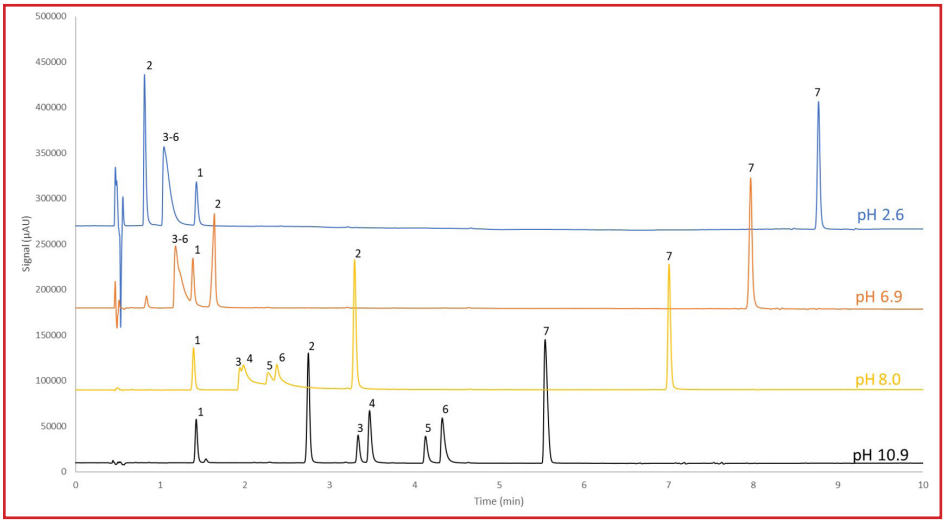
HALO®

CLINICAL / TOXICOLOGY

Elevating pH to Improve a Drugs of Abuse Separation

380



PEAK IDENTITIES:

1. Benzoylecgonine, pKa 3.35/pKb 10.82
2. 6-Acetylmorphine, pKa 9.08
3. MDA, pKa 9.67
4. d-Amphetamine, pKa 9.9
5. MDMA, pKa 9.9
6. Methamphetamine, pKa 9.87
7. 11-nor-Δ^9-carboxy-THC (THC-COOH), pKa 4.8

TEST CONDITIONS:

Column: HALO 120 Å ELV, 2.7 µm, 2.1 x 100 mm
Part Number: 92272-602
Mobile Phase A: Water + 0.1% Formic Acid, pH 2.6
10mM Ammonium Formate, pH 6.9
10mM Potassium Phosphate, pH 8.0
Water + 0.1% Ammonium Hydroxide, pH 10.9
Mobile Phase B: Methanol
Gradient:

Time	%B
0.0	25
3.0	50
5.0	60
10.0	95
10.1	25
15.0	25

Flow Rate: 0.4 mL/min
Back Pressure: 353 bar
Temperature: 40 °C
Injection Volume: 5.0 µL
Sample Solvent: 93:7 Water:Methanol
Detection: UV/PDA, 214 nm
Flow Cell: 1 µL
Data Rate: 40 Hz
Response Time: 0.05 sec.
LC System: Shimadzu Nexera X2

A mix of drugs of abuse and metabolites are screened at different pH's to determine the best separation conditions for a C18 column. Due to the high pKa's of amphetamines, a high pH mobile phase is ideal. This application shows how the use of low pH for high pKa compounds can cause poor chromatography. In this application four different pH's are tested showing major changes for the 4 amphetamine compounds while the acidic compound and multiple charged species have lesser effects from the increasing pH. Using HALO® Elevate C18, and a high pH mobile phase, one can obtain a great separation of drugs of abuse and metabolites without the use of a specialized stationary phase.

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