

Supporting Information

for

A convenient four-component one-pot strategy toward the synthesis of pyrazolo[3,4-*d*]pyrimidines

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Experimental section and copies of ^1H and ^{13}C NMR spectra of compounds

Experimental

Materials and methods

The starting materials are commercially available. Melting points were determined on XT4 microscope melting point apparatus and were uncorrected. Infrared (IR) spectra were recorded on a Perkin Elmer FT-IR spectrophotometer with KBr pellets. ^1H and ^{13}C NMR spectra were recorded on a Bruker 400 spectrometer with TMS as the internal standard. Mass spectra were recorded on a Bruker APEX IV using ESI ionization.

General procedure for the synthesis of compound 5. Hydrazine **1** (1.2 mmol), methylenemalononitrile **2** (1.0 mmol) were mixed in alcohol (15 mL), then aldehyde (**3**, 1.2 mmol) and sodium alkoxide (1.2 mmol) were added and the mixture was warmed to 60 °C. The completion of the reaction was monitored by TLC. The reaction solution was cooled to room temperature and diluted with water. The solid was filtered and the filtrate was extracted with acetic ether (3 × 20 mL). Then the organic layer was evaporated under reduced pressure. The solid was combined with filter cake and purified by crystallization from ethanol.

4-Ethoxy-1,6-diphenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5a): Yellow solid; m.p. 147-148 °C; IR (KBr, ν , cm^{-1}): 3119, 2980, 1593; ^1H NMR (400 MHz, $\text{DMSO-}d_6$) (δ , ppm): 8.50-8.48 (m, 2H), 8.45 (s, 1H), 8.31-8.28 (m, 2H), 7.65-7.61 (m, 2H), 7.57-7.56 (m, 3H), 7.43-7.40 (m, 1H), 4.76 (q, $J = 8.0$ Hz, 2H), 1.50 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, $\text{DMSO-}d_6$) (δ , ppm): 163.7, 161.9, 155.8, 139.1, 137.3, 133.7, 131.7, 129.9, 129.8, 129.2, 128.9, 127.1, 121.3, 102.8, 100.0, 63.6, 14.8; HRMS (ESI): calcd. For $\text{C}_{19}\text{H}_{16}\text{N}_4\text{OH}$ $[\text{M}+\text{H}]^+$ 317.1397; Found 317.1394.

4-Ethoxy-6-(4-methoxyphenyl)-1-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5b): White solid; m.p. 152-154 °C; IR (KBr, ν , cm^{-1}): 3102, 2990, 1591; ^1H NMR (400 MHz, $\text{DMSO-}d_6$) (δ , ppm): 8.46-8.43 (m, 3H), 8.31-8.29 (m, 2H), 7.65-7.61 (m, 2H), 7.43-7.39 (m, 1H), 7.12-7.10 (m, 2H), 4.75 (q, $J = 8.0$ Hz, 2H), 3.86 (s, 3H), 1.49 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, $\text{DMSO-}d_6$) (δ , ppm): 163.5, 162.4, 161.9, 155.9, 139.2, 133.7, 130.6, 129.8, 129.8, 126.9, 121.1, 114.5, 102.3, 63.4, 55.8, 14.8; HRMS (ESI): calcd. For $\text{C}_{20}\text{H}_{18}\text{N}_4\text{O}_2\text{H}$ $[\text{M}+\text{H}]^+$ 347.1503; Found 347.1500.

4-Ethoxy-1-phenyl-6-(*p*-tolyl)-1H-pyrazolo[3,4-*d*]pyrimidine (5c): White solid; m.p. 118-120 °C; IR (KBr, ν , cm^{-1}): 3064, 2976, 1595; ^1H NMR (400 MHz, $\text{DMSO-}d_6$) (δ , ppm): 8.37 (s, 1H), 8.32-8.25 (m, 4H), 7.63-7.59 (m, 2H), 7.41-7.37 (m, 1H), 7.31-7.29 (m, 2H), 4.69 (q, $J = 8.0$ Hz, 2H), 2.37 (s, 3H), 1.47 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, $\text{DMSO-}d_6$) (δ , ppm): 163.5, 162.0, 155.8, 141.6, 139.2, 134.6, 133.6, 129.8, 126.9, 121.2, 102.6, 63.4, 21.6, 14.8; HRMS (ESI): calcd. For $\text{C}_{20}\text{H}_{18}\text{N}_4\text{OH}$ $[\text{M}+\text{H}]^+$ 331.1553; Found 331.1550.

4-Ethoxy-1-phenyl-6-(3,4,5-trimethoxyphenyl)-1H-pyrazolo[3,4-*d*]pyrimidine (5d): White solid; m.p. 176-178 °C; IR (KBr, ν , cm^{-1}): 3101, 2940, 1587; ^1H NMR (400 MHz, CDCl_3) (δ , ppm): 8.37 (d, $J = 8.0$ Hz, 2H), 8.20 (s, 1H), 7.88 (s, 2H), 7.58-7.54 (m, 2H), 7.38-7.35 (m, 1H), 4.79 (q, $J = 8.0$ Hz, 2H), 4.02 (s, 6H), 3.97 (s, 3H), 1.59 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) (δ , ppm): 163.4, 161.7, 155.8, 153.1, 140.9, 139.3, 133.0, 132.8, 129.0, 126.3, 121.2, 106.1, 102.6, 62.9, 61.0, 56.1, 14.5; HRMS (ESI): calcd. For $\text{C}_{22}\text{H}_{22}\text{N}_4\text{O}_4\text{H}$ $[\text{M}+\text{H}]^+$ 407.1714; Found 407.1714.

6-(5-Bromo-2-methoxyphenyl)-4-ethoxy-1-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5e): Yellow solid; m.p. 150-152 °C; IR (KBr, ν , cm^{-1}): 3070, 2982, 1589; ^1H NMR (400 MHz, $\text{DMSO-}d_6$) (δ , ppm): 8.47 (s, 1H), 8.28 (d, $J = 8.0$ Hz, 2H), 7.96 (s, 1H), 7.65 (d, $J = 8.0$

Hz, 1H), 7.60-7.56 (m, 2H), 7.39-7.36 (m, 1H), 7.18 (d, $J = 8.0$ Hz, 1H), 4.66 (q, $J = 8.0$ Hz, 2H), 3.87 (s, 3H), 1.46 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.2, 161.1, 157.8, 155.3, 139.1, 134.2, 133.9, 133.6, 129.8, 127.1, 121.2, 115.7, 112.1, 102.4, 63.7, 56.8, 14.7; HRMS (ESI): calcd. For $\text{C}_{20}\text{H}_{17}\text{BrN}_4\text{O}_2\text{H}$ $[\text{M}+\text{H}]^+$ 425.0608; Found 425.0601.

4-Ethoxy-6-(3-nitrophenyl)-1-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5f): Pale yellow solid; m.p. 158-160 °C; IR (KBr, ν , cm^{-1}): 3076, 2980, 1594; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 9.08-9.07 (m, 1H), 8.81-8.79 (m, 1H), 8.47 (s, 1H), 8.38-8.35 (m, 1H), 8.23-8.21 (m, 2H), 7.84-7.80 (m, 1H), 7.65-7.61 (m, 2H), 7.45-7.41 (m, 1H), 4.74 (q, $J = 8.0$ Hz, 2H), 1.51 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.8, 159.5, 155.4, 148.7, 138.9, 134.7, 133.8, 130.9, 129.8, 127.3, 126.1, 122.9, 121.4, 103.2, 63.9, 14.7; HRMS (ESI): calcd. For $\text{C}_{19}\text{H}_{15}\text{N}_5\text{O}_3\text{H}$ $[\text{M}+\text{H}]^+$ 362.1248; Found 362.1247.

4-Ethoxy-6-(2-nitrophenyl)-1-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5g): Brown solid; m.p. 124-126 °C; IR (KBr, ν , cm^{-1}): 3069, 2990, 1593; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.57 (s, 1H), 8.31-8.29 (m, 1H), 8.18-8.15 (m, 2H), 7.98-7.96 (m, 1H), 7.88-7.84 (m, 1H), 7.81-7.76 (m, 1H), 7.62-7.59 (m, 2H), 7.44-7.41 (m, 1H), 4.64 (q, $J = 8.0$ Hz, 2H), 1.46 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.6, 159.6, 155.0, 150.6, 138.7, 133.9, 132.7, 132.1, 132.0, 131.3, 129.8, 127.4, 124.3, 121.4, 102.8, 64.0, 14.7; HRMS (ESI): calcd. For $\text{C}_{19}\text{H}_{15}\text{N}_5\text{O}_3\text{H}$ $[\text{M}+\text{H}]^+$ 362.1248; Found 362.1247.

1-(4-Chlorophenyl)-4-ethoxy-6-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5h): Yellow solid; m.p. 160-162 °C; IR (KBr, ν , cm^{-1}): 3108, 2984, 1591; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.50-8.47 (m, 3H), 8.34-8.32 (m, 2H), 7.69-7.67 (m, 2H), 7.57-7.56 (m, 3H), 4.76 (q, $J = 8.0$ Hz, 2H), 1.50 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm):

163.6, 162.0, 155.9, 138.0, 137.2, 134.0, 131.8, 131.1, 129.8, 129.1, 128.9, 122.6, 102.8, 63.6, 14.8; HRMS (ESI): calcd. For $C_{19}H_{15}ClN_4OH$ $[M+H]^+$ 351.1007; Found 351.1006.

1-(3,5-Dimethylphenyl)-4-ethoxy-6-phenyl-1H-pyrazolo[3,4-d]pyrimidine (5i): Yellow solid; m.p. 156-158 °C; IR (KBr, ν , cm^{-1}): 3107, 2980, 1596; 1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.49-8.46 (m, 2H), 8.43 (s, 1H), 7.91 (s, 2H), 7.58-7.56 (m, 3H), 7.05 (s, 1H), 4.77 (q, J = 8.0 Hz, 2H), 2.42 (s, 6H), 1.50 (t, J = 8.0 Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.6, 161.8, 139.0, 137.4, 136.3, 133.4, 131.7, 129.3, 129.2, 128.8, 128.6, 119.9, 119.1, 102.7, 63.5, 21.7, 21.6, 14.8; HRMS (ESI): calcd. For $C_{21}H_{20}N_4OH$ $[M+H]^+$ 345.1710; Found 345.1707.

4-Ethoxy-1-methyl-6-phenyl-1H-pyrazolo[3,4-d]pyrimidine (5j): Yellow solid; m.p. 214-216 °C; IR (KBr, ν , cm^{-1}): 3092, 2984, 1617; 1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.60 (s, 1H), 8.47-8.44 (m, 2H), 7.53-7.51 (m, 3H), 4.72 (q, J = 8.0 Hz, 2H), 4.15 (s, 3H), 1.47 (t, J = 8.0 Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 164.6, 162.8, 160.4, 138.4, 130.9, 128.9, 128.5, 125.8, 101.7, 62.9, 41.0, 14.8; HRMS (ESI): calcd. For $C_{14}H_{14}N_4OH$ $[M+H]^+$ 255.1240; Found 255.1240.

4-Ethoxy-1,3-dimethyl-6-phenyl-1H-pyrazolo[3,4-d]pyrimidine (5k): Yellow solid; m.p. 136-138 °C; IR (KBr, ν , cm^{-1}): 2984, 1598; 1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.50-8.47 (m, 2H), 7.55-7.54 (m, 3H), 4.71 (q, J = 8.0 Hz, 2H), 3.97 (s, 3H), 2.09 (s, 3H), 1.47 (t, J = 8.0 Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 164.0, 161.0, 156.5, 140.8, 137.6, 131.3, 129.0, 128.7, 100.0, 62.9, 33.8, 14.8, 14.1; HRMS (ESI): calcd. For $C_{15}H_{16}N_4OH$ $[M+H]^+$ 269.1397; Found 269.1393.

4-Methoxy-6-(4-methoxyphenyl)-1-phenyl-1H-pyrazolo[3,4-d]pyrimidine (5l): White solid; m.p. 142-144 °C; IR (KBr, ν , cm^{-1}): 3097, 2956, 1595; 1H NMR (400 MHz, DMSO- d_6)

(δ , ppm): 8.47-8.45 (m, 3H), 8.31-8.29 (m, 2H), 7.65-7.61 (m, 2H), 7.43-7.39 (m, 1H), 7.12-7.10 (m, 2H), 4.24 (s, 3H), 3.86 (s, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.8, 162.4, 161.9, 155.9, 139.2, 133.6, 130.6, 129.8, 127.0, 121.2, 114.5, 102.3, 55.9, 54.5; HRMS (ESI): calcd. For $\text{C}_{19}\text{H}_{16}\text{N}_4\text{O}_2\text{H}$ $[\text{M}+\text{H}]^+$ 333.1346; Found 333.1342.

4-Methoxy-6-(3-nitrophenyl)-1-phenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5m): White solid; m.p. 175-177 °C; IR (KBr, ν , cm^{-1}): 3113, 2935, 1595; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.92 (m, 1H), 8.67-8.65 (m, 1H), 8.35 (s, 1H), 8.29-8.26 (m, 1H), 8.14-8.12 (m, 2H), 7.74-7.70 (m, 1H), 7.58-7.54 (m, 2H), 7.41-7.37 (m, 1H), 4.15 (s, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 164.2, 159.7, 155.4, 148.7, 138.9, 134.9, 133.8, 131.0, 129.9, 127.4, 126.2, 123.0, 121.6, 103.2, 55.0; HRMS (ESI): calcd. For $\text{C}_{18}\text{H}_{13}\text{N}_5\text{O}_3\text{H}$ $[\text{M}+\text{H}]^+$ 348.1091; Found 348.1091.

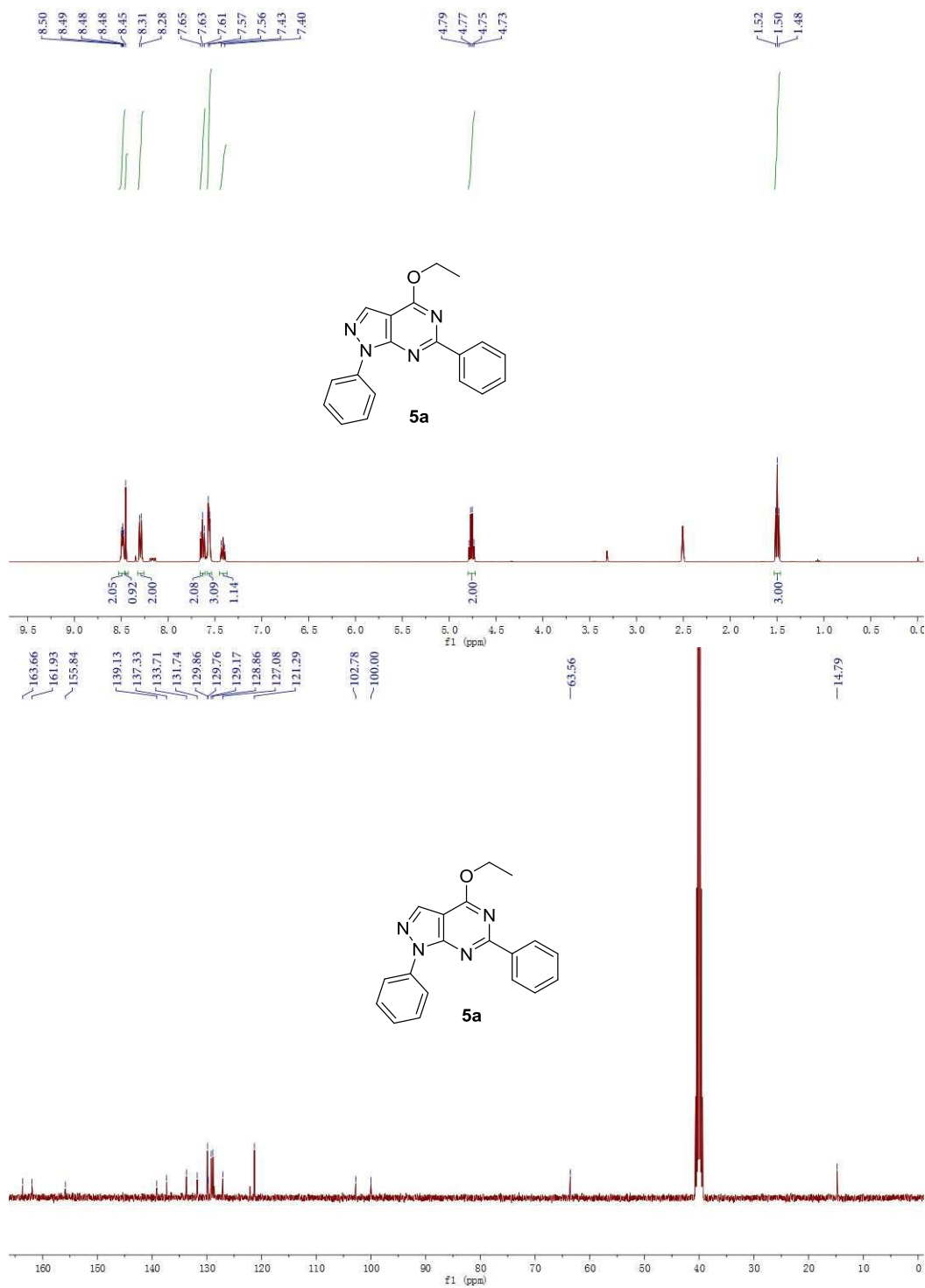
4-Butoxy-1,6-diphenyl-1H-pyrazolo[3,4-*d*]pyrimidine (5n): White solid; m.p. 99-101 °C; IR (KBr, ν , cm^{-1}): 3065, 2956, 1594; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.49-8.47 (m, 2H), 8.45 (s, 1H), 8.30-8.28 (m, 2H), 7.65-7.61 (m, 2H), 7.57-7.55 (m, 3H), 7.43-7.39 (m, 1H), 4.70 (t, $J = 8.0$ Hz, 2H), 1.89-1.82 (m, 2H), 1.56-1.47 (m, 2H), 0.99 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.7, 161.9, 155.8, 139.1, 137.3, 133.6, 131.7, 129.8, 128.8, 127.0, 121.1, 102.7, 67.1, 30.8, 19.2, 14.2; HRMS (ESI): calcd. For $\text{C}_{21}\text{H}_{20}\text{N}_4\text{OH}$ $[\text{M}+\text{H}]^+$ 345.1710; Found 345.1708.

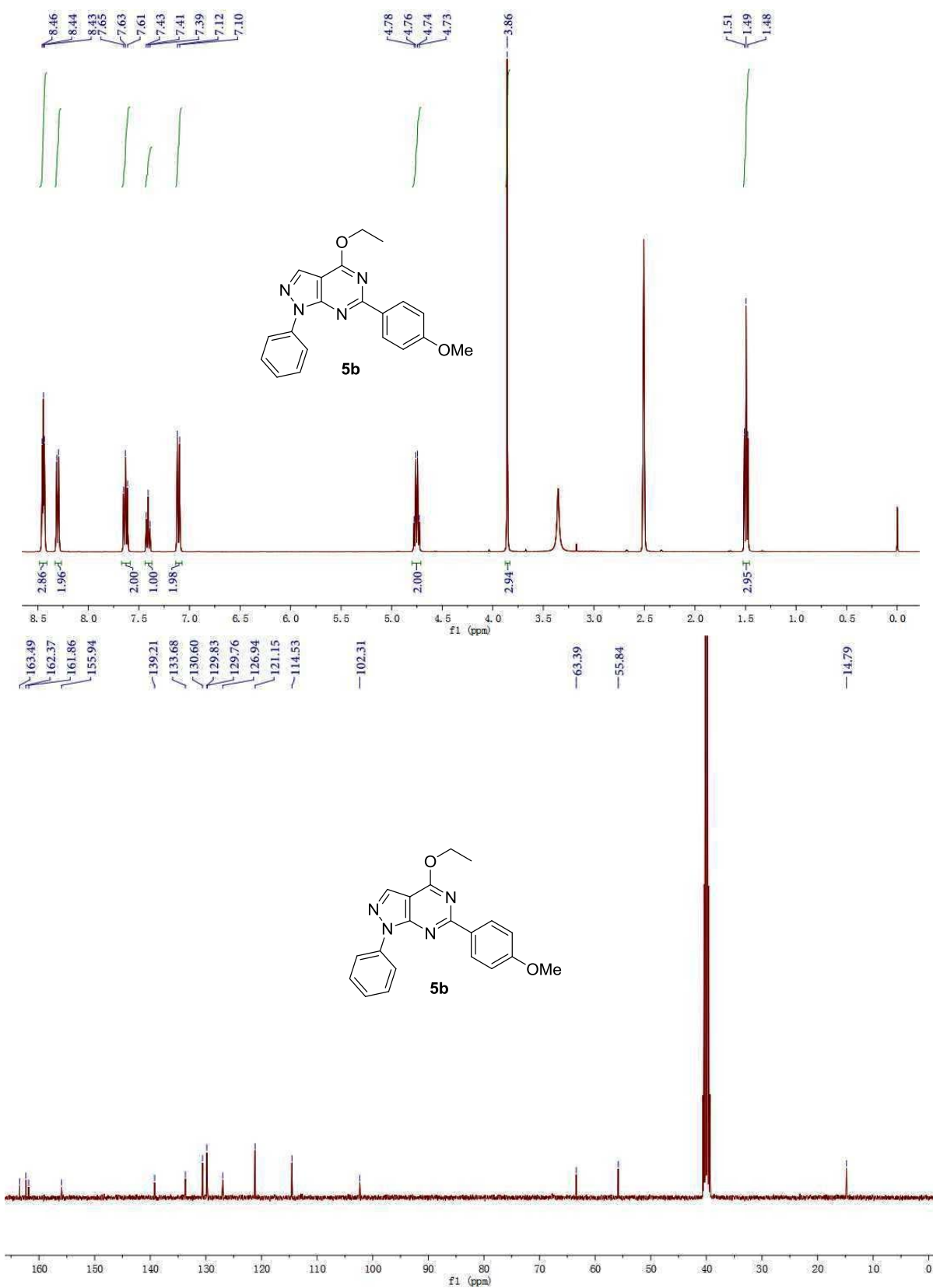
1,6-Diphenyl-4-propoxy-1H-pyrazolo[3,4-*d*]pyrimidine (5o): White solid; m.p. 128-129 °C; IR (KBr, ν , cm^{-1}): 3066, 2966, 1293; ^1H NMR (400 MHz, DMSO- d_6) (δ , ppm): 8.49-8.47 (m, 2H), 8.46 (s, 1H), 8.31-8.28 (m, 2H), 7.65-7.61 (m, 2H), 7.57-7.55 (m, 3H), 7.43-7.39 (m, 1H), 4.66 (t, $J = 8.0$ Hz, 2H), 1.95-1.86 (m, 2H), 1.07 (t, $J = 8.0$ Hz, 3H); ^{13}C NMR (100 MHz, DMSO- d_6) (δ , ppm): 163.8, 161.9, 155.8, 139.1, 137.3, 133.6, 131.7, 129.8, 129.1,

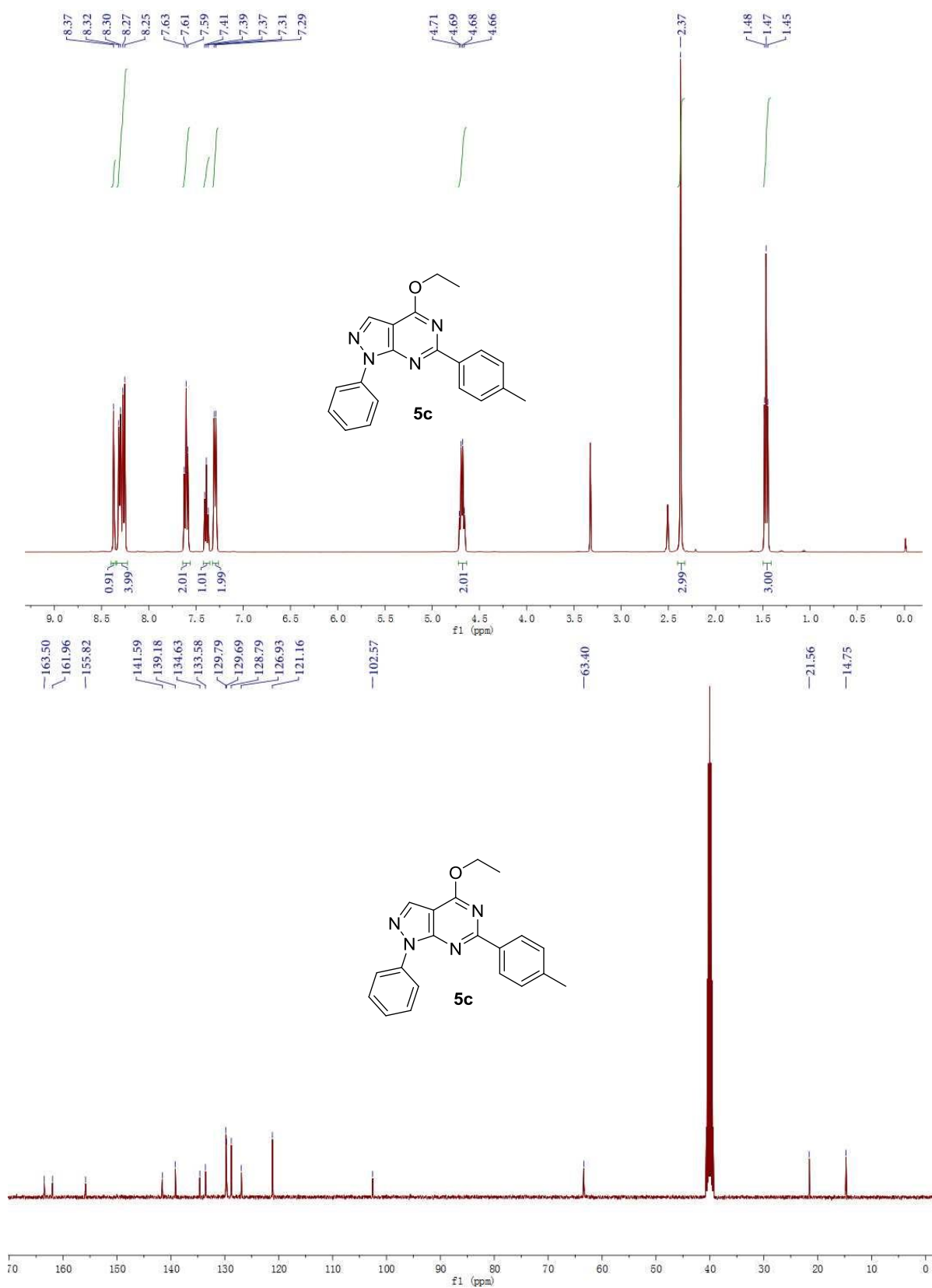
128.8, 127.0, 121.2, 102.7, 68.9, 22.2, 10.8; HRMS (ESI): calcd. For $C_{20}H_{18}N_4OH$ $[M+H]^+$ 331.1553; Found 331.1551.

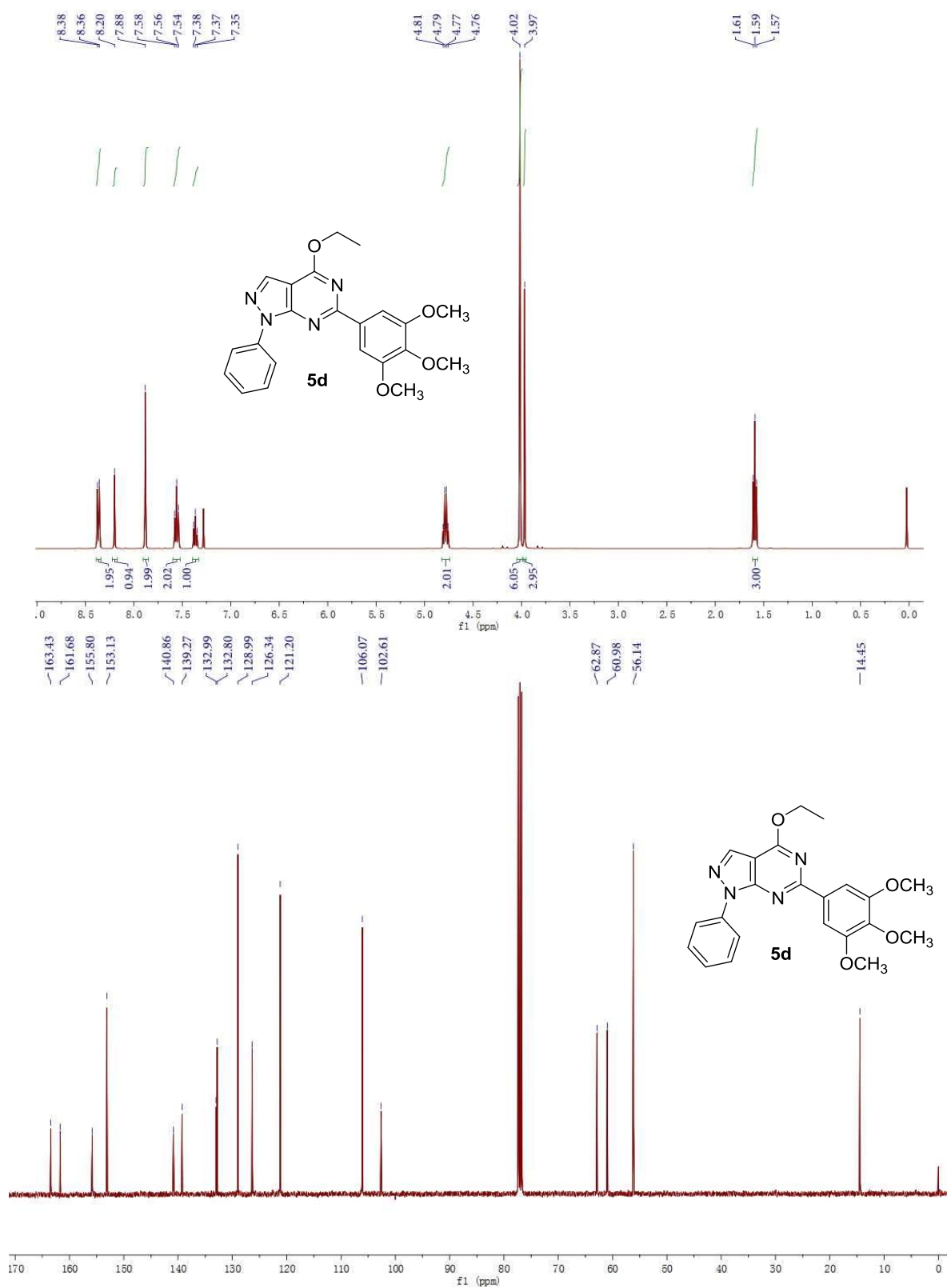
4-Isopropoxy-1,6-diphenyl-1*H*-pyrazolo[3,4-*d*]pyrimidine (5p): White solid; m.p. 192-194 °C; IR (KBr, ν , cm^{-1}): 3064, 2977, 1595; 1H NMR (400 MHz, $DMSO-d_6$) (δ , ppm): 8.53-8.51 (m, 2H), 8.48 (s, 1H), 8.33-8.31 (m, 2H), 7.67-7.63 (m, 2H), 7.60-7.58 (m, 3H), 7.45-7.41 (m, 1H), 5.87-5.81 (m, 1H), 1.52 (d, $J = 8$ Hz, 6H); ^{13}C NMR (100 MHz, $DMSO-d_6$) (δ , ppm): 163.6, 162.0, 155.9, 139.2, 137.5, 133.7, 131.2, 130.7, 129.9, 129.6, 129.2, 128.8, 127.1, 121.3, 100.0, 78.2, 22.2; HRMS (ESI): calcd. For $C_{20}H_{18}N_4OH$ $[M+H]^+$ 331.1553; Found 331.1549.

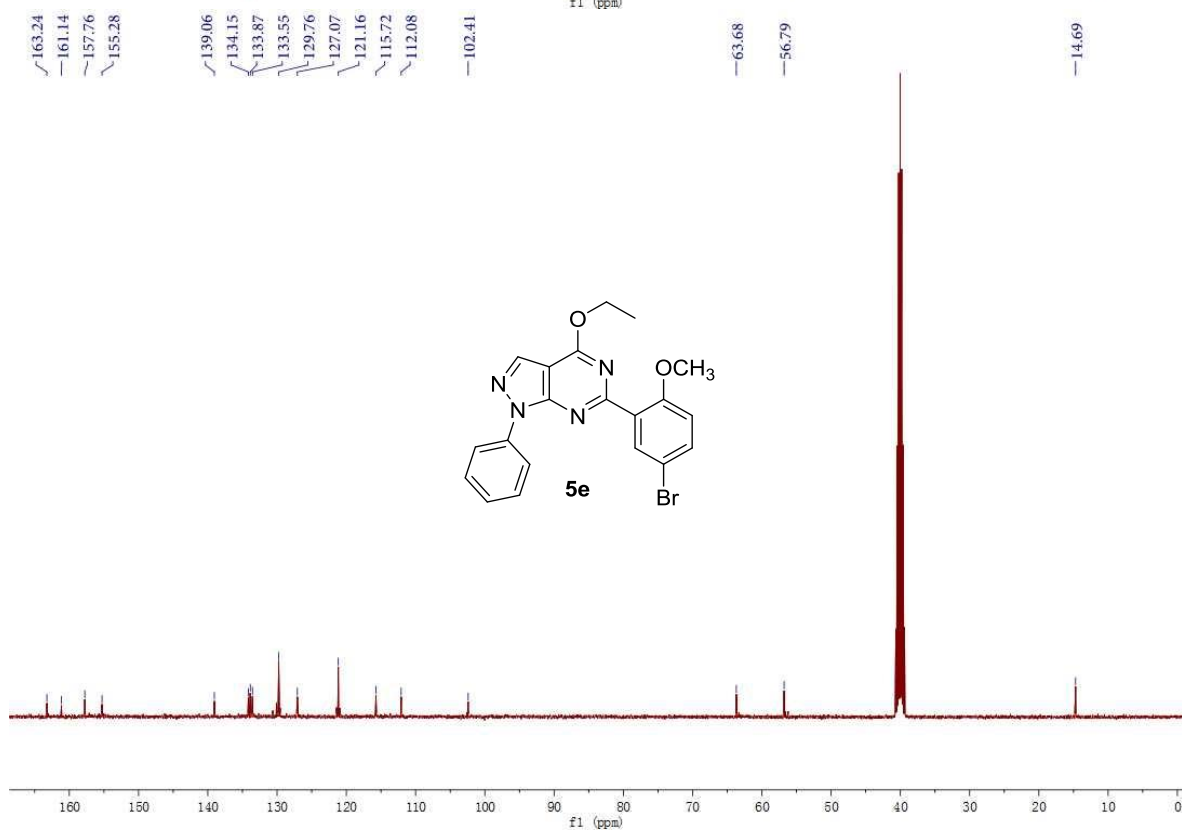
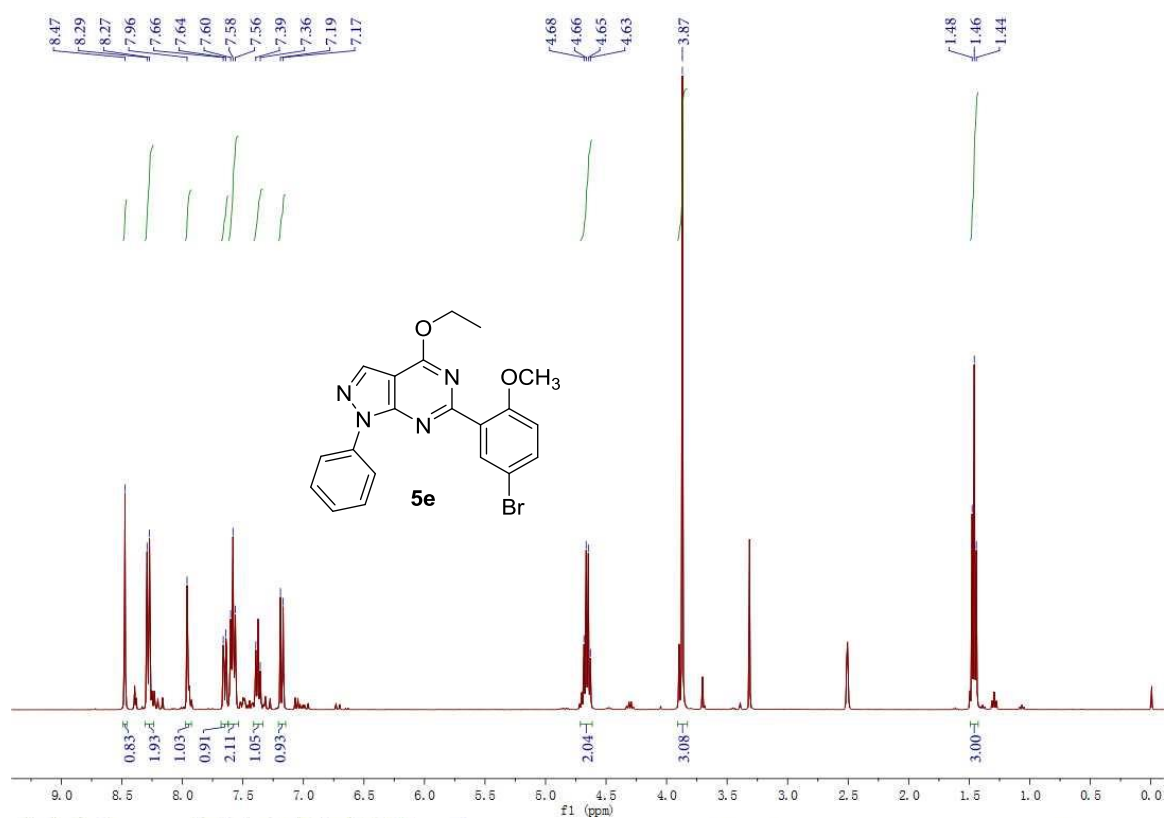
^1H and ^{13}C NMR spectra of 5

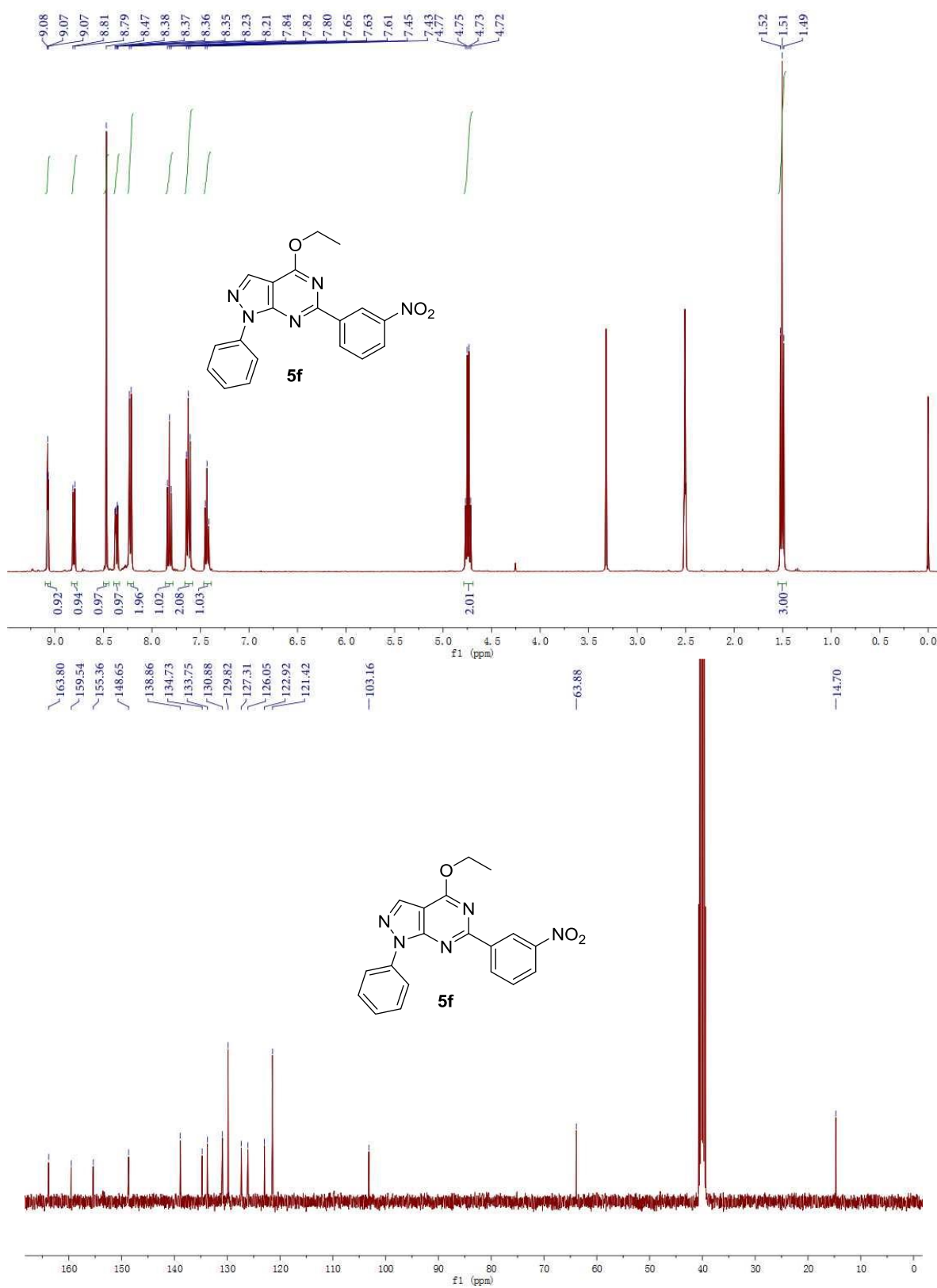


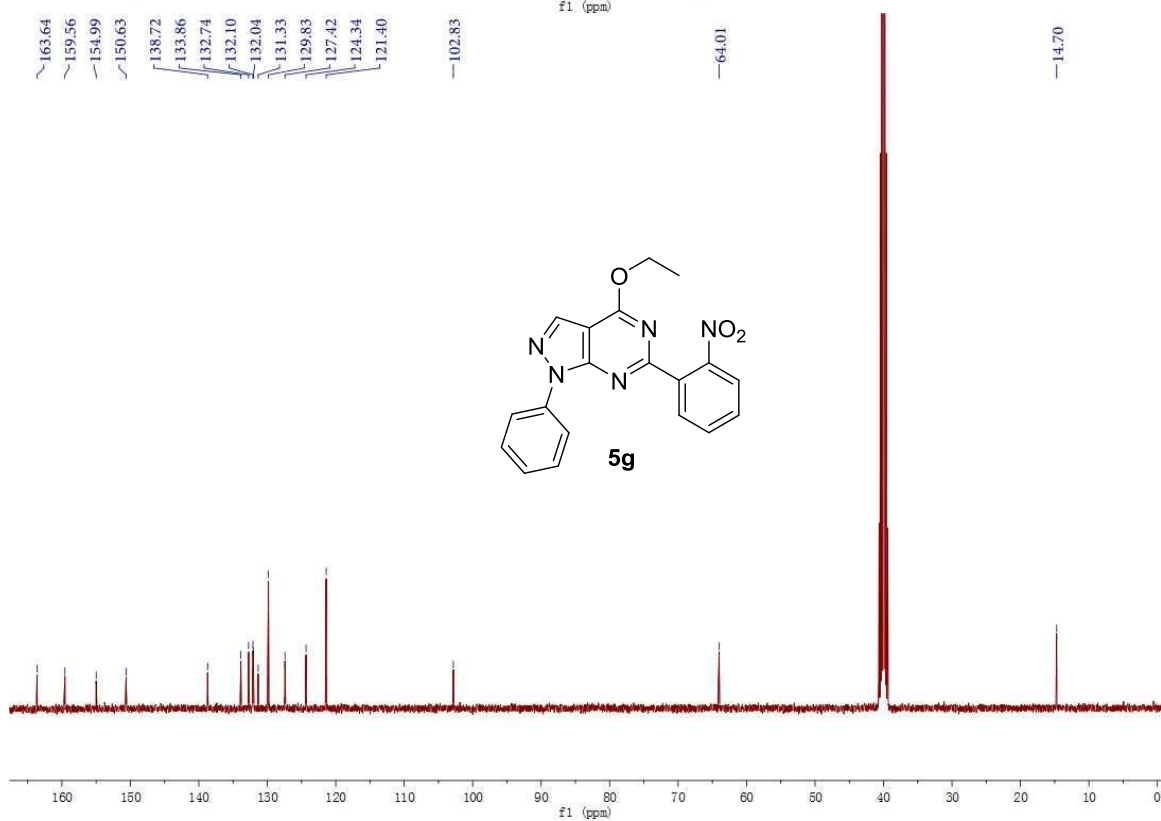
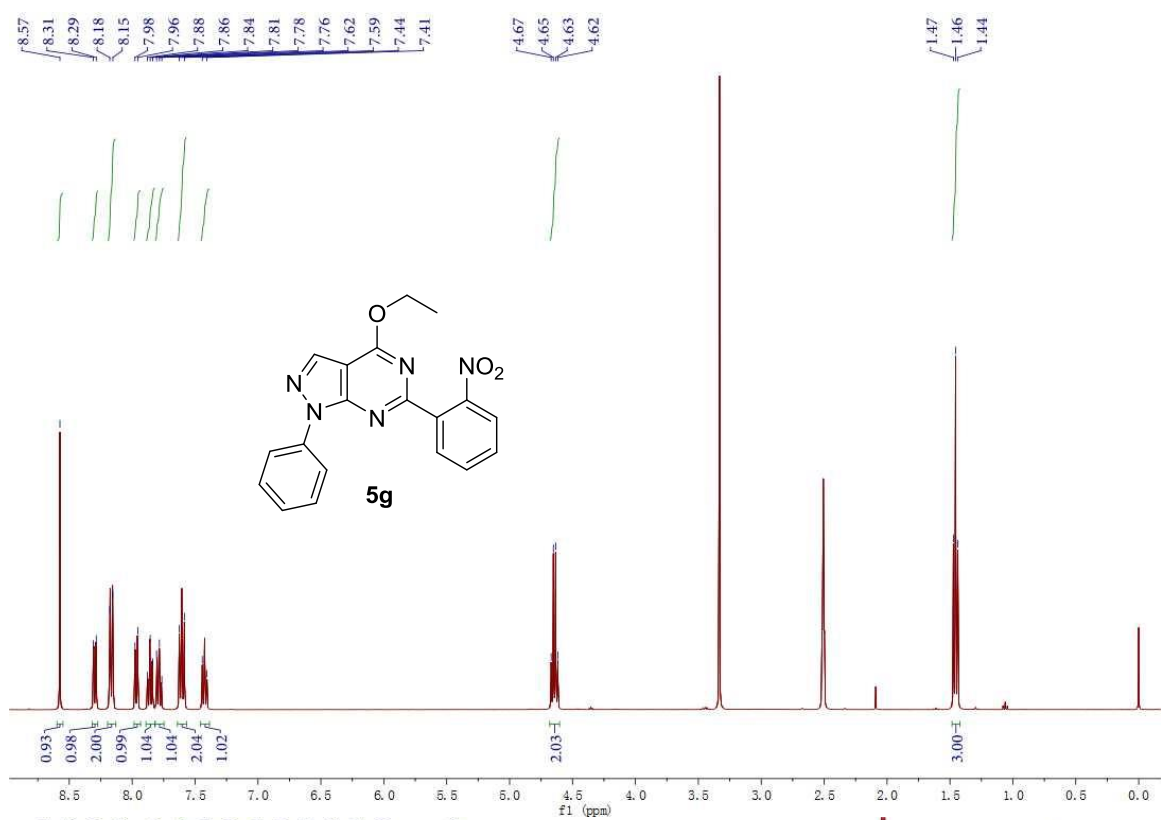


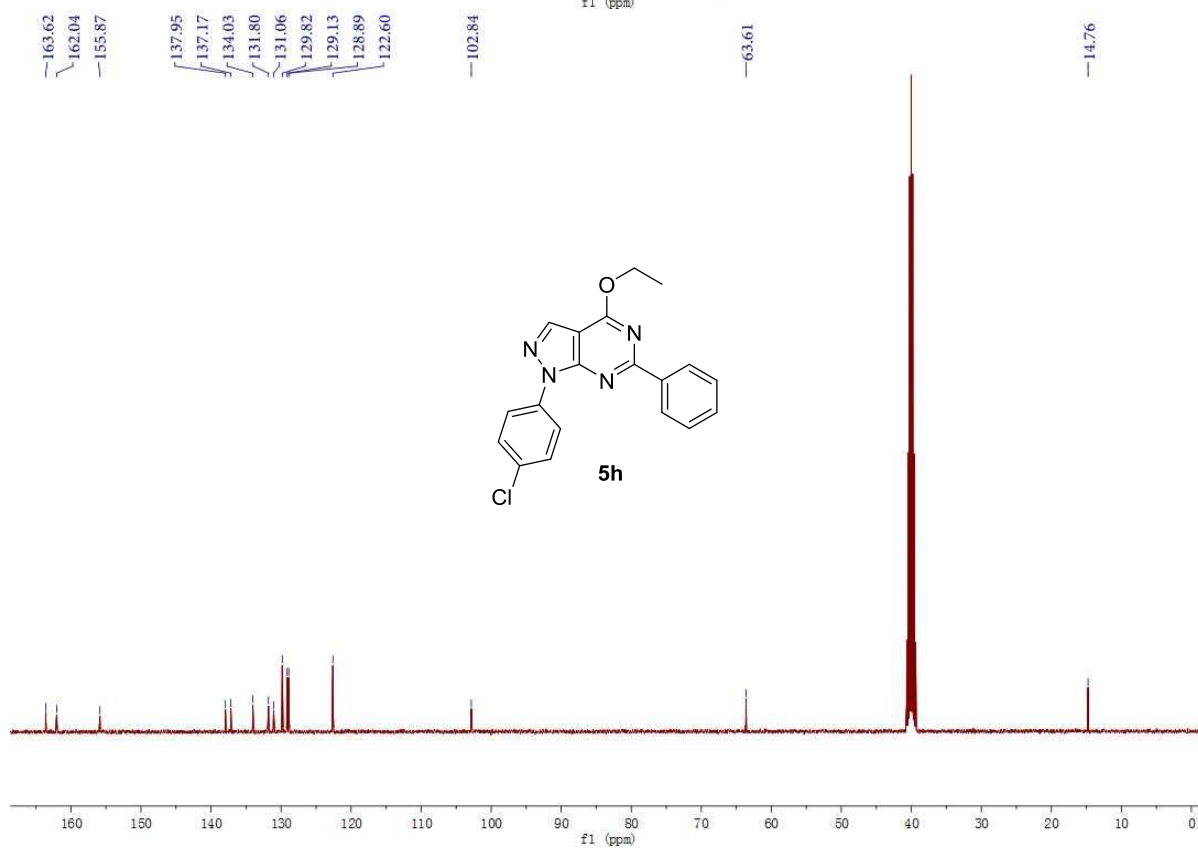
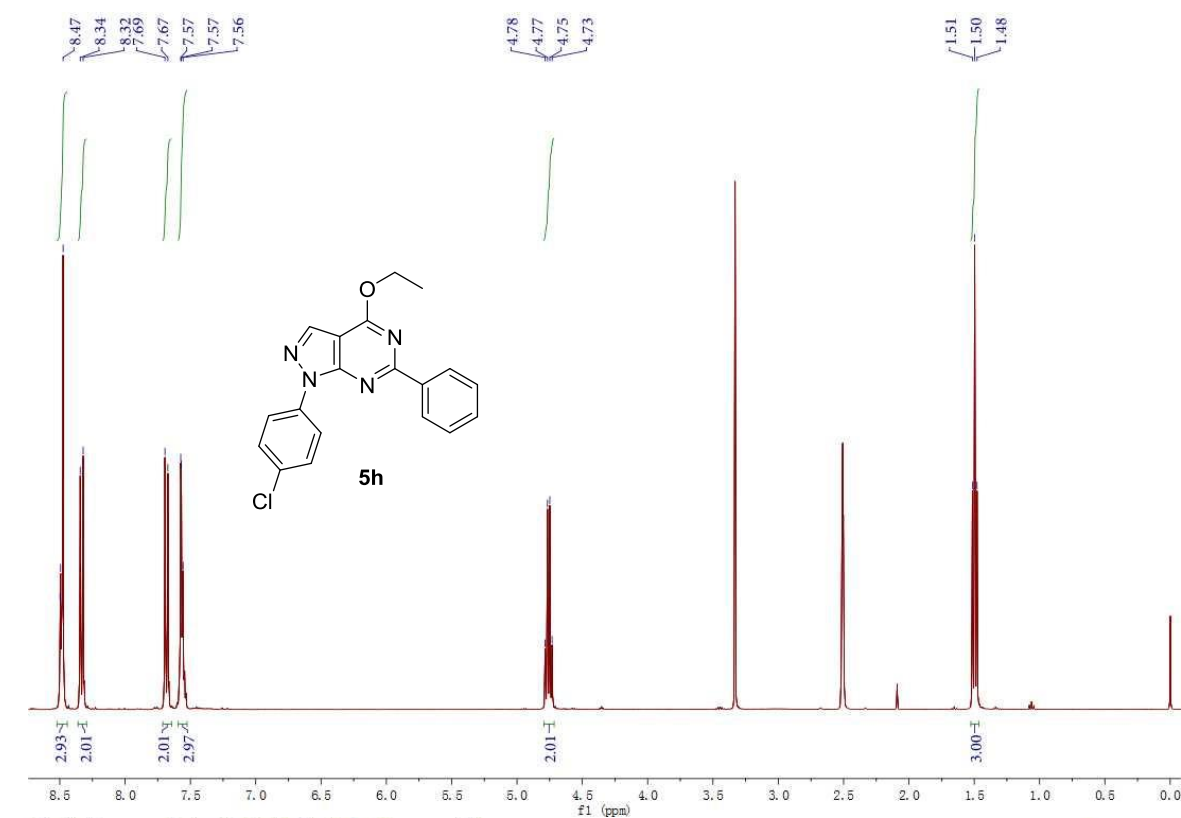


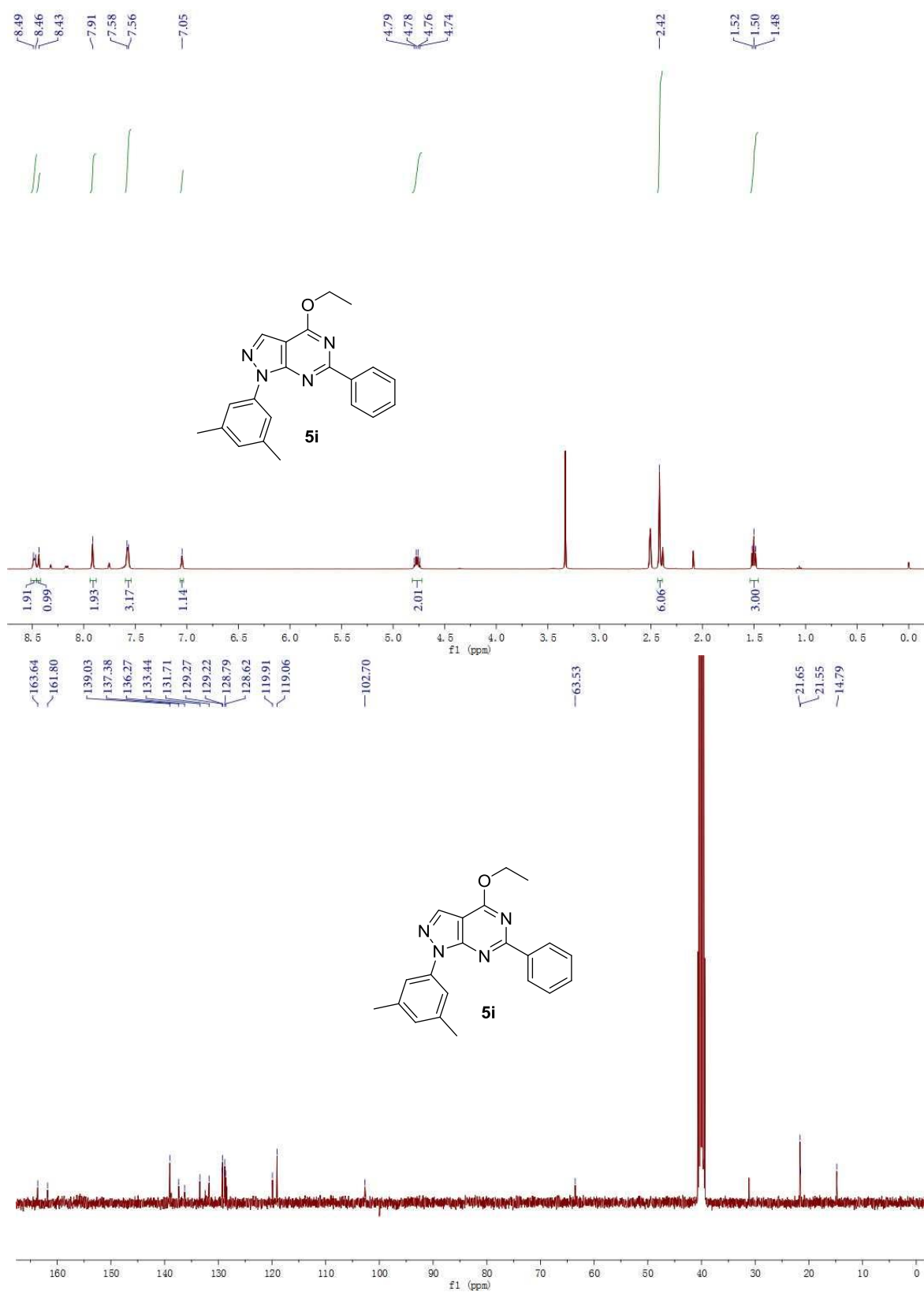


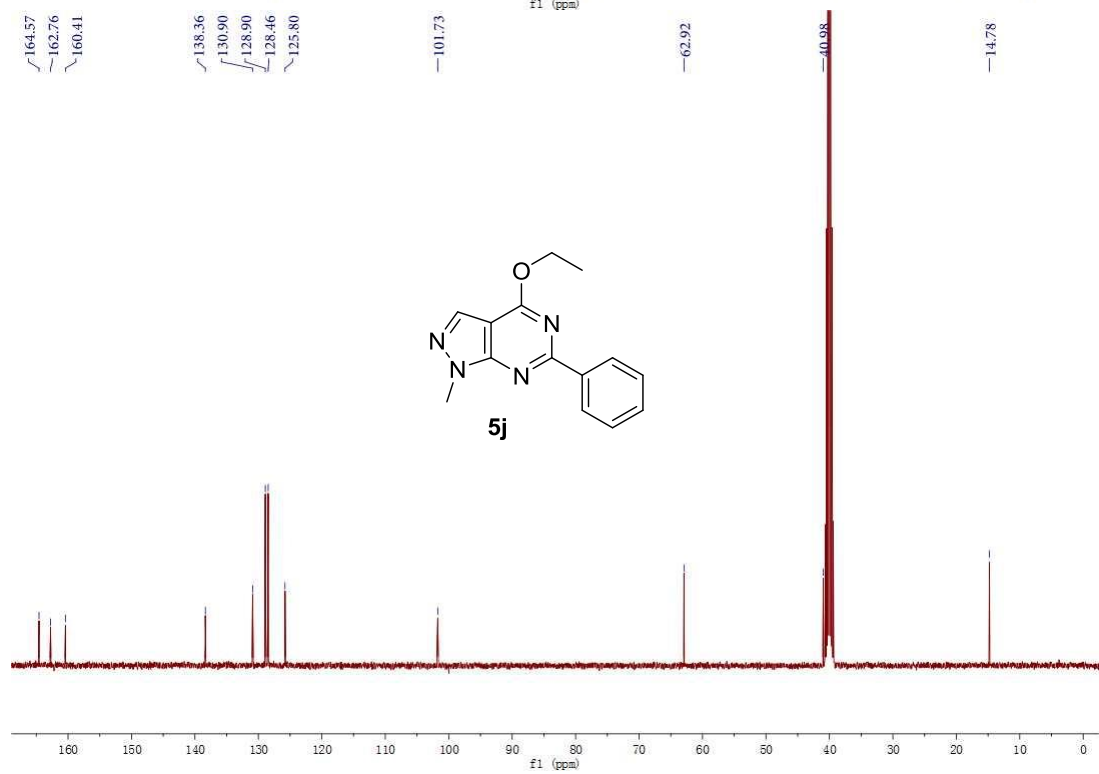
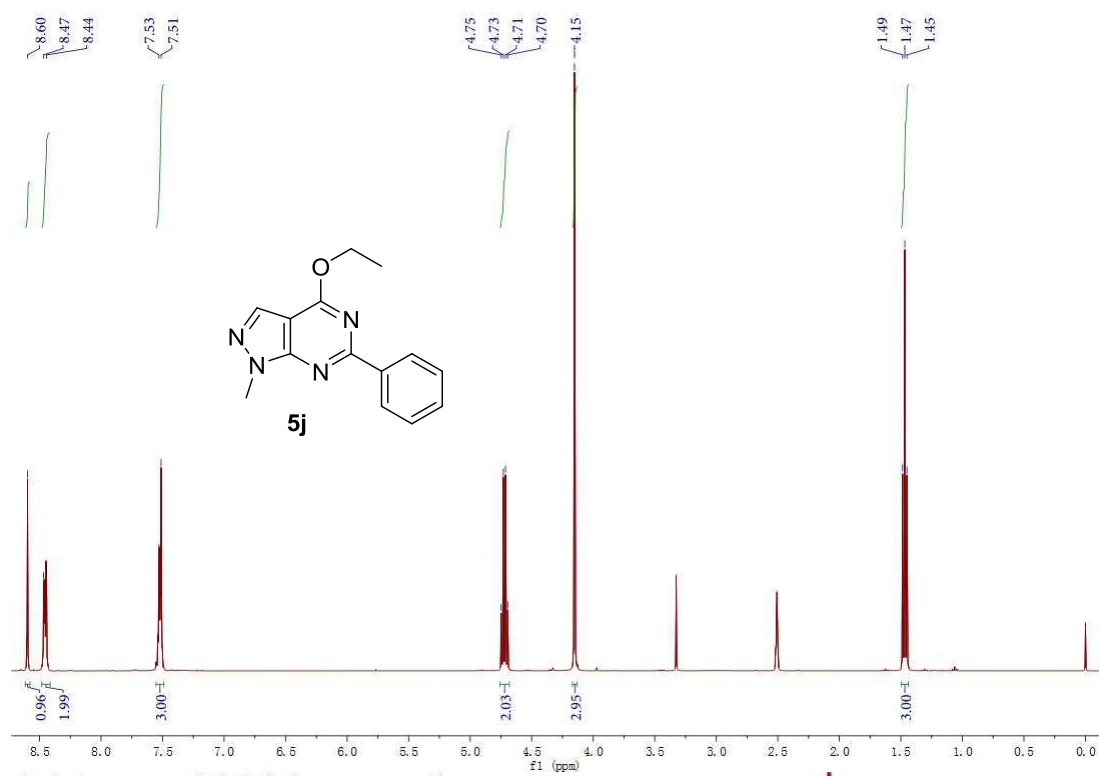


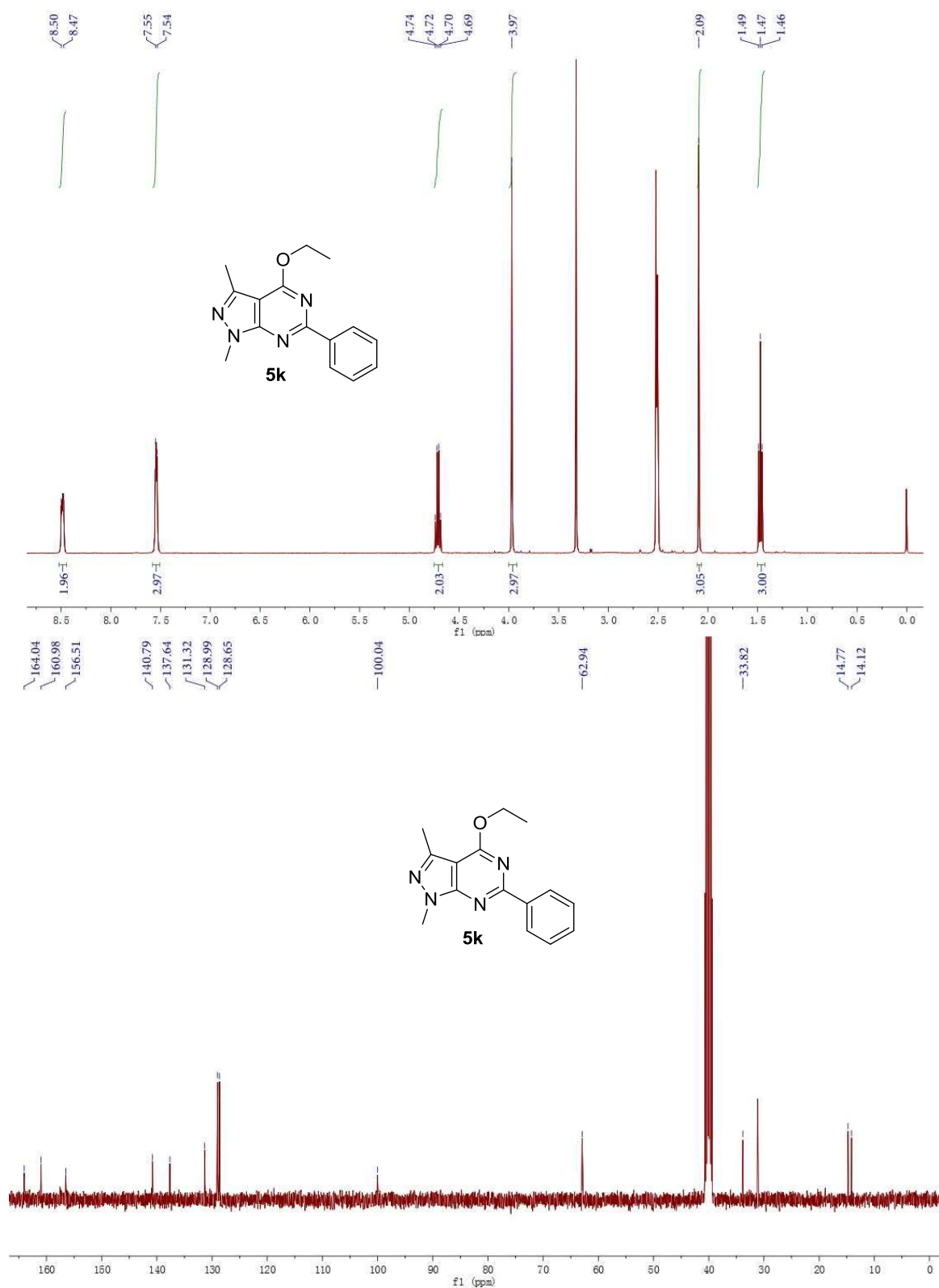


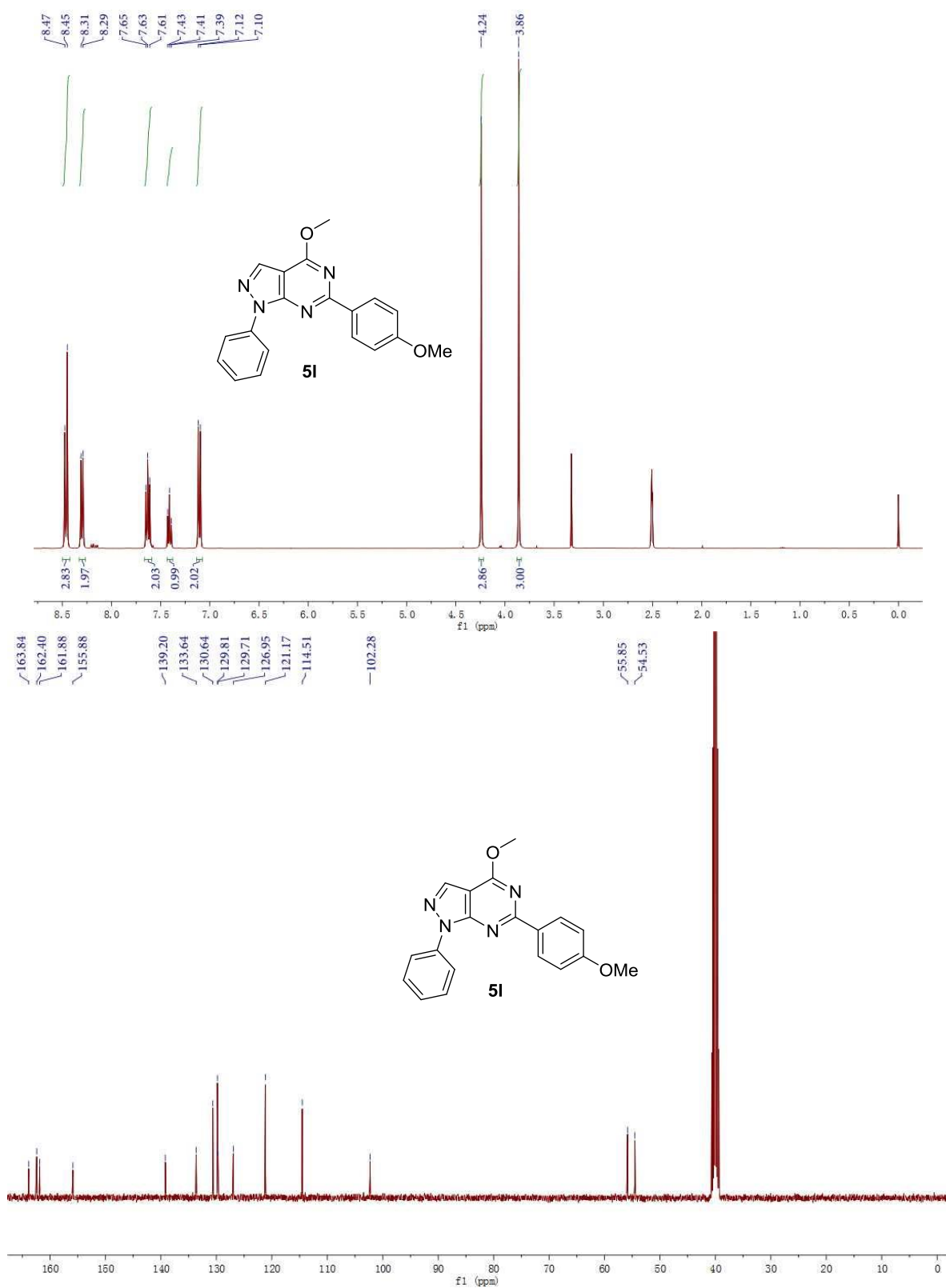


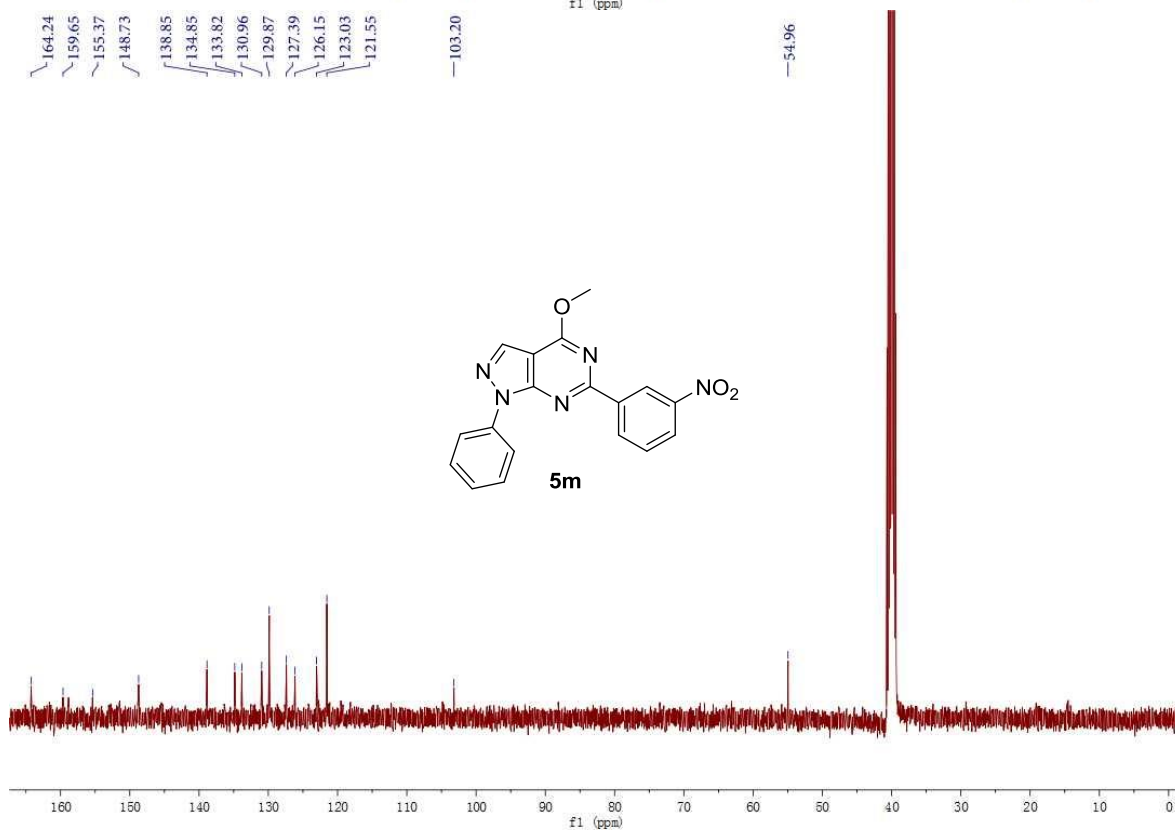
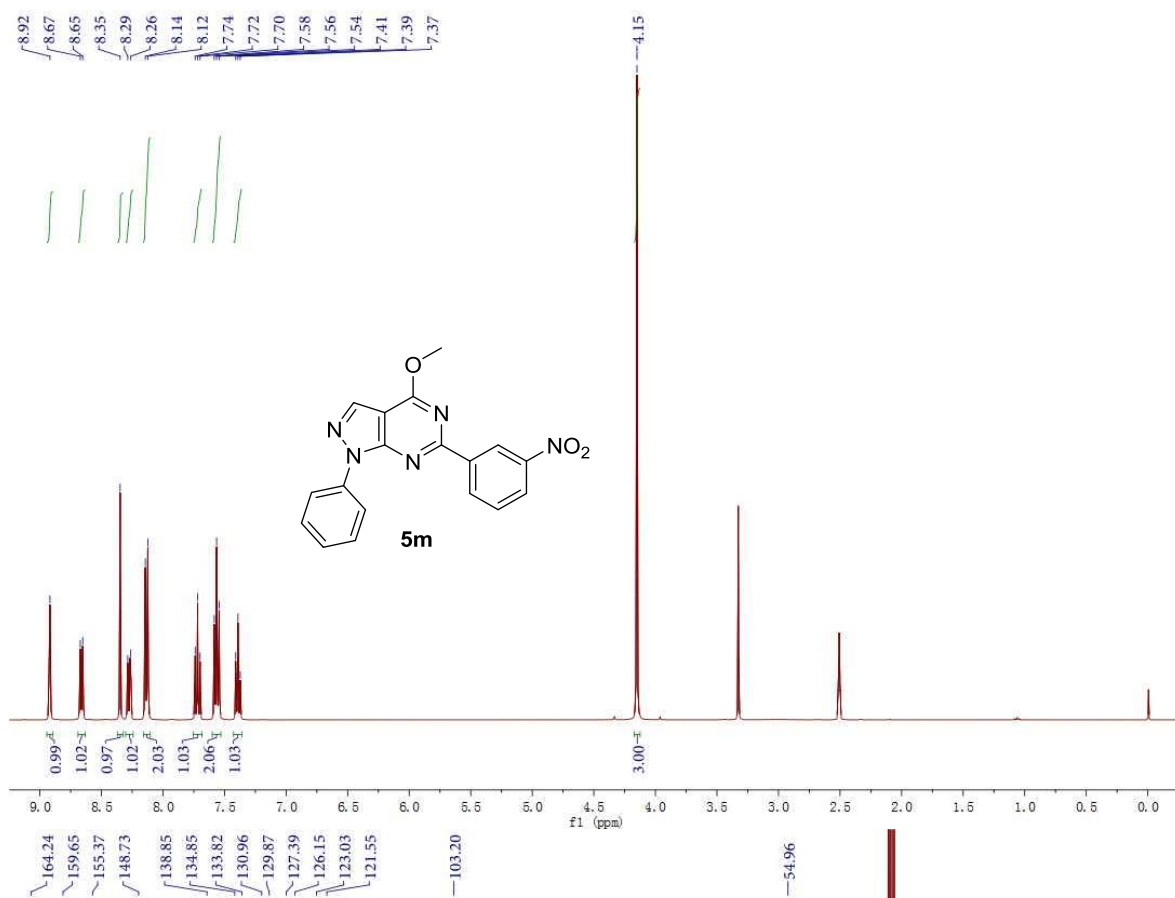


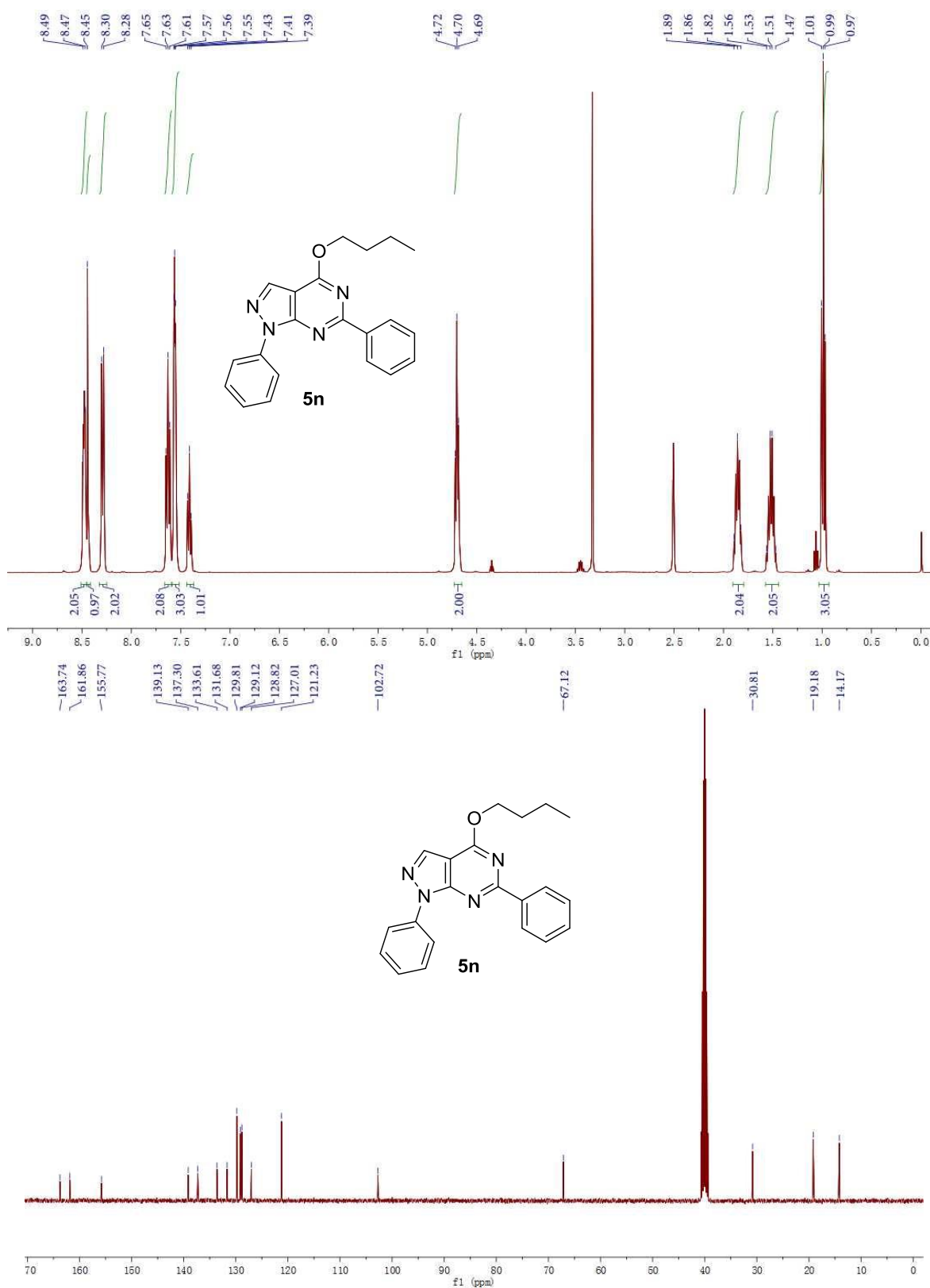


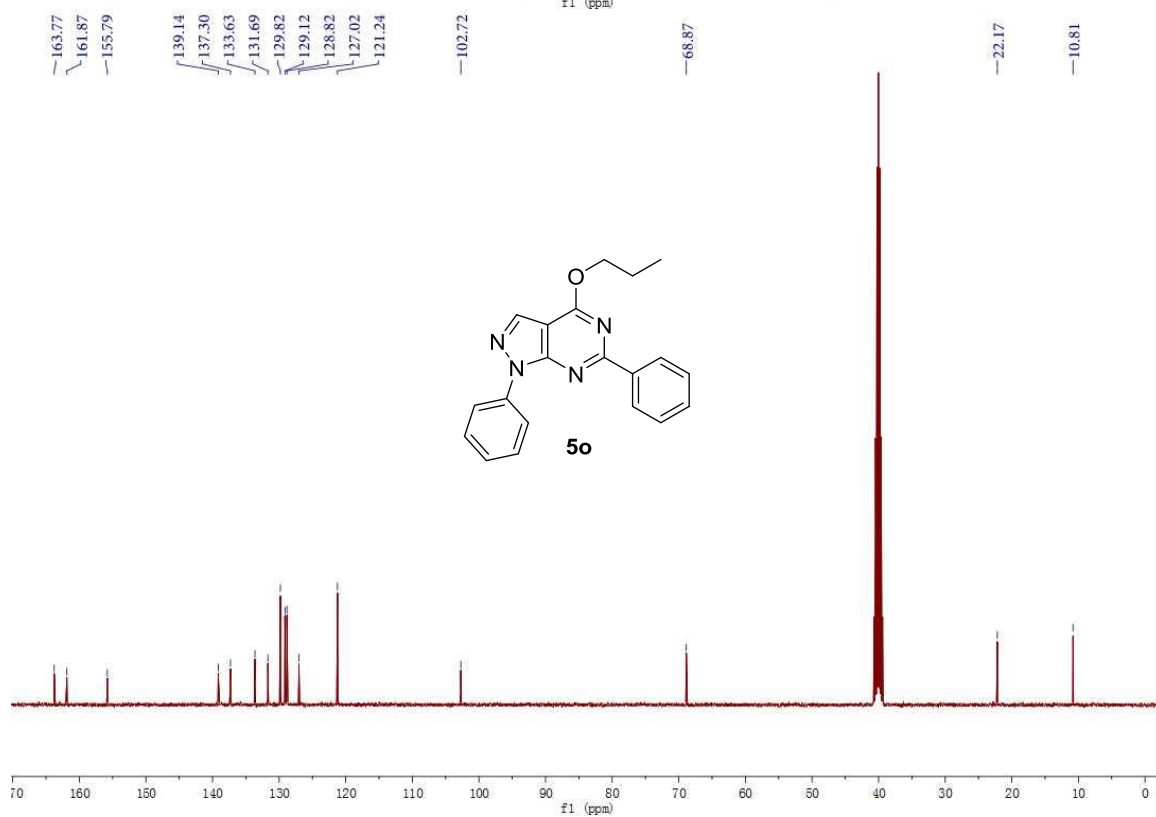
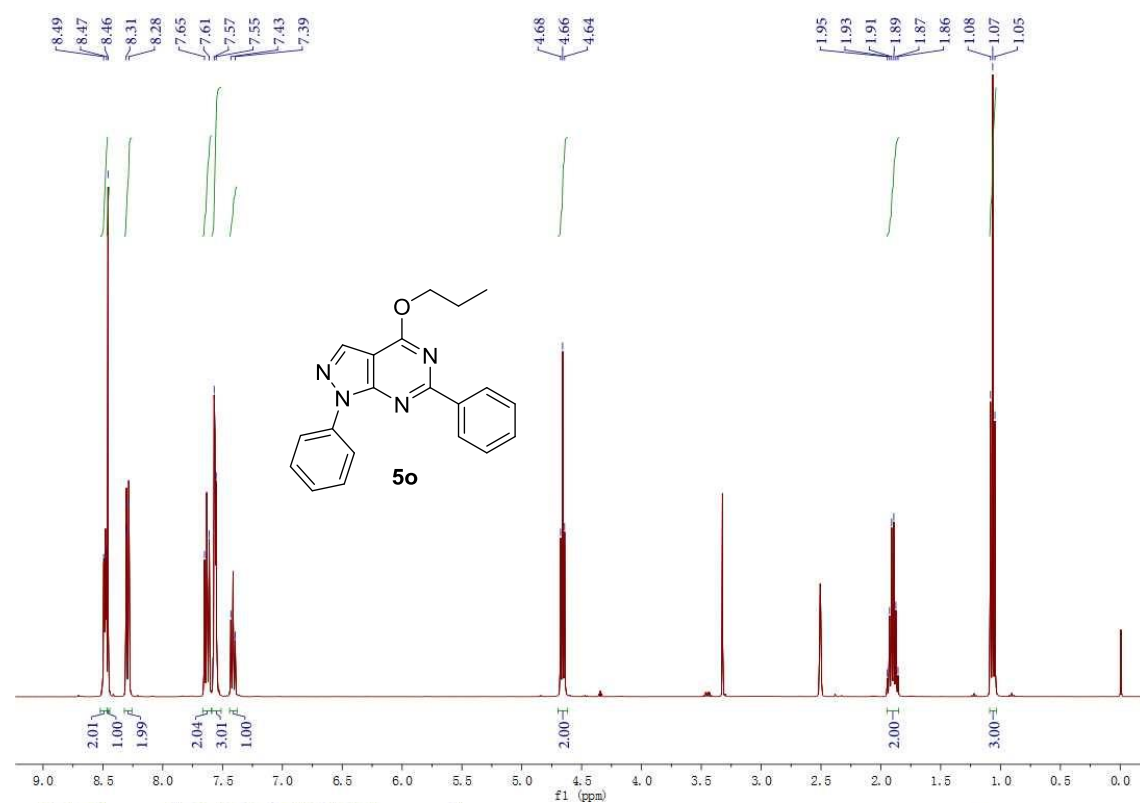


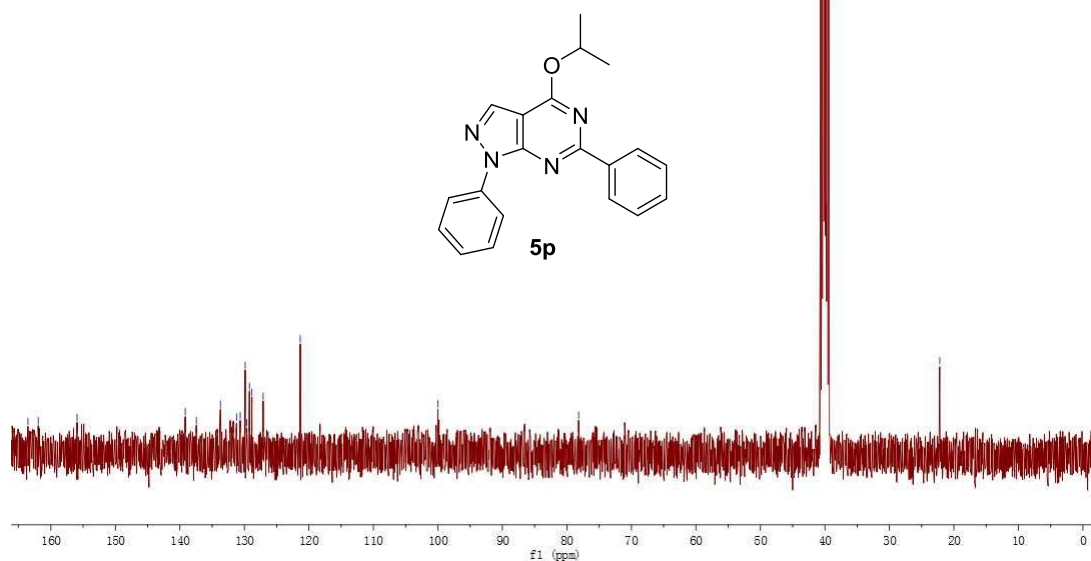
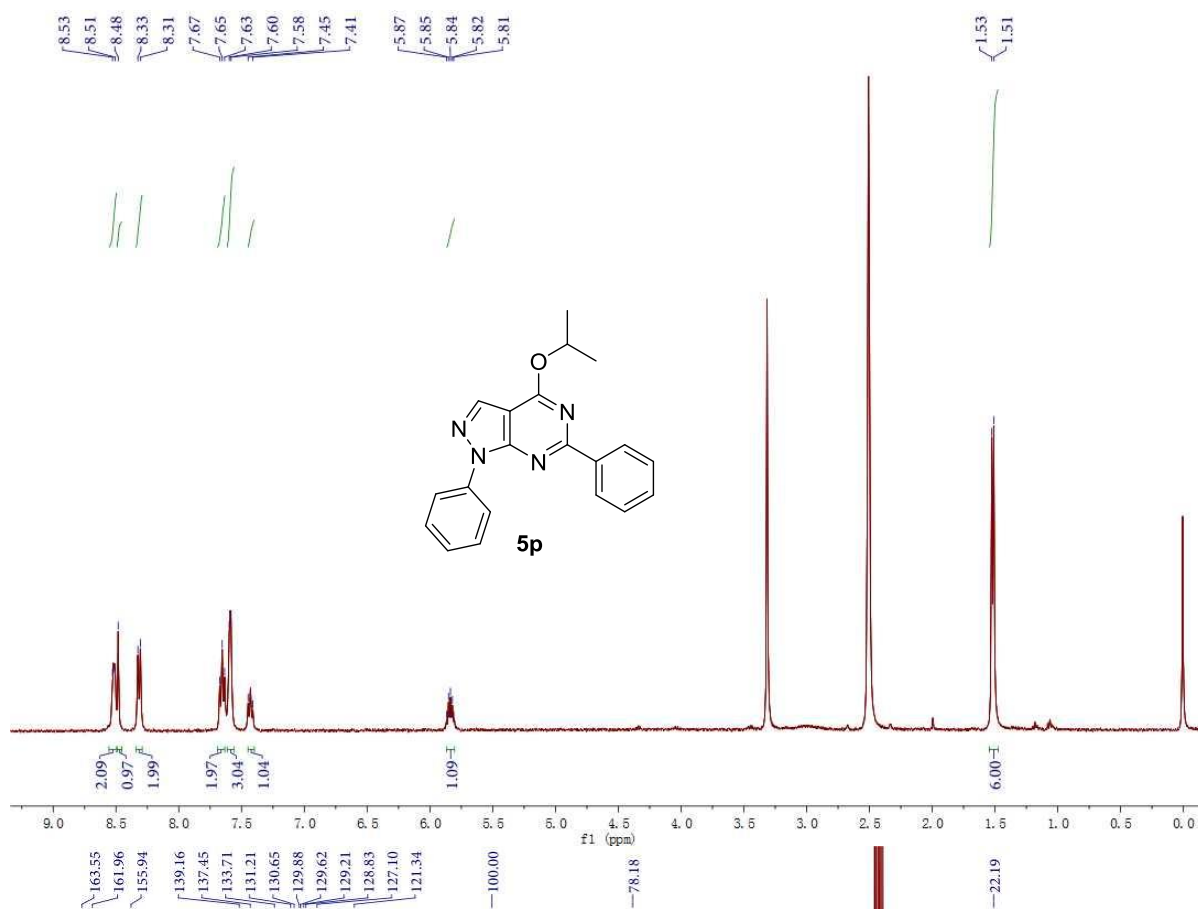












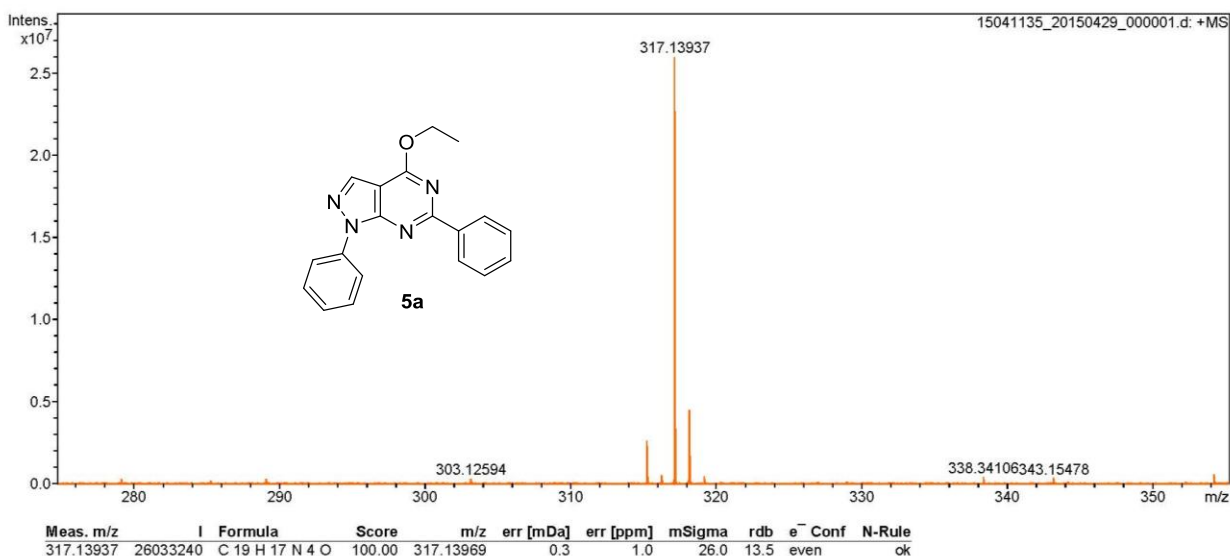
HRMS spectra of 5

Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15041135_20150429_000001.d
Sample Imx-046-1
Comment ESI Positive

Acquisition Date 4/29/2015 10:51:49 AM
Instrument Bruker Apex IV FTMS
Operator Peking University

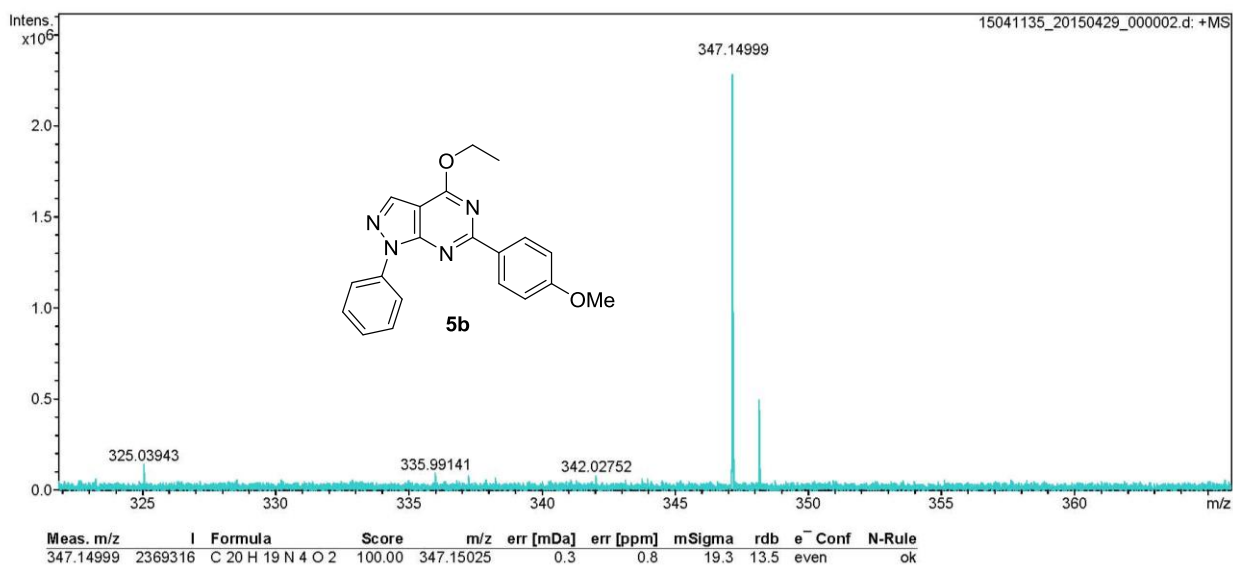


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

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Comment ESI Positive

Acquisition Date 4/29/2015 10:55:56 AM
Instrument Bruker Apex IV FTMS
Operator Peking University

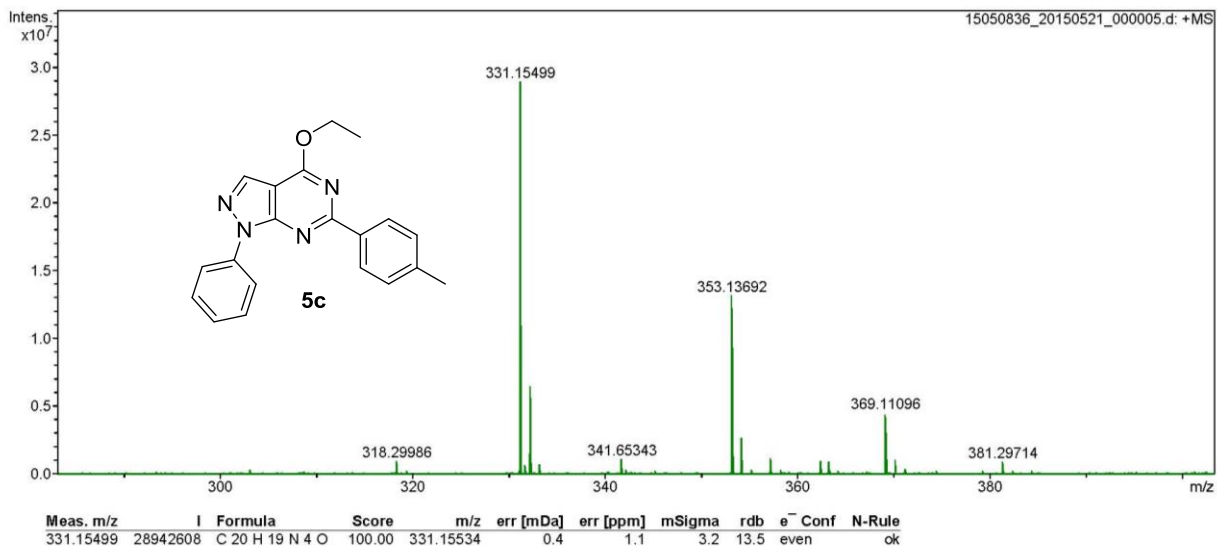


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000005.d
 Sample Lmx-052-6
 Comment ESI Positive

Acquisition Date 5/21/2015 11:04:15 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

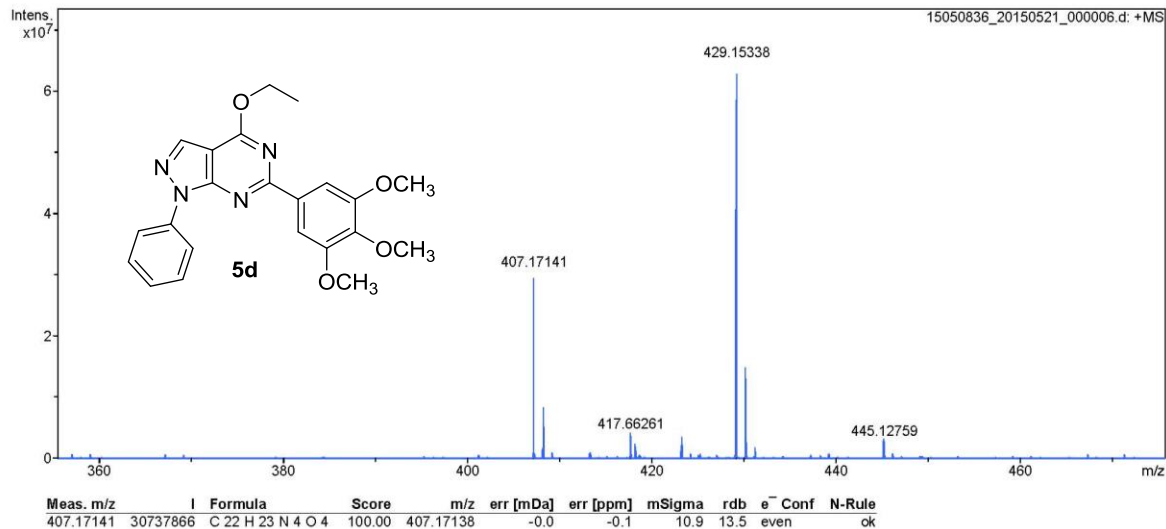


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000006.d
 Sample Lmx-052-4
 Comment ESI Positive

Acquisition Date 5/21/2015 11:05:49 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

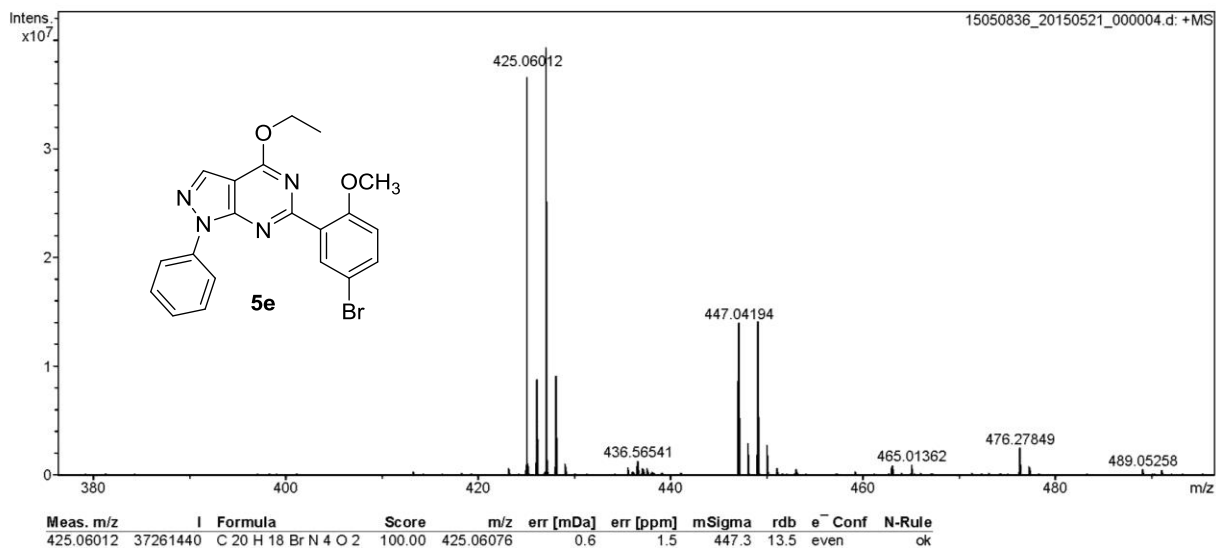


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000004.d
 Sample Lmx-052-5
 Comment ESI Positive

Acquisition Date 5/21/2015 11:00:44 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

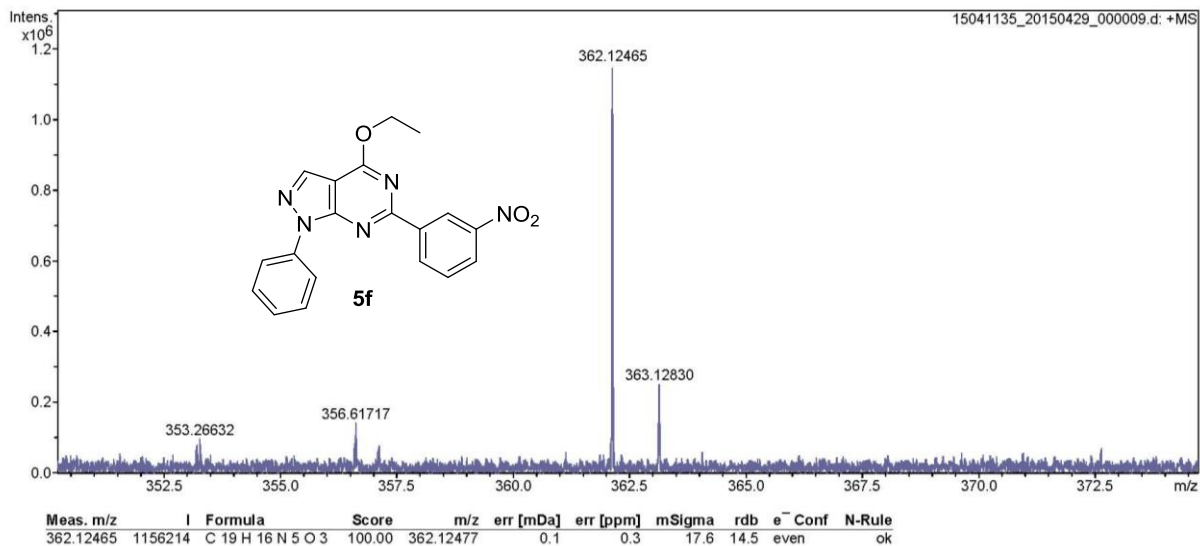


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15041135_20150429_000009.d
 Sample Imx-050-1
 Comment ESI Positive

Acquisition Date 4/29/2015 11:33:49 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

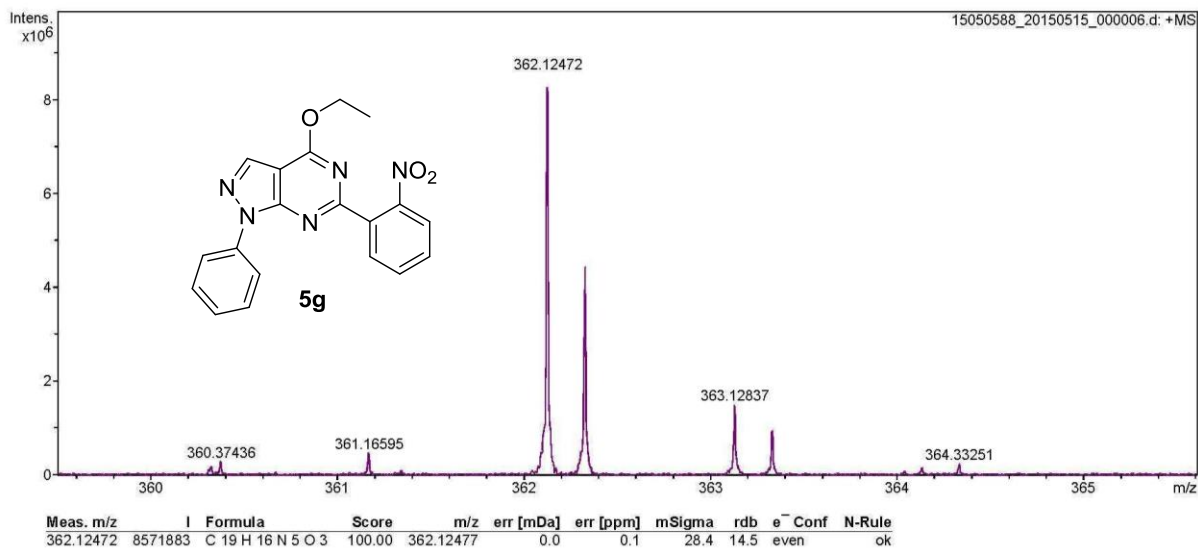


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050588_20150515_000006.d
 Sample Imx-051-2
 Comment ESI Positive

Acquisition Date 5/15/2015 9:46:53 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

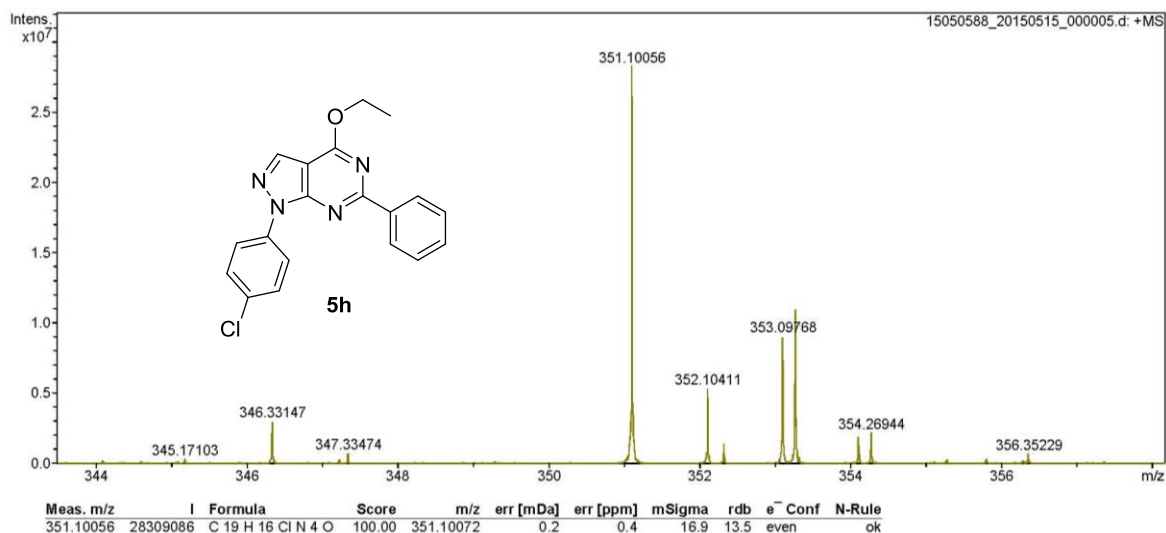


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050588_20150515_000005.d
 Sample Imx-051-2
 Comment ESI Positive

Acquisition Date 5/15/2015 9:45:21 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

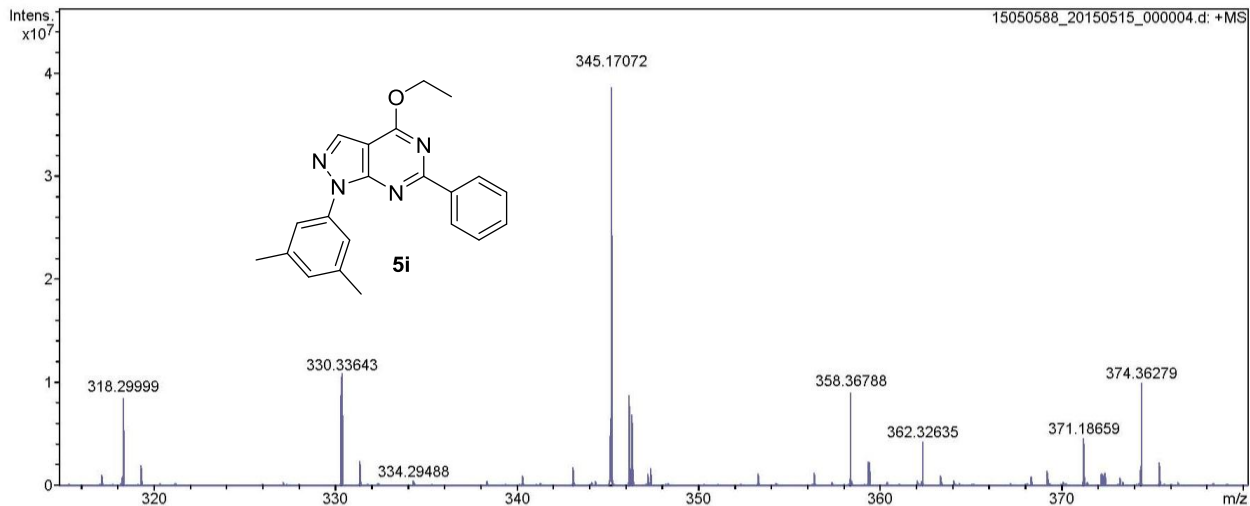


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name: 15050588_20150515_000004.d
 Sample: Imx-051-1
 Comment: ESI Positive

Acquisition Date: 5/15/2015 9:43:49 AM
 Instrument: Bruker Apex IV FTMS
 Operator: Peking University

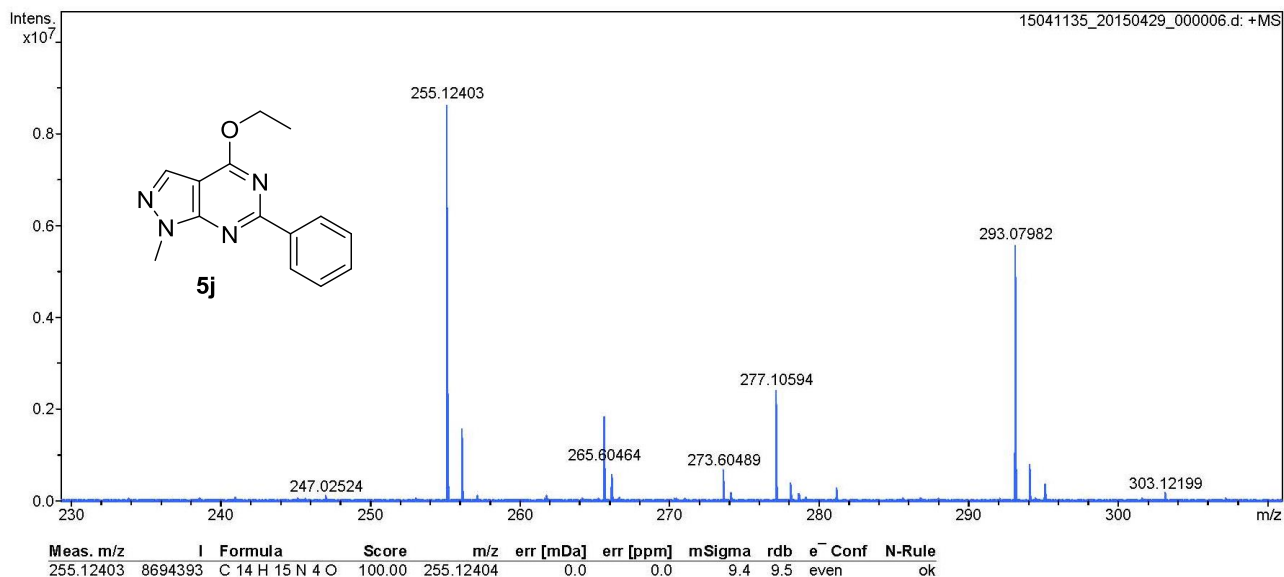


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name: 15041135_20150429_000006.d
 Sample: Imx-050-4
 Comment: ESI Positive

Acquisition Date: 4/29/2015 11:17:29 AM
 Instrument: Bruker Apex IV FTMS
 Operator: Peking University

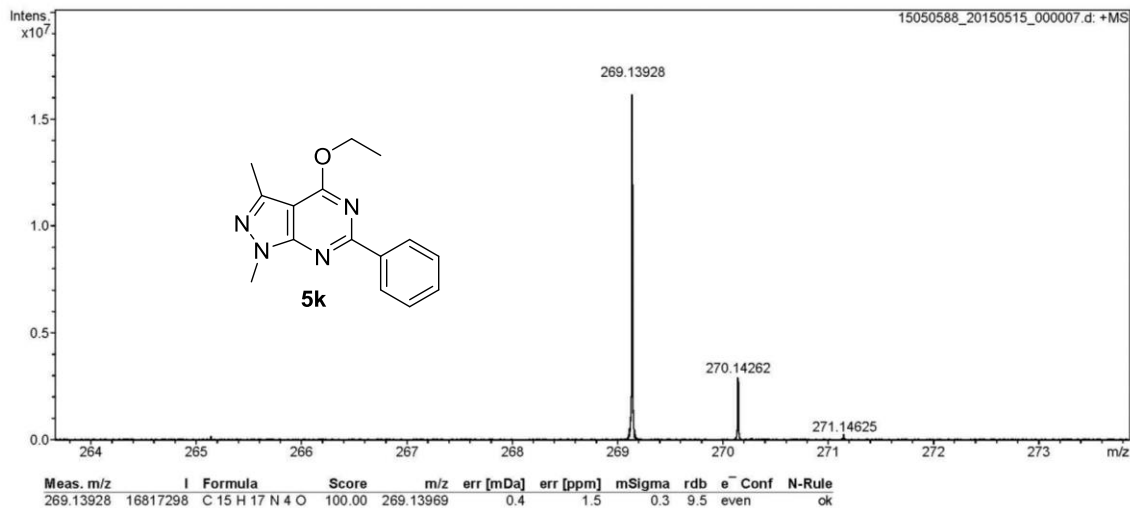


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050588_20150515_000007.d
 Sample Imx-050-7
 Comment ESI Positive

Acquisition Date 5/15/2015 9:49:26 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

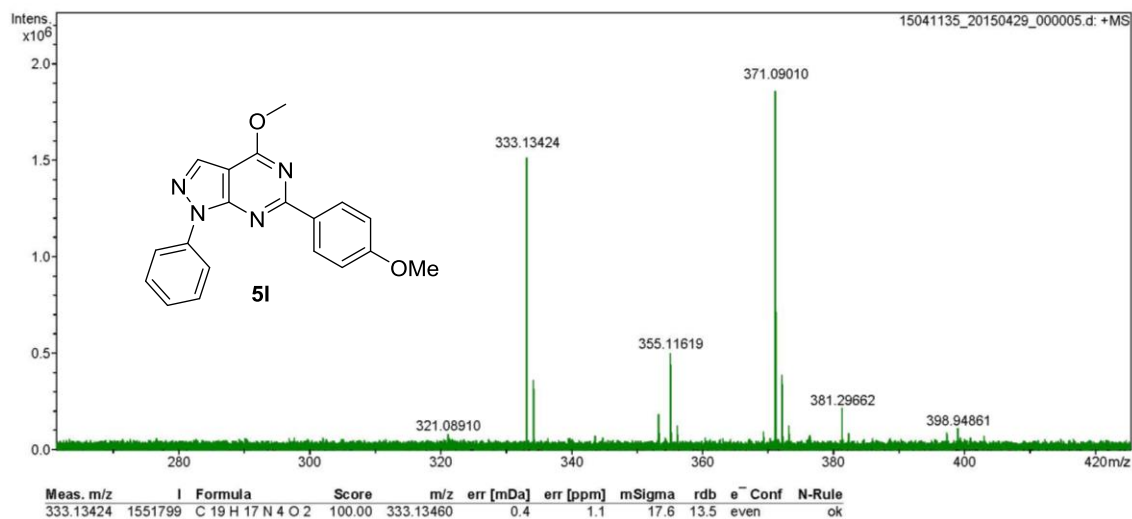


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15041135_20150429_000005.d
 Sample Imx-050-2
 Comment ESI Positive

Acquisition Date 4/29/2015 11:15:25 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

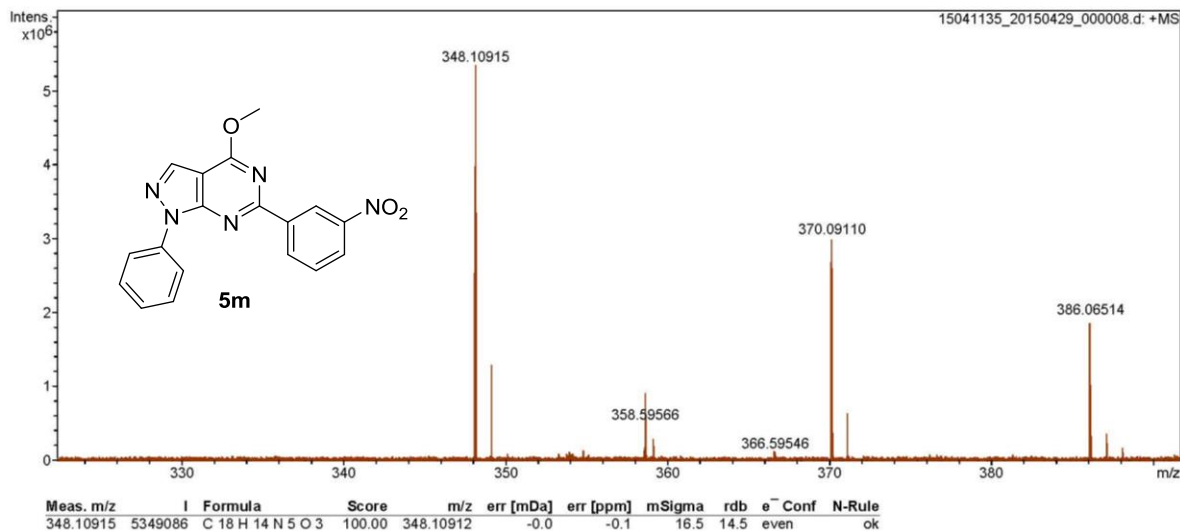


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15041135_20150429_000008.d
 Sample lmx-050-3
 Comment ESI Positive

Acquisition Date 4/29/2015 11:31:45 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

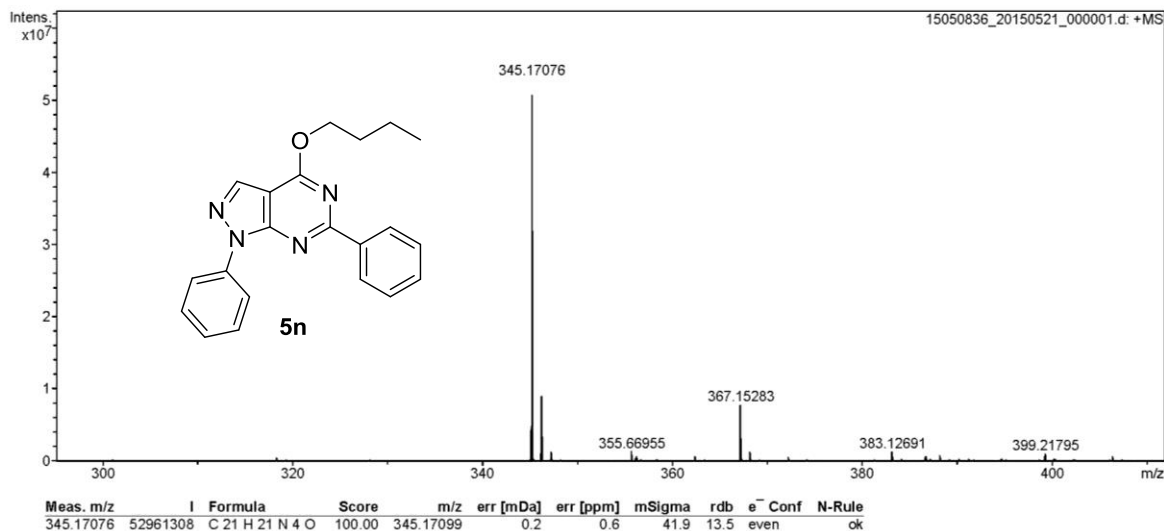


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000001.d
 Sample lmx-052-3
 Comment ESI Positive

Acquisition Date 5/21/2015 10:09:50 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

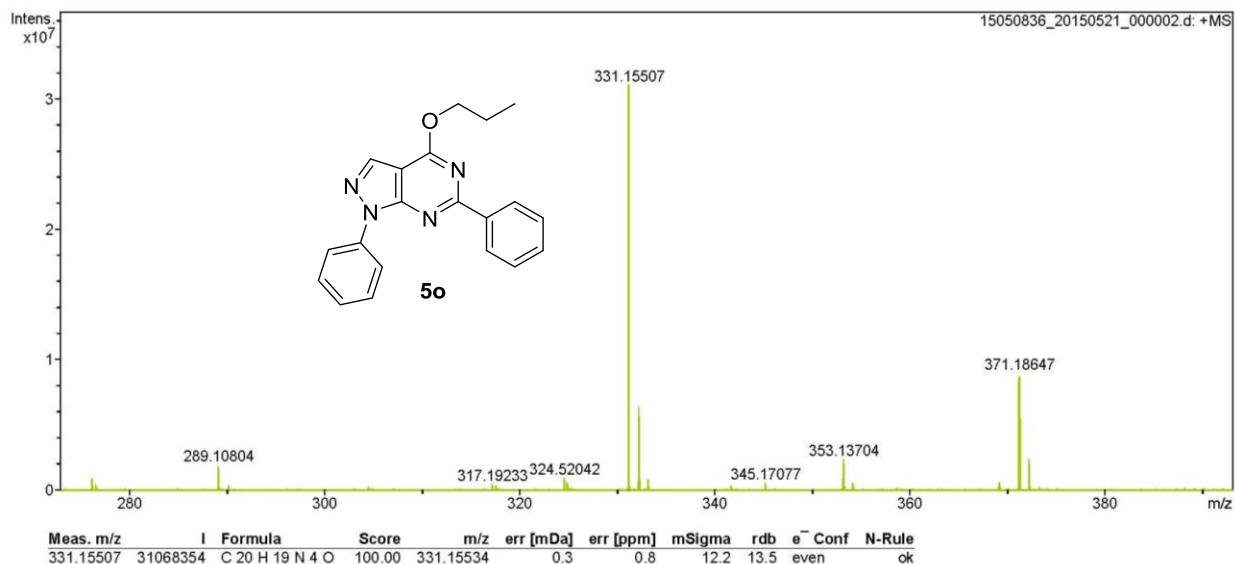


Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000002.d
 Sample Lmx-052-1
 Comment ESI Positive

Acquisition Date 5/21/2015 10:57:37 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University



Peking University Mass Spectrometry Sample Analysis Report

Analysis Info

Analysis Name 15050836_20150521_000003.d
 Sample Lmx-052-2
 Comment ESI Positive

Acquisition Date 5/21/2015 10:59:17 AM
 Instrument Bruker Apex IV FTMS
 Operator Peking University

