

APPLICATIONS



LC/MS/MS Analysis of Synthetic Cathinones (Bath Salts) from Urine and Whole Blood using a Kinetex® 2.6 µm C18 HPLC Column and Strata®-X-Drug B Solid Phase Extraction (SPE)

Daniel Spurgin and Dr. Jeff Layne
Phenomenex, Inc., 411 Madrid Ave., Torrance, CA 90501 USA

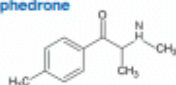
Overview

Cathinone is a naturally occurring beta-ketone amphetamine analogue found in the leaves of the *Catha edulis* (khat) plant which is native to the Horn of Africa and the Arabian Peninsula.¹ Over the past decade, synthetic cathinones more commonly known as "bath salts" have emerged as a sought after psychoactive recreational drug with effects similar to that of methamphetamines, cocaine, or 3,4-methylenedioxymethamphetamine (MDMA). This application illustrates the separation of 5 common synthetic cathinones using a Kinetex 2.6 µm C18 HPLC column, resulting in sharp, narrow peaks and specificity in both urine and whole blood. Kinetex core-shell columns deliver significantly improved chromatographic resolution, providing sub-2 µm performance but at backpressures that are compatible with conventional HPLC instruments.

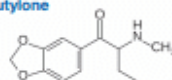


Figure 1.
Chemical Structures of Cathinones

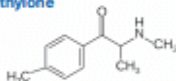
Mephedrone



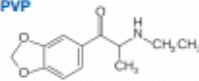
Butylone



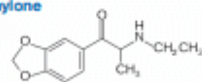
Methylone



α-PVP



Ethylone



Experimental Conditions

LC/MS/MS Conditions

LC Column: Kinetex 2.6µm C18
Dimensions: 50 x 4.6 mm
Part No.: 00B-4462-E0
Mobile Phase: A: 0.1% Formic Acid in Water
B: 0.1% Formic Acid in Acetonitrile

Gradient: Time (min)	% B
0	5
4	95
4.1	5
6	5

Flow Rate: 700 µL/min
Injection Volume: 1 µL
Temperature: 22 °C
Detection: MS/MS
Detection System: API 4000™ (SCEX)
Analytes: 1. Methylone
2. Ethylone
3. Butylone
4. Mephedrone
5. α-PVP

Sample Preparation

Pretreatment

Urine	Add 2 mL of 100 mM sodium acetate buffer (pH 5.0) and 50 µL of internal standards (@10 ppm) to 2 mL of urine
Whole blood	1. Add 2 mL of ice cold methanol:acetonitrile (50:50) and 20 µL of internal standards (@10 ppm) and 2 mL of 100 mM sodium acetate to 1 mL of blood. 2. Centrifuge at 4700 rpm 10 °C for 5 min 3. Transfer supernatant for SPE

Solid Phase Extraction (SPE)

Cartridge:	Strata-X-Drug B
Part No.:	BB-S128-UCH
Condition:	1 mL each of methanol, DI water, and 100 mM sodium acetate
Load:	Load pretreated sample
Weak Wash:	2 mL of 100 mM sodium acetate (pH 5.0)
Strong Wash:	1 mL of methanol
Dry Down:	2 minutes at >10" hg
Elute:	3 mL of ethyl acetate: IPA: ammonium hydroxide (70:20:10)
Evaporate:	to 500 µL and add 100 µL of HCl:methanol (20:80), evaporate to dryness under nitrogen
Reconstitute:	100 µL of methanol

Q1	Q2	Analyte	Retention Time (min)
208.1	160.2	Methylone	1.96
222.3	174.1	Ethylone	2.06
222.3	174.1	Butylone	2.15
178.1	160.2	Mephedrone	2.18
232.4	91	α-PVP	2.44



Caption:

Description:

Dimensions: 652 x 841

aperture: 0

credit:

camera:

caption:

created_timestamp: 0

copyright:

focal_length: 0

iso: 0

shutter_speed: 0

title:

orientation: 0

keywords: Array