Analysis of Sugars in Beverages Using the Hitachi LaChrom Elite® Liquid Chromatography System

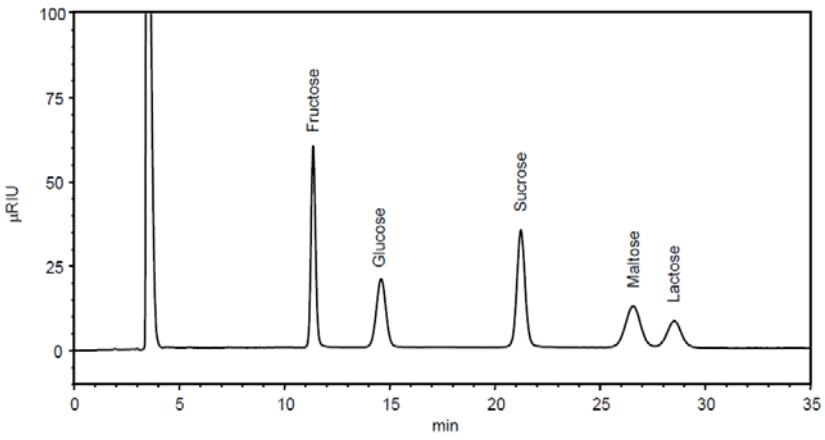
Hitachi High Technologies America, Inc.

Sugars such as sucrose, fructose, glucose, maltose, and lactose are commonly found in a variety of beverages. Here we describe a method for the analysis of several mono- and disaccharides found in beverages using the highly flexible Hitachi LaChrom Elite® HPLC system. The analytes are separated by reverse phase chromatography and analyzed by refractive index detection. This method is suitable for analysis of a variety of matrices including carbonated beverages, honey, syrup, and milk. The data here specifically describe the analysis of a carbonated beverage and milk via RI detection[1].

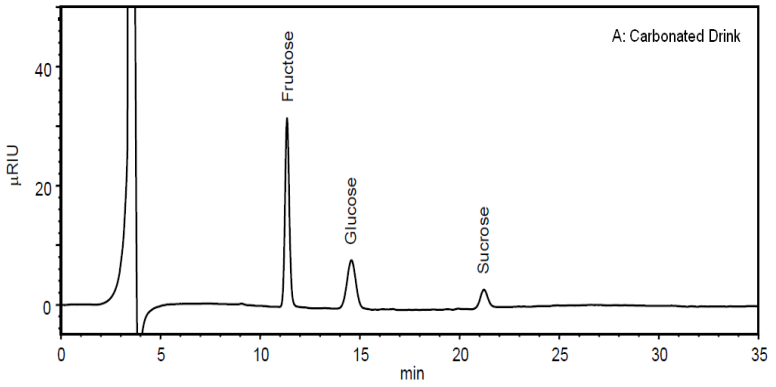
Experimental Conditions

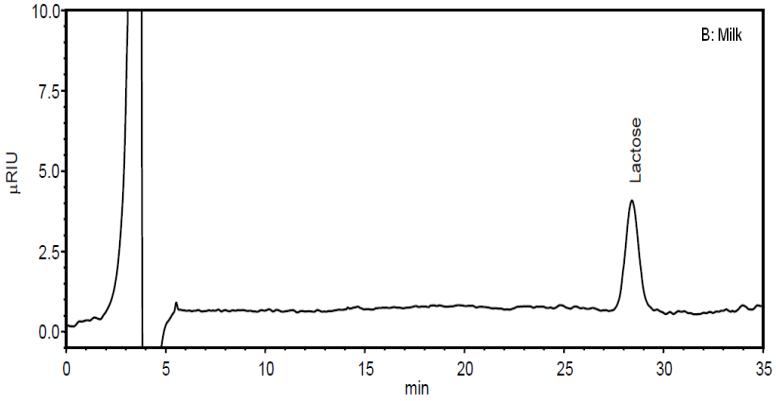
Module	Conditions
Pump (L-2130)	Isocratic Mobile Phase: 75% CH_3CN Flow Rate: 1 mL/min.
Autosampler (L-2200)	Injection Volume: 20 µL
Column	Hitachi LaChrom NH2, 5 µm, 4.6 x 250 mm Guard Column: Hitachi LaChrom NH2-G, 5 µm, 4 x 23 mm
Oven (L-2300)	Temperature: 40°C
Detector (L-2490)	Refractive Index
Standard	5 sugar mixture, 1% each

Results – Chromatogram of Standard Sugar Mixture



Results – Chromatograms of Carbonated Drink (A) and Milk (B)





Performance Results- Linearity from 0.1-2.0%

Sugar	R^2
Fructose	0.9999
Glucose	0.9999
Sucrose	0.9999
Maltose	0.9996
Lactose	0.9992

Discussion

Hitachi's LaChrom Elite® liquid chromatography system is extremely effective at analysis of sugars in a variety of matrices. The system exhibits a linear response over several orders of magnitude ($R^2 \geq 0.999$).

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Reference:
1 – Technical Data LC090051_E, Hitachi High Technologies Corporation.