Waters™

Application Note

UPLC-MS Analysis of Food Sugars/Saccharides in Beer Using ACQUITY UPLC BEH Amide Columns

Waters Corporation



This is an Application Brief and does not contain a detailed Experimental section.

Abstract

This application brief describes UPLC-MS analysis of food sugars/saccharides in beer.

Introduction

Compounds analysed in beer are:

- 1. Fructose
- 2. Glucose
- 3. Sucrose
- 4. Maltose
- 5. Maltotriose

Figure 1: Structure of the compounds analysed.

Experimental

Chromatographic Conditions

Column: ACQUITY UPLC BEH Amide 2.1 x 100 mm, 1.7 µm

Part Number: 186004801

Mobile Phase A: 80/20 MeCN/H₂O with 0.1% ammonium

hydroxide [NH₄OH]

Mobile Phase B: 30/70 MeCN/H₂O with 0.1% ammonium

		hydroxide [NH ₄ OH]
Flow Rate:		0.13 mL/min
Gradient:		10 minute gradient, 75%-45% MeCN (w/0.1% NH ₄ OH) with 25 minute re-equilibration
Injection Volume:		2.0 µL (PLNO)
Sample Concentration:		Standards at 10 µg/mL, Beer at 50% dilution
Sample Diluent:		50/50 MeCN/H ₂ O
Column Temperature:		35 °C
Strong Needle Wash:		20/80 MeCN/H ₂ O (800 μL)
Weak Needle Wash:		75/2MeCN/H ₂ O 5 (500 μL)
Seal Wash:		50/50 MeCN/H ₂ O
Instrument:		Waters ACQUITY UPLC with SQ
Gradient		
Time(min)	Profile	
	%A	

0.00

10.00

10.01

90.00

30.00

90.00

Time(min)	Profile		
35.00	90.00		
Mass Spectrometer Conditions			
Ionization Mode:		ES-	
Capillary:		2.8 kV	
Cone Voltage:		25 V (fructose, glucose, maltotriose); 40V (sucrose and maltose)	
Source Temp:		120 °C	
Desolvation Temp:		350 °C	
Desolvation Gas Flow:		500 L/Hr	
Cone:		50 L/Hr	
SIR (m/z):		179.0 (fructose, glucose);	
		341.1 (sucrose, maltose);	
		503.2 (maltotriose)	
Dwell Time:		0.04 s	

Results and Discussion

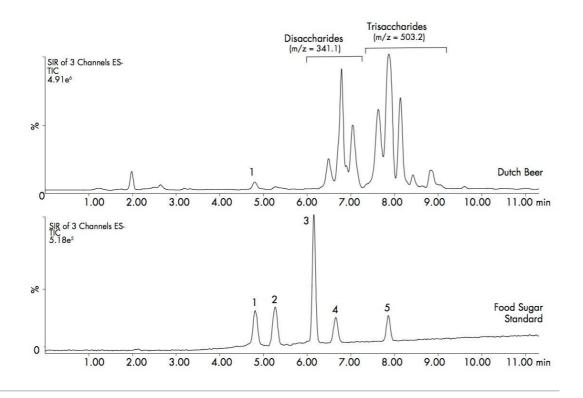


Figure 2: Chromatogram of 1. Fructose 2. Glucose 3. Sucrose 4. Maltose 5. Maltotriose

Featured Products

ACQUITY UPLC System https://www.waters.com/514207

SQ Detector 2 https://www.waters.com/134631584

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