Short application note

Food & beverage

Sugar Alcohols - Polyols

Keywords

- Sensitive analysis of sugar alcohols (polyols), e.g., mannitol, sorbitol, and Inositols in fruit juice and berries
- Zero sample prep (dilute and shoot)
- ALEXYS Carbohydrate Analyzer with the SweetSep™ CEX1 column

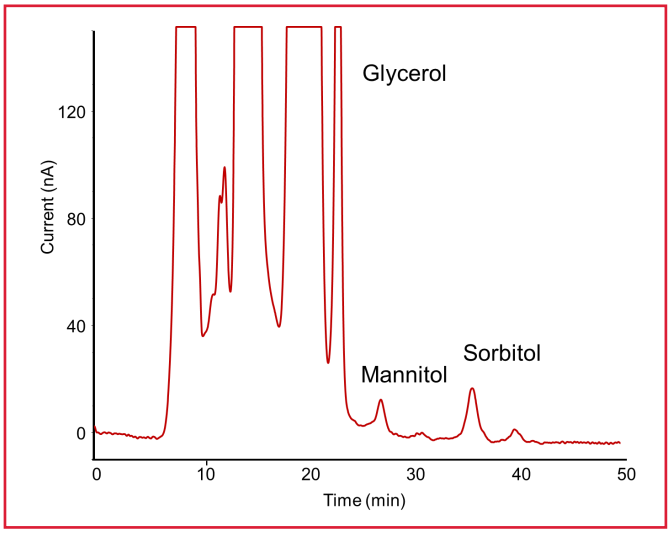

Figure 1. Chromatogram of a red currant concentrate (conditions see Table 1).

Introduction

Antec Scientific introduces the first dedicated ALEXYS Carbohydrate Analyzer, designed specifically for sugar alcohol analysis. It's simple to use, robust, and delivers consistent results. Unlike traditional ion chromatographs that need high-capacity columns and lengthy gradients, our new method separates sugar alcohols and inositols quickly and reliably under isocratic conditions. The innovative SweetSep™ CEX1 column delivers high-quality separation across different sample types and is built for long-term operation. Thanks to its highly sensitive and reliable pulsed amperometric detection system, it can detect even tiny amounts of sugar alcohols in complex food samples. Additionally, all the chemicals used are safe to dispose of in accordance with environmental regulations, supporting green practices. The system requires just under 2 liters of reagents and can run nonstop for a week, improving speed and accuracy while saving operator time.

Upgrade to a new standard in sugar analysis that keeps up with your needs.

The ALEXYS Carbohydrate Analyzer is successfully used for the determination of sugar alcohols. Table 1 summarizes typical operating conditions.

Table 1. Conditions

HPLC	ALEXYS™ Carbohydrate Analyzer (Antec Scientfic)
Columns	SweetSep™ CEX1, 4x250 mm column, 9 µm SweetSep™ CEX1, 4 x 5 mm guard, 9 µm
Mobile phase	DI water
Flow rate	0.1 mL/min
Injection volume	2 µL
Temperature	Separation 10°C for inositols, 50°C for sugar alcohols (column thermostat CT2.1), 35°C for detection (DECADE Elite)
Flow cell	SenCell Au WE, HyREF Pd RE, AST setting 2
Potential waveform	E1, E2, E3, E4: +0.1, -2.0, +0.6, -0.1 V ts, t1, t2, t3, t4: 0.2, 0.4, 0.02, 0.01, 0.07 s
Range	10 µA/V
I-cell	About 100 µA
ADF	0.5 Hz
Sample preparation	Dilution 1/500 with DI Water for concentrates Dilution 1/100 with DI Water for juice and drinks

Fig. 2. ALEXYS Carbohydrate Analyzer consisting of the ET210 eluent tray (for N_2 blanketing), a dual pump module for eluent delivery and post- column addition, a AS6.1L autosampler, CT2.1 column thermostat, and the DECADE Elite electrochemical detector.

The separation of inositols only requires adjusting the column temperature. Detection of scyllo-, myo-, and chiro-inositol is also readily achieved in fruit juice concentrates. Even high amounts of mono- and disaccharides do not interfere after simple sample preparation (Figure 2).

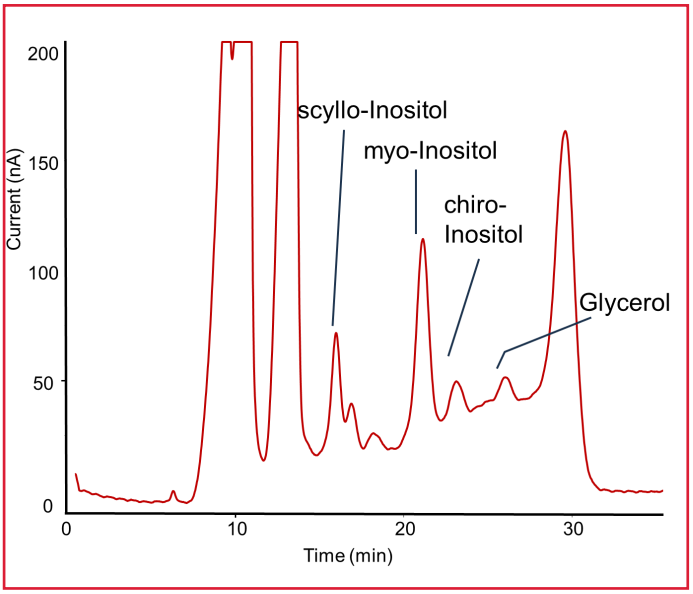

Fig. 2. Determination of Inositols in Lemon juice concentrate (conditions see Table 1).

Ordering Information

ALEXYS analyzer	
180.0057AL	ALEXYS™ Carbohydrate Analyzer
116.4321	SenCell 2 mm Au HyREF
186.ATC00	CT2.1 Column Thermostat
Columns	
260.0060	SweetSep™ CEX1, 4 x 250 mm column, 9 µm
260.0061	SweetSep™ CEX1, 4 x 5 mm guard, 9 µm, 5/pk
260.0061H	Holder, 5 mm guards
Software*	
195.0035	Clarity CDS single instr. incl LC, AS module

*) The ALEXYS Carbohydrate Analyzer (full system) can also be controlled under Thermo Fisher Scientific Chromeleon™ CDS. For the DECADE Elite electrochemical detector, Antec ECD drivers are available for Chromeleon™ CDS, OpenLAB™ CDS, and Empower™ CDS. Please contact Antec for more details.

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