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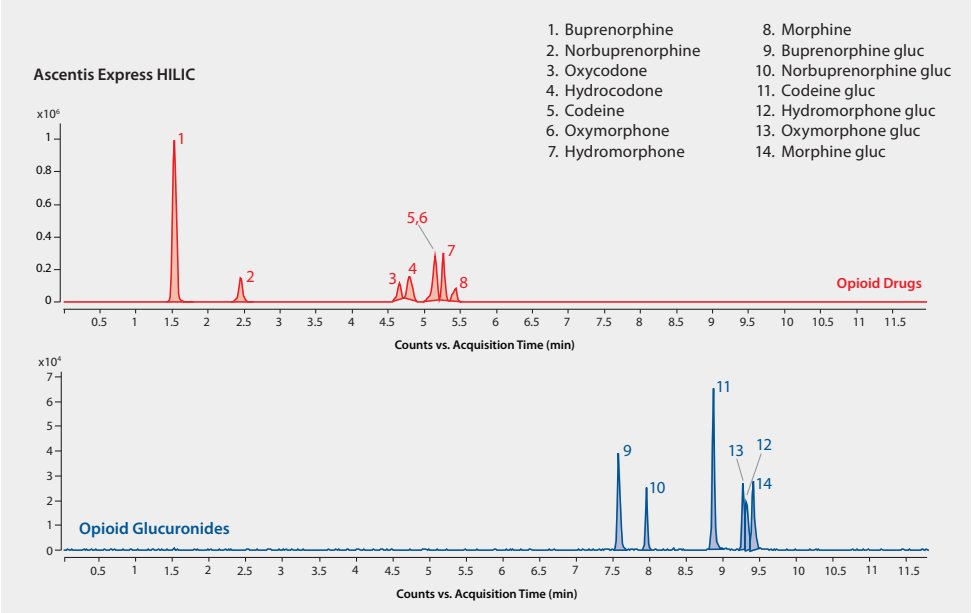
LC/MS (TOF) Analysis of Opioid Drugs and Glucuronide Metabolites in Urine on Ascentis® Express 2.7 µm HILIC after SPE using Supel™-Select HLB, β-Glucuronidase Enzyme Digestion

The glucuronide metabolites were converted back to the parent drug using β-glucuronidase, then processed using SPE prior to LC/MS analysis using HILIC mode chromatography. The Supel-Select HLB provided clean extracts and the Ascentis Express HILIC provided rapid resolution of parent drugs and metabolites. Cerilliant CRMs provided reliable quantitation.

market focus	Forensics and Toxicology
sample preparation	SPE (Solid Phase Extraction)
sample/matrix	urine spiked at 300 ng/mL
SPE well plate	Supel-Select HLB 96-well plate, 60 mg/well (575662-U)
condition	1 mL methanol, 1 mL water
sample addition	1.0 mL urine
washing	1 mL water, 1 mL 25% methanol
elution	1 mL acetonitrile
column	Ascentis Express HILIC, 10 cm x 2.1 mm x 2.7 µm particles (53939-U)
mobile phase	[A]: 5 mM ammonium formate pH 4.2 [B]: 5 mM ammonium formate (95:5 acetonitrile:water) pH 5.2
gradient	100% B for 3 min, to 80% B in 7 min, held for 2 min
flow rate	0.6 mL/min
detector	ESI(+) TOF, m/z 100-1000
injection	3.0 µL
sample	300 ng/mL
Application No.	G006290



Components

Buprenorphine solution (Cerilliant B-044)
Norbuprenorphine solution (Cerilliant N-059)
Oxycodone solution (Cerilliant O-002)
Hydrocodone solution (Cerilliant H-003)
Codeine solution (Cerilliant C-015)
Oxymorphone-D_3 solution (Cerilliant O-003)
Hydromorphone solution (Cerilliant H-004)
Morphine solution (Cerilliant M-030)
Buprenorphine glucuronide solution (Cerilliant B-035)
Norbuprenorphine glucuronide solution (Cerilliant N-045)
Codeine-6-β-D-glucuronide solution (Cerilliant C-087)
Hydromorphone-3-β-D-glucuronide (Cerilliant H-051)
Oxymorphone-3-β-D-glucuronide solution (Cerilliant O-030)

Related Products

analytical column
Ascentis® Express HILIC, 2.7 Micron HPLC Column (Supelco 53939-U)
eluent
Acetonitrile (Fluka 14261)
Ammonium formate (Fluka 14266)
Water (Fluka 14263)
enzyme
β-Glucuronidase from limpets (*Patella vulgata*) (Sigma G2174)
SPE tube or plate
Supel™ - Select HLB SPE 96-well Plate (Supelco 575662-U)