Electronic Supplementary Material (ESI) for New Journal of Chemistry.
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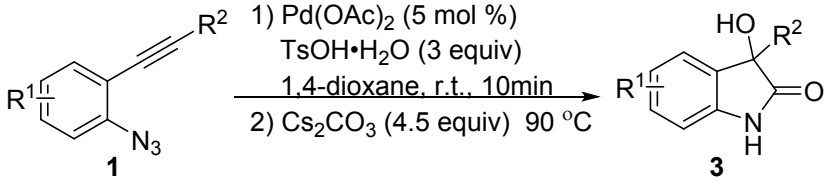
General Considerations

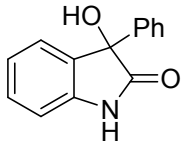
Unless specified, all reagents and starting materials were purchased from commercial sources and used as received. Solvents were purified following standard literature procedures. Analytical thin layer chromatography (TLC) was performed using pre-coated silica gel plate. Visualization was achieved by UV light (254 nm). Flash chromatography was performed using silica gel and a gradient solvent system (Ethyl acetate: Petrol ether as eluant). ^{1}H and ^{13}C NMR spectra were measured on 400 and 600 MHz spectrometers. Chemical shifts (ppm) were recorded with tetramethylsilane (TMS) as the internal reference standard. Multiplicities are given as: s (singlet), bs (broad singlet), d (doublet), t (triplet), dd (doublet of doublets) or m (multiplet). The number of protons (n) for a given resonance is indicated by nH and coupling constants are reported as a J value in Hz. Infrared spectra were recorded on a FTIR spectrometer. High resolution mass spectra (HRMS) were obtained on a LTQ Orbitrap LC/HRMS mass spectrometer. All the starting materials **1** (2-alkynyl arylazides) were prepared by our reported methods.[1]

General experimental procedure for the synthesis of 3



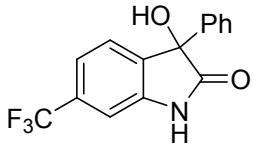
To a 10 ml of flask was added 2-alkynyl arylazides **1** (0.1 mmol, 1 equiv), TsOH·H_2O **2** (0.3 mmol, 3 equiv), $Pd(OAc)_2$ (5 mol%), and 1,4-dioxane (1 mL). The reaction mixture was stirred at room temperature. After the 2-alkynyl arylazides **1** disappeared monitored by TLC (about 10 min for most of **1**), Cs_2CO_3 (0.45 mmol, 4.5 equiv) was added to the reaction solution, which was then stirred at 90 ℃ and monitored by TLC analysis. On completion, the reaction mixture was directly subjected to purification by flash column chromatography on silica gel to give the desired **3**. (eluent: petrol ether: ethyl acetate = 8:1 to 2:1)

Hydroxy-3-phenylindolin-2-one (3a)



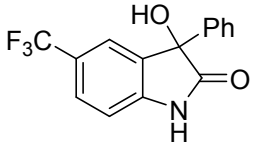
Known compound[2]; isolated yield = 81%, 18.2 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.60 (d, J = 6.6 Hz, 1 H), 6.89-6.91 (m, 1 H), 6.95-6.98 (m, 1 H), 7.09-7.11 (m, 1 H), 7.23-7.32 (m, 6 H), 10.37 (s, 1 H).

3-Hydroxy-3-phenyl-6-(trifluoromethyl)indolin-2-one (3b)



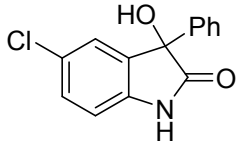
Known compound[3]; isolated yield = 82%, 24.0 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ =6.86-6.88 (m, 1 H), 7.15 (d, J = 7.8 Hz, 1 H), 7.29-7.35 (m, 7 H), 10.73 (s, 1 H).

3-Hydroxy-3-phenyl-5-(trifluoromethyl)indolin-2-one (3c)



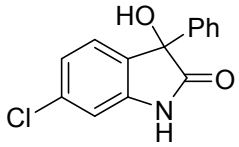
Isolated yield = 68%, 20.0 mg; yellow solid; m.p. 231.3-234.6 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.86 (s, 1 H), 7.10 (d, J = 7.8 Hz, 1 H), 7.29-7.30 (m, 3 H), 7.33-7.37 (m, 3 H) 7.65 (dd, J_1 = 1.2 Hz, J_2 = 8.4 Hz, 1 H), 10.84 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.5, 110.8, 121.8 (d, J =3.2 Hz), 123.1 (q, J = 31.8 Hz), 124.1, 125.8 (d, J = 17.0 Hz), 127.6 (d, J = 3.8 Hz), 128.3, 128.8, 135.0, 141.0, 146.2, 178.8; HRMS (ESI) calcd for $C_{15}H_{11}F_3NO_2$ $[M+H]^+$ 294.0742, found 294.0735.

5-Chloro-3-hydroxy-3-phenylindolin-2-one (3d)



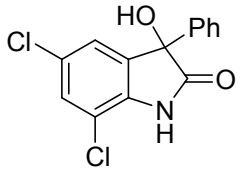
Known compound[2]; isolated yield = 62%, 16.0 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.78 (s, 1 H), 6.92 (d, J = 8.4 Hz, 1 H), 7.10 (d, J = 2.4 Hz, 1 H), 7.27-7.34 (m, 6 H), 10.56 (s, 1 H).

6-Chloro-3-hydroxy-3-phenylindolin-2-one (3e)



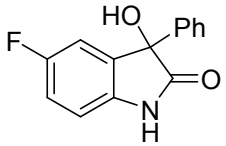
Isolated yield = 63%, 16.4 mg; black solid; m.p. 239.0-240.0 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.72 (s, 1 H), 6.92 (d, J = 1.8 Hz, 1 H), 7.01 (dd, J_1 = 1.8 Hz, J_2 = 7.8 Hz, 1 H), 7.10 (d, J = 7.8 Hz, 1 H), 7.27-7.28 (m, 3 H), 7.31-7.33 (m, 2 H), 10.57 (s, 1 H). ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.4, 110.4, 122.3, 125.8, 126.7, 128.1, 128.6, 133.1, 133.9, 141.4, 144.0, 178.8.

5,7-Dichloro-3-hydroxy-3-phenylindolin-2-one (3f)



Isolated yield = 74%, 21.7 mg; yellow solid; m.p. 224.0-226.0 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.94 (s, 1 H), 7.12 (d, J = 2.4 Hz, 1 H), 7.29-7.36 (m, 5 H), 7.52 (d, J = 2.4 Hz, 1 H), 11.06 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 78.4, 115.4, 124.0, 125.8, 127.1, 128.4, 128.8, 129.1, 137.3, 139.3, 140.6, 178.4; HRMS (ESI) calcd for $C_{14}H_{10}Cl_2NO_2$ $[M+H]^+$ 294.0089, found 294.0093.

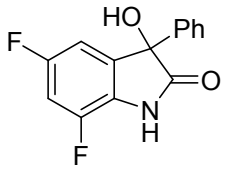
5-Fluoro-3-hydroxy-3-phenylindolin-2-one (3g)



Known compound[4]; isolated yield = 51%, 12.4 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 6.77 (s, 1 H), 6.91 (dd, J_1 = 4.4 Hz, J_2 = 8.4 Hz, 1 H), 6.96 (dd, J_1 =

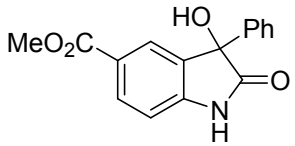
2.0 Hz, J_2 = 8.0 Hz, 1 H), 7.07-7.12 (m, 1 H), 7.26-7.35 (m, 5 H), 10.44 (s, 1 H).

5,7-Difluoro-3-hydroxy-3-phenylindolin-2-one (3h)



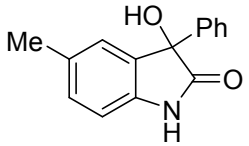
Isolated yield = 83%, 21.6 mg; yellow solid; m.p. 144.0-146.0 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.88-6.90 (m, 2 H), 7.24-7.28 (m, 1 H), 7.28-7.30 (m, 3 H), 7.33-7.35 (m, 2 H), 10.97 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 78.0, 105.1 (q, J = 21.8 Hz), 108.9 (d, J = 27.3 Hz), 125.8, 128.5 (d, J = 65.0 Hz), 129.3, 131.8, 137.6, 140.8, 146.2 (d, J = 232.4 Hz), 158.1 (d, J = 240.0 Hz), 178.5; HRMS (ESI) calcd for $C_{14}H_{10}F_2NO_2$ $[M+H]^+$ 262.0680, found 262.0691.

Methyl 3-hydroxy-2-oxo-3-phenylindoline-5-carboxylate (3i）



Isolated yield = 52%, 14.8 mg; balck solid; m.p. 220.9-226.0 ℃; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 3.78 (s, 3 H), 6.82 (s, 1 H), 7.03 (d, J = 8.0 Hz, 1 H), 7.27-7.29 (m, 3 H), 7.32-7.35 (m, 2 H), 7.63 (s, 1 H), 7.93 (d, J = 8.0 Hz, 1 H), 10.85 (s, 1 H); ^{13}C NMR (DMSO-d_6, 100 MHz): δ = 52.4, 77.4, 110.5, 123.8, 125.7, 125.9, 128.2, 128.8, 132.1, 134.5, 141.3, 147.1, 166.4, 179.1; HRMS (ESI) calcd for $C_{16}H_{14}NO_4$ $[M+H]^+$ 284.0923, found 284.0932.

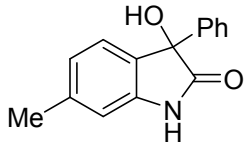
3-Hydroxy-5-methyl-3-phenylindolin-2-one (3j)



Known compound[5]; isolated yield = 78%, 18.1 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 2.20 (s, 3 H), 6.57 (s, 1 H), 6.79 (d, J = 8.0 Hz, 1 H), 6.90 (s, 1 H),

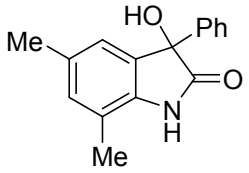
7.04 (dd, J_1 = 0.8 Hz, J_2 = 7.6 Hz, 1 H), 7.23-7.28 (m, 3 H), 7.29-7.33 (m, 2 H), 10.29 (s, 1 H).

3-Hydroxy-6-methyl-3-phenylindolin-2-one (3k)



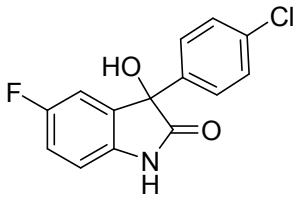
Known compound[5]; isolated yield = 80%, 18.6 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 2.29 (s, 3 H), 6.53 (s, 1 H), 6.71 (s, 1 H), 6.77 (d, J = 7.2 Hz, 1 H), 6.96 (d, J = 7.8 Hz, 1 H), 7.24-7.27 (m, 3 H), 7.29-7.31 (m, 2 H), 10.33 (s, 1 H).

3-Hydroxy-5,7-dimethyl-3-phenylindolin-2-one (3l)



Known compound[5]; isolated yield = 69%, 17.5 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 2.17 (s, 3 H), 2.21 (s, 3 H), 6.52 (s, 1 H), 6.71 (s, 1 H), 6.87 (s, 1 H), 7.22-7.28 (m, 4 H), 7.30-7.32 (m, 1 H), 10.34 (s, 1 H).

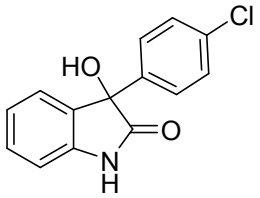
3-(4-Chlorophenyl)-5-fluoro-3-hydroxyindolin-2-one (3m)



Isolated yield = 60%, 16.8 mg; green solid; m.p. 178.7-199.4 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.87 (s, 1 H), 6.91 (dd, J_1 = 4.2 Hz, J_2 = 8.4 Hz, 1 H), 6.97-6.99 (m, 1 H), 7.09-7.12 (m, 1 H), 7.29 (d, J = 8.4 Hz, 2 H), 7.39 (d, J = 8.4 Hz, 2 H), 10.49 (s, 1 H). ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.7, 111.4 (d, J = 7.7 Hz), 112.8 (d, J = 24.3 Hz), 116.3 (d, J = 23.3 Hz), 127.8, 128.7, 132.9, 135.3 (d, J = 7.5 Hz), 138.5, 140.4, 158.7 (d, J = 236.6 Hz), 178.4; HRMS (ESI) calcd for $C_{14}H_{10}ClFNO_2$ $[M+H]^+$

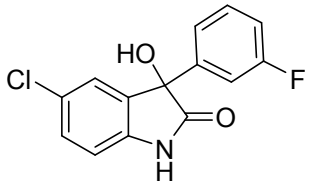
278.0384, found 278.0395.

4-(4-Chlorophenyl)-3-hydroxyindolin-2-one (3n)



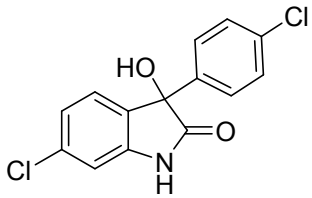
Isolated yield = 62%, 16.2 mg; yellow solid; m.p. 171.7-179.2 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.74 (d, J = 3.6 Hz, 1 H), 6.91 (dd, J_1 = 1.8 Hz, J_2 = 7.8 Hz, 1 H), 6.97-6.99 (m, 1 H), 7.10 (d, J = 7.2 Hz, 1 H), 7.25-7.29 (m, 3 H), 7.38 (dd, J_1 = 1.2 Hz, J_2 = 8.4 Hz, 2 H), 10.45 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.4, 110.5, 122.7, 125.2, 127.9, 128.6, 129.9, 132.6, 133.7, 141.0, 142.4, 178.5; HRMS (ESI) calcd for $C_{14}H_{11}ClNO_2$ $[M+H]^+$ 260.0478, found 260.0483.

5-Chloro-3-(3-fluorophenyl)-3-hydroxyindolin-2-one (3o)



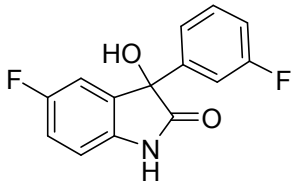
Isolated yield = 93%, 25.8 mg; yellow solid; m.p. 182.0-182.0 ℃; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 6.89 (s, 1 H), 6.95 (d, J = 7.2 Hz, 2 H), 7.03 (d, J = 8.0 Hz, 1 H), 7.10-7.19 (m, 3 H), 7.32-7.37 (m, 1 H), 10.64 (s, 1 H); ^{13}C NMR (DMSO-d_6, 100 MHz): δ = 77.0, 110.6, 112.9 (d, J = 22.8 Hz), 115.0 (d, J = 21.0 Hz), 121.8 (d, J = 2.5 Hz), 122.4, 126.8, 130.8 (d, J = 8.3 Hz), 132.4, 134.2, 144.0, 144.3 (d, J = 7.0 Hz), 162.6 (d, J = 242.2 Hz), 178.2; HRMS (ESI) calcd for $C_{14}H_{10}ClFNO_2$ $[M+H]^+$ 278.0384, found 278.0391.

6-Chloro-3-(4-chlorophenyl)-3-hydroxyindolin-2-one (3p)



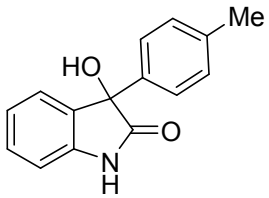
Isolated yield = 59%, 17.3 mg; yellow solid; m.p. 224.7-227.6 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.84 (s, 1 H), 6.93 (d, J = 1.8 Hz, 1 H), 7.03 (dd, J_1 = 1.8 Hz, J_2 = 7.8 Hz, 1 H), 7.11 (d, J = 7.8 Hz, 1 H), 7.28 (d, J = 8.4 Hz, 2 H), 7.39 (d, J = 8.4 Hz, 2 H), 10.62 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.0, 110.6, 122.4, 126.8, 127.9, 128.7, 132.5, 132.8, 134.1, 140.3, 144.0, 178.4; HRMS (ESI) calcd for $C_{14}H_{10}Cl_2NO_2$ $[M+H]^+$ 294.0089, found 294.0093.

5-Fluoro-3-(3-fluorophenyl)-3-hydroxyindolin-2-one (3q)



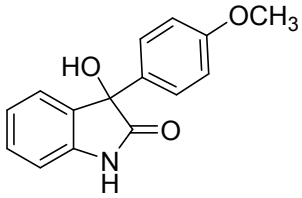
Isolated yield = 74%, 19.2 mg; black solid; m.p. 188.6-202.8 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.90-6.92 (m, 2 H), 6.95 (d, J = 7.8 Hz, 1 H), 6.99-7.01 (m, 1 H), 7.09-7.14 (m, 2 H), 7.17-7.20 (m, 1 H), 7.33-7.37 (m, 1 H), 10.50 (s, 1 H). ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 77.7, 111.5 (d, J = 7.8 Hz), 112.8 (d, J = 11.1 Hz), 113.0 (d, J = 9.8 Hz), 115.0 (d, J = 20.7 Hz), 116.3 (d, J = 23.3 Hz), 121.8, 130.7, 135.2 (d, J = 7.5 Hz), 138.5, 144.3 (d, J = 6.8 Hz), 158.7 (d, J = 236.4 Hz), 162.6 (d, J = 242.0 Hz), 178.3; HRMS (ESI) calcd for $C_{14}H_{10}F_2NO_2$ $[M+H]^+$ 262.0680, found 262.0691.

3-Hydroxy-3-(*p*-tolyl)indolin-2-one (3r)



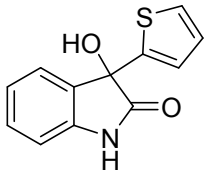
Known compound[2] ; isolated yield = 75%, 18.0 mg; red solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 2.26 (s, 3 H), 6.54 (s, 1 H). 6.88 (d, J = 7.8 Hz, 1 H), 6.94-6.97 (m, 1 H), 7.07-7.11 (m, 3 H), 7.16 (d, J = 7.8 Hz, 2 H), 7.22-7.25 (m, 1 H), 10.35 (s, 1 H).

3-Hydroxy-3-(4-methoxyphenyl)indolin-2-one (3s)



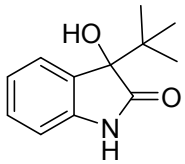
Isolated yield = 92%, 23.5 mg; gray solid; m.p. 180.0-182.0 ℃; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 3.71 (s, 3 H), 6.51 (s, 1 H), 6.86-6.89 (m, 3 H), 6.95-6.98 (m, 1 H), 7.10 (d, J = 7.2 Hz, 1 H), 7.18 (d, J = 9.0 Hz, 2 H), 7.22-7.25 (m, 1 H), 10.33 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 55.5, 77.3, 110.2, 113.9, 122.4, 125.2, 127.3, 129.6, 133.9, 134.2, 142.3, 159.1, 179.1; HRMS (ESI) calcd for $C_{15}H_{14}NO_3$ $[M+H]^+$ 256.0794, found 256.0799.

3-Hydroxy-3-(thiophen-2-yl)indolin-2-one (3t)



Known compound[2]; isolated yield = 51%, 11.8 mg; yellow solid; ^{1}H NMR (DMSO-d_6, 600 MHz): δ = 6.56 (s, 1 H), 6.86-6.87 (m, 1 H), 6.97-7.02 (m, 2 H), 7.20 (dd, J_1 = 1.2 Hz, J_2 = 3.0 Hz, 1 H), 7.23-7.25 (m, 2 H), 7.46 (dd, J_1 = 3.0 Hz, J_2 = 4.8 Hz, 1 H), 10.36 (s, 1 H).

3-(*t*ert-Butyl)-3-hydroxyindolin-2-one (3u)



Isolated yield = 60%, 11.4 mg; black solid; m.p. 198.6-200.7 ℃; ^{1}H NMR (DMSO-d_6, 400 MHz): δ = 0.94 (s, 9 H), 5.65 (s, 1 H), 6.76 (d, J = 8.0 Hz, 1 H), 6.90-6.94 (m, 1 H), 7.16-7.19 (m, 1 H), 7.24 (d, J = 7.6 Hz, 1 H), 10.10 (s, 1 H); ^{13}C NMR (DMSO-d_6, 150 MHz): δ = 24.4, 37.2, 80.3, 109.5, 121.2, 126.1, 129.0, 132.0, 142.8, 178.0; HRMS (ESI) calcd for $C_{12}H_{16}NO_2$ $[M+H]^+$ 206.1181, found 206.1187.

References:

1．(a) Zhang, X.; Sun, X.; Fan, H.; Lyu, C.; Li, P.; Zhang, H.; Rao, W. *RSC Adv.* **2016**, *6*, 56319; (b) Zhang, X.; Sun, X.; Fan, H.; Li, P.; Lyu, C.; Rao, W. *Eur. J. Org. Chem.* **2016**, *25*, 4265.

2. Toullec, P. Y.; Jagt, R. B. C.; Vries, J. D. *Org. Lett.* **2006,** 8, 2715.

3. Pedro, J. R.; Barroso, S.; Blay, G.; Cardona, L.; Fernández, I.; García, B. *J. Org. Chem.* **2004,** 69, 6821-6829.

4. Shao, L-X.; Xiao, Z-K.; Yin, H-Y. *Org. Lett.* **2013,** 15, 1254-1257.

5. Patil, N. T.; Gade, A. B.; Bagle, P. N.; Shinde, P. S.; Bhardwaj, V.; Banerjee, S.; Chande, A. *Angew. Chem. Int. Ed.* **2018,** 57, 5735-5739

Figure 1. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-phenylindolin-2-one **(3a)**

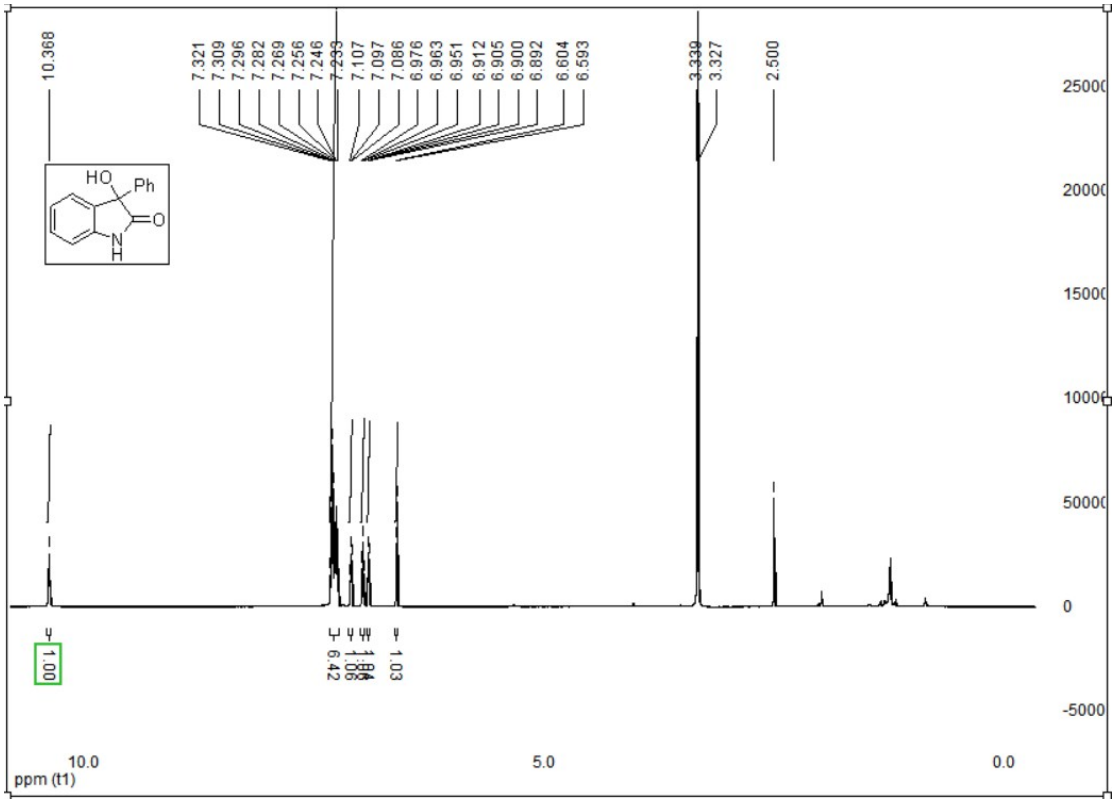


Figure 2. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-phenyl-6-(trifluoromethyl)indolin-2-one **(3b)**

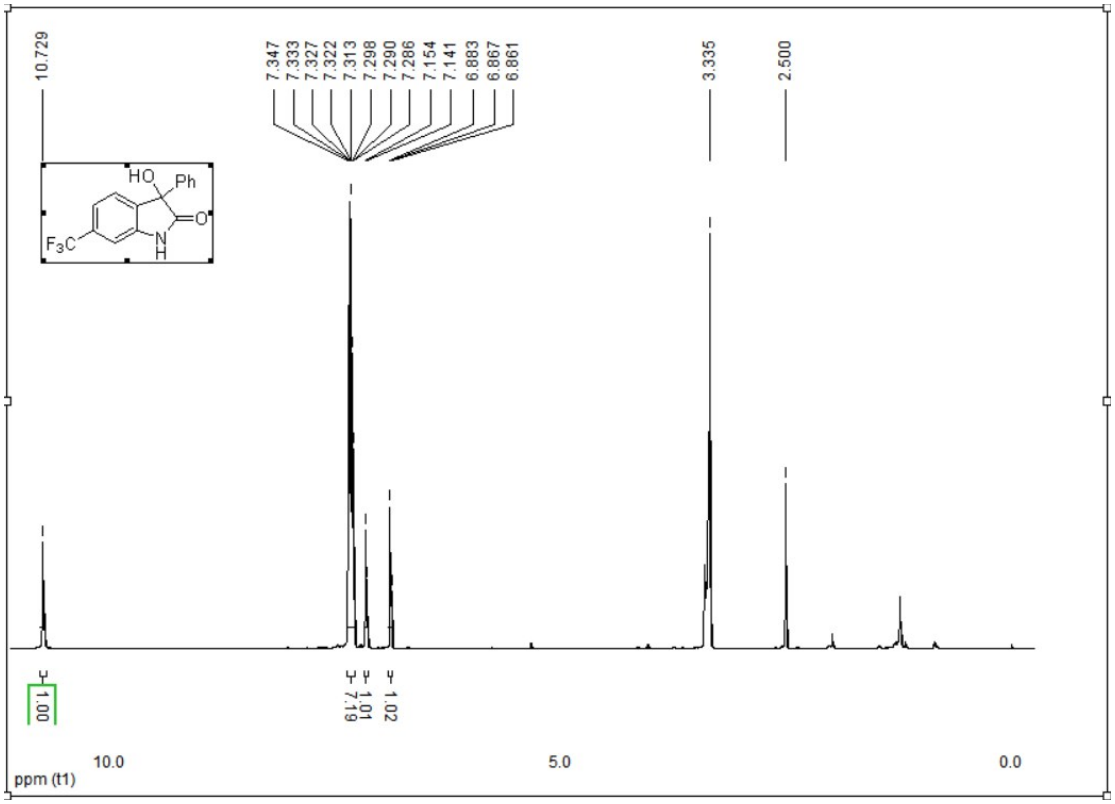


Figure 3. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-phenyl-5-(trifluoromethyl)indolin-2-one **(3c)**

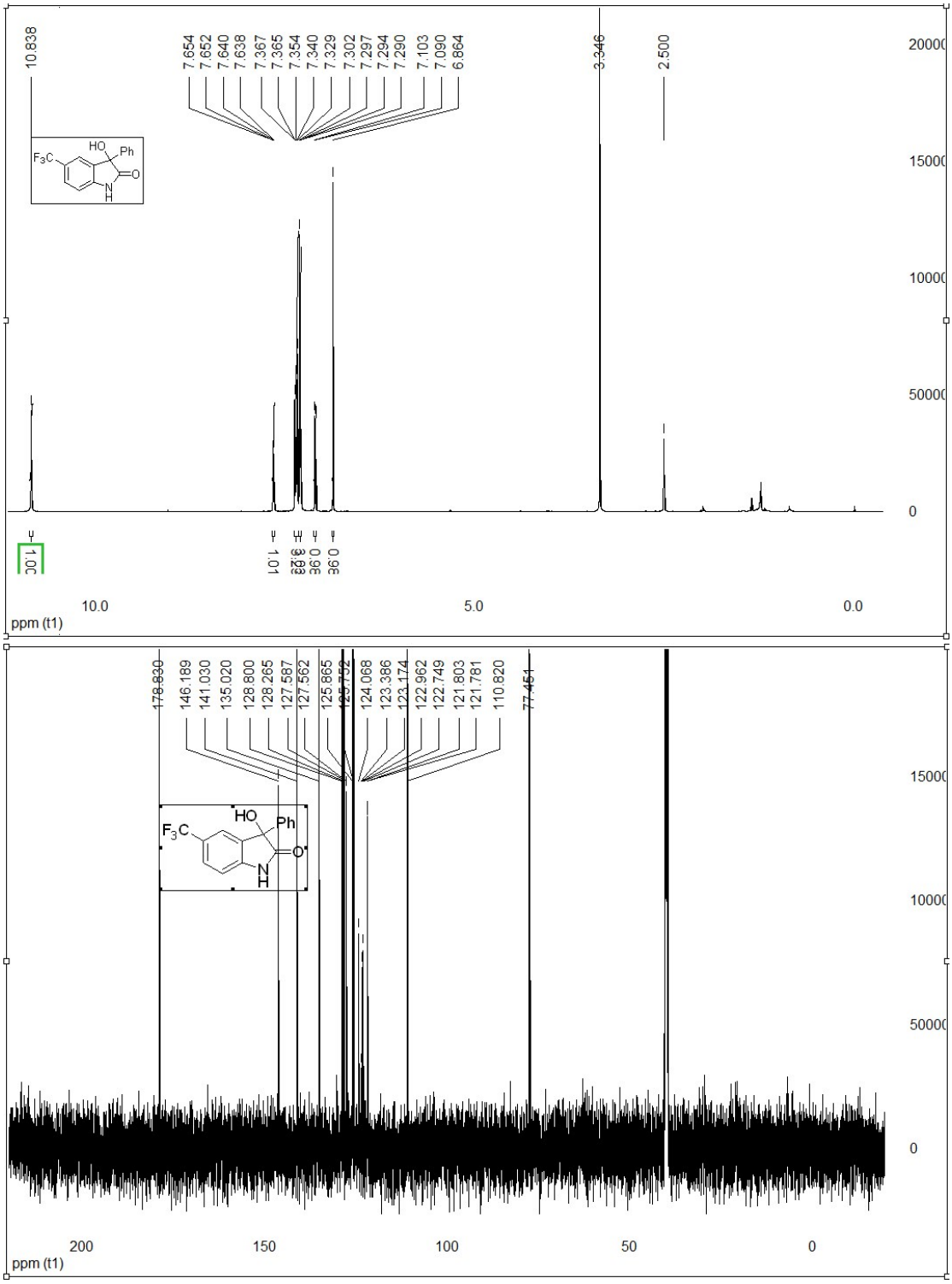


Figure 4. ^{1}H and ^{13}C NMR Spectra of 5-Chloro-3-hydroxy-3-phenylindolin-2-one **(3d)**

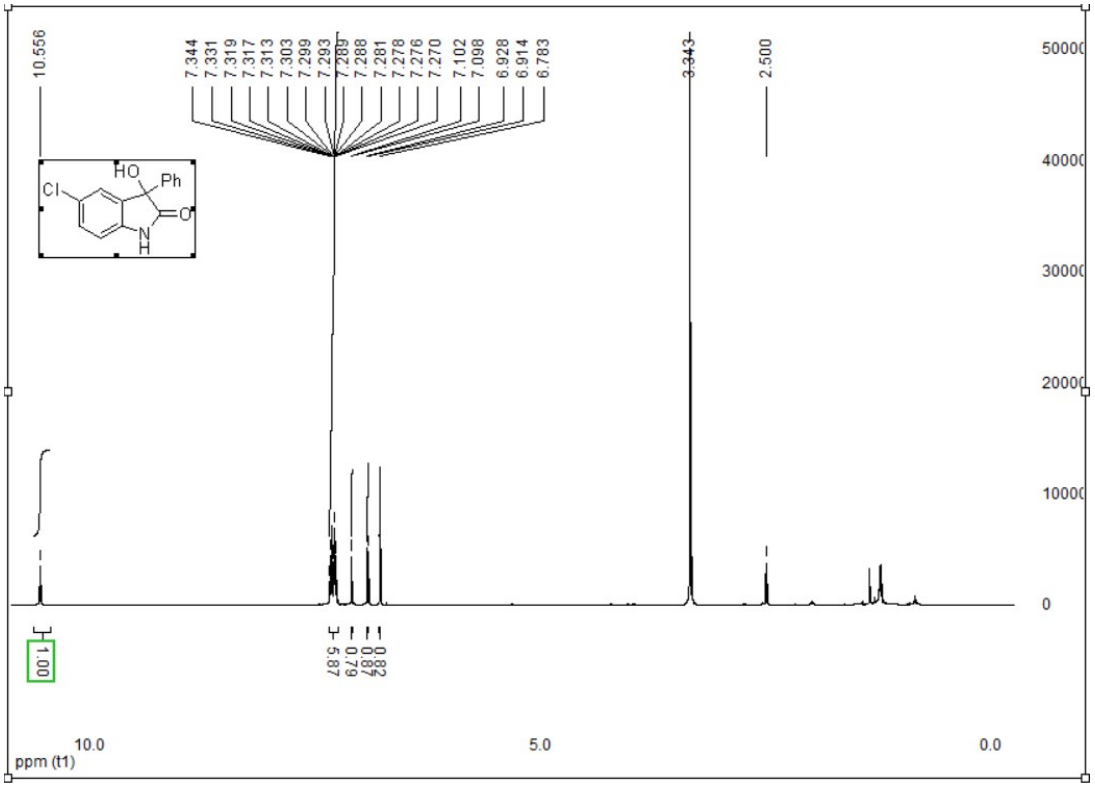
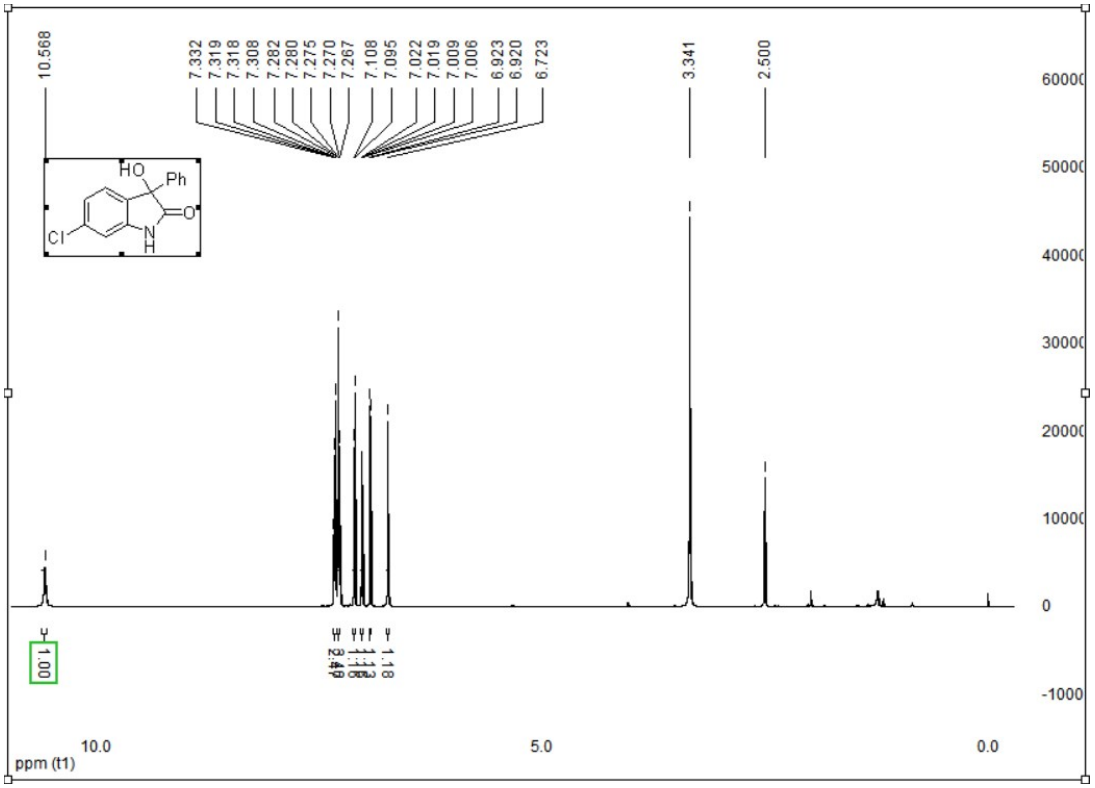


Figure 5. ^{1}H and ^{13}C NMR Spectra of 6-Chloro-3-hydroxy-3-phenylindolin-2-one **(3e)**



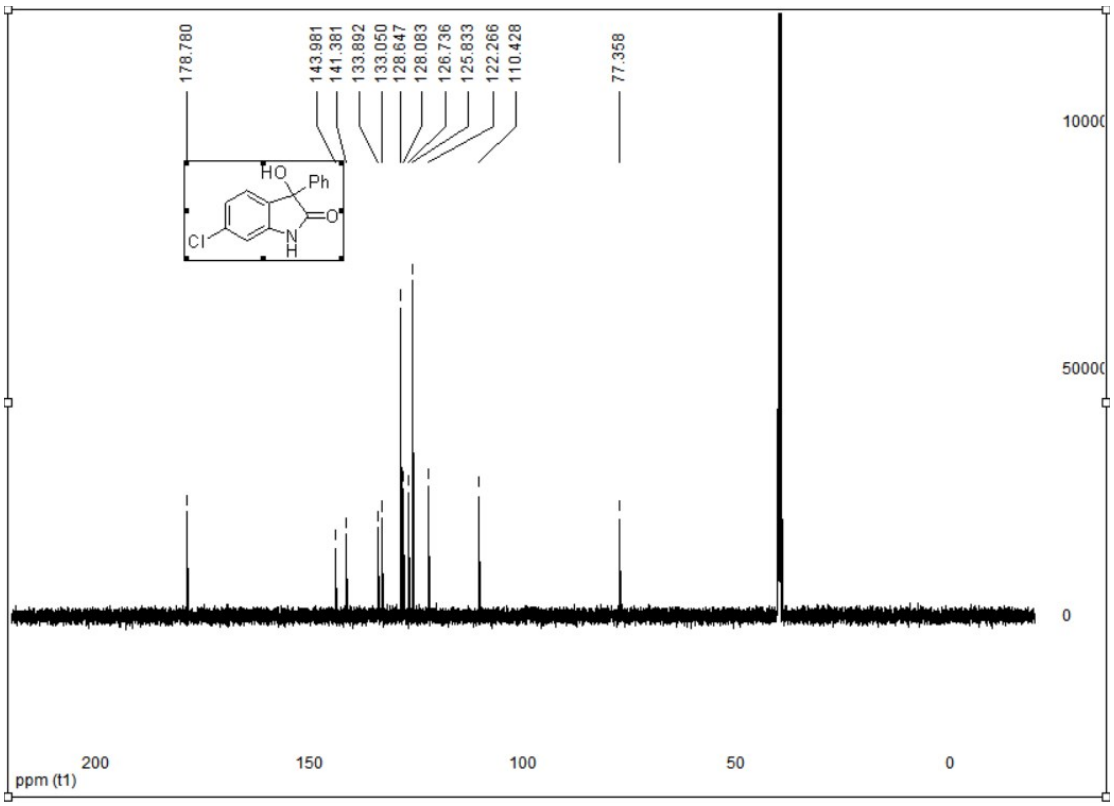
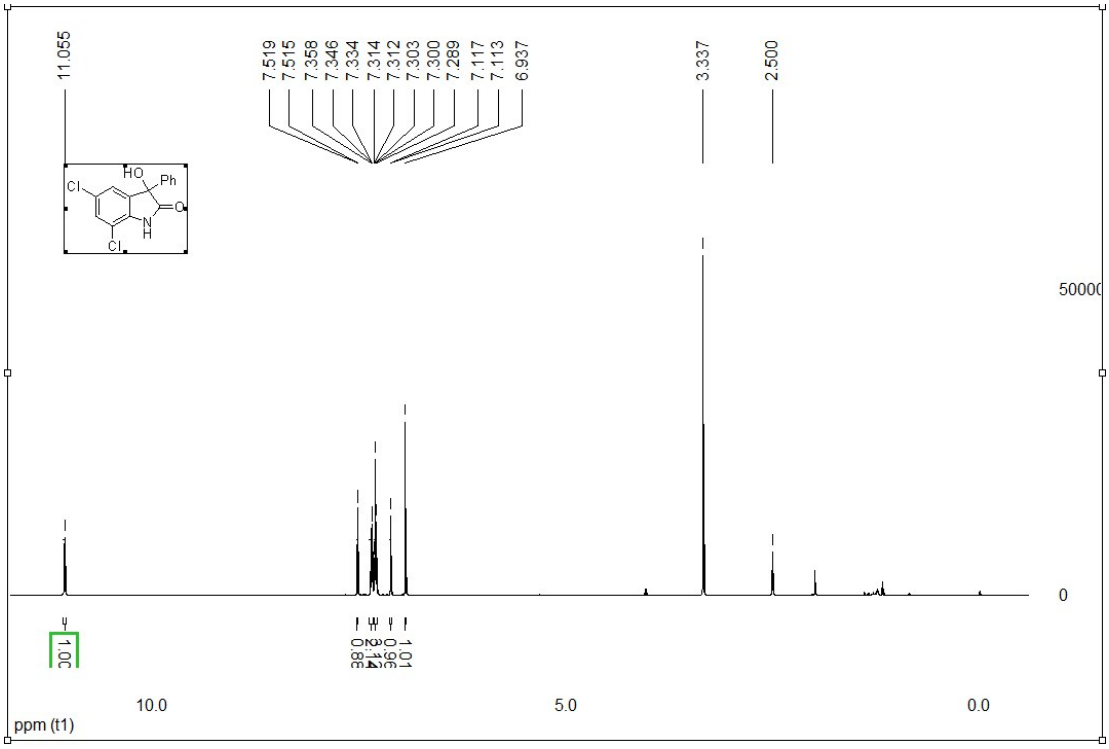


Figure 6. ^{1}H and ^{13}C NMR Spectra of 5,7-Dichloro-3-hydroxy-3-phenylindolin-2-one **(3f)**



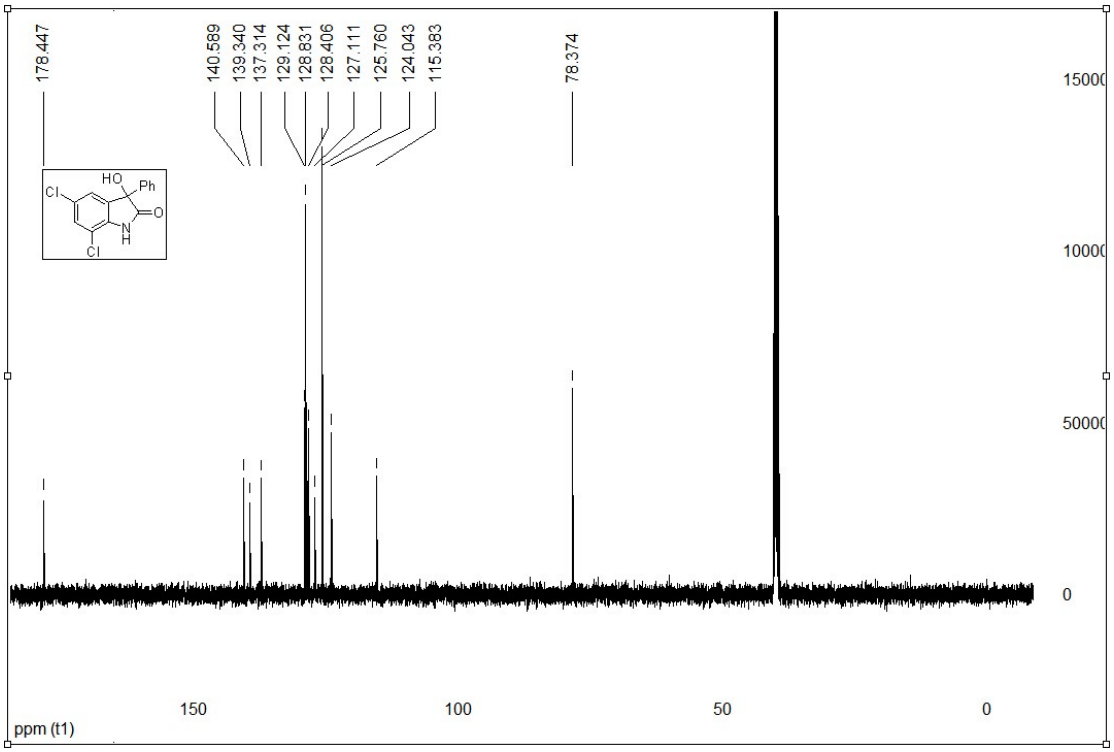


Figure 7. ^{1}H and ^{13}C NMR Spectra of 5-Fluoro-3-hydroxy-3-phenylindolin-2-one **(3g)**

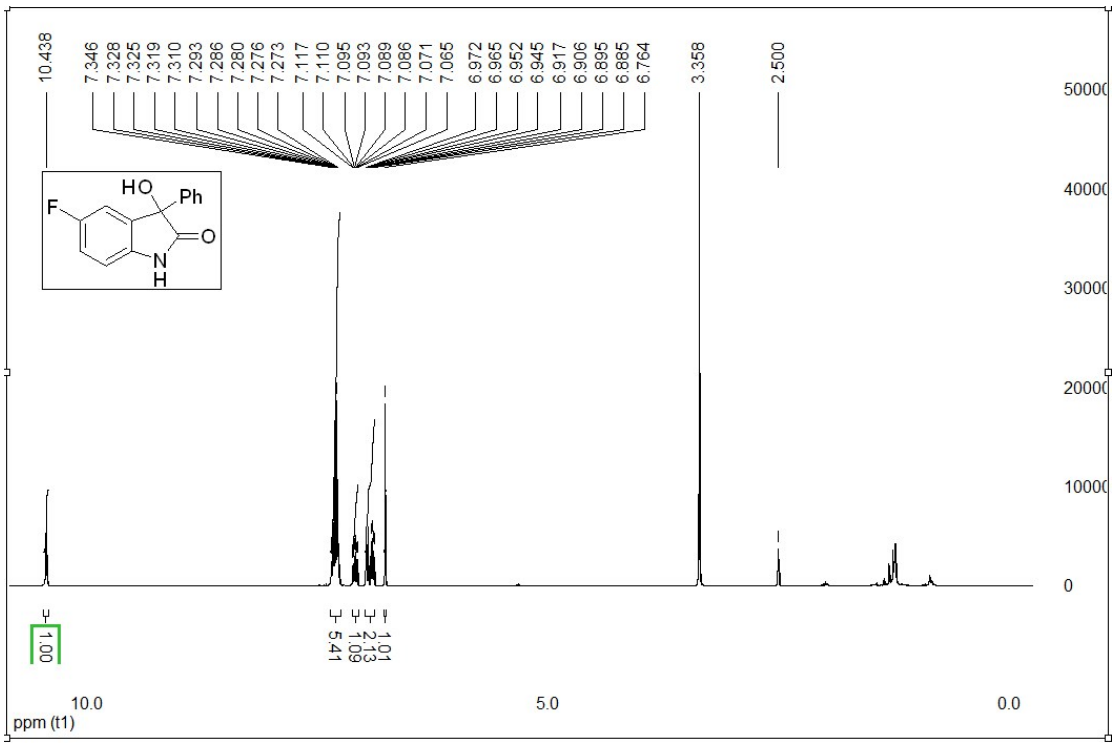


Figure 8. ^{1}H and ^{13}C NMR Spectra of 5,7-Difluoro-3-hydroxy-3-phenylindolin-2-one

(3h)

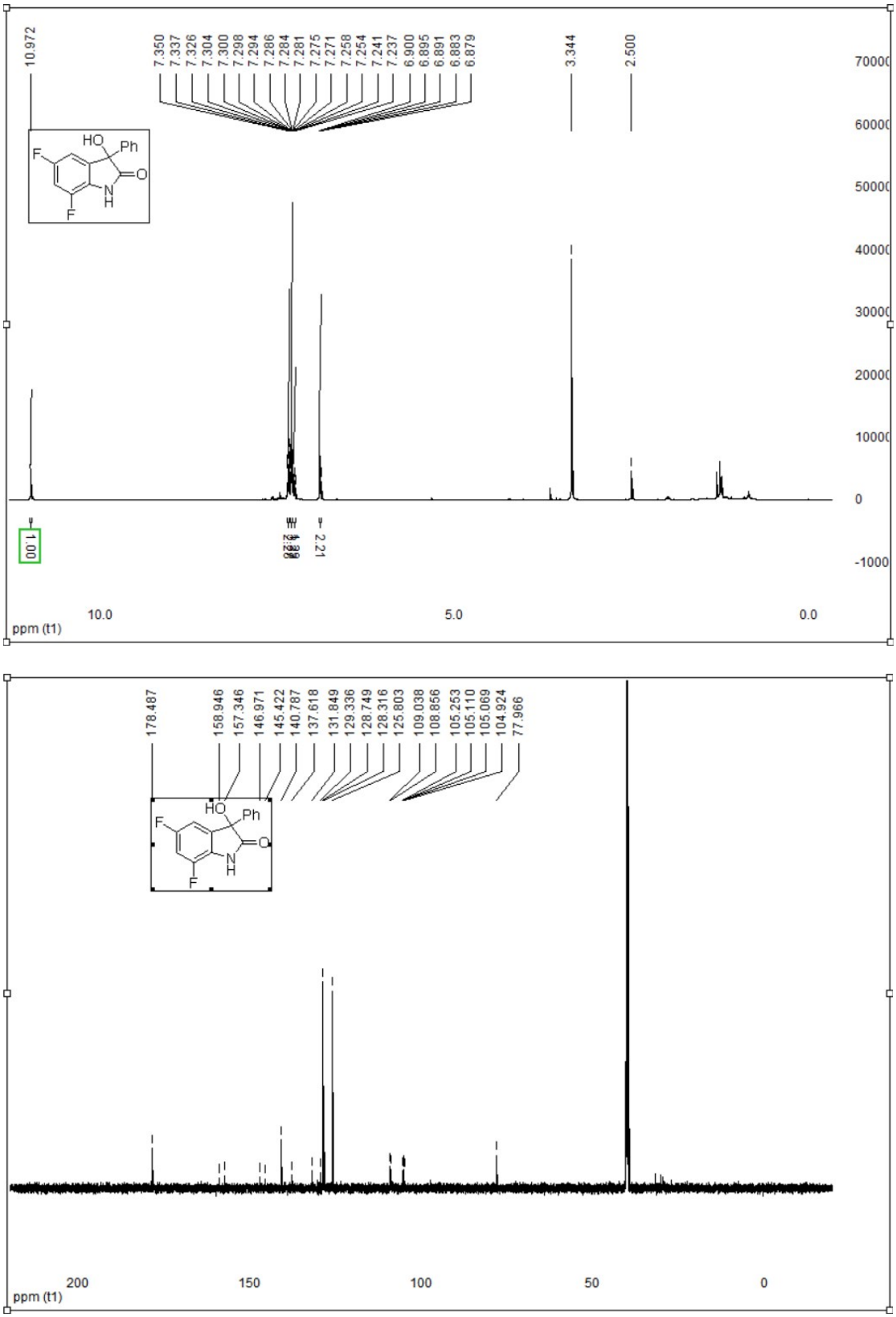


Figure 9. ^{1}H and ^{13}C NMR Spectra of Methyl 3-hydroxy-2-oxo-3-phenylindoline-5-

carboxylate **(3i**）

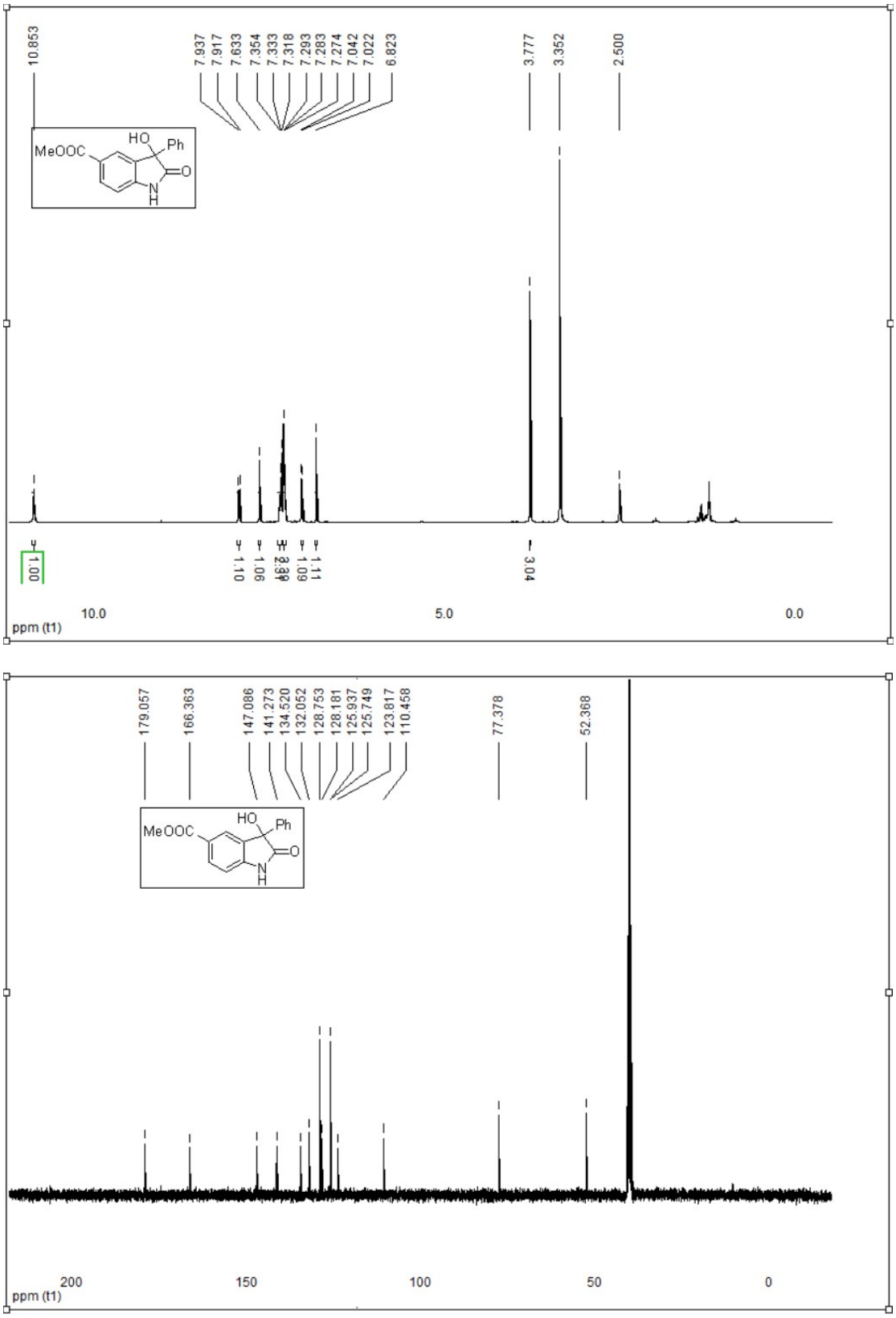


Figure 10. 1H and 13C NMR Spectra of 3-Hydroxy-5-methyl-3-phenylindolin-2-one

(3j)

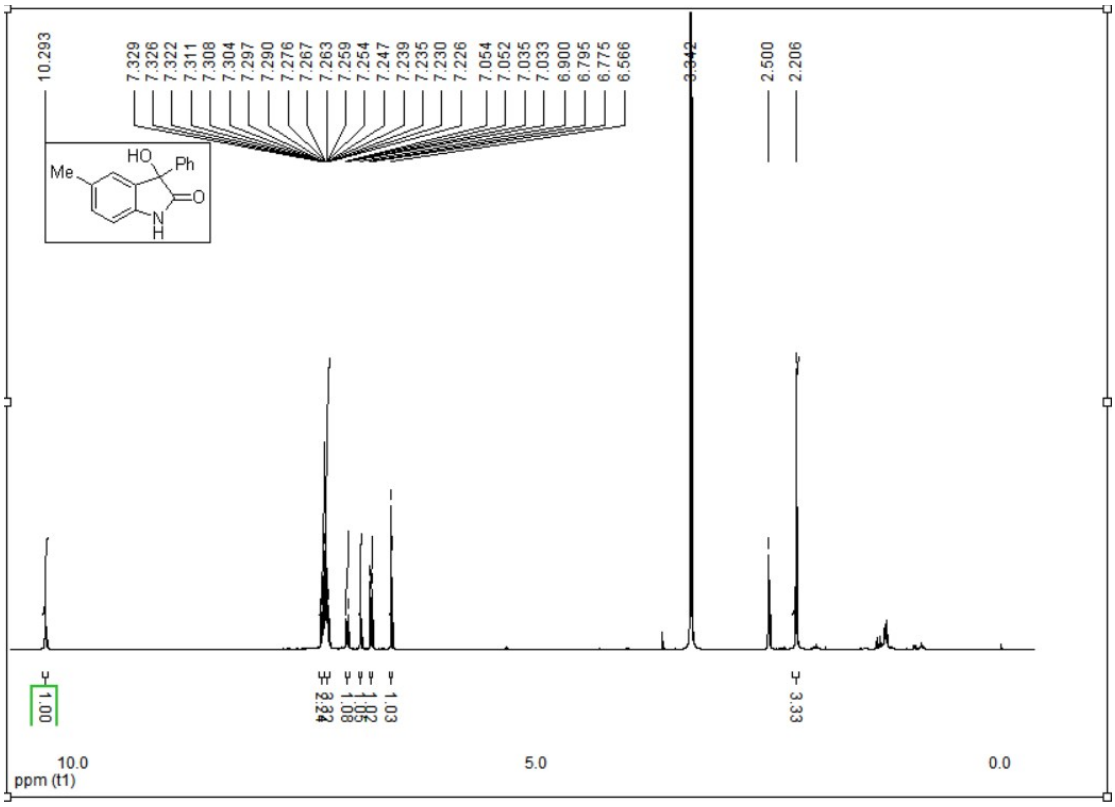


Figure 11. [1]H and [13]C NMR Spectra of 3-Hydroxy-6-methyl-3-phenylindolin-2-one

(3k)

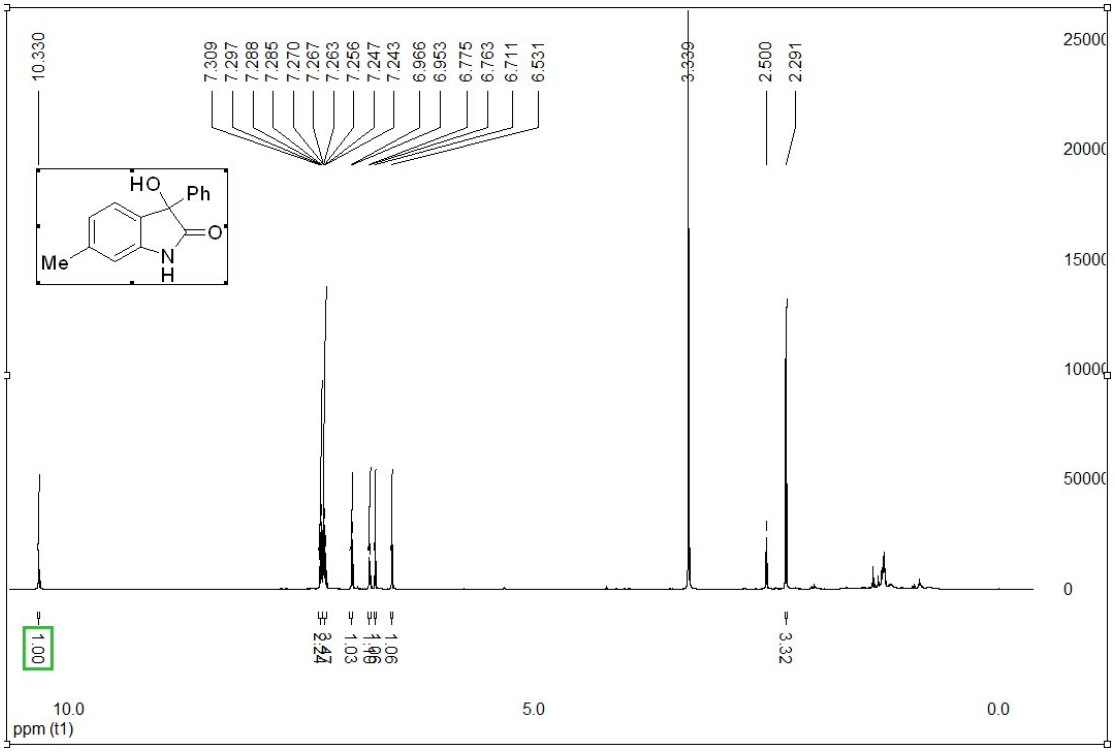


Figure 12. [1]H and [13]C NMR Spectra of 3-Hydroxy-5,7-dimethyl-3-phenylindolin-2-

one **(3l)**

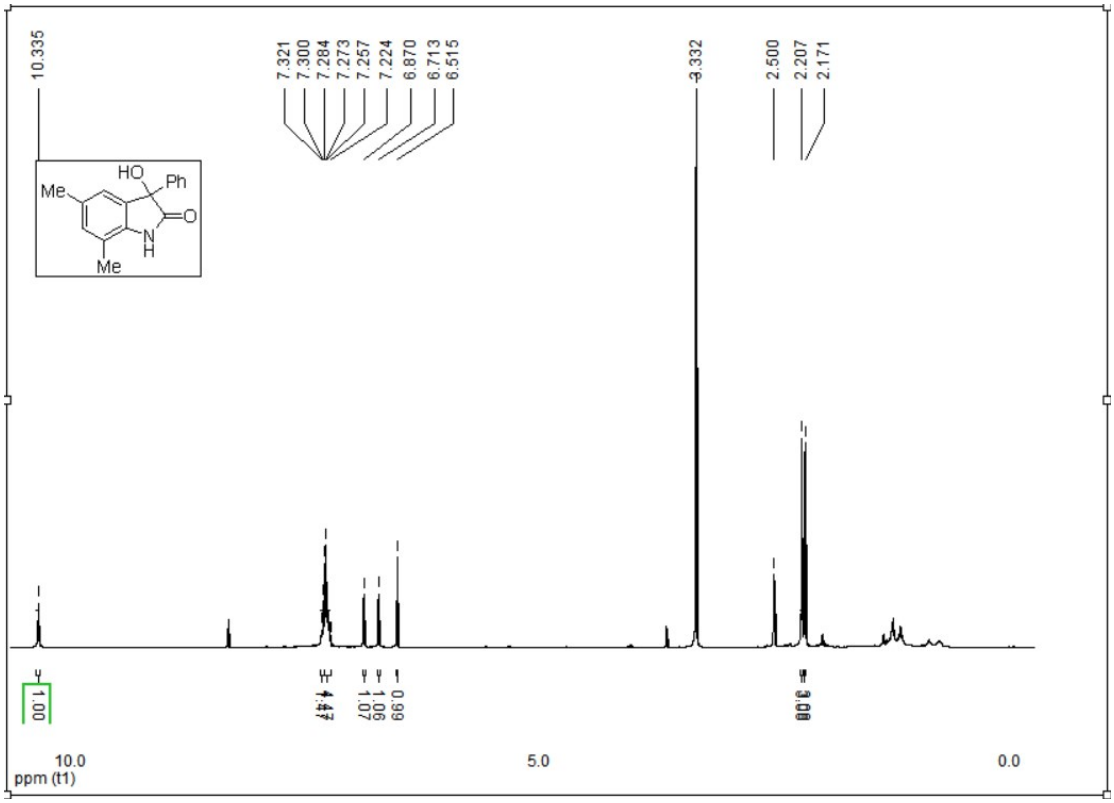
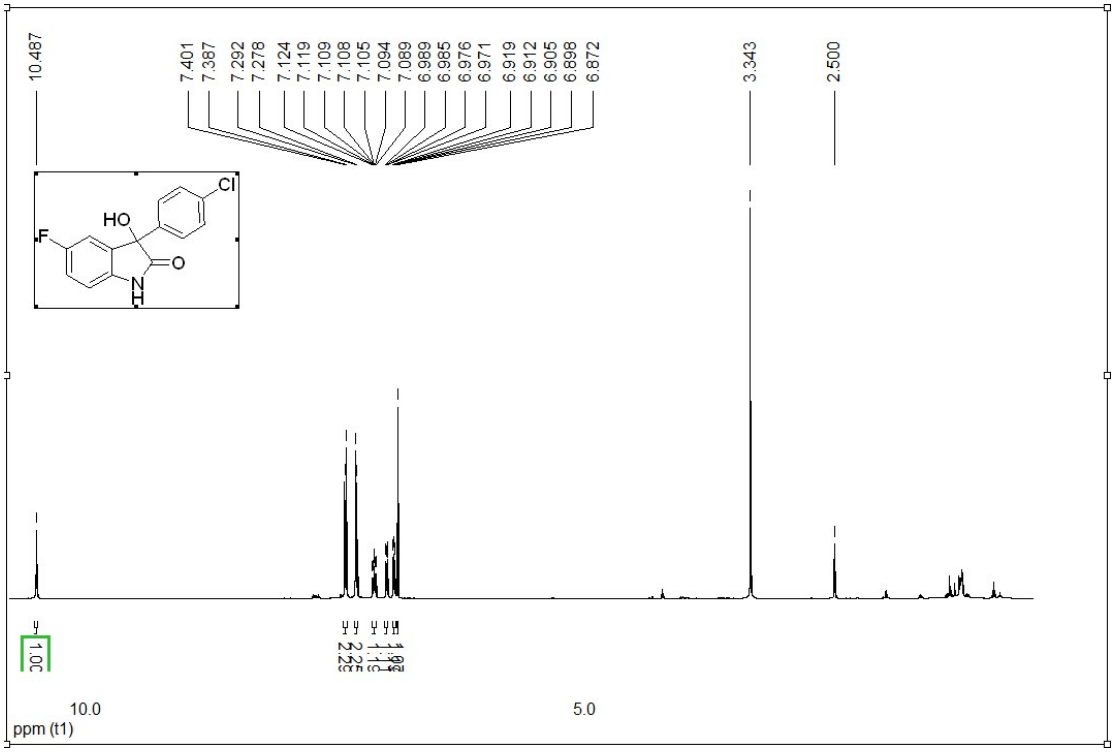


Figure 13. ^{1}H and ^{13}C NMR Spectra of 3-(4-Chlorophenyl)-5-fluoro-3-hydroxyindolin-2-one **(3m)**



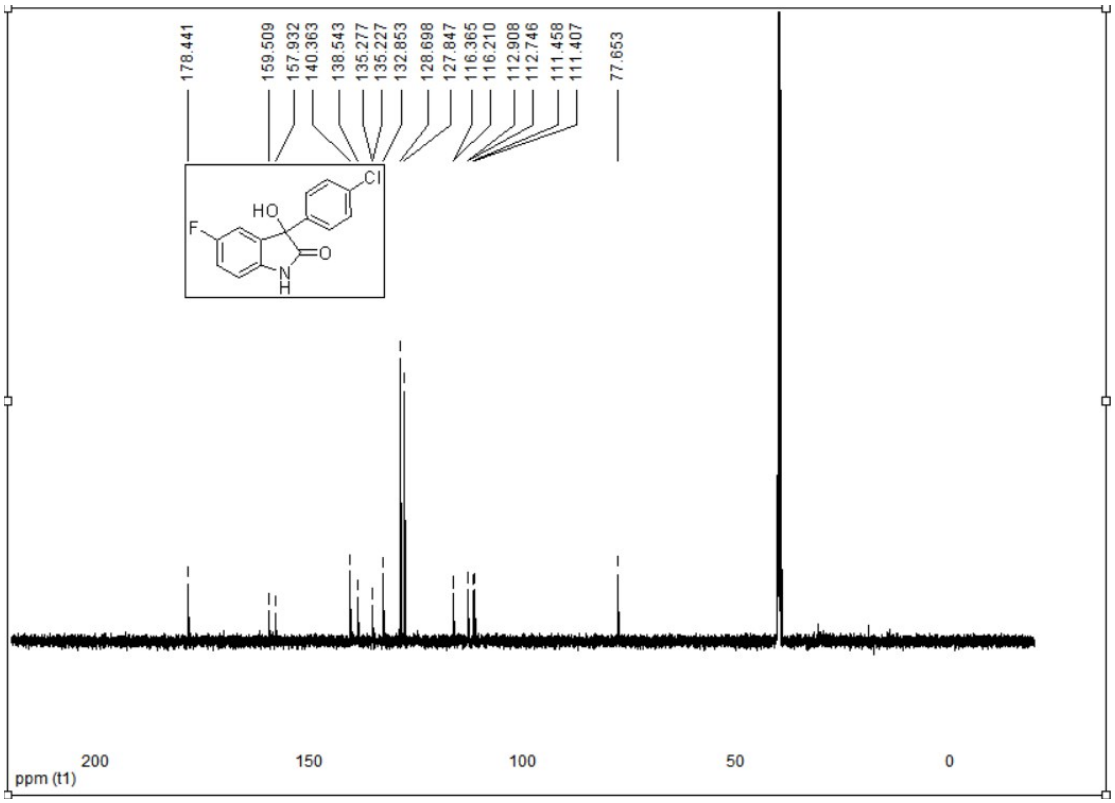
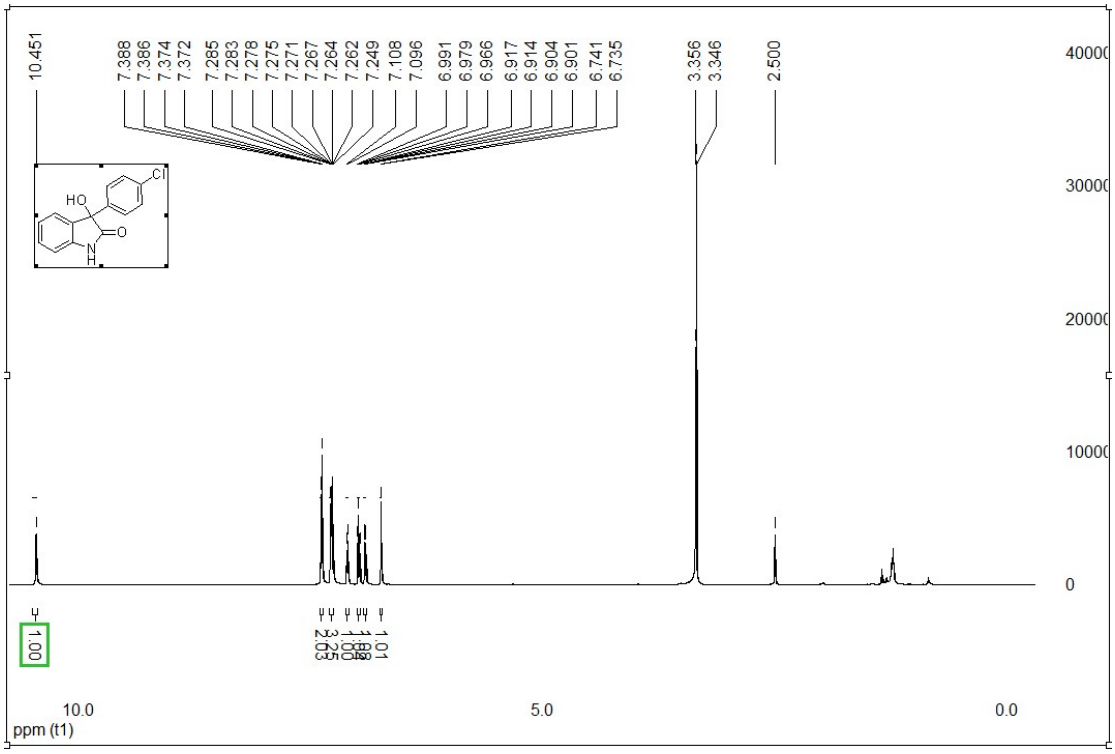


Figure 14. ^{1}H and ^{13}C NMR Spectra of 3-(4-Chlorophenyl)-3-hydroxyindolin-2-one **(3n)**



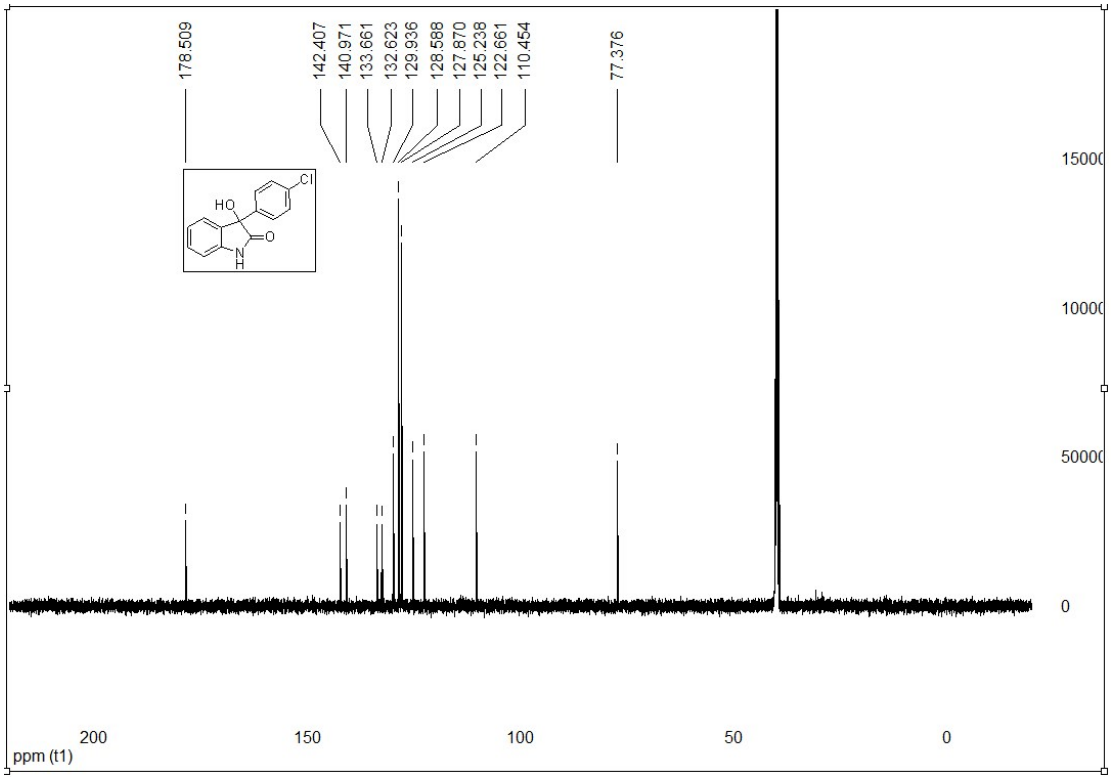
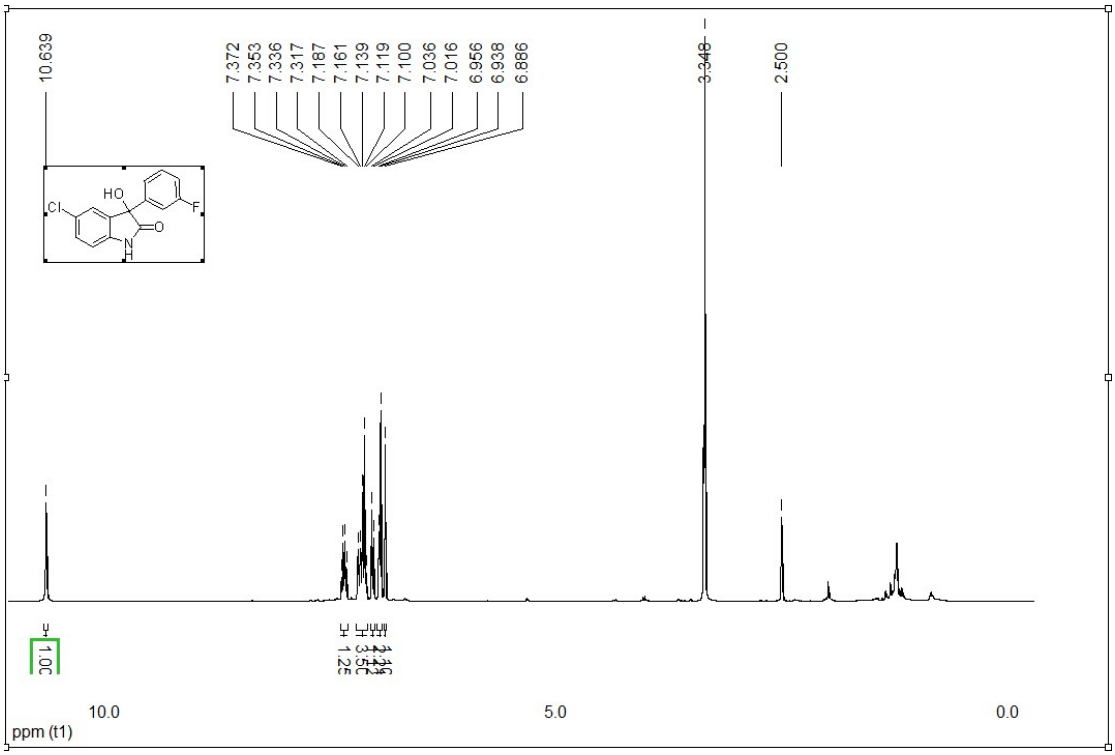


Figure 15. ^{1}H and ^{13}C NMR Spectra of 5-Chloro-3-(3-fluorophenyl)-3-hydroxyindolin-2-one **(3o)**



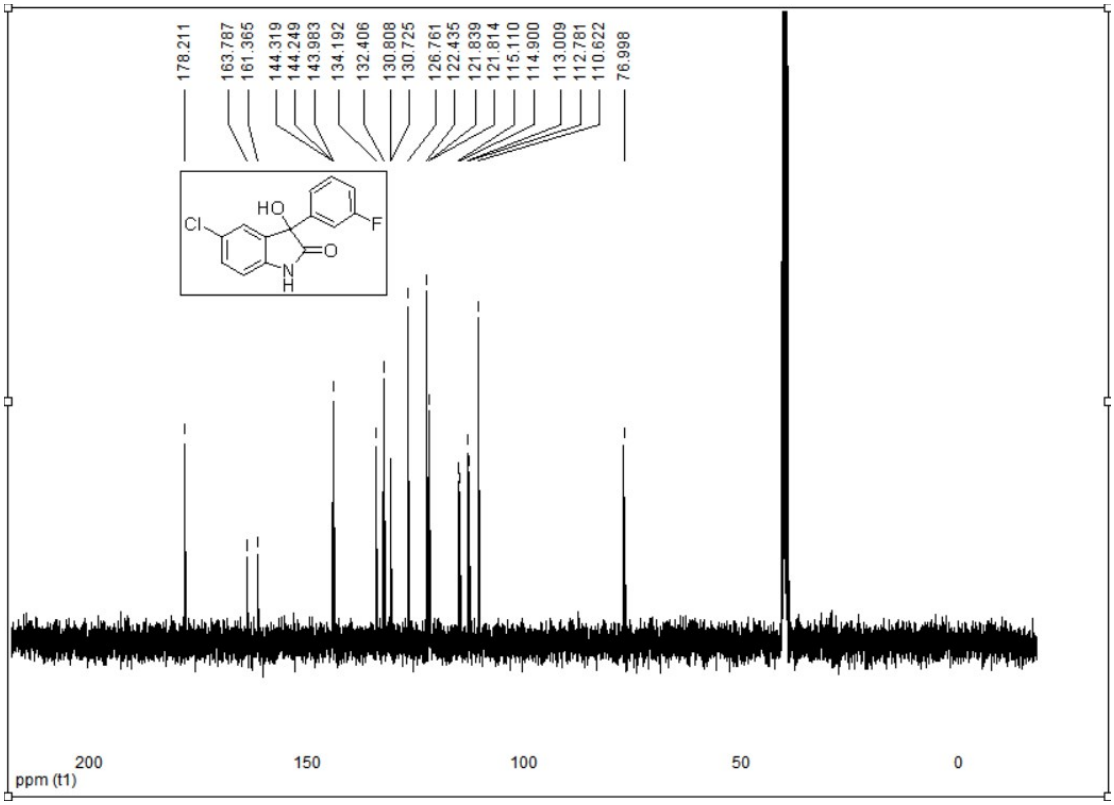
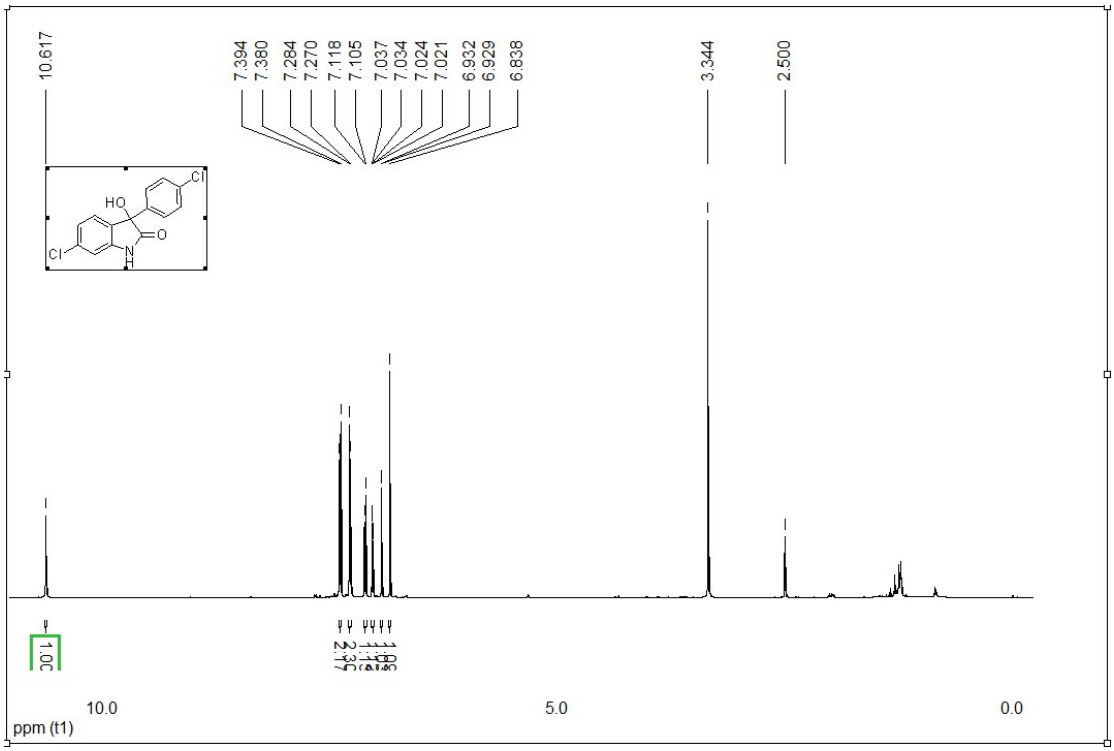


Figure 16. ^{1}H and ^{13}C NMR Spectra of 6-Chloro-3-(4-chlorophenyl)-3-hydroxyindolin-2-one **(3p)**



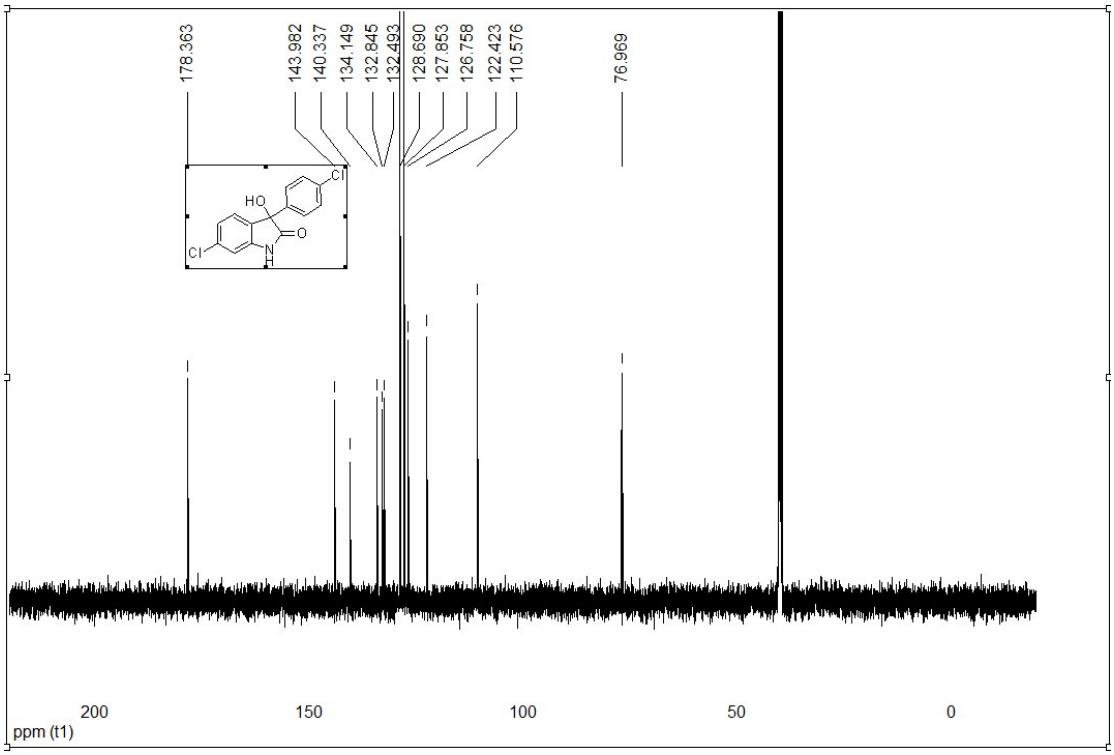
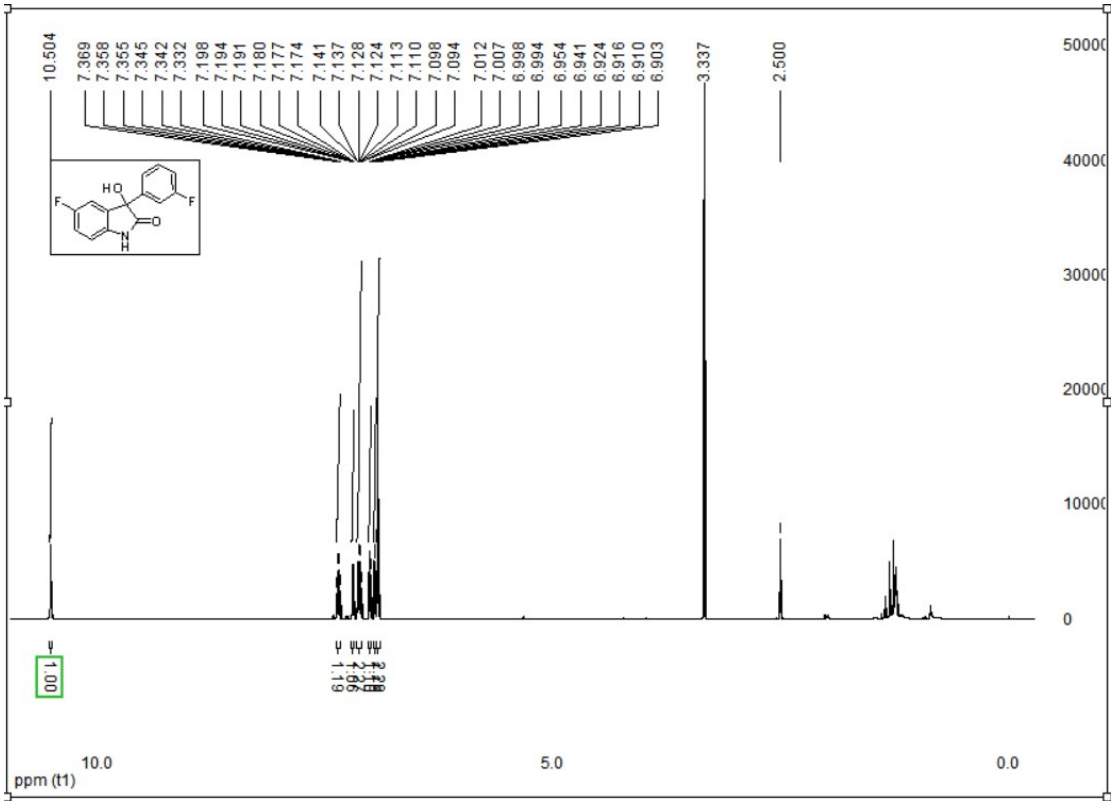


Figure 17. ^{1}H and ^{13}C NMR Spectra of 5-Fluoro-3-(3-fluorophenyl)-3-hydroxyindolin-2-one **(3q)**



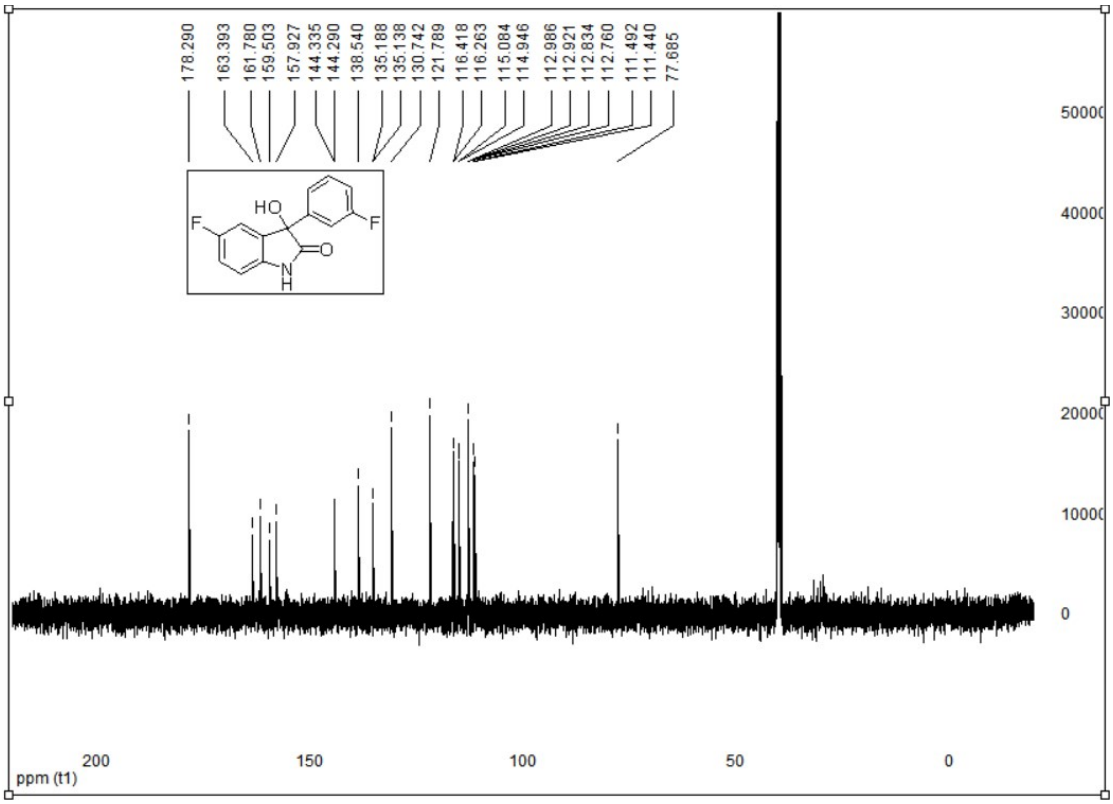
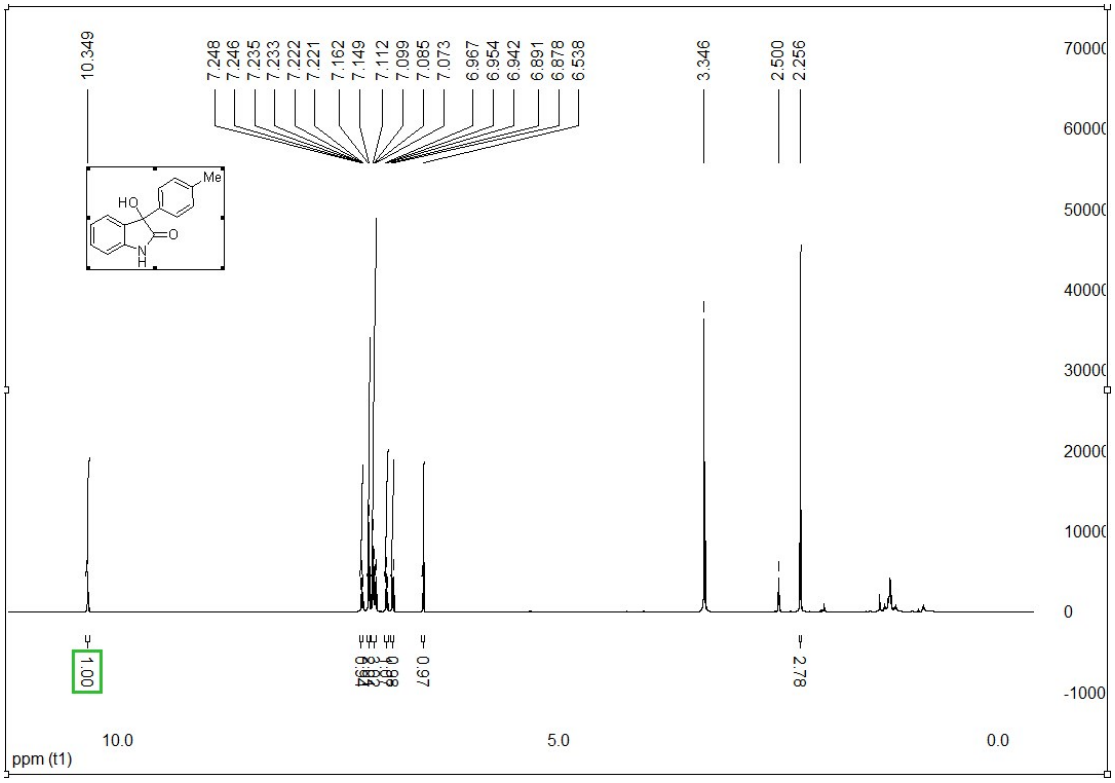


Figure 18. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-(*p*-tolyl)indolin-2-one **(3r)**



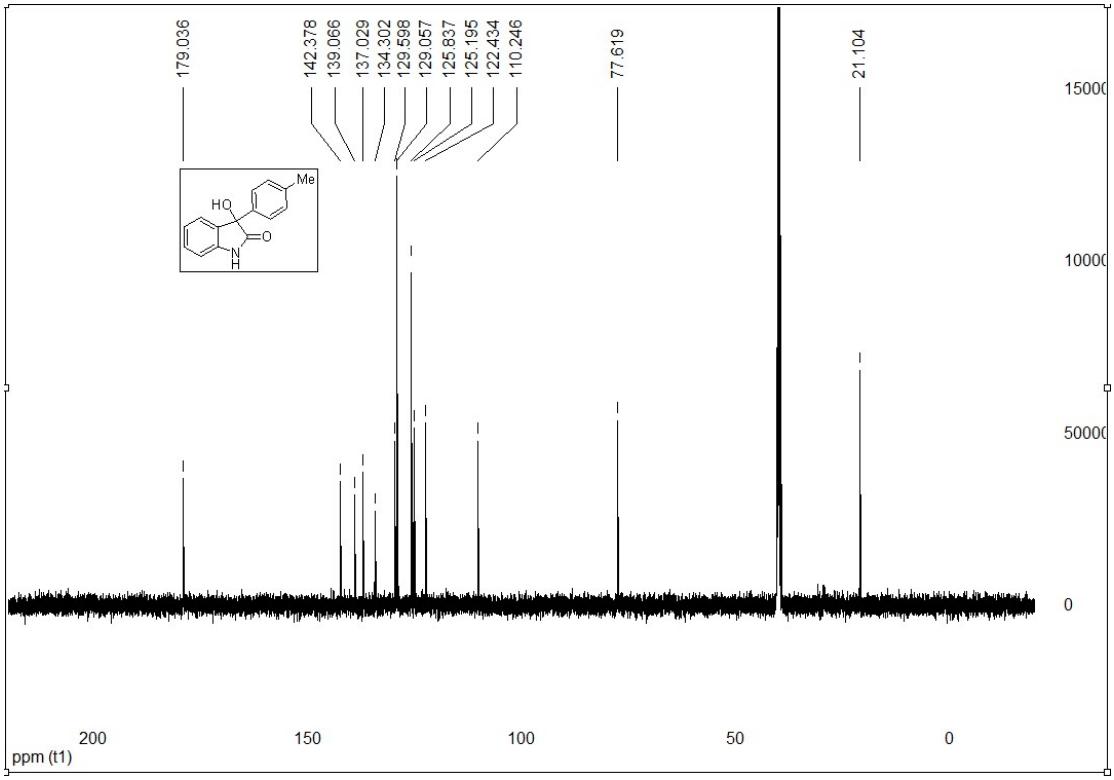
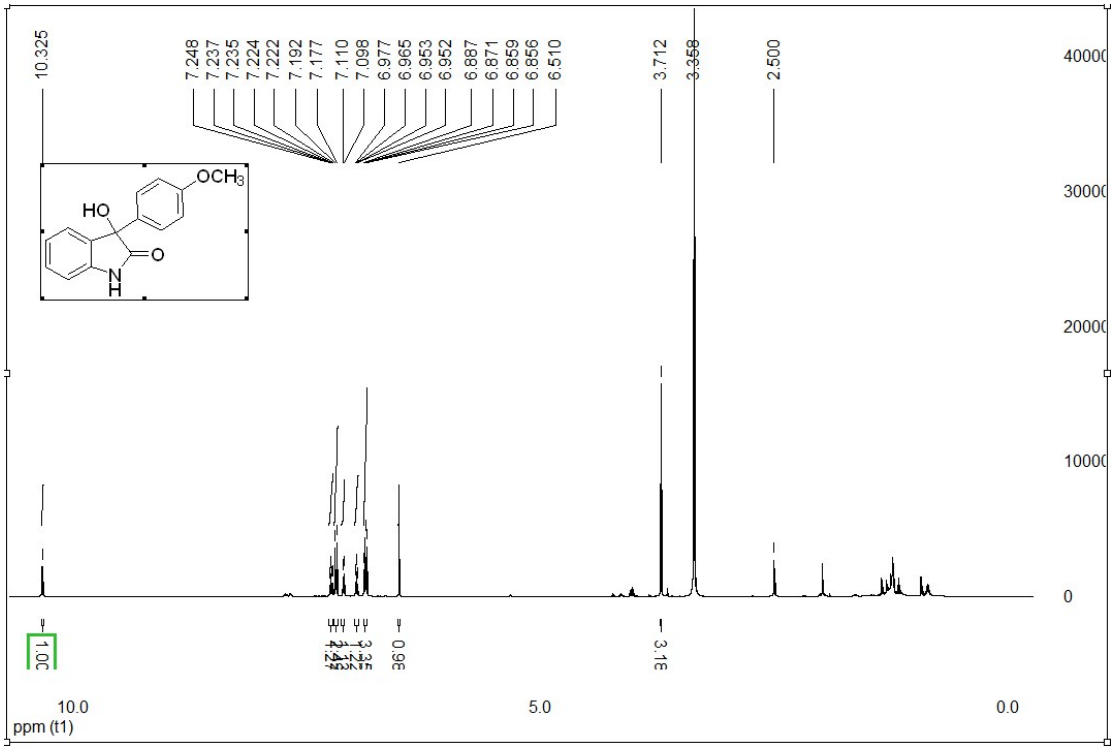


Figure 19. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-(4-methoxyphenyl)indolin-2-one **(3s)**



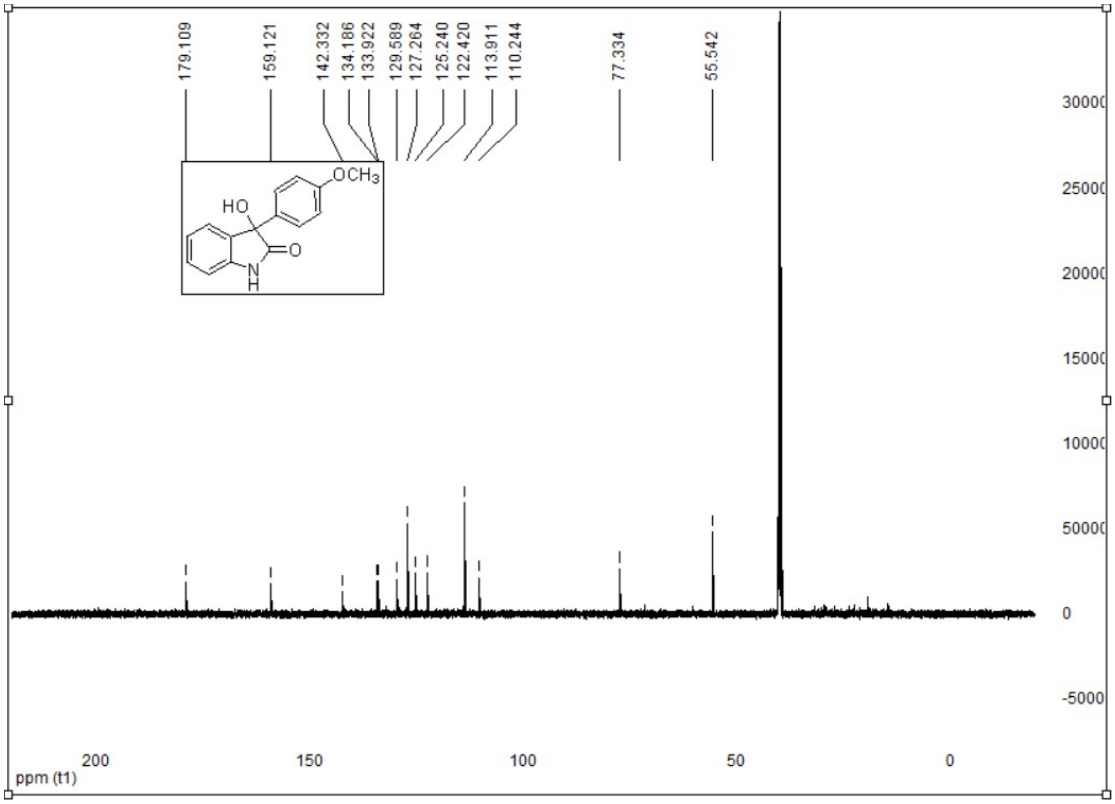


Figure 20. ^{1}H and ^{13}C NMR Spectra of 3-Hydroxy-3-(thiophen-2-yl)indolin-2-one (**3t**)

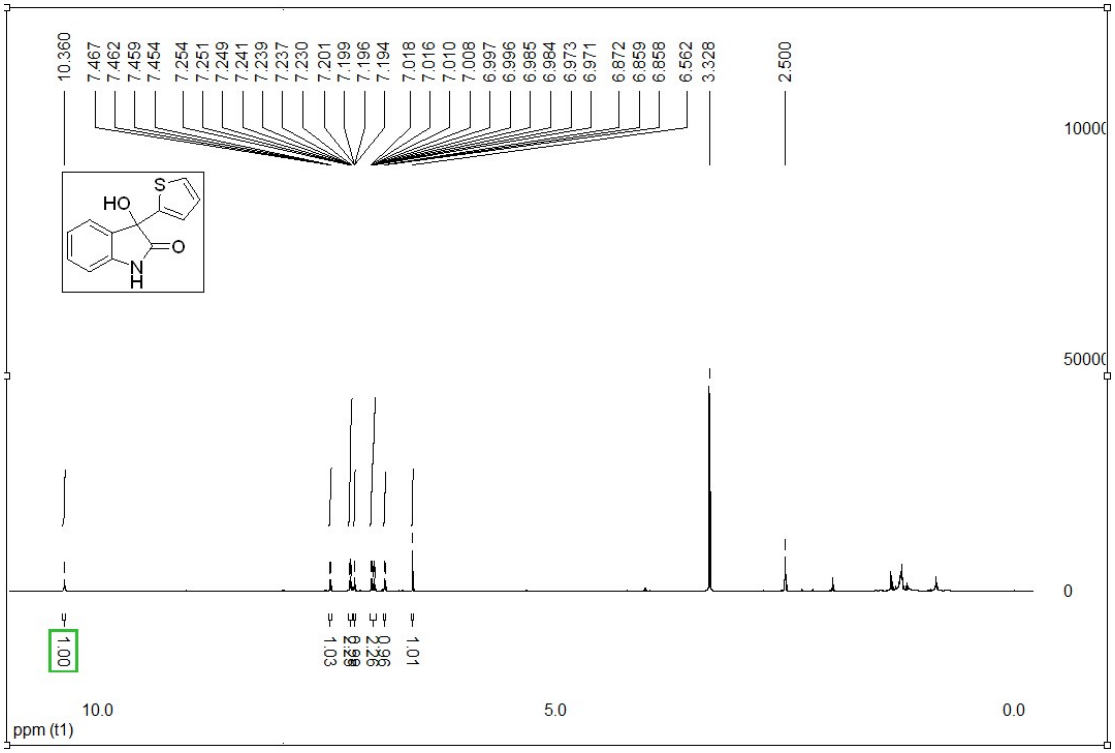


Figure 21. ^{1}H and ^{13}C NMR Spectra of 3-(*t*ert-Butyl)-3-hydroxyindolin-2-one (**3u**)

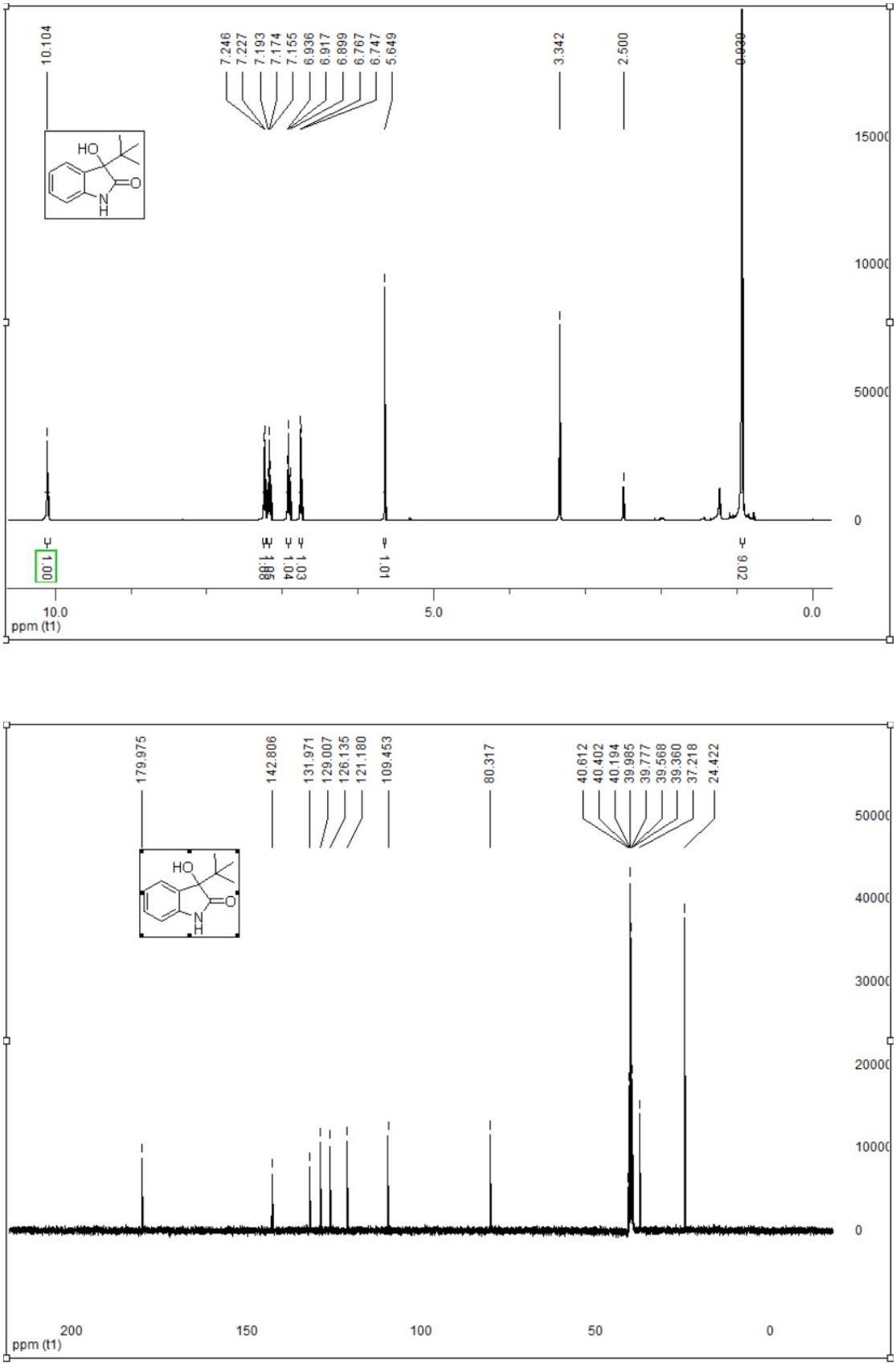


Figure 22. FTIR spectroscopy of O^{16}-**3a** and O^{18}-**3a**

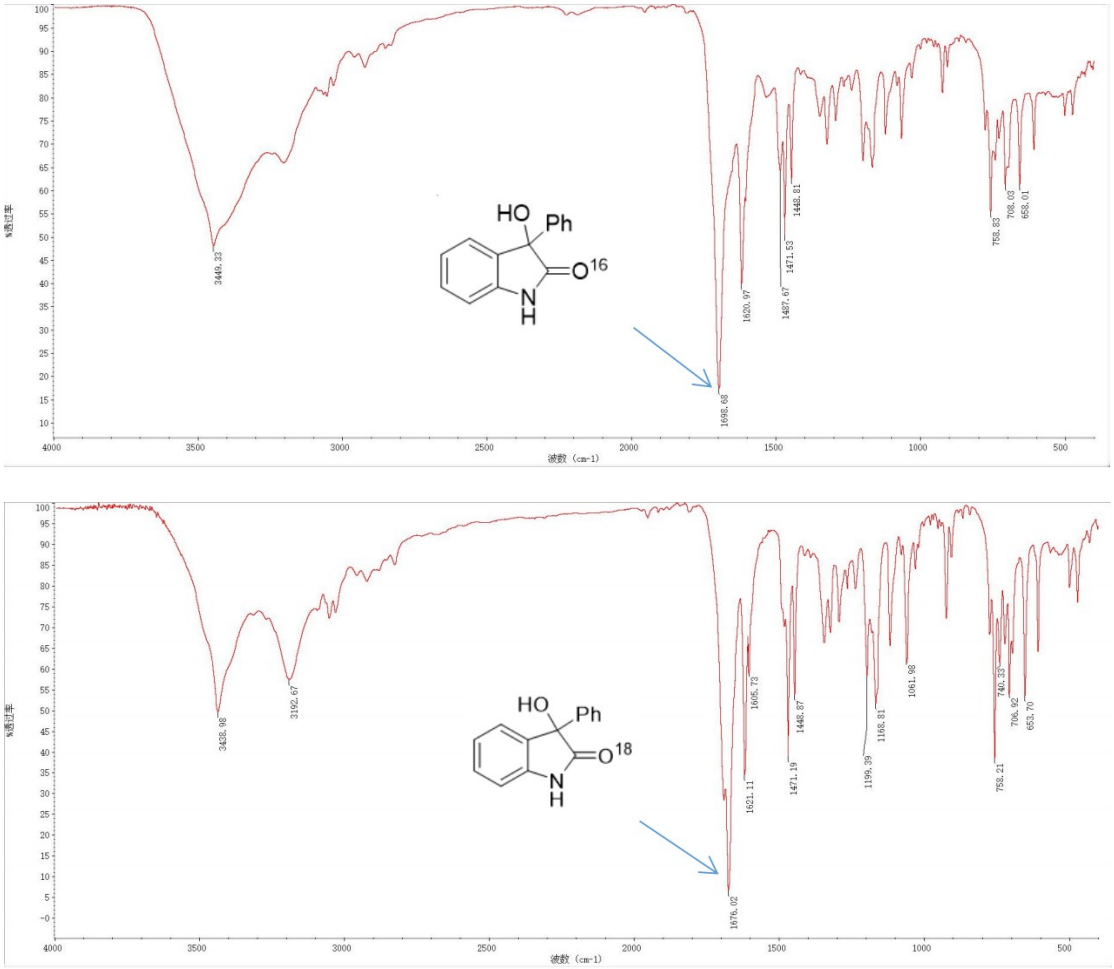


Figure 23. LCMS spectura of O^{18}-3a ([M+H]: 228.0806)