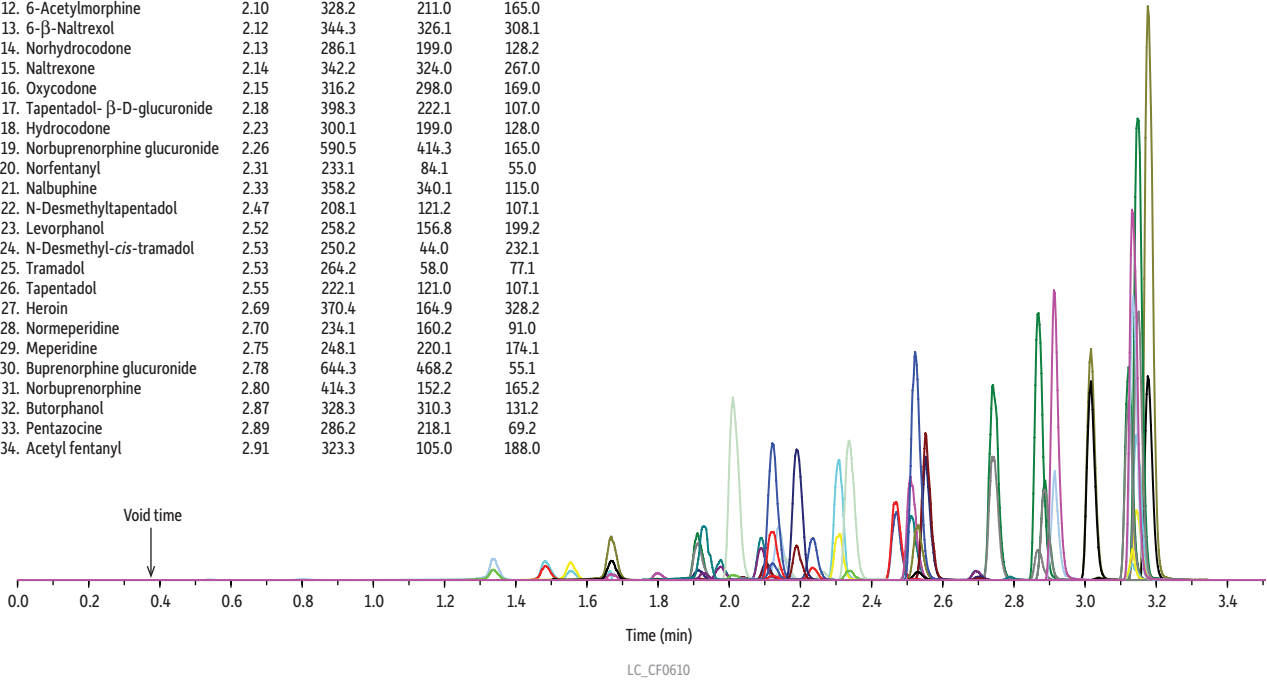


# Opioid Drug Panel on Raptor™ Biphenyl by LC-MS/MS

Peaks	t <sub>R</sub> (min)	Precursor Ion	Product Ion	Product Ion
1. Noroxymorphone	1.35	288.1	270.1	212.9
2. Morphine	1.50	286.2	152.1	165.0
3. Oxymorphone	1.57	302.1	227.2	198.2
4. Hydromorphone	1.67	286.2	184.9	156.9
5. Norcodeine	1.80	286.1	151.9	115.0
6. (-)-Dihydrocodeine	1.91	302.2	199.0	128.2
7. (-)-Naloxone	1.92	328.3	310.1	212.3
8. Codeine	1.97	300.2	152.0	165.1
9. O-Desmethyl- <i>cis</i> -tramadol	2.01	250.1	58.0	42.0
10. Noroxycodone	2.04	302.1	227.0	197.9
11. Desomorphine	2.09	272.1	152.1	165.0
12. 6-Acetylmorphine	2.10	328.2	211.0	165.0
13. 6-β-Naltrexol	2.12	344.3	326.1	308.1
14. Norhydrocodone	2.13	286.1	199.0	128.2
15. Naltrexone	2.14	342.2	324.0	267.0
16. Oxycodone	2.15	316.2	298.0	169.0
17. Tapentadol- β-D-glucuronide	2.18	398.3	222.1	107.0
18. Hydrocodone	2.23	300.1	199.0	128.0
19. Norbuprenorphine glucuronide	2.26	590.5	414.3	165.0
20. Norfentanyl	2.31	233.1	84.1	55.0
21. Nalbuphine	2.33	358.2	340.1	115.0
22. N-Desmethyltapentadol	2.47	208.1	121.2	107.1
23. Levorphanol	2.52	258.2	156.8	199.2
24. N-Desmethyl- <i>cis</i> -tramadol	2.53	250.2	44.0	232.1
25. Tramadol	2.53	264.2	58.0	77.1
26. Tapentadol	2.55	222.1	121.0	107.1
27. Heroin	2.69	370.4	164.9	328.2
28. Normeperidine	2.70	234.1	160.2	91.0
29. Meperidine	2.75	248.1	220.1	174.1
30. Buprenorphine glucuronide	2.78	644.3	468.2	55.1
31. Norbuprenorphine	2.80	414.3	152.2	165.2
32. Butorphanol	2.87	328.3	310.3	131.2
33. Pentazocine	2.89	286.2	218.1	69.2
34. Acetyl fentanyl	2.91	323.3	105.0	188.0

Peaks	t <sub>R</sub> (min)	Precursor Ion	Product Ion	Product Ion
35. Fentanyl	3.01	337.3	188.0	105.1
36. Buprenorphine	3.03	468.3	55.1	414.2
37. Norpropoxyphene	3.10	326.4	252.0	91.1
38. Sufentanil	3.12	387.2	238.1	111.1
39. Propoxyphene	3.13	340.3	265.9	58.1
40. EMDP	3.13	264.2	235.2	220.3
41. Mitragnine	3.14	399.3	174.2	159.0
42. EDDP	3.15	278.2	234.3	249.2
43. Methadone	3.18	310.2	264.9	105.1



**Column** Raptor™ Biphenyl (cat.# 9309A12)  
 Dimensions: 100 mm x 2.1 mm ID  
 Particle Size: 2.7 μm  
 Guard Column: Raptor™ Biphenyl EXP® guard column cartridge 5 mm, 2.1 mm ID, 2.7 μm (cat.# 9309A0252)  
 Temp.: 30 °C

**Sample**  
 Diluent: Water  
 Conc.: 25 ng/mL  
 Inj. Vol.: 5 μL

**Mobile Phase**  
 A: Water + 0.1% formic acid  
 B: Acetonitrile + 0.1% formic acid

Time (min)	Flow (mL/min)	%A	%B
0.00	0.6	98	2
2.00	0.6	75	25
3.50	0.6	10	90
3.51	0.6	98	2
5.50	0.6	98	2

**Detector** MS/MS  
 Ion Mode: ESI+  
 Mode: Scheduled MRM  
**Instrument** UHPLC