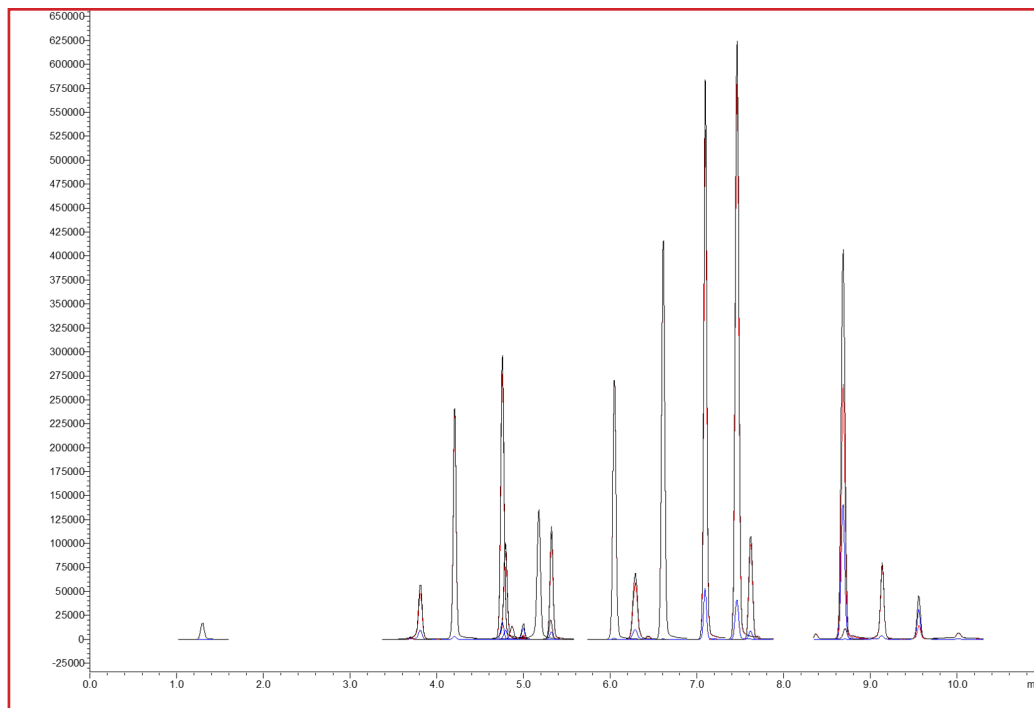




### LCMS Analysis of Drugs and Metabolites on HALO® Biphenyl

360



#### TEST CONDITIONS:

Column: HALO 90 Å Biphenyl, 2.7 µm, 2.1 x 100 mm

Part Number: 92812-611

Mobile Phase A: Water with 20 mM ammonium formate/0.1% formic acid

Mobile Phase B: Methanol with 20 mM ammonium formate/0.1% formic acid

Gradient:	Time	%B
	0.00	3.2
	1.00	3.2
	10.00	100
	11.00	100
	11.50	3.2

Flow Rate: 0.5 mL/min

Pressure: 308 bar

Temperature: 35 °C

Injection Volume: 5 µL

Sample: 50 ng/mL each analyte

Sample Solvent: Mobile Phase A

LC System: Shimadzu Nexera X2

#### Tubing Optimization:

Column outlet to Ground: AMT MarvelXACT™ PEEKsil™ 75 µm ID x 600 mm

Part Number: PS7075600

Ground to Source: AMT MarvelXACT™ PEEKsil™ 75 µm ID x 150 mm

Part Number: PS7075150

#### MS CONDITIONS:

System: Shimadzu 8040

Detection Mode: ESI +

Spray Voltage: 4.5 kV

Nebulizer Gas Flow: 2 L/min

DL Temperature: 250 °C

Heat Block Temperature: 400 °C

Drying Gas Flow: 15 L/min

Drugs of abuse and metabolite screening by LCMS is a routine clinical analysis. In the US, overdose deaths showing the presence of xylazine have increased significantly over the past few years. This application includes xylazine and fentanyl along with 21 other compounds. A HALO® Biphenyl column was selected to demonstrate good retention and resolution for both xylazine and fentanyl as well as increased retention for other polar analytes, such as ecgonine and morphine.





Peak #	Compound	m/z transition	Retention Time (min)
1	Ecgonine HCl	186.1000>168.2000	1.30
2	Morphine	286.2000>181.1000	3.70
3	Noroxycodone HCl	302.1000>284.2000	3.81
4	(±)-Amphetamine	136.2000>91.0000	4.21
5	(±)-Methamphetamine	150.3000>91.1000	4.76
6	Naloxone	328.2000>310.1000	4.79
7	Oxymorphone	302.2000>227.1000	4.87
8	6-Acetylmorphine	328.2000>165.1000	5.00
9	Oxycodone	316.2000>298.2000	5.18
10	Hydrocodone	300.2000>199.2000	5.31
11	(-) Levamisole HCl	205.1000>178.1000	5.32
12	Benzoyllecgonine	290.2000>168.2000	6.05
13	Xylazine	221.1000>90.0000	6.29
14	Heroin	370.4000>328.2000	6.44
15	Cocaine	304.2000>182.2000	6.61
16	Cocaethylene	318.2000>196.1000	7.10
17	Diphenhydramine HCl	256.2000>167.2000	7.46
18	Fentanyl	337.5000>188.1000	7.62
19	(±)-Methadone	310.2000>265.2000	8.69
20	Alpha-hydroxyalprazolam	325.1000>297.0000	8.71
21	Alprazolam	309.1000>280.9000	9.14
22	Diazepam	285.1000>193.1000	9.56
23	Tetrahydrocannabinol (-)-delta9-THC	315.0000>123.2000	10.02

