

Application Note

Codeine and Its Glucuronide Metabolite in Human Urine

Waters Corporation



For forensic toxicology use only.

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

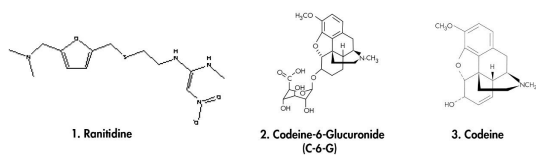
Abstract

This application brief highlights the analysis of codeine and its glucuronide metabolite in human urine using Symmetry C₁₈ columns.

Introduction

Compounds used in this study are:

1. Ranitidine (I.S.)
2. Codeine-6-Glucuronide (C-6-G)
3. Codeine



Experimental

HPLC Method

Column: Symmetry C₁₈, 2.1 x 150 mm, 3.5 μm (p/n: 186000174)

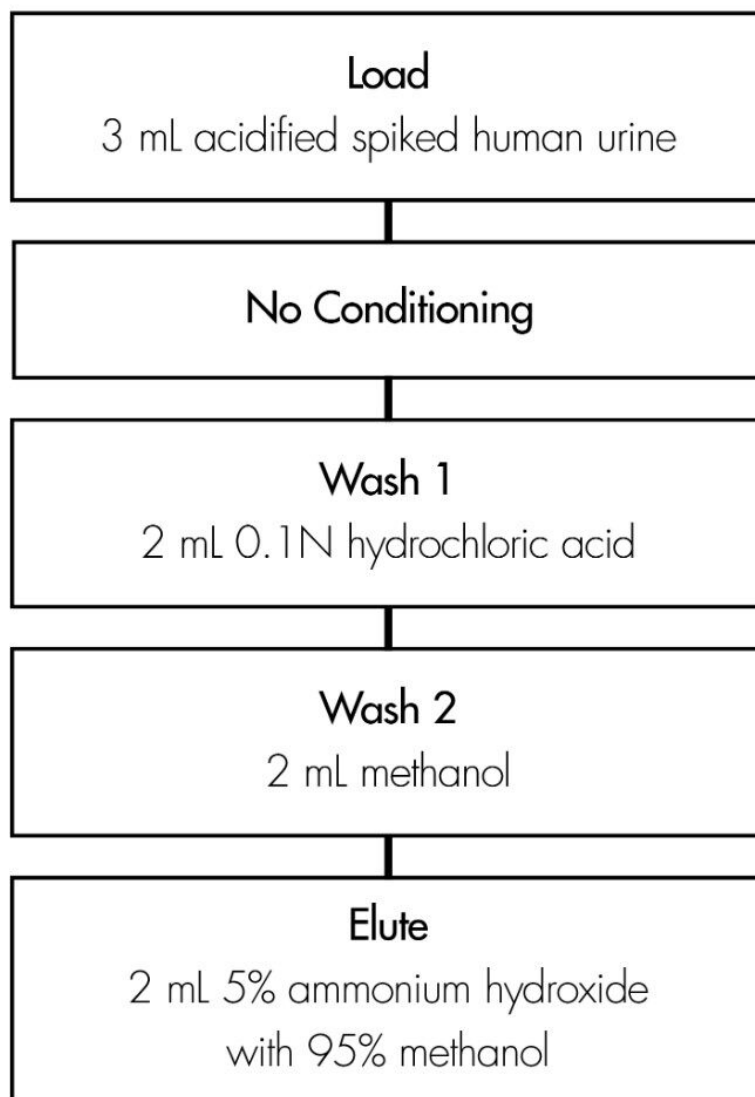
Guard column: Symmetry C₁₈, 2.1 x 10 mm, 3.5 μm (p/n: 186000169)

Mobile phase:	Methanol/Acetonitrile/0.05% TFA in water 5:5:90
Flow rate:	0.3 mL/min
Injection volume:	80 μ L urine extract
Temperature:	30 $^{\circ}$ C
Detection:	UV @ 220 nm (0.04 AUFS)

Oasis[®] MCX Extraction Method

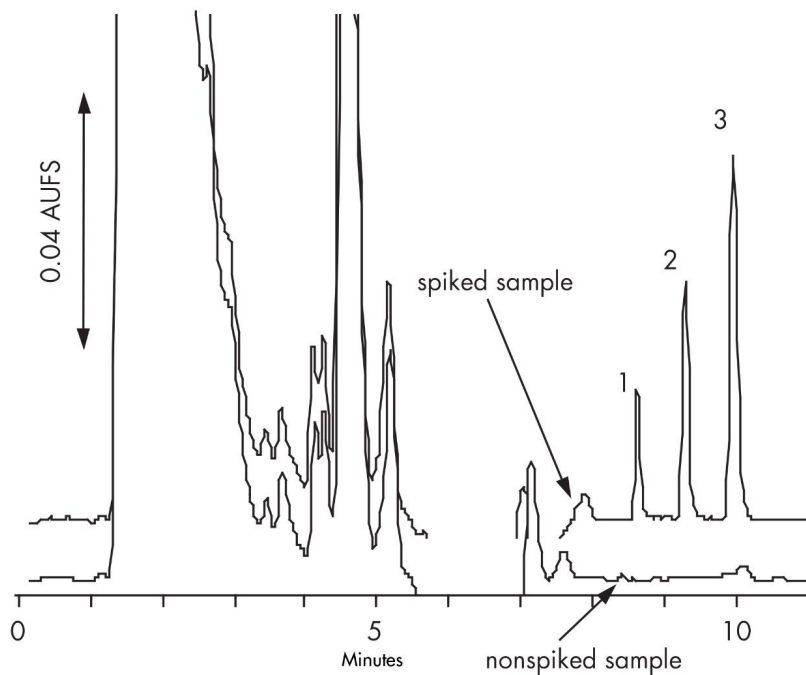
Oasis[®] MCX Extraction Cartridge, 3 cc/60 mg

Part Number 186000254



After elution, the extract is diluted 1:3 with water for HPLC analysis

Results and Discussion



Compound	% Recovery 0.12 µg/mL	%RSD 0.6 µg/mL
Codeine (n=3)	88.5 (2.7)	99.5 (1.2)
Codeine-6-Glucuronide (n=3)	99.3 (5.4)	98.7 (0.4)
Codeine Interday (n=6)	102.5 (3.5)	105.4 (4.0)
Codeine Interperson (n=9)	91.6 (7.1)	104.1 (5.4)
C-6-G Interday (n=6)	116.1 (9.4)	111.5 (3.3)
C-6-G Interperson (n=9)	102.4 (7.7)	107.4 (7.3)

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