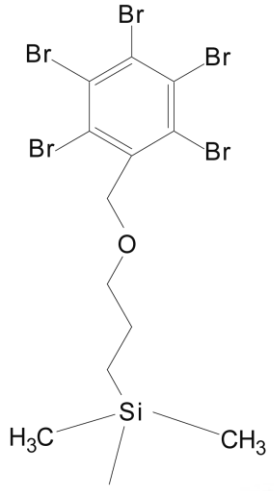
COSMOSIL / COSMOCORE

PBr

Pentabromobenzyl group bonded HPLC column

- Stronger retention; Very Polar Compounds
- Separate hydrophilic compounds in reversed phase conditions
- Greater sample loading capacity than HILIC
- Alternative selectivity to C18 column

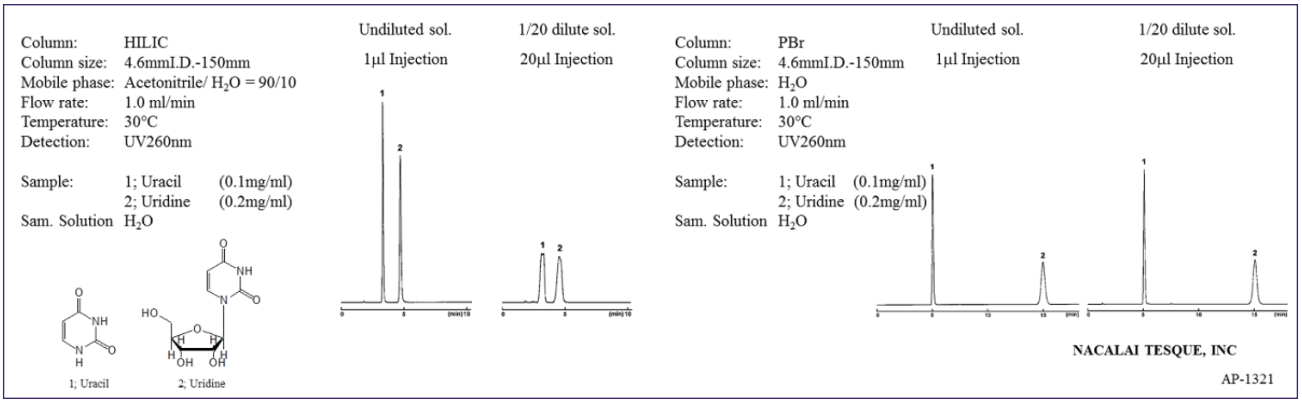


Physical characteristics

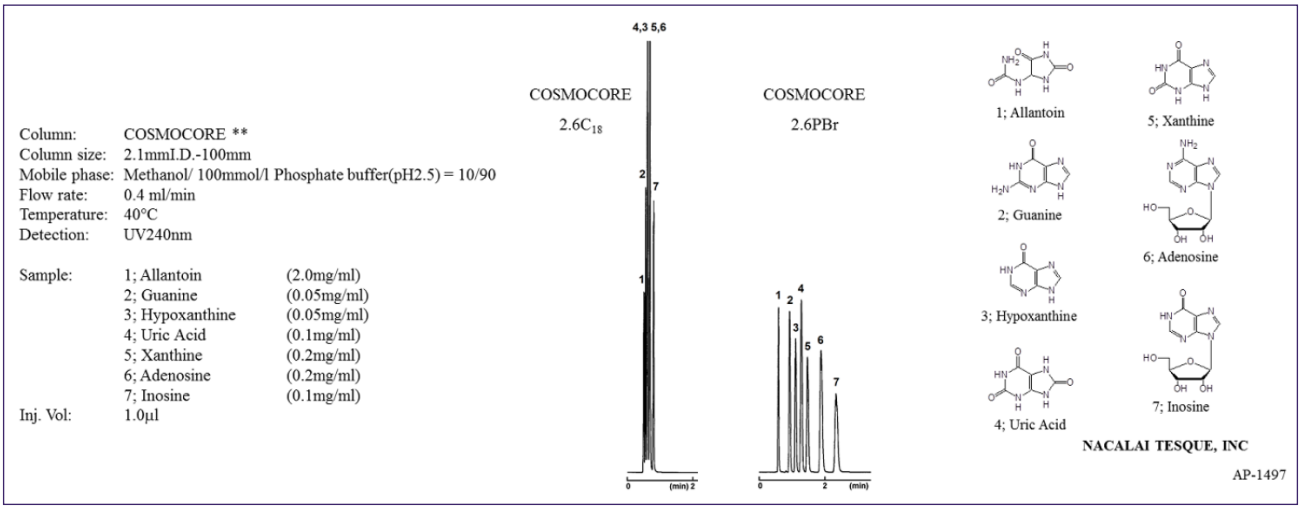
	COSMOCORE PBr	COSMOSIL PBr	
Silica Gel	Core-shell Silica Gel	High Purity Porous Spherical Silica	
Average Particle Size	2.6 µm	1.8 µm	3 µm, 5 µm
Average Pore Size	9 nm	12 nm	
Specific Surface Area	150 m^2/g	340 m^2/g	300 m^2/g
Stationary Phase	Pentabromobnzyl Group		
End-capping	Near-perfect Treatment		
pH range	2 – 7.5		

Separation of hydrophilic compounds in reversed-phase conditions

Hydrophilic interaction chromatography (HILIC) is an increasingly popular analytical technique. However, it is often difficult to develop a robust method due to users' less familiarity with HILIC conditions. Furthermore, high concentration of acetonitrile used in HILIC mobile phase makes it extremely sensitive to samples' water concentration; injecting samples in high water concentration often results in poor peak shapes. COSMOSIL PBr enables separation of hydrophilic compounds in reversed phase conditions, maintaining sharp peak shapes even with aqueous samples.



Nucleic acid metabolites



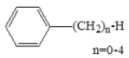
Separation mechanism

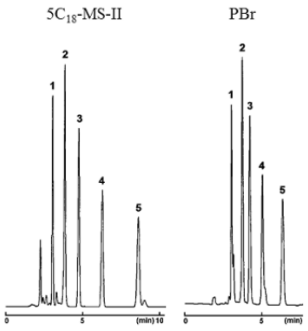
In reversed-phase chromatography, compounds are separated by difference in hydrophobicity (the number of CH2 bases, see chromatogram on the left (1)). Compounds with little hydrophobicity (the number of OCH2CH2, see chromatogram on the right (2)), are not retained by a C18 column. However, these compounds can easily be separated by dispersion force interaction using the COSMOSIL PBr column.

(1) Compounds with more hydrophobicity

Column:
Column size: 4.6mmI.D.-150mm
Mobile phase: Methanol/ H_2O = 80/20
Flow rate: 1.0 ml/min
Temperature: 30°C
Detection: UV254nm

Sample:
1; Benzene
2; Toluene
3; Ethylbenzene
4; *n*-Propylbenzene
5; *n*-Butylbenzene

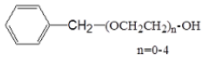


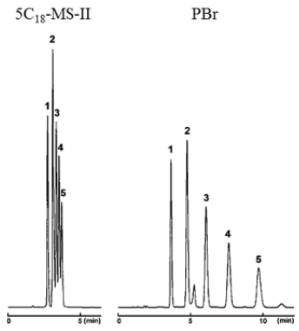


(2) Compounds with less hydrophobicity

Column:
Column size: 4.6mmI.D.-150mm
Mobile phase: Methanol/ H_2O = 60/40
Flow rate: 1.0 ml/min
Temperature: 30°C
Detection: UV254nm

Sample:
1; Benzyl Alcohol
2; Ethylene Glycol Monobenzyl Ether
3; Diethylene Glycol Monobenzyl Ether
4; Triethylene Glycol Monobenzyl Ether
5; Tetraethylene Glycol Monobenzyl Ether





NACALAI TESQUE, INC

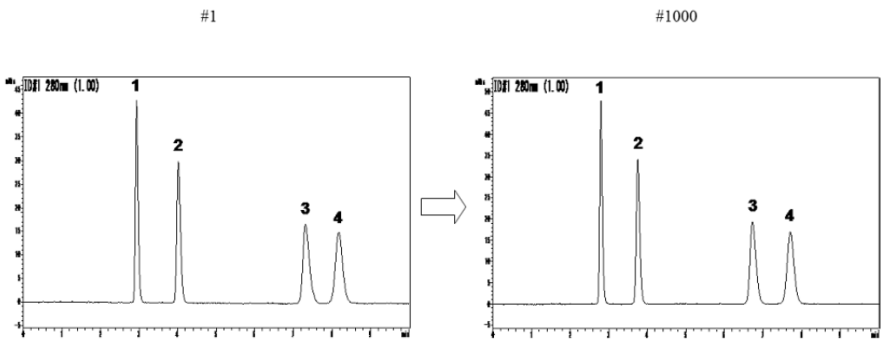
AP-1315

Column stability test

COSMOSIL PBr column remains stable after 1,000 injections under 100% aqueous condition.

Column: PBr
Column size: 4.6mmI.D.-150mm
Mobile phase: 20mmol/l Phosphate buffer(pH2.5)
Flow rate: 1.0 ml/min
Temperature: 40°C
Detection: UV280nm

Sample:
1; *L*-Noradrenaline (0.5mg/ml)
2; *L*-Adrenaline (0.5mg/ml)
3; Dopamine (0.5mg/ml)
4; *L*-DOPA (0.5mg/ml)
Inj.Vol.: 1.0µl

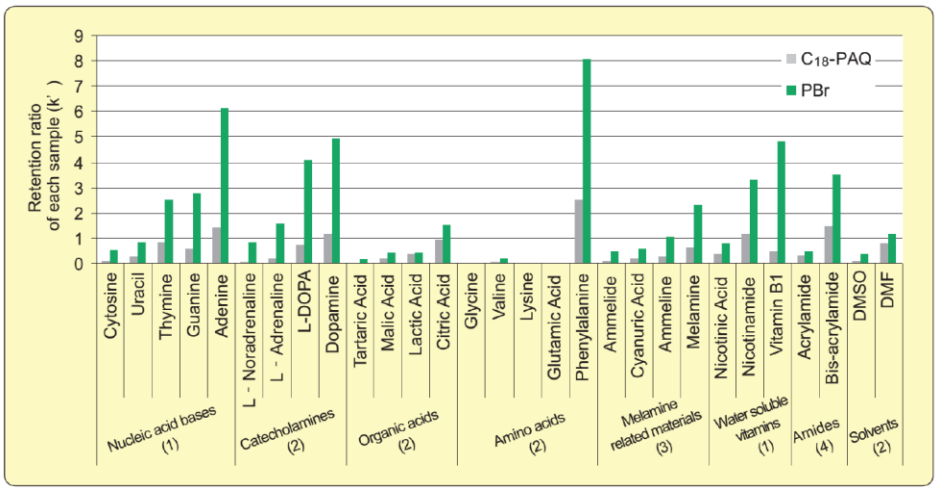


NACALAI TESQUE, INC

AP-1322

Suitable compounds to analyze by COSMOSIL PBr

COSMOSIL PBr retains cyclic compounds or amide compounds more strongly than C18 columns.

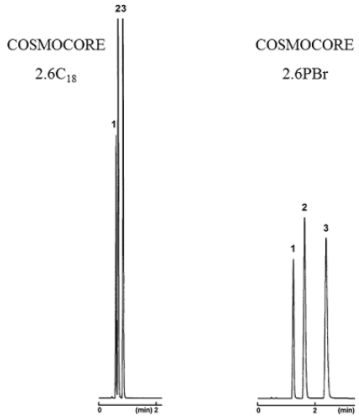


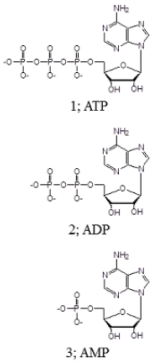
Mobile Phase:
(1) Methanol : 20 mmol/L Phosphate Buffer (pH 7.0) = 10 : 90
(2) 20 mmol/L Phosphate Buffer (pH 2.5)
(3) 20 mmol/L Phosphate Buffer (pH 7.0)
(4) Methanol : Water = 10 : 90

Nucleotide analysis

Column: COSMOCORE **
Column size: 2.1mmI.D.-100mm
Mobile phase: 20mmol/l Phosphate buffer(pH7.0)
Flow rate: 0.4 ml/min
Temperature: 40°C
Detection: UV260nm

Sample: 1; Adenosine-5'-triphosphate (0.5mg/ml)
2; Adenosine-5'-diphosphate (0.8mg/ml)
3; Adenosine-5'-monophosphate (0.8mg/ml)
Inj. Vol: 0.5µl





NACALAI TESQUE, INC

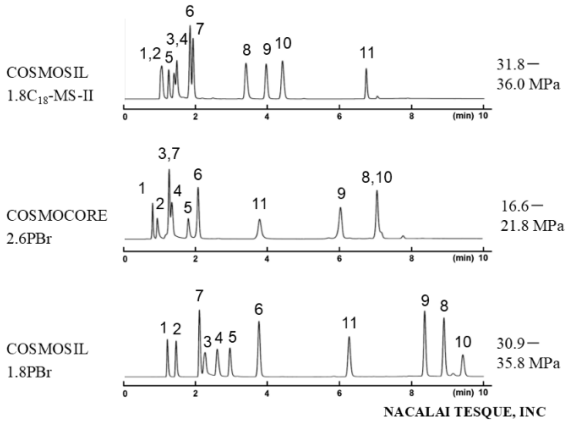
AP-1499

Nicotinamide metabolites

Column: **
Column size: 2.1 mmI.D.-100 mm
Mobile phase: A; Methanol/20 mM Ammonium Formate aq. = 5/95
B; Methanol/20 mM Ammonium Formate aq. = 20/80,
B conc. 0 % (0→3 min) 0→100 % (3→6 min) 100 % (6→10 min)
Flow rate: 0.3 ml/min
Temperature: 30 °C
Detection: UV260 nm
Sample:

1; Nicotinic Acid Mononucleotide [NAMN]
2; β-Nicotinamide Mononucleotide [NMN]
3; Adenosine-5'-triphosphate
4; Inosine-5'-monophosphate
5; Nicotinamide riboside
6; Cytidine
7; Nicotinic Acid
8; β-Nicotinamide Adenine Dinucleotide [NAD+]
9; Inosine
10; β-Nicotinamide Adenine Dinucleotide (reduced form) [NADH]
11; Nicotinamide

Inj.Vol.: 1.0 µl



NACALAI TESQUE, INC

AP-1927

Ordering information

For more information, please visit our website by scanning the QR code below.

COSMOSIL PBr
COSMOCORE PBr

COSMOSIL Cholester
COSMOCORE Cholester

COSMOSIL πNAP

COSMOSIL Application
(HPLC / UHPLC / SFC)

Nacalai USA
Innovations for Life Sciences.

NACALAI USA, INC.
6625 Top Gun Street, Suite 107, San Diego, CA 92121
TEL : 858-404-0403
Website : www.nacalaiusa.com
Email : info@nacalaiusa.com