ELECTRONIC SUPPLEMENTARY INFORMATION

Metal-free synthesis of functionalized tacrine derivatives and their evaluation for acetyl/butyrylcholinesterase and α-glucosidase inhibition[#]

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[#]*Dedicated to Prof. Sambasivarao Kotha on the occasion of his superannuation from the services*

Table of Contents

1. General information: All the solvents and required chemicals were procured from SD-Fine, Sigma-Aldrich, and Spectrochem, and used without purification and distillation. ^{1}H and ^{13}C-NMR spectra were recorded on Bruker Avance 400 MHz spectrometers using $CDCl_3$ and DMSO-d_6 as solvents and reported in δ ppm. The mass spectra of all the compounds were recorded using Agilent Technologies-6530. Elemental analyses were carried out by UNICUBE instrument from Elementar. Purity of some compounds was measured by HPLC with Agilent Technologies 1200 infinity C18 (250*4.6) mm column using a mixture of solvent acetonitrile : water (90 :10) and 0.1 % ortho phosphoric acid at the flow rate of 0.5 mL min^{-1} and peak detection at 200 - 600 nm under UV.

2. Experimental section:

General procedure for synthesis of compound (4):

To an ice-cooled solution of anthranilic acid (3.2 g, 3 mmol) and cyclohexanone (2.65 mL, 27 mmol) was added dropwise $POCl_3$ with a constant pressure dropping funnel. Then, the reaction was heated at reflux for 3 h. The solvent was reduced in vacuum and the residue was dissolved in ethyl acetate and washed with 1N K_2CO_3 solution, brine and dried (Na_2SO_4). The residue was purified by silica gel chromatography using ethyl acetate: hexane = 10: 90 to yield the desired compound (**4**) as a yellow solid.

General procedure for synthesis of compound (5):

Deep eutectic solvent was prepared by heating *N, N*'-Dimethyl urea + L-(+)-Tartaric acid (3:1 ratio) at 80 °C for 30 min. To this, 9-Chloro-1,2,3,4-tetrahydro acridine (1.0 mmol) and aromatic aldehyde (1.0 mmol) were added and heating continued for another 2- 3 hours at 80 °C. The completion of reaction was monitored by TLC. After completion of reaction the crude products obtained were purified by column chromatography on silica gel using petroleum ether-ethyl acetate as eluent to give the compound **5.**

General procedure for synthesis of compound (3):

Deep eutectic solvent was prepared by heating *N, N*'-Dimethyl urea + L-(+)-Tartaric acid (3:1 ratio) at 80 °C for 30 min. To this, 9-Chloro-1,2,3,4-tetrahydroacridine (1.0 mmol) and sodium azide (5.0 equiv.) were added and stirred at 80 °C for 2 h. After completion of the reaction, to the reaction mixture water was added and the resulting precipitate was collected by filtration and recrystallized to get 9-Azido-1,2,3,4-tetrahydroacridine (6). A stirred mixture of azide (1.0 equiv.) and PPh_3 (3.0 equiv.) in THF was refluxed for 5 h. The residue was purified by column chromatography to get phosphazene. A stirred solution of phosphazene (1.0 equiv.) in 80% acetic acid was boiled under reflux for 7 h. After completion of the reaction, the residue was purified by column chromatography to obtain the compound (**3**).

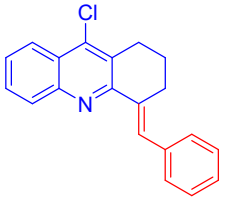
General procedure for synthesis of compound (8):

Deep eutectic solvent was prepared by heating *N, N'*-Dimethyl urea + L-(+)-Tartaric acid (3:1 ratio) at 80 °C for 30 min. To this, compound **5** (1.0 mmol) and *p*-Toluidine (1.0 mmol) were added and heating continued for another 3 - 4 hours at 80 °C. The completion of the reaction was monitored by TLC. After completion of the reaction the crude products obtained were purified by column chromatography on silica gel using petroleum ether-ethyl acetate as eluent to give the compound (**8**).

3. Characterization Data for synthesized compounds

(E)-4-Benzylidene-9-chloro-1,2,3,4-tetrahydroacridine (5a):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;

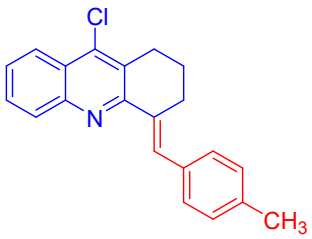


Yield= 85%, light Yellow solid; M. P: 119-119.9 °C; **IR (KBr, cm^{-1})**: 3041, 2948, 2821, 1569, 1305, 1191, 833; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.23 (s, 1H), 8.17 (dd, *J* = 8.4, 1.2 Hz, 1H), 8.09 (d, *J* = 8.4 Hz, 1H), 7.68 (ddd, *J* = 8.4, 6.8, 1.4 Hz, 1H), 7.55 (ddd, *J* = 8.4, 6.8, 1.2 Hz, 1H), 7.49 (d, *J* = 7.2 Hz, 2H), 7.41 (t, *J* = 7.6 Hz, 2H), 7.30 (t, *J* = 7.4 Hz, 1H), 3.13 (t, *J* = 6.4 Hz, 2H), 2.99 – 2.95 (t, *J* = 6.4 Hz, 2H), 1.95 (qui, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.66, 147.01, 141.03, 137.66, 135.77, 129.88 (t, *J* = 18.0 Hz), 129.39 (s), 129.00 (s), 128.18 (s), 127.19 (s), 126.81 (s), 125.68 (s),

123.74, 27.90, 27.60, 22.53. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{16}ClN$ for: 305.0971; Observed: 306.1043 $[M+H]^+$.

(E)-9-Chloro-4-(4-methylbenzylidene)-1,2,3,4-tetrahydroacridine (5b):

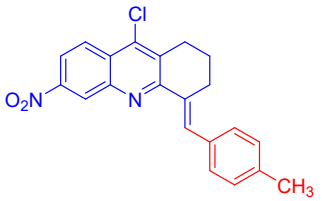
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 84%, Yellow solid; M. P: 91-92 °C; **IR (KBr, cm^{-1})**: 3101, 2950, 2816, 1536, 1245, 1092, 825; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.12 (s, 1H), 8.07 (dd, *J* = 8.4, 0.8 Hz, 1H), 8.02 (d, *J* = 8.4 Hz, 1H), 7.59 (tdd, *J* = 8.3, 7.0, 1.3 Hz, 1H), 7.45 (tdd, *J* = 8.2, 6.9, 1.1 Hz, 1H), 7.31 (d, *J* = 8.0 Hz, 2H), 7.13 (d, *J* = 7.9 Hz, 2H), 3.04 (t, *J* = 6.4 Hz, 2H), 2.91 – 2.85 (td, *J* = 12.6, 6.4 Hz, 2H), 2.31 (s, 3H), 1.86 (quin, *J* = 6.4Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.82, 146.92, 141.03, 137.14, 134.90, 134.76, 130.32, 129.90, 129.58, 129.41, 129.00, 128.94, 126.75, 125.61, 123.73, 27.89, 27.67, 22.50, 21.34. **Mass (ESI-MS):** m/z Calculated C21H18ClN for: 319.1128; Observed: 320.1201 $[M+H]^+$.

(E)-9-Chloro-4-(4-methylbenzylidene)-6-nitro-1,2,3,4-tetrahydroacridine (5c):

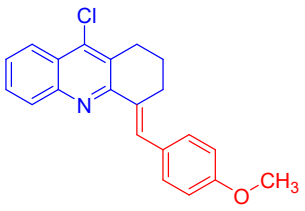
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 03: 97; R_f (pet ether: ethyl acetate = 10: 90): 0.5;



Yield=86%,Yellow solid; M. P: 205.1-205.6 °C; **IR (KBr, cm^{-1})**: 3201, 2974, 2825, 1549, 1362, 1102, 819; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.92 (s, 1H), 8.28 – 8.23 (m, 3H), 7.40 (d, *J* = 8.0 Hz, 2H), 7.23 (d, *J* = 8.0 Hz, 2H), 3.13 (t, *J* = 6.4 Hz, 2H), 2.98 (td, *J* = 6.4, 1.6 Hz, 2H), 2.40 (s, 3H), 1.99 – 1.92 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 157.39, 148.11, 145.83, 140.85, 137.79, 134.20, 133.90, 132.38, 132.03, 130.00, 129.08, 128.58, 125.69, 119.73, 28.20, 27.47, 22.00, 21.40. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{17}ClN_2O_2$ for: 364.0979; Observed: 365.1095 $[M+H]^+$.

(E)-9-Chloro-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5d):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.49;

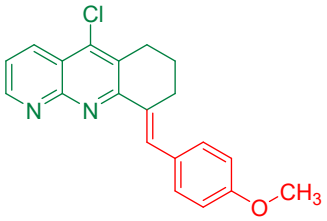


Yield= 80%, Yellow solid; M. P: 93.5-93.8 °C; **IR (KBr, cm^{-1})**: 3092, 2935, 2861, 1545, 1249, 1098, 823; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.09 (s, 1H), 8.07 (dd, *J* = 8.8, 0.8 Hz, 1H), 8.00 (d, *J* = 8.4 Hz, 1H), 7.61 – 7.56 (td,J= 8.2, 1.2 HZ 1H), 7.45 (ddd, *J* = 8.2, 6.8, 1.2 Hz, 1H), 7.37 (d, *J* = 8.4 Hz, 2H), 6.86 (d, *J* = 8.8 Hz, 2H), 3.77 (s, 3H), 3.03 (t, *J* = 6.4 Hz, 2H), 2.88 (td, *J* = 6.6, 1.6 Hz, 2H), 1.89 – 1.83 (quin, J= 6.4 HZ2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.93, 154.90, 146.60, 141.24, 133.55, 131.47, 130.50, 130.14, 129.58, 129.23, 129.04,

126.77, 125.51, 123.77, 113.69, 55.31, 27.84, 27.67, 22.44. **Mass (ESI-MS):** m/z Calculated C21H18ClNO for: 335.1077; Observed: 336.1159 $[M+H]^+$.

(E)-5-Chloro-9-(4-methoxybenzylidene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5e):

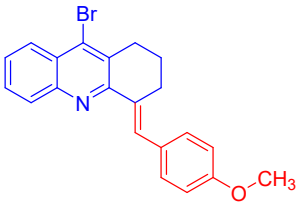
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 15: 85): 0.50;



Yield= 79%, red solid; M. P: 124.5-125 °C; **IR (KBr, cm^{-1})**: 3099, 2910, 2856, 1591, 1539, 1249, 799; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 9.07 (dd, *J* = 4.4, 2.0 Hz, 1H), 8.51 (dd, *J* = 8.2, 1.8 Hz, 1H), 8.47 (s, 1H), 7.48 (d, *J* = 5.2 Hz, 2H), 7.45 (d, *J* = 4.4 Hz, 1H), 6.97 – 6.92 (m, 2H), 3.85 (s, 3H), 3.12 (t, *J* = 6.4 Hz, 2H), 3.03 – 2.97 (td, J= 7.4, 1.2 Hz 2H), 1.99 – 1.93 (quin, J= 6.4 HZ, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 159.12, 158.16, 154.48, 153.55, 140.98, 133.31, 132.63, 132.18, 131.61, 130.20, 129.98, 121.65, 120.44, 113.76, 55.30, 27.84, 27.68, 22.07. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{17}ClN_2O$ for: 336.1029; Observed: 337.1099 $[M+H]^+$.

(E)-9-Bromo-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5f):

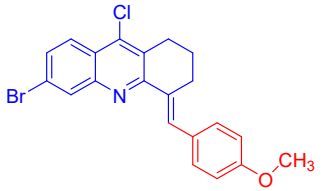
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.40;



Yield= 80%, Yellow solid; M. P: 98.1-98.5 °C; **IR (KBr, cm^{-1})**: 3081, 2965, 2856, 1591, 1249, 1102, 650; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.18 (s, 1H), 8.16 (s, 1H), 8.08 (d, *J* = 8.4 Hz, 1H), 7.71 – 7.66 (m, 1H), 7.58 – 7.53 (m, 1H), 7.47 (d, *J* = 8.8 Hz, 2H), 6.97 (d, *J* = 8.8 Hz, 2H), 3.88 (s, 3H), 3.15 (t, *J* = 6.4 Hz, 2H), 3.02 – 2.95 (t, *J* = 6.4 Hz, 2H), 2.01 – 1.94 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.86, 155.03, 147.02, 146.12, 131.37, 130.97, 130.29, 129.57, 129.35, 129.12, 127.30, 126.91, 126.50, 126.21, 113.67, 112.84, 55.30, 31.26, 27.73, 22.80. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{18}BrNO$ for: 379.0572; Observed:380.0647 $[M+H]^+$.

(E)-6-Bromo-9-chloro-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5g):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 2.5: 97.5; R_f (pet ether: ethyl acetate = 05: 95): 0.52;

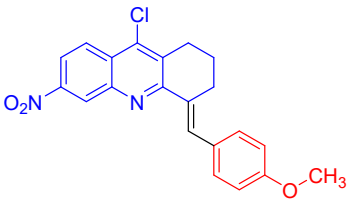


Yield= 78%, Yellow solid; M. P: 104.4-105.1 °C; **IR (KBr, cm^{-1})**: 3015, 2936, 2832, 1518, 1255, 1105, 1029, 844, 599; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.28 (d, *J* = 1.6 Hz, 1H), 8.18 (s, 1H), 8.03 (d, *J* = 8.8 Hz, 1H), 7.62 (dd, *J* = 8.8, 2.0 Hz, 1H), 7.47 (d, *J* = 8.4 Hz, 2H), 6.99 – 6.96 (dd, *J* =8.8, 2.0 Hz 2H), 3.88 (s, 3H), 3.11 (t, *J* = 6.4 Hz, 2H), 3.00 – 2.96 (m, 2H), 1.99 – 1.94 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 149.58, 147.77, 147.53, 144.20, 219.44 , 131.12, 149.58 ,

132.11, 138.40, 131.12 – 130.17, 129.97, 125.23, 113.72, 55.31, 29.71, 27.85, 22.30. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{17}BrClNO$ for: 413.0182; Observed: 414.0247 $[M+H]^+$.

(E)-9-Chloro-4-(4-methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridine(5h)

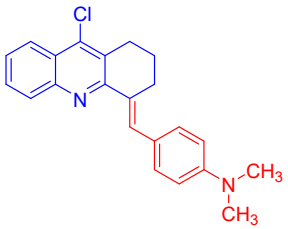
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 2.5: 97.5; R_f (pet ether: ethyl acetate = 05: 95): 0.4;



Yield= 81%, red solid; M. P: 172.9-173.8 °C; **IR (KBr, cm^{-1})**: 3015, 2936, 2832, 1555, 1380, 1105, 833; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.90 (s, 1H), 8.23 (s, 3H), 7.46 (d, *J* = 8.8 Hz, 2H), 6.95 (d, *J* = 8.8 Hz, 2H), 3.86 (s, 3H), 3.12 (t, *J* = 6.4 Hz, 2H), 3.02 – 2.94 (m, 2H), 1.95 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 153.38, 147.33, 145.72, 141.05, 136.89, 131.78, 129.52, 129.04, 128.54, 128.38, 126.98, 125.01, 122.79, 121.91, 120.76, 64.02, 61.86, 26.66, 25.11, 19.38. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{17}ClN_2O_3$ for: 380.0928; Observed: 381.1012 $[M+H]^+$.

(E)-4-((9-Chloro-2,3-dihydroacridin-4(1H)-ylidene)methyl)-N,N-dimethylaniline (5i):

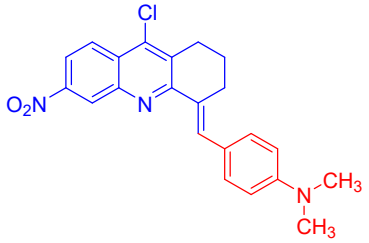
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 05: 95; R_f (pet ether: ethyl acetate = 10: 90): 0.52;



Yield= 82%, Yellow solid; M. P: 185.5-186.5 °C; **IR (KBr, cm^{-1})**: 3109, 2998, 2878, 1604, 1474, 1156, 1066, 889, 740; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.09 (s, 1H), 8.05 (t, *J* = 7.2 Hz, 2H), 7.58 (ddd, *J* = 8.2, 6.8, 1.2 Hz, 1H), 7.43 (ddd, *J* = 8.2, 7.0, 1.0 Hz, 1H), 7.38 (d, *J* = 8.8 Hz, 2H), 6.67 (d, *J* = 8.8 Hz, 2H), 3.02 (t, *J* = 6.4 Hz, 2H), 2.93 (s, 8H), 1.89 – 1.83 (quin, J= 6.4 HZ, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 155.46, 149.65, 146.82, 140.75, 131.53, 131.23, 129.35, 129.23, 128.97, 126.37, 125.82, 125.32, 123.73, 111.85, 40.36, 27.94, 27.87, 22.47. **Mass (ESI-MS):** m/z Calculated $C_{22}H_{21}ClN_2$ for: 348.1393; Observed: 349.1473 $[M+H]^+$.

(E)-4-((9-Chloro-6-nitro-2,3-dihydroacridin-4(1H)-ylidene)methyl)-N,N-dimethylaniline (5j):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 05: 95; R_f (pet ether: ethyl acetate = 10: 90): 0.50;

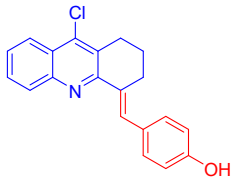


Yield= 83%, red solid; M. P: 185.5-186.5 °C; **IR (KBr, cm^{-1})**: 3112, 2982, 2861, 1554, 1360, 1188, 1064, 812, 768; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.94 (s, 1H), 8.26 (s, 1H), 8.26 (d, *J* = 2.0 Hz, 2H), 7.49 (d, *J* = 8.8 Hz, 2H), 6.78 (d, *J* = 8.8 Hz, 2H), 3.17 – 3.13 (m, 2H), 3.05 (s, 8H), 2.01 – 1.96 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$)** δ 162.58, 158.06, 149.93, 148.06, 145.99, 145.54, 141.31, 140.26, 132.78, 132.27, 131.73, 130.49, 128.33, 125.46, 125.01, 119.77, 119.20,

111.76, 40.26, 34.26, 28.16, 21.97. **Mass (ESI-MS):** m/z Calculated $C_{22}H_{20}ClN_3O_2$ for: 393.1244; Observed: 394.1324 $[M+H]^+$.

(E)-4-((9-Chloro-2,3-dihydroacridin-4(1H)-ylidene)methyl)phenol (5k):

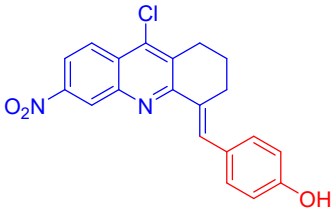
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 04: 96; R_f (pet ether: ethyl acetate = 10: 90): 0.45;



Yield= 78%, orange solid; M. P:148.4-148.5 °C; **IR (KBr, cm^{-1})**: 2982, 2870, 1730, 1604, 1194, 1043, 837; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.09 (dd, *J* = 8.4, 0.9 Hz, 2H), 8.06 (s, 1H), 7.62 (t, *J* = 8.2 Hz, 1H), 7.48 (t, *J* = 8.4 Hz, 1H), 7.29 (d, *J* = 8.4 Hz, 2H), 6.79 (d, *J* = 8.4 Hz, 2H), 5.59 (s, 1H), 3.05 (t, *J* = 6.4 Hz, 2H), 2.88 (t, *J* = 6.8 Hz, 2H), 1.91 – 1.86 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.95, 131.86, 130.30, 129.31, 127.15, 125.44, 123.92, 115.51, 27.6, 22.29. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{16}ClNO$ for: 321.0920; Observed:322.1000 $[M+H]^+$.

(E)-4-((9-Chloro-6-nitro-2,3-dihydroacridin-4(1H)-ylidene)methyl)phenol (5l):

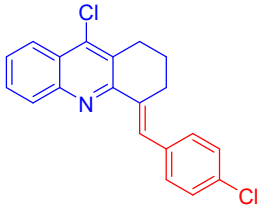
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 04: 96; R_f (pet ether: ethyl acetate = 10: 90): 0.50;



Yield= 79% ,Yellow solid; M. P: 165-166 °C; **IR (KBr, cm^{-1})**: 3028, 2935, 2857, 1604, 1440, 1171, 1053, 839; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.95 (s, 1H), 8.28 (d, *J* = 2.7 Hz, 2H), 8.23 (s, 1H), 7.42 (d, *J* = 8.8 Hz, 2H), 6.90 (d, *J* = 8.8 Hz, 2H), 5.06 (s, 1H), 3.15 (t, *J* = 6.2 Hz, 2H), 3.01 – 2.96 (t, J= 5.4 Hz, 2H), 2.01 – 1.94 (quin, J= 6.2 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 157.55, 155.31, 148.19, 145.92, 140.79, 132.92, 132.35, 131.74, 129.90, 128.58, 125.66, 119.69, 115.34, 28.16, 27.50, 22.01. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}ClN_2O_3$ for: 366.0771; Observed: 367.0849 $[M+H]^+$.

(E)-9-Chloro-4-(4-chlorobenzylidene)-1,2,3,4-tetrahydroacridine (5m):

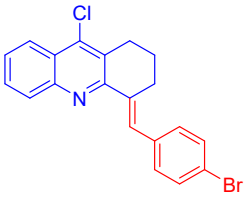
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 87%, white solid; M. P: 142.1-143 °C; **IR (KBr, cm^{-1})**: 3010, 2931, 1567, 1366, 1009, 910, 844; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.17 (d, *J* = 0.8 Hz, 1H), 8.15 (s, 1H), 8.07 (d, *J* = 8.4 Hz, 1H), 7.68 (ddd, *J* = 8.4, 7.0, 1.4 Hz, 1H), 7.55 (ddd, *J* = 8.2, 6.9, 1.2 Hz, 1H), 7.42 – 7.38 (m, 2H), 7.38 – 7.34 (m, 2H), 3.13 (t, *J* = 6.4 Hz, 2H), 2.95 – 2.89 (td, J= 6.4, 1.6 HZ 2H), 1.95 (dt, *J* = 12.6, 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.29, 146.95, 141.16, 136.29, 136.07, 132.97, 131.09, 129.63, 129.49, 128.99, 128.78, 128.40, 126.96, 125.73, 123.76, 27.81, 27.59, 22.45. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}Cl_2N$ for: 339.0582; Observed: 340.0667 $[M+H]^+$.

(E)-4-(4-Bromobenzylidene)-9-chloro-1,2,3,4-tetrahydroacridine (5n):

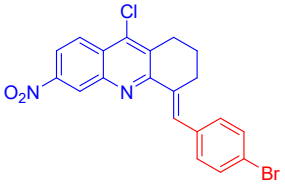
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 90%, white solid; M. P: 134-135.2 °C; **IR (KBr, cm^{-1})**: 3069, 2954, 1567, 1470, 1073, 519; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.23 (d, *J* = 6.3 Hz, 2H), 8.21 (d, *J* = 8.4 Hz, 1H), 7.75 (td, *J* = 8.0 Hz, 1H), 7.61 (td, *J* = 8.0 Hz, 1H), 7.55 (d, *J* = 8.4 Hz, 2H), 7.39 (d, *J* = 8.4 Hz, 2H), 3.16 (t, *J* = 6.4 Hz, 2H), 2.98 – 2.92 (m, 2H), 2.02 – 1.95 (quin, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.24, 136.50, 131.41, 131.37, 131.18, 130.49, 129.64, 129.57, 129.02, 127.01, 125.74, 123.78, 121.23, 27.81, 27.59, 22.43. **Mass (ESI-MS):** m/z Calculated C20H15BrClN for: 383.0076; Observed: 384.0154 $[M+H]^+$.

(E)-4-(4-Bromobenzylidene)-9-chloro-6-nitro-1,2,3,4-tetrahydroacridine (5o):

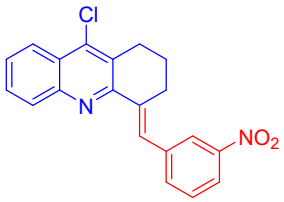
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 92%, white solid; M. P: 197.4-198 °C; **IR (KBr, cm^{-1})**: 3100, 2984, 1467, 1270, 1053, 553; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.95 (s, 1H), 8.30 (d, *J* = 1.6 Hz, 2H), 8.22 (s, 1H), 7.55 (d, *J* = 8.4 Hz, 2H), 7.35 (d, *J* = 8.4 Hz, 2H), 3.17 (t, *J* = 6.4 Hz, 2H), 2.97 – 2.92 (td, J= 6.4 ,1.2 Hz, 2H), 2.01 – 1.95 (quin, J= 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 156.85, 148.25, 145.85, 141.12, 135.97, 135.31, 132.37, 131.52, 131.44, 130.62, 128.69, 125.76, 125.73, 121.78, 120.00, 28.13, 27.39, 21.96. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{14}BrClN_2O_2$ for: 427.9927; Observed: 428.9998 $[M+H]^+$.

(E)-9-Chloro-4-(3-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5p):

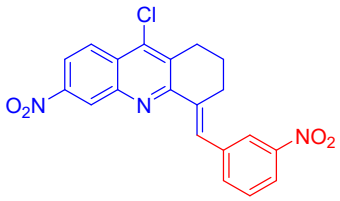
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 03: 97; R_f (pet ether: ethyl acetate = 05: 95): 0.4;



Yield= 76%, Light Yellow solid; M. P:129.8-130 °C; **IR (KBr, cm^{-1})**: 3010, 2984, 1547, 1350, 1073, 818; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.33 (s, 1H), 8.26 (s, 1H), 8.19 (d, *J* = 8.4 Hz, 1H), 8.15 (d, *J* = 8.0 Hz, 1H), 8.08 (d, *J* = 8.4 Hz, 1H), 7.78 (d, *J* = 7.6 Hz, 1H), 7.71 (t, *J* = 7.6 Hz, 1H), 7.61 – 7.58 (m, 1H), 7.56 (d, *J* = 8.0 Hz, 1H), 3.16 (t, *J* = 6.4 Hz, 2H), 2.99 – 2.94 (t, J= 5.4 HZ HZ2H), 2.02 – 1.96 (quin, J=6.4 HZ 2H). **^{13}C NMR (100 MHz, $CDCl_3$)** δ 153.39, 148.26, 139.08, 135.88, 130.04, 129.20, 127.51, 125.90, 124.23, 123.86, 122.02, 27.71, 27.51, 22.30. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}ClN_2O_2$ for: 350.0822; Observed: 351.0894 $[M+H]^+$.

(E)-9-Chloro-6-nitro-4-(3-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5q):

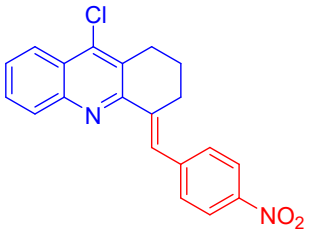
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 03: 97; R_f (pet ether: ethyl acetate = 05: 95): 0.43;



Yield= 73%, Light Yellow solid; M. P:146.8-147.0 °C; **IR (KBr, cm^{-1})**: 3109, 2989, 1552, 1360, 1037, 817; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.97 (dd, *J* = 1.8, 1.0 Hz, 1H), 8.36 – 8.33 (m, 2H), 8.33 – 8.32 (m, 2H), 8.18 (ddd, *J* = 8.2, 1.9, 1.0 Hz, 1H), 7.81 – 7.78 (m, 1H), 7.61 (t, *J* = 8.0 Hz, 1H), 3.20 (t, *J* = 6.4 Hz, 2H), 3.02 – 2.97 (td, J= 6.6, 1.6 Hz, 2H), 2.05 – 1.99 (quin, J= 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 156.12, 148.28, 145.79, 141.44, 138.72, 137.20, 135.87, 132.47, 129.36, 128.99, 128.86, 125.86, 125.83, 124.24, 122.33, 120.33, 28.07, 27.37, 21.91. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{14}ClN_3O_4$ for: 395.0673; Observed: 396.0742 $[M+H]^+$.

(E)-9-Chloro-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5r):

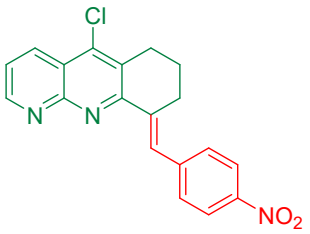
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 05: 95; R_f (pet ether: ethyl acetate = 10: 90): 0.48;



Yield= 93%, Yellow solid; M. P: 141.8-142.1 °C; **IR (KBr, cm^{-1})**: 3100, 2984, 1550, 1370, 1084, 714; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.26 (d, *J* = 2.0 Hz, 1H), 8.25 (d, *J* = 2.8 Hz, 1H), 8.24 (s, 1H), 8.19 (dd, *J* = 8.4, 0.9 Hz, 1H), 8.08 (dd, *J* = 8.4, 0.5 Hz, 1H), 7.71 (t, *J* = 8.4 Hz, 1H), 7.61 (s, 1H), 7.61 – 7.59 (m, 1H), 7.57 (dd, *J* = 7.0, 1.3 Hz, 1H), 3.16 (t, *J* = 6.4 Hz, 2H), 2.97 – 2.93 (m, 2H), 1.98 (dt, *J* = 12.6, 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 153.41, 146.95, 146.43, 144.45, 141.44, 139.22, 130.37, 130.08, 129.73, 129.14, 127.44, 125.94, 123.82, 123.54, 122.78, 27.75, 22.39. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}ClN_2O_2$ for: 350.0822; Observed: 351.0894 $[M+H]^+$.

(E)-5-Chloro-9-(4-nitrobenzylidene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5s):

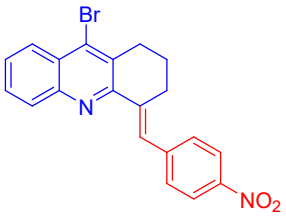
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 05: 95; R_f (pet ether: ethyl acetate = 15: 85): 0.50;



Yield= 88%, Yellow solid; M. P: 218.3-218.9 °C; **IR (KBr, cm^{-1})**: 3069, 2954, 1567, 1470, 1073, 519; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 9.13 (dd, *J* = 4.0, 2.0 Hz, 1H), 8.57 (dd, *J* = 8.4, 2.0 Hz, 1H), 8.55 (s, 1H), 8.27 (d, *J* = 8.8 Hz, 2H), 7.63 (d, *J* = 8.4 Hz, 2H), 7.55 (dd, *J* = 8.4, 4.2 Hz, 1H), 3.18 (t, *J* = 6.4 Hz, 2H), 3.00 (dd, *J* = 6.4Hz, 2H), 2.06 – 2.00 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 156.54, 154.25, 154.02, 146.59, 144.04, 141.77, 137.91, 133.41, 130.45, 129.60, 123.57, 122.39, 120.98, 27.67, 21.98. **Mass (ESI-MS):** m/z Calculated $C_{19}H_{14}ClN_3O_2$ for: 351.0775; Observed: 352.0844 $[M+H]^+$.

(E)-9-Bromo-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5t):

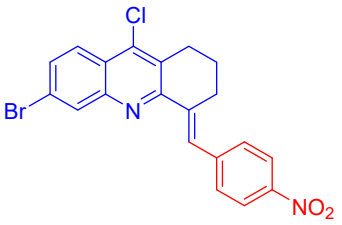
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 05: 95; R_f (pet ether: ethyl acetate = 10: 90): 0.49;



Yield= 90%, Yellow solid; M. P: 169.2-169.9 °C; **IR (KBr, cm^{-1})**: 3082, 2965, 1470, 1306, 769, 527; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 8.29 (s, 1H), 8.27 (s, 1H), 8.27 (s, 1H), 8.20 (dd, *J* = 8.5, 0.9 Hz, 1H), 8.09 (dd, *J* = 8.4, 0.6 Hz, 1H), 7.75 – 7.70 (m, 1H), 7.64 (s, 1H), 7.63 – 7.58 (m, 2H), 3.17 (t, *J* = 6.4 Hz, 2H), 2.99 – 2.94 (m, 2H), 2.04 – 1.97 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 153.44, 146.95, 146.43, 144.47, 139.23, 135.97, 131.52, 130.37, 129.73, 127.64, 126.57, 123.53, 31.10, 27.80, 22.69. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}BrN_2O_2$ for: 394.0317; Observed: 395.0395 $[M+H]^+$.

(E)-6-Bromo-9-chloro-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5u):

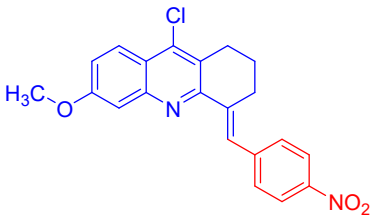
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 2.5: 97.5; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 89%, Yellow solid; M. P: 170.2 -171.5 °C; **IR (KBr, cm^{-1})**: 3106, 2974, 1545, 1416, 1346,830, 754, 514; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 8.27 (dd, *J* = 3.6, 2.0 Hz, 2H), 8.25 (t, *J* = 2.4 Hz, 2H), 8.03 (d, *J* = 9.0 Hz, 1H), 7.64 (dd, *J* = 9.0, 2.0 Hz, 1H), 7.61 – 7.58 (m, 2H), 3.12 (t, *J* = 6.4 Hz, 2H), 2.96 – 2.91 (m, 2H), 1.98 (m, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 154.40, 147.36, 146.54, 144.17, 141.55, 138.71, 131.82, 130.71, 130.39, 129.58, 128.20, 125.29, 124.64, 123.94, 123.57, 27.69, 22.19. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{14}BrClN_2O_2$ for: 427.9927; Observed: 429.0002 $[M+H]^+$.

(E)-9-Chloro-6-methoxy-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5v):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 2.5: 97.5; R_f (pet ether: ethyl acetate = 05: 95): 0.48;

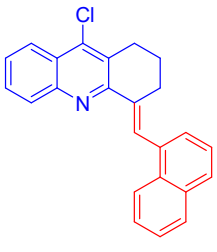


Yield= 85%, Light Yellow solid; M. P: 165.4-166 °C; **IR (KBr, cm^{-1})**: 3092, 2975, 1565, 1362, 1164, 1023, 842; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 8.29 (s, 1H), 8.28 (s, 1H), 8.27 (s, 2H), 7.92 (d, *J* = 8.8 Hz, 1H), 7.64 (d, *J* = 8.6 Hz, 2H), 7.59 (dd, *J* = 8.8, 2.0 Hz, 1H), 4.01 (s, 3H), 3.08 – 3.03 (m, 2H), 3.02 – 2.97 (m, 2H), 1.95 (m, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 161.02, 155.65, 148.82, 146.41, 144.41, 139.20, 131.81, 131.36, 130.38, 130.03, 129.55, 127.46, 123.78 – 123.30, 123.12, 122.82, 121.57, 61.61, 28.23, 23.63, 22.29. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 380.0928; Observed: 381.0995 $[M+H]^+$.

(E)-9-Chloro-4-(naphthalen-1-ylmethylene)-1,2,3,4-tetrahydroacridine (5w):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.51;

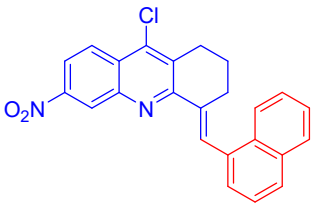
Yield= 86%, Yellow solid; M. P: 137-138 °C; **IR (KBr, cm^{-1})**: 3051, 2947, 2836, 1569, 1394, 860, 720; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 8.76 (s, 1H), 8.3 (d, J= 6 Hz, 1H), 8.24 (dd, J = 8.4 Hz, 1H), 8.15 (dd, *J* = 5.4, 4.3 Hz, 1H), 7.94 –



7.89 (m, 1H), 7.88 – 7.83 (m, 1H), 7.76 (t, *J* = 7.5 Hz, 1H), 7.63 (dd, *J* = 11.3, 3.9 Hz, 1H), 7.55 (t, *J* = 2.7 Hz, 1H), 7.54 (d, *J* = 1.6 Hz, 1H), 7.53 – 7.50 (m, 2H), 3.18 (t, *J* = 6.4 Hz, 2H), 2.87 – 2.76 (m, 2H), 1.94 (quin, *J* = 12.6, 6.4 Hz, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 154.45, 147.08, 141.29, 137.51, 135.10, 133.61, 132.38, 129.85, 129.42, 128.95, 128.46, 128.12, 127.75, 126.97, 126.90, 126.01, 125.91, 125.83, 125.36, 125.25, 123.74, 28.12, 27.79, 22.71. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 355.1128; Observed: 356.1207 $[M+H]^+$.

(E)-9-Chloro-4-(naphthalen-1-ylmethylene)-6-nitro-1,2,3,4-tetrahydroacridine (5x):

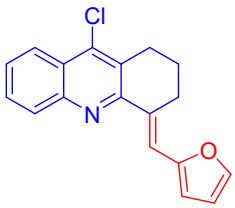
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;



Yield= 88%, Yellow solid; M. P: 200-201 °C; **IR (KBr, cm^{-1})**: 3102, 2986, 2852, 1543, 1364, 1018, 833; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 9.00 (dd, *J* = 2.0, 0.8 Hz, 1H), 8.78 (s, 1H), 8.33 (dd, *J* = 9.0, 0.6 Hz, 1H), 8.30 (dd, *J* = 9.2, 2.0 Hz, 1H), 8.12 – 8.07 (m, 1H), 7.93 – 7.88 (m, 1H), 7.85 (d, *J* = 8.0 Hz, 1H), 7.53 (dd, *J* = 4.8, 1.6 Hz, 2H), 7.51 (d, *J* = 6.8 Hz, 1H), 7.48 (d, *J* = 6.8 Hz, 1H), 3.18 (t, *J* = 6.4 Hz, 2H), 2.86 – 2.79 (td, J= 6.2, 1.6Hz, 2H), 1.94 (quin, *J* = 6.2 Hz, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 157.02, 148.21, 145.92, 141.27, 136.42, 134.45, 133.60, 132.38, 132.26, 130.01, 128.79, 128.54, 128.19, 126.93, 126.24, 126.06, 125.91, 125.68, 125.18, 125.08, 119.94, 28.44, 27.55, 22.21. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 400.0979; Observed: 401.1042 $[M+H]^+$.

(E)-9-Chloro-4-(furan-2-ylmethylene)-1,2,3,4-tetrahydroacridine(5y):

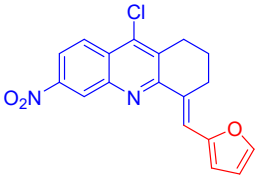
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 1.5: 98.5; R_f (pet ether: ethyl acetate = 05: 95): 0.6;



Yield= 90%, Green solid; M. P: 114-115.1 °C; **IR (KBr, cm^{-1})**: 3095, 2983, 2856, 1571, 1390, 1192, 1022, 927, 794; **^{1}H NMR (400 MHz, CDCl$_3$) δ** 8.08 (dd, *J* = 8.4, 0.4 Hz, 2H), 8.03 (s, 1H), 7.65 – 7.59 (dt, J= 8, 0.8 Hz 1H), 7.51 – 7.47 (m, 1H), 7.46 (d, *J* = 1.4 Hz, 1H), 6.56 (d, *J* = 2 Hz, 1H), 6.44 (dd, *J* = 3.2, 2 Hz, 1H), 3.05 (dd, *J* = 12.4, 6.4 Hz, 4H), 1.97 – 1.89 (m, J = 12.8, 6.4 Hz, 2H). **^{13}C NMR (100 MHz, CDCl$_3$) δ** 154.34, 153.83, 146.96, 142.81, 140.67, 132.71, 129.46, 129.42, 129.25, 126.70, 125.51, 123.81, 117.75, 112.69, 111.85, 27.89, 27.66, 21.77. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 295.0764; Observed: 296.0845 $[M+H]^+$.

(E)-9-Chloro-4-(furan-2-ylmethylene)-6-nitro-1,2,3,4-tetrahydroacridine (5z):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;

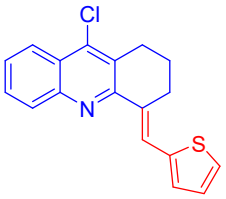


Yield= 88%, Yellow solid; M. P: 192-193 °C; **IR (KBr, cm^{-1})**: 3104, 2992, 2863, 1552, 1365, 1151, 1025, 920, 839; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.93 (dd, *J* = 2.0, 0.8 Hz, 1H), 8.30 – 8.24 (m, 2H), 8.11 (t, *J* = 1.8 Hz, 1H), 7.56 (d, *J* = 1.6 Hz, 1H), 6.66 (d, *J* = 3.6 Hz, 1H), 6.54 (dd, *J* = 3.4, 1.8 Hz, 1H), 3.18 – 3.12 (m, 4H), 2.04 – 2.01 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 156.92, 153.45, 148.15, 145.92, 143.42, 140.47, 132.52, 131.53, 128.47, 125.68, 125.55, 119.62, 119.08, 113.82, 112.06, 27.97, 27.55, 21.30. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 340.0615; Observed: 341.0694 $[M+H]^+$.

(E)-9-Chloro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5aa):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 1.5: 98.5; R_f (pet ether: ethyl acetate = 05: 95): 0.55;

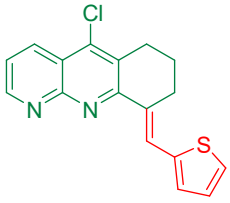
Yield= 94%, Yellow solid; M. P: 112.6-113.1 °C; **IR (KBr, cm^{-1})**: 3075, 2932, 2864, 1541, 1499, 1148, 903, 838; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.35 (s, 1H), 8.07 (dd, *J* = 8.4, 0.8 Hz, 1H), 8.01 (d, *J* = 8.4 Hz, 1H), 7.63 – 7.58 (td J=8.4 HZ, 1H), 7.48 – 7.43 (td, J=8 HZ 1H), 7.35 (d, *J* = 5.2 Hz, 1H), 7.27 (d, *J* = 3.6 Hz, 1H), 7.05 (dd, *J* = 5.2, 3.6 Hz, 1H), 3.07 – 3.03 (t, J=6.4HZ, 2H), 2.98 – 2.93 (dt, J= 5.6 Hz, 1.6 HZ,2H), 1.98 – 1.92 (quin, J= 6.4 HZ, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.50, 147.11, 141.00, 140.49, 132.58, 130.19, 129.53, 129.40, 129.25, 127.27, 127.15, 126.69, 125.47, 123.86, 123.48, 28.24, 27.55, 21.82. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 311.0535; Observed: 312.0608 $[M+H]^+$.



(E)-5-Chloro-9-(thiophen-2-ylmethylene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5ab):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 3: 97; R_f (pet ether: ethyl acetate = 05: 95): 0.40;

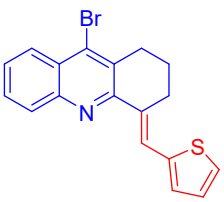
Yield= 89%, Yellow solid; M. P: 146.8-147.1 °C; **IR (KBr, cm^{-1})**: 3079, 2945, 2872, 1531, 1421, 1247, 901, 758;**^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.99 (dd, *J* = 4.2, 2.0 Hz, 1H), 8.65 (s, 1H), 8.43 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.41 – 7.36 (m, 2H), 7.32 (d, *J* = 3.4 Hz, 1H), 7.07 (dd, *J* = 5.2, 3.8 Hz, 1H), 3.08 – 3.04 (m, 2H), 2.99 – 2.95 (m, 2H), 1.96 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 157.80, 154.44, 153.51, 140.69, 133.53, 131.24, 130.50, 127.97, 127.43, 125.85, 121.68, 120.47, 28.01, 27.50, 21.43. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 312.0488; Observed: 313.0561 $[M+H]^+$.



(E)-9-Bromo-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ac):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;

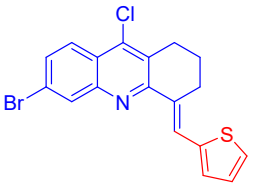
Yield= 90%, Yellow solid; M. P: 92.8-93.2 °C; **IR (KBr, cm^{-1})**: 3012, 2987, 2847, 1532, 1478, 1306, 1148, 910, 820, 592; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.44 (s, 1H), 8.16 (d, *J* = 8.4 Hz, 1H), 8.08 (d, *J* = 8.4



Hz, 1H), 7.69 (ddd, *J* = 8.3, 6.9, 1.3 Hz, 1H), 7.58 – 7.53 (m, 1H), 7.45 (d, *J* = 5.2 Hz, 1H), 7.37 (d, *J* = 3.2 Hz, 1H), 7.16 (dd, *J* = 5.2, 3.4 Hz, 1H), 3.18 – 3.13(t, *J* = 6.4 Hz, 2H), 3.05 (t, *J* = 6.4 Hz, 2H), 2.05 (t, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.56, 147.17, 141.03, 135.00, 132.58, 131.71, 130.20, 129.46, 127.13, 126.65, 123.64, 30.96, 28.32, 22.09. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{15}BrN_2O_2$ for: 355.0030; Observed:356.0107 $[M+H]^+$.

(E)-6-Bromo-9-chloro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ad):

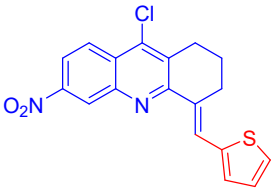
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 2.5: 97.5; R_f (pet ether: ethyl acetate = 05: 95): 0.45;



Yield= 89%, Yellow solid; M. P: 133.7-134 °C; **IR (KBr, cm^{-1})**: 3087, 2954, 2868, 1541, 1310, 1152, 904, 832, 524; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.39 (s, 1H), 8.23 (d, *J* = 1.6 Hz, 1H), 7.96 (d, *J* = 9.2 Hz, 1H), 7.57 (dd, *J* = 9.2, 2.0 Hz, 1H), 7.43 (d, *J* = 5.2 Hz, 1H), 7.33 (d, *J* = 3.4 Hz, 1H), 7.13 (dd, *J* = 5.2, 3.6 Hz, 1H), 3.08 – 3.04 (t, J=6.4 Hz, 2H), 3.02 – 2.97 (m, 2H), 2.03 – 1.97 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 155.45, 147.56, 140.79, 134.27, 132.04, 131.58, 130.55, 129.93, 129.62, 127.44, 125.32, 124.15, 123.59, 28.09, 27.51, 21.60. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 388.9641; Observed: 389.9710 $[M+H]^+$.

(E)-9-Chloro-6-nitro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ae):

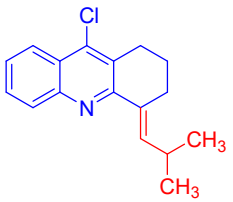
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 3: 97; R_f (pet ether: ethyl acetate = 05: 95): 0.4;



Yield= 92%, Yellow solid; M. P: 167-168 °C; **IR (KBr, cm^{-1})**: 3109, 2975, 2845, 1567, 1360, 1207, 845; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.95 (d, *J* = 0.8 Hz, 1H), 8.52 (s, 1H), 8.28 (s, 2H), 7.50 (d, *J* = 5.2 Hz, 1H), 7.41 (d, *J* = 3.6 Hz, 1H), 7.19 (dd, *J* = 5.0, 3.8 Hz, 1H), 3.19 – 3.15 (t, J= 6.4 Hz, 2H), 3.06 (t, *J* = 6.2 Hz, 2H), 2.10 – 2.04 (quin, J=6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 157.06, 148.19, 146.00, 140.49, 140.39, 132.53, 131.29, 131.13, 128.46, 128.11, 127.48, 125.75, 125.56, 125.24, 119.66, 27.93, 27.84, 21.34. **Mass (ESI-MS):** m/z Calculated $C_{23}H_{21}N_5O_4$ for: 356.0386; Observed: 357.0463 $[M+H]^+$.

(E)-9-Chloro-4-(2-methylpropylidene)-1,2,3,4-tetrahydroacridine (5af):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 02: 98; R_f (pet ether: ethyl acetate = 05: 95): 0.50;

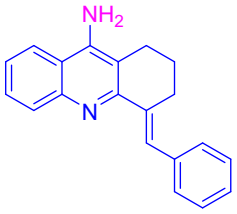


Yield= 75%, Yellow Oily compound; **IR (KBr, cm^{-1})**: 3010, 2982, 2854, 1536, 1174, 835; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.15 – 8.10 (m, 1H), 8.04 – 7.99 (m, 1H), 7.64 (ddd, *J* = 8.4, 6.8, 1.6 Hz, 1H), 7.50 (ddd, *J* = 8.4, 6.8, 1.6 Hz, 1H), 7.01 (dt, *J* = 9.6, 1.6 Hz, 1H), 3.10 – 3.06 (m, 2H), 2.80 – 2.75 (m, 1H), 2.70 – 2.66 (m, 2H), 1.96 – 1.92 (m, 2H), 1.14 (d, *J* = 6.8 Hz, 6H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.92,146.99, 139.35, 129.60, 129.09, 126.39, 123.64, 28.02,

27.60, 26.03, 22.71, 22.28. **Mass (ESI-MS):** m/z Calculated $C_{17}H_{18}ClN$ for: 271.1128; Observed: 272.1203 $[M+H]^+$.

(E)-4-Benzylidene-1,2,3,4-tetrahydroacridin-9-amine (3a):

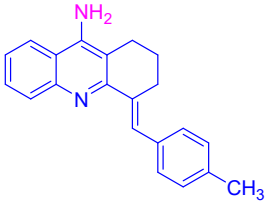
The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 50: 50; R_f (methanol: chloroform = 05: 95): 0.20;



Yield= 50%, white gummy compound; **IR (KBr, cm^{-1}):** 3312.45, 3192.05, 2922.85, 1635.01, 1495.88, 1181.01, 1011.21, 851.87, 756.46; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.16 (s, 1H), 8.00 (d, *J* = 8.4 Hz, 1H), 7.68 (d, *J* = 8.4 Hz, 1H), 7.60 – 7.56 (m, 1H), 7.45 (d, *J* = 7.2 Hz, 2H), 7.40 – 7.35 (m, 3H), 7.26 (t, *J* = 7.2 Hz, 1H), 4.69 (s, 2H), 2.92 – 2.88 (m, 2H), 2.70 (t, *J* = 6.4 Hz, 2H), 1.95 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 153.63, 146.87, 146.42, 138.14, 136.96, 129.90, 129.66, 128.61, 128.33, 128.06, 126.73, 124.23, 119.54, 117.46, 111.11, 27.38, 24.17, 22.78. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{18}N_2$ for: 286.1470; Observed: 287.1542 $[M+H]^+$.

(E)-4-(4-Methylbenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3b):

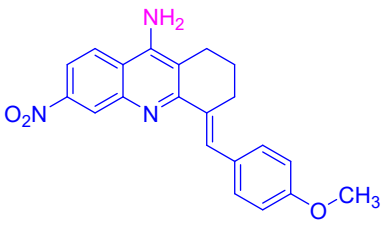
The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 50: 50; R_f (methanol: chloroform = 05: 95): 0.20;



Yield= 65%, white solid; M. P: 146.5-147.7 °C; **IR (KBr, cm^{-1}):** 3340.42, 3246.46, 2922.23, 2850.43, 1652.65, 1518.87, 1167.43, 1.22.05, 842.40, 741.42; **^{1}H NMR (400 MHz, DMSO) δ** 8.52 (d, *J* = 8.4 Hz, 1H), 8.34 (s, 2H), 8.22 (d, *J* = 8.4 Hz, 1H), 7.91 (d, *J* = 8.0 Hz, 1H), 7.88 (s, 1H), 7.63 (t, *J* = 8.4 Hz, 1H), 7.49 (d, *J* = 8.4 Hz, 2H), 7.35 (d, *J* = 8.0 Hz, 2H), 2.92 – 2.88 (m, 2H), 2.75 (t, *J* = 6.4 Hz, 2H), 2.42 (s, 3H), 1.94 (quint, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, DMSO) δ** 154.87, 152.71, 148.18, 143.26 (s), 138.36, 133.60, 133.15, 131.33, 130.22, 129.65, 125.70, 123.42, 115.67, 110.98, 110.66, 108.47, 26.64, 23.59, 22.21, 21.41. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{20}N_2$ for 300.1626; Observed: 301.1700 $[M+H]^+$.

(E)-4-(4-Methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine (3c)

The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 40: 60; R_f (methanol: chloroform = 05: 95): 0.30;

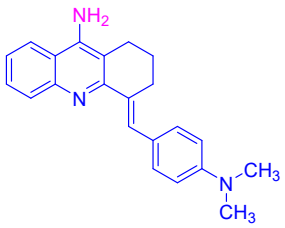


Yield= 70%, red solid; M. P: 136.1-137.2 °C; **IR (KBr, cm^{-1}):** 3348.42, 3245.28, 2926.46, 2851.49, 2100.46, 1604.78, 1466.90, 1176.43, 1029.05, 894.19, 842.40; **^{1}H NMR (400 MHz, $CDCL_3$+DMSO) δ** 8.74 (d, *J* = 2.3 Hz, 1H), 8.19 (d, *J* = 9.2 Hz, 1H), 8.12 (s, 1H), 8.02 (dd, *J* = 9.2, 2.4 Hz, 1H), 7.41 (d, *J* = 8.8 Hz, 2H), 6.94 (d, *J* = 8.8 Hz, 2H), 5.91 (s, 2H), 3.85 (s, 3H), 2.94 – 2.89 (m, 2H), 2.74 (t, *J* = 6.4 Hz, 2H), 1.96 (quin, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCL_3$+DMSO) δ** 158.69, 155.61, 148.30, 147.52, 145.67, 134.56, 131.17,

130.13, 128.94, 124.94, 123.56, 120.67, 116.08, 113.68, 113.01, 55.27, 27.28, 24.30, 22.39. **Mass (ESI-MS):** m/z Calculated $C_{21}H_{19}N_3O_3$ for 361.1426; Observed: 362.1500 $[M+H]^+$. Elem. Anal. Calcd for $C_{21}H_{19}N_3O_3$: C, 69.79; H, 5.30; N, 11.63; Found: C, 69.77; H, 5.33; N, 11.63.

(E)-4-(4-(Dimethylamino)benzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3d):

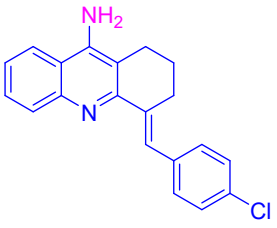
The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 50: 50; R_f (methanol: chloroform = 05: 95): 0.20;



Yield=58%, red solid; M. P:154.7-155.5 °C; **IR (KBr, cm^{-1}):** 3358.56, 3192.82, 2922.76, 1679.02, 1523.03, 1367.83, 1187.81, 812.23, 754.89; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.14 (s, 2H), 7.99 (t, *J* = 8.4 Hz, 2H), 7.77 (s, 1H), 7.41 (d, *J* = 7.6 Hz, 1H), 7.38 (d, *J* = 8.8 Hz, 2H), 7.27 (s, 3H), 7.24 (d, *J* = 7.2 Hz, 1H), 6.69 (d, *J* = 8.8 Hz, 2H), 3.02 (s, 6H), 2.71 – 2.64 (m, 2H), 2.37 (t, *J* = 6.4 Hz, 2H), 1.77 – 1.71 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 177.31, 153.52, 150.18, 148.60, 138.82, 134.41, 131.88, 131.36, 130.56, 125.72, 124.60, 124.26, 122.21, 121.13, 115.01, 111.66, 108.82, 40.22, 26.74, 23.01, 21.88. **Mass (ESI-MS):** m/z Calculated $C_{22}H_{23}N_3$ for 329.1892; Observed: 330.1970 $[M+H]^+$. Elem. Anal. Calcd for $C_{22}H_{23}N_3$: C, 80.21; H, 7.04; N, 12.76; Found: C, 80.33; H, 7.038; N, 12.58.

(E)-4-(4-Chlorobenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3e):

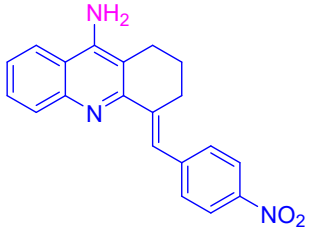
The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 50: 50; R_f (methanol: chloroform = 05: 95): 0.20;



Yield= 55%, white; M. P:169.7- 170.2 °C; **IR (KBr, cm^{-1}):** 3329.01, 3214.23, 2928.76, 1679.02, 1603.69, 1523.03, 1107.11, 812.45, 752.31; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.10 (s, 1H), 7.98 (d, *J* = 8.4 Hz, 1H), 7.67 (d, *J* = 8.4 Hz, 1H), 7.59 (ddd, *J* = 8.4, 6.8, 1.2 Hz, 1H), 7.38 (dd, *J* = 6.8, 1.2 Hz, 1H), 7.37 – 7.31 (m, 4H), 4.64 (s, 2H), 2.89 – 2.83 (m, 2H), 2.70 (t, *J* = 6.4 Hz, 2H), 1.96 (quint, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.47, 153.93, 138.83, 137.68, 132.31, 131.28, 130.71, 128.62, 124.91, 122.69, 120.80, 114.96, 108.47, 38.48, 24.23, 22.89. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{17}ClN_2$ for 320.1080; Observed: 321.1153 $[M+H]^+$.

(E)-4-(4-Nitrobenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3f):

The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 50: 50; R_f (methanol: chloroform = 05: 95): 0.20;

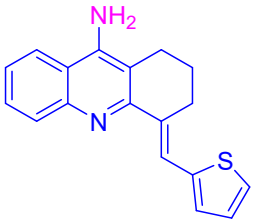


Yield= 52%, red solid; M. P: 178.9-179.3 °C; **IR (KBr, cm^{-1}):** 3342.25, 3157.05, 2926.85, 1634.01, 1495.88, 1189.47, 1010.21, 84.87, 757.46; **^{1}H NMR (400 MHz, $CDCL_3$+DMSO) δ** 8.11 (s, 1H), 7.88 (d, *J* = 4.9 Hz, 2H), 7.86 – 7.84 (m, 2H), 7.53 (d, *J* = 8.4 Hz, 2H), 7.49 (d, *J* = 7.2 Hz, 1H), 7.31 – 7.26 (m, 1H), 5.46 (s, 2H), 2.92 – 2.87 (m, 2H), 2.67 (t, *J* = 6.4 Hz,

2H), 1.89 (quint, J = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 152.21, 150.47, 147.23, 146.20, 140.58, 138.23, 129.96, 128.88, 127.99, 126.38, 123.26, 122.12, 120.35, 117.00, 110.25, 27.17, 23.54, 22.21. **Mass (ESI-MS):** m/z Calculated $C_{20}H_{17}N_3O_2$ for 331.1321; Observed: 332.1394 $[M+H]^+$. Elem. Anal. Calcd for $C_{20}H_{17}N_3O_2$: C, 72.49; H, 5.17; N, 12.68; Found: C, 72.44; H, 5.174; N, 12.62.

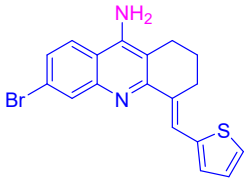
(E)-4-(Thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine (3g):

The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 40: 60; R_f (methanol : chloroform = 05: 95): 0.30; Yield= 68%, Yellow solid; M. P:98.7-99.5 °C; **IR (KBr, cm^{-1}):** 3390.01, 3294.31, 29545.64, 1599.97, 1483.27, 1183.42, 1045.47, 925.55, 851.21; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.36 (s, 1H), 7.98 (d, J = 8.0 Hz, 1H), 7.66 (dd, J = 8.4, 0.8 Hz, 1H), 7.57 (ddd, J = 8.4, 6.8, 1.2 Hz, 1H), 7.36 (d, J = 6.0 Hz, 1H), 7.35 – 7.32 (m, 1H), 7.28 (d, J = 3.6 Hz, 1H), 7.09 (dd, J = 5.2, 3.6 Hz, 1H), 4.70 (s, 2H), 3.01 – 2.96 (m, 2H), 2.68 (t, J = 6.4 Hz, 2H), 2.00 (m, 2H). **^{13}C NMR (100 MHz, $CDCL_3$+DMSO) δ** 152.27, 148.54, 146.38, 141.09, 134.04, 129.43, 128.69, 127.41, 126.67, 123.53, 121.80, 121.10, 117.41, 110.79, 28.12, 23.89, 22.22. **Mass (ESI-MS):** m/z Calculated $C_{18}H_{16}N_2S$ for 292.1034; Observed: 293.1109 $[M+H]^+$.



(E)-6-Bromo-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine(3h)

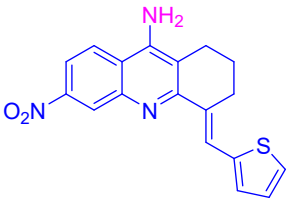
The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 30: 70; R_f (methanol: chloroform = 05: 95): 0.40;



Yield= 69%, red solid; M. P: 185.8-186.4 °C; **IR (KBr, cm^{-1})**: 3320.02, 3225.31, 2925.94, 1638, 1599.97, 1483.27, 1219.36, 1066.47, 851.80; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.35 (s, 1H), 8.16 (s, 1H), 7.49 (d, J = 8.8 Hz, 1H), 7.41 – 7.36 (m, 2H), 7.29 (d, J = 3.6 Hz, 1H), 7.10 (dd, J = 5.4, 3.6 Hz, 1H), 4.64 (s, 2H), 2.98 (t, J = 5.4 Hz, 2H), 2.65 (t, J = 6.4 Hz, 2H), 2.00 (q, J = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.23, 147.67, 146.28, 141.10, 133.52, 131.82, 129.82, 127.23, 126.59, 122.65, 122.25, 121.27, 115.96, 111.80, 27.86, 23.79, 21.90. **Mass (ESI-MS):** m/z Calculated $C_{18}H_{15}BrN_2S$ for: 370.0139; Observed: 371.0212 $[M+H]^+$.

(E)-6-Nitro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine (3i)

The crude product was purified by column chromatography on neutral alumina using pet ether: ethyl acetate = 40: 60; R_f (methanol: chloroform = 05: 95): 0.30;

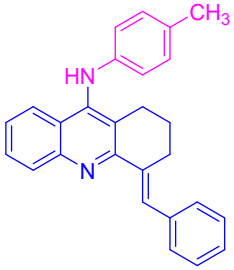


Yield= 72%, Yellow solid; M. P: 156.6-157.4 °C; **IR (KBr, cm^{-1}):** 3492.68, 3467.68, 3104.96, 2926.16, 2854.26, 1631.12, 1518.78, 1184.57, 1071.24, 894.13, 739.96; **^{1}H NMR (400 MHz, $CDCL_3$+DMSO) δ** 8.77 (d, J = 2.2 Hz, 1H), 8.40 (s, 1H), 8.08 (d, J = 9.2 Hz, 1H), 8.03 (d, J = 9.2 Hz, 1H), 7.41 (d, J = 5.2 Hz, 1H), 7.32 (d, J = 3.6 Hz, 1H), 7.12 (dd, J = 5.2, 3.6 Hz, 1H), 5.62 (s, 2H), 3.03 – 2.98 (m, 2H), 2.73 (t, J = 6.4 Hz, 2H), 2.06 – 2.00 (quin, J = 6.4 Hz, 2H). **^{13}C**

NMR (100 MHz, $CDCL_3$+DMSO) δ 155.28, 147.55, 145.88, 140.86, 133.27, 129.90, 126.84, 125.24, 123.12, 122.49, 120.62, 116.23, 113.46, 27.74, 23.96, 21.72. **Mass (ESI-MS):** m/z Calculated $C_{18}H_{15}N_3O_2S$ for: 337.0885; Observed: 338.0968 $[M+H]^+$. HPLC () t_R = 12.827, 95.27%.

(E)-4-Benzylidene-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8a):

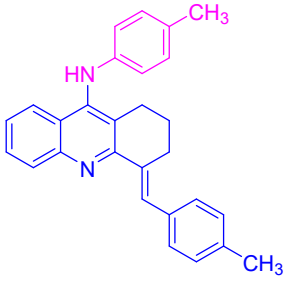
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;



Yield=76%, Yellow solid; M. P: 101.2-102 °C; **IR (KBr, cm−1):** 3375, 3060, 2932, 2860, 1614, 1574, 1241; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.32 (s, 1H), 7.81 (d, *J* = 8.4 Hz, 1H), 7.63 – 7.58 (m, 1H), 7.53 (d, *J* = 7.6 Hz, 2H), 7.39 (t, *J* = 7.6 Hz, 2H), 7.35 – 7.26 (m, 3H), 7.06 (d, *J* = 8.4 Hz, 2H), 6.74 (d, *J* = 8.0 Hz, 2H), 6.40 (s, 1H), 2.95 – 2.90 (t, *J* =5.6 Hz, 2H), 2.72 (t, *J* = 6.0 Hz, 2H), 2.30 (s, 3H), 1.85 – 1.80 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.41, 145.60, 141.81, 137.81, 135.52, 131.05, 130.43, 130.38, 129.86, 128.98, 128.34, 127.36, 122.97, 117.74 (s), 28.06, 26.32, 22.81, 20.85. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{24}N_2$ for: 376.1939; Observed: 377.2013 $[M+H]^+$. Elem. Anal. Calcd for $C_{27}H_{24}N_2$: C, 86.13; H, 6.43; N, 7.44; Found: C, 86.07; H, 6.491; N, 7.46.

(E)-4-(4-Methylbenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8b):

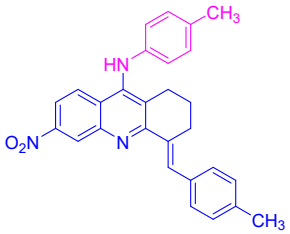
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.48;



Yield= 84%, Yellow solid; M. P: 212.3-213 °C; **IR (KBr, cm−1):** 3196, 3018, 2918, 2865, 1573, 1509, 1396, 1250, 811; **^{1}H NMR (400 MHz, DMSO) δ** 8.34 (s, 1H), 8.14 (s, 1H), 8.00 – 7.96 (m, 2H), 7.67 – 7.62 (m, 1H), 7.43 – 7.39 (m, 3H), 7.24 (d, *J* = 8.0 Hz, 2H), 6.98 (d, *J* = 8.4 Hz, 2H), 6.61 (d, *J* = 8.4 Hz, 2H), 2.91 – 2.85 (m, 2H), 2.63 (t, *J* = 6.0 Hz, 2H), 2.33 (s, 3H), 2.20 (s, 3H), 1.74 – 1.66 (m, 2H). **^{13}C NMR (100 MHz, DMSO) δ** 154.32, 147.07, 144.44, 142.96, 137.08, 135.52, 134.76, 129.96, 129.37, 128.67, 125.43, 123.75, 123.60, 116.66, 28.31, 26.72, 22.61, 21.33, 20.67. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{26}N_2$ for: 390.2096; Observed: 391.2172 $[M+H]^+$. HPLC () t_R = 15.05, 96.81%.

(E)-4-(4-Methylbenzylidene)-6-nitro-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8c):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.45;

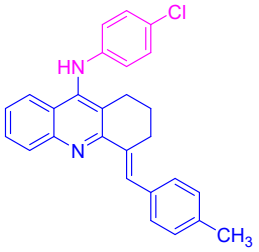


Yield= 87%, Yellow solid; M. P: 205.5-206 °C; **IR (KBr, cm−1):** 3376, 2938, 2917, 1536, 1340, 1246; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.95 (s, 1H), 8.29 (s, 1H), 8.01 (d, *J* = 9.2 Hz, 1H), 7.86 (d, *J* = 9.2

Hz, 1H), 7.41 (d, *J* = 8.0 Hz, 2H), 7.23 (d, *J* = 8.0 Hz, 2H), 7.05 (d, *J* = 8.4 Hz, 2H), 6.66 (d, *J* = 8.4 Hz, 2H), 5.98 (s, 1H), 2.99 – 2.95 (m, 2H), 2.80 (t, *J* = 6.0 Hz, 2H), 2.39 (s, 3H), 2.30 (s, 3H), 1.88 (q, *J* = 12.4, 6.2 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 157.50, 147.71, 146.57, 142.50, 141.36, 137.43, 134.60, 131.37, 130.30, 129.75, 129.02, 125.96, 125.31, 124.94 – 124.75, 118.34, 117.74, 27.79, 26.16, 22.33, 21.35, 20.66. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{25}N_3O_2$ for: 435.1947; Observed: 436.2019 $[M+H]^+$.

(E)-N-(4-Chlorophenyl)-4-(4-methylbenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (8d):

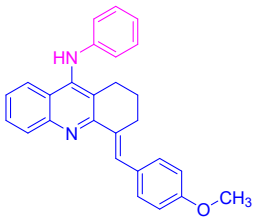
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;



Yield= 80%, Yellow solid; M. P: 173.5-174 °C; **IR (KBr, cm−1):** 3307,2944, 2867, 1598, 1494, 819; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.21 (s, 1H), 8.11 (d, *J* = 8.4 Hz, 1H), 7.73 (d, *J* = 8.0 Hz, 1H), 7.60 (m, 1H), 7.39 (d, *J* = 8.0 Hz, 2H), 7.36 – 7.31 (m, 1H), 7.19 (d, *J* = 8.0 Hz, 2H), 7.15 – 7.11 (m, 2H), 6.61 – 6.57 (m, 2H), 5.93 (s, 1H), 2.92 (t, *J* = 5.4 Hz, 2H), 2.71 (t, *J* = 6.2 Hz, 2H), 2.37 (s, 3H), 1.83 – 1.76 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 155.27, 147.56, 143.34, 142.24, 137.01, 135.34, 134.88, 130.13, 128.97, 128.97, 125.61, 125.07, 124.71, 123.58, 122.55, 117.20, 28.07, 26.10, 22.62, 21.36. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}ClN_2$ for: 410.1550; Observed: 411.1620 $[M+H]^+$. HPLC () t_R = 15.855, 99.37%.

(E)-4-(4-Methoxybenzylidene)-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8e):

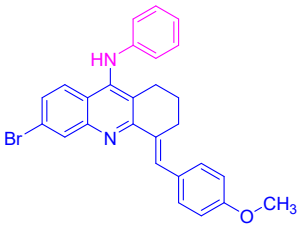
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.45;



Yield=80%, Yellow solid; M. P: 160.3-161.4 °C; **IR (KBr, cm−1):** 3280,3030,2951, 2870, 1560, 1513,1189; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.19 (s, 1H), 8.09 (d, *J* = 8.4 Hz, 1H), 7.80 (d, *J* = 9.2 Hz, 1H), 7.61 (ddd, *J* = 8.4, 6.8, 1.2 Hz, 1H), 7.46 (d, *J* = 8.4 Hz, 2H), 7.34 (ddd, *J* = 8.4, 6.8, 1.2 Hz, 1H), 7.21 (td, *J* = 7.6, 2.0 Hz, 2H), 6.94 (d, *J* = 8.8 Hz, 2H), 6.89 (t, *J* = 7.6 Hz, 1H), 6.70 (d, *J* = 7.6 Hz, 2H), 5.93 (s, 1H), 3.84 (s, 3H), 2.98 – 2.93 (m, 2H), 2.77 (t, *J* = 6.0 Hz, 2H), 1.86 – 1.81 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.67, 155.37, 147.70, 144.69, 142.45, 134.66, 131.32, 130.54, 129.86, 129.32, 129.05, 128.80, 125.33, 124.41, 123.64, 122.62, 120.40, 116.18, 113.64, 55.29, 28.15, 26.12, 22.71. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{24}N_2O$ for: 392.1889; Observed: 393.1963 $[M+H]^+$. Elem. Anal. Calcd for $C_{27}H_{24}N_2O$: C, 82.62; H, 6.16; N, 7.14; Found: C, 82.69; H, 6.158; N, 7.06.

(E)-6-Bromo-4-(4-methoxybenzylidene)-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8f):

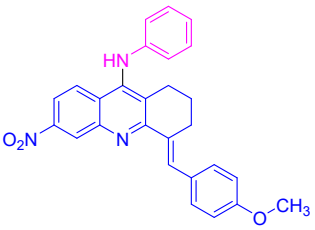
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.46;



Yield= 81%, Yellow solid; M. P: 171.9-172.6 °C; **IR (KBr, cm−1):** 3302, 3044, 2926, 2853, 1569, 1174, 1023, 832; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.27 (d, *J* = 2.0 Hz, 1H), 8.18 (s, 1H), 7.60 (d, *J* = 9.2 Hz, 1H), 7.44 (d, *J* = 8.4 Hz, 2H), 7.36 (dd, *J* = 9.2, 2.0 Hz, 1H), 7.23 – 7.18 (m, 2H), 6.95 – 6.92 (m, 2H), 6.89 (d, *J* = 7.6 Hz, 1H), 6.68 (d, *J* = 7.6 Hz, 2H), 5.91 (s, 1H), 3.84 (s, 3H), 2.94 – 2.90 (m, 2H), 2.72 (t, *J* = 6.2 Hz, 2H), 1.84 – 1.79 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.82, 156.34, 148.34, 144.40, 142.83, 134.23, 131.83, 131.40, 130.28, 129.70, 129.40, 128.43, 124.50, 122.85, 122.12, 120.78, 116.40, 113.71, 55.33, 28.01, 25.99, 22.52. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}BrN_2O$ for: 470.0994; Observed: 471.1072 $[M+H]^+$. HPLC () t_R = 15.575, 95.06%.

(E)-4-(4-Methoxybenzylidene)-6-nitro-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8g):

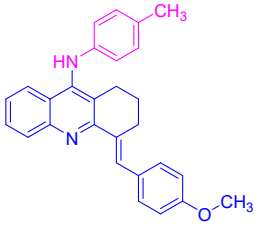
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.52;



Yield= 82%, Yellow solid; M. P: 179.8-180.4 °C; **IR (KBr, cm^{-1})**: 3366, 3017, 2924, 2853, 1491, 1340, 1173; **^{1}H NMR (400 MHz, $CDCl_3$)** δ 8.94 (d, *J* = 2.4 Hz, 1H), 8.27 (s, 1H), 8.03 (dd, *J* = 9.2, 2.4 Hz, 1H), 7.88 (d, *J* = 9.2 Hz, 1H), 7.48 (d, *J* = 8.4 Hz, 2H), 7.26 – 7.21 (m, 2H), 6.98 – 6.93 (m, 3H), 6.71 (d, *J* = 7.6 Hz, 2H), 6.00 (s, 1H), 3.86 (s, 3H), 2.98 (t, *J* = 5.2 Hz, 2H), 2.81 (t, *J* = 6.0 Hz, 2H), 1.86 (q, *J* = 6.0 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$)** δ 159.06, 157.88, 147.74, 146.64, 144.01, 142.84, 133.61, 131.50, 130.75, 129.99, 129.52, 129.30, 126.81, 126.51, 125.89, 124.86, 121.37, 118.58, 118.12, 116.74, 115.13, 113.80, 55.34, 27.88, 26.21, 22.29. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}N_3O_3$ for: 437.1739; Observed: 438.1817 $[M+H]^+$.

(E)-4-(4-Methoxybenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8h):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 12: 88; R_f (pet ether: ethyl acetate = 20: 80): 0.50;

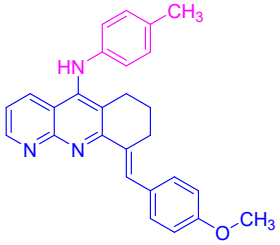


Yield= 81%, Yellow solid; M. P: 227.2-227.9 °C; IR (KBr, cm−1): 3356, 2922, 1591, 1519, 1104; **^{1}H NMR (400 MHz, $CDCL_3$+DMSO) δ** 8.18 (s, 1H), 8.14 (d, *J* =8.0 Hz, 1H), 7.87 (d, *J* = 8.8 Hz, 1H), 7.61 (t, *J* = 8.4 Hz, 1H), 7.48 (d, *J* = 8.8 Hz, 2H), 7.35 (d, *J* = 7.0 Hz, 1H), 7.25 (d, *J* = 8.8 Hz, 2H), 7.18 (d, *J* = 8.4 Hz, 2H), 7.03 (d, *J* = 8.0 Hz, 2H), 6.01 (s, 1H), 3.85 (s, 3H), 2.95 (t, *J* = 5.6 Hz, 2H), 2.73 (t, *J* = 6.4 Hz, 2H), 2.28 (s, 3H), 1.83 (t, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCL_3$+DMSO) δ** 173.95, 158.69, 154.74, 142.00, 138.62, 131.30, 131.00, 130.28, 129.72, 129.65, 129.28, 128.95, 128.75, 125.96, 125.03, 122.96,

117.08, 113.61, 55.23, 30.88, 28.06, 26.20, 22.61, 21.14. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{26}N_2O$ for: 406.2045; Observed: 407.2130 $[M+H]^+$. HPLC () t_R = 16.02, 93.13%.

(E)-9-(4-Methoxybenzylidene)-N-(p-tolyl)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridin-5-amine (8i):

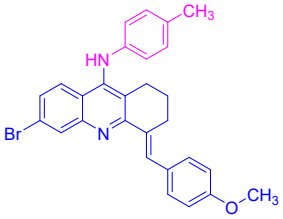
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 15: 85; R_f (pet ether: ethyl acetate = 30: 70): 0.50;



Yield= 71%, Yellow solid; M. P: 260.7-270.1 °C; **IR (KBr, cm−1):** 3231, 2910, 2856, 1591, 1539, 1249; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.96 (dd, *J* = 4.0, 1.6 Hz, 1H), 8.46 (s, 1H), 8.14 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.46 (d, *J* = 8.4 Hz, 2H), 7.18 (dd, *J* = 8.0, 4.0 Hz, 1H), 7.03 (d, *J* = 8.4 Hz, 2H), 6.93 (d, *J* = 8.8 Hz, 2H), 6.67 (d, *J* = 8.4 Hz, 2H), 6.15 (s, 1H), 3.83 (s, 3H), 2.97 – 2.92 (m, 2H), 2.75 (t, *J* = 6.0 Hz, 2H), 2.29 (s, 3H), 1.84 (p, *J* = 6.0 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.87, 158.07, 155.24, 152.86, 144.45, 141.78, 133.44, 132.84, 131.50, 130.97, 130.90, 130.27, 129.93, 123.54, 119.83, 117.42, 117.34, 113.70, 55.30, 28.00, 25.98, 22.37, 20.64. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{25}N_3O$ for: 407.1998; Observed: 408.2074 $[M+H]^+$.

(E)-6-Bromo-4-(4-methoxybenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8j):

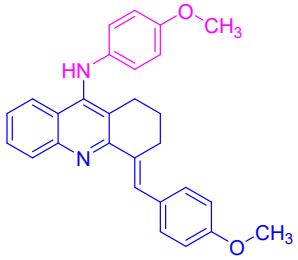
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 12: 88; R_f (pet ether: ethyl acetate = 20: 80): 0.60;



Yield= 78%, Yellow solid; M. P: 205.5-206 °C; **IR (KBr, cm−1):** 3304, 2924, 2853,1597, 1250, 539; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.28 (s, 1H), 8.18 (s, 1H), 7.62 (d, *J* = 8.8 Hz, 1H), 7.46 (d, *J* = 8.4 Hz, 2H), 7.37 (dd, *J* = 8.8, 2.0 Hz, 1H), 7.03 (d, *J* = 8.0 Hz, 2H), 6.96 – 6.93 (m, 2H), 6.64 (d, *J* = 8.4 Hz, 2H), 5.90 (s, 1H), 3.85 (s, 3H), 2.98 – 2.91 (m, 2H), 2.73 (t, *J* = 6.4 Hz, 2H), 2.29 (s, 3H), 1.84 (q, *J* = 6.4 Hz, 3H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.81, 156.13, 143.51, 141.81, 131.38, 131.10, 130.75, 130.30, 129.89, 129.79, 128.58, 128.28, 124.46, 123.38, 122.84, 121.64, 121.54, 120.91, 117.13, 113.68, 112.92, 55.30, 27.96, 25.95, 22.56, 20.63. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{25}BrN_2O$ for: 484.1150; Observed: 485.1125 $[M+H]^+$. HPLC () t_R = 15.566, 96.39%.

(E)-4-(4-Methoxybenzylidene)-N-(4-methoxyphenyl)-1,2,3,4-tetrahydroacridin-9-amine(8k):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 15: 85; R_f (pet ether: ethyl acetate = 25: 75): 0.50;

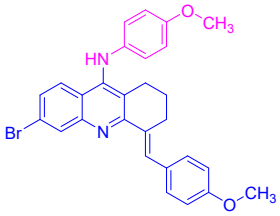


Yield= 85%, Yellow solid; M. P: 183.2-183.8 °C; **IR (KBr, cm−1):** 3342, 3069, 2982,2865, 1510, 1393, 1246, 1172; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.18 (s, 1H), 8.07 (d, *J* = 8.0 Hz, 1H), 7.74 (d, *J* = 8.4 Hz, 1H), 7.58 (ddd, *J* = 8.4, 6.8, 1.6 Hz, 1H), 7.45 (d, *J* = 8.4 Hz, 2H), 7.30 (ddd, *J* = 8.4,

6.8, 1.2 Hz, 1H), 6.93 (d, *J* = 8.8 Hz, 2H), 6.78 (d, *J* = 9.2 Hz, 2H), 6.71 (d, *J* = 9.2 Hz, 2H), 5.88 (s, 1H), 3.83 (s, 3H), 3.76 (s, 3H), 2.96 – 2.91 (m, 2H), 2.70 (t, *J* = 6.0 Hz, 2H), 1.82 (t, *J* = 6.0 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.62, 155.17, 154.47, 147.75, 143.65, 138.17, 134.87, 131.29, 130.61, 129.90, 128.78, 128.64, 124.94, 122.77, 122.54, 122.36, 118.98, 114.63, 113.63, 55.62, 55.30, 28.11, 26.11, 22.80. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{26}N_2O_2$ for: 422.1994; Observed: 423.2065 $[M+H]^+$. Elem. Anal. Calcd for $C_{28}H_{26}N_2O_2$: C, 79.59; H, 6.20; N, 6.63; Found: C, 79.64; H, 6.217; N, 6.65.

(E)-6-Bromo-4-(4-methoxybenzylidene)-N-(4-methoxyphenyl)-1,2,3,4-tetrahydroacridin-9-amine(8l):

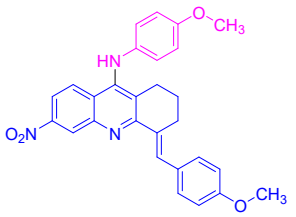
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 13:87; R_f (pet ether: ethyl acetate = 25: 75): 0.45;



Yield= 83%, Yellow solid; M. P: 173.8-174.2 °C; **IR (KBr, cm−1):** 3367, 3109, 2942,2845, 1568, 1335, 1236, 1182; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.27 (s, 1H), 8.18 (s, 1H), 7.58 (d, *J* = 9.2 Hz, 1H), 7.45 (d, *J* = 8.4 Hz, 2H), 7.33 (dd, *J* = 8.8, 2.0 Hz, 1H), 6.95 – 6.92 (m, 2H), 6.81 – 6.78 (m, 2H), 6.76 – 6.72 (m, 2H), 5.95 (s, 1H), 3.84 (s, 3H), 3.77 (s, 3H), 2.95 – 2.90 (m, 2H), 2.69 (t, *J* = 6.4 Hz, 2H), 1.84 (t, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.81, 154.91, 144.27, 137.62, 131.37, 130.29, 128.03, 124.45, 122.82, 121.92, 120.90, 119.61, 114.68, 113.69, 55.61, 55.31, 27.90, 25.94, 22.60. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{25}BrN_2O_2$ for: 500.1099; Observed: 501.1173 $[M+H]^+$. HPLC () t_R = 16.26, 94.46%.

(E)-4-(4-Methoxybenzylidene)-N-(4-methoxyphenyl)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine(8m):

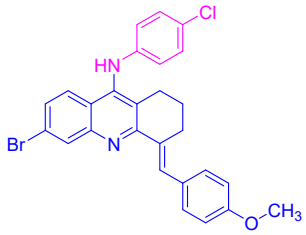
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 12: 88; R_f (pet ether: ethyl acetate = 25: 75): 0.50;



Yield= 90%, Yellow solid; M. P: 162.8-163.4 °C; **IR (KBr, cm^{-1}):** 3372, 3019, 2932,2834, 1508, 1343, 1236, 1172; **^{1}H NMR (400 MHz, $CDCl_3$)** δ 8.89 (d, *J* = 2.4 Hz, 1H), 8.25 (s, 1H), 7.96 (dd, *J* = 9.2, 2.4 Hz, 1H), 7.80 (d, *J* = 9.2 Hz, 1H), 7.46 (d, *J* = 8.8 Hz, 2H), 6.95 (d, *J* = 8.8 Hz, 2H), 6.81 (d, *J* = 9.2 Hz, 2H), 6.75 (d, *J* = 9.2 Hz, 2H), 5.97 (s, 1H), 3.85 (s, 3H), 3.78 (s, 3H), 2.95 (t, *J* = 6.2 Hz, 2H), 2.74 (t, j= 6.2 Hz, 2H), 1.86 (q, *J* = 6.2 Hz, 2H).**^{13}C NMR (100 MHz, $CDCl_3$)** δ 158.99, 157.51, 155.22, 147.57, 146.71, 144.12, 137.29, 133.81, 131.44, 130.42, 130.06, 125.87, 125.41, 124.85, 124.29, 119.89, 117.58, 114.79, 113.77, 55.61, 55.33, 27.79, 26.09, 22.38. **Mass (ESI-MS):** m/z Calculated $C_{28}H_{25}N_3O_4$ for: 467.1845; Observed: 468.1917 $[M+H]^+$. Elem. Anal. Calcd for $C_{28}H_{25}N_3O_4$: C, 71.93; H, 5.39; N, 8.99; Found: C, 71.93; H, 5.391; N, 8.90.

(E)-6-Bromo-N-(4-chlorophenyl)-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridin-9-amine(8n)

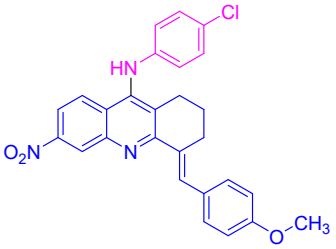
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;



Yield= 78%, Yellow solid; M. P: 87.0-87.8 °C; **IR (KBr, cm−1):** 3380, 3295, 2932,1599, 1250, 1173, 1089, 815; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.27 (s, 1H), 8.18 (s, 1H), 7.57 (dd, *J* = 9.2, 4.4 Hz, 1H), 7.45 (d, *J* = 8.8 Hz, 2H), 7.38 (dd, *J* = 9.2, 2.0 Hz, 1H), 7.15 (d, *J* = 8.8 Hz, 2H), 6.94 (d, *J* = 8.8 Hz, 2H), 6.59 (dd, *J* = 8.9, 2.2 Hz, 2H), 5.86 (s, 1H), 3.84 (s, 3H), 2.96 – 2.91 (m, 2H), 2.70 (t, *J* = 6.2 Hz, 2H), 1.82 (t, *J* = 6.2 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 158.88, 156.45, 148.37, 143.08, 142.30, 134.03, 131.95, 131.39, 130.19, 129.90, 129.34, 128.68, 125.46, 124.79, 124.20, 122.96, 122.07, 117.34, 113.73, 55.32, 27.98, 26.00, 22.46. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{22}BrClN_2O$ for: 504.0604; Observed: 505.0668 $[M+H]^+$.

(E)-N-(4-Chlorophenyl)-4-(4-methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine(8o):

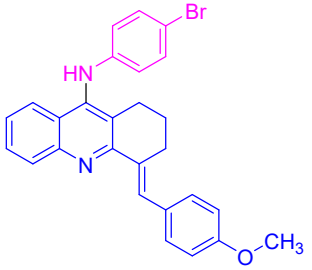
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;



Yield= 81%, Yellow solid; M. P: 162.8 – 163.4 °C; **IR (KBr, cm^{-1}):** 3382, 3101, 2972,2843, 1567, 1356, 1264, 1092; **^{1}H NMR (400 MHz, $CDCl_3$)** δ 8.94 (d, *J* = 2.4 Hz, 1H), 8.26 (s, 1H), 8.04 (dd, *J* = 9.2, 2.4 Hz, 1H), 7.85 (d, *J* = 9.2 Hz, 1H), 7.48 (d, *J* = 8.4 Hz, 2H), 7.18 (d, *J* = 8.8 Hz, 2H), 6.96 (d, *J* = 8.8 Hz, 2H), 6.64 (d, *J* = 8.8 Hz, 2H), 6.04 (s, 1H), 3.86 (s, 3H), 2.97 (m, 2H), 2.79 (t, *J* = 6.2 Hz, 2H), 1.90 – 1.84 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$)** δ 159.14, 157.93, 147.81, 146.54, 142.64, 142.44, 133.28, 131.53, 131.09, 129.87, 129.48, 129.12, 127.15, 126.41, 126.15, 125.82, 124.62, 118.37, 117.74, 116.24, 113.82, 55.34, 27.85, 26.28, 22.21. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{22}ClN_3O_3$ for: 471.1350; Observed: 472.1429 $[M+H]^+$.

(E)-N-(4-Bromophenyl)-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridin-9-amine(8p):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 12: 88; R_f (pet ether: ethyl acetate = 20: 80): 0.48;

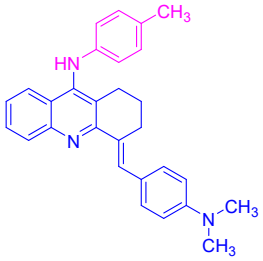


Yield= 80%,Yellow solid; M. P: 176.4-177.0 °C; **IR (KBr, cm^{-1}):** 3354, 3097, 2979, 2865, 1589, 1343, 1236, 1162; **^{1}H NMR (400 MHz, $CDCl_3$)** δ 8.19 (s, 1H), 8.10 (d, *J* = 8.4 Hz, 1H), 7.76 (d, *J* = 8.8 Hz, 1H), 7.62 (t, *J* = 8.4 Hz, 1H), 7.46 (d, *J* = 8.8 Hz, 2H), 7.39 – 7.34 (m, 1H), 7.29 (d, *J* = 8.8 Hz, 2H), 7.22 (d, *J* = 8.8 Hz, 1H), 6.94 (d, *J* = 8.8 Hz, 2H), 6.55 (dd, *J* = 8.8, 2.4 Hz, 3H), 5.89 (s,

1H), 3.85 (s, 3H), 2.98 – 2.92 (m, 2H), 2.75 (t, *J* = 6.2 Hz, 2H), 1.87 – 1.81 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$)** δ 158.73, 155.46, 147.70, 145.44, 143.88, 141.84, 134.42, 132.15, 132.02, 131.34, 130.42, 129.92, 129.28, 128.95, 125.59, 124.88, 123.62, 122.44, 117.48, 116.72, 113.67, 112.18, 110.21, 55.31, 28.12, 26.10, 22.63. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}BrN_2O$ for: 470.0994; Observed: 471.1069 $[M+H]^+$.

(E)-4-(4-(Dimethylamino)benzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8q):

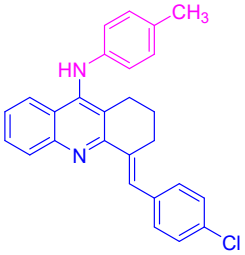
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 20: 80; R_f (pet ether: ethyl acetate = 30: 70): 0.40;



Yield= 79%, Yellow solid; M. P: 187.1-187.6 °C; **IR (KBr, cm−1):** 3303,3010,2941, 2868, 1569, 1523,1209; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.16 (s, 1H), 8.10 (d, *J* = 8.0 Hz, 1H), 7.76 (d, *J* = 8.4 Hz, 1H), 7.58 (t, *J* = 7.6 Hz, 1H), 7.46 (d, *J* = 8.4 Hz, 2H), 7.30 (t, *J* = 7.6 Hz, 1H), 7.01 (d, *J* = 8.0 Hz, 2H), 6.74 (d, *J* = 8.4 Hz, 2H), 6.63 (d, *J* = 8.0 Hz, 2H), 5.92 (s, 1H), 2.99 (s, 6H), 2.97 (t, *J* = 5.6 Hz, 2H), 2.71 (t, *J* = 5.6 Hz, 2H), 2.27 (s, 3H), 1.84 – 1.78 (m, 2H). **^{13}C NMR (101 MHz, $CDCl_3$) δ** 155.92, 149.64, 147.73, 142.96, 142.42, 132.73, 131.55, 130.13, 129.96, 129.72, 126.29, 125.09, 123.80, 123.35, 122.75, 116.83, 112.04, 40.56, 28.53, 26.31, 22.90, 20.79. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}ClN_2$ for: 410.1550; Observed: 411.1620 $[M+H]^+$.

(E)-4-(4-Chlorobenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8r):

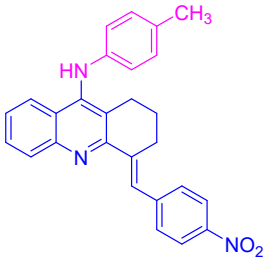
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;



Yield= 81%, Yellow solid; M. P: 205.2-205.8 °C; **IR (KBr, cm^{-1}):** 3198, 3012, 2929, 2967, 1510, 812; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.22 (s, 1H), 8.13 (d, *J* = 8.4 Hz, 1H), 7.82 (d, *J* = 9.2 Hz, 1H), 7.67 – 7.62 (m, 1H), 7.45 (d, *J* = 8.4 Hz, 2H), 7.39 (m, 3H), 7.06 (d, *J* = 8.0 Hz, 2H), 6.68 (d, *J* = 8.4 Hz, 2H), 5.96 (s, 1H), 2.96 – 2.91 (m, 2H), 2.78 (t, *J* = 6.2 Hz, 2H), 2.32 (s, 3H), 1.87 (q, *J* = 6.4 Hz, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.50, 143.37, 141.97, 136.97, 136.34, 132.69, 131.12, 130.38, 129.84, 128.94, 128.36, 127.93, 125.43, 123.36, 122.66, 116.95, 28.03, 26.09, 22.68, 20.65. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}ClN_2$ for: 410.1550; Observed: 411.1620 $[M+H]^+$.

(E)-4-(4-Nitrobenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8s):

The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 20: 80; R_f (pet ether: ethyl acetate = 30: 70): 0.45;

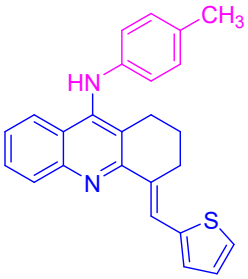


Yield= 72%, Yellow solid; M. P: 189.7-190 °C; **IR (KBr, cm^{-1}):** 3379, 2927, 2864, 1589, 1513, 1336; **^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.29 (s, 1H), 8.25 (d, *J* = 8.8 Hz, 2H), 8.09 (d, *J* = 8.4 Hz, 1H), 7.81 (d, *J* = 7.6 Hz, 1H), 7.64 (m, 2H), 7.61 (m, 1H), 7.38 (ddd, *J* = 8.2, 6.8, 1.2 Hz, 1H), 7.04 (d, *J* = 8.0 Hz, 2H), 6.67 (d, *J* = 8.4 Hz, 2H), 5.97 (s, 1H), 2.97 – 2.92 (m,

2H), 2.78 (t, *J* = 6.2 Hz, 2H), 2.29 (s, 3H), 1.90 – 1.85 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 153.67, 147.62, 146.25, 144.82, 143.66, 141.85, 140.12, 130.58, 130.34, 129.93, 129.08, 126.71, 125.77, 123.48, 122.68, 117.10, 28.25, 26.05, 22.65, 20.64. **Mass (ESI-MS):** m/z Calculated $C_{27}H_{23}N_3O_2$ for: 421.1790; Observed: 422.1866 $[M+H]^+$. Elem. Anal. Calcd for $C_{27}H_{23}N_3O_2$: C, 76.94; H, 5.50; N, 9.97; Found: C, 76.86; H, 5.532; N, 9.89.

(E)-4-(Thiophen-2-ylmethylene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8t):

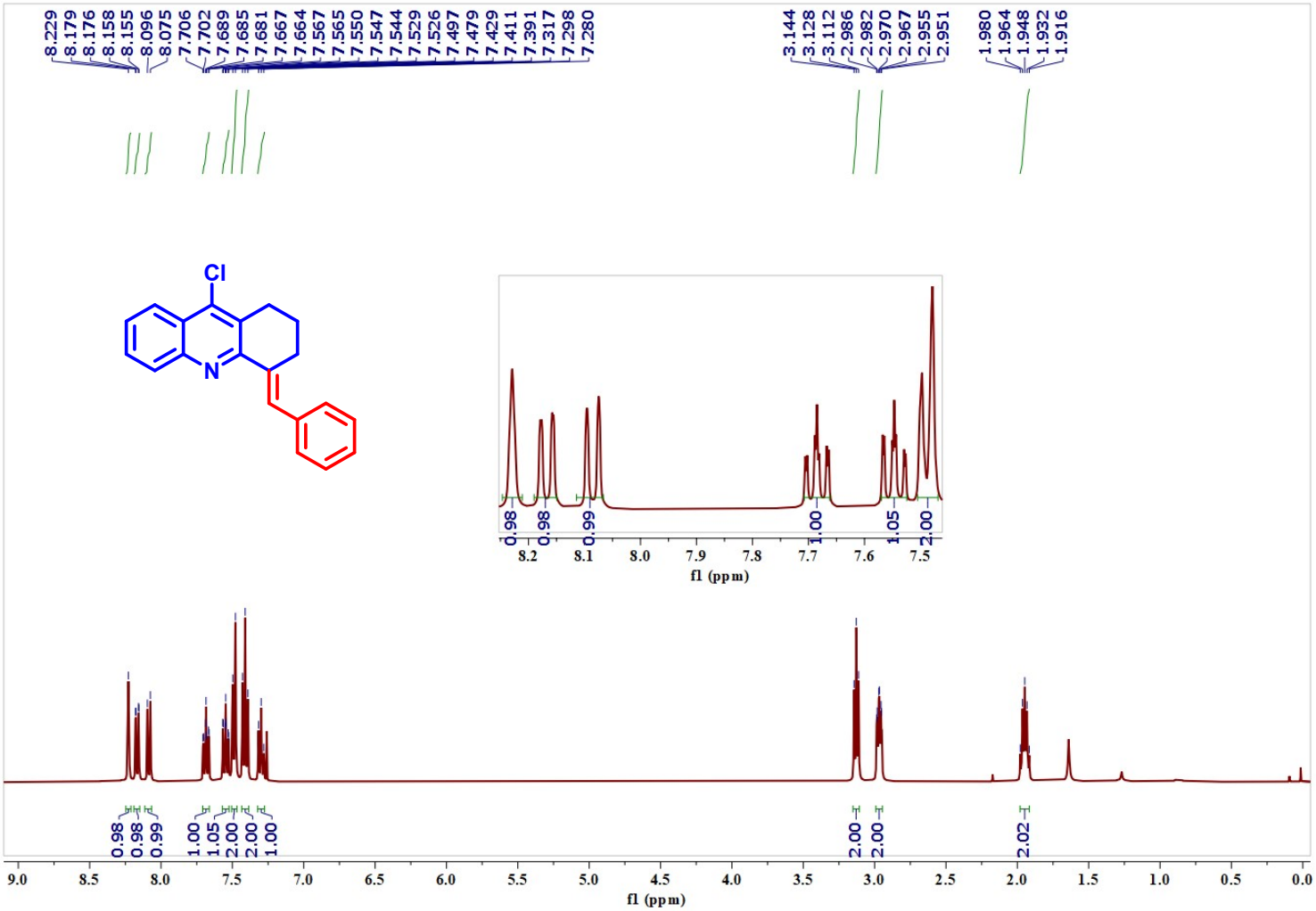
The crude product was purified by column chromatography on silica gel 100-200 mesh using pet ether: ethyl acetate = 10: 90; R_f (pet ether: ethyl acetate = 20: 80): 0.50;

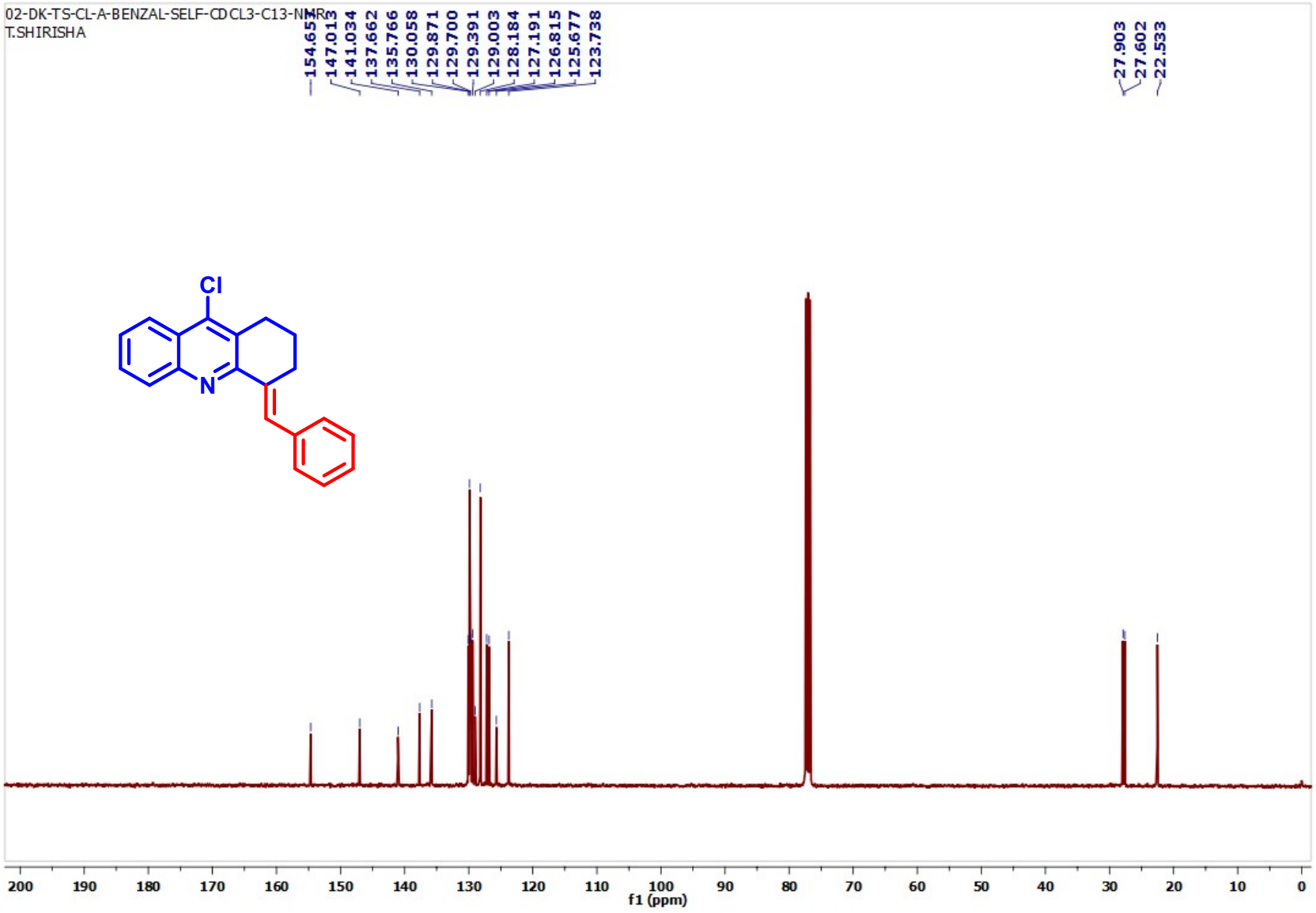


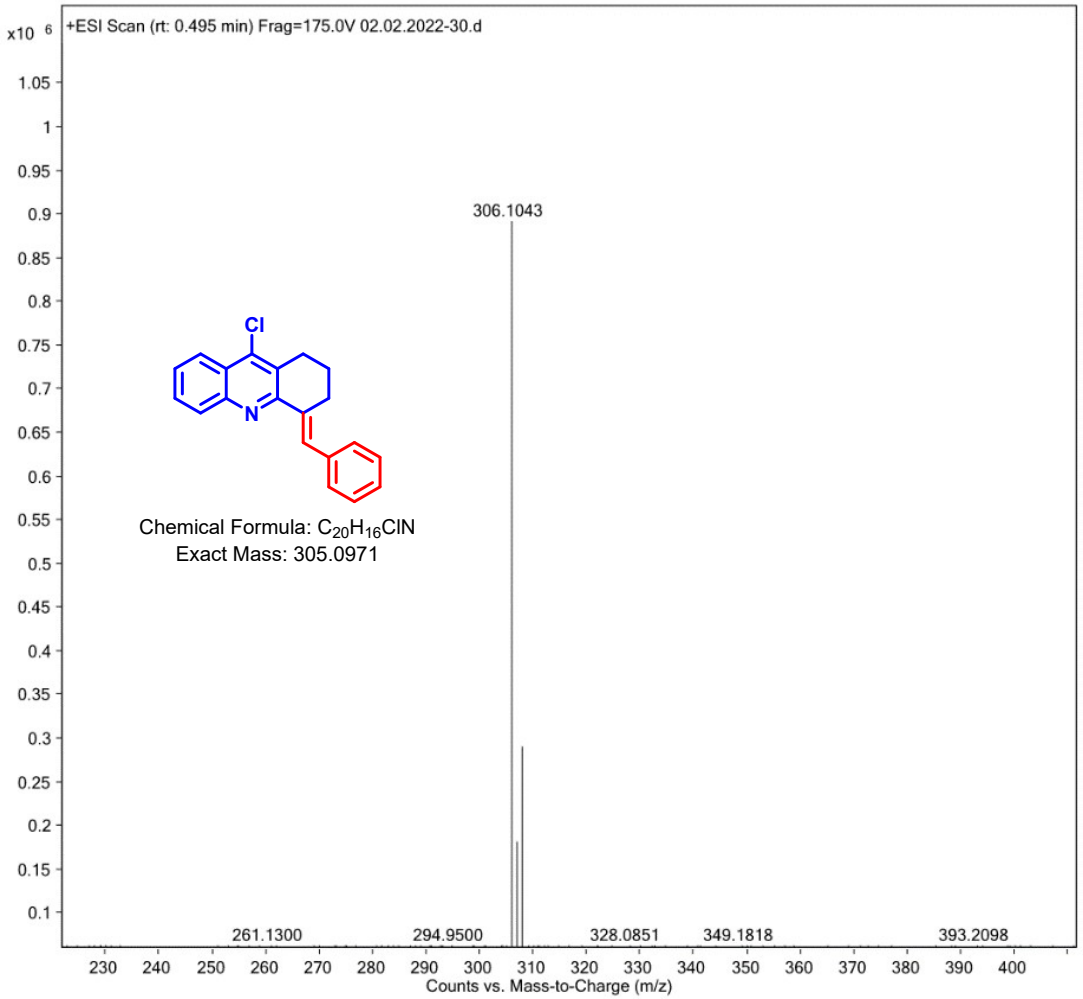
Yield= 85%, Yellow solid; M. P: 188.9-189.4 °C; **IR (KBr, cm^{-1}):** 3301,3100,2931, 2860, 1570, 1513,1209;**^{1}H NMR (400 MHz, $CDCl_3$) δ** 8.33 (s, 1H), 8.02 (d, *J* = 8.4 Hz, 1H), 7.70 (d, *J* = 8.0 Hz, 1H), 7.52 (t, *J* = 7.0 Hz, 1H), 7.31 (d, *J* = 5.1 Hz, 1H), 7.27 – 7.23 (m, 2H), 7.03 (dd, *J* = 5.1, 3.7 Hz, 1H), 6.94 (d, *J* = 8.2 Hz, 2H), 6.55 (d, *J* = 8.4 Hz, 2H), 5.89 (s, 1H), 2.89 (t, *J* = 5.5 Hz, 2H), 2.63 – 2.58 (m, 2H), 2.19 (s, 3H), 1.82 – 1.76 (m, 2H). **^{13}C NMR (100 MHz, $CDCl_3$) δ** 154.99, 147.67, 142.69, 142.14, 141.29, 133.55, 130.16, 130.16, 128.86, 127.23, 126.84, 125.30, 123.93, 123.28, 122.86, 122.43, 116.70, 28.63, 26.11, 22.11, 20.64. **Mass (ESI-MS):** m/z Calculated $C_{25}H_{22}N_2S$ for: 382.1502; Observed: 383.1578 $[M+H]^+$. Elem. Anal. Calcd for $C_{25}H_{22}N_2S$: C, 78.50; H, 5.80; N, 7.32; S, 8.38; Found: C, 78.38; H, 5.697; N, 7.32; S, 7.831.

4. NMR and HRMS spectra

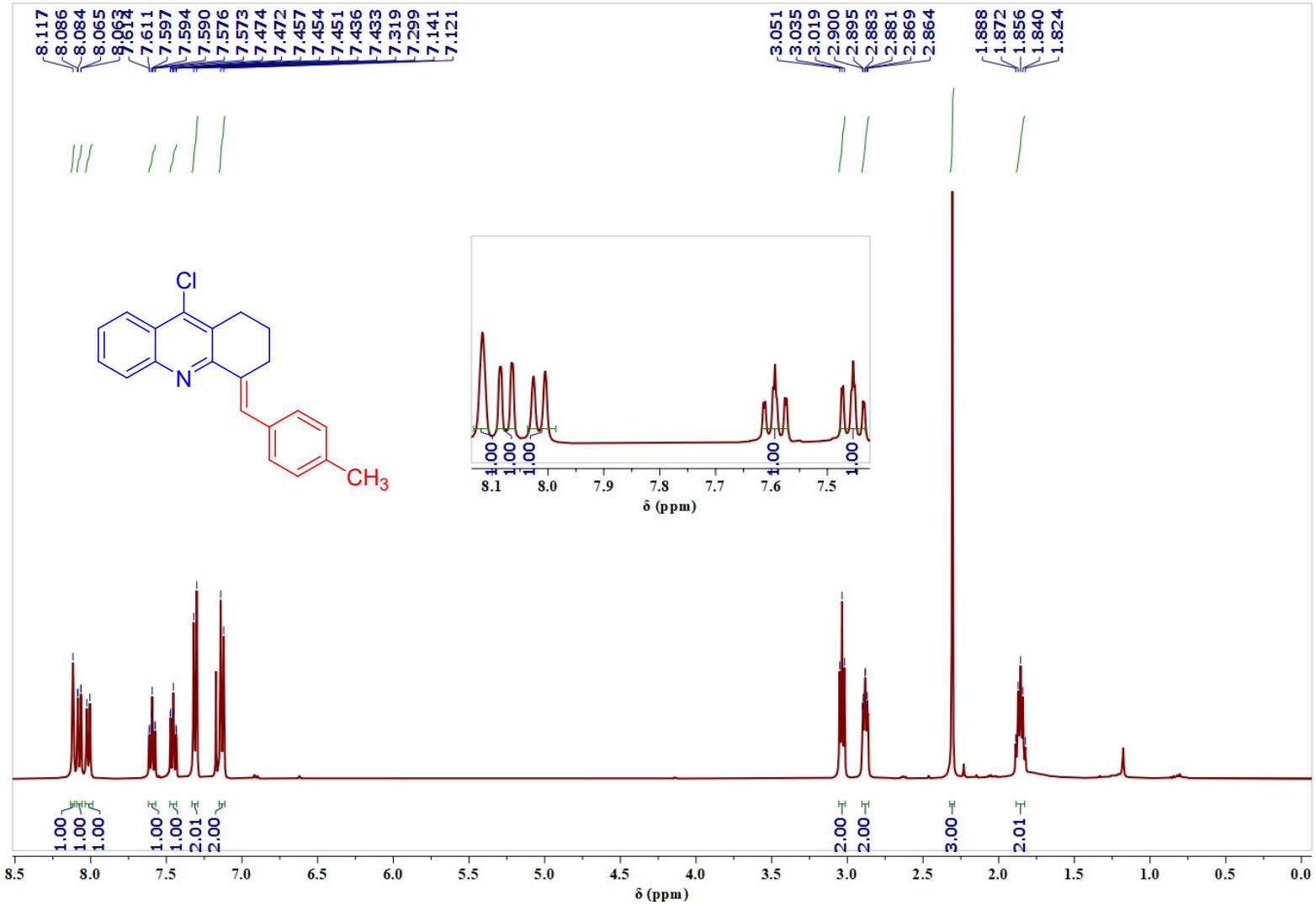
(E)-4-Benzylidene-9-chloro-1,2,3,4-tetrahydroacridine (5a):

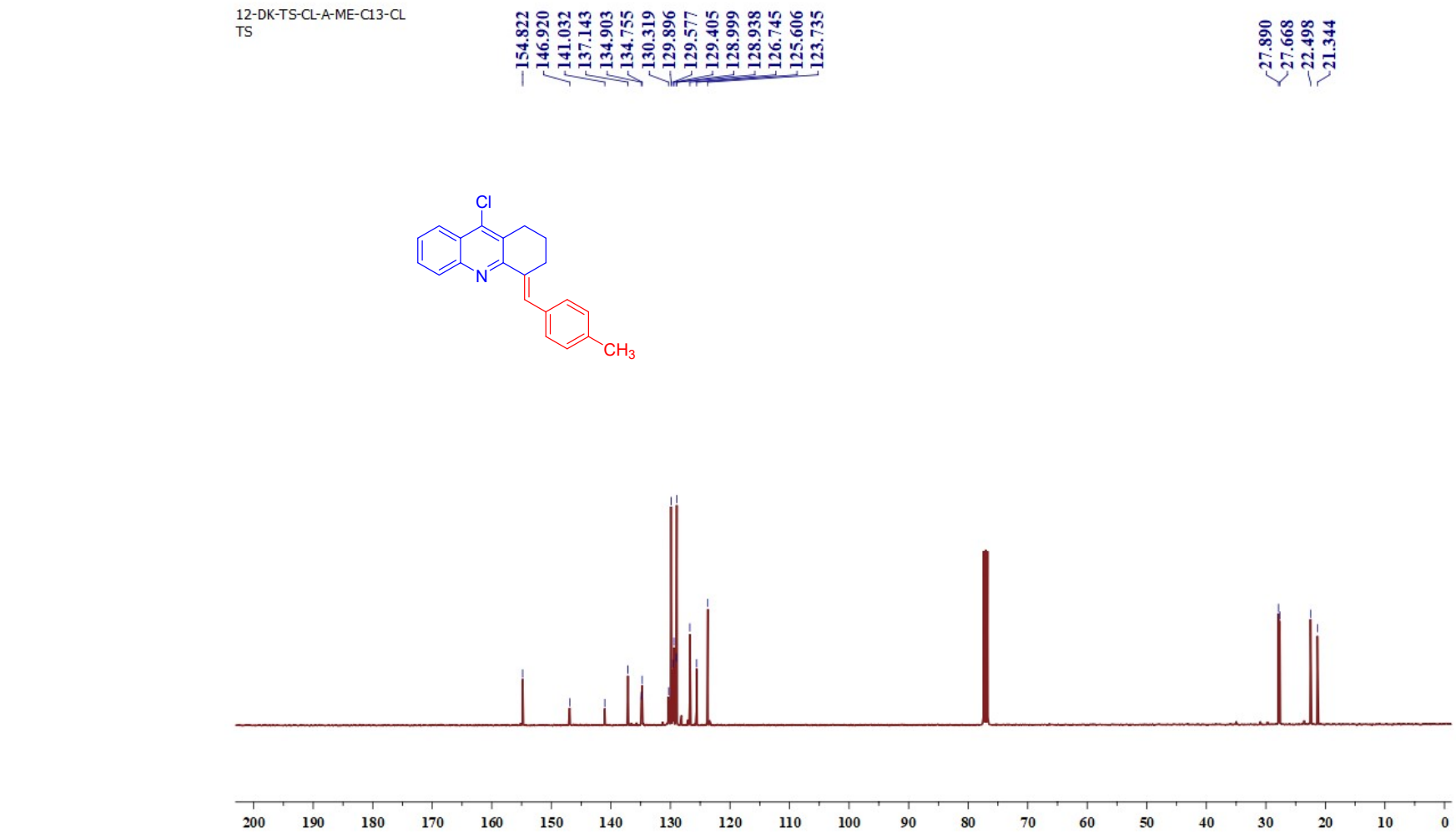


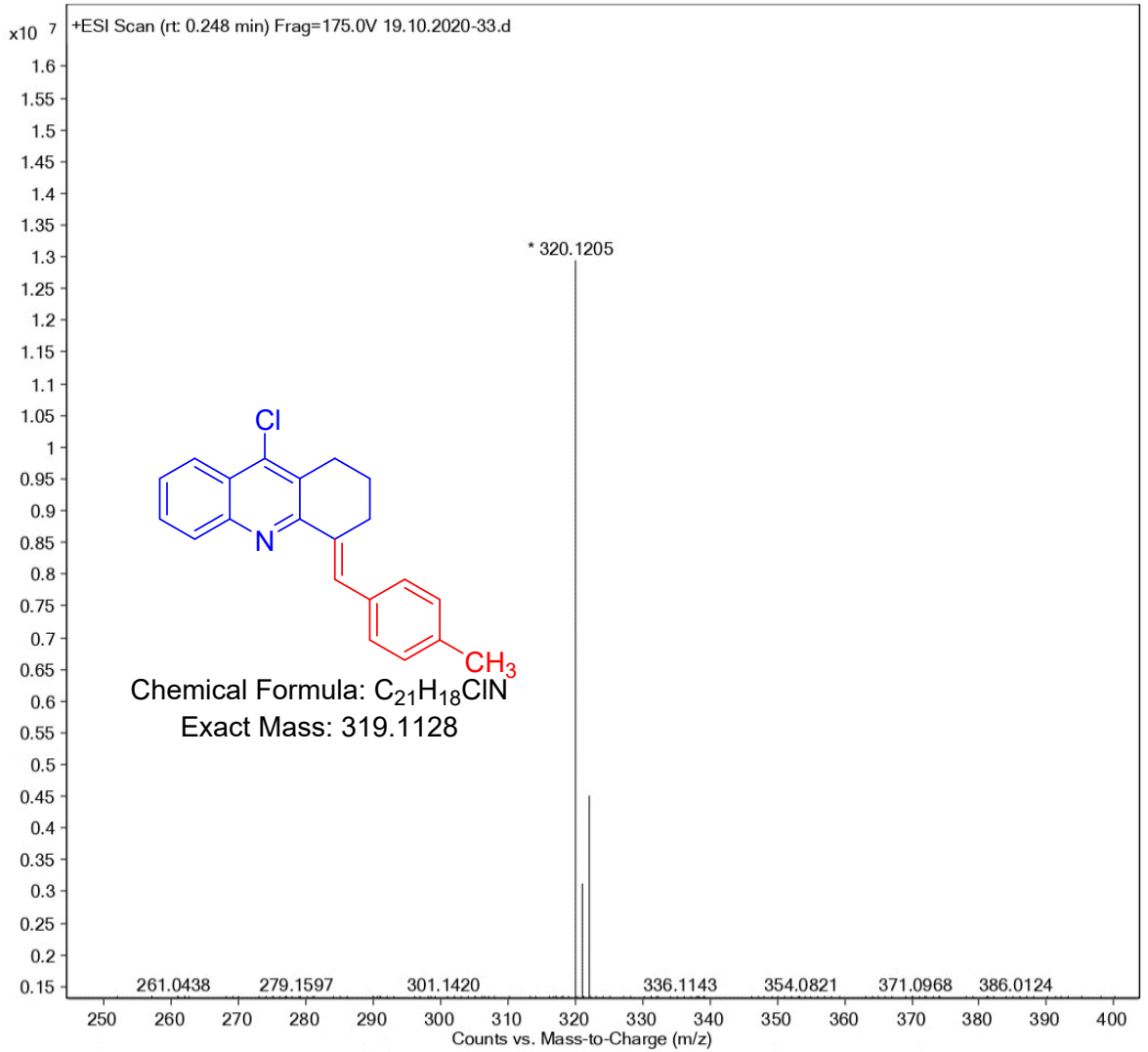

02-DK-TS-CL-A-BENZAL-SELF-CDCL3-C13-NMR
T.SHIRISHA
154.657
147.013
141.034
137.662
135.766
130.058
129.871
129.700
129.391
129.003
128.184
127.191
126.815
125.677
123.738
27.903
27.602
22.533
Cl
N
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.495 min) Frag=175.0V 02.02.2022-30.d
x10 6
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
306.1043
Cl
N
Chemical Formula: C20H16ClN
Exact Mass: 305.0971
261.1300
294.9500
328.0851
349.1818
393.2098
230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400
Counts vs. Mass-to-Charge (m/z)

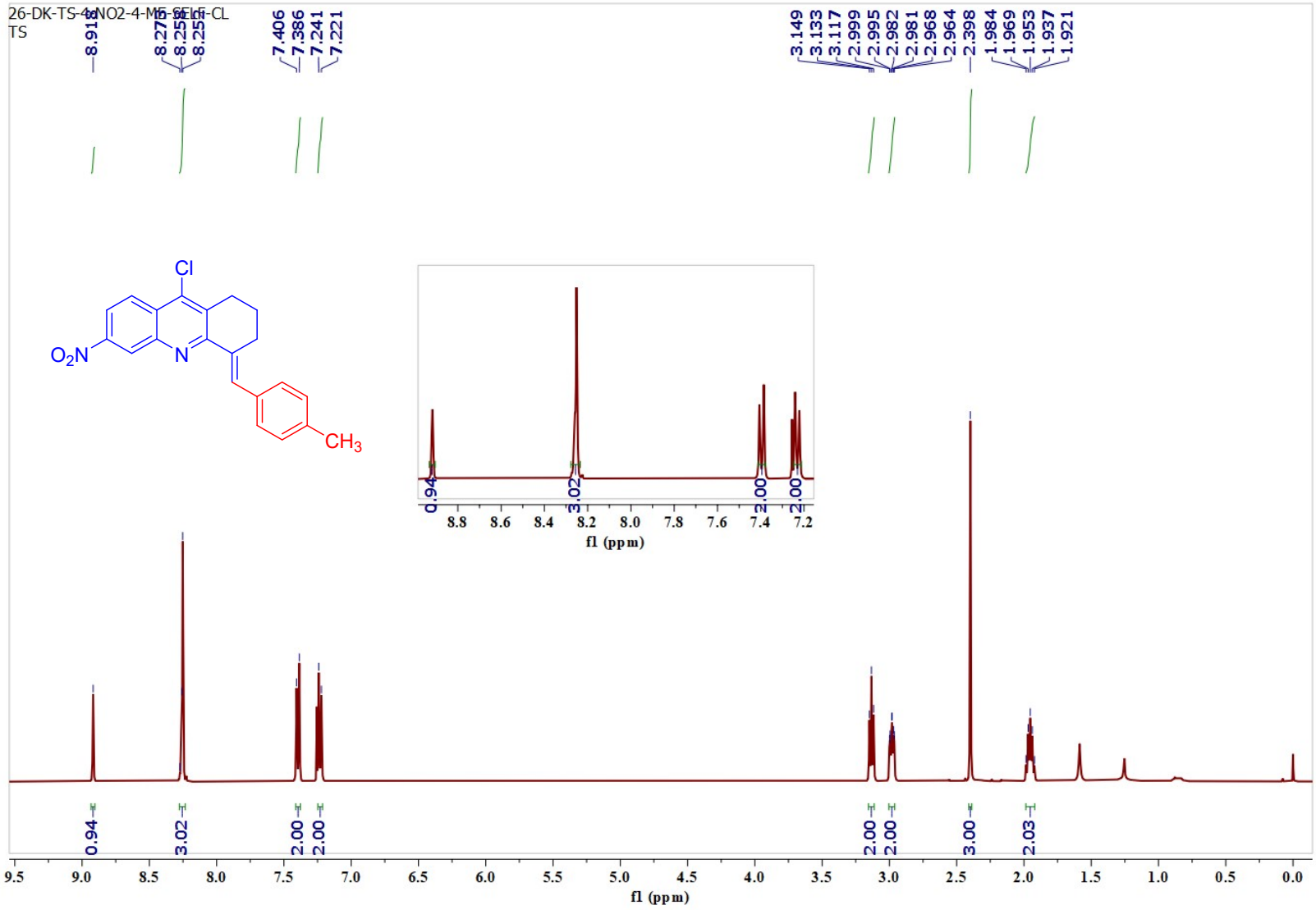
(E)-9-Chloro-4-(4-methylbenzylidene)-1,2,3,4-tetrahydroacridine (5b):

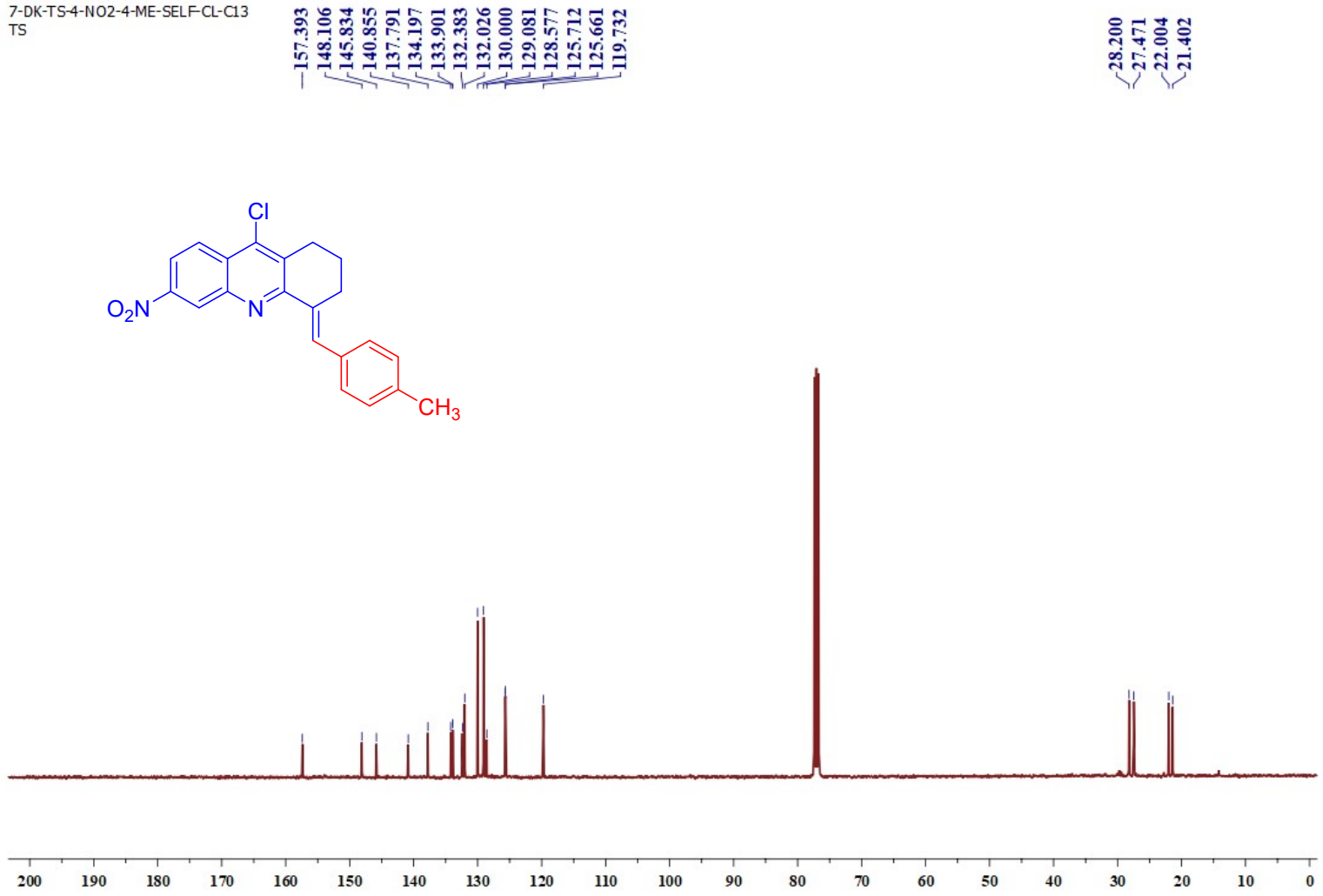


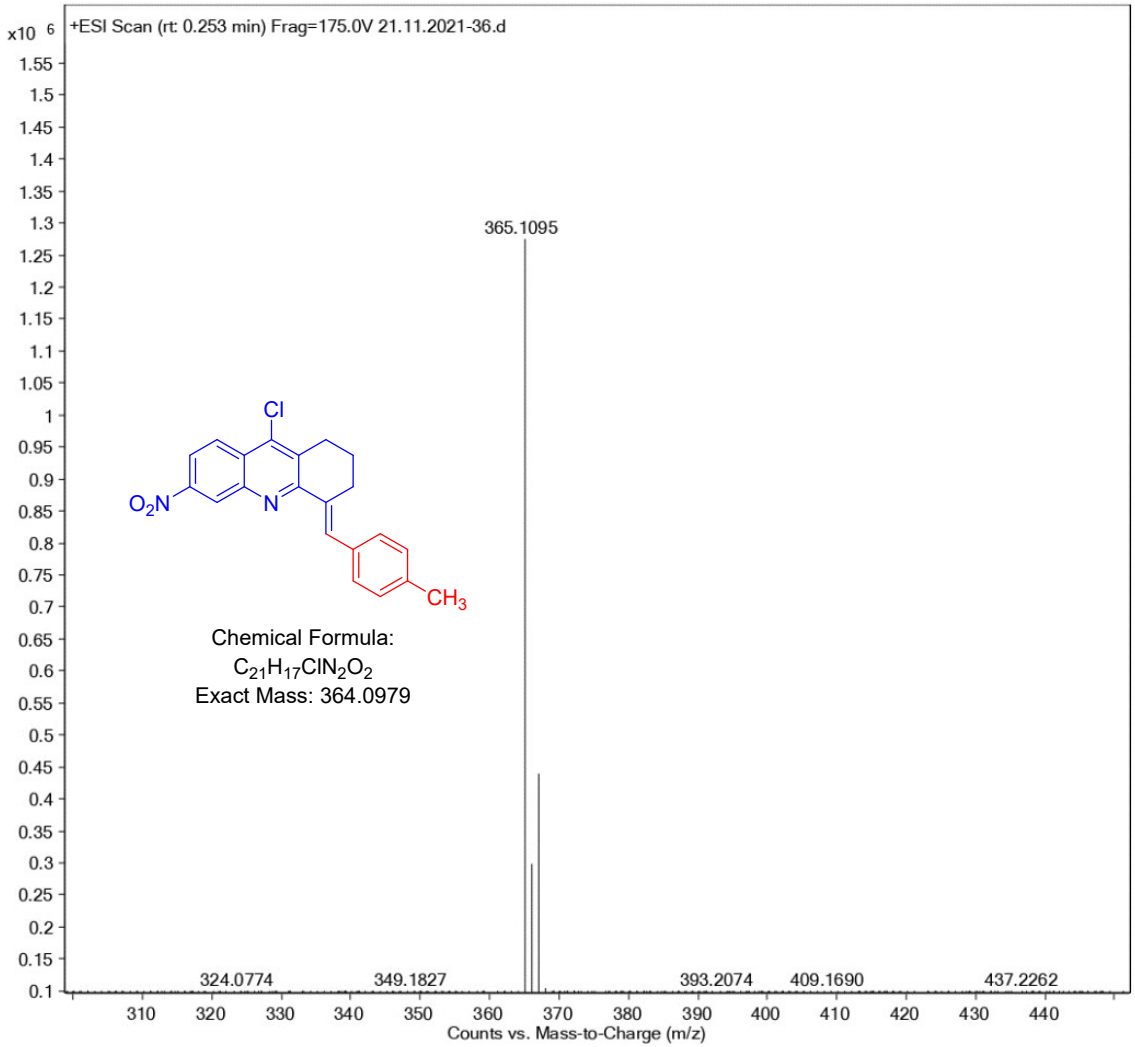

12-DK-TS-CL-A-ME-C13-CL
TS
154.822
146.920
141.032
137.143
134.903
134.755
130.319
129.896
129.577
129.405
128.999
128.938
126.745
125.606
123.735
27.890
27.668
22.498
21.344
Cl
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.248 min) Frag=175.0V 19.10.2020-33.d
x10 7
* 320.1205
Cl
N
CH3
Chemical Formula: C21H18ClN
Exact Mass: 319.1128
261.0438
279.1597
301.1420
336.1143
354.0821
371.0968
386.0124
Counts vs. Mass-to-Charge (m/z)

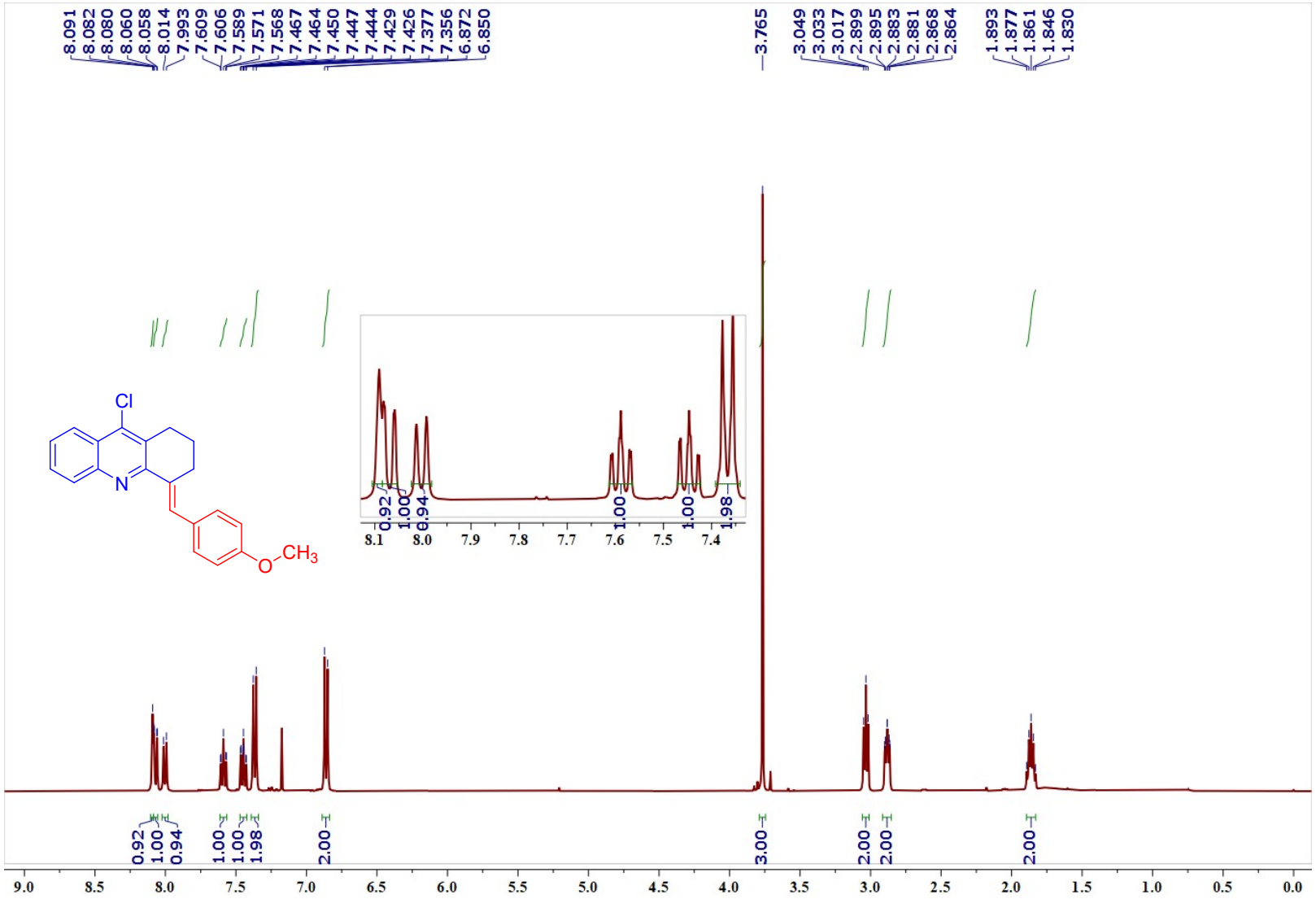
(E)-9-Chloro-4-(4-methylbenzylidene)-6-nitro-1,2,3,4-tetrahydroacridine (5c):

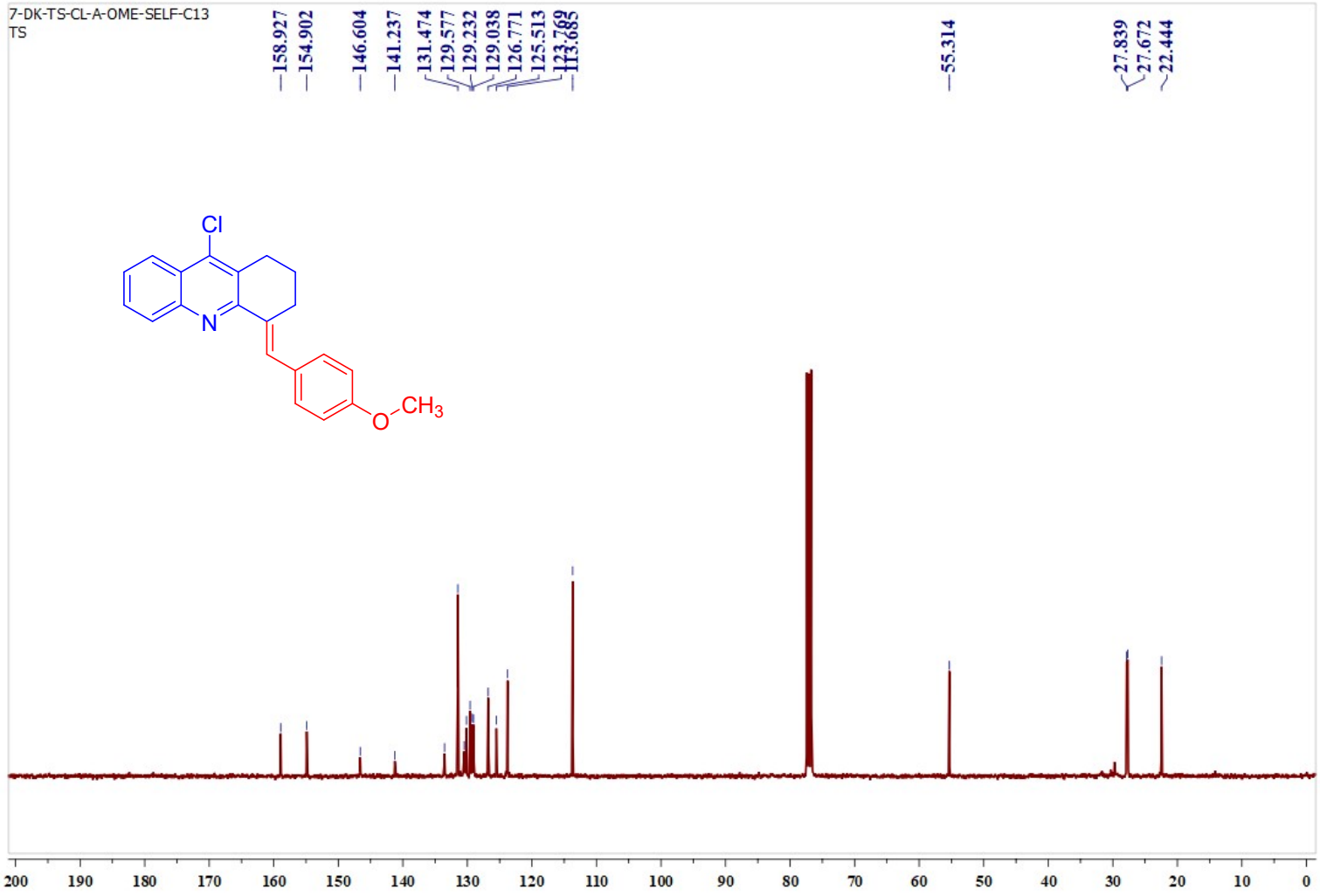


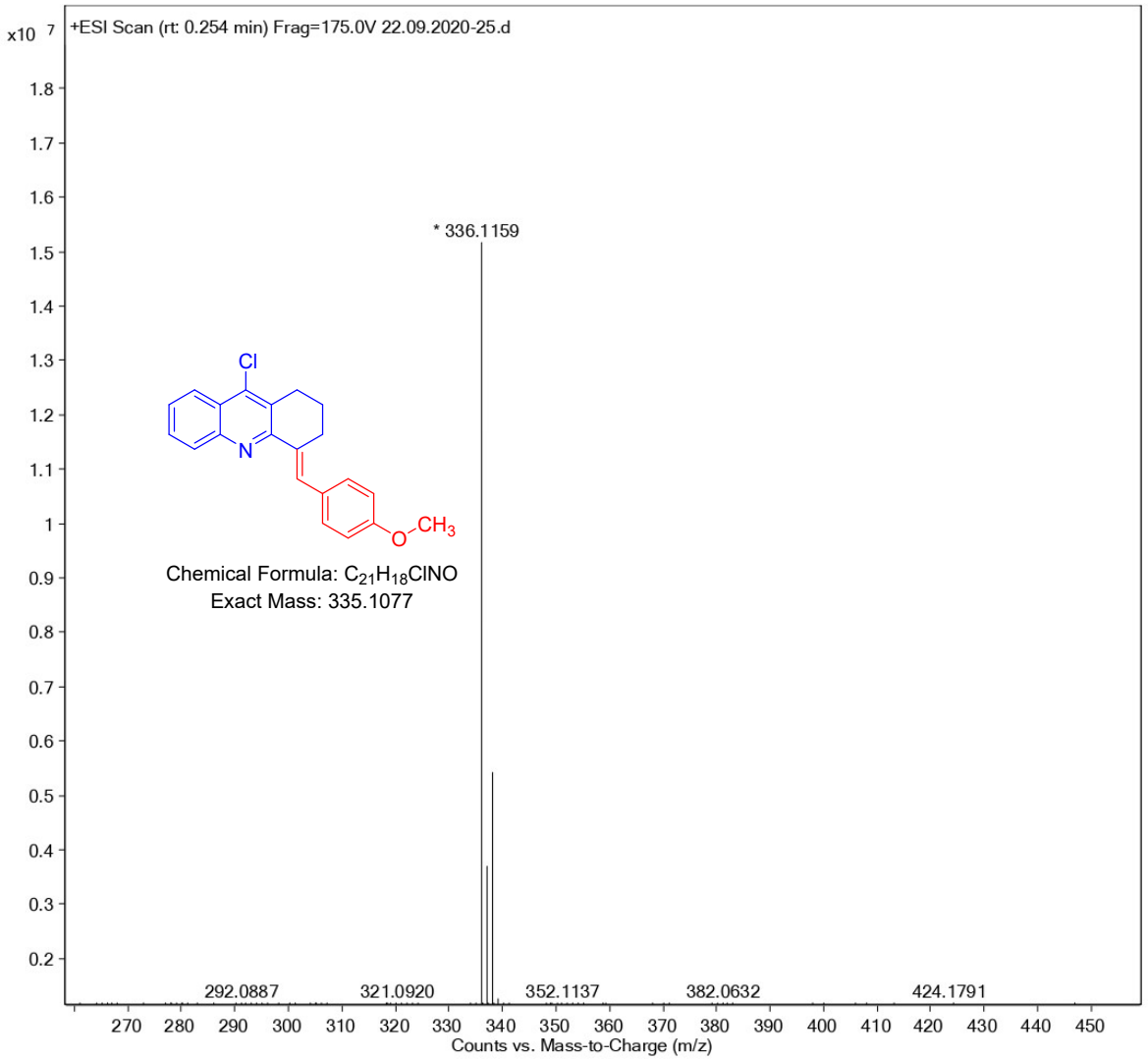

7-DK-TS-4-NO2-4-ME-SELF-CL-C13
TS
157.393
148.106
145.834
140.855
137.791
134.197
133.901
132.383
132.026
130.000
129.081
128.577
125.712
125.661
119.732
28.200
27.471
22.004
21.402
Cl
O2N
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.253 min) Frag=175.0V 21.11.2021-36.d
x10 6
1.55
1.5
1.45
1.4
1.35
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
365.1095
Cl
O2N
N
CH3
Chemical Formula:
C21H17ClN2O2
Exact Mass: 364.0979
324.0774
349.1827
393.2074
409.1690
437.2262
310
320
330
340
350
360
370
380
390
400
410
420
430
440
Counts vs. Mass-to-Charge (m/z)

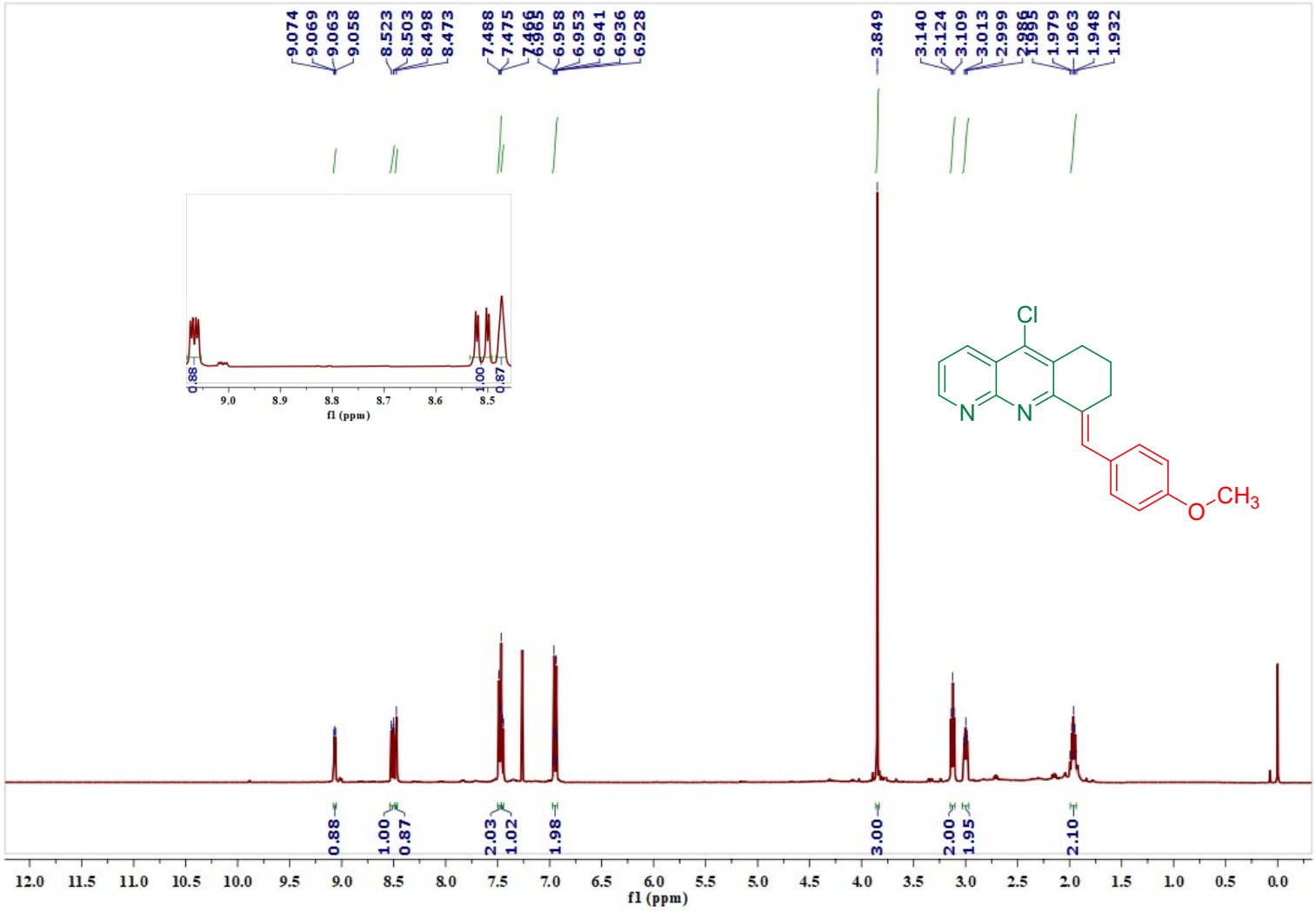
(E)-9-Chloro-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5d):

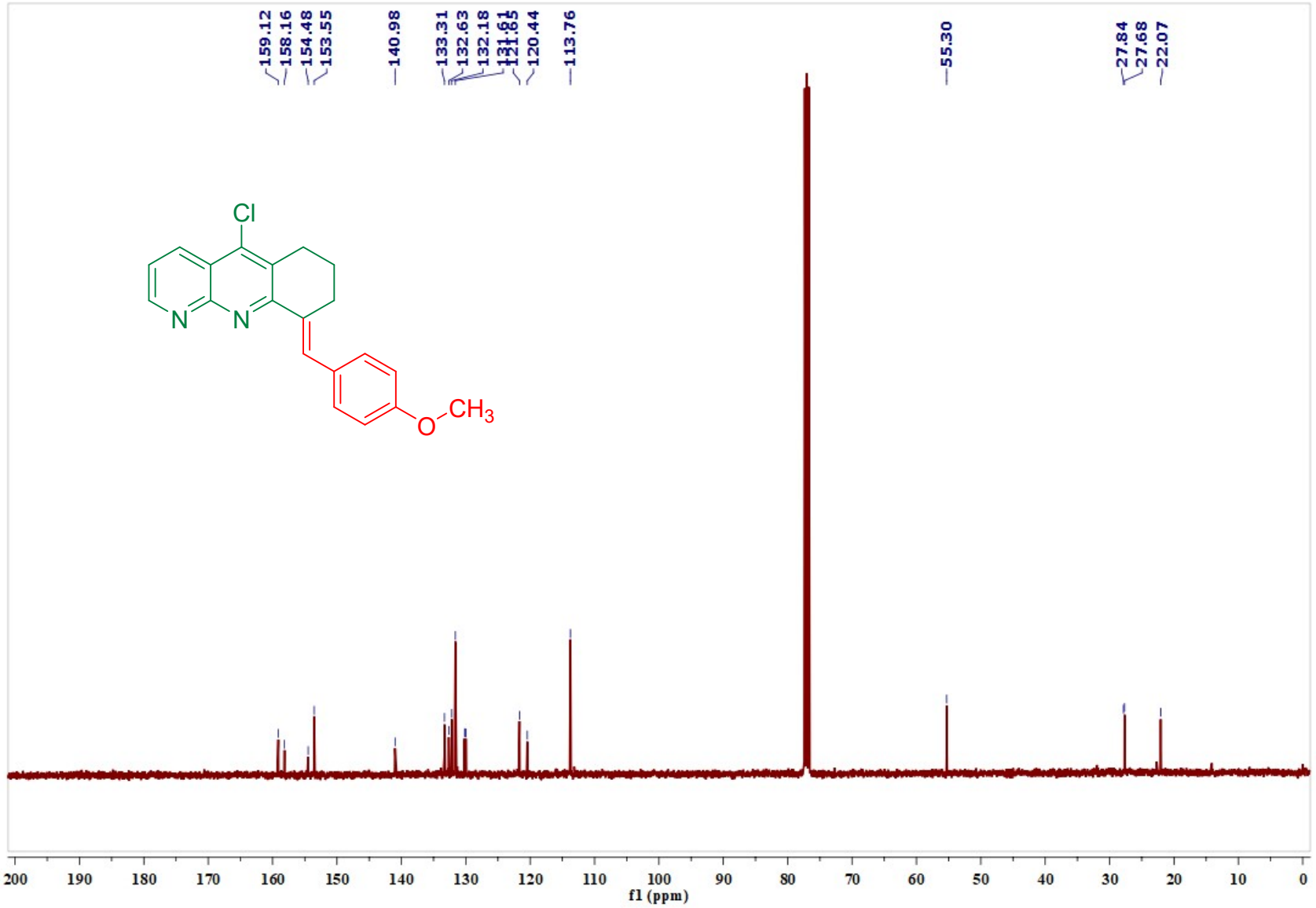


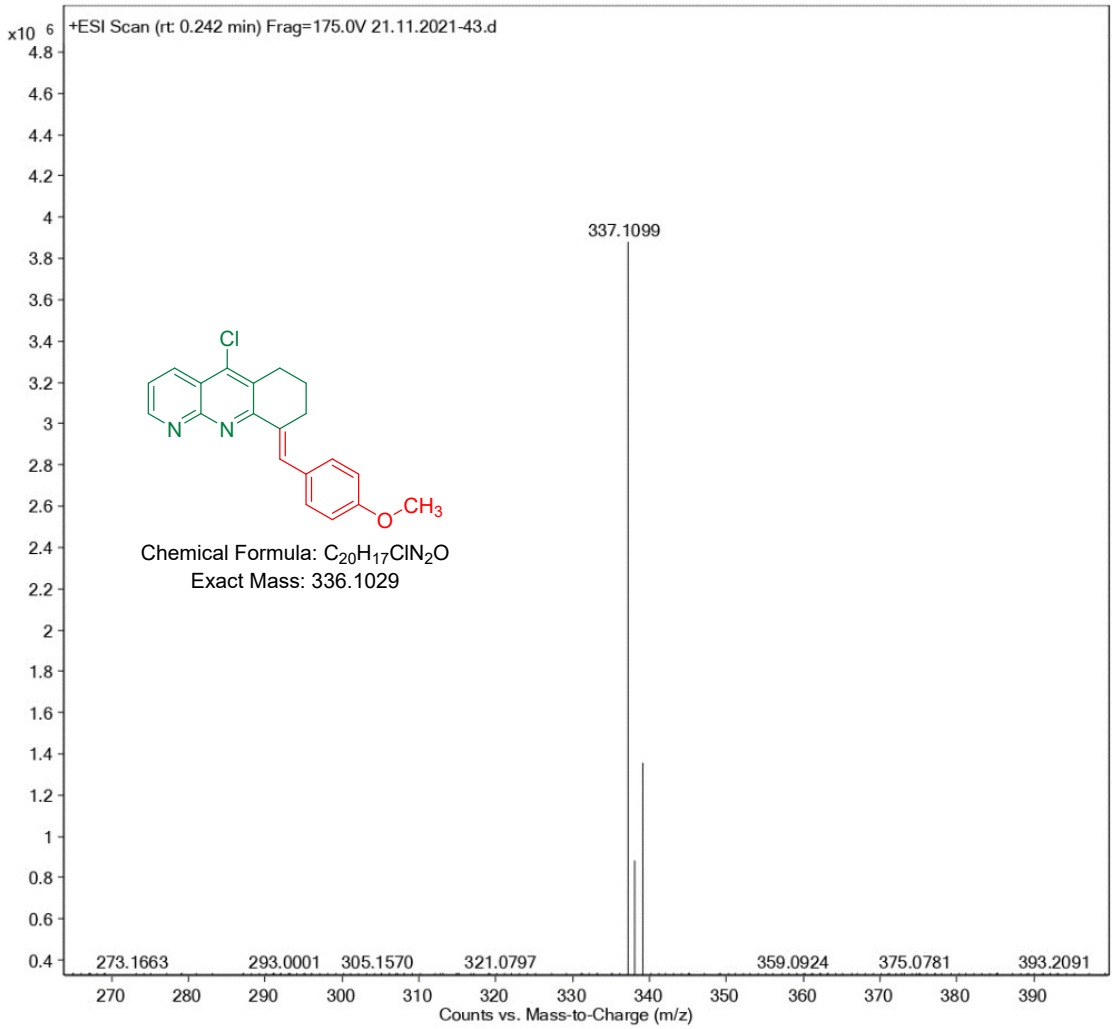

7-DK-TS-CL-A-OME-SELF-C13
TS
158.927
154.902
146.604
141.237
131.474
129.577
129.232
129.038
126.771
125.513
123.769
113.685
55.314
27.839
27.672
22.444
Cl
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.254 min) Frag=175.0V 22.09.2020-25.d
x10 7
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
* 336.1159
Cl
N
O
CH3
Chemical Formula: C21H18ClNO
Exact Mass: 335.1077
292.0887
321.0920
352.1137
382.0632
424.1791
270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450
Counts vs. Mass-to-Charge (m/z)

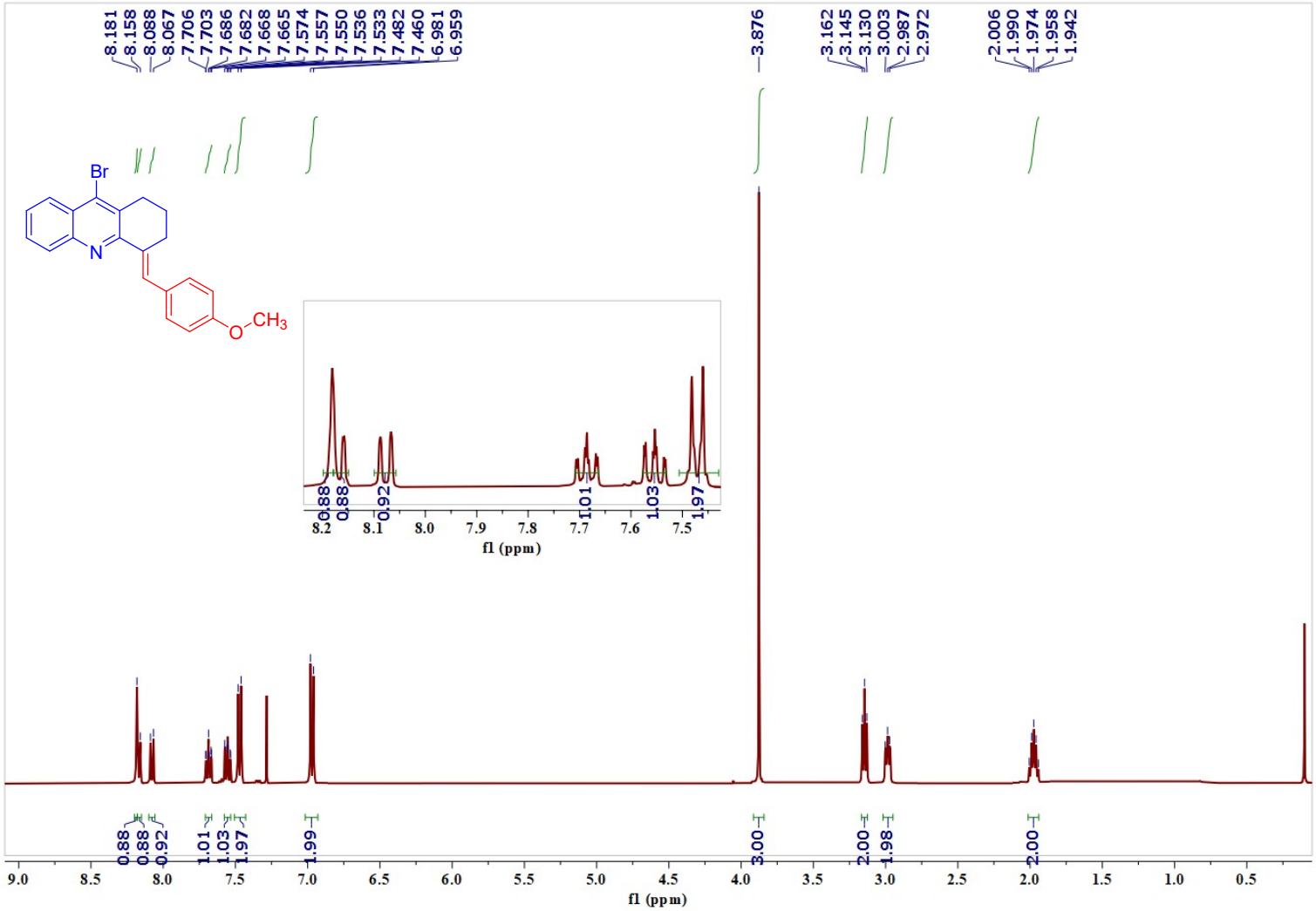
(E)-5-Chloro-9-(4-methoxybenzylidene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5e):

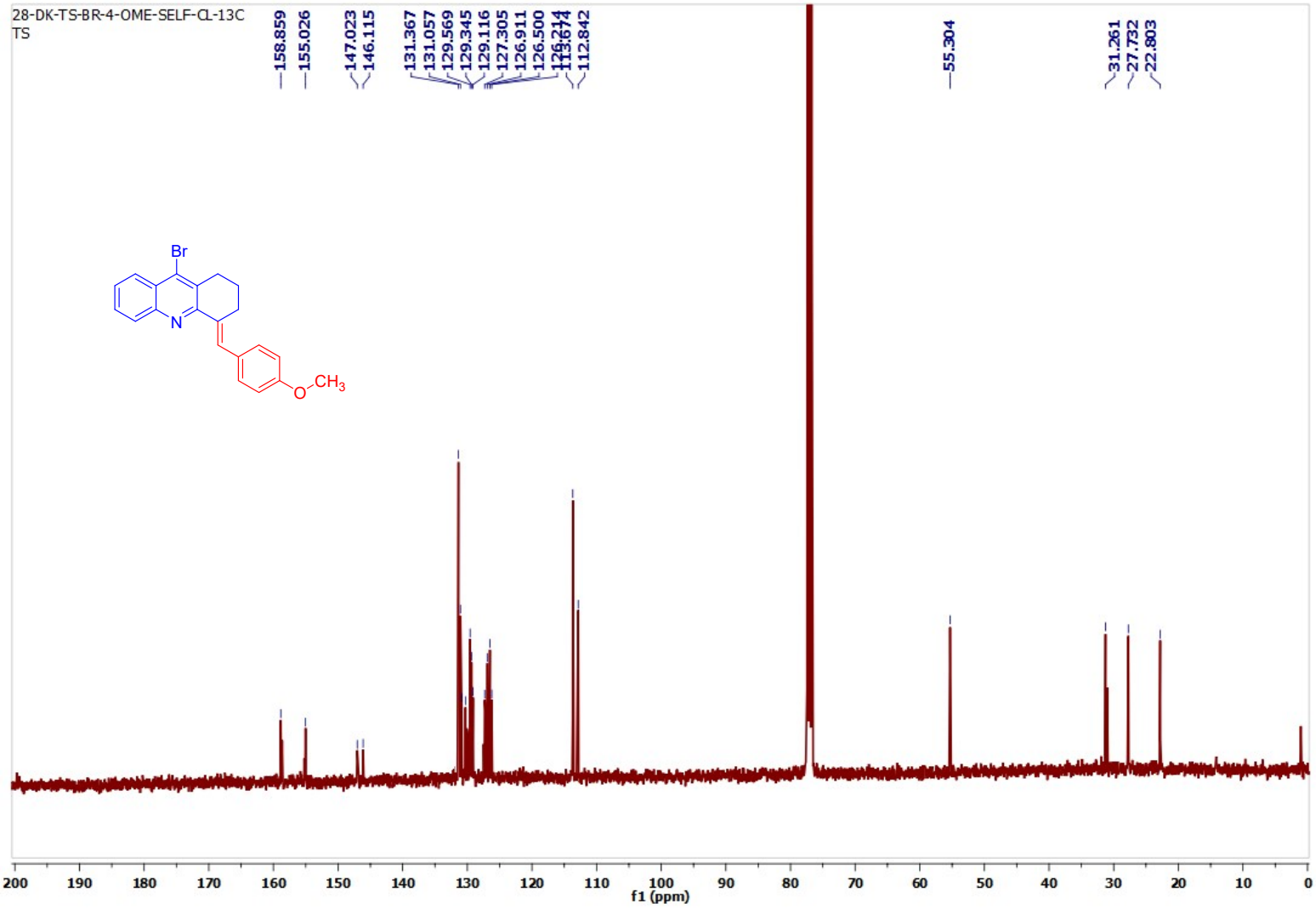


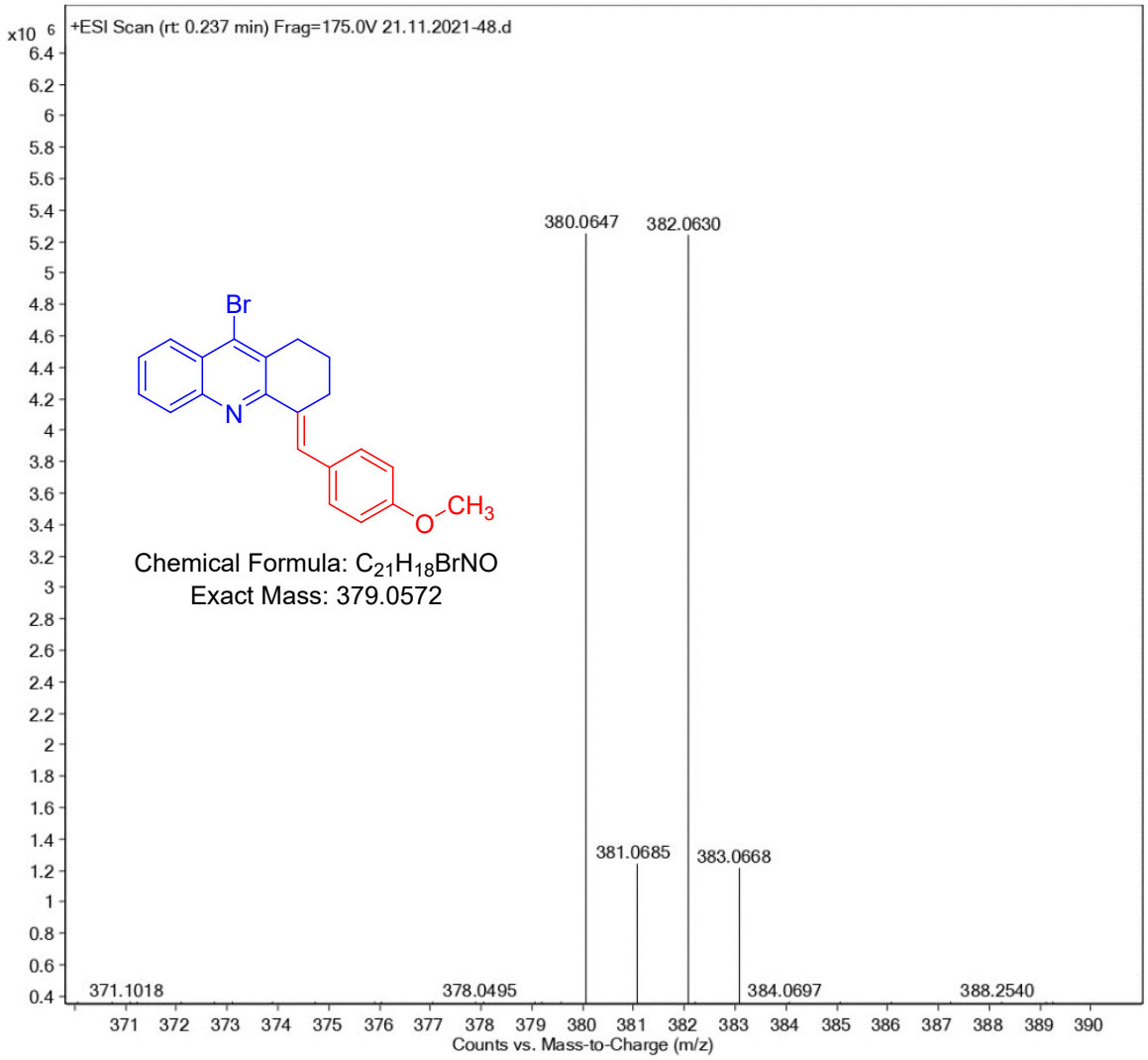

159.12
158.16
154.48
153.55
140.98
133.31
132.63
132.18
131.61
121.85
120.44
113.76
55.30
27.84
27.68
22.07
Cl
N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.242 min) Frag=175.0V 21.11.2021-43.d
x10 6
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
337.1099
Cl
N
N
O
CH3
Chemical Formula: C20H17ClN2O
Exact Mass: 336.1029
273.1663
293.0001
305.1570
321.0797
359.0924
375.0781
393.2091
270
280
290
300
310
320
330
340
350
360
370
380
390
Counts vs. Mass-to-Charge (m/z)

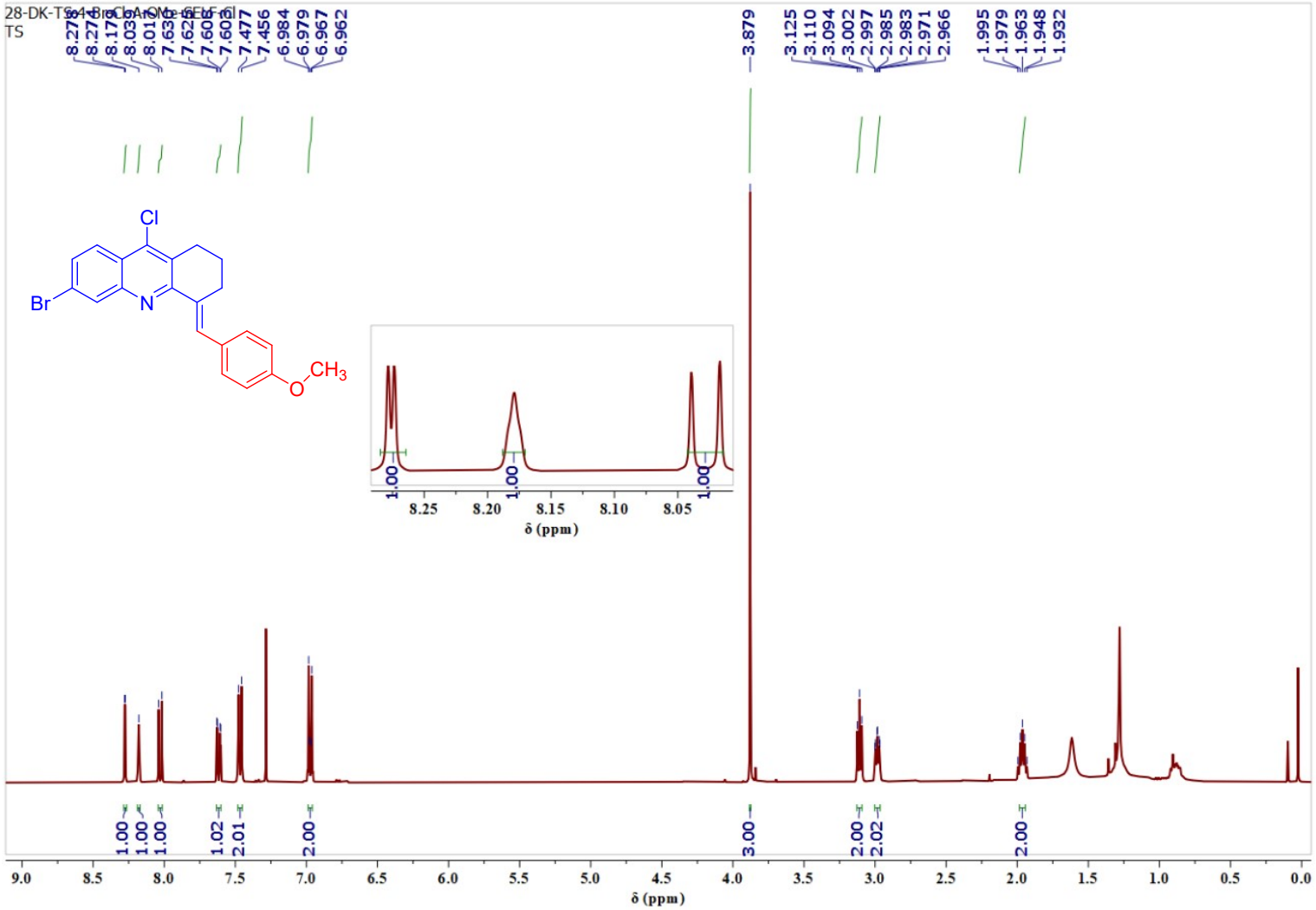
(E)-9-Bromo-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5f):

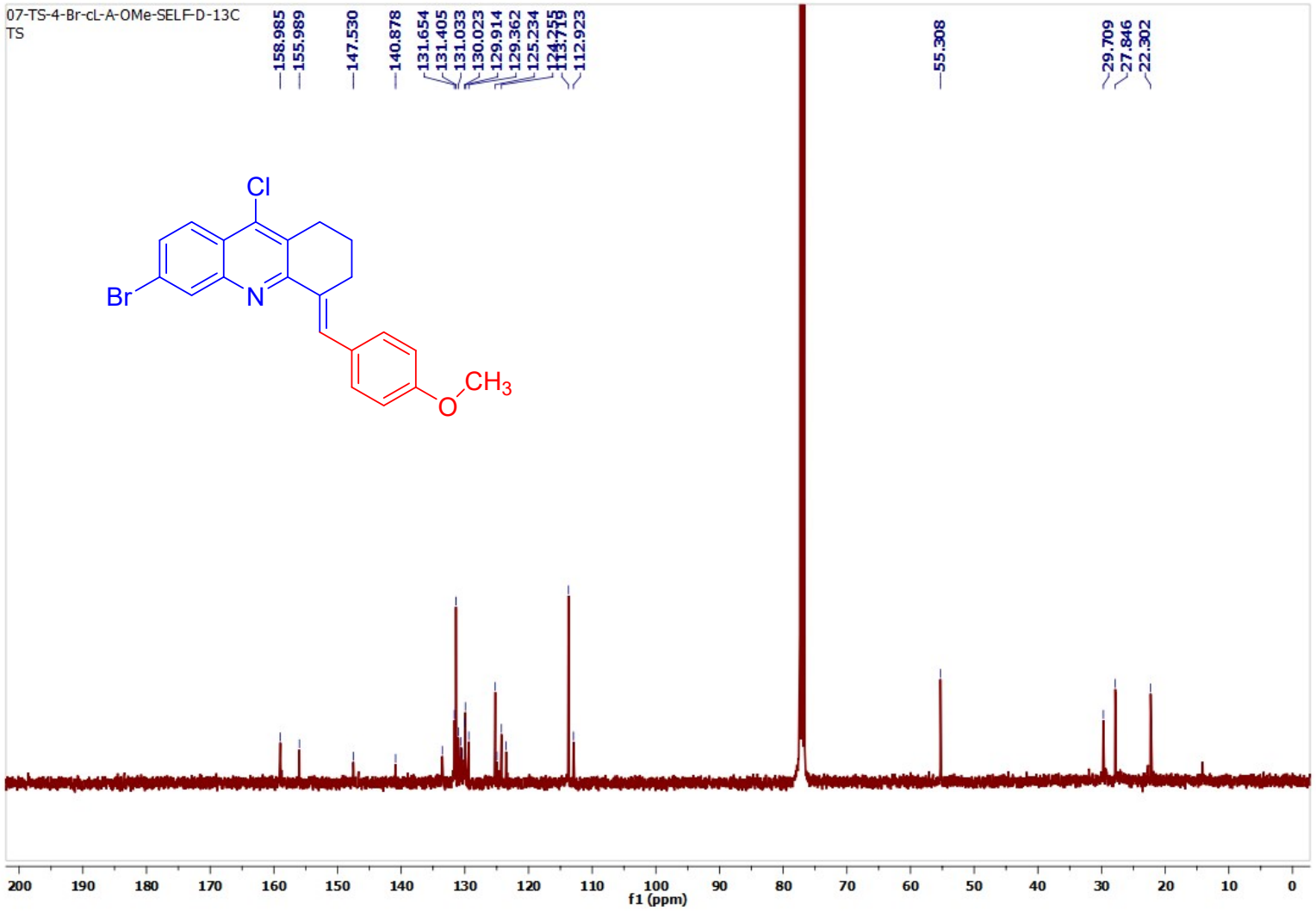


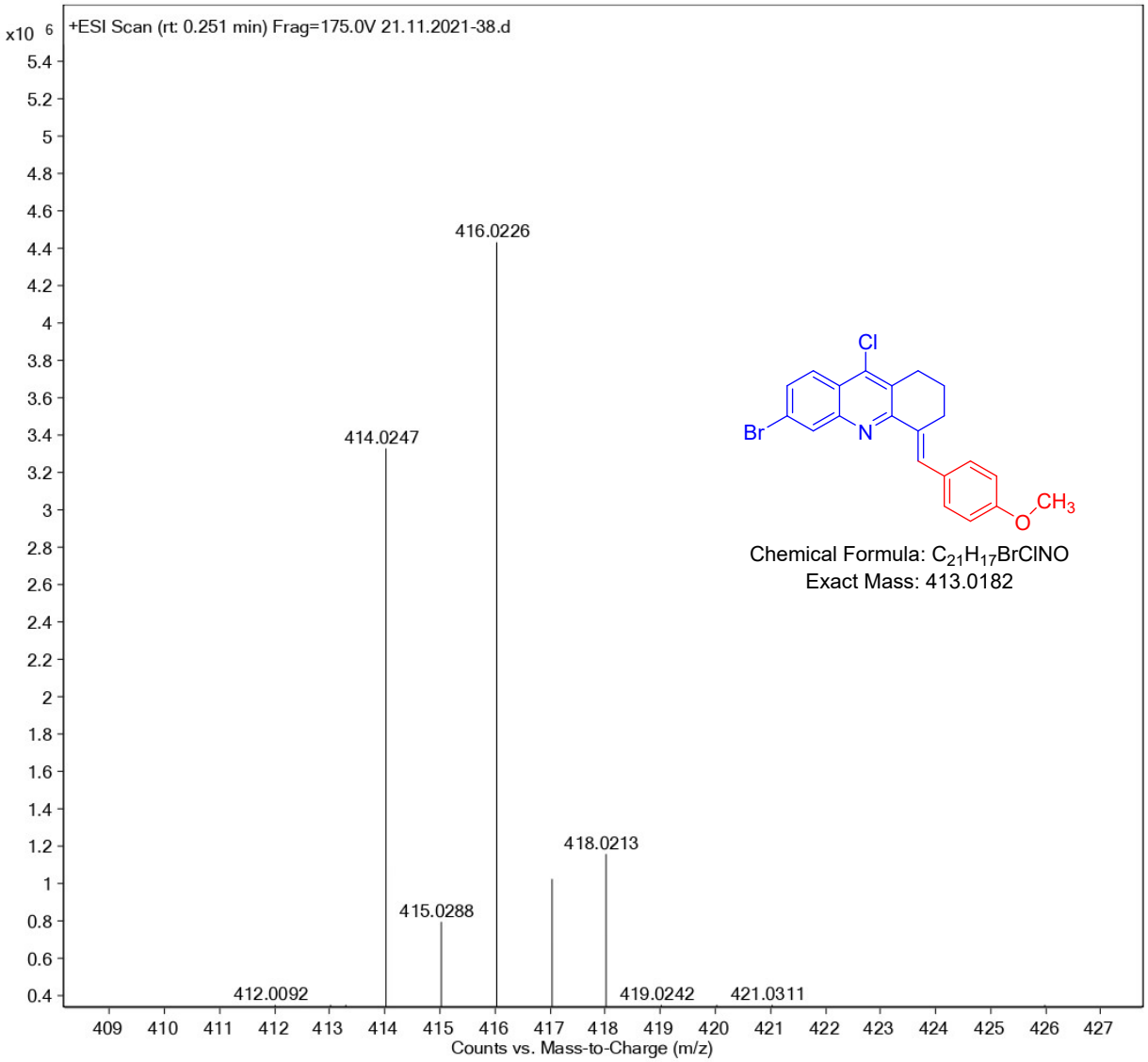

28-DK-TS-BR-4-OME-SELF-CL-13C
TS
158.859
155.026
147.023
146.115
131.367
131.057
129.569
129.345
129.116
127.305
126.911
126.500
126.214
113.674
112.842
55.304
31.261
27.732
22.803
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.237 min) Frag=175.0V 21.11.2021-48.d
x10 6
Br
N
O
CH3
Chemical Formula: C21H18BrNO
Exact Mass: 379.0572
380.0647
382.0630
381.0685
383.0668
371.1018
378.0495
384.0697
388.2540
Counts vs. Mass-to-Charge (m/z)

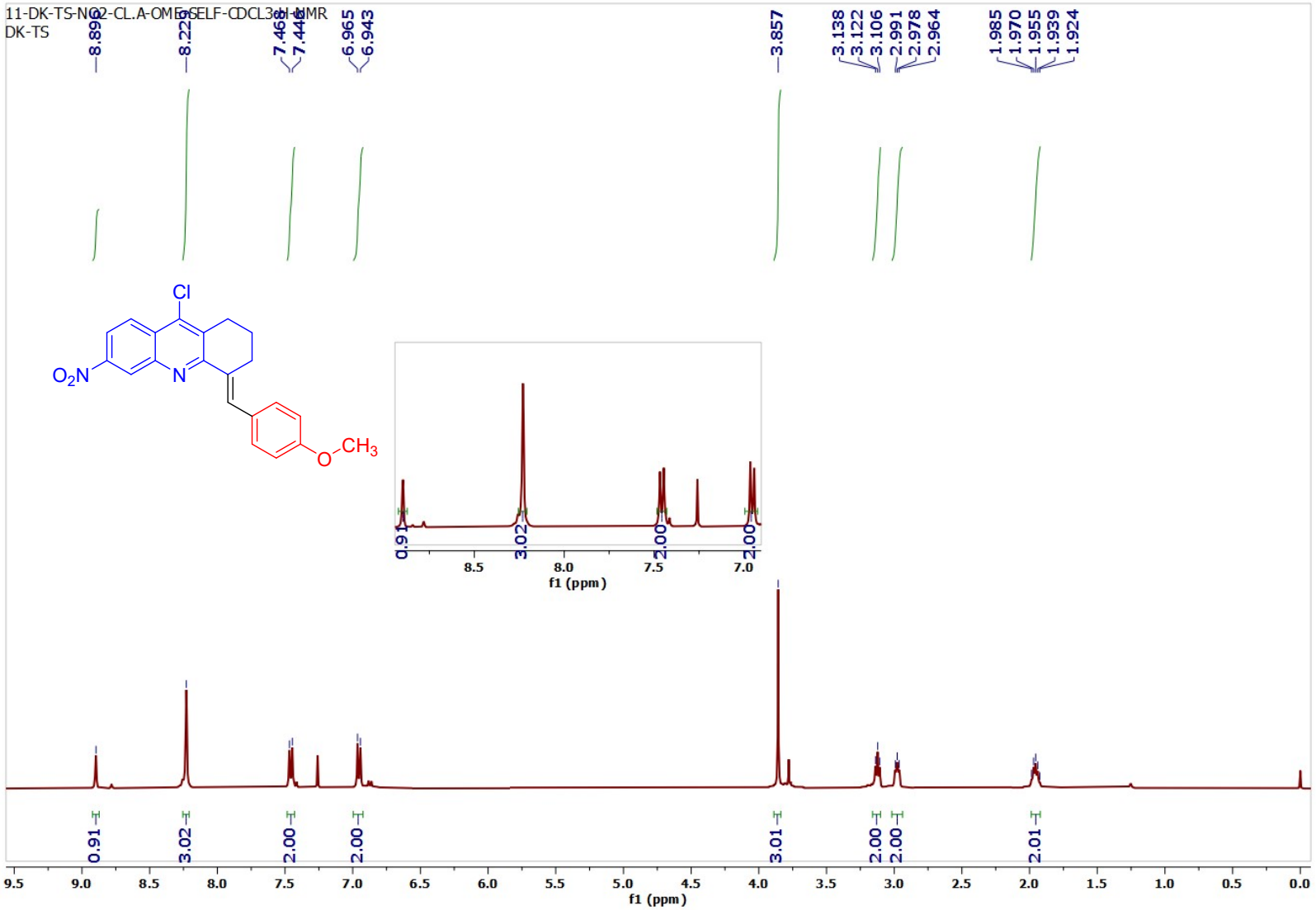
(E)-6-Bromo-9-chloro-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridine (5g):

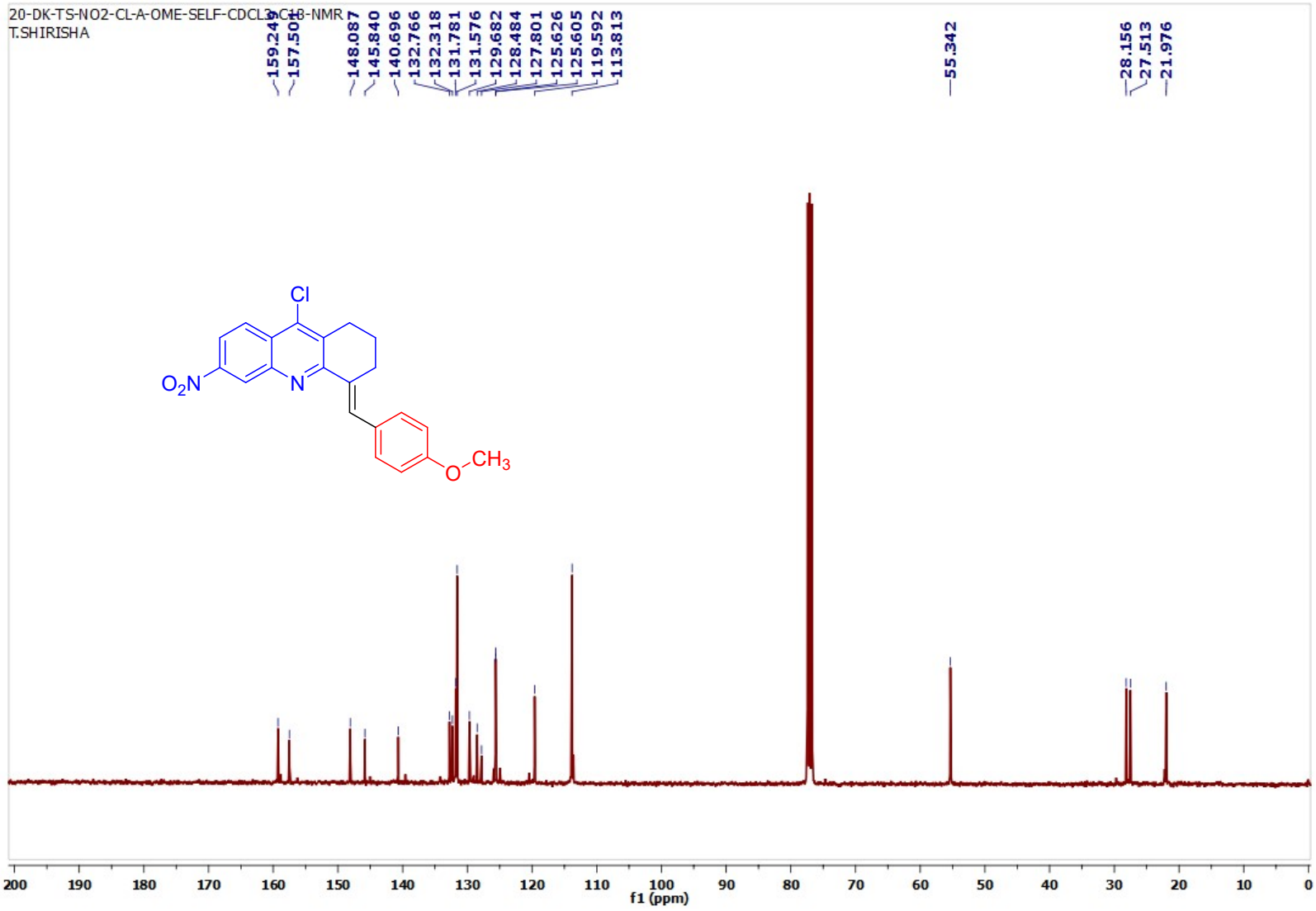


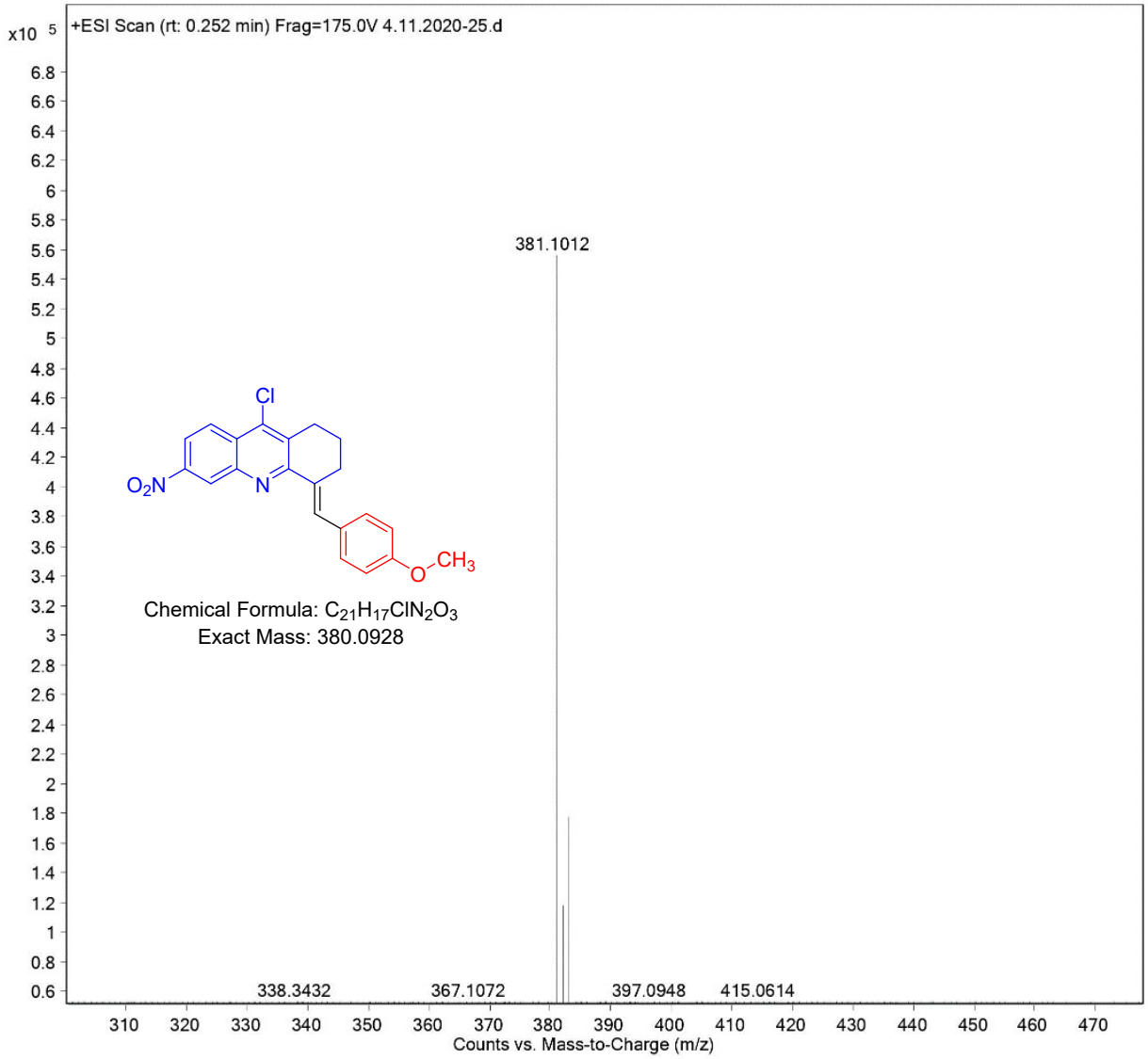

07-TS-4-Br-cL-A-OMe-SELF-D-13C
TS
158.985
155.989
147.530
140.878
131.654
131.405
131.033
130.023
129.914
129.362
125.234
124.255
113.719
112.923
55.308
29.709
27.846
22.302
Cl
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.251 min) Frag=175.0V 21.11.2021-38.d
x10 6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
416.0226
414.0247
418.0213
415.0288
412.0092
419.0242
421.0311
409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427
Counts vs. Mass-to-Charge (m/z)
Cl
Br
N
O
CH3
Chemical Formula: C21H17BrClNO
Exact Mass: 413.0182

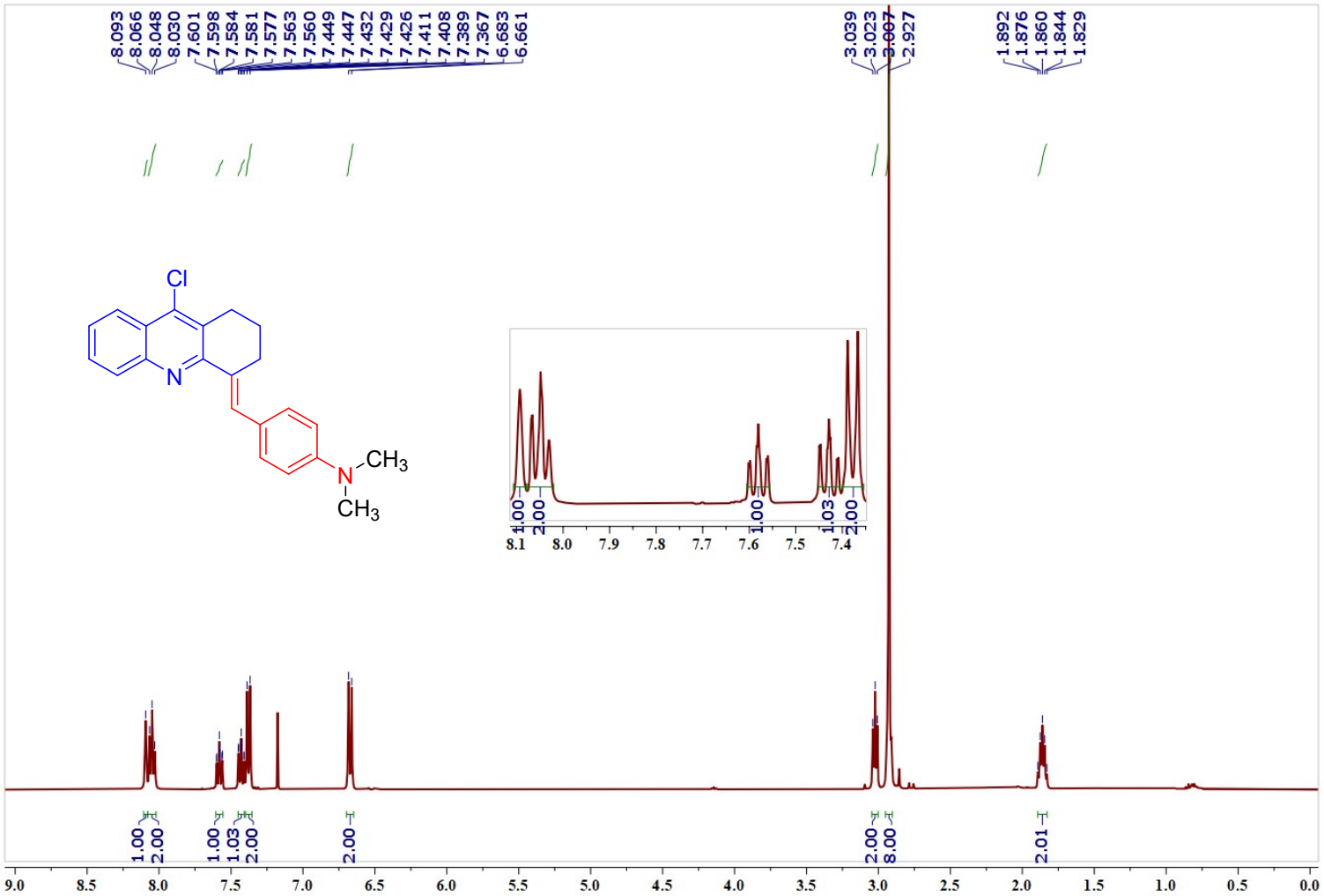
(E)-9-Chloro-4-(4-methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridine(5h):

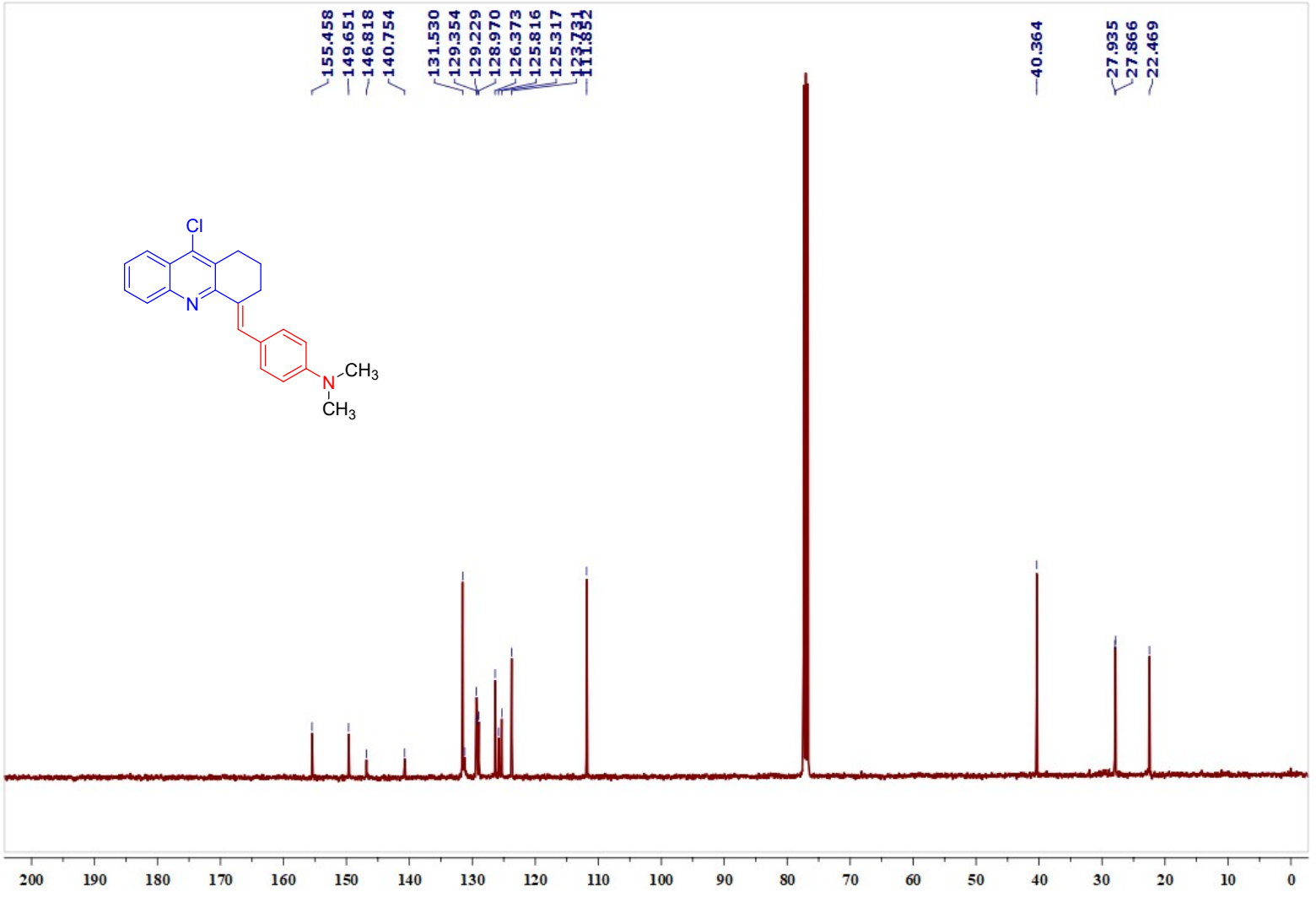


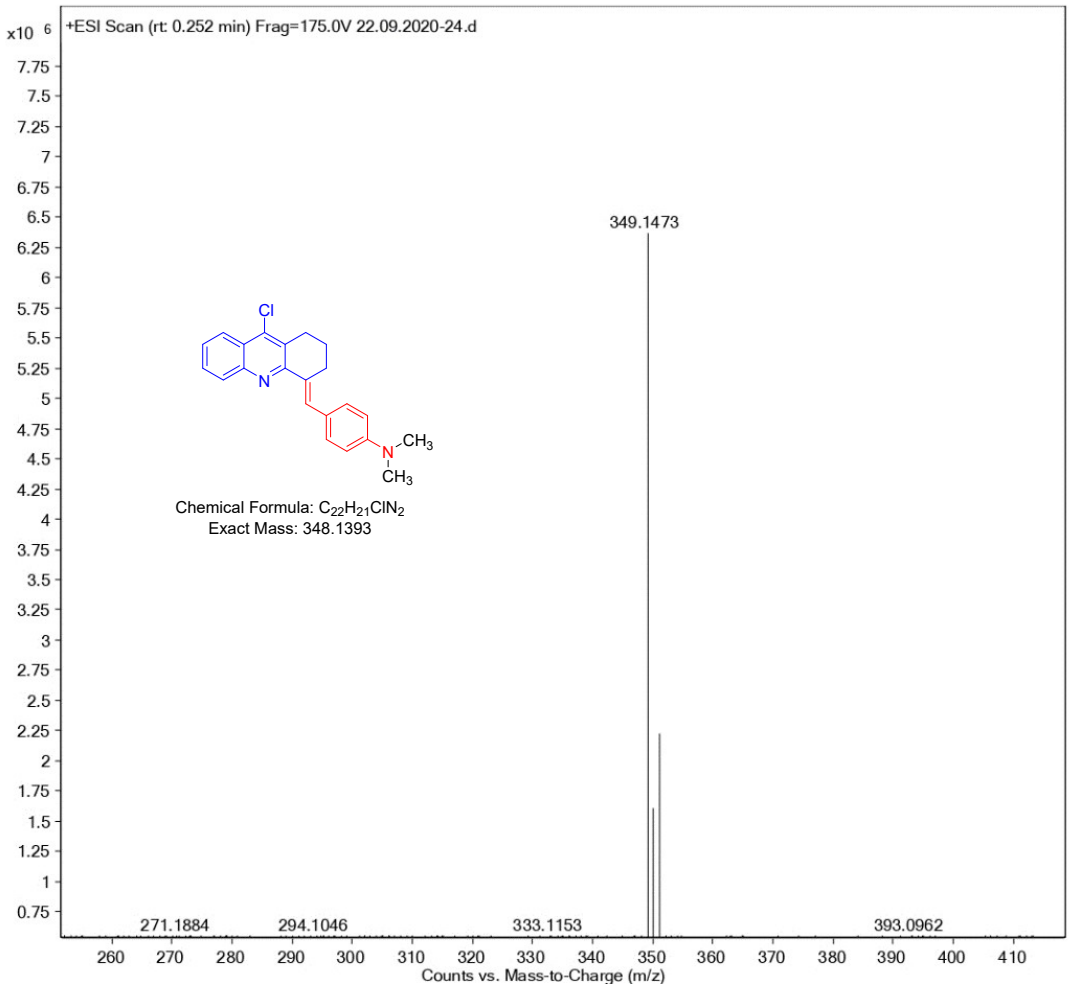

20-DK-TS-NO2-CL-A-OME-SELF-CDCL3-C13-NMR
T.SHIRISHA
159.243
157.501
148.087
145.840
140.696
132.766
132.318
131.781
131.576
129.682
128.484
127.801
125.626
125.605
119.592
113.813
55.342
28.156
27.513
21.976
Cl
O2N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.252 min) Frag=175.0V 4.11.2020-25.d
x10 5
6.8
6.6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
381.1012
Cl
O2N
N
CH3
O
Chemical Formula: C21H17ClN2O3
Exact Mass: 380.0928
338.3432
367.1072
397.0948
415.0614
310
320
330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
Counts vs. Mass-to-Charge (m/z)

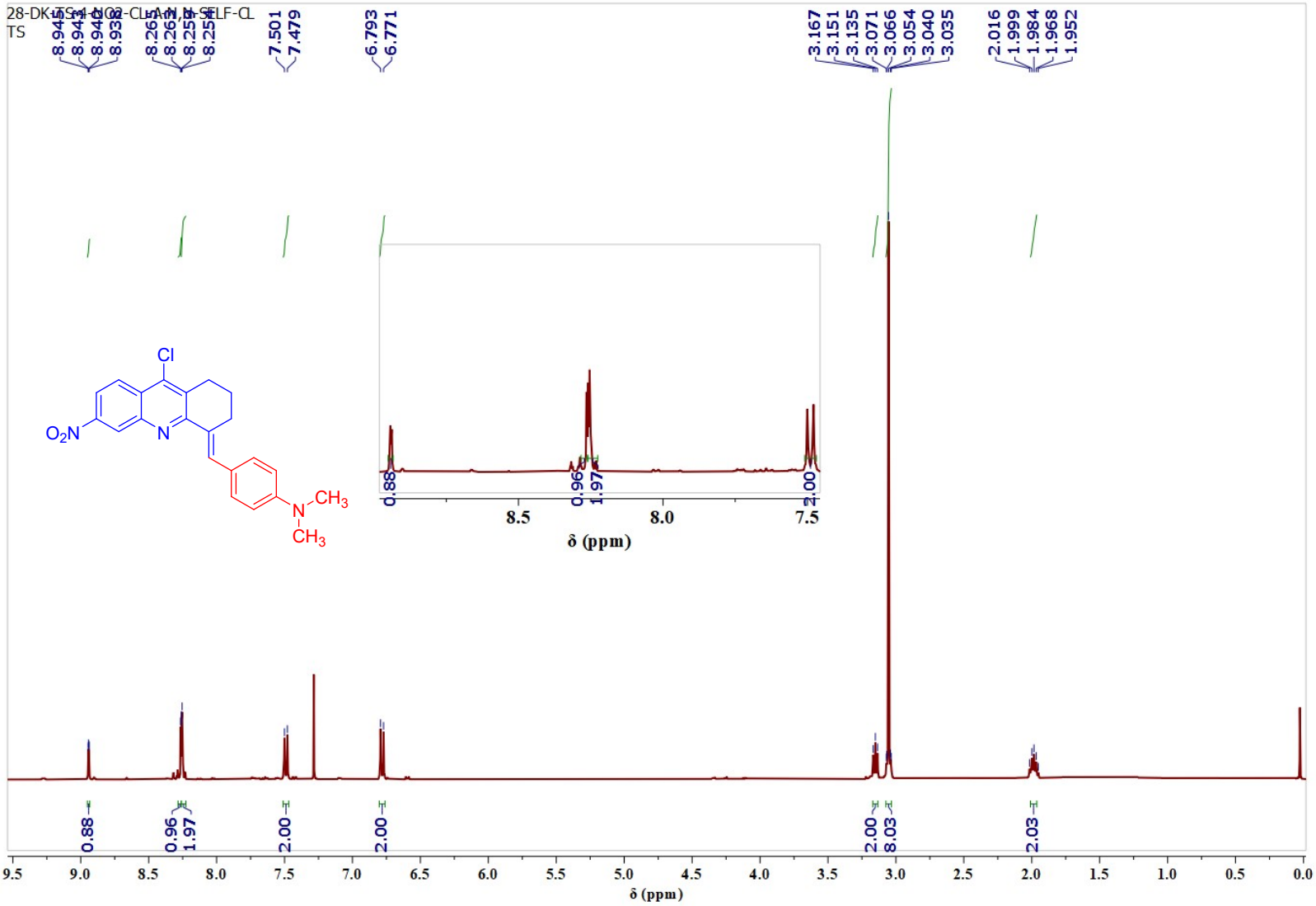
(E)-4-((9-Chloro-2,3-dihydroacridin-4(1H)-ylidene)methyl)-N,N-dimethylaniline (5i):

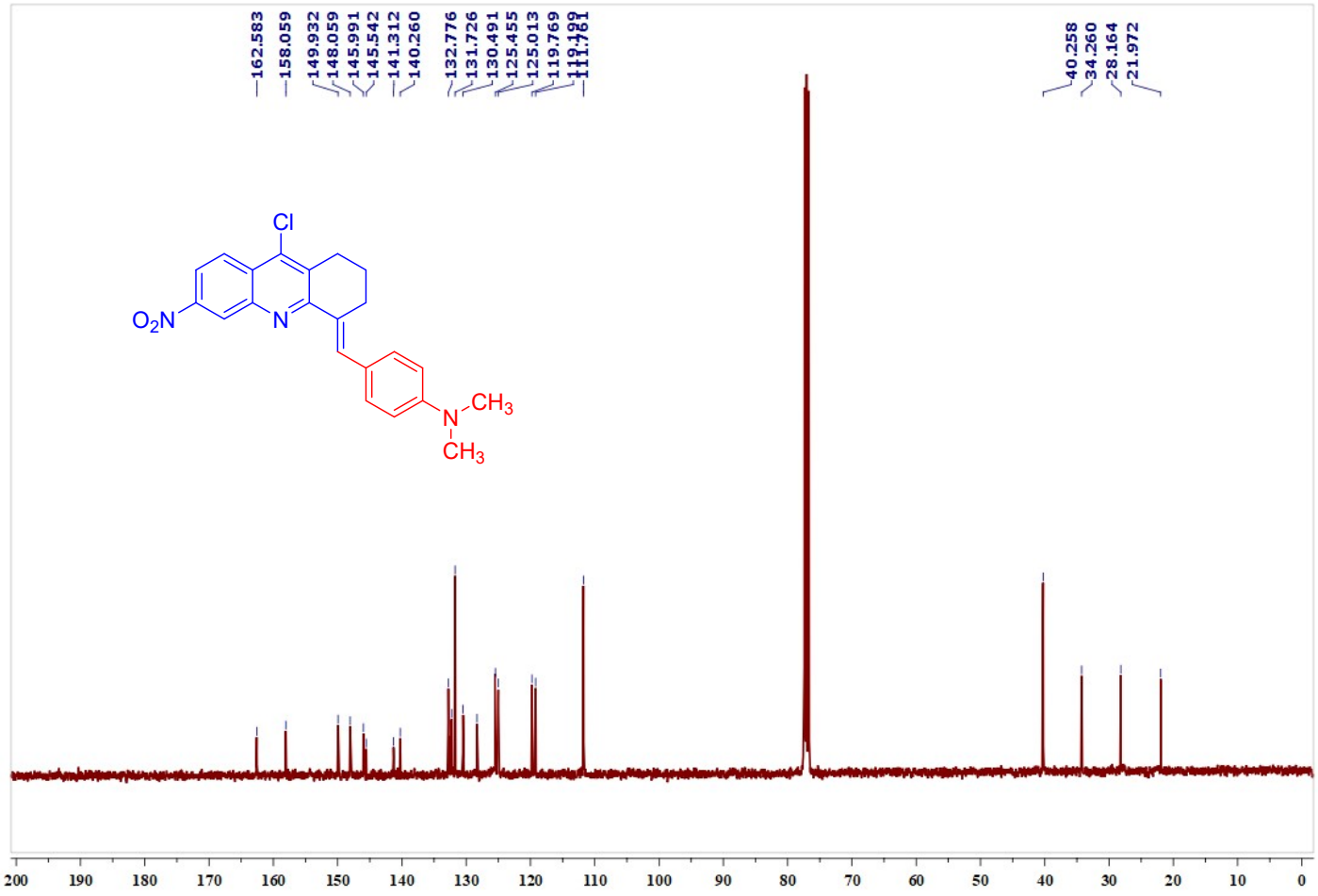


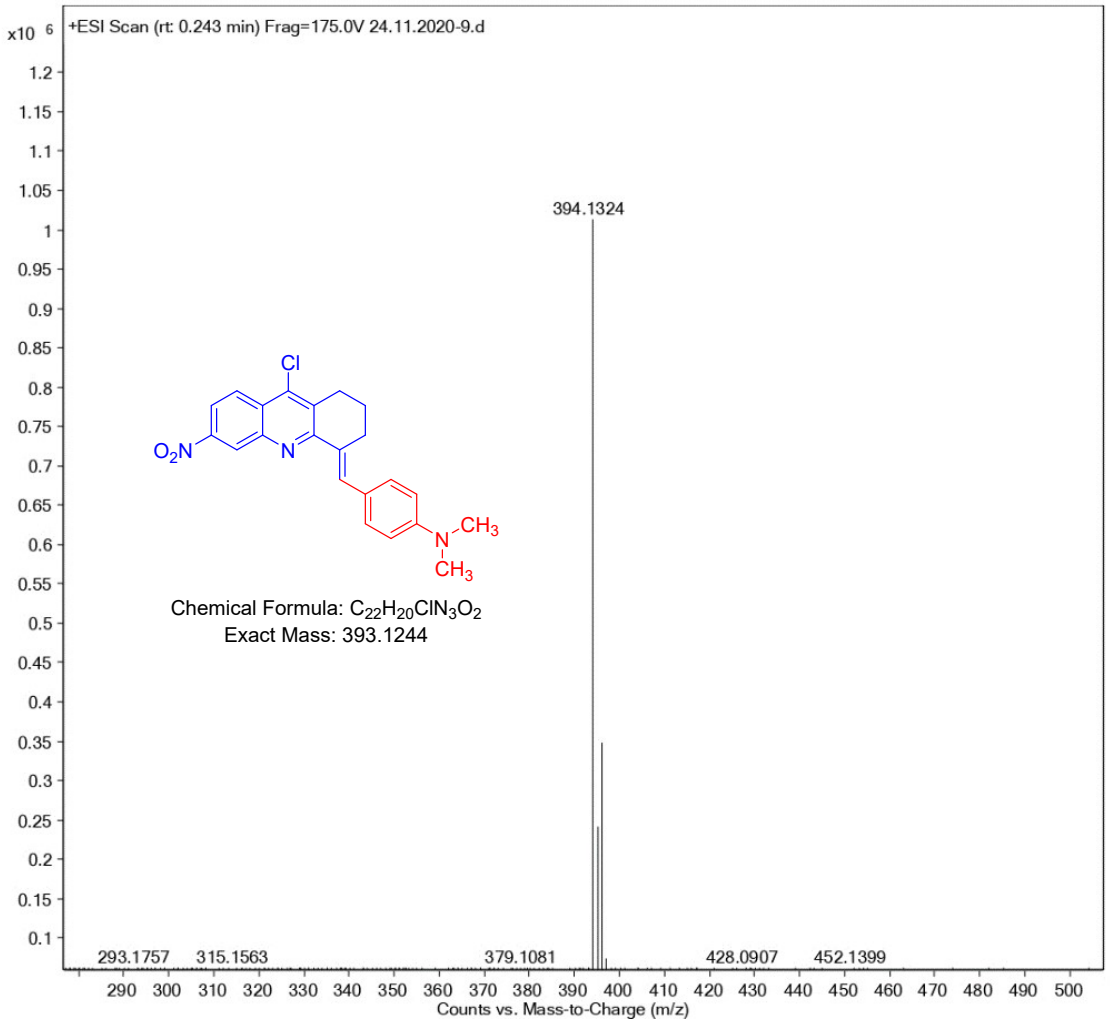

155.458
149.651
146.818
140.754
131.530
129.354
129.229
128.970
126.373
125.816
125.317
40.364
27.935
27.866
22.469
Cl
N
CH3
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.252 min) Frag=175.0V 22.09.2020-24.d
x10 6
7.75
7.5
7.25
7
6.75
6.5
6.25
6
5.75
5.5
5.25
5
4.75
4.5
4.25
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
349.1473
Cl
N
CH3
N
CH3
Chemical Formula: C22H21ClN2
Exact Mass: 348.1393
271.1884
294.1046
333.1153
393.0962
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400
410
Counts vs. Mass-to-Charge (m/z)

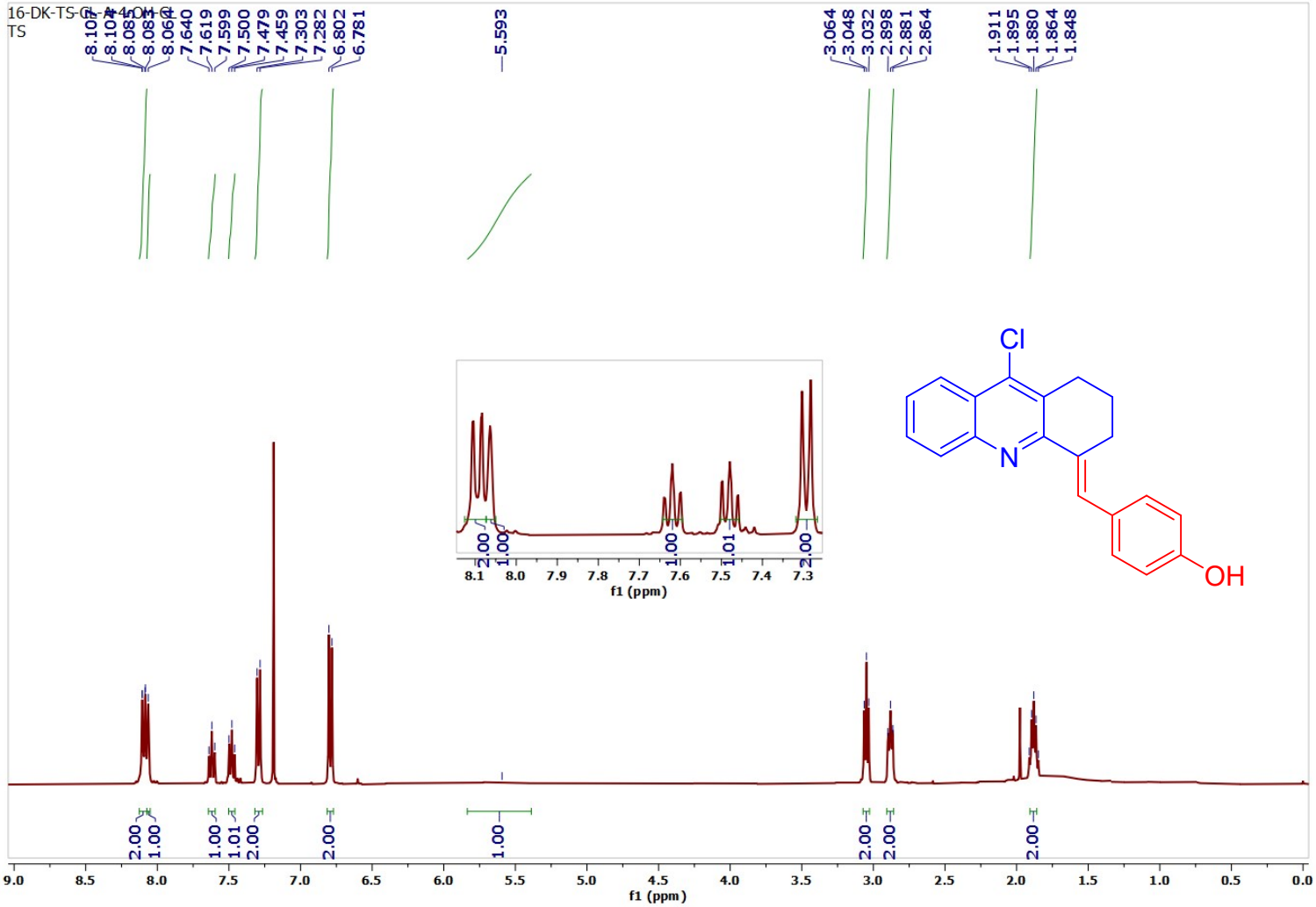
(E)-4-((9-Chloro-6-nitro-2,3-dihydroacridin-4(1H)-ylidene)methyl)-N,N-dimethylaniline (5j):

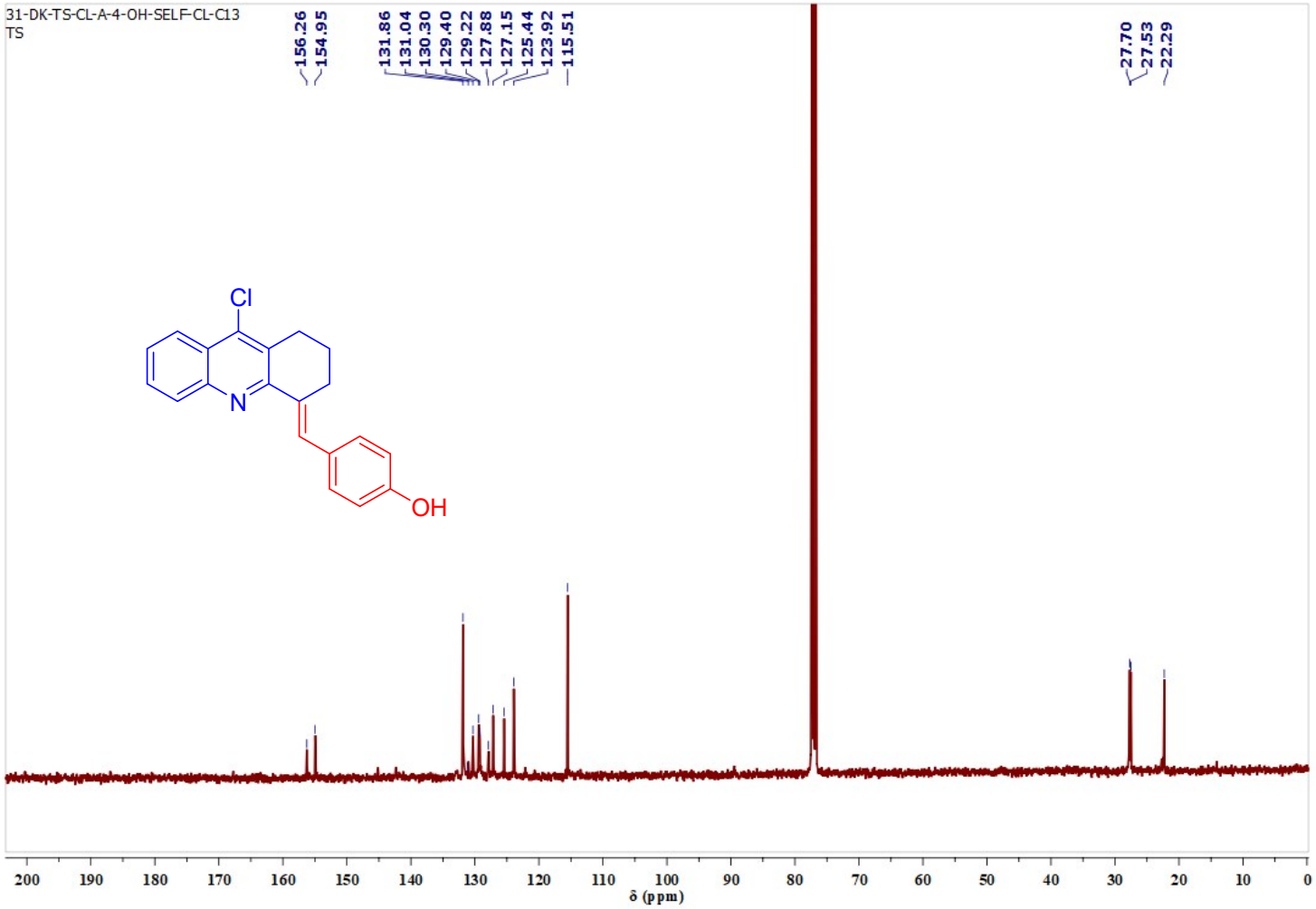


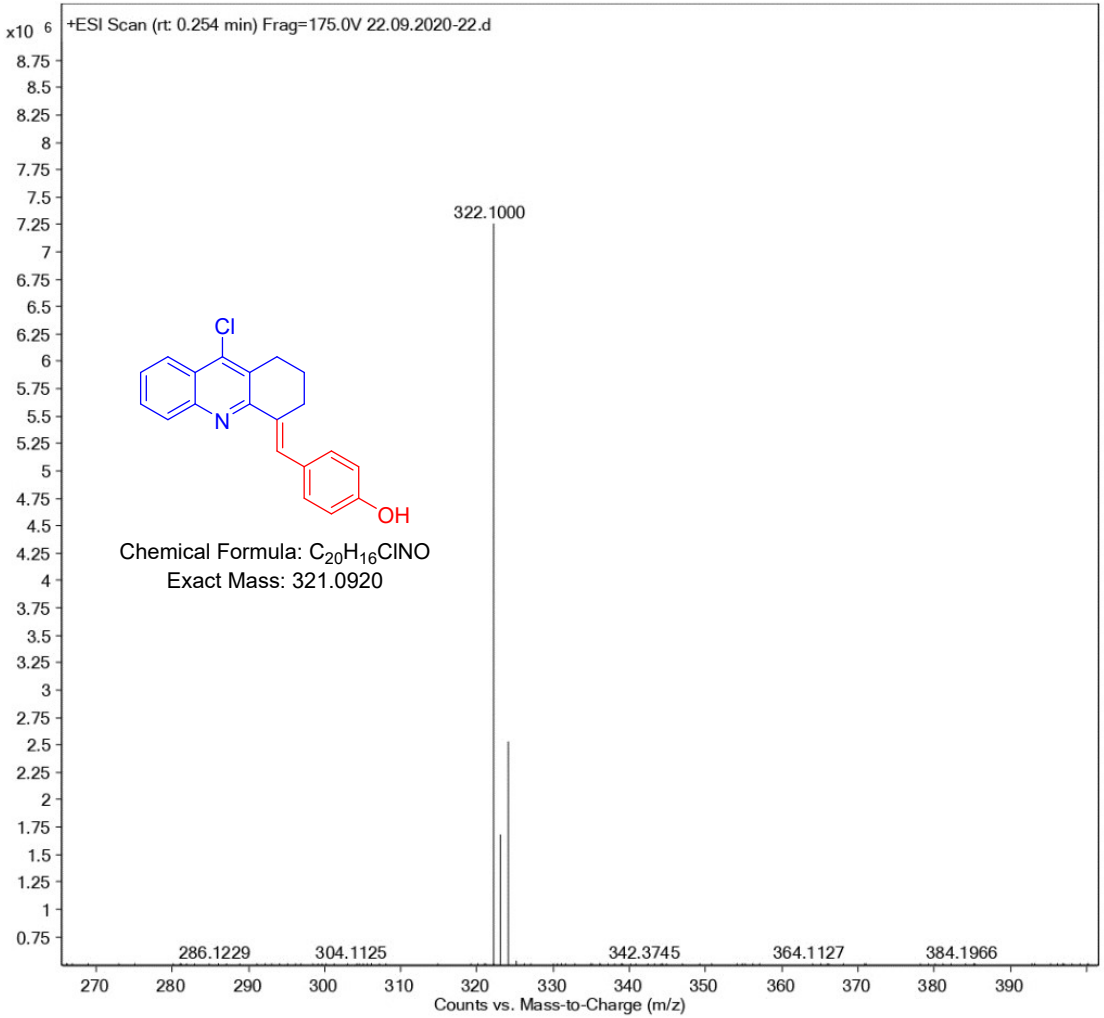

162.583
158.059
149.932
148.059
145.991
145.542
141.312
140.260
132.776
131.726
130.491
125.455
125.013
119.769
111.761
40.258
34.260
28.164
21.972
Cl
O2N
N
CH3
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


x10 6
+ESI Scan (rt: 0.243 min) Frag=175.0V 24.11.2020-9.d
394.1324
Cl
O2N
N
CH3
N
CH3
Chemical Formula: C22H20ClN3O2
Exact Mass: 393.1244
293.1757
315.1563
379.1081
428.0907
452.1399
Counts vs. Mass-to-Charge (m/z)

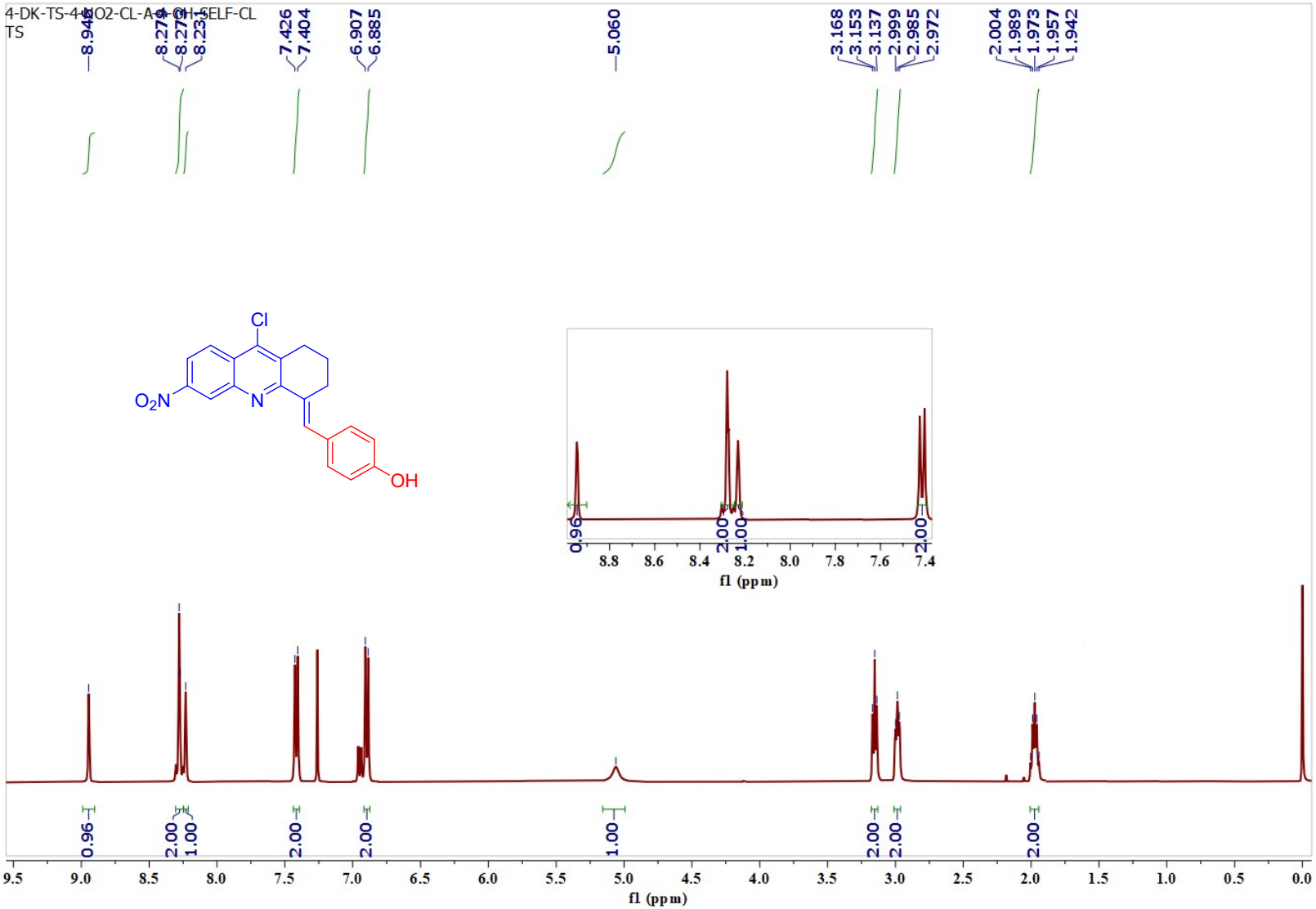
(E)-4-((9-Chloro-2,3-dihydroacridin-4(1H)-ylidene)methyl)phenol (5k):

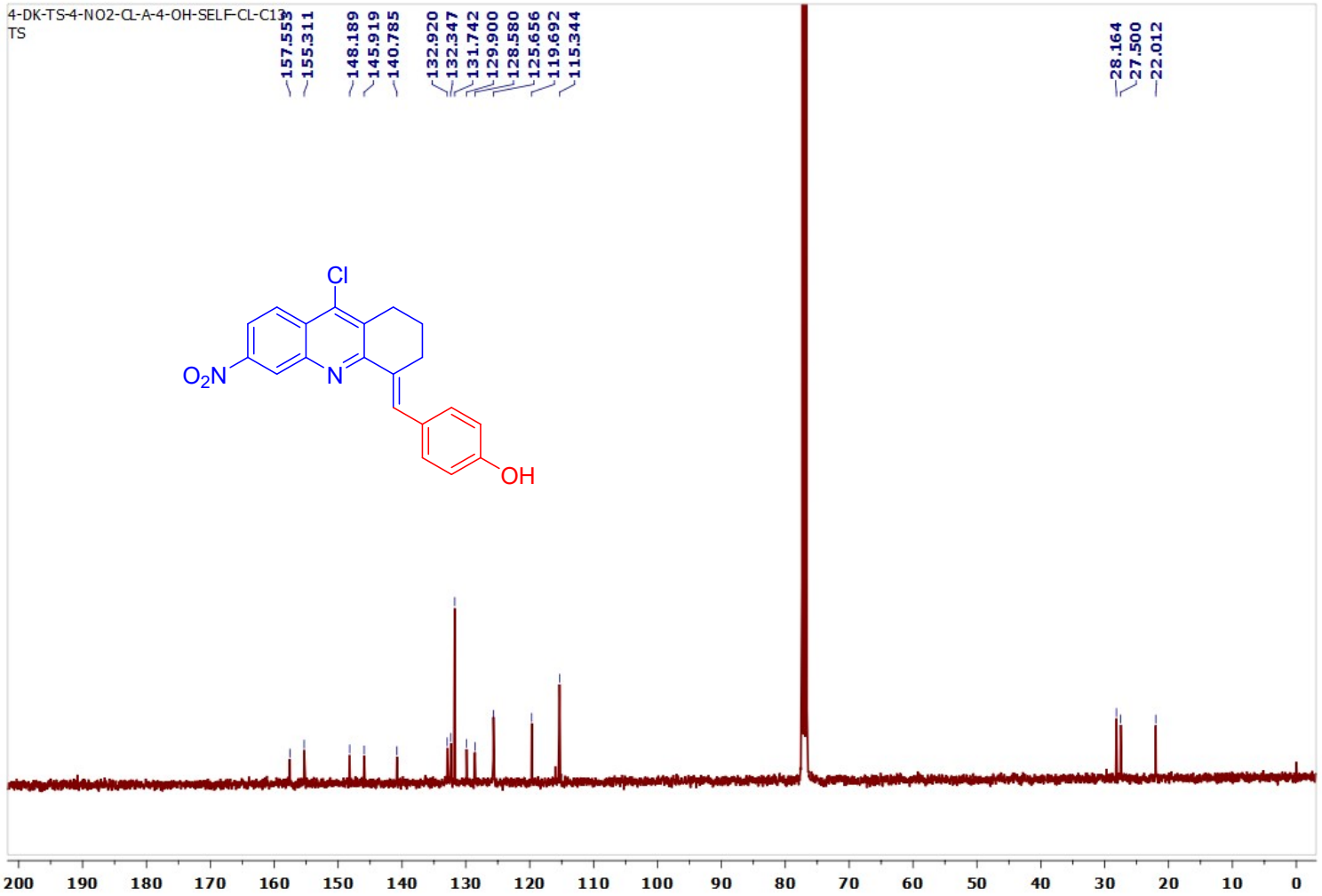


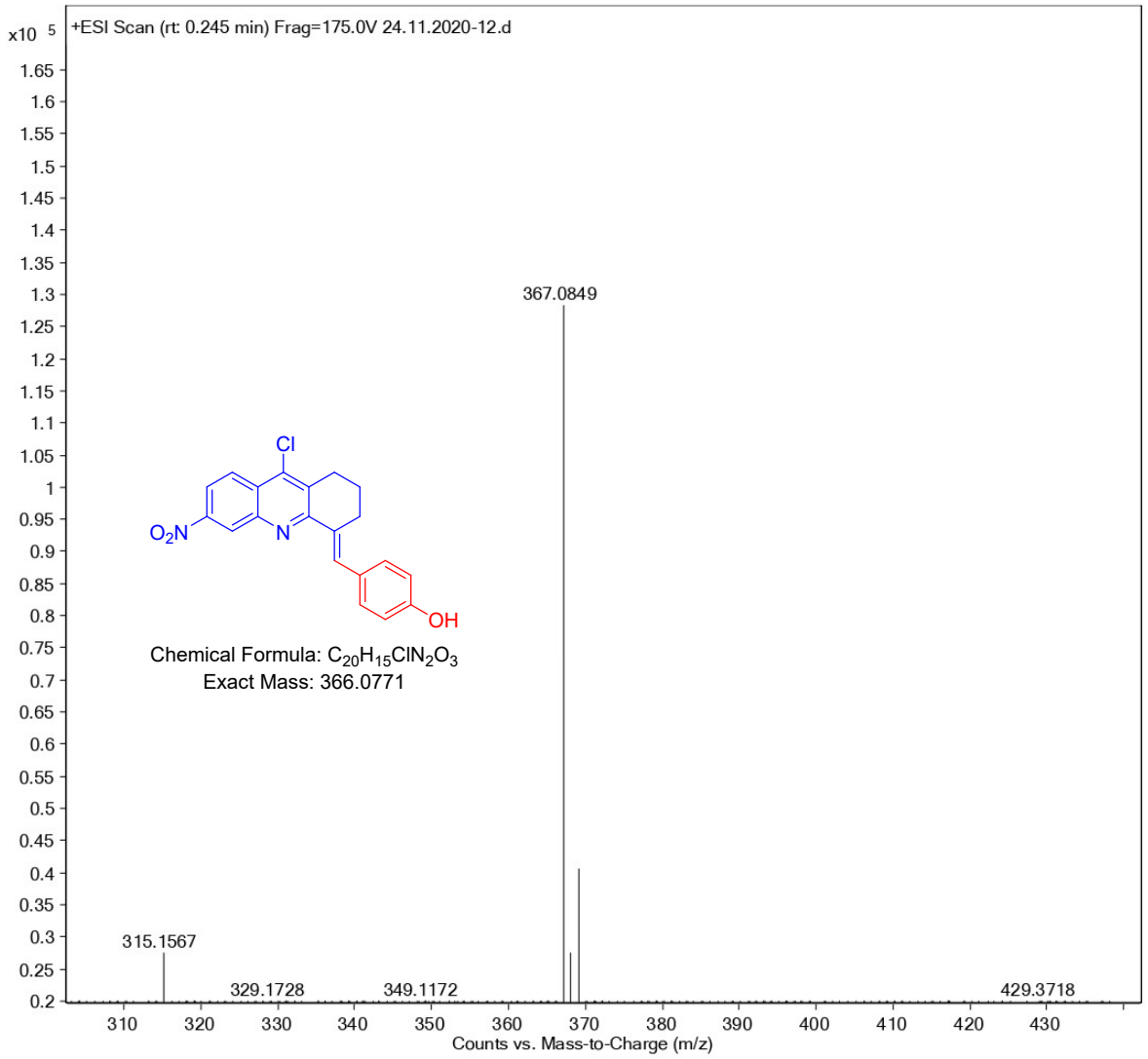

31-DK-TS-CL-A-4-OH-SELF-CL-C13
TS
156.26
154.95
131.86
131.04
130.30
129.40
129.22
127.88
127.15
125.44
123.92
115.51
27.70
27.53
22.29
Cl
N
OH
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
δ (ppm)


+ESI Scan (rt: 0.254 min) Frag=175.0V 22.09.2020-22.d
x10 6
322.1000
Cl
N
OH
Chemical Formula: C20H16ClNO
Exact Mass: 321.0920
286.1229
304.1125
342.3745
364.1127
384.1966
Counts vs. Mass-to-Charge (m/z)

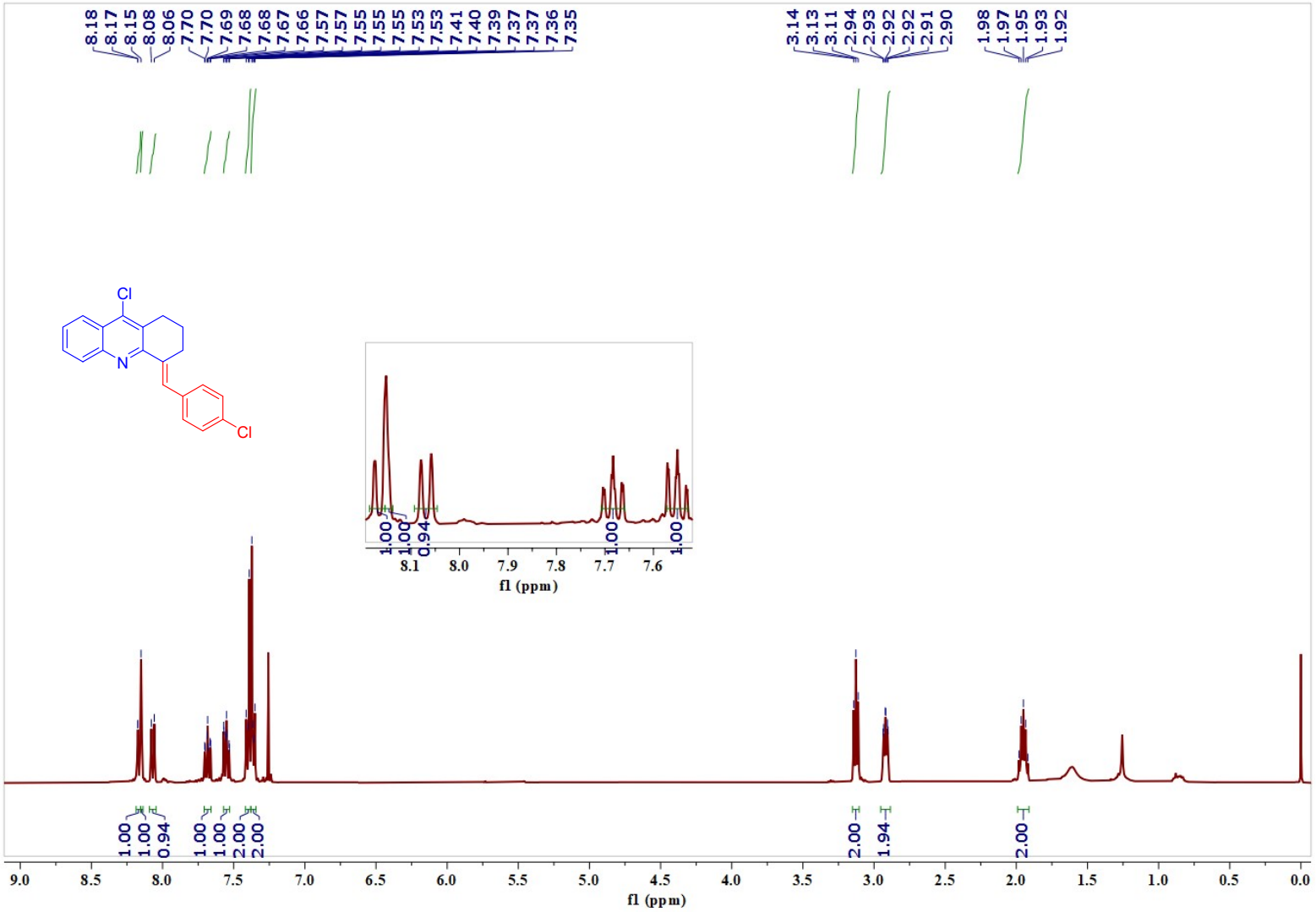
(E)-4-((9-Chloro-6-nitro-2,3-dihydroacridin-4(1H)-ylidene)methyl)phenol (5l):

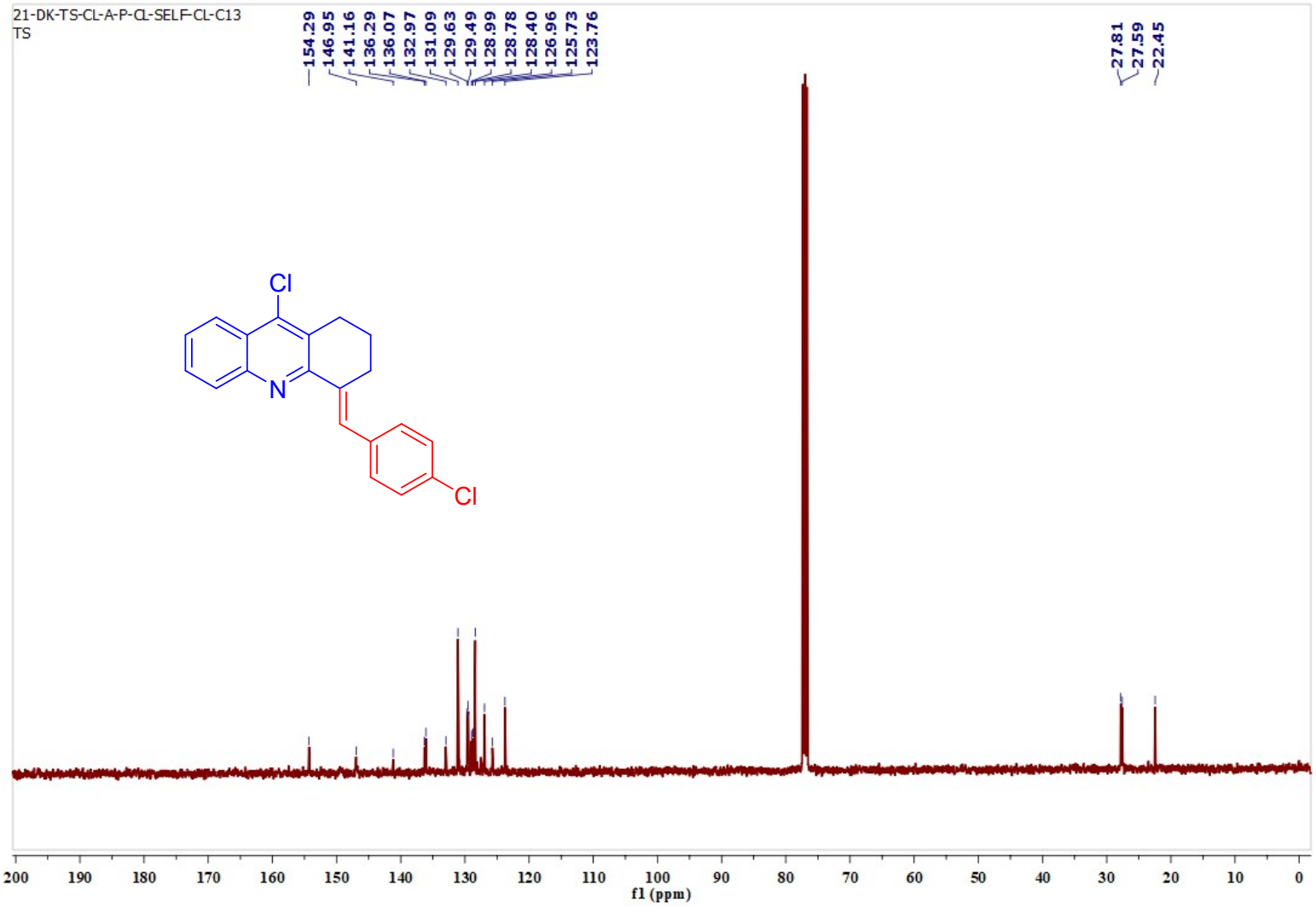


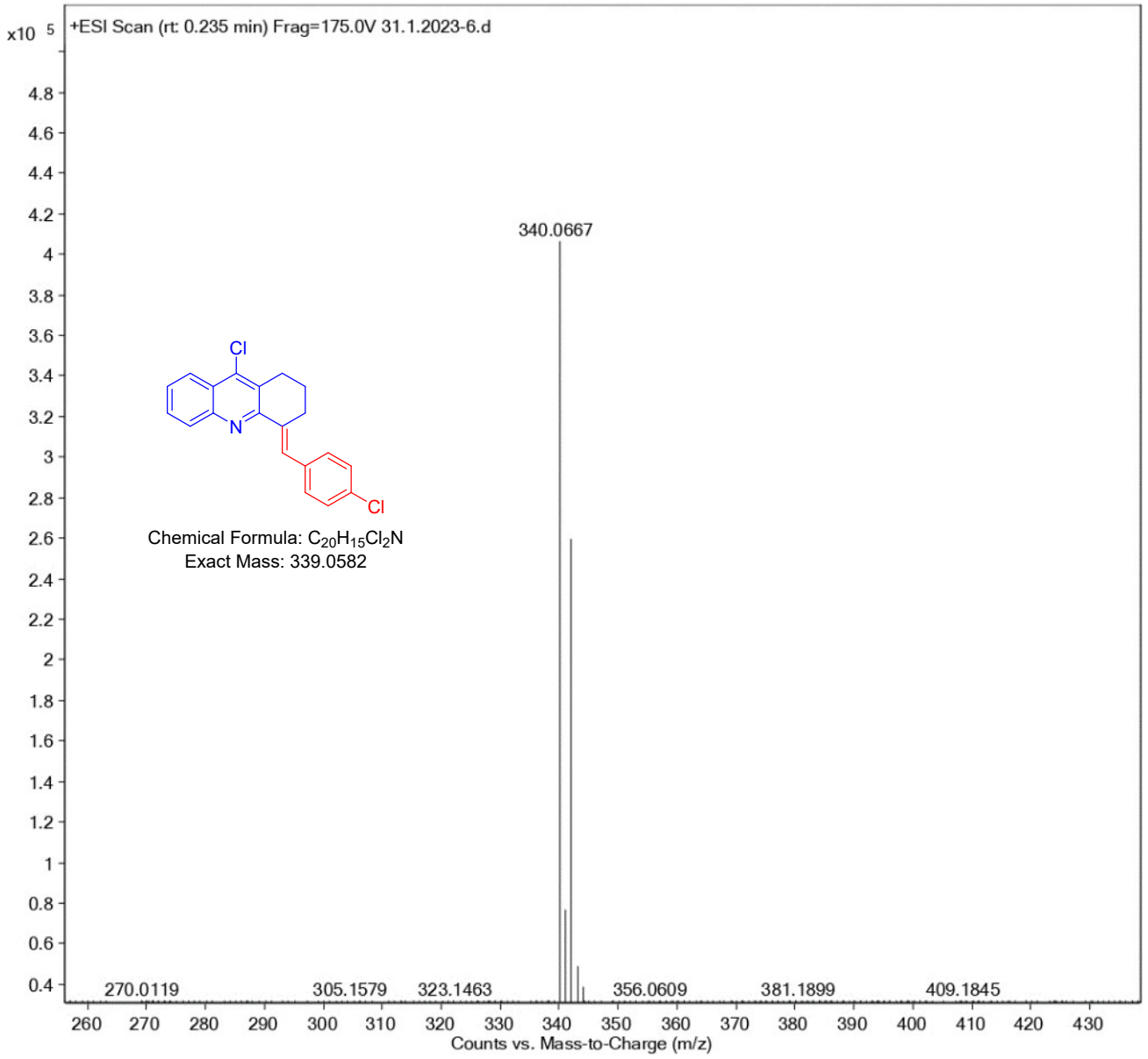

4-DK-TS-4-NO2-CL-A-4-OH-SELF-CL-C13
TS
157.553
155.311
148.189
145.919
140.785
132.920
132.347
131.742
129.900
128.580
125.656
119.692
115.344
28.164
27.500
22.012
Cl
O2N
N
OH
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.245 min) Frag=175.0V 24.11.2020-12.d
x10 5
1.65
1.6
1.55
1.5
1.45
1.4
1.35
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
367.0849
Cl
O2N
N
OH
Chemical Formula: C20H15ClN2O3
Exact Mass: 366.0771
315.1567
329.1728
349.1172
429.3718
310
320
330
340
350
360
370
380
390
400
410
420
430
Counts vs. Mass-to-Charge (m/z)

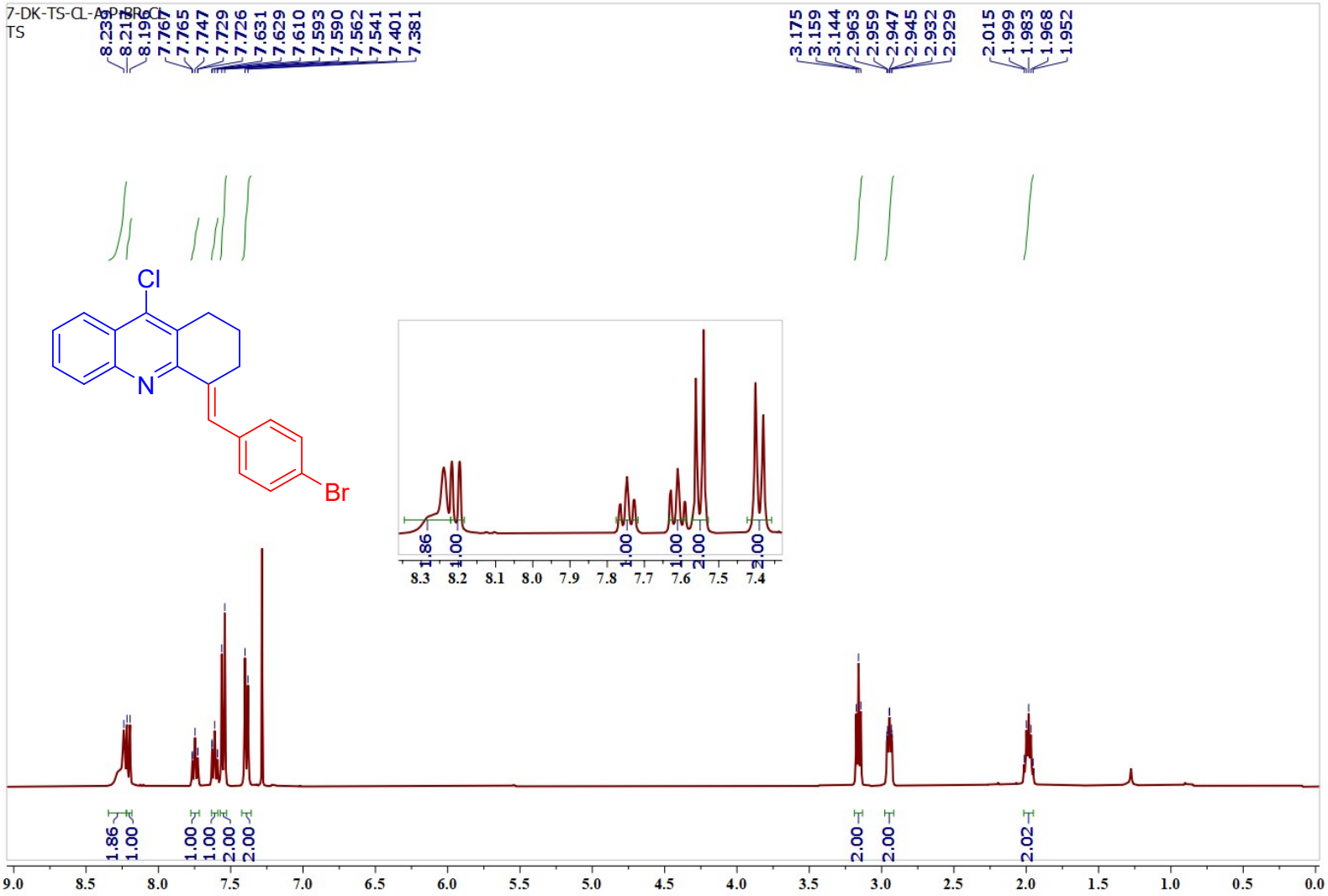
(E)-9-Chloro-4-(4-chlorobenzylidene)-1,2,3,4-tetrahydroacridine (5m):

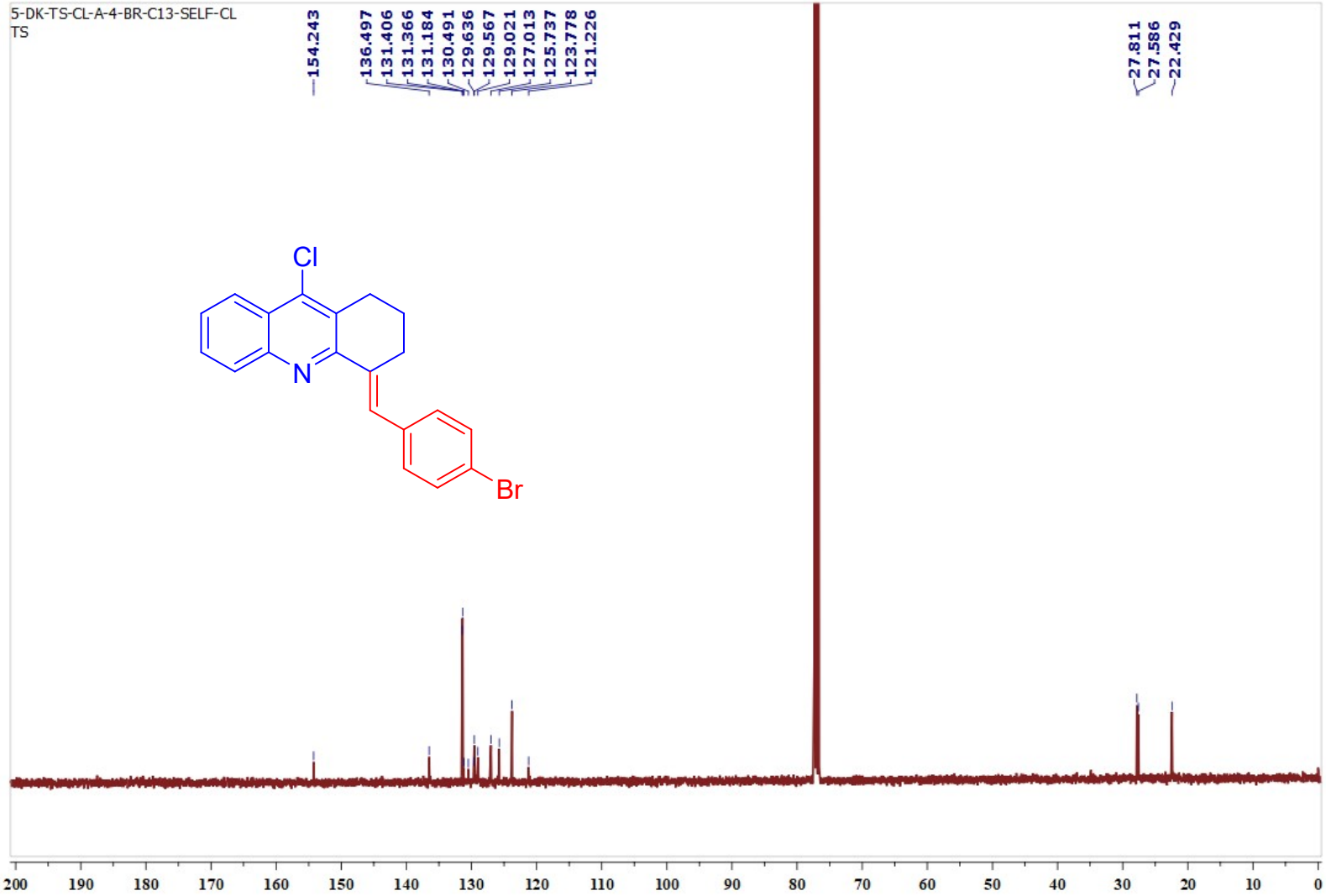


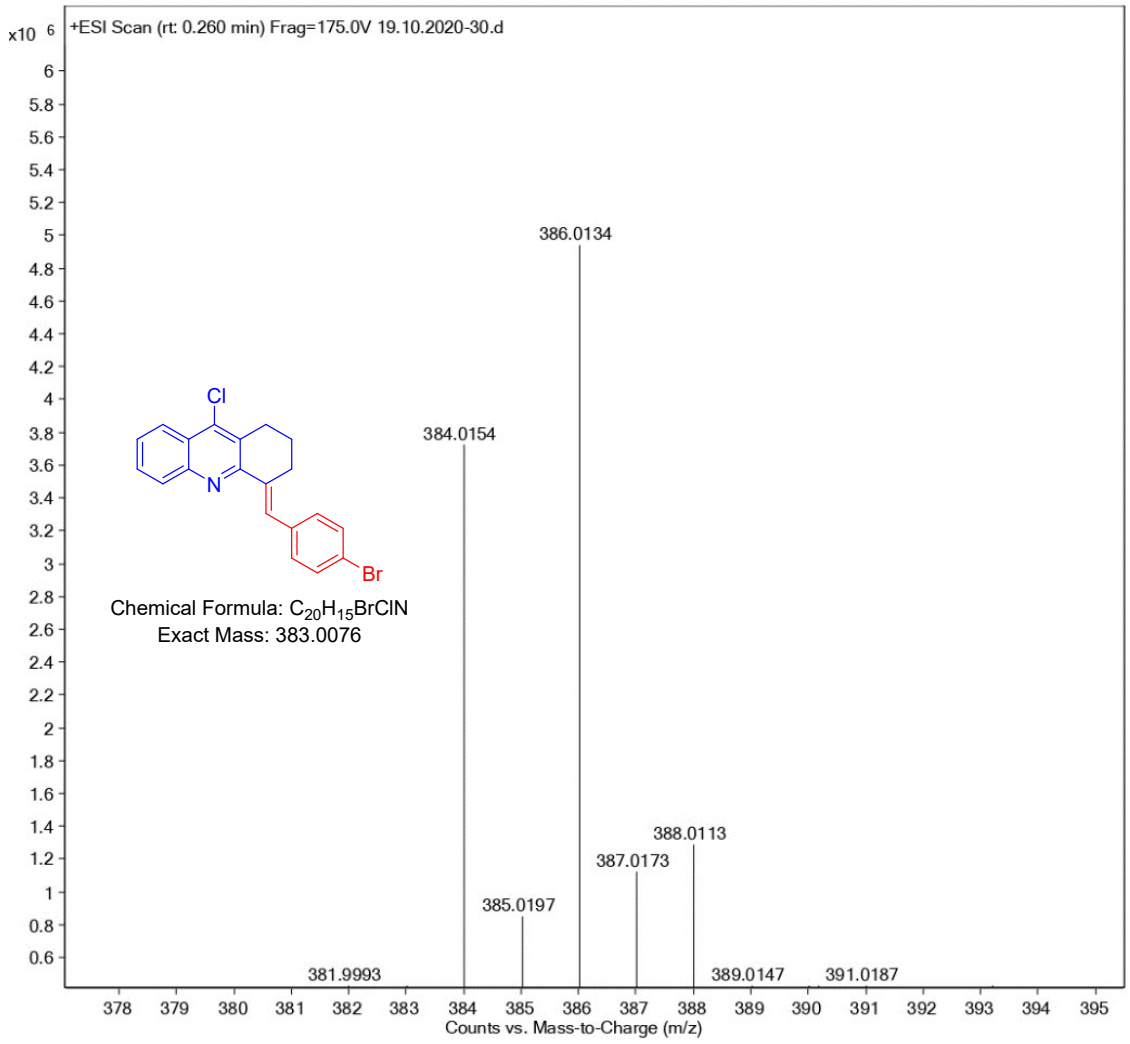

21-DK-TS-CL-A-P-CL-SELF-CL-C13
TS
154.29
146.95
141.16
136.29
136.07
132.97
131.09
129.63
129.49
128.99
128.78
128.40
126.96
125.73
123.76
27.81
27.59
22.45
Cl
N
Cl
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.235 min) Frag=175.0V 31.1.2023-6.d
x10 5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
340.0667
Cl
N
Cl
Chemical Formula: C20H15Cl2N
Exact Mass: 339.0582
270.0119
305.1579
323.1463
356.0609
381.1899
409.1845
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400
410
420
430
Counts vs. Mass-to-Charge (m/z)

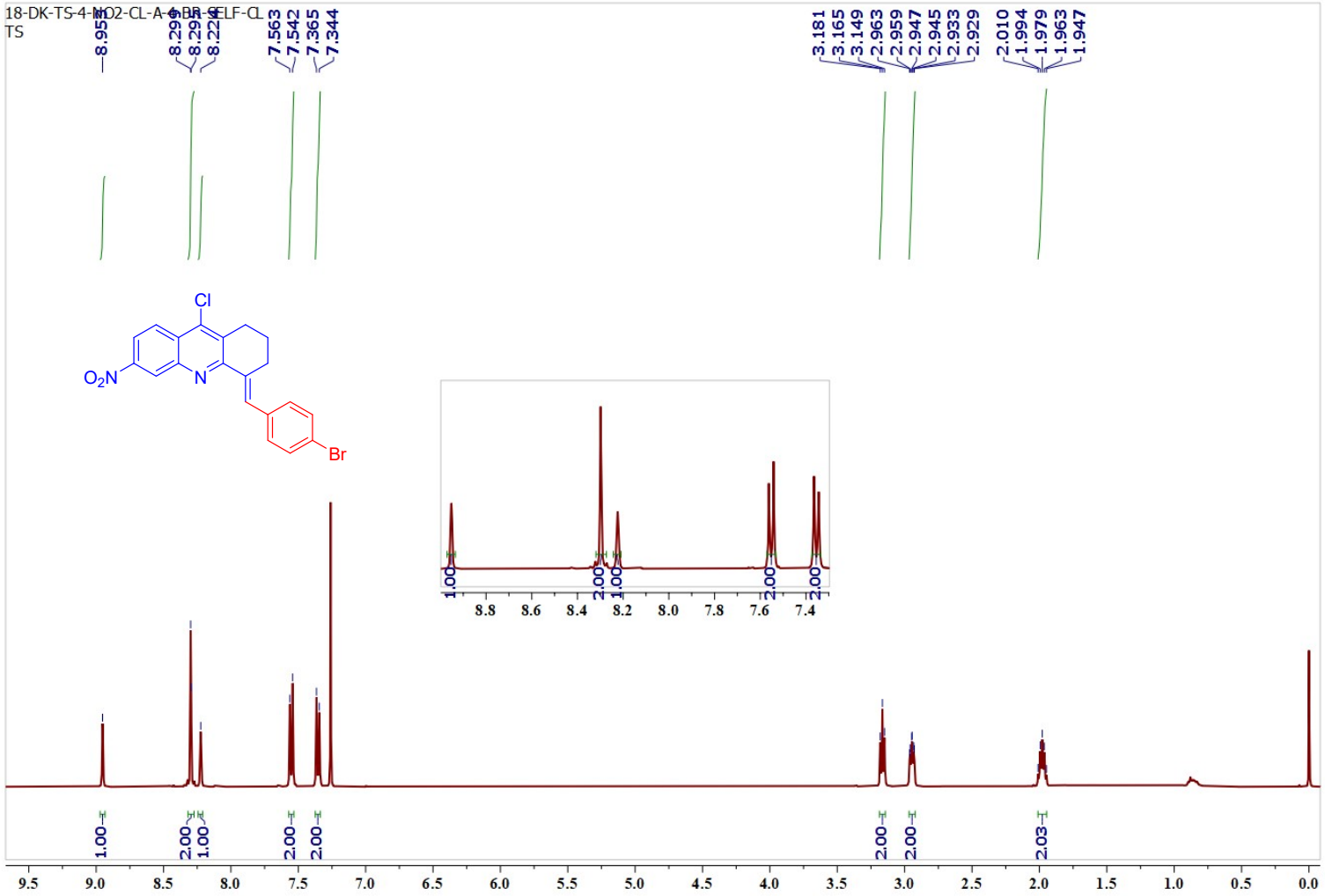
(E)-4-(4-Bromobenzylidene)-9-chloro-1,2,3,4-tetrahydroacridine (5n):

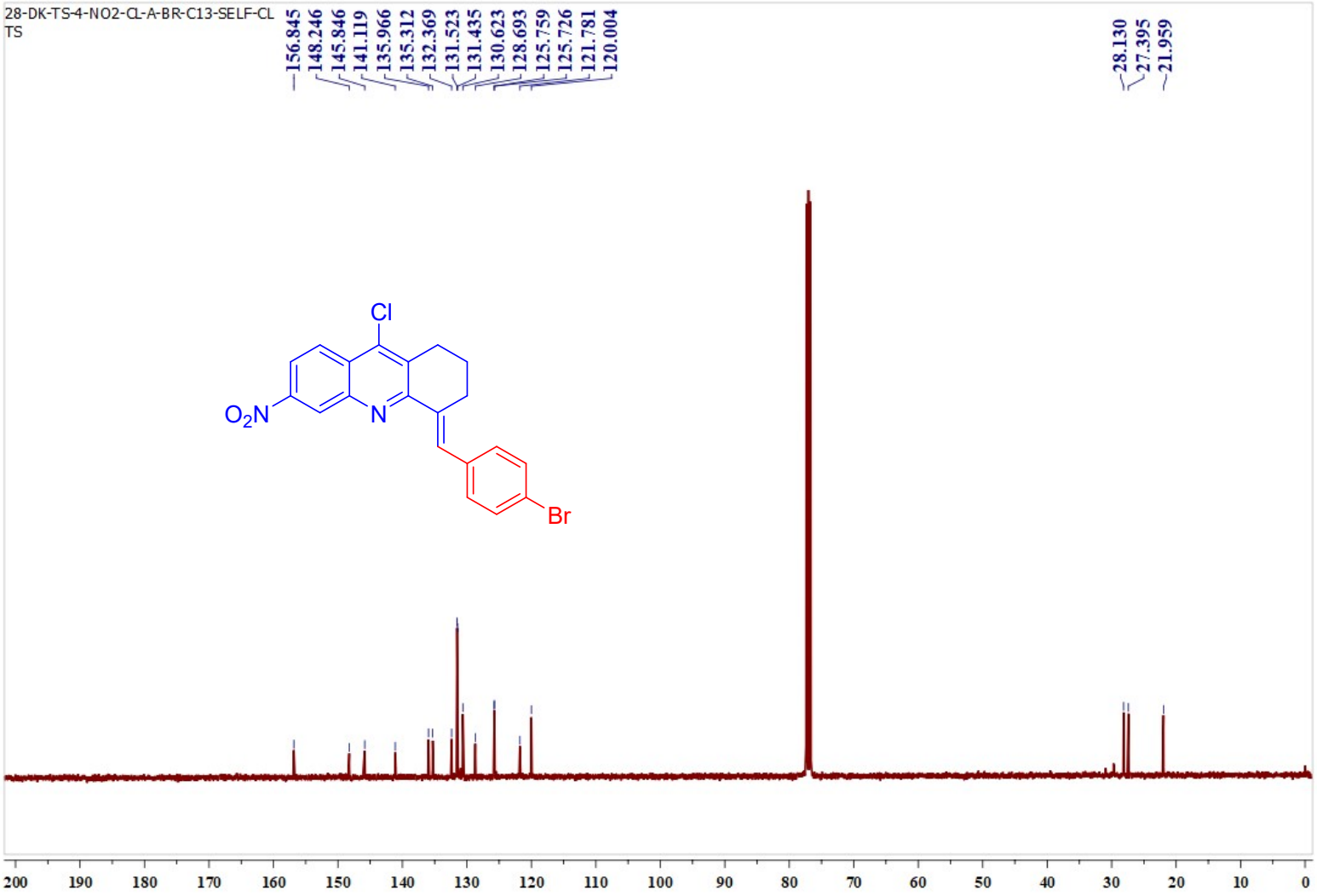


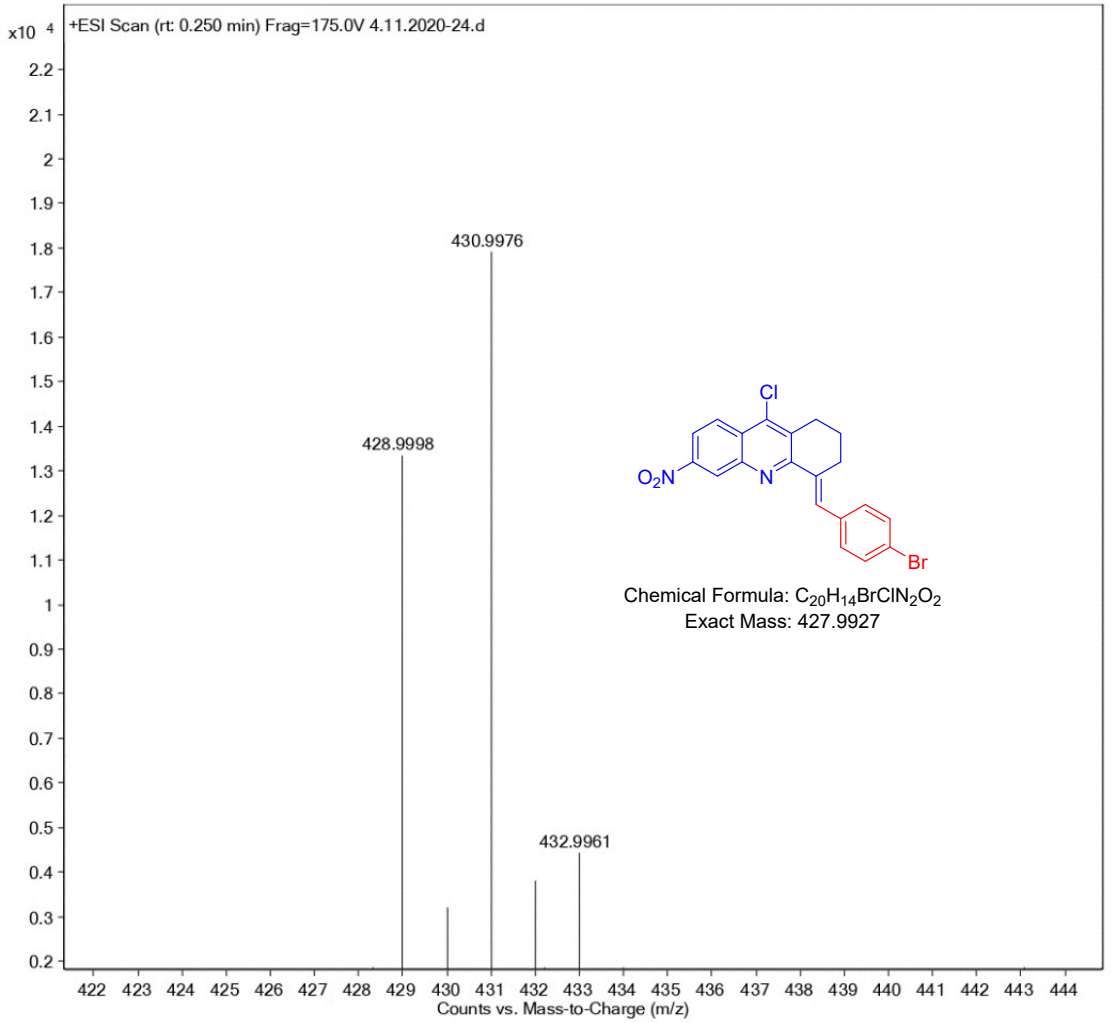

5-DK-TS-CL-A-4-BR-C13-SELF-CL
TS
154.243
136.497
131.406
131.366
131.184
130.491
129.636
129.567
129.021
127.013
125.737
123.778
121.226
27.811
27.586
22.429
Cl
N
Br
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.260 min) Frag=175.0V 19.10.2020-30.d
x10 6
Cl
N
Br
Chemical Formula: C20H15BrClN
Exact Mass: 383.0076
386.0134
384.0154
388.0113
387.0173
385.0197
381.9993
389.0147
391.0187
Counts vs. Mass-to-Charge (m/z)

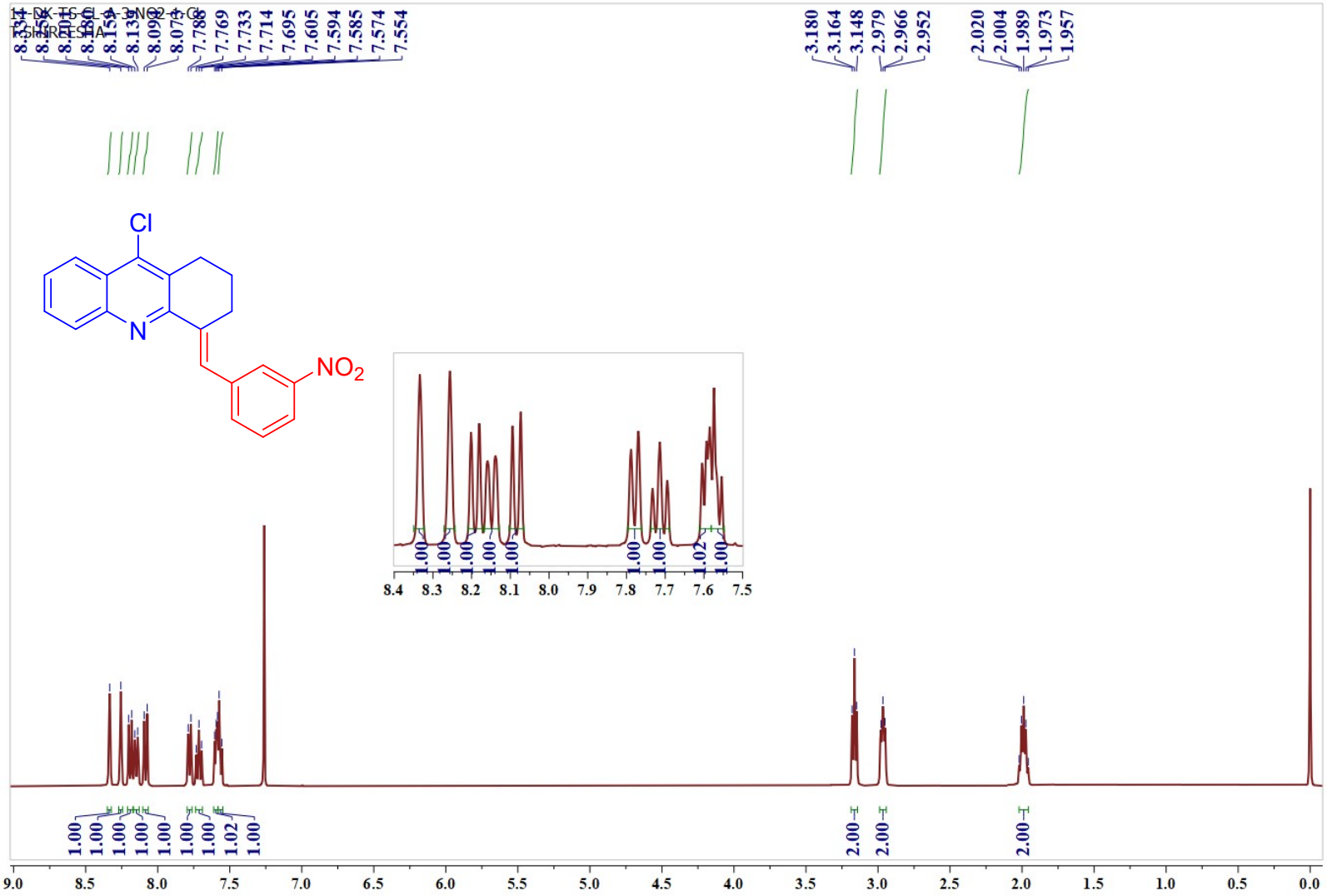
(E)-4-(4-Bromobenzylidene)-9-chloro-6-nitro-1,2,3,4-tetrahydroacridine (5o):

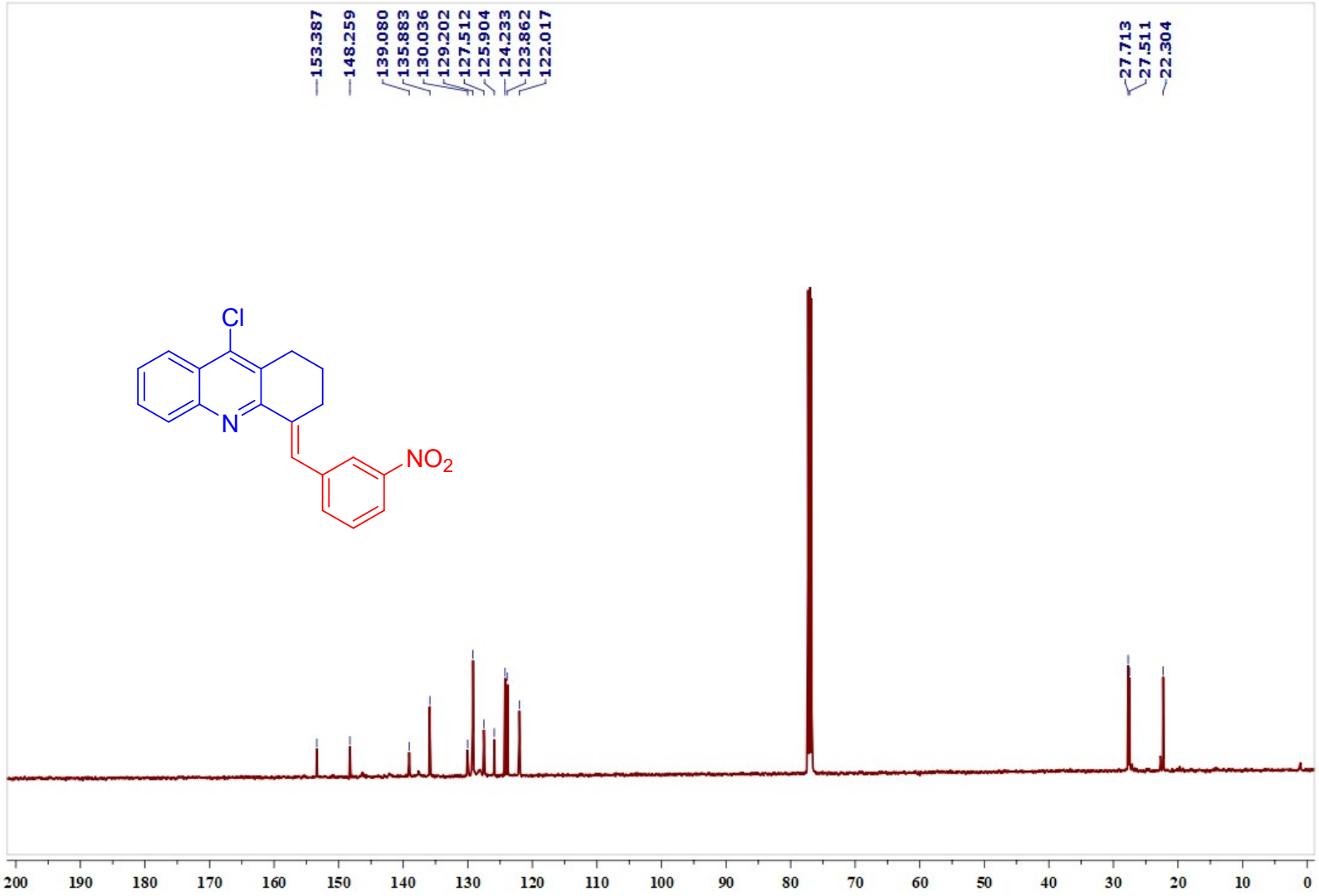


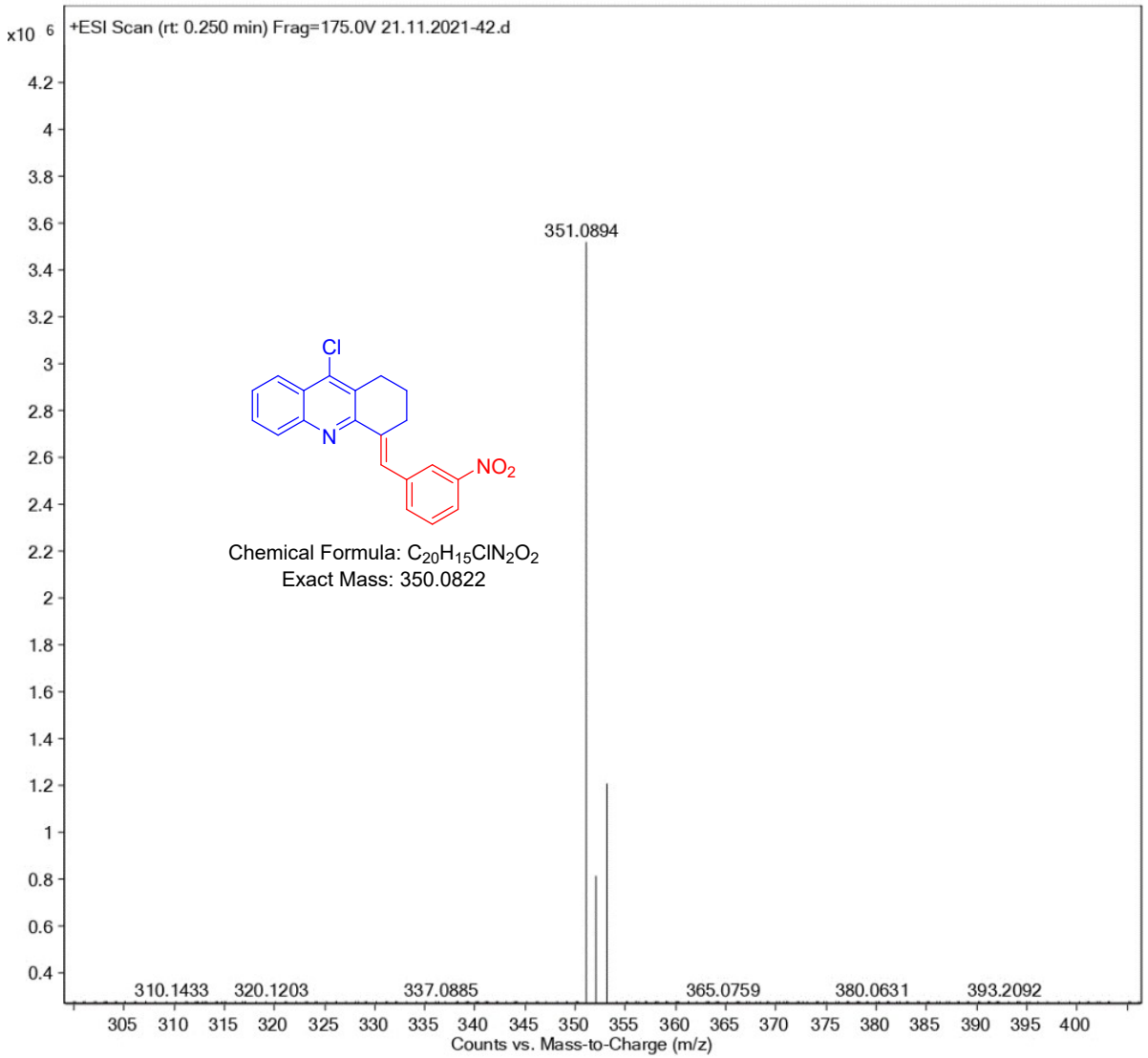

28-DK-TS-4-NO2-CL-A-BR-C13-SELF-CL
TS
156.845
148.246
145.846
141.119
135.966
135.312
132.369
131.523
131.435
130.623
128.693
125.759
125.726
121.781
120.004
28.130
27.395
21.959
Cl
O2N
N
Br
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.250 min) Frag=175.0V 4.11.2020-24.d
x10 4
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
430.9976
428.9998
432.9961
Cl
O2N
N
Br
Chemical Formula: C20H14BrClN2O2
Exact Mass: 427.9927
422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444
Counts vs. Mass-to-Charge (m/z)

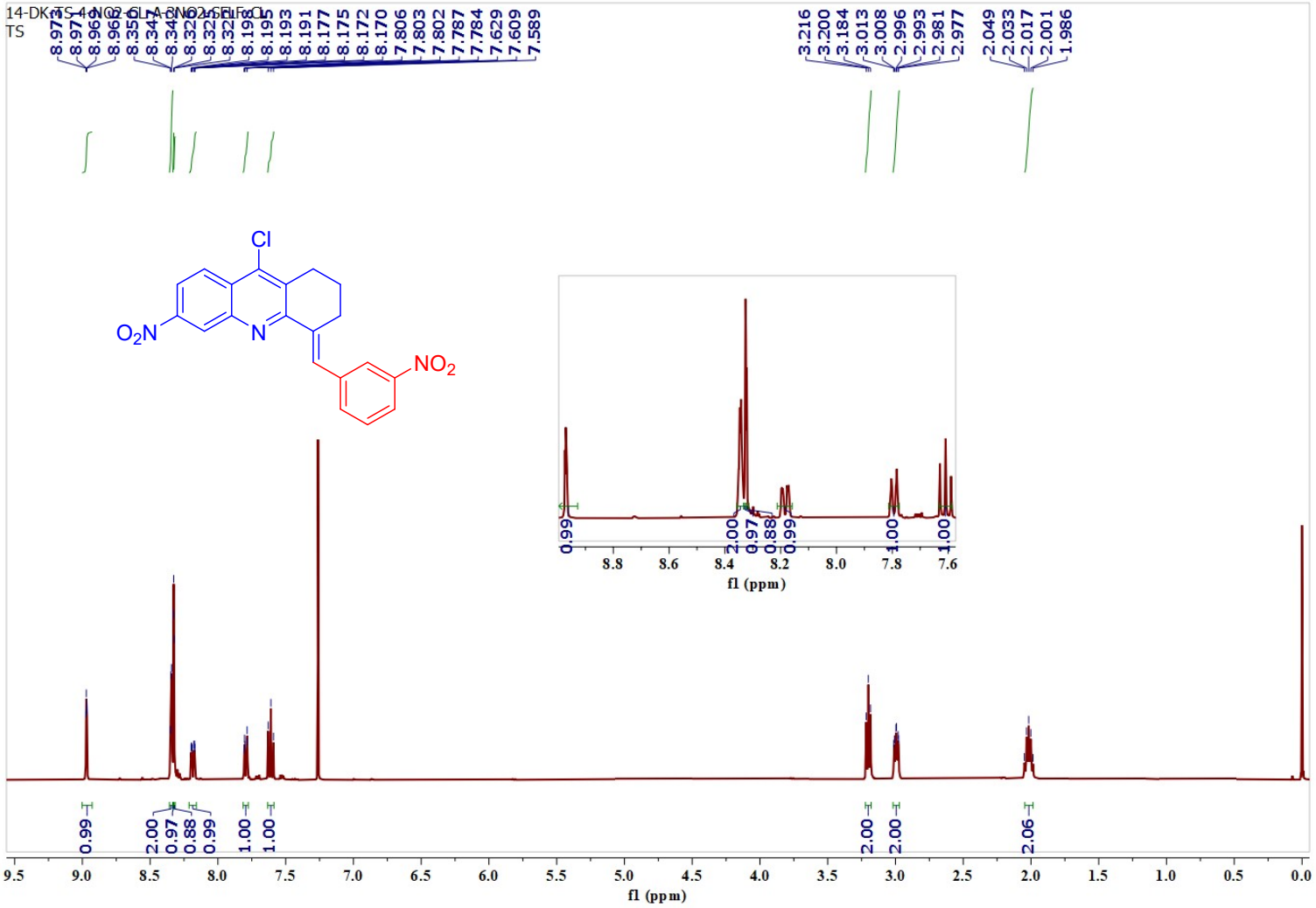
(E)-9-Chloro-4-(3-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5p):

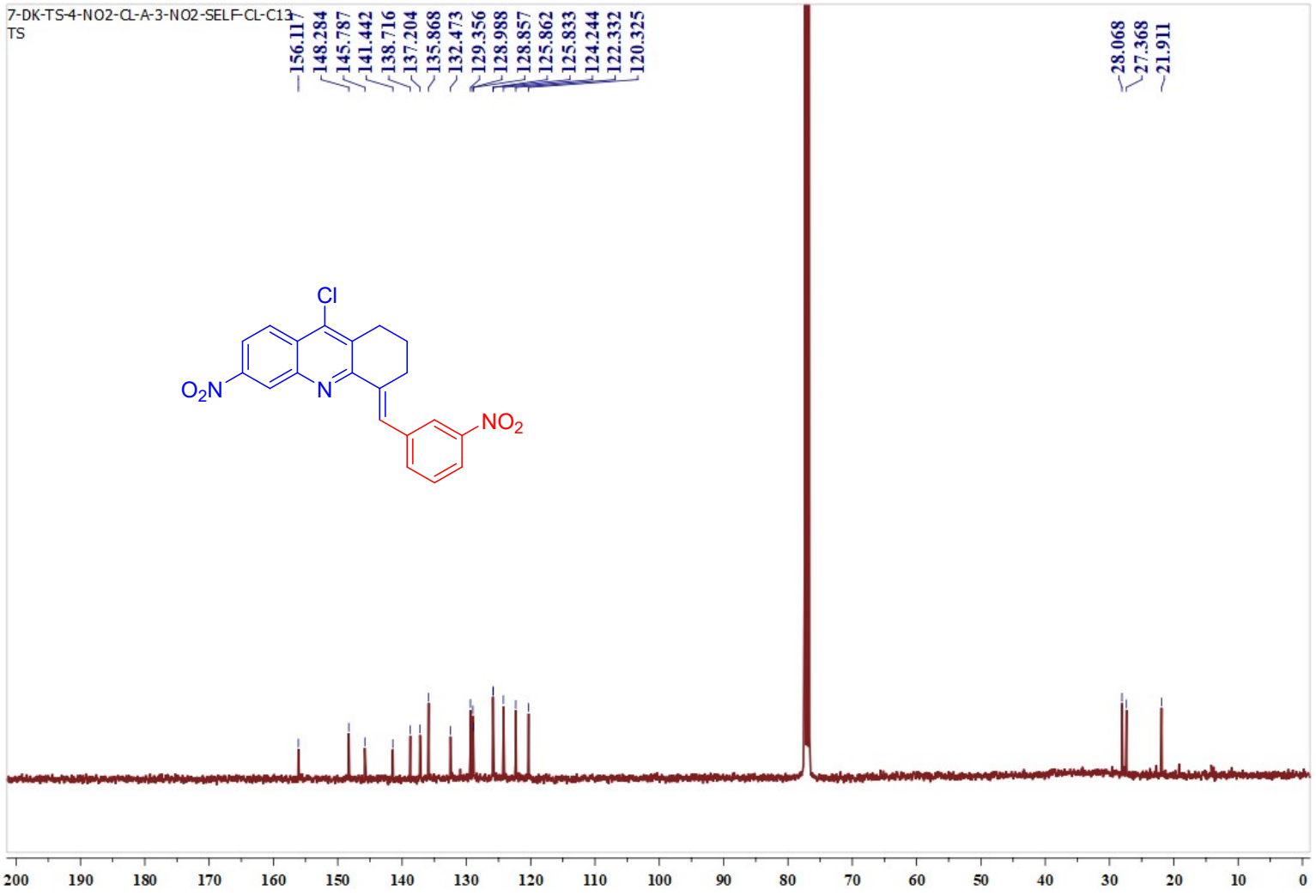


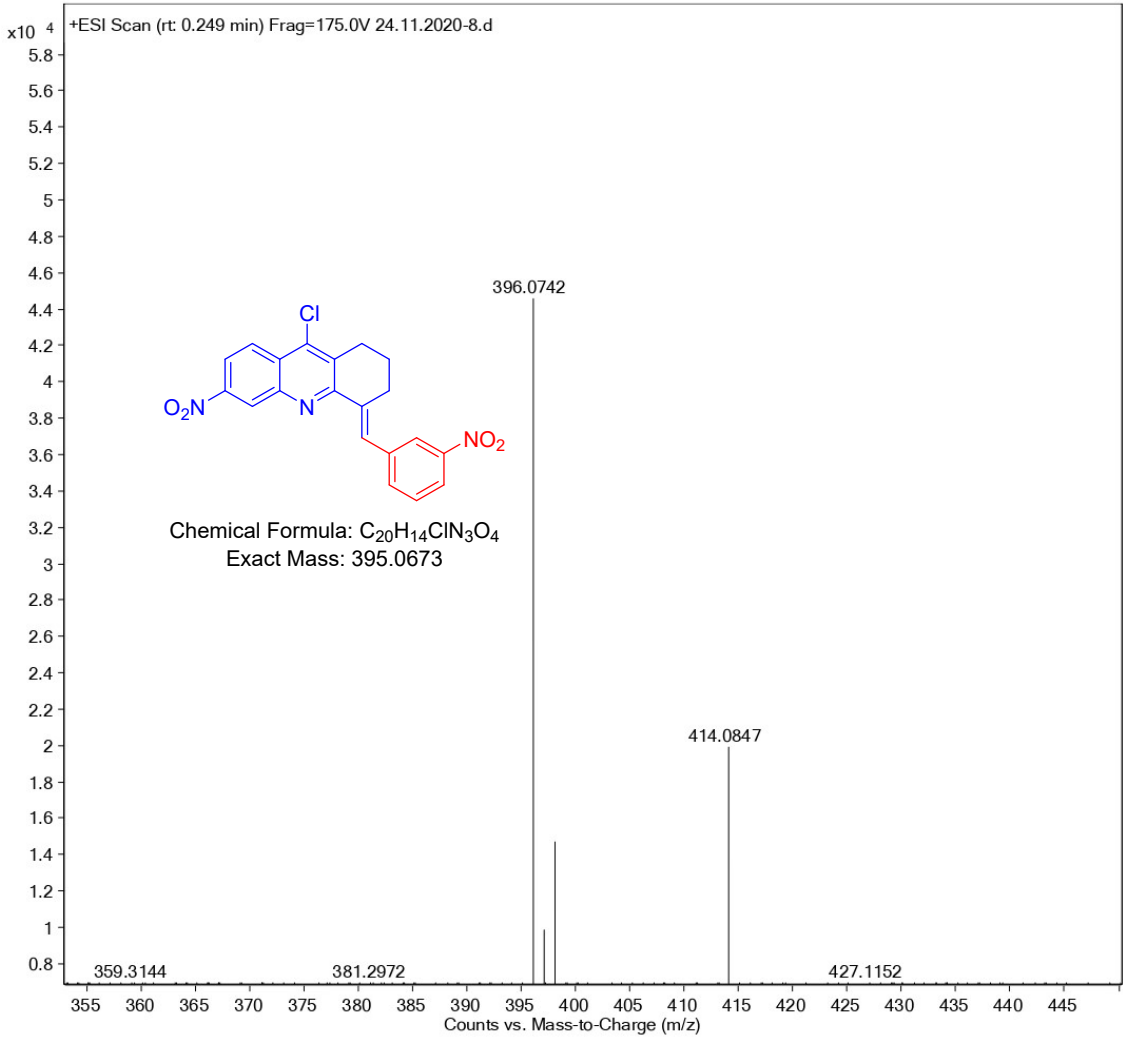

153.387
148.259
139.080
135.883
130.036
129.202
127.512
125.904
124.233
123.862
122.017
27.713
27.511
22.304
Cl
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.250 min) Frag=175.0V 21.11.2021-42.d
x10 6
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
351.0894
Cl
N
NO2
Chemical Formula: C20H15ClN2O2
Exact Mass: 350.0822
310.1433
320.1203
337.0885
365.0759
380.0631
393.2092
305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400
Counts vs. Mass-to-Charge (m/z)

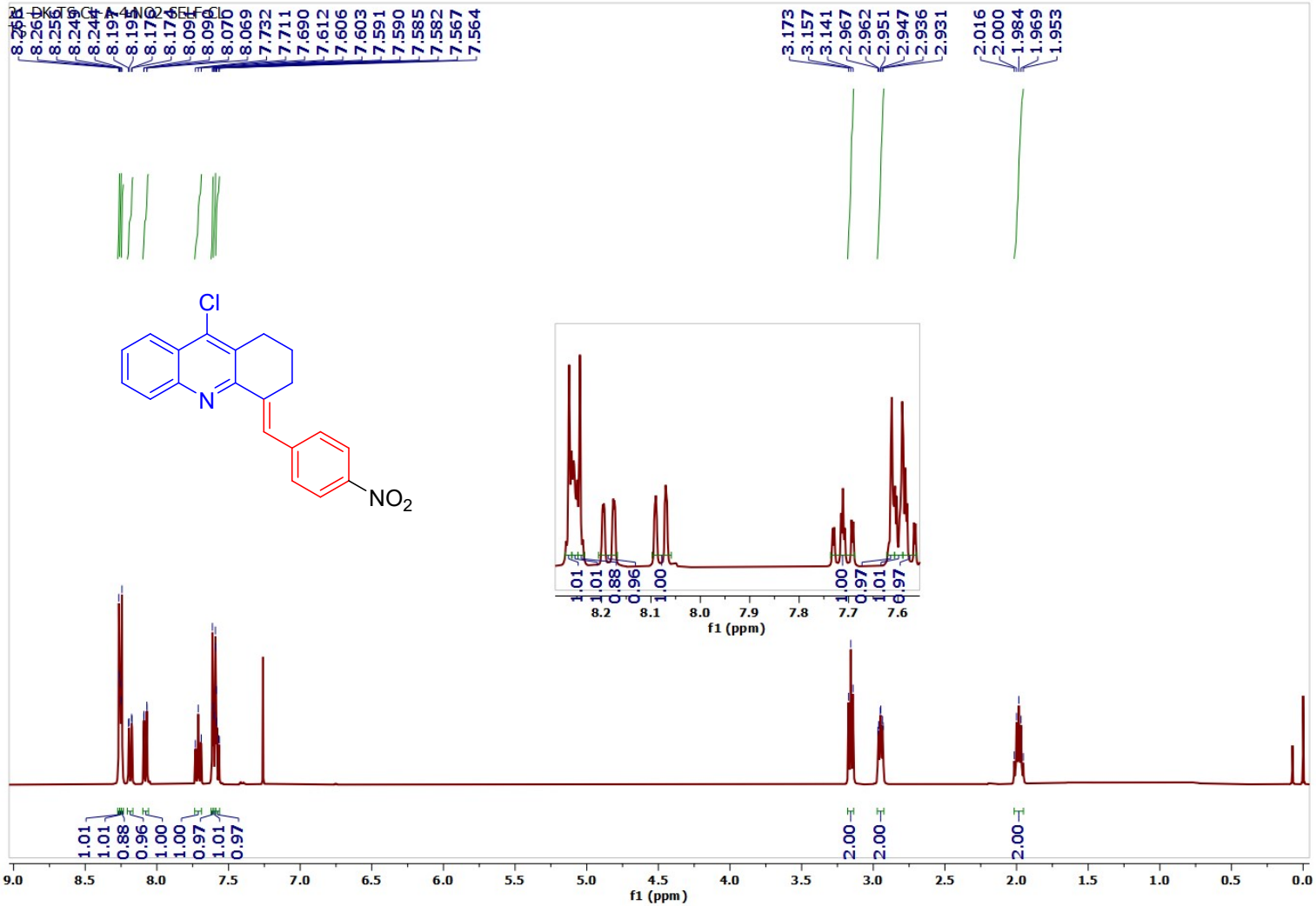
(E)-9-Chloro-6-nitro-4-(3-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5q):

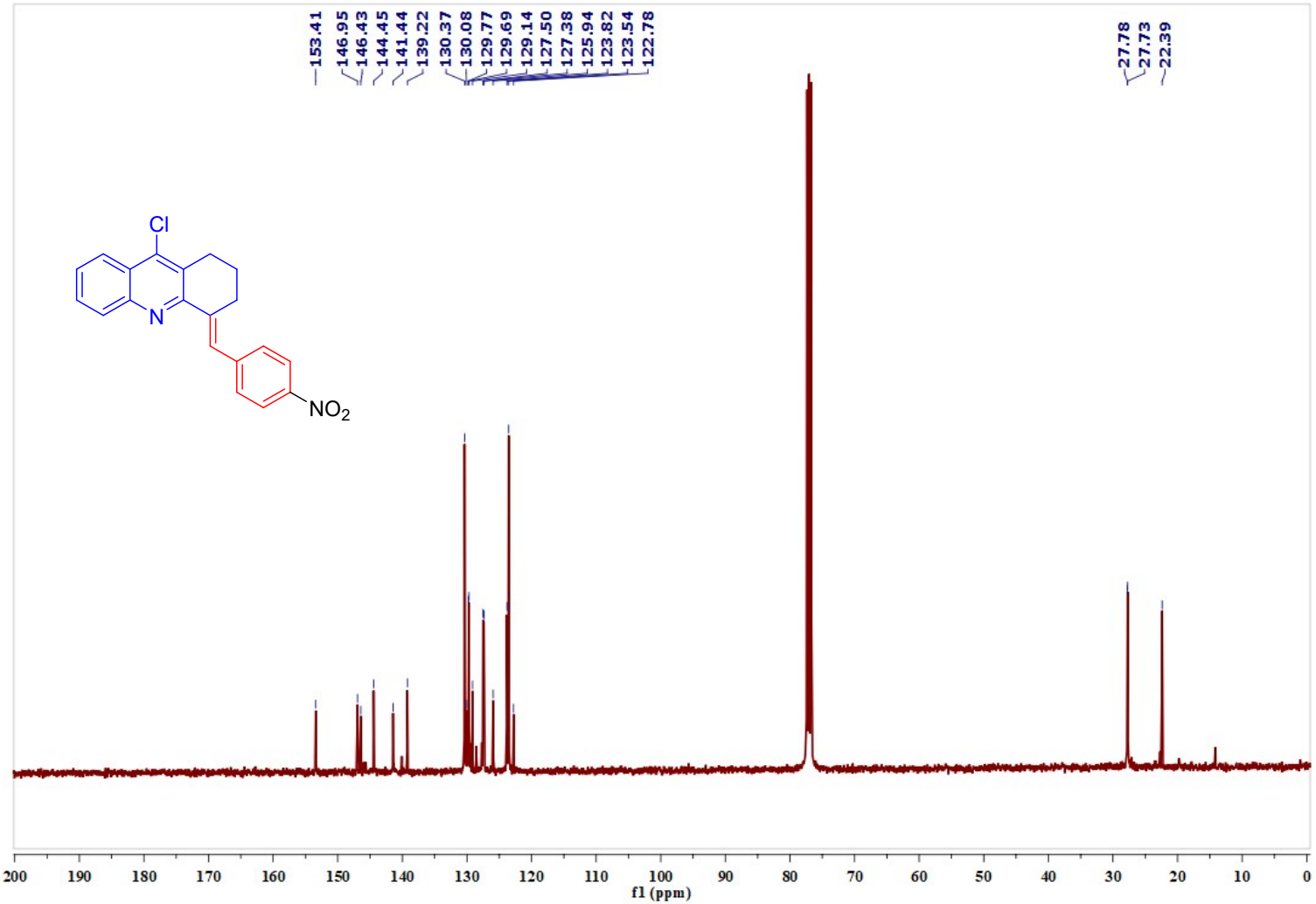


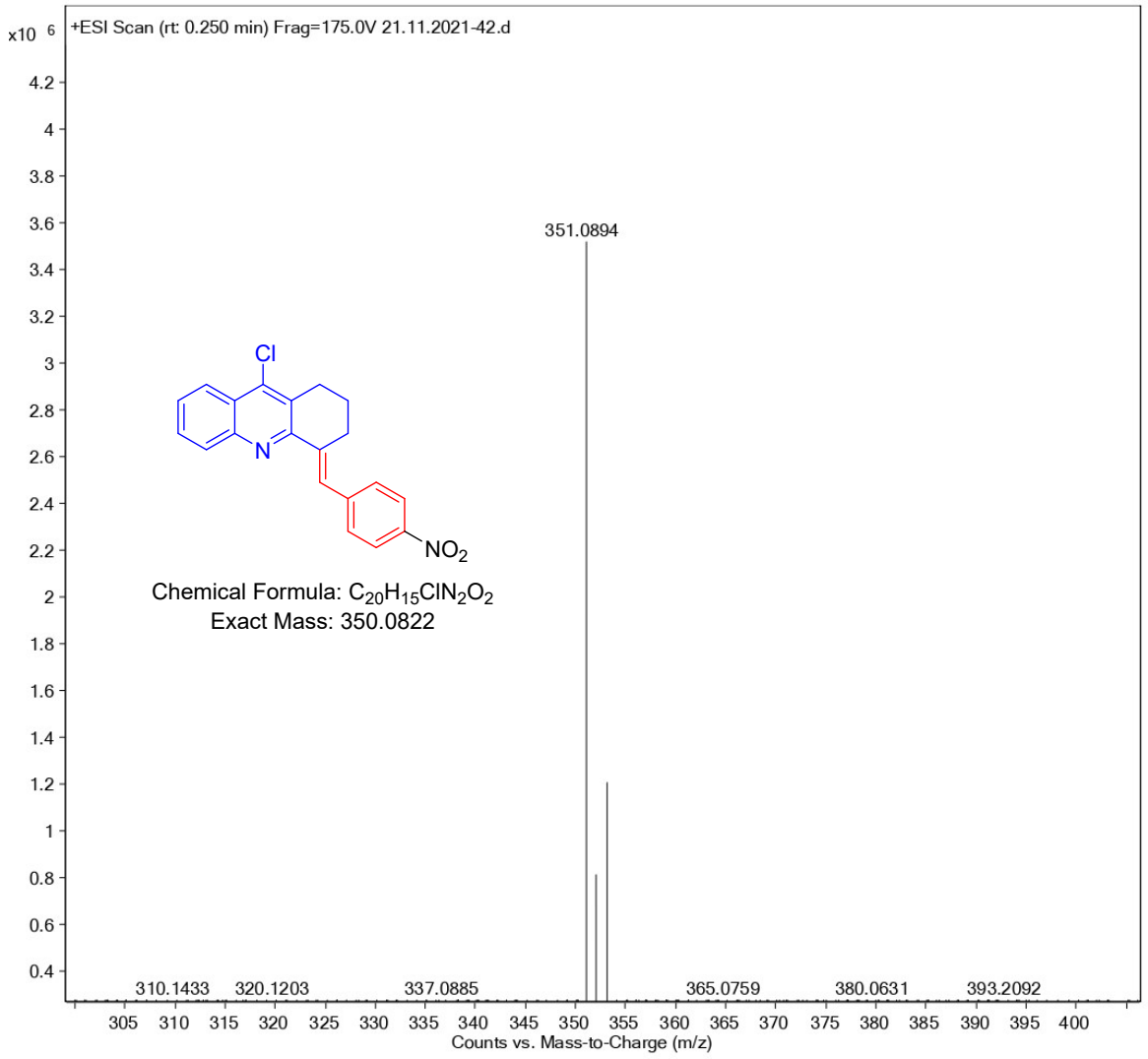

7-DK-TS-4-NO2-CL-A-3-NO2-SELF-CL-C13
TS
156.117
148.284
145.787
141.442
138.716
137.204
135.868
132.473
129.356
128.988
128.857
125.862
125.833
124.244
122.332
120.325
28.068
27.368
21.911
Cl
O2N
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


x10 4
+ESI Scan (rt: 0.249 min) Frag=175.0V 24.11.2020-8.d
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
396.0742
414.0847
359.3144
381.2972
427.1152
Cl
O2N
N
NO2
Chemical Formula: C20H14ClN3O4
Exact Mass: 395.0673
355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445
Counts vs. Mass-to-Charge (m/z)

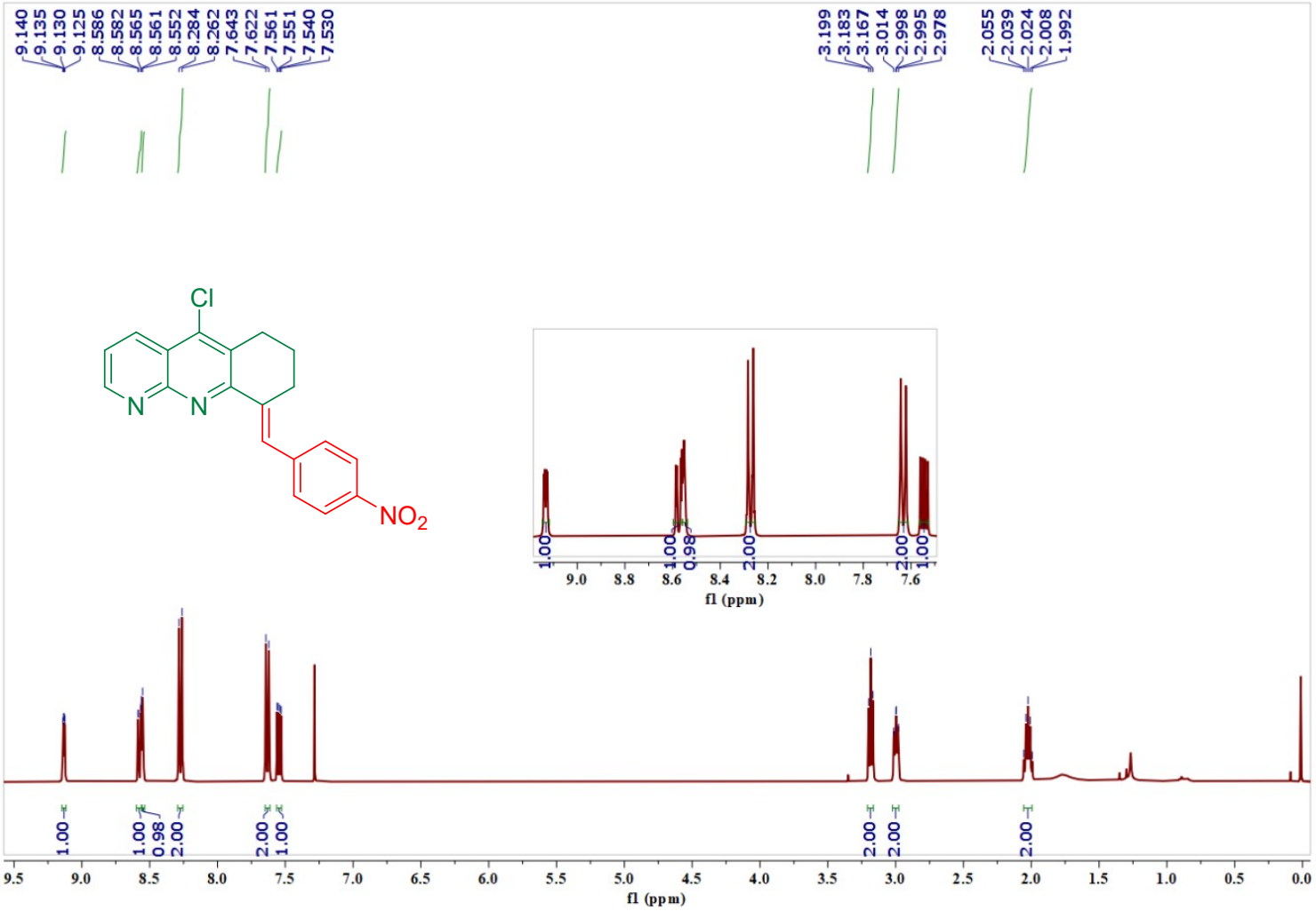
(E)-9-Chloro-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5r):

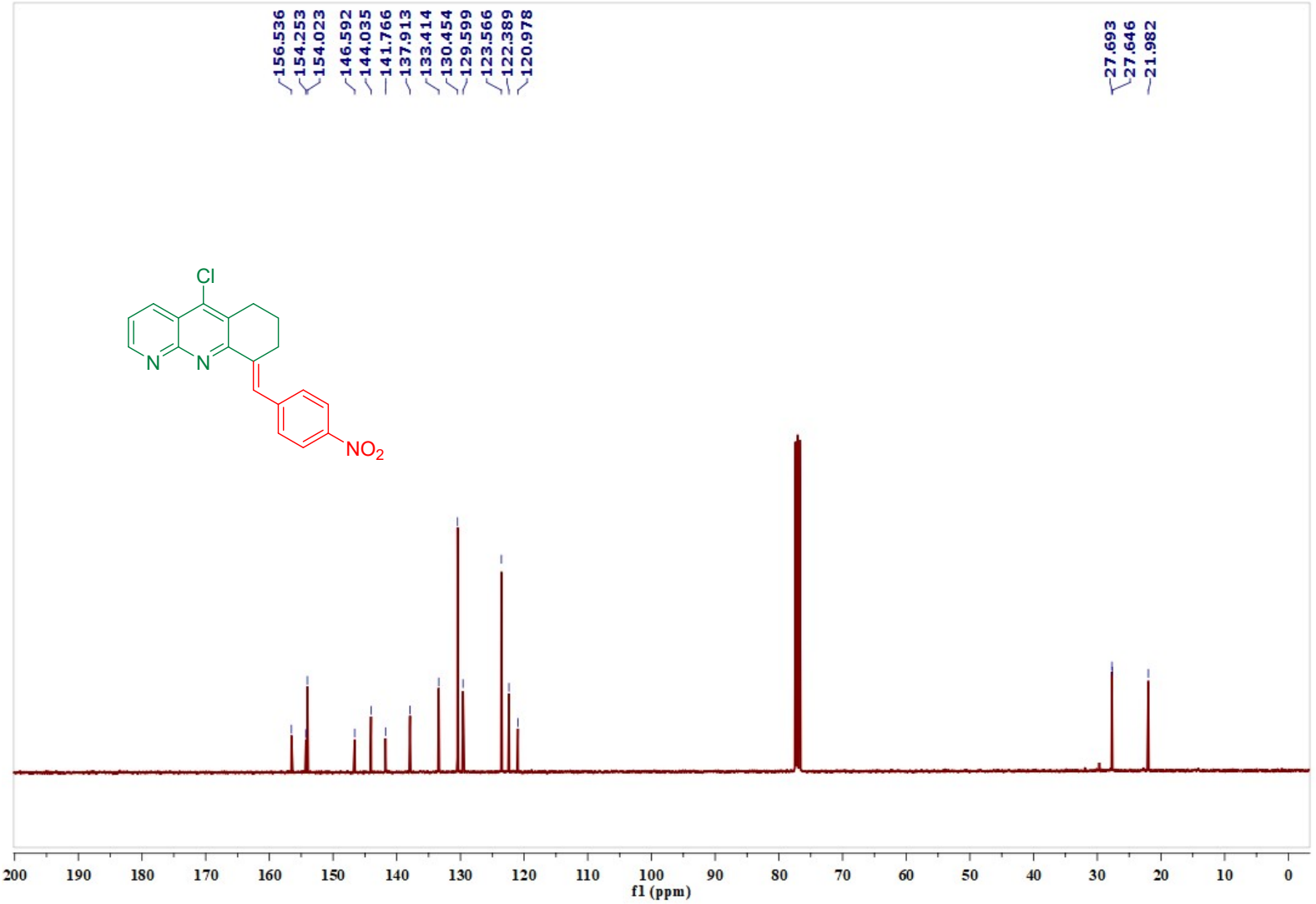


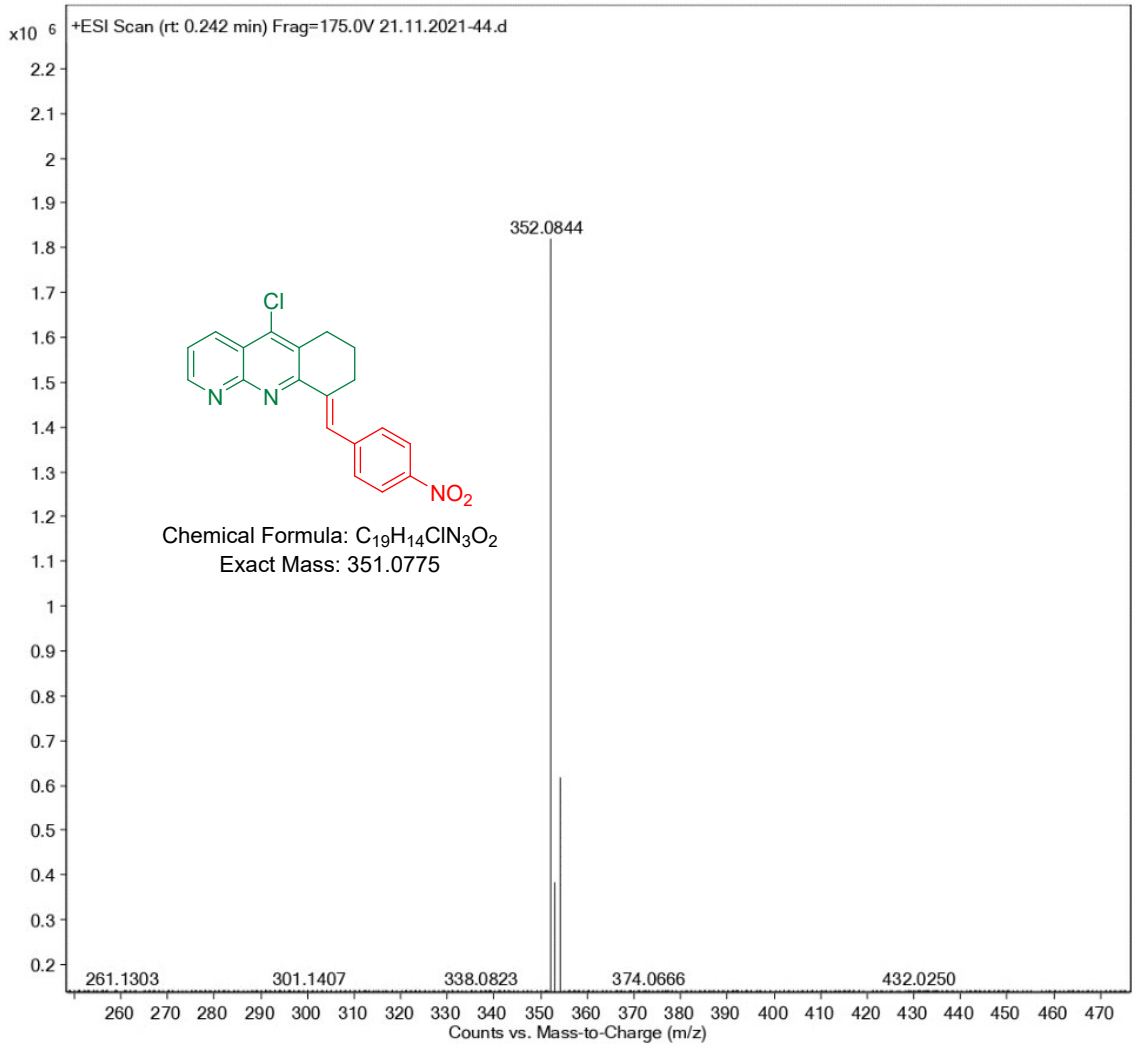

153.41
146.95
146.43
144.45
141.44
139.22
130.37
130.08
129.77
129.69
129.14
127.50
127.38
125.94
123.82
123.54
122.78
27.78
27.73
22.39
Cl
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.250 min) Frag=175.0V 21.11.2021-42.d
x10 6
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
351.0894
Cl
N
NO2
Chemical Formula: C20H15ClN2O2
Exact Mass: 350.0822
310.1433
320.1203
337.0885
365.0759
380.0631
393.2092
305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400
Counts vs. Mass-to-Charge (m/z)

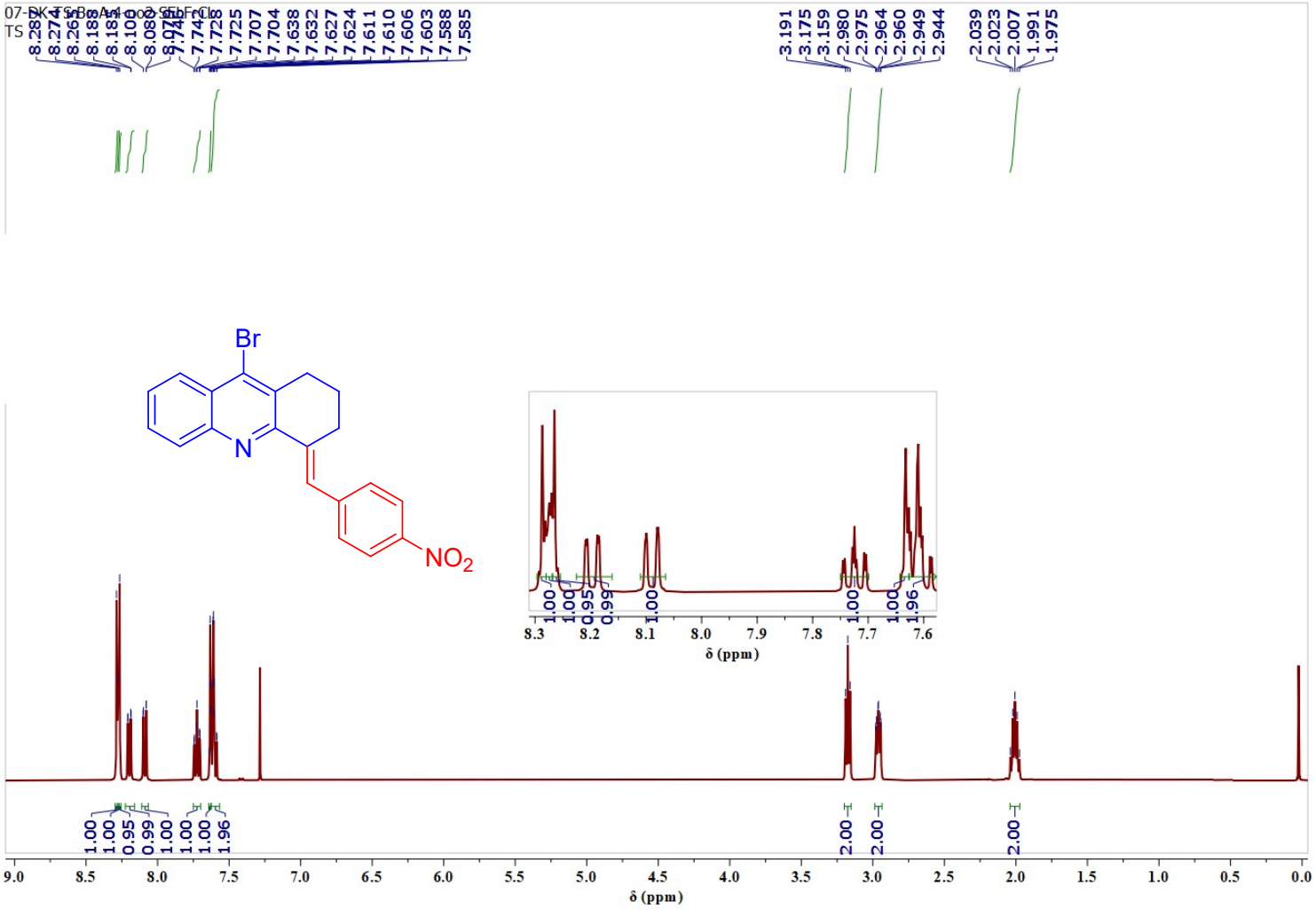
(E)-5-Chloro-9-(4-nitrobenzylidene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5s):

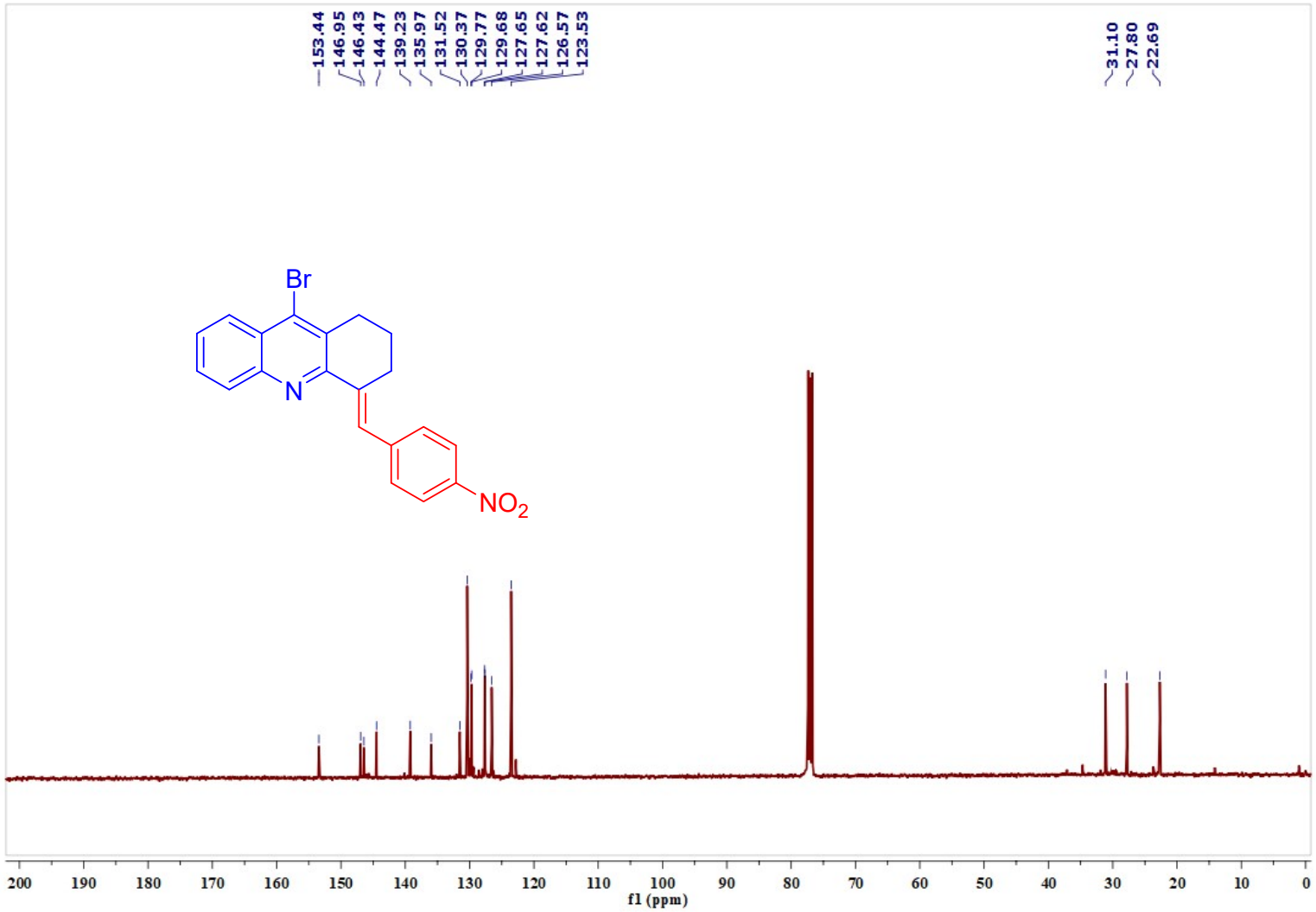


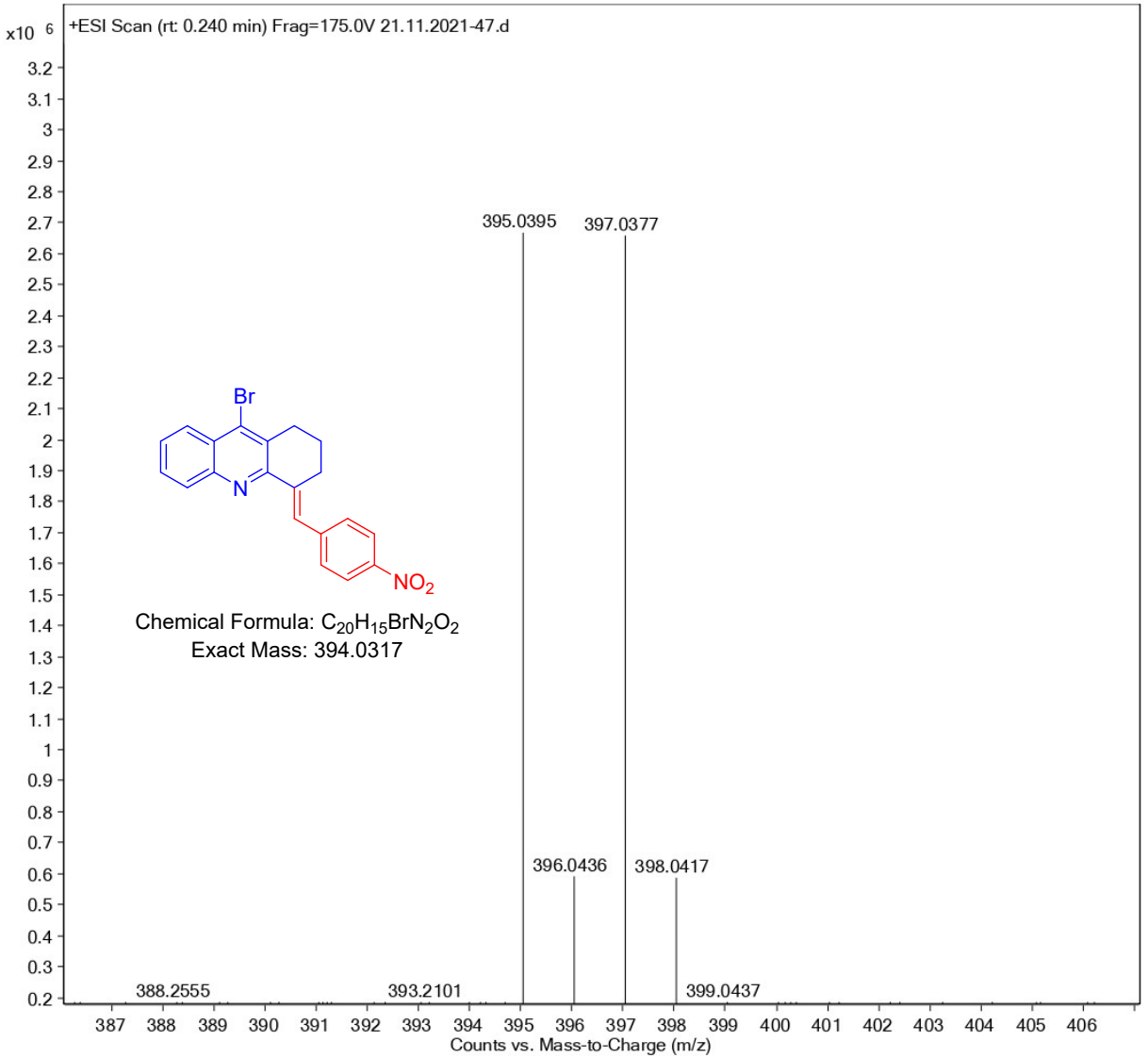

156.536
154.253
154.023
146.592
144.035
141.766
137.913
133.414
130.454
129.599
123.566
122.389
120.978
27.693
27.646
21.982
Cl
N
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.242 min) Frag=175.0V 21.11.2021-44.d
x10 6
352.0844
Cl
N
N
NO2
Chemical Formula: C19H14ClN3O2
Exact Mass: 351.0775
261.1303
301.1407
338.0823
374.0666
432.0250
Counts vs. Mass-to-Charge (m/z)

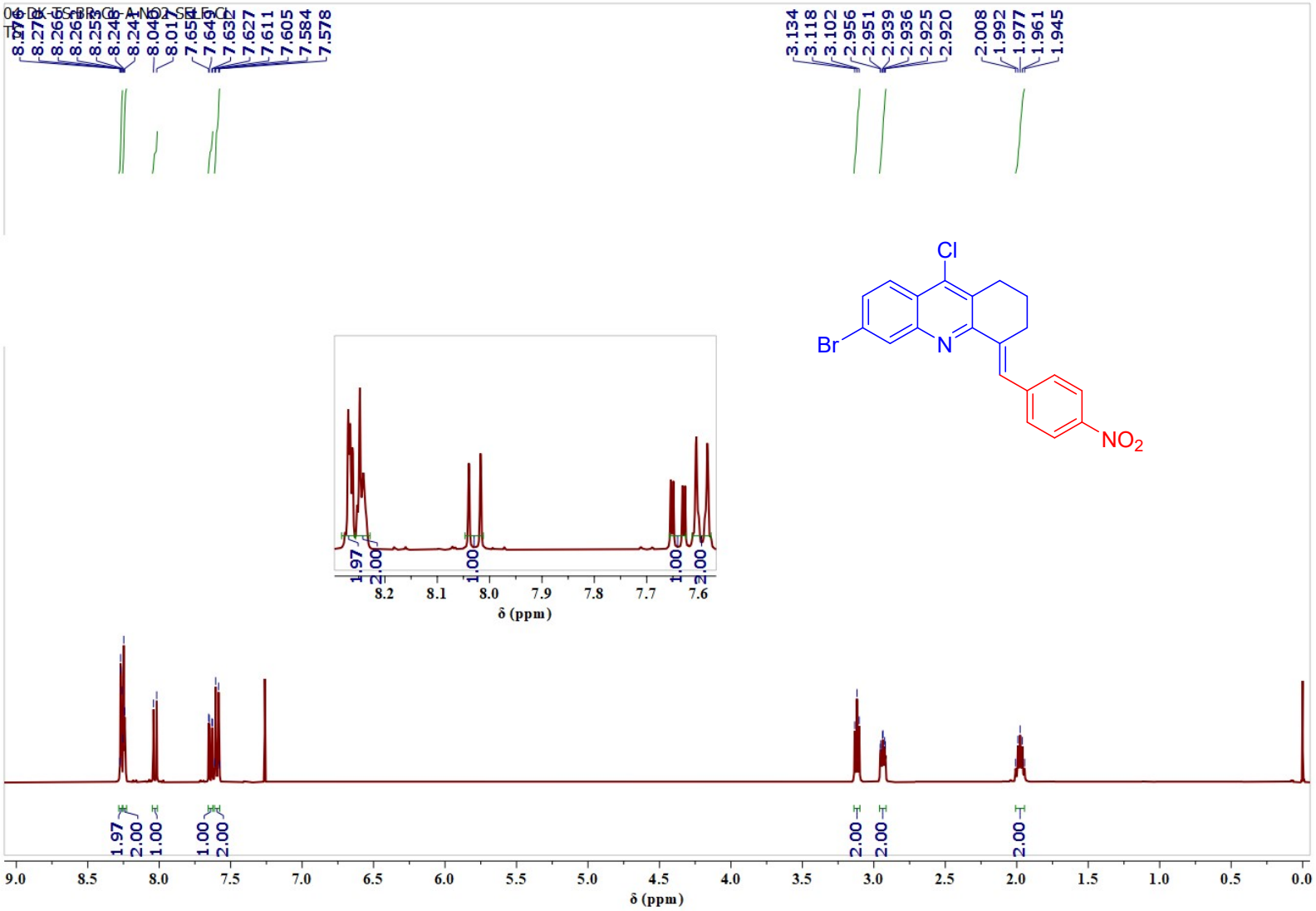
(E)-9-Bromo-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5t):

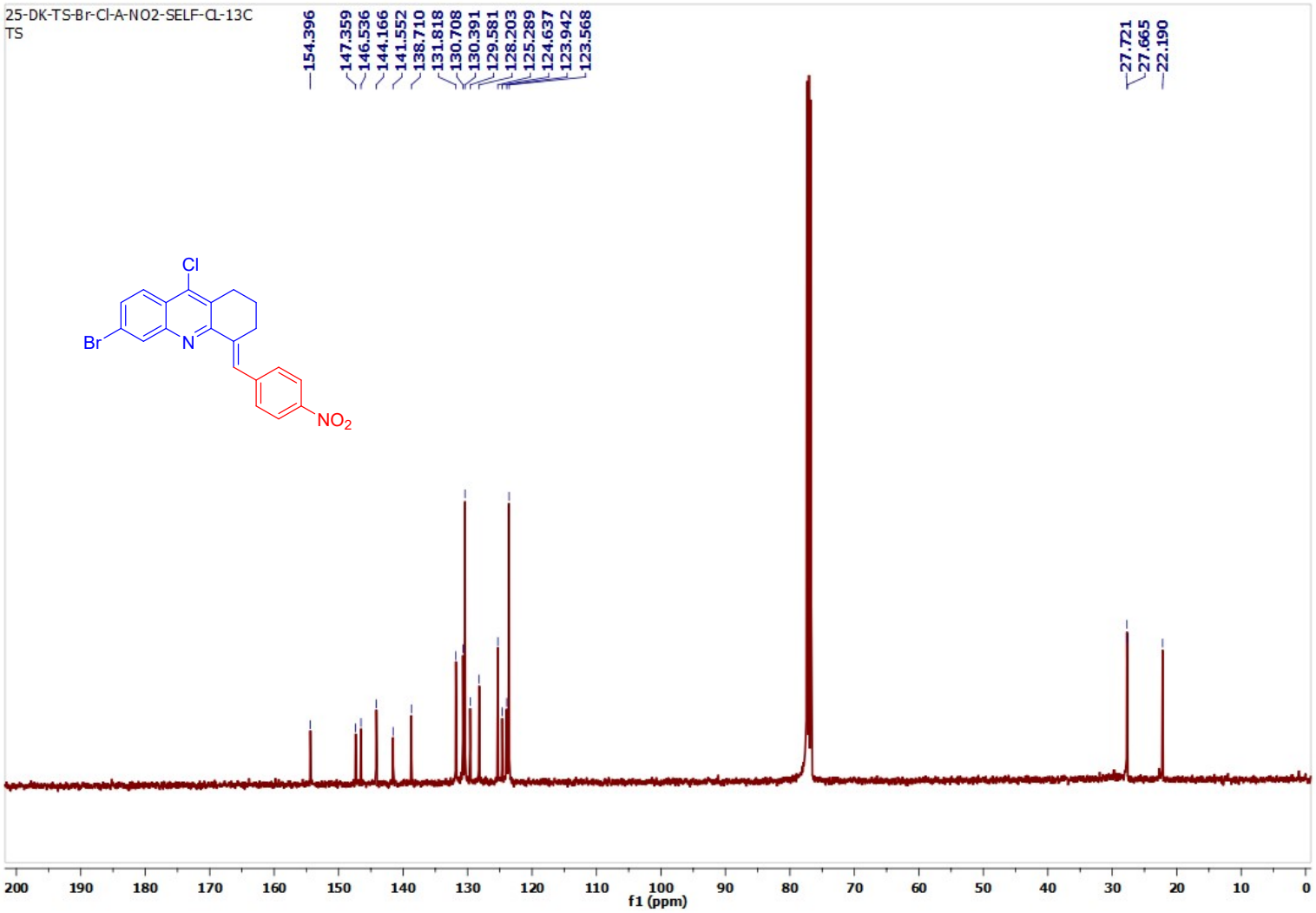


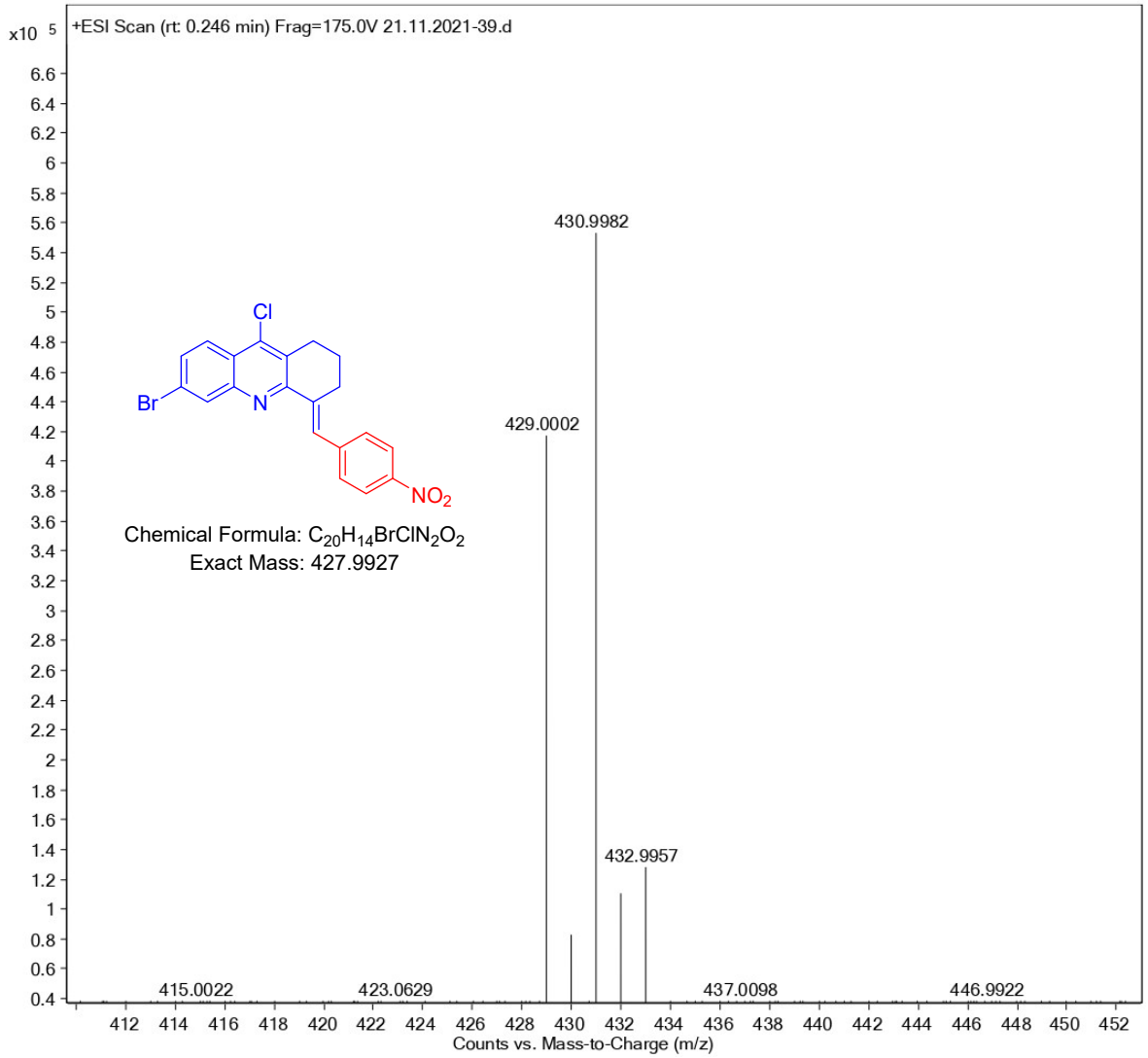

153.44
146.95
146.43
144.47
139.23
135.97
131.52
130.37
129.77
129.68
127.65
127.62
126.57
123.53
31.10
27.80
22.69
Br
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.240 min) Frag=175.0V 21.11.2021-47.d
x10 6
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
395.0395
397.0377
396.0436
398.0417
388.2555
393.2101
399.0437
Br
N
NO2
Chemical Formula: C20H15BrN2O2
Exact Mass: 394.0317
387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406
Counts vs. Mass-to-Charge (m/z)

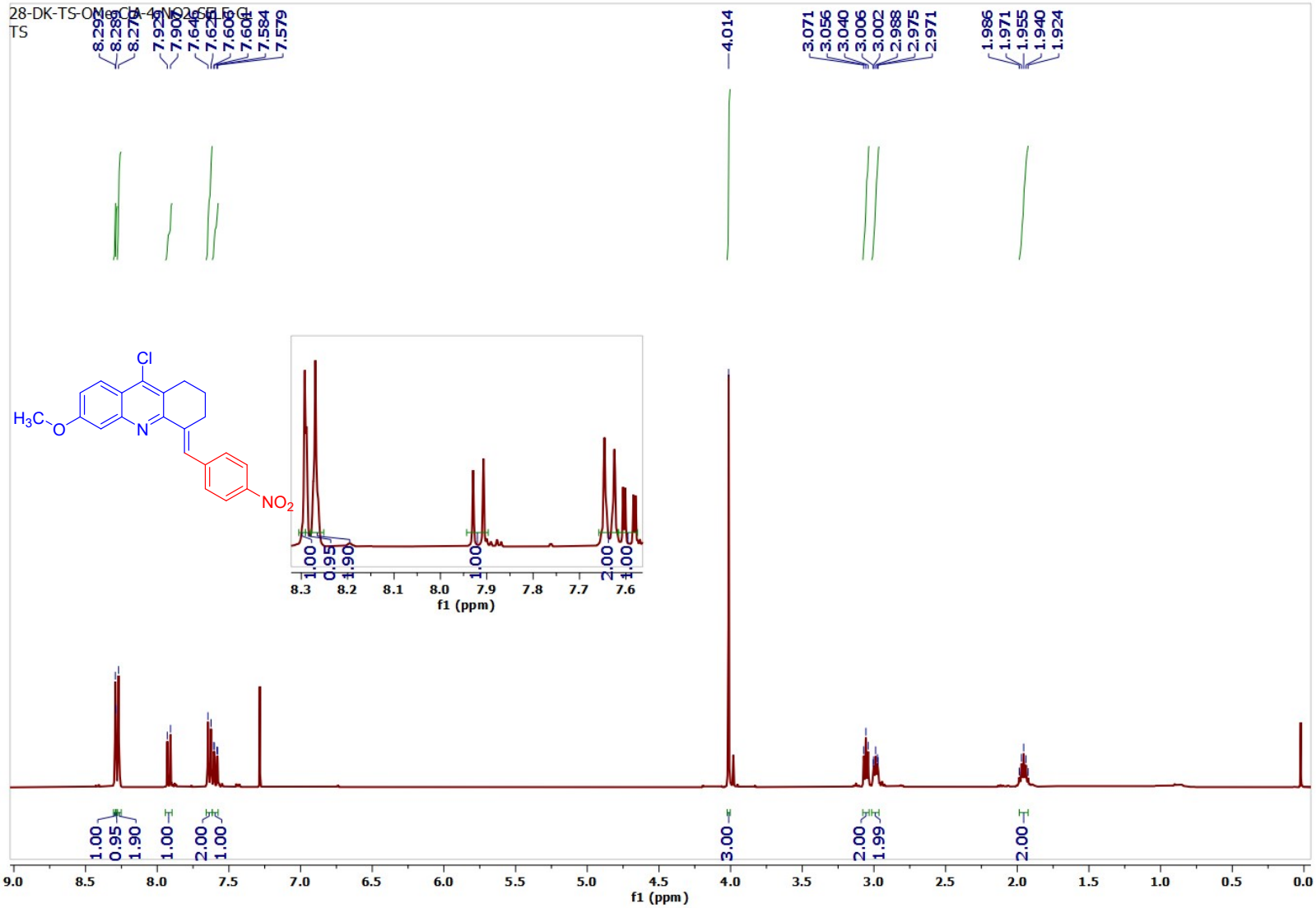
(E)-6-Bromo-9-chloro-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5u):

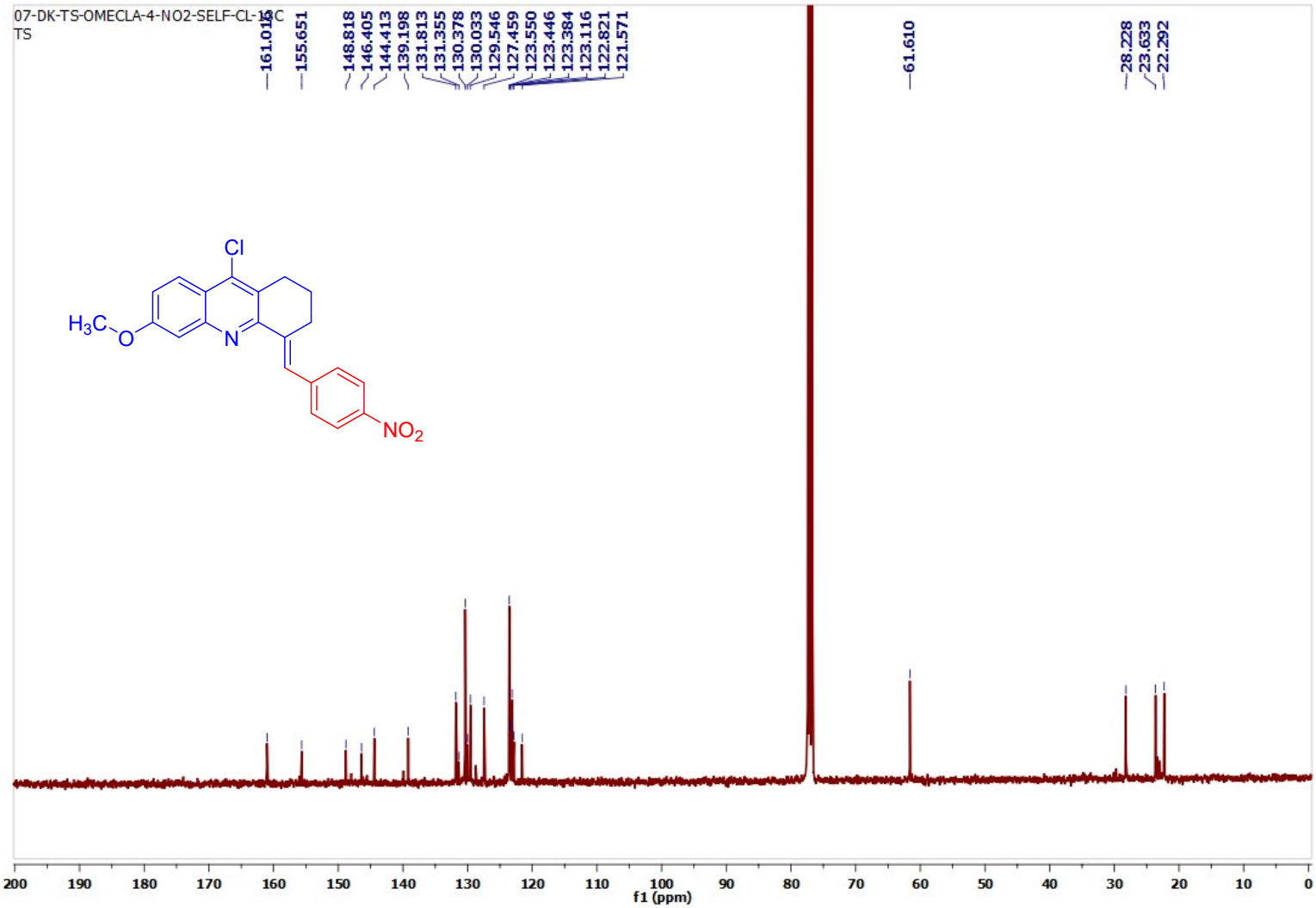


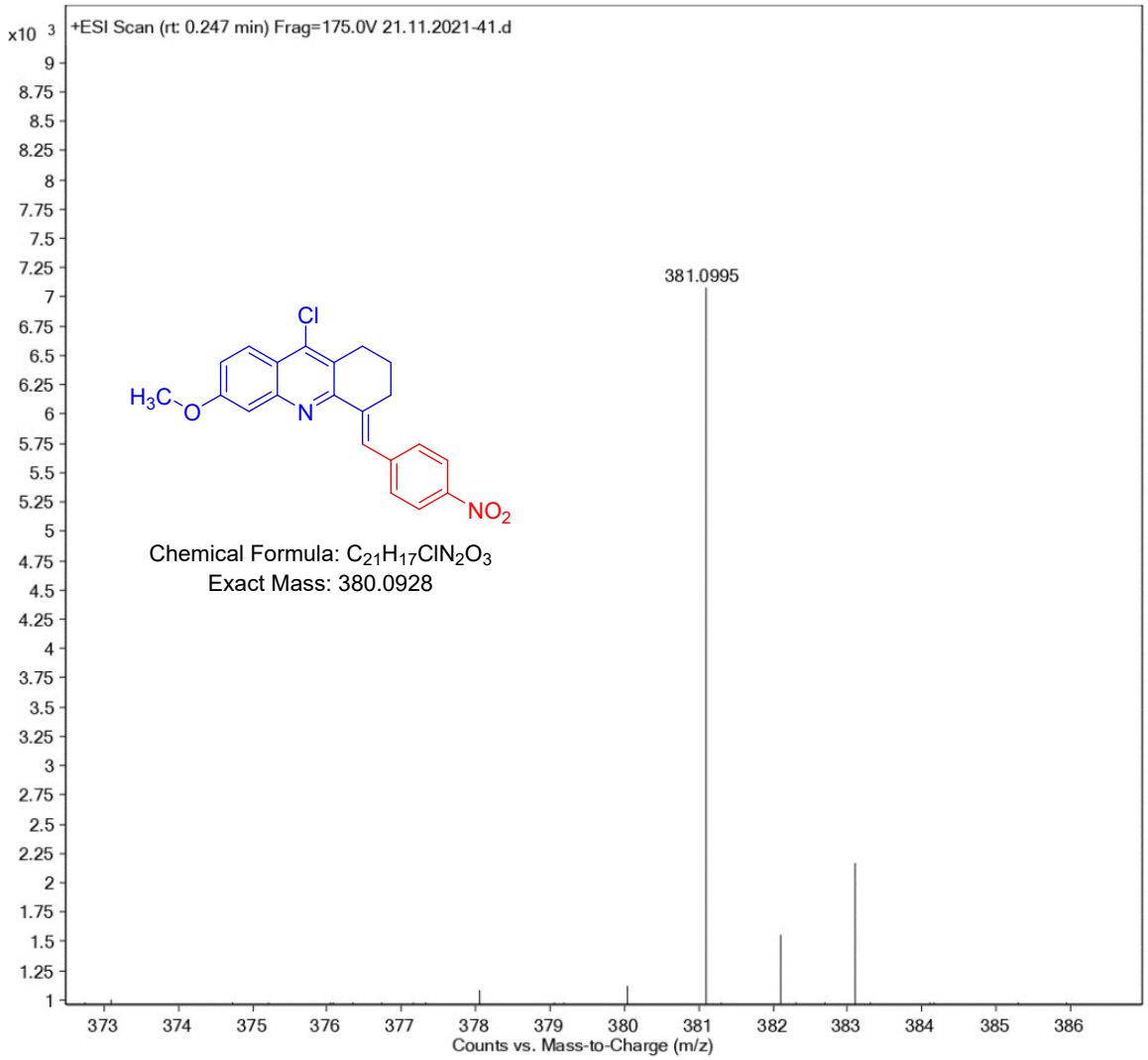

25-DK-TS-Br-Cl-A-NO2-SELF-CL-13C
TS
154.396
147.359
146.536
144.166
141.552
138.710
131.818
130.708
130.391
129.581
128.203
125.289
124.637
123.942
123.568
27.721
27.665
22.190
Cl
Br
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.246 min) Frag=175.0V 21.11.2021-39.d
x10 5
Cl
Br
N
NO2
Chemical Formula: C20H14BrClN2O2
Exact Mass: 427.9927
430.9982
429.0002
432.9957
415.0022
423.0629
437.0098
446.9922
Counts vs. Mass-to-Charge (m/z)

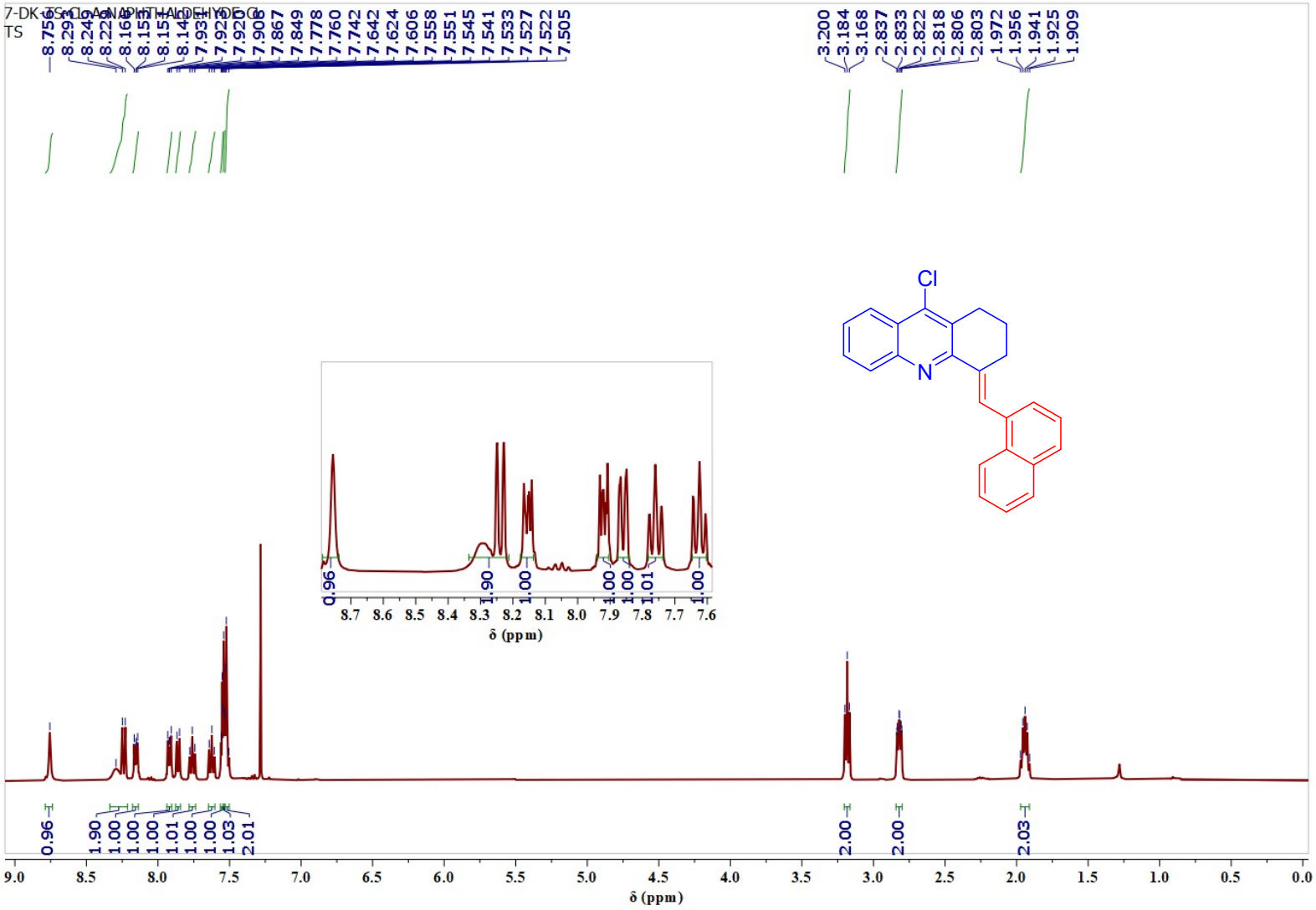
(E)-9-Chloro-6-methoxy-4-(4-nitrobenzylidene)-1,2,3,4-tetrahydroacridine (5v):

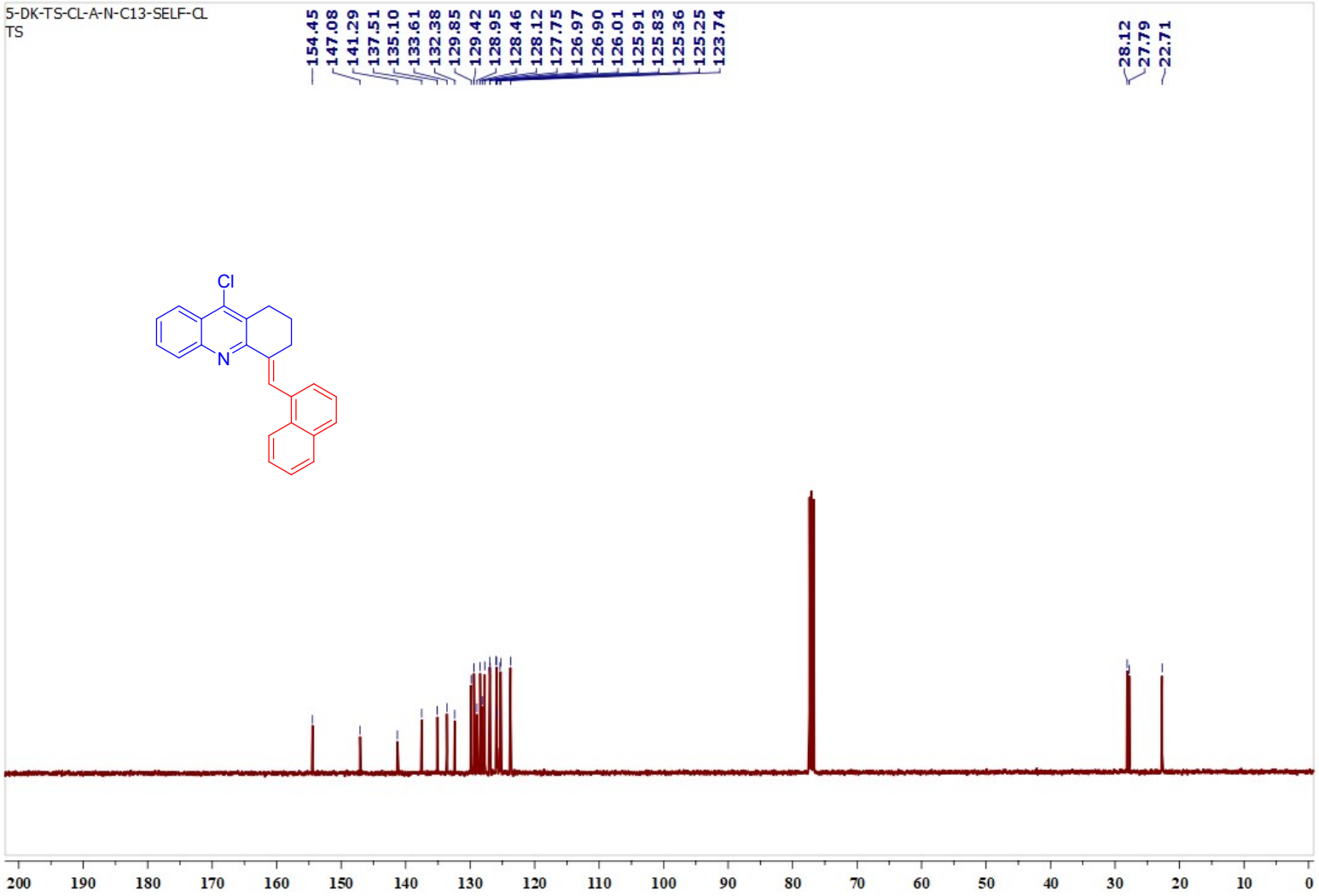


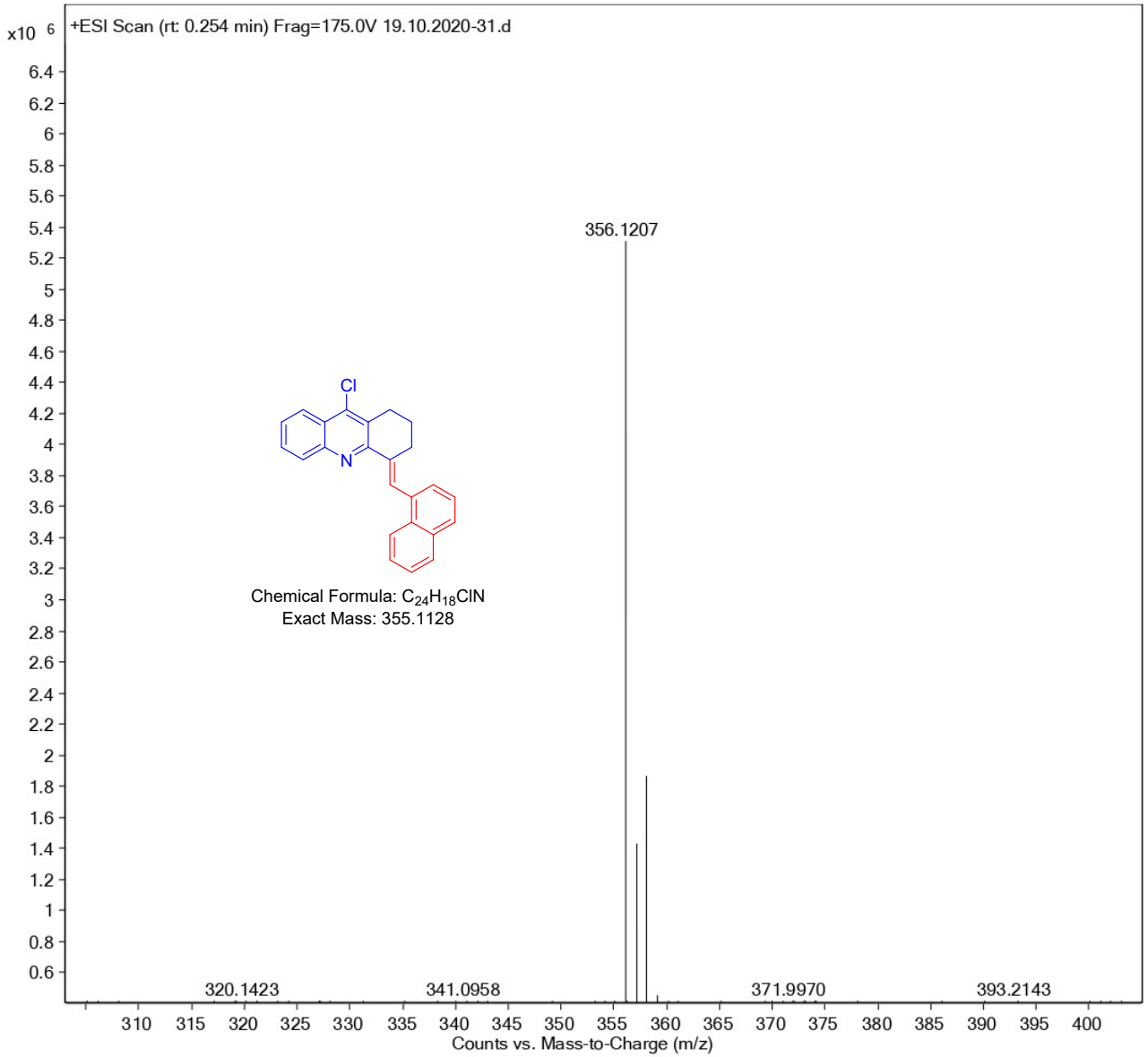

07-DK-TS-OMECLA-4-NO2-SELF-CL-13C
TS
161.018
155.651
148.818
146.405
144.413
139.198
131.813
131.355
130.378
130.033
129.546
127.459
123.550
123.446
123.384
123.116
122.821
121.571
61.610
28.228
23.633
22.292
Cl
H3C
O
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.247 min) Frag=175.0V 21.11.2021-41.d
x10 3
381.0995
Cl
H3C
O
N
NO2
Chemical Formula: C21H17ClN2O3
Exact Mass: 380.0928
Counts vs. Mass-to-Charge (m/z)

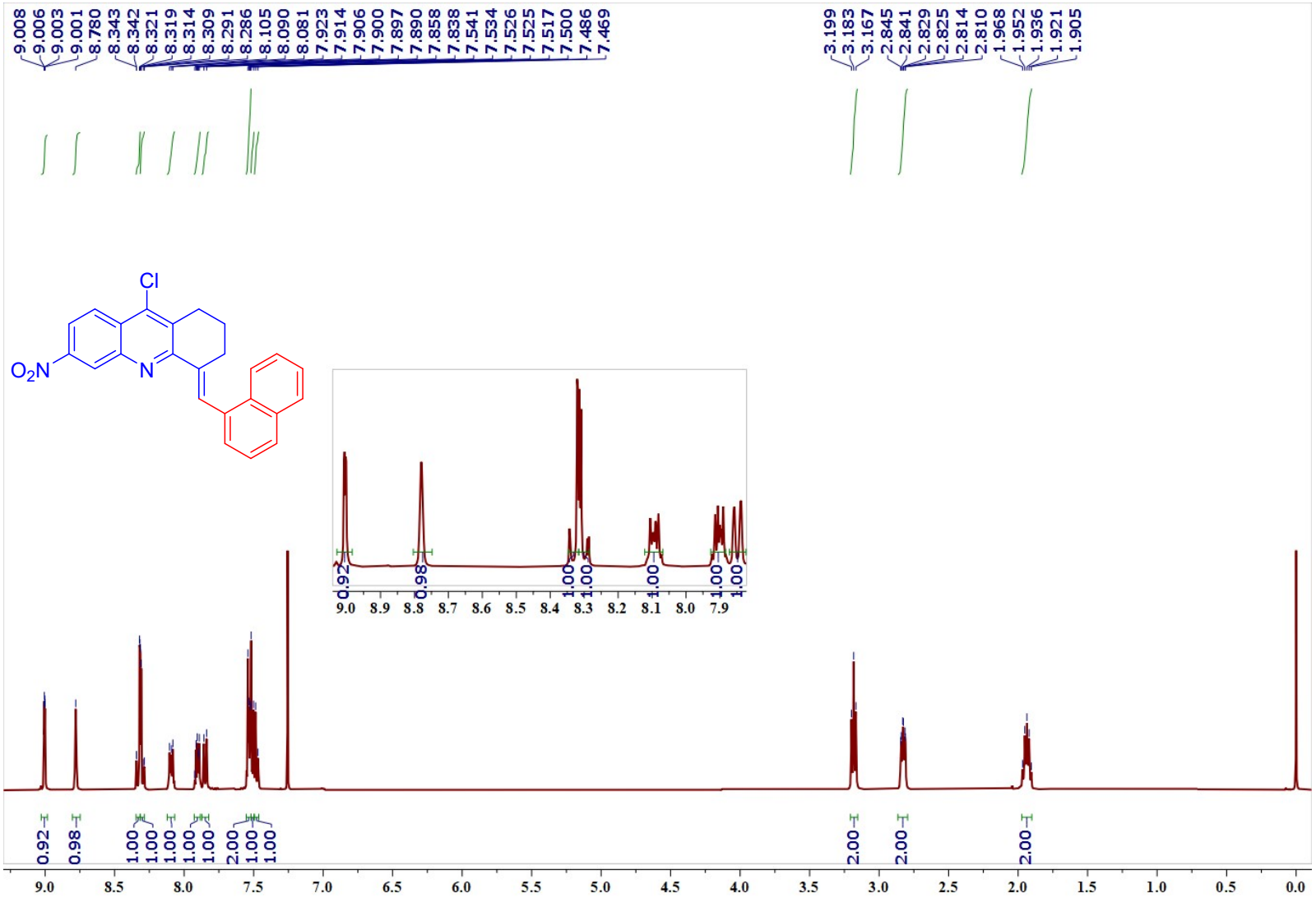
(E)-9-Chloro-4-(naphthalen-1-ylmethylene)-1,2,3,4-tetrahydroacridine (5w):

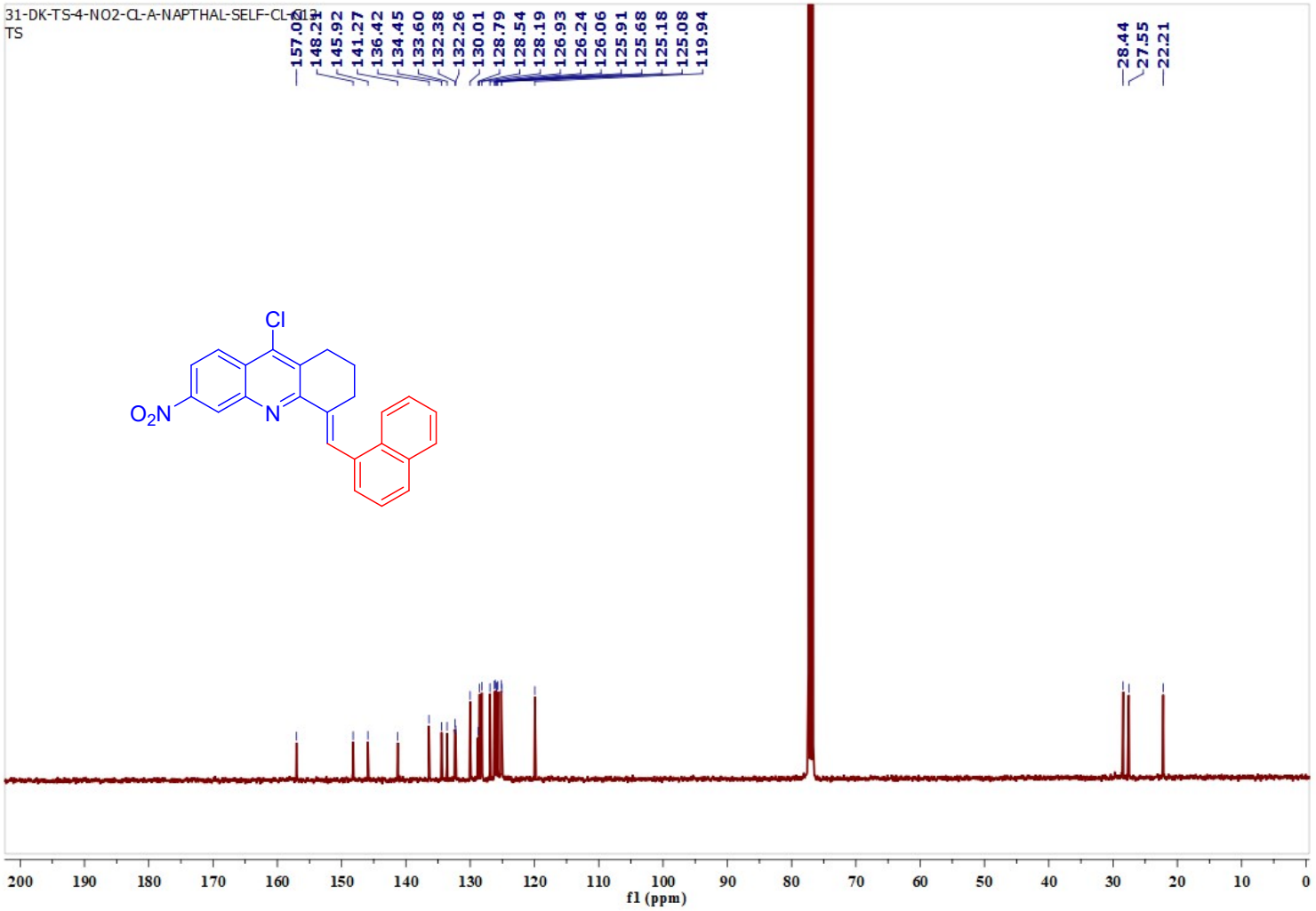


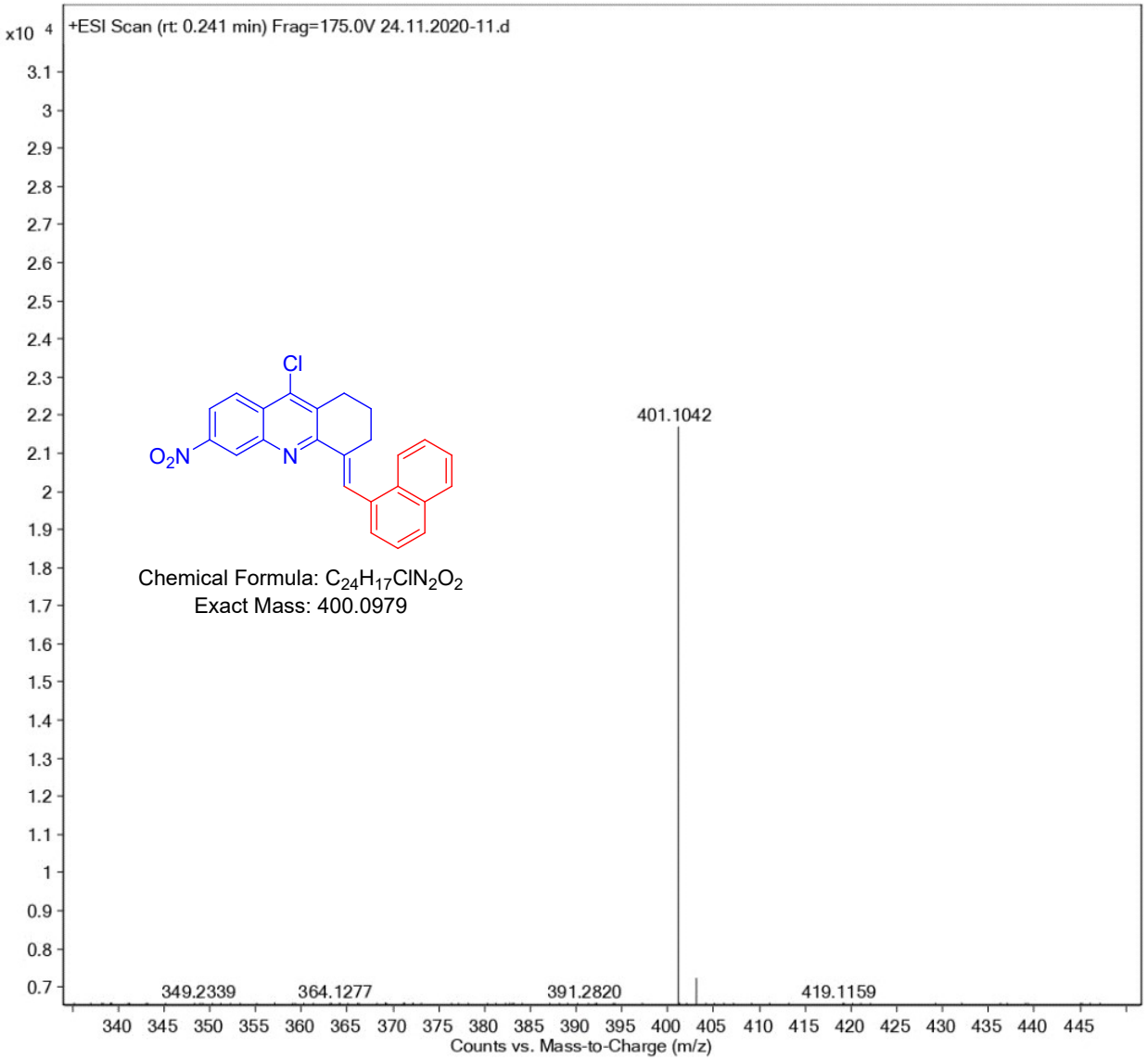

5-DK-TS-CL-A-N-C13-SELF-CL
TS
154.45
147.08
141.29
137.51
135.10
133.61
132.38
129.85
129.42
128.95
128.46
128.12
127.75
126.97
126.90
126.01
125.91
125.83
125.36
125.25
123.74
28.12
27.79
22.71
Cl
N
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.254 min) Frag=175.0V 19.10.2020-31.d
x10 6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
356.1207
Cl
N
Chemical Formula: C24H18ClN
Exact Mass: 355.1128
320.1423
341.0958
371.9970
393.2143
310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400
Counts vs. Mass-to-Charge (m/z)

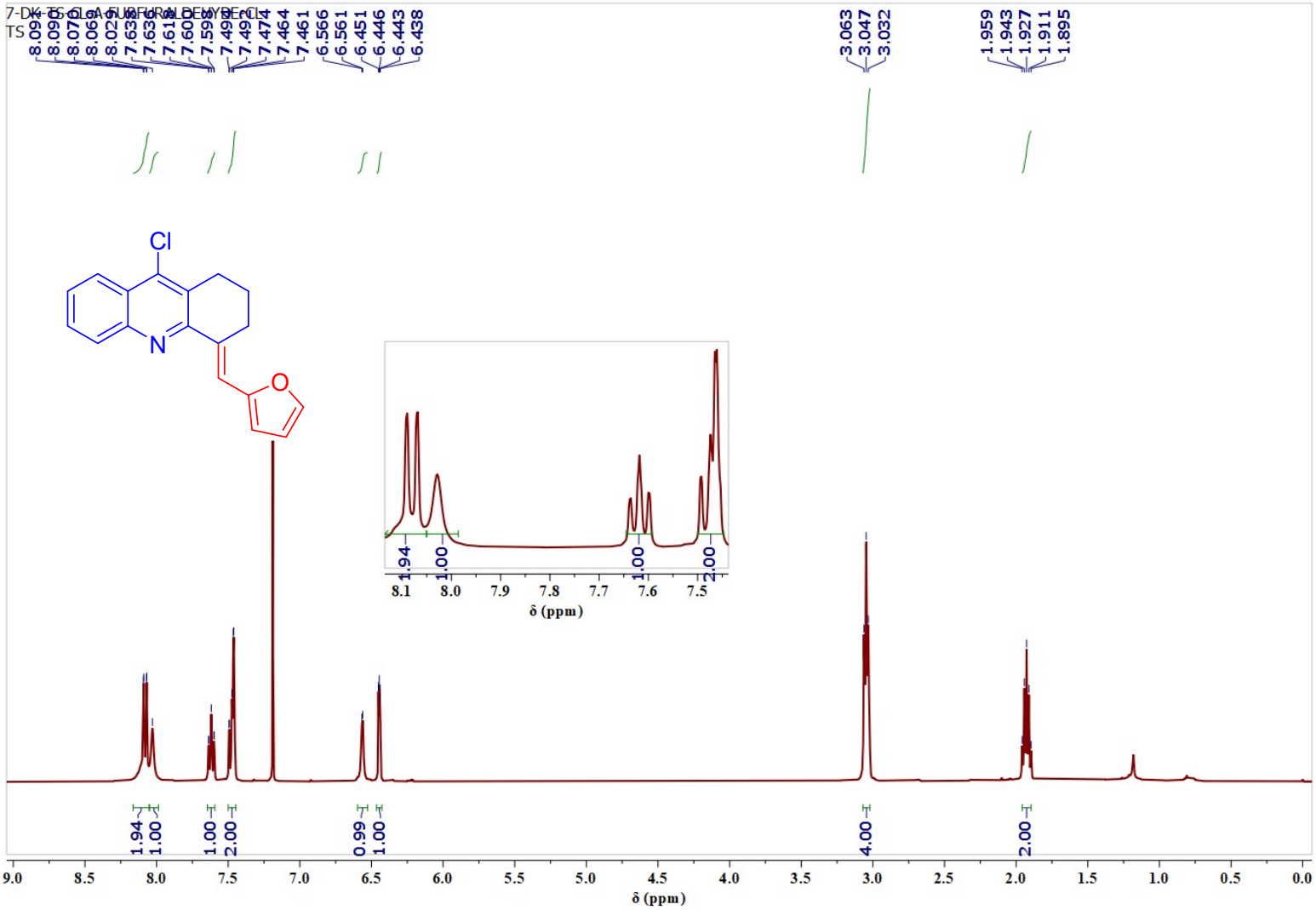
(E)-9-Chloro-4-(naphthalen-1-ylmethylene)-6-nitro-1,2,3,4-tetrahydroacridine (5x):

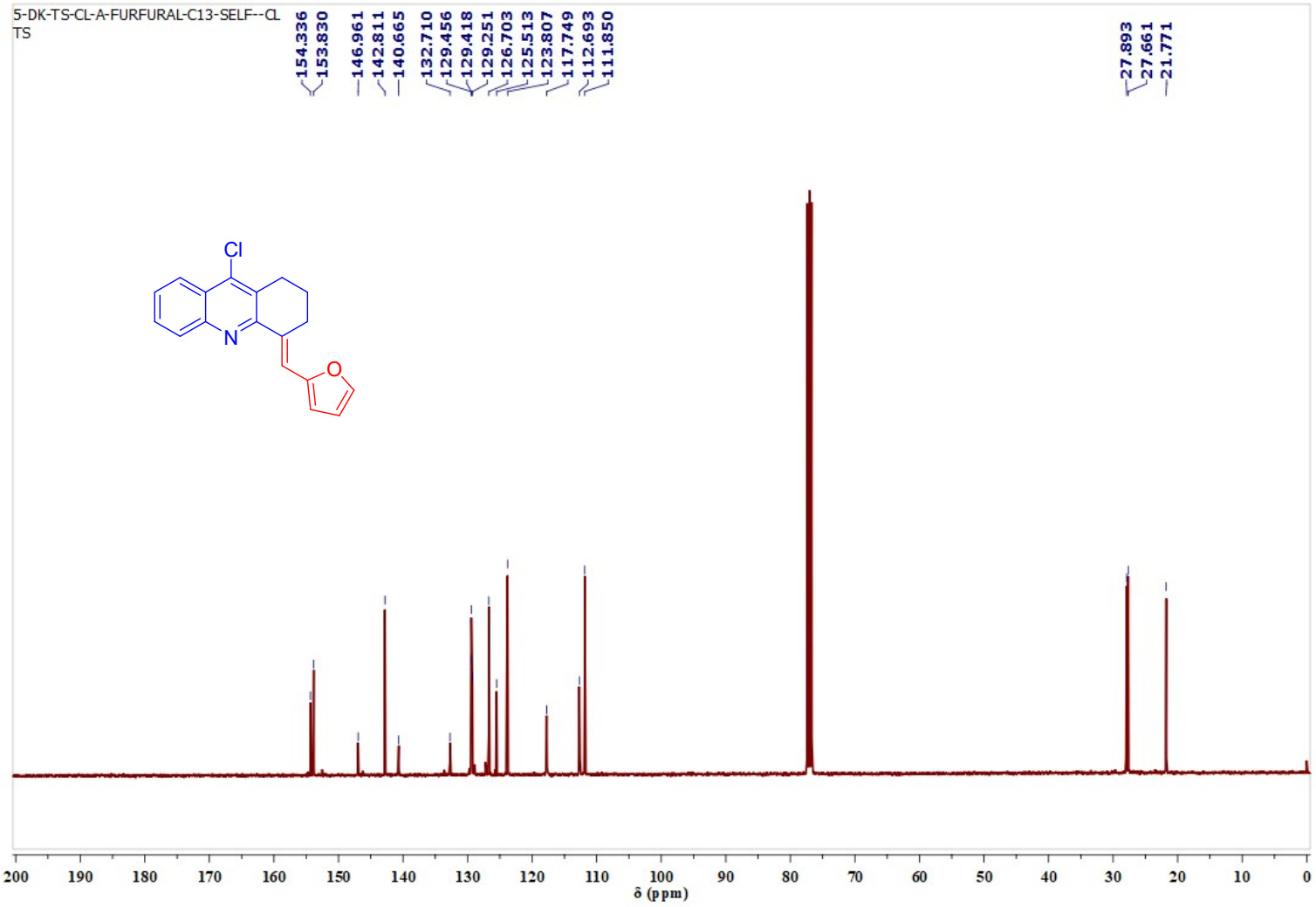


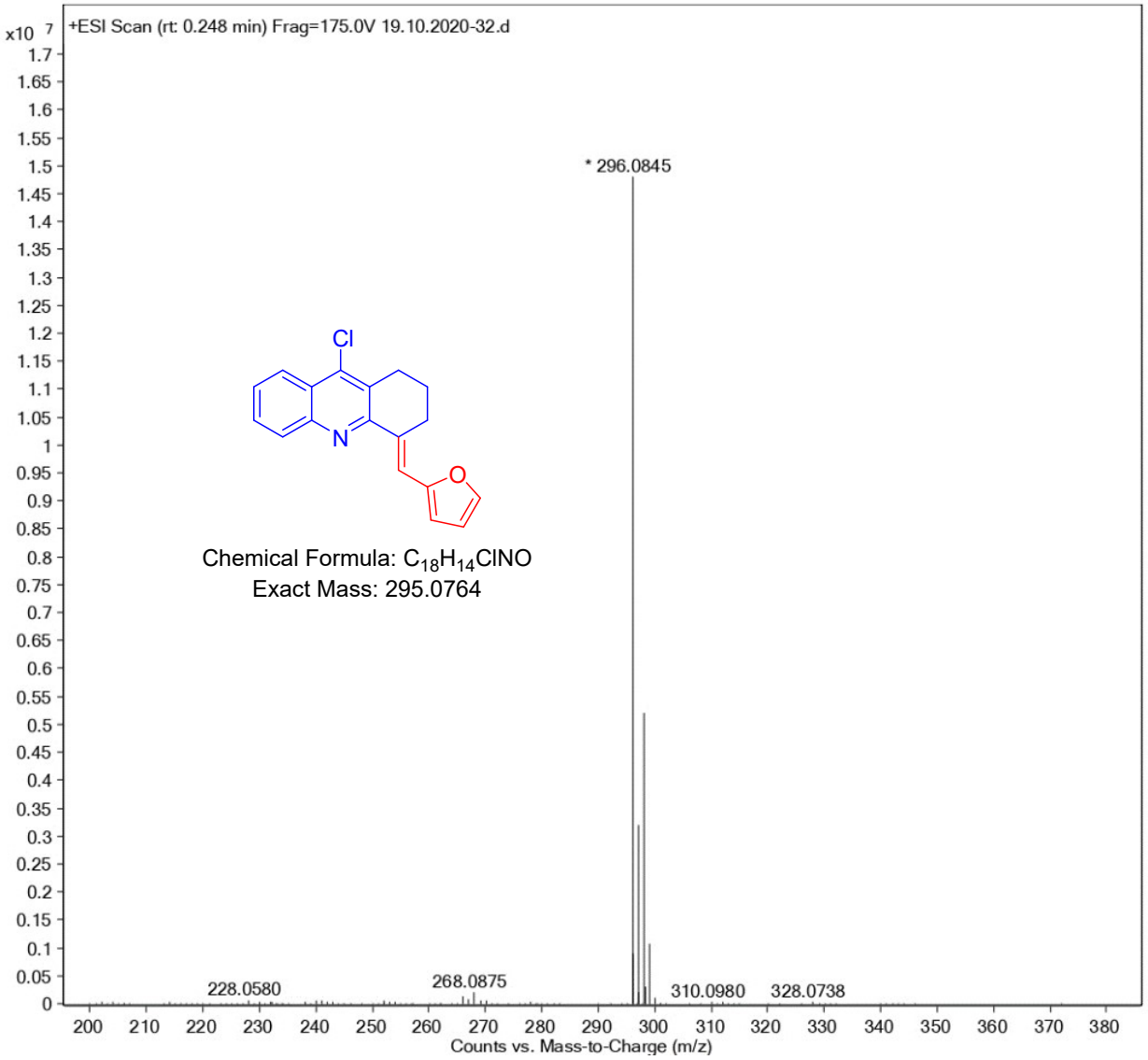

31-DK-TS-4-NO2-CL-A-NAPTHAL-SELF-CL-C13-TS
157.01
148.21
145.92
141.27
136.42
134.45
133.60
132.38
132.26
130.01
128.79
128.54
128.19
126.93
126.24
126.06
125.91
125.68
125.18
125.08
119.94
28.44
27.55
22.21
Cl
O2N
N
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.241 min) Frag=175.0V 24.11.2020-11.d
x10 4
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
Cl
O2N
N
401.1042
Chemical Formula: C24H17ClN2O2
Exact Mass: 400.0979
349.2339
364.1277
391.2820
419.1159
340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445
Counts vs. Mass-to-Charge (m/z)

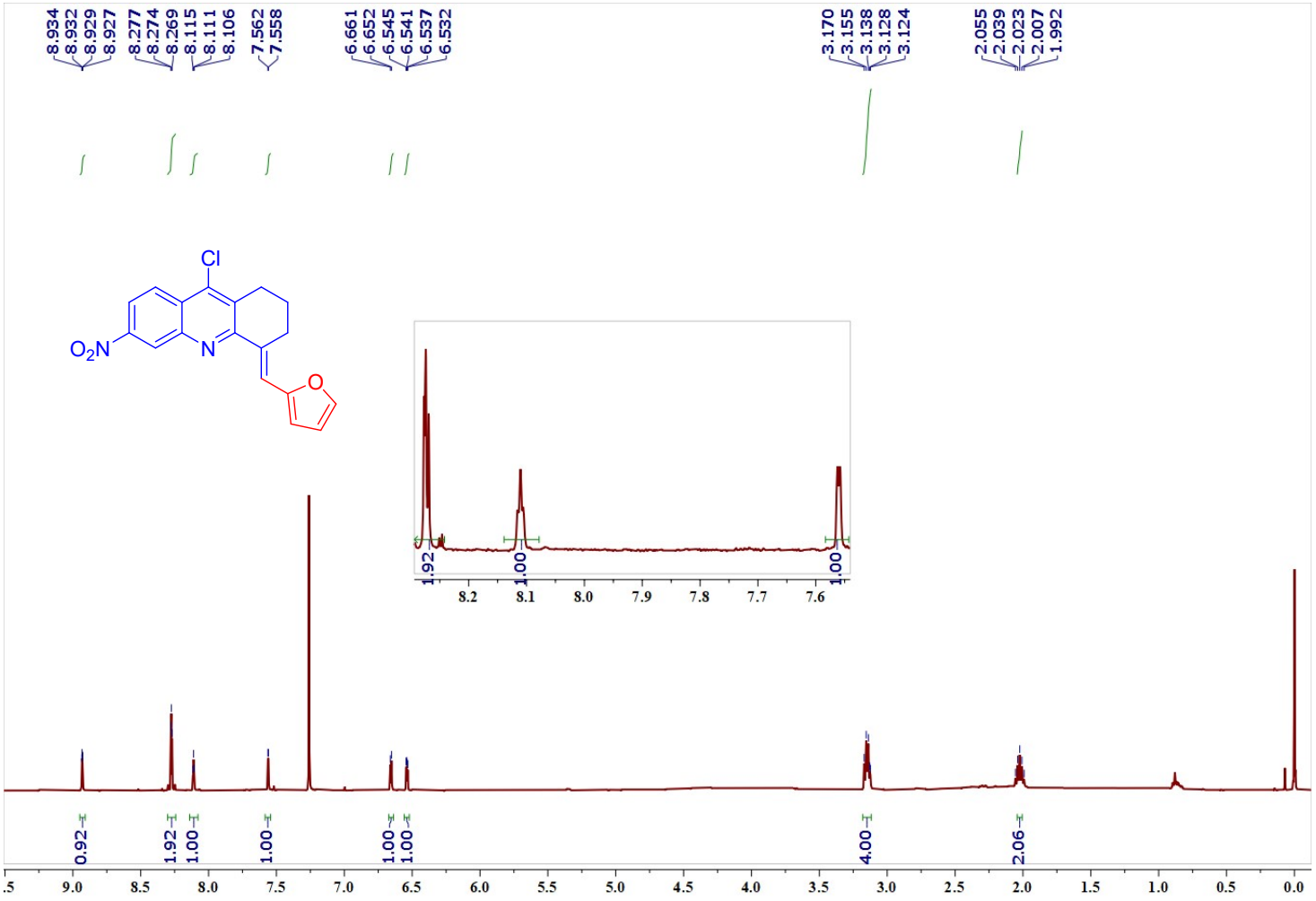
(E)-9-Chloro-4-(furan-2-ylmethylene)-1,2,3,4-tetrahydroacridine(5y):

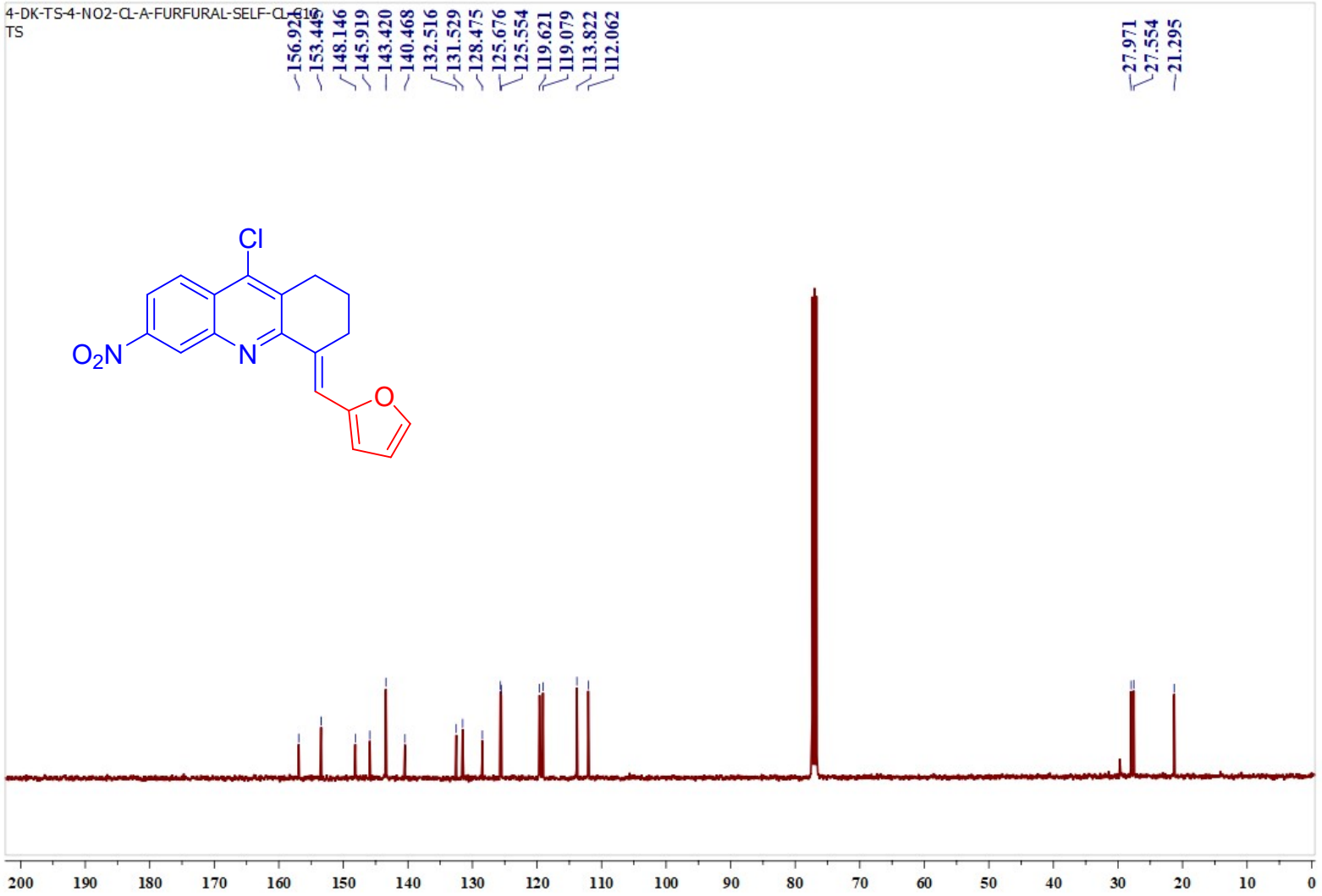


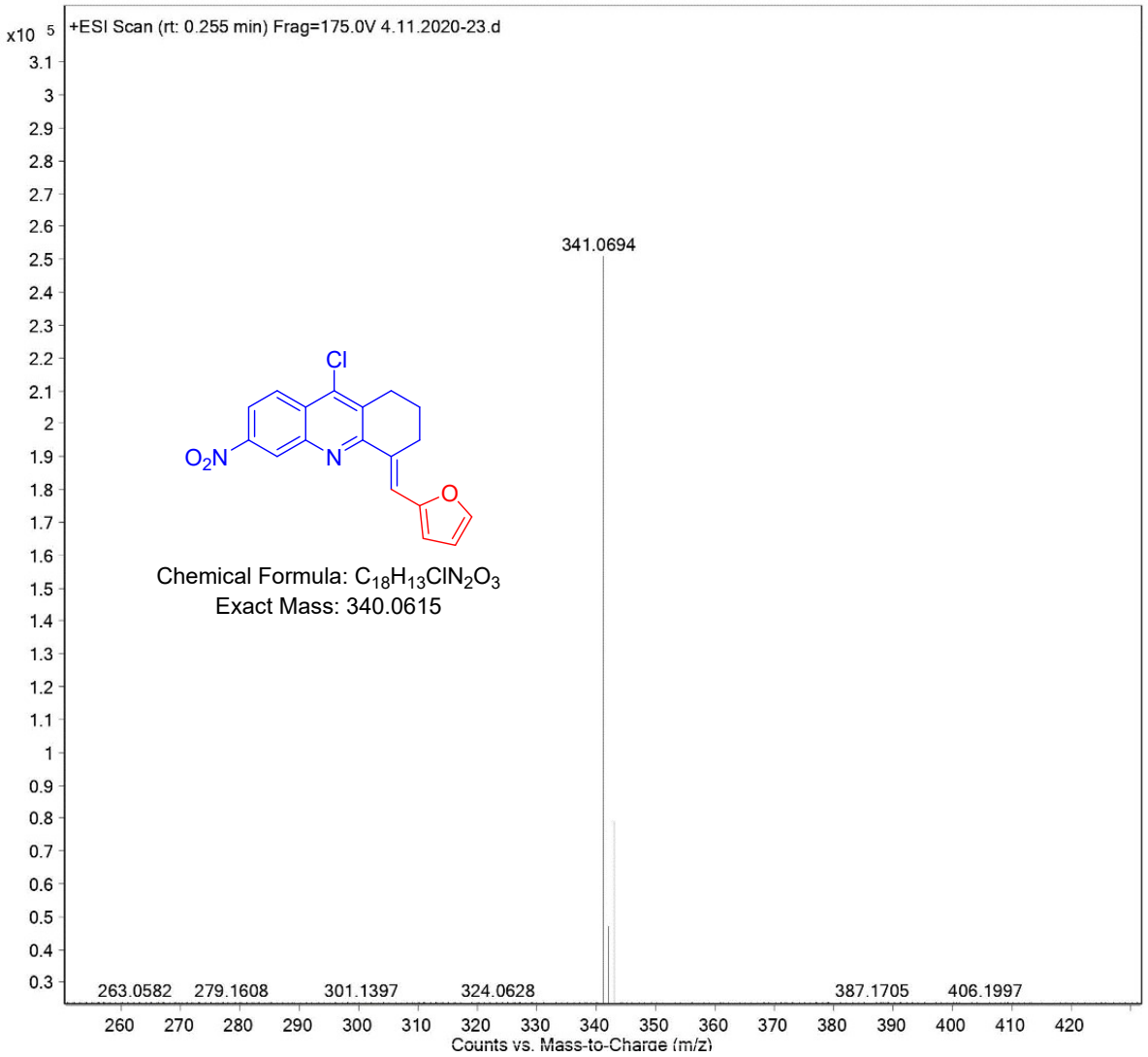

5-DK-TS-CL-A-FURFURAL-C13-SELF--CL
TS
154.336
153.830
146.961
142.811
140.665
132.710
129.456
129.418
129.251
126.703
125.513
123.807
117.749
112.693
111.850
27.893
27.661
21.771
Cl
N
O
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
δ (ppm)


+ESI Scan (rt: 0.248 min) Frag=175.0V 19.10.2020-32.d
x10 7
* 296.0845
Cl
N
O
Chemical Formula: C18H14ClNO
Exact Mass: 295.0764
228.0580
268.0875
310.0980
328.0738
Counts vs. Mass-to-Charge (m/z)

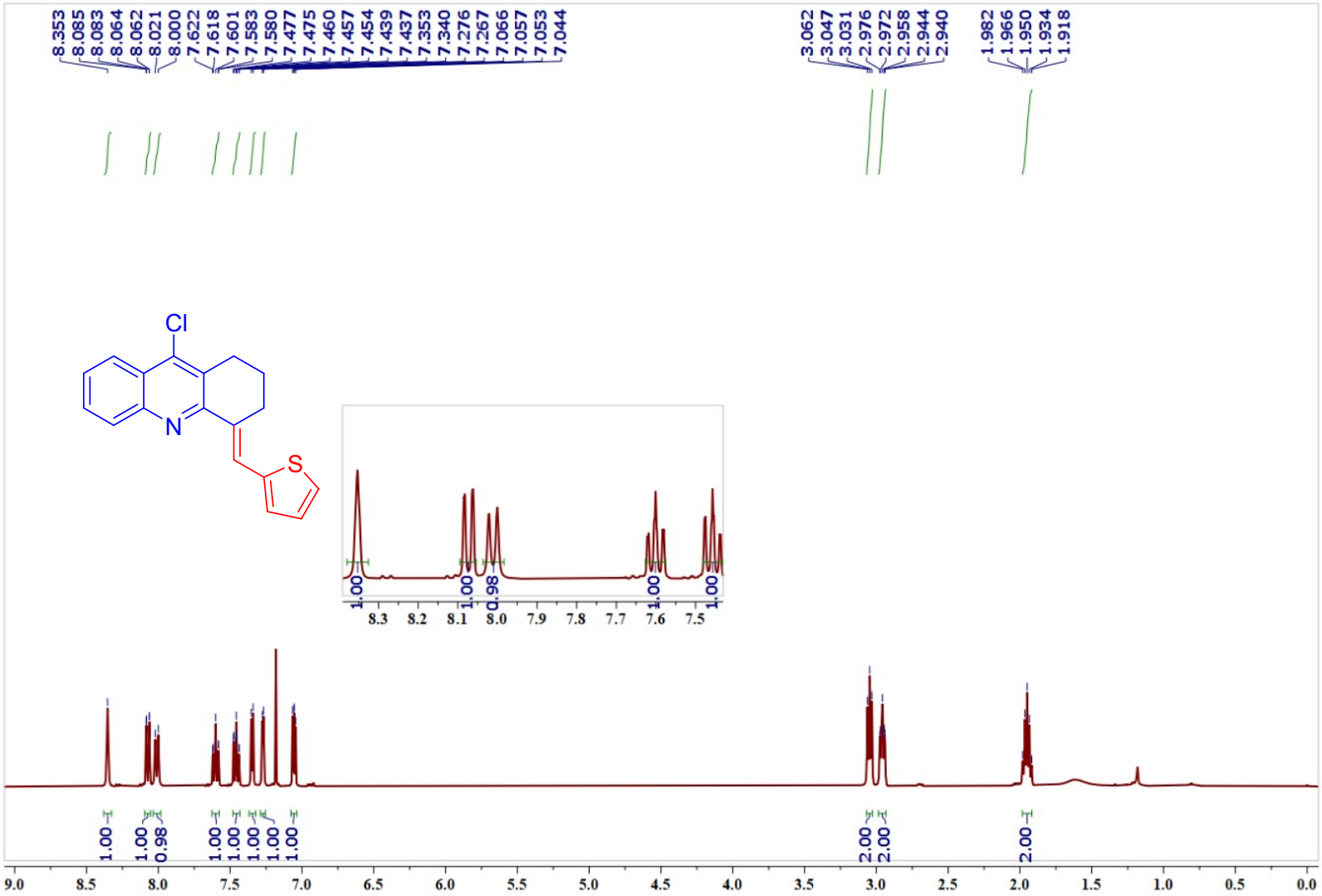
(E)-9-Chloro-4-(furan-2-ylmethylene)-6-nitro-1,2,3,4-tetrahydroacridine (5z):

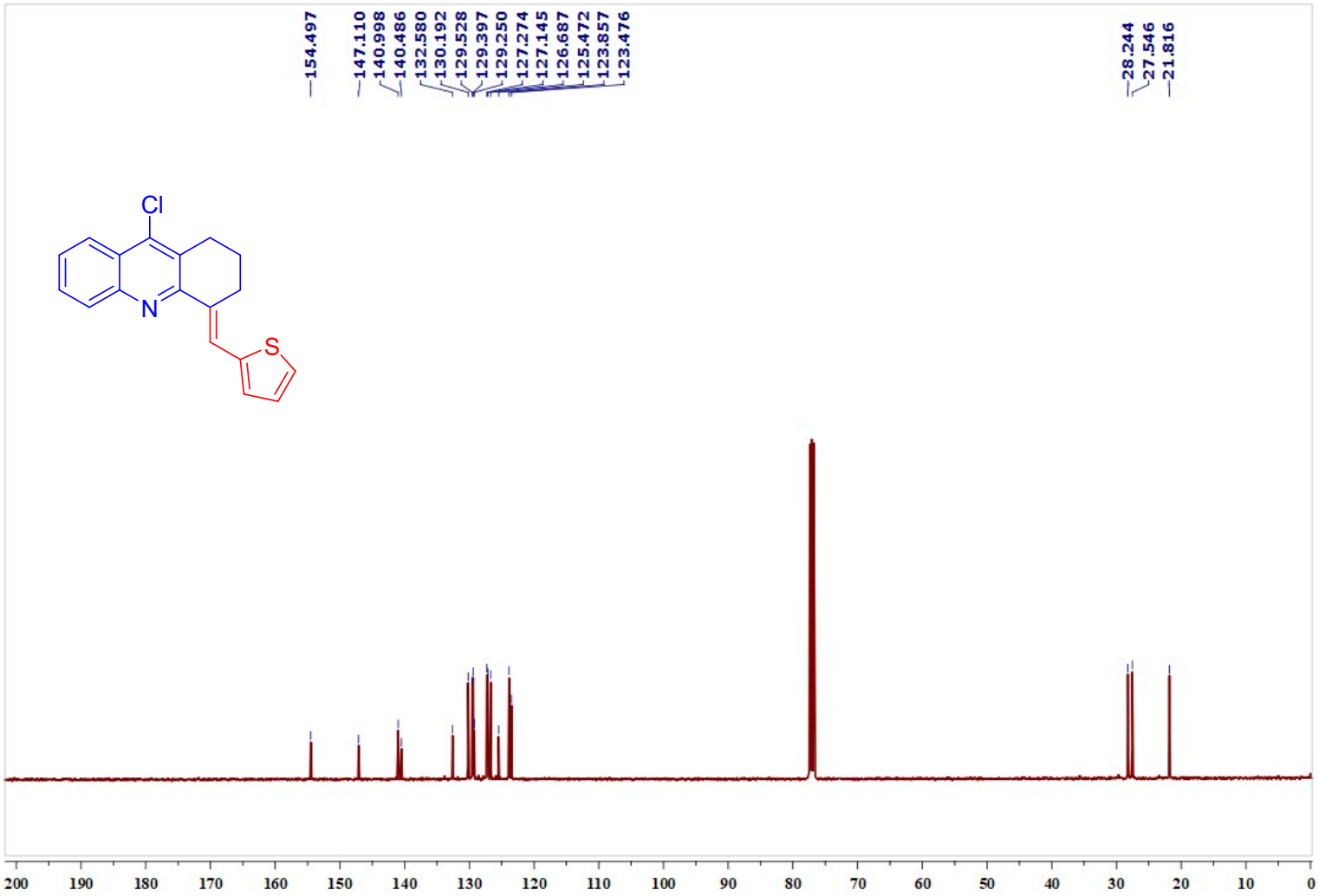


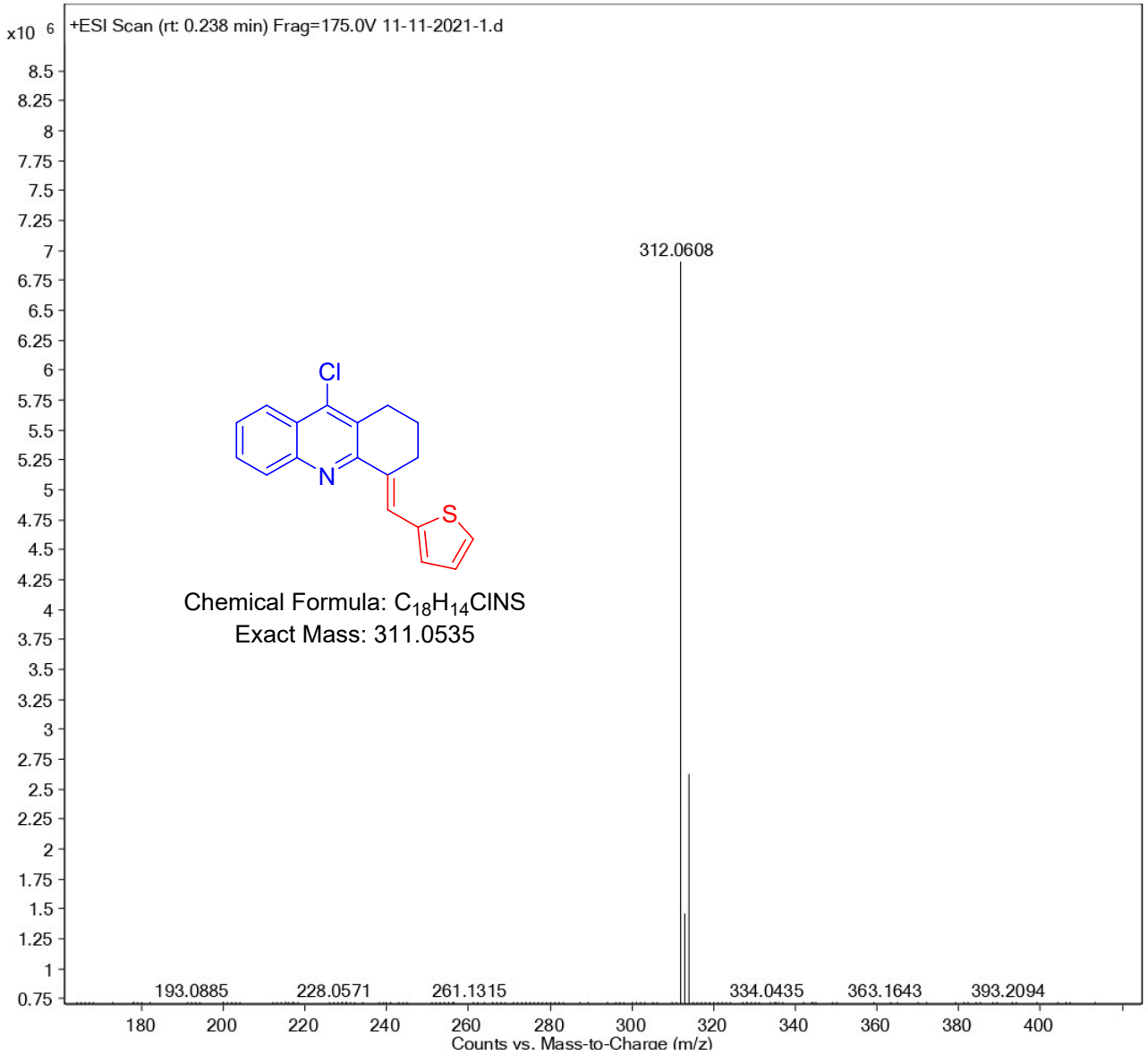

4-DK-TS-4-NO2-CL-A-FURFURAL-SELF-CL-C13
TS
156.924
153.445
148.146
145.919
143.420
140.468
132.516
131.529
128.475
125.676
125.554
119.621
119.079
113.822
112.062
27.971
27.554
21.295
Cl
O2N
N
O
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.255 min) Frag=175.0V 4.11.2020-23.d
x10 5
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
341.0694
Cl
O2N
N
O
Chemical Formula: C18H13ClN2O3
Exact Mass: 340.0615
263.0582
279.1608
301.1397
324.0628
387.1705
406.1997
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400
410
420
Counts vs. Mass-to-Charge (m/z)

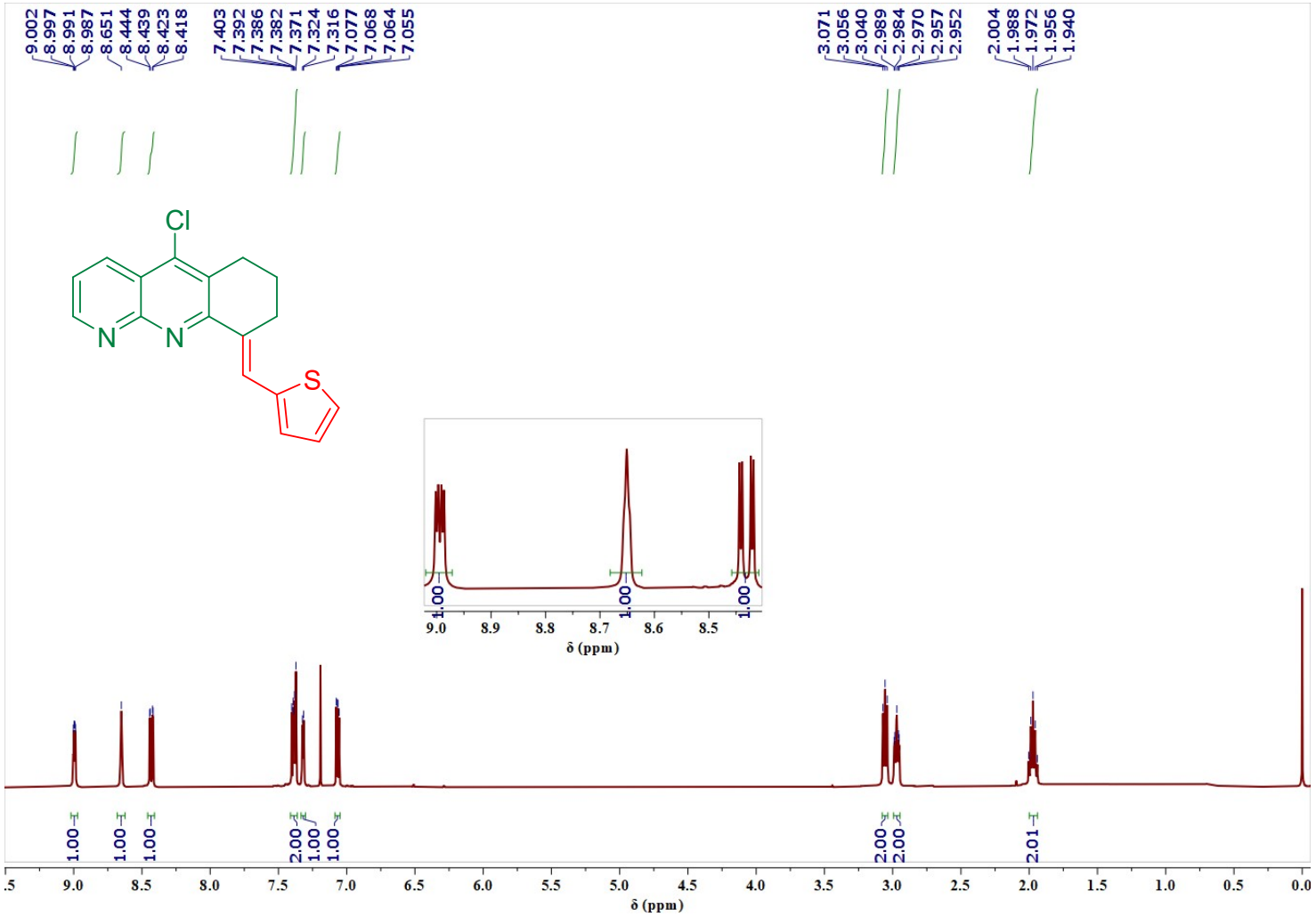
(E)-9-Chloro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5aa):

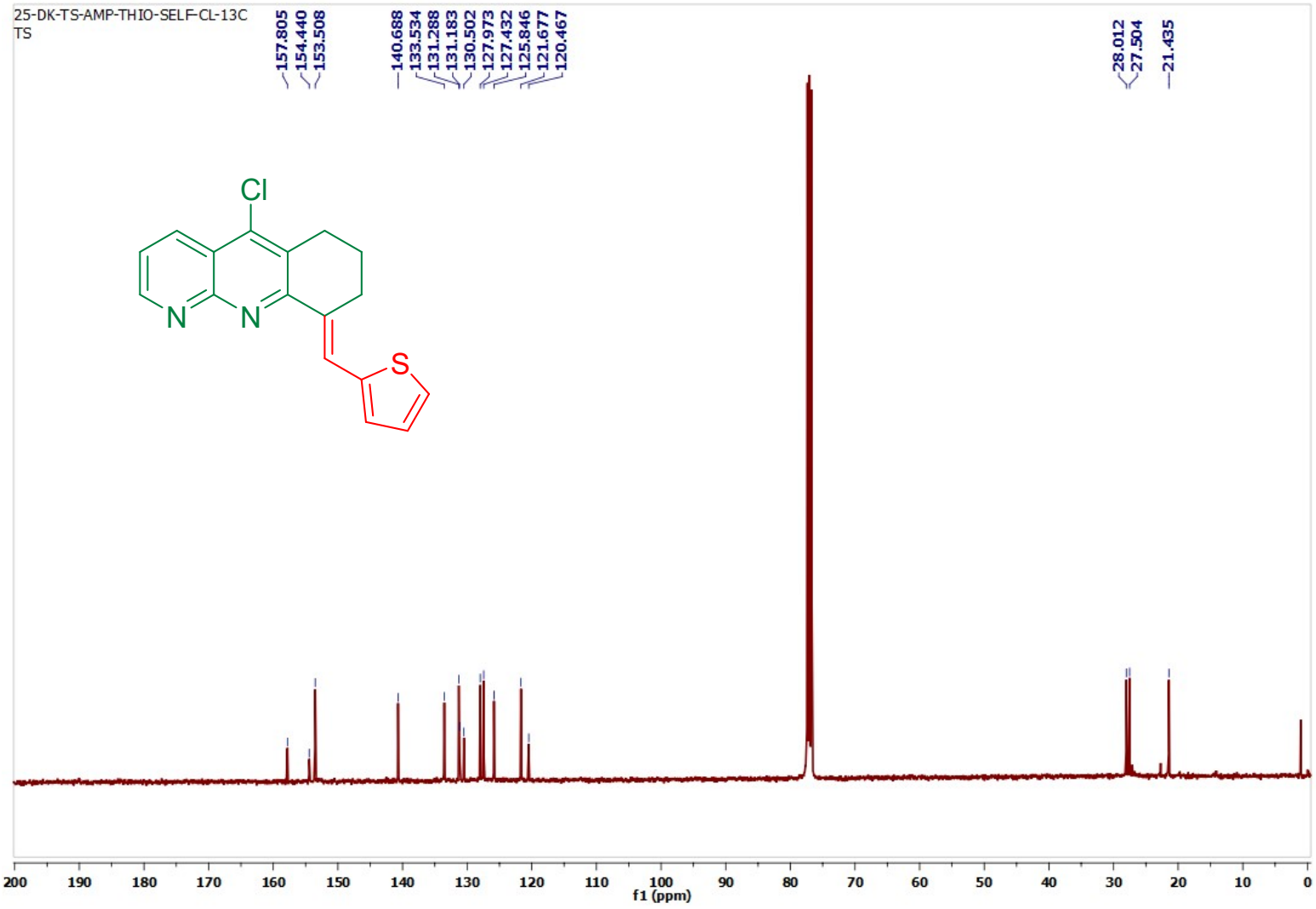


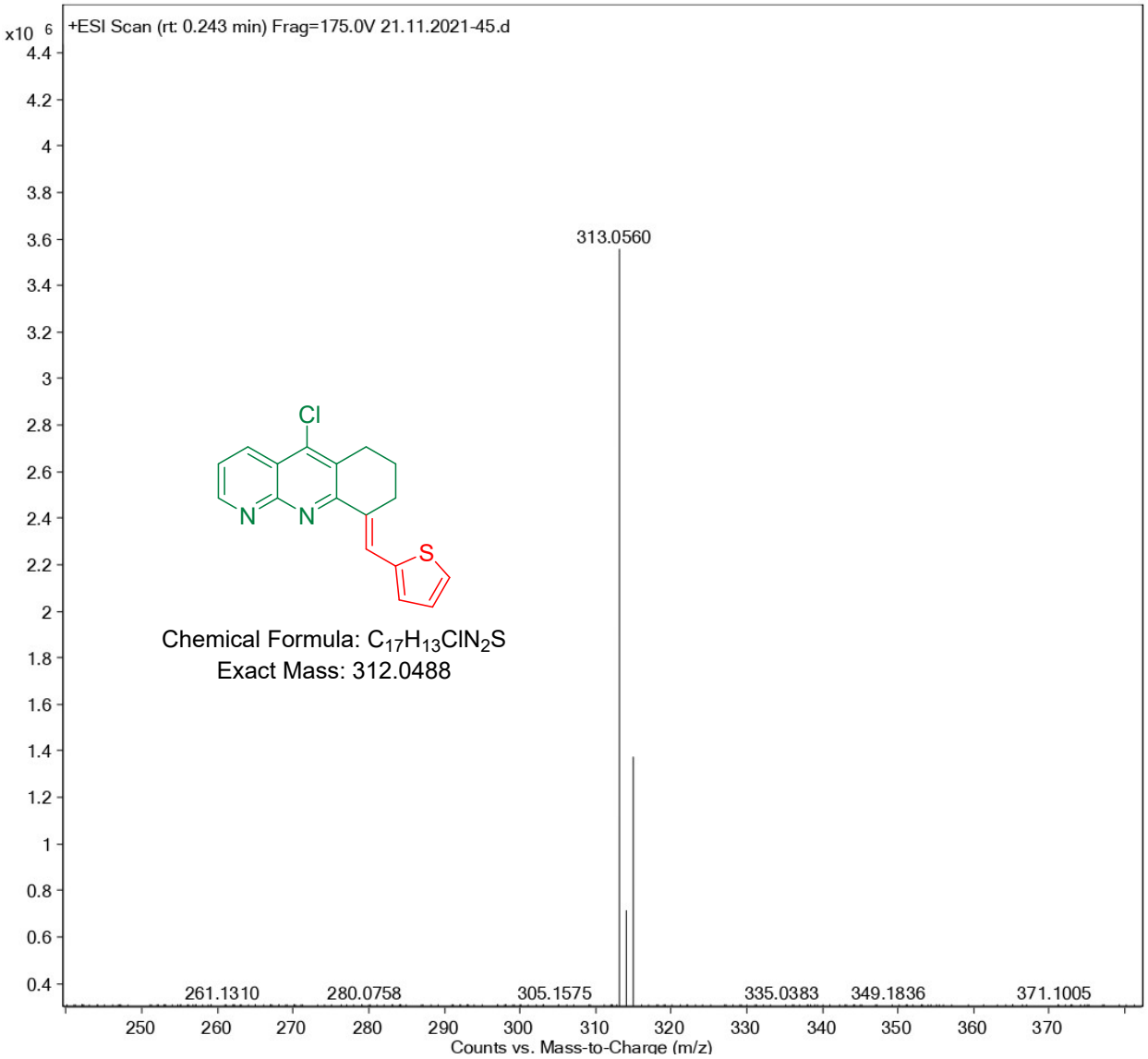

154.497
147.110
140.998
140.486
132.580
130.192
129.528
129.397
129.250
127.274
127.145
126.687
125.472
123.857
123.476
28.244
27.546
21.816
Cl
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.238 min) Frag=175.0V 11-11-2021-1.d
x10 6
8.5
8.25
8
7.75
7.5
7.25
7
6.75
6.5
6.25
6
5.75
5.5
5.25
5
4.75
4.5
4.25
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
312.0608
Cl
N
S
Chemical Formula: C18H14ClNS
Exact Mass: 311.0535
193.0885
228.0571
261.1315
334.0435
363.1643
393.2094
180
200
220
240
260
280
300
320
340
360
380
400
Counts vs. Mass-to-Charge (m/z)

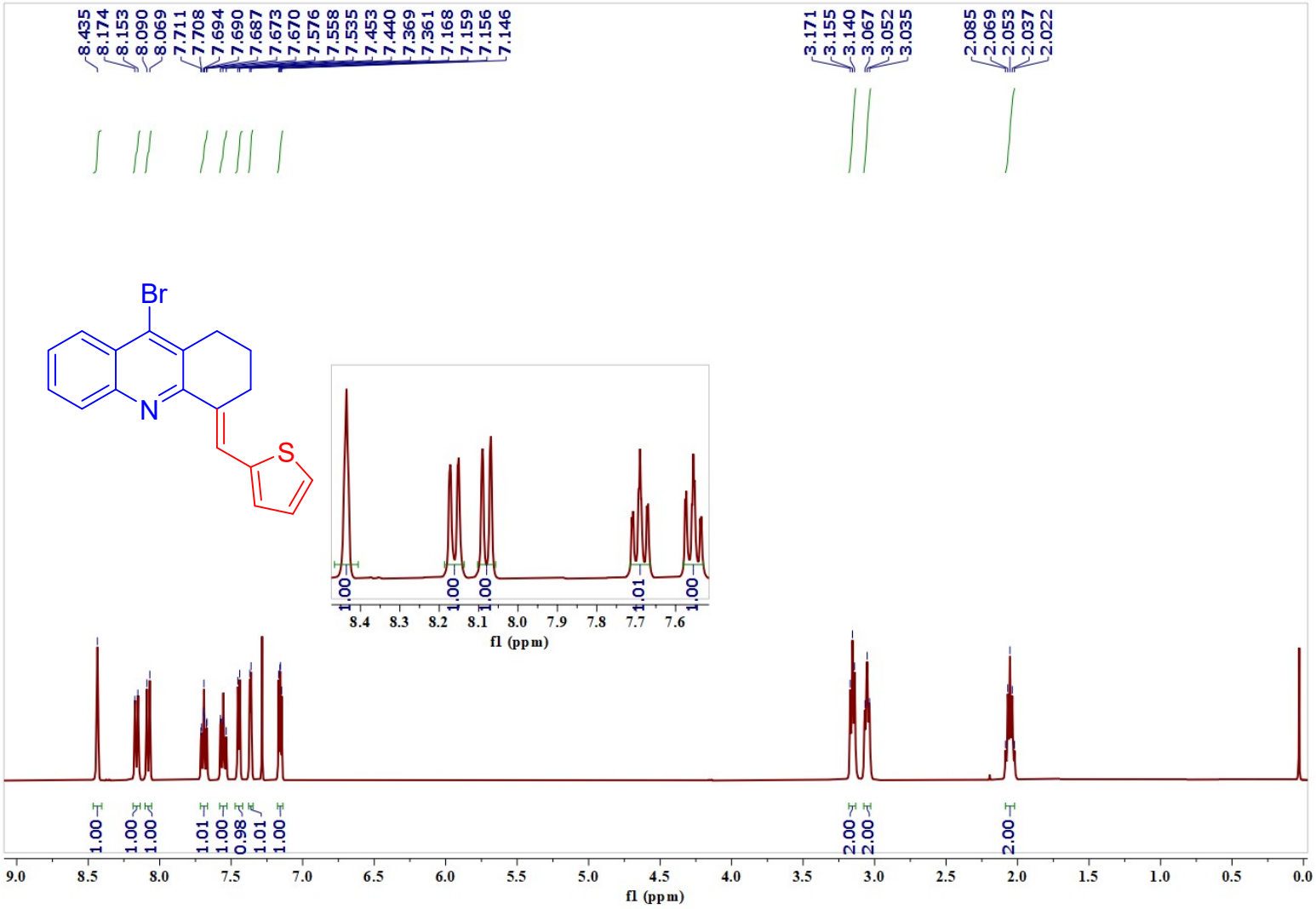
(E)-5-Chloro-9-(thiophen-2-ylmethylene)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridine (5ab):

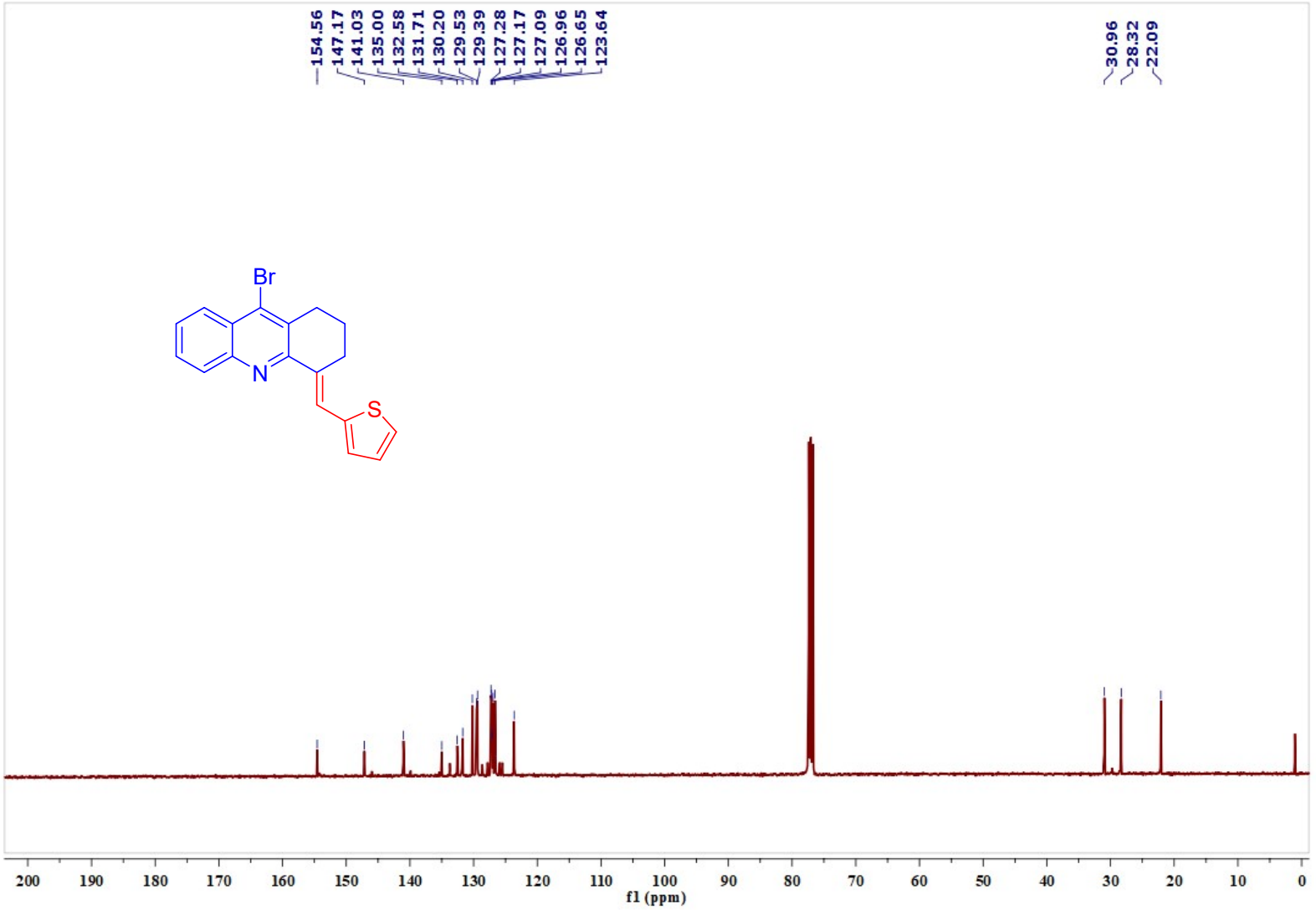


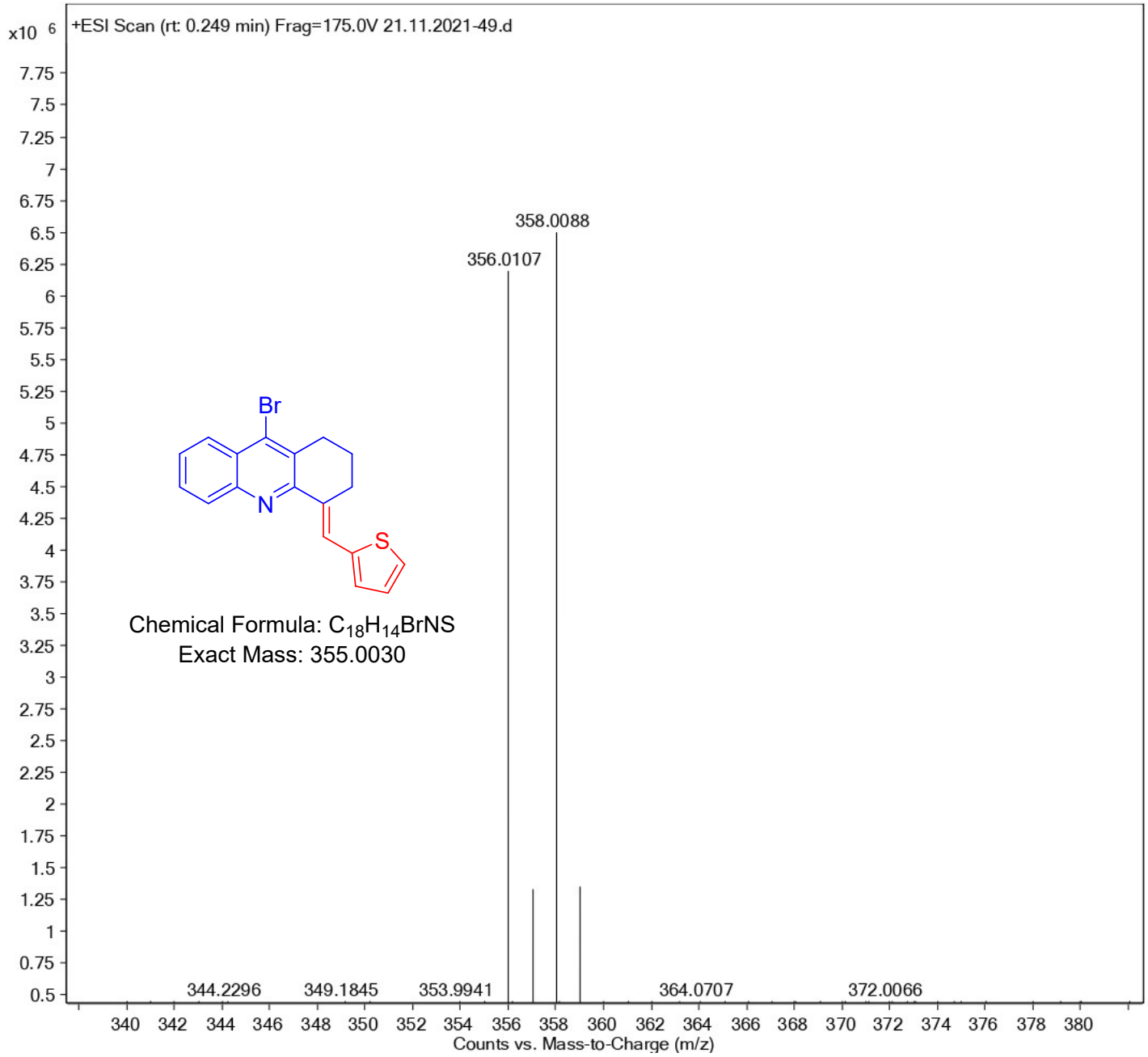

25-DK-TS-AMP-THIO-SELF-CL-13C
TS
157.805
154.440
153.508
140.688
133.534
131.288
131.183
130.502
127.973
127.432
125.846
121.677
120.467
28.012
27.504
21.435
Cl
N
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.243 min) Frag=175.0V 21.11.2021-45.d
x10 6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
313.0560
Cl
N
N
S
Chemical Formula: C17H13ClN2S
Exact Mass: 312.0488
261.1310
280.0758
305.1575
335.0383
349.1836
371.1005
250
260
270
280
290
300
310
320
330
340
350
360
370
Counts vs. Mass-to-Charge (m/z)

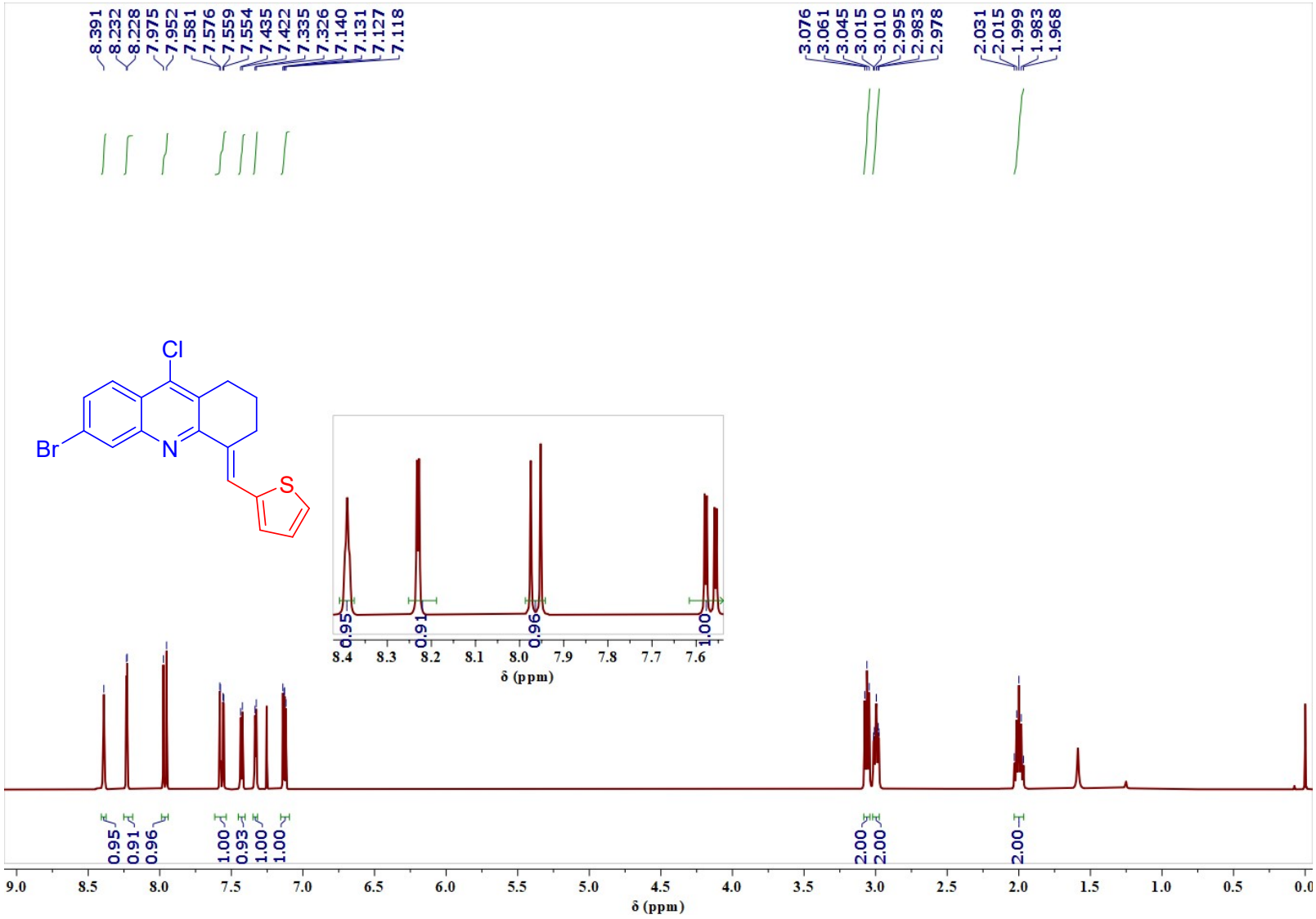
(E)-9-Bromo-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ac):

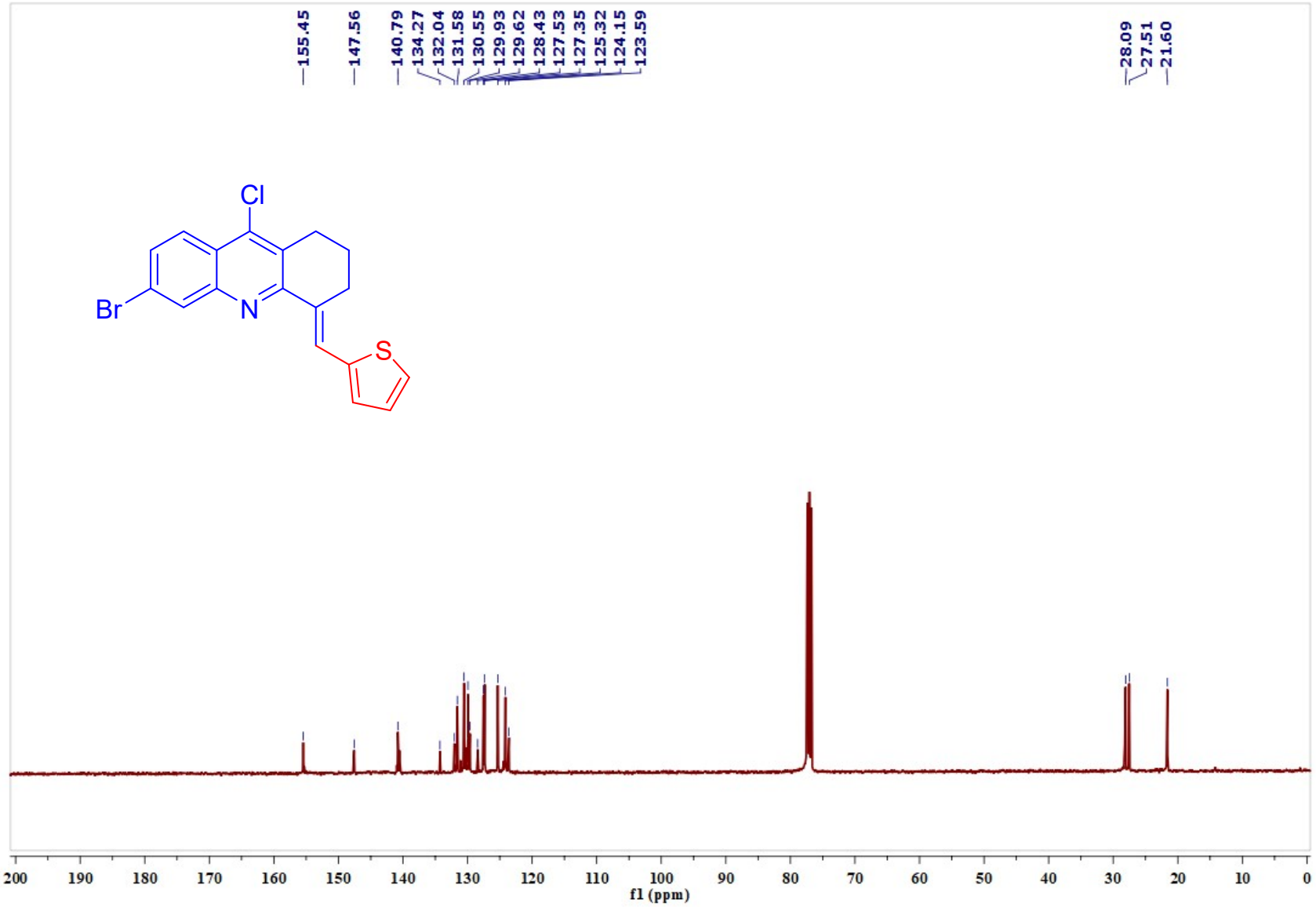


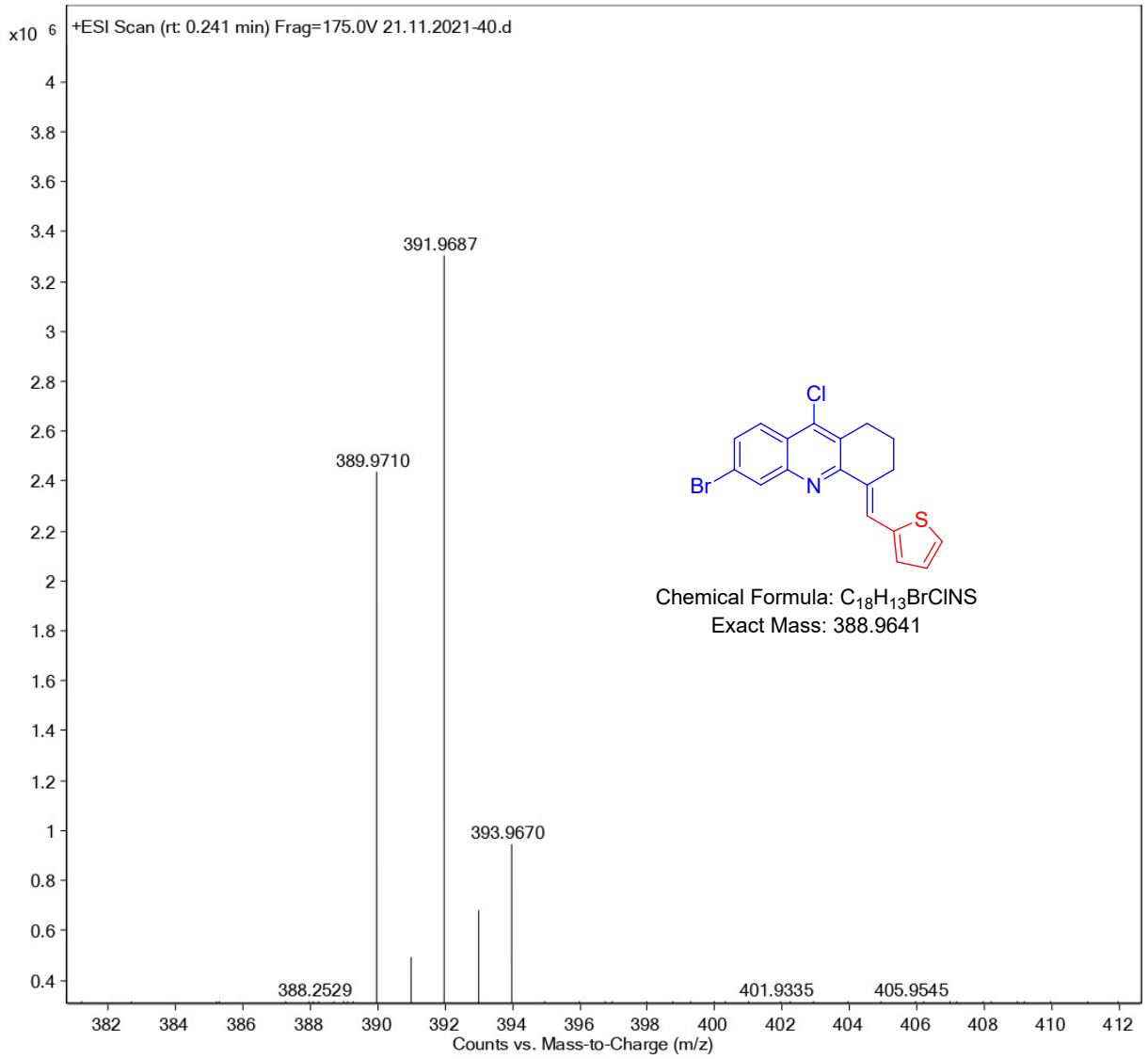

154.56
147.17
141.03
135.00
132.58
131.71
130.20
129.53
129.39
127.28
127.17
127.09
126.96
126.65
123.64
30.96
28.32
22.09
Br
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.249 min) Frag=175.0V 21.11.2021-49.d
x10 6
7.75
7.5
7.25
7
6.75
6.5
6.25
6
5.75
5.5
5.25
5
4.75
4.5
4.25
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
358.0088
356.0107
Br
N
S
Chemical Formula: C18H14BrNS
Exact Mass: 355.0030
344.2296
349.1845
353.9941
364.0707
372.0066
340 342 344 346 348 350 352 354 356 358 360 362 364 366 368 370 372 374 376 378 380
Counts vs. Mass-to-Charge (m/z)

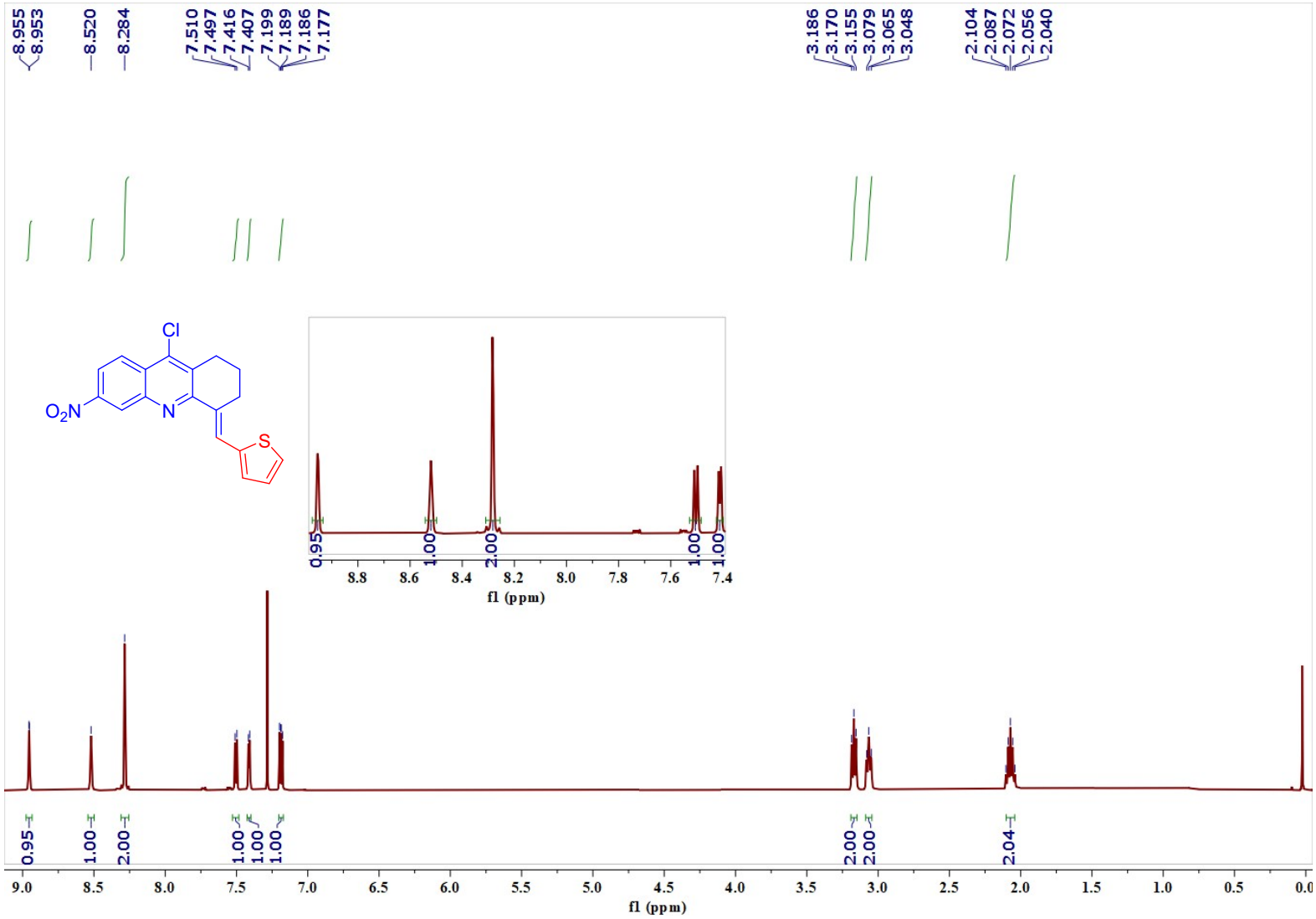
(E)-6-Bromo-9-chloro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ad):

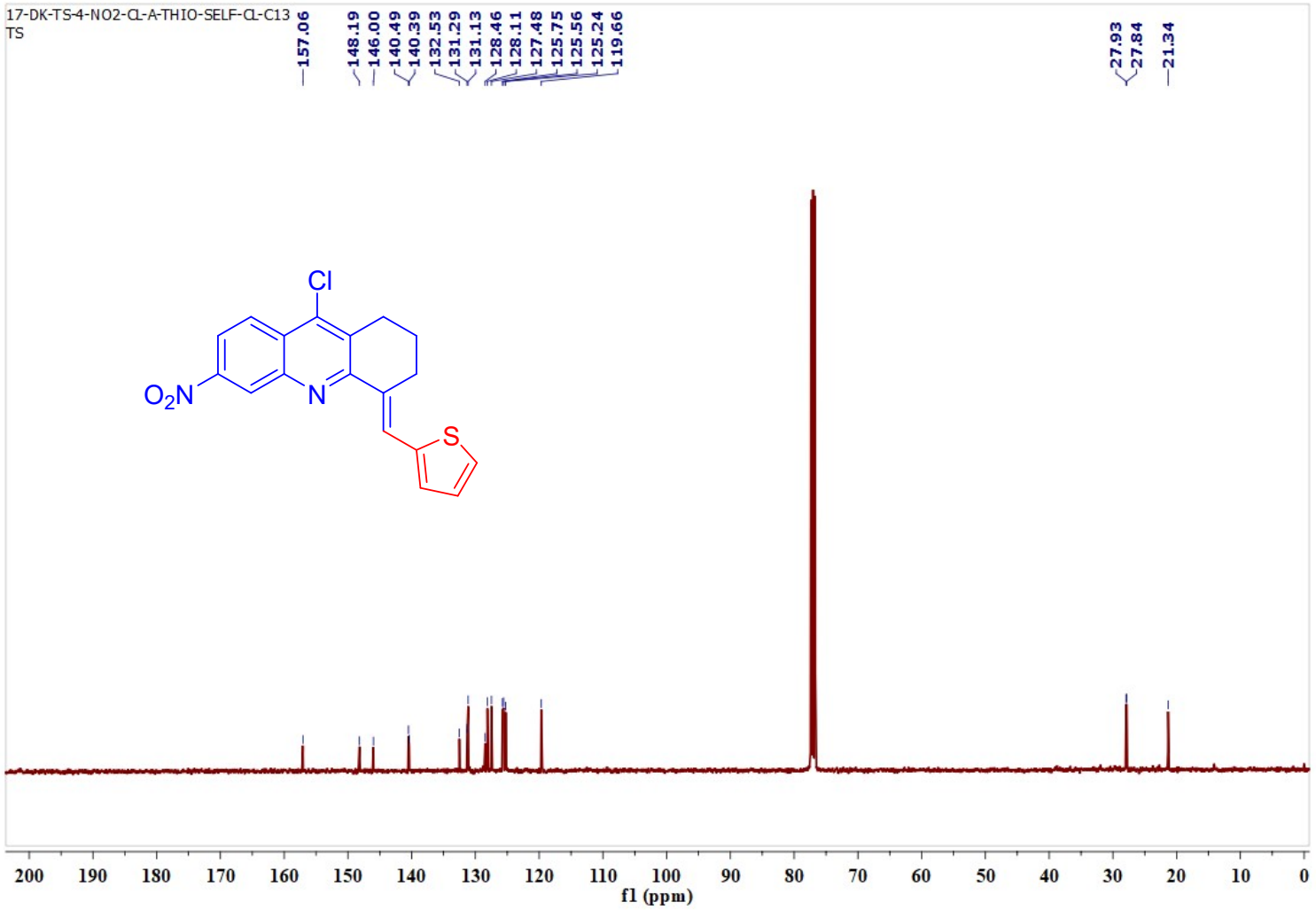


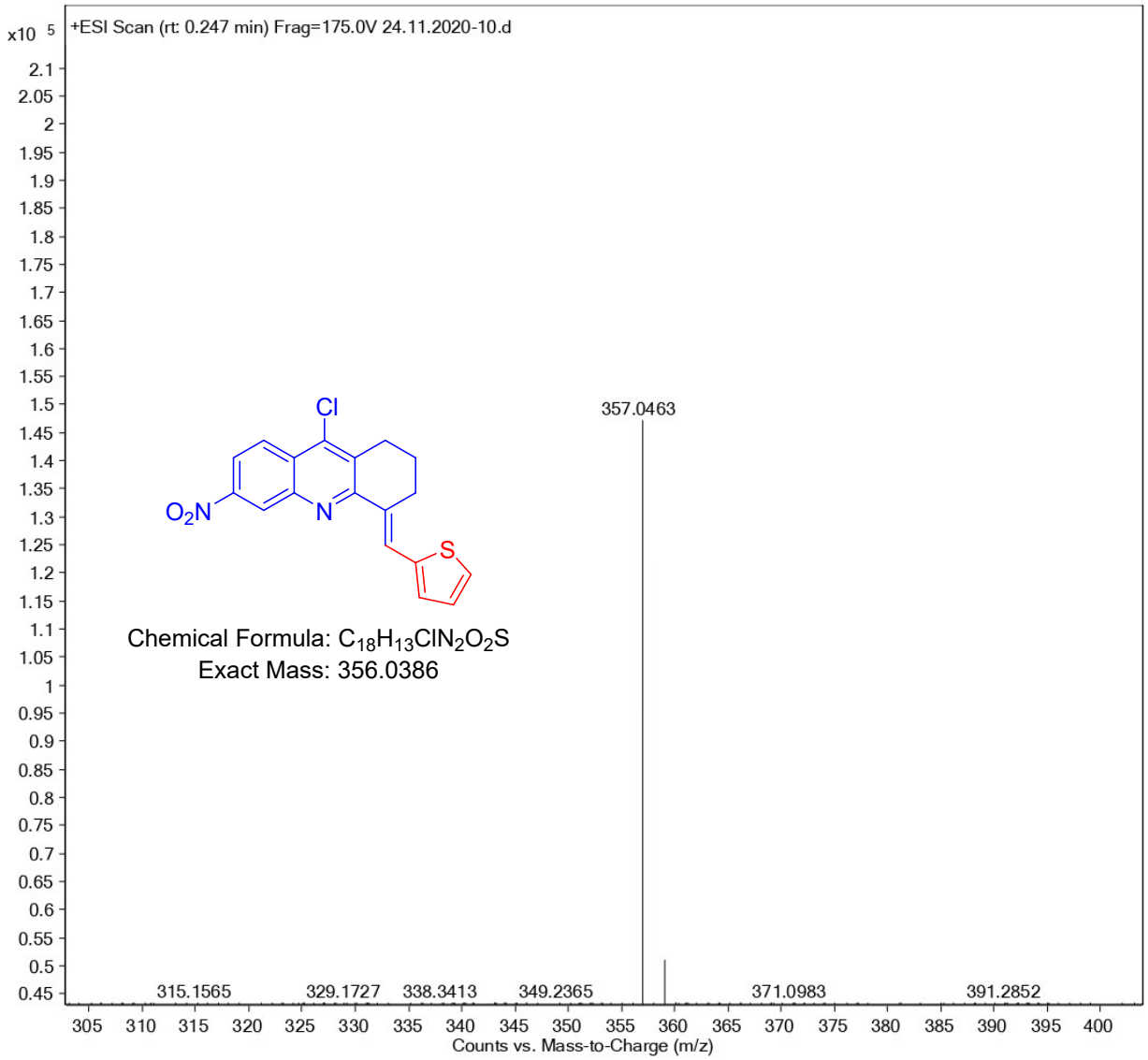

155.45
147.56
140.79
134.27
132.04
131.58
130.55
129.93
129.62
128.43
127.53
127.35
125.32
124.15
123.59
28.09
27.51
21.60
Cl
Br
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.241 min) Frag=175.0V 21.11.2021-40.d
x10 6
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
391.9687
389.9710
393.9670
388.2529
401.9335
405.9545
382
384
386
388
390
392
394
396
398
400
402
404
406
408
410
412
Counts vs. Mass-to-Charge (m/z)
Cl
Br
N
S
Chemical Formula: C18H13BrClNS
Exact Mass: 388.9641

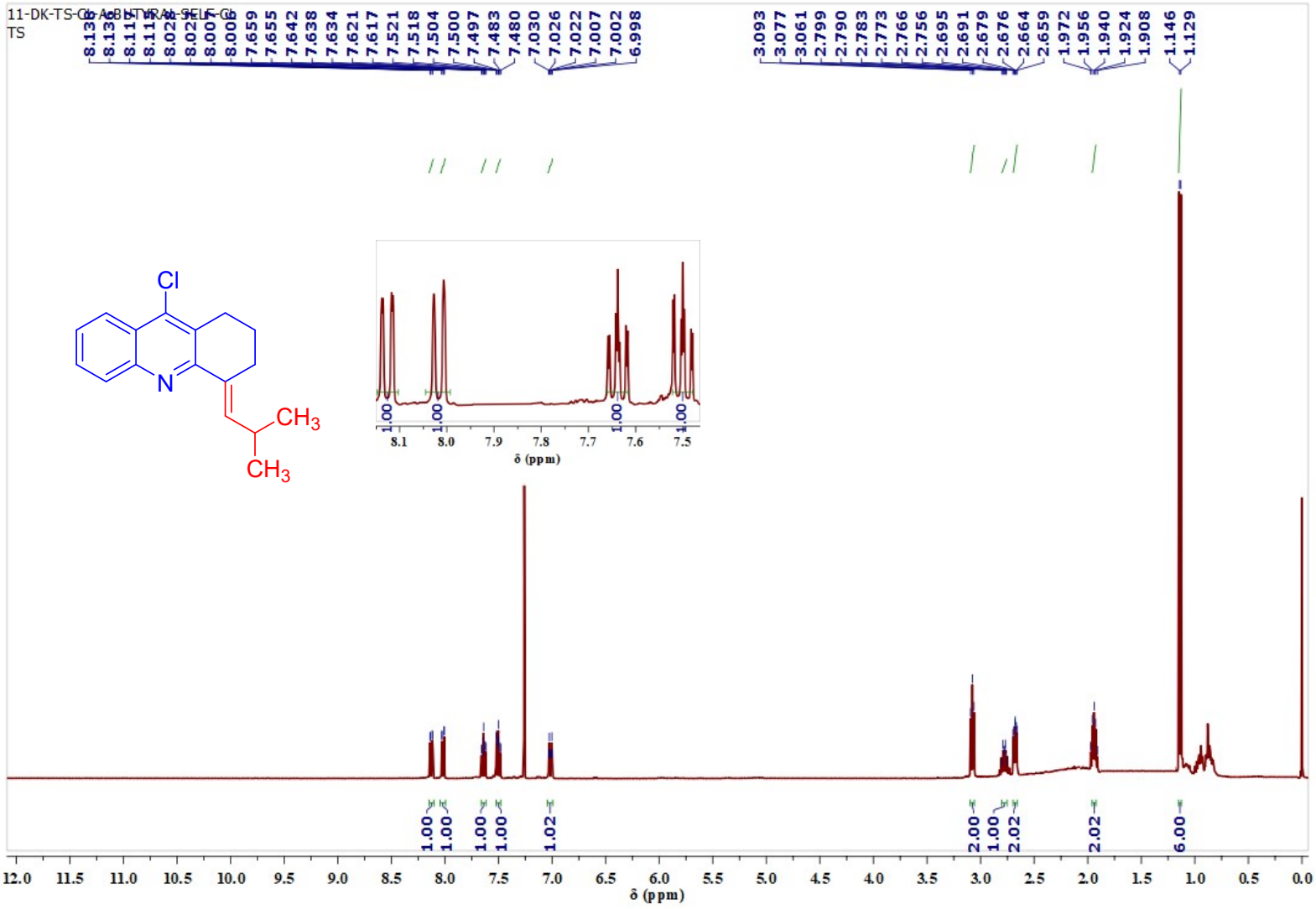
(E)-9-Chloro-6-nitro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridine (5ae):

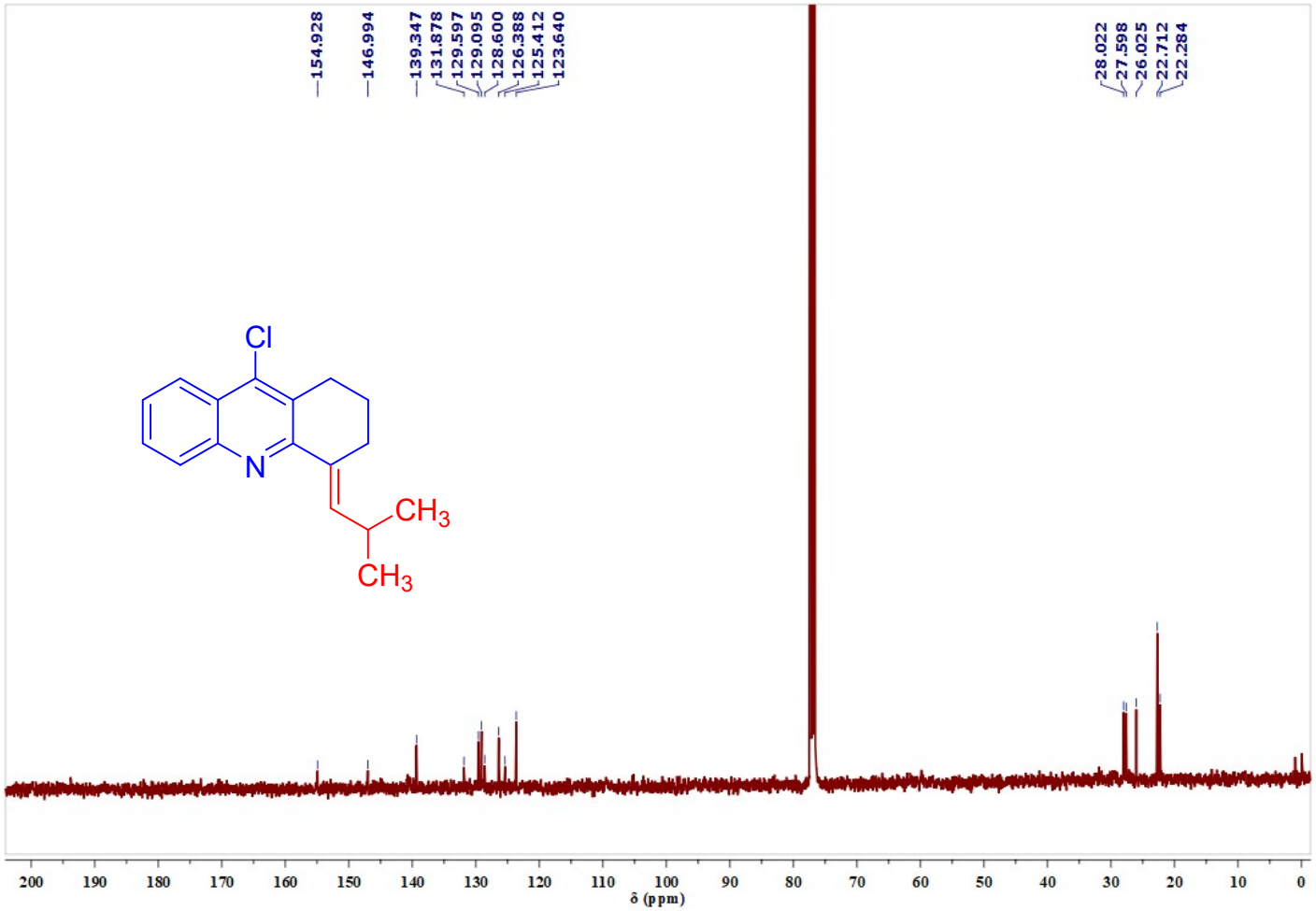


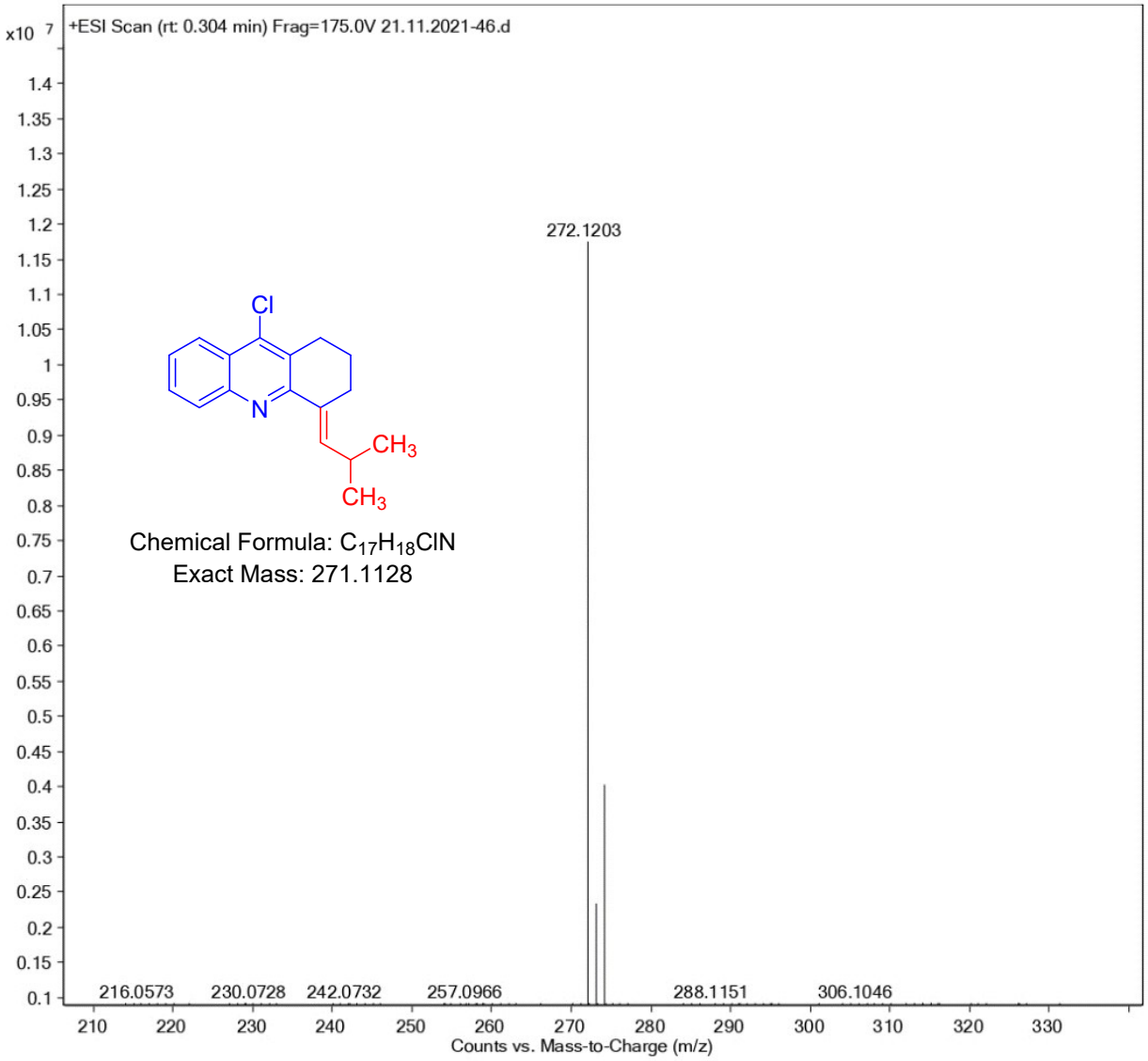

17-DK-TS-4-NO2-CL-A-THIO-SELF-CL-C13
TS
157.06
148.19
146.00
140.49
140.39
132.53
131.29
131.13
128.46
128.11
127.48
125.75
125.56
125.24
119.66
27.93
27.84
21.34
Cl
O2N
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.247 min) Frag=175.0V 24.11.2020-10.d
x10 5
Cl
O2N
N
S
357.0463
315.1565
329.1727
338.3413
349.2365
371.0983
391.2852
Chemical Formula: C18H13ClN2O2S
Exact Mass: 356.0386
Counts vs. Mass-to-Charge (m/z)

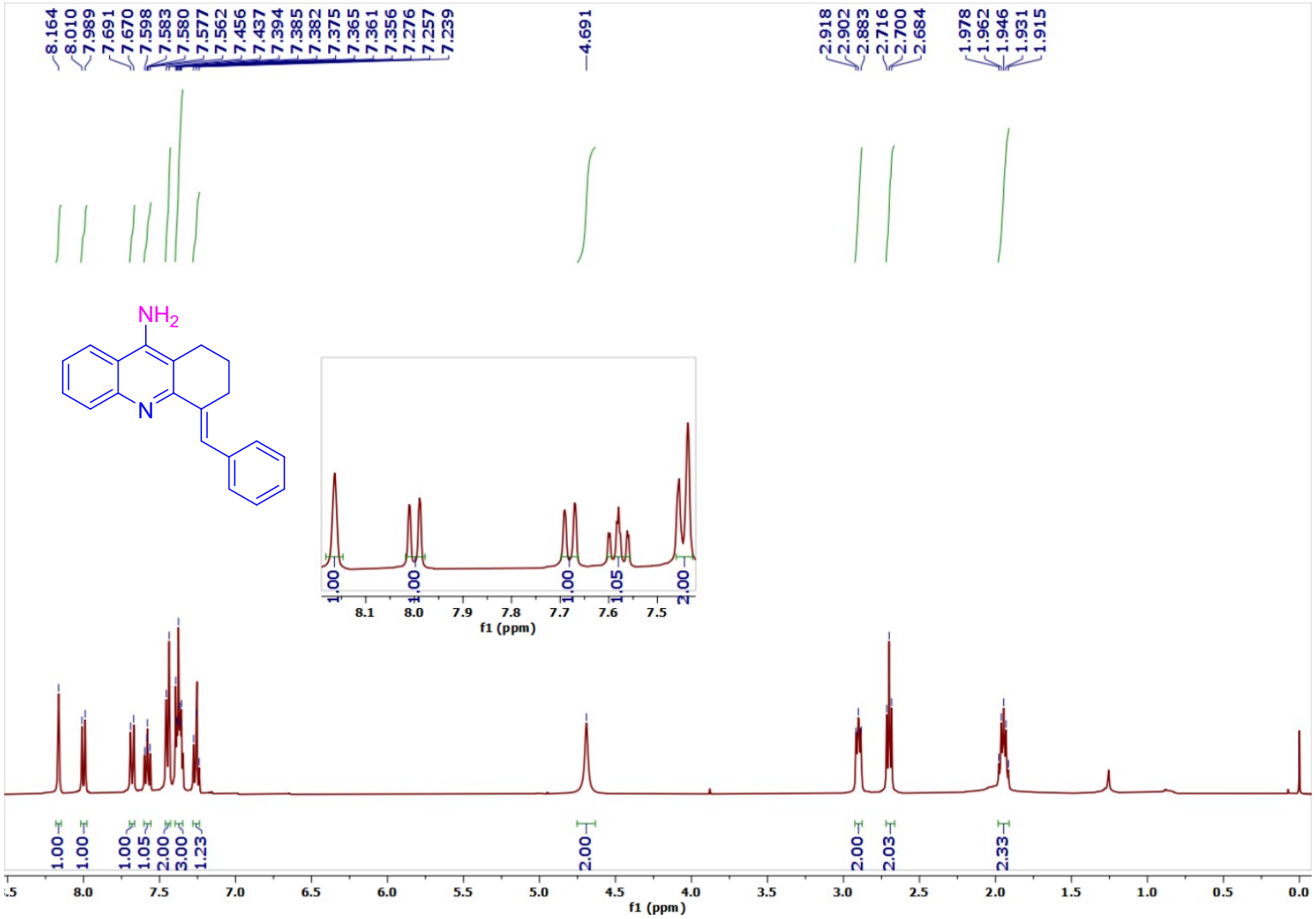
(E)-9-Chloro-4-(2-methylpropylidene)-1,2,3,4-tetrahydroacridine (5af):

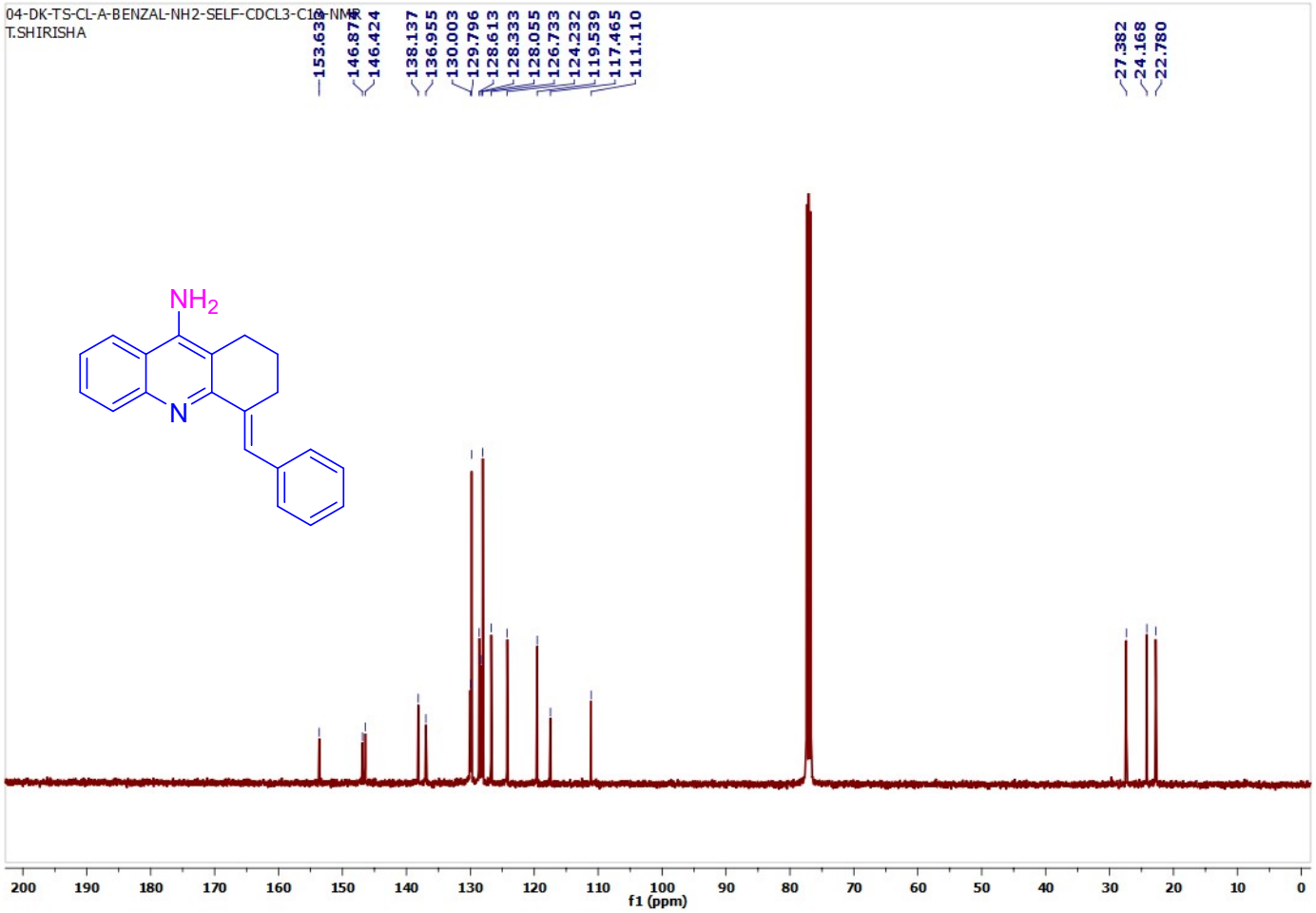


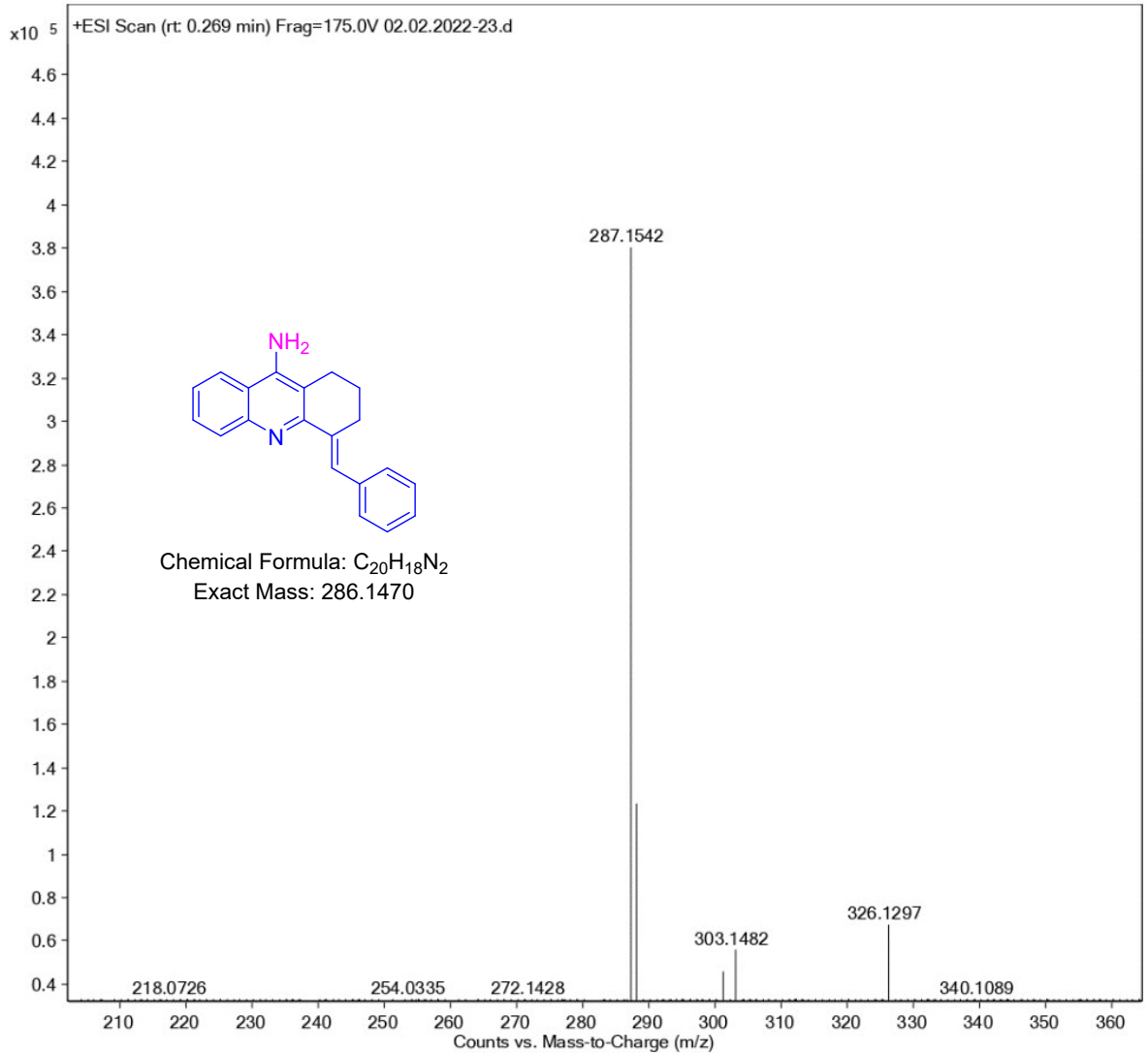

154.928
146.994
139.347
131.878
129.597
129.095
128.600
126.388
125.412
123.640
28.022
27.598
26.025
22.712
22.284
Cl
N
CH3
CH3
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
δ (ppm)


+ESI Scan (rt: 0.304 min) Frag=175.0V 21.11.2021-46.d
x10 7
1.4
1.35
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
272.1203
Cl
N
CH3
CH3
Chemical Formula: C17H18ClN
Exact Mass: 271.1128
216.0573
230.0728
242.0732
257.0966
288.1151
306.1046
210
220
230
240
250
260
270
280
290
300
310
320
330
Counts vs. Mass-to-Charge (m/z)

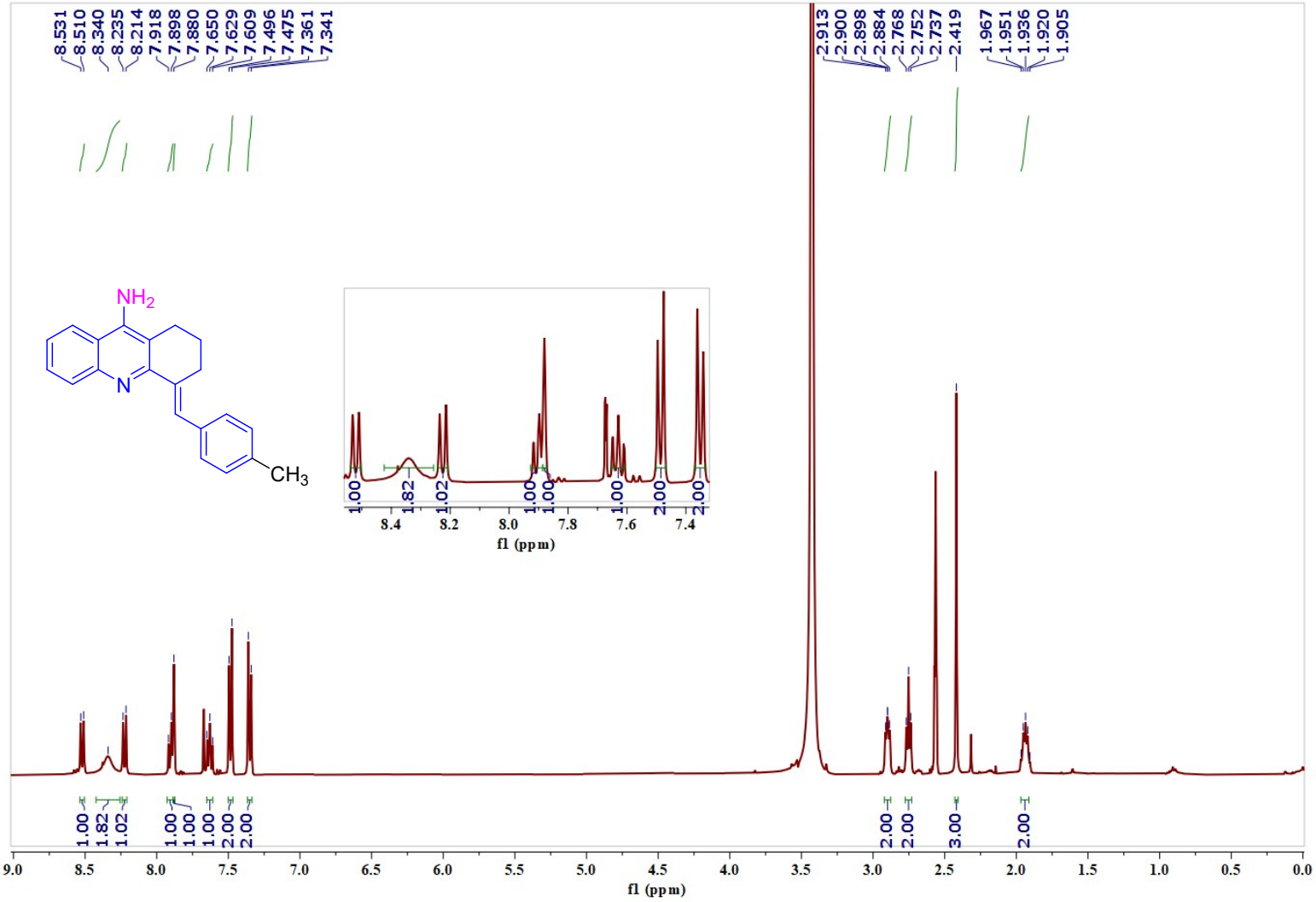
(E)-4-Benzylidene-1,2,3,4-tetrahydroacridin-9-amine (3a)

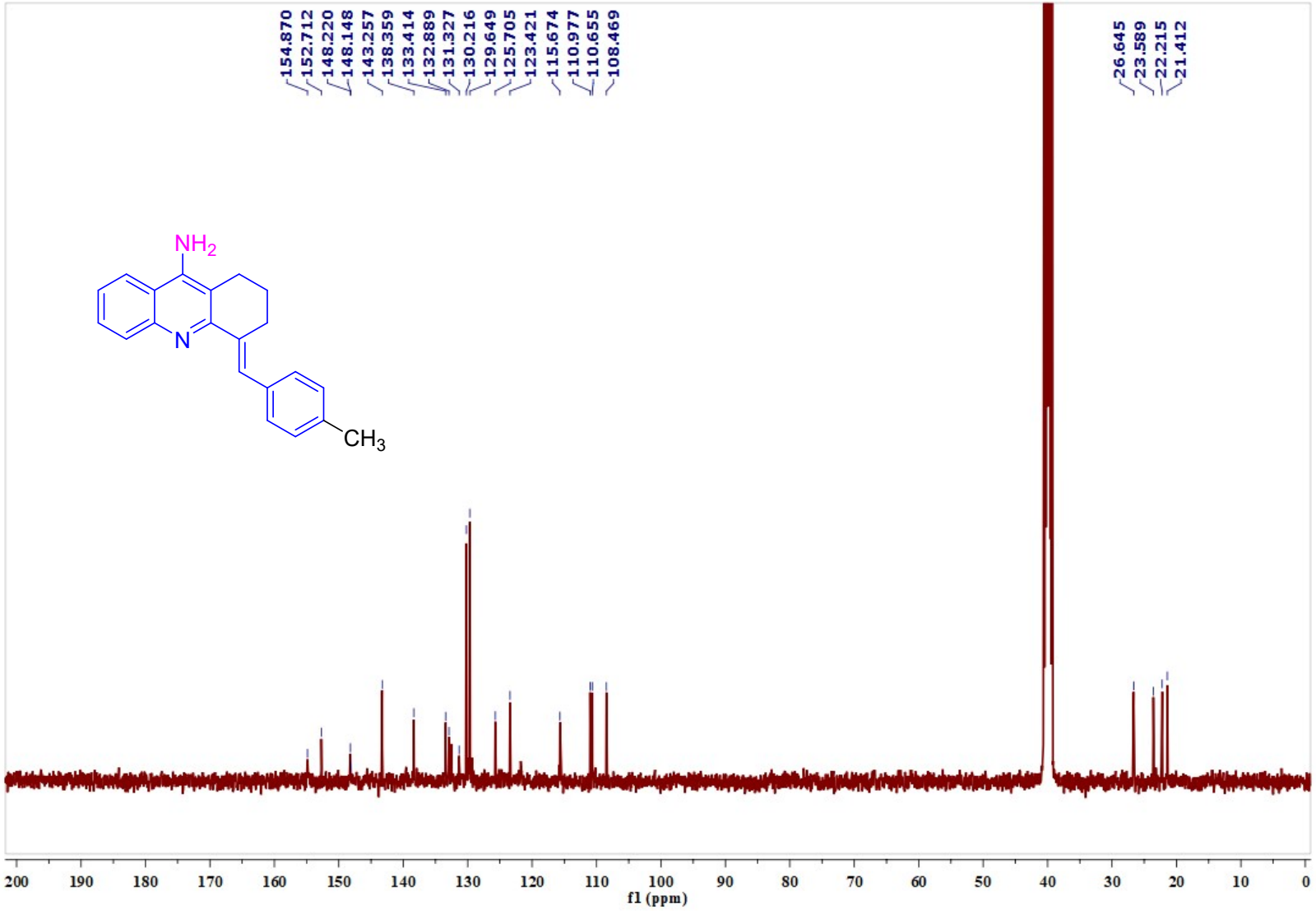


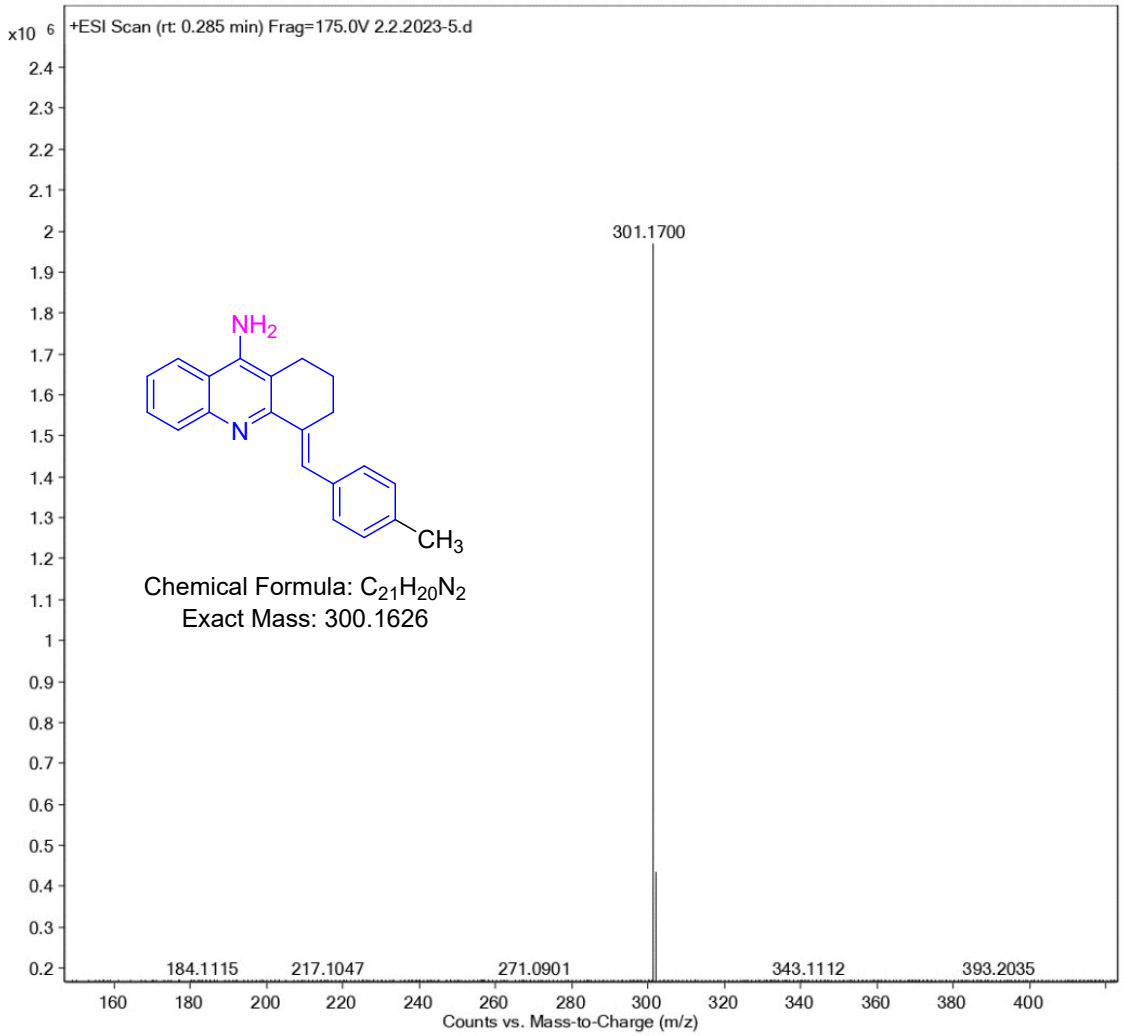

04-DK-TS-CL-A-BENZAL-NH2-SELF-CDCL3-C13-NMR
T.SHIRISHA
153.631
146.874
146.424
138.137
136.955
130.003
129.796
128.613
128.333
128.055
126.733
124.232
119.539
117.465
111.110
27.382
24.168
22.780
NH2
N
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


+ESI Scan (rt: 0.269 min) Frag=175.0V 02.02.2022-23.d
x10 5
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
287.1542
NH2
N
Chemical Formula: C20H18N2
Exact Mass: 286.1470
326.1297
303.1482
218.0726
254.0335
272.1428
340.1089
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360
Counts vs. Mass-to-Charge (m/z)

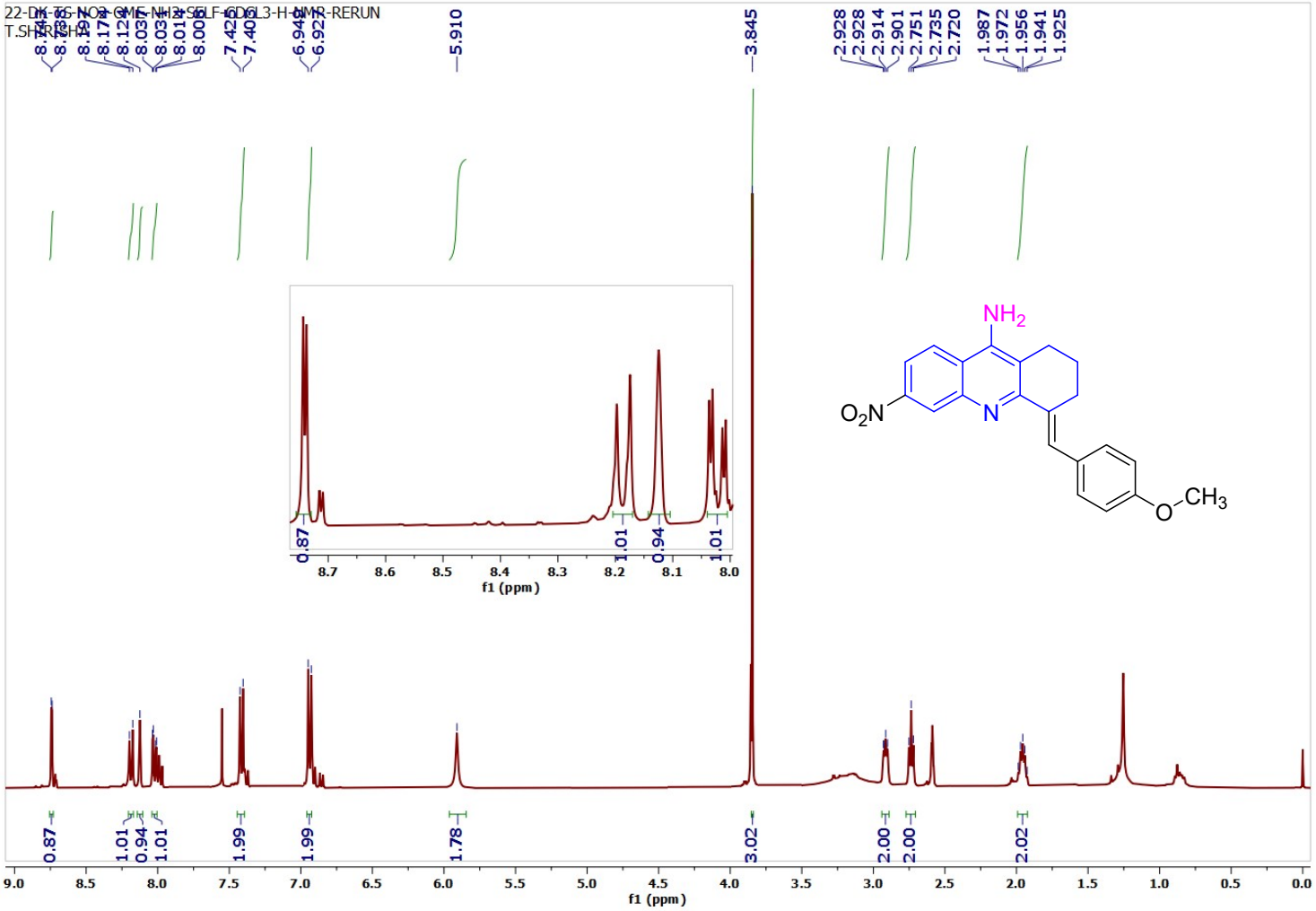
(E)-4-(4-Methylbenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3b)

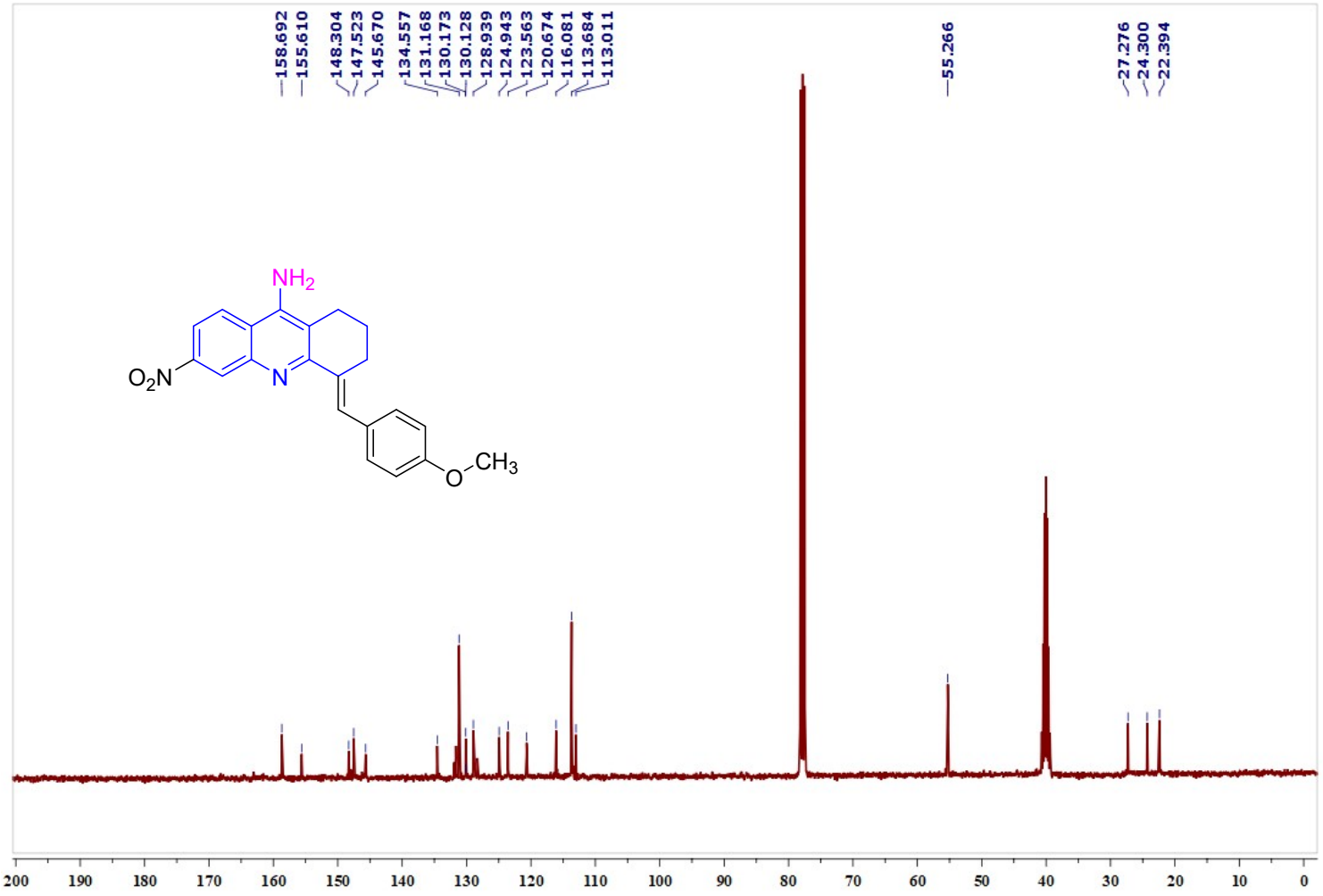


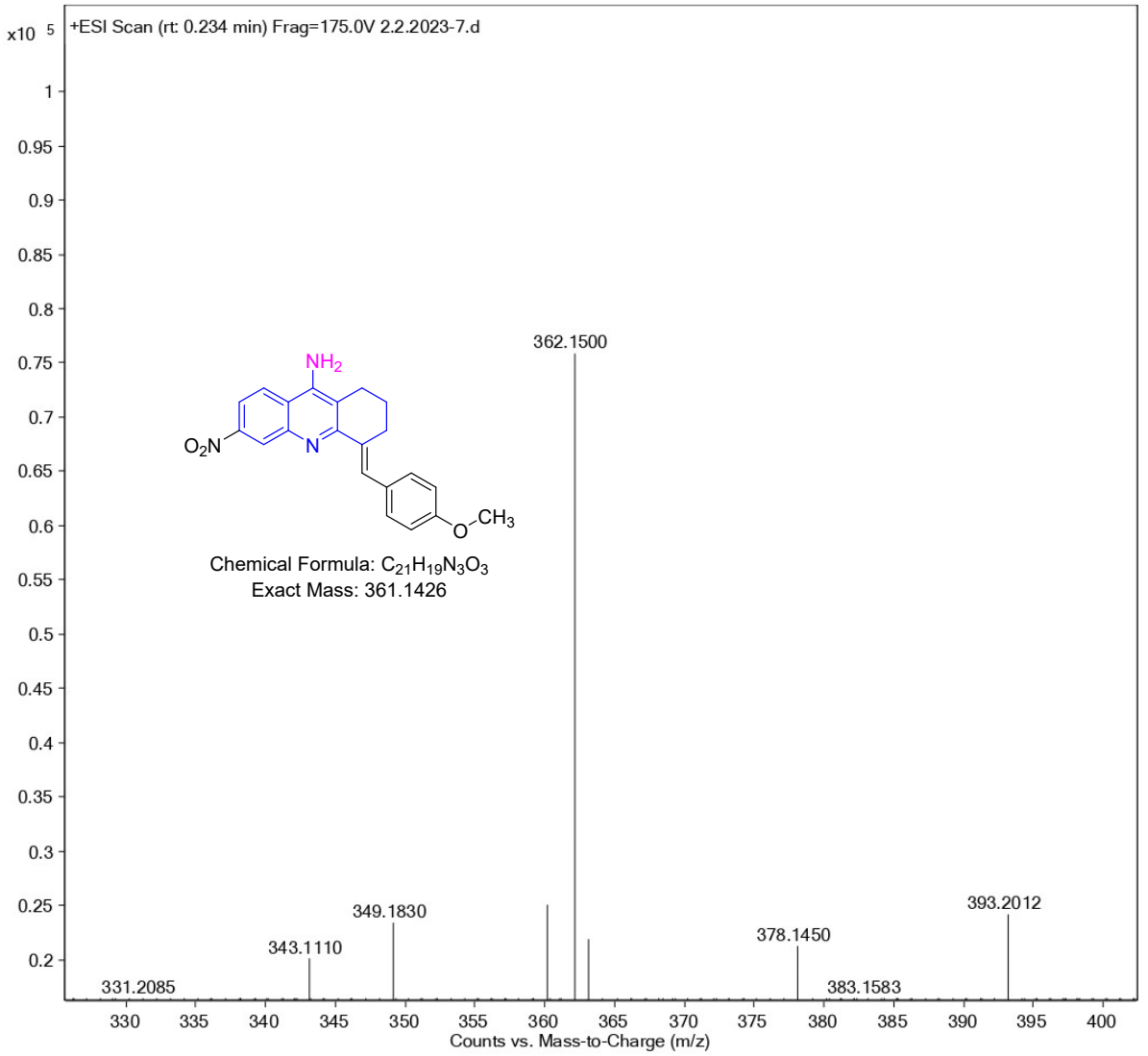

154.870
152.712
148.220
148.148
143.257
138.359
133.414
132.889
131.327
130.216
129.649
125.705
123.421
115.674
110.977
110.655
108.469
26.645
23.589
22.215
21.412
NH2
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.285 min) Frag=175.0V 2.2.2023-5.d
x10 6
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
301.1700
NH2
N
CH3
Chemical Formula: C21H20N2
Exact Mass: 300.1626
184.1115
217.1047
271.0901
343.1112
393.2035
160
180
200
220
240
260
280
300
320
340
360
380
400
Counts vs. Mass-to-Charge (m/z)

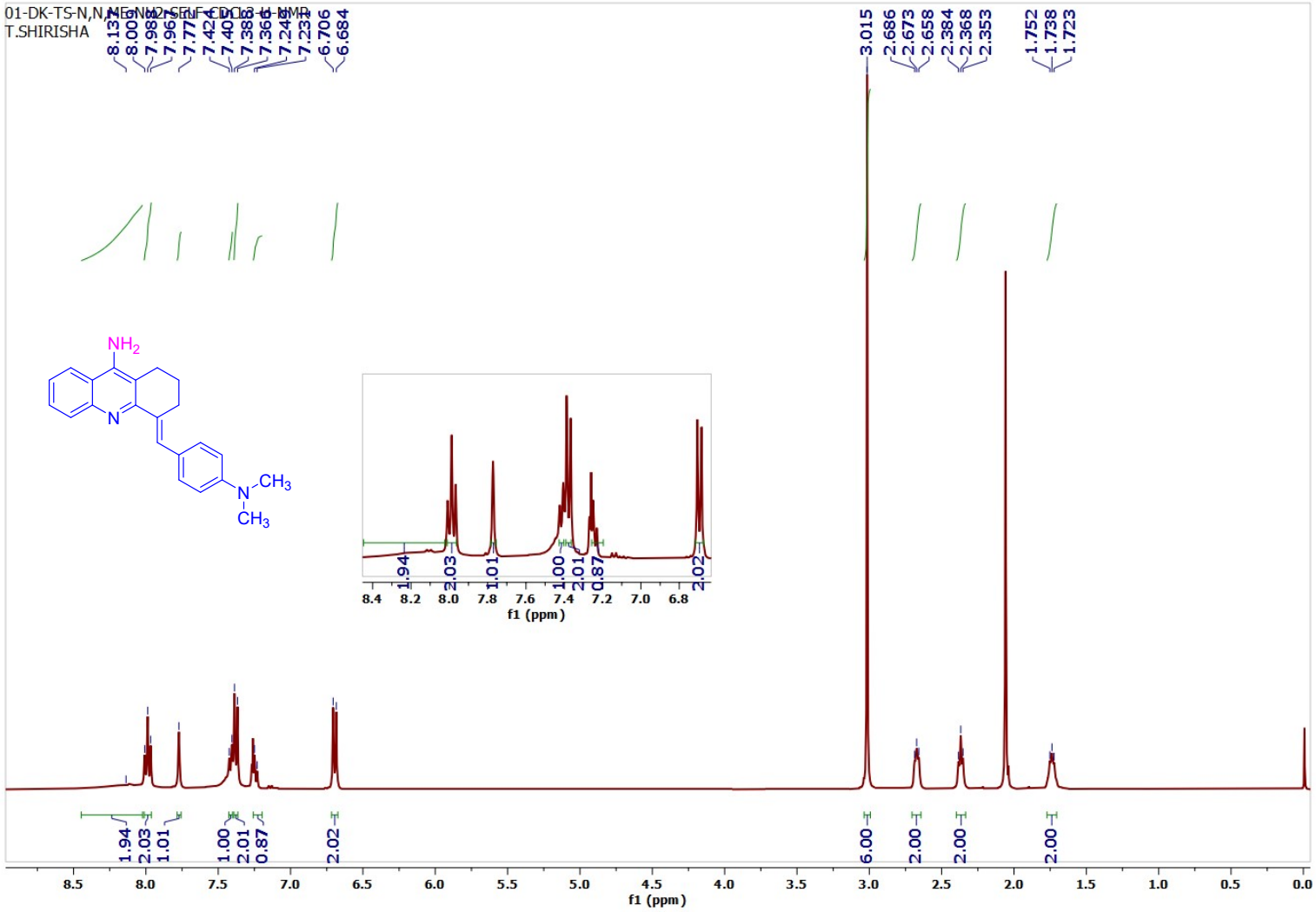
(E)-4-(4-Methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine (3c):

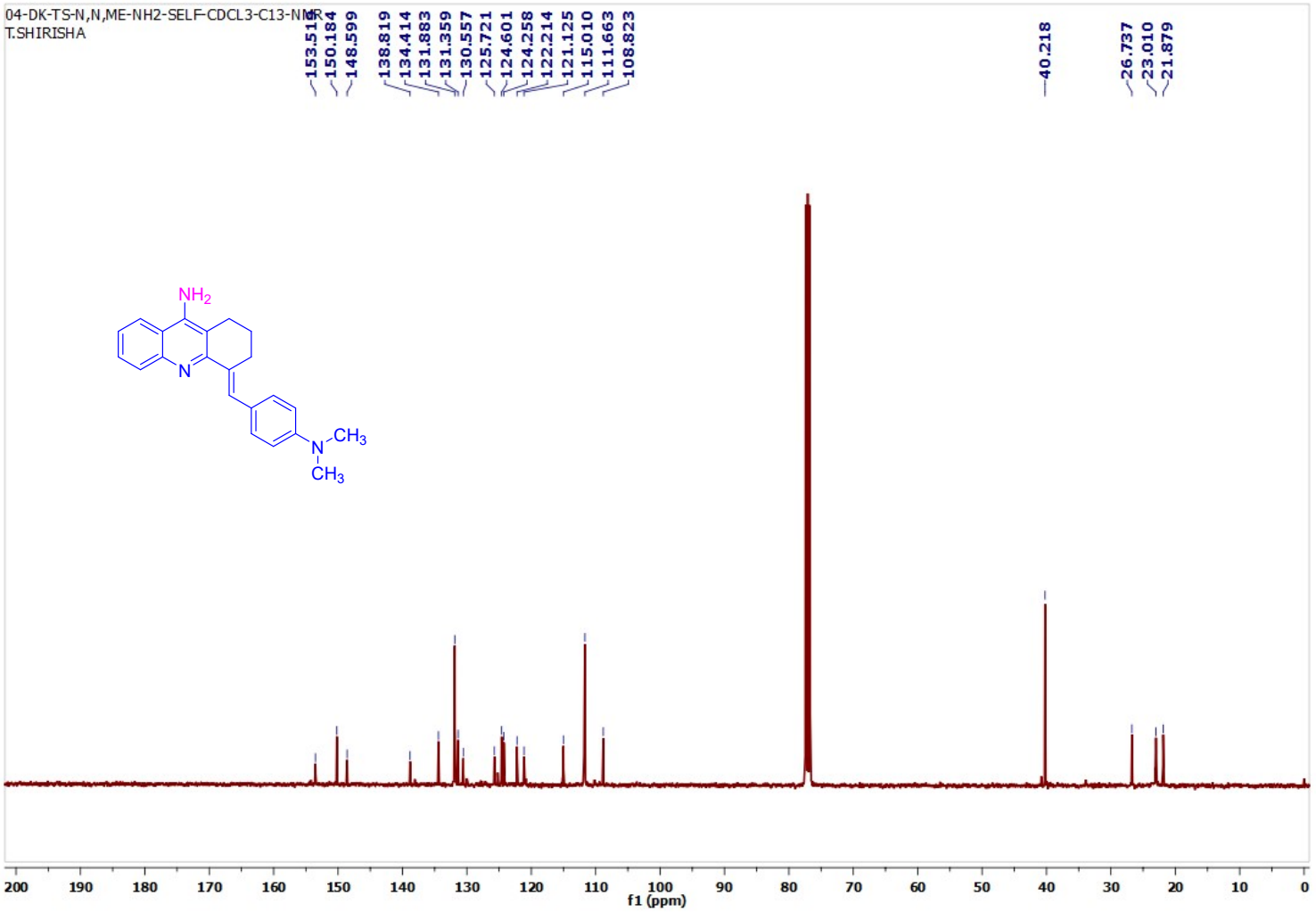


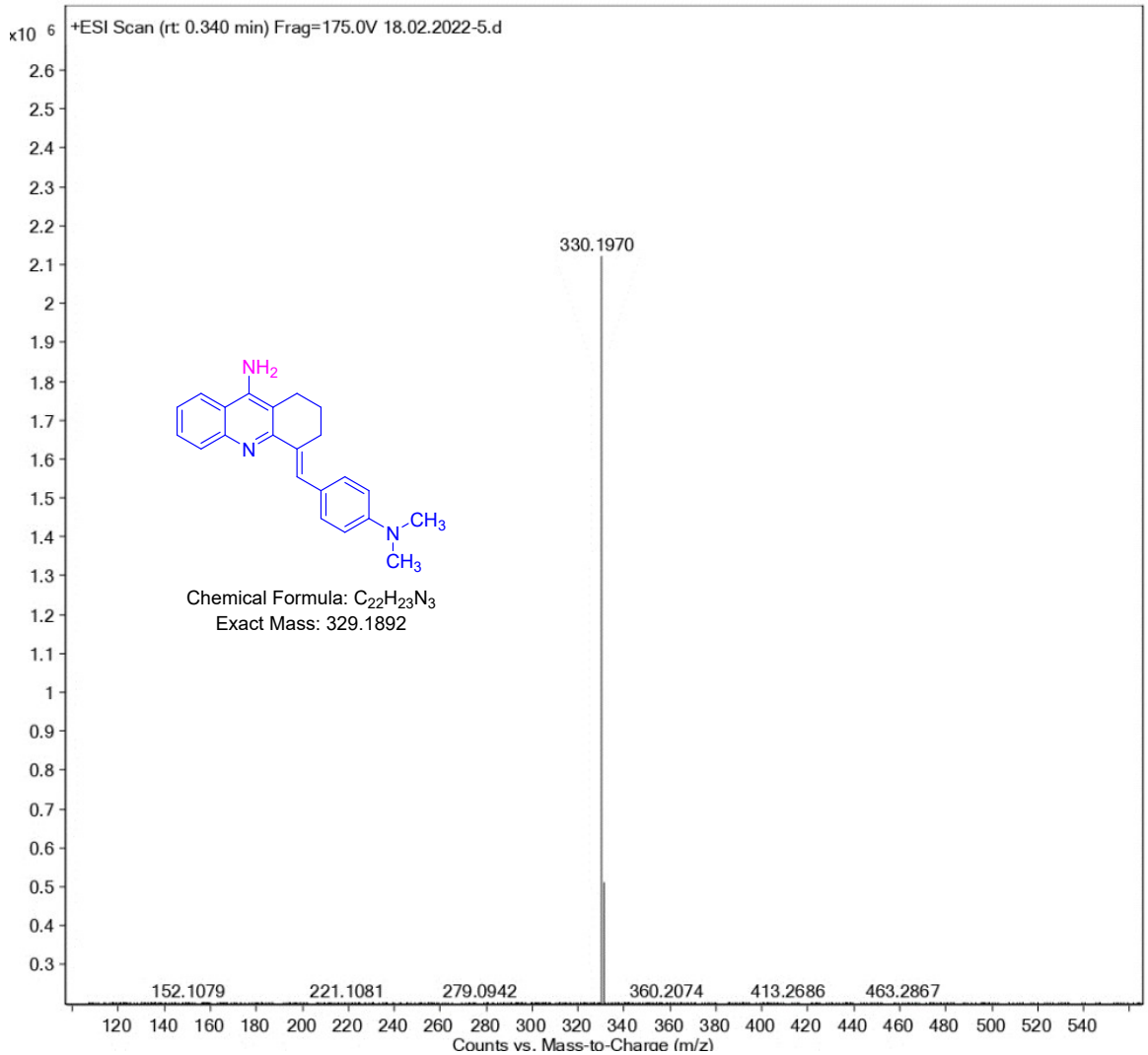

158.692
155.610
148.304
147.523
145.670
134.557
131.168
130.173
130.128
128.939
124.943
123.563
120.674
116.081
113.684
113.011
55.266
27.276
24.300
22.394
NH2
O2N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.234 min) Frag=175.0V 2.2.2023-7.d
x10 5
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
362.1500
349.1830
343.1110
331.2085
378.1450
393.2012
383.1583
330 335 340 345 350 355 360 365 370 375 380 385 390 395 400
Counts vs. Mass-to-Charge (m/z)
NH2
O2N
N
O
CH3
Chemical Formula: C21H19N3O3
Exact Mass: 361.1426

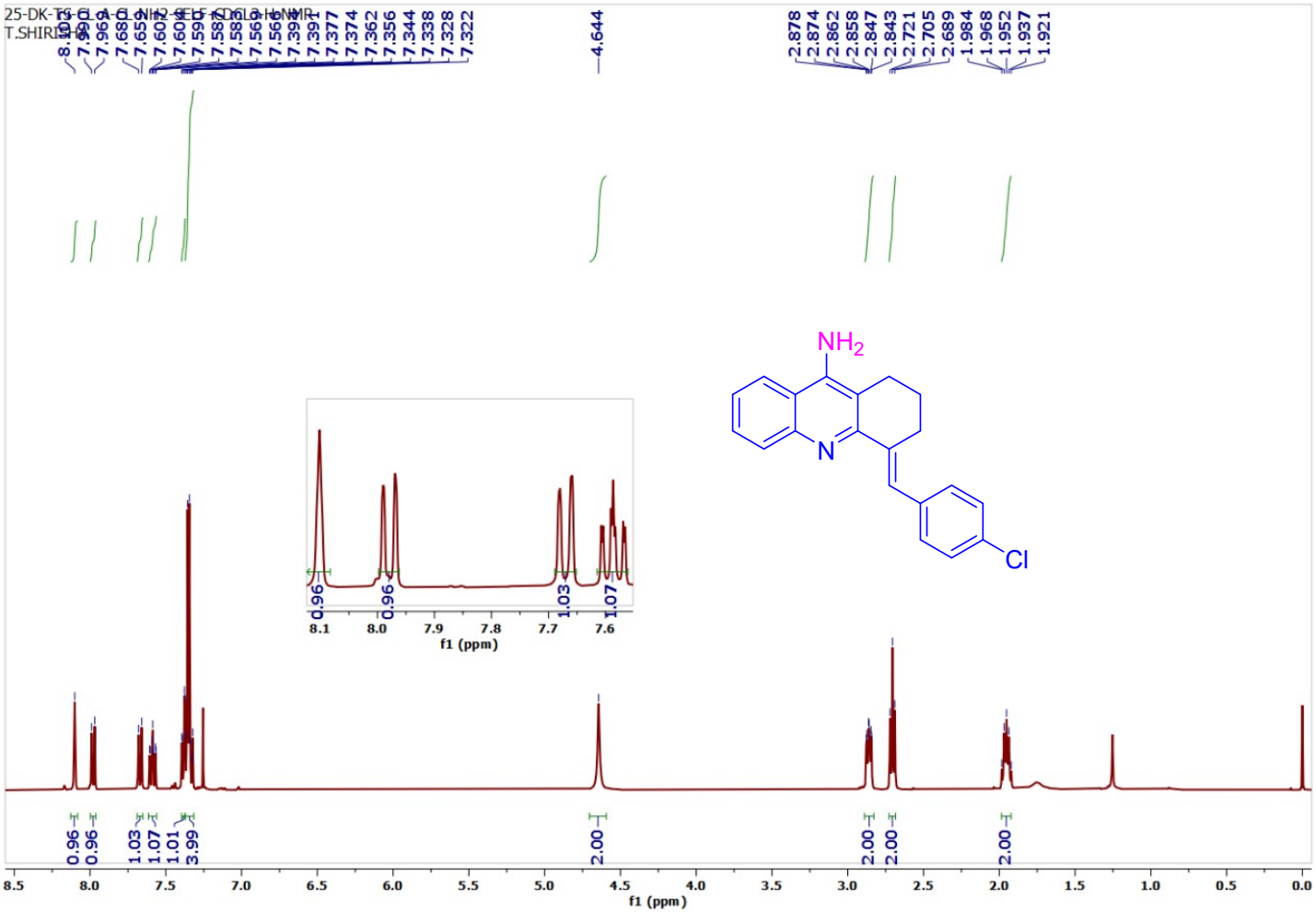
(E)-4-(4-(Dimethylamino)benzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3d)

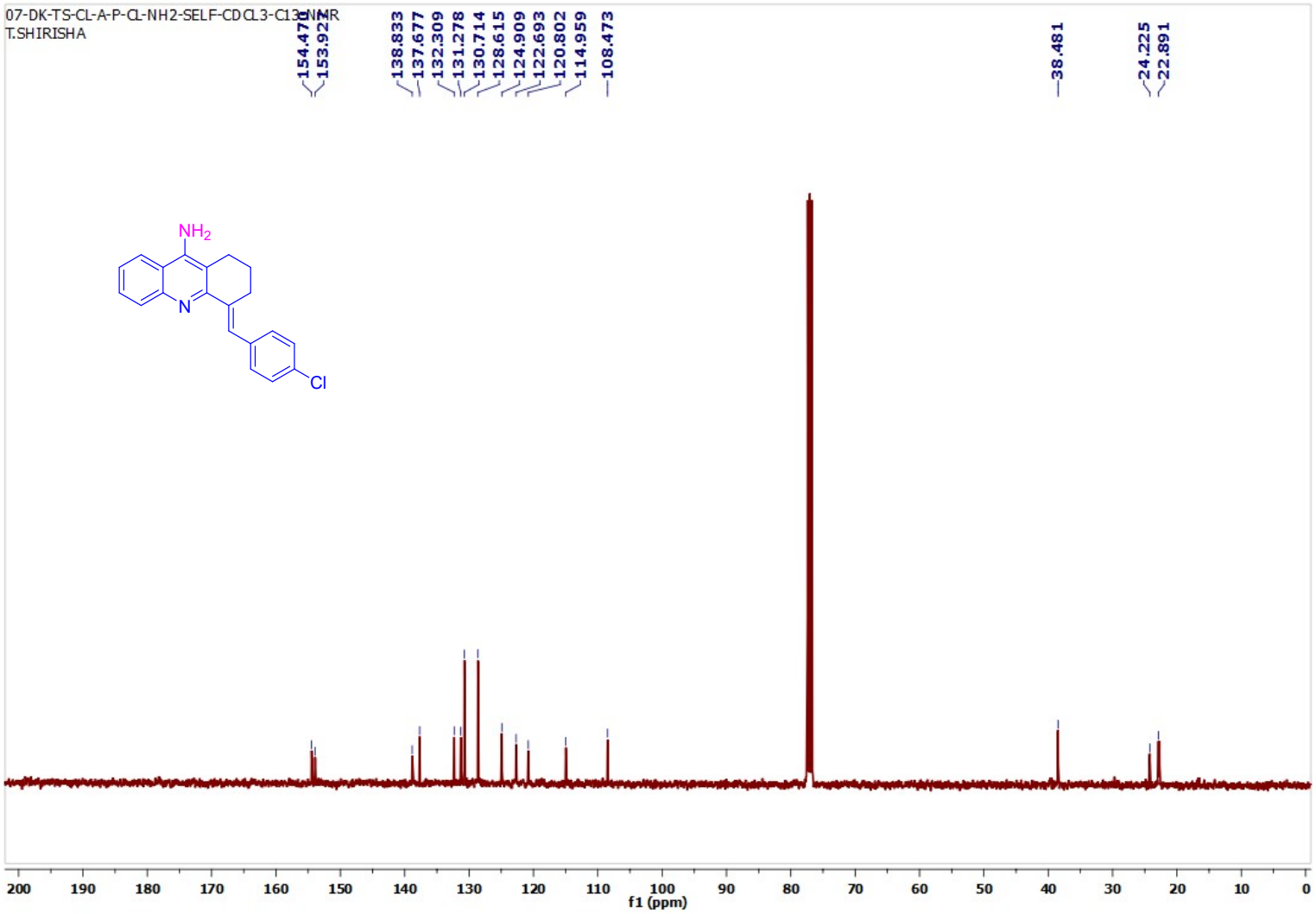


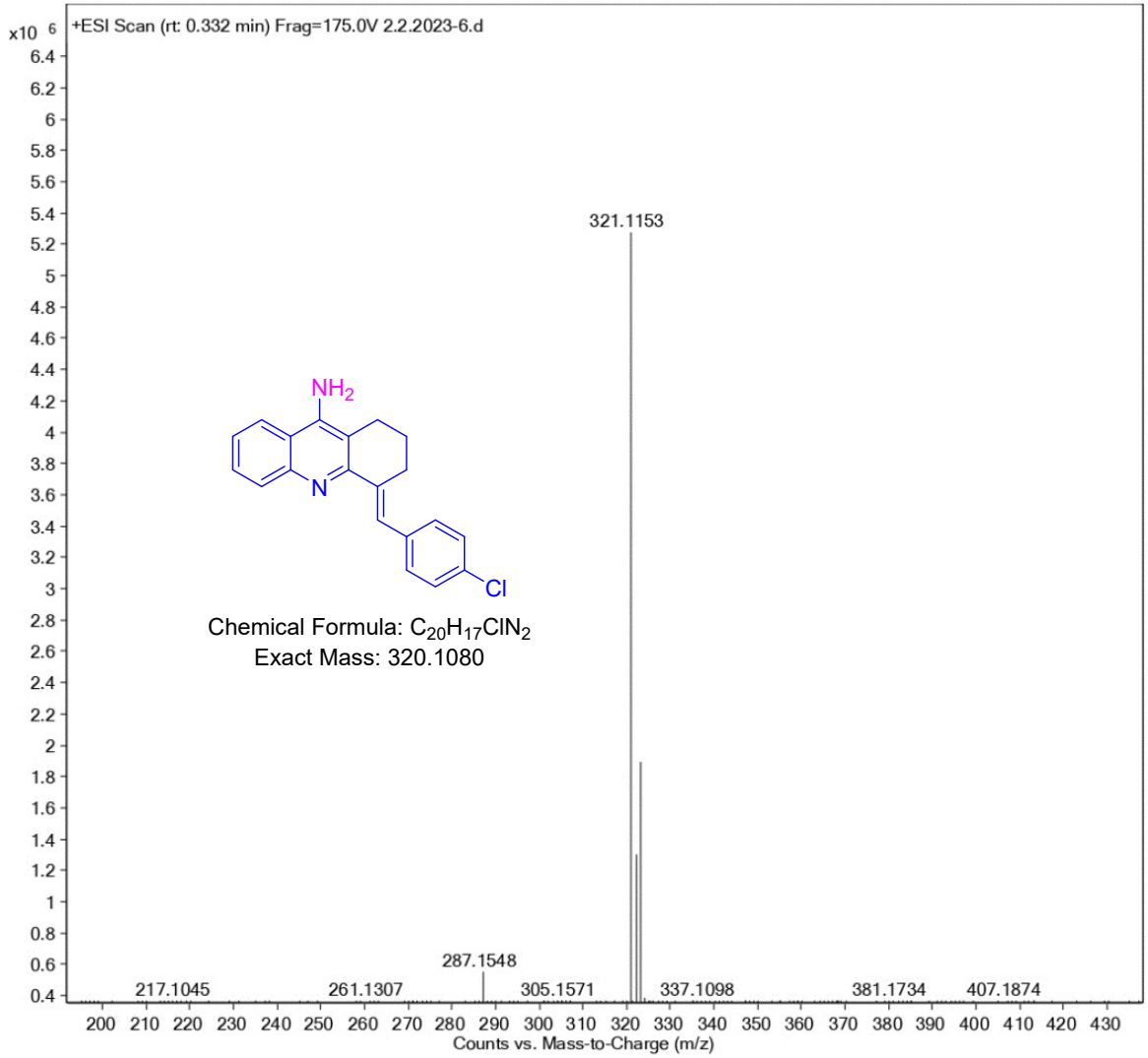

04-DK-TS-N,N,ME-NH2-SELF-CDCL3-C13-NMR
T.SHIRISHA
153.516
150.184
148.599
138.819
134.414
131.883
131.359
130.557
125.721
124.601
124.258
122.214
121.125
115.010
111.663
108.823
40.218
26.737
23.010
21.879
NH2
N
N
CH3
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.340 min) Frag=175.0V 18.02.2022-5.d
x10 6
330.1970
NH2
N
CH3
N
CH3
Chemical Formula: C22H23N3
Exact Mass: 329.1892
152.1079
221.1081
279.0942
360.2074
413.2686
463.2867
Counts vs. Mass-to-Charge (m/z)

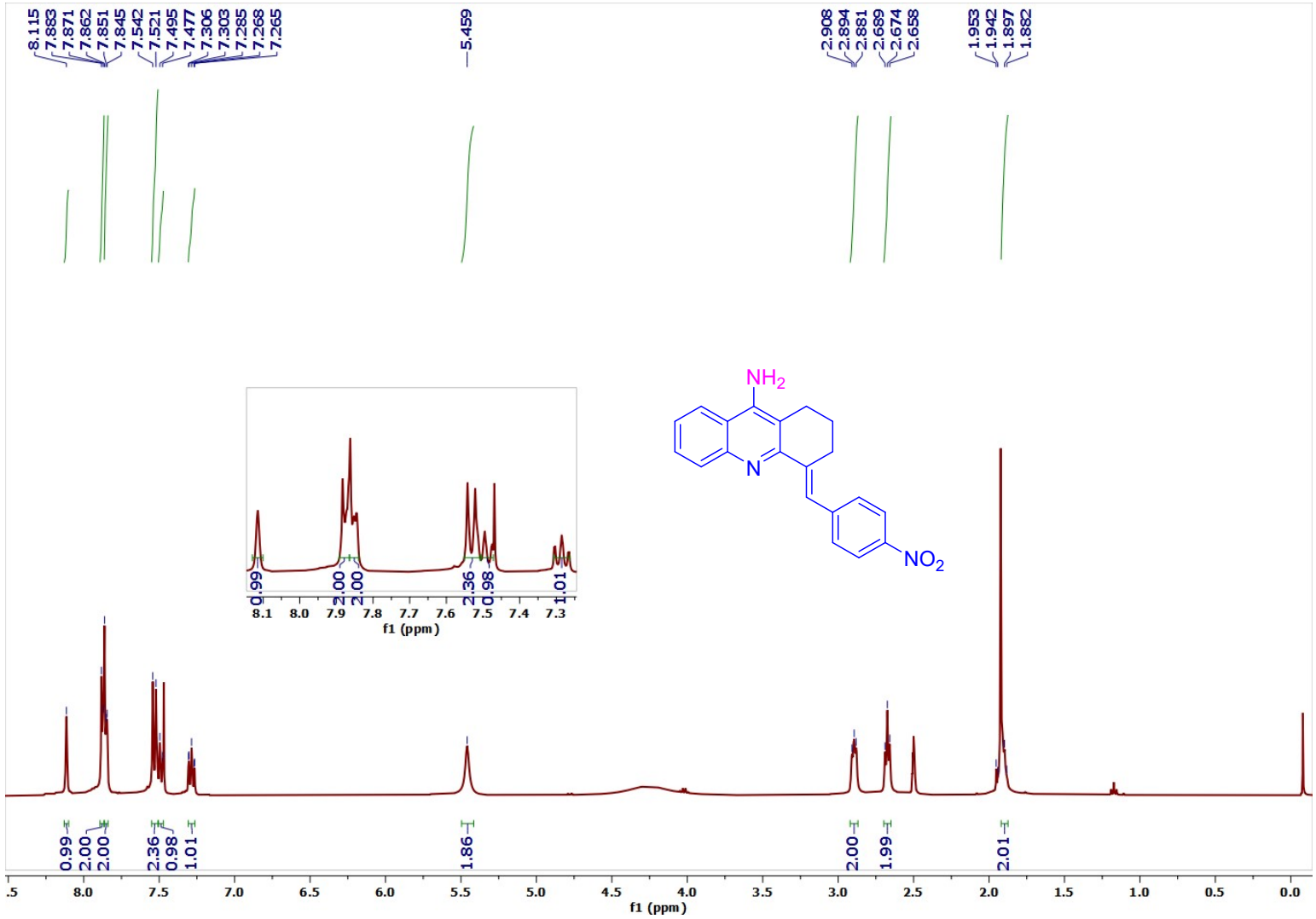
(E)-4-(4-Chlorobenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3e)

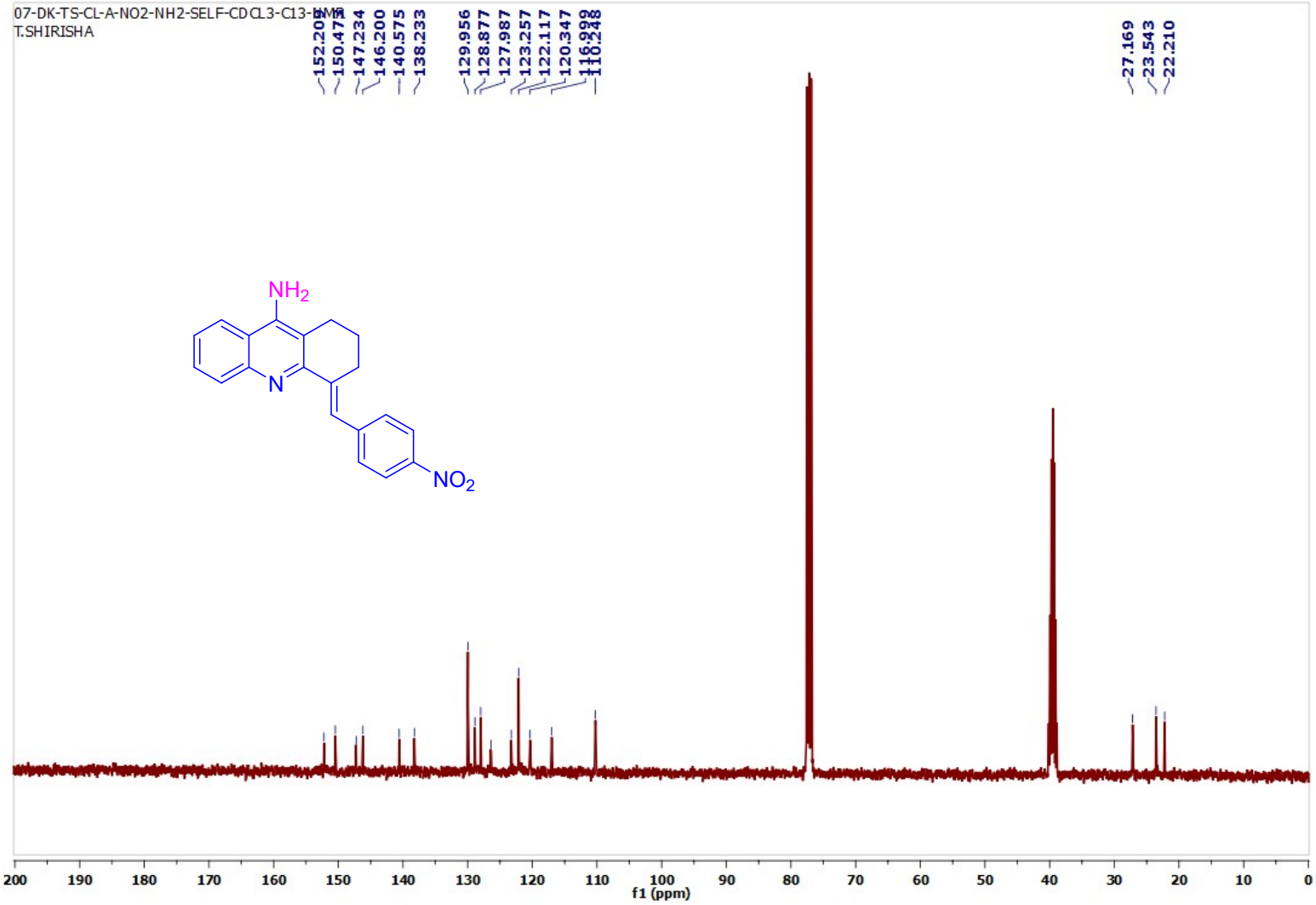


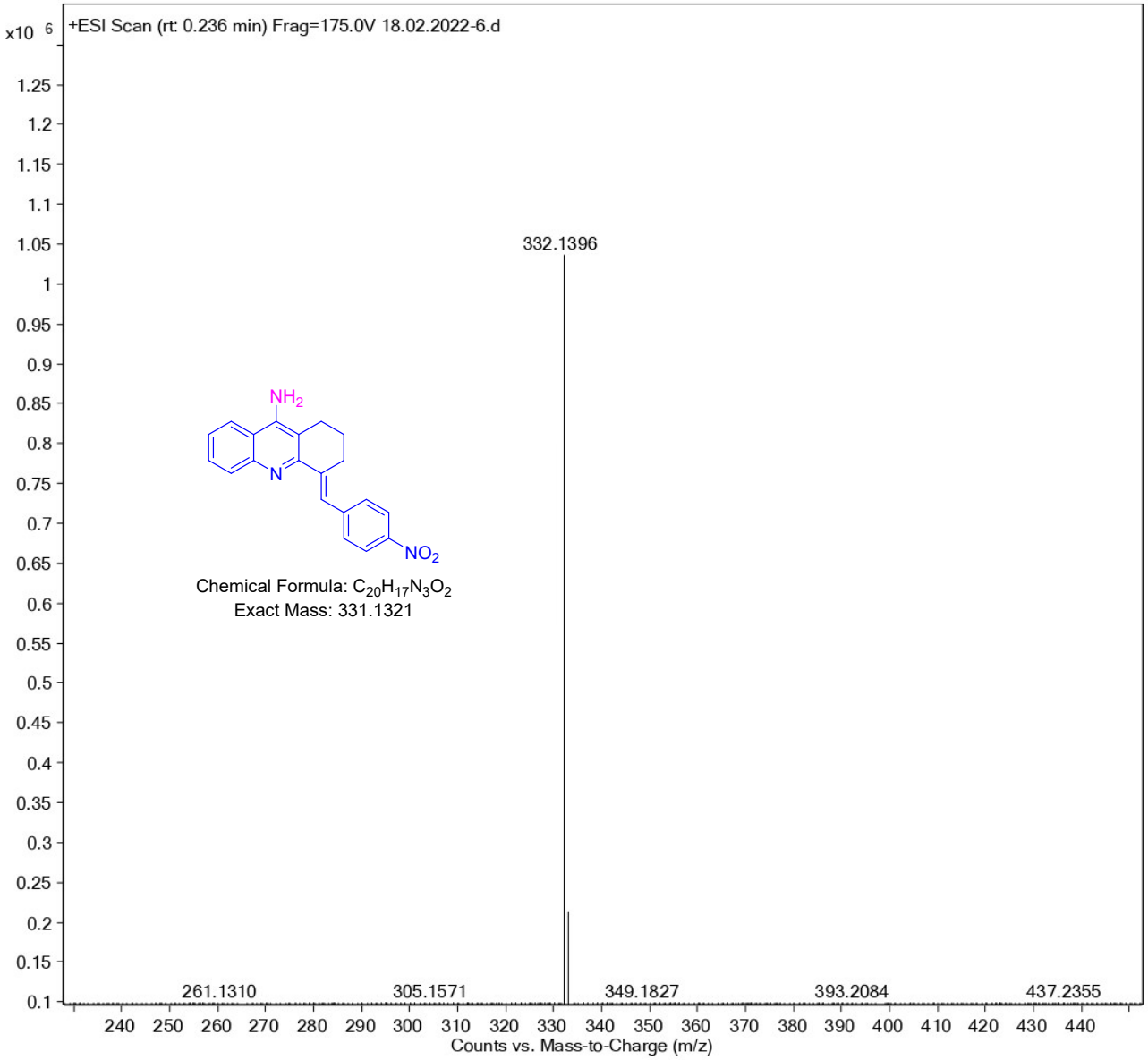

07-DK-TS-CL-A-P-CL-NH2-SELF-CDCL3-C13-NMR
T.SHIRISHA
154.471
153.927
138.833
137.677
132.309
131.278
130.714
128.615
124.909
122.693
120.802
114.959
108.473
38.481
24.225
22.891
NH2
N
Cl
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.332 min) Frag=175.0V 2.2.2023-6.d
x10 6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
321.1153
287.1548
217.1045
261.1307
305.1571
337.1098
381.1734
407.1874
NH2
N
Cl
Chemical Formula: C20H17ClN2
Exact Mass: 320.1080
200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430
Counts vs. Mass-to-Charge (m/z)

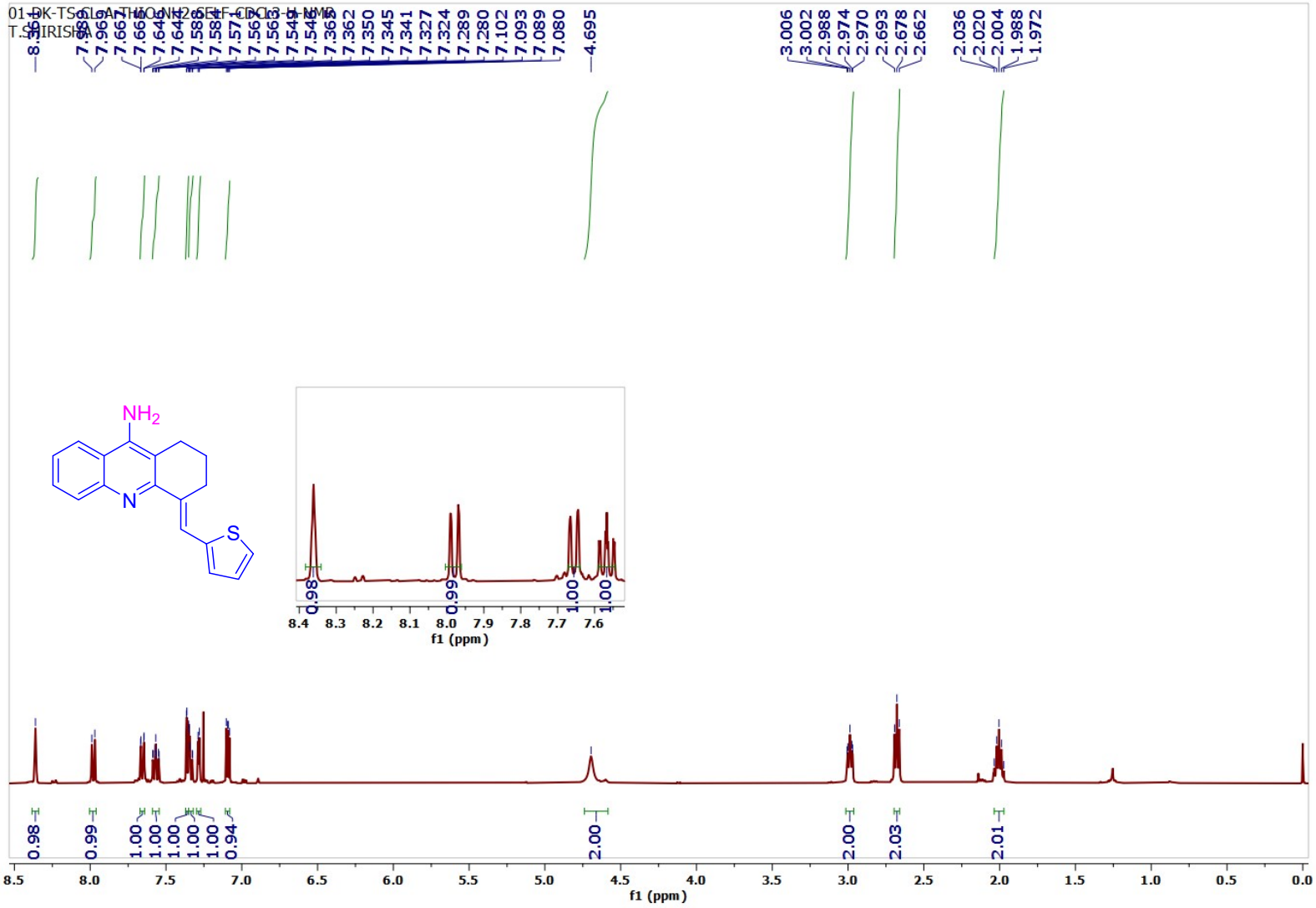
(E)-4-(4-Nitrobenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (3f)

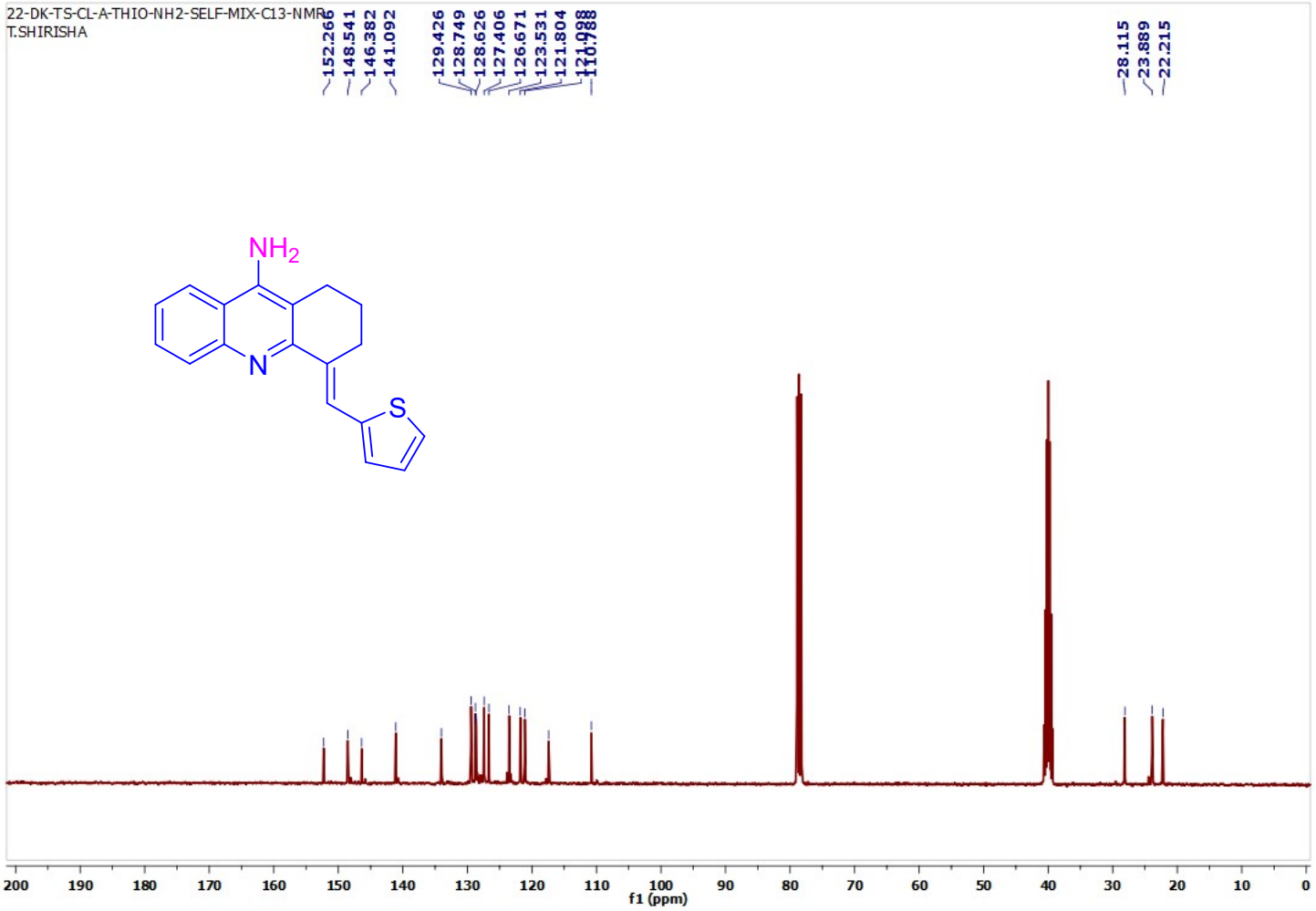


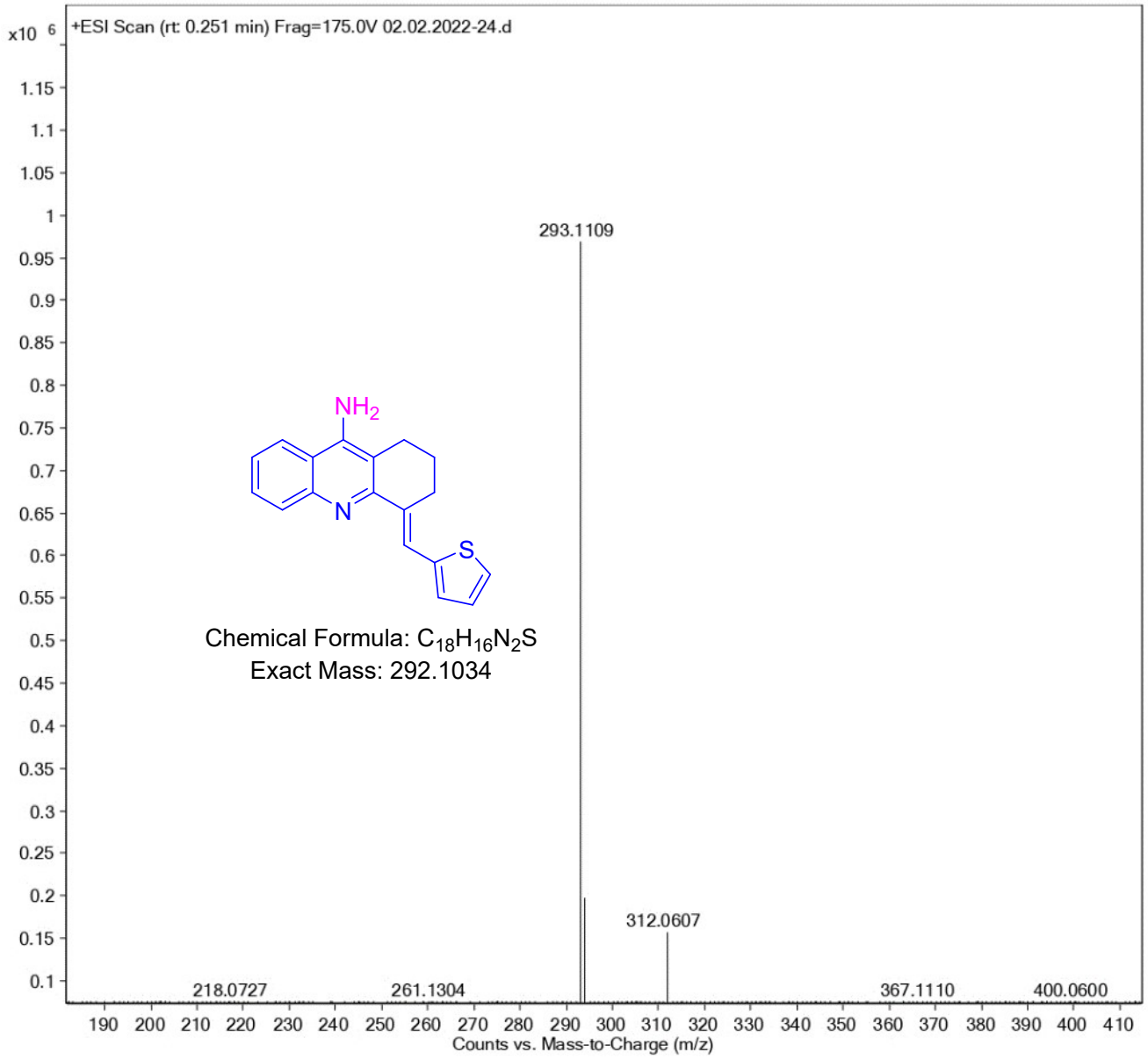

07-DK-TS-CL-A-NO2-NH2-SELF-CDCL3-C13-BMR
T.SHIRISHA
152.209
150.471
147.234
146.200
140.575
138.233
129.956
128.877
127.987
123.257
122.117
120.347
116.999
110.248
27.169
23.543
22.210
NH2
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.236 min) Frag=175.0V 18.02.2022-6.d
x10 6
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
332.1396
NH2
N
NO2
Chemical Formula: C20H17N3O2
Exact Mass: 331.1321
261.1310
305.1571
349.1827
393.2084
437.2355
240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440
Counts vs. Mass-to-Charge (m/z)

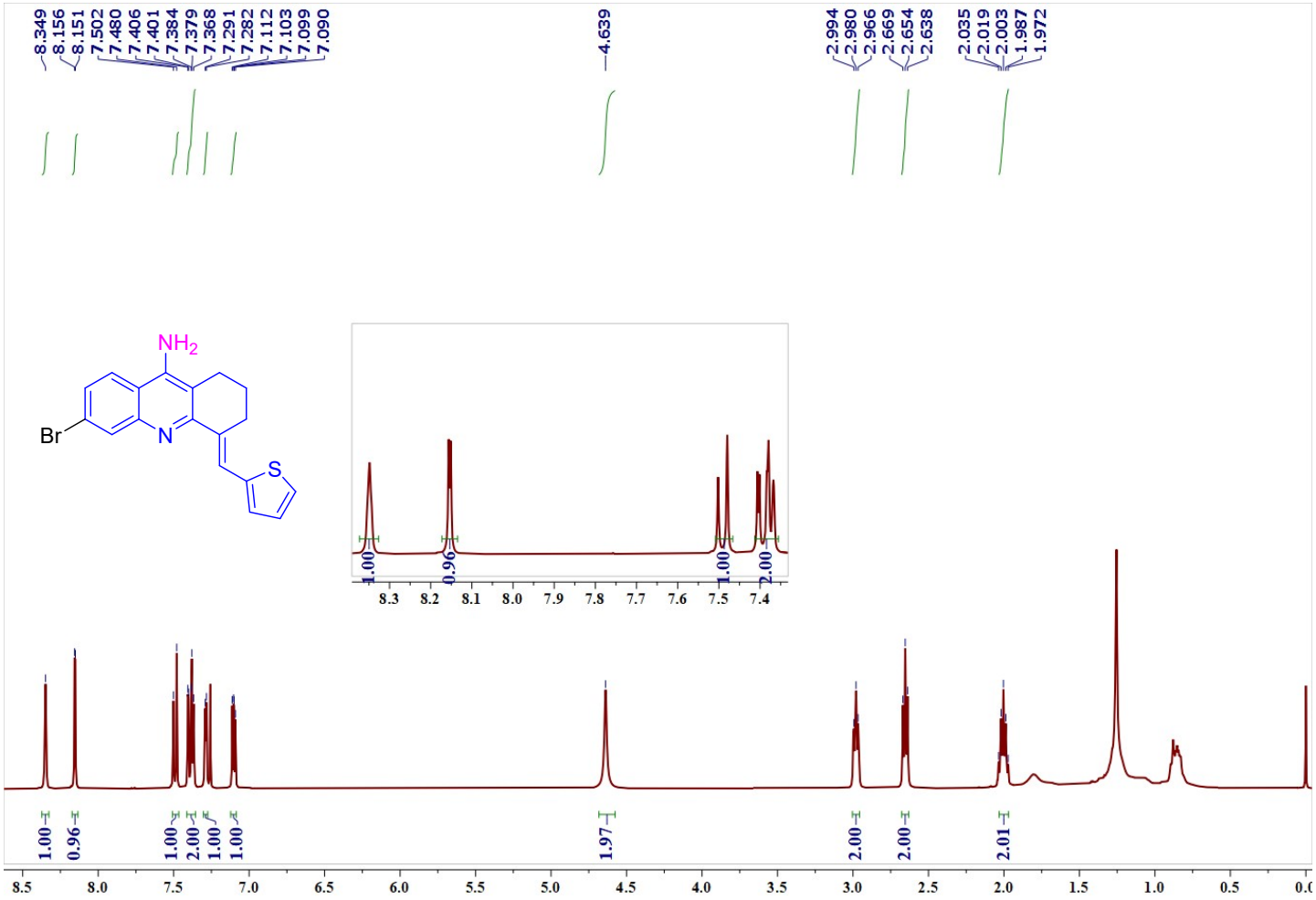
(E)-4-(Thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine (3g)

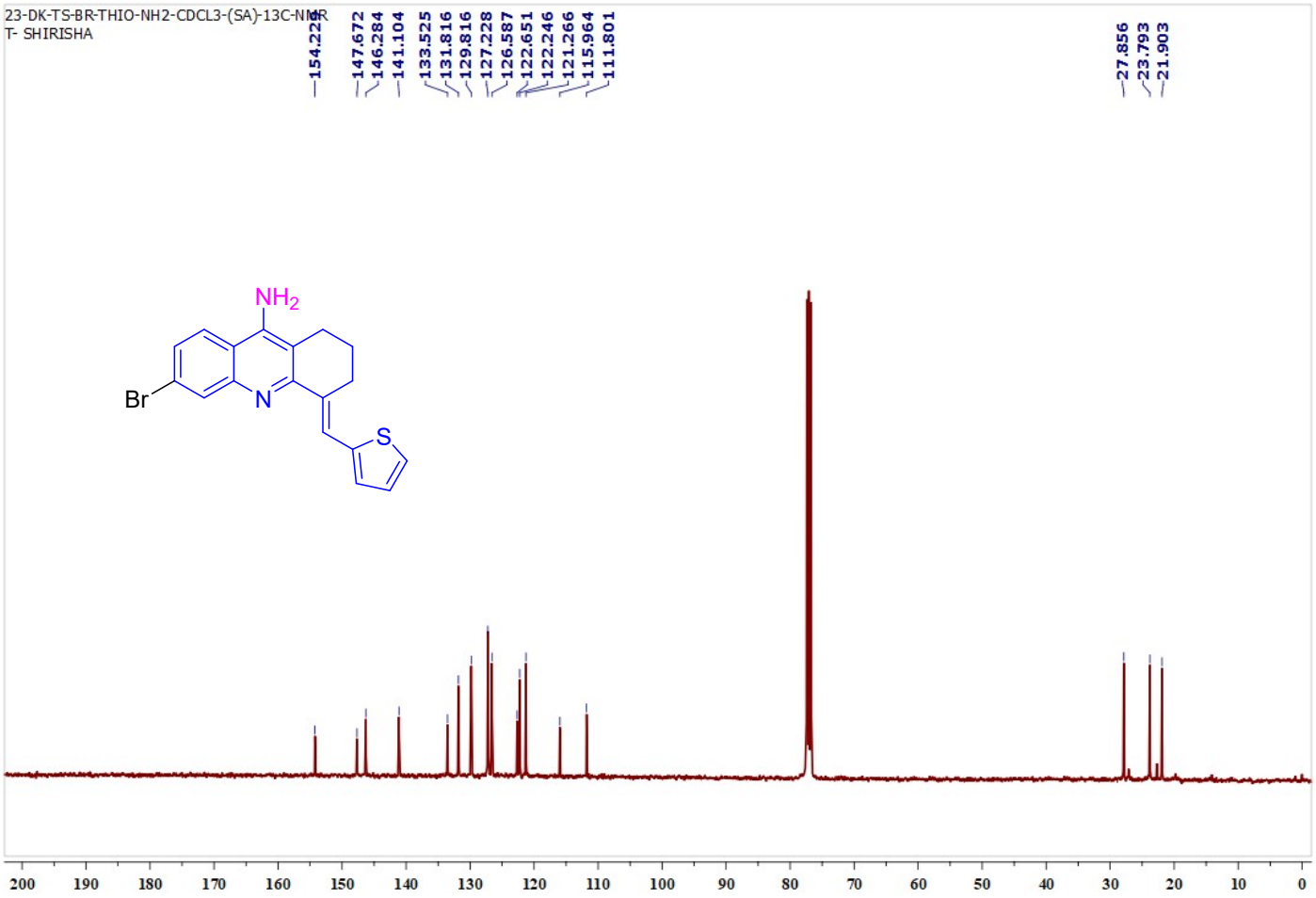


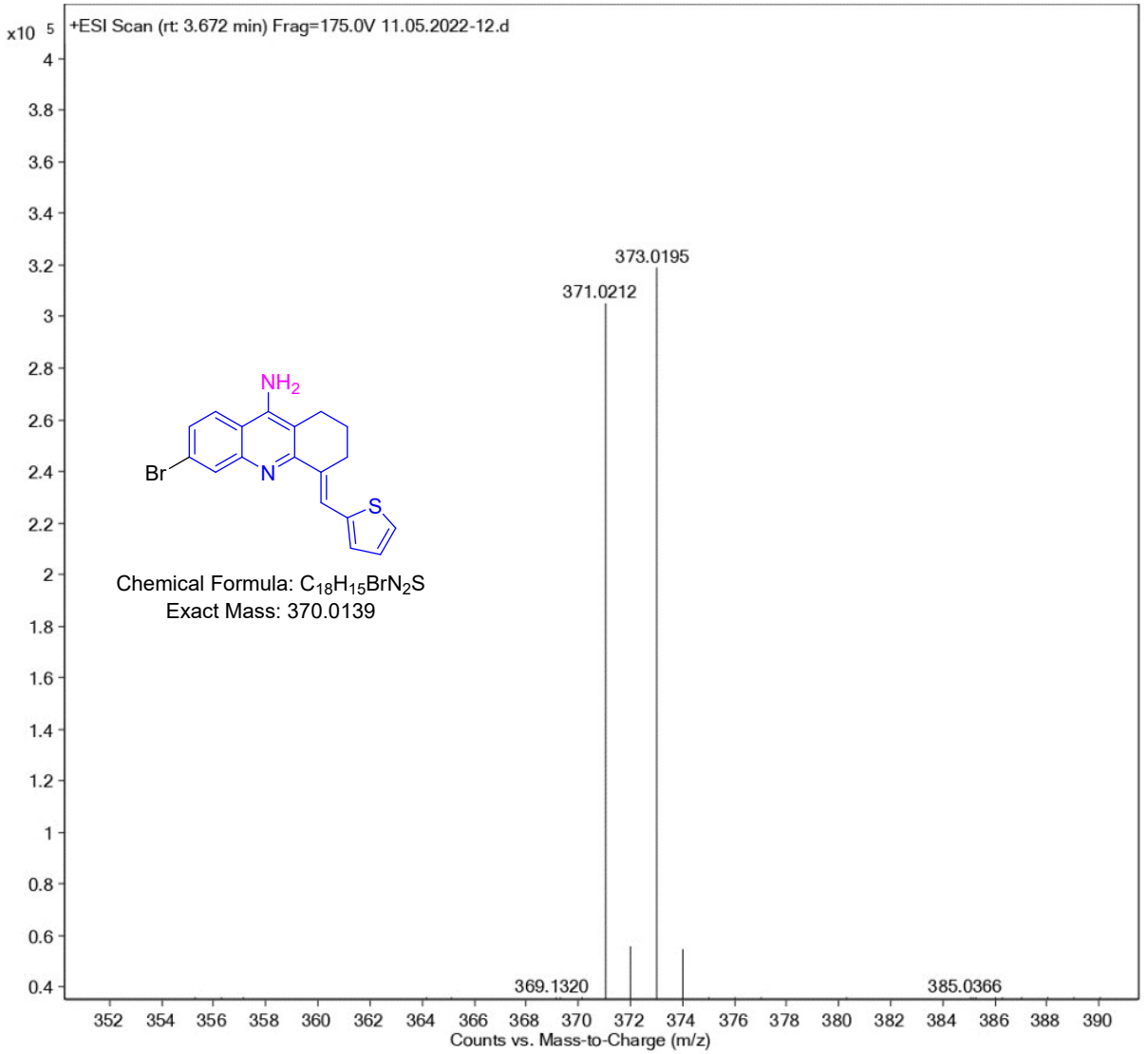

22-DK-TS-CL-A-THIO-NH2-SELF-MIX-C13-NMR
T.SHIRISHA
152.266
148.541
146.382
141.092
129.426
128.749
128.626
127.406
126.671
123.531
121.804
121.098
110.788
28.115
23.889
22.215
NH2
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.251 min) Frag=175.0V 02.02.2022-24.d
x10 6
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
293.1109
312.0607
218.0727
261.1304
367.1110
400.0600
NH2
N
S
Chemical Formula: C18H16N2S
Exact Mass: 292.1034
190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410
Counts vs. Mass-to-Charge (m/z)

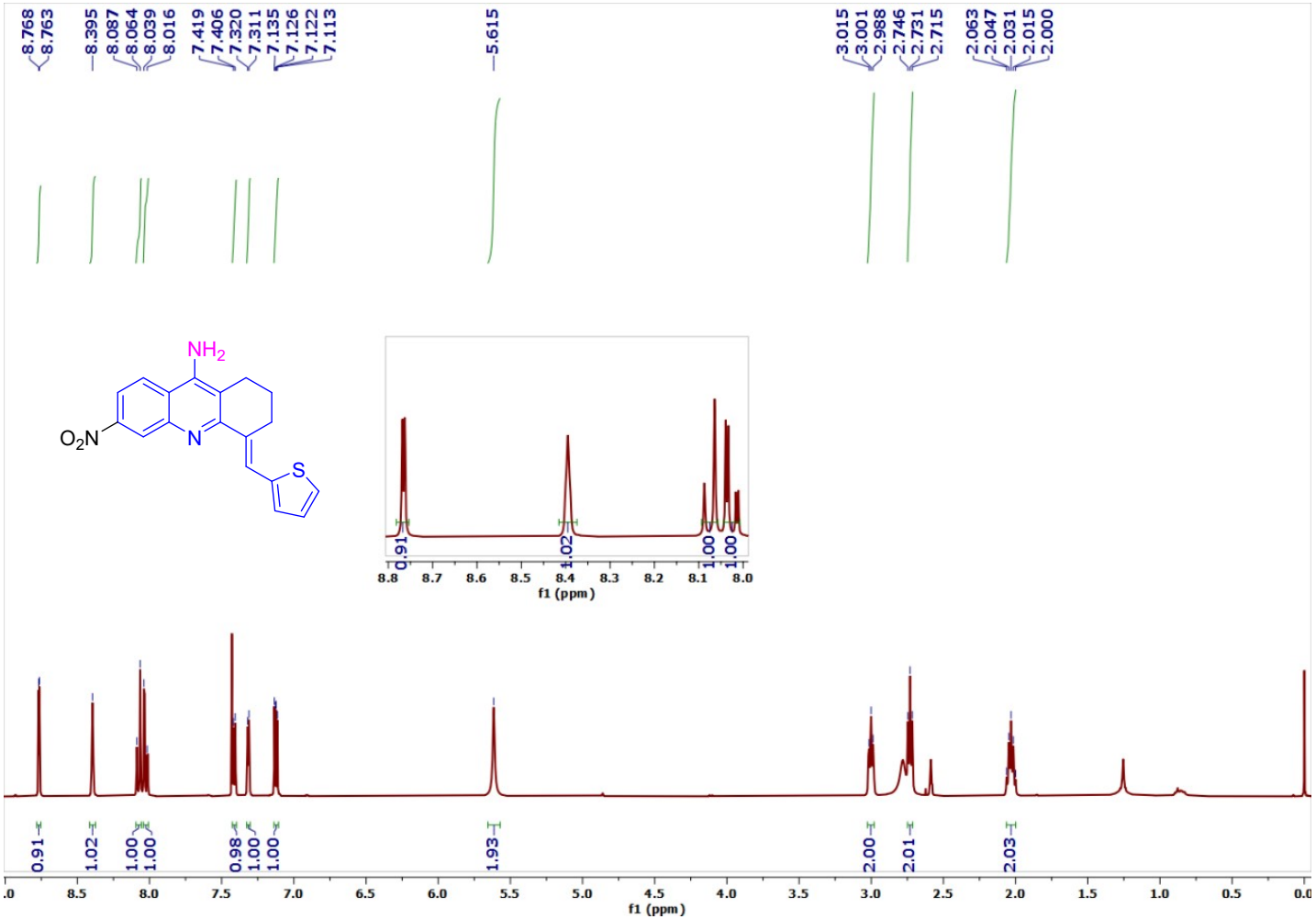
(E)-6-Bromo-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine(3h)

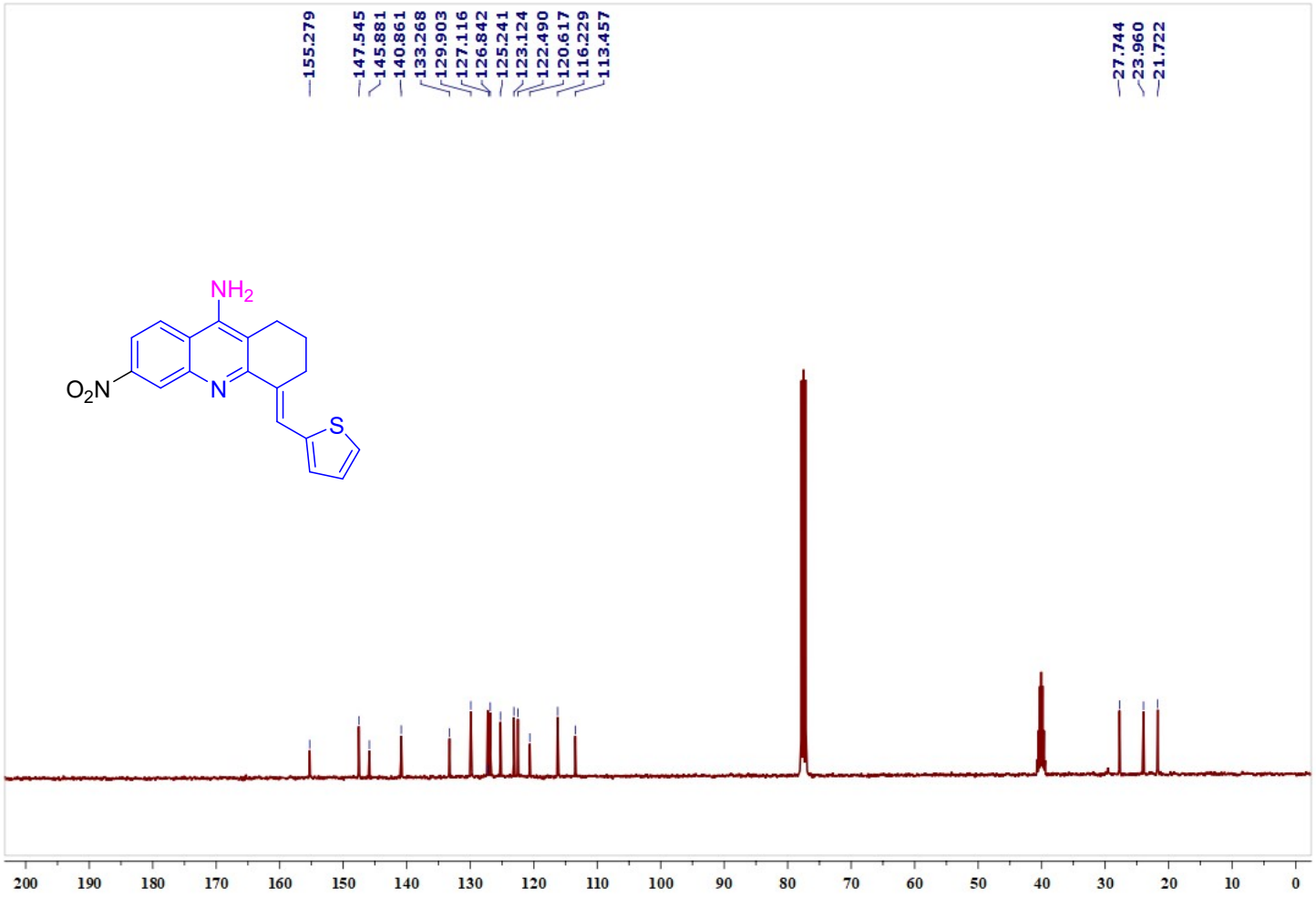


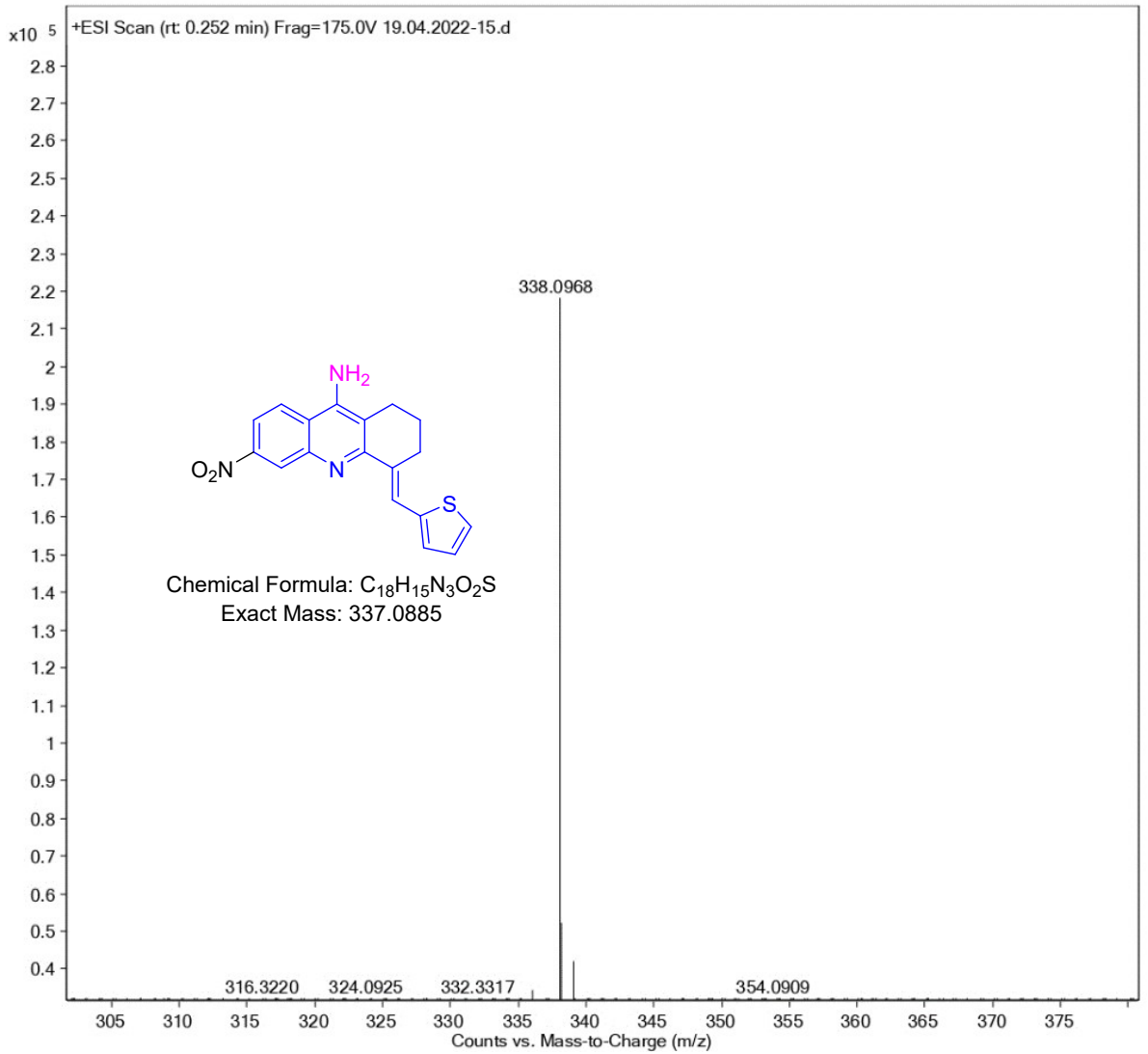

23-DK-TS-BR-THIO-NH2-CDCL3-(SA)-13C-NMR
T- SHIRISHA
154.220
147.672
146.284
141.104
133.525
131.816
129.816
127.228
126.587
122.651
122.246
121.266
115.964
111.801
27.856
23.793
21.903
NH2
Br
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 3.672 min) Frag=175.0V 11.05.2022-12.d
x10 5
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
373.0195
371.0212
NH2
Br
N
S
Chemical Formula: C18H15BrN2S
Exact Mass: 370.0139
369.1320
385.0366
352 354 356 358 360 362 364 366 368 370 372 374 376 378 380 382 384 386 388 390
Counts vs. Mass-to-Charge (m/z)

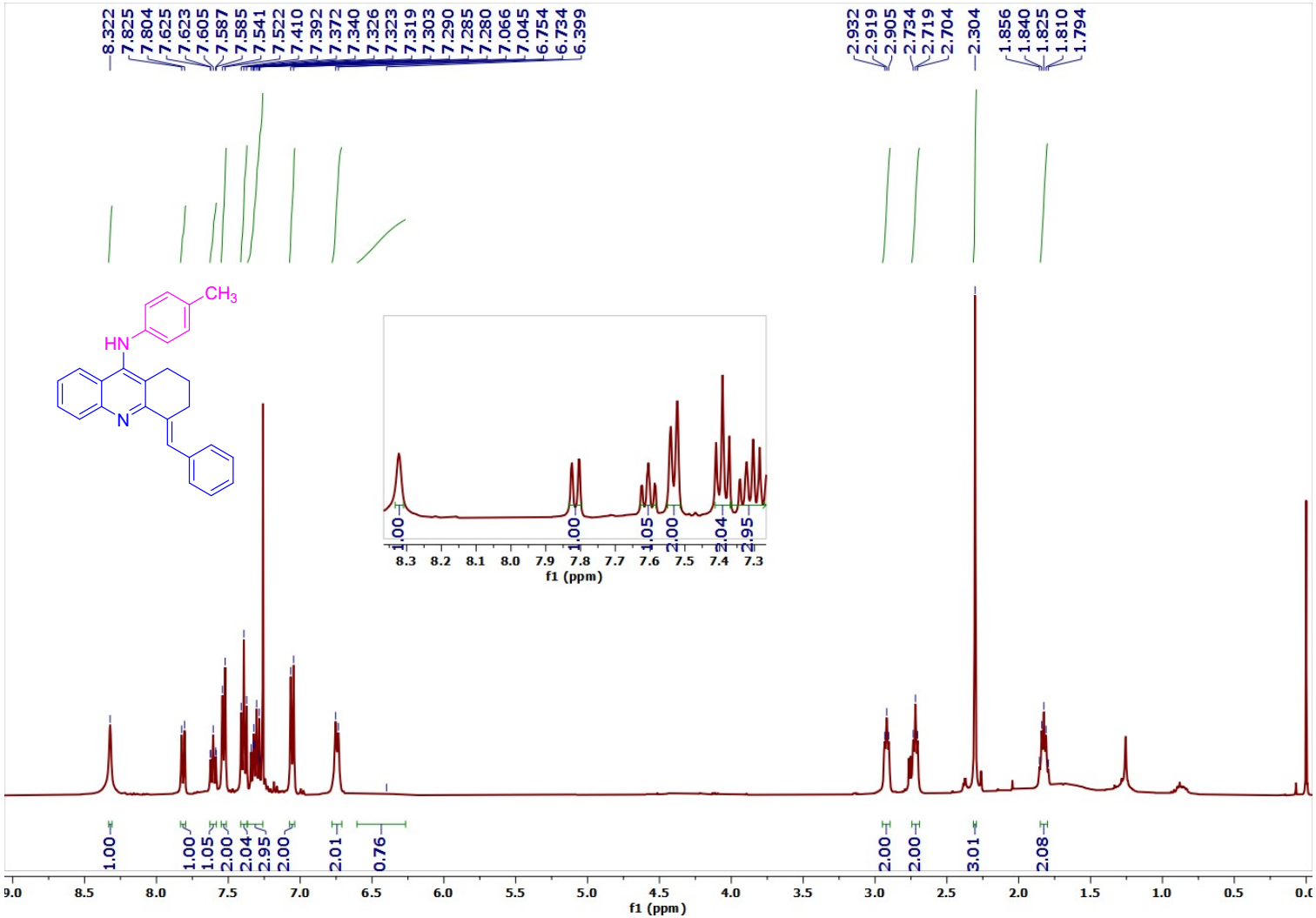
(E)-6-Nitro-4-(thiophen-2-ylmethylene)-1,2,3,4-tetrahydroacridin-9-amine(3i)

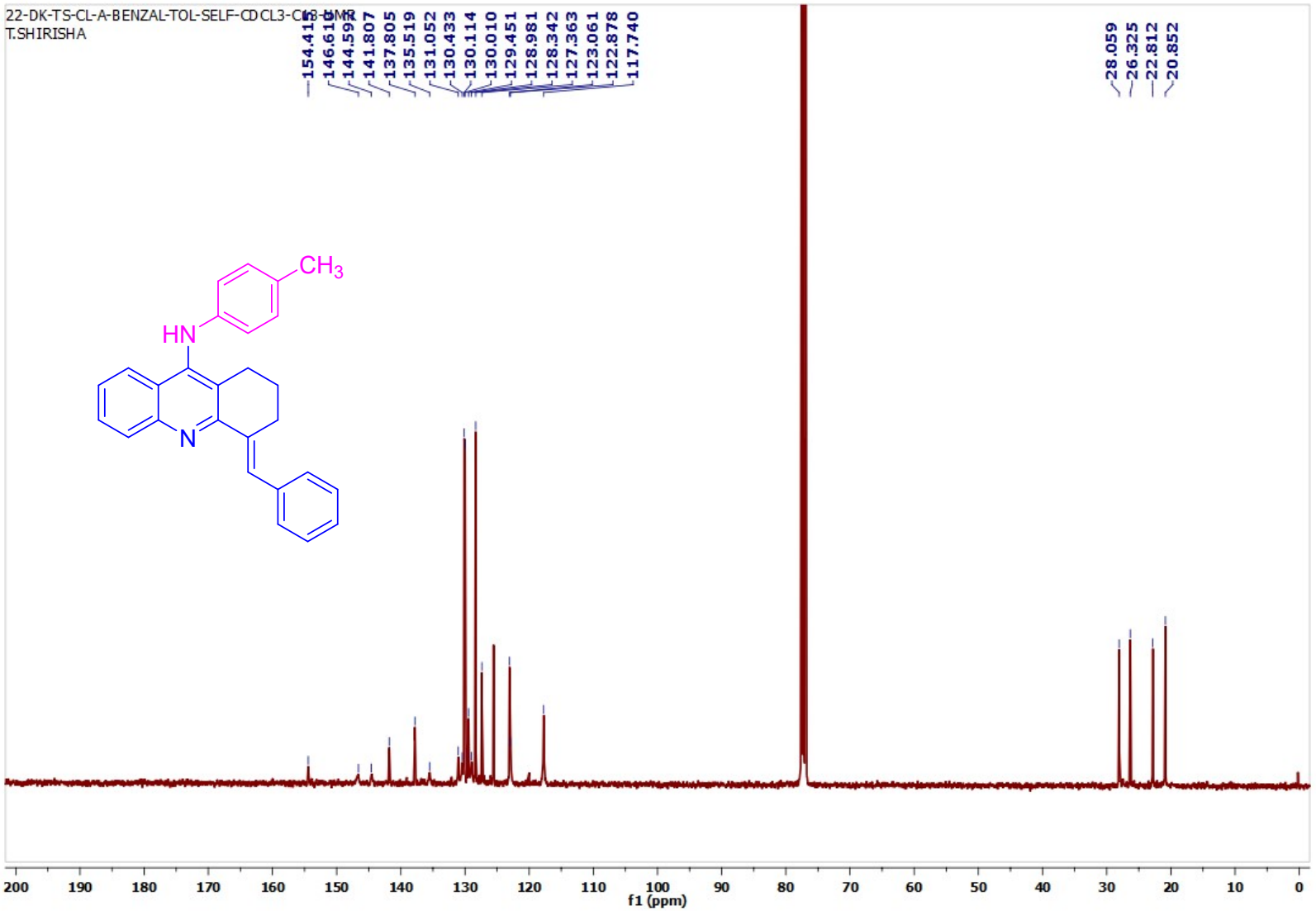


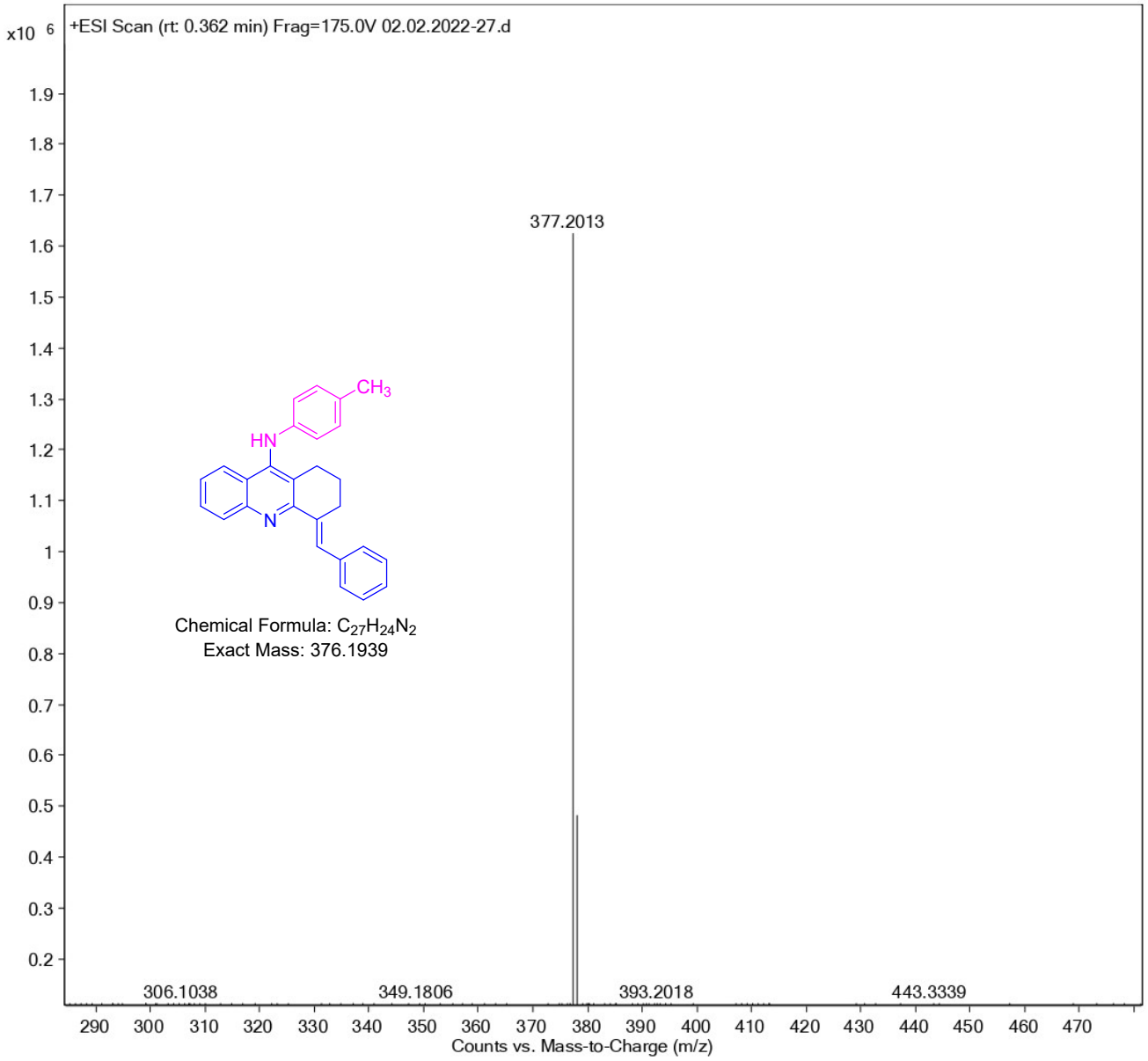

155.279
147.545
145.881
140.861
133.268
129.903
127.116
126.842
125.241
123.124
122.490
120.617
116.229
113.457
27.744
23.960
21.722
NH2
O2N
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.252 min) Frag=175.0V 19.04.2022-15.d
x10 5
338.0968
316.3220
324.0925
332.3317
354.0909
Counts vs. Mass-to-Charge (m/z)
Chemical Formula: C18H15N3O2S
Exact Mass: 337.0885

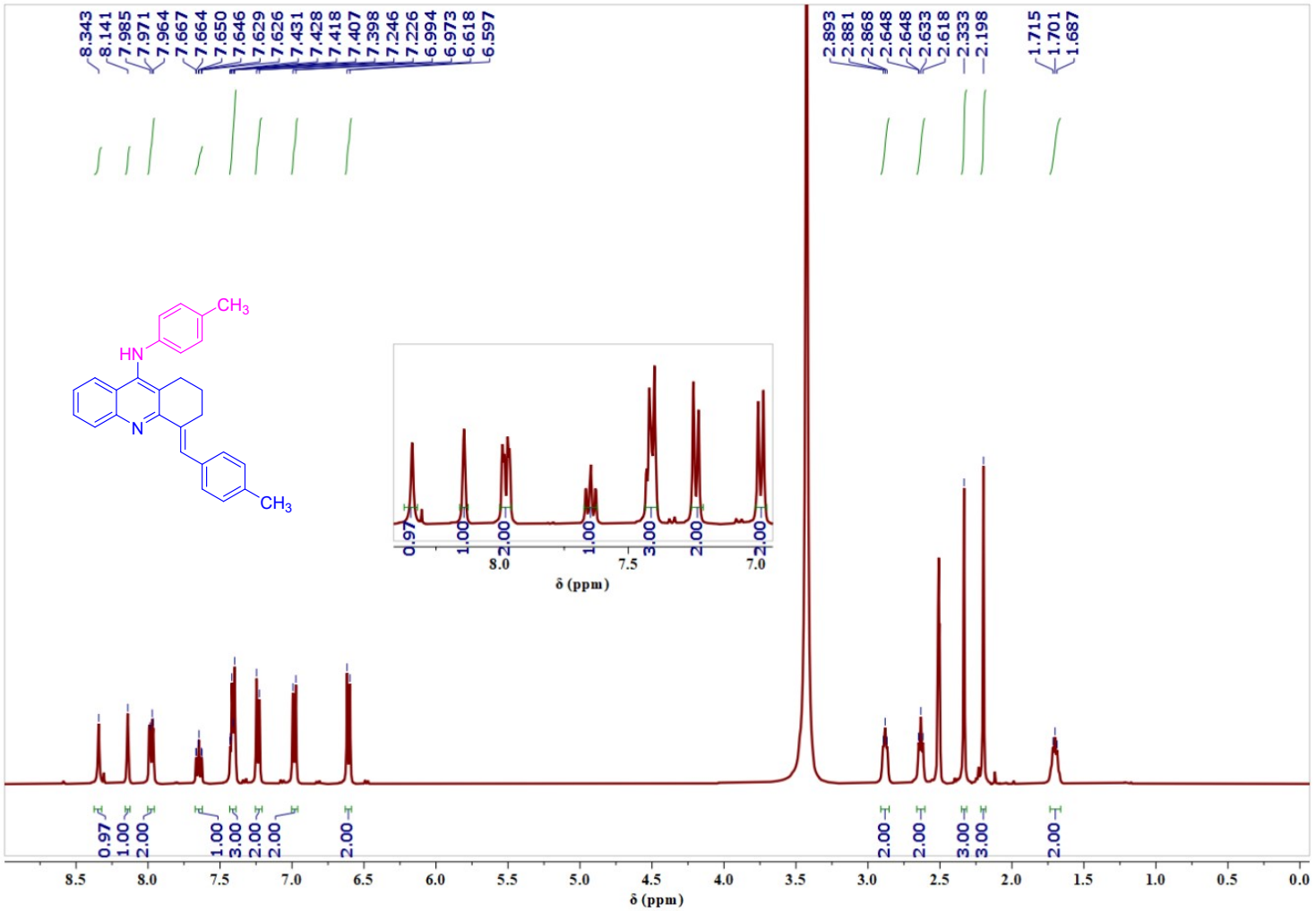
(E)-4-Benzylidene-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8a):

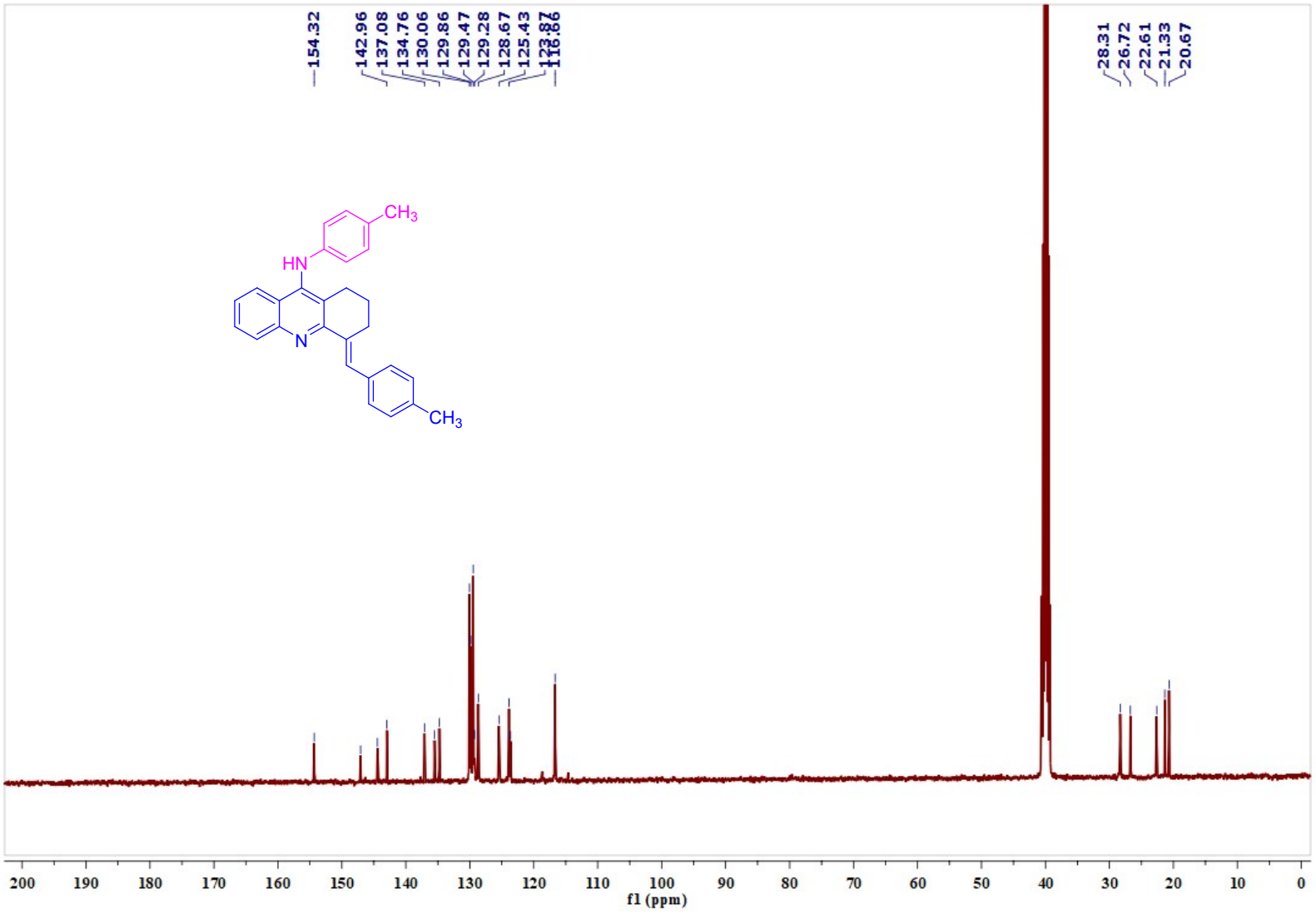


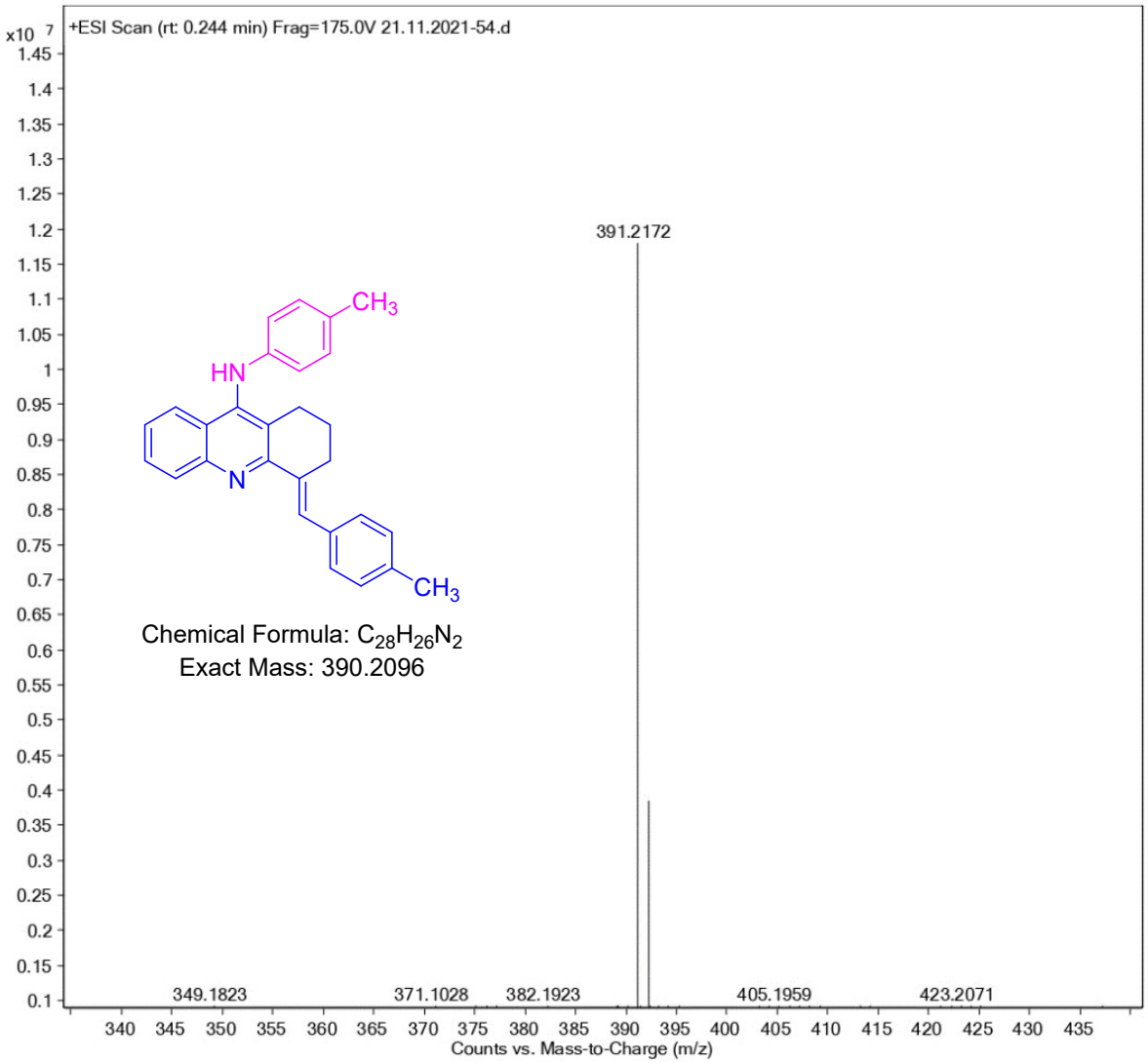

22-DK-TS-CL-A-BENZAL-TOL-SELF-CDCL3-C13-DMR
T.SHIRISHA
154.418
146.610
144.592
141.807
137.805
135.519
131.052
130.433
130.114
130.010
129.451
128.981
128.342
127.363
123.061
122.878
117.740
28.059
26.325
22.812
20.852
CH3
HN
N
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.362 min) Frag=175.0V 02.02.2022-27.d
x10 6
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
377.2013
CH3
HN
N
Chemical Formula: C27H24N2
Exact Mass: 376.1939
306.1038
349.1806
393.2018
443.3339
290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470
Counts vs. Mass-to-Charge (m/z)

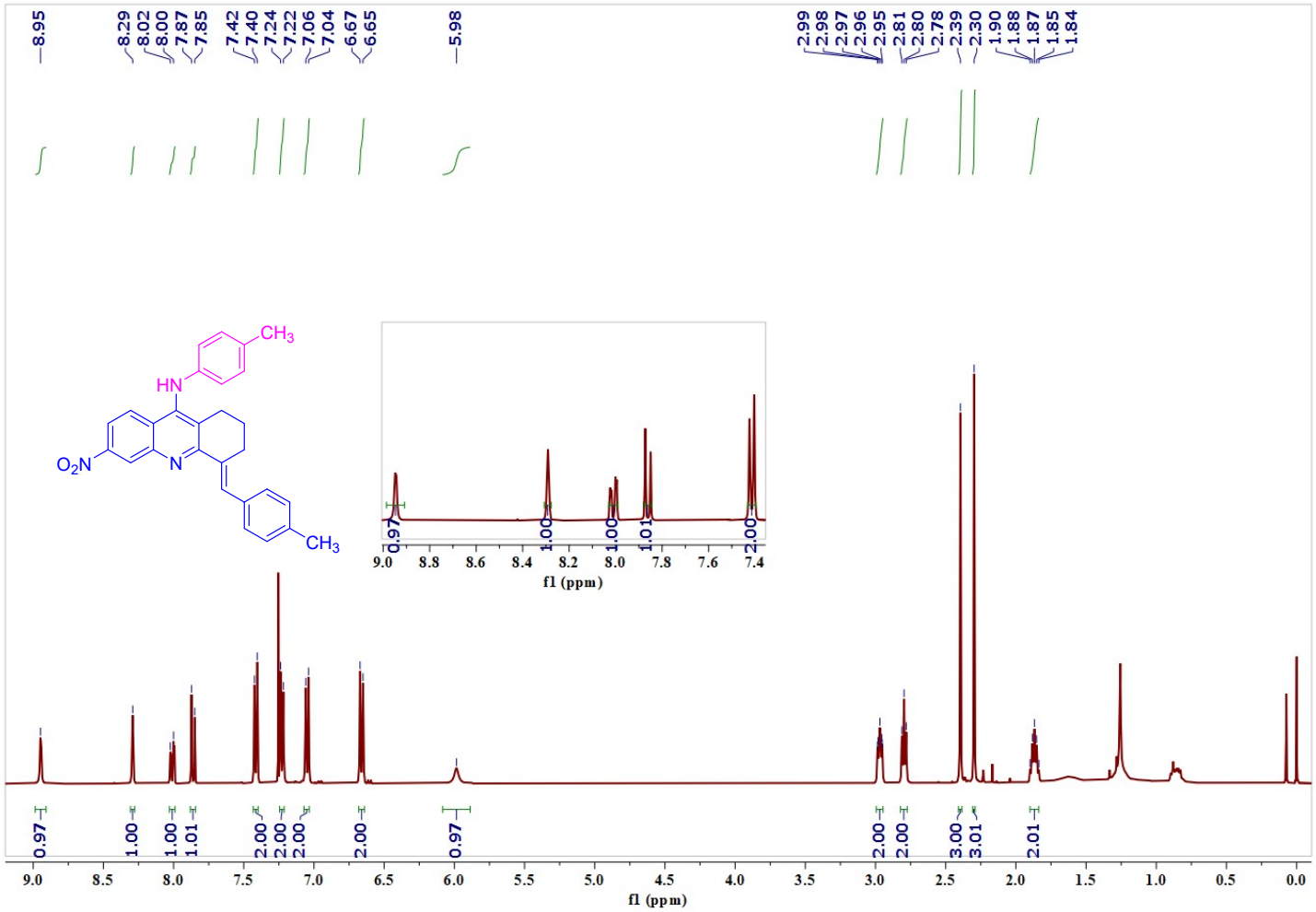
(E)-4-(4-Methylbenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8b):

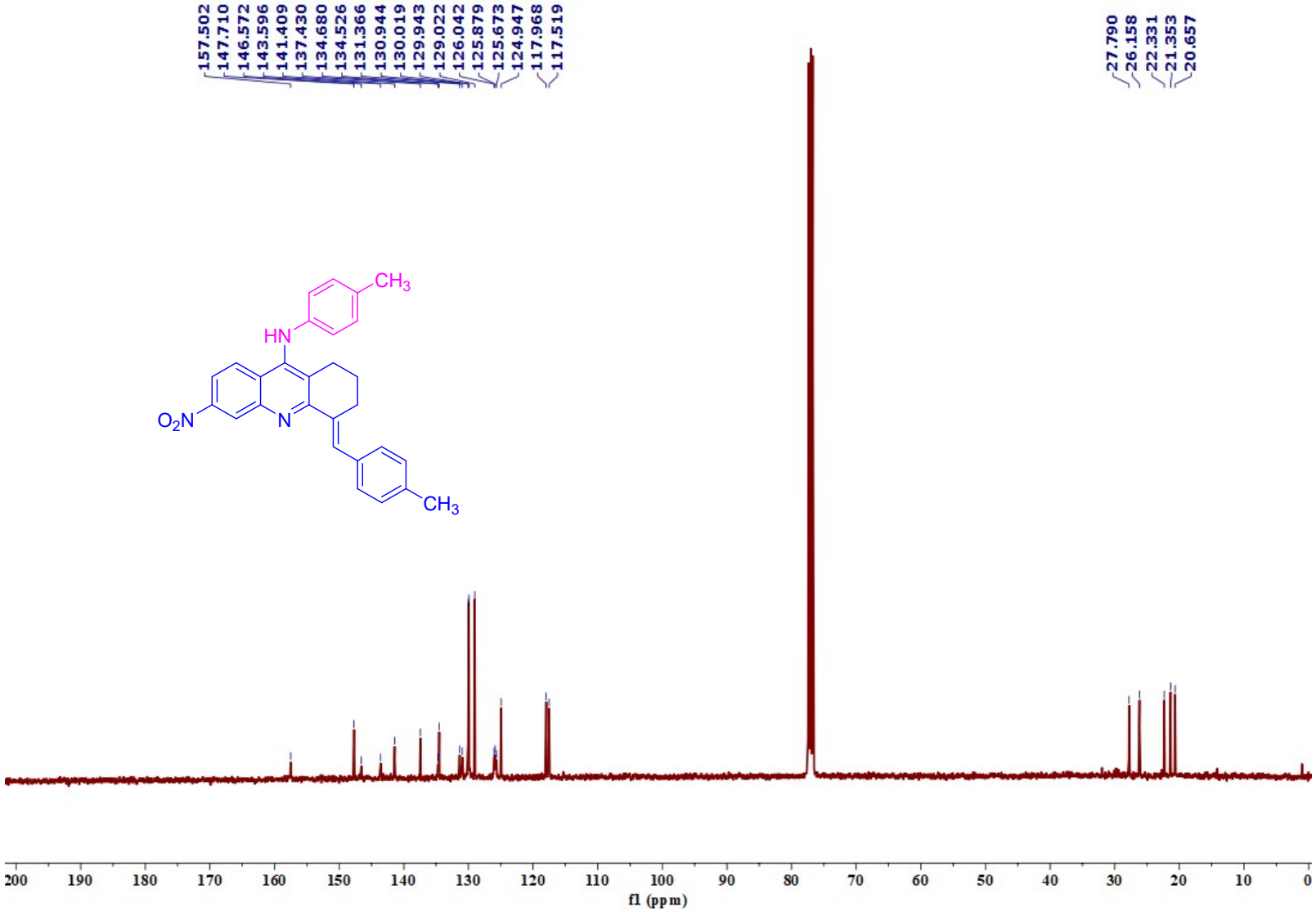


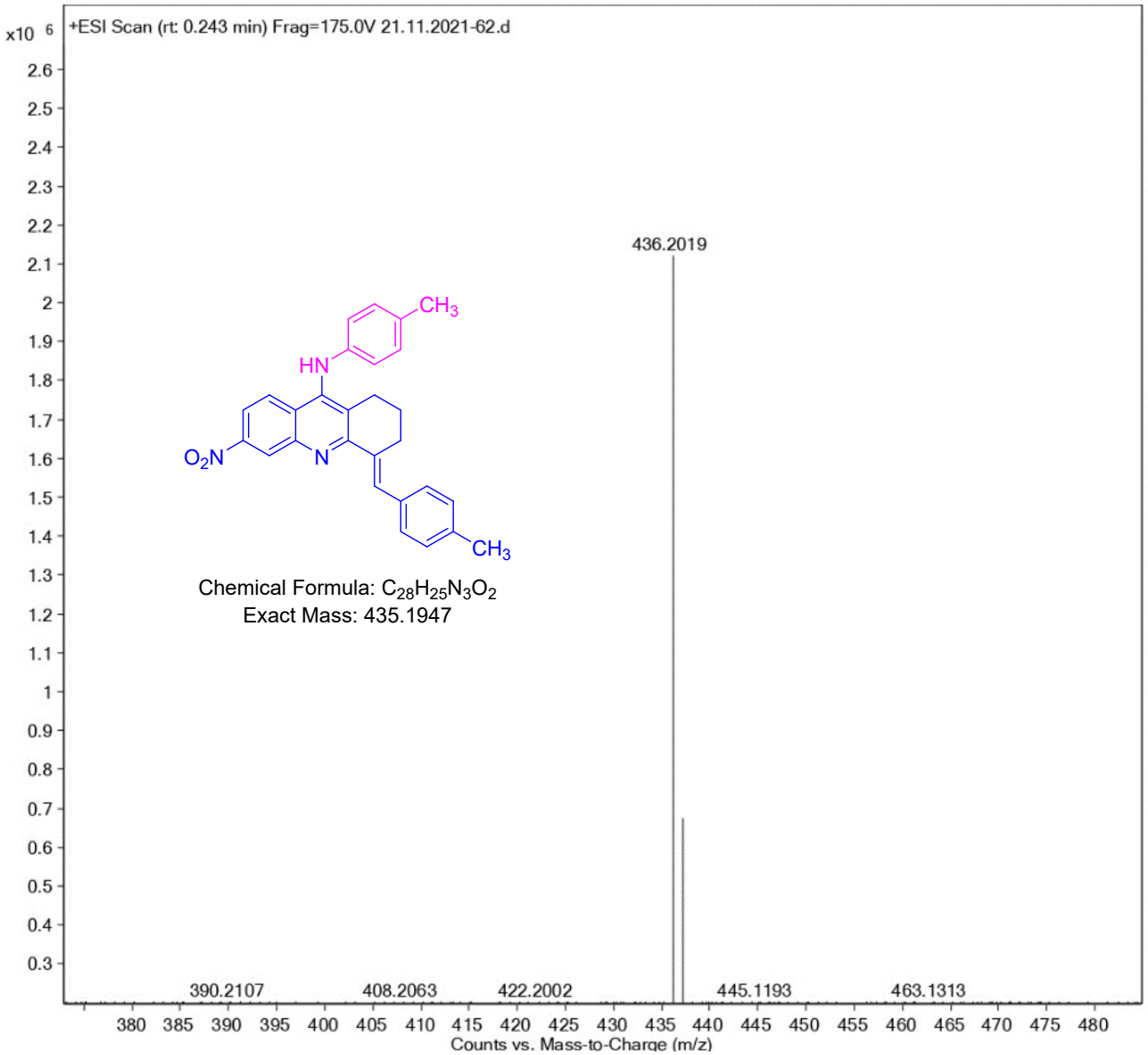

154.32
142.96
137.08
134.76
130.06
129.86
129.47
129.28
128.67
125.43
123.87
116.86
28.31
26.72
22.61
21.33
20.67
HN
CH3
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.244 min) Frag=175.0V 21.11.2021-54.d
x10 7
391.2172
HN
CH3
N
CH3
Chemical Formula: C28H26N2
Exact Mass: 390.2096
349.1823
371.1028
382.1923
405.1959
423.2071
Counts vs. Mass-to-Charge (m/z)

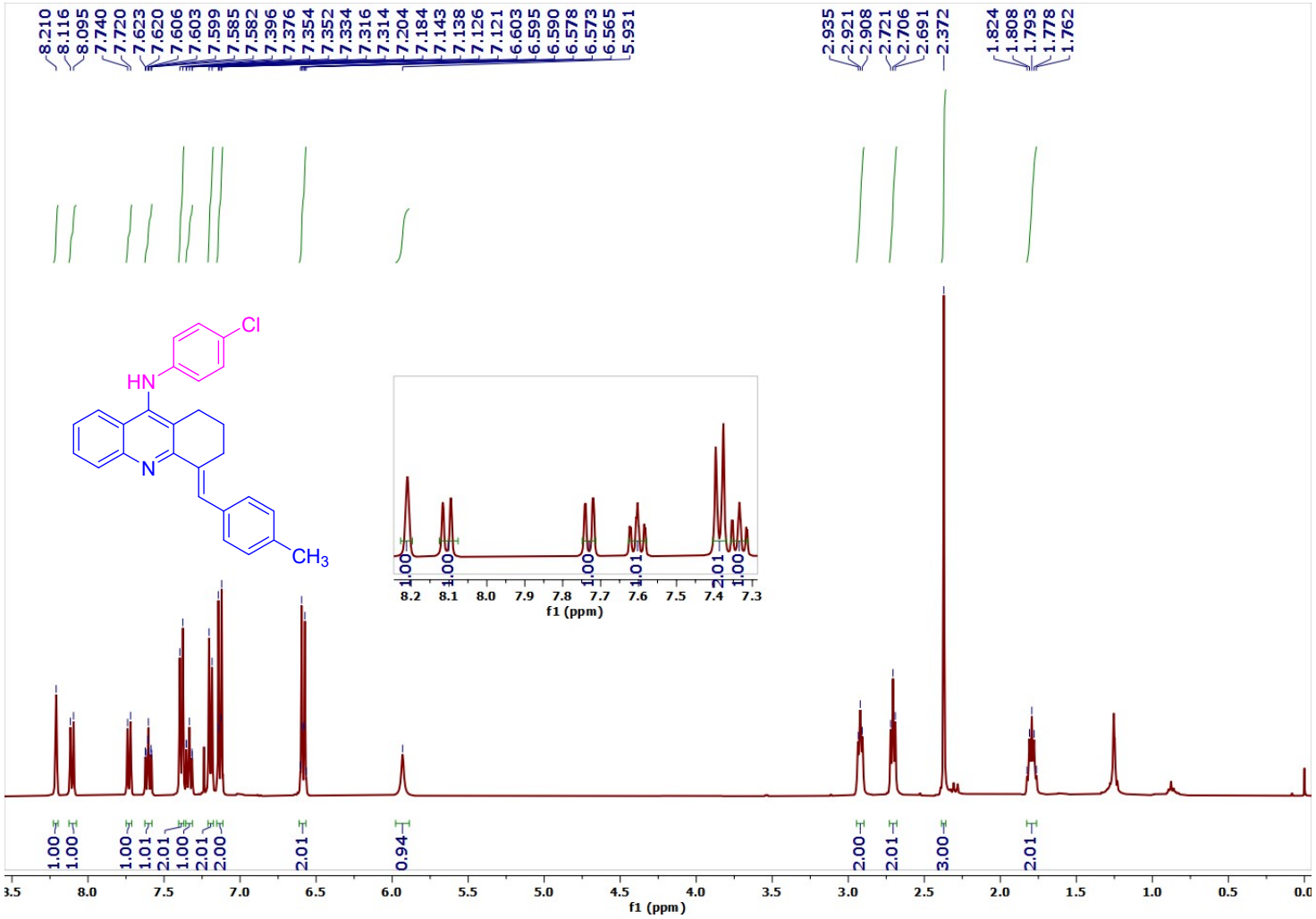
(E)-4-(4-Methylbenzylidene)-6-nitro-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8c):

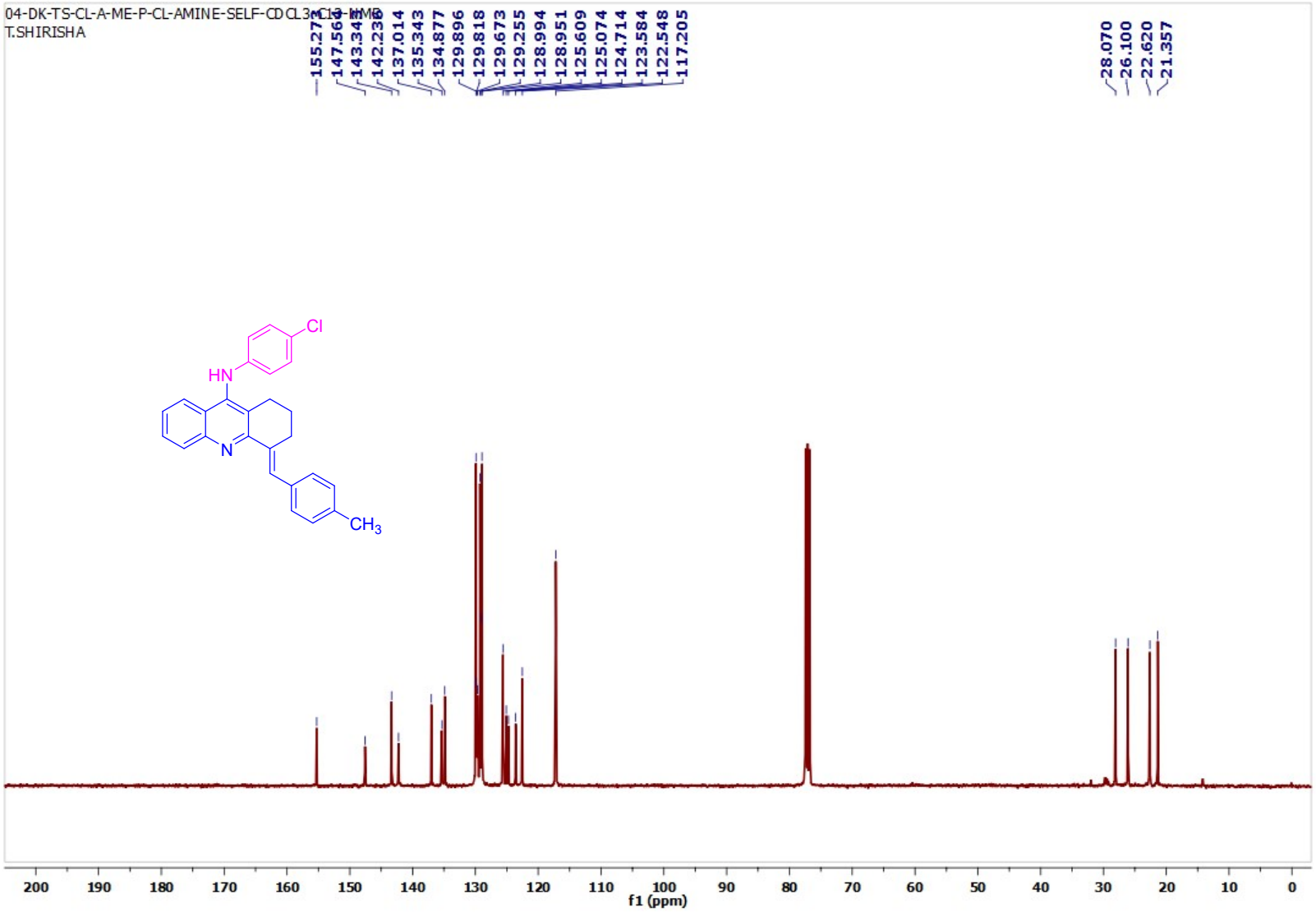


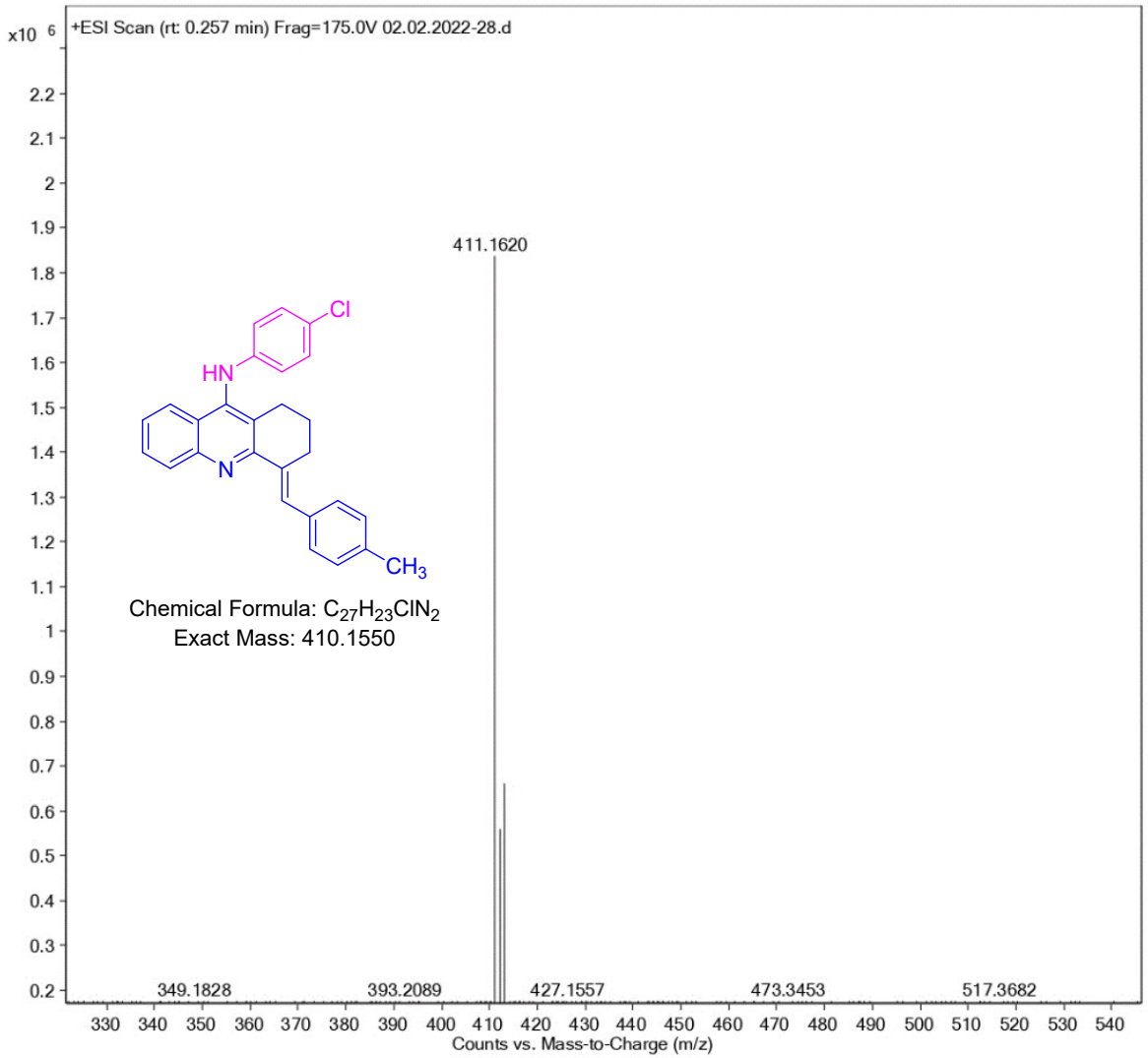

157.502
147.710
146.572
143.596
141.409
137.430
134.680
134.526
131.366
130.944
130.019
129.943
129.022
126.042
125.879
125.673
124.947
117.968
117.519
27.790
26.158
22.331
21.353
20.657
CH3
HN
O2N
N
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.243 min) Frag=175.0V 21.11.2021-62.d
x10 6
436.2019
390.2107
408.2063
422.2002
445.1193
463.1313
Counts vs. Mass-to-Charge (m/z)
Chemical Formula: C28H25N3O2
Exact Mass: 435.1947

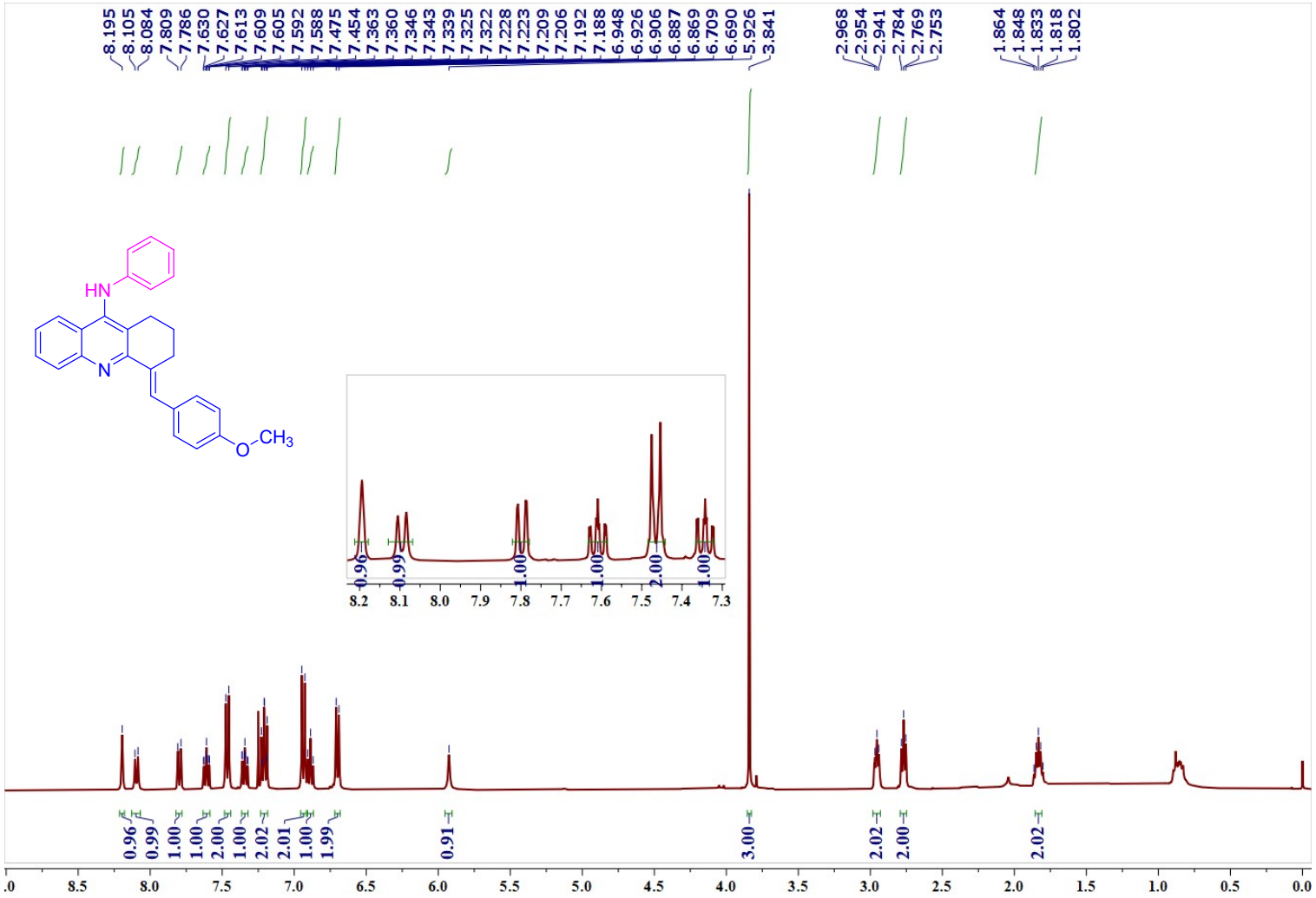
(E)-N-(4-Chlorophenyl)-4-(4-methylbenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (8d):

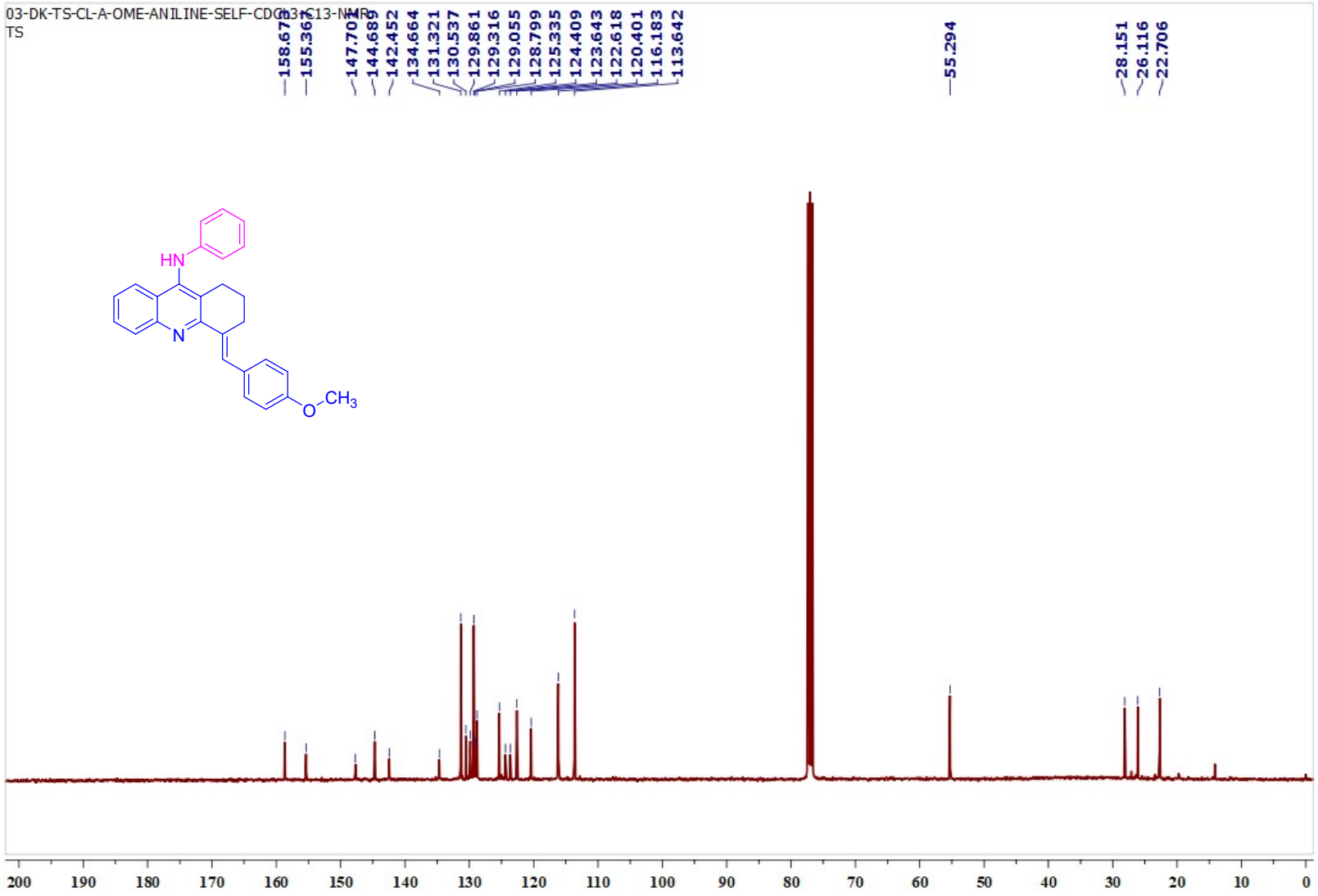


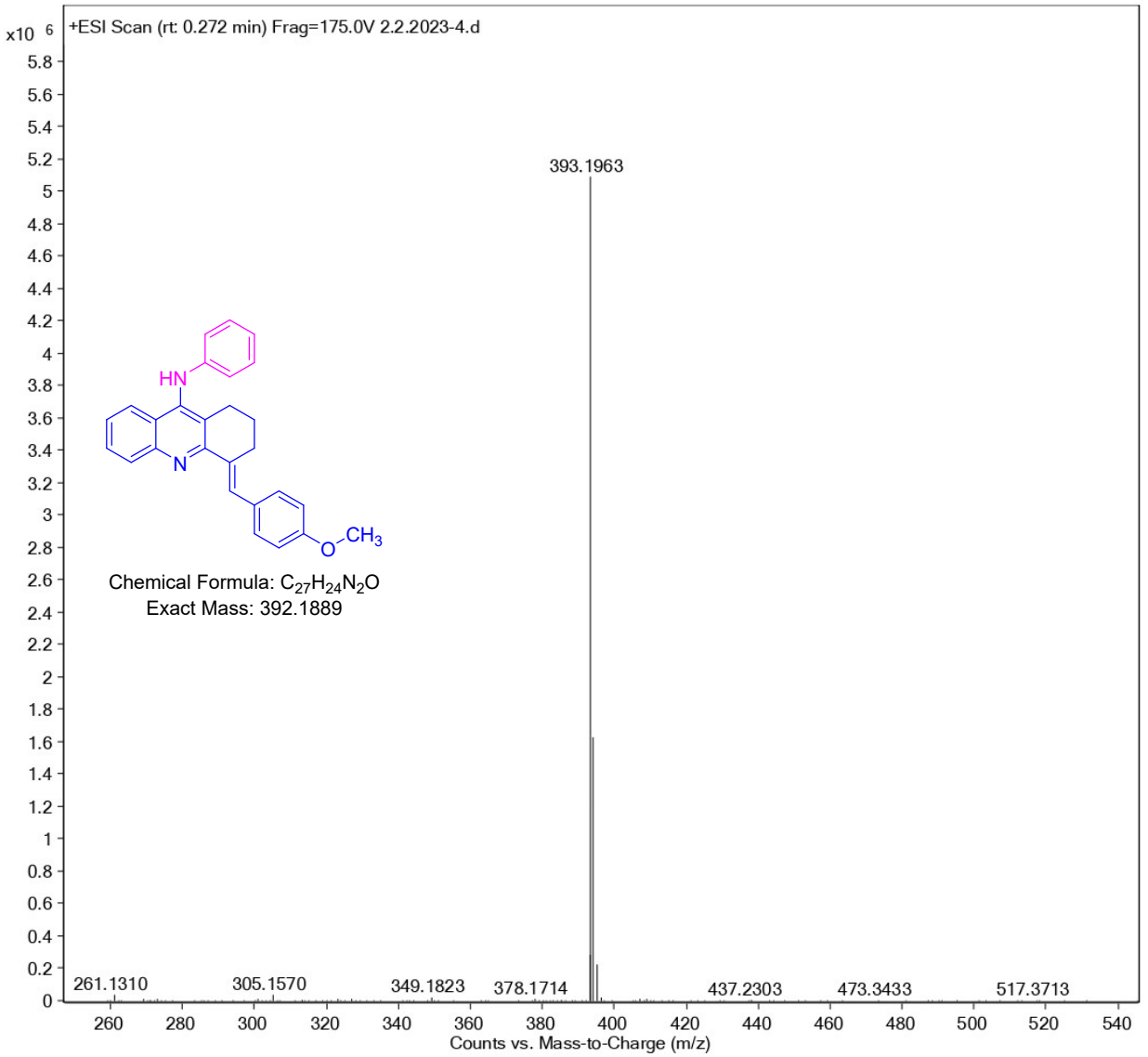

04-DK-TS-CL-A-ME-P-CL-AMINE-SELF-CDCL3-C13-HMB
T.SHIRISHA
155.271
147.564
143.345
142.238
137.014
135.343
134.877
129.896
129.818
129.673
129.255
128.994
128.951
125.609
125.074
124.714
123.584
122.548
117.205
28.070
26.100
22.620
21.357
Cl
HN
N
CH3
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


+ESI Scan (rt: 0.257 min) Frag=175.0V 02.02.2022-28.d
x10 6
411.1620
Cl
HN
N
CH3
Chemical Formula: C27H23ClN2
Exact Mass: 410.1550
349.1828
393.2089
427.1557
473.3453
517.3682
Counts vs. Mass-to-Charge (m/z)

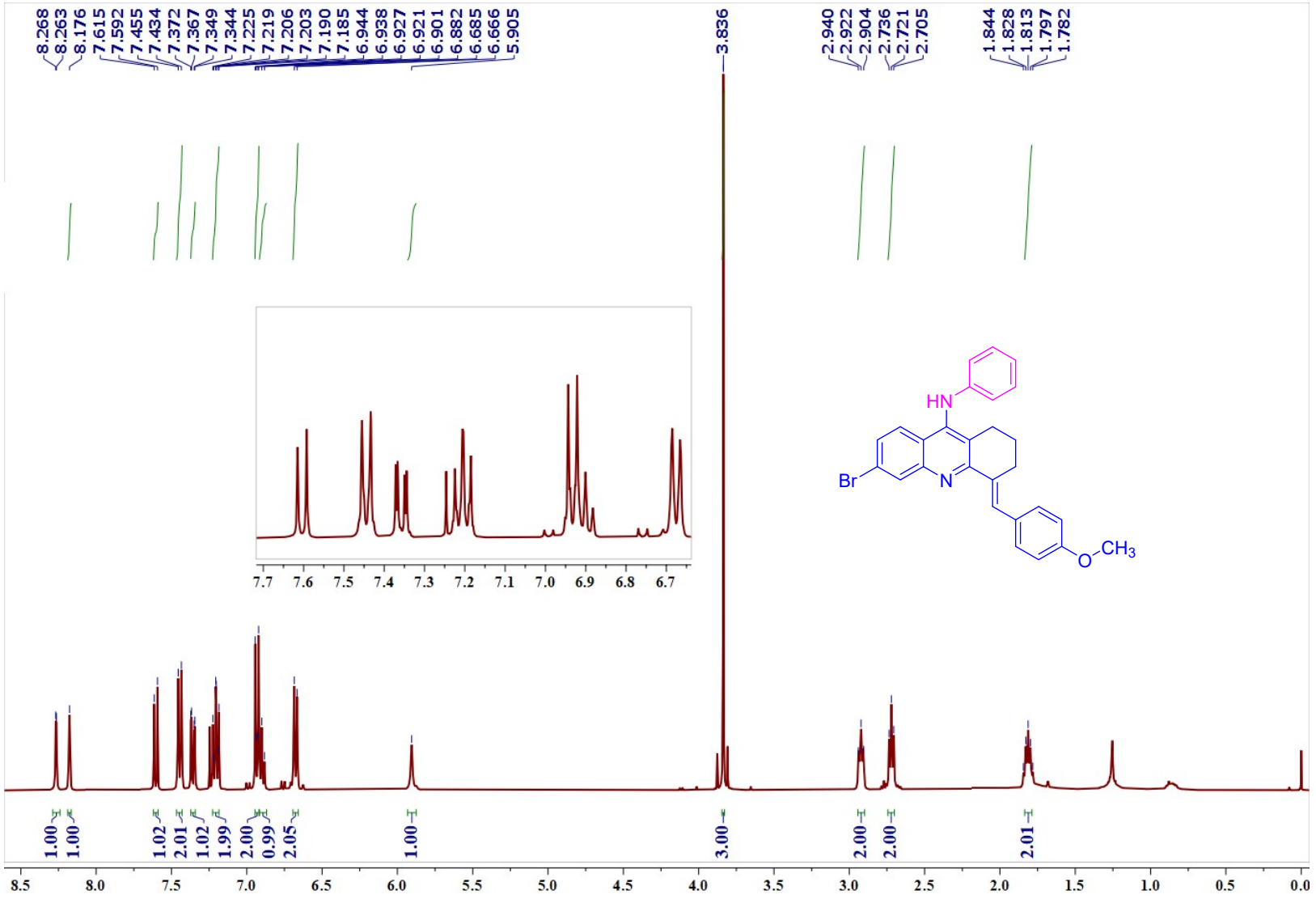
(E)-4-(4-Methoxybenzylidene)-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8e):

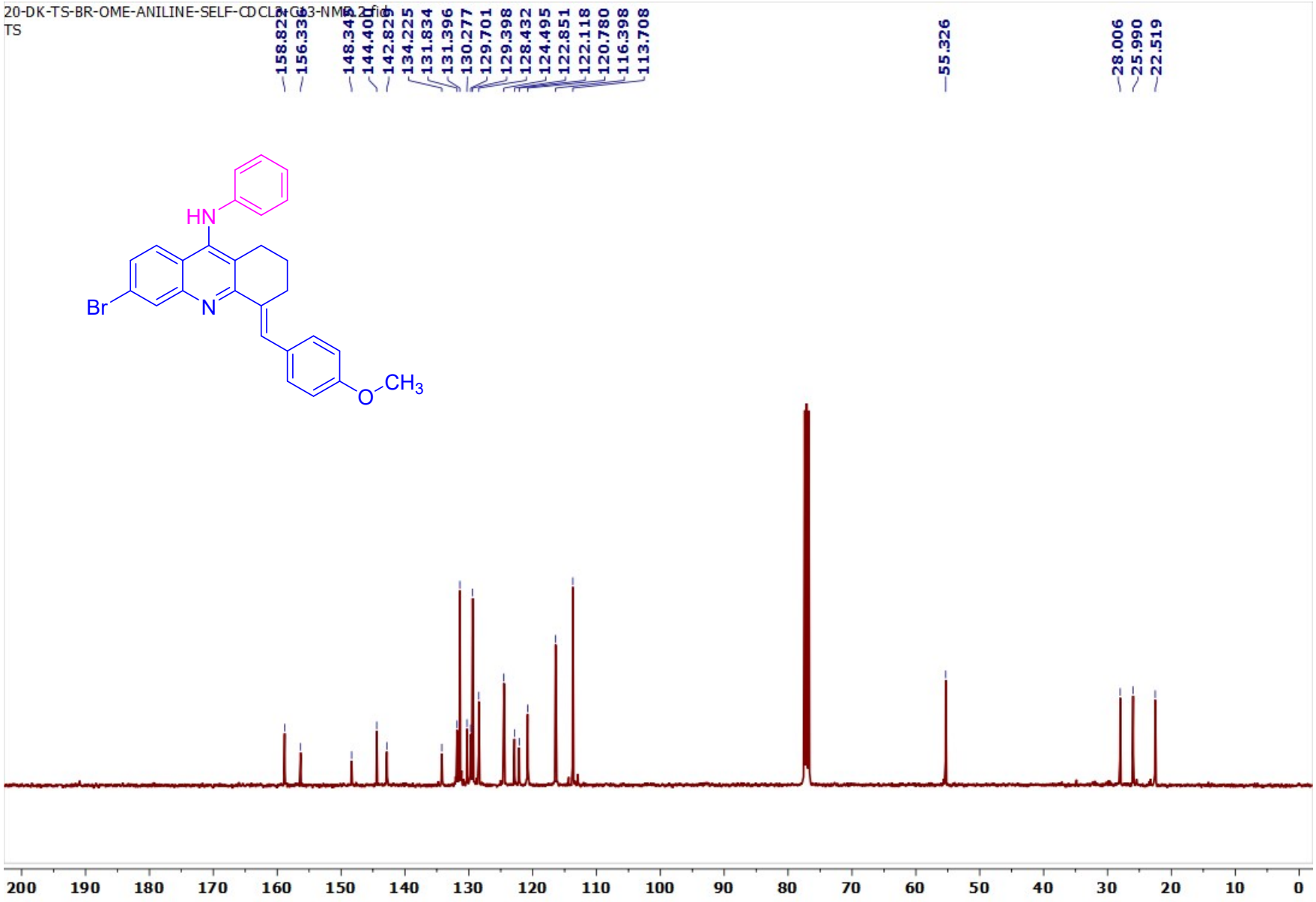


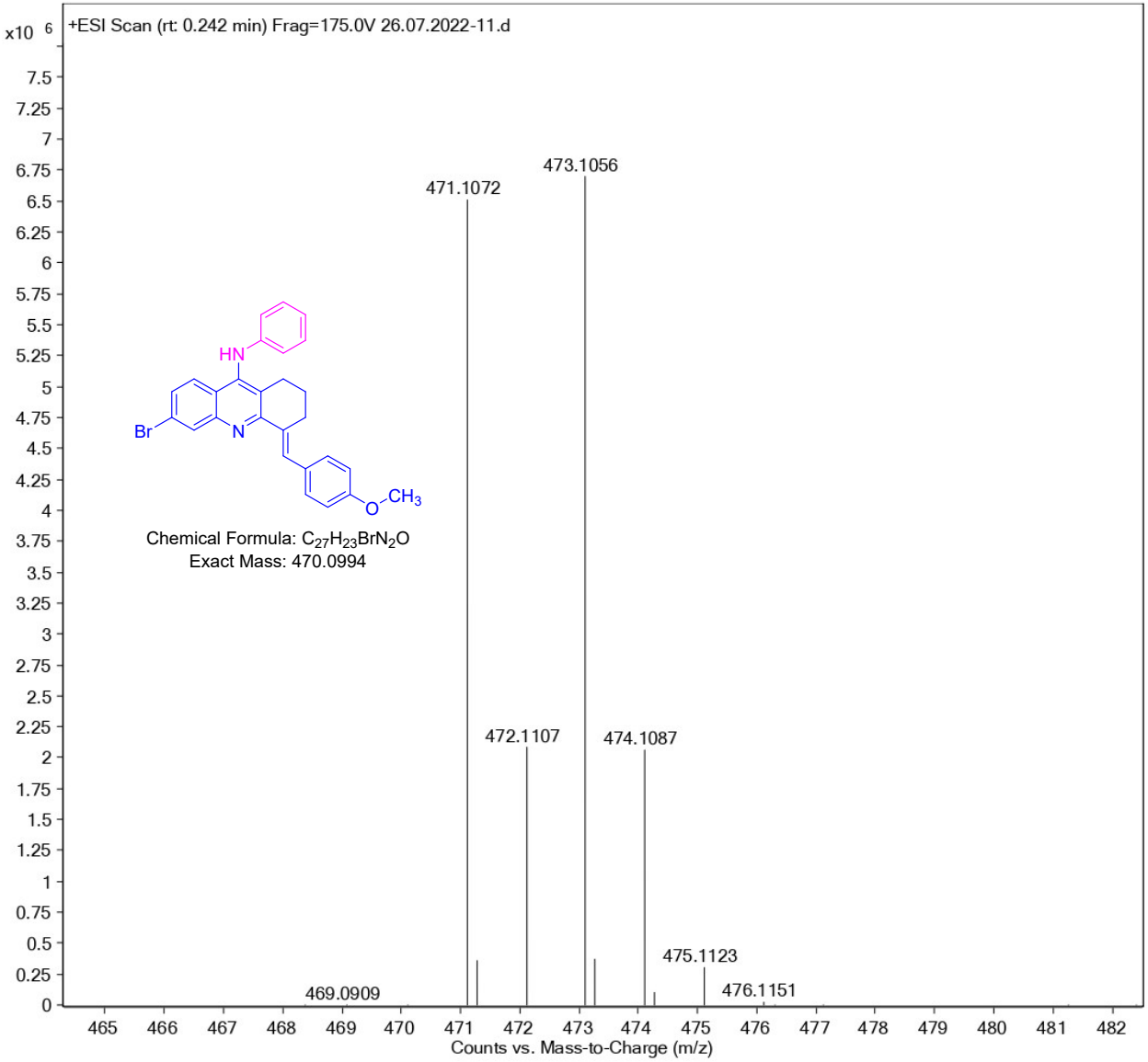

03-DK-TS-CL-A-OME-ANILINE-SELF-CDCl3+C13-NMR-
TS
158.670
155.367
147.701
144.689
142.452
134.664
131.321
130.537
129.861
129.316
129.055
128.799
125.335
124.409
123.643
122.618
120.401
116.183
113.642
55.294
28.151
26.116
22.706
HN
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.272 min) Frag=175.0V 2.2.2023-4.d
x10 6
393.1963
HN
N
O
CH3
Chemical Formula: C27H24N2O
Exact Mass: 392.1889
261.1310
305.1570
349.1823
378.1714
437.2303
473.3433
517.3713
Counts vs. Mass-to-Charge (m/z)

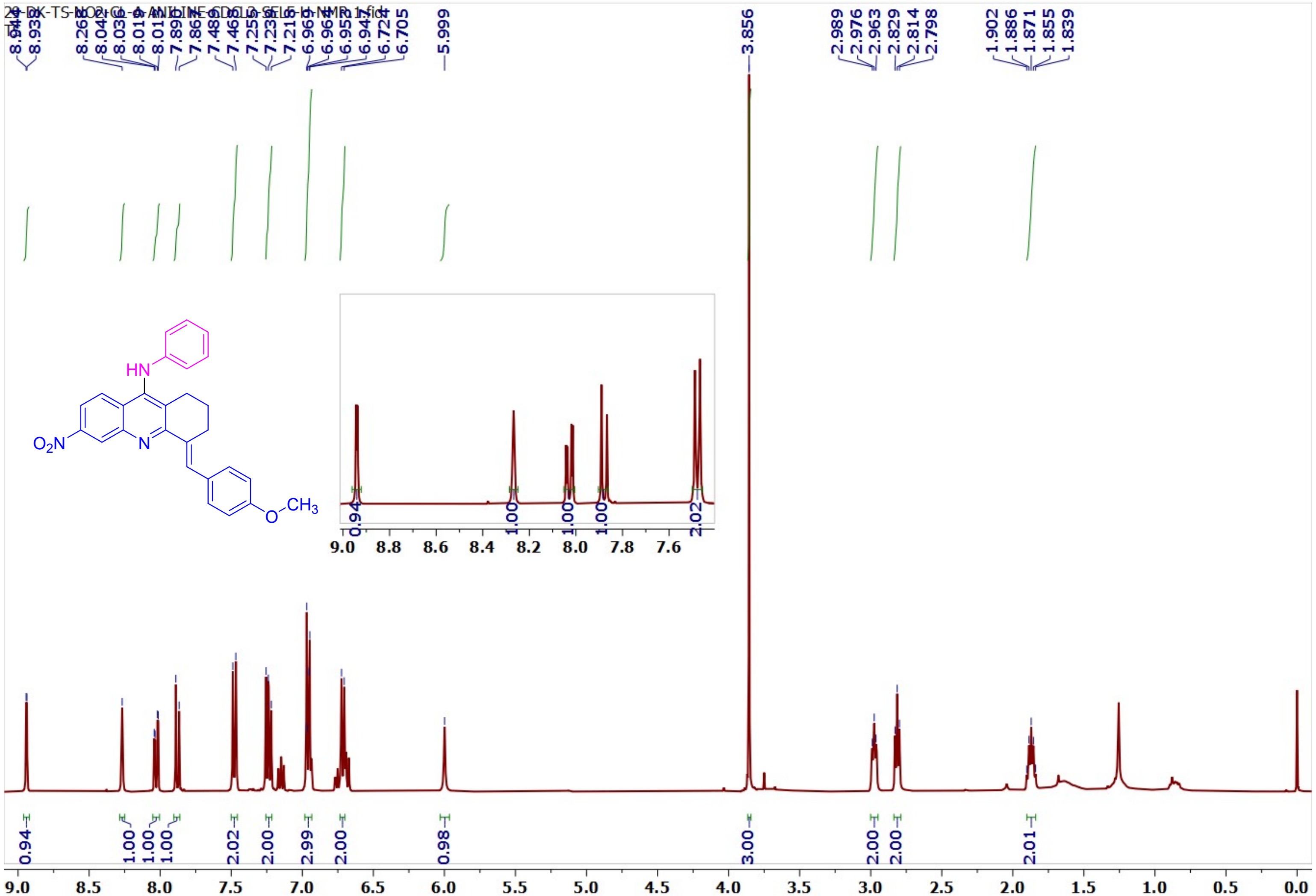
(E)-6-Bromo-4-(4-methoxybenzylidene)-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8f):

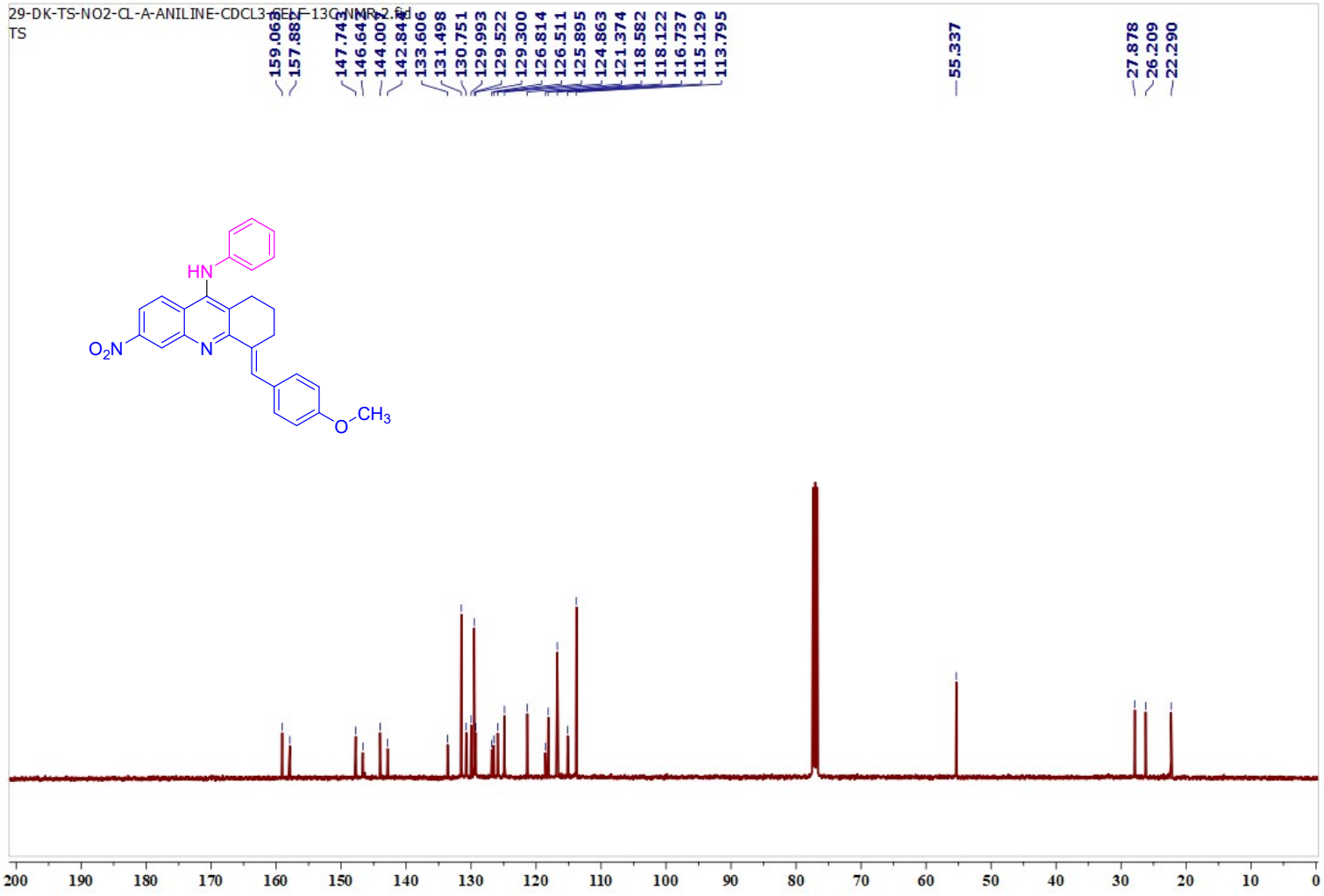


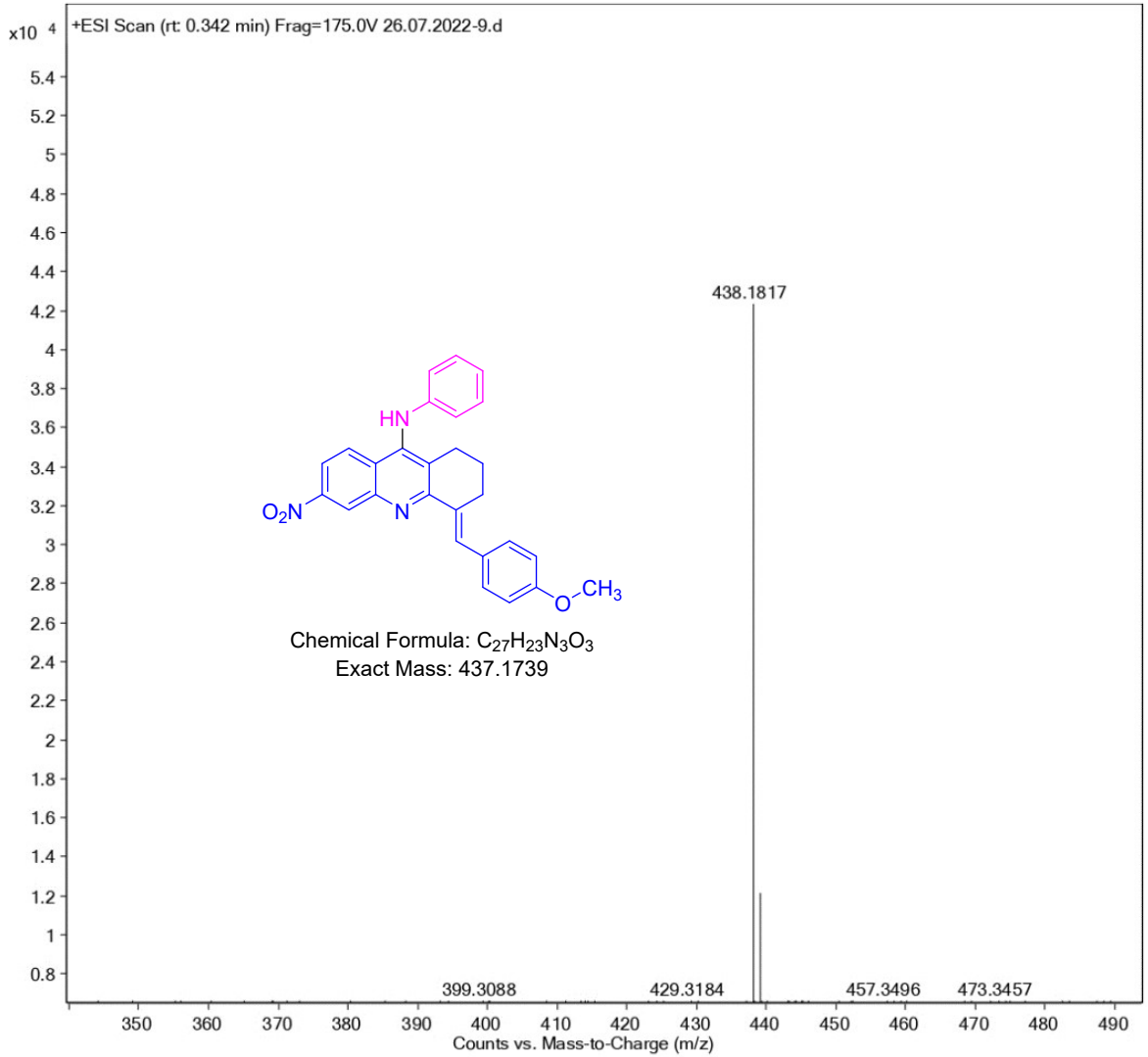

20-DK-TS-BR-OME-ANILINE-SELF-CDCL3-GU3-NMR-2.fid
TS
158.822
156.330
148.347
144.400
142.829
134.225
131.834
131.396
130.277
129.701
129.398
128.432
124.495
122.851
122.118
120.780
116.398
113.708
55.326
28.006
25.990
22.519
HN
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.242 min) Frag=175.0V 26.07.2022-11.d
x10 6
7.5
7.25
7
6.75
6.5
6.25
6
5.75
5.5
5.25
5
4.75
4.5
4.25
4
3.75
3.5
3.25
3
2.75
2.5
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
473.1056
471.1072
472.1107
474.1087
475.1123
476.1151
469.0909
HN
Br
N
O
CH3
Chemical Formula: C27H23BrN2O
Exact Mass: 470.0994
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
Counts vs. Mass-to-Charge (m/z)

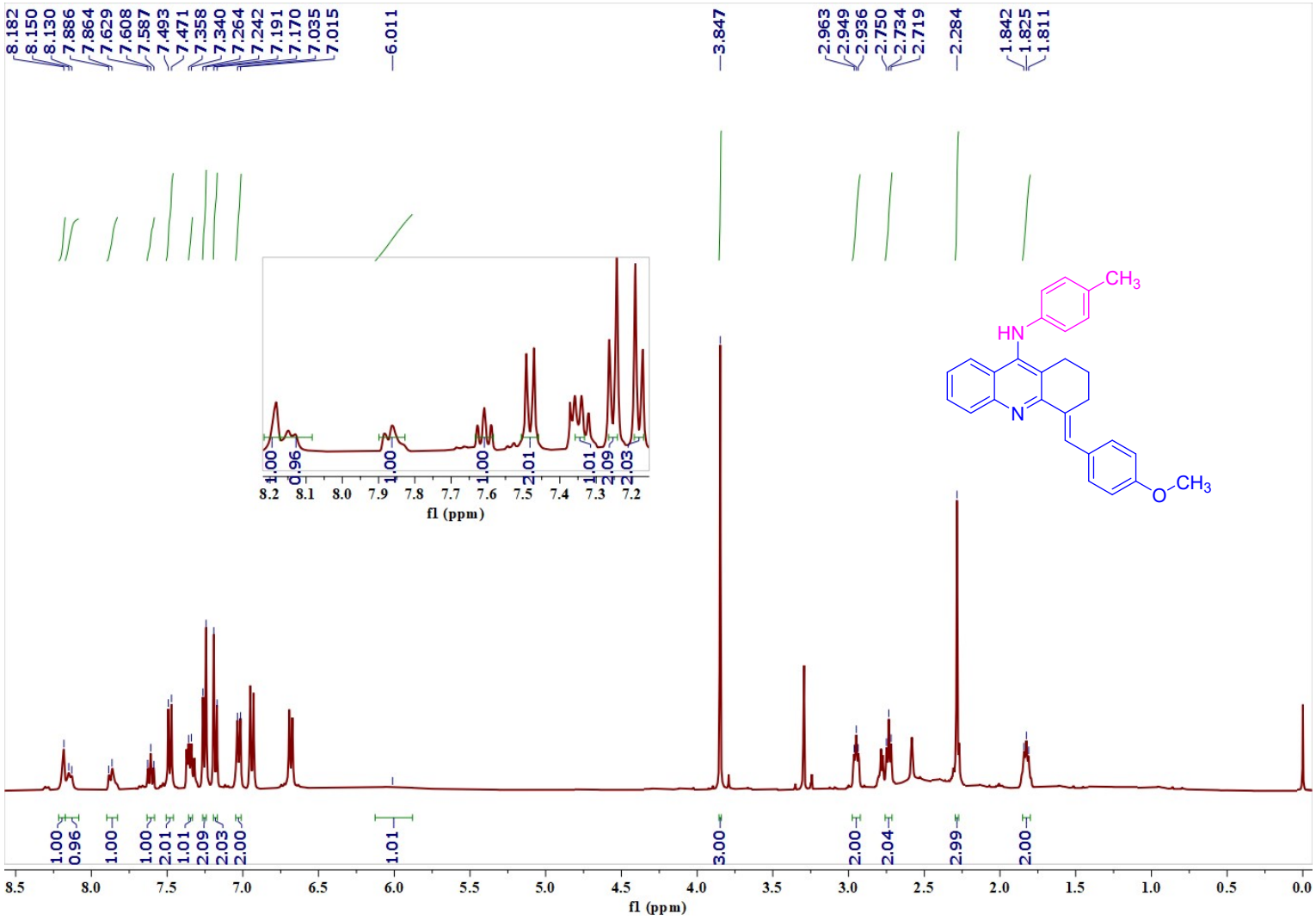
(E)-4-(4-Methoxybenzylidene)-6-nitro-N-phenyl-1,2,3,4-tetrahydroacridin-9-amine(8g):

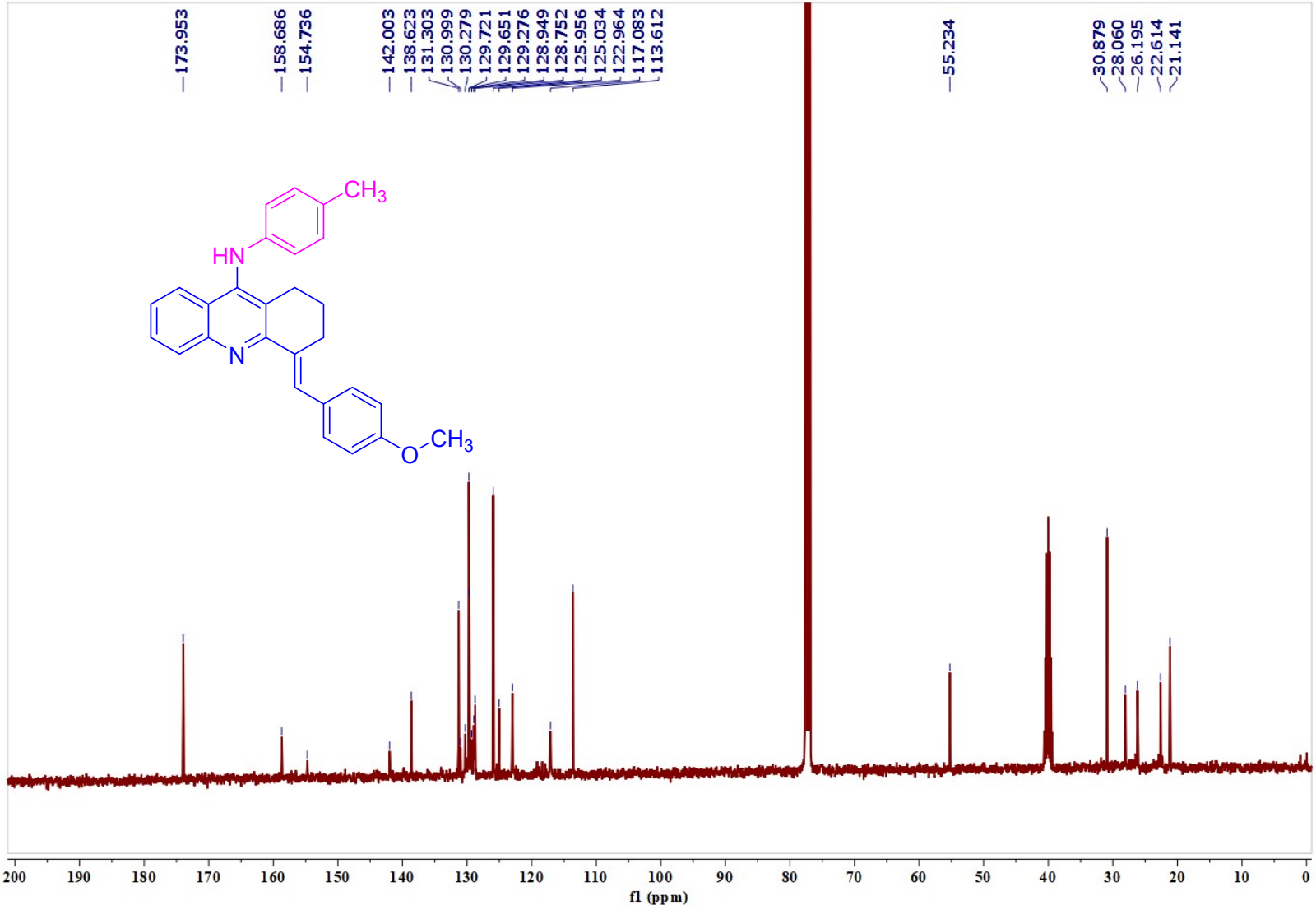

HN
O_2N
N
CH_3
O
9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
9.0 8.8 8.6 8.4 8.2 8.0 7.8 7.6
0.94 1.00 1.00 1.00 2.02 2.00 2.99 2.00 0.98 3.00 2.00 2.00 2.01

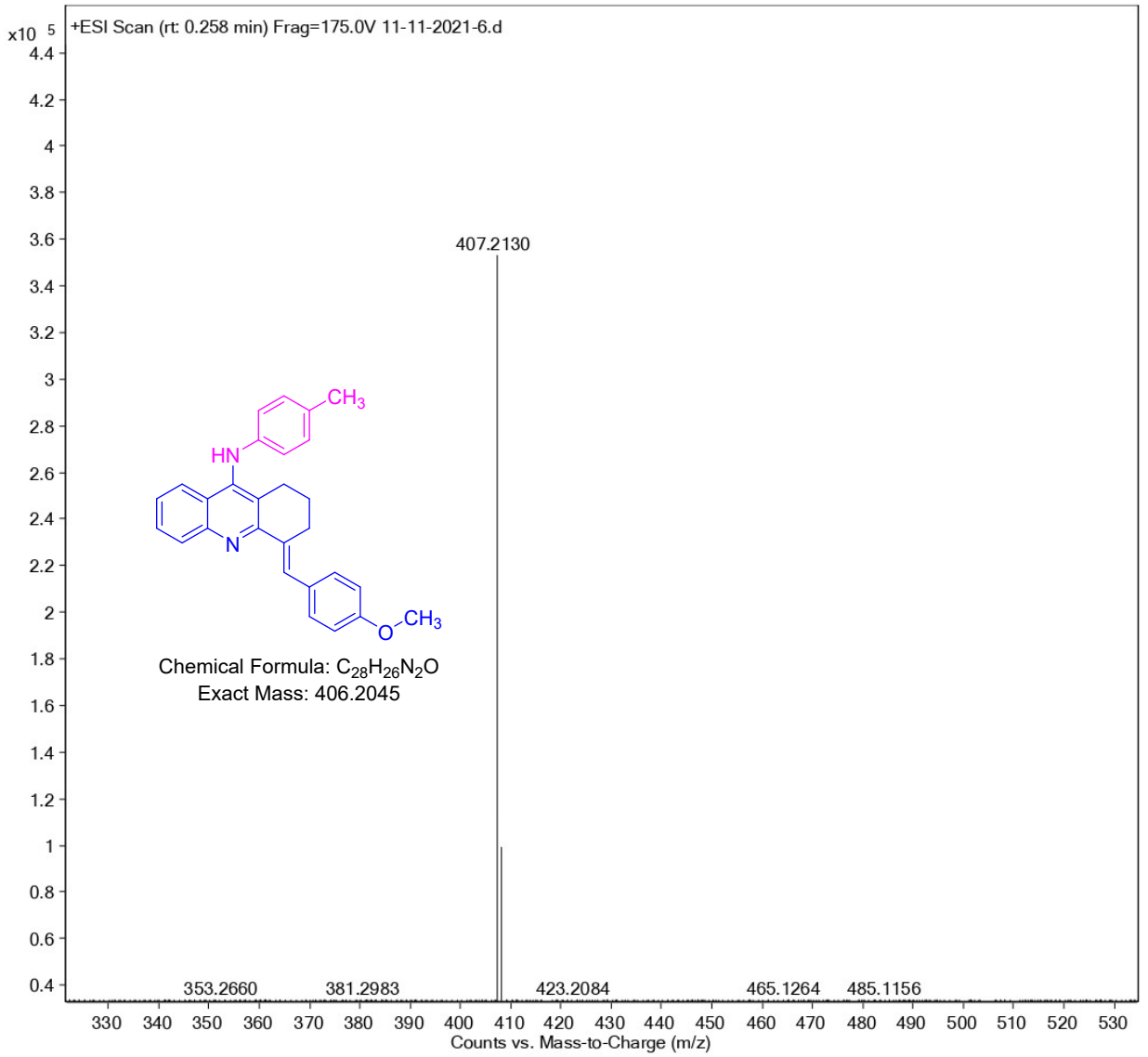

29-DK-TS-NO2-CL-A-ANILINE-CDCL3-GELF-13CNMR-2.fid
TS
159.061
157.881
147.747
146.643
144.007
142.842
133.606
131.498
130.751
129.993
129.522
129.300
126.814
126.511
125.895
124.863
121.374
118.582
118.122
116.737
115.129
113.795
55.337
27.878
26.209
22.290
HN
O2N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.342 min) Frag=175.0V 26.07.2022-9.d
x10 4
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
438.1817
399.3088
429.3184
457.3496
473.3457
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
Counts vs. Mass-to-Charge (m/z)
HN
O2N
N
CH3
O
Chemical Formula: C27H23N3O3
Exact Mass: 437.1739

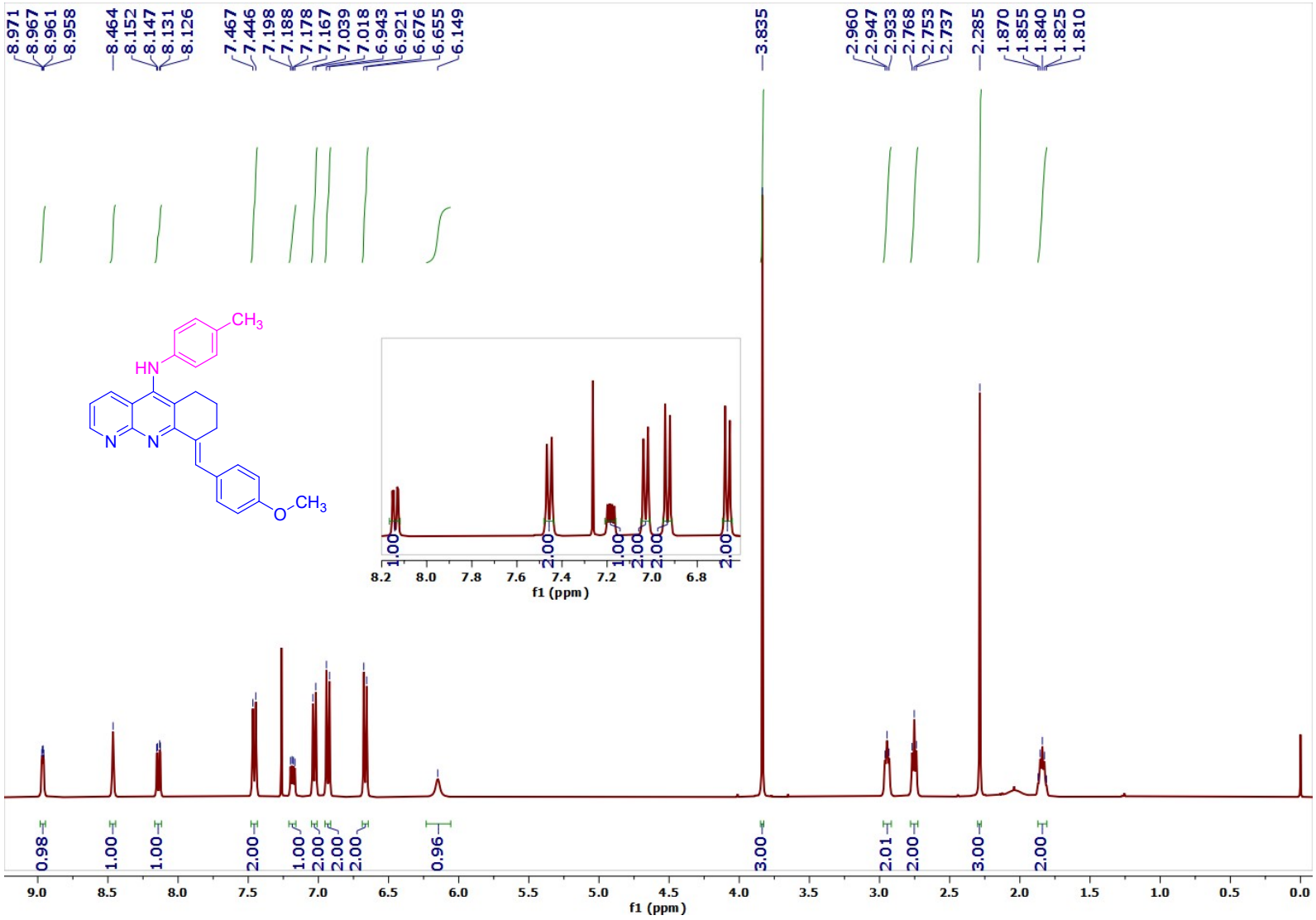
(E)-4-(4-Methoxybenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8h):

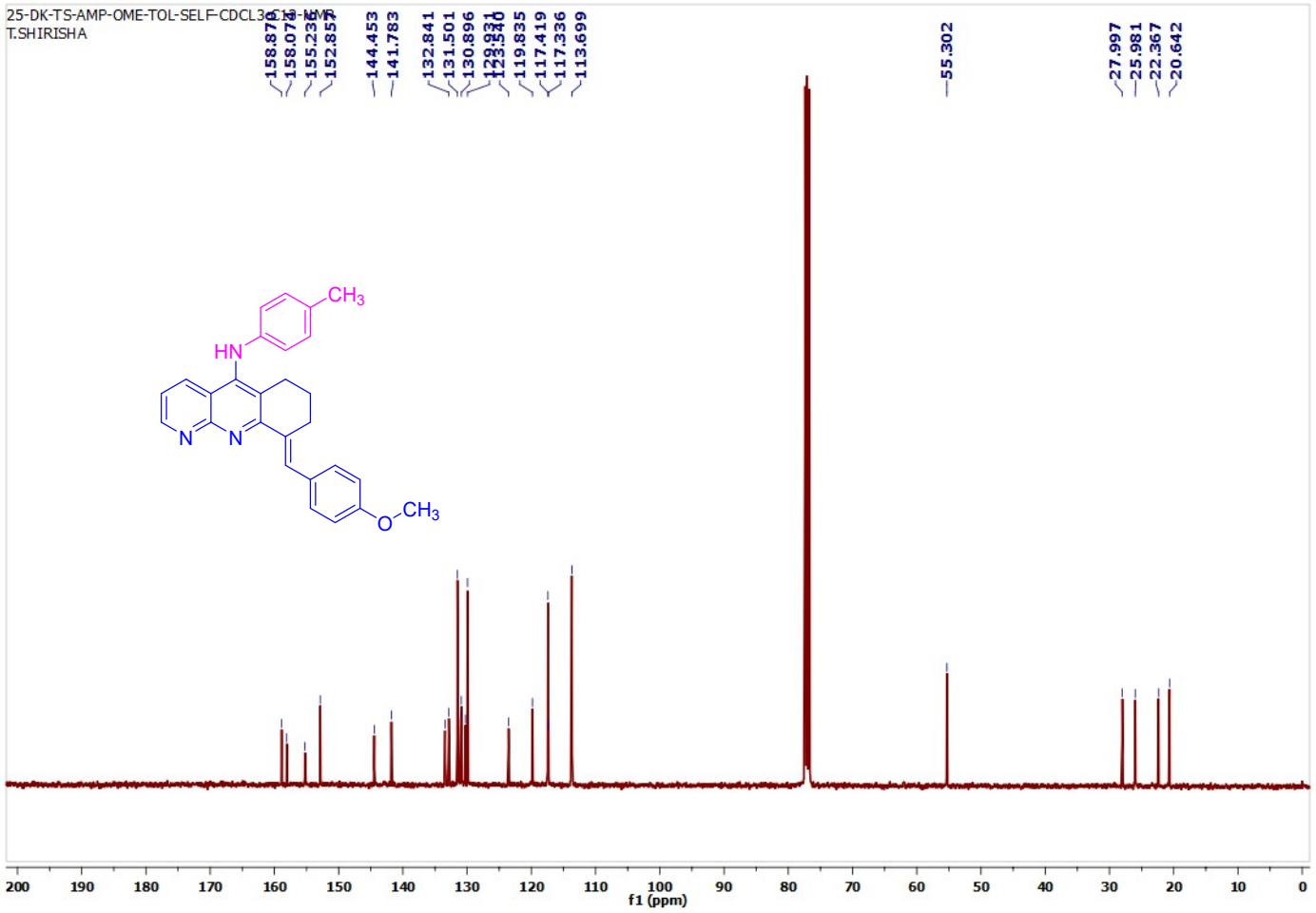


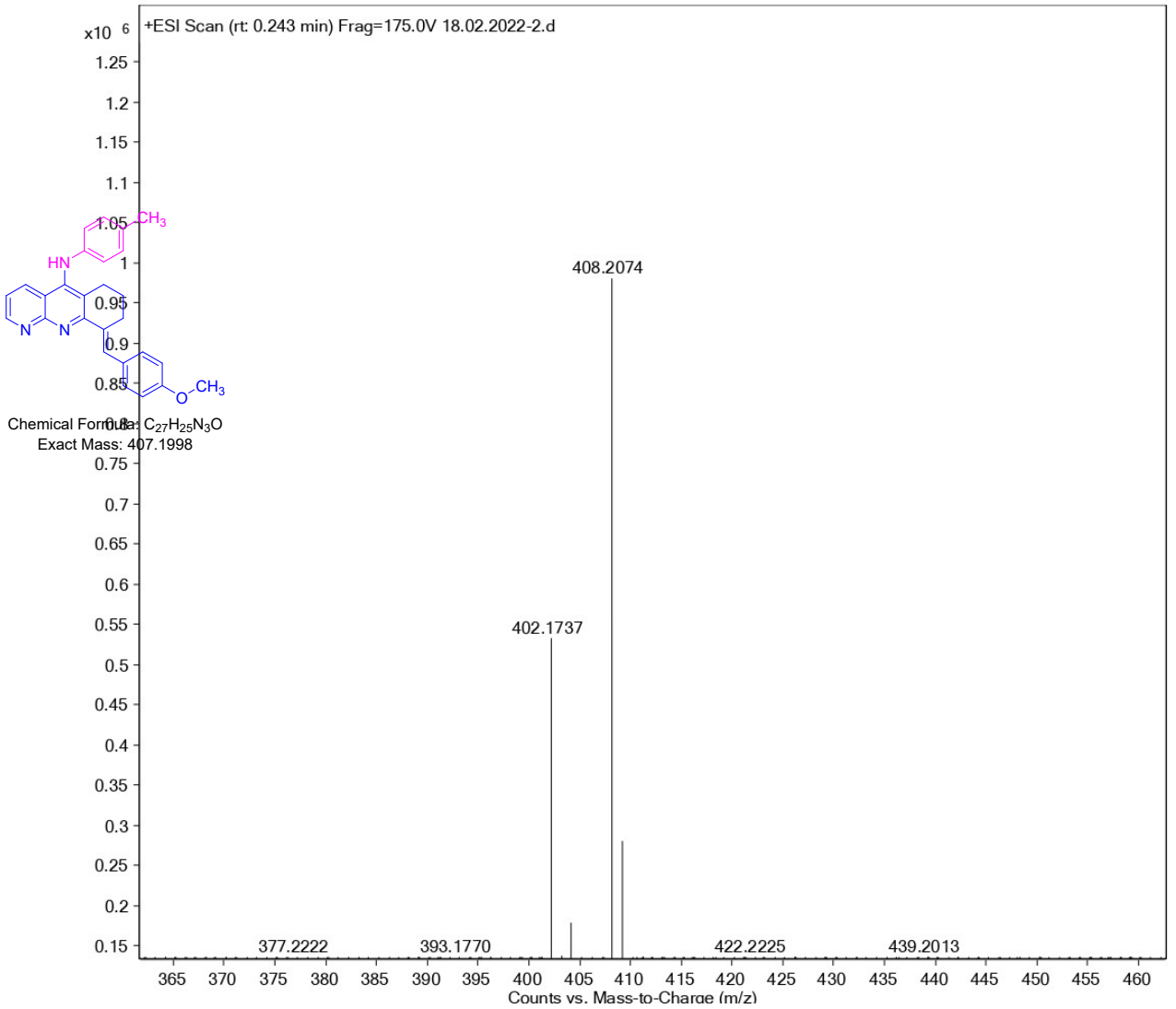

173.953
158.686
154.736
142.003
138.623
131.303
130.999
130.279
129.721
129.651
129.276
128.949
128.752
125.956
125.034
122.964
117.083
113.612
55.234
30.879
28.060
26.195
22.614
21.141
CH3
HN
N
O
CH3
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


+ESI Scan (rt: 0.258 min) Frag=175.0V 11-11-2021-6.d
x10 5
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
407.2130
HN
CH3
N
O
CH3
Chemical Formula: C28H26N2O
Exact Mass: 406.2045
353.2660
381.2983
423.2084
465.1264
485.1156
330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530
Counts vs. Mass-to-Charge (m/z)

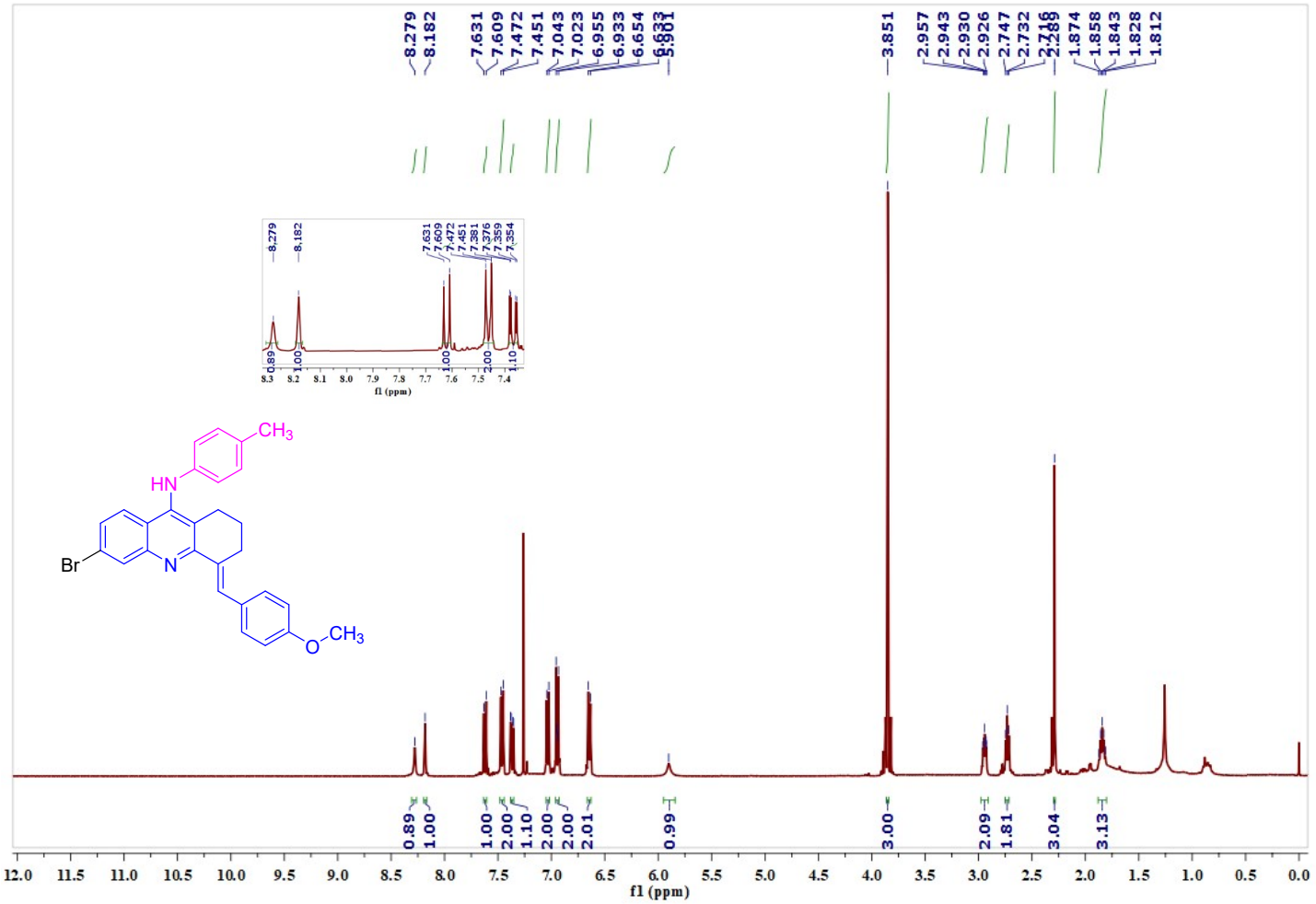
(E)-9-(4-Methoxybenzylidene)-N-(p-tolyl)-6,7,8,9-tetrahydrobenzo[b][1,8]naphthyridin-5-amine (8i):

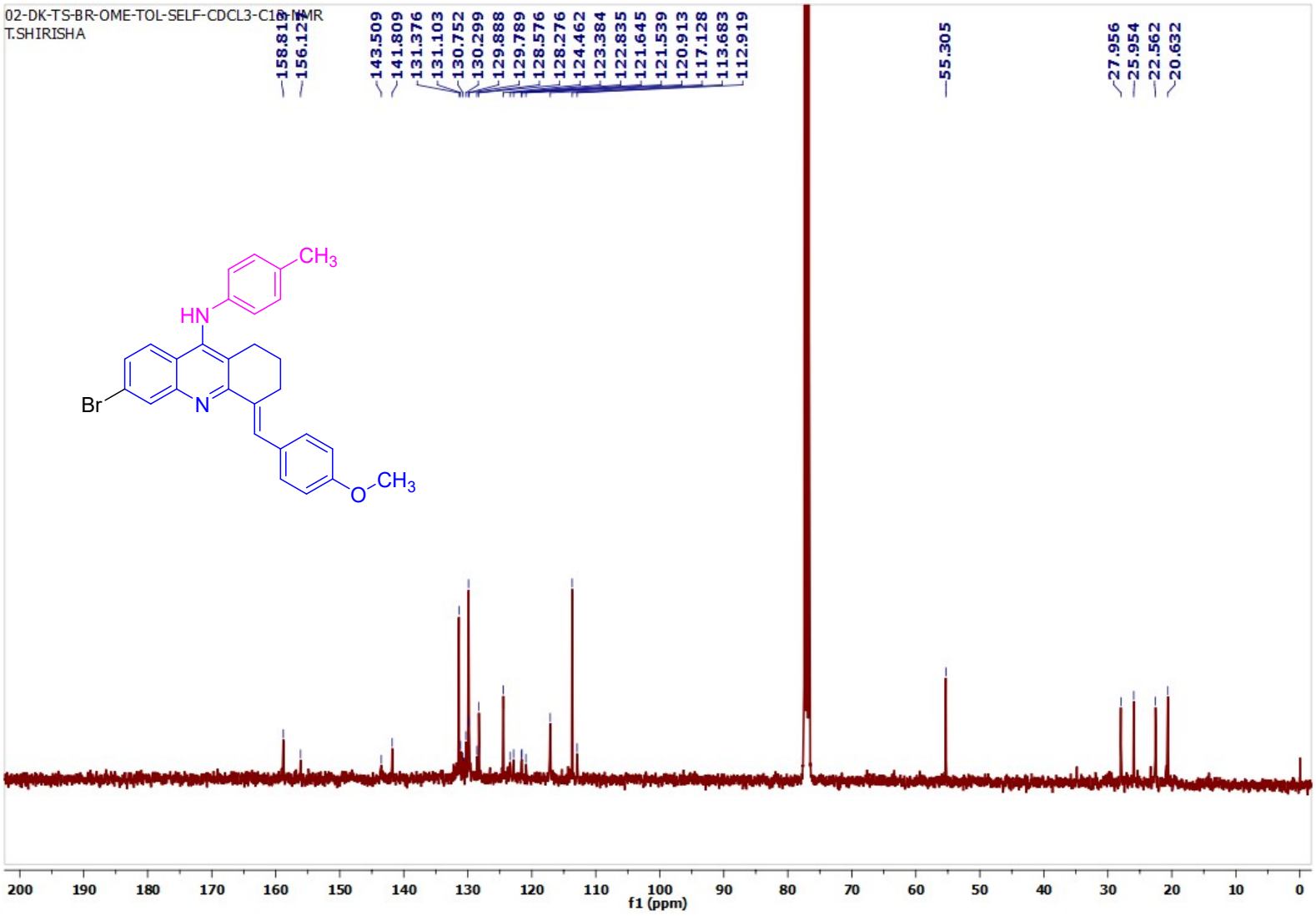


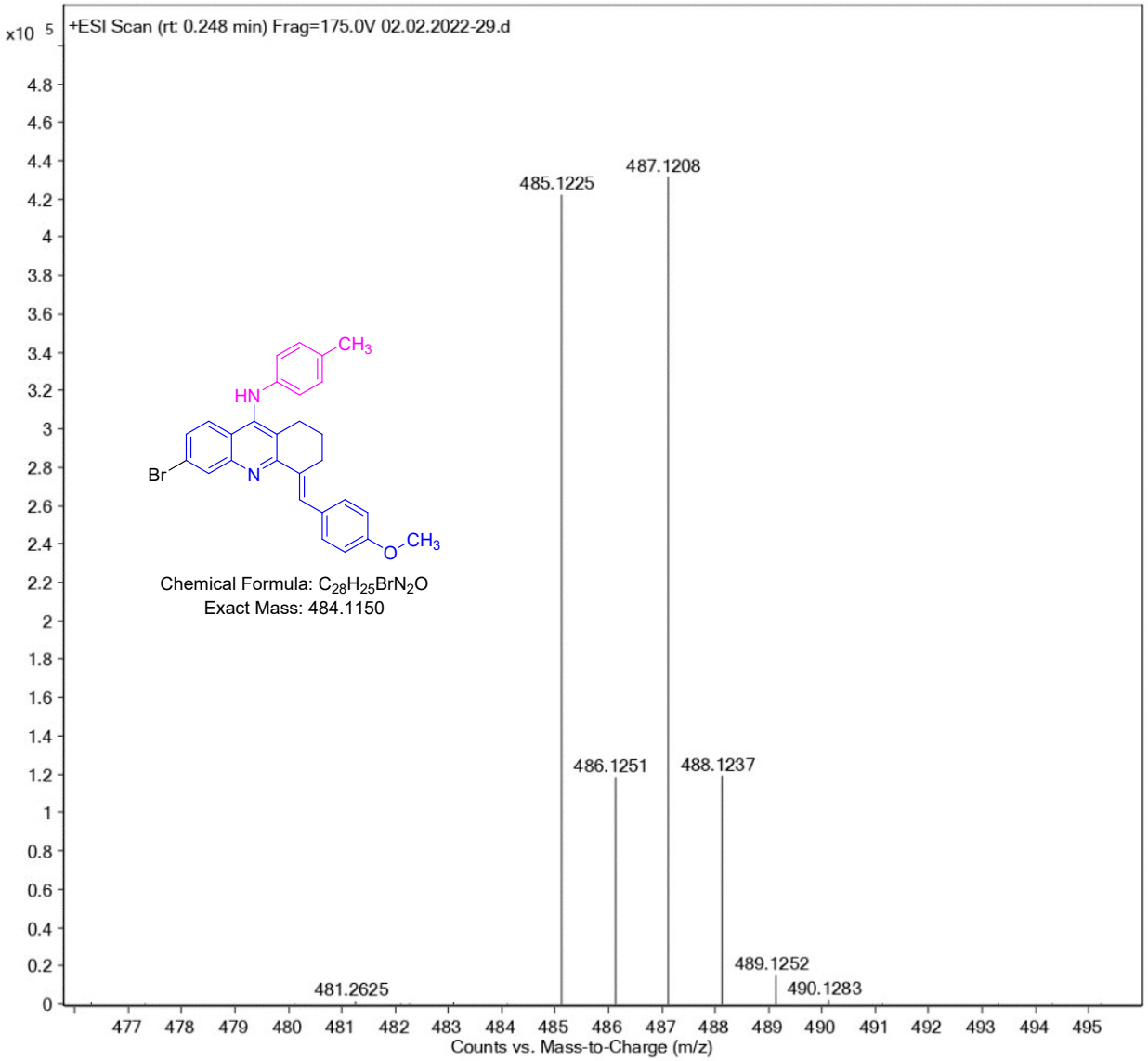

25-DK-TS-AMP-OME-TOL-SELF-CDCL3-C13-MR
T.SHIRISHA
158.878
158.074
155.230
152.857
144.453
141.783
132.841
131.501
130.896
129.931
129.540
123.540
119.835
117.419
117.336
113.699
55.302
27.997
25.981
22.367
20.642
HN
CH3
N
N
O
CH3
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


+ESI Scan (rt: 0.243 min) Frag=175.0V 18.02.2022-2.d
x10 6
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
HN
N
N
CH3
O
CH3
Chemical Formula: C27H25N3O
Exact Mass: 407.1998
408.2074
402.1737
377.2222
393.1770
422.2225
439.2013
365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460
Counts vs. Mass-to-Charge (m/z)

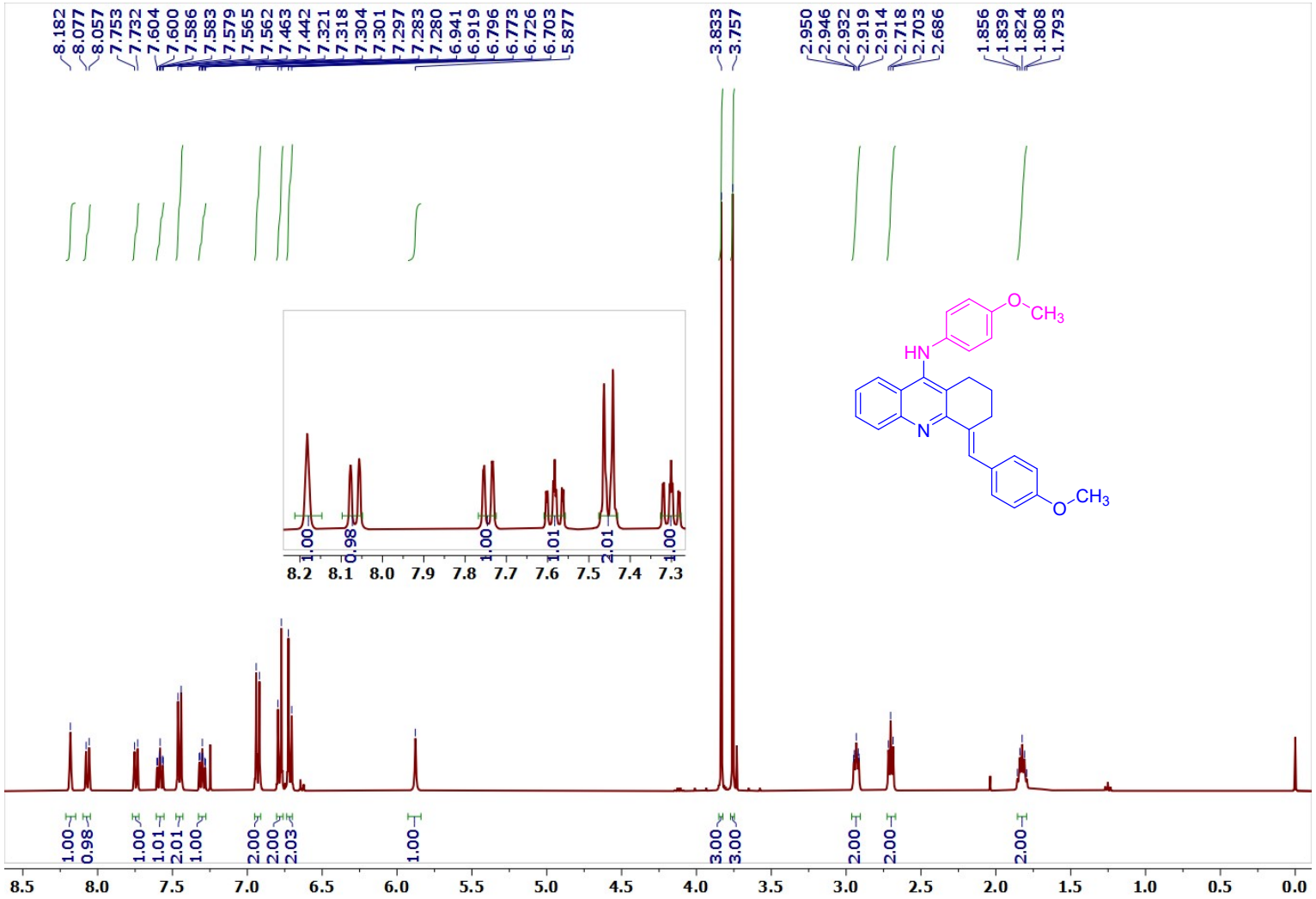
(E)-6-Bromo-4-(4-methoxybenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8j):

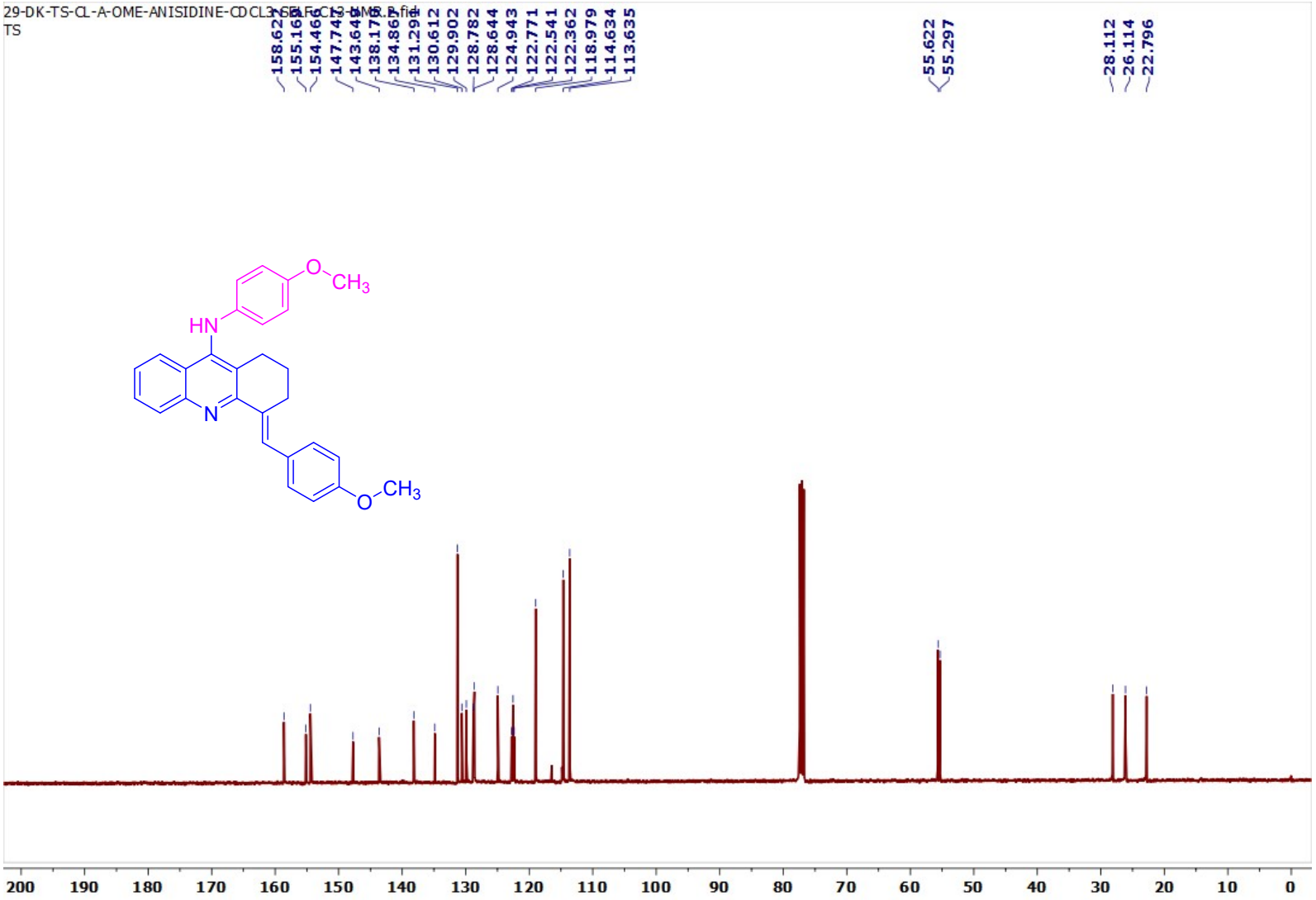


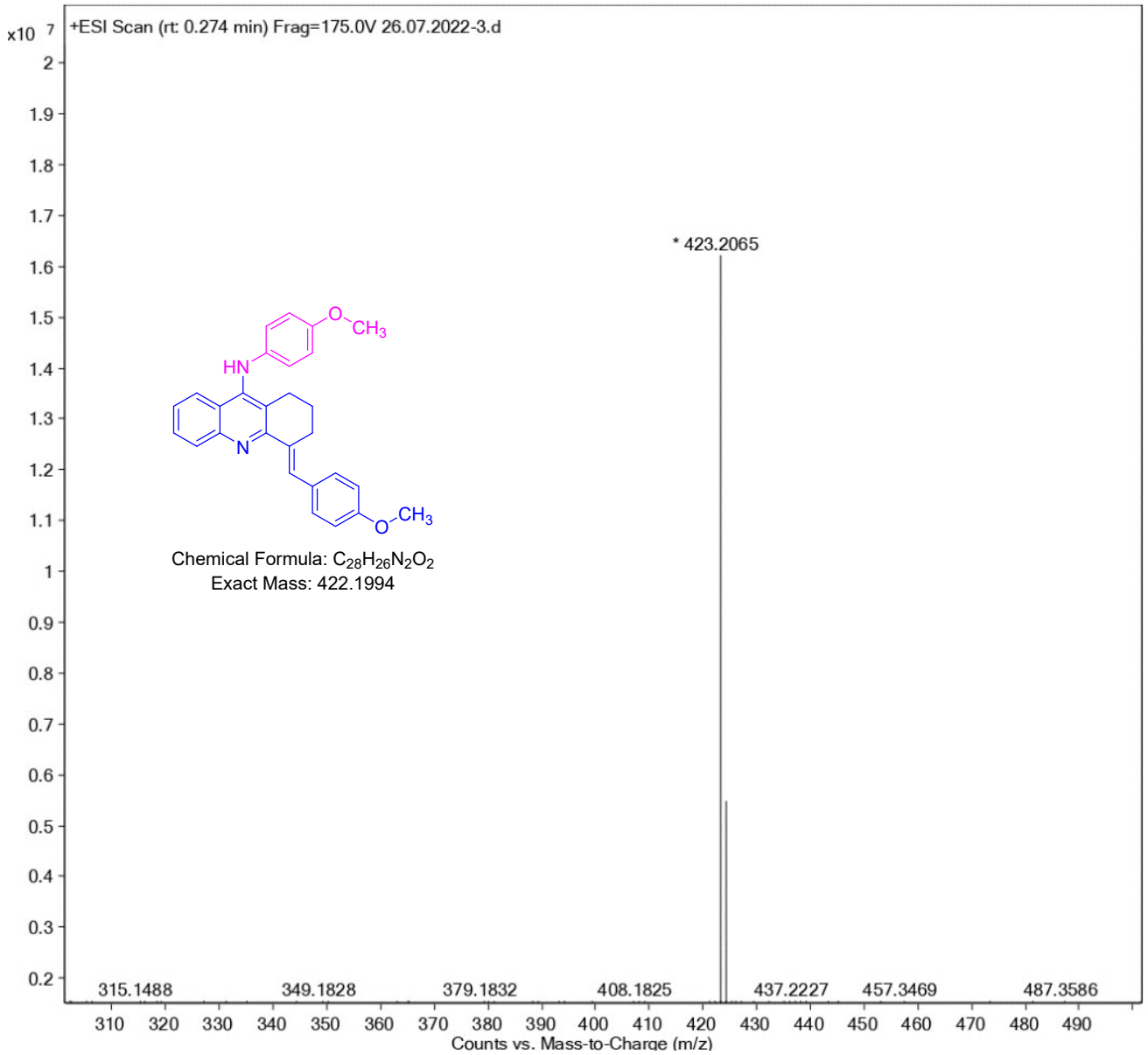

02-DK-TS-BR-OME-TOL-SELF-CDCL3-C13-NMR
T.SHIRISHA
158.819
156.127
143.509
141.809
131.376
131.103
130.752
130.299
129.888
129.789
128.576
128.276
124.462
123.384
122.835
121.645
121.539
120.913
117.128
113.683
112.919
55.305
27.956
25.954
22.562
20.632
CH3
HN
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.248 min) Frag=175.0V 02.02.2022-29.d
x10 5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
485.1225
487.1208
486.1251
488.1237
489.1252
490.1283
481.2625
CH3
HN
Br
N
O
CH3
Chemical Formula: C28H25BrN2O
Exact Mass: 484.1150
477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495
Counts vs. Mass-to-Charge (m/z)

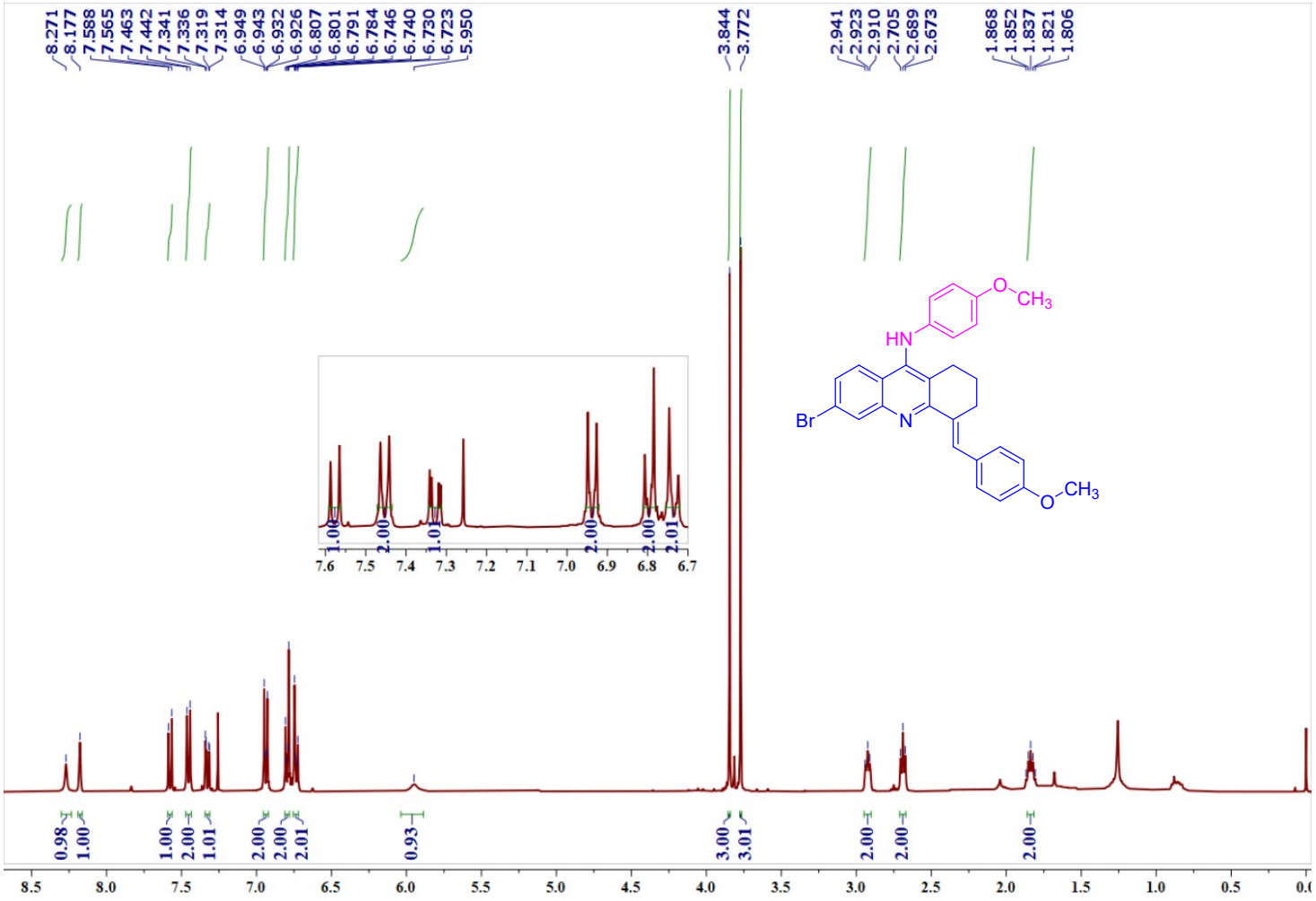
(E)-4-(4-Methoxybenzylidene)-N-(4-methoxyphenyl)-1,2,3,4-tetrahydroacridin-9-amine(8k):

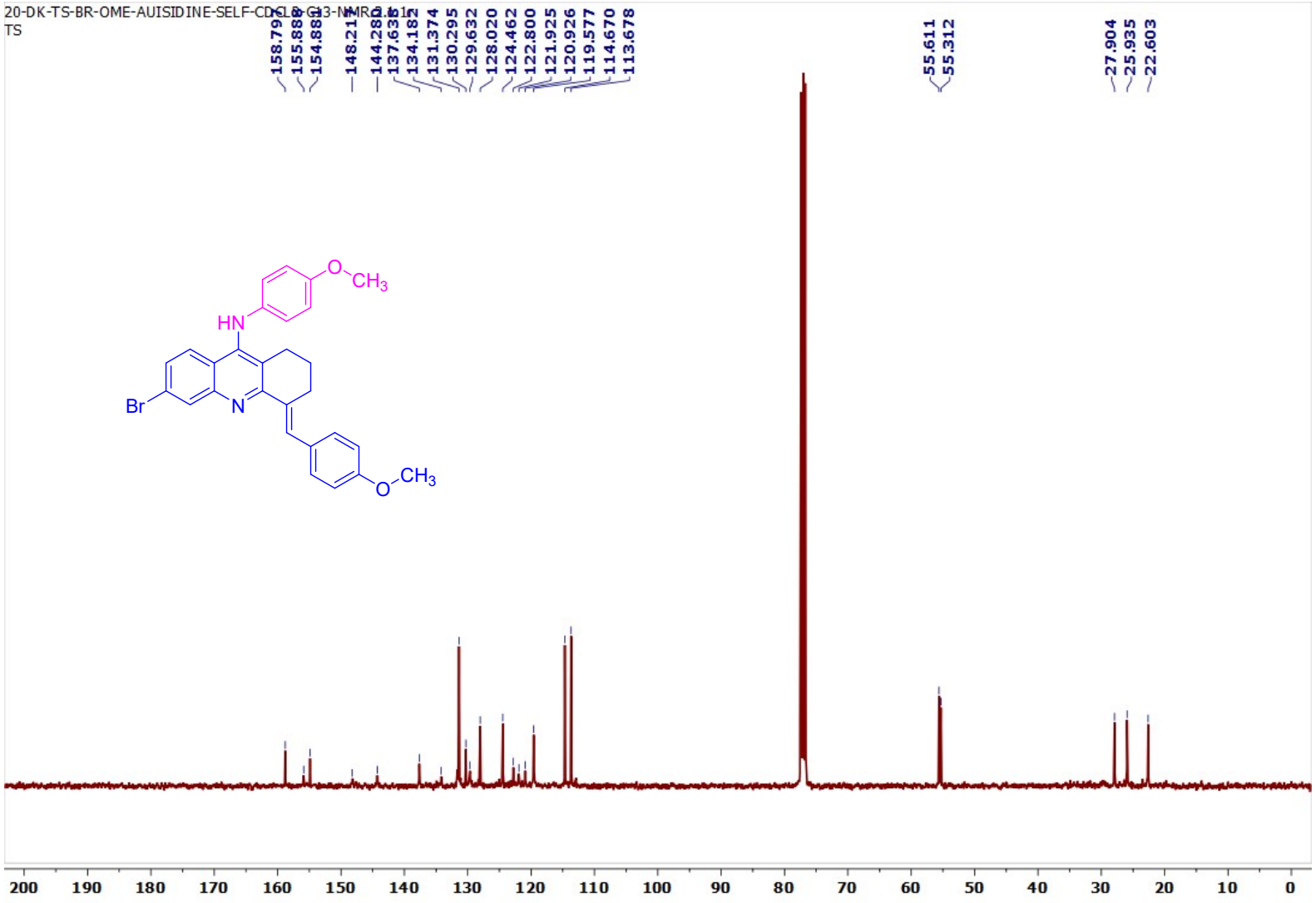


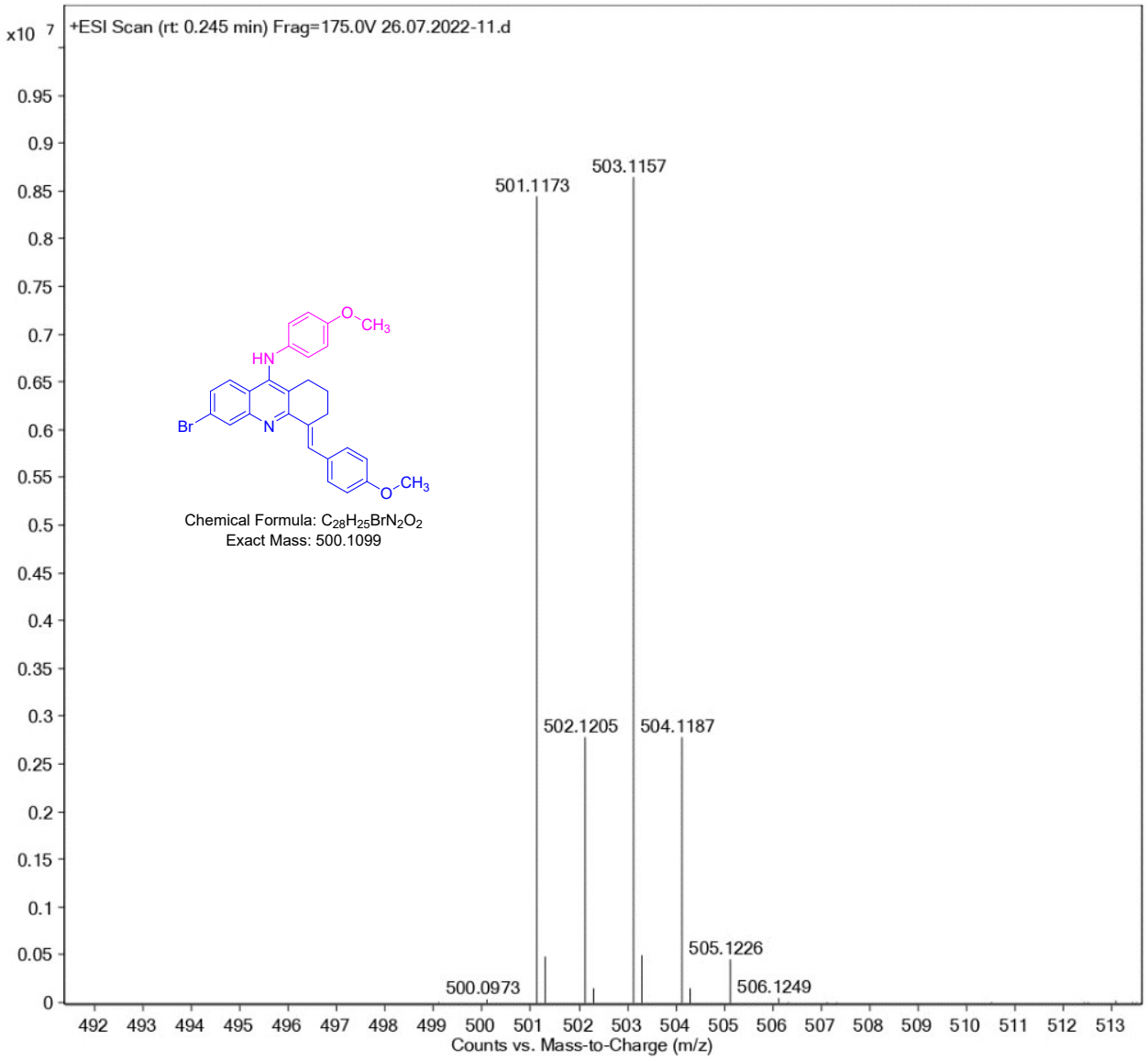

29-DK-TS-CL-A-OME-ANISIDINE-CDCL3-SBAFCC13-HNMR.fid
TS
158.627
155.161
154.466
147.747
143.644
138.170
134.860
131.298
130.612
129.902
128.782
128.644
124.943
122.771
122.541
122.362
118.979
114.634
113.635
55.622
55.297
28.112
26.114
22.796
HN
O
CH3
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.274 min) Frag=175.0V 26.07.2022-3.d
x10 7
* 423.2065
HN
O
CH3
N
O
CH3
Chemical Formula: C28H26N2O2
Exact Mass: 422.1994
315.1488
349.1828
379.1832
408.1825
437.2227
457.3469
487.3586
Counts vs. Mass-to-Charge (m/z)

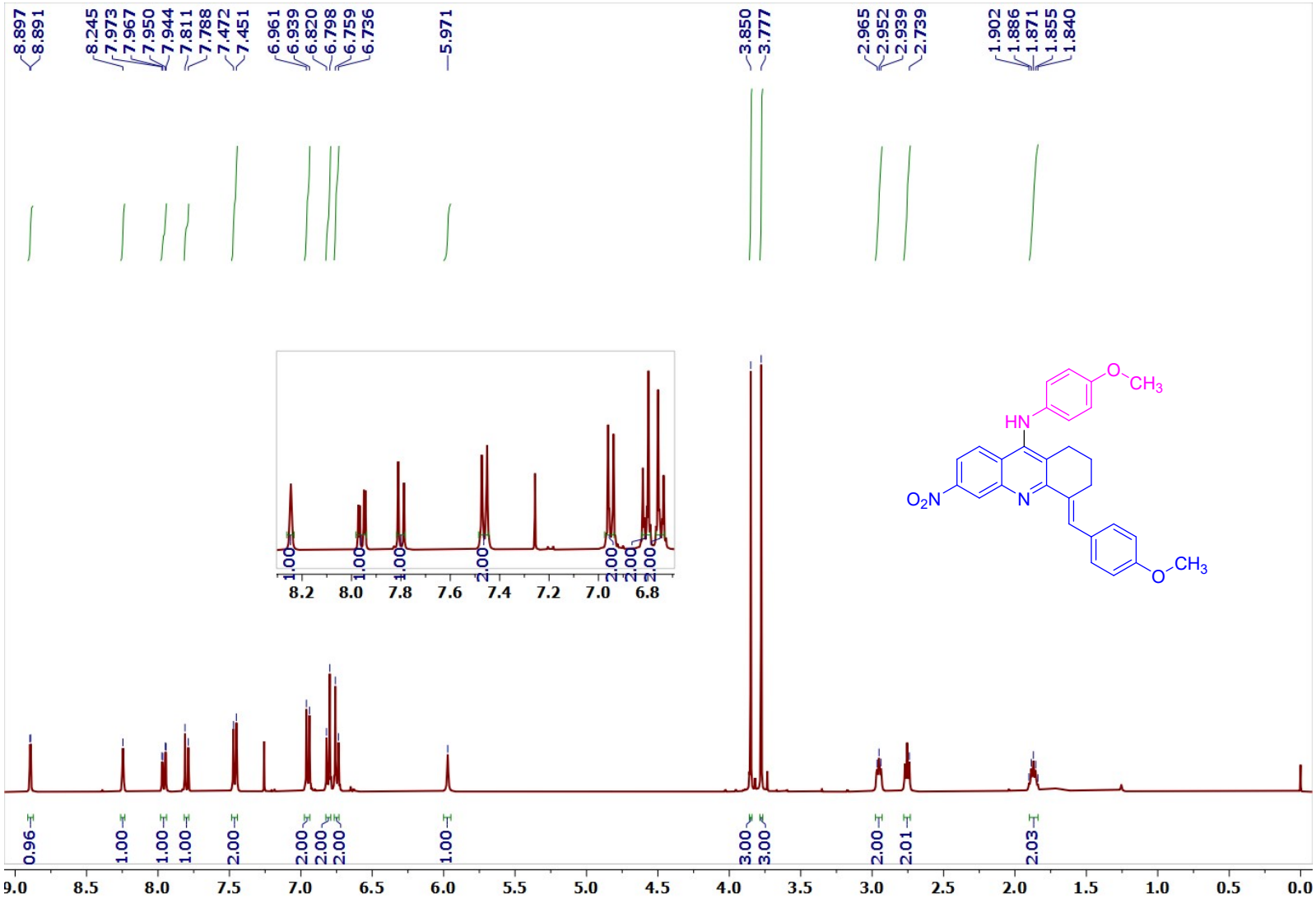
(E)-6-Bromo-4-(4-methoxybenzylidene)-N-(4-methoxyphenyl)-1,2,3,4-tetrahydroacridin-9-amine (8l):

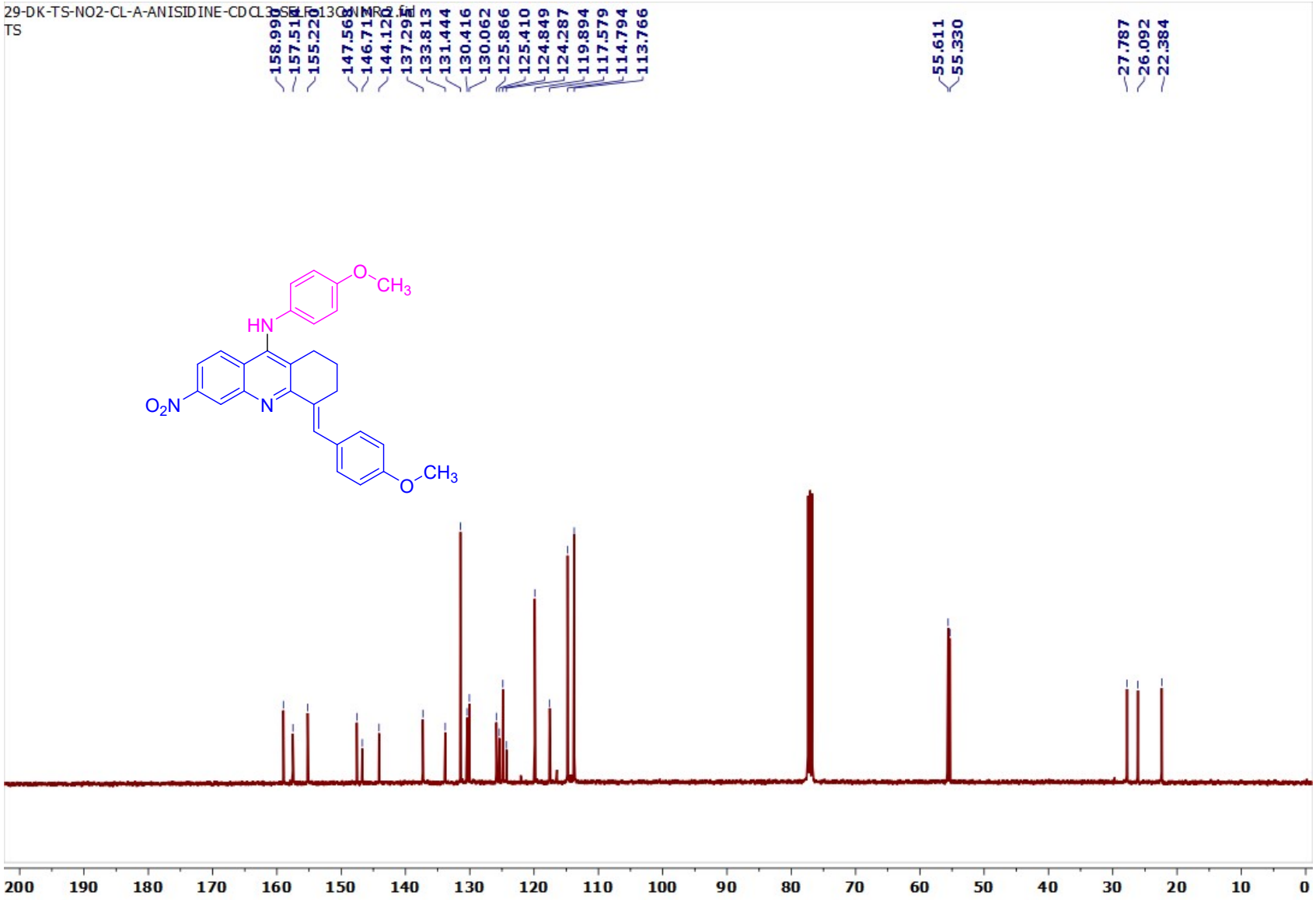


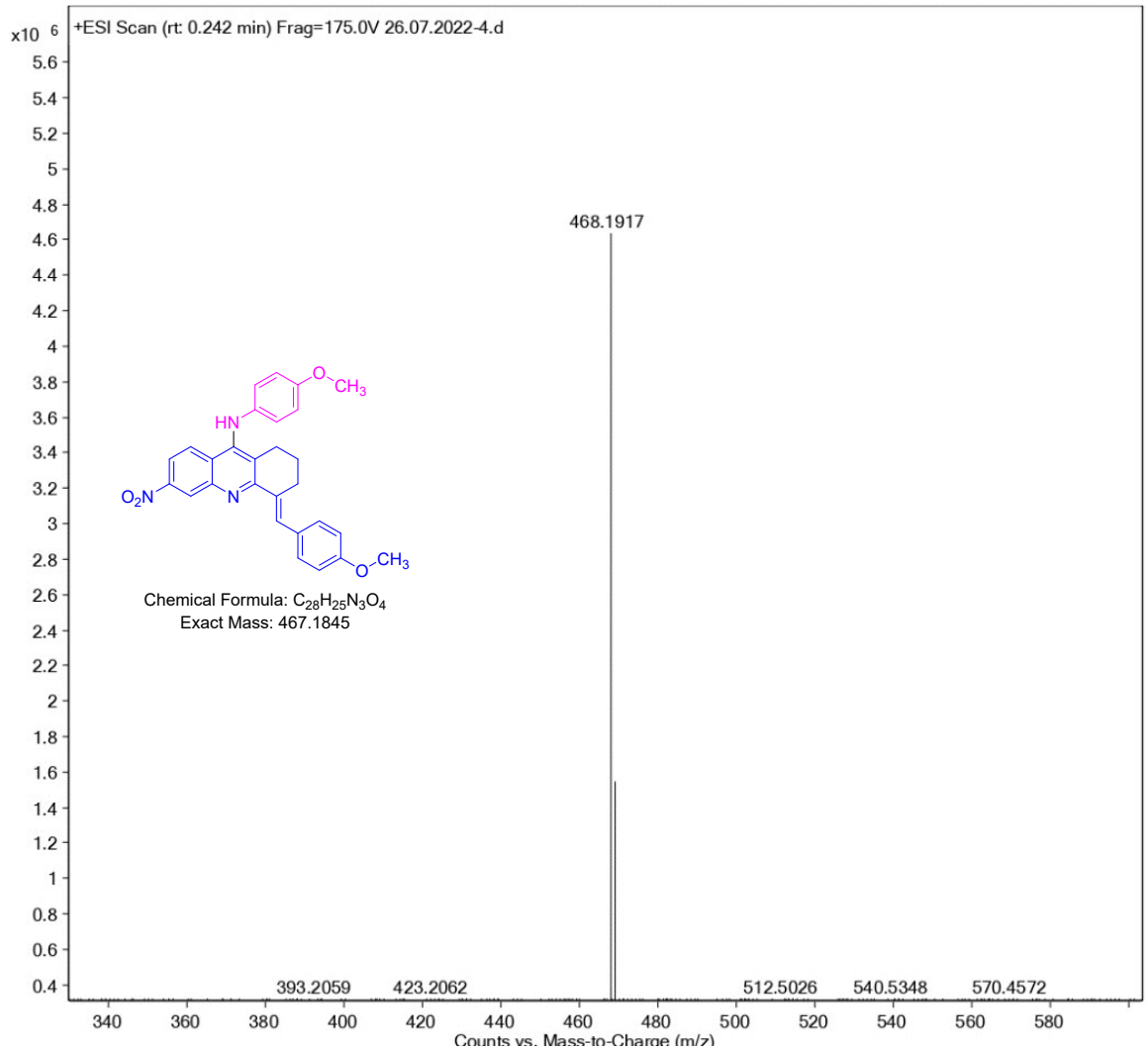

20-DK-TS-BR-OME-AUISIDINE-SELF-CDCL3-C13-NMR-2.10.1.1
TS
158.791
155.888
154.881
148.217
144.286
137.636
134.182
131.374
130.295
129.632
128.020
124.462
122.800
121.925
120.926
119.577
114.670
113.678
55.611
55.312
27.904
25.935
22.603
HN
O
CH3
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


x10 7
+ESI Scan (rt: 0.245 min) Frag=175.0V 26.07.2022-11.d
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
501.1173
503.1157
502.1205
504.1187
505.1226
500.0973
506.1249
HN
O
CH3
Br
N
O
CH3
Chemical Formula: C28H25BrN2O2
Exact Mass: 500.1099
492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513
Counts vs. Mass-to-Charge (m/z)

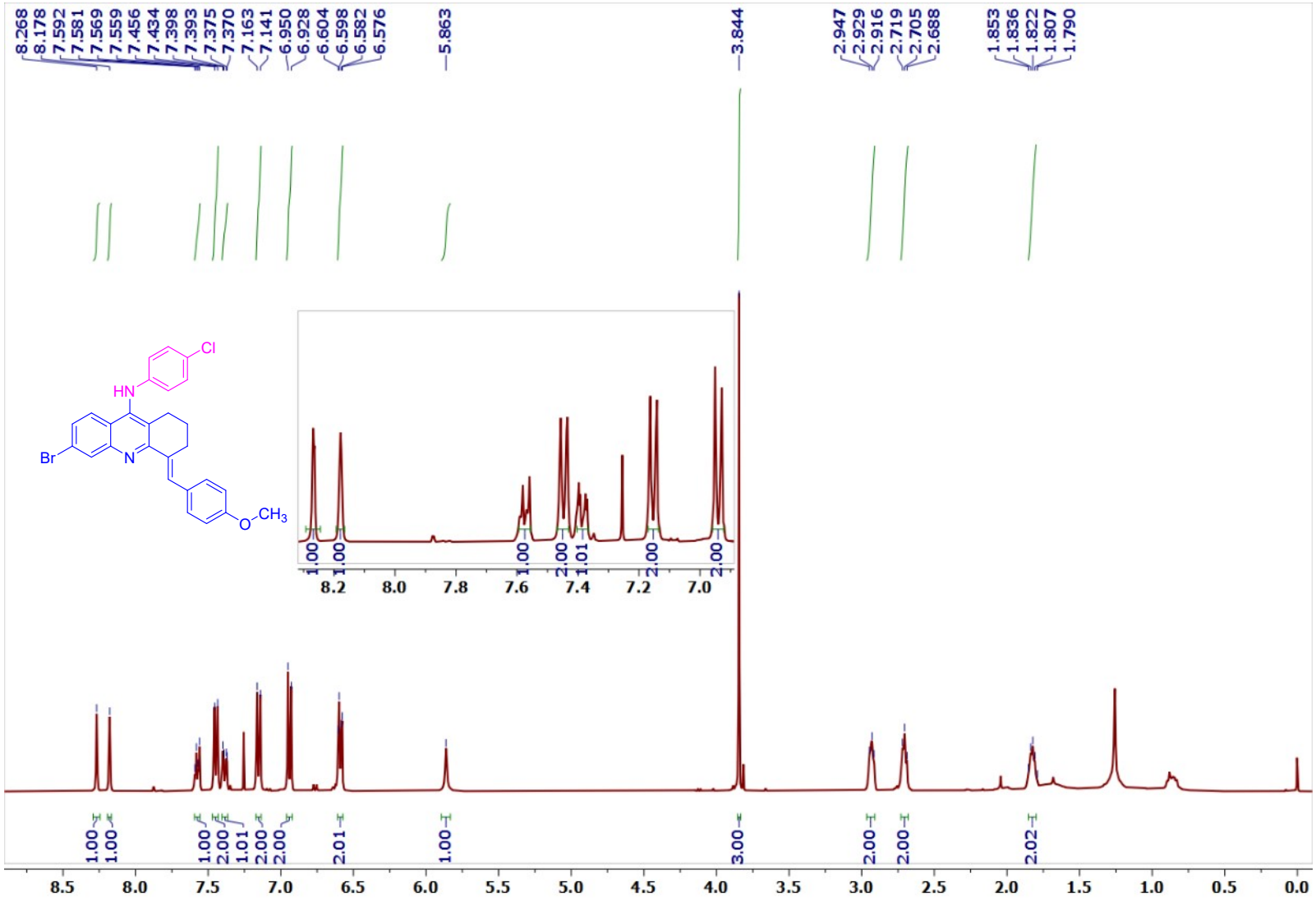
(E)-4-(4-Methoxybenzylidene)-N-(4-methoxyphenyl)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine(8m):

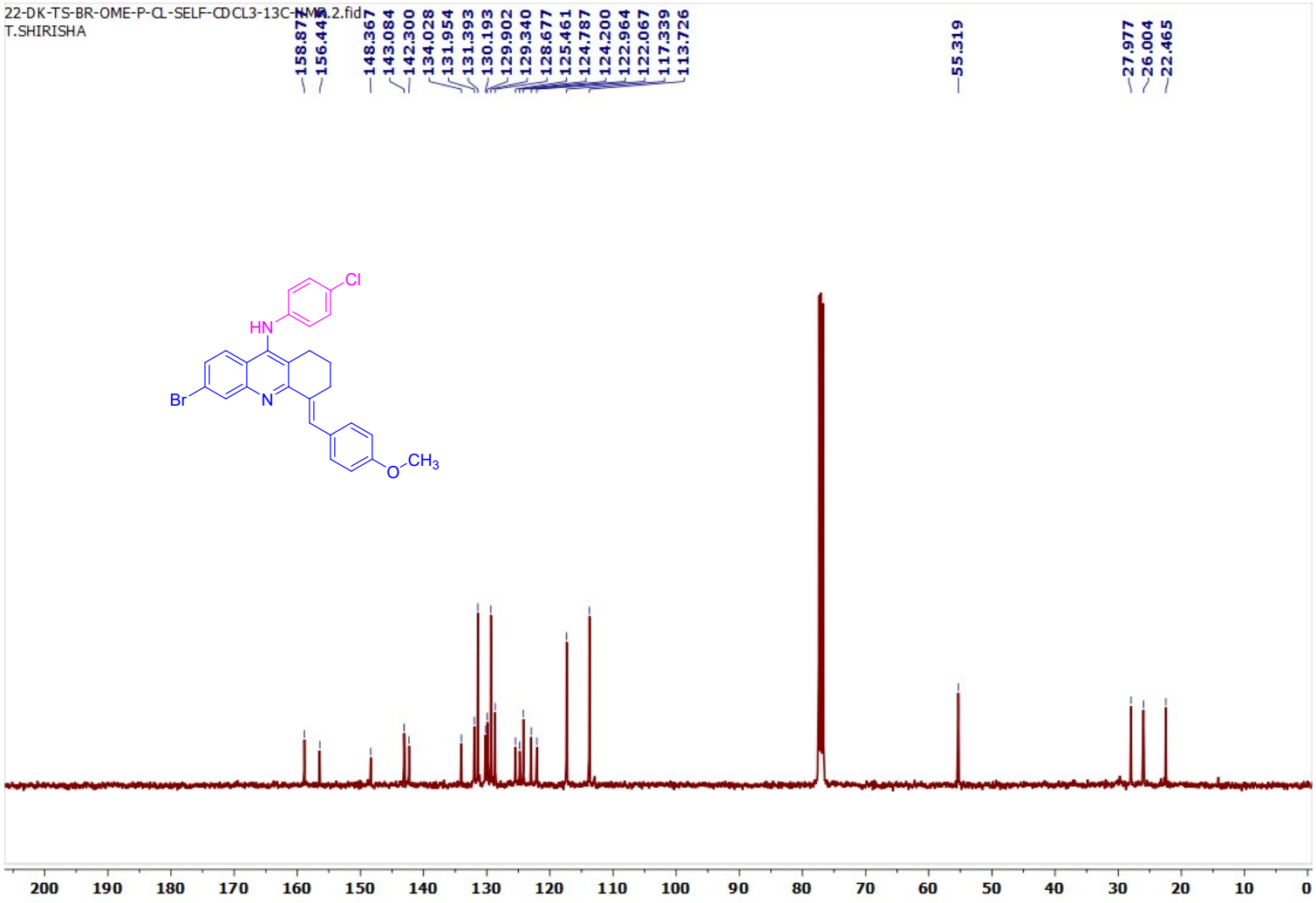


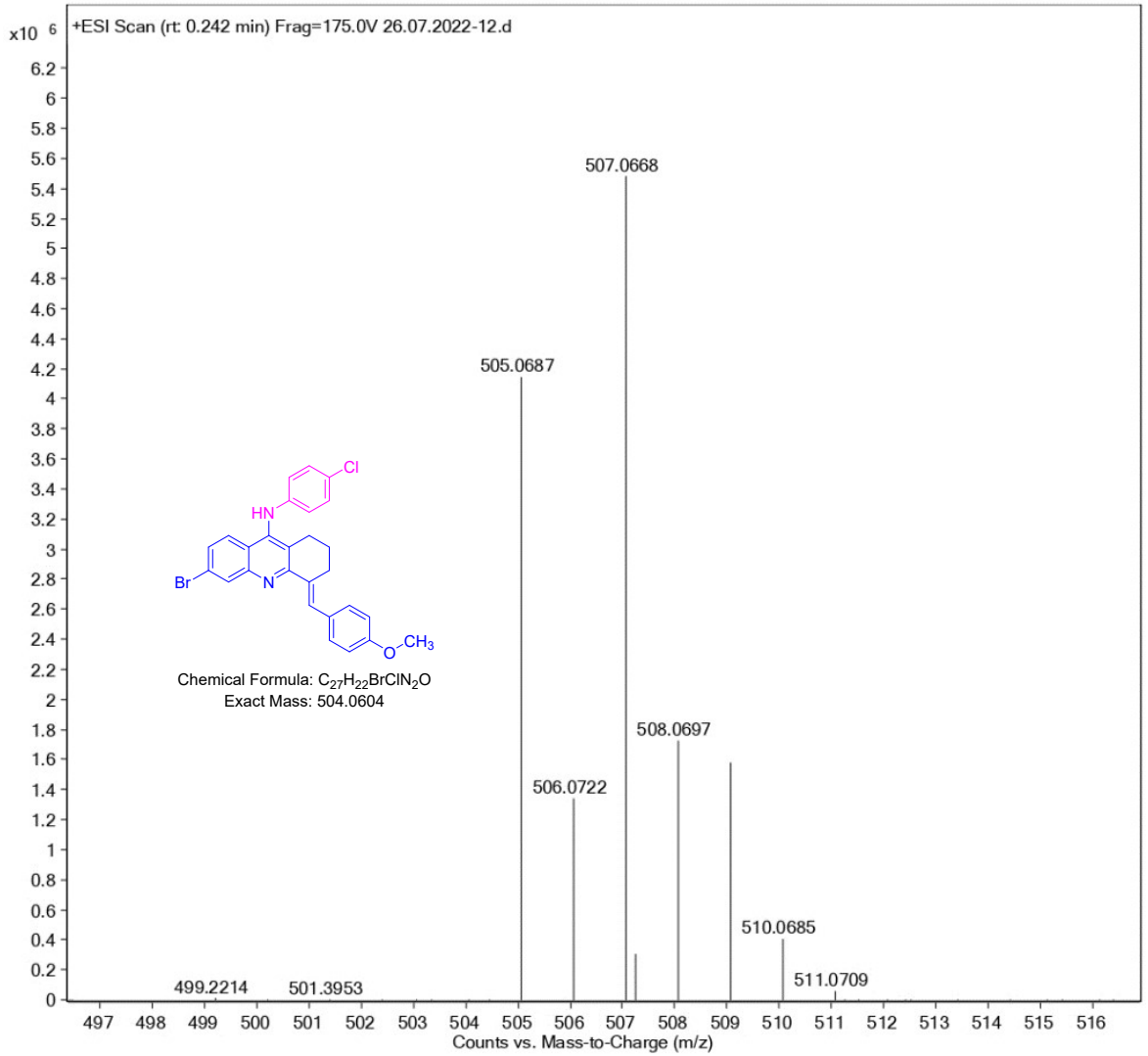

29-DK-TS-NO2-CL-A-ANISIDINE-CDCL3-SELF-13CDNMR-2.fid
TS
158.990
157.510
155.220
147.563
146.713
144.120
137.294
133.813
131.444
130.416
130.062
125.866
125.410
124.849
124.287
119.894
117.579
114.794
113.766
55.611
55.330
27.787
26.092
22.384
HN
O
CH3
O2N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.242 min) Frag=175.0V 26.07.2022-4.d
x10 6
468.1917
393.2059
423.2062
512.5026
540.5348
570.4572
Chemical Formula: C28H25N3O4
Exact Mass: 467.1845
Counts vs. Mass-to-Charge (m/z)

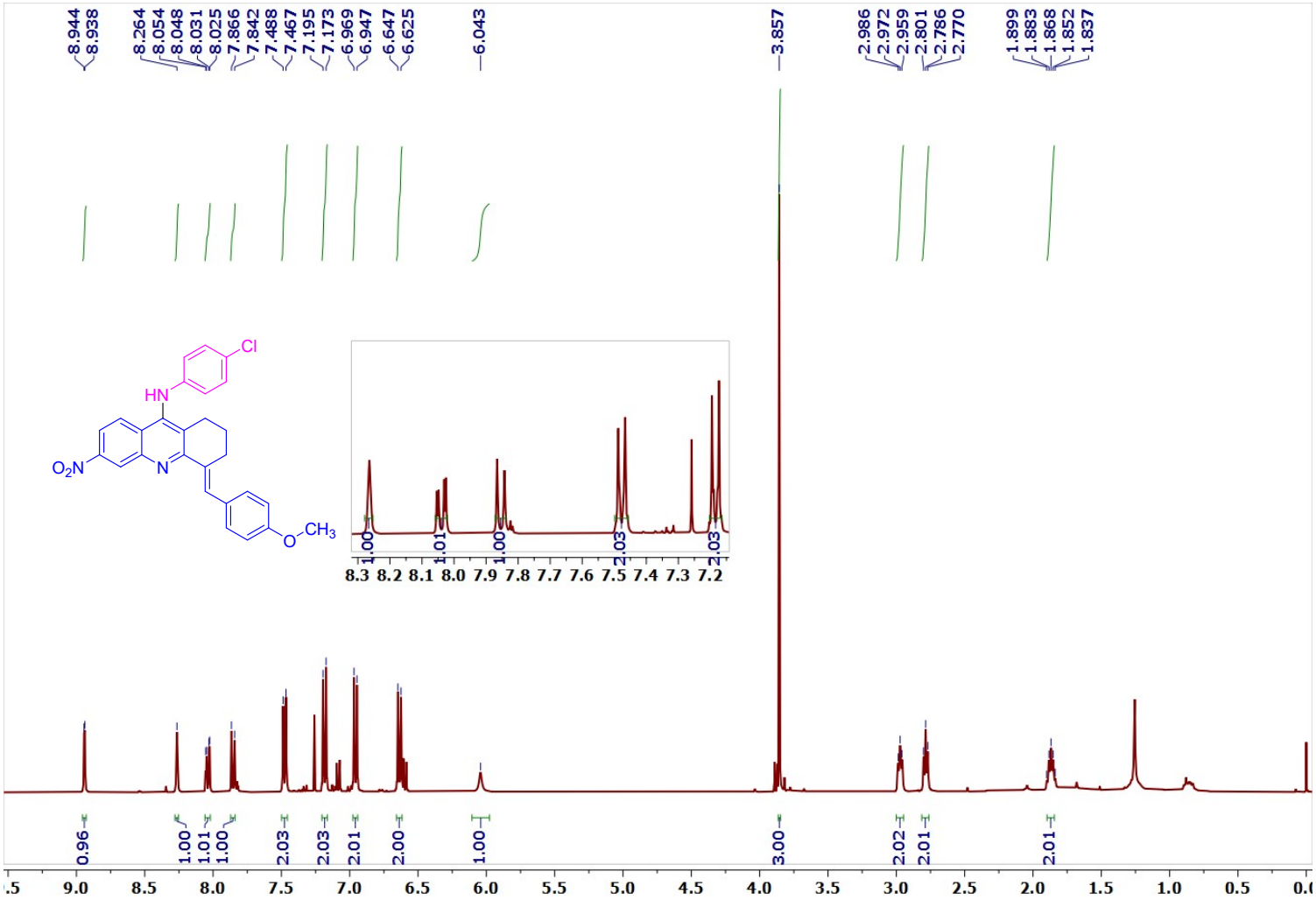
(E)-6-Bromo-N-(4-chlorophenyl)-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridin-9-amine (8n):

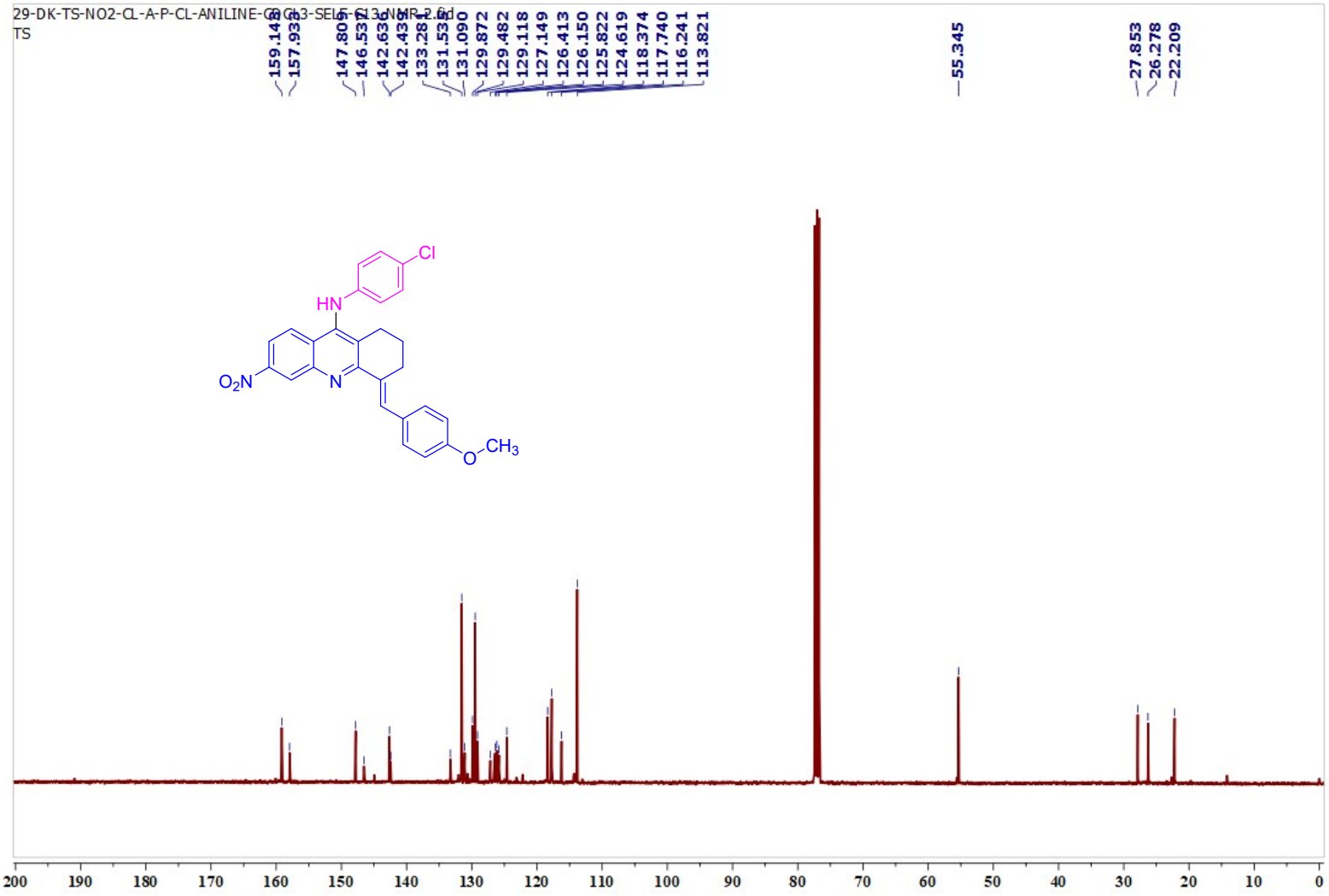


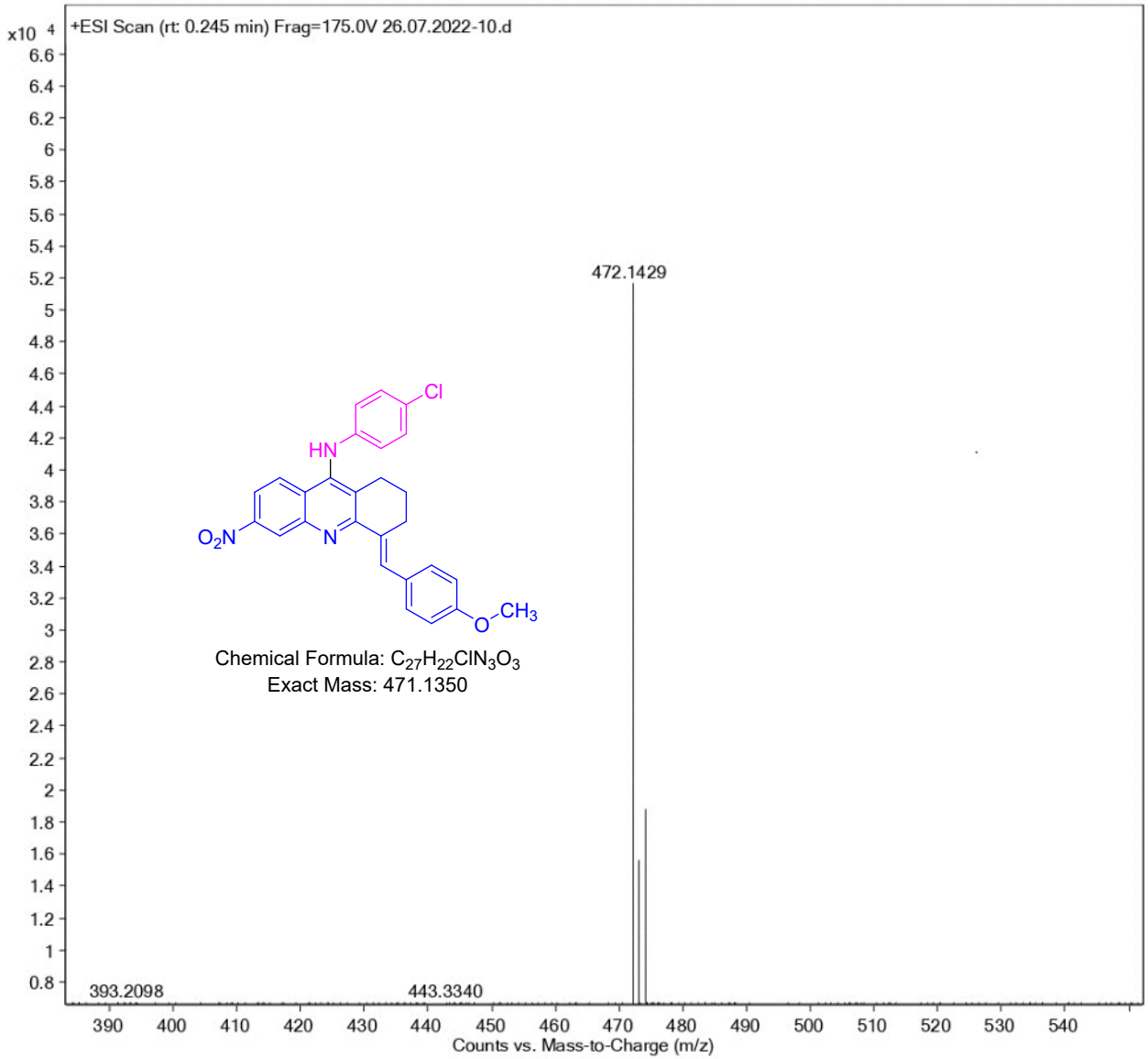

22-DK-TS-BR-OME-P-CL-SELF-CDCL3-13C-HMR.2.fid
T.SHIRISHA
158.871
156.443
148.367
143.084
142.300
134.028
131.954
131.393
130.193
129.902
129.340
128.677
125.461
124.787
124.200
122.964
122.067
117.339
113.726
55.319
27.977
26.004
22.465
Cl
HN
Br
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.242 min) Frag=175.0V 26.07.2022-12.d
x10 6
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
507.0668
505.0687
508.0697
506.0722
510.0685
511.0709
499.2214
501.3953
Cl
HN
Br
N
O
CH3
Chemical Formula: C27H22BrClN2O
Exact Mass: 504.0604
497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516
Counts vs. Mass-to-Charge (m/z)

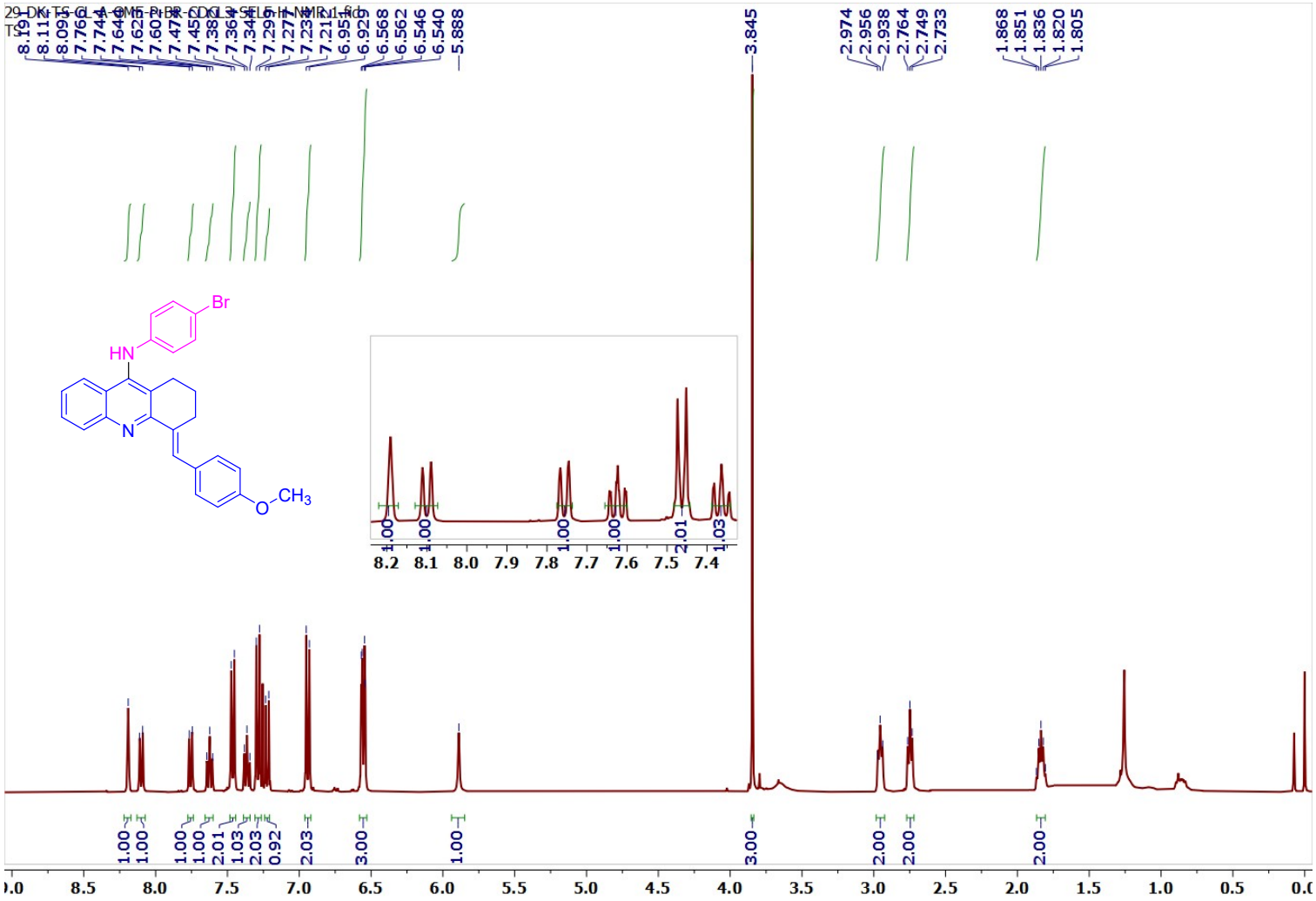
(E)-N-(4-Chlorophenyl)-4-(4-methoxybenzylidene)-6-nitro-1,2,3,4-tetrahydroacridin-9-amine(8o):

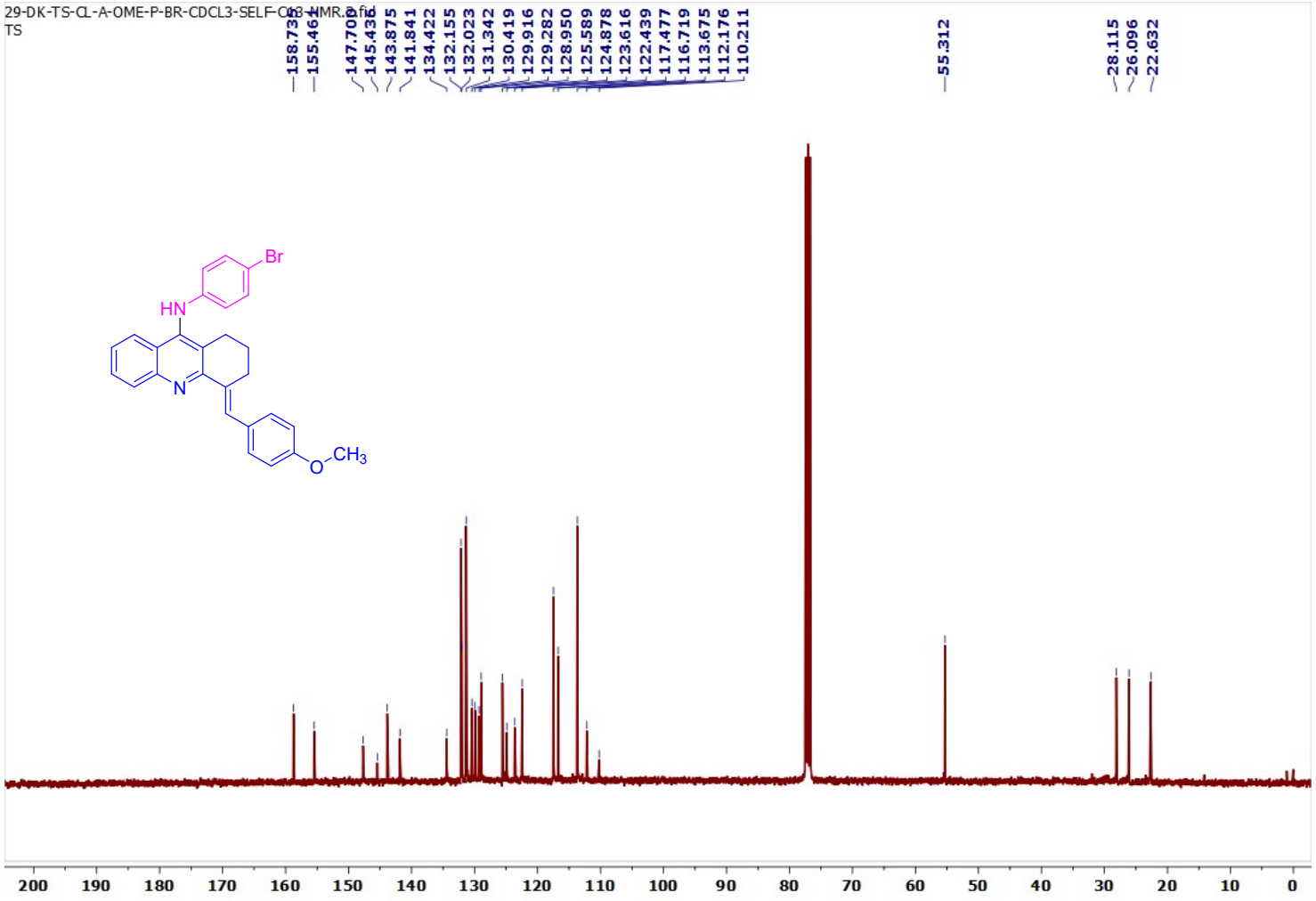


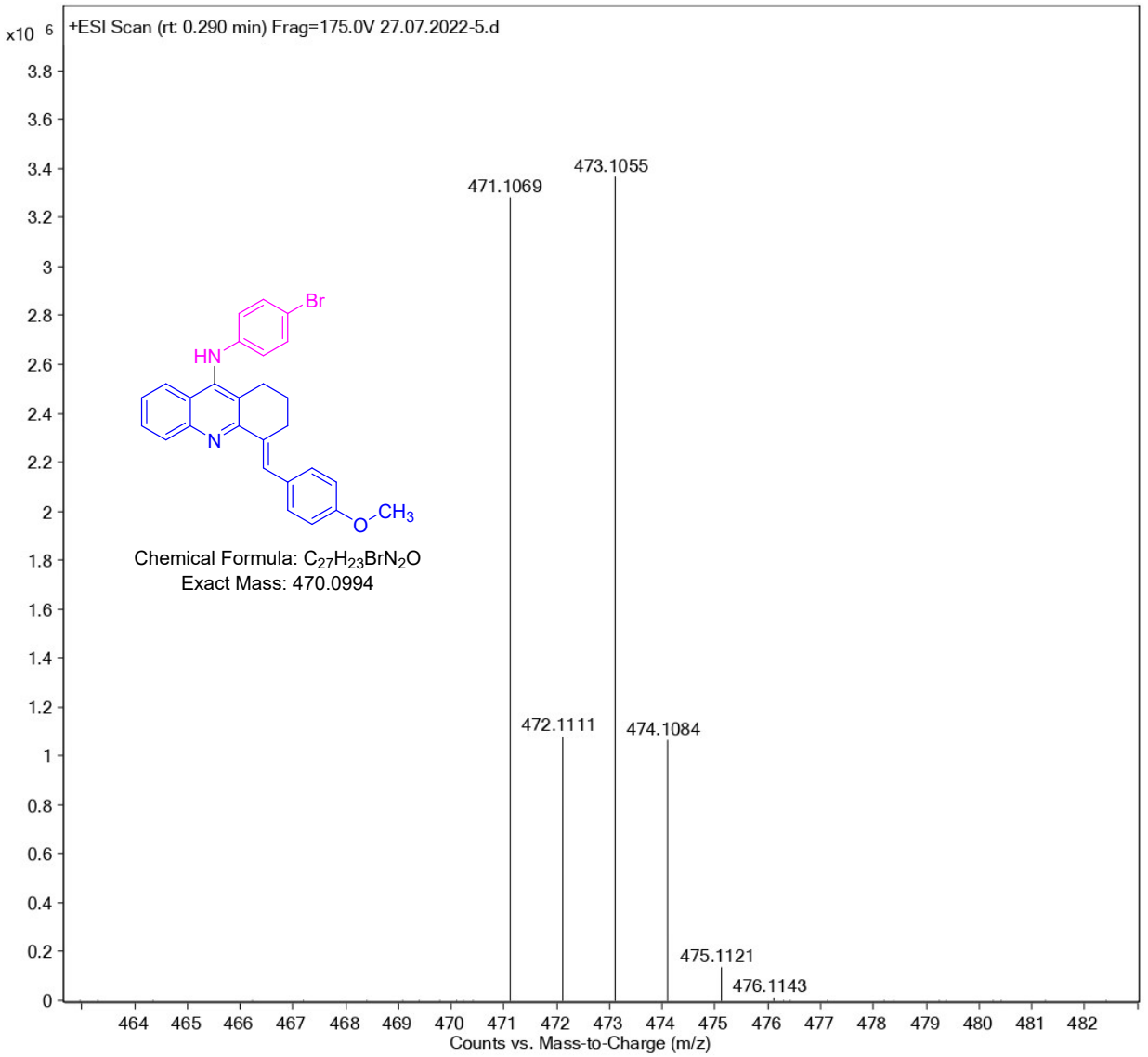

29-DK-TS-NO2-CL-A-P-CL-ANILINE-GROUP-SELE-C13-NMR-2.fid
TS
159.145
157.931
147.805
146.537
142.636
142.431
133.281
131.535
131.090
129.872
129.482
129.118
127.149
126.413
126.150
125.822
124.619
118.374
117.740
116.241
113.821
55.345
27.853
26.278
22.209
Cl
HN
O2N
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.245 min) Frag=175.0V 26.07.2022-10.d
x10 4
6.6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
472.1429
393.2098
443.3340
Cl
HN
O2N
N
O
CH3
Chemical Formula: C27H22ClN3O3
Exact Mass: 471.1350
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
Counts vs. Mass-to-Charge (m/z)

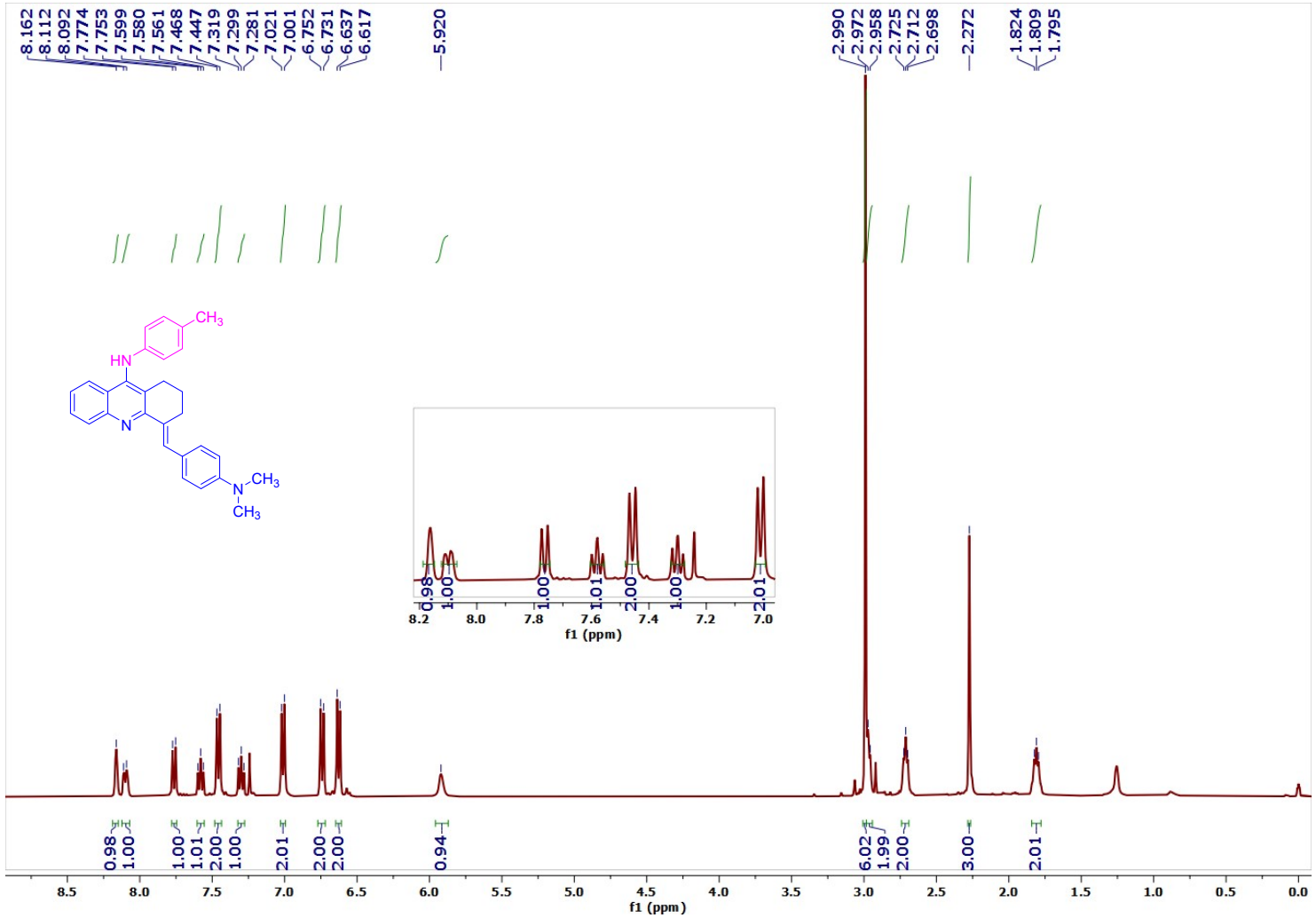
(E)-N-(4-Bromophenyl)-4-(4-methoxybenzylidene)-1,2,3,4-tetrahydroacridin-9-amine(8p):

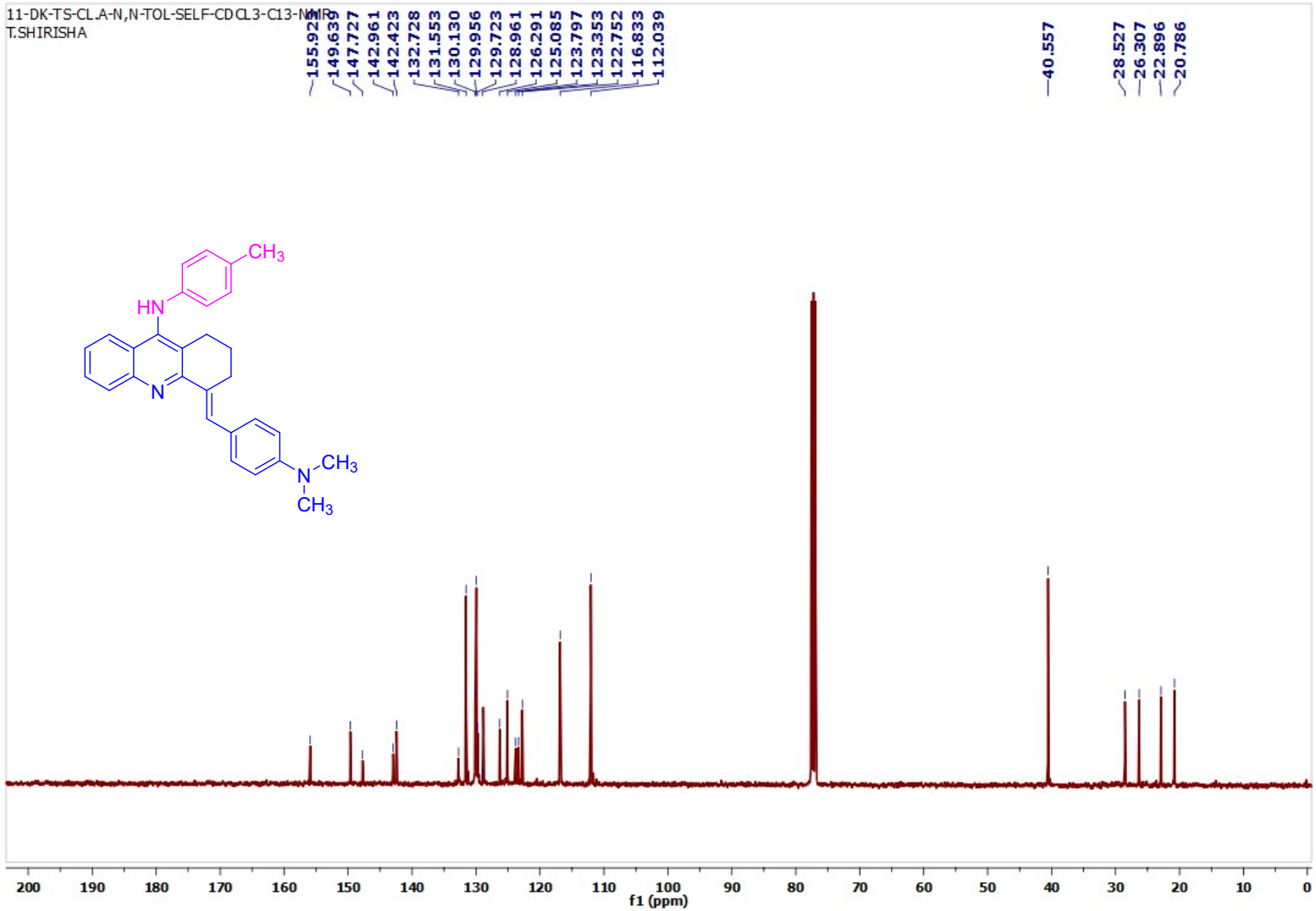


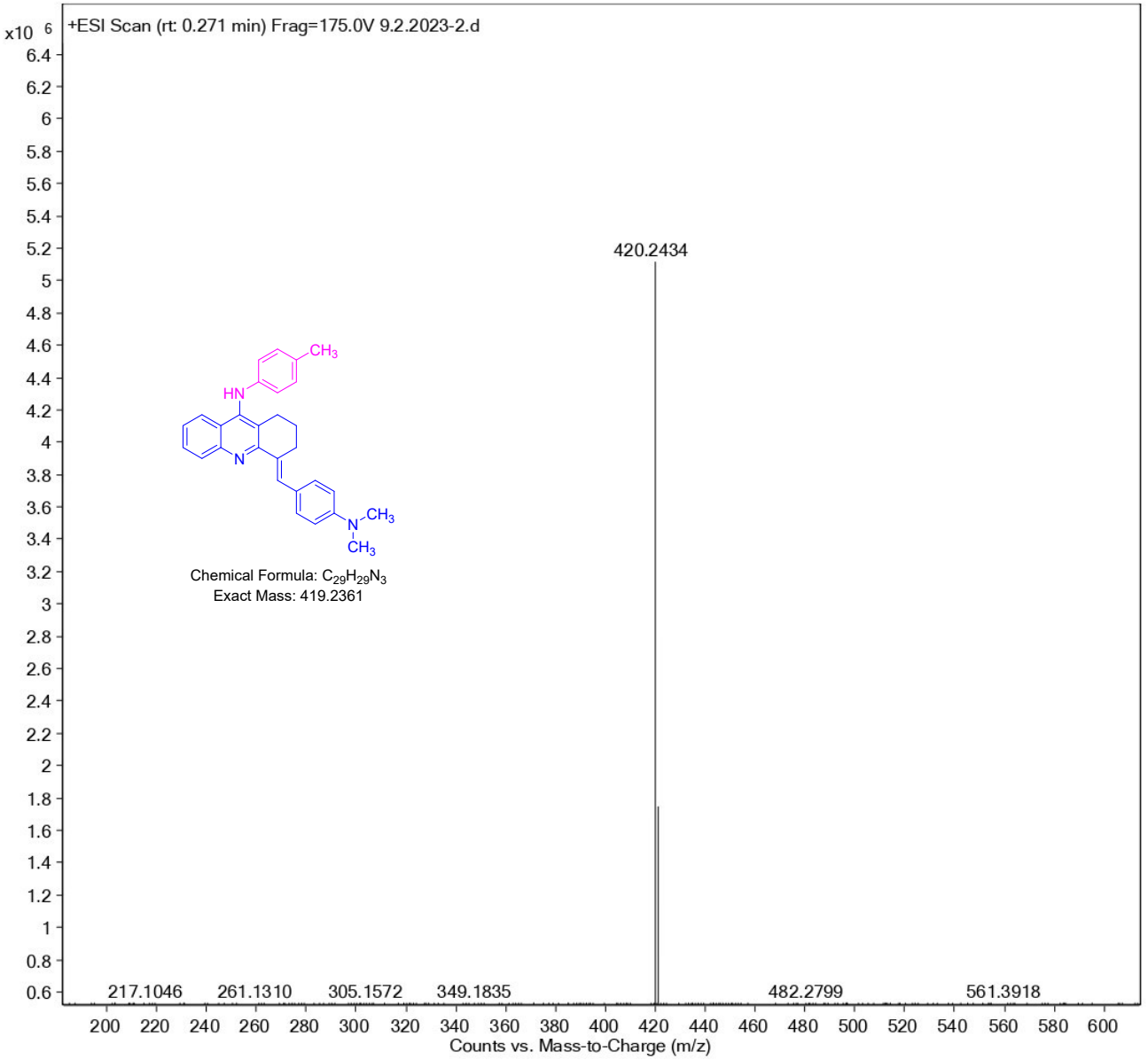

29-DK-TS-CL-A-OME-P-BR-CDCL3-SELF-C13-1HMR.fid
TS
158.736
155.461
147.706
145.436
143.875
141.841
134.422
132.155
132.023
131.342
130.419
129.916
129.282
128.950
125.589
124.878
123.616
122.439
117.477
116.719
113.675
112.176
110.211
55.312
28.115
26.096
22.632
Br
HN
N
O
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0


+ESI Scan (rt: 0.290 min) Frag=175.0V 27.07.2022-5.d
x10 6
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
471.1069
473.1055
472.1111
474.1084
475.1121
476.1143
Br
HN
N
O
CH3
Chemical Formula: C27H23BrN2O
Exact Mass: 470.0994
464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482
Counts vs. Mass-to-Charge (m/z)

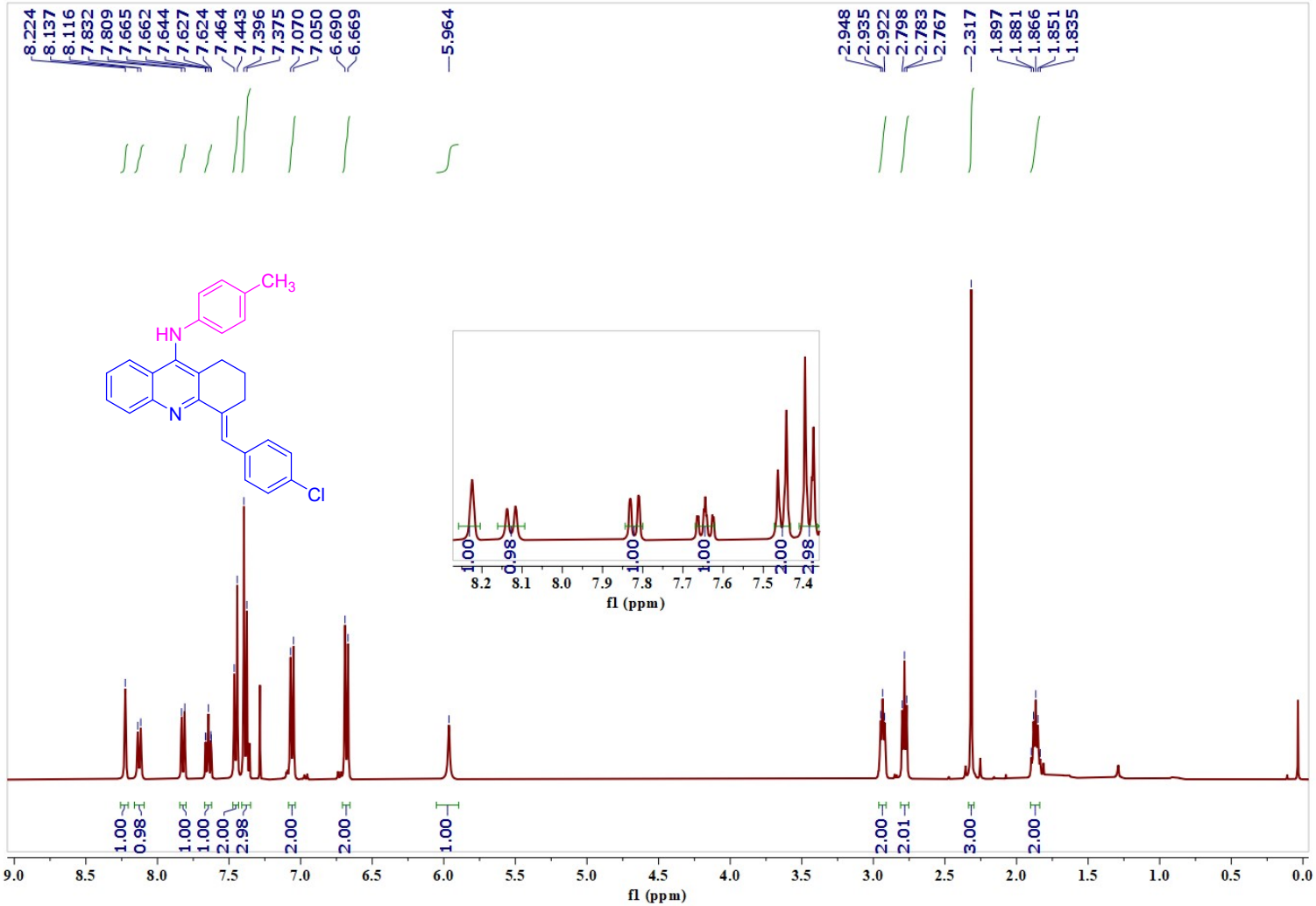
(E)-4-(4-(Dimethylamino)benzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8q):

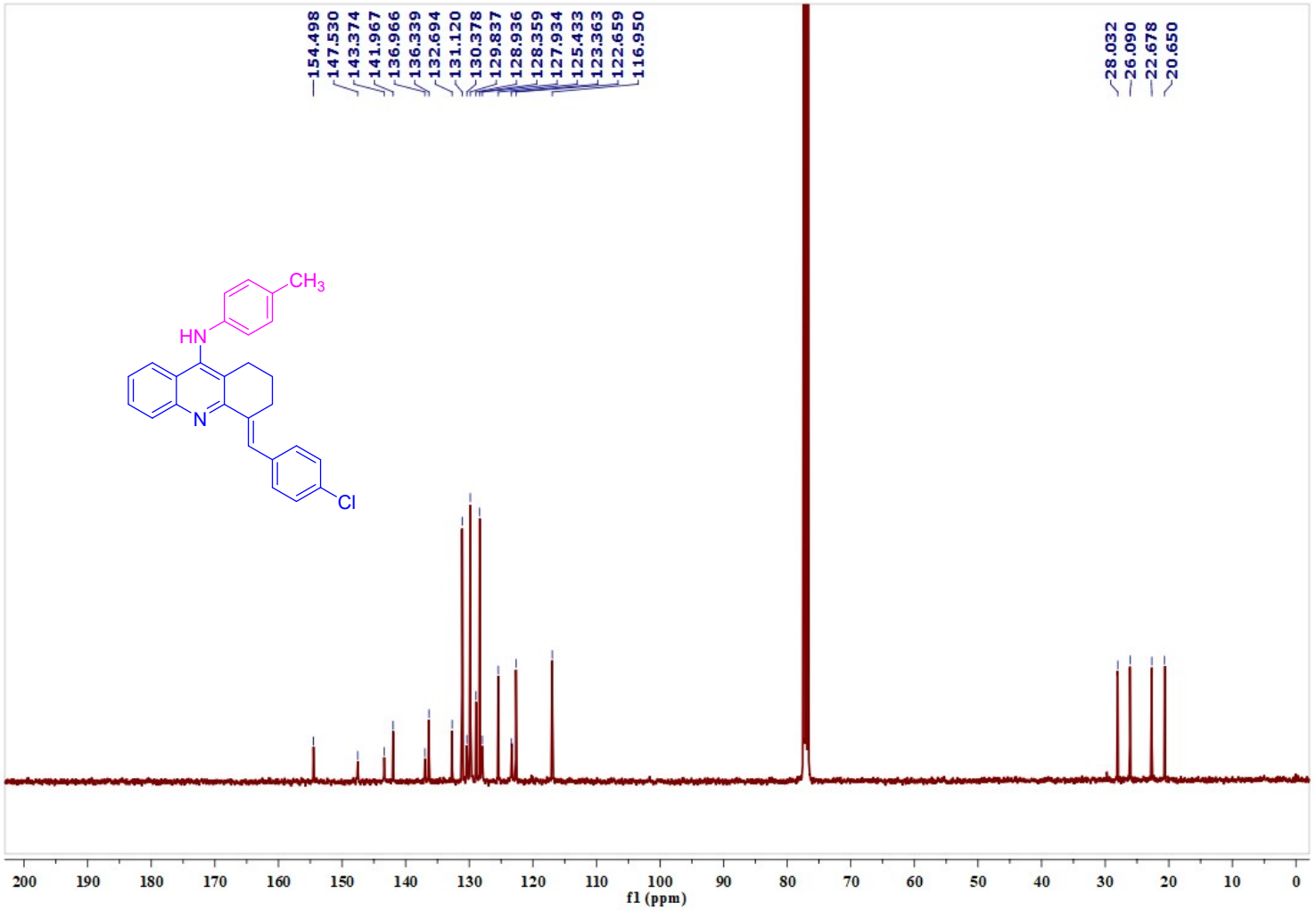


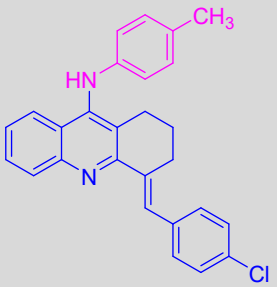

11-DK-TS-CL.A-N,N-TOL-SELF-CDCL3-C13-NMR
T.SHIRISHA
155.921
149.639
147.727
142.961
142.423
132.728
131.553
130.130
129.956
129.723
128.961
126.291
125.085
123.797
123.353
122.752
116.833
112.039
40.557
28.527
26.307
22.896
20.786
HN
CH3
N
N
CH3
CH3
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.271 min) Frag=175.0V 9.2.2023-2.d
x10 6
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
420.2434
CH3
HN
N
N
CH3
CH3
Chemical Formula: C29H29N3
Exact Mass: 419.2361
217.1046
261.1310
305.1572
349.1835
482.2799
561.3918
200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560 580 600
Counts vs. Mass-to-Charge (m/z)

(E)-4-(4-Chlorobenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8r)

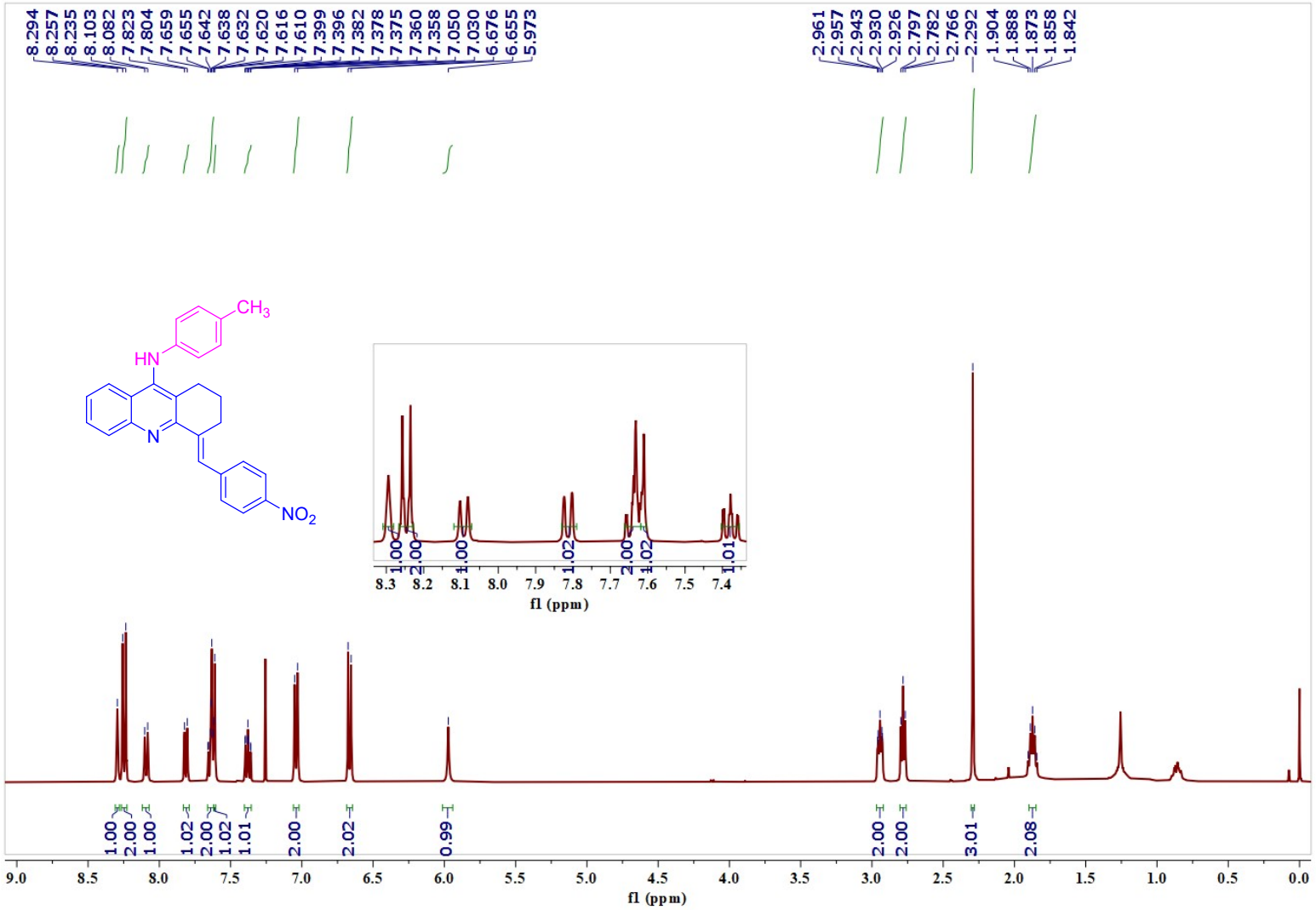


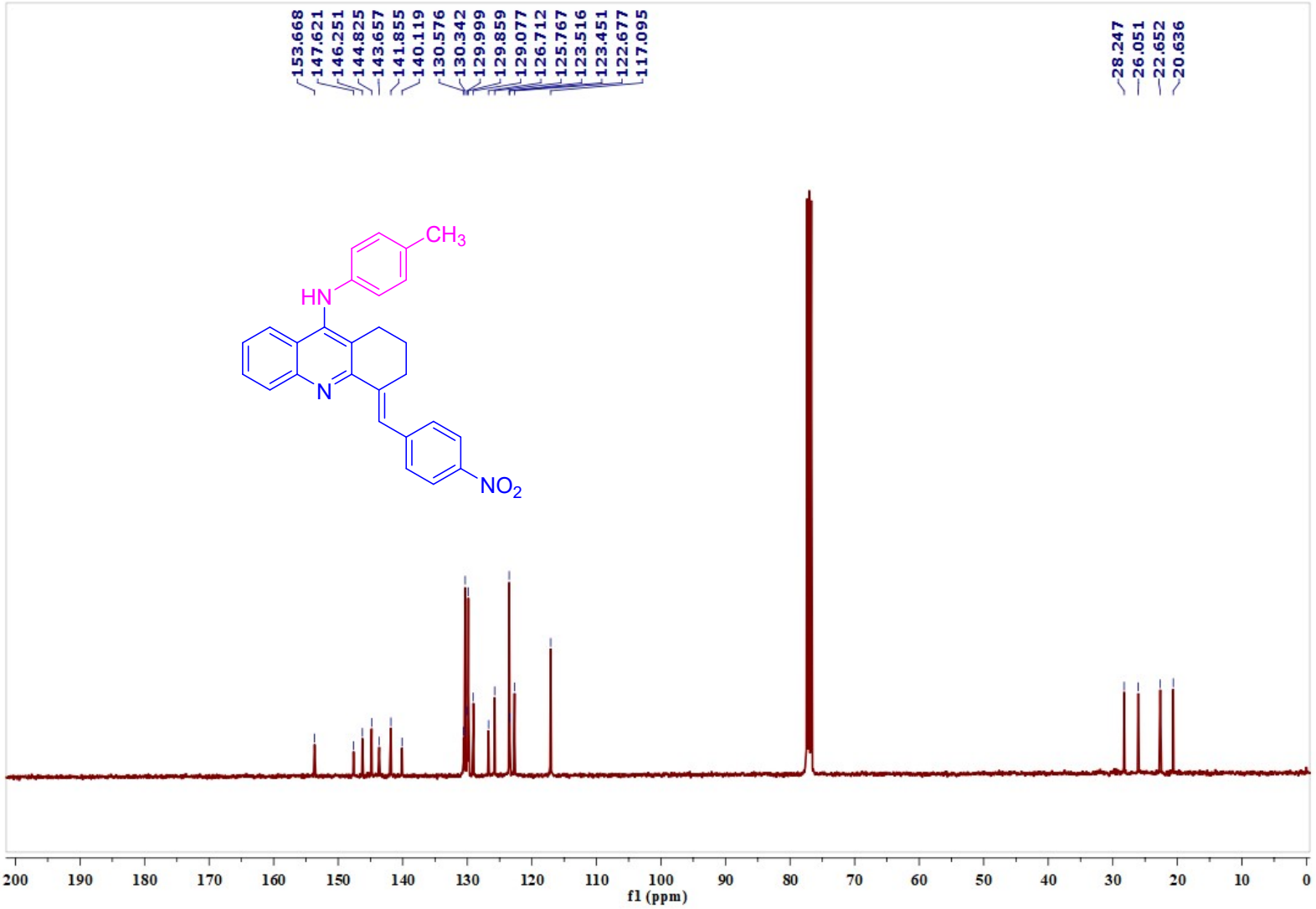

154.498
147.530
143.374
141.967
136.966
136.339
132.694
131.120
130.378
129.837
128.936
128.359
127.934
125.433
123.363
122.659
116.950
28.032
26.090
22.678
20.650
CH3
HN
N
Cl
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

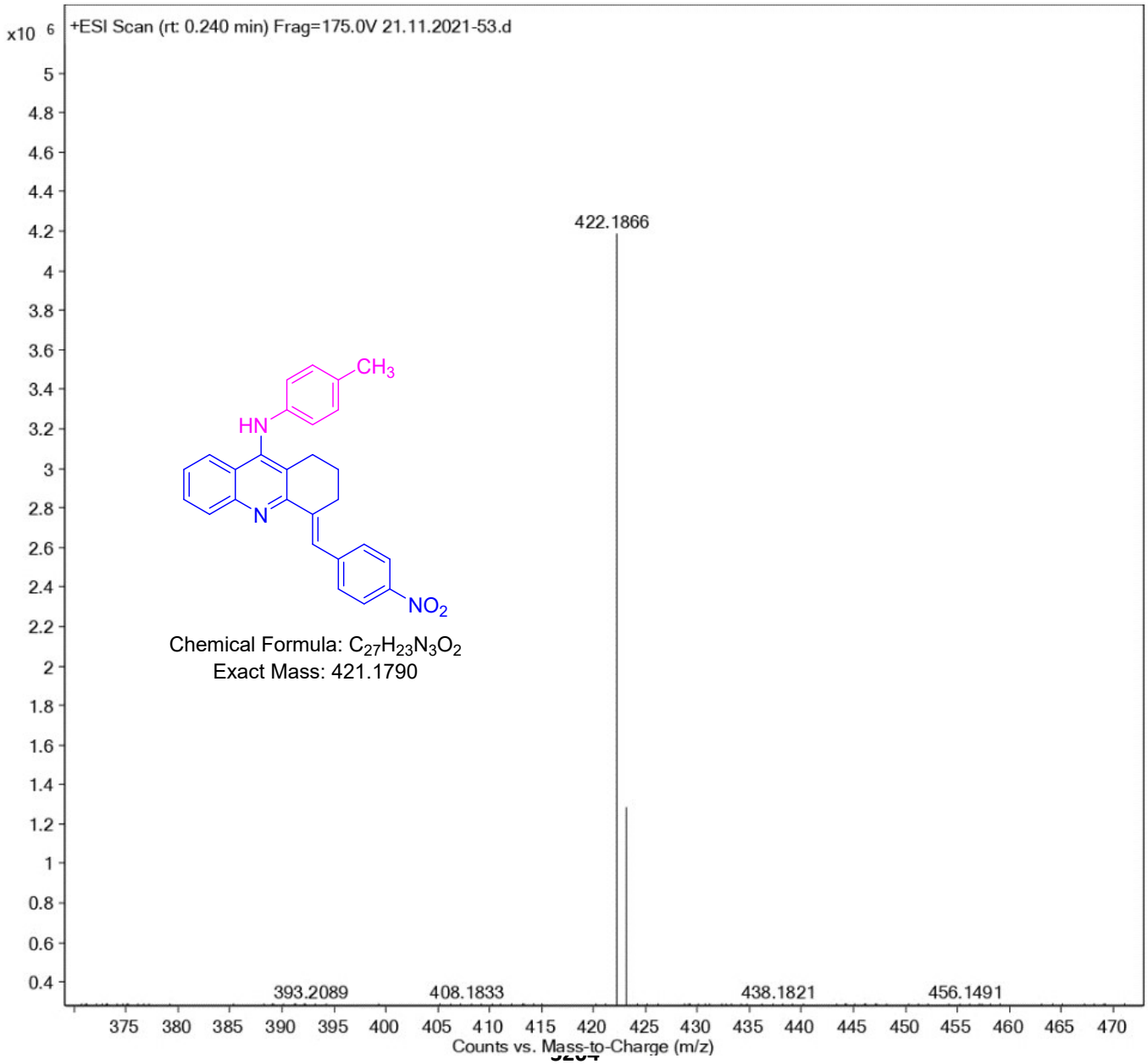


Chemical Formula: $C_{27}H_{23}ClN_2$
Exact Mass: 410.1550

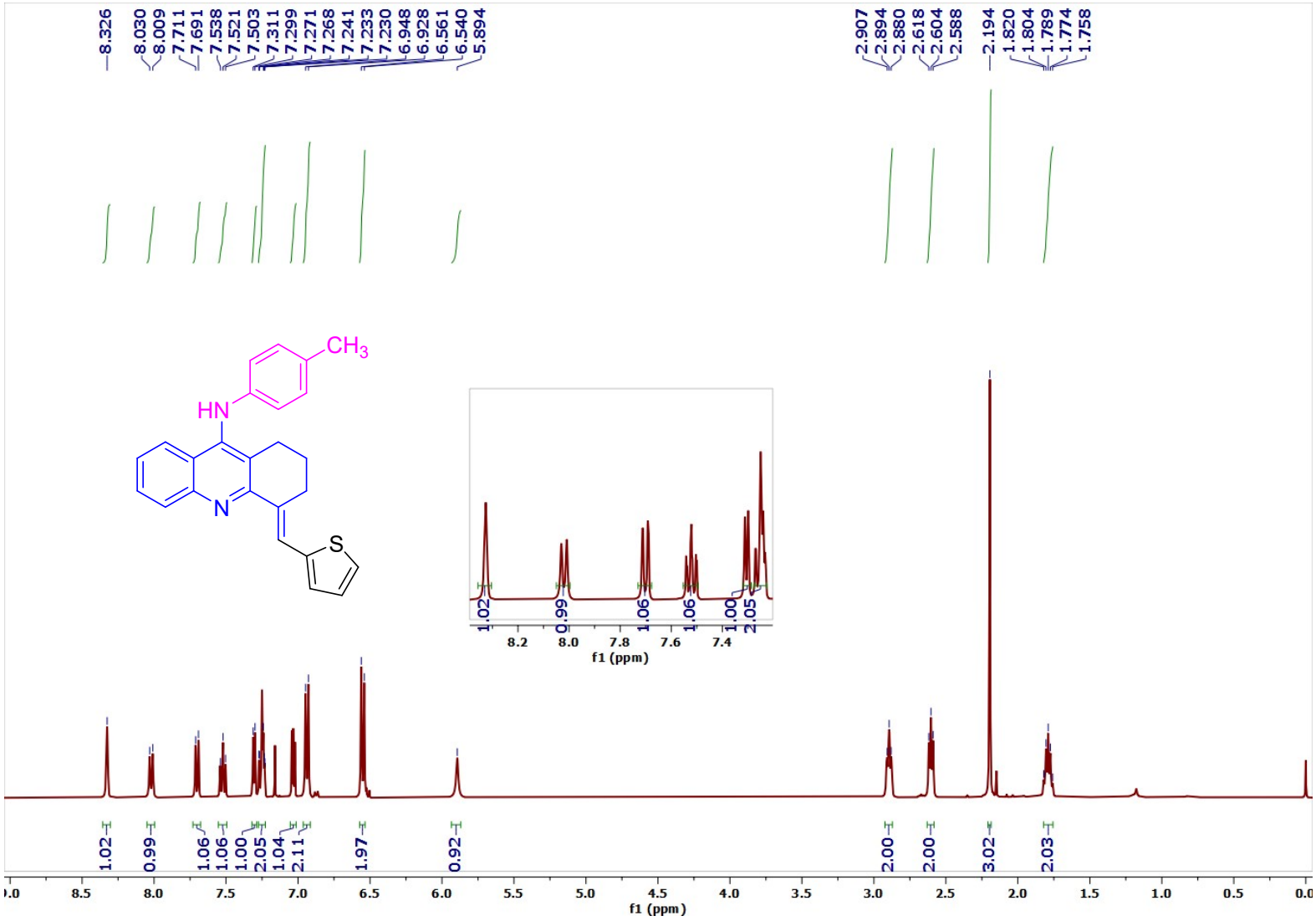
(E)-4-(4-Nitrobenzylidene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine(8s):

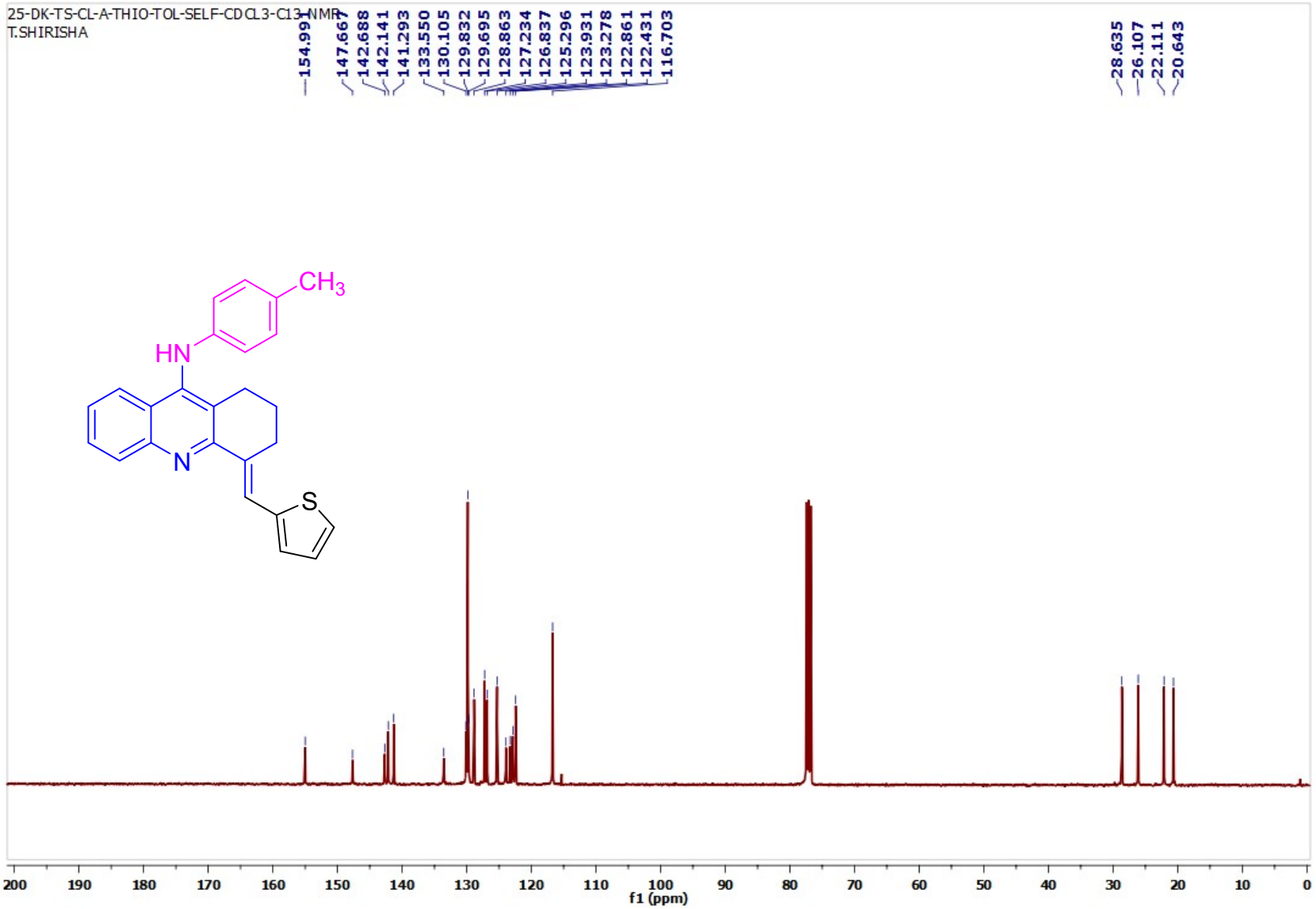


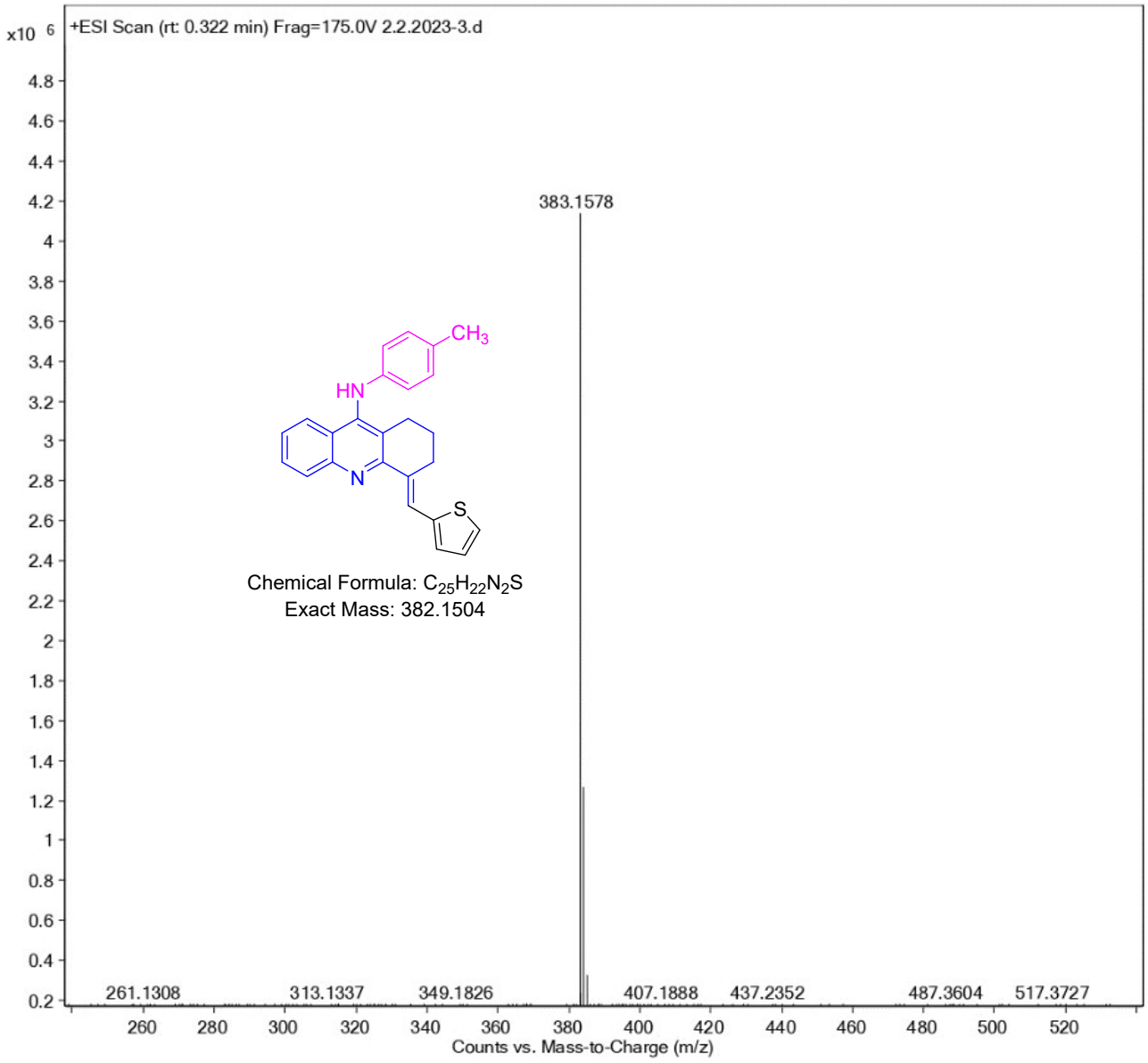

153.668
147.621
146.251
144.825
143.657
141.855
140.119
130.576
130.342
129.999
129.859
129.077
126.712
125.767
123.516
123.451
122.677
117.095
28.247
26.051
22.652
20.636
CH3
HN
N
NO2
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.240 min) Frag=175.0V 21.11.2021-53.d
x10 6
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
422.1866
393.2089
408.1833
438.1821
456.1491
375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470
Counts vs. Mass-to-Charge (m/z)
CH3
HN
N
NO2
Chemical Formula: C27H23N3O2
Exact Mass: 421.1790

(E)-4-(Thiophen-2-ylmethylene)-N-(p-tolyl)-1,2,3,4-tetrahydroacridin-9-amine (8t):




25-DK-TS-CL-A-THIO-TOL-SELF-CDCL3-C13-NMR
T.SHIRISHA
154.991
147.667
142.688
142.141
141.293
133.550
130.105
129.832
129.695
128.863
127.234
126.837
125.296
123.931
123.278
122.861
122.431
116.703
28.635
26.107
22.111
20.643
CH3
HN
N
S
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)


+ESI Scan (rt: 0.322 min) Frag=175.0V 2.2.2023-3.d
x10 6
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
383.1578
CH3
HN
N
S
Chemical Formula: C25H22N2S
Exact Mass: 382.1504
261.1308
313.1337
349.1826
407.1888
437.2352
487.3604
517.3727
260
280
300
320
340
360
380
400
420
440
460
480
500
520
Counts vs. Mass-to-Charge (m/z)