

SUNSHELL DICTIONARY








APPLICATION DATA 2018-2019



No.	Title	Sample	Column	Pdf
1127	Ingredients in an eye drop	Pyridoxine HCl	SunShell PFP 2.6 µm, 150 x 4.6 mm i.d.	
		Neostigmine methylsulfate	SunShell Phenyl 2.6 µm, 150 x 4.6 mm i.d.	
		Naphazoline HCl	SunShell C18 2.6 µm, 150 x 4.6 mm i.d.	
		Chlorpheniramine		
		Glycyrrhizin		
1126H	Tar pigment	wTartrazine	SunShell C18 2.6 µm, 150 x 4.6 mm i.d.	
		Amaranth	Sunniest C18 5 µm, 150 x 4.6 mm i.d.	
		Indigo carmine		
		New Coccine		
		Sunset Yellow FCF		
		Allura Red AC		
		Fast Green FCF		
		Brilliant Blue FCF		
		Erythrosine B		
		Furoxan		
		Acid Red 52		
1125H	o, m, p-Toluidine	cis-Stilbene	SunShell PFP 2.6 µm, 150 x 4.6 mm i.d.	
		trans-Stilbene	SunShell Phenyl 2.6 µm, 150 x 4.6 mm i.d.	
1124H	Stilbene	cis-Stilbene	SunShell PFP 2.6 µm, 150 x 4.6 mm i.d.	
		trans-Stilbene	SunShell C18 2.6 µm, 150 x 4.6 mm i.d.	
1123	Stantins (2)	Pravastatin	Sunnist C18 5 µm, 150 x 4.6 mm i.d.	
		Fluvastatin		
		Mevastatin		
		Lovastatin		
		Simvastatin		
1122	Anthraquinone dye (2)	Alizalin	Sunnist C18 5 µm, 150 x 4.6 mm i.d.	
		Chrysazin		
		Anthrarufin		
1121	Ethinylestradiol and its metabolites (2)	17β-Estradiol	SunShell C18 2.6 µm, 100 x 4.6 mm i.d.	
		Estrone	Sunnist C18 5 µm, 150 x 4.6 mm i.d.	
		Ethinylestradiol		
1120	Corticosteroids (2)	Prednisone	Sunnist C18 5 µm, 150 x 4.6 mm i.d.	
		Cortisone	SunShell C18 2.6 µm, 150 x 4.6 mm i.d.	
		Prednisolone	SunShell PFP 2.6 µm, 150 x 4.6 mm i.d.	
		Hydrocortisone		

No.	Title	Sample	Column	Pdf
1119	Neurotransmitter	Serotonin Dopamine Epinephrine Norepinephrine	SunShell HILIC-S 2.6 µm, 100 x 2.1 mm i.d. SunShell HILIC-Amide 2.6 µm, 100 x 2.1 mm i.d. SunShell RP-AQUA 2.6 µm, 100 x 2.1 mm i.d.	
1118	Local anesthetic (2)	Benzocaine Procaine Cinchonine Lidocaine Tetracaine	Sunniest C18 5 µm, 150 x 4.6 mm i.d.	
1117	Endocrine disruptors (2)	Phenol Bisphenol-A 2,4-Dichlorophenol Diethylphthalate	Sunniest C18 5 µm, 150 x 4.6 mm i.d.	
1116	Hypotensive diuretic	4-Amino-6-chloro-1,3-benzenedisulfonamide Hydrochlorothiazide p-Aminoacetophenone	Sunniest C18 5µm, 150 x 4.6 mm i.d.	
1115	Analgesics (3)	Acetaminophen Antipyrine Aspirin Ethenzamide	SunShell C18 2.6µm, 100 x 4.6 mm i.d.	
1114H	Isoflavone	Daidzein Genistein	SunShell C18 2.0 µm, 50 x 2.1 mm i.d.	
1113H	Resveratrol	Resveratrol	SunShell C18 2.6 µm, 50 x 2.1 mm i.d.	
1112H	Triton X-100	Triton X-100	SunShell C18 2.6 µm, 150 x 3.0 mm i.d.	
1111	Cyclodextrin	α-Cyclodextrin β-Cyclodextrin γ-Cyclodextrin	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	
1110H	Coffee polyphenol	Caffeine Caffeic acid	SunShell C18 2.6 µm, 100 x 4.6 mm i.d.	

No.	Title	Sample	Column	Pdf
1109H	phenolic antioxidants	PG THBP TBHQ NDGA BHA HMBP OG BHT DG	Sunniest C18 5 µm, 150 x 4.6 mm i.d., SunShell C18 2.6 µm, 100 x 4.6 mm i.d.	PDF 
1108	Sugar alcohol	Glycerine Erythritol Xylitol Sorbitol Mannitol	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	PDF 
1107H	Ascorbic acid and Erythorbic acid	Ascorbic acid Erythorbic acid	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	PDF 
1106	Sucrose and Palatinose	Sucrose Palatinose	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	PDF 
1105	Comparison of injection volume of water-dissolved sample(nucleobases)	Uridine Cytosine	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	PDF 
1104	Branched-chain amino acids	L-Leucine L-Isoleucine L-Valine	SunArmor NH2 5 µm, 250 x 4.6 mm i.d.	PDF 
1103H	Local anesthetic (1)	Benzocaine Procaine Cinchonine Lidocaine Tetracaine	SunShell C18 2.6 µm, 100 x 4.6 mm i.d.	PDF 
1102	Simultaneous Analysis of Pesticide (LC/MS) (2)	Pesticide	SunShell C18 2.6 µm, 100 x 2.1 mm i.d.	PDF 
1101B	Simultaneous Analysis of Pesticide (LC/MS) (1)- B	Pesticide	SunShell C18 2.6 µm, 150 x 2.1 mm i.d.	PDF 
1101A	Simultaneous Analysis of Pesticide (LC/MS) (1)- A	Pesticide	SunShell C18 2.6 µm, 100 x 2.1 mm i.d.	PDF 

No.	Title	Sample	Column	Pdf
1100H	Continuous analysis under basic pH condition	Uracil Propranolol Nortriptyline Amitriptyline	SunShell C18 2.6 µm, 50 x 2.1 mm i.d.	PDF 
1099H	Continuous analysis under acidic pH condition	Benzydamine Krtoprofen Indomethacin	SunShell C18 2.6 µm, 50 x 2.1 mm i.d.	PDF 
1098H	Vitamin K1 (Phylloquinone)	Vitamin K1 (trans) Vitamin K1 (cis)	SunShell C30 2.6 µm, 100 x 2.1 mm i.d.	PDF 
1097H	Vitamin E (Tocopherol)	δ-Tocopherol γ-Tocopherol β-Tocopherol α-Tocopherol	SunShell C30 2.6 µm, 150 x 3.0 mm i.d.	PDF 
1096H	Catechins (3)	(-)-Epigallocatechin (±)-Catechin (-)-Epicatechin (-)- Epigallocatechin gallate (-)-Epicatechin gallate (-)-Catechin gallate	SunShell C18 2.6 µm, 100 x 2.1 mm i.d.	PDF 
1095H	Food additives	4-Hydroxybenzoate Sorbic acid Benzoic acid Dehydroacetic acid Na Methyl 4-hydroxybenzoate Ethyl 4-hydroxybenzoate Isopropyl 4-hydroxybenzoate Propyl 4-hydroxybenzoate Butyl 4-hydroxybenzoate	SunShell C18 2.6 µm, 150 x 4.6 mm i.d. SunShell C18 2 µm, 100 x 2.1 mm i.d.	PDF 
1094H	Nucleic acid	Cytosine Uracil Cytidine Uridine Thymine Adenine Inosine	SunShell RP-AQUA 2.6 µm, 150 x 4.6 mm i.d. SunShell HILIC-Amide 2.6 µm, 150 x 4.6 mm i.d.	PDF 

No.	Title	Sample	Column	Pdf
1093H	Organic acids (4)	Tartaric acid Formic acid Malic acid Lactic acid Acetic acid Diglycolic acid Maleic acid Citric acid Succinic acid Fumaric acid	SunShell RP-AQUA 2.6 mm, 150 x 4.6 mm i.d.	 
1092H	Artificial sweeteners	Acesulfame K Saccharin Aspartame	SunShell HILIC-Amide 2.6 mm, 150 x 4.6 mm i.d.	 
1091H	Water-soluble vitamins in the drinks	Nicotinic acid Pyridoxine HCl (Vitamin B6) Nicotinamide Thiamine HCl (Vitamin B1) Folic acid Caffeine Riboflavin (Vitamin B2)	SunShell RP-AQUA 2.6mm □ 100 x 4.6 mm i.d.	 
1090	Cis-trans isomers of 9-cotadecenoic acid (2)	Oleic acid Elaidic acid	SunShell C18 2.6 mm, 150 x 4.6 mm i.d. SunShell C30 2.6 mm, 150 x 4.6 mm i.d.	 
1089	Sugar	Fructose Glucose Sucrose Maltose	Sunniest NH2 5 µm, 250 x 4.6 mm i.d.	 
1088	Vitamin D2 and D3	Vitamin D2 Vitamin D3	Sunrise C18-SAC 3 µm, 150 x 4.6 mm i.d. SunShell C18 2.6 µm, 150 x 4.6 mm i.d.	 
1087	Fluorobenzene and benzene	Benzene Fluorobenzene Toluene α,α,α-Trifluorotoluene	Sunrise C28 3 µm(150 x 4.6 mm) SunShell C18, PFP 2.6 µm(150 x 4.6 mm)	 
1086	Components of explosive	1,3-Dinitrobenzene 1,3,5-Trinitrobenzene 2,4-Dinitrotoluene 2,4,6-Trinitrotoluene	SunShell C18, PFP, RP-AQUA, Phenyl 2.6 µm(100 x 4.6 mm)	 

No.	Title	Sample	Column	Pdf
1085	Naphthols	2-Naphthol 1-Naphthol	SunShell C18 2.6 µm(150 x 4.6 mm)	PDF 
1084	Hypotensive diuretic	4-Amino-6-chloro-1,3-benzenedisulfonamide Hydrochlorothiazide p-Aminoacetophenone	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1083	Endocrine disruptors (1)	Phenol Bisphenol-A 2,4-Dichlorophenol Diethylphthalate	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1082	o, p, m-Terphenyl	o-Terphenyl p-Terphenyl m-Terphenyl	SunShell RP-AQUA 2.6 µm(150 x 4.6 mm) SunShell C18 2.6 µm(150 x 4.6 mm) Sunrise C28 3 µm(150 x 4.6 mm)	PDF 
1081	Clotrimazole	Clotrimazole	Sunrise C18-SAC 5 µm(150 x 4.6 mm)	PDF 
1080	Cis-trans isomers of 9-cotadecenoic acid (1)	Oleic acid Elaidic acid	SunShell C18 2.6 µm(150 x 4.6 mm)	PDF 
1079	Stantins (1)	Pravastatin Fluvastatin Mevastatin Lovastatin Simvastatin	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1078	Benzophenones	2,2',4,4'-Tetrahydroxybenzophenone 2,4-Dihydroxybenzo-phenone Benzophenone 2,2'-Dihydroxy-4,4'-dimethoxybenzophenone 2-Hydroxy-4-methoxybenzophenone	SunShell PFP 2.6 µm(150 x 4.6 mm)	PDF 
1077	Anthraquinone dye (1)	Alizalin Chrysazin Anthrarufin	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1076	Ethinylestradiol and its metabolites (1)	17β-Estradiol Estrone,	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1075	Resorcinol and reated substances	Hydroquinone Resorcinol Pyrocatechol Phenol	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1074	Corticosteroids (1)	Prednisone Cortisone Prednisolone Hydrocortisone	Sunniest C18 5 µm(150 x 4.6 mm) SunShell C18 2.6 µm(150 x 4.6 mm) SunShell C18 2.6 µm(250 x 4.6 mm)	PDF 

No.	Title	Sample	Column	Pdf
1073	Flavonoids	Myricetin,Quercetin Apigenin,Baicalein	SunShell C18 2.6 µm(100 x 4.6 mm)	PDF 
1072	Tetracyclines	Tetracycline Oxytetracycline Chlortetracycline	SunShell C18 2.6 µm(150 x 4.6 mm)	PDF 
1071	Nucleic acid	Sodium nitrite Cytosine,Uracil Guanine,Thymine Adenine	SunShell RP-AQUA 2.6 µm(150 x 4.6 mm)	PDF 
1070	Calcium antagonists (Sunniest C18)	Nifedipine Nitredipine Diltiazem Hydrochloride Verapamil Hydrochloride Nicardipine Hydrochloride	Sunniest C18 (150x4.6mm)	PDF 
1069	β blocker	Atenolol Metoprolol Timolol Propranolol	SunShell C18 (100x4.6mm)	PDF 
1068	H2 blockers	Famotidine Cimetidine Ranitidine	SunShell C18 (100x4.6mm)	PDF 
1067	Calcium antagonists	Nifedipine Nitredipine Diltiazem Hydrochloride Verapamil Hydrochloride Nicardipine Hydrochloride	SunShell C18, C8, RP-AQUA, Phenyl(150x4.6mm)	PDF 
1066	Standard peptides using 1.0 mm i.d. column	Gly-Tyr Val-Tyr-Val Met enkephalin Leu enkephalin Angiotensin II	SunShell RP-AQUA (100x1.0mm)	PDF 
1065	Arbutin and related substances	Arbutin Hydroquinone Gallic acid	SunShell RP-AQUA (150x4.6mm)	PDF 
1064	Purine analogue	Uric acid Hypoxanthine Xanthine Oxipurinol Allopurinol	SunShell RP-AQUA (100x4.6mm)	PDF 

No.	Title	Sample	Column	Pdf
1063	Monosaccharides derivatized with L-Tryptphan	D-Galactose L-Galactose D-Glucose L-Mannose L-Glucose D-Mannose	SunShell RP-AQUA (100x4.6mm)	PDF 
1062	Proteins Comparison of thickness of porous layer	Cytochrome C Lysozyme BSA Myoglobin Ovalbumin	SunShell C8-30 (100x2.1mm)	PDF 
1061	Proteins Effect of gradient time	Cytochrome C Lysozyme BSA Myoglobin Ovalbumin	SunShell C8-30 (100x2.1mm)	PDF 
1060	Proteins Effect of temperature	Cytochrome C Lysozyme BSA Myoglobin Ovalbumin	SunShell C8-30 (100x2.1mm)	PDF 
1059	Organic acids (3)	Oxalic acid Tartaric acid Formic acid Malic acid Lactic acid Acetic acid Diglycolic acid Maleic acid Citric acid Succinic acid Fumaric acid	SunShell RP-AQUA (150x4.6mm)	PDF 
1058	Organic acids (2)	Oxalic acid Tartaric acid Formic acid Malic acid Lactic acid Acetic acid Diglycolic acid Maleic acid Citric acid Succinic acid Fumaric acid	SunShell RP-AQUA (150x4.6mm)	PDF 

No.	Title	Sample	Column	Pdf
1057	Amino acids LC/MS (2)	20 kinds of amino acids	SunShell RP-AQUA (150x2.1mm)	PDF 
1056	Melamine and cyanuric acid	Cyanuric acid Melamine	SunShell HILIC-Amide (100x4.6mm)	PDF 
1055	Glycoside	Helicin Salicin Arbutin Rutin	SunShell HILIC-Amide (100x4.6mm)	PDF 
1054	Artificial sweeteners	Aspartame Saccharin Acesulfame K	SunShell HILIC-Amide (100x4.6mm)	PDF 
1053	Water- soluble vitamins	Nicotinic acid Ascorbic acid Pyridoxine	SunShell HILIC-Amide (100x4.6mm)	PDF 
1052	Nucleic acid bases	Thymine Uracil Uridine Cytosine Cytidines	SunShell HILIC-Amide (100x4.6mm)	PDF 
1051A	Erythromycin Estolate	Erythromycin Estolate	Sunniest C18 (250x4.6mm)	PDF 
1050	Alpha Casein Digest using SunShell C18-16	Alpha Casein Digest	SunShell C18-16 (100x2.1mm)	PDF 
1049	BSA Digest using SunShell C18-16	Bovine Serum Albumin Digest	SunShell C18-16 (100x2.1mm)	PDF 
1048	Lipase using SunShell C8-30	Lipase Impurity Lipase	SunShell C8-30 (100x2.1mm)	PDF 
1047	Peptide Mix using SunShell C18-16	Angiotensin I Somatostatin Glu-1-fibrinopeptide	SunShell C18-16 (100x2.1mm)	PDF 
1046	Oxidized Insulin using SunShell C18-30	Oxidized insulin	SunShell C18-30 (100x2.1mm)	PDF 
1045	Ribonuclease A/B Mix using SunShell C8-30	Ribonuclease B Ribonuclease A	SunShell C18-30 100x2.1mm)	PDF 
1044	Ribonuclease A/B Mix using SunShell C18-30	Ribonuclease B Ribonuclease A	SunShell C18-30 (100x2.1mm)	PDF 

No.	Title	Sample	Column	Pdf
1043	Ribonuclease A/B Mix using SunShell C18-16	Ribonuclease B Ribonuclease A	SunShell C18-16 (100x2.1mm)	PDF 
1042	Protein Mix using SunShell C4-30	Cytochrome C Bovine Serum Albumin Myoglobin Carbonic Anhydrase Phosphorylase B	SunShell C4-30 (100x2.1mm)	PDF 
1041	Protein Mix using SunShell C18-30	Angiotensin I Ribonuclease A Lysozyme Transferrin Bovine Serum Albumin	SunShell C18-30	PDF 
1040	Protein Mix using SunShell C4-30	Angiotensin I Ribonuclease A Lysozyme Transferrin Bovine Serum Albumin	SunShell C4-30 (100x2.1mm)	PDF 
1039	Protein Mix using SunShell	Angiotensin I Ribonuclease A Cytochrome C Lysozyme Transferrin Bovine Serum Albumin Myoglobin Carbonic Anhydrase	SunShell C8-30 (150x 2.1mm)	PDF 
1038A	Ethambutol Hydrochloride	Ethambutol	SunShell C18 (100x4.6mm)	PDF 
1033	SunShell High through-put separation	Hydroxybenzophenone and similar articles	SunShell C18 (30x3.0mm)	PDF 
1032	PFP Basic compounds (PFP phase)	Uracil Propranolol Nortriptyline Amitriptyline	SunShell PFP (150x4.6mm)	PDF 
1031	Amino Acids derivatized with OPA and FMOC (2)	Amino Acids derivatized with OPA	SunShell C18 (150x2.1mm)	PDF 
1030	Amino Acids derivatized with OPA and FMOC (1)	Amino Acids derivatized with OPA	Sunniest C18-HT (100x2.1mm)	PDF 
1029	Amino acids (LC/MS)	Amino acids	Sunniest RP-AQUA (150x2.0mm)	PDF 

No.	Title	Sample	Column	Pdf
1028	Black Cohosh	Black Cohosh (Natural products)	SunShell C18 (150x2.1mm)	PDF 
1027	Dansylated estrogen hormones	Dansylated estriol Dansylated 17beta-estradiol Dansylated 17alpha-estradiol Dansylated estrone	SunShell C18 (100x2.1mm)	PDF 
1026	Peptides (BSA)	Tryptic digest of BSA	SunShell C18-WP (150x4.6mm)	PDF 
1025	Peptides (1)	Tryptic digest of myoglobin and cytochrome C	SunShell C18-WP (150x4.6mm)	PDF 
1024A	Leuprolide Acetate	Leuprolide Acetate	SunShell C18 (100x4.6mm)	PDF 
1023	Oolong tea	Gallocatechin Epigallocatechin Catechin Caffeine Epicatechin Epigallocatechin gallate Gallocatechin gallate Epicatechin gallate Catechin gallate	SunShell C18 (75x4.6mm)	PDF 
1022	SunShell Comparison of SunShell phases	Uracil Caffeine Phenol Butylbenzene o-Terphenyl Amylbenzene Triphenylene	SunShellC18, C8, PFP, PhE, RP-AQUA, C18-WP	PDF 
1021	Nucleotides	5'-GDP 5'-ATP 5'-ADP 5'-AMP	SunShell RP-AQUA (150x4.6mm)	PDF 
1020	Water-soluble vitamins (3)	Nicotinic acid Pyridoxal Pyridoxine HCl Vitamin B6 Nicotinamide	SunShell RP-AQUA (150x4.6mm)	PDF 
1019	Xanthines	Theobromine Theophylline Caffeine Phenol	SunShell PFP (150x4.6mm)	PDF 

No.	Title	Sample	Column	Pdf
1018	Nucleic acid bases	Cytosine Uracil Thymidine Uridine Thymine	SunShell RP-AQUA (150x4.6mm)	PDF 
1017	Isomers (ortho, meta and para) of xylene and cresol (Renewal)	Isomers (ortho, meta and para) of xylene and cresol	Sunrise C28 (250x4.6mm), SunShell PFP (150x4.6mm)	PDF 
1016	Tryptic digest of myoglobin	Tryptic digest of myoglobin	SunShell C18-WP (150x4.6mm)	PDF 
1015A	Ritodrine Hydrochloride	Ritodrine Hydrochloride	Sunniest C8 (250 x 4.6 mm)	PDF 
1014A	Separation of Clobetasol Propionate and Related Substances	Clobetasol Propionate	Sunniest C18 (150x4.6mm)	PDF 
1013A	Separation of Valsartan and	Valsartan	Sunniest C18 (150x4.6mm)	PDF 
1012A	Separation of Salbutamol Sulphate and Related Substances	Salbutamol Sulphate and Related Substances	Sunniest C8 (150 x 4.6 mm)	PDF 
1011A	Separation of Lumazine and Related Substances	5.6 diamino-2,4-pyrimidinediol 6-amino-5-nitroso-2,4-pyrimidinediol Lumazine	Sunniest RP-AQUA (250x4.6mm)	PDF 
1010	Analgesics (2)	Benzydamine, Ketoprofen Naproxen Indomethacin Ibuprofen	Sunniest C18 (250x4.6mm)	PDF 
1009	Analgesics (1)	Acetaminophen Antipyrine Aspirin Ethenzamide	Sunniest C18 (150x4.6mm)	PDF 
1008	Antihistamines	Chlorpheniramine Diphenhydramine Clemastine	Sunniest C18 (150x4.6mm)	PDF 
1007	Organic acids (1)	Formic acid Acetic acid Citric acid Succinic acid Propionic acid	Sunniest RP-AQUA (150x4.6mm)	PDF 

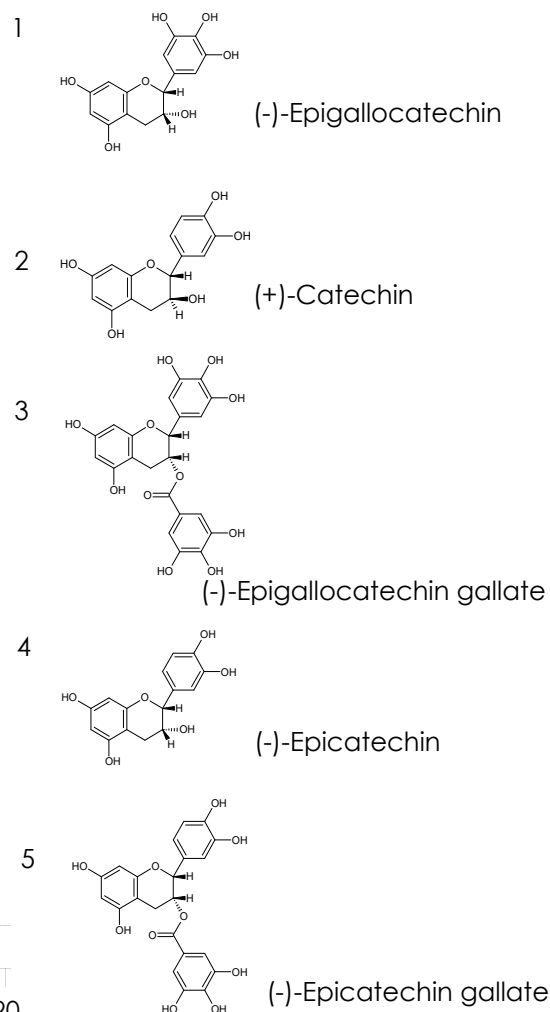
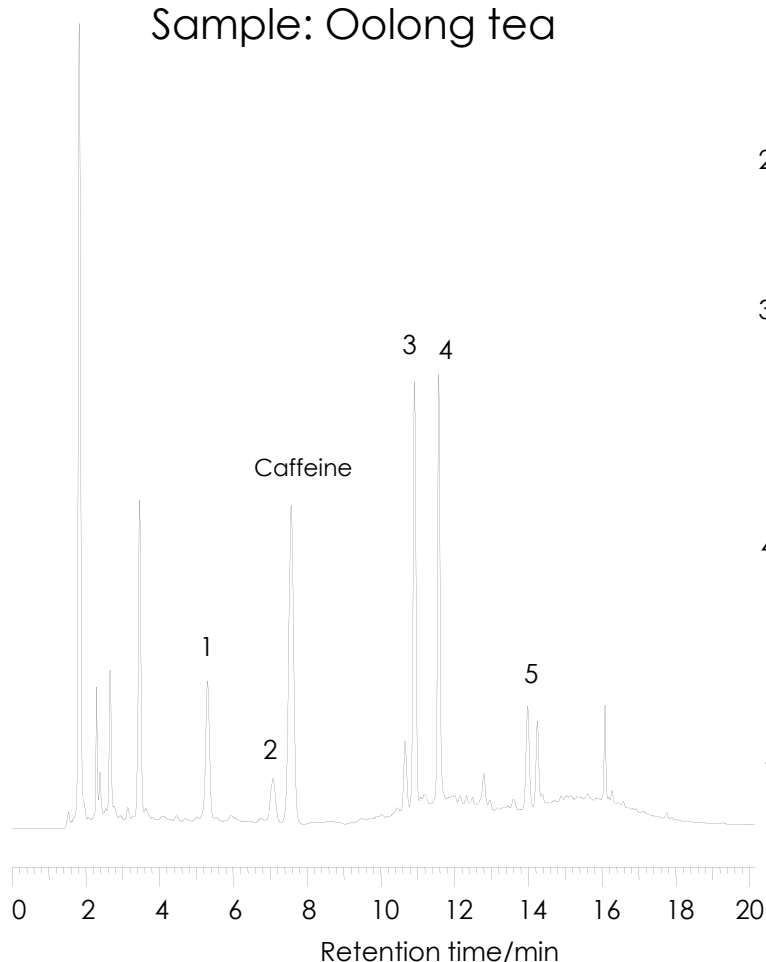
No.	Title	Sample	Column	Pdf
1006	Antidepressants	Uracil Propranolol Nortriptyline Amitriptyline Toluene	Sunniest C18 (150x4.6mm)	PDF 
1005	Nucleotides	5'-GDP 5'-GMP 5'-ATP 5'-ADP 5'-AMP	Sunniest RP-AQUA (150x4.6mm)	PDF 
1004	Water-soluble vitamins (2)	Nicotinic acid Pyridoxal Pyridoxine HCl Vitamin B6 Nicotinamide	Sunniest RP-AQUA (150x4.6mm)	PDF 
1003	Water-soluble vitamins (1)	Nicotinic acid Pyridoxine HCl Nicotinamide Thiamine HCl Folic acid Riboflavin	Sunniest RP-AQUA (150x4.6mm)	PDF 
1002	Catechins (2)	Oxalic acid Theanine Guanylic acid (-)-Epigallocatechin (+)-Catechin (-)-Epigallocatechin gallate (-)-Epicatechin (-)-Epicatechin gallate	Sunniest RP-AQUA (150x4.6mm)	PDF 
1001	Catechins (1)	(-)-Epigallocatechin (+)-Catechin (-)-Epigallocatechin gallate (-)-Epicatechin (-)-Epicatechin gallate	Sunniest C18 (150x4.6mm)	PDF 

カテキン類 (1)

Catechins (1)

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Sample: Oolong tea



Column: Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Mobile phase: A) H₂O/CH₃CN/85% H₃PO₄ (95:5:0.05)

B) H₂O/CH₃CN/85% H₃PO₄ (50:50:0.05)

Time (min)	0	5	8	10	15	20
%B	10	10	30	30	80	80

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@230 nm

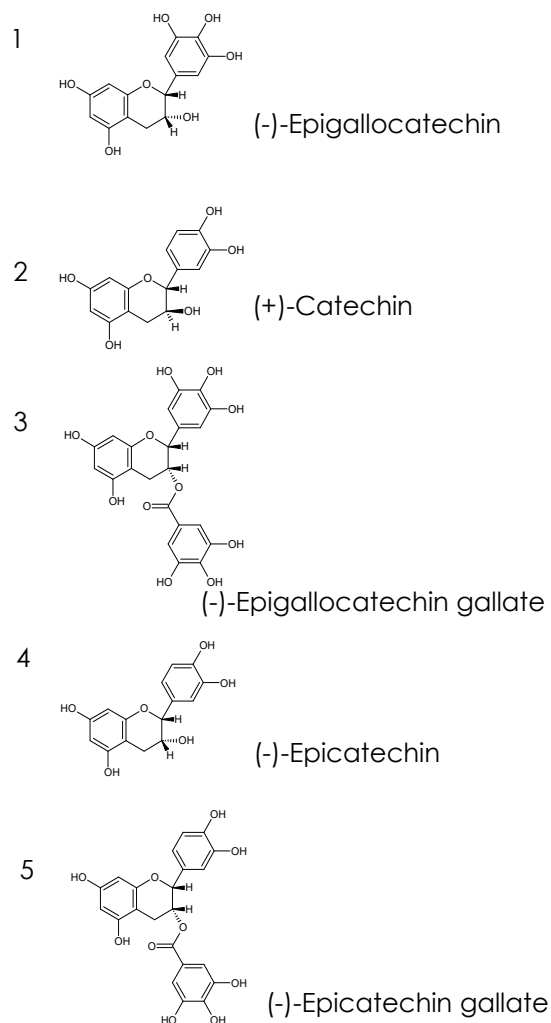
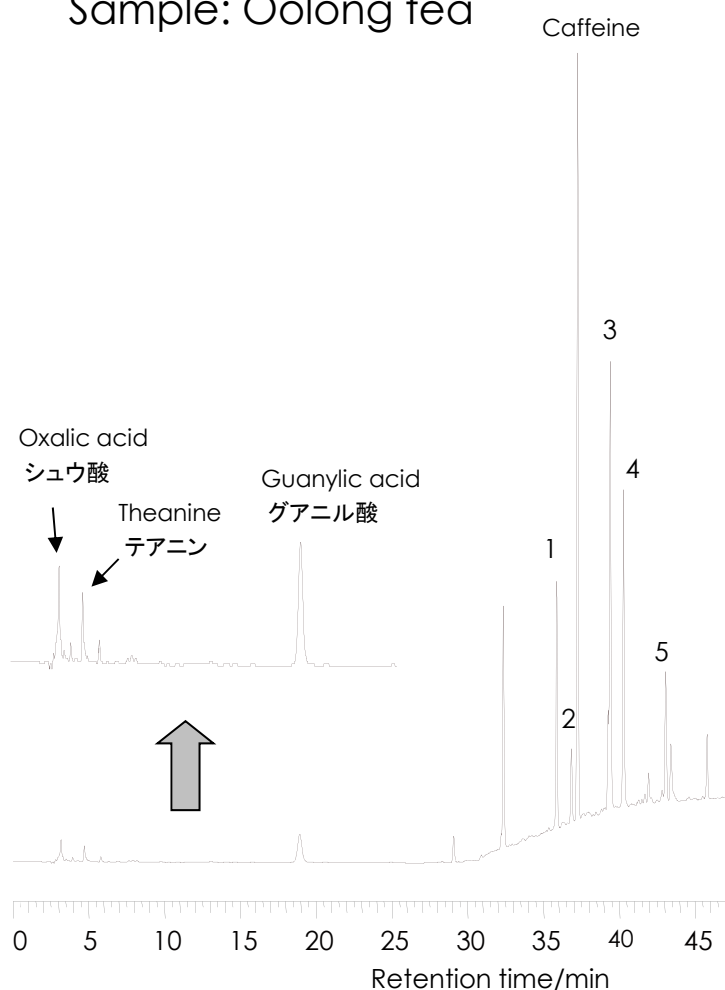
Injection volume: 10 μ L

カテキン類 (2)

Catechins (2)

Sunniest RP-AQUA 5 μm , 150 x 4.6 mm i.d.

Sample: Oolong tea



Column: Sunniest RP-AQUA 5 μm , 250 x 4.6 mm i.d.

Mobile phase: A) $\text{H}_2\text{O}/\text{H}_3\text{PO}_4$ (99.9:0.1)

B) CH_3CN

Time (min)	0	20	60
%B	0	0	50

Flow rate: 1.0 mL/min

Temperature: 40 °C

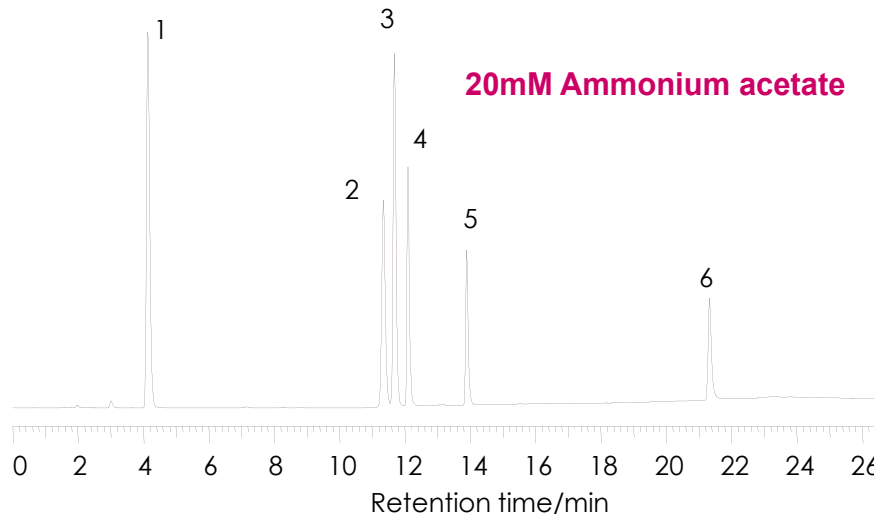
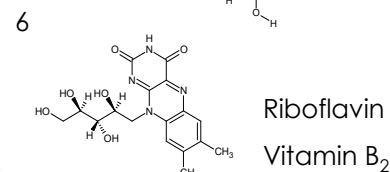
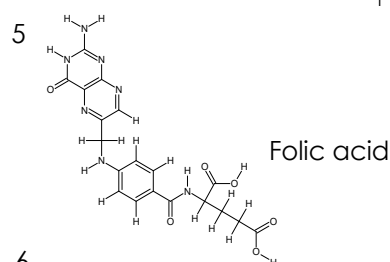
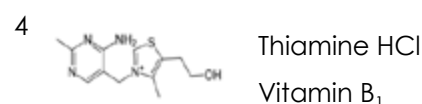
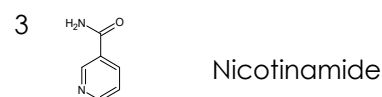
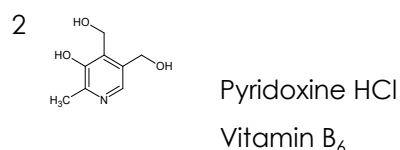
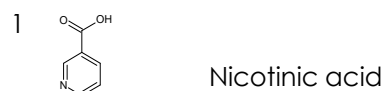
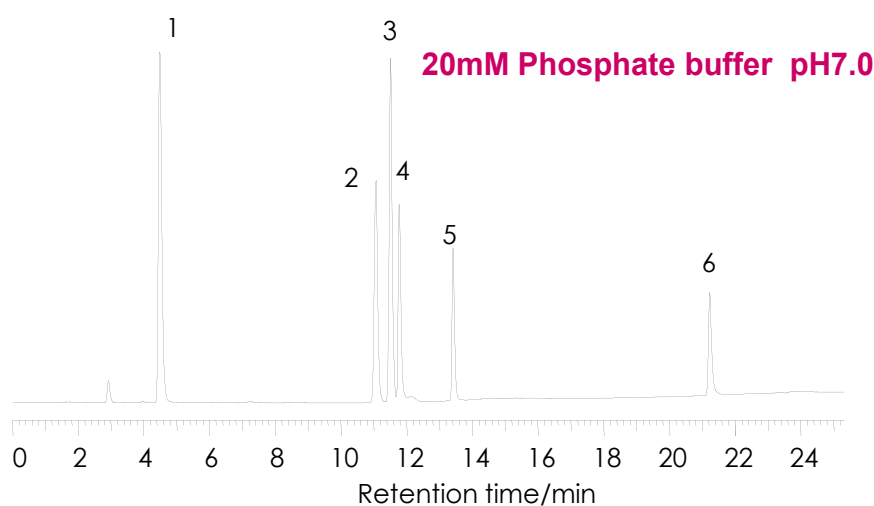
Detection: UV@210 nm

Injection volume: 10 μL

水溶性ビタミン類 (1)

Water-soluble vitamins (1)

Sunniest RP-AQUA 5 μm, 150 x 4.6 mm i.d.



Column: Sunniest RP-AQUA 5 μm, 150 x 4.6 mm i.d.

Mobile phase: A) 20mM Phosphate buffer pH7.0 or 20mM Ammonium acetate

B) Acetonitrile/ A solution (20:80)

Time (min)	0	5	20	25
%B	0	0	100	100

Flow rate: 1.0 mL/min

Temperature: 40 °C

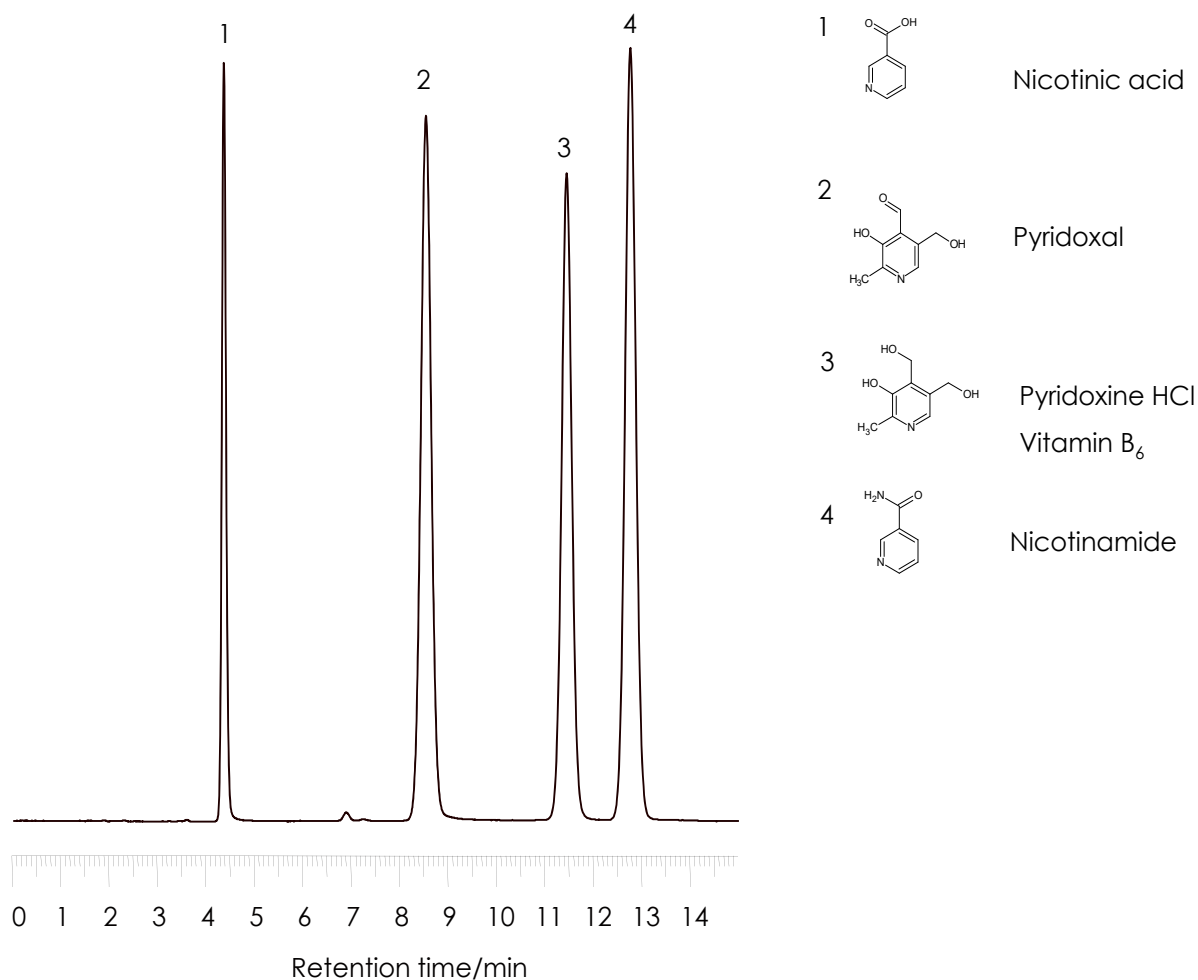
Detection: UV@250 nm

Injection volume: 10 μL

水溶性ビタミン類 (2)

Water-soluble vitamins (2)

Sunniest RP-AQUA 5 μ m, 150 x 4.6 mm i.d.



Column: Sunniest RP-AQUA 5 μ m, 150 x 4.6 mm i.d.

Mobile phase: 40mM Phosphate buffer pH6.8

Flow rate: 1.0 mL/min

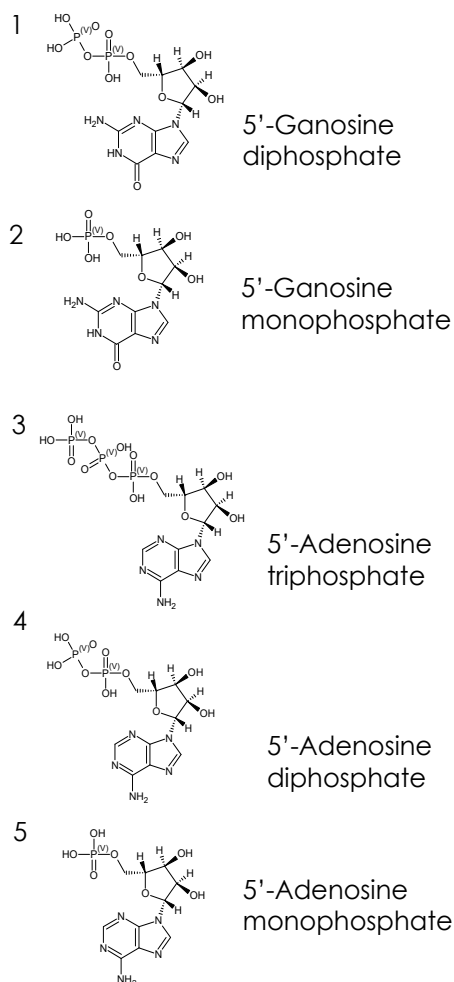
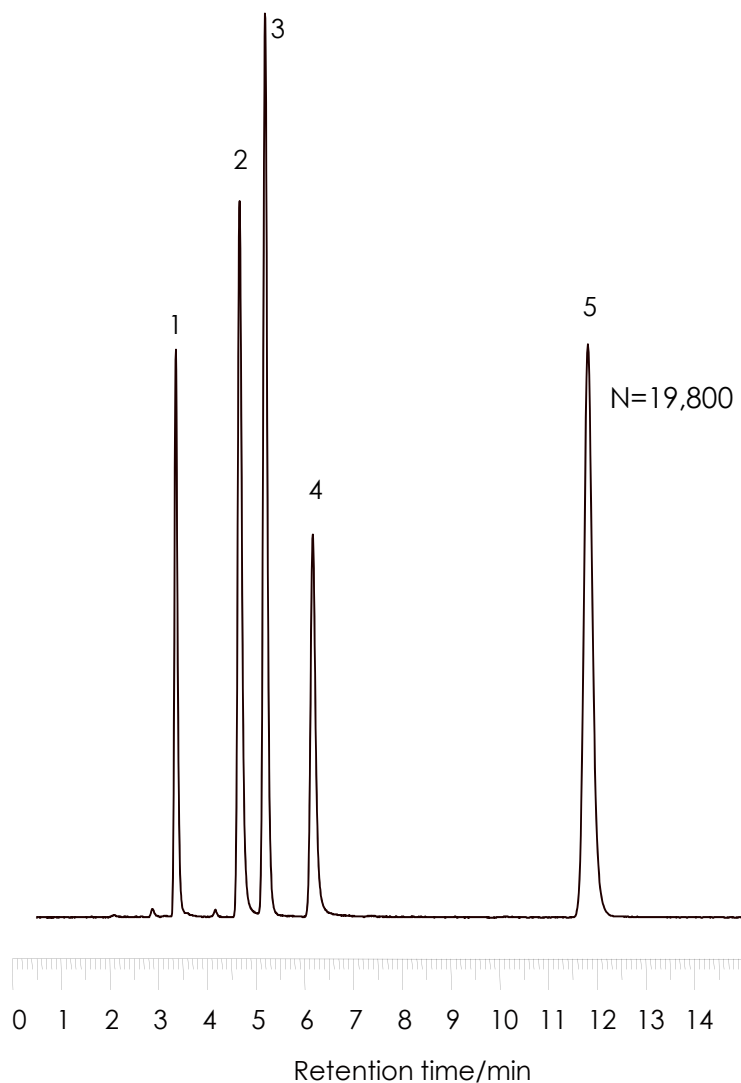
Temperature: 40 °C

Detection: UV@250 nm

ヌクレオチドの分離

Nucleotides

Sunniest RP-AQUA 3 μ m, 150 x 4.6 mm i.d.



Column: Sunniest RP-AQUA 3 μ m, 150 x 4.6 mm

Mobile phase: 20mM Phosphate buffer pH6.0

Flow rate: 1.0 mL/min

Temperature: 40 °C

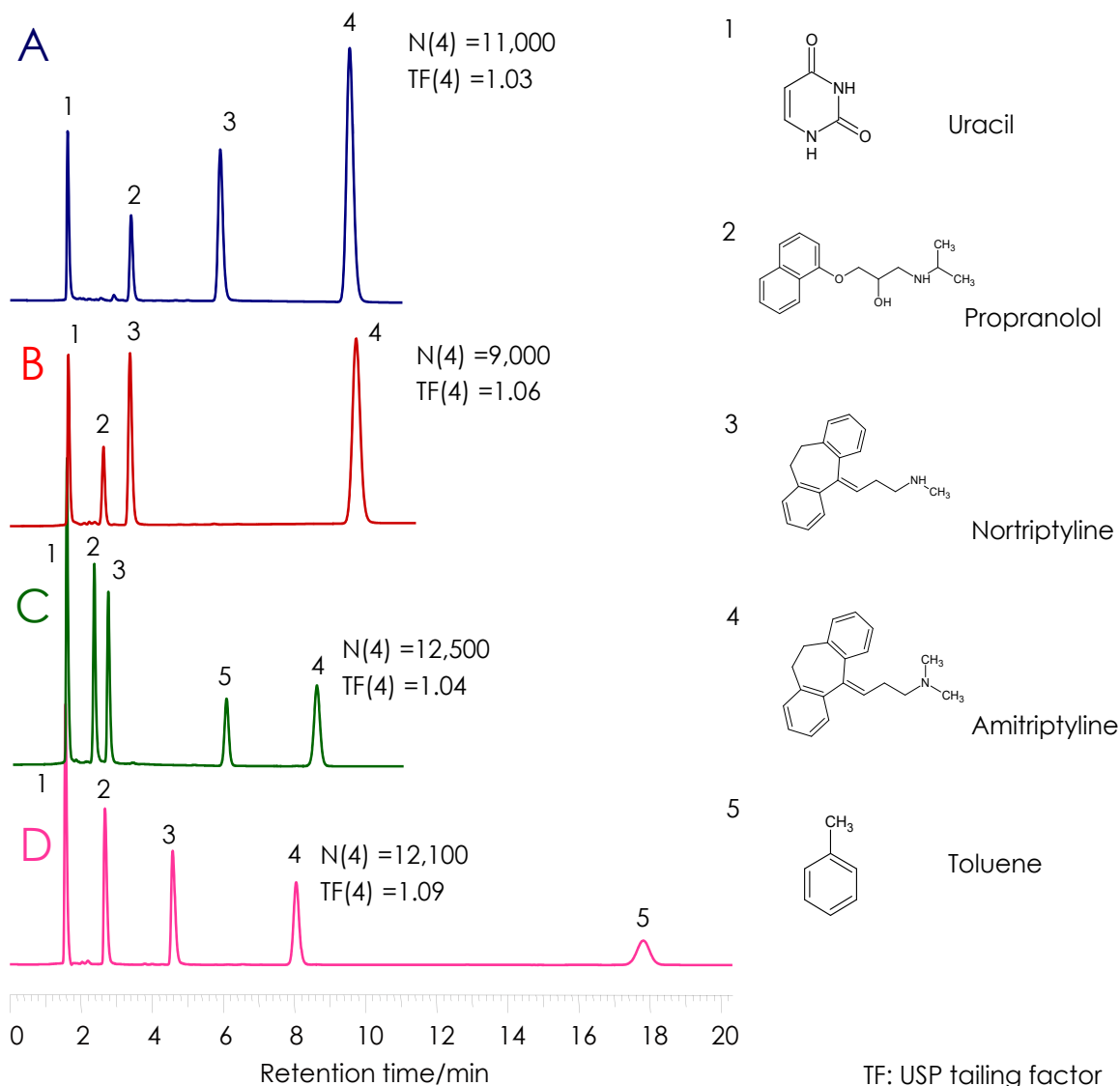
Detection: UV@250nm

Sample: 1 = 5'-GDP, 2 = 5'-GMP, 3 = 5'-ATP, 4 = 5'-ADP, 5 = 5'-AMP

三環系抗うつ剤の分離

Antidepressants

Sunniest C18 5 μm, 150 x 4.6 mm i.d.



Column: Sunniest C18 5 μm, 150 x 4.6 mm

Mobile phase:

A) CH₃OH/20mM Phosphate buffer pH7.5 = 80/20

B) CH₃OH/20mM Phosphate buffer pH6.0 = 80/20

C) CH₃CN/20mM Phosphate buffer pH7.0 = 60/40

D) CH₃CN/10mM Ammonium acetate pH6.8 = 40/60

Flow rate: 1.0 mL/min

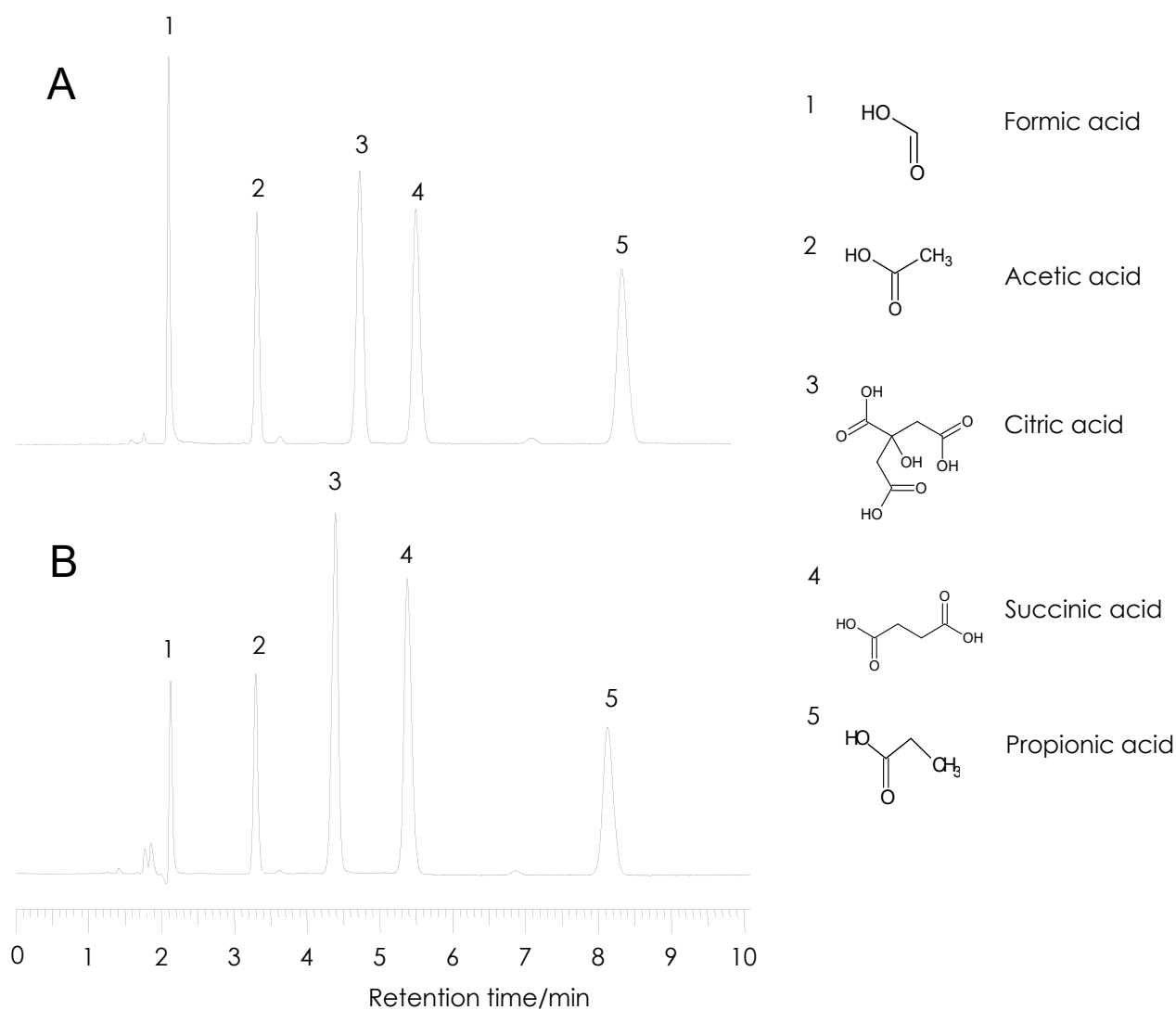
Temperature: 40 °C for **A**, **C** and **D**, 22 °C for **B**

Sample: 1 = Uracil, 2 = Propranolol, 3 = Nortriptyline, 4 = Amitriptyline, 5 = Toluene

有機酸の分離 (1)

Organic acids (2)

Sunniest RP-AQUA 5 μm, 150 x 4.6 mm i.d.



Column: Sunniest RP-AQUA 5 μm, 150 x 4.6 mm i.d.

Mobile phase:

A) 50 mM Ammonium phosphate + Phosphoric acid (pH 2.4)

B) 0.01% Trifluoroacetic acid (pH 2.9)

Flow rate: 1.0 mL/min

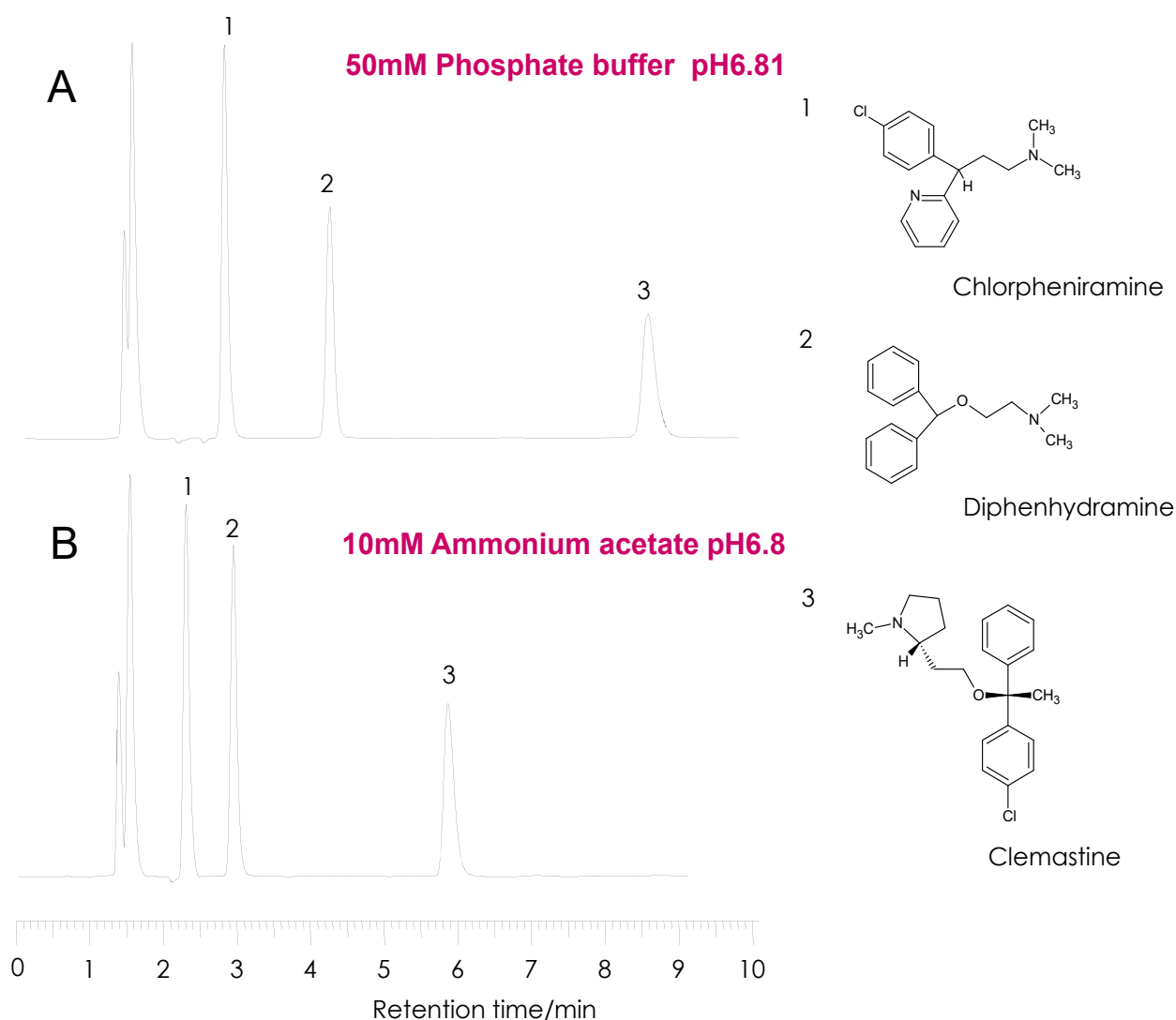
Temperature: 40 °C

Detection: UV@210 nm

抗ヒスタミン剤の分離

Antihistamines

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.



Column: Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Mobile phase:

A) CH₃CN/50mM Phosphate buffer pH6.81 = 50/50

B) CH₃CN/10mM Ammonium acetate pH6.8 = 50/50

Flow rate: 1.0 mL/min

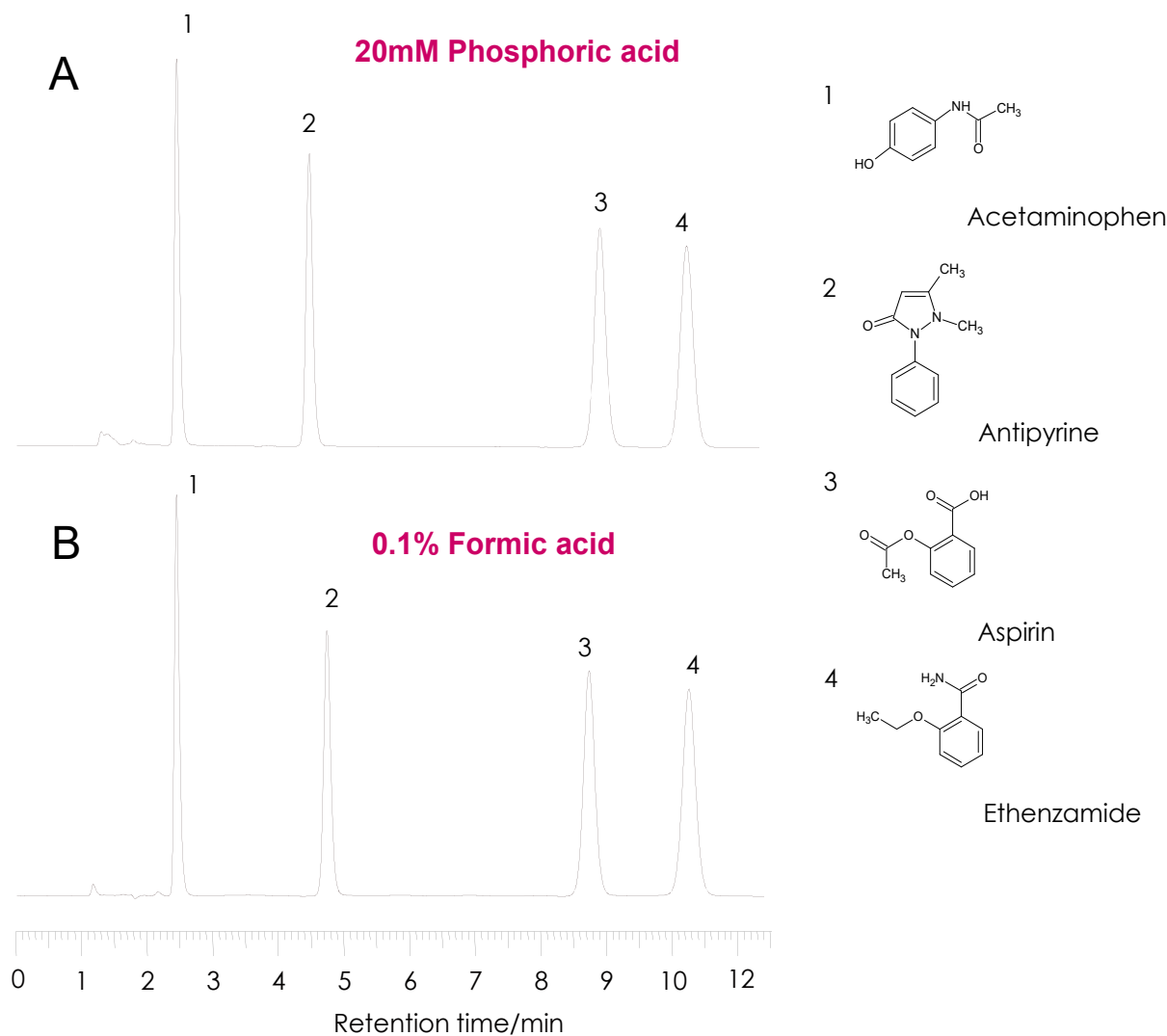
Temperature: 40 °C

Detection: UV@220 nm

解熱鎮痛剤の分離 (1)

Analgesics (1)

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.



Column: Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Mobile phase:

A) CH₃CN/20mM Phosphoric acid = 20/80

B) CH₃CN/0.1% Formic acid = 20/80

Flow rate: 1.0 mL/min

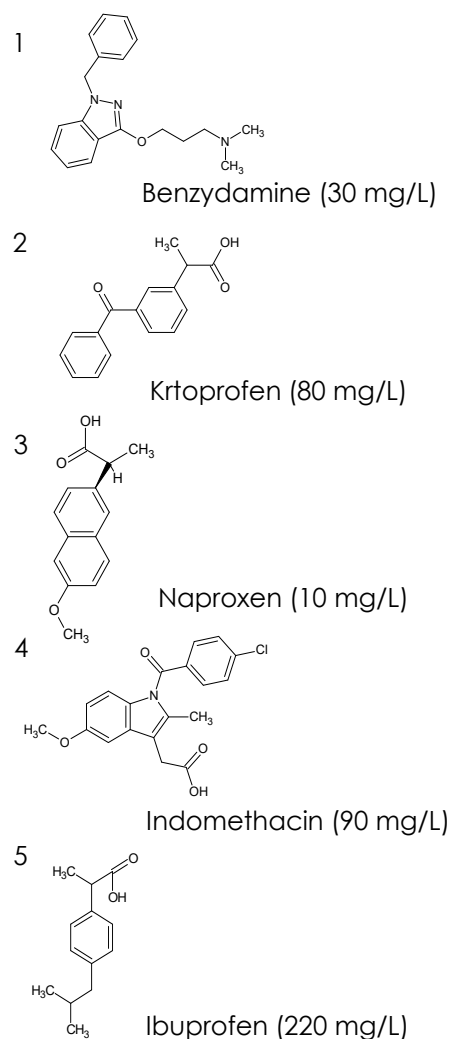
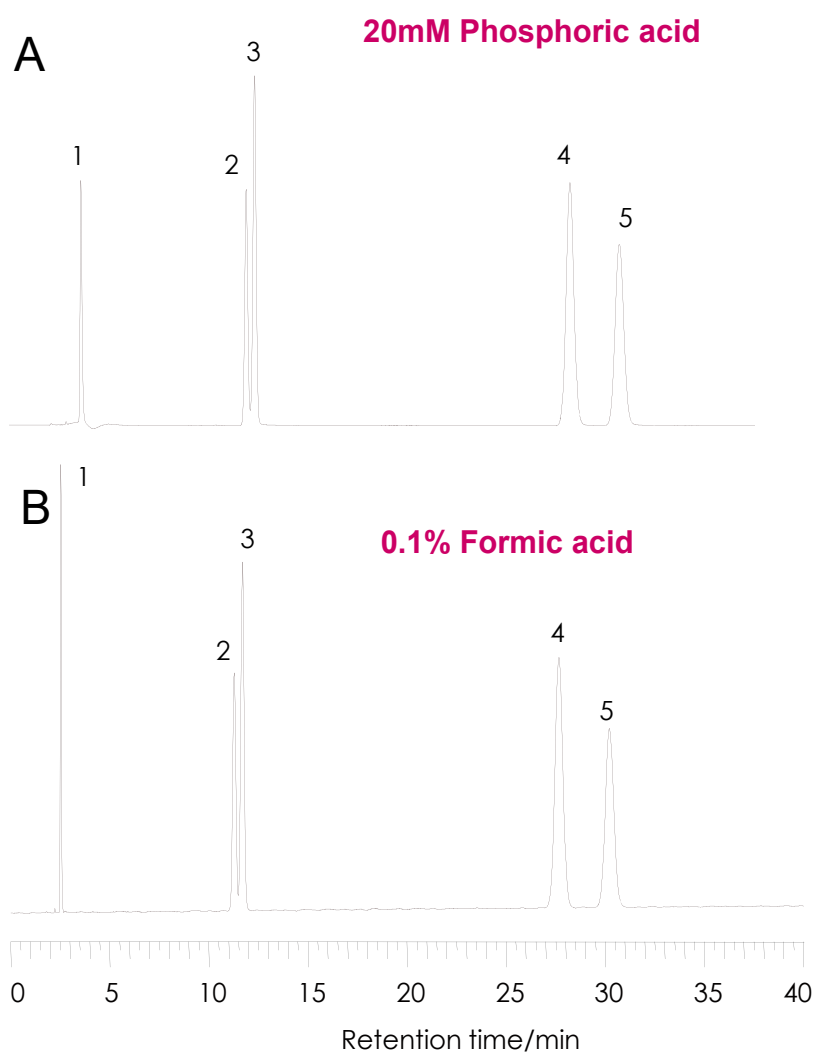
Temperature: 40 °C

Detection: UV@230 nm

解熱鎮痛剤の分離 (2)

Analgesics (2)

Sunniest C18 5 μ m, 250 x 4.6 mm i.d.



Column: Sunniest C18 5 μ m, 250 x 4.6 mm i.d.

Mobile phase:

A) CH₃CN/20mM Phosphoric acid = 45/55

B) CH₃CN/0.1% Formic acid = 45/55

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@230 nm

Injection volume: 10 μ L in B mobile phase



BIOTECH AB

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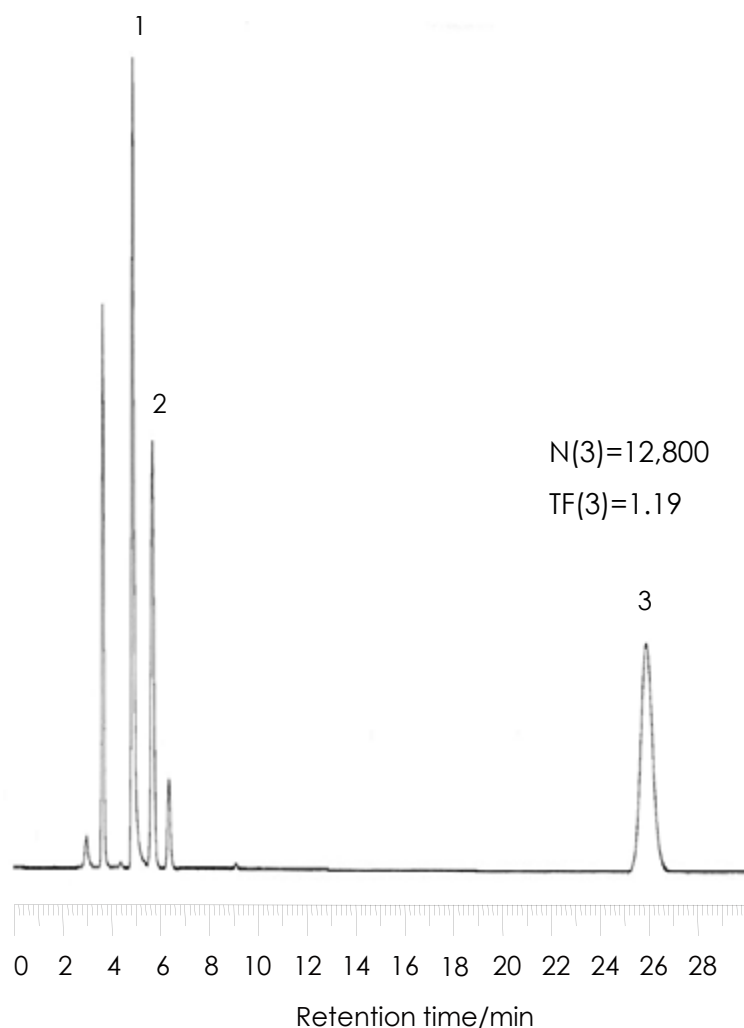
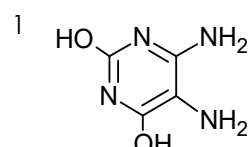
Application Data

No. 1011A

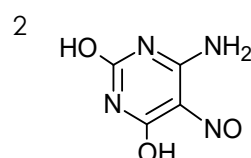
ChromaNik
ChromaNik Technologies Inc.

ルマジンと関連物質の分離

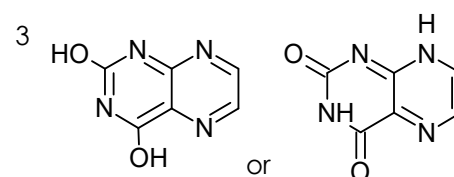
Separation of Lumazine and Related Substances

Sunniest RP-AQUA 5 μ m, 250 x 4.6 mm i.d.

5,6-diamino-2,4-pyrimidinediol



6-amino-5-nitroso-2,4-pyrimidinediol



Lumazine

N: Plate number

TF: USP Tailing factor

Column: Sunniest RP-AQUA 5 μ m, 250 x 4.6 mm

Mobile phase: 20mM Phosphate buffer pH6.0

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@250nm

Sample: 3=Lumazine

Biotech AB (Sweden) Email: info@biotech.se

ChromaNik Technologies Inc. (Japan)

Email: info@chromanik.co.jp

No. 1011A



BIOTECH AB

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Application Data

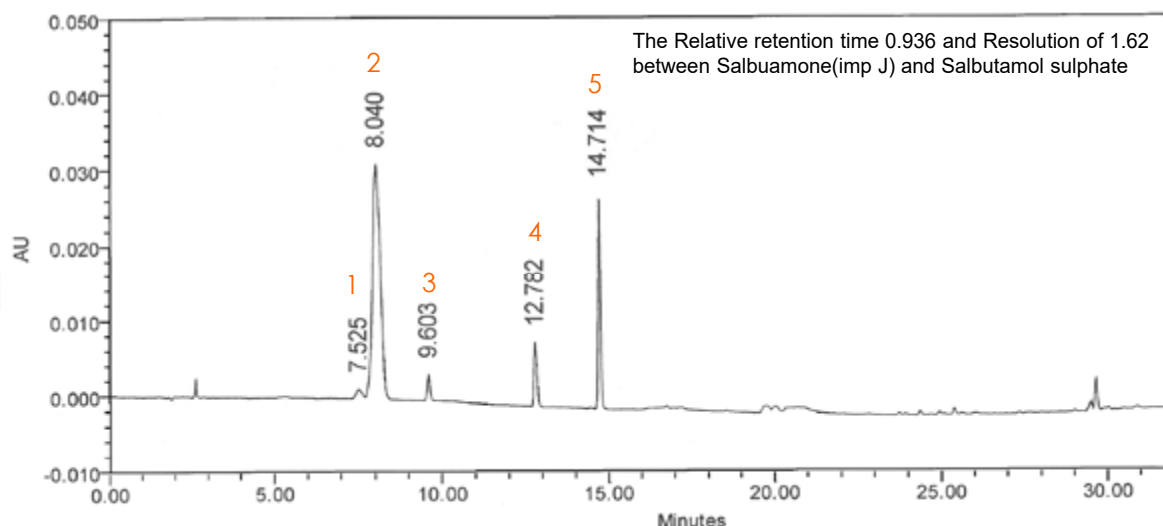
No. 1012A

ChromaNik
ChromaNik Technologies Inc.

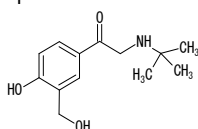
サルブタモール硫酸塩と関連物質の分離

Separation of Salbutamol Sulphate and Related Substances

Sunniest C8 3 μm, 150 x 4.6 mm i.d.

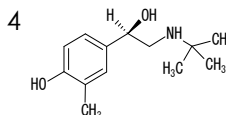


1



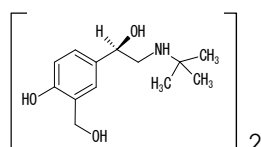
2-[(1,1-dimethylethyl)amino]-
1-[4-hydroxy-3-
(hydroxymethyl)phenyl]etha
none (salbutamone)

3 unknown



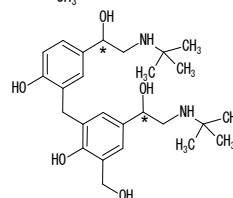
(1RS)-2-[(1,1-dimethylethyl)amino]-
1-[4-hydroxy-3-methylphenyl]
ethanol

2



H_2SO_4
Salbutamol Sulphate

5



2-[(1,1-dimethylethyl)amino]-1-[3-
[[5-[2-[(1,1-dimethylethyl)amino]-1-
hydroxyethyl]-2-
hydroxyphenyl]methyl]-4-hydroxy-5-
(hydroxymethyl)phenylethanol

* The Relative retention time 0.936 and Resolution of 1.62 between Salbuamone(imp J) and Salbutamol sulphate

Column: Sunniest C8 3 μm, 150 x 4.6 mm

Mobile phase: A) dissolve 3.45 g of sodium dihydrogen phosphate monohydrate R in 900 mL of a 0.05 % V/V solution of triethylamine R, adjust to pH 3.0 with dilute phosphoric acid R and dilute to 1000 mL with a 0.05% V/V solution of triethylamine R;

B) methanol R, acetonitrile R (35:65 V/V)

Gradient: time 0 – 5 min %B 5%
time 5 – 30 min %B 5 – 90%

Flow rate: 1.0 mL/min

Temperature: 30 °C

Detection: UV@273nm



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Application Data

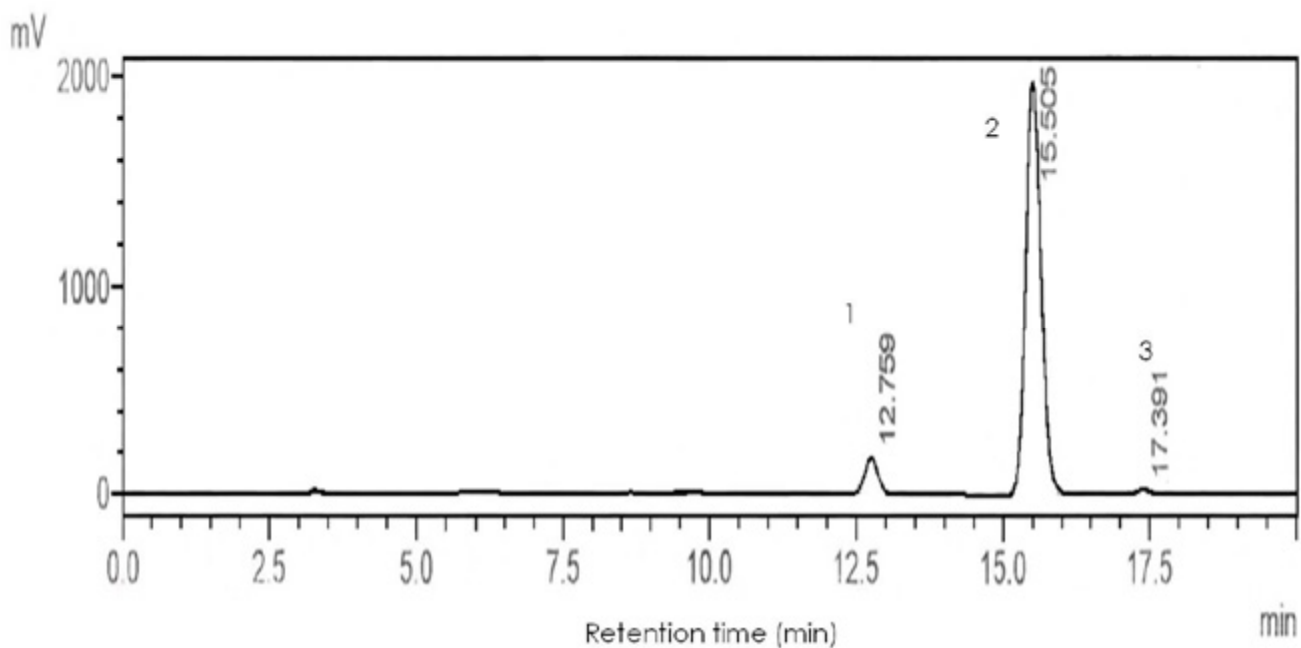
No. 1013A

ChromaNik
ChromaNik Technologies Inc.

バルサルタンと関連物質の分離

Separation of Valsartan and Related Substances

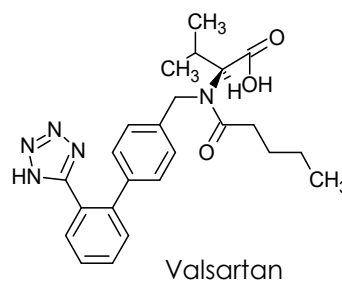
Sunniest C18 3 μ m, 150 x 4.6 mm i.d.



1 Unknown

2

3 Unknown



Column: Sunniest C18 3 μ m, 150 x 4.6 mm

Mobile phase: Acetonitrile/Water/Glacial Acetic Acid = 500/500/1

Flow rate: 0.4 mL/min

Temperature: 30 °C

Detection: UV@225nm

Test probe : Valsartan 0.5mg/mL in mobile phase

Injection volume: 10 μ L



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Application Data

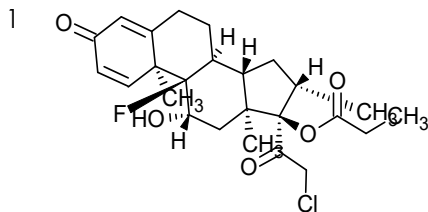
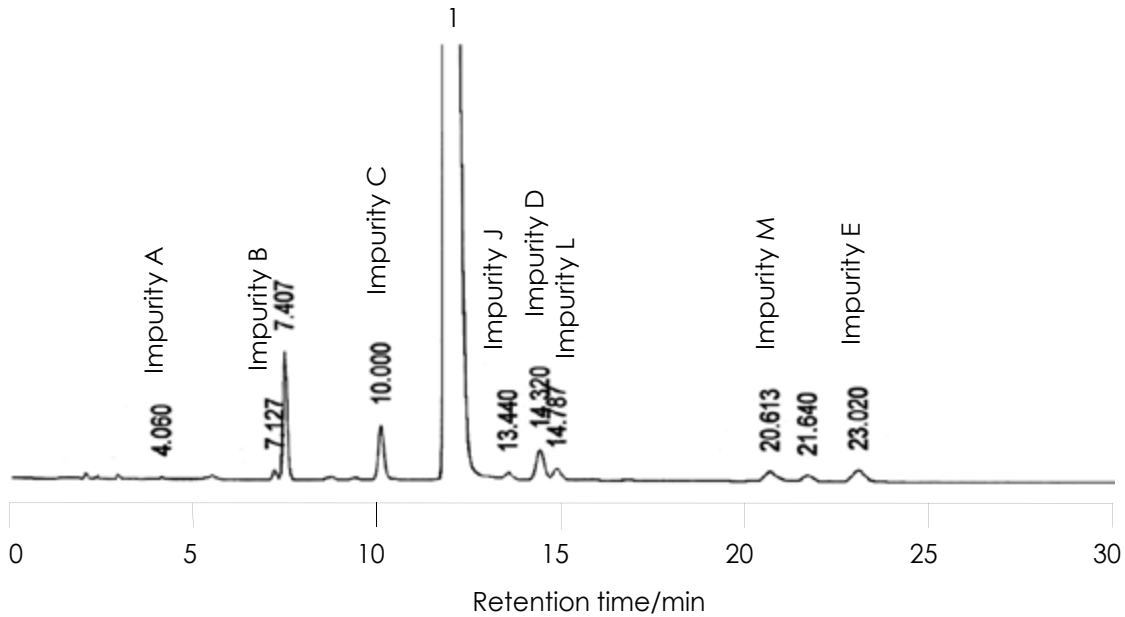
No. 1014A



プロピオン酸クロベタゾールと関連物質の分離

Separation of Clobetasol Propionate and Related Substances

Sunniest C18 5 μm, 150 x 4.6 mm i.d.



Clobetasol Propionate

Column: Sunniest C18 5 μm, 150 x 4.6 mm

Mobile phase:

Solution A, 3.33 g NaH₂PO₄ dissolve in 425 ml Water, Adjust pH 5.5 with 10 % NaOH

Solvent B, Acetonitrile

Solvent C, Methanol

425ml Solution A + 475 ml Solvent B+ 100 ml Solvent C

Flow rate: 1.0 mL/min

Temperature: 30 °C

Test probe : 20 mg Sample in 20 ml Mobile phase

Injection volume: 10 μ L



BIOTECH AB

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Application Data

No. 1015A

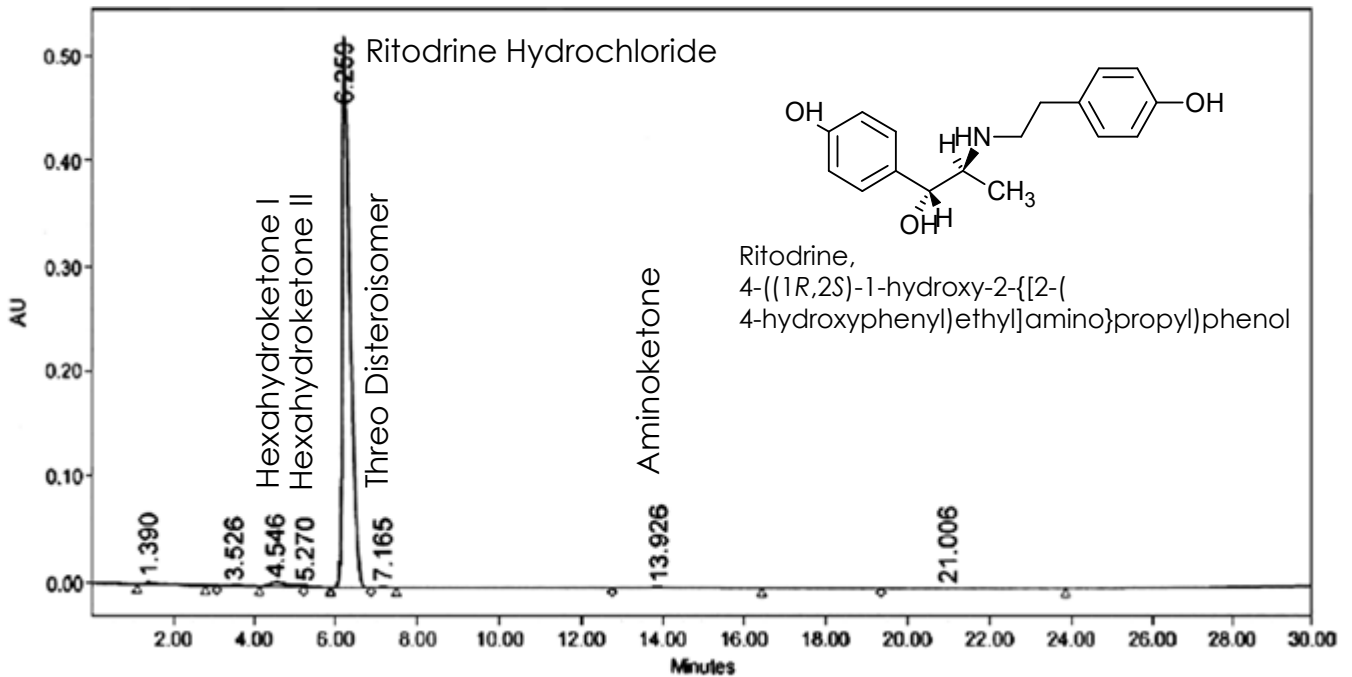
ChromaNik
ChromaNik Technologies Inc.

塩酸リトドリン

British Pharmacopoeia 2009 Related substances Test

Ritodrine Hydrochloride

Sunniest C8 5 μm, 250 x 4.6 mm i.d.



Column: Sunniest C8 5 μm, 250 x 4.6 mm

Mobile phase:

Solution A.: 6.6 g Diammonium Hydrogen Orthophosphate + 1.1 g Sodium Heptane sulphonate dissolved in 700 mL water and adjust the pH to 3.0 with 85% orthophosphoric acid

Solvent B, Methanol 300mL

Mix Mobile phase solution A and B

Flow rate: 2.0 mL/min

Temperature: ambient room temperature

Detection: UV 214 nm

Test probe : 0.10 % w/v Ritodrine Hydrochloride in Mobile phase

Injection volume: 20 μL

System suitability requirements

Relative retention with respect to Ritodrine

Impurity Tyramine RRT 0.3

Impurity Hexahydroketone II RRT 0.65

Impurity Hexahydroketone I RRT 0.85

Impurity Threo Disteroisomer RRT 1.15

Impurity Aminoketone RRT 2.3

Resolution between Threo Disteroisomer and Ritodrine

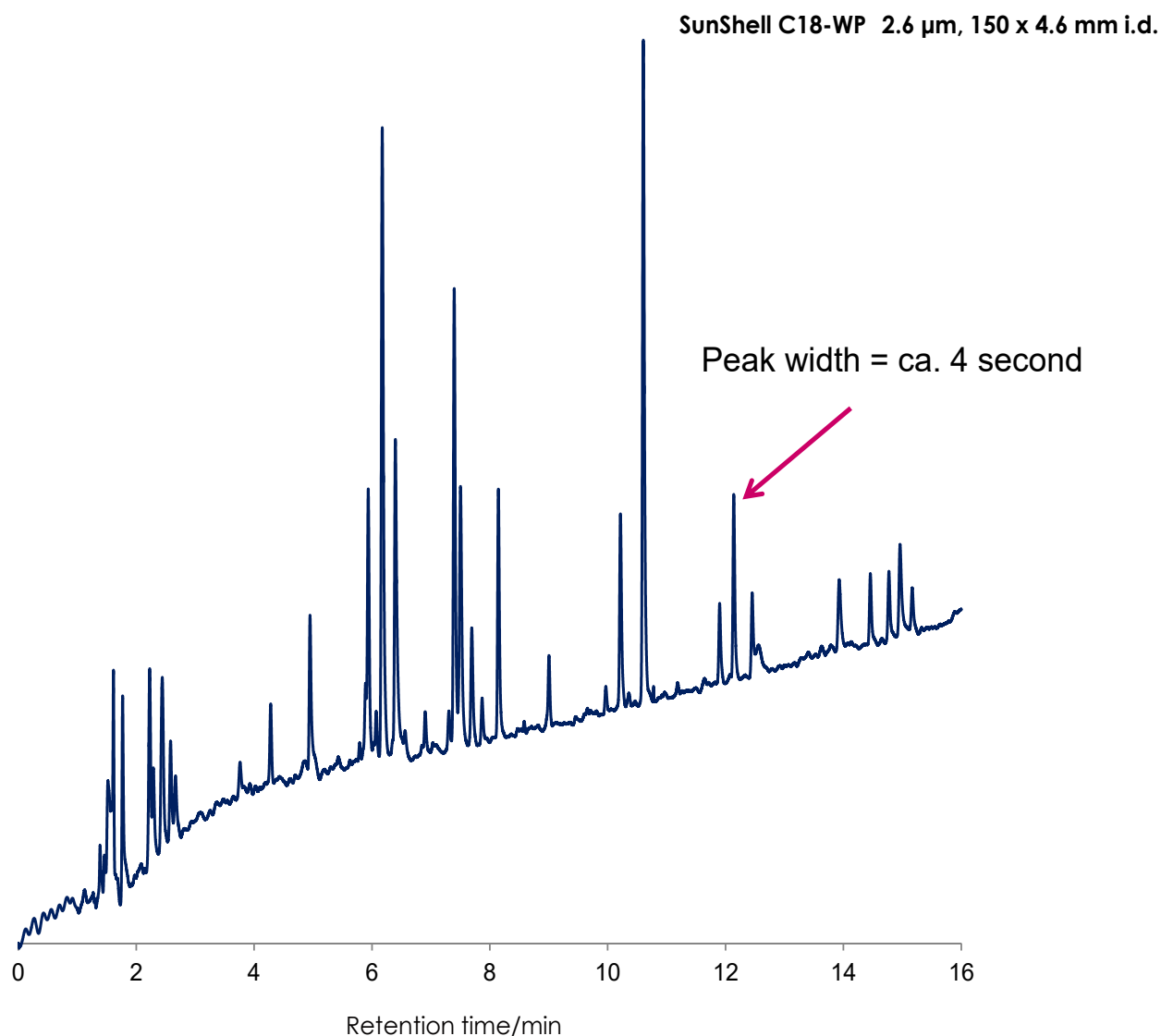
Hydrochloride not less than 1.5

Observations

- Sunniest C8 column offers resolution of 2.8 between Threo Disteroisomer and Ritodrine.
- Sunniest C 8 column offers RRT and resolution within the prescribed Pharmacopoeal requirements.

ミオグロビンのトリプシン消化物の分離

Tryptic digest of myoglobin



Column: SunShell C18-WP 2.6 μ m (16 nm), 150 x 4.6 mm,

Mobile phase: A) 0.1% TFA in acetonitrile/water(10:90)

B) 0.1 % TFA in cetonitrile

Gradient program: %B 0% – 100% in 35 min

Flow rate: 1.0 mL/min

Temperature: 25 °C

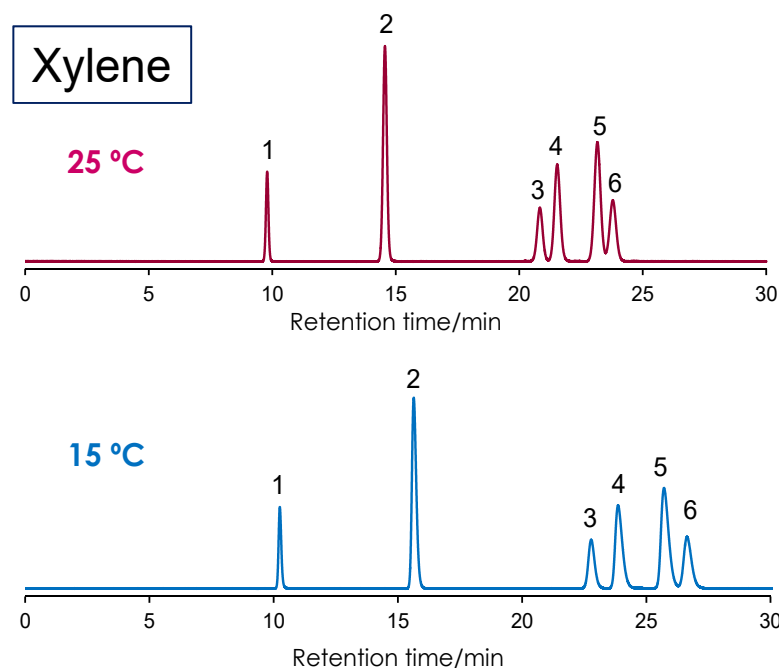
Detection: UV@210 nm

Sample: Tryptic digest of myoglobin

UHPLC: X-LC (Jasco)

異性体の分離 (キシレン、クレゾール)

Isomers (ortho, meta and para) of xylene and cresol



Sunrise C28 3 μm, 250 x 4.6 mm i.d.

SunShell PFP 2.6 μm, 150 x 4.6 mm i.d.

Column: Sunrise C28 3 μm, 250 x 4.6 mm

Mobile phase: CH₃OH/H₂O=70:30

Flow rate: 0.7 mL/min

Temperature: 25 °C and 15 °C

Detection: UV@250nm

Sample: BTEX

1 = Benzene

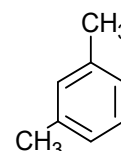
2 = Toluene

3 = Ethylbenzene

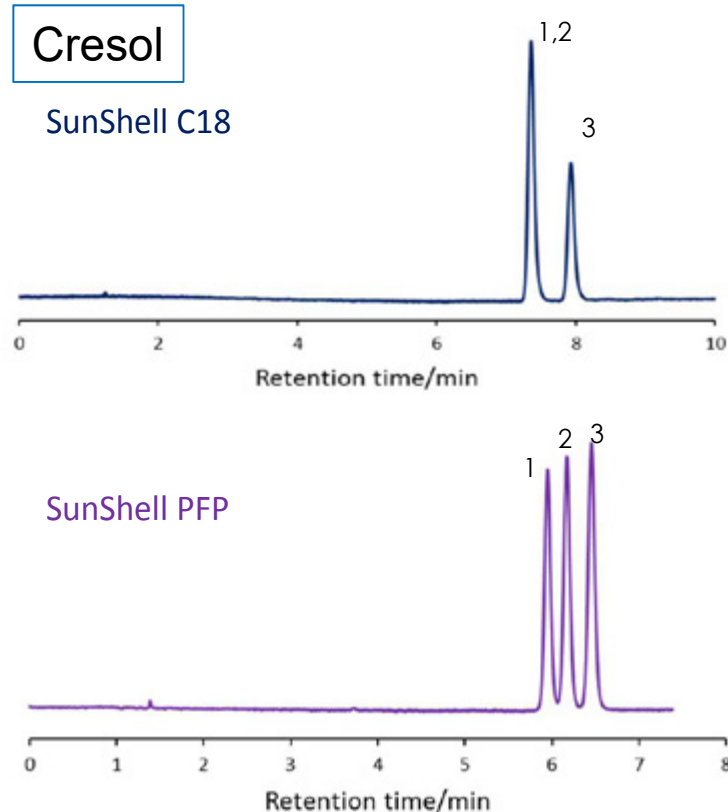
4 = o-Xylene

5 = m-Xylene

6 = p-Xylene



LC instrument: X-LC (Jasco)



Column:

SunShell C18 2.6 μm, 150 x 4.6 mm

SunShell PFP 2.6 μm, 150 x 4.6 mm

Mobile phase: CH₃OH/H₂O=40/60

Flow rate: 1.0 mL/min

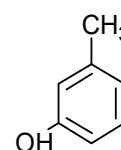
Temperature: 25 °C

Detection: UV@250nm

Sample: 1 = p-Cresol

2 = m-Cresol

3 = o-Cresol



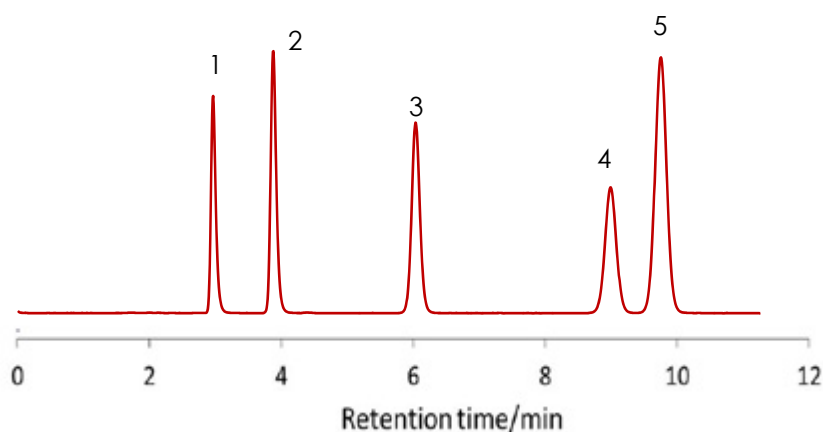
LC instrument: X-LC (Jasco)

核酸塩基の分離

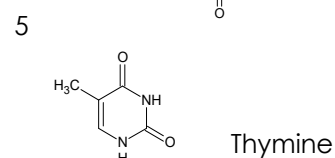
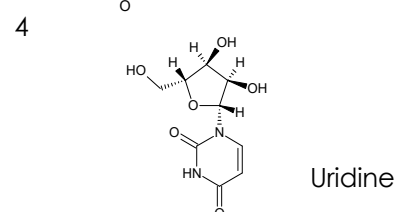
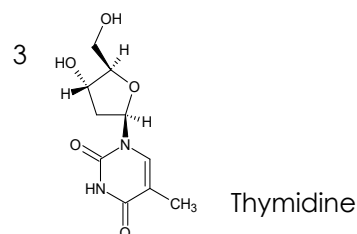
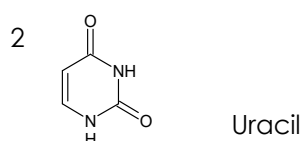
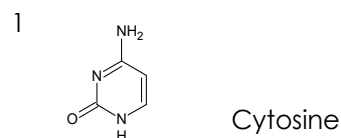
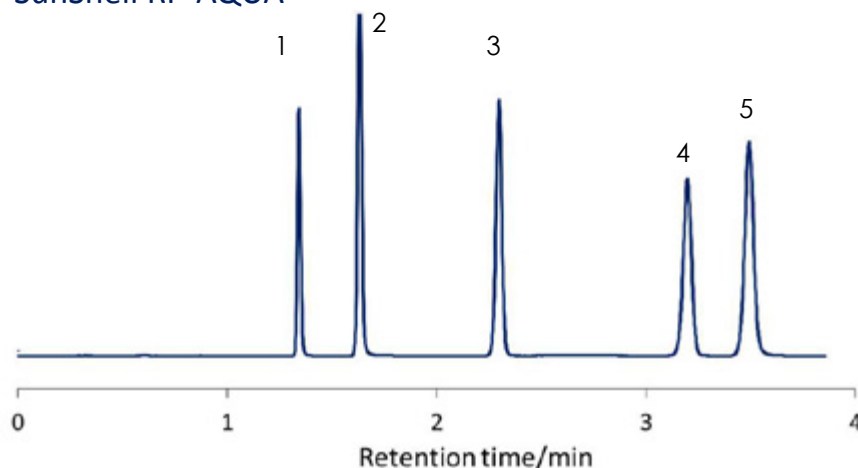
Nucleic acid bases

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

Sunniest RP-AQUA



SunShell RP-AQUA



TF: USP tailing factor

Column: Sunniest RP-AQUA 5 μ m, 150 x 4.6 mm

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm

Mobile phase: 10mM Phosphate buffer pH7.0

Flow rate: 1.0 mL/min for Sunniest,

1.5 ml/min for SunShell

Temperature: 40 °C

Detection: UV@250nm

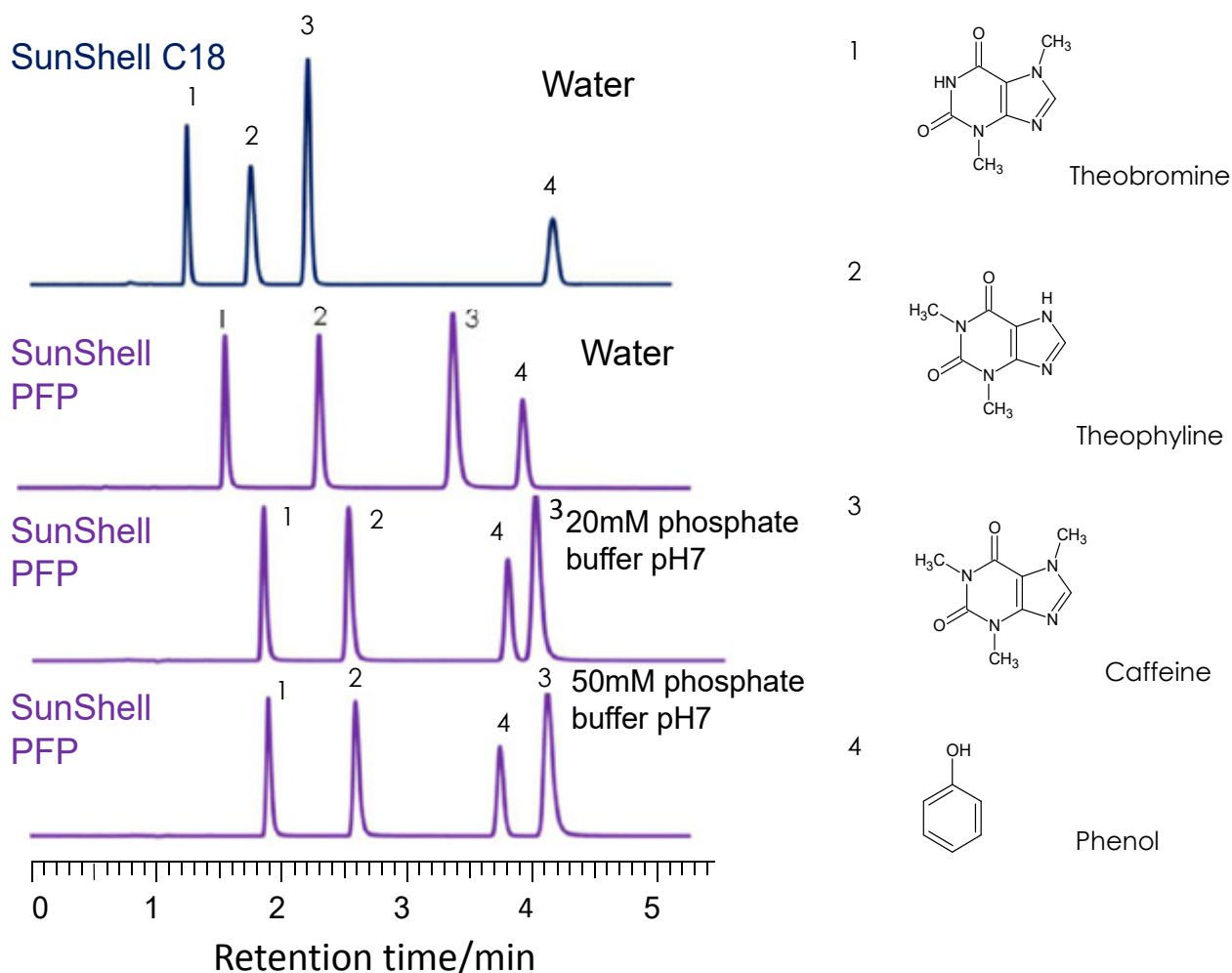
Sample: 1 = Cytosine, 2 = Uracil, 3 = Thymidine, 4 = Uridine, 5 = Thymine

	Plate(5)	Resolution (4,5)
Sunniest	14,000	1.98
SunShell	30,000	3.79

キサンチン類の分離

Xanthines

SunShell PFP 2.6 μ m, 150 x 4.6 mm i.d.



Column: SunShell C18, PFP 2.6 μ m, 150 x 2.1 mm

Mobile phase: CH₃OH/water or buffer=30/70

Flow rate: 0.3 mL/min

Temperature: 25 °C

Detection: UV@250nm

Sample: 1 = Theobromine, 2 = Theophylline

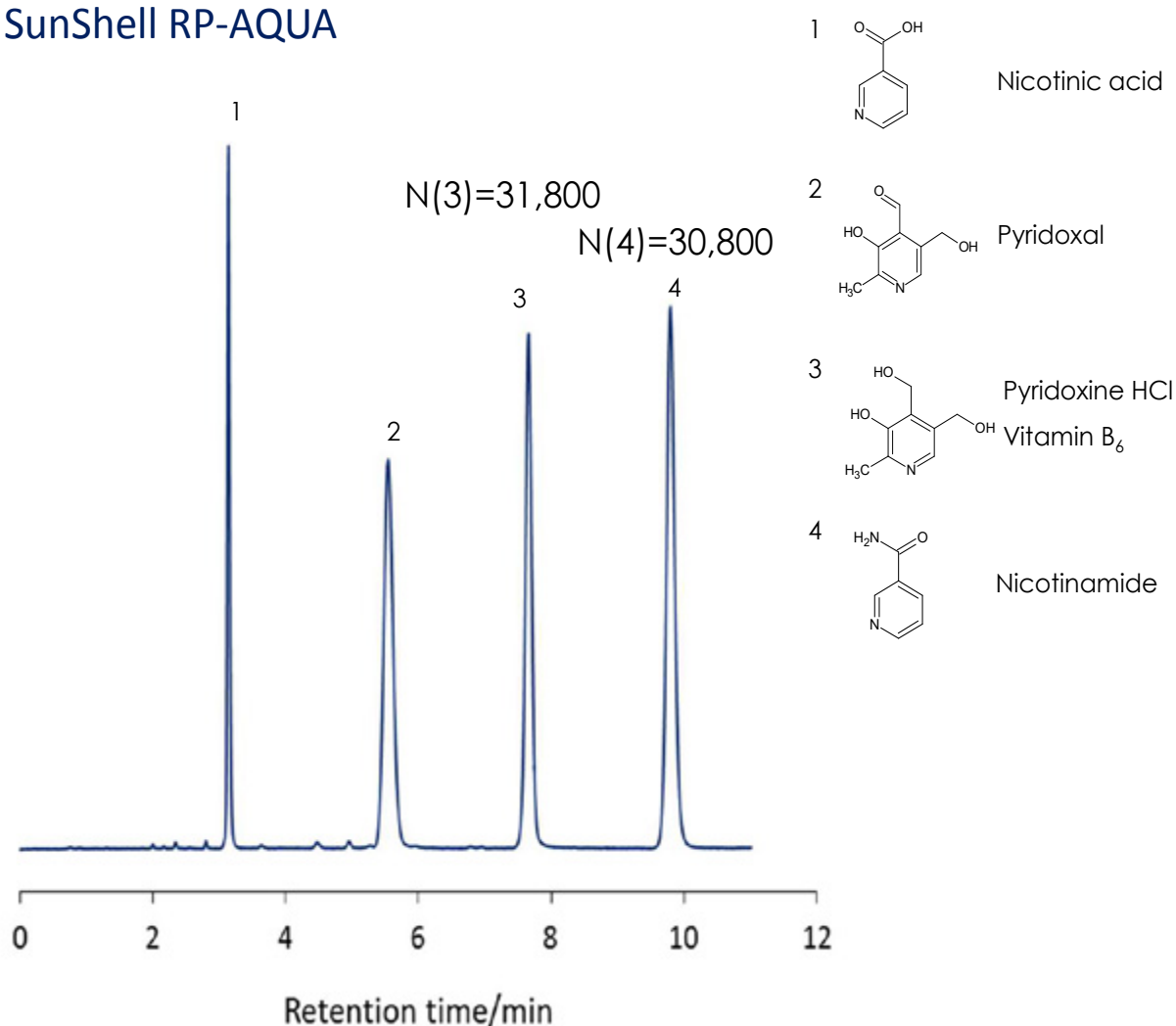
3 = Caffeine, 4 = Phenol

水溶性ビタミン類 (3)

Water-soluble vitamins (3)

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

SunShell RP-AQUA



Column: SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

Mobile phase: 40mM Phosphate buffer pH6.8

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@250 nm

Sample: 1 = Nicotinic acid, 2 = Pyridoxal, 3 = Pyridoxine HCl, 4 = Nicotinamide

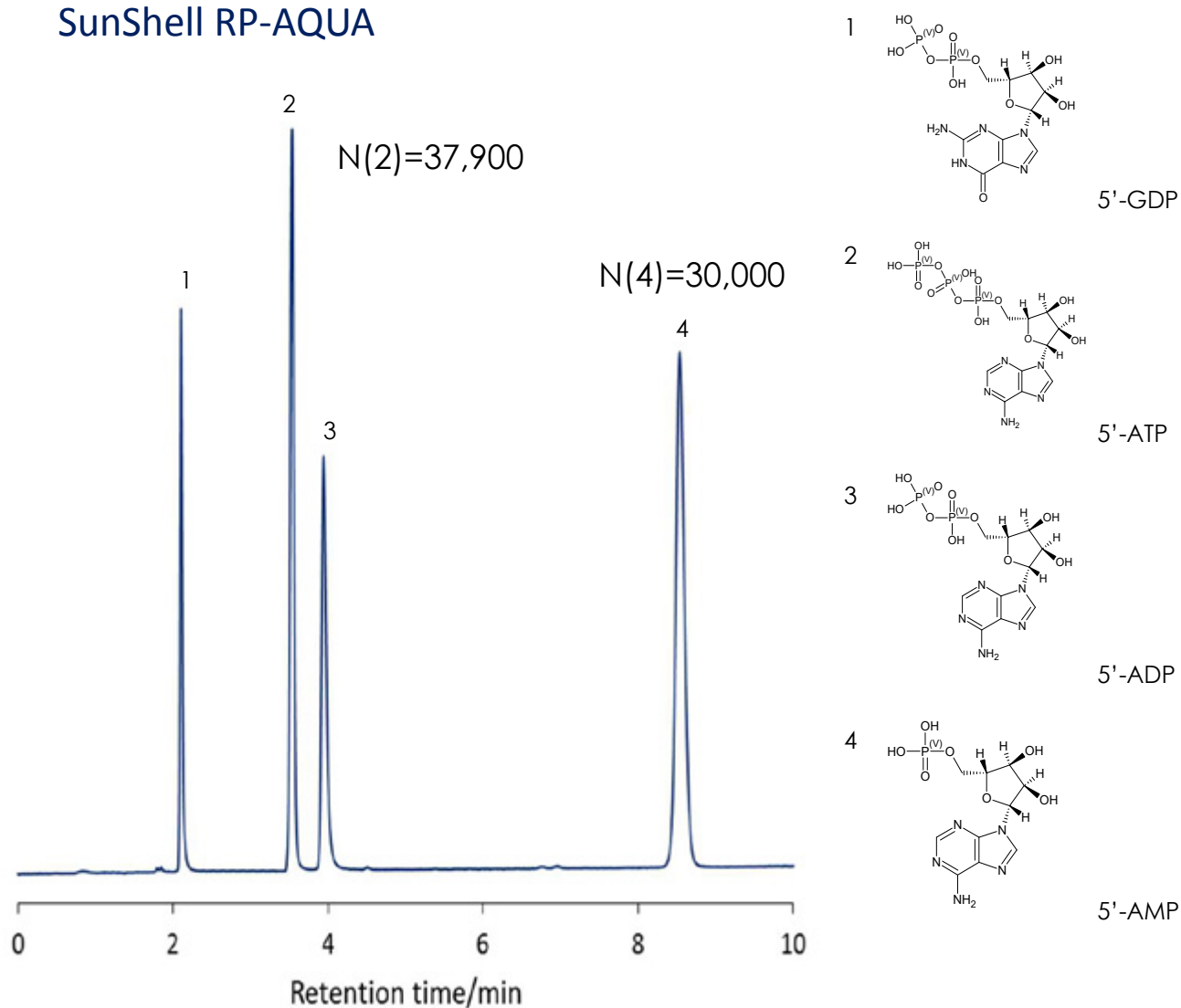
UHPLC: X-LC (Jasco)

ヌクレオチドの分離

Nucleotides

SunShell RP-AQUA 2.6 μm , 150 x 4.6 mm i.d.

SunShell RP-AQUA



Column: SunShell RP-AQUA 2.6 μm , 150 x 4.6 mm i.d.

Mobile phase: 20mM Phosphate buffer pH6.0

Flow rate: 1.0 mL/min

Temperature: 25 $^{\circ}\text{C}$

Detection: UV@250nm

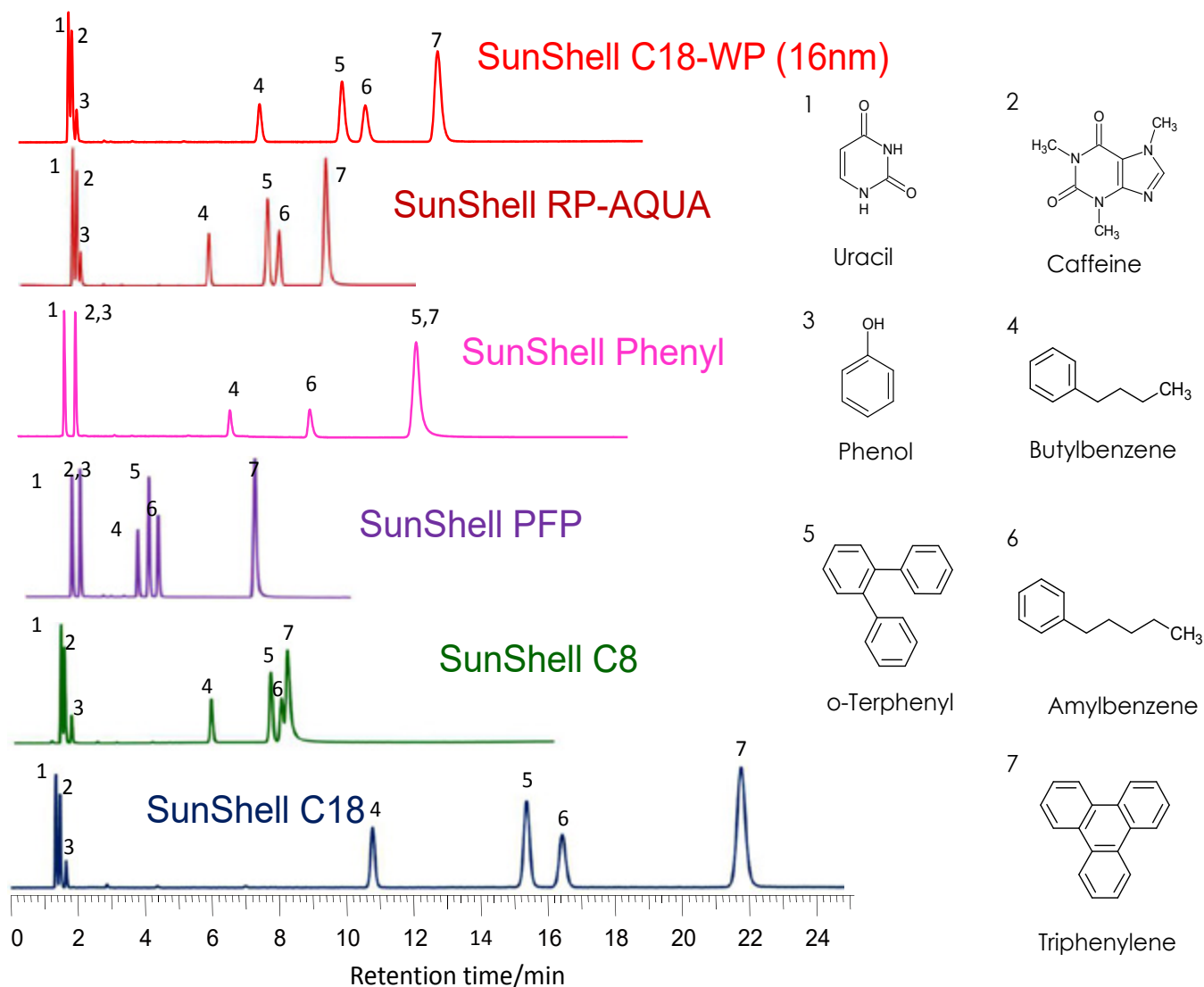
Sample: 1 = 5'-GDP, 2 = 5'-ATP, 3 = 5'-ADP, 4 = 5'-AMP

UHPLC: X-LC (Jasco)

SunShellカラムの標準試料の分離比較

Comparison of SunShell phases

SunShell 2.6 μm, 150 x 4.6 mm i.d.



Column dimension: 150 x 4.6 mm

Mobile phase: CH₃OH/H₂O=75/25

Flow rate: 1.0 mL/min

Temperature: 40 °C

Sample: 1 = Uracil, 2 = Caffeine,

3 = Phenol, 4 = Butylbenzene,

5 = o-Terphenyl, 6 = Amylbenzene,

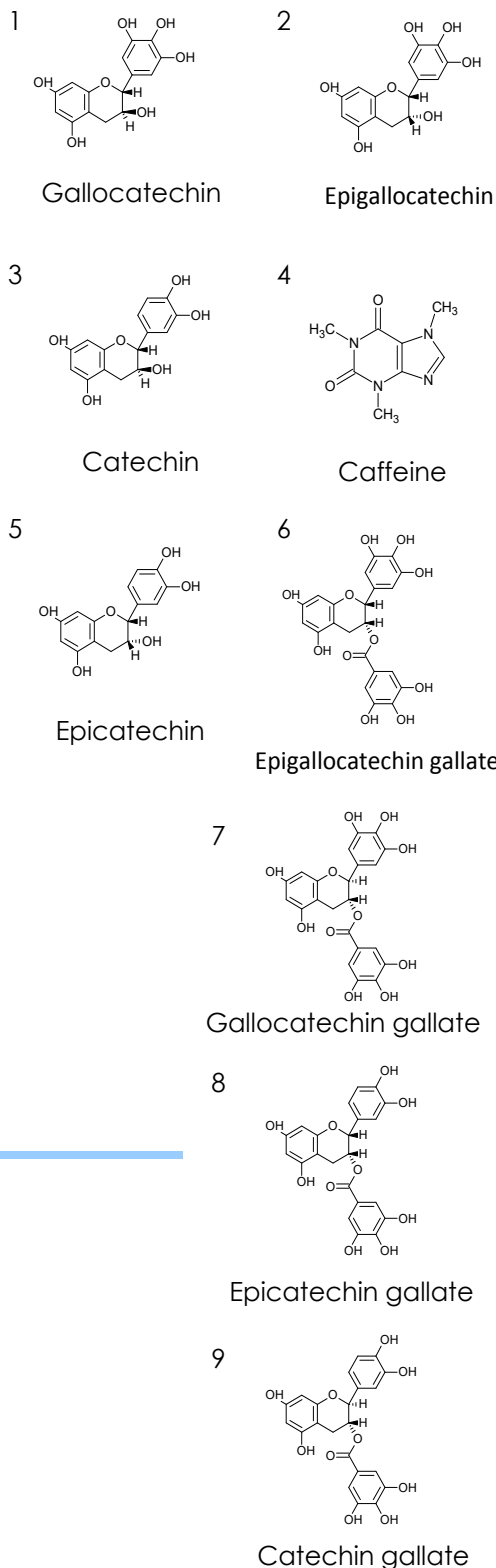
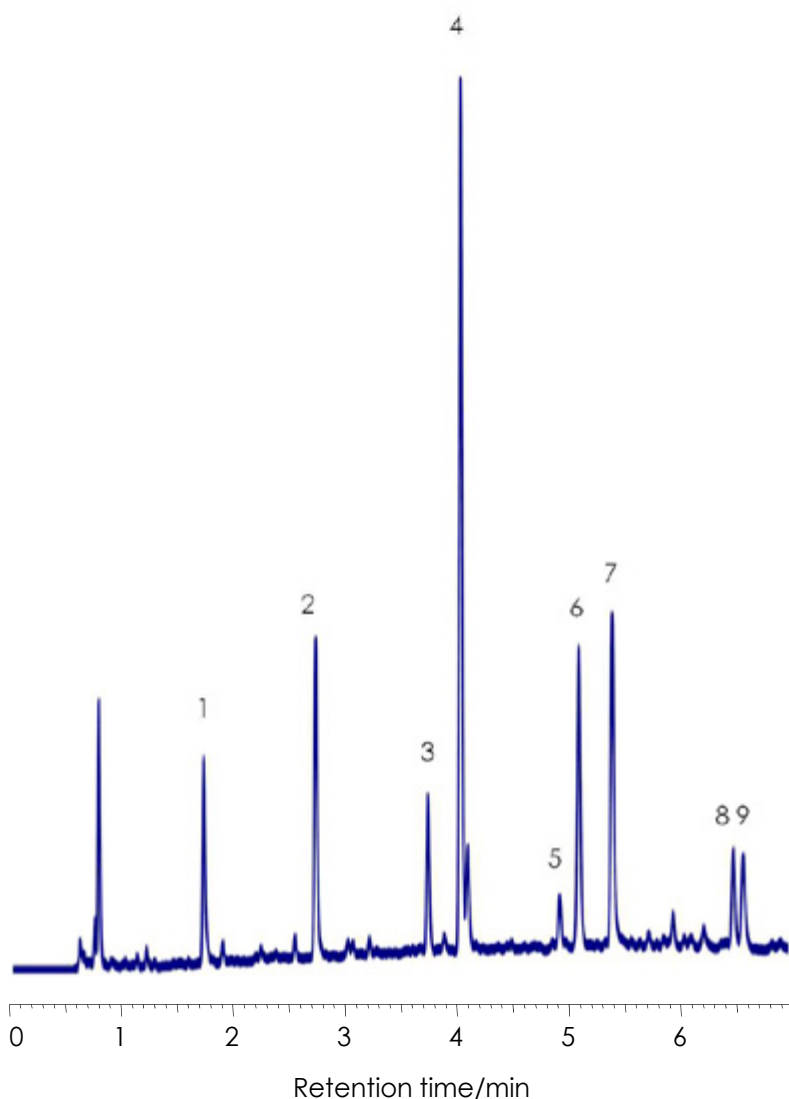
7 = Triphenylene.

	Hydrogen bonding (Caffeine/Phenol)	Hydrophobicity (Amylbenzene/Butylbenzene)	Steric selectivity (Triphenylene/o-Terphenyl)
C18-WP	0.40	1.55	1.35
RP-AQUA	0.52	1.52	1.30
Phenyl	1.00	1.48	1.00
PFP	1.00	1.31	2.38
C8	0.32	1.46	1.08
C18	0.39	1.60	1.46

ウーロン茶の分離

Oolong tea

SunShell C18 2.6 μm, 75 x 4.6 mm i.d.



Column: SunShell C18 2.6 μm, 75 x 4.6 mm

Mobile phase:

A) 0.1% Phosphoric acid

B) CH₃CN

Gradient program

Time	0 min	7.5 min	10 min
%B	2%	25%	25%

Flow rate: 1.0 mL/min,

Temperature: 25 °C

Detection: UV@250 nm

Sample: Oolong tea

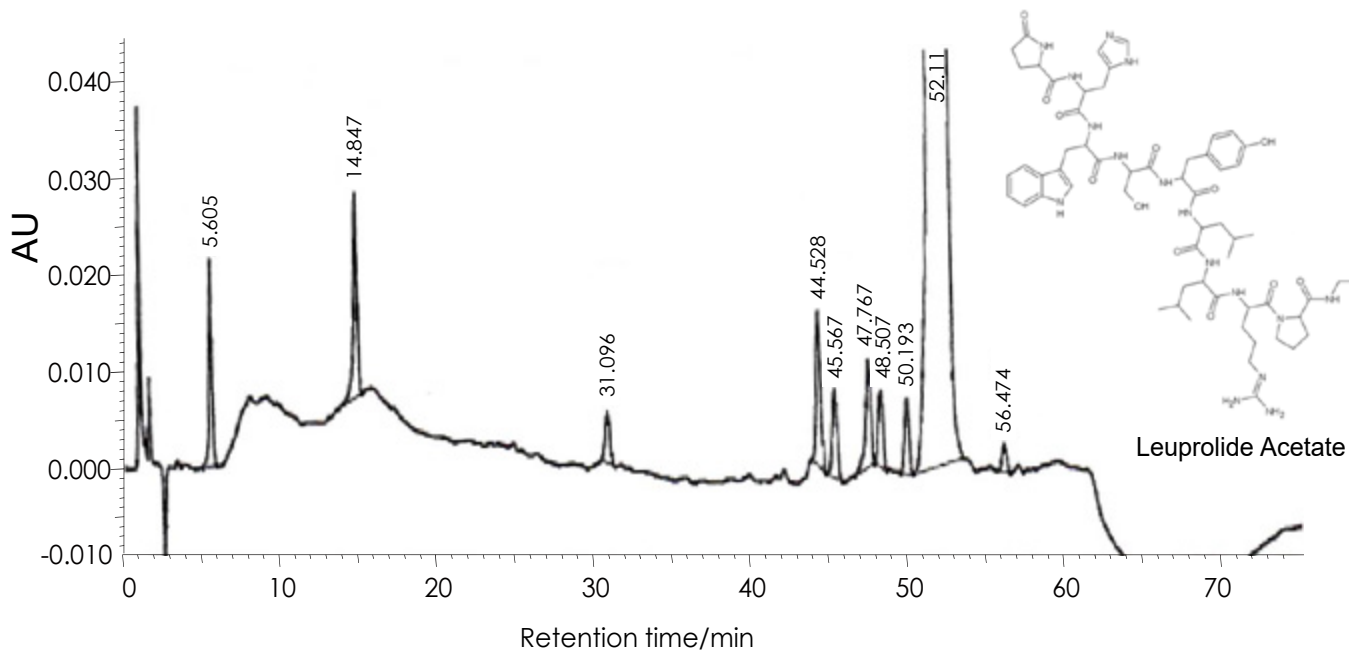
酢酸ロイプロリド

Chromatographic Purity Test

Source Reference USP 2010

Leuprolide Acetate

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.



Column: SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

Mobile phase: A) Triethyleamine 15.2g/L adjust the pH 3.0 with o-Phosphoric Acid

B) Acetonitrile/ n-Propyl alcohol(3:2)

Gradient Program

Time (min)	0	4	60	68	76
%A (%)	95	95	80	95	95
%B (%)	5	5	20	5	5

Diluent Mobile Phase A(17 parts) + Mobile Phase B(3parts)

Flow rate : 1.0. mL/min

Detection : UV@229 nm

Column Temperature : 50 °C

Sample Temperature : 4 °C

Sample: Solution 100 mg Leuprolide Acetate in 100 mL Diluents

Injection Volume : 20 μ L

Degradation solution a) 5 mL Sample /standard solution 1 mg/mL) dilute to 50 mL Water

b) Solution (a) 5 mL +100 mL 1N NaOH.

c) Shake Vigorously and place in Oven at 100 °C for 1 hour

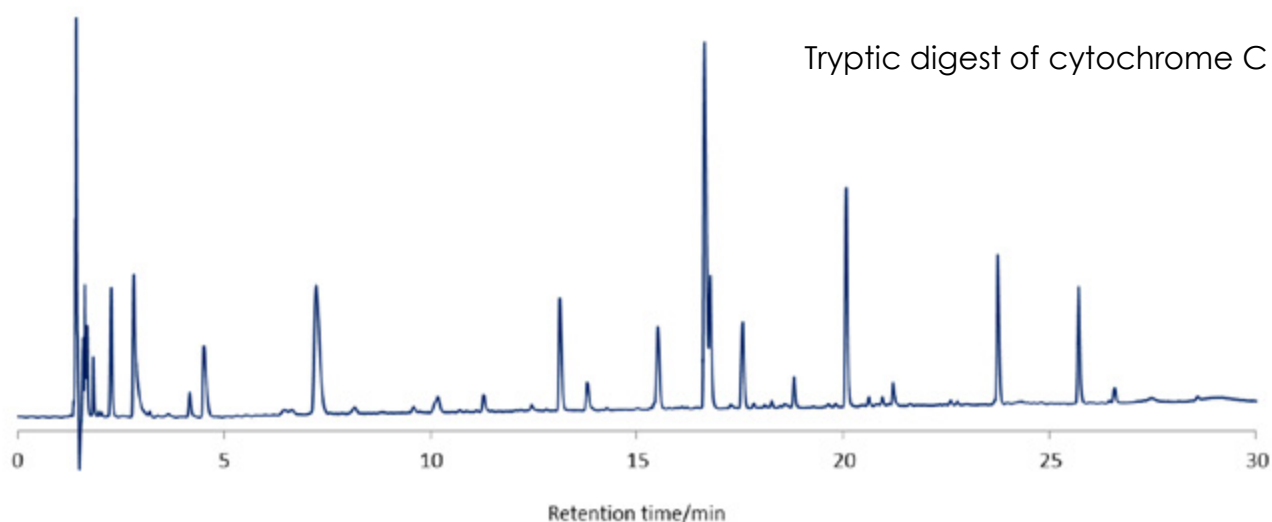
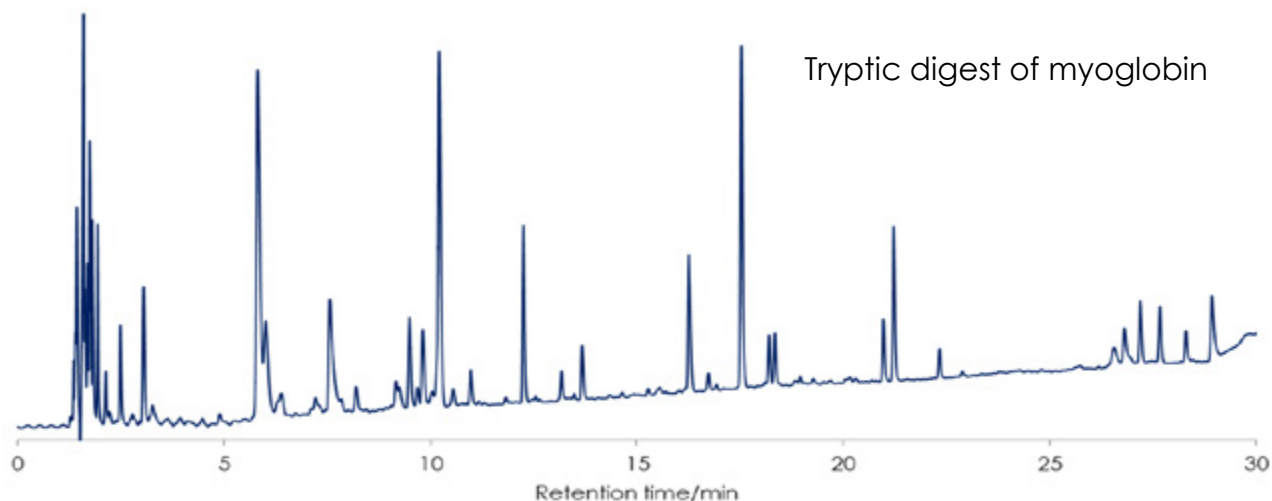
d)Cool and add 50 μ L 1M Phosphoric Acid

Biotech AB in partnership with ChromaNik Technologies

ペプチドの分離 (1)

Peptides (1)

SunShell C18-WP 2.6 μ m, 150 x 4.6 mm i.d.



Column: SunShell C18-WP 2.6 μ m, 150 x 4.6 mm

Mobile phase:

A) 0.1% TFA in H₂O/CH₃CN=(90:10)

B) 0.1% TFA in CH₃CN

Gradient program

Time	0 min	5 min	40 min
%B	5%	5%	50%

Flow rate: 1.0 mL/min,

Temperature: 25 °C

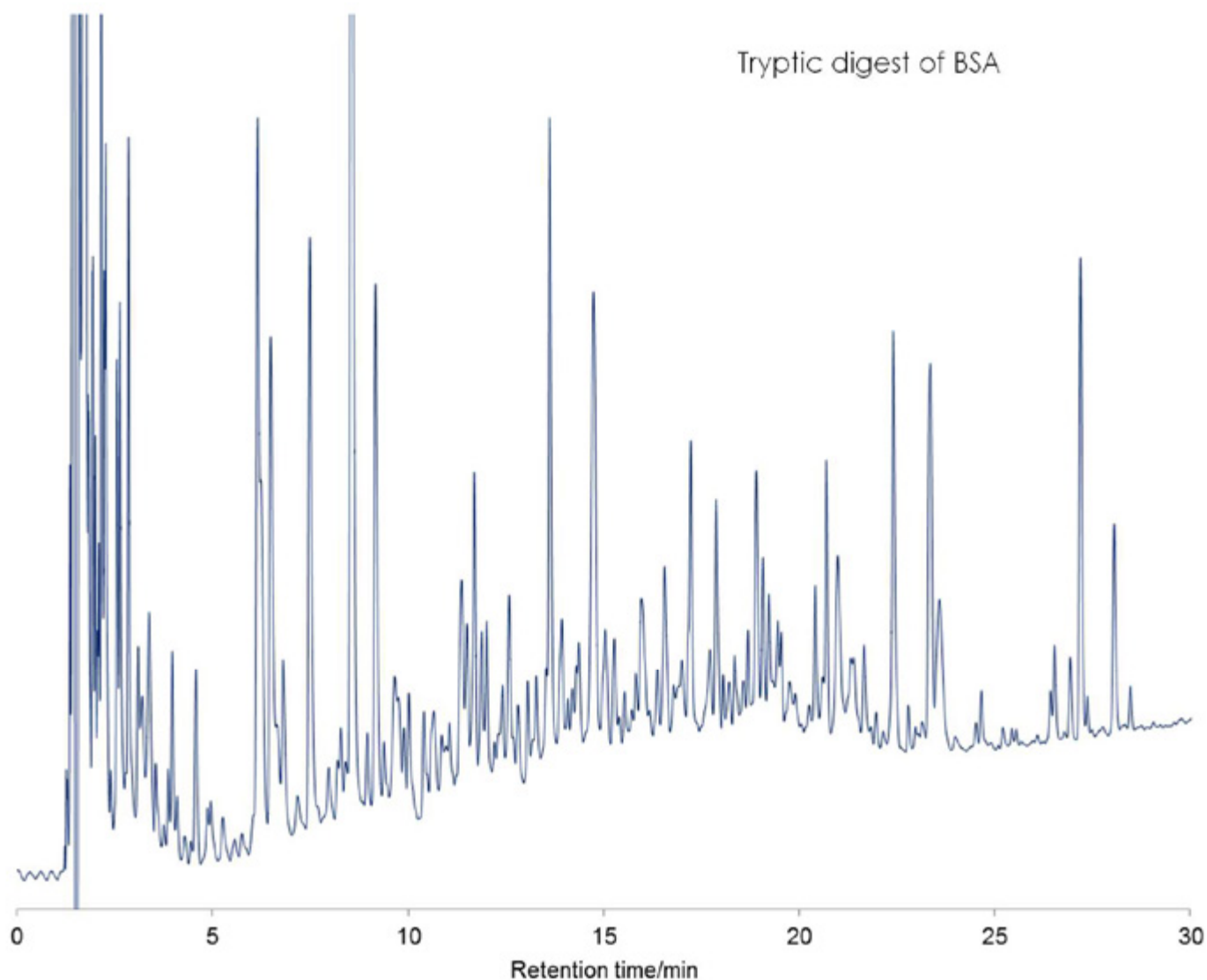
Detection: UV@215 nm

Sample: Tryptic digest of myoglobin and tryptic digest of cytochrome C

ペプチド(BSA)の分離

Peptides (BSA)

SunShell C18-WP 2.6 μm , 150 x 4.6 mm i.d.



Column: SunShell C18-WP 2.6 μm , 150 x 4.6 mm

Mobile phase:

A) 0.1% TFA in $\text{H}_2\text{O}/\text{CH}_3\text{CN}=(90:10)$

B) 0.1% TFA in CH_3CN

Gradient program

Time	0 min	5 min	50 min
%B	5%	5%	50%

Flow rate: 1.0 mL/min,

Temperature: 25 °C

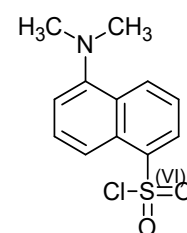
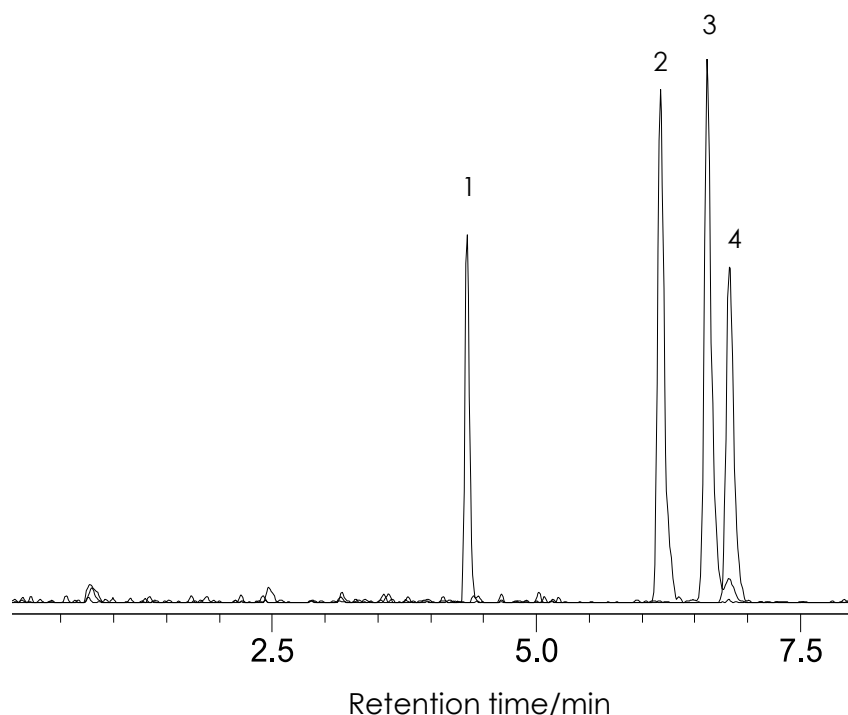
Detection: UV@215 nm

Sample: Tryptic digest of BSA

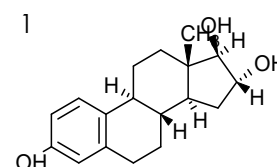
ダンシル化エストロゲン(女性ホルモン)の分離

Dansylated estrogen hormones

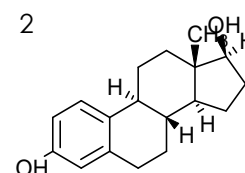
SunShell C18 2.6 μ m, 100 x 2.1 mm i.d.



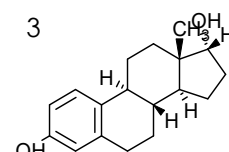
Dansyl chloride



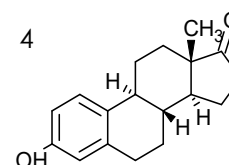
1
Estriol,



2
17Beta-estradiol,



3
17Alpha-estradiol



4
Estrone

Column: SunShell C18 2.6 μ m, 100 x 2.1 mm

Mobile phase:

A) H₂O with 0.1% formic acid.

B) CH₃CN with 0.1% formic acid.

Gradient program:

0 - 0.5 min: 10% B

0.51 - 3.0 min: 10 - 72% B

3.01 - 6.0 min: 72% B

6.01 - 7.0 min: 72 - 100% B

7.01 - 10.0 min: 100% B

Flow rate: 0.45 mL/min.

Temperature: 40 °C

Detection: MS(sim), m/z, 522.20, 506.20, 504.20

Samples: 1. Dansylated estriol, 2. Dansylated 17beta-estradiol,

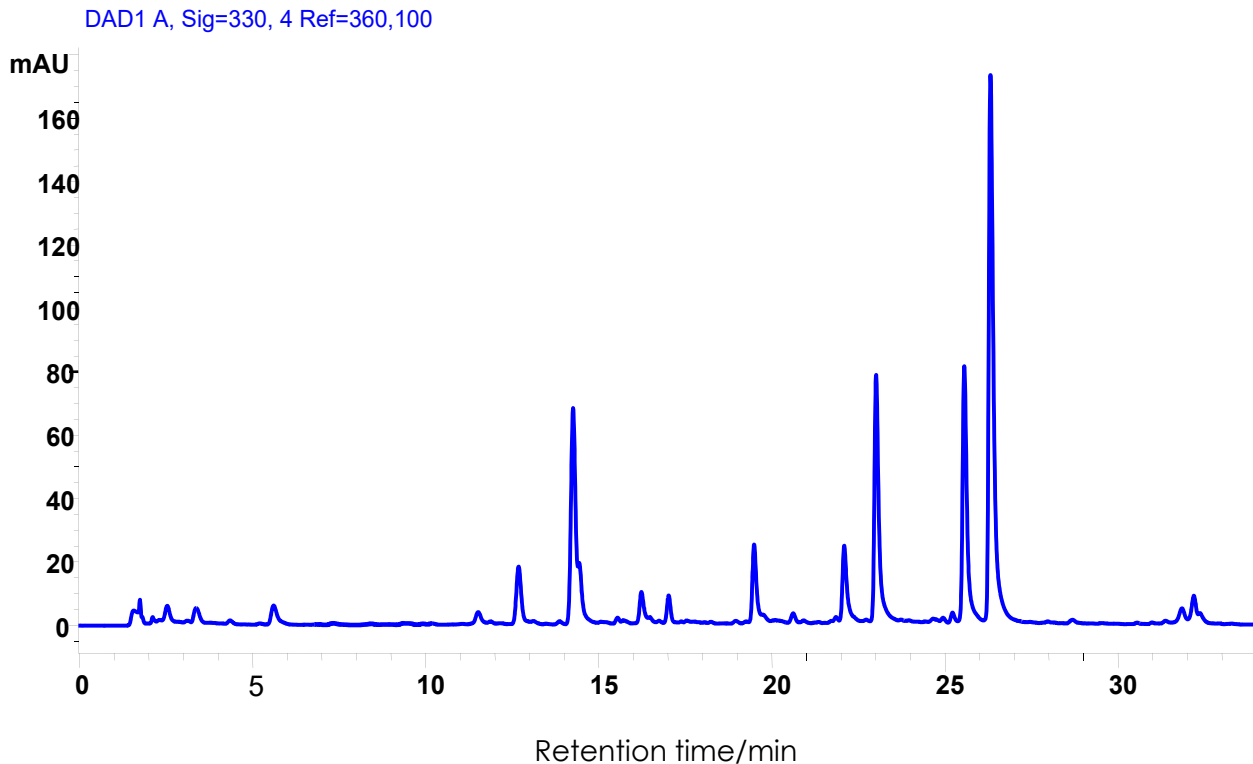
3. Dansylated 17alpha-estradiol, 4. Dansylated estrone

Courtesy of Department of Chemistry & Biochemistry, The University of Texas at Arlington

ブラックコホシュ(サプリメント)の分離

Black Cohosh

SunShell C18 2.6 μ m, 150 x 2.1 mm i.d.



Column: SunShell C18 2.6 μ m, 150 x 2.1 mm

Mobile phase:

A) H₂O with 0.1% formic acid.

B) CH₃CN with 0.1% formic acid.

Gradient program:

Time 0 min. 30 min. 32 min.

% B 10% 30% 100%

Flow rate: 0.2 mL/min.

Temperature: 40 °C

Detection: UV@330 nm

Samples: Black Cohosh (Natural products)

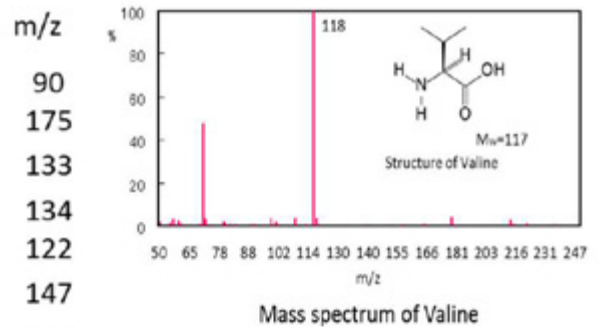
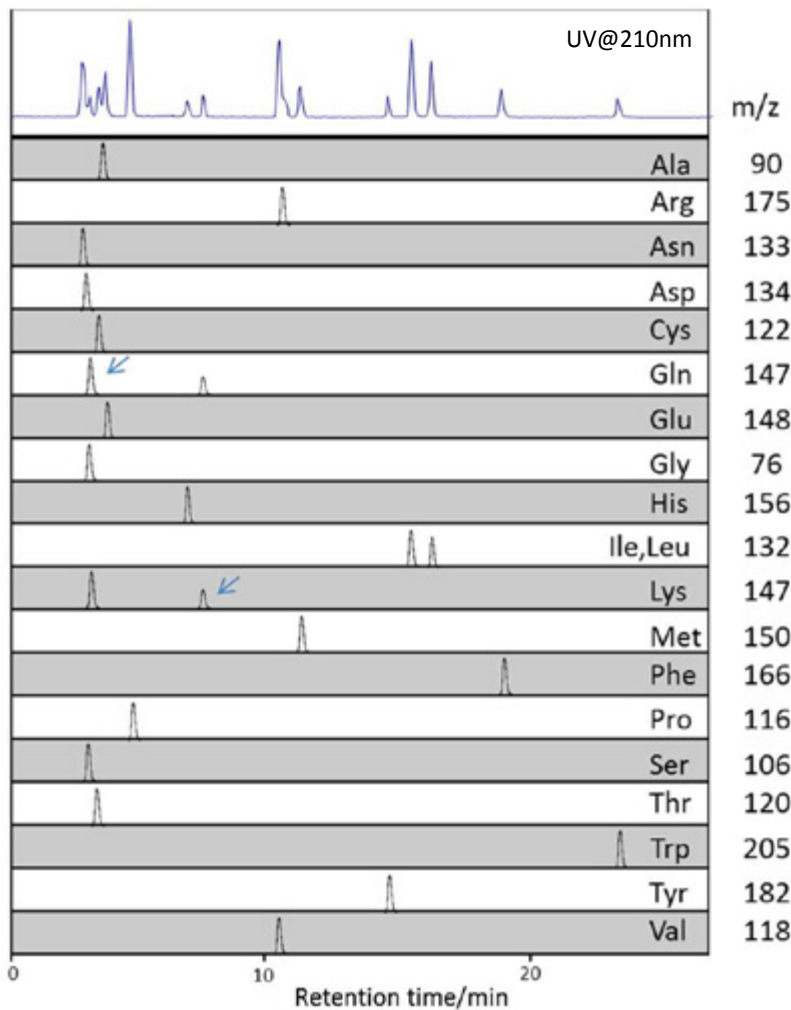


Courtesy of Dr. Pei Chen
United State Department of Agriculture

アミノ酸の分離 (LC/MS)

Amino acids (LC/MS)

Sunniest RP-AQUA 5 μ m, 150 x 2.1 mm i.d.



Column: Sunniest RP-AQUA 5 μ m, 150 x 2.0 mm

Mobile phase:

- A) 5mM HFBA (Heptafluorobutyric acid)
- B) 5mM HFBA in Acetonitrile/water(9/1)
- %B 0% to 20% in 20 min

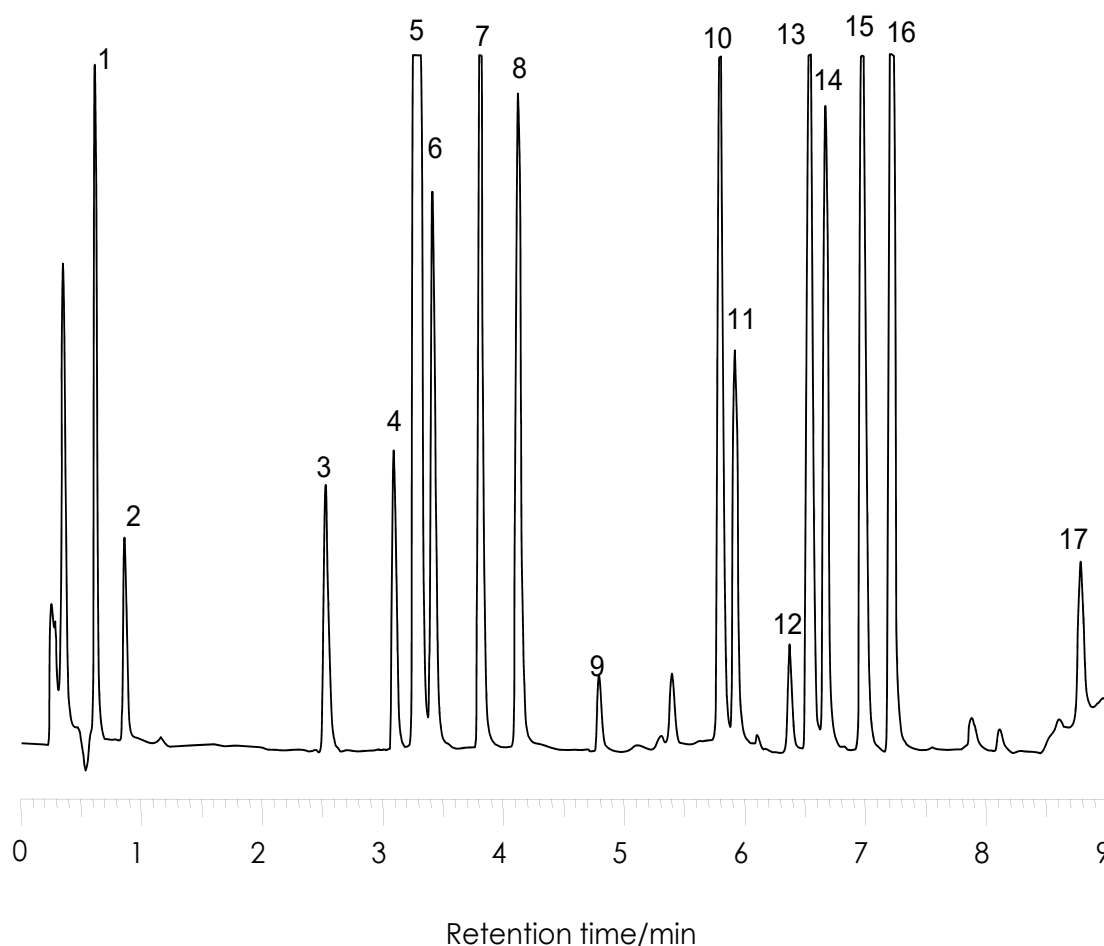
Flow rate: 0.2mL/min

Temperature: 40 °C

Detection: Quattro Micro API (ESI positive) SIM and UV@210nm

OPAとFMOC誘導体化アミノ酸の分離(1) Sunniest C18-HT 2 μ m, 100 x 2.1 mm i.d.

Amino Acids derivatized with OPA and FMOC (1)



Column: Sunniest C18-HT 2 μ m, 100 x 2.1 mm

Mobile phase: A) 10mM Na₂PO₄ + 10mM Na₂B₄O₇ + 0.5mM NaN₃ (pH7.8)

B) Acetonitrile/Methanol/Water (45/45/10 %V)

Time(min)	0	0.2	7.2	7.8
%B	5	5	50	100

Flow rate: 0.72 mL/min

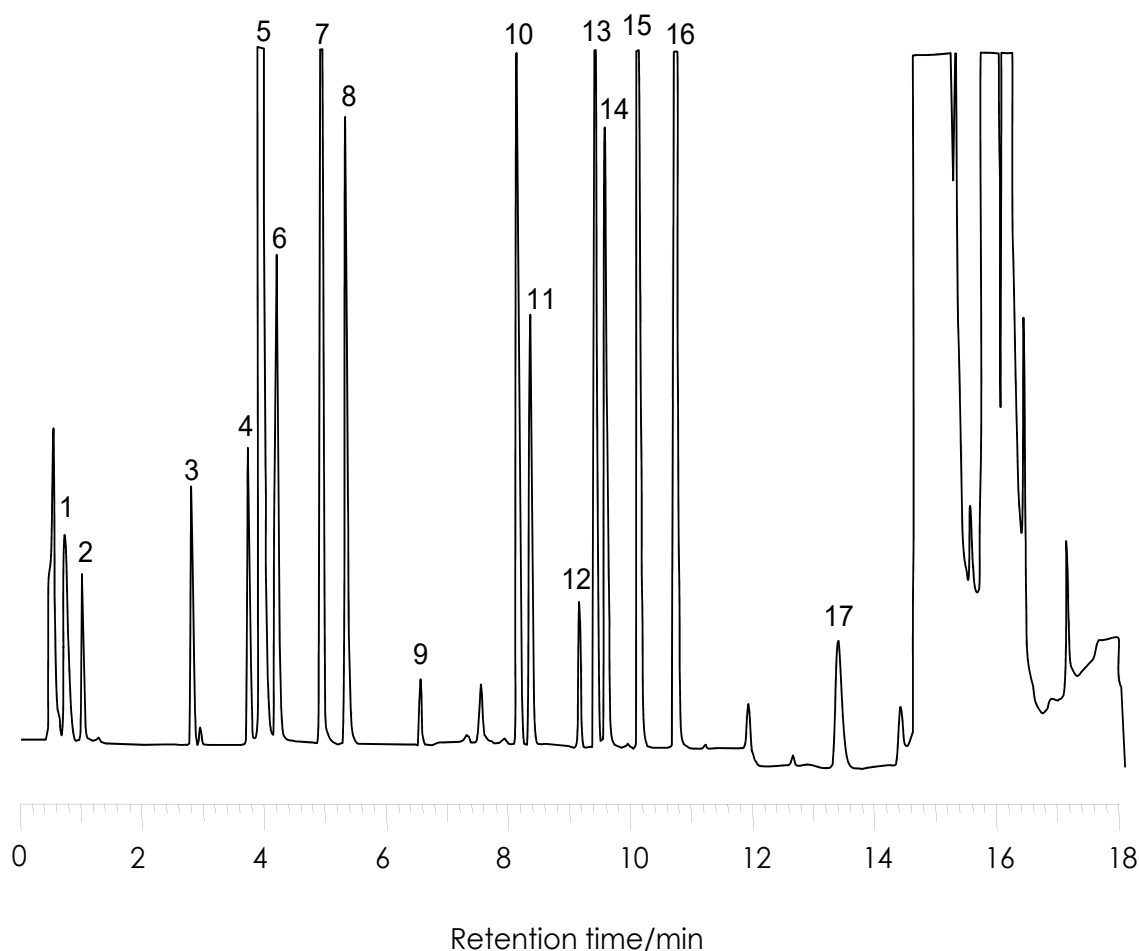
Temperature: 40 °C

Detection: UV@338 nm

Sample: 1=Aspartic acid, 2=Glutamic acid, 3=Serine, 4=Histidine, 5=Glycine, 6=Threonine,
7=Arginine, 8=Alanine, 9=Tyrosine, 10=Valine, 11=Methionine, 12=Tryptophan, 13=Phenylalanine,
14=Isoleucine, 15=Leucine, 16=Lysine, 17=Proline

OPAとFMOC誘導体化アミノ酸の分離(2) SunShell C18 2.6 μ m, 150 x 2.1 mm i.d.

Amino Acids derivatized with OPA and FMOC (2)



Column: SunShell C18 2.6 μ m, 150 x 2.1 mm

Mobile phase: A) 10mM Na₂PO₄ + 10mM Na₂B₄O₇ + 0.5mM NaN₃ (pH7.8)

B) Acetonitrile/Methanol/Water (45/45/10 %V)

Time(min)	0	0.4	12.8	13.8
%B	5	5	50	100

Flow rate: 0.61 mL/min

Temperature: 40 °C

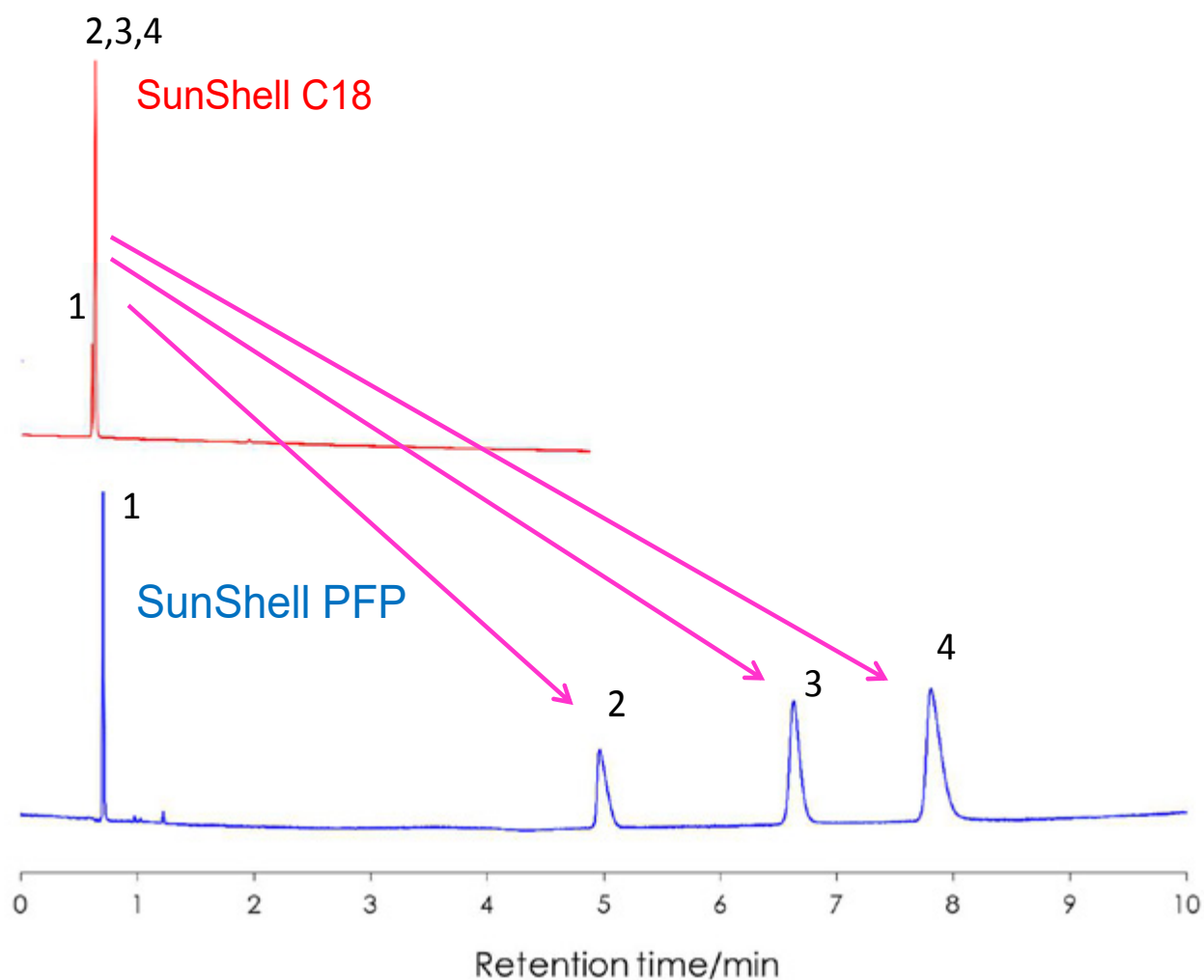
Detection: UV@338 nm

Sample: 1=Aspartic acid, 2=Glutamic acid, 3=Serine, 4=Histidine, 5=Glycine, 6=Threonine, 7=Arginine, 8=Alanine, 9=Tyrosine, 10=Valine, 11=Methionine, 12=Tryptophan, 13=Phenylalanine, 14=Isoleucine, 15=Leucine, 16=Lysine, 17=Proline

PFPによる塩基性化合物の分離

Basic compounds (PFP phase)

SunShell PFP and C18 2.6 μ m, 150 x 2.1 mm i.d.



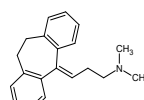
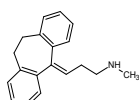
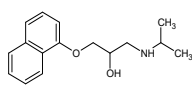
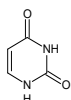
Column: SunShell C18, PFP, 2.6 μ m, 150 x 4.6 mm

Mobile phase: CH₃CN/10mM Phosphate buffer pH7.0 = 80/20

Flow rate: 1.8 mL/min

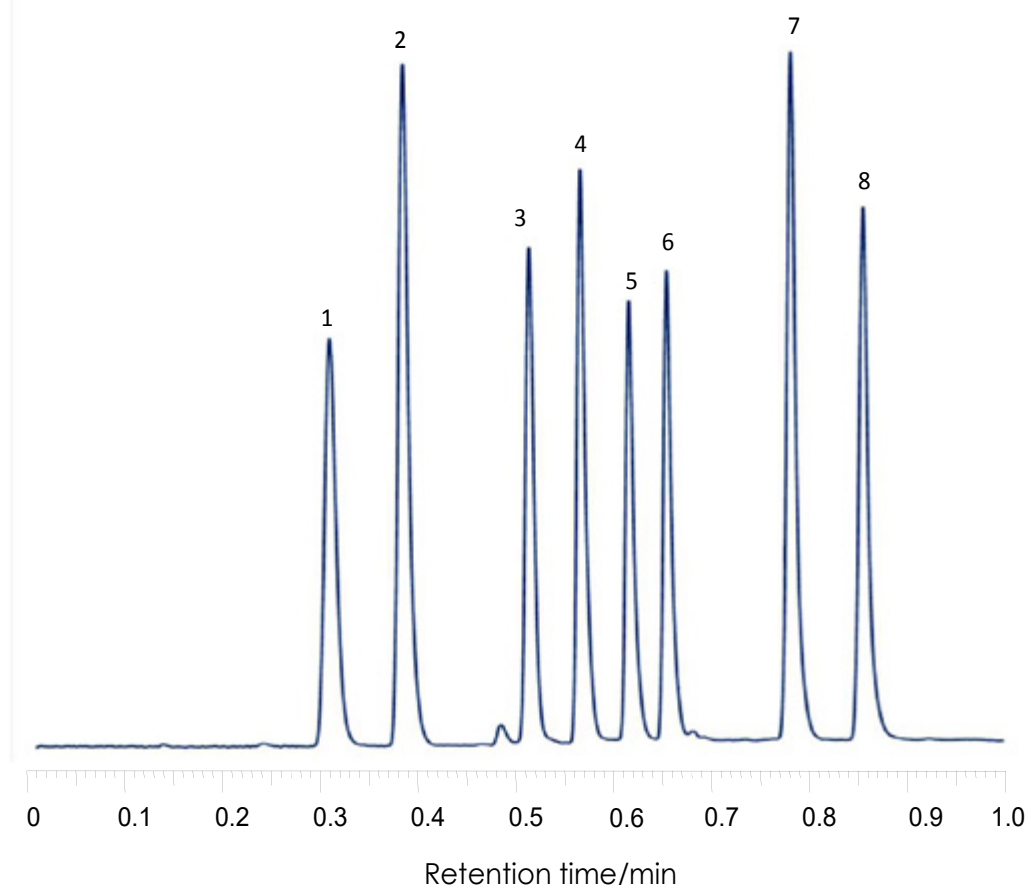
Temperature: 25 °C

Sample: 1 = Uracil, 2 = Propranolol, 3 = Nortriptyline, 4 = Amitriptyline



SunShellカラムの高速分離

High through-put separation

SunShell C18 2.6 μm , 30 x 3.0 mm i.d.

Column: SunShell C18 2.6 μm , 30 x 3.0 mm.

Mobile phase: A) Water, B) Acetonitrile; Gradient (Acetonitrile %), 0.00 min - 35%, 0.40 min - 100%, 0.80 min - 100%, 0.85 min - 35%, 1 cycle; 1.8min, (High-pressure gradient).

Flow rate: 1.0 mL/min.

Temperature: 40 °C.

Injection Volume: 1 μL .

Wavelength: 200 - 500nm, CH-9, 215 - 500nm (Max Abs.).

Sample: Mixture of ultraviolet absorbers,

1 = 2,2',4,4'-Tetrahydroxybenzophenone,

2 = Ethyl p-aminobenzoate,

3 = 2, 4-Dihydroxybenzophenone,

4 = 2,2'-Dihydroxy-4-methoxybenzophenone,

5 = 2,2'-Dihydroxy-4,4'-dimethoxybenzophenone,

6 = 2-Hydroxy-4-methoxybenzophenone,

7 = 2-(2'-Hydroxy-5'-methylphenyl) benzotriazole,

8 = 4-tert-Butylphenyl salicylate.

Courtesy of Jasco.



BIOTECH AB

WWW.BIOTECH-SWEDEN.COM

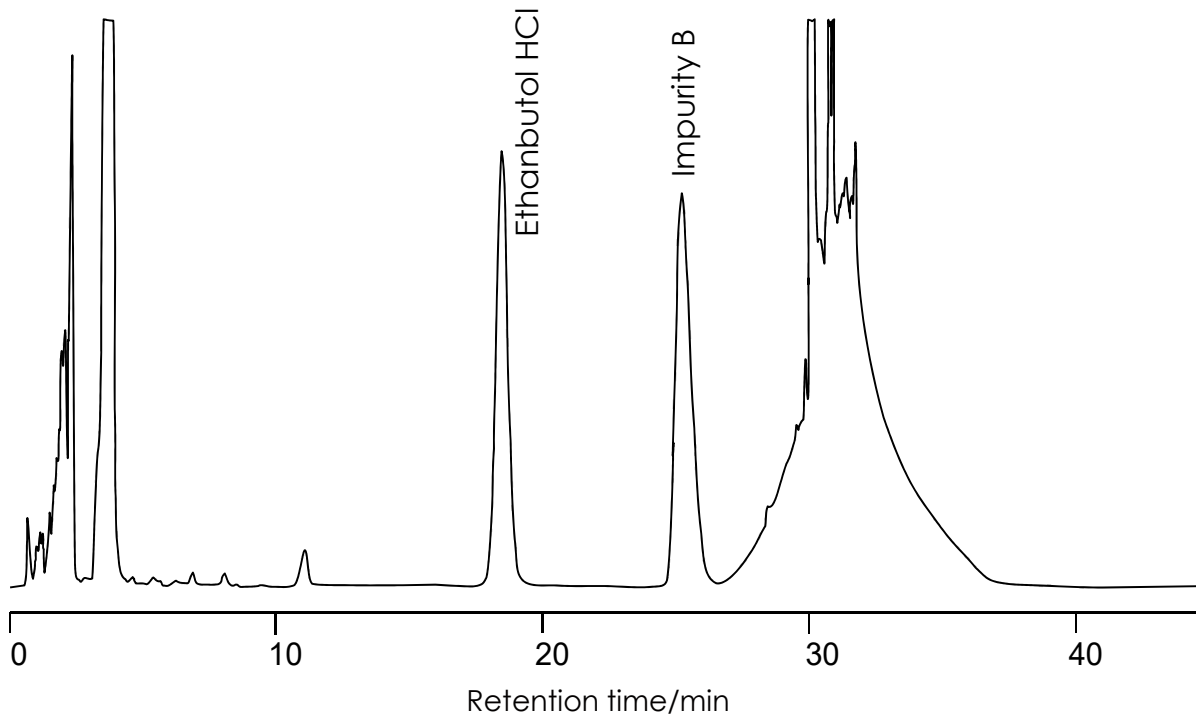
Application Data

No. 1038A

ChromaNik
ChromaNik Technologies Inc.

エタンブトール

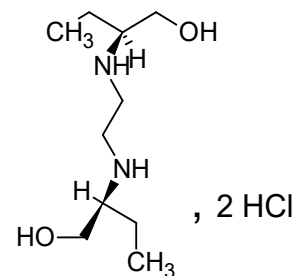
Ethambutol Hydrochloride

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

Column: SunShell C18 2.6 μ m, 100 x 4.6 mm
 Mobile phase: A) methanol/water (50/50 V/V)
 B) methanol

Time(min)	0	30	35	37	38
%B	29	29	100	100	29

Flow rate: 1.0 mL/min
 Temperature: 40°C
 Detection: UV 215 nm
 Injection volume: 10 μ L



Ethambutol Hydrochloride

System suitability

— resolution: minimum 4.0 between the peaks due to ethambutol and impurity B.

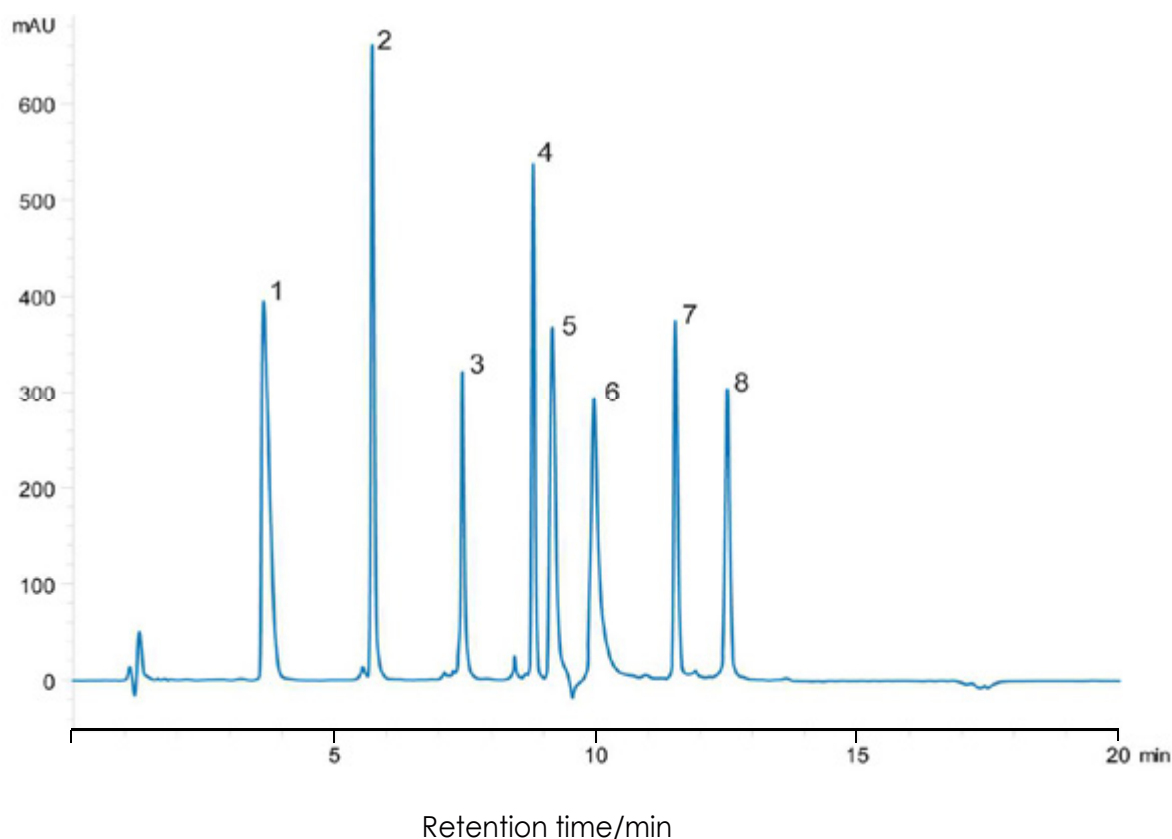
Limits:

— impurity B: not more than twice the area of the principal peak in the chromatogram obtained with reference solution (a)

タンパク質の分離(1)

SunShell C8-30 2.6 μ m, 150 x 2.1 mm i.d.

Protein Mix using SunShell C8-30

Column: SunShell C8-30 2.6 μ m (30 nm), 150 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Flow rate: 0.35 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μ LConcentration: 0.01 μ g/ μ L each protein

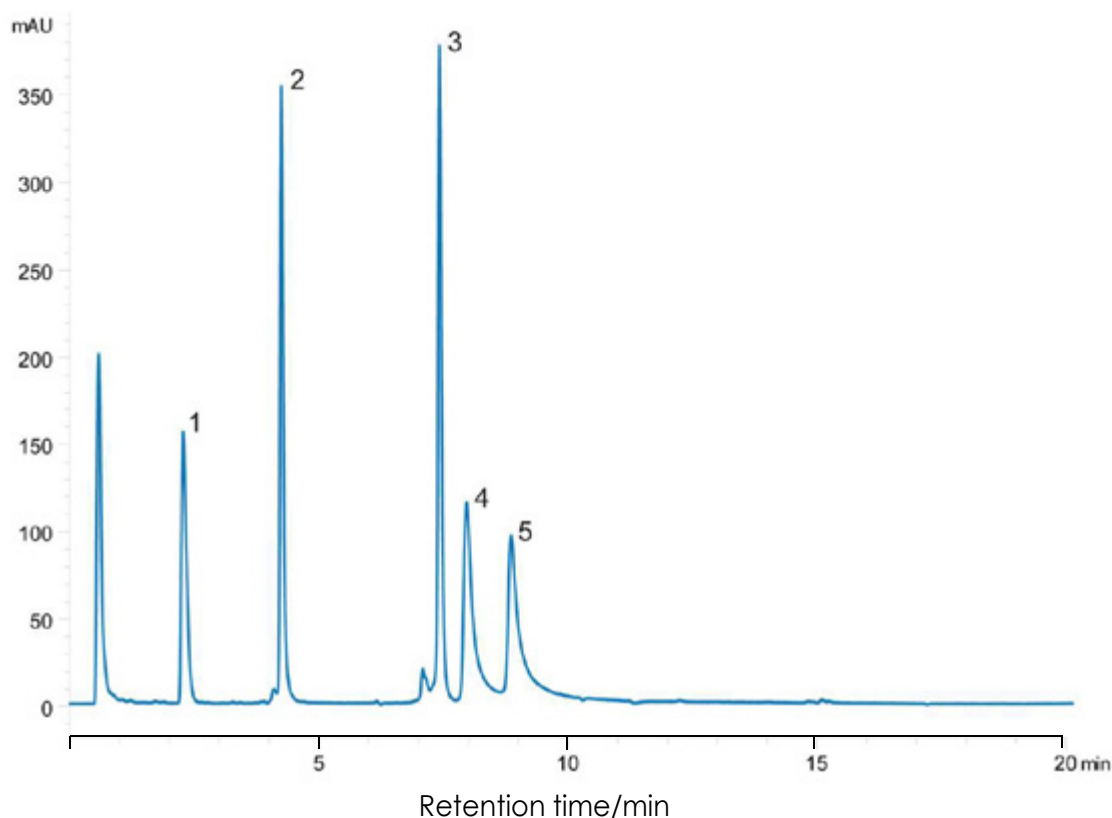
Sample:

1. Angiotensin I
2. Ribonuclease A
3. Cytochrome C
4. Lysozyme
5. Transferrin
6. Bovine Serum Albumin
7. Myoglobin
8. Carbonic Anhydrase

タンパク質の分離(2)

SunShell C4-30 2.6 μ m, 100 x 2.1 mm i.d.

Protein Mix using SunShell C4-30



Column: SunShell C4-30 2.6 μ m (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:	Time(min)	0	20
	%B	22	70.5

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μ L

Concentration: 0.01 μ g/ μ L each protein

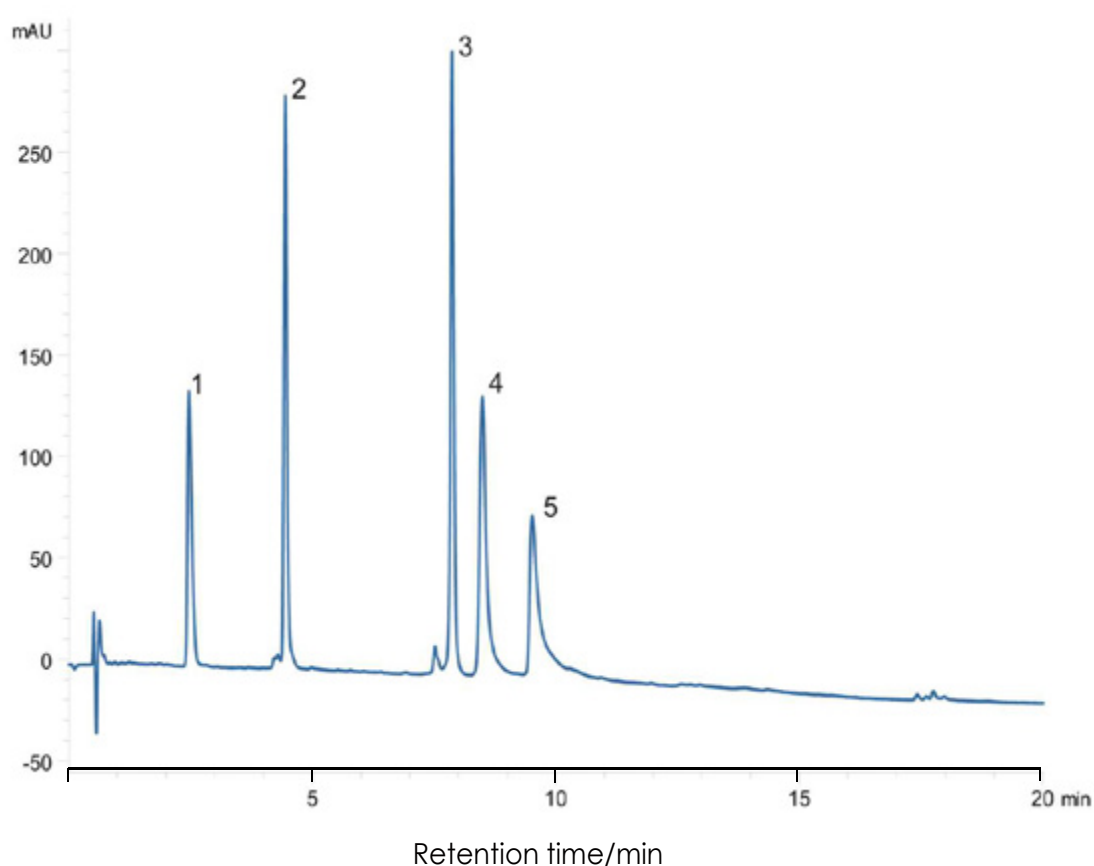
Sample:

1. Angiotensin I
2. Ribonuclease A
3. Lysozyme
4. Transferrin
5. Bovine Serum Albumin

タンパク質の分離(3)

SunShell C18-30 2.6 μm , 100 x 2.1 mm i.d.

Protein Mix using SunShell C18-30



Column: SunShell C18-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	20
%B	22	70.5

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μL ,

Concentration: 0.01 $\mu\text{g}/\mu\text{L}$ each protein

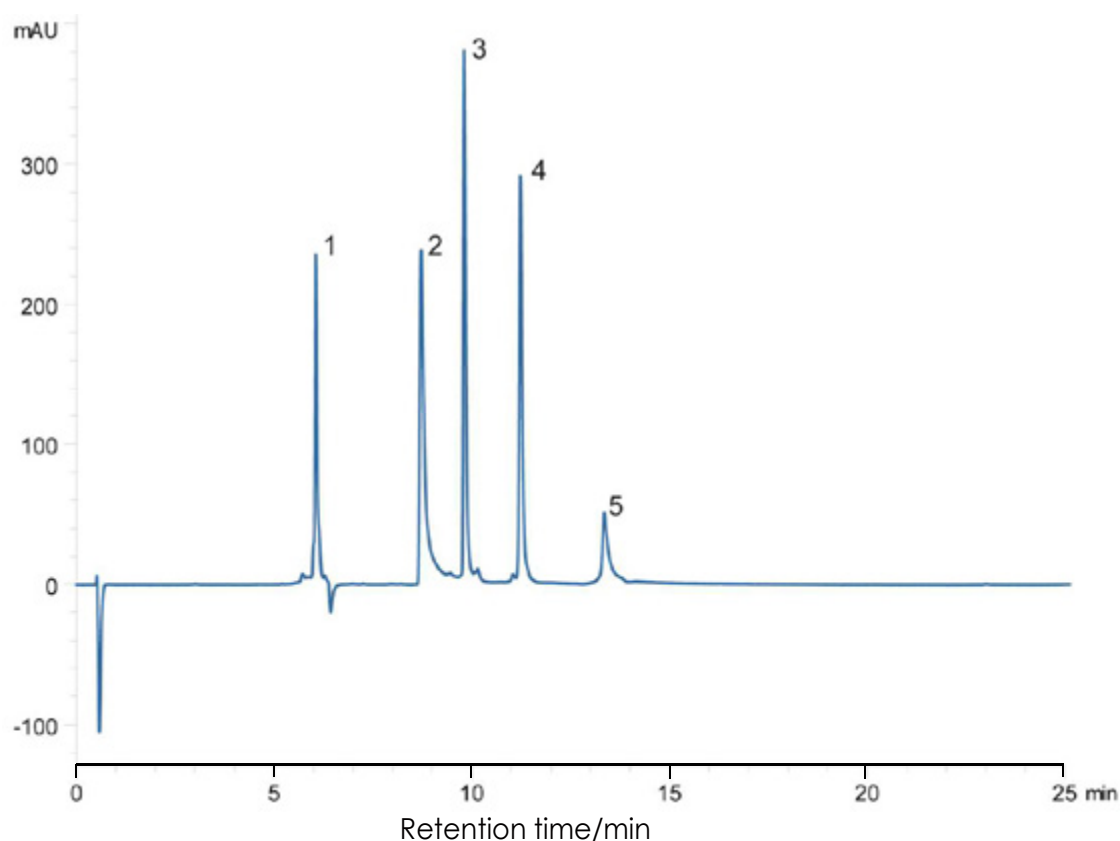
Sample:

1. Angiotensin I
2. Ribonuclease A
3. Lysozyme
4. Transferrin
5. Bovine Serum Albumin

タンパク質の分離(4)

SunShell C4-30 2.6 μm , 100 x 2.1 mm i.d.

Protein Mix using SunShell C4-30



Column: SunShell C4-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	20
%B	22	70.5

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μL

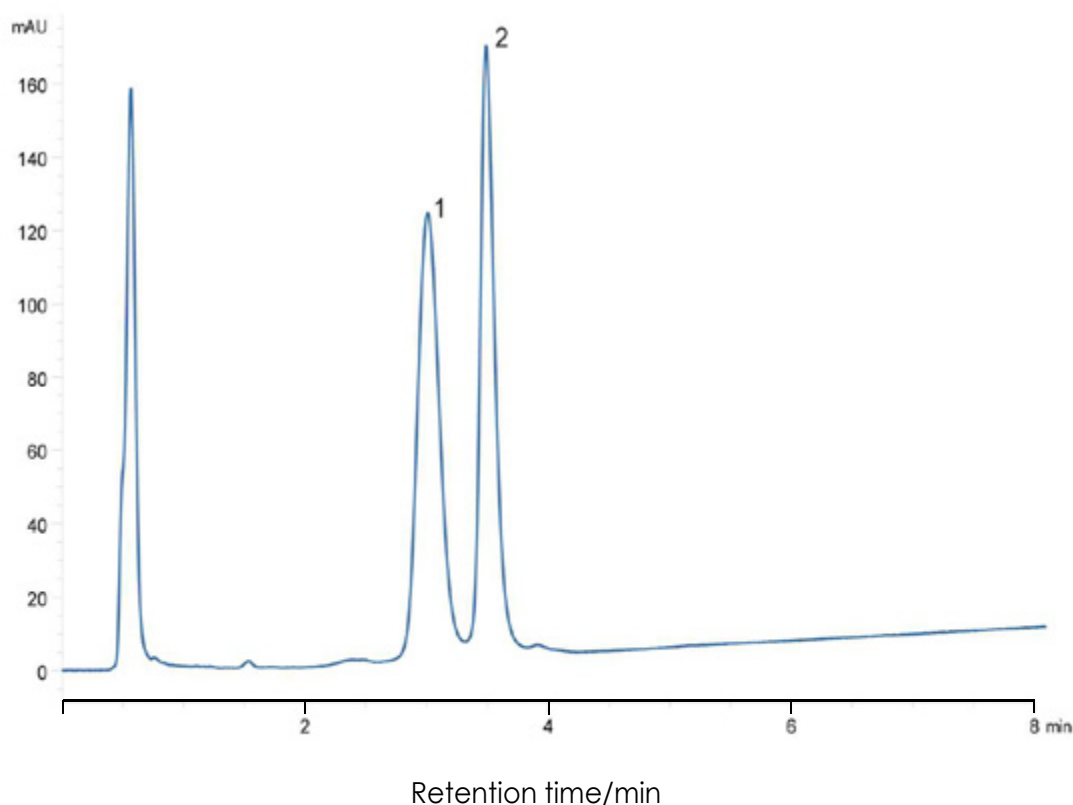
Concentration: 0.01 $\mu\text{g}/\mu\text{L}$ each protein

Sample:

1. Cytochrome C
2. Bovine Serum Albumin
3. Myoglobin
4. Carbonic Anhydrase
5. Phosphorylase B

リボヌクレアーゼA/Bの分離(1) SunShell C18-16 2.6 μ m, 100 x 2.1 mm i.d.

Ribonuclease A/B Mix using SunShell C18-16



Column: SunShell C18-16 2.6 μ m (16 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	7
%B	25	35

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μ L

Concentration: 0.01 μ g/ μ L each protein

Sample:

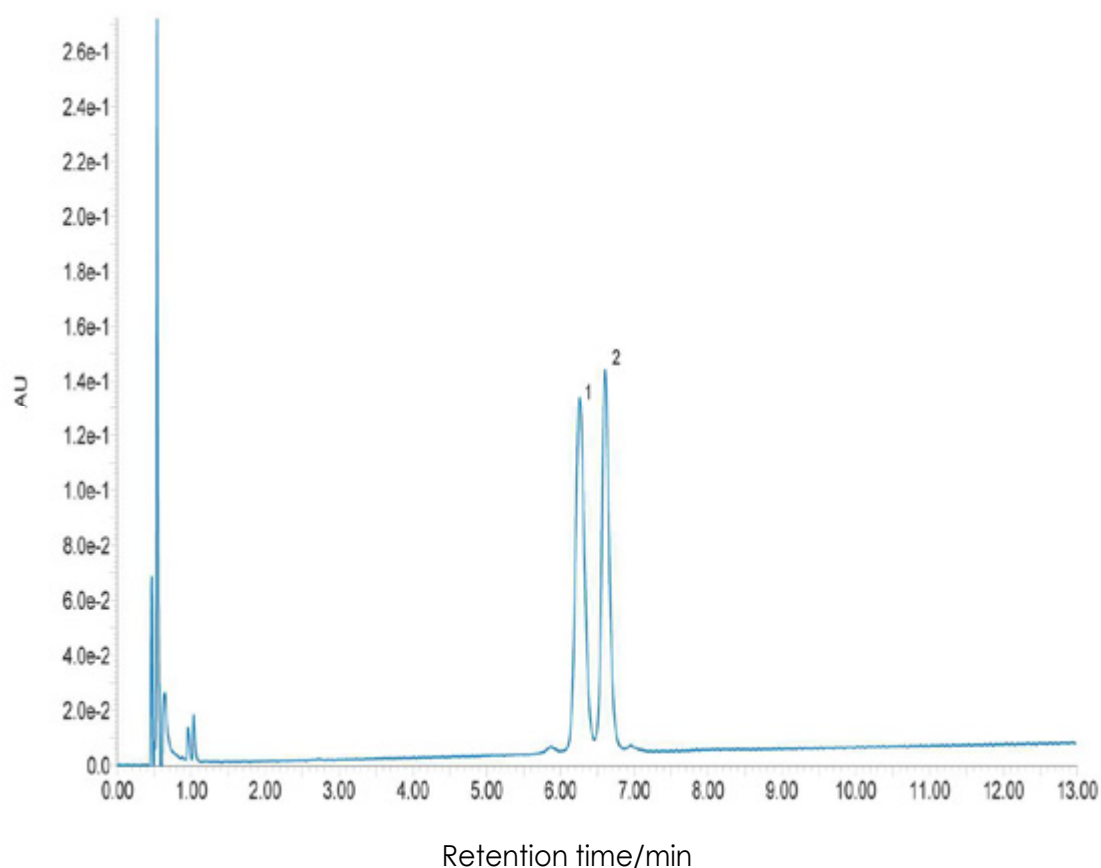
1. Ribonuclease B

2. Ribonuclease A

リボヌクレアーゼA/Bの分離(2)

SunShell C18-30 2.6 μ m, 100 x 2.1 mm i.d.

Ribonuclease A/B Mix using SunShell C18-30



Column: SunShell C18-30 2.6 μ m (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	20
%B	20	40

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μ L

Concentration: 0.01 μ g/ μ L each protein

Sample:

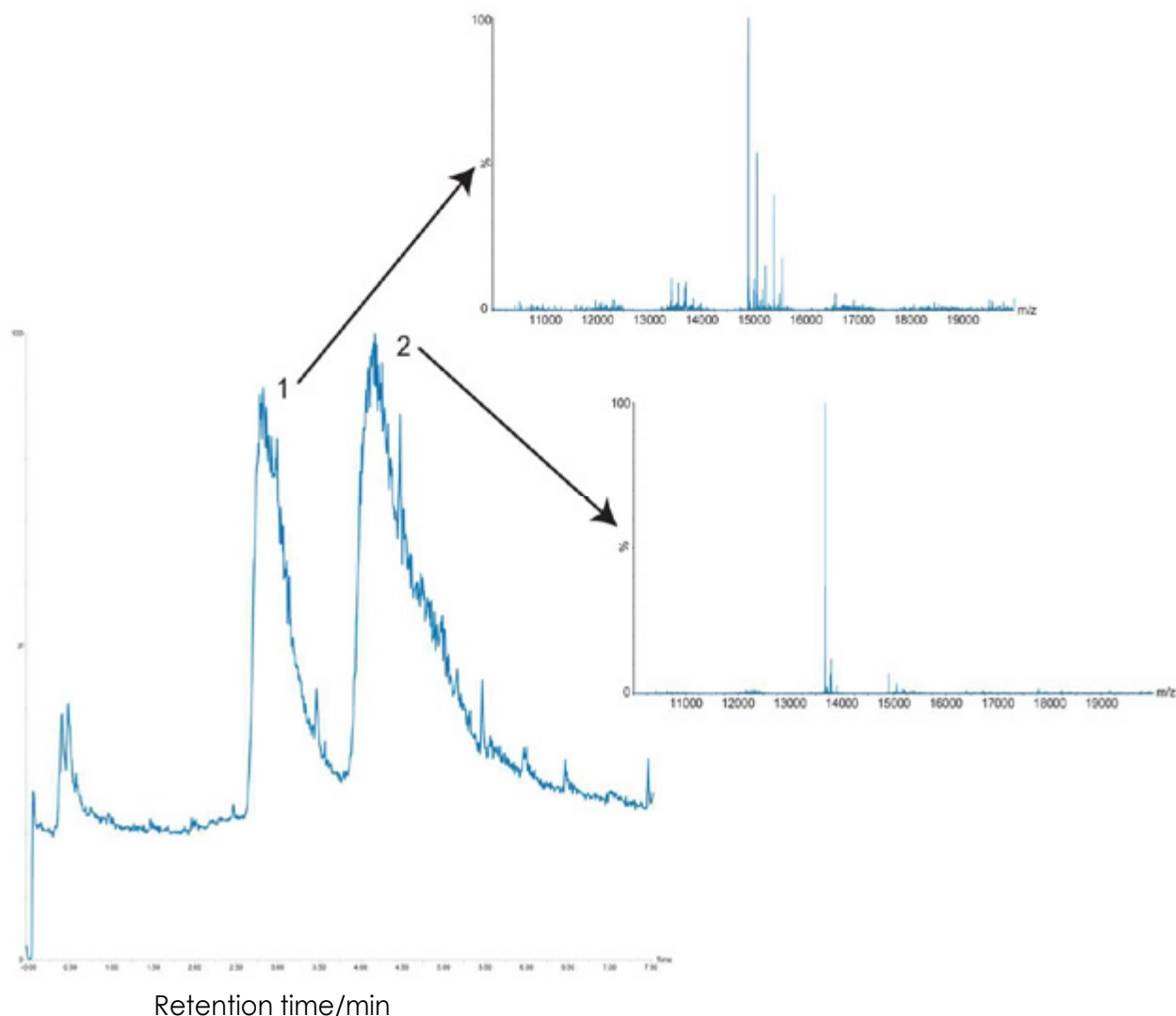
1. Ribonuclease B

2. Ribonuclease A

リボヌクレアーゼA/Bの分離(3)

SunShell C8-30 2.6 μm , 100 x 2.1 mm i.d.

Ribonuclease A/B Mix using SunShell C8-30



Column: SunShell C8-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% Formic acid in water

B) 0.1% Formic acid in acetonitrile

Gradient program:

Time(min)	0	10	
Isocratic separation	%B	17.5	17.5

Flow rate: 0.50 mL/min

Temperature: 60 °C

Detection: MS, Waters SYNAPT G2-S

Injection volume: 10 μL

Concentration: 0.01 $\mu\text{g}/\mu\text{L}$ each protein

Sample:

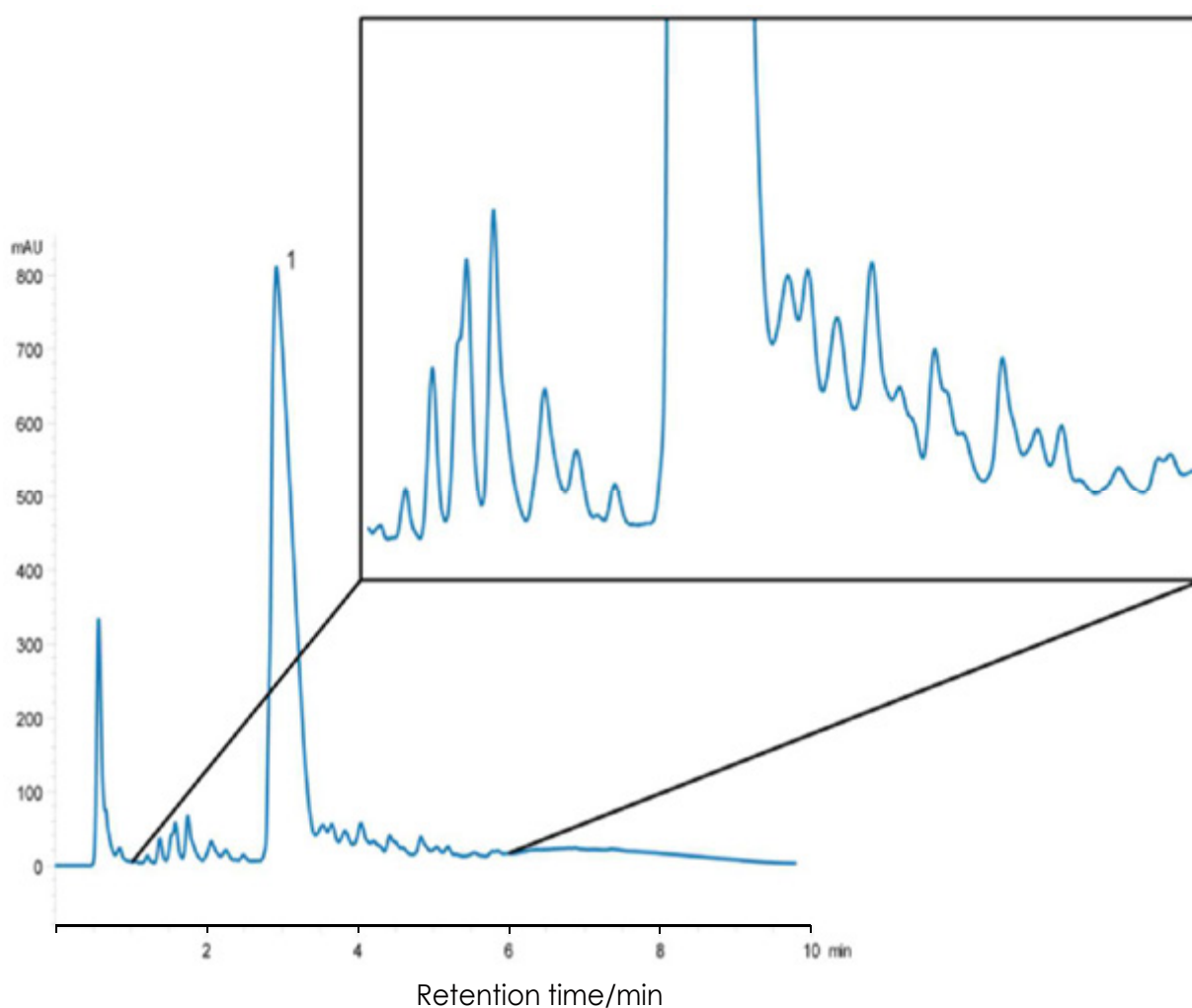
1. Lipase Impurity

2. Lipase

酸化型インスリンの分離

SunShell C18-30 2.6 μm , 100 x 2.1 mm i.d.

Oxidized Insulin using SunShell C18-30



Column: SunShell C18-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	10
%B	30	40

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μL

Concentration: 0.01 $\mu\text{g}/\mu\text{L}$ each protein

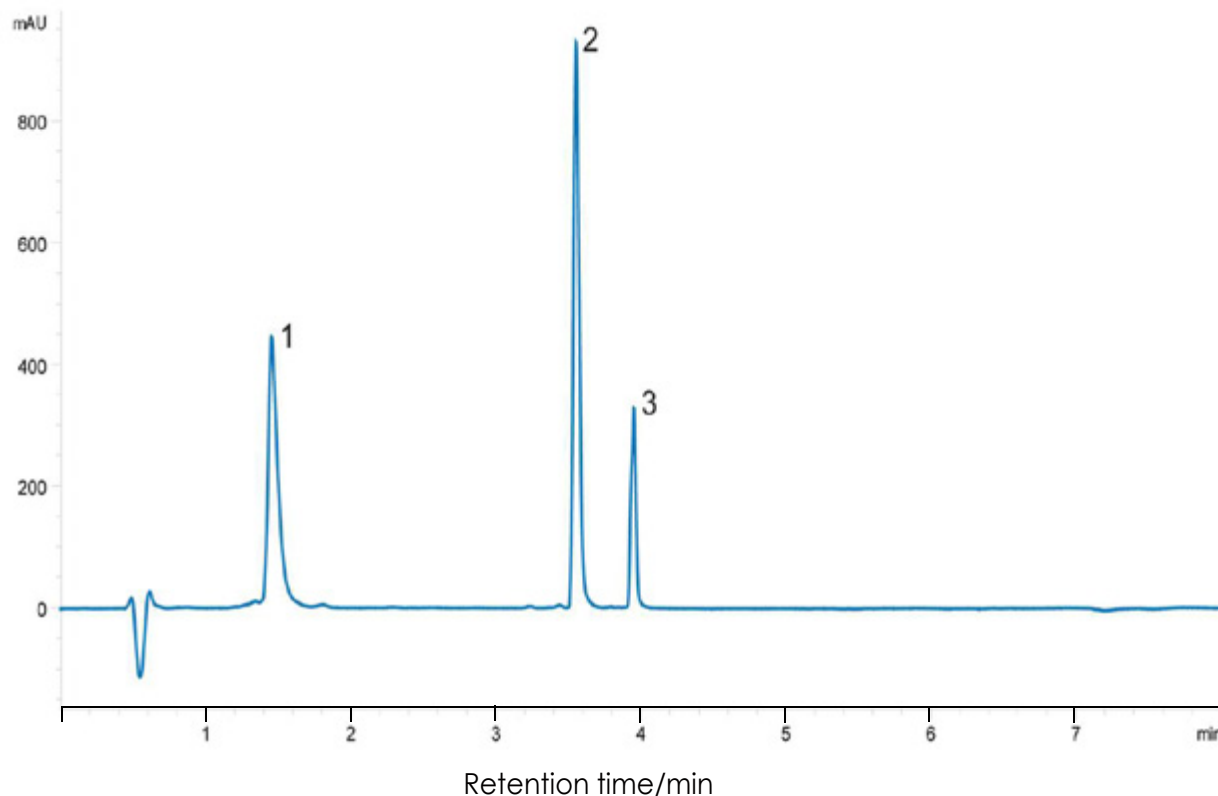
Sample:

1. Oxidized insulin

ペプチドの分離(2)

SunShell C18-16 2.6 μ m, 100 x 2.1 mm i.d.

Peptide Mix using SunShell C18-16



Column: SunShell C18-16 2.6 μ m (16 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	1	6
%B	20	20	95

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μ L

Concentration: 0.10 μ g/ μ L each protein

Sample:

1. Angiotensin I

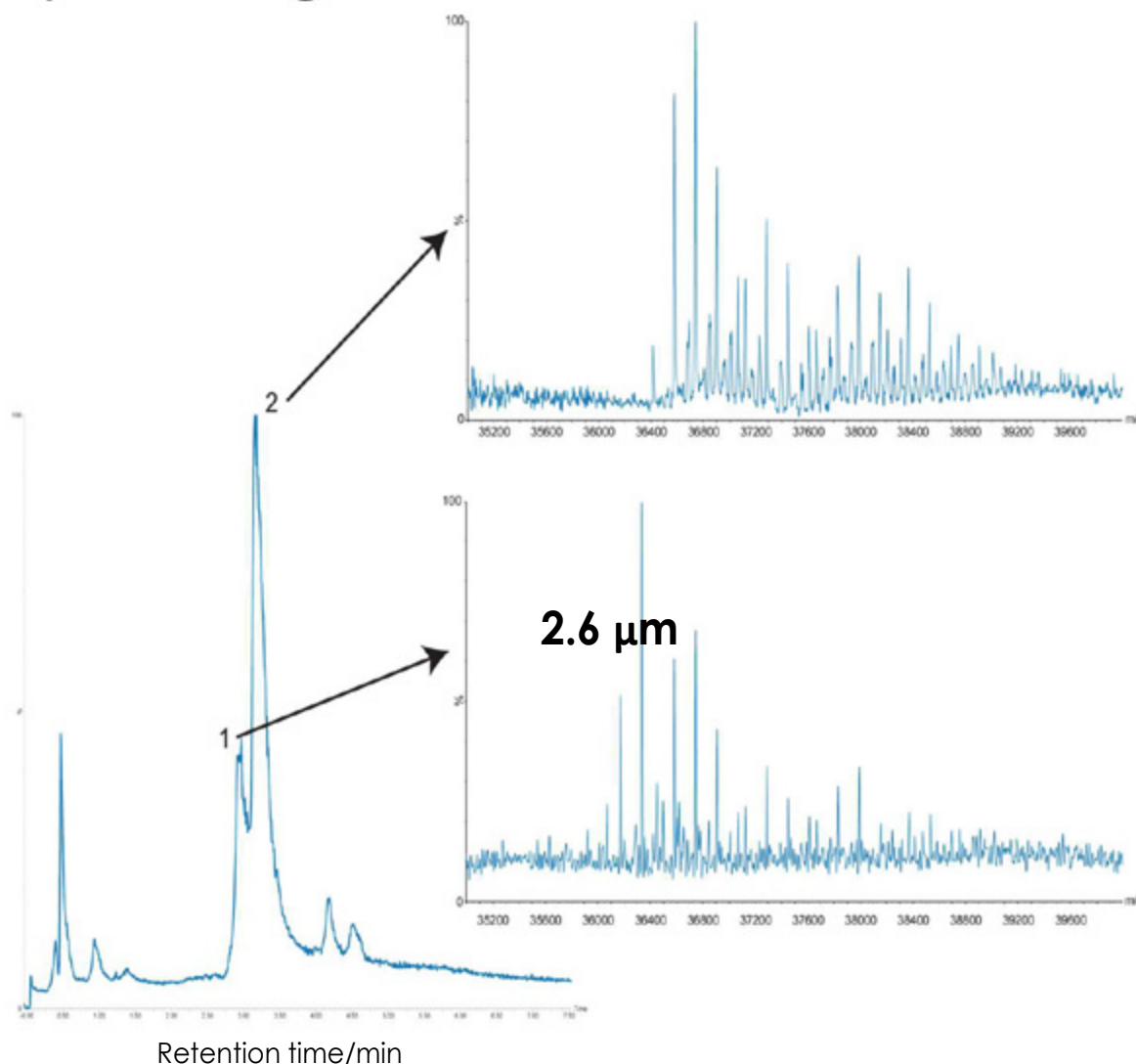
2. Somatostatin

3. Glu-1-fibrinopeptide

リパーゼの分離

SunShell C8-30 2.6 μm , 100 x 2.1 mm i.d.

Lipase using SunShell C8-30



Column: SunShell C8-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% Formic acid in water

B) 0.1% Formic acid in acetonitrile

Gradient program:	Time(min)	0	10
	%B	15	60

Flow rate: 0.50 mL/min

Temperature: 60 °C

Detection: MS, Waters SYNAPT G2-S

Injection volume: 10 μL

Concentration: 0.01 $\mu\text{g}/\mu\text{L}$ each protein

Sample:

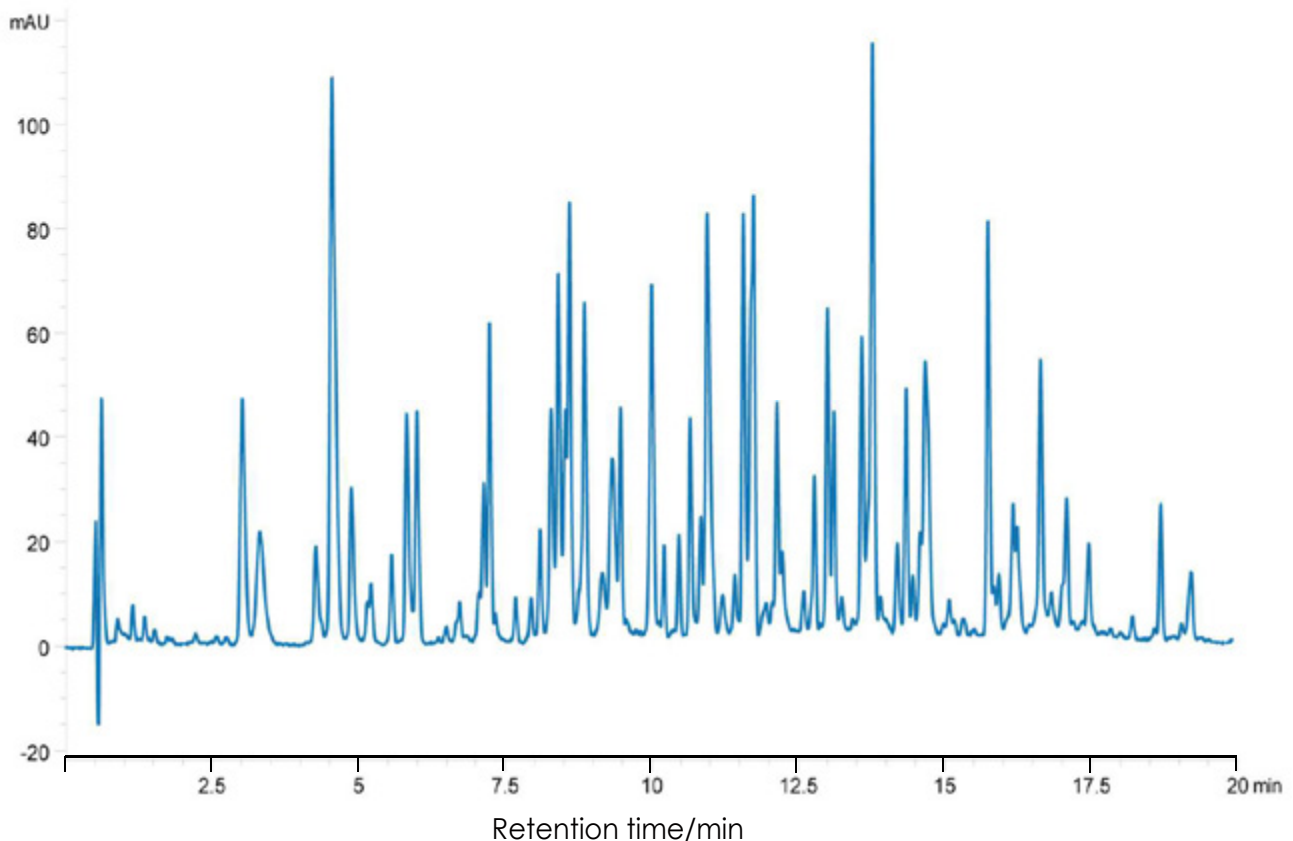
1. Lipase Impurity

2. Lipase

BSAの消化物の分離

SunShell C18-16 2.6 μm , 100 x 2.1 mm i.d.

BSA Digest using SunShell C18-16



Column: SunShell C18-16 2.6 μm (16 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	1	21
%B	10	10	40

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μL

Concentration: 0.01 $\mu\text{g}/\mu\text{L}$

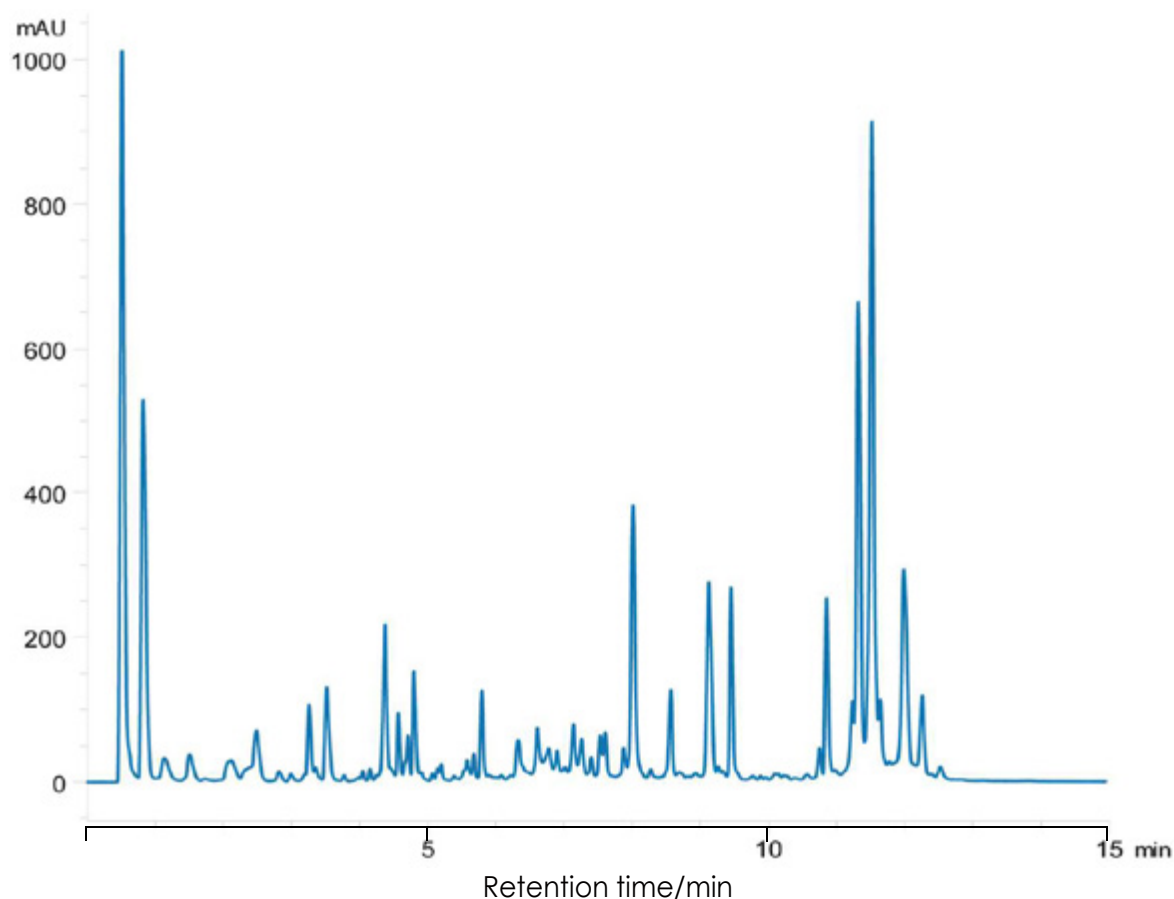
Sample:

1. Bovine Serum Albumin Digest

アルファカゼイン消化物の分離

SunShell C18-16 2.6 μm , 100 x 2.1 mm i.d.

Alpha Casein Digest using SunShell C18-16



Column: SunShell C18-16 2.6 μm (16 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.1% TFA in acetonitrile

Gradient program:

Time(min)	0	10	14
%B	10	36.4	36.4

Flow rate: 0.50 mL/min

Temperature: 40 °C

Detection: UV@214 nm

Injection volume: 10 μL

Sample:

1. Alpha Casein Digest



BIOTECH AB

WWW.BIOTECH-SWEDEN.COM

Application Data

No. 1051A



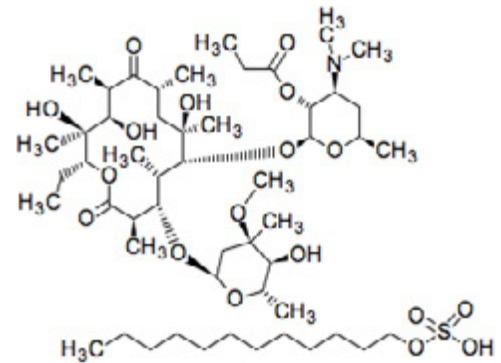
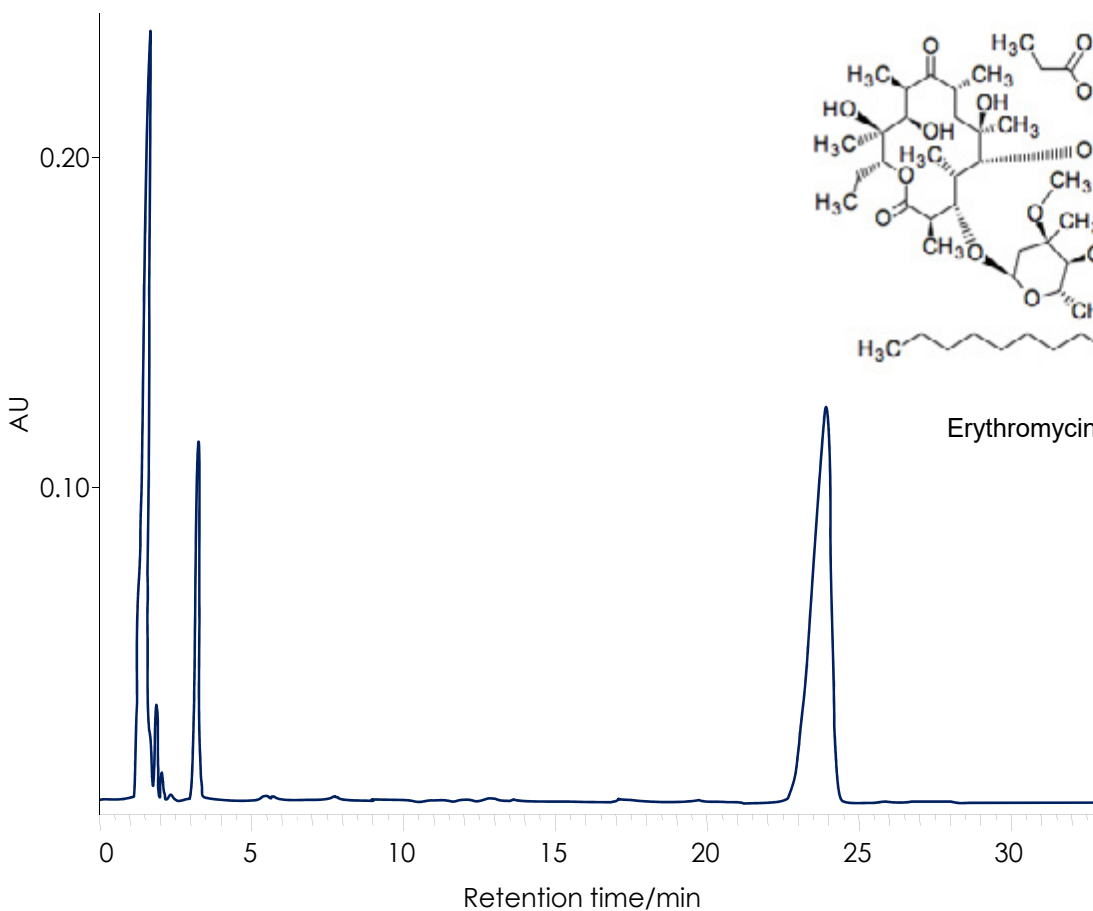
エリストマイシンエステレートの分離

Sunniest C18 5 μm, 250 x 4.6 mm i.d.

Erythromycin Estolate

Chromatographic Purity Test

Source Reference USP 30



Erythromycin Estolate

Column: Sunniest C18 5 μm, 250 x 4.6 mm i.d.

Mobile phase: 50ml of 35gm/lit dibasic potassium phosphate, pH 8.0 with dilute phosphoric acid, add 400 ml water add 165 ml 2methyl 2propanol add 30ml ACN, adju volume to 1lit with water

Flow rate : 2.0. mL/min

Detection : UV@215 nm

Column Temperature : 65 °C

Sample Temperature : Ambient

Injection Volume : 200 μ L

Biotech AB in partnership with ChromaNik Technologies

Biotech AB (Sweden) Email: info@biotech.se

ChromaNik Technologies Inc. (Japan)

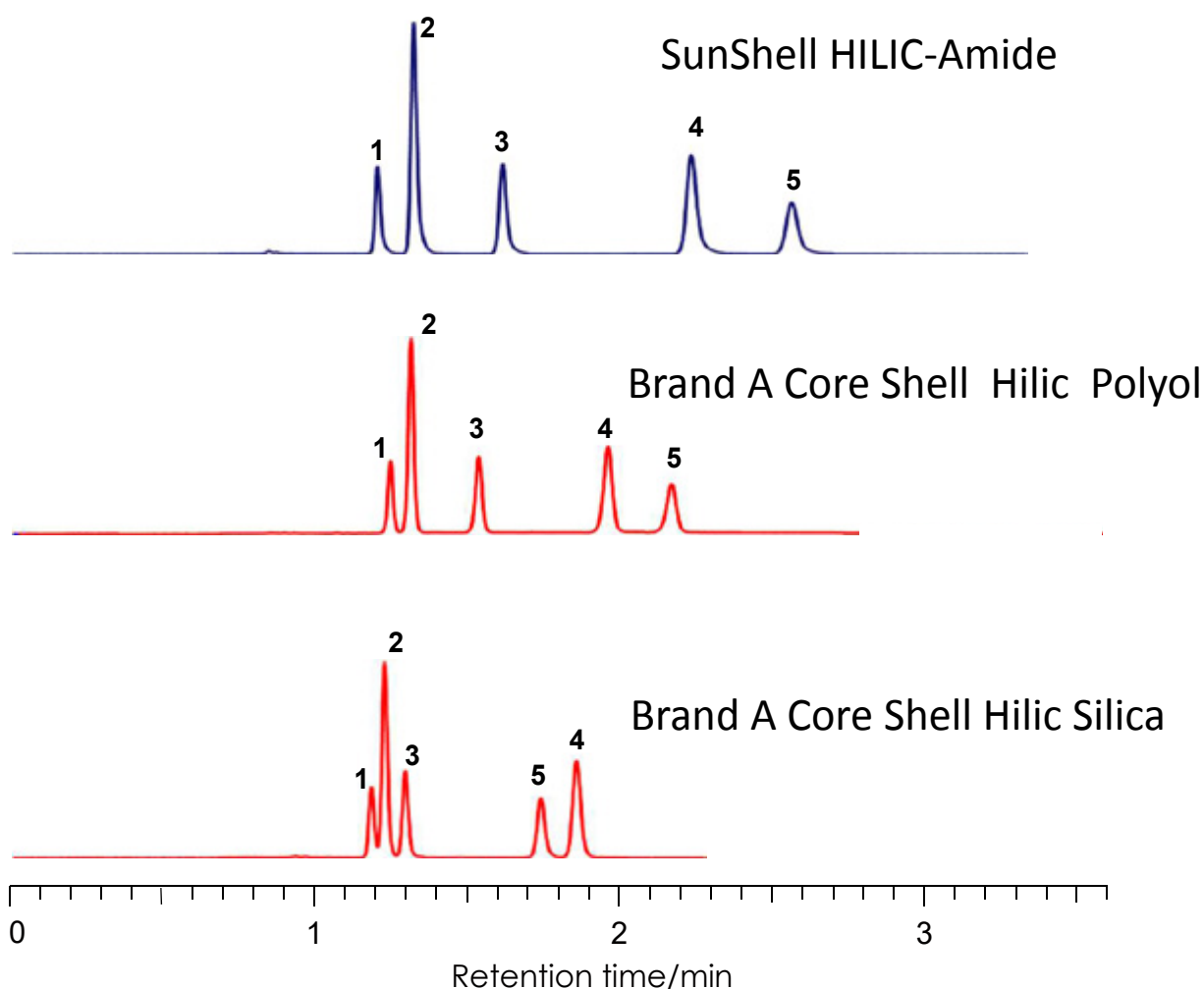
Email: info@chromanik.co.jp

No. 1051A

核酸塩基の分離比較

Nucleic acid bases

SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm i.d.



Column:

SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm

Brand A Core Shell Hilic Polyol 2.7 μ m, 100 x 4.6 mm

Brand A Core Shell Hilic Silica 2.7 μ m, 100 x 4.6 mm

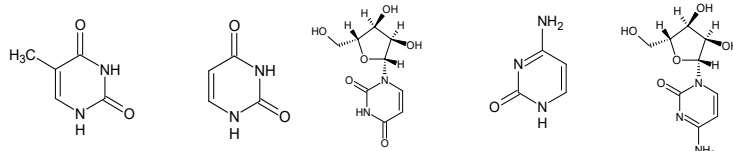
Mobile phase: acetonitrile: 20 mM ammonium acetate (pH4.7) =8:2

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@250 nm

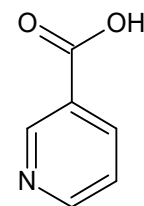
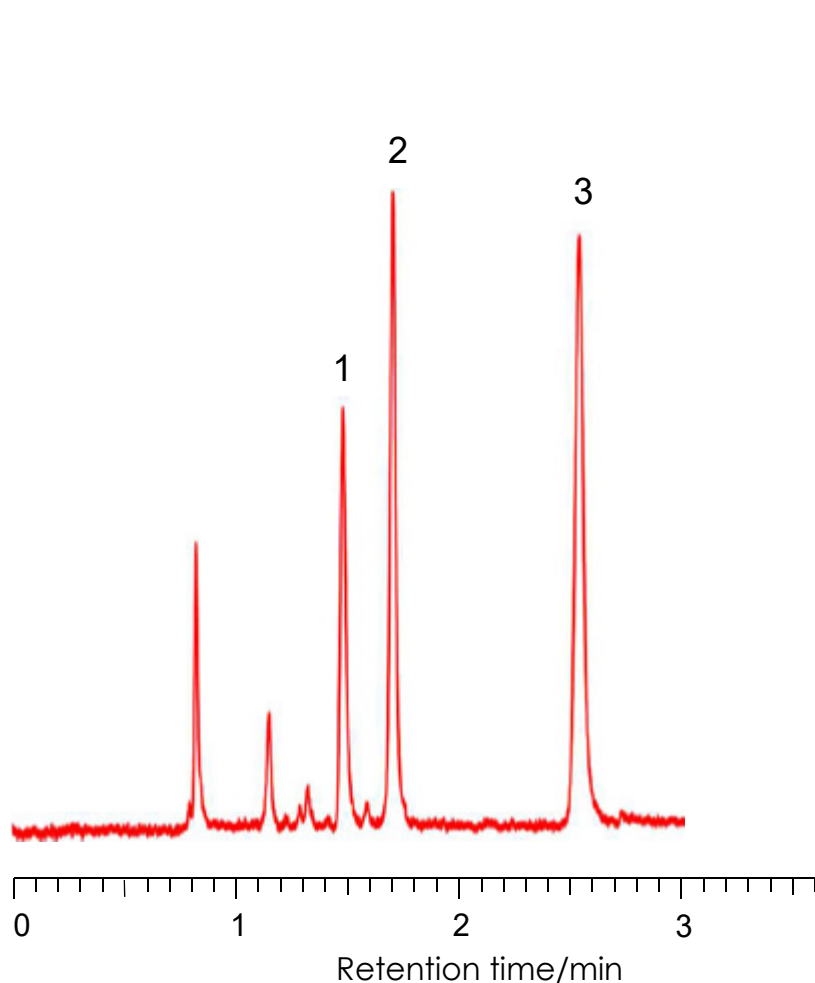
Sample: 1= Thymine, 2 = Uracil, 3 = Uridine, 4 = Cytosine, 5 = Cytidine



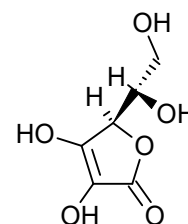
水溶性ビタミンの分離

Water- soluble vitamins

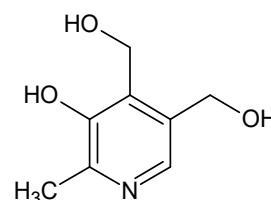
SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm i.d.



1. Nicotinic acid



2. Ascorbic acid



3. Pyridoxine

Column:

SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm,

Mobile phase: acetonitrile: 25 mM phosphate buffer (pH2.5) =8:2

Flow rate: 1.0 mL/min

Temperature: 40 °C

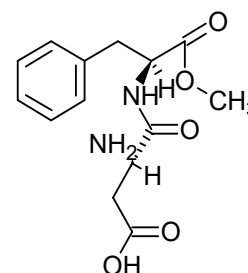
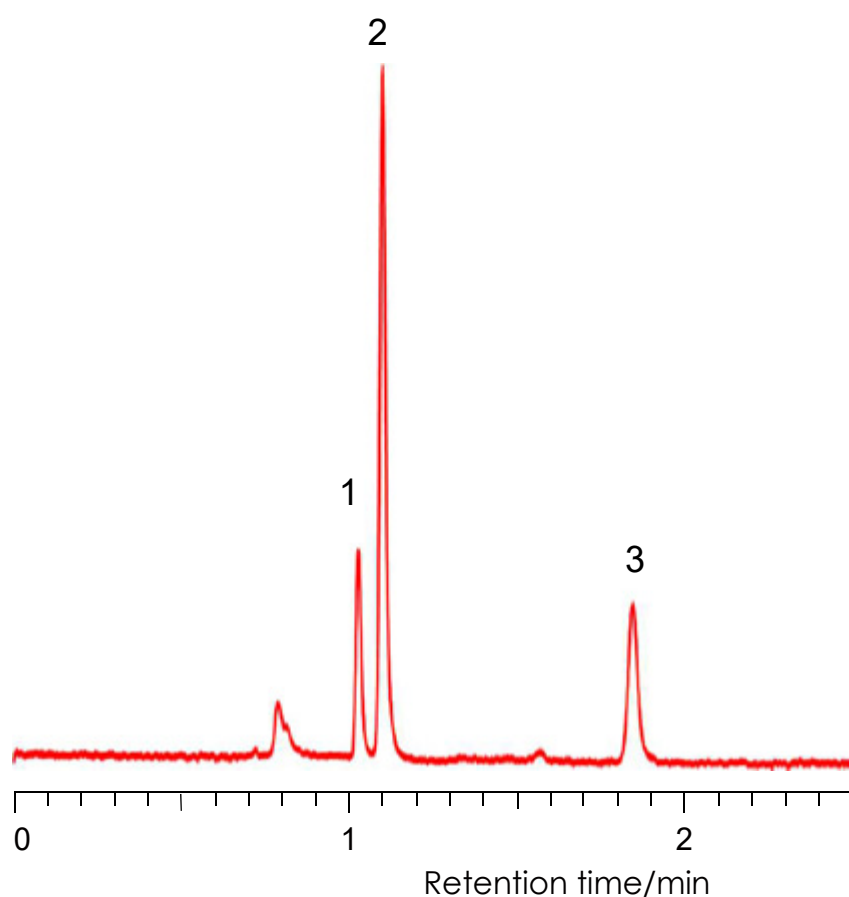
Detection: UV@250 nm

Sample: 1 = Nicotinic acid, 2 = Ascorbic acid, 3 = Pyridoxine

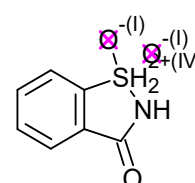
合成甘味料の分離

Artificial sweeteners

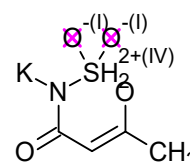
SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm i.d.



1. Aspartame



2. Saccharin



3. Acesulfame K

Column:

SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm,

Mobile phase: acetonitrile: 25 mM phosphate buffer (pH2.5) =8:2

Flow rate: 1.0 mL/min ,

Temperature: Ambient

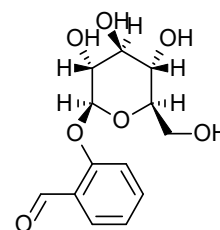
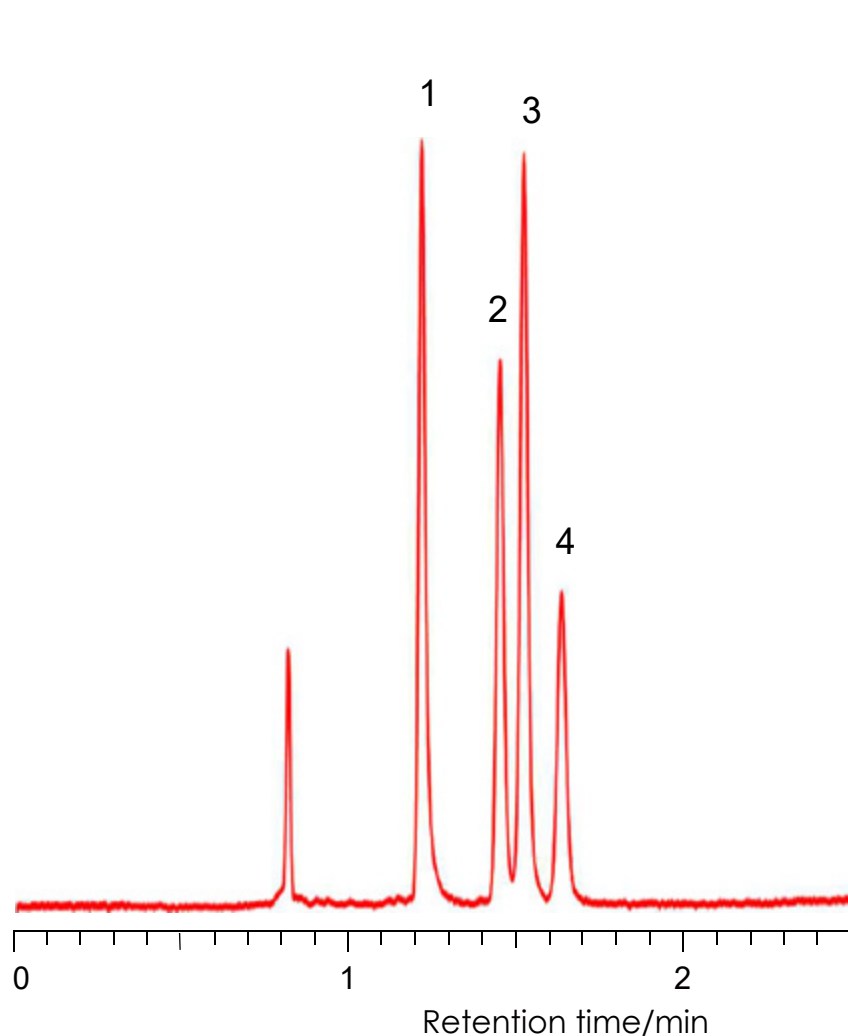
Detection: UV@215 nm

Sample: 1 = Aspartame, 2 = Saccharin, 3 = Acesulfame K

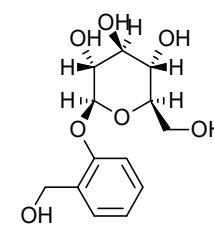
配糖体の分離

Glycoside

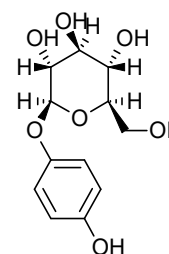
SunShell HILIC-Amide 2.6 μm, 100 x 4.6 mm i.d.



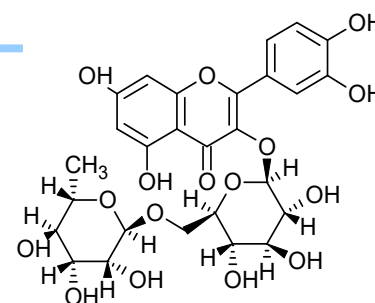
1. Helicin



2. Salitin



3. Arbutin



4. Rutin

Column: SunShell HILIC-Amide 2.6 μm, 100 x 4.6 mm

Mobile phase:

Acetonitrile:25 mM phosphate Ammonium (pH4.9) =8:2

Flow rate: 1.0 mL/min

Temperature: Ambient

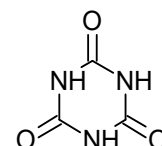
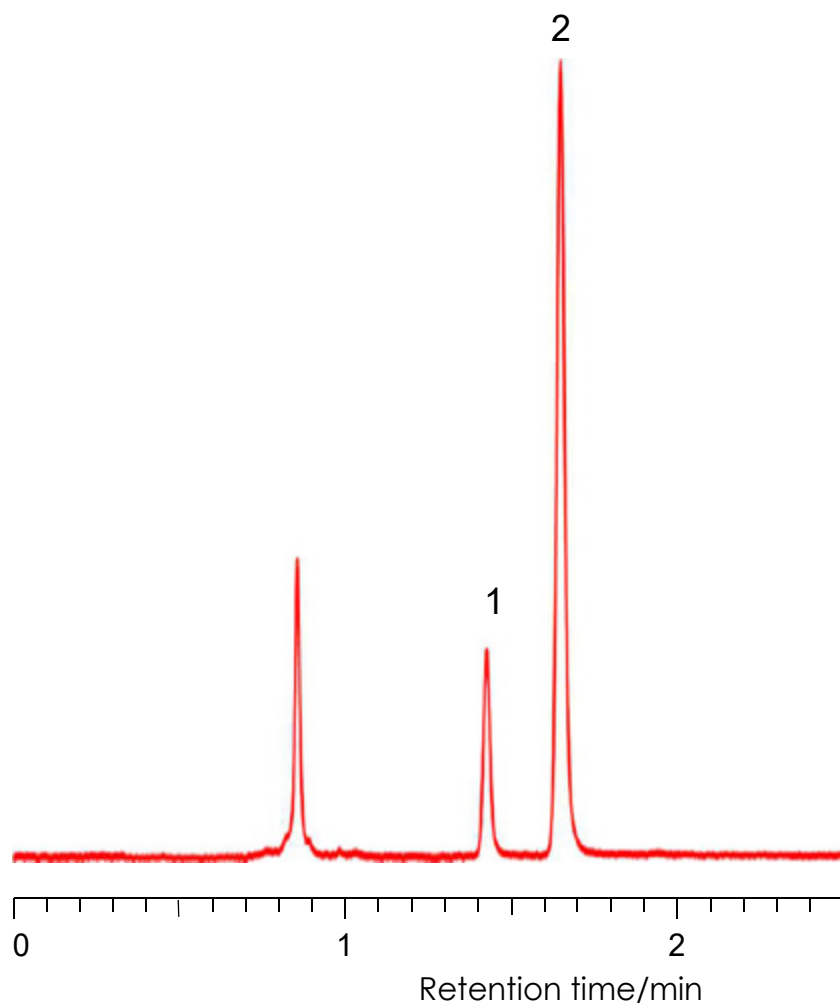
Detection: UV@215 nm

Sample: 1 = Helicin, 2 = Salicin, 3 = Arbutin, 4 = Rutin

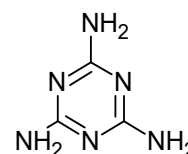
メラミンとシアヌル酸の分離

Melamine and cyanuric acid

SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm i.d.



1. Cyanuric acid



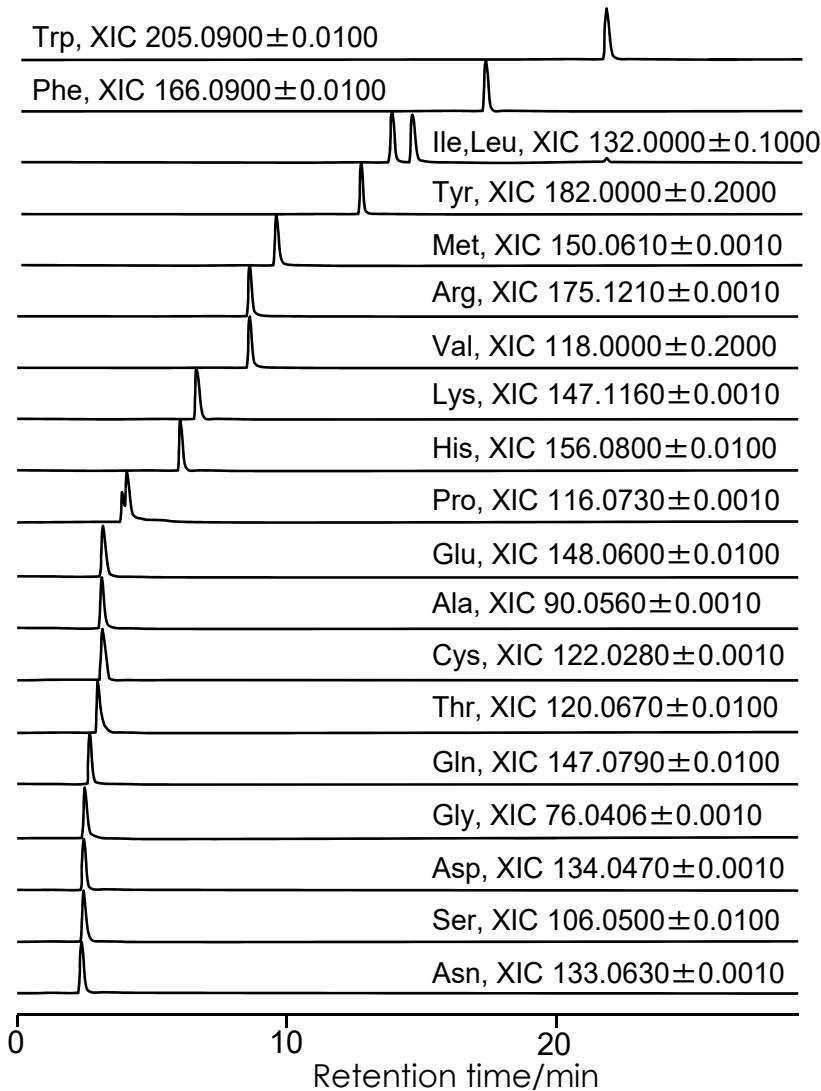
2. Melamine

Column: SunShell HILIC-Amide 2.6 μ m, 100 x 4.6 mm
Mobile phase: acetonitrile:5 mM phosphate Buffer (pH6.9) =75:25
Flow rate: 1.0 mL/min
Temperature: 40 °C
Detection: UV@220 nm,
Sample: 1 = Cyanuric acid, 2 = Melamine

アミノ酸の分離 (LC/MS) (2)

Amino acids LC/MS (2)

SunShell RP-AQUA 2.6 μ m, 150 x 2.1 mm i.d.

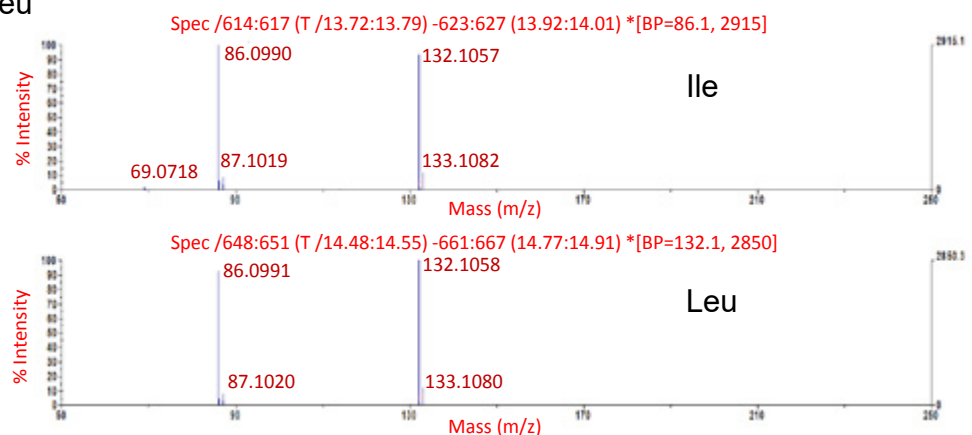


Column:
SunShell RP-AQUA 2.6 μ m,
150 x 2.1 mm
Mobile phase:
A) 5 mM HFBA,
B) 5 mM HFBA in CH₃CN / H₂O
(9/1)
%B 0% to 20% in 20 min
Flow rate: 0.2 mL / min
Temperature: 40 °C
Detection: MS (NanoFrontier LD)
ESI Positive, Extracted ion
chromatogram (EIC)
HPLC: LaChrom Ultra

HFBA: Heptafluorobutyric acid

データ提供：横浜国立大学 金子竹男先生
横浜国立大学機器分析評価センター

Mass spectra of Ile and Leu



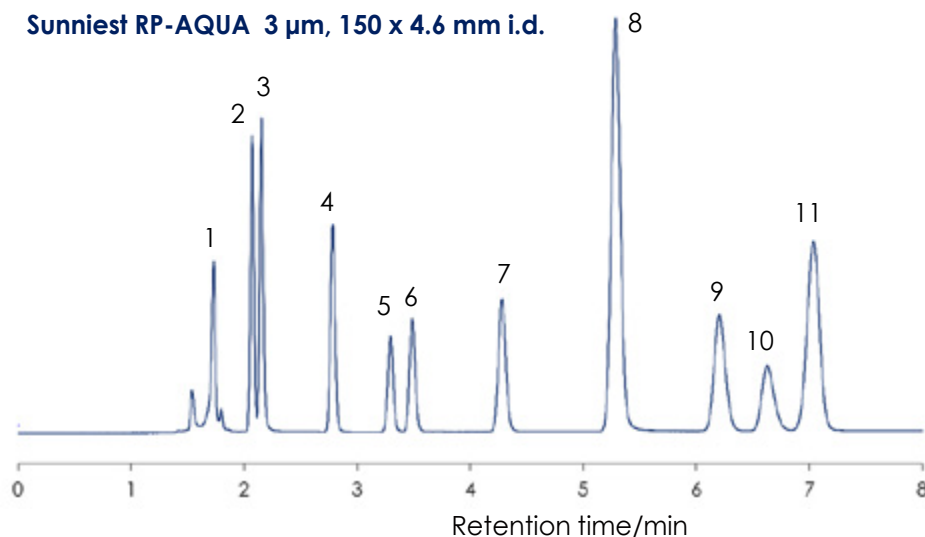
有機酸の分離 (2)

Organic acids (2)

Sunniest RP-AQUA 3 μ m, 150 x 4.6 mm i.d.

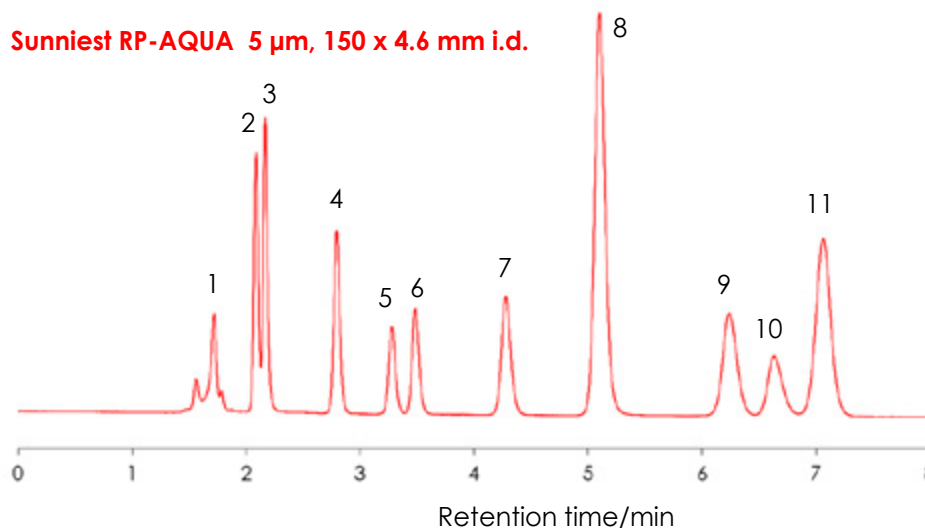
Sunniest RP-AQUA 5 μ m, 150 x 4.6 mm i.d.

Sunniest RP-AQUA 3 μ m, 150 x 4.6 mm i.d.



- | | | |
|----|--|-----------------|
| 1 | | Oxalic acid |
| 2 | | Tartaric acid |
| 3 | | Formic acid |
| 4 | | Malic acid |
| 5 | | Lactic acid |
| 6 | | Acetic acid |
| 7 | | Diglycolic acid |
| 8 | | Maleic acid |
| 9 | | Citric acid |
| 10 | | Succinic acid |
| 11 | | Fumaric acid |

Sunniest RP-AQUA 5 μ m, 150 x 4.6 mm i.d.



Column: Sunniest RP-AQUA 3 μ m and 5 μ m, 150 x 4.6 mm

Mobile phase: 0.025 M KH₂PO₄, pH2.5

Flow rate: 1.0 mL/min

Column pressure: 14 MPa for 3 μ m and 5 MPa for 5 μ m

Temperature: 25 °C

Detection: UV@210nm (Semi-micro flow cell)

Injection volume: 3 μ L

Sample: 1 = Oxalic acid (60 ppm), 2 = Tartaric acid (500 ppm), 3 = Formic acid (1000 ppm),

4 = Malic acid (1000 ppm), 5 = Lactic acid (1000 ppm), 6 = Acetic acid (1000 ppm),

7 = Diglycolic acid (1000 ppm), 8 = Maleic acid (100 ppm), 9 = Citric acid (1000 ppm),

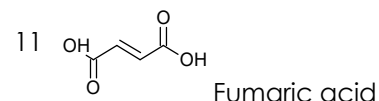
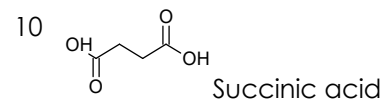
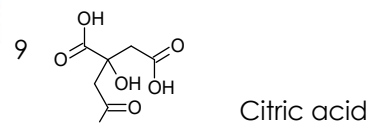
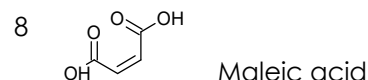
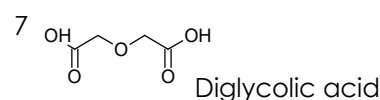
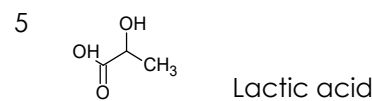
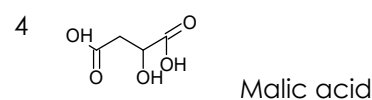
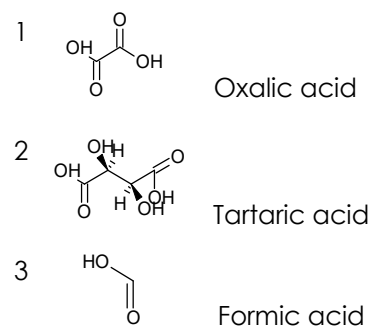
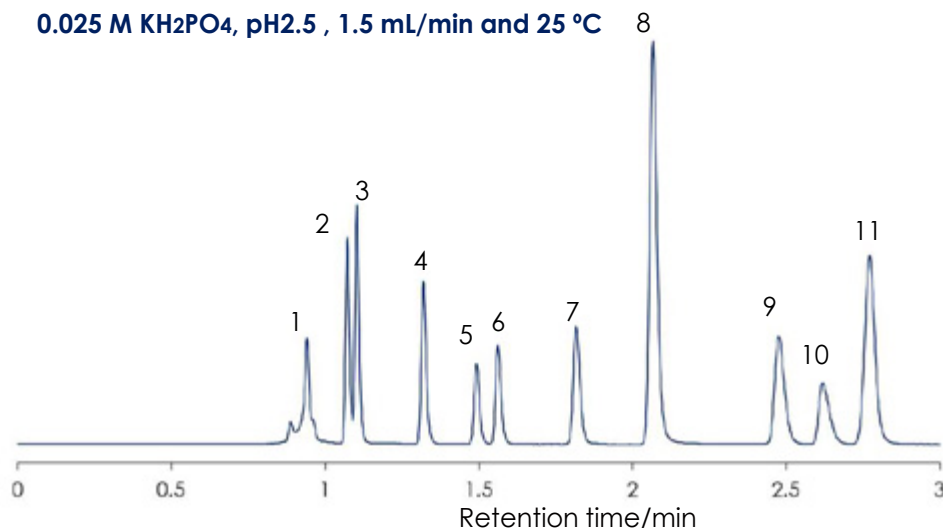
10 = Succinic acid (1000 ppm), 11 = Fumaric acid (10 ppm).

有機酸の分離 (3)

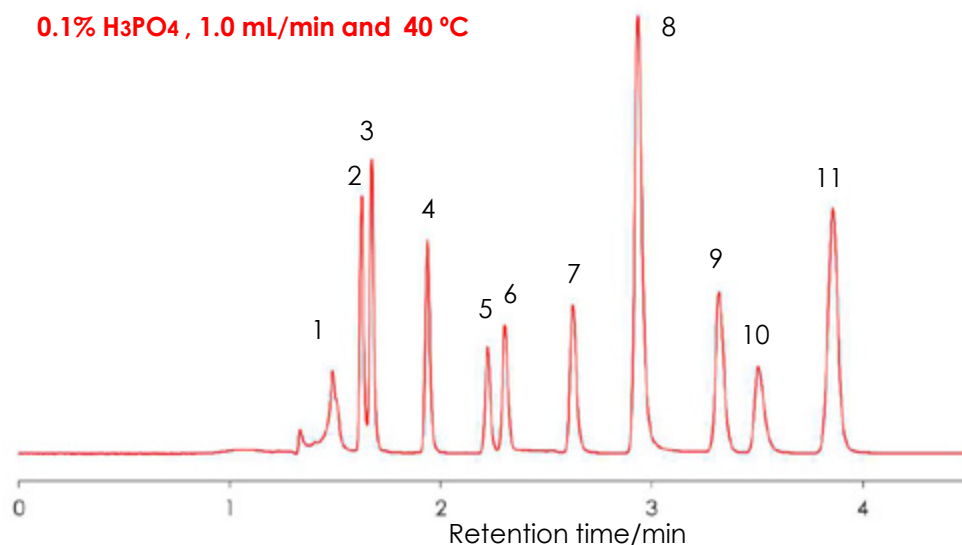
Organic acids (3)

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

0.025 M KH₂PO₄, pH2.5, 1.5 mL/min and 25 °C



0.1% H₃PO₄, 1.0 mL/min and 40 °C



Column: SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm

Mobile phase: 0.025 M KH₂PO₄, pH2.5 and 0.1% H₃PO₄

Flow rate: 1.5 mL/min and 1.0 mL/min

Column pressure: 32 MPa for 1.5mL/min and 18 MPa for 1.0 mL/min

Temperature: 25 °C and 40 °C

Detection: UV@210nm

Injection volume: 2 μ L

Sample: 1 = Oxalic acid (60 ppm), 2 = Tartaric acid (500 ppm), 3 = Formic acid (1000 ppm),

4 = Malic acid (1000 ppm), 5 = Lactic acid (1000 ppm), 6 = Acetic acid (1000 ppm),

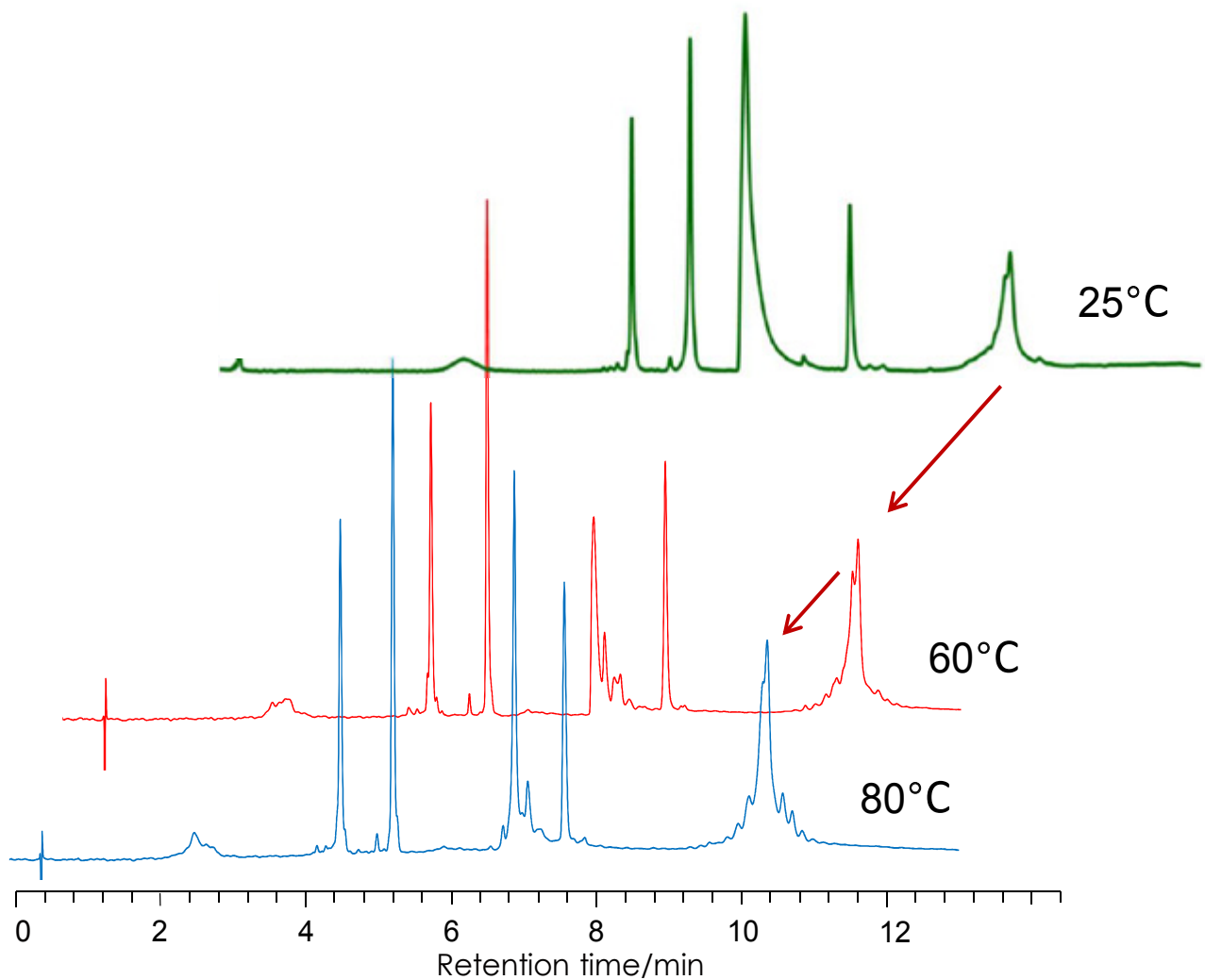
7 = Diglycolic acid (1000 ppm), 8 = Maleic acid (100 ppm), 9 = Citric acid (1000 ppm),

10 = Succinic acid (1000 ppm), 11 = Fumaric acid (10 ppm).

タンパク質の温度による分離比較

Proteins Effect of temperature

SunShell C8-30 2.6 μm , 100 x 2.1 mm i.d.



Column:

SunShell C8-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.08 % TFA in acetonitrile

Gradient program: Time 0 min 15 min

%B 20% 65%

Flow rate: 0.5 mL/min

Temperature: 25 °C, 60 °C or 80 °C

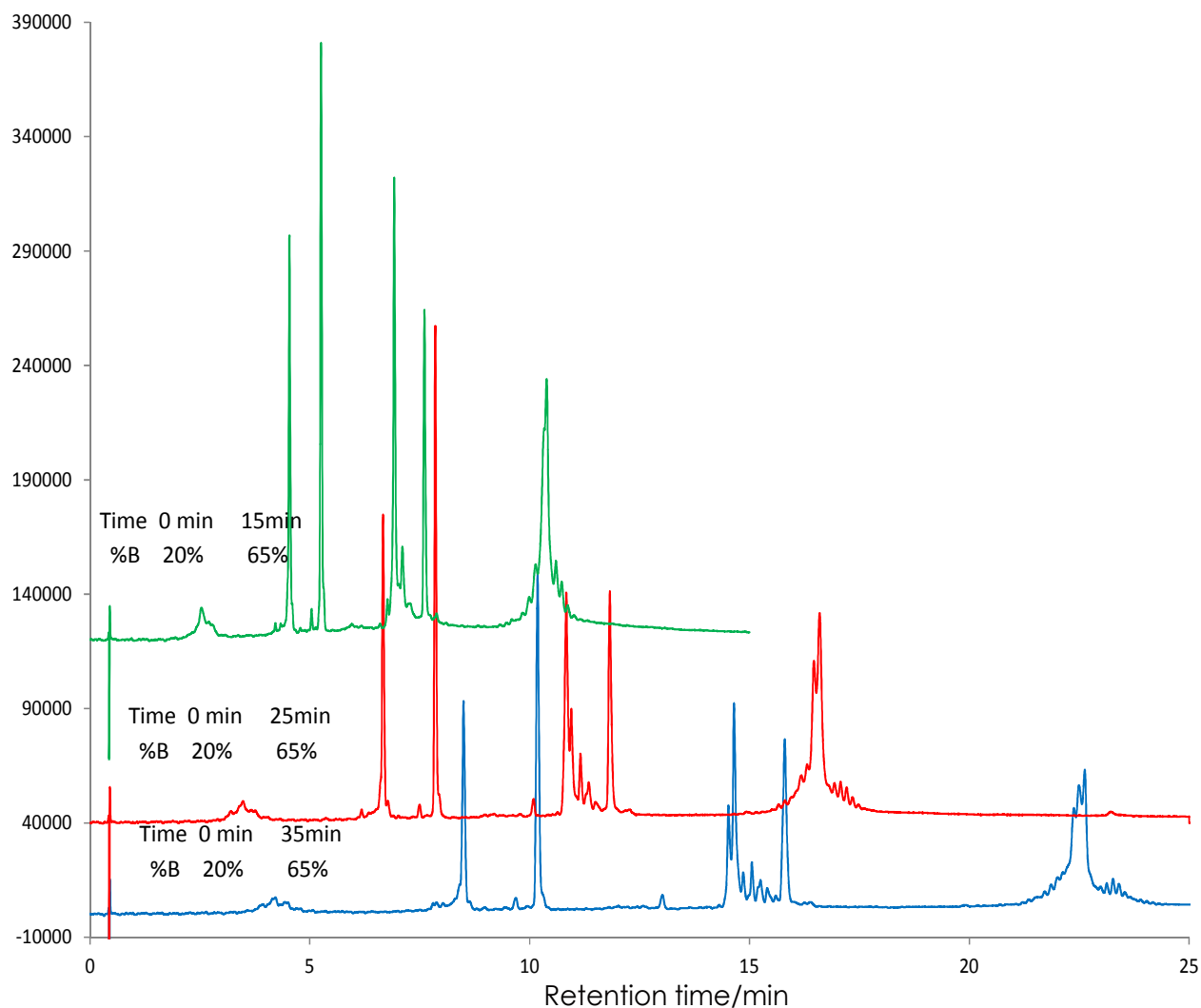
Detection: UV@215 nm

Sample: 1 = Cytochrome C, 2 = Lysozyme, 3 = BSA, 4 = Myoglobin, 5 = Ovalbumin

タンパク質のグラジエン時間による分離比較

Proteins Effect of gradient time

SunShell C8-30 2.6 μm , 100 x 2.1 mm i.d.



Column:

SunShell C8-30 2.6 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.08 % TFA in acetonitrile

Gradient program: Time 0 min 15, 25, 35min

%B 20% 65%

Flow rate: 0.5 mL/min

Temperature: 80 °C

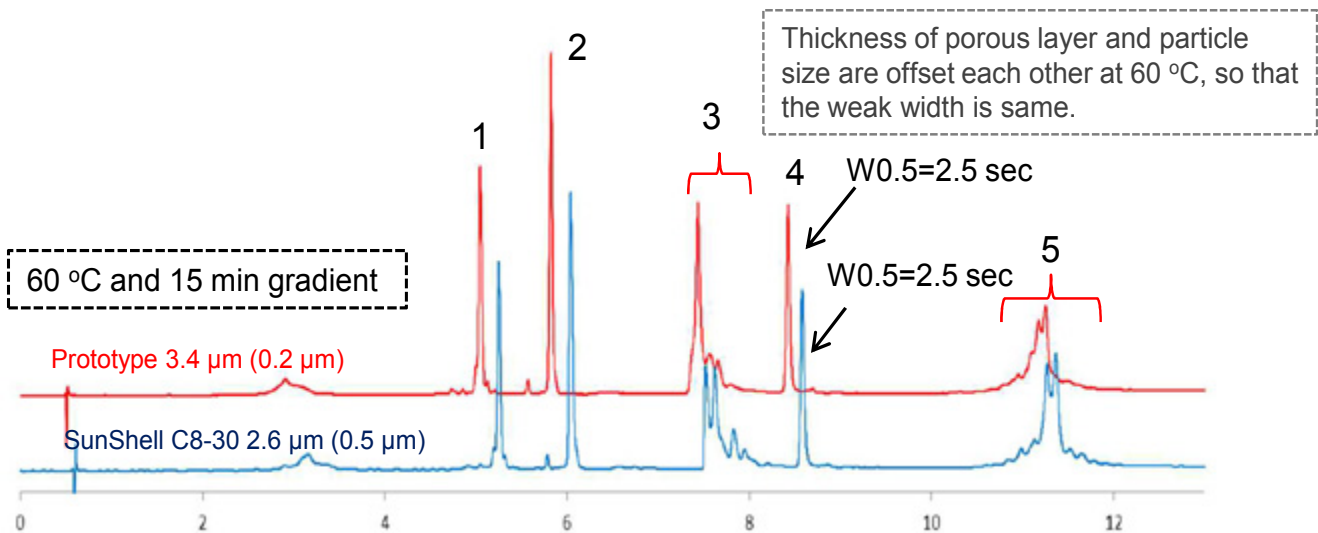
Detection: UV@215 nm

Sample:1 = Cytochrome C, 2 = Lysozyme, 3 = BSA, 4 = Myoglobin, 5 = Ovalbumin

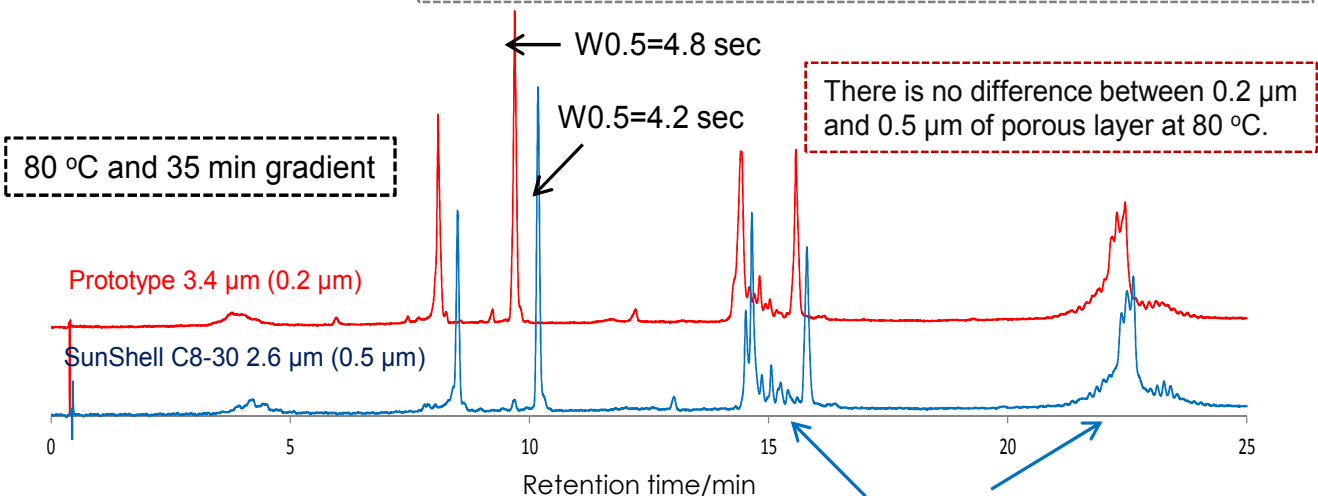
タンパク質の分離 (多孔質層の厚さの比較)

Proteins Comparison of thickness of porous layer

SunShell C8-30 2.6 μm , 100 x 2.1 mm i.d.



The difference of retention time between two phases is due to a specific surface area.



There is no difference between 0.2 μm and 0.5 μm of porous layer at 80 °C.

Surface area works well for separation.

Column:

SunShell C8-30 2.6 μm (30 nm), 100 x 2.1 mm

Prototype C8-30 3.4 μm (30 nm), 100 x 2.1 mm

Mobile phase: A) 0.1% TFA in water

B) 0.08 % TFA in acetonitrile

Gradient program: Time 0 min 15, 35min

%B 20% 65%

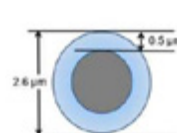
Flow rate: 0.5 mL/min

Temperature: 80 °C

Detection: UV@215 nm

Sample: 1 = Cytochrome C, 2 = Lysozyme, 3 = BSA, 4 = Myoglobin, 5 = Ovalbumin

SunShell particle

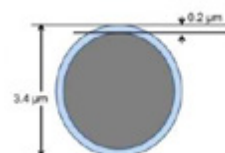


Particle size: 2.6 μm

Thickness of porous layer: 0.5 μm

Specific surface area: 40 m^2/g

Prototype particle



Particle size: 3.4 μm

Thickness of porous layer: 0.2 μm

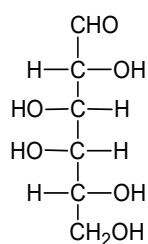
Specific surface area: 15 m^2/g

トリプトファン誘導体化単糖の分離

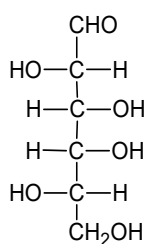
Monosaccharides derivatized with L-Tryptophan

SunShell RP-AQUA 2.6 μ m, 100 x 4.6 mm i.d.

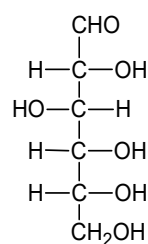
1 D-Galactose



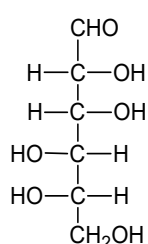
2 L-Galactose



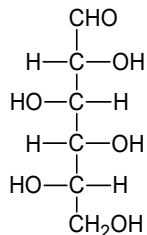
3 D-Glucose



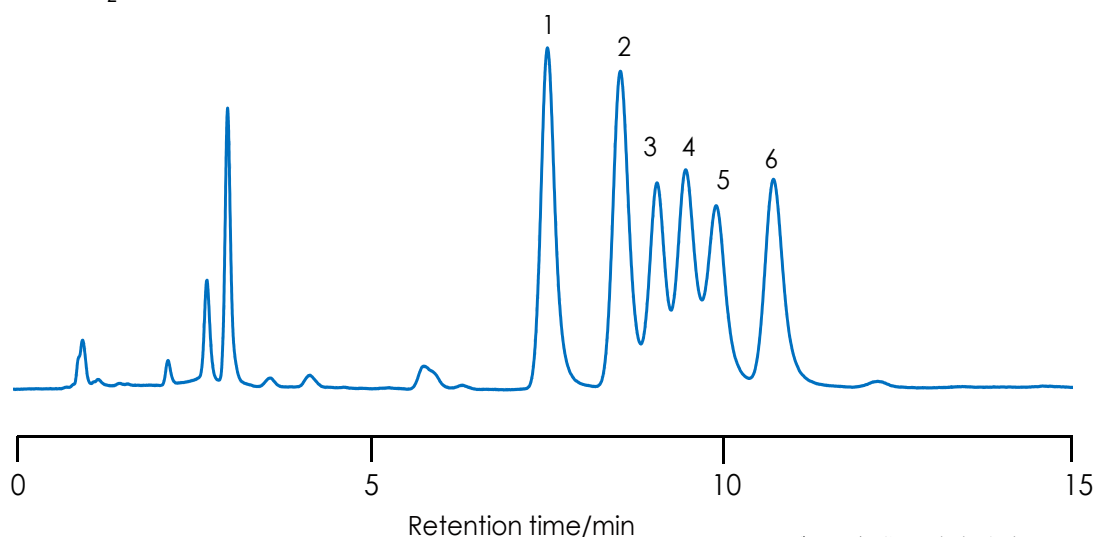
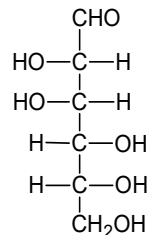
4 L-Mannose



5 L-Glucose



6 D-Mannose



データ提供：東海大学 小玉修嗣先生

Column: SunShell RP-AQUA 2.6 μ m, 100 x 4.6 mm

Mobile phase: 5 mM Phosphate and 25 mM tetraborate (pH 9.6)

Flow rate: 1.0 mL/min

Temperature: 20 $^{\circ}$ C

Detection: UV@220 nm

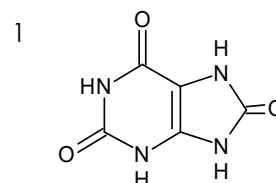
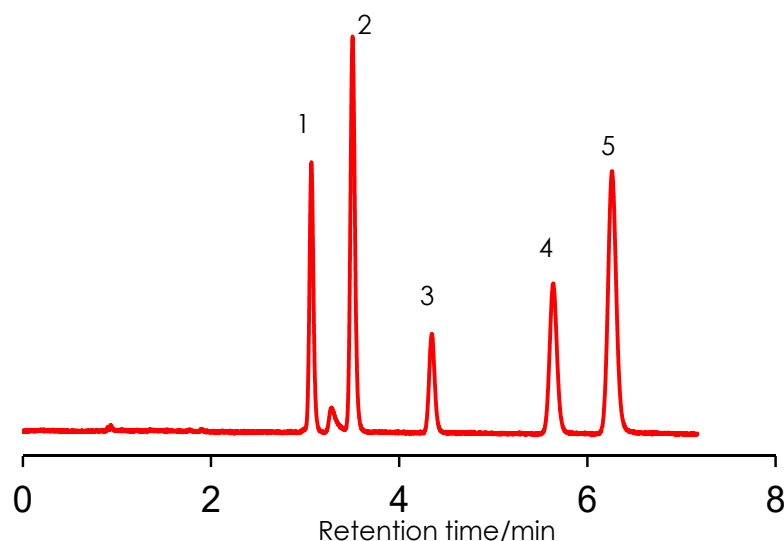
Sample: Monosaccharides derivatized with L-Tryptophan

プリン類似物質の分離

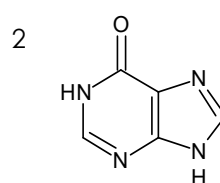
Purine analogue

SunShell RP-AQUA 2.6 μ m, 100 x 4.6 mm i.d.

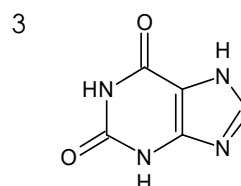
10 mM Ammonium acetate (pH 4.7)



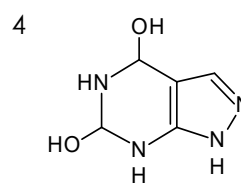
Uric acid



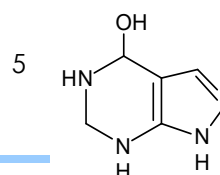
Hypoxanthine



Xanthine

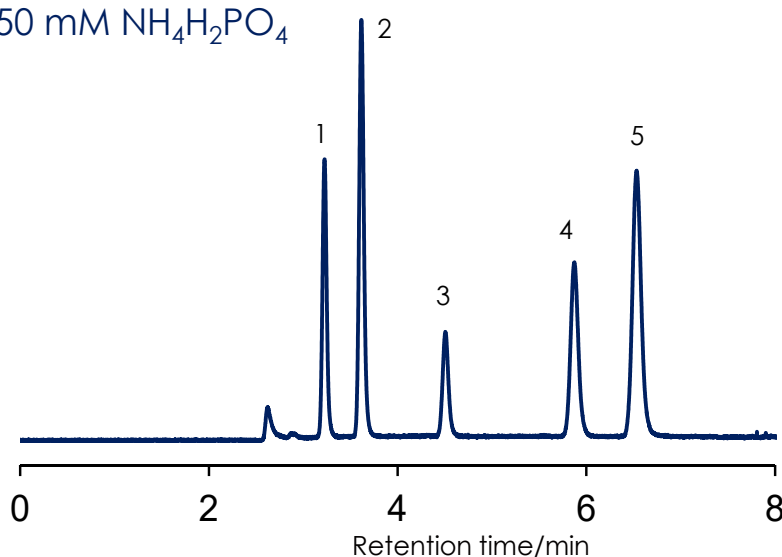


Oxipurinol



Allopurinol

50 mM $\text{NH}_4\text{H}_2\text{PO}_4$



Column: SunShell RP-AQUA 2.6 μ m, 100 x 4.6 mm

Mobile phase: 50 mM $\text{NH}_4\text{H}_2\text{PO}_4$ or 10 mM ammonium acetate (pH 4.7)

Flow rate: 1.0 mL/min

Temperature: Ambient

Detection: UV@250 nm

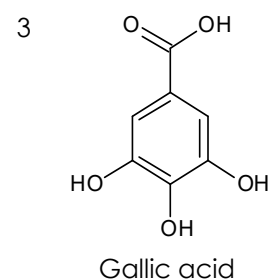
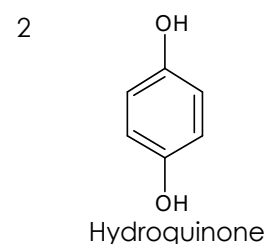
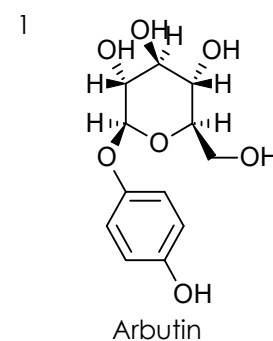
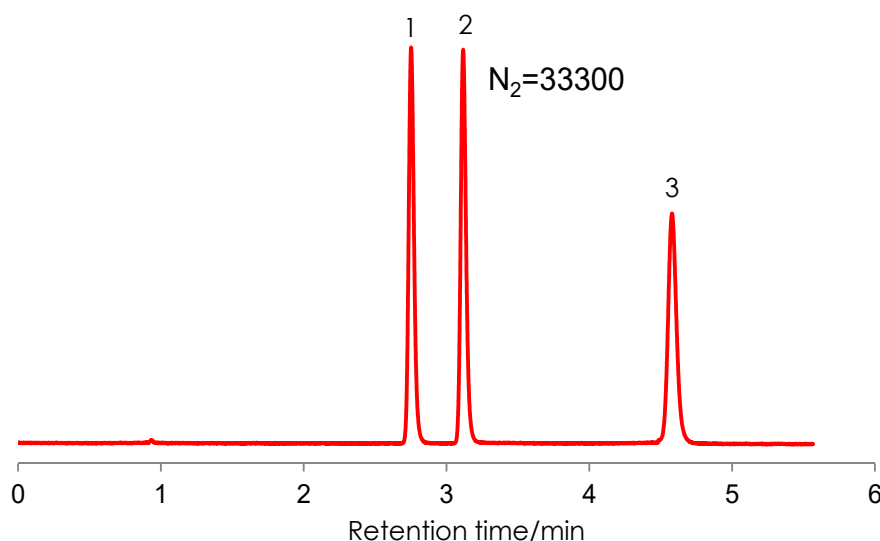
Sample: 1 = Uric acid, 2 = Hypoxanthine, 3 = Xanthine, 4 = Oxipurinol, 5 = Allopurinol

アルブチンとその関連物質の分離

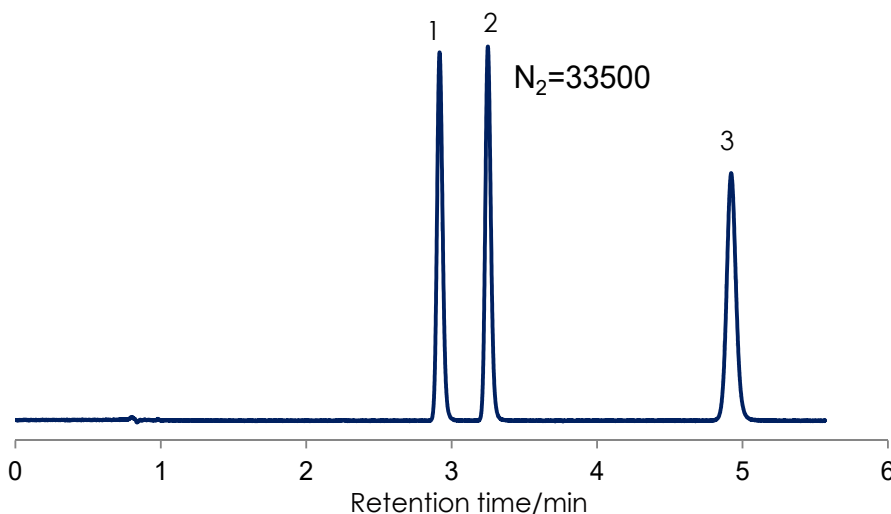
Arbutin and related substances

SunShell RP-AQUA 2.6 μ m,
150 x 4.6 mm i.d.

10 mM formic acid/ methanol = 97/3



10 mM phosphoric acid/methanol = 97/3



Column: SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm

Mobile phase: 10 mM formic acid/ methanol = 97/3 or

10 mM phosphoric acid/methanol = 97/3

Flow rate: 1.5 mL/min

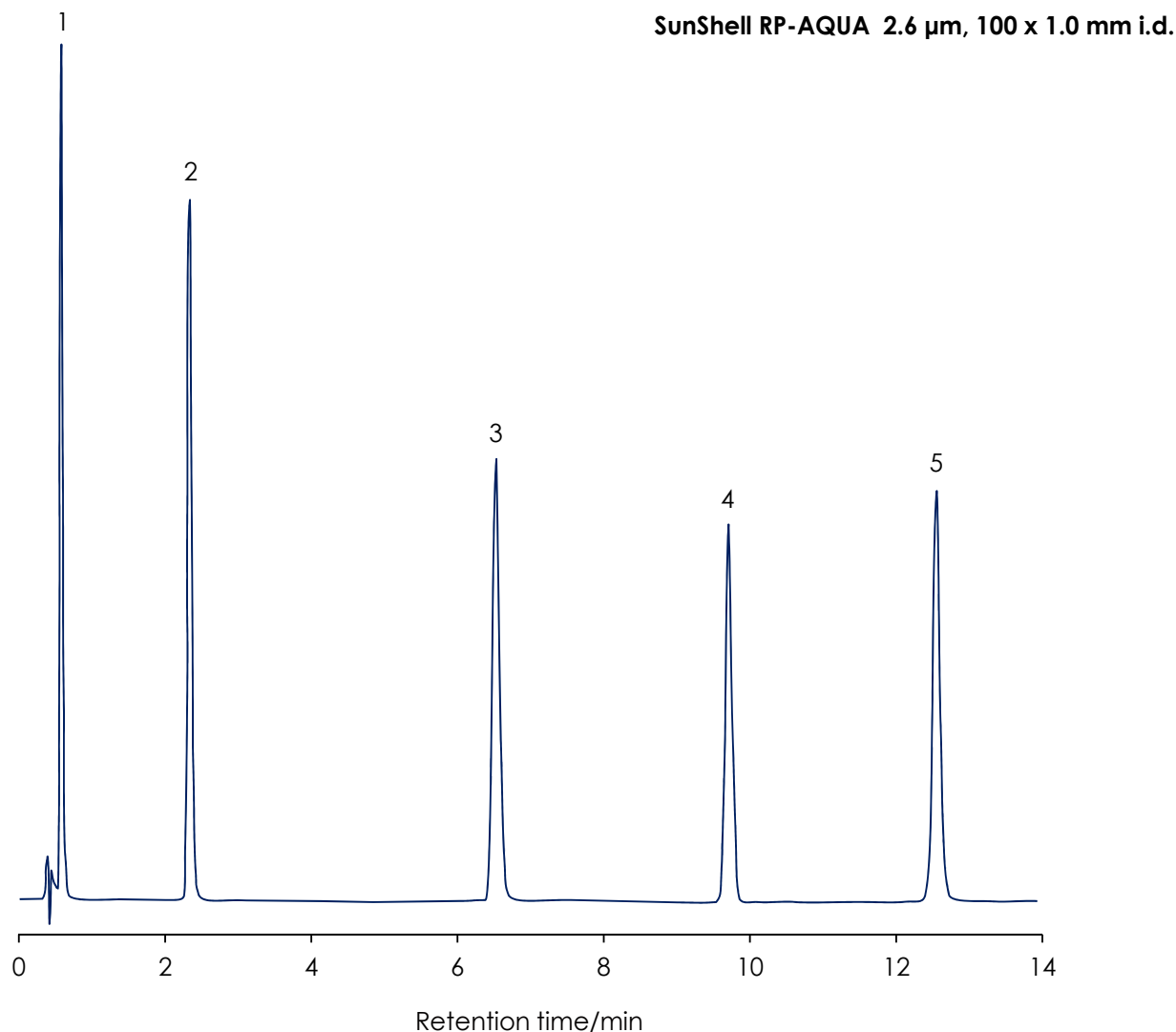
Temperature: Ambient

Detection: UV@280 nm

Sample: 1 = Arbutin, 2 = Hydroquinone, 3 = Gallic acid

1.0 mm i.d. カラムによる標準ペプチドの分離

Standard peptides using 1.0 mm i.d. column



Column: SunShell RP-AQUA 2.6 μ m, 100 x 1.0 mm

Mobile phase: A) 0.1 % trifluoroacetic acid (TFA) in water

B) 0.08 % trifluoroacetic acid (TFA) in acetonitrile

%B 10% to 30% in 25 min

Flow rate: 0.15 mL / min

Temperature: 60 °C

Detection: UV@214 nm

Sample: 1 = Gly-Tyr, 2 = Val-Tyr-Val, 3 = Met enkephalin, 4 = Leu enkephalin, 5 = Angiotensin II

(HPLC peptide standard mixture by Sigma-Aldrich)

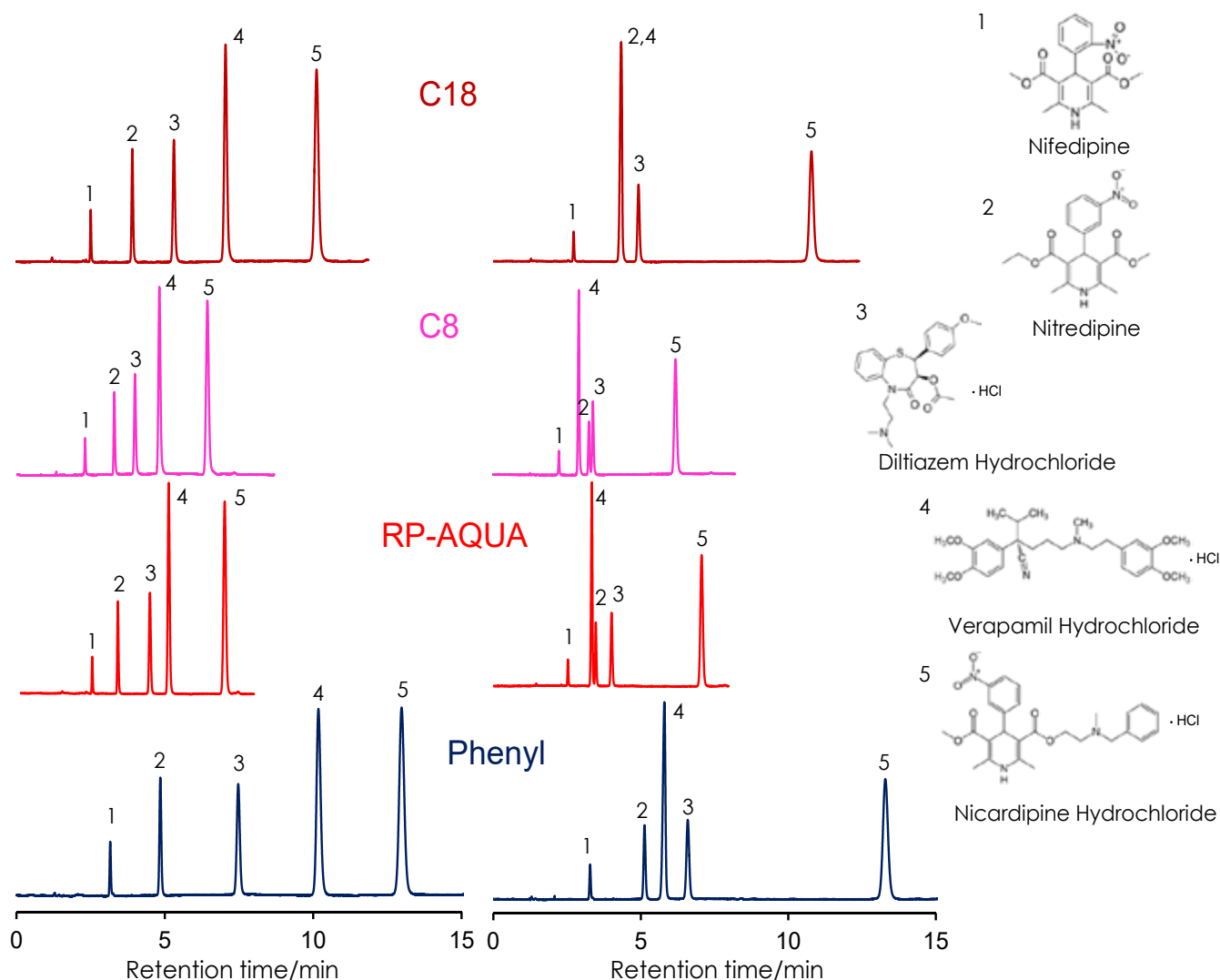
Ca拮抗剤の分離

Calcium antagonists

SunShell C18, C8, RP-AQUA and Phenyl 2.6 μ m,
150 x 4.6 mm i.d.

Methanol:25 mM phosphate buffer pH7=70:30

Methanol:10 mM ammonium acetate pH6.8=70:30



Column: SunShell C18, C8, RP-AQUA and Phenyl 2.6 μ m, 150 x 4.6 mm

Mobile phase: Methanol:25 mM phosphate buffer pH7=70:30 or

Methanol:10 mM ammonium acetate pH6.8=70:30

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@230 nm

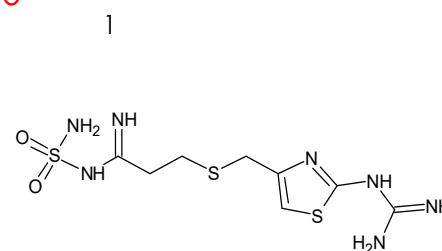
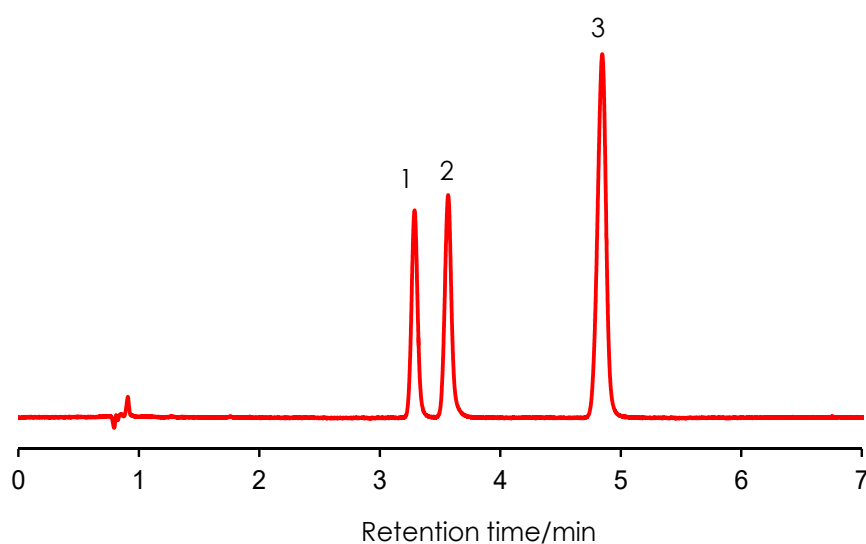
Sample: 1 = Nifedipine, 2 = Nitrendipine, 3 = Diltiazem Hydrochloride, 4 = Verapamil Hydrochloride,
5 = Nicardipine Hydrochloride

抗潰瘍(H₂ブロッカー)の分離

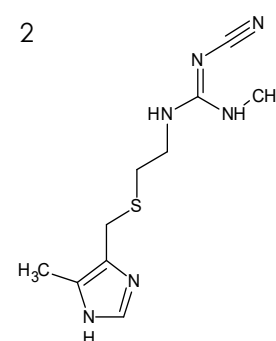
H₂ blockers

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

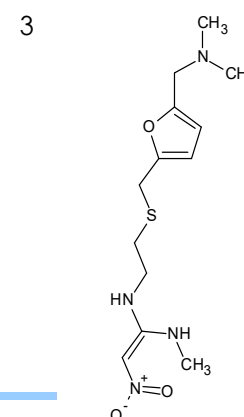
Acetonitrile:10 mM ammonium acetate pH6.8=10:90



Famotidine

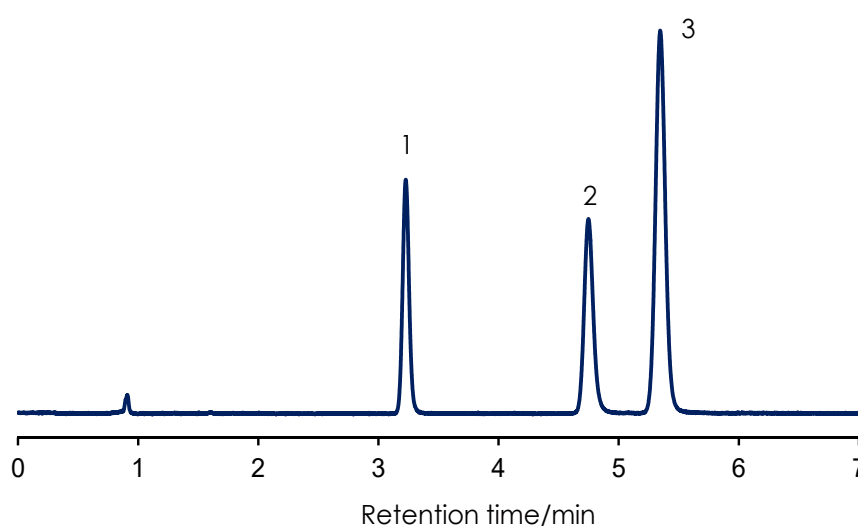


Cimetidine



Ranitidine

Acetonitrile:25 mM phosphate buffer pH7=10:90



Column: SunShell C18 2.6 μm, 100 x 4.6 mm

Mobile phase: Acetonitrile:10 mM ammonium acetate pH6.8=10:90 or

Acetonitrile:25 mM phosphate buffer pH7=10:90

Flow rate: 1.0 mL/min

Temperature: Ambient

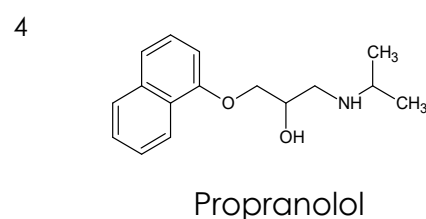
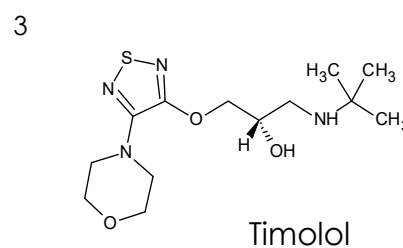
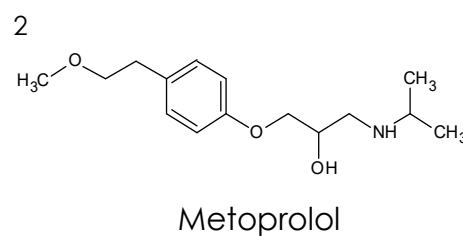
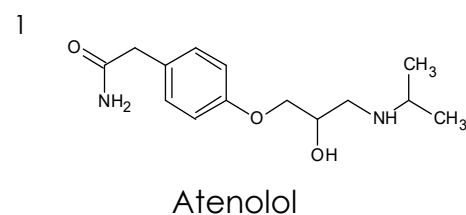
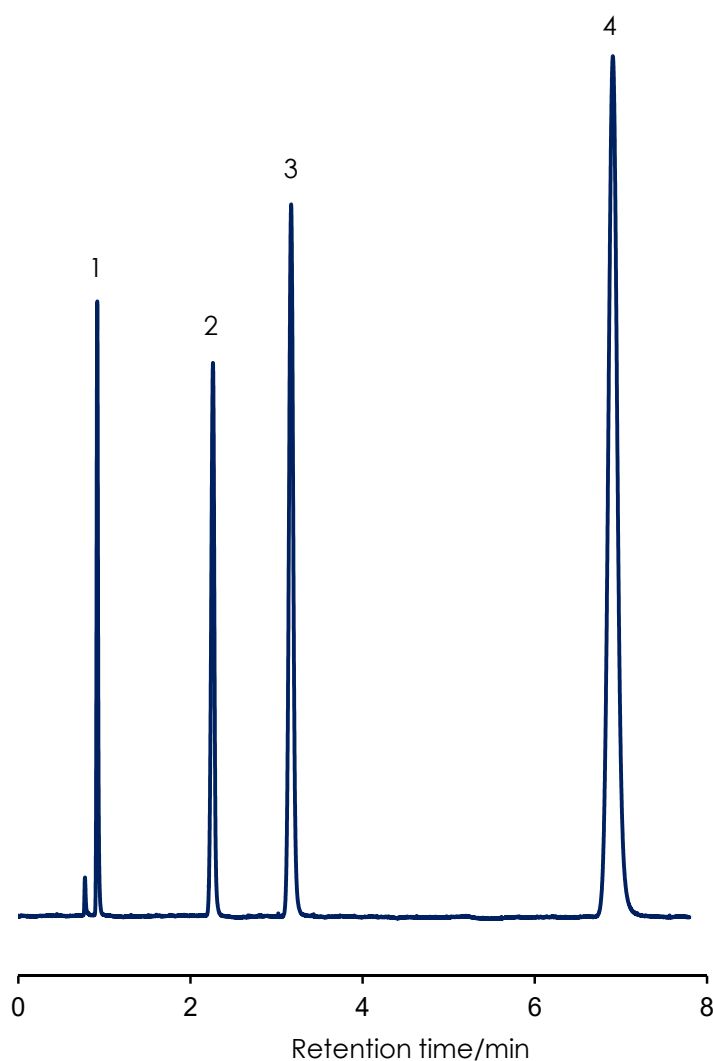
Detection: UV@230 nm

Sample: 1 = Famotidine, 2 = Cimetidine, 3 = Ranitidine

β遮断薬の分離

β blocker

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

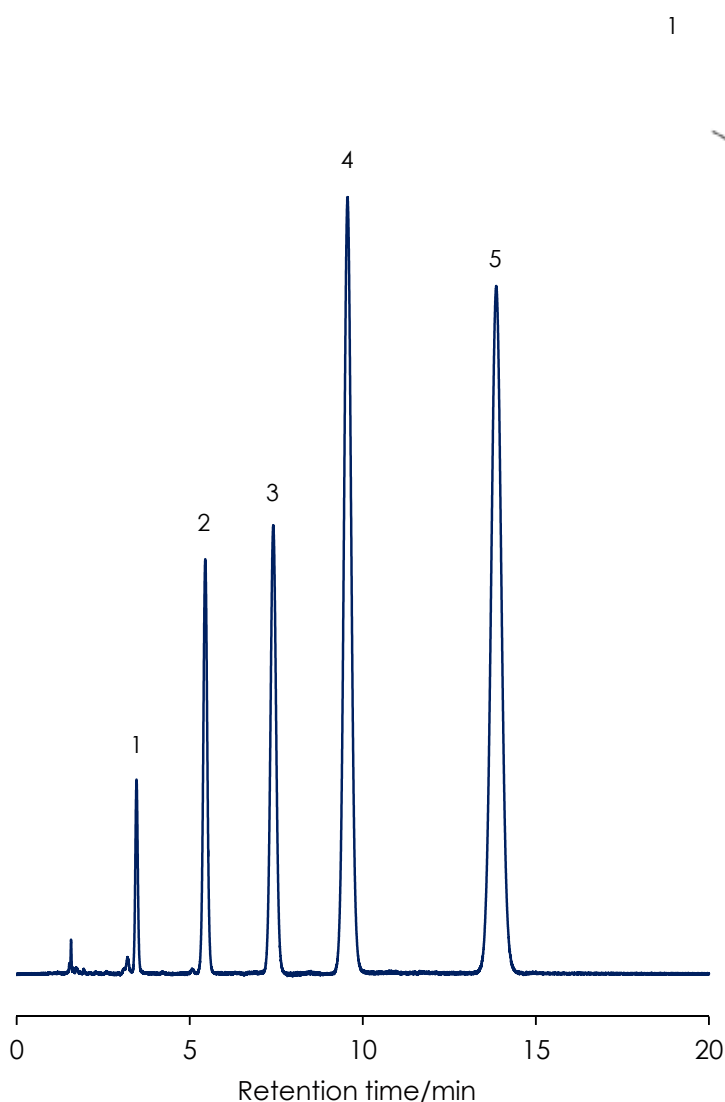


Column: SunShell C18 2.6 μm, 100 x 4.6 mm
Mobile phase: Metyanol:25 mM phosphate buffer pH7 = 50:50
Flow rate: 1.0 mL / min
Temperature: 40 °C
Detection: UV@280 nm
Sample: 1 = Atenolol, 2 = Metoprolol, 3 = Timolol, 4 = Propranolol

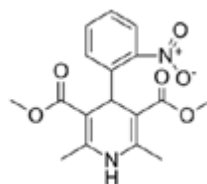
Ca拮抗剤の分離 (Sunniest C18)

Calcium antagonists

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

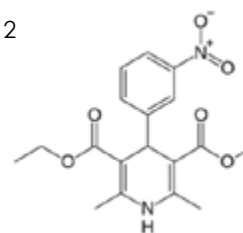


1



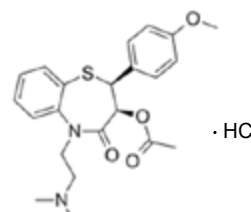
Nifedipine

2



Nitredipine

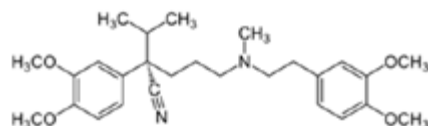
3



· HCl

Diltiazem Hydrochloride

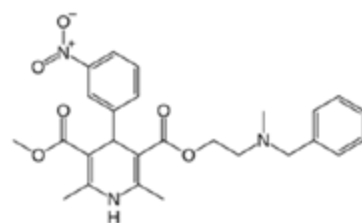
4



· HCl

Verapamil Hydrochloride

5



· HCl

Nicardipine Hydrochloride

Column: Sunniest C18 5 μ m, 150 x 4.6 mm

Mobile phase: Methanol:25 mM phosphate buffer pH7=70:30

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@230 nm

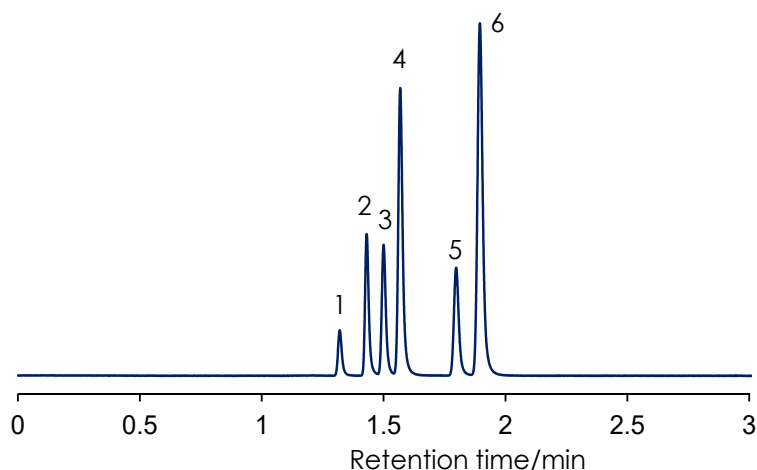
Sample: 1 = Nifedipine, 2 = Nitredipine, 3 = Diltiazem Hydrochloride, 4 = Verapamil Hydrochloride, 5 = Nicardipine Hydrochloride

核酸の分離

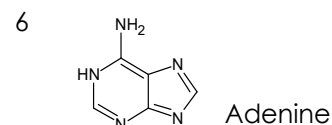
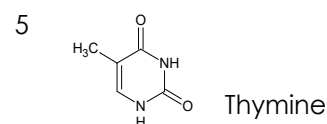
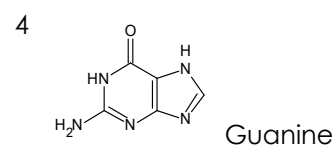
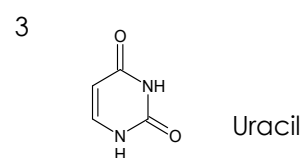
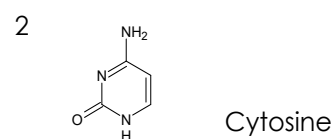
Nucleic acid

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

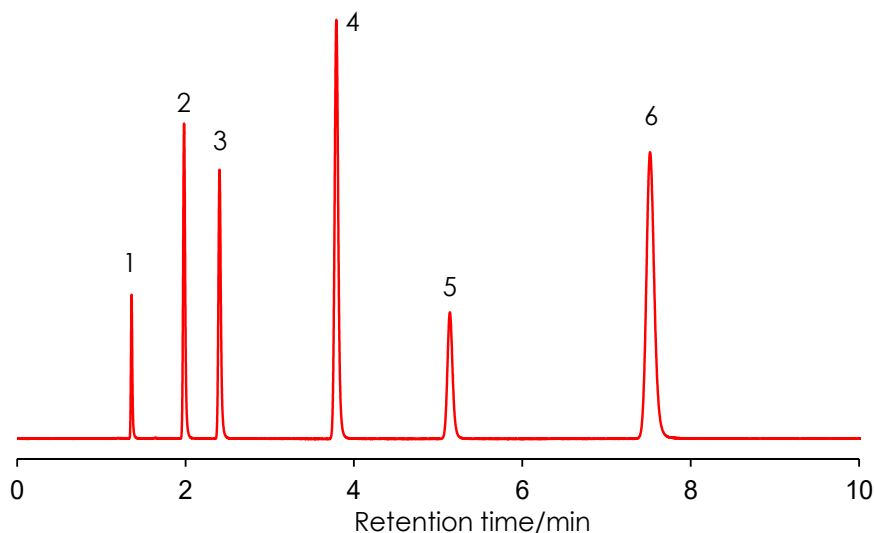
Methanol:10 mM ammonium acetate pH6.8=20:80



1 NaNO₂



10 mM ammonium acetate pH6.8



Column: SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm

Mobile phase:

A) Methanol:10 mM ammonium acetate pH6.8=20:80

B) 10 mM ammonium acetate pH6.8

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@250 nm

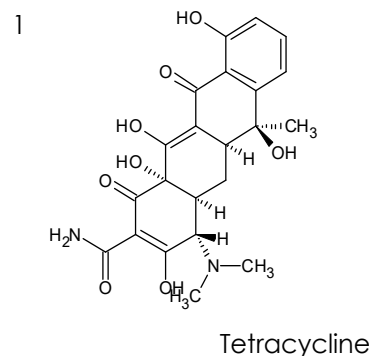
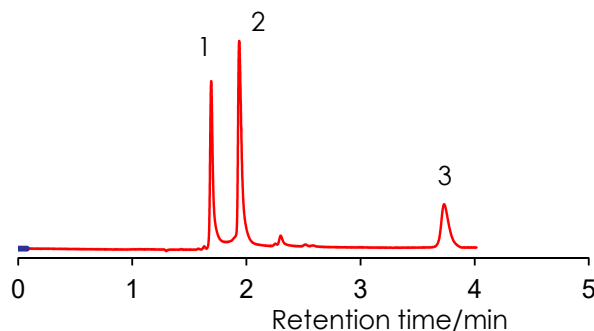
Sample: 1 = Sodium nitrite, 2 = Cytosine, 3 = Uracil, 4 = Guanine, 5 = Thymine, 6 = Adenine

テトラサイクリン類の分離

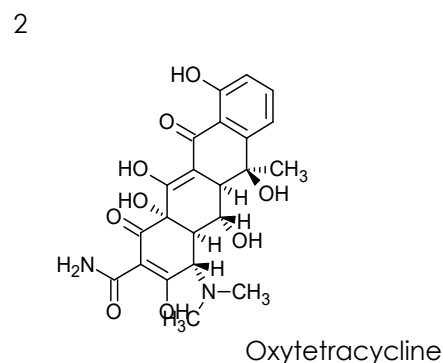
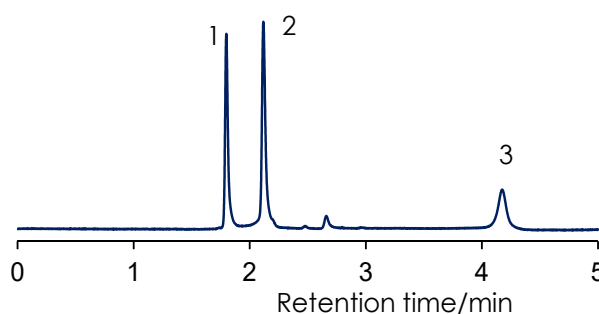
Tetracyclines

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

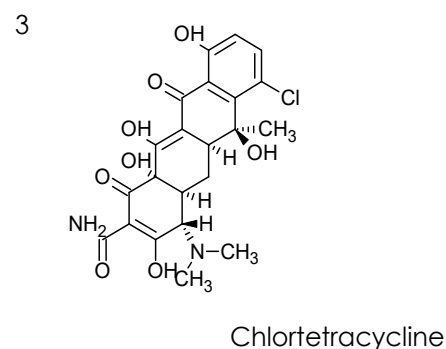
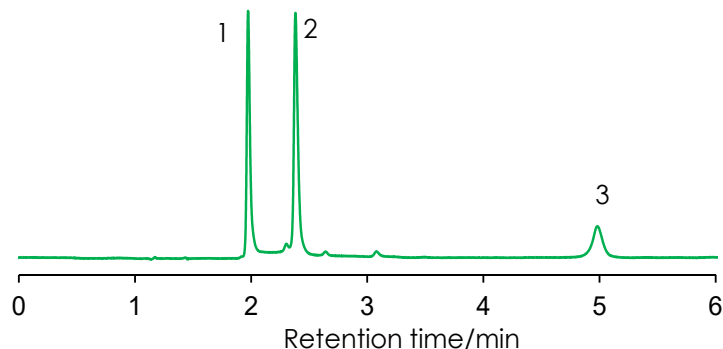
Acetonitrile:0.1% formic acid=20:80



Acetonitrile:0.1% phosphoric acid=20:80



Acetonitrile: 10mM oxalic acid=20:80



Column: SunShell C18 2.6 μ m, 150 x 4.6 mm

Mobile phase:

A) Acetonitrile:0.1% formic acid=20:80

B) Acetonitrile:0.1% phosphoric acid=20:80

C) Acetonitrile: 10mM oxalic acid=20:80

Flow rate: 1.0 mL / min

Temperature: 40 $^{\circ}$ C

Detection: UV@350 nm

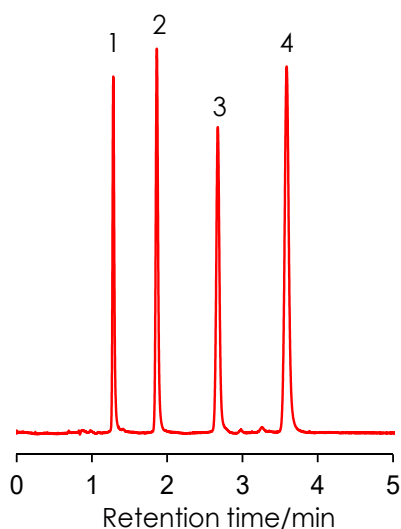
Sample: 1 = Tetracycline, 2 = Oxytetracycline, 3 = Chlortetracycline

フラボノイド類の分離

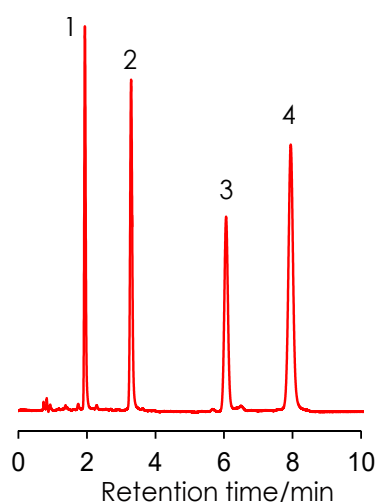
Flavonoids

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

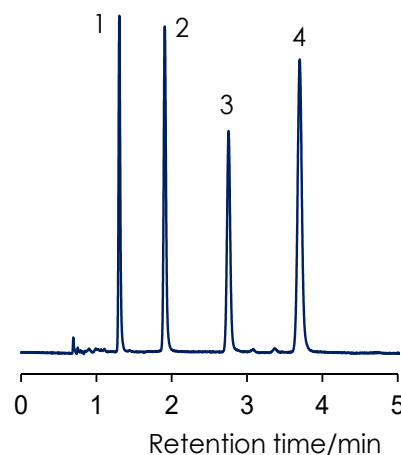
Acetonitrile:water:formic acid=35:65:0.1



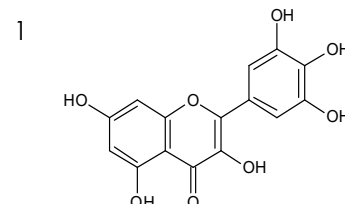
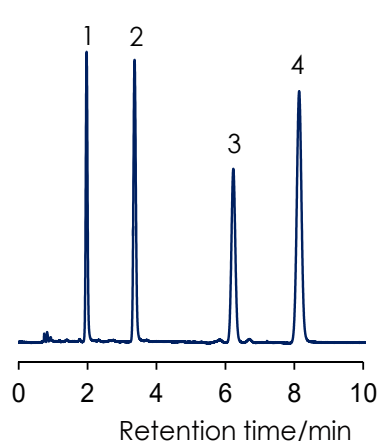
Methanol:water:formic acid=50:50:0.1



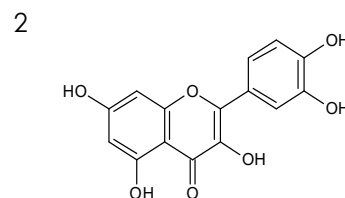
Acetonitrile:10mM phosphoric acid=35:65



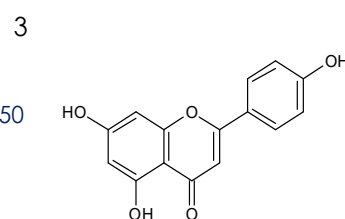
Methanol:10mM phosphoric acid=50:50



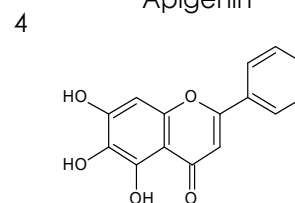
Myricetin



Quercetin



Apigenin



Baicalein

Column: SunShell C18 2.6 μ m, 100 x 4.6 mm

Mobile phase:

A) Acetonitrile:water:formic acid=35:65:0.1

B) Acetonitrile:10mM phosphoric acid=35:65

C) Methanol:water:formic acid=50:50:0.1

D) Methanol:10mM phosphoric acid=50:50

Flow rate: 1.0 mL / min

Temperature: 40 $^{\circ}$ C

Detection: UV@260 nm

Sample: 1 = Myricetin, 2 = Quercetin, 3 = Apigenin, 4 = Baicalein

副腎皮質ステロイド類の分離 (1)

Corticosteroids (1)

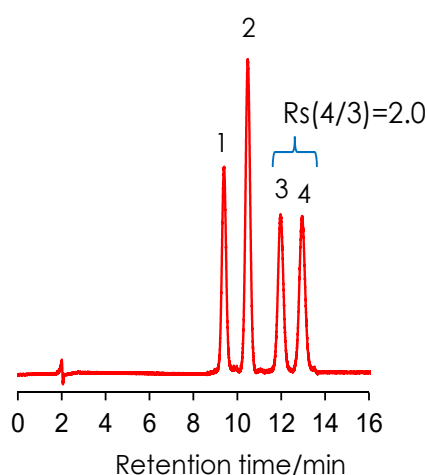
Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

SunShell C18 2.6 μ m, 250 x 4.6 mm i.d.

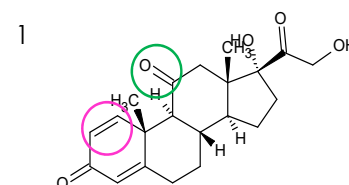
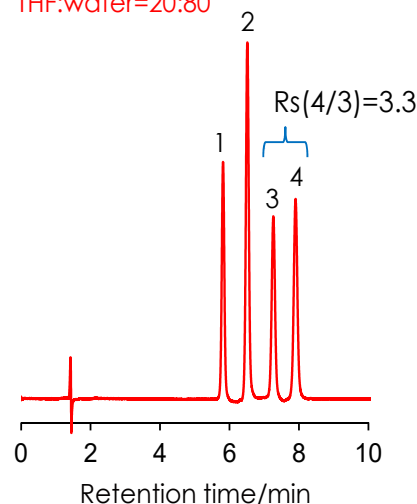
Sunniest C18 5 μ m, 150 x 4.6 mm

THF:water=20:80

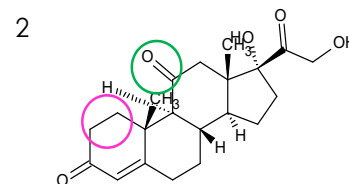


SunShell C18 2.6 μ m, 150 x 4.6 mm

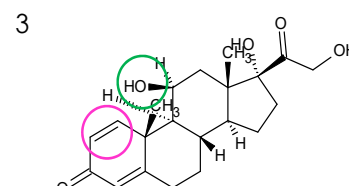
THF:water=20:80



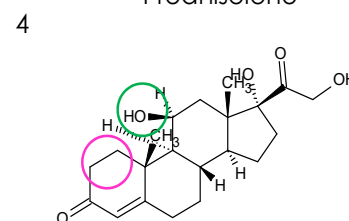
Prednisone



Cortisone



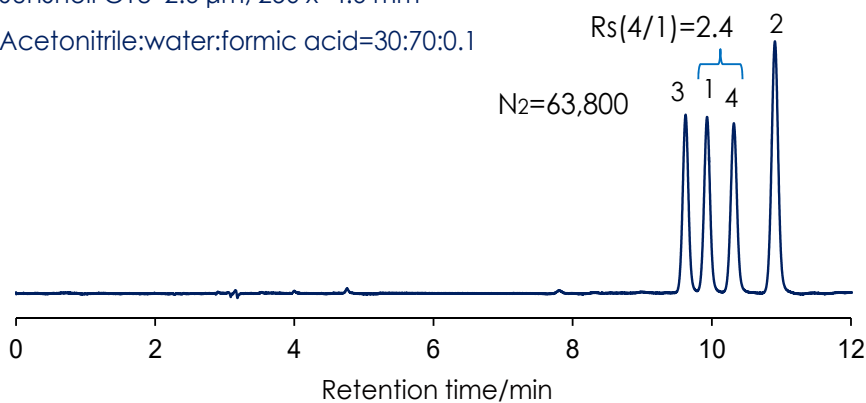
Prednisolone



Hydrocortisone

SunShell C18 2.6 μ m, 250 x 4.6 mm

Acetonitrile:water:formic acid=30:70:0.1



Column: Sunniest C18 5 μ m, 150 x 4.6 mm

SunShell C18 2.6 μ m, 150 x 4.6 mm

SunShell C18 2.6 μ m, 250 x 4.6 mm

Mobile phase:

A) THF:water=20:80

B) Acetonitrile:water:formic acid=30:70:0.1

Flow rate: 1.0 mL / min for A mobile phase, 0.7 mL/min for B mobile phase

Temperature: 40 °C

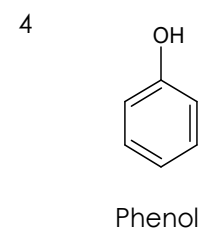
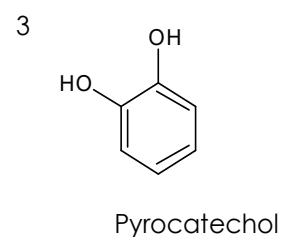
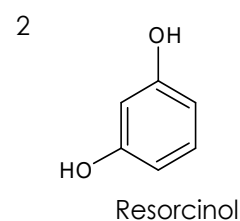
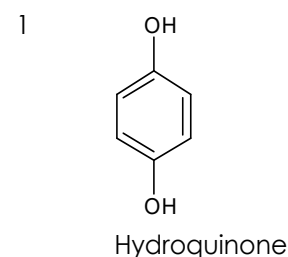
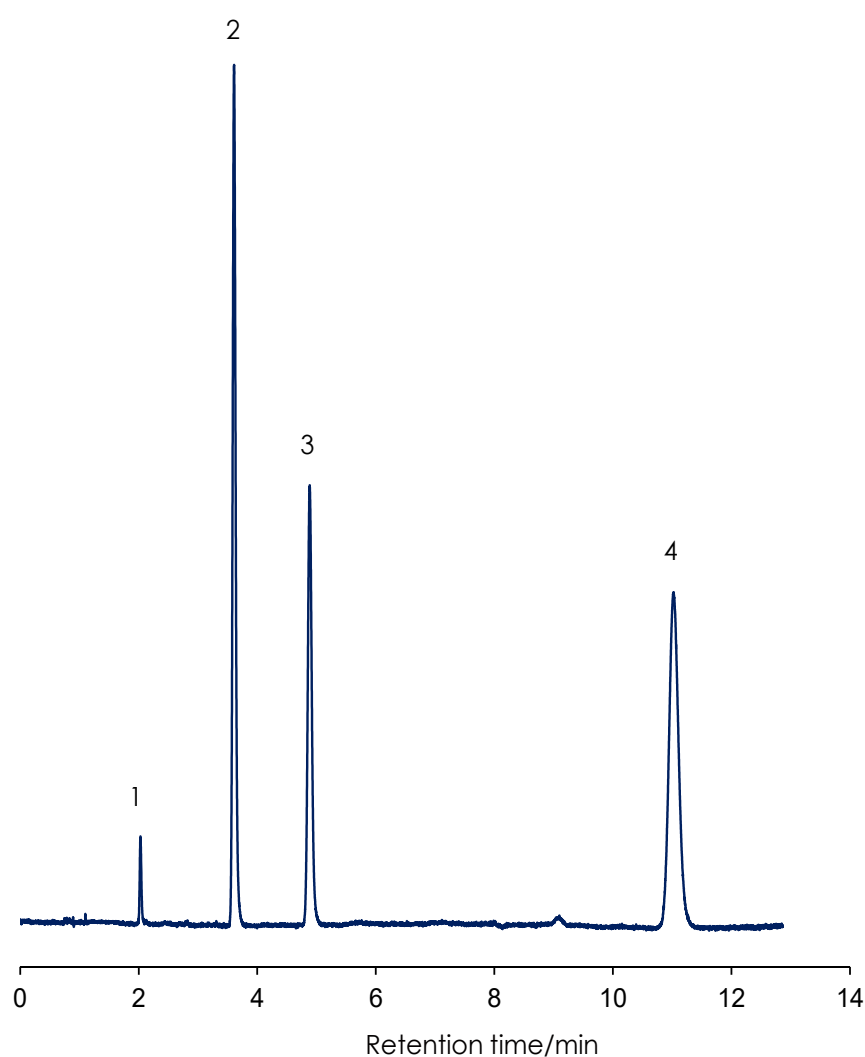
Detection: UV@260 nm

Sample: 1 = Prednisone, 2 = Cortisone, 3 = Prednisolone, 4 = Hydrocortisone

レソルシノールと関連物質の分離

Resorcinol and related substances

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.



Column: SunShell C18 2.6 μ m, 100 x 4.6 mm

Mobile phase: Methanol:0.1% formic acid=10:90

Flow rate: 1.0 mL / min

Temperature: 30 $^{\circ}$ C

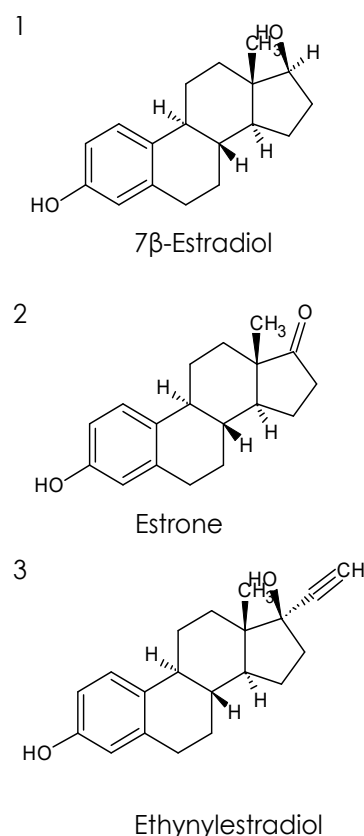
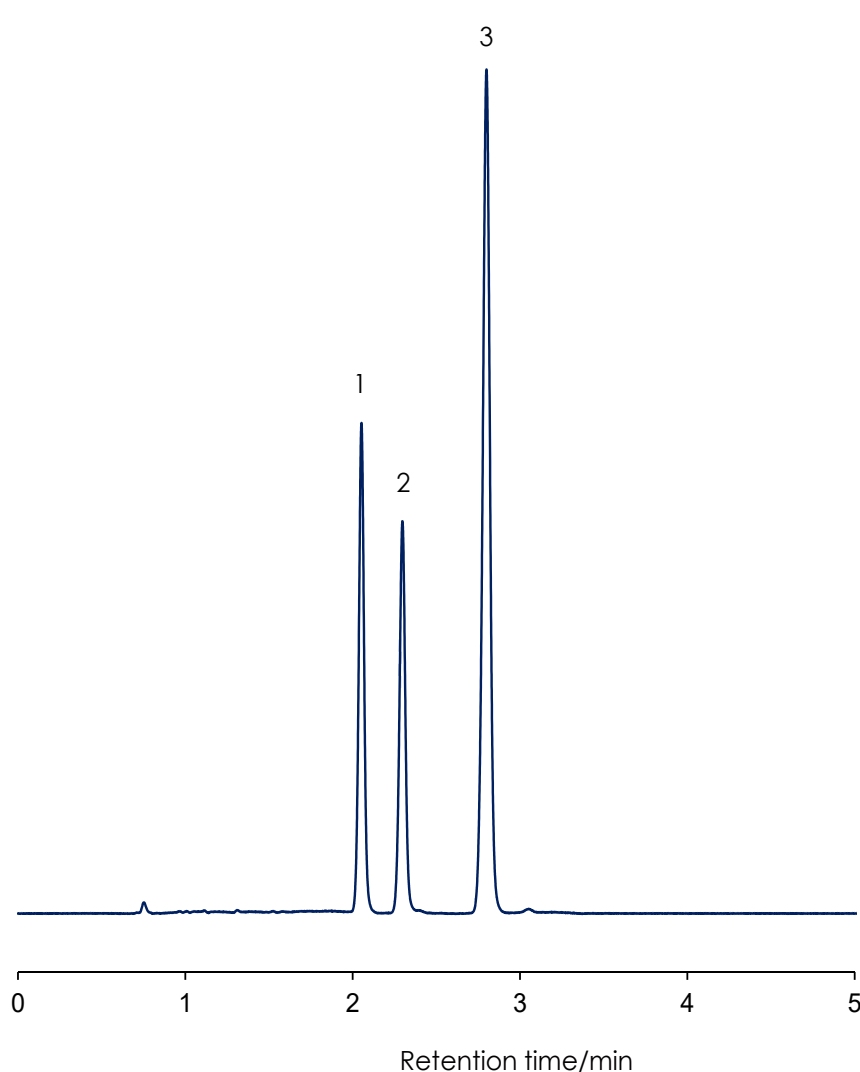
Detection: UV@280 nm

Sample: 1 = Hydroquinone, 2 = Resorcinol, 3 = Pyrocatechol, 4 = Phenol

抗アンドロゲン薬と代謝物の分離 (1)

Ethinylestradiol and its metabolites (1)

SunShell C18 2.6 μm , 100 x 4.6 mm i.d.



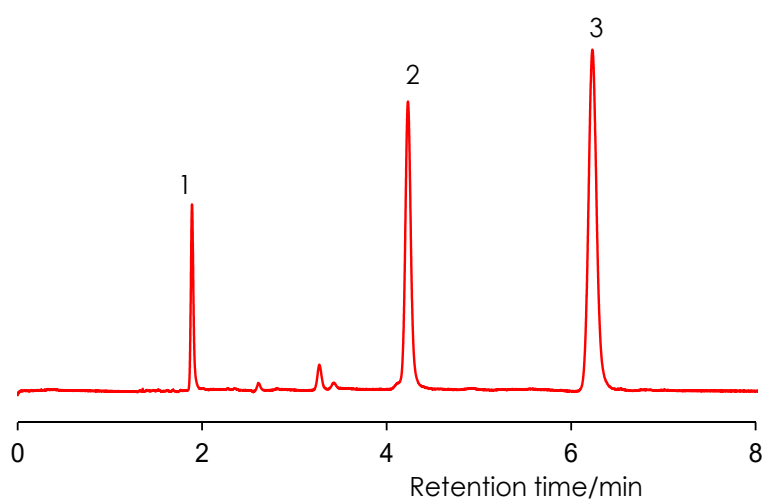
Column: SunShell C18 2.6 μm , 100 x 4.6 mm
Mobile phase: Acetonitrile:water=30:70
Flow rate: 1.0 mL / min
Temperature: 40 $^{\circ}\text{C}$
Detection: UV@230 nm
Sample: 1 = 17 β -Estradiol, 2 = Estrone, 3 = Ethinylestradiol

アントラキノン系染料の分離 (1)

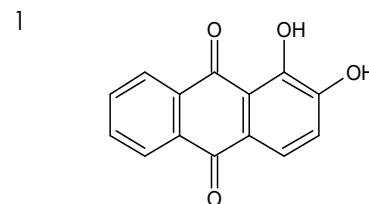
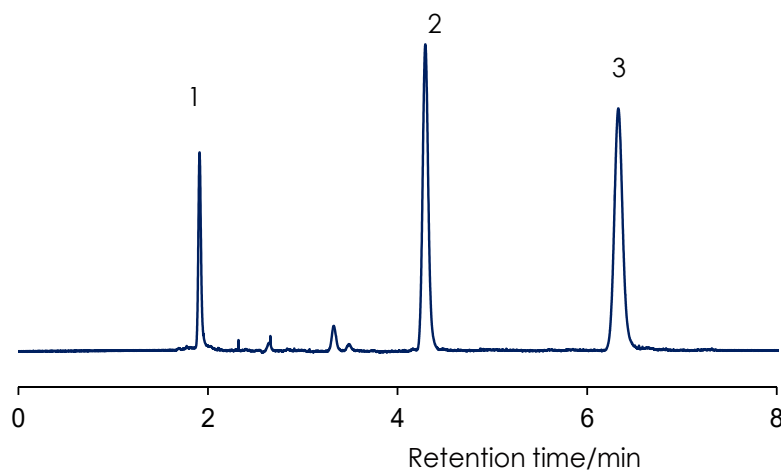
Anthraquinone dye (1)

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

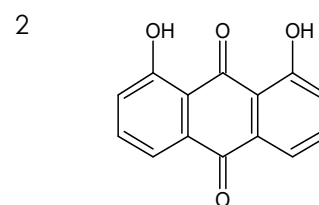
Methanol:20mM phosphate buffer pH2.5=75:25



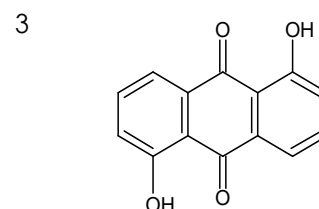
Methanol:0.1% formic acid=75:25



Alizarin



Chrysazin



Anthrarufin

Column: SunShell C18 2.6 μ m, 100 x 4.6 mm

Mobile phase:

A) Methanol:20mM phosphate buffer pH2.5=75:25

B) Methanol:0.1% formic acid=75:25

Flow rate: 1.0 mL / min

Temperature: 40 °C

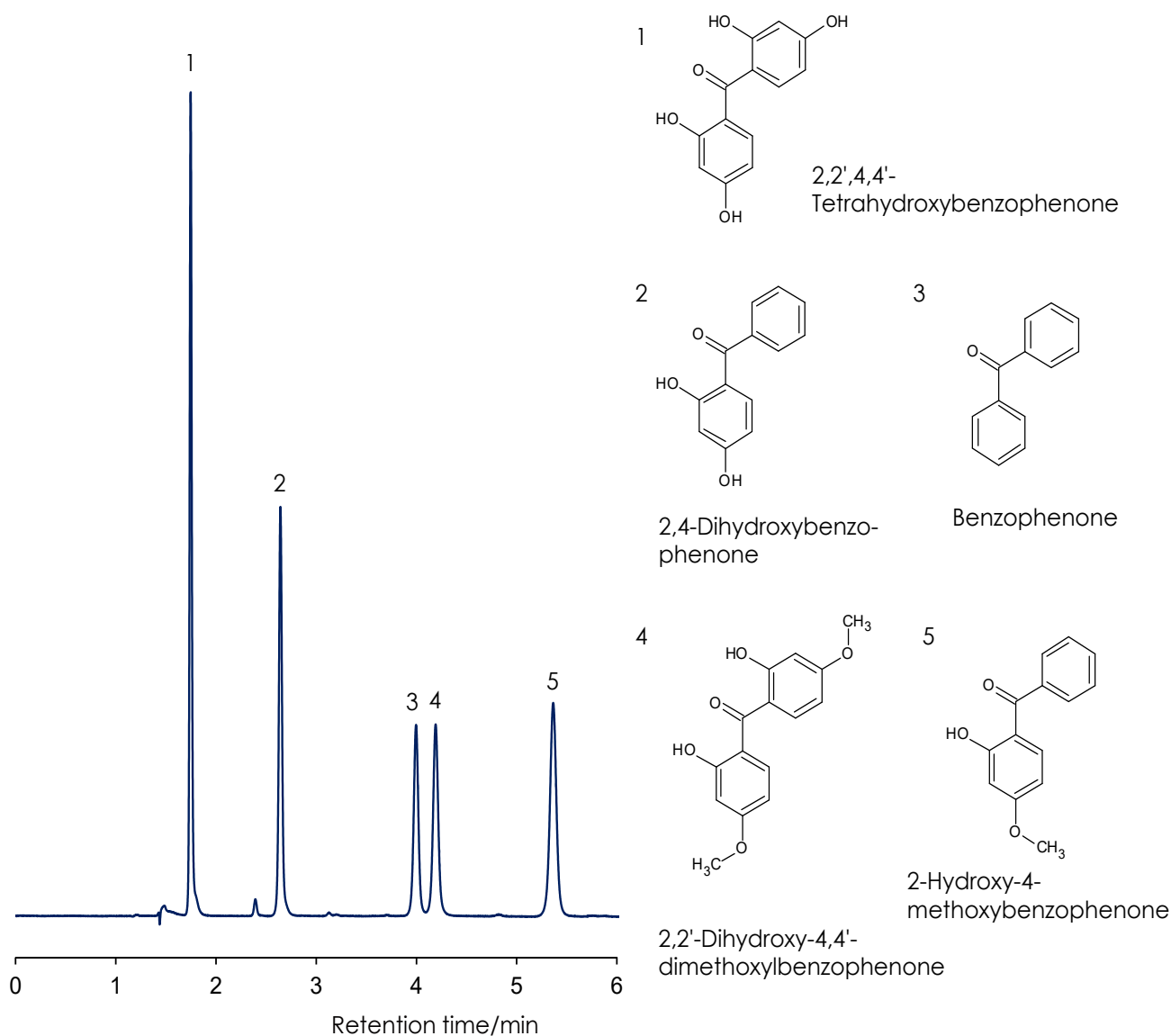
Detection: UV@250 nm

Sample: 1 = Alizarin, 2 = Chrysazin, 3 = Anthrarufin

ベンゾフェノン類の分離

Benzophenones

SunShell PFP 2.6 μm, 150 x 4.6 mm i.d.



Column: SunShell PFP 2.6 μm, 150 x 4.6 mm

Mobile phase: Acetonitrile:water=50:50

Flow rate: 1.0 mL / min

Temperature: 25 °C

Detection: UV@280 nm

Sample: 1 = 2,2',4,4'-Tetrahydroxybenzophenone, 2 = 2,4-Dihydroxybenzophenone,

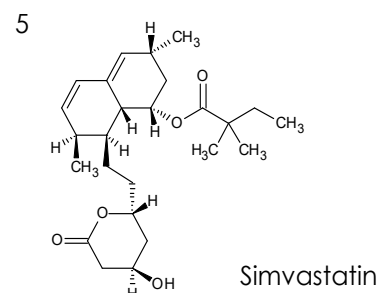
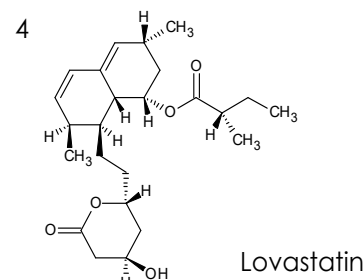
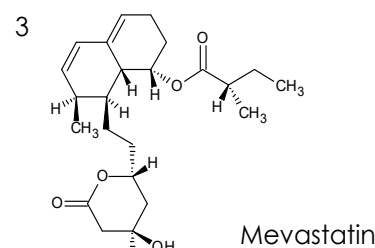
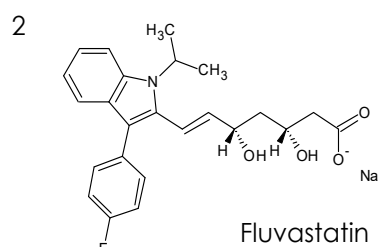
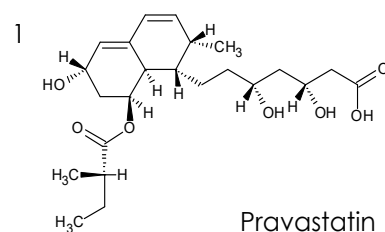
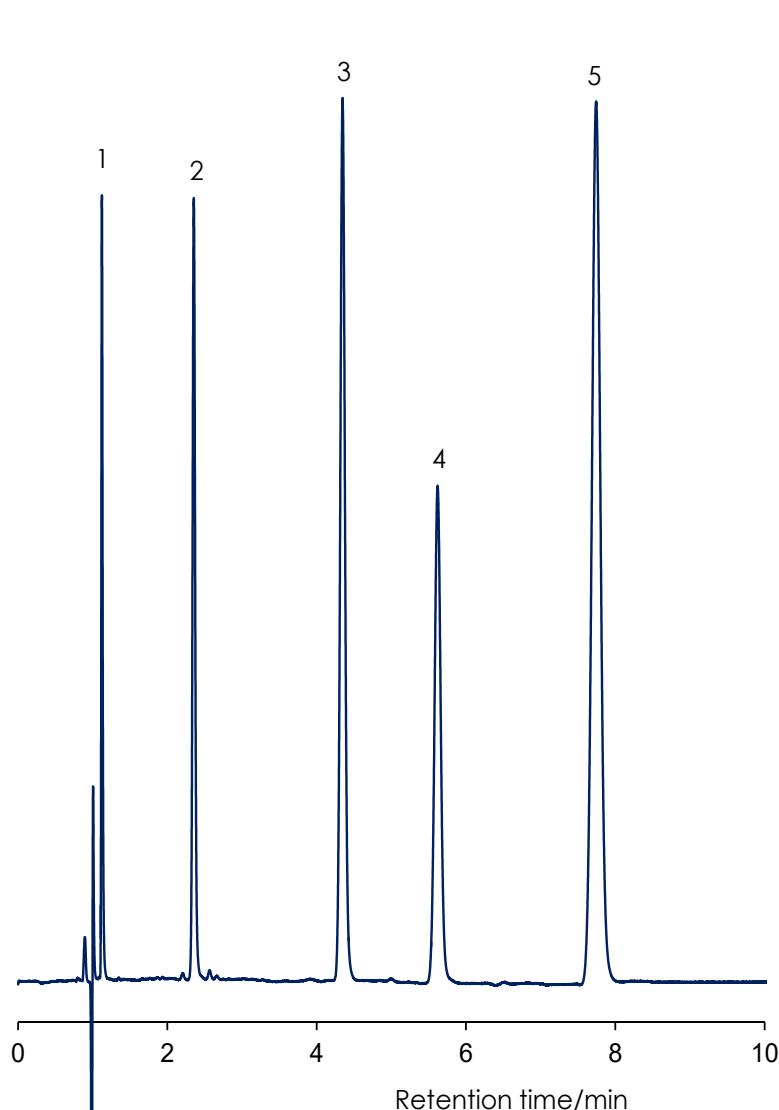
3 = Benzophenone, 4 = 2,2'-Dihydroxy-4,4'-dimethoxybenzophenone,

5 = 2-Hydroxy-4-methoxybenzophenone.

抗高脂血症剤の分離 (1)

Stantins (1)

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

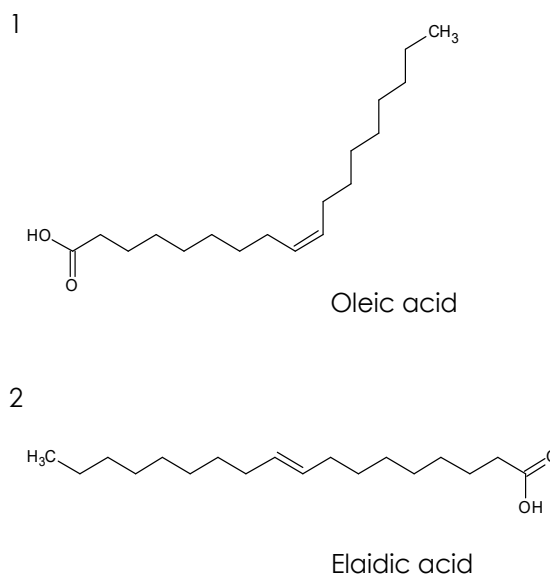
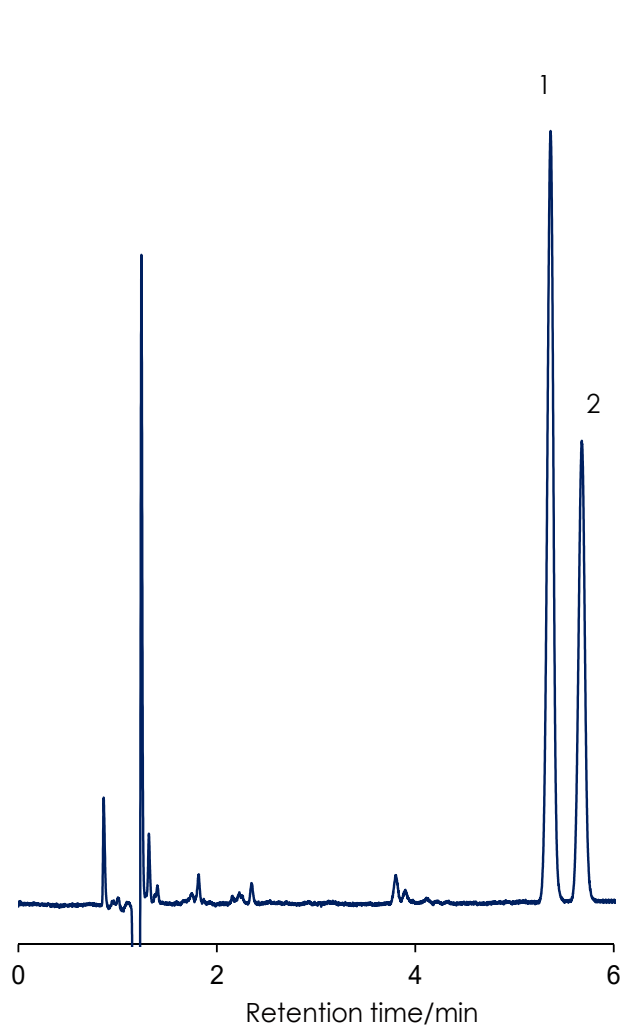


Column: SunShell C18 2.6 μ m, 100 x 4.6 mm
Mobile phase: Acetonitrile:0.1% formic acid=60:40
Flow rate: 0.8 mL / min
Temperature: 40 $^{\circ}$ C
Detection: UV@240 nm
Sample: 1 = Pravastatin, 2 = Fluvastatin, 3 = Mevastatin,
4 = Lovastatin, 5 = Simvastatin.

オレイン酸とエライジン酸の分離 (1)

Cis-trans isomers of 9-cotadecenoic acid (1)

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

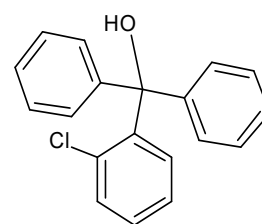
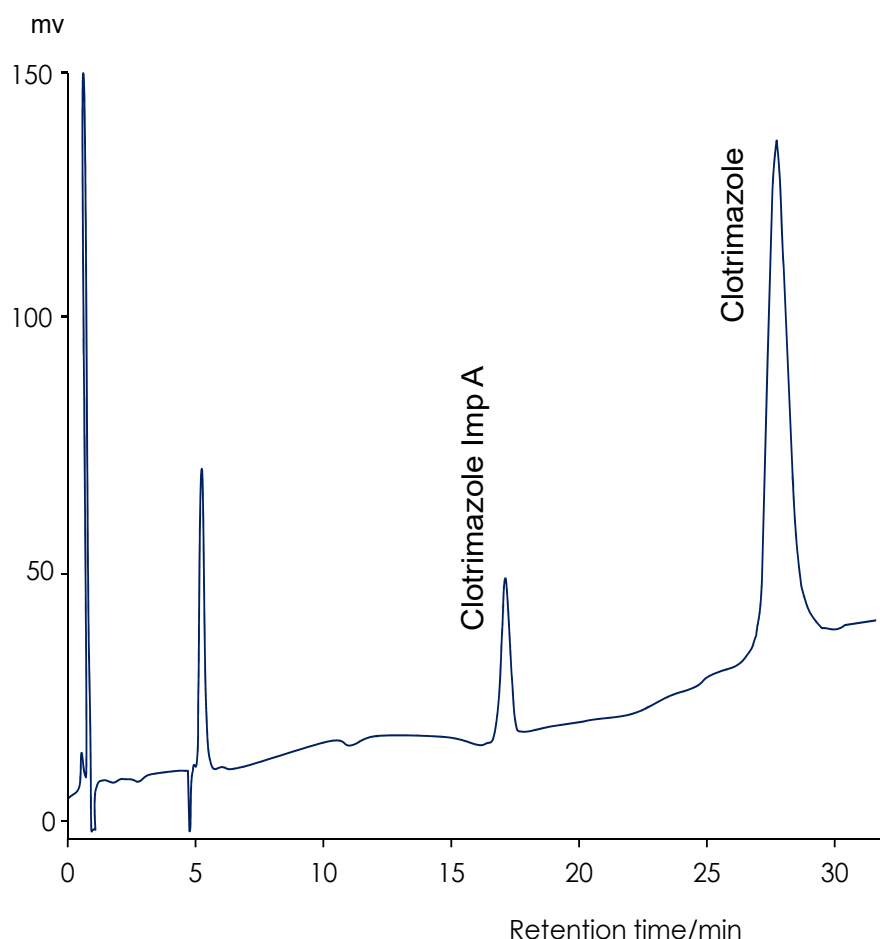


Column: SunShell C18 2.6 μ m, 150 x 4.6 mm
Mobile phase: Acetonitrile:water:formic acid=90:10:0.05
Flow rate: 1.0 mL / min
Temperature: 40 $^{\circ}$ C
Detection: UV@215 nm
Sample: 1 = Oleic acid, 2 = Elaidic acid

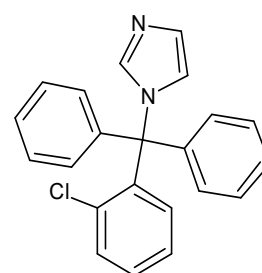
クロトリマゾール

Clotrimazole

Sunrise C18-SAC 5 μm, 150 x 4.6 mm i.d.



Clotrimazole Imp A



Clotrimazole

System Suitability Requirement: 1. Tailing Factor NMT 1.5
2. RSD NMT 2%

Column: Sunrise C18-SAC 5μm, 150 x 4.6 mm

Mobile phase : Acetonitrile and Buffer (1:1)

Buffer: 0.3 g/L of anhydrous monobasic sodium phosphate and 0.35 g/L of anhydrous dibasic sodium phosphate in water. The resulting solution has a pH of 6.i-7.0.

Flow rate : 2.0. mL/min

Detection : UV@ 206 nm

Column Temperature : Ambient

Injection Volume : 8 μL

オルト, メタ, パラ - ターフェニルの分離

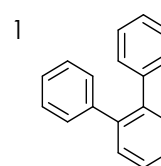
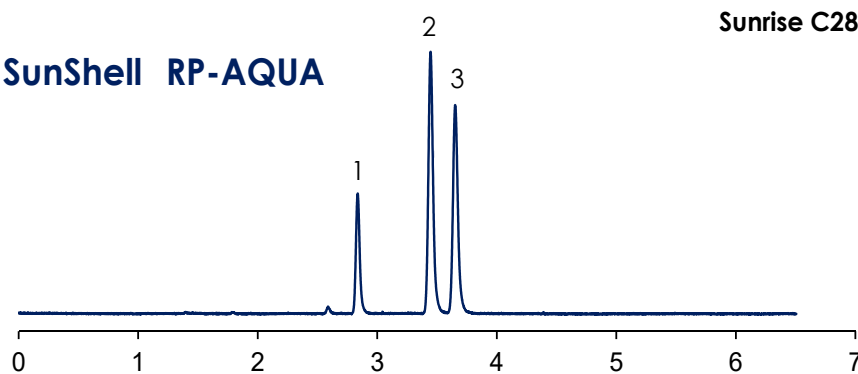
o, p, m-Terphenyl

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

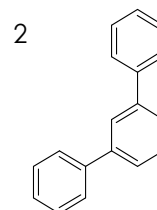
SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

Sunrise C28 3 μ m, 150 x 4.6 mm i.d.

SunShell RP-AQUA

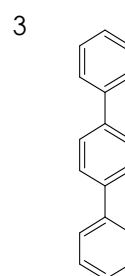
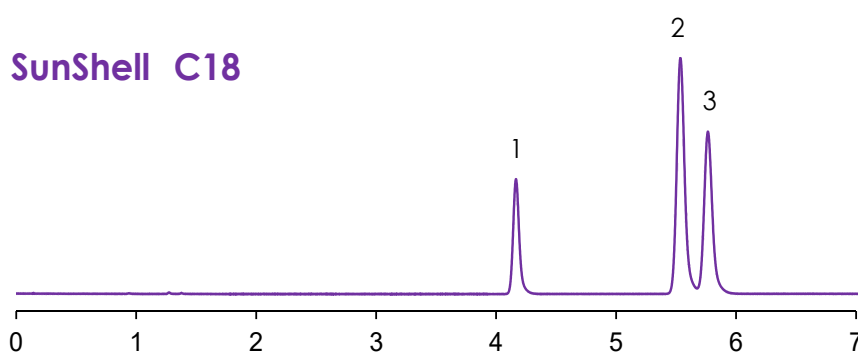


o-Terphenyl



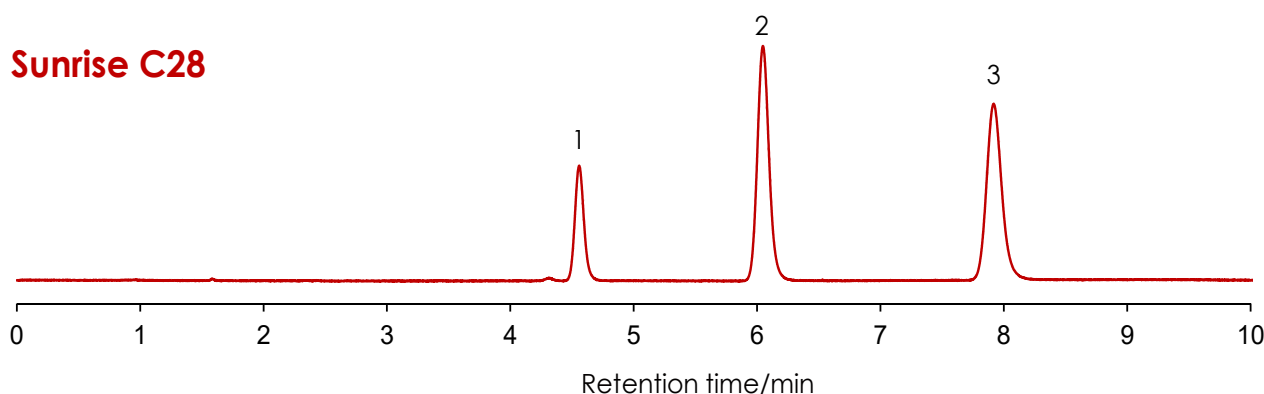
m-Terphenyl

SunShell C18



p-Terphenyl

Sunrise C28



Column: SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm

SunShell C18 2.6 μ m, 150 x 4.6 mm

Sunrise C28 3 μ m, 150 x 4.6 mm

Mobile phase: Methanol/water=90:10

Flow rate: 1.0 mL / min

Temperature: 25 $^{\circ}$ C

Detection: UV@250 nm

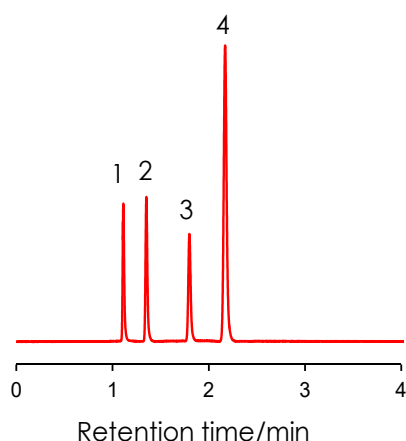
Sample: 1 = o-Terphenyl, 2 = m-Terphenyl, 3 = p-Terphenyl

内分泌攪乱物質の分離 (1)

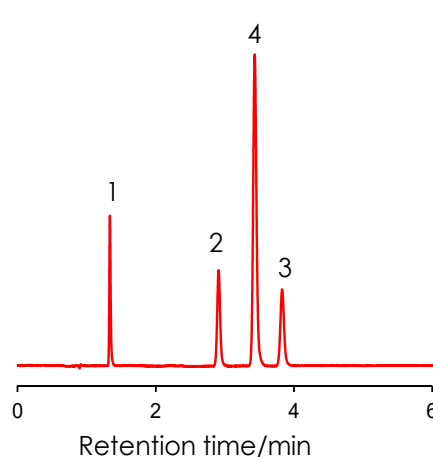
Endocrine disruptors (1)

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

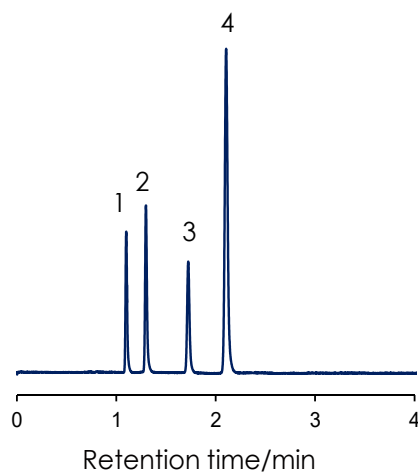
Acetonitrile:water:formic acid=60:40:0.04



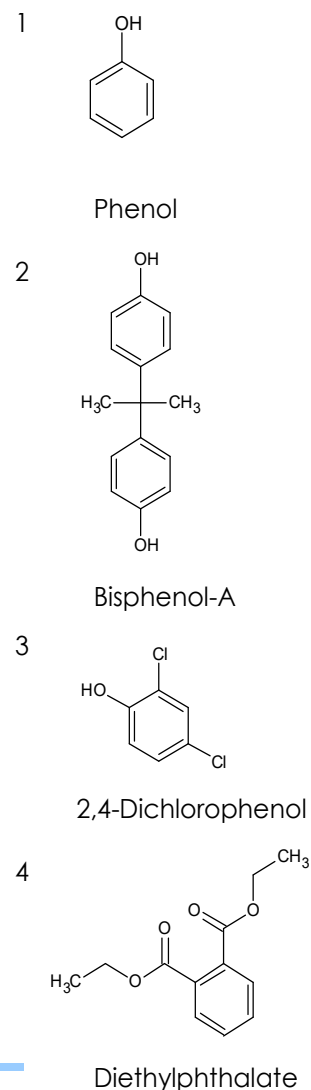
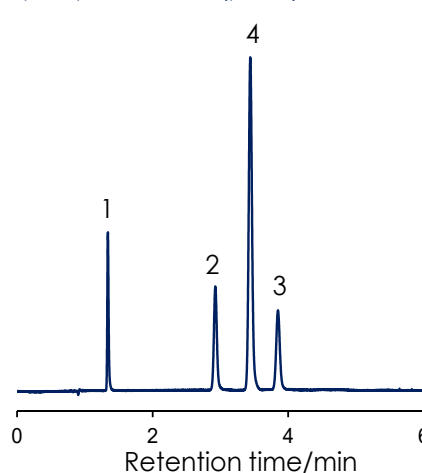
Methanol:water:formic acid=60:40:0.04



Acetonitrile:20mM Potassium phosphate buffer (pH3.0)=60:40



Methanol:20mM Potassium phosphate buffer (pH3.0)=60:40



Column: SunShell C18 2.6 μm, 100 x 4.6 mm

Mobile phase:

A) Acetonitrile:water:formic acid=60:40:0.04

B) Acetonitrile:20mM Potassium phosphate buffer (pH3.0)=60:40

C) Methanol:water:formic acid=60:40:0.04

D) Methanol:20mM Potassium phosphate buffer (pH3.0)=60:40

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@280 nm

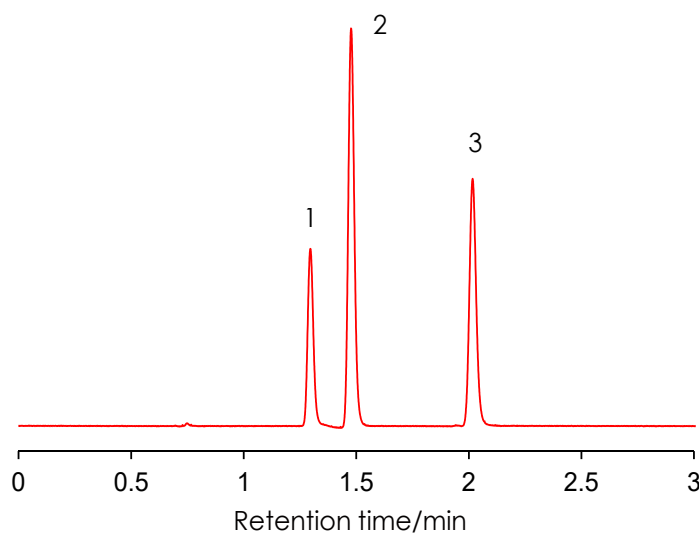
Sample: 1 = Phenol, 2 = Bisphenol-A, 3 = 2,4-Dichlorophenol, 4 = Diethylphthalate

降圧利尿剤の分離 (1)

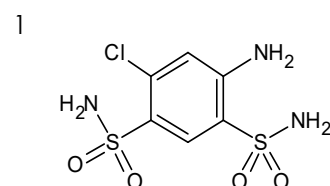
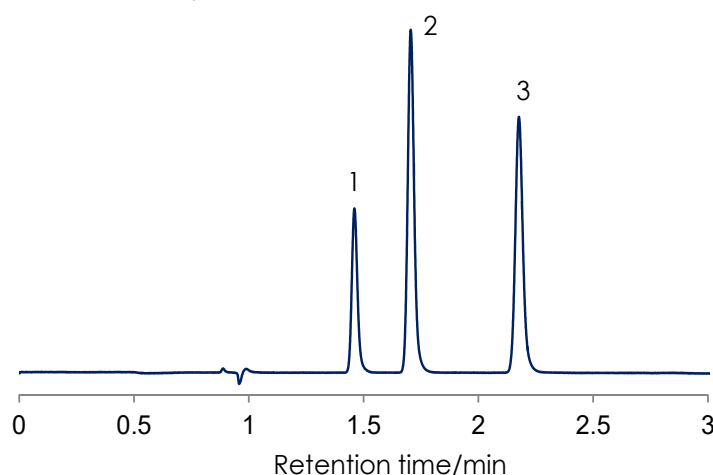
Hypotensive diuretic (1)

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

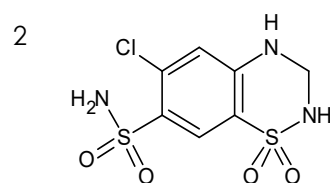
Acetonitrile:100mM phosphate buffer pH3.0=20:80



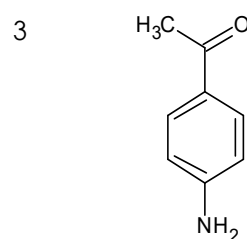
Acetonitrile:0.1% formic acid=20:80



4-Amino-6-chloro-1,3-benzenedisulfonamide



Hydrochlorothiazide



p-Aminoacetophenone

Column: SunShell C18 2.6 μ m, 100 x 4.6 mm

Mobile phase:

A) Acetonitrile:100mM phosphate buffer (NaH₂PO₄) pH3.0=20:80

B) Acetonitrile:0.1% formic acid=20:80

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@250 nm

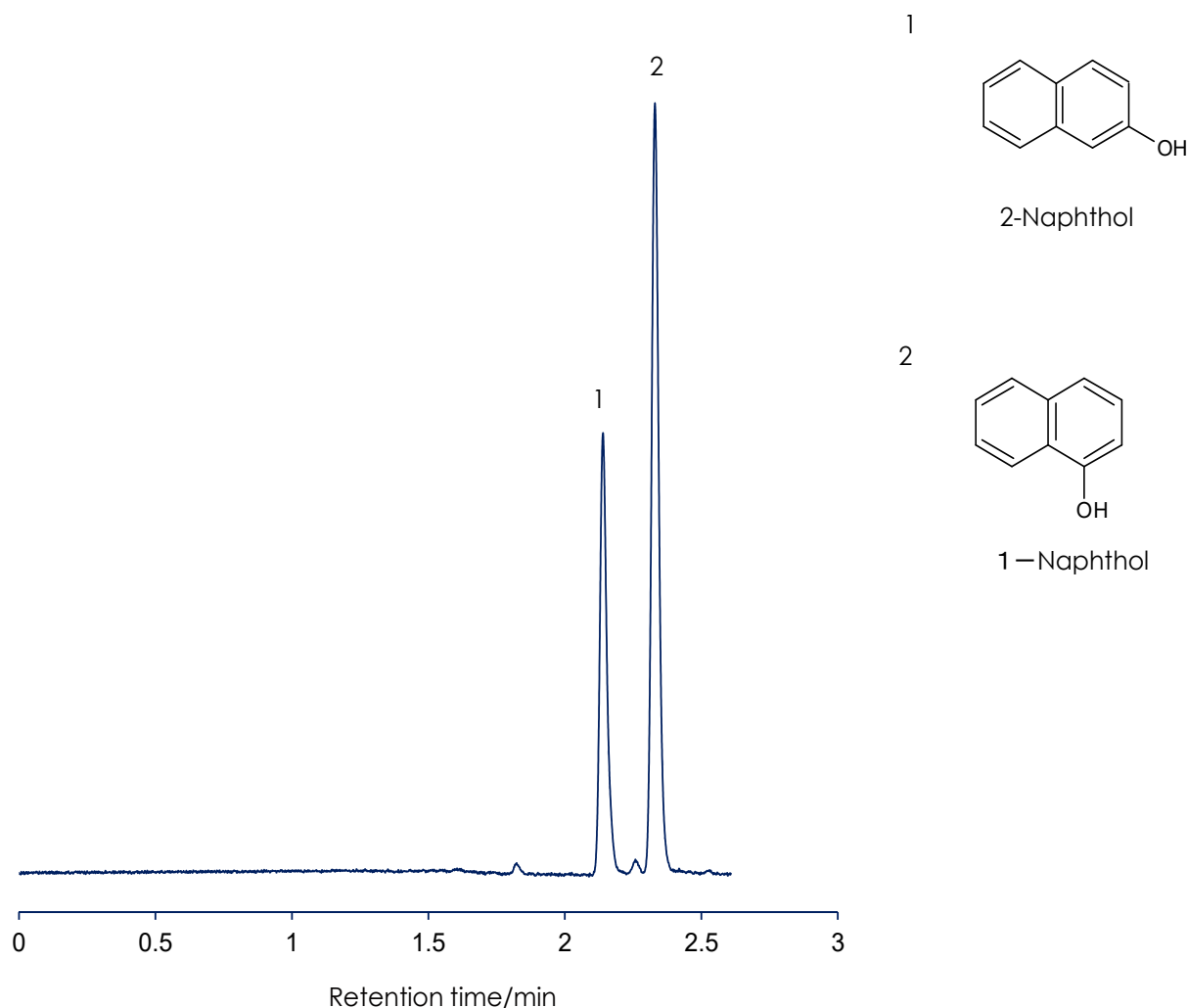
Sample: 1 = 4-Amino-6-chloro-1,3-benzenedisulfonamide, 2 = Hydrochlorothiazide,

3 = p-Aminoacetophenone

ナフトール類の分離

Naphthols

SunShell C18 2.6 μm, 150 x 4.6 mm i.d.



Column: SunShell C18 2.6 μm, 150 x 4.6 mm
Mobile phase: Acetonitrile:water:formic acid=60:40:0.04
Flow rate: 1.0 mL / min
Temperature: 40 °C
Detection: UV@250 nm
Sample: 1 = 2-Naphthol, 2 = 1-Naphthol

爆薬成分の分離

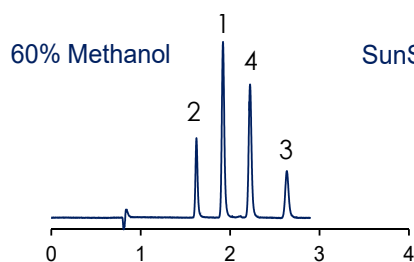
Components of explosive

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

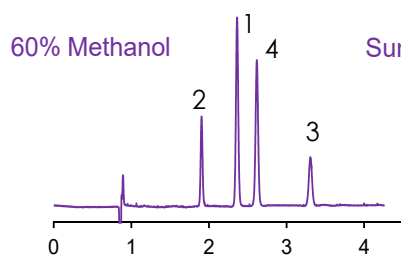
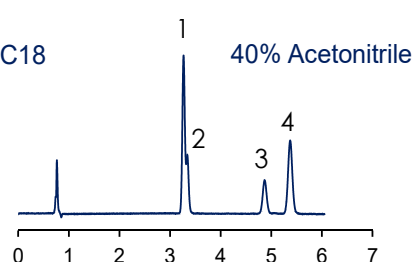
SunShell PFP 2.6 μm, 100 x 4.6 mm i.d.

SunShell RP-AQUA 2.6 μm, 100 x 4.6 mm i.d.

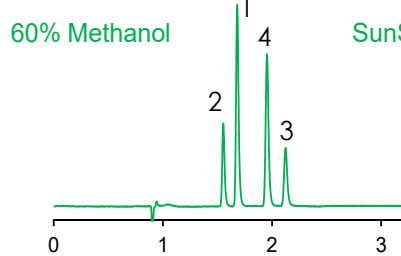
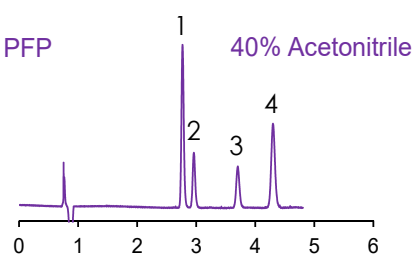
SunShell Phenyl 2.6 μm, 100 x 4.6 mm i.d.



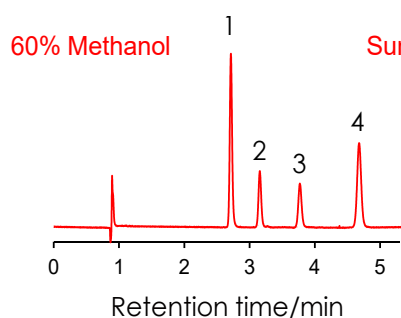
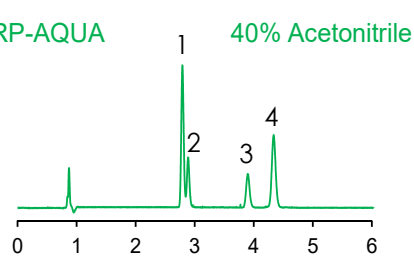
SunShell C18



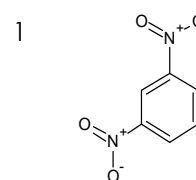
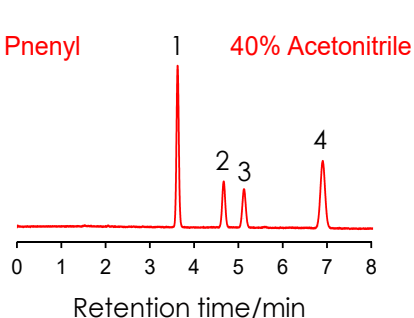
SunShell PFP



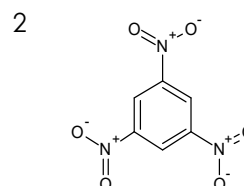
SunShell RP-AQUA



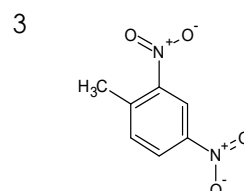
SunShell Phenyl



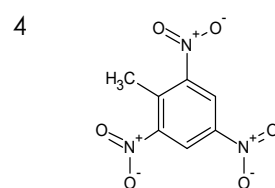
1,3-Dinitrobenzene



1,3,5-Trinitrobenzene



2,4-Dinitrotoluene



2,4,6-Trinitrotoluene

Column: SunShell C18 2.6 μm, 100 x 4.6 mm

SunShell PFP 2.6 μm, 100 x 4.6 mm

SunShell RP-AQUA 2.6 μm, 100 x 4.6 mm

SunShell Phenyl 2.6 μm, 100 x 4.6 mm

Mobile phase: Methanol:water=60:40

Acetonitrile:water=40:60

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@250 nm

Sample: 1 = 1,3-Dinitrobenzene, 2 = 1,3,5-Trinitrobenzene, 3 = 2,4-Dinitrotoluene, 4 = 2,4,6-Trinitrotoluene

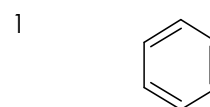
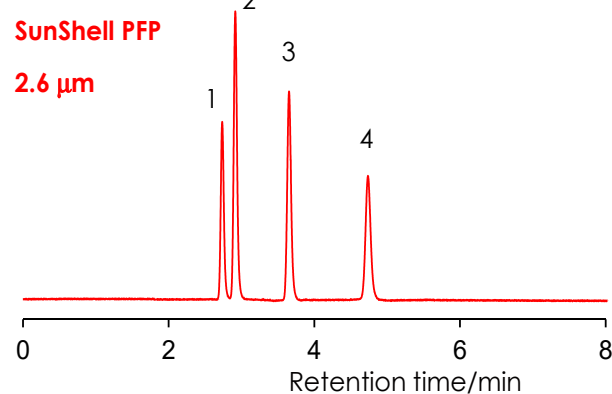
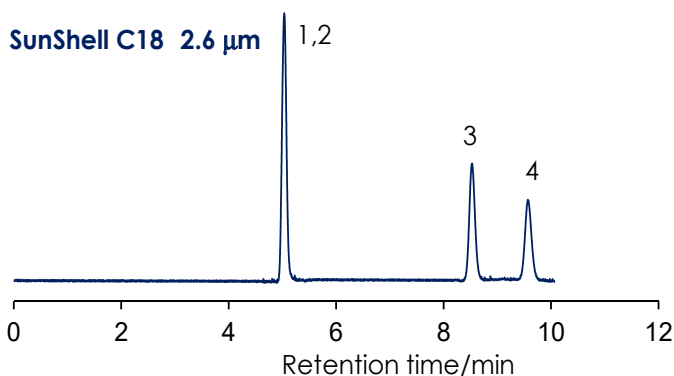
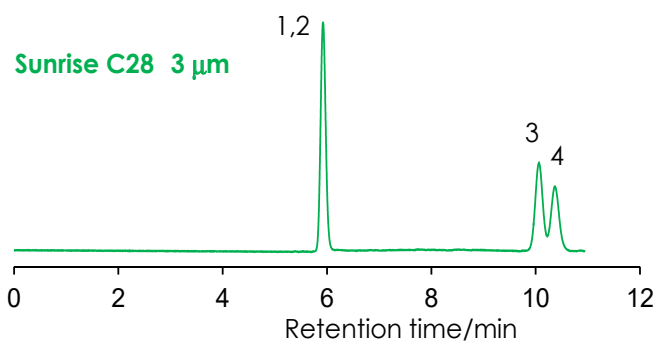
フルオロベンゼンとベンゼンの分離

Fluorobenzene and benzene

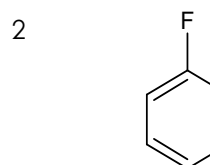
Sunrise C28 3 μm , 150 x 4.6 mm i.d.

SunShell C18 2.6 μm , 150 x 4.6 mm i.d.

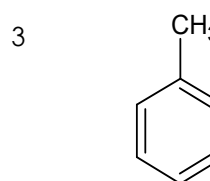
SunShell PFP 2.6 μm , 150 x 4.6 mm i.d.



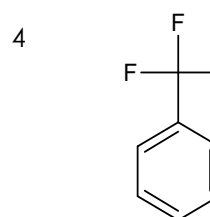
Benzene



Fluorobenzene



Toluene



α,α,α -Trifluorotoluene

Column: Sunrise C28 3 μm , 150 x 4.6 mm

SunShell C18 2.6 μm , 150 x 4.6 mm

SunShell PFP 2.6 μm , 150 x 4.6 mm

Mobile phase: Methanol:water=60:40

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: UV@250 nm

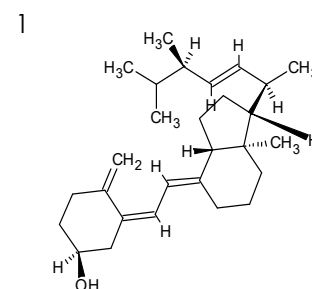
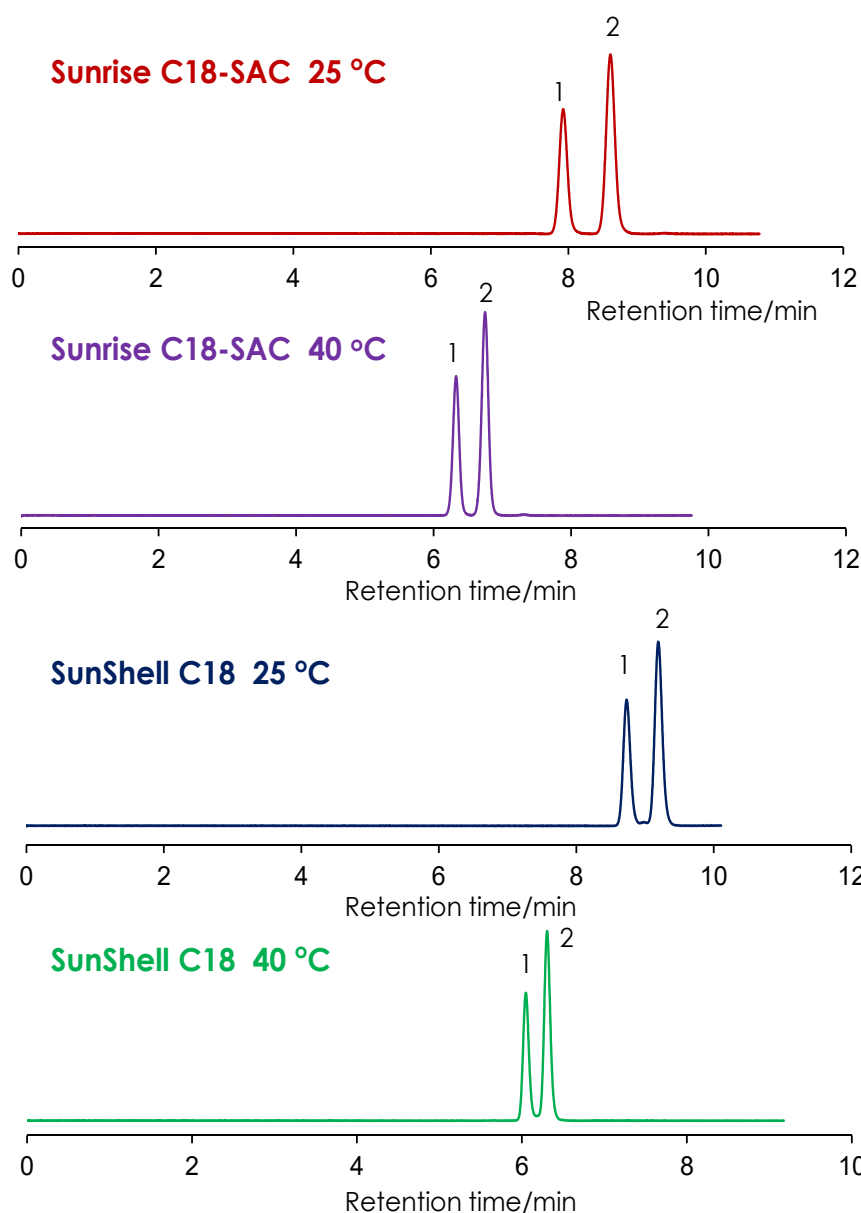
Sample: 1 = Benzene, 2 = Fluorobenzene, 3 = Toluene, 4 = α,α,α -Trifluorotoluene

ビタミンD₂とD₃の分離

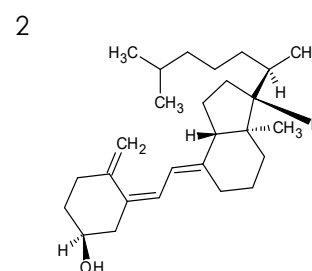
Vitamin D₂ and D₃

Sunrise C18-SAC 3 μm, 150 x 4.6 mm i.d.

SunShell C18 2.6 μm, 150 x 4.6 mm i.d.



Vitamin D₂



Vitamin D₃

Column: Sunrise C18-SAC 3 μm, 150 x 4.6 mm

SunShell C18 2.6 μm, 150 x 4.6 mm

Mobile phase: Methanol:water=97:3

Flow rate: 1.0 mL / min

Temperature: 25 and 40 °C

Detection: UV@250 nm

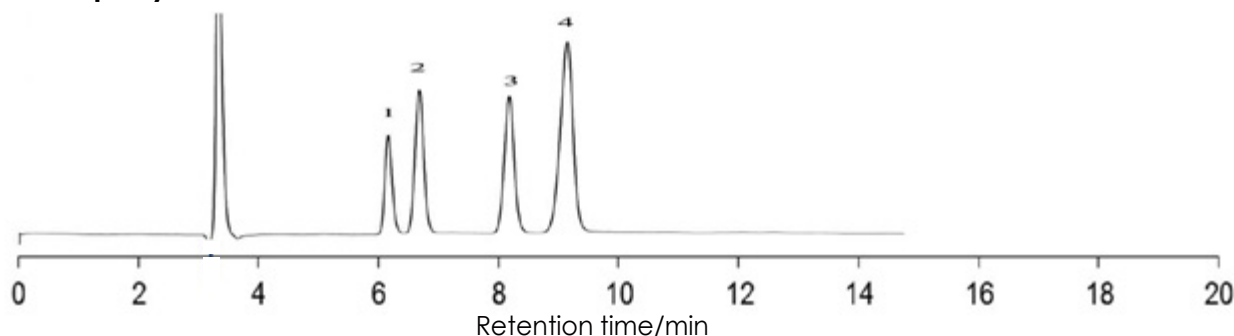
Sample: 1 = Vitamin D₂, 2 = Vitamin D₃

糖の分離

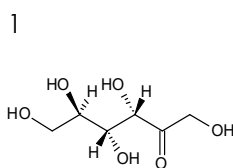
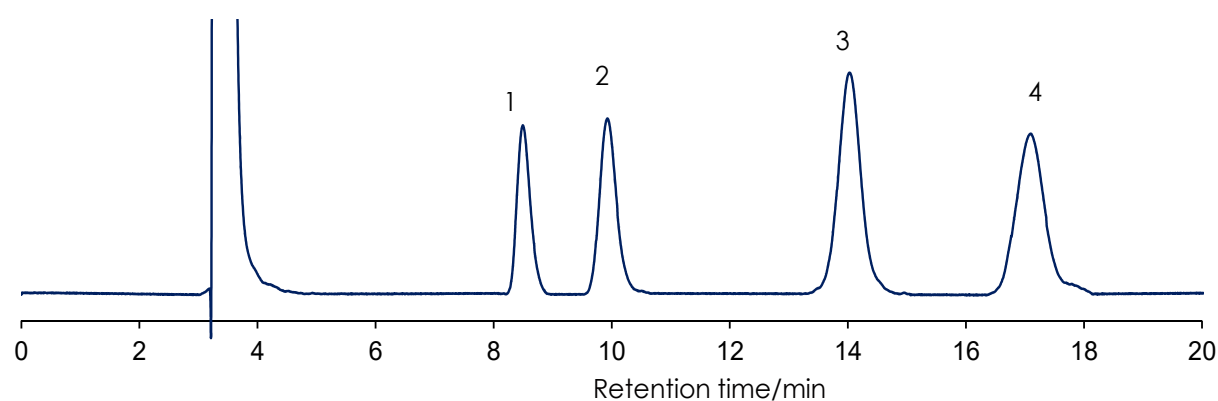
Sugar

Sunniest NH2 5 μ m, 250 x 4.6 mm i.d.

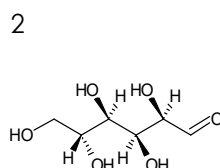
Company A NH2



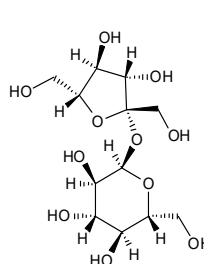
Sunniest NH2



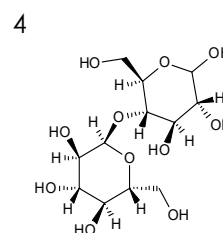
Fructose



Glucose



Sucrose



Maltose

Column: Company A NH2 5 μ m, 250 x 4.6 mm

Sunniest NH2 5 μ m, 250 x 4.6 mm

Mobile phase: Acetonitrile:water=75:25

Flow rate: 1.0 mL / min

Temperature: 40 °C

Detection: RI

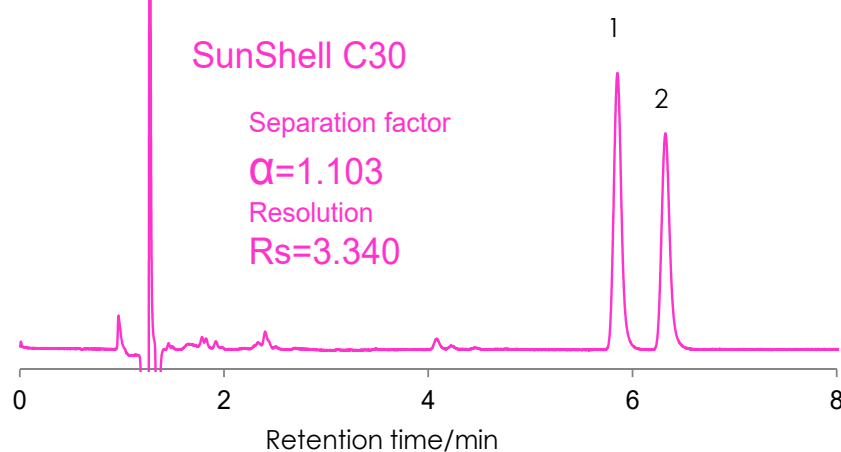
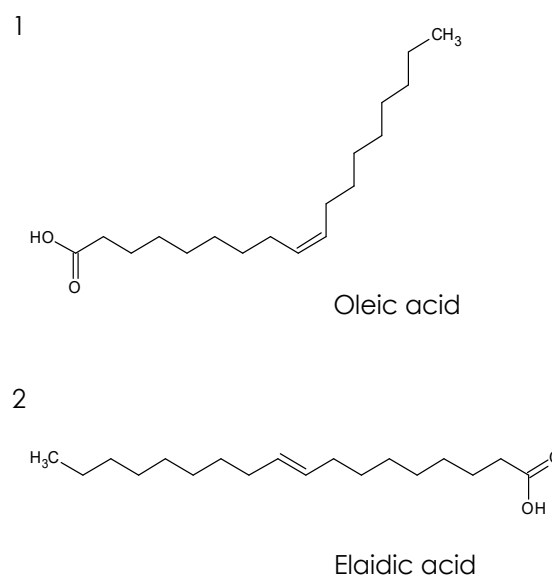
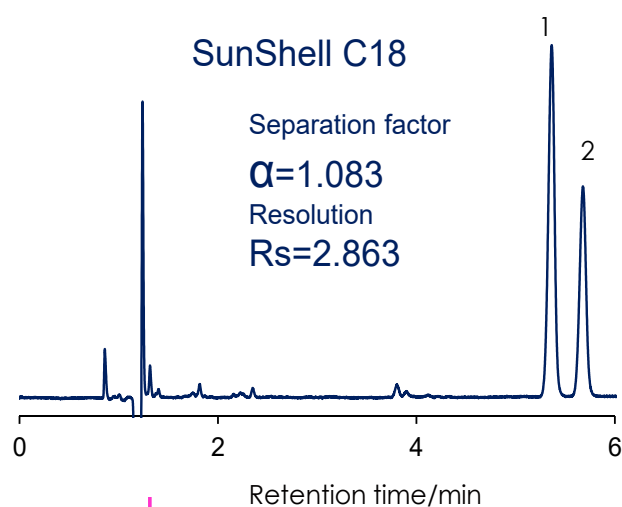
Sample: 1 = Fructose, 2 = Glucose, 3 = Sucrose, 4 = Maltose

オレイン酸とエライジン酸の分離 (2)

Cis-trans isomers of 9-cotadecenoic acid (2)

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

SunShell C30 2.6 μ m, 150 x 4.6 mm i.d.



Column: SunShell C18 2.6 μ m, 150 x 4.6 mm

SunShell C30 2.6 μ m, 150 x 4.6 mm

Mobile phase: Acetonitrile:water:formic acid=90:10:0.05

Flow rate: 1.0 mL / min

Temperature: 40 °C

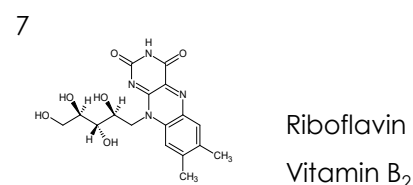
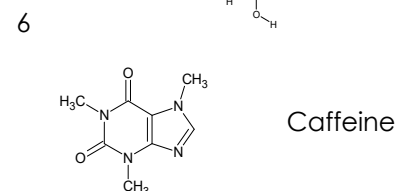
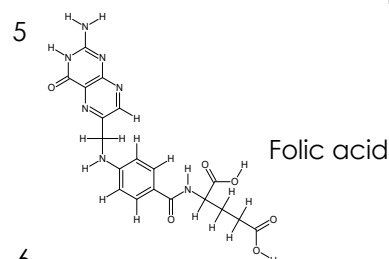
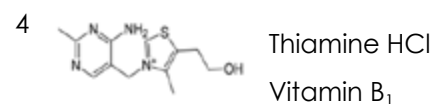
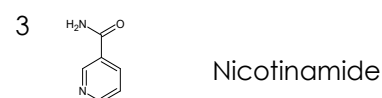
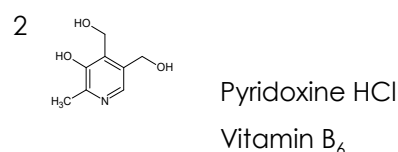
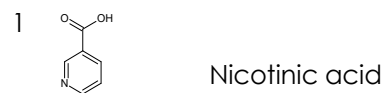
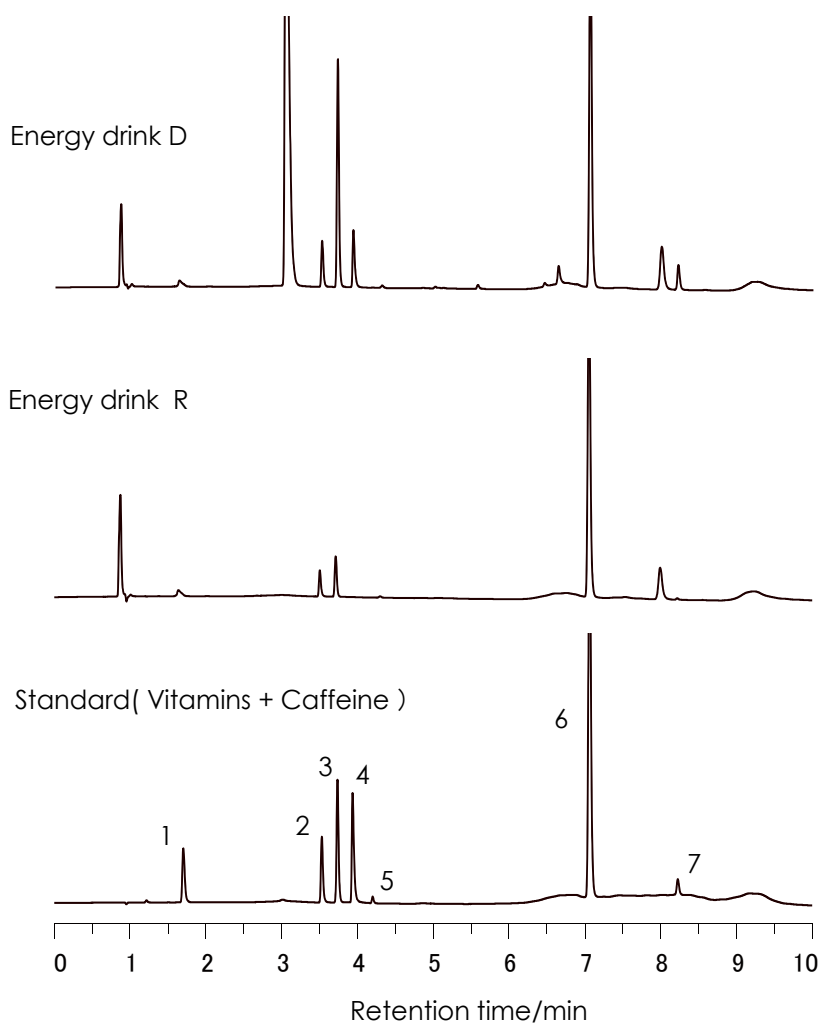
Detection: UV@215 nm

Sample: 1 = Oleic acid, 2 = Elaidic acid

ドリンク剤中の水溶性ビタミン類の分離

Water-soluble vitamins in the drinks

SunShell RP-AQUA 2.6 μm, 100 x 4.6 mm i.d.



Column: SunShell RP-AQUA 2.6 μm, 100 x 4.6 mm

Mobile phase: A) 20mM Ammonium acetate

B) Acetonitrile

Time (min)	0	8	10
%B	0	20	20

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@230 nm

Injection volume: 1 μL

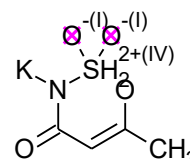
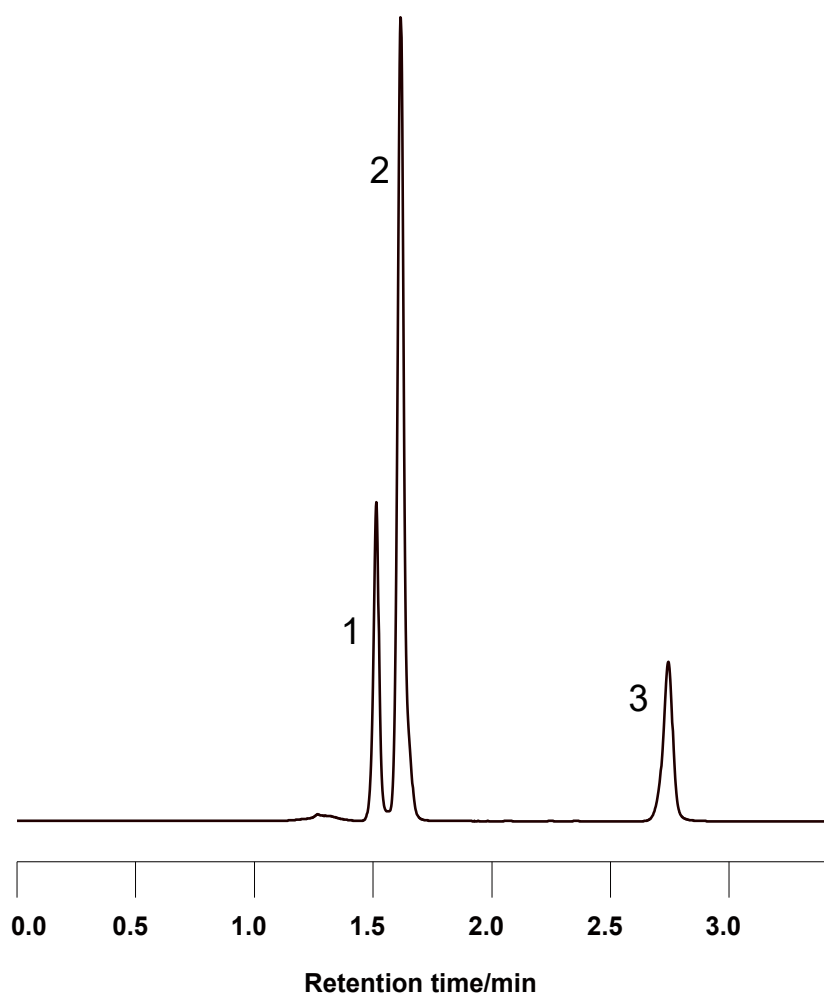
Instrument	Hitachi Chromaster®
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



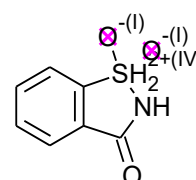
合成甘味料の分離

Artificial sweeteners

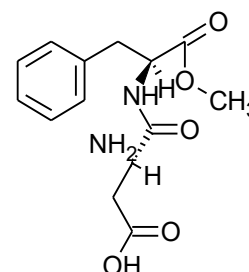
SunShell HILIC-Amide 2.6 μm , 150 x 4.6 mm i.d.



1. Acesulfame K



2. Saccharin



3. Aspartame

Column:

SunShell HILIC-Amide 2.6 μm , 150 x 4.6 mm i.d.

Mobile phase: acetonitrile:

25 mM phosphate buffer (pH2.5) =8:2

Flow rate: 1.0 mL/min ,

Pressure : 14.6MPa

Temperature: Ambient

Detection: UV@215 nm

Injection volume: 2 μL

Sample: 1 = Acesulfame K,

2 = Saccharin,

3 = Aspartame

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

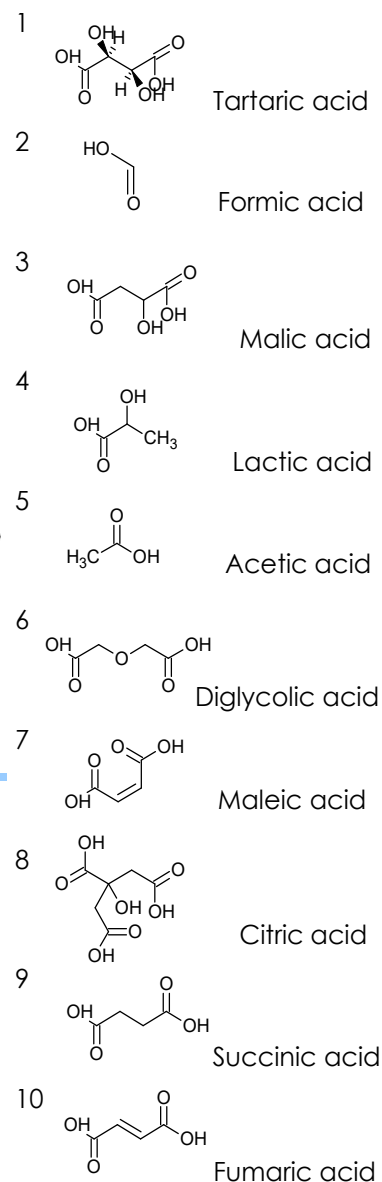
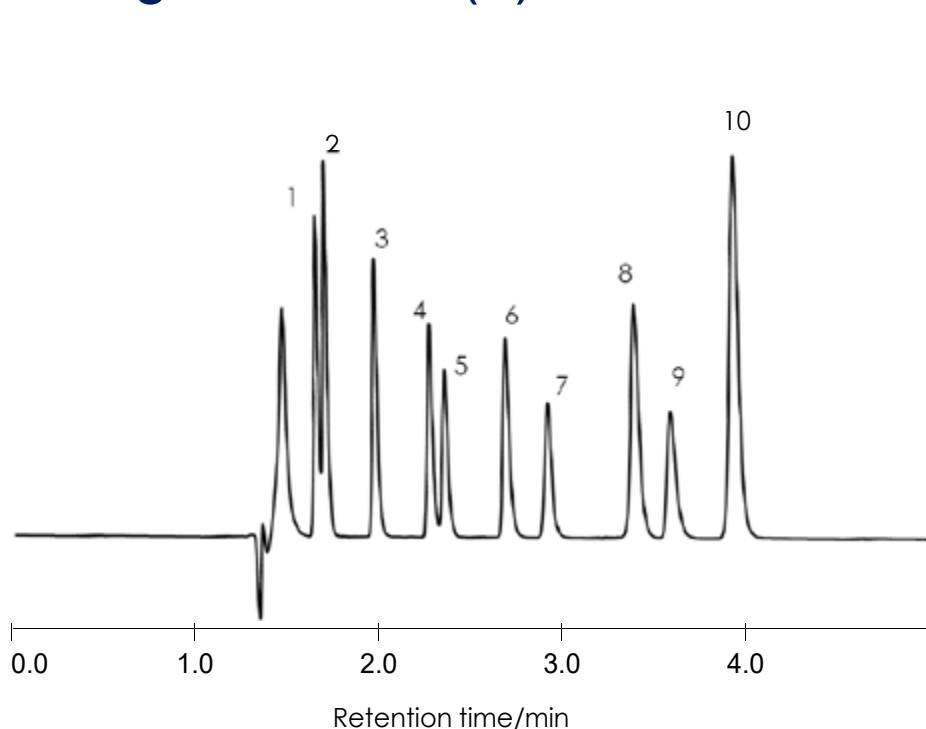
Pump: 5160



有機酸の分離 (4)

Organic acids (4)

SunShell RP-AQUA 2.6 μm, 150 x 4.6 mm i.d.



Column: SunShell RP-AQUA 2.6 μm, 150 x 4.6 mm

Mobile phase: 0.1% H₃PO₄

Flow rate: 1.0 mL/min

Pressure : 23.2 MPa

Temperature: 40 °C

Detection: UV@210nm

Injection volume: 1 μL

Sample:

- 1 = Tartaric acid (500 ppm)
- 2 = Formic acid (1000 ppm)
- 3 = Malic acid (1000 ppm)
- 4 = Lactic acid (1000 ppm)
- 5 = Acetic acid (1000 ppm)
- 6 = Diglycolic acid (1000 ppm)
- 7 = Maleic acid (30 ppm)
- 8 = Citric acid (1000 ppm)
- 9 = Succinic acid (1000 ppm)
- 10 = Fumaric acid (10 ppm)

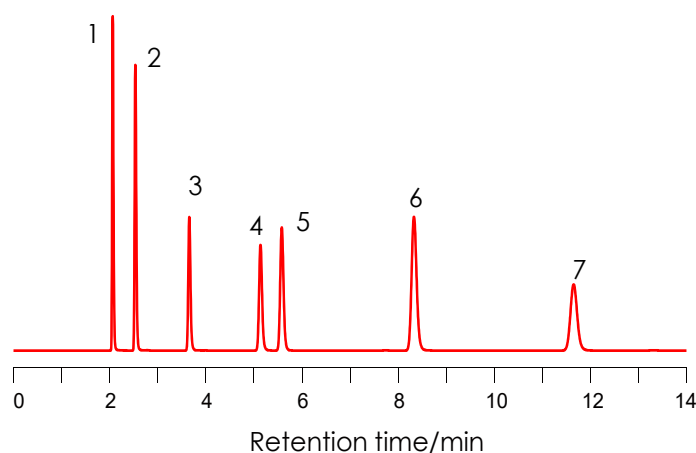
Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



核酸の分離

Nucleic acid

Column: SunShell RP-AQUA, 2.6 μ m 150 x 4.6 mm



Mobile phase:

20 mM ammonium acetate pH6.8

Flow rate: 1.0 mL / min

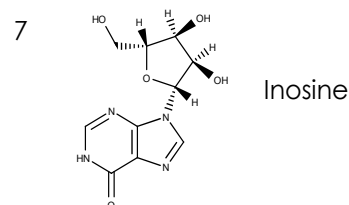
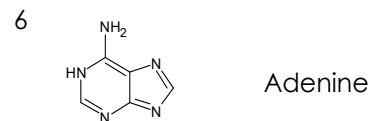
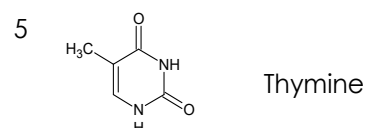
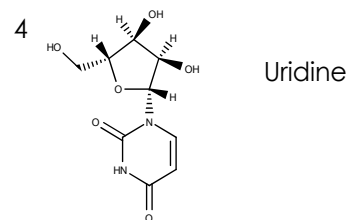
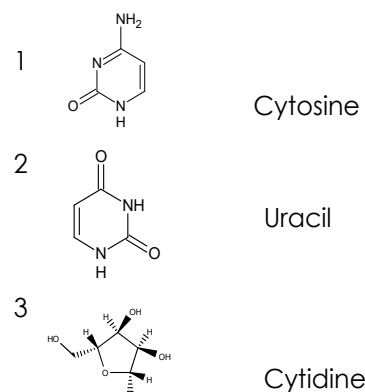
Temperature: 40 °C

Pressure: 23.8 MPa

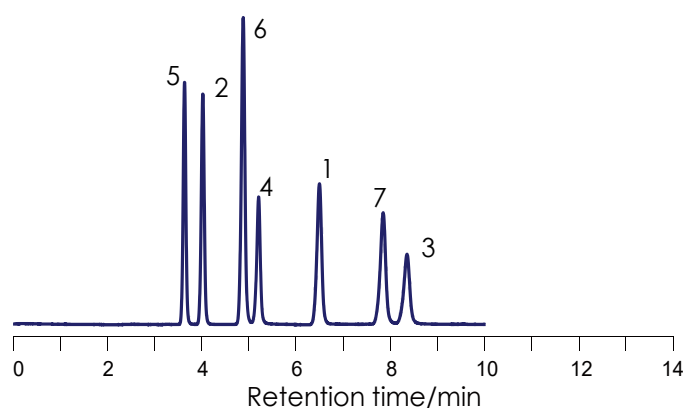
Detection: UV@250 nm

SunShell RP-AQUA 2.6 μ m, 150 x 4.6 mm i.d.

SunShell HILIC-Amide 2.6 μ m, 150 x 4.6 mm i.d.



Column: SunShell HILIC-Amide, 2.6 μ m, 150 x 4.6 mm



Mobile phase:

Acetonitrile:20 mM ammonium acetate pH6.8 = 80:20

Flow rate: 0.5mL / min

Temperature: 40 °C

Pressure: 6.1 MPa

Detection: UV@250 nm

核酸塩基は親水性の高い物質ですが、SunShell RP-AQUAであれば水100%の移動相でも使用でき、良好な分離を示します。

また、SunShell HILIC-Amideを使用すれば有機溶媒濃度を高くする事ができ、LC/MSでも使用可能となります。

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

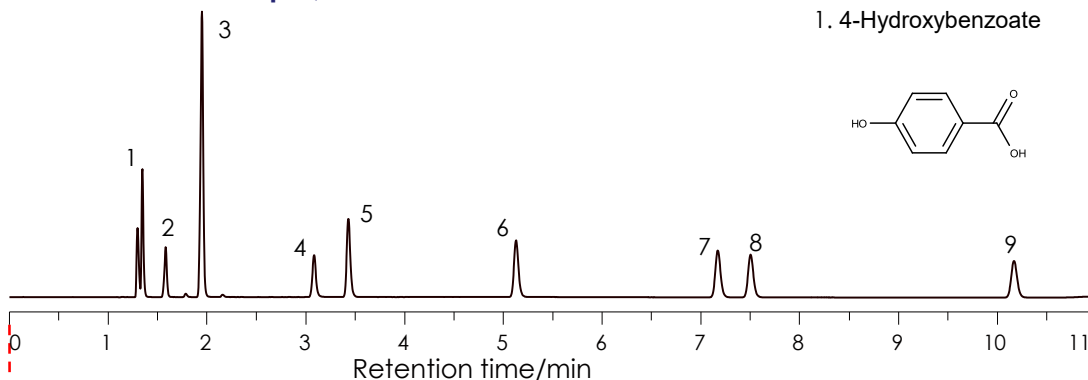
Pump: 5160



食品添加物の分離

Food additives

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

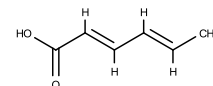
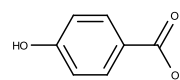


SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

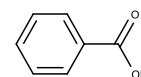
SunShell C18 2 μ m, 100 x 2.1 mm i.d.

1. 4-Hydroxybenzoate

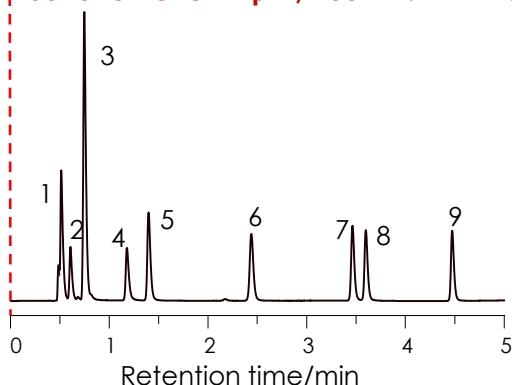
2. Sorbic acid



3. Benzoic acid

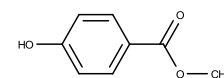
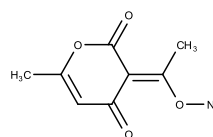


SunShell C18 2 μ m, 100 x 2.1 mm i.d.



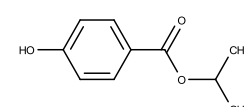
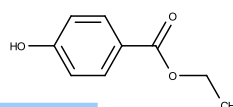
4. Dehydroacetic acid Na

5. Methyl 4-hydroxybenzoate



6. Ethyl 4-hydroxybenzoate

7. Isopropyl 4-hydroxybenzoate



Mobile phase: A) 20 mM Ammonium formate pH4.9

B) Acetonitrile

Time (min)	0	10	12
%B (2.6 μ m, 150 x 4.6 mm i.d.)	30	50	30

Time (min)	0	5	6
%B (2 μ m, 100 x 2.1 mm i.d.)	30	80	30

Flow rate : 1.0 mL / min (2.6 μ m, 150 x 4.6 mm i.d.)

: 0.4 mL / min (2 μ m, 100 x 2.1 mm i.d.)

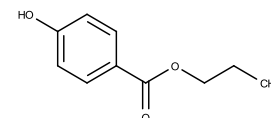
Temperature : 40 °C

Pressure : 21.0MPa (2.6 μ m, 150 x 4.6 mm i.d.)

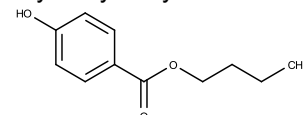
: 44.3MPa (2 μ m, 100 x 2.1 mm i.d.)

Detection : UV@240 nm

8. Propyl 4-hydroxybenzoate



9. Butyl 4-hydroxybenzoate



SunShell C18カラムを使用する事で良好な分離を得られました。

圧力は上がってしまいますが、2 μ mカラムを使用する事で測定サイクルを1/2にする事が出来ます。また、流速も1/2以下になるため、使用する移動相は1/4以下になります。

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

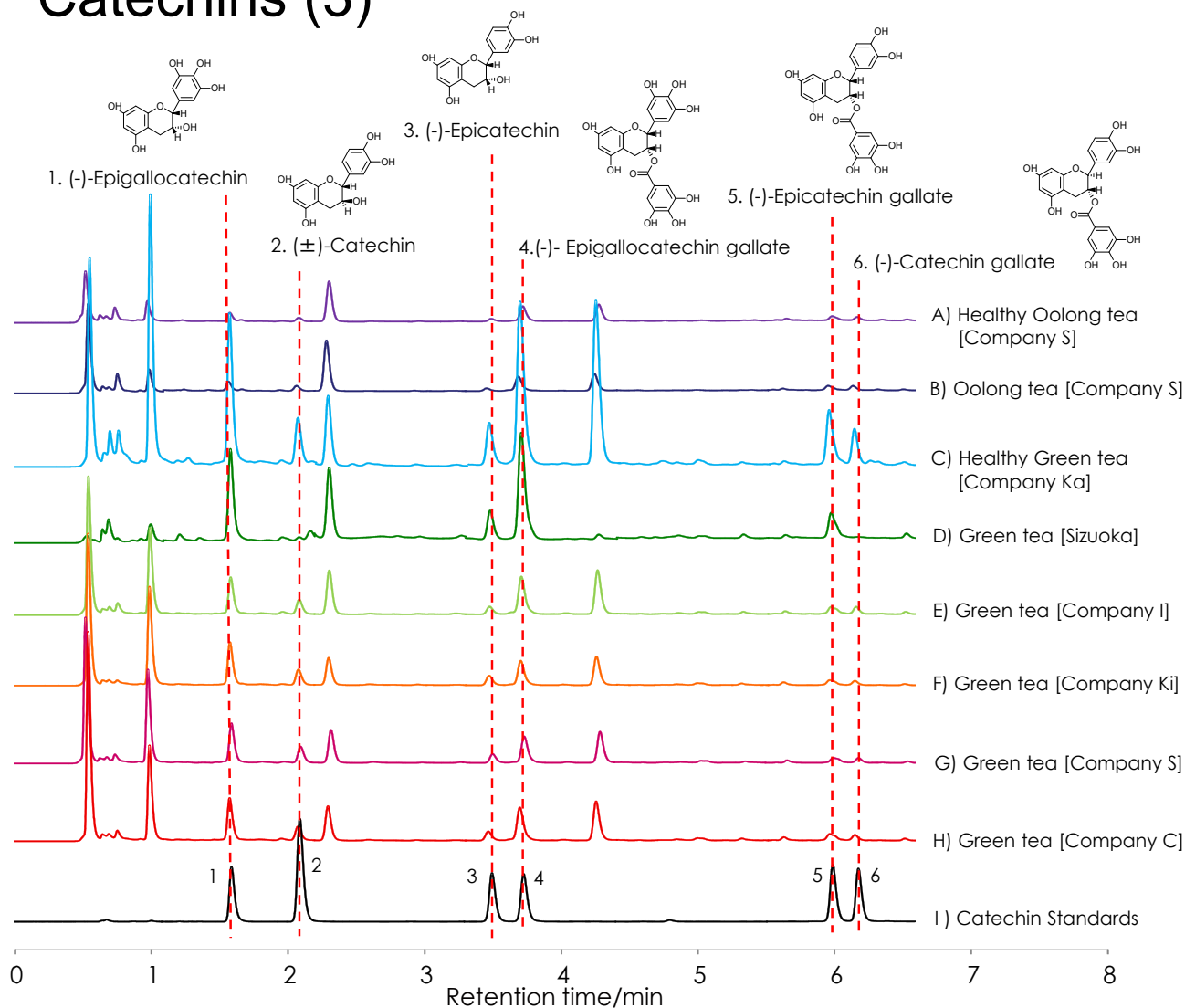
Pump: 5160



カテキン類の分離 (3)

Catechins (3)

SunShell C18 2.6 μ m, 100 x 2.1 mm i.d.



Mobile phase: A) 0.1% phosphoric acid
B) Acetonitrile

Time (min)	0	7	8
%B	10	25	25

Flow rate : 0.35 mL/min
Temperature : 40 °C
Pressure : 20.4 MPa
Detection : UV@230 nm

Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160

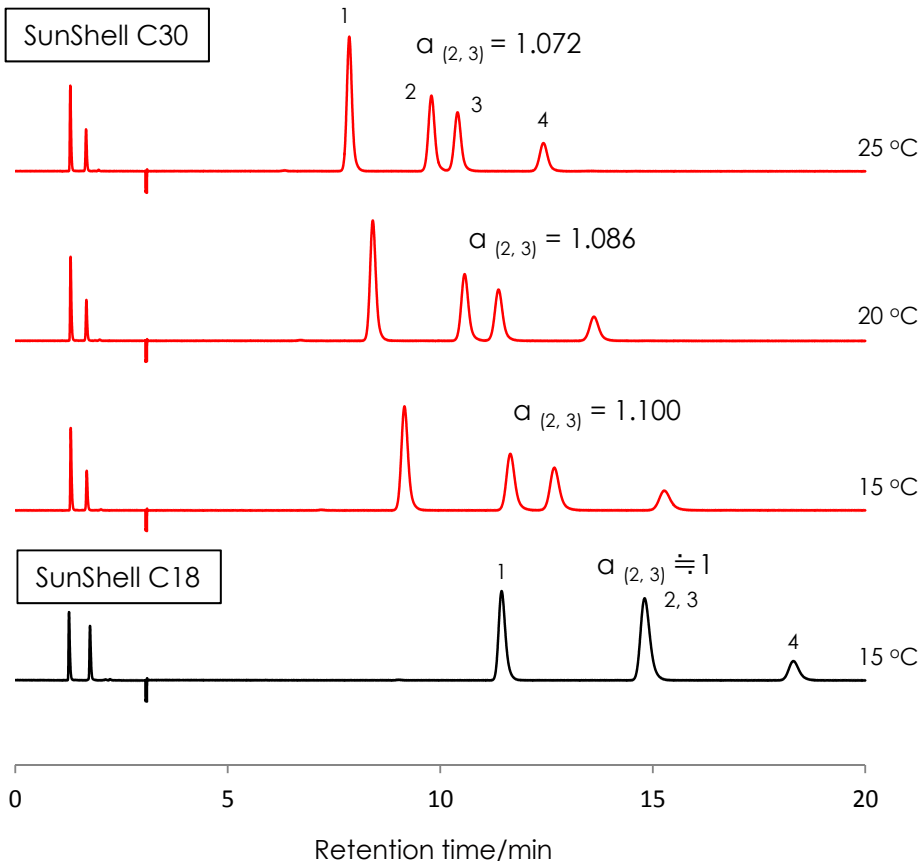


サンプルはすべて0.45 μ mのフィルターを通し、原液を1 μ L注入しています。
高濃度のカテキン含有を謳ったC)の製品や、茶葉(静岡県産)をお湯で抽出したD)のサンプルが含有量が多いという結果になりました。

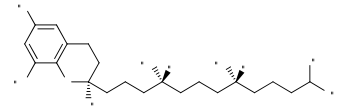
ビタミンE異性体の分離

Vitamin E (Tocopherol)

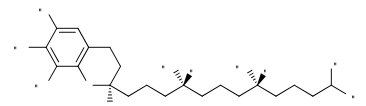
SunShell C30 2.6 μm, 150 x 3.0 mm i.d.



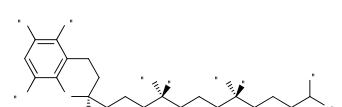
1. δ-Tocopherol



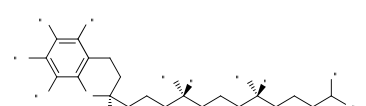
2. γ-Tocopherol



3. β-Tocopherol



4. α-Tocopherol



Mobile phase : Methanol/Water = 96/4
 Flow rate : 0.43 mL/min
 Temperature : 15, 20, 25 °C
 Pressure : SunShell C30 / 17.8 MPa (15 °C) ~ 15.7MPa (25 °C)
 : SunShell C18 / 19.7 MPa (15 °C)
 Detection : UV@250 nm (0 ~ 3 min) for detection t_0
 : UV@295 nm (3 ~ 20 min)

脂溶性物質であるビタミンE (Tocopherol) 異性体の分離およびC18カラムとの比較です。

C18カラムでは15°Cでもβ, γ-Tocopherolを分離できませんでしたが、C30カラムでは15°Cはもちろん、25°Cにおいても良好に分離する事が出来ました。

脂溶性化合物や異性体の分離ではSunShellC30カラムがおすすめです。

Instrument

Hitachi Chromaster®
 Detector: 5410
 Oven: 5310
 AutoSampler: 5260
 Pump: 5160

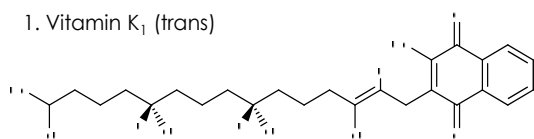
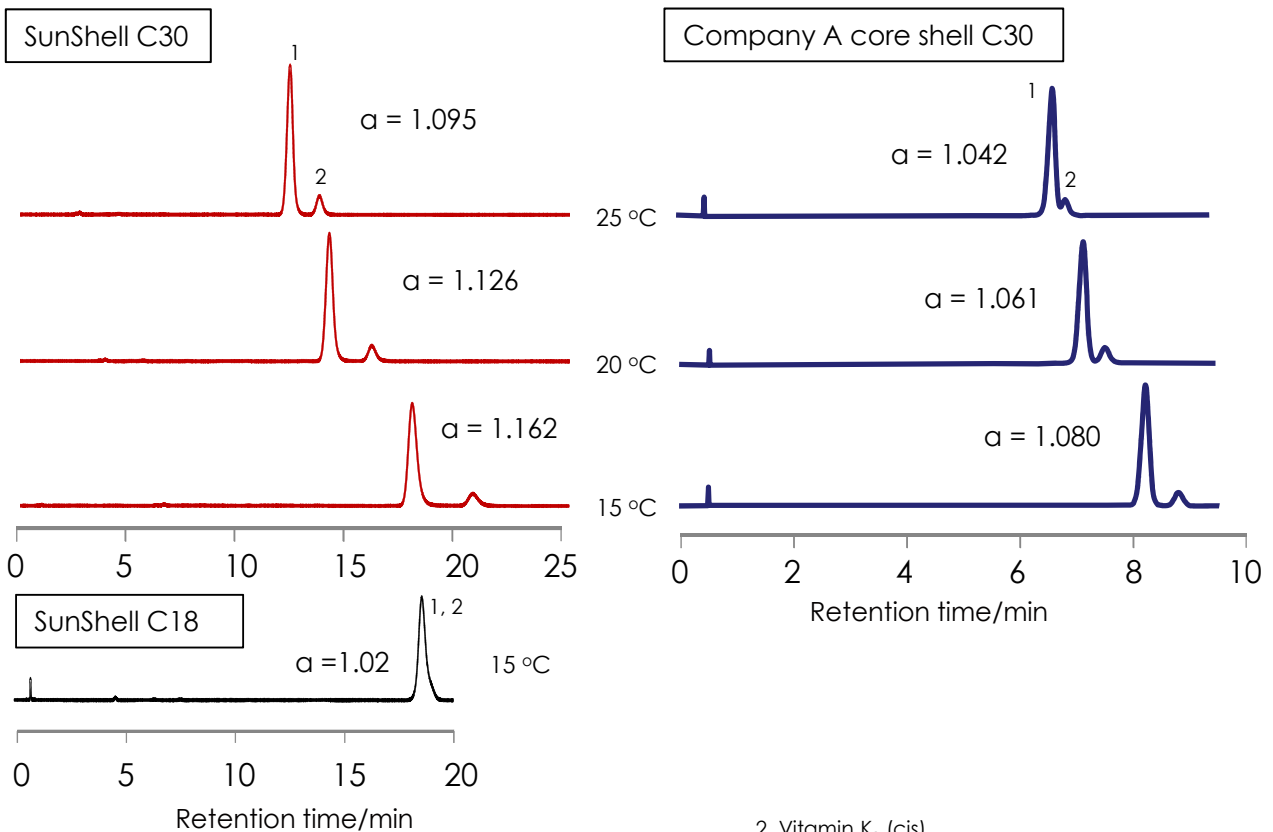


ビタミンK₁異性体の分離

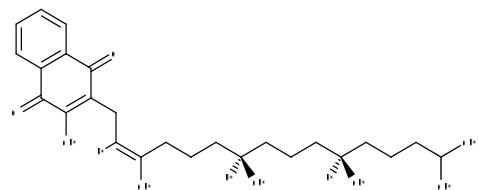
Vitamin K₁ (Phylloquinone)

SunShell C30 2.6 μm, 100 x 2.1 mm i.d.

Company A C30 2.6 μm, 100 x 2.1 mm i.d.



2. Vitamin K₁ (cis)



Mobile phase : Methanol/Water = 96/4
 Flow rate : 0.35 mL/min
 Temperature : 15, 20, 25 °C
 Pressure : SunShell C30 / 18.7MPa (15 °C) ~ 21.4MPa (25 °C)
 : SunShell C18 / 19.7MPa (15 °C)
 Detection : UV@250 nm

ビタミンK₁(Phylloquinone) のcis, trans異性体をSunShellC30カラムにて分離しました。

C18カラムでは分離が不可能でしたが、C30カラムでは25°Cでも余裕をもって分離することができます。

また、他社のC30カラムと比べても分離係数αは高くなっており、同じC30カラムからの変更でも分離の向上が期待できます。

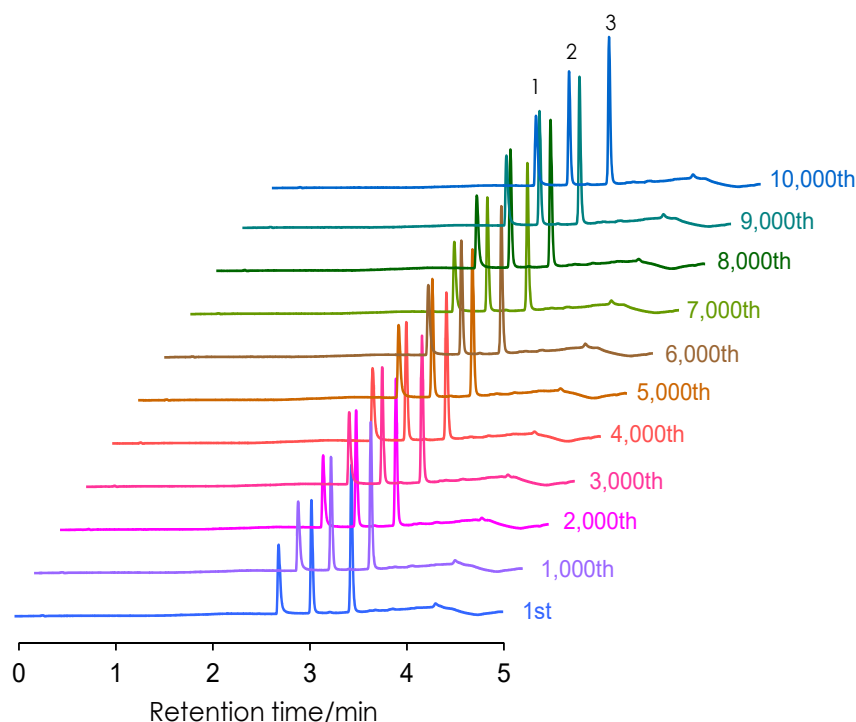
Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



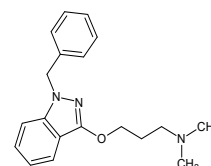
酸性条件(pH2)下の連続分析

SunShell C18 2.6 μm, 50 x 2.1 mm i.d.

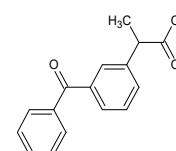
Continuous analysis under acidic pH condition



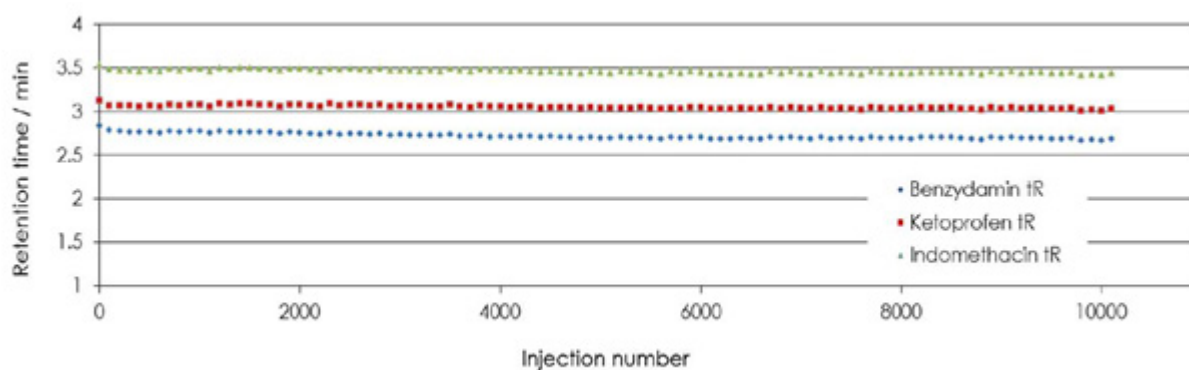
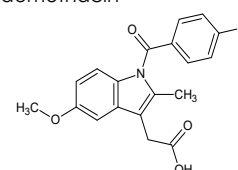
1. Benzylamine



2. Ketoprofen



3. Indomethacin



Column: SunShell C18 2.6 μm, 50 x 2.1 mm
Mobile phase: A) 0.1% trifluoroacetic acid pH 2.0
B) Acetonitrile

Gradient program:

Time (min)	0	3	3.1	5
% B	10	90	10	10

Flow rate: 0.5 mL/min
Temperature: 40 °C
Back pressure: 11 MPa to 17 MPa
Detection: UV@270nm
Injection volume: 0.5 μL
Sample: 1=Benzydamin (0.5 mg/mL), 2=Ketoprofen (0.04 mg/mL),
3= Indomethacin (0.05 mg/mL)

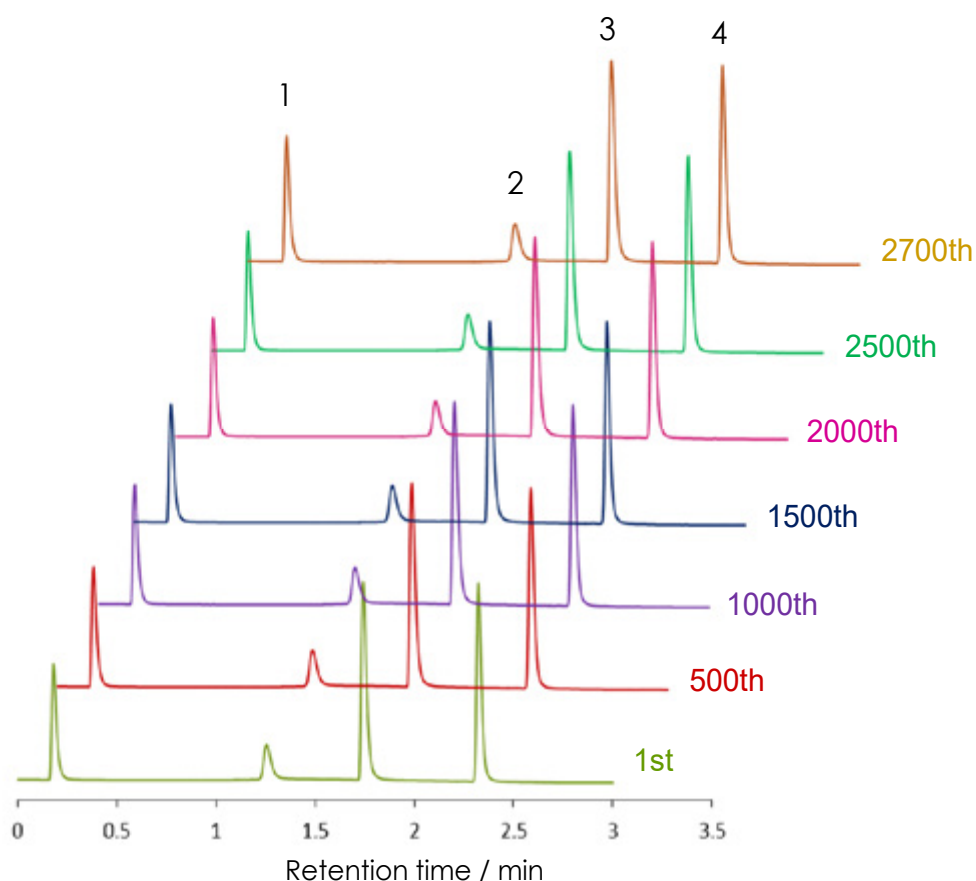
Instrument
Hitachi Chromaster®
Detector: 5410
Oven: 5310
AutoSampler: 5260
Pump: 5160



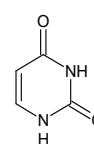
アルカリ性条件(pH9.5)下の連続分析

Continuous analysis under basic pH condition

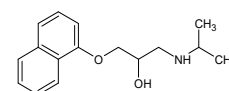
SunShell C18 2.6 μ m, 50 x 2.1 mm i.d.



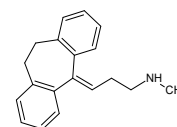
1. Uracil



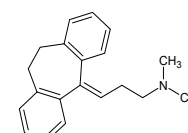
2. Propranolol



3. Nortriptyline



4. Amitriptyline



Column: SunShell C18, 2.6 μ m 50 x 2.1 mm
Mobile phase: A) 10 mM Ammonium bicarbonate pH 9.5
B) Acetonitrile

Gradient program:

Time (min)	0	1	3	3.1	5
% B	30	90	90	30	30

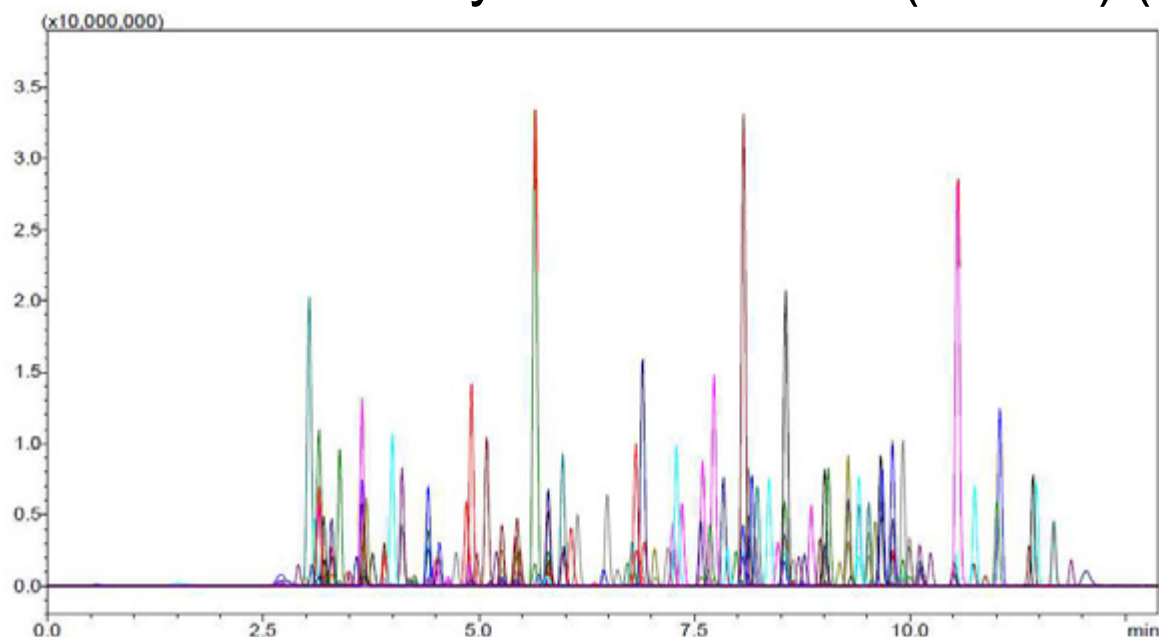
Flow rate: 0.5 mL/min
Temperature: 40 °C
Detection: UV@250nm
Injection volume: 0.5 μ L
Sample: 1=Uracil, 2=Propranolol,
3= Nortriptyline, 4=Amitriptyline

Instrument
Hitachi Chromaster®
Detector: 5410
Oven: 5310
AutoSampler: 5260
Pump: 5160



農薬の一斉分析(LC/MS) (1)-A SunShell C18 2.6 μm, 100 x 2.1 mm i.d.

Simultaneous Analysis of Pesticide (LC/MS) (1)-A



Sample:

1 : 3-keto Carbofuran	26 : Carbofuran	51 : Ethiprole	76 : Haloxifop-methyl	101 : Monocrotophos	126 : Simazine
2 : 3-OH Carbofuran	27 : Carbosulfan	52 : Ethirimol	77 : Hexaconazole	102 : Norflurazon	127 : Spinetoram J
3 : Abamectin	28 : Carpropamid	53 : Etoxazole	78 : Hexaflumuron	103 : Novaluron	128 : Spinetoram L
4 : Abamectin	29 : Chlorantraniliprole	54 : Famoxadone	79 : Hexythiazox	104 : Omethoate	129 : Spinosad A
5 : Acetamiprid	30 : Chlorfluazuron	55 : Fenamiphos	80 : Imazali	105 : Oxamyl	130 : Spinosad A
6 : Aldicarb	31 : Chromafenozide	56 : Fenazaquin	81 : Imidacloprid	106 : Oxyacboxin	131 : Spirodiclofen
7 : Aldicarb sulfone	32 : Cinosulfuron	57 : Fenbutatin-oxide	82 : Indoxacarb	107 : Pencycuron	132 : Spirotetramat
8 : Aldicarb sulfoxide	33 : Clofentezine	58 : Fenhexamid	83 : Isazofos	108 : Penoxsulam	133 : Tebufenozide
9 : Alloxidim (sodium)	34 : Clomazone	59 : Fenobucarb	84 : Isoprocarb	109 : Phosphamidon	134 : Tebufenpyrad
10 : Ametryn	35 : Clomeprop	60 : Fenothiocarb	85 : Isouron	110 : Phoxim	135 : Teflubenzuron
11 : Amisulbrom	36 : Clothianidin	61 : Fenoxycarb	86 : Linuron	111 : Pirimicarb	136 : Tepraloxidim
12 : Atrazine	37 : Cyazofamid	62 : Fenpyroximate	87 : Lufenuron	112 : Prochloraz	137 : Thiabendazole
13 : Azoxystrobin	38 : Cyclosulfamuron	63 : Fenthion	88 : Mecarbam	113 : Profenophos	138 : Thiocloprid
14 : Benalaxyl	39 : Cyflumetofen	64 : Fipronil	89 : Mepanipyrim	114 : Promecarb	139 : Thiamethoxam
15 : Bendiocarb	40 : Cymoxanil	65 : Flazasulfuron	90 : Metaflumizon	115 : Propamocarb hydrochloride	140 : Thiobencarb
16 : Benfuracarb	41 : Cyprodinil	66 : Fonicamid	91 : Metalaxyl	116 : Propanil	141 : Thiodicarb
17 : Bensulfuron-methyl	42 : Demeton-S-methyl	67 : Fluazifop-P-butyl	92 : Metconazole-cis	117 : Propargite	142 : Tolfenpyrad
18 : Bentazone	43 : Dicrotophos	68 : Fluazinam	93 : Methamidophos	118 : Propoxur	143 : Trichlorfon
19 : Benthiazole	44 : Dicrotophos	69 : Fludioxonil	94 : Methiocarb	119 : Pymetrozine	144 : Tricyclazole
20 : Bifenazate	45 : Dimethenamid	70 : Flufenoxuron	95 : Methomyl	120 : Pyraclostrobin	145 : Trifloxystrobin
21 : Boscalid	46 : Dimethoate	71 : Fluopicolide	96 : Methoxyfenozide	121 : Pyridaben	146 : Triforine
22 : Buprofezin	47 : Dimethomorph	72 : Flusilazole	97 : Metbromuron	122 : Pyridate	147 : Triphenylphosphate (STD)
23 : Butacboxim	48 : Dinotefuran	73 : Flutriafol	98 : Metolcarb	123 : Pyrifenox	148 : Vamidothion
24 : Carbaryl	49 : Diuron	74 : Formetanate	99 : Metrafenone	124 : Quinoxyfen	149 : XMC (Macbal)
25 : Carbazim	50 : Dymron	75 : Furametpyr	100 : Metribuzin	125 : Quizalofop-ethyl	150 : Xylfycarb
					151 : Zoxamide

Column: SunShell C18 2.6 μm, 100 x 2.1 mm

Mobile phase: A) 5 mM Ammonium acetate in H₂O

B) 5 mM Ammonium acetate in CH₃OH

Time (min)	0	0.5	1	10	15	15.1	15.5	17.5	17.51
% B	1	1	40	98	98		1		
Flow rate (mL/min)	0.4				0.4	0.7		0.7	0.4

Temperature: 40 °C

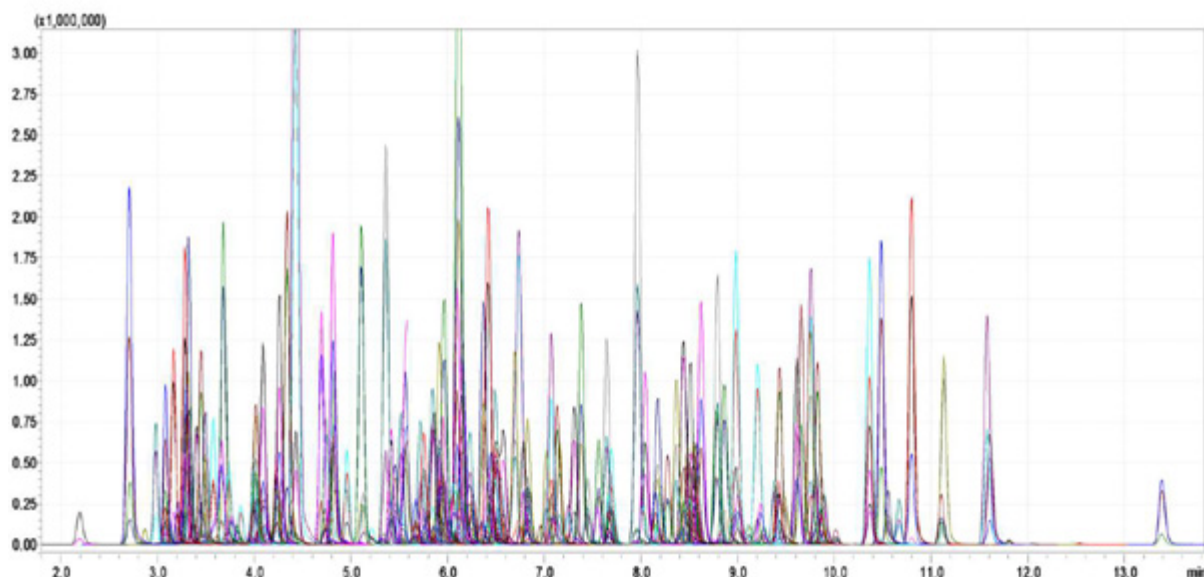
Detection: LC/MS/MS (ESI, MRM)

Injection volume: 5 μL (100ppb pesticide STD)

農薬の一斉分析(LC/MS) (1)-B

SunShell C18 2.6 μm, 150 x 2.1 mm i.d.

Simultaneous Analysis of Pesticide (LC/MS) (1)-B



Sample:

1 Abamectin B1	37 Cymoxanil	73 Fenoxycarb	109 Isoprazam	145 Paclobutrazole	181 Quinoclamine
2 Acephate	38 Cyproconazole(I)	74 Fenpyroximate	110 Kresoxim-methyl	146 Penconazole	182 Quizalofop-ethyl
3 Acetamiprid	39 Cyproconazole(II)	75 Fentrazamide	111 Linuron	147 Pencycuron	183 Saflufenacil
4 Aldicarb	40 Daimuron	76 Ferimzone(E)	112 Lufenuron	148 Penoxsulam	184 Sethoxydim
5 Amisulbrom	41 Demeton-S-methyl	77 Ferimzone(Z)	113 Malathion	149 Pentoxazone	185 Spinetoram(J)
6 Azimsulfuron	42 Diazinon	78 Flonicamid	114 Mandipropamid	150 Phenthoate	186 Spinetoram(L)
7 Azinphos-methyl	43 Dichlorvos(DDVP)	79 Fluacrypyrim	115 Mefenacet	151 Phosphamidone	187 Spirodiclofen
8 Azoxystrobin	44 Diethofencarb	80 Flubendiamide	116 Mepanipyrim	152 Phoxim	188 Spirotetramat
9 Bendiocarb	45 Diflubenzuron	81 Flucetosulfuron	117 Mepronil	153 Piperophos	189 Sulfoxaflor
10 Bensulfuron-methyl	46 Dimepiperate	82 Fludioxonil	118 Metalaxyl	154 Pirimicarb	190 Tebuconazole
11 Benthiaivalicarb-Isopropyl	47 Dimethametryn	83 Flufenacet	119 Metamifop	155 Pirimiphos-methyl	191 Tebufenozide
12 Benzobicyclon	48 Dimethenamid	84 Flufenoxuron	120 Metazosulfuron	156 Probenazole	192 Tebufenpyrad
13 Benzoximate	49 Dimethomorph(E)	85 Fluopicolide	121 Methconazole	157 Propenofos	193 Teflubenzuron
14 Bifentanol	50 Dimethomorph(Z)	86 Fluquinconazole	122 Methabenzthiazuron	158 Propamocarb	194 Terbufthiazine
15 Boscalid	51 Diniconazole	87 Flusilazole	123 Methiocarb	159 Propanil	195 Tetraconazole
16 Bromacil	52 Dinotefuran	88 Flutolanil	124 Methomyl	160 Propaquizafop	196 Thenylchlor
17 Buprofezin	53 Diphenamid	89 Fluxapyroxad	125 Methoxyfenozide	161 Propoxur	197 Thiabendazole
18 Cadusafos	54 Dithiopyr	90 Forchlorfenuron	126 Metobromuron	162 Pyraclofos	198 Thiadiprid
19 Cafenstrole	55 Diuron	91 Fosthiazate	127 Metolcarb	163 Pyraclostrobin	199 Thiamethoxam
20 Carbaril	56 Edifenphos	92 Furathiocarb	128 Metrafenone	164 Pyrazolate	200 Thiazopyr
21 Carbendazim	57 Esprocarb	93 Gibberellic acid	129 Mevinphos	165 Pyrazophos	201 Thidiazuron
22 Carbofuran	58 Ethaboxam	94 Halosulfuron-methyl	130 Milbemeclin A3	166 Pyribenzoxim	202 Thifensulfuron-methyl
23 Carboxin	59 Ethiofencarb	95 Haloxyfop	131 Milbemeclin A4	167 Pyributicarb	203 Thiobencarb
24 Carfentrazone-ethyl	60 Ethoprophos	96 Hexaconazole	132 Molinate	168 Pyridaben	204 Thiodicarb
25 Carpropamide	61 Ethoxysulfuron	97 Hexaflumuron	133 Monocrotophos	169 Pyridaphenthion	205 Tiadinil
26 Chlorpyrifos	62 Etofenprox	98 Hexazinone	134 Myclobutanil	170 Pyrifluquinazon	206 Triadimefon
27 Chlorsulfuron	63 Etoxazole	99 Hexythiazox	135 Napropamide	171 Pyriflailid	207 Triazophos
28 Chromafenozide	64 Etrifimos	100 Imazalil	136 Nicosulfuron	172 Pyrimethanil	208 Tricyclazole
29 Clethodim	65 Famoxadone	101 Imazosulfuron	137 Novaluron	173 Pyrimidifen	209 Trifloxystrobin
30 Clofentezine	66 Fenamiphos	102 Imicyafos	138 Nuarimol	174 Pyriminobac-methyl(E)	210 Triflumizole
31 Clomazone	67 Fenarimol	103 Imidacloprid	139 Oflurace	175 Pyriminobac-methyl(Z)	211 Trifluroxuron
32 Clothianidin	68 Fenazaquin	104 Inabentfide	140 Omethoate	176 Pyrimisulfan	212 Uniconazole
33 Cyazofamid	69 Fenbuconazole	105 Iprobenfos	141 Oxadiazon	177 Pyriproxyfen	213 Vamidothion
34 Cyclosulfamuron	70 Fenhexamid	106 Iprovalicarb	142 Oxadixyl	178 Pyroquilon	
35 Cylflufenamid	71 Fenobucarb	107 Isoprocarb	143 Oxamyl	179 Quinalphos	
36 Cyhalofop-butyl	72 Fenoxaprop-ethyl	108 Isoprothiolane	144 Oxaziclonfemon	180 Quinmerac	

Column: SunShell C18 2.6 μm, 150 x 2.1 mm

Mobile phase: A) 5 mM Ammonium acetate and 0.1% formic acid in H₂O

B) 5 mM Ammonium acetate and 0.1 % formic acid in CH₃OH

Time (min)	0	1	1.5	10	12	12.1	16	16.1	19
% B	15	15	60	60	90	98	98	15	15

Flow rate: 0.3 mL/min

Temperature: 40 °C

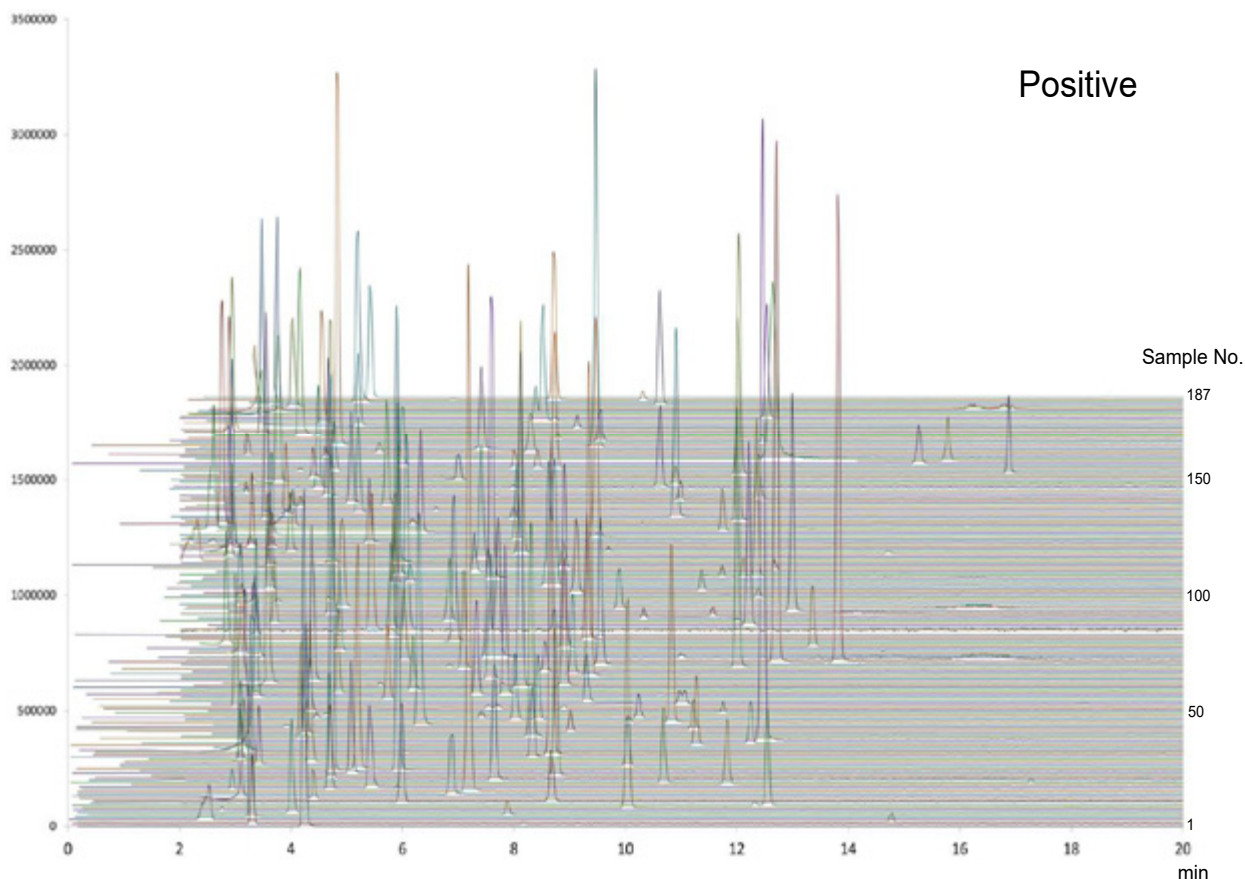
Detection: LC/MS/MS (ESI, MRM), Shimadzu LCMS-8050

Injection volume: 3 μL (10ppb pesticide STD)

農薬の一斉分析(LC/MS) (2)

SunShell C18 2.6 μm, 100 x 2.1 mm i.d.

Simultaneous Analysis of Pesticide (LC/MS) (2)



Sample

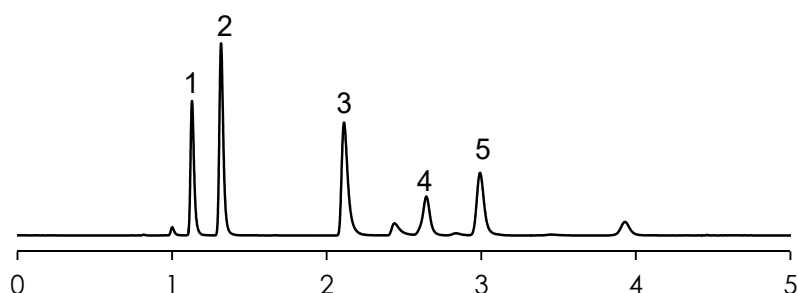
1. 1-Naphthylacetamide	33. Chrothianidin	64. Ethoxysulfuron	95. Imazalil	126. Naproanilide	157. Simetryn
2. 3-oh-Carbofuran	34. Cinosulfuron	65. Fenamidon	96. Imazamethabenz-methyl	127. Naptalam	158. Spinosyna
3. Abamection	35. Clodinafop acid	66. Fenamiphos	97. Imazaquin	128. Norflurazon	159. Spinosynd
4. Acephate	36. Clofentezine	67. Fenbuconazole	98. Imazosulfuron	129. Novaluron	160. Spiroxamine
5. Acetamiprid	37. Clomeprop	68. Fenhexamid	99. Imibenconazole debenzil	130. Ometoate	161. Sulfentrazone
6. Acibenzolar-s-methyl	38. Cloquintocet-methyl	69. Fenobucarb	100. Imibenconazole	131. Oxadixyl	162. Sulfosulfuron
7. Aldicarb	39. Cloransulam-methyl	70. Fenoxaprop-ethyl	101. Imidacloprid	132. Oxamyl	163. Tarloxymid
8. Aldoxycarb	40. Cumyruron	71. Fenoxycarb	102. Indanofan	133. Oxaziclomefone	164. Tcmtb
9. Anilofos	41. Cyanazine	72. Fenpyroximate	103. Indoxacarb	134. Oxycarboxin	165. Tebufenozide
10. Aramite	42. Cyazofamid	73. Fensulfthion	104. Iodosulfuron-methyl	135. Pencycuron	166. Tebuthiuron
11. Atrazine	43. Cycloate	74. Ferimzone	105. Iprovalicarb	136. Penoxsulam	167. Teflubenzuron
12. Azafenidin	44. Cycloprothrin	75. Flazasulfuron	106. Isoprocarb	137. Pentoxazone	168. Tetrachlorvinphos
13. Azamethiphos	45. Cyclosulfamuron	76. Florasulam	107. Isoxaflutole	138. Phenmedipham	169. Tetraconazole
14. Azimsulfuron	46. Cyflufenamide	77. Fluazifop	108. Isoxation-oxon	139. Phosphamidone	170. Thiabendazole
15. Azinphos-methyl	47. Cyproconazole	78. Flufenacet	109. Lactofen	140. Primicarb	171. Thiachloprid
16. Azoxystrobin	48. Cyprodinil	79. Flufenoxuron	110. Lenacil	141. Primisulfuron	172. Thiamethoxam
17. Bendiocarb	49. DDPV	80. Flumetsulam	111. Linuron	142. Prohydrojasmon	173. Thifensulfuron-methyl
18. Bensulfuron-methyl	50. Diallate	81. Fluridone	112. Lufenuron	143. Propaquizafop	174. Thifluzamide
19. Benzofenap	51. Dichlosulam	82. Flusilazole	113. Mepanipyrim	144. Propoxur	175. Thiodicarb
20. Bitertanol	52. Diclomezine	83. Flutriahol	114. Mesosulfuron-methyl	145. Propoxycarbazone	176. Tiazuron
21. Boscalid	53. Diclotopos	84. Foramsulfuron	115. Methabenzthiazuron	146. Prosulfuron	177. Tiradimenol
22. Bromacil	54. Difenoconazole	85. Forchlofenuron	116. Methamidofos	147. Pyorquilon	178. Tolfenpyrad
23. Butafenacil	55. Diflubenzuron	86. Fostiazate	117. Methiocarb	148. Pyraclostrobin	179. Triasulfuron
24. Carbaryl	56. Dimethirimol	87. Furametpyr	118. Methomyl	149. Pyrazolynate	180. Tribenuron
25. Carbofuran	57. Dimethoate	88. Furathiocarb	119. Methoxyfenozide	150. Pyrazosulfuron-ethyl	181. Tricyclazole
26. Carboxin	58. Dimethomorph	89. Halosulfuron-methyl	120. Metosulam	151. Pyrifitalid	182. Tridemorph
27. Carpropamide	59. Dimeton-s-methyl	90. Haloxyfop	121. Metsulfuron-methyl	152. Quinoclamine	183. Trifloxysulfuron
28. Chloridazon	60. Diuron	91. Hexaconazole	122. Metvinphos	153. Quizalofop-ethyl	184. Triflumuron
29. Chlorimuron-ethyl	61. Dymuron	92. Hexaflumuron	123. Monocrotophos	154. Silafluofen	185. Trifluzulfuron
30. Chlorsulfuron	62. Epoxiconazole	93. Hexazinon	124. Monolinuron	155. Simazine	186. Triticonazole
31. Chlorsuron	63. Ethametsulfuron-methyl	94. Hexythiazox	125. Myclobutanil	156. Simeconazole	187. XMC
32. Chromafenozide					

局所麻酔薬の分離 (1)

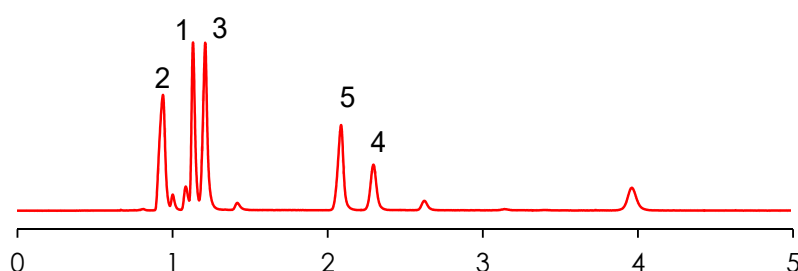
Local anesthetic (1)

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

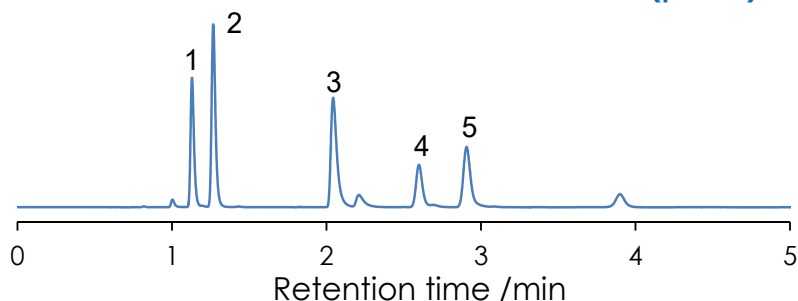
Methanol: 20 mM Phosphate buffer (pH 7.0) = 70:30



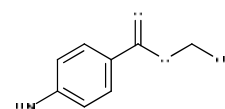
Methanol: 20 mM Ammonium acetate buffer (pH 6.8) = 70:30



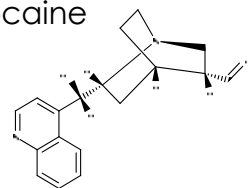
Methanol: 20 mM Ammonium bicarbonate buffer (pH 9.5) = 70:30



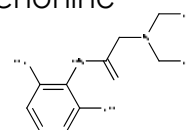
1. Benzocaine



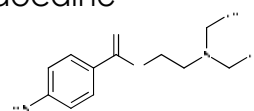
2. Procaine



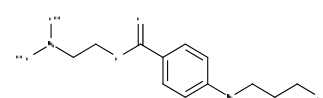
3. Cinchonine



4. Lidocaine



5. Tetracaine



Column :

SunShell C18 2.6 μm, 100 x 4.6 mm

Mobile phase : Methanol : 20 mM Phosphate buffer (pH 7.0) = 70:30

Methanol : 20 mM Ammonium acetate buffer (pH 6.8) = 70:30

Methanol : 20 mM Ammonium bicarbonate buffer (pH 9.5) = 70:30

Flow rate : 1.0 mL/min

Pressure : 24.8 MPa

Temperature : 40 °C

Detection : UV@250nm

Injection volume : 1 μL

Sample : 1 = Benzocaine,

2 = Procaine,

3 = Cinchonine,

4 = Lidocaine,

5 = Tetracaine

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

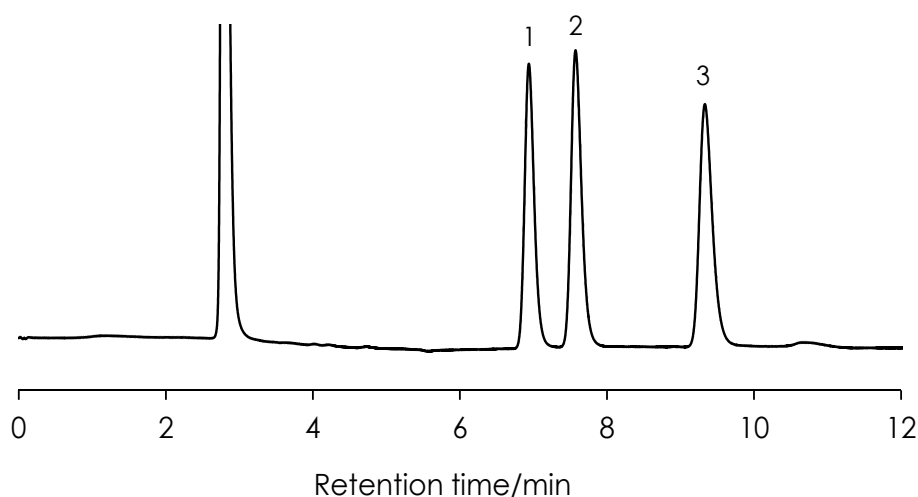
Pump: 5160



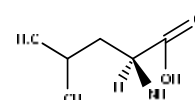
分岐鎖アミノ酸の分離

Branched-chain amino acids SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.

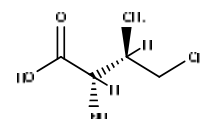
Temperature: 25 °C



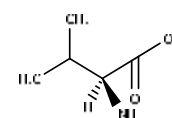
1. L-Leucine



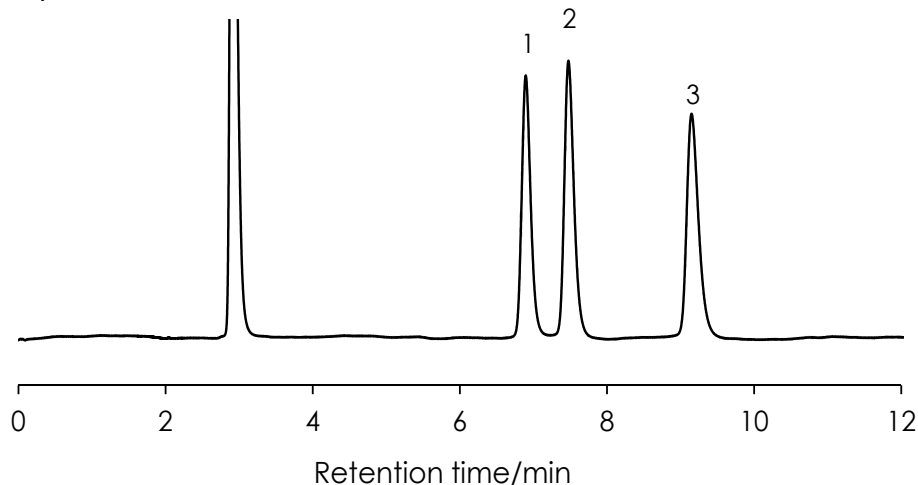
2. L-Isoleucine



3. L-Valine



Temperature: 40 °C



These samples have little temperature dependence.

Column: SunArmor NH2 5 μ m, 250 x 4.6 mm

Mobile phase: Acetonitrile:10mM ammonium acetate = 70:30

Flow rate: 1.0 mL/min

Temperature: 25, 40 °C

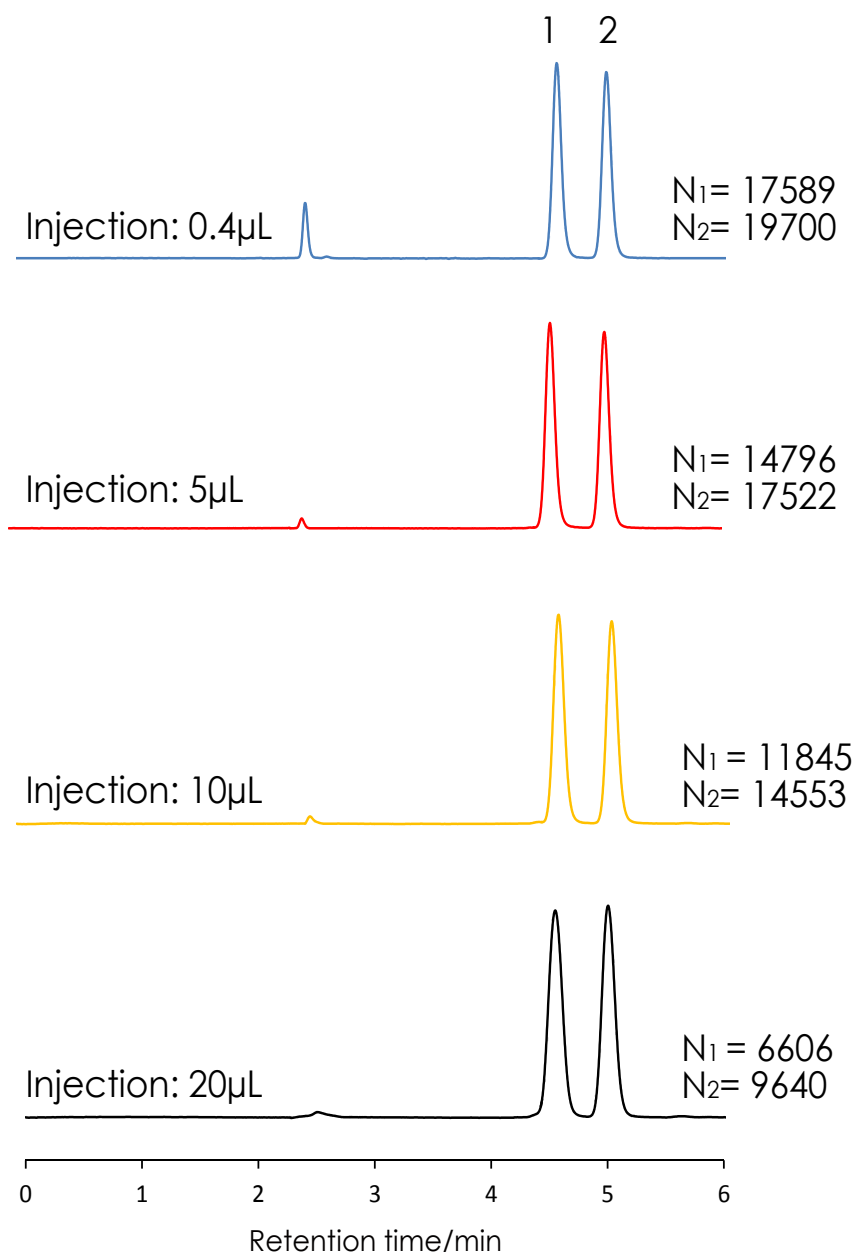
Detection: RI

Sample: 1 = L-Leucine, 2 = L-Isoleucine, 3 = L-Valine

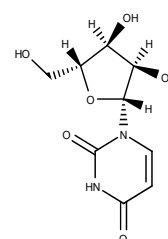
水溶解サンプルの注入量による比較(核酸塩基)

Comparison of injection volume of water-dissolved sample
(nucleobases)

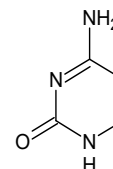
SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.



1. Uridine



2. Cytosine



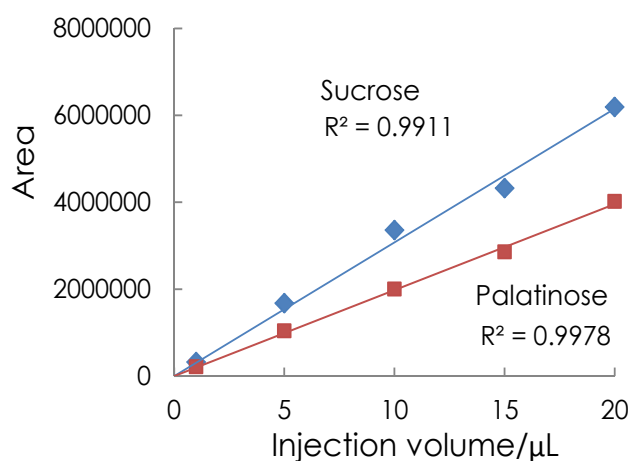
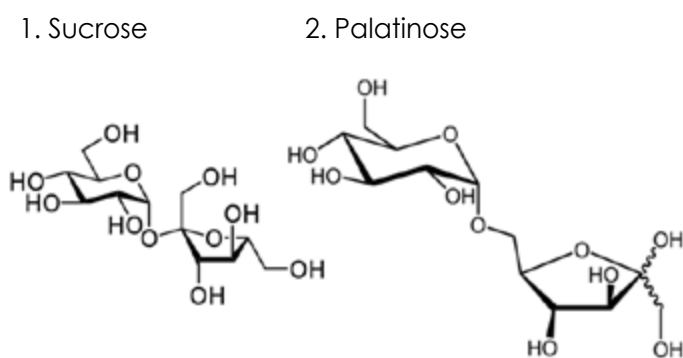
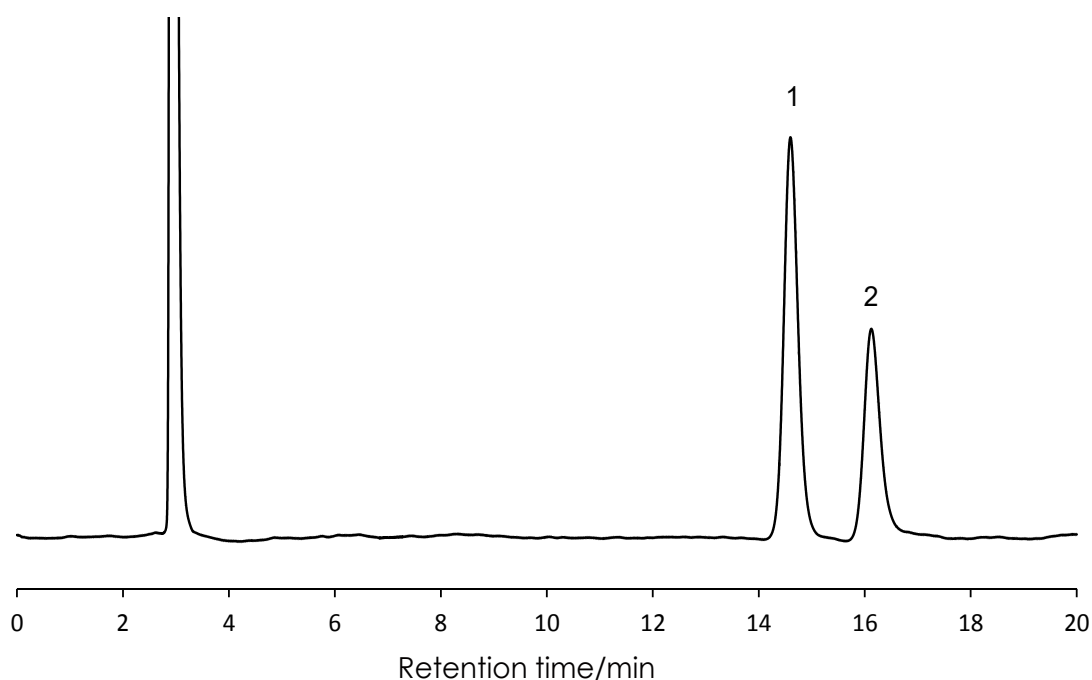
Sample was dissolved
in water

Column: SunArmor NH2 5 μ m, 250 x 4.6 mm
Mobile phase: Acetonitrile:10 mM ammonium acetate (pH 6.8) = 70:30
Flow rate: 1.0 mL/min
Temperature: 40 $^{\circ}$ C
Detection: UV@250nm
Sample: 1 = Uridine, 2 = Cytosine

スクロースとパラチノースの分離

Sucrose and Palatinose

SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.



Column: SunArmor NH2 5 μ m, 250 x 4.6 mm

Mobile phase: Acetonitrile:50mM ammonium acetate = 75:25

Flow rate: 1.0 mL/min

Temperature: 40 $^{\circ}$ C

Detection: RI

Sample: 1 = Sucrose, 2 = Palatinose

アスコルビン酸とエリソルビン酸の分離

Ascorbic acid

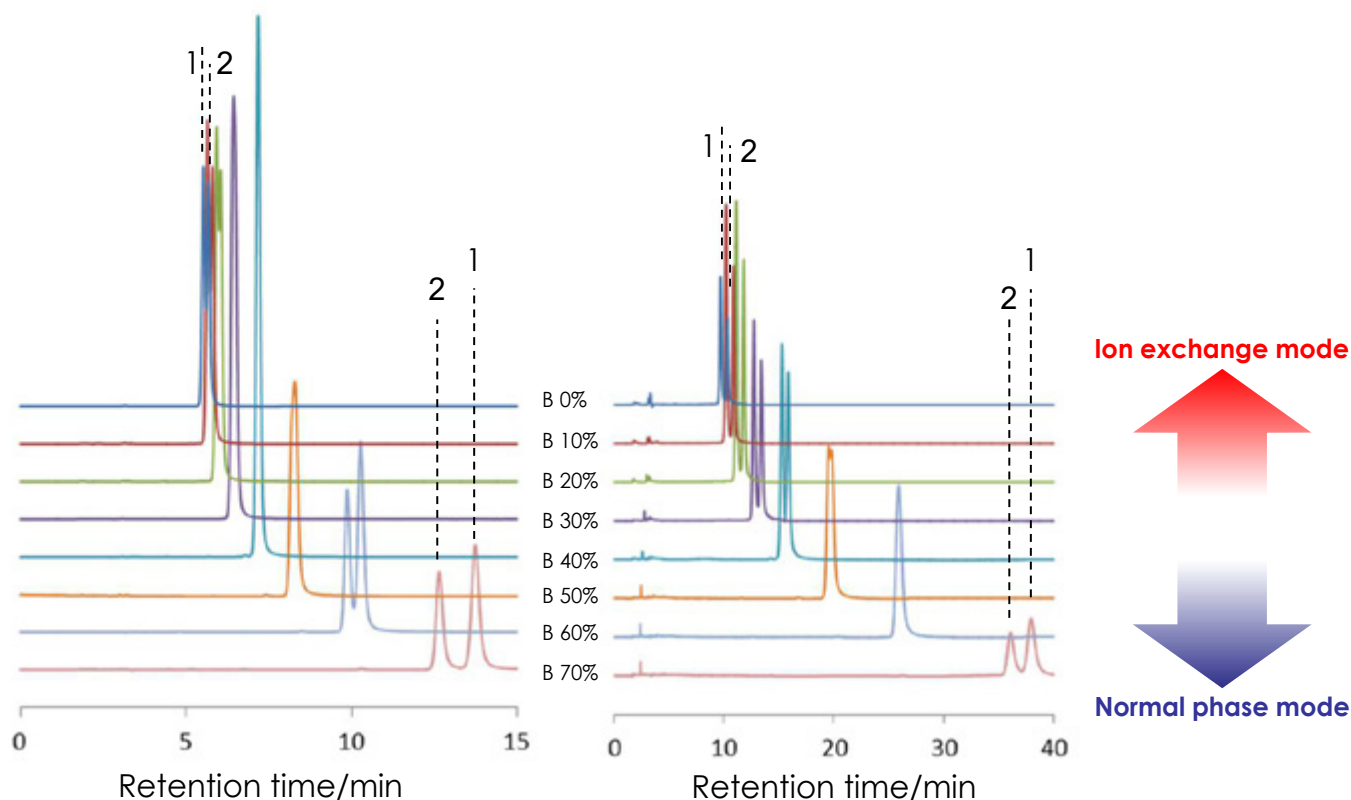
SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.

A: 5% Acetic acid in water

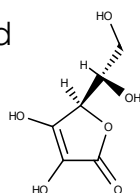
B: 5% Acetic acid in acetonitrile

A: 1% Acetic acid in water

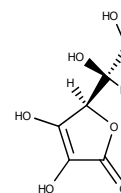
B: 1% Acetic acid in acetonitrile



1. Ascorbic acid



2. Erythorbic acid



Column :

SunArmor NH2, 5 μ m 250 x 4.6 mm i.d.

Mobile phase : A) (1% or 5%) Acetic acid in water

B) (1% or 5%) Acetic acid in acetonitrile

Flow rate : 1.0 mL/min

Temperature : 40 $^{\circ}$ C

Detection : UV@260 nm

Injection volume : 1 μ L

Sample : 1 = Ascorbic acid,

2 = Erythorbic acid

Instrument

Hitachi Chromaster[®]

Detector: 5410

Oven: 5310

AutoSampler: 5260

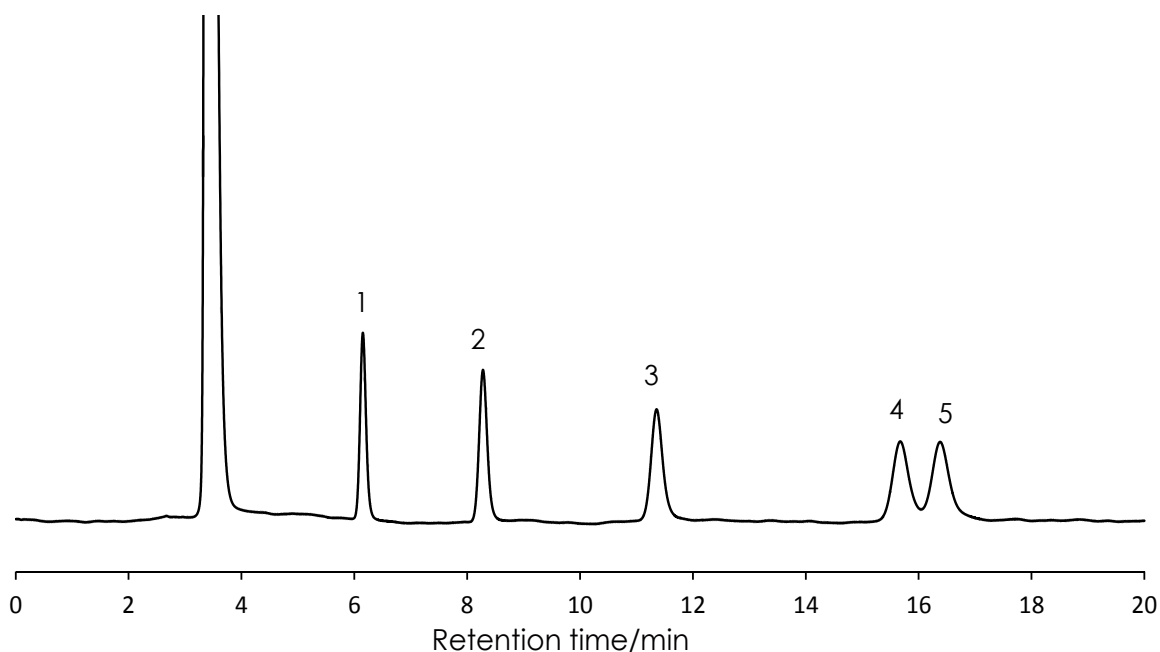
Pump: 5160



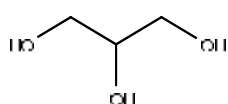
糖アルコールの分離

Sugar alcohol

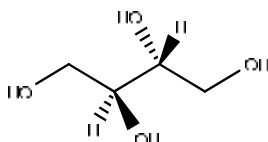
SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.



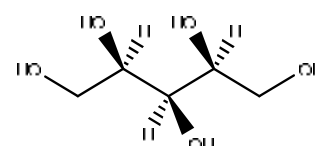
1. Glycerine



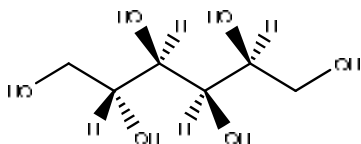
2. Erythritol



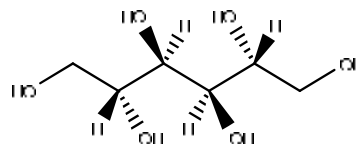
3. Xylitol



4. Sorbitol



5. Mannitol



Column: SunArmor NH2 5 μ m, 250 x 4.6 mm

Mobile phase: Acetonitrile:Water = 80:20

Flow rate: 1.0 mL/min

Temperature: 40 $^{\circ}$ C

Detection: RI

Sample: 1= Glycerine, 2= Erythritol, 3= Xylitol, 4= Sorbitol, 5= Mannitol

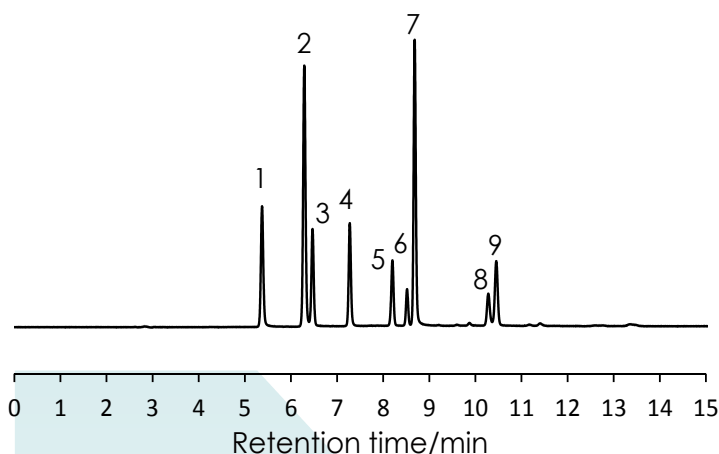
フェノール系酸化防止剤の分離

phenolic antioxidants

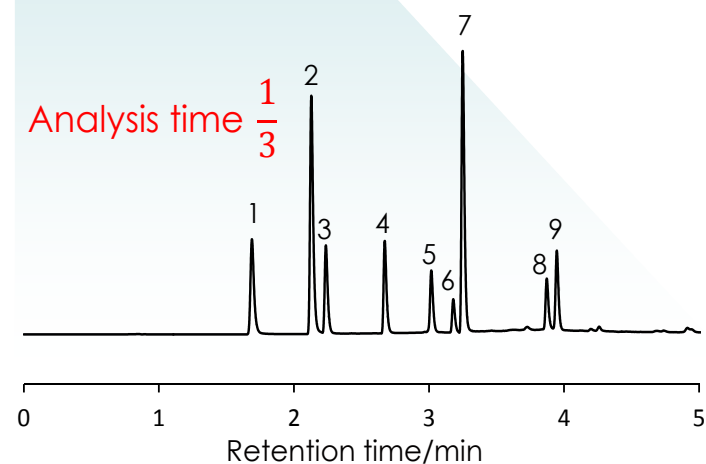
Sunniest C18 5 μm, 150 x 4.6 mm i.d.

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

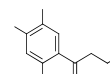
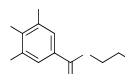
Sunniest C18 5 μm, 150 x 4.6 mm i.d.



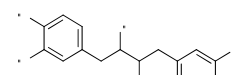
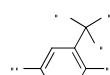
SunShell C18 2.6 μm, 100 x 4.6 mm i.d.



1. PG(Propyl Gallate) 2. THBP (2,4,5-Trihydroxybutyrophenone)

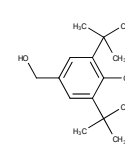
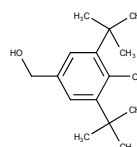


3. TBHQ (tert-Butylhydroquinone) 4. NDGA (Nordihydroguaiaretic acid)



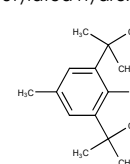
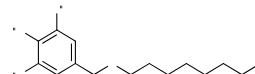
5. BHA (Butylated Hydroxyanisole)

6. HMBP (4-Hydroxymethyl-2,6-di-tert-butylphenol)

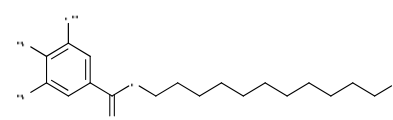


7. OG (Octyl gallate)

8. BHT (Butylated hydroxytoluene)



9. DG (Dodecyl gallate)



Column: Sunniest C18 5 μm, 150 x 4.6 mm i.d.

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

Mobile phase: A) 5% Acetic acid in water, B) Methanol, C) Acetonitrile

150 x 4.6 mm i.d. 0.6 mL/min

100 x 4.6 mm i.d. 1.0 mL/min

Time (min)	0	5	15
% B	60	0	0
% C	20	50	50

Time (min)	0	2	5
% B	60	0	0
% C	20	50	50

Flow rate: 0.6, 1.0 mL/min

Temperature: 40 °C

Detection: UV@280nm

Sample: 1= PG, 2= THBP, 3= TBHQ, 4= NDGA, 5= BHA, 6= HMBP, 7= OG, 8= BHT, 9= DG

Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160

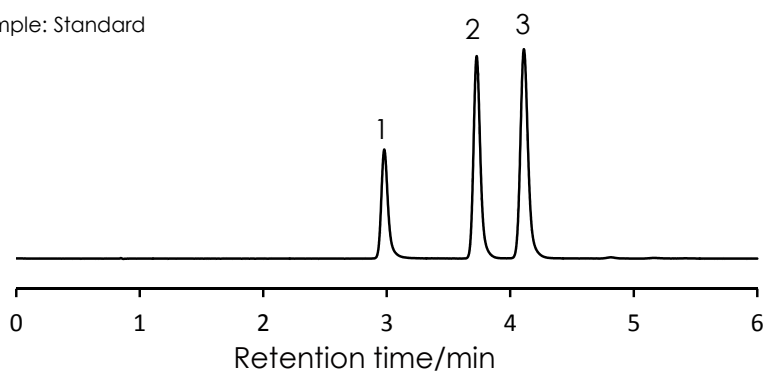


コーヒー成分(ポリフェノール)の分離

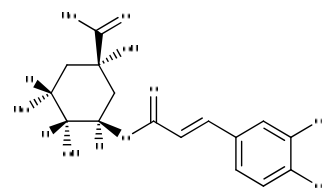
Coffee polyphenol

SunShell C18 2.6 μm, 100 x 4.6 mm i.d.

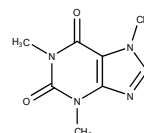
Sample: Standard



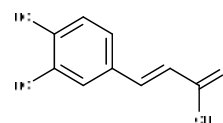
1. Chlorogenic Acid



2. Caffeine



3. Caffeic acid



Sample: Boiled water extracted

Coffee beans 10 g

Extracted by boiled water at 90 °C, 150 mL for 1 min

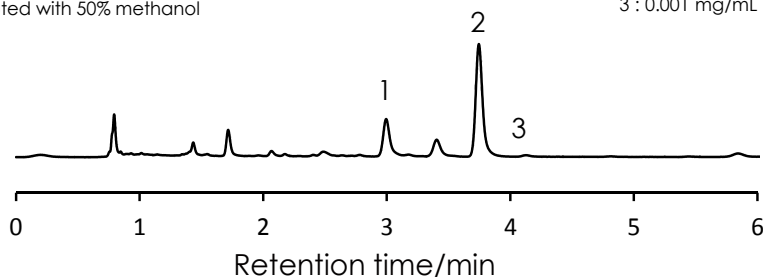
Diluted with 50% methanol

Component concentration

1 : 0.063 mg/mL

2 : 0.101 mg/mL

3 : 0.001 mg/mL



Sample: Water extracted

Coffee beans 10 g

Extracted by water at RT, 150 mL for 20 hour

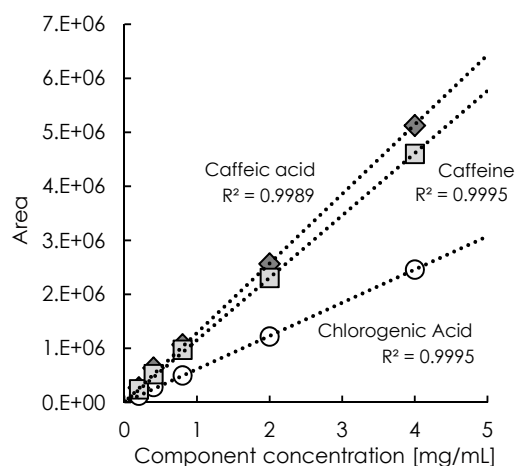
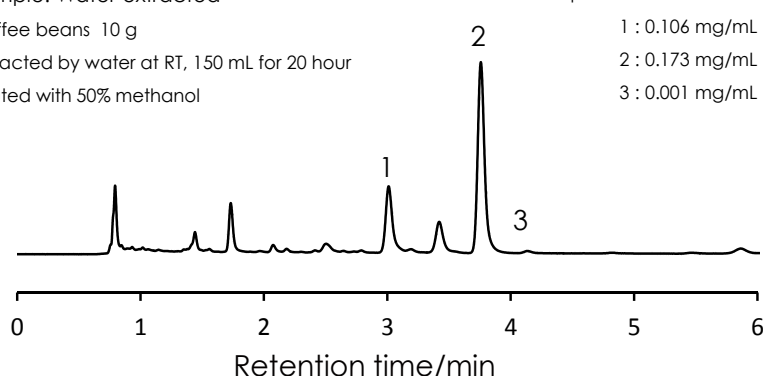
Diluted with 50% methanol

Component concentration

1 : 0.106 mg/mL

2 : 0.173 mg/mL

3 : 0.001 mg/mL



Column: SunShell C18, 2.6 μm 100 x 4.6 mm i.d.

Mobile phase: Methanol:0.1% Formic acid = 20:80

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@280nm

Sample: 1= Chlorogenic Acid, 2= Caffeine, 3= Caffeic acid

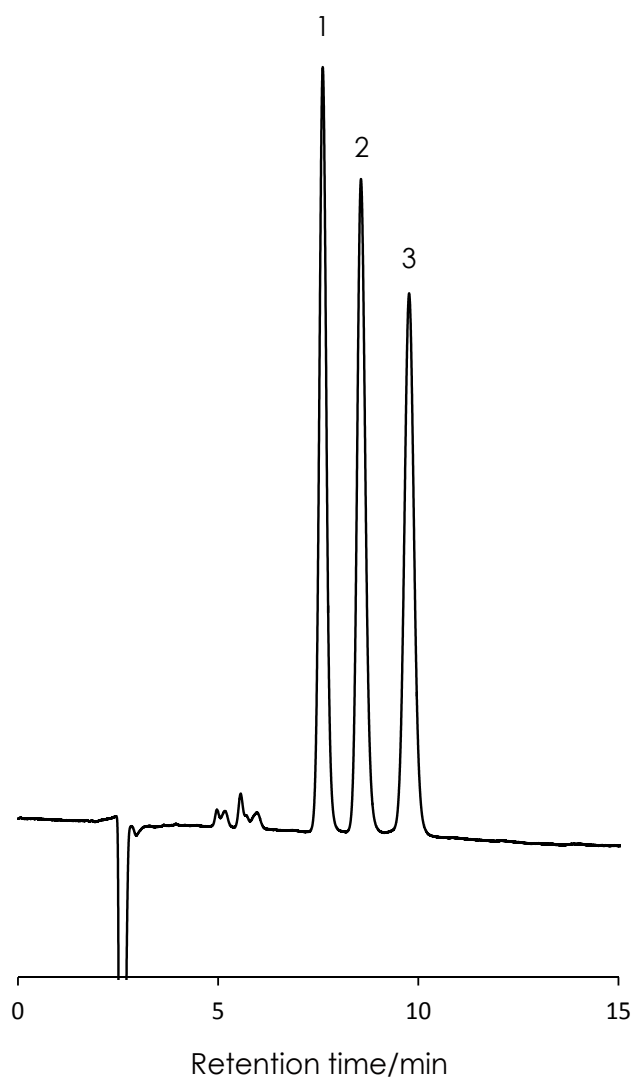
Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



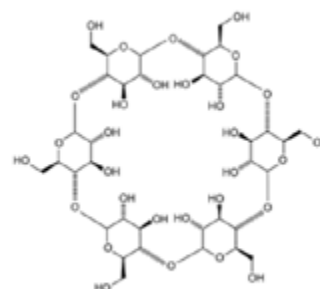
シクロデキストリンの分離

Cyclodextrin

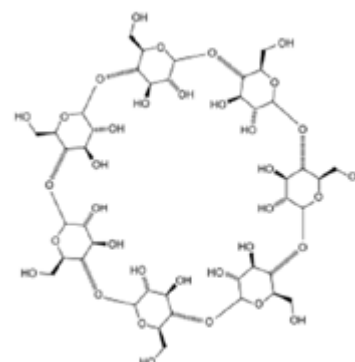
SunArmor NH2 5 μ m, 250 x 4.6 mm i.d.



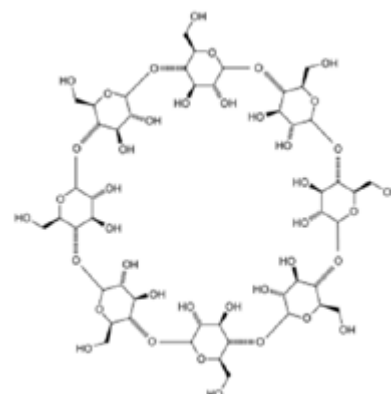
1. α -Cyclodextrin



2. β -Cyclodextrin



3. γ -Cyclodextrin



Column: SunArmor NH2 5 μ m, 250 x 4.6 mm

Mobile phase: Acetonitrile:Water = 60:40

Flow rate: 1.0 mL/min

Temperature: 25 $^{\circ}$ C

Detection: RI

Sample: 1= α -Cyclodextrin, 2= β -Cyclodextrin, 3= γ -Cyclodextrin

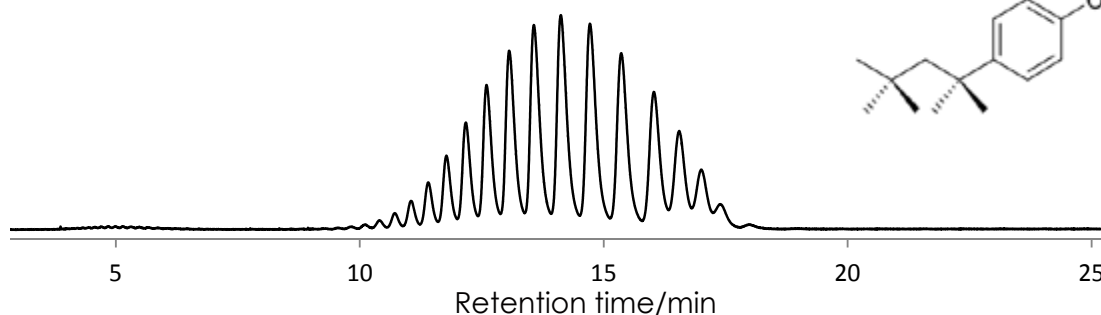
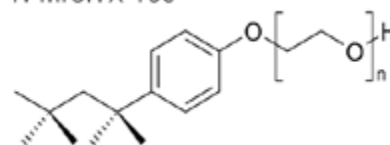
非イオン界面活性剤の分離

Triton X-100

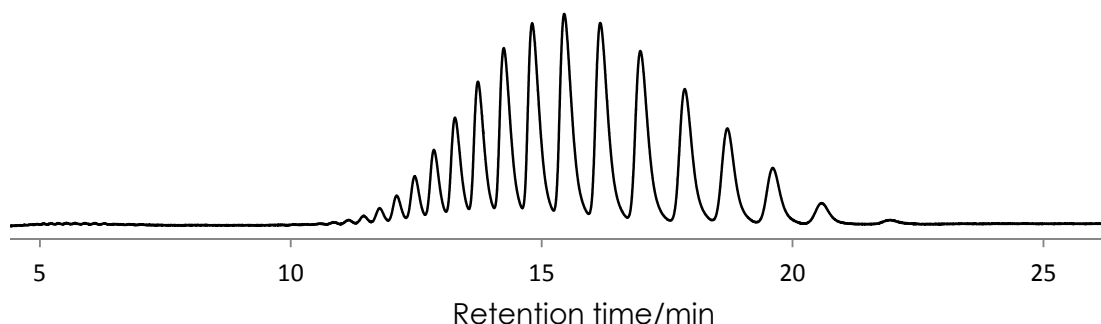
SunShell C18 2.6 μ m, 150 x 3.0 mm i.d.

Mobile phase: Tetrahydrofuran:Acetonitrile:Water = **0:50:50**

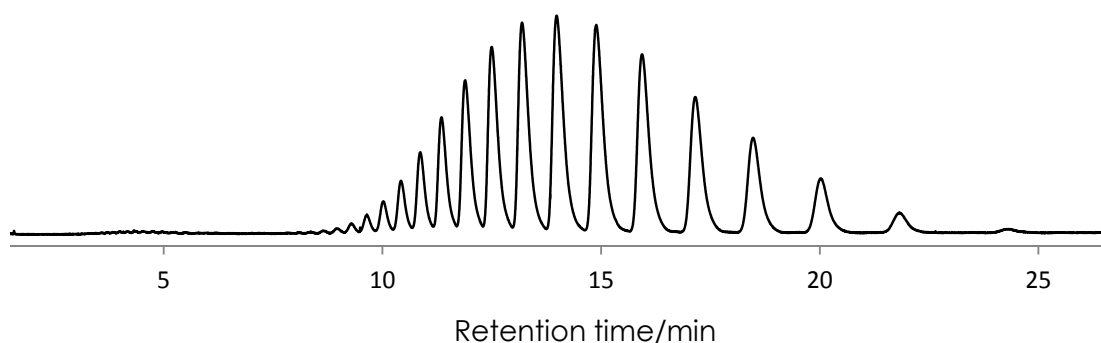
1. Triton X 100



Mobile phase: Tetrahydrofuran:Acetonitrile:Water = **10:35:55**



Mobile phase: Tetrahydrofuran:Acetonitrile:Water = **20:20:60**



Column: SunShell C18, 2.6 μ m 150 x 3.0 mm i.d.

Mobile phase: Tetrahydrofuran:Acetonitrile:Water
= 0:50:50, 10:35:55, 20:20:60

Flow rate: 0.5 mL/min

Temperature: 25 $^{\circ}$ C

Detection: UV@275nm

Sample: 1= Triton X-100

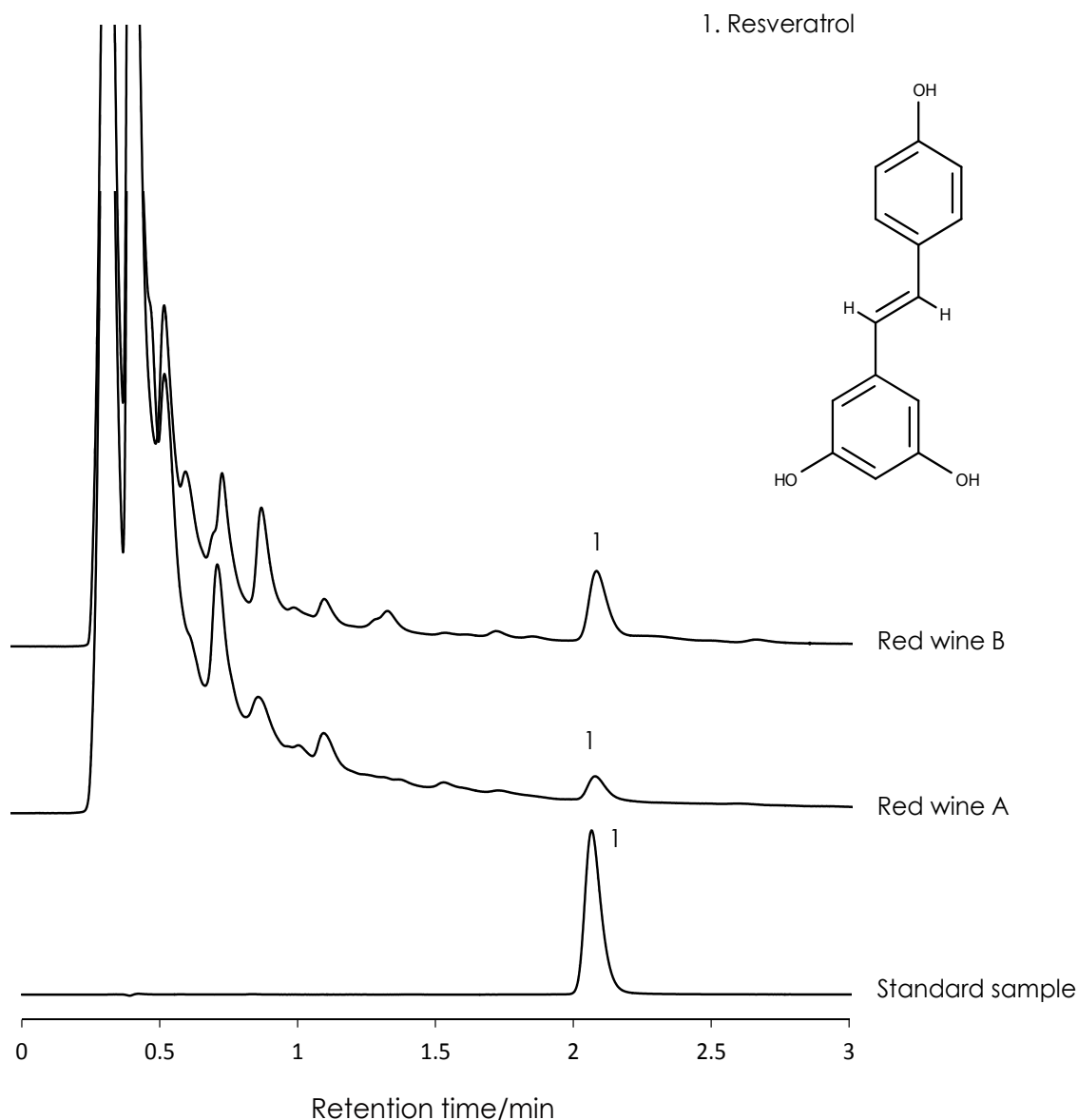
Instrument	
Hitachi Chromaster®	
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



赤ワイン中ポリフェノール(レスベラトロール)の分離

Resveratrol

SunShell C18 2.6 μ m, 50 x 2.1 mm i.d.



Column: SunShell C18 2.6 μ m, 50 x 2.1 mm i.d.
Mobile phase: Acetonitrile:Water = 20:80
Flow rate: 0.3 mL/min
Temperature: 40 °C
Detection: UV@310nm
Sample: 1= Resveratrol

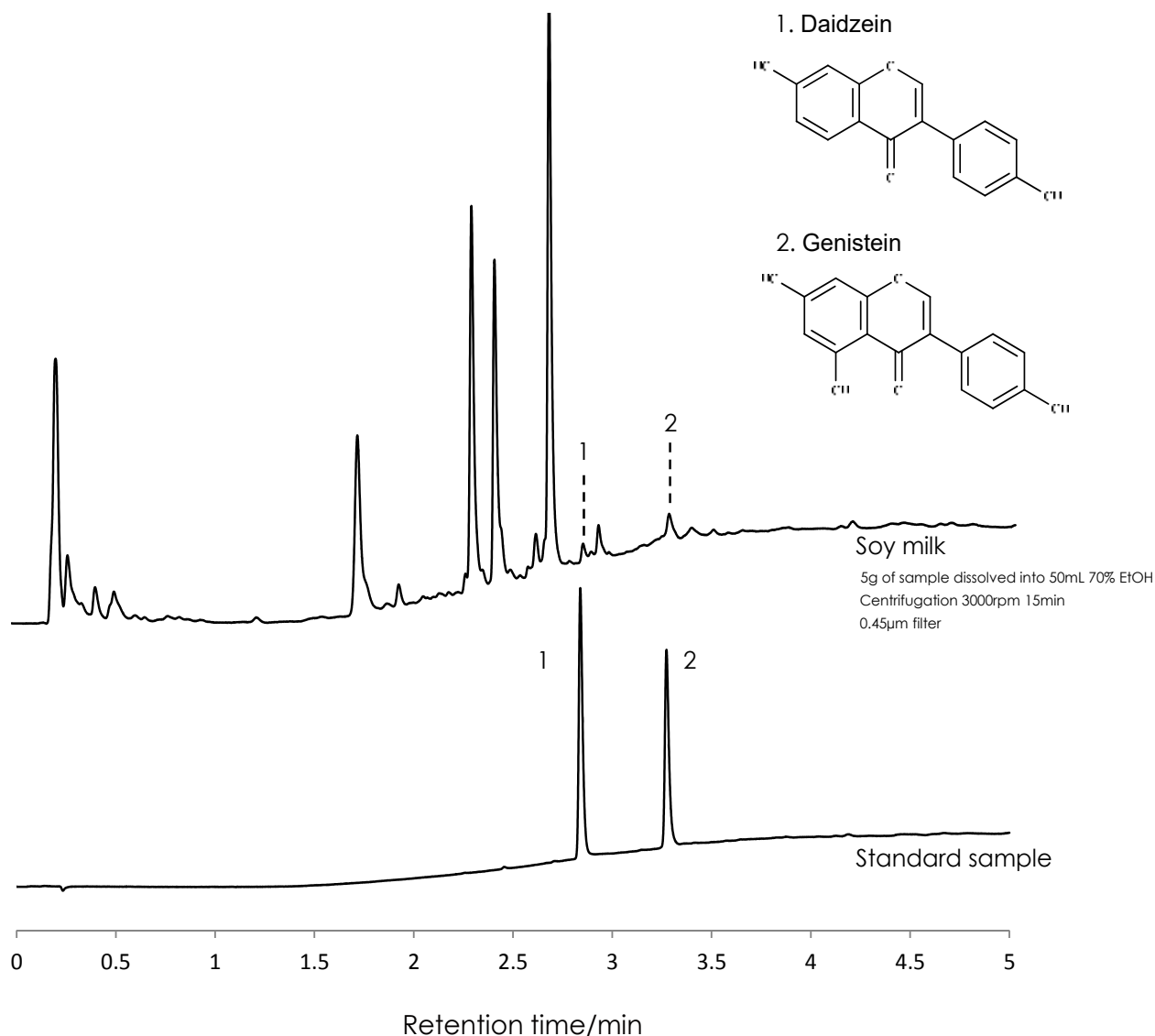
Instrument	Hitachi Chromaster®
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



大豆イソフラボンの高速分離

Isoflavone

SunShell C18 2.0 μm, 50 x 2.1 mm i.d.



Column: SunShell C18, 2.0 μm 50 x 2.1 mm i.d.

Mobile phase: A) Water:Acetic acid = 100:3

B) Acetonitrile:Acetic acid = 100:3

Gradient program:

Time (min)	0	1	5
% B	10	40	40

Flow rate: 0.5mL/min

Temperature: 40 °C

Detection: UV@250nm

Sample: 1= Daidzein, 2 = Genistein

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

Pump: 5160

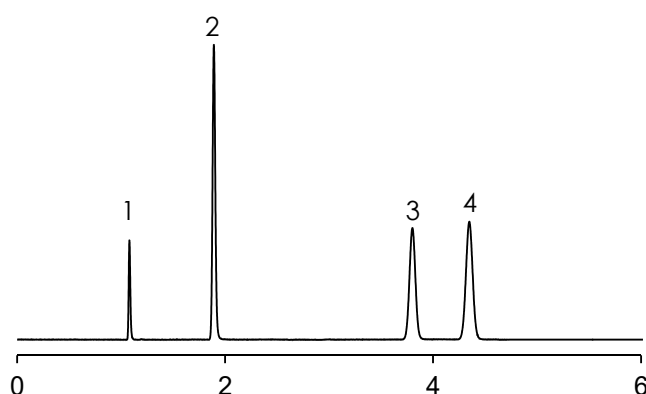


解熱鎮痛剤の分離 (3)

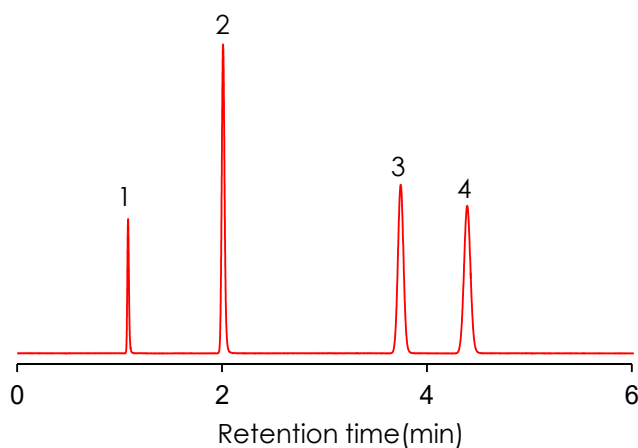
Analgesics (3)

SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

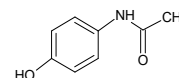
A) CH₃CN:20 mM Phosphoric acid = 20:80



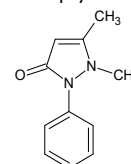
B) CH₃CN:0.1% Formic acid = 20:80



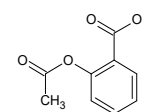
1. Acetaminophen



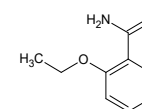
2. Antipyrine



3. Aspirin



4. Ethenzamide



Column: SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.

Mobile phase:

A) CH₃CN:20 mM Phosphoric acid = 20:80

B) CH₃CN:0.1% Formic acid = 20:80

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@230nm

Sample: 1 = Acetaminophen, 2 = Antipyrine, 3 = Aspirin, 4= Ethenzamide

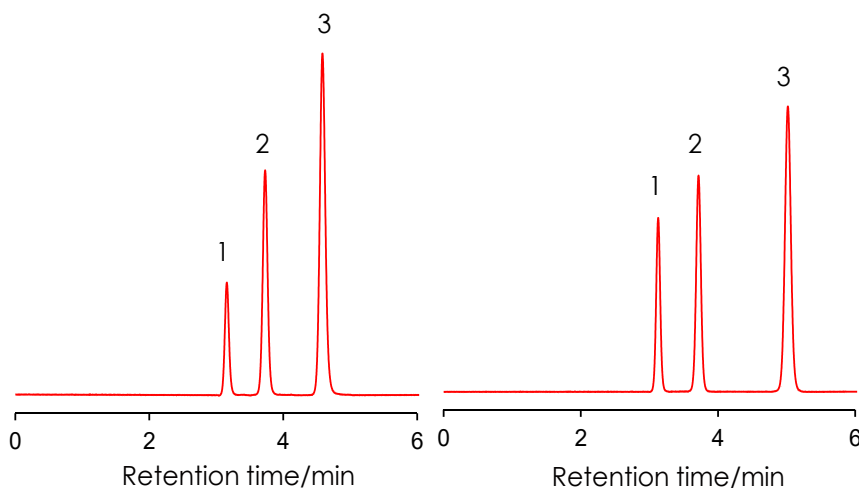
降圧利尿剤の分離 (2)

Hypotensive diuretic (2)

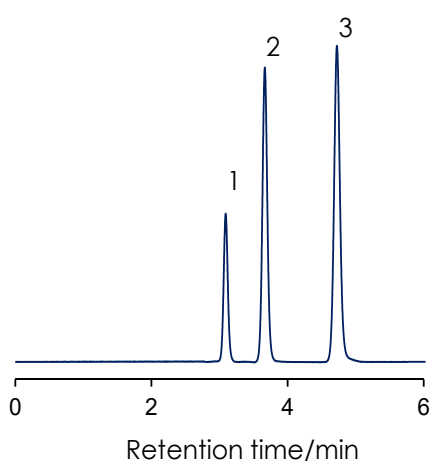
Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Acetonitrile:100 mM
phosphate buffer pH 3.0 = 20:80

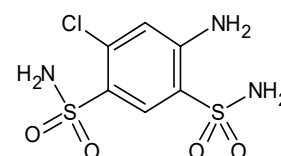
Acetonitrile:20 mM
phosphate buffer pH 3.0 = 20:80



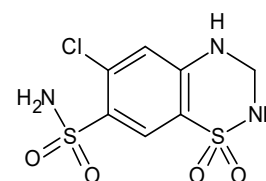
Acetonitrile:0.1% formic acid = 20:80



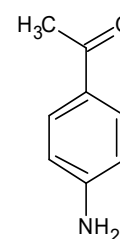
1. 4-Amino-6-chloro-1,3-benzenedisulfonamide



2. Hydrochlorothiazide



3. p-Aminoacetophenone



Column: Sunniest C18 5 μ m, 150 x 4.6 mm

Mobile phase: A) Acetonitrile:100 mM phosphate buffer (KH₂PO₄) pH 3.0 = 20:80

B) Acetonitrile:20 mM phosphate buffer (KH₂PO₄) pH 3.0 = 20:80

C) Acetonitrile:0.1% formic acid = 20:80

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@250nm

Sample: 1 = 4-Amino-6-chloro-1,3-benzenedisulfonamide, 2 = Hydrochlorothiazide,

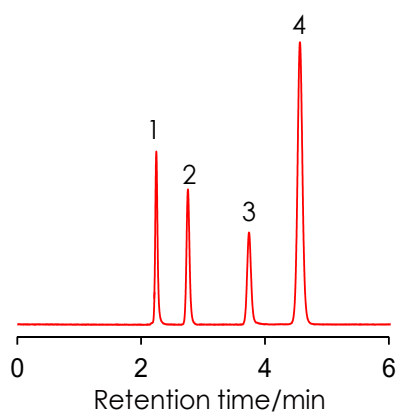
3 = p-Aminoacetophenone

内分泌攪乱物質の分離 (2)

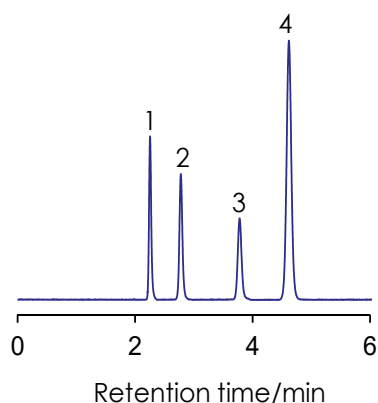
Endocrine disruptors (2)

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

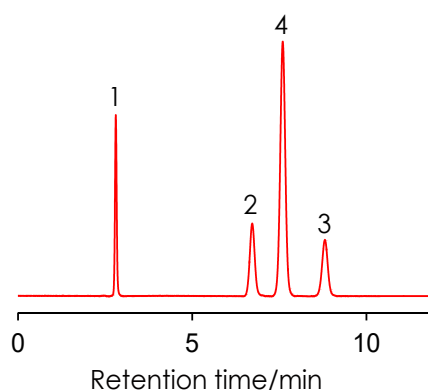
Acetonitrile:water:formic acid=60:40:0.04



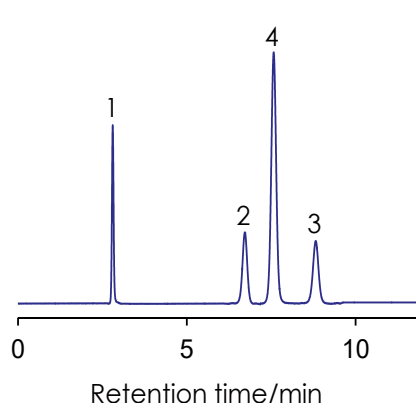
Acetonitrile:20 mM Potassium phosphate buffer (pH 3.0) = 60:40



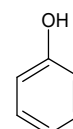
Methanol:water:formic acid = 60:40:0.04



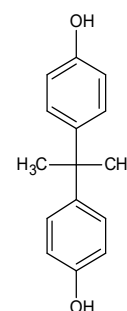
Methanol:20 mM Potassium phosphate buffer (pH 3.0) = 60:40



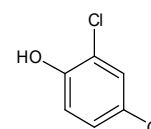
1. Phenol



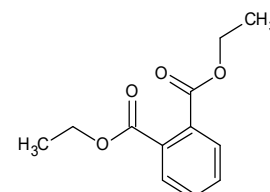
2. Bisphenol-A



3. 2,4-Dichlorophenol



4. Diethylphthalate



Column: Sunniest C18 5 μ m, 150 x 4.6 mm

Mobile phase:

A) Acetonitrile:water:formic acid=60:40:0.04

B) Acetonitrile:20 mM Potassium phosphate buffer (pH 3.0)=60:40

C) Methanol:water:formic acid=60:40:0.04

D) Methanol:20 mM Potassium phosphate buffer (pH 3.0)=60:40

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@280nm

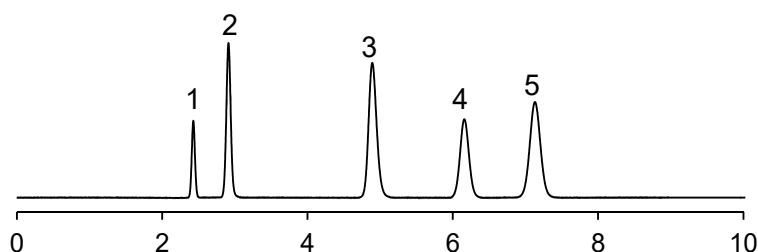
Sample: 1 = Phenol, 2 = Bisphenol-A, 3 = 2,4-Dichlorophenol, 4 = Diethylphthalate

局所麻酔薬の分離 (2)

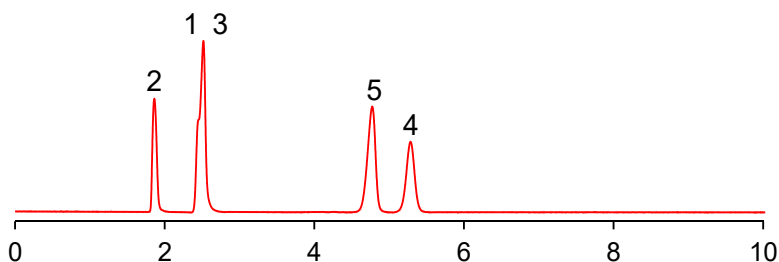
Local anesthetic (2)

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

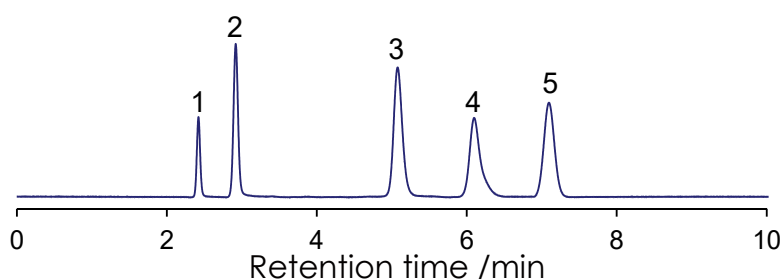
Methanol:20 mM Phosphate buffer (pH 7.0) = 70:30



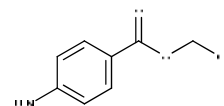
Methanol:20 mM Ammonium acetate buffer (pH 6.8) = 70:30



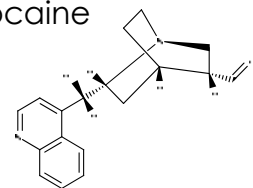
Methanol:20 mM Ammonium bicarbonate buffer (pH 9.5) = 70:30



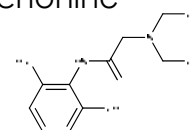
1. Benzocaine



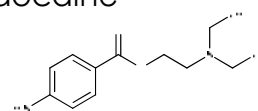
2. Procaine



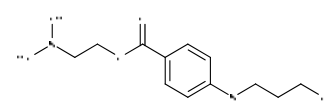
3. Cinchonine



4. Lidocaine



5. Tetracaine



Column :

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

Mobile phase : Methanol:20 mM Phosphate buffer (pH 7.0) = 70:30

Methanol:20 mM Ammonium acetate buffer (pH 6.8) = 70:30

Methanol:20 mM Ammonium bicarbonate buffer (pH 9.5) = 70:30

Flow rate : 1.0 mL/min

Pressure : 10.4 MPa

Temperature : 40 $^{\circ}$ C

Detection : UV@250nm

Injection volume : 1 μ L

Sample : 1 = Benzocaine,

2 = Procaine,

3 = Cinchonine,

4 = Lidocaine,

5 = Tetracaine

神経伝達物質の分離

Neurotransmitter

Sun Shell HILIC-S 2.6 μ m, 100 x 2.1 mm i.d.

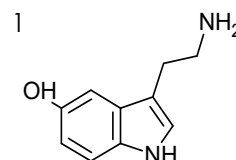
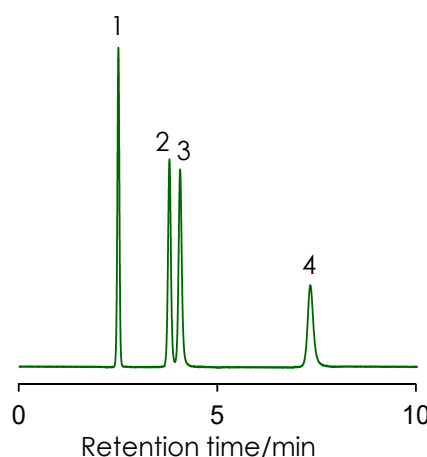
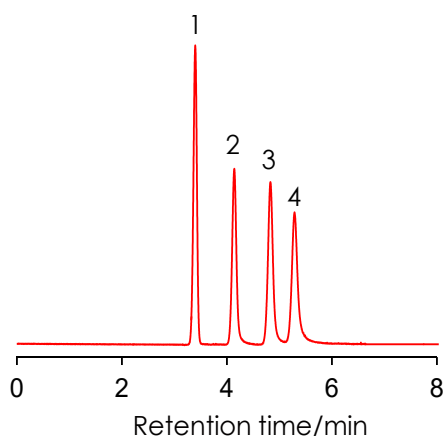
Sun Shell HILIC-Amide 2.6 μ m, 100 x 2.1 mm i.d.

Sun Shell RP-AQUA 2.6 μ m, 100 x 2.1 mm i.d.

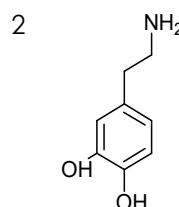
SunShell HILIC-S, 2.6 μ m

SunShell HILIC Amide, 2.6 μ m

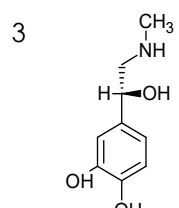
ACN:100 mM ammonium formate(pH3.0)=92.5:7.5



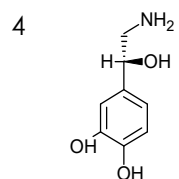
Serotonin



Dopamine



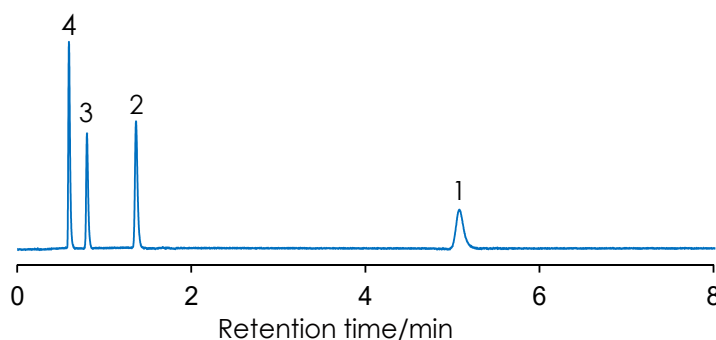
Epinephrine



Norepinephrine

Sun Shell RP-AQUA, 2.6 μ m

10 mM ammonium formate(pH3.0)



Column: Sun Shell HILIC Silica 2.6 μ m 100 x 2.1 mm

Sun Shell HILIC Amide 2.6 μ m 100 x 2.1 mm

Sun Shell RP-AQUA 2.6 μ m 100 x 2.1 mm

Mobile phase:

A) ACN:100 mM ammonium formate(pH3.0)=92.5:7.5

B) 10 mM ammonium formate(pH3.0)

Flow rate: 0.4mL /min

Temperature: 25 °C

Detection: UV@270 nm

Sample: 1 = Serotonin, 2 = Dopamine, 3 = Epinephrine, 4 = Norepinephrine

副腎皮質ステロイド類の分離 (2)

Corticosteroids (2)

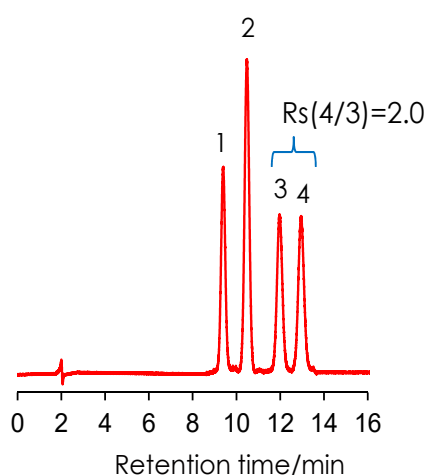
Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

SunShell PFP 2.6 μ m, 150 x 4.6 mm i.d.

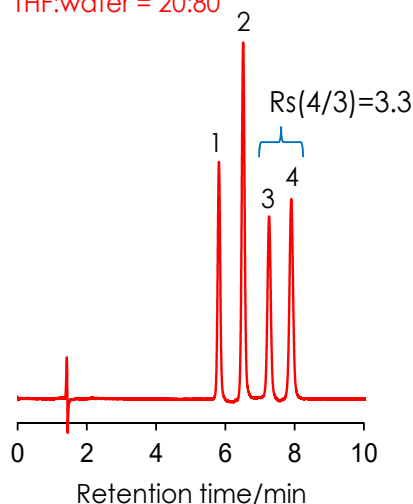
Sunniest C18 5 μ m, 150 x 4.6 mm

THF:water = 20:80

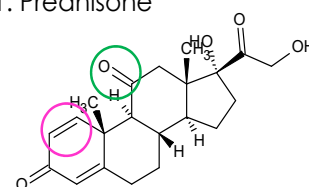


SunShell C18 2.6 μ m, 150 x 4.6 mm

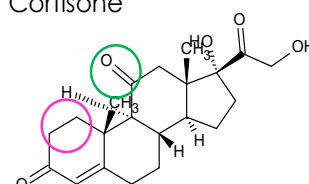
THF:water = 20:80



1. Prednisone

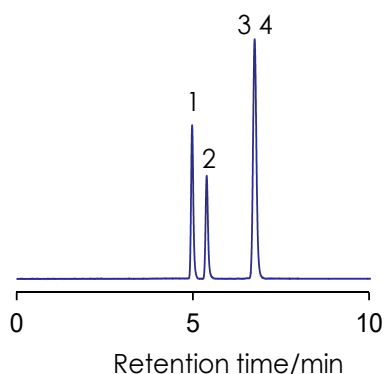


2. Cortisone



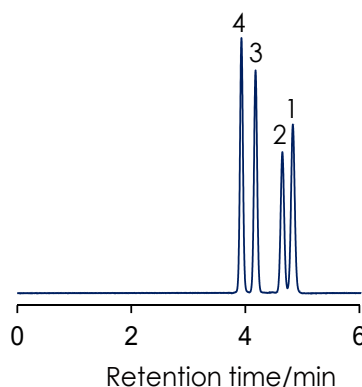
SunShell C18 2.6 μ m, 150 x 4.6 mm

Methanol:water = 50:50

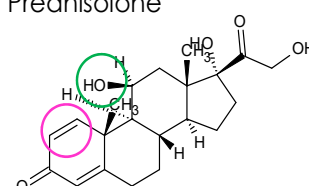


SunShell PFP 2.6 μ m, 150 x 4.6 mm

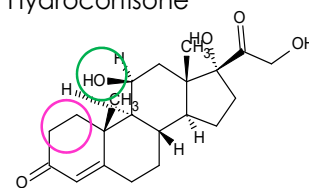
Methanol:water = 50:50



3. Prednisolone



4. Hydrocortisone



Column: Sunniest C18 5 μ m, 150 x 4.6 mm

SunShell C18 2.6 μ m, 150 x 4.6 mm

SunShell PFP 2.6 μ m, 150 x 4.6 mm

Mobile phase:

A) THF:water = 20:80

B) Methanol:water = 50:50

Flow rate: 1.0 mL/min

Temperature: 40 $^{\circ}$ C

Detection: UV@260nm

Sample: 1 = Prednisone, 2 = Cortisone, 3 = Prednisolone, 4 = Hydrocortisone

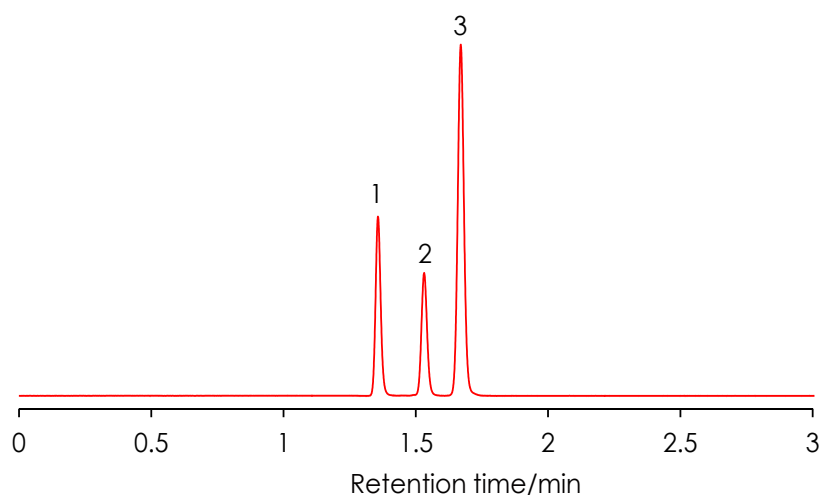
抗アンドロゲン薬と代謝物の分離 (2)

Ethynylestradiol and its metabolites (2)

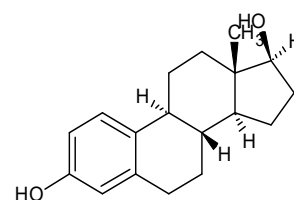
SunShell C18 2.6 μm , 100 x 4.6 mm i.d.

SunShell C18 2.6 μm , 100 x 4.6 mm

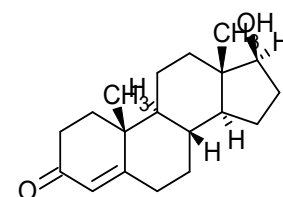
Sunniest C18 5 μm , 150 x 4.6 mm



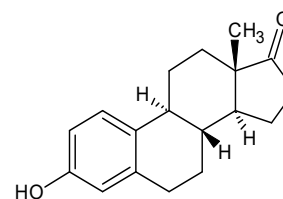
1.17 β -Estradiol



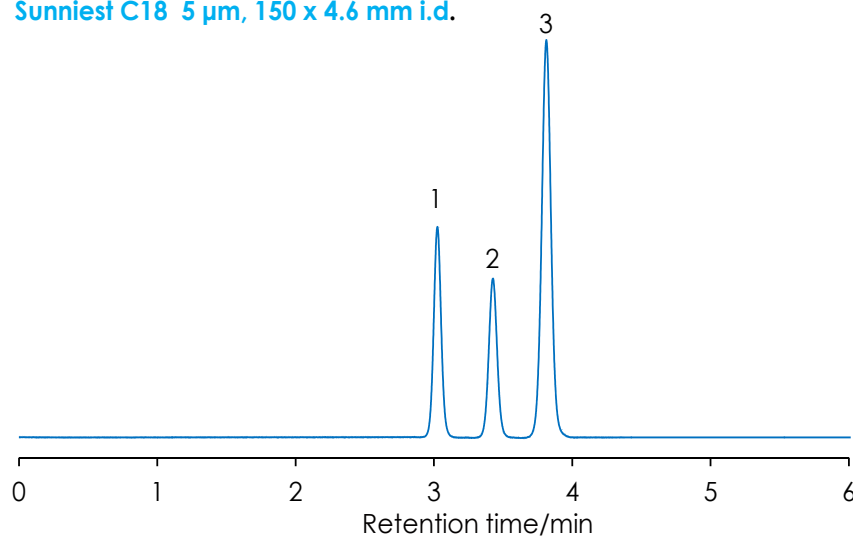
2.Testosterone



3.Estrone



Sunniest C18 5 μm , 150 x 4.6 mm i.d.



Column: SunShell C18 2.6 μm , 100 x 4.6 mm

Sunniest C18 5 μm , 150 x 4.6 mm

Mobile phase: Acetonitrile:water = 60:40

Flow rate: 1.0 mL/min

Temperature: 40 $^{\circ}\text{C}$

Detection: UV@230nm

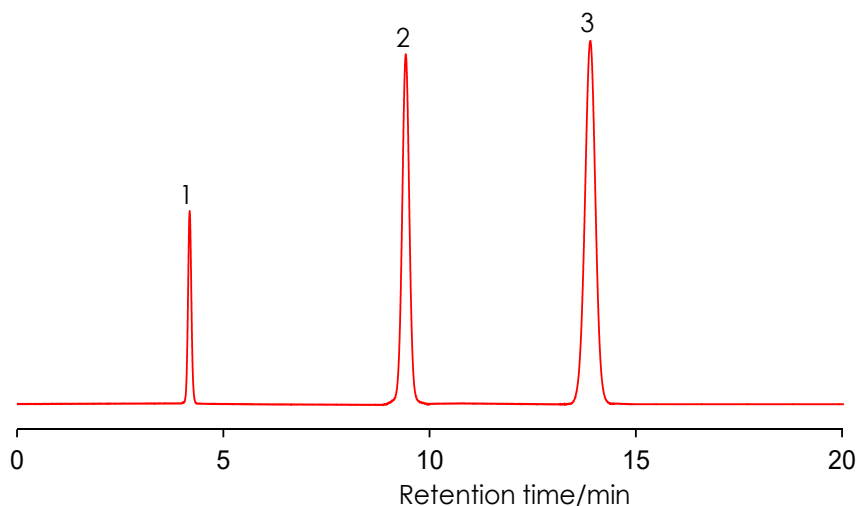
Sample: 1 = 17 β -Estradiol, 2 = Testosterone, 3 = Estrone

アントラキノン系染料の分離 (2)

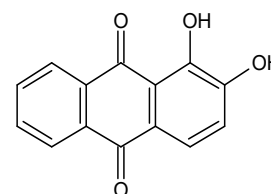
Anthraquinone dye (2)

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

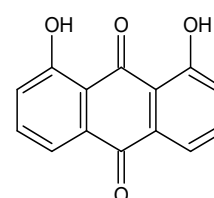
Methanol:20 mM phosphate buffer (pH 2.5) = 75:25



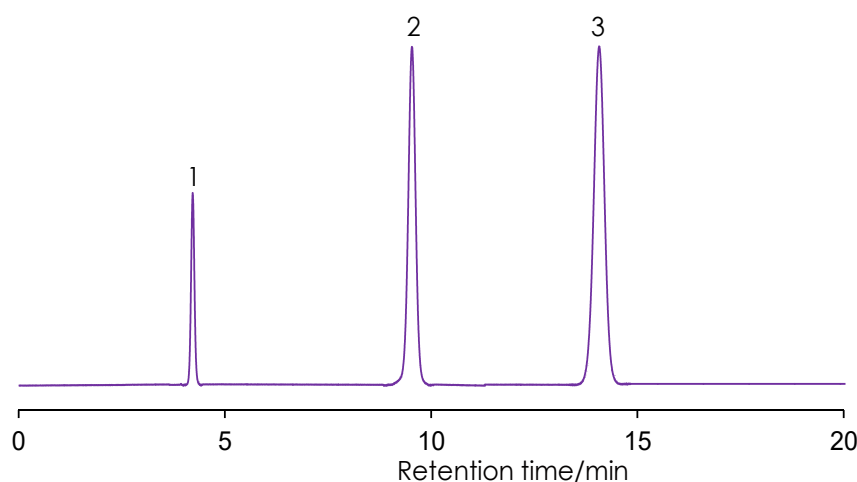
1. Alizalin



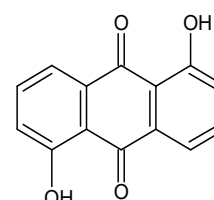
2. Chrysazin



Methanol:0.1% formic acid = 75:25



3. Anthrarufin



Column: Sunniest C18 5 μ m, 150 x 4.6 mm

Mobile phase:

A) Methanol:20 mM phosphate buffer (pH 2.5) = 75:25

B) Methanol:0.1% formic acid = 75:25

Flow rate: 1.0 mL/min

Temperature: 40 $^{\circ}$ C

Detection: UV@250nm

Sample: 1 = Alizalin, 2 = Chrysazin, 3 = Anthrarufin

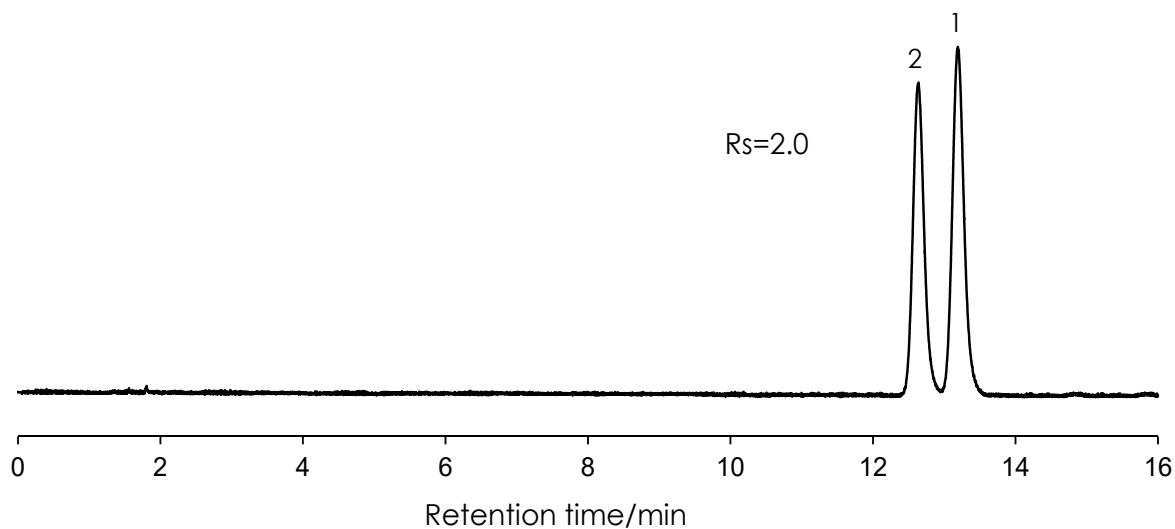
cis,trans -スチルベンの分離

Stilbene

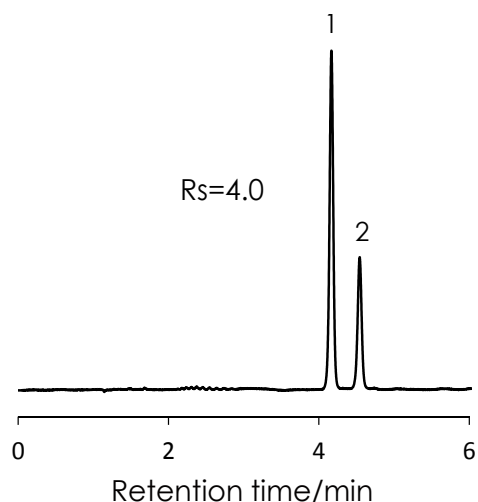
SunShell PFP 2.6 μ m, 150 x 4.6 mm i.d.

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

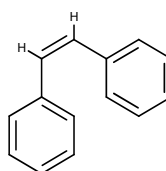
SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.



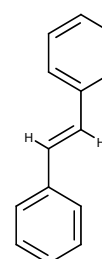
SunShell PFP 2.6 μ m, 150 x 4.6 mm i.d.



1. cis-Stilbene



2. trans-Stilbene



Column: SunShell PFP 2.6 μ m, 150 x 4.6 mm
SunShell C18 2.6 μ m, 150 x 4.6 mm
Mobile phase: Acetonitrile:Water = 40:60
Flow rate: 1.0 mL/min
Temperature: 25 $^{\circ}$ C
Detection: UV@230nm
Sample: 1= cis-Stilbene, 2 = trans-Stilbene

Instrument	Hitachi Chromaster®
Detector:	5410
Oven:	5310
AutoSampler:	5260
Pump:	5160



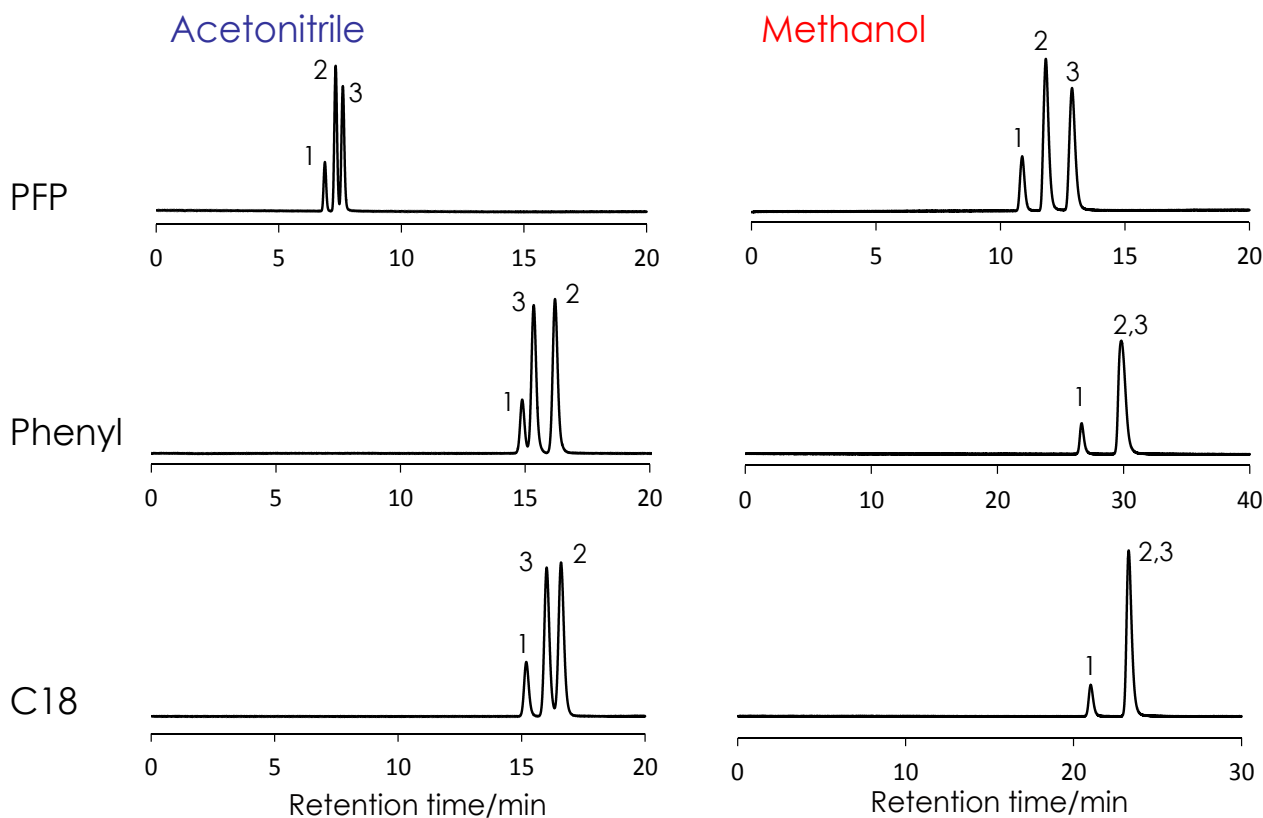
o, m, p-トルイジンの分離

o, m, p-Toluidine

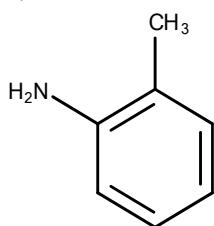
SunShell PFP 2.6 μm, 150 x 4.6 mm i.d.

SunShell Phenyl 2.6 μm, 150 x 4.6 mm i.d.

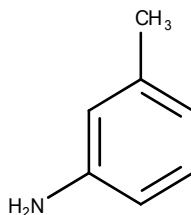
SunShell C18 2.6 μm, 150 x 4.6 mm i.d.



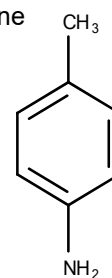
1. o-Toluidine



2. m-Toluidine



3. p-Toluidine



Mobile phase:

Methanol:10 mM Ammonium acetate (pH 6.8) = 10:90

Acetonitrile:10 mM Ammonium acetate (pH 6.8) = 10:90

Flow rate: 1.5 mL/min

Temperature: 25 °C

Detection: UV@250nm

Sample: 1 = o-Toluidine, 2 = p-Toluidine, 3 = m-Toluidine

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

Pump: 5160



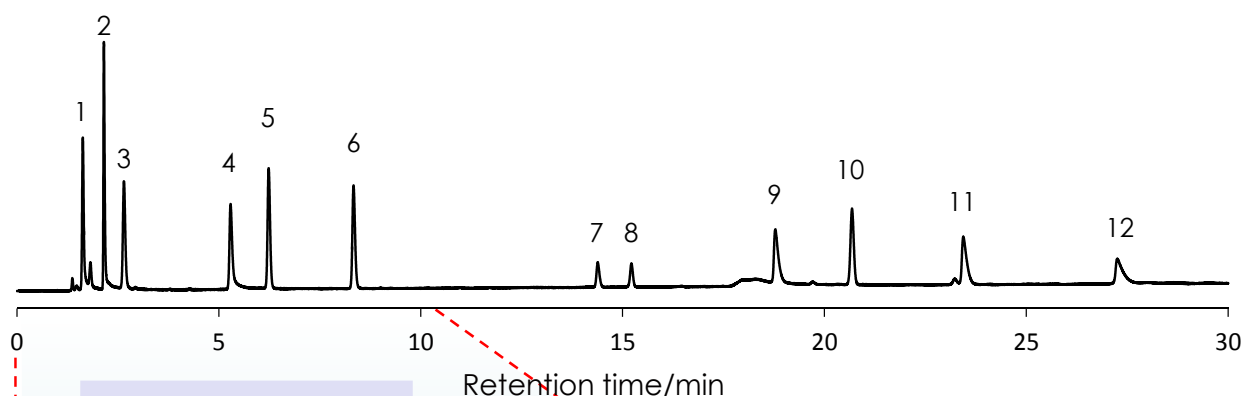
タール色素の分離

Tar pigment

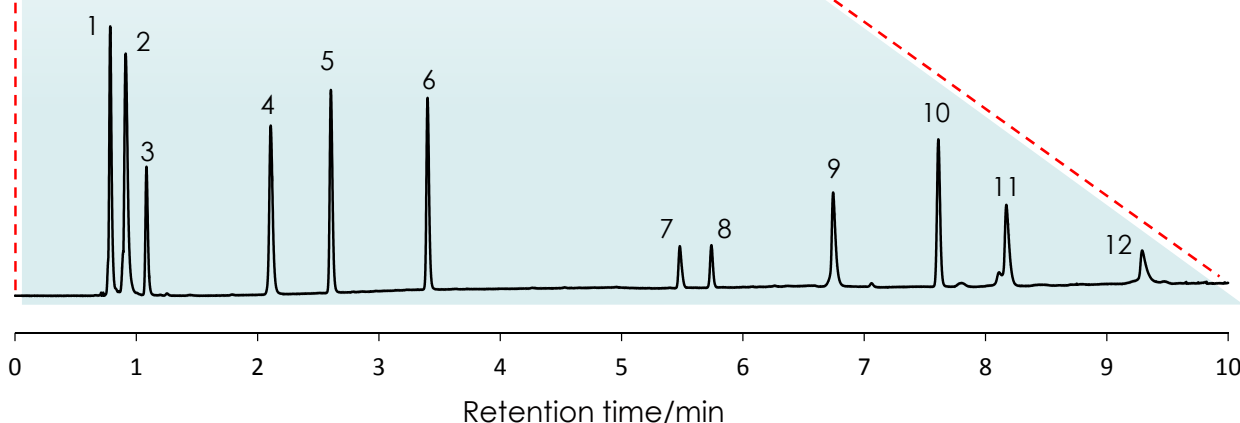
Sunniest C18 5 μ m, 150 x 4.6 mm i.d.

SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

Sunniest C18 5 μ m, 150 x 4.6 mm i.d.



SunShell C18 2.6 μ m, 100 x 4.6 mm i.d.



Column: SunShell C18 2.6 μ m, 150 x 4.6 mm i.d.

Mobile phase: A) 10 mM Ammonium acetate (pH 6.8)

B) Acetonitrile

Gradient program:

Time (min)	0	10
% B	10	50

Flow rate: 1.0 mL/min

Temperature: 40 °C

Detection: UV@250nm

Sample: 1 = Tartrazine, 2 = Amaranth, 3 = Indigo carmine,

4 = New Coccine, 5 = Sunset Yellow FCF, 6 = Allura Red AC, 7 = Fast Green FCF,

8 = Brilliant Blue FCF, 9 = Erythrosine B, 10 = Furoxan, 11 = Acid Red 52, 12 = Rose bengal

Instrument

Hitachi Chromaster®

Detector: 5410

Oven: 5310

AutoSampler: 5260

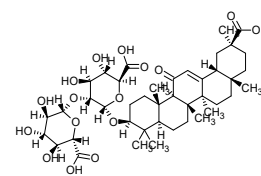
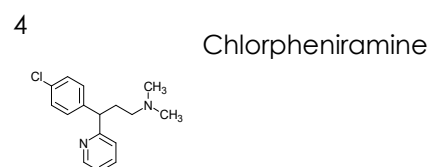
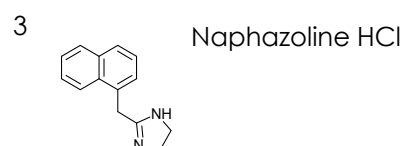
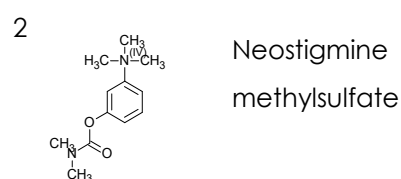
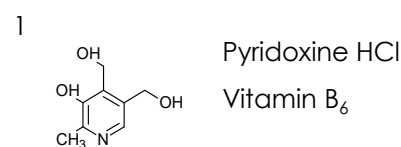
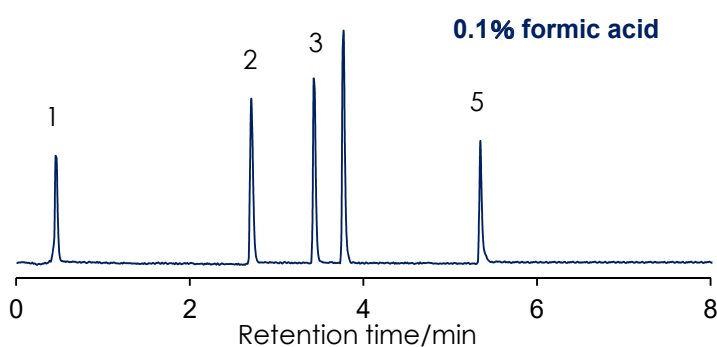
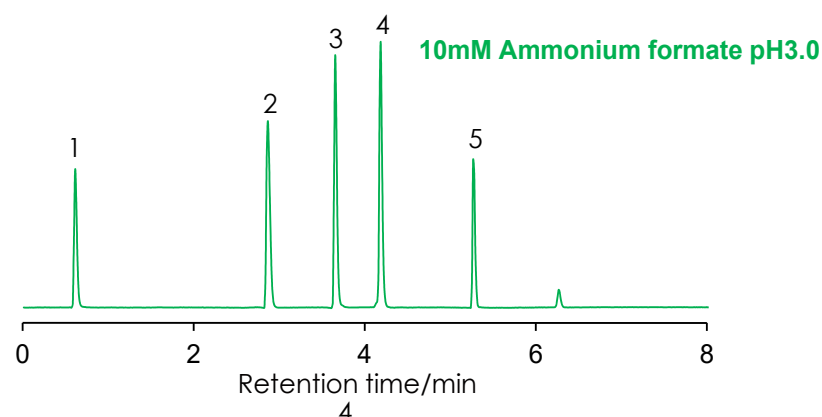
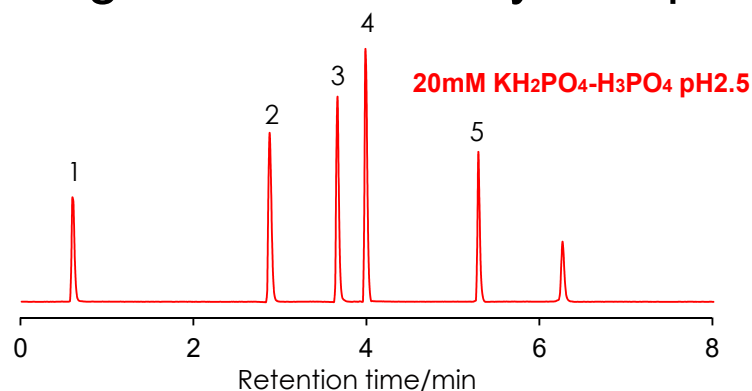
Pump: 5160



点眼剤成分の分離

Ingredients in an eye drop

SunShell C18 2.6 μm, 50 x 2.1 mm i.d.



Column: SunShell C18 2.6 μm, 50 x 2.1 mm

Mobile phase: A) 20mM KH₂PO₄-H₃PO₄ pH2.5, 10mM Ammonium formate pH3.0 or 0.1% formic acid

B) Acetonitrile

Time (min)	0	5	7.5
%B	0	60	60

Flow rate: 0.4 mL/min

Temperature: 37 °C

Detection: UV@265 nm

Sample: 1 = Pyridoxine HCl, 2 = Neostigmine methylsulfate, 3 = Naphazoline HCl,

4 = Chlorpheniramine, 5 = Glycyrrhizin



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