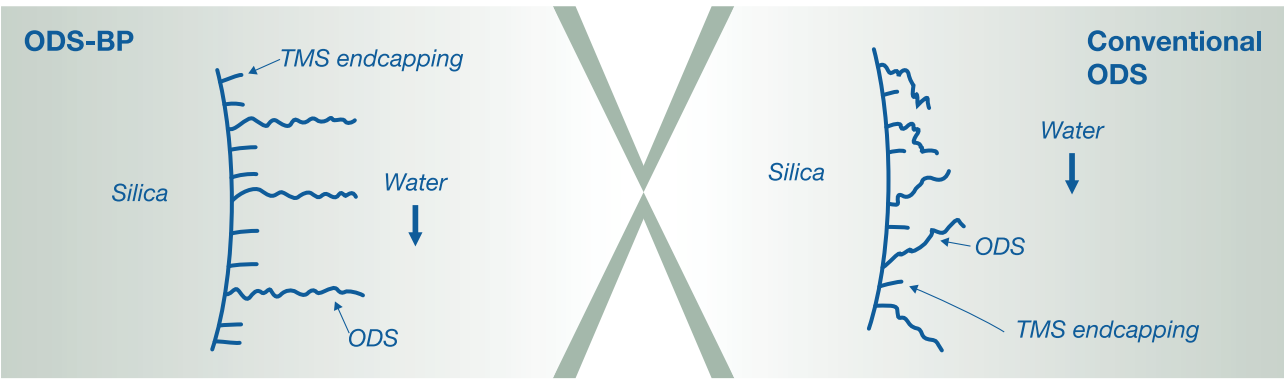
DAISOGEL ODS-BP Series

- ✻ *Suitable for hydrophilic compounds separation*
- ✻ *Strong retention in aqueous condition*
- ✻ *Longer lifetime in aqueous eluents*
- ✻ *Different selectivity from ODS-RPS*
- ✻ *Enhanced mechanical stability*
- ✻ *Suitable for Dynamic Axial Compression Columns*

ODS-BP phases are designed to show extended selectivity for hydrophilic and polar compounds which are either not or poorly retained on other phases. A proprietary modification technique avoids the matting-down effect of the C18 chains which conventional ODS-phases show at high water contents in the mobile phase, even if pure water is used. Typical applications are separations of biomolecules and metabolites such as oligosaccharides, amino acids, small peptides, nucleotides and organic acids.
DAISOGEL ODS-BP phases are fully endcapped and show similar selectivity as conventional C18 phases when being used for separations of hydrophobic compounds with typical reversed phase eluents.
DAISOGEL ODS-BP phases show stable base lines and high sensitivity even under neutral pH conditions and without buffer or counter-ion additives, which makes them appear especially suited for hyphenated techniques like LC-MS, where such additives disturb the detection.

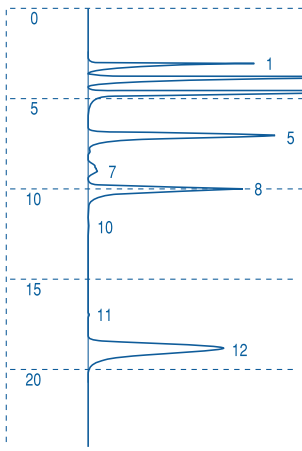


Product names and properties / analytical grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-120-3-ODS-BP	12	3	1.0	300	15	50
SP-120-4-ODS-BP	12	4	1.0	300	15	50
SP-120-5-ODS-BP	12	5	1.0	300	15	50
SP-120-7-ODS-BP	12	7	1.0	300	15	50
SP-200-3-ODS-BP	20	3	1.1	200	10	50
SP-200-5-ODS-BP	20	5	1.1	200	10	50

Product names and properties / preparative grades

	Pore Size (nm)	Particle Size (µm)	Pore Volume (ml/g)	Surface Area (m^2/g)	% of Carbon	Minimum Lot (g)
SP-120-10-ODS-BP	12	10	1.0	300	15	500
SP-120-15-ODS-BP	12	15	1.0	300	15	500
SP-120-20-ODS-BP	12	20	1.0	300	15	500
SP-120-40/60-ODS-B	12	50	1.0	300	15	500
SP-200-10-ODS-BP	20	10	1.1	200	10	500
SP-200-15-ODS-BP	20	15	1.1	200	10	500
SP-200-20-ODS-BP	20	20	1.1	200	10	500
SP-200-40/60-ODS-B	20	50	1.1	200	10	500



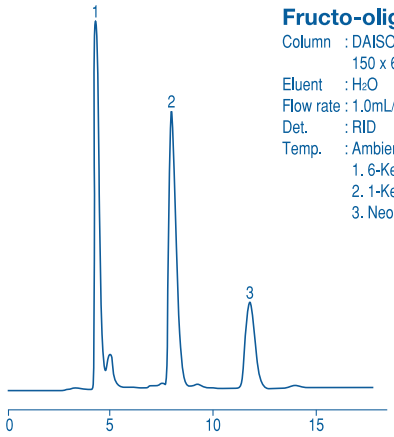
Alanyl peptides

PK 1	L-Ala
PK 2	H-Ala-Ala-Ala-OH
PK 3	H-Ala-Ala-Ala-Ala-OH
PK 5	H-Ala-Ala-Ala-Ala-Ala-OH
PK 8	H-Ala-Ala-D-Ala-Ala-OH
PK 12	H-Ala-Ala-Ala-D-Ala-Ala-OH

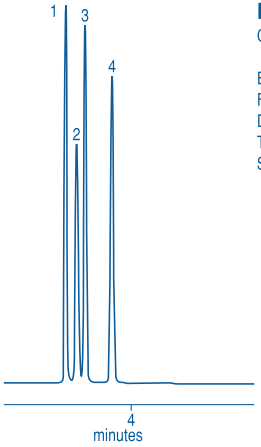
Alanine and its oligopeptides are separated on DAISOGEL ODS-BP using 100% water as eluent. The elution sequence corresponds with the number of amino acid units included in the each peptide. The diastereoisomer which contains the unnatural D-Ala in its structure shows a different retention time from the corresponding all-L-Ala peptide with the same number of amino acid residue.

Peptides were eluted on
DAISOGEL SP-120-5-ODS-BP(6.0 x 150mm) with H_2O
Flow rate, 1ml/min. Detector : UV214nm.

1-Kestose, 6-Kestose and Neokestose are position diastereoisomers which have the same molecular weight and are built up by the same monosaccharides, but they differ in the bonding position between sucrose and fructose. ODS-BP is sensitive to such small differences.



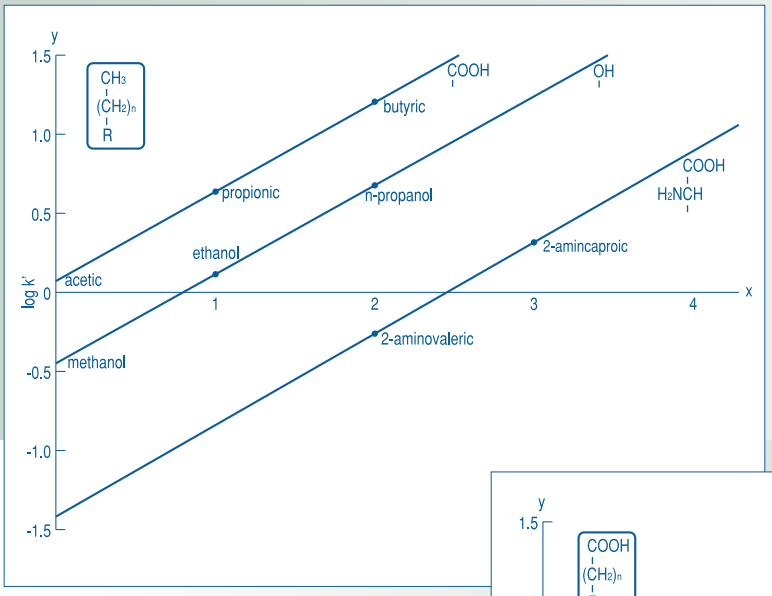
Fructo-oligosaccharides
Column : DAISOGEL SP-120-5-ODS-BP 150 x 6mmI.D.
Eluent : H_2O
Flow rate : 1.0mL/min
Det. : RID
Temp. : Ambient
1. 6-Kestose
2. 1-Kestose
3. Neokestose



Disaccharides
Column : DAISOGEL SP-120-5-ODS-BP 150 x 4.6mmI.D.
Eluent : H_2O
Flow rate : 1.0mL/min
Det. : RID
Temp. : 40˚C
Sample Size : 5µl
1. Fructose (2.0mg/ml)
2. Cellobiose (1.8mg/ml)
3. Sucrose (2.0mg/ml)
4. Raffinose (2.5mg/ml)

Disaccharides such as cellobiose and sucrose can be efficiently separated by ODS-BP. These disaccharides are composed of different monosaccharide units and exhibit different hydrophobicity. ODS-BP is capable of recognizing such a small differences.

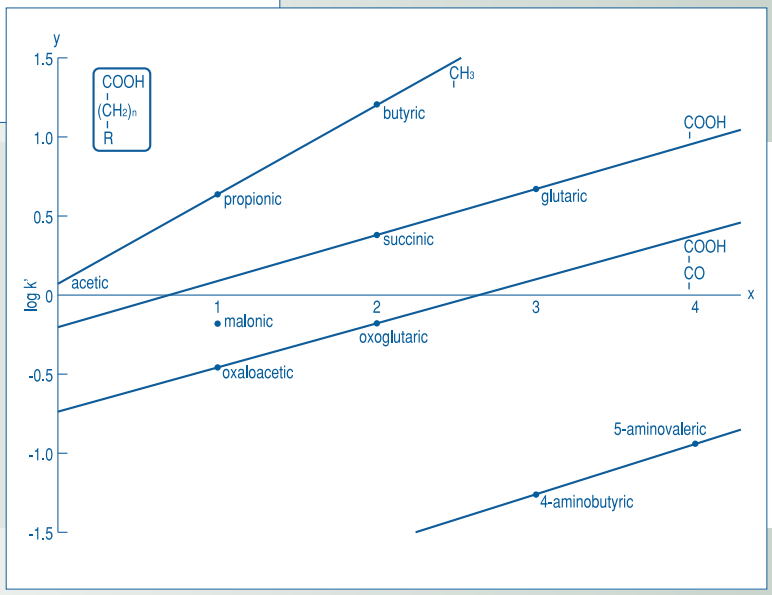
Intensity of hydrophobic interaction of ODS-BP

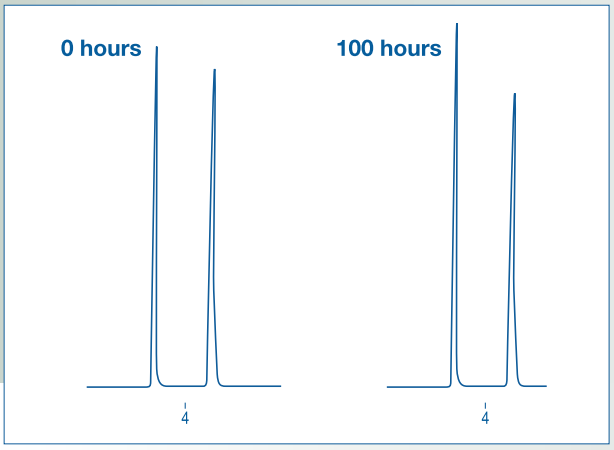


The figure shows the intensity of interaction between solutes and ODS-BP.
The x-axis shows the number of carbon atoms of the solute, the y-axis shows log K', which is calculated from the retention time of each solute. The fact that there is a linear relationship between these parameters proves that the retention mechanism of ODS-BP is based on van der Waals forces. Every side-chain added changes the hydrophobicity of the solute and influences the retention behavior.

x : number of carbon atoms of the solute

$$y : \log k' = \log \frac{RT_{solute} - RT_0}{RT_0}$$





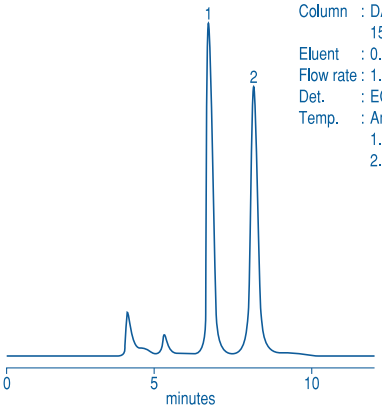
	0 hours	after 100 hours
Pyridine kpy	0.704	0.686
Phenol kph	2.129	2.080
Separation α	3.024	3.032

There is no evidence of phase collapse of DAISOGEL ODS-BP with pure water. The test chromatogram of the pyridine/phenol separations shows that after 100 hours washing with water there was no change in selectivity or retention behavior.

Applications

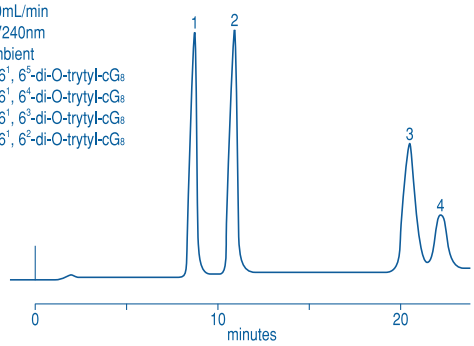
Antioxidants

Column : DAISOGEL SP-120-5-ODS-BP 150 x 6mmI.D.
Eluent : 0.1M Phosphate buffer (pH3.1)
Flow rate : 1.0mL/min
Det. : ECD
Temp. : Ambient
1. Ascorbic acid
2. GSH



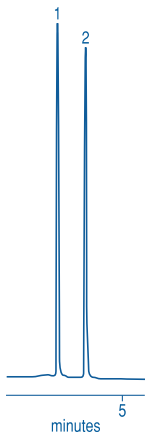
Cyclodextrin derivatives

Column : DAISOGEL SP-120-5-ODS-BP 150 x 6mmI.D.
Eluent : MeOH/H_2O=70/30
Flow rate : 1.0mL/min
Det. : UV240nm
Temp. : Ambient
1. 6^1, 6^5-di-O-trytyl-cG_8
2. 6^1, 6^4-di-O-trytyl-cG_8
3. 6^1, 6^3-di-O-trytyl-cG_8
4. 6^1, 6^2-di-O-trytyl-cG_8



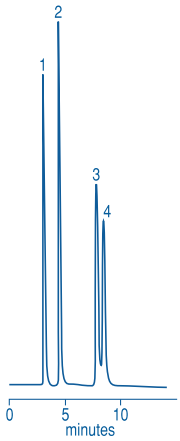
Glycolic acid, Lactic acid

Column : DAISOGEL SP-120-5-ODS-BP 150 x 4.6mmI.D.
Eluent : 0.1% H_3PO_4
Flow rate : 1.0mL/min
Det. : UV210nm, 0.32AUFS
Temp. : 40˚C
1. Glycolic acid (2.0mg/ml)
2. Lactic acid (3.3mg/ml)
3. Carbamazepine



Amino acids

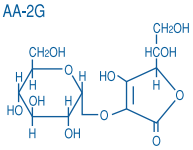
Column : DAISOGEL SP-120-5-ODS-BP 150 x 6mmI.D.
Eluent : H_2O
Flow rate : 1.0mL/min
Det. : RID
Temp. : 40˚C
1. Alanine
2. Valine
3. Isoleucine
4. Leucine

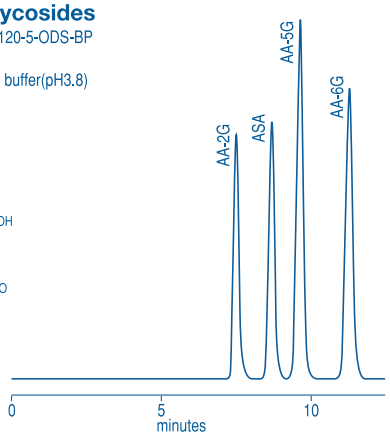


Ascorbic acid glycosides

Column : DAISOGEL SP-120-5-ODS-BP 150 x 6mmI.D.
Eluent : KH_2PO_4 • H_3PO_4 buffer(pH3.8)
Flow rate : 0.7mL/min
Det. : Ambient
Temp. : 40˚C

AA-2G





Alcohols

Column : DAISOGEL SP-120-5-ODS-BP 150 x 4.6mmI.D.
Eluent : H_2O
Flow rate : 1.0mL/min
Det. : RID
Temp. : 40˚C
1. Methanol
2. Ethanol
3. iso-Propanol
4. n-Propanol