

**Palladium(II)-catalyzed *ortho*-C-H olefination of
phenylalanine and phenylethylamine derivatives directed by
removable picolinamide group**

Supporting Information

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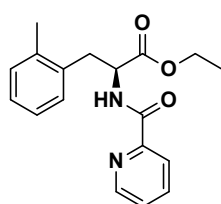
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Preparation and characterization data of the materials

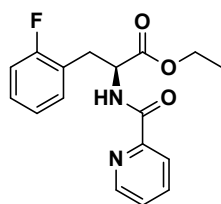
Procedure for the preparation of **1a**

SOCl₂ (2.97 ml, 40.98 mmol) was added dropwise to a suspension of 2-methoxy-*L*-phenylalanine (1.0 g, 5.12 mmol) in ethanol (20 ml) at 0 °C, and the mixture was heated to reflux for 4 h. Then the reaction mixture was concentrated, and the residue obtained was dissolved in ethyl acetate (30 ml), the resulting mixture was washed with saturated aqueous NaHCO₃ solution, water and brine, dried over Na₂SO₄, and concentrated to give (*S*)-ethyl 2-amino-3-(2-methoxyphenyl)propanoate (1.1 g, 96%). To a solution of (*S*)-ethyl 2-amino-3-(2-methoxyphenyl)propanoate (1.1 g, 4.93 mmol), DMAP (180.57 mg, 1.48 mmol) and NEt₃ (1.37 ml, 9.85 mmol) in dichloromethane (30 ml) was added pyridine-2-carbonyl chloride hydrochloride (964.77 mg, 5.42 mmol) by portion at 0 °C, and the mixture was stirred at room temperature for 12 h. Then the resulting mixture was washed with water and brine, dried over Na₂SO₄, and concentrated. The residue was purified by flash chromatography to give **1a** as white solid (1.41 g, 87%). ¹H NMR (400 MHz, CDCl₃) δ 8.88 (d, *J* = 7.2 Hz, 1H), 8.59-8.50 (m, 1H), 8.12 (d, *J* = 7.8 Hz, 1H), 7.85-7.73 (m, 1H), 7.39 (ddd, *J* = 7.6, 4.8, 1.2 Hz, 1H), 7.23-7.11 (m, 2H), 6.93-6.78 (m, 2H), 4.96-4.82 (m, 1H), 4.24-4.07 (m, 2H), 3.88 (s, 3H), 3.37-3.16 (m, 2H), 1.22 (t, *J* = 7.1 Hz, 3H); ¹³C NMR (101 MHz, CDCl₃) δ 171.73, 164.36, 157.66, 149.70, 148.15, 137.22, 131.27, 128.57, 126.23, 124.93, 122.29, 120.69, 110.22, 61.23, 55.35, 53.86, 32.65, 14.22; LRMS (ESI): 329 [M+H]⁺; HRMS (ESI) calcd for C₁₈H₂₁N₂O₄ [M+H]⁺ 329.1501, found: 329.1498.

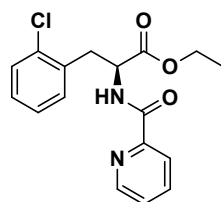
Compounds **1l**, **1n**, **1o**, **1p**, **1q**, **1r**, **1s**, **1t**, **1u**, **4a**, **4d**, **4g**, **4h**, **4i**, **4j** and **4k** were prepared following the similar procedure carried out for **1a**.



(*S*)-ethyl-2-(picolinamido)-3-(*o*-tolyl)propanoate (**1l**): ^1H NMR (400 MHz, CDCl_3) δ 8.61-8.49 (m, 2H), 8.18-8.11 (m, 1H), 7.88-7.78 (m, 1H), 7.43 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.20-7.00 (m, 4H), 5.06-4.94 (m, 1H), 4.21-4.03 (m, 2H), 3.30-3.14 (m, 2H), 2.39 (s, 3H), 1.17 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.95, 164.08, 149.42, 148.36, 137.38, 136.85, 134.65, 130.61, 130.03, 127.22, 126.45, 126.05, 122.36, 61.50, 52.86, 36.38, 19.54, 14.12; LRMS (ESI): 313 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{18}\text{H}_{21}\text{N}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 313.1552, found: 313.1543.

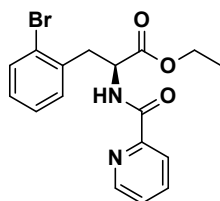


(*S*)-ethyl-3-(2-fluorophenyl)-2-(picolinamido)propanoate (**1m**): ^1H NMR (400 MHz, CDCl_3) δ 8.62-8.49 (m, 2H), 8.18-8.10 (m, 1H), 7.87-7.78 (m, 1H), 7.42 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.25-7.16 (m, 2H), 7.08-6.94 (m, 2H), 5.12-4.97 (m, 1H), 4.28-4.11 (m, 2H), 3.36-3.20 (m, 2H), 1.23 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.40, 164.14, 161.53 (d, $J_{\text{C-F}} = 245.7$ Hz), 149.41, 148.39, 137.39, 131.74 (d, $J_{\text{C-F}} = 4.3$ Hz), 129.02 (d, $J_{\text{C-F}} = 8.1$ Hz), 126.46, 124.22 (d, $J_{\text{C-F}} = 3.3$ Hz), 123.40 (d, $J_{\text{C-F}} = 15.9$ Hz), 122.36, 115.46 (d, $J_{\text{C-F}} = 22.2$ Hz), 61.72, 52.82, 31.92, 14.15; LRMS (ESI): 317 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{17}\text{H}_{18}\text{FN}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 317.1301, found: 317.1299.

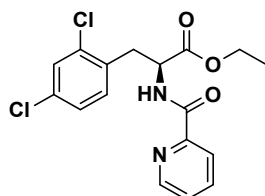


(*S*)-ethyl-3-(2-chlorophenyl)-2-(picolinamido)propanoate (**1o**): ^1H NMR (400 MHz, CDCl_3) δ 8.61-8.48 (m, 2H), 8.12 (d, $J = 7.8$ Hz, 1H), 7.85-7.76 (m, 1H), 7.44-7.38 (m, 1H), 7.36-7.30 (m, 1H), 7.28-7.23 (m, 1H), 7.19-7.11 (m, 2H), 5.13-5.04 (m, 1H), 4.24-4.09 (m, 2H), 3.45-3.27 (m, 2H), 1.19 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.54, 164.13, 149.39, 148.36, 137.36, 134.69, 134.43, 131.45, 129.71,

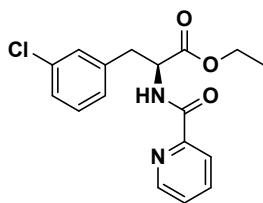
128.57, 126.93, 126.45, 122.36, 61.69, 52.58, 36.22, 14.13; LRMS (ESI): 335 ([M+H]⁺, (Cl³⁷)), 333 ([M+H]⁺, (Cl³⁵)); HRMS (ESI) calcd for C₁₇H₁₈ClN₂O₃ [M+H]⁺ 333.1006, found: 333.1001.



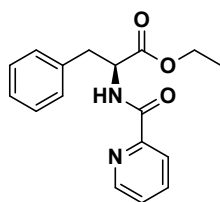
(*S*)-ethyl-3-(2-bromophenyl)-2-(picolinamido)propanoate (**1p**): ¹H NMR (400 MHz, CDCl₃) δ 8.62-8.50 (m, 2H), 8.15-8.09 (m, 1H), 7.86-7.77 (m, 1H), 7.53 (dd, *J* = 8.0, 1.2 Hz, 1H), 7.42 (ddd, *J* = 7.6, 4.8, 1.2 Hz, 1H), 7.28 (dd, *J* = 7.6, 1.7 Hz, 1H), 7.23-7.17 (m, 1H), 7.12-7.04 (m, 1H), 5.16-5.04 (m, 1H), 4.24-4.08 (m, 2H), 3.49-3.22 (m, 2H), 1.20 (t, *J* = 7.1 Hz, 3H); ¹³C NMR (101 MHz, CDCl₃) δ 171.49, 164.12, 149.36, 148.34, 137.32, 136.18, 133.03, 131.36, 128.75, 127.54, 126.43, 125.12, 122.32, 61.67, 52.60, 38.69, 14.11; LRMS (ESI): 379 ([M+H]⁺, (Br⁸¹)), 377 ([M+H]⁺, (Br⁷⁹)); HRMS (ESI) calcd for C₁₇H₁₈BrN₂O₃ [M+H]⁺ 377.0501, found: 377.0493.



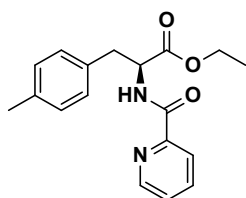
(*S*)-ethyl-3-(2,4-dichlorophenyl)-2-(picolinamido)propanoate (**1q**): ¹H NMR (400 MHz, CDCl₃) δ 8.63-8.49 (m, 2H), 8.13 (d, *J* = 7.7 Hz, 1H), 7.88-7.79 (m, 1H), 7.47-7.40 (m, 1H), 7.36 (d, *J* = 2.1 Hz, 1H), 7.21 (d, *J* = 8.3 Hz, 1H), 7.14 (dd, *J* = 8.3, 2.1 Hz, 1H), 5.13-4.99 (m, 1H), 4.27-4.08 (m, 2H), 3.39 (dd, *J* = 14.0, 6.4 Hz, 1H), 3.27 (dd, *J* = 14.0, 7.7 Hz, 1H), 1.23 (t, *J* = 7.1 Hz, 3H); ¹³C NMR (101 MHz, CDCl₃) δ 171.28, 164.11, 149.24, 148.36, 137.47, 135.36, 133.61, 133.11, 132.21, 129.51, 127.24, 126.56, 122.42, 61.86, 52.38, 35.69, 14.17; LRMS (ESI): 367 [M+H]⁺; HRMS (ESI) calcd for C₁₇H₁₇Cl₂N₂O₃ [M+H]⁺ 367.0616, found: 367.0613.



(*S*)-ethyl-3-(3-chlorophenyl)-2-(picolinamido)propanoate (**1r**): ^1H NMR (400 MHz, CDCl_3) δ 8.62-8.49 (m, 2H), 8.20-8.11 (m, 1H), 7.90-7.78 (m, 1H), 7.44 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.23-7.16 (m, 3H), 7.13-7.05 (m, 1H), 5.08-4.96 (m, 1H), 4.19 (q, $J = 7.1$ Hz, 2H), 3.28-3.13 (m, 2H), 1.24 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.16, 164.08, 149.33, 148.43, 138.31, 137.46, 134.36, 129.87, 129.69, 127.67, 127.36, 126.56, 122.40, 61.76, 53.43, 38.18, 14.25; LRMS (ESI): 335 ($[\text{M}+\text{H}]^+$, (Cl^{37})), 333 ($[\text{M}+\text{H}]^+$, (Cl^{35})); HRMS (ESI) calcd for $\text{C}_{17}\text{H}_{18}\text{ClN}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 333.1006, found: 333.1001.

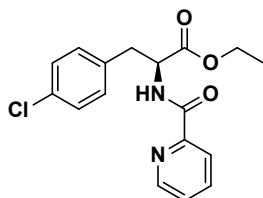


(*S*)-ethyl-3-phenyl-2-(picolinamido)propanoate (**1s**): ^1H NMR (400 MHz, CDCl_3) δ 8.59-8.53 (m, 1H), 8.50 (d, $J = 8.0$ Hz, 1H), 8.19-8.11 (m, 1H), 7.87-7.78 (m, 1H), 7.42 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.30-7.18 (m, 5H), 5.10-4.97 (m, 1H), 4.18 (q, $J = 7.2$ Hz, 2H), 3.29-3.16 (m, 2H), 1.22 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.48, 164.08, 149.48, 148.43, 137.34, 136.23, 129.47, 128.62, 127.12, 126.44, 122.34, 61.56, 53.61, 38.52, 14.22; LRMS (ESI): 299 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{17}\text{H}_{19}\text{N}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 299.1396, found: 299.1395.

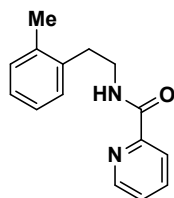


(*S*)-ethyl-2-(picolinamido)-3-(*p*-tolyl)propanoate (**1t**): ^1H NMR (400 MHz, CDCl_3) δ 8.58-8.54 (m, 1H), 8.50 (d, $J = 8.1$ Hz, 1H), 8.19-8.13 (m, 1H), 7.88-7.79 (m, 1H), 7.42 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.12-7.04 (m, 4H), 5.06-4.95 (m, 1H), 4.18 (q, J

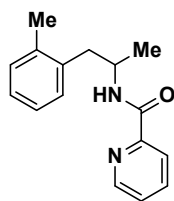
= 7.1 Hz, 2H), 3.26-3.10 (m, 2H), 2.30 (s, 3H), 1.24 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.53, 164.04, 149.51, 148.38, 137.37, 136.65, 133.06, 129.33, 126.42, 122.37, 61.53, 53.68, 38.04, 21.19, 14.26; LRMS (ESI): 313 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{18}\text{H}_{21}\text{N}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 313.1552, found: 313.1550.



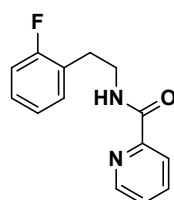
(*S*)-ethyl-3-(4-chlorophenyl)-2-(picolinamido)propanoate (**1u**): ^1H NMR (400 MHz, CDCl_3) δ 8.59-8.54 (m, 1H), 8.50 (d, $J = 8.1$ Hz, 1H), 8.19-8.12 (m, 1H), 7.88-7.80 (m, 1H), 7.43 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.26-7.21 (m, 2H), 7.16-7.07 (m, 2H), 5.08-4.95 (m, 1H), 4.23-4.14 (m, 2H), 3.30-3.10 (m, 2H), 1.24 (t, $J = 7.1$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 171.23, 164.05, 149.33, 148.43, 137.48, 134.78, 133.06, 130.84, 128.78, 126.57, 122.42, 61.74, 53.45, 37.83, 14.28; LRMS (ESI): 335 ($[\text{M}+\text{H}]^+$, (Cl^{37})), 333 ($[\text{M}+\text{H}]^+$, (Cl^{35})); HRMS (ESI) calcd for $\text{C}_{17}\text{H}_{18}\text{ClN}_2\text{O}_3$ $[\text{M}+\text{H}]^+$ 333.1006, found: 333.1007.



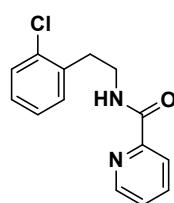
N-(2-methylphenethyl)picolinamide (**4a**): ^1H NMR (400 MHz, CDCl_3) δ 8.58-8.47 (m, 1H), 8.29-8.09 (m, 2H), 7.89-7.81 (m, 1H), 7.42 (ddd, $J = 7.6, 4.8, 1.1$ Hz, 1H), 7.23-7.12 (m, 4H), 3.74-3.66 (m, 2H), 2.99-2.93 (m, 2H), 2.38 (s, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 164.45, 150.06, 148.16, 137.47, 137.18, 136.51, 130.54, 129.44, 126.73, 126.25, 126.22, 122.29, 39.81, 33.48, 19.46; LRMS (ESI): 241 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{15}\text{H}_{17}\text{N}_2\text{O}$ $[\text{M}+\text{H}]^+$ 241.1341, found: 241.1339.



N-(1-(*o*-tolyl)propan-2-yl)picolinamide (**4d**): ^1H NMR (400 MHz, CDCl_3) δ 8.59-8.50 (m, 1H), 8.25-8.15 (m, 1H), 8.03 (d, $J = 7.6$ Hz, 1H), 7.88-7.79 (m, 1H), 7.41 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.22-7.08 (m, 4H), 4.49-4.36 (m, 1H), 3.10 (dd, $J = 13.6, 5.8$ Hz, 1H), 2.74 (dd, $J = 13.6, 8.3$ Hz, 1H), 2.43 (s, 3H), 1.26 (d, $J = 6.6$ Hz, 3H); ^{13}C NMR (101 MHz, CDCl_3) δ 163.64, 150.17, 148.11, 137.49, 136.81, 136.72, 130.53, 130.41, 126.66, 126.18, 125.91, 122.29, 45.88, 40.55, 20.23, 19.73; LRMS (ESI): 255 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{16}\text{H}_{19}\text{N}_2\text{O}$ $[\text{M}+\text{H}]^+$ 255.1497, found: 255.1493.

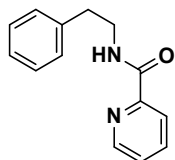


N-(2-fluorophenethyl)picolinamide (**4g**): ^1H NMR (400 MHz, CDCl_3) δ 8.58-8.48 (m, 1H), 8.31-8.06 (m, 2H), 7.89-7.80 (m, 1H), 7.41 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.29-7.17 (m, 2H), 7.15-6.96 (m, 2H), 3.77-3.70 (m, 2H), 3.00 (t, $J = 7.2$ Hz, 2H); ^{13}C NMR (101 MHz, CDCl_3) δ 164.47, 161.44 (d, $J_{\text{C-F}} = 245.2$ Hz), 150.00, 148.16, 137.47, 131.22 (d, $J_{\text{C-F}} = 4.8$ Hz), 128.42 (d, $J_{\text{C-F}} = 8.1$ Hz), 126.24, 125.97 (d, $J_{\text{C-F}} = 15.9$ Hz), 124.29 (d, $J_{\text{C-F}} = 3.6$ Hz), 122.31, 115.49 (d, $J_{\text{C-F}} = 22.0$ Hz), 39.65, 29.49; LRMS (ESI): 245 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{14}\text{H}_{14}\text{FN}_2\text{O}$ $[\text{M}+\text{H}]^+$ 245.1090, found: 245.1092.

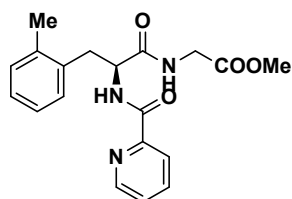


N-(2-chlorophenethyl)picolinamide (**4h**): ^1H NMR (400 MHz, CDCl_3) δ 8.57-8.48 (m, 1H), 8.26-8.08 (m, 2H), 7.89-7.78 (m, 1H), 7.41 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.39-7.34 (m, 1H), 7.31-7.24 (m, 1H), 7.23-7.14 (m, 2H), 3.79-3.71 (m, 2H), 3.09 (t, $J =$

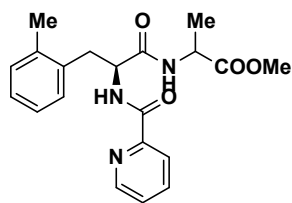
7.3 Hz, 2H); ^{13}C NMR (101 MHz, CDCl_3) δ 164.49, 150.01, 148.15, 137.50, 136.71, 134.33, 131.11, 129.76, 128.15, 127.09, 126.26, 122.33, 39.22, 33.80; LRMS (ESI): 263 ($[\text{M}+\text{H}]^+$, (Cl^{37})), 261 ($[\text{M}+\text{H}]^+$, (Cl^{35})); HRMS (ESI) calcd for $\text{C}_{14}\text{H}_{14}\text{ClN}_2\text{O}$ $[\text{M}+\text{H}]^+$ 261.0795, found: 261.0789.



N-phenethylpicolinamide (**4i**): ^1H NMR (400 MHz, CDCl_3) δ 8.54-8.47 (m, 1H), 8.26-8.04 (m, 2H), 7.89-7.79 (m, 1H), 7.41 (ddd, $J = 7.6, 4.8, 1.2$ Hz, 1H), 7.35-7.29 (m, 2H), 7.29-7.20 (m, 3H), 3.77-3.70 (m, 2H), 2.95 (t, $J = 7.3$ Hz, 2H); ^{13}C NMR (101 MHz, CDCl_3) δ 164.39, 150.04, 148.14, 139.09, 137.47, 128.91, 128.73, 126.59, 126.21, 122.31, 40.88, 36.08; LRMS (ESI): 227 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{14}\text{H}_{15}\text{N}_2\text{O}$ $[\text{M}+\text{H}]^+$ 227.1184, found: 227.1177.



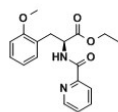
(*S*)-methyl-2-(2-(picolinamido)-3-(*o*-tolyl)propanamido)acetate (**4j**): ^1H NMR (400 MHz, DMSO) δ 8.74-8.61 (m, 3H), 8.02-7.94 (m, 2H), 7.65-7.57 (m, 1H), 7.19-6.98 (m, 4H), 4.92-4.79 (m, 1H), 3.88 (d, $J = 5.8$ Hz, 2H), 3.63 (s, 3H), 3.15 (dd, $J = 14.2, 5.3$ Hz, 1H), 3.05 (dd, $J = 14.2, 8.8$ Hz, 1H), 2.31 (s, 3H); ^{13}C NMR (101 MHz, DMSO) δ 171.44, 170.08, 163.12, 149.16, 148.50, 137.91, 136.35, 135.58, 129.96, 129.70, 126.79, 126.46, 125.55, 121.88, 52.70, 51.74, 40.67, 35.37, 19.11; LRMS (ESI): 356 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{19}\text{H}_{22}\text{N}_3\text{O}_4$ $[\text{M}+\text{H}]^+$ 356.1610, found: 356.1608.



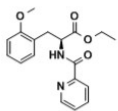
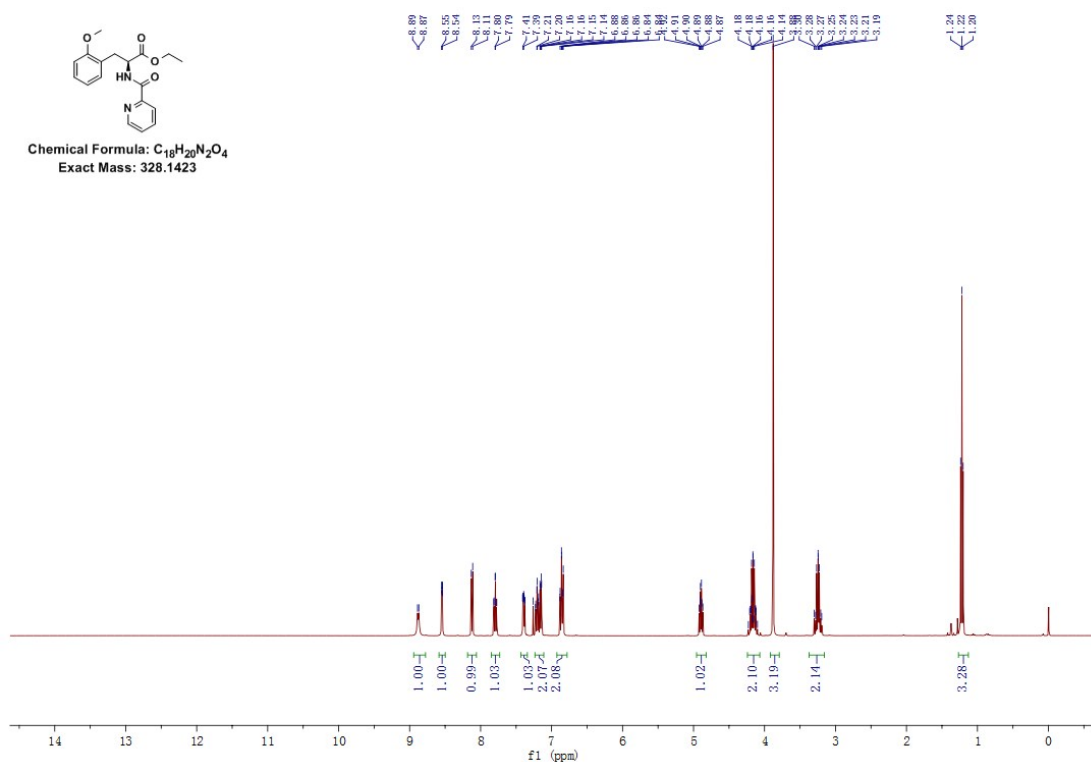
Methyl-2-((*S*)-2-(picolinamido)-3-(*o*-tolyl)propanamido)propanoate (**4k**): ^1H NMR (400 MHz, DMSO) δ 8.71-8.57 (m, 3H), 8.03-7.93 (m, 2H), 7.65-7.56 (m, 1H), 7.20-6.98 (m, 4H), 4.85 (dd, $J = 14.3, 8.7$ Hz, 1H), 4.40-4.19 (m, 1H), 3.70-3.54 (m, 3H), 3.19-2.94 (m, 2H), 2.39-2.24 (m, 3H), 1.34-1.14 (m, 3H); ^{13}C NMR (101 MHz, DMSO) δ 172.77, 172.71, 170.73, 170.51, 163.02, 162.83, 149.14, 149.09, 148.52, 137.98, 137.93, 136.46, 136.37, 135.48, 135.23, 129.97, 129.93, 129.87, 129.71, 126.84, 126.79, 126.52, 126.43, 125.53, 125.49, 121.85, 52.60, 51.92, 47.63, 47.55, 36.12, 35.45, 19.16, 19.09, 16.95, 16.87; LRMS (ESI): 370 $[\text{M}+\text{H}]^+$; HRMS (ESI) calcd for $\text{C}_{20}\text{H}_{24}\text{N}_3\text{O}_4$ $[\text{M}+\text{H}]^+$ 370.1767, found: 370.1770.

^1H and ^{13}C NMR Spectra

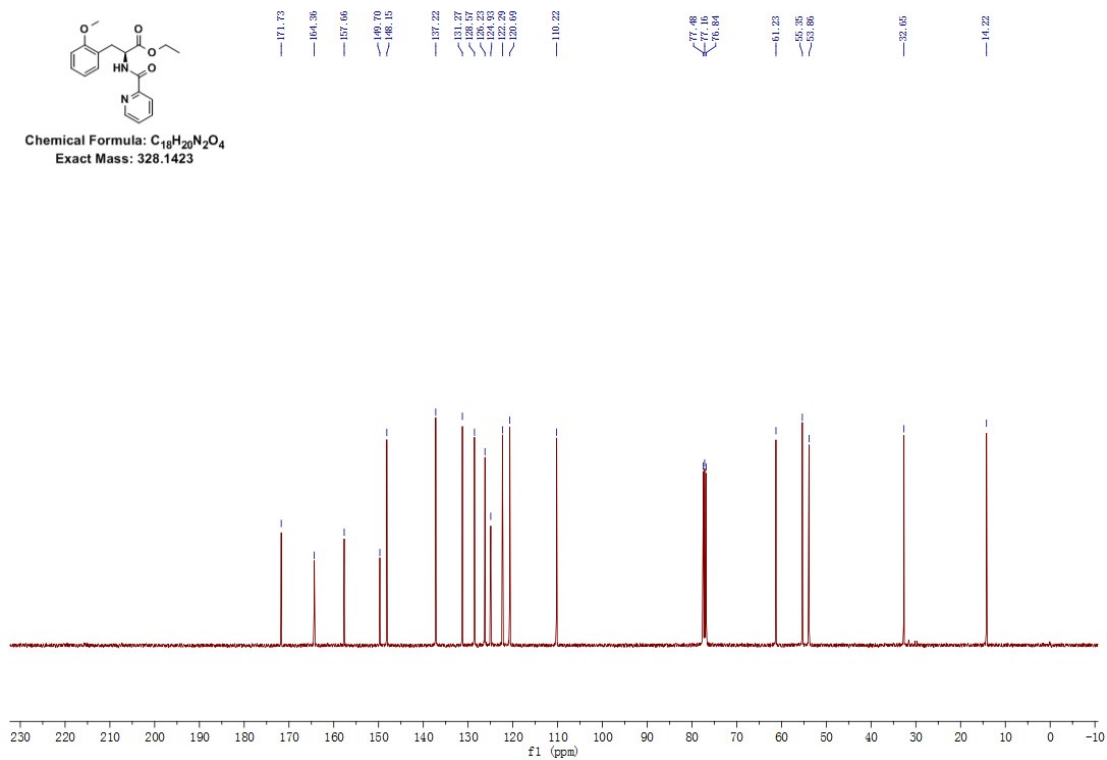
(*S*)-ethyl-3-(2-methoxyphenyl)-2-(picolinamido)propanoate (**1a**)



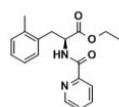
Chemical Formula: $\text{C}_{18}\text{H}_{20}\text{N}_2\text{O}_4$
Exact Mass: 328.1423



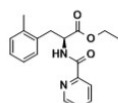
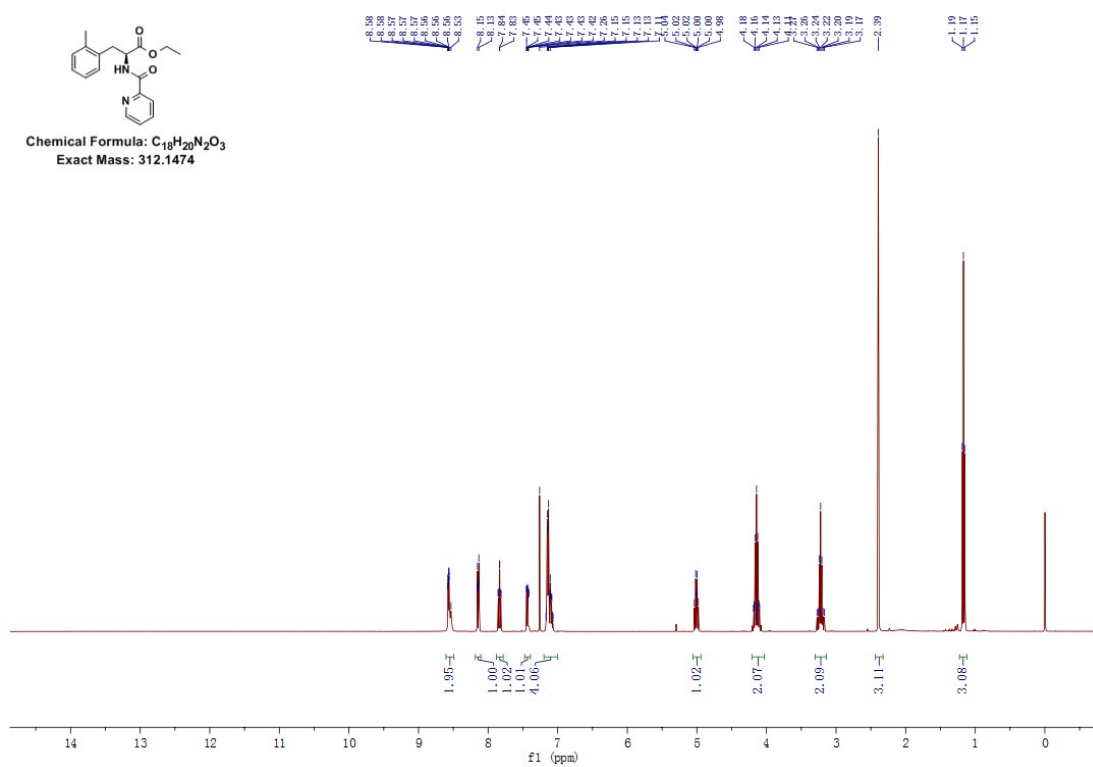
Chemical Formula: $\text{C}_{18}\text{H}_{20}\text{N}_2\text{O}_4$
Exact Mass: 328.1423



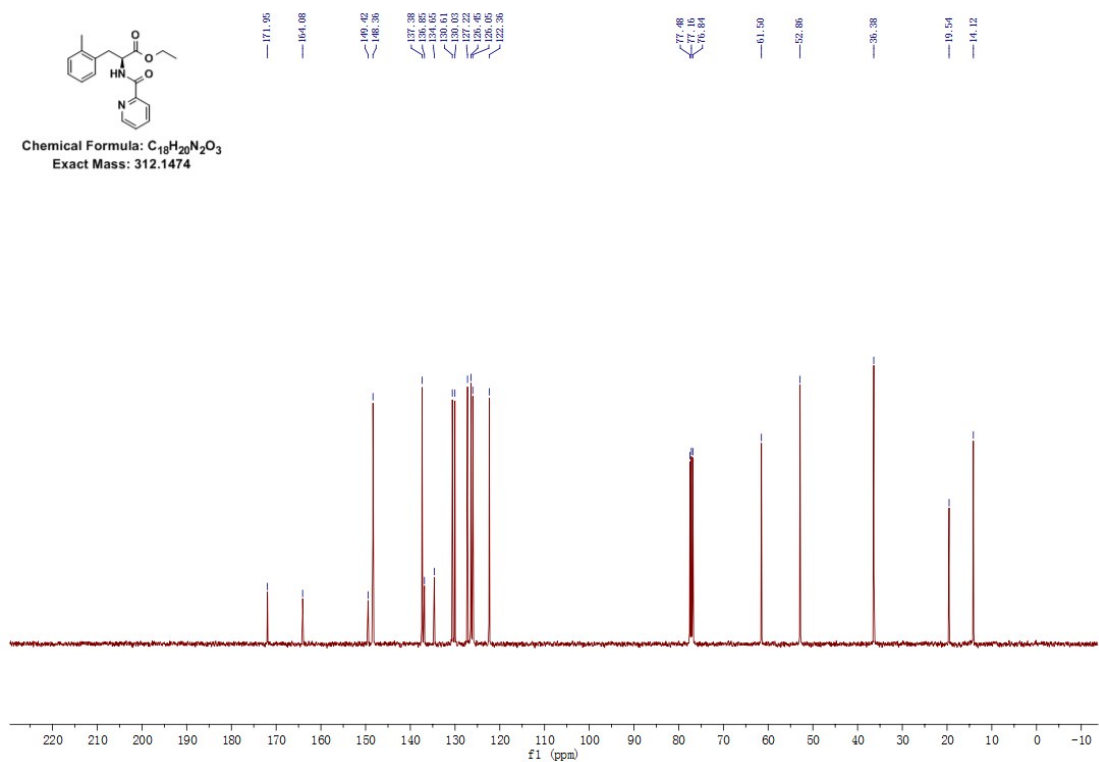
(S)-ethyl-2-(picolinamido)-3-(o-tolyl)propanoate (11)



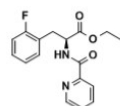
Chemical Formula: $C_{18}H_{20}N_2O_3$
Exact Mass: 312.1474



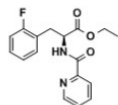
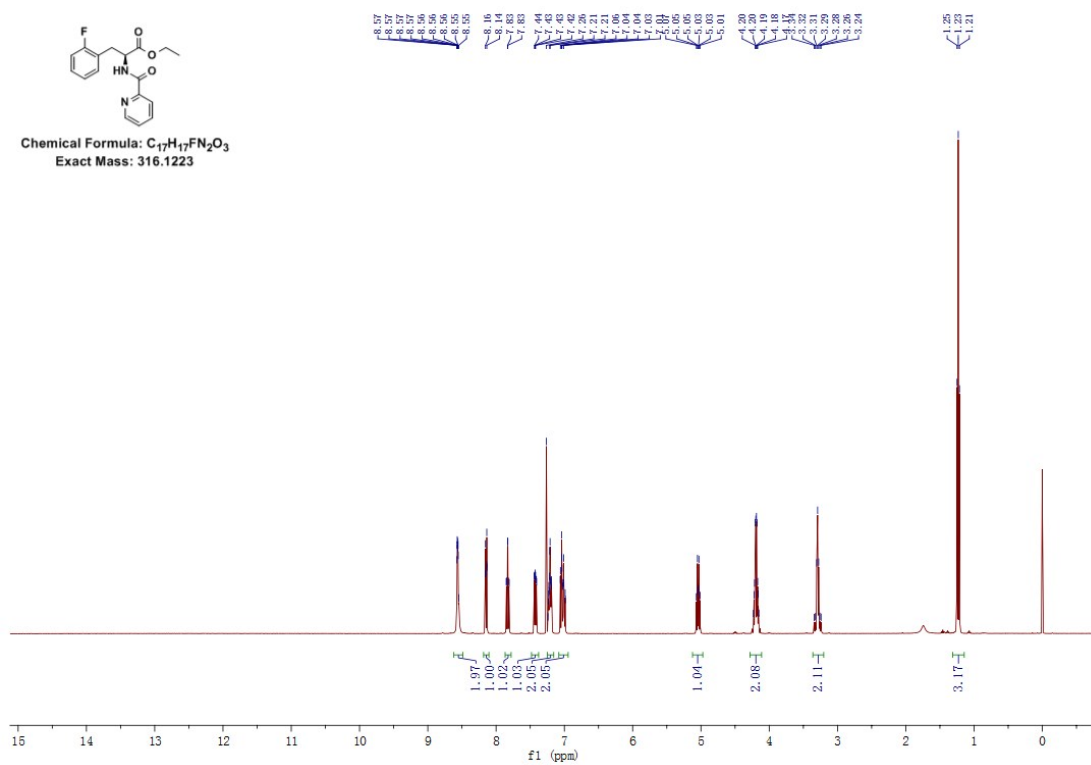
Chemical Formula: $C_{18}H_{20}N_2O_3$
Exact Mass: 312.1474



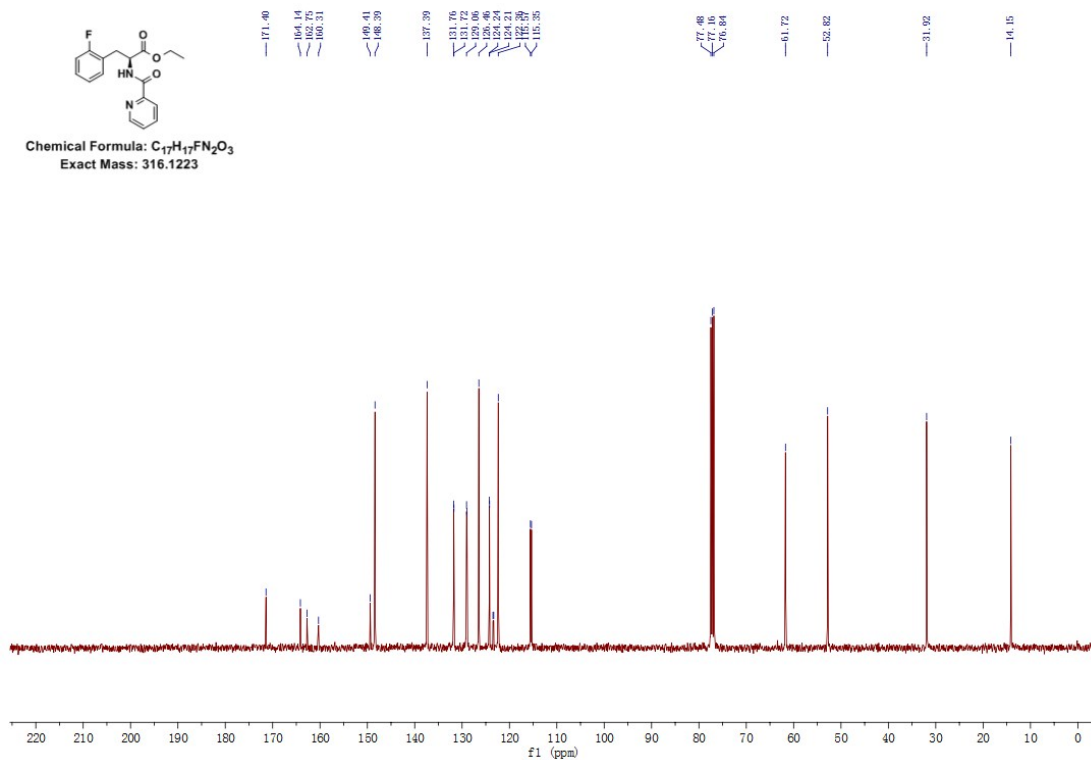
(S)-ethyl-3-(2-fluorophenyl)-2-(picolinamido)propanoate (**1n**)



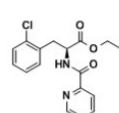
Chemical Formula: C₁₇H₁₇FN₂O₃
Exact Mass: 316.1223



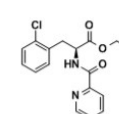
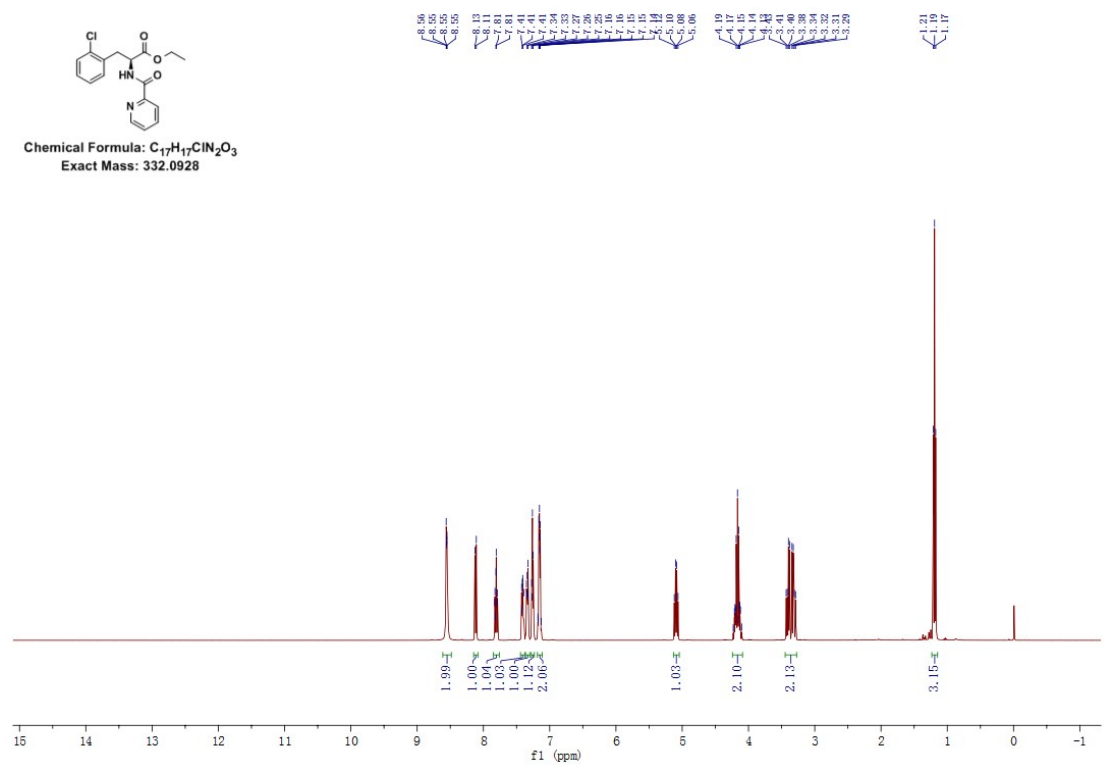
Chemical Formula: C₁₇H₁₇FN₂O₃
Exact Mass: 316.1223



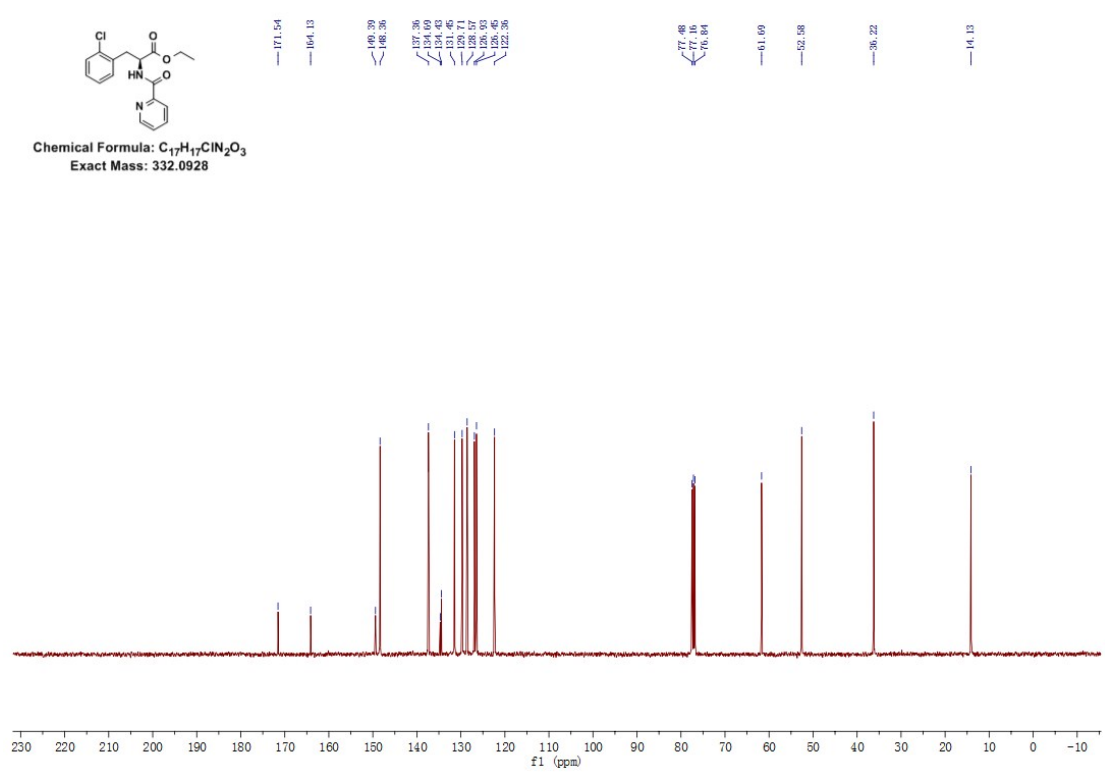
(S)-ethyl-3-(2-chlorophenyl)-2-(picolinamido)propanoate (**1o**)



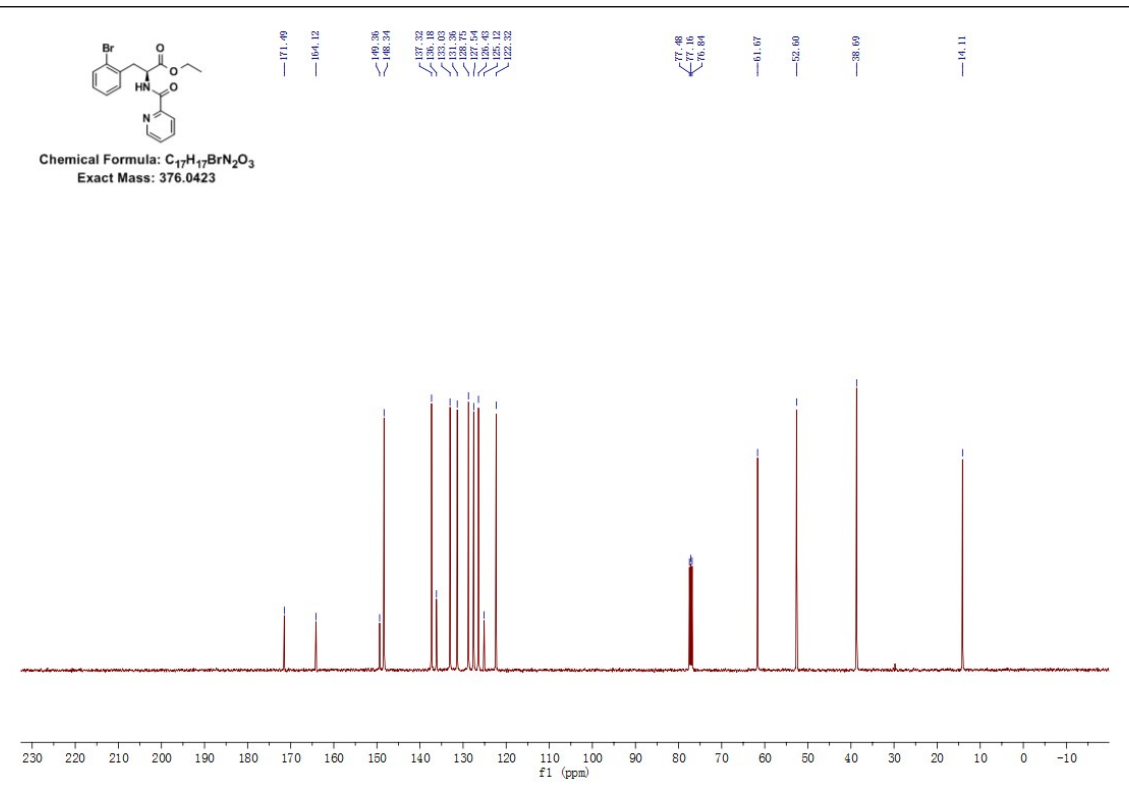
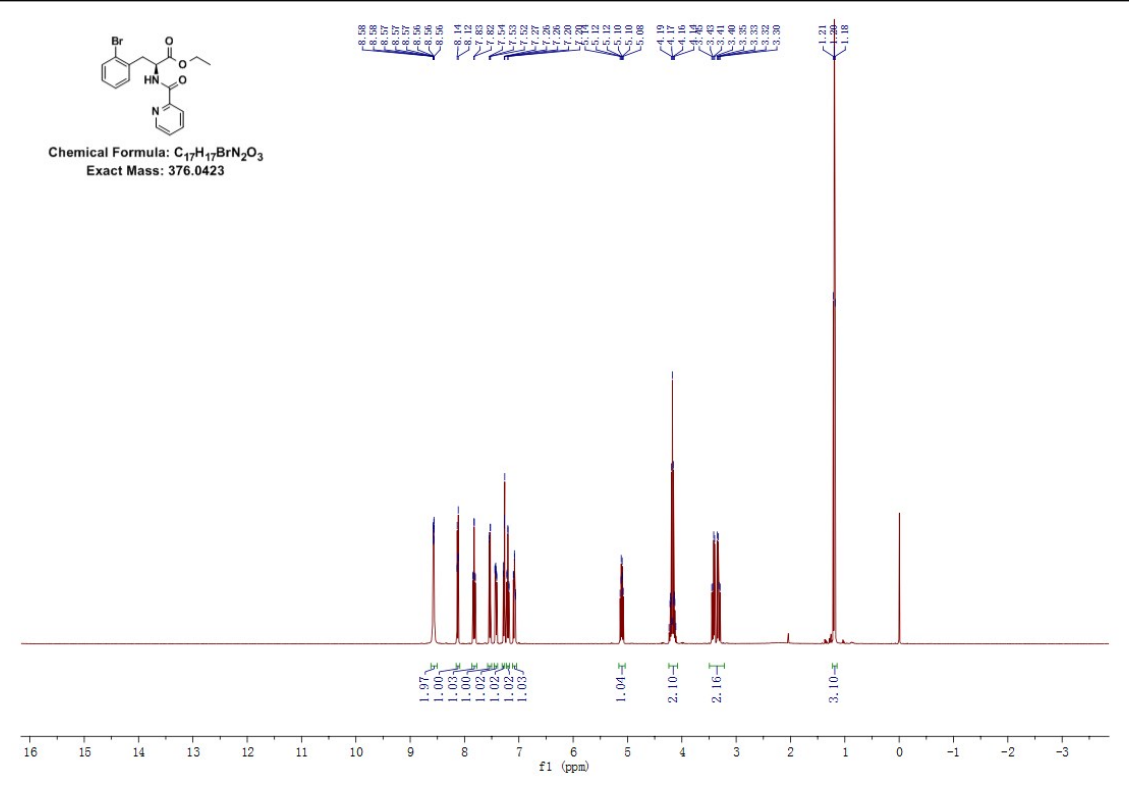
Chemical Formula: C₁₇H₁₇ClN₂O₃
Exact Mass: 332.0928



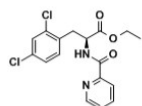
Chemical Formula: C₁₇H₁₇ClN₂O₃
Exact Mass: 332.0928



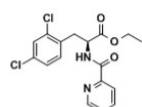
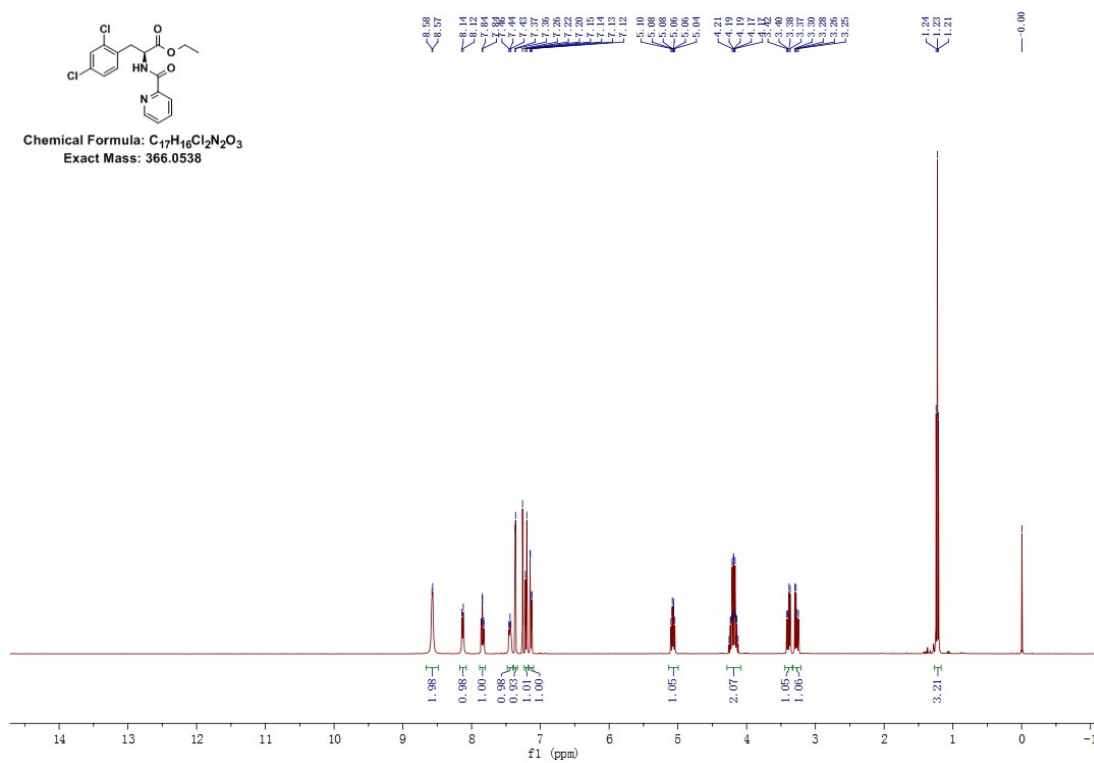
(S)-ethyl-3-(2-bromophenyl)-2-(picolinamido)propanoate (**1p**)



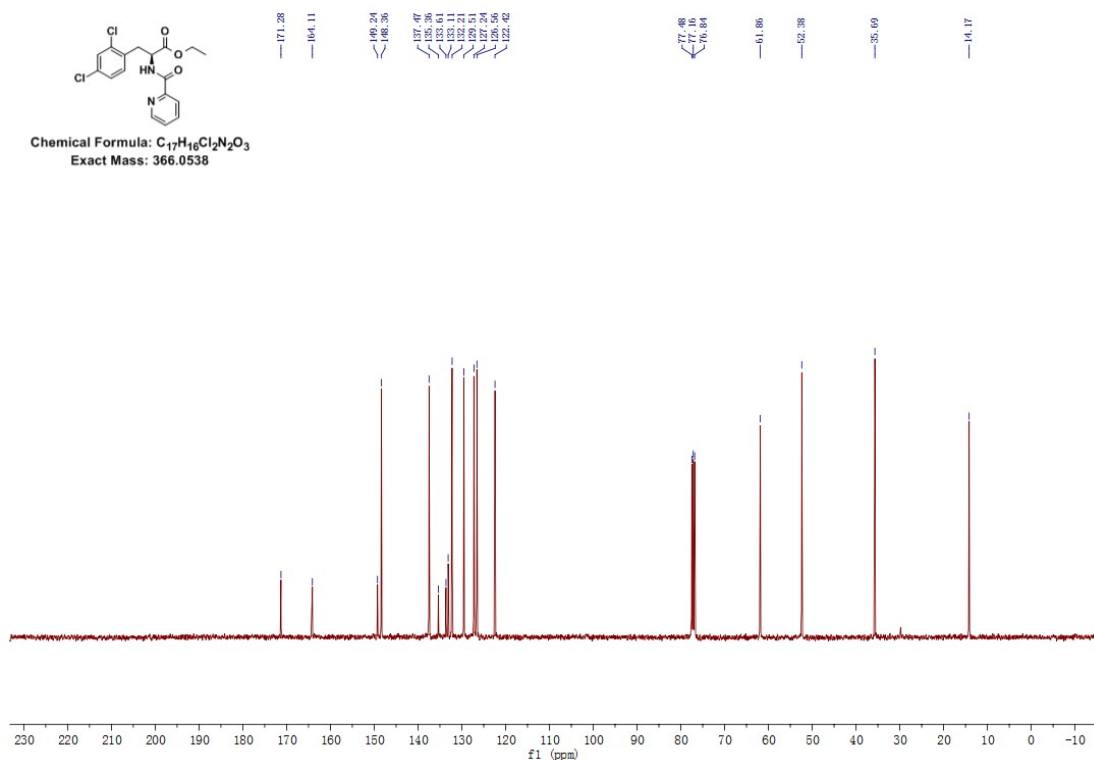
(S)-ethyl-3-(2,4-dichlorophenyl)-2-(picolinamido)propanoate (**1q**)



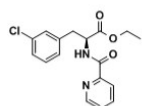
Chemical Formula: C₁₇H₁₆Cl₂N₂O₃
Exact Mass: 366.0538



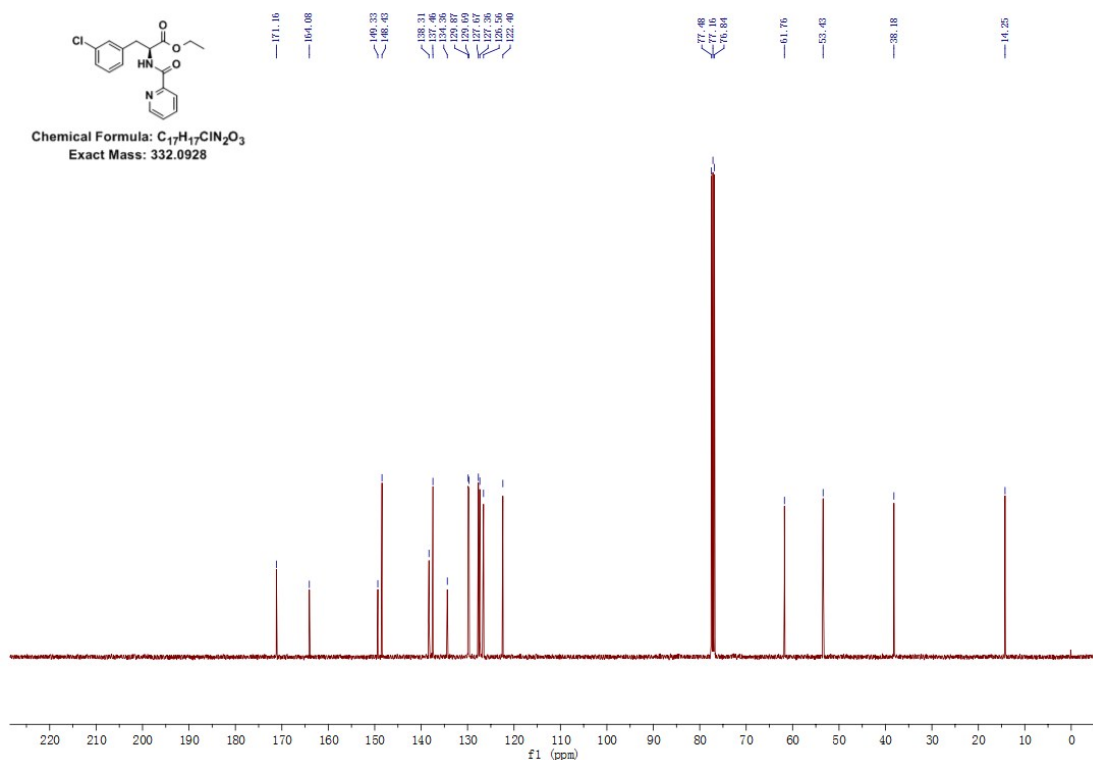
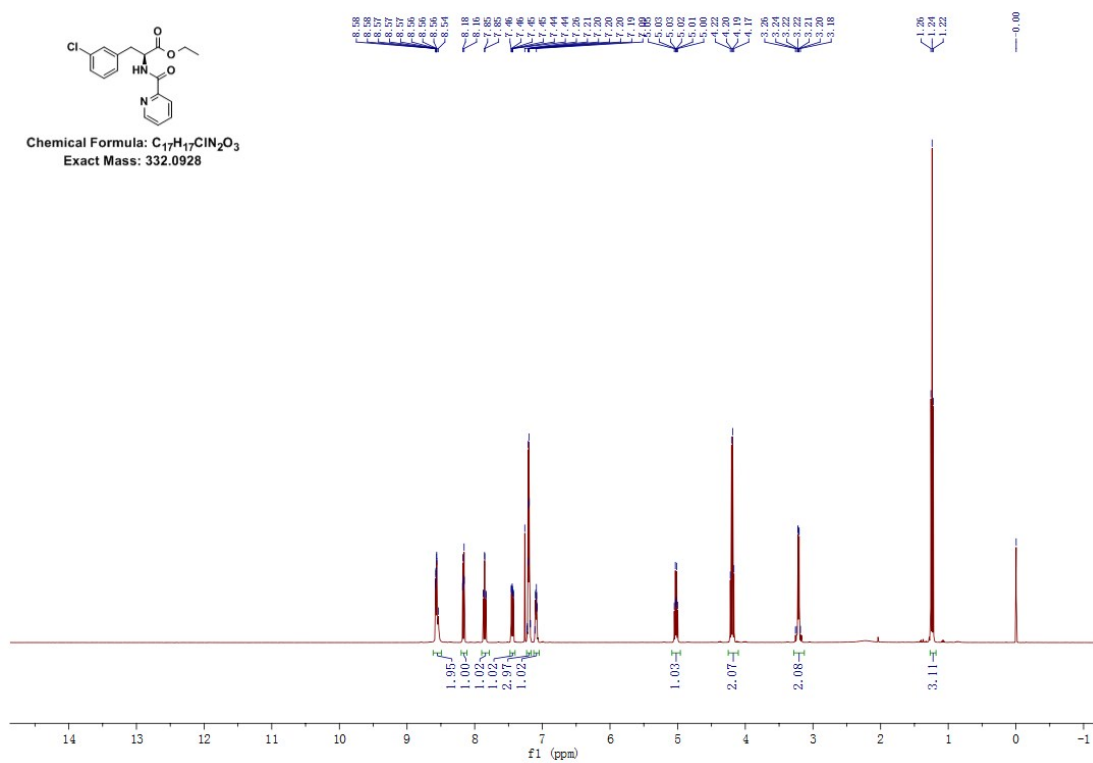
Chemical Formula: C₁₇H₁₆Cl₂N₂O₃
Exact Mass: 366.0538



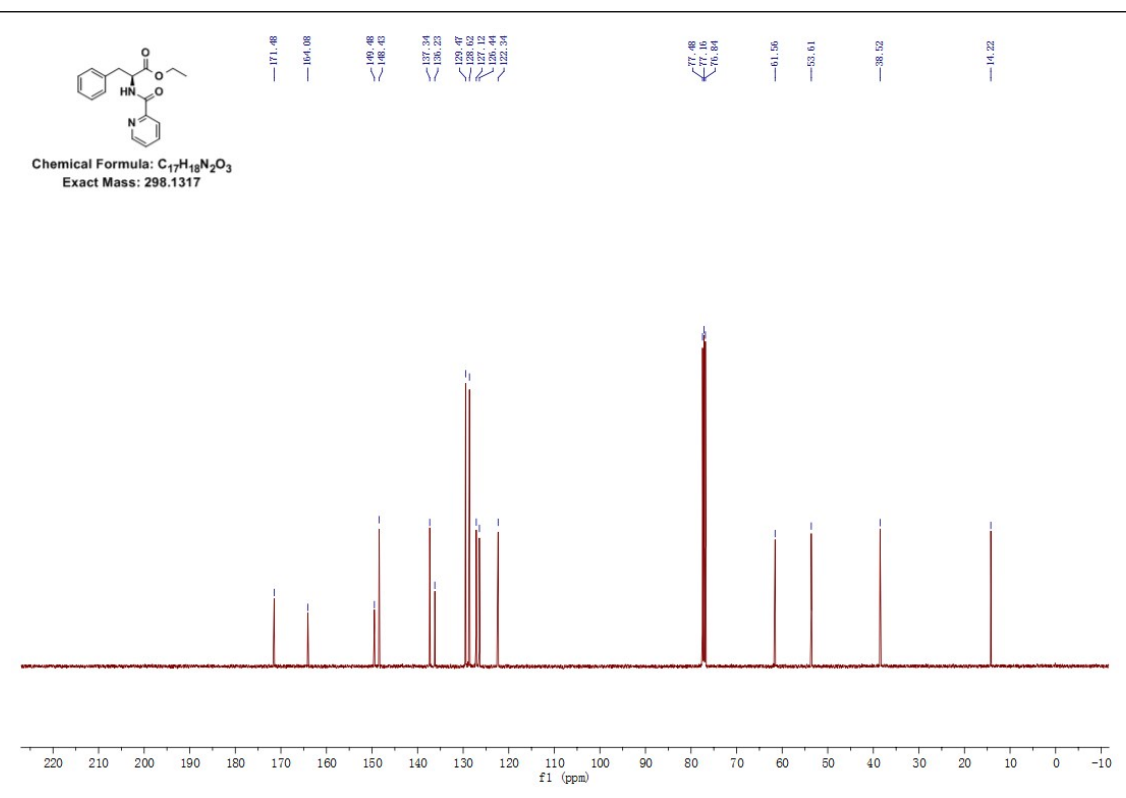
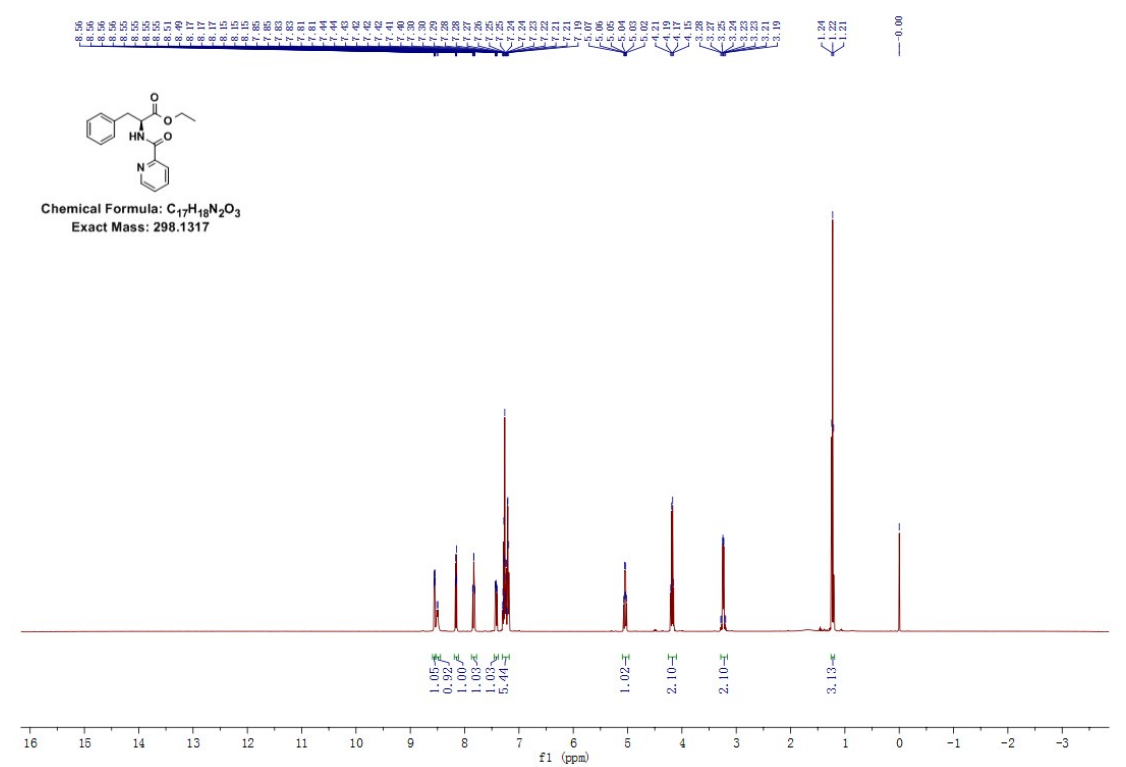
(S)-ethyl-3-(3-chlorophenyl)-2-(picolinamido)propanoate (**1r**)



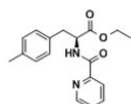
Chemical Formula: C₁₇H₁₇ClN₂O₃
Exact Mass: 332.0928



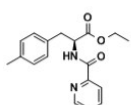
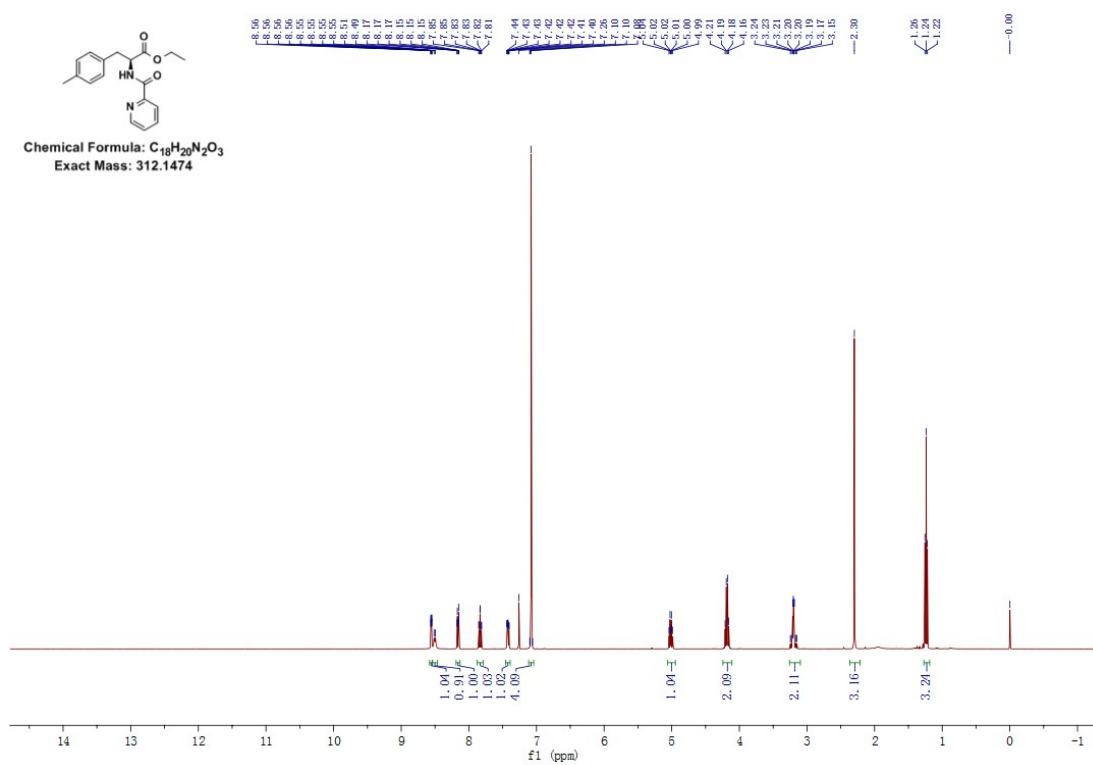
(S)-ethyl-3-phenyl-2-(picolinamido)propanoate (1s)



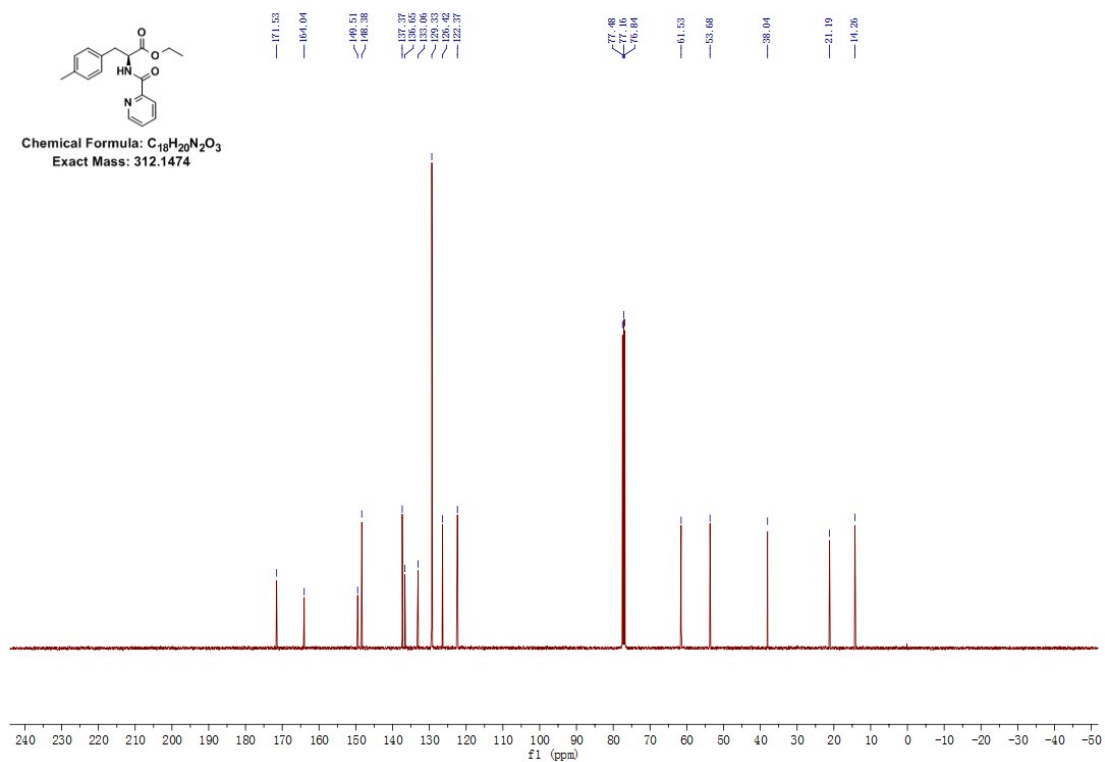
(S)-ethyl-2-(picolinamido)-3-(p-tolyl)propanoate (1t)



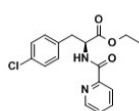
Chemical Formula: $C_{18}H_{20}N_2O_3$
Exact Mass: 312.1474



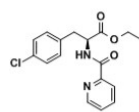
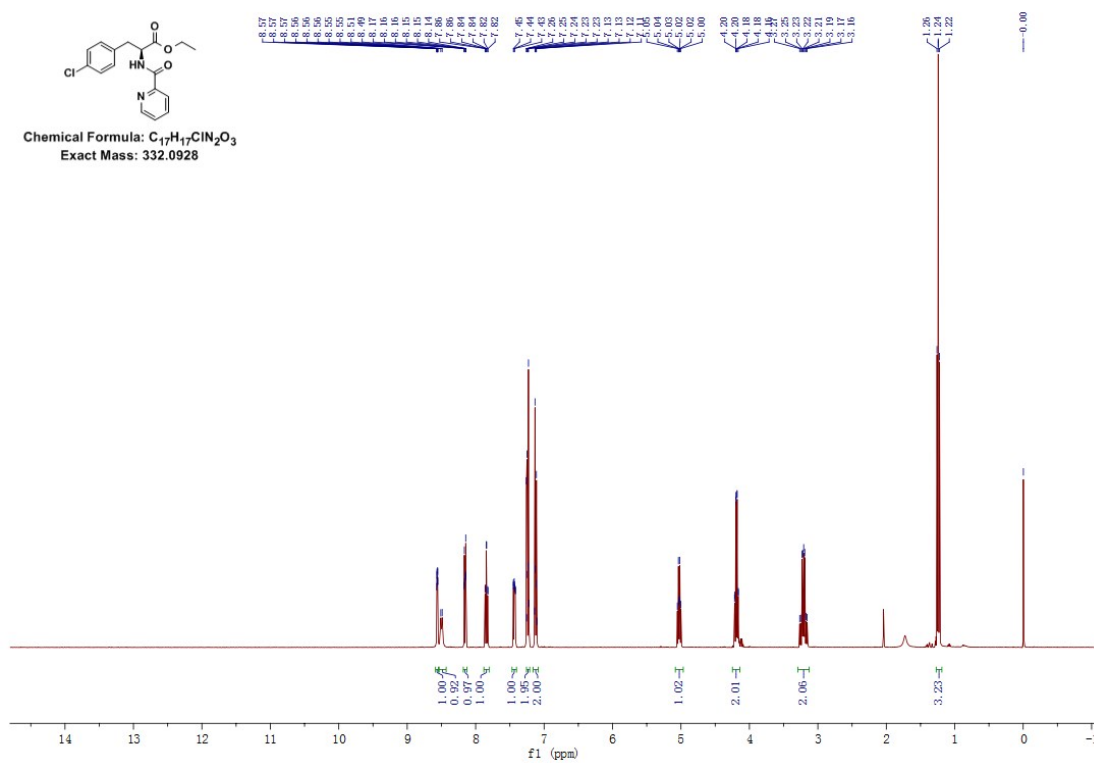
Chemical Formula: $C_{18}H_{20}N_2O_3$
Exact Mass: 312.1474



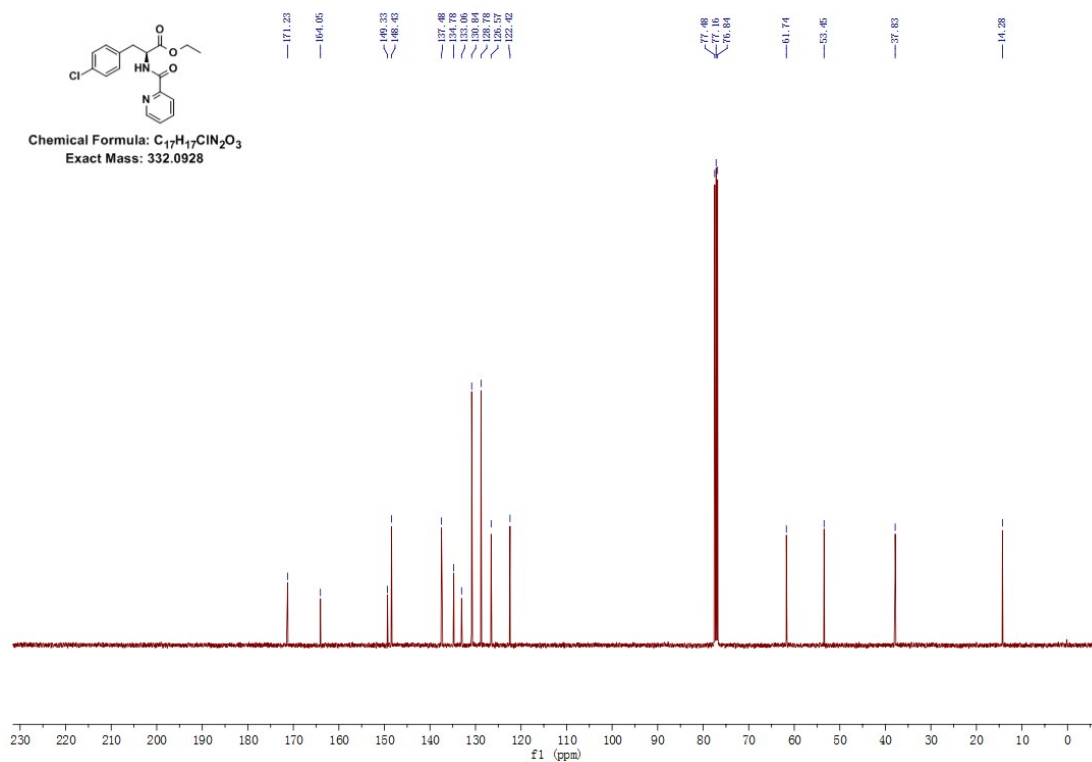
(S)-ethyl-3-(4-chlorophenyl)-2-(picolinamido)propanoate (**1u**)



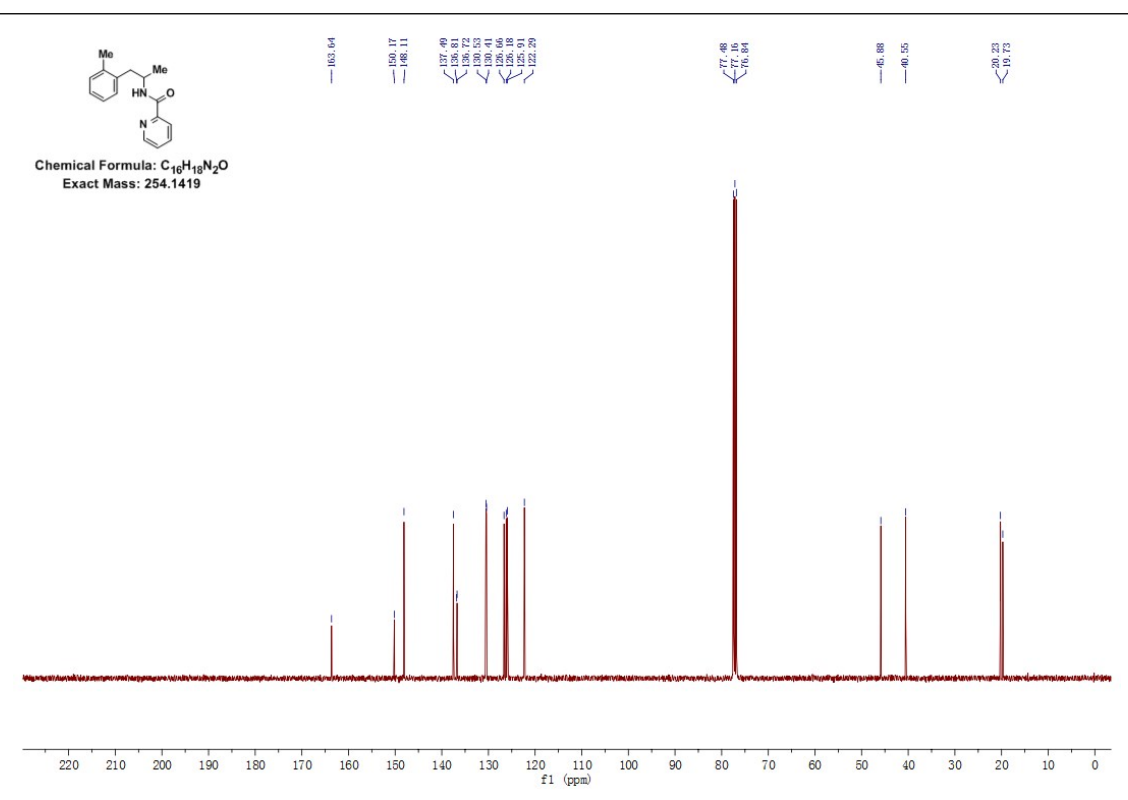
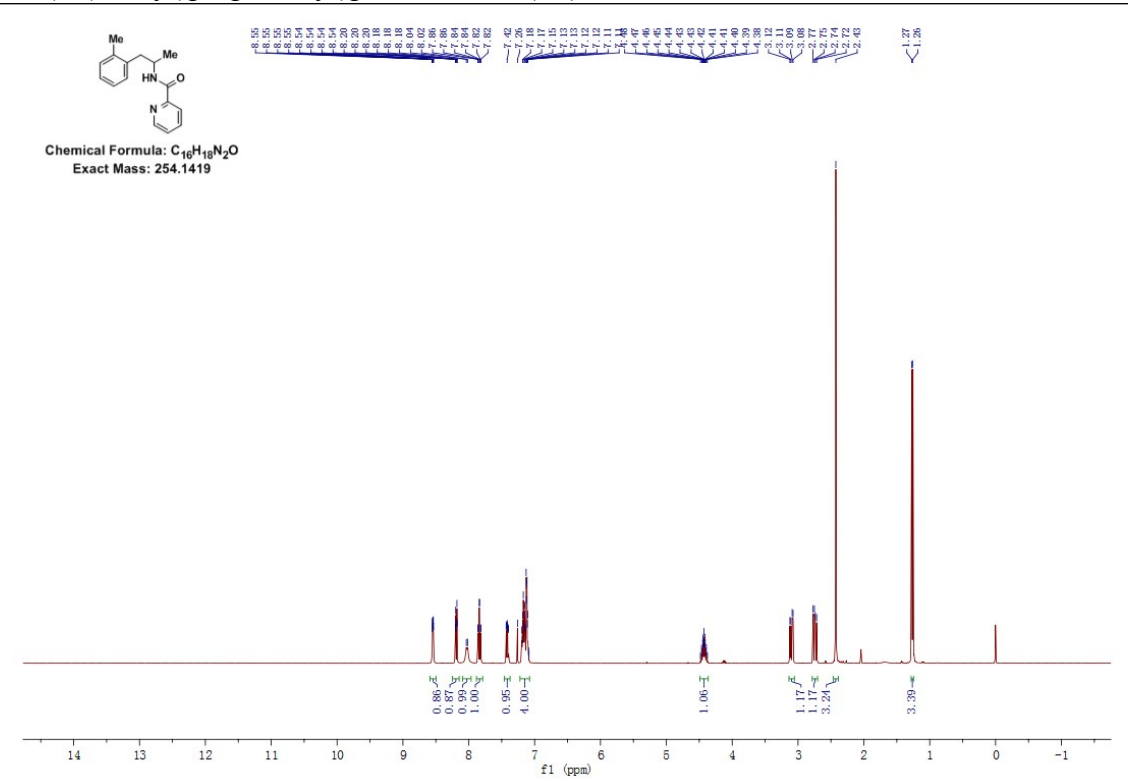
Chemical Formula: C₁₇H₁₇ClN₂O₃
Exact Mass: 332.0928



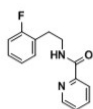
Chemical Formula: C₁₇H₁₇ClN₂O₃
Exact Mass: 332.0928



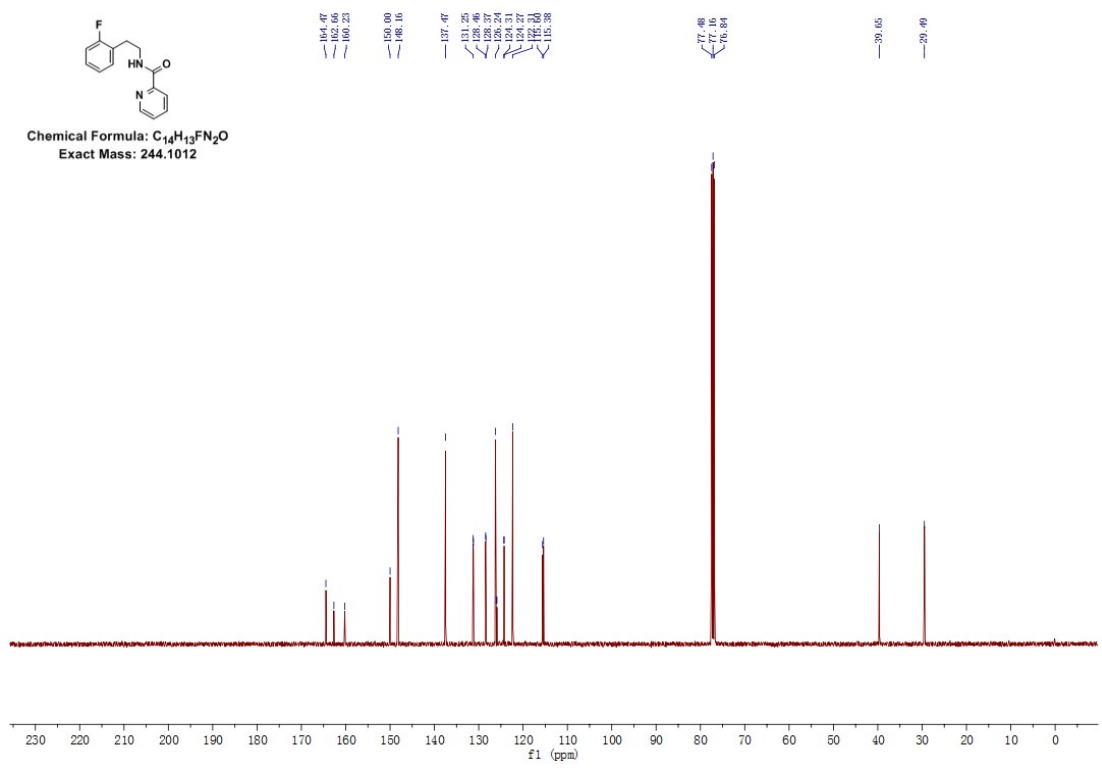
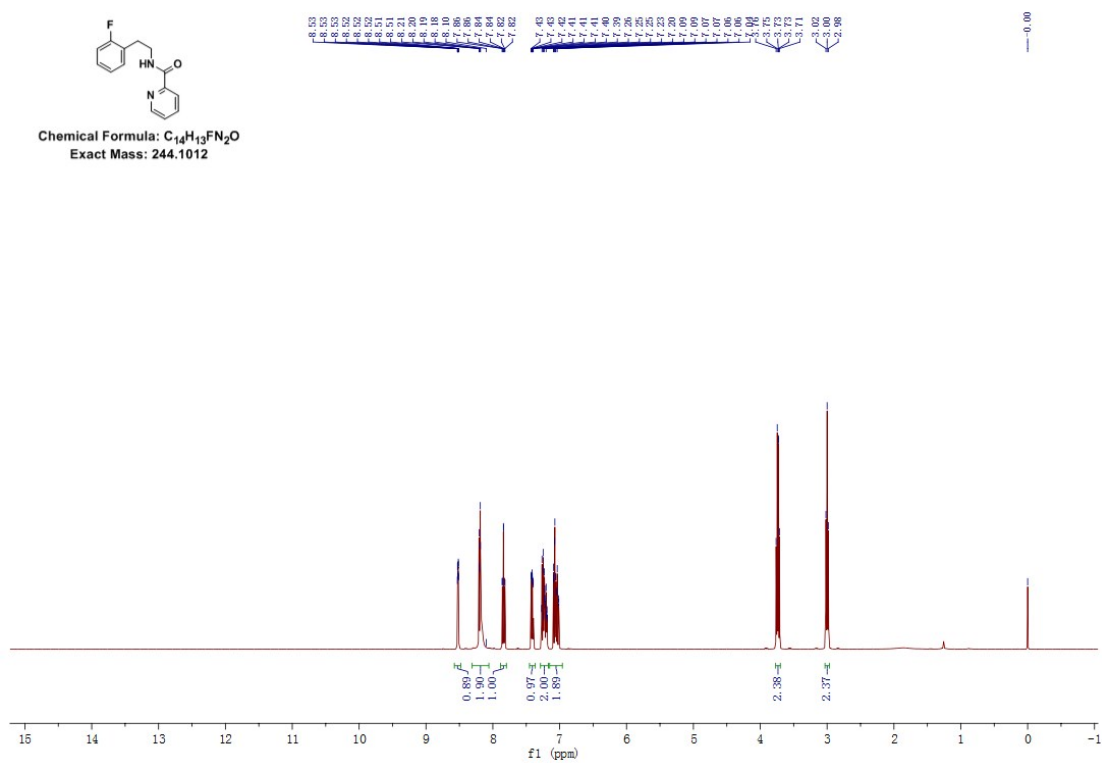
N-(1-(*o*-tolyl)propan-2-yl)picolinamide (4d)



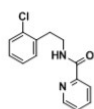
N-(2-fluorophenethyl)picolinamide (4g)



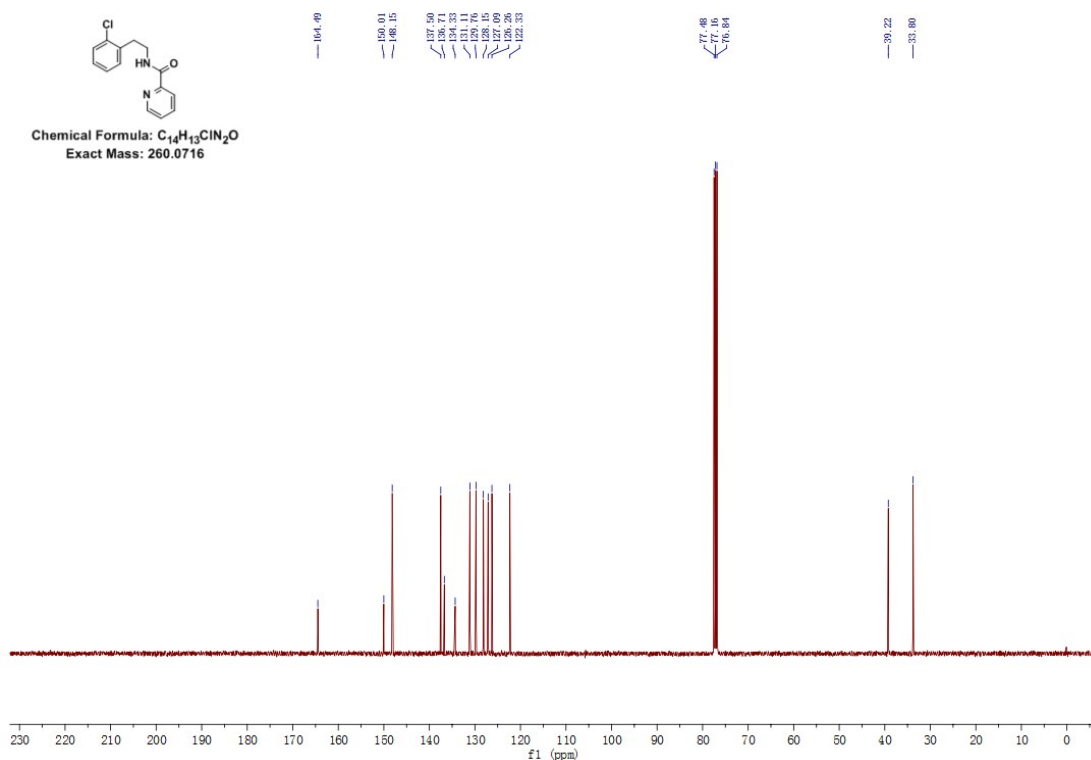
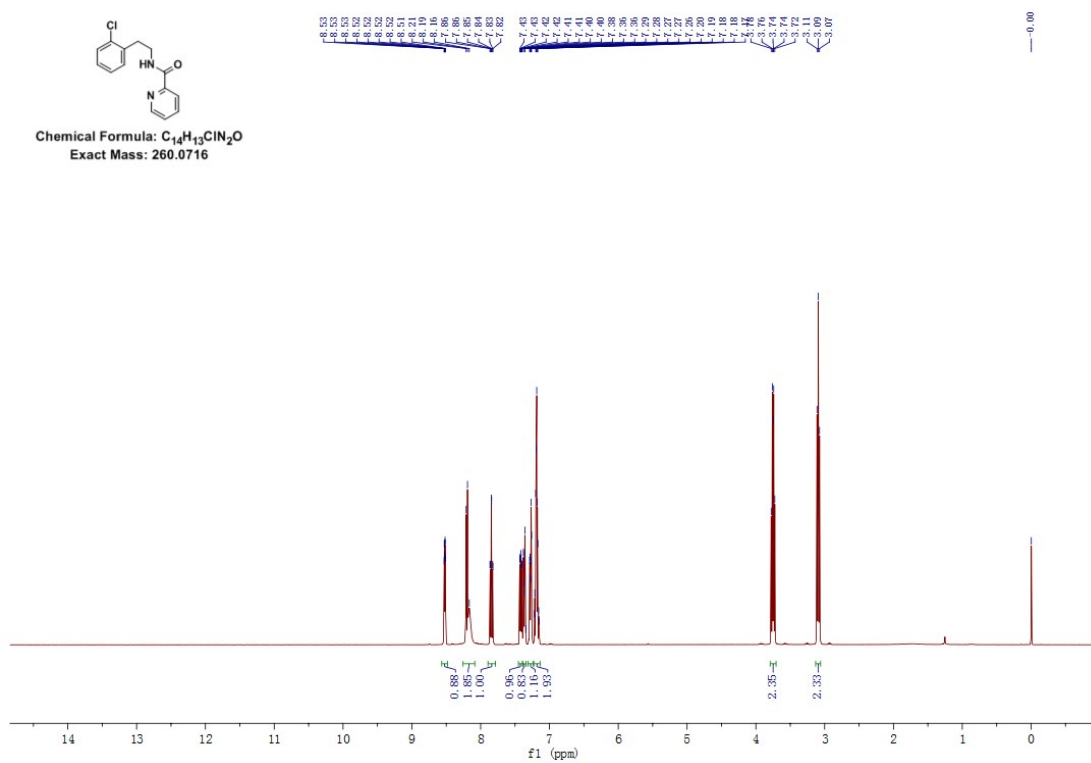
Chemical Formula: C₁₄H₁₃FN₂O
Exact Mass: 244.1012



N-(2-chlorophenethyl)picolinamide (**4h**)



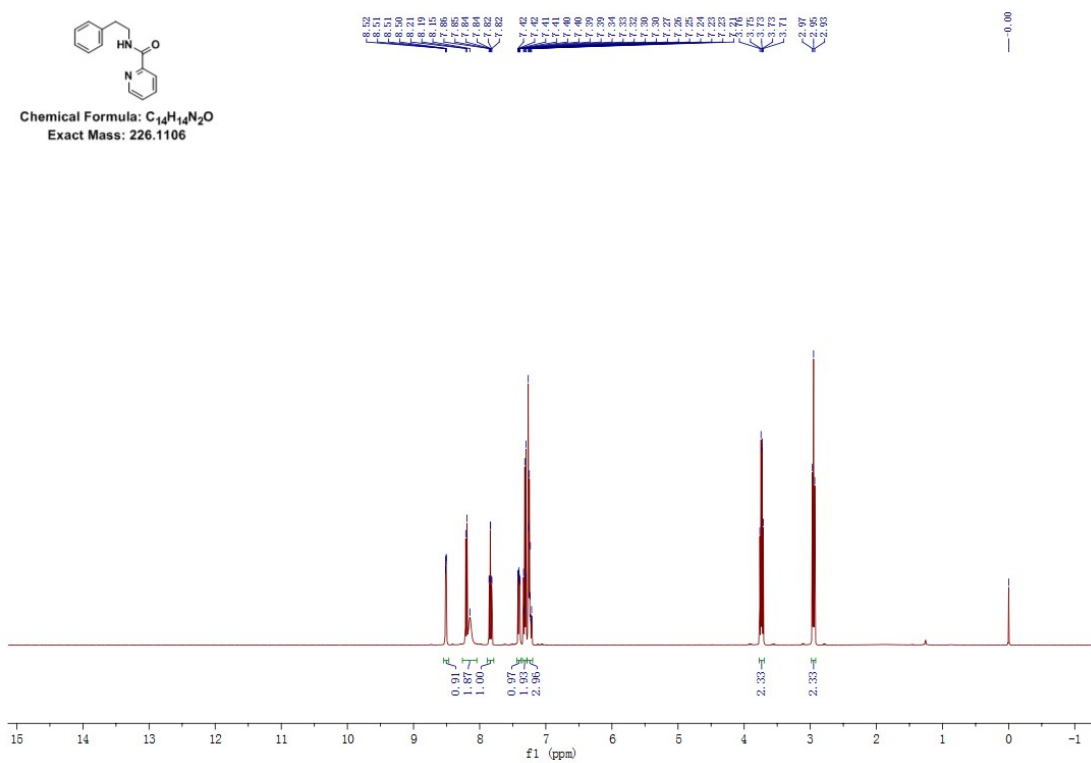
Chemical Formula: C₁₄H₁₃ClN₂O
Exact Mass: 260.0716



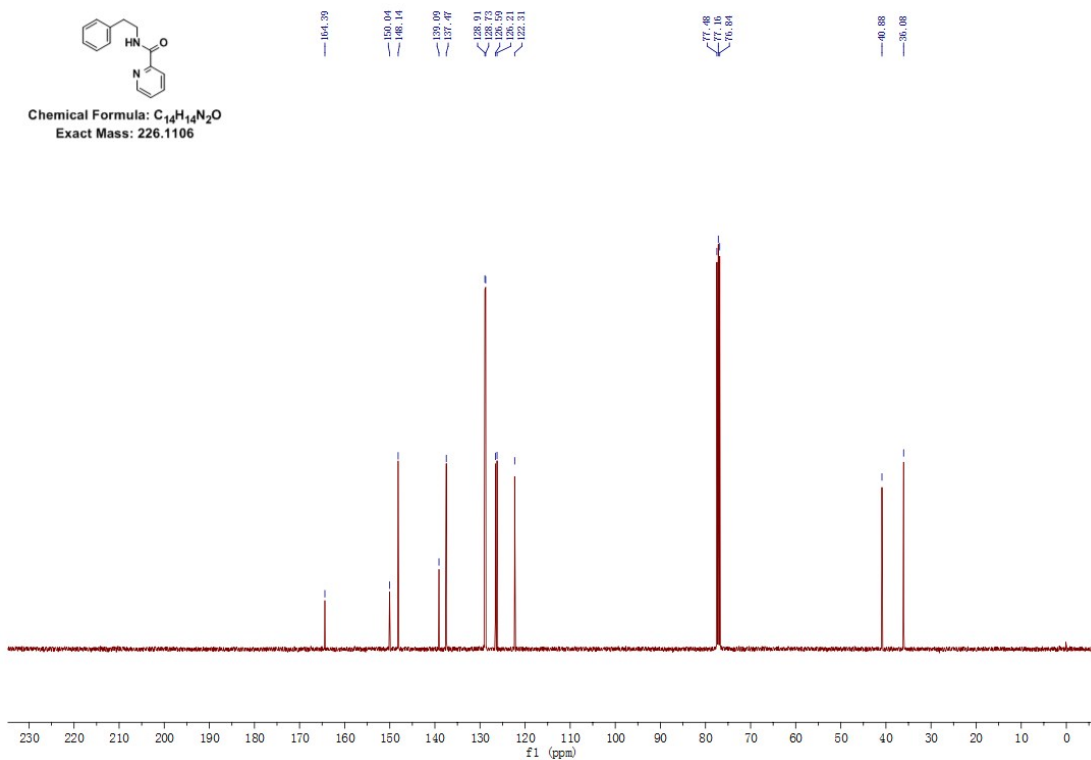
N-phenethylpicolinamide (4i)



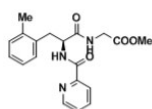
Chemical Formula: C₁₄H₁₄N₂O
Exact Mass: 226.1106



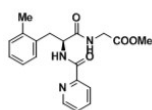
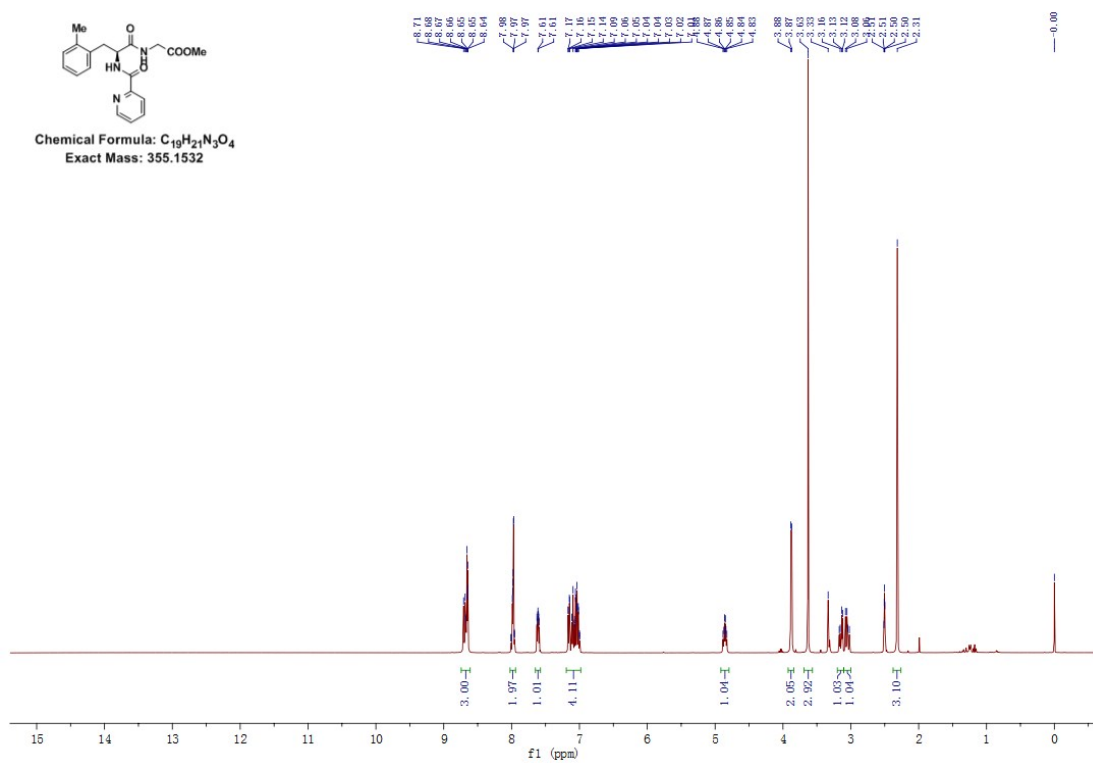
Chemical Formula: C₁₄H₁₄N₂O
Exact Mass: 226.1106



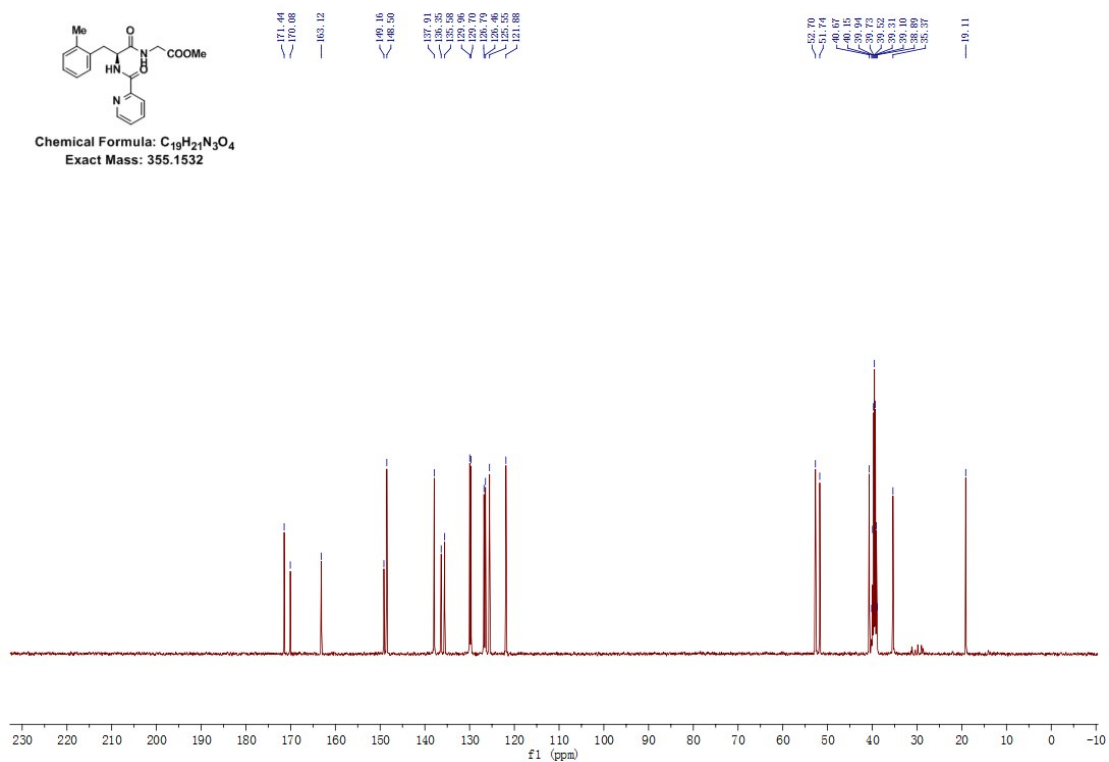
(S)-methyl-2-(2-(picolinamido)-3-(o-tolyl)propanamido)acetate (**4j**)



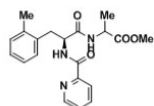
Chemical Formula: $C_{19}H_{21}N_3O_4$
Exact Mass: 355.1532



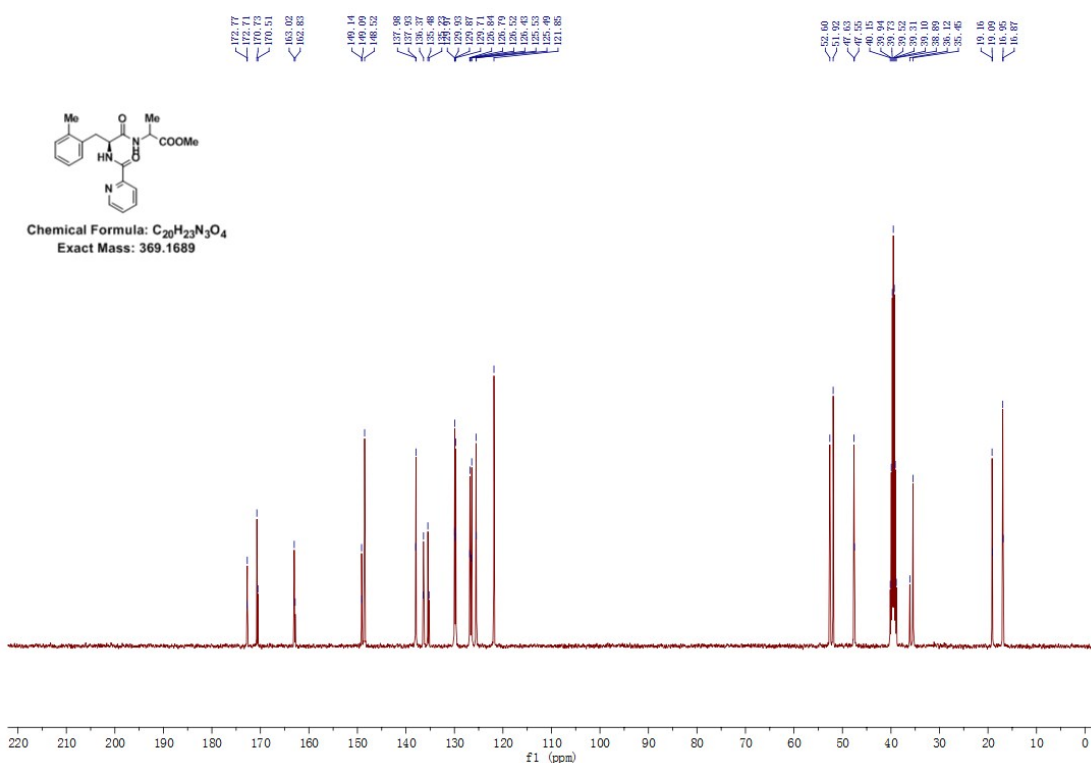
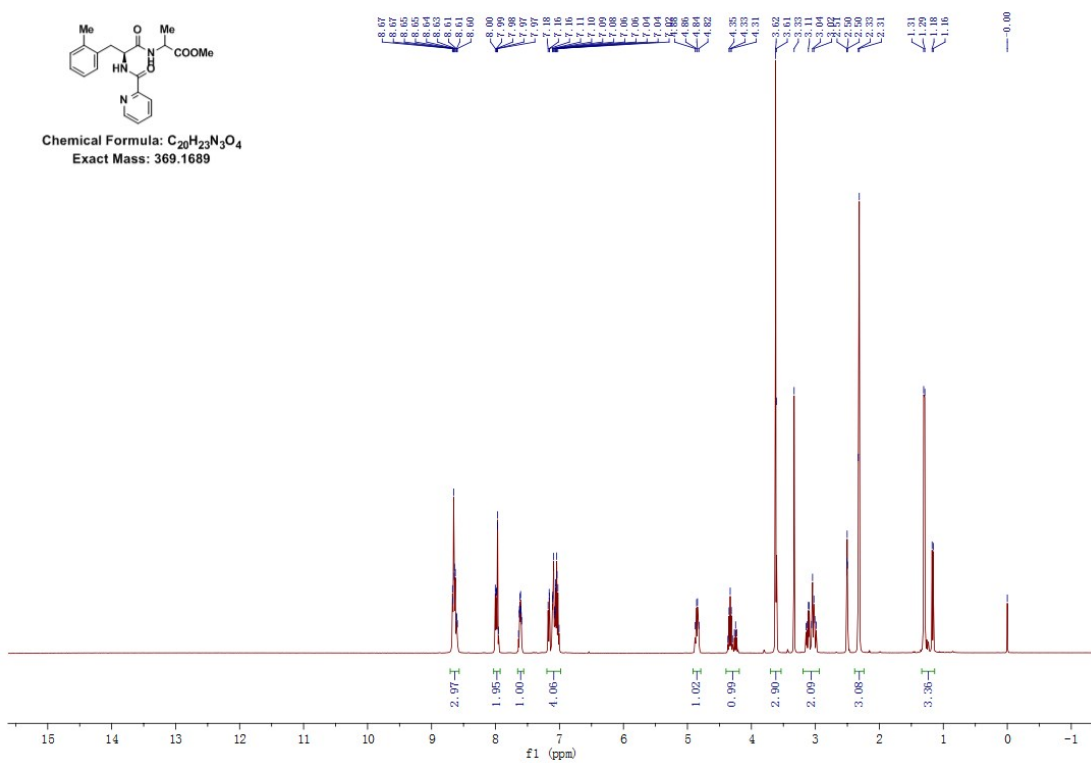
Chemical Formula: $C_{19}H_{21}N_3O_4$
Exact Mass: 355.1532



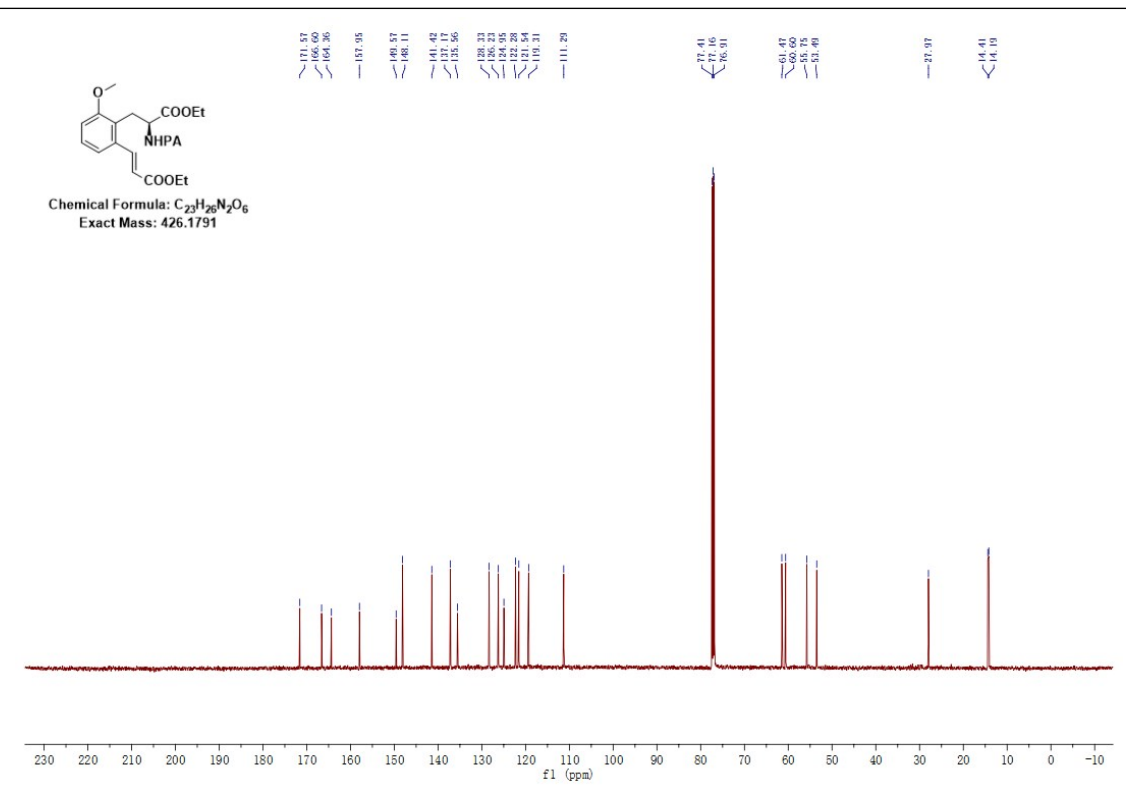
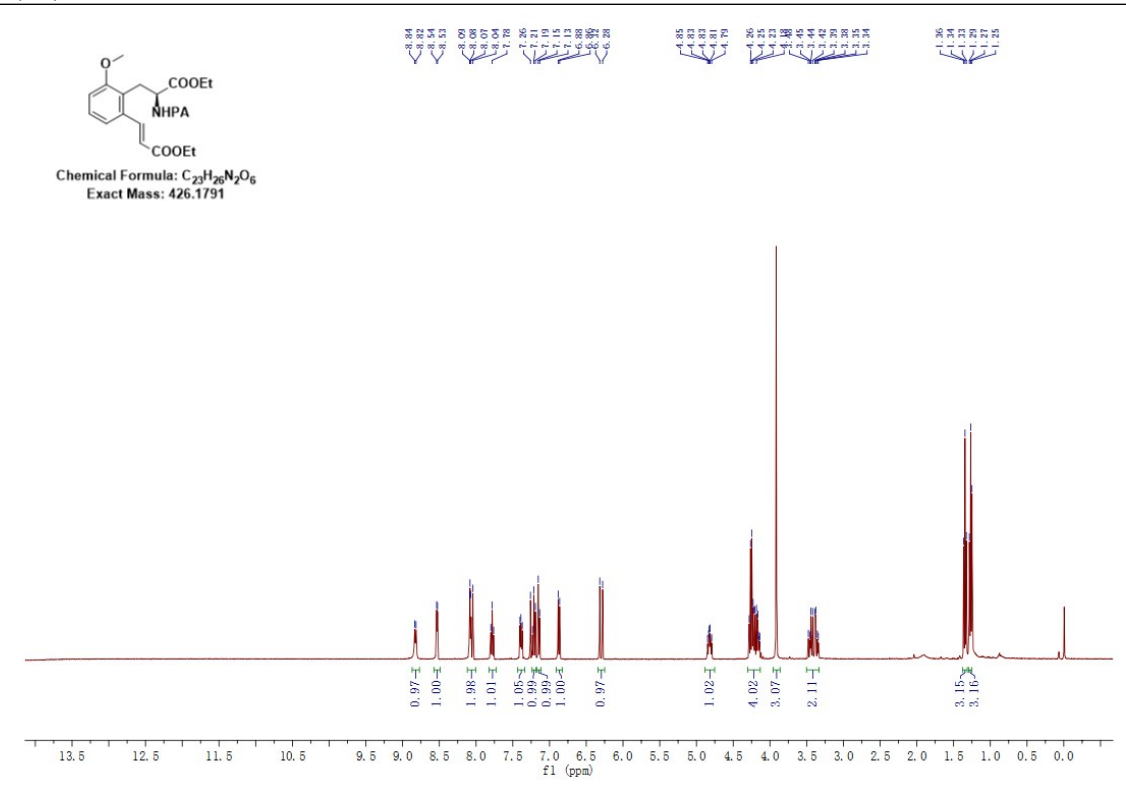
Methyl-2-((S)-2-(picolinamido)-3-(o-tolyl)propanamido)propanoate (4k)



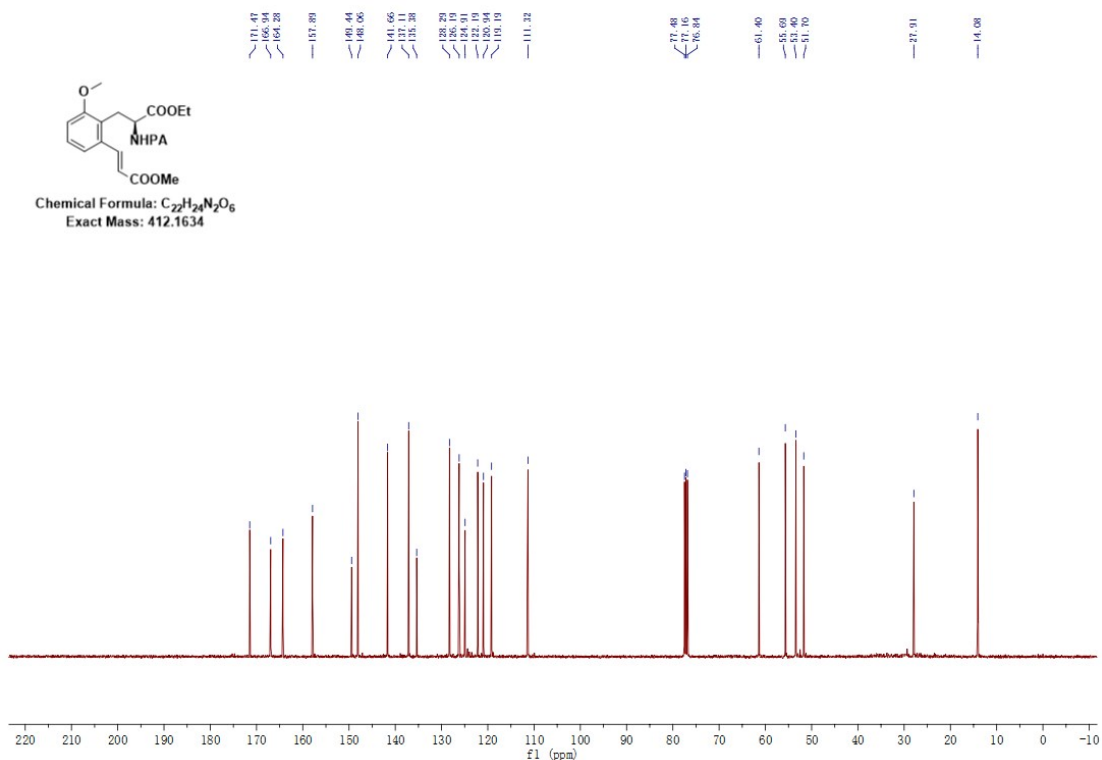
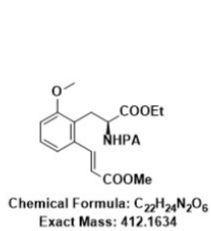
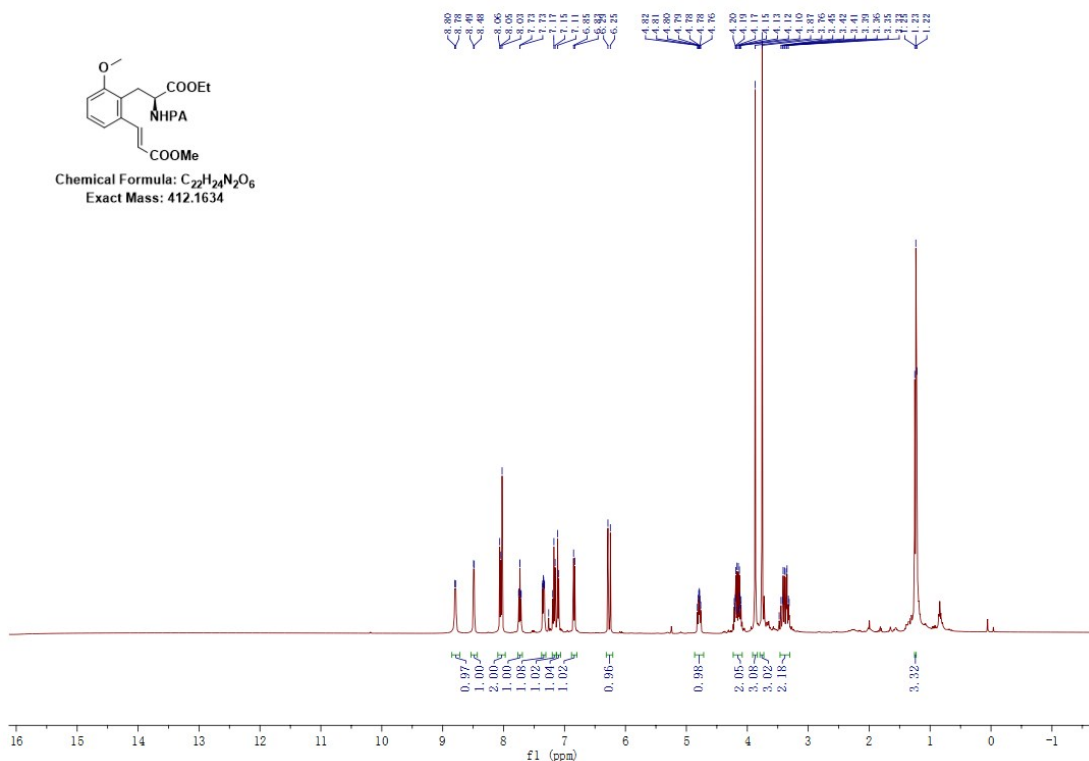
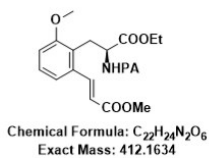
Chemical Formula: $C_{20}H_{23}N_3O_4$
Exact Mass: 369.1689



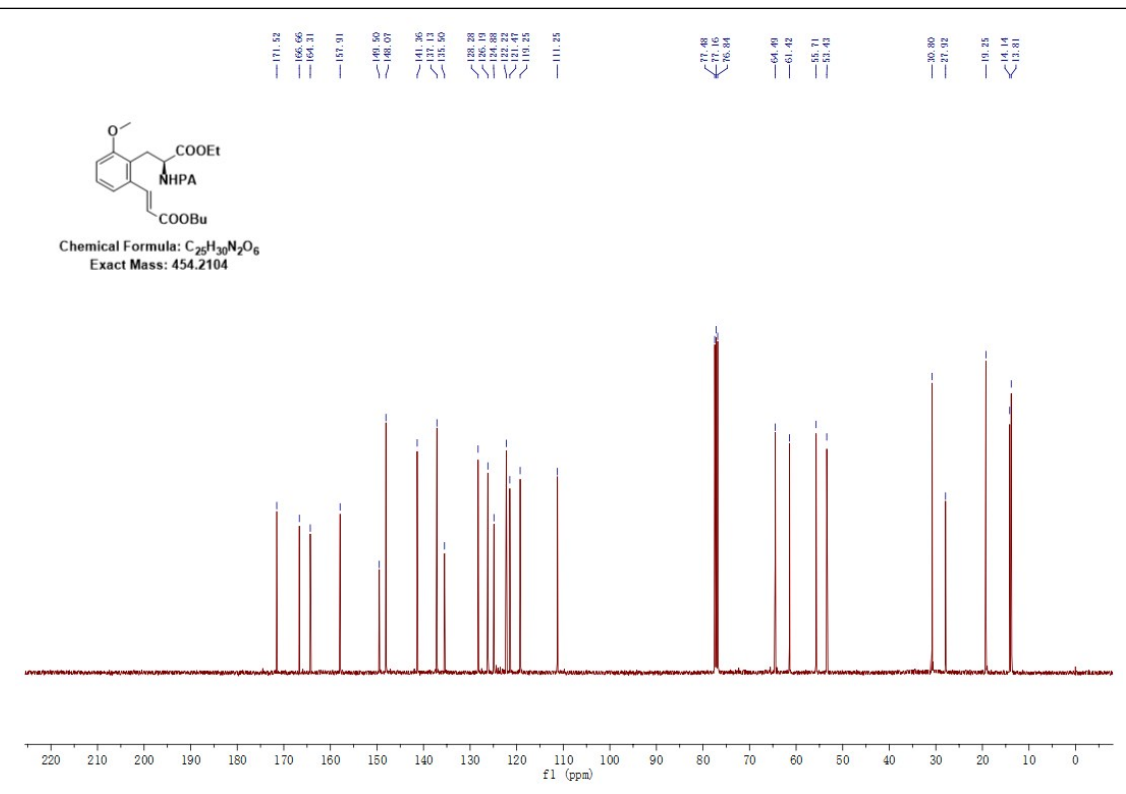
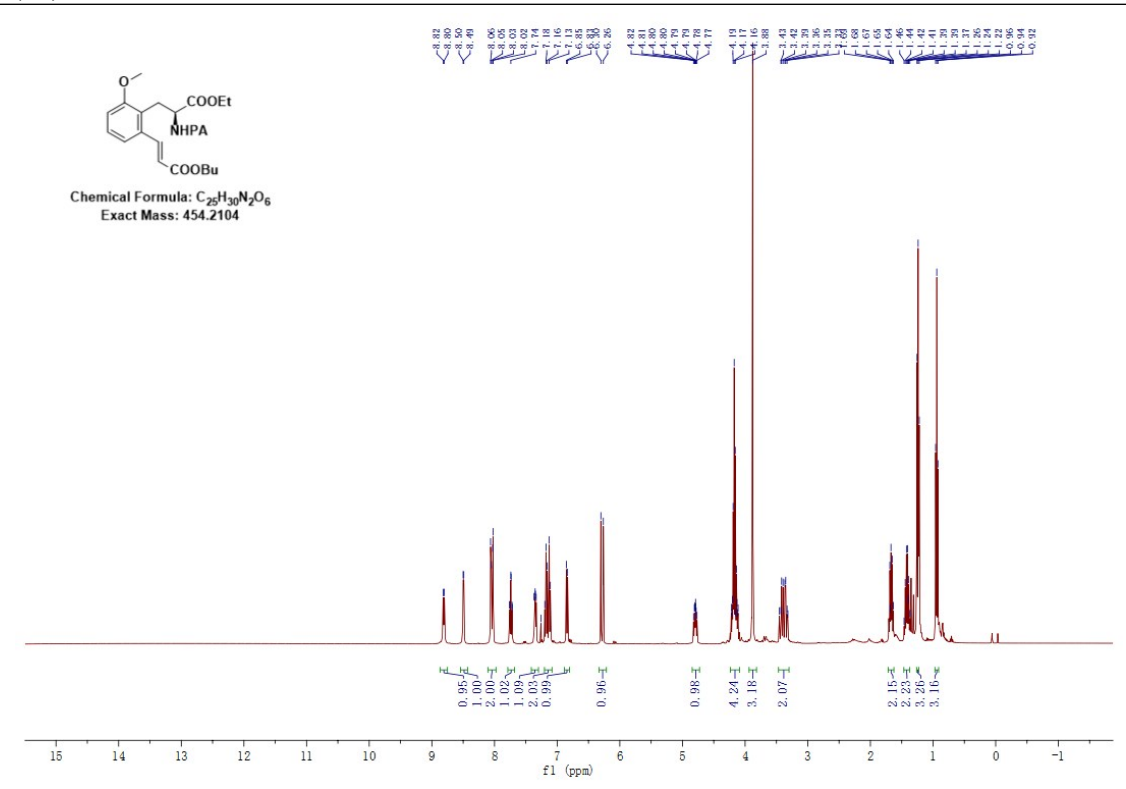
(*S,E*)-ethyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methoxyphenyl)acrylate
(3a)



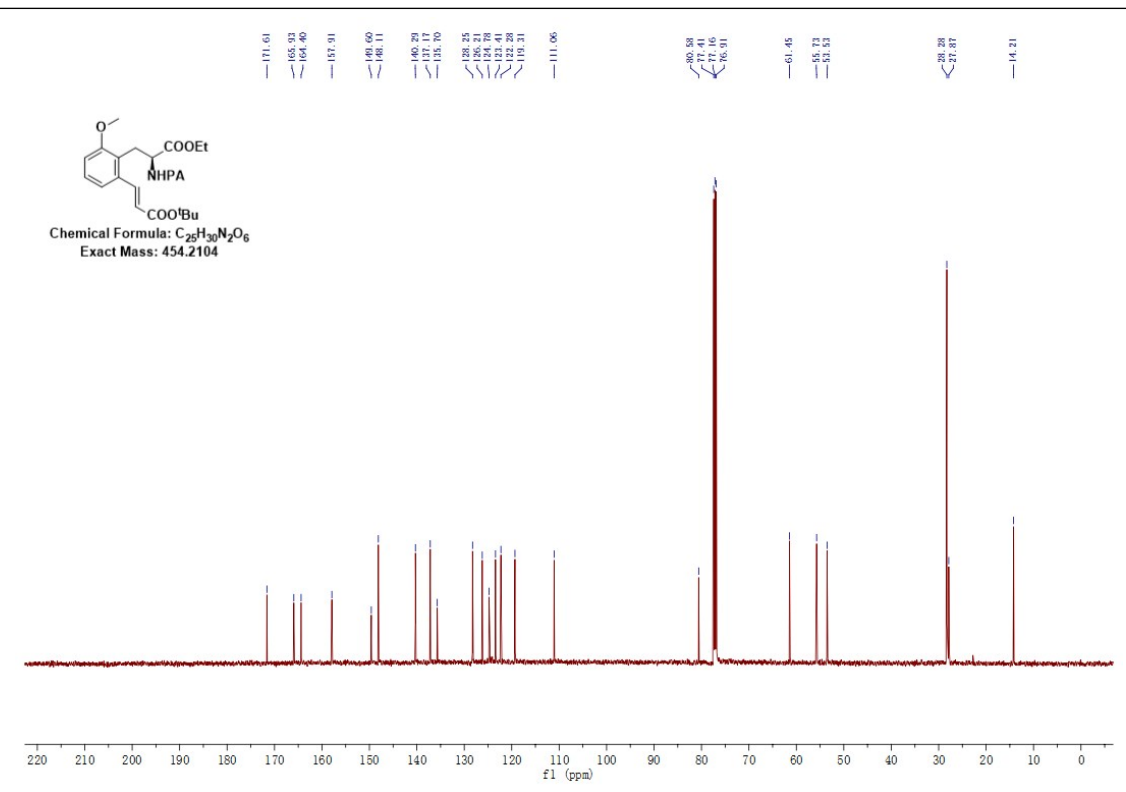
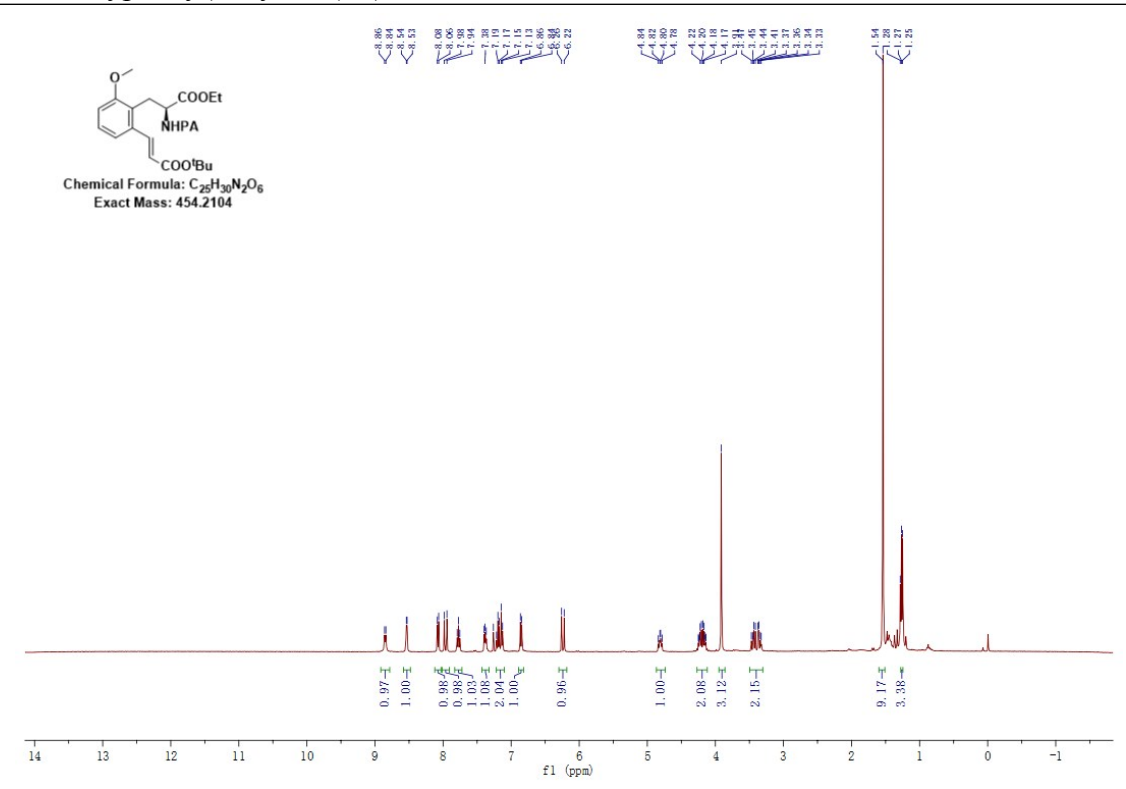
(*S,E*)-methyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methoxyphenyl)acrylate (**3b**)



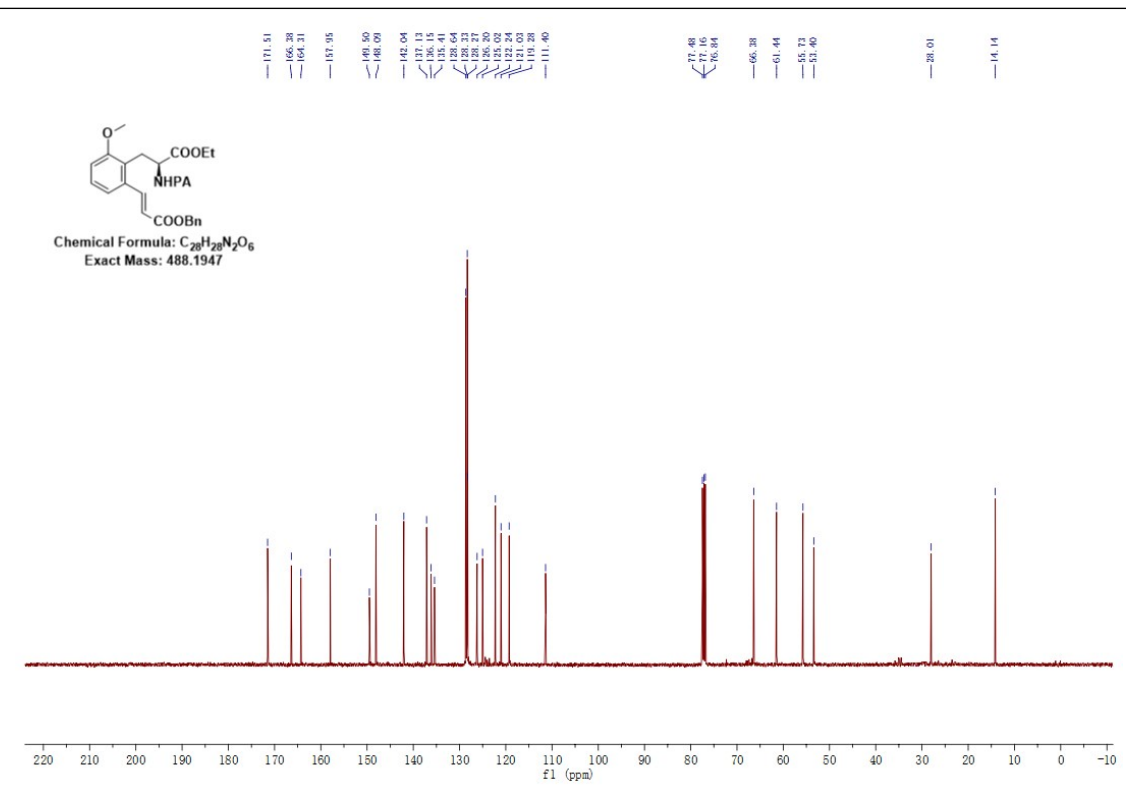
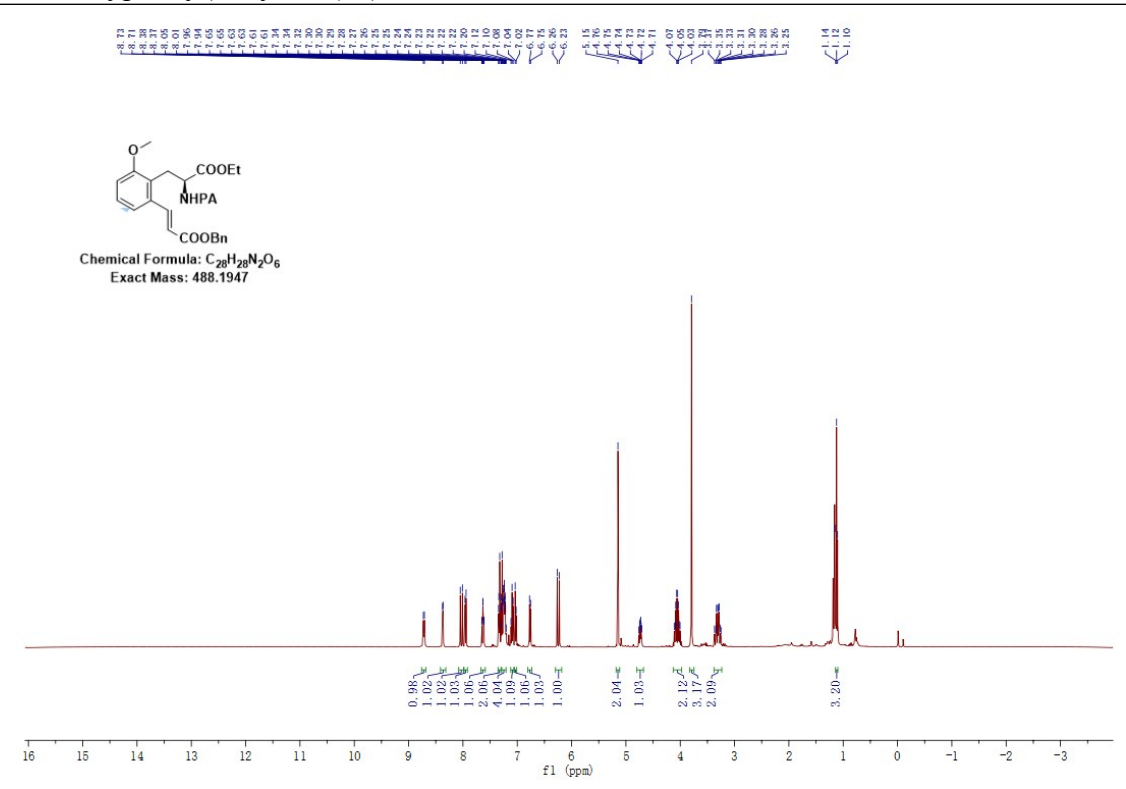
(*S,E*)-butyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methoxyphenyl)acrylate
(3c)



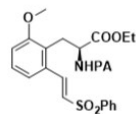
(*S,E*)-*tert*-butyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methoxyphenyl)acrylate (**3d**)



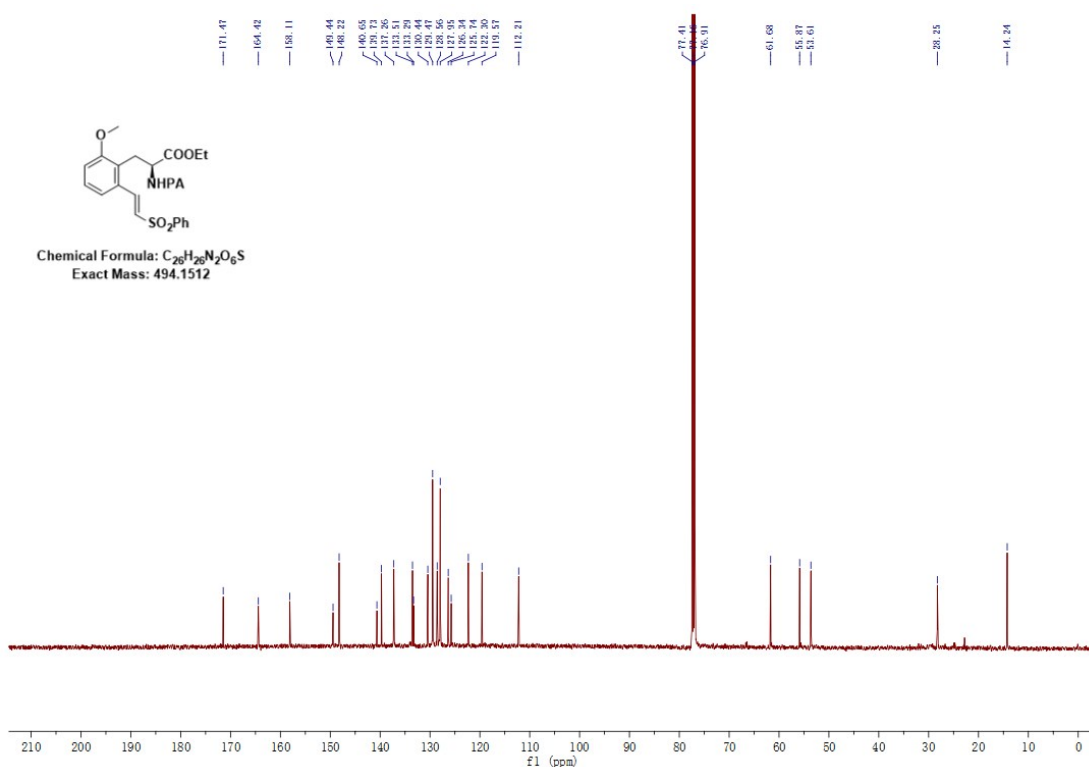
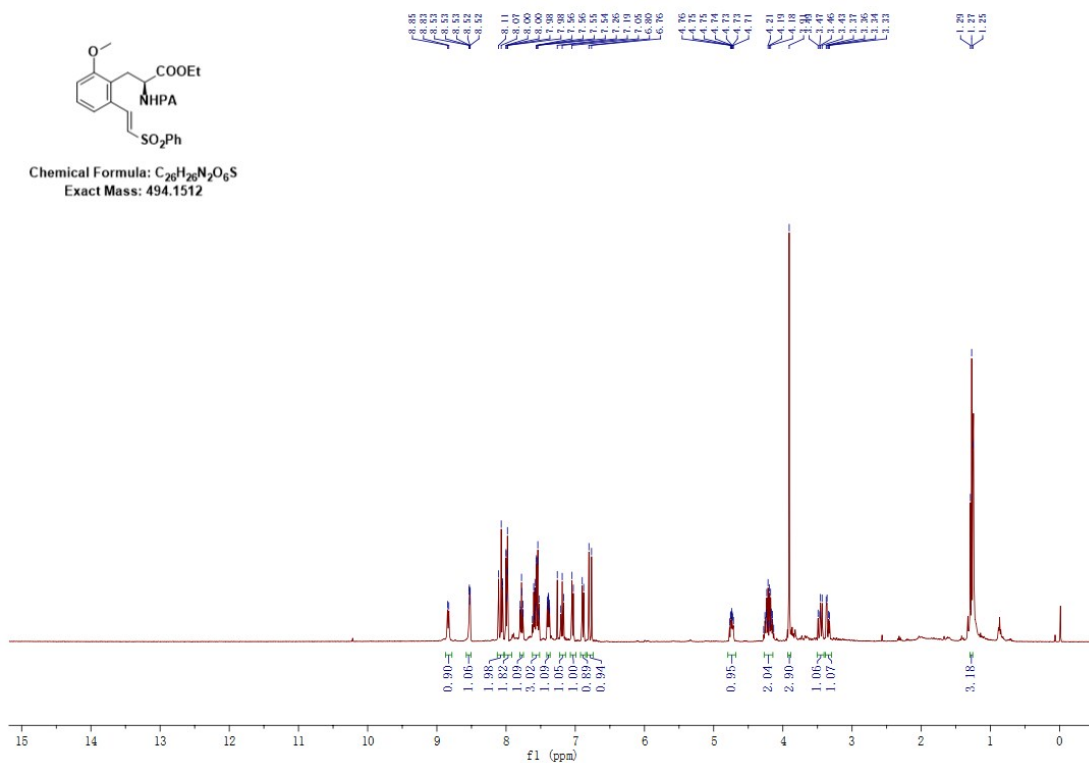
(*S,E*)-benzyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methoxyphenyl)acrylate (**3e**)



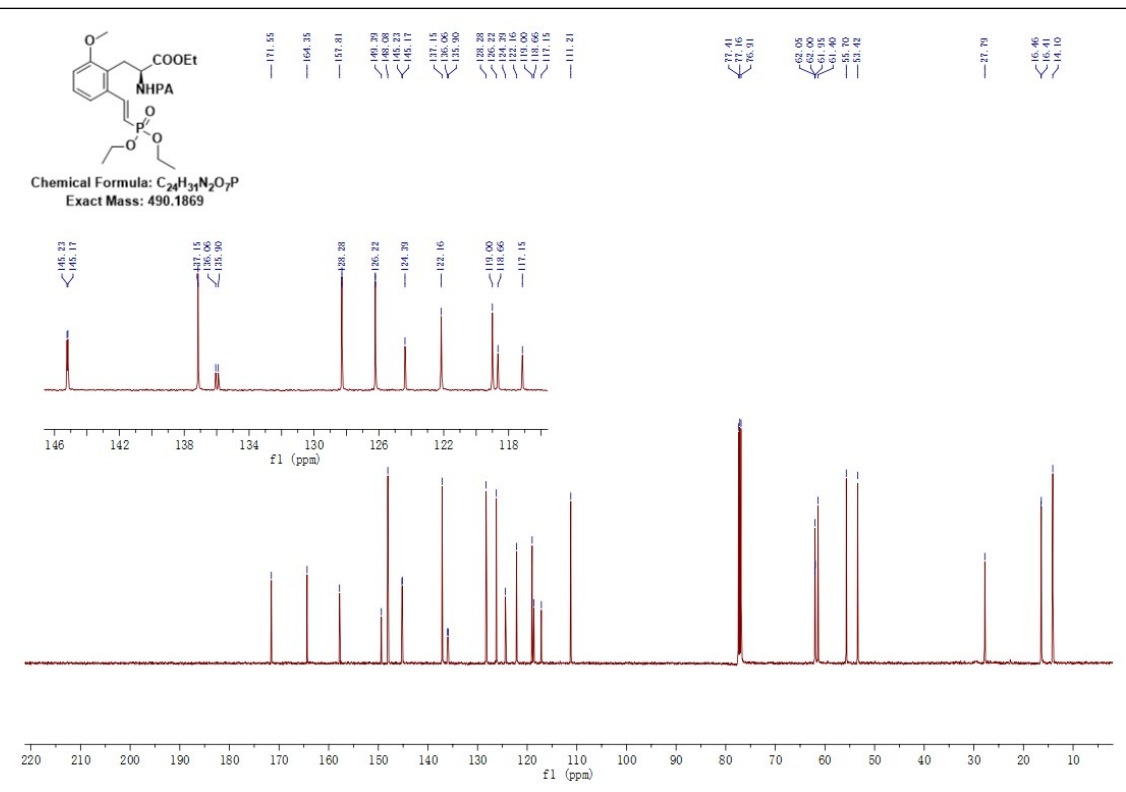
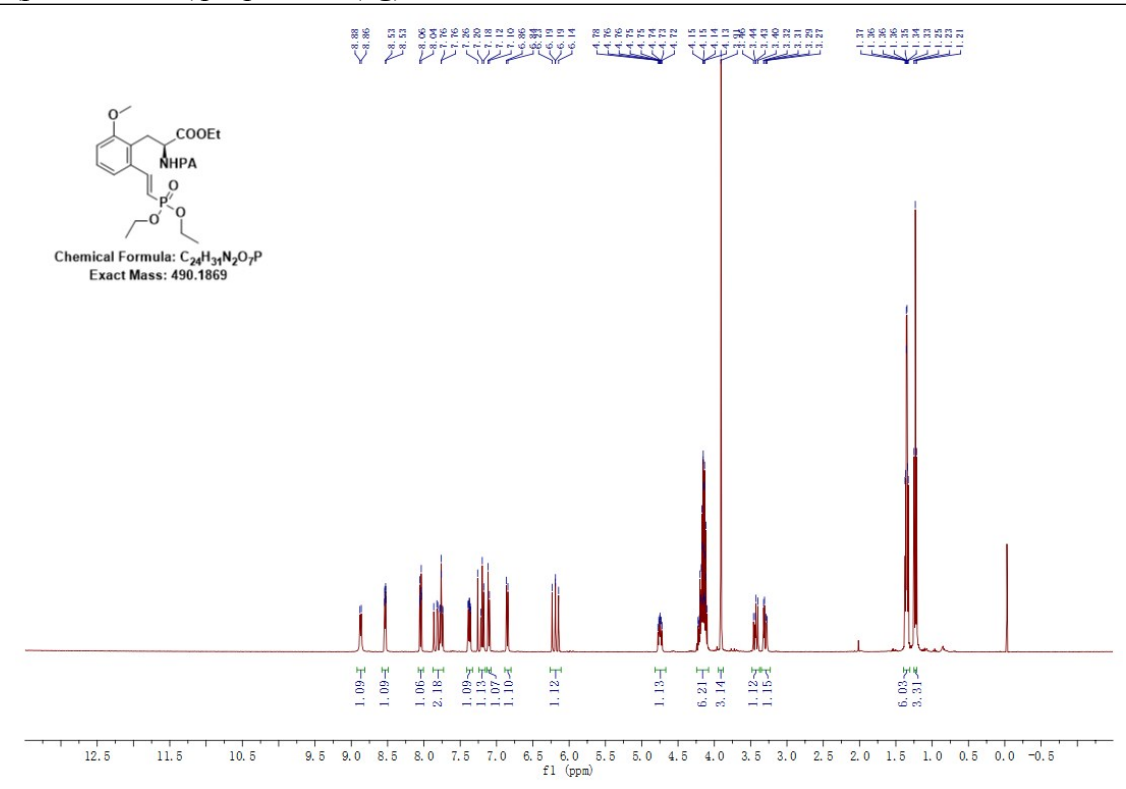
(*S,E*)-ethyl-3-(2-methoxy-6-(2-(phenylsulfonyl)vinyl)phenyl)-2-(picolinamido)propanoate (**3f**)



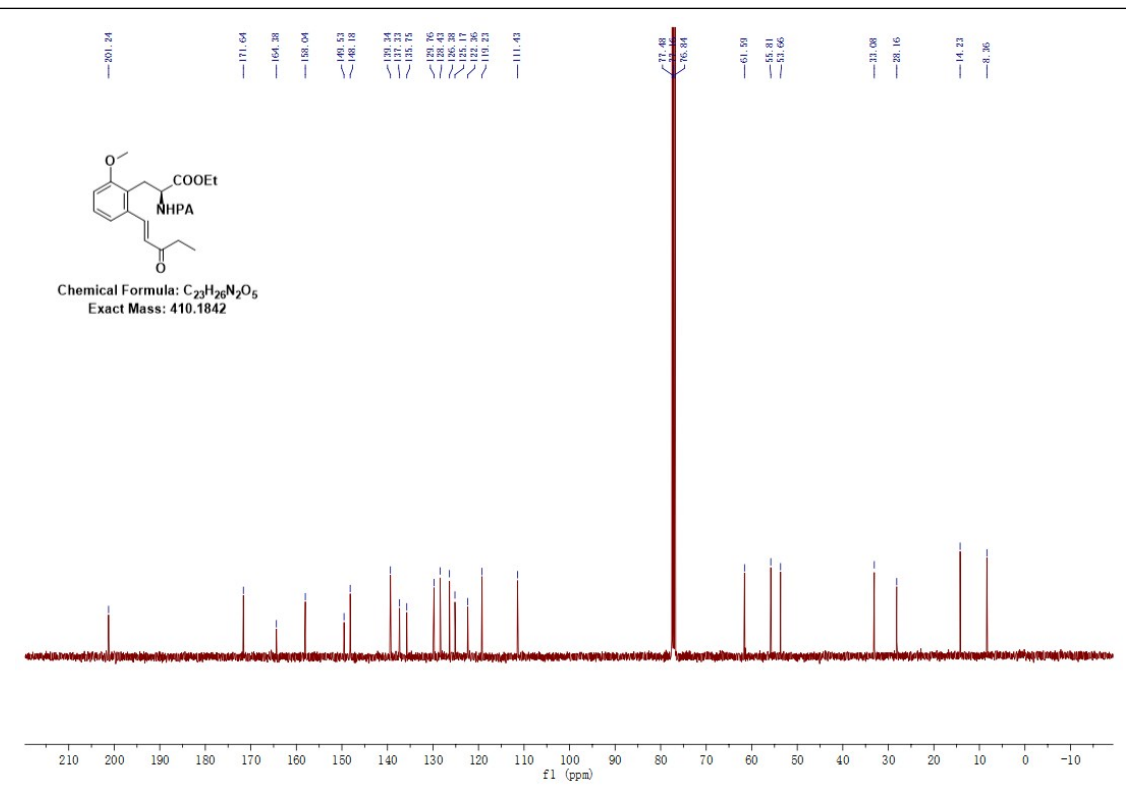
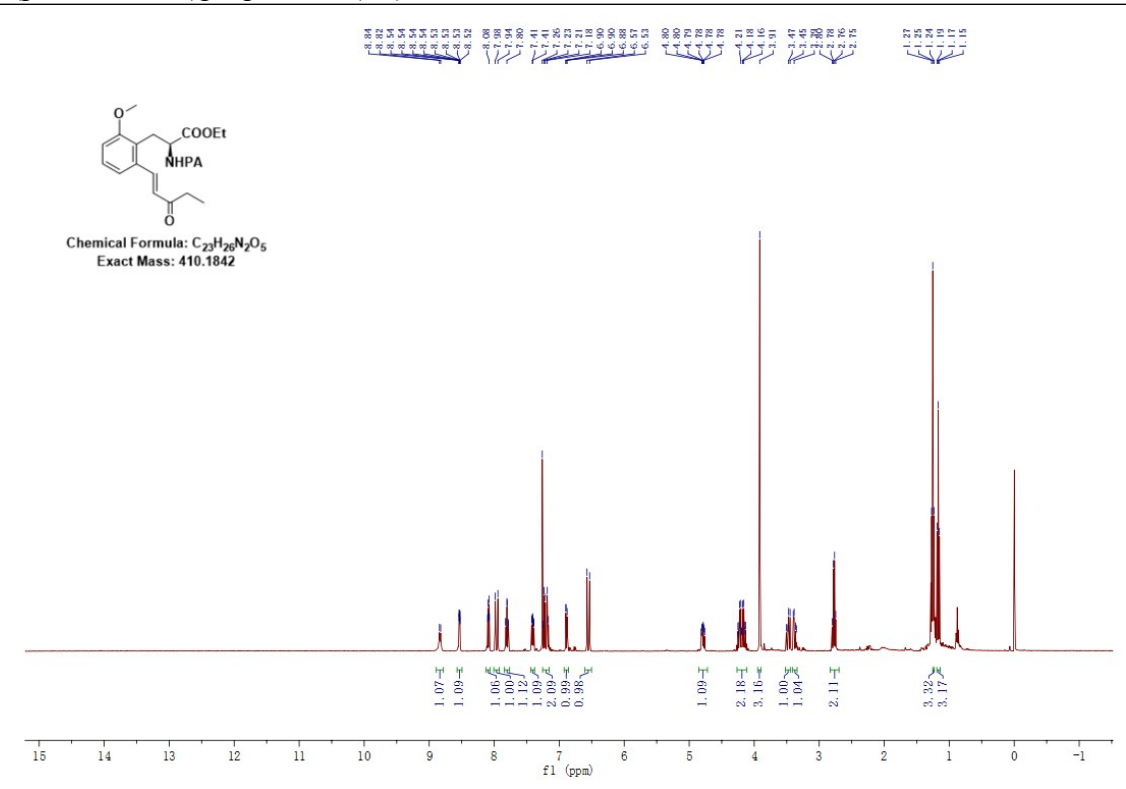
Chemical Formula: C₂₈H₂₆N₂O₆S
Exact Mass: 494.1512



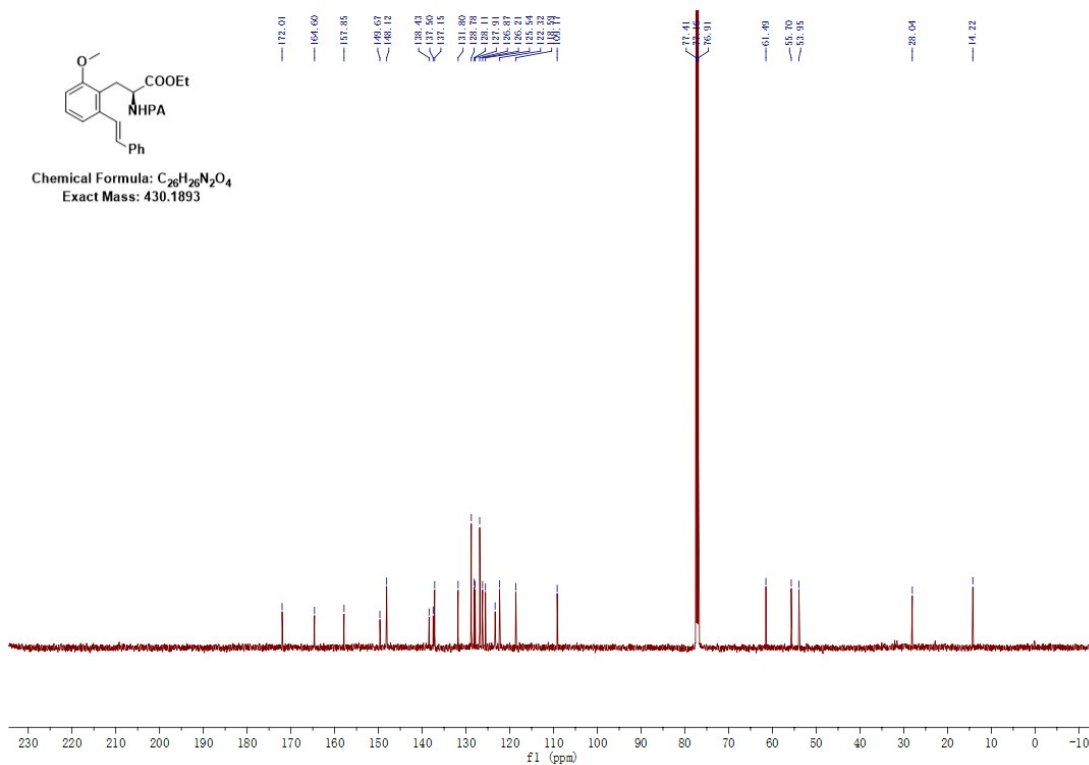
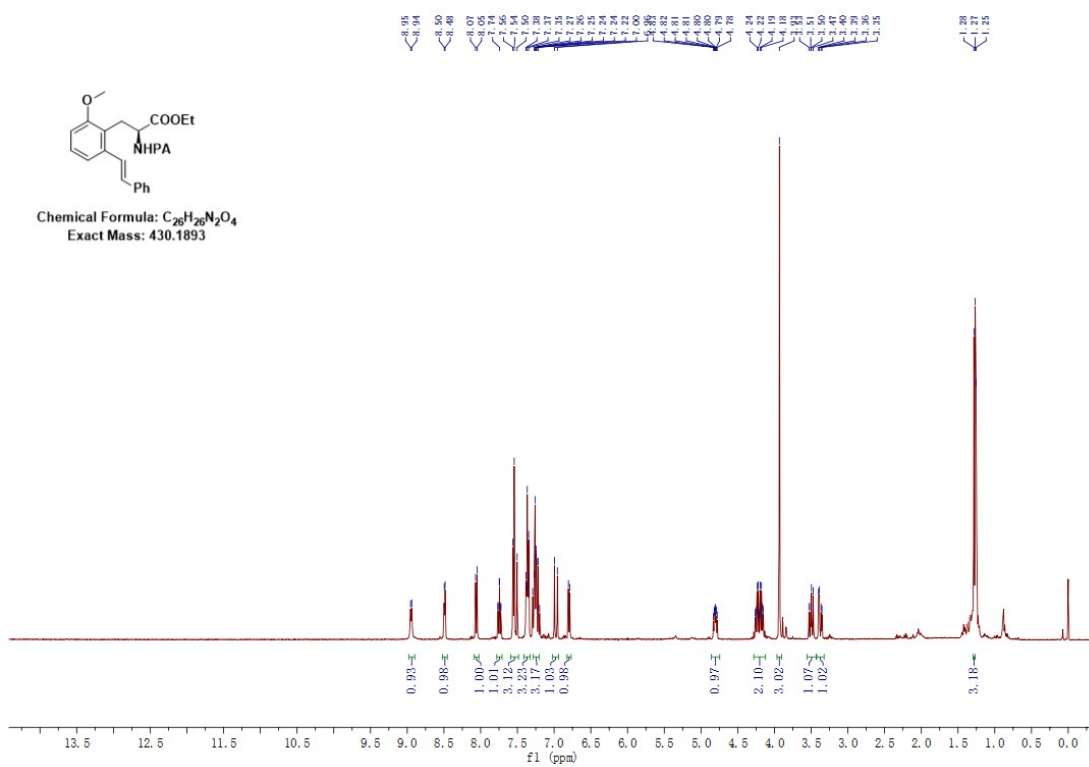
(*S,E*)-ethyl-3-(2-(2-(diethoxyphosphoryl)vinyl)-6-methoxyphenyl)-2-(picolinamido)propanoate (**3g**)



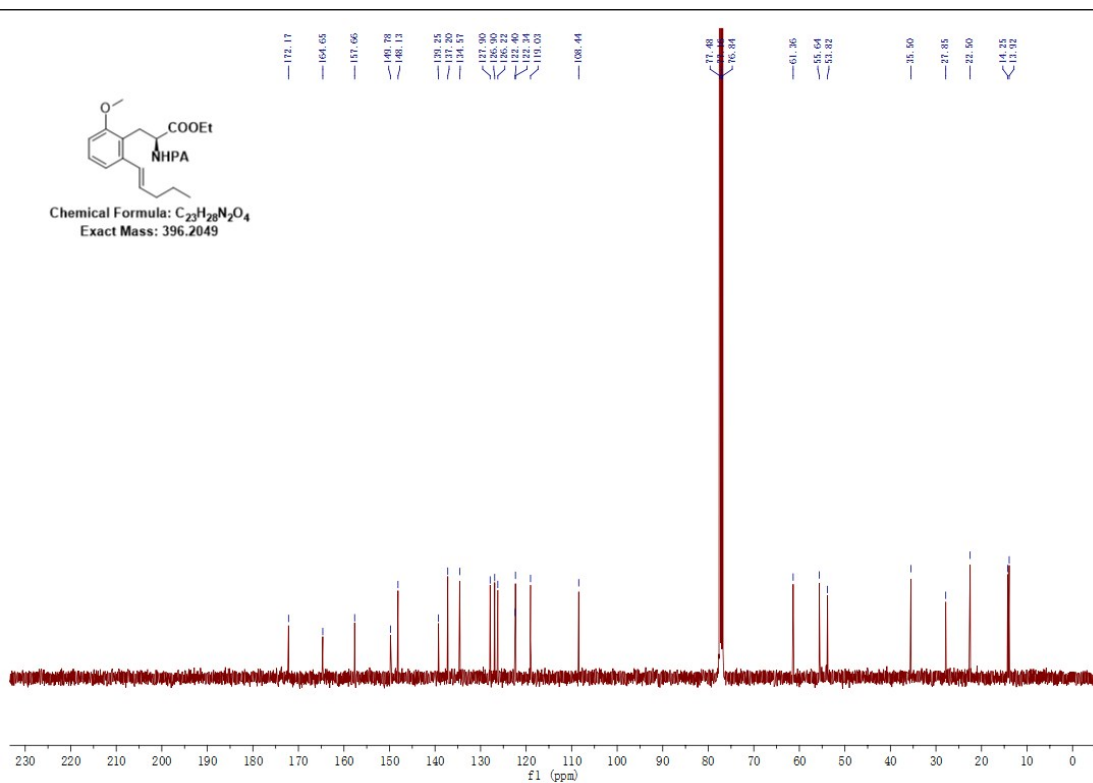
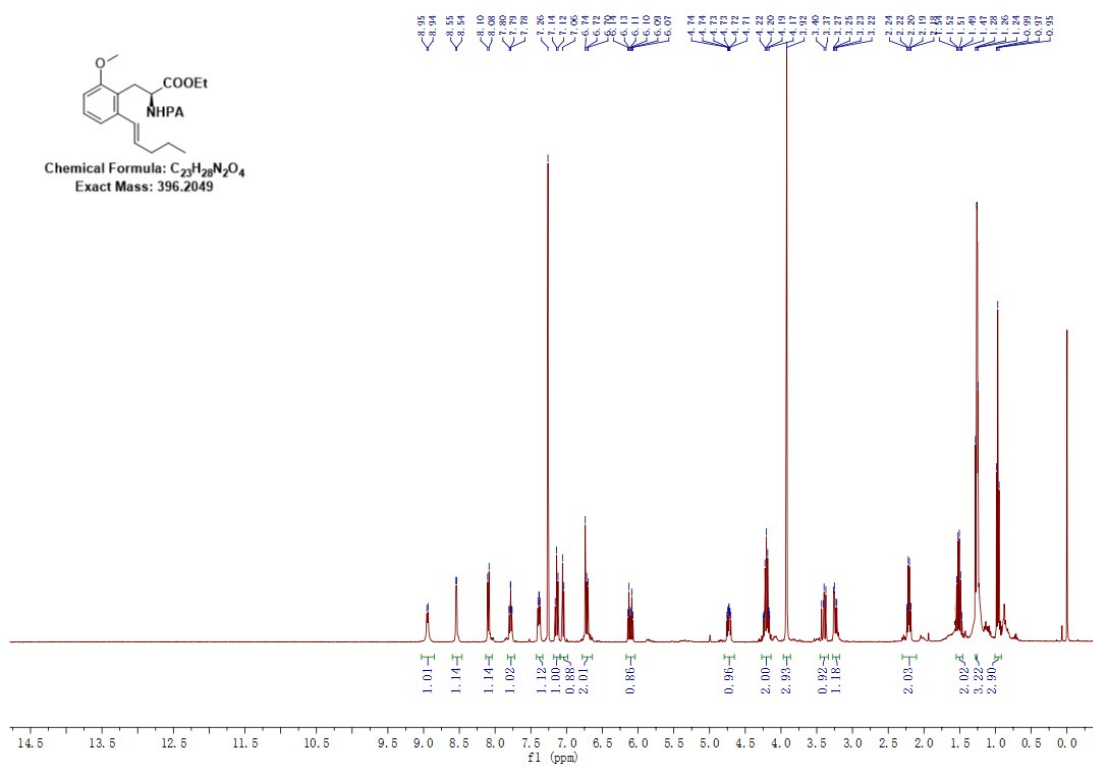
(S,E)-ethyl-3-(2-methoxy-6-(3-oxopent-1-en-1-yl)phenyl)-2-(picolinamido)propanoate (**3h**)



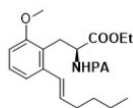
(*S,E*)-ethyl-3-(2-methoxy-6-styrylphenyl)-2-(picolinamido)propanoate (**3i**)



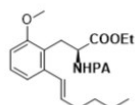
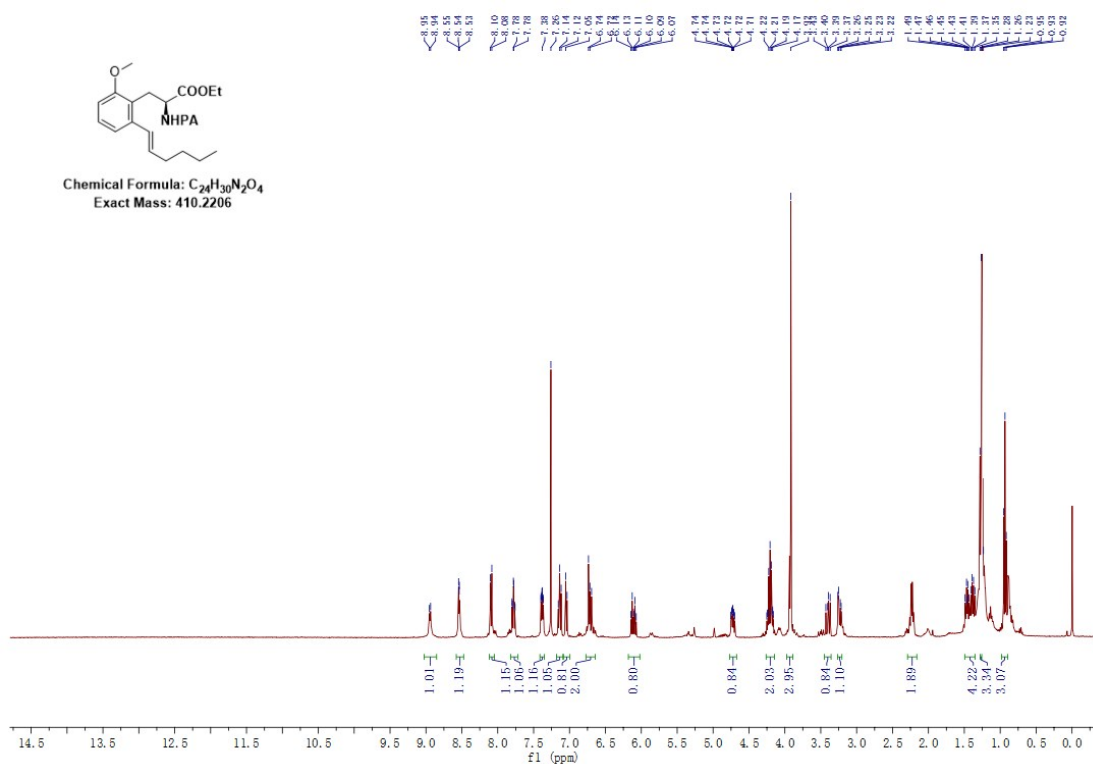
(*S,E*)-ethyl-3-(2-methoxy-6-(pent-1-en-1-yl)phenyl)-2-(picolinamido)propanoate (**3j**)



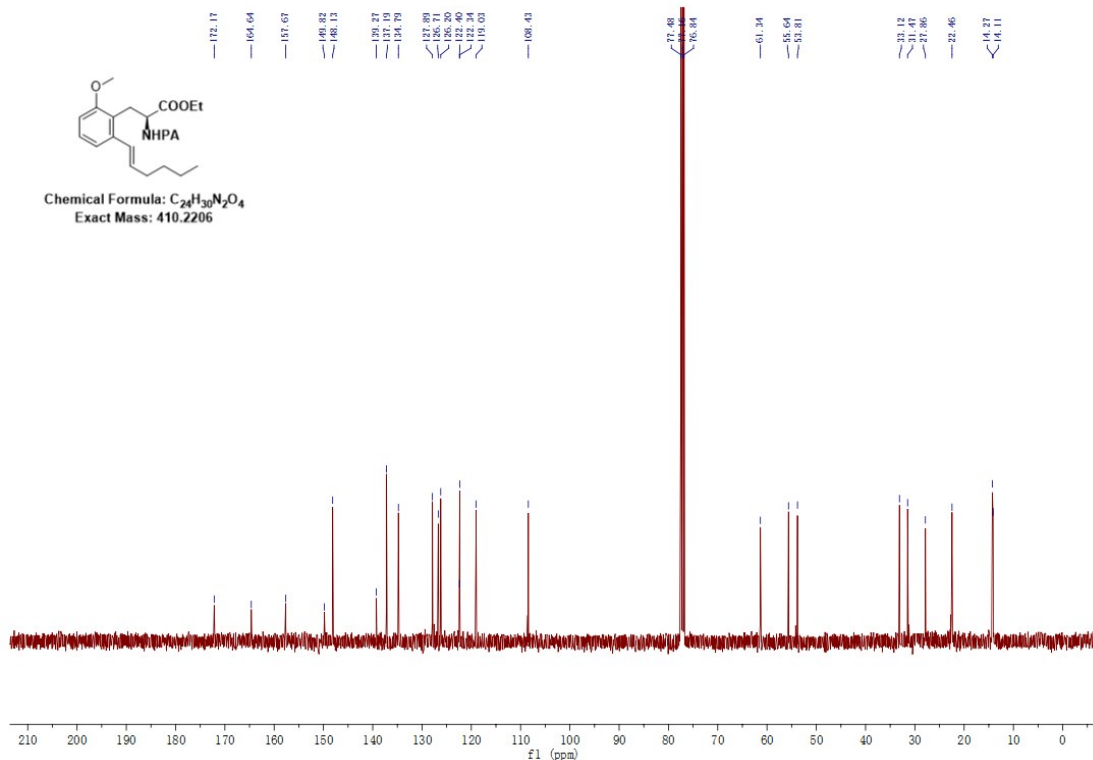
(*S,E*)-ethyl-3-(2-(hex-1-en-1-yl)-6-methoxyphenyl)-2-(picolinamido)propanoate (**3k**)



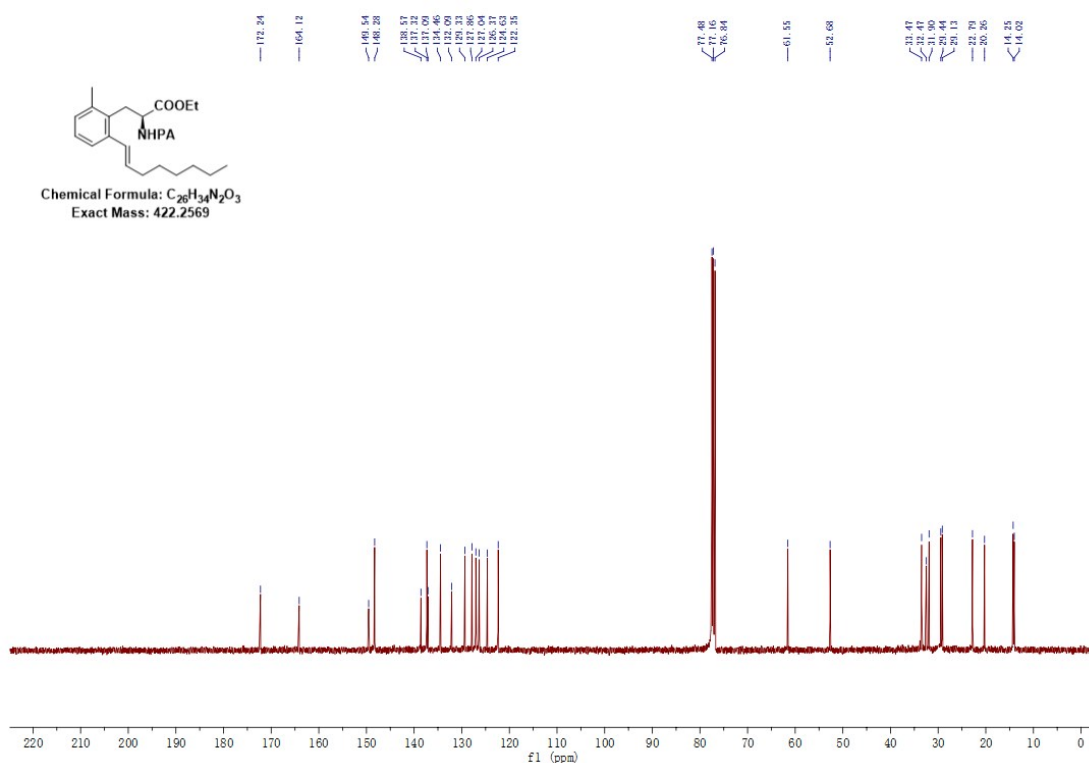
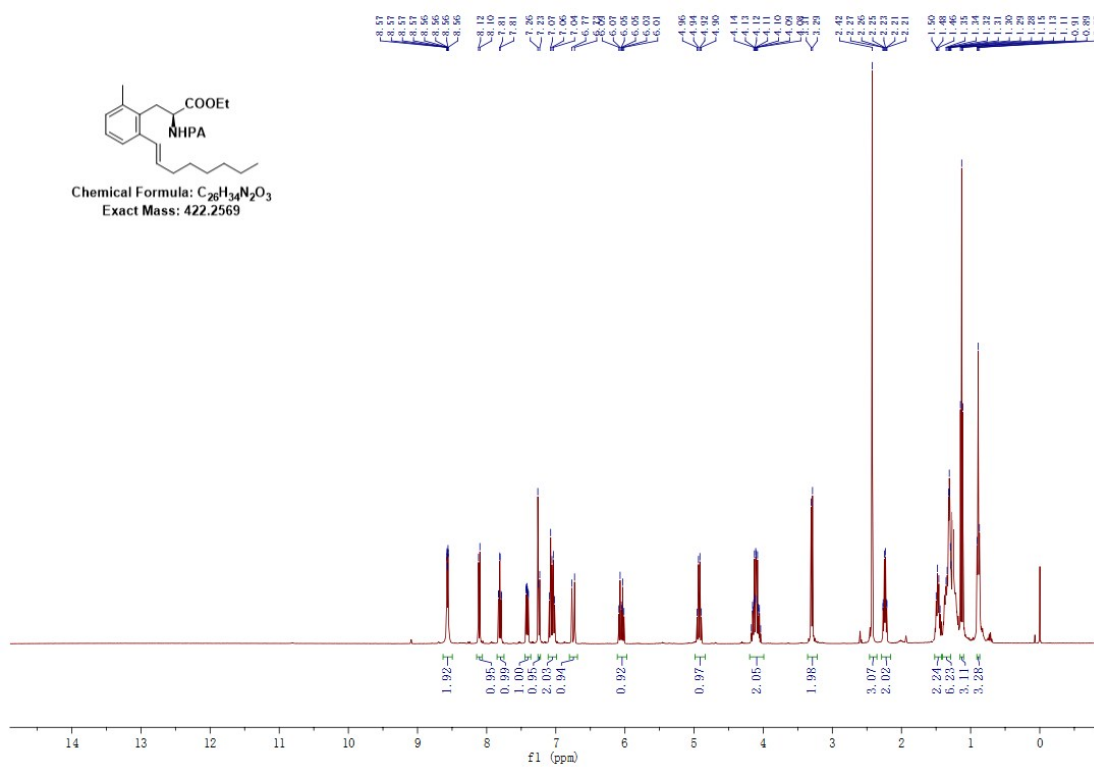
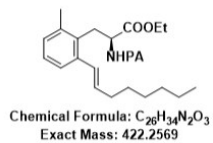
Chemical Formula: C₂₄H₃₀N₂O₄
Exact Mass: 410.2206



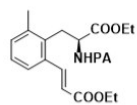
Chemical Formula: C₂₄H₃₀N₂O₄
Exact Mass: 410.2206



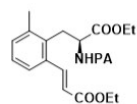
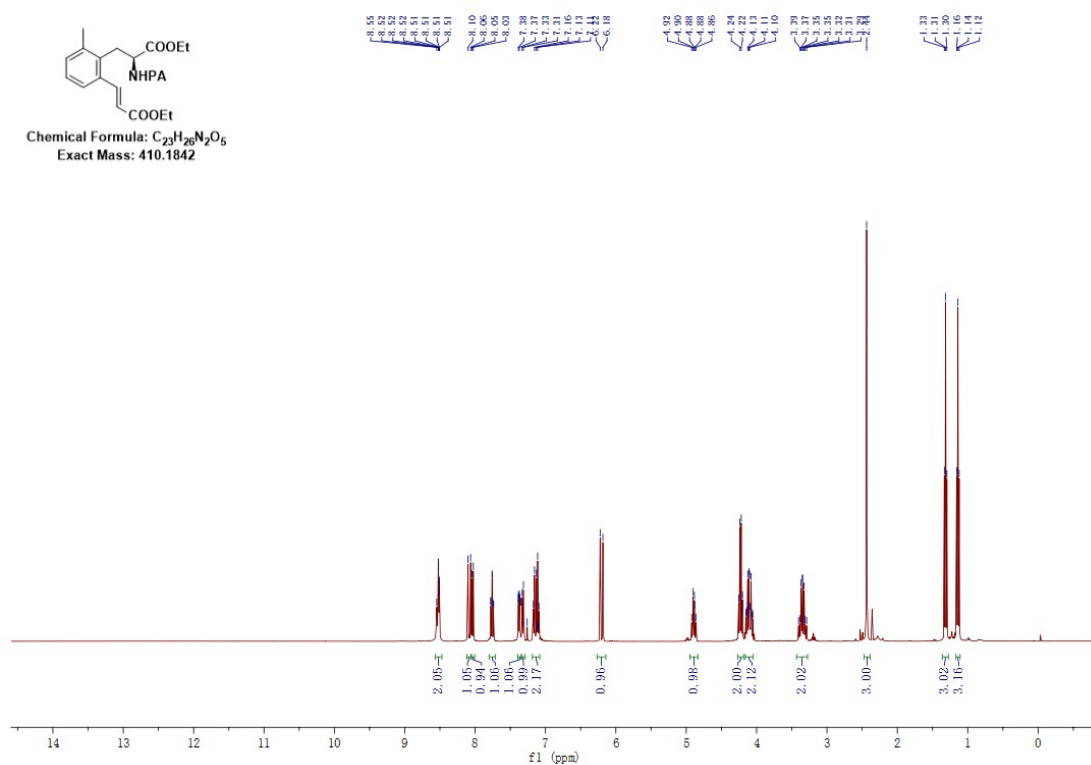
(*S,E*)-ethyl-3-(2-methyl-6-(oct-1-en-1-yl)phenyl)-2-(picolinamido)propanoate (**31**)



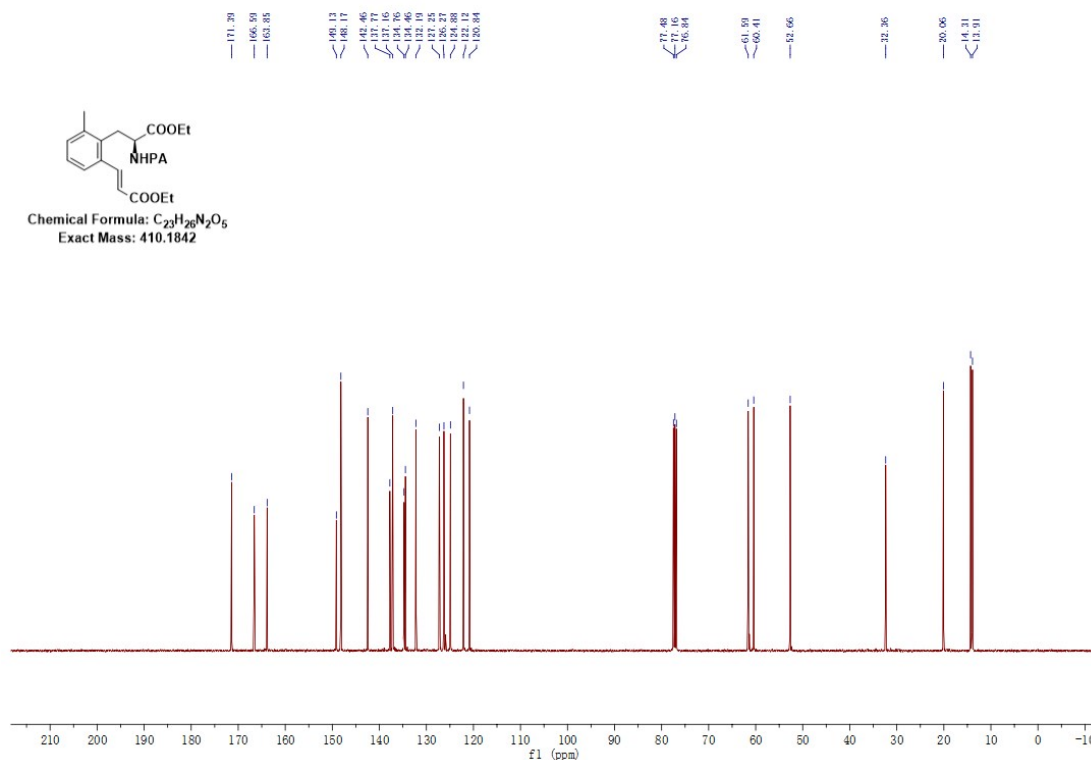
(*S,E*)-ethyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-methylphenyl)acrylate
(3m)



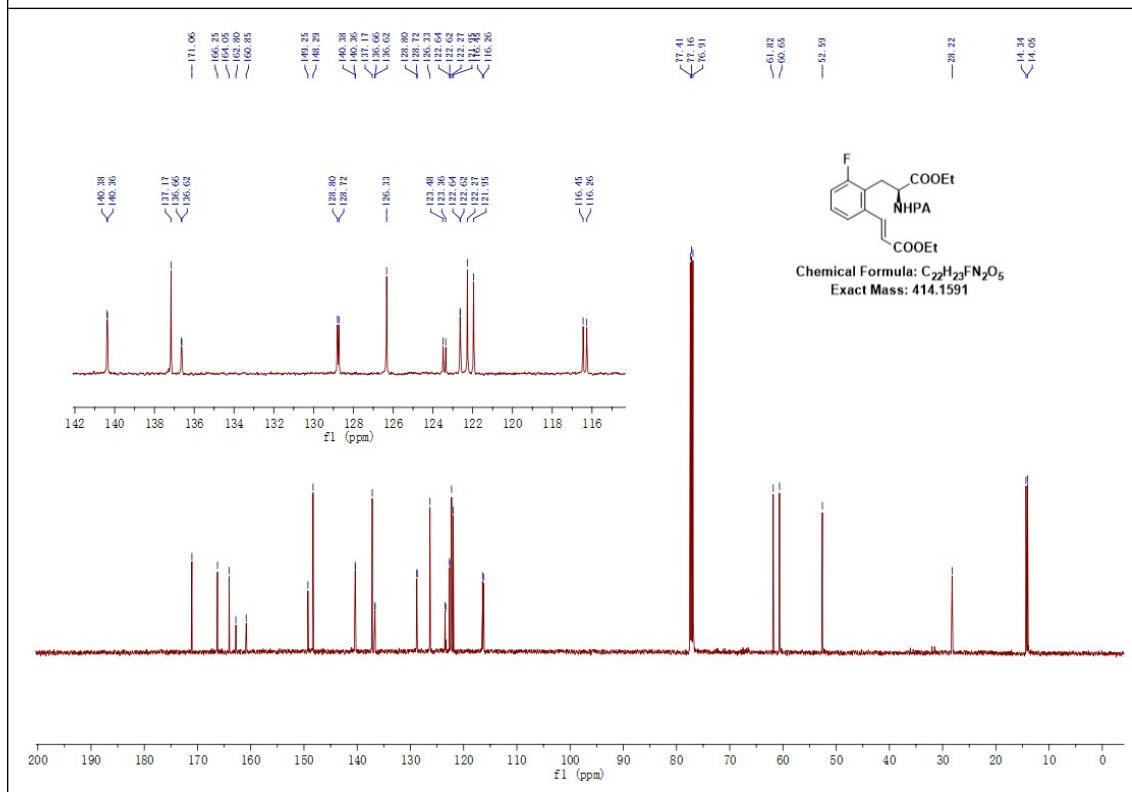
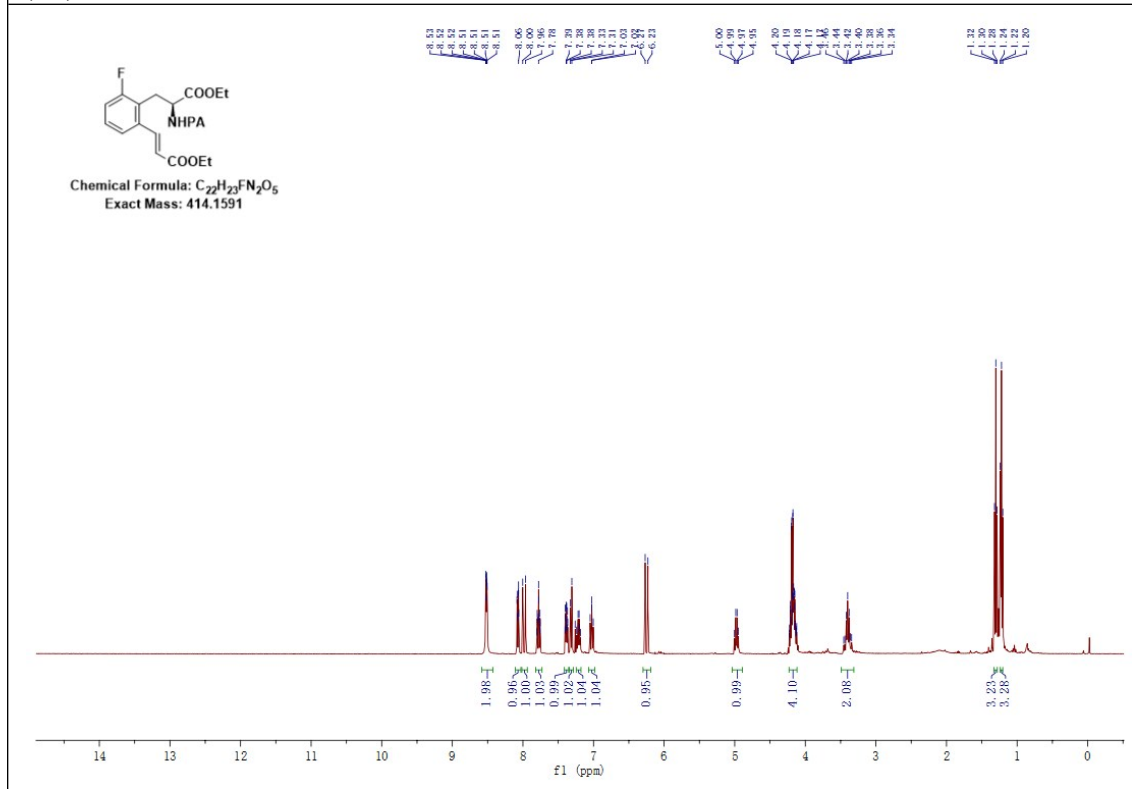
Chemical Formula: $C_{23}H_{26}N_2O_5$
 Exact Mass: 410.1842



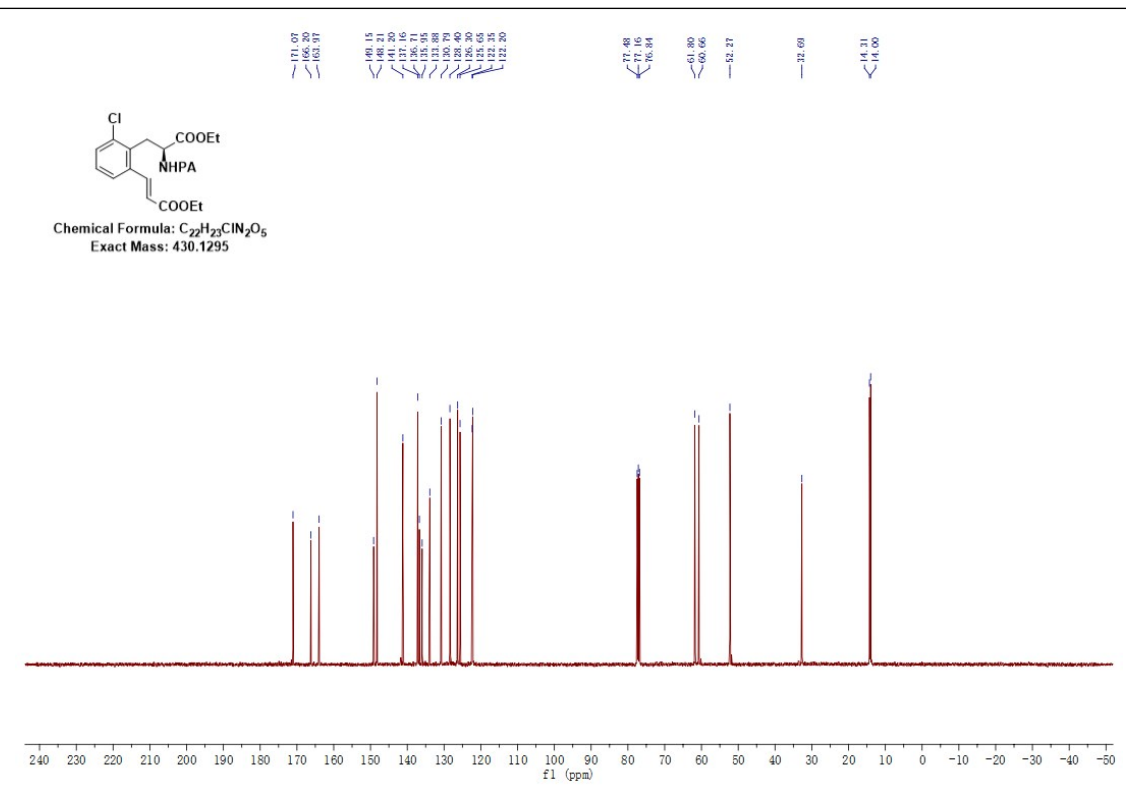
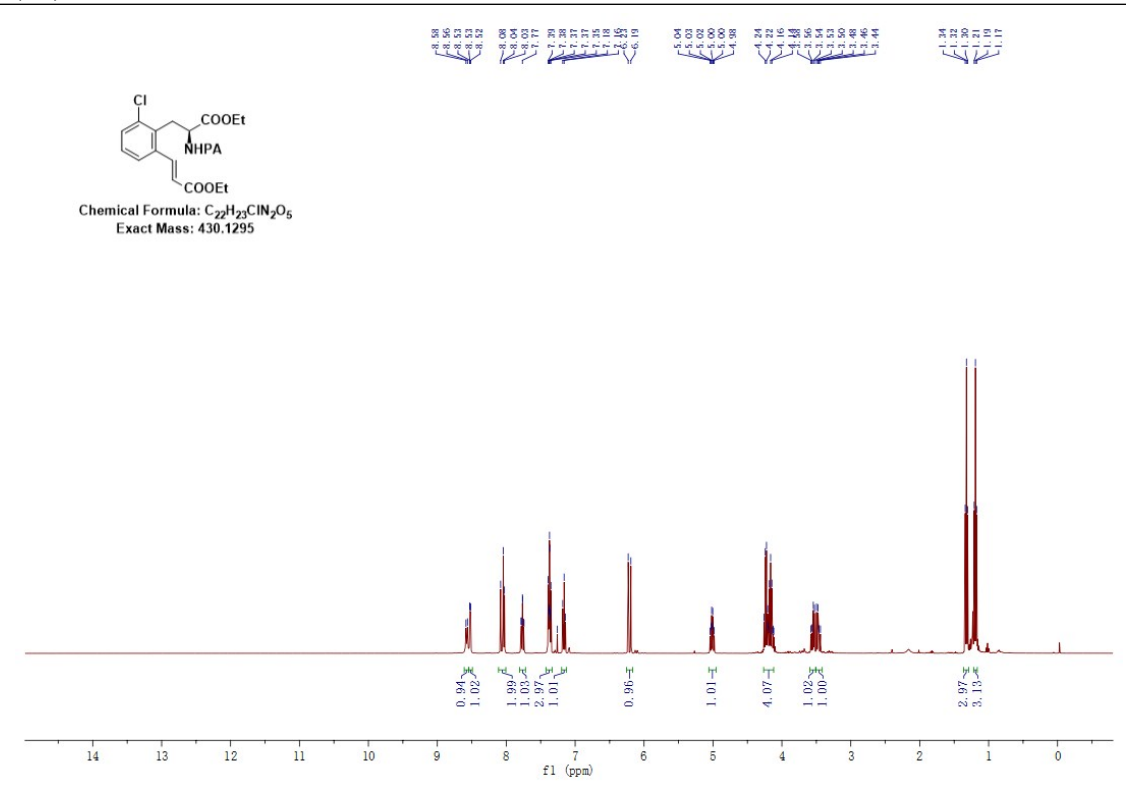
Chemical Formula: $C_{23}H_{26}N_2O_5$
 Exact Mass: 410.1842



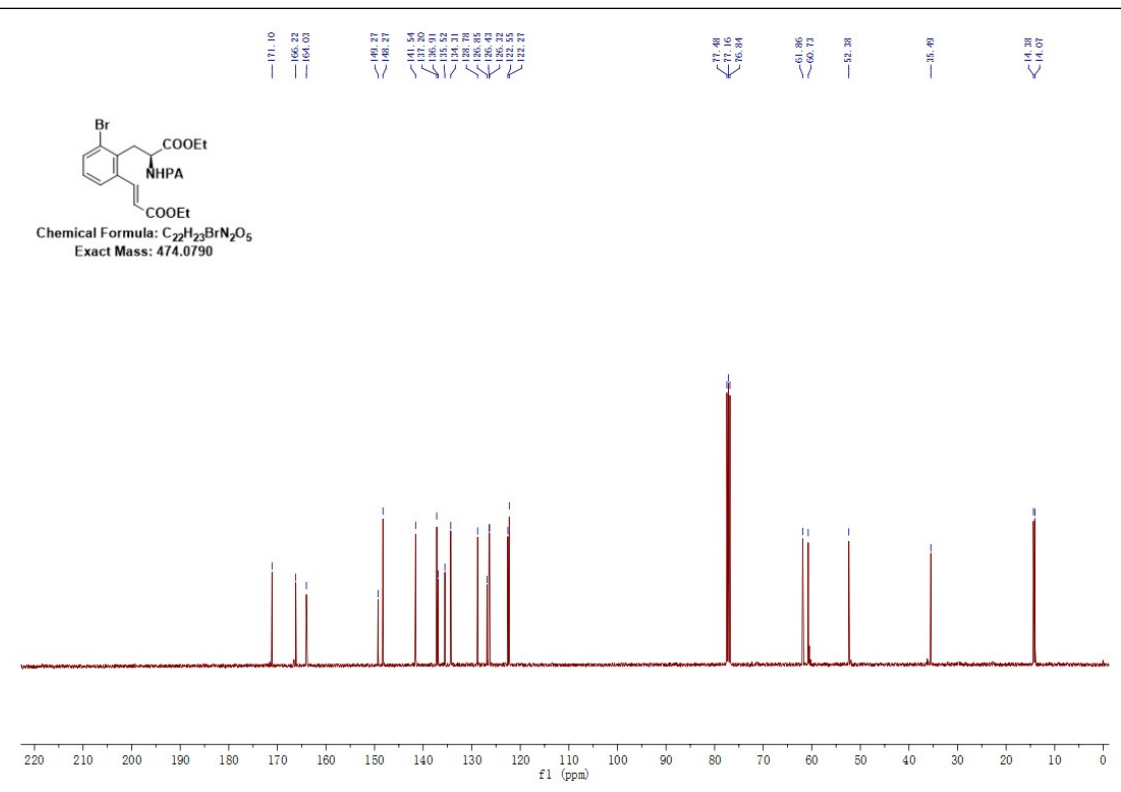
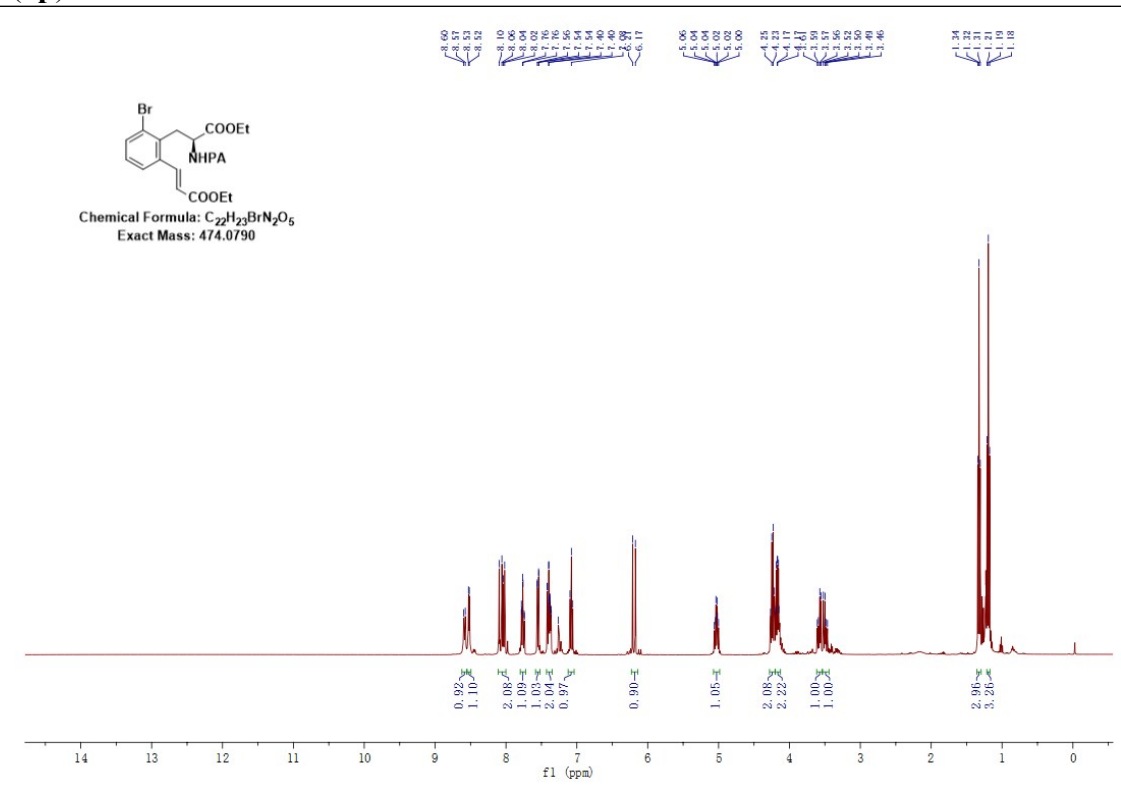
(*S,E*)-ethyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-3-fluorophenyl)acrylate (3n)



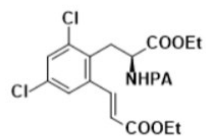
(*S,E*)-ethyl-3-(3-chloro-2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate
(30)



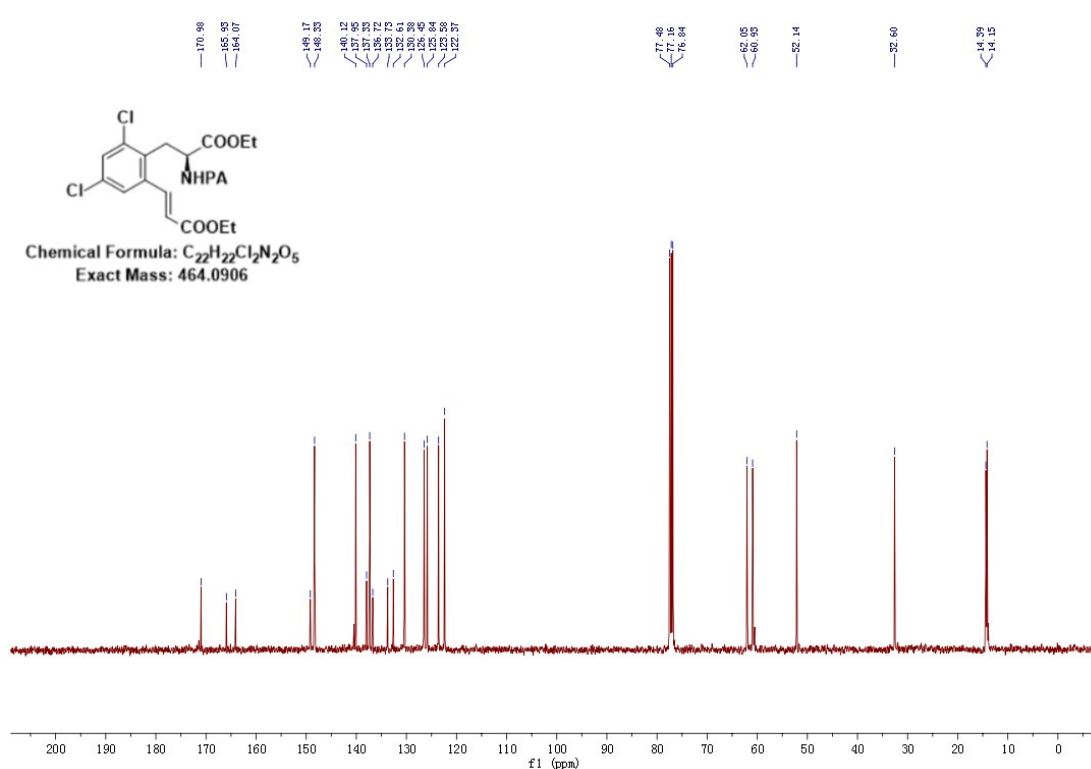
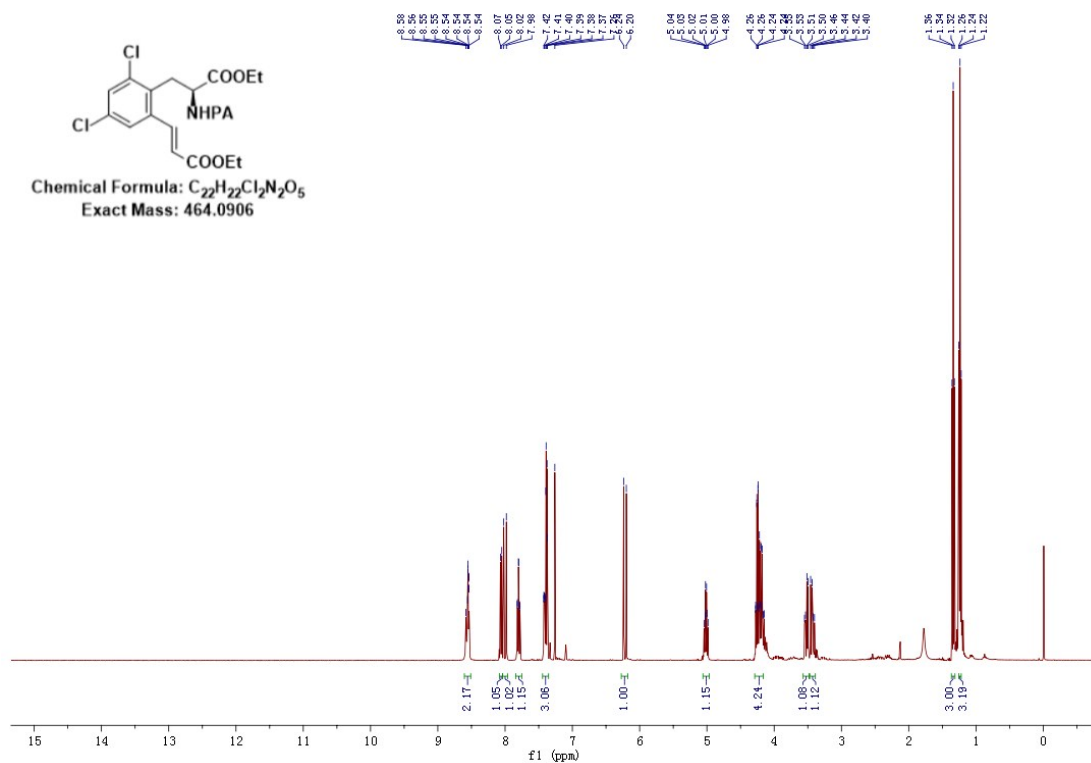
(*S,E*)-ethyl-3-(3-bromo-2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate
(3p)



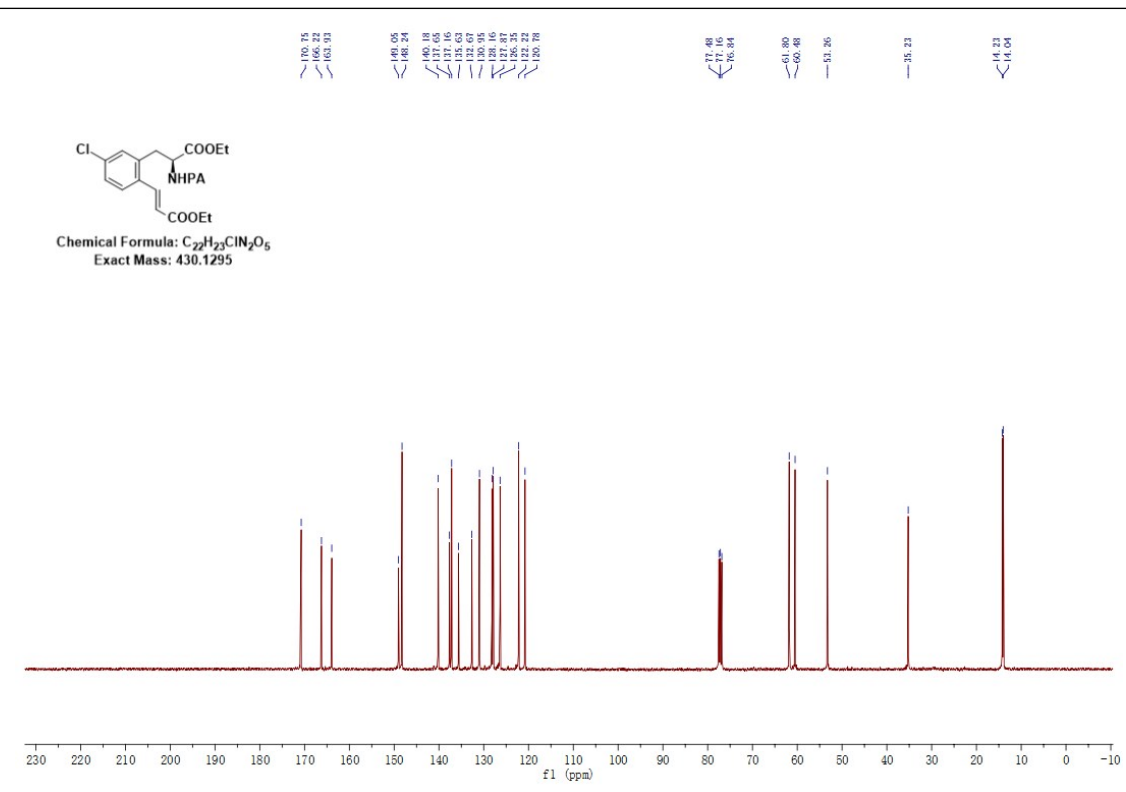
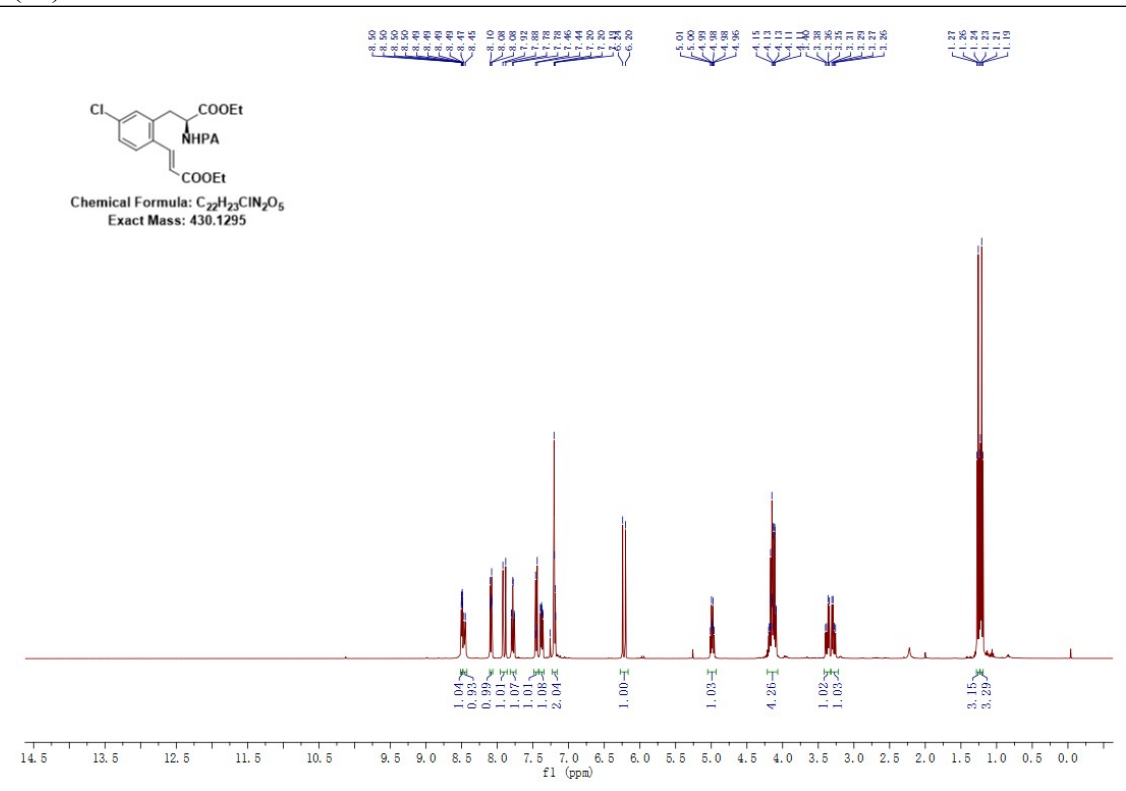
(*S,E*)-ethyl-3-(3,5-dichloro-2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate (**3q**)



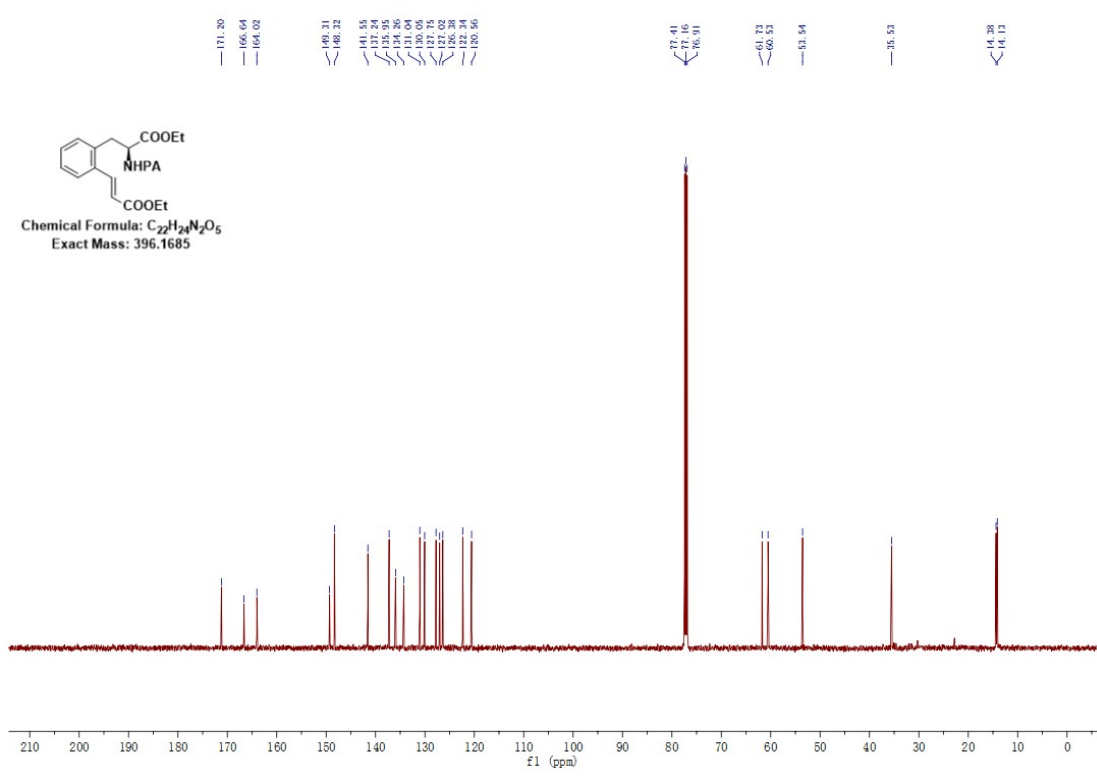
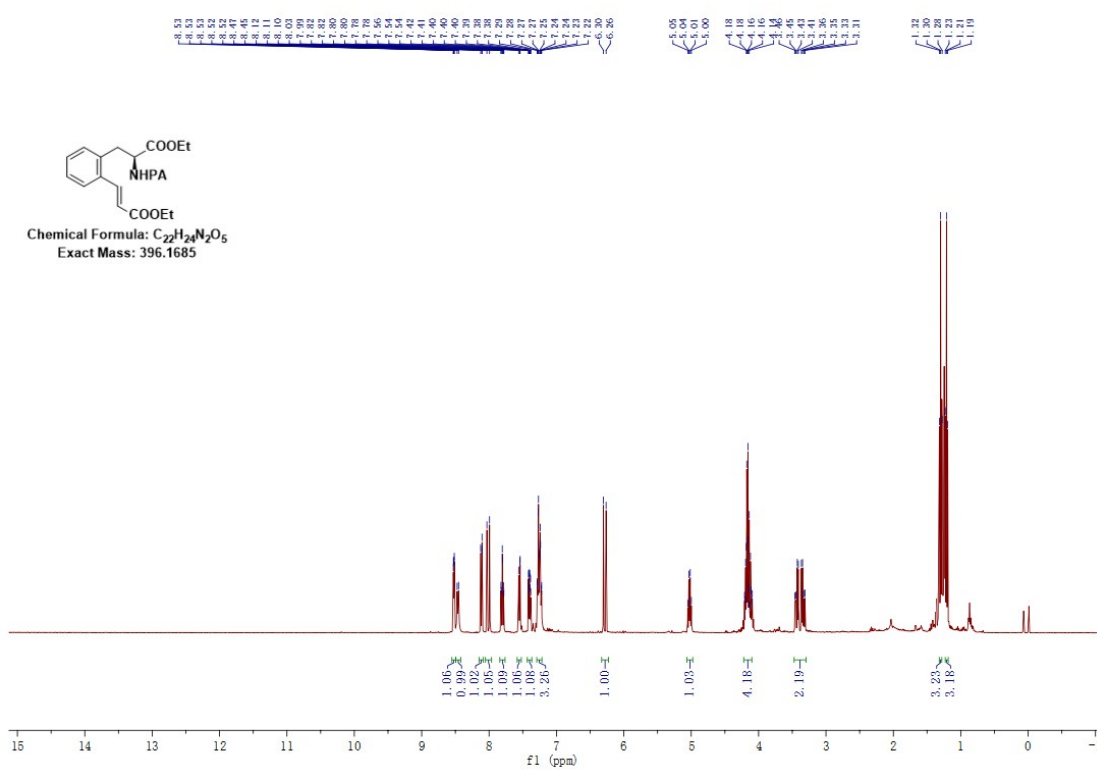
Chemical Formula: $C_{22}H_{22}Cl_2N_2O_5$
Exact Mass: 464.0906



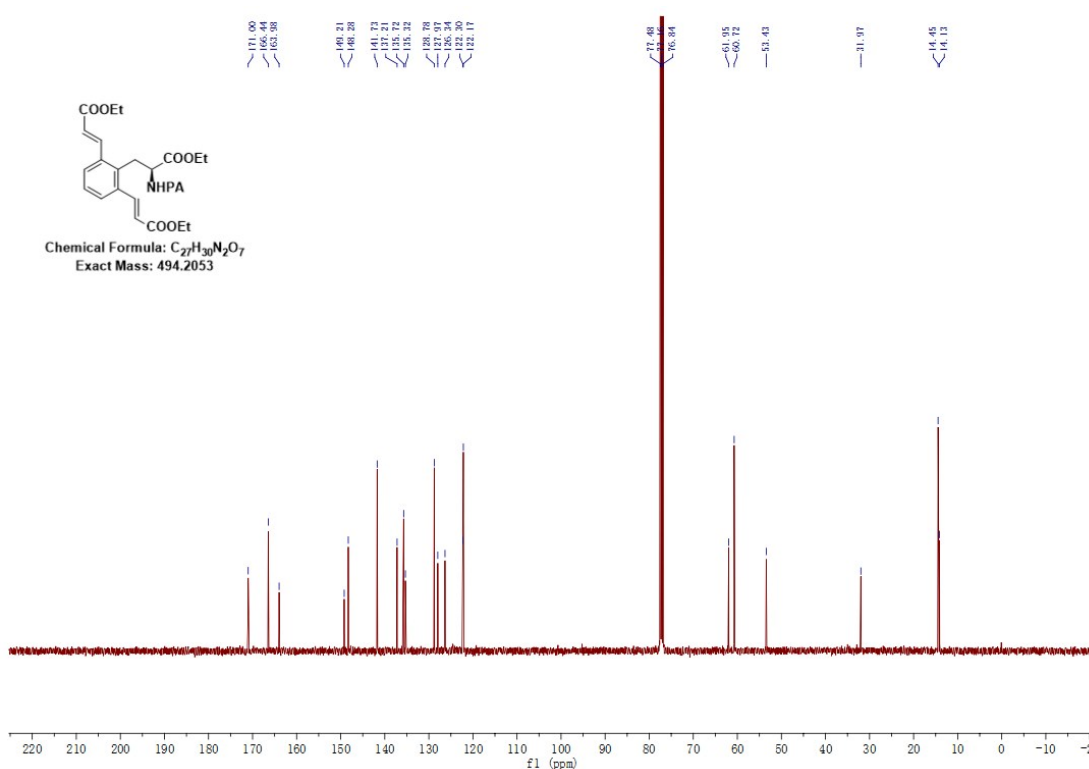
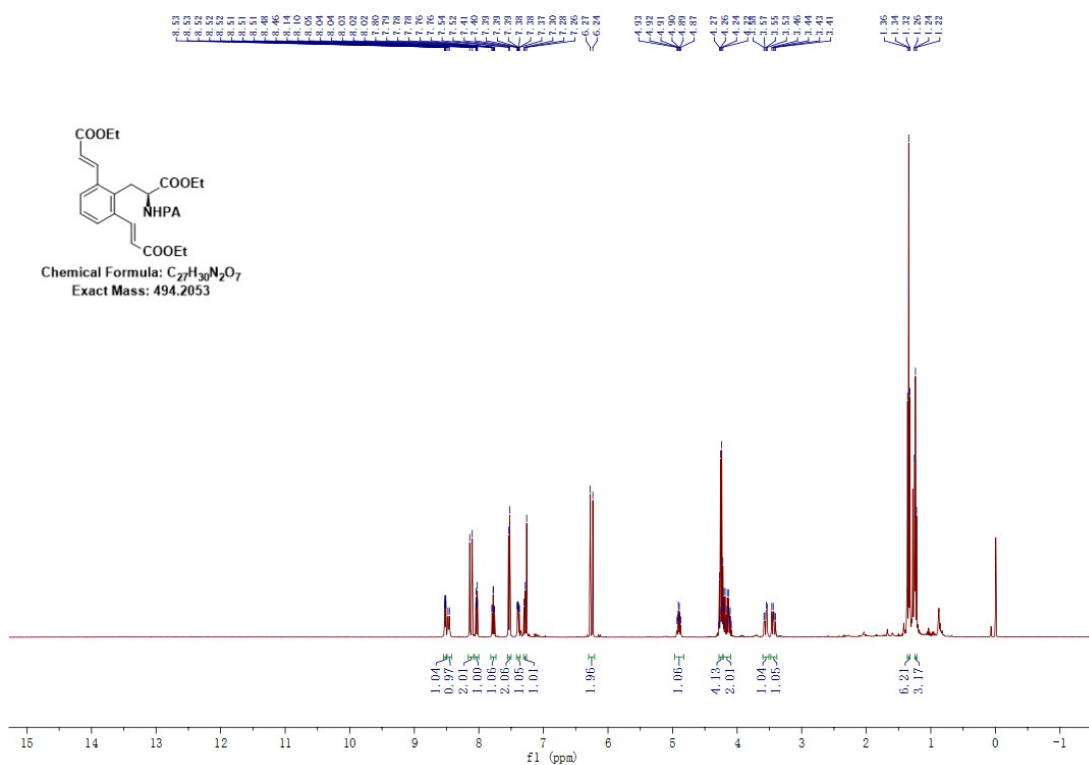
(*S,E*)-ethyl-3-(4-chloro-2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate
(3r)



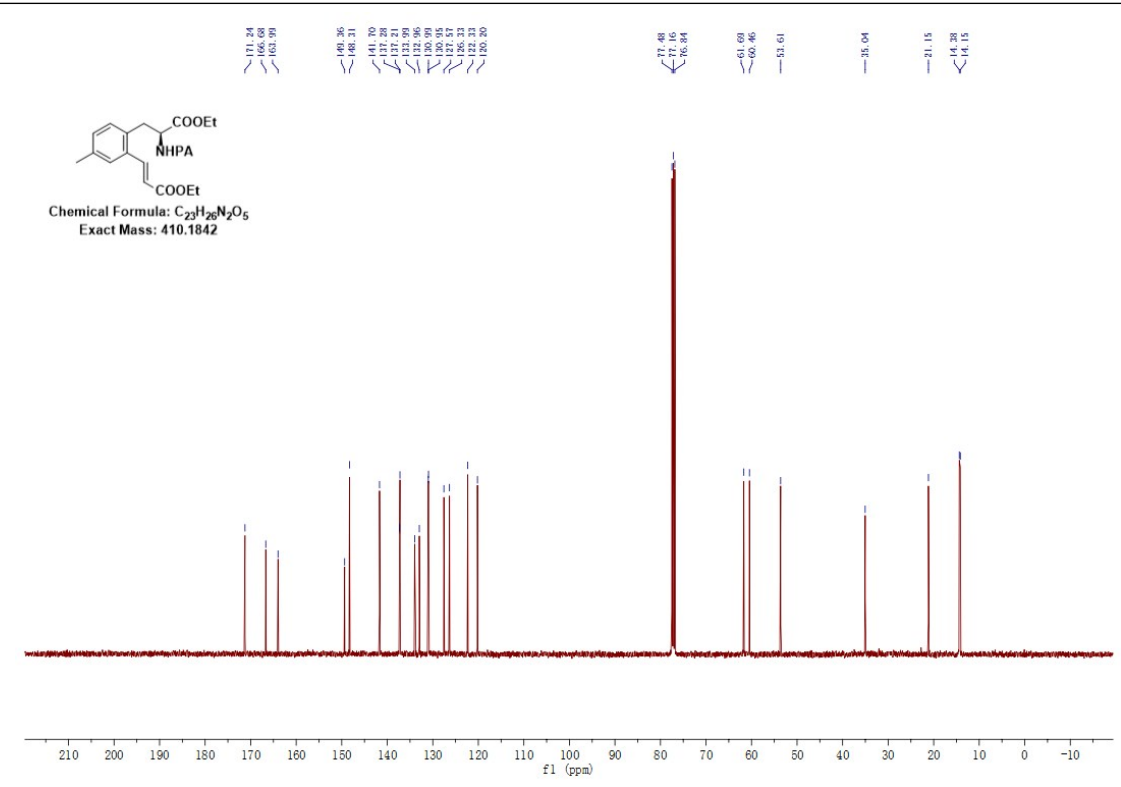
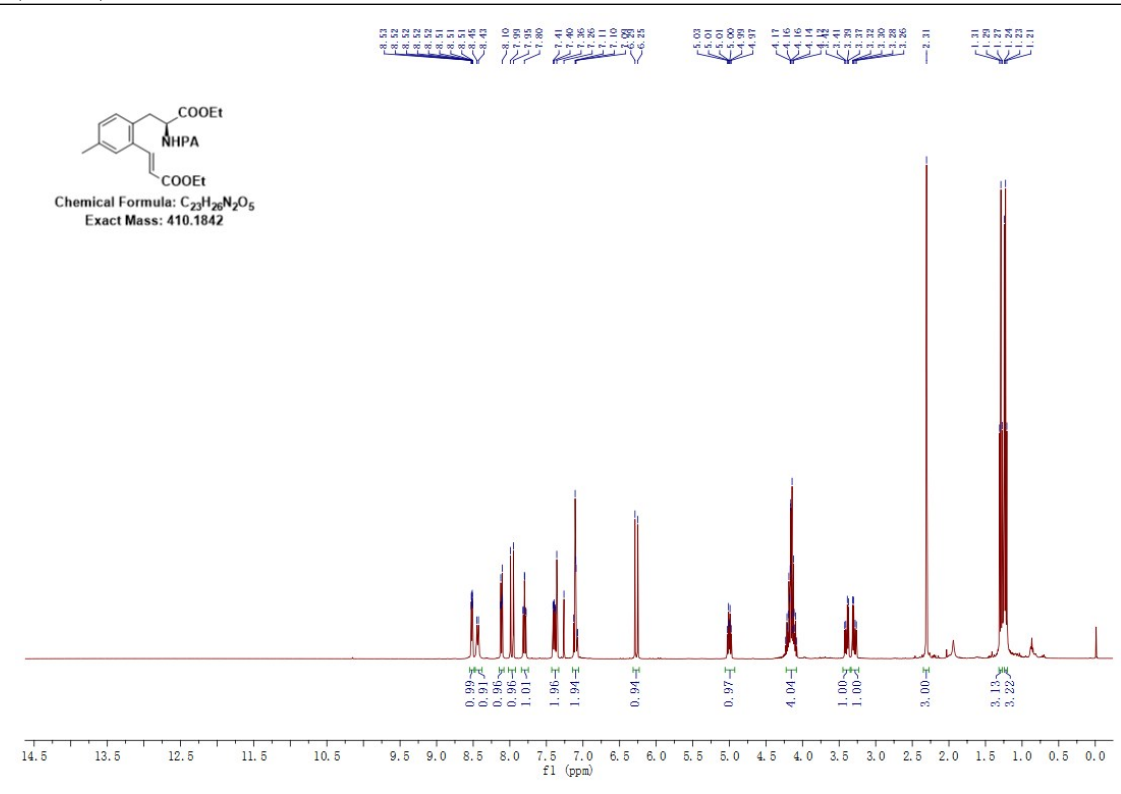
(*S,E*)-ethyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate (**3s_{mono}**)



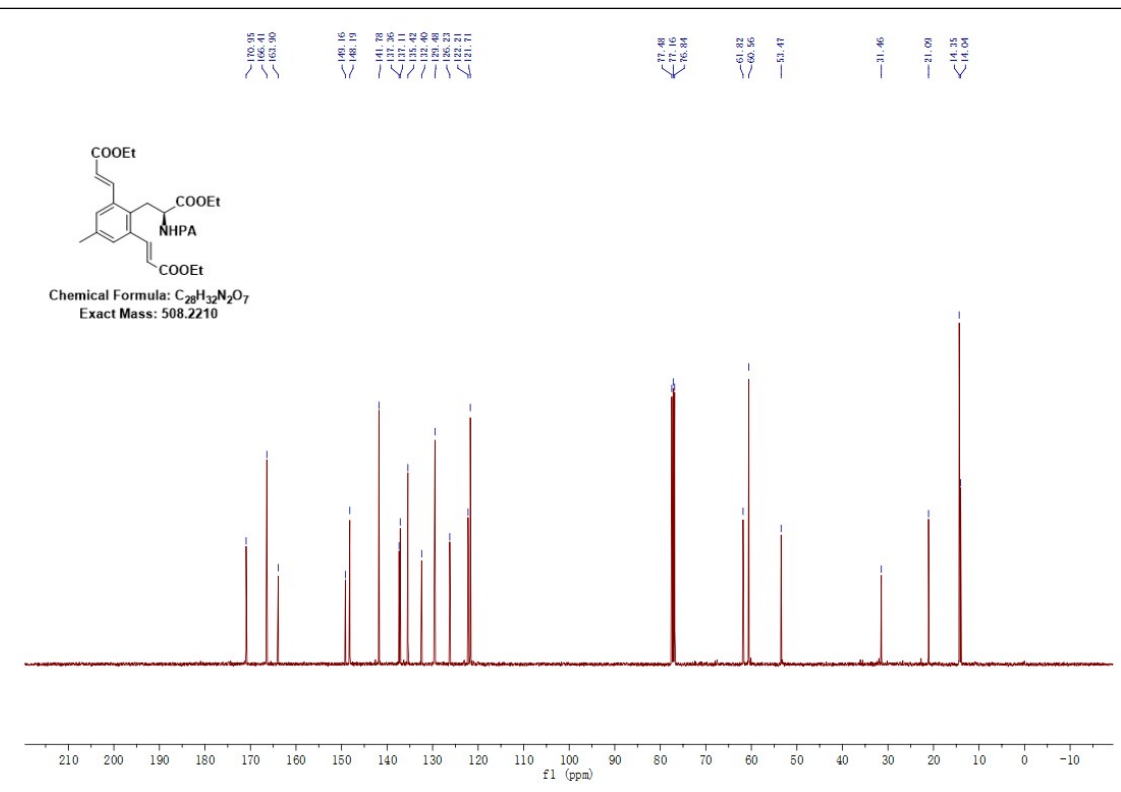
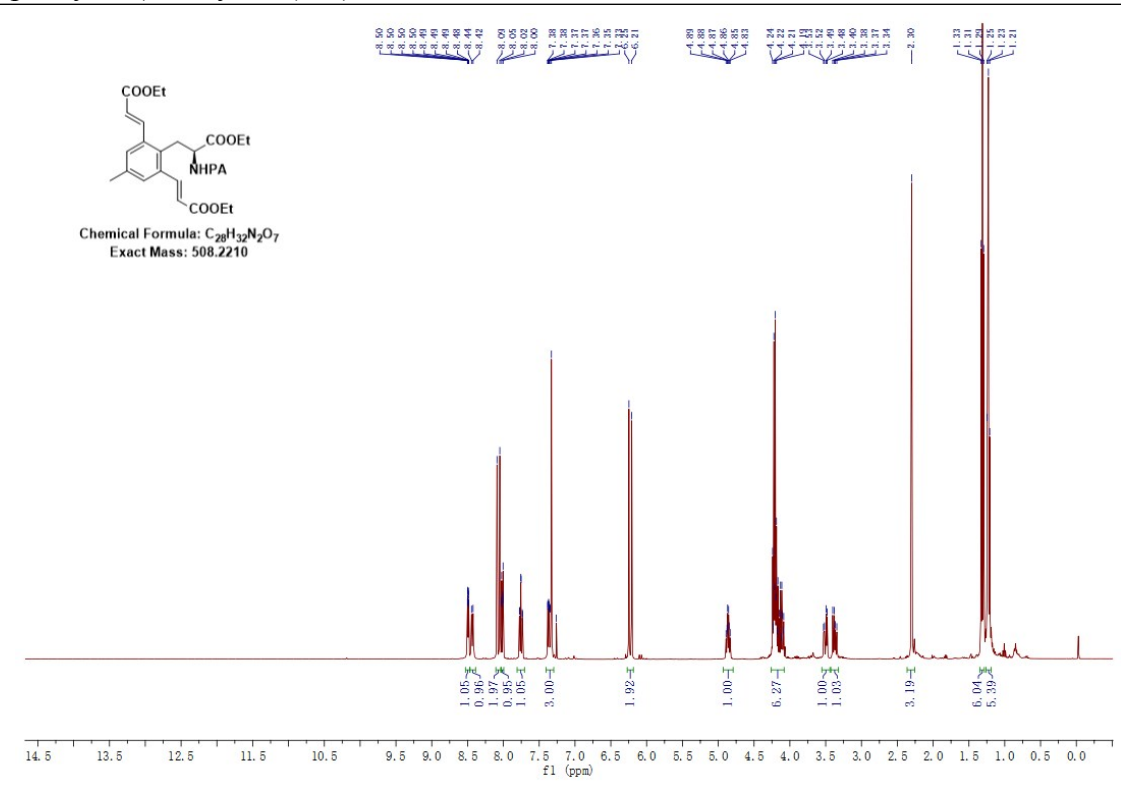
(2*E*,2'*E*)-diethyl-3,3'-(2-((*S*)-3-ethoxy-3-oxo-2-(picolinamido)propyl)-1,3-phenylene)diacrylate (**3s_{di}**)



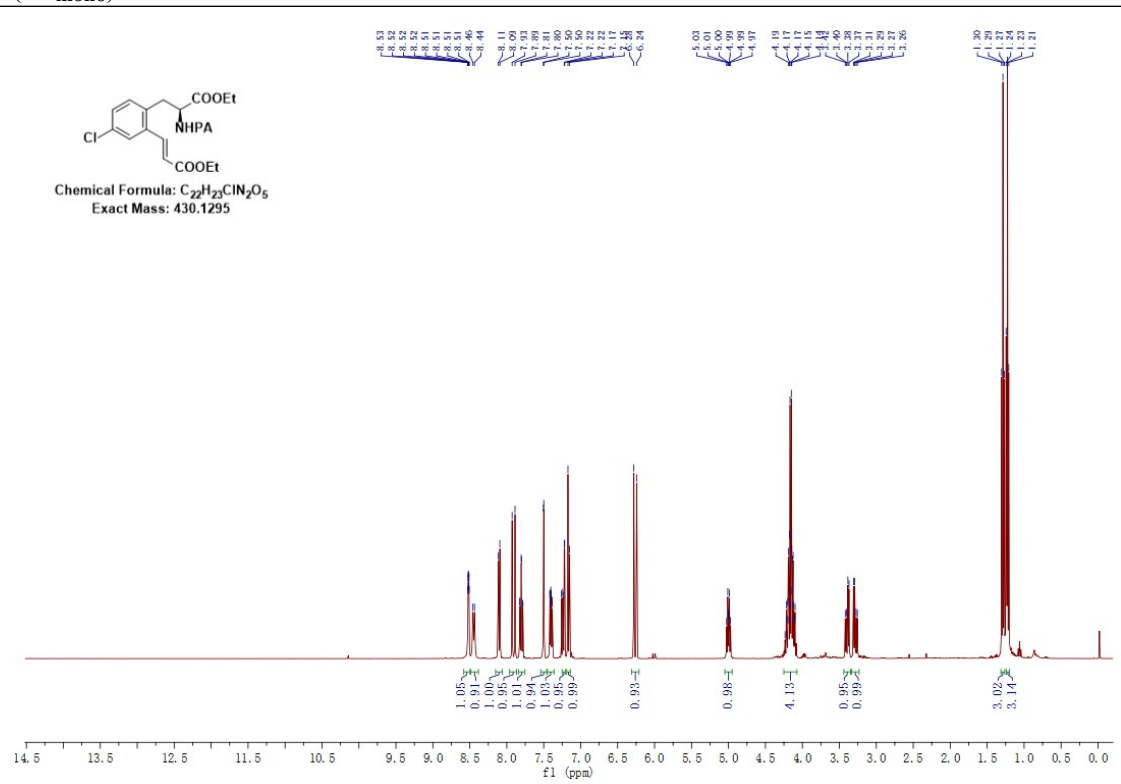
(*S,E*)-ethyl-3-(2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)-5-methylphenyl)acrylate
(3t_{mono})



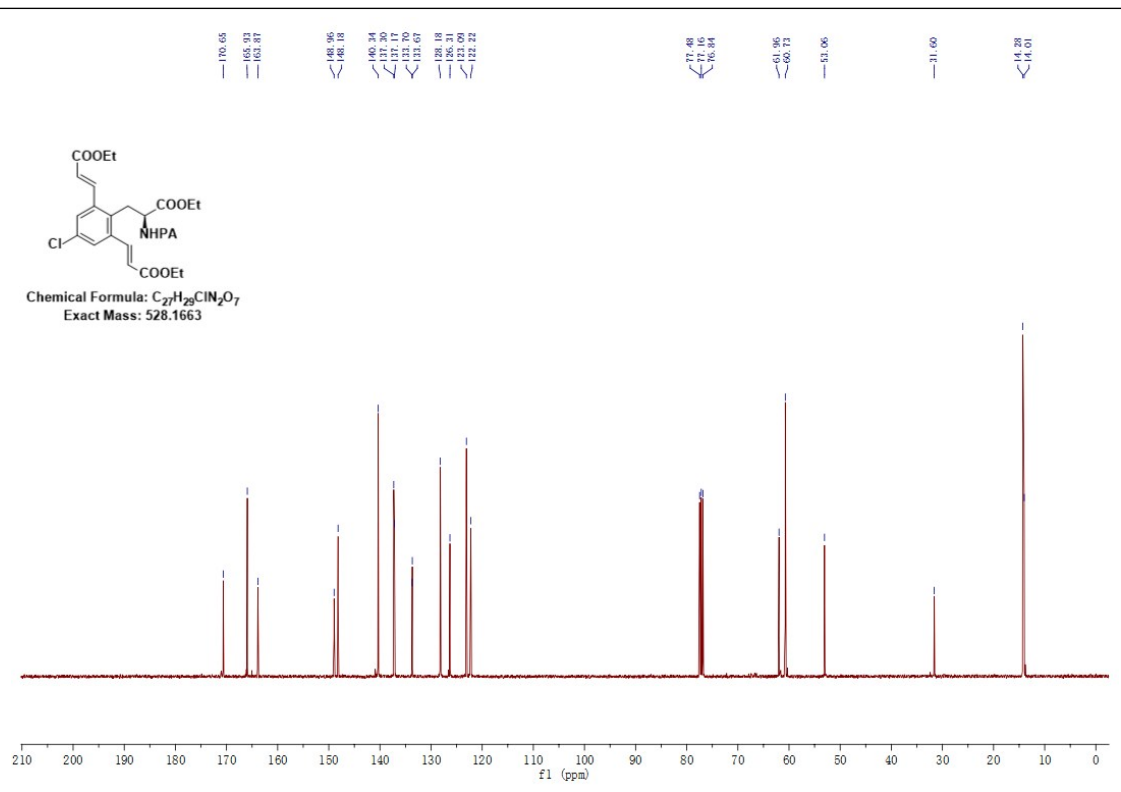
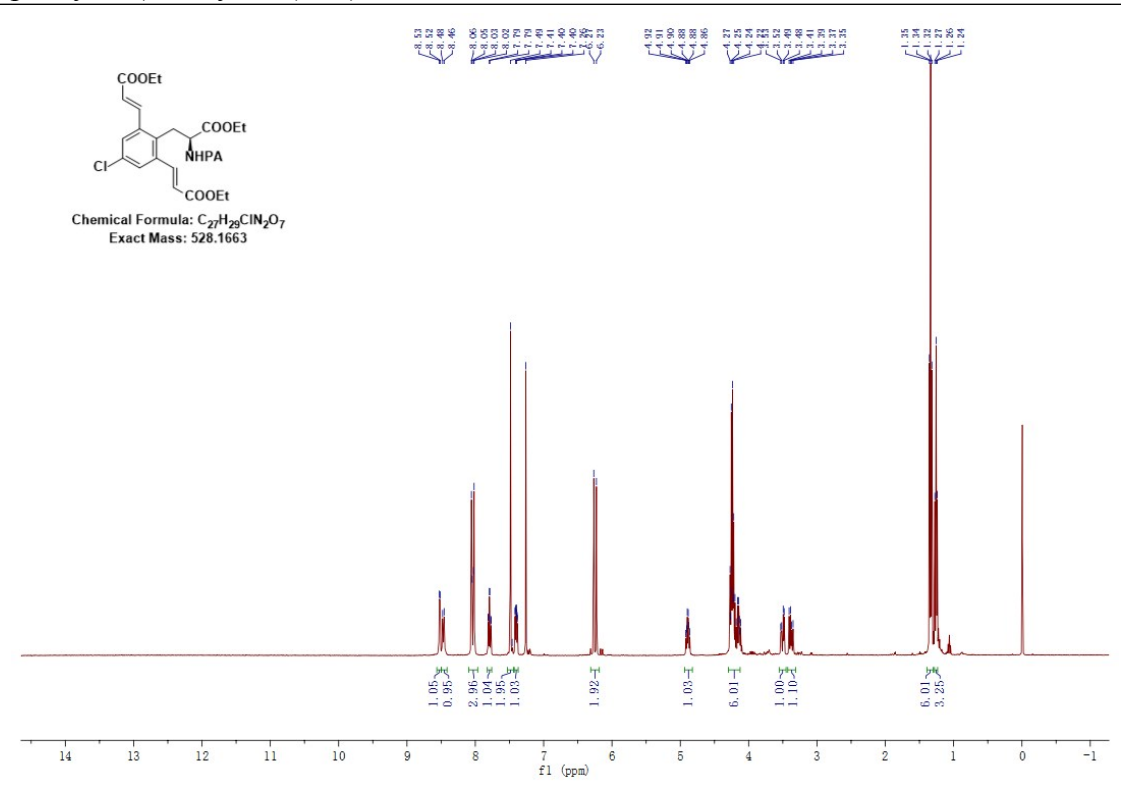
(2*E*,2'*E*)-diethyl-3,3'-(2-((*S*)-3-ethoxy-3-oxo-2-(picolinamido)propyl)-5-methyl-1,3-phenylene)diacrylate (**3t_{di}**)



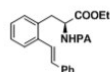
(*S,E*)-ethyl-3-(5-chloro-2-(3-ethoxy-3-oxo-2-(picolinamido)propyl)phenyl)acrylate
(3u_{mono})



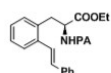
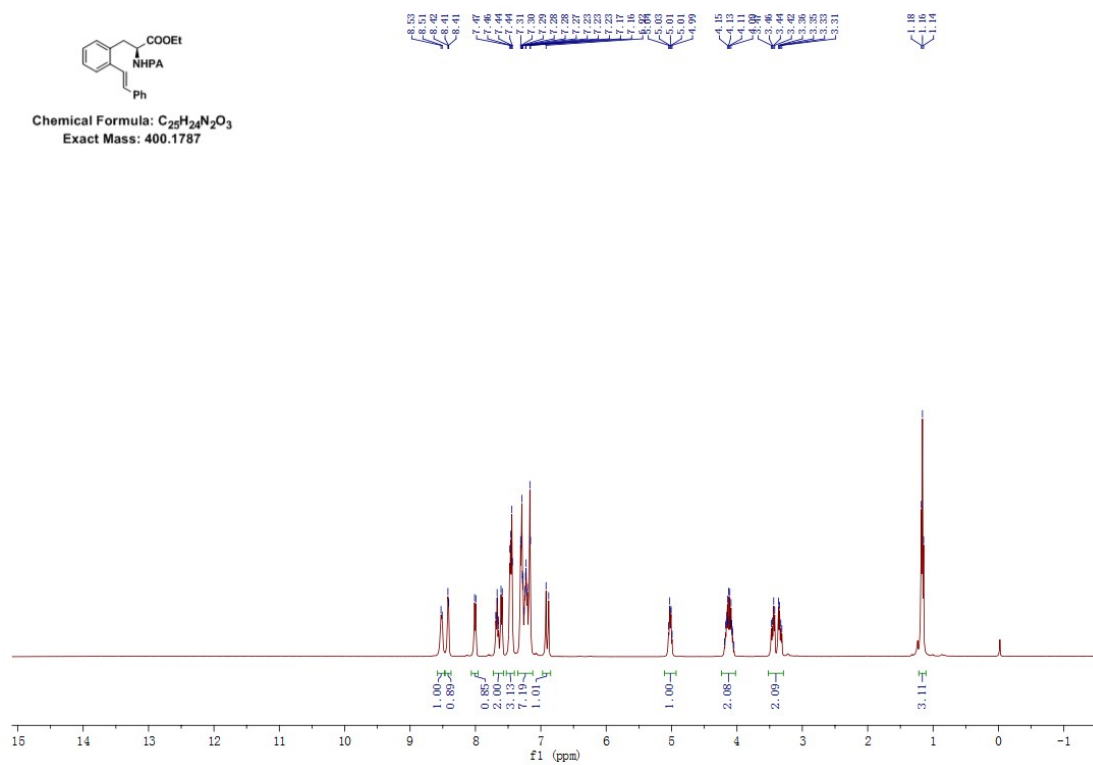
(2*E*,2'*E*)-diethyl-3,3'-(5-chloro-2-((*S*)-3-ethoxy-3-oxo-2-(picolinamido)propyl)-1,3-phenylene)diacrylate (**3u_{di}**)



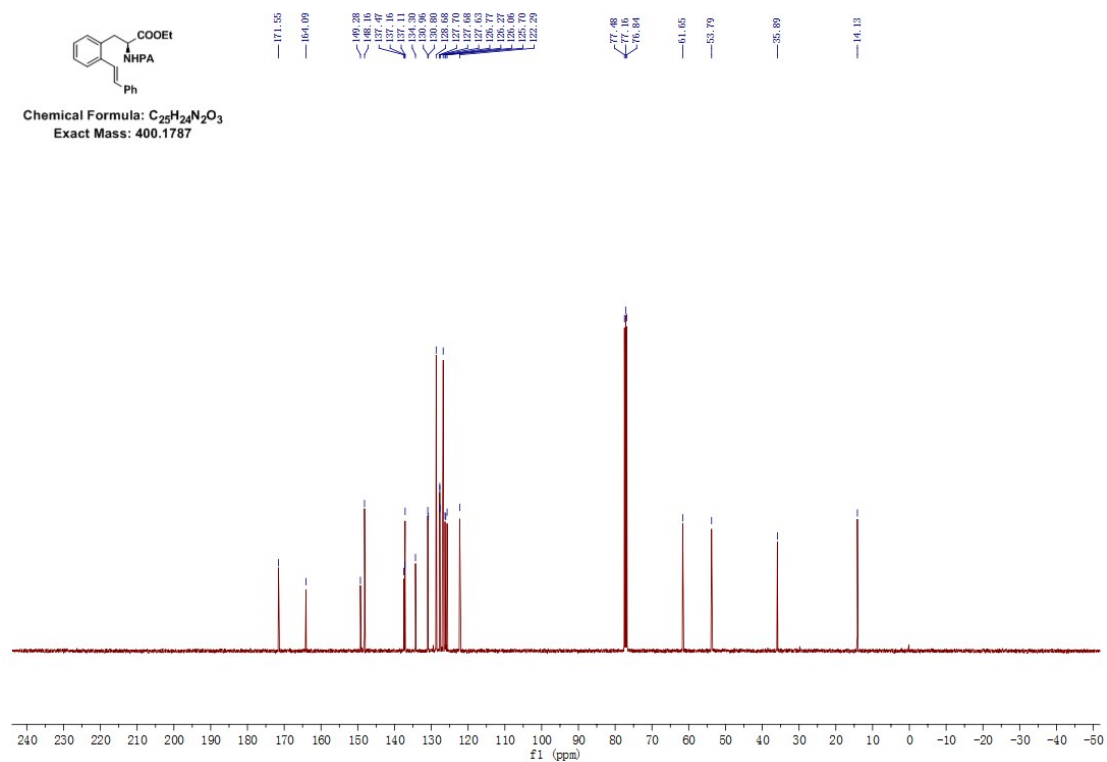
(*S,E*)-ethyl-2-(picolinamido)-3-(2-styrylphenyl)propanoate (**3v**)



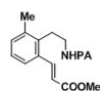
Chemical Formula: $C_{25}H_{24}N_2O_3$
Exact Mass: 400.1787



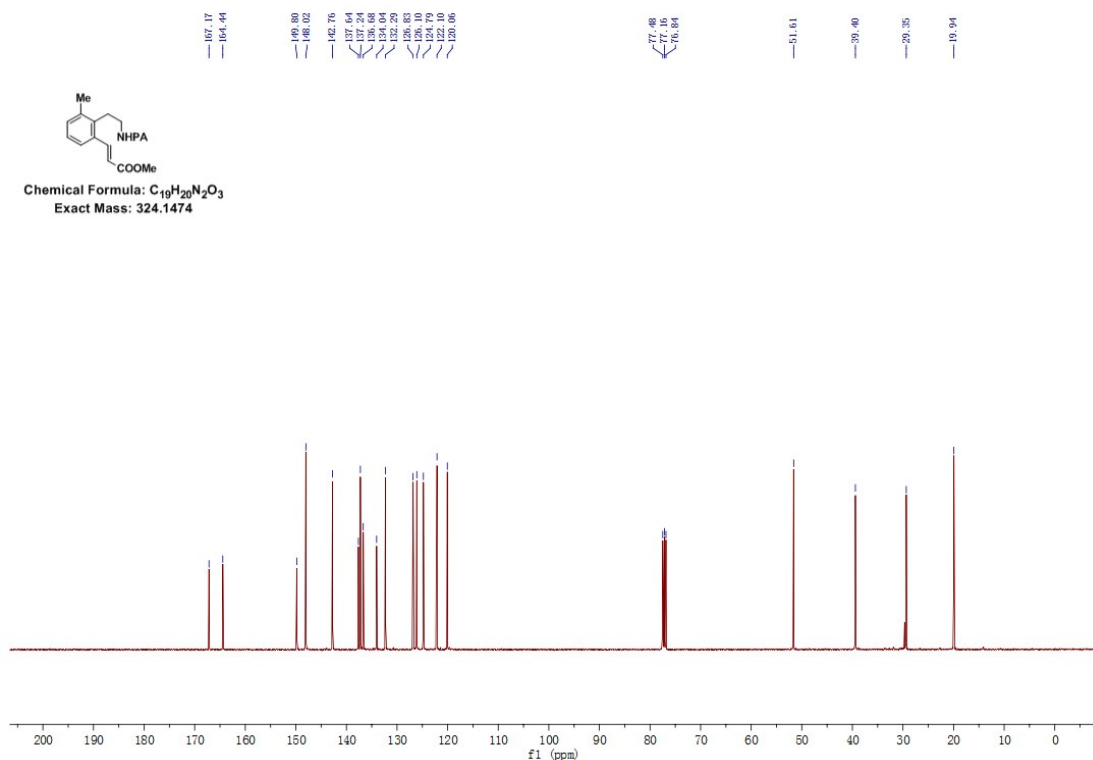
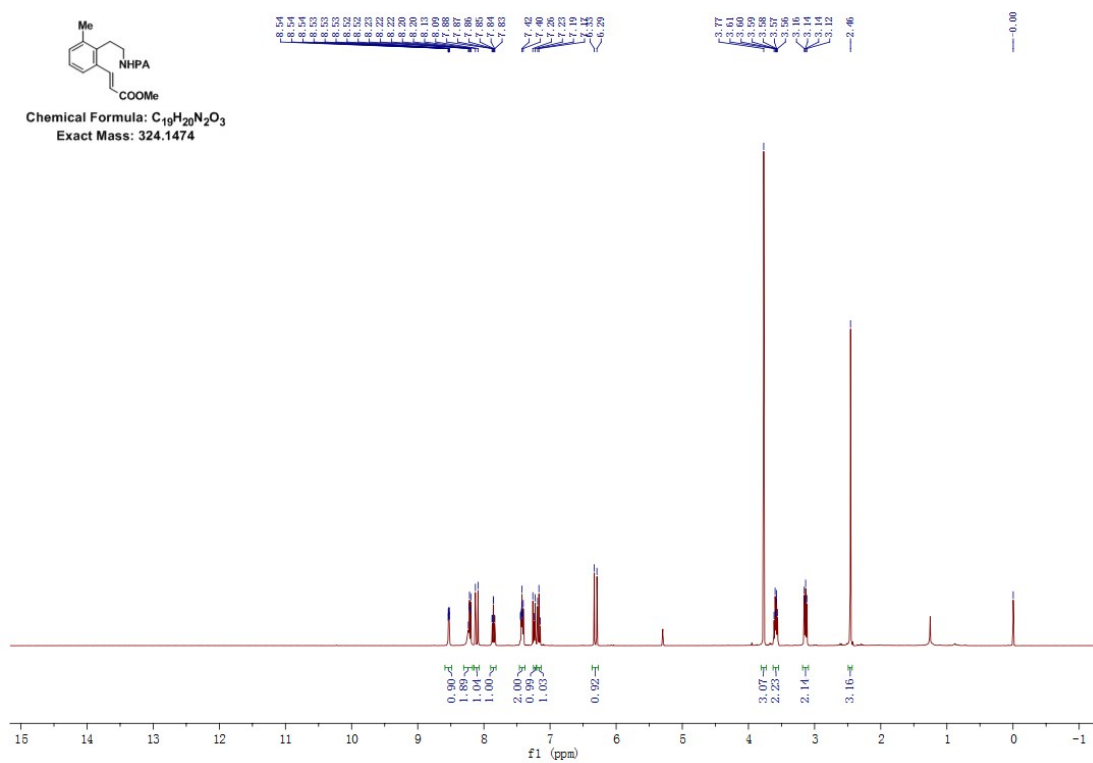
Chemical Formula: $C_{25}H_{24}N_2O_3$
Exact Mass: 400.1787



(E)-methyl-3-(3-methyl-2-(2-(picolinamido)ethyl)phenyl)acrylate (**5a**)



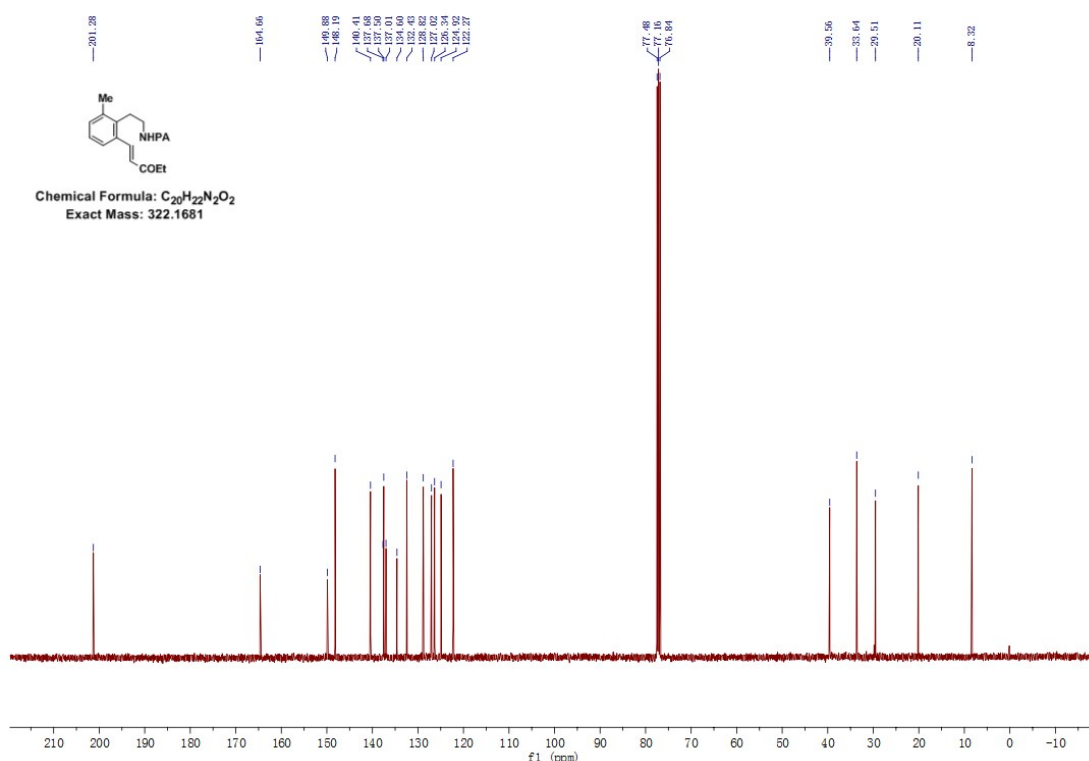
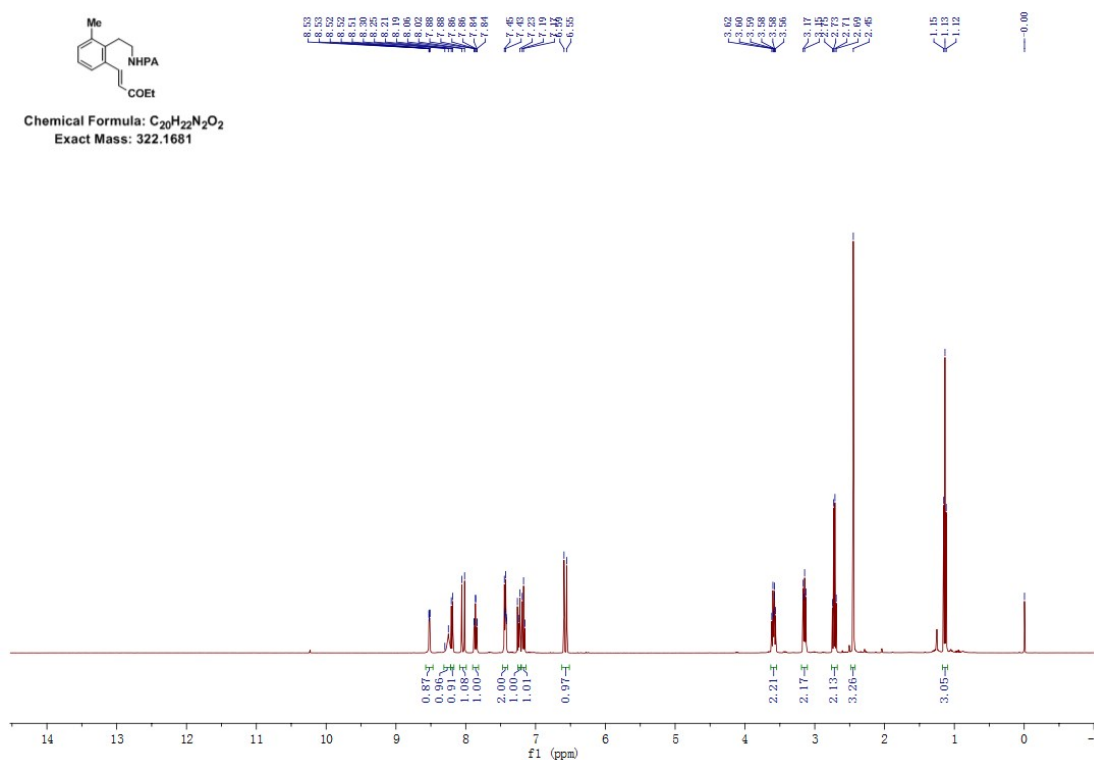
Chemical Formula: $C_{19}H_{20}N_2O_3$
Exact Mass: 324.1474



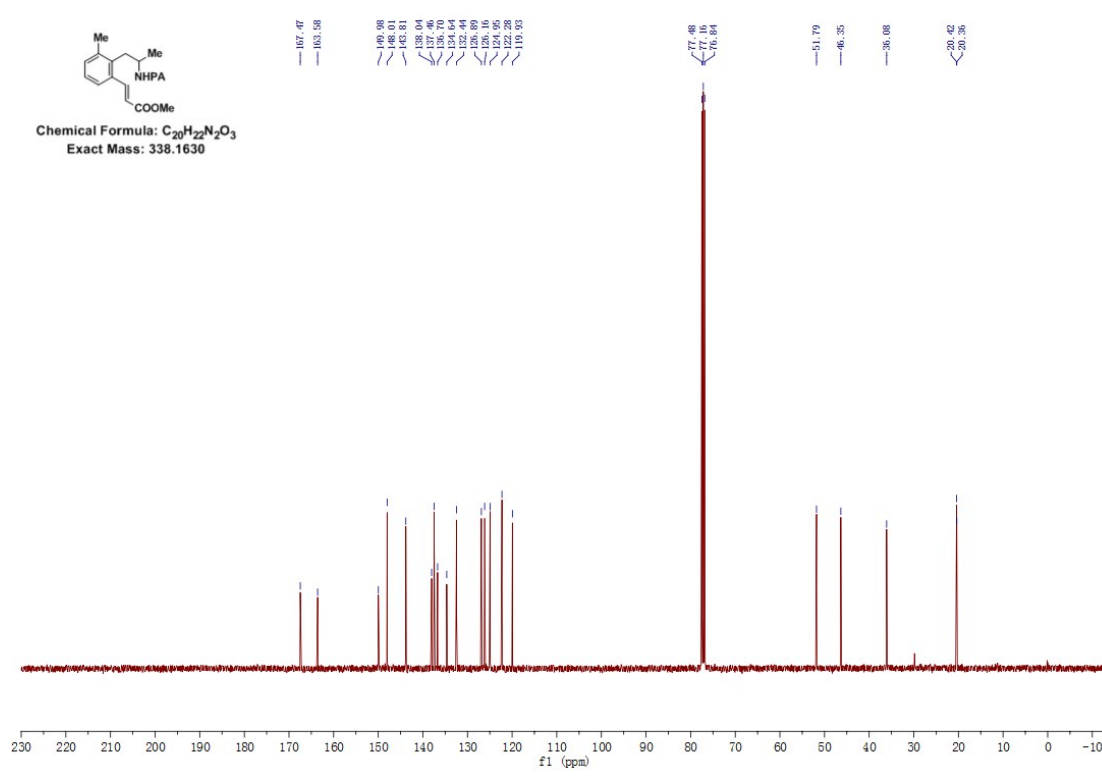
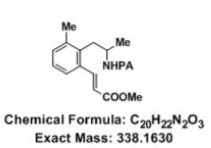
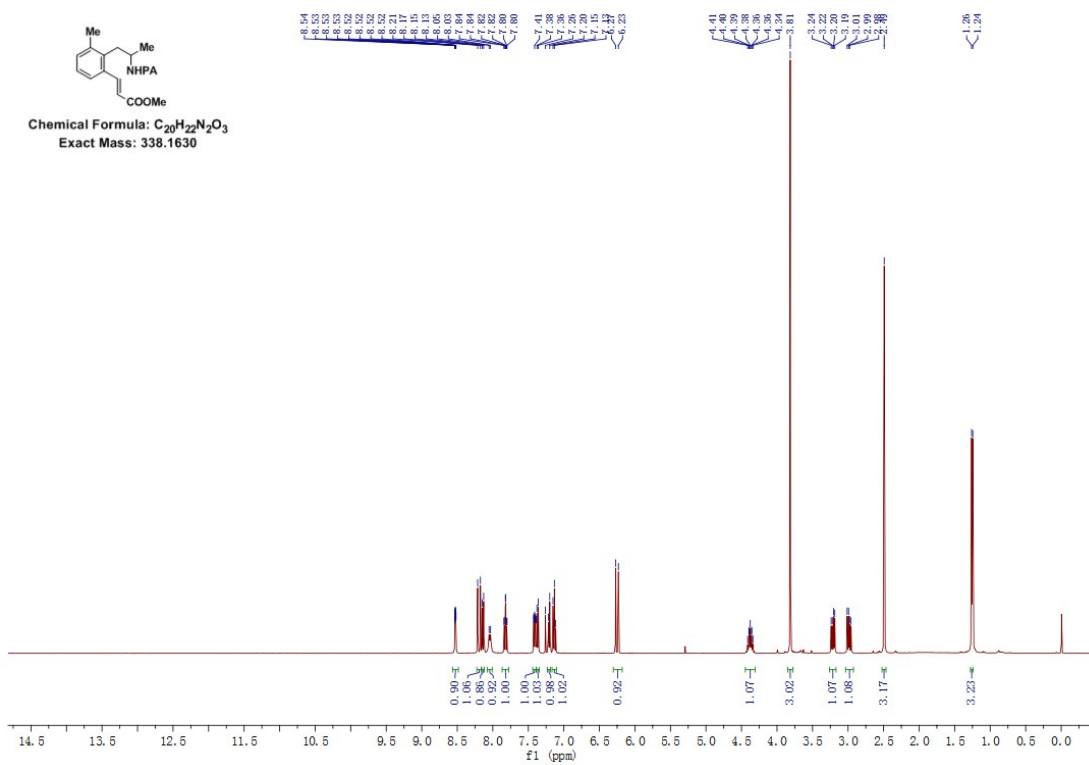
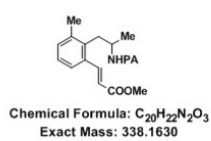
(E)-N-(2-methyl-6-(3-oxopent-1-en-1-yl)phenethyl)picolinamide (5c)



Chemical Formula: $C_{20}H_{22}N_2O_2$
Exact Mass: 322.1681



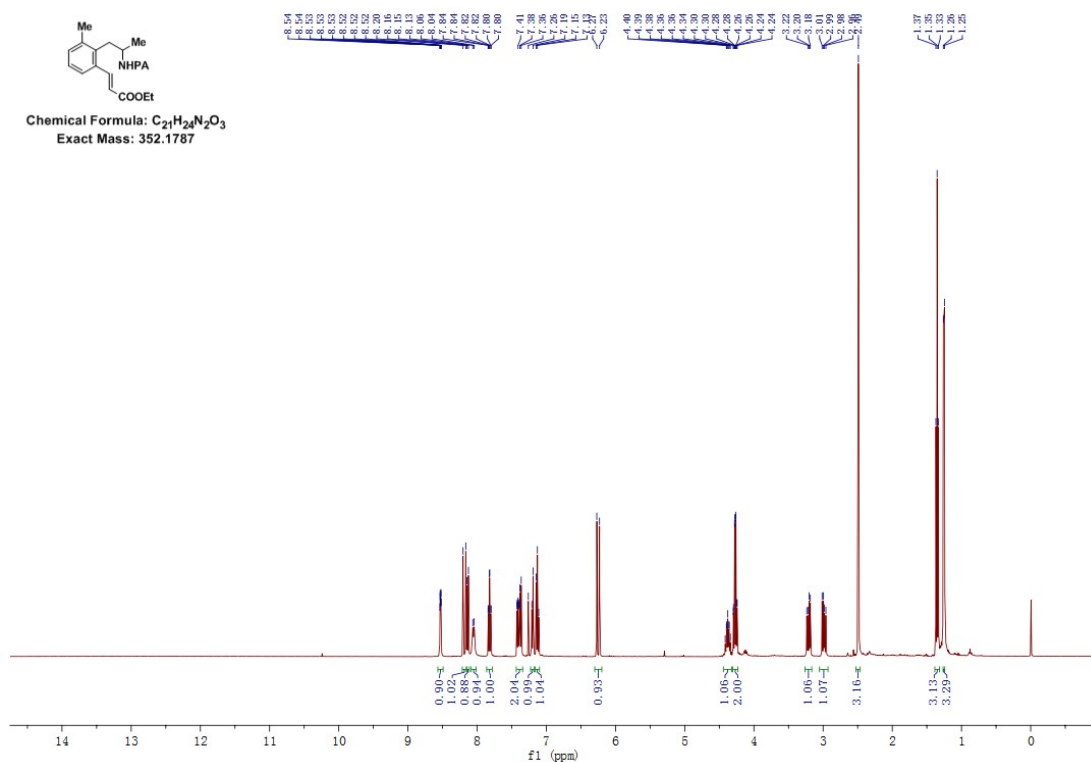
(E)-methyl-3-(3-methyl-2-(2-(picolinamido)propyl)phenyl)acrylate (5d)



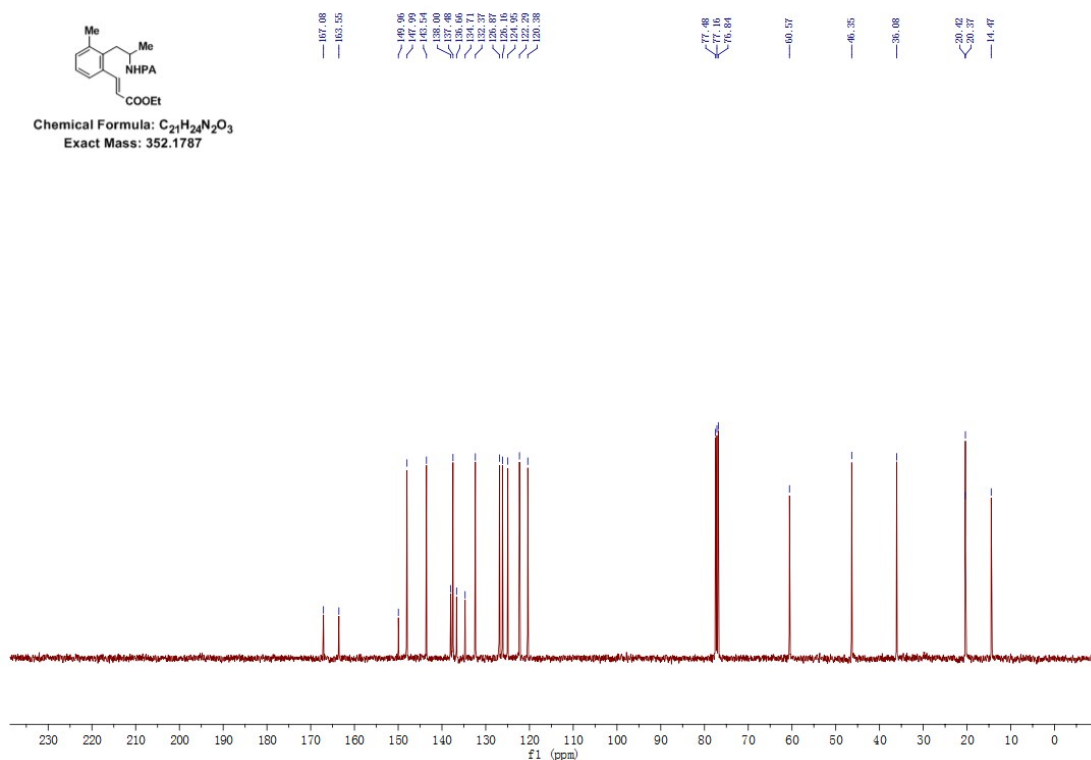
(E)-ethyl-3-(3-methyl-2-(2-(picolinamido)propyl)phenyl)acrylate (5e)



Chemical Formula: $C_{27}H_{28}N_2O_3$
Exact Mass: 352.1787



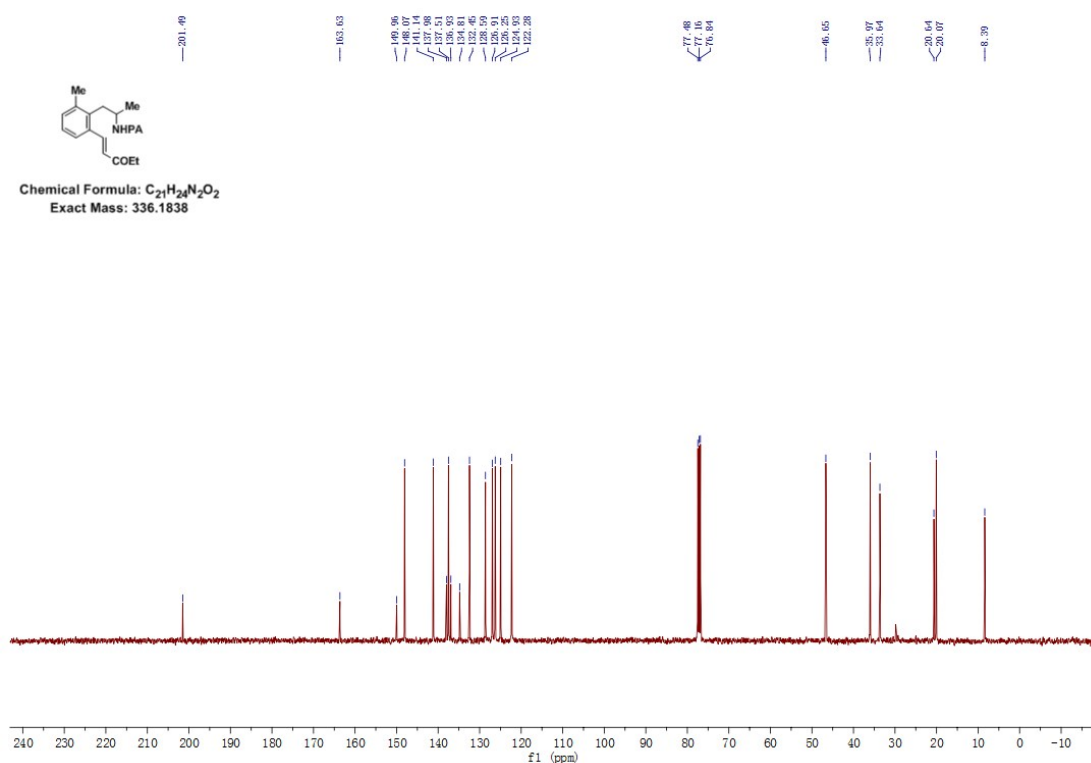
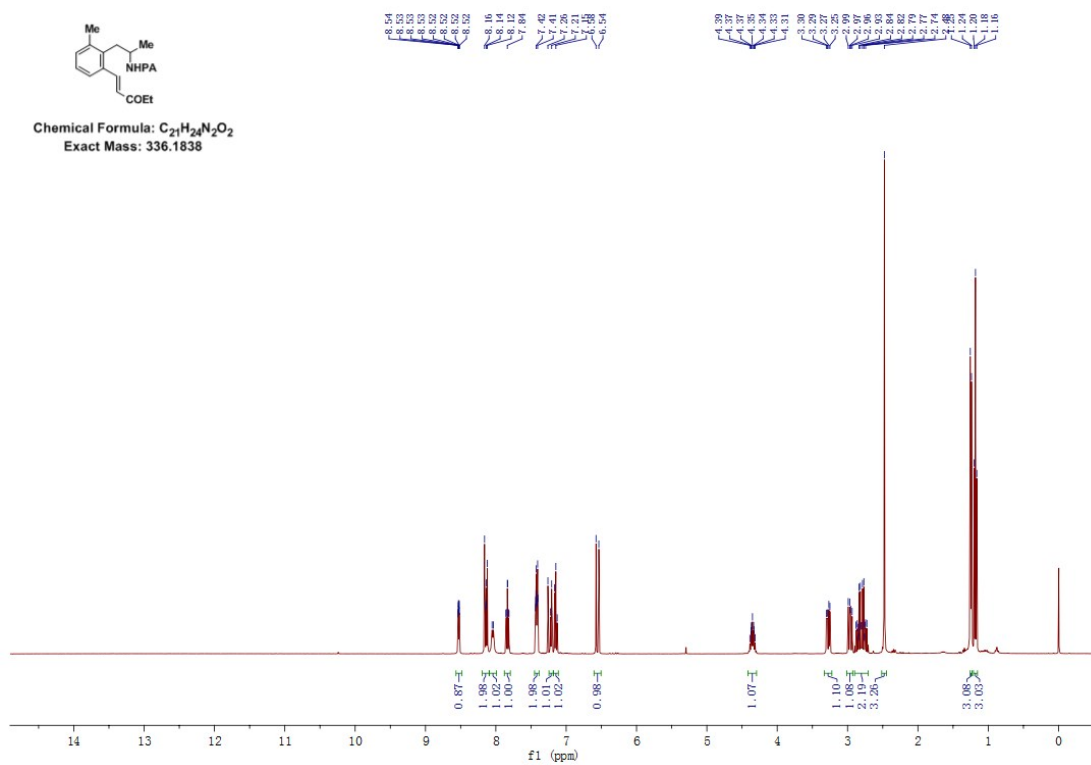
Chemical Formula: $C_{27}H_{28}N_2O_3$
Exact Mass: 352.1787



(E)-*N*-(1-(2-methyl-6-(3-oxopent-1-en-1-yl)phenyl)propan-2-yl)picolinamide (**5f**)



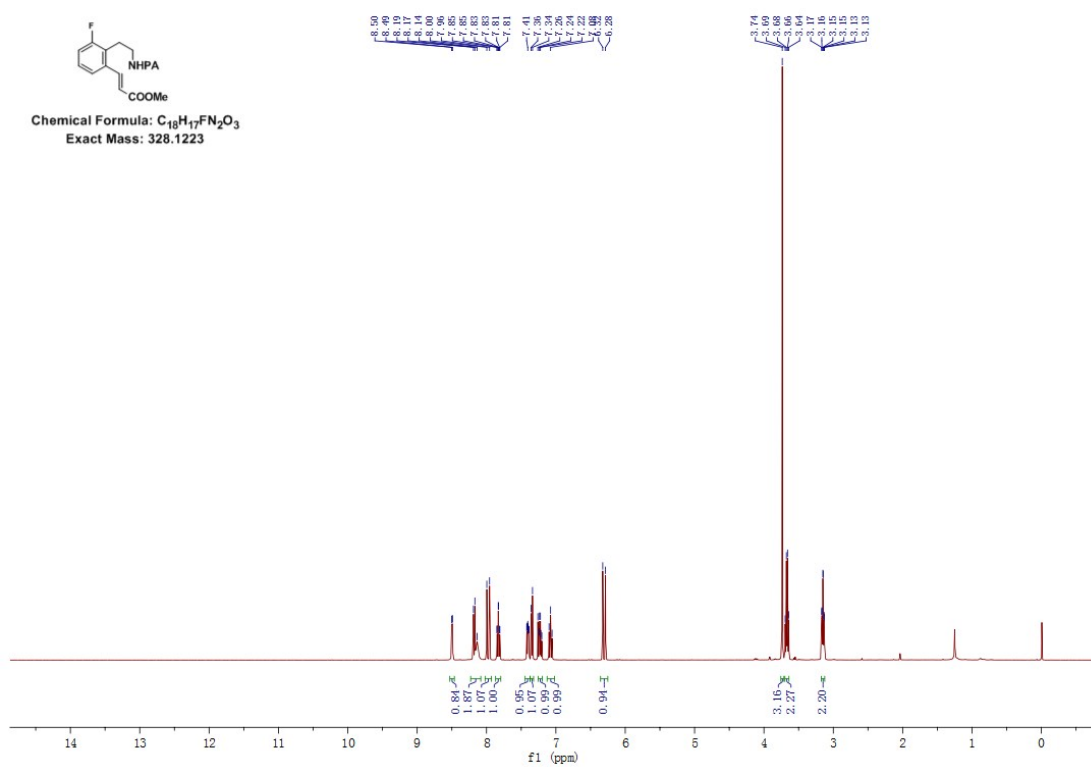
Chemical Formula: $C_{21}H_{24}N_2O_2$
Exact Mass: 336.1838



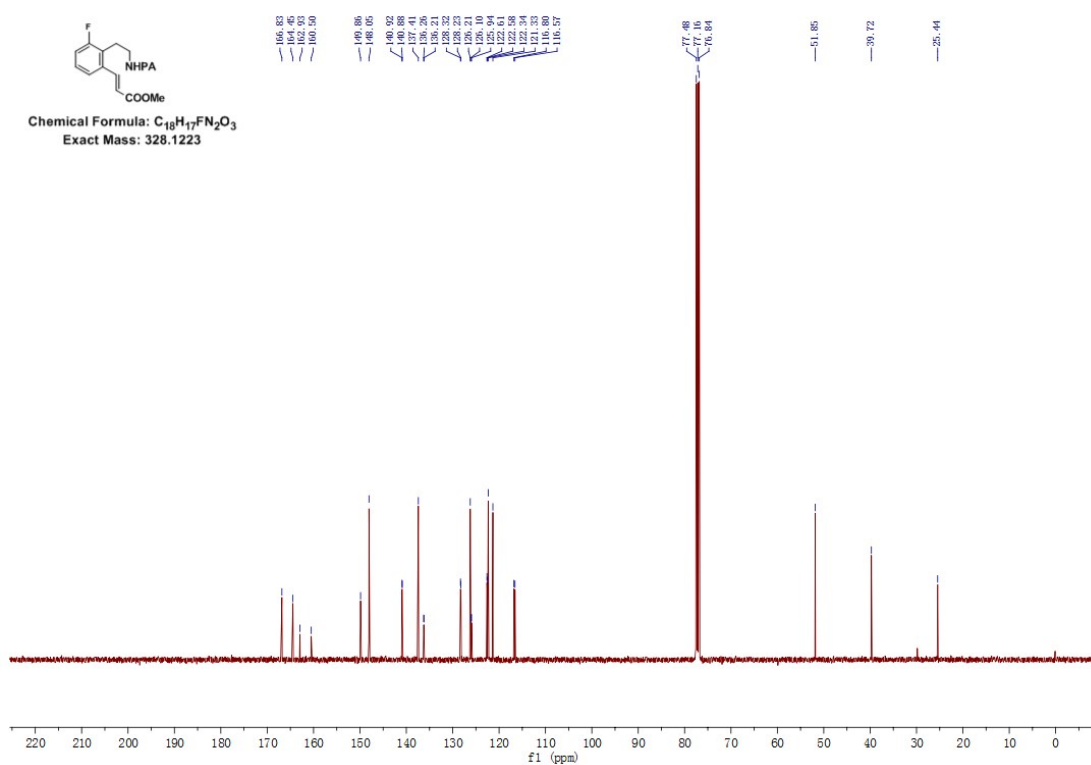
(E)-methyl-3-(3-fluoro-2-(2-(picolinamido)ethyl)phenyl)acrylate (5g)



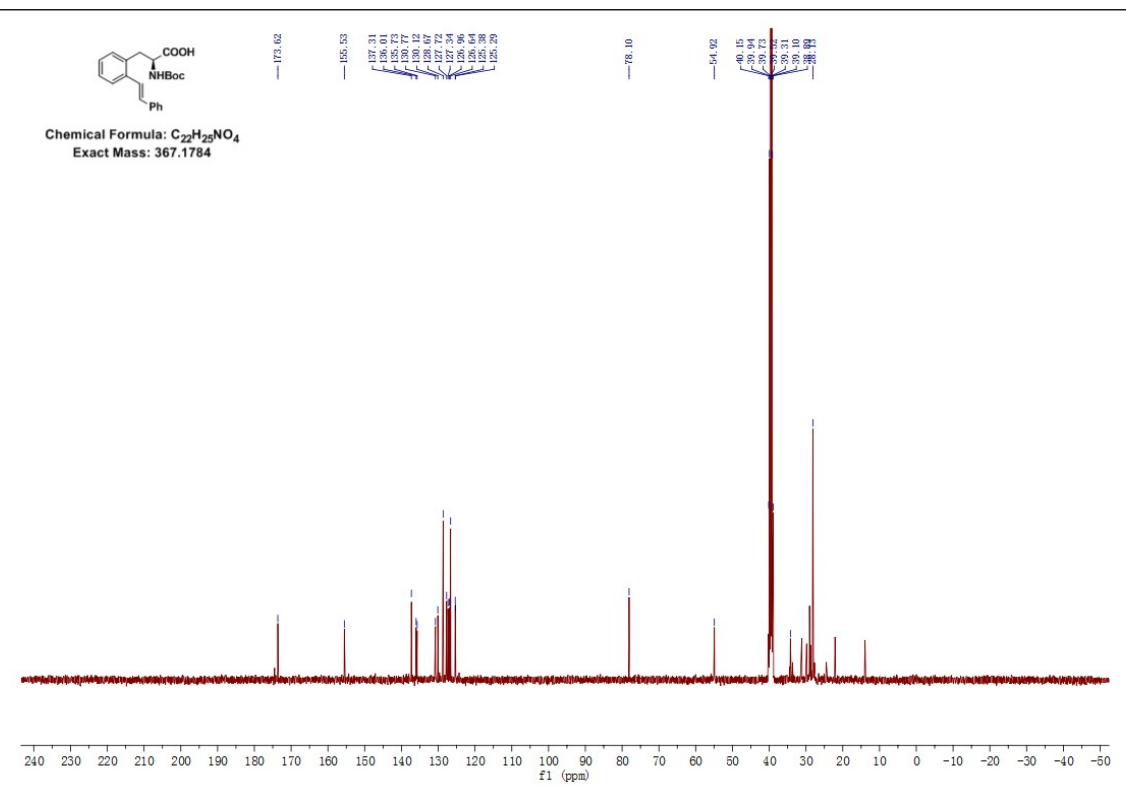
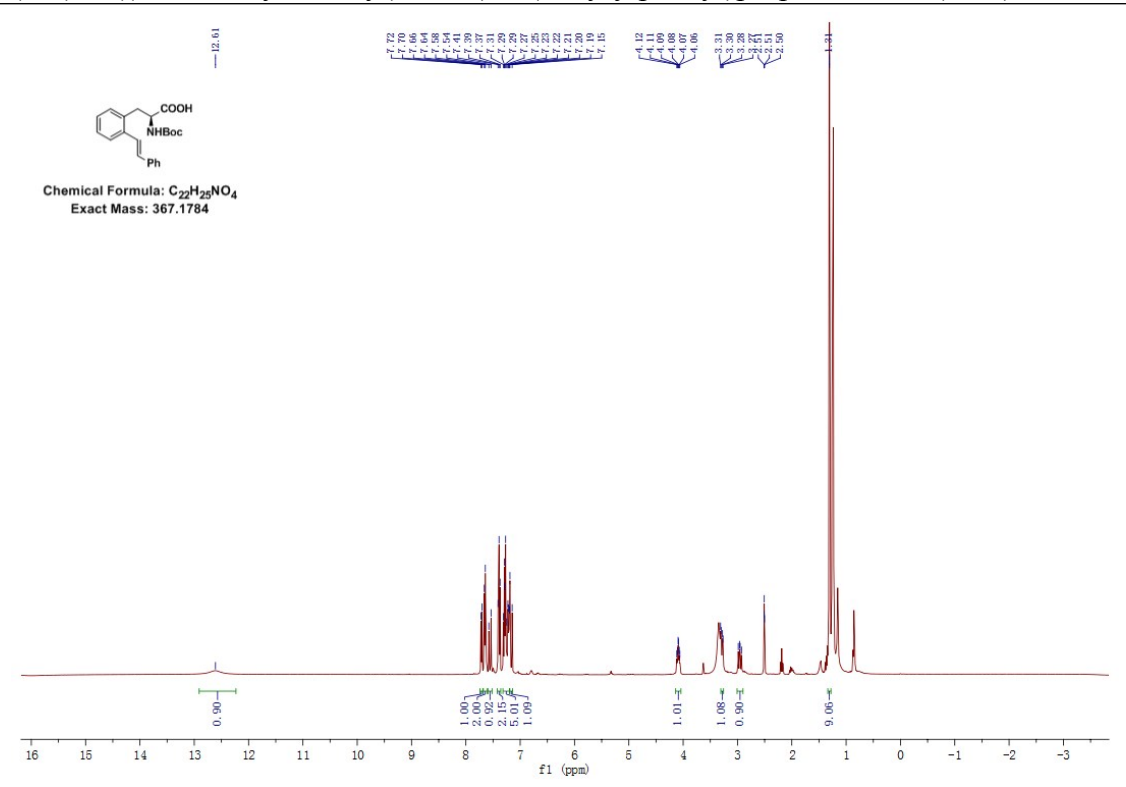
Chemical Formula: $C_{18}H_{17}FN_2O_3$
Exact Mass: 328.1223



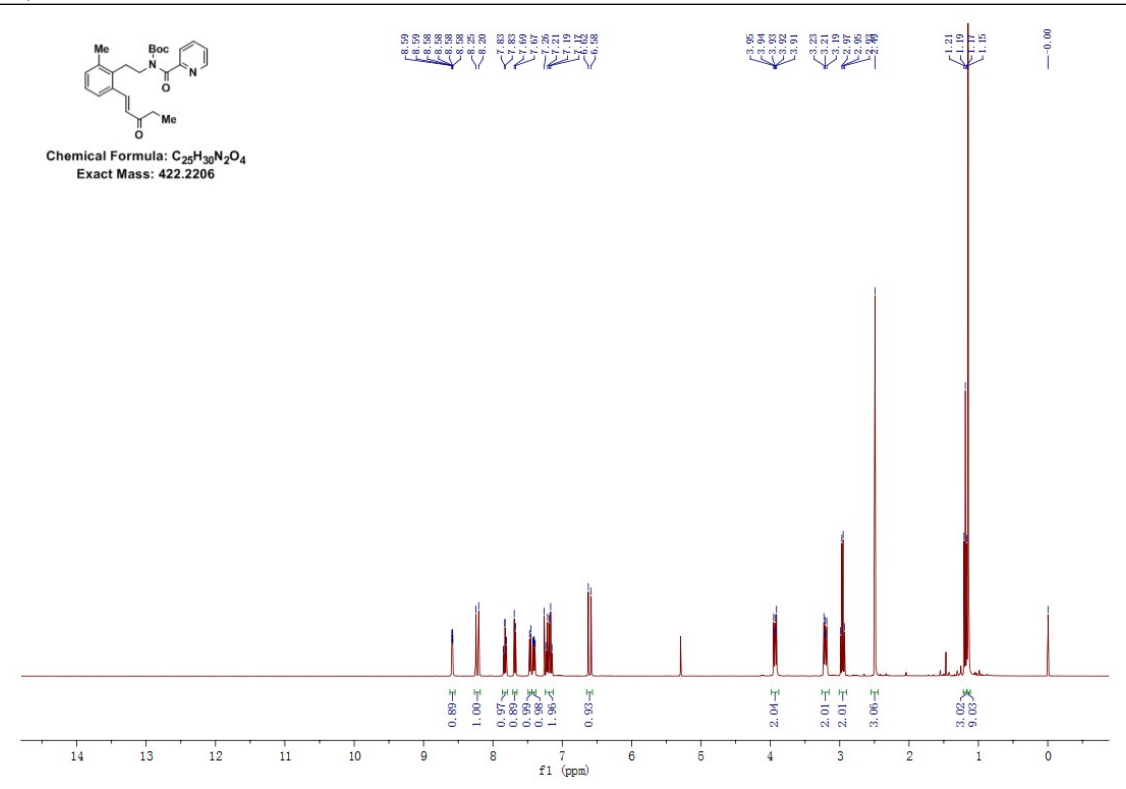
Chemical Formula: $C_{18}H_{17}FN_2O_3$
Exact Mass: 328.1223



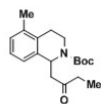
(*S,E*)-2-((*tert*-butoxycarbonyl)amino)-3-(2-styrylphenyl)propanoic acid (**3v-1**)



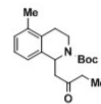
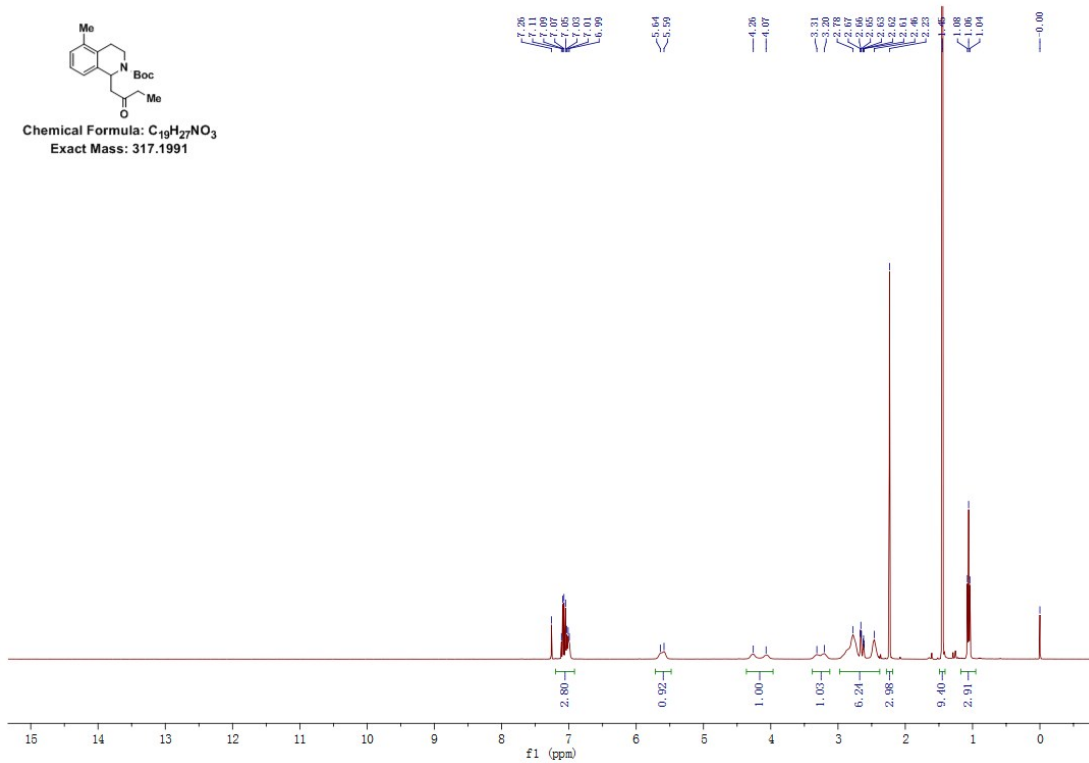
(E)-tert-butyl-2-methyl-6-(3-oxopent-1-en-1-yl)phenethyl(picolinoyl)carbamate (5c-1)



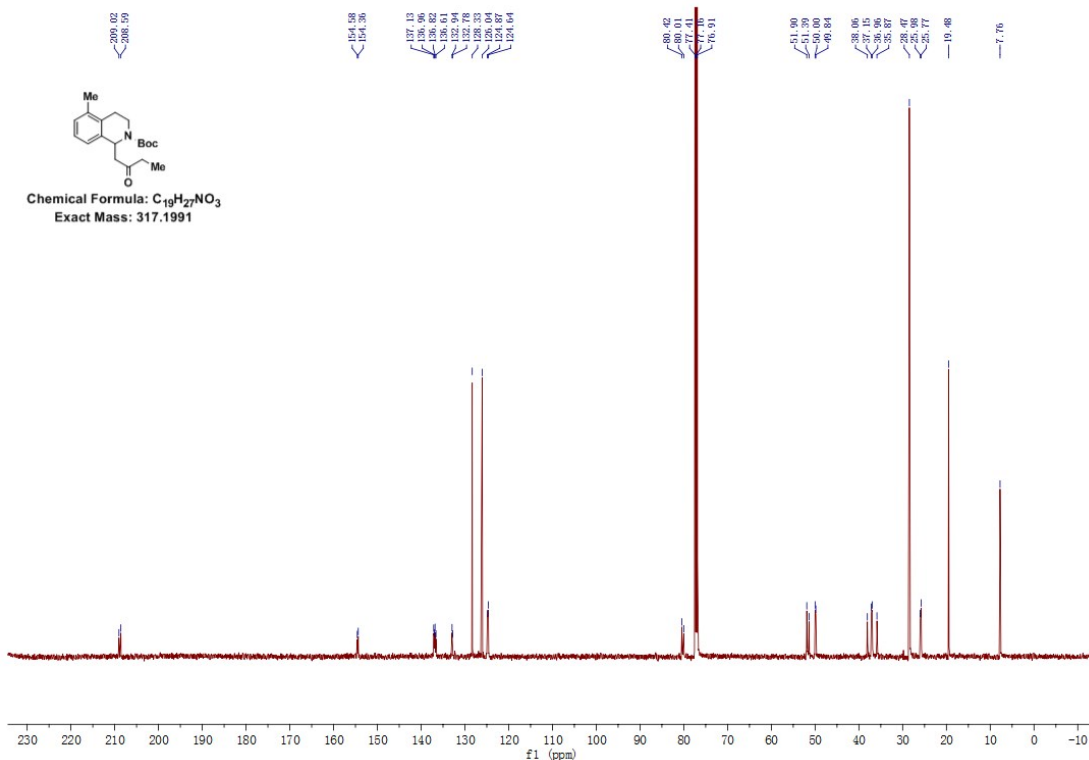
tert-butyl-5-methyl-1-(2-oxobutyl)-3,4-dihydroisoquinoline-2(*1H*)-carboxylate (**5c-2**)



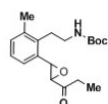
Chemical Formula: C₁₉H₂₇NO₃
Exact Mass: 317.1991



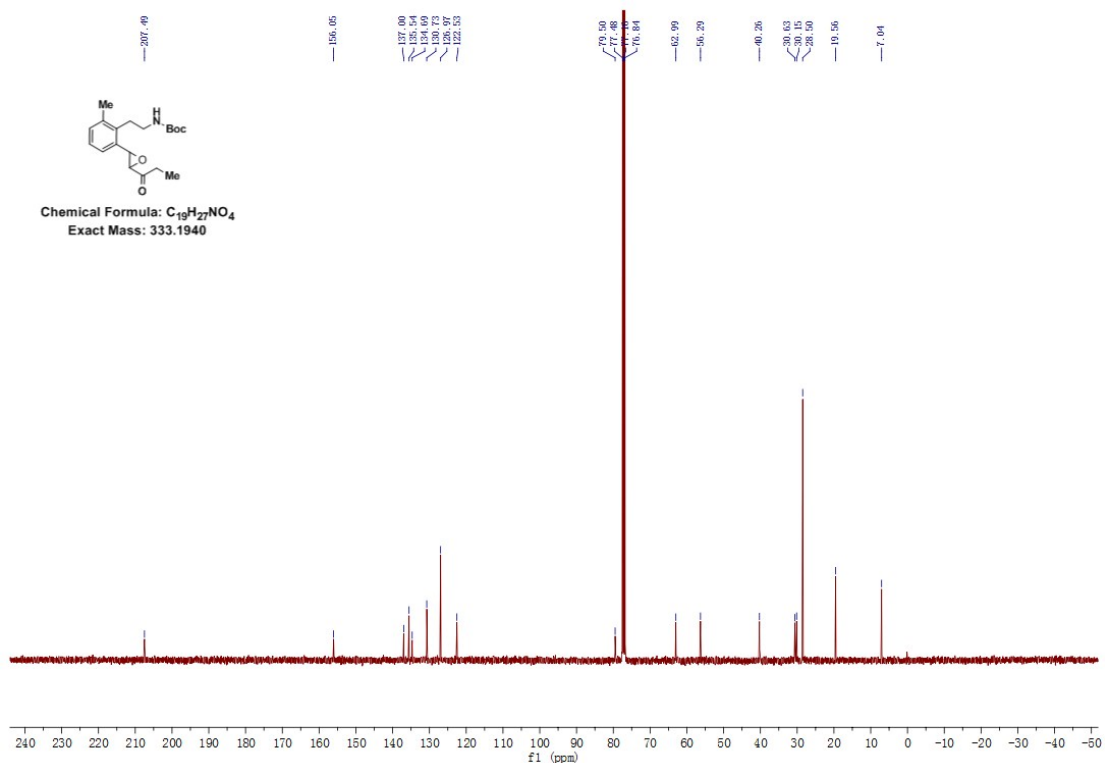
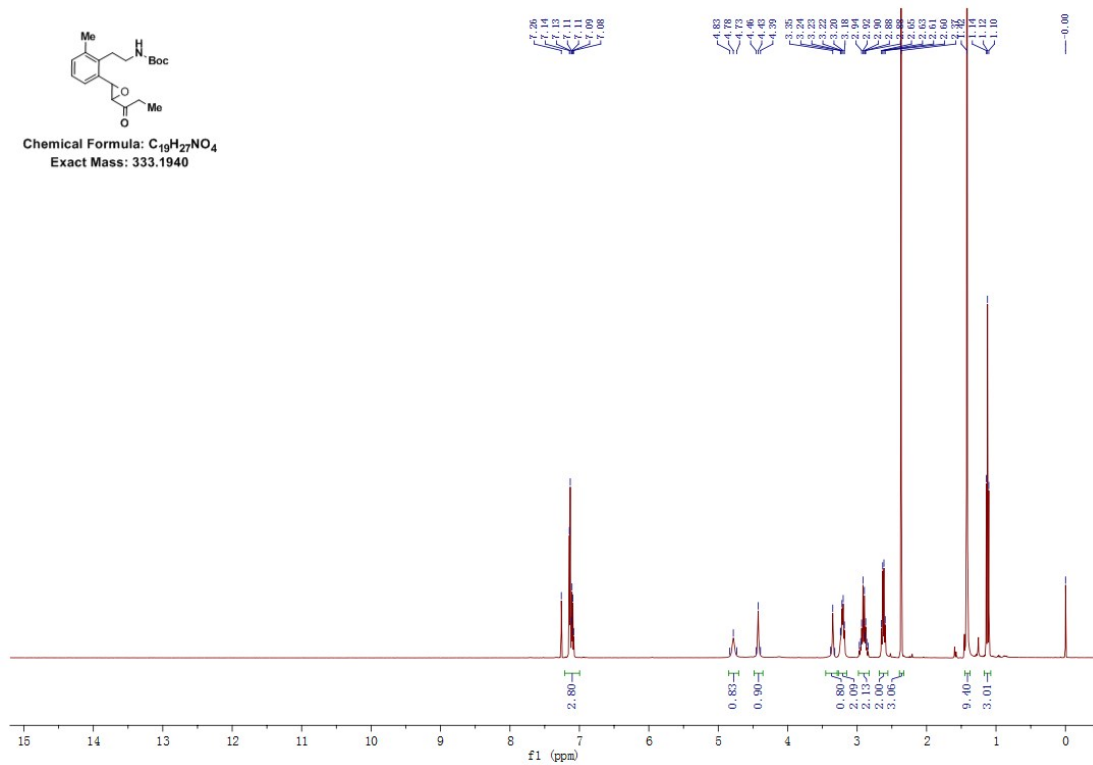
Chemical Formula: C₁₉H₂₇NO₃
Exact Mass: 317.1991



tert-butyl-2-methyl-6-(3-propionyloxiran-2-yl)phenethylcarbamate (**5c-3**)



Chemical Formula: C₁₉H₂₇NO₄
Exact Mass: 333.1940



Chemical Formula: C₁₉H₂₇NO₄
Exact Mass: 333.1940