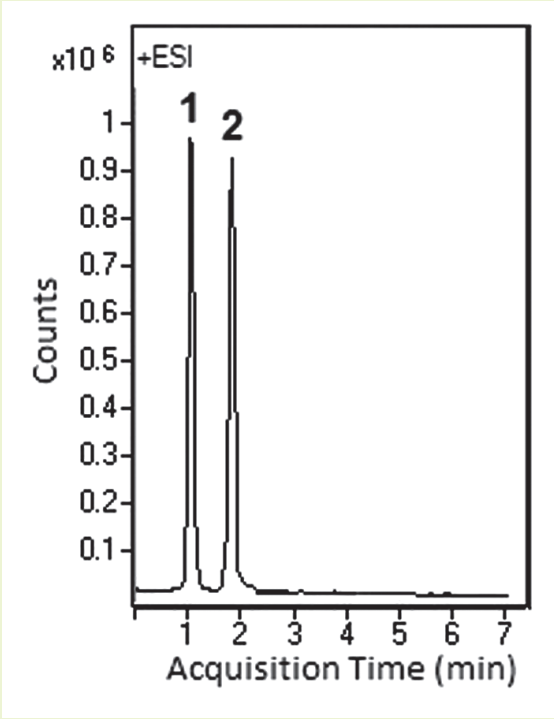
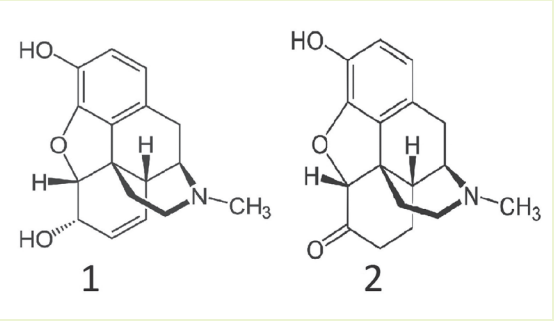
Morphine and Hydromorphone in Urine

LC-MS analysis of opioids





Note: Opioids have been used as pain relieving drugs but are also abused as drugs producing feelings of euphoria. They are highly addictive. Nearly three out of four drug overdoses involve pain killers, so the screening of this class of drugs in urine or plasma samples is very important.

Method Conditions

Column: **Cogent Bidentate C18 2.ō™**, 2.2µm, 120Å

Catalog No.: 40218-05P-2

Dimensions: 2.1 x 50 mm

Mobile Phase: A: DI H_2O / 0.1% formic acid (v/v)
B: 50% acetonitrile / 50% methanol / 0.1% formic acid (v/v)

Gradient:

time (min.)	%B
0	5
4	50
5	90
6	90
7	5

Post Time: 3 min

Injection vol.: 1µL

Flow rate: 0.4mL/min

Detection: ESI – POS - Agilent 6210 MSD TOF mass spectrometer

Sample: The drugs were spiked into urine at a level of 50 ng/mL. Extraction method: Spiked urine sample was loaded into SPE cartridge I (Clean Screen Xcel™, UCT Bristol, PA, USA) and eluted with 0.78 mL of acetonitrile, 200 microL of 2-propanol, and 20 microL of ammonia. After the elution, the sample was dried under N_2 gas and dissolved in 100 microL of 50% methanol / 50% DI H_2O / 0.1% formic acid. Before injection, the sample was filtered through a 0.45 µm nylon syringe filter (MicroSolv Tech Corp.).

Peaks: 1. Morphine 286.1438 m/z $[M+H]^+$
2. Hydromorphone 286.1438 m/z $[M+H]^+$

Discussion

Morphine and hydromorphone are isobaric drugs (the same m/z value) and can be separated using the Cogent Bidentate C18 2.ō column. Multiple samples (n=5) were prepared and analyzed. The results showed excellent reproducibility (RSDs < 3%). The detection limits were 50 to 500 times lower than that required by immunoassays.

MANUFACTURED BY:
MICROSOLV TECHNOLOGY CORPORATION
9158 Industrial Blvd NE
Leland, NC 28451
p: 1.732.380.8900
f: 1.910.769.9435
customers@mtc-usa.com
www.Cogent-HPLC.com