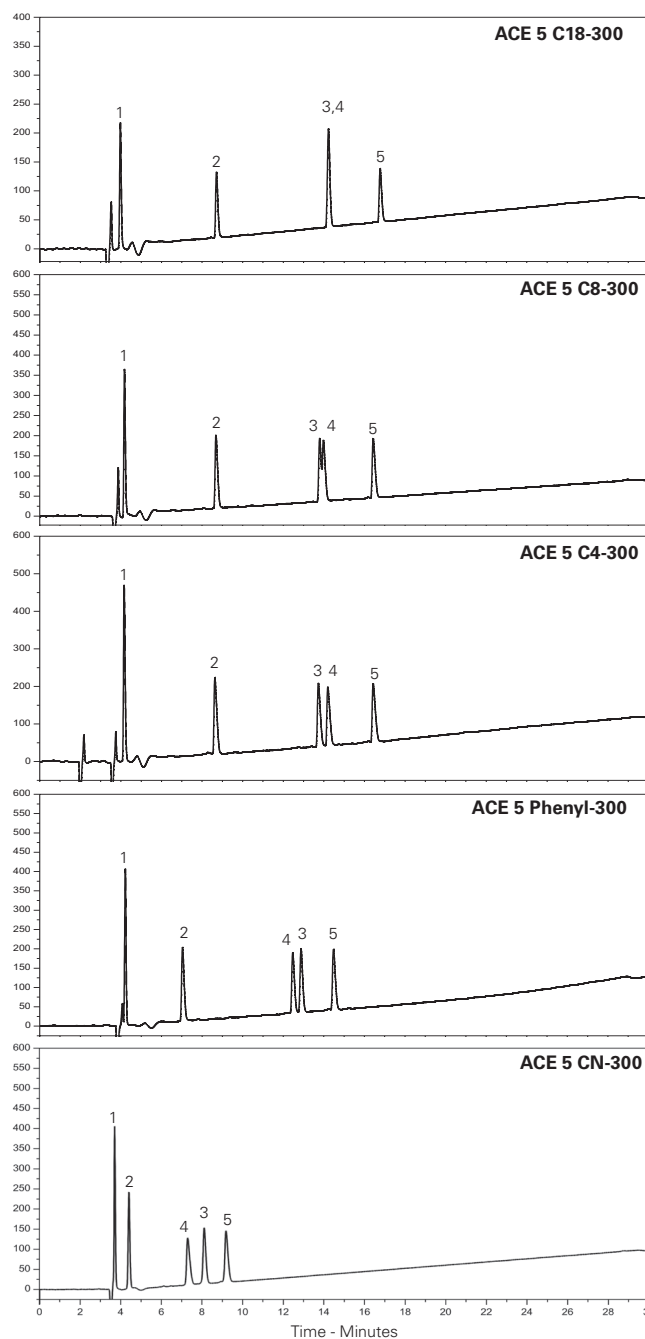
Analytes

1. Gly-Tyr (MW: 238.34)
2. Val-Tyr-Val (MW: 379.45)
3. Methionine enkephalin (MW: 573.67)
4. Angiotensin II (MW: 1046.18)
5. Leucine enkephalin (MW: 555.62)

0.1% TFA



0.1% HCOOH



Perfluoro Acids by LC-MS/MS

Application #AN1280

Conditions

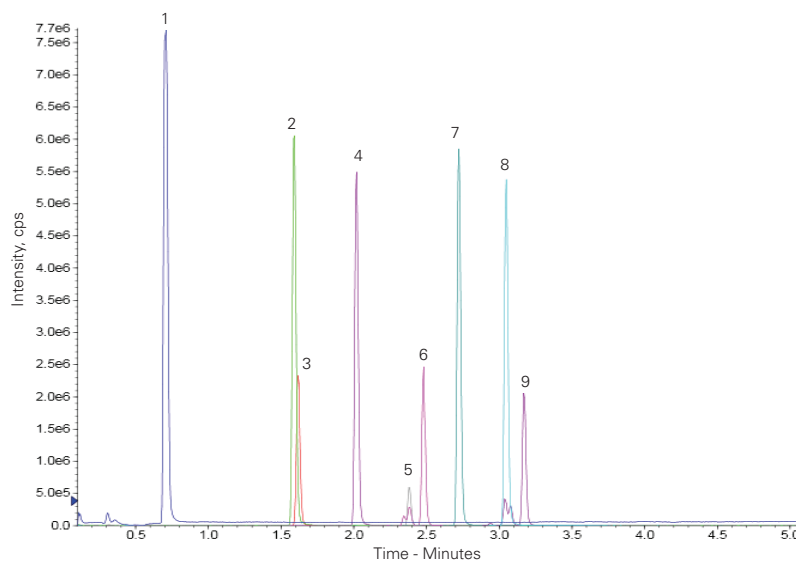
Column: ACE Excel 2 C18
Dimensions: 50 x 2.1 mm
Part Number: EXL-101-0502U
Mobile Phase: A: 2 mM ammonium acetate, 0.1% acetic acid/MeCN (95:5 v/v)
 B: 2 mM ammonium acetate, 0.1% acetic acid/MeCN (5:95 v/v)
Gradient:

Time (mins)	%B
0.0	25
0.5	25
5.5	95
7.5	95
8.0	25
10.0	25

Flow Rate: 0.5 mL/min
Injection: 20 µL
Temperature: 40 °C
Detection: AB SCIEX triple quad 5500
 Negative ESI MRM
 Source temperature: 450 °C
 IonSpray voltage: -2400 V

Analytes

- | | | |
|--|--|--|
| 1. Heptafluorobutyric acid
(m/z 212.9 → 168.9) | 4. Perfluoroheptanoic acid
(m/z 363 → 319) | 7. Perfluorononanoic acid
(m/z 463 → 419) |
| 2. Perfluorohexanoic acid
(m/z 313 → 268.9) | 5. Perfluorooctanoic acid
(m/z 413 → 368.9) | 8. Perfluorodecanoic acid
(m/z 513 → 469) |
| 3. Perfluorobutanesulfonic acid
(m/z 299 → 79.9) | 6. Perfluorohexanesulfonic acid
(m/z 399 → 80) | 9. Perfluorooctanesulfonic acid
(m/z 499 → 80) |



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Perfluoroalkyl Substances by Ion-Pairing LC-MS/MS

Application #AN2560

Conditions

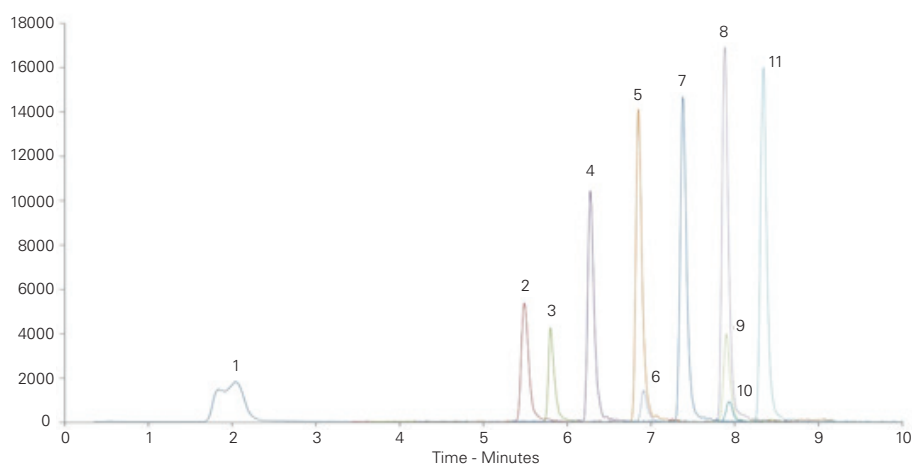
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: CORE-25A-0502U
Mobile Phase: A: 2 mM ammonium acetate + 5 mM 1-methylpiperidine in MeOH/H₂O (5:95 v/v)
 B: 2 mM ammonium acetate + 5 mM 1-methylpiperidine in MeOH/H₂O (95:5 v/v)
Gradient:

Time (mins)	%B
0.0	10
0.3	10
1.0	20
1.5	50
5.0	80
10.0	80
13.0	100
16.0	100

Flow Rate: 0.3 mL/min
Injection: 5 µL
Temperature: 35 °C
Detection: Agilent 6430 triple quad MS
 ESI in negative ion mode
 Capillary voltage: 3000 V
 Nebulizer pressure: 50 psi

Analytes

- | | | | |
|--------------------------------|--------------------------------|-------------------------------|--------------------------------|
| 1. PFBA
(m/z 213 → 169) | 4. PFHxA
(m/z 313 → 269) | 7. PFOA
(m/z 413 → 369) | 10. FOSA
(m/z 498 → 498) |
| 2. PFPeA
(m/z 263 → 219) | (m/z 313 → 119) | (m/z 413 → 169) | (m/z 498 → 78) |
| 3. PFBS
(m/z 299 → 99) | 5. PFHpA
(m/z 363 → 319) | 8. PFNA
(m/z 463 → 419) | 11. PFDA
(m/z 513 → 469) |
| (m/z 299 → 80) | (m/z 363 → 169) | (m/z 463 → 169) | (m/z 513 → 269) |
| | 6. PFHxS
(m/z 399 → 99) | 9. PFOS
(m/z 499 → 99) | |
| | (m/z 399 → 80) | (m/z 499 → 80) | |



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Perfluorinated Compounds in Water by LC-MS/MS

Application #AN2260

Conditions

Column: ACE Excel 1.7 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-171-1002U
Mobile Phase: A: 2 mM ammonium acetate, 0.1% formic acid in H₂O/MeCN (90:10 v/v)
 B: 2 mM ammonium acetate, 0.1% formic acid in H₂O/MeCN (10:90 v/v)

Gradient:

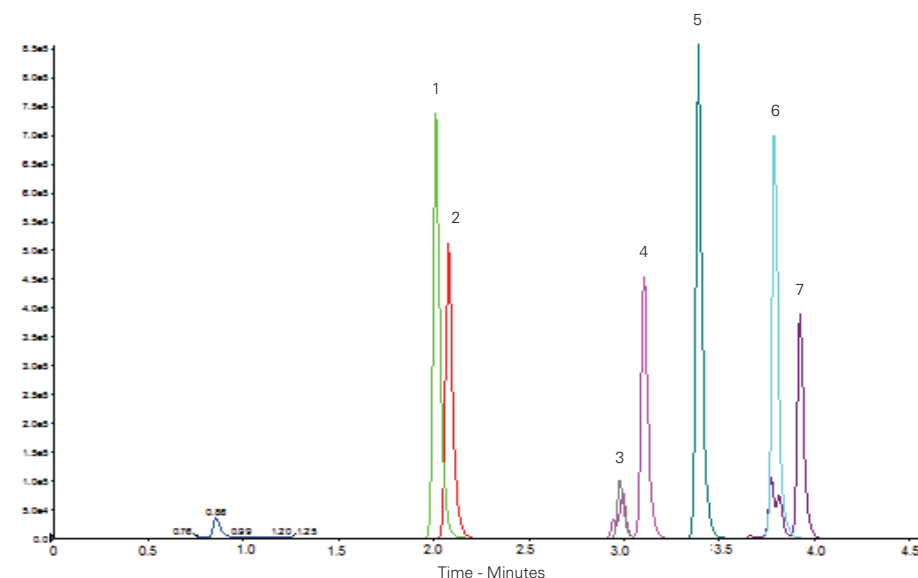
Time (mins)	%B
0.0	25
0.5	25
3.5	70
4.0	100
5.5	100
6.0	25
9.0	25

Flow Rate: 0.5 mL/min**Injection:** 10 µL**Temperature:** 40 °C

Detection: AB SCIEX triple quad 5500
 Negative ESI MRM
 Source temperature: 450 °C
 IonSpray voltage: -2400 V

Analytes

1. Perfluorohexanoic acid
(*m/z* 313.0 → 268.9)
2. Perfluorobutanesulfonic acid
(*m/z* 299.0 → 79.9)
3. Perfluorooctanoic acid
(*m/z* 413.0 → 368.9)
4. Perfluorohexanesulfonic acid
(*m/z* 399.0 → 80.0)
5. Perfluorononanoic acid
(*m/z* 463.0 → 419.0)
6. Perfluorodecanoic acid
(*m/z* 513.0 → 469.0)
7. Perfluorooctanesulfonic acid
(*m/z* 499.0 → 80.0)



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250 Pesticide Screen by LC-MS/MS

Conditions

Column: ACE Excel 2 C18**Dimensions:** 100 x 2.1 mm**Part Number:** EXL-101-1002U**Mobile Phase:** A: 10 mM ammonium formate + 0.05% formic acid in H₂O
B: 10 mM ammonium formate + 0.05% formic acid in MeOH**Gradient:**

Time (mins)	%B
0.00	2
0.25	30
10.00	100
12.00	100
12.50	2
14.50	2

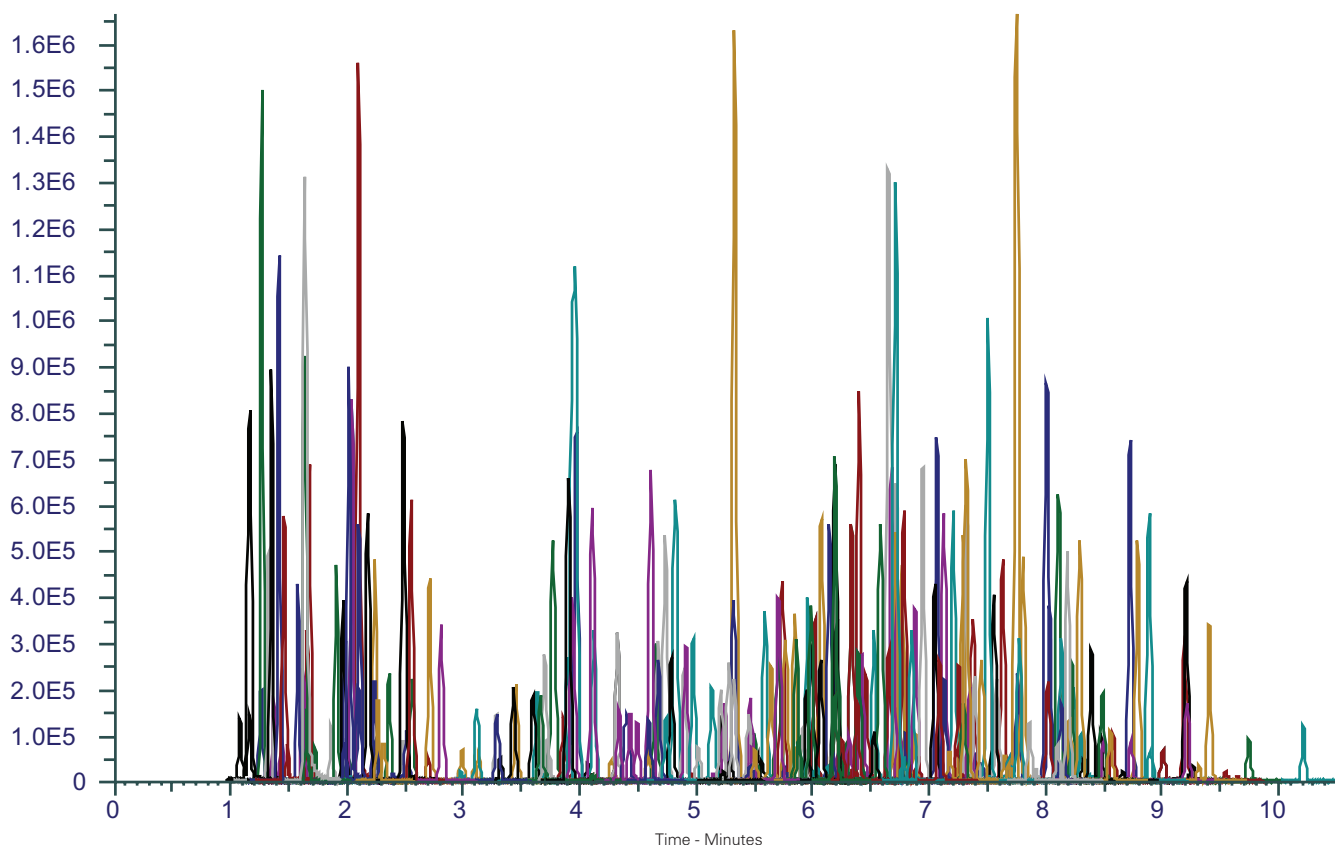
Flow Rate: 0.5 mL/min**Temperature:** 50 °C**Detection:** TSQ Quantiva triple quad MS

Positive mode HESI

Spray voltage: 3500 V

Ion transfer tube temperature: 350 °C

Vaporizer temperature: 300 °C



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250 Pesticide Screen by LC-MS/MS

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Application #AN3060

Analyte	R _t (mins)	Adduct	Precursor Ion m/z	Quant Ion m/z	Conf Ion m/z	Analyte	R _t (mins)	Adduct	Precursor Ion m/z	Quant Ion m/z	Conf Ion m/z
3-OH Carbofuran	2.25	[M+H] ⁺	238.1	181.2	163.1	Cyprosulfamide	3.30	[M+H] ⁺	375.1	135.1	254.1
5-OH Thiabendazole	1.66	[M+H] ⁺	218.0	147.2	191.1	Cyromazine	1.15	[M+H] ⁺	167.1	125.2	68.2
Abamectin	9.45	[M+NH ₄] ⁺	890.5	305.3	567.5	DEF	9.20	[M+H] ⁺	315.1	169.0	113.0
Acephate	1.26	[M+H] ⁺	184.0	143.1	125.1	Demeton-S sulfone	2.55	[M+H] ⁺	291.1	235.1	263.1
Acetamiprid	2.24	[M+H] ⁺	223.1	126.1	90.1	Dialifos	7.46	[M+H] ⁺	394.0	208.1	181.0
Aldicarb	2.95	[M+NH ₄] ⁺	208.1	116.1	89.0	Diazinon	7.12	[M+H] ⁺	305.1	169.1	153.2
Aldicarb sulfone	1.44	[M+NH ₄] ⁺	240.1	148.0	86.0	Diazinon OA	5.32	[M+H] ⁺	289.1	153.2	233.1
Aldicarb sulfoxide	1.37	[M+NH ₄] ⁺	224.1	132.0	89.1	Dichlormid	3.85	[M+H] ⁺	208.0	140.0	81.2
Allethrin	8.33	[M+H] ⁺	303.2	135.1	123.1	Dichlorvos	3.63	[M+H] ⁺	221.0	109.1	127.0
Ametoctradin	7.64	[M+H] ⁺	276.2	149.1	176.2	Dicrotophos	1.87	[M+H] ⁺	238.1	112.2	193.1
Atrazine	4.64	[M+H] ⁺	216.1	174.0	104.0	Diethofencarb	5.53	[M+H] ⁺	268.2	124.1	180.2
Azinphos ethyl	6.30	[M+H] ⁺	346.0	132.1	223.0	Diflubenzuron	6.66	[M+H] ⁺	311.0	158.0	141.0
Azinphos methyl	5.14	[M+H] ⁺	318.0	132.0	124.9	Dimethenamid	5.70	[M+H] ⁺	276.1	244.1	168.2
Azinphos methyl OA	2.98	[M+H] ⁺	302.0	132.2	160.0	Dimethoate	2.23	[M+H] ⁺	230.1	199.0	125.0
Azoxystrobin	5.59	[M+H] ⁺	404.1	372.1	344.1	Dimethomorph	5.76, 6.07	[M+H] ⁺	388.1	301.0	165.1
Bendiocarb	3.72	[M+H] ⁺	224.1	167.1	109.1	Dinotefuran	1.36	[M+H] ⁺	203.1	129.1	114.2
Benoxacor	5.23	[M+H] ⁺	260.1	134.1	120.1	Dioxacarb	2.26	[M+H] ⁺	224.1	123.1	167.1
Bifenazate	6.27	[M+H] ⁺	301.1	198.0	170.1	Dioxathion	8.10	[M-C ₄ H ₁₀ O ₂ PS ₂] ⁺	271.1	97.0	125.0
Bitertanol	7.41	[M+H] ⁺	338.2	269.3	99.1	Disulfoton sulfone	4.59	[M+H] ⁺	307.0	261.1	125.0
Boscalid	5.85	[M+H] ⁺	343.0	307.0	140.0	Disulfoton sulfoxide	4.49	[M+H] ⁺	291.0	185.1	213.1
Bupirimate	6.68	[M+H] ⁺	317.2	210.2	237.3	Diuron	4.82	[M+H] ⁺	233.0	72.1	160.0
Buprofezin	8.24	[M+H] ⁺	306.1	201.1	106.1	DMST	3.90	[M+H] ⁺	215.1	106.1	151.0
Cadusafos	7.58	[M+H] ⁺	271.1	159.0	131.0	Dodine	7.56	[M+H] ⁺	228.3	186.3	60.1
Carbaryl	4.07	[M+NH ₄] ⁺	219.1	145.1	127.0	Emamectin	8.57	[M+H] ⁺	886.5	158.1	126.1
Carbendazim	2.10	[M+H] ⁺	192.1	160.1	132.1	Ethiofencarb	4.27	[M+H] ⁺	226.1	107.1	169.1
Carbofuran	3.77	[M+H] ⁺	222.1	165.2	123.2	Ethiofencarb sulfone	1.90	[M+NH ₄] ⁺	275.1	107.1	201.1
Carboxin	3.97	[M+H] ⁺	236.1	143.0	93.0	Ethiofencarb sulfoxide	1.98	[M+H] ⁺	242.1	107.1	185.0
Carfentrazone ethyl	6.88	[M+H] ⁺	412.0	346.1	366.0	Ethion	8.31	[M+H] ⁺	385.0	199.1	143.0
Chlorantraniliprole	5.24	[M+H] ⁺	484.0	286.0	194.0	Ethion monoxon	6.73	[M+H] ⁺	369.0	199.0	143.0
Chlorfenvinphos	7.21	[M+H] ⁺	359.0	170.0	99.1	Ethiprole	5.77	[M+NH ₄] ⁺	413.9	351.0	255.0
Chlorimuron ethyl	5.73	[M+H] ⁺	415.1	186.0	83.0	Ethofumesate	5.55	[M+H] ⁺	287.1	121.1	241.1
Chlorpyrifos	8.47	[M+H] ⁺	349.9	198.0	97.0	Ethoprop	6.46	[M+H] ⁺	243.1	173.0	131.0
Chlorpyrifos OA	6.65	[M+H] ⁺	334.0	278.0	197.9	Etofenprox	9.75	[M+NH ₄] ⁺	394.2	177.2	107.1
Clethodim	7.71	[M+H] ⁺	360.3	164.1	136.1	Etoxazole	8.73	[M+H] ⁺	360.2	141.0	304.2
Clofentezine	7.38	[M+H] ⁺	303.0	138.1	102.0	Famoxadone	7.24	[M+NH ₄] ⁺	392.2	331.1	238.0
Cloransulam methyl	4.13	[M+H] ⁺	430.0	398.1	370.0	Fenamidone	5.76	[M+H] ⁺	312.1	236.1	92.2
Clothianidin	1.99	[M+H] ⁺	250.0	169.1	132.0	Fenamiphos	6.71	[M+H] ⁺	304.1	217.1	202.0
Coumaphos	7.07	[M+H] ⁺	363.0	227.1	307.1	Fenamiphos sulfone	4.10	[M+H] ⁺	336.1	266.1	188.1
Crotoxyphos	5.86	[M+NH ₄] ⁺	332.1	127.1	193.1	Fenamiphos sulfoxide	3.96	[M+H] ⁺	320.1	233.1	171.1
Crufomate	6.77	[M+H] ⁺	292.1	236.1	108.1	Fenazaquin	9.21	[M+H] ⁺	307.2	161.2	57.2
Cyantraniliprole	4.33	[M+2+H] ⁺	475.0	286.0	444.1	Fenhexamid	6.39	[M+H] ⁺	302.1	178.0	97.2
Cyazofamid	6.52	[M+H] ⁺	325.1	108.1	261.2	Fenobucarb	5.49	[M+H] ⁺	208.1	95.0	152.0
Cyflufenamid	7.42	[M+H] ⁺	413.1	295.1	203.0	Fenoxaprop ethyl	8.04	[M+H] ⁺	362.1	288.1	91.1
Cymoxanil	2.48	[M+H] ⁺	199.1	128.1	111.1	Fenoxycarb	6.80	[M+H] ⁺	302.1	88.1	116.1
Cyphenothrin	9.27	[M+NH ₄] ⁺	393.2	151.2	123.2	Fenpropimorph	6.42	[M+H] ⁺	304.3	147.2	119.1





250 Pesticide Screen by LC-MS/MS

Page 3 of 4

Application #AN3060

Analyte	R _t (mins)	Adduct	Precursor ion m/z	Quant Ion m/z	Conf Ion m/z	Analyte	R _t (mins)	Adduct	Precursor ion m/z	Quant Ion m/z	Conf Ion m/z
Fenpyroximate	8.90	[M+H] ⁺	422.2	366.1	214.2	Mepanipirim	6.21	[M+H] ⁺	224.1	106.2	77.1
Fensulfothion	4.89	[M+H] ⁺	309.0	235.0	281.1	Mesotrione	2.01	[M+H] ⁺	340.1	228.1	104.1
Fenuron	2.17	[M+H] ⁺	165.1	72.1	77.1	Metaflumizone	8.30	[M+H] ⁺	507.1	178.0	287.1
Flonicamid	1.66	[M+H] ⁺	230.1	203.0	98.0	Metalaxyl	4.91	[M+H] ⁺	280.1	220.1	192.1
Fluazifop-p-butyl	8.12	[M+H] ⁺	384.1	282.2	328.2	Metaldehyde	2.02	[M+NH ₄] ⁺	194.1	62.2	45.3
Fludioxonil	5.76	[M+NH ₄] ⁺	266.1	158.1	131.0	Metconazole	7.32	[M+H] ⁺	320.2	70.1	125.0
Flufenoxuron	8.79	[M+H] ⁺	489.0	158.1	141.1	Methamidophos	1.16	[M+H] ⁺	142.0	94.2	125.1
Flufenpyr ethyl	6.72	[M+H] ⁺	409.1	335.0	307.0	Methidathion	4.97	[M+NH ₄] ⁺	320.0	145.1	85.1
Flumetsulam	2.03	[M+H] ⁺	326.1	129.1	109.0	Methiocarb	5.64	[M+H] ⁺	226.1	169.2	121.1
Flumiclorac pentyl	8.13	[M+NH ₄] ⁺	441.1	308.1	354.1	Methiocarb sulfone	2.35	[M+NH ₄] ⁺	275.0	122.1	201.1
Fluometuron	4.31	[M+H] ⁺	233.1	72.2	46.3	Methiocarb sulfoxide	2.10	[M+H] ⁺	242.1	185.1	122.1
Fluopicolide	6.00	[M+H] ⁺	383.0	173.0	145.0	Methomyl	1.61	[M+H] ⁺	163.1	106.1	88.1
Fluopyram	6.33	[M+H] ⁺	397.1	173.0	208.0	Methoxyfenozide	6.04	[M+H] ⁺	369.2	149.1	313.1
Fluoxastrobin	6.40	[M+H] ⁺	459.1	427.2	188.1	Metolcarb	3.28	[M+H] ⁺	166.1	109.1	94.1
Fluridone	5.32	[M+H] ⁺	330.1	309.1	290.0	Metribuzin	3.59	[M+H] ⁺	215.1	187.1	131.1
Flusilazole	6.77	[M+H] ⁺	316.1	247.2	165.1	Mevinphos	2.70	[M+NH ₄] ⁺	242.1	193.1	127.1
Fluthiacet methyl	6.88	[M+H] ⁺	404.0	344.0	273.9	Monocrotophos	1.71	[M+H] ⁺	224.1	193.0	127.0
Flutolanil	5.95	[M+H] ⁺	324.1	262.0	282.0	Monolinuron	4.16	[M+H] ⁺	215.1	126.1	148.1
Flutriafol	4.74	[M+H] ⁺	302.1	70.1	123.1	Myclobutanil	6.15	[M+H] ⁺	289.1	125.0	70.1
Fluxapyroxad	6.02	[M+H] ⁺	382.1	342.1	314.1	Nicosulfuron	3.45	[M+H] ⁺	411.1	182.0	213.0
Forchlorfenuron	4.78	[M+H] ⁺	248.1	129.1	93.1	Norflurazon	4.98	[M+H] ⁺	304.0	160.0	140.0
Formetanate HCl	1.26	[M+H] ⁺	222.0	165.1	120.0	Norflurazon desmethyl	4.43	[M+H] ⁺	290.0	179.0	140.0
Fosthiazate	4.40	[M+H] ⁺	284.1	104.1	228.1	Omethoate	1.33	[M+H] ⁺	214.0	183.0	125.0
Hexaconazole	7.29	[M+H] ⁺	314.1	158.9	70.0	Oxamyl	1.48	[M+NH ₄] ⁺	237.1	72.0	90.0
Hexythiazox	8.51	[M+H] ⁺	353.1	228.0	168.0	Oxamyl oxime	1.34	[M+H] ⁺	163.1	72.1	90.1
Imazalil	5.14	[M+H] ⁺	297.1	159.1	255.1	Oxydemeton methyl	1.57	[M+H] ⁺	247.0	169.1	109.1
Imazosulfuron	5.28	[M+H] ⁺	413.0	153.0	156.1	Oxydemeton methyl sulfone	1.62	[M+H] ⁺	263.0	169.0	109.0
Imidacloprid	1.96	[M+H] ⁺	256.1	209.1	175.0	Parathion methyl OA	3.10	[M+H] ⁺	248.0	202.0	109.1
Imiprothrin	6.34	[M+H] ⁺	319.2	151.1	123.1	Parathion OA	4.61	[M+H] ⁺	276.1	220.1	248.1
Indaziflam	6.58	[M+H] ⁺	302.2	158.1	145.1	Pencycuron	7.50	[M+H] ⁺	329.1	125.1	89.1
Indoxacarb	7.75	[M+H] ⁺	528.1	249.0	150.1	Penflufen	6.95	[M+H] ⁺	318.2	234.1	141.0
Ipconazole	7.81	[M+H] ⁺	334.2	70.1	125.0	Penthiopyrad	7.05	[M+H] ⁺	360.1	177.1	276.1
Iprovalicarb	6.31	[M+H] ⁺	321.2	119.1	186.2	Phenothrin	9.56	[M+H] ⁺	351.2	183.1	168.0
Isofenphos	7.39	[M+H] ⁺	346.1	217.0	245.1	Phenthoate	6.81	[M+H] ⁺	321.0	247.1	79.1
Isoproc carb	4.67	[M+H] ⁺	194.1	95.1	152.2	Phorate OA	5.10	[M+H] ⁺	245.0	75.2	47.2
Isoproturon	4.79	[M+H] ⁺	207.2	72.2	165.2	Phorate OA Sulfone	2.51	[M+H] ⁺	277.0	155.0	127.0
Kresoxim methyl	6.90	[M+H] ⁺	314.1	267.2	222.1	Phorate OA Sulfoxide	2.31	[M+H] ⁺	261.0	153.0	81.0
Lactofen	8.22	[M+NH ₄] ⁺	479.1	344.1	223.0	Phorate Sulfone	4.61	[M+H] ⁺	293.0	114.9	171.0
Lenacil	4.67	[M+H] ⁺	235.1	153.1	136.1	Phorate Sulfoxide	4.49	[M+H] ⁺	277.0	170.9	199.0
Leptophos OA	7.75	[M+2+H] ⁺	396.9	155.1	364.9	Phosalone	7.35	[M+H] ⁺	368.0	182.0	111.1
Linuron	5.46	[M+H] ⁺	249.0	182.1	160.1	Phosmet	5.21	[M+H] ⁺	318.0	160.1	133.1
Malathion	5.92	[M+H] ⁺	331.0	127.1	285.1	Phosmet OA	3.12	[M+H] ⁺	302.0	160.0	133.0
Malathion OA	3.89	[M+H] ⁺	315.1	127.1	99.0	Phosphamidon	3.43	[M+H] ⁺	300.1	127.1	174.1
Mandipropamid	5.94	[M+H] ⁺	412.1	328.2	356.2	Phoxim	7.25	[M+H] ⁺	299.1	77.2	129.1
Mefenpyr diethyl	7.26	[M+H] ⁺	373.1	327.1	160.0	Picoxystrobin	6.79	[M+H] ⁺	368.1	145.0	115.0



250 Pesticide Screen by LC-MS/MS

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Application #AN3060

Analyte	R _t (mins)	Adduct	Precursor Ion m/z	Quant Ion m/z	Conf Ion m/z	Analyte	R _t (mins)	Adduct	Precursor Ion m/z	Quant Ion m/z	Conf Ion m/z
Pirimicarb	4.24	[M+H] ⁺	239.2	182.1	72.0	Spiromesifen	8.66	[M+NH ₄] ⁺	388.1	273.1	187.0
Pirimicarb Desmethyl	2.71	[M+H] ⁺	225.1	168.2	72.1	Spiromesifen Alcohol	5.01	[M+H] ⁺	273.2	187.1	179.1
Pirimiphos Methyl	7.34	[M+H] ⁺	306.1	164.2	108.1	Spirotetramat	6.38	[M+H] ⁺	374.2	302.3	216.2
Prallethrin	7.69	[M+H] ⁺	301.2	133.0	151.2	Spiroxamine	5.95	[M+H] ⁺	298.3	144.2	100.2
Prochloraz	7.39	[M+H] ⁺	376.0	308.1	70.1	Sulfoxaflo	2.39	[M+NH ₄] ⁺	295.2	174.1	154.1
Profoxydim	7.71, 9.00	[M+H] ⁺	466.2	280.0	180.0	Sulprofos	8.56	[M+H] ⁺	323.0	219.1	139.1
Promecarb	5.88	[M+H] ⁺	208.1	109.0	151.1	TCMTB	5.48	[M+H] ⁺	239.0	180.0	136.0
Propamocarb	1.41	[M+H] ⁺	189.1	102.0	144.0	Tebufenozide	6.78	[M+H] ⁺	353.2	133.0	104.8
Propaquizafop	8.21	[M+H] ⁺	444.1	299.2	371.2	Tebufenpyrad	8.19	[M+H] ⁺	334.2	117.1	145.1
Propargite	8.74	[M+NH ₄] ⁺	368.2	231.2	175.1	Tebuthiuron	3.89	[M+H] ⁺	229.1	172.0	116.0
Propetamphos	6.13	[M+H] ⁺	282.1	138.1	156.1	Tepraloxym	4.10, 6.19	[M+H] ⁺	342.2	250.1	166.1
Propoxur(S)	3.69	[M+H] ⁺	210.1	168.2	111.1	Terbufos Sulfone	5.46	[M+H] ⁺	321.0	115.0	143.0
Prosulfuron	5.29	[M+H] ⁺	420.1	167.1	141.1	Terbufos Sulfoxide	5.49	[M+H] ⁺	305.1	97.0	187.0
Pymetrozine	1.44	[M+H] ⁺	218.1	105.1	78.1	Terbutylazine	5.71	[M+H] ⁺	230.1	174.1	104.1
Pyraclostrobin	7.30	[M+H] ⁺	388.1	163.1	194.1	Tetrachlorvinphos	6.86	[M+2+H] ⁺	366.9	127.1	206.0
Pyraflufen Ethyl	7.13	[M+H] ⁺	413.0	339.0	253.1	Tetramethrin	7.91, 8.10	[M+H] ⁺	332.2	164.1	135.1
Pyrazophos	7.31	[M+H] ⁺	374.1	222.2	194.1	Thiabendazole	2.48	[M+H] ⁺	202.0	175.0	131.1
Pyridaben	9.22	[M+H] ⁺	365.1	309.0	147.1	Thiacloprid	2.55	[M+H] ⁺	253.0	126.1	99.1
Pyridalyl	10.21	[M+2+H] ⁺	492.0	110.9	164.0	Thiamethoxam	1.65	[M+H] ⁺	292.0	211.1	181.1
Pyrimethanil	5.45	[M+H] ⁺	200.1	107.1	168.1	Thifensulfuron Methyl	3.28	[M+H] ⁺	388.0	167.1	205.0
Pyriproxyfen	8.39	[M+H] ⁺	322.1	96.0	227.1	Thiobencarb	7.46	[M+H] ⁺	258.1	125.0	89.0
Quinalphos	6.78	[M+H] ⁺	299.1	163.1	147.1	Thiodicarb	4.34	[M+H] ⁺	355.1	163.2	88.1
Quinoxifen	8.50	[M+H] ⁺	308.0	197.1	214.1	Thionazin	4.74	[M+H] ⁺	249.1	193.1	97.0
Quizalofop Ethyl	8.01	[M+H] ⁺	373.1	299.2	255.1	Topramezone	1.63	[M+H] ⁺	364.1	334.1	125.1
Resmethrin	9.40	[M+H] ⁺	339.2	128.1	171.1	Triadimefon	6.07	[M+H] ⁺	294.1	197.0	225.0
Rimsulfuron	3.94	[M+H] ⁺	432.1	182.1	139.0	Triadimenol	6.25	[M+H] ⁺	296.1	70.2	99.0
Rotenone	6.71	[M+H] ⁺	395.2	213.2	192.1	Triazophos	6.19	[M+H] ⁺	314.1	162.1	119.1
Saflufenacil	5.32	[M+H] ⁺	501.1	349.1	198.0	Tribenuron Methyl	4.59	[M+H] ⁺	396.1	155.1	181.1
Sedaxane	6.20, 6.54	[M+H] ⁺	332.2	159.0	139.0	Trichlorfon	2.26	[M+H] ⁺	256.9	109.0	221.0
Sethoxydim	8.03	[M+H] ⁺	328.2	178.0	220.1	Tricyclazole	2.80	[M+H] ⁺	190.0	163.1	136.1
Simazine	3.66	[M+H] ⁺	202.1	104.1	132.1	Trifloxystrobin	7.78	[M+H] ⁺	409.1	186.2	206.2
Spinetoram	8.14	[M+H] ⁺	748.5	142.1	203.1	Triflumizole	7.87	[M+H] ⁺	346.1	278.0	73.0
Spinosad A	7.69	[M+H] ⁺	732.5	142.1	98.0	Triforine	5.23	[M+2+H] ⁺	434.9	213.0	98.2
Spinosad D	8.10	[M+H] ⁺	746.5	142.1	98.0	Zoxamide	7.09	[M+H] ⁺	336.0	187.0	159.0
Spirodiclofen	8.91	[M+H] ⁺	411.1	313.1	71.1						

300 Pesticide Screen by LC-MS/MS

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Application #AN3120

Conditions

Column: ACE UltraCore 2.5 SuperC18

Dimensions: 100 x 2.1 mm

Part Number: CORE-25A-1002U

Mobile Phase: A: 5 mM ammonium formate in H₂O/MeOH (9:1 v/v)
B: 5 mM ammonium formate in H₂O/MeOH (1:9 v/v)

Gradient:

Time (mins)	%B
0.0	30
0.5	30
15.0	100
22.0	100
22.1	30
27.0	30

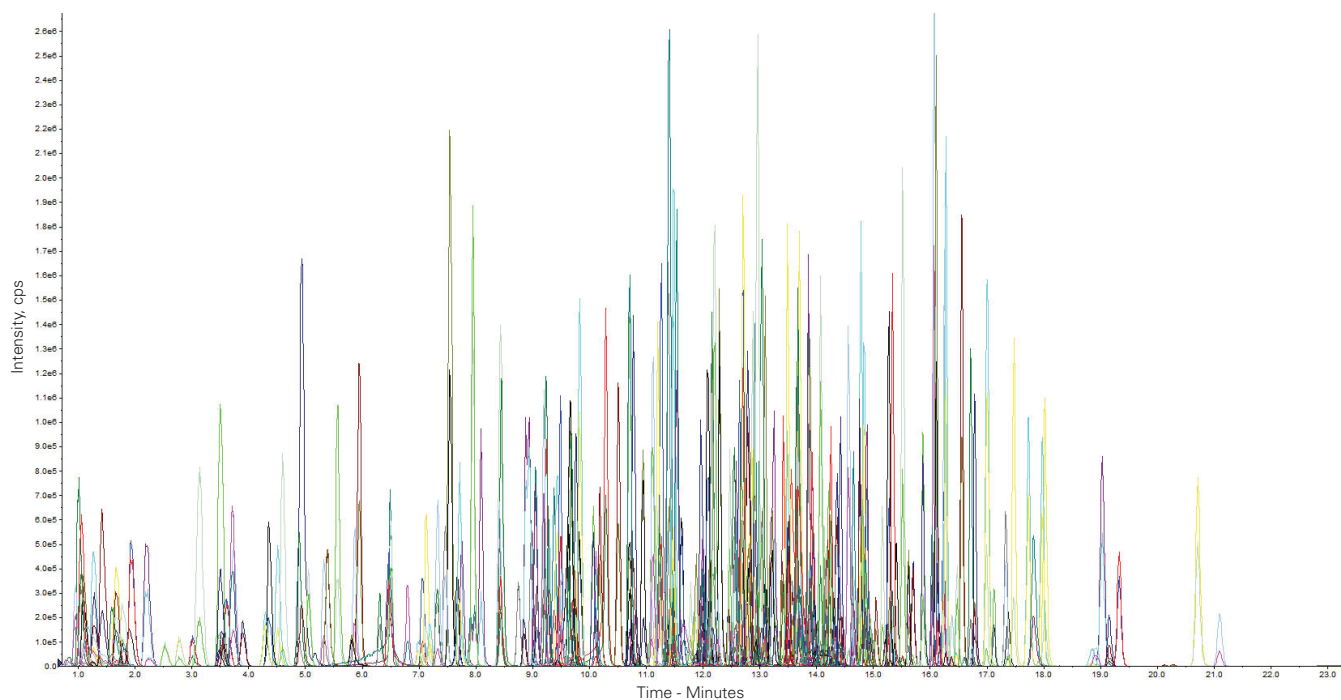
Flow Rate: 0.3 mL/min

Injection: 6 µL

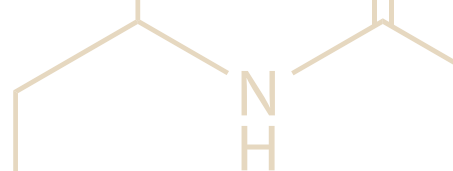
Temperature: 24 °C

Detection: AB SCIEX 4000 QTRAP
TurbolonSpray ESI positive mode
Capillary voltage: 5000 V
Heater gas temperature: 450 °C

Sample: Sample prepared using QuEChERS methodology
Method validated using cucumber matrix spiked at 0.01 mg/kg. 265 analytes successfully validated (Analytes in black)



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300 Pesticide Screen by LC-MS/MS

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Application #AN3120

Analyte	Retention Time (mins)	MRM transitions (m/z)	Analyte	Retention Time (mins)	MRM transitions (m/z)
3-Hydroxycarbofuran	3.5	238.1 → 163.1, 238.1 → 181.1	Chlorpyrifos-methyl	15.2	322.0 → 124.9, 324.0 → 125.1
Acephate	1.0	184.1 → 142.9, 184.1 → 124.8	Chlortoluron	9.1	213.2 → 72.0, 215.1 → 72.1
Acetamiprid	3.6	223.2 → 126.1, 225.2 → 128.1	Cinidon-ethyl	16.3	394.0 → 348.0, 394.0 → 366.0
Aclonifen	13.9	265.0 → 248.0, 267.0 → 250.0	Clethodim A	12.8	360.1 → 164.1, 360.1 → 268.1
Alachlor	12.9	270.2 → 238.2, 270.2 → 162.1	Clethodim B	10.2	360.1 → 164.1, 360.1 → 268.1
Aldicarb	5.4	208.0 → 89.0, 208.0 → 116.0	Clofentezine	15.1	303.1 → 137.9, 305.1 → 102.0
Aldicarb sulfone	1.2	240.0 → 86.0, 223.0 → 148.0	Clomazone	10.7	240.1 → 124.9, 242.2 → 127.1
Aldicarb sulfoxide	1.1	207.0 → 132.0, 207.2 → 88.9	Cloquintocet-mexyl	16.1	336.2 → 238.0, 336.2 → 192.1
Ametryn	11.1	228.2 → 186.1, 228.2 → 68.0	Clothianidin	2.9	250.1 → 169.0, 250.1 → 132.0
Aminopyralid	0.8	207.0 → 160.9, 207.0 → 133.9	Coumaphos	14.3	363.0 → 227.0, 363.0 → 211.1
Amitrole	0.8	85.1 → 58.1, 85.1 → 57.1	Cyanazine	6.7	241.1 → 214.1, 243.1 → 216.1
Atrazine	9.3	216.2 → 174.0, 218.1 → 176.1	Cyazofamid	13.2	325.2 → 107.9, 327.2 → 107.9
Atrazine-desethyl	4.4	188.2 → 146.0, 190.1 → 148.0	Cycloate	14.9	216.2 → 83.1, 216.2 → 154.1
Atrazine-desisopropyl	2.4	174.1 → 104.1, 174.1 → 132.1	Cycloxydim A	13.1	326.3 → 280.0, 326.3 → 180.0
Avermectin B1a	18.2	876.5 → 553.0, 876.5 → 291.0	Cycloxydim B	8.4	326.3 → 280.0, 326.3 → 180.0
Avermectin B1b	19.1	890.5 → 305.0, 890.5 → 567.0	Cymoxanil	4.2	199.2 → 128.0, 199.2 → 111.1
Azamethiphos	6.9	325.0 → 183.0, 325.0 → 138.9	Cyproconazole A	12.5	292.0 → 70.0, 292.0 → 125.0
Azinphos-ethyl	13.0	346.0 → 132.1, 346.0 → 160.1	Cyproconazole B	12.0	292.0 → 70.0, 292.0 → 125.0
Azinphos-methyl	10.9	318.1 → 132.1, 318.1 → 260.8	Cyprodinil A	14.1	226.2 → 93.0, 226.2 → 77.0
Aziprotryne	11.8	226.0 → 156.0, 226.0 → 125.0	Demeton-S-methyl	7.7	231.1 → 88.8, 231.1 → 61.0
Azoxystrobin	11.4	404.2 → 372.3, 404.2 → 344.1	Demeton-S-methyl sulfone	1.6	263.0 → 168.9, 263.0 → 120.8
Benalaxyl	14.0	326.2 → 148.1, 326.2 → 294.1	Desmedipham	10.6	318.1 → 182.1, 318.1 → 136.0
Benfuracarb	15.7	411.2 → 252.1, 411.2 → 195.1	Desmethyl-pirimicarb	5.8	225.2 → 72.0, 225.2 → 168.1
Benthiavalicarb-isopropyl	12.0	382.3 → 116.0, 382.3 → 197.0	Diafenthiuron	17.4	385.2 → 329.2, 385.2 → 278.2
Bifenazate	12.5	301.2 → 198.1, 301.2 → 170.2	Diazinon	14.2	305.1 → 169.1, 305.1 → 97.0
Bifenoxy	14.9	359.0 → 342.0, 359.0 → 310.0	Dichlofluanid	12.8	333.0 → 223.9, 333.0 → 122.9
Bifenthrin	21.0	440.0 → 181.1, 440.0 → 166.1	Diclobutrazol A	13.7	328.0 → 70.0, 330.0 → 70.0
Bitertanol	14.6	338.2 → 269.0, 338.2 → 99.1	Dicrotofos	2.1	238.1 → 112.1, 238.1 → 193.1
Bixafen	13.6	414.0 → 393.9, 416.1 → 395.9	Diethofencarb	11.1	268.1 → 226.1, 268.1 → 124.0
Boscalid	11.7	343.1 → 306.8, 343.1 → 139.9	Difenoconazole	14.8	406.1 → 251.1, 408.2 → 253.1
Bromfeninfos-ethyl	14.3	405.0 → 155.0, 403.0 → 155.0	Diflubenzuron	13.5	311.0 → 158.2, 311.0 → 141.1
Bromuconazole A	12.2	378.0 → 159.1, 378.0 → 161.0	Diflufenican	15.4	395.0 → 266.0, 395.0 → 246.0
Bromuconazole B	13.5	378.1 → 159.1, 378.1 → 161.0	Dimethachlor	10.2	256.2 → 224.0, 256.2 → 148.1
Bupirimate	13.5	317.2 → 166.2, 317.2 → 107.9	Dimethenamid	11.3	276.1 → 244.0, 278.1 → 246.0
Buprofezin	16.1	306.3 → 201.1, 306.3 → 116.1	Dimethoate	3.6	230.1 → 198.8, 230.1 → 124.9
Cadusafos	14.8	271.1 → 158.9, 271.1 → 214.9	Dimethomorph	11.7	388.1 → 301.0, 388.1 → 165.1
Carbaryl	8.3	202.2 → 145.1, 202.2 → 127.1	Dimoxystrobin	13.7	327.1 → 205.0, 327.1 → 116.0
Carbendazim	4.7	192.2 → 160.1, 192.0 → 132.0	Diniconazole	14.8	326.0 → 70.0, 328.0 → 70.0
Carbofuran	7.4	222.2 → 165.1, 222.2 → 122.9	Disulfoton	15.0	275.1 → 89.0, 275.1 → 61.0
Carbosulfan	19.3	381.2 → 160.1, 381.2 → 118.1	Disulfoton sulfone	9.6	307.1 → 153.0, 307.1 → 171.0
Carboxin	8.3	236.1 → 143.1, 236.1 → 87.0	Disulfoton sulfoxide	9.2	291.1 → 212.9, 291.1 → 185.0
Carfentrazone-ethyl	13.8	412.2 → 345.9, 412.2 → 383.9	Ditalimfos	13.1	300.1 → 148.0, 300.1 → 130.0
Chlorantraniliprole	10.7	484.0 → 452.9, 484.0 → 285.9	Diuron	10.0	233.1 → 71.9, 235.1 → 72.0
Chlorbromuron	11.7	295.1 → 205.9, 293.1 → 182.0	DMST	8.0	215.2 → 106.0, 215.2 → 78.9
Chlorfeninfos A	14.3	359.0 → 155.0, 358.9 → 99.0	Dodine	13.6	228.3 → 57.0, 228.3 → 60.1
Chloridazon	3.7	222.1 → 104.0, 222.1 → 77.1	Epoxiconazole	12.9	330.1 → 120.9, 330.1 → 75.2
Chlorpyrifos	16.8	349.9 → 198.1, 349.9 → 115.0	Ethion	16.5	385.0 → 199.0, 385.0 → 143.0



300 Pesticide Screen by LC-MS/MS

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Application #AN3120

Analyte	Retention Time (mins)	MRM transitions (m/z)	Analyte	Retention Time (mins)	MRM transitions (m/z)
Ethirimol	9.7	210.3 → 140.1, 210.3 → 98.0	Furathiocarb	15.9	383.1 → 195.0, 383.1 → 252.1
Ethofumesate	11.3	287.1 → 121.0, 287.1 → 259.0	Heptenofos	10.1	251.0 → 127.0, 251.0 → 124.8
Ethoprophos	12.7	243.0 → 131.0, 243.0 → 97.0	Hexaconazole	14.3	314.0 → 70.0, 316.0 → 70.0
Ethoxyquin A	12.9	218.2 → 148.0, 218.2 → 174.1	Hexaflumuron	15.5	461.1 → 158.2, 461.1 → 141.1
Ethoxyquin B	10.7	218.2 → 148.0, 218.2 → 174.1	Hexazinone	7.3	253.2 → 71.0, 253.2 → 85.0
Etofenprox	20.6	394.0 → 177.0, 394.0 → 359.0	Hexythiazox	16.6	353.0 → 168.0, 353.0 → 228.0
Etrimfos	14.2	293.1 → 125.0, 293.1 → 265.1	Imazalil	13.6	297.2 → 159.1, 299.1 → 160.9
Famoxadone NH ₄ ⁺	14.4	392.0 → 331.0, 392.0 → 238.0	Imidacloprid	2.7	256.1 → 209.0, 256.1 → 175.0
Fenamidone	11.5	312.1 → 92.1, 312.1 → 236.1	Indoxacarb	15.2	528.1 → 248.9, 528.1 → 292.9
Fenamifos	13.4	304.0 → 217.0, 304.0 → 202.0	Ipconazole	15.3	334.2 → 70.0, 334.2 → 125.0
Fenamifos sulfone	8.4	336.0 → 308.0, 336.0 → 266.0	Iprodione	13.3	332.1 → 246.9, 330.0 → 245.0
Fenamifos sulfoxide	7.9	320.0 → 171.0, 320.0 → 233.0	Iprovalicarb	12.6	321.3 → 119.0, 321.3 → 203.1
Fenarimol	12.7	331.2 → 268.0, 331.2 → 139.0	Isofenfos	14.7	346.1 → 245.1, 346.1 → 217.1
Fenazaquin	18.0	307.1 → 161.1, 307.1 → 147.0	Isofenfos-methyl	13.8	332.1 → 231.0, 332.1 → 273.0
Fenbuconazole	13.2	337.0 → 124.9, 337.0 → 70.0	Isoproc carb	9.4	194.1 → 95.0, 194.1 → 137.0
Fenbutatin oxide	22.9	519.3 → 463.3, 519.3 → 197.0	Isoprothiolane	12.1	291.1 → 231.0, 291.1 → 189.0
Fenhexamid	12.6	302.2 → 96.9, 304.2 → 97.0	Isoproturon	9.7	207.2 → 72.0, 207.2 → 165.2
Fenoxycarb	13.6	302.2 → 87.9, 302.2 → 116.0	Isoxadifen-ethyl	13.9	313.2 → 296.1, 313.2 → 263.0
Fenpropathrin	17.3	367.0 → 125.0, 350.0 → 125.0	Isoxaflutole	10.0	360.1 → 251.1, 377.0 → 251.0
Fenpropidin	10.8	274.0 → 147.0, 274.0 → 117.0	Kresoxim-methyl	13.9	314.0 → 116.0, 314.0 → 131.1
Fenpropimorph	18.7	304.0 → 147.0, 304.0 → 117.0	Lenacil	9.5	235.3 → 153.2, 235.3 → 136.2
Fenpyroximate	17.4	422.2 → 366.1, 422.2 → 135.1	Linuron	11.3	249.0 → 159.9, 249.0 → 182.0
Fensulfothion	10.0	309.1 → 280.8, 309.1 → 252.9	Lufenuron	16.4	511.0 → 158.0, 511.0 → 141.0
Fensulfothion sulfone	10.4	325.1 → 268.9, 325.1 → 297.0	Malaaxon	7.9	315.1 → 99.1, 315.1 → 127.1
Fenthion sulfone	9.0	311.1 → 125.0, 311.1 → 278.8	Mandipropamid	11.9	412.1 → 328.1, 412.2 → 125.0
Fenthion sulfoxide	8.4	295.1 → 279.7, 295.1 → 108.9	Mecarbam	13.0	330.1 → 227.0, 330.1 → 198.9
Flonicamid	1.7	230.0 → 203.0, 230.0 → 148.0	Mepanipyrim	12.9	224.2 → 106.0, 224.2 → 77.1
Flubendiamide NH ₄ ⁺	13.8	700.0 → 407.9, 682.9 → 407.9	Mepronil	12.1	270.1 → 119.0, 270.1 → 228.1
Fludioxonil NH ₄ ⁺	11.8	266.0 → 229.0, 266.0 → 227.1	Mesotrione	1.2	340.0 → 228.0, 357.1 → 227.9
Flufenacet	12.8	364.1 → 194.1, 364.1 → 152.2	Metaflumizone	16.1	507.1 → 178.1, 507.1 → 287.1
Flufenoxuron	17.1	489.0 → 158.0, 489.0 → 141.1	Metalaxyl	9.8	280.1 → 220.2, 280.1 → 192.2
Flumethrin NH ₄ ⁺	20.2	527.2 → 510.0, 527.2 → 267.0	Metamitron	3.4	203.1 → 175.0, 203.1 → 104.2
Flumetsulam	2.0	326.2 → 128.8, 326.2 → 128.3	Metazachlor	9.6	278.1 → 209.9, 278.1 → 134.2
Flumioxazin	10.7	355.0 → 327.0, 355.0 → 299.0	Metconazole	14.4	320.1 → 70.0, 320.1 → 125.0
Fluometuron	8.9	233.0 → 72.0, 233.0 → 160.0	Methacrifos	10.7	241.0 → 208.9, 241.0 → 124.9
Fluopicolide	11.9	383.0 → 173.0, 385.1 → 174.9	Methamidofos	0.9	142.0 → 93.9, 142.0 → 112.1
Fluopiram	12.5	397.0 → 173.0, 397.0 → 208.0	Methiocarb	11.4	226.2 → 169.1, 226.2 → 121.2
Fluoxastrobin	12.8	459.1 → 427.1, 459.1 → 188.1	Methiocarb sulfone	4.1	258.1 → 122.0, 258.1 → 200.9
Fluquinconazole	12.6	376.1 → 307.1, 376.1 → 349.1	Methiocarb sulfoxide	3.0	242.1 → 185.0, 242.1 → 122.1
Flusilazole	13.3	316.2 → 247.0, 316.2 → 165.1	Methomyl	1.6	163.0 → 106.0, 163.0 → 88.0
Flutolanil	12.0	324.0 → 262.0, 324.0 → 242.0	Methoxyfenozide	12.2	369.1 → 149.1, 369.1 → 313.2
Flutriafol	9.7	302.1 → 70.1, 302.1 → 123.0	Metobromuron	9.4	259.0 → 170.0, 259.0 → 148.1
Fomesafen (NH ₄ -Adduct)	11.3	456.1 → 344.0, 458.1 → 346.0	Metolachlor	13.0	284.1 → 252.0, 286.1 → 254.0
Fonofos	14.3	247.0 → 109.0, 247.0 → 127.0	Metoxuron	5.7	229.1 → 72.0, 231.1 → 71.9
Fosthiazate	8.9	284.1 → 227.9, 284.1 → 104.0	Metrafenone	14.8	409.2 → 209.1, 411.2 → 209.1
Fuberidazole	6.9	185.0 → 157.0, 185.0 → 65.0	Metribuzin	7.1	215.2 → 187.1, 215.2 → 84.1





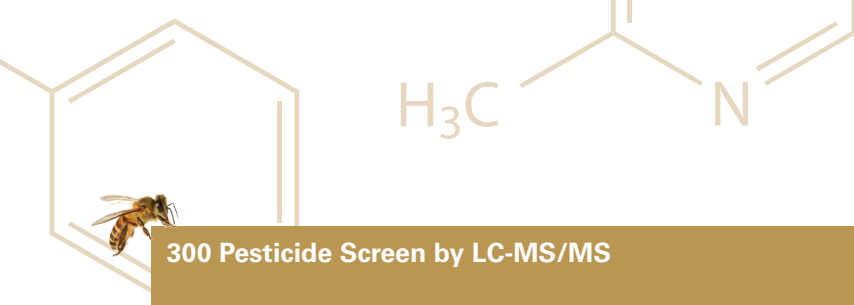
300 Pesticide Screen by LC-MS/MS

Page 4 of 5

Application #AN3120

Analyte	Retention Time (mins)	MRM transitions (m/z)
Mevinfos A	4.9	225.0 → 193.0, 225.0 → 127.0
Mevinfos B	3.4	225.0 → 193.0, 225.0 → 127.0
Molinate	12.0	188.2 → 126.2, 188.2 → 55.1
Monocrotofos	1.8	224.2 → 192.9, 224.2 → 126.9
Monolinuron	8.7	215.1 → 126.1, 215.1 → 148.1
Myclobutanil	12.2	289.2 → 70.0, 289.2 → 125.0
Napropamide	12.9	272.2 → 129.1, 272.2 → 171.1
Nitenpyram	1.3	271.1 → 189.2, 271.1 → 126.0
Novaluron	15.6	493.0 → 158.1, 493.0 → 141.1
Nuarimol	11.2	315.0 → 252.0, 315.0 → 81.0
Ofurace	7.6	282.0 → 160.1, 282.0 → 236.3
Omethoate	1.0	214.0 → 183.0, 214.0 → 125.0
Oxadiazon	16.2	345.0 → 220.0, 345.0 → 303.0
Oxadixyl	6.4	279.0 → 219.0, 279.0 → 133.0
Oxamyl NH ₄ ⁺	1.2	237.1 → 72.0, 220.2 → 72.0
Oxycarboxin	4.5	268.1 → 174.9, 268.1 → 147.0
Oxydemeton-methyl	1.4	247.0 → 108.9, 247.0 → 168.9
Paclobutrazol	11.8	294.0 → 70.0, 294.0 → 125.0
Paraoxon	9.4	275.9 → 219.9, 275.9 → 248.0
Paraoxon-methyl	6.1	248.1 → 202.1, 248.1 → 90.0
Parathion	13.8	292.0 → 236.0, 292.0 → 264.1
Penconazole	13.7	248.1 → 70.0, 284.1 → 159.0
Pencycuron	14.8	329.3 → 125.1, 331.3 → 127.0
Pendimethalin	16.9	282.2 → 212.1, 282.2 → 194.1
Pethoxamid	12.7	296.2 → 131.0, 296.2 → 250.0
Phenmedipham	10.8	301.2 → 168.0, 301.2 → 136.0
Phenthoate	13.9	321.0 → 247.0, 321.0 → 275.1
Phorate sulfone	9.6	293.0 → 170.8, 293.0 → 96.7
Phorate sulfoxide	9.2	277.0 → 199.0, 277.0 → 171.0
Phosalone	14.6	368.0 → 182.0, 369.9 → 183.9
Phosphamidon	6.4	300.2 → 127.1, 300.2 → 226.8
Phoxim	14.7	299.2 → 129.2, 299.2 → 77.1
Picloram	1.2	243.0 → 224.9, 241.0 → 222.9
Picolinafen	16.2	377.1 → 238.0, 377.1 → 359.0
Picoxystrobin	13.6	368.0 → 205.0, 368.0 → 145.0
Piperonyl butoxide	16.2	356.2 → 177.2, 356.2 → 119.0
Pirimicarb	9.0	239.2 → 72.0, 239.2 → 182.3
Pirimiphos-ethyl	16.3	334.1 → 198.0, 334.1 → 182.3
Pirimiphos-methyl	14.8	306.2 → 108.0, 306.2 → 164.3
Prochloraz	14.4	376.0 → 308.0, 376.0 → 70.0
Profenofos	15.6	375.0 → 304.9, 373.0 → 302.9
Prometryn	12.6	242.2 → 158.1, 242.2 → 200.0
Propachlor	9.6	212.0 → 170.0, 212.0 → 94.1
Propamocarb	1.1	189.0 → 102.0, 189.0 → 144.0
Propaquizafop	16.0	444.2 → 100.0, 444.2 → 371.0
Propargite NH ₄ ⁺	17.0	368.2 → 231.1, 368.2 → 175.0

Analyte	Retention Time (mins)	MRM transitions (m/z)
Propazine	11.0	230.2 → 188.1, 230.2 → 146.1
Propetamfos	12.4	282.1 → 138.0, 282.1 → 156.1
Propham	9.4	180.1 → 138.1, 180.1 → 120.1
Propiconazole	14.0	342.1 → 159.0, 342.1 → 69.0
Propisochlor	14.0	284.2 → 224.0, 284.2 → 148.0
Propoxur	7.2	210.1 → 111.1, 210.1 → 168.0
Propyzamide	11.9	256.1 → 190.0, 256.1 → 173.0
Proquinazid	17.7	373.2 → 330.9, 373.2 → 289.0
Prosulfocarb	15.5	252.2 → 91.0, 252.2 → 128.1
Prosulfuron	9.0	420.1 → 141.0, 420.1 → 167.1
Prothioconazole	14.1	344.1 → 326.0, 346.1 → 328.1
Prothioconazole-desthio	13.0	312.0 → 70.0, 312.0 → 125.0
Pymetrozine	1.5	218.0 → 105.0, 218.0 → 78.0
Pyraclostrobin	14.5	388.1 → 194.0, 388.1 → 163.0
Pyrazophos	14.8	374.0 → 222.0, 374.0 → 194.0
Pyridaben	18.0	365.0 → 309.0, 365.0 → 147.0
Pyridapenthion	12.4	341.0 → 189.0, 341.0 → 205.0
Pyridate	19.1	379.1 → 206.9, 379.1 → 350.9
Pyrifenox	13.0	295.1 → 93.0, 297.1 → 93.0
Pyrimethanil	11.3	200.0 → 82.0, 200.0 → 107.0
Pyriproxyfen	16.7	322.0 → 96.0, 322.0 → 185.0
Pyroxuslam	5.6	435.0 → 195.1, 435.0 → 194.0
Quinalfos	13.9	299.0 → 271.0, 299.0 → 243.0
Quinoclamine	6.8	208.0 → 105.0, 208.0 → 77.0
Quinoxifen	16.4	308.0 → 197.0, 308.0 → 162.0
Rotenone	13.4	395.1 → 213.1, 395.1 → 192.0
Secbumeton	10.6	226.2 → 170.1, 226.2 → 100.0
Silthiofam	13.5	268.0 → 252.0, 268.0 → 73.0
Simazine	7.2	202.2 → 132.1, 202.2 → 104.0
Simetryn	9.4	214.1 → 124.1, 214.1 → 144.0
Spinosyn A	17.3	732.5 → 142.0, 732.5 → 98.0
Spinosyn D	18.3	746.5 → 142.0, 746.5 → 98.0
Spirodiclofen	17.4	313.1 → 295.0, 313.1 → 213.0
Spiromesifen	16.8	371.2 → 273.1, 371.2 → 255.2
Spirotetramat	12.8	374.2 → 302.2, 374.2 → 330.2
Spiroxamine	13.3	298.3 → 100.1, 298.3 → 144.1
Sulfotep	14.0	323.0 → 97.0, 323.0 → 115.0
Tau-fluvalinate	18.9	503.0 → 208.0, 503.0 → 181.0
Tebuconazole	13.9	308.1 → 70.0, 308.1 → 125.0
Tebufenozide	13.5	353.2 → 297.2, 353.2 → 133.0
Tebufenpyrad	15.9	334.0 → 145.0, 334.0 → 117.0
Teflubenzuron	16.3	381.1 → 158.2, 381.1 → 141.2
Tembotrione (NH ₄ adduct)	5.9	458.0 → 340.9, 458.0 → 441.0
Terbufos	16.1	289.1 → 103.1, 289.1 → 232.9
Terbufos sulfone	11.1	321.1 → 171.0, 321.1 → 115.0
Terbufos sulfoxide	11.0	305.1 → 187.2, 305.1 → 131.1



300 Pesticide Screen by LC-MS/MS

Analyte	Retention Time (mins)	MRM transitions (m/z)	Analyte	Retention Time (mins)	MRM transitions (m/z)
Terbumeton	11.3	226.2 → 170.1, 226.2 → 142.0	Triadimefon	12.1	294.2 → 197.2, 294.2 → 225.0
Terbuthylazine	11.4	230.2 → 174.0, 232.2 → 176.0	Triadimenol	12.4	296.2 → 70.0, 298.2 → 70.0
Terbutryn	12.9	242.1 → 186.1, 242.1 → 96.0	Triallate	16.7	304.1 → 142.9, 304.1 → 86.2
Tetrachlorvinfos	13.5	367.0 → 127.0, 365.0 → 127.0	Triazofos	12.6	314.0 → 162.0, 314.2 → 119.0
Tetraconazole	12.9	372.0 → 159.0, 374.0 → 161.2	Trichlorfon	3.4	257.0 → 108.9, 257.0 → 220.8
Thiabendazole	6.2	202.1 → 174.9, 202.1 → 131.0	Tricyclazole	5.2	190.1 → 136.1, 190.1 → 163.0
Thiacloprid	4.7	253.1 → 126.1, 253.1 → 99.1	Trifloxystrobin	15.3	409.0 → 186.0, 409.0 → 206.0
Thiencarbazone-methyl	2.3	391.0 → 130.0, 391.0 → 230.0	Triflumizole	15.3	346.0 → 278.0, 346.0 → 73.0
Thiodicarb	9.2	355.0 → 88.0, 355.0 → 108.0	Triflumuron	14.6	359.1 → 156.2, 359.1 → 139.0
Thiophanate-methyl	7.6	343.0 → 151.1, 343.0 → 311.0	Triforin	10.6	435.0 → 390.0, 437.0 → 392.0
Thiamethoxam	1.7	292.0 → 211.0, 292.0 → 181.0	Triticonazole A	12.7	318.0 → 70.0, 318.0 → 125.0
Tolclophos-methyl	14.9	301.2 → 268.9, 303.1 → 270.9	Triticonazole B	10.9	318.0 → 70.0, 318.0 → 125.0
Tolyfluanid	13.9	347.0 → 237.8, 347.0 → 137.1	Vamidothion	3.4	288.1 → 146.0, 288.1 → 118.0
Topramezone	1.6	364.1 → 334.1, 364.1 → 125.0	Zoxamide	14.2	336.0 → 187.0, 338.0 → 189.0





Pesticides by LC-MS/MS

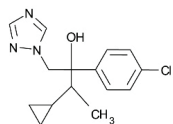
Application #AN1290

Conditions

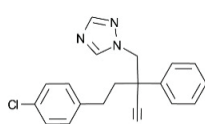
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: CORE-25A-0502U
Mobile Phase: A: 0.1% formic acid + 5 mM ammonium formate in H₂O/MeOH (90:10 v/v)
 B: 0.1% formic acid + 5 mM ammonium formate in H₂O/MeOH (10:90 v/v)
Gradient:

Time (mins)	%B
0.00	0
1.00	0
15.00	100
18.00	100
18.05	0
20.00	0

Flow Rate: 0.4 mL/min
Injection: 20 µL
Temperature: 40 °C
Detection: Agilent 6420 Triple Quadrupole MS, +ve mode ESI, Dynamic MRM



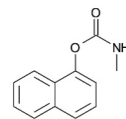
Cyproconazoles



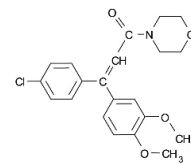
Fenbuconazole

Analytes

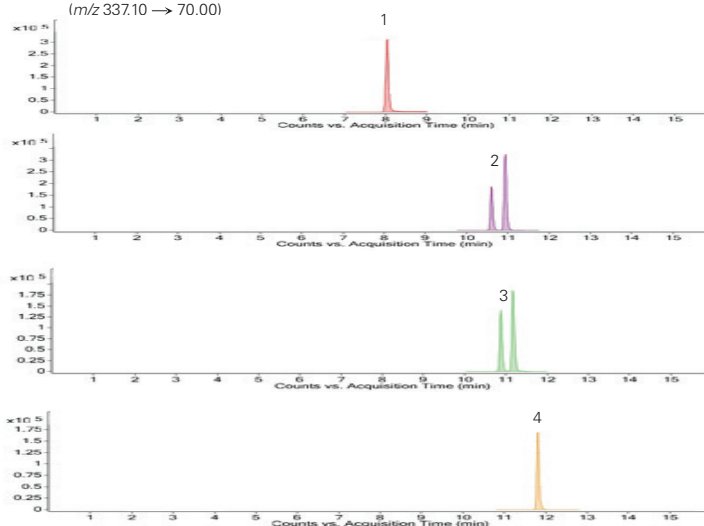
1. Carbaryl
(*m/z* 202.10 → 145.10)
2. Dimethomorphs
(*m/z* 388.10 → 301.10)
3. Cyproconazoles
(*m/z* 292.10 → 70.00)
4. Fenbuconazole
(*m/z* 337.10 → 70.00)



Carbaryl



Dimethomorphs



Also analysed under same conditions: Acephate, Acetamiprid, Aldicarb, Aldicarb sulfone, Aldicarb sulfoxide, Benomyl, Carbendazim, Carbofuran, Clofentezine, Clothianidin, Cyfluthrin, Demeton S-methylsulfone, Demeton S-methylsulfoxide, Dicrotophos, Dimethoate, Dinotefuran, DMA, DMPF, Flubendiamide, Folpet, Formetanate, Hexaconazole, Hexaflumuron, Imidacloprid, Indoxacarb, Mandipropamid, Methamidophos, Methomyl, Monocrotophos, Nicotine, Omethoate, Oxamyl, Pencycuron, Prochloraz, Propargite, Thiabendazole, Thiocloprid, Thiamethoxam, Thiodicarb, Thiophanate methyl and Triflorine

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Pesticides in Water

Application #AN3020

Conditions

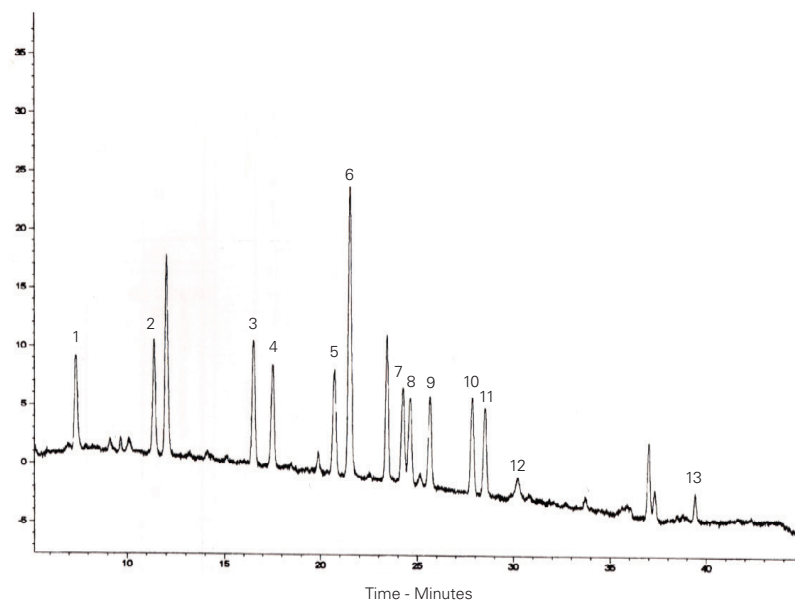
Column: ACE 3 C18
Dimensions: 150 x 2.1 mm
Part Number: ACE-111-1502
Mobile Phase: A: 0.1 M ammonium acetate in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	10
40	80
47	90
49	10

Flow Rate: 0.3 mL/min
Injection: 25 µL
Temperature: 40 °C
Detection: UV, 220 nm (Pendimethalin at 245 nm)
Sample: 0.05 µg/L standards in MeCN/H₂O (10:90 v/v)

Analytes

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



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Pharmaceutically Relevant Compounds (II)

Application #AN1630

Conditions

Column: ACE Excel 3 CN-ES
ACE Excel 3 C18-Amide
ACE Excel 3 C18-PFP

Dimensions: 100 x 3.0 mm

Part Numbers: EXL-1113-1003U, EXL-1112-1003U,
EXL-1110-1003U

Mobile Phase: A: 20 mM ammonium formate in H₂O
B: 20 mM ammonium formate in MeOH

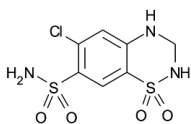
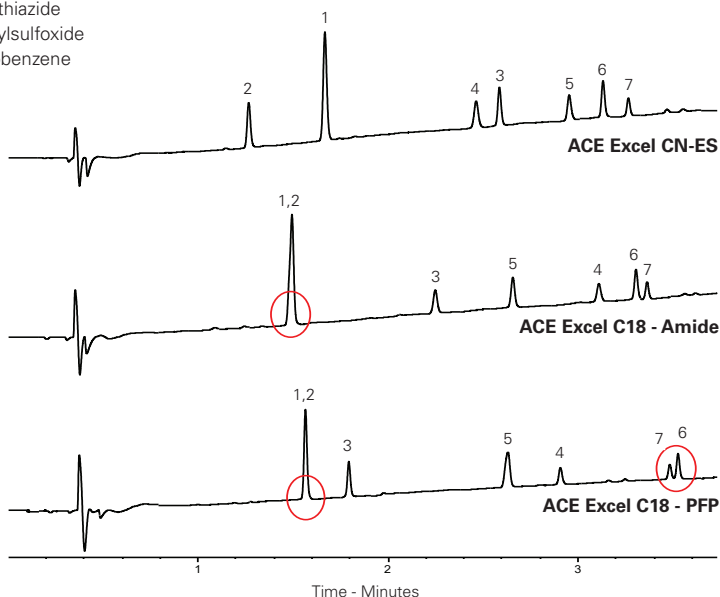
Gradient:

Time (mins)	%B
0.0	3
5.0	100
6.0	100
6.5	3

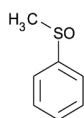
Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV

Analytes

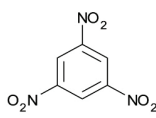
1. Hydrochlorothiazide
2. Methylphenylsulfonide
3. 1,3,5-Trinitrobenzene
4. Myricetin
5. p-Cresol
6. Sulindac
7. Toluene



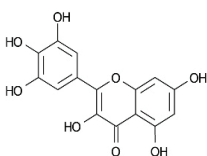
Hydrochlorothiazide



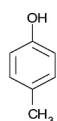
Methylphenylsulfonide



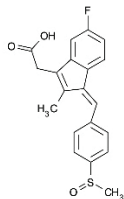
1,3,5-Trinitrobenzene



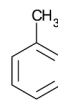
Myricetin



p-Cresol



Sulindac



Toluene

Pharmaceutically Relevant Compounds (III)

Application #AN2400

Conditions

Column: ACE 5 C18-PFP

Dimensions: 150 x 4.6 mm

Part Number: ACE-1210-1546

Mobile Phase: A: 5 mM formic acid in H₂O
B: 5 mM formic acid in MeOH

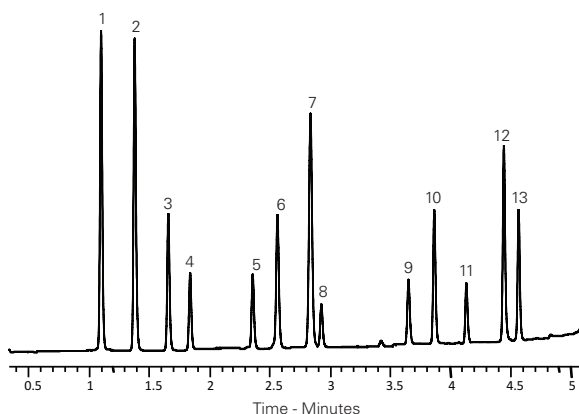
Gradient:

Time (mins)	%B
0.0	3
5.0	100
5.5	100
6.0	3
8.5	3

Flow Rate: 1.5 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Paracetamol
2. Hydrochlorothiazide
3. Methylphenylsulfonide
4. Methylphenylsulfone
5. Aspirin
6. Phenacetin
7. 1,3-Dinitrobenzene
8. 1,2,4-Trimethoxybenzene
9. Ethylbenzoate
10. Nimesulide
11. Ibuprofen
12. Indomethacin
13. Mefenamic acid



Pharmaceutically Relevant Compounds (IV)

Application #AN2460

Conditions

Column: ACE Excel 3 CN-ES

Dimensions: 100 x 2.1 mm

Part Number: EXL-1113-1002U

Mobile Phase: A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN

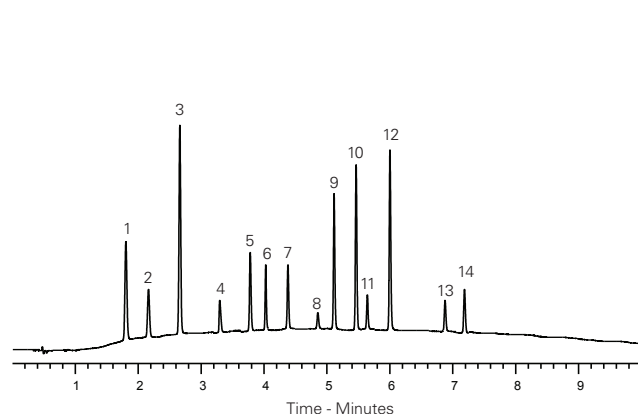
Gradient:

Time (mins)	%B
0	3
10	100

Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV, 210 nm

Analytes

1. 1,3-Dihydroxybenzene
2. Catechol
3. Hydrochlorothiazide
4. Oxprenolol
5. Salicylic acid
6. Myricetin
7. Piroxicam
8. 1,2-Dinitrobenzene
9. Tolmetin
10. 1-Naphthol
11. Piperine
12. Diflunisal
13. Propylbenzene
14. 1,2,3-Trichlorobenzene





Pharmaceutically Relevant Compounds (V)

Application #AN2500

Conditions

Column: ACE 3 C18-PFP
Dimensions: 50 x 2.1 mm
Part Number: ACE-1110-0502
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

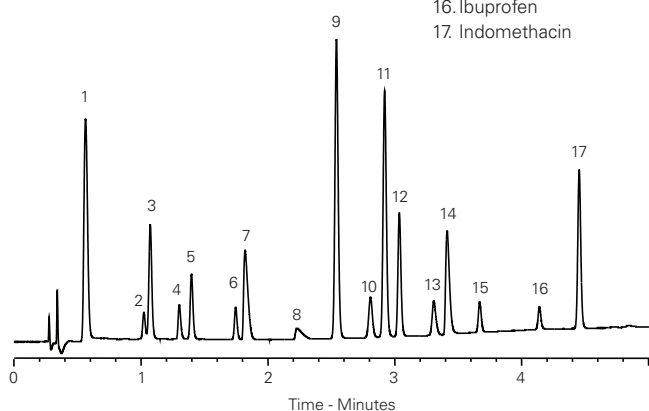
Time (mins)	%B
0	3
5	100

Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Sulphanilamide
2. Nizatidine
3. Metronidazole
4. Amiloride
5. Hydrochlorothiazide
6. Caffeine
7. Pindolol
8. Metoprolol
9. Phenacetin
10. 1,3-Dinitrobenzene
11. Hexobarbital
12. Furosemide
13. Piroxicam
14. Carvedilol
15. Ketoprofen
16. Ibuprofen
17. Indomethacin

Please contact us for further information and advice on specific applications or for method development support



Pharmaceutically Relevant Mixture (I) – Different Selectivity Using pH

Application #AN1310

Conditions

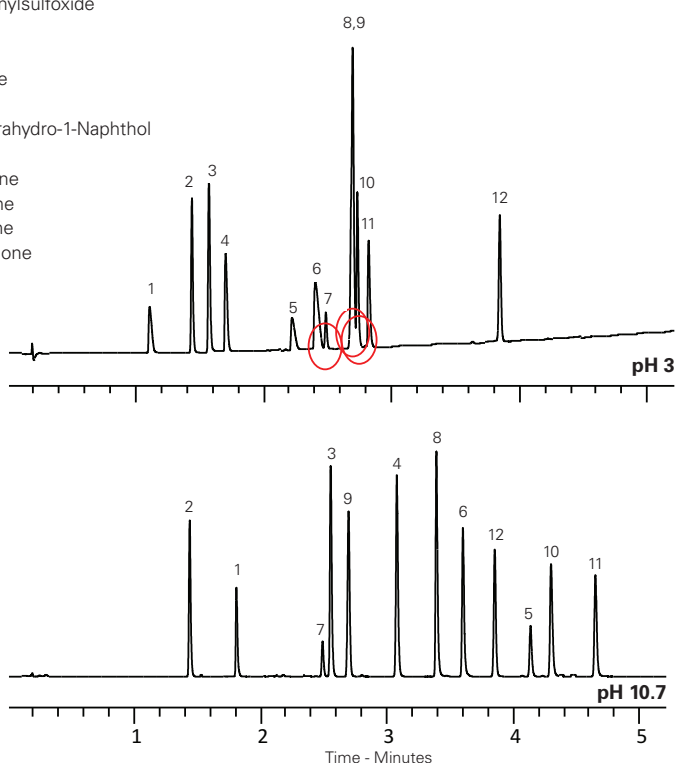
Column: ACE Ultracore 2.5 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: CORE-25A-0502U
Mobile Phase: A1: 10 mM ammonium formate pH 3 in H₂O
 A2: 0.1% ammonia pH 10.7 in H₂O
 B1: 10 mM ammonium formate pH 3 in MeCN/H₂O (90:10 v/v)
 B2: 0.1% ammonia pH 10.7 in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	3
5	100
6	100

Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Atenolol
2. Methylphenylsulfoxide
3. Eserine
4. Prilocaine
5. Bupivacaine
6. Tetracaine
7. 1,2,3,4-Tetrahydro-1-Naphthol
8. Carvedilol
9. Nitrobenzene
10. Methdilazine
11. Amitriptyline
12. Valerophenone



Pharmaceutically Relevant Mixture (II) – Different Selectivity Using pH

Application #AN1300

Conditions

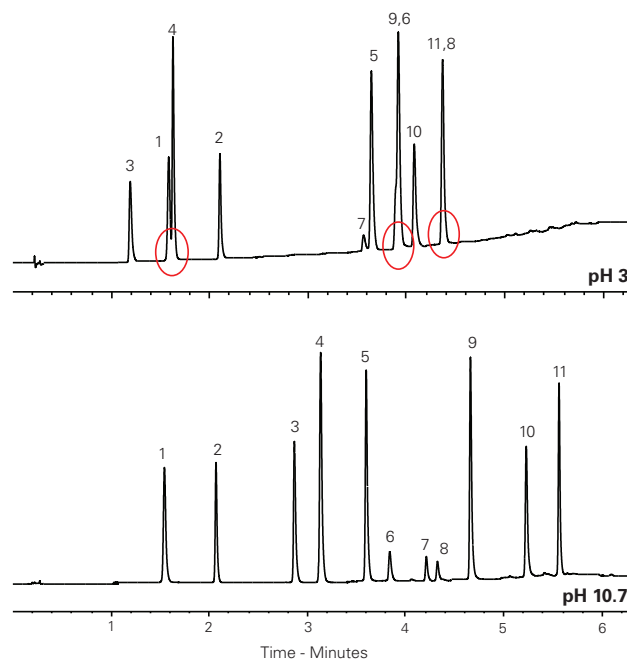
Column: ACE Ultracore 2.5 SuperPhenylHexyl
Dimensions: 50 x 2.1 mm
Part Number: CORE-25B-0502U
Mobile Phase: A1: 10 mM ammonium formate pH 3 in H₂O
 A2: 0.1% ammonia pH 10.7 in H₂O
 B1: 10 mM ammonium formate pH 3 in MeCN/H₂O (90:10 v/v)
 B2: 0.1% ammonia pH 10.7 in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	3
5	100
6	100

Flow Rate: 0.6 mL/min
Temperature: 40 °C
Detection: UV, 254 nm

Analytes

1. Benzamide
2. Caffeine
3. Procainamide
4. N-Acetylprocainamide
5. Propiophenone
6. Toluene
7. Remacemide
8. Ethylbenzene
9. Carvedilol
10. Nortriptyline
11. Clomipramine



Phenelzine in Human Plasma by LC-MS/MS

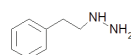
Application #AN4200

Conditions

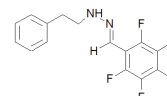
Column: ACE 5 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-121-1046
Mobile Phase: 10 mM ammonium acetate in H₂O, pH 4.0/MeOH (20:80 v/v)
Flow Rate: 1 mL/min with 70% split flow into MS
Injection: 10 µL
Temperature: 45 °C
Detection: AB Sciex API-4000 MS
 MRM using ESI in positive ion mode
 TurbolonSpray Interface Temperature: 600 °C
 IonSpray Voltage: 5500 V
Sample: Phenelzine derivatised with pentafluorobenzaldehyde, followed by SPE extraction of derivative and hydroxyzine (I.S.) from 200 µL human plasma.

Analytes

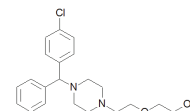
1. Phenelzine derivative
(*m/z* 305.1 → 105.1)
20.2 ng/mL
2. Hydroxyzine
(*m/z* 375.3 → 201.1)
25 ng/mL



Phenelzine

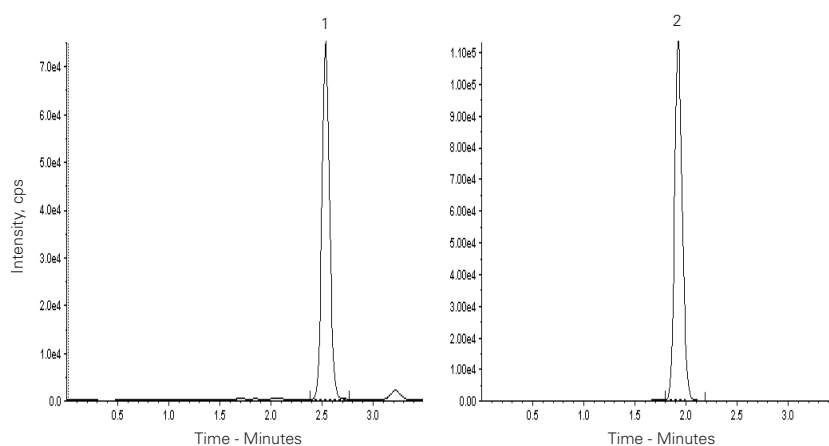


Phenelzine derivative



Hydroxyzine

Spiked human plasma





Phenol and Phenoxy Acid Herbicides

Application #AN2290

Conditions

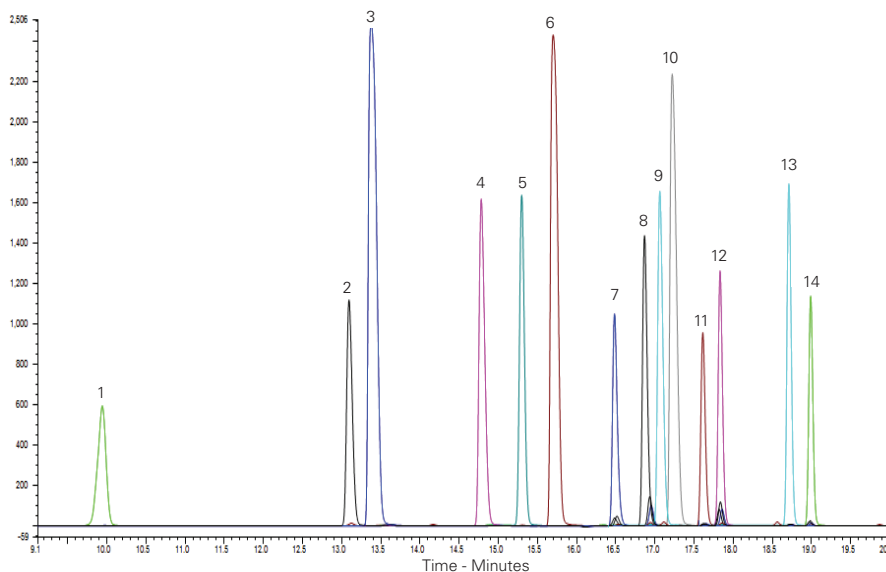
Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0.0	10
20.0	100

Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: UV, 280 nm

Analytes

- | | | |
|-----------------------|-------------|------------|
| 1. Phenol | 6. 6-CP | 11. 2,4-DP |
| 2. o-Cresol | 7. 2,4-D | 12. CMPP |
| 3. 2-Chlorophenol | 8. MCPA | 13. 2,4-DB |
| 4. 4-Chlorophenol | 9. PCOC | 14. MCPB |
| 5. 2,6-Dichlorophenol | 10. 2,4-DCP | |



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Phenolic Acids

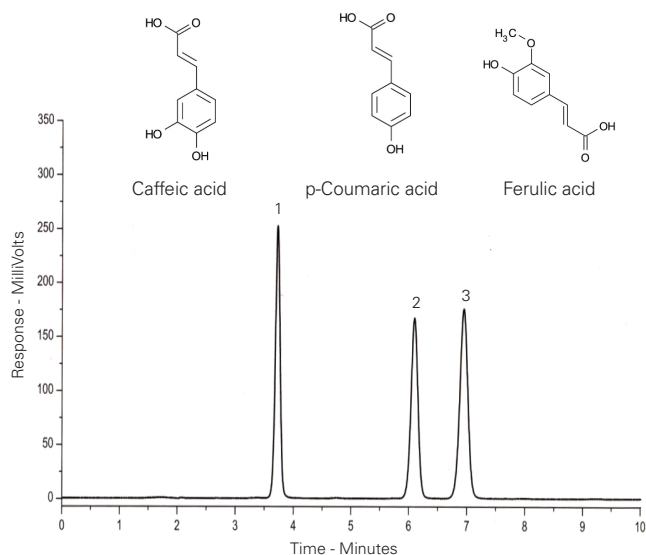
Application #AN3030

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: MeCN/0.1% formic acid in H₂O (20:80 v/v)
Flow Rate: 1 mL/min
Injection: 1 µL
Temperature: Ambient
Detection: UV, 254 nm

Analytes

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



Phenolic Compounds in Ground Water & Landfill Leachates

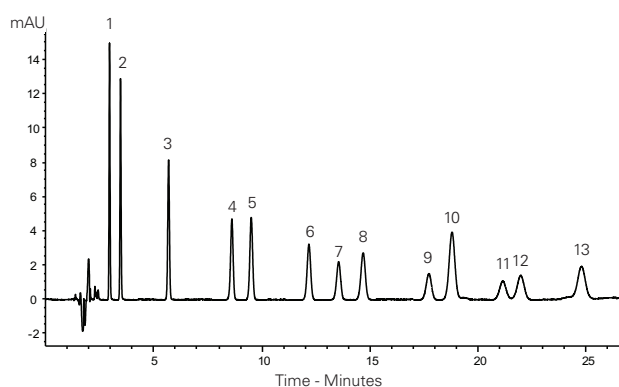
Application #AN3070

Conditions

Column: ACE Excel 3 C18-Amide
Dimensions: 150 x 4.6 mm
Part Number: EXL-1112-1546U
Mobile Phase: 0.1% formic acid v/v in H₂O
 MeCN (65:35 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 30 °C
Detection: UV, 274 nm

Analytes

1. Pyrocatechol
2. Resorcinol
3. Phenol
4. m-Cresol
5. o-Cresol
6. 2,4-Dimethylphenol
7. 3,4-Dimethylphenol
8. 3,5-Dimethylphenol
9. 1-Naphthol
10. 3,4,5-Trimethylphenol
11. 2,3,6-Trimethylphenol
12. 2,4,6-Trimethylphenol
13. 2-Naphthol



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Phenolic Compounds from Red Grape Seed Extract

Application #AN3790

Conditions

Column: ACE 3 C18-AR
Dimensions: 200 x 4.6 mm
Part Number: ACE-119-2046
Mobile Phase: A: 2% acetic acid in H₂O
 B: 2% acetic acid in MeCN
Gradient:

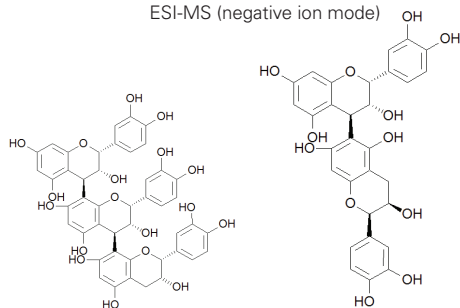
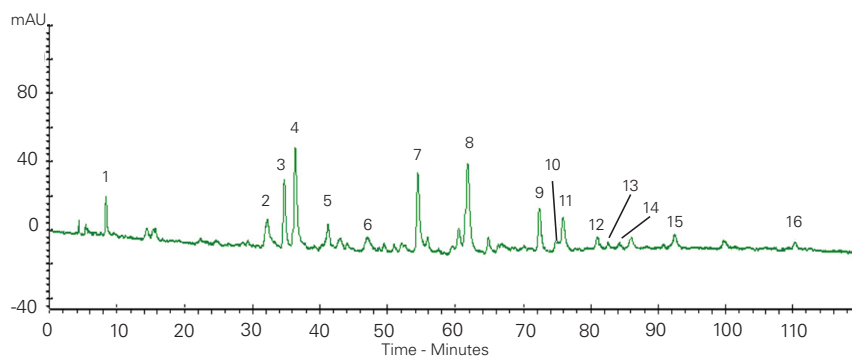
Times (mins)	%B
0	0
80	20
115	28
120	100
130	100

Flow Rate: 0.6 mL/min**Detection:** UV, 280 nm

Peak identities established by combination of retention times, UV, fluorescence, NMR and ESI-MS (negative ion mode)

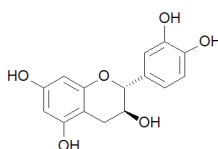
Analytes

- Gallic acid
- Procyanidin B3 (dimer) + procyanidin C2 (trimer)
- Procyanidin B1 (dimer)
- (+)-Catechin
- Procyanidin C3 (trimer)
- Procyanidin B4 (dimer)
- Procyanidin B2 (dimer)
- (-)-Epicatechin
- Procyanidin B3 gallate (dimer)
- Procyanidin B7 (dimer)
- Procyanidin C1 (trimer)
- Procyanidin tetramer
- Procyanidin pentamer
- Procyanidin hexamer
- (-)-Epigallocatechin
- Procyanidin B5 (dimer)

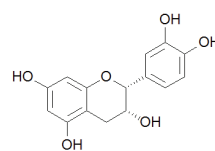


Procyanidin C1

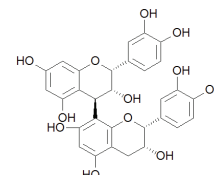
Procyanidin B5



(±)-Catechin



(±)-Epicatechin



Procyanidin B2

Grases F, Prieto R, Fernandez-Cabot R, Costa-Bauza A, Sanchez A, Prodanov M (2015) Effect of consuming a grape seed supplement with abundant phenolic compounds on the oxidative status of healthy human volunteers. Nutrition Journal 14:94 (2015) doi: 10.1186/s12937-015-0083-3

Phenols in Purple Coneflower (*Echinacea Purpurea*)

Application #AN2920

Conditions

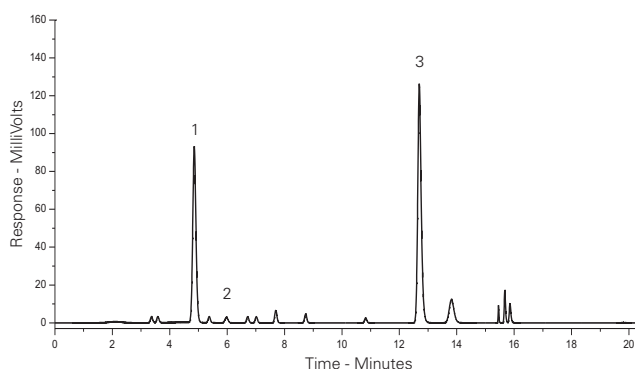
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 0.1% H₃PO₄ in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	10
13	22
14	40

Flow Rate: 1.5 mL/min**Injection:** 10 µL**Temperature:** 35 °C**Detection:** UV, 330 nm

Analytes

- Caftaric acid
- Chlorogenic acid
- Cichoric acid

*Echinacea Purpurea*

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Phosphatidylethanol Biomarker Analysis by UHPLC-MS/MS

Application #AN3400

Conditions

Column: ACE 2 C4
Dimensions: 100 x 2.1 mm
Part Number: EXL-103-1002U
Mobile Phase: A: 2 mM ammonium acetate/MeCN (20:80 v/v)
 B: IPA

Gradient:

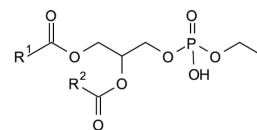
Time (mins)	%B
0.00	10
1.00	10
3.00	60
3.01	100
5.00	100
5.10	10

Flow Rate: 0.4 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: AB SCIEX triple quad 5500
 Turbo IonSpray negative mode ESI
 IonSpray Voltage: -4500 V
 Temperature: 650 °C

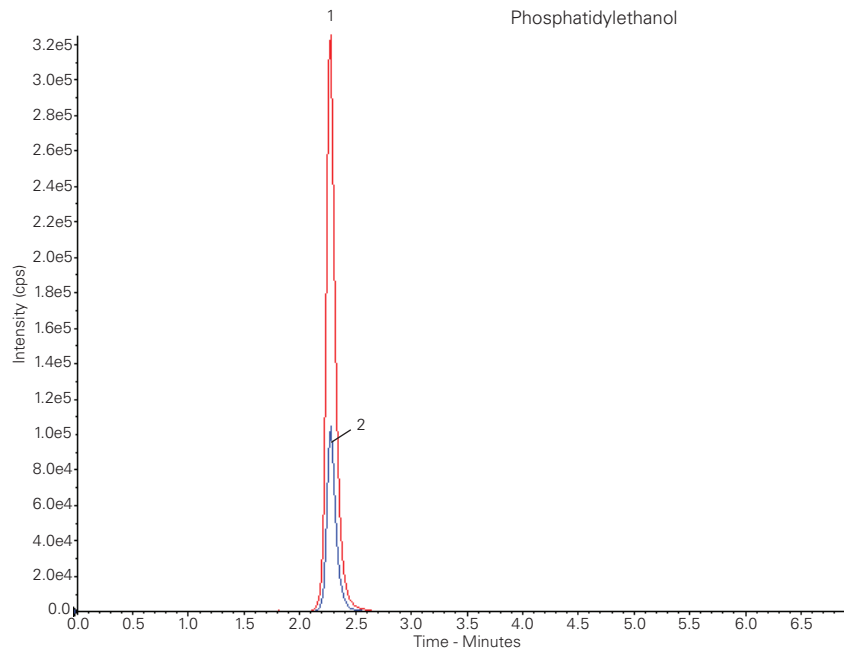
Phosphatidylethanol (PEth) measurement in blood is used as a biomarker of chronic alcohol use/abuse.

Analytes

1. R1/R2 = 18:1/18:1
(*m/z* 701.4 → 281.2)
2. R1/R2 = 16:1/16:1
(*m/z* 701.4 → 255.1)



Phosphatidylethanol



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Phytoestrogens from Hop Extract by LC-MS/MS

Application #AN1160

Conditions

Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: A: 1% formic acid in MeCN
 B: 1% formic acid in MeOH
 C: 1% formic acid in H₂O
 D: MeOH

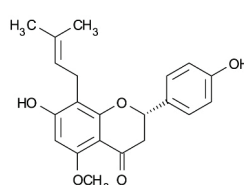
Gradient:

Time (mins)	%A	%B	%C	%D
0	56	0	44	0
8	51	5	44	0
10	51	5	44	0
17	95	5	0	0
22	95	0	0	5

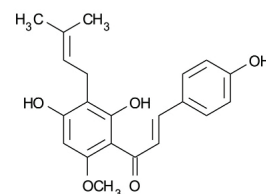
Flow Rate: 0.6 mL/min
Detection: TSQ-Quantum triple quad ESI
 Spray voltage: -4500 V
 Precursor ion: 355.4 [M+H]⁺
 MRM transition ions: 179 and 299
 Collision energy: 28 and 16 V

Analytes

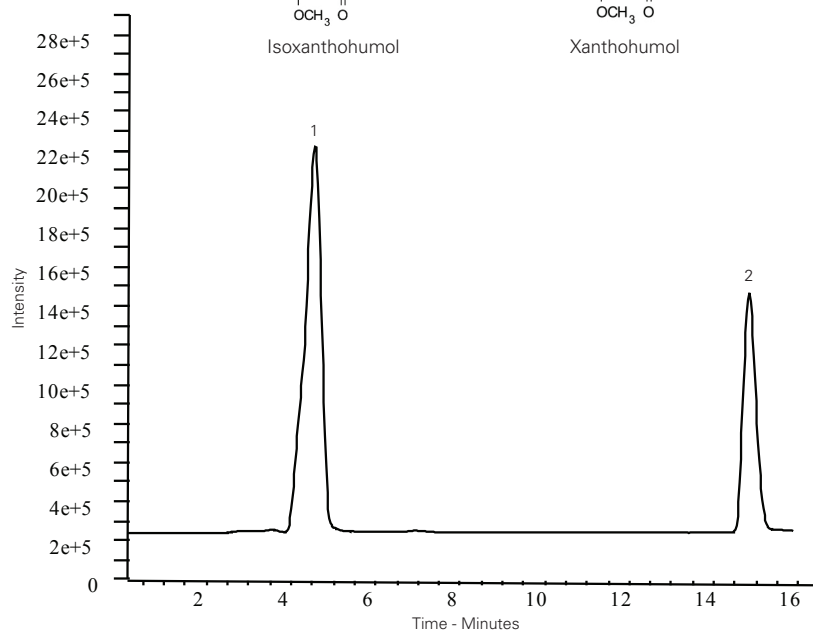
1. Isoxanthohumol
LOQ 0.07 µg/mL
2. Xanthohumol
LOQ 0.01 µg/mL



Isoxanthohumol



Xanthohumol



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Pilocarpine

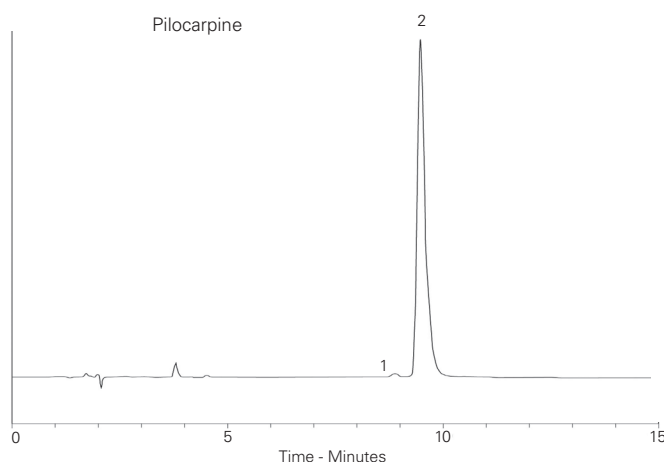
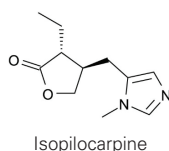
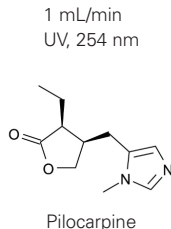
Application #AN3720

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 2 mM tetrabutylammonium dihydrogen phosphate/MeCN (85:15 v/v)
Flow Rate: 1 mL/min
Detection: UV, 254 nm

Analytes

1. Isopilocarpine
2. Pilocarpine



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enable your chromatography
colleagues to benefit and if we
select your application for future
publications we'll send you a
FREE ACE analytical column of
your choice.

To submit your application:
email us at info@ace-hplc.com

Plant Hormones Involved in Abiotic Stresses

Application #AN4010

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 4.6 mm
Part Number: CORE-25A-1546U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeCN

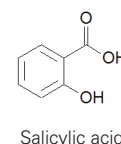
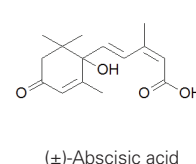
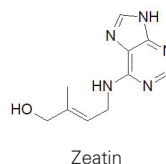
Gradient:	Time (mins)	%B
	0	0
	2	40
	5	60
	13	100
	15	20

Flow Rate: 0.5 mL/min
Temperature: 40 °C
Detection: Shimadzu LCMS-8040 triple quad MS
 ESI positive and negative mode

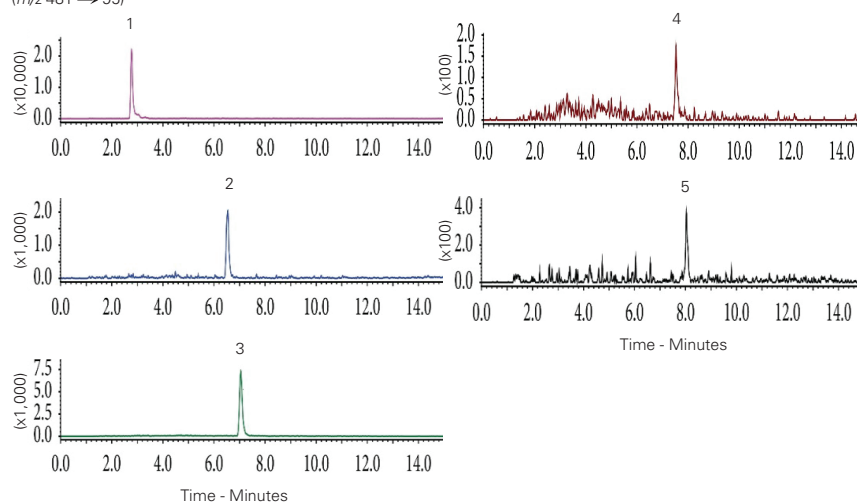
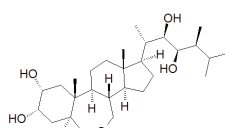
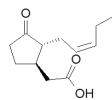
Sample: Crude extract of *Arabidopsis thaliana*
 rosette leaves

Analytes

1. Zeatin (+ ESI)
(*m/z* 220 → 119)
2. (±)-Absciscic acid (+ ESI)
(*m/z* 247 → 91)
3. Salicylic acid (- ESI)
(*m/z* 137 → 93)
4. (±)-Jasmonic acid (- ESI)
(*m/z* 209 → 59)
5. Brassinolide (+ ESI)
(*m/z* 481 → 95)



Plant hormones are involved in the regulation of response
to exposure of abiotic stresses such as drought or salt



Kasote DM, Ghosh R, Chung JY, Kim J, Bae I, Bae H. Multiple Reaction Monitoring Mode Based Liquid Chromatography-Mass Spectrometry Method for Simultaneous Quantification of Brassinolide and other Plant Hormones Involved in Abiotic Stresses. International Journal of Analytical Chemistry (2016). <http://dx.doi.org/10.1155/2016/7214087>



Polar Compounds Separation

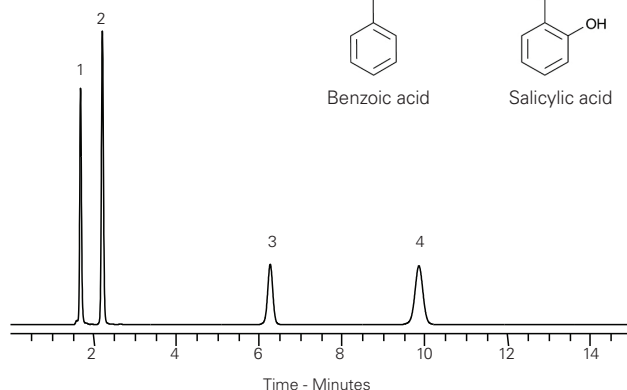
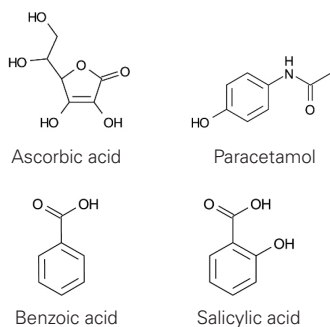
Application #AN1590

Conditions

Column: ACE Excel 5 CN-ES
Dimensions: 150 x 4.6 mm
Part Number: EXL-1213-1546U
Mobile Phase: MeOH/H₂O (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 20 °C
Detection: UV, 254 nm

Analytes

1. Ascorbic acid
2. Paracetamol
3. Benzoic acid
4. Salicylic acid



Polyamines

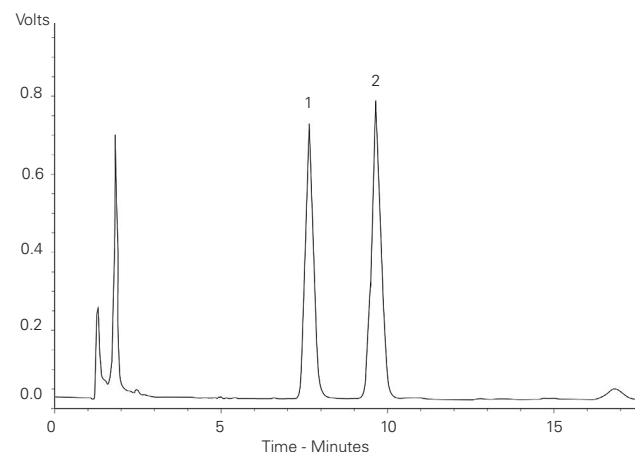
Application #AN3740

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: TRIS buffer pH 7.0/MeOH (10:90 v/v)
Flow Rate: 1.2 mL/min
Detection: Fluorescence – λ_{ex} 340 nm, λ_{em} 450 nm

Analytes

1. Putrescine
 2. Cadaverine
- (as OPA derivatives)



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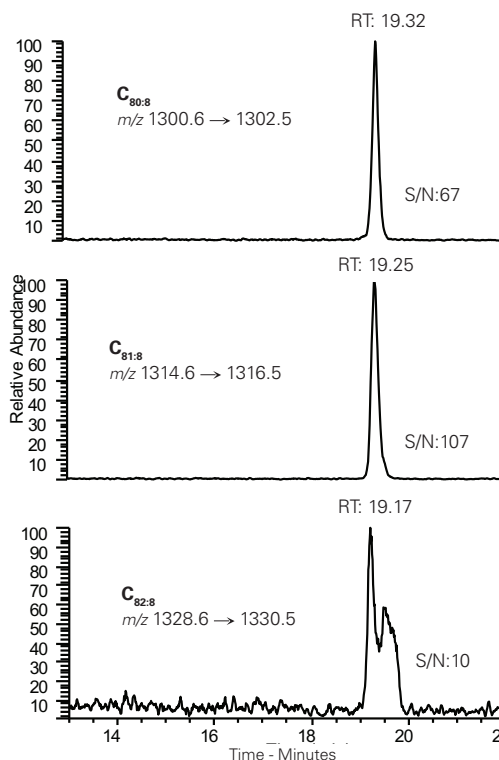
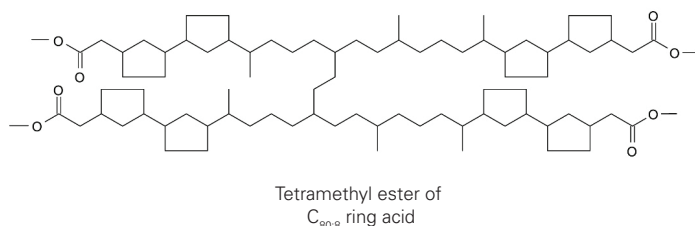
Polycyclic Tetracarboxylic Acids

Application #AN1340

Conditions

Column: ACE UltraCore 2.5 SuperPhenylHexyl
Dimensions: 100 x 2.1 mm
Part Number: CORE-25B-1002U
Mobile Phase: A: 10 mM ammonium acetate in MeOH/H₂O (98:2 v/v)
 B: 10 mM ammonium acetate in IPA/H₂O (98:2 v/v)
Gradient: Time (mins) %B
 0.0 0
 1.0 0
 15.0 100
 25.0 100
Flow Rate: 0.15 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: LCQ Ion trap MS
 LC-ESI-MS extracted ion chromatograms
 Compounds detected as ammoniated quasimolecular ions [M+NH₄]⁺
 Detection limit ~ 0.1 ppm

C₈₀₋₈₂ polycyclic tetracarboxylic acids isolated from oilfield deposits



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Polyethylene Glycol 1000

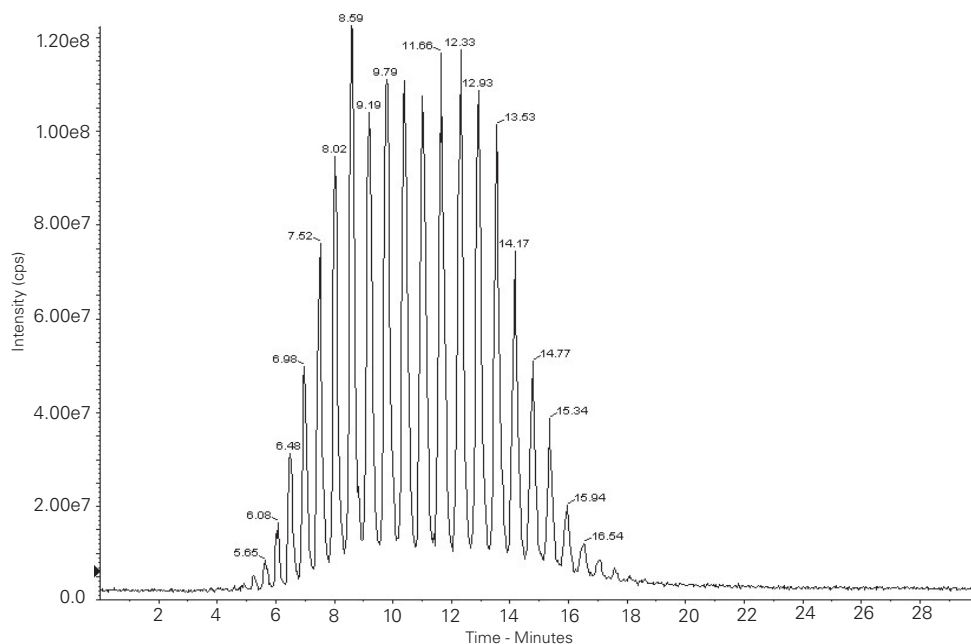
Application #AN3900

Conditions

Column: ACE 3 C8
Dimensions: 150 x 4.6 mm
Part Number: ACE-112-1546
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0	50
45	85
50	50
60	50

Flow Rate: 1 mL/min
Detection: APCI (negative ion)



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[¹⁴C]Pomalidomide and Metabolites in Human Plasma and Urine

Application #AN4240

Conditions

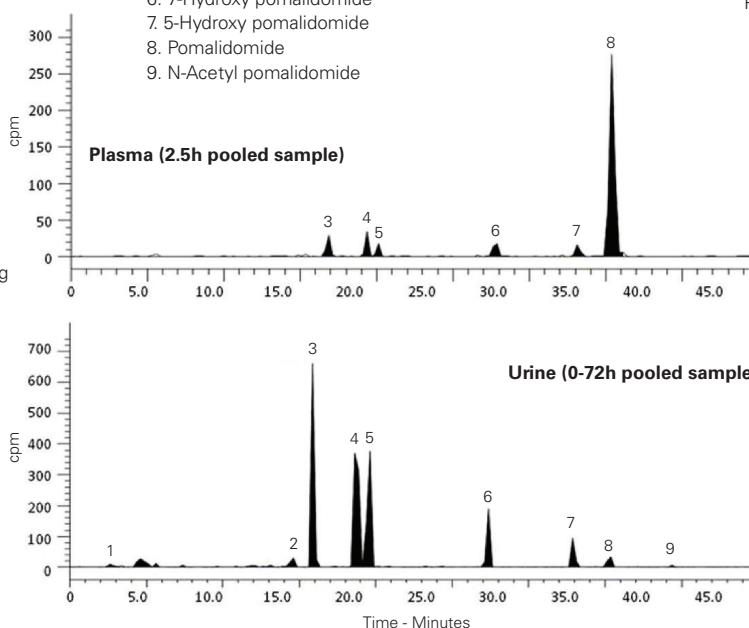
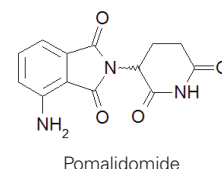
Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: A: 25 mM ammonium acetate pH 5.5 in H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0	0
2	0
38	36
44	100
48	100
50	0

Flow Rate: 0.7 mL/min
Temperature: 30 °C
Detection: Radiometric
 Metabolites characterised using LC-MS/MS (positive ion mode)

Analytes

1. 3-Aminophthalic acid
2. Hydrolysis product of pomalidomide
3. Hydrolysis product of pomalidomide
4. Glucuronide conjugate of 5-hydroxy pomalidomide
5. Glucuronide conjugate of 5-hydroxy pomalidomide
6. 7-Hydroxy pomalidomide
7. 5-Hydroxy pomalidomide
8. Pomalidomide
9. N-Acetyl pomalidomide



Hoffmann M, Kasserra C, Reyes J, Schafer P, Kosek J, Capone L, Parton A, Kim-Kang H, Surapaneni S, Kumar G. Absorption, Metabolism and Excretion of [¹⁴C] Pomalidomide in Humans following Oral Administration. Cancer Chemotherapy and Pharmacology 71, 489-501 (2013) doi 10.1007/s00280-012-2040-6



Porphyrins in Oral Bacteria by LC-MS/MS

Application #AN3080

Conditions

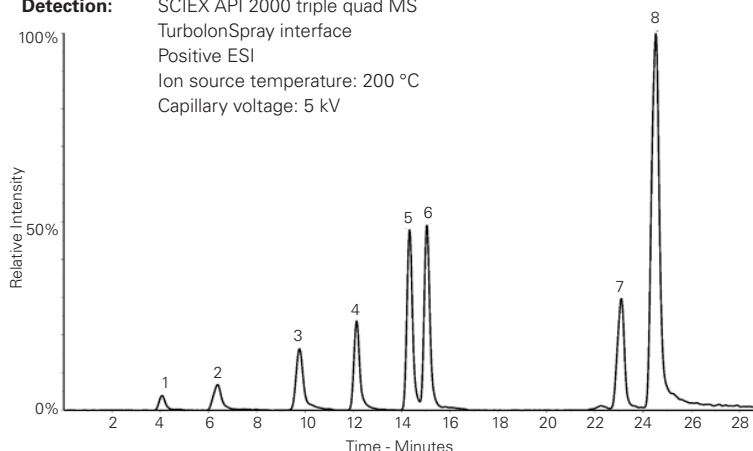
Column: ACE 3 C18-PFP
Dimensions: 75 x 2.1 mm
Part Number: ACE-1110-7502
Mobile Phase: A: 0.1 % formic acid in H₂O/MeCN (95:5 v/v)
 B: 0.1 % formic acid in H₂O/MeCN (5:95 v/v)
Gradient:

Time (mins)	%B
0.0	30
10.0	50
10.2	100
35.0	100

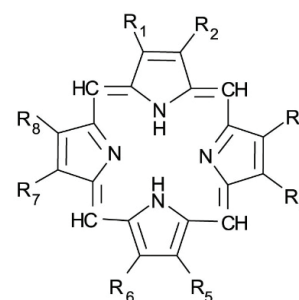
Flow Rate: 0.1 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: SCIEX API 2000 triple quad MS
 TurbolonSpray interface
 Positive ESI
 Ion source temperature: 200 °C
 Capillary voltage: 5 kV

Analytes

1. Uroporphyrin I
(R₁:A, R₂:P, R₃:A, R₄:P, R₅:A, R₆:P, R₇:A, R₈:P)
(m/z 831 → 727, 623, 655)
2. 7-Carboxyporphyrin I
(R₁:A, R₂:P, R₃:A, R₄:P, R₅:A, R₆:P, R₇:M, R₈:P)
(m/z 787 → 683, 670, 623)
3. 6-Carboxyporphyrin I
(R₁:M, R₂:P, R₃:A, R₄:P, R₅:A, R₆:P, R₇:M, R₈:P)
(m/z 743 → 639, 507, 521)
4. 5-Carboxyporphyrin I
(R₁:M, R₂:P, R₃:M, R₄:P, R₅:A, R₆:P, R₇:M, R₈:P)
(m/z 699 → 463, 595, 640)
5. Coproporphyrin I
(R₁:M, R₂:P, R₃:M, R₄:P, R₅:M, R₆:P, R₇:M, R₈:P)
(m/z 655 → 537, 596, 523)
6. Coproporphyrin III
(R₁:M, R₂:P, R₃:M, R₄:P, R₅:M, R₆:P, R₇:P, R₈:M)
(m/z 655 → 537, 596, 523)
7. Mesoporphyrin IX
(R₁:M, R₂:E, R₃:M, R₄:E, R₅:M, R₆:P, R₇:M, R₈:P)
(m/z 567 → 449, 479, 508)
8. Protoporphyrin IX
(R₁:M, R₂:V, R₃:M, R₄:V, R₅:M, R₆:P, R₇:P, R₈:M)
(m/z 563 → 445, 504, 489)



Where:
 A: -CH₂COOH
 E: -CH₂CH₃
 M: -CH₃
 P: -CH₂CH₂COOH
 V: -CH=CH₂



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Pravastatin and Isomers by LC-MS/MS

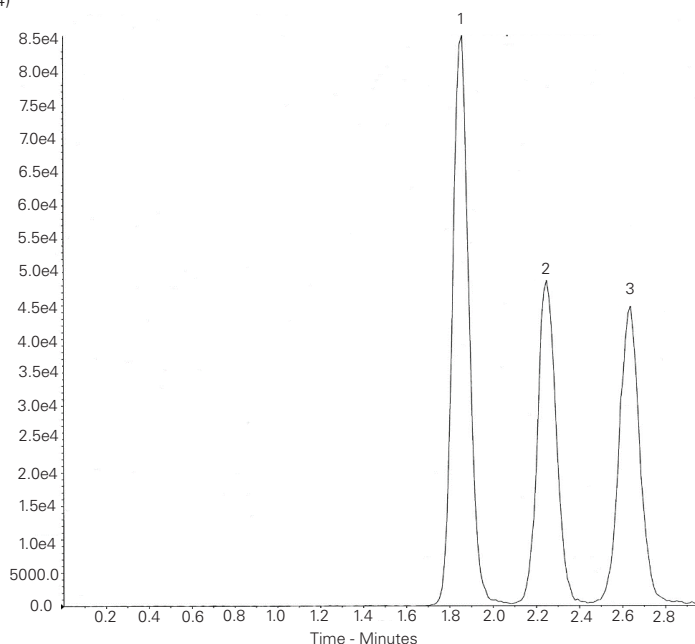
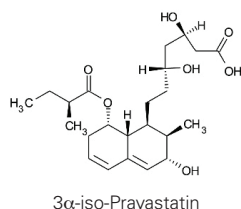
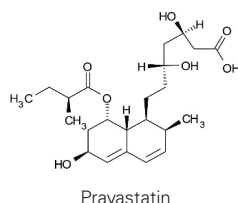
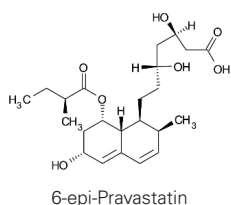
Application #AN1350

Conditions

Column: ACE 3 C18
Dimensions: 50 x 3.0 mm
Part Number: ACE-111-0503
Mobile Phase: MeCN/MeOH/THF/H₂O/Acetic Acid
 (15:20:5:60:0.1 v/v/v/v/v)
Flow Rate: 0.6 mL/min
Injection: 2 µL
Temperature: Ambient
Detection: API 3000 triple quad MS
 TurbolonSpray – negative mode
 Extracted ion chromatogram
 of MRM m/z 423.3 → 321.1

Analytes

1. 6-epi-Pravastatin
(MW 424)
2. Pravastatin
(MW 424)
3. 3α-iso-Pravastatin
(MW 424)



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Pravastatin in Cell Lysate Samples by LC-MS/MS

Application #AN4350

Conditions

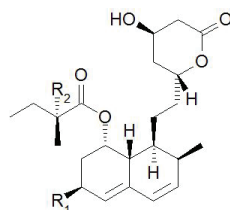
Column: ACE Excel 3 SuperC18
Dimensions: 100 x 3.0 mm
Part Number: EXL-1111-1003U
Mobile Phase: A: 5 mM ammonium acetate pH 4.5 in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	65
4	65
5	75
7	75
8	65

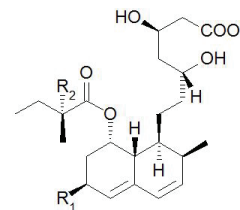
Flow Rate: 0.3 mL/min
Temperature: 40 °C
Detection: Quattro Ultima triple quad MS
 ESI MRM mode: +ve (lactones)
 -ve (hydroxy acids)
 Source temperature: 125 °C
 Desolvation temperature: 350 °C

Analytes

1. Lactone form (pharmacologically inactive)
2. Hydroxy acid form (pharmacologically active)



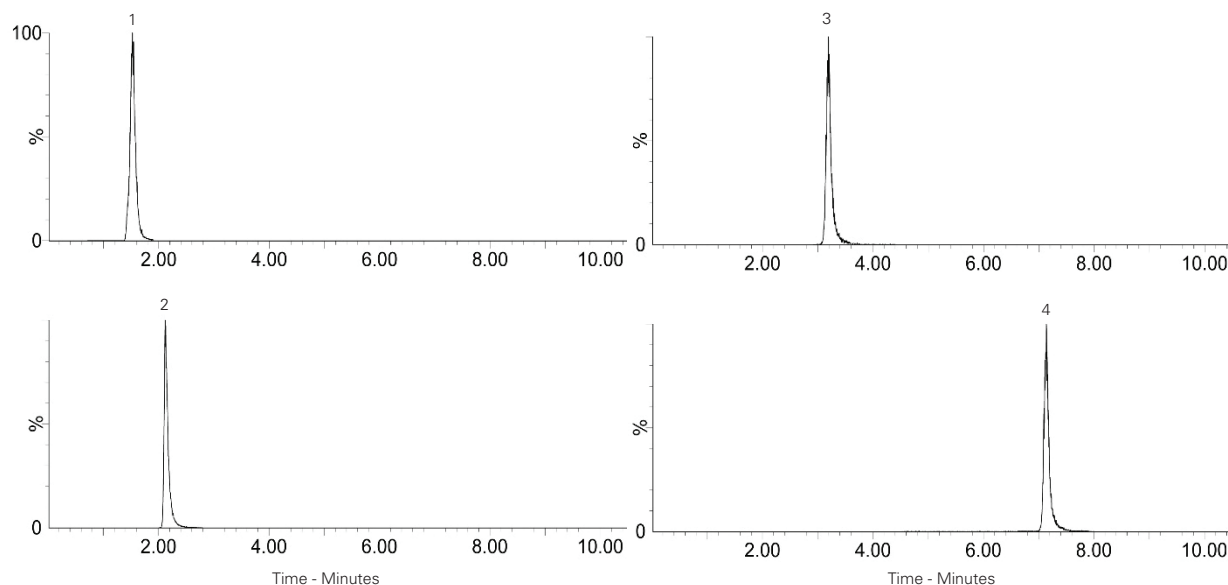
Lactone form
(pharmacologically inactive)



Hydroxy acid form
(pharmacologically active)

Peak	Analyte	Precursor ion	MRM transition (m/z)	LLOQ (ng/mL)
1	Pravastatin hydroxy acid	[M-H] ⁻	423.23 → 321.37	2.23
2	Pravastatin lactone	[M+H] ⁺	407.46 → 183.22	2.03
3	Lovastatin hydroxy acid (IS)	[M-H] ⁻	421.08 → 319.54	n/a
4	Lovastatin lactone (IS)	[M+Na] ⁺	427.15 → 325.36	n/a

Pravastatin: R₁ = OH, R₂ = H
Lovastatin (IS): R₁ = CH₃, R₂ = H



Taha DA, de Moor CH, Barrett DA, Lee JB, Gandhi RD, Hoo CW, Gershkovich P, (2016) The role of acid-base imbalance in statin-induced myotoxicity. Translational Research, The Journal of Laboratory and Clinical Medicine. <http://dx.doi.org/10.1016/j.trsl.2016.03.015>

Prednisolone, Prednisone, Cortisol and Cortisone in Serum by LC-MS/MS

Application #AN2690

Conditions

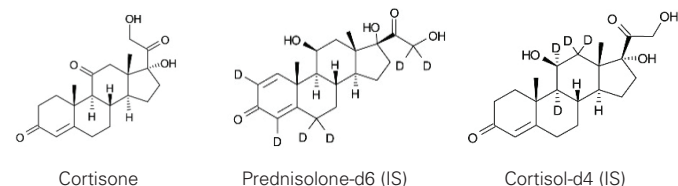
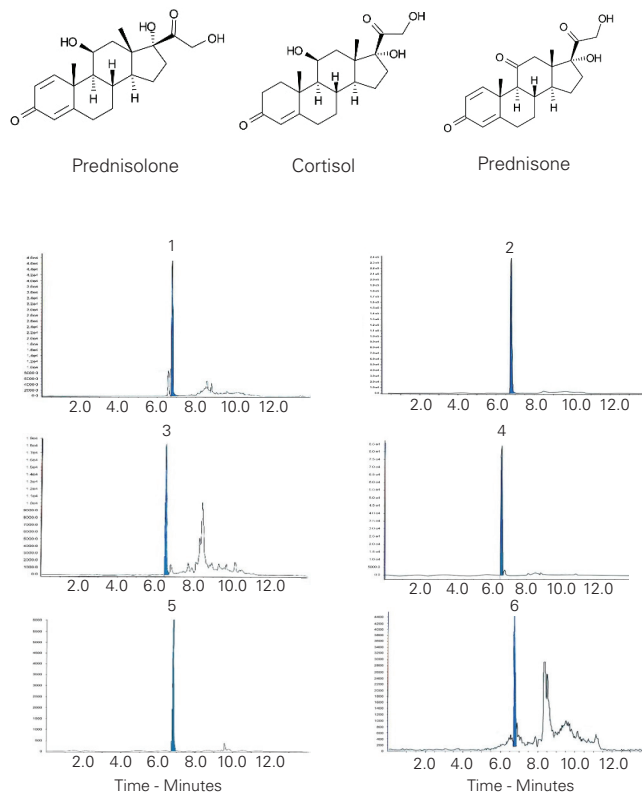
Column: ACE Excel 2 C18
Dimensions: 100 x 2.1 mm
Part Number: EXL-101-1002U
Mobile Phase: A: 4 mM ammonium acetate in H₂O
 B: 0.2% (v/v) formic acid in MeOH
Gradient:

Time (mins)	%B
0.00	30
0.25	30
3.90	70
6.00	70
6.01	95
7.00	95
7.01	100

Flow Rate: 0.2 mL/min
Injection: 50 µL
Temperature: 50 °C
Detection: Applied Biosystems 5000 MS/MS
 APCI in positive ion mode

Analytes

1. Prednisolone
(*m/z* 361.5 → 147.1)
2. Cortisol
(*m/z* 363.5 → 121.3)
3. Prednisone
(*m/z* 359.4 → 147.1)
4. Cortisone
(*m/z* 361.5 → 163.3)
5. Prednisolone-d6 (IS)
(*m/z* 367.4 → 150.3)
6. Cortisol-d4 (IS)
(*m/z* 367.3 → 331.3)



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Preservatives (I)

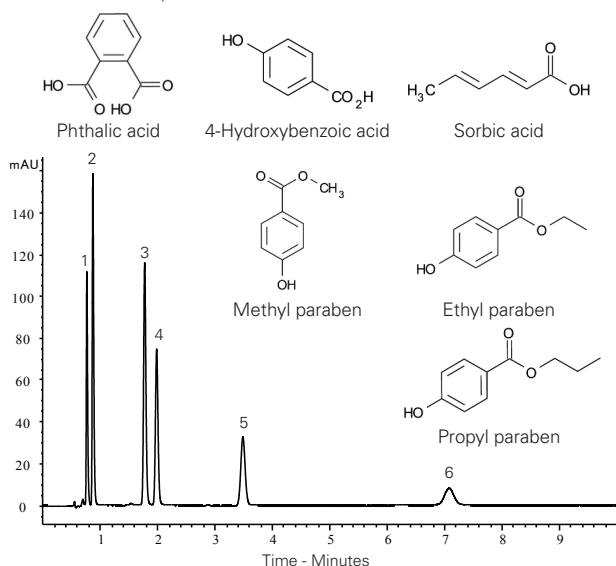
Application #AN2230

Conditions

Column: ACE Excel 1.7 C18
Dimensions: 50 x 3.0 mm
Part Number: EXL-171-0503U
Mobile Phase: 20 mM potassium phosphate
 pH 2.5 in MeCN/H₂O (30:70 v/v)
Flow Rate: 0.43 mL/min
Injection: 0.7 µL
Temperature: 20 °C
Detection: UV, 230 nm

Analytes

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



Preservatives (II)

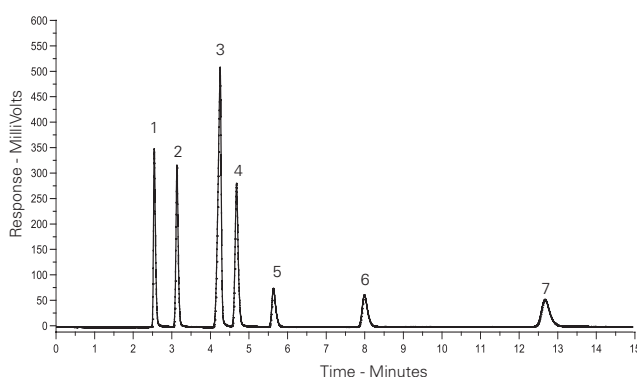
Application #AN3040

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: MeCN/50 mM KH₂PO₄
 pH 4.4 in H₂O (40:60 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 230 nm

Analytes

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



Pristinamycin Components in Plasma by LC-MS/MS

Application #AN1360

Conditions

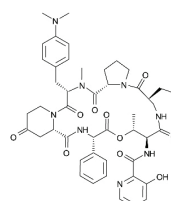
Column: ACE 3 C18
Dimensions: 30 x 3.0 mm
Part Number: ACE-111-0303
Mobile Phase: A: 1 mM ammonium formate + 0.1 % formic acid in MeCN/H₂O (35:65 v/v)
 B: MeCN
Gradient:

Time (mins)	%B
0.00	0
0.30	0
0.31	10
1.60	10
1.61	100
2.60	100
2.61	0
4.00	0

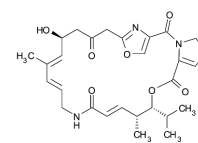
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 25 °C
Detection: MDS Sciex API 4000
 TurbolonSpray positive mode

Analytes

1. Pristinamycin IA
(*m/z* 867.5 → 134.2)
2. Pristinamycin IIA
(*m/z* 526.3 → 355.1)
3. Virginiamycin (IS)
(*m/z* 824.6 → 134.0)

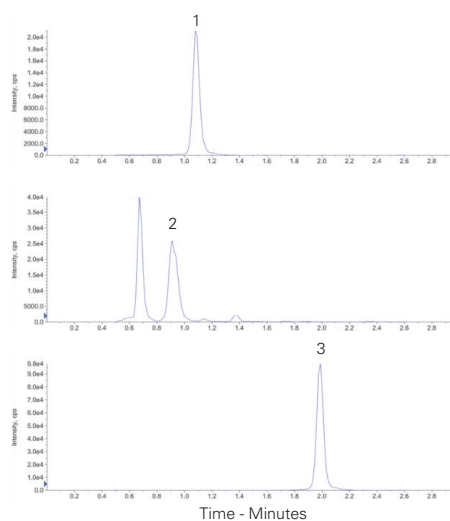
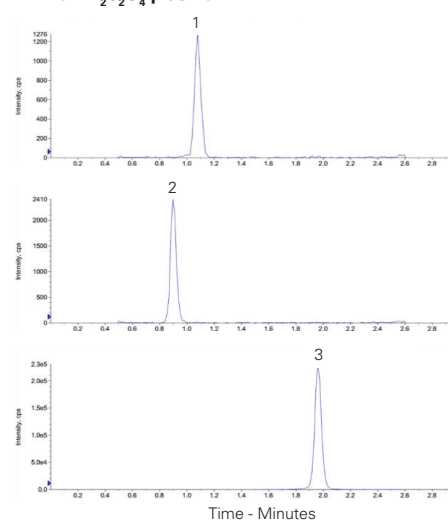


Pristinamycin IA



Pristinamycin IIA

Processed study sample containing pristinamycin IA and IIA

Low calibration standard containing 2.5 ng/mL each of pristinamycin IA and IIA in human NaF/K₂C₂O₄ plasma

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Proanthocyanidins from Cinnamon Bark Extract

Application #AN3510

Conditions

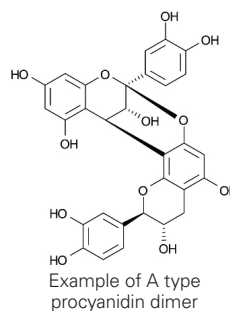
Column: ACE 3 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-111-2546
Mobile Phase: A: 1 % acetic acid in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0	36
35	36
40	50
45	100
55	0
60	0

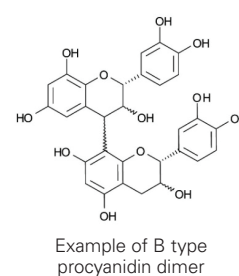
Flow Rate: 0.75 mL/min
Temperature: Ambient
Detection: UV, 280 nm
Sample: Cinnamon bark extract thiolysed with benzyl mercaptan

Analytes

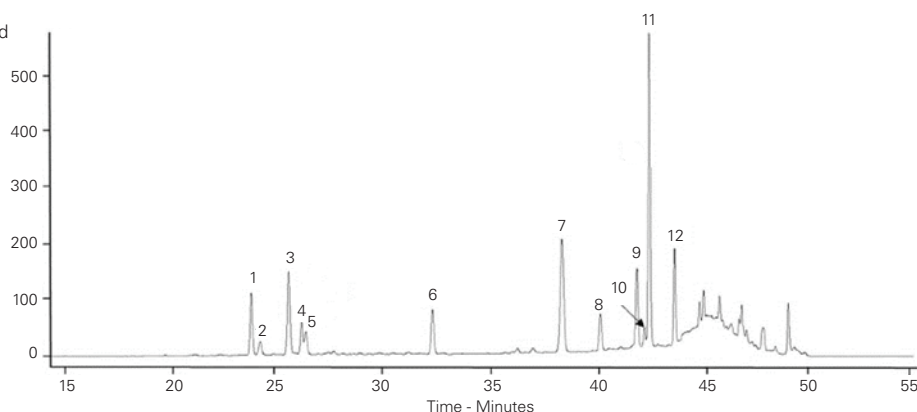
1. Catechin
 2. A-type PC dimer
 3. A-type PC trimer
 4. Epicatechin
 5. A-type PC trimer
 6. IS
 7. cis-Cinnamic acid
 8. A-type PC-BM trimer
 9. trans-Cinnamic acid
 10. cis-Catechin-BM
 11. Epicatechin-BM
 12. A-type PC-BM dimer
- PC = Procyanidin
 BM = Benzyl mercaptan adduct



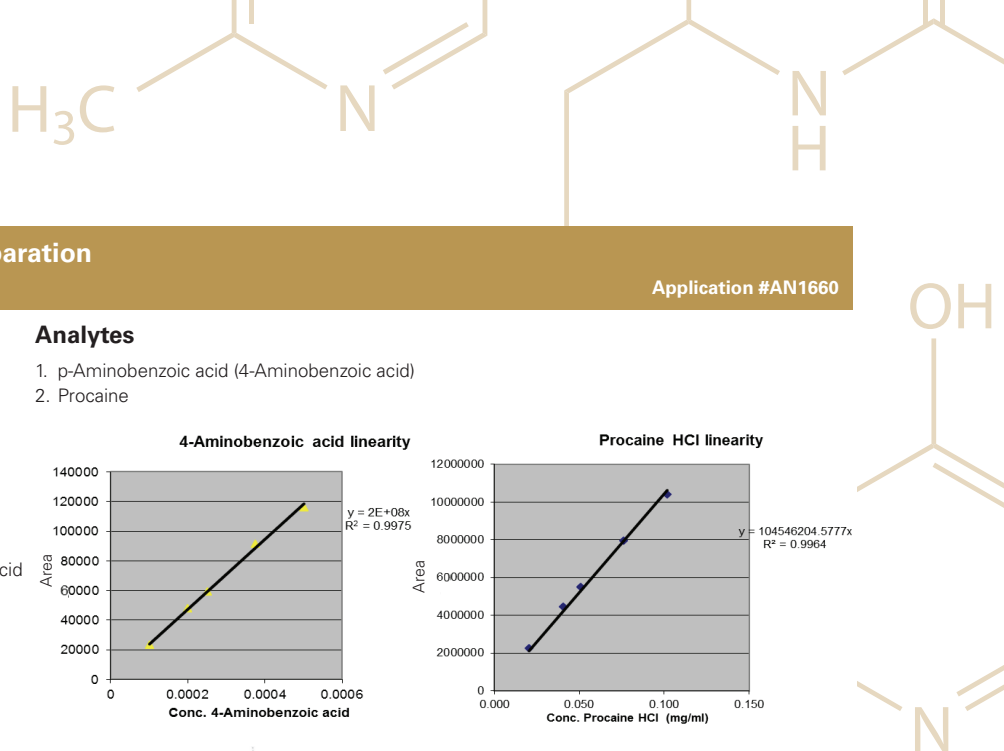
Example of A type procyanidin dimer



Example of B type procyanidin dimer



Williams, A. R. et al. Anthelmintic activity of trans-cinnamaldehyde and A and B-type proanthocyanidins derived from cinnamon (*Cinnamomum verum*). Sci. Rep. 5, 14791; doi:10.1038/srep14791 (2015).



Procaine and p-Aminobenzoic Acid Separation

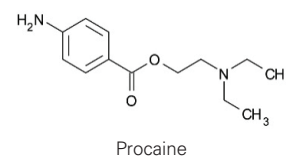
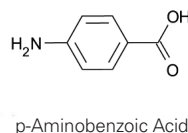
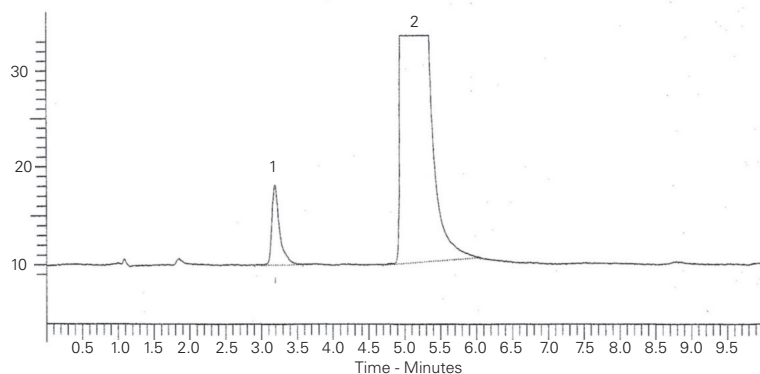
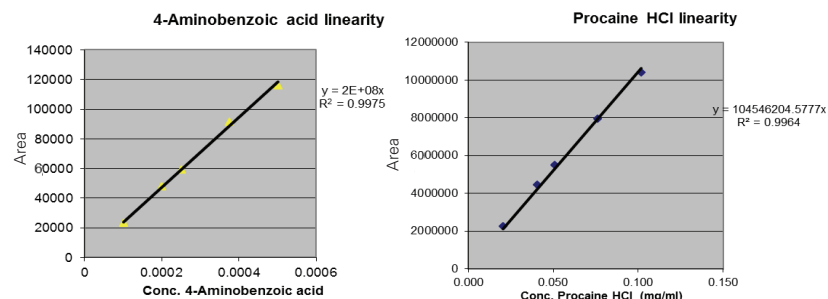
Application #AN1660

Conditions

Column: ACE 3 C18-PFP
Dimensions: 100 x 4.6 mm
Part Number: ACE-1110-1046
Mobile Phase: 0.6% acetic acid in H₂O/MeOH (81:19 v/v), adjusted to pH 4.7 with 20% NaOH
Flow Rate: 1 mL/min
Detection: UV, 279 nm
 S/N limit: 10
Sample: Procaine 0.0002 mg/mL, p-Aminobenzoic acid 0.00005 mg/mL

Analytes

1. p-Aminobenzoic acid (4-Aminobenzoic acid)
2. Procaine



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Propolis Phenolic Acids Applied to Human Skin

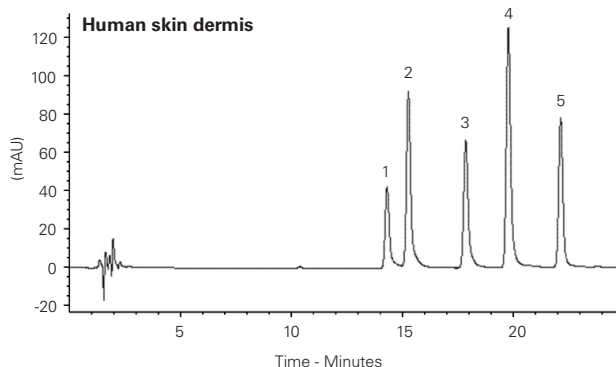
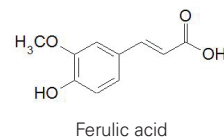
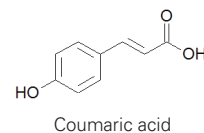
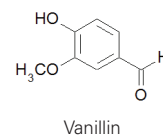
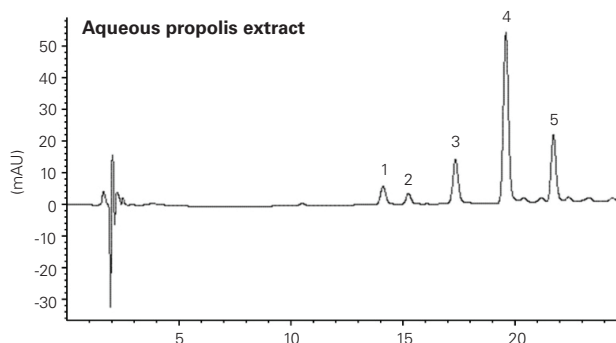
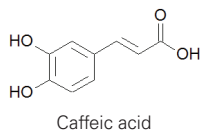
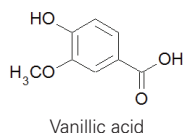
Application #AN4230

Conditions

Column: ACE 5 C18
Dimensions: 150 x 0.5 mm
Part Number: ACE-121-15005
Mobile Phase: A: 0.5% acetic acid in H₂O
 B: MeCN
Gradient: Time (mins) %B
 0 1
 25 21
Flow Rate: 20 µL/min
Injection: 0.2 µL
Temperature: 25 °C
Detection: UV, 290 nm

Analytes

1. Vanillic acid
2. Caffeic acid
3. Vanillin
4. Coumaric acid
5. Ferulic acid



Zilius M, Ramanauskienė K, Briedis V. Release of Propolis Phenolic Acids from Semisolid Formulations and their Penetration into the Human Skin in vitro. Evidence-based Complementary and Alternative Medicine (2013) <http://dx.doi.org/10.1155/2013/958717>

Prostaglandins using LC-MS/MS

Application #AN3260

Conditions

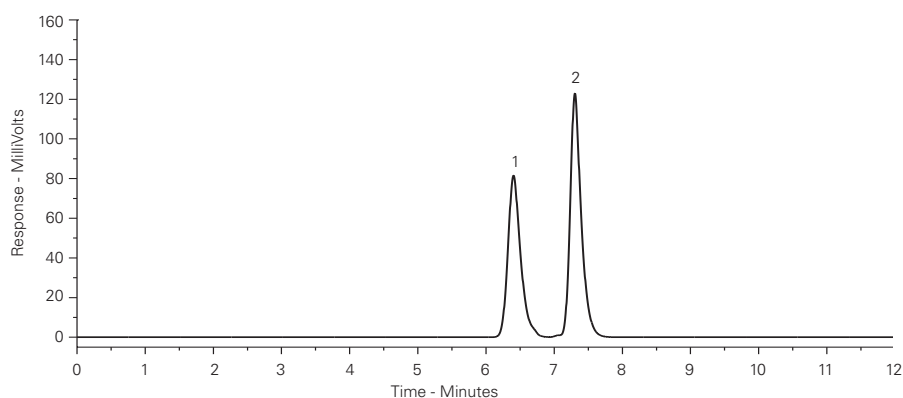
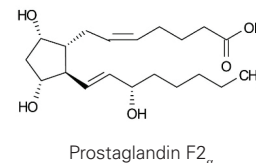
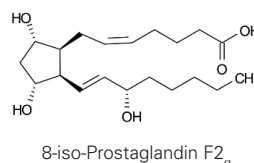
Column: ACE 3 C18
Dimensions: 50 x 2.1 mm
Part Number: ACE-111-0502
Mobile Phase: A: H₂O
 B: MeOH
 C: MeCN
Gradient:

Time (mins)	%A	%B	%C
0	70.0	20.0	10.0
9	10.0	60.0	30.0
10	0.1	66.6	33.3

Flow Rate: 0.2 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: ESI (-) MS/MS
 MRM m/z 353.3 → 193

Analytes

1. 8-iso-Prostaglandin F_{2α}
2. Prostaglandin F_{2α}



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Protein Test Mix

Application #AN3730

Conditions

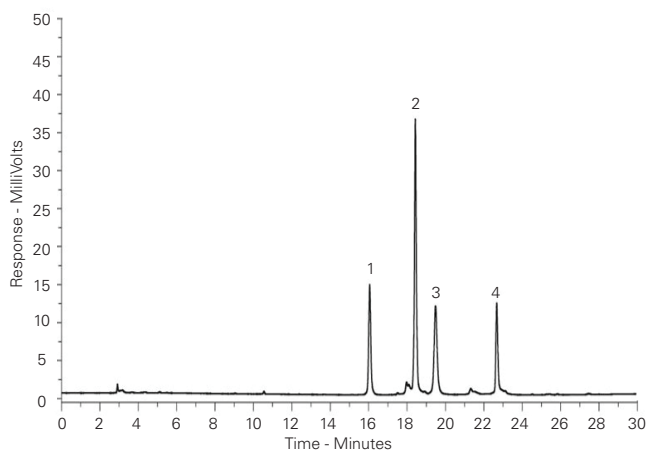
Column: ACE 5 C18-300
Dimensions: 250 x 4.6 mm
Part Number: ACE-221-2546
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in MeCN
Gradient:

Time (mins)	%B
0	5
30	70

Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 280 nm

Analytes

1. Ribonuclease A (MW ~14 kDa)
2. Cytochrome C (MW ~12 kDa)
3. Holo-transferrin (MW ~77 kDa)
4. Apomyoglobin (MW ~17 kDa)



Proton Pump Inhibitors (PPIs)

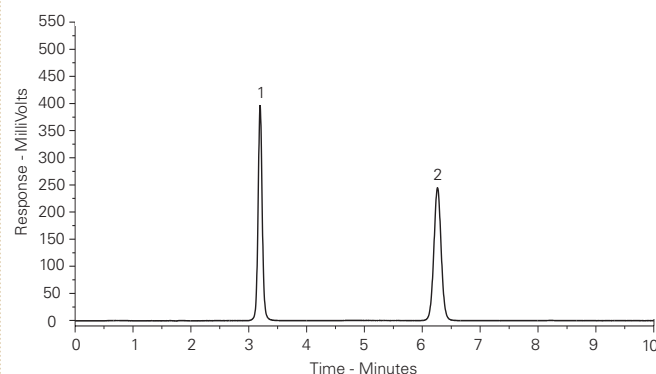
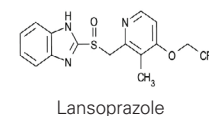
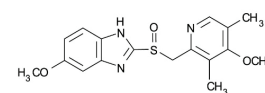
Application #AN3710

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM ammonium formate
 pH 3.0/MeCN (65:35 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 254 nm

Analytes

1. Omeprazole
2. Lansoprazole





Psychoactive Substances in 'Synthacaine' by LC-UV

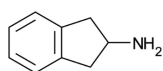
Application #AN3440

Conditions

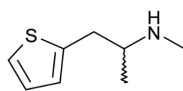
Column: ACE 3 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-111-1546
Mobile Phase: 10 mM ammonium formate pH 3.5/MeCN (90:10 v/v)
Flow Rate: 1.2 mL/min
Temperature: 22 °C
Detection: UV, 207 nm (2-Aminoindane) and 233 nm (Methiopropamine)
Sample: Synthacaine 40 µg/mL

Analytes

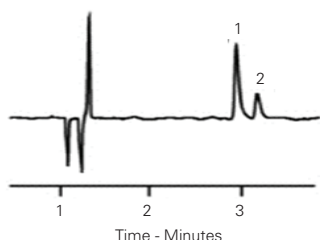
1. 2-Aminoindane
LOD 0.83 µg/mL
2. Methiopropamine
LOD 0.31 µg/mL



2-Aminoindane



Methiopropamine



Cumba L, Kolliopoulos A, Smith J, Thompson P, Evans P, Sutcliffe O, do Carmo D, Banks C (2015) Forensic electrochemistry: indirect electrochemical sensing of the components of the new psychoactive substance 'Synthacaine'. Analyst 140, 5536. doi:10.1039/c5an00858a

Quinidine, Quinine and their Hydroderivatives Separation

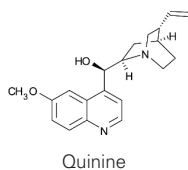
Application #AN1600

Conditions

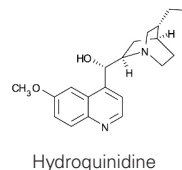
Column: ACE 3 C18-AR
Dimensions: 50 x 4.6 mm
Part Number: ACE-119-0546
Mobile Phase: 20 mM ammonium formate pH 3.0 in MeOH/H₂O (30:70 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 30 °C
Detection: UV, 254 nm

Analytes

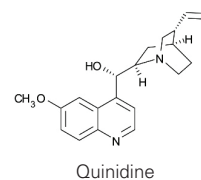
1. Quinidine
2. Quinine
3. Hydroquinidine
4. Hydroquinine



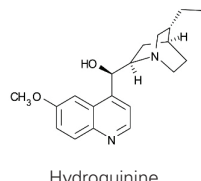
Quinine



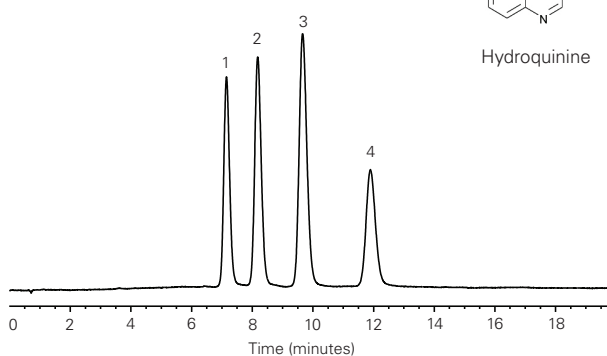
Hydroquinidine



Quinidine



Hydroquinine



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Ranitidine Hydrochloride and Related Impurities

Application #AN3450

Conditions

Column: ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-111-1046
Mobile Phase: A: 0.05 M KH_2PO_4 pH 6.5 in $\text{H}_2\text{O}/\text{MeCN}$ (98:2 v/v)
 B: $\text{H}_2\text{O}/\text{MeCN}$ (5:95 v/v)

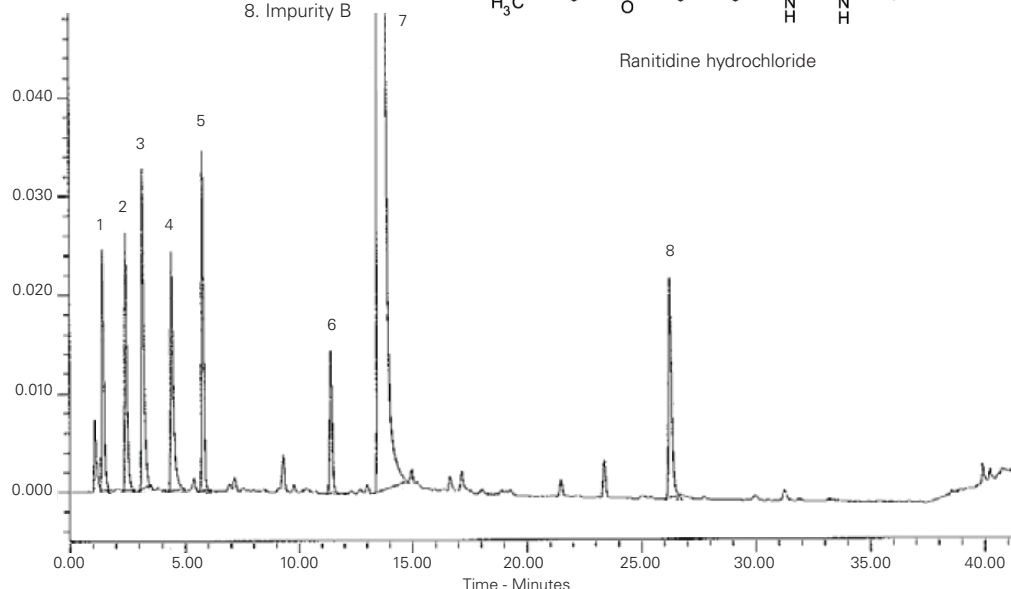
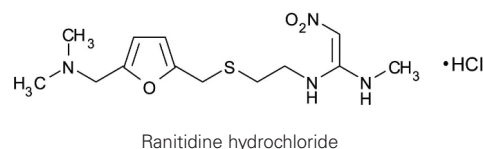
Gradient:

Time (mins)	%B
0	0
10	5
25	15
35	20
40	55
55	0

Flow Rate: 1 mL/min
Injection: 40 μL
Temperature: 40 $^{\circ}\text{C}$
Detection: UV, 230 nm

Analytes

1. Impurity F
2. Impurity E
3. Impurity D
4. Impurity A
5. Impurity C
6. Impurity G
7. Ranitidine
8. Impurity B



Sharma N, Rao S, Kumar N, Reddy P, Reddy A (2011) A Validated Stability-Indicating Liquid-Chromatographic Method for Ranitidine Hydrochloride in Liquid Oral Dosage Form. Sci Pharm. 79, 309. doi:10.3797/scipharm.1101-06

Recombinant hGMCSF Purified from *Escherichia Coli*

Application #AN3840

Conditions

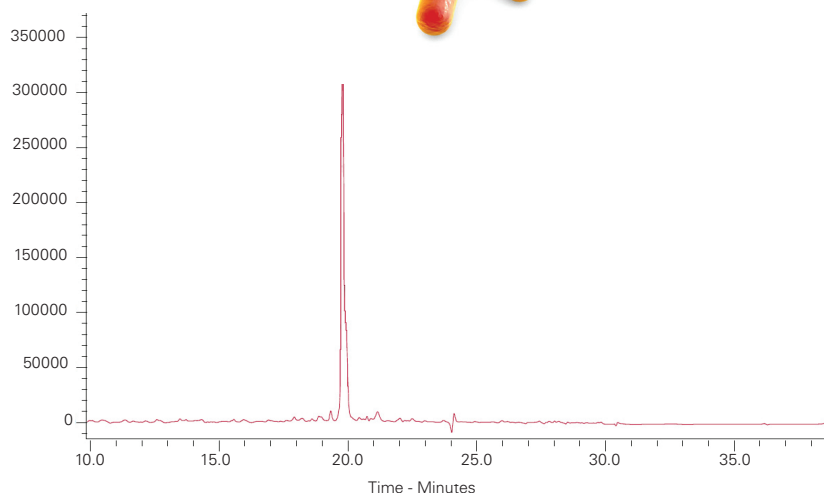
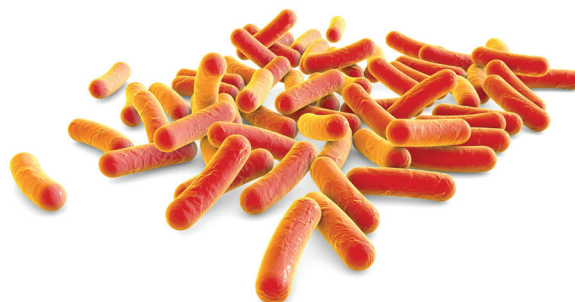
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: A: 0.1% TFA in $\text{H}_2\text{O}/\text{MeCN}$ (90:10 v/v)
 B: 0.1% TFA in $\text{H}_2\text{O}/\text{MeCN}$ (10:90 v/v)

Gradient:

Time (mins)	%B
0	10
20	65
23	100

Flow Rate: 1 mL/min
Temperature: 30 $^{\circ}\text{C}$
Detection: UV, 215 nm

hGMCSF = human Granulocyte Macrophage Colony Stimulating Factor, a 127 amino acid residue cytokine with a molecular weight of 14,477 Da



Das KMP, Banerjee S, Shekhar N, Damodaran K, Nair R, Somani S, Raiker VP, Jain S, Padmanabhan S. Cloning, Soluble Expression and Purification of High Yield Recombinant hGMCSF in *Escherichia coli*. Int. J. Mol. Sci. 2011, 12, 2064-2076; doi:10.3390/ijms12032064



Rifamycin Anti-tubercular Antibiotics in Human Plasma

Application #AN4090

Conditions

Column: ACE 3 C18
Dimensions: 100 x 3.0 mm
Part Number: ACE-111-1003
Mobile Phase: A: 15 mM ammonium formate pH 5.0 with formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	60
4.0	95
7.0	95
7.2	60
9.0	60

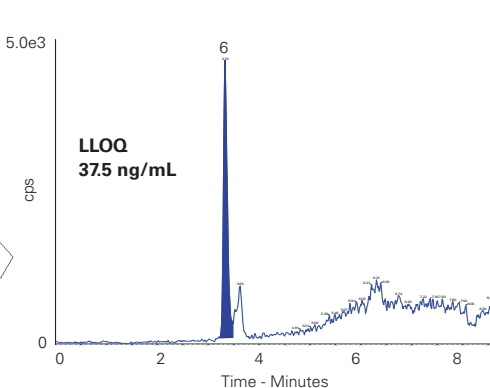
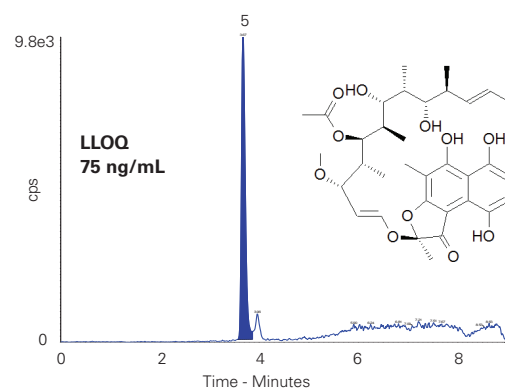
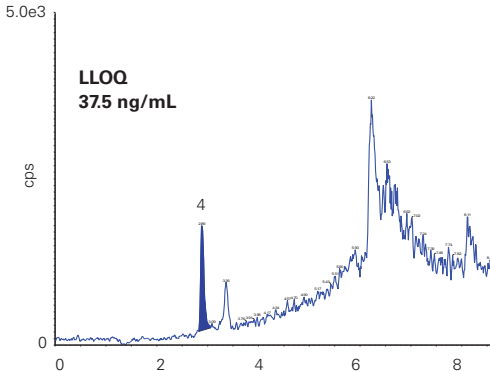
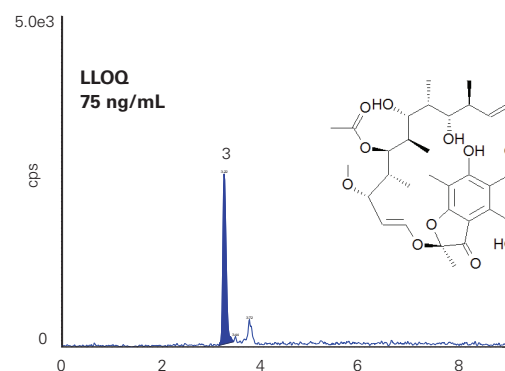
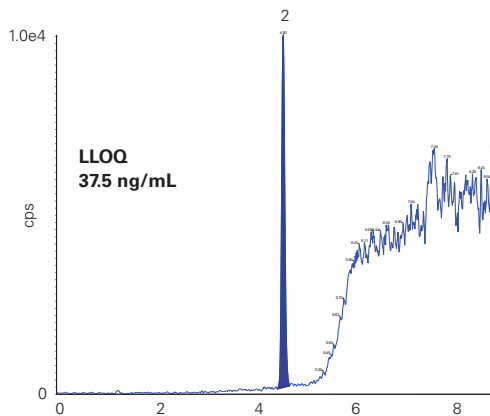
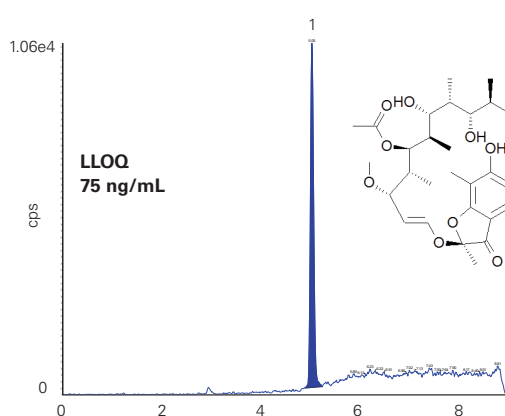
Flow Rate: 0.35 mL/min**Injection:** 2 µL**Temperature:** 30 °C

Detection: API 5000 triple quad MS
 ESI in positive ion mode

Analytes

1. Rifabutin
(*m/z* 847.5 → 815.5)
2. Desacetyl rifabutin
(*m/z* 805.5 → 773.4)
3. Rifampicin
(*m/z* 823.5 → 791.4)
4. Desacetyl rifampicin
(*m/z* 781.5 → 749.4)
5. Rifapentine
(*m/z* 877.5 → 845.4)
6. Desacetyl rifapentine
(*m/z* 835.5 → 803.5)

Assay for simultaneous quantification of rifamycin antibiotics and their corresponding active desacetyl metabolites



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Sennosides in Traditional Chinese Medicine

Application #AN1390

Conditions

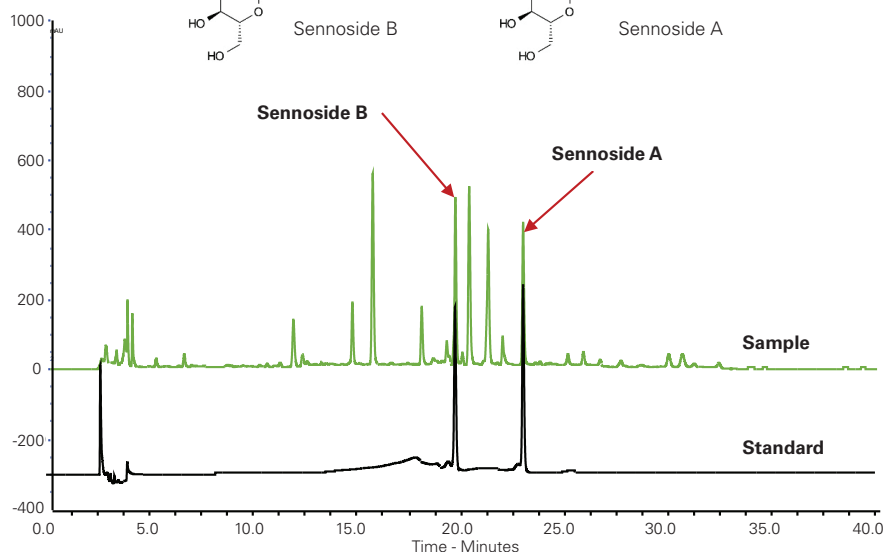
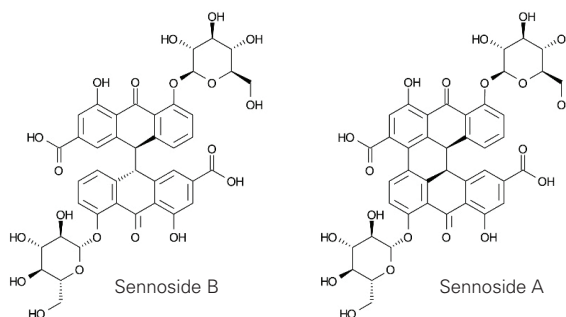
Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: A: 0.75% acetic acid in H₂O
 B: MeCN/MeOH (90:10 v/v)
Gradient:

Time (mins)	%B
0	9
23	28
40	28

Flow Rate: 0.6 mL/min
Temperature: 35 °C
Detection: UV, 271 nm
Sample: Herbal tea bag containing Folium Sennae, Peppermint, Folium Mori, Folium Nelumbinis, Glycyrrhiza Uralensis and Lalang Grass Rhizome

Analytes

Sennoside A
 Sennoside B



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Sotalol

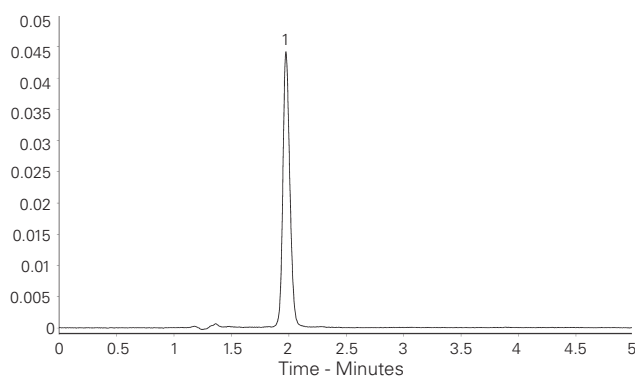
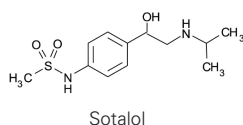
Application #AN3700

Conditions

Column: ACE 5 CN
Dimensions: 150 x 4.6 mm
Part Number: ACE-124-1546
Mobile Phase: 20 mM ammonium formate pH 3.0/MeOH (85:15 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL (0.2 mg/mL solution)
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Sotalol



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Snake Venom from *Crotalus Durissus Terrificus*

Application #AN4190

Conditions

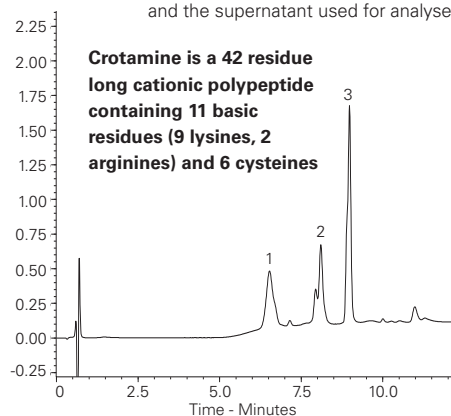
Column: ACE 3 C8-300
Dimensions: 50 x 4.6 mm
Part Number: ACE-212-0546
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in MeCN/H₂O (90:10 v/v)
Gradient:

Time (mins)	%B
0	20
2	20
27	70

Analytes

1. Crotaamine
 2. Crotafotin
 3. Phospholipase A2 (PLA₂)

Flow Rate: 1.2 mL/min
Injection: 20 µL
Detection: UV, 214 nm
Sample: Lyophilised crude venom powder was solubilised (1 mg/mL) in 0.1% TFA. Resulting solutions were centrifuged and the supernatant used for analyses.



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Stability Indicating Method for HIV Injection Treatment

Application #AN4170

Conditions

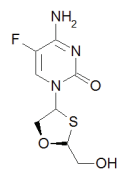
Column: ACE Excel 2 C18
Dimensions: 50 x 3.0 mm
Part Number: EXL-101-0503U
Mobile Phase: A: 0.1% TFA in H₂O
 B: 0.1% TFA in MeCN
Gradient:

Time (mins)	%B
0.0	10
3.0	90
6.0	90
6.1	10
8.0	10

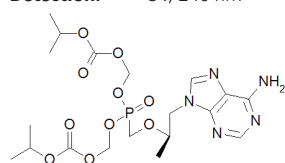
Flow Rate: 0.4 mL/min
Injection: 20 µL
Temperature: 30 °C
Detection: UV, 240 nm

Analytes

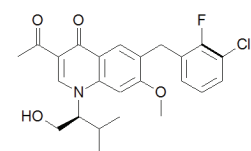
1. Emtricitabine (LLOQ 0.10 µg/mL)
2. Tenofovir disoproxil (LLOQ 0.10 µg/mL)
3. Cobicistat (LLOQ 0.20 µg/mL)
4. Elvitegravir (LLOQ 0.02 µg/mL)



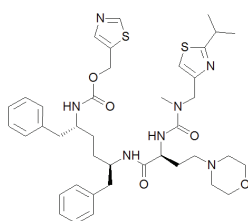
Emtricitabine



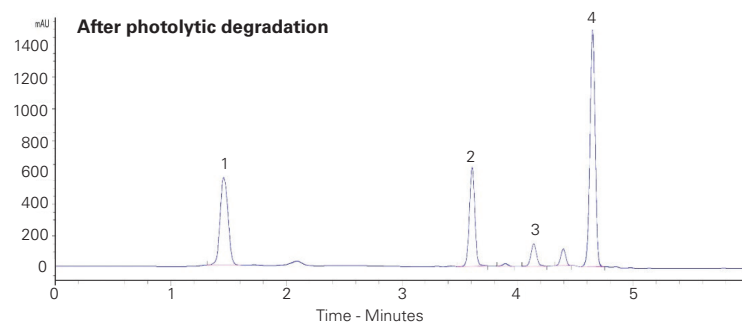
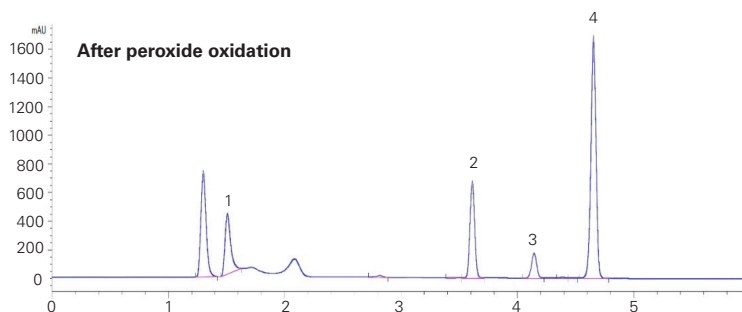
Tenofovir disoproxil



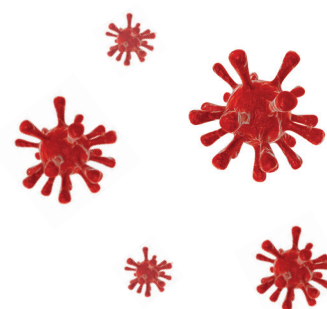
Elvitegravir



Cobicistat



Revath Naga Lakshmi P, Prahlad P, Mastananna SK., Ravindra N., Venkata Basaveswara Rao M, UPLC Separation Analysis of Emtricitabine, Tenofovir, Cobicistat and Elvitegravir from their Degradation products, Int. J. Pharm & Pharm Sci, 8(4), 362- 369 (2016)



Please contact us for further information and advice on specific applications or for method development support

Statins in Lactone and Hydroxy Acid Forms by HPLC-UV

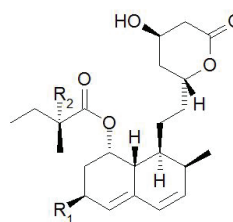
Application #AN4360

Conditions

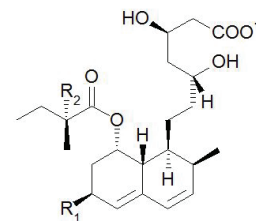
Column: ACE Excel 3 SuperC18
Dimensions: 100 x 3.0 mm
Part Number: EXL-1111-1003U
Mobile Phase: A: MeCN
 B: 5 mM ammonium acetate pH 4.5 in H₂O
 A/B (I) 73:27 v/v (II) 55:45 v/v
Flow Rate: (I) 0.4 mL/min (II) 0.3 mL/min
Injection: 20 µL
Temperature: 40 °C
Detection: UV, 238 nm

Analytes

1. Simvastatin hydroxy acid
2. 4,4-Dichlorodiphenyl trichloroethane (I.S.)
3. Simvastatin lactone
4. Pravastatin hydroxy acid
5. Griseofulvin (I.S.)
6. Pravastatin lactone

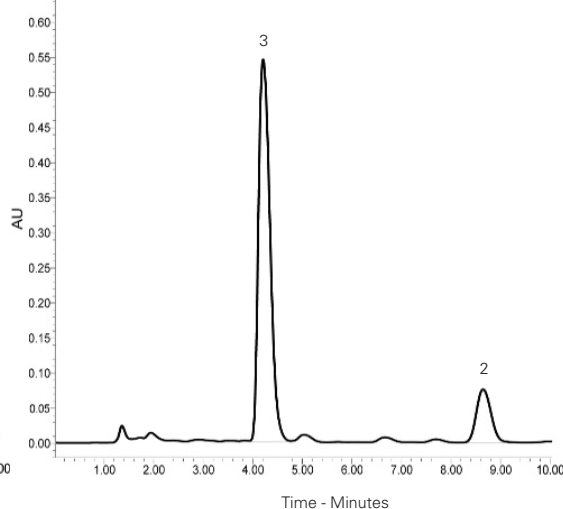
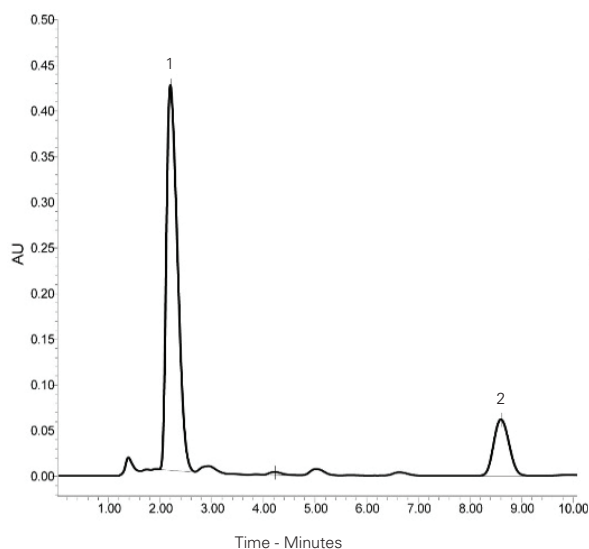
Simvastatin: R₁, R₂ = CH₃Pravastatin: R₁ = OH, R₂ = H

Lactone form
(pharmacologically inactive)

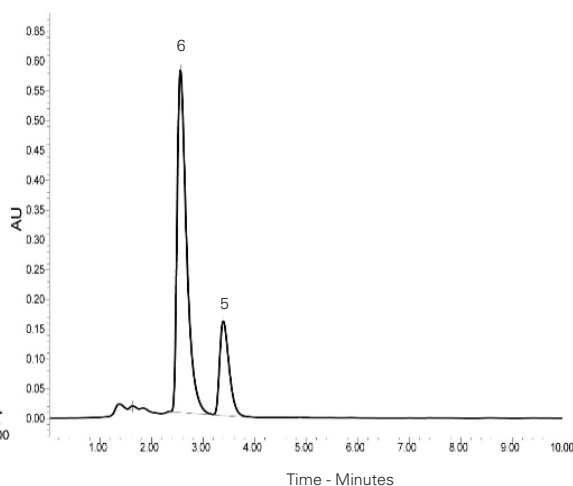
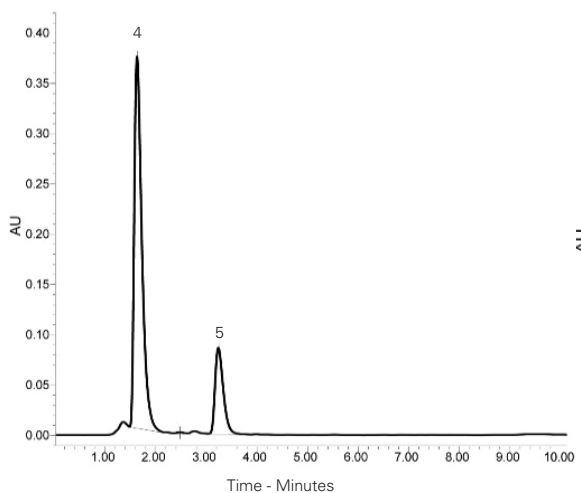


Hydroxy acid form
(pharmacologically active)

Conditions (I)



Conditions (II)



Statins – Atorvastatin

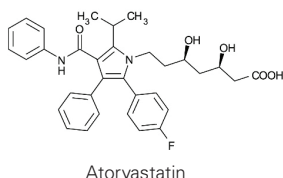
Application #AN3310

Conditions

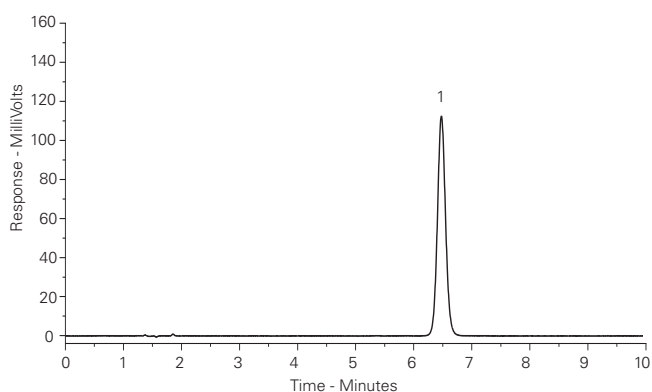
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM ammonium formate
 pH 3.0/MeCN (47:53 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Atorvastatin



Atorvastatin



Statins – Fluvastatin

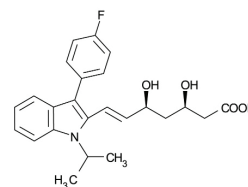
Application #AN3320

Conditions

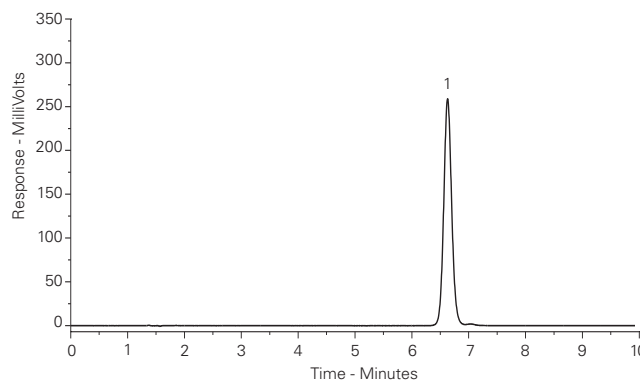
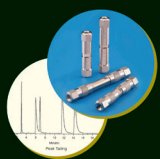
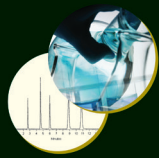
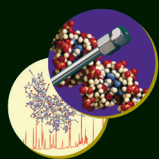
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM ammonium formate
 pH 3.0/MeCN (47:53 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Fluvastatin



Fluvastatin

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GuideA Guide to HPLC
and LC-MS
Buffer SelectionA Guide to the Analysis
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Reversed-Phase HPLC

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- HPLC Troubleshooting Guide

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email: info@ace-hplc.com

Statins – Pravastatin

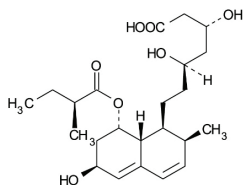
Application #AN3330

Conditions

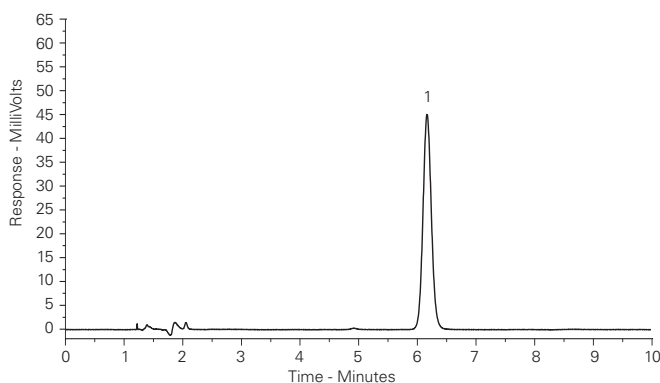
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM ammonium formate
 pH 3.0/MeCN (68:32 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Pravastatin



Pravastatin



Statins – Simvastatin

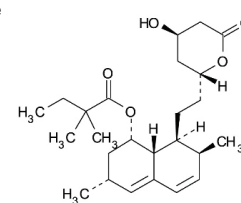
Application #AN3340

Conditions

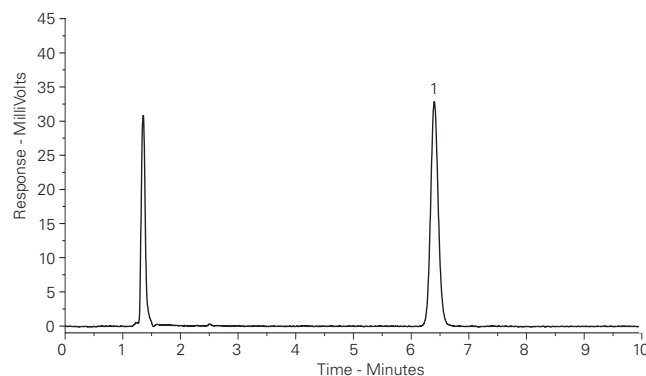
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 10 mM ammonium formate
 pH 3.0/MeCN (25:75 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: Ambient
Detection: UV, 254 nm

Analyte

1. Simvastatin



Simvastatin



Steroid Hormones (Endogenous) by LC-MS/MS

Application #AN2640

Conditions

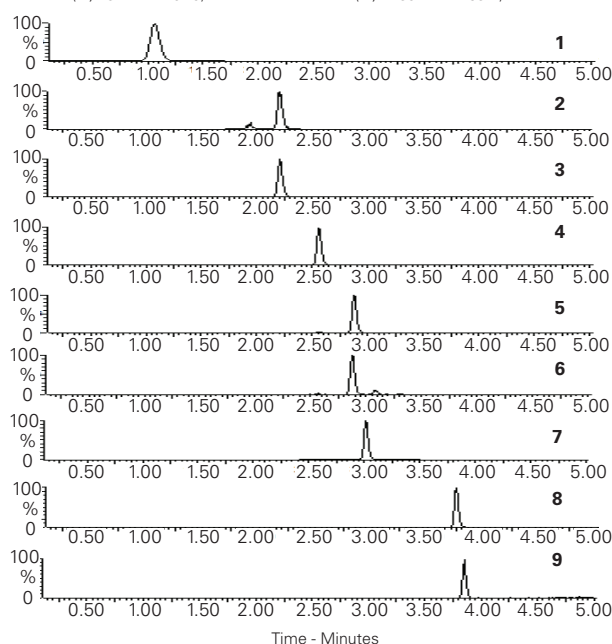
Column: ACE Excel 2 C18
Dimensions: 50 x 2.1 mm
Part Number: EXL-101-0502U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	50
0.8	50
4.2	81
4.3	100
5.3	100
5.8	50
6.8	50

Flow Rate: 0.4 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: MS/MS
 ESI in positive ion mode

Analytes

- | | | |
|--|--|---|
| 1. Aldosterone
(<i>m/z</i> 361.4 → 315.4) | 4. Androstenedione
(<i>m/z</i> 287.3 → 97.0) | 7. 17 α -Hydroxyprogesterone
(<i>m/z</i> 331.4 → 97.0) |
| 2. 21-Deoxycortisol
(<i>m/z</i> 347.4 → 311.4) | 5. Testosterone
(<i>m/z</i> 289.4 → 97.0) | 8. Progesterone
(<i>m/z</i> 315.4 → 97.0) |
| 3. 11-Deoxycortisol
(<i>m/z</i> 347.4 → 97.0) | 6. DHEA
(<i>m/z</i> 289.4 → 253.2) | 9. Androsterone
(<i>m/z</i> 291.3 → 255.4) |





Steroid Mixture Separation

Application #AN1060

Conditions

Column: ACE 3 C18
ACE 3 Phenyl
ACE 3 C18-AR

Dimensions: 150 x 4.6 mm

Part Number: ACE-111-1546, ACE-115-1546,
ACE-119-1546

Mobile Phase: A: H₂O
B: MeCN

Gradient:

Time (mins)	%B
0	25
24	46
26	46
27	25

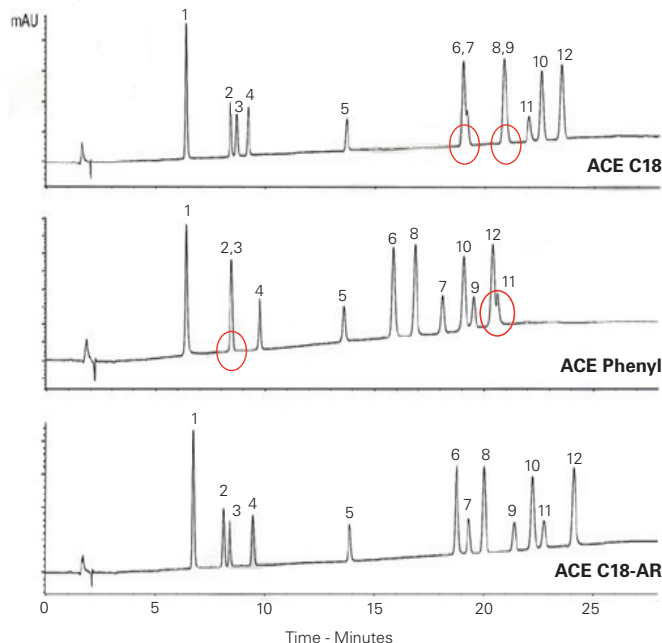
Flow Rate: 1 mL/min

Temperature: 20 °C

Detection: UV, 214 nm

Analytes

1. Estriol
2. Prednisolone
3. Hydrocortisone
4. Cortisone
5. Corticosterone
6. 17β-Estradiol
7. Cortisone-21-acetate
8. 17α-Estradiol
9. 19-Norethindrone
10. 17α-Ethinylestradiol
11. 21-Hydroxyprogesterone
12. Estrone



Steroids UHPLC-UV Analysis and Comparison

Application #AN1640

Conditions

Column: ACE Excel 2 CN-ES
ACE Excel 2 C18
ACE Excel 2 CN

Dimensions: 50 x 2.1 mm

Part Number: EXL-1013-0502U,
EXL-101-0502U,
EXL-104-0502U

Mobile Phase: A: 0.1% formic acid in H₂O
B: 0.1% formic acid in MeCN

Gradient:

Time (mins)	%B
0.0	25
10.0	80
10.5	80
11.0	25

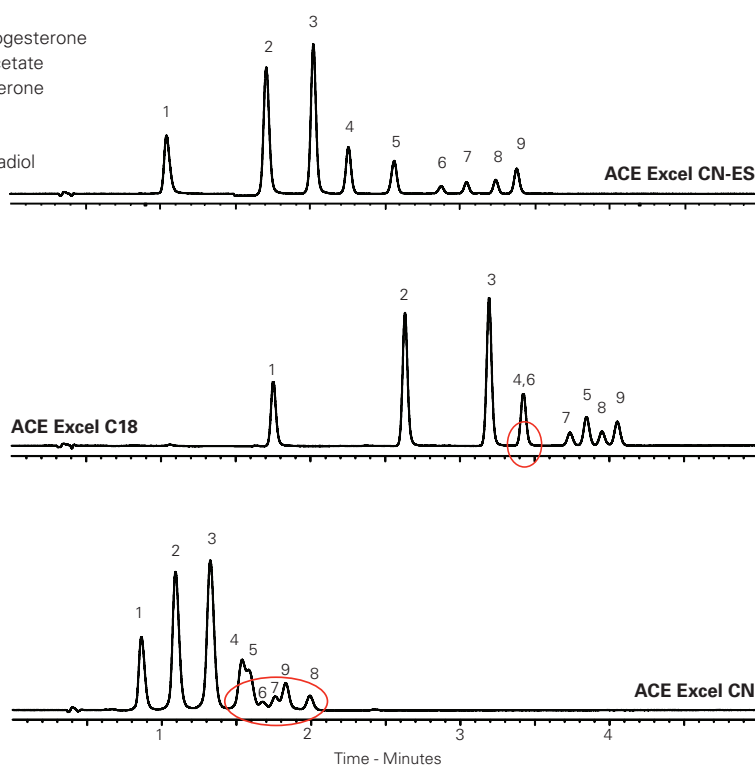
Flow Rate: 0.4 mL/min

Temperature: 40 °C

Detection: UV, 260 nm

Analytes

1. Cortisone
2. Corticosterone
3. 11α-Hydroxyprogesterone
4. Cortisone-21-acetate
5. 11-Ketoprogesterone
6. β-Estradiol
7. 17α-Estradiol
8. 17α-Ethinylestradiol
9. Estrone



Steroids Separation using Enhanced Polar Selectivity

Application #AN2470

Conditions

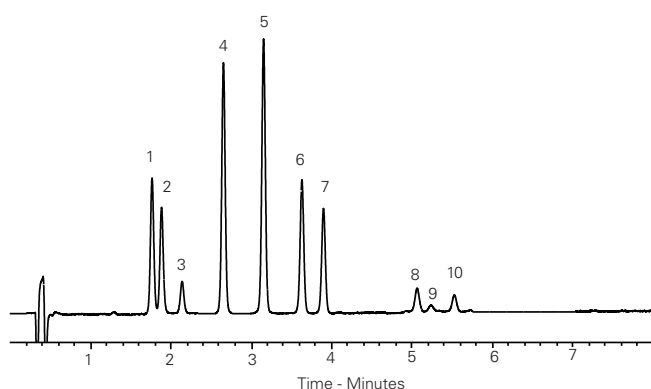
Column: ACE Excel 3 C18-Amide
Dimensions: 50 x 2.1 mm
Part Number: EXL-1112-0502U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0	25
10	80

Flow Rate: 0.4 mL/min
Temperature: 20 °C
Detection: UV, 260 nm

Analytes

1. Prednisone
2. Prednisolone
3. Estriol
4. Corticosterone
5. 11 α -Hydroxyprogesterone
6. 11-Ketoprogesterone
7. 21-Hydroxyprogesterone
8. β -Estradiol
9. 17 α -Estradiol
10. 17 α -Ethinylestradiol



Explore Selectivity

2 and 3 column kits
 available for the
 same price as a
 single column

See page 5 for details



Steroids (Veterinary) by LC-MS/MS

Application #AN1830

Conditions

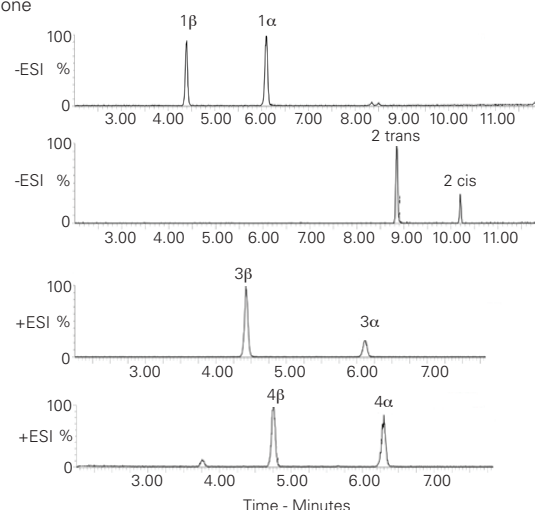
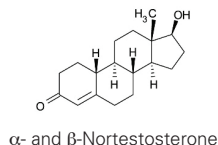
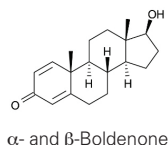
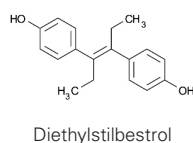
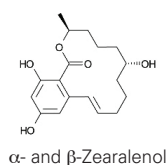
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 2.1 mm
Part Number: CORE-25A-1002U
Mobile Phase: A: 0.01 mM ammonium fluoride + 0.001% formic acid
 B: MeCN
Gradient:

Time (mins)	%B
0.0	25
0.5	25
7.0	35
7.5	35
10.5	60
12.5	90

Flow Rate: 0.5 mL/min
Temperature: 45 °C
Detection: Positive or negative ESI
 MRM data

Analytes

1. α - and β -Zearalenol
 (m/z 319.17 $\rightarrow$ 275.12)
2. Diethylstilbestrol-d8
 (m/z 275.23 $\rightarrow$ 245.09)
 Also analysed in -ESI:
 Talaranol and zeranorol
 Talaranol and zeranorol
 Zearalenone
 Hexestrol
 Diethylstilbestrol
 Dienestrol
3. α - and β -Boldenone
 (m/z 287.17 $\rightarrow$ 121.12)
4. α - and β -Nortestosterone
 (m/z 275.23 $\rightarrow$ 109.09)
 Also analysed in +ESI:
 Hydroxystanozolol
 Hydroxystanozolol-d3
 Methyltestosterone
 Methyltestosterone-d3
 β -Nortestosterone-d3
 β -Trenbolone
 α -Trenbolone





St John's Wort

Application #AN4300

Conditions

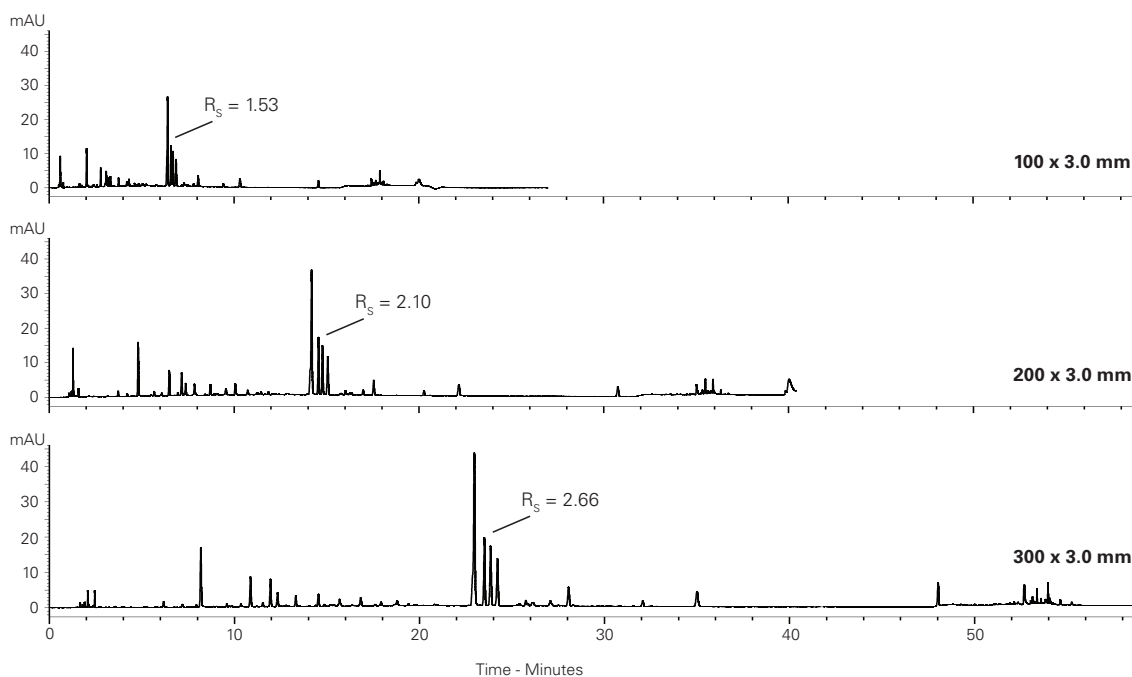
Column: ACE Excel 1.7 SuperC18
Dimensions: 100 x 3.0 mm; 2 x 100 x 3.0 mm (coupled); 3 x 100 x 3.0 mm (coupled)
Part Number: EXL-1711-1003U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN

Gradient:	Time (mins)			%B
	100 x 3.0 mm	200 x 3.0 mm	300 x 3.0 mm	
	-	0.00	0.00	5
	0.00	0.35	0.71	5
	15.00	30.35	45.71	30
	17.00	34.35	51.71	100
	19.00	38.35	57.71	100
	20.00	39.35	58.71	5
	27.00	53.35	79.71	5

Flow Rate: 0.8 mL/min
Injection: 2 µL (100 x 3.0 mm); 4 µL (200 x 3.0 mm); 6 µL (300 x 3.0 mm)
Temperature: 80 °C
Detection: UV, 280 nm
Sample: Tablet ground to fine powder and extracted with MeCN/H₂O (1:1 v/v) with ultrasonication. Supernatant diluted with H₂O and filtered using Whatman Mini-Uniprep syringeless filter
System: Chromaster Ultra Rs



Hypericum perforatum



Substituted Methoxybenzene Isomers

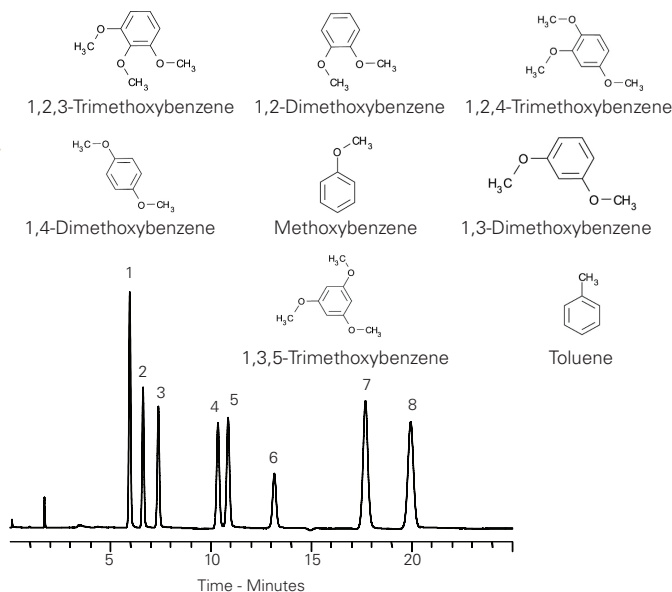
Application #AN2430

Conditions

Column: ACE 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: ACE-1110-1546
Mobile Phase: H₂O/MeOH (50:50 v/v)
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: UV, 214 nm

Analytes

- 1,2,3-Trimethoxybenzene
- 1,2-Dimethoxybenzene
- 1,2,4-Trimethoxybenzene
- 1,4-Dimethoxybenzene
- Methoxybenzene
- 1,3-Dimethoxybenzene
- 1,3,5-Trimethoxybenzene
- Toluene



Sugars – Cola vs Diet Cola

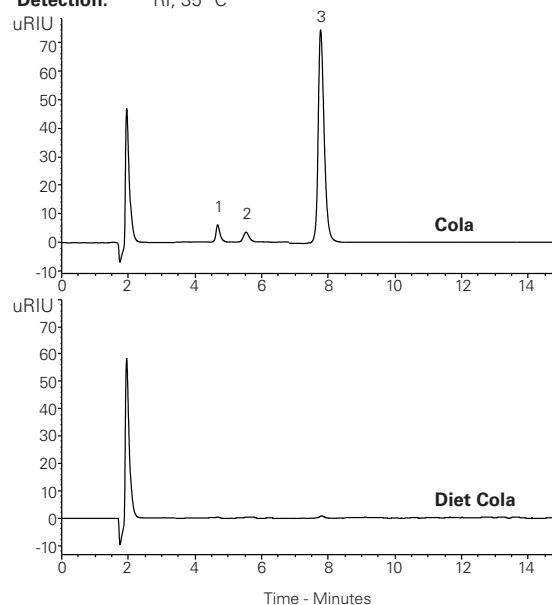
Application #AN4150

Conditions

Column: ACE Excel 3 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1114-1546U
Mobile Phase: MeCN/H₂O (75:25 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C

Analytes

1. Fructose
2. Glucose
3. Sucrose



Sugars – Disaccharides

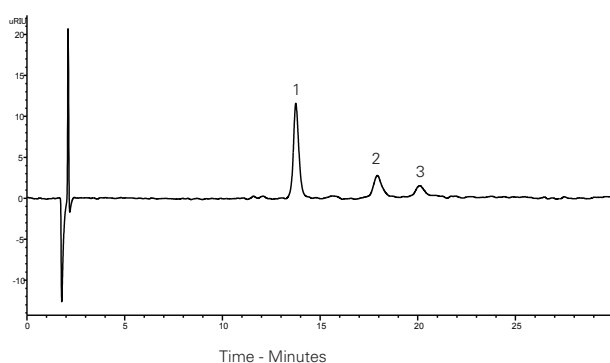
Application #AN4320

Conditions

Column: ACE Excel 3 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1114-1546U
Mobile Phase: MeCN/H₂O (80:20 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 35 °C
Detection: RI, 35 °C
Sample: 2 mg/mL each disaccharide in MeCN/H₂O (80:20 v/v)
System: Chromaster 600

Analytes

1. Sucrose
2. Maltose
3. Lactose



Sugars – Lactulose

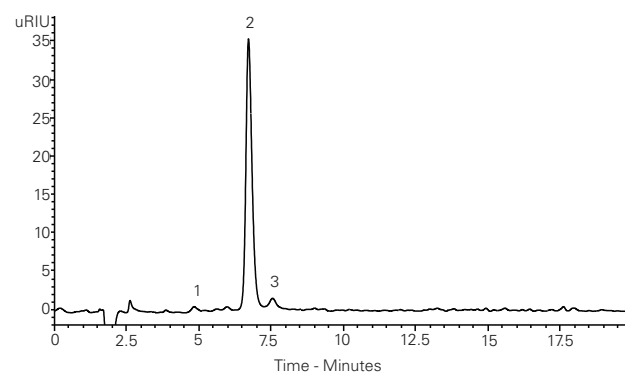
Application #AN4020

Conditions

Column: ACE Excel 5 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1214-1546U
Mobile Phase: MeCN/H₂O (70:30 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C

Analytes

1. Galactose
2. Lactulose
3. Lactose





Sugars – Maple Syrup

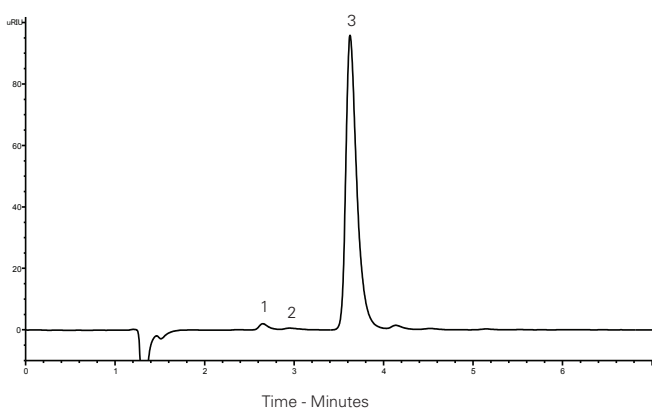
Application #AN4310

Conditions

Column: ACE Excel 1.7 NH₂
Dimensions: 100 x 3.0 mm
Part Number: EXL-1714-1003U
Mobile Phase: MeCN/H₂O (70:30 v/v)
Flow Rate: 0.43 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C
Sample: 100 µL maple syrup in 9900 µL mobile phase
System: Chromaster 600

Analytes

1. Fructose
2. Glucose
3. Sucrose



Sugars – Monosaccharides

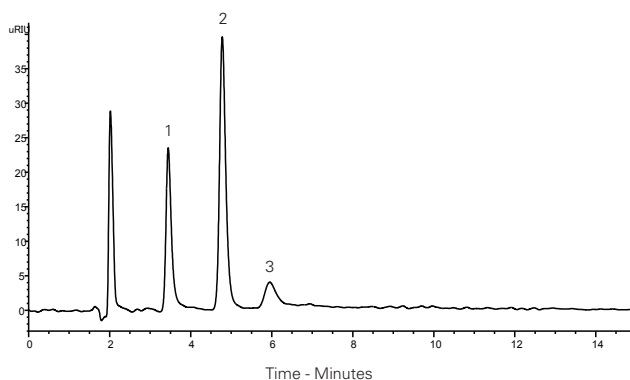
Application #AN4330

Conditions

Column: ACE Excel 5 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1214-1546U
Mobile Phase: MeCN/H₂O (75:25 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C
Sample: 5 mg/mL per monosaccharide in MeCN/H₂O (70:30 v/v)
System: Chromaster 600

Analytes

1. Fructose
2. Galactose
3. Rhamnose



Please contact us for further
information and advice on
specific applications or for
method development support

Sugars – Orange Juice

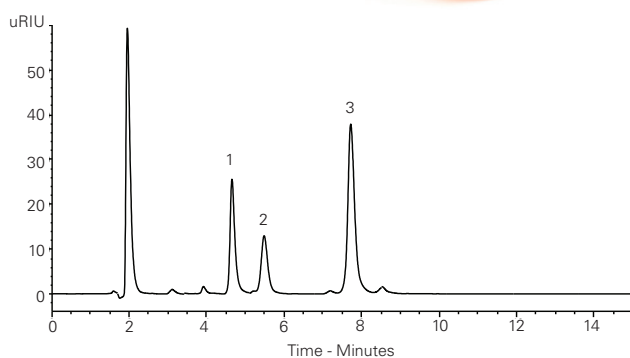
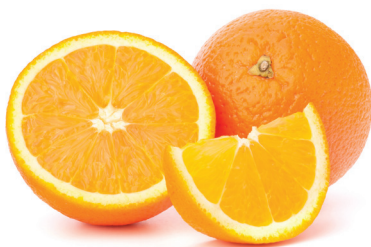
Application #AN4160

Conditions

Column: ACE Excel 3 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1114-1546U
Mobile Phase: MeCN/H₂O (75:25 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C

Analytes

1. Fructose
2. Glucose
3. Sucrose



Sugars Separation

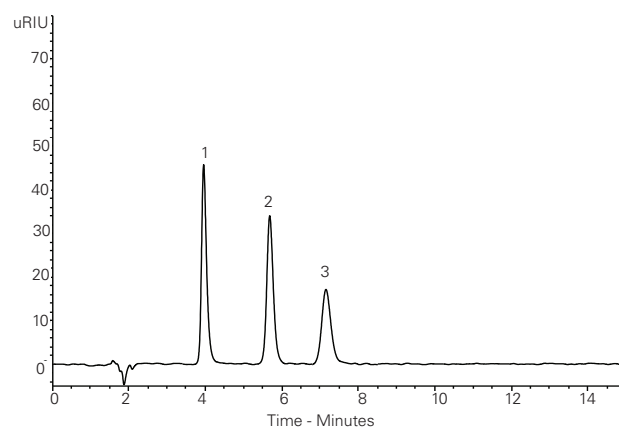
Application #AN4030

Conditions

Column: ACE Excel 5 NH₂
Dimensions: 150 x 4.6 mm
Part Number: EXL-1214-1546U
Mobile Phase: MeCN/H₂O (70:30 v/v)
Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: 35 °C
Detection: RI, 35 °C

Analytes

1. Fructose
2. Sucrose
3. Lactose



Sulfonamides

Application #AN1610

Conditions

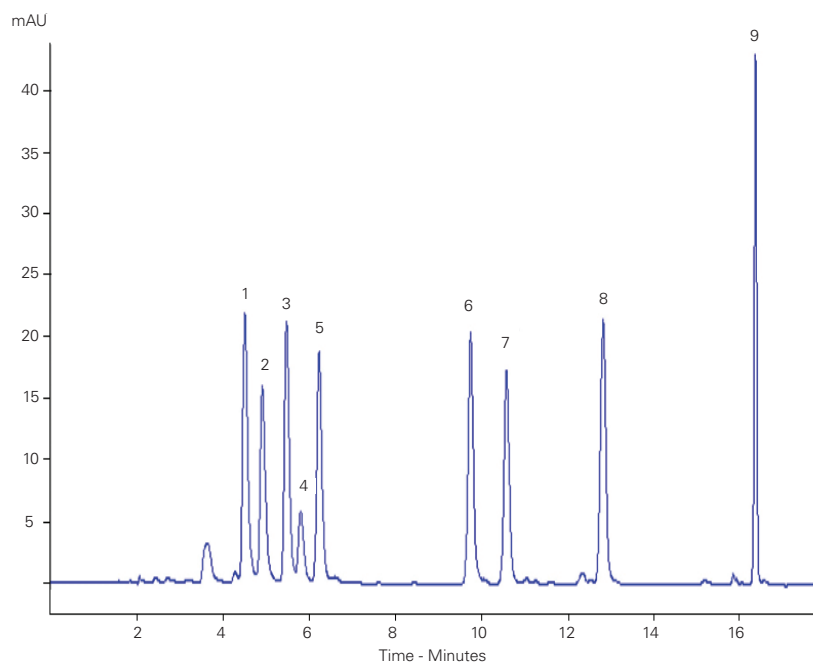
Column: ACE Excel 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: EXL-1110-1546U
Mobile Phase: A: H₂O
 B: MeCN
 C: 10% formic acid

Gradient:	Time (mins)	%A	%B	%C
	0	84	15	1
	12	74	25	1
	14	59	40	1
	16	84	15	1
	18	84	15	1

Flow Rate: 1 mL/min
Detection: UV, 268 nm

Analytes

1. Sulfadiazine
2. Sulfapyridine
3. Sulfamerazine
4. Sulfamoxole
5. Sulfamethazine
6. Sulfamonomethoxine
7. Sulfachloropyridazine
8. Sulfamethoxazole
9. Sulfadimethoxine



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Sulfurous Analytes Separation Comparison

Application #AN1320

Conditions

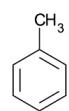
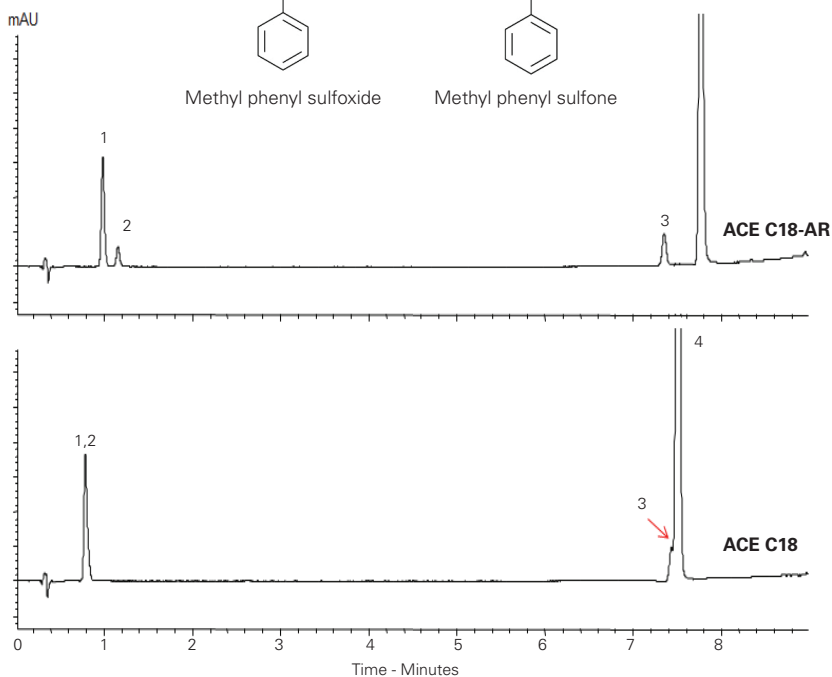
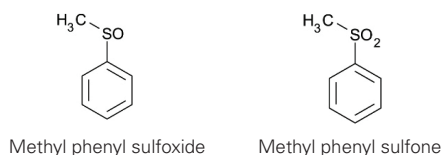
Column: ACE 3 C18-AR, ACE 3 C18
Dimensions: 50 x 2.1 mm
Part Number: ACE-119-0502, ACE-111-0502
Mobile Phase: A: H₂O
 B: MeOH
Gradient:

Time (mins)	%B
0.0	30
5.0	30
9.0	95
9.5	30
13.5	30

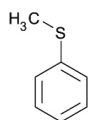
Flow Rate: 0.5 mL/min
Injection: 1 µL
Temperature: 22 °C
Detection: UV, 254 nm

Analytes

1. Methyl phenyl sulfoxide
2. Methyl phenyl sulfone
3. Toluene
4. Thioanisole



Toluene



Thioanisole

Sumatriptan and Promethazine by LC-MS/MS

Application #AN2530

Conditions

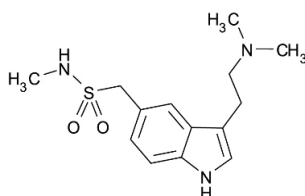
Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	15
0.5	15
2.5	90
3.5	90
5.5	15

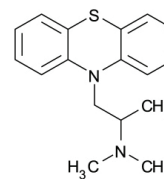
Flow Rate: 0.7 mL/min
Temperature: 50 °C
Detection: AB Sciex QTRAP 6500
 DuoSpray Ion source (ESI/APCI)
 Positive ion MRM mode

Analytes

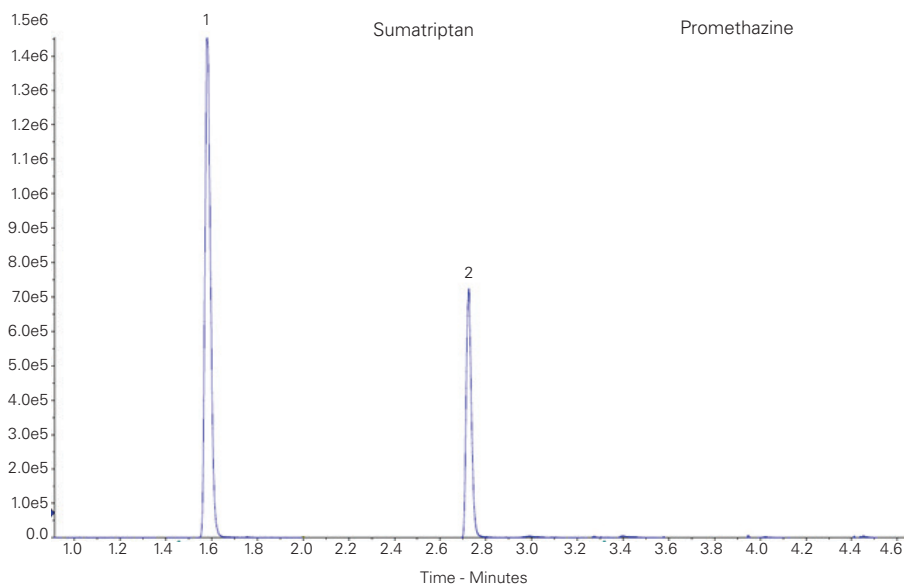
1. Sumatriptan
(*m/z* 296 → 58)
2. Promethazine
(*m/z* 286 → 86)



Sumatriptan



Promethazine



Sunscreen Agents

Application #AN4370

Conditions

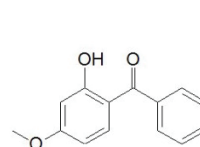
Column: ACE 3 C18
Dimensions: 150 x 4.0 mm
Part Number: ACE-111-1504
Mobile Phase: A: MeOH/H₂O (85:15 v/v)
 B: THF
Gradient:

Time (mins)	%B
0	0
7	0
10	50
14	50
16	0

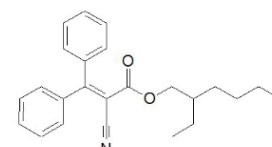
Flow Rate: 0.85 mL/min
Temperature: 30 °C
Detection: UV, 310 nm
Sample: 40 µg/mL each standard

Analytes

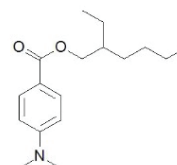
1. Benzophenone-3
2. Octocrylene
3. Octyl dimethyl PABA
4. Octyl methoxycinnamate
5. Avobenzone
6. Ethylhexyl salicylate
7. Homosalate
8. Ethylhexyl triazone
9. Tinosorb® M
10. Tinosorb® S



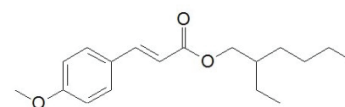
Benzophenone-3



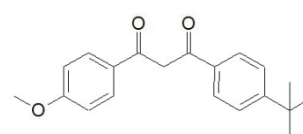
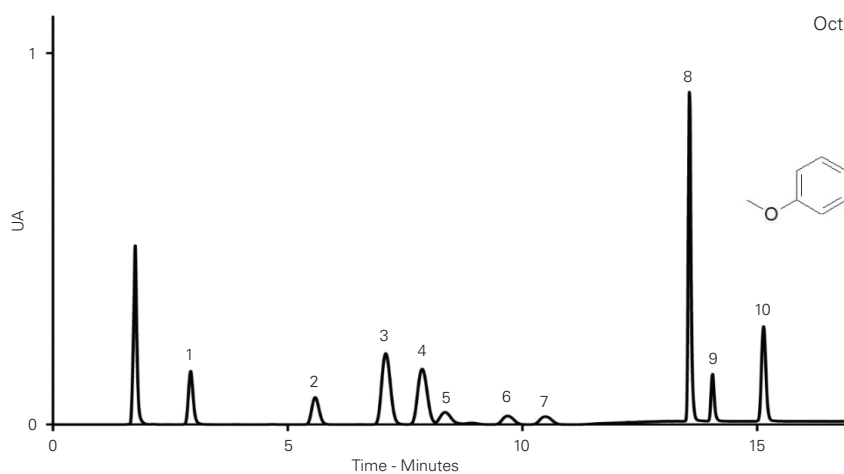
Octocrylene



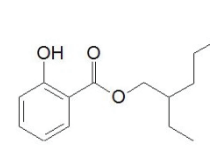
Octyl dimethyl PABA



Octyl methoxycinnamate

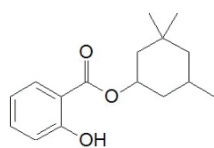


Avobenzone

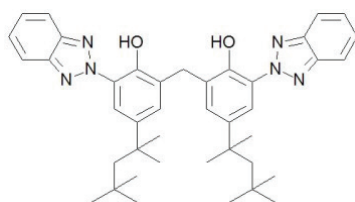


Ethylhexyl salicylate

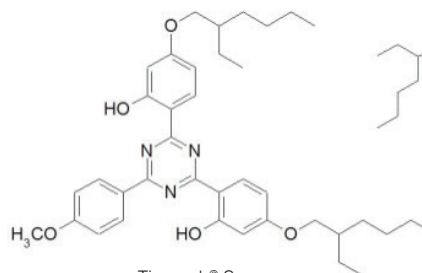
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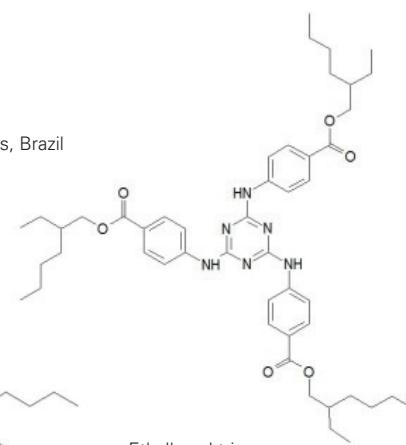
Homosalate



Tinosorb® M



Tinosorb® S



Ethylhexyl triazone

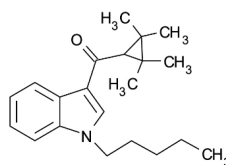


Synthetic Cannabinoids (SPICE) from Oral Fluid

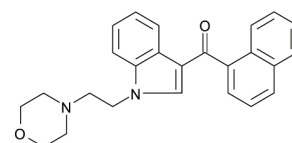
Application #AN1650

Conditions

Column: ACE Excel 2 C18-AR
Dimensions: 100 x 2.1 mm
Part Number: EXL-109-1002U
Mobile Phase: 0.1% formic acid in MeOH/H₂O (85:15 v/v)
Flow Rate: 0.3 mL/min
Temperature: Ambient
Detection: Applied Biosystems/MDS Sciex 4000 Q-Trp
 Positive mode Turbo Ionspray



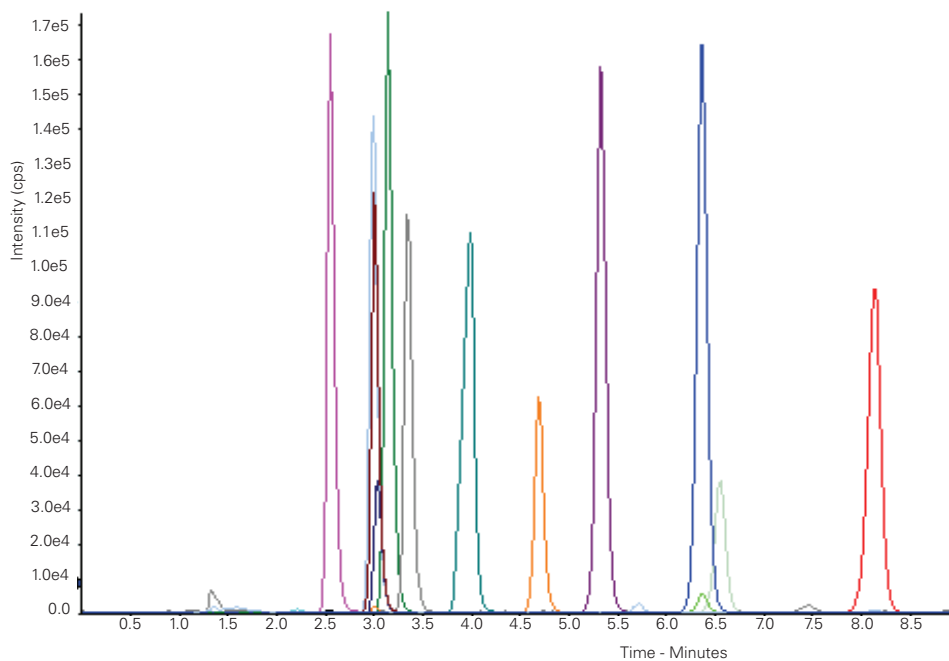
UR - 144



JWH - 200

Extracted ion chromatogram for SPICE analytes
 fortified in neat oral fluid at 20 ng/mL

Retention Time (minutes)	Analyte	MRM Transition	Declustering Potential (DP)	Collision Energy (CE)	Cell Exit Potential (CXP)
2.55	JWH-250 N-(5-hydroxypentyl)	352 → 120.9	40	30	16
2.99	JWH-073 N-(3-hydroxybutyl)	344 → 155	40	30	16
3.00	UR-144 5-Hydroxy-pentyl	328.5 → 125	30	35	16
3.03	UR-144 Pentanoic Acid	342.5 → 125	30	35	16
3.14	d5-JWH-018 N- (4-hydroxypentyl)	363.5 → 155	40	35	16
3.14	JWH-018 N- (4-hydroxypentyl)	358 → 155	40	30	16
3.34	JWH-018 5-pentanoic acid	372 → 155	40	30	16
3.98	JWH-200	385 → 155	40	30	16
4.69	XLR-11	330 → 125	30	35	16
5.32	JWH-250	336 → 121	40	30	16
6.36	JWH-073	328 → 155	40	30	16
6.37	UR-144 5-Chloro-pentyl	346.9 → 125	30	35	16
6.55	UR-144	312.5 → 125	30	35	16
8.14	JWH-018	342 → 155	40	30	16



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Taxol in Fungal Extract by LC-MS/MS

Application #AN1670

Conditions

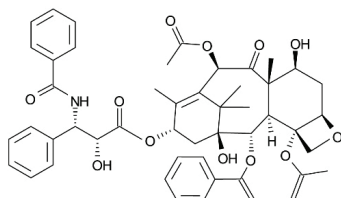
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 150 x 2.1 mm
Part Number: CORE-25A-1502U
Mobile Phase: A: 0.5% formic acid in H₂O
 B: 0.5% formic acid in MeCN

Gradient:

Time (mins)	%B
0.0	10
1.0	10
3.0	40
22.0	60
25.0	95

Flow Rate: 0.35 mL/min

Detection: Orbitrap Elite MS
 FT positive ion mode
 Collision induced dissociation isolation width 5 Da
 Normalised collision energy 32 eV
 Activation Q 0.25
 Activation times 10 ms

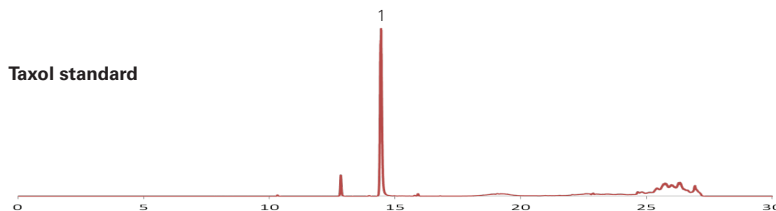


Taxol (Paclitaxel)

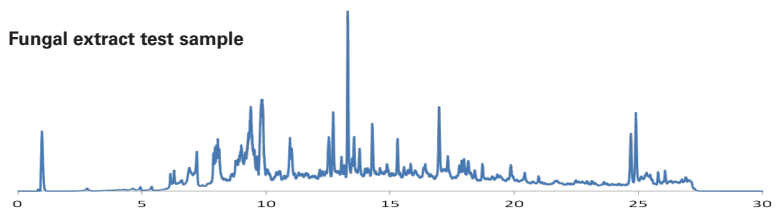
Analyte

1. Taxol (Paclitaxel)

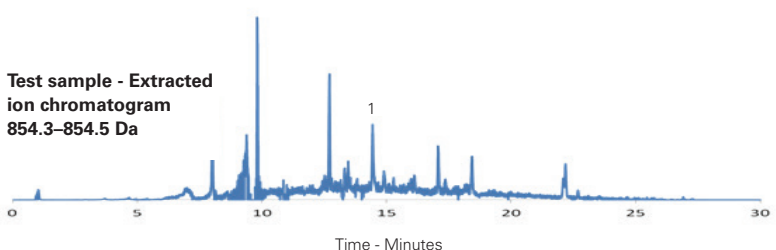
Taxol standard



Fungal extract test sample



Test sample - Extracted ion chromatogram 854.3–854.5 Da



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Telithromycin Analysis

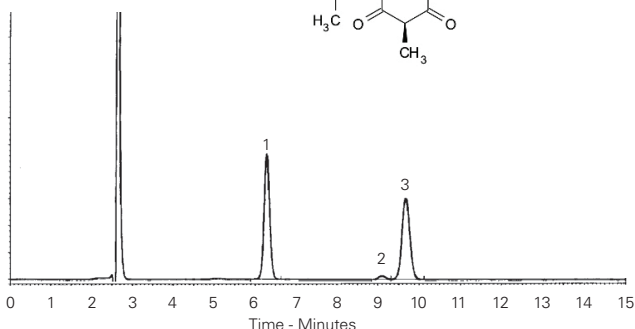
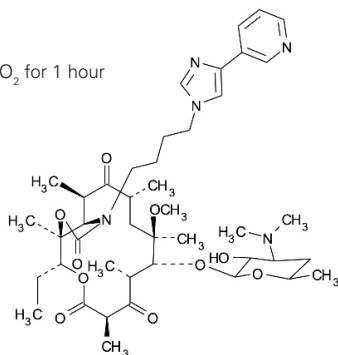
Application #AN3280

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 0.05 M phosphate buffer pH 4.0/MeOH (45:55 v/v)
Flow Rate: 1 mL/min
Injection: 20 µL
Temperature: 50 °C
Detection: UV, 265 nm
Sample: Exposed to 3% H₂O₂ for 1 hour

Analytes

1. Telithromycin
 2. Degradant 1
 3. Degradant 2



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 or
 email: info@ace-hplc.com

Terfenadine and Fexofenadine in Rat Plasma

Application #AN3290

Conditions

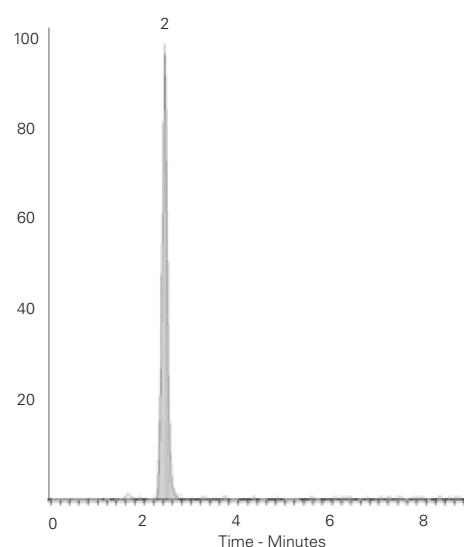
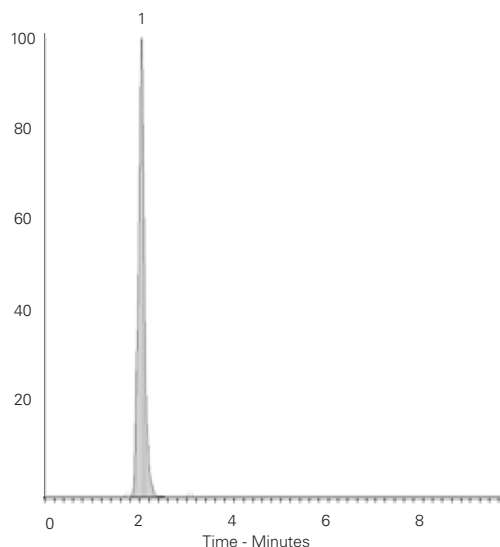
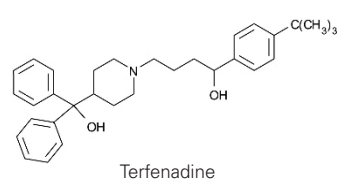
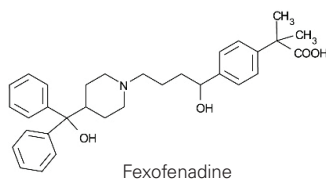
Column: ACE 5 AQ
Dimensions: 50 x 3.0 mm
Part Number: ACE-126-0503
Mobile Phase: A: 0.1% formic acid in H₂O
 B: MeOH

Gradient:	Time (mins)	%B
	0.0	10
	1.5	90
	2.0	90
	3.0	10

Flow Rate: 1 mL/min
Injection: 10 µL
Temperature: Ambient
Detection: TurbolonSpray MS/MS
 Positive ion mode

Analytes

1. Fexofenadine
(m/z 502.3 $\rightarrow$ 466.3)
2. Terfenadine
(m/z 472.3 $\rightarrow$ 436.3)



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Testosterone

Application #AN3300

Conditions

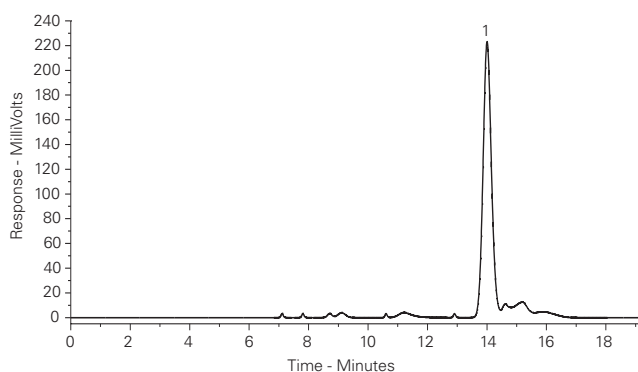
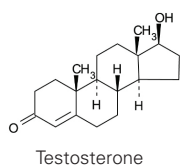
Column: ACE 5 C18 1. Testosterone
Dimensions: 150 x 0.075 mm
Part Number: ACE-121-1500075
Mobile Phase: A: 0.1% formic acid in MeCN/0.1% formic acid in H₂O (10:90 v/v)
 B: 0.1% formic acid in MeCN/0.1% formic acid in H₂O (90:10 v/v)

Gradient:	Time (mins)	%B
	0	40
	5	40
	30	95

Flow Rate: 1 μ L/min
Temperature: Ambient
Detection: ESI MS/MS
Positive ion mode

Analyte

- ### 1. Testosterone



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Tetracyclines

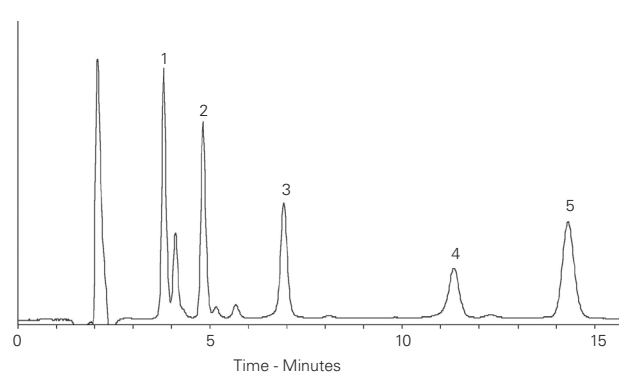
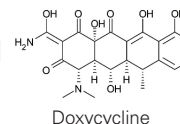
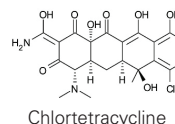
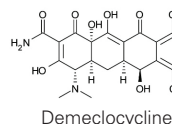
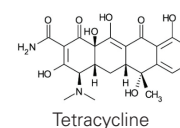
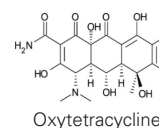
Application #AN3680

Conditions

Column: ACE 5 C18
Dimensions: 150 x 3.0 mm
Part Number: ACE-121-1503
Mobile Phase: 10 mM oxalic acid
(80:20 v/v)
Flow Rate: 0.5 mL/min
Injection: 20 µL
Temperature: Ambient
Detection: UV-Vis, 350 nm

Analytes

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



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Thyroid Hormones by LC-MS/MS (I)

Application #AN2170

Conditions

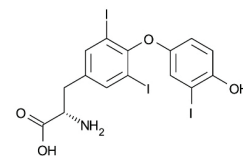
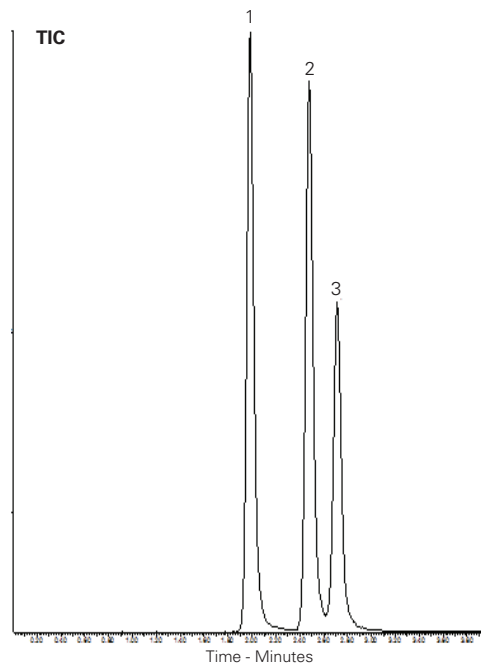
Column: ACE Excel 2 C18-AR
Dimensions: 100 x 2.1 mm
Part Number: EXL-109-1002U
Mobile Phase: A: 2 mM ammonium acetate, 0.1% formic acid in H₂O
 B: 2 mM ammonium acetate, 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	60
3.0	77
3.1	60

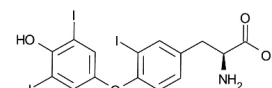
Flow Rate: 0.4 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: XEVO TQS triple quad MS
 Desolvation temperature: 500 °C
 Ion source temperature: 150 °C
 Positive mode ESI, MRM
Sample: Serum samples extracted using Biotage EVOLUTE EXPRESS AX methodology

Analytes

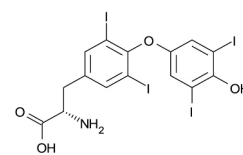
1. T3 (Tri-iodothyronine)
2. rT3 (Reversed tri-iodothyronine)
3. T4 (Thyroxine)



T3 (Tri-iodothyronine)



rT3 (Reversed tri-iodothyronine)



T4 (Thyroxine)

Analyte	Q1 (Da)	Q3 (Da)
T3	651.8	605.8
	(651.8)	(507.8)
	(651.8)	(478.9)
rT3	651.8	605.8
	(651.8)	(507.8)
	(651.8)	(478.9)
T3/rT3-d6 I.S.	657.8	611.8
T4	777.7	731.7
	(777.7)	(351)
	(777.7)	(633.8)

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Tocopherols Mixture Separation

Application #AN3390

Conditions

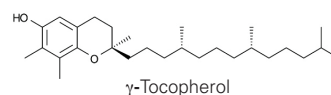
Column: ACE Excel 3 C18-PFP
Dimensions: 150 x 4.6 mm
Part Number: EXL-1110-1546U
Mobile Phase: A: 0.1% H₃PO₄/MeCN (1:3 v/v)
 B: MeCN
Gradient:

Time (mins)	%B
0.00	0
0.10	0
0.11	80
8.00	80
8.01	100
12.00	100
12.01	0
14.00	0

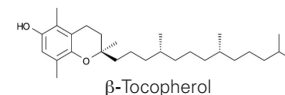
Flow Rate: 1.2 mL/min
Injection: 10 µL
Temperature: 40 °C
Detection: UV, 285 nm

Analytes

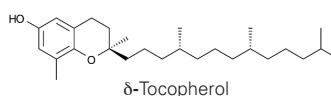
1. γ-Tocopherol
2. β-Tocopherol
3. δ-Tocopherol
4. α-Tocopherol
5. α-Tocopherol acetate



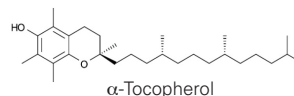
γ-Tocopherol



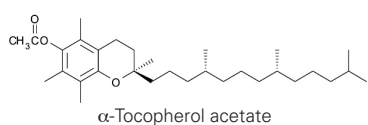
β-Tocopherol



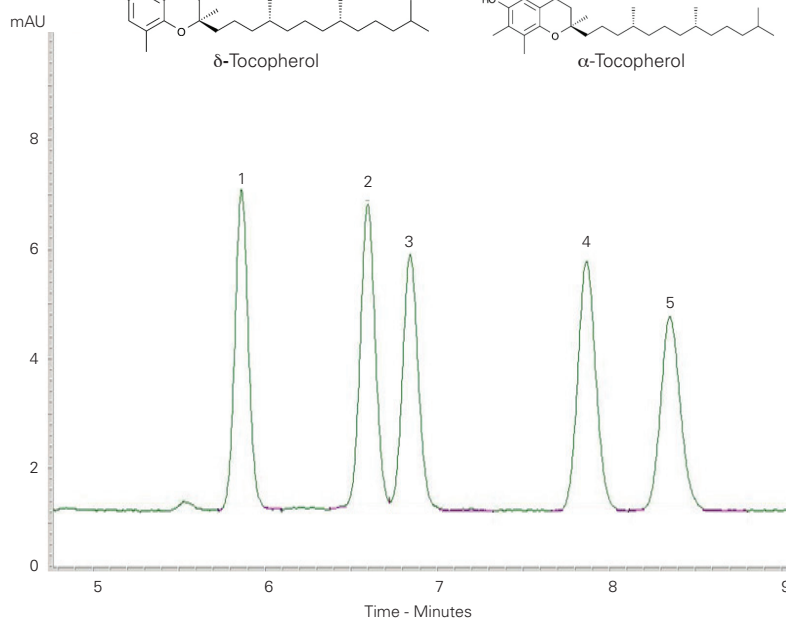
δ-Tocopherol



α-Tocopherol



α-Tocopherol acetate



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Tocopherols

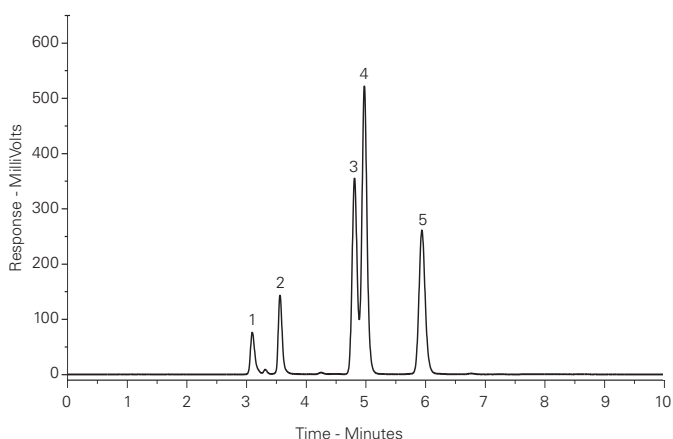
Application #AN2790

Conditions

Column: ACE 5 SIL
Dimensions: 250 x 4.6 mm
Part Number: ACE-127-2546
Mobile Phase: Hexane/IPA (98:2 v/v)
Flow Rate: 1 mL/min
Injection: 1 µL
Temperature: Ambient
Detection: UV-Vis, 450 nm

Analytes

1. γ-Tocopherol
2. α-Tocopherol
3. β-Tocopherol
4. β-Tocopherol
5. δ-Tocopherol



Tricyclic Antidepressants

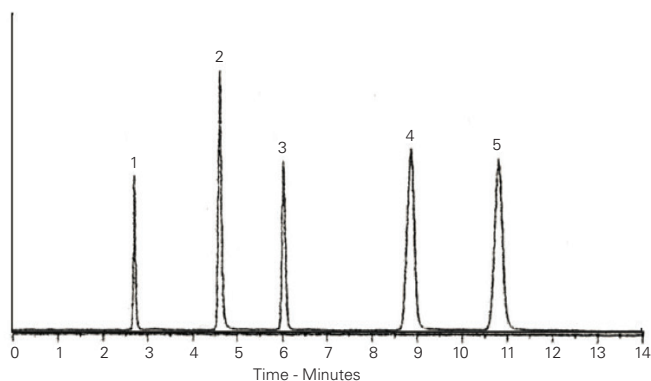
Application #AN3920

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: MeOH/25 mM KH₂PO₄ pH 6.0 in H₂O (80:20 v/v)
Flow Rate: 1 mL/min
Temperature: 22 °C
Detection: UV, 215 nm

Analytes

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

Toxins from *Amanita Phalloides* Mushrooms by LC-HRMS

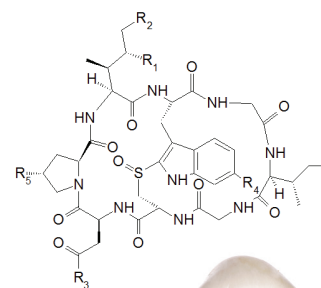
Application #AN4060

Conditions

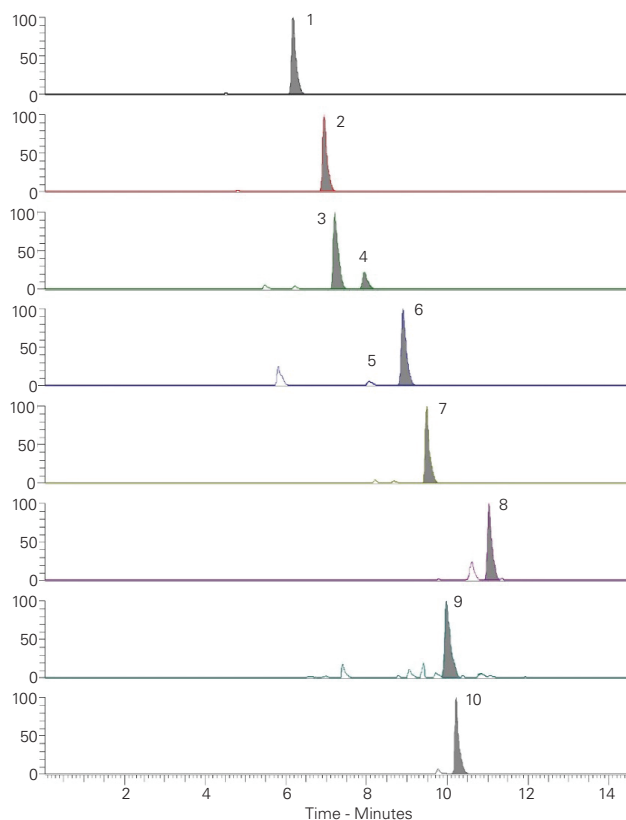
Column: ACE 3 AQ
Dimensions: 150 x 3.0 mm
Part Number: ACE-116-1503
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient: Time (mins) %B
 0 15
 17 100
 22 100
 22 15
 30 15
Flow Rate: 0.4 mL/min
Injection: 10 µL
Temperature: 50 °C
Detection: Thermo Exactive MS
 ESI in positive ion mode

Analyte

1. Amatoxins

*Amanita Phalloides*

Peak	Analyte	R1	R2	R3	R4	R5	Exact Mass
1	α - Amanitin	OH	OH	NH ₂	OH	OH	918.35417
2	β - Amanitin	OH	OH	OH	OH	OH	919.338182
3	γ - Amanitin	H	OH	NH ₂	OH	OH	902.359252
4	Amaninamide	OH	OH	NH ₂	H	OH	902.359252
5	Amanin	OH	OH	OH	H	OH	903.343267
6	ε - Amanitin	H	OH	OH	OH	OH	903.343267
7	Amanullin	H	H	NH ₂	OH	OH	886.364337
8	Proamanullin	H	H	NH ₂	OH	H	870.369423
9	Amanullinic Acid	H	H	OH	OH	OH	887.348353
10	Bacitracin (IS)	-	-	-	-	-	1421.7489



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Tricyclic Antidepressants (Gradient)

Application #AN1690

Conditions

Column: ACE Excel 2 SuperC18
Dimensions: 100 x 3.0 mm
Part Number: EXL-1011-1003U
Mobile Phase: A: 20 mM ammonium formate pH 3.0 in H₂O
 B: 20 mM ammonium formate pH 3.0 in MeOH/H₂O (9:1 v/v)

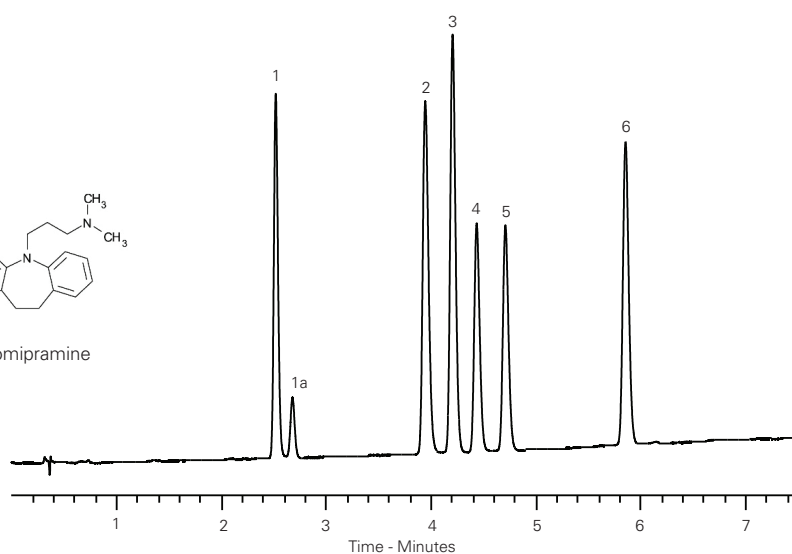
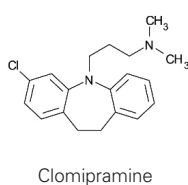
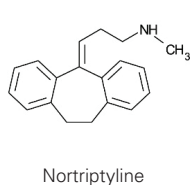
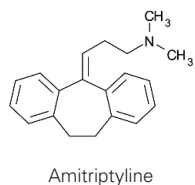
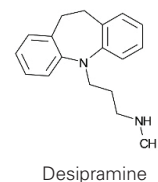
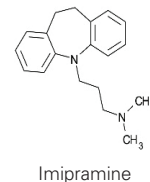
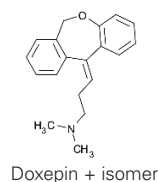
Gradient:

Time (mins)	%B
0.0	50
6.0	70
7.0	70
7.5	50

Flow Rate: 1.2 mL/min**Injection:** 2 µL**Temperature:** 40 °C**Detection:** UV, 260 nm

Analytes

1. Doxepin + isomer
2. Imipramine
3. Desipramine
4. Amitriptyline
5. Nortriptyline
6. Clomipramine



Tricyclic Antidepressants (Isocratic)

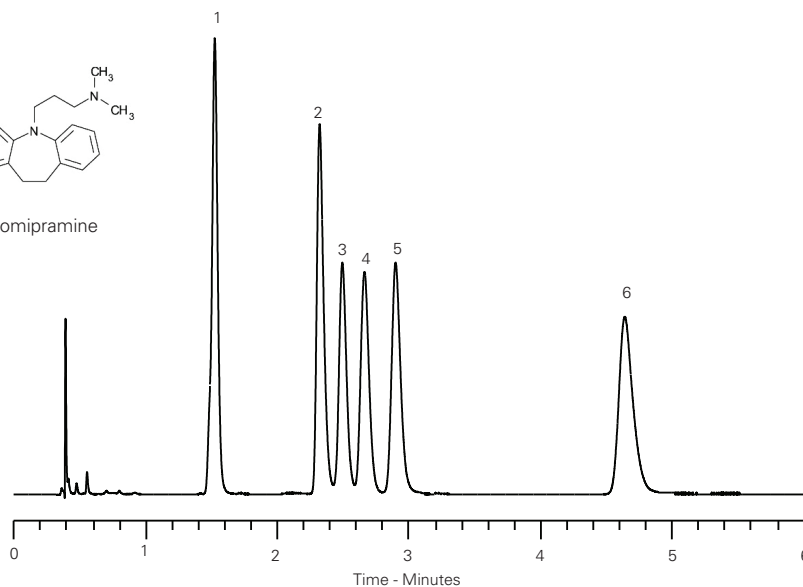
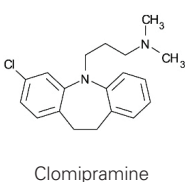
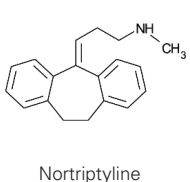
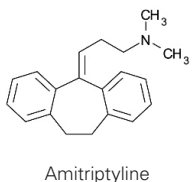
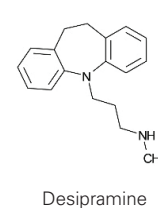
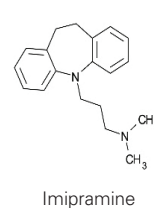
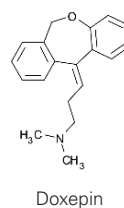
Application #AN1680

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 3.0 mm
Part Number: EXL-1010-1003U
Mobile Phase: 20 mM ammonium formate pH 3.0 in MeOH/H₂O (54:46 v/v)
Flow Rate: 1.2 mL/min
Injection: 2 µL
Temperature: 40 °C
Detection: UV, 260 nm

Analytes

1. Doxepin
2. Imipramine
3. Desipramine
4. Amitriptyline
5. Nortriptyline
6. Clomipramine





Tricyclic Antidepressants (Isocratic Rapid Analysis)

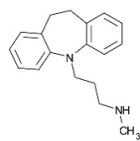
Application #AN1700

Conditions

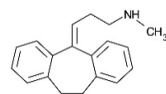
Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 20 mM ammonium acetate pH 6.3
 MeCN/H₂O (65:35 v/v)
Flow Rate: 1.5 mL/min
Injection: 10 µL
Temperature: 60 °C
Detection: UV, 215 nm

Analytes

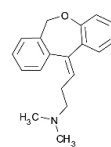
1. Desipramine
2. Nortriptyline
3. Doxepin
4. Imipramine
5. Amitriptyline



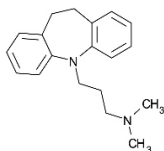
Desipramine



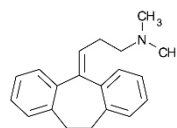
Nortriptyline



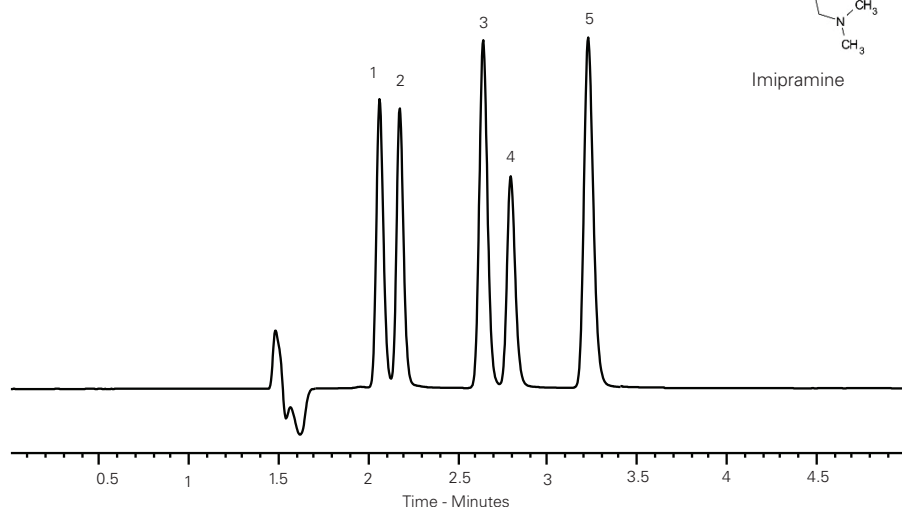
Doxepin



Imipramine



Amitriptyline



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Application #AN3560

Conditions

Column: ACE Excel 1.7 SuperC18
Dimensions: 100 x 3.0 mm; 2 x 100 x 3.0 mm (coupled); 3 x 100 x 3.0 mm (coupled)
Part Number: EXL-1711-1003U
Mobile Phase: A: H₂O
 B: MeCN
 C: 200 mM ammonium formate pH 3.0

Analytes

- | | | |
|------------------|---------------------------|---------------------------------|
| 1. 2-Aminophenol | 7. 4-Hydroxybenzoic acid | 13. 4-Nitrophenol |
| 2. Hydroquinone | 8. Caffeine | 14. 4-Chloroacetanilide |
| 3. Theobromine | 9. 2-Acetamidophenol | 15. 2-Nitrophenol |
| 4. Paracetamol | 10. 2-Hydroxybenzoic acid | 16. Acetylsalicylsalicylic acid |
| 5. Paraxanthine | 11. Phenol | 17. Salsalate |
| 6. Theophylline | 12. Aspirin | |

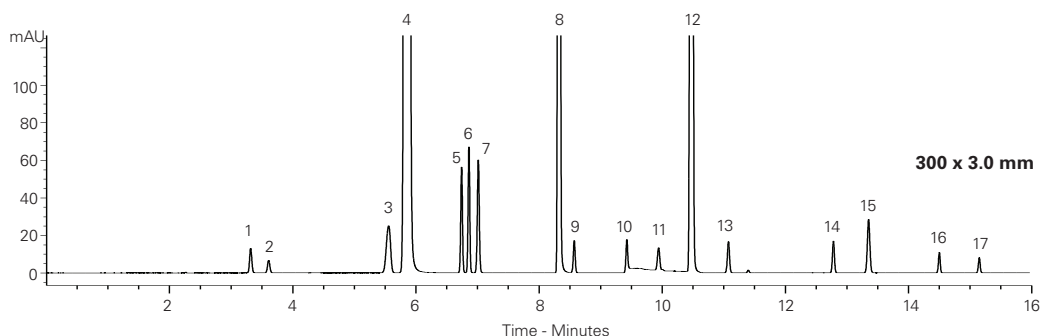
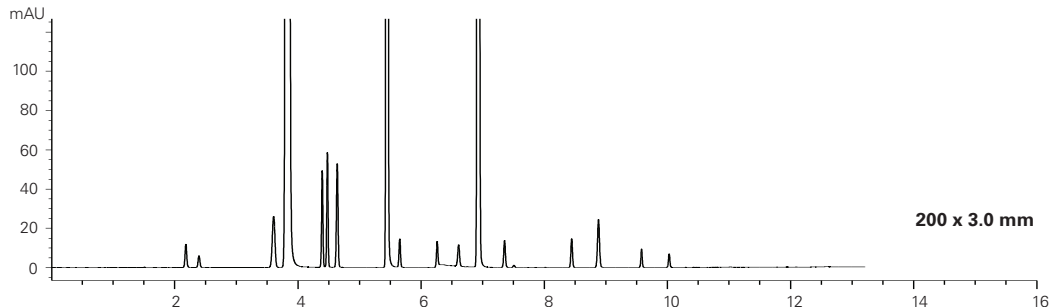
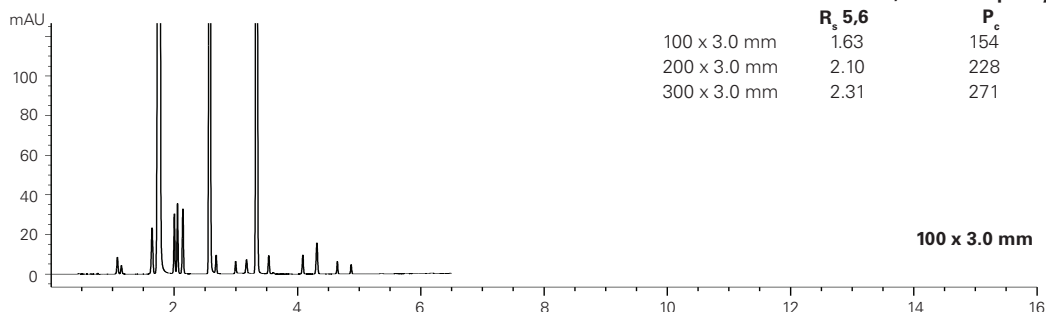
Gradient:

	Time (mins)			%A	%B	%C
	100 x 3.0 mm	200 x 3.0 mm	300 x 3.0 mm			
-	0.00	0.00	0.00	90	5	5
0.00	1.21	2.41		90	5	5
5.00	11.21	17.41		20	75	5
6.00	12.21	18.41		20	75	5
6.50	13.21	19.41		90	5	5

Flow Rate: 0.8 mL/min**Temperature:** 80 °C**Detection:** UV, 270 nm

Dimensions Resolution, Peak Capacity,

Dimensions	Resolution, R_s 5,6	Peak Capacity, P_c
100 x 3.0 mm	1.63	154
200 x 3.0 mm	2.10	228
300 x 3.0 mm	2.31	271





Tyrosine, Tryptophan and Tramadol by HPLC with Fluorescence Detection

Application #AN4180

Conditions

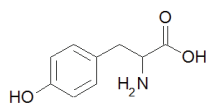
Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: A: 50 mM NaH₂PO₄ in H₂O
 B: MeCN/H₂O (60:40 v/v)
Gradient:

Time (mins)	%B
0.0	0
5.0	10
8.0	100
9.0	100
9.5	0
14.0	0

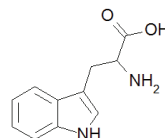
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: Fluorescence, λ_{Ex} 280 nm, λ_{Em} 340 nm

Analytes

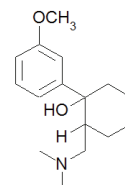
1. L-Tyrosine
2. L-Tryptophan
3. Tramadol



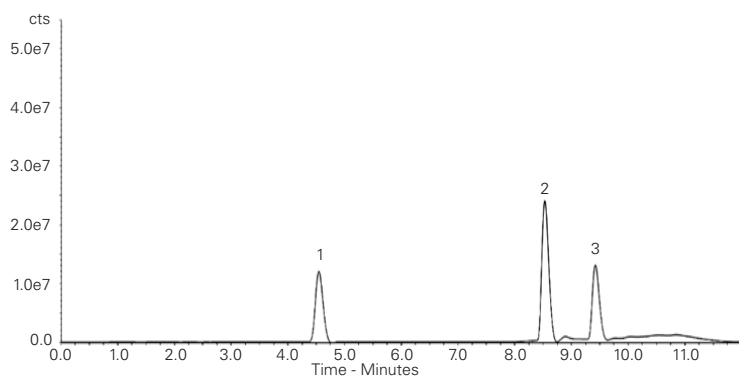
L-Tyrosine



L-Tryptophan



Tramadol



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USP Monograph – 17α-Ethinylestradiol

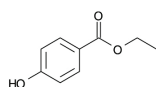
Application #AN1710

Conditions

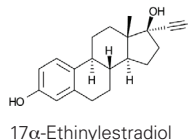
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: CORE-25A-0503U
Mobile Phase: H₂O/MeCN (50:50 v/v)
Flow Rate: 0.43 mL/min
Injection: 3.1 µL
Temperature: Ambient (22 °C)
Detection: UV, 280 nm

Analytes

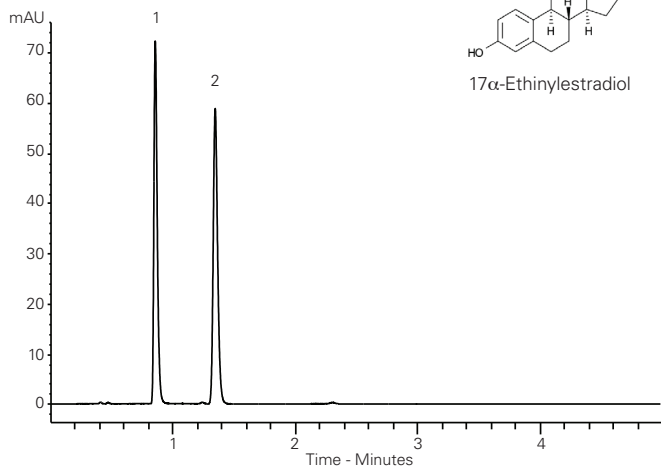
1. Ethylparaben
2. 17α-Ethinylestradiol



Ethylparaben



17α-Ethinylestradiol



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Amlodipine Besylate

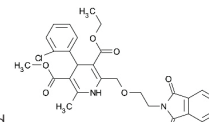
Application #AN2550

Conditions

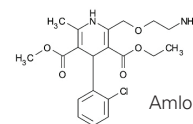
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 75 x 3.0 mm
Part Number: CORE-25A-7503U
Mobile Phase: MeOH/MeCN/buffer pH 3.0 (35:15:50 v/v/v)
Buffer: 7.0 mL triethylamine in 900 mL H₂O to 1000 mL volumetric flask. Adjust to pH 3.0 with phosphoric acid. Dilute to volume with H₂O
Flow Rate: 0.8 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: UV, 237 nm

Analytes

1. Impurity A
2. Amlodipine

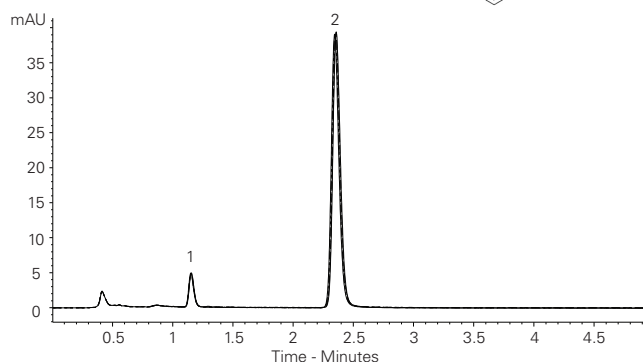


Impurity A



Amlodipine

Chromatogram shows 6 injections overlaid



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Budesonide

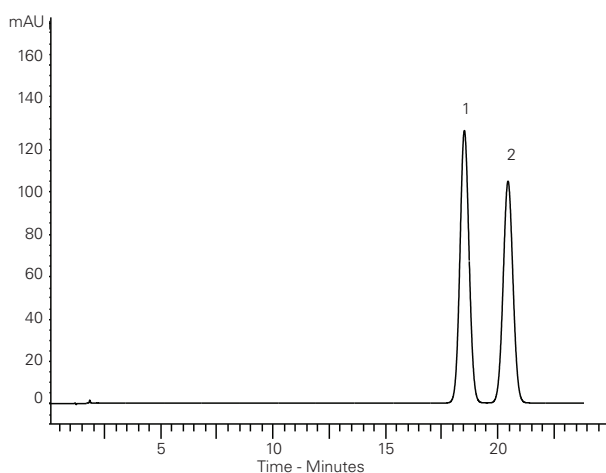
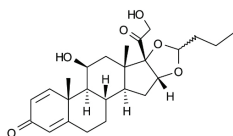
Application #AN1720

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 18 mM monobasic sodium phosphate pH 3.2 in H₂O/MeCN (68:32 v/v)
Flow Rate: 1.5 mL/min
Injection: 20 µL
Temperature: Ambient (22 °C)
Detection: UV, 254 nm

Analytes

1. Budesonide B
2. Budesonide A



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Doxepin

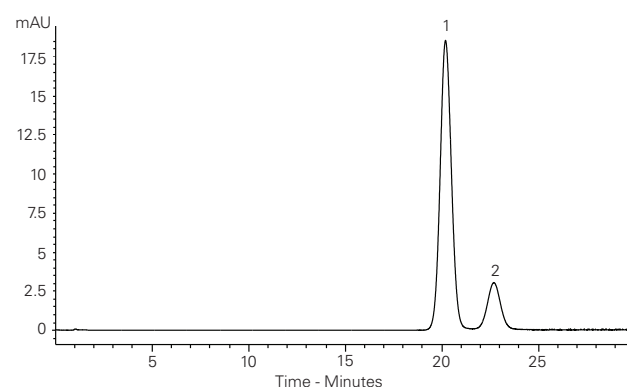
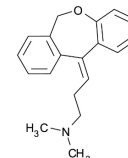
Application #AN1730

Conditions

Column: ACE 3 C8
Dimensions: 50 x 4.6 mm
Part Number: ACE-112-0546
Mobile Phase: 0.2 M monobasic NaH₂PO₄ pH 2.5 in H₂O/MeOH (30:70 v/v)
Flow Rate: 0.56 mL/min
Injection: 4.5 µL
Temperature: 50 °C
Detection: UV, 254 nm

Analytes

1. Doxepin isomer
2. Doxepin isomer



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Estradiol

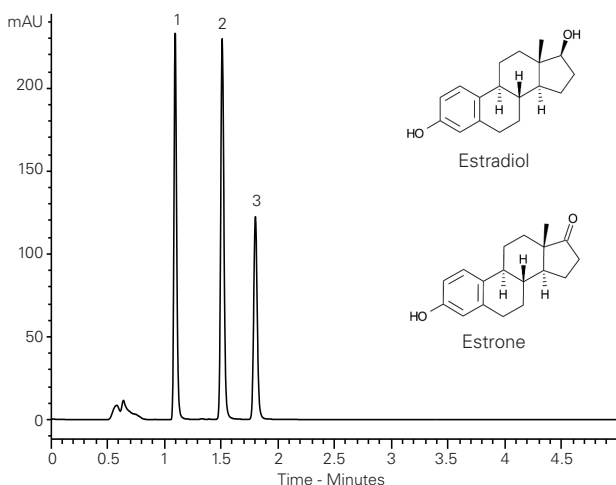
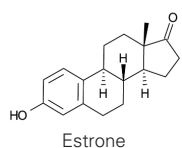
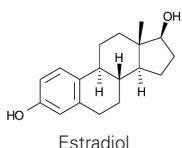
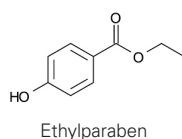
Application #AN1740

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 4.6 mm
Part Number: CORE-25A-1046U
Mobile Phase: H₂O/MeCN (45:55 v/v)
Flow Rate: 1.39 mL/min
Injection: 10.1 µL
Temperature: Ambient (22 °C)
Detection: UV, 205 nm

Analytes

1. Ethylparaben
2. Estradiol
3. Estrone



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Glimepiride

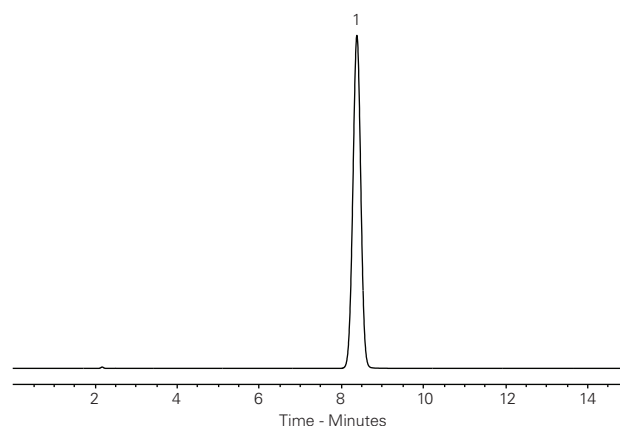
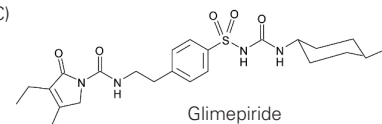
Application #AN1760

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 8 mM monobasic sodium phosphate pH 2.4/MeCN (1:1 v/v)
Flow Rate: 1.32 mL/min
Injection: 16 µL
Temperature: Ambient (22 °C)
Detection: UV, 228 nm

Analyte

1. Glimepiride



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.



USP Monograph – Guaifenesin

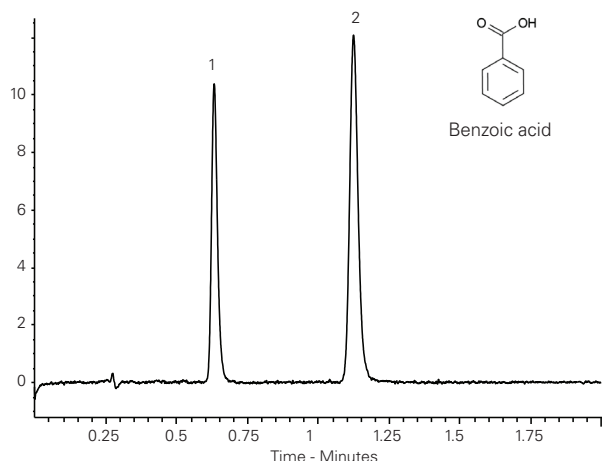
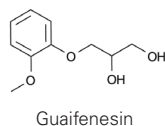
Application #AN1750

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: CORE-25A-0503U
Mobile Phase: H₂O/MeOH/Glacial acetic acid (60:40:1.5 v/v/v)
Flow Rate: 0.85 mL/min
Injection: 1.5 µL
Temperature: Ambient (22 °C)
Detection: UV, 276 nm

Analytes

1. Guaifenesin
2. Benzoic acid



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Hydrocortisone

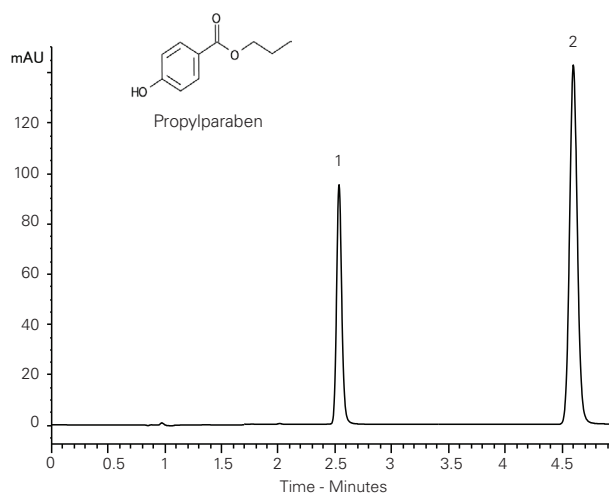
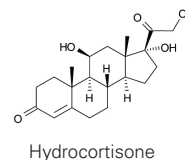
Application #AN1770

Conditions

Column: ACE UltraCore 2.5 SuperC18
Dimensions: 100 x 4.6 mm
Part Number: CORE-25A-1046U
Mobile Phase: H₂O/MeCN/MeOH (50:25:25 v/v/v)
Flow Rate: 1 mL/min
Injection: 5.8 µL
Temperature: Ambient (22 °C)
Detection: UV, 254 nm

Analytes

1. Hydrocortisone
2. Propylparaben



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Hydroquinone

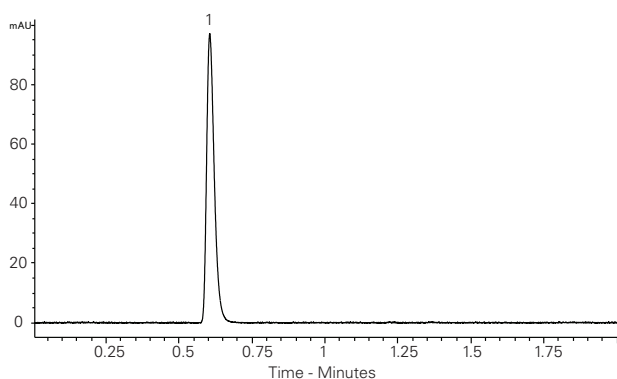
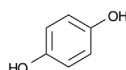
Application #AN1780

Conditions

Column: ACE Excel 2 C18
Dimensions: 50 x 3.0 mm
Part Number: EXL-101-0503U
Mobile Phase: H₂O/MeOH (45:55 v/v)
Flow Rate: 0.45 mL/min
Injection: 0.9 µL
Temperature: Ambient (22 °C)
Detection: UV, 280 nm

Analyte

1. Hydroquinone



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Indomethacin

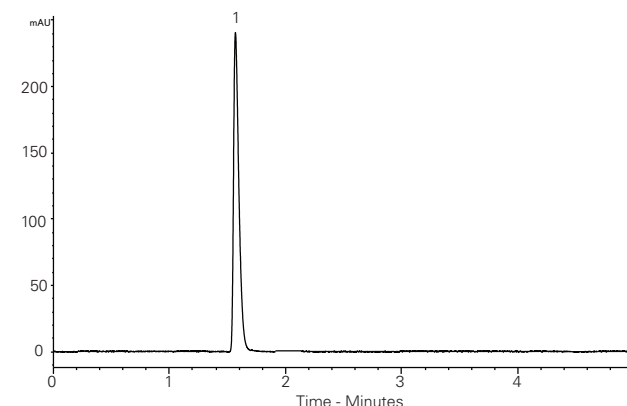
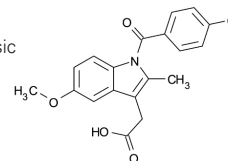
Application #AN1790

Conditions

Column: ACE 5 C18
Dimensions: 150 x 4.6 mm
Part Number: ACE-121-1546
Mobile Phase: 0.01 M monobasic sodium phosphate and 0.01 M dibasic sodium phosphate in MeCN/H₂O (1:1 v/v)
Flow Rate: 1.32 mL/min
Injection: 13 µL
Temperature: Ambient (22 °C)
Detection: UV, 254 nm

Analyte

1. Indomethacin



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Metronidazole

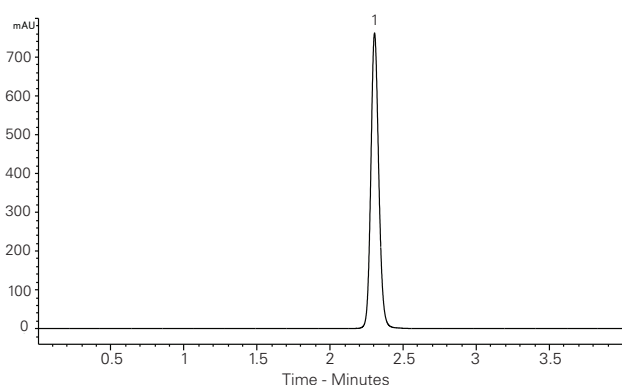
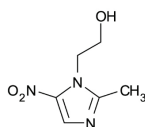
Application #AN1800

Conditions

Column: ACE 3 C8
Dimensions: 75 x 4.6 mm
Part Number: ACE-112-7546
Mobile Phase: H₂O/MeOH (4:1 v/v)
Flow Rate: 1 mL/min
Injection: 15 µL
Temperature: 30 °C
Detection: UV, 319 nm

Analyte

1. Metronidazole



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Naproxen

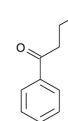
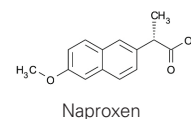
Application #AN1810

Conditions

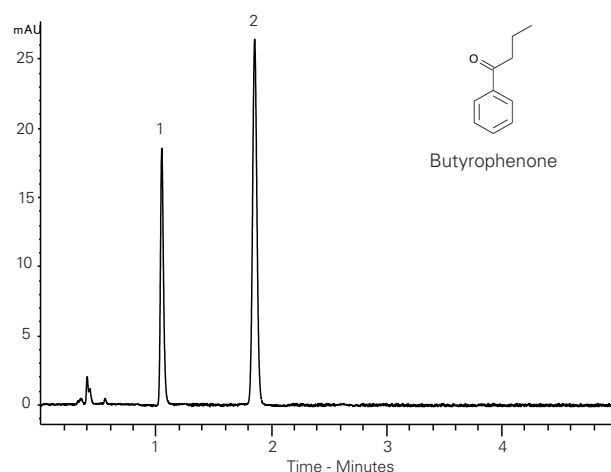
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 3.0 mm
Part Number: CORE-25A-0503U
Mobile Phase: H₂O with glacial acetic acid (49:1)/MeCN (50:50 v/v)
Flow Rate: 0.51 mL/min
Injection: 2.8 µL
Temperature: Ambient (22 °C)
Detection: UV, 254 nm

Analytes

1. Naproxen
 2. Butyrophenone



Butyrophenone



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

USP Monograph – Paracetamol/Aspirin/Caffeine

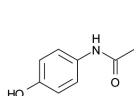
Application #AN1820

Conditions

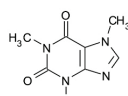
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 4.6 mm
Part Number: CORE-25A-0546
Mobile Phase: H₂O with glacial acetic acid (69:3)/MeOH (72:28 v/v)
Flow Rate: 2 mL/min
Injection: 2.5 µL
Temperature: 45 °C
Detection: UV, 275 nm

Analytes

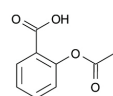
1. Paracetamol
 2. Caffeine
 3. Aspirin
 4. Benzoic acid
 5. Salicylic acid



Paracetamol



Caffeine



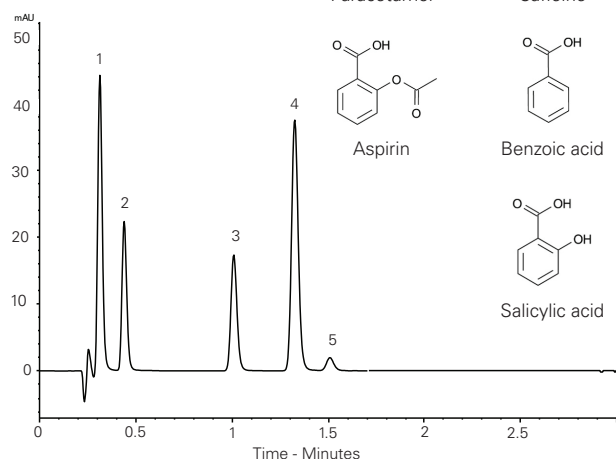
Aspirin



Benzoic acid



Salicylic acid



Translated method according to USP <621> guidance. Always check the latest and official method information from the relevant pharmacopoeia prior to analysis.

Please enquire for details
 of our chromatography
 training, technical advice,
 applications support, batch
 reservation service and
 custom packing facility

email: info@ace-hplc.com



Vanilla Flavourings – Natural and Artificial

Application #AN4390

Conditions

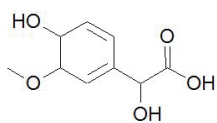
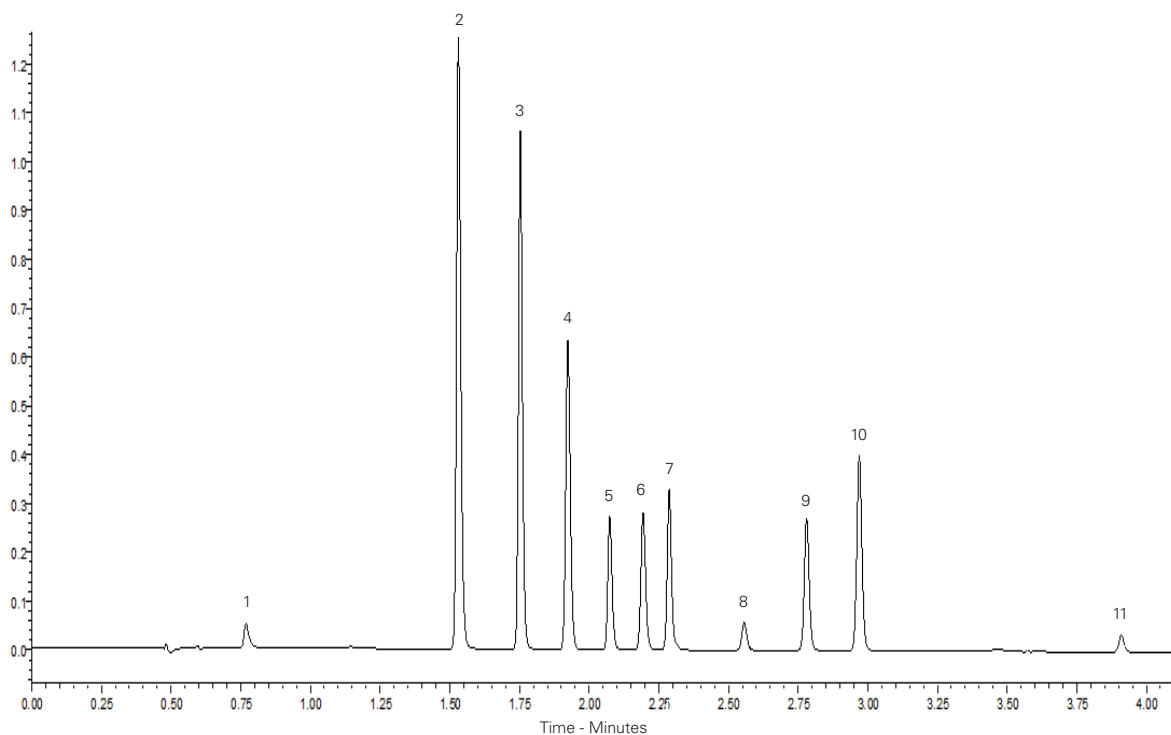
Column: ACE UltraCore 2.5 SuperPhenylHexyl
Dimensions: 100 x 2.1 mm
Part Number: CORE-25B-1002U
Mobile Phase: A: 10 mM ammonium formate in H₂O
 B: MeCN
Gradient:

Time (mins)	%B
0.0	5
5.5	70

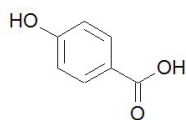
Flow Rate: 0.5 mL/min
Injection: 3 µL
Temperature: 50 °C
Detection: UV, 254 nm

Analytes

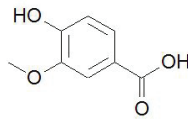
1. Vanillylmandelic acid
2. 4-Hydroxybenzoic acid
3. Vanillic acid
4. 4-Hydroxybenzaldehyde
5. p-Coumaric acid
6. Vanillin
7. Ferulic acid
8. Guaiacol
9. Ethyl vanillin
10. Coumarin
11. Eugenol



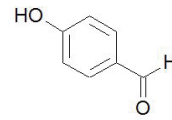
Vanillylmandelic acid



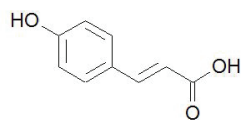
4-Hydroxybenzoic acid



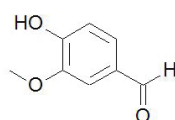
Vanillic acid



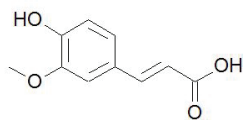
4-Hydroxybenzaldehyde



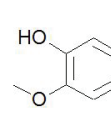
p-Coumaric acid



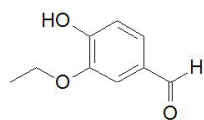
Vanillin



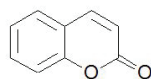
Ferulic acid



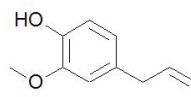
Guaiacol



Ethyl vanillin



Coumarin



Eugenol

Vanillins

Application #AN1620

Conditions

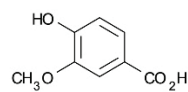
Column: ACE Excel 3 C18-Amide
Dimensions: 150 x 4.6 mm
Part Number: EXL-1112-1546U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	30
10.0	55
10.5	55
15.0	30
20.0	30

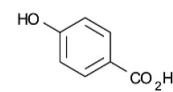
Flow Rate: 1 mL/min
Injection: 5 µL
Temperature: 40 °C
Detection: UV, 260 nm

Analytes

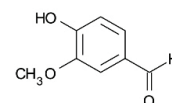
1. Vanillic acid
2. 4-Hydroxybenzoic acid
3. Vanillin
4. 4-Hydroxybenzaldehyde
5. Guaiacol
6. Ethyl Vanillin
7. Eugenol



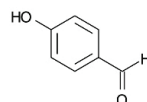
Vanillic acid



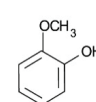
4-Hydroxybenzoic acid



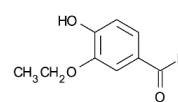
Vanillin



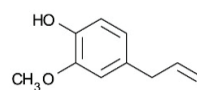
4-Hydroxybenzaldehyde



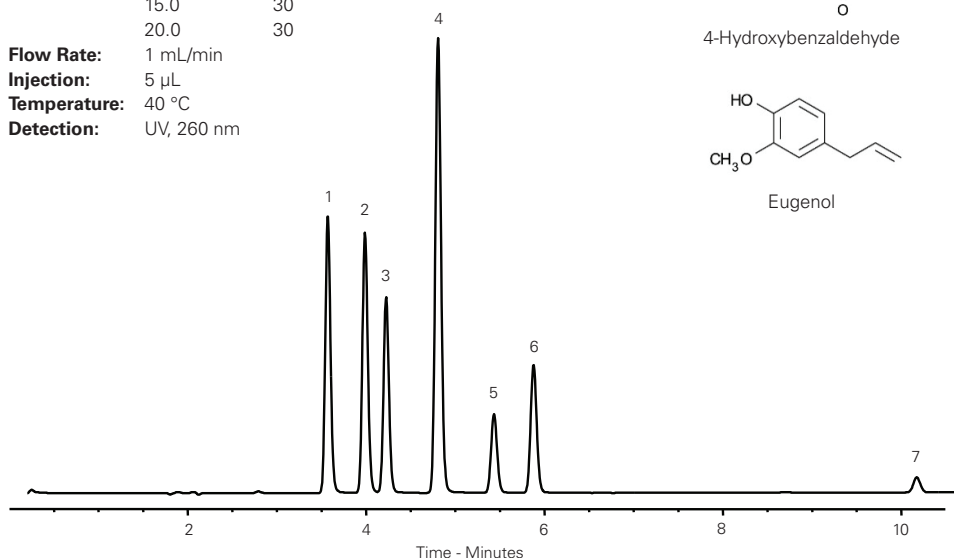
Guaiacol



Ethyl Vanillin



Eugenol



Vanillins – Fast Analysis

Application #AN2240

Conditions

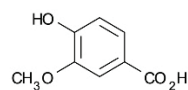
Column: ACE Excel 1.7 C18-Amide
Dimensions: 50 x 3.0 mm
Part Number: EXL-1712-0503U
Mobile Phase: A: 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeCN
Gradient:

Time (mins)	%B
0.0	25
1.32	75
1.49	75
1.60	25

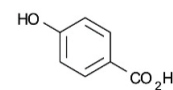
Flow Rate: 1.3 mL/min
Injection: 1 µL
Temperature: 45 °C
Detection: UV, 260 nm

Analytes

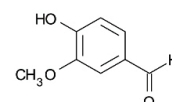
1. Vanillic acid
2. 4-Hydroxybenzoic acid
3. Vanillin
4. 4-Hydroxybenzaldehyde
5. Guaiacol
6. o-Vanillin
7. Ethyl Vanillin
8. Eugenol



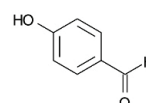
Vanillic acid



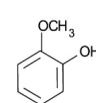
4-Hydroxybenzoic acid



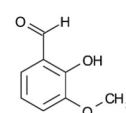
Vanillin



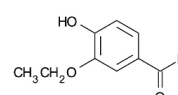
4-Hydroxybenzaldehyde



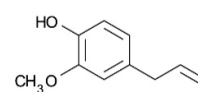
Guaiacol



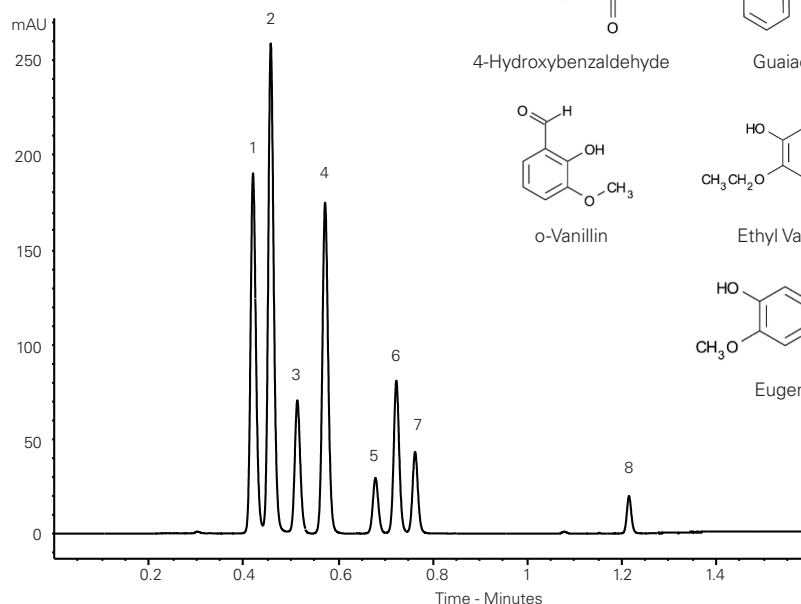
o-Vanillin



Ethyl Vanillin



Eugenol





Vitamin D2/D3

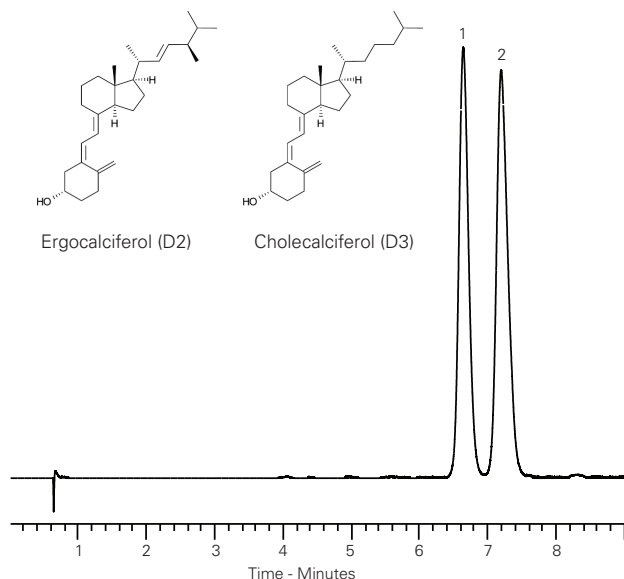
Application #AN1840

Conditions

Column: ACE Excel 2 C18-Amide
Dimensions: 50 x 3.0 mm
Part Number: EXL-1012-0503U
Mobile Phase: 100% MeCN
Flow Rate: 0.43 mL/min
Injection: 2 µL
Temperature: 20 °C
Detection: UV, 265 nm

Analytes

1. Ergocalciferol (D2)
2. Cholecalciferol (D3)



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 or
 email: info@ace-hplc.com

25-Hydroxy Vitamin D in Serum by LC-MS/MS

Application #AN2390

Conditions

Column: ACE Excel 2 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1010-1002U
Mobile Phase: A: 2 mM ammonium acetate, 0.1% formic acid in H₂O
 B: 0.1% formic acid in MeOH
Gradient:

Time (mins)	%B
0.0	75
3.0	100
4.0	100

Flow Rate: 0.4 mL/min

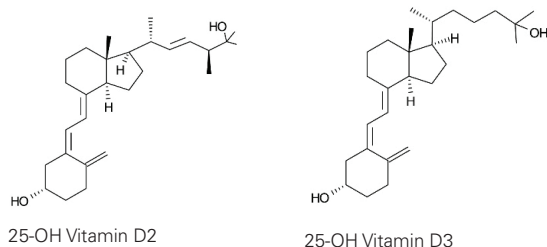
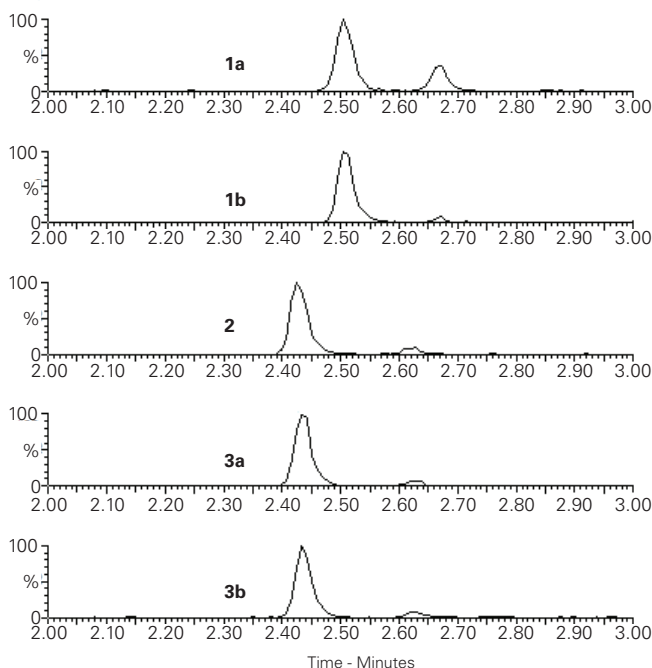
Injection: 15 µL

Temperature: 40 °C

Detection: Quattro Premier XE triple quad MS
 MRM positive ESI mode
 Desolvation temperature: 450 °C
 Ion source temperature: 150 °C

Analytes

- 1a. 25-OH Vitamin D2
(*m/z* 395.5 → 269.5)
- 1b. 25-OH Vitamin D2
(*m/z* 395.5 → 119.2)
2. d6-25-OH Vitamin D3 (IS)
(*m/z* 389.6 → 263.5)
- 3a. 25-OH Vitamin D3
(*m/z* 383.5 → 257.5)
- 3b. 25-OH Vitamin D3
(*m/z* 383.5 → 107.2)



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1,25-Dihydroxyvitamins D2 and D3 in Serum by LC-MS/MS

Application #AN4070

Conditions

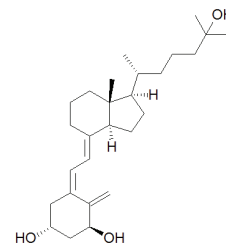
Column: ACE UltraCore 2.5 SuperC18
Dimensions: 50 x 2.1 mm
Part Number: CORE-25A-0502U
Mobile Phase: MeCN/H₂O (50:50 v/v) containing 30 μ L methylamine per 500 mL
Flow Rate: 0.5 mL/min
Injection: 20 μ L
Temperature: 40 °C
Detection: AB Sciex 5500 triple quad MS

ESI in positive ion mode
 IonSpray Voltage: 5500 V
 Temperature: 550 °C

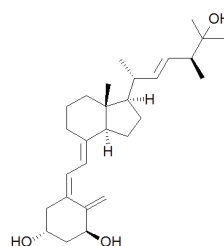
Sample: 1,25 diOH vitamin D2 and 1,25 diOH vitamin D3 metabolites are extracted from serum using supported liquid extraction. Sensitivity of LC-MS/MS analysis is maximised through use of PTAD (9-phenyl-1,2,4-triazole-3,5-dione) derivatisation and complexation with methylamine.

Analytes

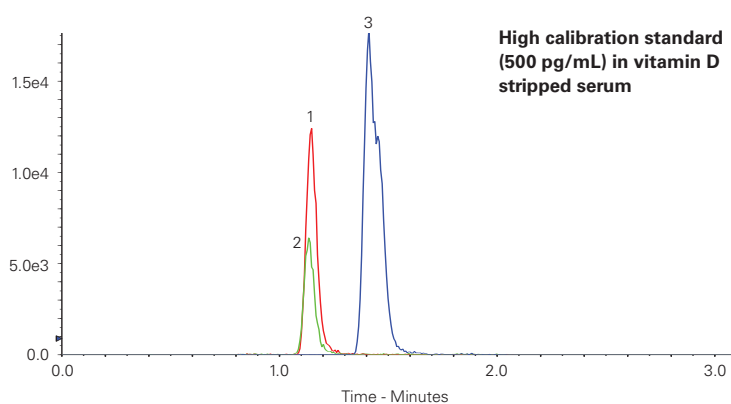
- 1,25-diOH vitamin D3-PTAD-methylamine complex
(*m/z* 623.4 $\rightarrow$ 314.1)
- d3-1,25-diOH vitamin D3-PTAD-methylamine complex (I.S.)
(*m/z* 626.4 $\rightarrow$ 317.1)
- 1,25-diOH vitamin D2-PTAD-methylamine complex
(*m/z* 635.4 $\rightarrow$ 314.1)



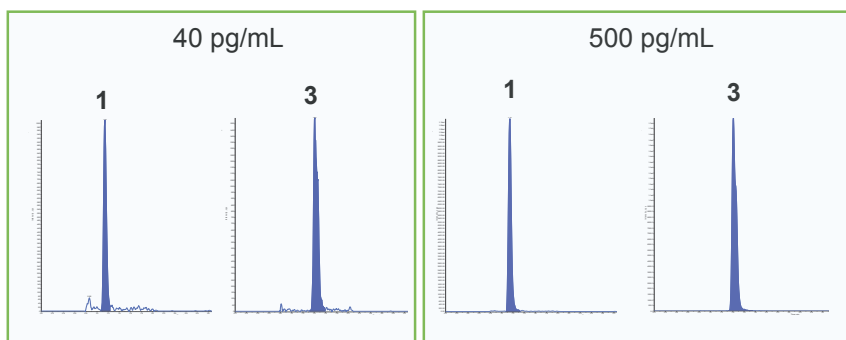
1,25-dihydroxy vitamin D3



1,25-dihydroxy vitamin D2



Low and high calibration standards in charcoal stripped (vitamin D free) serum, analysed as PTAD-methylamine complexes



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Vitamins – Fat Soluble

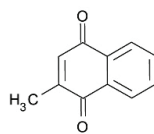
Application #AN2420

Conditions

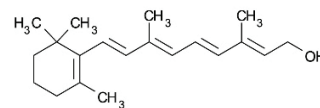
Column: ACE Excel 3 C18-Amide
Dimensions: 150 x 4.6 mm
Part Number: EXL-1112-1546U
Mobile Phase: MeOH/MeCN (90:10 v/v)
Flow Rate: 1 mL/min
Temperature: 20 °C
Detection: UV, 280 nm

Analytes

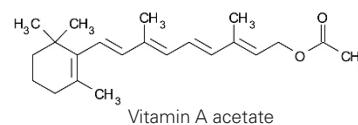
1. Menadione (Vitamin K3)
2. Retinol (Vitamin A)
3. Vitamin A acetate
4. Ergocalciferol (Vitamin D2)
5. Cholecalciferol (Vitamin D3)
6. Vitamin E acetate
7. α -Tocopherol (Vitamin E)
8. Vitamin K1



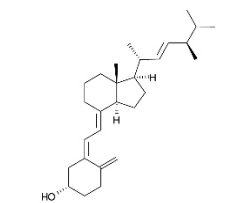
Menadione (Vitamin K3)



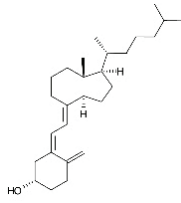
Retinol (Vitamin A)



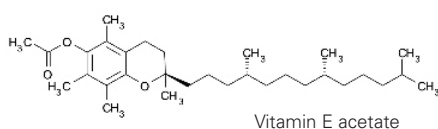
Vitamin A acetate



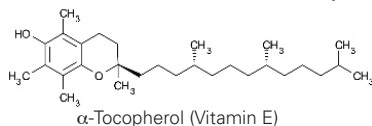
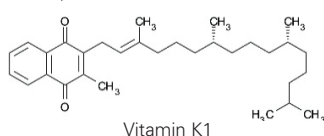
Ergocalciferol (Vitamin D2)



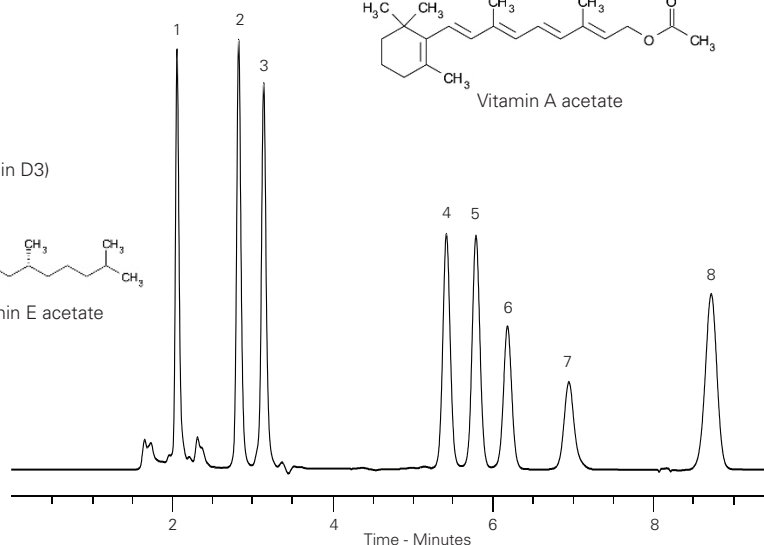
Cholecalciferol (Vitamin D3)



Vitamin E acetate

 α -Tocopherol (Vitamin E)

Vitamin K1



Vitamins – Water Soluble (Gradient I)

Application #AN2940

Conditions

Column: ACE 5 C8
Dimensions: 250 x 4.6 mm
Part Number: ACE-122-2546
Mobile Phase: A: 50 mM KH₂PO₄ pH 2.5 in H₂O
 B: MeOH

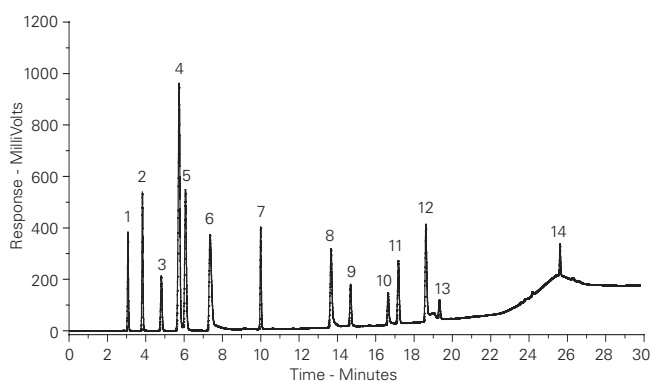
Gradient:

Time (mins)	%B
0.0	0
3.0	0
16.5	45
19.5	80

Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 205 nm

Analytes

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 B9)
11. Cyanocobalamin (Vitamin B12)
12. Riboflavin (Vitamin B2)
13. d-Biotin (Vitamin B7)
14. Thiocctic acid



Vitamins – Water Soluble (Gradient II)

Application #AN2930

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: A: 50 mM KH₂PO₄ pH 3.0 in H₂O
 B: MeOH

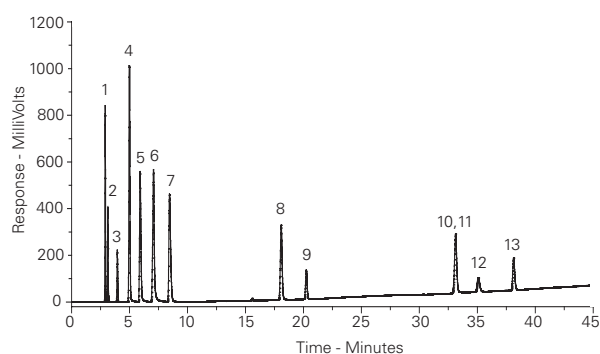
Gradient:

Time (mins)	%B
0	3
5	3
45	45
50	80

Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 205 nm

Analytes

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 B9)
11. Cyanocobalamin (Vitamin B12)
12. d-Biotin (Vitamin B7)
13. Riboflavin (Vitamin B2)



Vitamins – Water Soluble (Gradient III)

Application #AN1870

Conditions

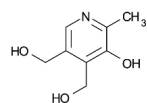
Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: A: 20 mM potassium phosphate pH 2.83 in H₂O
 B: 20 mM potassium phosphate pH 2.83 in MeOH
 H₂O (50:50 v/v)
Gradient:

Time (mins)	%B
0	20
15	70

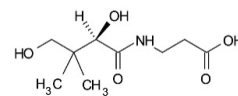
Flow Rate: 1.5 mL/min
Injection: 1 µL
Temperature: 40 °C
Detection: UV, 205 nm

Analytes

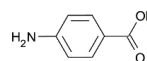
1. Pyridoxine (Vitamin B6)
2. Pantothenic acid (Vitamin B5)
3. p-Aminobenzoic acid
4. Folic acid (Vitamin B9/ Vitamin M)
5. D-Biotin (Vitamin B7/ Vitamin H)
6. Cyanocobalamin (Vitamin B12)
7. Riboflavin (Vitamin B2)



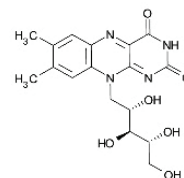
Pyridoxine (Vitamin B6)



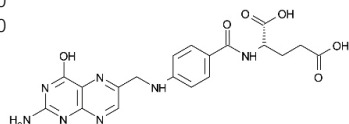
Pantothenic acid (Vitamin B5)



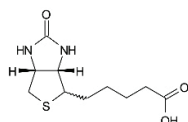
p-Aminobenzoic acid



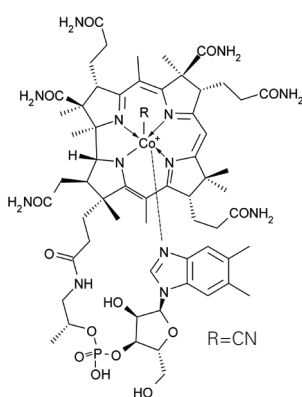
Riboflavin (Vitamin B2)



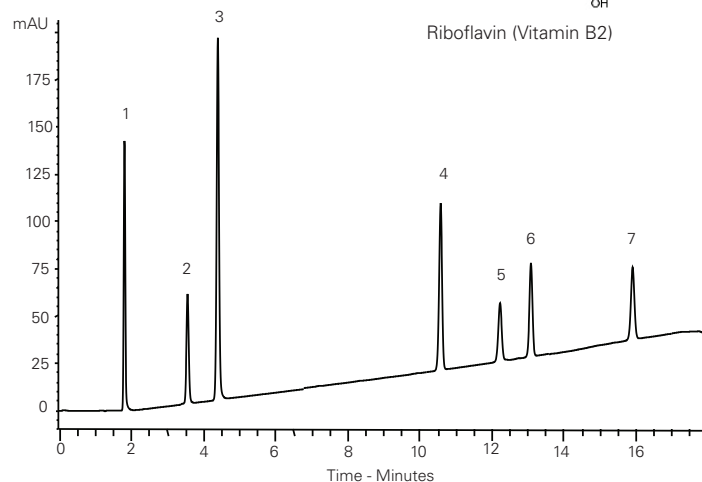
Folic acid (Vitamin B9/ Vitamin M)



D-Biotin (Vitamin B7/ Vitamin H)



Cyanocobalamin (Vitamin B12)



Vitamins – Water Soluble (Gradient IV)

Application #AN1880

Conditions

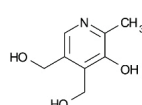
Column: ACE Ultracore 2.5 SuperPhenylHexyl
Dimensions: 50 x 2.1 mm
Part Number: CORE-25B-0502U
Mobile Phase: A: 20 mM KH₂PO₄, pH 2.7
 B: 20 mM KH₂PO₄, pH 2.7 in MeOH/H₂O (50:50 v/v)
Gradient:

Time (mins)	%B
0.00	20
1.50	60
3.00	70
3.75	70
4.50	20
9.00	20

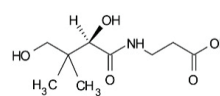
Flow Rate: 0.4 mL/min
Injection: 1 µL
Temperature: 40 °C
Detection: UV, 205 and 254 nm

Analytes

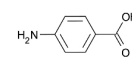
1. Pyridoxine
2. Pantothenic acid
3. p-Aminobenzoic acid
4. Folic acid
5. D-Biotin
6. Cyanocobalamin
7. Riboflavin



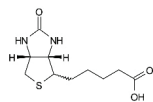
Pyridoxine



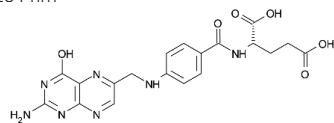
Pantothenic acid



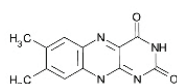
p-Aminobenzoic acid



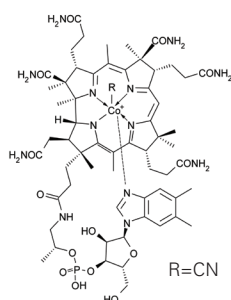
D-Biotin



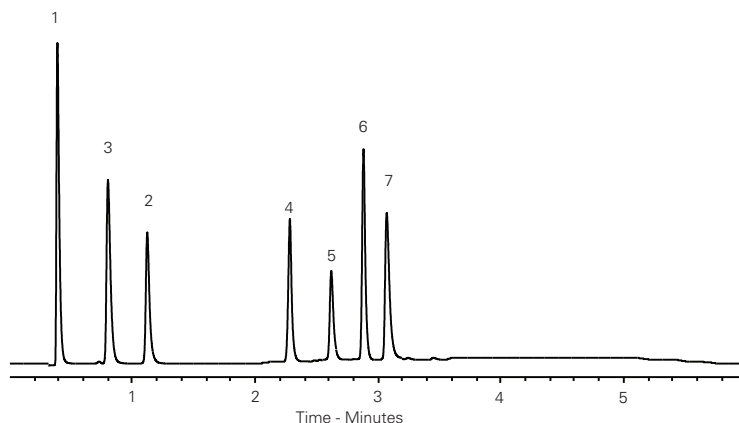
Folic acid

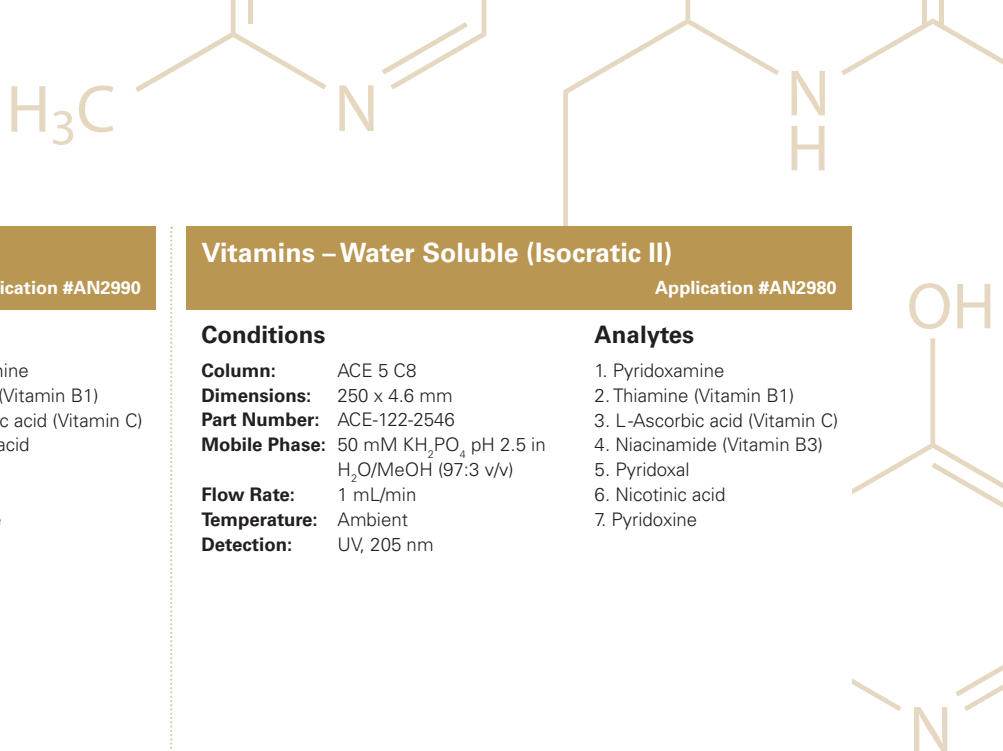


Riboflavin



Cyanocobalamin





Vitamins – Water Soluble (Isocratic I)

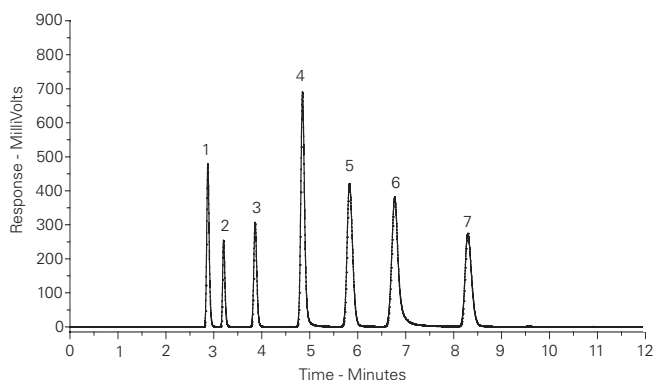
Application #AN2990

Conditions

Column: ACE 5 C18
Dimensions: 250 x 4.6 mm
Part Number: ACE-121-2546
Mobile Phase: 50 mM KH_2PO_4 pH 3.0 in $\text{H}_2\text{O}/\text{MeOH}$ (97:3 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 205 nm

Analytes

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



Vitamins – Water Soluble (Isocratic II)

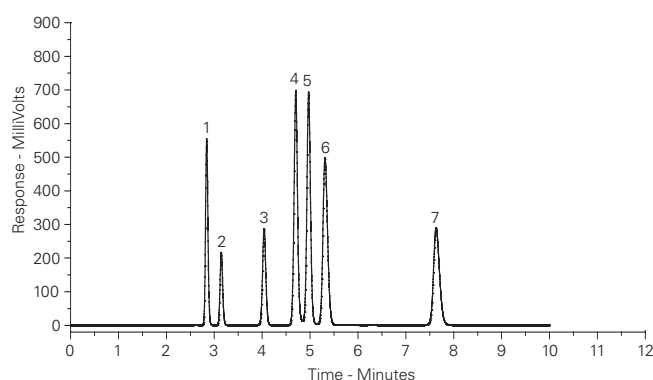
Application #AN2980

Conditions

Column: ACE 5 C8
Dimensions: 250 x 4.6 mm
Part Number: ACE-122-2546
Mobile Phase: 50 mM KH_2PO_4 pH 2.5 in $\text{H}_2\text{O}/\text{MeOH}$ (97:3 v/v)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV, 205 nm

Analytes

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



Vitamins in Fruit Juice by Fast LC-MS

Application #AN2610

Conditions

Column: ACE Excel 3 C18-PFP
Dimensions: 100 x 2.1 mm
Part Number: EXL-1110-1002U
Mobile Phase: A: 15 mM formic acid, adjusted to pH 3.8 with ammonia solution
 B: MeOH

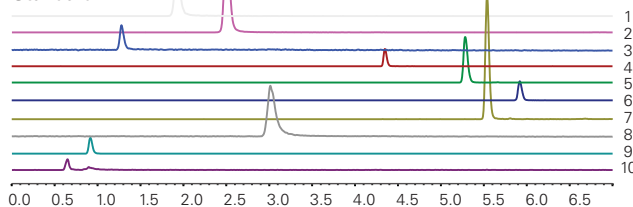
Gradient:	Time (mins)	%B
	0.00	1
	1.00	1
	3.00	8
	3.10	25
	6.00	50
	6.50	50
	6.51	1
	9.00	1

Flow Rate: 0.4 mL/min
Temperature: 30 °C
Detection: LCMS-8040 triple quad MS
 ESI positive mode (ESI negative for ascorbic and citric acid)
 DL temperature: 250 °C
 Heat block temperature: 400 °C

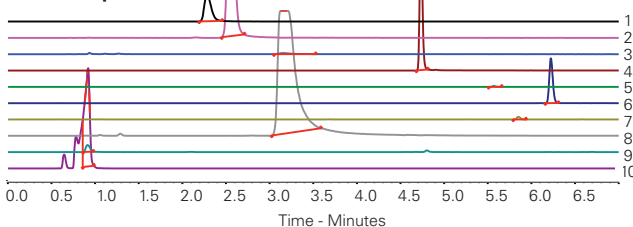
Analytes

1. Thiamine (Vitamin B1)
(m/z 266.10 → 122.15)
2. Pyridoxine (Vitamin B6)
(m/z 170.20 → 152.15)
3. Nicotinic acid (Vitamin B3)
(m/z 124.00 → 78.00)
4. Pantothenic acid (Vitamin B5)
(m/z 220.30 → 90.05)
5. Cyanocobalamin (Vitamin B12)
(m/z 678.50 → 147.05)
6. Riboflavin (Vitamin B2)
(m/z 377.20 → 243.10)
7. Biotin (Vitamin B7)
(m/z 245.10 → 227.05)
8. Nicotinamide (Vitamin B3)
(m/z 123.20 → 80.05)
9. Ascorbic acid (Vitamin C)
(m/z 175.10 → 114.80)
10. Citric acid
(m/z 191.10 → 87.15)

Standard



Juice sample



Vitamins in Green Vegetables by LC-MS/MS - Water Soluble

Application #AN1860

Conditions

Column: ACE 3 C4-300
Dimensions: 150 x 2.1 mm
Part Number: ACE-213-1502
Mobile Phase: A: 10 mM ammonium acetate
 pH 4.5 in H₂O
 B: 0.1% acetic acid in MeOH
 C: 0.3% acetic acid in MeOH

Gradient:	Time (mins)	%A	%B	%C
	0	90	10	0
	3	90	10	0
	4	50	0	50
	7	50	0	50
	10	0	100	0

Flow Rate: 0.2 mL/min

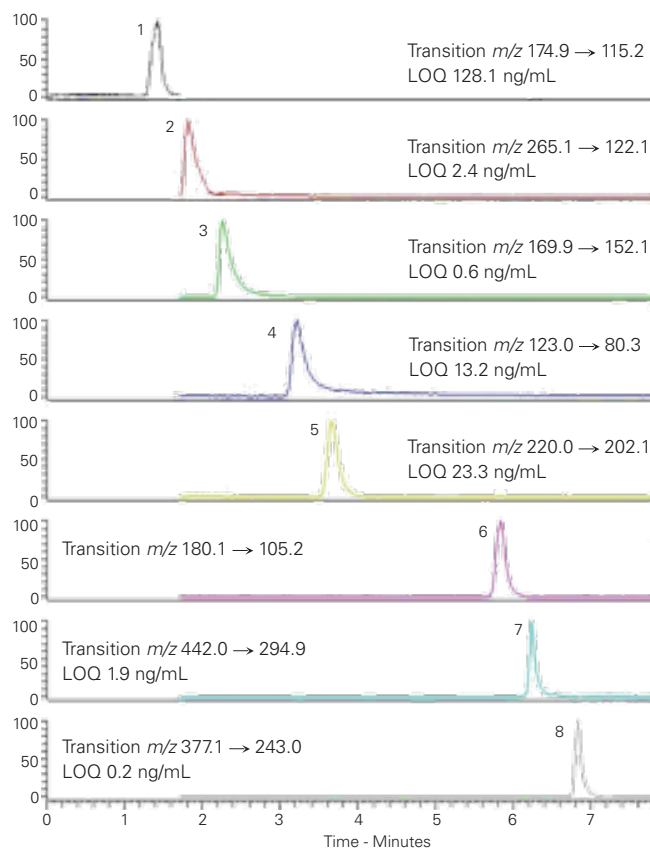
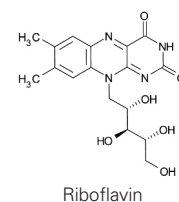
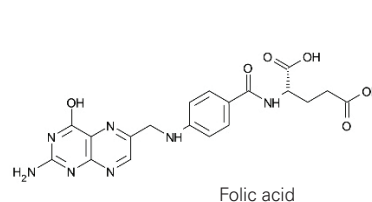
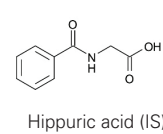
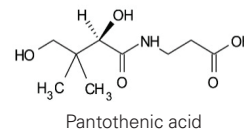
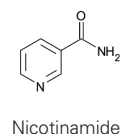
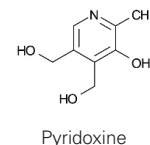
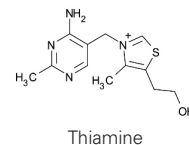
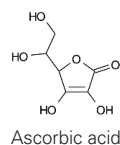
Injection: 10 µL

Temperature: 20 °C

Detection: TSQ triple quad MS; SRM mode
 -ESI for vitamin C
 +ESI for vitamin B

Analytes

1. Ascorbic acid
2. Thiamine
3. Pyridoxine
4. Nicotinamide
5. Pantothenic acid
6. Hippuric acid (IS)
7. Folic acid
8. Riboflavin



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Vitamins and Polar Molecules - Water Soluble

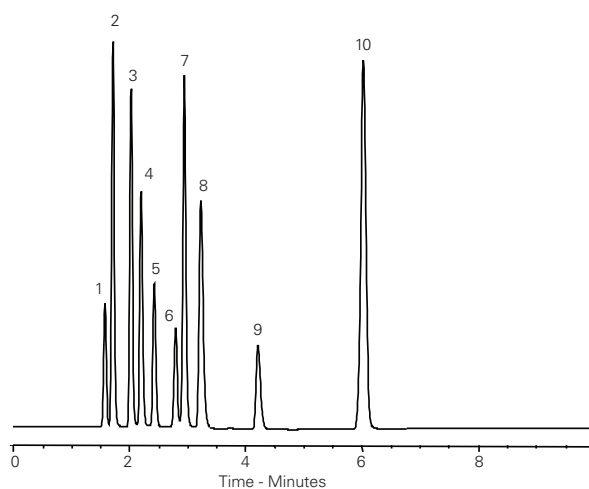
Application #AN1850

Conditions

Column: ACE 3 C18-AR
Dimensions: 150 x 4.6 mm
Part Number: ACE-119-1546
Mobile Phase: 0.1 % phosphoric acid in H₂O/MeOH (96.5:3.5 v/v)
Flow Rate: 1 mL/min
Injection: 2 µL
Temperature: 22 °C
Detection: UV, 260 nm

Analytes

1. Pyridoxamine (Vitamin B6)
2. Thiamine (Vitamin B1)
3. Isonicotinamide
4. Nicotinamide
5. L-Ascorbic acid (Vitamin C)
6. Orotic Acid
7. Hypoxanthine
8. Pyridoxal (Vitamin B6)
9. Pyridoxine (Vitamin B6)
10. p-Aminobenzoic acid



Water Soluble Artificial Colours

Application #AN3010

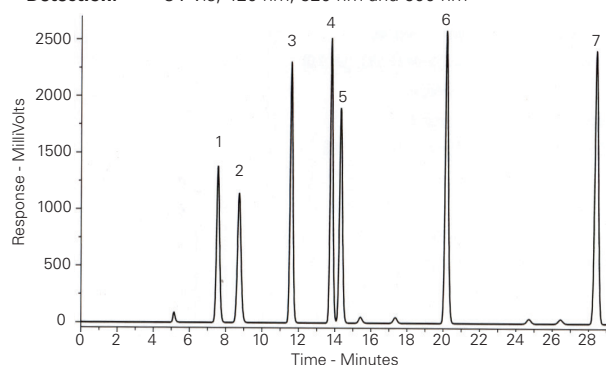
Conditions

Column: ACE 3 C18
Dimensions: 100 x 4.6 mm
Part Number: ACE-111-1046
Mobile Phase: A: 3 mM tetrabutylammonium bromide and 5 mM KH₂PO₄ in H₂O
 B: 5 mM tetrabutylammonium bromide in MeOH

Analytes

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

Gradient:	Time (mins)	%B
	0	45
	20	70
	30	45
	40	45

Flow Rate: 0.8 mL/min**Injection:** 10 µL**Temperature:** Ambient**Detection:** UV-Vis, 420 nm, 520 nm and 600 nm

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Whey Proteins from Whole Milk

Application #AN3000

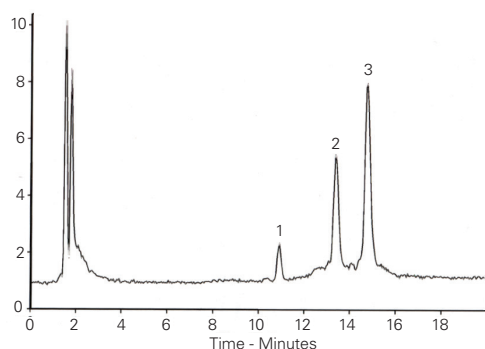
Conditions

Column: ACE 3 C4-300
Dimensions: 150 x 2.1 mm
Part Number: ACE-213-1502
Mobile Phase: A: 0.5% formic acid in H₂O
 B: 0.5% formic acid in MeCN

Analytes

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

Gradient:	Time (mins)	%B
	0	35
	16	43
	17	80
	20	80
	21	35
	31	35

Flow Rate: 0.4 mL/min**Injection:** 10 µL**Temperature:** 40 °C**Detection:** ESI-MS (+ve)

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Wine Acid Analysis

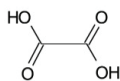
Application #AN1890

Conditions

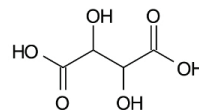
Column: ACE Excel 3 C18-Amide
Dimensions: 250 x 2.1 mm
Part Number: EXL-1112-2502U
Mobile Phase: 40 mM ammonium phosphate pH 2.5 in H₂O
Flow Rate: 0.21 mL/min
Injection: 5 µL
Temperature: 25 °C
Detection: UV, 214 nm

Analytes

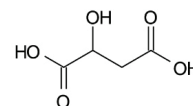
1. Oxalic acid
2. Tartaric acid
3. Malic acid
4. Lactic acid
5. Ascorbic acid
6. Citric acid



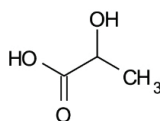
Oxalic acid



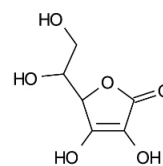
Tartaric acid



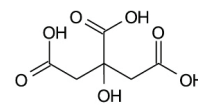
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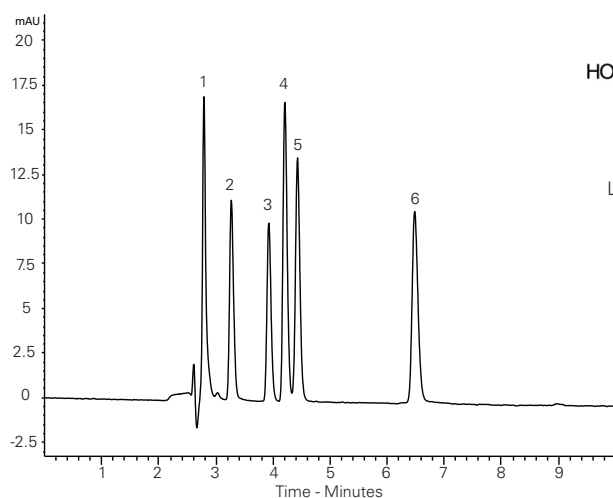
Lactic acid



Ascorbic acid



Citric acid





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