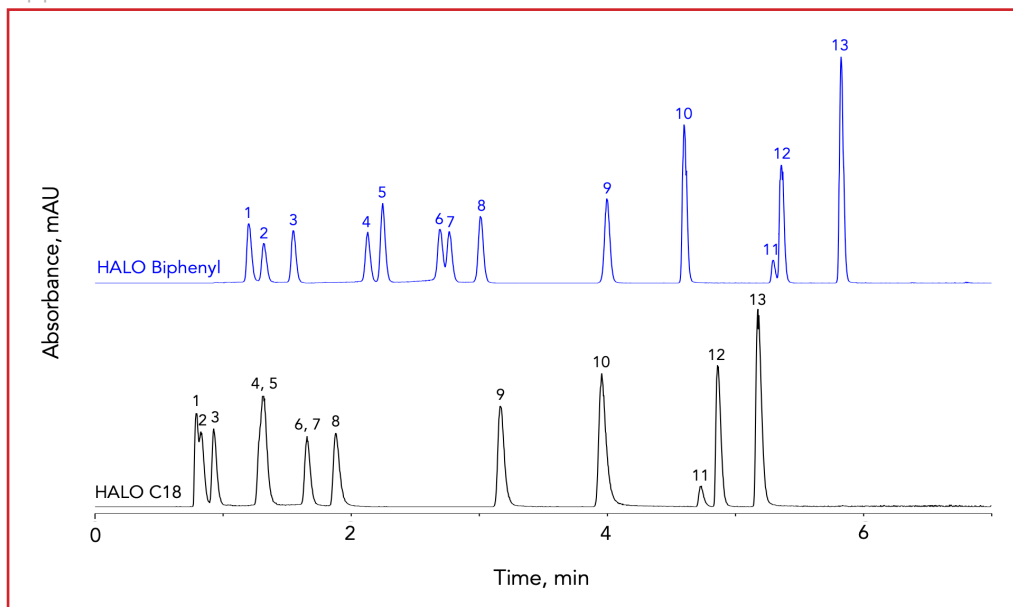




Pain Management Panel Comparison on HALO® Biphenyl and C18

Application Note 173-OP



PEAK IDENTITIES:

1. Morphine
2. Oxymorphone
3. Hydromorphone
4. Naloxone
5. Codeine
6. Naltrexone
7. Oxycodone
8. Hydrocodone
9. cis-Tramadol HCl
10. Meperidine
11. Fentanyl
12. Buprenorphine
13. (±)-Methadone

The HALO® Biphenyl phase provides greater retention and improved resolution for the polar analytes in this mixture of pain management drugs. Compound pairs 1/2 and 4/5 are baseline separated using the HALO® Biphenyl column, but co-elute on the HALO® C18 column. Analytes 6 and 7 are partially resolved on the HALO® Biphenyl column, but they co-elute using the HALO® C18 column. These bonded-phase selectivity differences are very useful for method development, and provide a basis for LC-MS analyses of large pain medicine panels.

TEST CONDITIONS:

Columns:

1) HALO 90 Å Biphenyl, 2.7 μm, 2.1 x 100 mm

Part Number: 92812-611

2) HALO 90 Å C18, 2.7 μm, 2.1 x 100 mm

Part Number: 92812-602

Mobile Phase:

A: Water/0.1% formic acid

B: ACN/0.1% formic acid

Gradient: 0-3 min 10-20% B

3-3.5 min 20-100% B

3.5-6 min hold at 100% B

Flow Rate: 0.3 mL/min

Temperature: 30 °C

Injection Volume: 2.0 μL

Sample Solvent: 99/1 water/methanol

Dwell Volume: 0.19 mL

LC System: Agilent 1290

MS System: Agilent 6210 TOF

ESI: +4 kV

Gas Temperature: 360 °C

Gas Flow: 12 L/min

Nebulizer: 50 psi

Scan Rate: 5 spectra/s

Fragmentor: 175 V

Skimmer: 65 V

Octopole RF: 250 V

