Best Column for Nucleic acids and Organic acids
MCIGEL™ CHK45/C05

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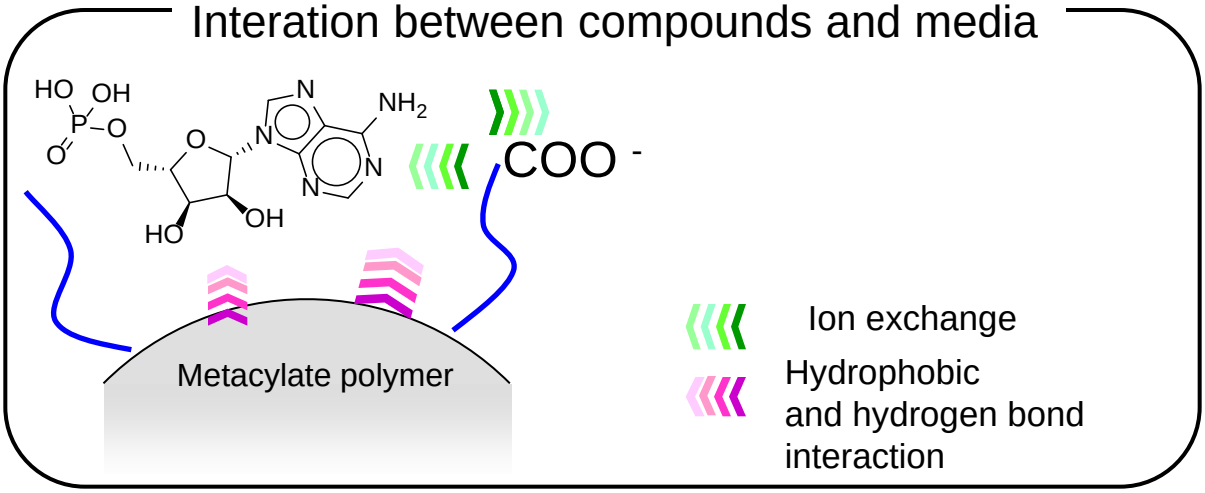
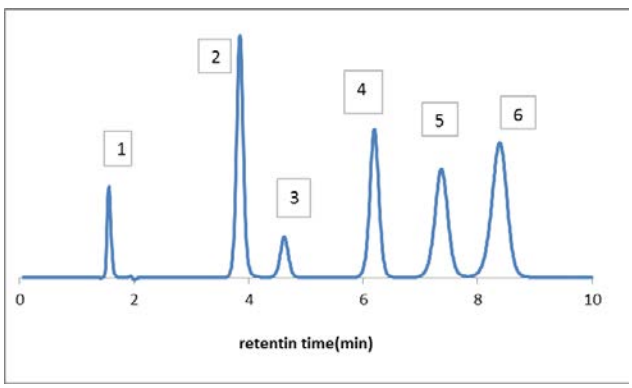
MCIGEL™ CHK45/C05 is a mix mode column; the multiple interactions moderately occurring between the solute and the resin surface, that is., electrostatic, hydrophobic, polar, and/or further weak interactions.
Suitable for high-speed separations of biogenic cations as well as inorganic cations.

Column size	4.6㎜φ×150mm
Column material	SUS
Packing material	Methacylate dicarboxylic acid type resin
Particle size	5 μm

Interation between compounds and media

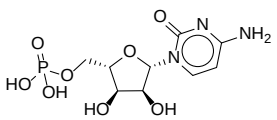


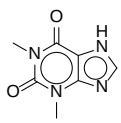
◆ Nucleotides and relatide organic compounds

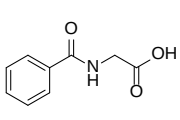


1: 5-CMP 2: Theophylline 3: Hippuric acid
4: Nicotinamide 5: Adenosine 6: p-hydroxy benzoic acid

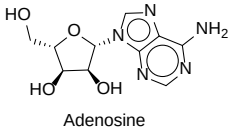
Column：MCI GEL™ CHK45/C05
Φ4.6×150mm
FlowRate：1.2mL/min
Eluent：：8mM H_3PO_4 / 10% CH_3CN
Detection：UV254nm
Injection：10μL

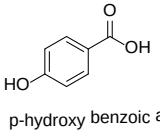

5-CMP


Theophylline


Hippuric acid


Nicotinamide


Adenosine


p-hydroxy benzoic acid

Application of MCIGEL™ CHK45/C05

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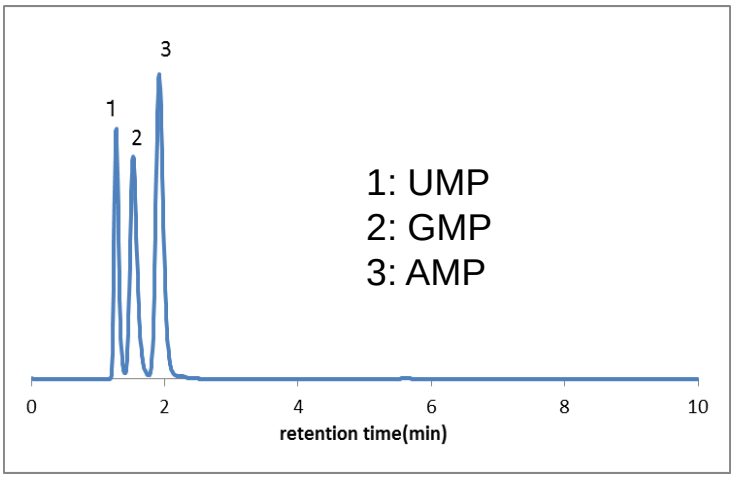
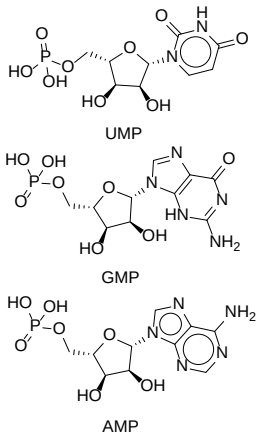
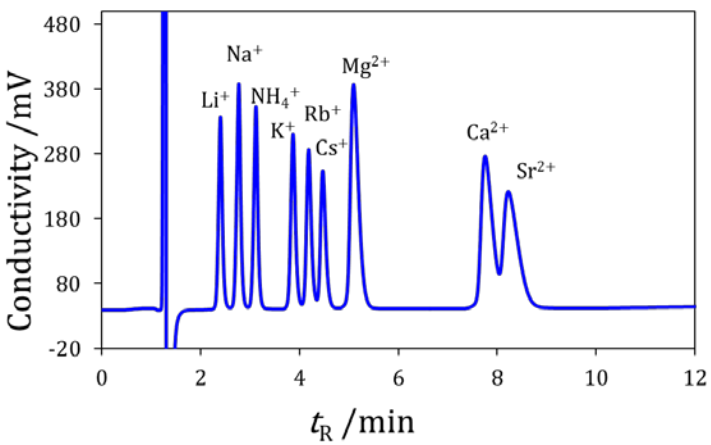
◆ mono nucleotide



Column：MCI GEL™ CHK45/C05
Φ4.6×150mm
FlowRate：1.2mL/min
Eluent：：3mM H_3PO_4
Detection：UV254nm
Injection：10μL



◆ inorganic cations



Column：MCI GEL™ CHK45/C05
Φ4.6×150mm
FlowRate：1.2mL/min
Eluent：：4mM H_3PO_4
Temp: 40C

Simultaneous separation of 7 nucleobases and 5 nucleosides

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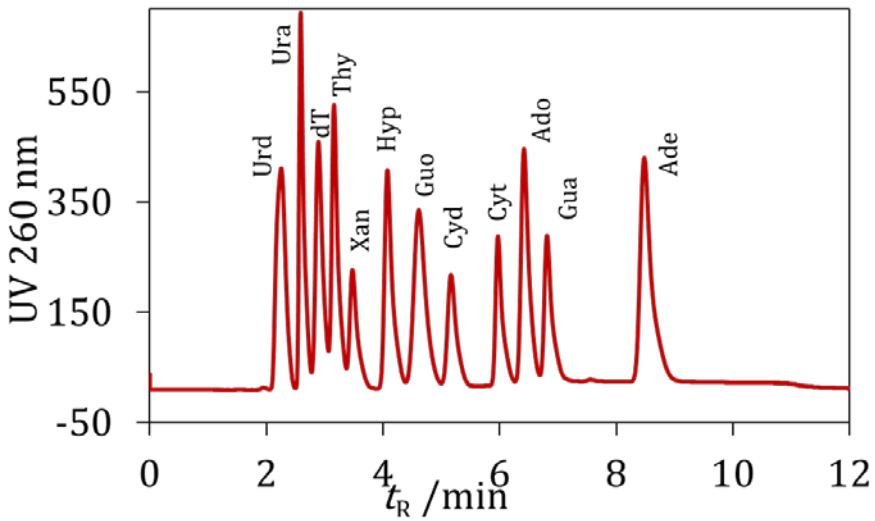
Ura, Thy, Xan, Hyp, Cyt, Gua, Ade, uridine (Urd), thymidine (dT), cytidine (Cyd), guanosine (Guo), and adenosine (Ado).

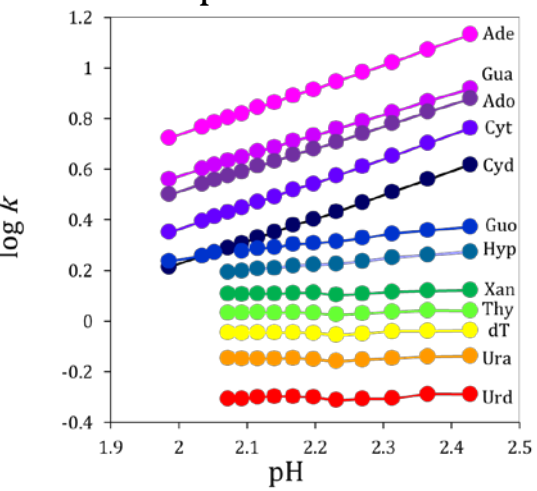
（Data by Professor Yokoyama, Yokohama National Univ)



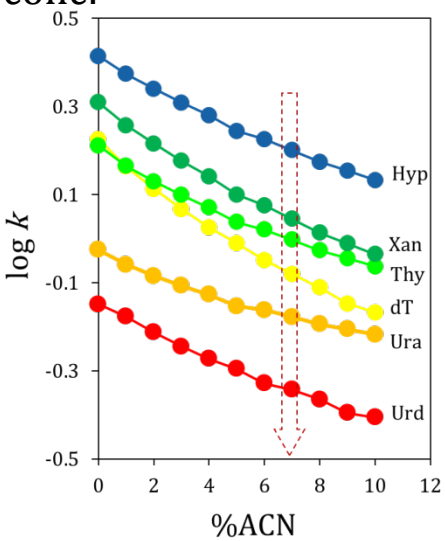
Chromatographic conditions
Solvent A : 10 mM H_3PO_4 / 7 % ACN
Solvent B : 20 mM H_3PO_4 / 30 % ACN
Temp : 35℃

Time (min)	Solvent A [a] (%)	Solvent B [b] (%)	Flow rate (mL/min)
0.0 → 1.0	100	0	1.0
1.1 → 3.5	100 → 30	0 → 70	1.0
3.6→ 4.0	30	70	1.0
4.1→ 5.0	30	70	1.0 → 1.2
5.1→ 8.0	30	70	1.2
8.1→ 9.0	100	0	1.2
9.1→	100	0	1.0

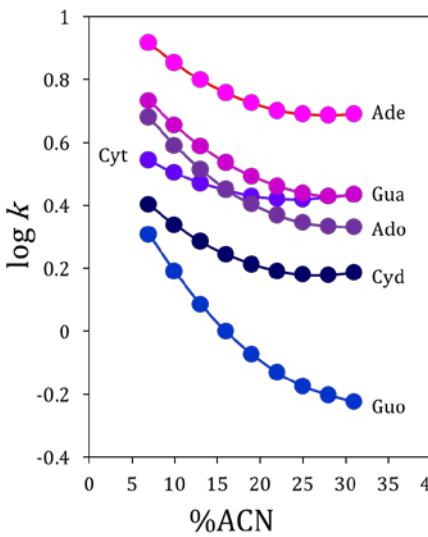
Effect of pH and acetonitrile conc.



Effect of eluent pH (apparent) on the retention of analyte.
Test range: 5 – 20 mM H_3PO_4 with 7%(v/v) ACN.



Effect of acetonitrile content in solvent A.
Test range: 0 – 10 %(v/v) ACN with 10 mM H_3PO_4.



Effect of acetonitrile content for solvent B.
Test range: 7 – 31 %(v/v) ACN with 10 mM H_3PO_4.

Simultaneous separation of 7 amino acids and 7 nucleobases

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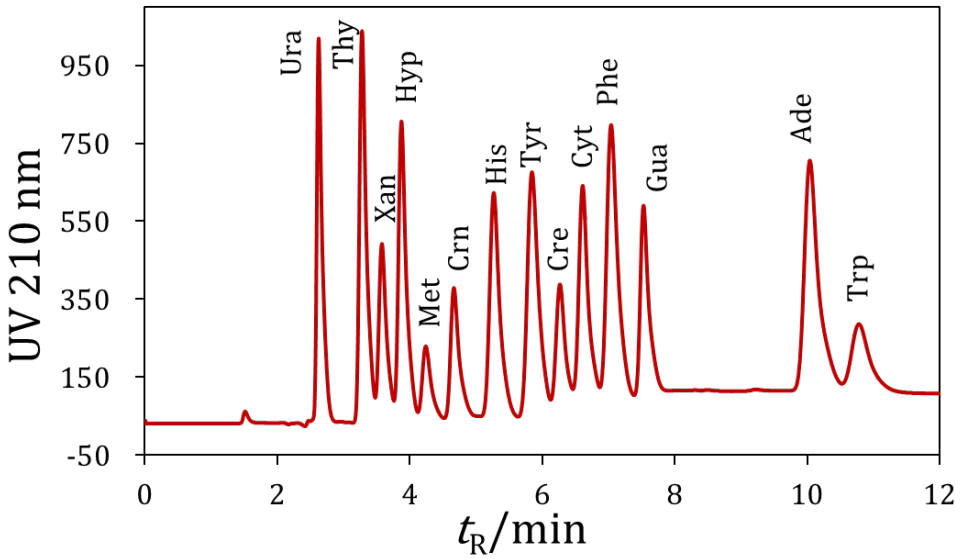

Chromatographic conditions
Dual-mode gradient program for the 14 analytes
Solvent A : 6 mM H3PO4 /0.7 mM ethylenediamine (EDA) / 5%(v/v) ACN
Solvent B : 6 mM H3PO4 /0.7 mM EDA / 35%(v/v) ACN
Temp : 40℃

Time (min)	Solvent A [a] (%)	Solvent B [b] (%)	Flow rate (mL/min)
0.0 → 0.5	100	0	1.0
0.6 → 3.0	85	15	1.0
3.1→ 5.0	85 → 30	15 → 70	1.0 → 1.2
5.1→ 11.0	30	70	1.2
11.1→ 14.0	100	0	1.2 → 1.0
14.1→	100	0	1.0

The optimized chromatography was very repeatable and quantitative.

Analyte	RSD (%) (n=5)		Linear range (μM)	r^2
	Retention time	Area intensity		
Ura	0.06	2.39	1-100	0.9999
Thy	0.07	1.01	1-100	0.9997
Xan	0.08	1.21	1-100	0.9990
Hyp	0.04	1.32	1-100	0.9998
Met	0.05	2.95	2-100	0.9992
Crn	0.06	3.27	1-100	0.9999
His	0.14	0.45	1-100	0.9998
Tyr	0.17	3.22	0.1-10	0.9999
Cre	0.05	0.61	1-100	0.9993
Cyt	0.06	0.53	1-100	0.9998
Phe	0.04	0.93	1-100	0.9998
Gua	0.04	0.67	1-100	0.9995
Ade	0.08	0.95	1-100	0.9998
Trp	0.05	2.18	0.1-10	0.9992