Supporting Information

A Solvent and Transition Metal-Free, highly efficient Bronsted acidic ionic liquid promoted one pot three-component reactions for the synthesis of tetrasubstituted pyrroles.

Amol Balu Atar[a]* ● Han Eunbi[a] ●Dae Hyup Sohn[a] ●Jongmin Kang[a]*

[a]Department of Chemistry, Sejong University, Seoul 143-747, Republic of Korea

**Corresponding author E-mail: amol.atar@sejong.ac.kr, kangjm@sejong.ac.kr*

Tel.: +82269352599.

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1. General procedure for the synthesis of fully substituted pyrrole functionalities

To a mixture of amines (1 mmol), dialkyl acetylenedicarboxylates (1 mmol) and β-nitrostyrene (1 mmol) was added 10 mol % BAIL and the reaction mixture was kept room temperature with constant stirring for stipulated time (see table 2). After completion of the reaction as monitored by TLC, the crude product was extracted with ether. The combined organic layers were washed with brine solution, and dried over Na_2SO_4. The Na_2SO_4 was filtered off and the solvent was removed under vacuum. The crude product obtained was then purified by silica gel column chromatography (100-200 mesh) using ethyl acetate: hexane as eluent to get corresponding products.

2. Spectral data of the compounds

4a. Diethyl 1-(4-methoxyphenyl)-4-phenyl-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.46-7.43 (m, 2H), 7.35 (t, *J*=12Hz, 2H), 7.29-7.24 (m, 3H), 6.96-6.92 (m, 3H), 4.34-4.28 (m, 2H), 4.19-4.14 (m, 2H), 3.83 (s, 3H), 1.28 (t, *J*=12Hz, 3H), 1.17 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.31, 159.92, 159.49, 133.33, 132.49, 128.47, 127.74, 127.42, 127.00, 126.04, 124.46, 123.41, 121.77, 61.26, 60.74, 55.50, 14.05, 13.95; HRMS m/z calcd for $C_{23}H_{23}NO_5$ [M+] 393.4324, found 393.4321.

4b. Diethyl 1-(2-methoxyphenyl) - 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.43 (d, *J*=8Hz, 2H), 7.32-7.27 (m, 3H), 7.21-7.18 (m, 2H), 6.95-6.91 (m, 2H), 6.83 (s, 1H), 4.29-4.26 (m, 2H), 4.10-4.06 (m, 2H), 3.64 (s, 3H), 1.24 (t, *J*=12Hz, 3H), 1.07 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.36, 159.64, 154.42, 133.46, 129.71, 128.79, 128.40, 127.57, 126.81, 125.56, 124.27, 124.00, 121.51, 120.33, 111.56, 61.10, 60.34, 55.48, 14.00, 13.83; HRMS m/z calcd for C23H23NO5 [M+] 393.4324, found 393.4321.

4c. Diethyl 1-(4-chlorophenyl) - 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.45-7.40 (m, 4H), 7.35 (t, *J*=12Hz, 2H), 7.29-7.24 (m, 3H), 6.95 (s, 1H), 4.34-4.28 (m, 2H), 4.20-4.14 (m, 2H), 1.28 (t, *J*=12Hz, 3H), 1.18 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.11, 159.67, 138.07, 134.37, 132.97, 129.02, 128.54, 127.66, 127.61, 127.19, 125.70, 125.70, 124.94, 122.99, 122.66, 61.38, 60.91, 14.03, 13.91; HRMS m/z calcd for $C_{22}H_{20}ClNO_4$ [M+] 397.8515, found 397.8519.

4d. Diethyl 1-(4-bromophenyl) - 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.48 (d, *J*=8Hz, 2H), 7.41(d, *J*=8Hz, 2H), 7.29 (t, *J*=12Hz, 2H), 7.22 (d, *J*=8Hz, 1H), 7.13 (d, *J*=12Hz, 2H), 6.90 (s, 1H), 4.29-4.26 (m, 2H), 4.14-4.10 (m, 2H), 1.25 (t, *J*=12Hz, 3H), 1.14 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 165.92, 159.52, 138.44, 132.88, 131.87, 128.48, 127.80, 127.54, 127.10, 125.56, 124.82, 122.93, 122.63, 122.12, 61.25, 60.82, 13.98, 13.84; HRMS m/z calcd for $C_{22}H_{20}BrNO_4$ [M+] 442.3025, found 442.3028.

4e. Diethyl 1-(4-methoxyphenyl)-4-(2-methyphenyl) -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.27-7.22 (m, 5H), 7.09 (d, *J* =4Hz, 1H), 6.95-6.92 (m, 3H), 4.35-4.29 (m, 2H), 4.19-4.13 (m, 2H), 3.83 (s, 3H), 2.35 (s, 3H), 1.30 (d, *J*=12Hz, 3H), 1.17 (d, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.41, 159.89, 159.48, 138.00, 133.19, 132.55, 128.43, 127.78, 127.45, 126.10, 124.77, 124.48, 123.17, 121.95, 113.90, 61.25, 60.70, 55.50, 21.45, 14.09, 13.95; HRMS m/z calcd for $C_{24}H_{25}NO_5$ [M+] 407.1733, found 407.1736.

4f. Dimethyl 1-(4-methylphenyl)-4-(4-hydroxyphenyl)-1H-pyrrole-2, 3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.24-7.22 (m, 3H), 7.20-7.15 (m, 4H), 6.87 (s, 1H), 6.76 (d, *J*=8Hz, 2H), 3.81 (s, 3H), 3.67 (s, 3H), 2.34 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 167.48, 160.74, 155.72, 138.41, 136.80, 129.48, 128.90, 125.80, 125.71, 124.84, 124.78, 122.93, 121.24, 115.62, 52.50, 51.99, 21.05; HRMS m/z calcd for $C_{21}H_{19}NO_5$ [M+] 365.1263, found 365.1264.

4g. Dimethyl 1-(4-methoxyphenyl)- 4-(4-fluorophenyl) -1H-pyrrole-2, 3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 8.05 (d, *J*=8Hz, 1H), 7.46-7.61 (m, 2H), 7.47-7.44 (m, 1H), 7.36 (d, *J*=4Hz, 1H), 7.17-7.02 (m, 3H), 6.95-6.91 (m, 1H), 4.02 (s, 3H), 3.93 (m, 3H), 3.72 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 168.25, 166.59, 159.26, 152.73, 144.71, 136.93, 131.40, 130.36, 130.27, 127.22, 124.89, 124.62, 123.45, 115.59, 115.36, 114.03, 55.66, 53.17, 52.78; HRMS m/z calcd for $C_{21}H_{18}FNO_5$ [M+] 383.1669, found 383.1167. ^{19}F NMR (376 MHz, $CDCl_3$) δ (ppm) -117.65 (m, 1F).

4h. Diethyl 1-(2-methylphenyl)-4-phenyl-1H-pyrrole-2,3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.47-7.45 (m, 2H), 7.36-7.32 (m, 3H), 7.30-7.20 (m, 4H), 6.88 (s, 1H), 4.34-4.32 (m, 2H), 4.11-4.08 (m 2H), 2.11 (s, 3H), 1.29 (t, *J*=12Hz, 3H), 1.09 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.47, 159.52, 139.11, 135.46, 133.31, 130.42, 128.91, 12852, 127.58, 127.35, 126.99, 126.30, 125.35, 124.60, 123.29, 121.85, 61.32, 60.55, 17.36, 14.06, 13.80; HRMS m/z calcd for $C_{21}H_{19}NO_4$ [M+] 349.1314, found 349.1315.

4i. Diethyl 1-(3-methylphenyl)-4-phenyl-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.44 (d, *J*=8Hz, 2H), 7.29 (t, *J*=8Hz, 2H), 7.22 (t, *J*=12Hz, 2H), 7.15 (d, *J*=8Hz, 1H), 7.09 (t, *J*=12Hz, 2H), 6.90 (s, 1H), 4.29-4.26 (m, 2H), 4.14-4.11 (m, 2H), 2.32 (s, 3H), 1.24 (t, *J*=12Hz, 3H), 1.11 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.01, 159.91, 139.42, 138.77, 133.29, 129.05, 128.58, 128.38, 127.74, 126.95, 126.60, 125.50, 124.66, 123.10, 121.71, 61.09, 60.70, 21.14, 13.99, 13.82; HRMS m/z calcd for $C_{23}H_{23}NO_4$ [M+] 377.1627, found 377.1629.

4j. Diethyl 1-(4-methylphenyl)-4-phenyl-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.43 (t, *J*=12Hz, 2H), 7.28-7.19 (m, 3H), 7.12 (t, *J*=8Hz, 4H), 6.87 (s, 1H), 4.2-4.25 (m, 2H), 4.13-4.10 (m, 2H), 2.29 (s, 3H), 1.23 (t, *J*=12Hz, 3H), 1.11 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.03, 159.87, 138.17, 136.99, 133.33, 129.36, 128.39, 127.71, 126.94, 125.80, 125.63, 124.56, 123.58, 121.76, 61.06, 60.67, 20.97, 14.00, 13.84; HRMS m/z calcd for $C_{23}H_{23}NO_4$ [M+] 377.1627, found 377.1629.

4k. Diethyl 1-(3-methoxyphenyl)-4-phenyl-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.46-7.44 (m, 2H), 7.37-7.32 (m, 2H), 7.30-7.24 (m, 2H), 6.98 (s, 1H), 9.96-6.92 (m, 2H), 6.89 (t, *J*=12Hz, 1H), 4.33-4.28 (m, 2H), 4.20-4.14 (m, 2H), 3.80 (s, 3H), 1.27 (t, *J*=12Hz, 3H), 1.16 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.09, 159.93, 159.85, 140.58, 133.25, 129.55, 128.45, 127.81, 127.06, 125.51, 124.79, 123.64, 121.76, 118.38, 114.19, 112.03, 61.25, 60.86, 55.44, 14.03, 13.89; HRMS m/z calcd for $C_{23}H_{23}NO_5$ [M+] 393.4324, found 393.4321.

4l. Dimethyl 1-(4-methoxyphenyl)- 4-(3, 4-difluorophenyl) -1H-pyrrole-2, 3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 8.06 (d, *J*=8Hz, 1H), 7.56-7.47 (m, 3H), 7.37-7.32 (m, 2H), 7.27-7.21 (m, 2H), 4.03 (s, 3H), 3.95 (s, 3H), 3.76 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 167.99, 166.47, 159.52, 151.47, 144.69, 137.10, 131.45, 124.89, 124.69, 123.69, 117.96, 117.76, 117.36, 117.19, 102.69, 55.72, 53.22, 52.90; HRMS m/z calcd for $C_{21}H_{17}F_2NO_5$ [M+] 401.3601, found 401.3603. ^{19}F NMR (376 MHz, $CDCl_3$) δ (ppm) -139.27 (m, 1F), -142.63 (m, 1F).

4m. Dimethyl 4-(phenyl)-1-phenyl-1H-pyrrole-2,3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.48-7.32 (m, 5H), 7.26-7.15 (m, 5H), 7.02 (s, 1H), 3.82(s, 3H), 3.74 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.52, 160.12, 138.12, 133.20, 129.32, 128.56, 127.66,

127.09, 126.58, 125.45, 121.23, 120.73, 55.23, 53.26; HRMS m/z calcd for $C_{20}H_{17}NO_4$ [M+] 335.1158, found 335.1153.

4n. Dimethyl 1-(benzyl)-4-(4-ethoxyphenyl)-1H-pyrrole-2, 3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.30-7.22 (m, 5H), 7.14 (d, *J*=8Hz, 2H), 6.85 (d, *J*=12Hz, 2H), 6.83 (s, 1H), 5.46 (s, 2H), 4.01-3.96 (m, 2H), 3.79 (s, 3H), 3.75 (s, 3H), 1.37 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 167.35, 160.64, 158.12, 137.10, 128.74, 128.53, 127.79, 127.17, 125.62, 125.35, 123.82, 122.07, 120.90, 115.35, 114.59, 63.39, 52.31, 51.71, 14.82; HRMS m/z calcd for $C_{23}H_{23}NO_5$ [M+] 393.4324, found 393.4323.

4o. Diethyl 1-(3, 4-dimethylphenyl)- 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.44 (d, *J*=8Hz, 2H), 7.28 (t, *J*=12Hz, 2H), 7.21-7.17 (m, 1H), 7.10-7.05 (m, 2H), 7.00 (d, *J*=8Hz, 1H), 6.89 (s, 1H), 4.28-4.26 (m, 2H), 4.16-4.11 (m, 2H), 2.21 (s, 6H), 1.23 (t, *J*=12Hz, 3H), 1.15 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.04, 159.98, 137.21, 137.16, 136.83, 133.39, 129.83, 128.37, 127.75, 126.94, 125.60, 124.55, 123.26, 121.50, 61.03, 60.68, 19.65, 19.33, 14.01, 13.87; HRMS m/z calcd for $C_{24}H_{25}NO_4$ [M+] 391.4596, found 391.4595.

4p. Dimethyl 1-(benzyl) - 4-(4-bromophenyl) -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.40-7.37 (m, 2H), 7.27-7.19 (m, 5H), 7.11 (d, *J*=8Hz, 2H), 6.88 (s, 1H), 5.40 (s, 2H), 3.77 (s, 3H), 3.71 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.82, 160.41, 136.84, 132.21, 131.56, 128.92, 128.70, 127.80, 127.05, 125.57, 122.68, 121.83, 121.52, 120.80, 52.27, 51.74; HRMS m/z calcd for $C_{21}H_{18}BrNO_4$ [M+] 427.0419, found 427.0416.

4q. Dimethyl 1-(benzyl) - 4-(3-fluorophenyl) -1H-pyrrole-2, 3-dicarboxylate

Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.32-7.22 (m, 5H), 7.16-7.12 (m, 3H), 7.09-7.06 (m, 1H), 6.93 (s, 1H), 5.47 (s, 2H), 3.81 (s, 3H), 3.76 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.96, 164.11, 161.67, 160.53, 136.82, 135.51, 130.12, 130.04, 128.82, 127.93, 127.22, 125.77, 122.99, 122.76, 122.13, 121.46, 114.29, 114.07, 113.84, 113.63, 52.43, 51.84; HRMS m/z calcd for $C_{21}H_{18}FNO_4$ [M+] 367.3703, found 367.3705. ^{19}F NMR (376 MHz, $CDCl_3$) δ (ppm) -113.57 (m, 1F).

4r. Diethyl 1-(3, 4-dimethylphenyl)- 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.44 (d, *J*=8Hz, 2H), 7.28 (t, *J*=12Hz, 2H), 7.21-7.17 (m, 1H), 7.10-7.05 (m, 2H), 7.00 (d, *J*=8Hz, 1H), 6.89 (s, 1H), 4.28-4.26 (m, 2H), 4.16-4.11 (m, 2H), 2.21 (s, 6H), 1.23 (t, *J*=12Hz, 3H), 1.15 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.04, 159.98, 137.21, 137.16, 136.83,

133.39, 129.83, 128.37, 127.75, 126.94, 125.60, 124.55, 123.26, 121.50, 61.03, 60.68, 19.65, 19.33, 14.01, 13.87; HRMS m/z calcd for $C_{24}H_{25}NO_4$ [M+] 391.4596, found 391.4595.

4s. Dimethyl 1-(benzyl)- 4-(4-methylphenyl) -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.27-7.17 (m, 5H), 7.14-7.09 (m, 4H), 6.86 (s, 1H), 5.41 (s, 2H), 3.76 (s, 3H), 3.70 (s, 3H), 2.28 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 167.30, 160.56, 137.11, 136.55, 130.33, 129.28, 128.68, 127.73, 127.16, 127.08, 125.60, 123.90, 122.19, 120.93, 52.24, 51.64, 21.03; HRMS m/z calcd for $C_{22}H_{21}NO_4$ [M+] 363.4064, found 363.4066.

4t. Diethyl 1-(3, 5-dimethylphenyl)- 4-phenyl -1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.43 (d, *J*=8Hz, 2H), 7.27 (t, *J*=12Hz, 2H), 7.18 (t, *J*=12Hz, 1H), 6.97 (s, 1H), 6.85 (d, *J*=8Hz, 3H), 4.28-4.23 (m, 2H), 4.15-4.10 (m, 2H), 2.26 (s, 6H), 1.22 (t, *J*=12Hz, 3H), 1.17 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 165.92, 160.01, 139.36, 138.52, 133.40, 129.91, 128.36, 127.80, 126.91, 125.37, 124.65, 123.68, 121.45, 60.99, 60.68, 21.03, 13.99, 13.84; HRMS m/z calcd for $C_{24}H_{25}NO_4$ [M+] 391.4596, found 391.4597.

4v. Dimethyl 1-(4-methoxyphenyl) - 4-(2, 3-fluorophenyl)-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 8.07 (d, *J*=8Hz, 1H), 7.50-7.47 (m, 1H), 7.40 (t, *J*=12Hz, 1H), 7.28-7.16 (m, 5H), 4.04 (s, 3H), 3.94 (s, 3H), 3.77 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.83, 166.76, 159.62, 144.96, 138.31, 131.50, 125.94, 125.07, 124.36, 123.97, 117.83, 117.67, 102.72, 55.73, 53.19, 52.84; HRMS m/z calcd for $C_{21}H_{17}F_2NO_5$ [M+] 401.3602, found 401.3605. ^{19}F NMR (376 MHz, $CDCl_3$) δ (ppm) -132.48 (m, 1F), -145.30 (m, 1F).

4w. Diethyl 1-(2, 4, 6-trimethylphenyl) – 4-phenyl-1H-pyrrole-2, 3-dicarboxylate

Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.45 (d, *J*=8Hz, 2H), 7.33 (t, *J*=12Hz, 2H), 7.25 (d, *J*=8Hz, 1H), 6.92 (s, 2H), 6.76 (s, 1H), 4.34-4.28 (m, 2H), 4.13-4.08(m, 2H), 2.30 (s, 3H), 2.00(s, 6H), 1.27 (t, *J*=12Hz, 3H), 1.10 (t, *J*=12Hz, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.37, 159.60, 138.31, 135.91, 135.25, 134.63, 133.47, 129.49, 128.58, 128.43, 127.64, 126.88, 125.03, 124.52, 123.20, 121.30, 61.16, 60.50, 20.89, 17.41, 14.04, 13.79; HRMS m/z calcd for $C_{25}H_{27}NO_4$ [M+] 405.4862, found 405.4865.

4x. Diethyl 1-(benzyl) - 4-(4-bromophenyl) -1H-pyrrole-2, 3-dicarboxylate

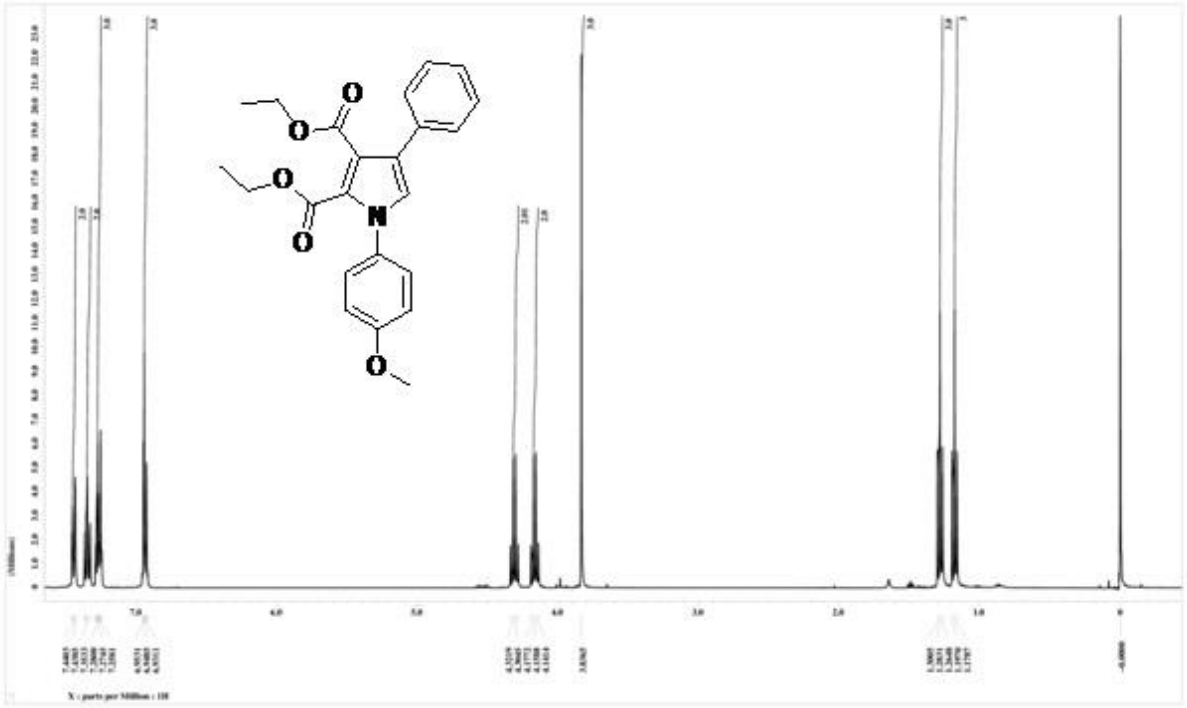
Yellow sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.50 (d, *J*=8Hz, 2H), 7.41 (d, *J*=8Hz, 1H), 7.34 (m, 4H), 7.15 (d, *J*=4Hz, 2H), 6.90 (s, 1H), 5.47 (s, 2H), 4.30-4.21 (m, 4H), 1.30-1.22 (m, 6H); ^{13}C NMR ($CDCl_3$, 100 MHz)

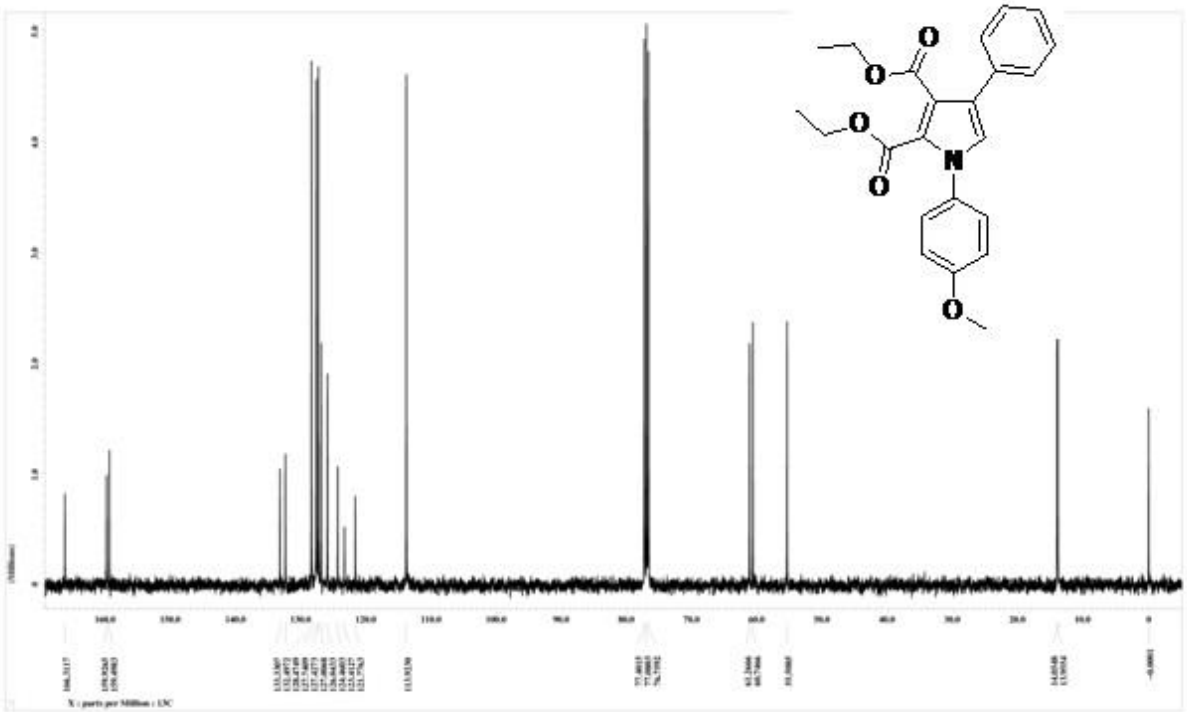
δ (ppm) 166.44, 160.11, 137.62, 137.45, 136.91, 132.53, 131.50, 130.43, 129.01, 128.71, 127.80, 127.19, 126.54, 125.34, 122.58, 122.12, 121.57, 120.76, 61.29, 60.75, 52.27, 14.03, 13.98; HRMS m/z calcd for $C_{23}H_{22}BrNO_4$ [M+] 456.3291, found 456.3292.

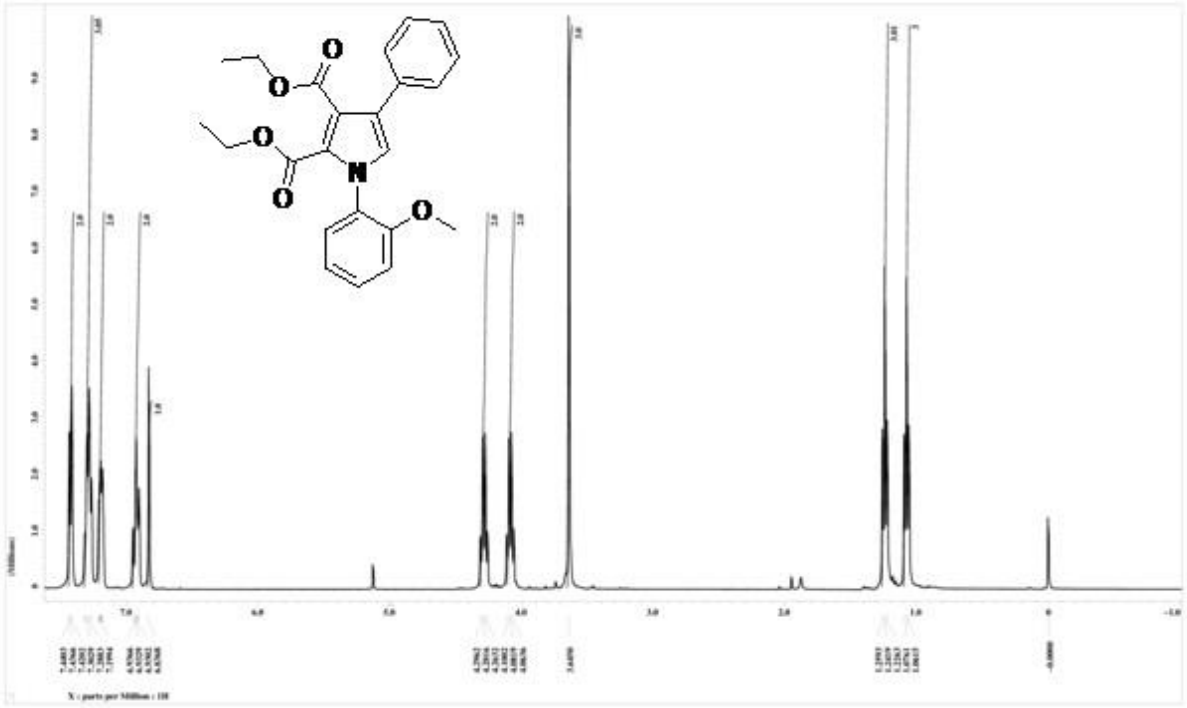
4y. Dimethyl 1-allyl-4-phenyl-1H-pyrrole-2, 3-dicarboxylate

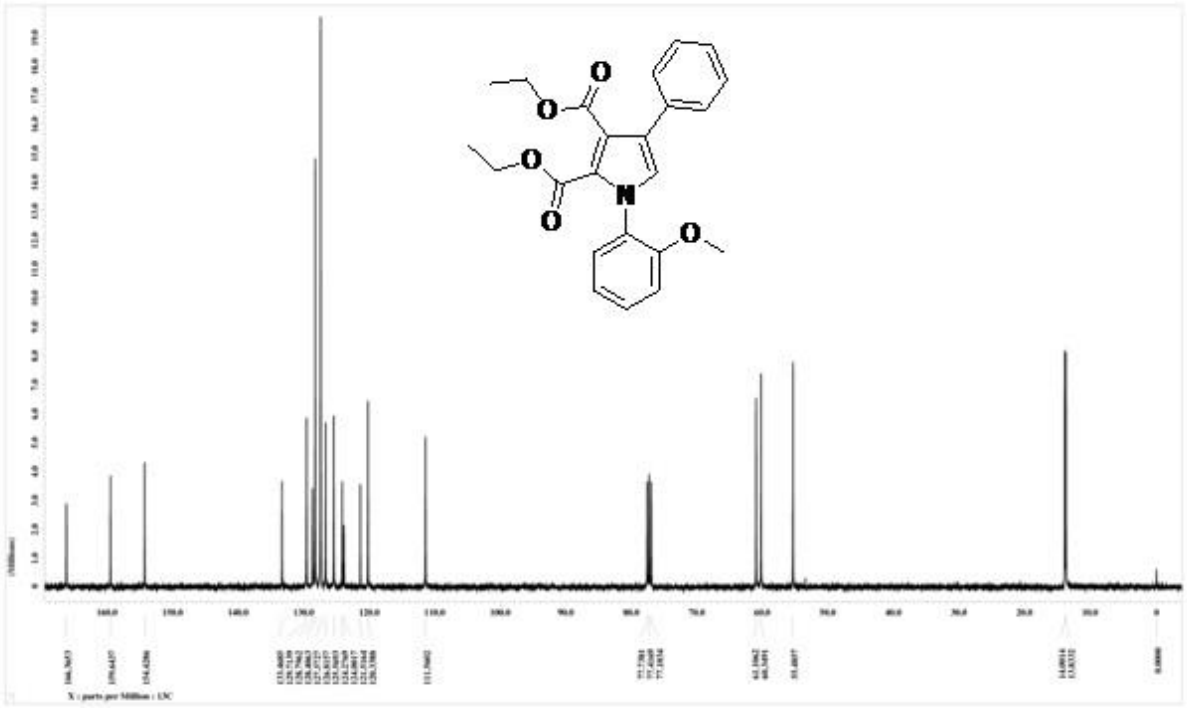
Brown sticky liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ (ppm) 7.43 (d, *J*=8Hz, 2H), 7.25 (t, *J*=12Hz, 2H), 7.20 (d, *J*=8Hz, 1H), 6.91 (s, 1H), 6.02 (m, 1H), 5.22 (d, *J*=10Hz, 1H), 5.13 (d, *J*=16Hz, 1H), 5.01 (d, *J*=5Hz, 2H), 3.82 (s, 3H), 3,76 (s, 3H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ (ppm) 166.32, 160.51, 133.74, 126.56, 127.21, 126.85, 125.32, 123.87, 122.12, 120.85, 118.75, 53.21, 51.36, , 51.01; HRMS m/z calcd for $C_{17}H_{17}NO_4$ [M+] 299.3212, found 299.3215.

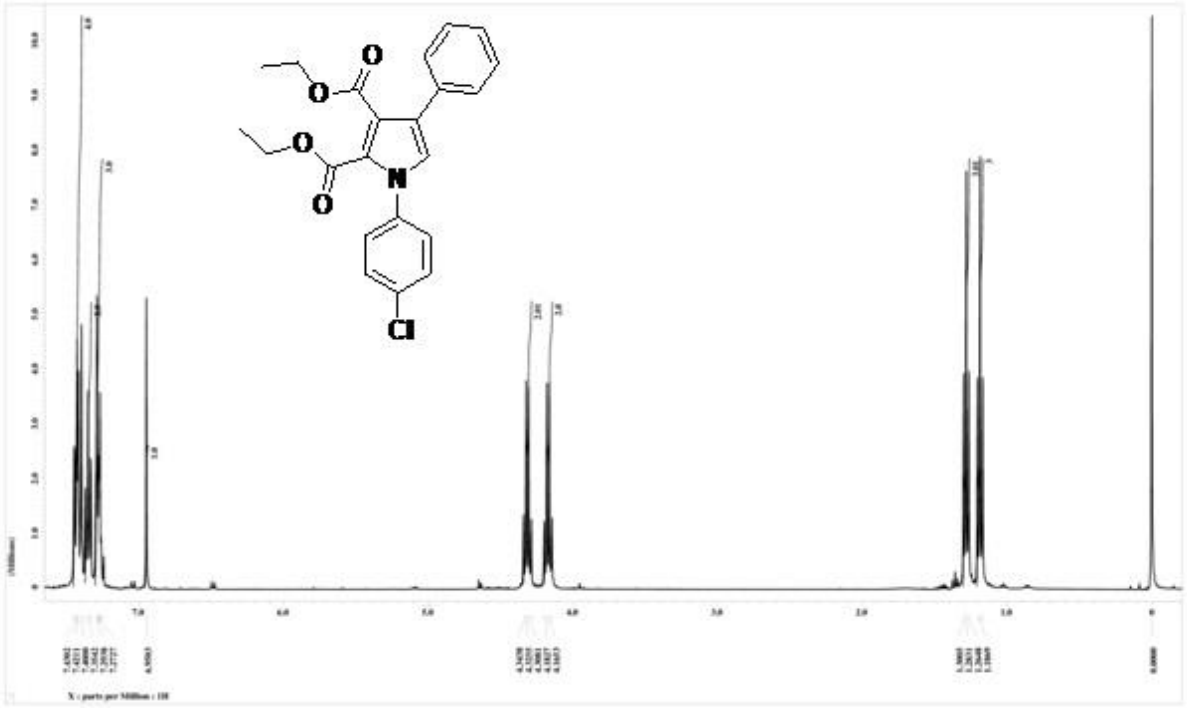
3. ^{1}H and ^{13}C NMR spectra of the compounds







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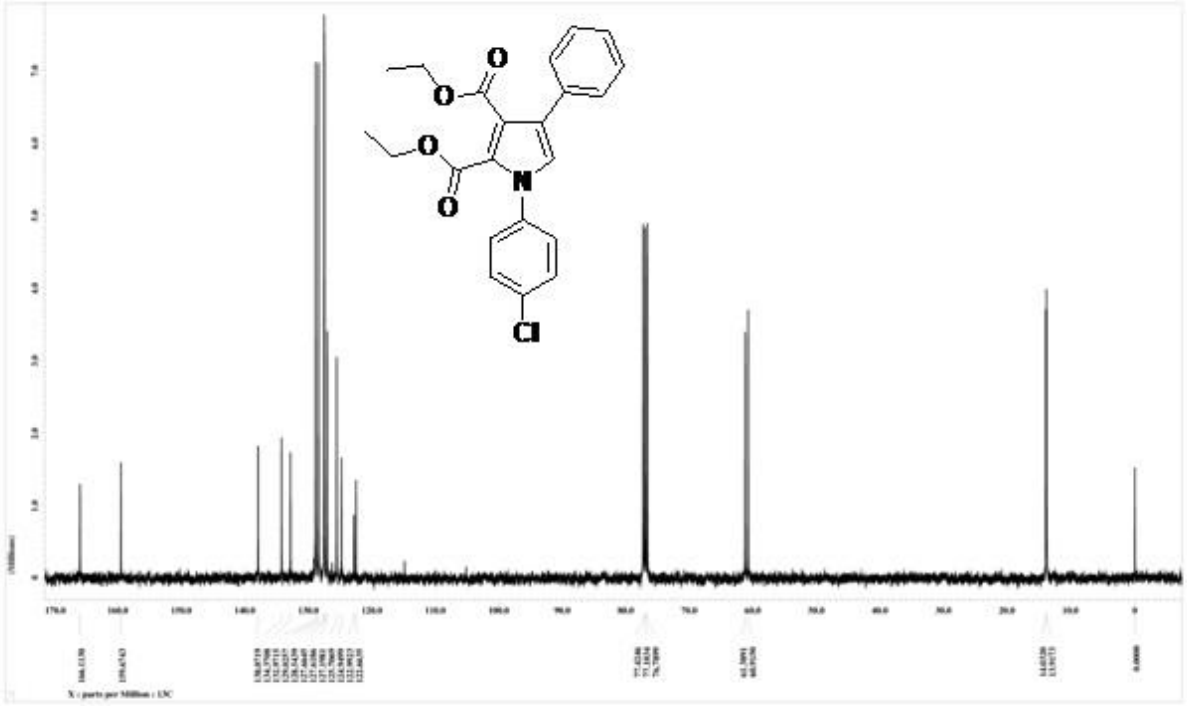
Cl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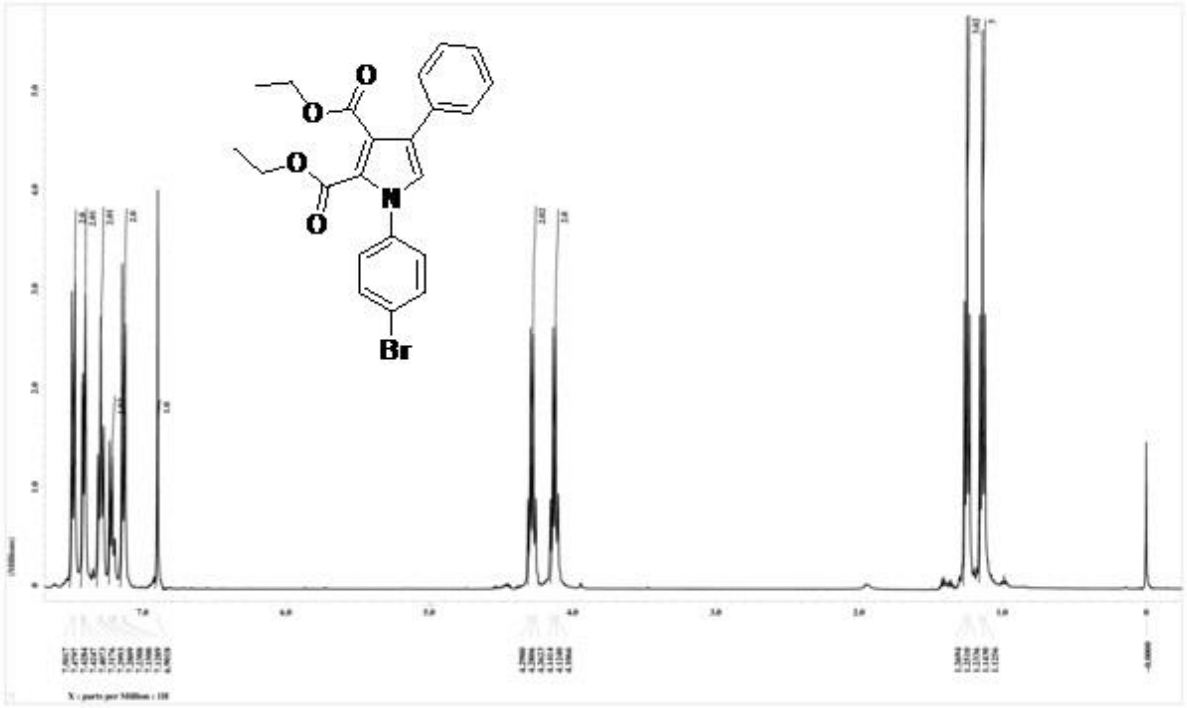
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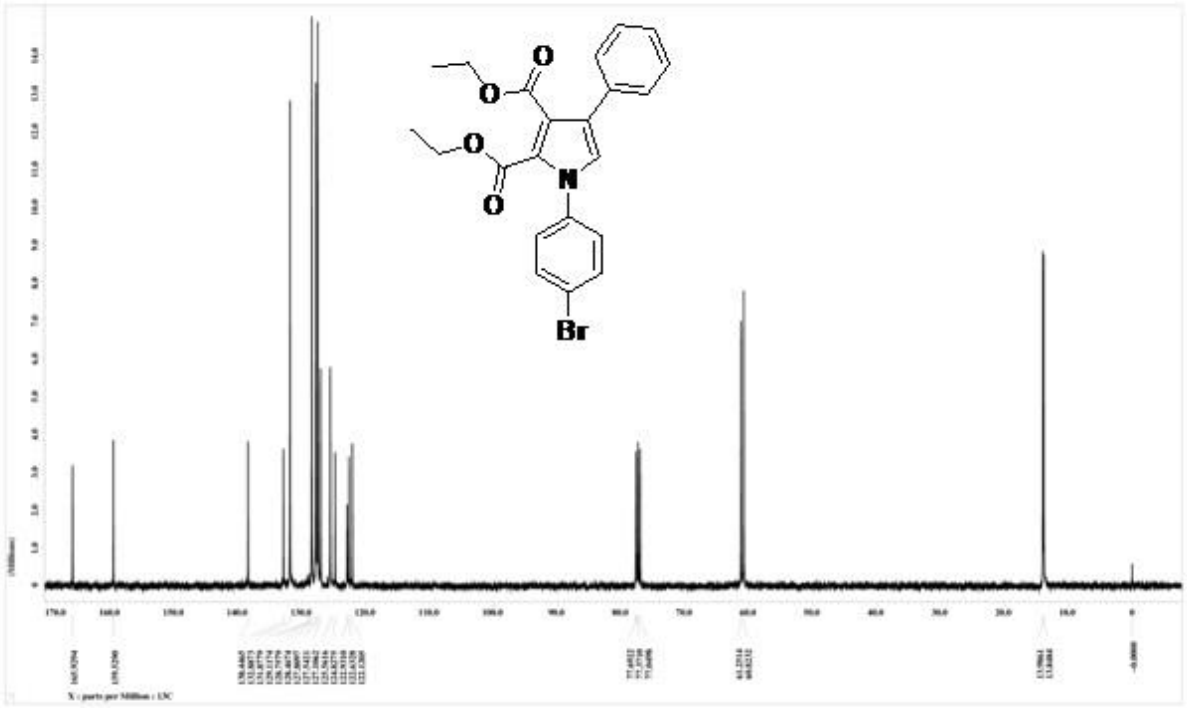
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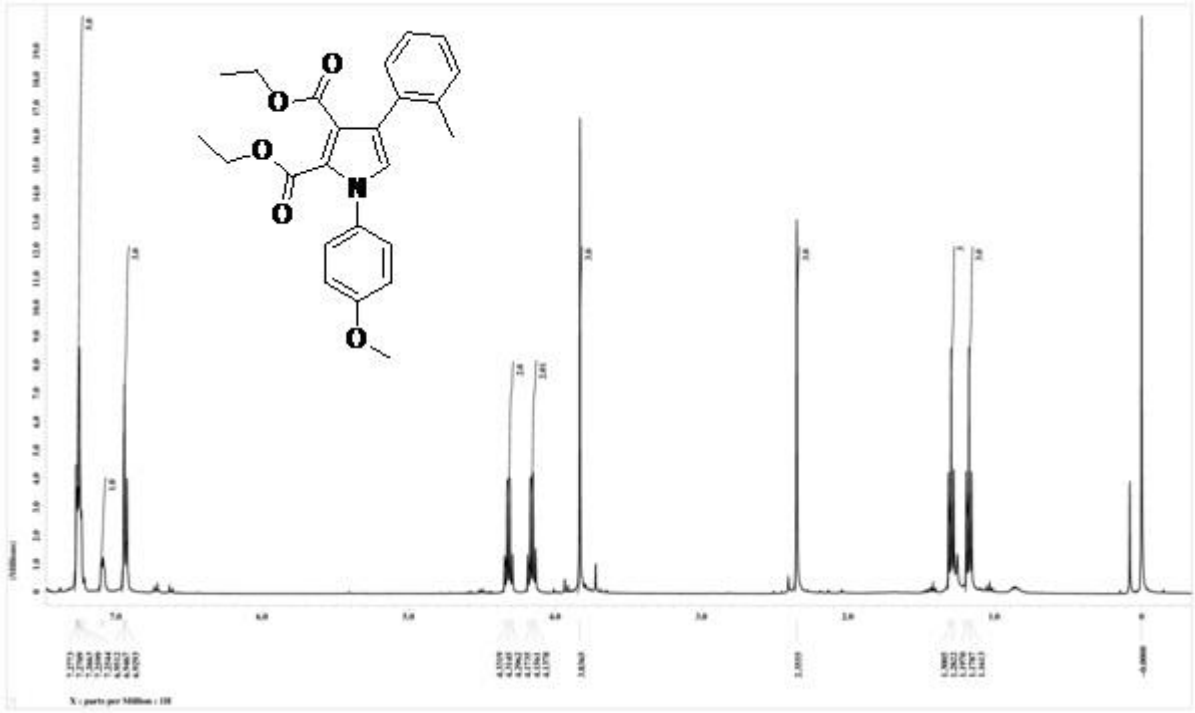

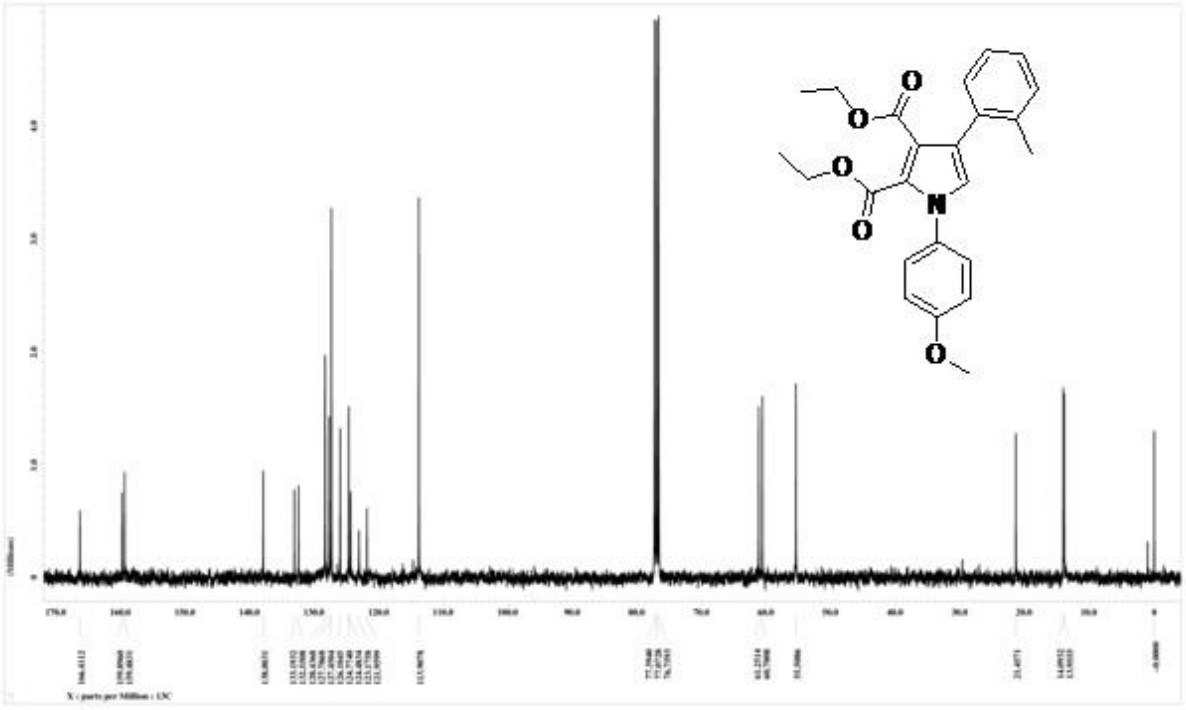

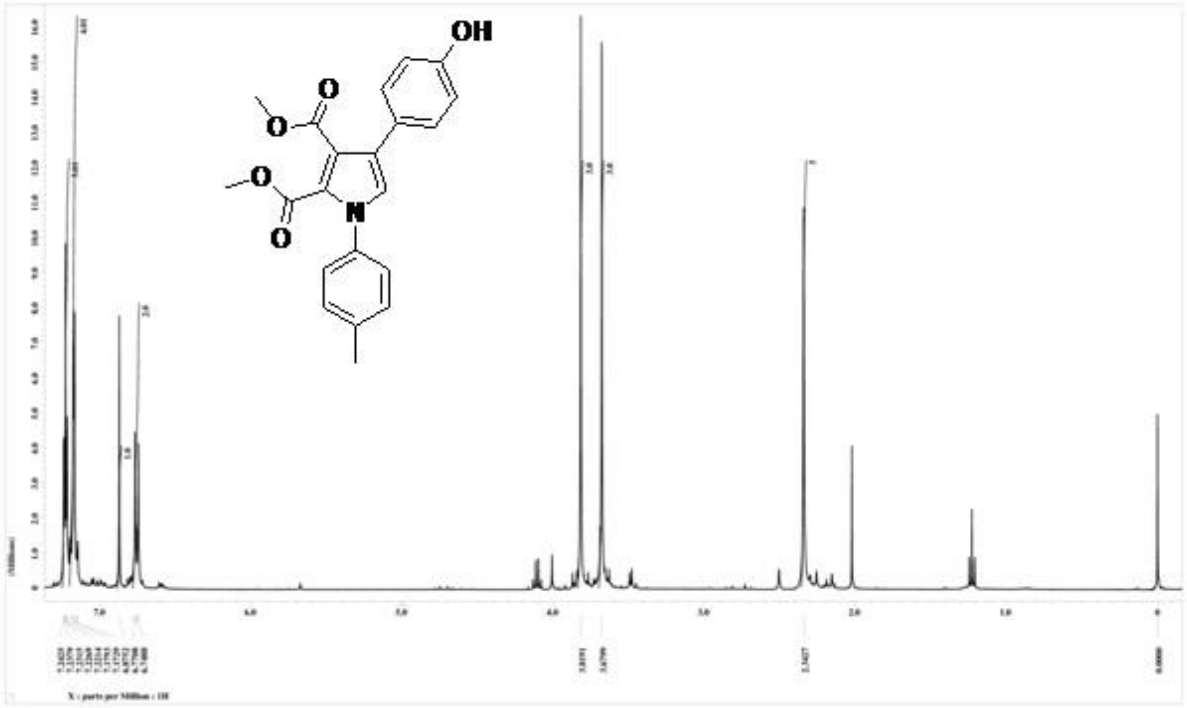
OH
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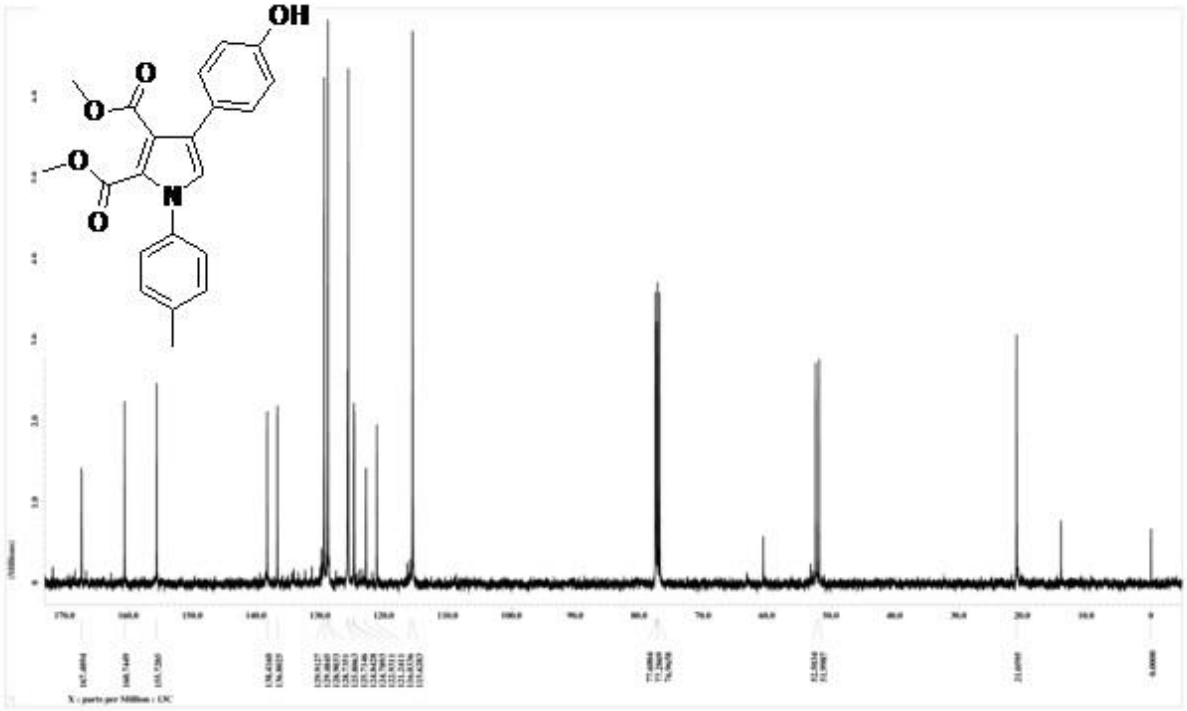
OH
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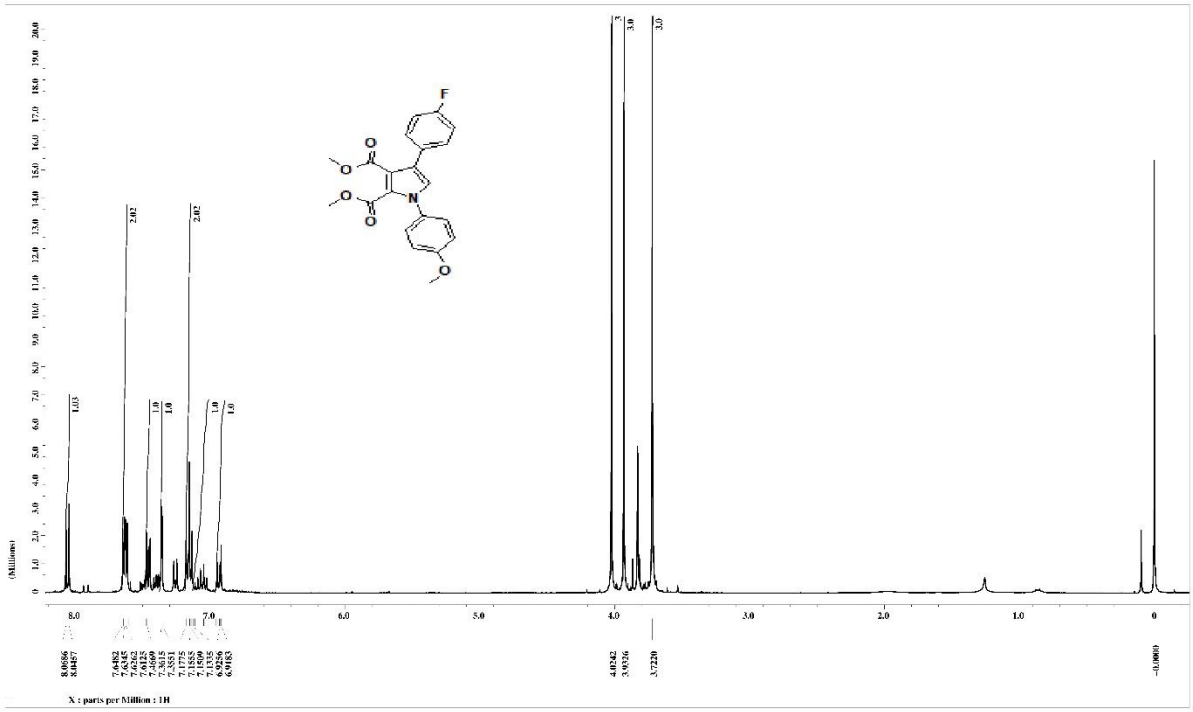
F
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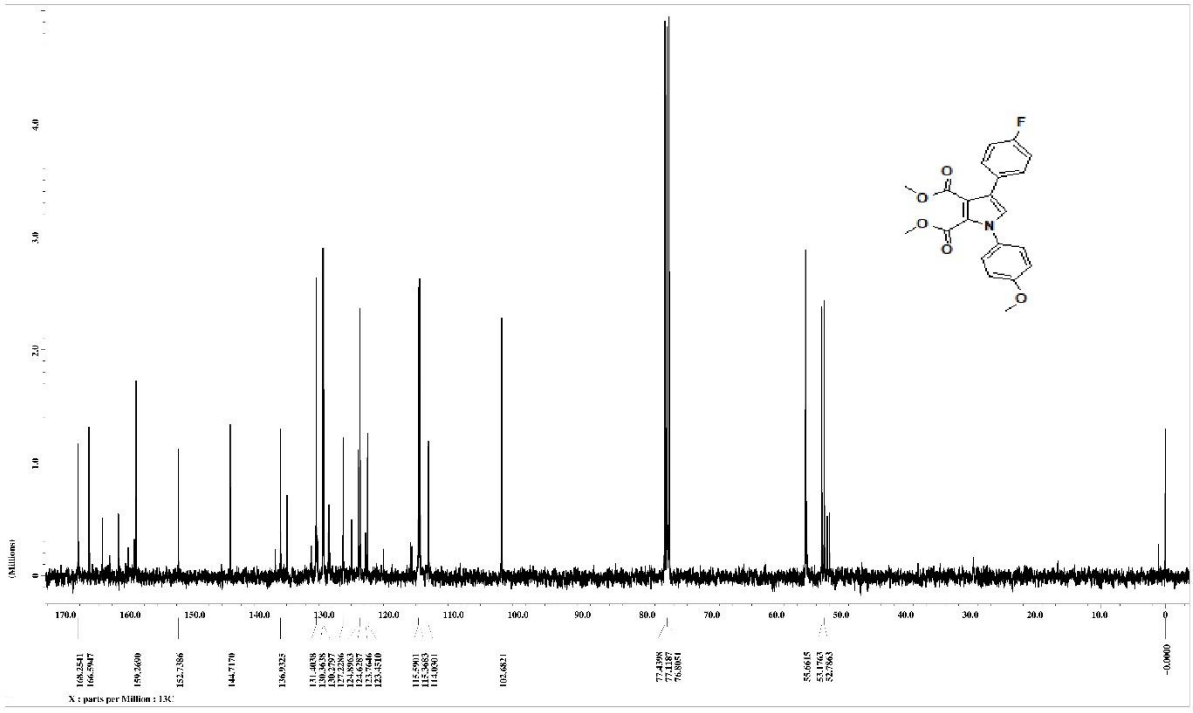
(Millions)
X : parts per Million : 1H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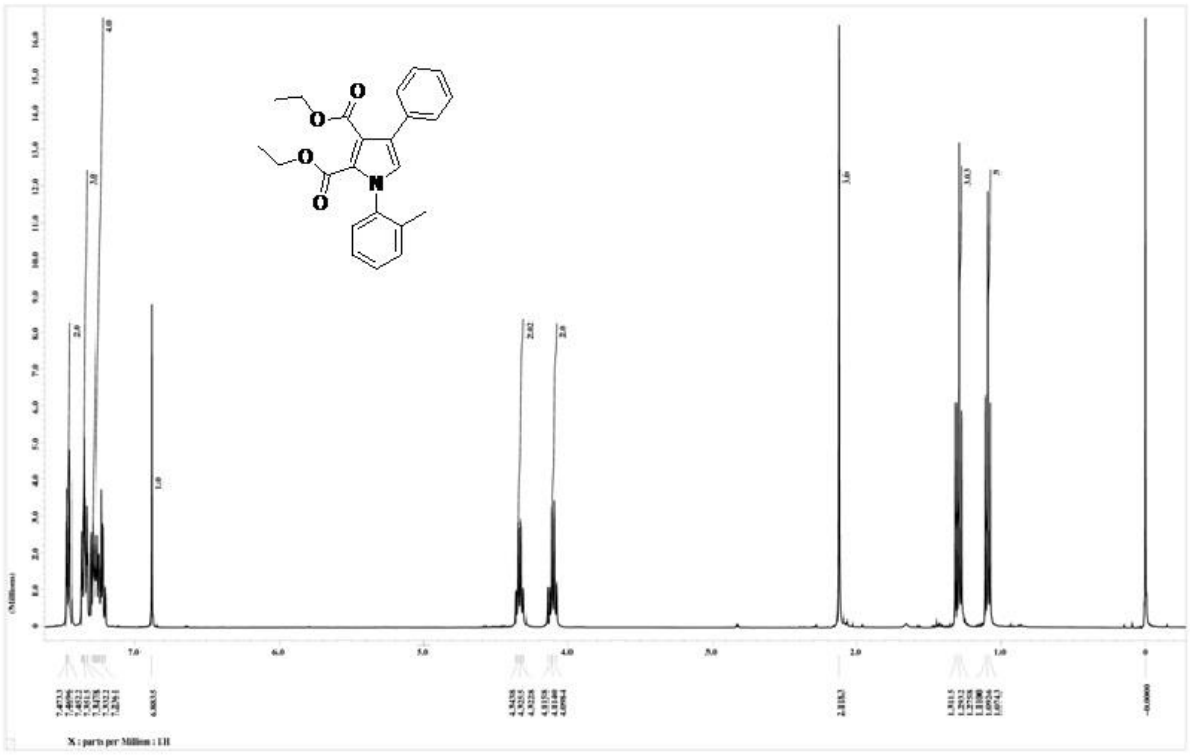
(Millions)
X : parts per Million : 13C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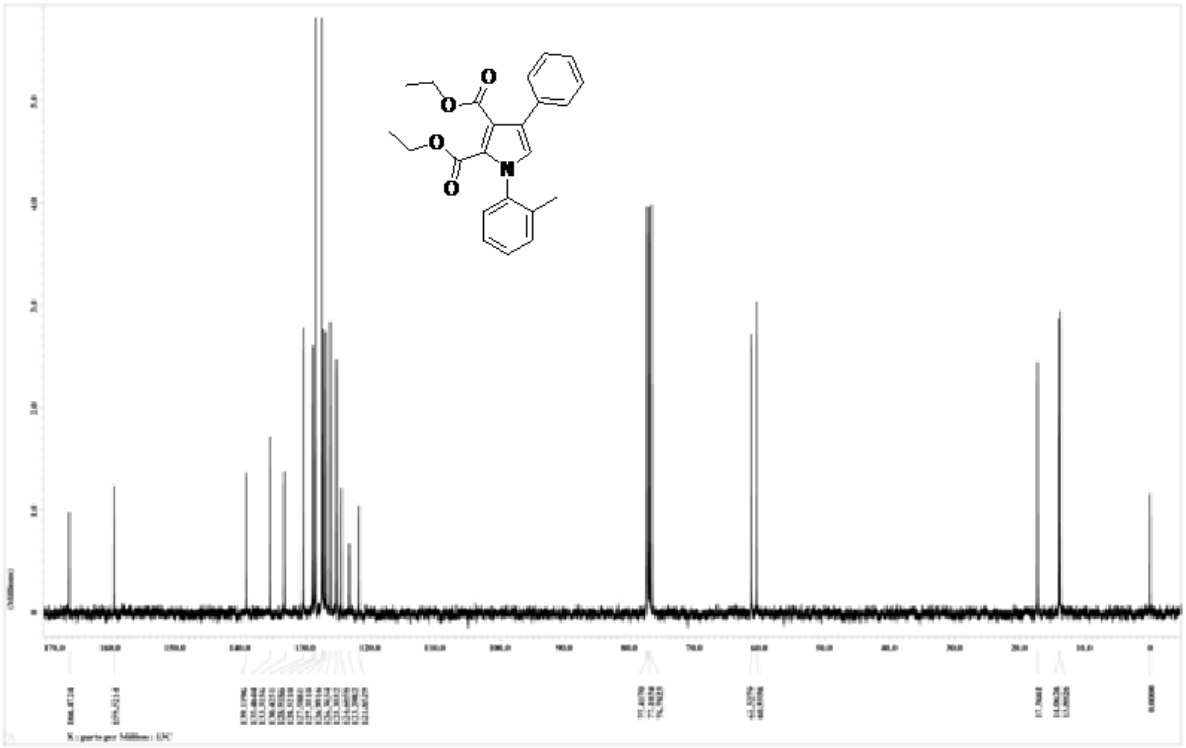
X : parts per Million : 1H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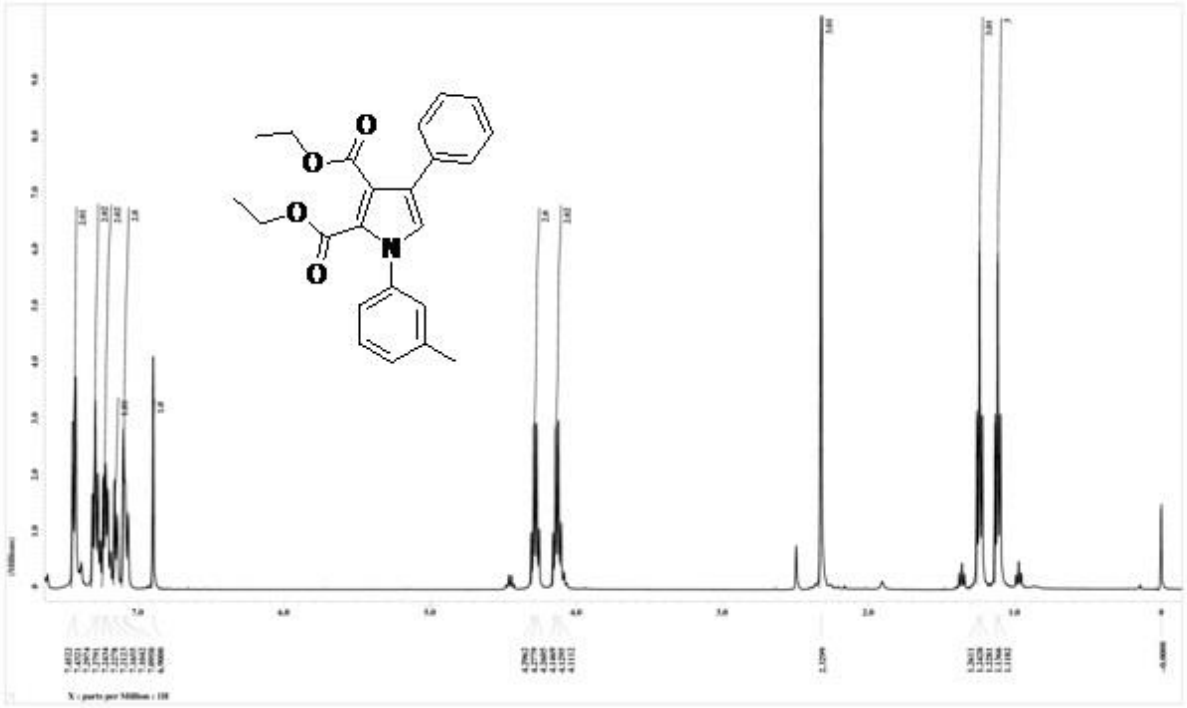
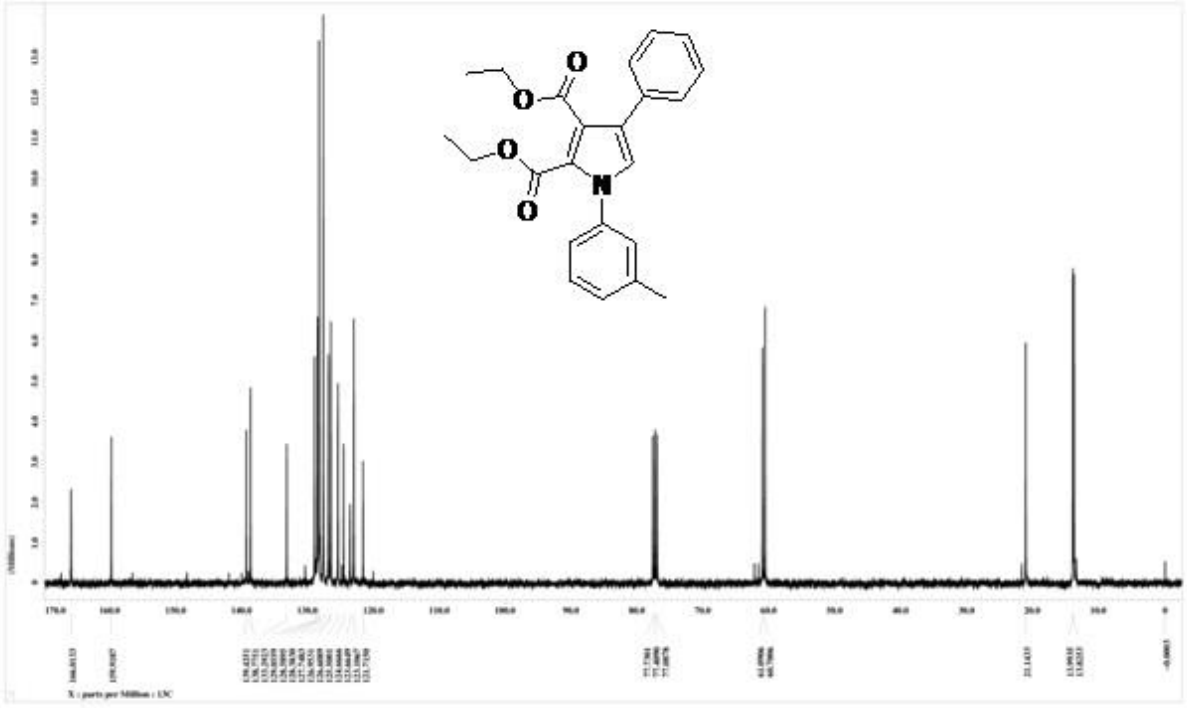
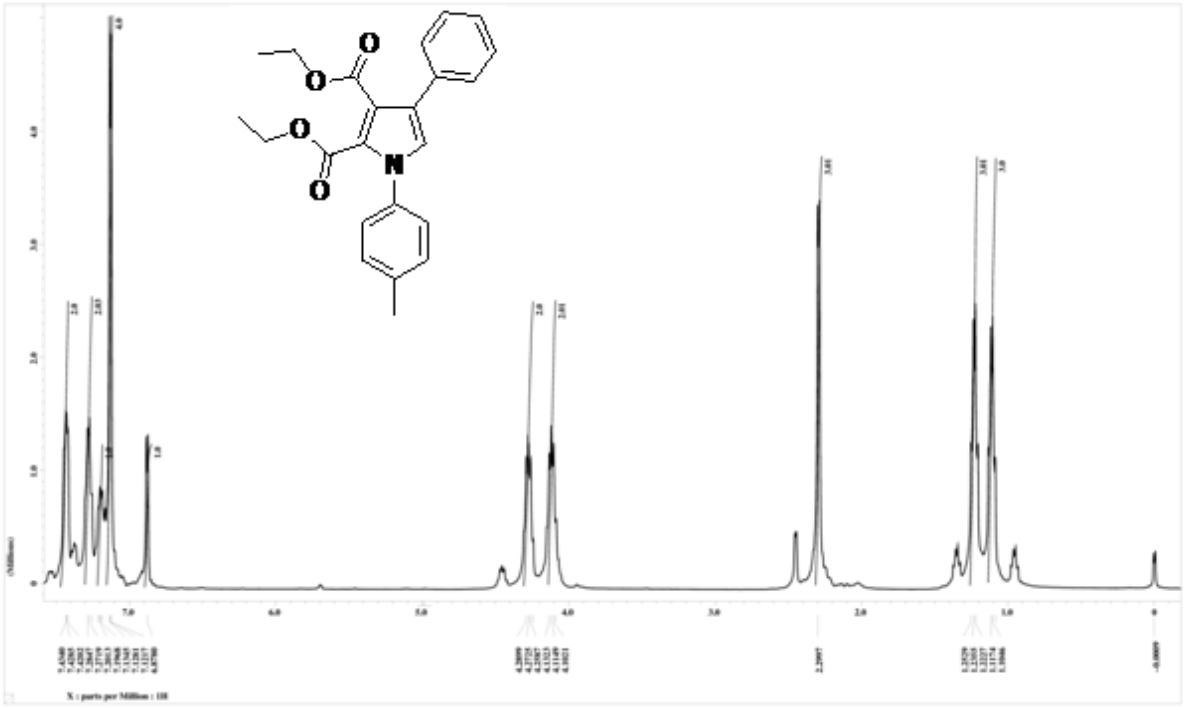
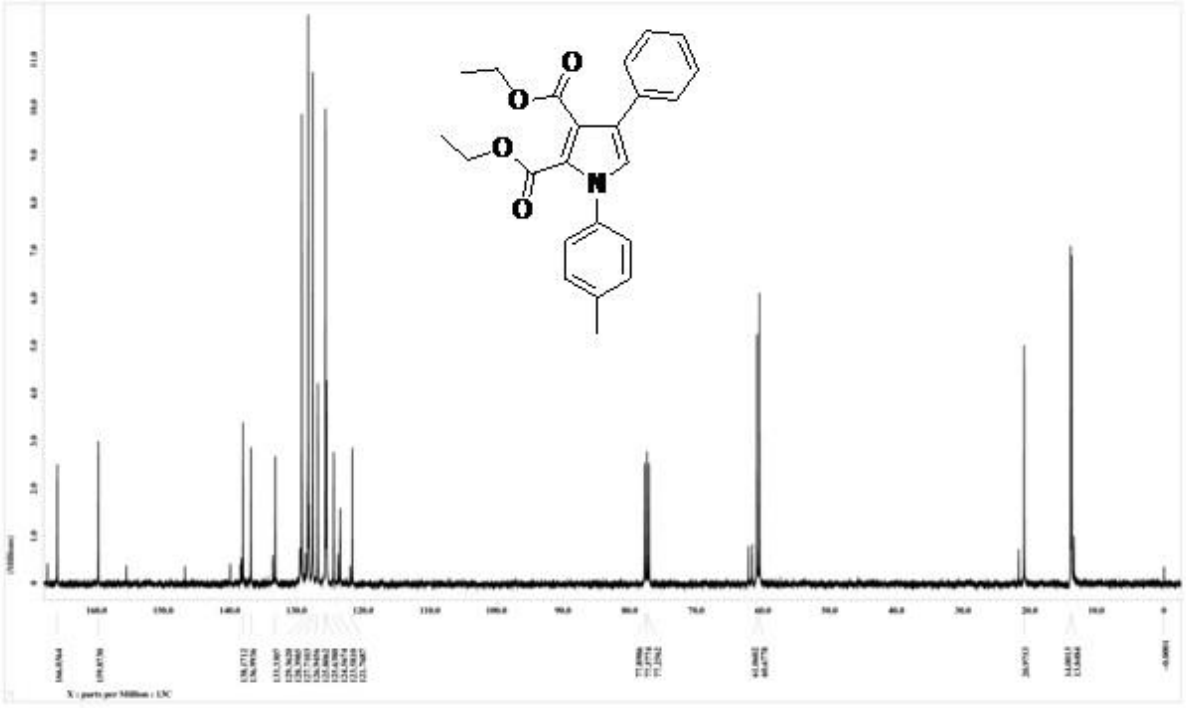
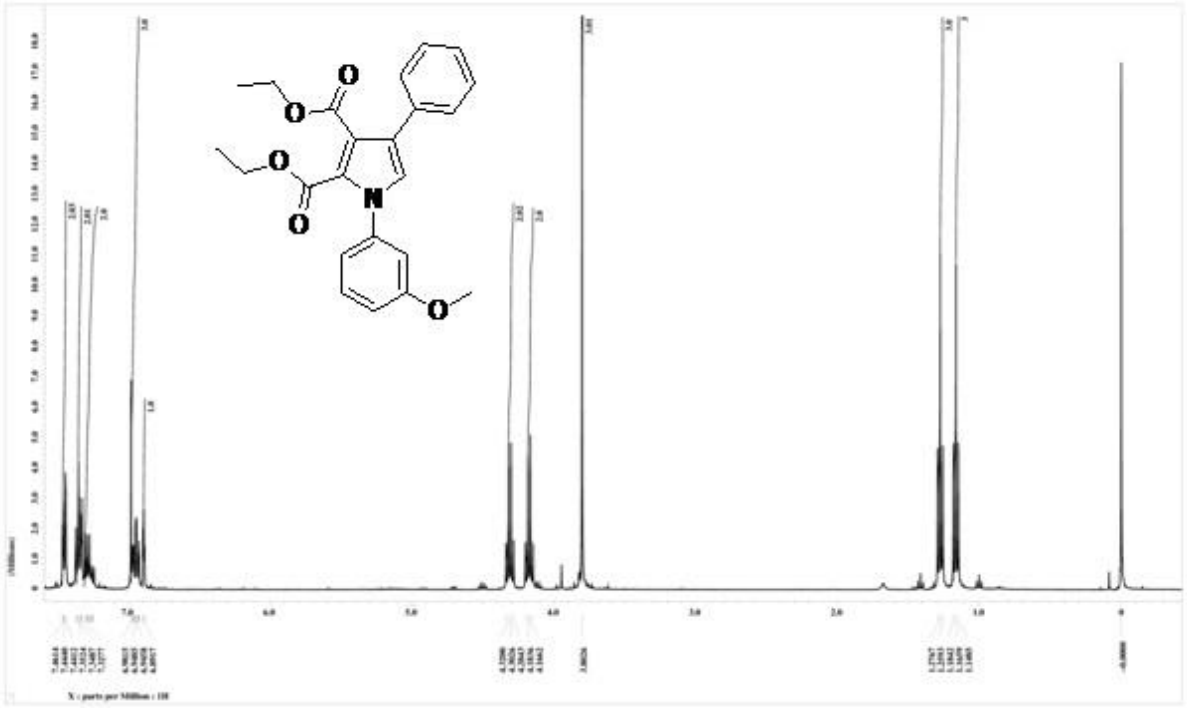
X : parts per Million : 13C

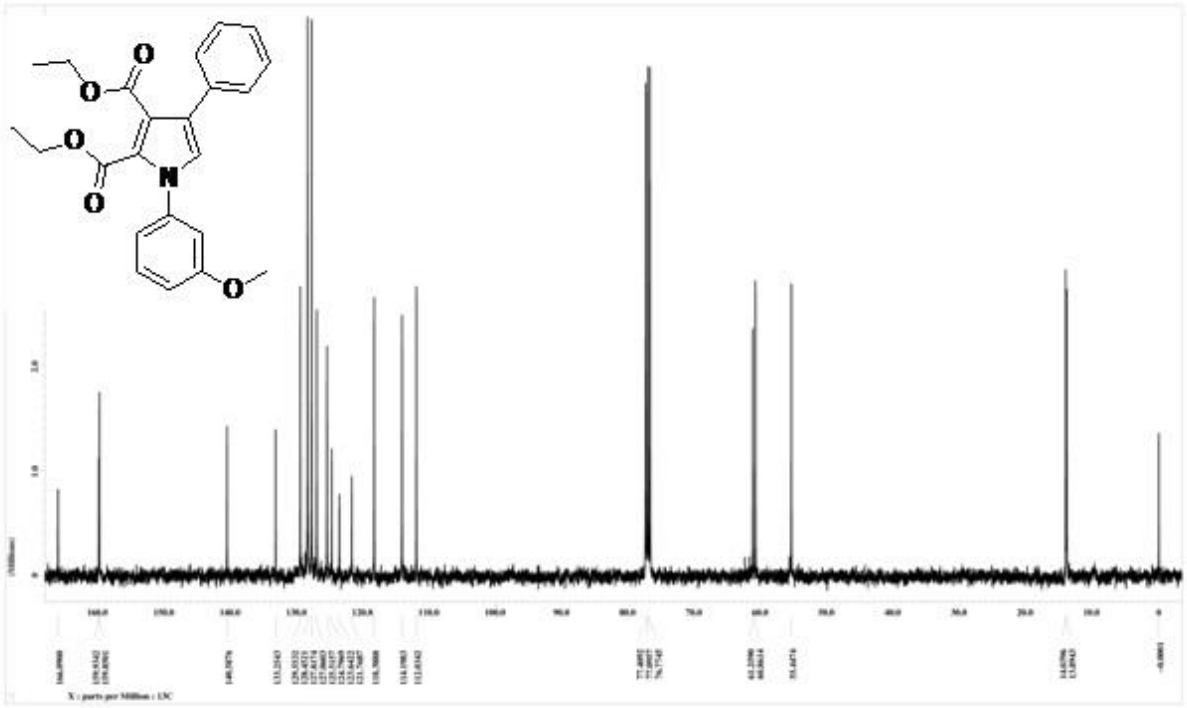


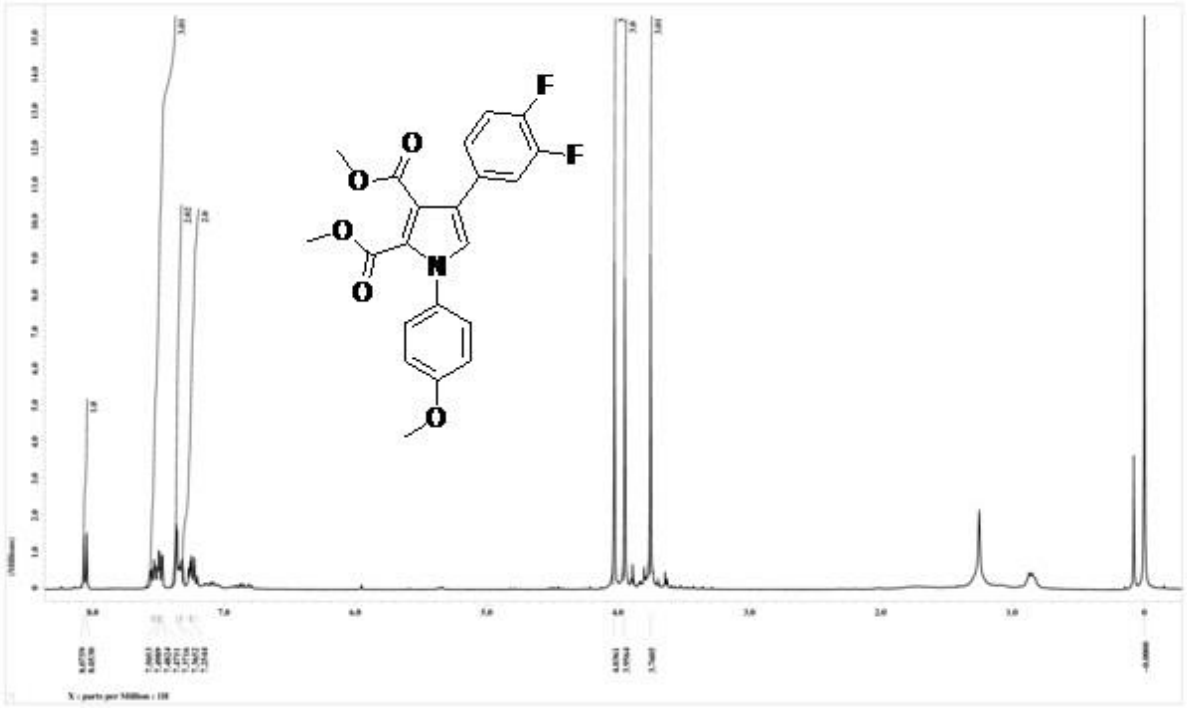








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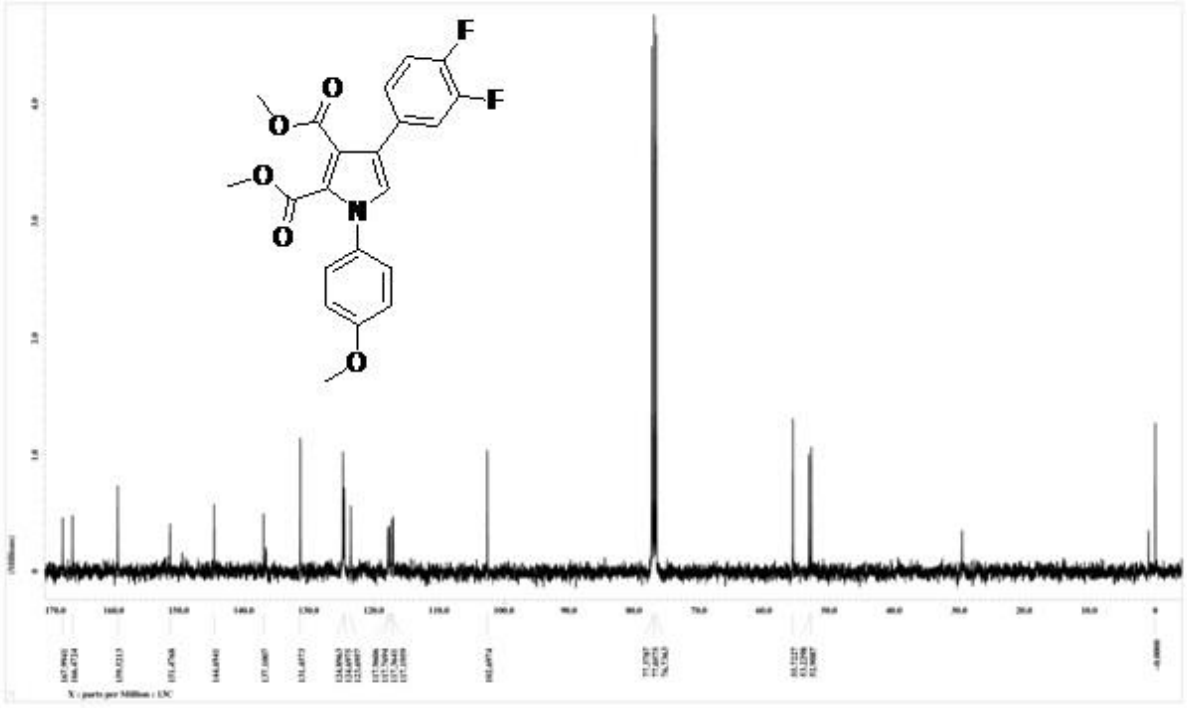
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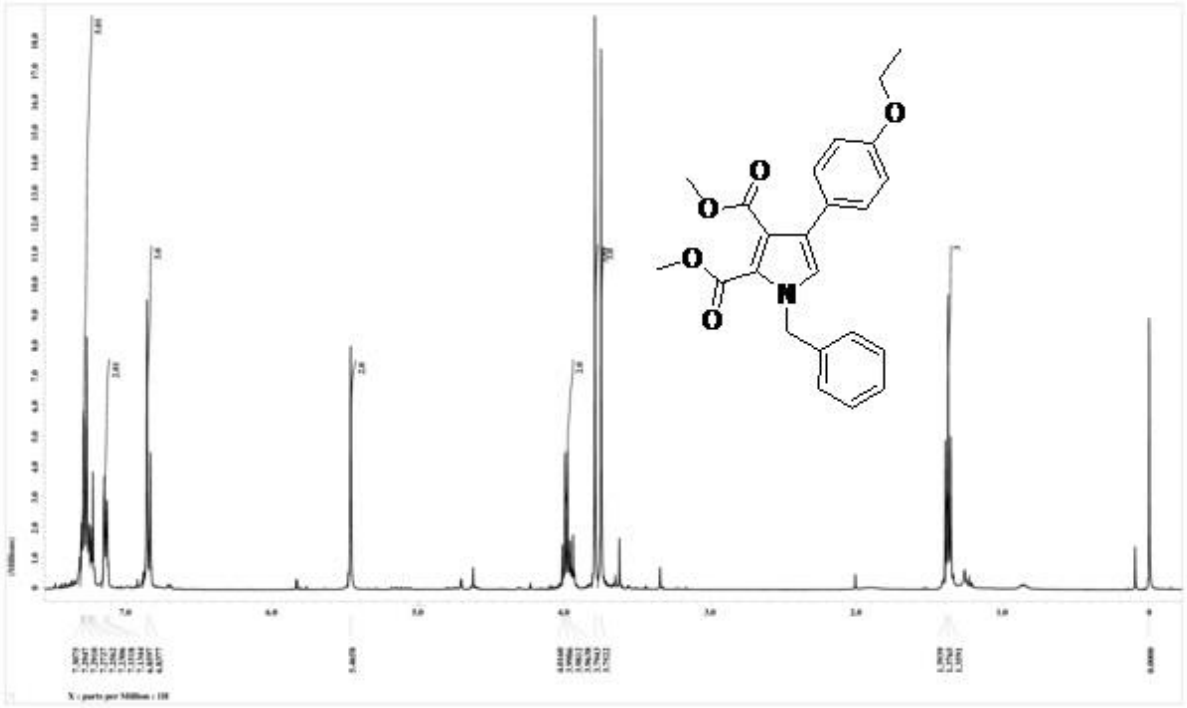

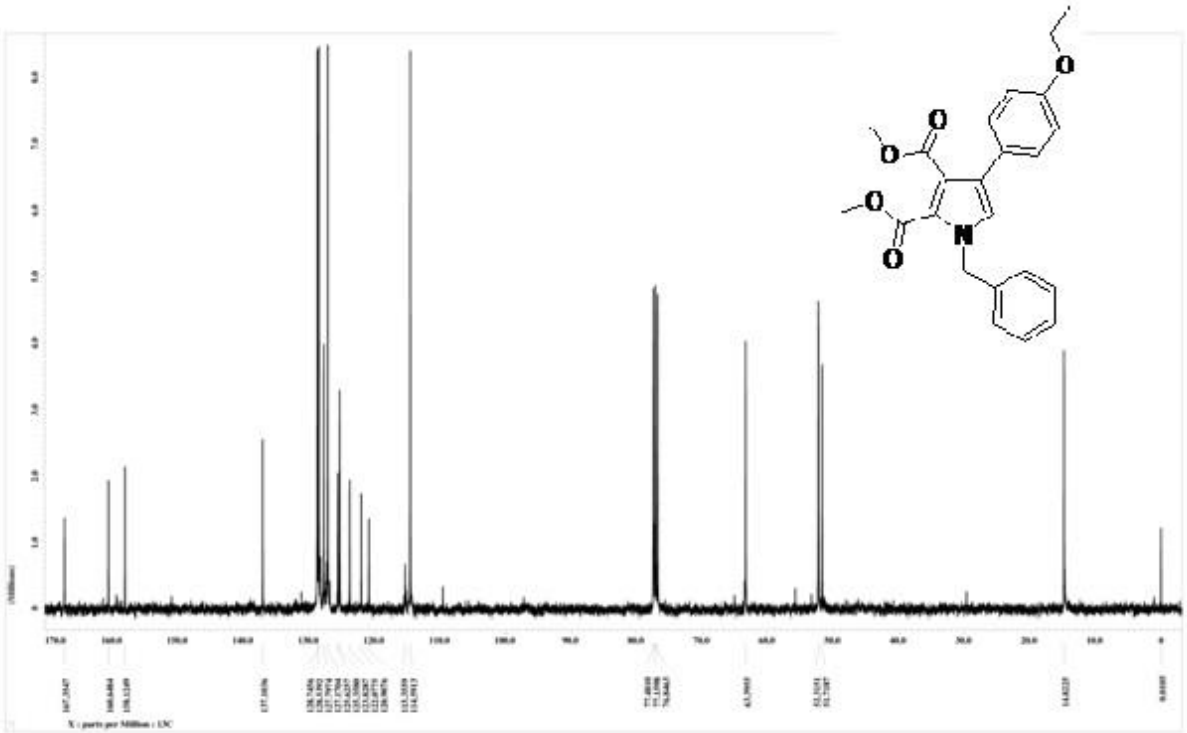

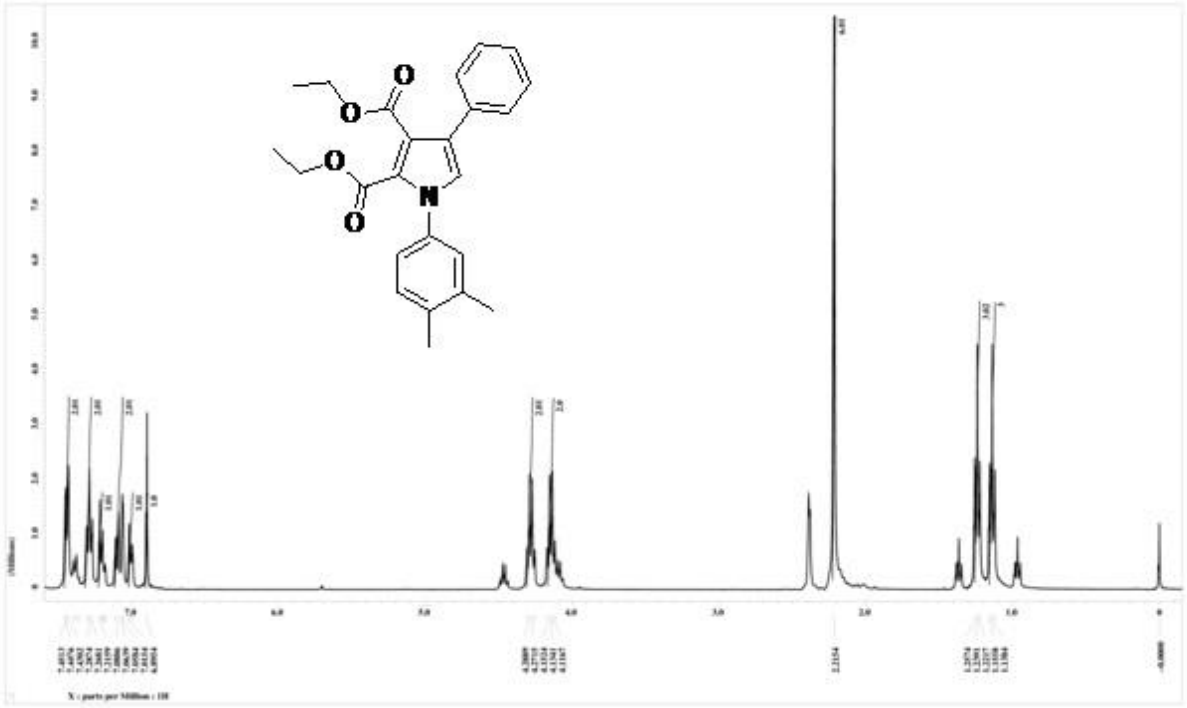

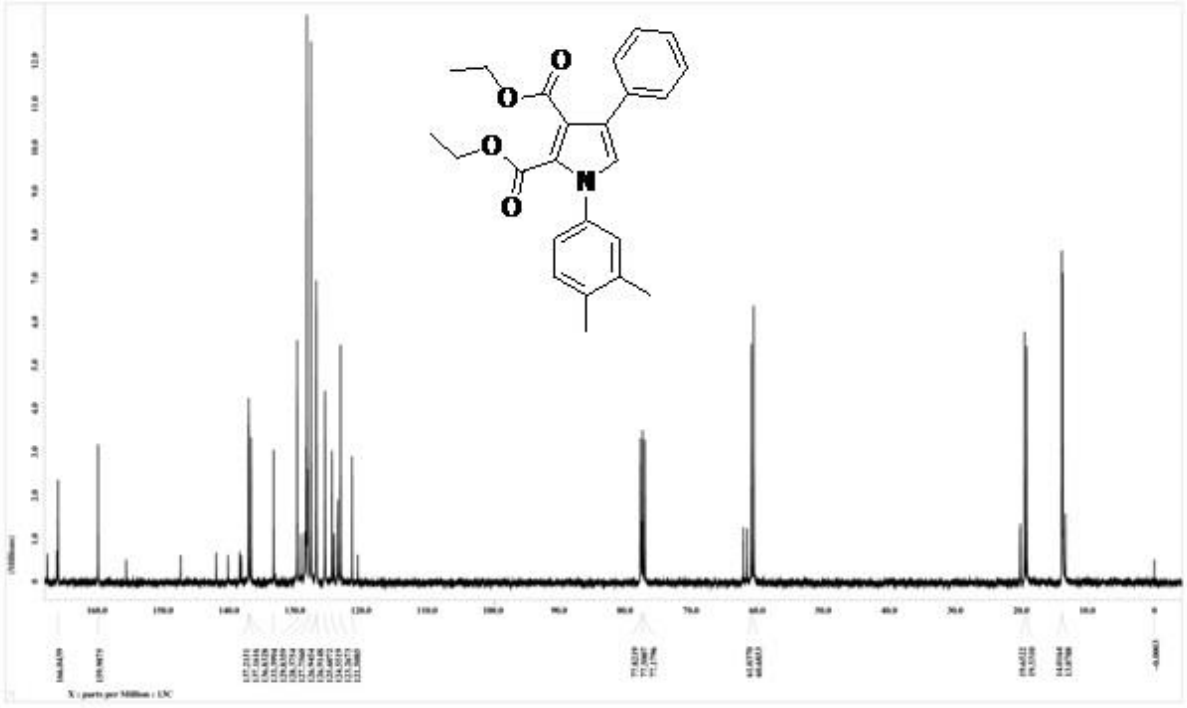

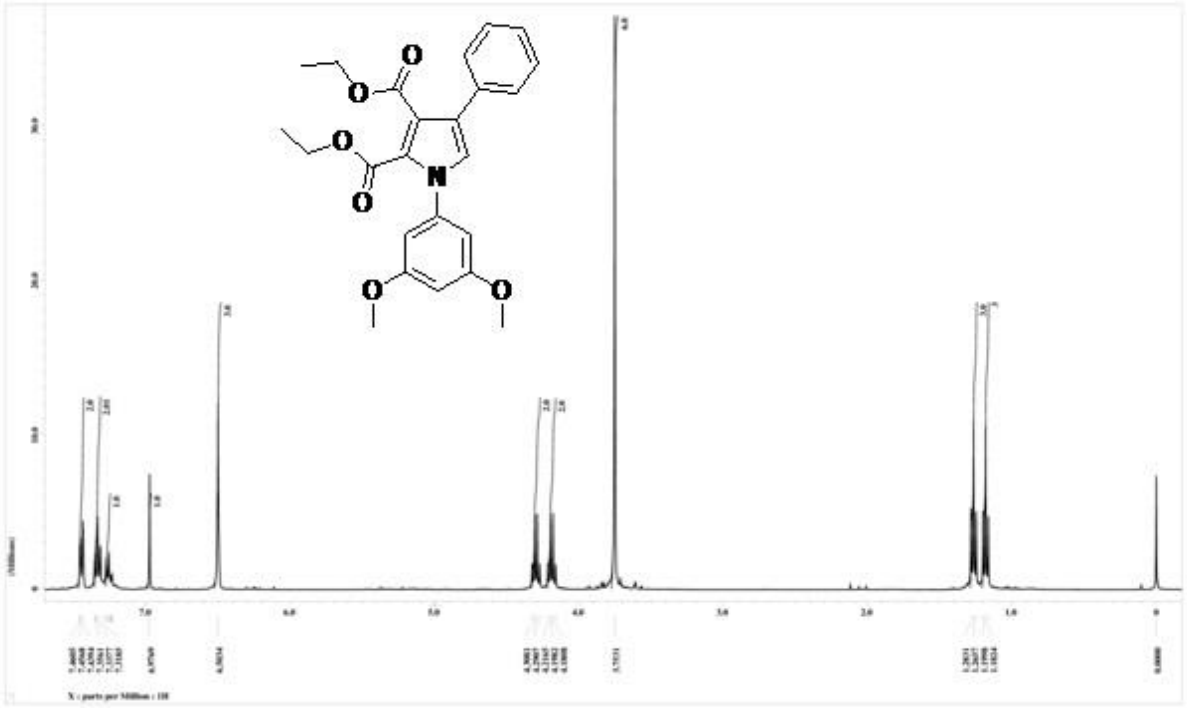

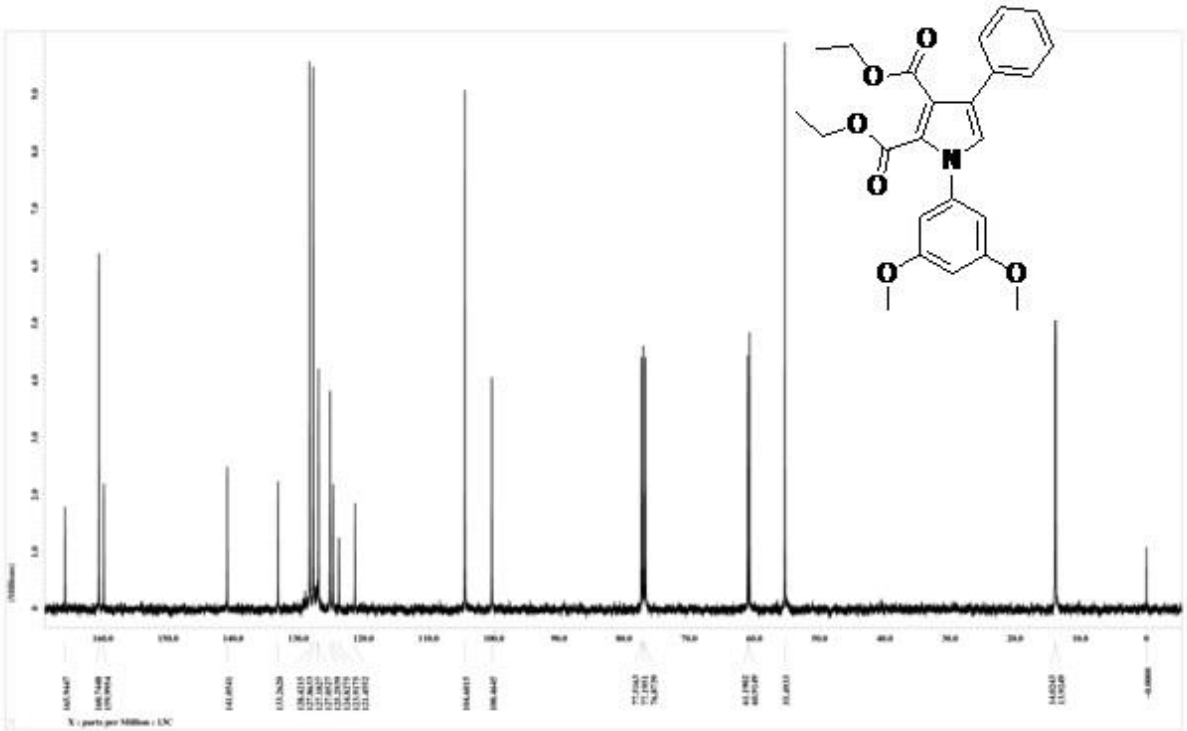

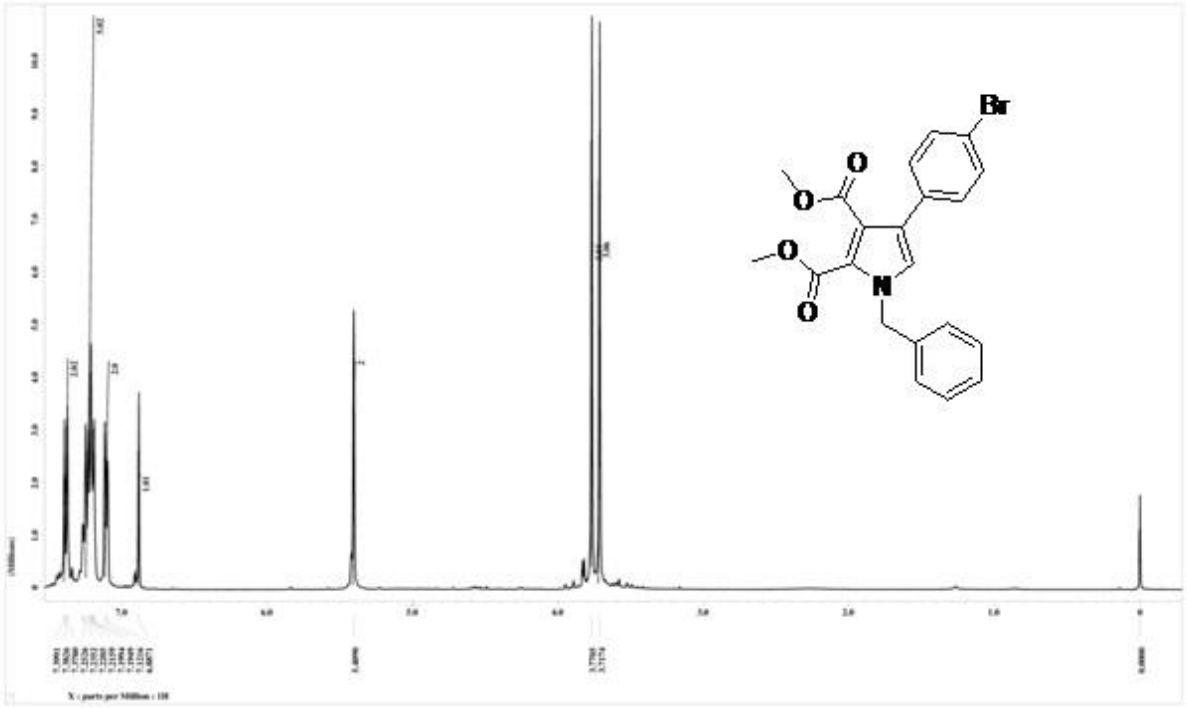
Br
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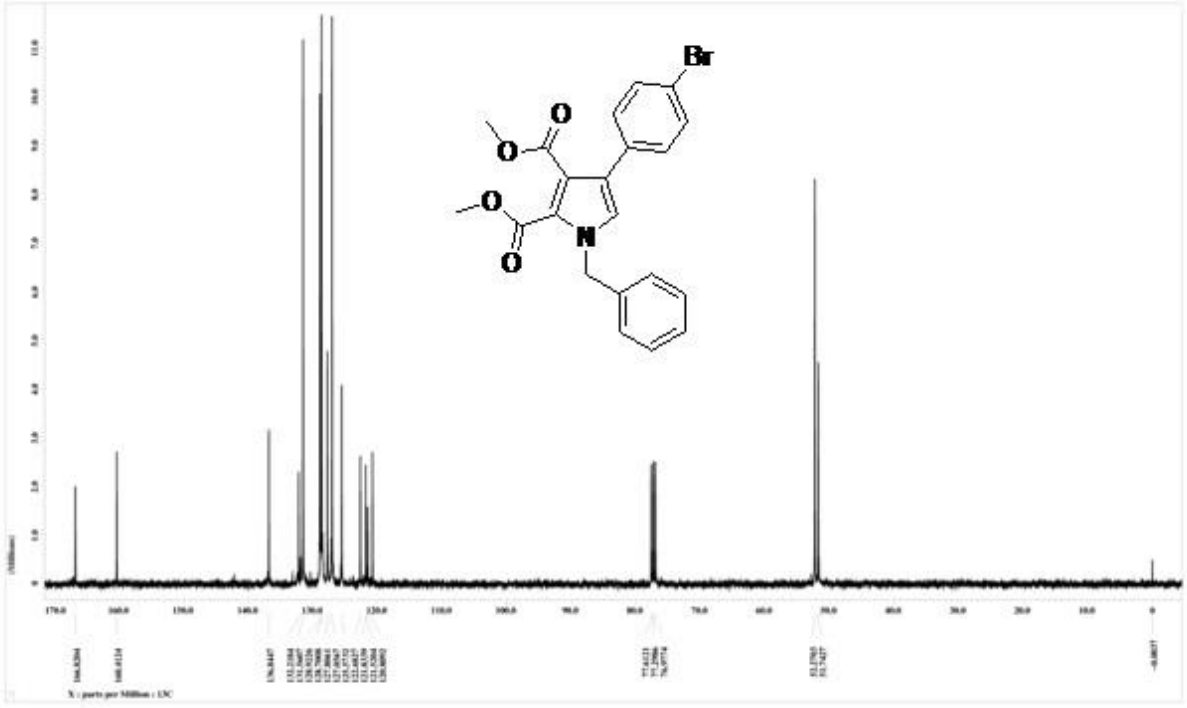
Br
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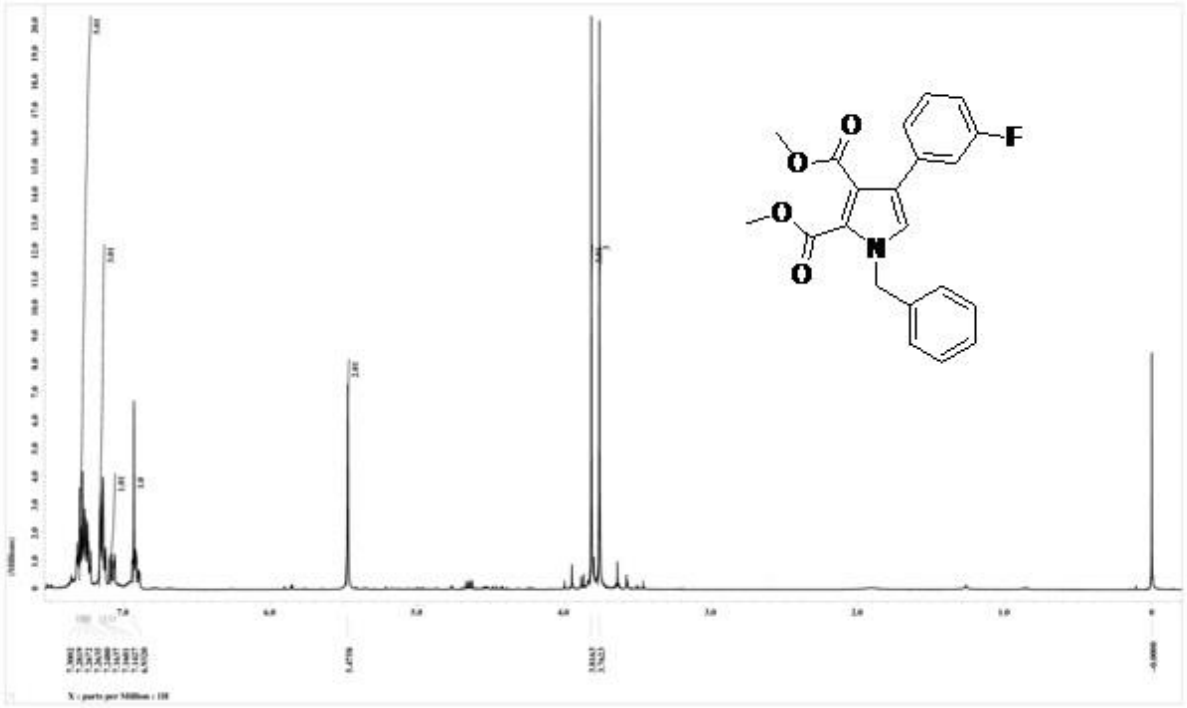
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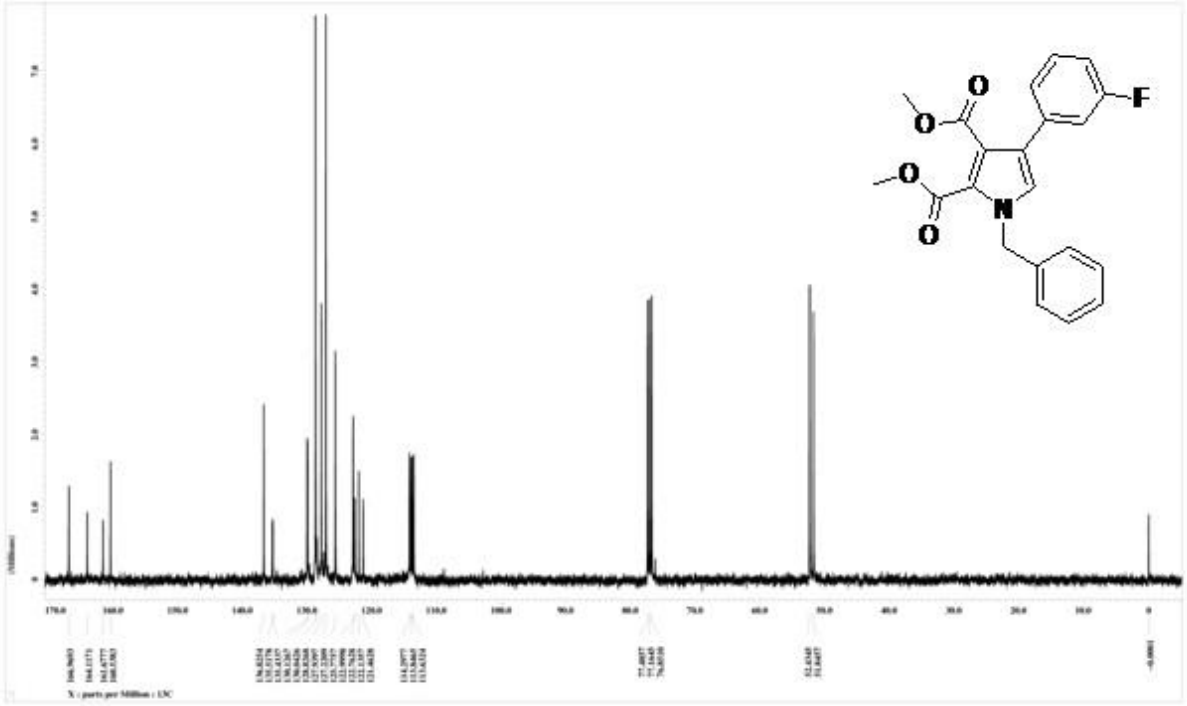
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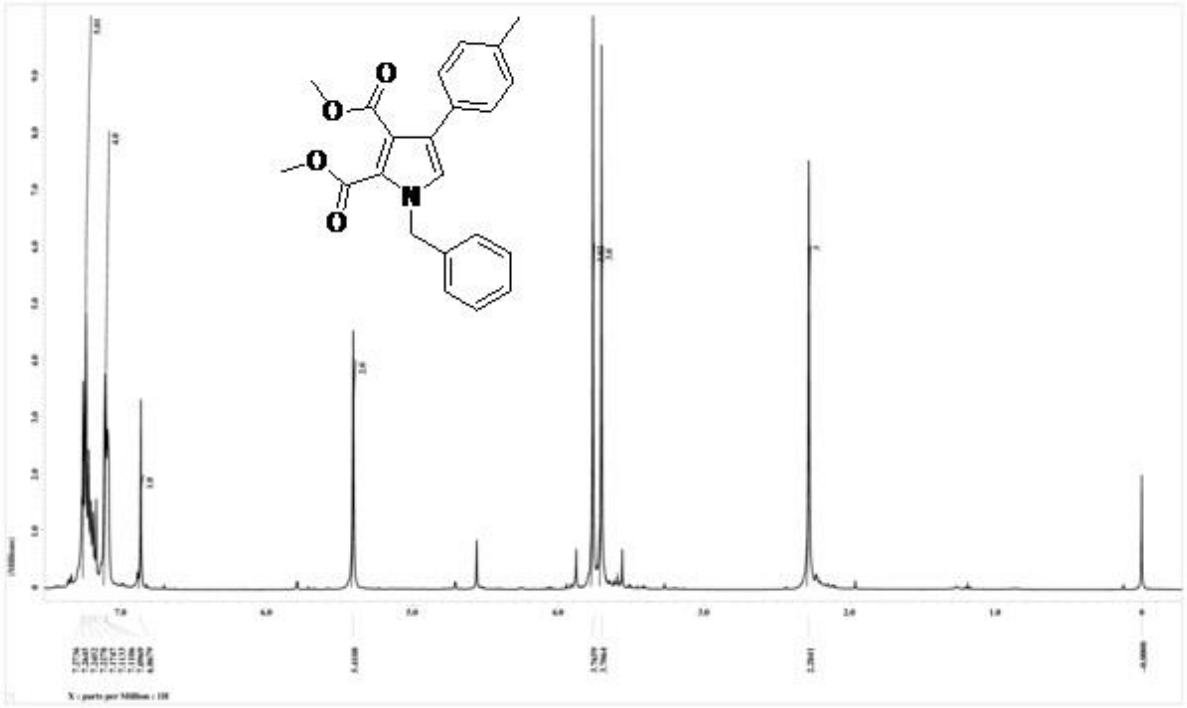
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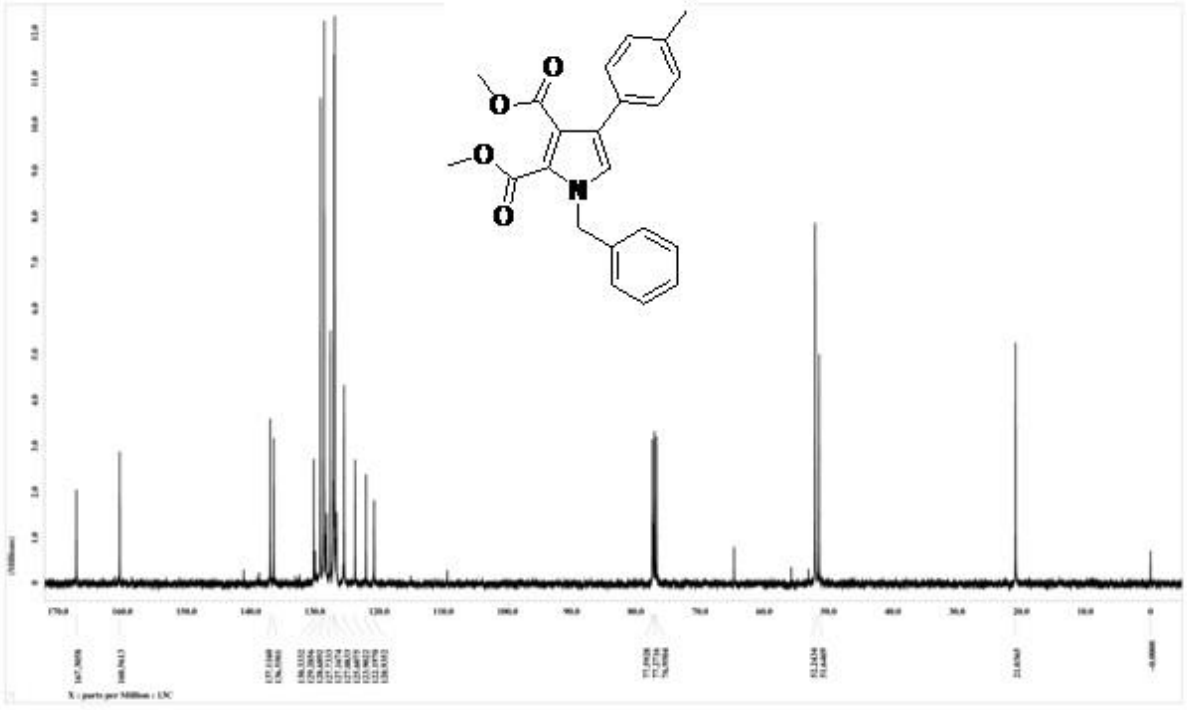
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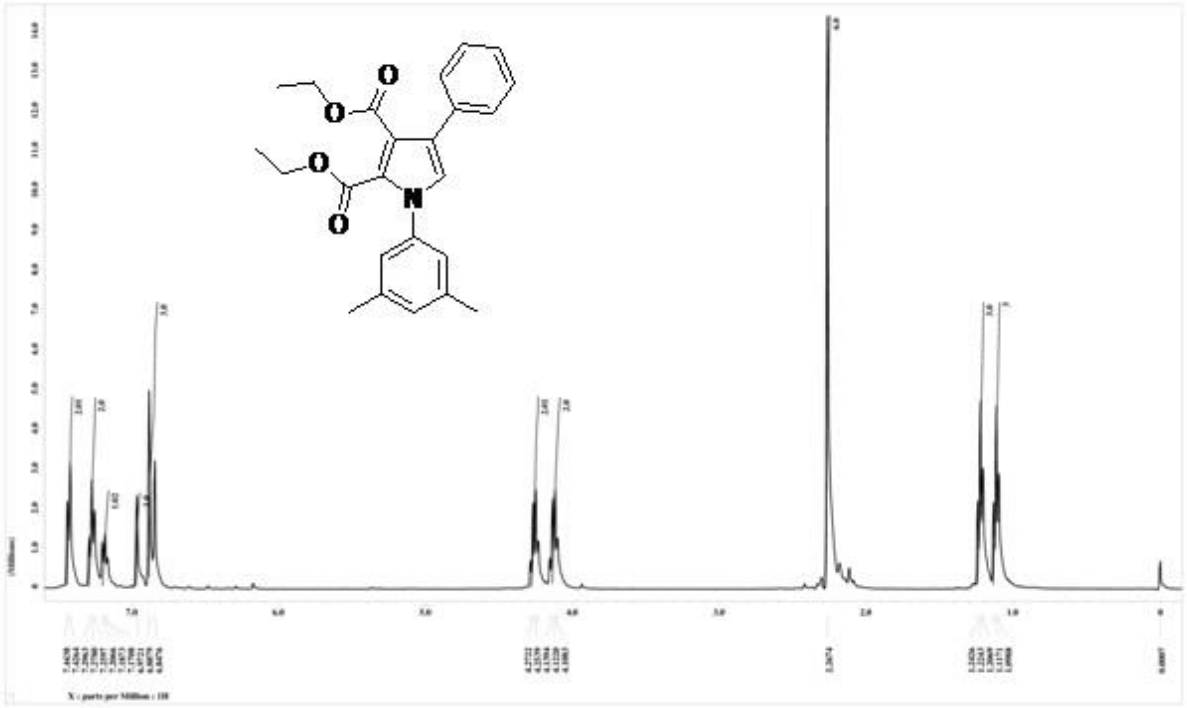
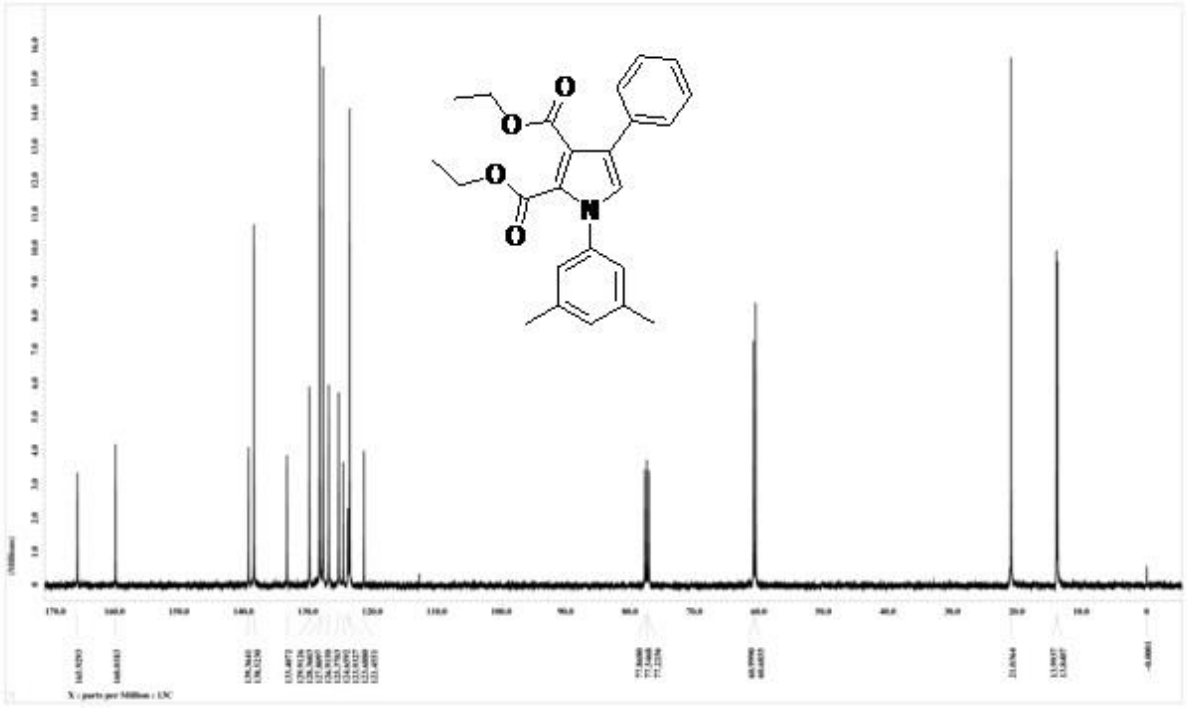
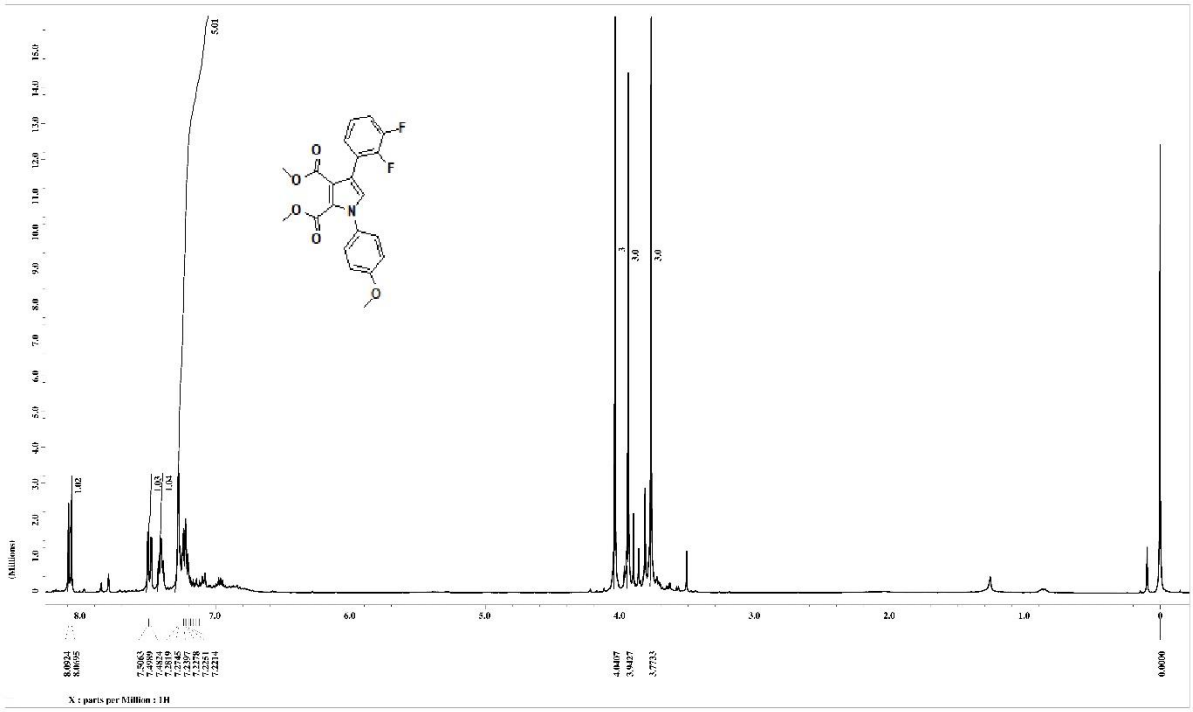
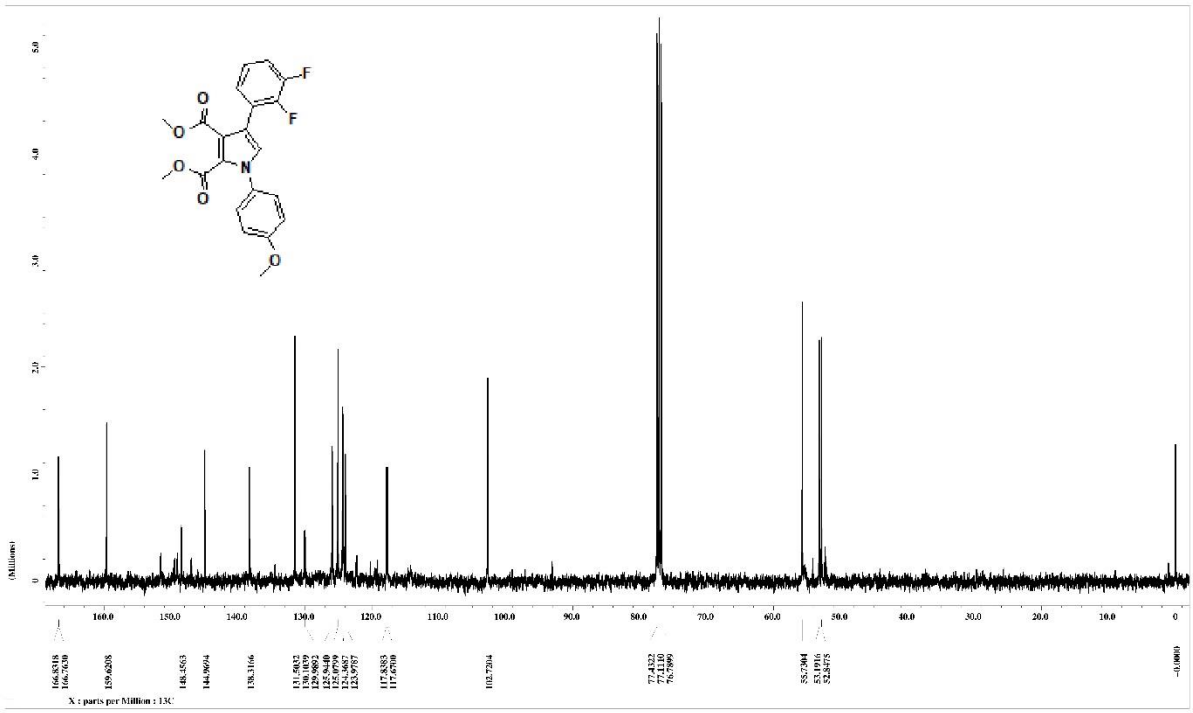
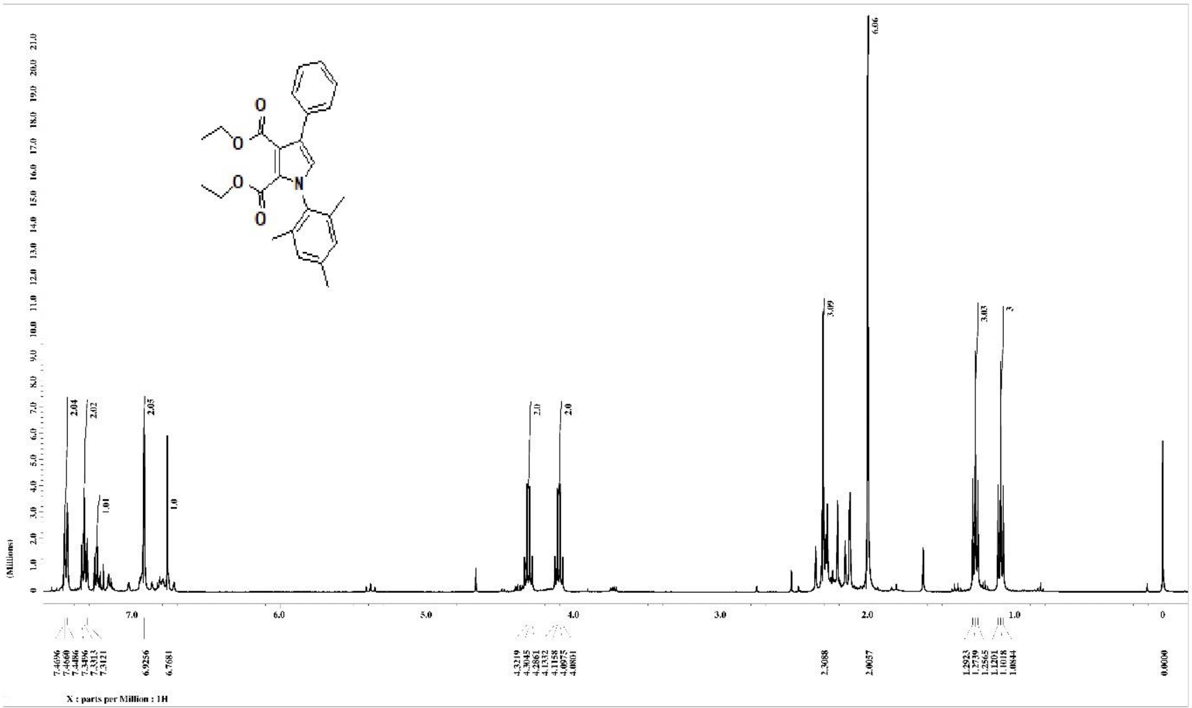
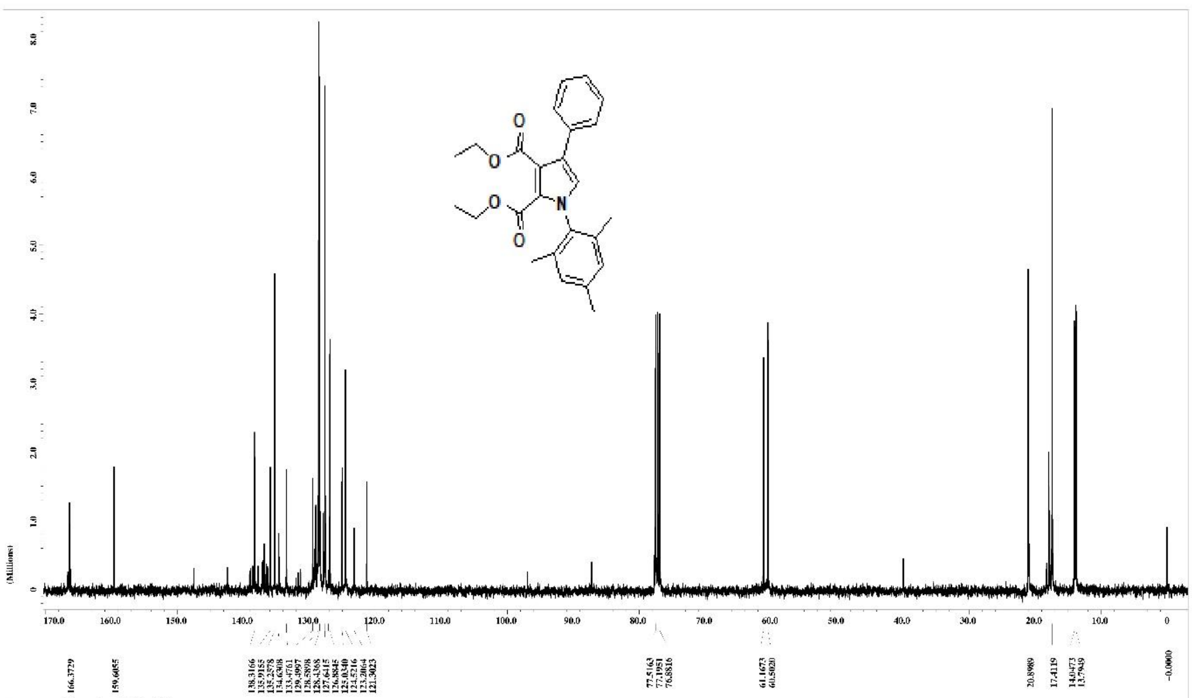





(Millions)
5.01
1.02
1.03
1.02
3
3.0
3.0
8.0924
8.0695
7.5063
7.4899
7.4791
7.3819
7.3745
7.3598
7.2378
7.2251
7.2214
4.0407
3.9427
3.7733
0.0000
X : parts per Million : 1H


(Millions)
166.8318
166.7630
159.6208
148.4563
144.9694
130.3166
131.5032
130.1039
129.9892
125.8749
125.0750
124.3687
123.9787
117.8383
117.6588
102.7304
77.4132
77.1110
76.7899
55.7304
53.1916
52.8475
-0.0000
X : parts per Million : 13C


(Millions)
X : parts per Million : 1H


(Millions)
X : parts per Million : 13C