Multimode Columns

Features

GS-HQ

- SEC is the main separation mode
- With the choice of eluent, the column provides multimode features of reversed phase, HILIC, and ion exchange modes to SEC
- Suitable for the separation of peptides or nucleic acids with similar molecular weights
- Suitable for desalting samples or substituting buffer in protein analysis

Standard columns

Product Code	Product Name	Plate Number (TP/column)	Particle Size (µm)	Pore Size (Å)	Column Size (mm) I.D. x Length	Shipping Solvent
F7600005	**Asahipak GS-220 HQ**	≥ 19,000	6	150	**7.5 x 300**	H_2O/CH_3OH = 70/30
F7600006	**Asahipak GS-320 HQ**	≥ 19,000	6	400	**7.5 x 300**	H_2O/CH_3OH = 70/30
F6710019	**Asahipak GS-2G 7B**	(guard column)	9	—	**7.5 x 50**	H_2O/CH_3OH = 70/30

Base Material: Polyvinyl alcohol
Usable pH Range: pH2 - 9 (GS-220 HQ)
pH2 - 12 (GS-320 HQ)

Preparative columns [Preparative columns are made to order]

Product Code	Product Name	Plate Number (TP/column)	Particle Size (µm)	Column Size (mm) I.D. x Length	Shipping Solvent	Standard Column
F6810034	**Asahipak GS-220 20G**	≥ 14,000	13	**20.0 x 500**	H_2O/CH_3OH = 70/30	GS-220 HQ
F6810035	**Asahipak GS-320 20G**	≥ 14,000	13	**20.0 x 500**	H_2O/CH_3OH = 70/30	GS-320 HQ
F6710021	**Asahipak GS-20G 7B**	(guard column)	20	**7.5 x 50**	H_2O/CH_3OH = 70/30	(guard column)

Base Material: Polyvinyl alcohol

Usable solvents

Product Name	Maximum Usable Concentration (%)	
	Methanol	Acetonitrile
GS-220 HQ	30	50
GS-320 HQ	100	50

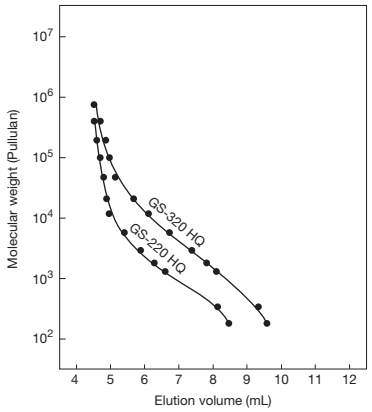
Target molecular weight range and exclusion limit

- **Measured with pullulan (eluent: ultrapure water)**

Product Name	Target Molecular Weight Range	Exclusion Limit
GS-220 HQ	300 - 3,000	7,000
GS-320 HQ	300 - 20,000	40,000

Please use the above table for reference purposes only when selecting columns.

Calibration curves for GS-HQ series using pullulan



Column : **Shodex Asahipak GS-HQ series**
Eluent : H_2O
Flow rate : 0.6 mL/min
Detector : RI
Column temp. : 30 ˚C

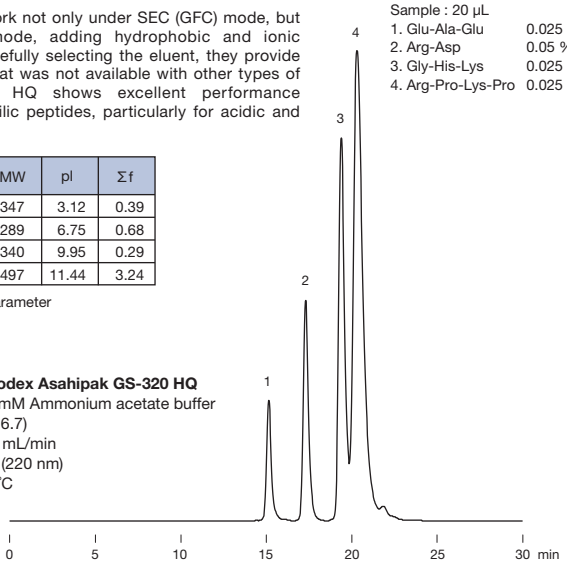
Peptides

GS-HQ columns work not only under SEC (GFC) mode, but also under multimode, adding hydrophobic and ionic interactions. By carefully selecting the eluent, they provide separation mode that was not available with other types of columns. GS-320 HQ shows excellent performance separating hydrophilic peptides, particularly for acidic and basic peptides.

	MW	pI	Σf
Glu-Ala-Glu	347	3.12	0.39
Arg-Asp	289	6.75	0.68
Gly-His-Lys	340	9.95	0.29
Arg-Pro-Lys-Pro	497	11.44	3.24

Σf : Hydrophobic parameter
pI : Isoelectric point

Sample : 20 µL
1. Glu-Ala-Glu 0.025 %
2. Arg-Asp 0.05 %
3. Gly-His-Lys 0.025 %
4. Arg-Pro-Lys-Pro 0.025 %

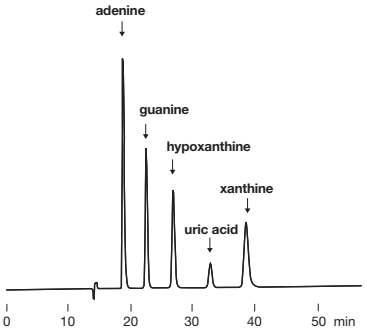


Column : **Shodex Asahipak GS-320 HQ**
Eluent : 30 mM Ammonium acetate buffer (pH6.7)
Flow rate : 0.5 mL/min
Detector : UV (220 nm)
Column temp. : 30 ˚C

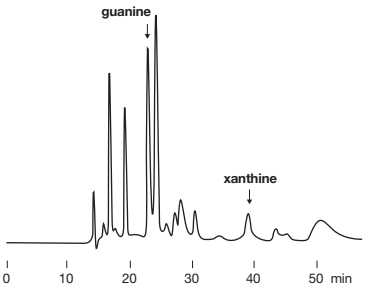
Purine bases in beer

Purine in food is analyzed as purine base after steps of sample preparation; homogenization, freeze drying, hydolyzation with 70 % perchloric acid, and neutralization. Example below shows the analysis of purine in regular beer and beer treated with guanase (an enzyme that degrades guanine to xanthine). The following data indicate that guanine was decreased and xanthine was increased by guanase.

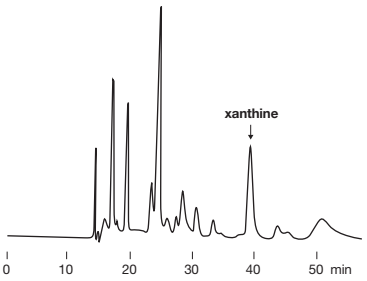
Purine base standards



Normal beer



Guanase treated beer



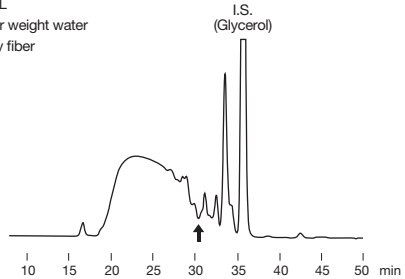
Column : **Shodex Asahipak GS-320 HQ**
Eluent : 150 mM Sodium phosphate buffer (pH2.5)
Flow rate : 0.6 mL/min
Detector : UV (260 nm)
Column temp. : 35 ˚C

Data provided by Kiyoko Kaneko Ph.D.,
Faculty of Pharmaceutical Sciences, Teikyo University

Low molecular weight water-soluble dietary fiber

GS-220 HQ allows to elute monosaccharides, disaccharides, and sugar alcohols after the indigestible component fraction (indicated by an arrow on the chromatogram).
This separation makes the method preferable for the quantification of low molecular weight water-soluble dietary fiber.

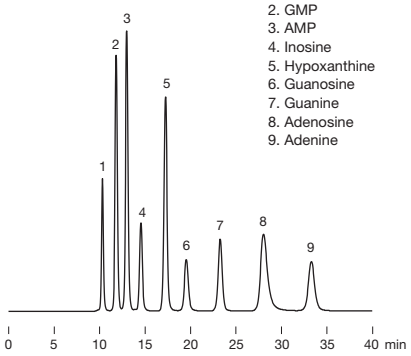
Sample : 20 µL
Low molecular weight water soluble dietary fiber



Column : **Shodex Asahipak GS-220 HQ x 2**
Eluent : H_2O
Flow rate : 0.5 mL/min
Detector : RI
Column temp. : 60 ˚C

"Umami"

Sample : 50 µg/mL each, 20 µL
1. IMP
2. GMP
3. AMP
4. Inosine
5. Hypoxanthine
6. Guanosine
7. Guanine
8. Adenosine
9. Adenine



Column : **Shodex Asahipak GS-320 HQ**
Eluent : 10 mM NaH_2PO_4 aq./10 mM Na_2HPO_4 aq. = 1000/31
Flow rate : 1.0 mL/min
Detector : UV (260 nm)
Column temp. : 40 ˚C