

CK08,06 series

Cation exchange columns applications; sugars, carboxylic acids, (poly)alcohols, etc.



CK08EC 8×300, 7.8×300

CK08EH 8×300, 7.8×300

● Column list

MCI GEL™ column	Counter ion	Application areas	USP
MCI GEL™ CK08S MCI GEL™ CK08E	Na ⁺	General sugar separation columns	L58
MCI GEL™ CK08EC	Ca ²⁺	The most general sugar separation column Highly recommended for fructose and glucose This column conforms to US Pharmacopeia.	L19
MCI GEL™ CK08ES	Ag ⁺	Gel permeation chromatographic effect	
MCI GEL™ CK08EH	H ⁺	Organic acids with H ₃ PO ₄ eluent; sugars with distilled water eluent	L17
MCI GEL™ CK06SC	Ca ²⁺	Use for analysis of mono-saccharides and disaccharides.	

Application data of CK08EC

Fig. 2-1 Sugars

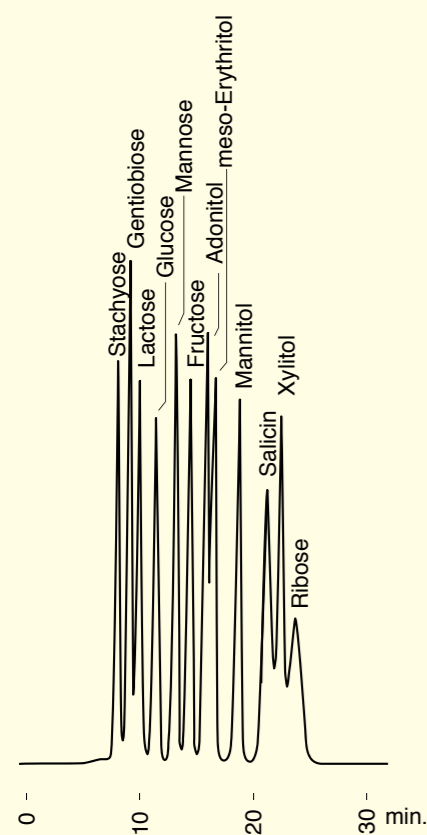
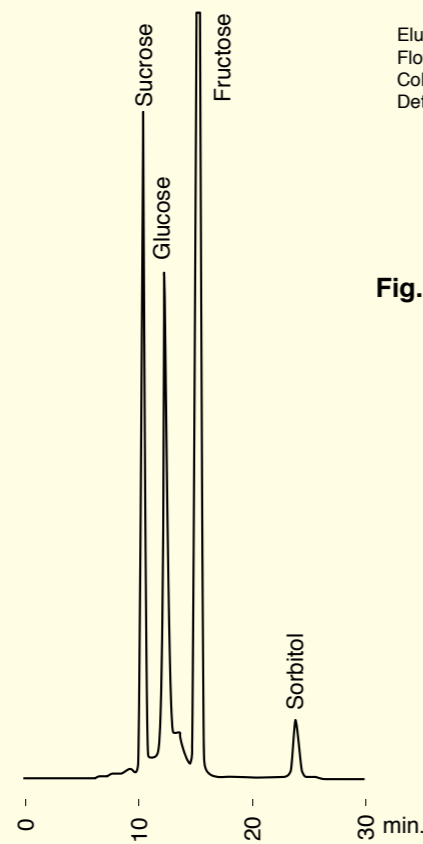
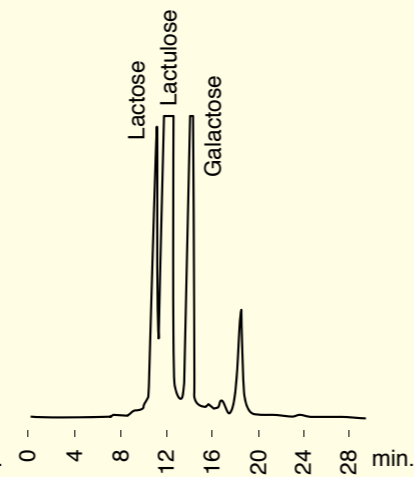


Fig. 2-2 Apple juice



Conditions
 Column : MCI GEL™ CK08EC
 8mm I.D.×300mm
 Eluent : H₂O
 Flow rate : 0.6 ml/min
 Column temp. : 75°C
 Detection : RI

Fig. 2-3 Lactulose syrup



Application data of CK08EC

Fig. 2-4 Sports drink A

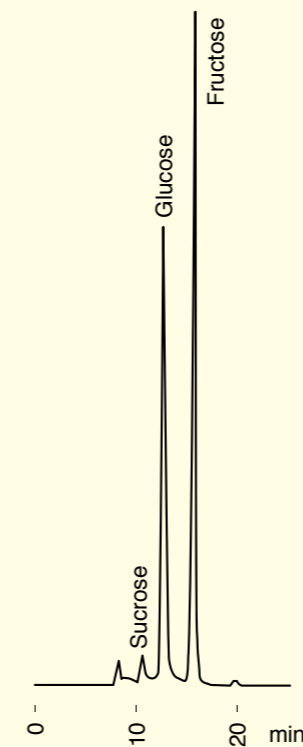


Fig. 2-5 Sports drink B

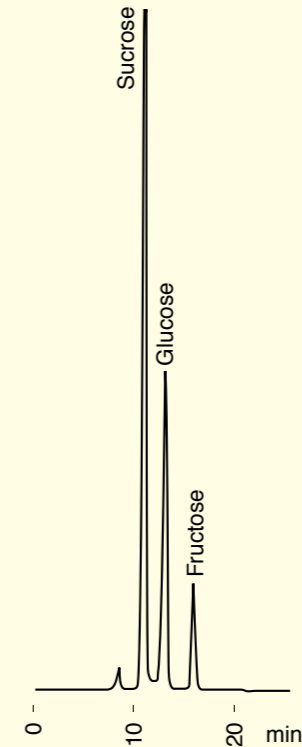


Fig. 2-6 Honey

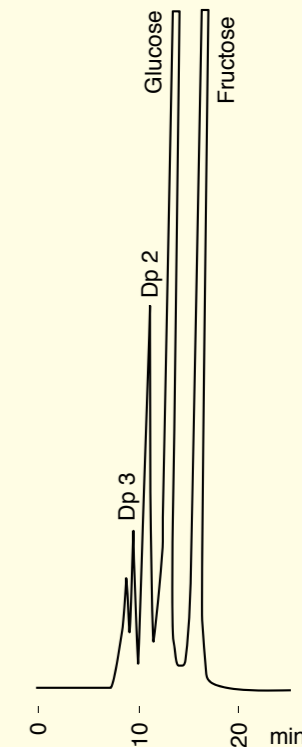


Fig. 2-7 Jam

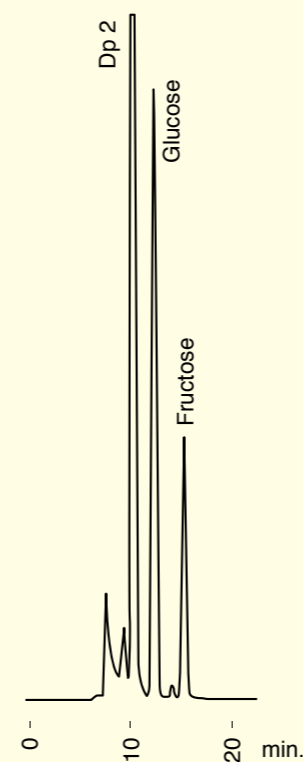
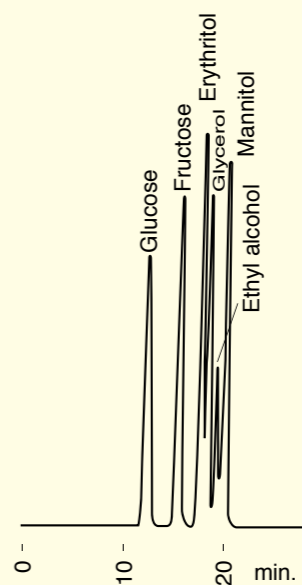


Fig. 2-8 Sugars/Alcohols



Conditions
 Column : MCI GEL™ CK08EC
 8mm I.D.×300mm
 Eluent : H₂O
 Flow rate : 0.6 ml/min
 Column temp. : 75°C
 Detection : RI

Application data of CK08EC

Fig. 2-9 Sugars / Alcoles (Comparison with competitor's column)

Conditions
 Column : 7.8x 300 mm.I.D. (MCI GEL™ CK08EC / Competitor's Column)
 Eluent : Milli Q water
 Flow rate : 0.6 ml/min
 Temperature : 75 °C
 Sample Conc : 40mmol/ml each
 Injection : 20µL

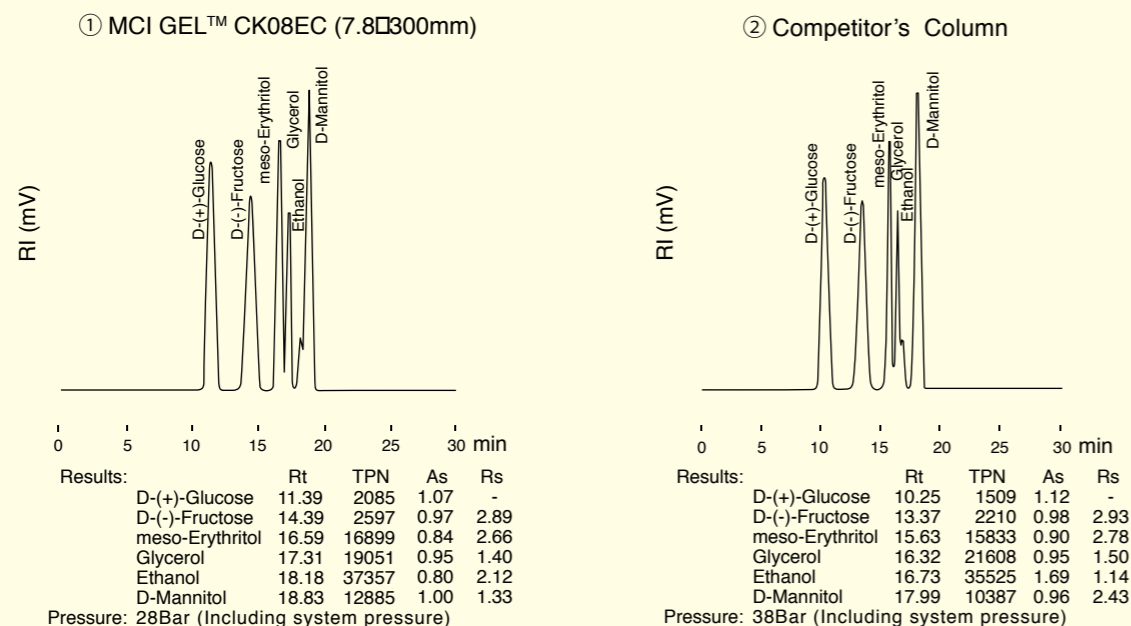
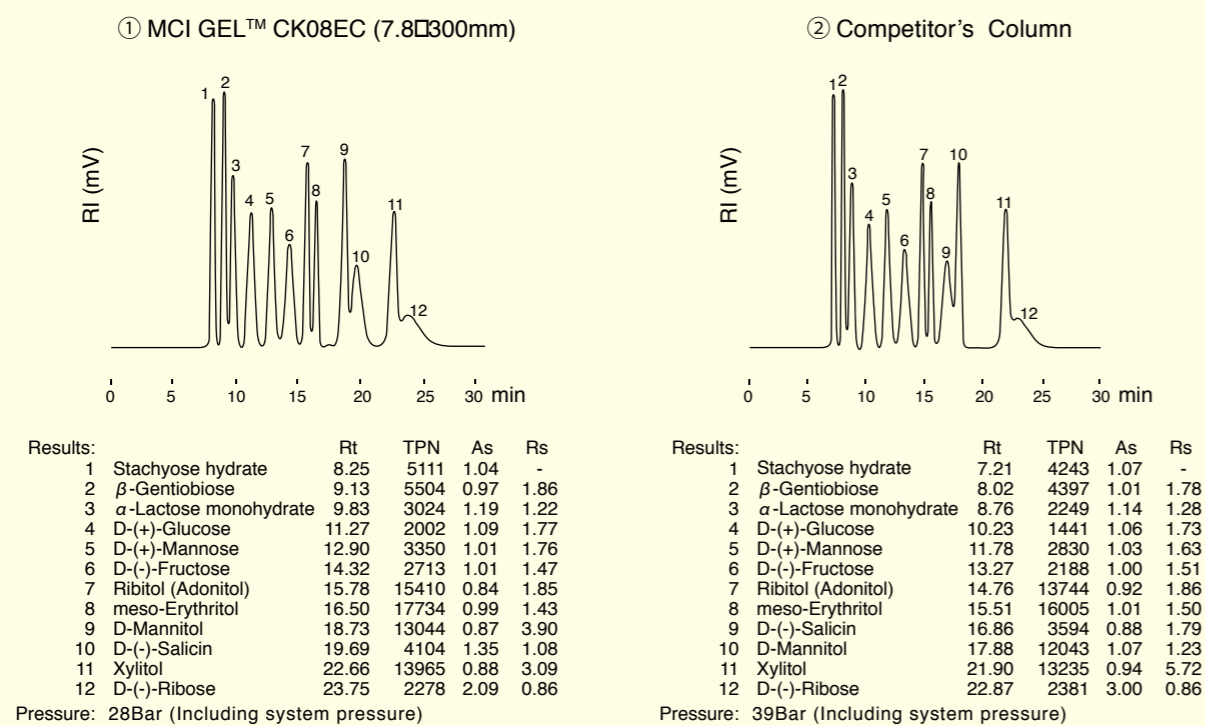


Fig. 2-10 Sugars (Comparison with competitor's column)

Conditions
 Column : 7.8x 300 mm.I.D. (MCI GEL™ CK08EC / Competitor's Column)
 Eluent : Milli Q water
 Flow rate : 0.6 ml/min
 Temperature : 75 °C
 Sample Conc : 40mmol/ml each
 Injection : 20µL

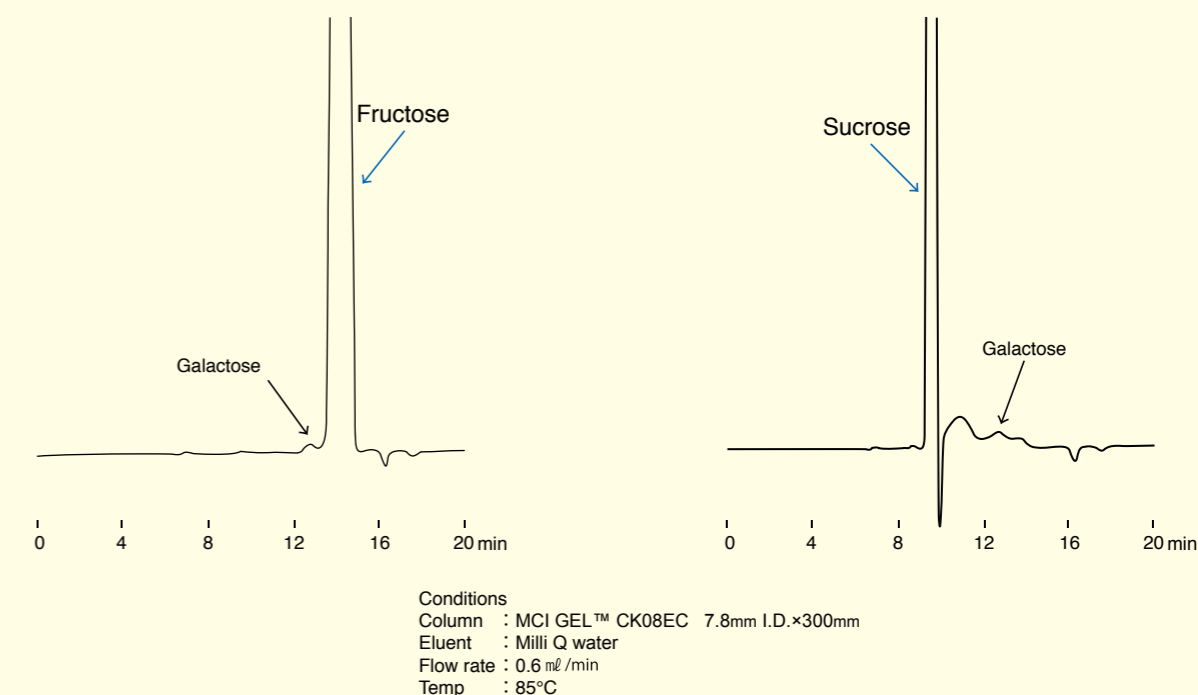


Application data of CK08EC

Fig. 2-11 Analysis of galactose impurity

① Galactose / Fructose = 0.1 / 99.9

② Galactose / Sucrose = 0.1 / 99.9

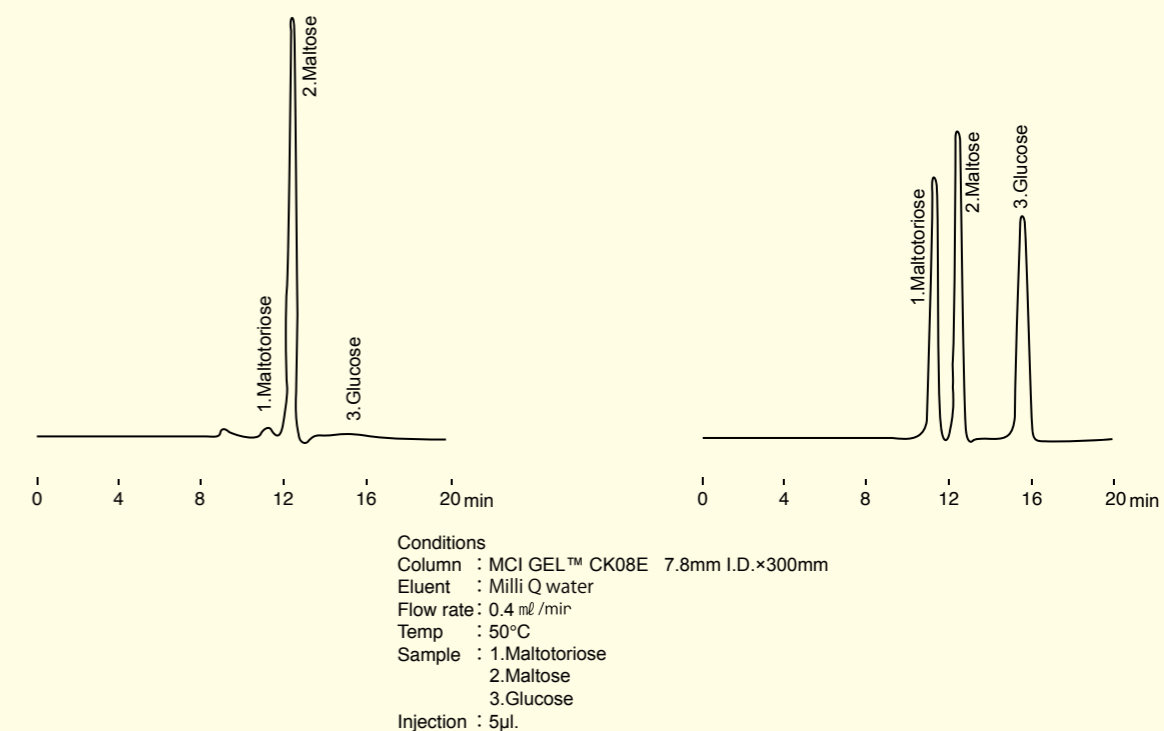


Application data of CK08E

Fig. 2-12 Maltose syrup powder

① Maltose syrup powder

② Mixture



Application data of CK08EH

Fig. 2-13 Carboxylic acids

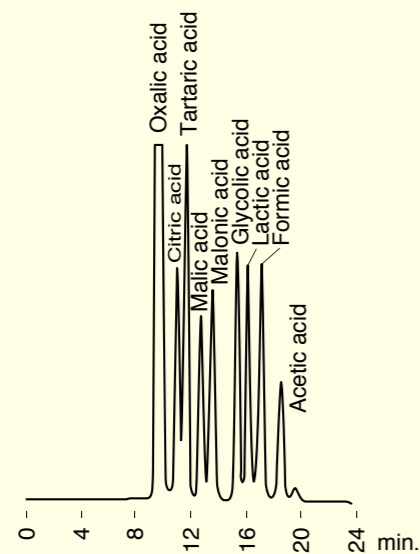
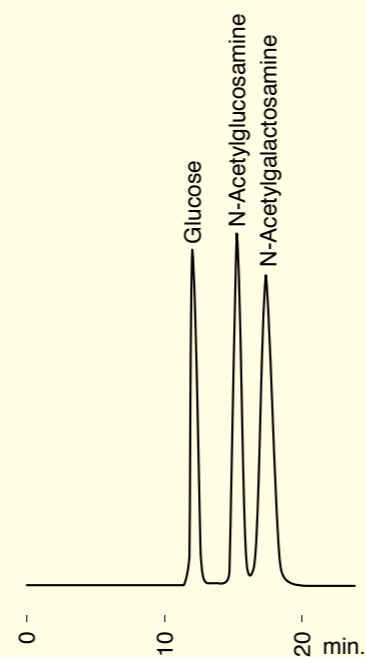
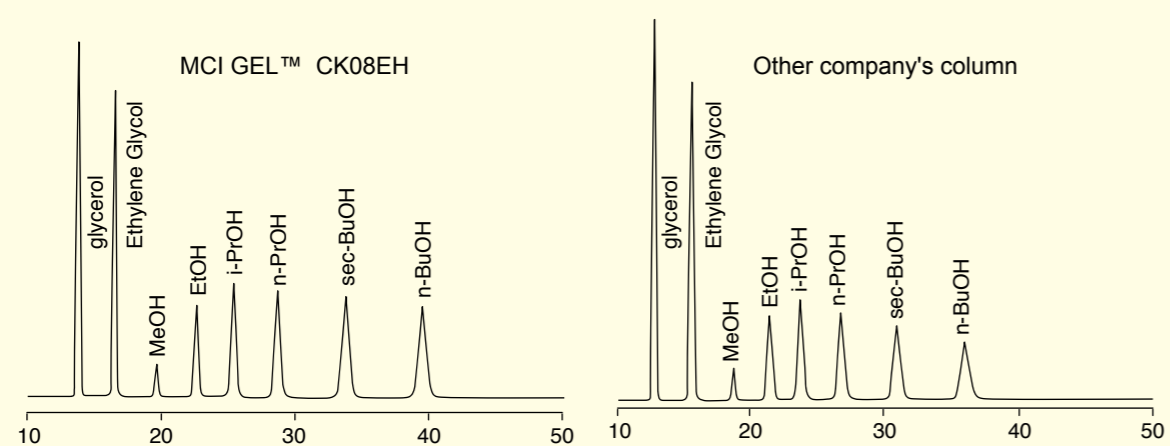


Fig. 2-14 Amino sugars



Conditions
 Column : MCI GEL™ CK08EH, 8mm I.D.×300mm
 Eluent : 1% H₃PO₄ (Fig.2-13,2-14)
 Flow rate : 0.6 ml /min
 Column temp. : 45°C (Fig. 2-13), ambient (Fig. 2-14)
 Detection : 210nm (Fig. 2-13), RI (Fig. 2-14)

Fig. 2-15 Alcohols



Conditions
 Column : MCI GEL™ CK08EH, 7.8mm I.D.×300mm
 Temp : 60 °C
 Press : 2.5 bar
 Detection : RI
 Injection : 10.0 μL

Application data of CK08EH

Fig. 2-16 Chloroacetic acids

Conditions
 Column : MCI GEL™ CK08EH
 8mm I.D.×300mm
 Eluent : 1% H₃PO₄
 Flow rate : 0.6 ml /min
 Column temp. : 45°C
 Detection : 210nm

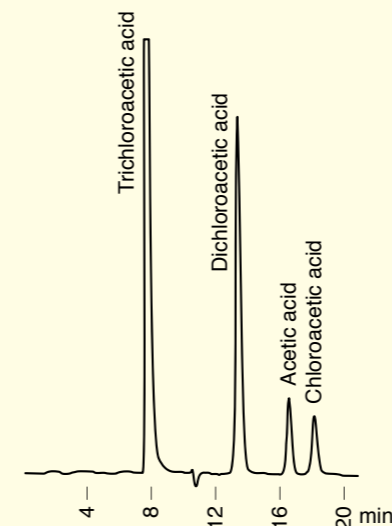


Fig. 2-17 Poly alcohols

Conditions
 Column : MCI GEL™ CK08EH
 8mm I.D.×300mm
 Eluent : 1% H₃PO₄
 Flow rate : 0.6 ml /min
 Column temp. : 25°C
 Detection : RI

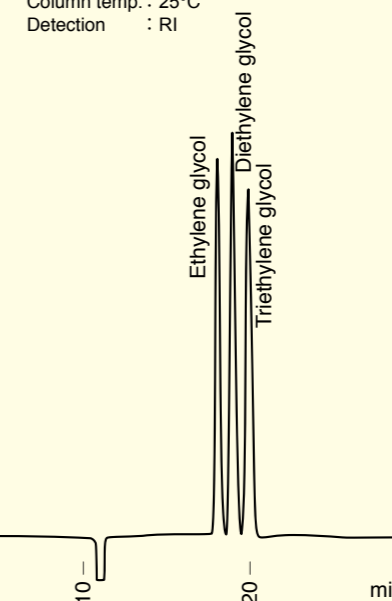
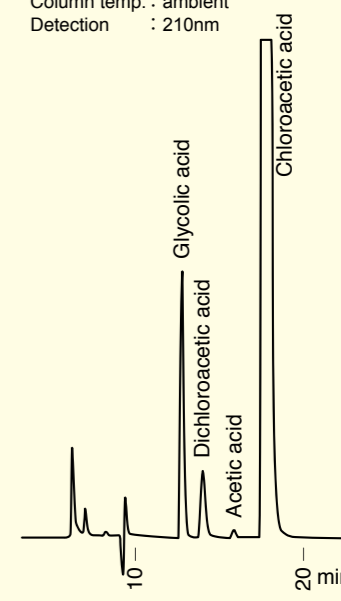


Fig. 2-18 Carboxylic acids

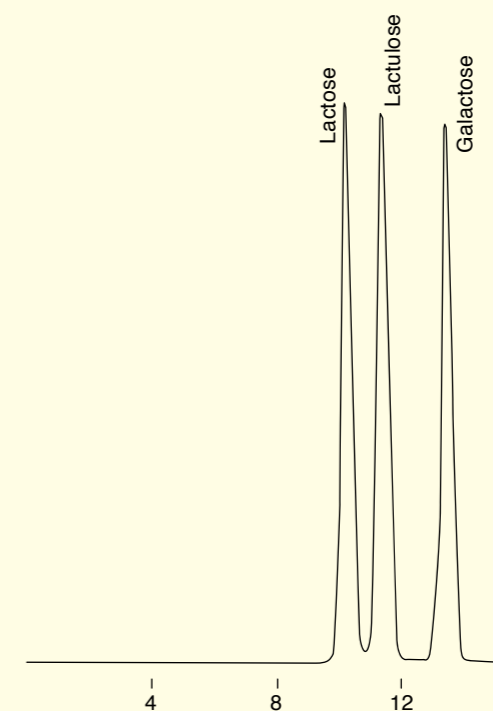
Conditions
 Column : MCI GEL™ CK08EH
 8mm I.D.×300mm
 Eluent : 2% H₃PO₄
 Flow rate : 0.6 ml /min
 Column temp. : ambient
 Detection : 210nm



Application data of CK06SC

Fig. 2-19 Lactose

Conditions
 Column : MCI GEL™ CK06SC
 8mm I.D.×500mm
 Eluent : H₂O
 Flow rate : 1.0 ml /min
 Column temp. : 75°C
 Detection : RI
 Injection volume : 20μL



● Peak retention time for Sugars and Sugar alcohols on various columns [min]

CK08EC Ca ²⁺	CK08E Na ⁺	CK08ES Ag ⁺
Stachyose 9	Stachyose 8	* Melezitose 12
Melezitose 10	Melezitose 9	* Stachyose 13
Raffinose 10	Raffinose 9	* Raffinose 13
Gentiobiose 10	Gentiobiose 9	* Sucrose 14
Cellobiose 10	Cellobiose 9	Trehalose 14
Trehalose 10	Trehalose 9	Cellobiose 14
Isomaltose 10	Sucrose 10	Gentiobiose 14
Sucrose 10	Isomaltose 10	Maltose 14
Maltose 10	Melibiose 10	Isomaltose 14
Melibiose 10	Maltose 10	Maltulose 15
Lactose 10	Maltulose 10	Maltulose 15
Maltulose 10	Lactose 10	Lactose 16
Lactulose 11	Lactulose 11	Melibiose 17
Glucose 11	Lactulose 11	Lactulose 18
Xylose 14	Glucose 12	Adonitol 18
Galactose 14	Mannitol 12	Digitoxose 18
Mannose 15	Rhamnose 13	Rhamnose 18
Rhamnose 15	Adonitol 13	Glucose 18
Fructose 16	Sorbitol 13	Xylose 18
Fucose 16	Digitoxose 14	Xylitol 18
Inositol 16	Mannose 14	Erythritol 19
Arabinose 16	Xylose 14	Mannitol 19
Digitoxose 16	Galactose 14	Fructose 19
Adonitol 17	Fructose 14	Dulcitol 20
Erythritol 18	Inositol 14	Galactose 20
Mannitol 20	Xylitol 15	Sorbitol 20
Salicin 22	Fucose 15	Mannose 20
Dulcitol 23	Dulcitol 15	Arabinose 20
Xylitol 24	Arabinose 15	Fucose 21
Sorbitol 24	Erythritol 15	Ribose 21
Ribose 25	Ribose 17	Ribose 21
	Salicin 27	Inositol 23
		Salicin 52

Column temp : CK08EC...75°C, CK08E...45°C, CK08ES...75°C
 Column size : 8mm I.D.×300mm
 Eluent : H₂O
 Flow rate : 0.6 ml/min
 Sample : 1% aq. solution
 Injection vol. : 20μl

* ; These sugars, containing Fructose component, may partially be decomposed by CK08ES and CK08EH.

2 MCI GEL™

CK04S, CK04SS
CK02A, CK02AS

Cation exchange columns applications; oligosaccharides

The separation mechanism is based on gel filtration chromatography and elution is achieved via simple distilled water. A larger molecule elutes ahead.



● Separation ability of each column

MCI GEL™ column	Counter ion	Separation ability (degree of polymerization)
MCI GEL™ CK04S	Na ⁺	8~9
MCI GEL™ CK04SS	Ag ⁺	12~13
MCI GEL™ CK02A	Na ⁺	15~16
MCI GEL™ CK02AS	Ag ⁺	19~20

Calibration curves of malto-oligosaccharides

