Electronic Supplementary Material (ESI) for Green Chemistry.

Catalyst- and Oxidant-Free Electrochemical *para*-Selective Hydroxylation of *N*-Arylamides in Batch and Continuous-Flow

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1 General Remarks

Reagents: Commercially available reagents and solvents were of reagent grade quality without any further purification.

N-Arylamides were prepared according to a previous method.

Chromatography: Flash column chromatography was performed using silicycle silica gel (200-300 mesh).

Analytical thin-layer chromatography (TLC) was performed on 0.2 mm coated silica gel plates (HSGF 254) and visualized using a UV lamp (254 nm or 365 nm).

Nuclear Magnetic Resonance Spectroscopy:

^{1}H NMR and ^{13}C NMR were recorded on magnet system 400'54 ascend purchased from Bruker Biospin AG.

^{1}H NMR spectra chemical shifts (δ) were reported in parts per million (ppm) referenced to hydrogen resonances in the NMR solvent ($CDCl_3$ or DMSO-d_6).

^{13}C NMR spectra chemical shifts (δ) were reported in parts per million (ppm) referenced to carbon resonances in the NMR solvent.

ESI-MS spectra were recorded on Agilent Q-TOF 6520.

All electrochemical *para*-selective hydroxylation of *N*-arylamides were carried out in an undivided electrochemical cell equipped with two C rod electrodes (⌀ 6 mm), which were purchased from Shanghai Jing Chong Electronic Technology Development Co., Ltd Contract. And, electrolysis was conducted under an AXIOMET AX3003P potentiostat in constant current mode. Cyclic voltammogram experiments were investigated using a Metrohm Autolab PGSTAT204 workstation and Nova 2.0 software.

2 General Material Information for Batch Setup and Continuous-Flow Electrochemical Reactor

2.1 General Material Information for Batch setup

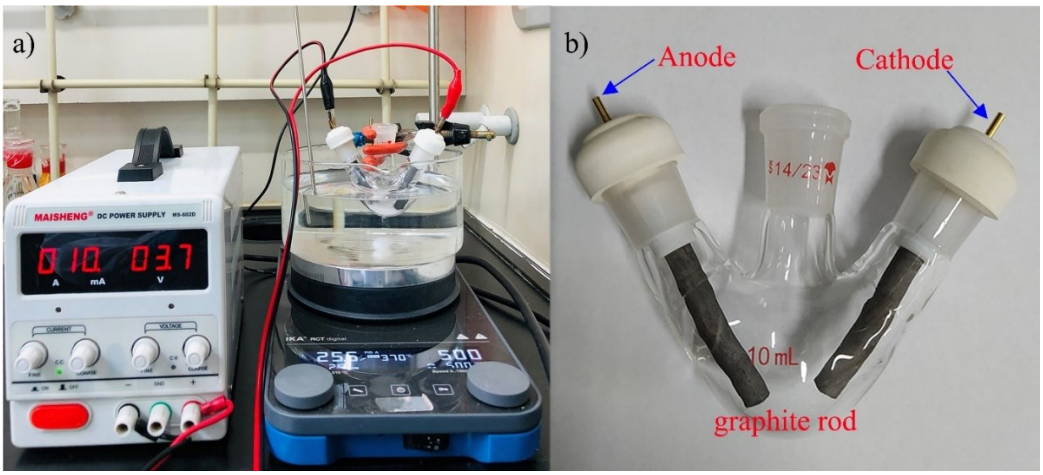


Figure **S1** pictures of batch setup

The batch electrolysis setup used is shown in figure **S1**.

2.2 General Material Information for Continuous-Flow Electrochemical Reactor

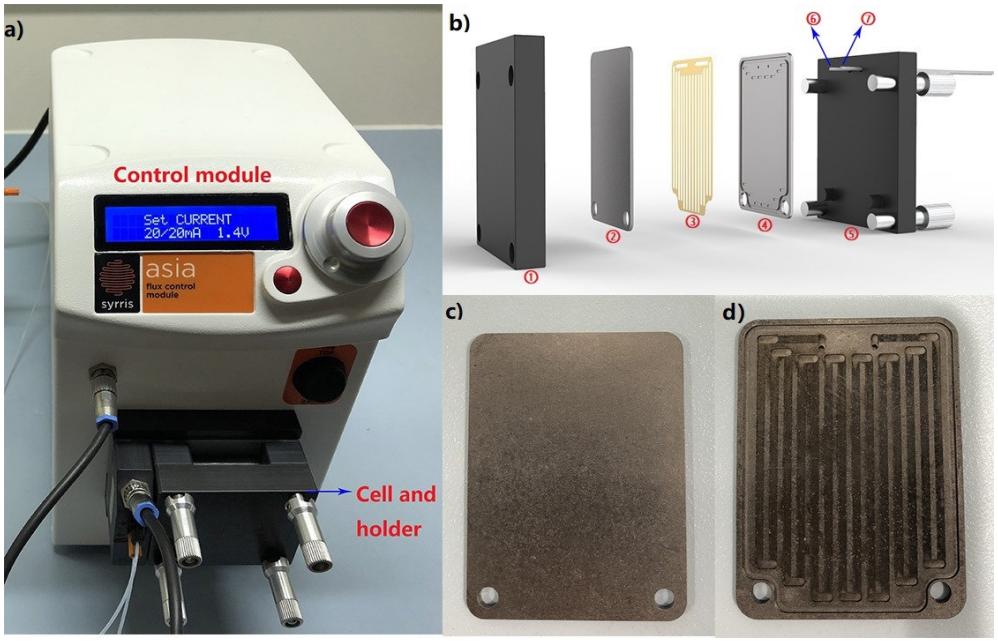
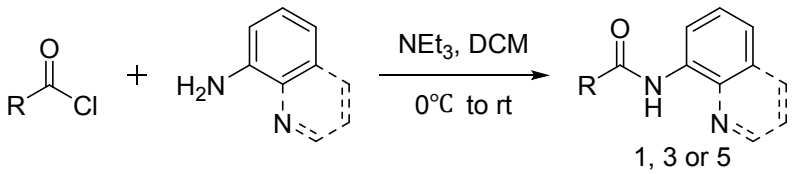


Figure **S2** pictures of continuous-flow electrochemical reactor

a) the outside views of control module and cell; b) the diagram of reactor. ① and ⑤: electrode holder; ②: cathode; ③ channel reactor; ④: Anode; ⑥ and ⑦: inlet and outlet. c) C flat electrode (carbon filled PPS, 5.0 × 4.0 cm). d) C gasket electrode (carbon filled PPS, 5.0 × 4.0 cm).

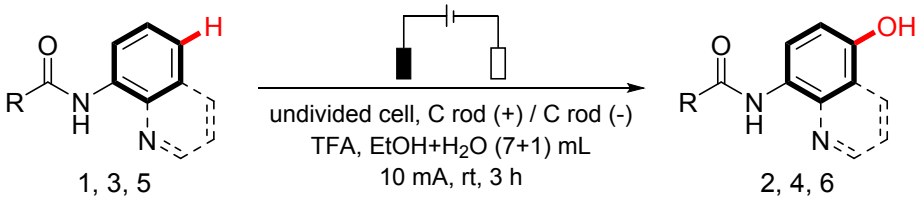
The continuous-flow electrochemical reactor used was the Asia Flux Module purchased from Syrris as shown in Fig. **S2**.

3 Synthesis of the Starting Materials 1, 3, 5[1]



The corresponding amine (10 mmol) and triethylamine (20 mmol, 2.023 g) were dissolved in anhydrous CH_2Cl_2 (30 mL). the specific acyl chloride (10.5 mmol) in CH_2Cl_2 (10 mL) was added dropwise to the solution at 0 °C. The reaction mixture was stirred for another 2h at ambient temperature. The reaction mixture was diluted with CH_2Cl_2 (110 mL). The crude product was washed with HCl solution (3%, 150 mL), saturated $NaHCO_3$ solution (150 mL) and water (150 mL). The separated organic layer was dried over anhydrous Na_2SO_4 and filtered. The filtrate was concentrated under reduced pressure to give the crude product 1, 3, or 5, which was purified by recrystallization from ethyl acetate or column chromatographic separation (petroleum ether /ethyl acetate).

4 General Procedure for the Electrochemical *para*-Selective Hydroxylation of *N*-Arylamides in Batch



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, amide **1, 3** or **5** (0.2 mmol) and TFA (1.4 mmol, 159.6 mg, 7 eq) were dissolved in a mixed solvent of EtOH/H_2O [(7:1) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA for 3 h. The mixtures were concentrated under reduced pressure. The residue was diluted with CH_2Cl_2 (50 mL) and washed with brine (50 mL) and H_2O (50 mL). The separated organic layer was dried over anhydrous Na_2SO_4 and filtered. The filtrate was concentrated under reduced pressure to give the crude product, which was purified by column chromatographic separation (petroleum ether/ethyl acetate).

5 Optimization of Amount of TFA in Continuous-Flow Reactor

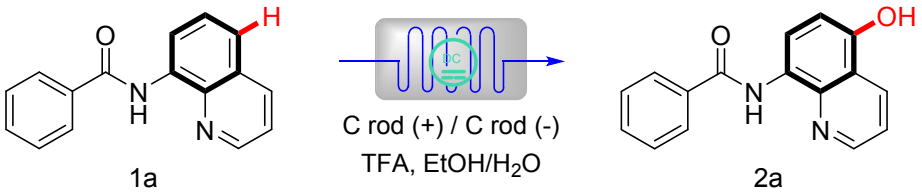


Table S1 Screening equiv. of TFA in continuous-flow reactora

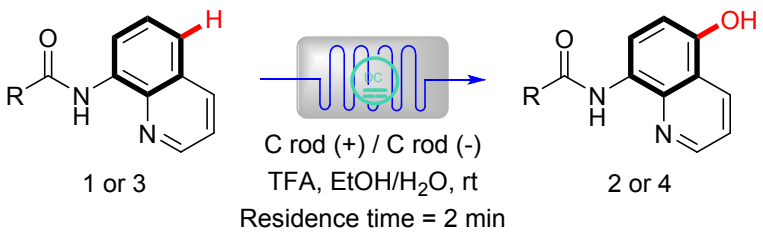
Entry	Equiv. of TFA	Yield (%)
1	2	78
2	3	89
3	4	88

[a]Reaction conditions: 1a (0.2 mmol), TFA (X mmol), EtOH/H_2O (7 mL/1 mL), C (carbon filled PPS, 5.0 × 4.0 cm) anode, C (carbon filled PPS, 5.0 × 4.0 cm) cathode, volume (0.12 mL), flow rate: 0.06 mL/min, residence time: 2 min, I = 10 mA, rt, isolated yield.

This reaction was investigated using less amount of TFA in continuous-flow reactor (Table S1). To our delight, reducing the amount of TFA from 7 equivalents to 3 equivalents could also give excellent yield (Table S1, entry 2).

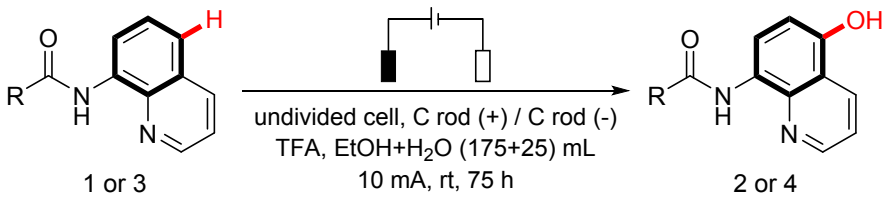
6 Gram-Scale Synthesis of 2a, 2w and 4b in Batch and Continuous-Flow Reactor

6.1 In continuous-flow reactor



1 or **3** (5 mmol) and TFA (15 mmol, 1.71 g) were dissolved in a mixed solvent of EtOH/H_2O [(175:25) mL]. At ambient temperature, the reaction mixtures were introduced into the reactor at 0.06 mL/min at a constant current of 10 mA. The reaction solution was concentrated under reduced pressure. The residue was diluted with CH_2Cl_2 (250 mL) and washed with brine (250 mL) and H_2O (250 mL). The separated organic layer was dried over anhydrous Na_2SO_4 and filtered. The filtrate was concentrated under reduced pressure to give the crude product, which was purified by column chromatographic separation (petroleum ether/ethyl acetate).

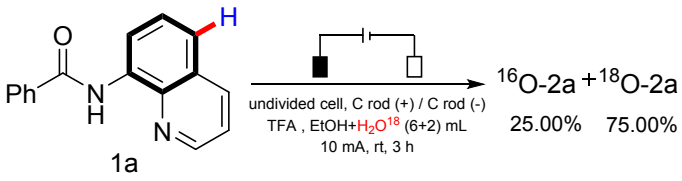
6.2 In batch



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, amide **1** or **3** (5 mmol) and TFA (35 mmol, 3.99 g, 7 eq) were dissolved in a mixed solvent of EtOH/H_2O [(175:25) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA for 75 h. The reaction solution was concentrated under reduced pressure. The residue was diluted with CH_2Cl_2 (250 mL) and washed with brine (250 mL) and H_2O (250 mL). The separated organic layer was dried over anhydrous Na_2SO_4 and filtered. The filtrate was concentrated under reduced pressure to give the crude product, which was purified by column chromatographic separation (petroleum ether/ethyl acetate).

7 Mechanistic Studies

7.1 ^{18}O-labeled experiments



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(quinolin-8-yl)benzamide **1a** (0.2 mmol, 49.6 mg) and TFA (1.4 mmol, 159.6 mg, 7 eq) were dissolved in a mixed solvent of anhydrous EtOH/H_2O^{18} [(6:2) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA under N_2 for 3 h. The crude mixture was analyzed by HRMS (ESI), which revealed that the ratio between ^{16}O-2a and ^{18}O-2a was 25.00:75.00 (Fig. **S3**).

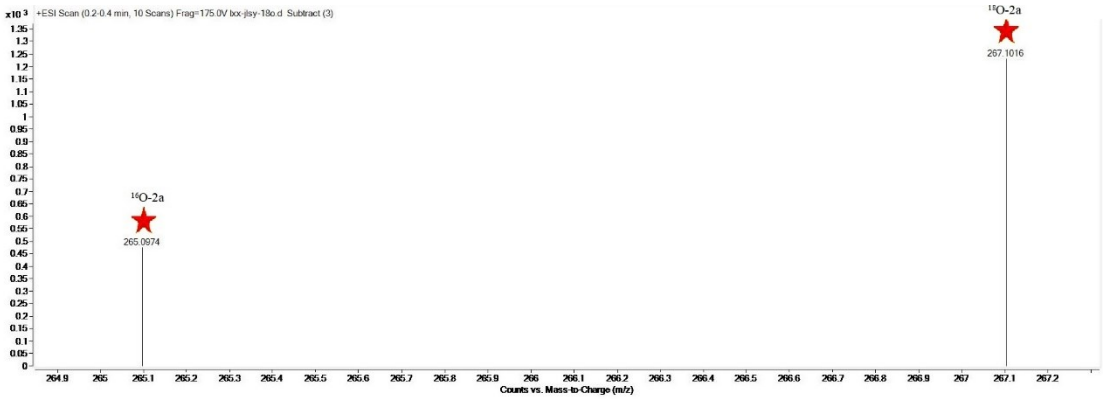
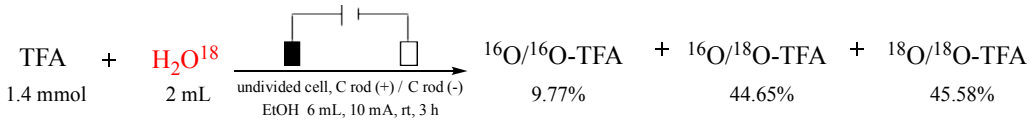


Figure **S3** HRMS (ESI) analysis of electrochemically generated ^{16}O-2a and ^{18}O-2a using the mixed solvent of EtOH/H_2O^{18}



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, TFA (1.4 mmol, 159.6 mg, 7 eq) was dissolved in a mixed solvent of anhydrous EtOH/H_2O^{18} [(6:2) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA under N_2 for 3 h. The crude mixture was analyzed by MS-ESI, which revealed that the ratio between ^{16}O/^{16}O-TFA, ^{16}O/^{18}O-TFA and ^{18}O/^{18}O-TFA was 9.77:44.65:45.58 (Fig. **S4**).

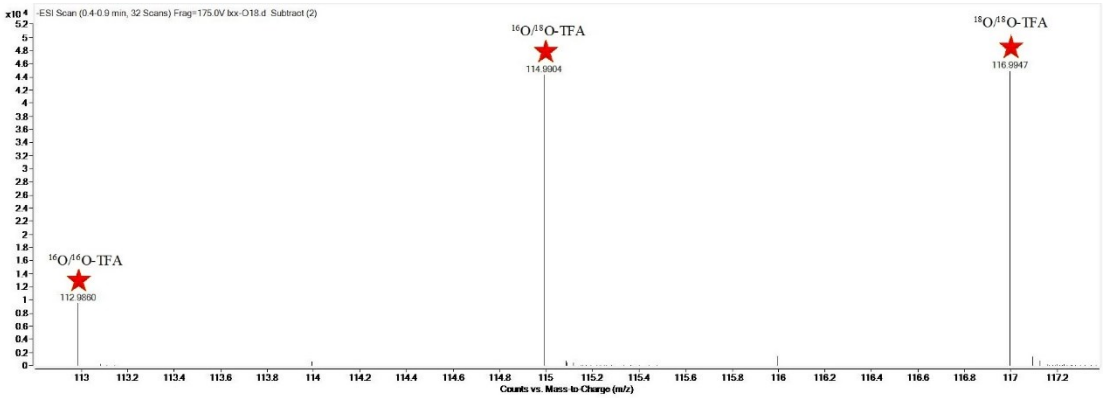
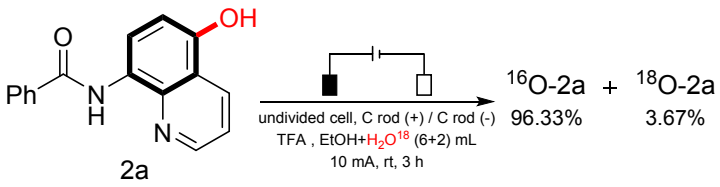


Figure **S4** HRMS (ESI) analysis of electrochemically generated $^{16}O/^{16}O$-TFA, $^{16}O/^{18}O$-TFA and $^{18}O/^{18}O$-TFA using the mixed solvent of EtOH/H_2O^{18}



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(5-hydroxyquinolin-8-yl)benzamideand (2a, 0.2 mmol, 52.8 mg) TFA (1.4 mmol, 159.6 mg, 7 eq) was dissolved in a mixed solvent of anhydrous EtOH/H_2O^{18} [(6:2) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA unser N_2 for 3 h. The crude mixture was analyzed by MS-ESI, which revealed that the ratio between ^{16}O-2a and ^{18}O-2a was 96.33:3.67 (Fig. **S5**).

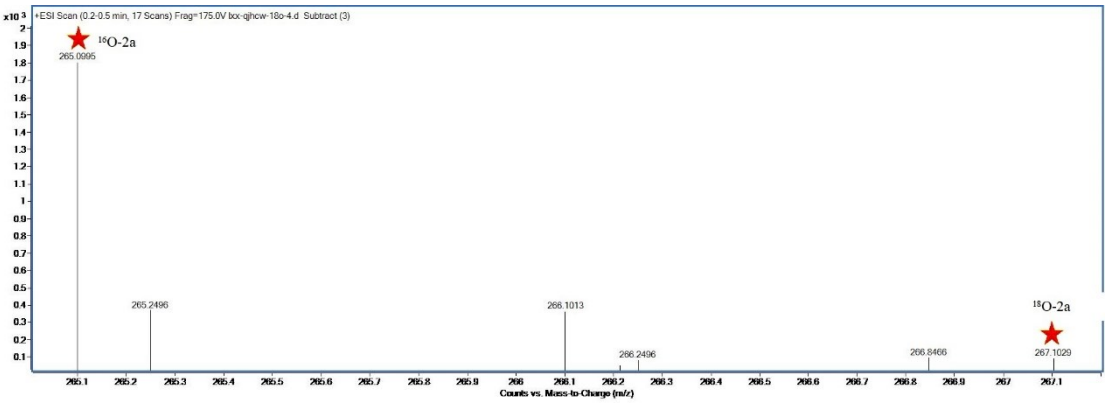
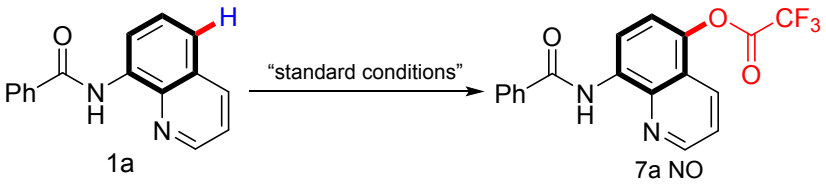
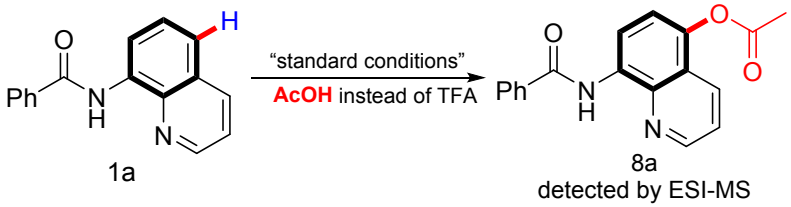


Figure **S5** HRMS (ESI) analysis of electrochemically generated ^{18}O-2a from ^{16}O-2a using the mixed solvent of EtOH/H_2O^{18}

7.2 Intermediate-monitoring experiments



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(quinolin-8-yl)benzamide 1a (0.2 mmol, 49.6 mg) and TFA (1.4 mmol, 159.6 mg, 7 eq) were dissolved in a mixed solvent of EtOH/H_2O [(7:1) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA. The mixture was monitored by TLC and MS-ESI. The corresponding esterification product **7a** was not detected.



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(quinolin-8-yl)benzamide 1a (0.2 mmol, 49.6 mg) and AcOH (1.4 mmol, 84.1 mg, 7 eq) were dissolved in a mixed solvent of EtOH/H_2O [(7:1) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA. The mixture was monitored by TLC and MS-ESI. And, the corresponding esterification product **8a** was detected (Calcd for $C_{18}H_{15}N_2O_3$ $[M+H]^+$: 307.1077; found: 307.1051, Fig. **S6**).

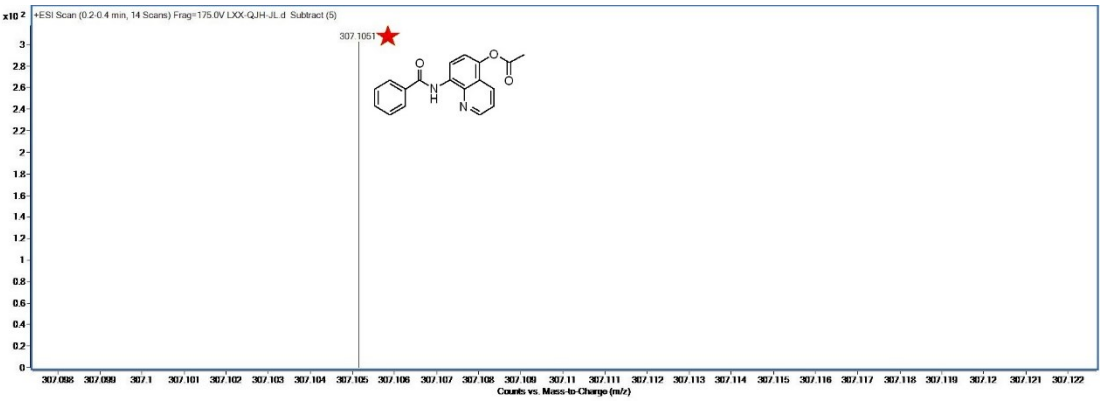
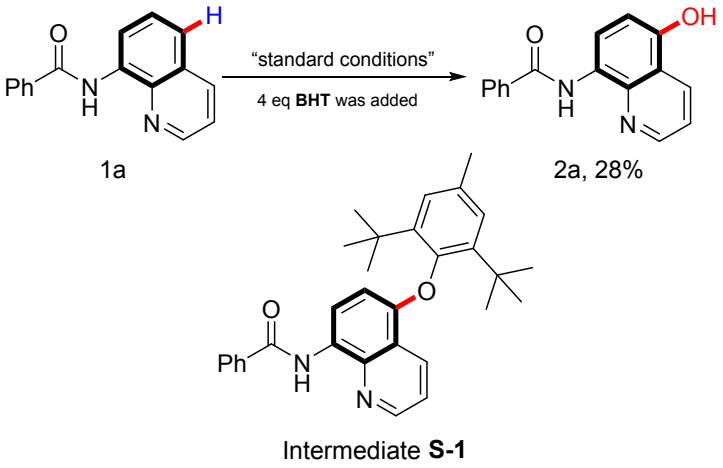


Figure **S6** HRMS (ESI) analysis of esterification product **8a**

7.3 Radical-trapping experiments



In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(quinolin-8-yl)benzamide **1a** (0.2 mmol, 49.6 mg), TFA (1.4 mmol, 159.6 mg, 7 eq) and BHT (0.8 mmol, 176.3 mg, 4 eq) were dissolved in a mixed solvent of EtOH/H_2O [(7:1) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA for 3 h. The mixtures were concentrated under reduced pressure. The residue was diluted with CH_2Cl_2 (50 mL) and washed with brine (50 mL) and H_2O (50 mL). The separated organic layer was dried over anhydrous Na_2SO_4 and filtered. The filtrate was concentrated under reduced pressure to give the crude product, which was purified by column chromatographic separation (petroleum ether/ethyl acetate 12/1) to give the desired product **2a** (14.8 mg, 28%). And, the corresponding radical-trapping intermediate **S-1** was detected by MS-ESI (Calcd for $C_{31}H_{35}N_2O_2$ $[M+H]^+$: 467.2693; found: 467.2674, Fig. **S7**).

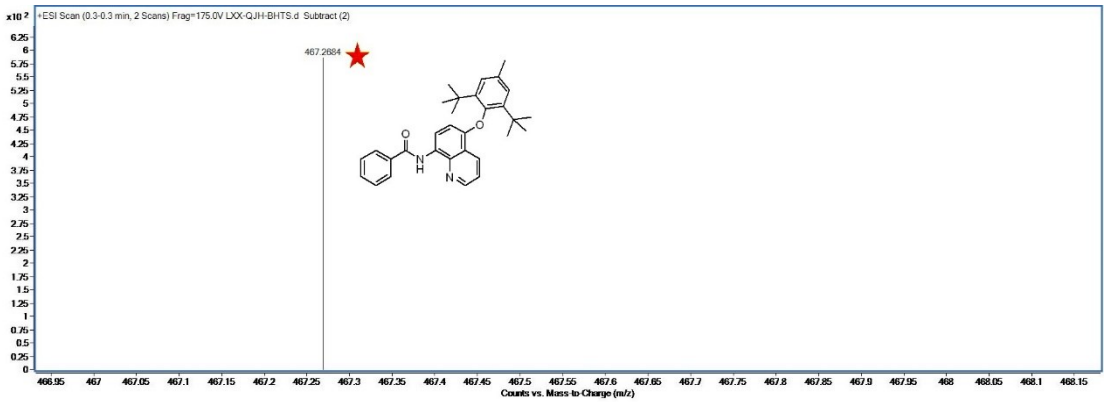
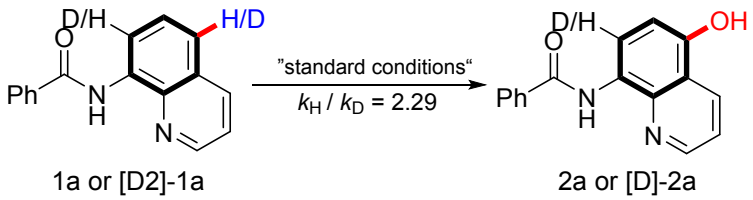


Figure **S7** HRMS (ESI) analysis of corresponding radical-trapping intermediate **S-1**

7.4 KIE studies



1a or [D2]-1a 2a or [D]-2a

In an undivided cell equipped with a carbon rod (⌀ 6 mm) anode and a carbon rod (⌀ 6 mm) cathode, *N*-(quinolin-8-yl)benzamide **1a** or **[D2] -1a** (0.2 mmol, 49.6 mg or 50.0 mg) and TFA (1.4 mmol, 159.6 mg, 7 eq) were dissolved in a mixed solvent of EtOH/H_2O [(7:1) mL]. At ambient temperature, the reaction was started at a constant current of 10 mA. Aliquots of 0.2 mL were removed from the cell every 15 minutes and analyzed by ^{1}H-NMR using CH_2Br_2 (5 µL) as the internal standard (Fig. **S8** and Fig. **S9**).

Time [min]	30	45	60	75	90
2a [%]	12.18	20.65	27.94	34.76	40.71
[D]-2a [%]	11.09	14.25	17.38	20.35	23.55

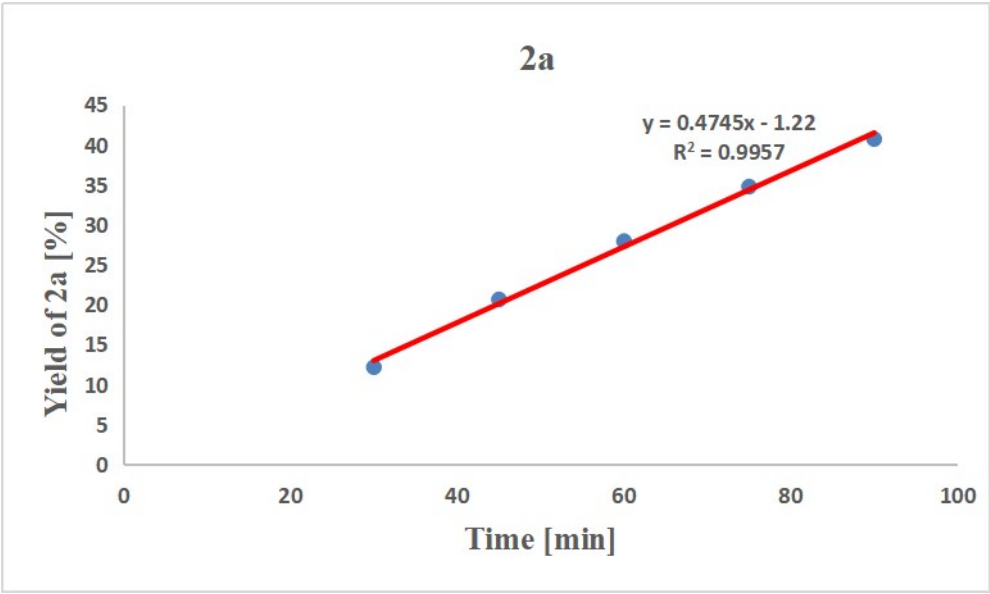


Figure **S8** Parallel experiment of 1a

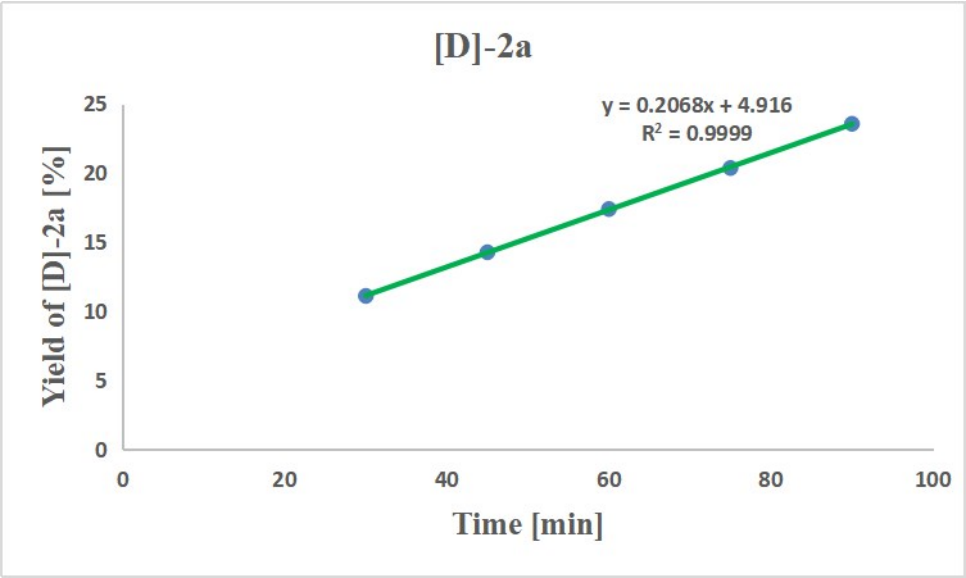


Figure **S9** Parallel experiment of [D2]-1a

7.5 Cyclic voltammetry

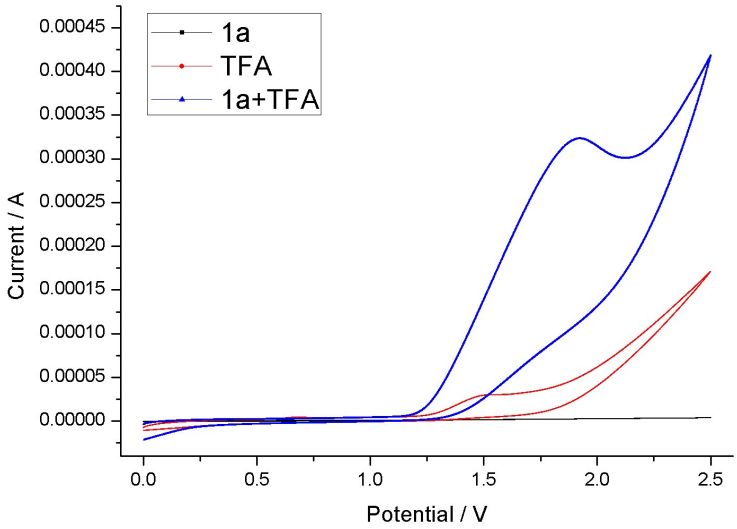


Figure **S10** Cyclic Voltammetry

100 mVs-1: Solvent: EtOH (8 mL). (black) substrate 1a (0.1 mmol); (red) TFA (0.7 mmol); (blue) 1a (0.1 mmol) and TFA (0.7 mmol).

The undivided cell was equipped with glassy-carbon disk working electrode (diameter, 3.0 mm) and Pt wire auxiliary electrode. The Ag/AgCl was used as reference electrode. The scan range was 0.0 V to 2.5 V. The scan rate was 100 mVs-1 (Fig. **S10**).

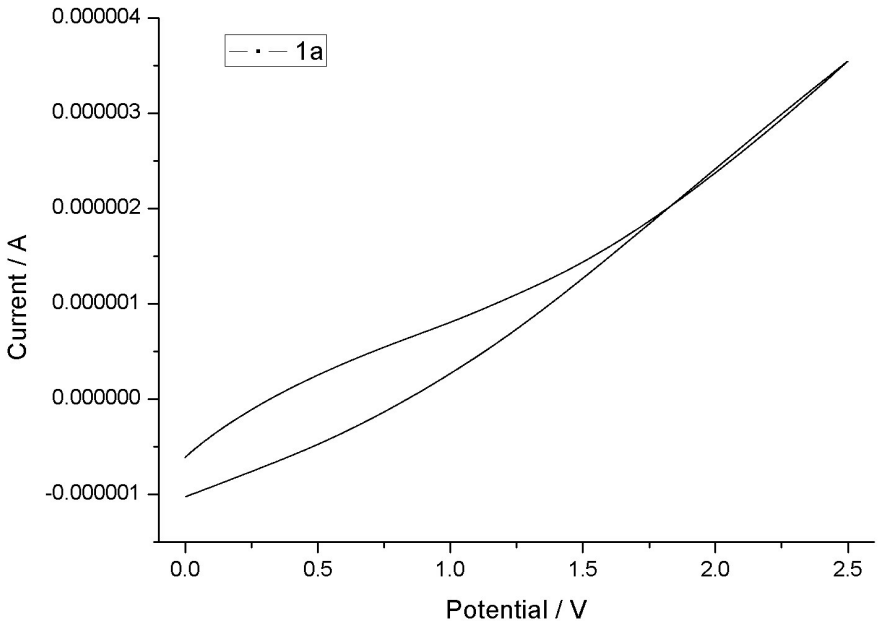


Figure **S11**: Cyclic Voltammetry of 1a

100 mVs-1: Solvent: EtOH (8 mL). (black) substrate 1a (0.1 mmol).

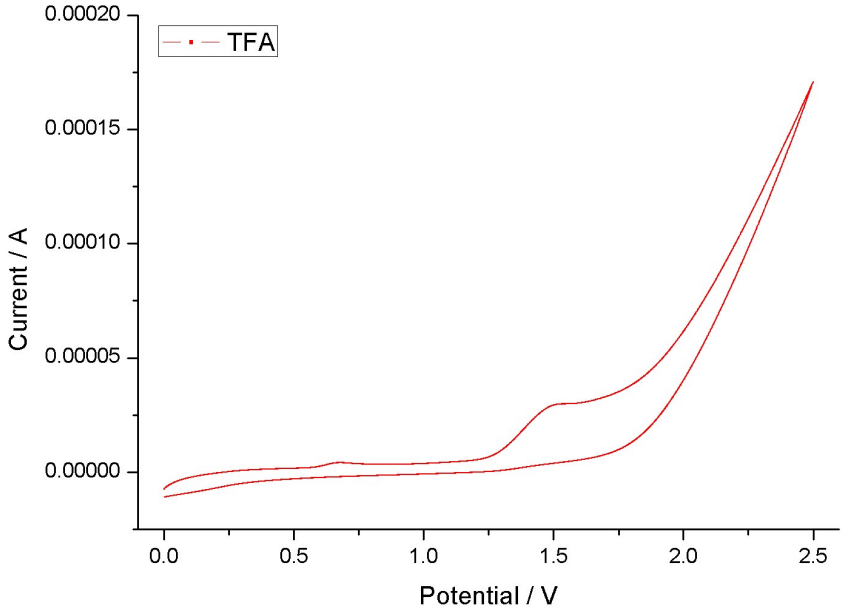


Figure **S12**: Cyclic Voltammetry of TFA

100 mVs-1: Solvent: EtOH (8 mL). (red) TFA (0.7 mmol).

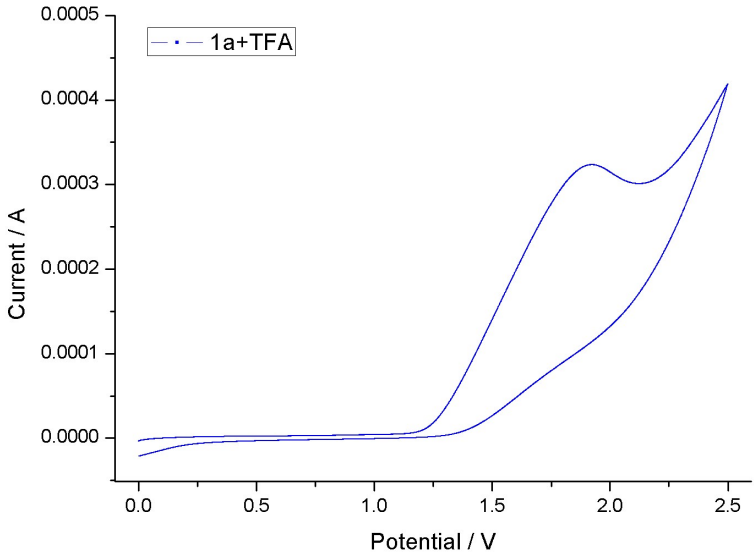
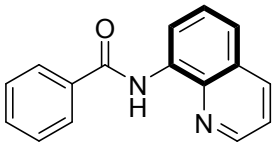


Figure **S13**: Cyclic Voltammetry of the mixture of 1a and TFA

100 mVs-1: Solvent: EtOH (8 mL). (blue) 1a (0.1 mmol) and TFA (0.7 mmol).

8 Characterization Data of 1, 3, 5 and 2, 4, 6

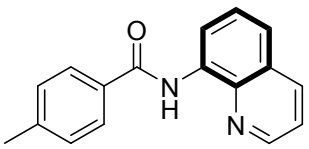
8.1 Characterization Data of **1**



1a

***N*-(Quinolin-8-yl)benzamide (1a):**

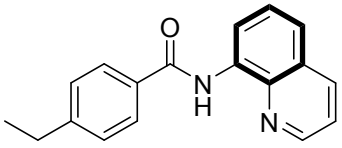
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.74 (s, 1H), 8.94 (t, *J* = 6.5 Hz, 1H), 8.83 (brs, 1H), 8.20 - 8.05 (m, 3H), 7.68 – 7.36 (m, 6H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.52, 148.28, 138.68, 136.56, 135.13, 134.55, 131.93, 128.86, 128.04, 127.52, 127.36, 121.80, 121.75, 116.69. **HRMS** (ESI) Calcd for $C_{16}H_{13}N_2O$ $[M+H]^+$: 249.1022; found: 249.1044.



1b

4-Methyl-*N*-(quinolin-8-yl)benzamide (1b):

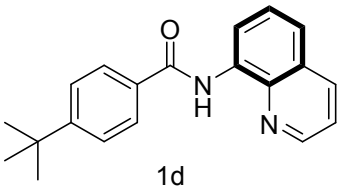
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.45 (s, 1H), 8.73 (d, *J* = 7.6, 1H), 8.59 – 8.48 (m, 1H), 7.86 – 7.78 (m, 1H), 7.78 - 7.70 (m, 2H), 7.36 – 7.25 (m, 1H), 7.25 – 6.99 (m, 4H), 2.18 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.04, 148.00, 142.13, 138.41, 136.07, 134.39, 131.99, 129.25, 127.69, 127.13, 127.06, 121.44, 121.37, 116.13, 21.36. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O$ $[M+H]^+$: 263.1179; found: 263.1191.



1c

4-Ethyl-*N*-(quinolin-8-yl)benzamide (1c):

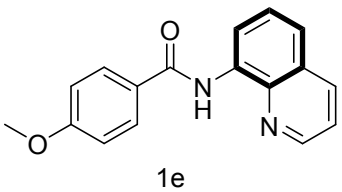
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.69 (s, 1H), 8.93 (dd, *J* = 7.7, 1.3 Hz, 1H), 8.80 - 8.75 (m, 1H), 8.12 - 8.04 (m, 1H), 8.00 (d, *J* = 7.9 Hz, 2H), 7.59 - 7.49 (m, 1H), 7.48 - 7.42 (m, 1H), 7.41 - 7.35 (m, 1H), 7.33 (d, *J* = 8.1 Hz, 2H), 2.70 (q, *J* = 7.6 Hz, 2H), 1.26 (t, *J* = 6.1 Hz, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.34, 148.49, 148.13, 138.56, 136.30, 134.55, 132.42, 128.22, 127.87, 127.33, 121.59, 121.51, 116.36, 28.79, 15.32. **HRMS** (ESI) Calcd for $C_{18}H_{17}N_2O$ $[M+H]^+$: 277.1335; found: 277.1356.



1d

4-(*tert*-butyl)-*N*-(quinolin-8-yl)benzamide (1d):

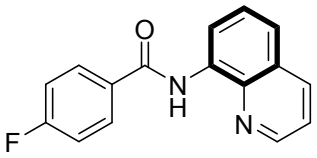
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.74 (s, 1H), 8.94 (dd, *J* = 7.6, 1.4 Hz, 1H), 8.84 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.19 (dd, *J* = 8.3, 1.7 Hz, 1H), 8.07 – 8.02 (m, 2H), 7.62 – 7.53 (m, 4H), 7.48 (dd, *J* = 8.3, 4.2 Hz, 1H), 1.38 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.66, 155.50, 148.26, 138.75, 136.69, 134.76, 132.41, 128.15, 127.68, 127.31, 125.87, 121.77, 121.70, 116.82, 35.15, 31.32. **HRMS** (ESI) Calcd for $C_{20}H_{21}N_2O$ $[M+H]^+$: 305.1648; found: 305.1661.



1e

4-methoxy-*N*-(quinolin-8-yl)benzamide (1e):

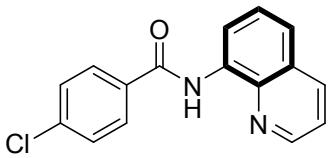
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.62 (s, 1H), 8.90 (dd, *J* = 7.7, 1.2 Hz, 1H), 8.78 (dd, *J* = 4.2, 1.9 Hz, 1H), 8.08 (dq, *J* = 8.5, 1.7 Hz, 1H), 8.05 – 7.99 (m, 2H), 7.52 (td, *J* = 8.0, 1.4 Hz, 1H), 7.44 (dq, *J* = 8.3, 1.3 Hz, 1H), 7.41 - 7.35 (m, 1H), 7.01 – 6.95 (m, 2H), 3.84 – 3.80 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.86, 162.47, 148.15, 138.64, 136.30, 134.69, 129.10, 127.92, 127.38, 127.32, 121.60, 121.38, 116.26, 113.93, 55.40. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O_2$ $[M+H]^+$: 279.1128; found: 279.1112.



1f

4-fluoro-*N*-(quinolin-8-yl)benzamide (1f):

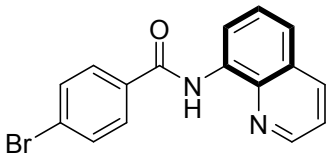
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.70 (s, 1H), 8.90 (dd, *J* = 7.4, 1.6 Hz, 1H), 8.85 (dd, *J* = 4.3, 1.7 Hz, 1H), 8.20 (dd, *J* = 8.3, 1.6 Hz, 1H), 8.15 – 8.07 (m, 2H), 7.63 – 7.54 (m, 2H), 7.49 (dd, *J* = 8.3, 4.3 Hz, 1H), 7.25 – 7.19 (m, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 166.37, 164.53, 163.86, 148.31, 138.64, 136.82, 134.45, 131.38 (d, *J* = 3.0 Hz), 129.89, 129.79, 128.15, 127.66, 121.99, 121.85, 116.96, 116.08, 115.86. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O$ $[M+H]^+$: 267.0928; found: 267.0937.



1g

4-chloro-*N*-(quinolin-8-yl)benzamide (1g):

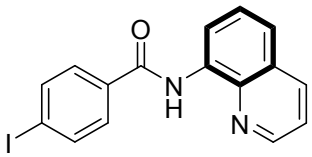
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.61 (s, 1H), 8.84 (t, *J* = 7.7 Hz, 1H), 8.76 (brs, 1H), 8.07 (t, *J* = 7.2 Hz, 1H), 7.93 (7, *J* = 7.8 Hz, 2H), 7.59 - 7.34 (m, 5H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.07, 148.25, 138.51, 138.00, 136.32, 134.19, 133.31, 128.93, 128.62, 127.85, 127.31, 121.85, 121.69, 116.47. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O$ $[M+H]^+$: 283.0633; found: 283.0653.



1h

4-bromo-*N*-(quinolin-8-yl)benzamide (1h):

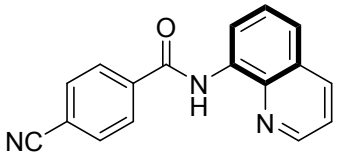
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.70 (s, 1H), 8.89 (dd, *J* = 7.4, 1.6 Hz, 1H), 8.83 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.17 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.96 – 7.91 (m, 2H), 7.70 – 7.63 (m, 2H), 7.61 – 7.51 (m, 2H), 7.47 (dd, *J* = 8.3, 4.3 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.43, 148.32, 138.62, 136.55, 134.27, 133.94, 132.04, 128.92, 128.00, 127.48, 126.64, 121.98, 121.79, 116.72. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O$ $[M+H]^+$: 327.0128; found: 327.0141.



1i

4-iodo-*N*-(quinolin-8-yl)benzamide (1i):

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.70 (s, 1H), 8.89 (dd, *J* = 7.3, 1.7 Hz, 1H), 8.84 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.18 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.92 – 7.86 (m, 2H), 7.82 – 7.77 (m, 2H), 7.61 – 7.53 (m, 2H), 7.48 (dd, *J* = 8.3, 4.3 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.75, 148.40, 138.73, 138.13, 136.67, 134.66, 134.38, 128.99, 128.12, 127.60, 122.06, 121.86, 116.89, 99.08. **HRMS** (ESI) Calcd for $C_{16}H_{12}IN_2O$ $[M+H]^+$: 374.9989; found: 374.9998.

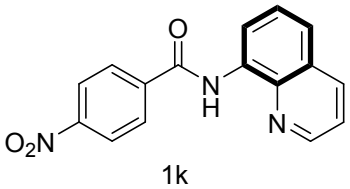


1j

4-cyano-*N*-(quinolin-8-yl)benzamide (1j):

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.80 (s, 1H), 8.90 (dd, *J* = 6.3, 2.7 Hz, 1H), 8.86 (dd, *J* = 4.3, 1.7 Hz, 1H), 8.23 (dd, *J* = 8.3, 1.7 Hz, 1H), 8.19 – 8.15 (m, 2H), 7.86 – 7.82 (m, 2H), 7.65 – 7.57 (m, 2H), 7.52 (dd, *J* = 8.3, 4.3 Hz, 1H).

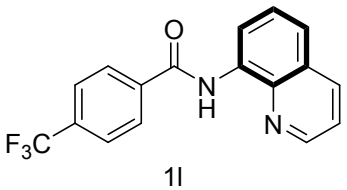
^{13}C NMR (101 MHz, $CDCl_3$) δ 163.50, 148.39, 138.94, 138.50, 136.80, 133.88, 133.02, 132.67, 128.06, 128.02, 127.54, 127.51, 122.48, 121.91, 118.10, 117.13, 115.37. **HRMS** (ESI) Calcd for $C_{17}H_{12}N_3O$ $[M+H]^+$: 274.0975; found: 274.0953.



1k

4-nitro-*N*-(quinolin-8-yl)benzamide (1k):

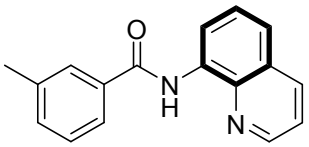
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.83 (s, 1H), 8.91 (dd, *J* = 6.1, 2.8 Hz, 1H), 8.87 (dd, *J* = 4.3, 1.7 Hz, 1H), 8.43 – 8.36 (m, 2H), 8.28 – 8.20 (m, 3H), 7.66 – 7.59 (m, 2H), 7.53 (dd, *J* = 8.3, 4.3 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 163.36, 149.90, 148.56, 140.70, 138.64, 136.88, 133.98, 128.62, 128.18, 127.61, 124.17, 122.67, 122.06, 117.23. **HRMS** (ESI) Calcd for $C_{16}H_{12}N_3O_3$ $[M+H]^+$: 294.0873; found: 294.0861.



1l

***N*-(quinolin-8-yl)-4-(trifluoromethyl)benzamide (1l):**

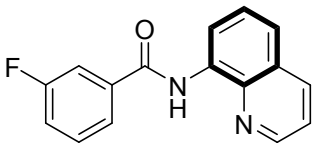
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.79 (s, 1H), 8.97 – 8.80 (m, 2H), 8.18 (t, *J* = 7.5 Hz, 3H), 7.80 (t, *J* = 8.0 Hz, 2H), 7.66 - 7.44 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.19, 148.49, 138.67, 138.45, 136.73, 134.18, 133.70, 133.39, 128.11, 127.89, 127.57, 125.97 (q, *J* = 3.1 Hz), 125.18, 122.47, 122.34, 121.95, 116.99. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -62.87. **HRMS** (ESI) Calcd for $C_{17}H_{12}F_3N_2O$ $[M+H]^+$: 317.0896; found: 317.0912.



1m

3-Methyl-*N*-(quinolin-8-yl)benzamide (1m):

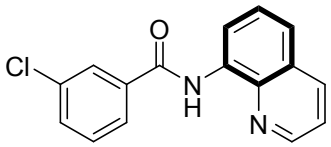
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.70 (s, 1H), 8.94 (dd, *J* = 7.6, 1.4 Hz, 1H), 8.83 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.14 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.91 – 7.84 (m, 2H), 7.61 – 7.49 (m, 2H), 7.47 – 7.35 (m, 3H), 2.47 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.72, 148.33, 138.79, 138.72, 136.42, 135.16, 134.66, 132.68, 128.70, 128.10, 128.02, 127.49, 124.27, 121.73, 121.70, 116.56, 21.56. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O$ $[M+H]^+$: 263.1179; found: 263.1188.



1n

3-Fluoro-*N*-(quinolin-8-yl)benzamide (1n):

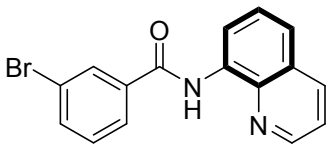
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.71 (s, 1H), 8.90 (dd, *J* = 7.3, 1.7 Hz, 1H), 8.84 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.17 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.85 (dt, *J* = 7.7, 1.2 Hz, 1H), 7.78 (ddd, *J* = 9.4, 2.6, 1.7 Hz, 1H), 7.61 – 7.50 (m, 3H), 7.49 – 7.44 (m, 1H), 7.31 – 7.23 (m, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.18, 164.06 (d, *J* = 2.7 Hz), 148.39, 138.63, 137.41, 137.34, 136.52, 134.22 , 130.53, 130.46, 127.99, 127.45, 122.75 (d, *J* = 2.9 Hz), 122.05, 121.82, 119.01, 118.80, 116.72, 114.85, 114.62. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -111.50. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O$ $[M+H]^+$: 267.0928; found: 267.0942.



1o

3-Chloro-*N*-(quinolin-8-yl)benzamide (1o):

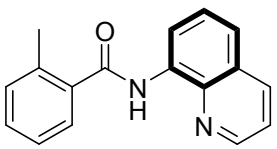
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.64 (s, 1H), 8.87 (dd, *J* = 7.4, 1.6 Hz, 1H), 8.81 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.12 (dd, *J* = 8.3, 1.7 Hz, 1H), 8.03 (t, *J* = 1.9 Hz, 1H), 7.90 (dt, *J* = 7.6, 1.5 Hz, 1H), 7.59 – 7.47 (m, 3H), 7.47 – 7.38 (m, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 163.88, 148.40, 138.63, 136.84, 136.41, 135.00, 134.20, 131.87, 130.08, 127.93, 127.72, 127.37, 125.23, 122.04, 121.80, 116.65. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O$ $[M+H]^+$: 283.0633; found: 283.0629.



1p

3-Bromo-*N*-(quinolin-8-yl)benzamide (1p):

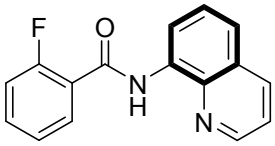
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.69 (s, 1H), 8.90 (dd, *J* = 7.2, 1.8 Hz, 1H), 8.86 (dd, *J* = 4.3, 1.6 Hz, 1H), 8.23 – 8.18 (m, 2H), 7.99 (dt, *J* = 7.8, 1.4 Hz, 1H), 7.70 (ddd, *J* = 8.0, 2.0, 1.0 Hz, 1H), 7.62 – 7.55 (m, 2H), 7.50 (dd, *J* = 8.3, 4.3 Hz, 1H), 7.42 (t, *J* = 7.9 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 164.07, 148.42, 138.64, 137.17, 136.77, 134.94, 134.25, 130.77, 130.44, 128.12, 127.60, 125.86, 123.16, 122.21, 121.90, 117.07. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O$ $[M+H]^+$: 327.0128; found: 327.0138.



1q

2-Methyl-*N*-(quinolin-8-yl)benzamide (1q):

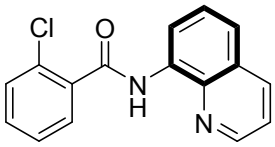
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.27 (s, 1H), 9.01 (t, *J* = 6.9 Hz, 1H), 8.75 (brs, 1H), 8.10 (t, *J* = 7.3 Hz, 1H), 7.71 (t, *J* = 7.0 Hz, 1H), 7.64 - 7.47 (m, 2H), 7.40 (t, *J* = 7.1 Hz, 2H), 7.31 (t, *J* = 7.3 Hz, 2H), 2.65 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 167.99, 148.09, 138.30, 136.54, 136.38, 136.24, 134.51, 131.28, 130.25, 127.80, 127.20, 127.10, 125.91, 121.72, 121.54, 116.34, 20.17. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O$ $[M+H]^+$: 263.1179; found: 263.1181.



1r

2-Fluoro-*N*-(quinolin-8-yl)benzamide (1r):

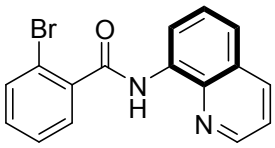
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 11.03 (d, *J* = 12.5 Hz, 1H), 8.86 (dd, *J* = 7.5, 1.5 Hz, 1H), 8.73 (dd, *J* = 4.3, 1.6 Hz, 1H), 8.11 (td, *J* = 7.8, 1.9 Hz, 1H), 8.02 (dd, *J* = 8.3, 1.6 Hz, 1H), 7.49 – 7.38 (m, 3H), 7.32 (dd, *J* = 8.3, 4.2 Hz, 1H), 7.21 (td, *J* = 7.6, 1.1 Hz, 1H), 7.16 – 7.08 (m, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 161.81, 161.65, 161.62, 159.33, 148.50, 138.75, 136.30, 134.81, 133.68, 133.59, 132.03 (d, *J* = 2.0 Hz), 127.98, 127.38, 124.89 (d, *J* = 3.4 Hz), 122.11, 121.98, 121.71, 117.25, 116.49, 116.25. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O$ $[M+H]^+$: 267.0928; found: 267.0938.



1s

2-Chloro-*N*-(quinolin-8-yl)benzamide (1s):

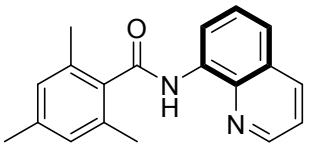
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.49 (s, 1H), 8.96 (dd, *J* = 7.3, 1.7 Hz, 1H), 8.79 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.18 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.83 – 7.79 (m, 1H), 7.63 – 7.55 (m, 2H), 7.52 – 7.48 (m, 1H), 7.47 – 7.37 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.05, 148.43, 138.62, 136.56, 135.91, 134.46, 131.63, 131.27, 130.62, 130.14, 128.10, 127.53, 127.27, 122.29, 121.83, 117.11. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O$ $[M+H]^+$: 283.0633; found: 283.0624.



1t

2-Bromo-*N*-(quinolin-8-yl)benzamide (1t):

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.30 (s, 1H), 8.95 (dd, *J* = 7.3, 1.7 Hz, 1H), 8.77 (dd, *J* = 4.3, 1.7 Hz, 1H), 8.16 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.71 (dd, *J* = 7.6, 1.8 Hz, 1H), 7.67 (dd, *J* = 8.0, 1.2 Hz, 1H), 7.62 – 7.57 (m, 1H), 7.57 - 7.53 (m, 1H), 7.47 – 7.40 (m, 2H), 7.33 (td, *J* = 7.8, 1.8 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.94, 148.36, 138.54, 138.33, 136.44, 134.32, 133.70, 131.52, 129.55, 128.02, 127.68, 127.42, 122.24, 121.76, 119.73, 116.96. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O$ $[M+H]^+$: 327.0128; found: 327.0125.

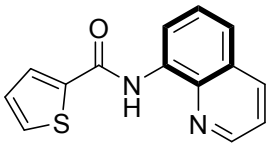


1u

2,4,6-Trimethyl-*N*-(quinolin-8-yl)benzamide (1u):

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.94 (s, 1H), 9.00 (dd, *J* = 7.4, 1.5 Hz, 1H), 8.73 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.18 (dd, *J* = 8.3, 1.7 Hz, 1H),

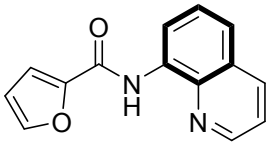
7.64 – 7.54 (m, 2H), 7.44 (dd, *J* = 8.3, 4.2 Hz, 1H), 6.94 (s, 2H), 2.41 (s, 6H), 2.34 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 169.16, 148.20, 138.78, 138.48, 136.44, 135.40, 134.56, 134.51, 128.45, 128.05, 127.49, 121.85, 121.64, 116.82, 21.17, 19.44. **HRMS** (ESI) Calcd for $C_{19}H_{19}N_2O$ $[M+H]^+$: 291.1492; found: 291.1505.



1v

***N*-(quinolin-8-yl)thiophene-2-carboxamide (1v):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.45 (s, 1H), 8.77 (dd, *J* = 7.6, 1.5 Hz, 1H), 8.71 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.00 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.72 (dd, *J* = 3.8, 1.2 Hz, 1H), 7.51 (dd, *J* = 5.0, 1.2 Hz, 1H), 7.45 (t, *J* = 7.9 Hz, 1H), 7.41 - 7.36 (m, 1H), 7.31 (dd, *J* = 8.2, 4.2 Hz, 1H), 7.09 (dd, *J* = 5.0, 3.7 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 159.70, 148.12, 139.87, 138.13, 136.11, 134.00, 130.87, 128.21, 127.80, 127.69, 127.11, 121.55, 116.15. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2OS$ $[M+H]^+$: 255.0587; found: 255.0587.



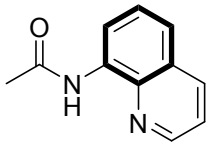
1w

***N*-(quinolin-8-yl)furan-2-carboxamide (1w):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.73 (s, 1H), 8.88 – 8.81 (m, 2H), 8.12 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.59 (d, *J* = 2.1 Hz, 1H), 7.57 – 7.46 (m, 2H), 7.42 (dd, *J* = 8.3, 4.2 Hz, 1H), 7.29 (dd, *J* = 3.5, 0.9 Hz, 1H), 6.56 (dd, *J* = 3.5, 1.8 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 156.37, 148.39,

148.36, 144.56, 138.57, 136.35, 134.15, 127.99, 127.36, 121.84, 121.71, 116.66, 115.12, 112.45. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2O_2$ $[M+H]^+$: 239.0815; found: 239.0823.

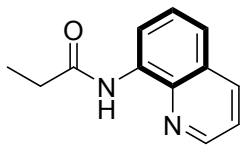
8.2 Characterization Data of **3**



3a

***N*-(quinolin-8-yl)acetamide (3a):**

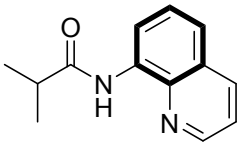
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.83 – 8.72 (m, 2H), 8.14 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.55 – 7.46 (m, 2H), 7.46 - 7.41 (m, 1H), 2.34 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 168.88, 148.16, 138.26, 136.53, 134.58, 128.01, 127.51, 121.68, 121.55, 116.55, 25.23. **HRMS** (ESI) Calcd for $C_{11}H_{11}N_2O$ $[M+H]^+$: 187.0866; found: 187.0863.



3b

***N*-(quinolin-8-yl)propionamide (3b):**

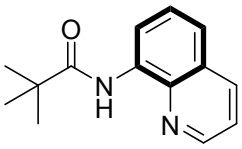
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.84 (s, 1H), 8.83 – 8.76 (m, 2H), 8.16 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.56 – 7.47 (m, 2H), 7.45 (dd, *J* = 8.3, 4.3 Hz, 1H), 2.60 (q, *J* = 7.6 Hz, 2H), 1.34 (t, *J* = 7.6 Hz, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 172.67, 148.12, 138.32, 136.68, 134.63, 128.09, 127.64, 121.67, 121.47, 116.68, 31.37, 9.88. **HRMS** (ESI) Calcd for $C_{12}H_{13}N_2O$ $[M+H]^+$: 201.1022; found: 201.1036.



3c

***N*-(quinolin-8-yl)isobutyramide (3c):**

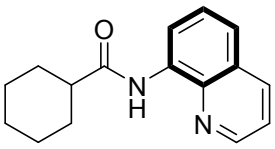
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.92 (s, 1H), 8.81 (d, *J* = 1.6 Hz, 1H), 8.80 (dd, *J* = 3.3, 1.6 Hz, 1H), 8.16 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.56 – 7.47 (m, 2H), 7.45 (dd, *J* = 8.3, 4.2 Hz, 1H), 2.78 (hept, *J* = 6.9 Hz, 1H), 1.36 (s, 3H), 1.34 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.92, 148.17, 138.49, 136.63, 134.72, 128.08, 127.63, 121.67, 121.44, 116.64, 37.26, 19.86. **HRMS** (ESI) Calcd for $C_{13}H_{15}N_2O$ $[M+H]^+$: 215.1179; found: 215.1190.



3d

***N*-(quinolin-8-yl)pivalamide (3d):**

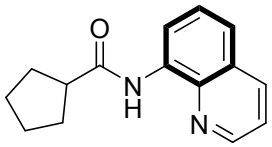
Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 10.28 (s, 1H), 8.81 (dd, *J* = 3.4, 1.6 Hz, 1H), 8.79 (d, *J* = 1.6 Hz, 1H), 8.12 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.54 – 7.44 (m, 2H), 7.42 (dd, *J* = 8.3, 4.2 Hz, 1H), 1.43 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 177.34, 148.26, 138.77, 136.42, 134.71, 127.97, 127.49, 121.60, 121.33, 116.29, 40.42, 27.81. **HRMS** (ESI) Calcd for $C_{14}H_{17}N_2O$ $[M+H]^+$: 229.1335; found: 229.1332.



3e

***N*-(quinolin-8-yl)cyclohexanecarboxamide (3e):**

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.91 (s, 1H), 8.83 – 8.78 (m, 2H), 8.16 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.56 – 7.43 (m, 3H), 2.49 (tt, *J* = 11.7, 3.5 Hz, 1H), 2.12 – 2.05 (m, 2H), 1.91 - 1.83 (m, 2H), 1.76 – 1.71 (m, 1H), 1.69 - 1.57 (m, 2H), 1.45 - 1.27 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.01, 148.01, 138.33, 136.60, 134.59, 127.99, 127.56, 121.56, 121.32, 116.62, 46.91, 29.78, 25.77. **HRMS** (ESI) Calcd for $C_{16}H_{19}N_2O$ $[M+H]^+$: 255.1492; found: 255.1495.

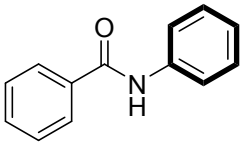


3f

***N*-(quinolin-8-yl)cyclopentanecarboxamide (3f):**

Purified by recrystallization from ethyl acetate. **^{1}H NMR** (400 MHz, $CDCl_3$) δ 9.87 (s, 1H), 8.82 – 8.76 (m, 2H), 8.13 (dd, *J* = 8.3, 1.7 Hz, 1H), 7.54 – 7.49 (m, 1H), 7.48 - 7.44 (m, 1H), 7.42 (dd, *J* = 8.3, 4.2 Hz, 1H), 2.94 (p, *J* = 8.1 Hz, 1H), 2.08 – 1.94 (m, 4H), 1.89 – 1.77 (m, 2H), 1.73 – 1.61 (m, 2H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.20, 148.12, 138.38, 136.48, 134.76, 128.00, 127.53, 121.61, 121.30, 116.44, 47.45, 30.69, 26.09. **HRMS** (ESI) Calcd for $C_{15}H_{17}N_2O$ $[M+H]^+$: 241.1335; found: 241.1345.

8.3 Characterization Data of **5**

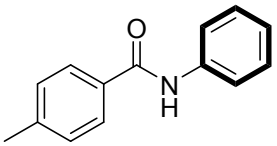


5a

***N*-phenylbenzamide (5a):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 16/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.95 (s, 1H), 7.88 – 7.84 (m, 2H), 7.67 – 7.62 (m, 2H), 7.56 – 7.51

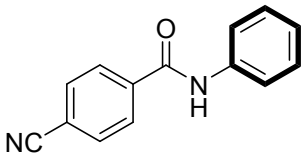
(m, 1H), 7.49 – 7.43 (m, 2H), 7.39 – 7.33 (m, 2H), 7.18 – 7.13 (m, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.96, 138.07, 135.13, 131.95, 129.21, 128.90, 127.17, 124.71, 120.40. **HRMS** (ESI) Calcd for $C_{13}H_{12}NO$ $[M+H]^+$: 198.0913; found: 198.0922.



5b

4-Methyl-*N*-phenylbenzamide (5b):

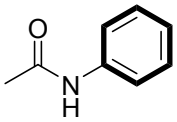
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 16/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.87 (s, 1H), 7.79 – 7.74 (m, 2H), 7.66 – 7.61 (m, 2H), 7.39 – 7.33 (m, 2H), 7.29 - 7.27 (m, 1H), 7.17 – 7.11 (m, 1H), 2.42 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.73, 142.38, 138.07, 132.14, 129.44, 129.08, 127.06, 124.45, 120.21, 21.51. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO$ $[M+H]^+$: 212.1070; found: 212.1072.



5c

4-Cyano-*N*-phenylbenzamide (5c):

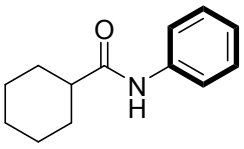
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.99 – 7.94 (m, 2H), 7.89 (s, 1H), 7.80 – 7.75 (m, 2H), 7.62 (d, J = 7.8 Hz, 2H), 7.42 – 7.36 (m, 2H), 7.20 (tt, J = 7.6, 1.2 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 163.94, 138.90, 137.28, 132.65, 129.26, 127.80, 125.29, 120.43, 117.90, 115.43. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2O$ $[M+H]^+$: 223.0866; found: 223.0879.



5d

***N*-phenylacetamide (5d):**

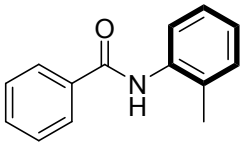
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.64 (s, 1H), 7.54 – 7.46 (m, 2H), 7.30 (t, *J* = 8.0 Hz, 2H), 7.14 – 7.06 (m, 1H), 2.16 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 168.74, 138.04, 129.08, 124.44, 120.12, 24.63. **HRMS** (ESI) Calcd for $C_8H_{10}NO$ $[M+H]^+$: 135.0684; found: 135.0691.



5e

***N*-phenylcyclohexanecarboxamide (5e):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.53 (d, *J* = 7.8 Hz, 2H), 7.33 – 7.27 (m, 3H), 7.12 – 7.05 (m, 1H), 2.23 (tt, *J* = 11.8, 3.5 Hz, 1H), 1.99 – 1.92 (m, 2H), 1.86 - 1.80 (m, 2H), 1.73 – 1.66 (m, 1H), 1.60 - 1.48 (m, 2H), 1.35 – 1.23 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 174.55, 138.24, 129.08, 124.20, 119.91, 46.68, 29.80, 25.80. **HRMS** (ESI) Calcd for $C_{13}H_{18}NO$ $[M+H]^+$: 204.1383; found: 204.1371.

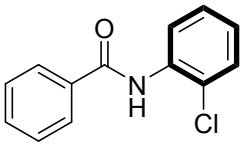


5f

***N*-(*o*-tolyl)benzamide (5f)**:

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 16/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.95 (d, *J* = 8.1 Hz, 1H), 7.91 – 7.87 (m, 2H), 7.70 (s, 1H), 7.60 –

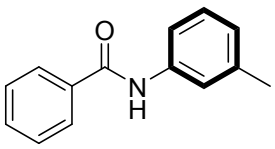
7.54 (m, 1H), 7.53 – 7.47 (m, 2H), 7.29 – 7.22 (m, 2H), 7.13 (td, *J* = 7.5, 1.3 Hz, 1H), 2.34 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.68, 135.79, 135.04, 131.88, 130.59, 129.24, 128.87, 127.07, 126.94, 125.39, 123.14, 17.86. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO$ $[M+H]^+$: 212.1070; found: 212.1079.



5g

***N*-(2-chlorophenyl)benzamide (5g)**:

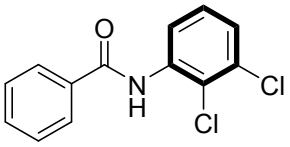
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 16/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.56 (dd, *J* = 8.3, 1.6 Hz, 1H), 8.46 (s, 1H), 7.94 – 7.90 (m, 2H), 7.60 – 7.55 (m, 1H), 7.51 (tt, *J* = 6.6, 1.8 Hz, 2H), 7.41 (dd, *J* = 8.0, 1.5 Hz, 1H), 7.36 - 7.30 (m, 1H), 7.08 (td, *J* = 7.7, 1.6 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.29, 134.77, 134.63, 132.21, 129.05, 128.96, 127.90, 127.12, 124.79, 123.11, 121.58. **HRMS** (ESI) Calcd for $C_{13}H_{11}NOCl$ $[M+H]^+$: 232.0524; found: 232.0532.



5h

***N*-(*m*-tolyl)benzamide (5h)**:

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 16/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 7.89 – 7.80 (m, 4H), 7.56 – 7.51 (m, 1H), 7.48 - 7.42 (m, 2H), 7.24 – 7.18 (m, 2H), 7.10 (td, *J* = 7.3, 6.9, 1.3 Hz, 1H), 2.29 (s, 3H).^{13}C NMR (101 MHz, $CDCl_3$) δ 165.84, 135.79, 134.93, 131.86, 130.60, 129.80, 128.82, 127.15, 126.84, 125.51, 123.51, 17.90. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO$ $[M+H]^+$: 212.1070; found: 212.1074.

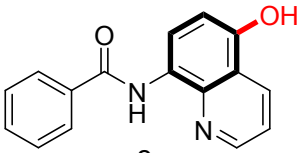


5i

***N*-(2,3-dichlorophenyl)benzamide (5i)**:

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). **^{1}H NMR** (400 MHz, $CDCl_3$) δ 8.58 – 8.46 (m, 2H), 7.95 – 7.89 (m, 2H), 7.63 – 7.57 (m, 1H), 7.56 – 7.50 (m, 2H), 7.31 – 7.23 (m, 2H).^{13}C NMR (101 MHz, $CDCl_3$) δ 165.34, 136.40, 134.37, 132.77, 132.43, 129.05, 127.99, 127.14, 125.37, 121.61, 119.43. **HRMS** (ESI) Calcd for $C_{13}H_{10}NOCl_2$ $[M+H]^+$: 266.0134; found: 266.0142.

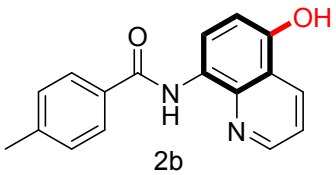
8.4 Characterization Data of **2**



2a

***N*-(5-hydroxyquinolin-8-yl)benzamide (2a)**[2]**:**

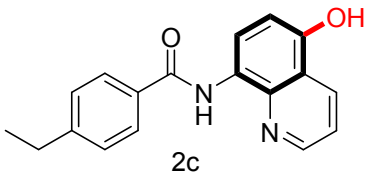
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 45.9 mg, 87%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.40 (s, 1H), 10.35 (s, 1H), 8.94 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.50 (d, J = 8.4 Hz, 1H), 8.06 – 7.98 (m, 2H), 7.65 – 7.57 (m, 4H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.52, 149.85, 149.45, 140.05, 135.29, 132.24, 131.93, 129.40, 127.39, 126.53, 121.34, 120.09, 118.91, 108.52. **HRMS** (ESI) Calcd for $C_{16}H_{13}N_2O_2$ $[M+H]^+$: 265.0972; found: 265.0953.



2b

***N*-(5-hydroxyquinolin-8-yl)-4-methylbenzamide (2b)**[2]**:**

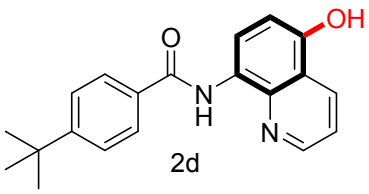
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 49.5 mg, 89%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.39 (s, 1H), 10.31 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.50 (d, J = 8.4 Hz, 1H), 7.93 - 7.89 (m, 2H), 7.60 (dd, J = 8.5, 4.2 Hz, 1H), 7.40 (d, J = 8.1 Hz, 2H), 6.97 (d, J = 8.4 Hz, 1H), 2.41 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.37, 149.84, 149.30, 142.30, 139.96, 132.45, 131.93, 129.93, 127.40, 126.59, 121.35, 120.07, 118.73, 108.52, 21.51. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O_2$ $[M+H]^+$: 279.1128; found: 279.1103.



2c

4-Ethyl-*N*-(5-hydroxyquinolin-8-yl)benzamide (2c):

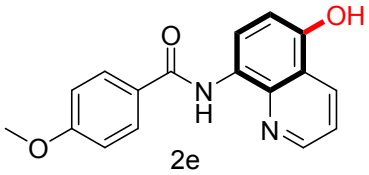
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 51.4 mg, 88%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.40 (s, 1H), 10.31 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.50 (d, J = 8.4 Hz, 1H), 7.93 (d, J = 8.2 Hz, 2H), 7.60 (dd, J = 8.4, 4.2 Hz, 1H), 7.43 (d, J = 8.2 Hz, 2H), 6.97 (d, J = 8.4 Hz, 1H), 2.71 (q, J = 7.6 Hz, 2H), 1.23 (t, J = 7.6 Hz, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.42, 149.83, 149.29, 148.42, 139.94, 132.76, 131.93, 128.77, 127.49, 126.61, 121.35, 120.07, 118.68, 108.52, 28.55, 15.82. **HRMS** (ESI) Calcd for $C_{18}H_{17}N_2O_2$ $[M+H]^+$: 293.1285; found: 293.1245.



2d

4-(*tert*-butyl)-*N*-(5-hydroxyquinolin-8-yl)benzamide (2d):

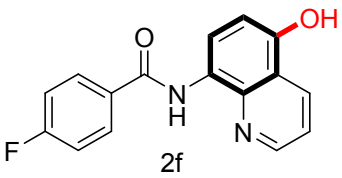
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 51.9 mg, 81%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.40 (s, 1H), 10.32 (s, 1H), 8.94 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.52 (d, J = 8.4 Hz, 1H), 7.94 (dt, J = 8.8, 2.0 Hz, 2H), 7.63 - 7.56 (m, 3H), 6.97 (d, J = 8.4 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.41, 155.12, 149.81, 149.27, 139.89, 132.58, 131.94, 127.22, 126.62, 126.20, 121.35, 120.07, 118.54, 108.52, 35.19, 31.39. **HRMS** (ESI) Calcd for $C_{20}H_{21}N_2O_2$ $[M+H]^+$: 321.1598; found: 321.1587.



2e

***N*-(5-hydroxyquinolin-8-yl)-4-methoxybenzamide (2e)[2]:**

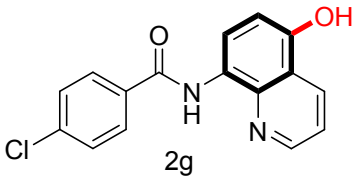
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 15/1). White solid, 46.5 mg, 79%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.38 (s, 1H), 10.27 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.48 (d, J = 8.4 Hz, 1H), 8.01 – 7.96 (m, 2H), 7.61 (dd, J = 8.4, 4.2 Hz, 1H), 7.17 – 7.10 (m, 2H), 6.97 (d, J = 8.4 Hz, 1H), 3.86 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.03, 162.47, 149.79, 149.18, 139.97, 131.92, 129.28, 127.41, 126.71, 121.32, 120.07, 118.66, 114.62, 108.54, 55.95. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O_3$ $[M+H]^+$: 295.1077; found: 295.1067.



2f

4-Fluoro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2f)[2]**:**

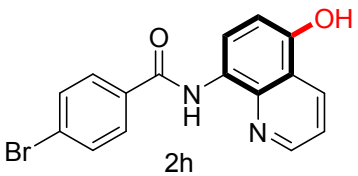
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 44.0 mg, 78%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.32 (s, 1H), 8.94 (dd, J = 4.1, 1.6 Hz, 1H), 8.58 (dd, J = 8.4, 1.5 Hz, 1H), 8.43 (d, J = 8.4 Hz, 1H), 8.13 - 8.05 (m, 2H), 7.60 (dd, J = 8.4, 4.2 Hz, 1H), 7.42 (t, J = 8.8 Hz, 2H), 6.97 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 165.84, 163.63, 163.37, 149.89, 149.62, 140.28, 131.90, 131.80, 131.77, 130.25, 130.16, 126.43, 121.33, 120.08, 119.49, 116.42, 116.21, 108.47. ^{19}F NMR (376 MHz, DMSO-d_6) δ -108.64. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O_2$ $[M+H]^+$: 283.0877; found: 283.0883.



2g

4-Chloro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2g)[2]**:**

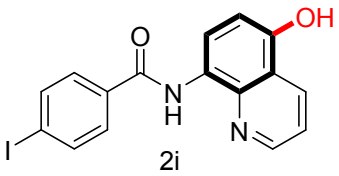
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 50.1 mg, 84%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.45 (s, 1H), 10.36 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.44 (d, J = 8.3 Hz, 1H), 8.04 (d, J = 8.6 Hz, 2H), 7.67 (d, J = 8.6 Hz, 2H), 7.61 (dd, J = 8.4, 4.2 Hz, 1H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.61, 149.93, 149.73, 140.31, 137.01, 134.01, 131.91, 129.46, 129.42, 126.33, 121.35, 120.08, 119.63, 108.47. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O_2$ $[M+H]^+$: 299.0582; found: 299.0588.



2h

4-Bromo-*N*-(5-hydroxyquinolin-8-yl)benzamide (2h)[2]**:**

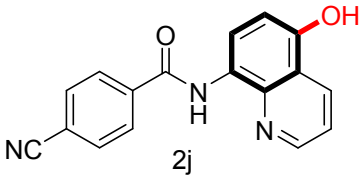
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 52.9 mg, 76%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.36 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.59 (dd, J = 8.5, 1.7 Hz, 1H), 8.44 (d, J = 8.4 Hz, 1H), 7.99 – 7.92 (m, 2H), 7.84 – 7.78 (m, 2H), 7.61 (dd, J = 8.4, 4.2 Hz, 1H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.72, 149.92, 149.73, 140.29, 134.37, 132.35, 131.91, 129.62, 126.32, 125.95, 121.35, 120.08, 119.59, 108.48. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O_2$ $[M+H]^+$: 343.0077; found: 343.0082.



2i

***N*-(5-hydroxyquinolin-8-yl)-4-iodobenzamide (2i)**[2]**:**

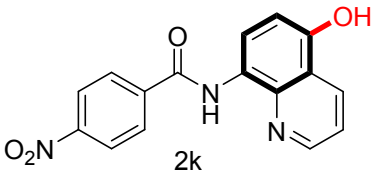
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 58.5 mg, 75%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.47 (s, 1H), 10.39 (s, 1H), 8.98 (dd, J = 4.2, 1.7 Hz, 1H), 8.62 (dd, J = 8.4, 1.7 Hz, 1H), 8.48 (d, J = 8.4 Hz, 1H), 8.02 (dt, J = 8.4, 1.6 Hz, 2H), 7.83 (dt, J = 8.4, 2.0 Hz, 2H), 7.64 (dd, J = 8.4, 4.2 Hz, 1H), 7.01 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.96, 149.91, 149.68, 140.23, 138.22, 134.66, 131.91, 129.41, 126.33, 121.35, 120.08, 119.47, 108.49, 99.94. **HRMS** (ESI) Calcd for $C_{16}H_{12}IN_2O_2$ $[M+H]^+$: 390.9938; found: 390.9935.



2j

4-Cyano-*N*-(5-hydroxyquinolin-8-yl)benzamide (2j)[2]**:**

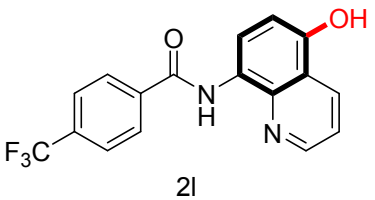
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Light yellow solid, 41.0 mg, 71%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.50 (s, 1H), 10.46 (s, 1H), 8.94 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.41 (d, J = 8.4 Hz, 1H), 8.17 (d, J = 8.4 Hz, 2H), 8.06 (dt, J = 8.5, 2.0 Hz, 2H), 7.60 (dd, J = 8.4, 4.2 Hz, 1H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.34, 150.08, 150.00, 140.51, 139.25, 133.35, 131.90, 128.45, 126.10, 121.36, 120.18, 120.09, 118.79, 114.42, 108.42. **HRMS** (ESI) Calcd for $C_{17}H_{12}N_3O_2$ $[M+H]^+$: 290.0924; found: 290.0903.



2k

***N*-(5-hydroxyquinolin-8-yl)-4-nitrobenzamide (2k):**

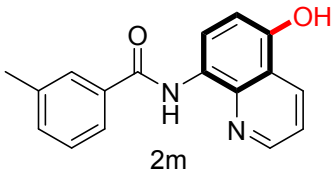
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 8/1). Light yellow solid, 40.8 mg, 66%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.51 - 10.49 (m, 2H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.59 (dd, J = 8.4, 1.7 Hz, 1H), 8.46 – 8.38 (m, 3H), 8.28 – 8.22 (m, 2H), 7.61 (dd, J = 8.5, 4.2 Hz, 1H), 6.99 (d, J = 8.3 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.15, 150.17, 150.03, 149.71, 140.89, 140.56, 131.91, 129.16, 126.10, 124.46, 121.38, 120.31, 120.11, 108.44. **HRMS** (ESI) Calcd for $C_{16}H_{12}N_3O_4$ $[M+H]^+$: 310.0822; found: 310.0836.



2l

***N*-(5-hydroxyquinolin-8-yl)-4-(trifluoromethyl)benzamide (2l):**

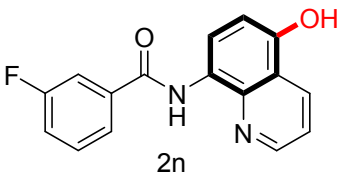
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 50.5 mg, 76%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.49 (s, 1H), 10.46 (s, 1H), 8.94 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.44 (d, J = 8.4 Hz, 1H), 8.21 (d, J = 8.1 Hz, 2H), 7.97 (d, J = 8.3 Hz, 2H), 7.60 (dd, J = 8.4, 4.2 Hz, 1H), 6.99 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.54, 149.96, 140.43, 139.05, 132.09, 131.91, 131.78, 128.51, 126.39, 126.36, 126.32, 126.28, 126.19, 125.75, 123.04, 121.37, 120.10, 119.96, 108.44. ^{19}F NMR (376 MHz, DMSO-d_6) δ -61.32. **HRMS** (ESI) Calcd for $C_{17}H_{12}F_3N_2O_2$ $[M+H]^+$: 333.0845; found: 333.0846.



2m

***N*-(5-hydroxyquinolin-8-yl)-3-methylbenzamide (2m)**[2]**:**

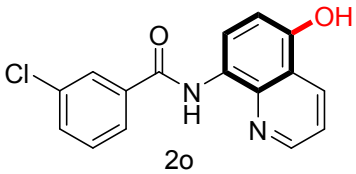
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 48.4 mg, 87%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.41 (s, 1H), 10.31 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.59 (dd, J = 8.5, 1.7 Hz, 1H), 8.50 (d, J = 8.4 Hz, 1H), 7.84 – 7.78 (m, 2H), 7.61 (dd, J = 8.4, 4.2 Hz, 1H), 7.53 – 7.42 (m, 2H), 6.98 (d, J = 8.4 Hz, 1H), 2.44 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.66, 149.88, 149.40, 140.02, 138.79, 135.32, 132.87, 131.93, 129.29, 127.97, 126.55, 124.43, 121.35, 120.07, 118.90, 108.50, 21.49. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O_2$ $[M+H]^+$: 279.1128; found: 279.1138.



2n

3-Fluoro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2n):

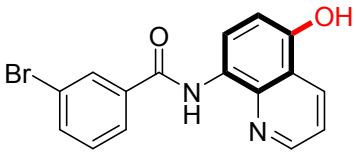
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 44.6 mg, 79%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.43 (s, 1H), 10.35 (s, 1H), 8.94 (s, 1H), 8.58 (d, J = 7.8 Hz, 1H), 8.42 (d, J = 8.0 Hz, 1H), 7.86 (d, J = 7.1 Hz, 1H), 7.79 (d, J = 9.2 Hz, 1H), 7.70 – 7.55 (m, 2H), 7.49 (t, J = 6.9 Hz, 1H), 6.98 (d, J = 8.1 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.93, 163.41, 161.49, 149.96, 149.85, 140.41, 137.78, 137.71, 131.88, 131.60, 131.52, 126.25, 123.48, 123.46, 121.33, 120.09, 119.86, 119.22, 119.01, 114.66, 114.44, 108.45.^{19}F NMR (376 MHz, DMSO-d_6) δ -112.02. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O_2$ $[M+H]^+$: 283.0877; found: 283.0878.



2o

3-Chloro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2o)[2]**:**

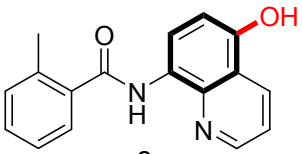
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 52.4 mg, 88%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.35 (s, 1H), 8.94 (dd, J = 4.3, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.40 (d, J = 8.4 Hz, 1H), 8.02 (t, J = 2.0 Hz, 1H), 7.97 (d, J = 7.8 Hz, 1H), 7.72 – 7.67 (m, 1H), 7.65 – 7.57 (m, 2H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.35, 149.96, 149.91, 140.51, 137.37, 134.12, 132.00, 131.87, 131.29, 127.52, 126.25, 126.10, 121.30, 120.10, 120.08, 108.45. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O_2$ $[M+H]^+$: 299.0582; found: 299.0599.



2p

3-Bromo-*N*-(5-hydroxyquinolin-8-yl)benzamide (2p):

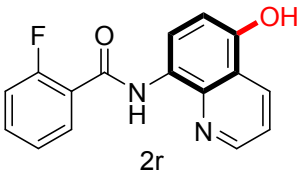
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 51.3 mg, 75%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.47 (s, 1H), 10.36 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.5, 1.7 Hz, 1H), 8.39 (d, J = 8.3 Hz, 1H), 8.17 (t, J = 1.9 Hz, 1H), 8.04 – 8.00 (m, 1H), 7.84 (ddd, J = 8.1, 2.1, 1.0 Hz, 1H), 7.62 – 7.53 (m, 2H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.28, 149.97, 149.93, 140.54, 137.53, 134.90, 131.87, 131.52, 130.40, 126.48, 126.24, 122.58, 121.30, 120.15, 120.10, 108.44. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O_2$ $[M+H]^+$: 343.0077; found: 343.0085.



2q

***N*-(5-hydroxyquinolin-8-yl)-2-methylbenzamide (2q):**

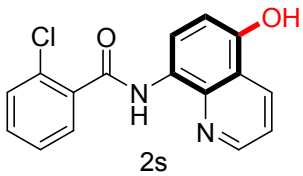
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 47.3 mg, 85%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.39 (s, 1H), 9.88 (s, 1H), 8.88 (dd, J = 4.2, 1.7 Hz, 1H), 8.57 (dd, J = 8.4, 1.7 Hz, 1H), 8.51 (d, J = 8.4 Hz, 1H), 7.63 (d, J = 7.1 Hz, 1H), 7.58 (dd, J = 8.4, 4.2 Hz, 1H), 7.44 (td, J = 7.5, 1.5 Hz, 1H), 7.38 - 7.33 (m, 2H), 6.98 (d, J = 8.4 Hz, 1H), 2.48 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 167.22, 149.80, 149.38, 139.79, 137.18, 136.15, 131.88, 131.53, 130.56, 127.33, 126.69, 126.55, 121.31, 120.05, 118.59, 108.45, 20.11. **HRMS** (ESI) Calcd for $C_{17}H_{15}N_2O_2$ $[M+H]^+$: 279.1128; found: 279.1133.



2r

2-Fluoro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2r)[2]:

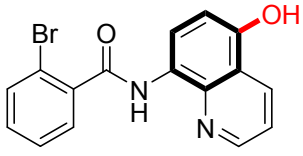
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 34.4 mg, 61%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.72 (d, J = 11.0 Hz, 1H), 10.45 (s, 1H), 8.93 (dd, J = 4.2, 1.7 Hz, 1H), 8.65 (d, J = 8.4 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.06 (td, J = 7.9, 1.9 Hz, 1H), 7.72 – 7.65 (m, 1H), 7.61 (dd, J = 8.4, 4.2 Hz, 1H), 7.50 – 7.39 (m, 2H), 6.97 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 161.3, 160.66 (d, J = 2.6 Hz), 158.94, 149.91, 149.44, 139.40, 134.44 (d, J = 9.2 Hz), 131.95, 131.70 (d, J = 1.6 Hz), 126.65, 125.75 (d, J = 3.0 Hz), 122.40, 122.28, 121.48, 120.02, 118.39, 117.15, 116.91, 108.54. **^{19}F NMR** (376 MHz, DMSO-d_6) δ -112.95. **HRMS** (ESI) Calcd for $C_{16}H_{12}FN_2O_2$ $[M+H]^+$:283.0877; found: 283.0872.



2s

2-Chloro-*N*-(5-hydroxyquinolin-8-yl)benzamide (2s)[2]**:**

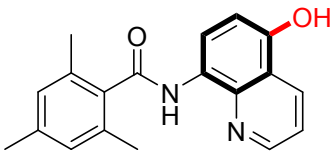
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 50.1 mg, 84%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.13 (s, 1H), 8.88 (dd, J = 4.2, 1.7 Hz, 1H), 8.57 (dd, J = 8.5, 1.7 Hz, 1H), 8.51 (d, J = 8.4 Hz, 1H), 7.76 (dd, J = 7.4, 1.9 Hz, 1H), 7.64 – 7.55 (m, 3H), 7.55 – 7.48 (m, 1H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.28, 149.87, 149.64, 139.80, 136.61, 132.12, 131.87, 130.56, 130.30, 129.96, 128.06, 126.40, 121.37, 120.03, 118.93, 108.44. **HRMS** (ESI) Calcd for $C_{16}H_{12}ClN_2O_2$ $[M+H]^+$: 299.0582; found: 299.0584.



2t

2-Bromo-*N*-(5-hydroxyquinolin-8-yl)benzamide (2t)[2]**:**

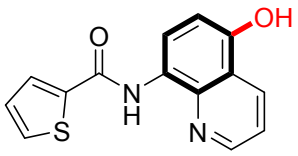
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). White solid, 52.7 mg, 77%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.00 (s, 1H), 8.87 (dd, J = 4.2, 1.7 Hz, 1H), 8.57 (dd, J = 8.4, 1.7 Hz, 1H), 8.50 (d, J = 8.4 Hz, 1H), 7.76 (dd, J = 7.9, 1.2 Hz, 1H), 7.70 (dd, J = 7.5, 1.8 Hz, 1H), 7.60 – 7.52 (m, 2H), 7.47 (td, J = 7.7, 1.8 Hz, 1H), 6.98 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 165.35, 149.86, 149.65, 139.80, 139.02, 133.60, 132.11, 131.87, 129.68, 128.49, 126.36, 121.37, 120.03, 119.31, 118.94, 108.42. **HRMS** (ESI) Calcd for $C_{16}H_{12}BrN_2O_2$ $[M+H]^+$: 343.0077; found: 343.0081.



2u

***N*-(5-hydroxyquinolin-8-yl)-2,4,6-trimethylbenzamide (2u):**

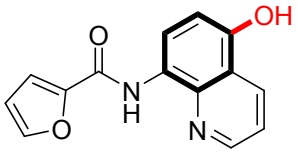
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). White solid, 48.4 mg, 79%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.45 (s, 1H), 9.66 (s, 1H), 8.82 (dd, J = 4.2, 1.7 Hz, 1H), 8.55 (dd, J = 8.5, 1.7 Hz, 1H), 8.45 (d, J = 8.4 Hz, 1H), 7.55 (dd, J = 8.5, 4.2 Hz, 1H), 6.97 (d, J = 8.3 Hz, 1H), 6.93 (s, 2H), 2.30-2.26 (m, 9H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 167.64, 149.47, 149.15, 139.63, 138.03, 135.64, 133.79, 131.44, 128.13, 126.03, 120.90, 119.68, 118.82, 108.06, 20.79, 19.02. **HRMS** (ESI) Calcd for $C_{19}H_{19}N_2O_2$ $[M+H]^+$: 307.1441; found: 307.1447.



2v

***N*-(5-hydroxyquinolin-8-yl)thiophene-2-carboxamide (2v):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Light yellow solid, 36.6 mg, 68%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.44 (s, 1H), 10.25 (s, 1H), 8.95 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.5, 1.7 Hz, 1H), 8.31 (d, J = 8.4 Hz, 1H), 7.96 (dd, J = 3.8, 1.1 Hz, 1H), 7.89 (dd, J = 5.0, 1.1 Hz, 1H), 7.60 (dd, J = 8.4, 4.2 Hz, 1H), 7.26 (dd, J = 5.0, 3.7 Hz, 1H), 6.97 (d, J = 8.4 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 159.55, 149.98, 149.77, 140.36, 140.18, 132.13, 131.88, 129.15, 128.85, 126.11, 121.33, 120.09, 120.02, 108.50. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2O_2S$ $[M+H]^+$: 271.0536; found: 271.0542.

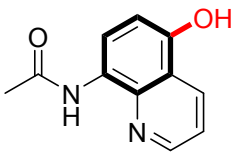


2w

***N*-(5-hydroxyquinolin-8-yl)furan-2-carboxamide (2w)[2]:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Light yellow solid, 33.0 mg, 65%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.43 (s, 1H), 10.38 (s, 1H), 8.97 (dd, J = 4.2, 1.7 Hz, 1H), 8.58 (dd, J = 8.4, 1.7 Hz, 1H), 8.52 (d, J = 8.4 Hz, 1H), 8.02 (dd, J = 1.6, 0.7 Hz, 1H), 7.62 (dd, J = 8.4, 4.2 Hz, 1H), 7.30 (d, J = 4.1 Hz, 1H), 6.96 (d, J = 8.4 Hz, 1H), 6.76 (dd, J = 3.5, 1.7 Hz, 1H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 155.46, 149.90, 149.33, 148.15, 146.26, 139.32, 132.01, 126.00, 121.49, 120.06, 117.90, 115.32, 113.16, 108.57. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2O_3$ $[M+H]^+$: 255.0746; found: 255.0742.

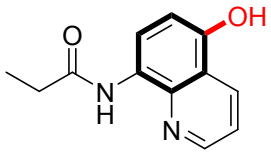
8.5 Characterization Data of **4**



4a

***N*-(5-hydroxyquinolin-8-yl)acetamide (4a)[2]:**

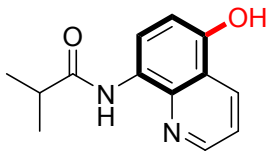
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 31.1 mg, 77%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.24 (s, 1H), 9.79 (s, 1H), 8.90 (dd, J = 4.2, 1.7 Hz, 1H), 8.53 (dd, J = 8.4, 1.8 Hz, 1H), 8.36 (d, J = 8.4 Hz, 1H), 7.56 (dd, J = 8.4, 4.2 Hz, 1H), 6.89 (d, J = 8.4 Hz, 1H), 2.21 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 168.57, 149.43, 148.79, 139.76, 131.65, 127.19, 121.05, 119.93, 118.81, 108.46, 24.74. **HRMS** (ESI) Calcd for $C_{11}H_{11}N_2O_2$ $[M+H]^+$: 203.0815; found: 203.0819.



4b

***N*-(5-hydroxyquinolin-8-yl)propionamide (4b)**[2]**:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 35.0 mg, 81%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.24 (s, 1H), 9.72 (s, 1H), 8.89 (dd, J = 4.2, 1.7 Hz, 1H), 8.53 (dd, J = 8.4, 1.7 Hz, 1H), 8.39 (d, J = 8.4 Hz, 1H), 7.55 (dd, J = 8.5, 4.2 Hz, 1H), 6.89 (d, J = 8.4 Hz, 1H), 2.57 – 2.50 (m, 2H), 1.13 (t, J = 7.5 Hz, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 172.05, 149.43, 148.68, 139.66, 127.12, 121.08, 119.94, 118.53, 108.48, 30.18, 10.29. **HRMS** (ESI) Calcd for $C_{12}H_{13}N_2O_2$ $[M+H]^+$: 217.0972; found: 217.0981.

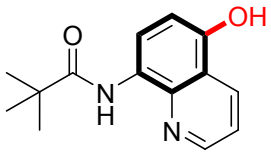


4c

***N*-(5-hydroxyquinolin-8-yl)isobutyramide (4c)**[2]**:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 36.4 mg, 79%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.24 (s, 1H), 9.71 (s, 1H), 8.90 (dd, J = 4.2, 1.7 Hz, 1H), 8.54 (dd, J = 8.5, 1.7 Hz, 1H), 8.40 (d, J = 8.4 Hz, 1H), 7.56 (dd, J =

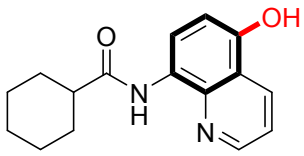
8.4, 4.2 Hz, 1H), 6.89 (d, *J* = 8.4 Hz, 1H), 2.92 – 2.79 (m, 1H), 1.17 (d, *J* = 6.8 Hz, 6H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 175.51, 149.92, 149.13, 140.12, 132.15, 127.46, 121.53, 120.37, 118.88, 108.88, 36.11, 20.59. **HRMS** (ESI) Calcd for $C_{13}H_{15}N_2O_2$ $[M+H]^+$: 231.1128; found: 231.1131.



4d

***N*-(5-hydroxyquinolin-8-yl)pivalamide (4d)**[2]**:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 36.1 mg, 74%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.26 (s, 1H), 9.83 (s, 1H), 8.91 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.55 (dd, *J* = 8.5, 1.7 Hz, 1H), 8.45 (d, *J* = 8.4 Hz, 1H), 7.58 (dd, *J* = 8.4, 4.2 Hz, 1H), 6.90 (d, *J* = 8.4 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 175.81, 149.68, 148.62, 139.42, 131.91, 126.75, 121.26, 119.98, 117.29, 108.49, 40.64, 28.81, 27.88. **HRMS** (ESI) Calcd for $C_{14}H_{17}N_2O_2$ $[M+H]^+$: 245.1285; found: 245.1256.

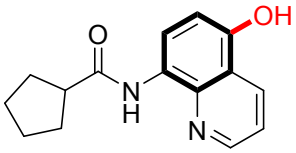


4e

***N*-(5-hydroxyquinolin-8-yl)cyclohexanecarboxamide (4e)**[2]**:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 41.1 mg, 76%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.25 (s, 1H), 9.68 (s, 1H), 8.90 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.53 (dd, *J* = 8.4, 1.7 Hz, 1H), 8.40 (d, *J* = 8.4 Hz, 1H), 7.56 (dd, *J* = 8.4, 4.2 Hz, 1H), 6.88 (d, *J* = 8.4 Hz, 1H), 2.57 (tt, *J* = 11.4, 3.4 Hz, 1H), 1.89 (d, *J* = 10.8 Hz, 2H), 1.76 (dt, *J* = 12.4, 3.2 Hz, 2H), 1.69 - 1.61 (m, 1H), 1.52 – 1.26 (m, 5H). **^{13}C NMR** (101

MHz, DMSO-d_6) δ 174.08, 149.48, 148.64, 139.60, 131.74, 127.02, 121.12, 119.94, 118.25, 108.45, 45.46, 29.91, 25.92, 25.65. **HRMS** (ESI) Calcd for $C_{16}H_{19}N_2O_2$ $[M+H]^+$: 271.1441; found: 271.1444.

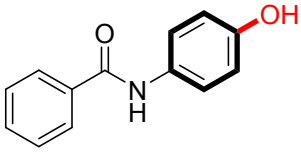


4f

***N*-(5-hydroxyquinolin-8-yl)cyclopentanecarboxamide (4f):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 36.9 mg, 72%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.22 (s, 1H), 9.69 (s, 1H), 8.90 (dd, J = 4.2, 1.7 Hz, 1H), 8.54 (dd, J = 8.4, 1.8 Hz, 1H), 8.40 (d, J = 8.4 Hz, 1H), 7.56 (dd, J = 8.4, 4.2 Hz, 1H), 6.89 (d, J = 8.4 Hz, 1H), 3.12 – 2.96 (m, 1H), 1.97 – 1.86 (m, 2H), 1.84 – 1.64 (m, 4H), 1.59 (dt, J = 8.2, 4.2 Hz, 2H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 174.35, 149.47, 148.66, 139.59, 131.72, 127.13, 121.10, 119.94, 118.36, 108.48, 46.09, 30.67, 26.14. **HRMS** (ESI) Calcd for $C_{15}H_{17}N_2O_2$ $[M+H]^+$: 257.1285; found: 257.1288.

8.6 Characterization Data of **6**

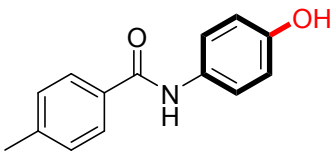


6a

***N*-(4-hydroxyphenyl)benzamide (6a)**[3]**:**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 25.1 mg, 59%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.02 (s, 1H), 9.26 (s, 1H), 7.96 – 7.91 (m, 2H), 7.58 – 7.48 (m, 5H), 6.78 – 6.73 (m, 2H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ

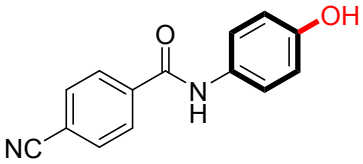
165.44, 154.19, 135.65, 131.73, 131.17, 128.78, 127.97, 122.76, 115.45. **HRMS** (ESI) Calcd for $C_{13}H_{12}NO_2$ $[M+H]^+$: 214.0863; found: 214.0862.



6b

***N*-(4-hydroxyphenyl)-4-methylbenzamide (6b)**[4]**:**

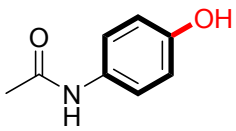
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 27.2 mg, 60%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 9.92 (s, 1H), 9.23 (s, 1H), 7.89 – 7.81 (m, 2H), 7.57 – 7.48 (m, 2H), 7.31 (d, J = 8.0 Hz, 2H), 6.78 – 6.69 (m, 2H), 2.37 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 164.78, 153.63, 141.19, 132.29, 130.76, 128.83, 127.52, 122.28, 114.95, 20.98. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO_2$ $[M+H]^+$: 228.1019; found: 228.1015.



6c

4-Cyano-*N*-(4-hydroxyphenyl)benzamide (6c):

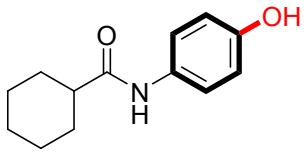
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Light red solid, 24.3 mg, 51%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.25 (s, 1H), 9.31 (s, 1H), 8.10 – 8.06 (m, 2H), 8.01 – 7.98 (m, 2H), 7.56 – 7.50 (m, 2H), 6.78 – 6.73 (m, 2H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 163.48, 154.04, 139.18, 132.41, 130.25, 128.38, 122.32, 118.37, 115.06, 113.59. **HRMS** (ESI) Calcd for $C_{14}H_{11}N_2O_2$ $[M+H]^+$: 239.0815; found: 239.0808.



6d

N-(4-hydroxyphenyl)acetamide (6d)[3]**:**

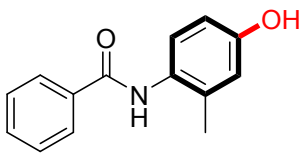
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 9.7 mg, 32%. **^{1}H NMR** (400 MHz, DMSO-*d*6) δ 9.64 (s, 1H), 9.12 (s, 1H), 7.35 – 7.31 (m, 2H), 6.69 – 6.64 (m, 2H), 1.97 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 167.49, 153.10, 131.03, 120.79, 114.98, 23.73. **HRMS** (ESI) Calcd for $C_8H_{10}NO_2$ $[M+H]^+$: 152.0706; found: 152.0698.



6e

***N*-(4-hydroxyphenyl)cyclohexanecarboxamide (6e)**[5]**:**

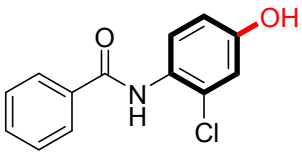
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 10/1). Colorless oil, 22.4 mg, 51%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 9.49 (s, 1H), 9.10 (s, 1H), 7.38 – 7.33 (m, 2H), 6.68 – 6.63 (m, 2H), 2.25 (tt, *J* = 11.5, 3.3 Hz, 1H), 1.79 – 1.70 (m, 4H), 1.67 – 1.60 (m, 1H), 1.45 - 1.33 (m, 2H), 1.31 – 1.16 (m, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 173.55, 152.98, 131.18, 120.80, 114.92, 44.73, 29.21, 25.43, 25.28. **HRMS** (ESI) Calcd for $C_{13}H_{18}NO_2$ $[M+H]^+$: 220.1332; found: 220.1321.



6f

***N*-(4-hydroxy-2-methylphenyl)benzamide (6f)**:

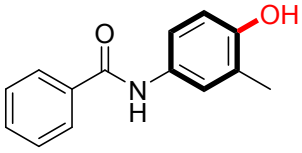
Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 18.6 mg, 41%. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.70 (s, 1H), 9.32 (s, 1H), 7.99 – 7.93 (m, 2H), 7.58 – 7.47 (m, 3H), 7.05 (d, J = 8.5 Hz, 1H), 6.67 (d, J = 2.7 Hz, 1H), 6.60 (dd, J = 8.4, 2.8 Hz, 1H), 2.13 (s, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 165.68, 135.79, 135.04, 131.88, 130.59, 129.24, 128.87, 127.07, 126.94, 125.39, 123.14, 17.86. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO_2$ $[M+H]^+$: 228.1019; found: 228.1024.



6g

***N*-(2-chloro-4-hydroxyphenyl)benzamide (6g):**

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 19.3 mg, 39%. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.92 (s, 1H), 9.88 (s, 1H), 7.97 (d, J = 7.5 Hz, 2H), 7.62 – 7.56 (m, 1H), 7.55 - 7.49 (m, 2H), 7.27 (d, J = 8.6 Hz, 1H), 7.08 (d, J = 2.6 Hz, 1H), 6.82 (dd, J = 8.6, 2.7 Hz, 1H). ^{13}C NMR (101 MHz, DMSO) δ 165.97, 157.07, 134.61, 132.10, 130.67, 128.90, 128.15, 128.04, 122.16, 119.14, 115.47. **HRMS** (ESI) Calcd for $C_{13}H_{11}NO_2Cl$ $[M+H]^+$: 248.0473; found: 248.0490.

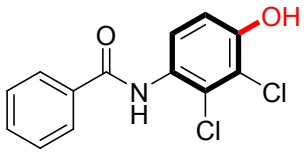


6h

***N*-(4-hydroxy-3-methylphenyl)benzamide (6h)**:

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 18.2 mg, 40%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 9.96 (s, 1H), 9.16 (s, 1H), 7.95 –

7.89 (m, 2H), 7.56 – 7.48 (m, 3H), 7.44 (d, J = 2.6 Hz, 1H), 7.36 (dd, J = 8.6, 2.6 Hz, 1H), 6.73 (d, J = 8.6 Hz, 1H), 2.12 (s, 3H). **^{13}C NMR** (101 MHz, DMSO-d_6) δ 165.31, 152.26, 135.65, 131.70, 130.92, 128.78, 127.94, 124.03, 124.00, 119.95, 114.70, 16.68. **HRMS** (ESI) Calcd for $C_{14}H_{14}NO_2$ $[M+H]^+$: 228.1019; found: 228.1032.



6i

***N*-(2,3-dichloro-4-hydroxyphenyl)benzamide (6i)**:

Purification by column chromatography on silica gel (petroleum ether/ethyl acetate 12/1). Light red solid, 18.0 mg, 32%. **^{1}H NMR** (400 MHz, DMSO-d_6) δ 10.72 (s, 1H), 10.06 (s, 1H), 8.00 - 7.95 (m, 2H), 7.63 – 7.57 (m, 1H), 7.56 - 7.50 (m, 2H), 7.29 (d, J = 8.8 Hz, 1H), 7.00 (d, J = 8.8 Hz, 1H).**^{13}C NMR** (101 MHz, DMSO) δ 166.04, 153.43, 134.33, 132.26, 130.64, 128.95, 128.26, 128.10, 128.07, 119.25, 114.75. **HRMS** (ESI) Calcd for $C_{13}H_{10}NO_2Cl_2$ $[M+H]^+$: 282.0083; found: 282.0099.

9 References

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[2] Mondal, S. & Hajra, A. Metal-Free C-5 hydroxylation of 8-aminoquinoline amide. *J. Org. Chem.* **83**, 11392-11398 (2018).

[3] Yan, D.-Y., Wang, G.-Q., Xiong, F., Sun, W.-Y., Shi, Z.-., Lu, Y.; Li, S.-H. & Zhao, J. A selenium-catalysed para-amination of phenols. *Nat. Commun.* **9**, 1-9 (2018).

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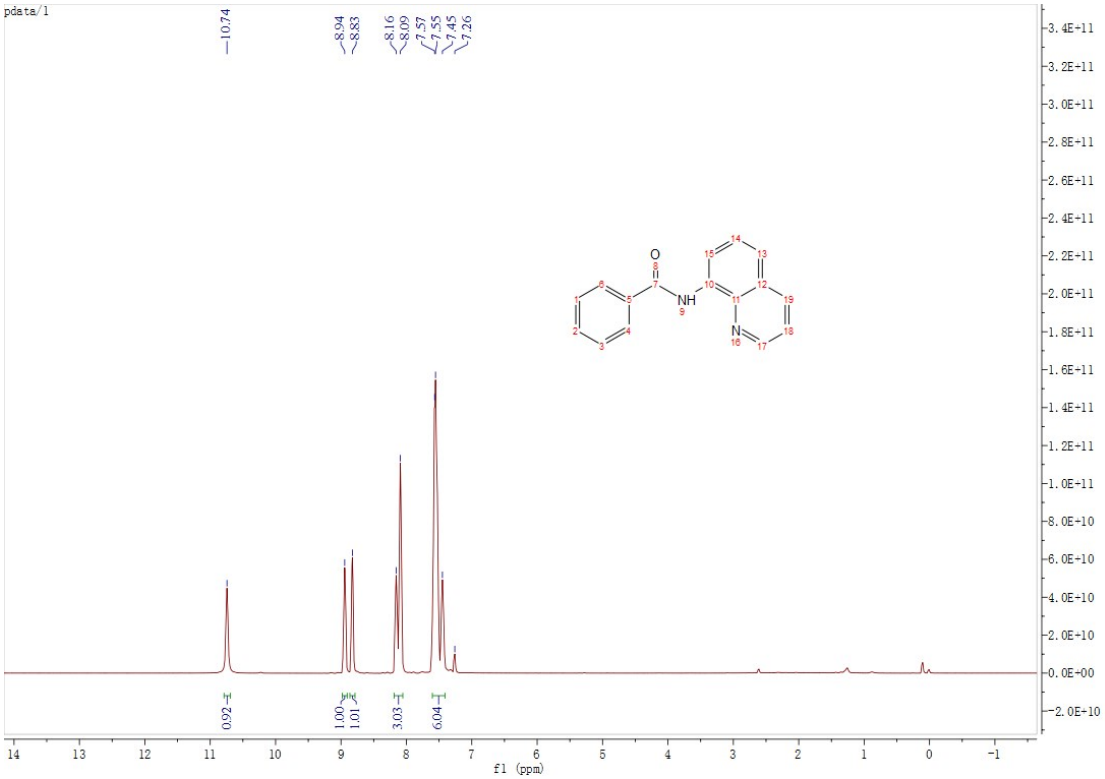
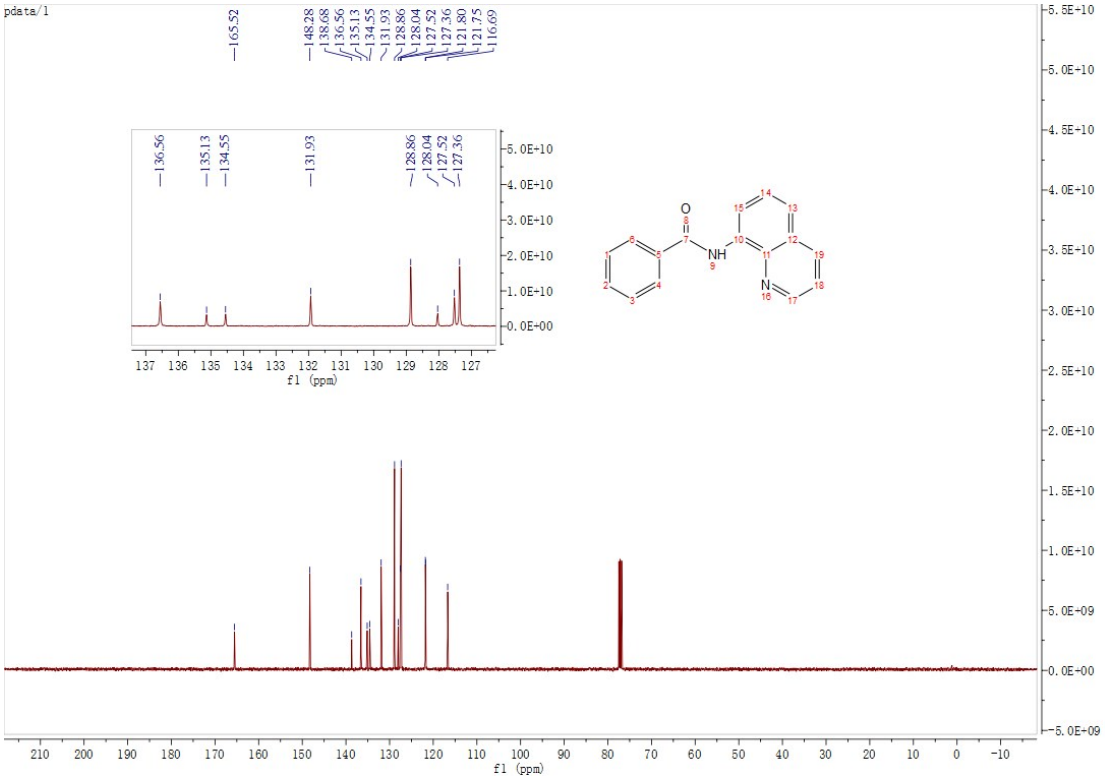
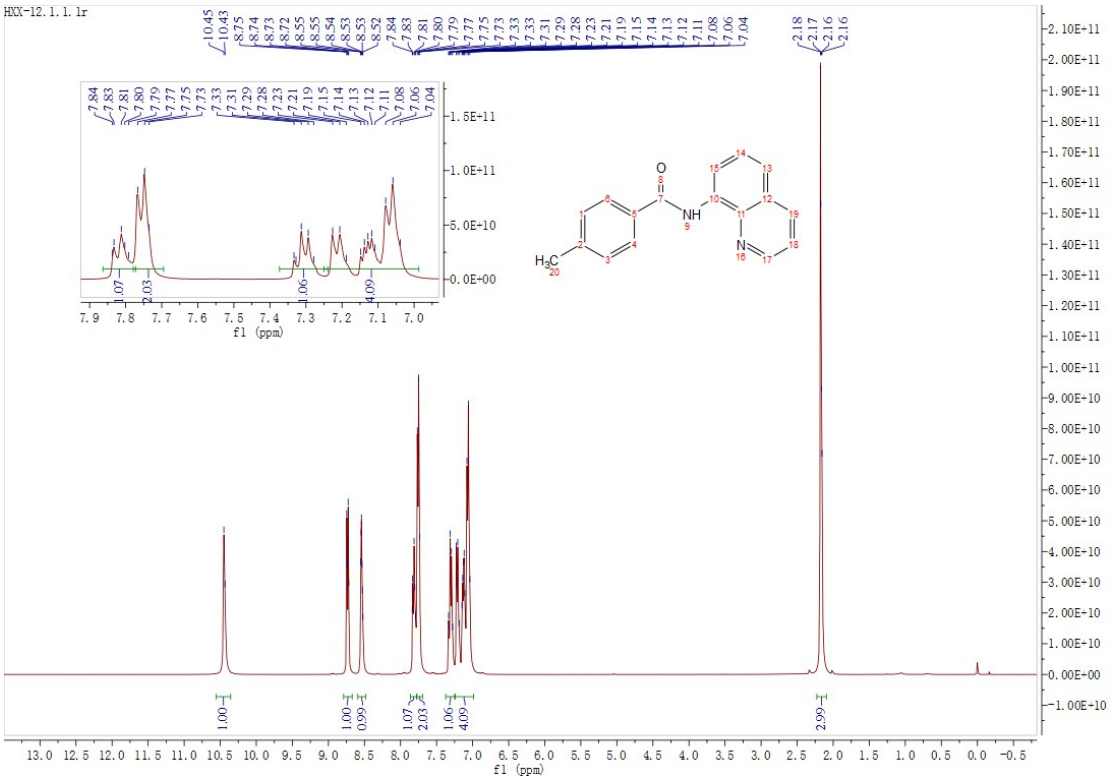
10 NMR-Spectra of 1, 3, 5 and 2, 4, 6

10.1 NMR-Spectra of **1**



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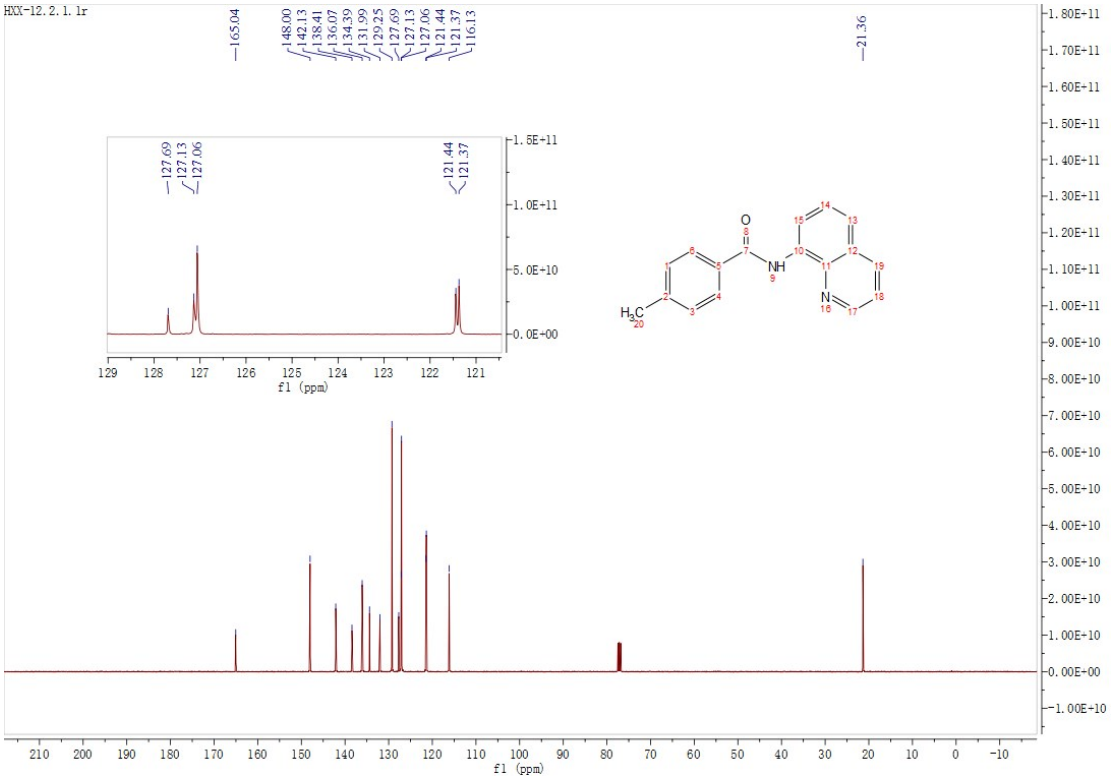
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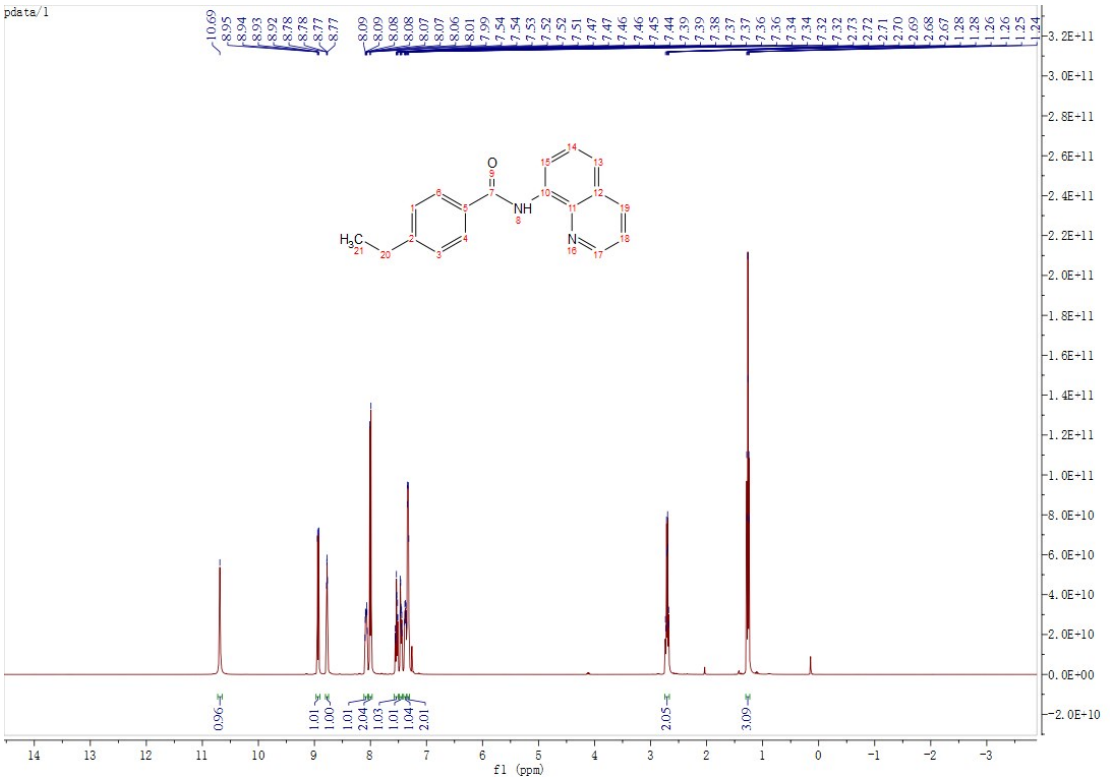
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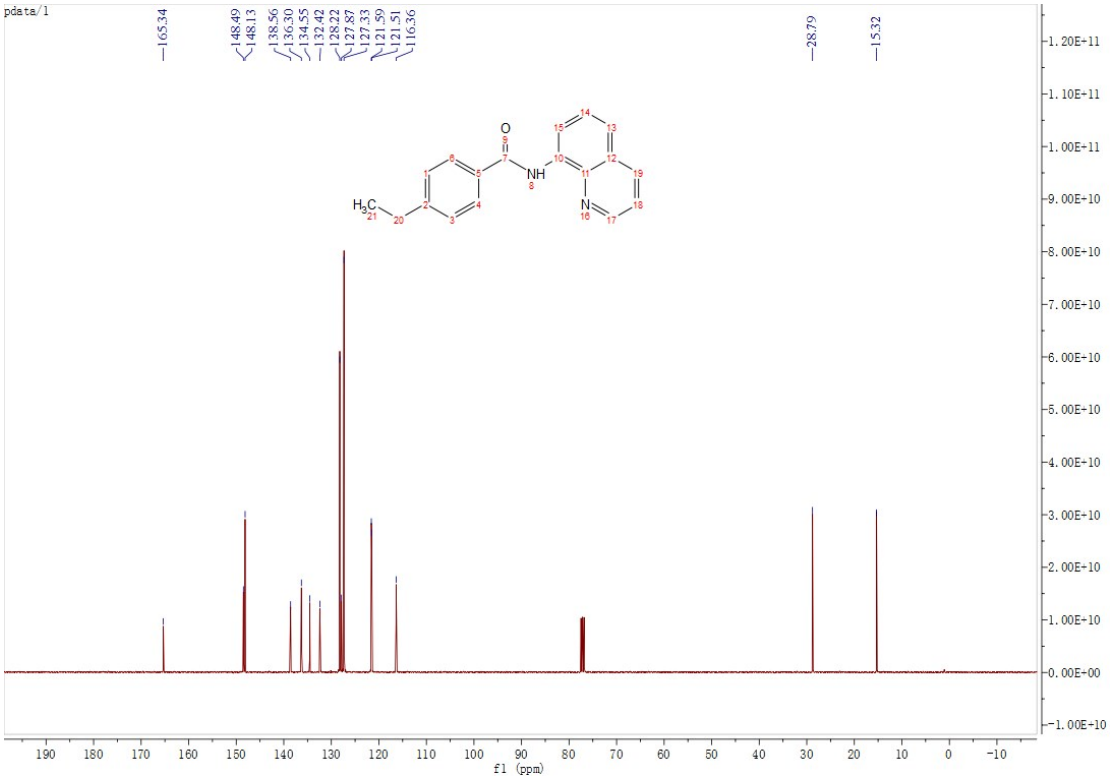
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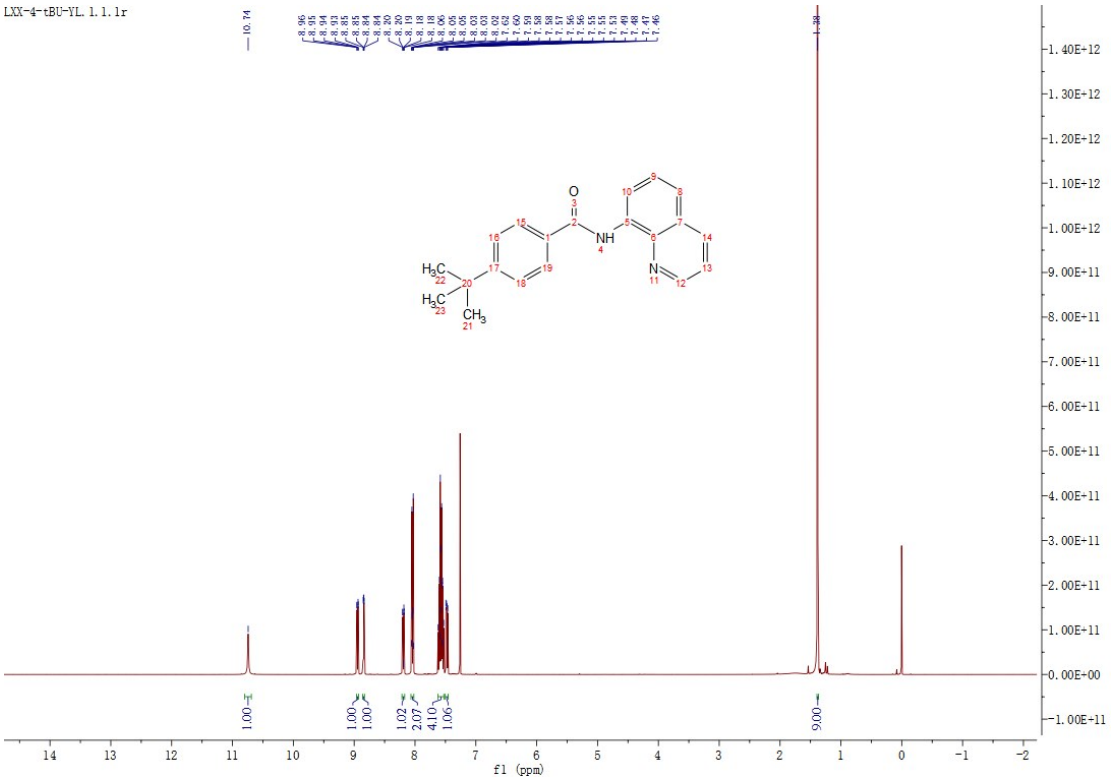
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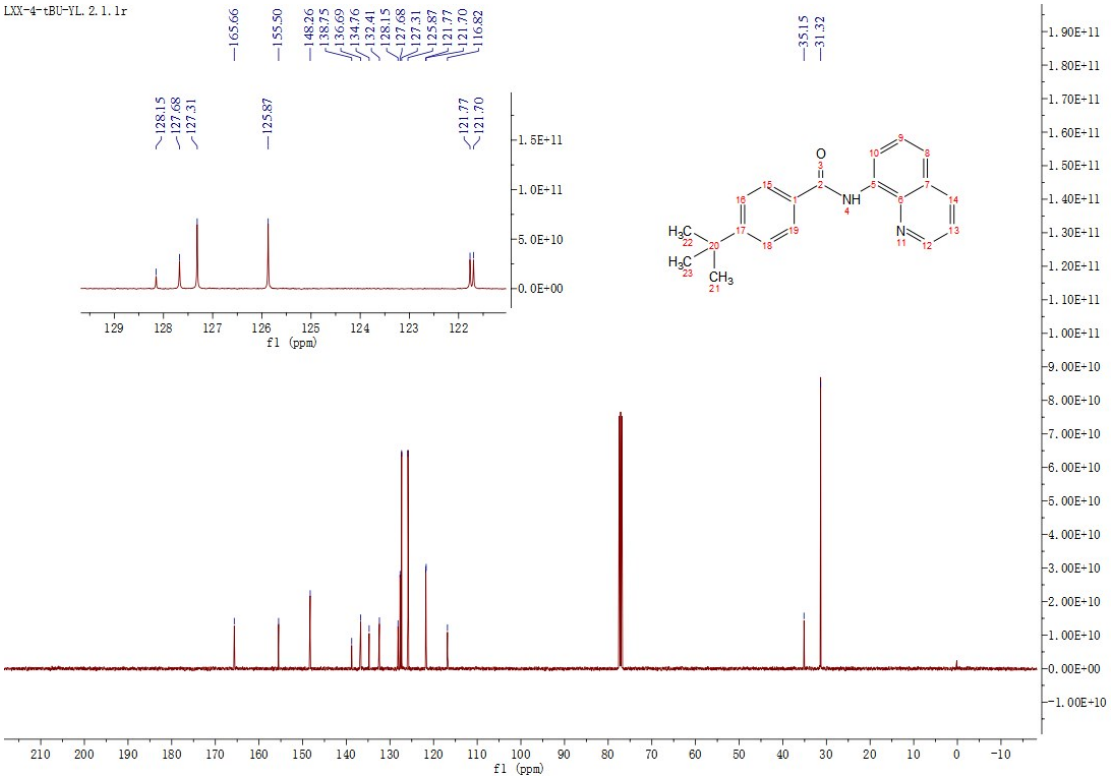
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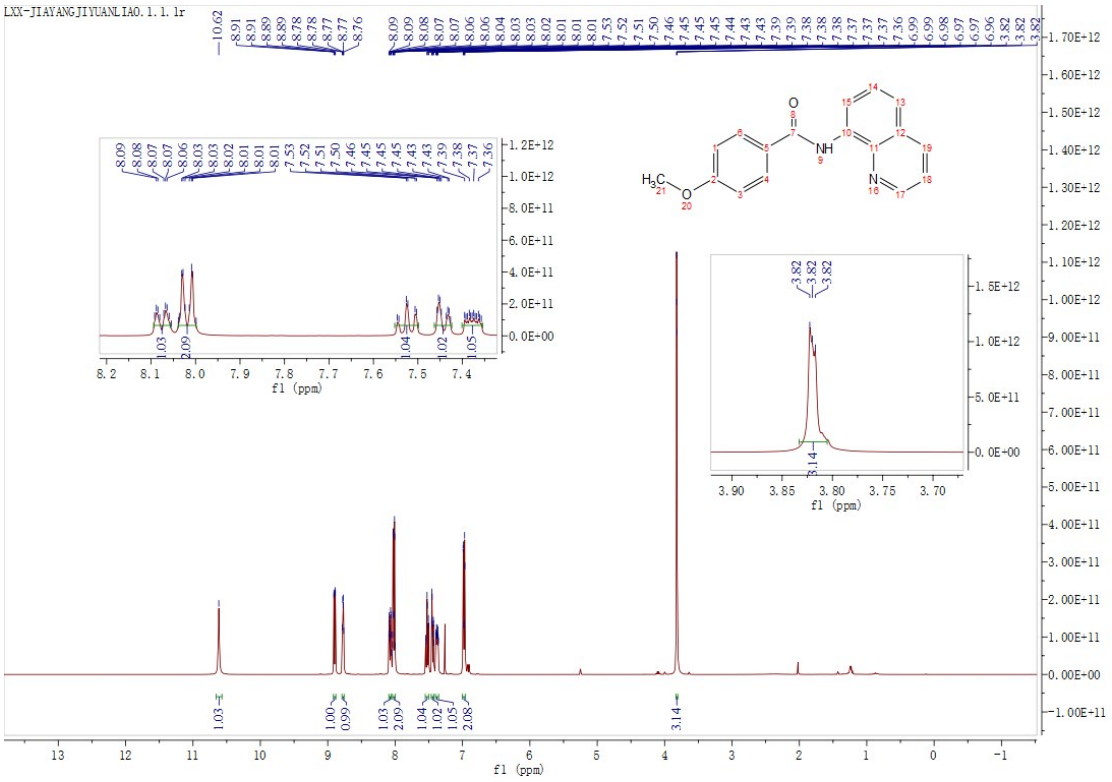
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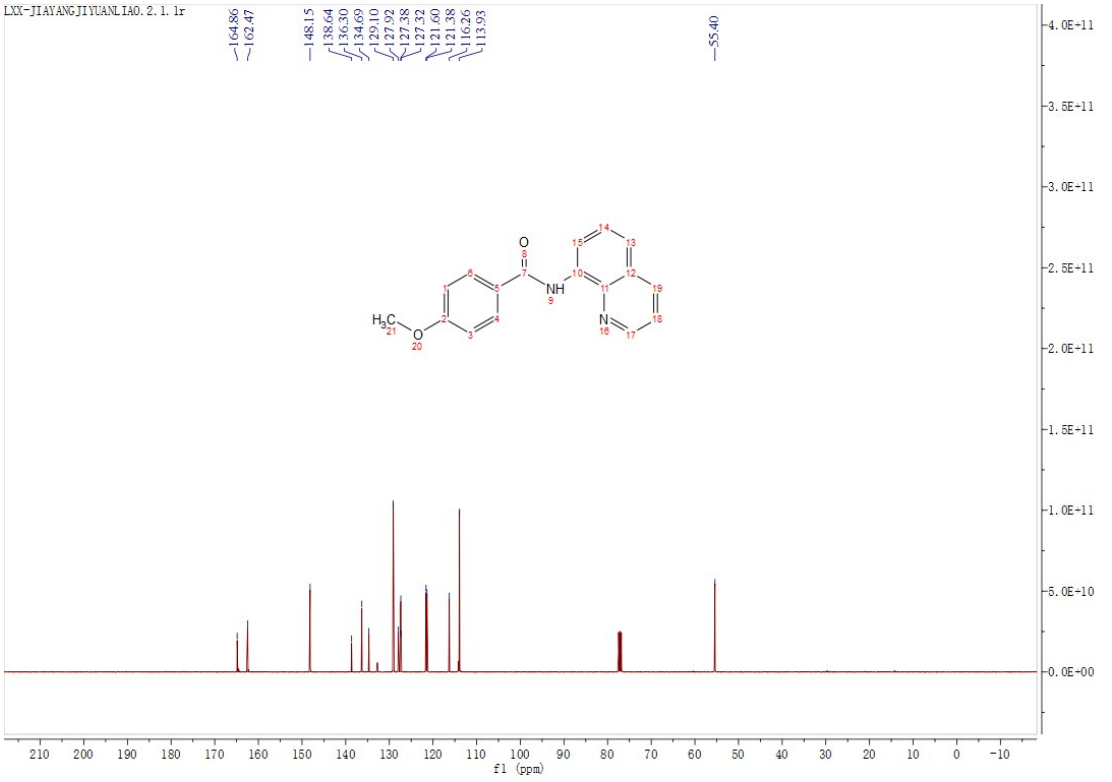
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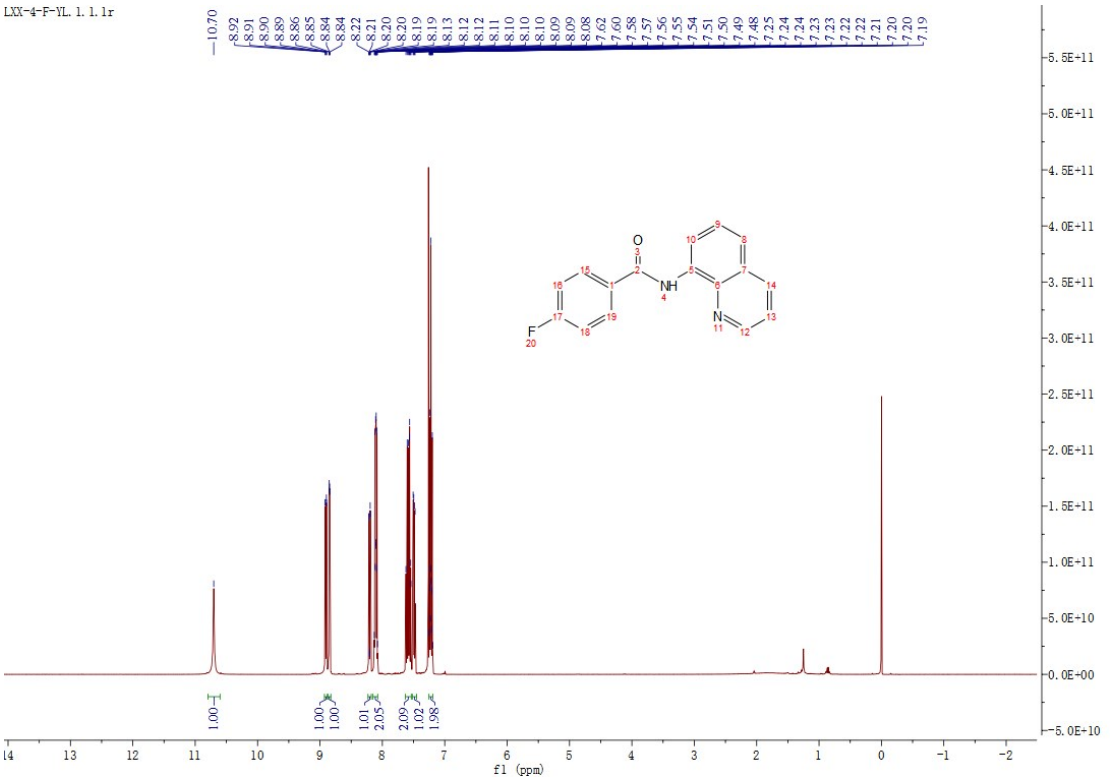
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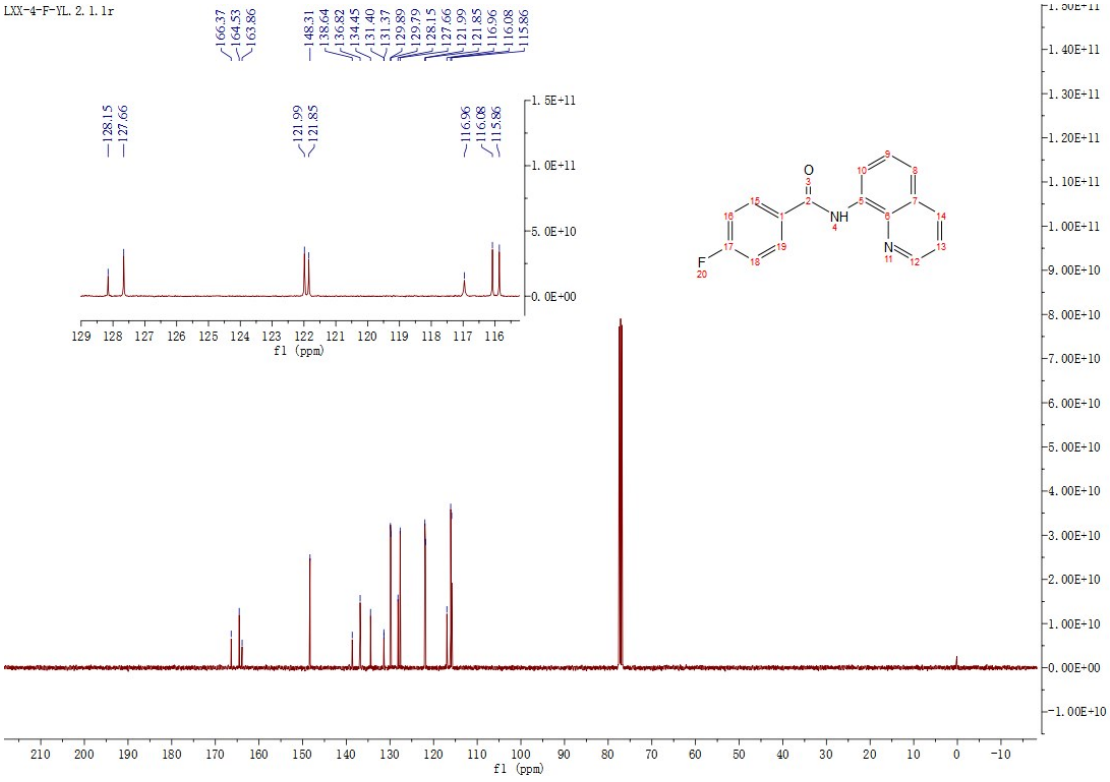
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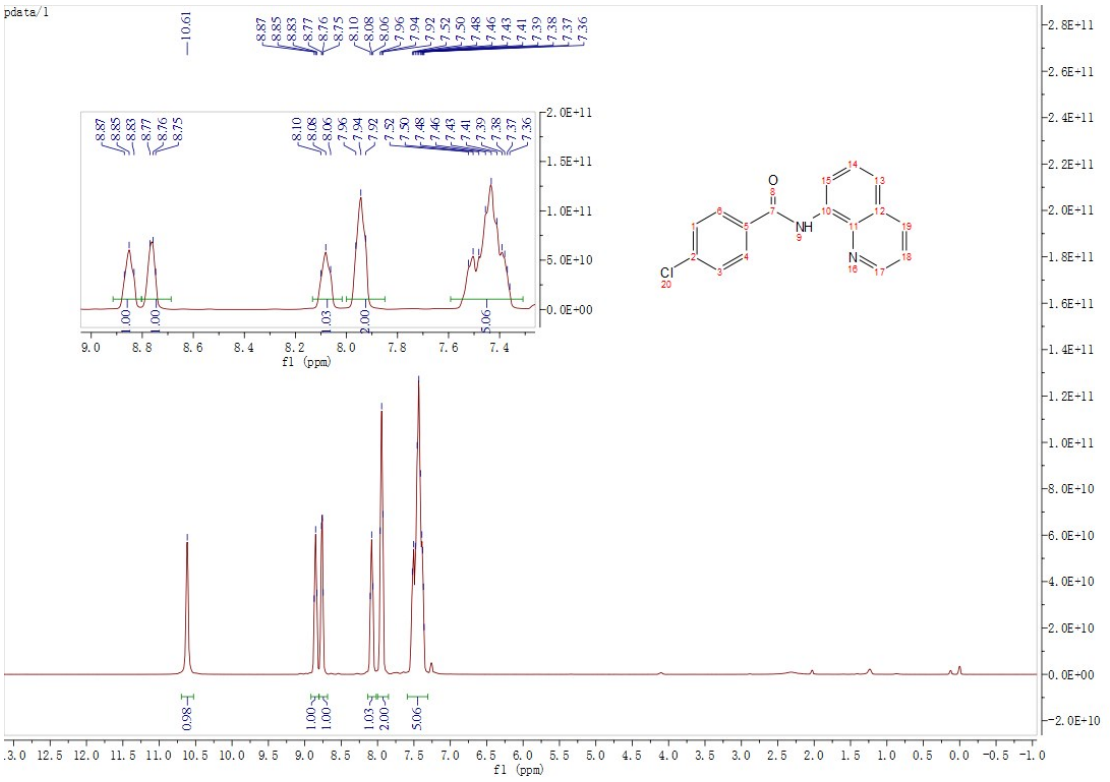
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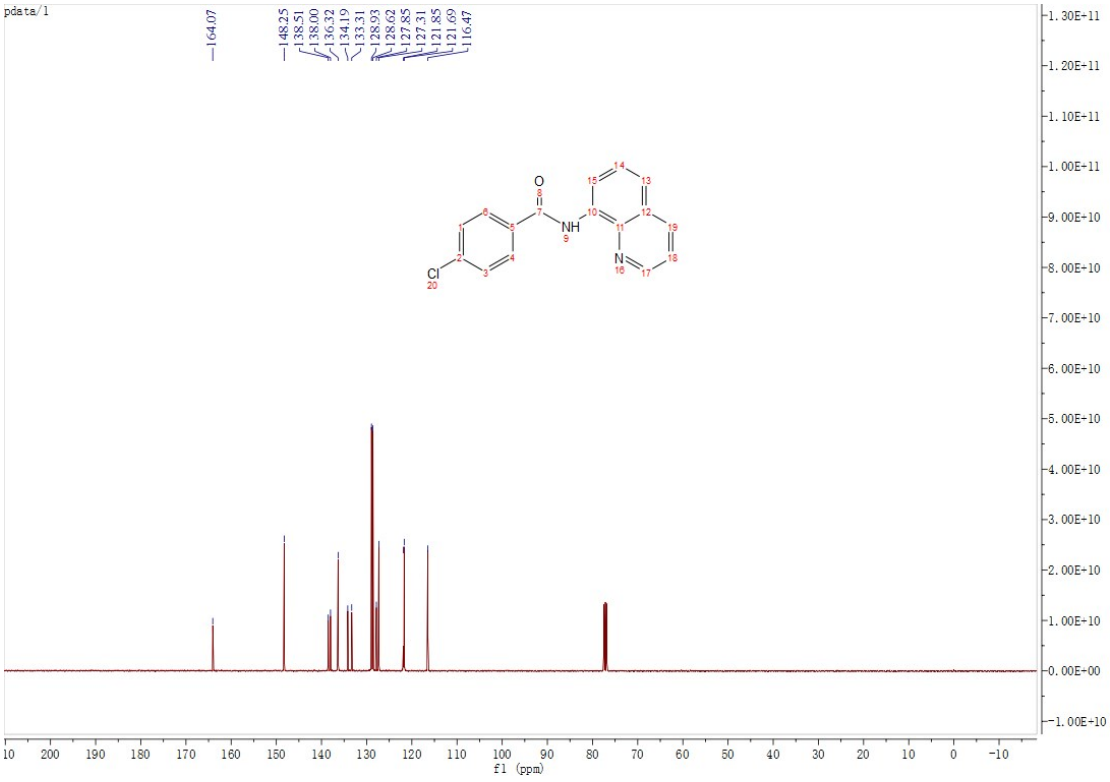
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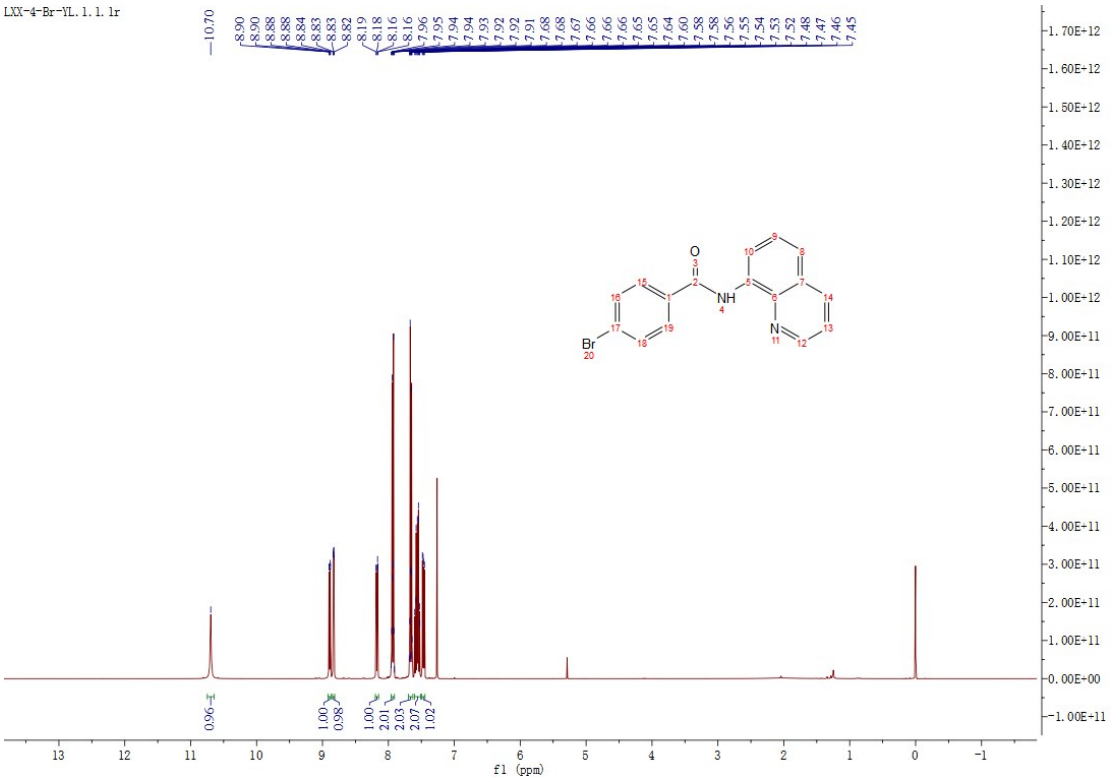
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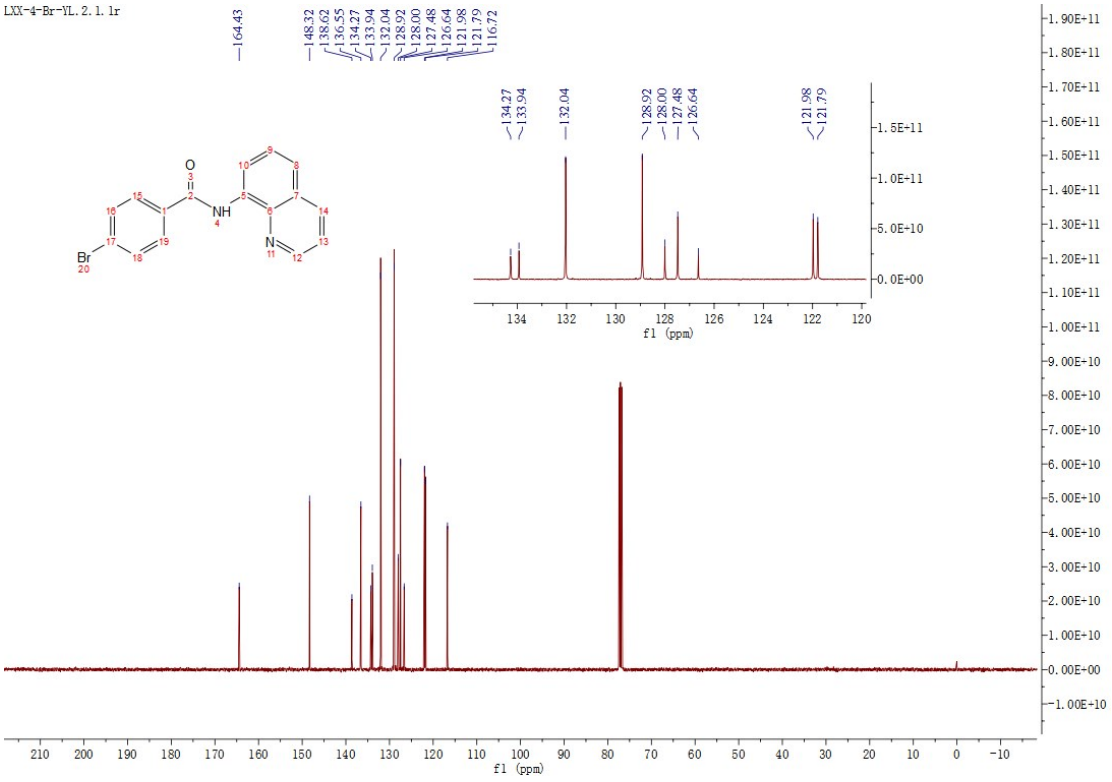
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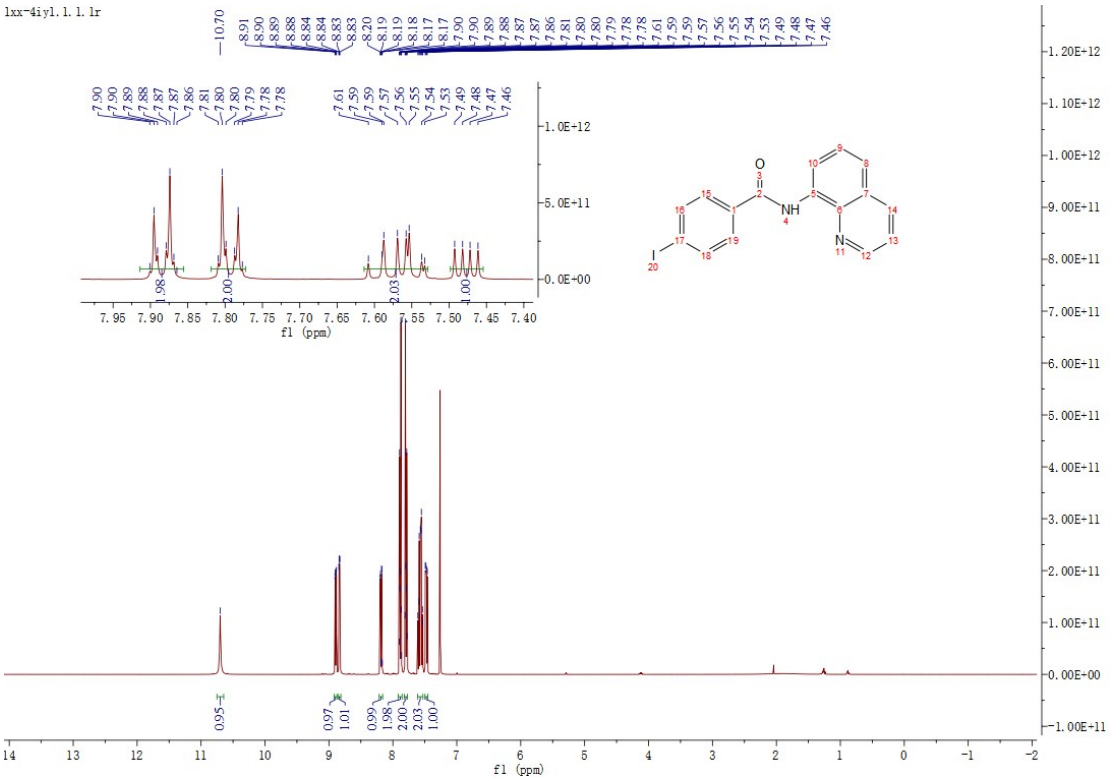
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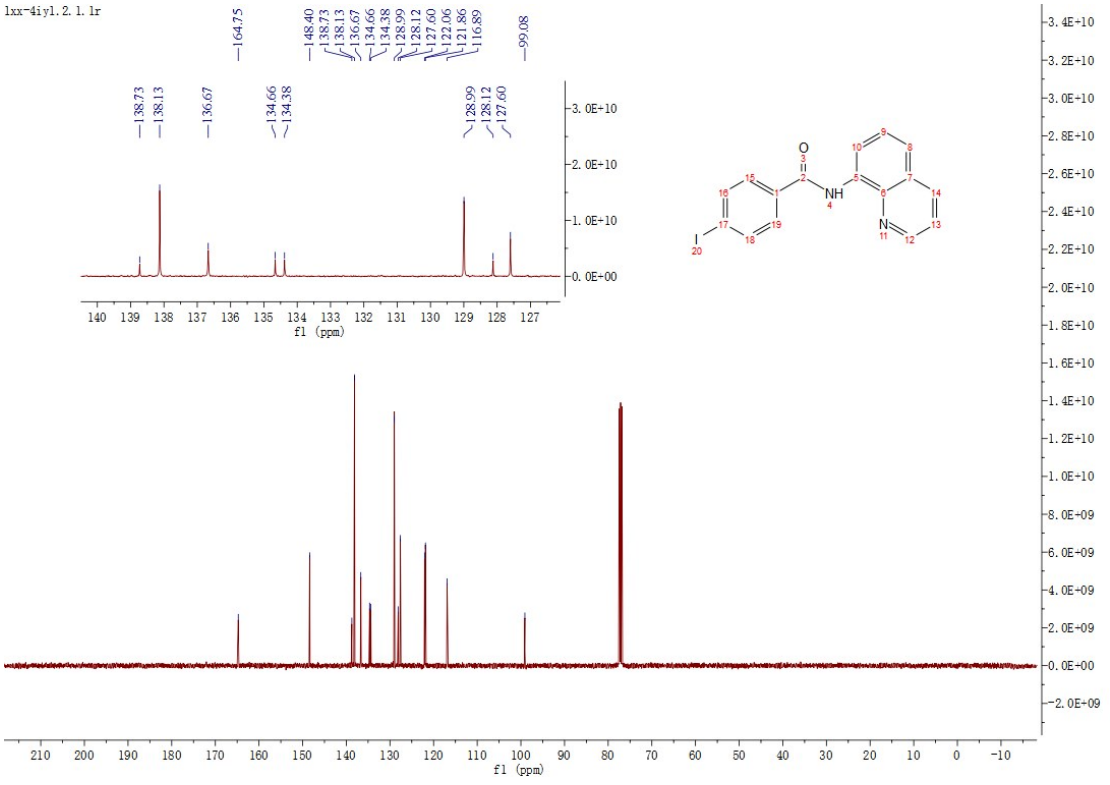
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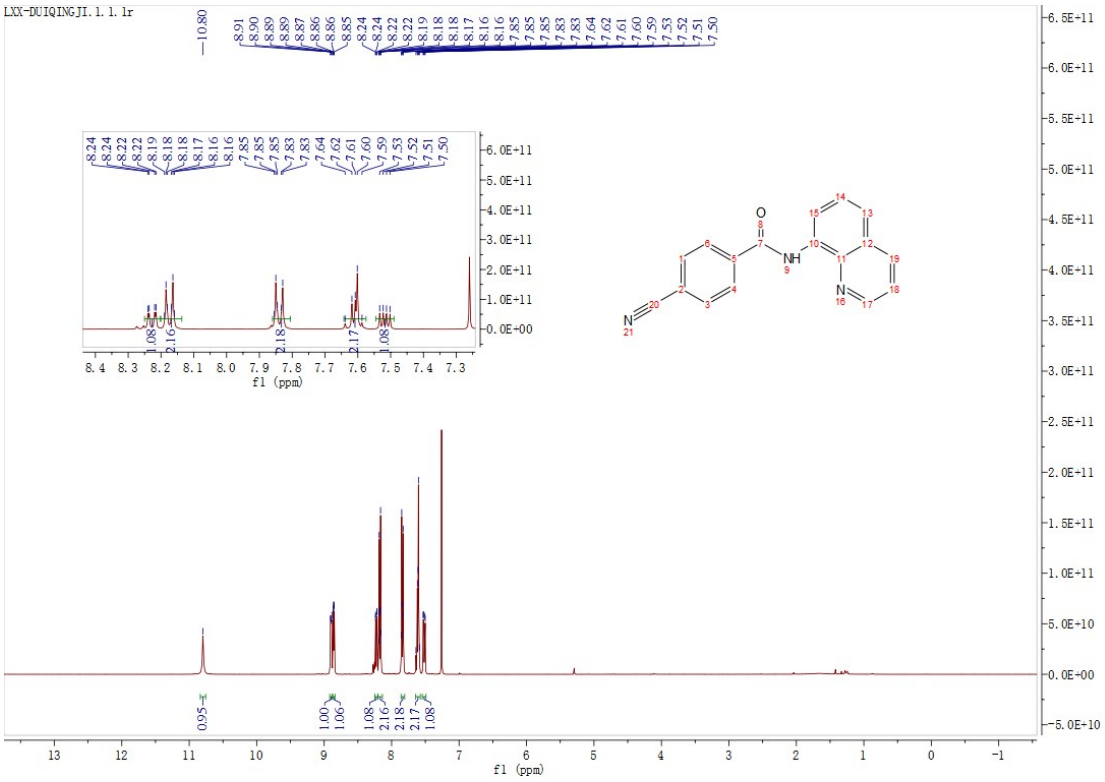
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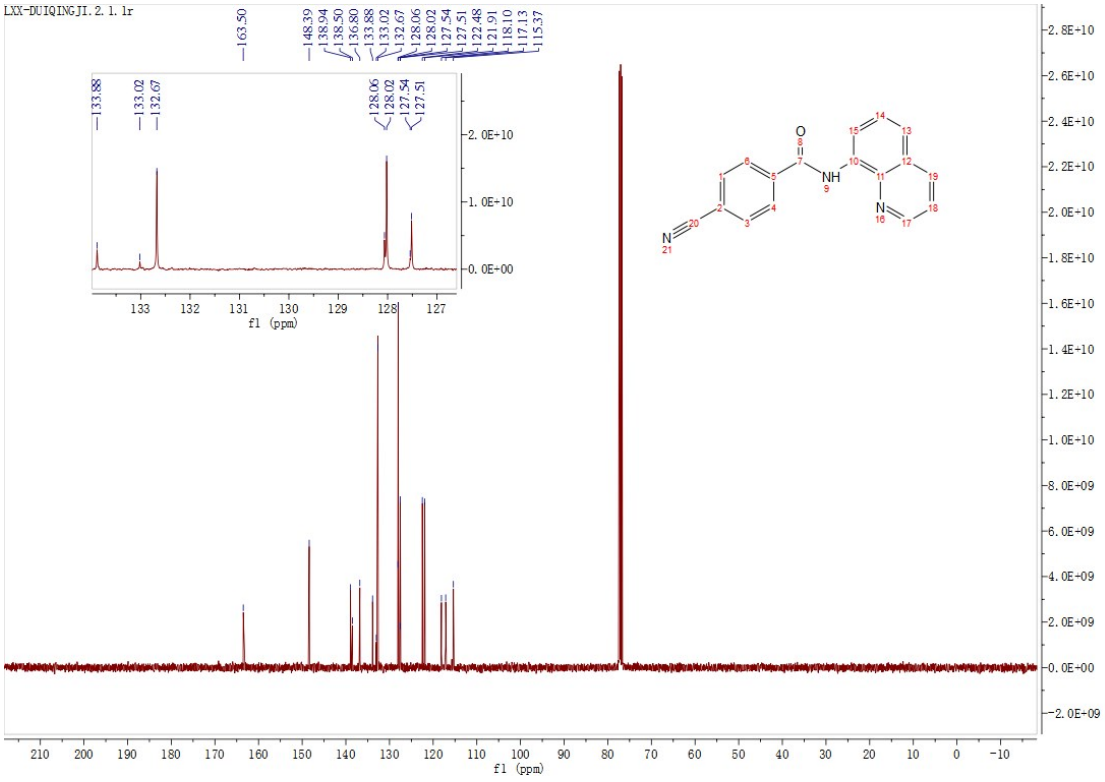
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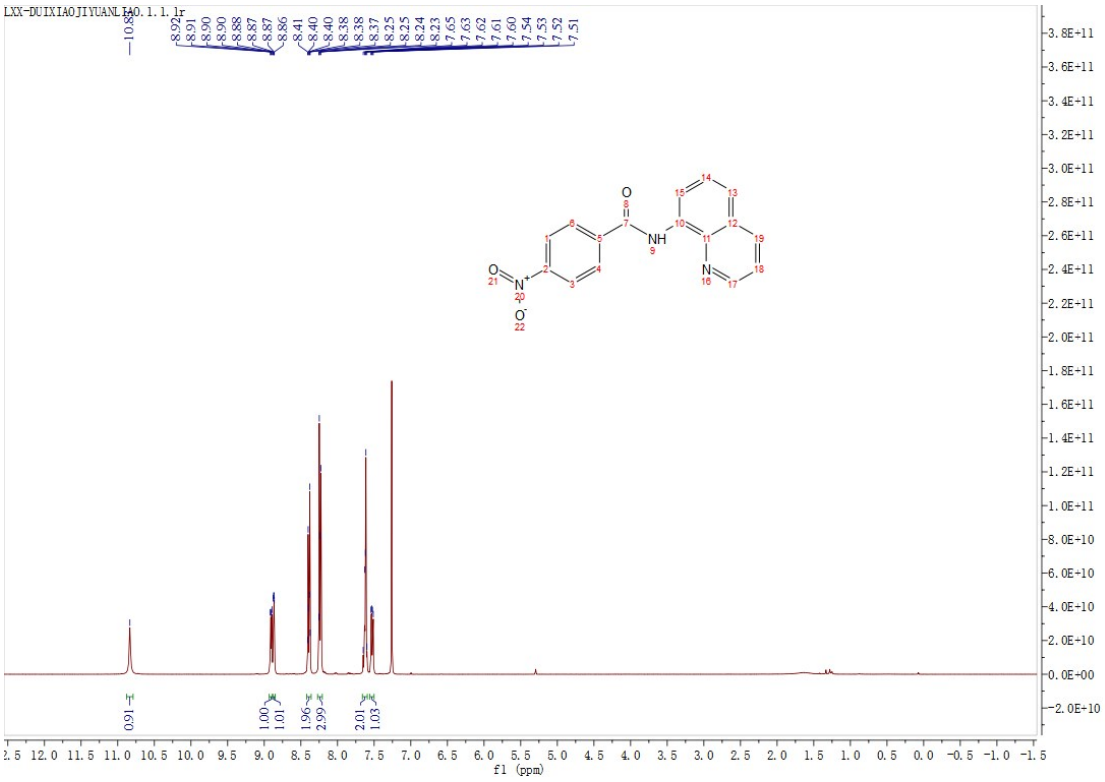
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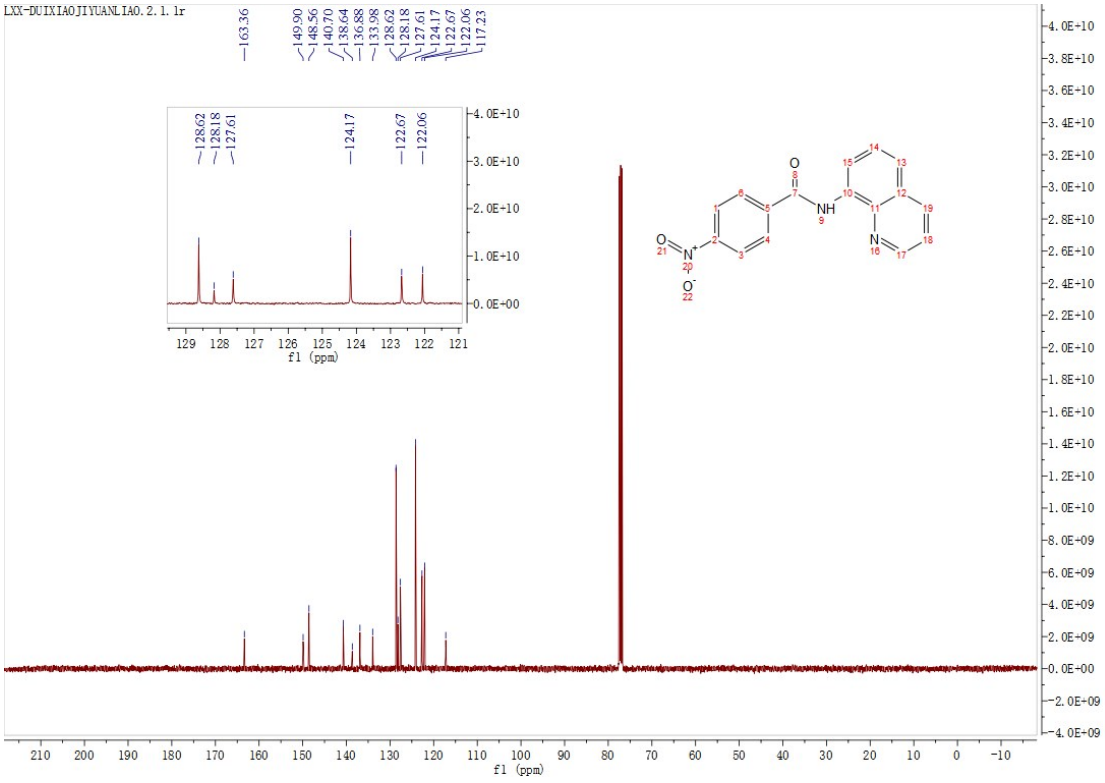
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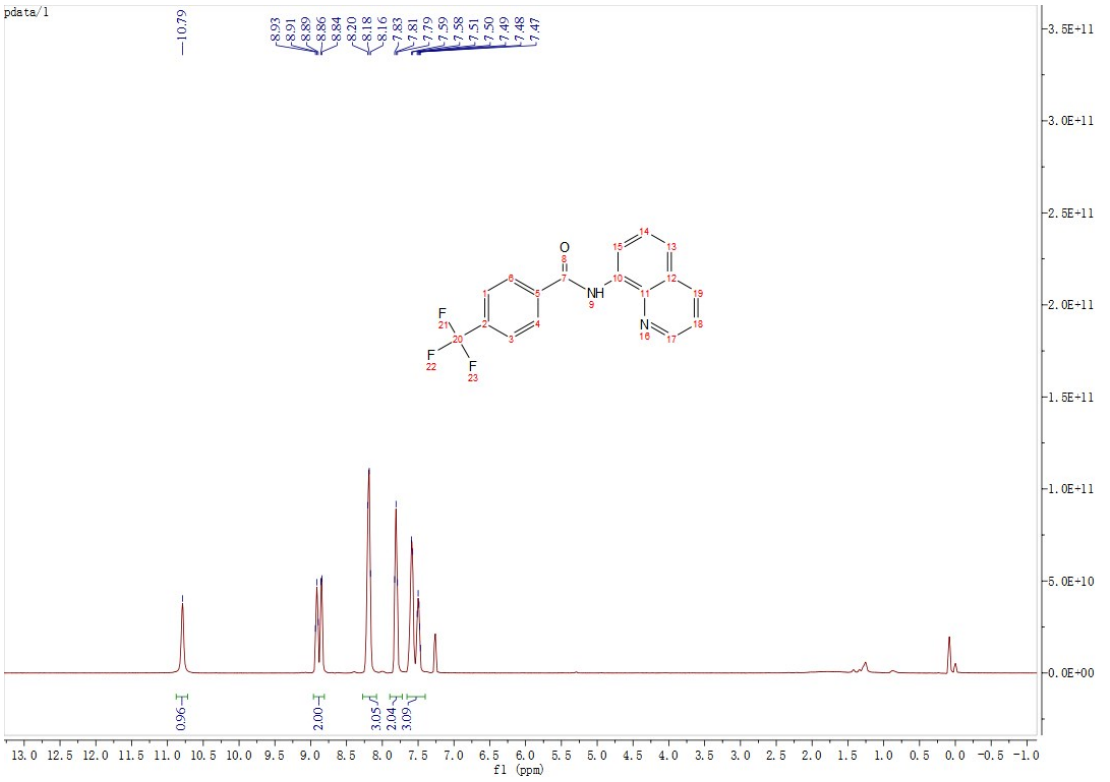
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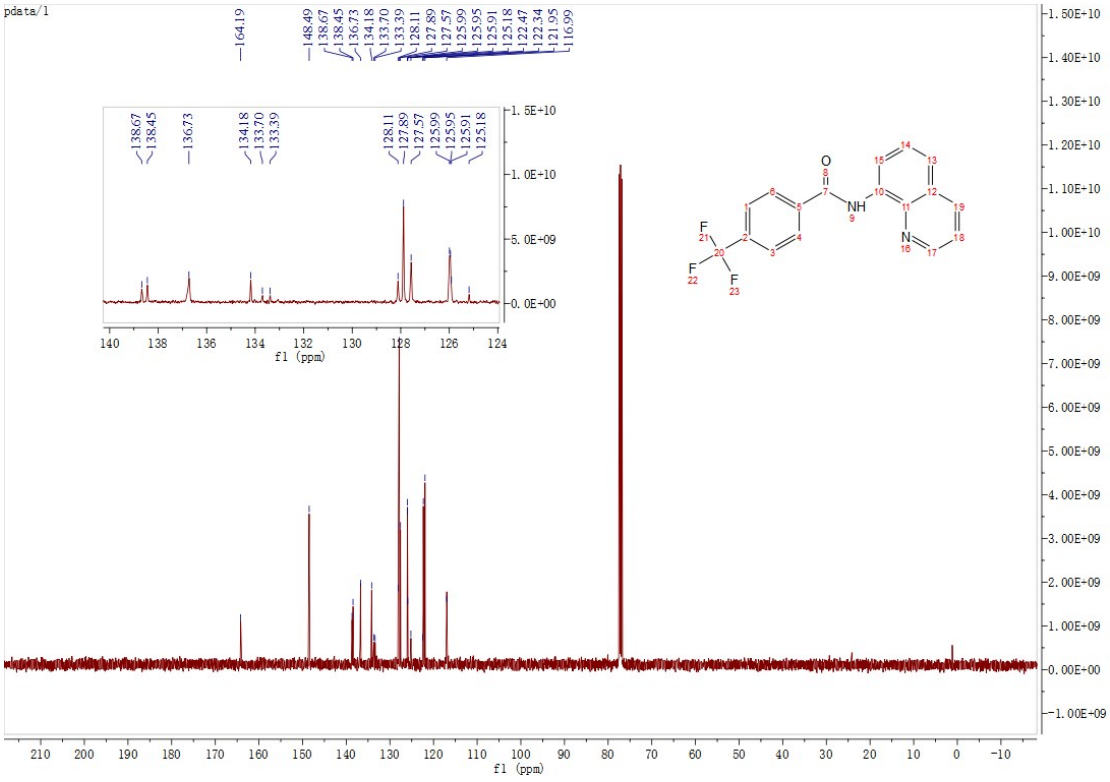
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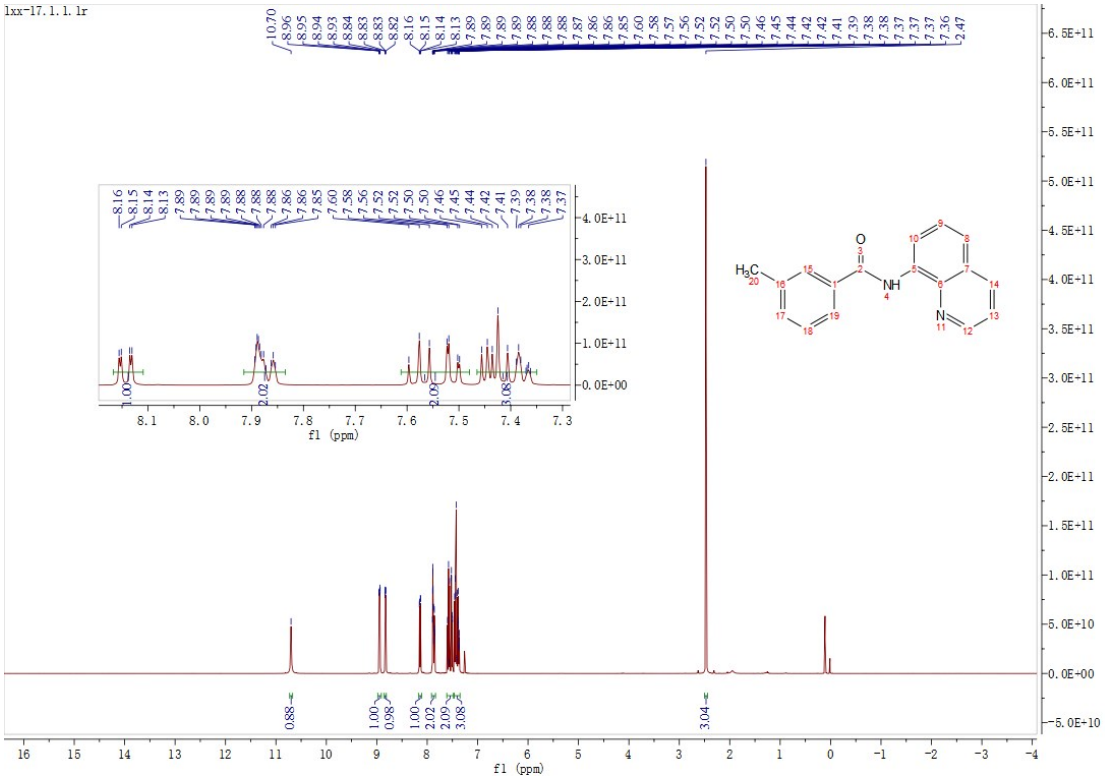
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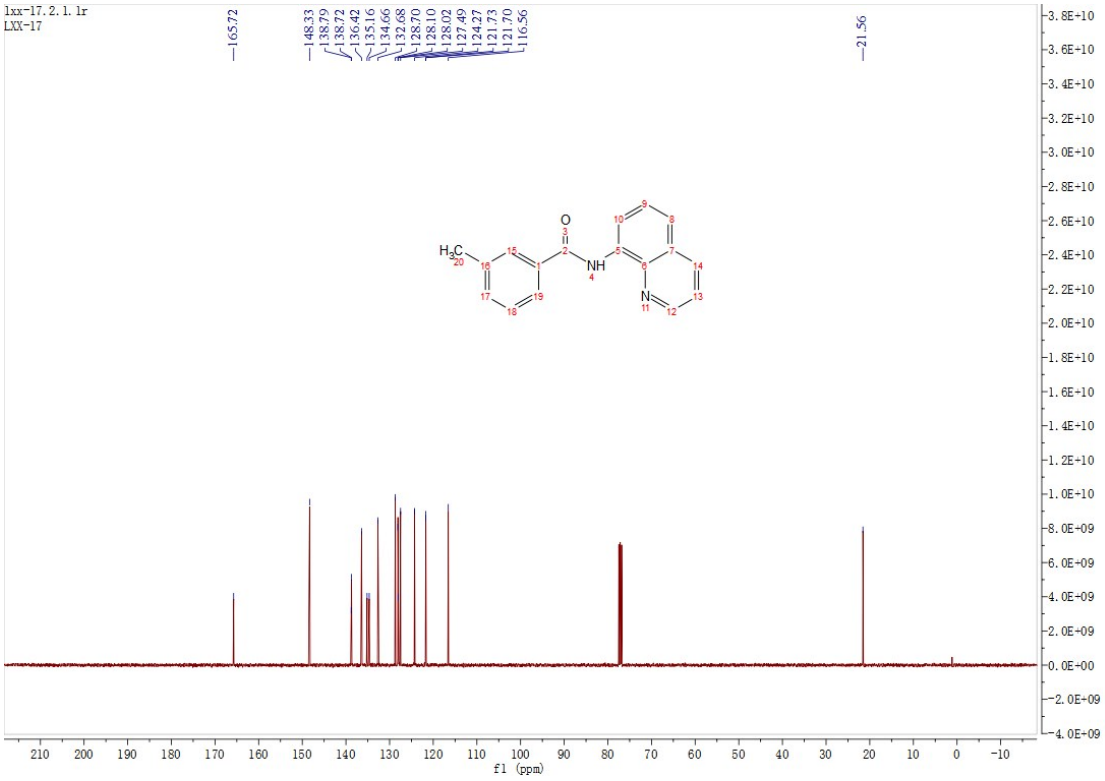
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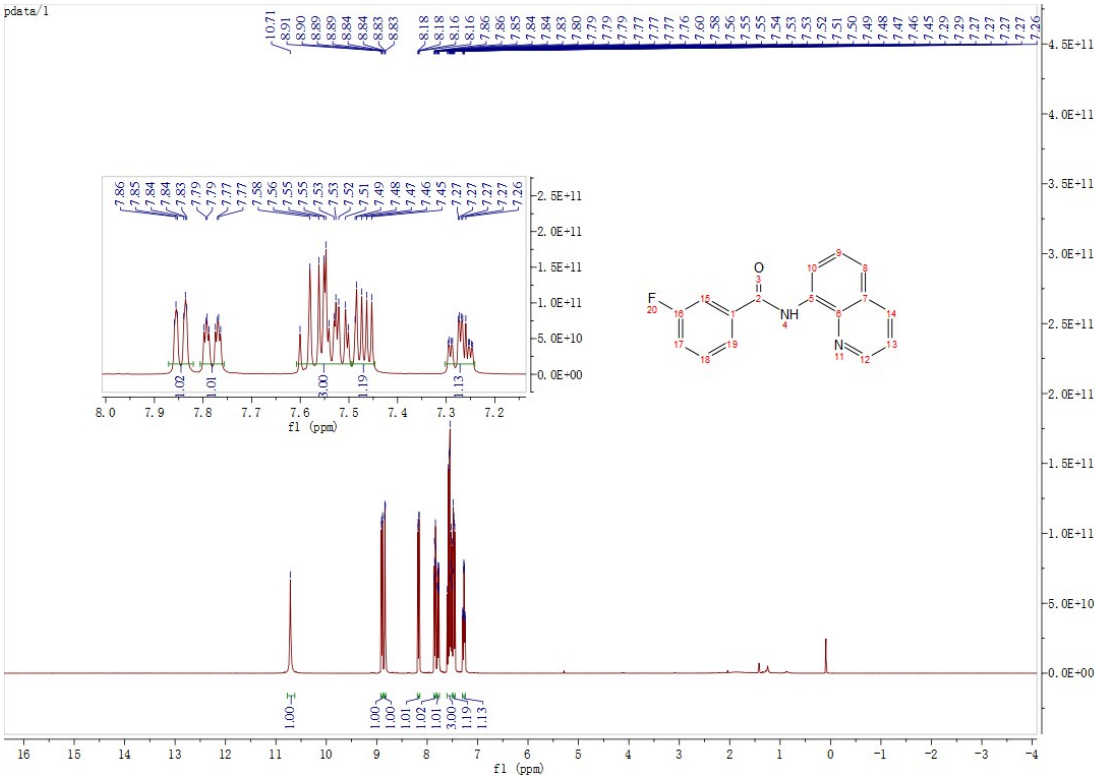
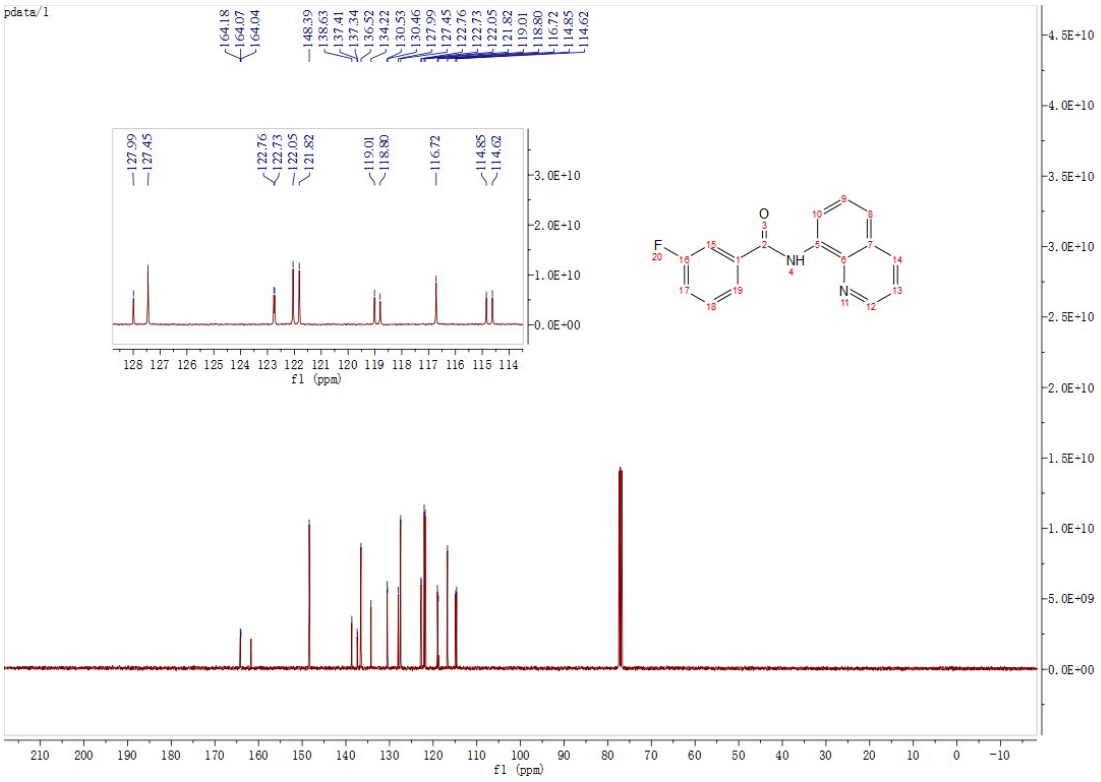
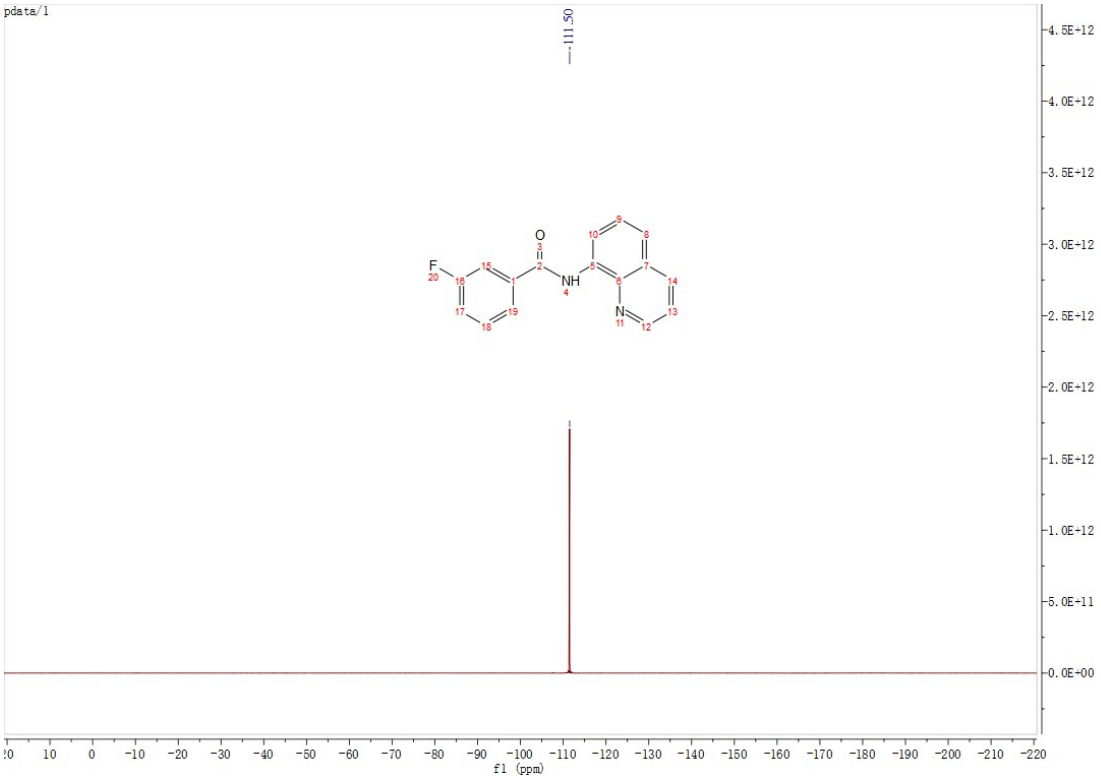
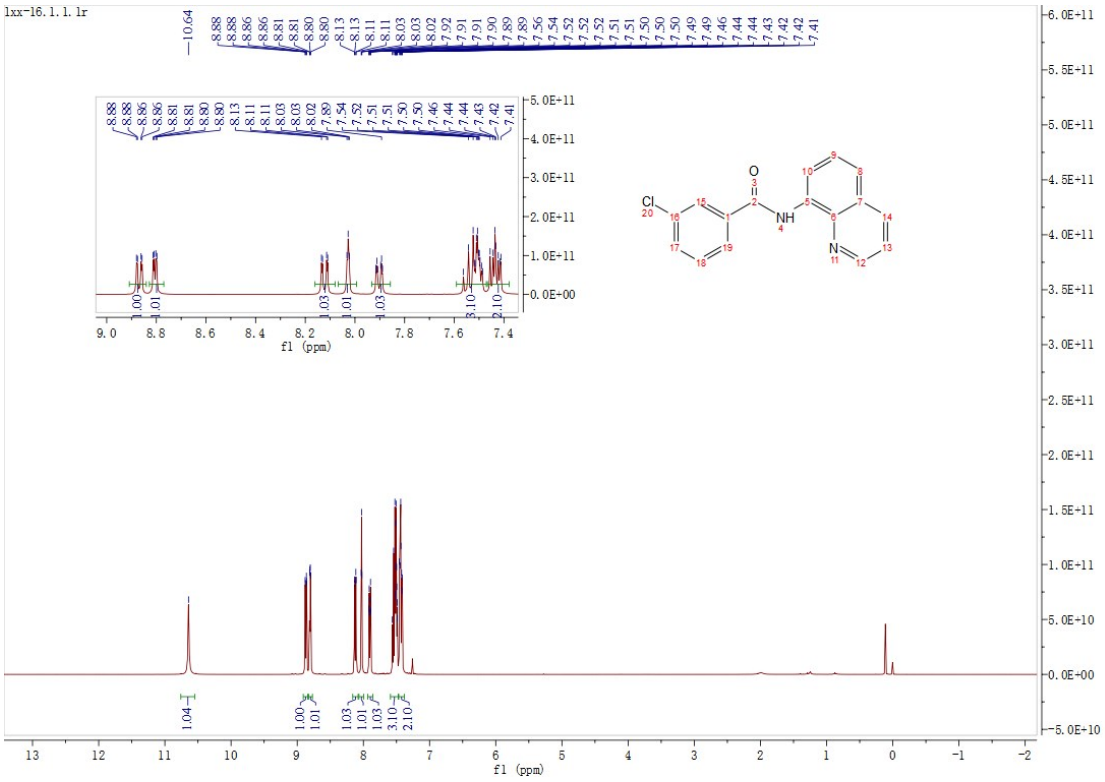
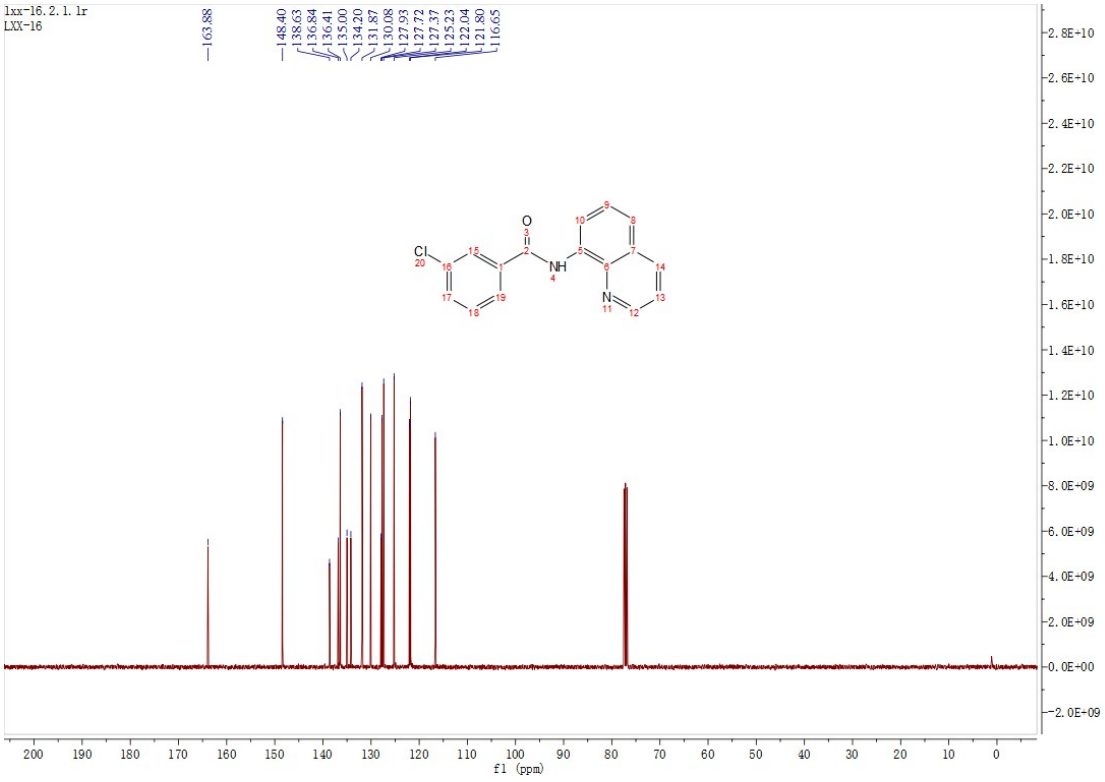
21.56
f1 (ppm)

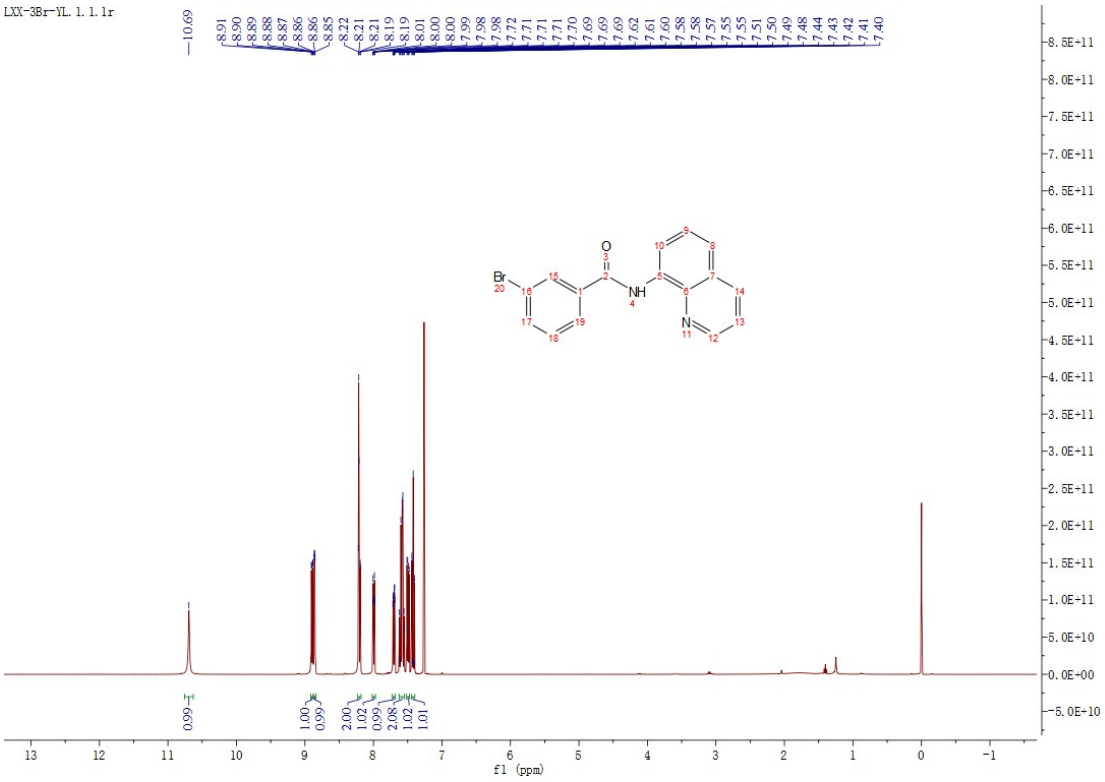

pdata/1
10.71
8.91
8.90
8.89
8.89
8.84
8.84
8.83
8.83
8.18
8.18
8.16
8.16
7.86
7.86
7.85
7.84
7.84
7.83
7.80
7.79
7.79
7.79
7.77
7.77
7.77
7.76
7.60
7.58
7.56
7.55
7.55
7.54
7.53
7.53
7.52
7.51
7.50
7.49
7.48
7.47
7.46
7.45
7.29
7.27
7.27
7.27
7.27
7.27
7.26
1.00
1.00
1.01
1.02
1.01
3.00
1.19
1.13
f1 (ppm)

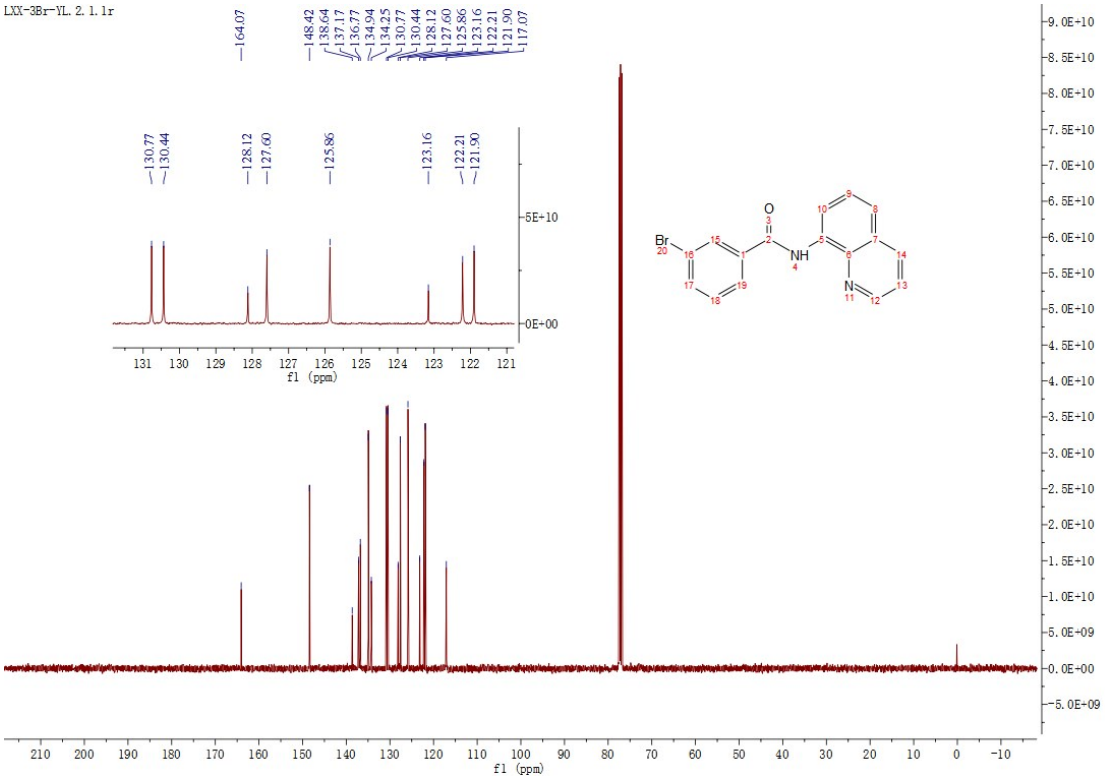

pdata/1
164.18
164.07
164.04
148.39
138.63
137.41
137.34
136.52
134.22
130.53
130.46
127.99
127.45
122.76
122.73
122.05
121.82
119.01
118.80
116.72
114.85
114.62
f1 (ppm)

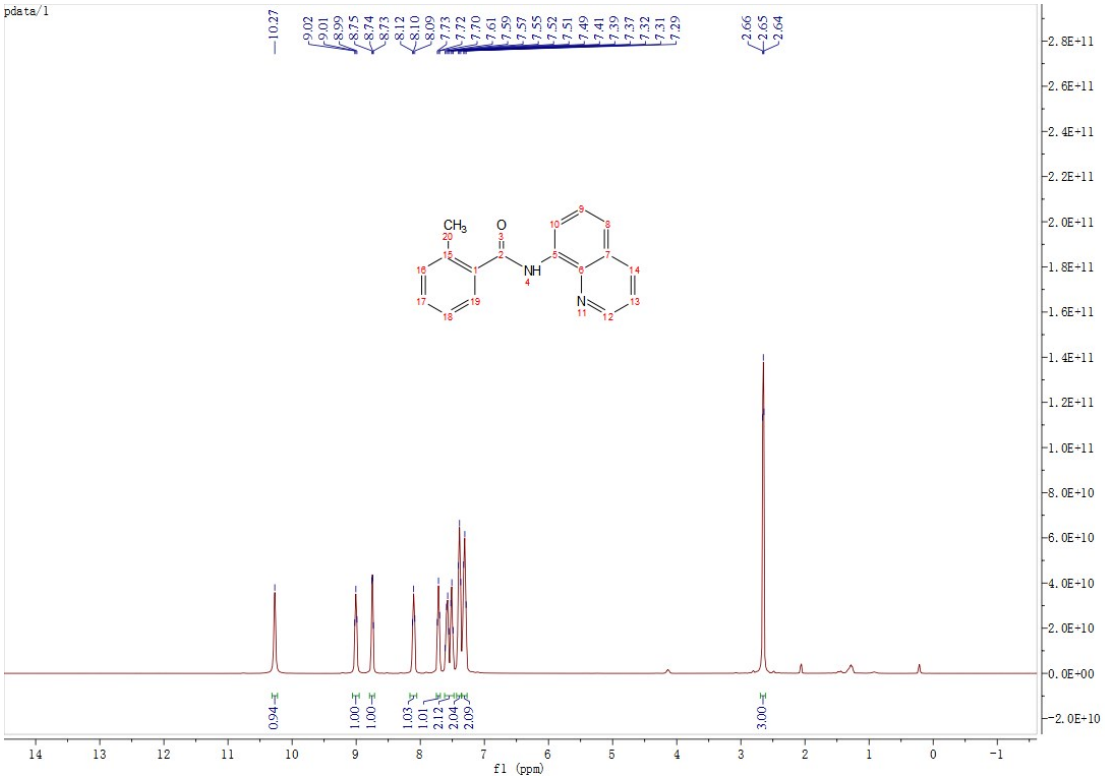

pdata/1
111.50
f1 (ppm)

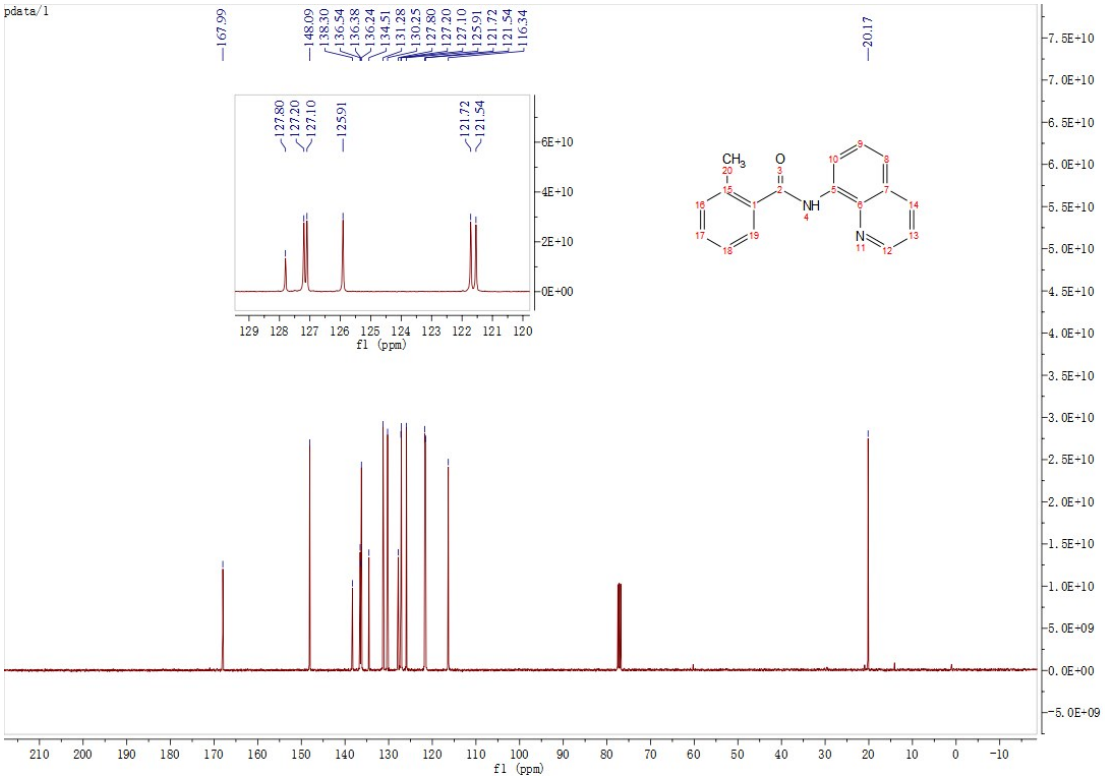

1xx-16.1.1.1r
f1 (ppm)

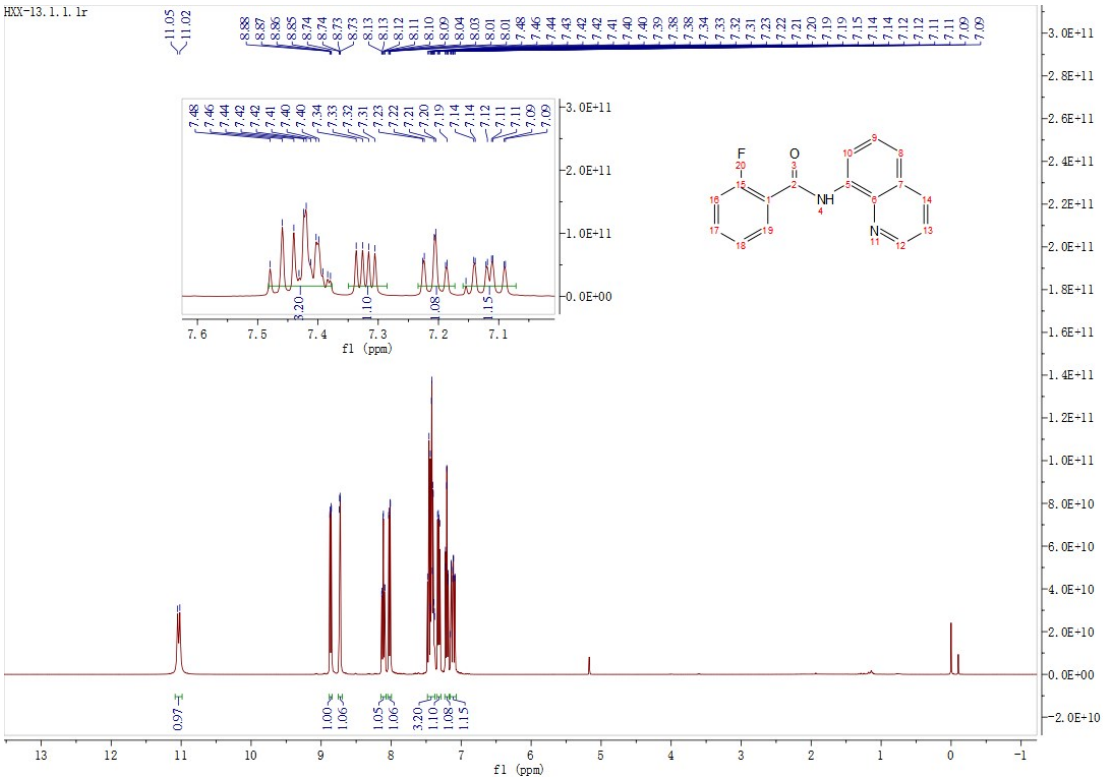

1xx-16.2.1.1r
LXX-16
f1 (ppm)

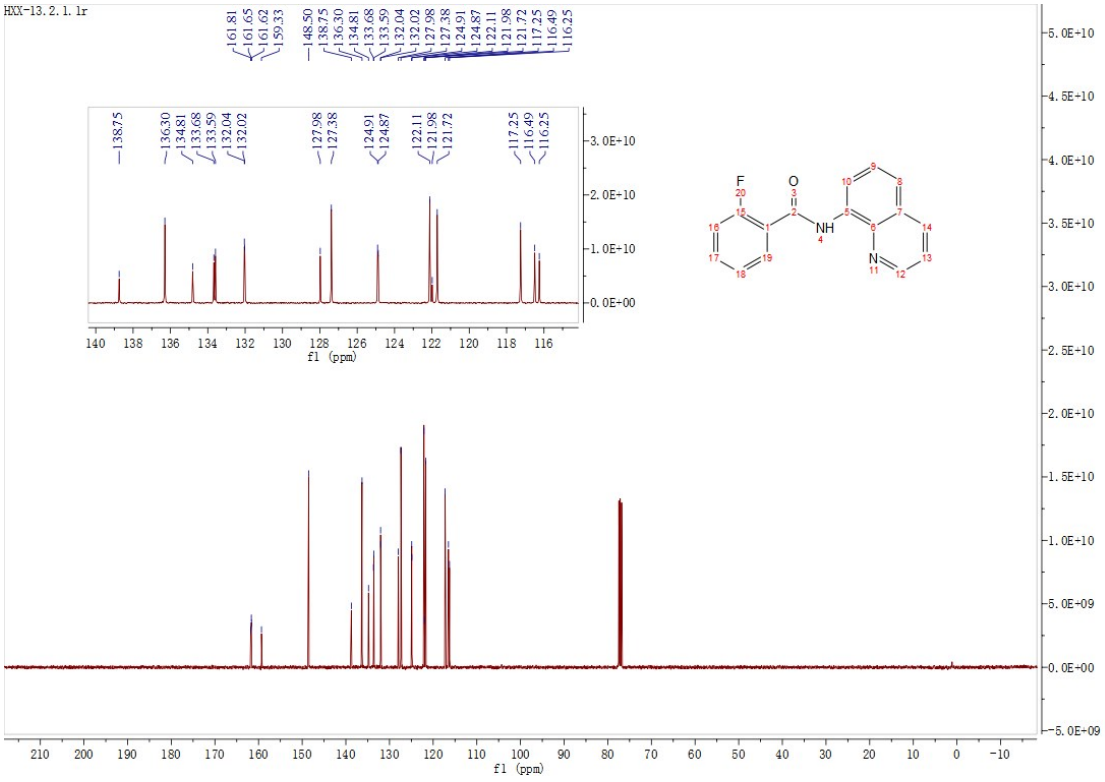

LXX-3Br-YL. 1. 1. 1r
10.69
8.91
8.90
8.89
8.88
8.87
8.86
8.86
8.85
8.22
8.21
8.21
8.19
8.19
8.01
8.00
8.00
7.99
7.98
7.98
7.72
7.71
7.71
7.71
7.70
7.69
7.69
7.69
7.62
7.61
7.60
7.58
7.58
7.57
7.55
7.55
7.51
7.50
7.49
7.48
7.44
7.43
7.42
7.41
7.40
0.99
1.00
0.99
2.00
1.02
0.99
2.08
1.02
1.01
f1 (ppm)

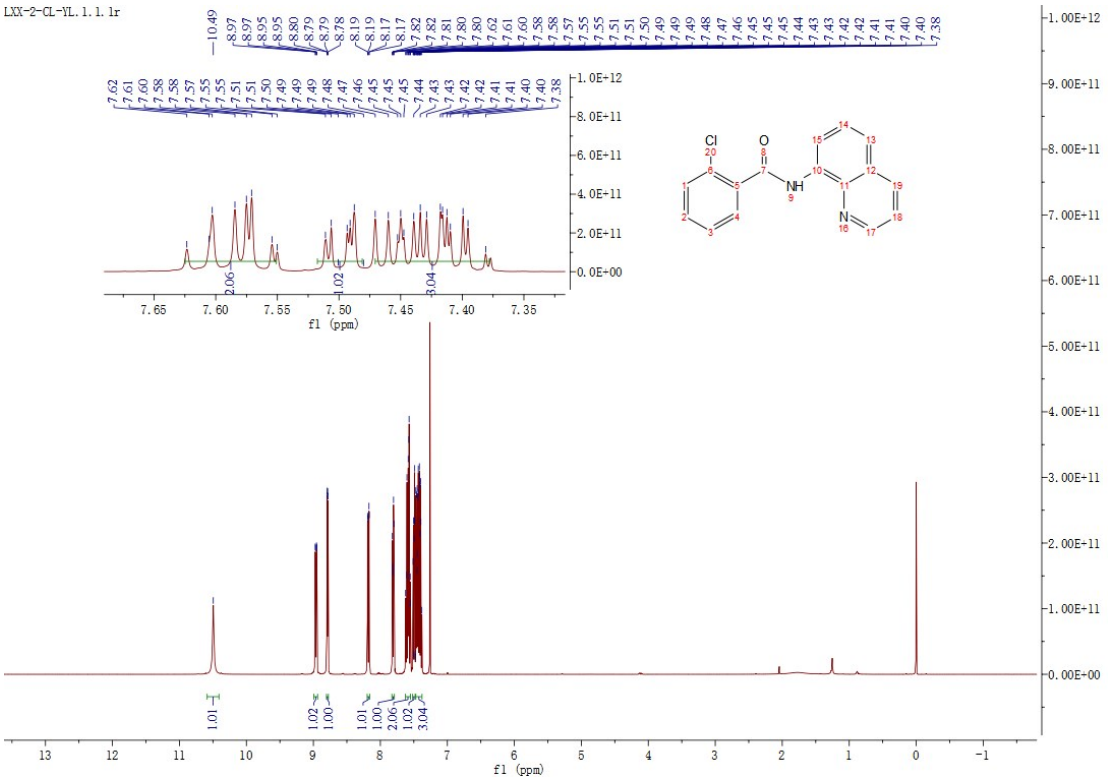

LXX-3Br-YL. 2. 1. 1r
164.07
148.42
138.64
137.17
136.77
134.94
134.25
130.77
130.44
128.12
127.60
125.86
123.16
122.21
121.90
117.07
f1 (ppm)

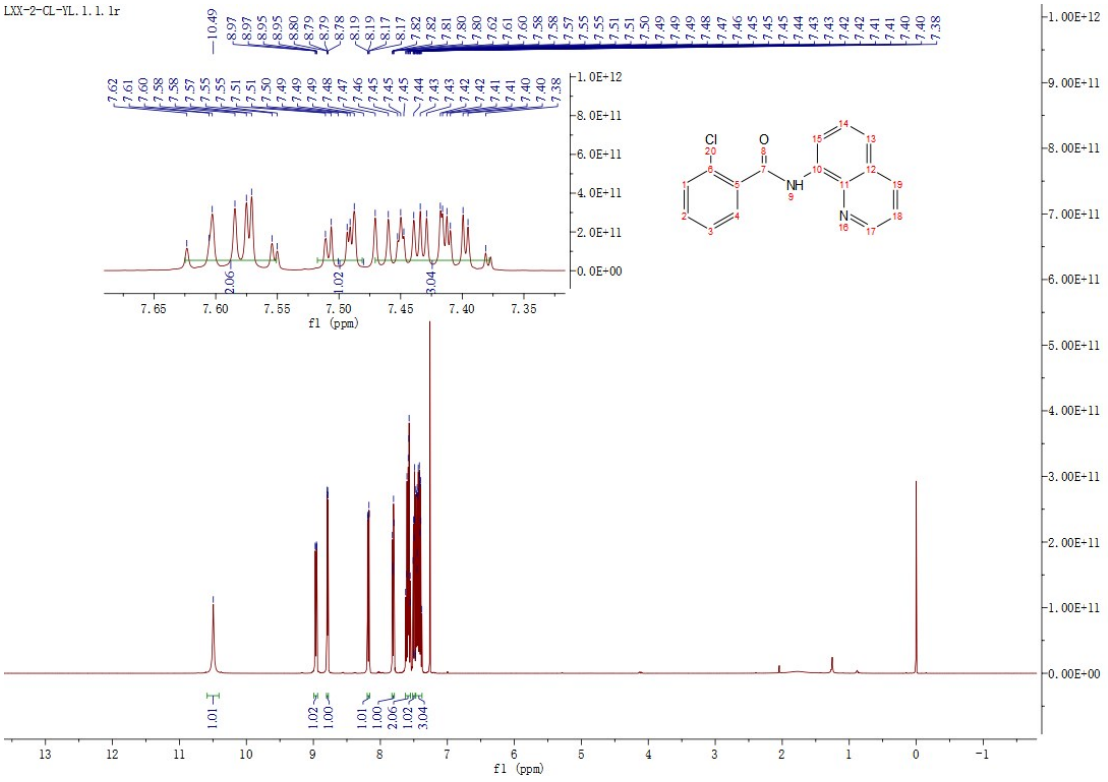

pdata/1
10.27
9.02
9.01
8.99
8.75
8.74
8.73
8.12
8.10
8.09
7.73
7.72
7.70
7.61
7.59
7.57
7.55
7.52
7.51
7.49
7.41
7.39
7.37
7.32
7.31
7.29
2.66
2.65
2.64
0.94
1.00
1.00
1.03
1.01
2.12
2.04
2.09
3.00
f1 (ppm)

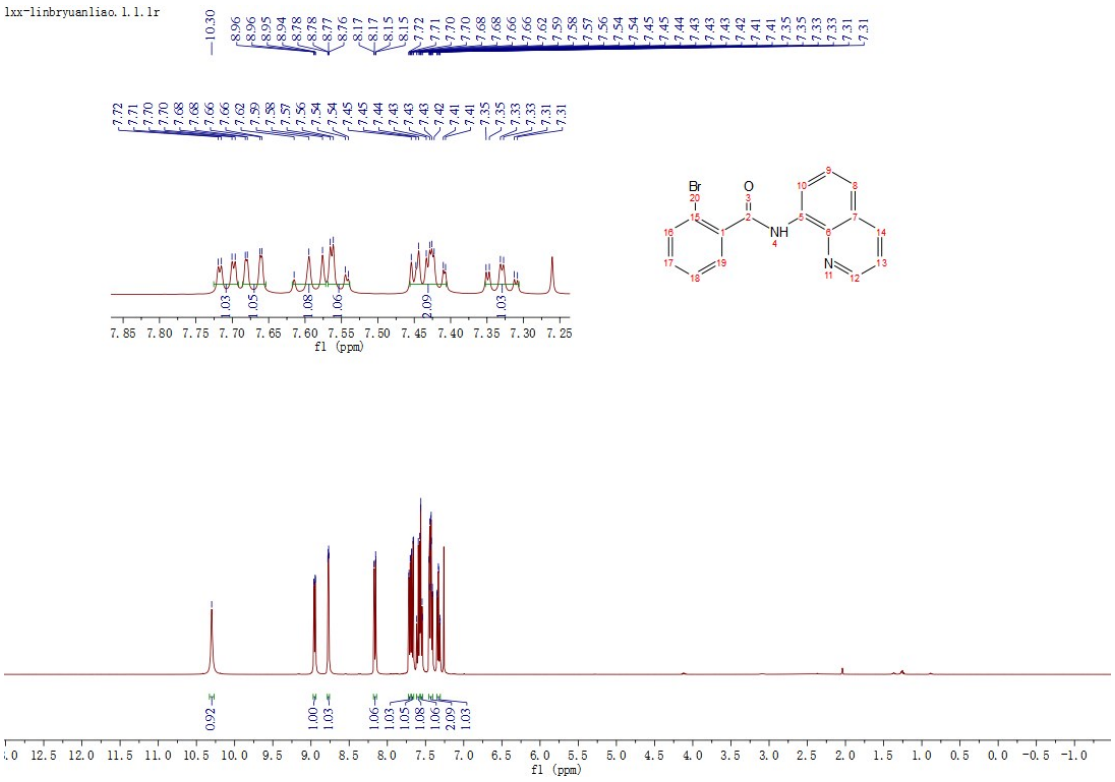

pdata/1
167.99
148.09
138.30
136.54
136.38
136.24
134.51
131.28
130.25
127.80
127.20
127.10
125.91
121.72
121.54
116.34
20.17
f1 (ppm)

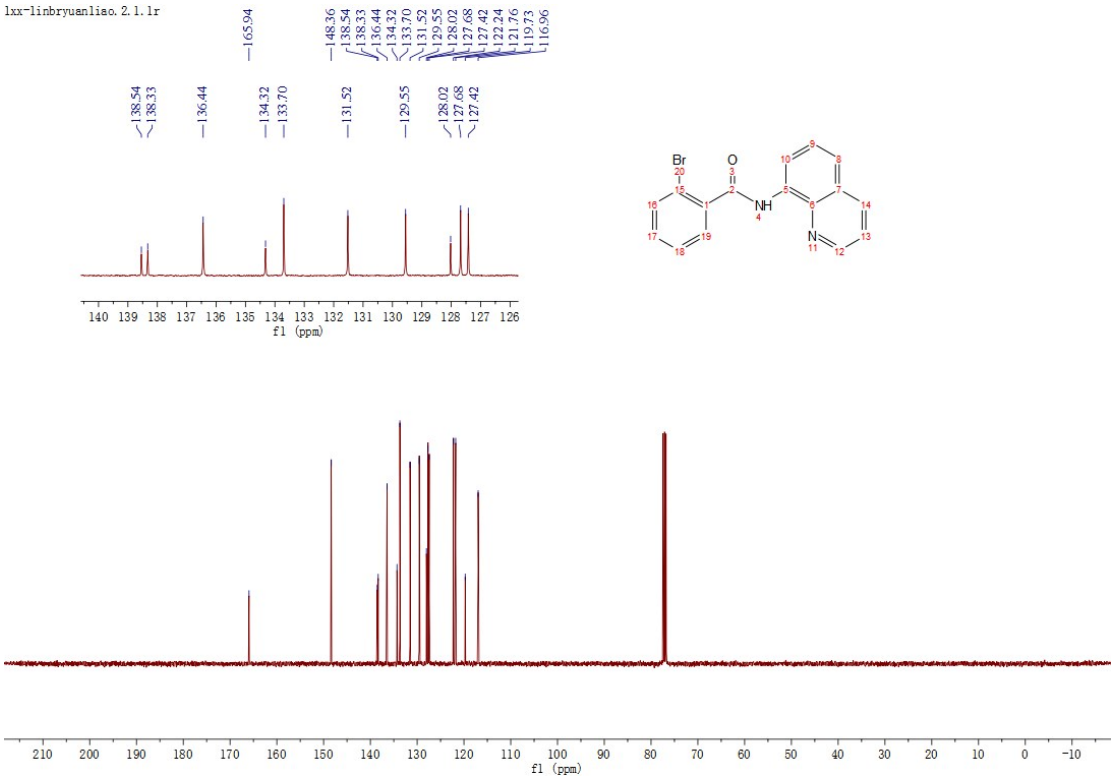

HXX-13.1.1.1r
f1 (ppm)

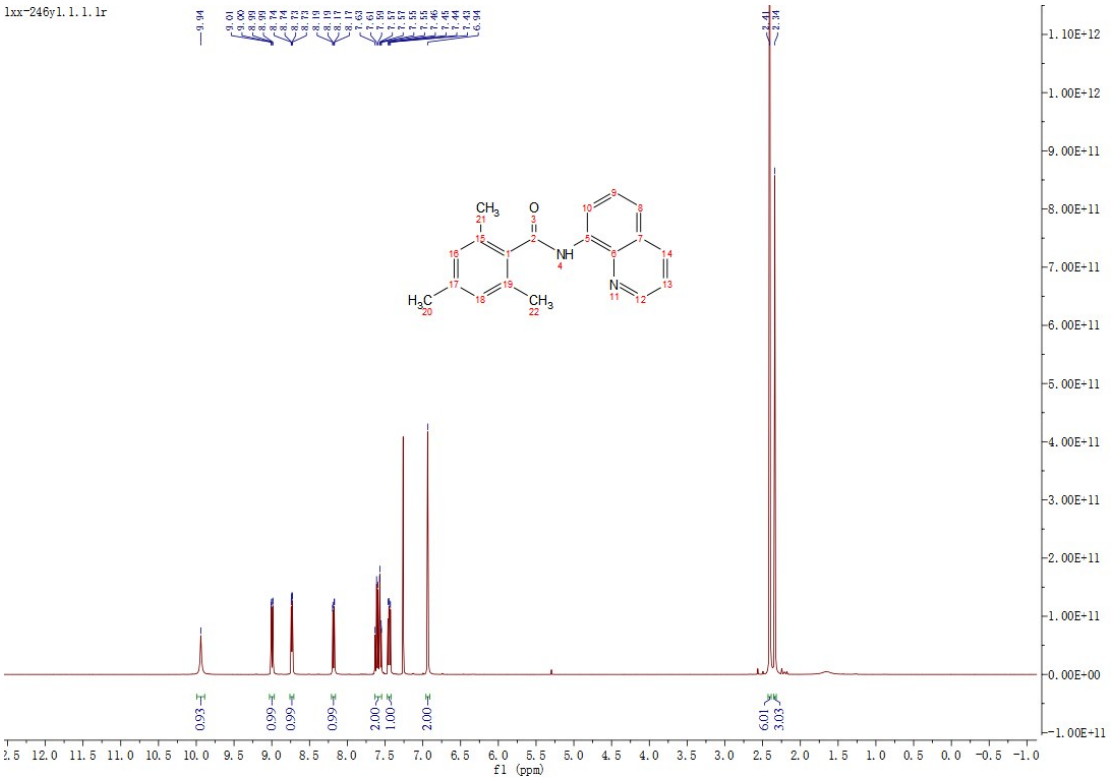

HXX-13.2.1.1r
f1 (ppm)

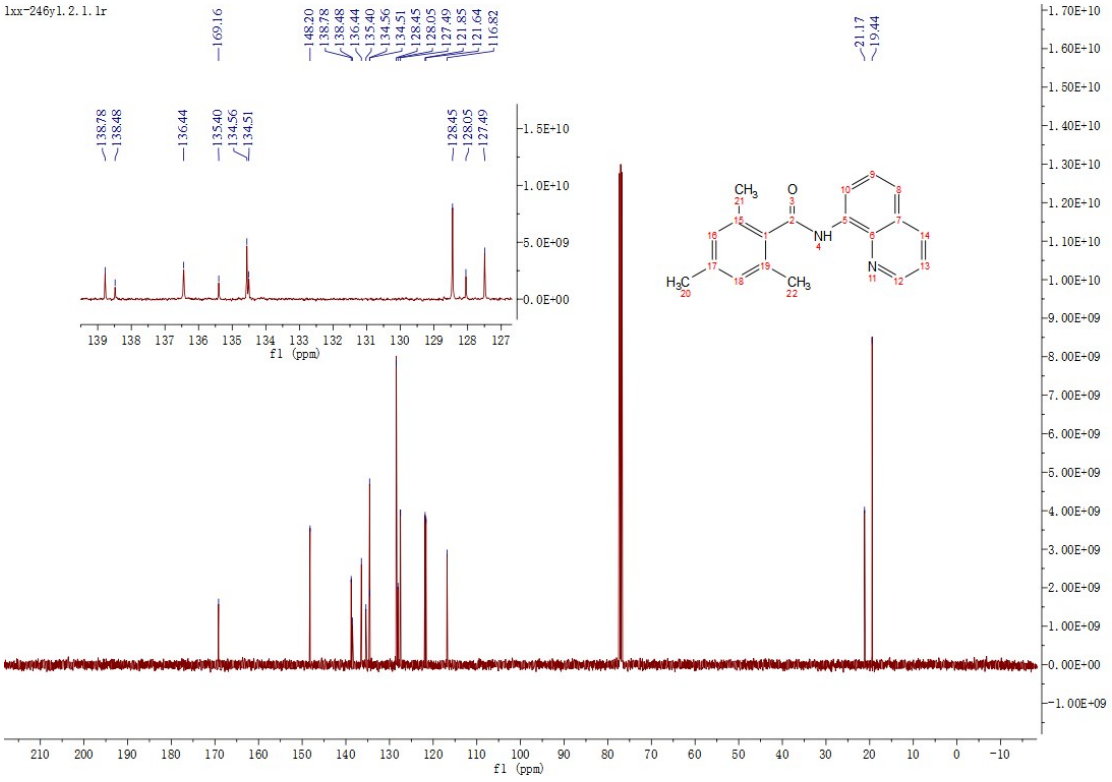

LXX-2-CL-YL.1.1.1r
f1 (ppm)

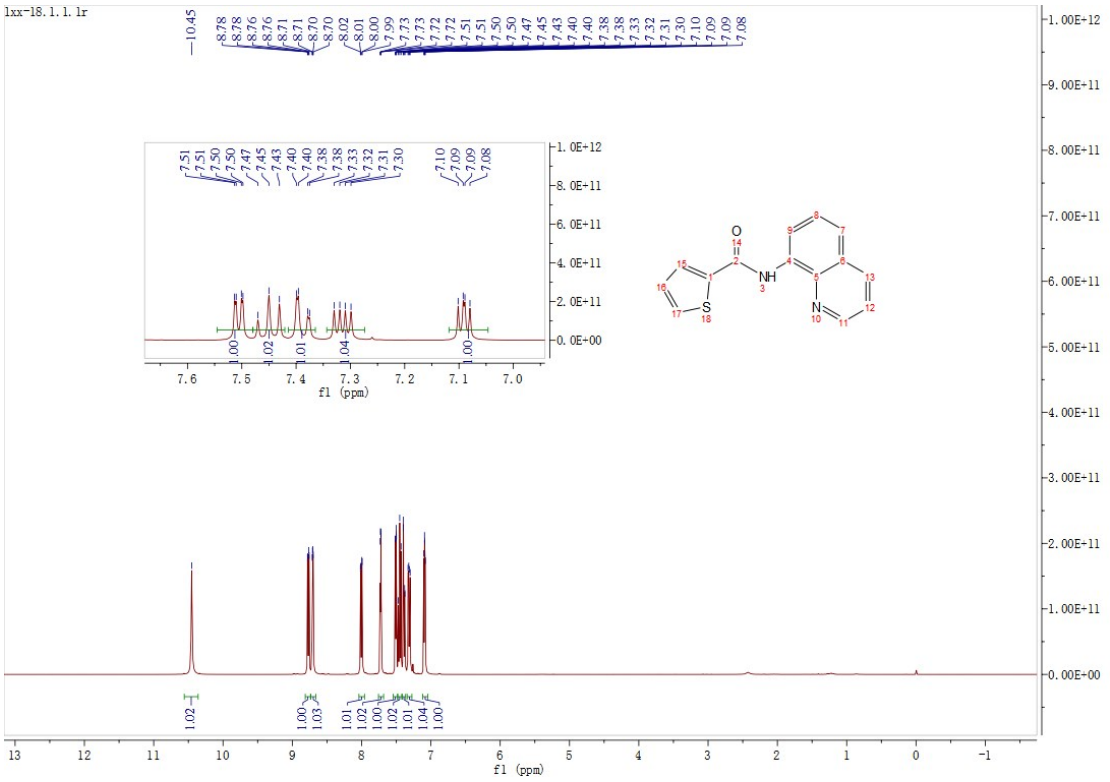

LXX-2-CL-YL.1.1.1r
f1 (ppm)

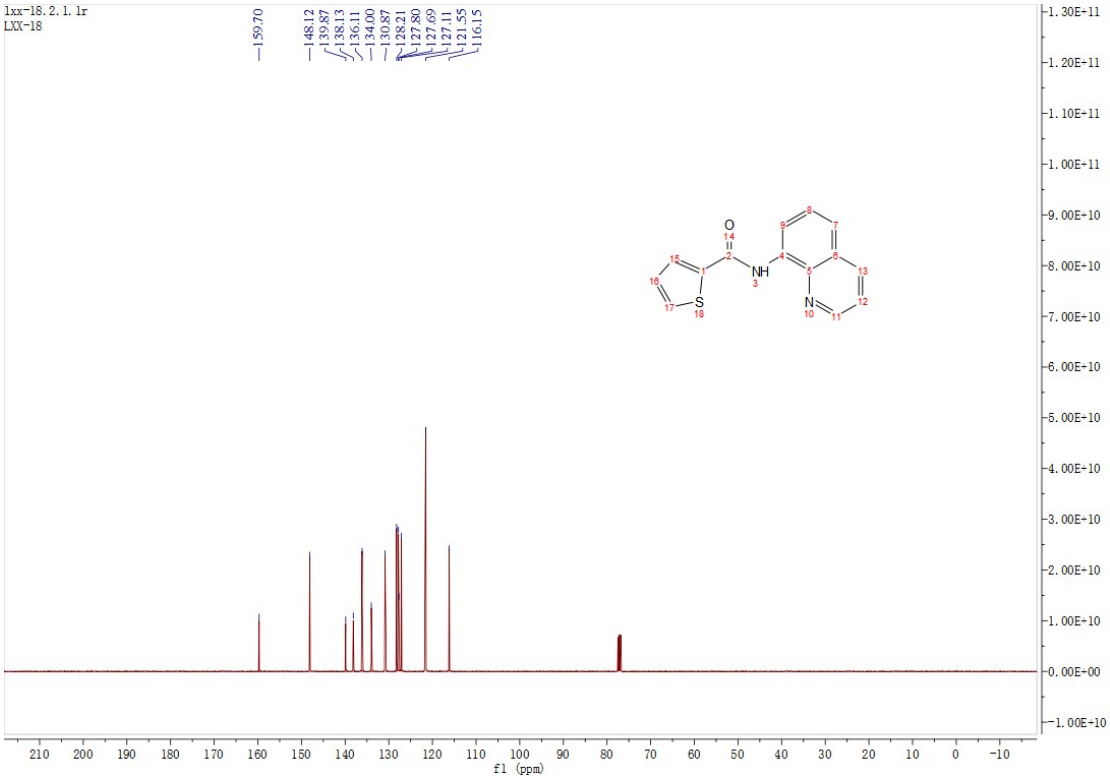

lxx-linbryuanliao.1.1.1r
f1 (ppm)

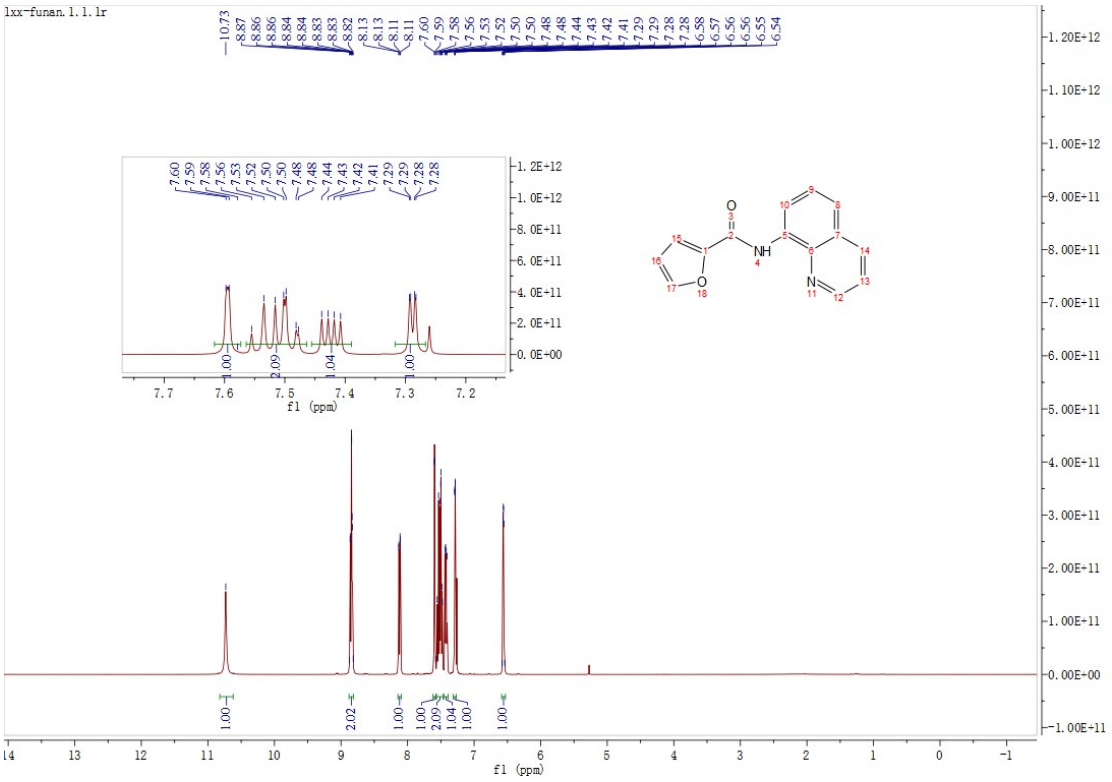

lxx-linbryuanliao.2.1.1r
f1 (ppm)

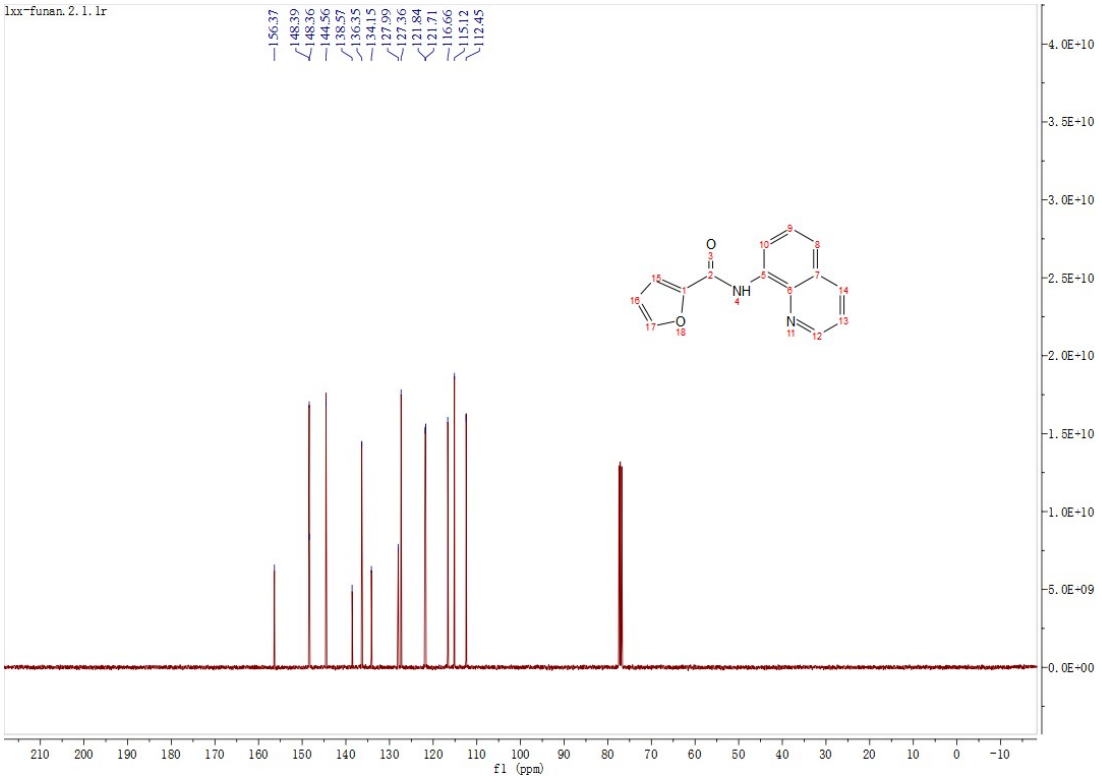

lxx-246y1.1.1.1r
f1 (ppm)


lxx-246y1.2.1.1r
f1 (ppm)

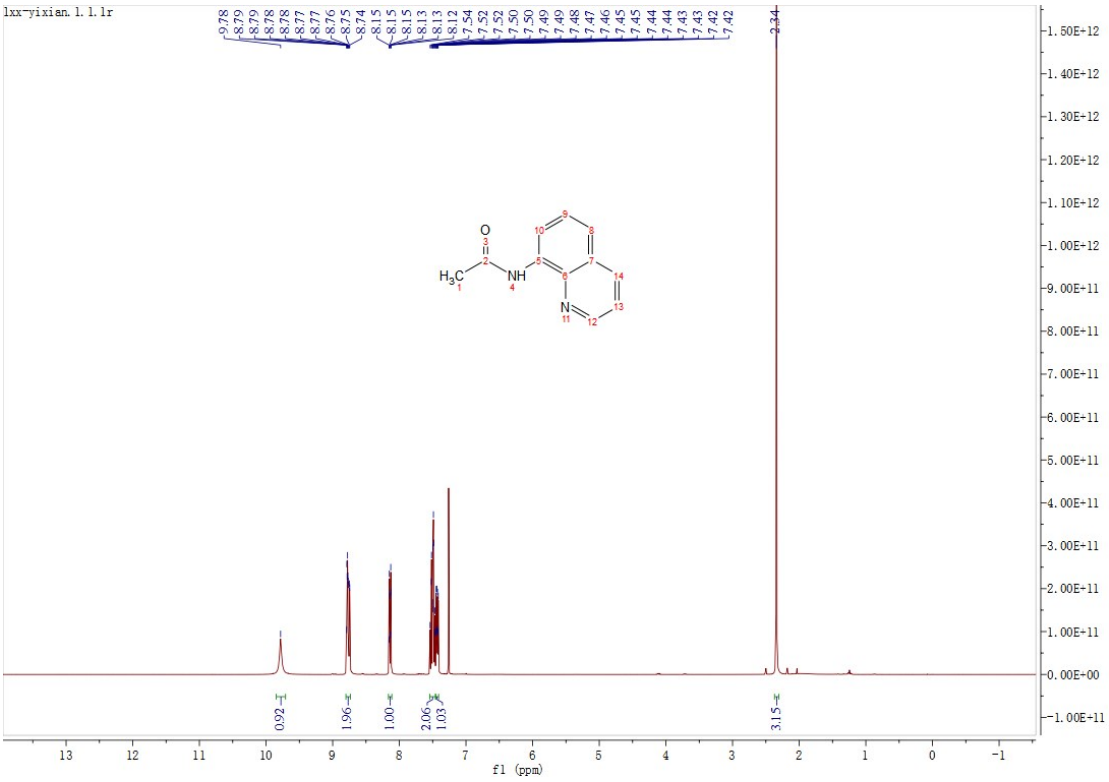

1xx-18.1.1.1r
f1 (ppm)

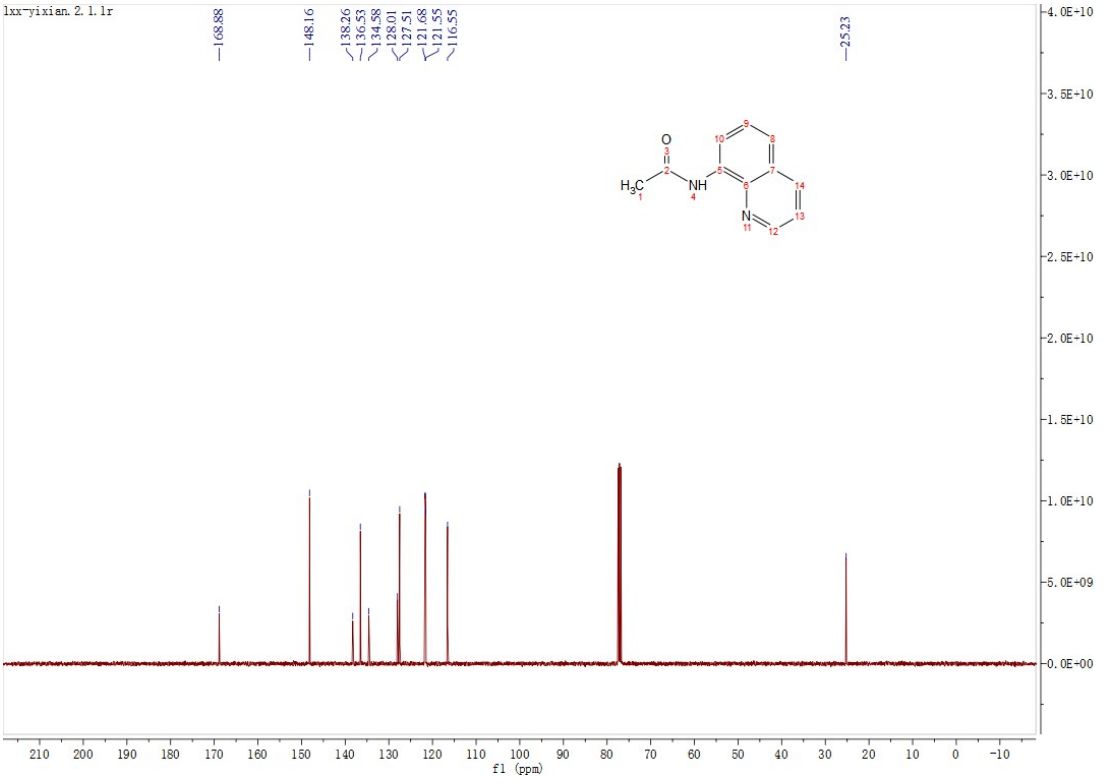

1xx-18.2.1.1r
LXX-18
f1 (ppm)

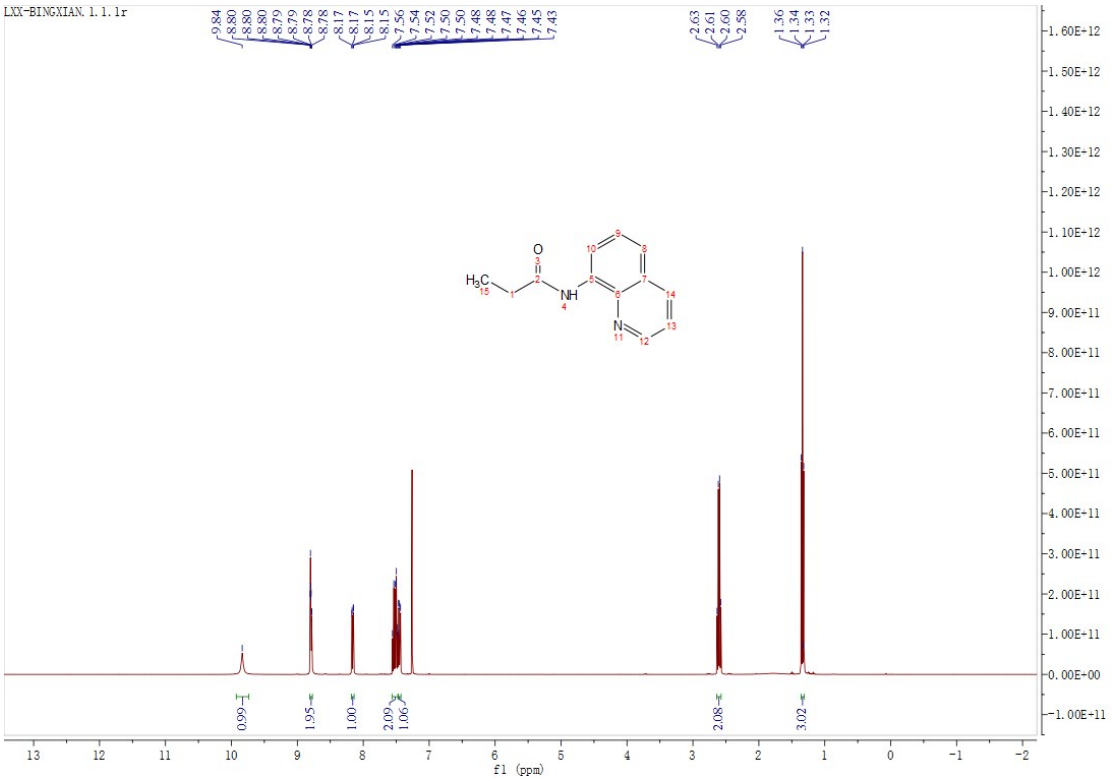

lxx-funan.1.1.1r
f1 (ppm)

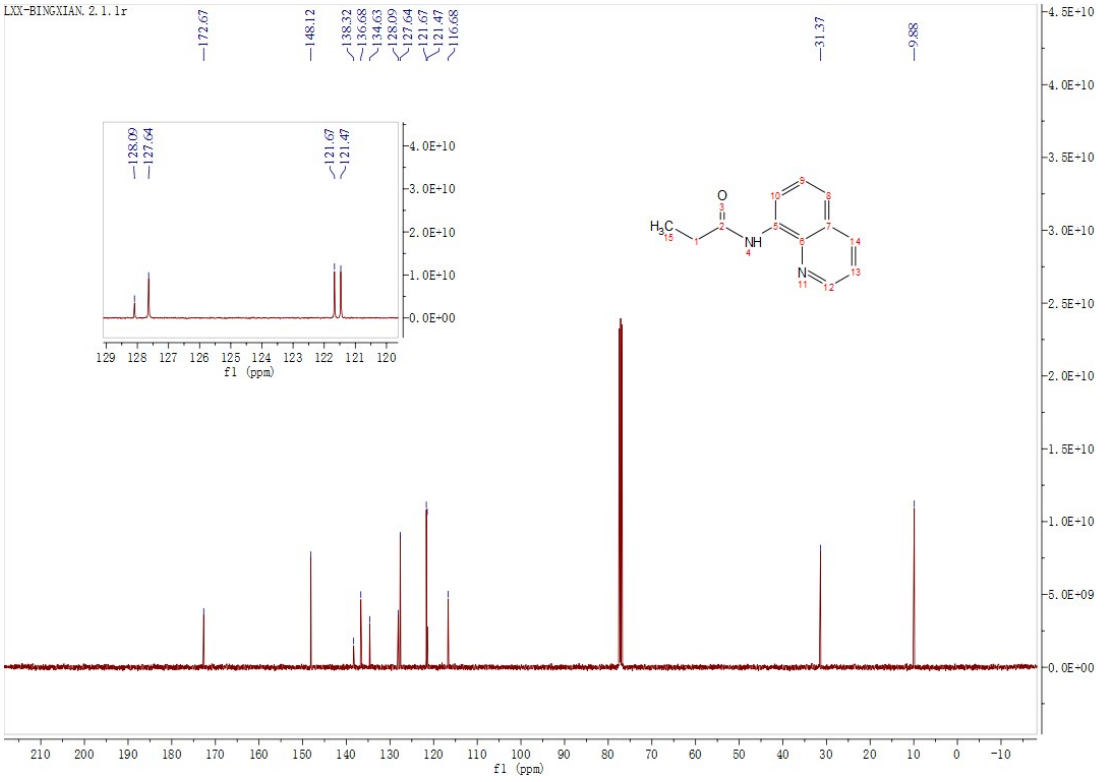

lxx-funan.2.1.1r
f1 (ppm)

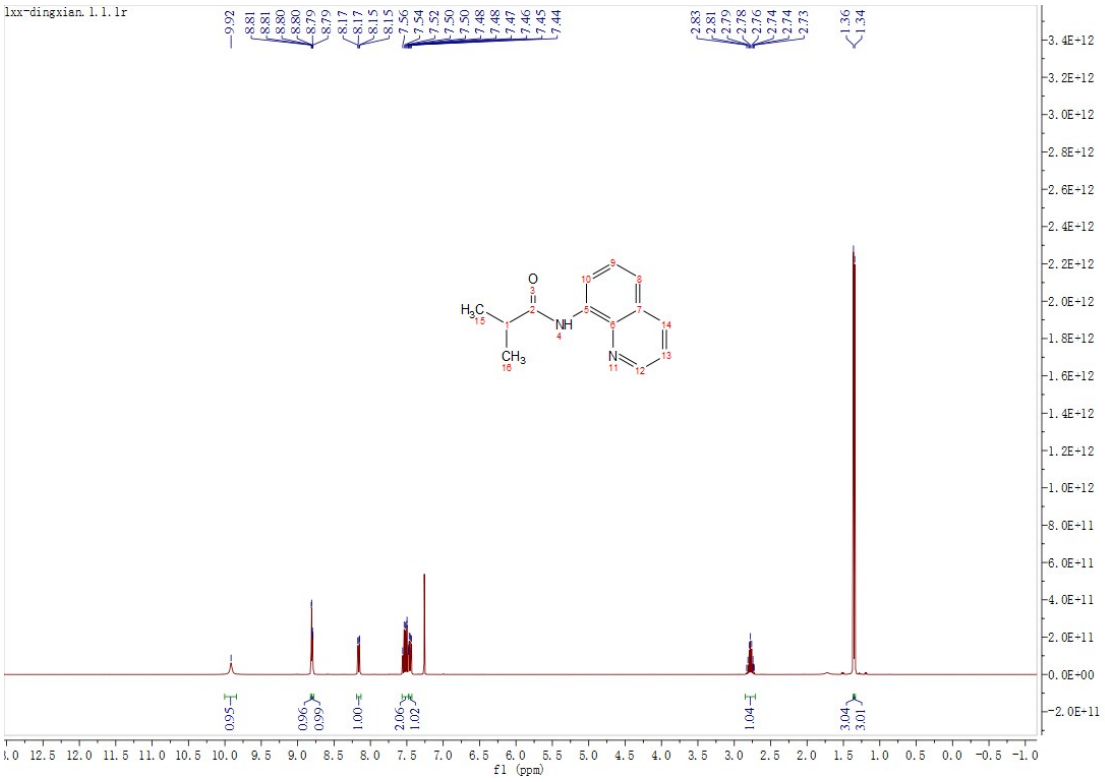
10.2 NMR-Spectra of **3**

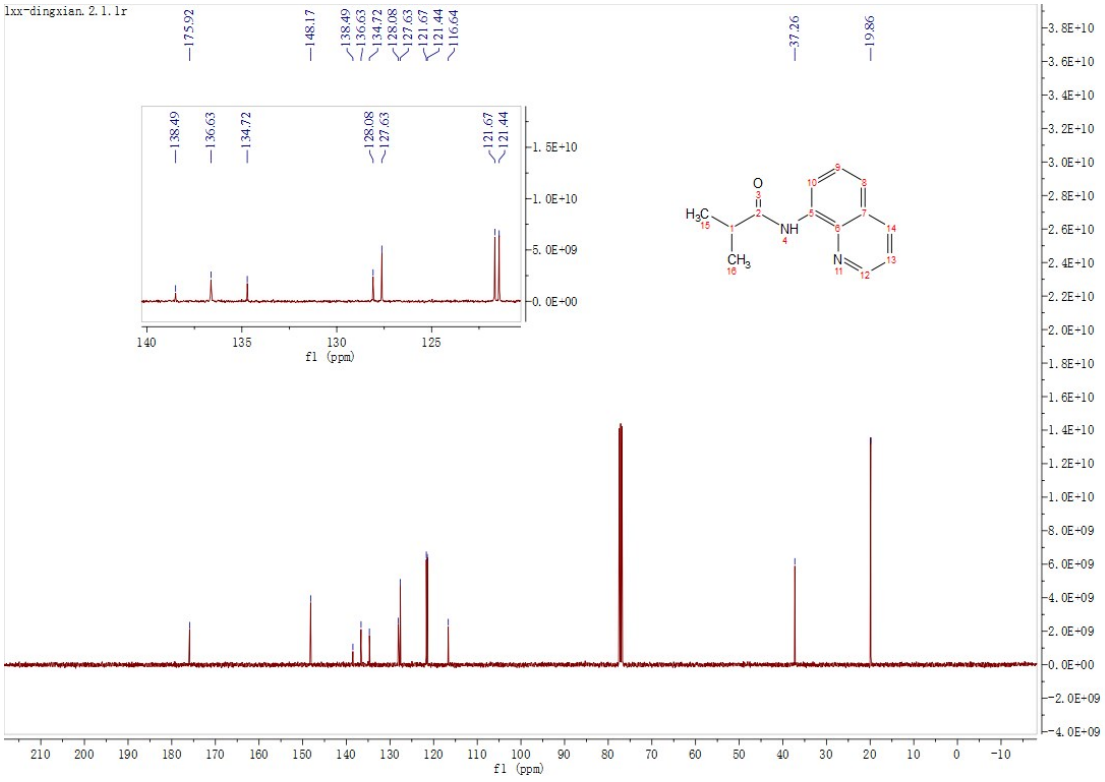


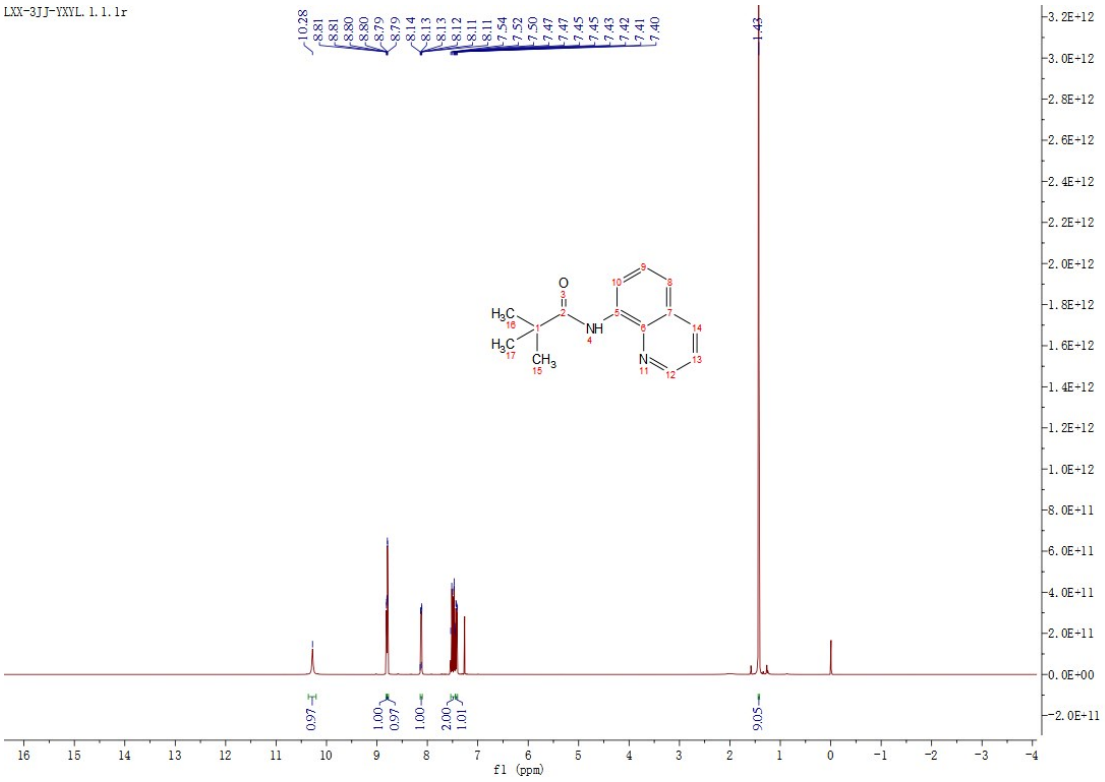


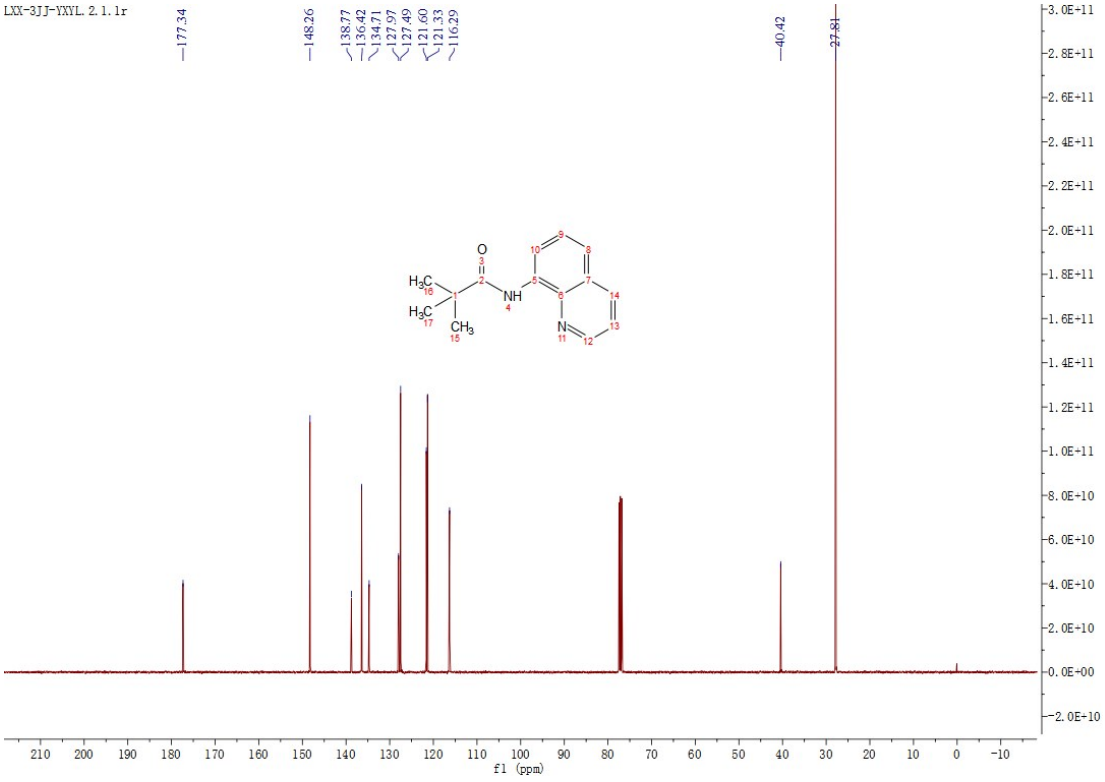

LXX-BINGXIAN. 1. 1. 1r
9.84
8.80
8.80
8.80
8.79
8.79
8.78
8.78
8.17
8.17
8.15
8.15
7.56
7.54
7.52
7.50
7.50
7.48
7.48
7.47
7.46
7.45
7.43
2.63
2.61
2.60
2.58
1.36
1.34
1.33
1.32
0.99
1.95
1.00
2.09
1.06
2.08
3.02
f1 (ppm)

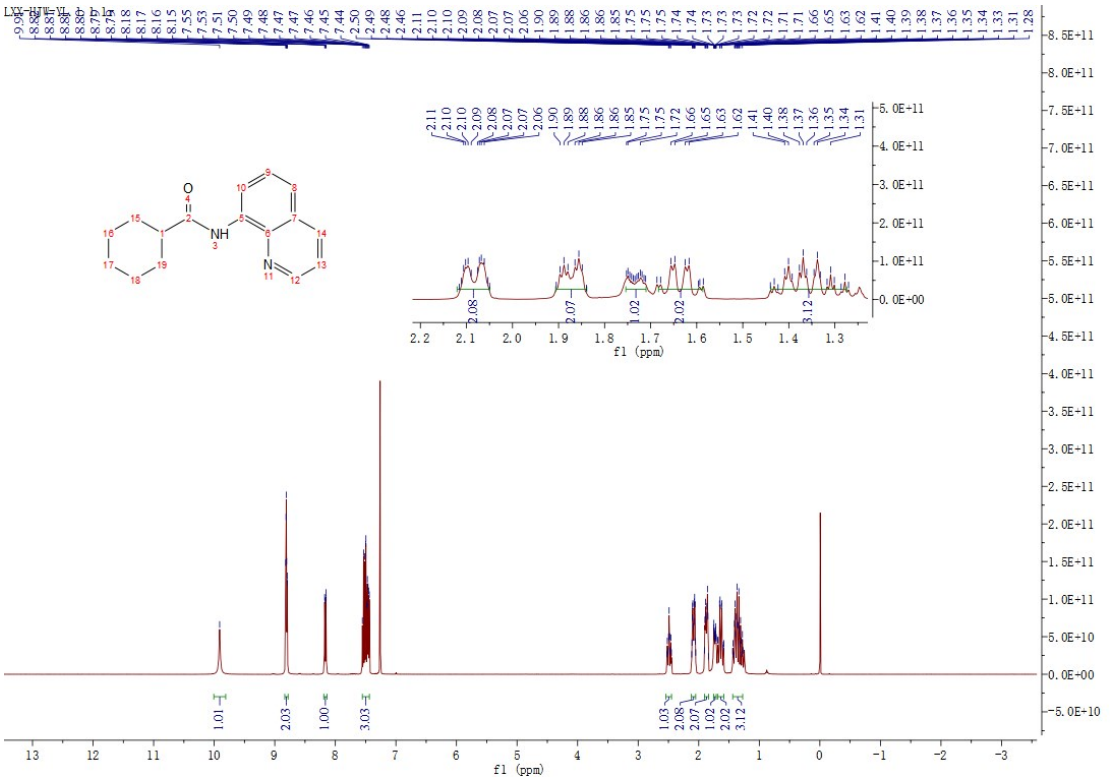

LXX-BINGXIAN. 2. 1. 1r
172.67
148.12
138.32
136.68
134.63
128.09
127.64
121.67
121.47
116.68
31.37
9.88
f1 (ppm)

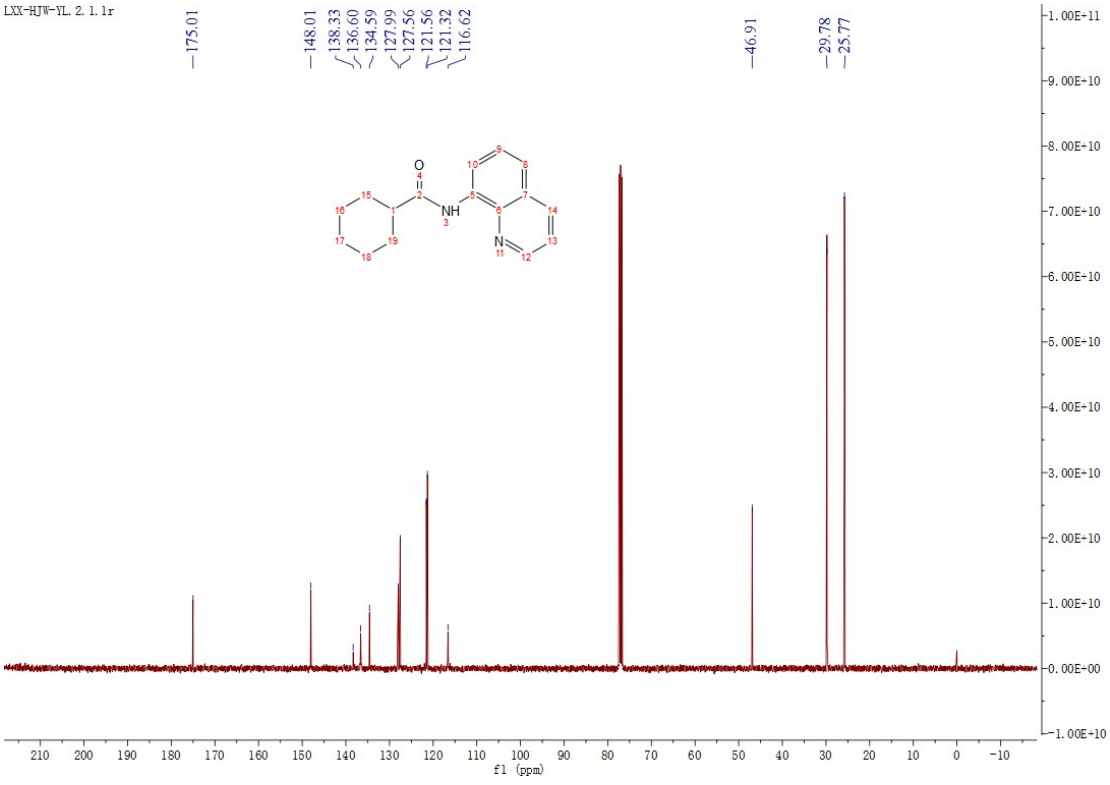

lxx-dingxian.1.1.1r
f1 (ppm)

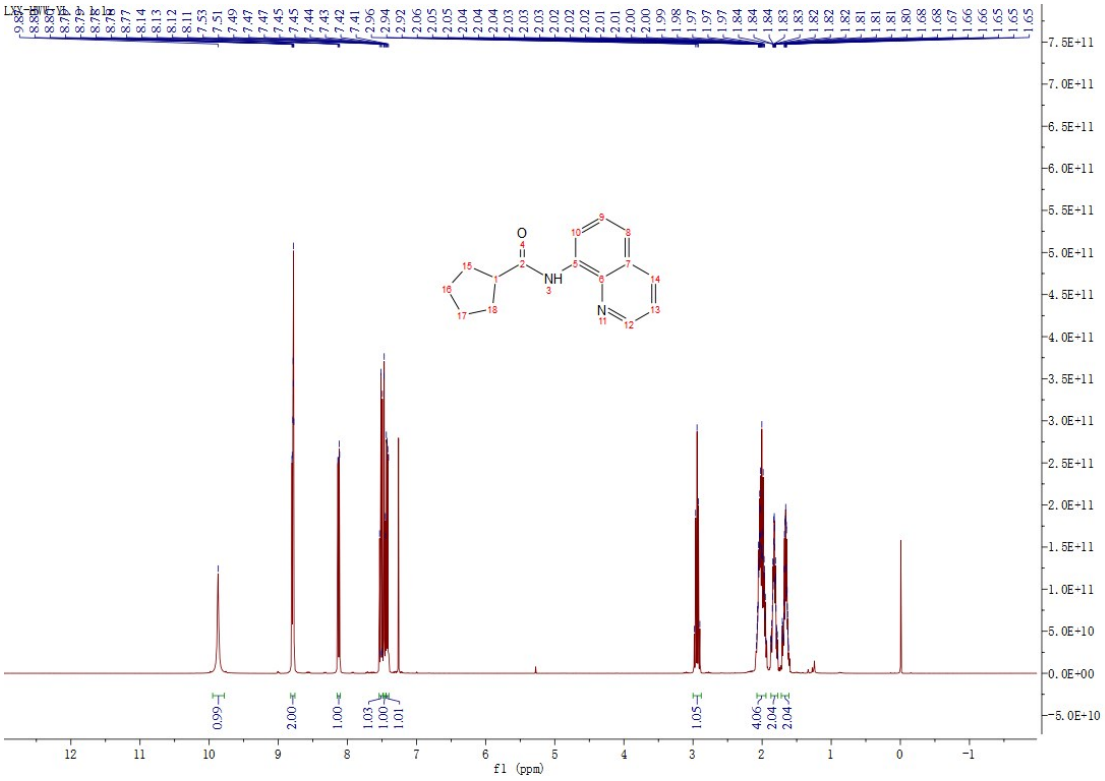

lxx-dingxian.2.1.1r
f1 (ppm)

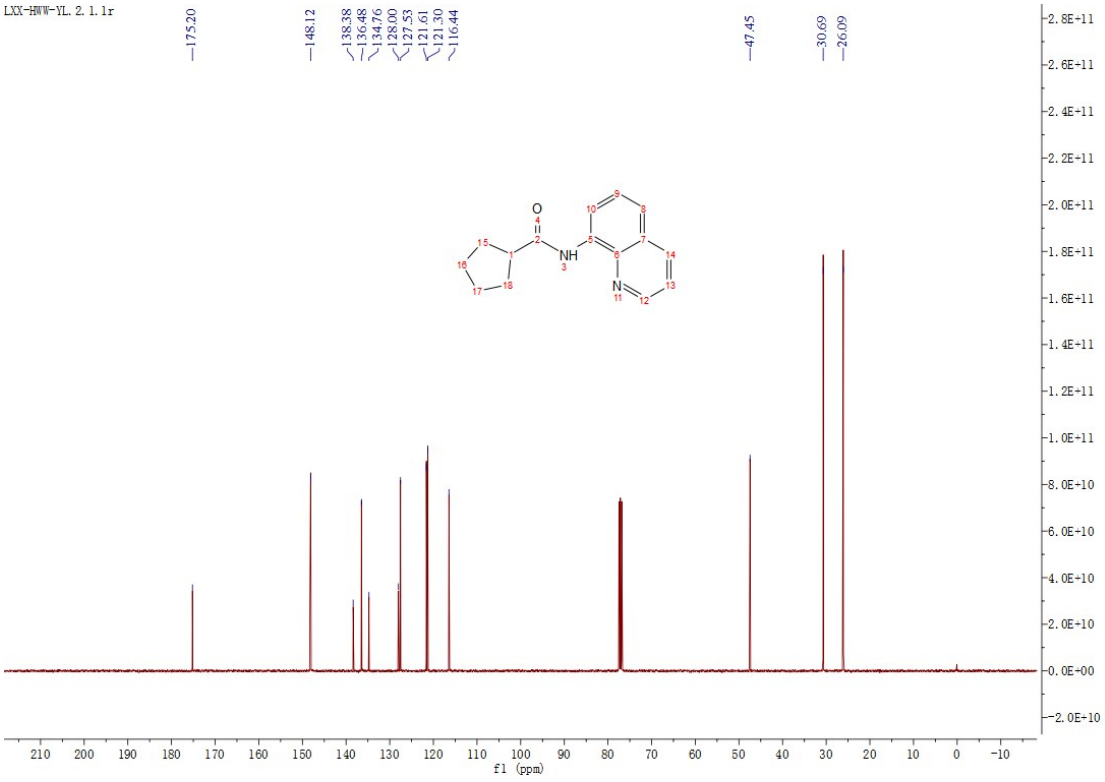

LXX-3JJ-YXYL.1.1.1r
10.28
8.81
8.81
8.80
8.80
8.79
8.79
8.14
8.13
8.13
8.12
8.11
8.11
7.54
7.52
7.50
7.47
7.47
7.45
7.45
7.43
7.42
7.41
7.40
1.43
0.97
1.00
0.97
1.00
2.00
1.01
9.05
f1 (ppm)


LXX-3JJ-YXYL.2.1.1r
177.34
148.26
138.77
136.42
134.71
127.97
127.49
121.60
121.33
116.29
40.42
27.81
f1 (ppm)

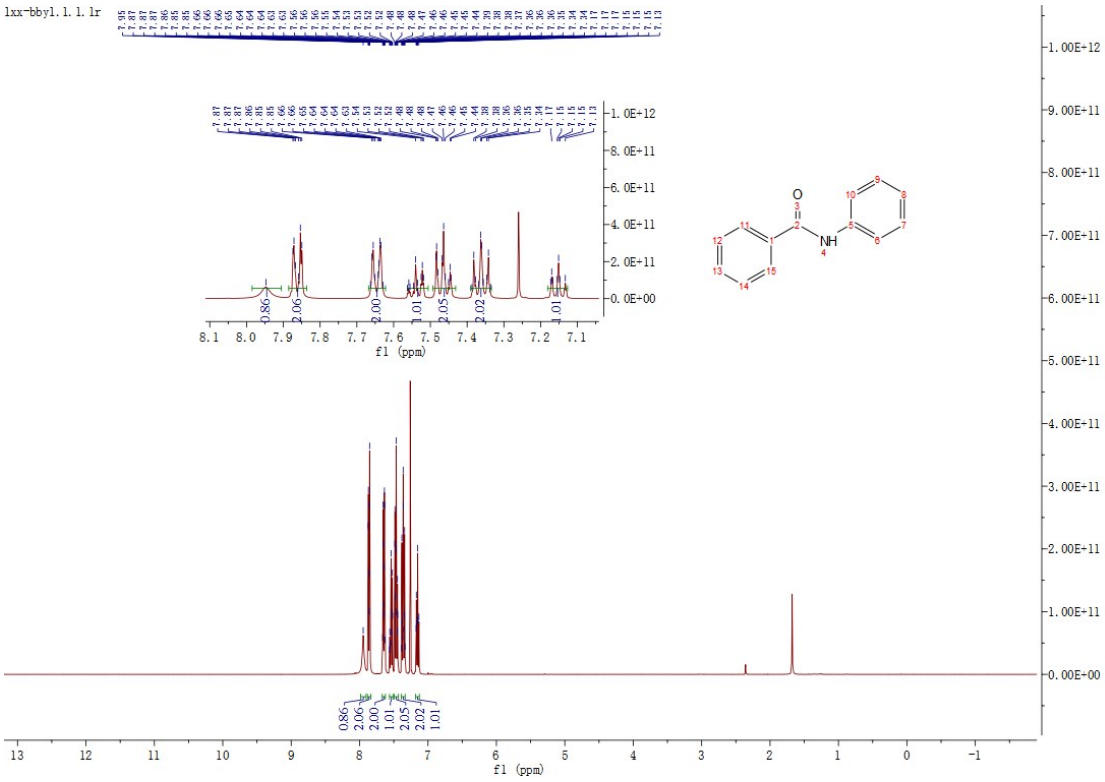

f1 (ppm)

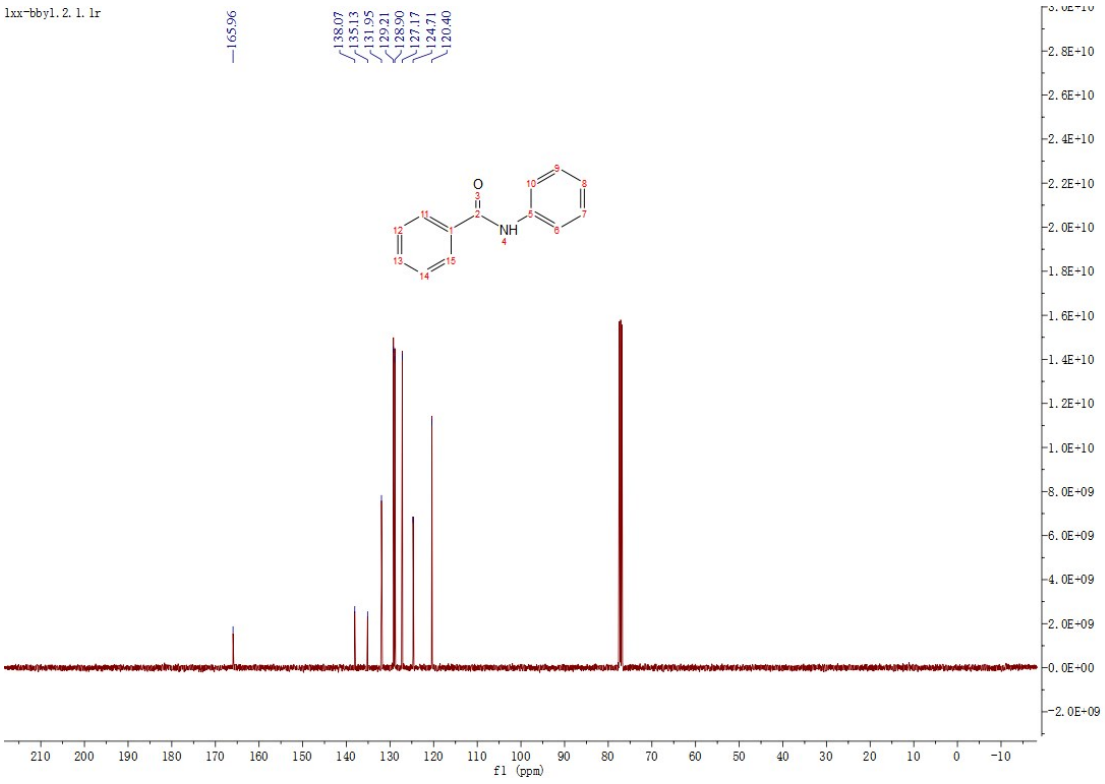

LXX-HJW-YL.2.1.1r
175.01
148.01
138.33
136.60
134.59
127.99
127.56
121.56
121.32
116.62
46.91
29.78
25.77
f1 (ppm)

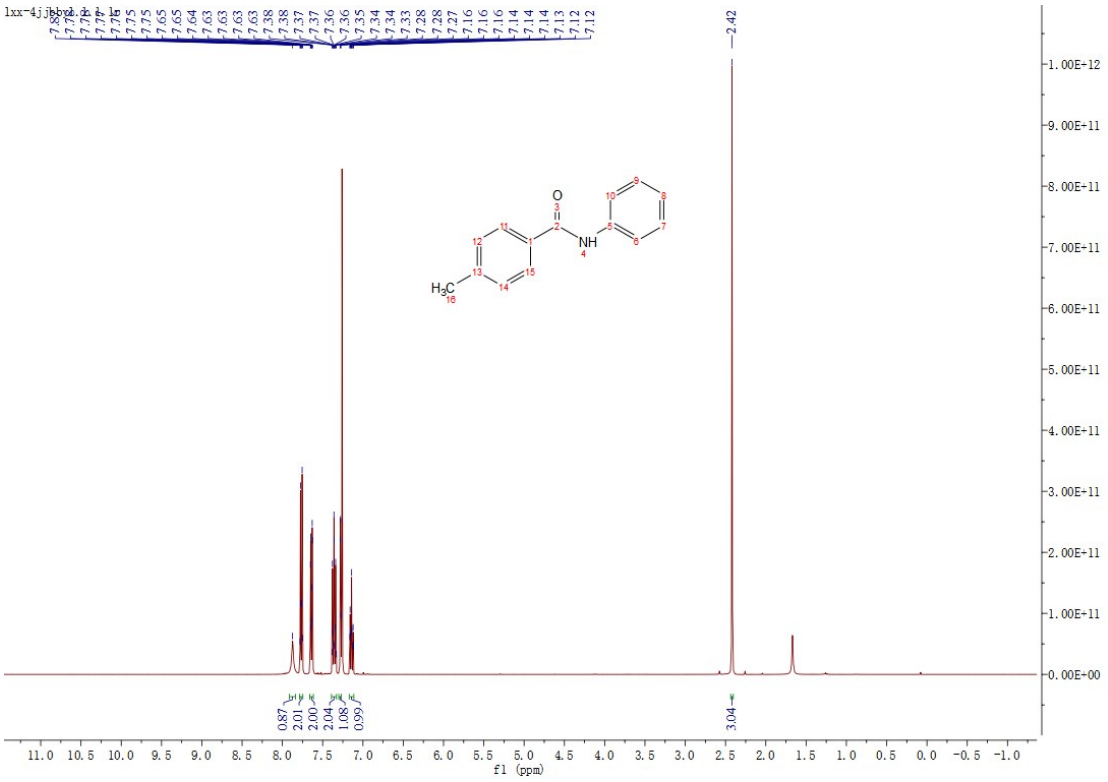

f1 (ppm)

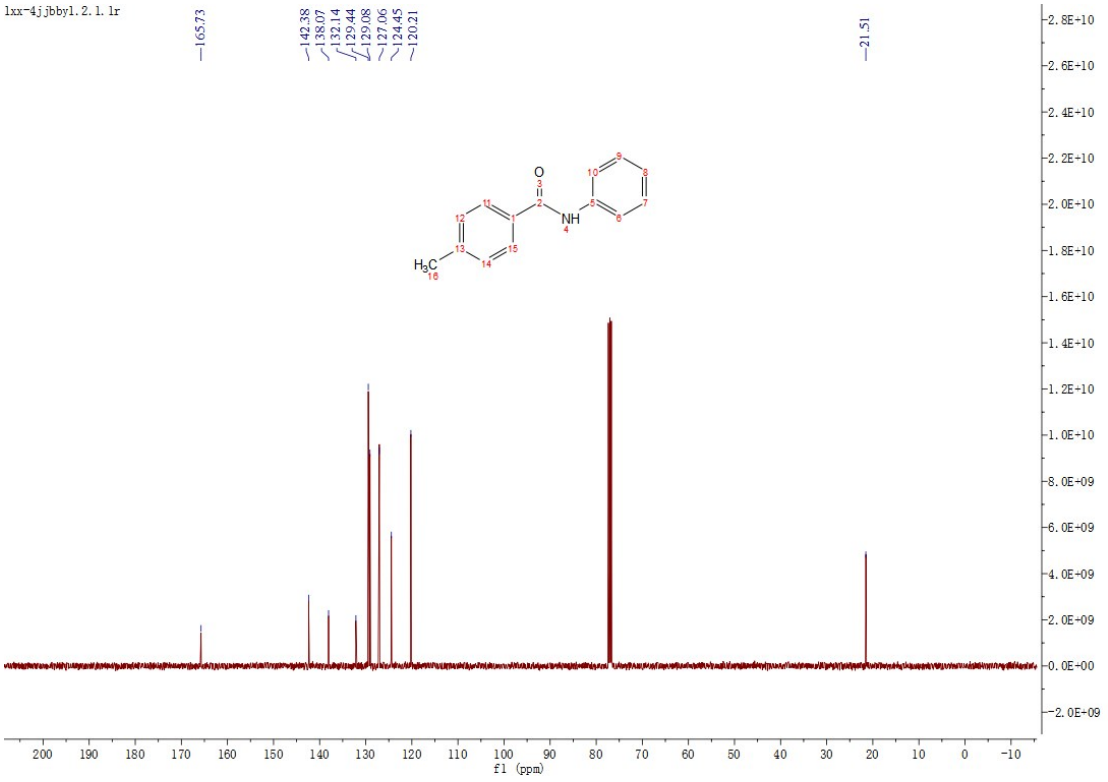

LXX-HWW-YL.2.1.1r
175.20
148.12
138.38
136.48
134.76
128.00
127.53
121.61
121.30
116.44
47.45
30.69
26.09
f1 (ppm)

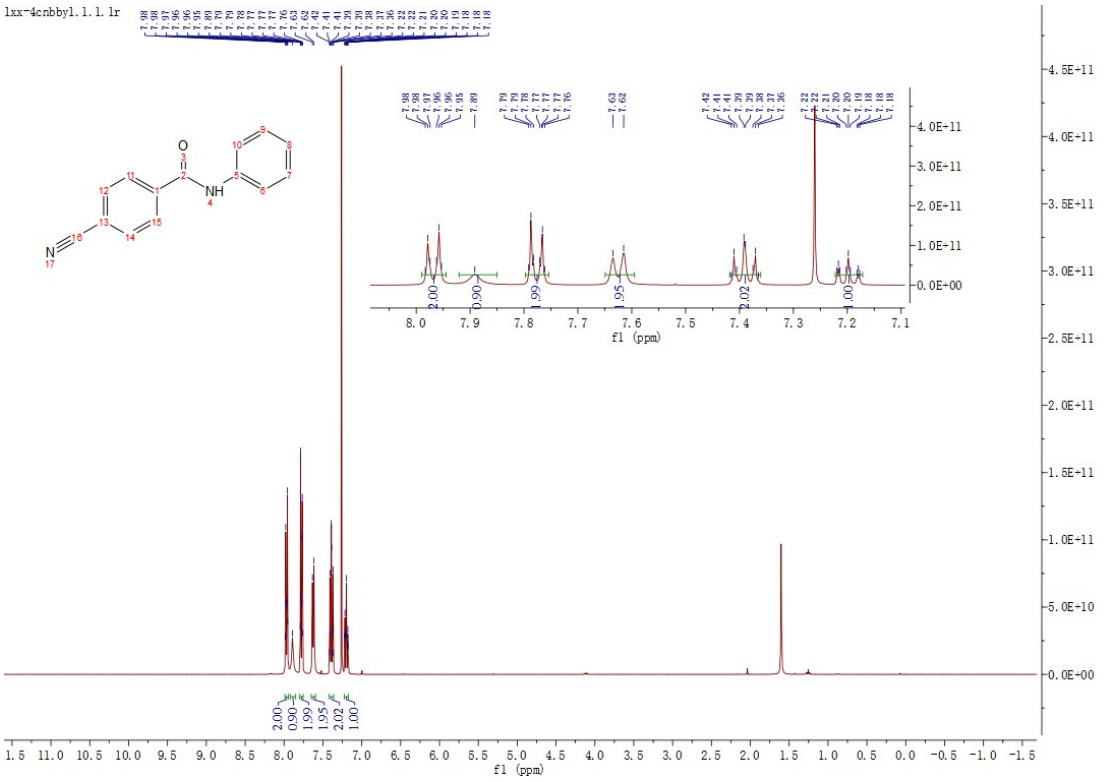
10.3 NMR-Spectra of **5**

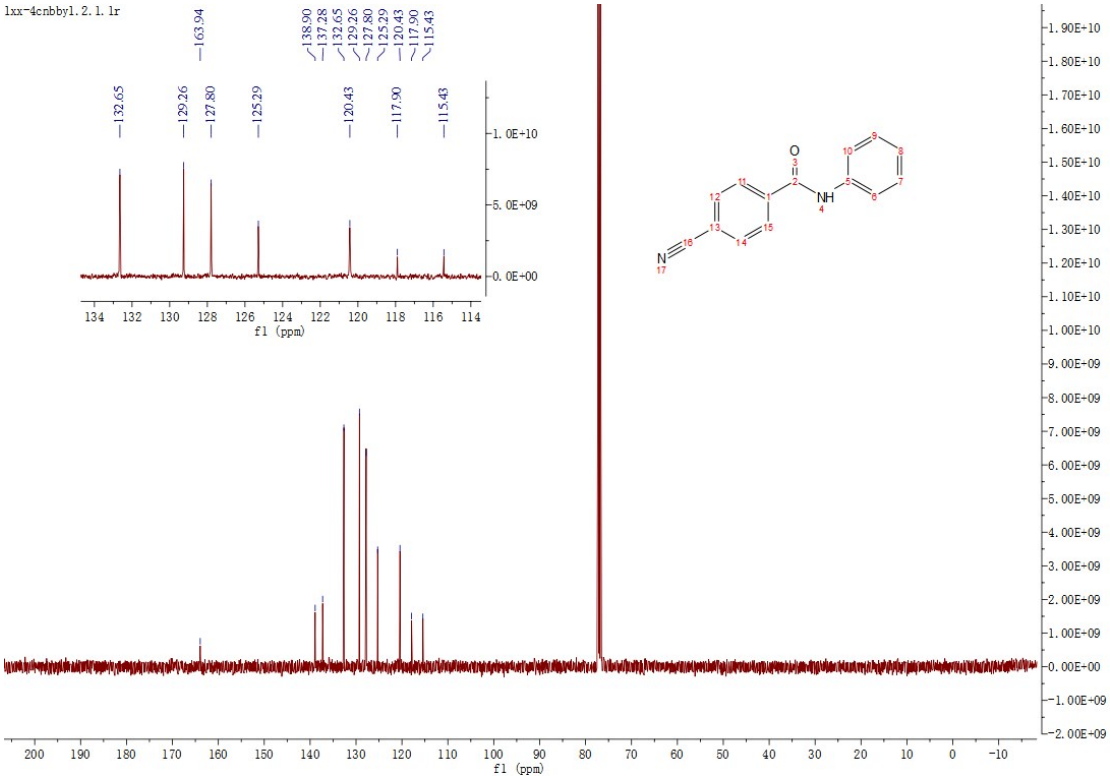


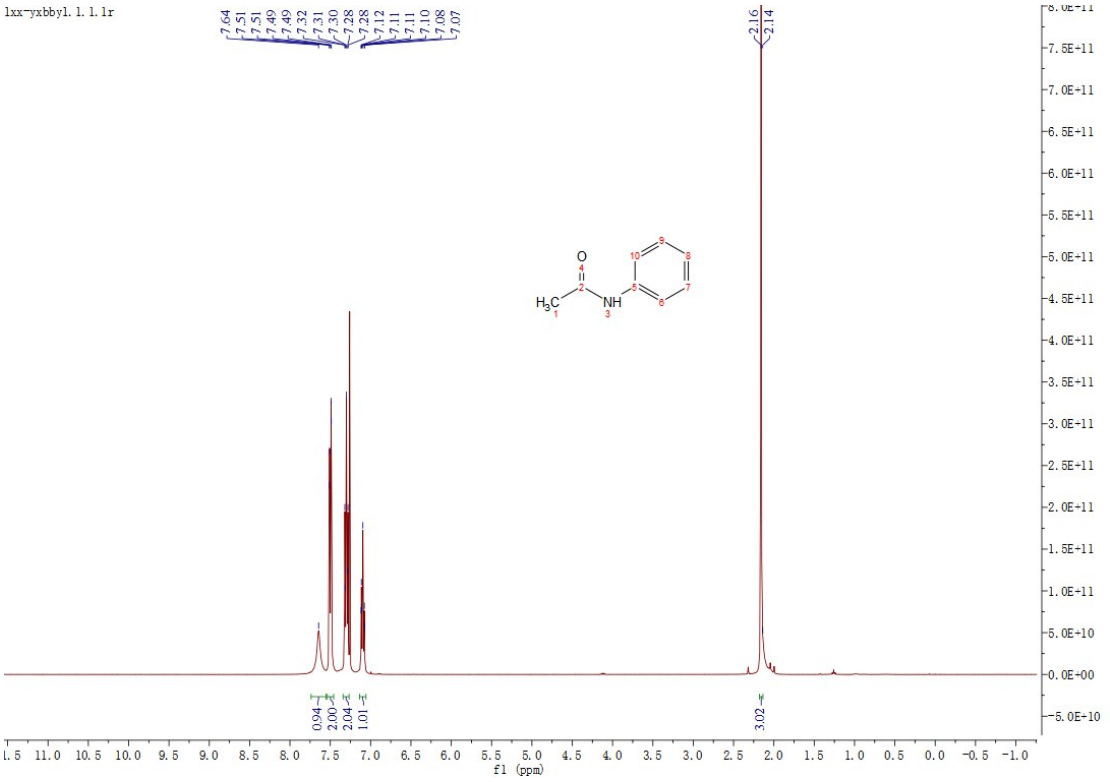


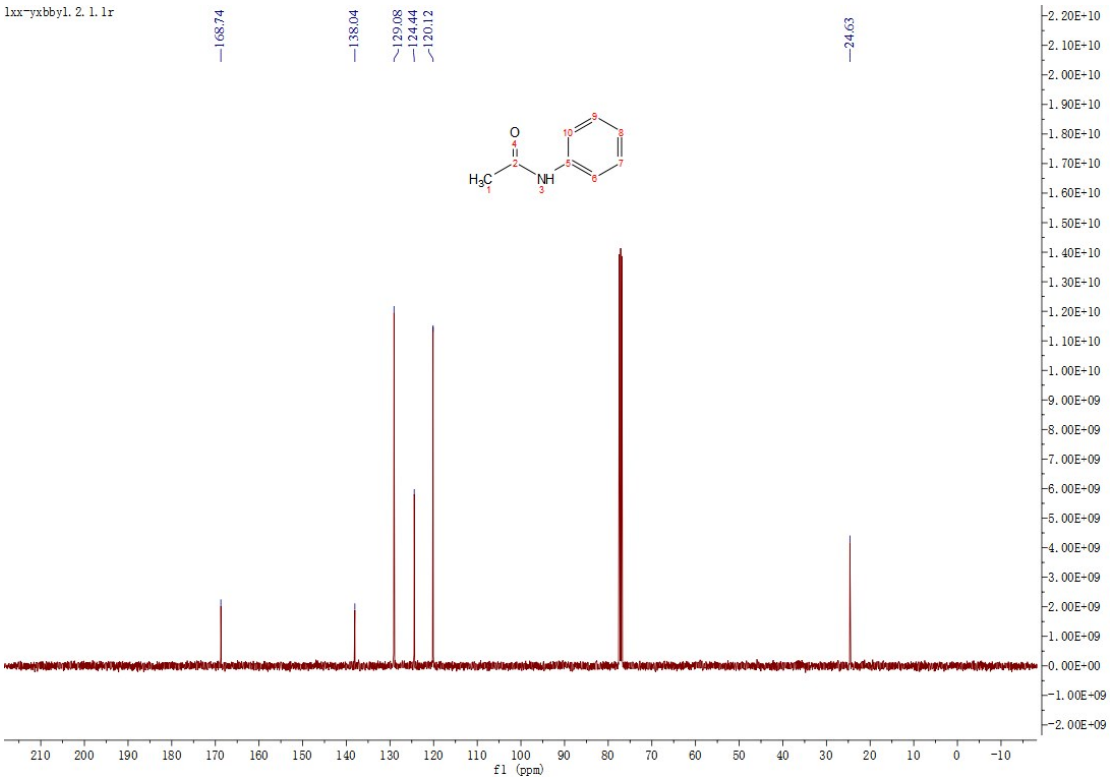

2.42
0.87
2.01
2.00
2.04
1.08
0.99
3.04
f1 (ppm)

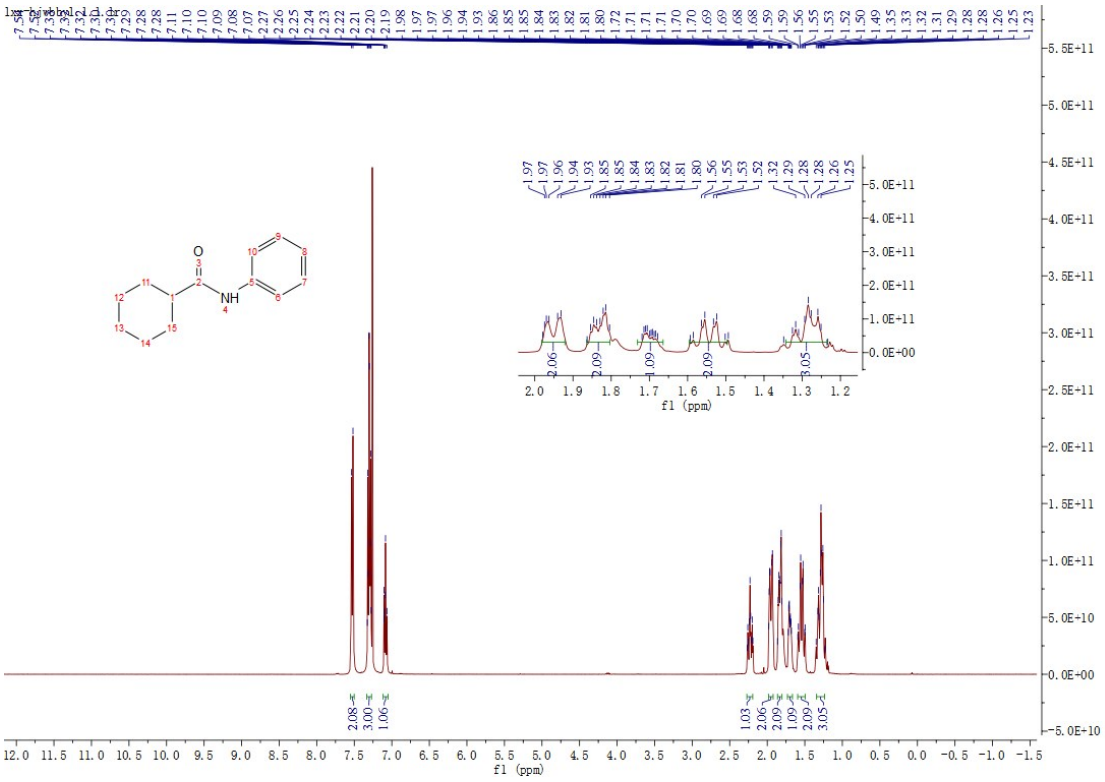

165.73
142.38
138.07
132.14
129.44
129.08
127.06
124.45
120.21
21.51
f1 (ppm)

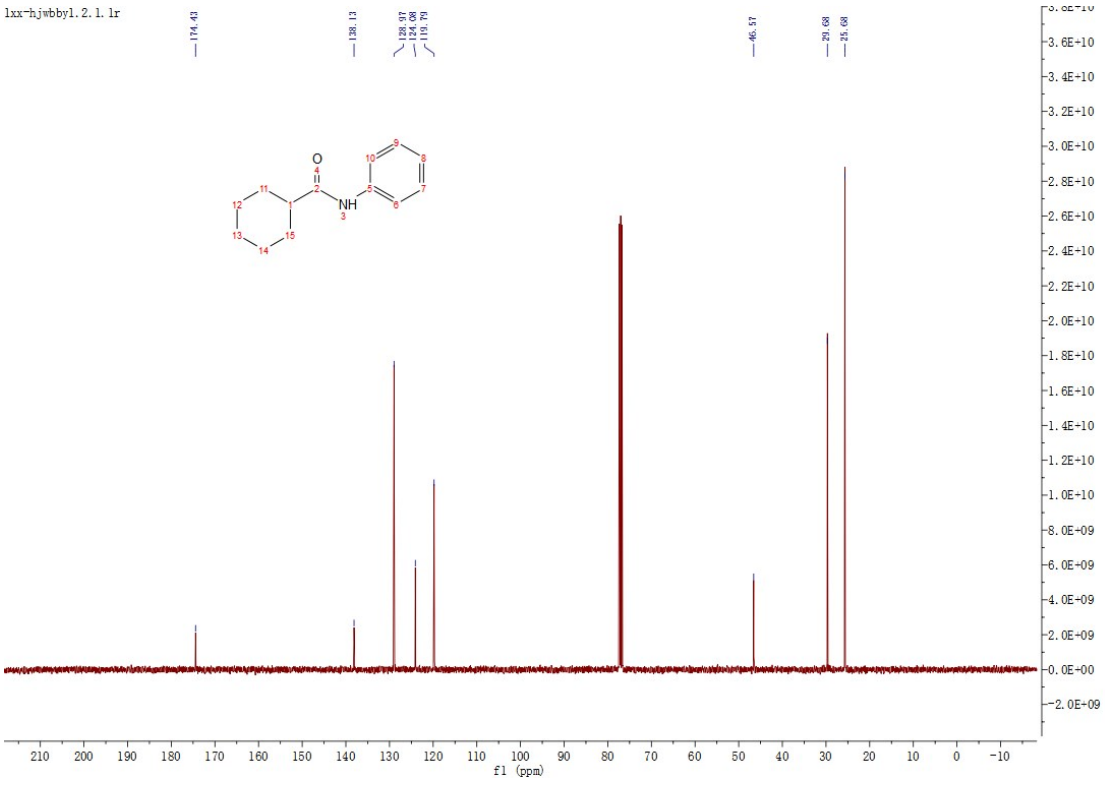

lxx-4cnbby1.1.1.1r
f1 (ppm)

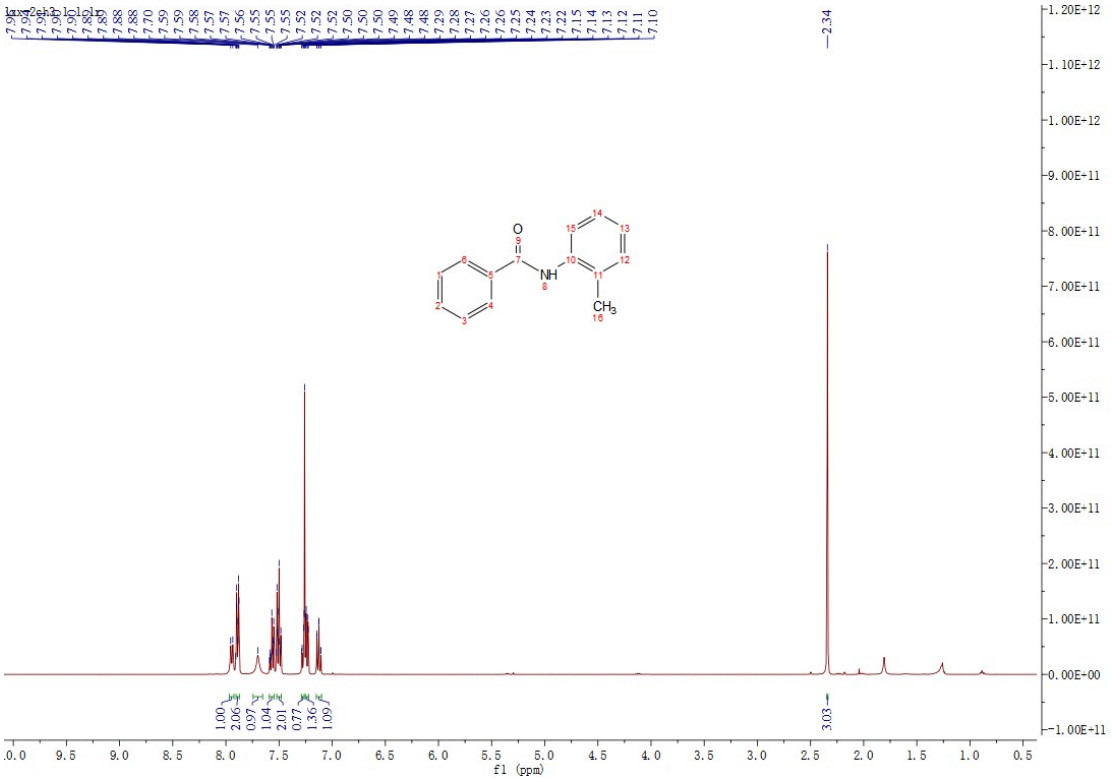

lxx-4cnbby1.2.1.1r
f1 (ppm)

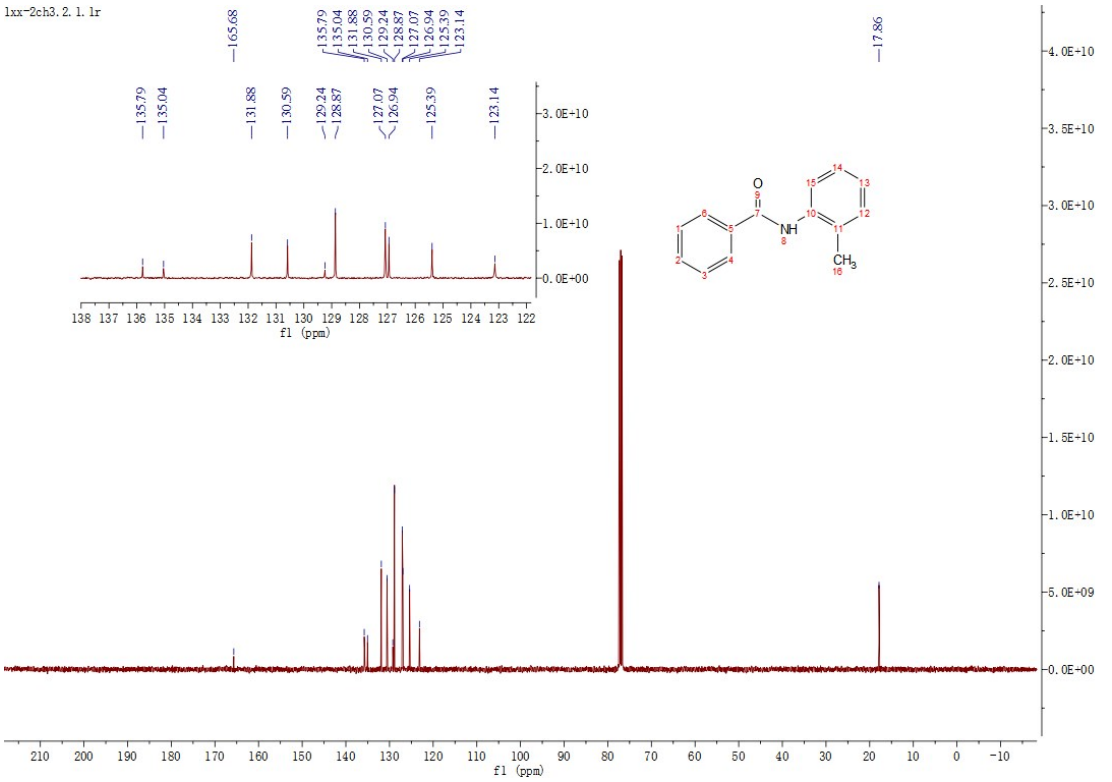

lxx-yxbbyl.1.1.1r
7.64
7.51
7.51
7.49
7.49
7.32
7.31
7.30
7.28
7.28
7.12
7.11
7.11
7.10
7.08
7.07
2.16
2.14
0.94
2.00
2.04
1.01
3.02
f1 (ppm)

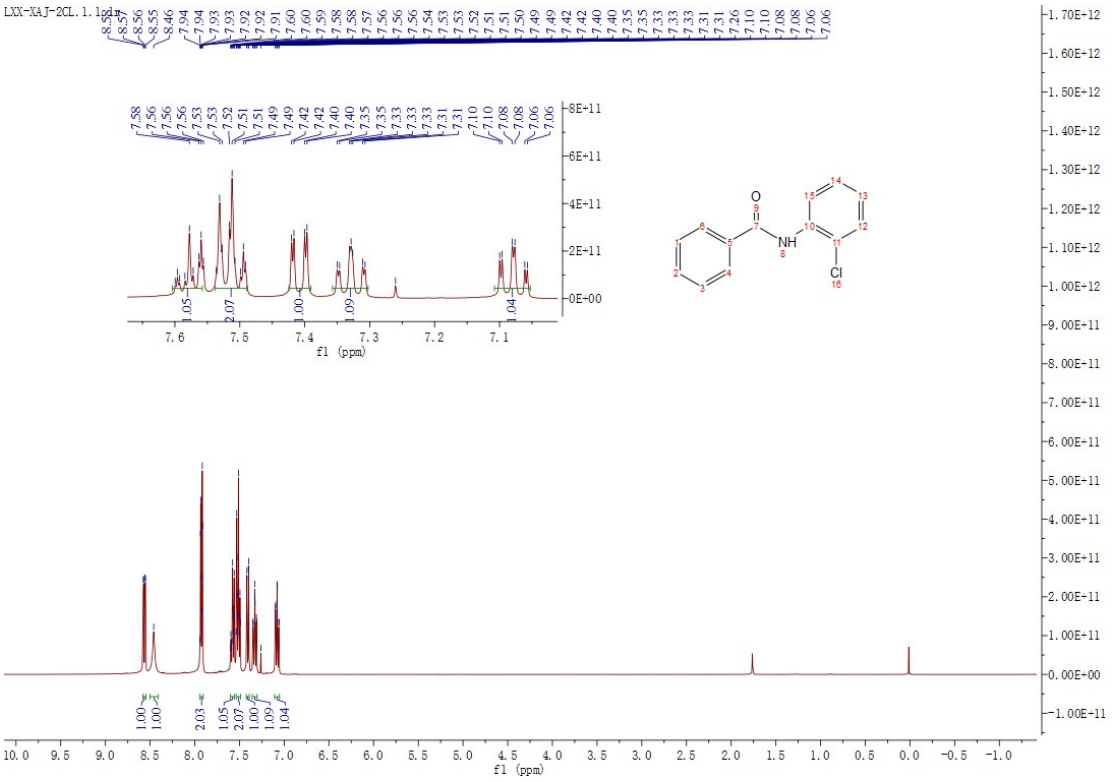

lxx-yxbbyl.2.1.1r
168.74
138.04
129.08
124.44
120.12
24.63
f1 (ppm)

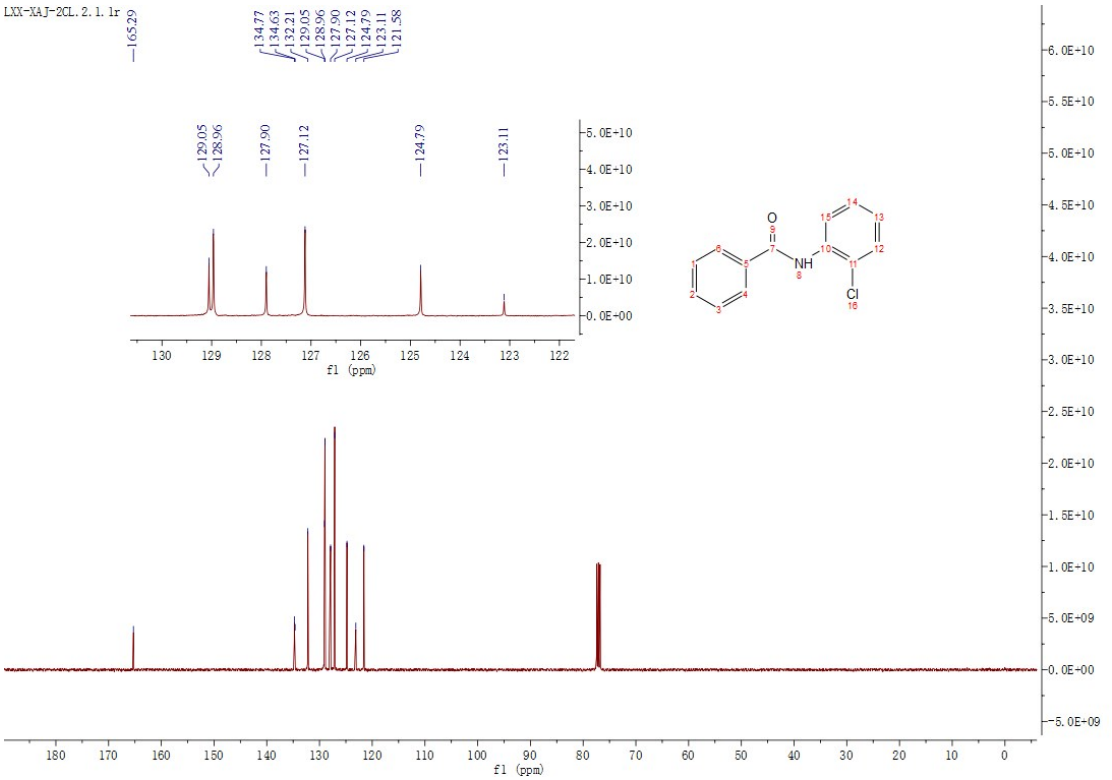

f1 (ppm)

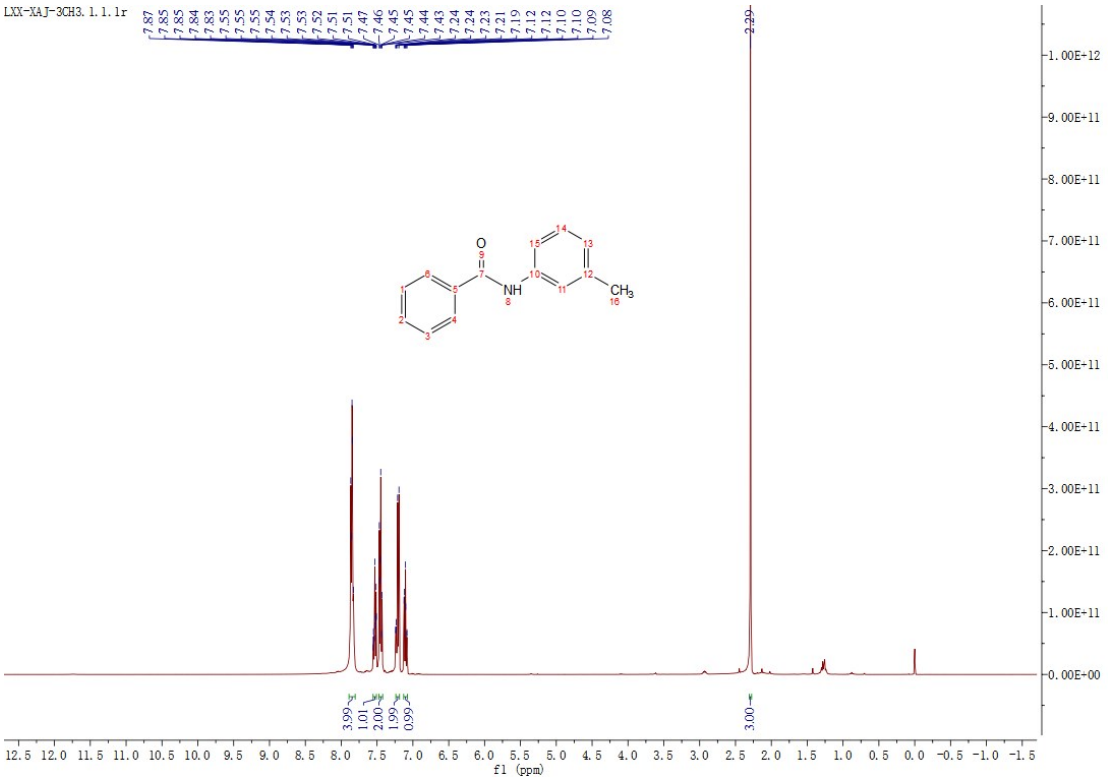

lxx-hjwbby1.2.1.1r
174.43
138.13
128.97
124.08
119.79
46.57
29.68
25.68
f1 (ppm)

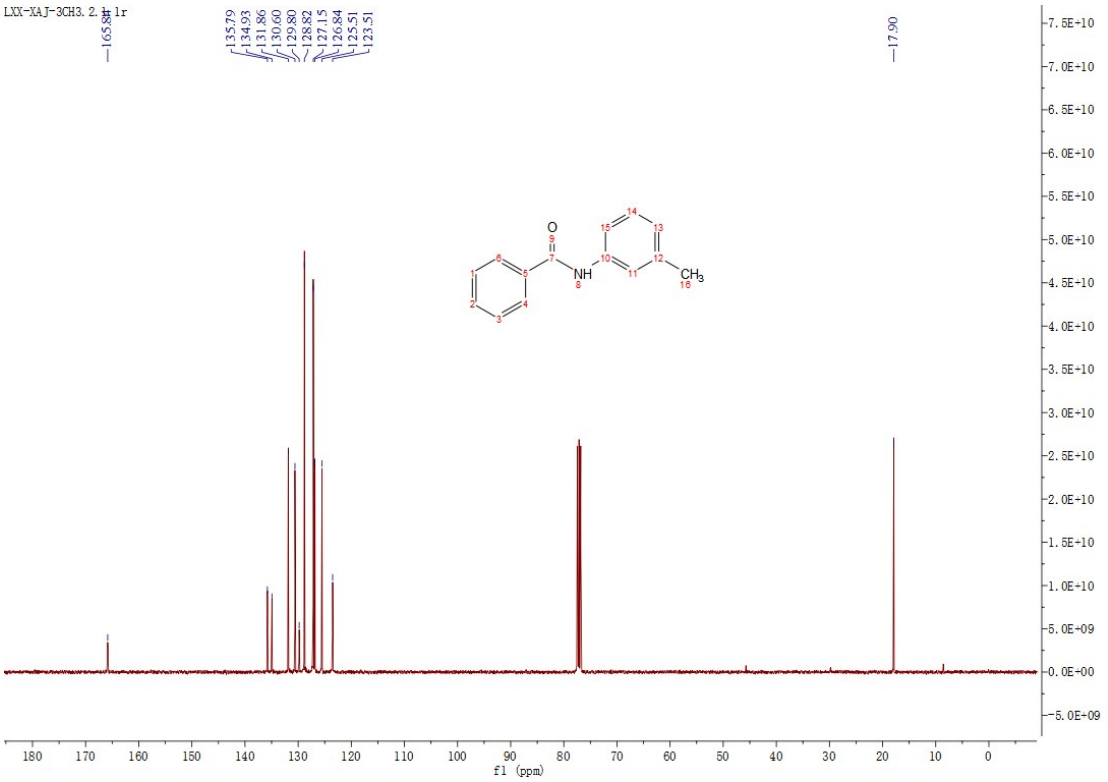

2.34
3.03
f1 (ppm)

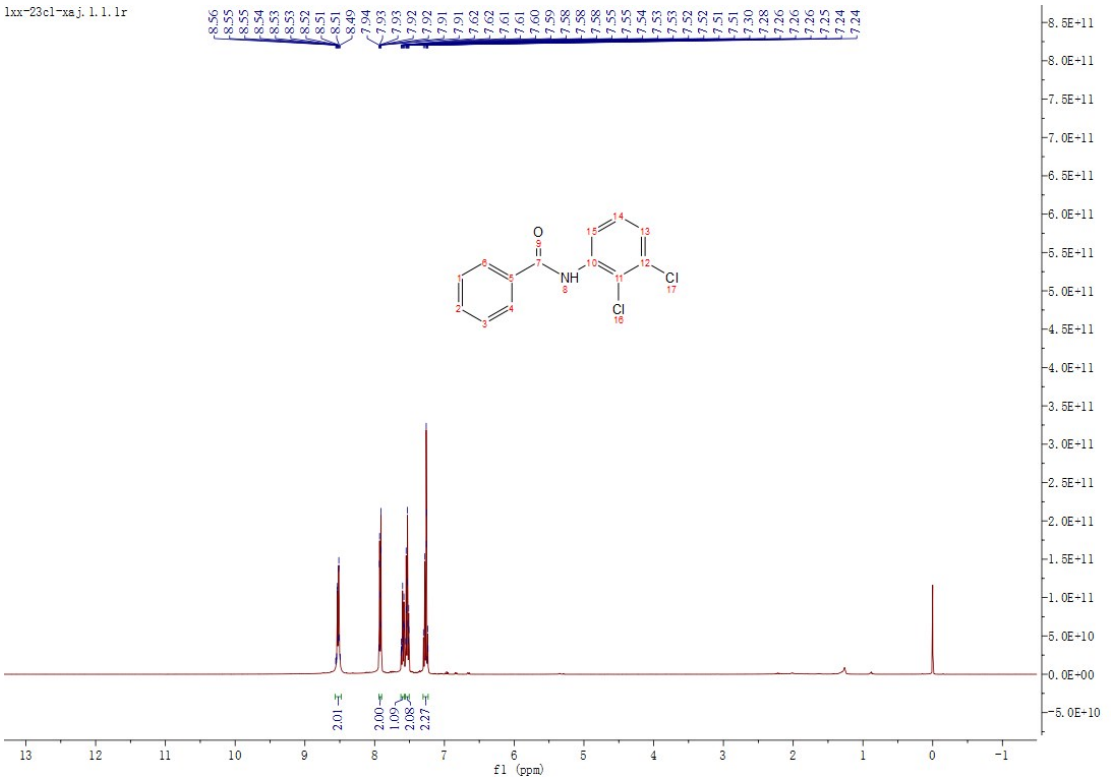

1xx-2ch3.2.1.1r
165.68
135.79
135.04
131.88
130.59
129.24
128.87
127.07
126.94
125.39
123.14
17.86
f1 (ppm)

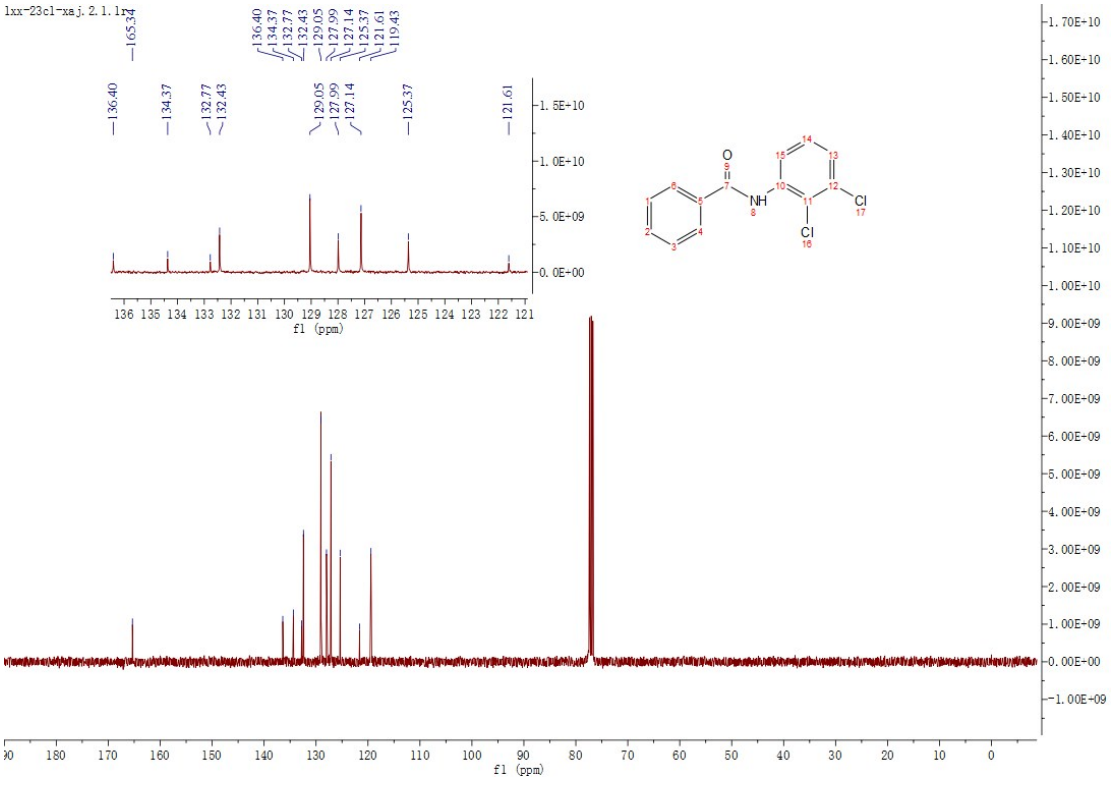

LXX-XAJ-2CL.1.1r
f1 (ppm)


LXX-XAJ-2CL.2.1.1r
f1 (ppm)

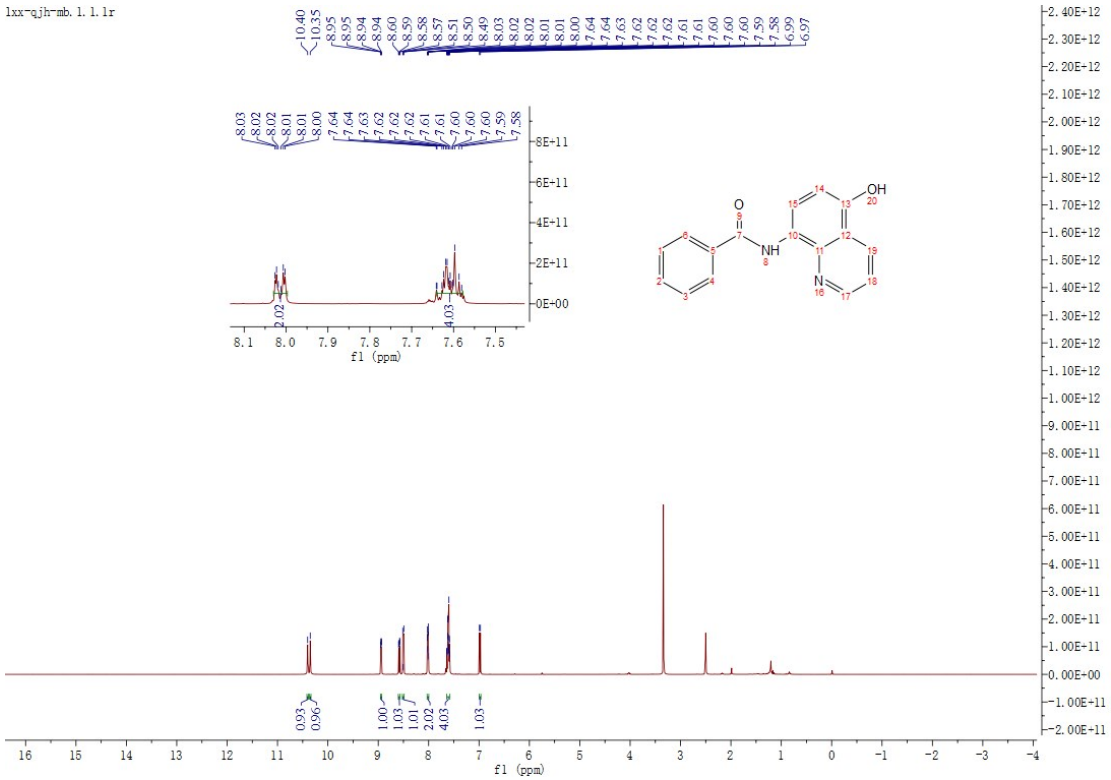

LXX-XAJ-3CH3.1.1.1r
7.87
7.85
7.85
7.84
7.83
7.55
7.55
7.55
7.54
7.53
7.53
7.52
7.51
7.51
7.47
7.46
7.45
7.45
7.44
7.43
7.24
7.24
7.23
7.21
7.19
7.12
7.12
7.10
7.10
7.09
7.08
2.29
O
NH
CH3
3.99
1.01
2.00
1.99
0.99
3.00
f1 (ppm)

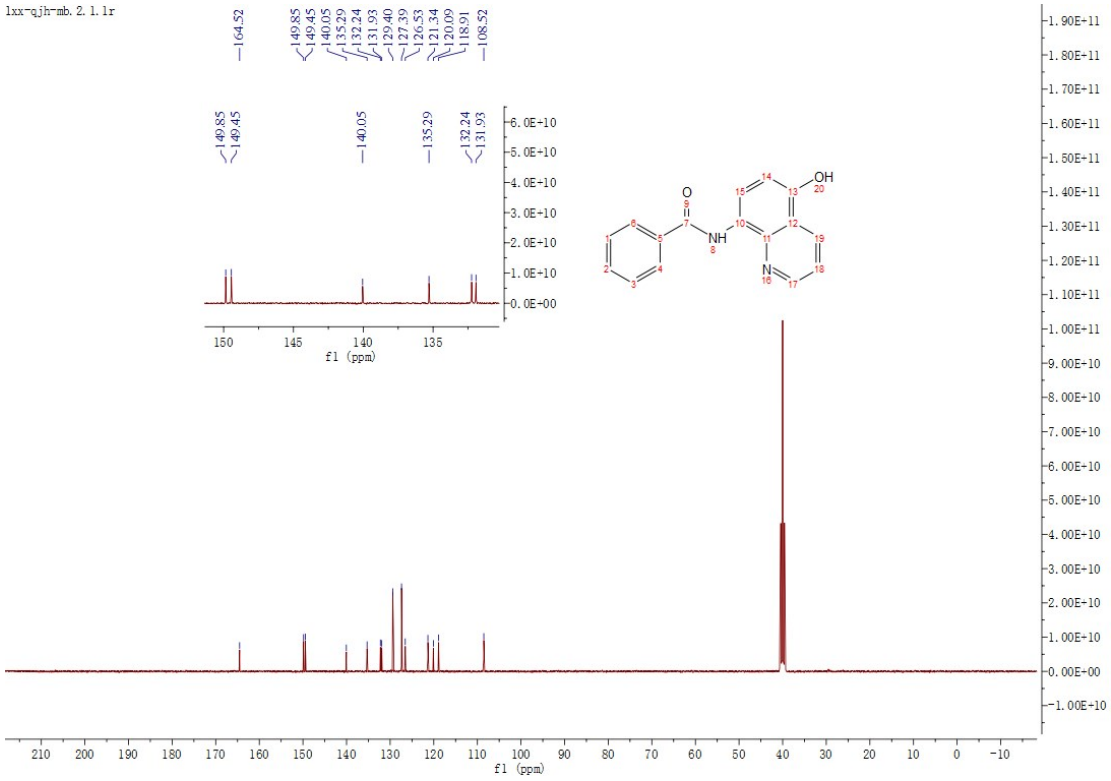

LXX-XAJ-3CH3.2.1.1r
165.88
135.79
134.93
131.86
130.60
129.80
128.82
127.15
126.84
125.51
123.51
17.90
O
NH
CH3
f1 (ppm)

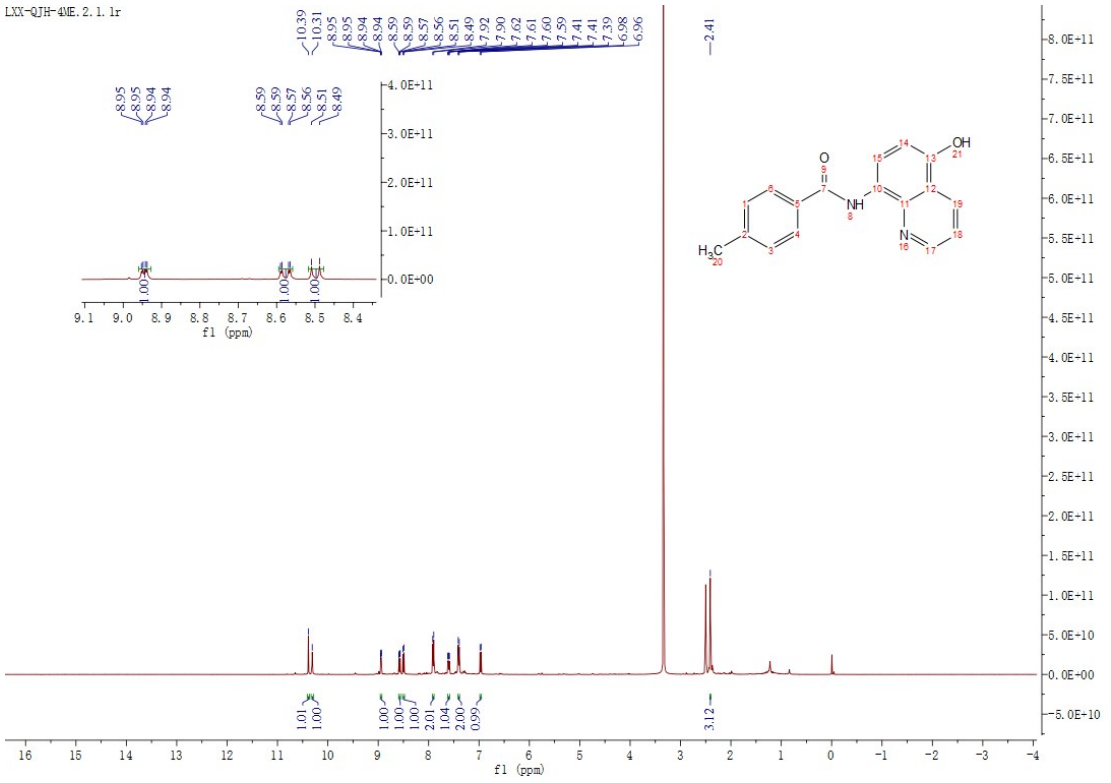

lxx-23cl-xsj.1.1.1r
8.56 8.55 8.55 8.54 8.53 8.53 8.52 8.51 8.51 8.49 7.94 7.93 7.93 7.92 7.92 7.91 7.91 7.62 7.62 7.61 7.61 7.60 7.59 7.58 7.58 7.55 7.55 7.54 7.53 7.53 7.52 7.52 7.51 7.51 7.30 7.28 7.26 7.26 7.25 7.24 7.24
O
NH
Cl
Cl
2.01
2.00
1.09
2.08
2.27
f1 (ppm)

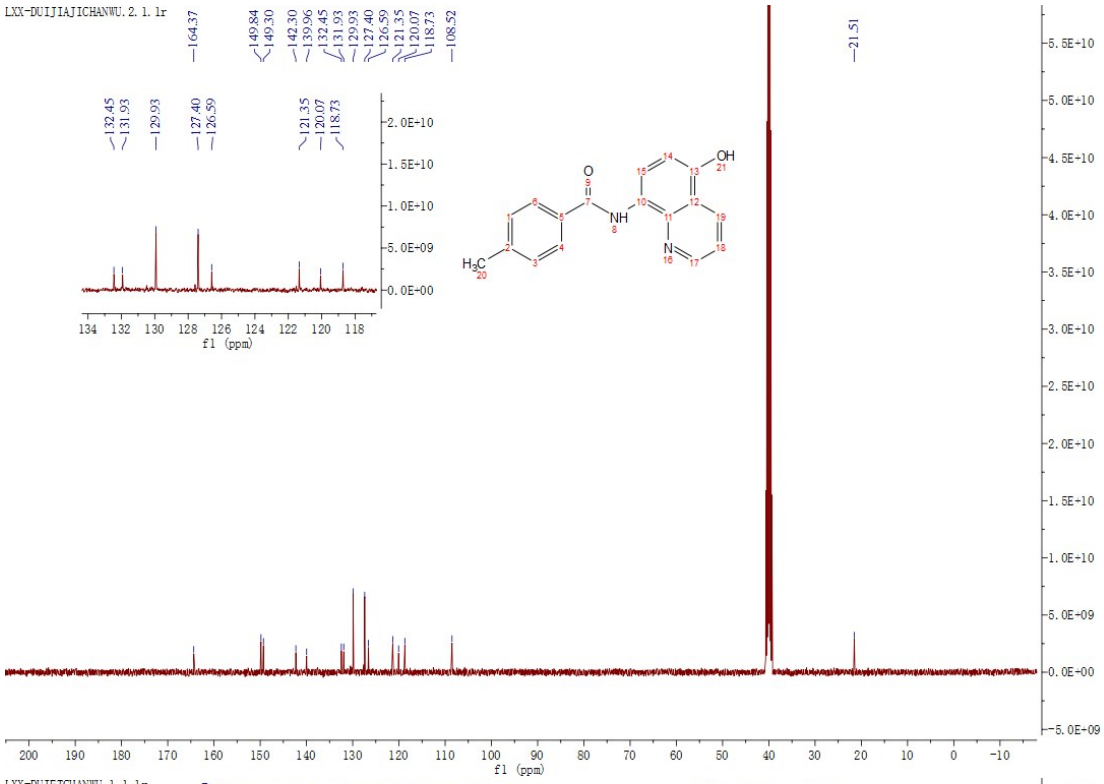

lxx-23cl-xsj.2.1.1r
165.34
136.40
134.37
132.77
132.43
129.05
127.99
127.14
125.37
121.61
119.43
O
NH
Cl
Cl
f1 (ppm)

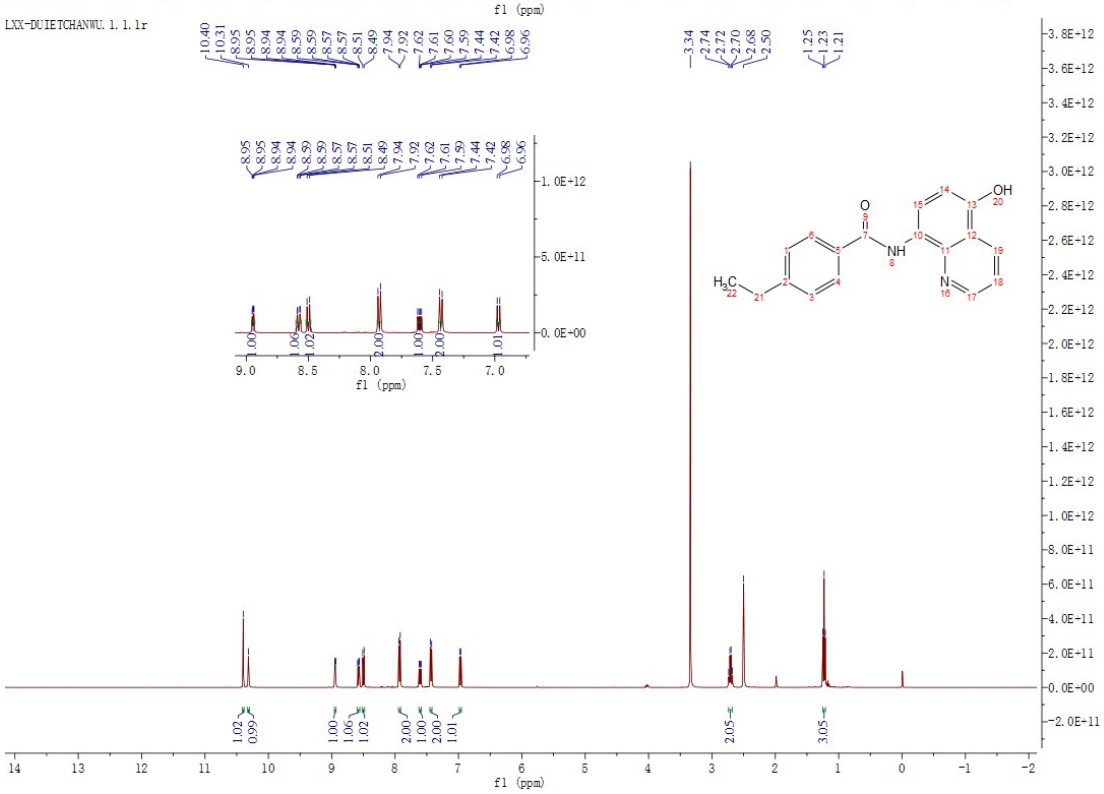
10.4 NMR-Spectra of **2**

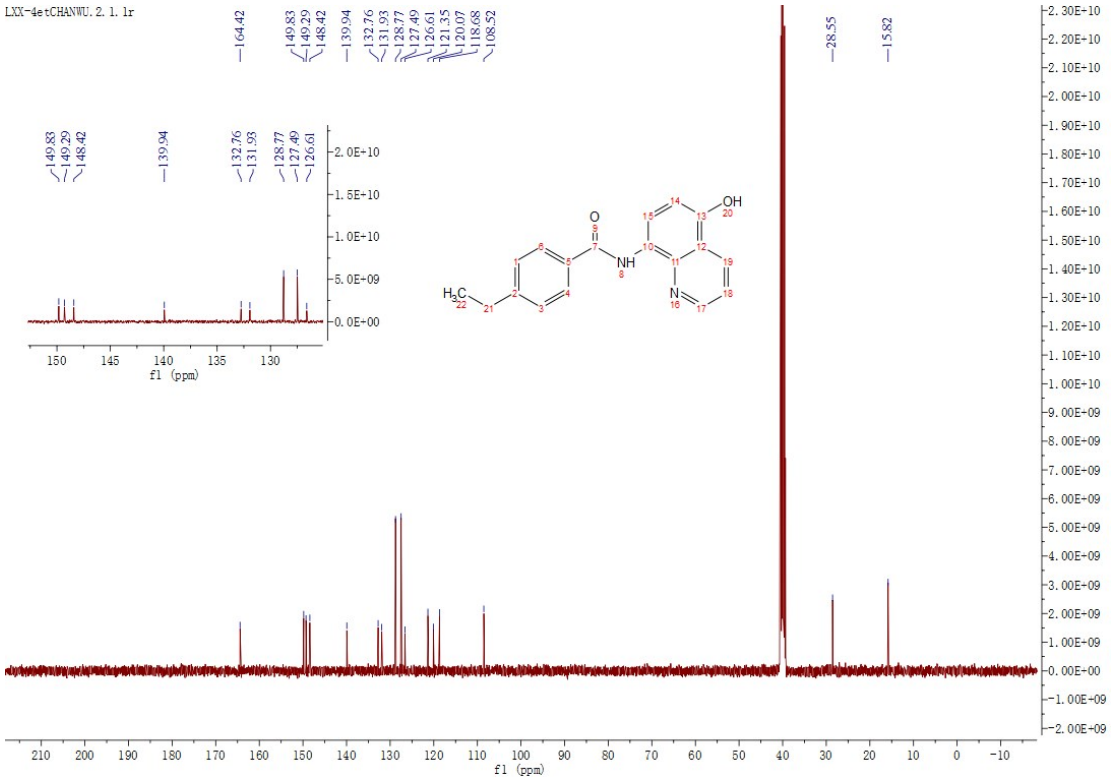


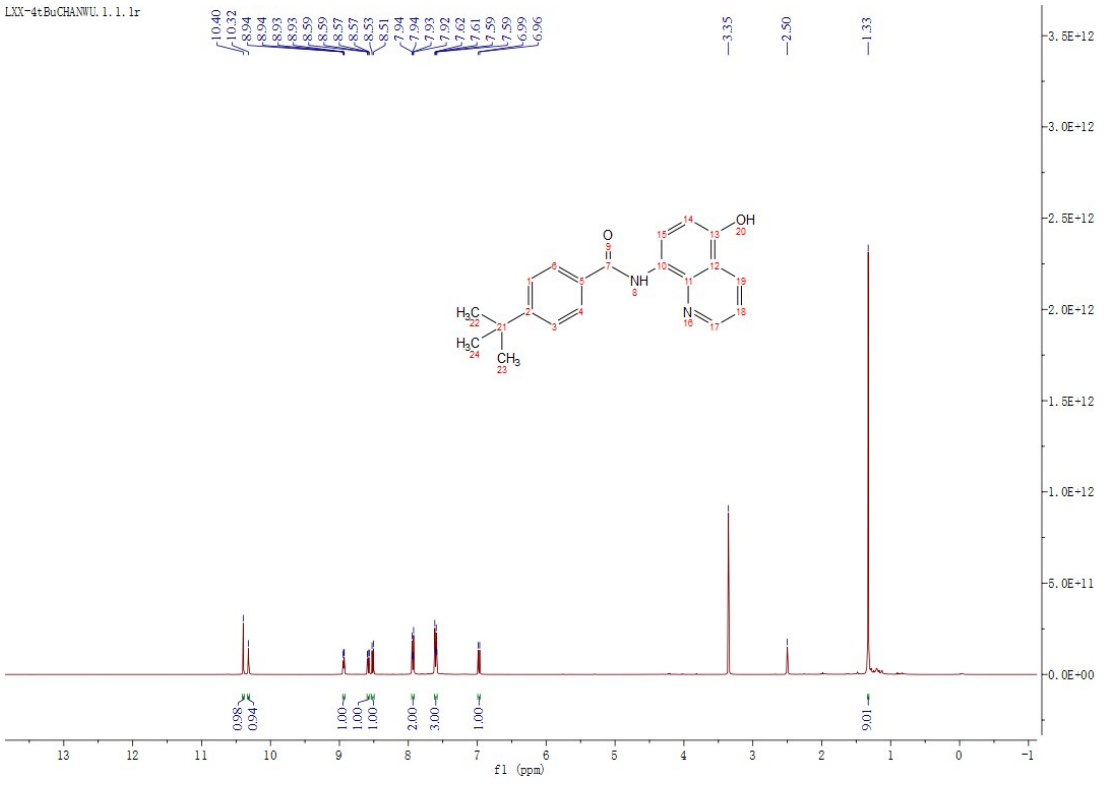

lxx-qjh-mb.2.1.1r
164.52
149.85
149.45
140.05
135.29
132.24
131.93
129.40
127.39
126.53
121.34
120.09
118.91
108.52
f1 (ppm)

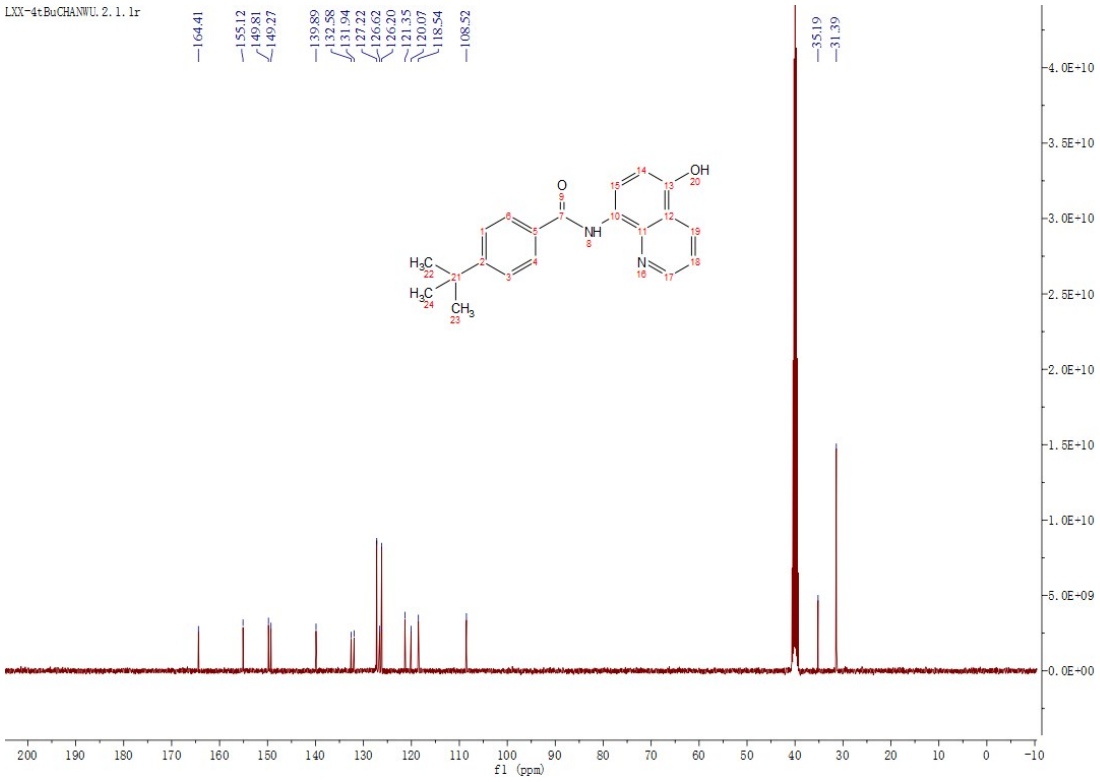

LXX-QJH-4ME.2.1.1r
10.39
10.31
8.95
8.94
8.59
8.57
8.56
8.51
8.49
7.92
7.90
7.62
7.61
7.60
7.59
7.41
7.41
7.39
6.98
6.96
2.41
f1 (ppm)

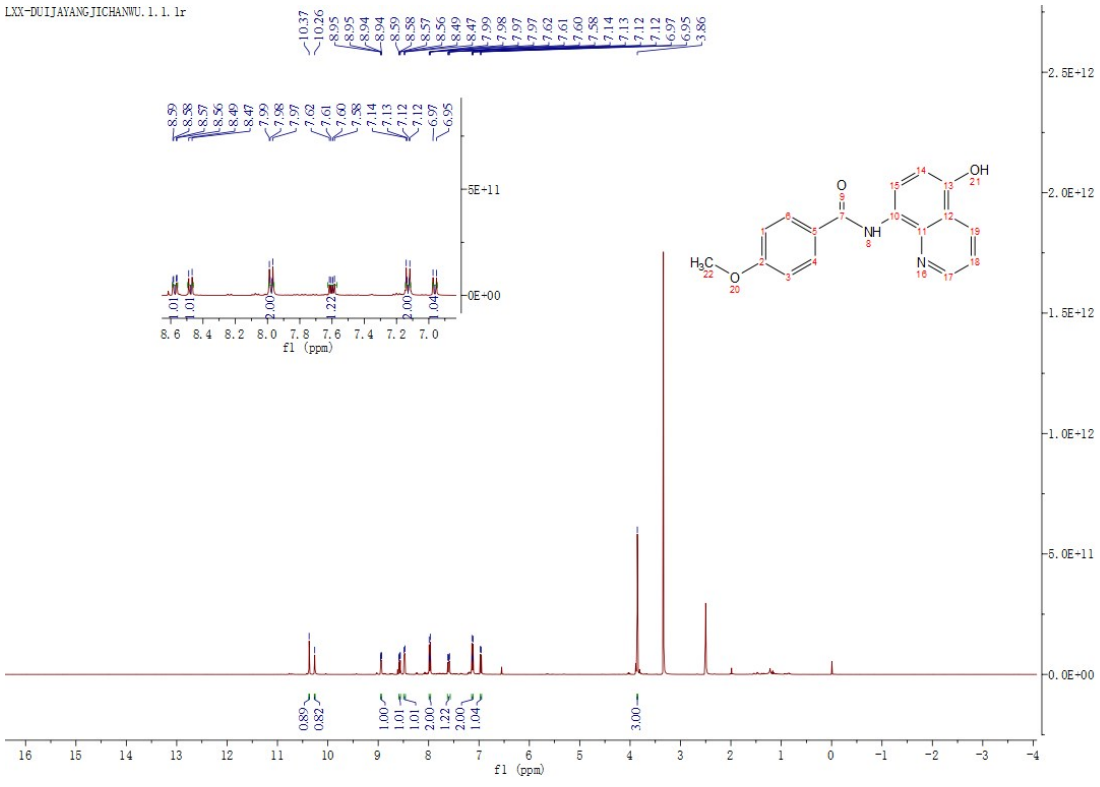

LXX-DUIJIAJICHANWU.2.1.1r
164.37
149.84
149.30
142.30
139.96
132.45
131.93
129.93
127.40
126.59
121.35
120.07
118.73
108.52
21.51
f1 (ppm)

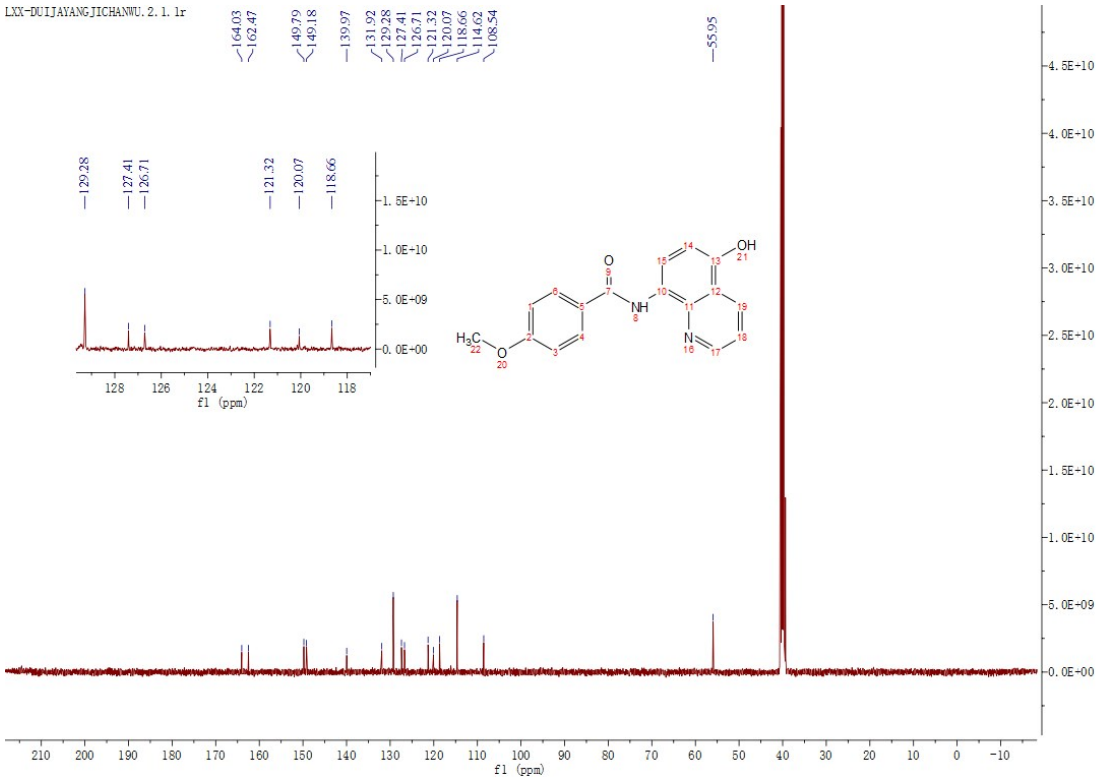

LXX-DUIETCHANWU.1.1.1r
10.40
10.31
8.95
8.94
8.59
8.57
8.51
8.49
7.94
7.92
7.62
7.61
7.60
7.59
7.44
7.42
6.98
6.96
3.34
2.74
2.72
2.70
2.68
2.50
1.25
1.23
1.21
f1 (ppm)

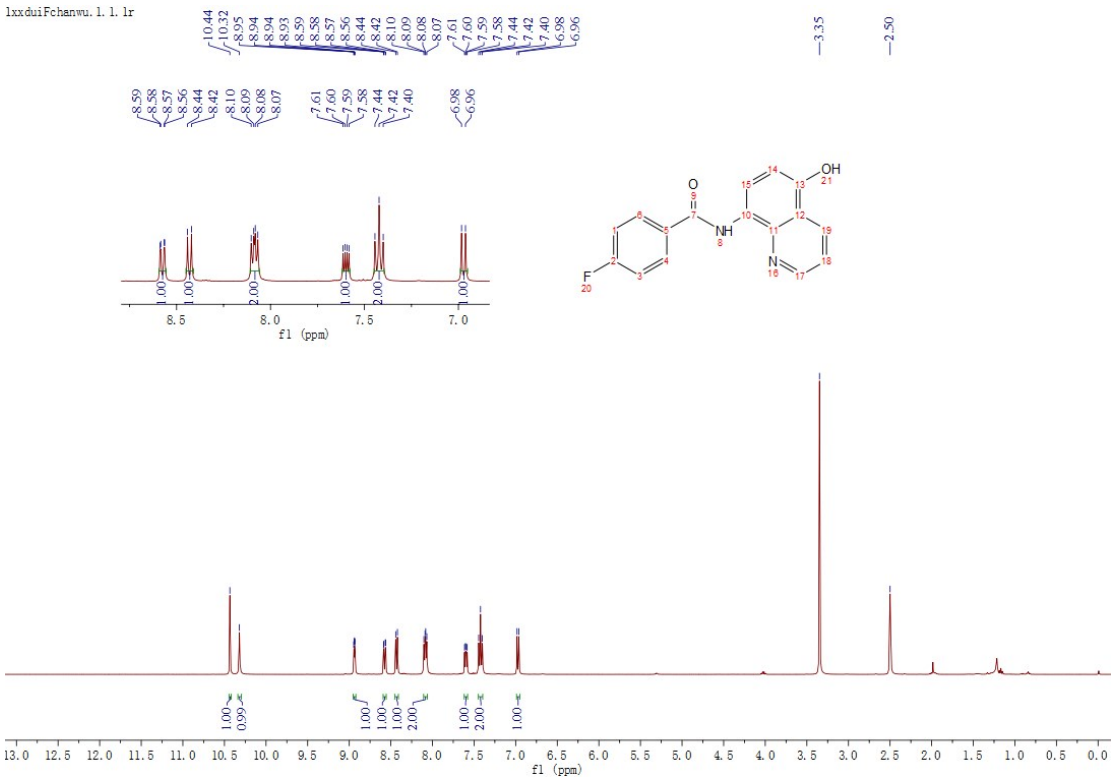

LXX-4etCHANWU.2.1.1r
164.42
149.83
149.29
148.42
139.94
132.76
131.93
128.77
127.49
126.61
121.35
120.07
118.68
108.52
28.55
15.82
f1 (ppm)

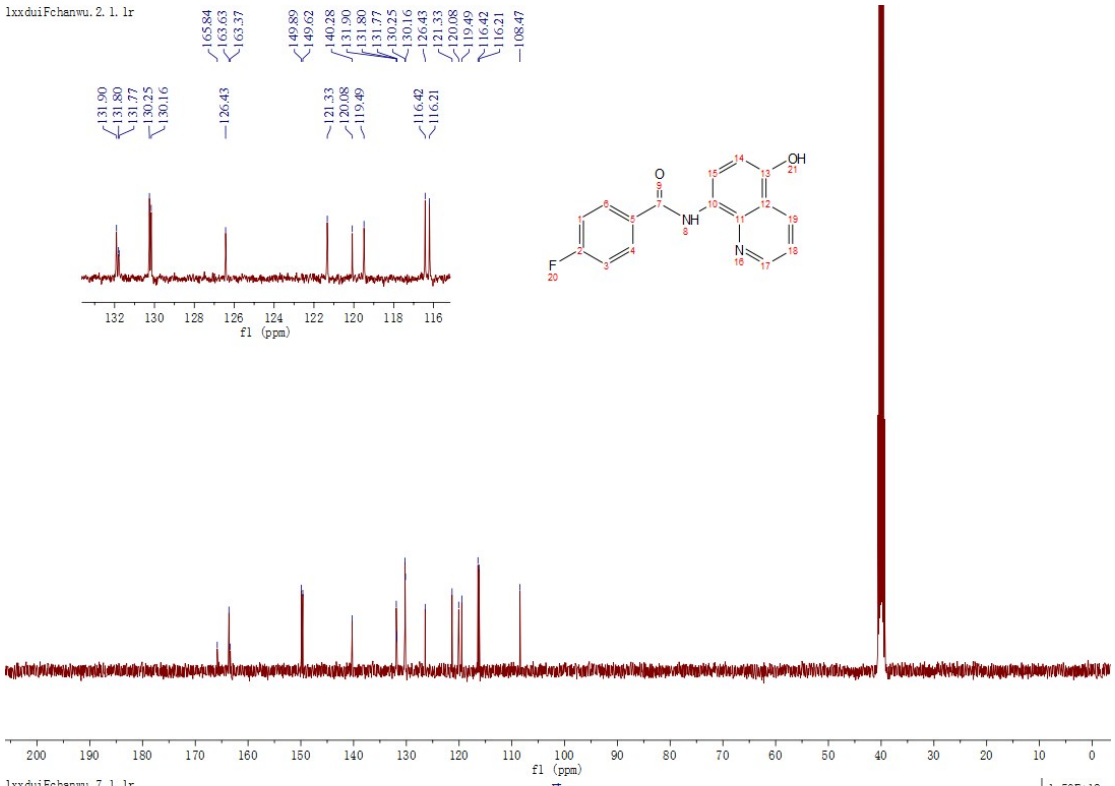

LXX-4tBuCHANWU.1.1.1r
10.40
10.32
8.94
8.93
8.59
8.57
8.53
8.51
7.94
7.93
7.92
7.62
7.61
7.59
6.99
6.96
3.35
2.50
1.33
0.98
0.94
1.00
1.00
1.00
2.00
3.00
1.00
9.01
f1 (ppm)

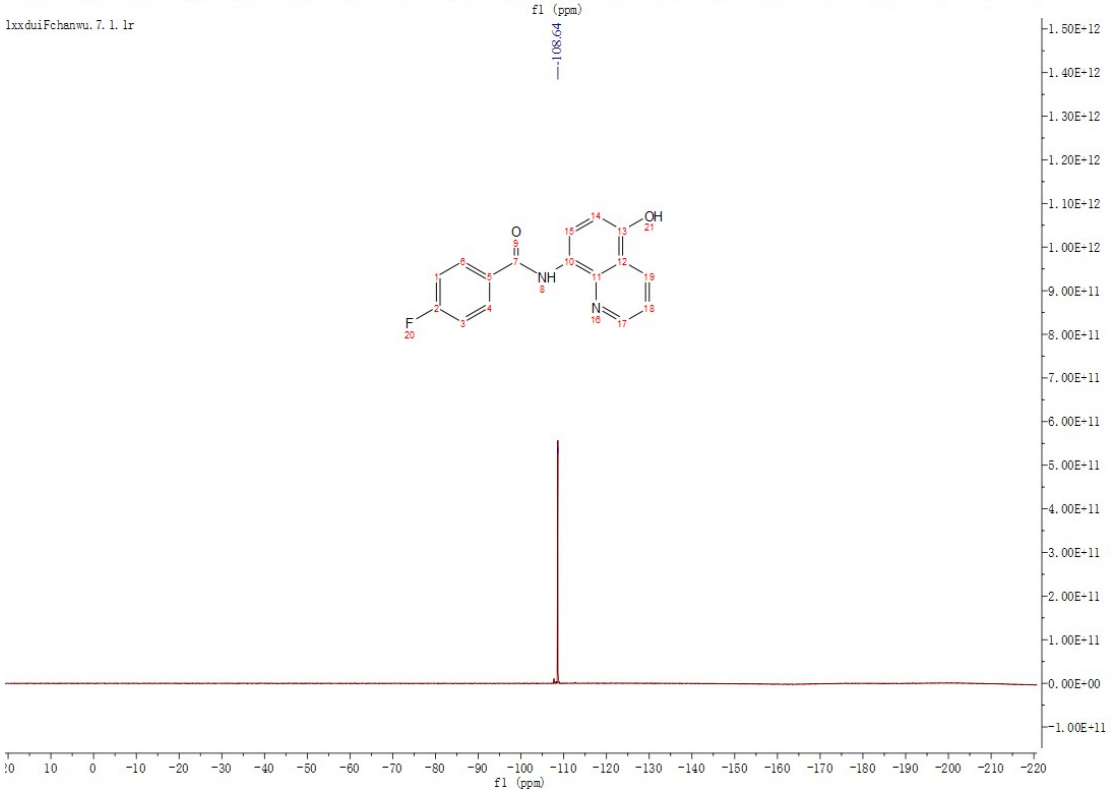

LXX-4tBuCHANWU.2.1.1r
164.41
155.12
149.81
149.27
139.89
132.58
131.94
127.22
126.62
126.20
121.35
120.07
118.54
108.52
35.19
31.39
OH
O
NH
N
H3C
CH3
f1 (ppm)

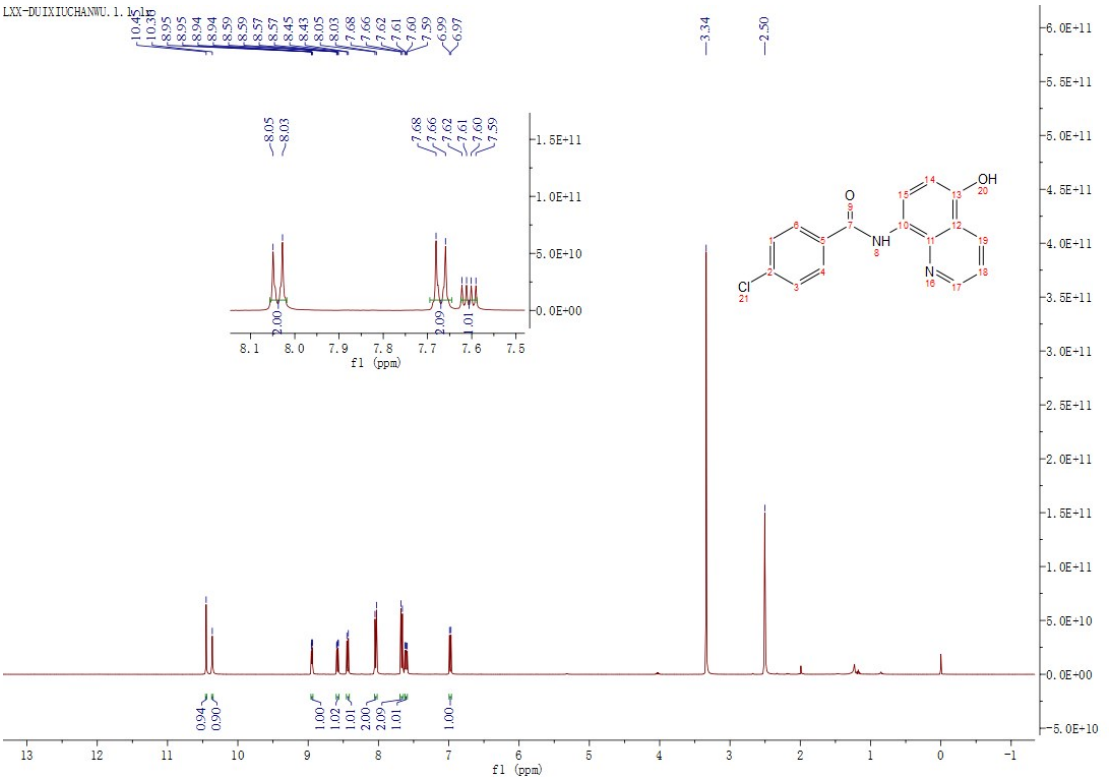

LXX-DUIJAYANGJICHANWU.1.1.1r
10.37
10.26
8.95
8.94
8.59
8.58
8.57
8.56
8.49
8.47
7.99
7.98
7.97
7.62
7.61
7.60
7.58
7.14
7.13
7.12
7.12
6.97
6.95
3.86
OH
O
NH
N
H3C
f1 (ppm)

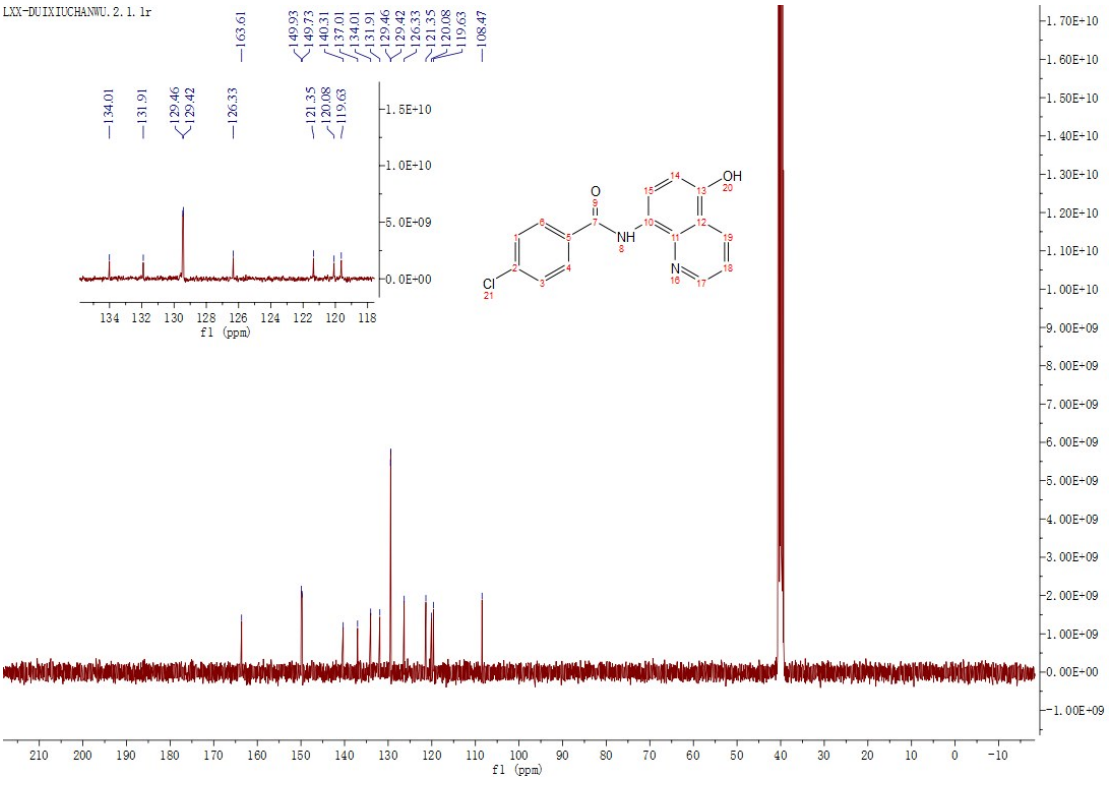

LXX-DUIJAYANGJICHANWU.2.1.1r
164.03
162.47
149.79
149.18
139.97
131.92
129.28
127.41
126.71
121.32
120.07
118.66
114.62
108.54
55.95
f1 (ppm)

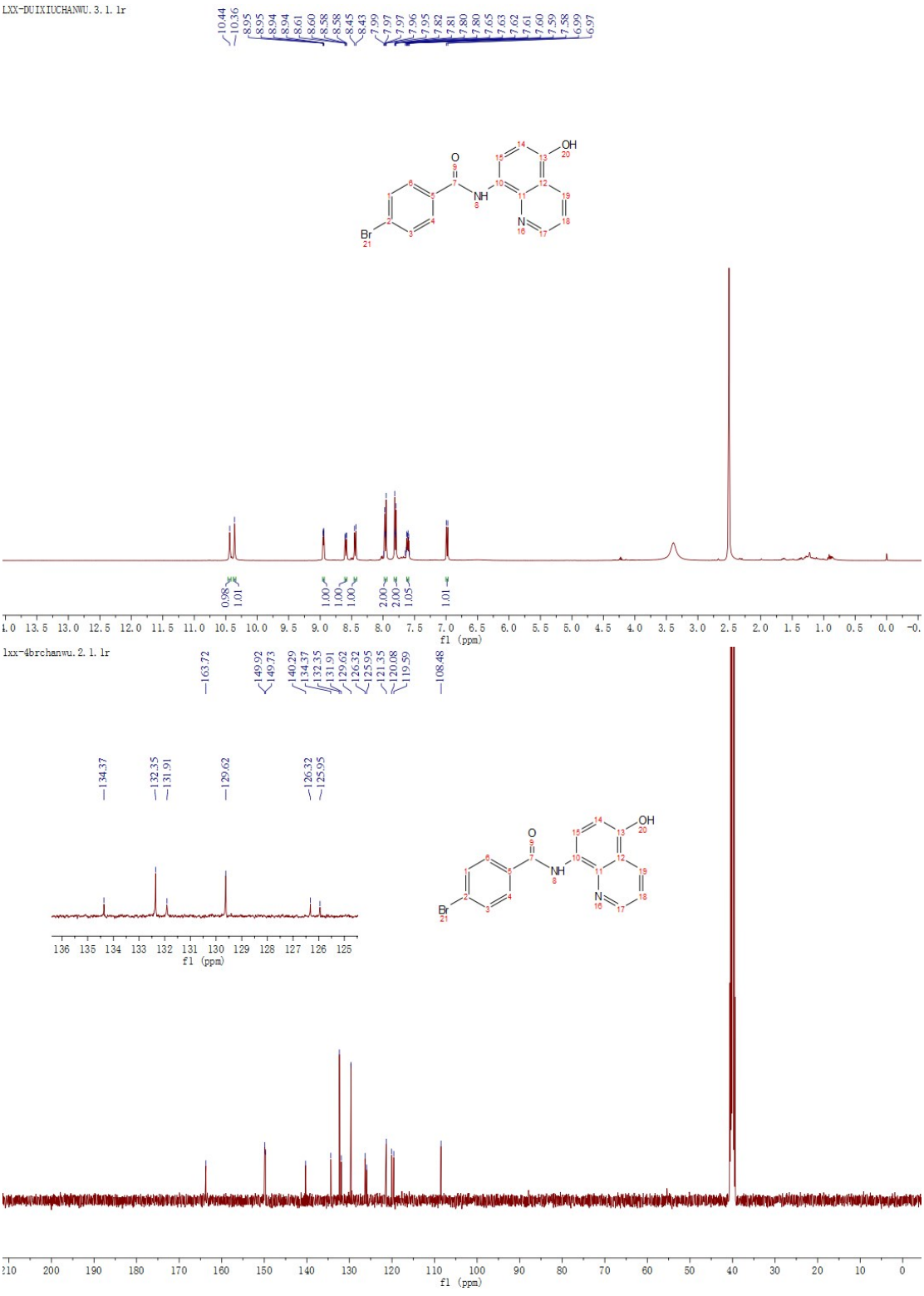

lxxduiFchanwu.1.1.1r
10.44
10.32
8.95
8.94
8.94
8.93
8.59
8.58
8.57
8.56
8.44
8.42
8.10
8.09
8.08
8.07
7.61
7.60
7.59
7.58
7.44
7.42
7.40
6.98
6.96
3.35
2.50
f1 (ppm)

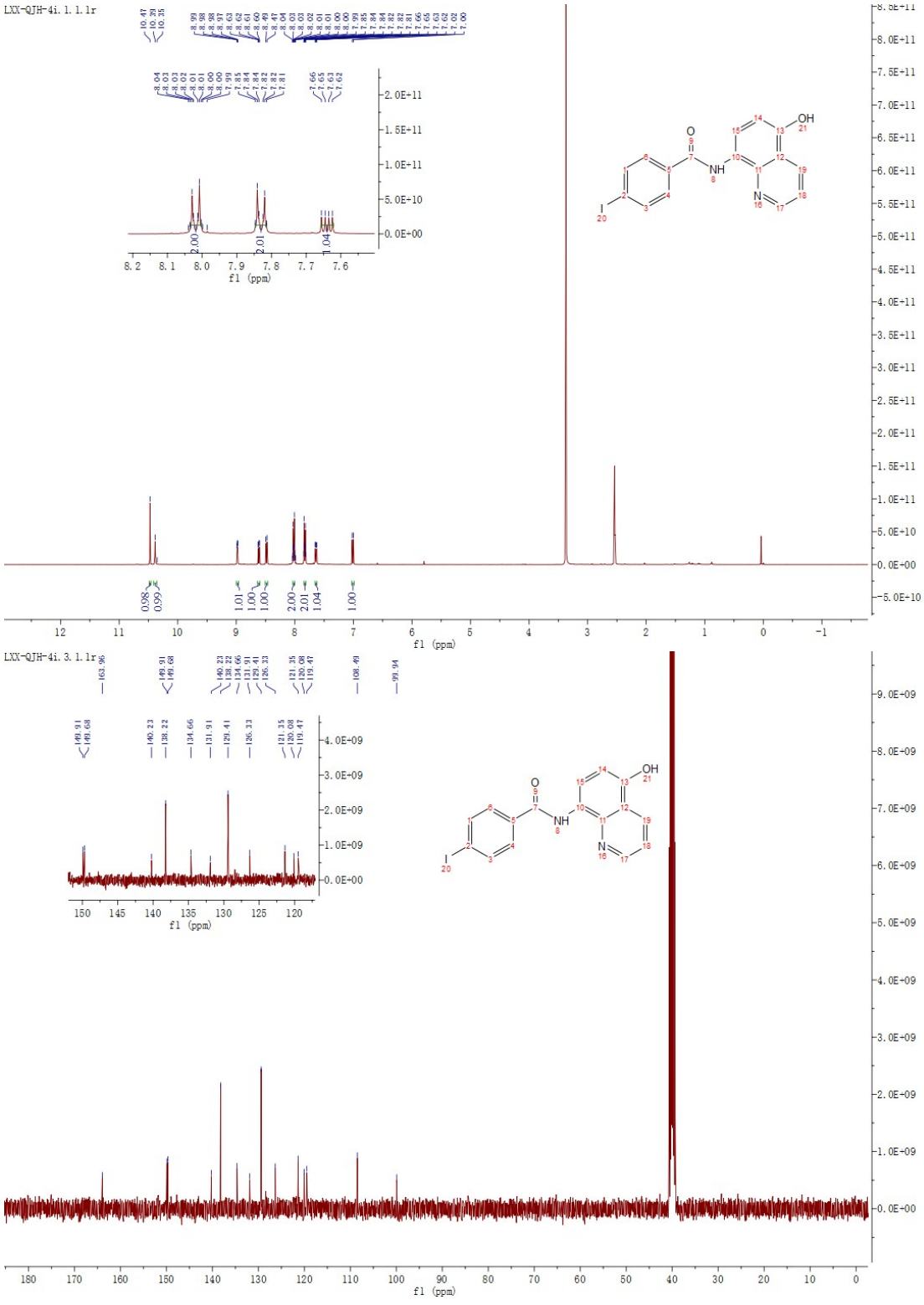

lxxduiFchanwu.2.1.1r
165.84
163.63
163.37
149.89
149.62
140.28
131.90
131.80
131.77
130.25
130.16
126.43
121.33
120.08
119.49
116.42
116.21
108.47
f1 (ppm)

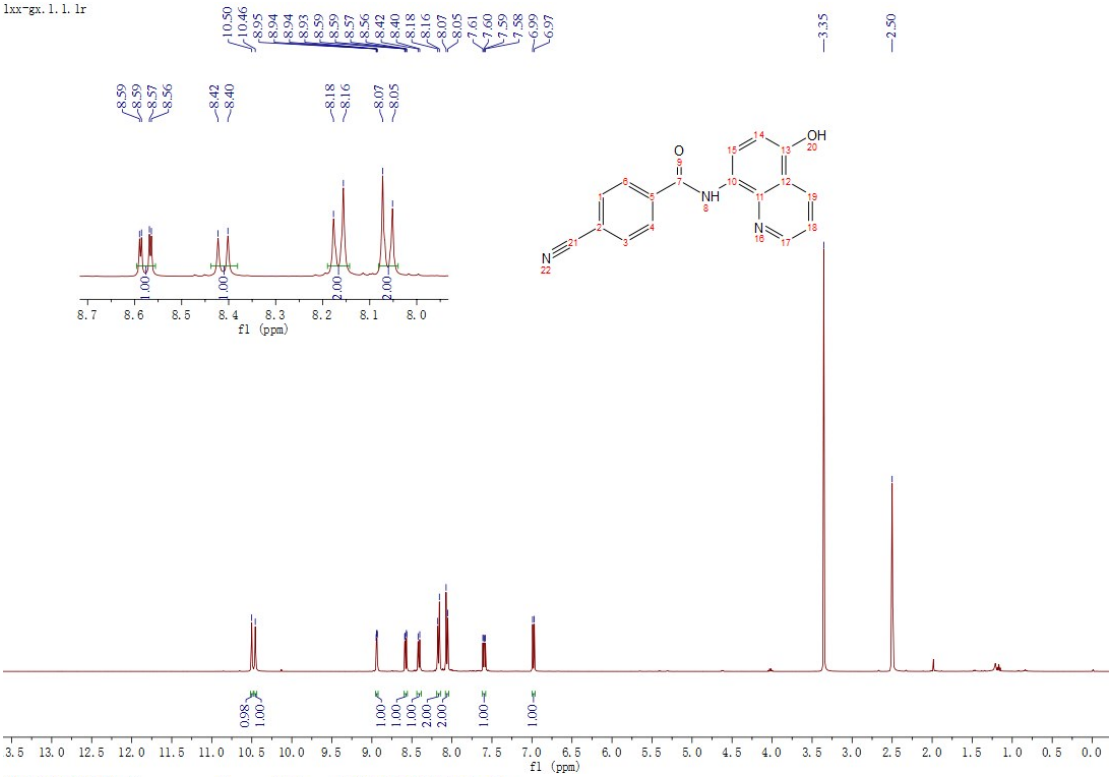

lxxduiFchanwu.7.1.1r
108.64
f1 (ppm)

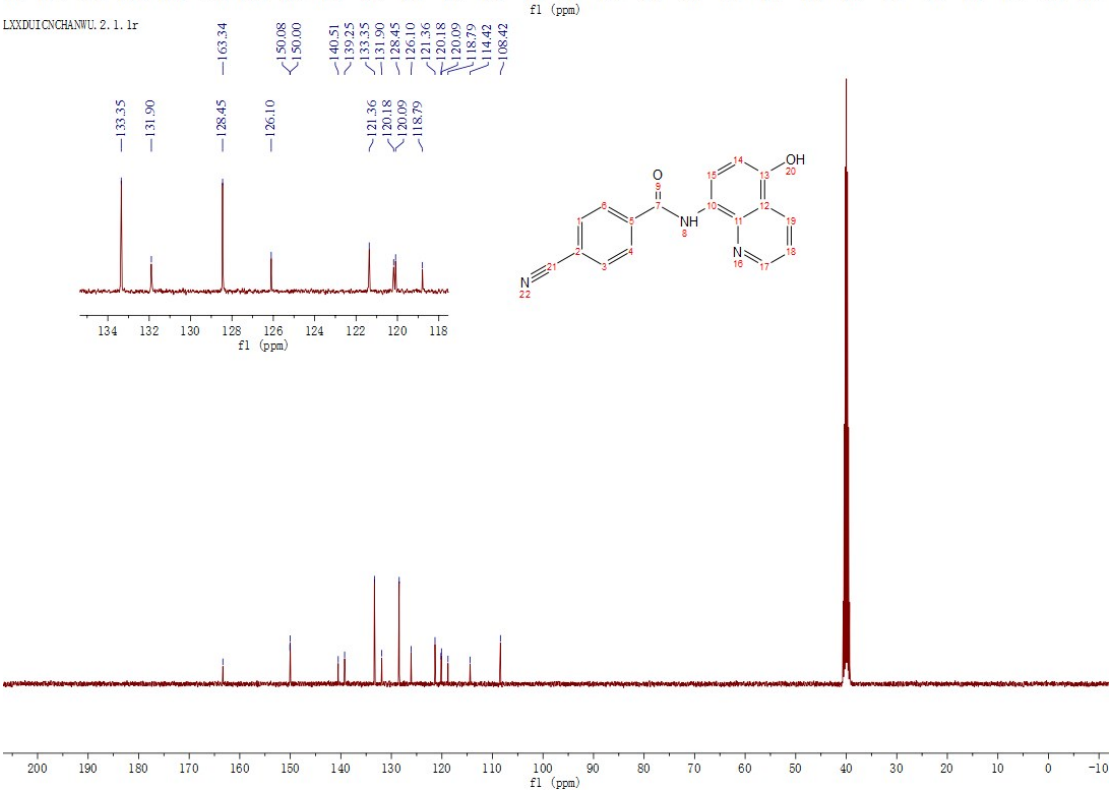

LXX-DUIXIUCHANWU.1.1r
10.45
10.38
8.95
8.95
8.94
8.94
8.59
8.59
8.57
8.57
8.45
8.43
8.05
8.03
7.68
7.66
7.62
7.61
7.60
7.59
6.99
6.97
3.34
2.50
f1 (ppm)

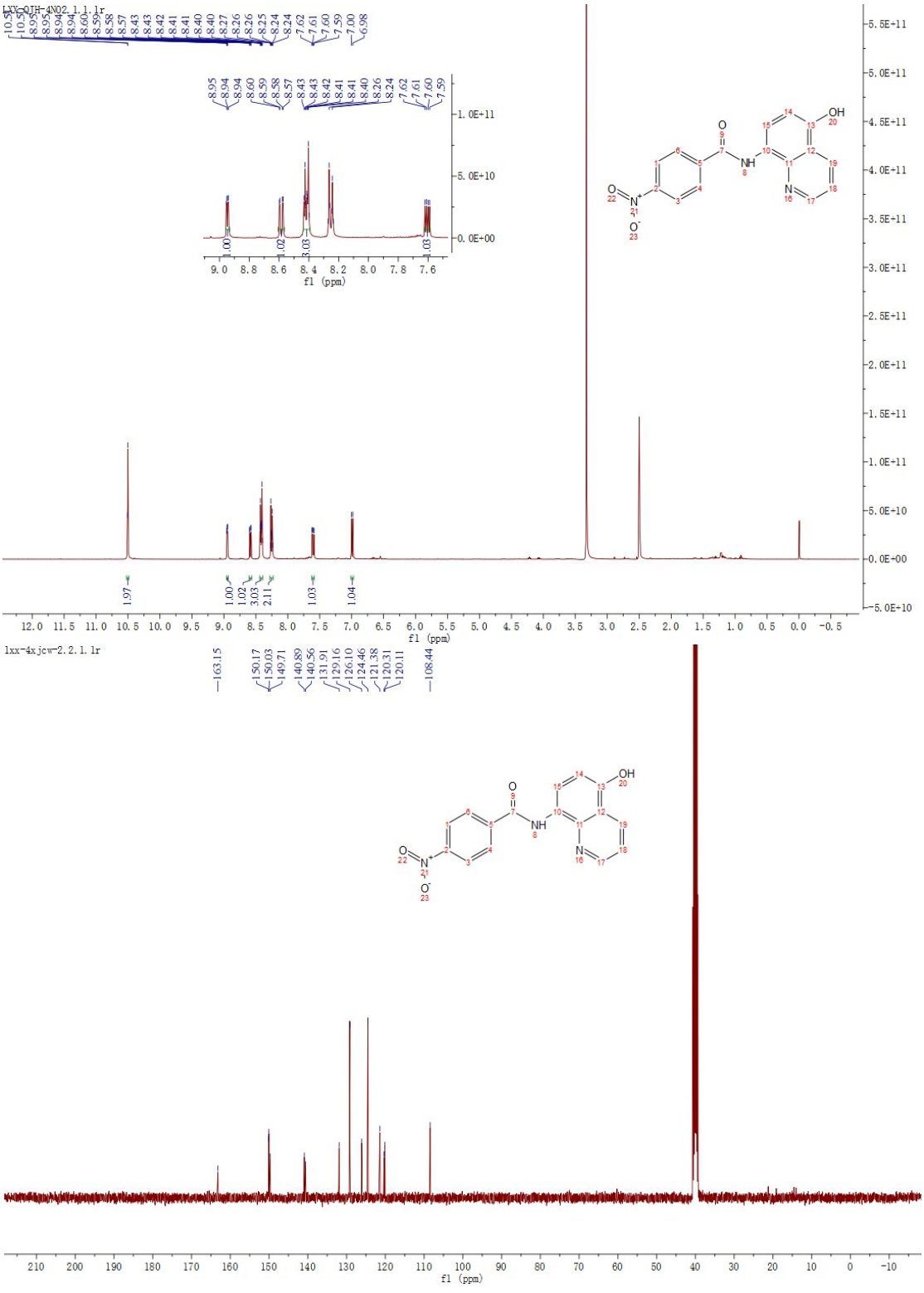

LXX-DUIXIUCHANWU.2.1.1r
163.61
149.93
149.73
140.31
137.01
134.01
131.91
129.46
129.42
126.33
121.35
120.08
119.63
108.47
f1 (ppm)

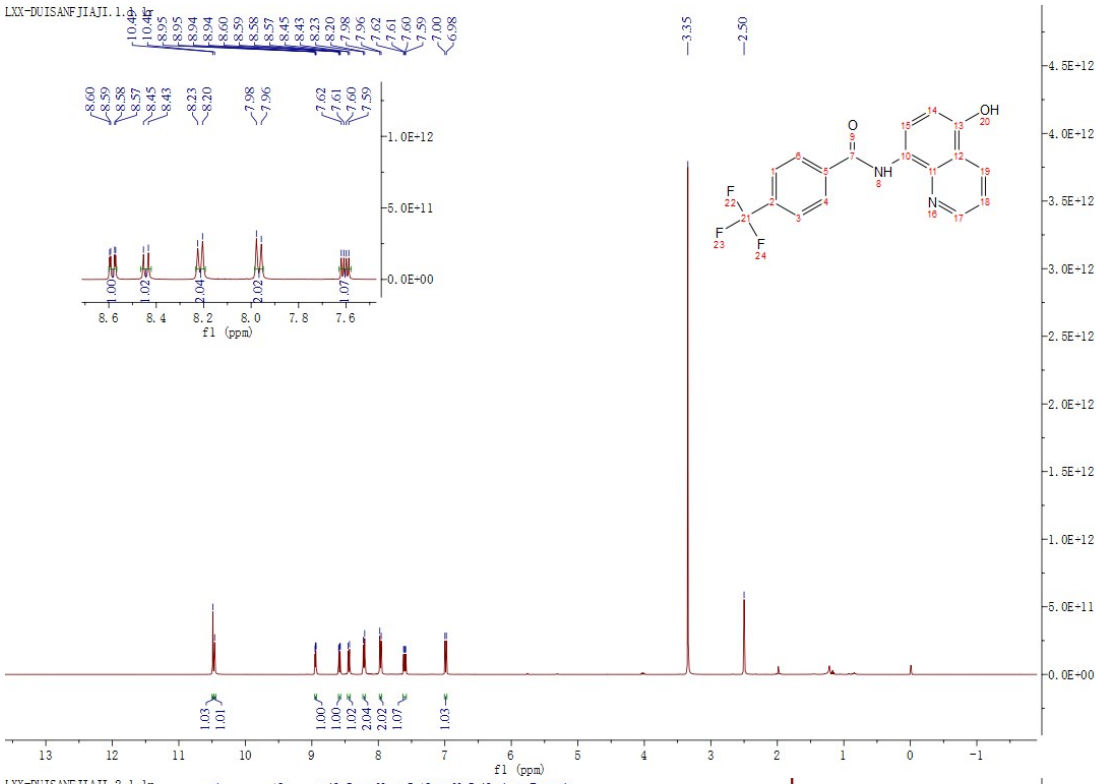

LXX-DUIXIUCHANWU.3.1.1r
10.44
10.36
8.95
8.95
8.94
8.94
8.61
8.60
8.58
8.58
8.45
8.43
7.99
7.97
7.97
7.96
7.95
7.82
7.81
7.80
7.80
7.65
7.63
7.62
7.61
7.60
7.59
7.58
6.99
6.97
OH
20
O
9
NH
8
Br
21
N
16
0.98
1.01
1.00
1.00
1.00
2.00
2.00
1.05
1.01
f1 (ppm)
1xx-4brchanwu.2.1.1r
163.72
149.92
149.73
140.29
134.37
132.35
131.91
129.62
126.32
125.95
121.35
120.08
119.59
108.48
134.37
132.35
131.91
129.62
126.32
125.95
f1 (ppm)
f1 (ppm)

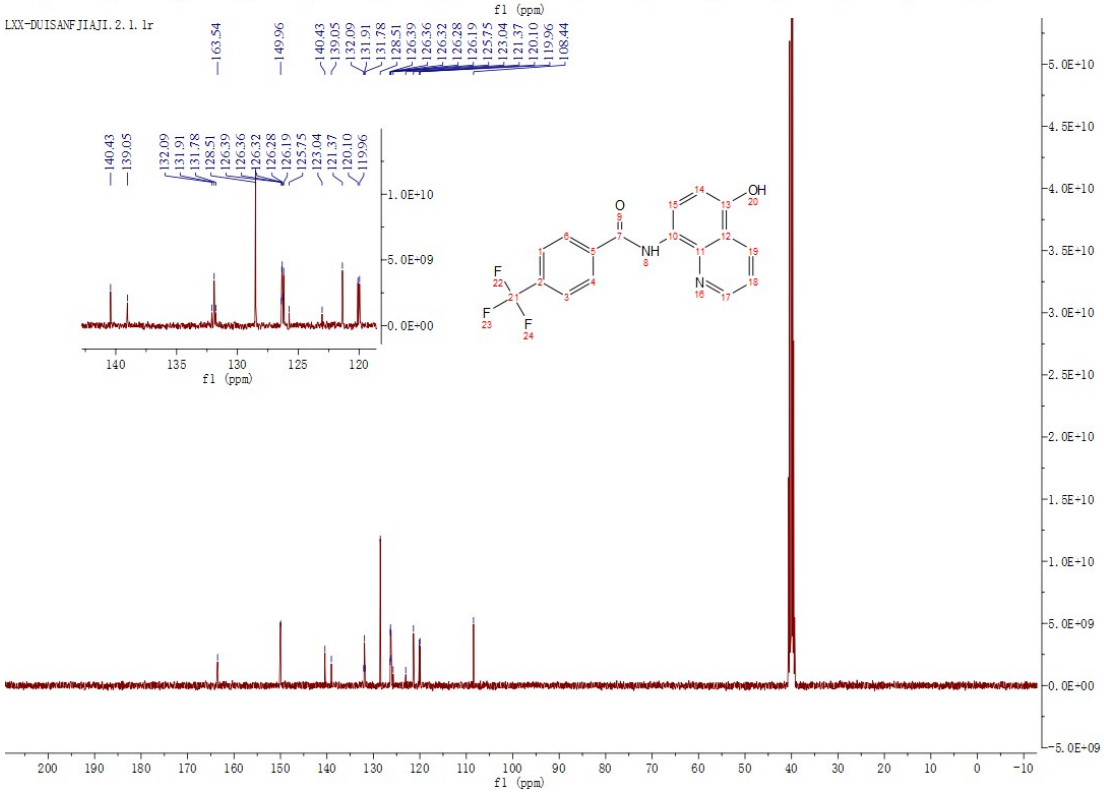

LXX-QJH-4i.1.1.1r
f1 (ppm)
LXX-QJH-4i.3.1.1r
f1 (ppm)

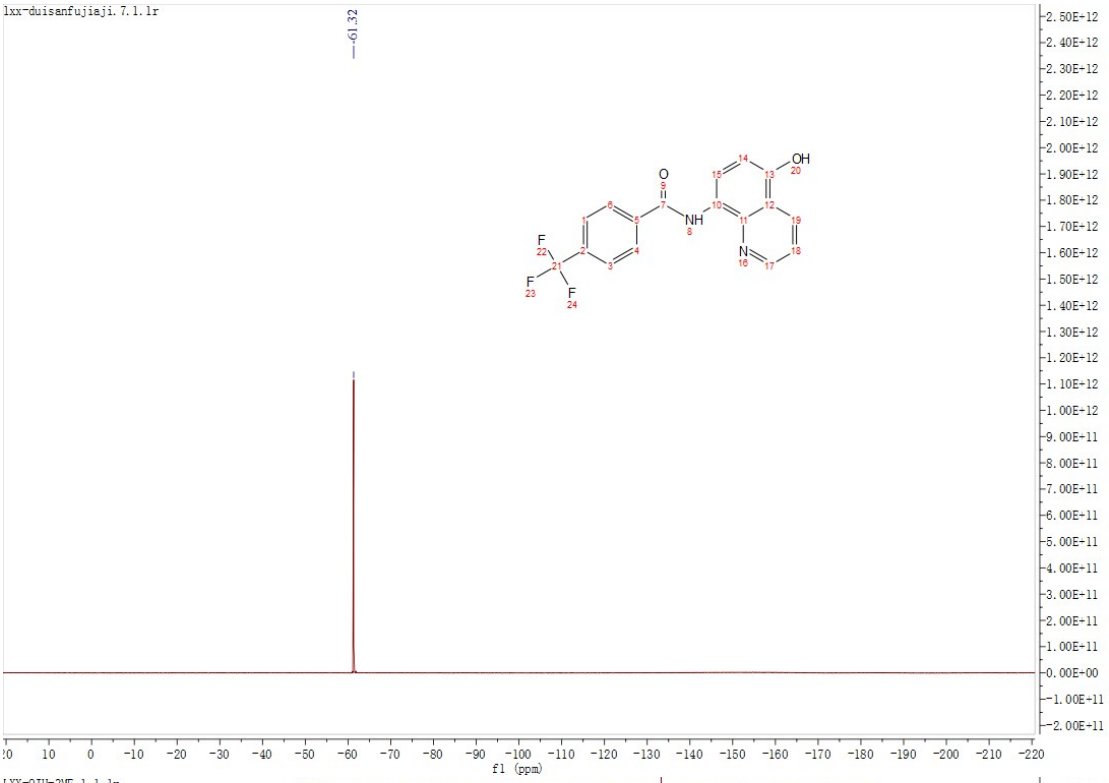

lxx-gx.1.1.1r
10.50
10.46
8.95
8.94
8.94
8.93
8.59
8.59
8.57
8.56
8.42
8.40
8.18
8.16
8.07
8.05
7.61
7.60
7.59
7.58
6.99
6.97
3.35
2.50
f1 (ppm)

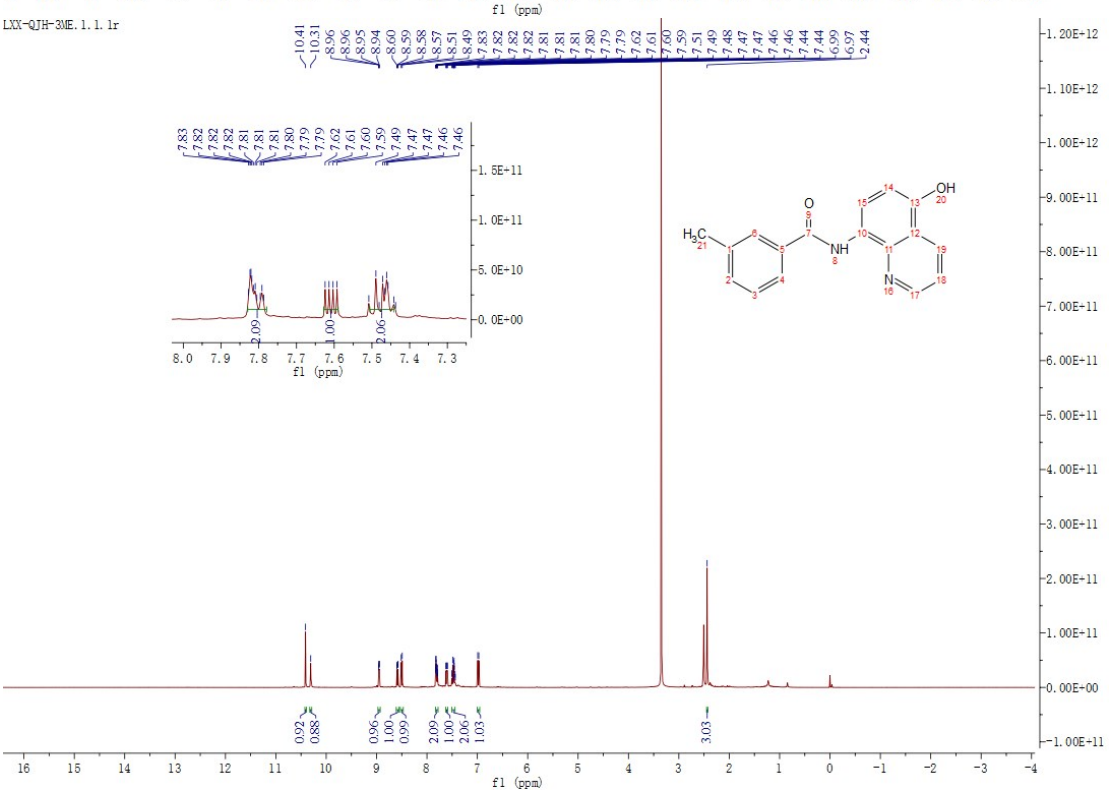

LXXDUICNCHANWU.2.1.1r
163.34
150.08
150.00
140.51
139.25
133.35
131.90
128.45
126.10
121.36
120.18
120.09
118.79
114.42
108.42
f1 (ppm)

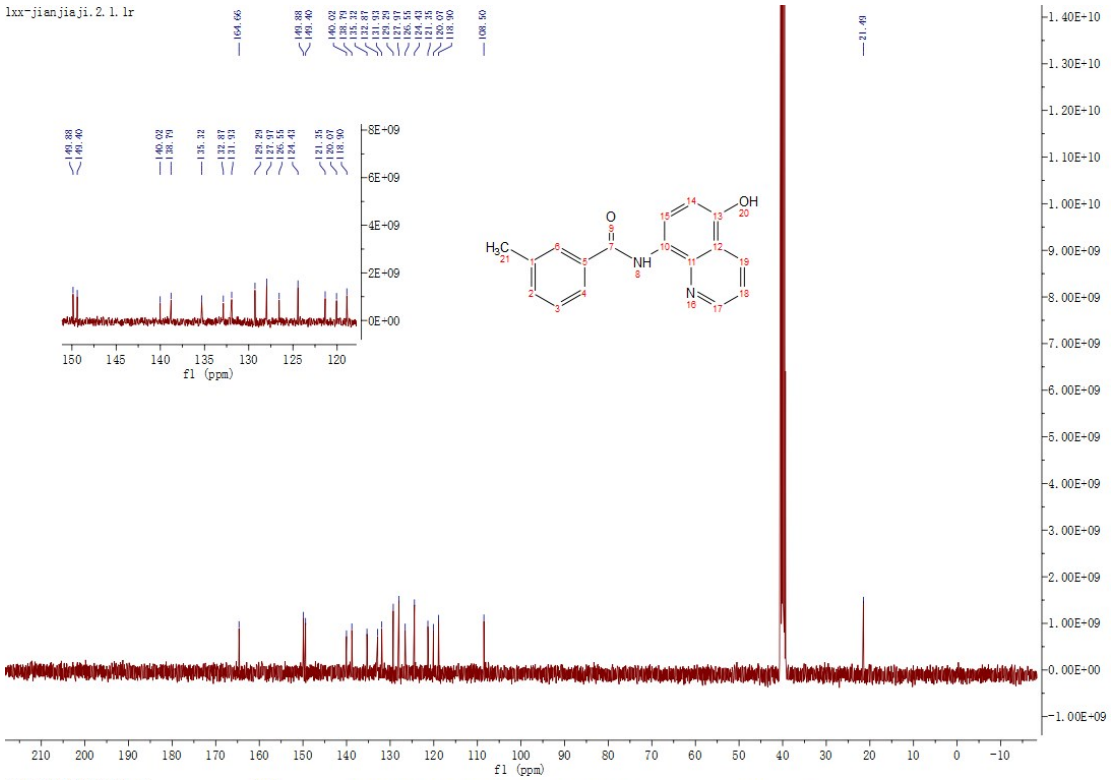

LYX-QJH-4NO2_1_1_1r
1lxx-4xjcw-2.2.1.1r
f1 (ppm)

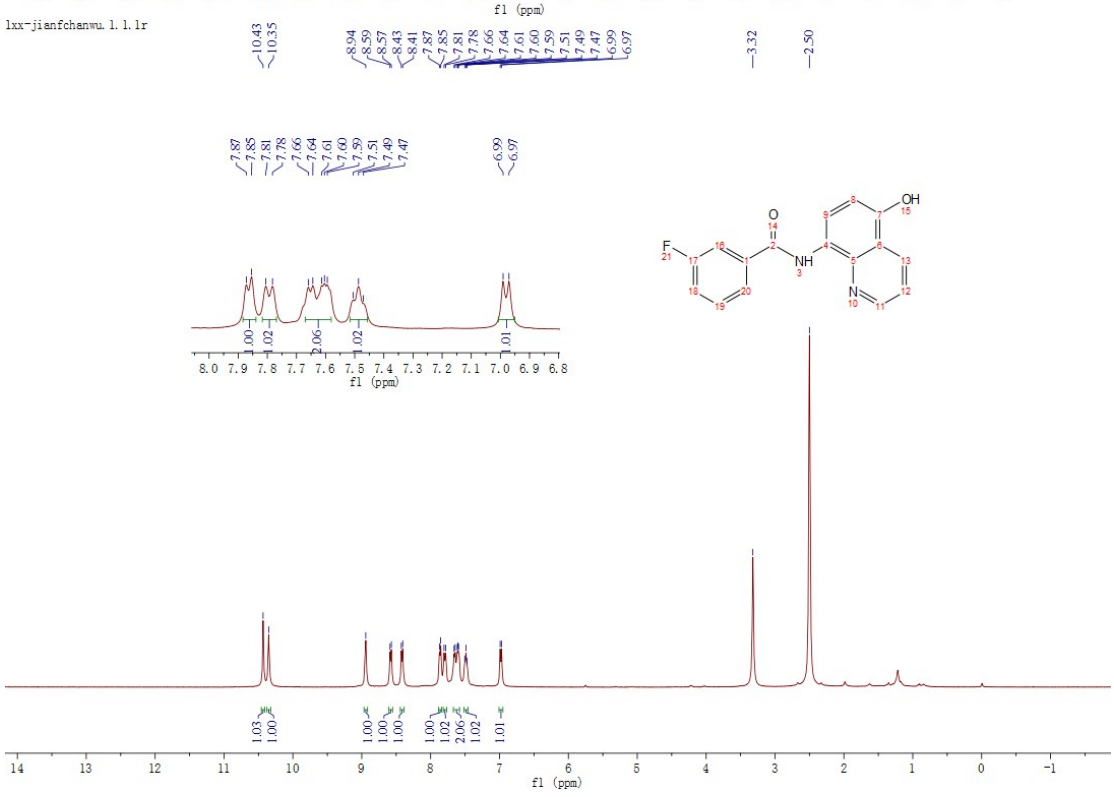

LXX-DUISANFJIAJI.1.1r
10.49
10.48
8.95
8.95
8.94
8.94
8.60
8.59
8.58
8.57
8.45
8.43
8.23
8.20
7.98
7.96
7.62
7.61
7.60
7.59
7.00
6.98
3.35
2.50
1.03
1.01
1.00
1.00
1.02
2.04
2.02
1.07
1.03
f1 (ppm)

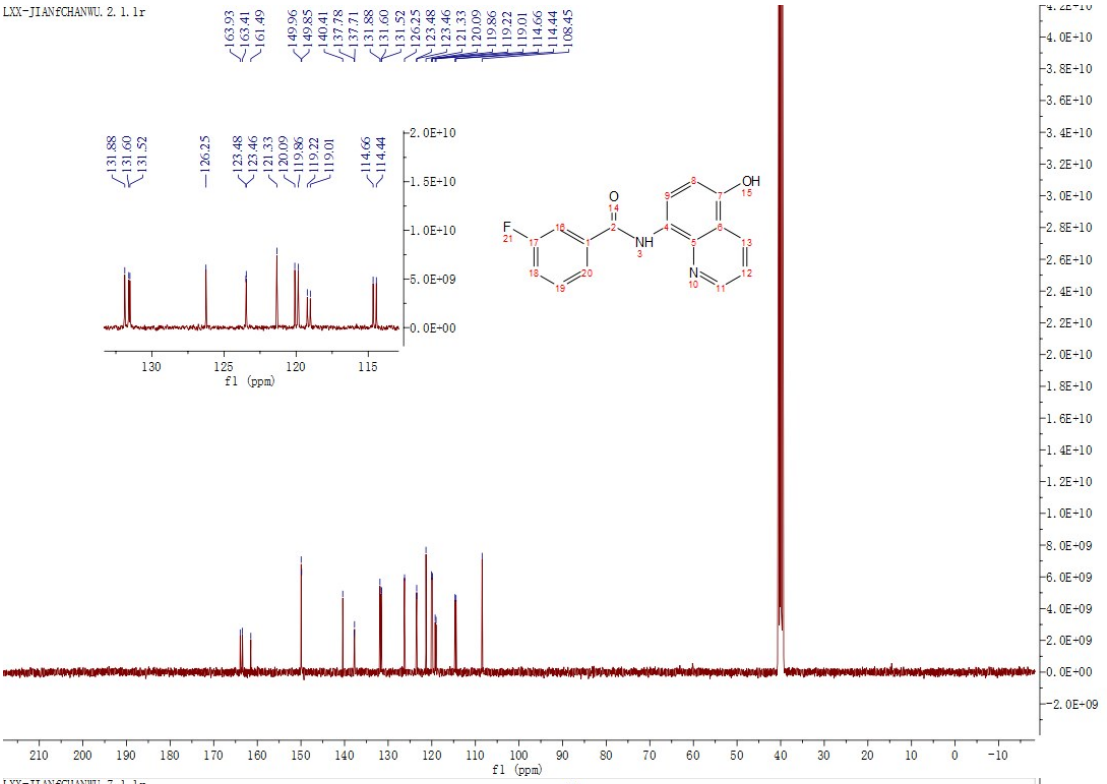

LXX-DUISANFJIAJI.2.1.1r
163.54
149.96
140.43
139.05
132.09
131.91
131.78
128.51
126.39
126.36
126.32
126.28
126.19
125.75
123.04
121.37
120.10
119.96
108.44
f1 (ppm)

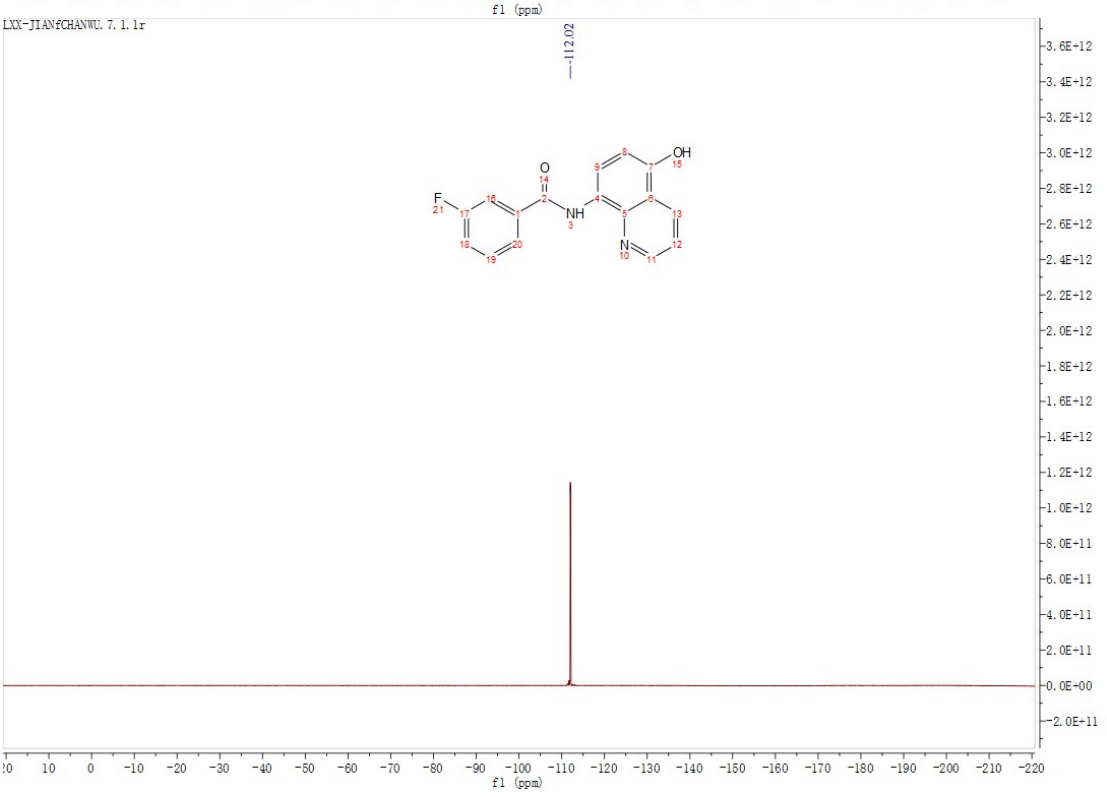

lxx-duisanfujiaji.7.1.1r
-61.32
f1 (ppm)

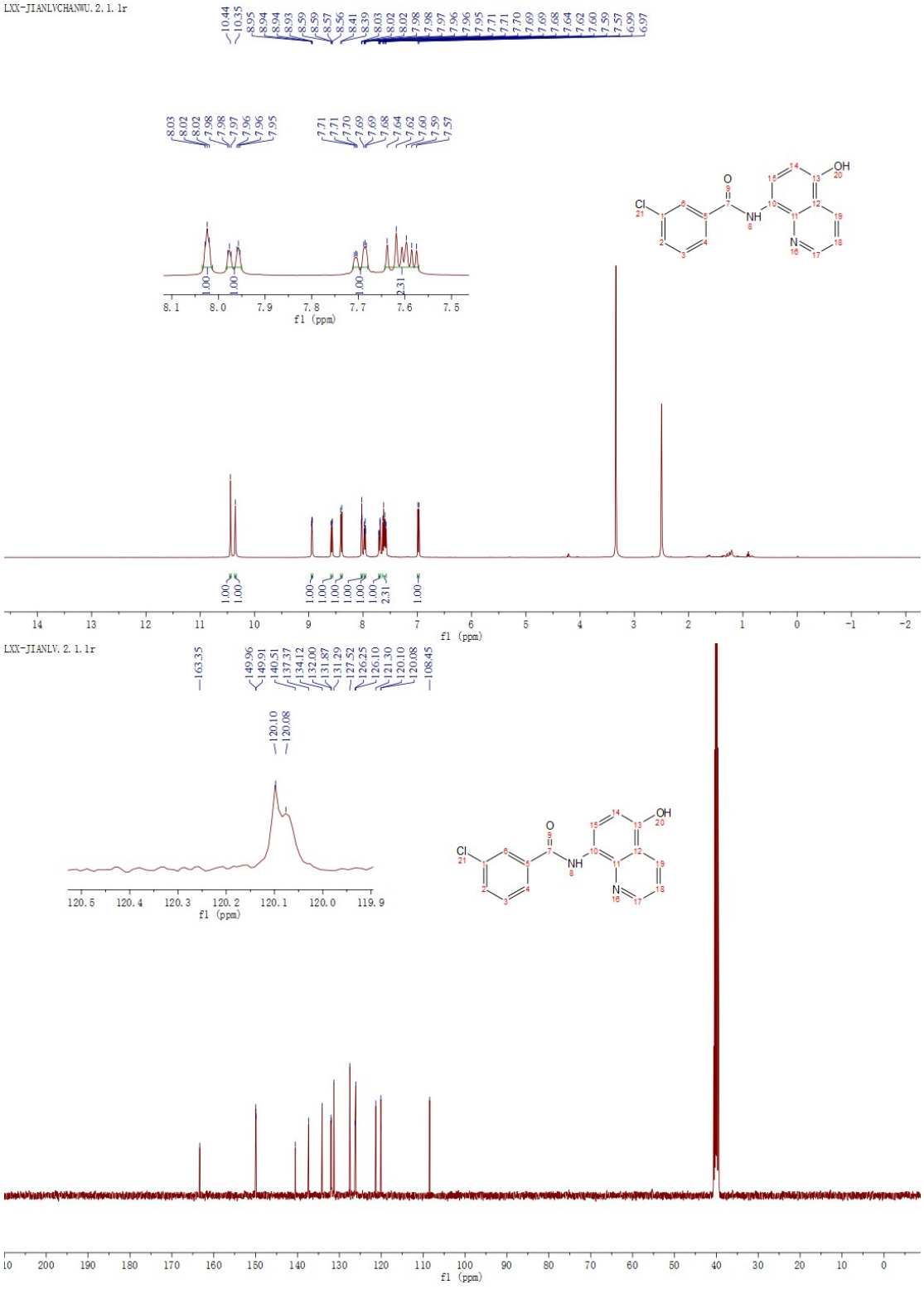

LXX-QJH-3ME.1.1.1r
f1 (ppm)

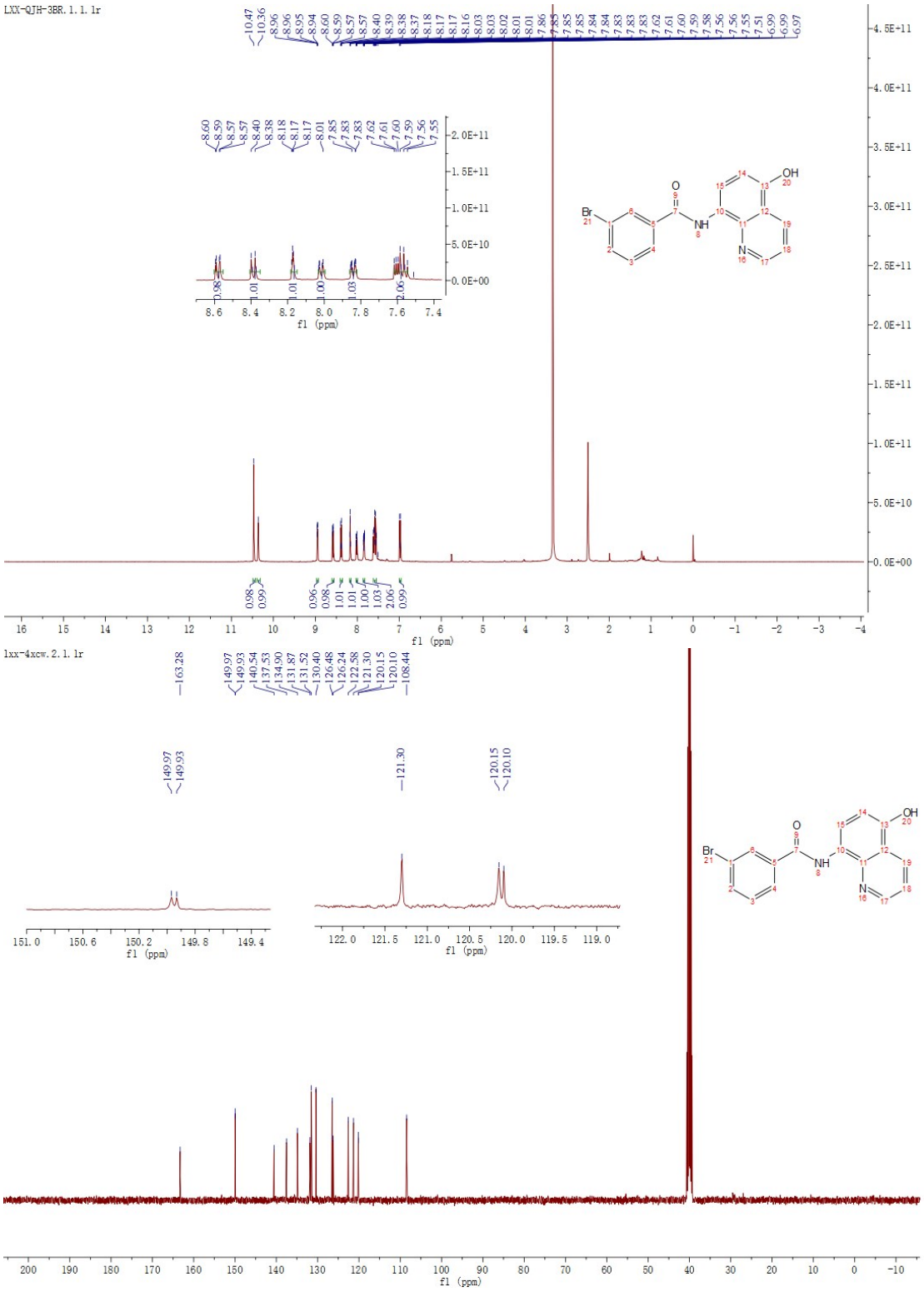

lxx-jianjiaji.2.1.1r
164.66
149.88
149.40
140.02
138.79
135.32
132.87
131.93
129.29
127.97
126.55
124.43
121.35
120.07
118.90
108.50
21.49
f1 (ppm)

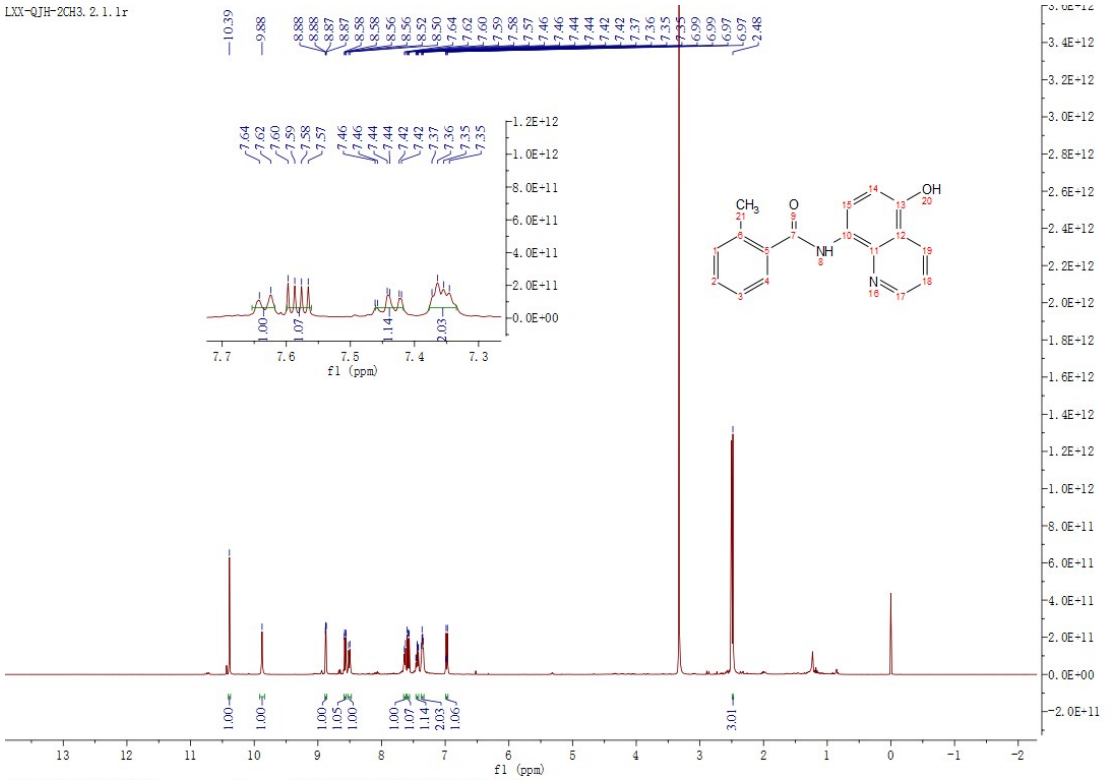

lxx-jianfchanwu.1.1.1r
10.43
10.35
8.94
8.59
8.57
8.43
8.41
7.87
7.85
7.81
7.78
7.66
7.64
7.61
7.60
7.59
7.51
7.49
7.47
6.99
6.97
3.32
2.50
f1 (ppm)

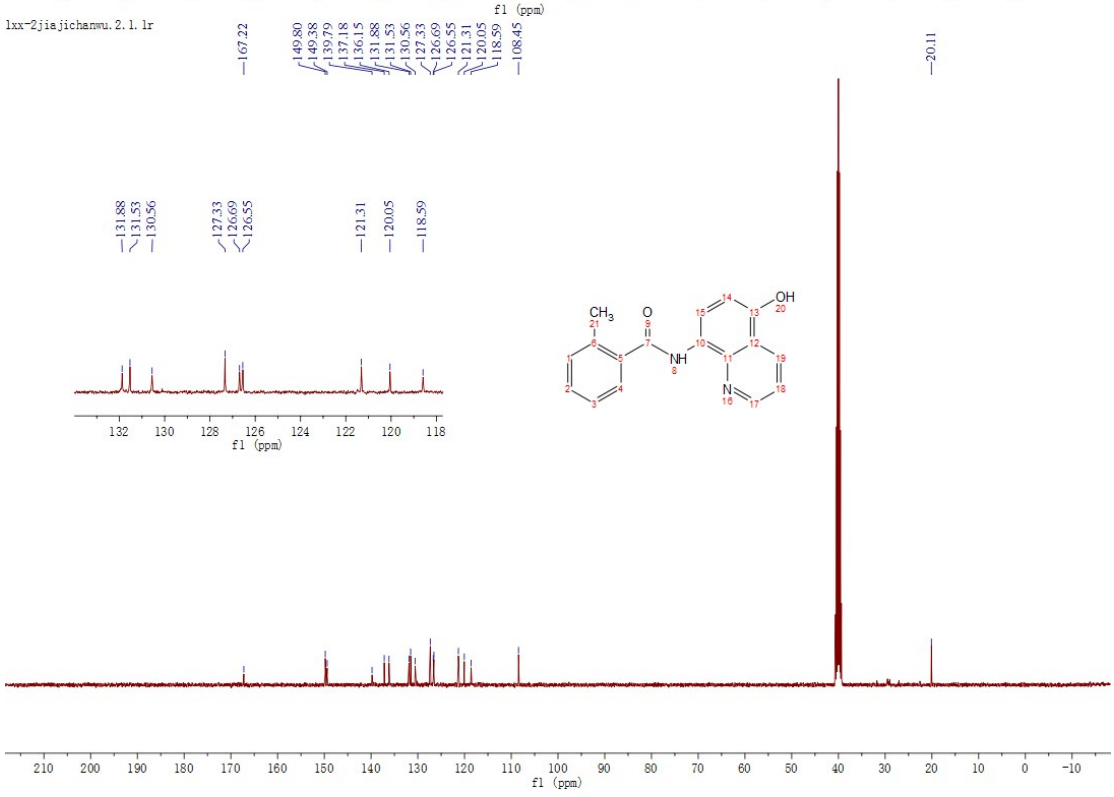

LXX-JIANfCHANWU.2.1.1r
163.93
163.41
161.49
149.96
149.85
140.41
137.78
137.71
131.88
131.60
131.52
126.25
123.48
123.46
121.33
120.09
119.86
119.22
119.01
114.66
114.44
108.45
f1 (ppm)

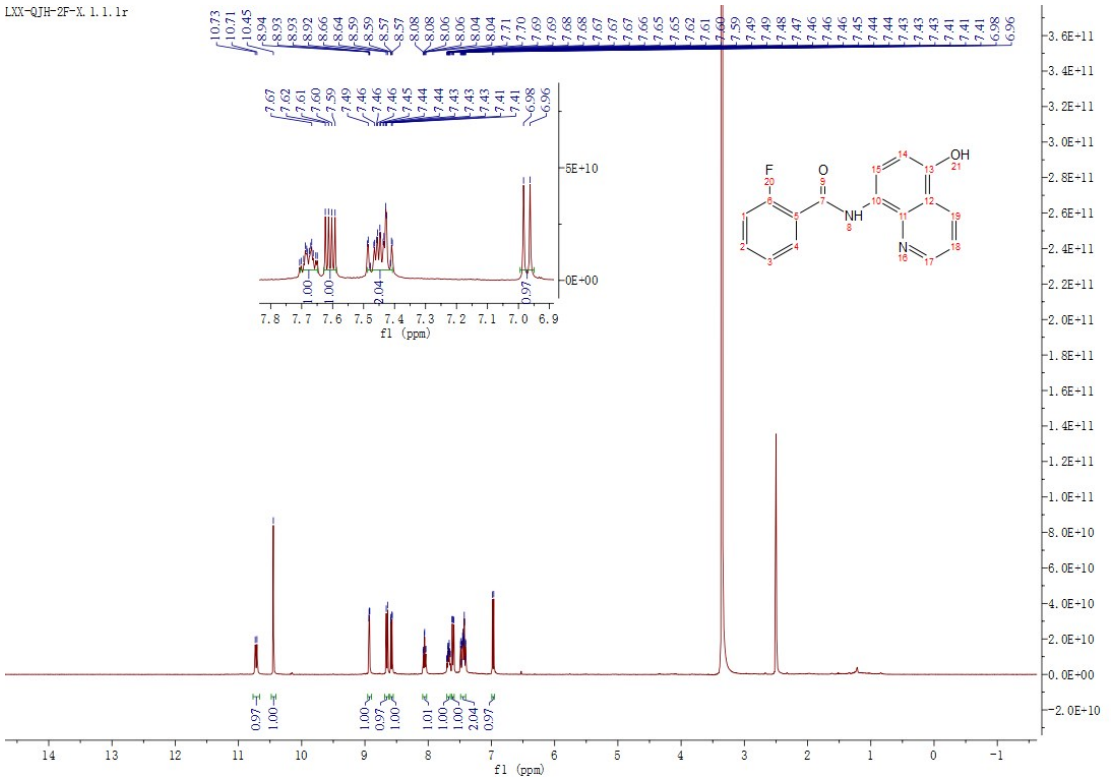

LXX-JIANfCHANWU.7.1.1r
-112.02
f1 (ppm)

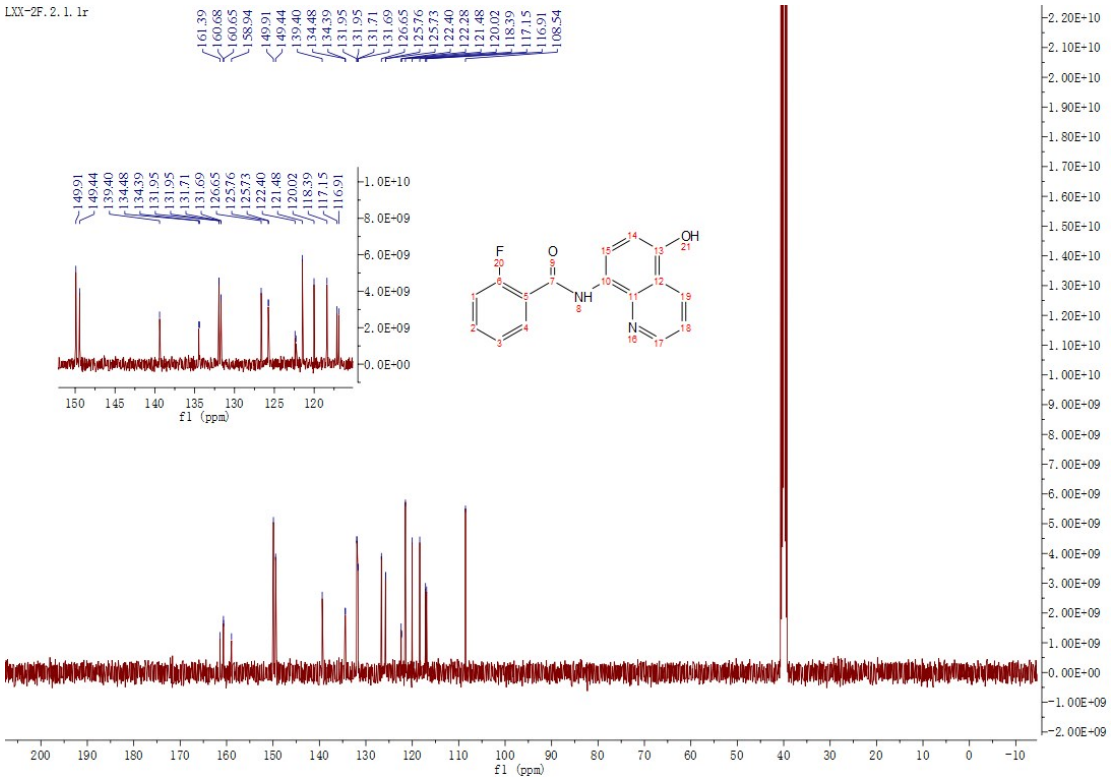

LXX-JIANLVCHANWU.2.1.1r
LXX-JIANLV.2.1.1r
f1 (ppm)

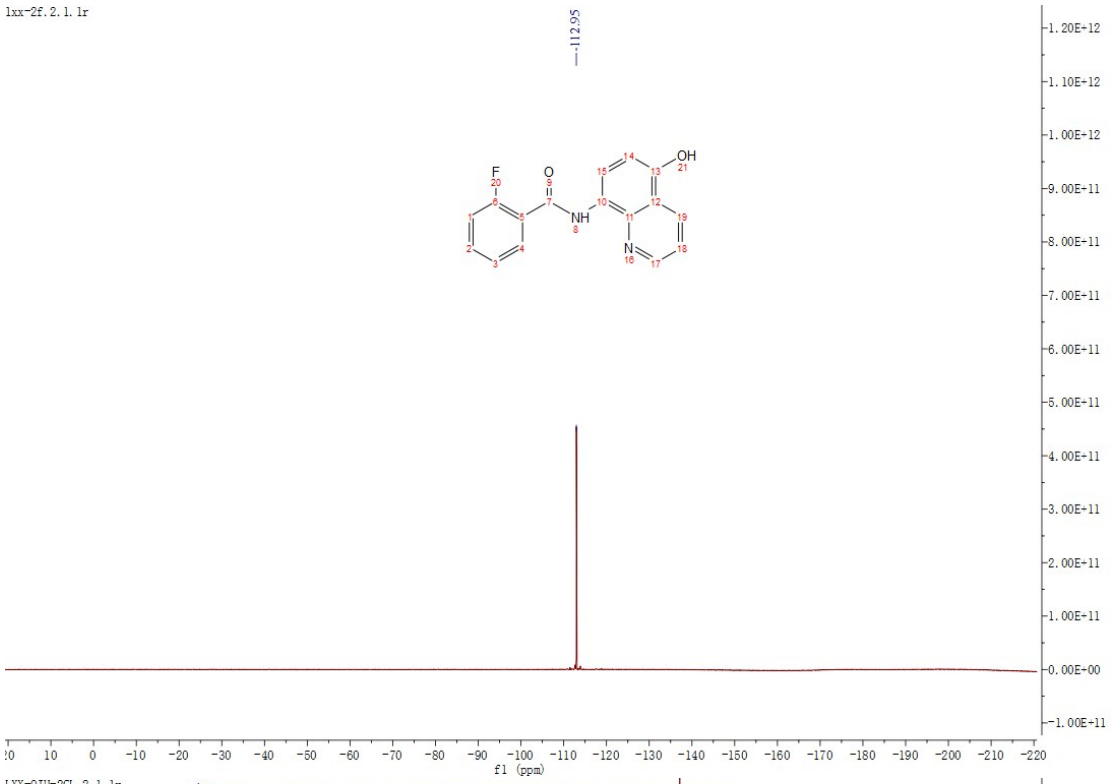

LXX-QJH-3BR.1.1.1r
f1 (ppm)
1xx-4xcw.2.1.1r
f1 (ppm)

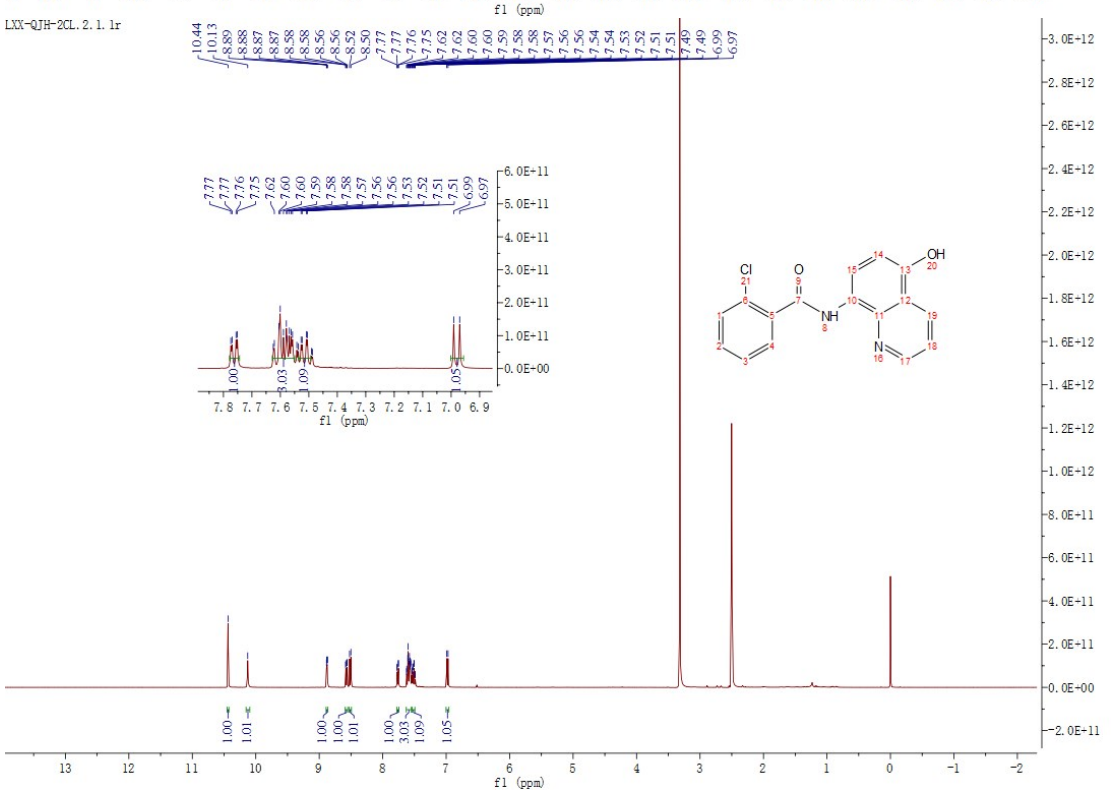

LXX-QJH-2CH3.2.1.1r
f1 (ppm)

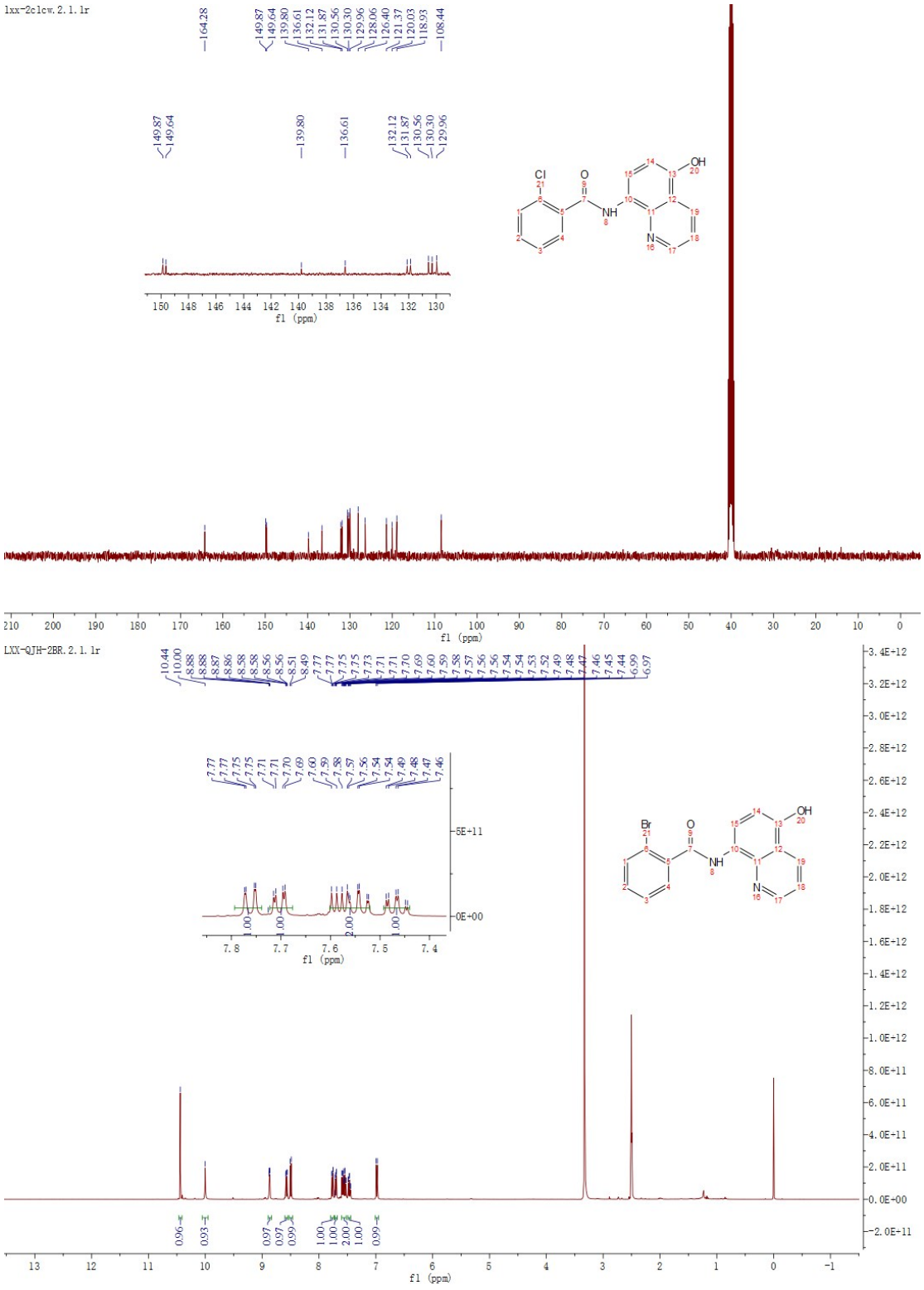

lxx-2jiajichanwu.2.1.1r
f1 (ppm)

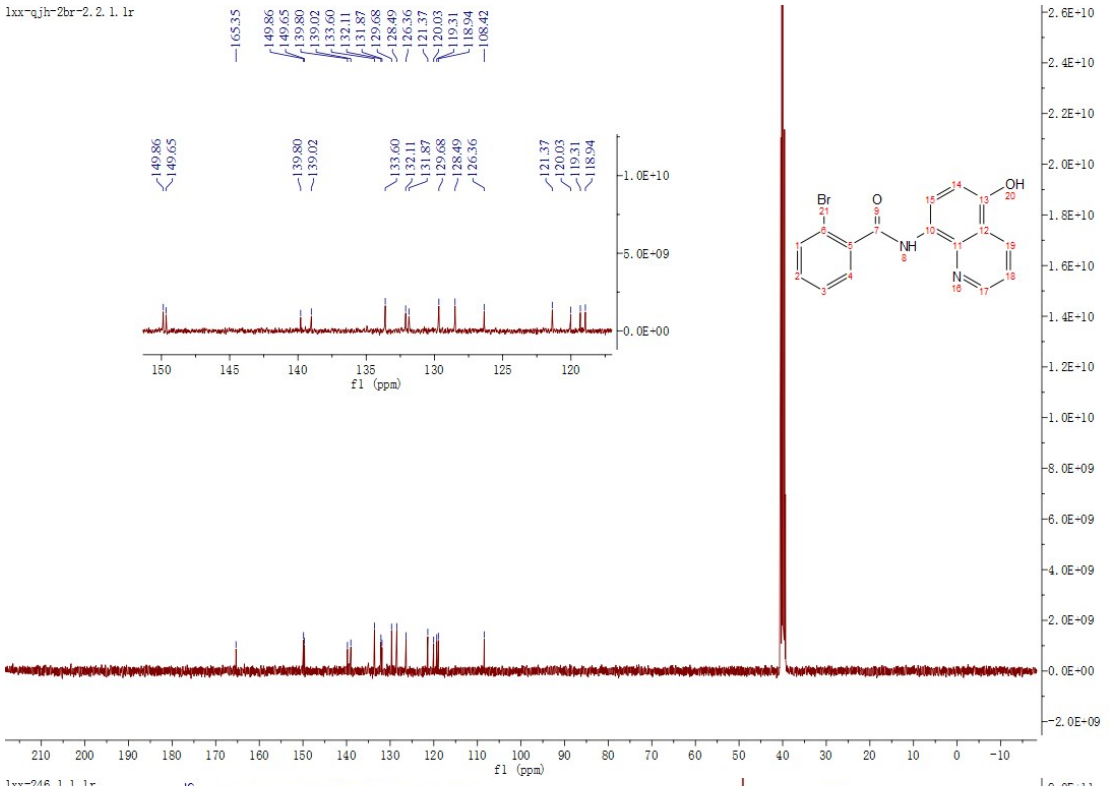

LXX-QJH-2F-X.1.1.1r
f1 (ppm)

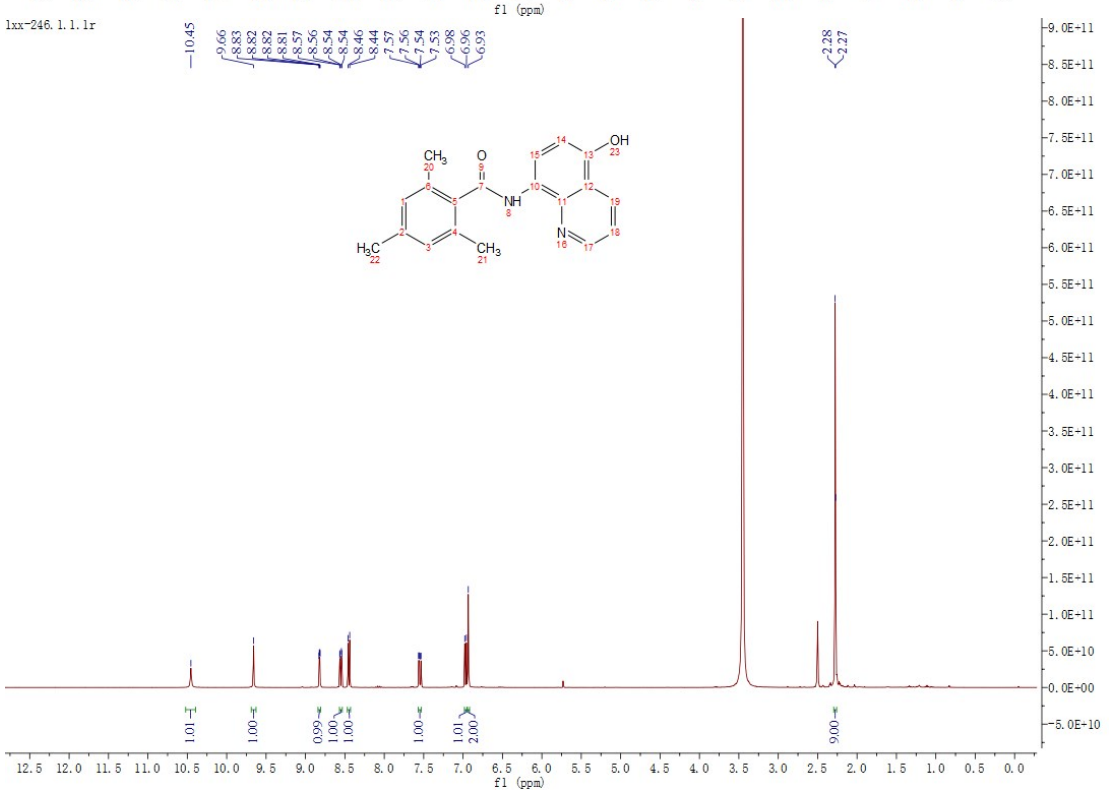

LXX-2F.2.1.1r
f1 (ppm)

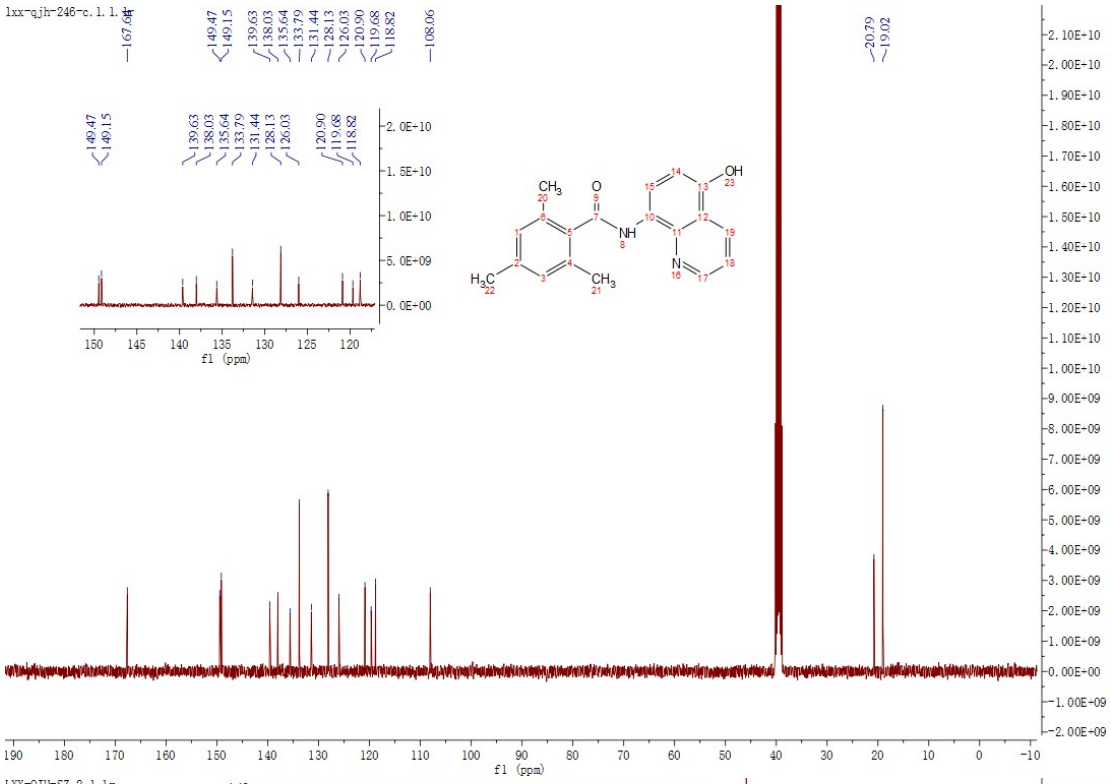

lxx-2f.2.1.1r
-112.95
F
O
NH
OH
N
f1 (ppm)

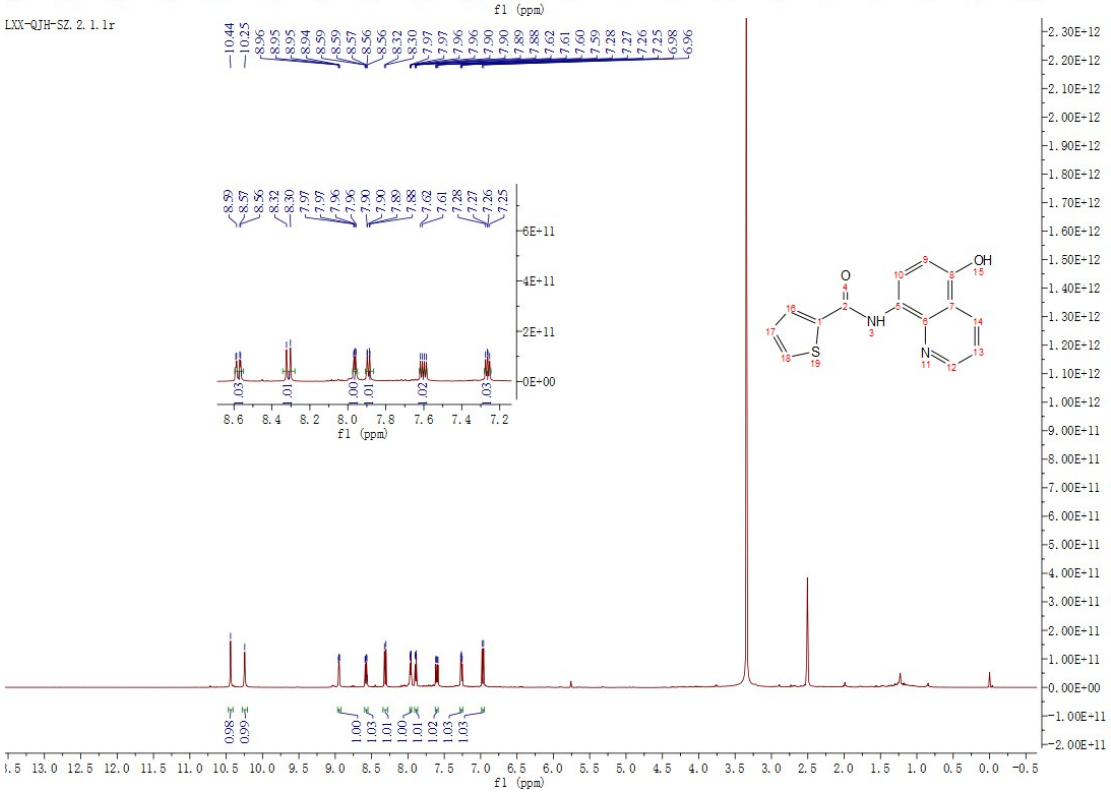

LXX-QJH-2CL.2.1.1r
10.44
10.13
8.89
8.88
8.87
8.58
8.56
8.52
8.50
7.77
7.76
7.75
7.62
7.60
7.59
7.58
7.57
7.56
7.54
7.53
7.52
7.51
7.49
6.99
6.97
Cl
O
NH
OH
N
1.00
1.01
1.00
1.00
1.01
1.00
3.03
1.09
1.05
f1 (ppm)

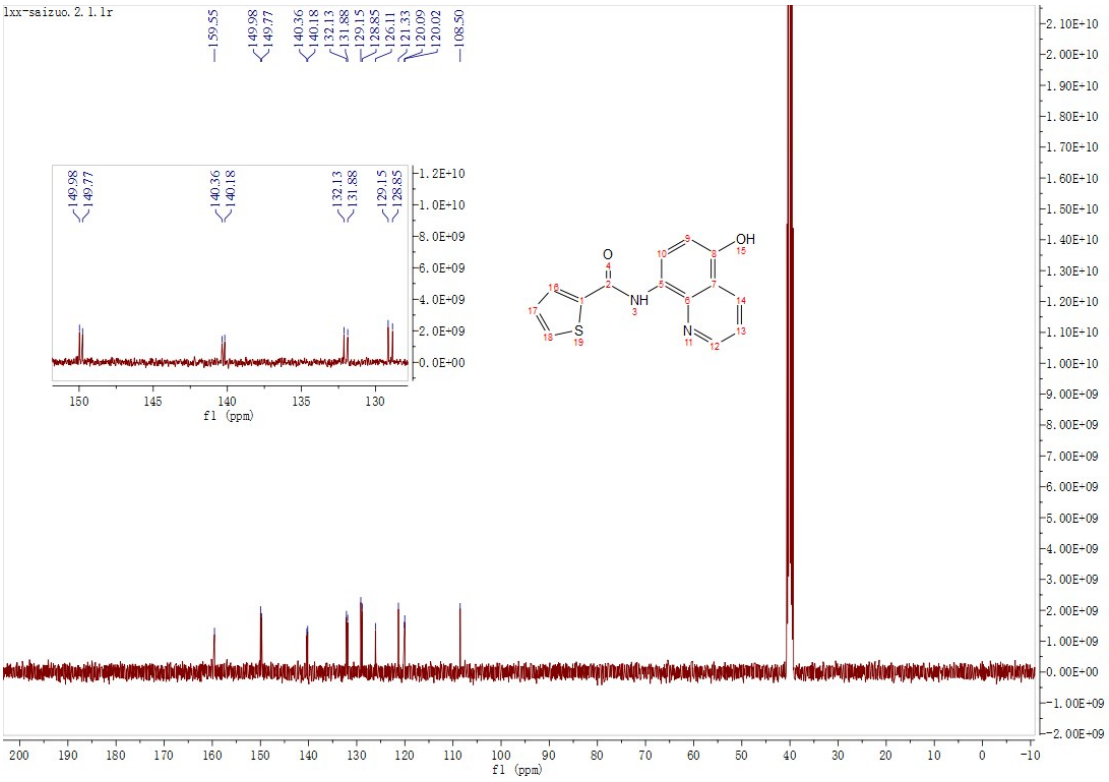

lxx-2c1cw.2.1.1r
164.28
149.87
149.64
139.80
136.61
132.12
131.87
130.56
130.30
129.96
128.06
126.40
121.37
120.03
118.93
108.44
f1 (ppm)
LXX-QJH-2BR.2.1.1r
10.44
10.00
8.88
8.87
8.86
8.58
8.58
8.56
8.56
8.51
8.49
7.77
7.77
7.75
7.75
7.73
7.71
7.71
7.70
7.69
7.60
7.59
7.58
7.57
7.56
7.56
7.54
7.54
7.53
7.52
7.49
7.48
7.47
7.46
7.46
7.45
7.44
6.99
6.97
f1 (ppm)

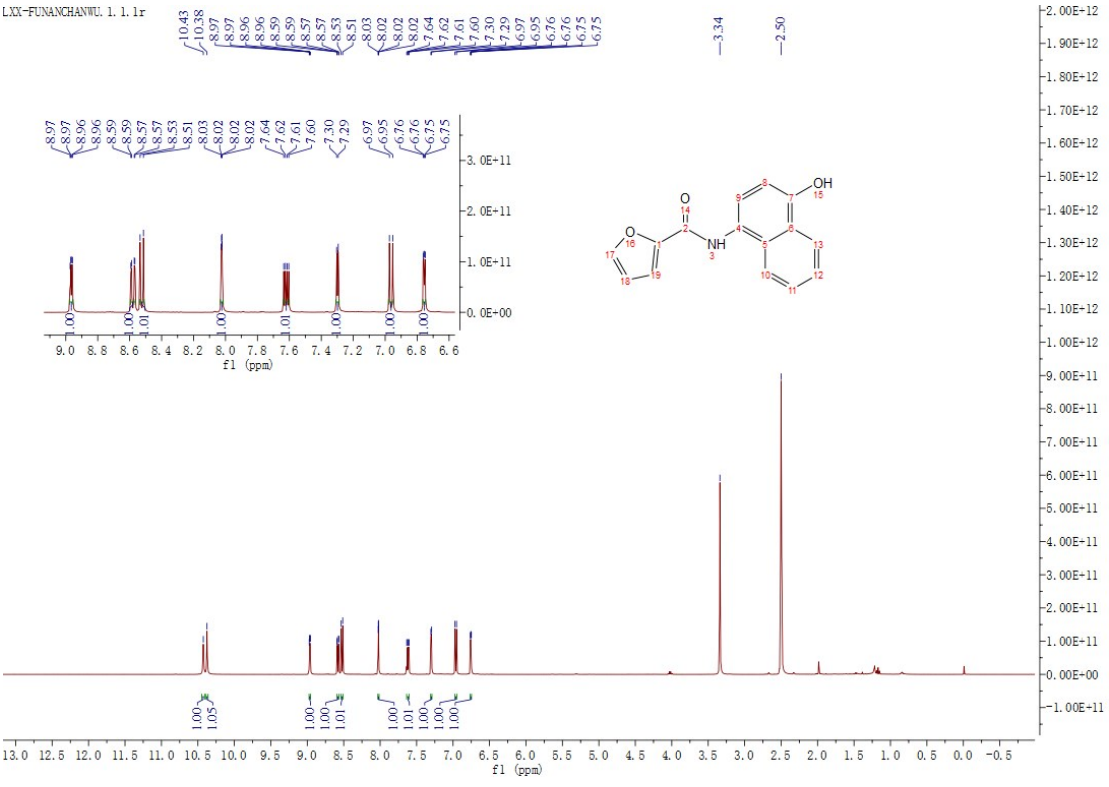

lxx-qjh-2br-2.2.1.1r
165.35
149.86
149.65
139.80
139.02
133.60
132.11
131.87
129.68
128.49
126.36
121.37
120.03
119.31
118.94
108.42
f1 (ppm)
Br
O
NH
OH
N

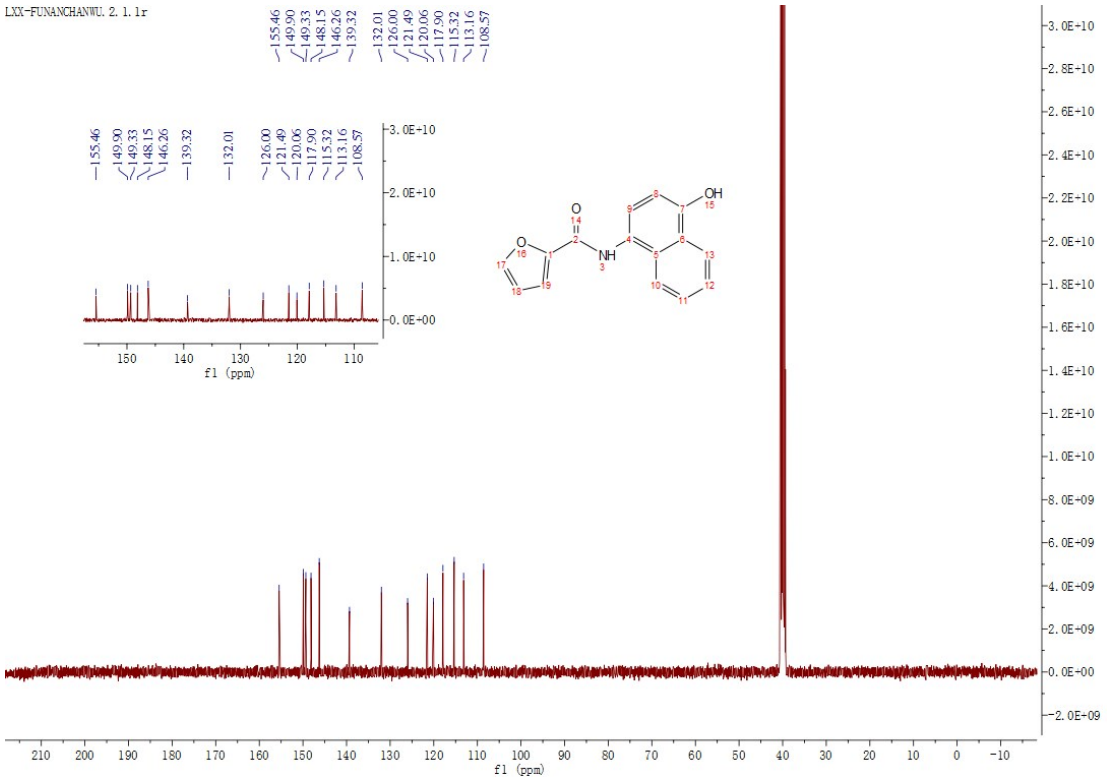

lxx-246.1.1.1r
10.45
9.66
8.83
8.82
8.82
8.81
8.57
8.56
8.54
8.54
8.46
8.44
7.57
7.56
7.54
7.53
6.98
6.96
6.93
2.28
2.27
1.01
1.00
0.99
1.00
1.00
1.00
1.01
2.00
9.00
f1 (ppm)
CH3
O
NH
OH
H3C
CH3
N


1xx-qjh-246-c.1.1.1r
167.64
149.47
149.15
139.63
138.03
135.64
133.79
131.44
128.13
126.03
120.90
119.68
118.82
108.06
20.79
19.02
f1 (ppm)

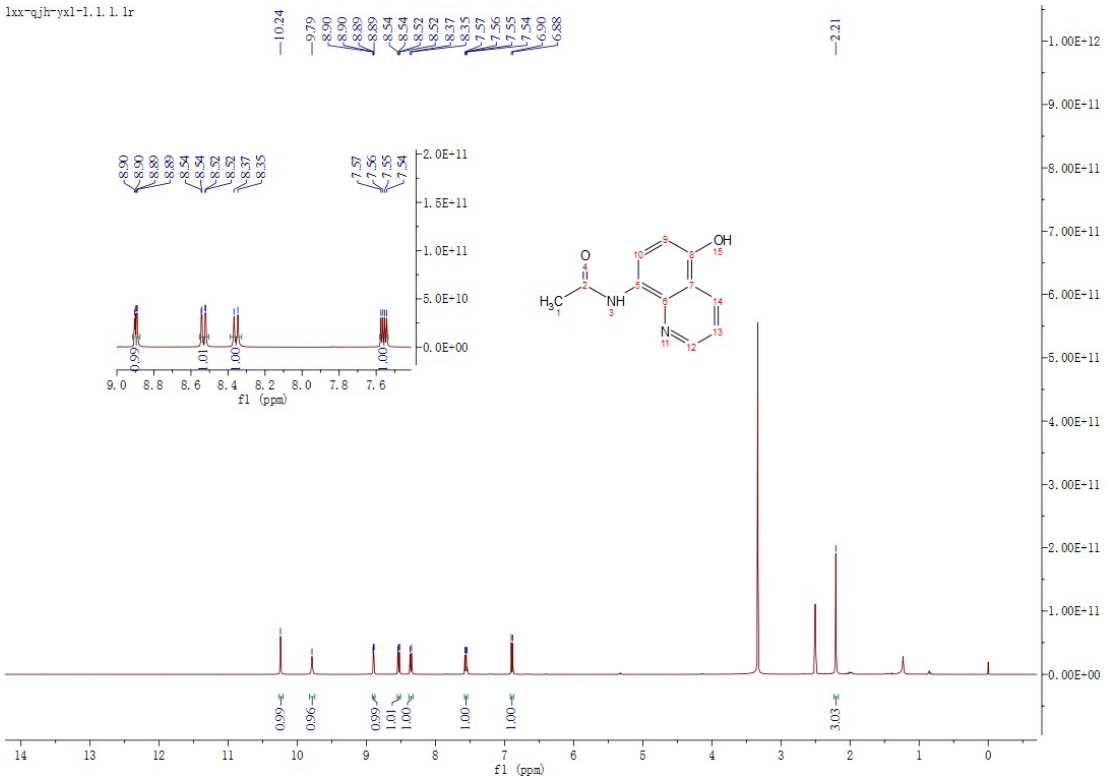

LXX-QJH-SZ.2.1.1r
10.44
10.25
8.96
8.95
8.95
8.94
8.59
8.59
8.57
8.56
8.56
8.32
8.30
7.97
7.97
7.96
7.96
7.90
7.90
7.89
7.88
7.62
7.61
7.60
7.59
7.28
7.27
7.26
7.25
6.98
6.96
0.98
0.99
1.00
1.03
1.01
1.00
1.01
1.02
1.03
1.03
f1 (ppm)

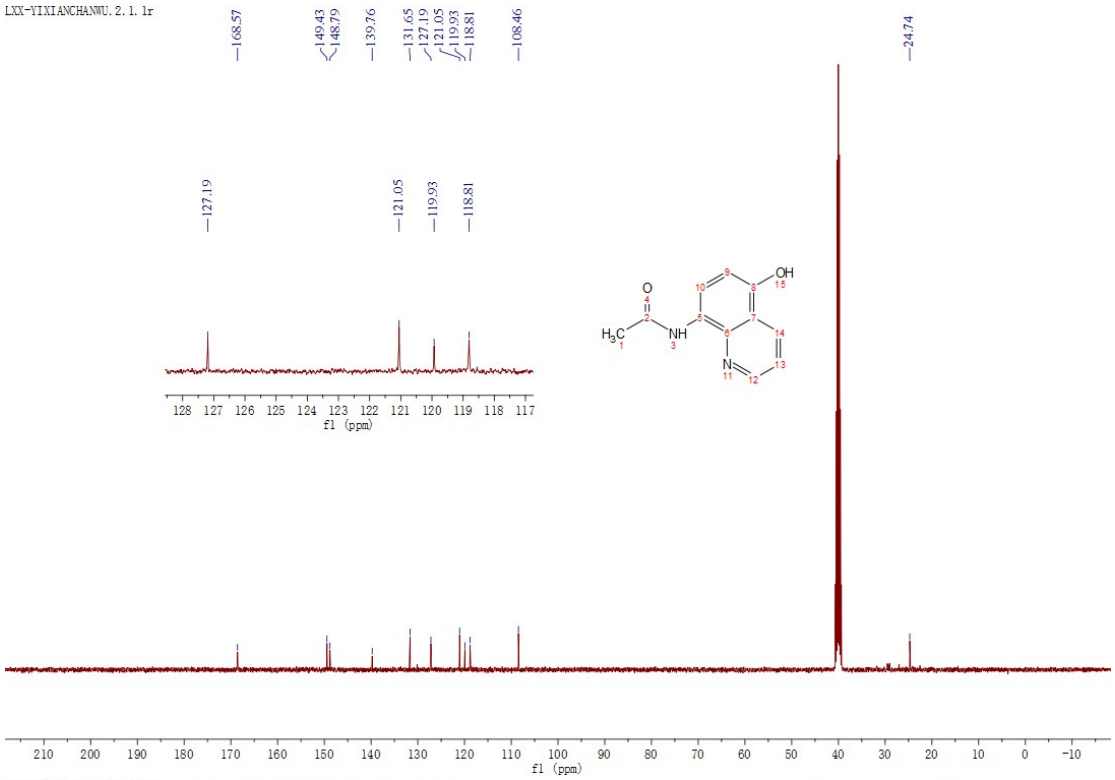

lxx-saizuo.2.1.1r
159.55
149.98
149.77
140.36
140.18
132.13
131.88
129.15
128.85
126.11
121.33
120.09
120.02
108.50
f1 (ppm)

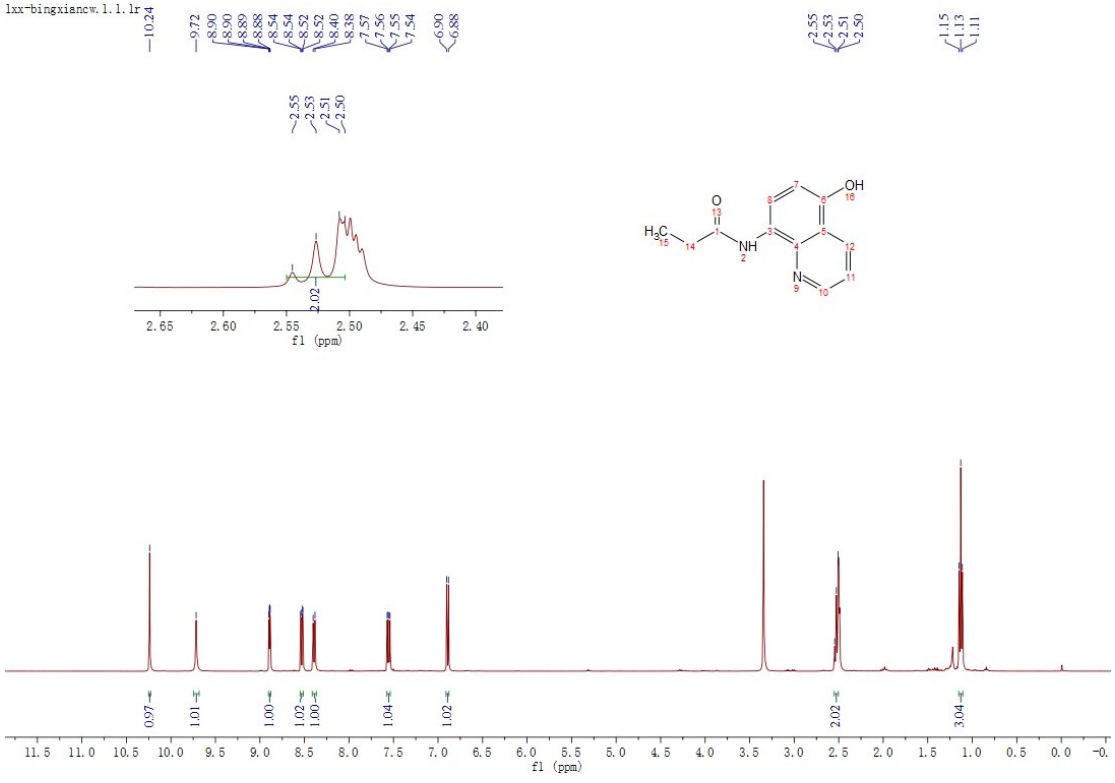

LXX-FUNANCHANWU.1.1.1r
10.43
10.38
8.97
8.96
8.59
8.57
8.53
8.51
8.03
8.02
7.64
7.62
7.61
7.60
7.30
7.29
6.97
6.95
6.76
6.75
3.34
2.50
f1 (ppm)

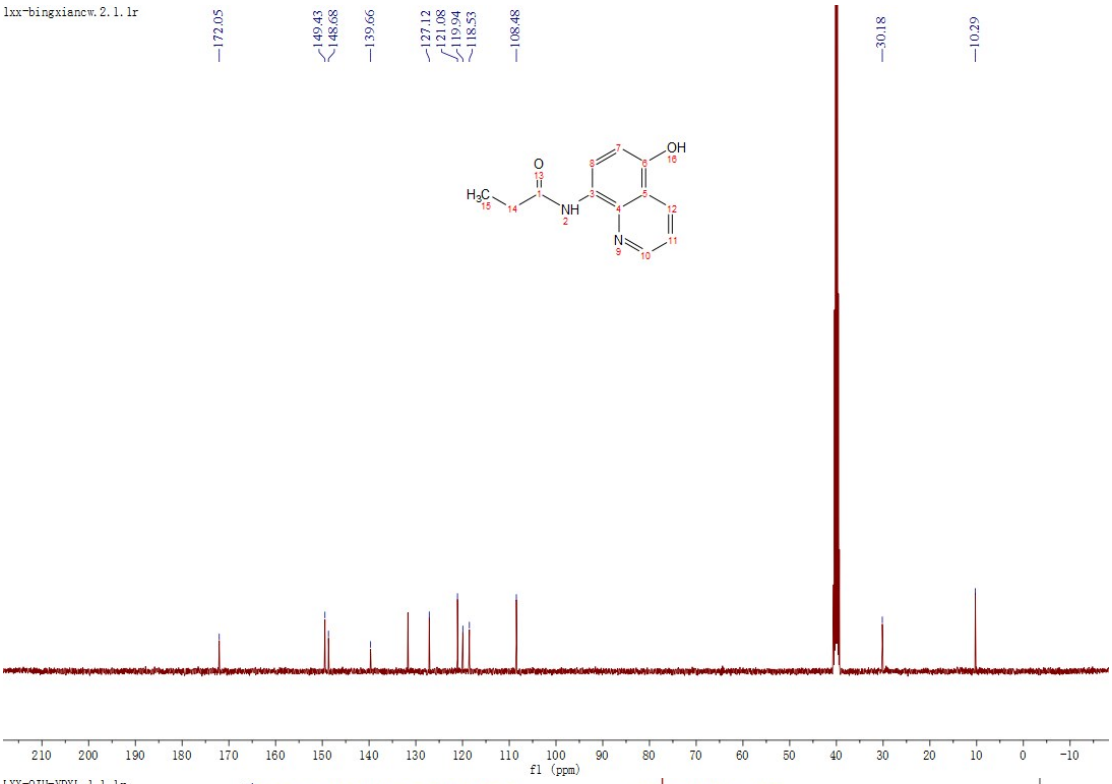


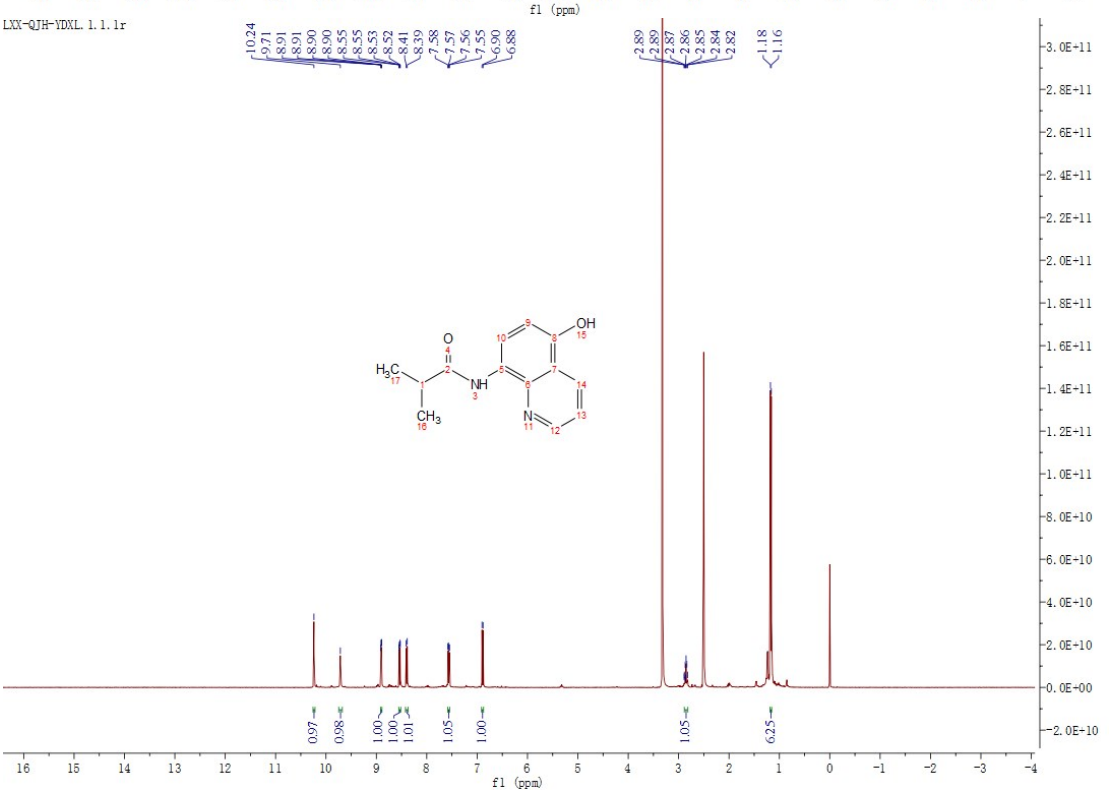
10.5 NMR-Spectra of **4**

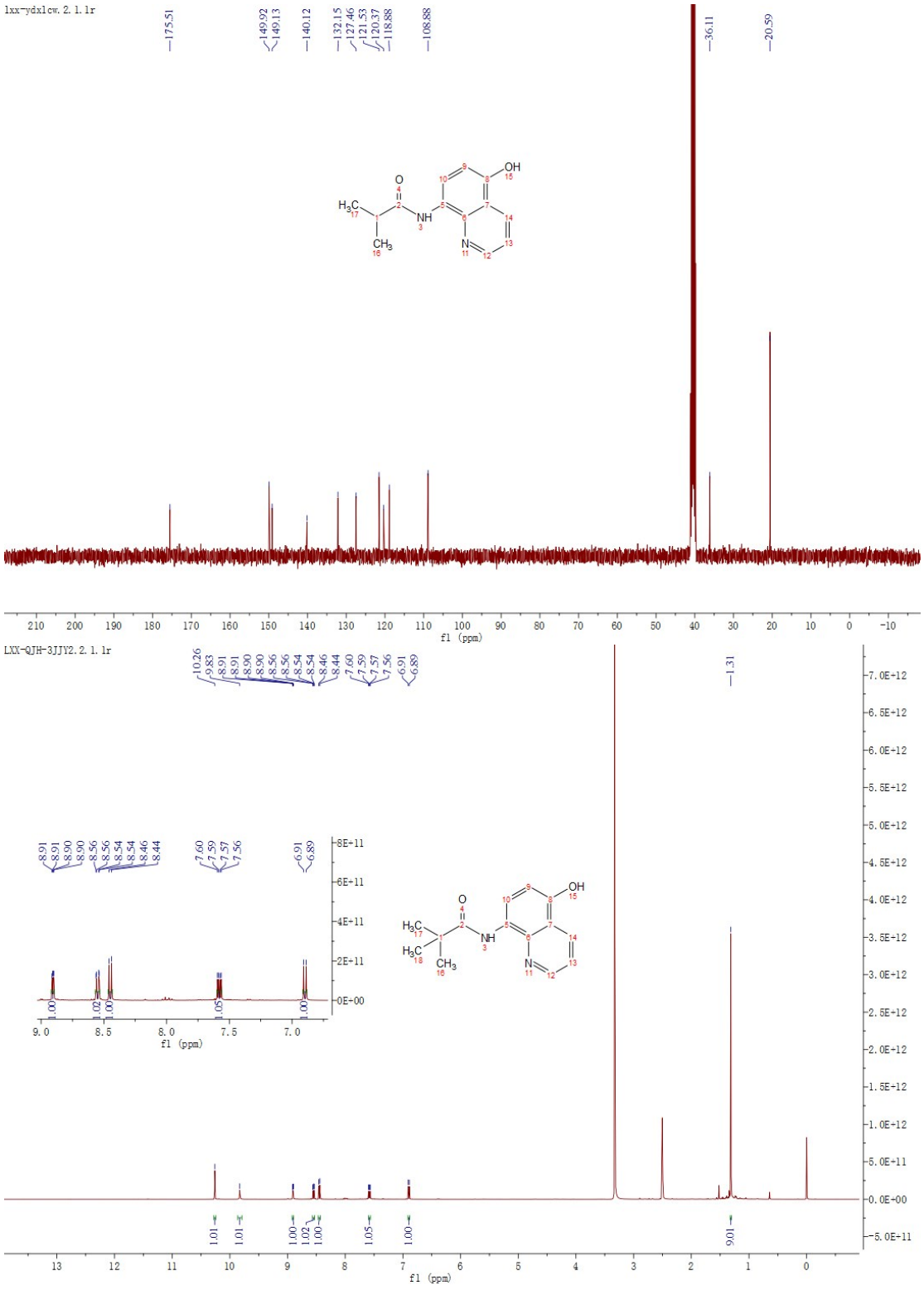


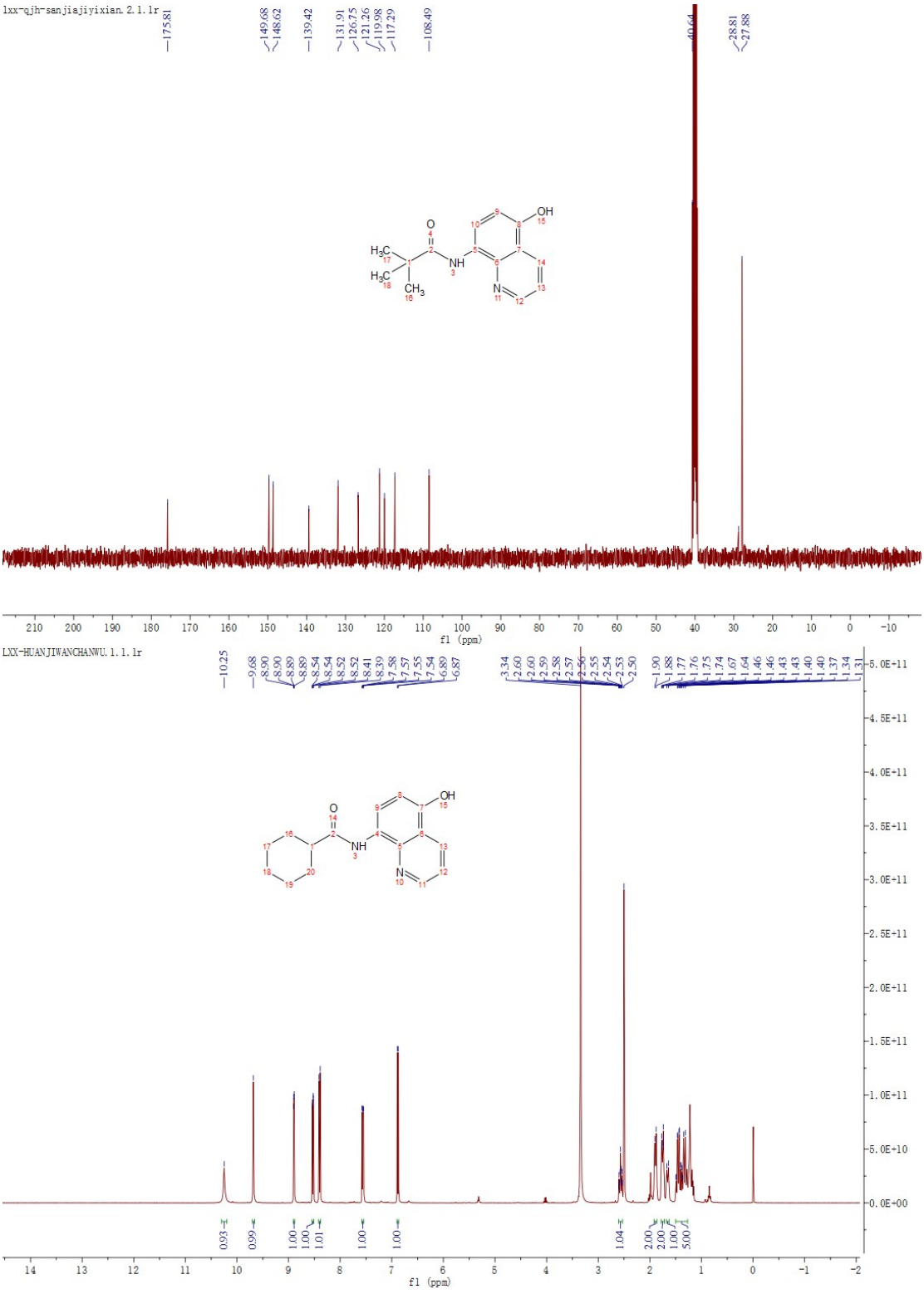

LXX-YIXIANCHANWU.2.1.1r
168.57
149.43
148.79
139.76
131.65
127.19
121.05
119.93
118.81
108.46
24.74
f1 (ppm)

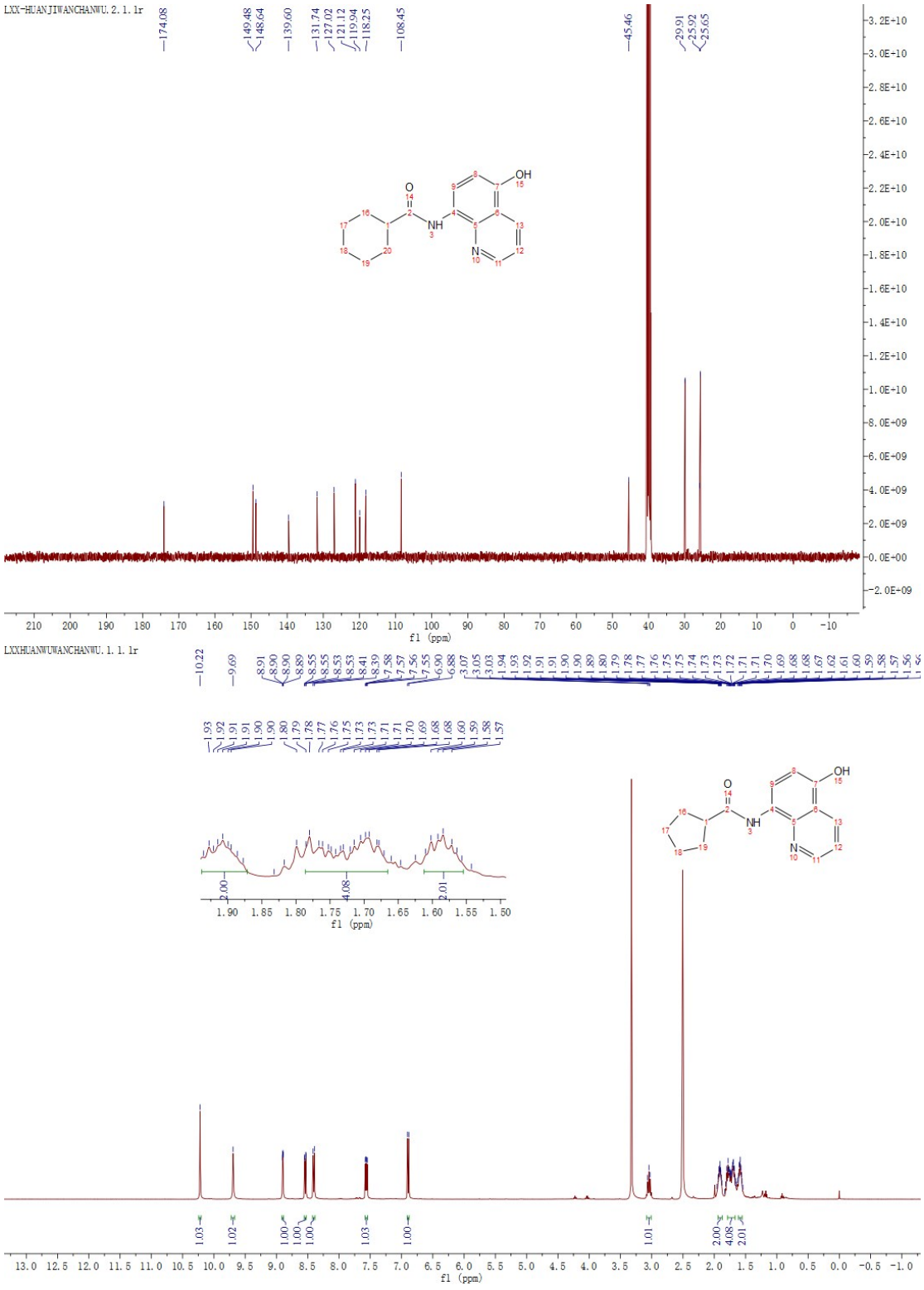

lxx-bingxiancw.1.1.1r
10.24
9.72
8.90
8.90
8.89
8.88
8.54
8.54
8.52
8.52
8.40
8.38
7.57
7.56
7.55
7.54
6.90
6.88
2.55
2.53
2.51
2.50
1.15
1.13
1.11
2.02
f1 (ppm)

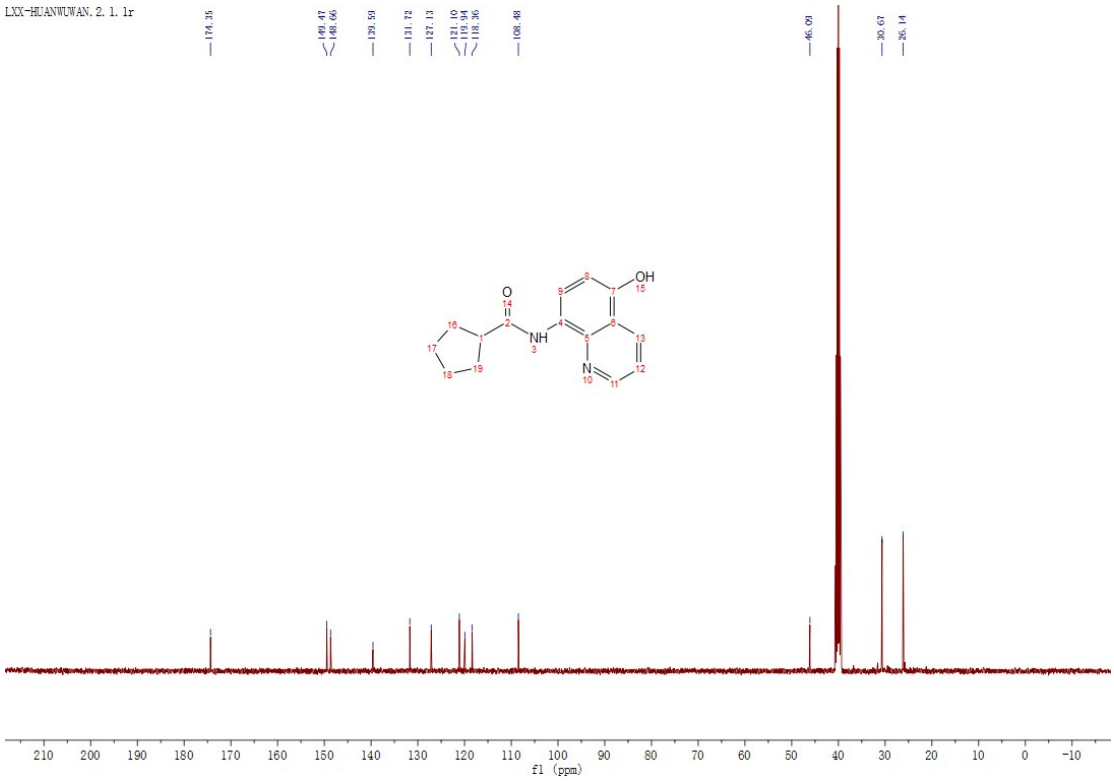

lxx-bingxiancw.2.1.1r
172.05
149.43
148.68
139.66
127.12
121.08
119.94
118.53
108.48
30.18
10.29
f1 (ppm)


LXX-QJH-YDXL.1.1.1r
10.24
9.71
8.91
8.91
8.90
8.90
8.55
8.55
8.53
8.52
8.41
8.39
7.58
7.57
7.56
7.55
6.90
6.88
2.89
2.89
2.87
2.86
2.85
2.84
2.82
1.18
1.16
0.97
0.98
1.00
1.00
1.01
1.05
1.00
1.05
6.25
f1 (ppm)

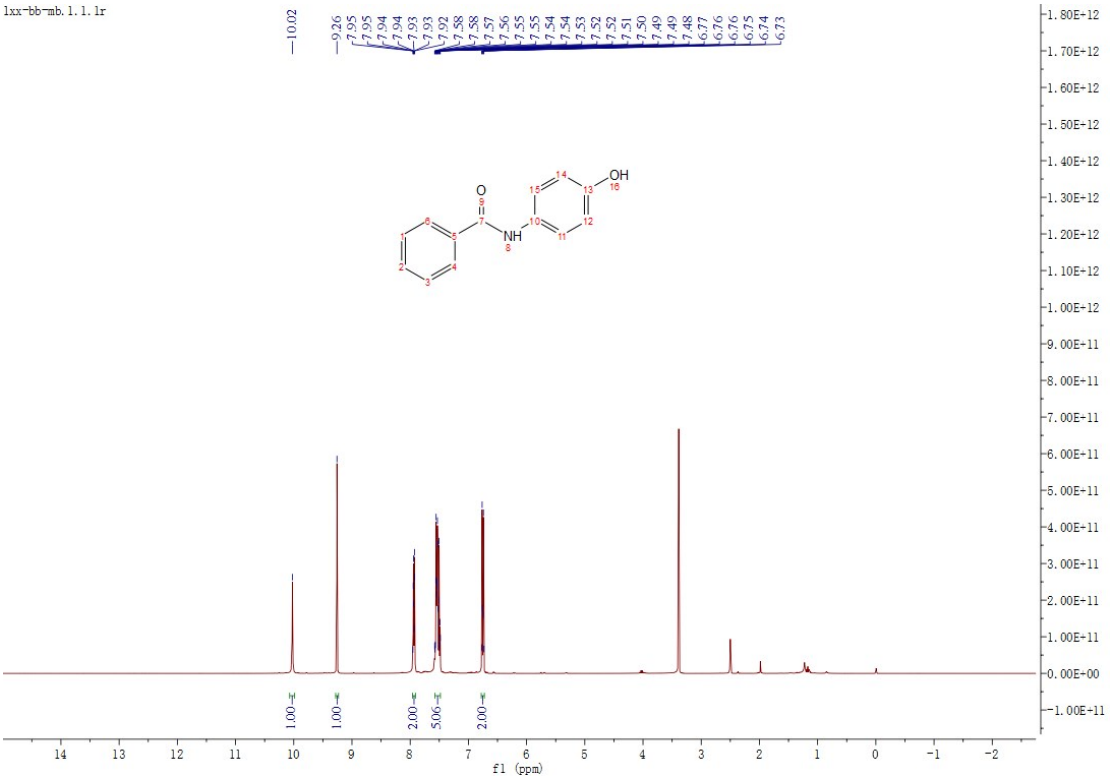

lxx-ydx1cw.2.1.1r
175.51
149.92
149.13
140.12
132.15
127.46
121.53
120.37
118.88
108.88
36.11
20.59
f1 (ppm)
LXX-QJH-3JJY2.2.1.1r
10.26
9.83
8.91
8.91
8.91
8.90
8.90
8.56
8.56
8.54
8.54
8.46
8.44
7.60
7.59
7.57
7.56
6.91
6.89
1.31
1.01
1.01
1.00
1.02
1.00
1.05
1.00
9.01
f1 (ppm)

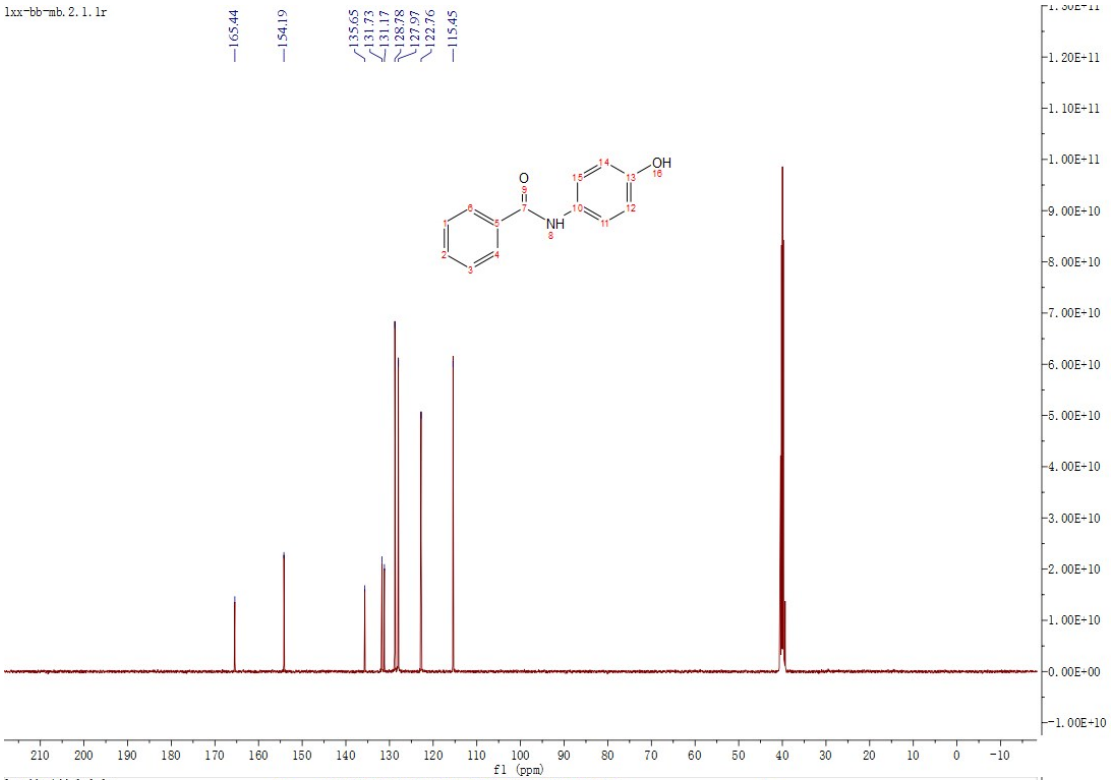

lxx-qjh-sanjiajiyixian.2.1.1r
175.81
149.68
148.62
139.42
131.91
126.75
121.26
119.98
117.29
108.49
40.64
28.81
27.88
OH
O
NH
N
f1 (ppm)
LXX-HUANJIWANCHANWU.1.1.1r
10.25
9.68
8.90
8.89
8.54
8.52
8.41
8.39
7.58
7.57
7.55
7.54
6.89
6.87
3.34
2.60
2.59
2.58
2.57
2.56
2.55
2.54
2.53
2.50
1.90
1.88
1.77
1.76
1.75
1.74
1.67
1.64
1.46
1.43
1.40
1.37
1.34
1.31
OH
O
NH
N
0.93
0.99
1.00
1.00
1.01
1.00
1.00
1.04
2.00
2.00
1.00
5.00
f1 (ppm)

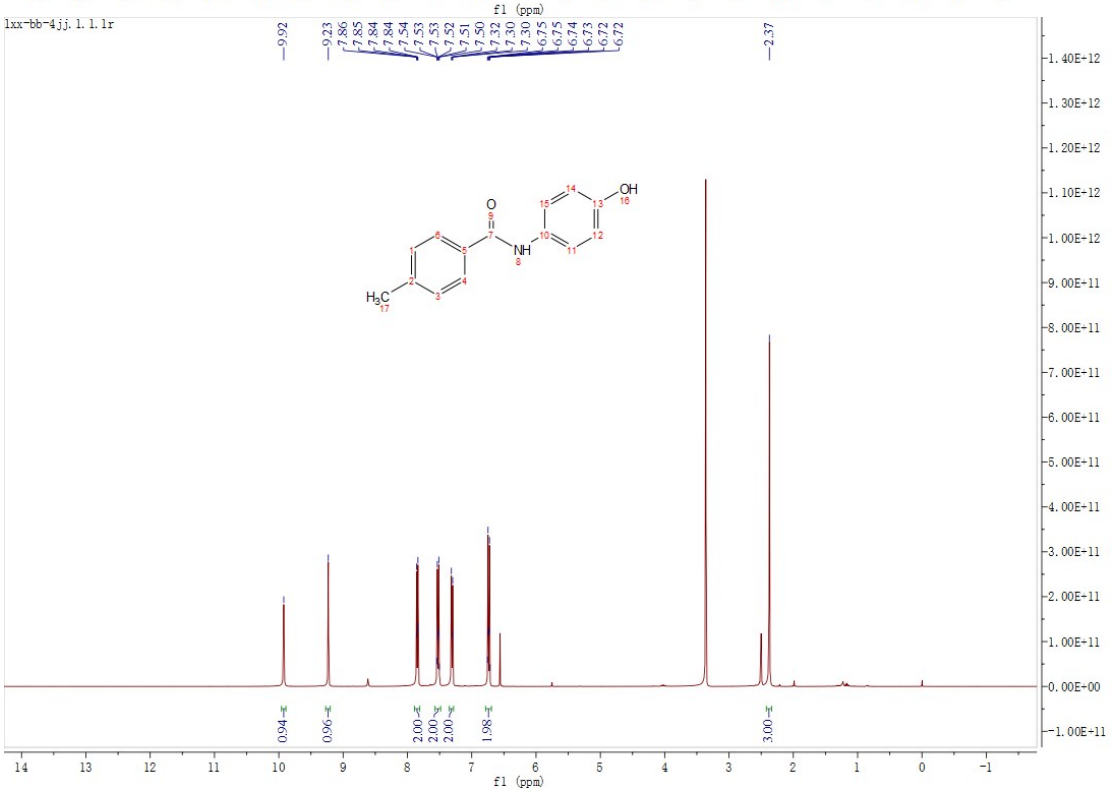

LXX-HUANJIWANCHANWU.2.1.1r
174.08
149.48
148.64
139.60
131.74
127.02
121.12
119.94
118.25
108.45
45.46
29.91
25.92
25.65
f1 (ppm)
LXXHUANWUWANCHANWU.1.1.1r
10.22
9.69
f1 (ppm)
1.03
1.02
1.00
1.00
1.00
1.03
1.00
1.01
2.00
4.08
2.01

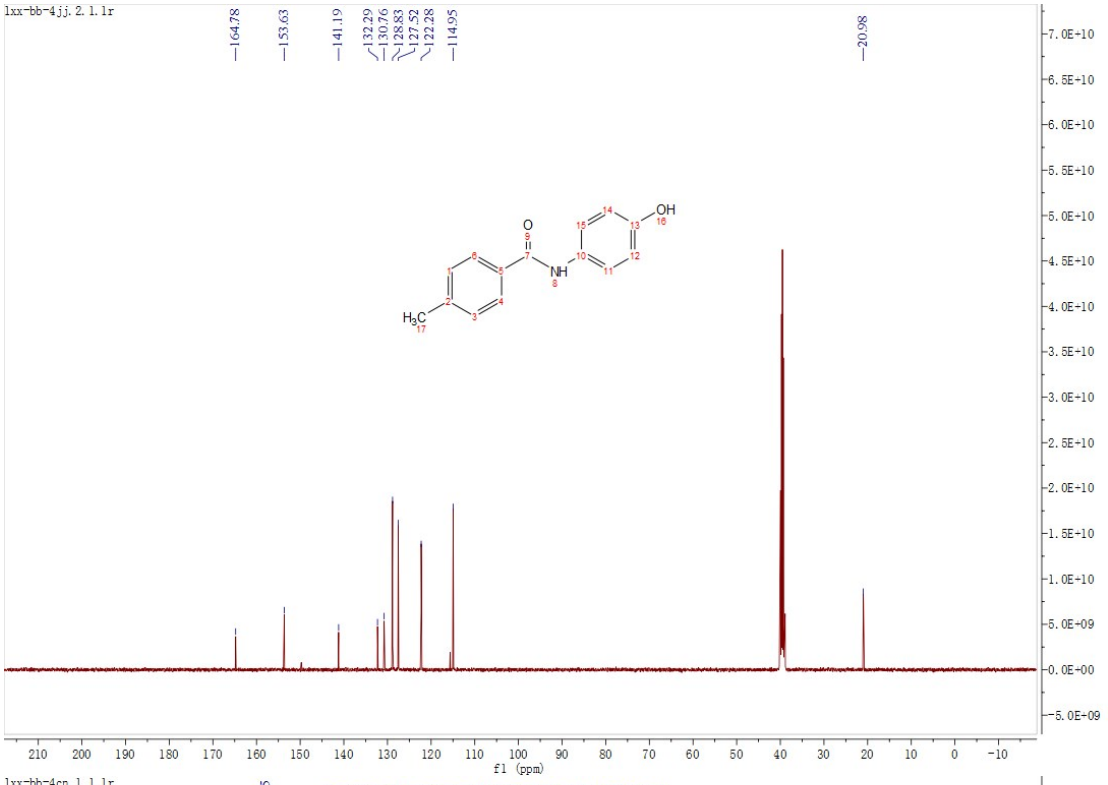


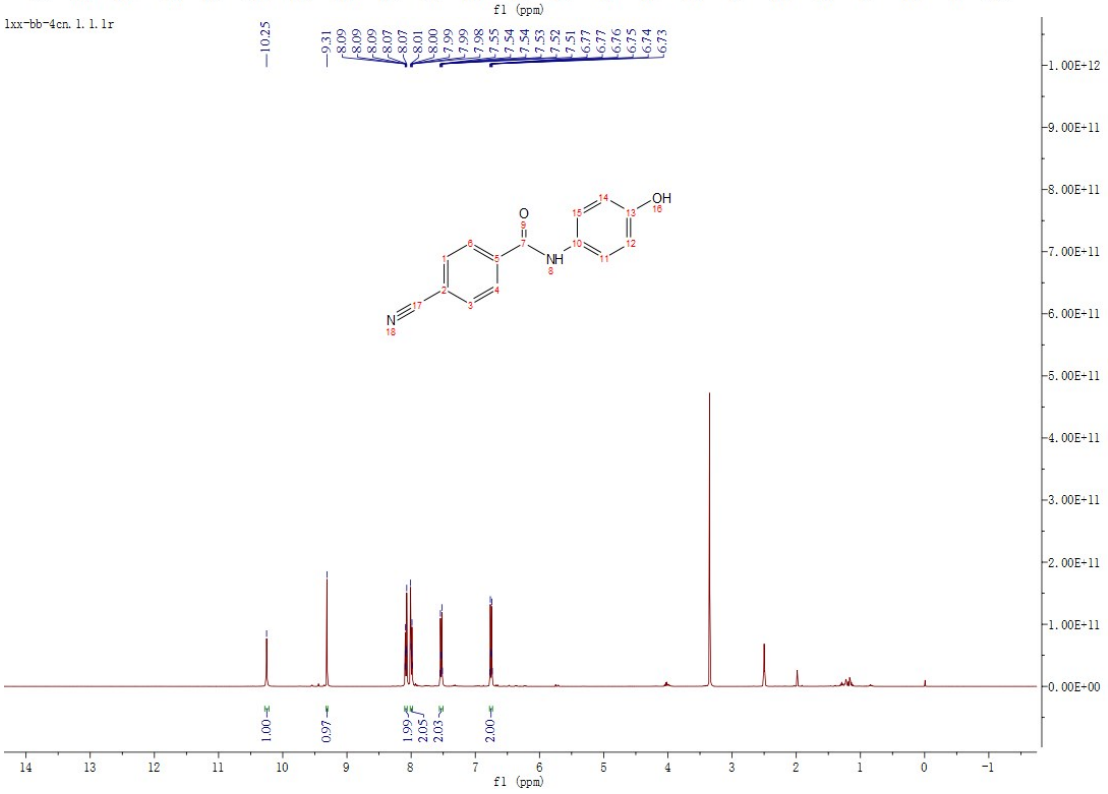
10.6 NMR-Spectra of **6**

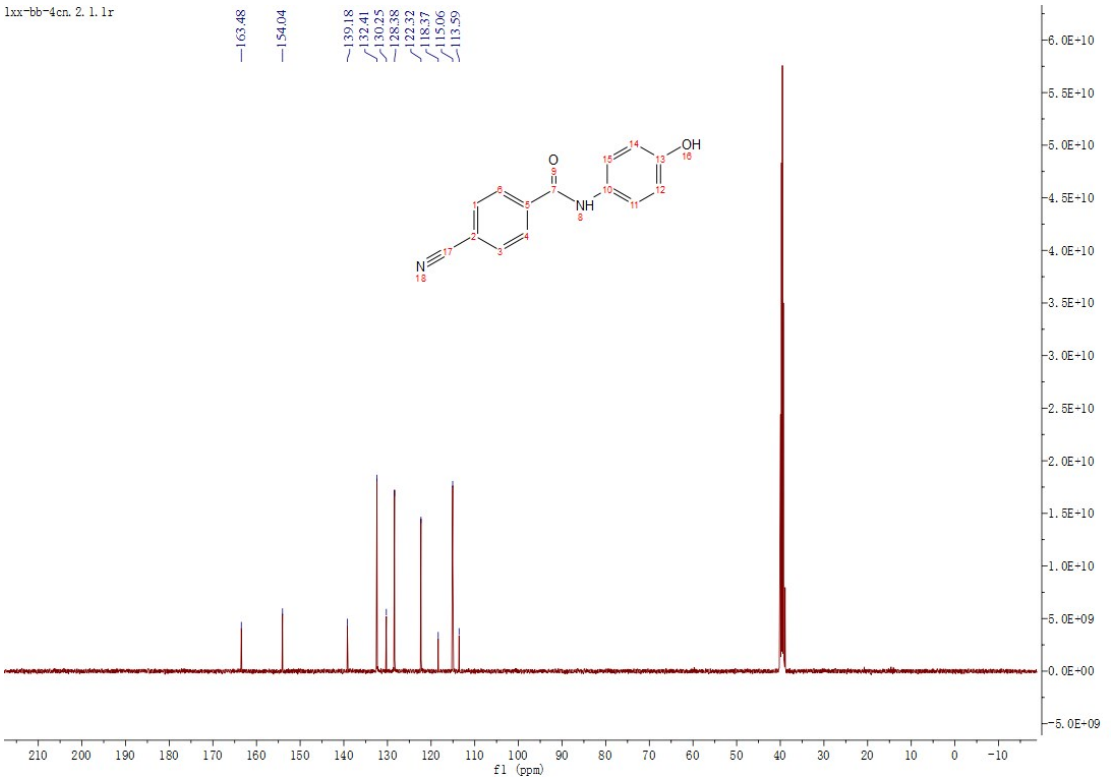


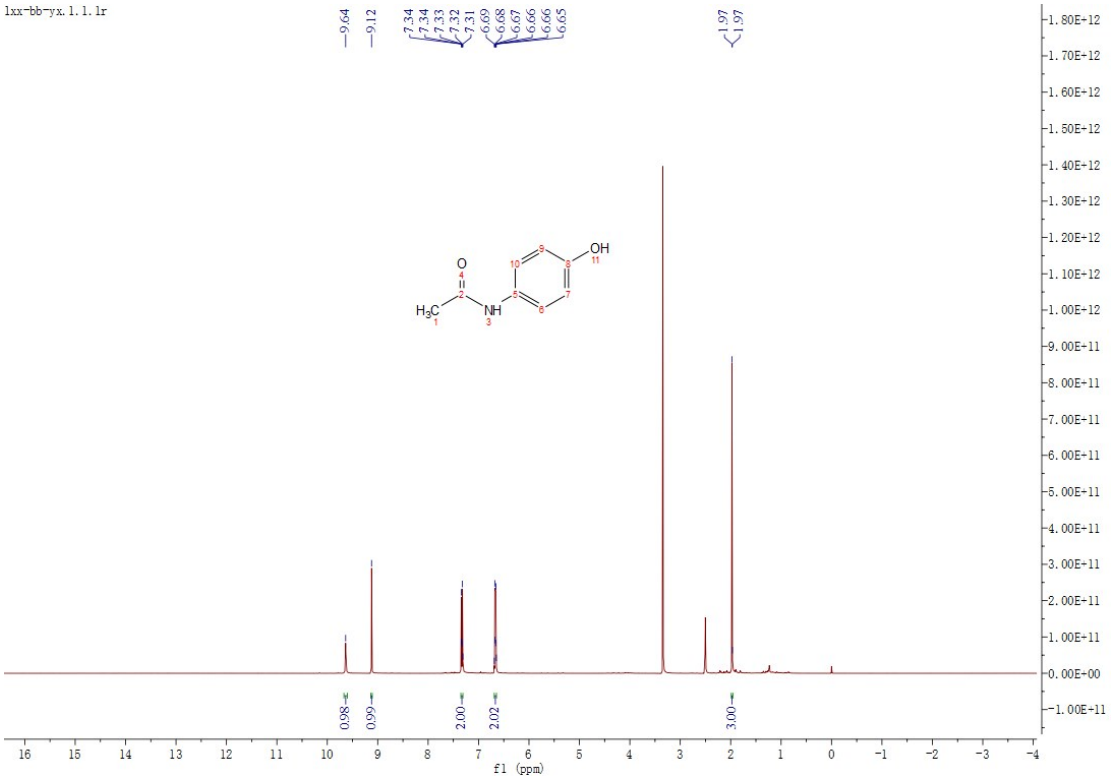

lxx-bb-mb.2.1.1r
165.44
154.19
135.65
131.73
131.17
128.78
127.97
122.76
115.45
OH
O
NH
f1 (ppm)

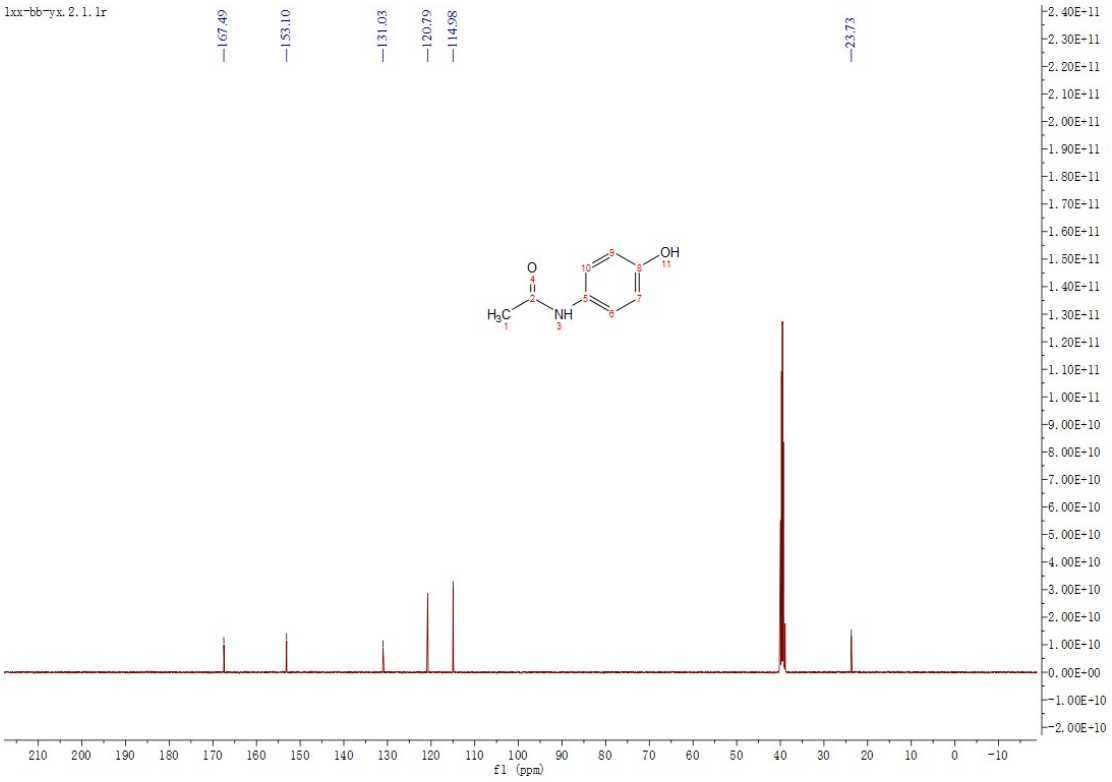

lxx-bb-4jj.1.1.1r
9.92
9.23
7.86
7.85
7.84
7.84
7.54
7.53
7.53
7.52
7.51
7.50
7.32
7.30
6.75
6.74
6.73
6.72
6.72
2.37
OH
O
NH
H3C
0.94
0.96
2.00
2.00
2.00
1.98
3.00
f1 (ppm)

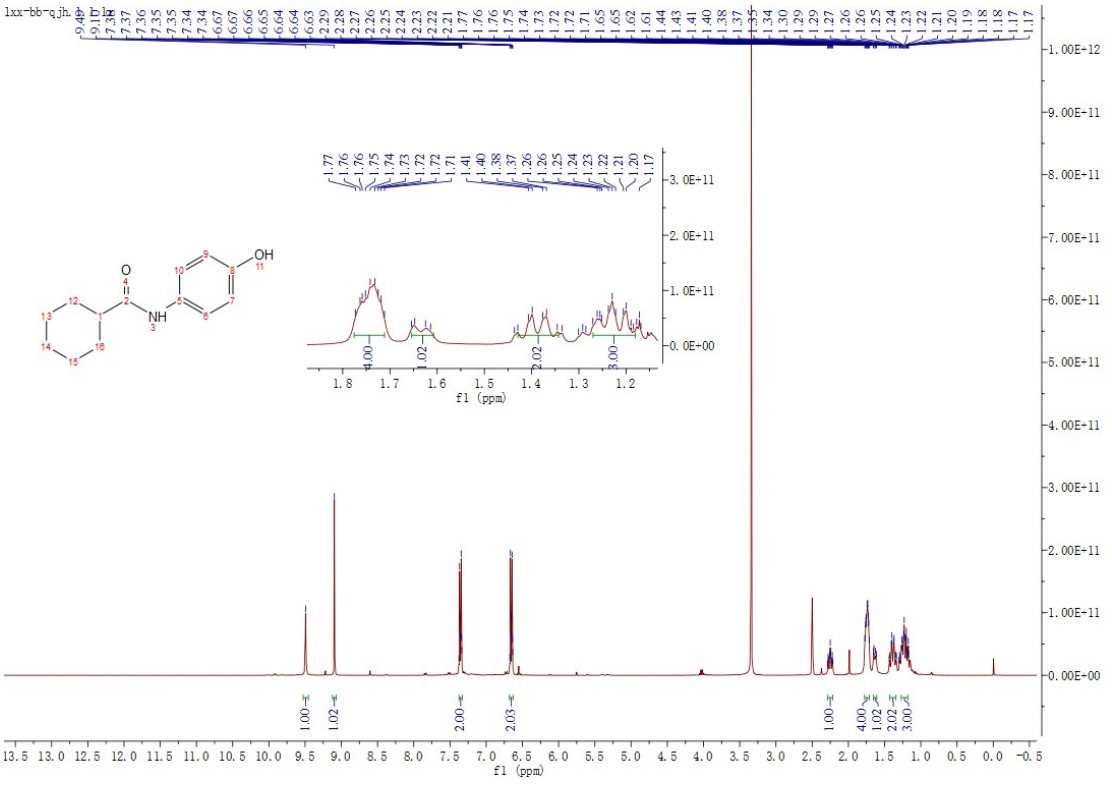

1xx-bb-4jj.2.1.1r
164.78
153.63
141.19
132.29
130.76
128.83
127.52
122.28
114.95
20.98
O
NH
OH
H3C
f1 (ppm)

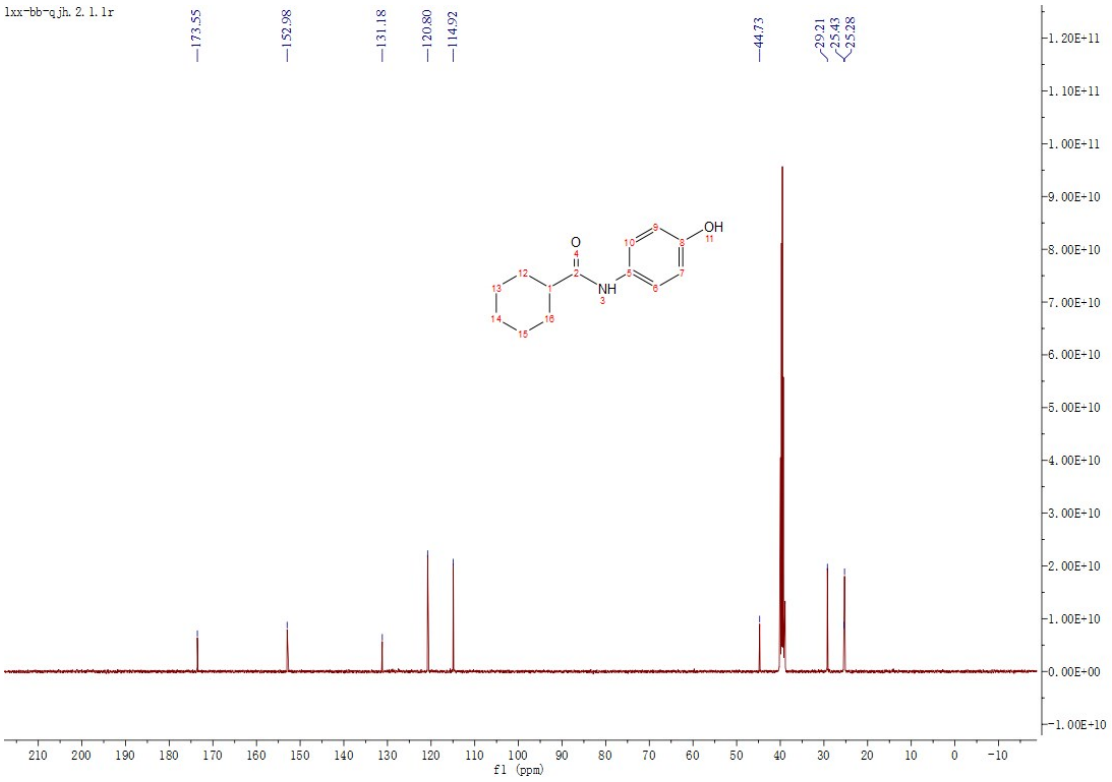

1xx-bb-4cn.1.1.1r
10.25
9.31
8.09
8.09
8.09
8.07
8.07
8.01
8.00
7.99
7.99
7.99
7.98
7.55
7.54
7.54
7.53
7.52
7.51
6.77
6.77
6.76
6.75
6.74
6.73
1.00
0.97
1.99
2.05
2.03
2.00
O
NH
OH
N
f1 (ppm)

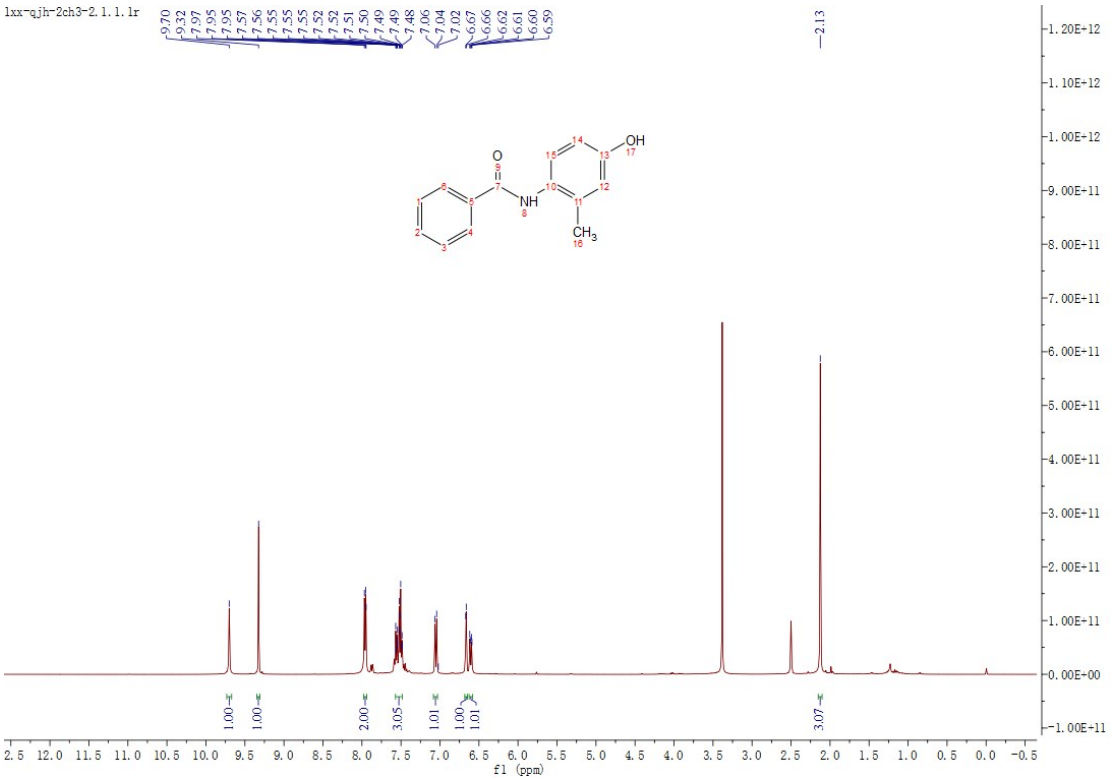

1xx-bb-4cn. 2. 1. 1r
163.48
154.04
139.18
132.41
130.25
128.38
122.32
118.37
115.06
113.59
O
NH
OH
N
f1 (ppm)

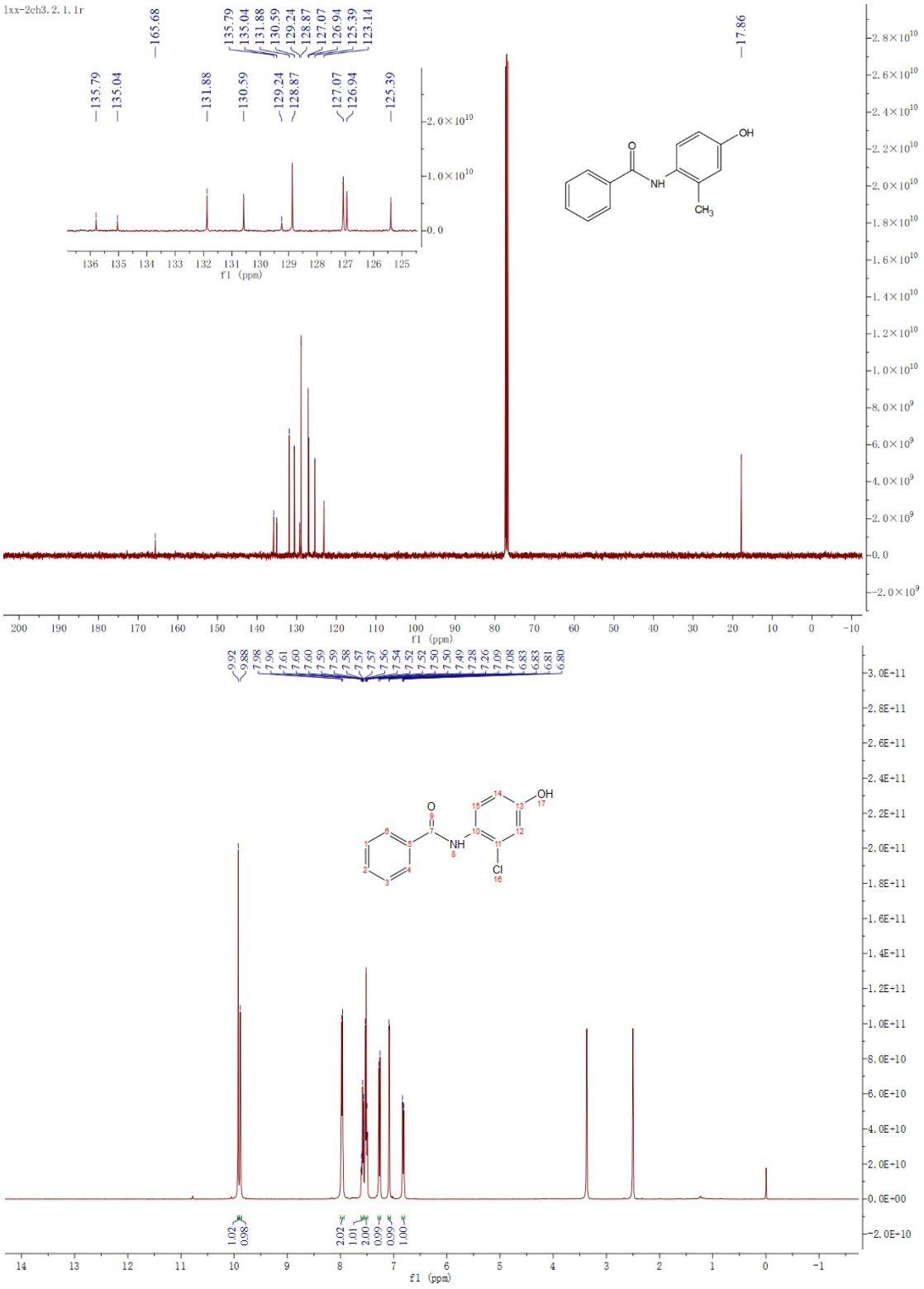

1xx-bb-yx. 1. 1. 1r
9.64
9.12
7.34
7.34
7.33
7.32
7.31
6.69
6.68
6.67
6.66
6.66
6.65
1.97
1.97
O
NH
OH
H3C
0.98
0.99
2.00
2.02
3.00
f1 (ppm)

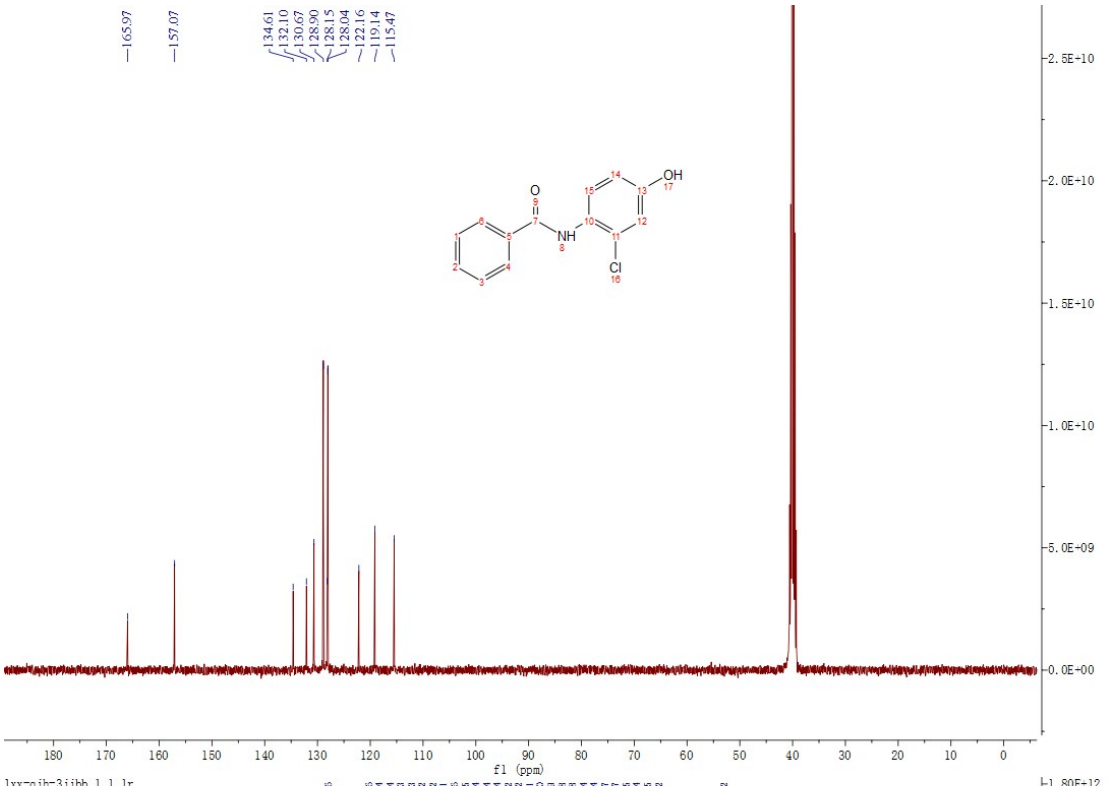

lxx-bb-yx.2.1.1r
167.49
153.10
131.03
120.79
114.98
23.73
f1 (ppm)

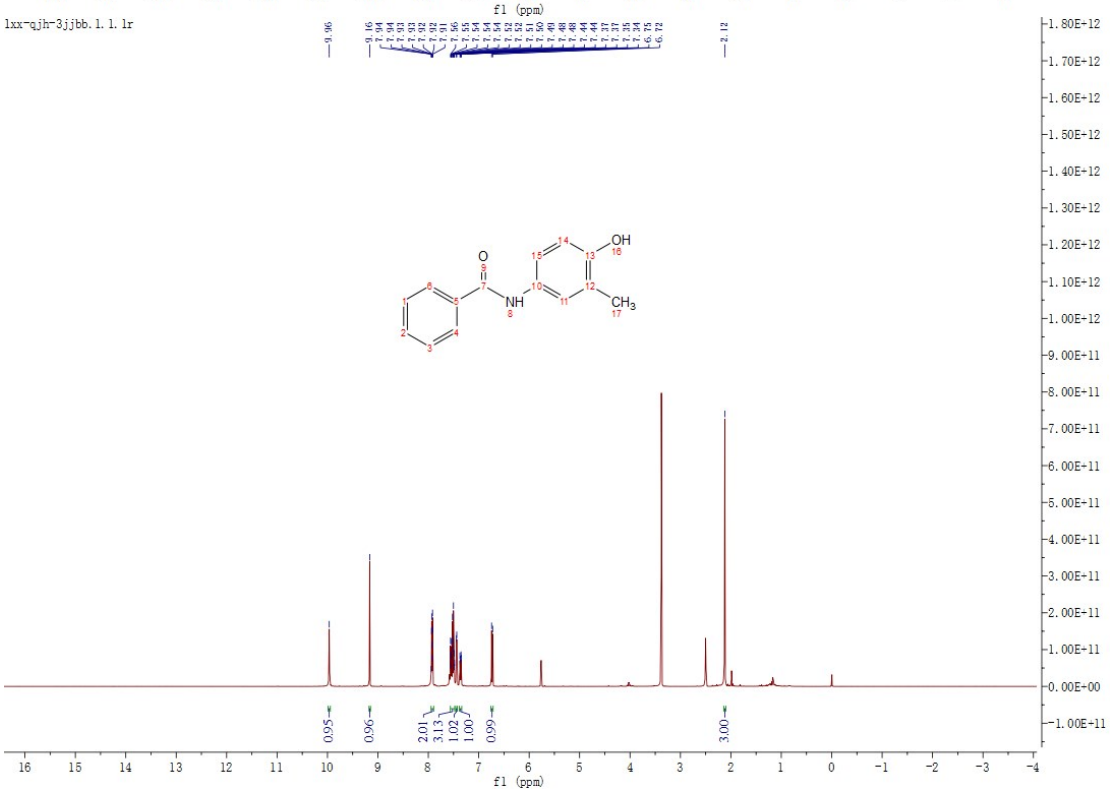

lxx-bb-qjh.
f1 (ppm)

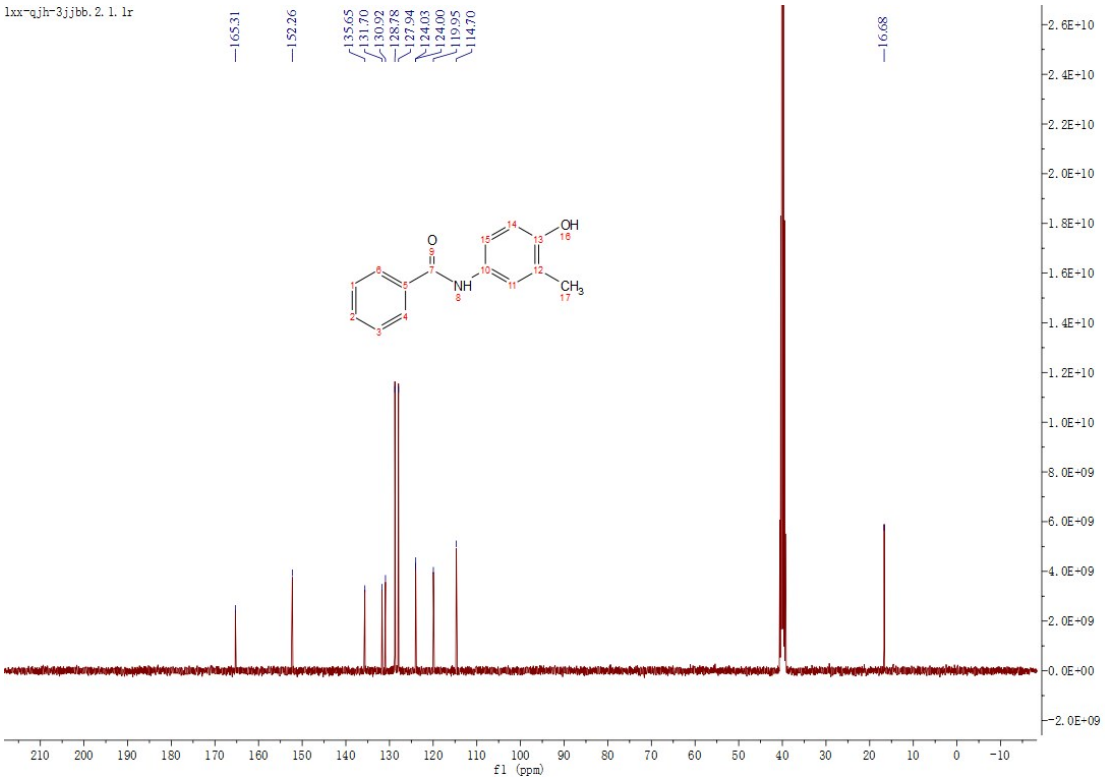

1xx-bb-qjh.2.1.1r
173.55
152.98
131.18
120.80
114.92
44.73
29.21
25.43
25.28
OH
O
NH
f1 (ppm)

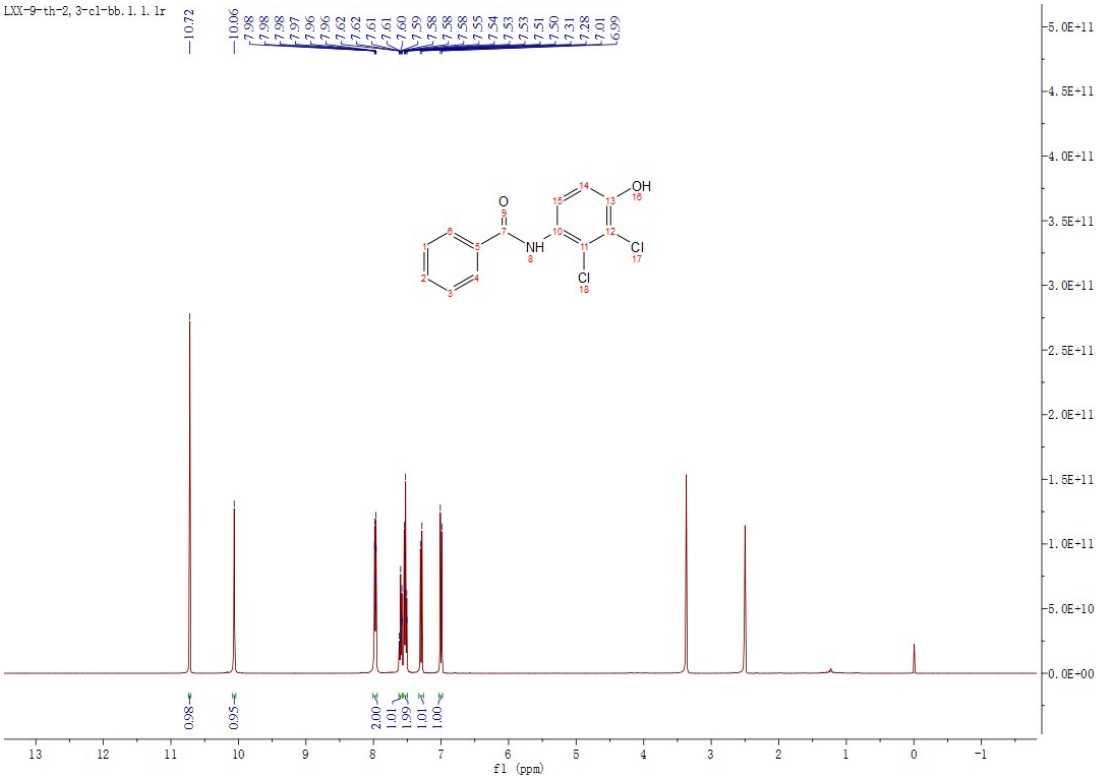

1xx-qjh-2ch3-2.1.1.1r
9.70
9.32
7.97
7.95
7.95
7.57
7.56
7.55
7.55
7.55
7.52
7.52
7.51
7.50
7.49
7.49
7.48
7.06
7.04
7.02
6.67
6.66
6.62
6.61
6.60
6.59
2.13
OH
O
NH
CH3
1.00
1.00
2.00
3.05
1.01
1.00
1.01
3.07
f1 (ppm)

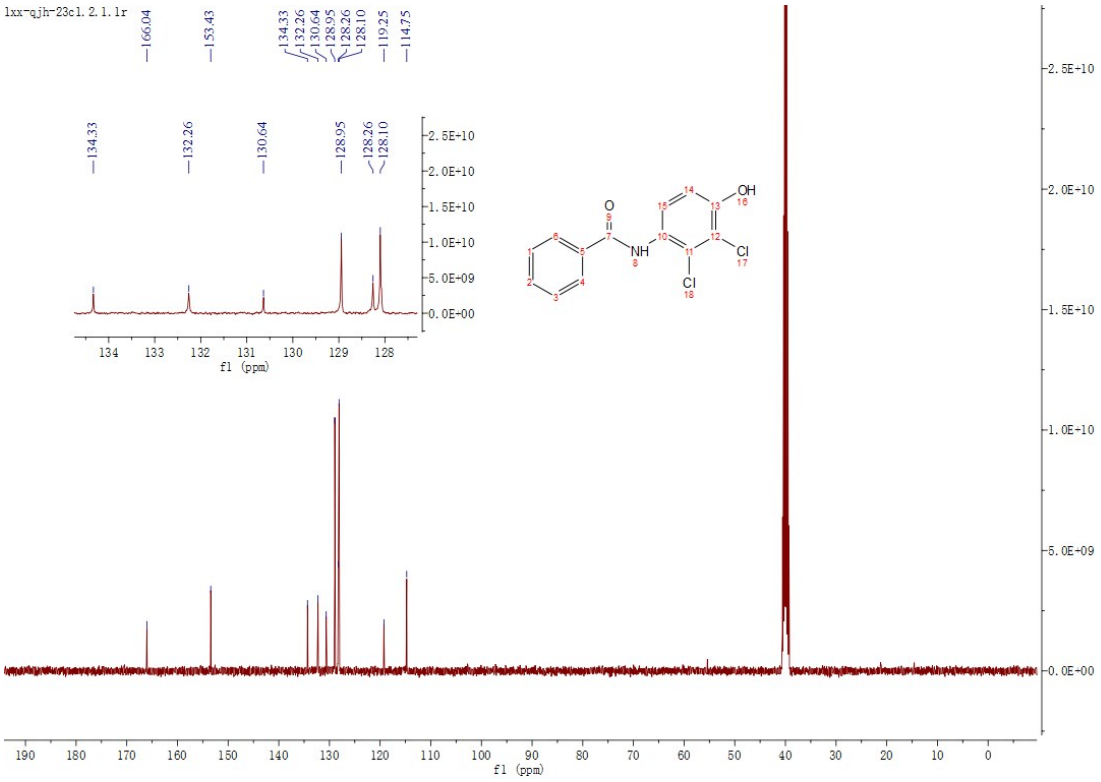

1xx-2ch3.2.1.1r
165.68
135.79
135.04
131.88
130.59
129.24
128.87
127.07
126.94
125.39
123.14
17.86
f1 (ppm)
9.92
9.88
7.98
7.96
7.61
7.60
7.60
7.59
7.59
7.58
7.57
7.57
7.56
7.54
7.52
7.52
7.50
7.50
7.49
7.28
7.26
7.09
7.08
6.83
6.83
6.81
6.80
1.02
0.98
2.02
1.01
2.00
0.99
0.99
1.00
OH
NH
CH3
O
Cl


165.97
157.07
134.61
132.10
130.67
128.90
128.15
128.04
122.16
119.14
115.47
OH
17
O
9
NH
8
Cl
16
f1 (ppm)


1xx-qjh-3jjbb.1.1.1r
9.96
9.16
2.12
OH
16
O
9
NH
8
CH3
17
0.95
0.96
2.01
3.13
1.02
1.00
0.99
3.00
f1 (ppm)


lxx-qjh-3jjbb.2.1.1r
165.31
152.26
135.65
131.70
130.92
128.78
127.94
124.03
124.00
119.95
114.70
16.68
f1 (ppm)


LXX-9-th-2,3-cl-bb.1.1.1r
10.72
10.06
7.98
7.98
7.98
7.97
7.96
7.96
7.62
7.62
7.61
7.61
7.60
7.59
7.58
7.58
7.58
7.55
7.54
7.53
7.53
7.51
7.50
7.31
7.28
7.01
6.99
0.98
0.95
2.00
1.01
1.99
1.01
1.00
f1 (ppm)


lxx-qjh-23cl.2.1.1r
166.04
153.43
134.33
132.26
130.64
128.95
128.26
128.10
119.25
114.75
f1 (ppm)
OH
NH
Cl
Cl