

Supplementary Information

5-Phenoxy primaquine analogs and the tetraoxane hybrid as anti-malarial agents

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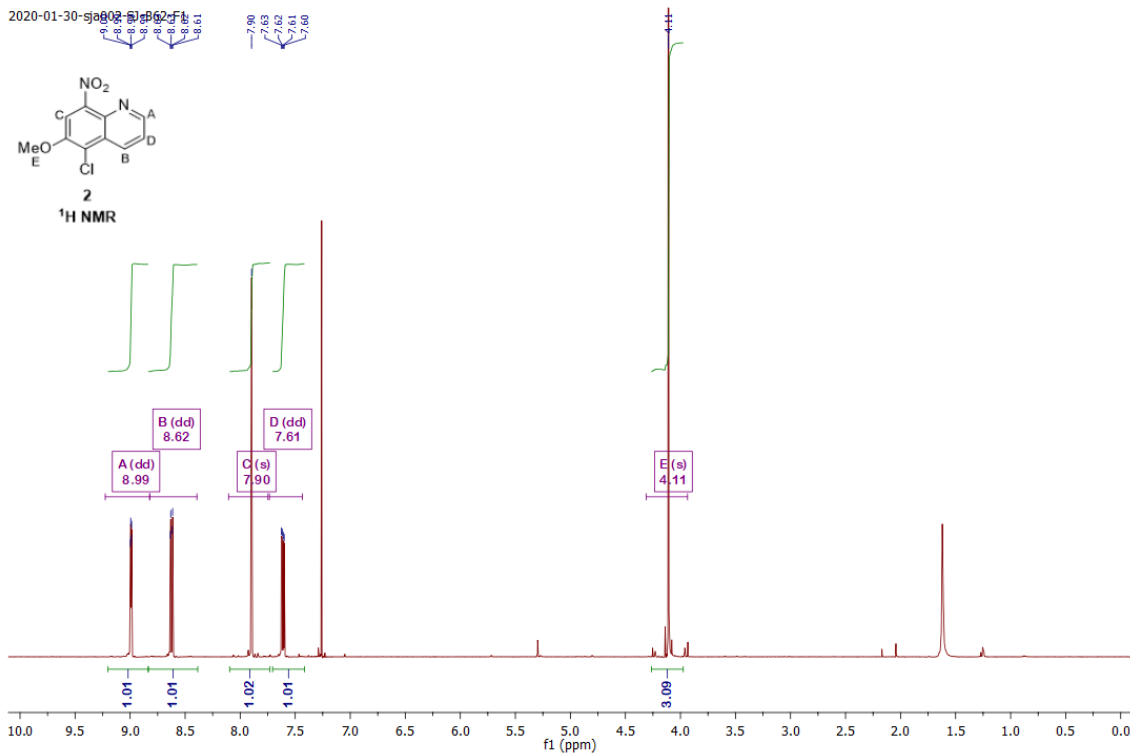
†These authors contributed equally to this work.

NMR and HRMS spectra

5-Chloro-6-methoxy-8-nitroquinoline (2)

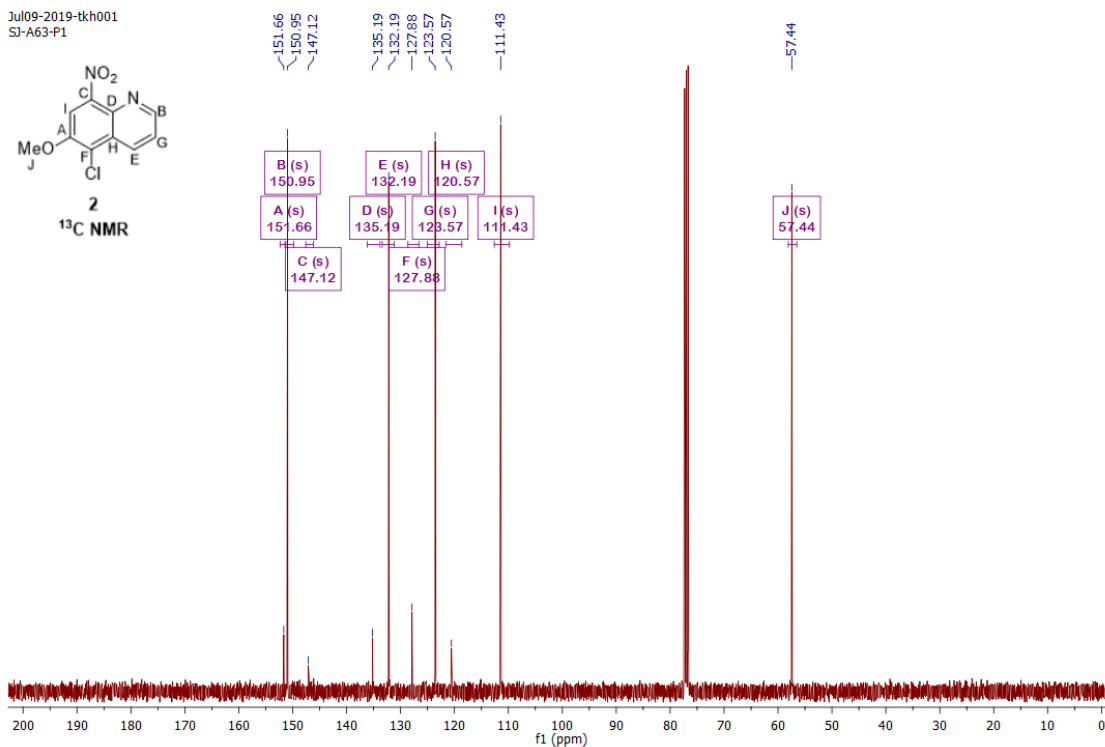
¹H NMR (500 MHz, δ) 8.99 (dd, J =4.1, 1.4 Hz), 8.62 (dd, J =8.7, 1.6 Hz), 7.90 (s), 7.61 (dd, J =8.7, 4.1 Hz), 4.11 (s).

2020-01-30-sj-a02-01-p62-f1



¹³C NMR (101 MHz, CDCl₃) δ 151.66 (s), 150.95 (s), 147.12 (s), 135.19 (s), 132.19 (s), 127.88 (s), 123.57 (s), 120.57 (s), 111.43 (s), 57.44 (s).

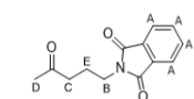
Jul09-2019-tkh001
SJ-A63-P1



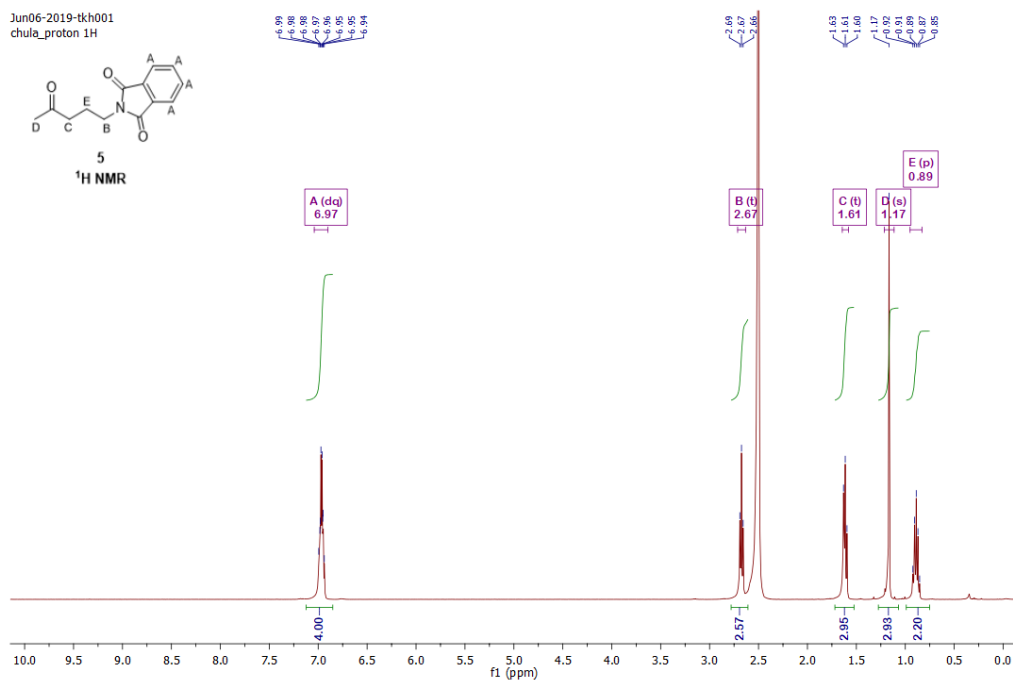
2-(4-Oxopentyl)isoindoline-1,3-dione (5)

¹H NMR (400 MHz, DMSO) δ 6.97 (dq, *J* = 6.2, 4.8 Hz, 1H), 2.67 (t, *J* = 6.8 Hz, 1H), 1.61 (t, *J* = 7.1 Hz, 1H), 1.17 (s, 1H), 0.89 (p, *J* = 6.9 Hz, 1H).

Jun06-2019-tkh001
chula_proton 1H

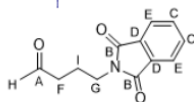


¹H NMR

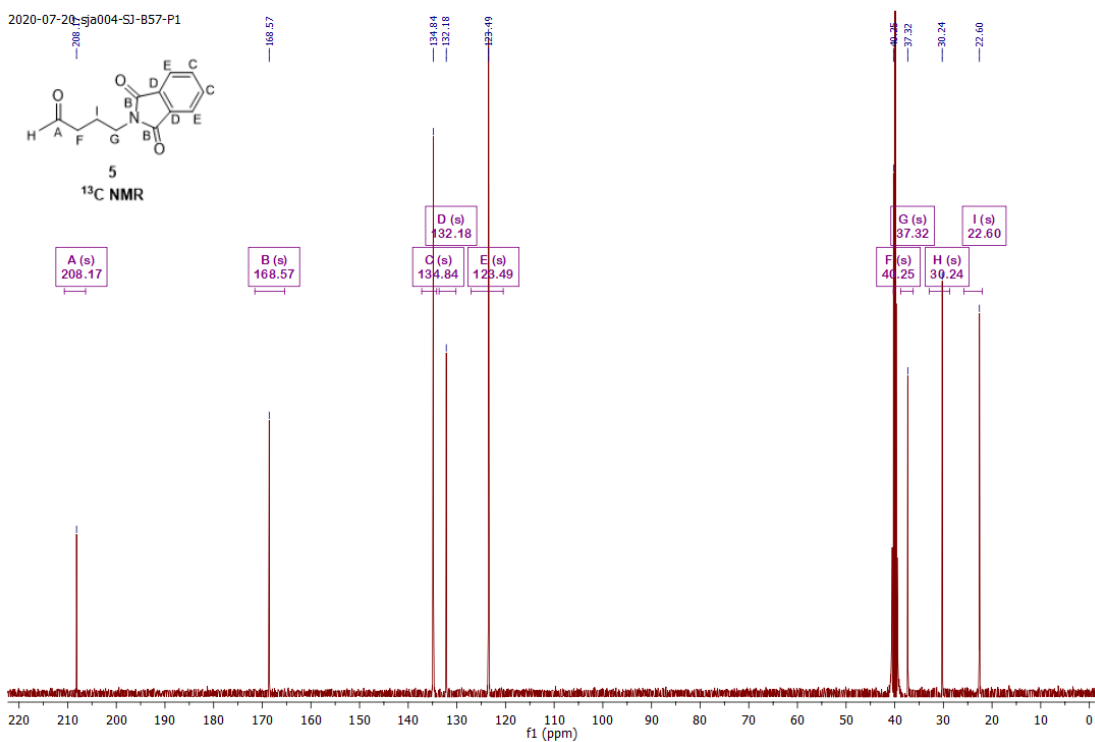


NMR (126 MHz,) δ 208.17 (s), 168.57 (s), 134.84 (s), 132.18 (s), 123.49 (s), 40.25 (s), 37.32 (s), 30.24 (s), 22.60 (s).

2020-07-20-sja004-SJ-B57-P1

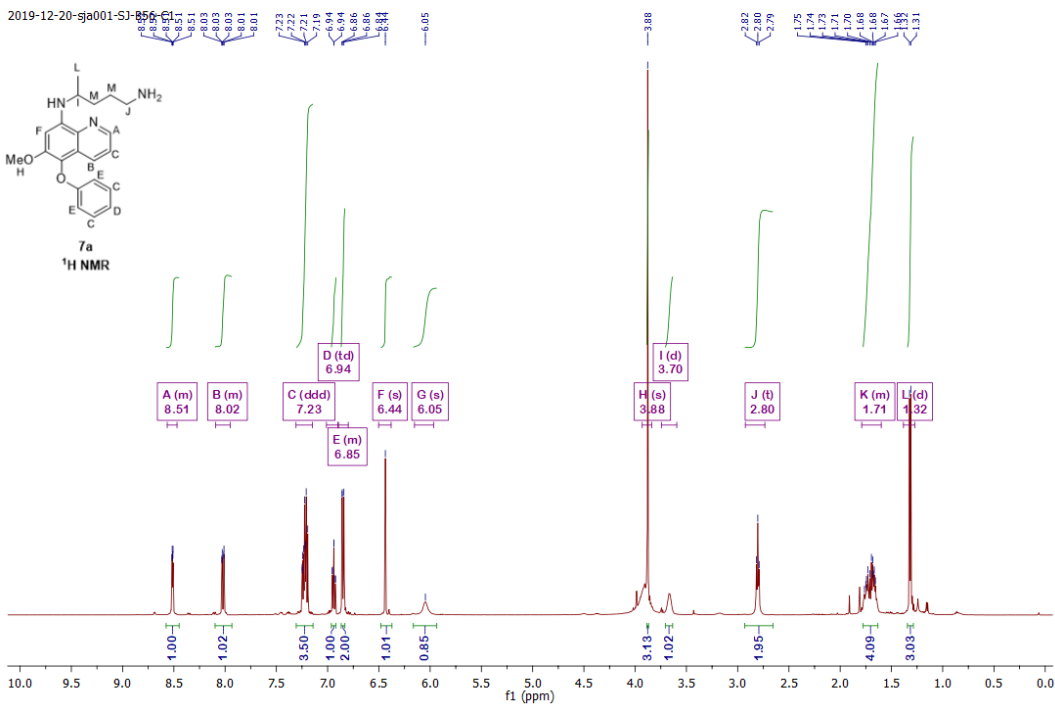


¹³C NMR

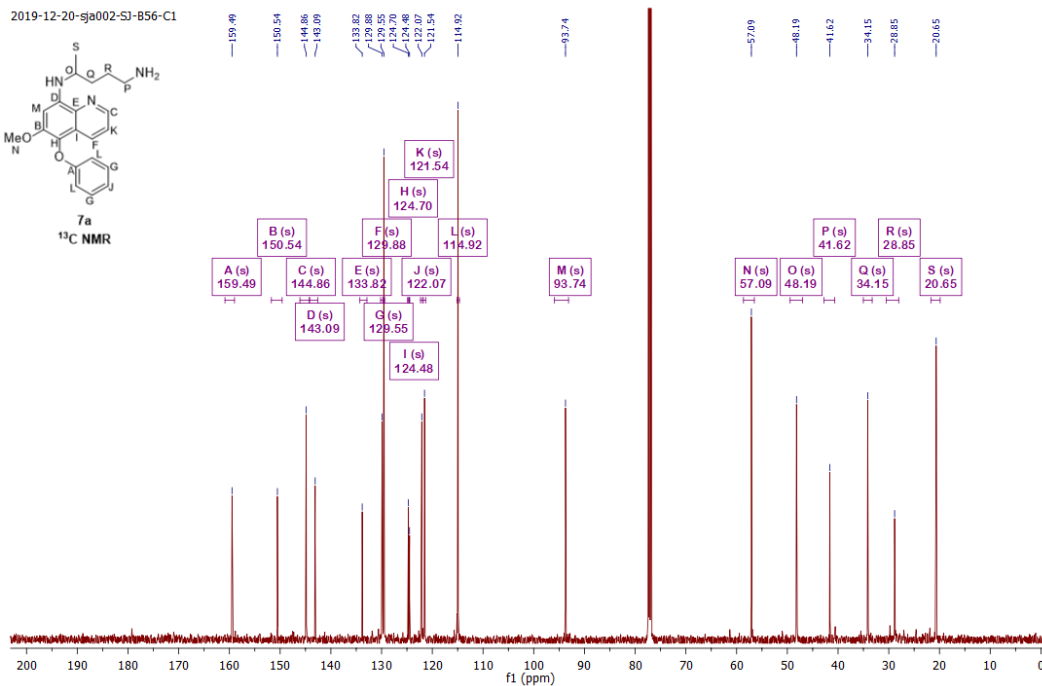


***N*⁴-(6-Methoxy-5-phenoxyquinolin-8-yl)pentane-1,4-diamine (7a)**

¹H NMR (500 MHz,) δ 8.56 – 8.47 (m), 8.09 – 7.95 (m), 7.23 (ddd, *J* = 15.7, 7.2, 3.9 Hz), 6.94 (td, *J* = 7.4, 0.7 Hz), 6.89 – 6.80 (m), 6.44 (s), 6.05 (s), 3.88 (s), 2.80 (t, *J* = 6.7 Hz), 1.79 – 1.60 (m), 1.32 (d, *J* = 6.3 Hz).



¹³C NMR (126 MHz,) δ 159.49 (s), 150.54 (s), 144.86 (s), 143.09 (s), 133.82 (s), 129.88 (s), 129.55 (s), 124.70 (s), 124.48 (s), 122.07 (s), 121.54 (s), 114.92 (s), 93.74 (s), 57.09 (s), 48.19 (s), 41.62 (s), 34.15 (s), 28.85 (s), 20.65 (s).



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High resolution report

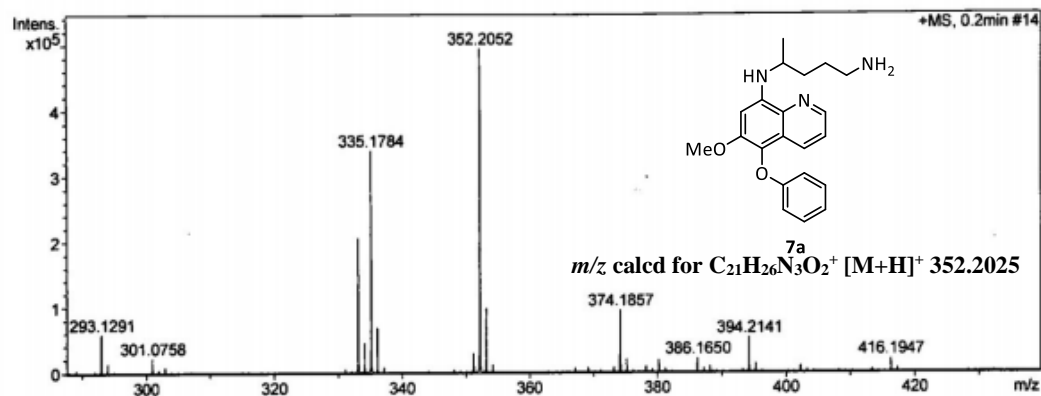
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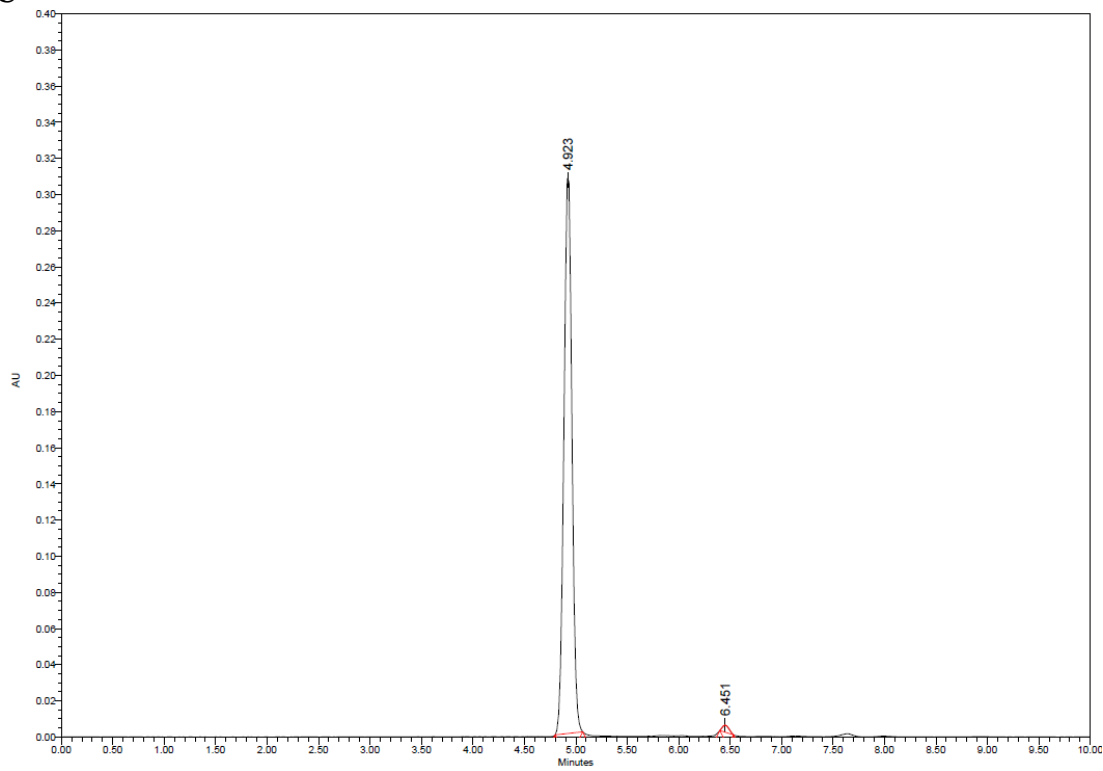
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 Calibrate by Sodium Formate

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Scan End	2000 m/z	Set End Plate Offset	-500 V	Set Divert Valve	Source

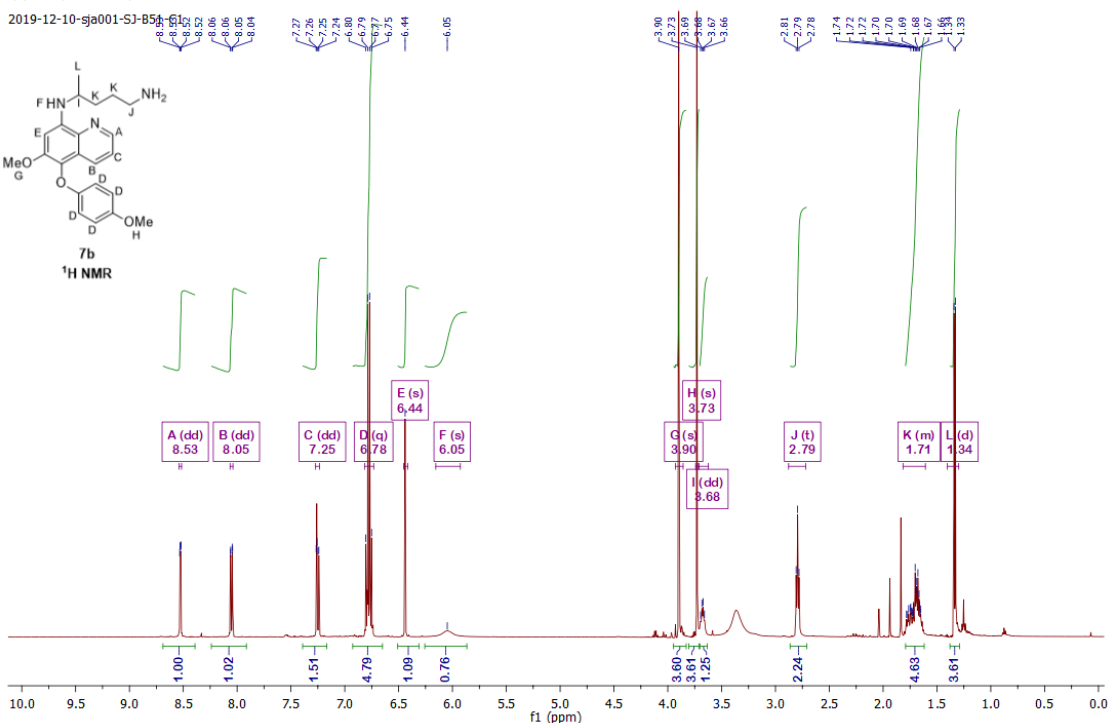


HPLC

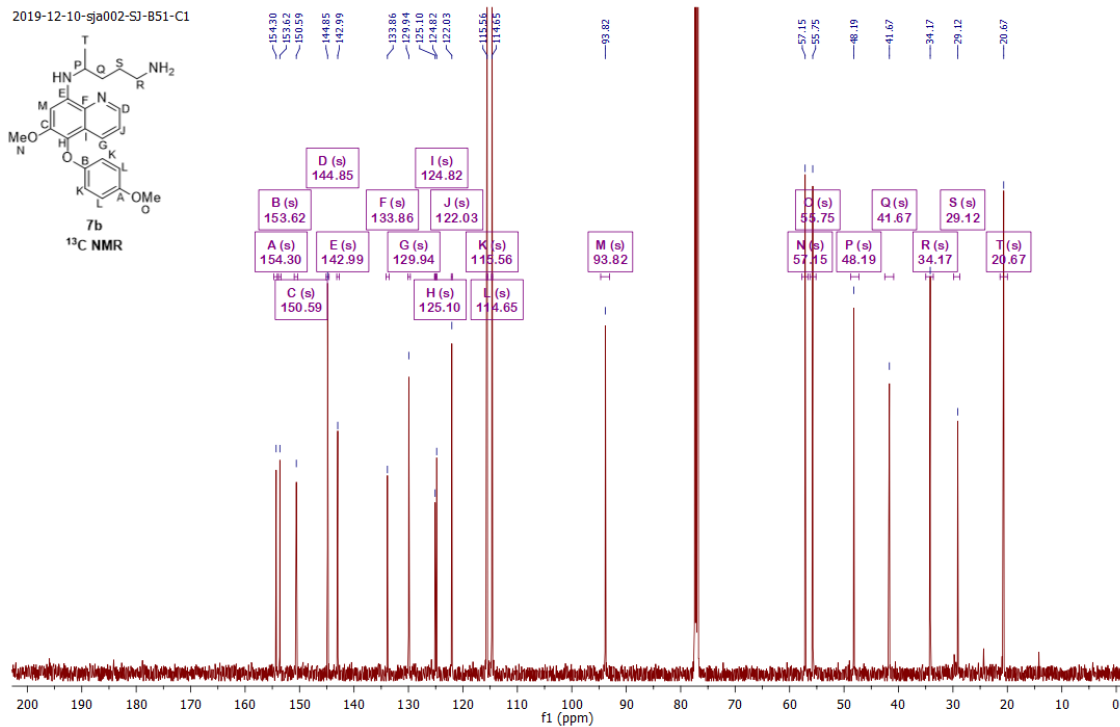


N^4 -(6-Methoxy-5-(4-methoxyphenoxy)quinolin-8-yl)pentane-1,4-diamine (7b)

^1H NMR (500 MHz) δ 8.53 (dd, $J = 4.1, 1.6$ Hz), 8.05 (dd, $J = 8.4, 1.5$ Hz), 7.25 (dd, $J = 8.5, 4.1$ Hz), 6.78 (q, $J = 9.3$ Hz), 6.44 (s), 6.05 (s), 3.90 (s), 3.73 (s), 3.68 (dd, $J = 11.9, 5.9$ Hz), 2.79 (t, $J = 6.8$ Hz), 1.82 – 1.61 (m), 1.34 (d, $J = 6.3$ Hz).



^{13}C NMR (126 MHz) δ 154.30 (s), 153.62 (s), 150.59 (s), 144.85 (s), 142.99 (s), 133.86 (s), 129.94 (s), 125.10 (s), 124.82 (s), 122.03 (s), 115.56 (s), 114.65 (s), 93.82 (s), 57.15 (s), 55.75 (s), 48.19 (s), 41.67 (s), 34.17 (s), 29.12 (s), 20.67 (s).



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High resolution report

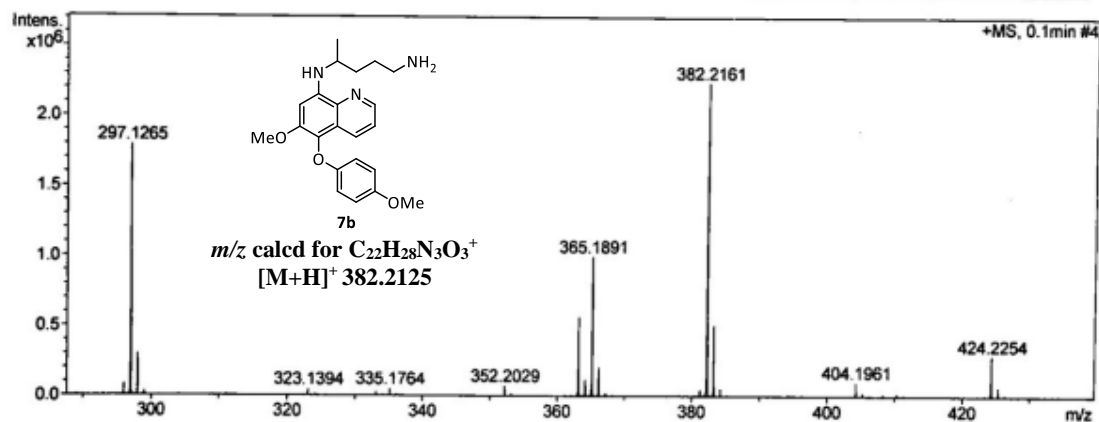
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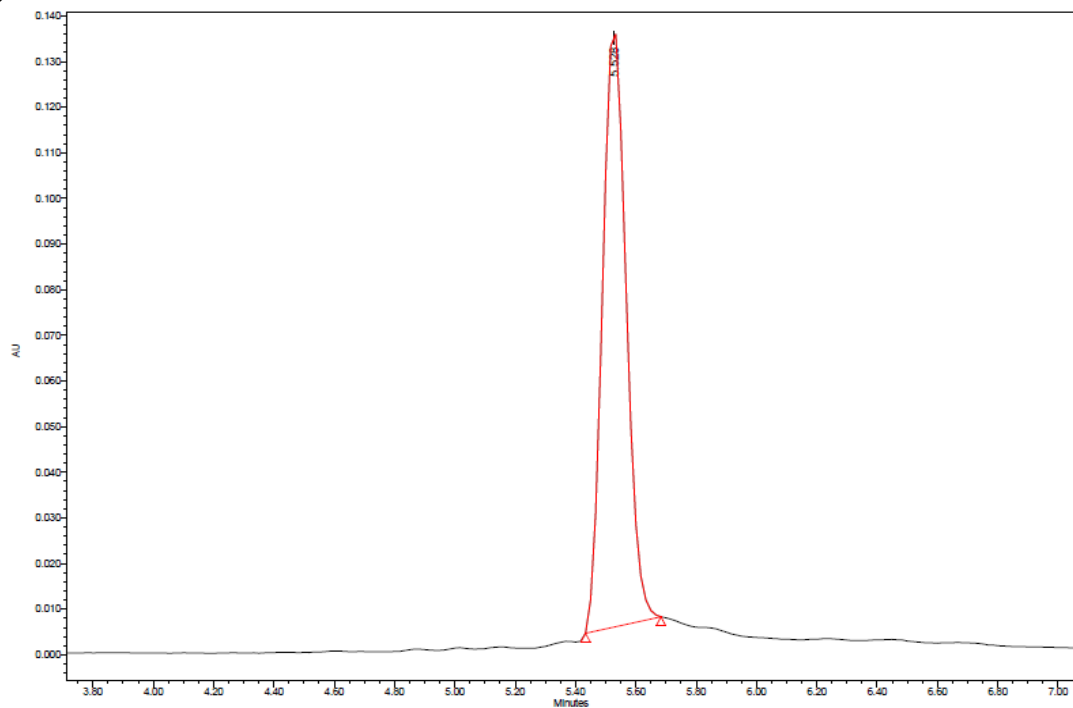
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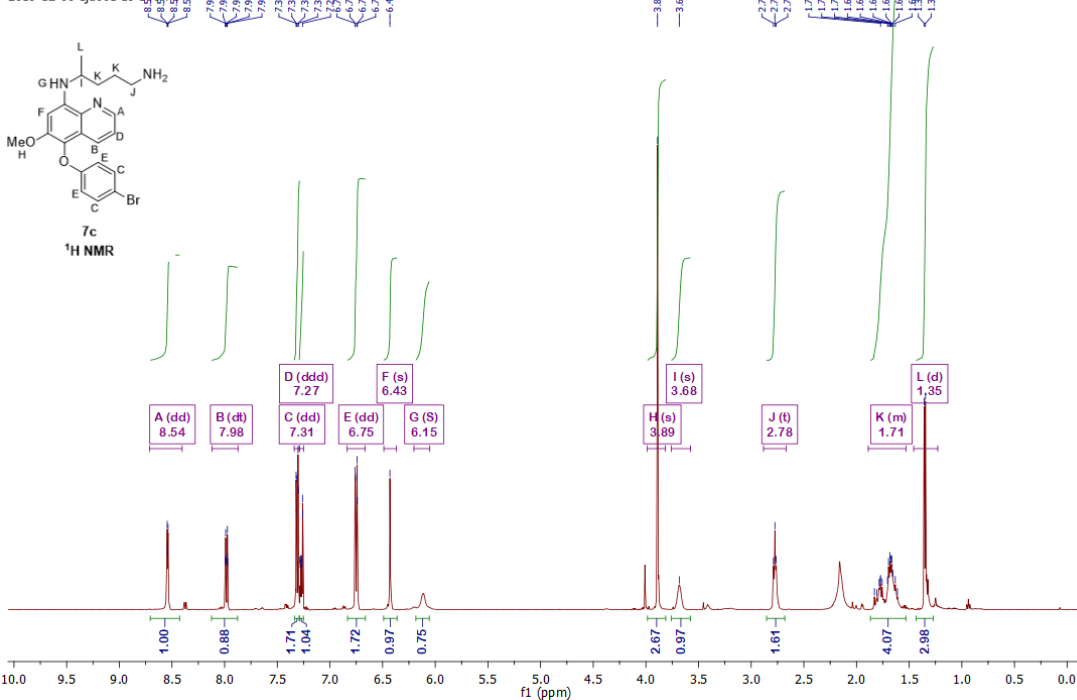
HPLC



N^4 -(5-(4-Bromophenoxy)-6-methoxyquinolin-8-yl)pentane-1,4-diamine (7c)

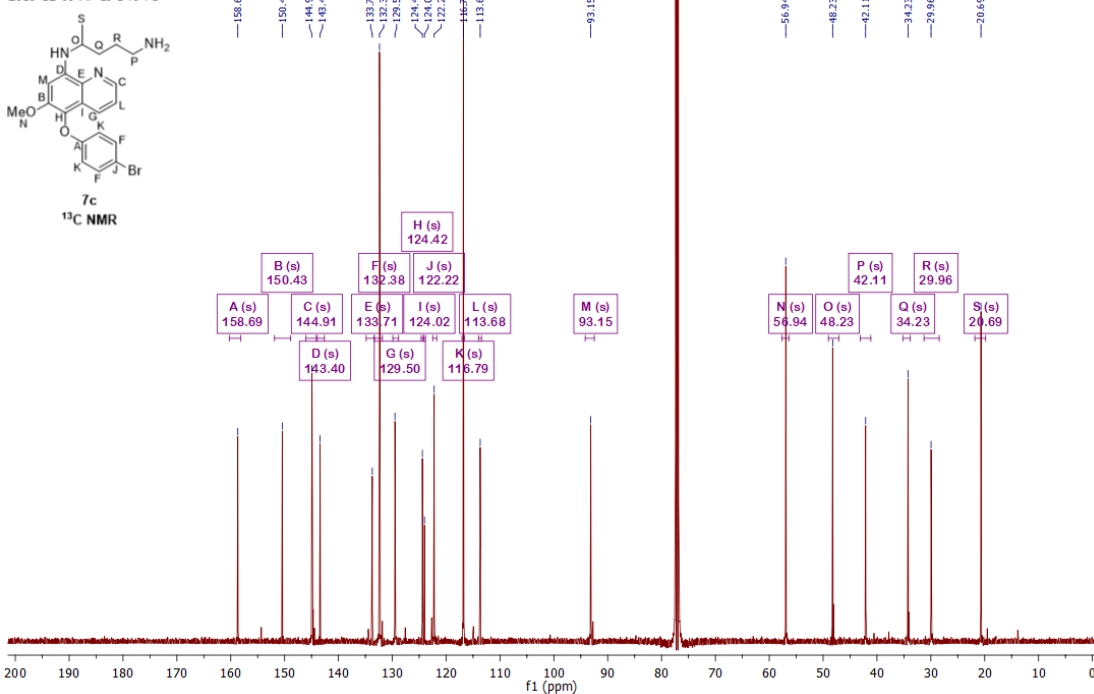
NMR (500 MHz, δ) 8.54 (dd, J = 2.7, 1.5 Hz), 7.98 (dt, J = 8.5, 1.5 Hz), 7.31 (dd, J = 9.1, 1.4 Hz), 7.27 (ddd, J = 8.5, 4.2, 1.4 Hz), 6.75 (dd, J = 9.1, 1.4 Hz), 6.43 (s), 3.89 (s), 3.68 (s), 2.78 (t, J = 6.4 Hz), 1.89 – 1.53 (m), 1.35 (d, J = 6.3 Hz).

2019-12-06-SJ-B46-P1



NMR (126 MHz, δ) 158.69 (s), 150.43 (s), 144.91 (s), 143.40 (s), 133.71 (s), 132.38 (s), 129.50 (s), 124.42 (s), 124.02 (s), 122.22 (s), 116.79 (s), 113.68 (s), 93.15 (s), 56.94 (s), 48.23 (s), 42.11 (s), 34.23 (s), 29.96 (s), 20.69 (s).

2019-12-09-AP-SJ-B46-P1



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High resolution report

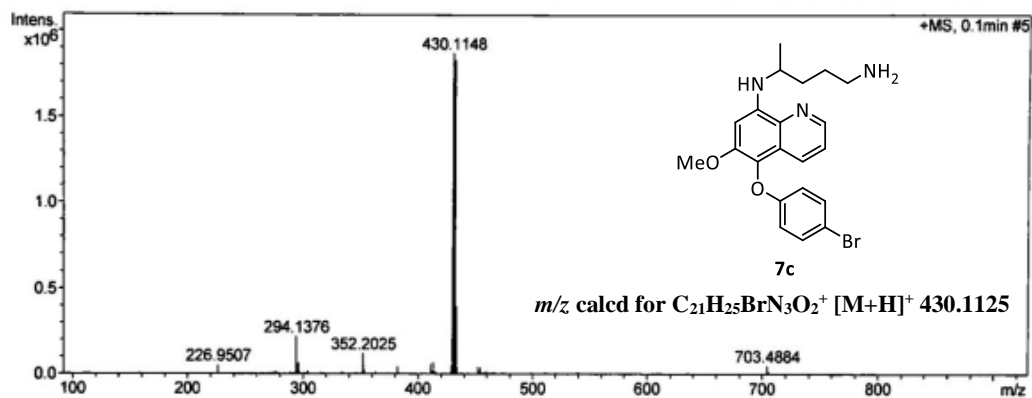
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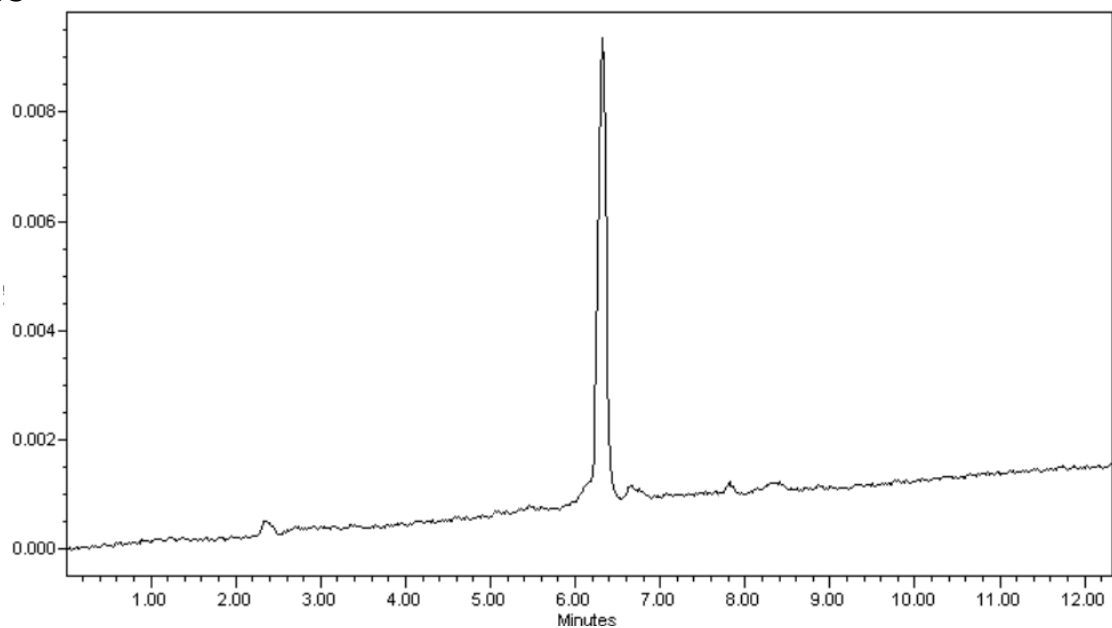
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 Instrument micrOTOF Bruker
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Acquisition Parameter

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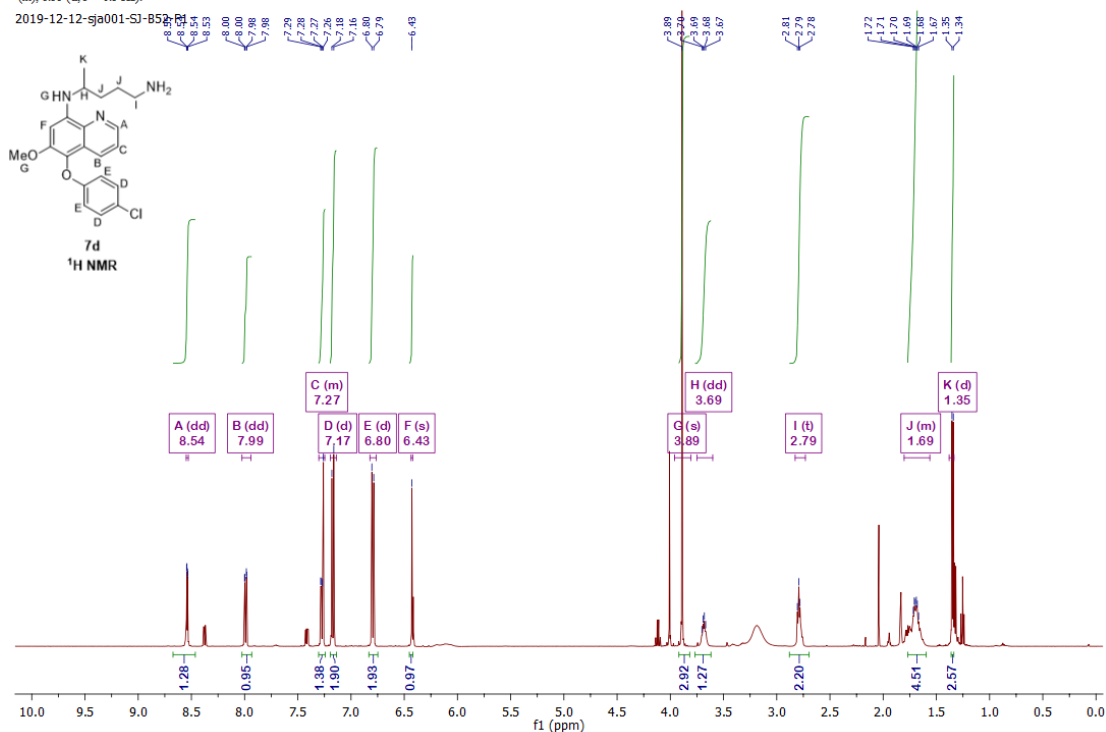
HPLC



N^4 -(6-Methoxy-5-(4-chlorophenoxy)quinolin-8-yl)pentane-1,4-diamine (7d)

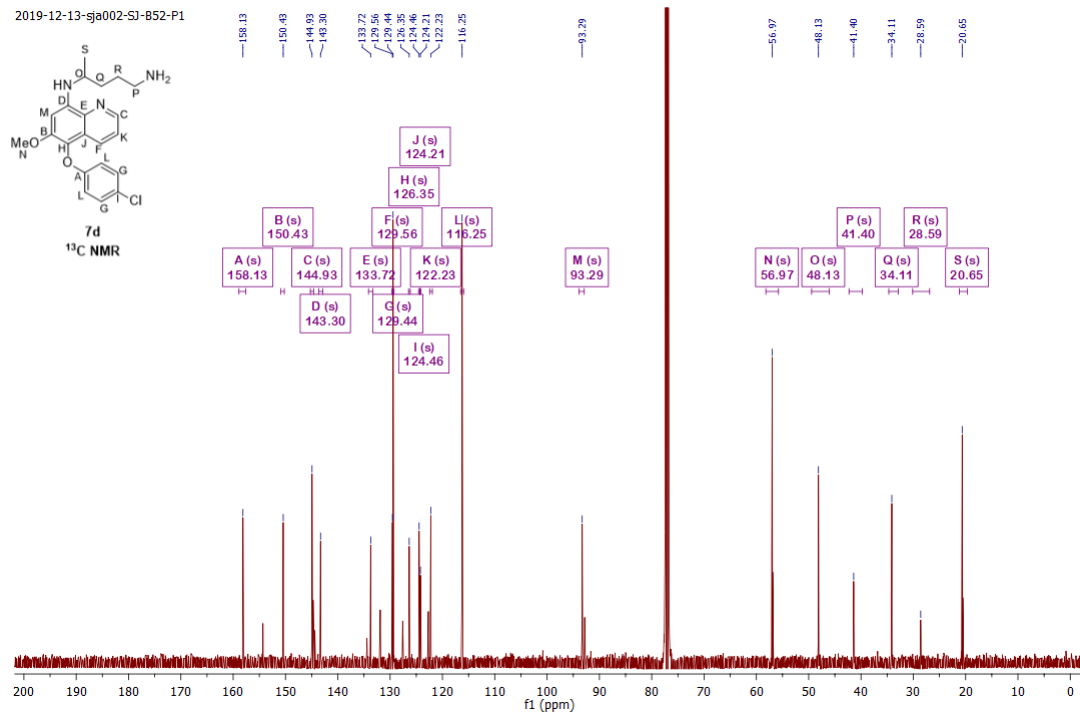
NMR (500 MHz,) δ 8.54 (dd, $J=4.2, 1.6$ Hz), 7.99 (dd, $J=8.5, 1.6$ Hz), 7.30–7.25 (m), 7.17 (d, $J=9.0$ Hz), 6.80 (d, $J=9.0$ Hz), 6.43 (s), 3.89 (s), 3.69 (dd, $J=11.8, 5.8$ Hz), 2.79 (t, $J=6.1$ Hz), 1.80–1.56 (m), 1.35 (d, $J=6.3$ Hz).

2019-12-12-sja001-SJ-B52-P1



NMR (126 MHz,) δ 158.13 (s), 150.43 (s), 144.93 (s), 143.30 (s), 133.72 (s), 129.56 (s), 129.44 (s), 126.35 (s), 124.46 (s), 124.21 (s), 122.23 (s), 116.25 (s), 93.29 (s), 56.97 (s), 48.13 (s), 41.40 (s), 34.11 (s), 28.59 (s), 20.65 (s).

2019-12-13-sja002-SJ-B52-P1



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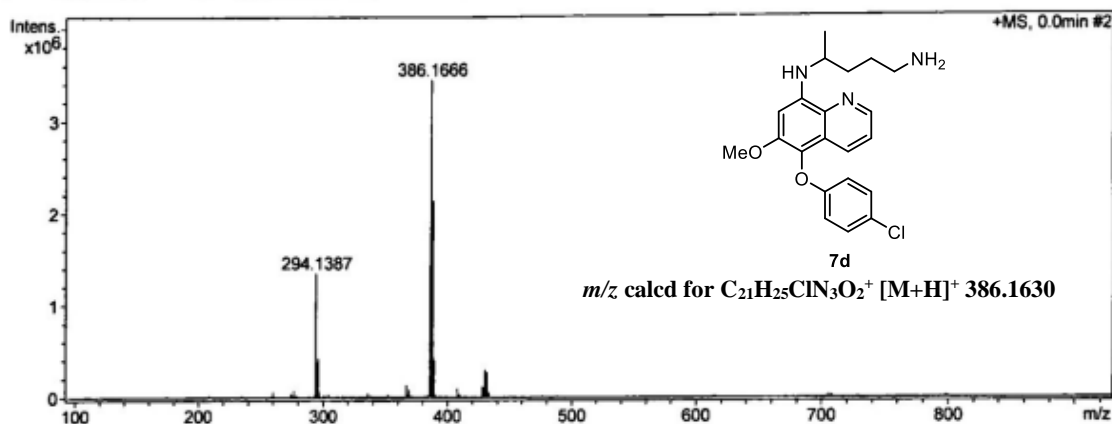
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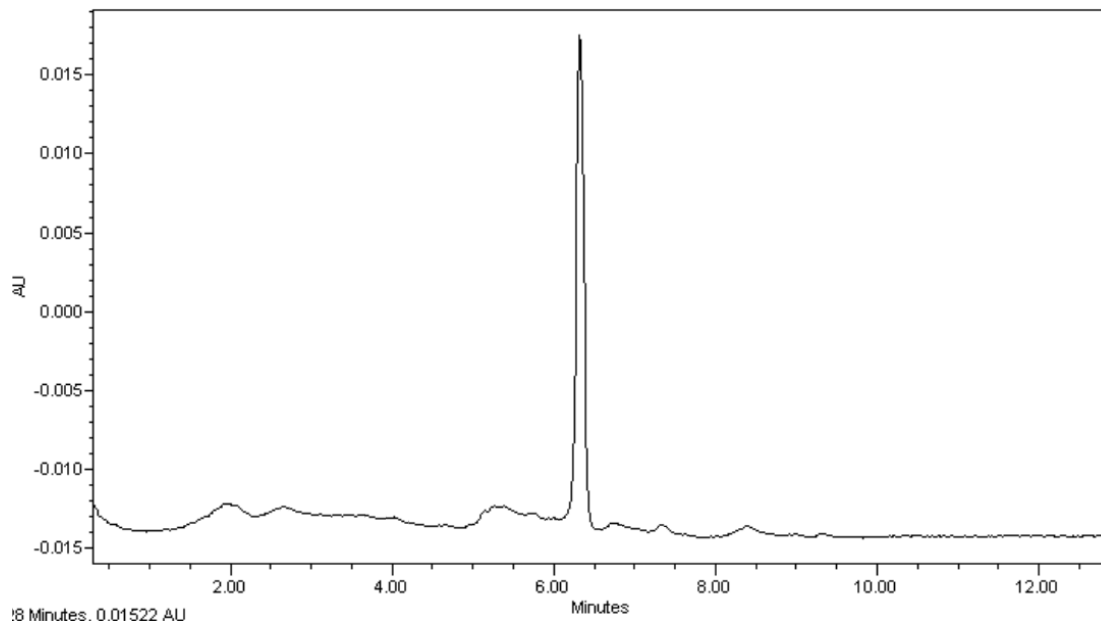
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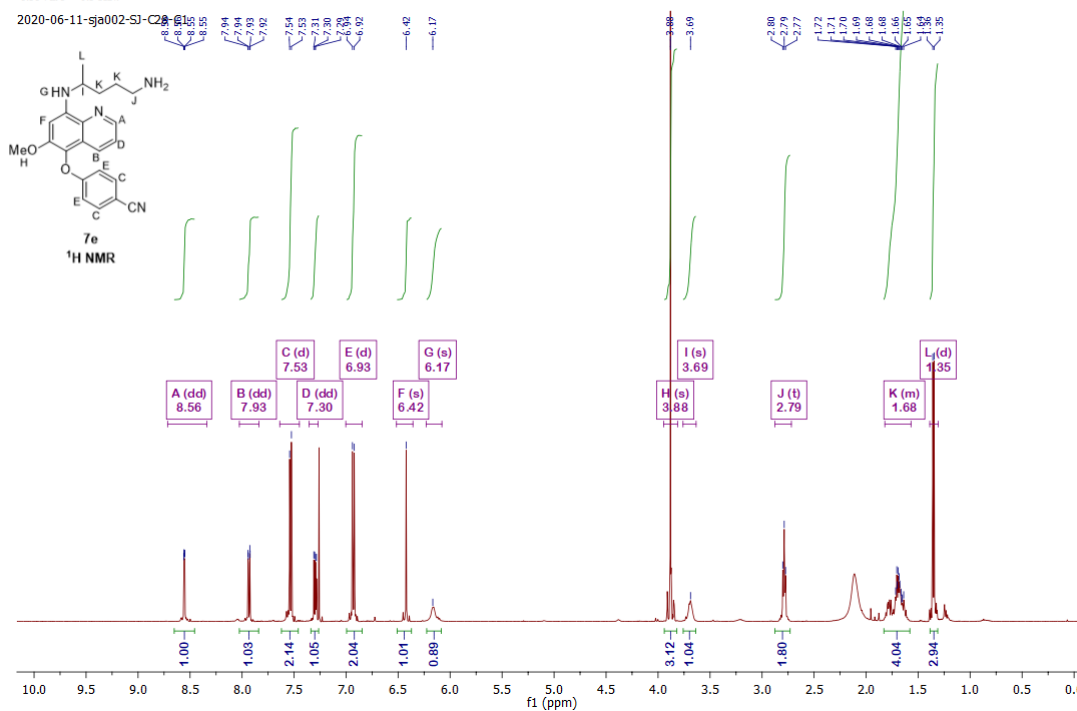
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4-((8-((5-Aminopentan-2-yl)amino)-6-methoxyquinolin-5-yl)oxy)benzonitrile (7e)

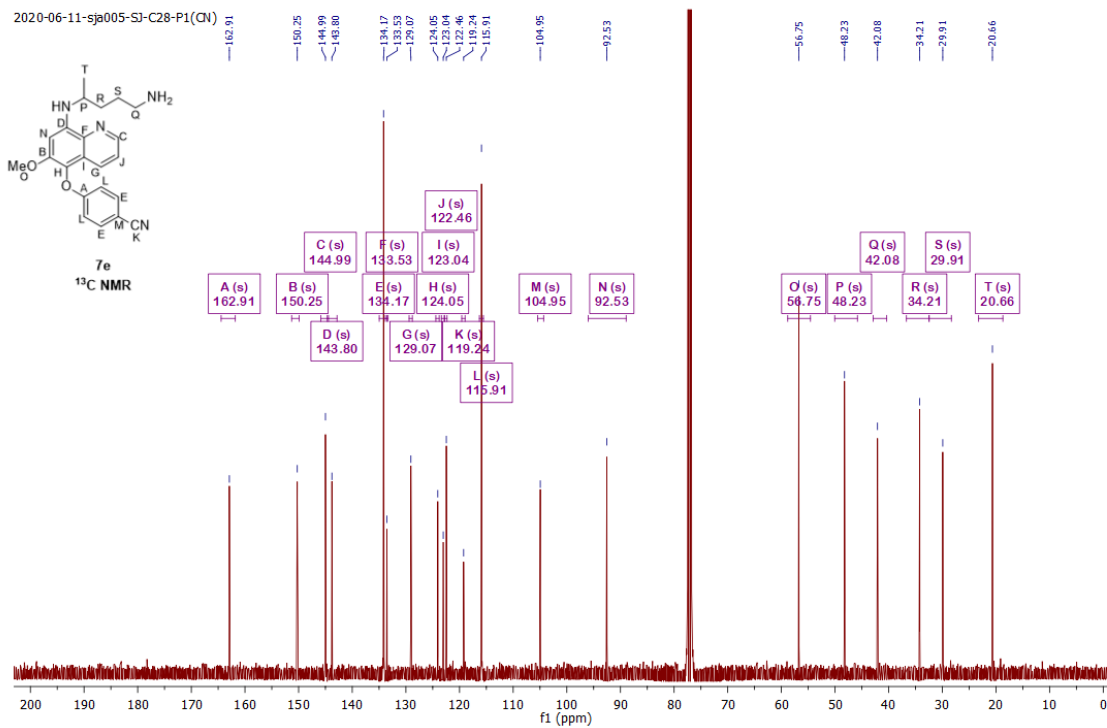
NMR (500 MHz, δ 8.56 (dd, $J=4.2, 1.4$ Hz), 7.93 (dd, $J=8.5, 1.5$ Hz), 7.53 (d, $J=8.7$ Hz), 7.30 (dd, $J=8.5, 4.1$ Hz), 6.93 (d, $J=8.7$ Hz), 6.42 (s), 6.17 (s), 3.88 (s), 3.69 (s), 2.79 (t, $J=6.8$ Hz), 1.82–1.57 (m), 1.35 (d, $J=6.3$ Hz).

2020-06-11-sja002-SJ-C28



NMR (126 MHz, δ 162.91 (s), 150.25 (s), 144.99 (s), 143.80 (s), 134.17 (s), 133.53 (s), 129.07 (s), 124.05 (s), 123.04 (s), 122.46 (s), 119.24 (s), 115.91 (s), 104.95 (s), 92.53 (s), 56.75 (s), 48.23 (s), 42.08 (s), 34.21 (s), 29.91 (s), 20.66 (s).

2020-06-11-sja005-SJ-C28-P1(CN)



High resolution report

Acquisition Date 7/13/2020 12:31:38 PM

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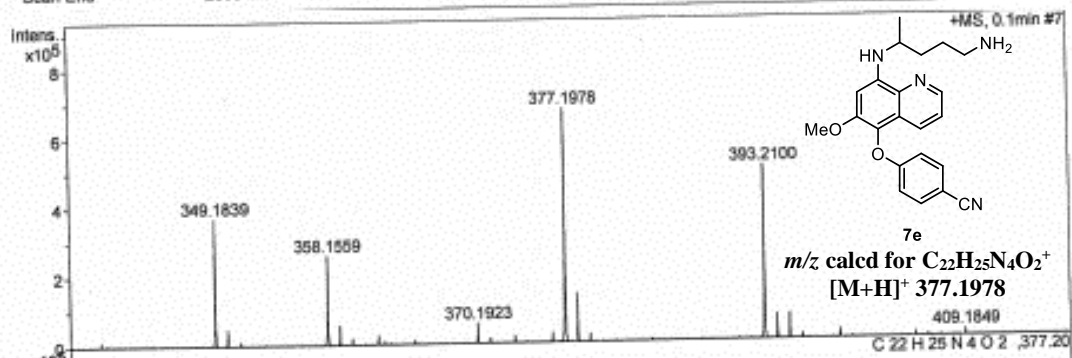
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Instrument microTOF Bruker
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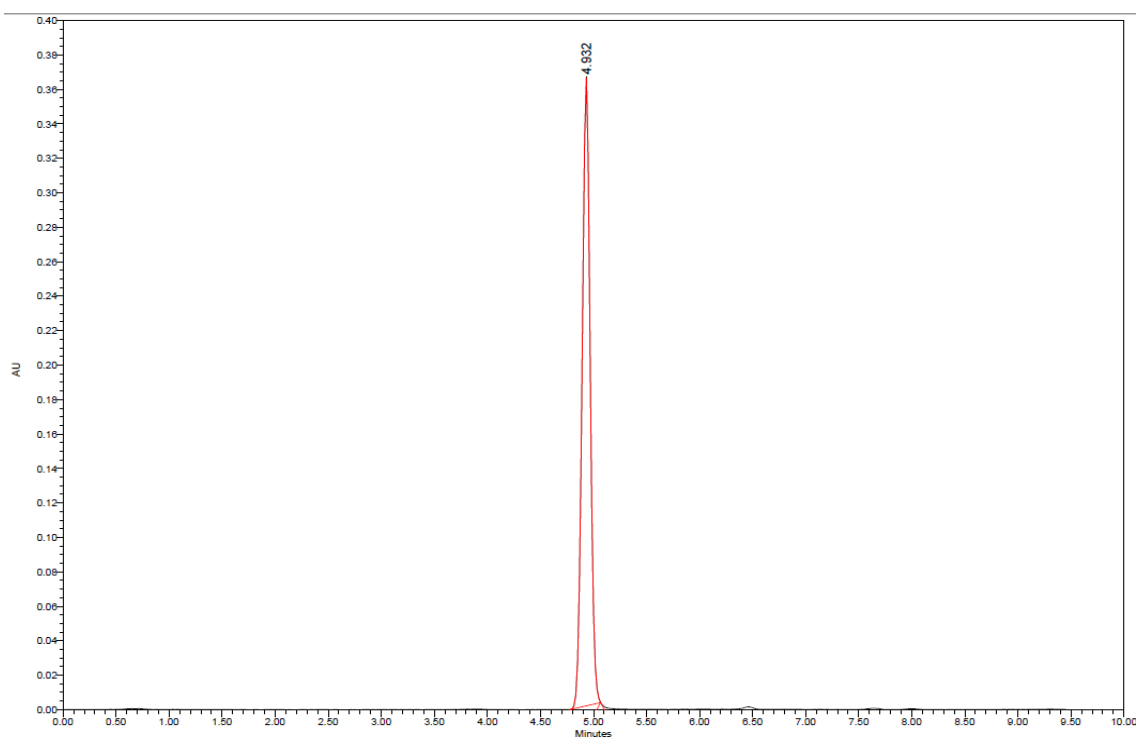
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HPLC



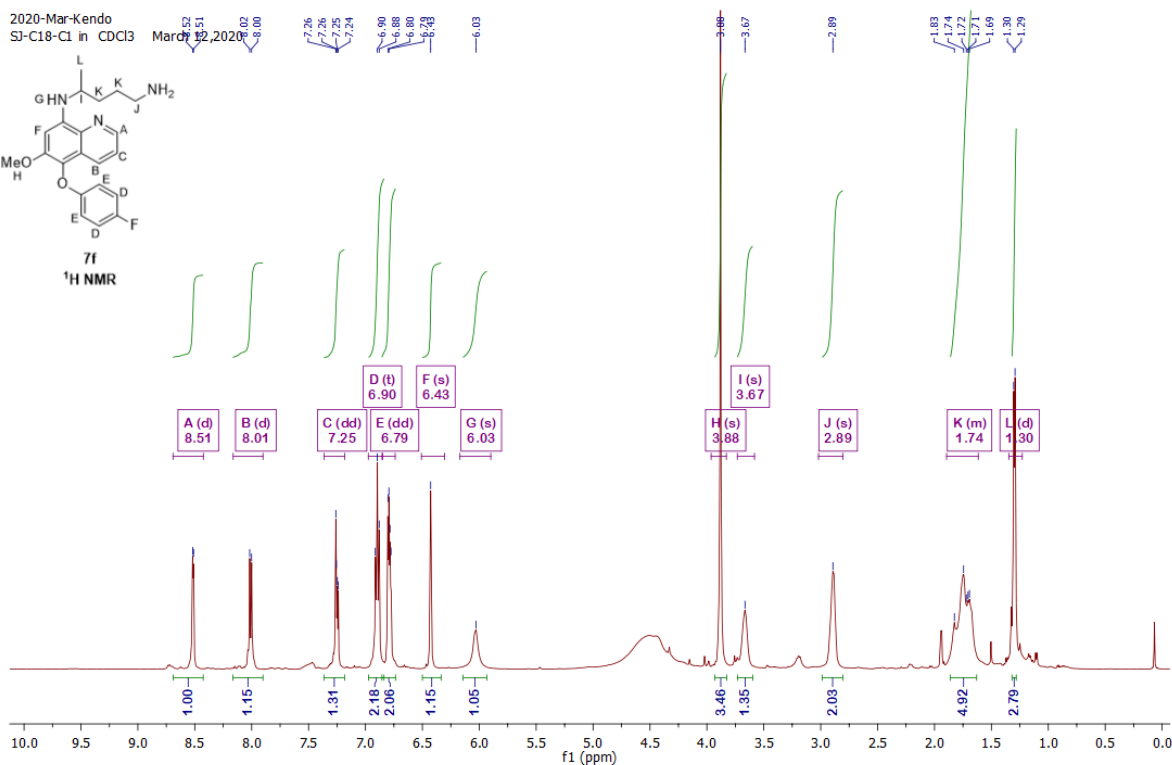
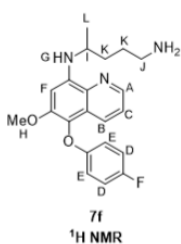
***N*⁴-(5-(4-Fluorophenoxy)-6-methoxyquinolin-8-yl)pentane-1,4-diamine (7f)**

¹H NMR (500 MHz, CDCl₃) δ 8.51 (d, *J* = 4.0 Hz, 1H), 8.01 (d, *J* = 8.4 Hz, 1H), 7.25 (dd, *J* = 7.7, 3.2 Hz, 1H), 6.90 (t, *J* = 8.6 Hz, 2H), 6.79 (dd, *J* = 9.0, 4.2 Hz, 2H), 6.43 (s, 1H), 6.03 (s, 1H), 3.88 (s, 3H), 3.67 (s, 1H), 2.89 (s, 2H), 1.89–1.62 (m, 4H), 1.30 (d, *J* = 6.0 Hz, 3H).

2020-Mar-Kendo

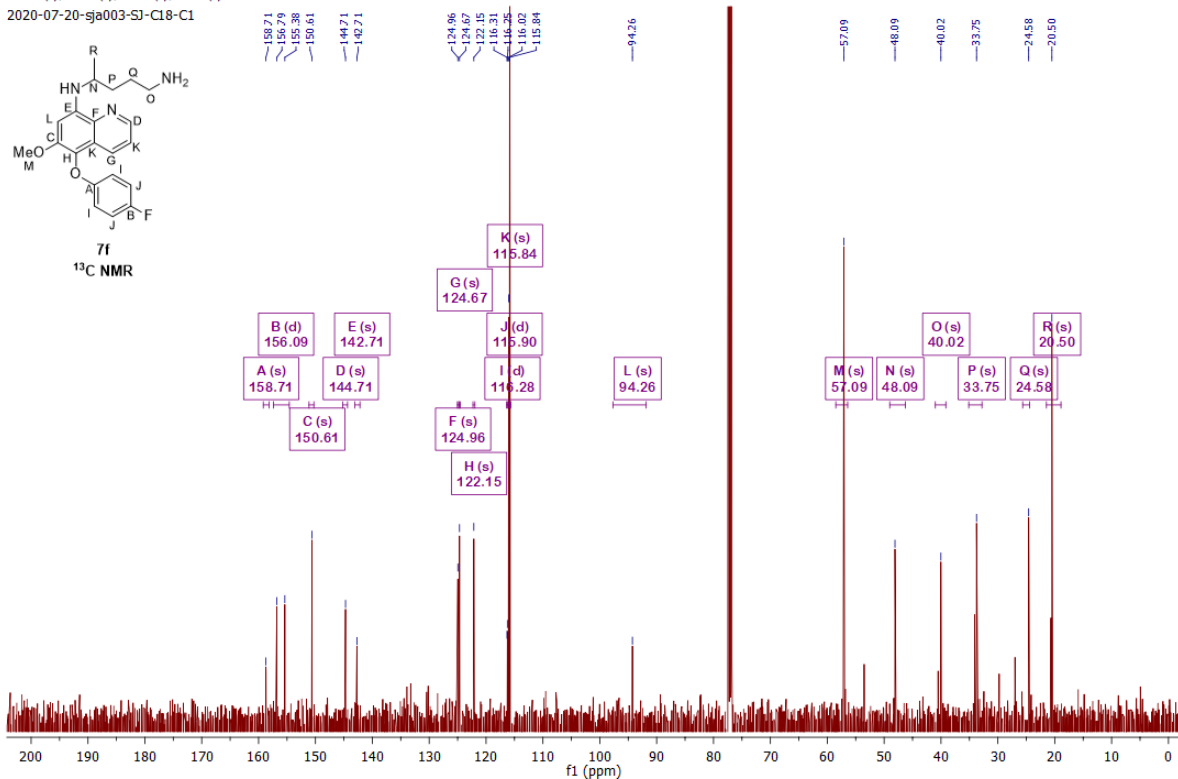
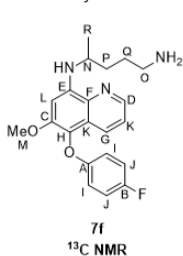
SJ-C18-C1 in CDCl₃

March 12, 2020



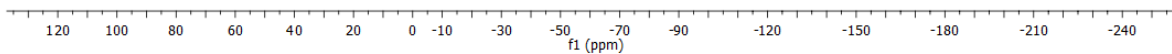
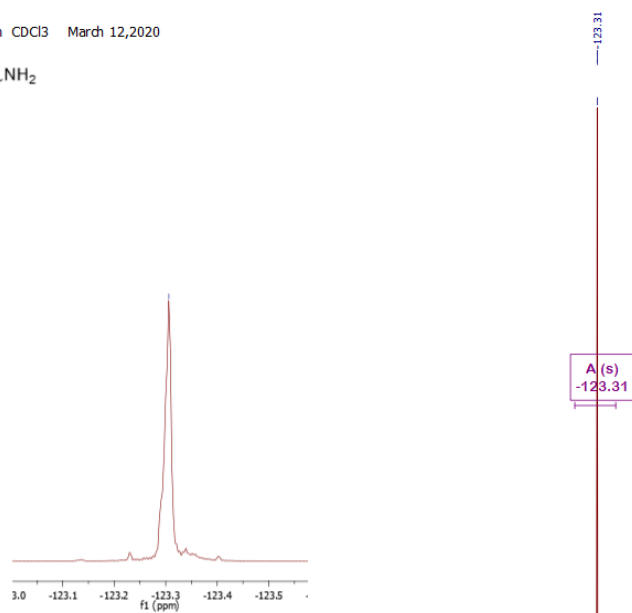
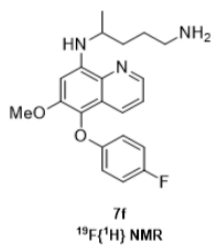
NMR (126 MHz,) δ 158.71 (s), 156.09 (d, *J* = 177.0 Hz), 150.61 (s), 144.71 (s), 142.71 (s), 124.96 (s), 124.67 (s), 122.15 (s), 116.28 (d, *J* = 7.9 Hz), 115.90 (d, *J* = 31.5 Hz), 115.84 (s), 94.26 (s), 57.09 (s), 48.09 (s), 40.02 (s), 33.75 (s), 24.58 (s), 20.50 (s).

2020-07-20-sja003-SJ-C18-C1



^{19}F NMR (471 MHz, CDCl_3) δ -123.31 (s).

2020-Mar-Kendo
decoupled ^{19}F SJ-C18-C1 in CDCl_3 March 12, 2020



High resolution report

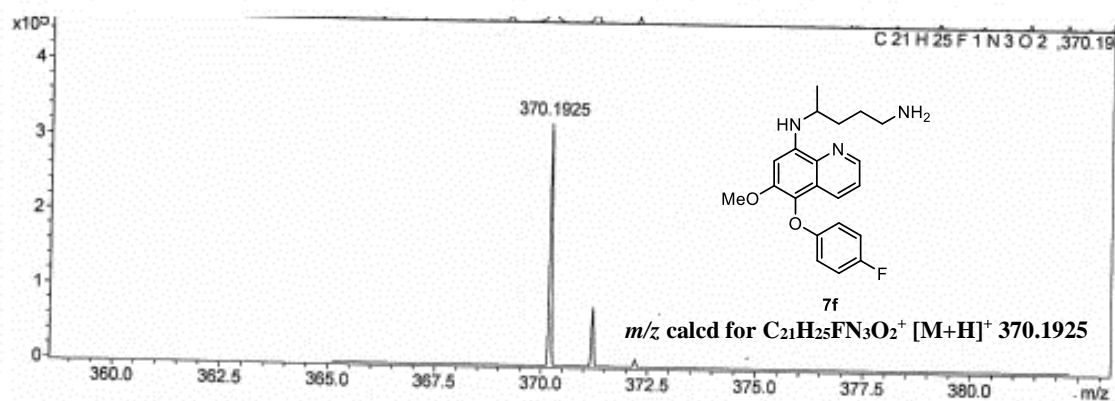
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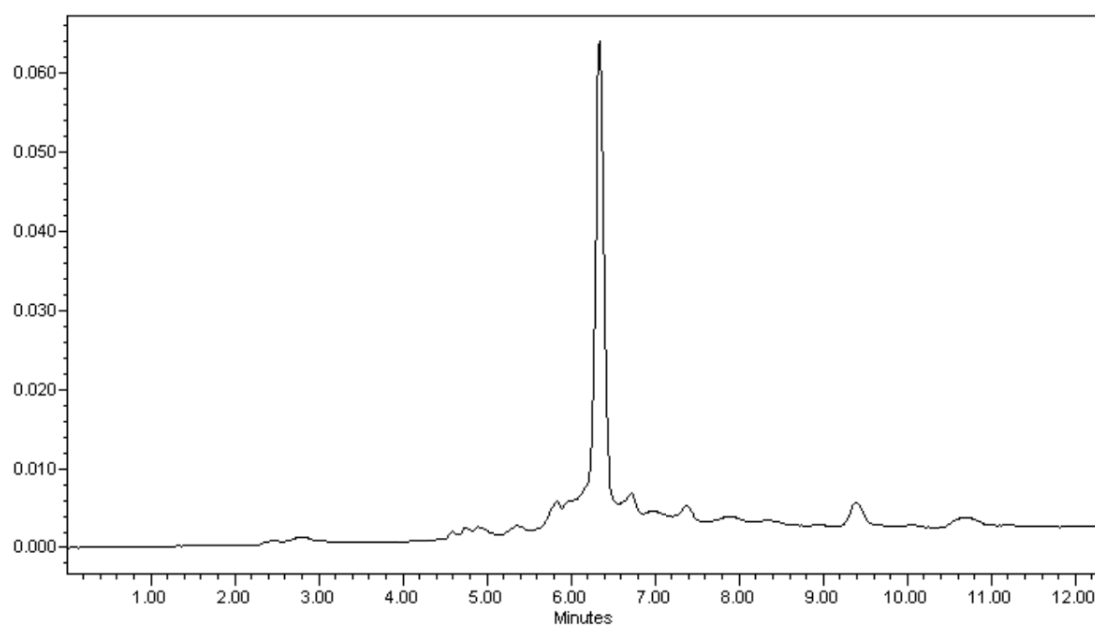
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Calibrate by Sodium Formate

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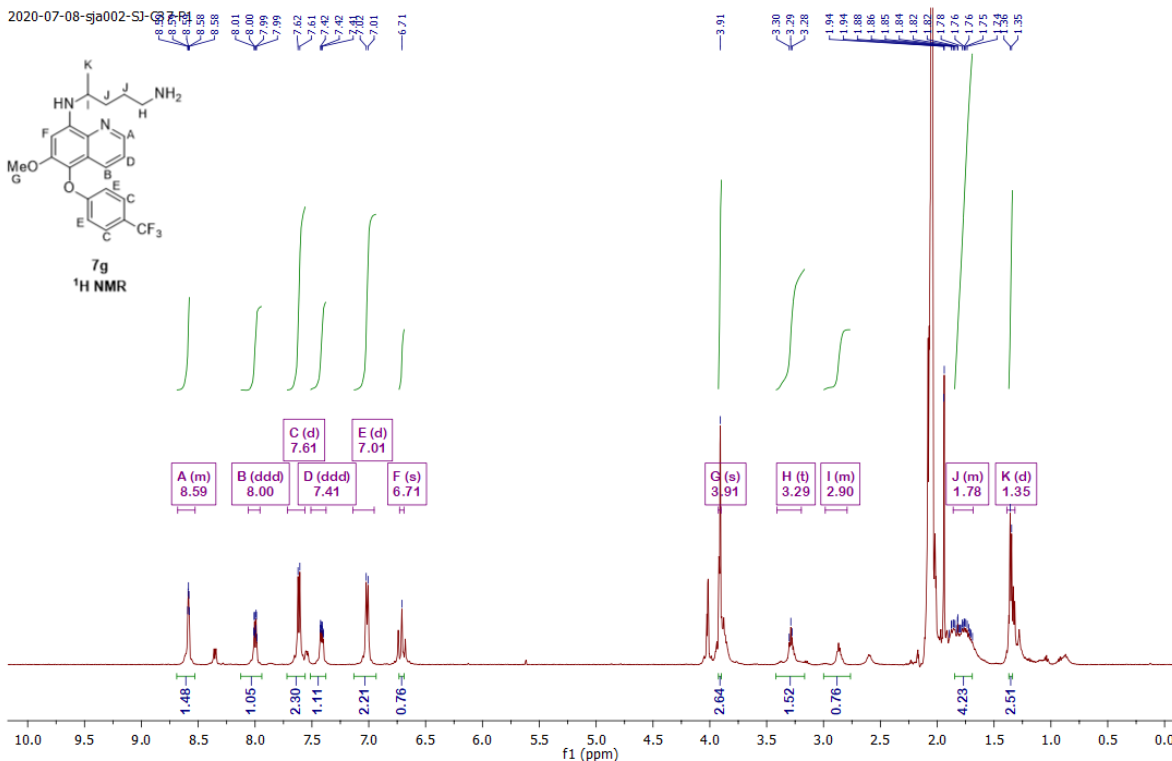


HPLC

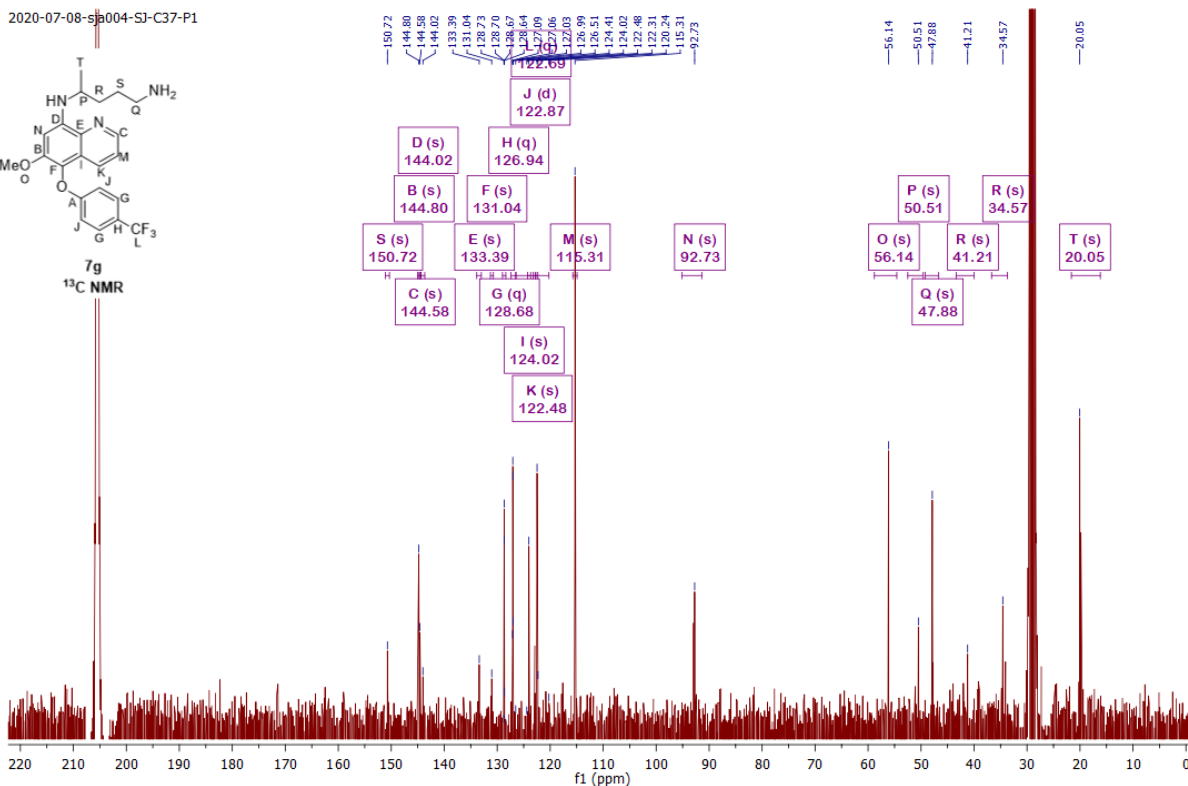


***N*⁴-(5-(4-Fluorophenoxy)-6-methoxyquinolin-8-yl)pentane-1,4-diamine (7g)**

¹H NMR (500 MHz,) δ 8.68 – 8.53 (m), 8.00 (ddd, *J* = 8.5, 3.5, 1.7 Hz), 7.61 (d, *J* = 8.0 Hz), 7.41 (ddd, *J* = 8.3, 4.1, 1.5 Hz), 7.01 (d, *J* = 8.3 Hz), 6.71 (dd, *J* = 16.1, 14.9 Hz), 3.91 (dd, *J* = 4.4, 1.7 Hz), 3.29(m), 1.94 (t, *J* = 6.2 Hz), 2.98 - 2.79 (m) 1.86 – 1.68 (m), 1.35 (d, *J* = 6.3 Hz).

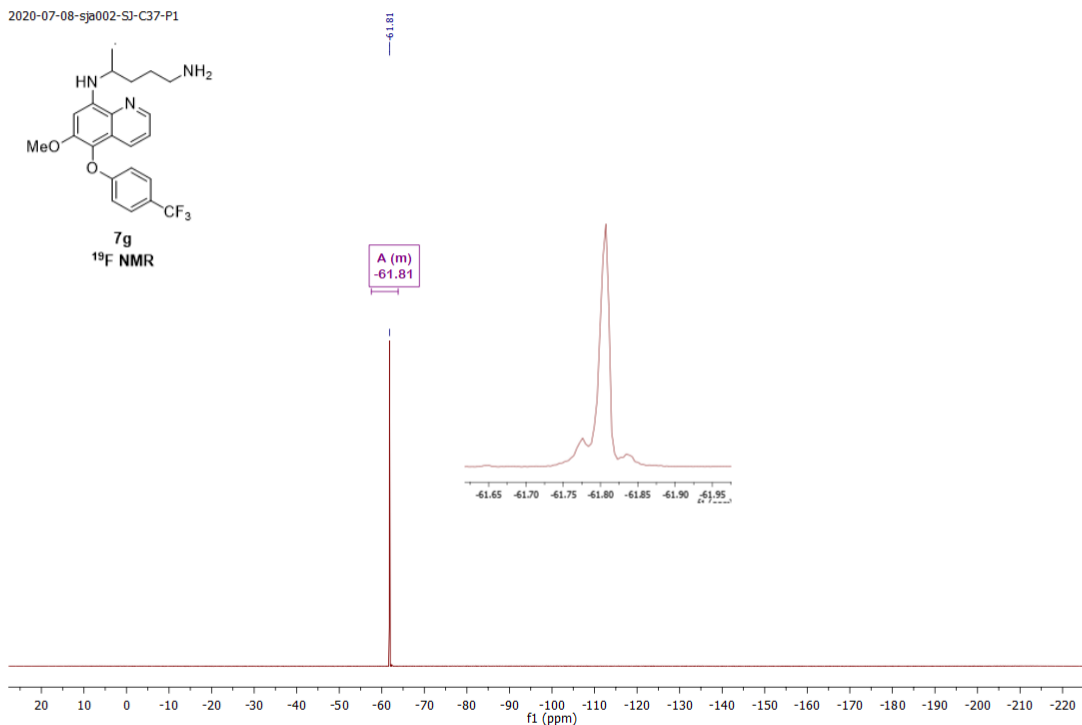
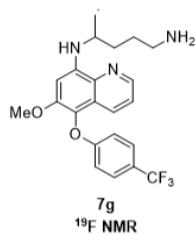


¹³C NMR (126 MHz,) δ 150.72 (s), 144.80 (s), 144.58 (s), 144.02 (s), 133.39 (s), 131.04 (s), 128.68 (q, *J* = 4.1 Hz), 126.94 (q, *J* = 65.1 Hz), 124.02 (s), 122.87 (d, *J* = 7.7 Hz), 122.69 (q, *J* = 265.0 Hz), 122.48 (s), 115.31 (s), 92.73 (s), 56.14 (s), 50.51 (s), 47.88 (s), 41.21 (s), 34.57 (s), 20.05 (s).



NMR (471 MHz,) δ -57.53 – -63.84 (m).

2020-07-08-sja002-SJ-C37-P1



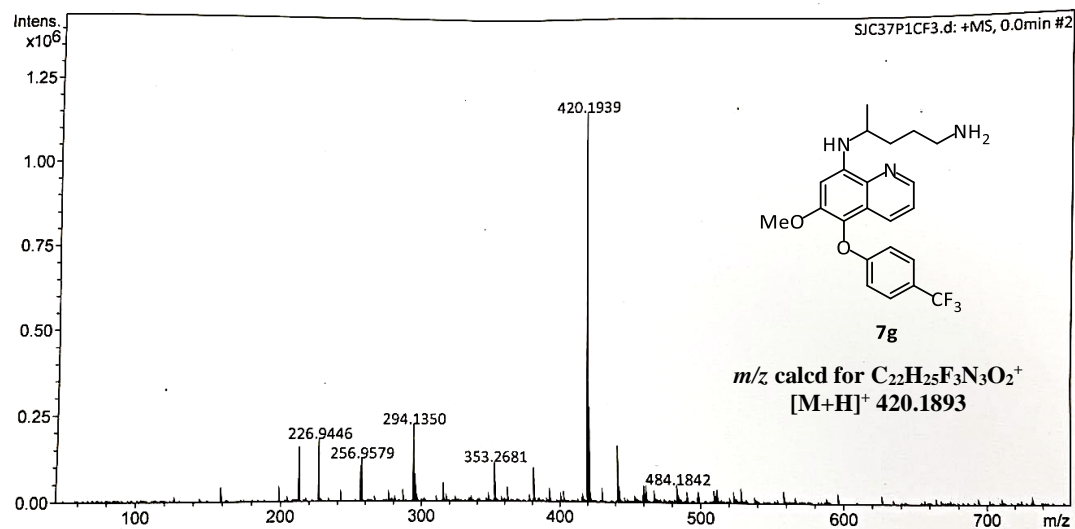
High resolution report

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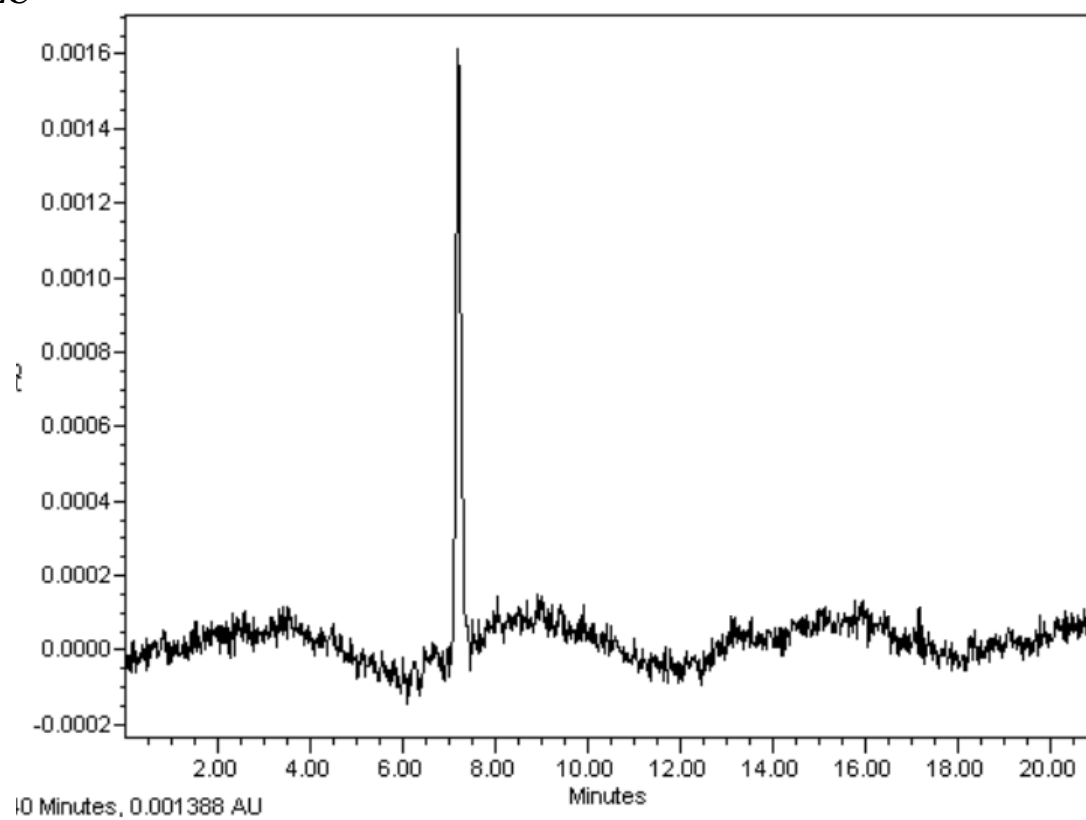
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Operator Sutichai
Instrument micrOTOF
Calibrate by Sodium Formate
Ext: 3560
Bruker

Acquisition Parameter

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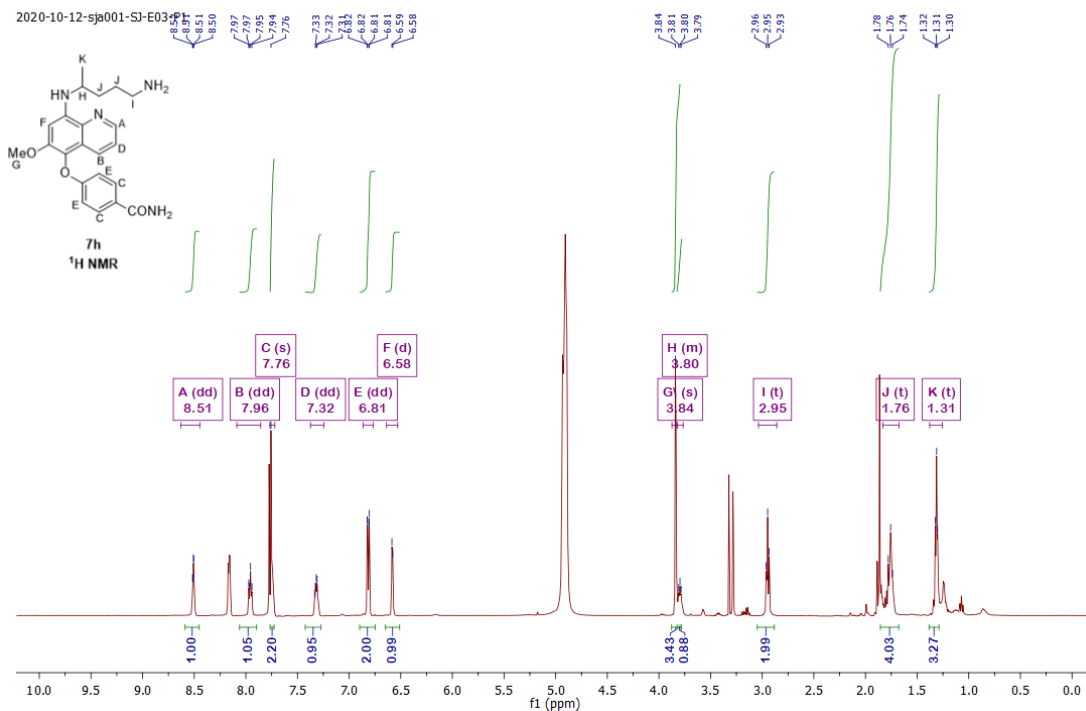
HPLC



4-((8-((5-Aminopentan-2-yl)amino)-6-methoxyquinolin-5-yl)oxy)benzamide (7h)

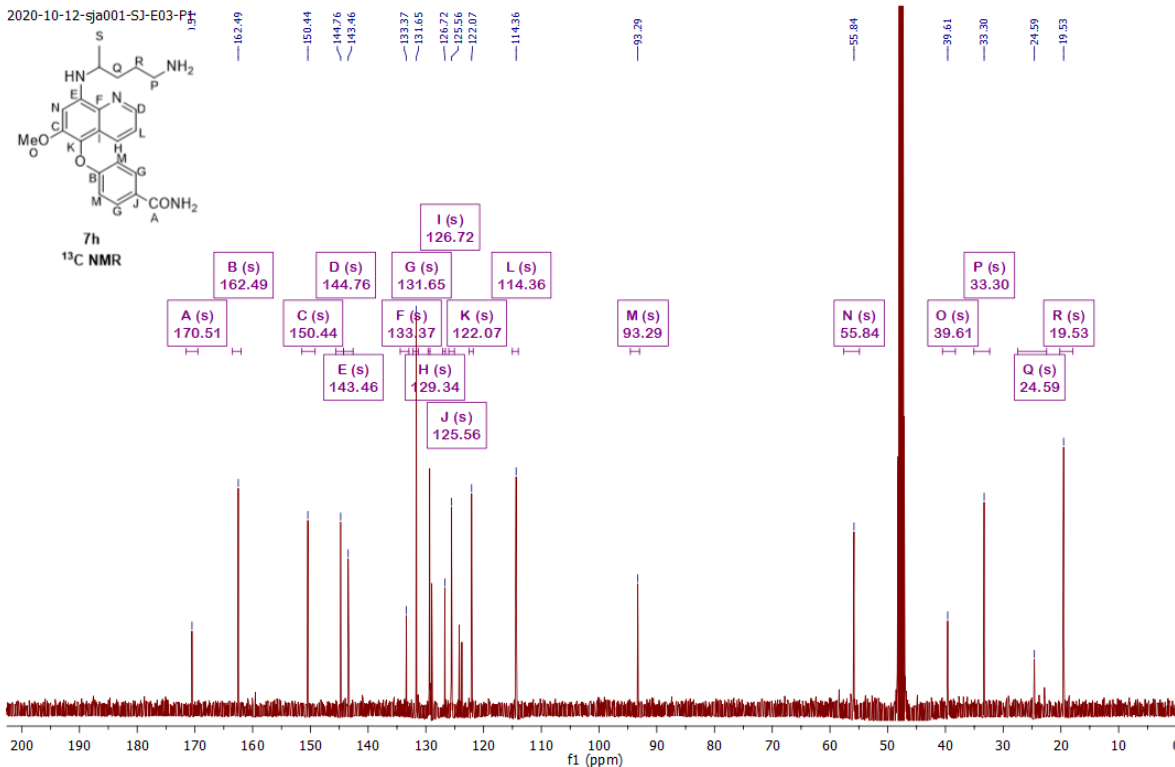
¹H NMR (500 MHz,) 6.81 (dd, *J* = 4.1, 1.4 Hz), 8.16 (dd, *J* = 5.7, 3.4 Hz), 7.96 (dd, *J* = 11.1, 4.1 Hz), 7.77 (s), 7.76 (s), 7.32 (dd, *J* = 8.4, 4.1 Hz), 6.81 (dd, *J* = 8.3, 1.4 Hz), 6.58 (d, *J* = 4.1 Hz), 3.84 (s), 3.82–3.77 (m), 2.95 (t, *J* = 7.2 Hz), 1.76 (t, *J* = 10.6 Hz), 1.31 (t, *J* = 5.5 Hz).

2020-10-12-sja001-SJ-E03-P1



¹³C NMR (126 MHz,) 6.170.51 (s), 162.49 (s), 150.44 (s), 144.76 (s), 143.46 (s), 133.37 (s), 131.65 (s), 129.34 (s), 128.97 (s), 126.72 (s), 125.56 (s), 124.22 (s), 123.76 (s), 122.07 (s), 114.36 (s), 93.29 (s), 55.84 (s), 39.61 (s), 33.30 (s), 19.53 (s).

2020-10-12-sja001-SJ-E03-P1



Mass Spectrum List Report

Analysis Info

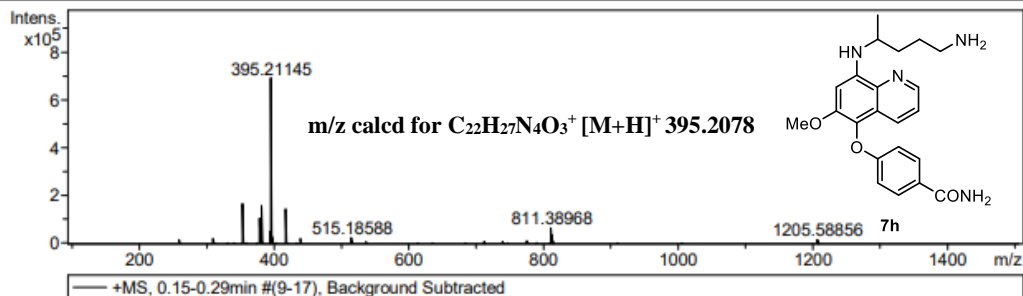
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Sample Name SJ-E03-P1
Comment

Acquisition Date 12/14/2020 6:45:27 PM

Operator CU.
Instrument / Ser# microTOF-Q II 10335

Acquisition Parameter

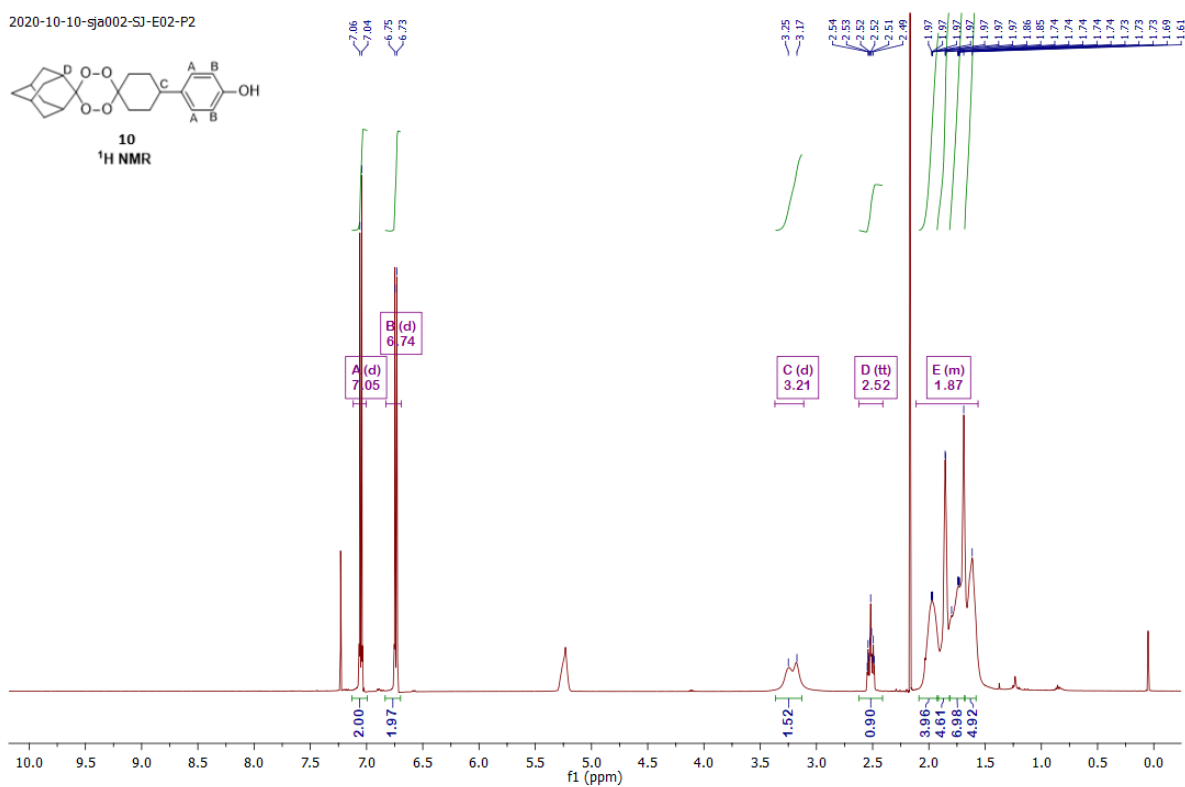
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Scan End	1500 m/z	Set Collision Cell RF	250.0 Vpp	Set Divert Valve	Waste



4-(Dispiro[cyclohexane-1,3'-[1,2,4,5]tetroxane-6',2''-tricyclo[3.3.1.3¹.7]decan]-4-yl)phenol (10)

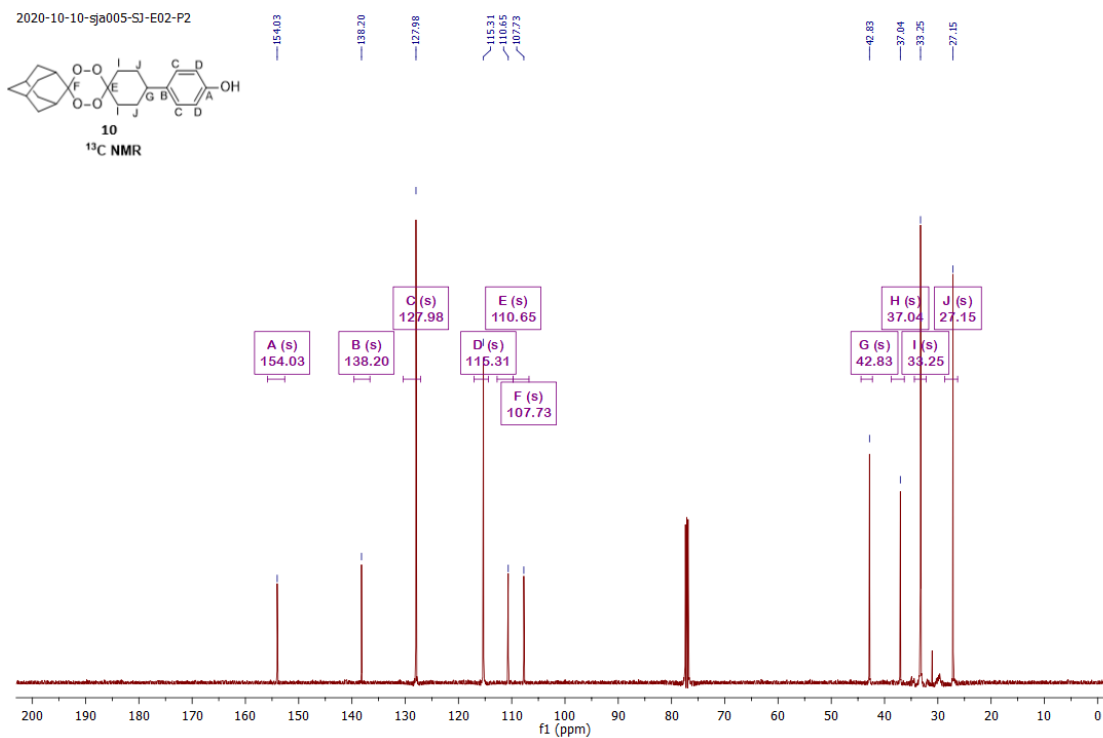
NMR (500 MHz,) δ 7.05 (d, J = 8.5 Hz), 6.74 (d, J = 8.1 Hz), 3.21 (d, J = 38.1 Hz), 2.52 (tt, J = 11.8, 3.6 Hz), 2.11 – 1.56 (m).

2020-10-10-sja002-SJ-E02-P2

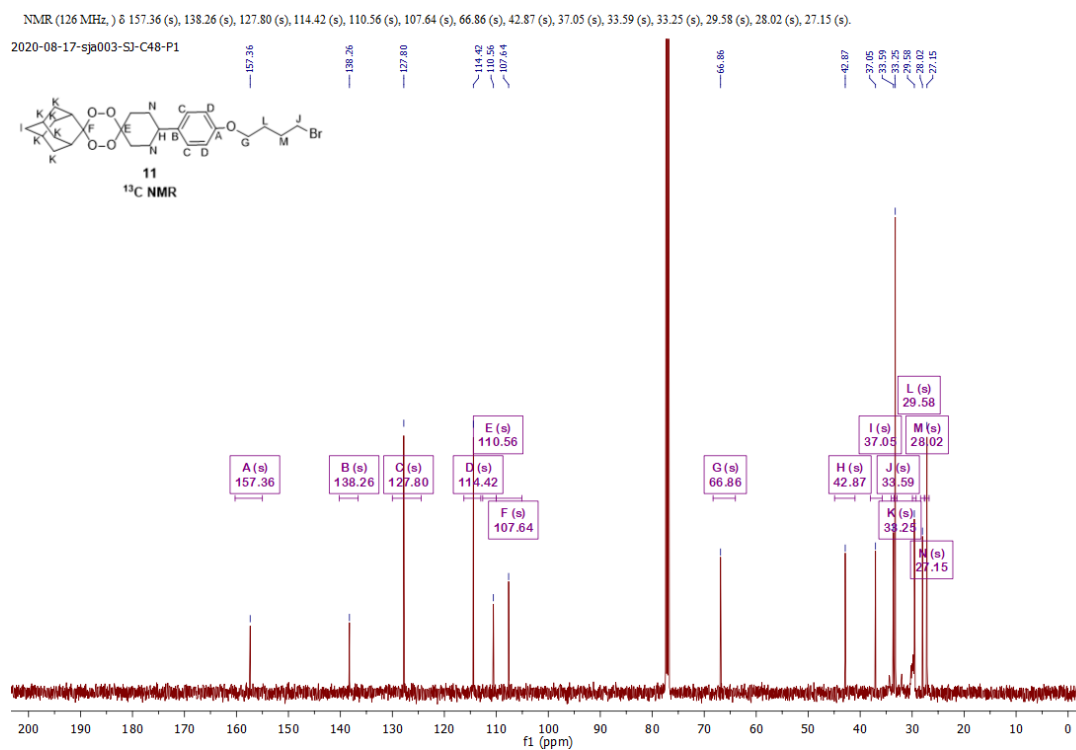
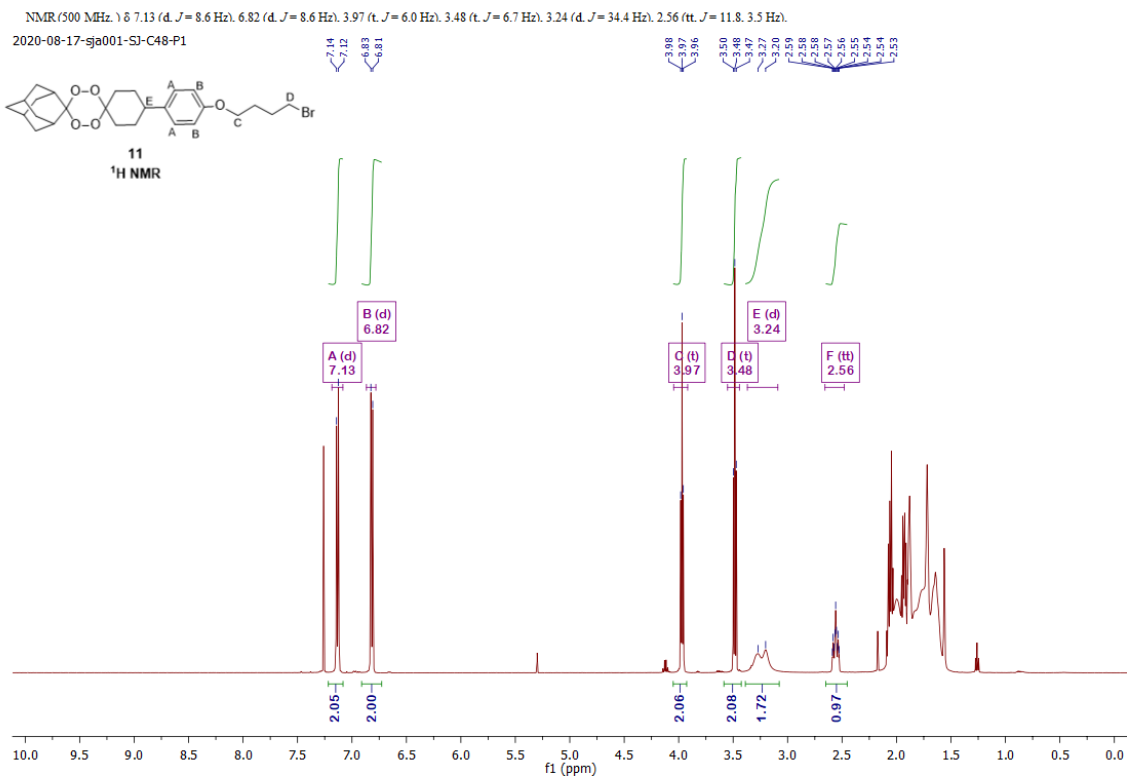


NMR (126 MHz,) δ 154.03 (s), 138.20 (s), 127.98 (s), 115.31 (s), 110.65 (s), 107.73 (s), 42.83 (s), 37.04 (s), 33.25 (s), 27.15 (s).

2020-10-10-sja005-SJ-E02-P2

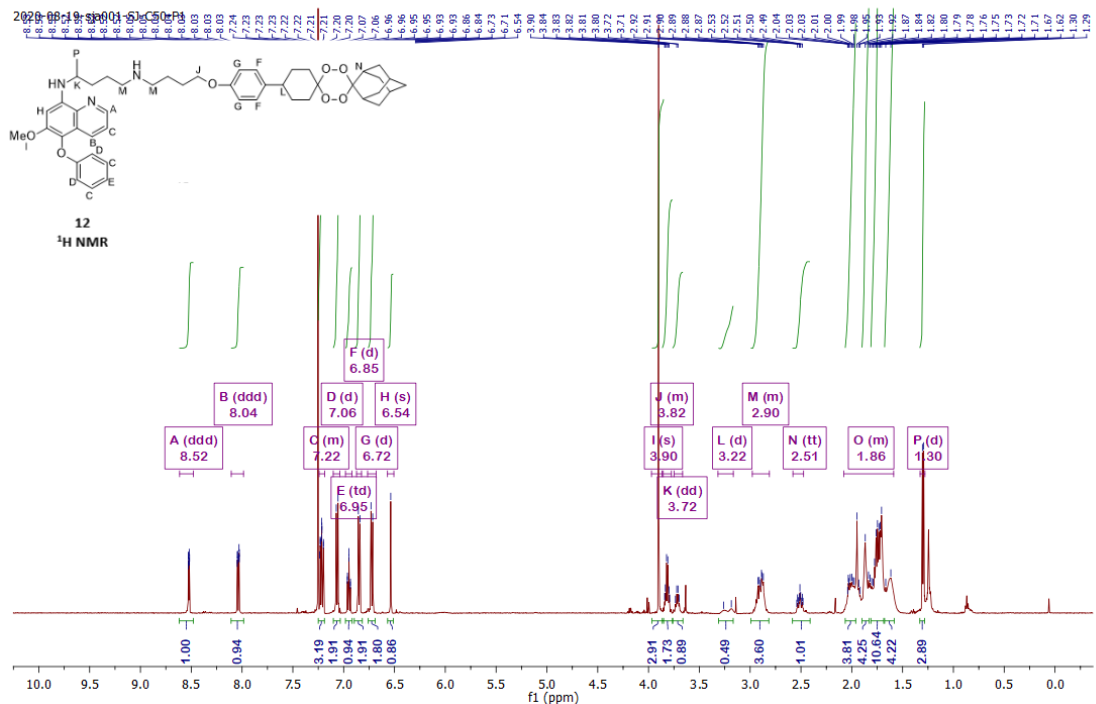


(1*r*,3*r*,5*r*,7*r*)-4''-(4-(4-bromobutoxy)phenyl)dispiro[adamantane-2,3'-[1,2,4,5]tetraoxane-6',1''-cyclohexane] (11)

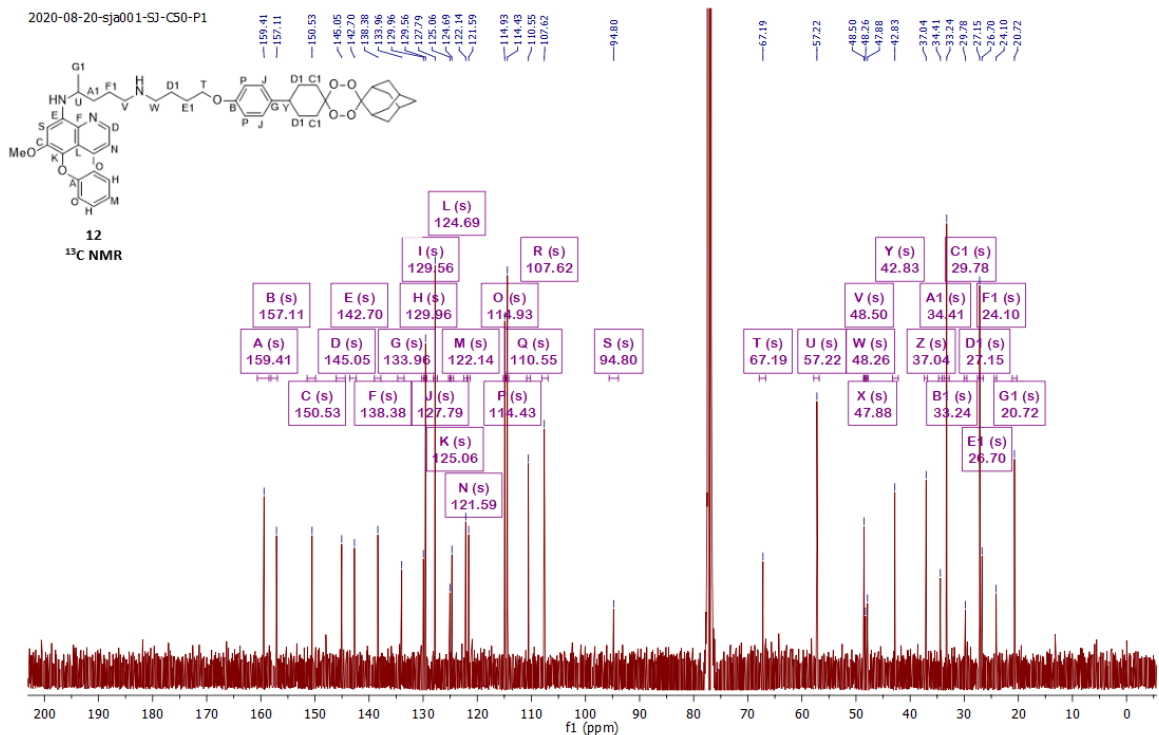


***N*¹-(4-(4-((1*r*,3*r*,5*r*,7*r*)-dispiro[adamantane-2,3'-[1,2,4,5]tetraoxane-6',1'-cyclohexan]-4''-yl)phenoxy)butyl)-*N*⁴-(6-methoxy-5-phenoxyquinolin-8-yl)pentane-1,4-diamine (12)**

NMR (500 MHz, δ 8.52 (ddd, J = 4.1, 1.6, 0.5 Hz), 8.04 (ddd), 7.24 – 7.19 (m), 7.06 (d, J = 8.7 Hz), 6.95 (td, J = 7.3, 0.5 Hz), 6.85 (d, J = 7.8 Hz), 6.72 (d, J = 8.4 Hz), 6.54 (s), 3.90 (s), 3.86 – 3.77 (m), 3.72 (dd, J = 12.5, 6.3 Hz), 3.22 (d, J = 38.2 Hz), 2.98 – 2.81 (m), 2.51 (tt, J = 11.6, 3.5 Hz), 2.08 – 1.59 (m), 1.30 (d, J = 6.3 Hz).



NMR (126 MHz, δ 159.41 (s), 157.11 (s), 150.53 (s), 145.05 (s), 142.70 (s), 138.38 (s), 133.96 (s), 129.96 (s), 129.56 (s), 127.79 (s), 125.06 (s), 124.69 (s), 122.14 (s), 121.59 (s), 114.93 (s), 114.43 (s), 110.55 (s), 107.62 (s), 94.80 (s), 67.19 (s), 57.22 (s), 48.50 (s), 48.26 (s), 47.88 (s), 42.83 (s), 37.04 (s), 34.41 (s), 33.24 (s), 29.78 (s), 27.15 (s), 26.70 (s), 24.10 (s), 20.72 (s).



High resolution report

Acquisition Date 9/9/2020 3:01:38 PM

Analysis Name D:\Data\customer\SJ C50 P1.d
Method NaFormate_pos.m
Sample Name SJ C50 P1

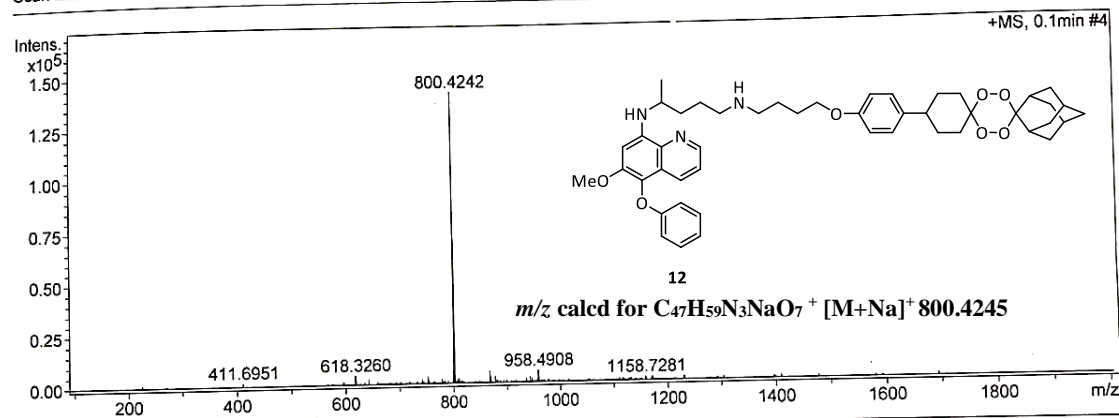
Operator Sutichai
Instrument micrOTOF
Calibrate by Sodium Formate
Ext: 3560
Bruker

Acquisition Parameter

Source Type ESI
Focus Not active
Scan Begin 100 m/z
Scan End 2000 m/z

Ion Polarity Positive
Set Capillary 4500 V
Set End Plate Offset -500 V

Set Nebulizer 0.3 Bar
Set Dry Heater 180 °C
Set Dry Gas 4.0 l/min
Set Divert Valve Source



Primary data for heme polymerization inhibition assay

	Control	T	T-									
	1	0.5446	1.3240									
	2	0.5361	1.3336									
	3	0.5828	1.3263									
	Average	0.5545	1.3280									
PQ	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.1201	1.1807	1.1501	0.269	0.190	0.230	73.12	80.96	77.01		
	200	0.9117	0.8333	0.8610	0.538	0.640	0.604	46.18	36.04	39.63		
	100	0.7047	0.7321	0.7060	0.806	0.770	0.804	19.42	22.96	19.59		
	50	0.6525	0.5004	0.5950	0.873	1.070	0.948	12.67	-7.00	5.24		
	10	0.4823	0.6216	0.5831	1.093	0.913	0.963	-9.33	8.67	3.70		
	2	0.5384	0.6796	0.5908	1.021	0.838	0.953	-2.08	16.17	4.69		
							IC50	312.8	309.9	336.8	319.8	Average
											12.0	SD
7a	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
R = H	400	1.3420	1.3328	1.2949	-0.018	-0.006	0.043	101.81	100.63	95.73		
	200	1.2442	1.2371	1.2369	0.108	0.118	0.118	89.17	88.25	88.23		
	100	0.9465	1.0180	0.9378	0.493	0.401	0.505	50.68	59.92	49.55		
	50	0.7077	0.7989	0.7428	0.802	0.684	0.757	19.81	31.60	24.35		
	10	0.5876	0.6523	0.6299	0.957	0.874	0.903	4.28	12.65	9.75		
	2	0.5604	0.6189	0.5991	0.992	0.917	0.942	0.76	8.32	5.77		
							IC50	104.9	96.0	103.9	101.6	Average
											4.1	SD
7b	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
R = OMe	400	1.2860	1.2564	1.3151	0.054	0.093	0.017	94.57	90.75	98.34		
	200	1.0747	1.0745	1.1075	0.328	0.328	0.285	67.25	67.23	71.49		
	100	0.8648	0.8585	0.8842	0.599	0.607	0.574	40.12	39.30	42.63		
	50	0.6724	0.7042	0.6810	0.848	0.806	0.837	15.24	19.36	16.35		
	10	0.5933	0.6127	0.6461	0.950	0.925	0.882	5.02	7.53	11.84		
	2	0.5750	0.5950	0.5688	0.974	0.948	0.982	2.65	5.23	1.85		
							IC50	162.1	159.6	156.7	159.5	Average
											2.2	SD
7c	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
R = Br	400	1.2540	1.2423	1.2580	0.096	0.111	0.091	90.44	88.93	90.95		
	200	1.0445	1.0467	1.0307	0.367	0.364	0.384	63.35	63.64	61.57		
	100	0.7978	0.8029	0.8502	0.685	0.679	0.618	31.46	32.12	38.23		
	50	0.6525	0.6955	0.6376	0.873	0.818	0.893	12.67	18.23	10.74		
	10	0.6204	0.5995	0.6111	0.915	0.942	0.927	8.52	5.82	7.32		
	2	0.6135	0.6058	0.5650	0.924	0.934	0.986	7.63	6.63	1.36		
							IC50	170.0	180.6	174.8	175.2	Average
											4.3	SD
7d	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
R = Cl	400	1.3014	1.3228	1.2608	0.034	0.007	0.087	96.57	99.33	91.32		
	200	1.1881	1.1676	1.1406	0.181	0.207	0.242	81.92	79.27	75.78		
	100	0.8563	0.9389	0.8664	0.610	0.503	0.597	39.02	49.70	40.32		
	50	0.7722	0.7133	0.7552	0.719	0.795	0.741	28.15	20.53	25.95		
	10	0.6479	0.6889	0.6284	0.879	0.826	0.905	12.08	17.37	9.55		
	2	0.6147	0.6029	0.5760	0.922	0.937	0.972	7.78	6.26	2.78		
							IC50	135.4	124.7	136.6	132.2	Average
											5.3	SD

7e R = CN	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.1611	1.2140	1.0931	0.216	0.147	0.304	78.42	85.27	69.64		
	200	0.9587	0.9868	0.9039	0.477	0.441	0.548	52.26	55.89	45.17		
	100	0.7875	0.7915	0.6884	0.699	0.694	0.827	30.12	30.64	17.31		
	50	0.7039	0.6810	0.7223	0.807	0.837	0.783	19.32	16.35	21.70		
	10	0.5837	0.6538	0.6274	0.962	0.872	0.906	3.78	12.84	9.43		
	2	0.6189	0.5844	0.6159	0.917	0.961	0.921	8.32	3.87	7.94		
							IC50	291.1	269.3	297.1	285.8	Average
											11.9	SD
7f R = F	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.2465	1.2646	1.3609	0.105	0.082	-0.043	89.47	91.81	104.26		
	200	1.0774	1.1136	1.1214	0.324	0.277	0.267	67.61	72.28	73.29		
	100	0.8393	0.8052	0.8321	0.632	0.676	0.641	36.82	32.41	35.89		
	50	0.7010	0.7465	0.6951	0.811	0.752	0.818	18.94	24.82	18.18		
	10	0.6656	0.6128	0.6293	0.856	0.925	0.903	14.36	7.54	9.67		
	2	0.6011	0.5685	0.6436	0.940	0.982	0.885	6.02	1.81	11.52		
							IC50	155.3	170.6	175.4	167.1	Average
											8.6	SD
7g R = CF3	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.2701	1.3094	1.3367	0.075	0.024	-0.011	92.52	97.60	101.13		
	200	1.2291	1.2514	1.2888	0.128	0.099	0.051	87.22	90.10	94.94		
	100	0.9072	0.9439	0.9565	0.544	0.497	0.480	45.60	50.34	51.98		
	50	0.7905	0.8434	0.7615	0.695	0.627	0.732	30.51	37.35	26.76		
	10	0.6662	0.7085	0.6369	0.856	0.801	0.894	14.44	19.91	10.65		
	2	0.5617	0.6305	0.6619	0.991	0.902	0.861	0.93	9.83	13.89		
							IC50	107.6	114.2	107.2	109.7	Average
											3.2	SD
7h R = CONH2	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.2292	1.2707	1.3532	0.128	0.074	-0.033	87.23	92.60	103.26		
	200	1.0705	1.1566	1.2061	0.333	0.222	0.158	66.71	77.84	84.25		
	100	0.8632	0.9015	0.8701	0.601	0.551	0.592	39.91	44.86	40.80		
	50	0.7271	0.7882	0.7887	0.777	0.698	0.697	22.32	30.21	30.28		
	10	0.6189	0.6897	0.6984	0.917	0.825	0.814	8.33	17.48	18.60		
	2	0.6080	0.5767	0.6640	0.931	0.971	0.858	6.92	2.87	14.16		
							IC50	153.6	161.7	146.0	153.8	Average
											6.4	SD
12 conjugate	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.3771	1.2946	1.3063	-0.063	0.043	0.028	106.35	95.69	97.20		
	200	1.2526	1.2954	1.2334	0.098	0.042	0.122	90.25	95.79	87.78		
	100	1.1903	1.1218	1.0502	0.178	0.267	0.359	82.20	73.34	64.09		
	50	0.9274	0.9397	0.9501	0.518	0.502	0.489	48.21	49.80	51.14		
	10	0.7022	0.7176	0.6639	0.809	0.789	0.859	19.10	21.09	14.14		
	2	0.6519	0.6822	0.6232	0.874	0.835	0.911	12.59	16.51	8.88		
							IC50	64.5	64.3	71.8	66.9	Average
											3.5	SD
CQ	conc	1	2	3	HCF1	HCF2	HCF3	%Inh1	%Inh2	%Inh3		
	400	1.3721	1.2840	1.3079	-0.057	0.057	0.026	105.70	94.31	97.41		
	200	1.2998	1.1170	1.2177	0.036	0.273	0.143	96.36	72.73	85.74		
	100	1.2104	1.1826	1.0987	0.152	0.188	0.296	84.80	81.20	70.36		
	50	0.9397	0.8390	1.0169	0.502	0.632	0.402	49.80	36.78	59.78		
	10	0.7031	0.7685	0.7640	0.808	0.723	0.729	19.21	27.67	27.09		
	2	0.6704	0.6490	0.6412	0.850	0.878	0.888	14.98	12.22	11.21		
							IC50	61.3	59.6	62.8	61.2	Average
											1.3	SD