

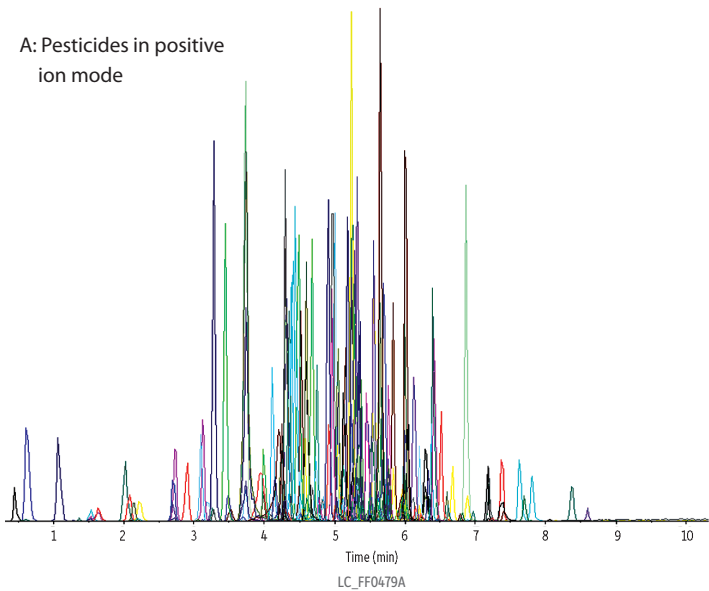
Pesticides on Pinnacle DB Aqueous C18

**Column** Pinnacle DB Aqueous C18 (cat.# 9418252)  
**Dimensions:** 50 mm x 2.1 mm ID  
**Particle Size:** 1.9 µm  
**Pore Size:** 140 Å  
**Temp.:** 35 °C  
**Standard/Sample** Multicomponent pesticide standard  
**Diluent:** Water  
**Conc.:** 33.3 ppb each pesticide  
**Inj. Vol.:** 5 µL  
**Mobile Phase**  
**A:** 10 mM NH<sub>4</sub>OAc in water  
**B:** 10 mM NH<sub>4</sub>OAc in methanol

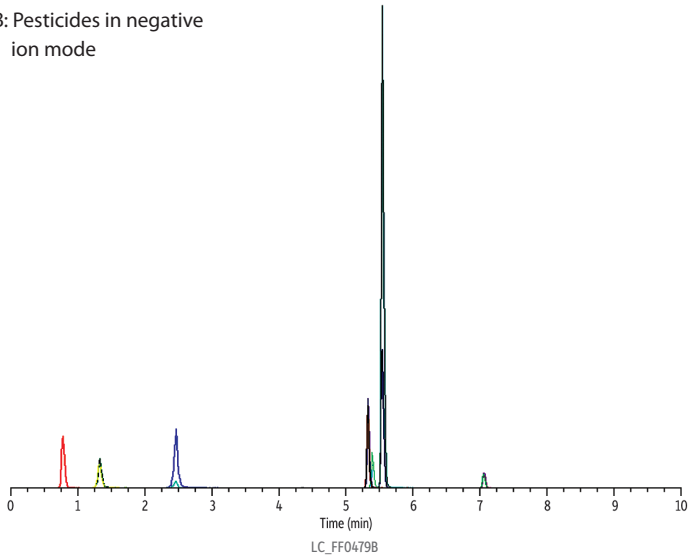
| Time (min) | %B |
|------------|----|
| 0.00       | 10 |
| 1          | 10 |
| 8          | 90 |
| 10         | 90 |
| 11         | 10 |

**Flow:** 0.60 mL/min  
**Max Pressure:** ~517 bar  
**Detector** Applied Biosystems/MDS Sciex LC/MS/MS  
**Model #:** 4000 QTRAP LC-MS/MS system  
**Ion Source:** TurbolonSpray®  
**A & C:** ESI+  
**B:** ESI-  
**Ion Spray Voltage:** 5 kV (ESI+), -4.2kV (ESI-)  
**Gas 1:** 40 psi (275.8 kPa)  
**Gas 2:** 60 psi (413.7 kPa)  
**Source Temp.:** 500 °C  
**Instrument** Shimadzu UFLCXR

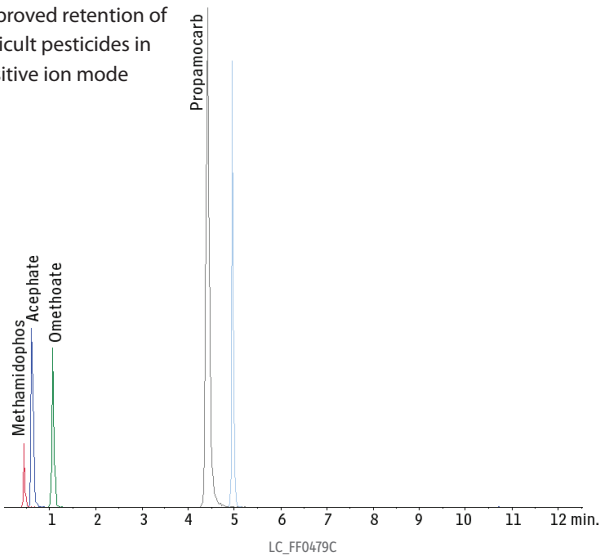
A: Pesticides in positive ion mode



B: Pesticides in negative ion mode



C: Improved retention of difficult pesticides in positive ion mode



**Table I** Peak list for pesticides in positive ion mode (continued on next page).

| Peaks                  | tr (min)   | Polarity | Mol. Wt. | Transition 1 | Peaks                   | tr (min)  | Polarity | Mol. Wt. | Transition 1 |
|------------------------|------------|----------|----------|--------------|-------------------------|-----------|----------|----------|--------------|
| 1. Methamidophos       | 0.45       | positive | 141.13   | 142.0→94.0   | 64. Fludioxonil         | 5.34      | negative | 248.19   | 247.0→179.9  |
| 2. Acephate            | 0.62       | positive | 183.17   | 184.0→142.8  | 65. Boscalid            | 5.36      | negative | 343.21   | 343.0→307.0  |
| 3. Bentazone           | 0.77       | negative | 240.28   | 239.0→131.8  | 66. Azoxystrobin        | 5.36      | positive | 403.3    | 404.1→372.1  |
| 4. Omethoate           | 1.07       | positive | 213.14   | 214.0→124.9  | 67. Methoxyfenozide     | 5.38      | positive | 368.47   | 369.0→149.0  |
| 5. Bromoxynil          | 1.32       | negative | 276.91   | 275.9→80.8   | 68. Cyproconazole       | 5.39      | positive | 291.78   | 292.2→70.2   |
| 6. Butoxycarboxin      | 1.64       | positive | 222.27   | 223.1→86.1   | 69. Prothioconazole     | 5.41      | negative | 344.26   | 341.9→305.8  |
| 7. Aldicarb sulfoxide  | 2.03       | positive | 206.26   | 207.1→132.1  | 70. Flufenacet          | 5.46      | positive | 363.34   | 364.0→152.0  |
| 8. Methomyl            | 2.08       | positive | 162.21   | 163.1→88.1   | 71. Butafenacil         | 5.47      | positive | 474.82   | 492.2→331.1  |
| 9. Ioxynil             | 2.46       | negative | 370.92   | 369.8→126.7  | 72. Myclobutanil        | 5.51      | positive | 288.78   | 289.0→70.0   |
| 10. Thiamethoxam       | 2.7        | positive | 291.7    | 292.0→211.0  | 73. Dimethomorph        | 5.52,5.54 | positive | 387.86   | 388.0→301.0  |
| 11. Monocrotophos      | 2.73       | positive | 223.17   | 224.1→127.0  | 74. Bromuconazole 47    | 5.54      | positive | 377.06   | 378.0→159.0  |
| 12. Dimethoate         | 2.9        | positive | 229.26   | 230.1→199.0  | 75. Prometryn           | 5.55      | positive | 241.36   | 242.2→158.1  |
| 13. Fenuron            | 3.1        | positive | 164.21   | 165.1→72.1   | 76. Fipronil            | 5.56      | negative | 437.15   | 434.9→329.8  |
| 14. Dioxacarb          | 3.12       | positive | 223.23   | 224.0→123.0  | 77. Triticonazole       | 5.58      | positive | 317.81   | 318.0→70.0   |
| 15. Dicrotophos        | 3.28       | positive | 237.19   | 238.0→112.0  | 78. Tetraconazole       | 5.6       | positive | 372.12   | 372.0→159.0  |
| 16. Vamidothion        | 3.45       | positive | 287.34   | 288.0→146.0  | 79. Uniconazole         | 5.62      | positive | 291.78   | 292.2→70.2   |
| 17. Carbenfentazim     | 3.73       | positive | 191.19   | 192.0→160.0  | 80. Fluoxastrobin       | 5.62      | positive | 458.83   | 459.2→427.2  |
| 18. Aldicarb           | 3.73       | positive | 190.27   | 208.1→116.0  | 81. Cyazofamid          | 5.63      | positive | 324.78   | 325.0→108.0  |
| 19. Formetanate        | 3.74       | positive | 221.26   | 222.1→165.2  | 82. Terbutryn           | 5.65      | positive | 241.36   | 242.2→186.0  |
| 20. Acetamidiprid      | 3.95       | positive | 222.67   | 223.1→126.1  | 83. Tebufenozide        | 5.65      | positive | 352.47   | 353.1→133.1  |
| 21. Carbetamide        | 3.99       | positive | 236.27   | 237.0→192.0  | 84. Chloroxuron         | 5.67      | positive | 290.75   | 291.0→72.0   |
| 22. Oxamyl             | 3.99       | positive | 219.26   | 237.1→72.2   | 85. Picoxystrobin       | 5.67      | positive | 367.25   | 368.0→145.0  |
| 23. Aminocarb          | 4.11, 4.44 | positive | 208.26   | 209.2→137.1  | 86. Carfentazone ethyl  | 5.69      | positive | 412.17   | 412.0→346.0  |
| 24. Propoxur           | 4.15       | positive | 209.24   | 210.1→111.0  | 87. Diclobutrazol       | 5.71      | positive | 328.21   | 328.0→70.0   |
| 25. Oxadixyl           | 4.21       | positive | 278.31   | 279.0→219.0  | 88. Fenoxycarb          | 5.72      | positive | 301.34   | 302.0→88.1   |
| 26. Bendiocarb         | 4.24       | positive | 223.23   | 224.1→109.1  | 89. Diflubenzuron       | 5.72      | positive | 310.67   | 311.2→158.1  |
| 27. Thiocloprid        | 4.25       | positive | 252.71   | 253.2→126.1  | 90. Neburon             | 5.74      | positive | 275.18   | 275.0→88.0   |
| 28. Thiophanate methyl | 4.3        | positive | 342.4    | 343.0→151.0  | 91. Flusilazole         | 5.76      | positive | 315.4    | 316.0→247.0  |
| 29. Methabenzthiazuron | 4.31       | positive | 221.28   | 222.0→165.1  | 92. Epoxiconazole       | 5.76      | positive | 329.76   | 330.0→121.0  |
| 30. Tricyclazole       | 4.35       | positive | 189.23   | 190.0→163.0  | 93. Fenbuconazole       | 5.76      | positive | 336.82   | 337.0→125.0  |
| 31. Pyracarbolid       | 4.38       | positive | 217.27   | 218.2→125.0  | 94. Bupirimate          | 5.77      | positive | 316.41   | 317.0→166.0  |
| 32. Propamocarb        | 4.41       | positive | 188.27   | 189.2→102.2  | 95. Zoxamide            | 5.77      | positive | 336.54   | 336.2→187.1  |
| 33. Carboxin           | 4.51       | positive | 235.3    | 236.0→143.0  | 96. Rotenone            | 5.79      | positive | 394.42   | 395.0→213.0  |
| 34. Ethiofencarb       | 4.52       | positive | 225.31   | 226.1→106.9  | 97. Benalaxyl           | 5.83      | positive | 325.41   | 326.0→148.0  |
| 35. Carbaryl           | 4.58       | positive | 201.22   | 202.1→145.1  | 98. Tebuconazole        | 5.84      | positive | 307.82   | 308.0→70.0   |
| 36. Thiabendazole      | 4.6        | positive | 201.25   | 202.0→175.0  | 99. Penconazole         | 5.93      | positive | 284.19   | 284.0→159.0  |
| 37. Carbanilide        | 4.6        | positive | 212.25   | 213.1→94.0   | 100. Cyprodinil         | 5.96      | positive | 225.29   | 226.0→93.0   |
| 38. Clethodim          | 4.61       | positive | 359.91   | 360.0→164.0  | 101. Propiconazole      | 5.96      | positive | 342.22   | 342.0→159.0  |
| 39. Tebuthiuron        | 4.68       | positive | 228.32   | 229.2→172.4  | 102. Alanycarb          | 5.98      | positive | 399.52   | 400.1→238.2  |
| 40. Fluometuron        | 4.75       | positive | 232.21   | 233.1→72.0   | 103. Triflumuron        | 5.99      | positive | 358.68   | 359.1→156.1  |
| 41. Metobromuron       | 4.82       | positive | 259.1    | 259.0→170.2  | 104. Thiobencarb        | 6         | positive | 257.78   | 258.1→125.0  |
| 42. Flutriafol         | 4.84       | positive | 301.3    | 302.0→123.0  | 105. Pyraclostrobin     | 6         | positive | 387.83   | 388.0→194.0  |
| 43. Chlortoluron       | 4.92       | positive | 212.68   | 213.1→72.2   | 106. Benzoximate        | 6.01      | positive | 363.8    | 364.0→199.0  |
| 44. Simetryn           | 4.96       | positive | 213.31   | 214.0→124.0  | 107. Pinoxaden          | 6.01      | positive | 400.52   | 401.3→317.2  |
| 45. Pirimicarb         | 4.97       | positive | 238.29   | 239.2→72.1   | 108. Clofentezine       | 6.11      | positive | 303.15   | 303.0→138.0  |
| 46. Forchlorfenuron    | 5.04       | positive | 247.68   | 248.0→129.1  | 109. Trifloxystrobin    | 6.12      | positive | 408.38   | 409.2→186.0  |
| 47. Siduron            | 5.09       | positive | 232.32   | 233.3→137.2  | 110. Prochloraz         | 6.21      | positive | 376.67   | 376.0→308.0  |
| 48. Ethofumesate       | 5.11       | positive | 286.35   | 304.0→121.0  | 111. Difenoconazole     | 6.29      | positive | 406.28   | 406.0→251.0  |
| 49. Cycluron           | 5.13       | positive | 198.31   | 199.1→89.1   | 112. Benfuracarb        | 6.29      | positive | 410.53   | 411.2→195.1  |
| 50. Diuron             | 5.13       | positive | 233.1    | 233.1→72.0   | 113. Triflumizole       | 6.38      | positive | 345.75   | 346.1→278.1  |
| 51. Diethofencarb      | 5.15       | positive | 267.33   | 268.0→226.0  | 114. Buprofezin         | 6.4       | positive | 305.44   | 306.0→201.0  |
| 52. Furalaxyl          | 5.18       | positive | 301.34   | 302.2→95.0   | 115. Piperonyl butoxide | 6.42      | positive | 338.45   | 356.2→177.2  |
| 53. Methiocarb         | 5.24       | positive | 225.31   | 226.1→169.2  | 116. Pyriproxyfen       | 6.52      | positive | 321.28   | 322.0→96.0   |
| 54. Secbumeton         | 5.24       | positive | 225.29   | 226.2→169.9  | 117. Propargite         | 6.68      | positive | 350.48   | 368.0→231.0  |
| 55. Terbumeton         | 5.25       | positive | 225.29   | 226.2→169.9  | 118. Etoxazole          | 6.87      | positive | 359.42   | 360.1→141.0  |
| 56. Prometon           | 5.26       | positive | 225.29   | 226.2→142.3  | 119. Amitraz            | 6.89      | positive | 293.41   | 294.2→163.3  |
| 57. Paclobutrazol      | 5.26       | positive | 293.8    | 294.0→70.0   | 120. Noviflumuron       | 7.08      | negative | 529.1    | 527.1→343.8  |
| 58. Promecarb          | 5.27       | positive | 207.27   | 208.2→109.2  | 121. Pyridaben          | 7.18      | positive | 364.94   | 365.0→147.0  |
| 59. Dimoxystrobin      | 5.27       | positive | 326.39   | 327.1→205.0  | 122. (E)-Fenpyroximate  | 7.2       | positive | 421.5    | 422.0→366.0  |
| 60. Ametryn            | 5.29       | positive | 227.33   | 228.2→186.2  | 123. Fenpropimorph      | 7.38      | positive | 303.49   | 304.0→147.0  |
| 61. Methoprotetryne    | 5.32       | positive | 271.39   | 272.2→240.2  | 124. Spiroxamine        | 7.63,7.81 | positive | 297.48   | 298.0→144.0  |
| 62. Triadimefon        | 5.32       | positive | 293.75   | 294.0→197.0  | 125. Spinosyn A         | 8.37      | positive | 731.97   | 732.6→142.2  |
| 63. Mexacarbate        | 5.34       | positive | 222.28   | 223.2→166.2  |                         |           |          |          |              |

**Table II** Peak list for pesticides in negative ion mode.

| Peaks              | tr (min) | Polarity | Mol. Wt. | Transition 1 |
|--------------------|----------|----------|----------|--------------|
| 1. Bentazone       | 0.77     | negative | 240.28   | 239.0→131.8  |
| 2. Bromoxynil      | 1.32     | negative | 276.91   | 275.9→80.8   |
| 3. Ioxynil         | 2.46     | negative | 370.92   | 369.8→126.7  |
| 4. Fludioxonil     | 5.34     | negative | 248.19   | 247.0→179.9  |
| 5. Boscalid        | 5.36     | negative | 343.21   | 343.0→307.0  |
| 6. Prothioconazole | 5.41     | negative | 344.26   | 341.9→305.8  |
| 7. Fipronil        | 5.56     | negative | 437.15   | 434.9→329.8  |
| 8. Noviflumuron    | 7.08     | negative | 529.1    | 527.1→343.8  |