

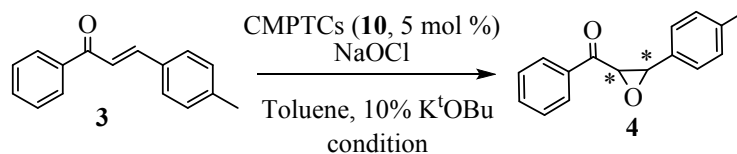
Supporting Information

Ultrasonic Assisted Dimeric Cinchona based Chiral Phase Transfer Catalysts for Highly Enantioselective Synthesis of Epoxidation of α , β -Unsaturated Ketones

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Table 1 The asymmetric epoxidation of chalcone **3** under various conditions with CMPTCs (**10**) and NaOCl in toluene.

Entry	Condition	Catalyst	Time (h)	Yield (%) ^a	% of ee ^b (Abs.Conf.) ^c
1	Ultrasonication	10a	1.0	99	81 (2 <i>S</i> ,3 <i>R</i>)
2	Ultrasonication	10b	1.0	96	79 (2 <i>S</i> ,3 <i>R</i>)
3	10°C	10a	5.0	65	67 (2 <i>S</i> ,3 <i>R</i>)
4	10°C	10b	5.0	63	65 (2 <i>S</i> ,3 <i>R</i>)
5	-10°C	10a	10.0	52	64 (2 <i>S</i> ,3 <i>R</i>)
6	-10°C	10b	10.0	51	59 (2 <i>S</i> ,3 <i>R</i>)

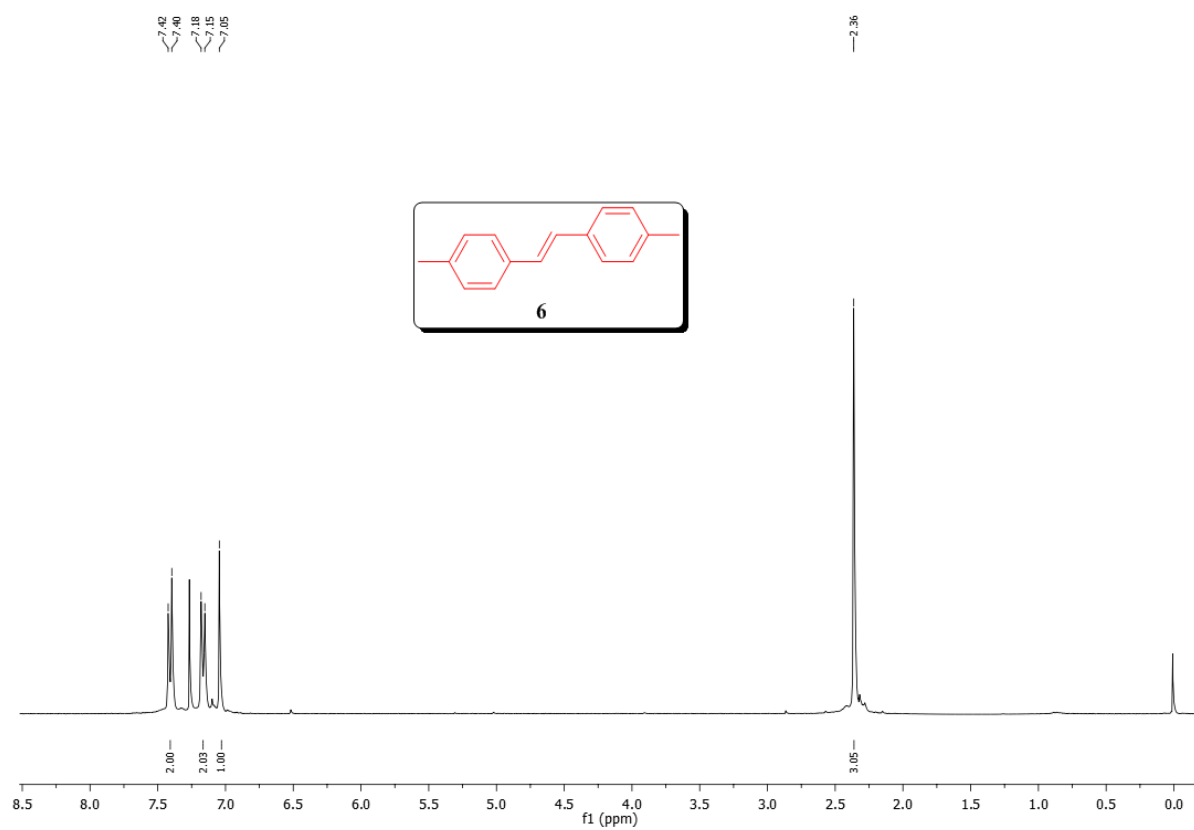
^a Isolated yield of purified materials.

^b Enantiomeric excess of **4** was determined by HPLC analysis using a chiral column (Phenomenex Chiralpack) with hexane-IPA as a solvent.

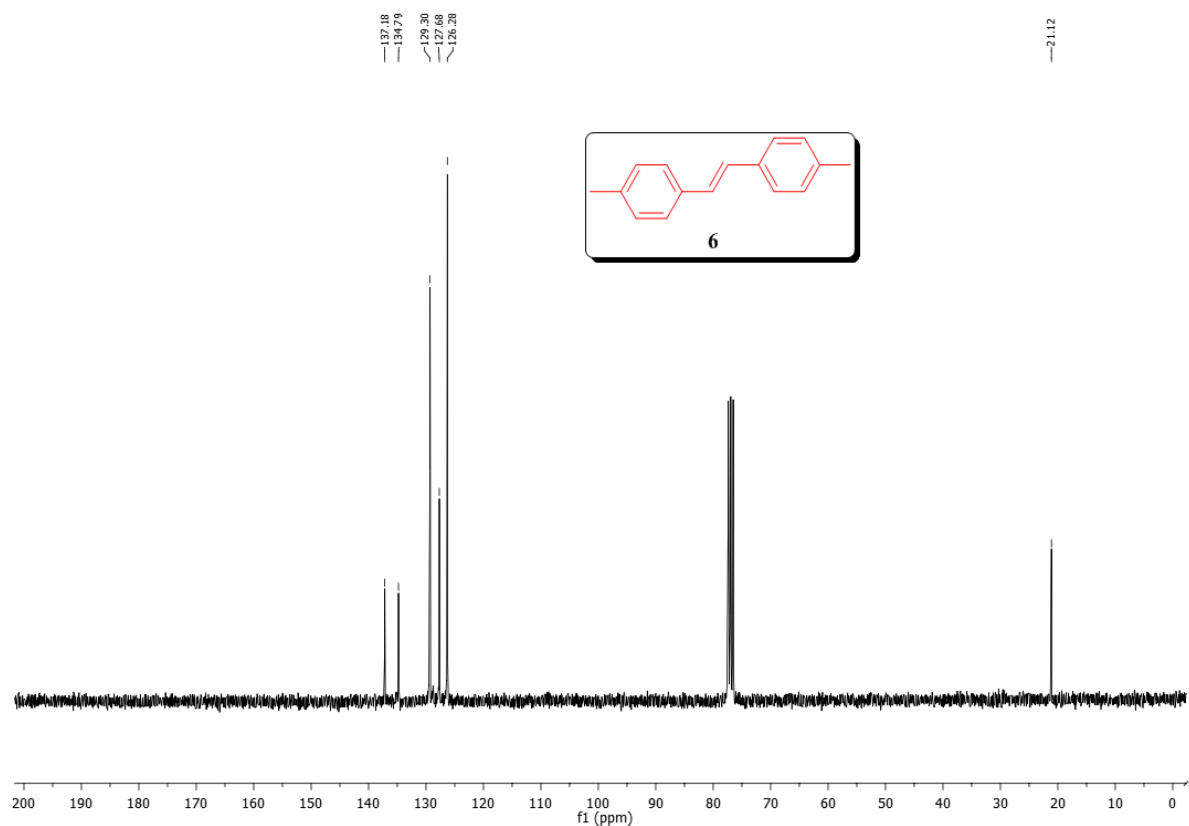
^c The absolute configuration of **4** was determined to be (2*S*,3*R*) by comparison with the HPLC retention time using known standard.¹

Reference

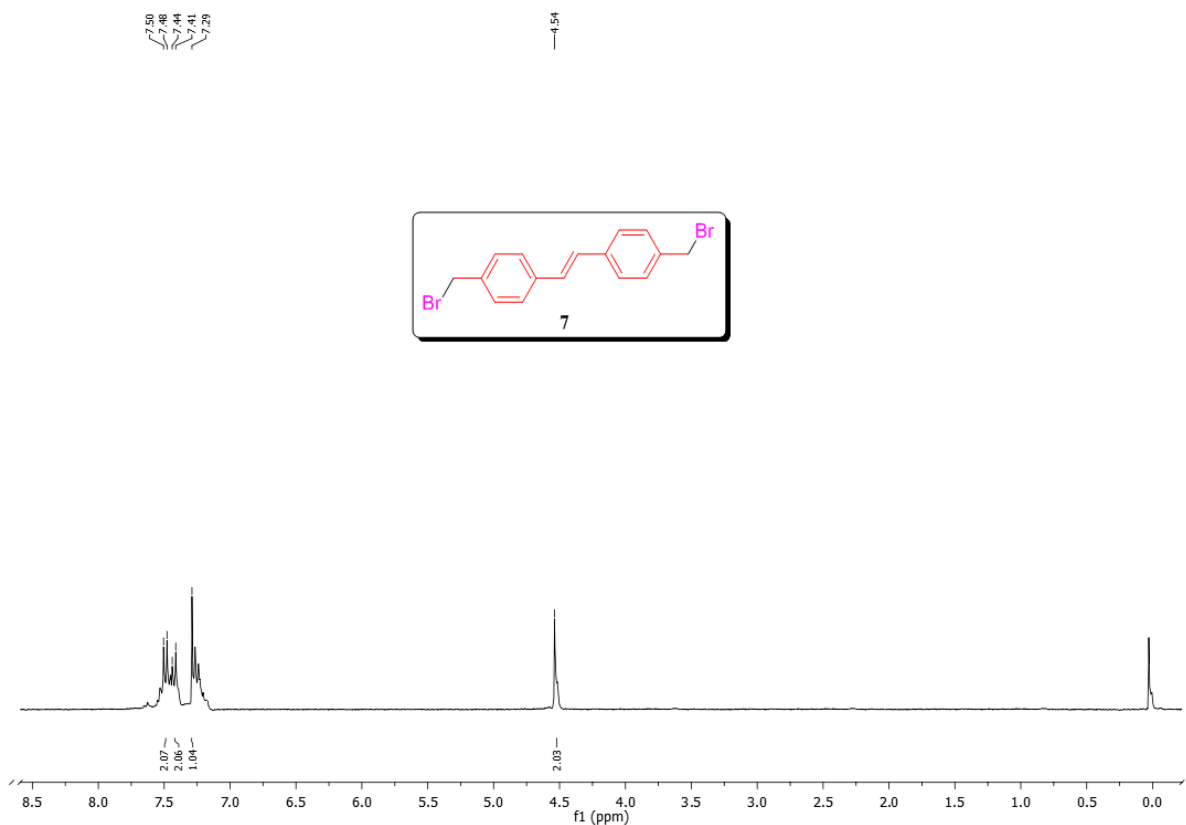
1 Shigeru Arai, Hiroki Tsuge, and Takayuki Shioiri, *Tetrahedron Lett.* 1998, **39**, 7563.



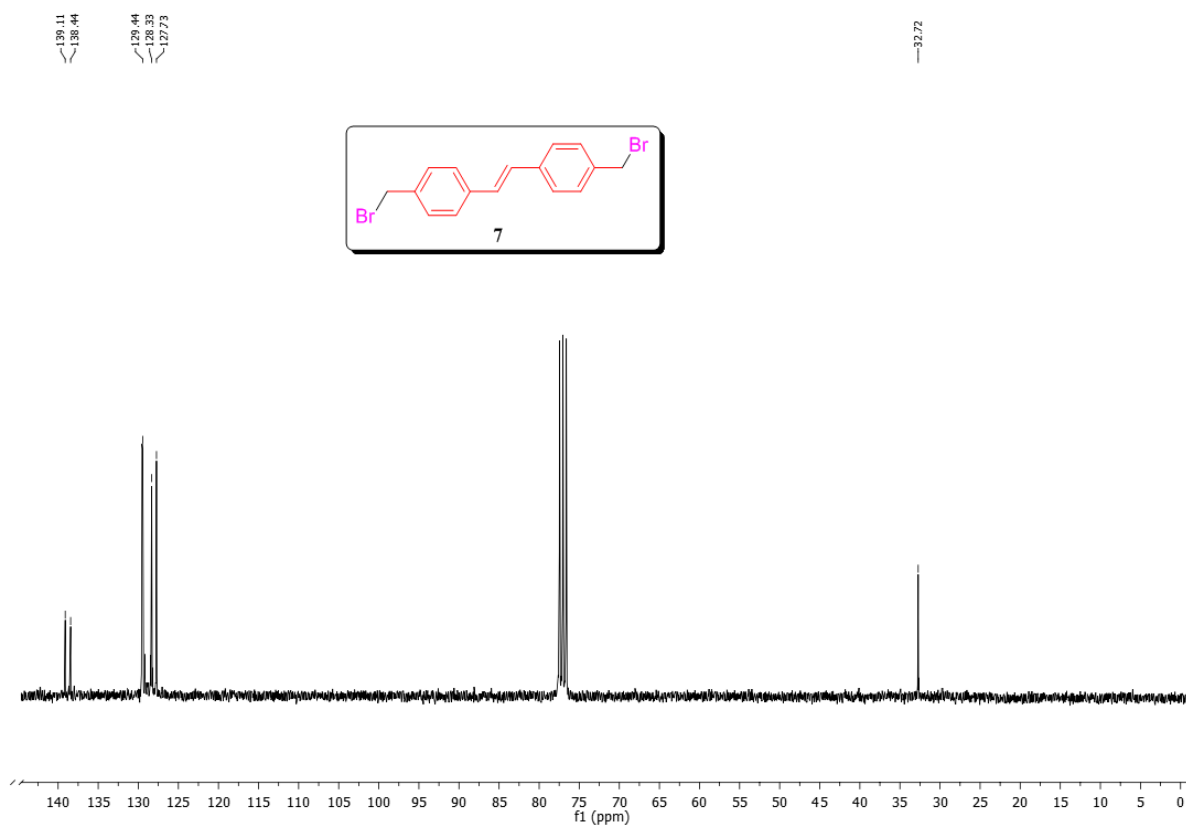
S 1: ^1H NMR Spectrum of (*E*)-4,4-Dimethylstilbene (6).



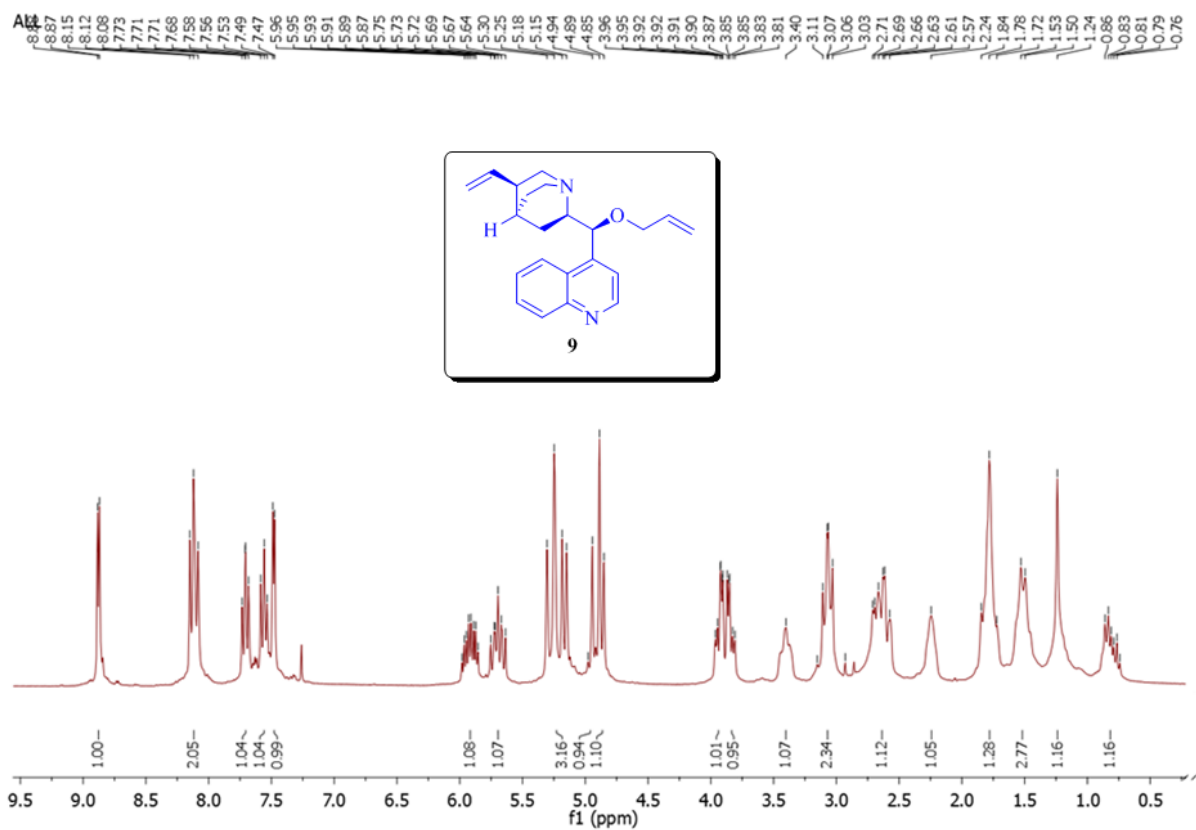
S 2: ^{13}C NMR Spectrum of (*E*)-4,4-Dimethylstilbene (6).



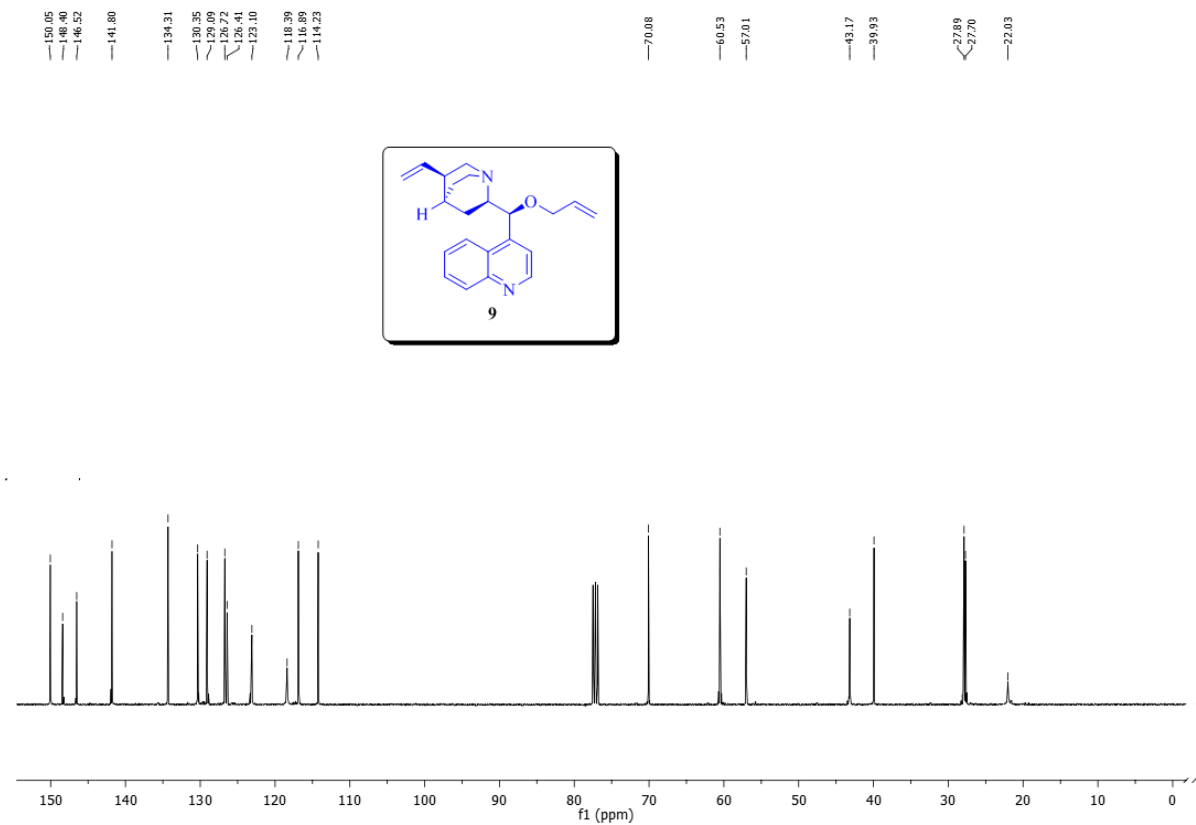
S 3: ¹H NMR Spectrum of (E)-4,4-bis(bromomethyl)stilbene (7).



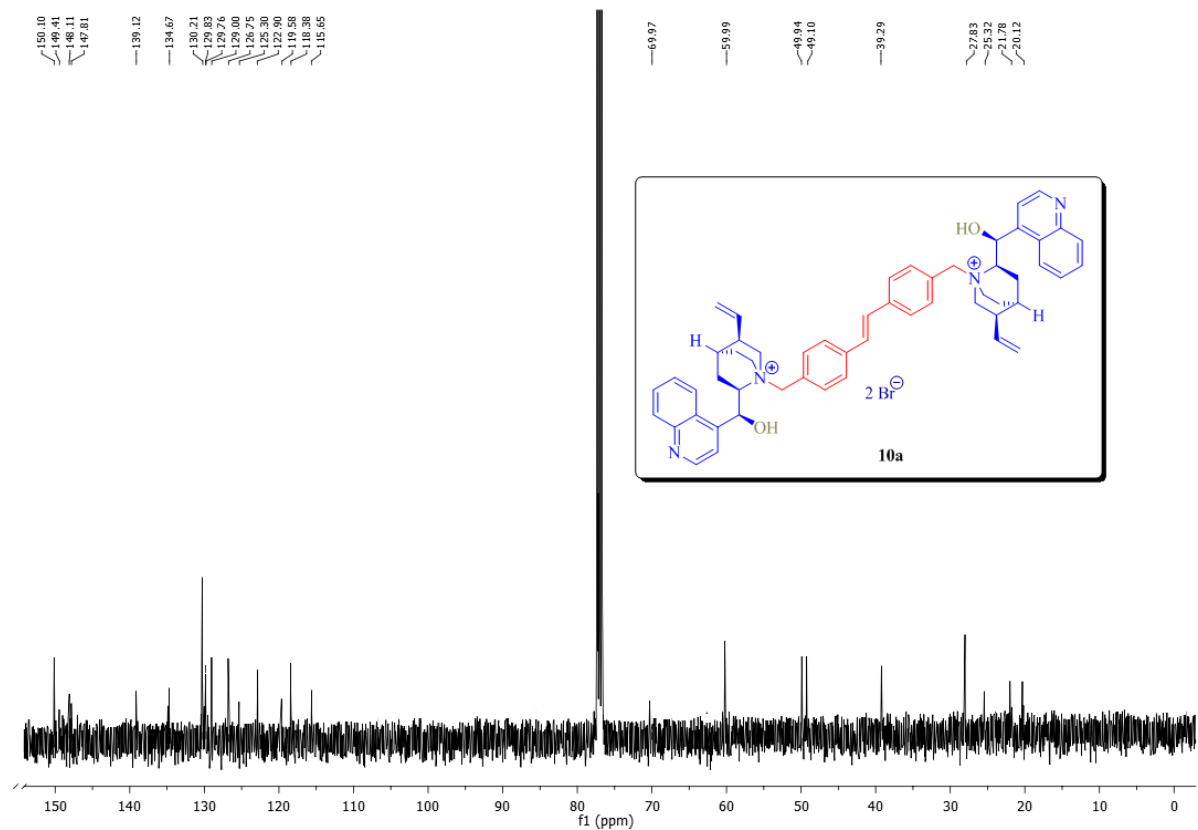
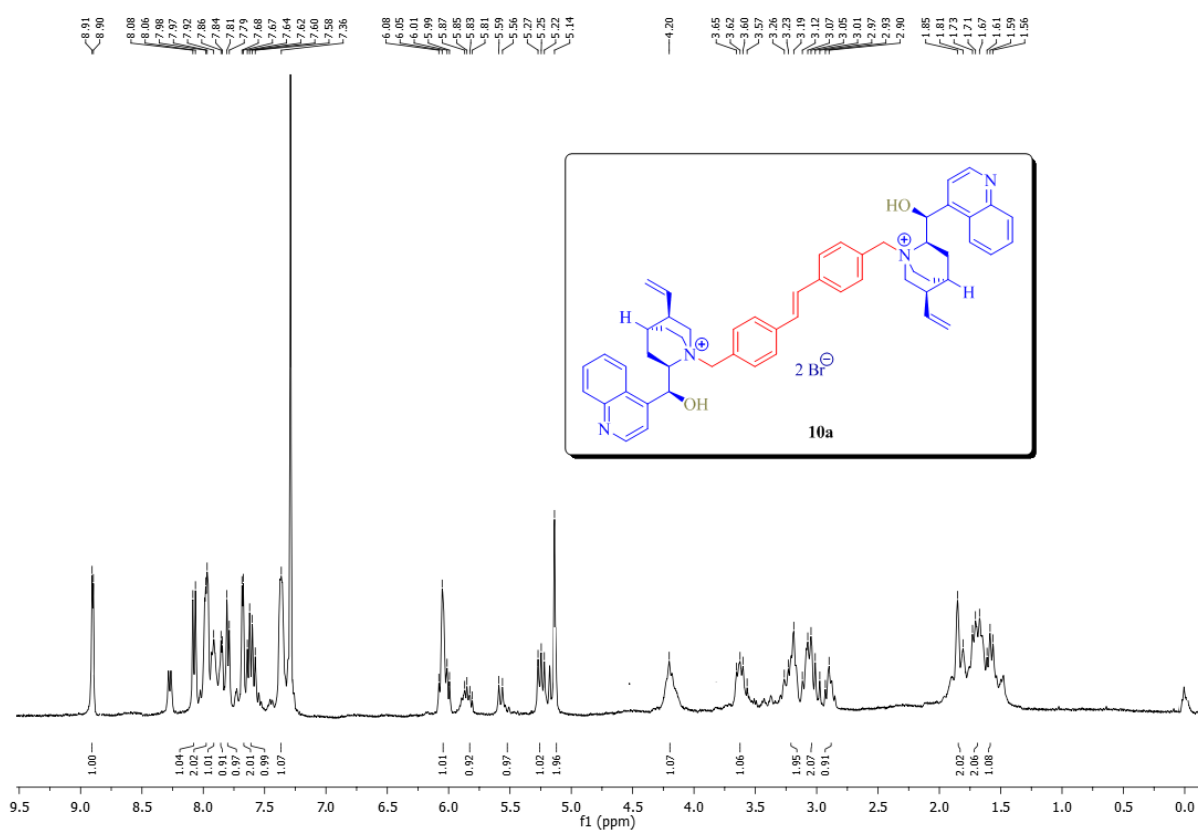
S 4: ¹³C NMR Spectrum of (E)-4,4-bis(bromomethyl)stilbene (7).



S 5: ^1H NMR Spectrum of *O*- Allylcinchonine (9).

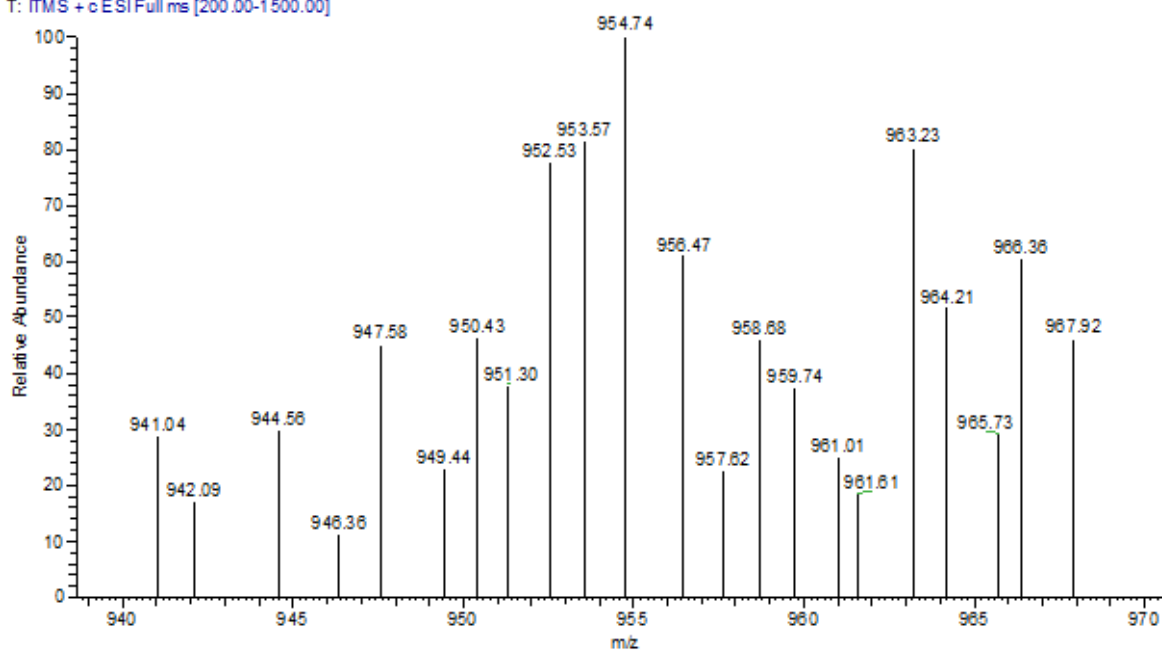


S 6: ^{13}C NMR Spectrum of *O*- Allylcinchonine (9).

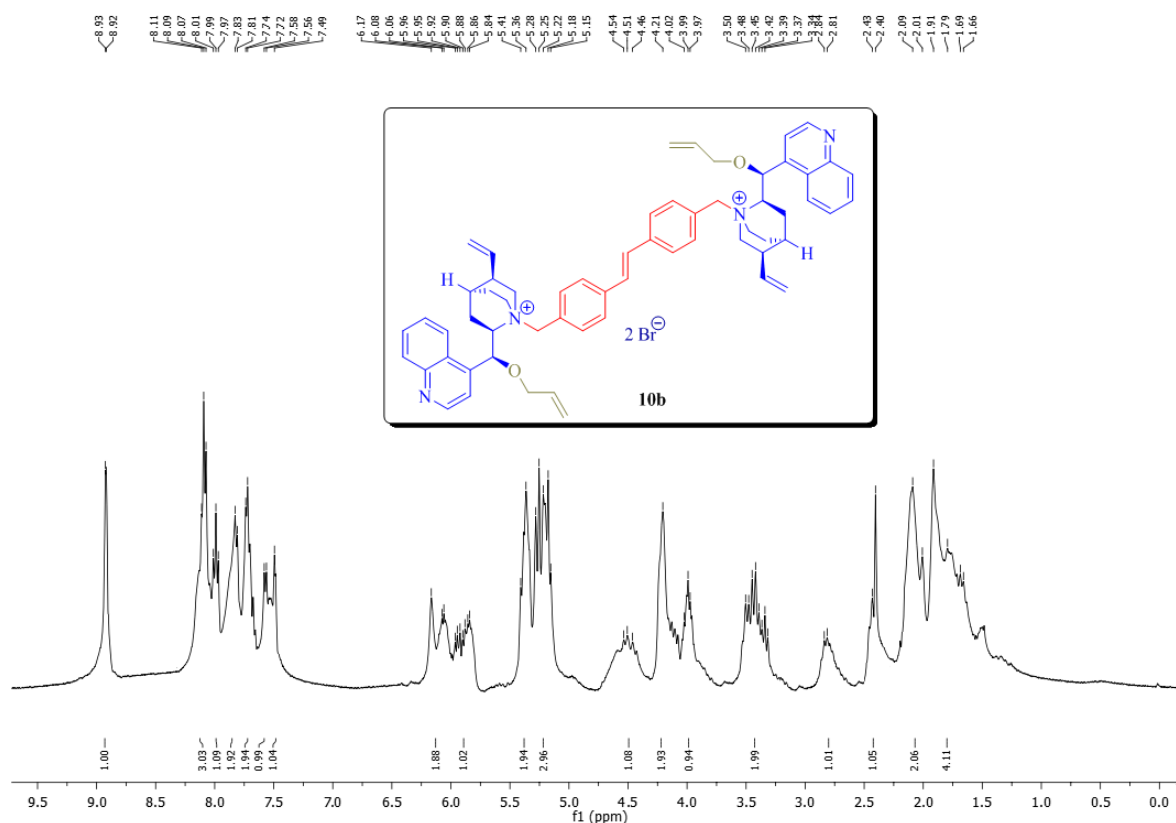


Supporting Information

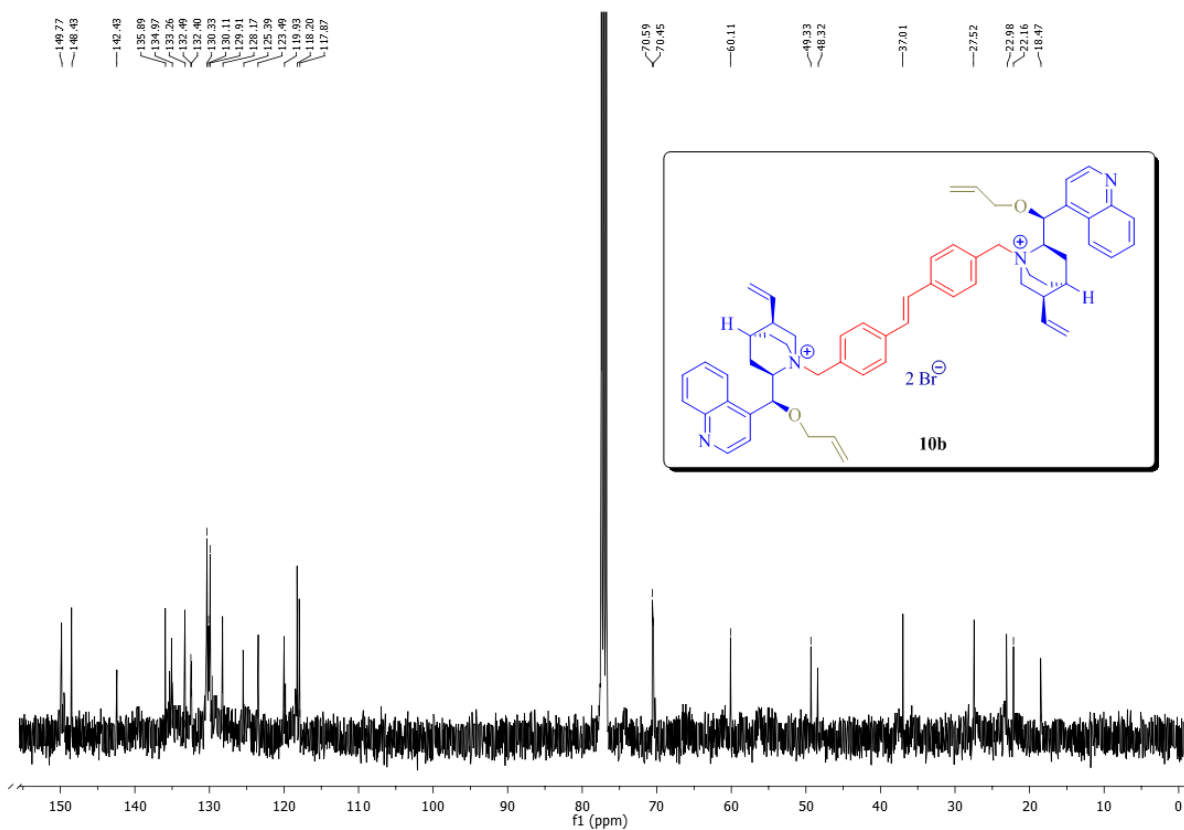
SC_141017221503 #5 RT: 0.06 AV: 1 NL: 4.98E1
T: FTMS + c ESI Full ms [200.00-1500.00]



S 9: ESI - Mass Spectrum of Cinchonine (contains free -OH) based CMPTC (10a).

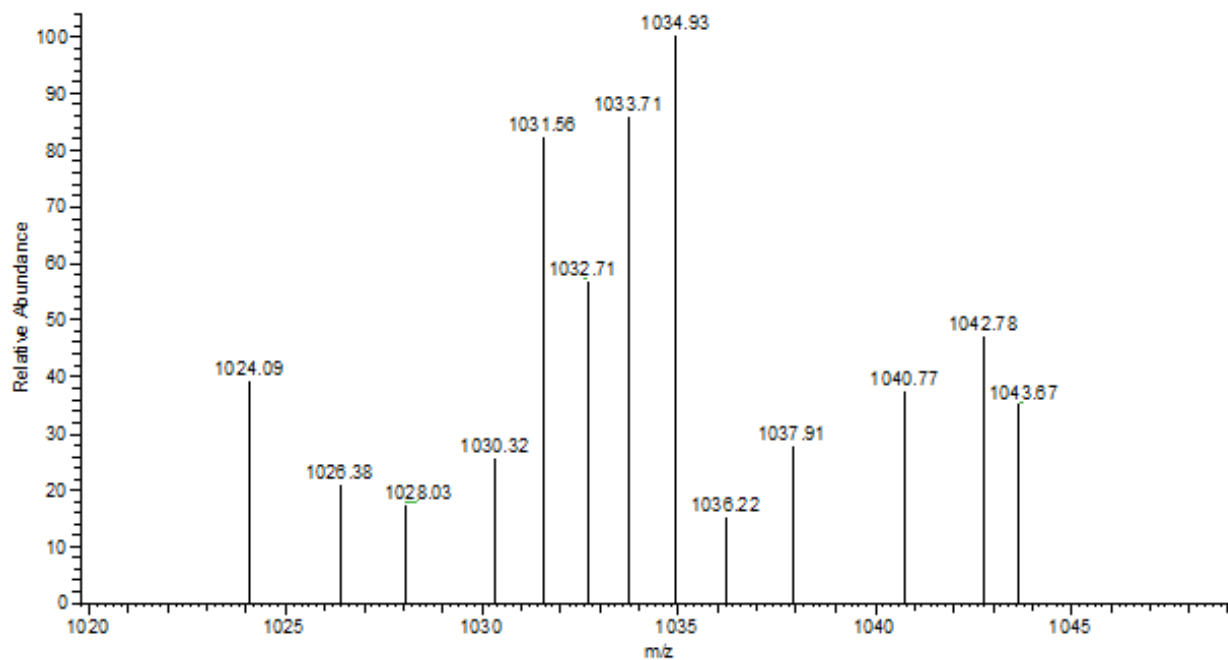


S 10: ¹H NMR Spectrum of Allylated cinchonine based CMPTC (10b).

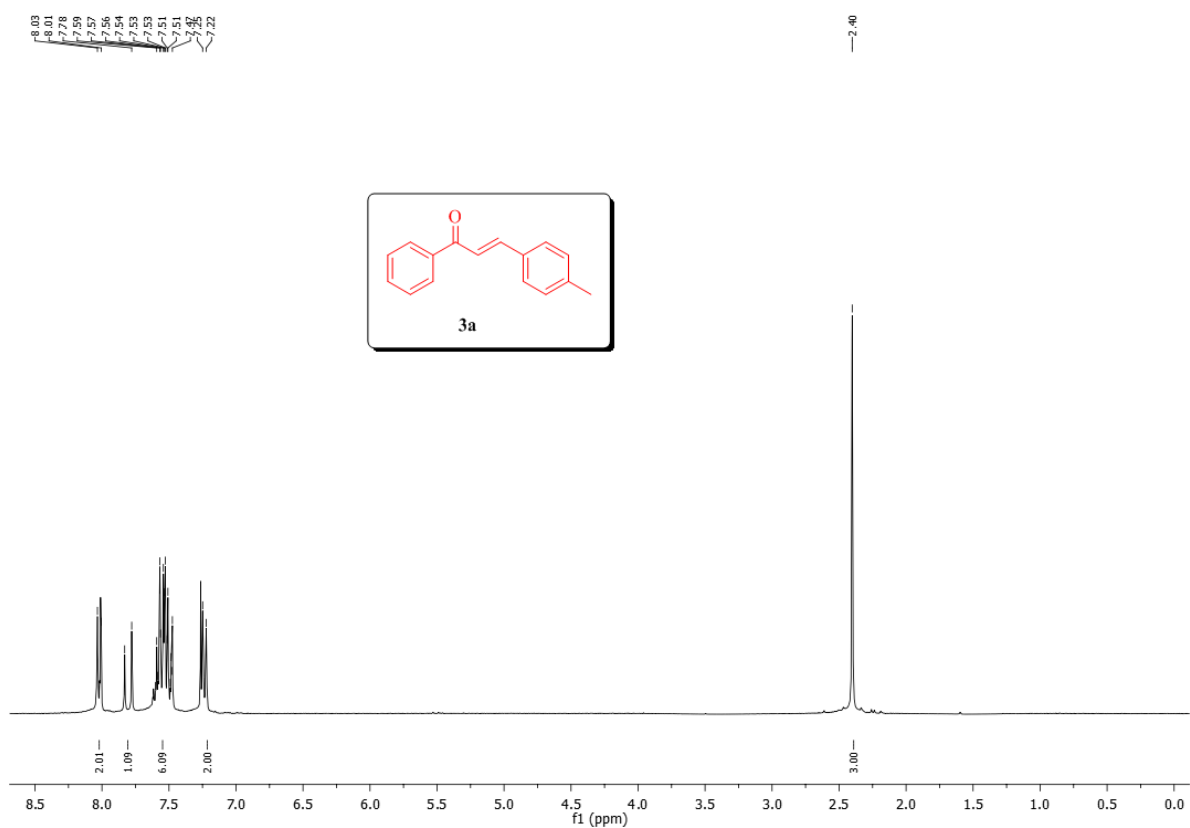


S 11: ¹³C NMR Spectrum of Allylated cinchonine based CMPTC (10b).

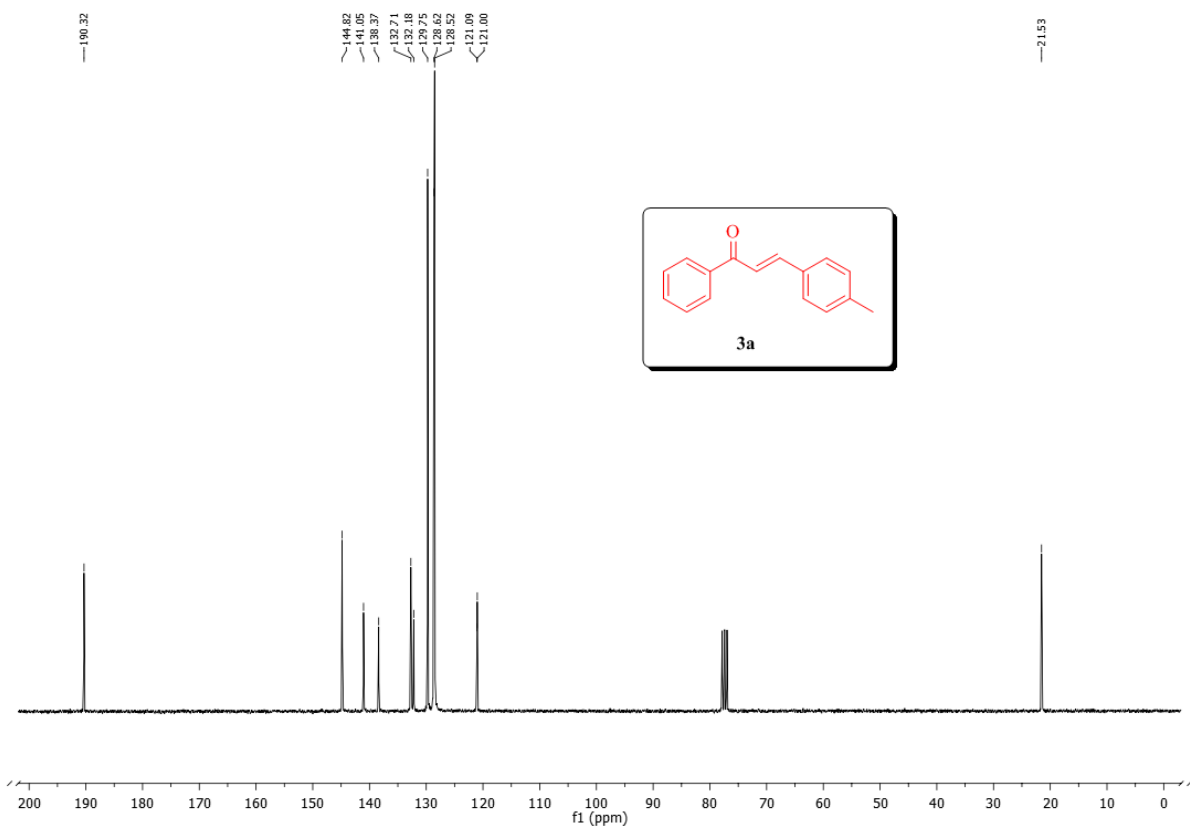
SPC #27 RT: 0.37 AV: 1 NL: 1.90E2
T: ITMS + c ESI Full ms [200.00-1500.00]



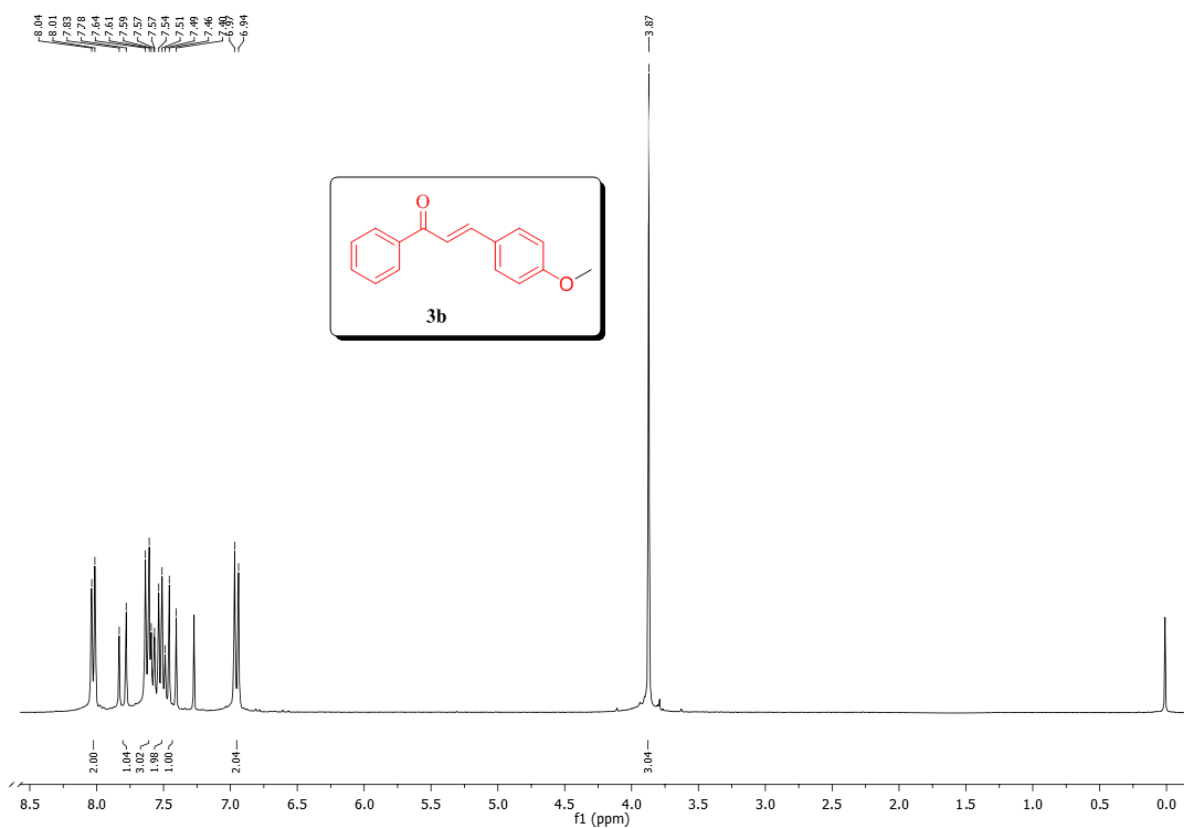
S 12: ESI - Mass Spectrum of Allylated cinchonine based CMPTC (10b).



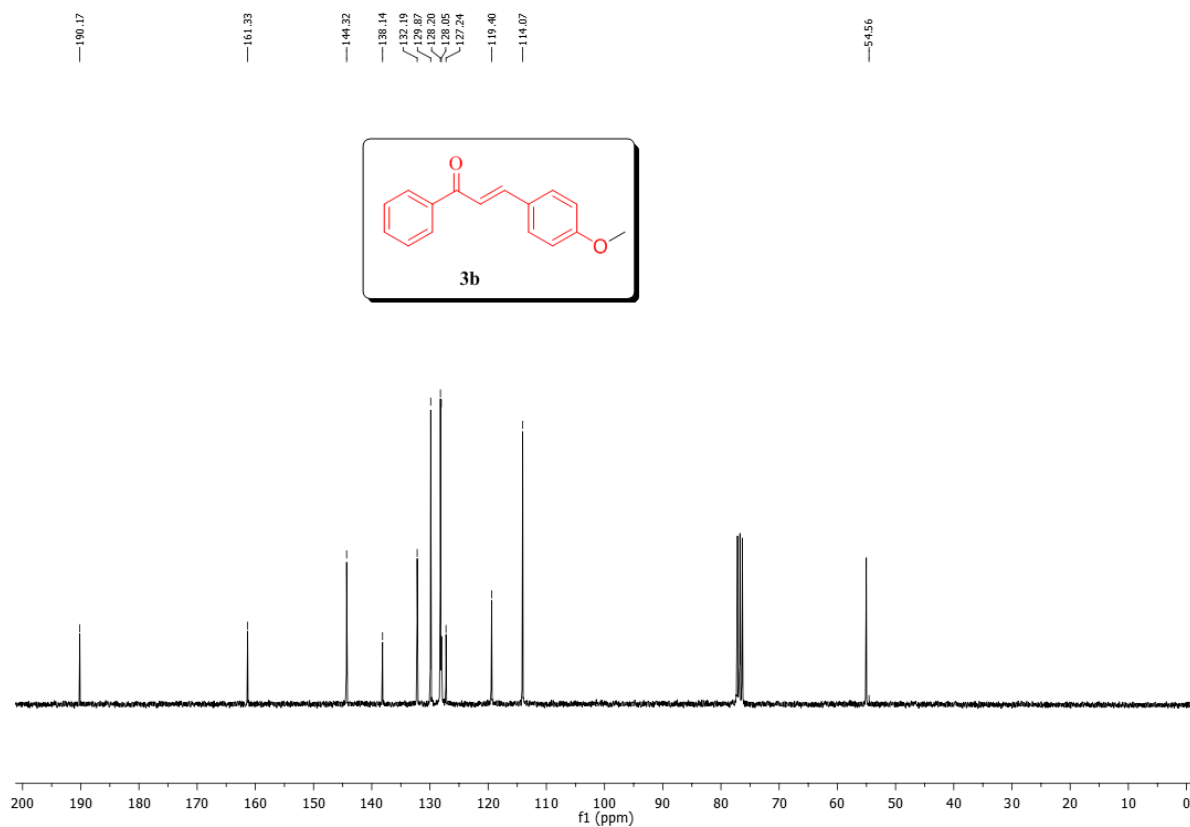
S 13: ¹H NMR Spectrum of (*E*)-1-phenyl-3-*p*-tolylprop-2-en-1-one (3a).



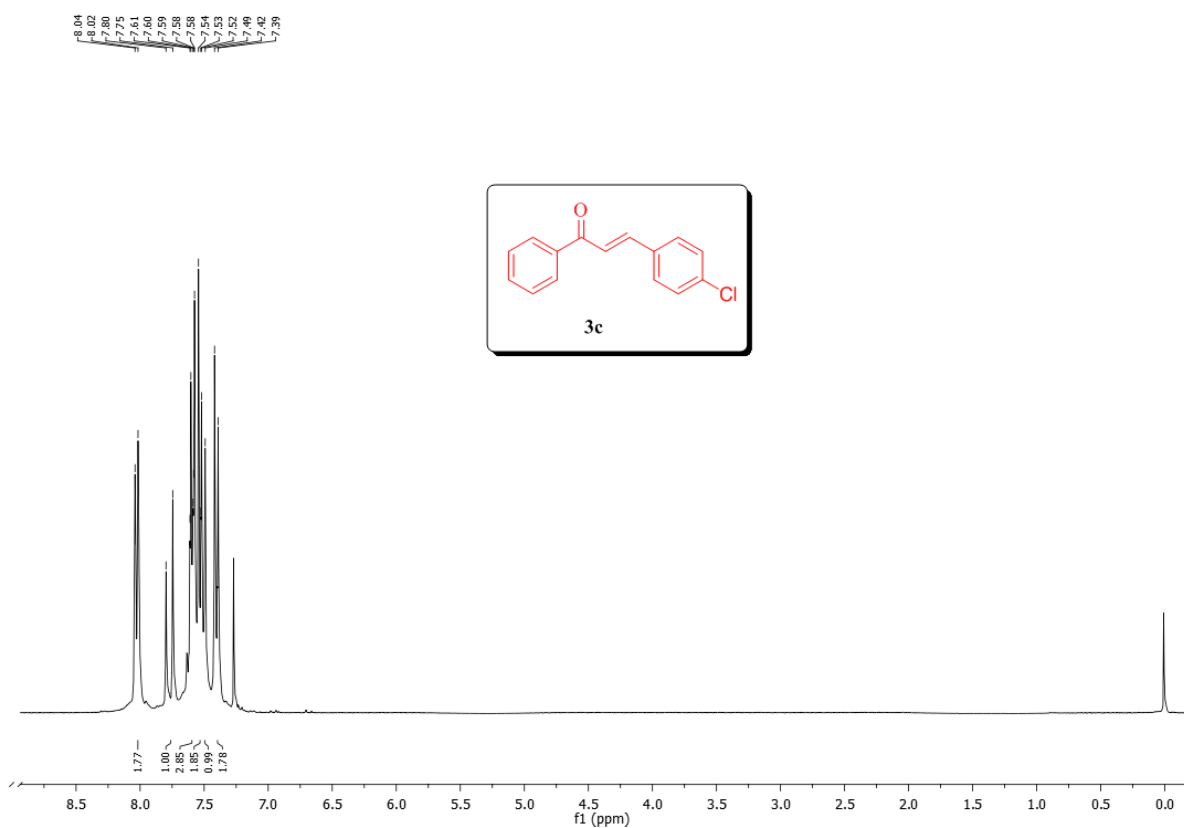
S 14: ¹³C NMR Spectrum of (*E*)-1-phenyl-3-*p*-tolylprop-2-en-1-one(3a).



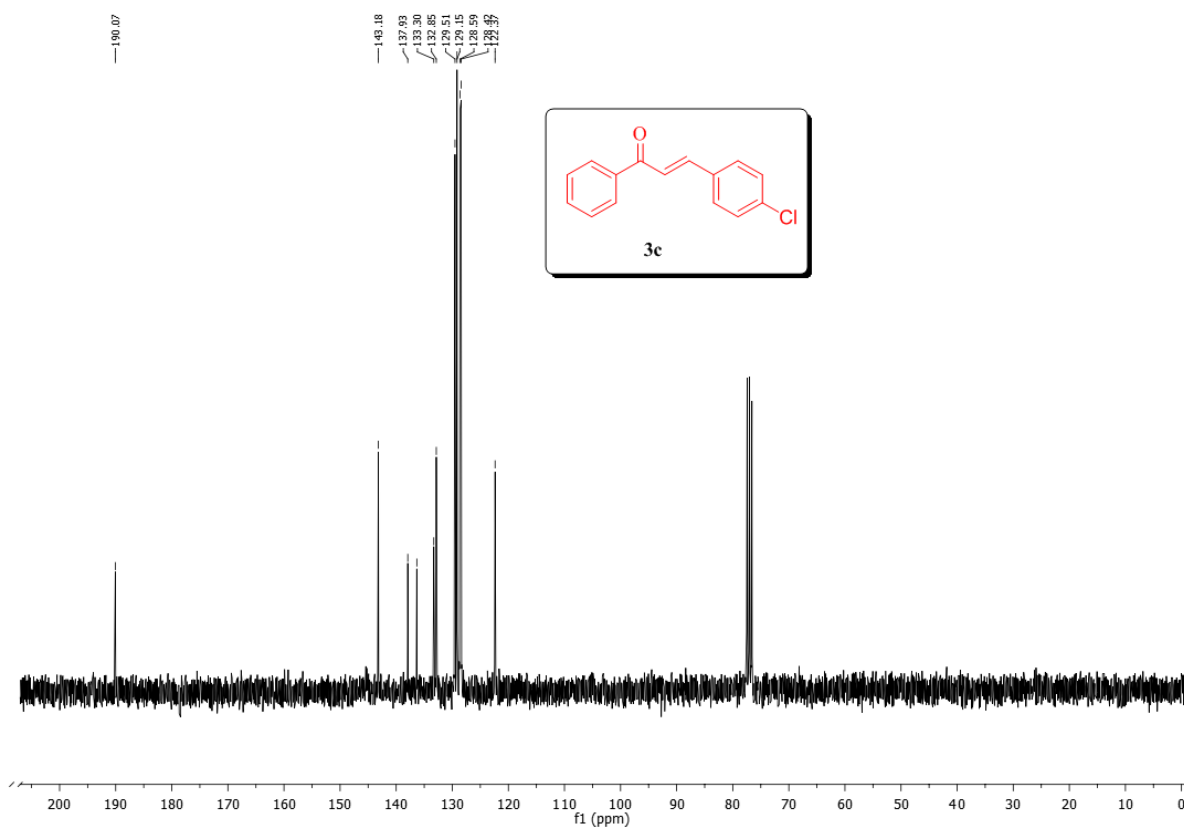
S 15: ¹H NMR Spectrum of (*E*)-3-(4-methoxyphenyl)-1-phenylprop-2-en-1-one (3b).



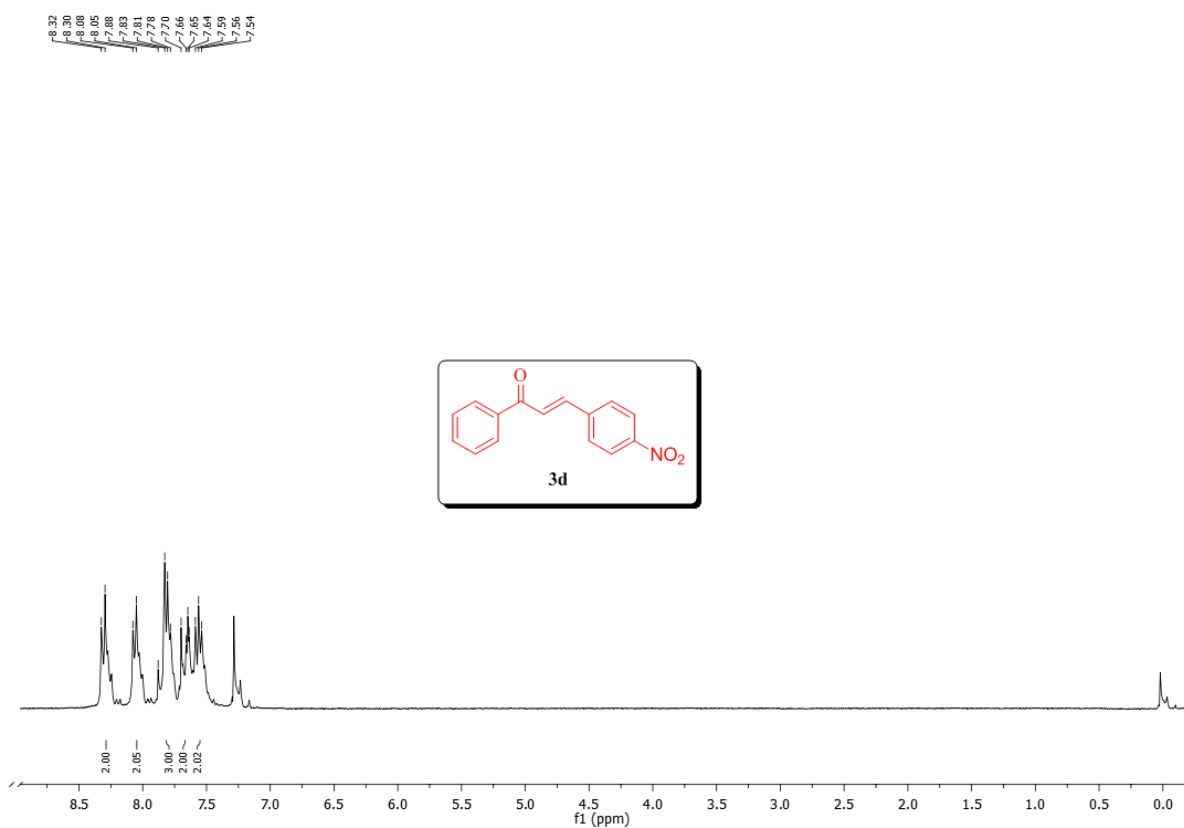
S 16: ¹³C NMR Spectrum of (*E*)-3-(4-methoxyphenyl)-1-phenylprop-2-en-1-one (3b).



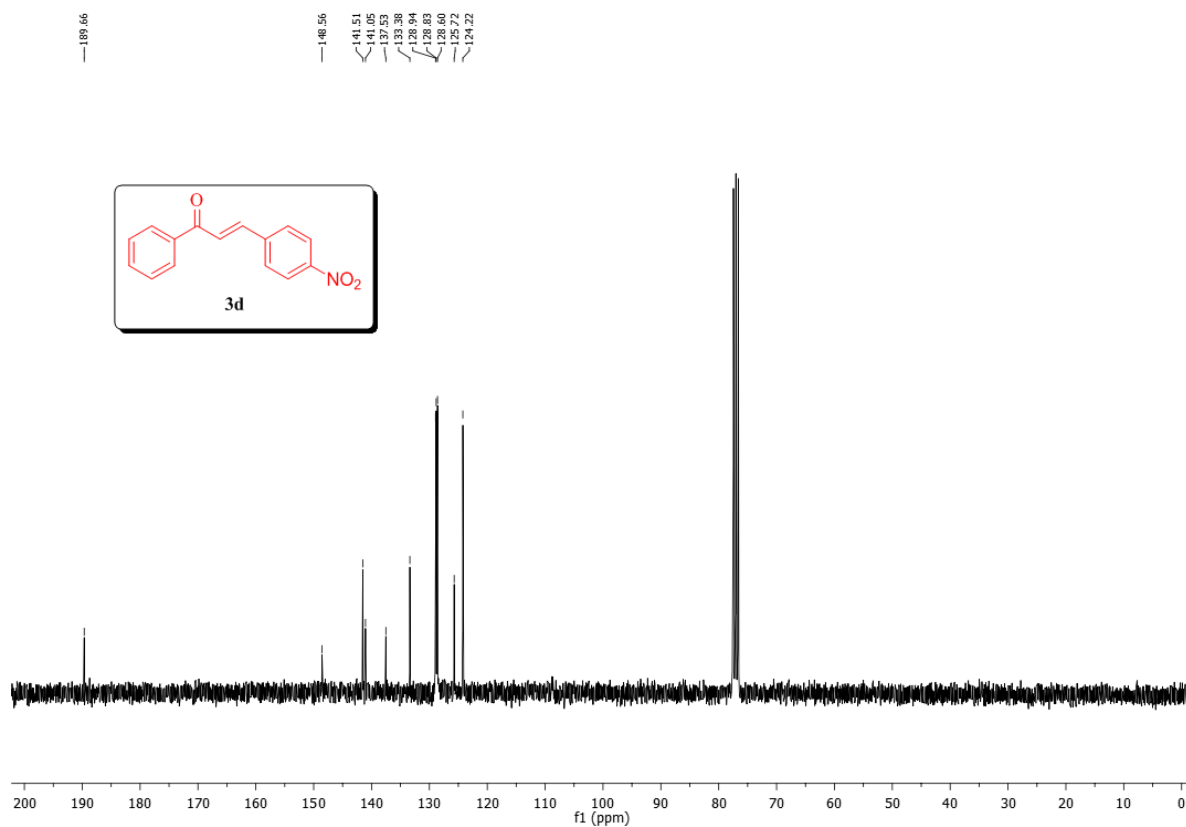
S 17: ¹H NMR Spectrum of (*E*)-3-(4-chlorophenyl)-1-phenylprop-2-en-1-one (3c).



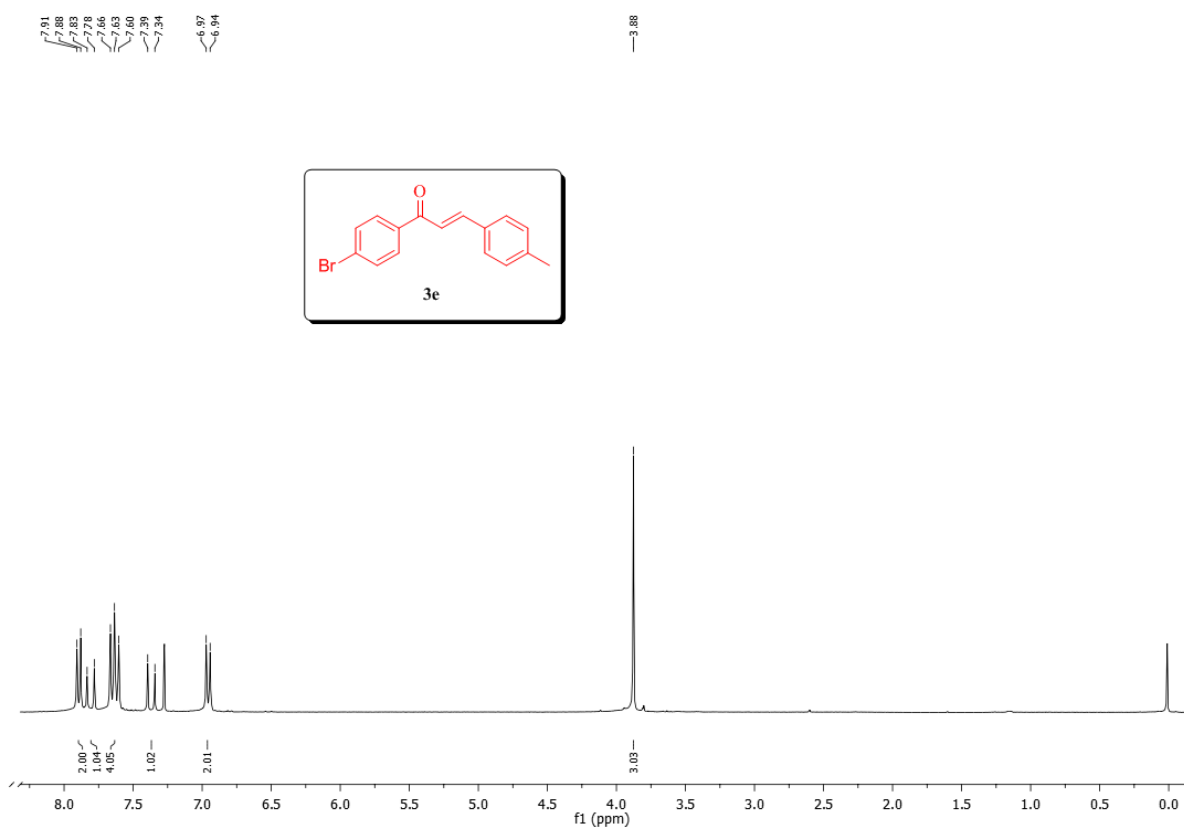
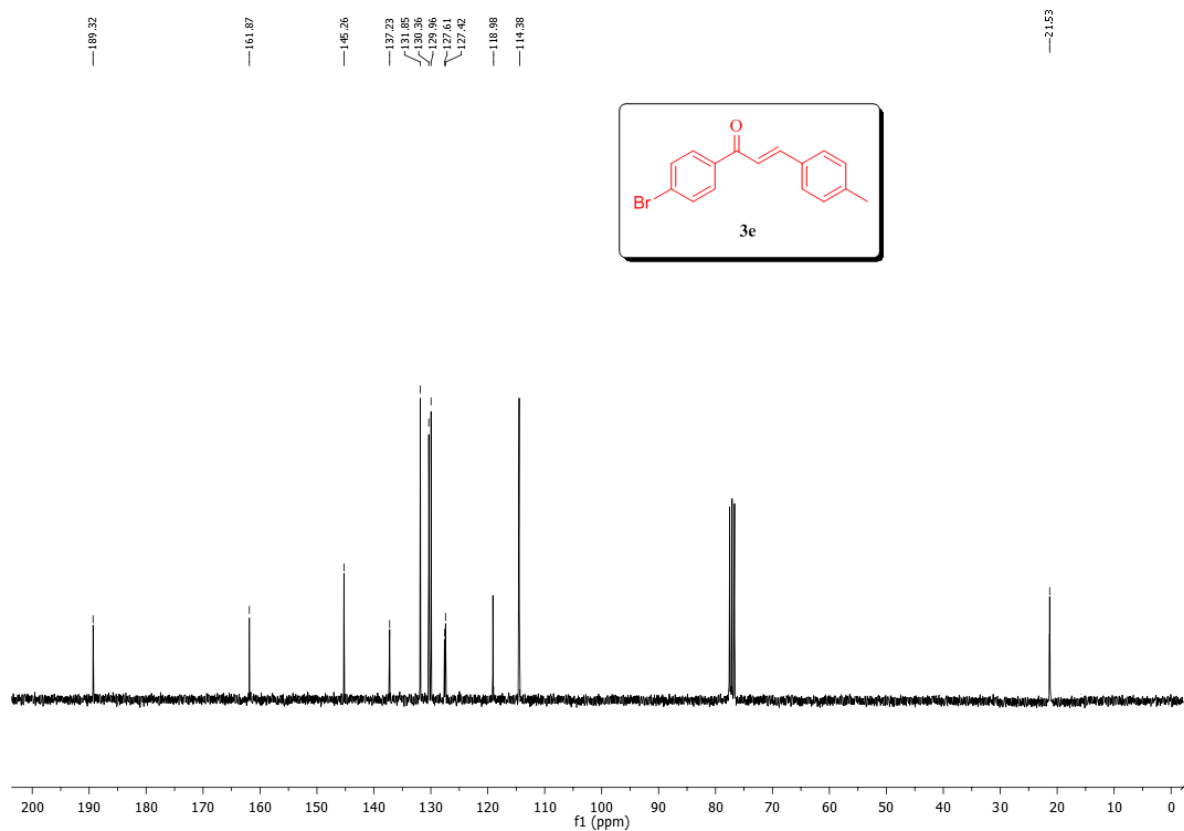
S 18: ¹³C NMR Spectrum of (*E*)-3-(4-chlorophenyl)-1-phenylprop-2-en-1-one (3c).

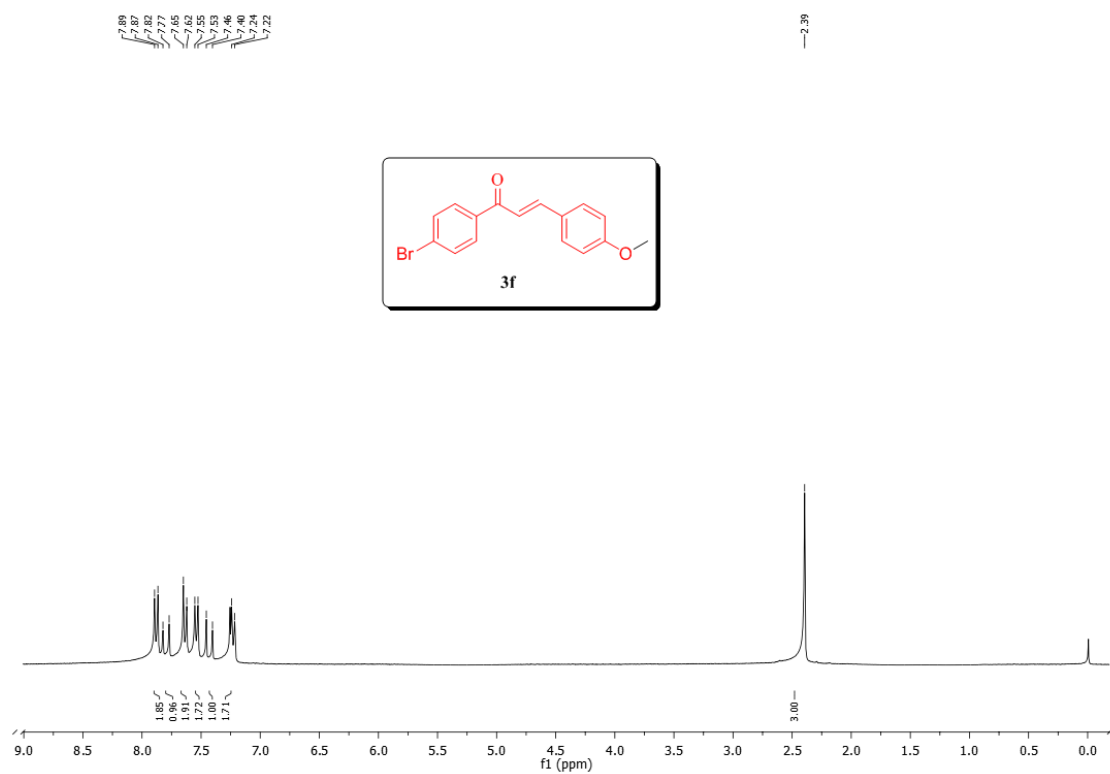


S 19: ¹H NMR Spectrum of (*E*)-3-(4-nitrophenyl)-1-phenylprop-2-en-1-one (**3d**).

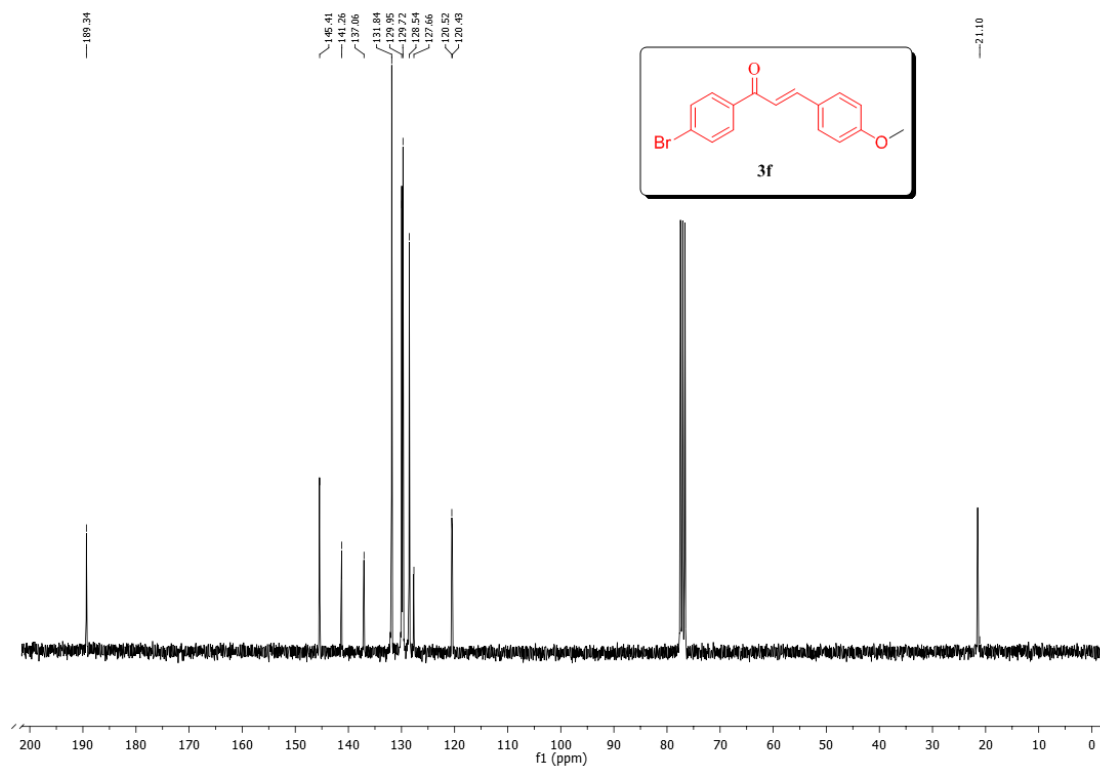


S 20: ¹³C NMR Spectrum of (*E*)-3-(4-nitrophenyl)-1-phenylprop-2-en-1-one (**3d**).

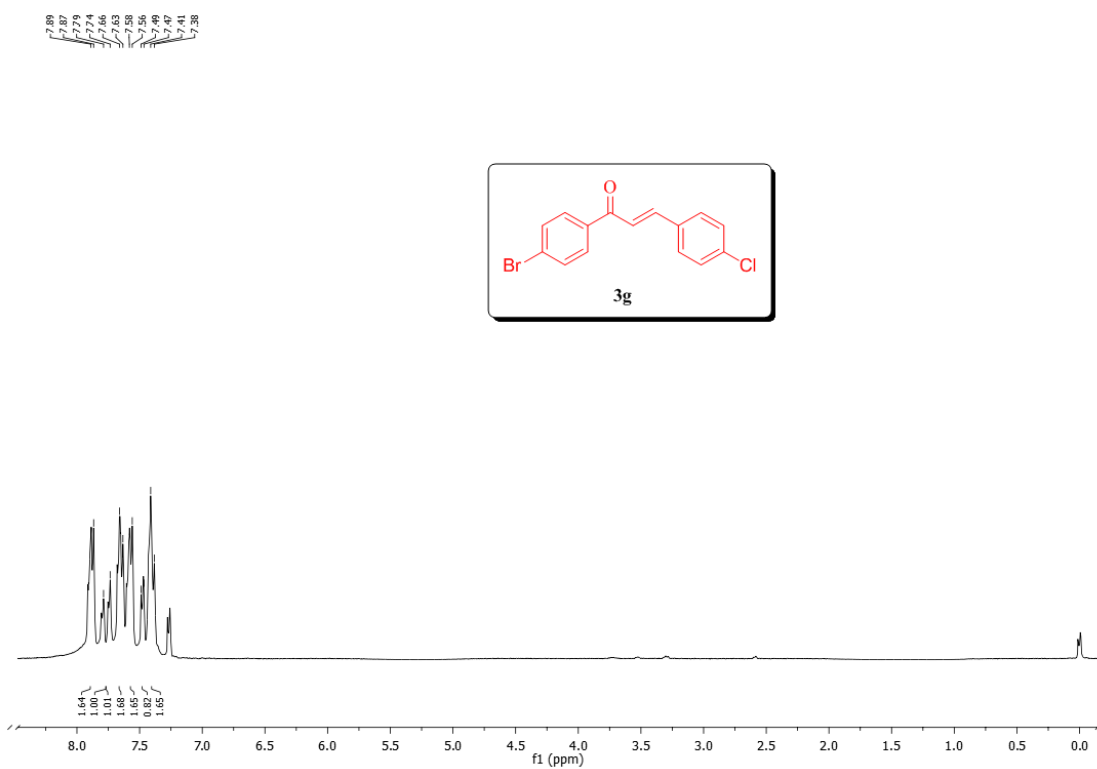
S 21: ^1H NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-*p*-tolylprop-2-en-1-one (**3e**).S 22: ^{13}C NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-*p*-tolylprop-2-en-1-one (**3e**)



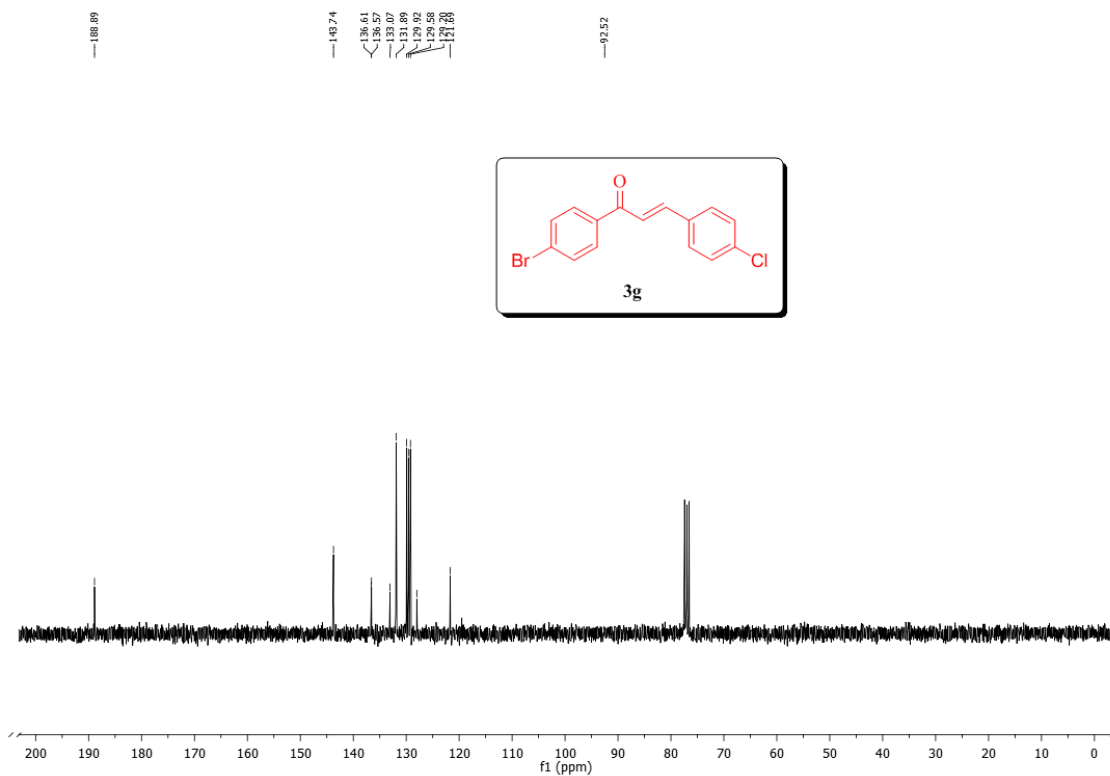
S 23: ¹H NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-methoxyphenyl) prop-2-en-1-one (3f).



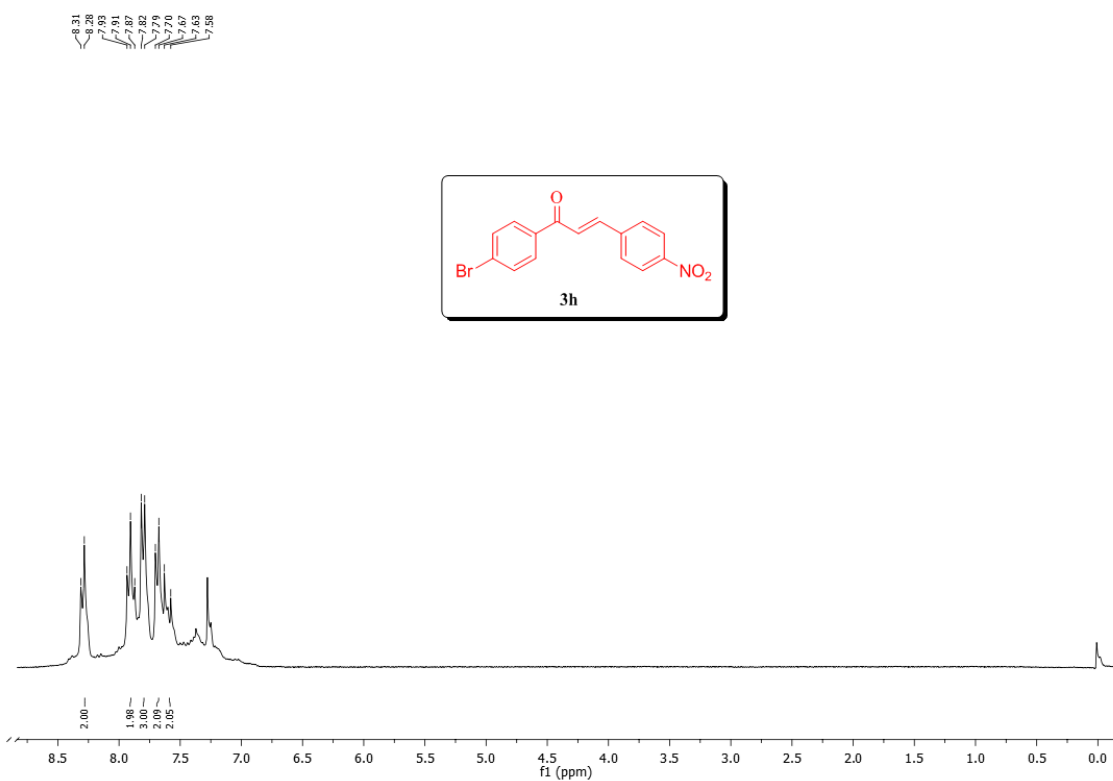
S 24: ¹³C NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-methoxyphenyl) prop-2-en-1-one (3f).



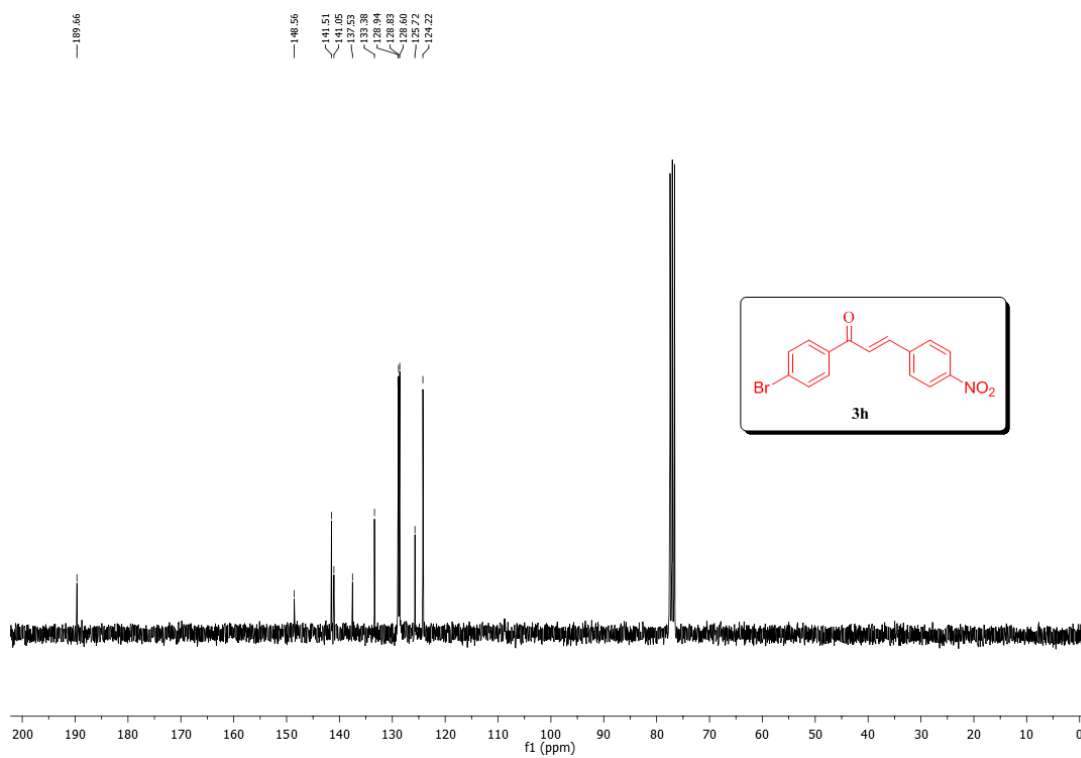
S 25: ¹H NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-chlorophenyl)prop-2-en-1-one (3g).



S 26: ¹³C NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-chlorophenyl)prop-2-en-1-one (3g).



S 27: ¹H NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-nitrophenyl) prop-2-en-1-one (3h).



S 28: ¹³C NMR Spectrum of (*E*)-1-(4-bromophenyl)-3-(4-nitrophenyl) prop-2-en-1-one (3h).

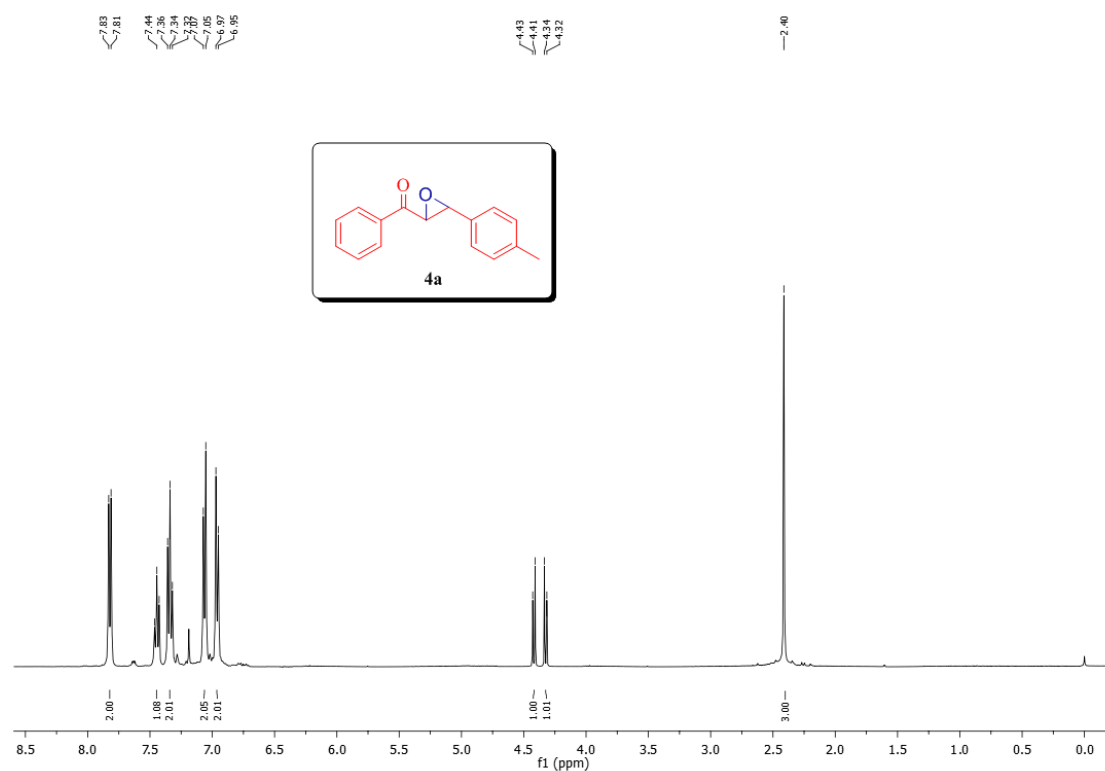
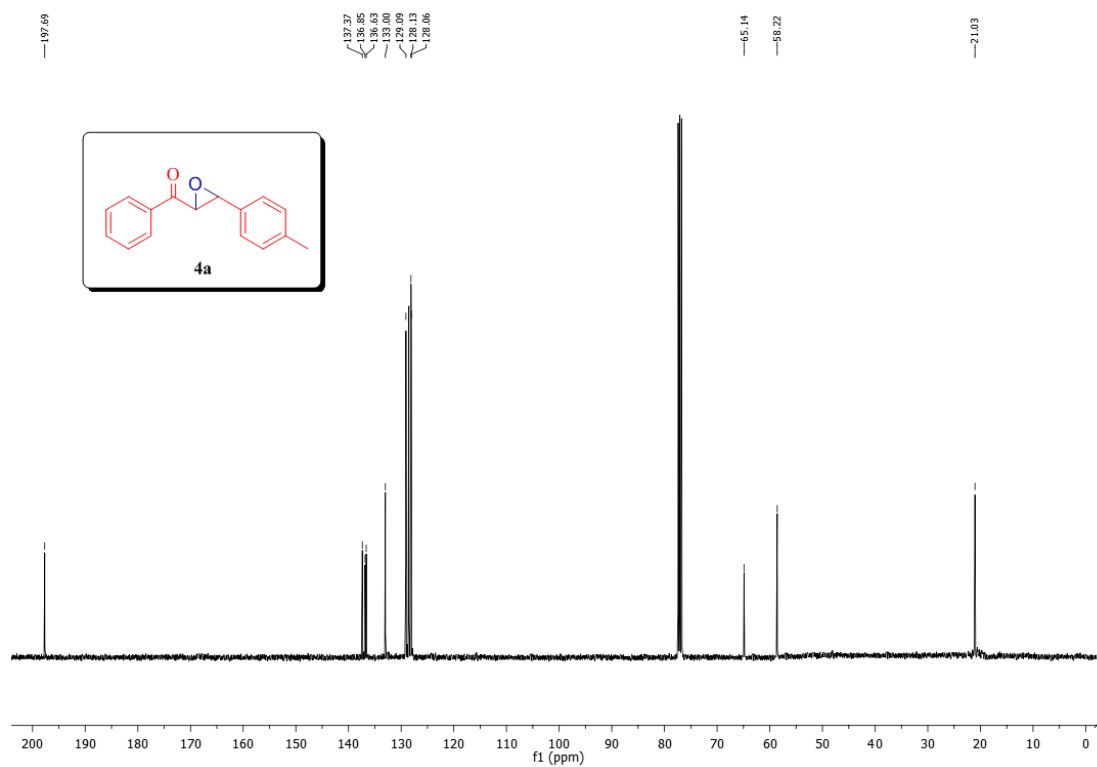
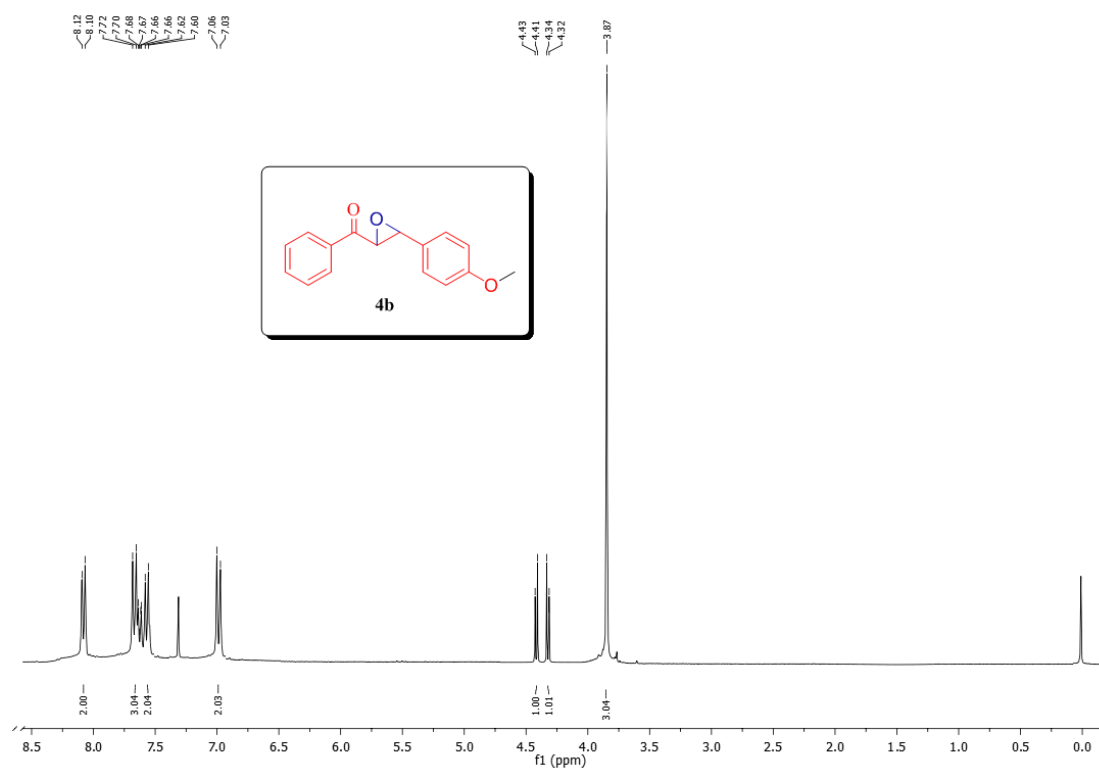


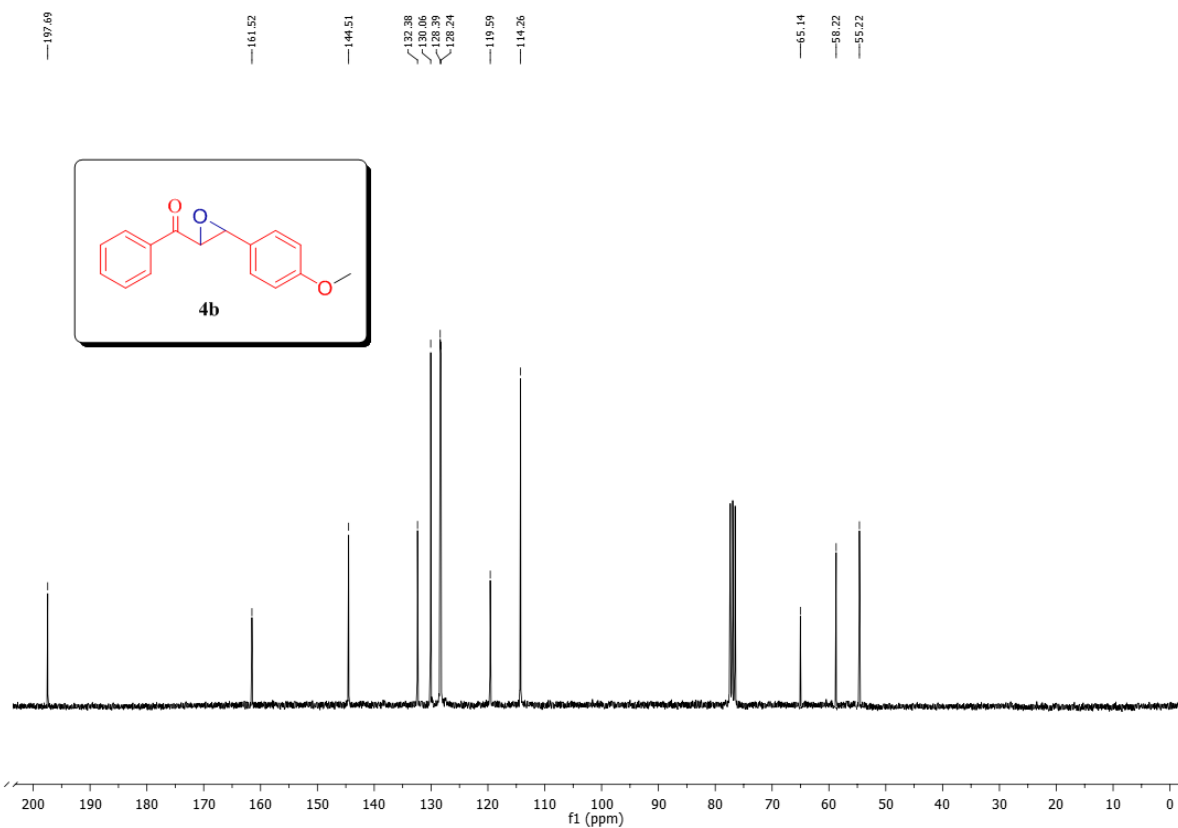
Figure 29: ¹H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-methylphenyl)-1-phenylpropan-1-one (4a).



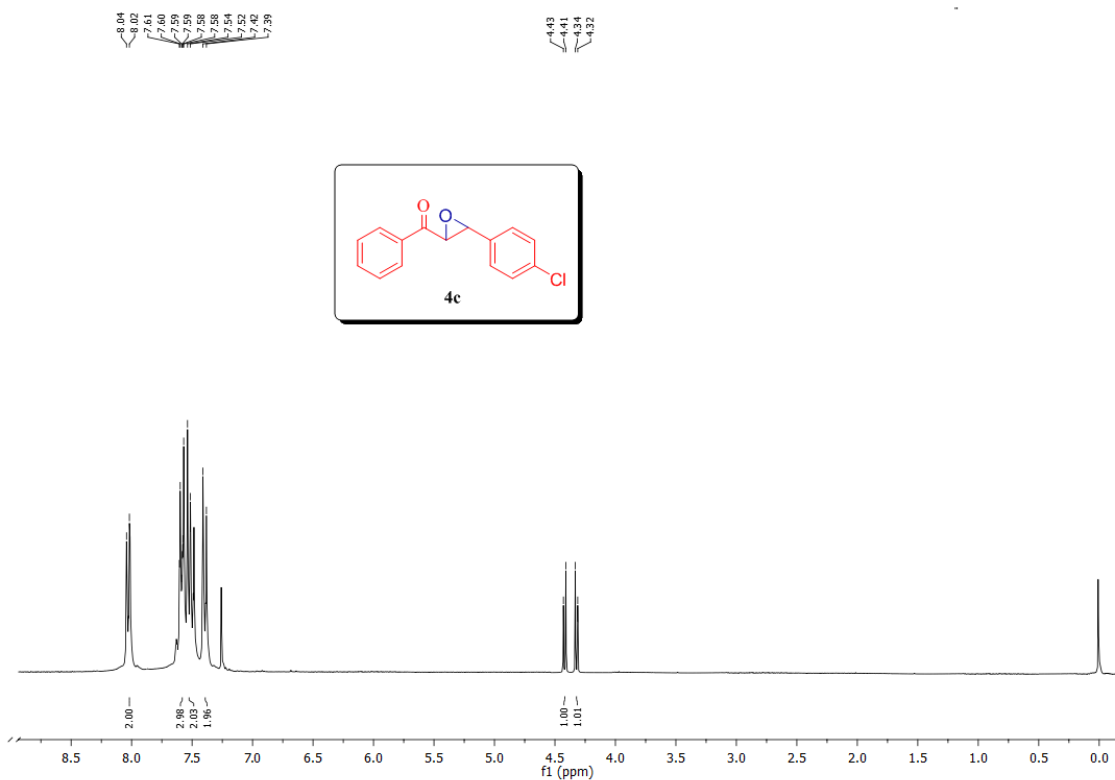
S 30: ¹³C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-methylphenyl)-1-phenylpropan-1-one (4a).



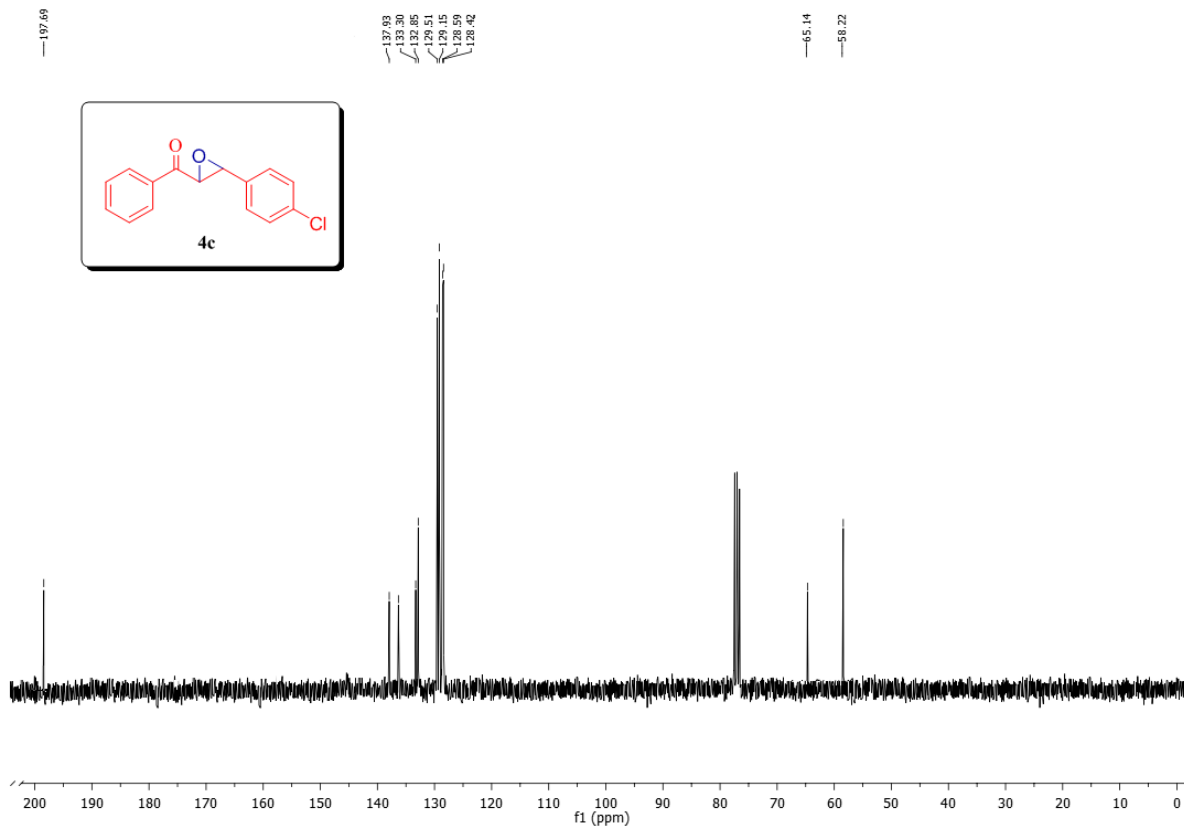
S 31: ¹H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-methoxyphenyl)-1-phenylproan-1-one (4b).



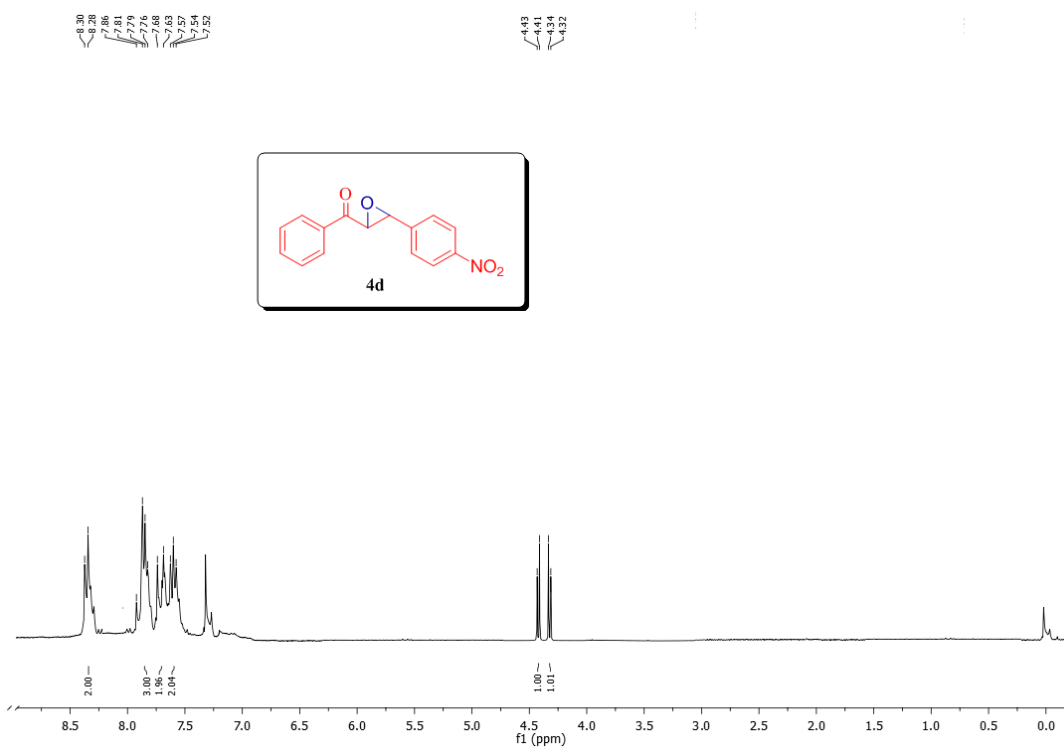
S 32: ¹³C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-methoxyphenyl)-1-phenylproan-1-one (4b).



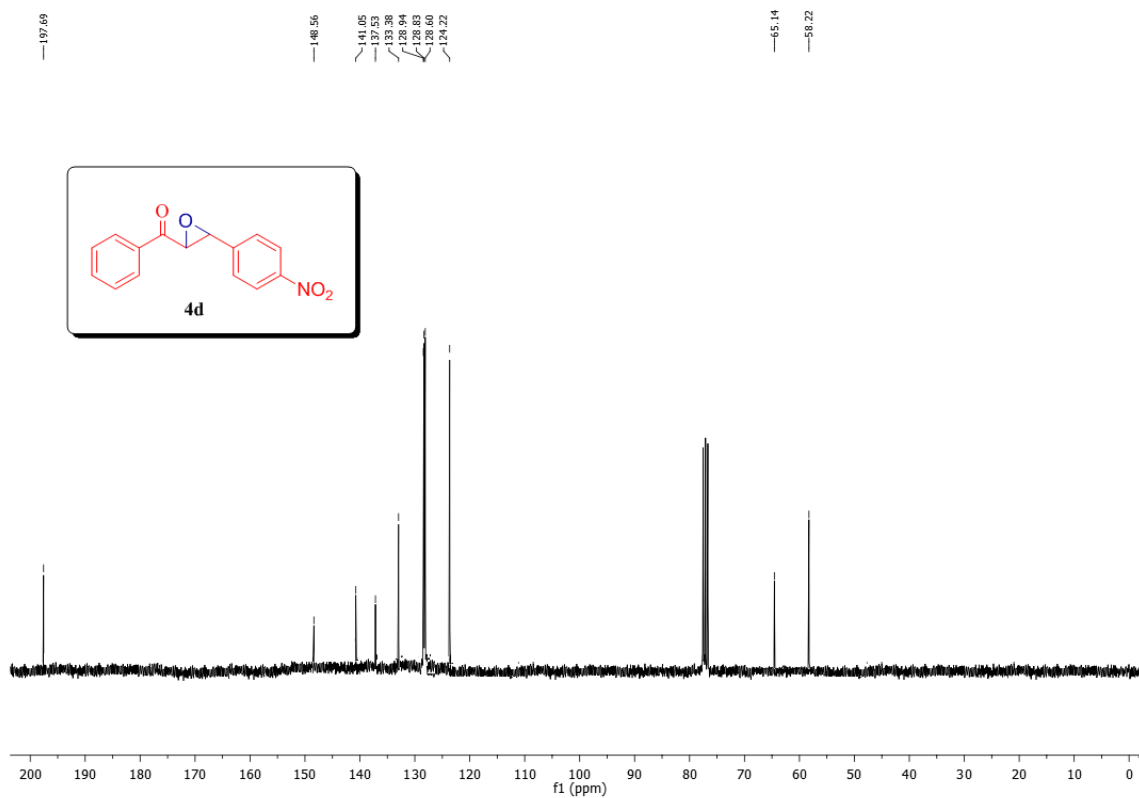
S 33: ¹H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-chlorophenyl)-1-phenylproan-1-one (4c).



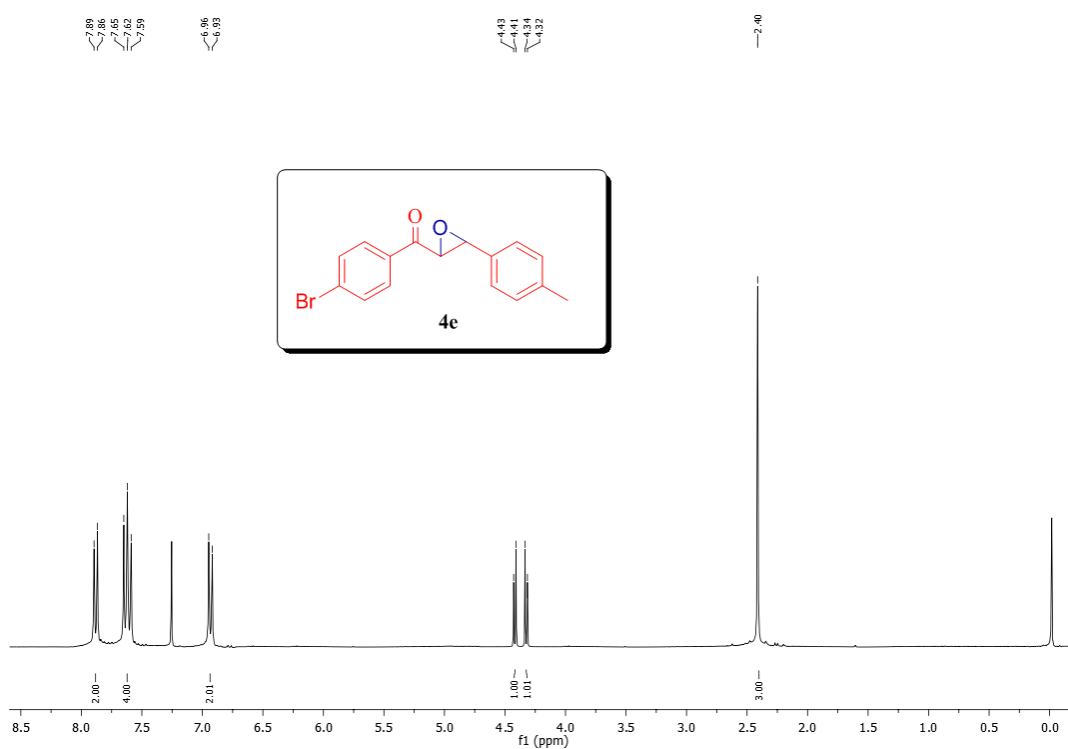
S 34: ¹³C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-chlorophenyl)-1-phenylproan-1-one (4c).



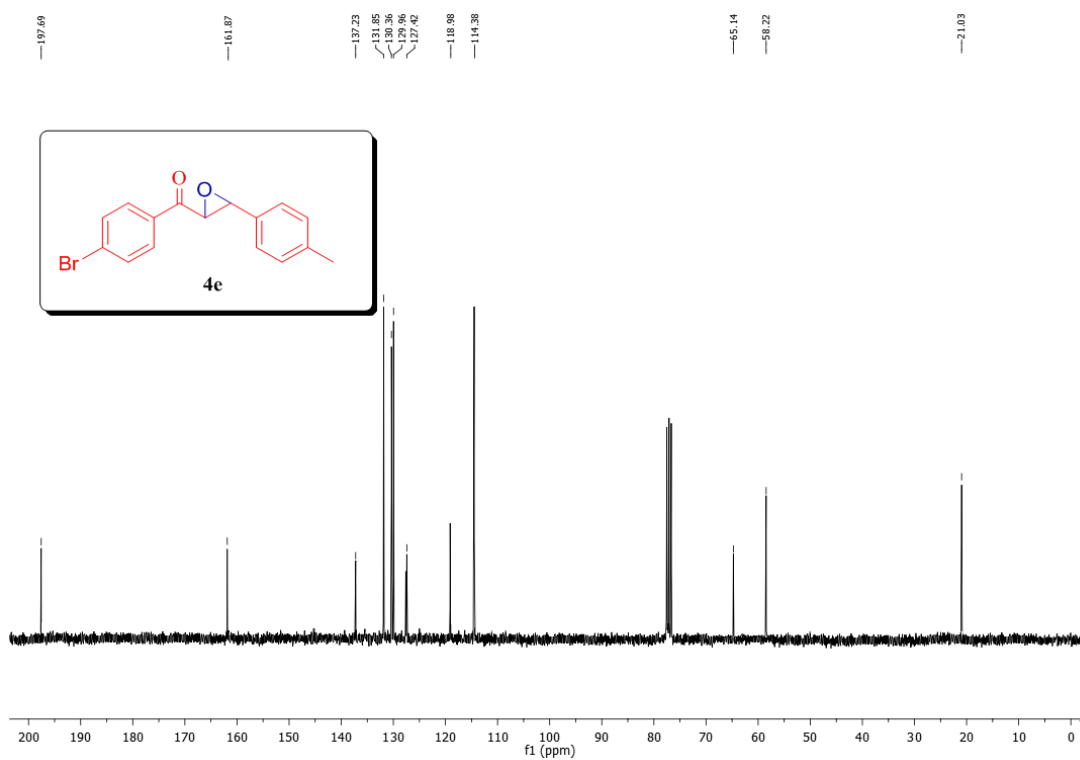
S 35: ^1H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-nitrophenyl)-1-phenylproan-1-one (**4d**).



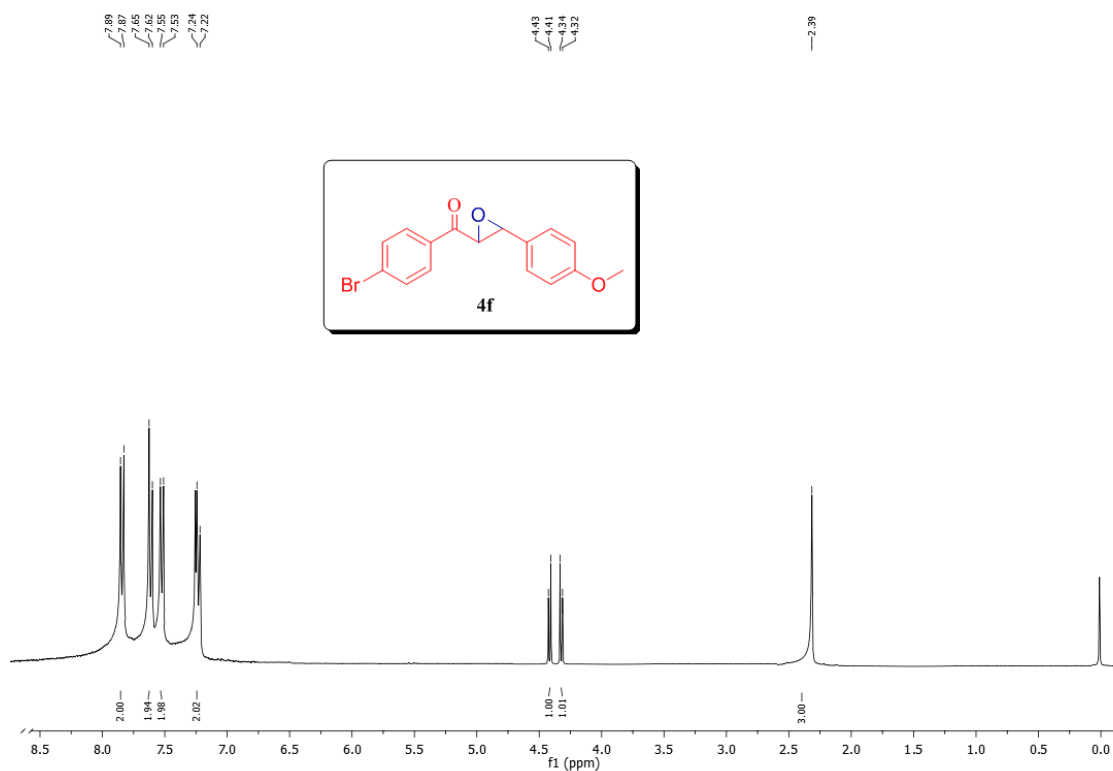
S 36: ^{13}C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-3-(4-nitrophenyl)-1-phenylproan-1-one (**4d**).



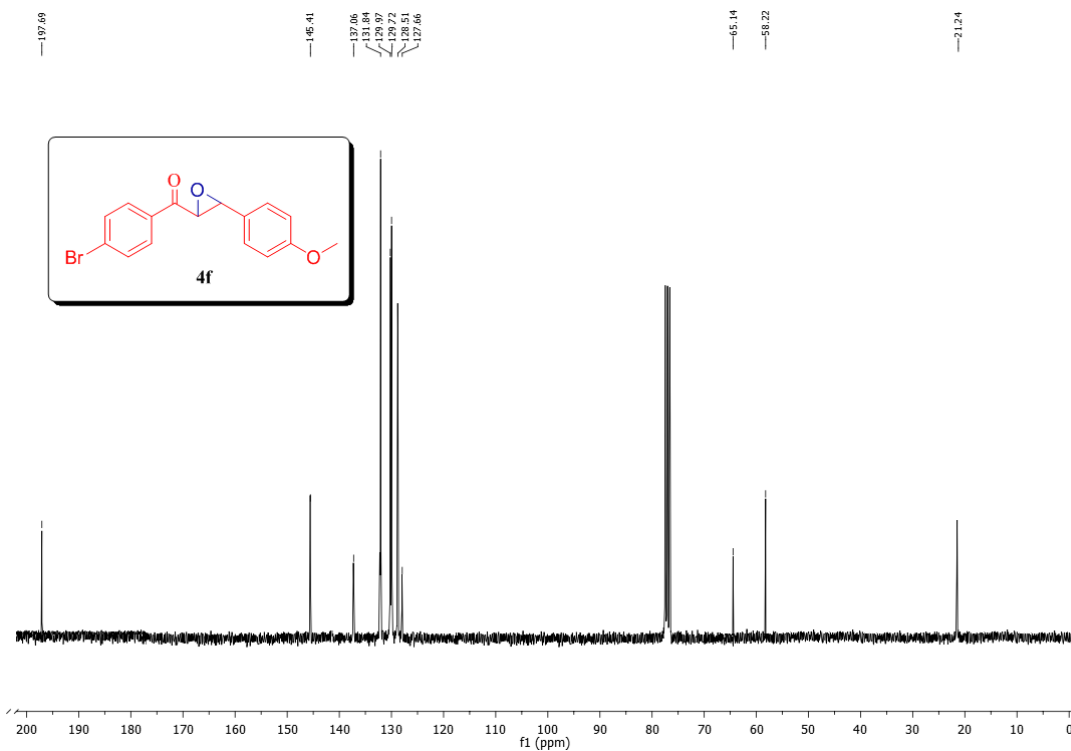
S 37: ^1H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-methylphenyl)proan-1-one (**4e**).



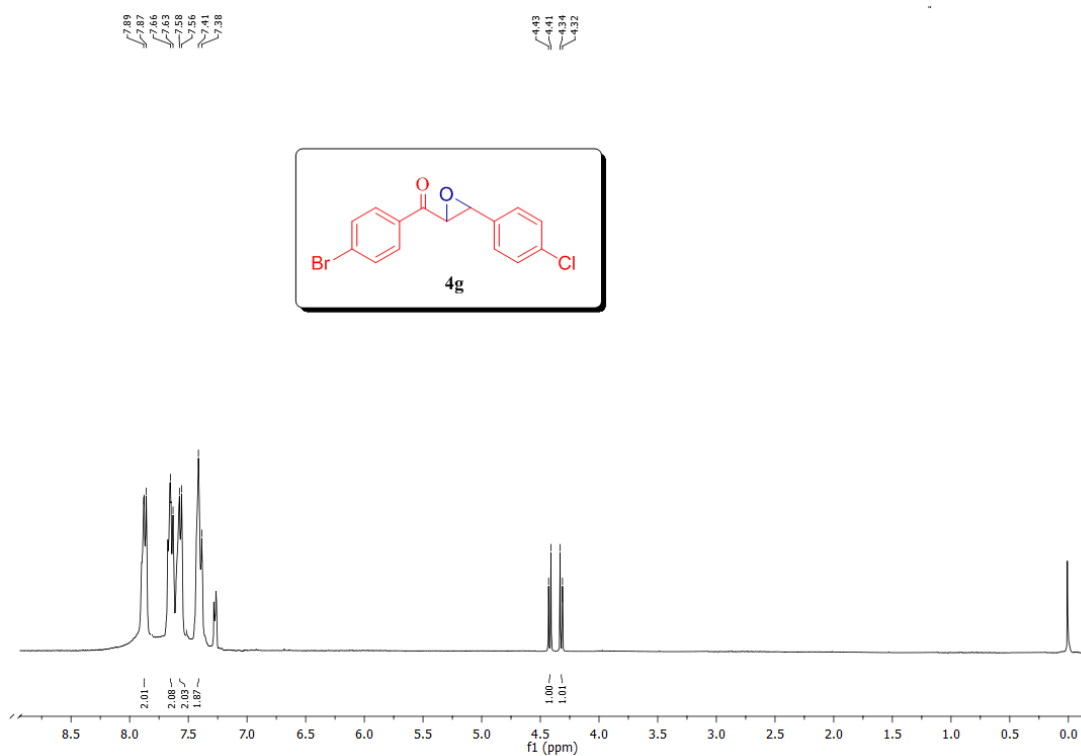
S 38: ^{13}C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-methylphenyl)proan-1-one (**4e**).



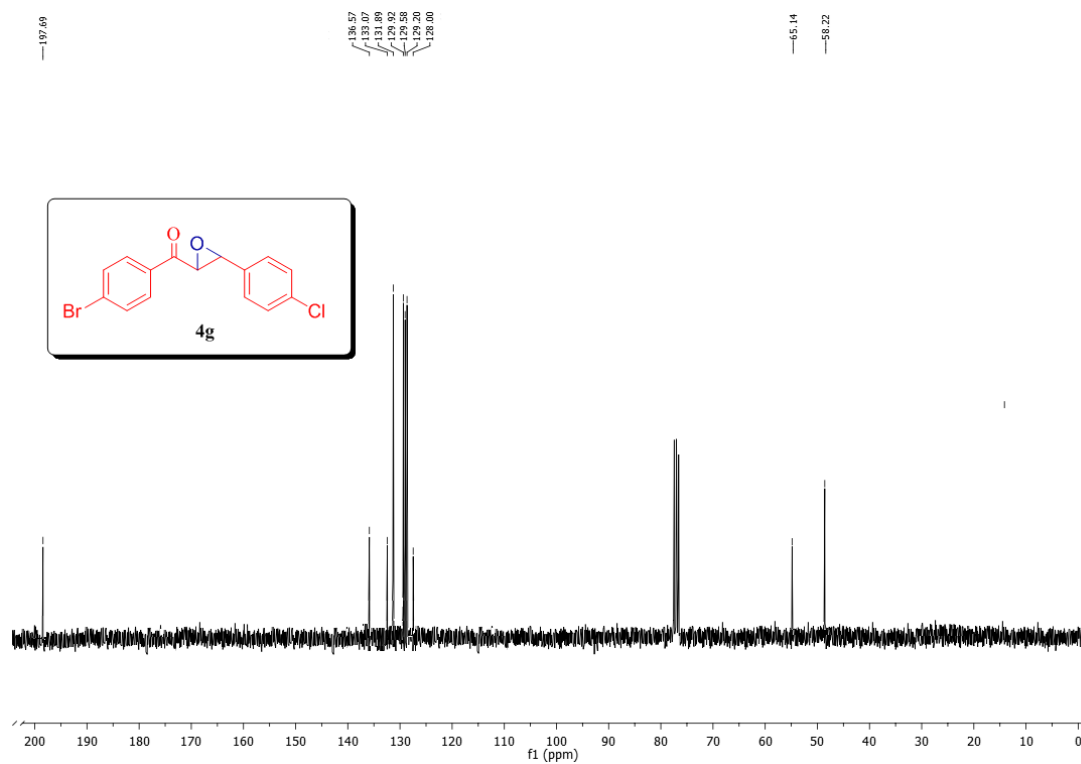
S 39: ^1H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-methoxyphenyl)propan-1-one (**4f**).



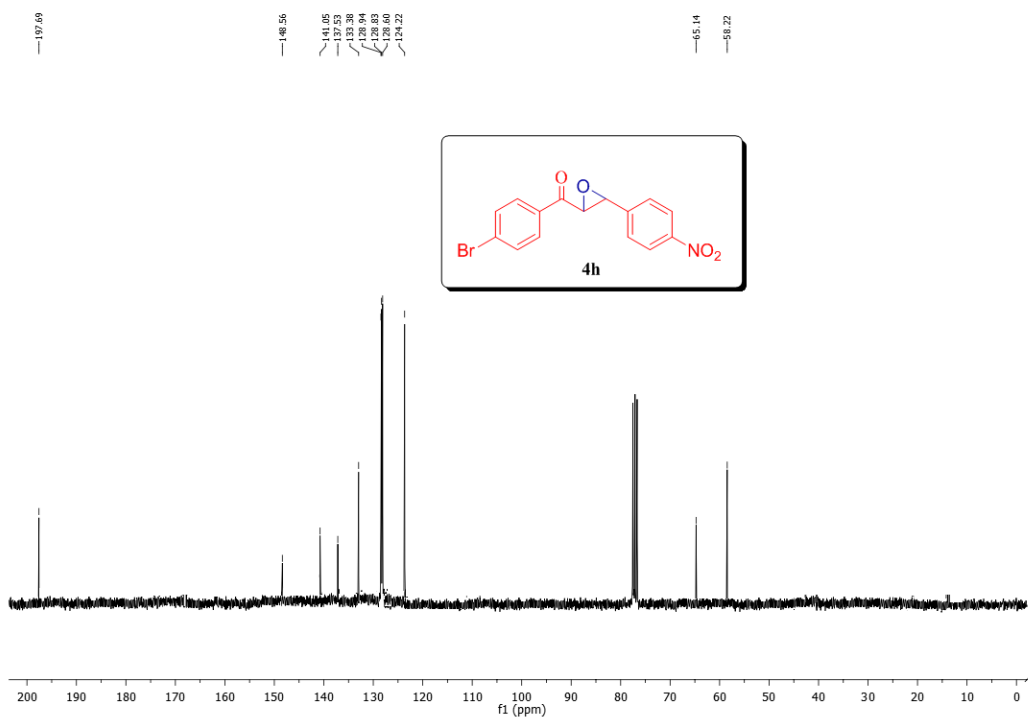
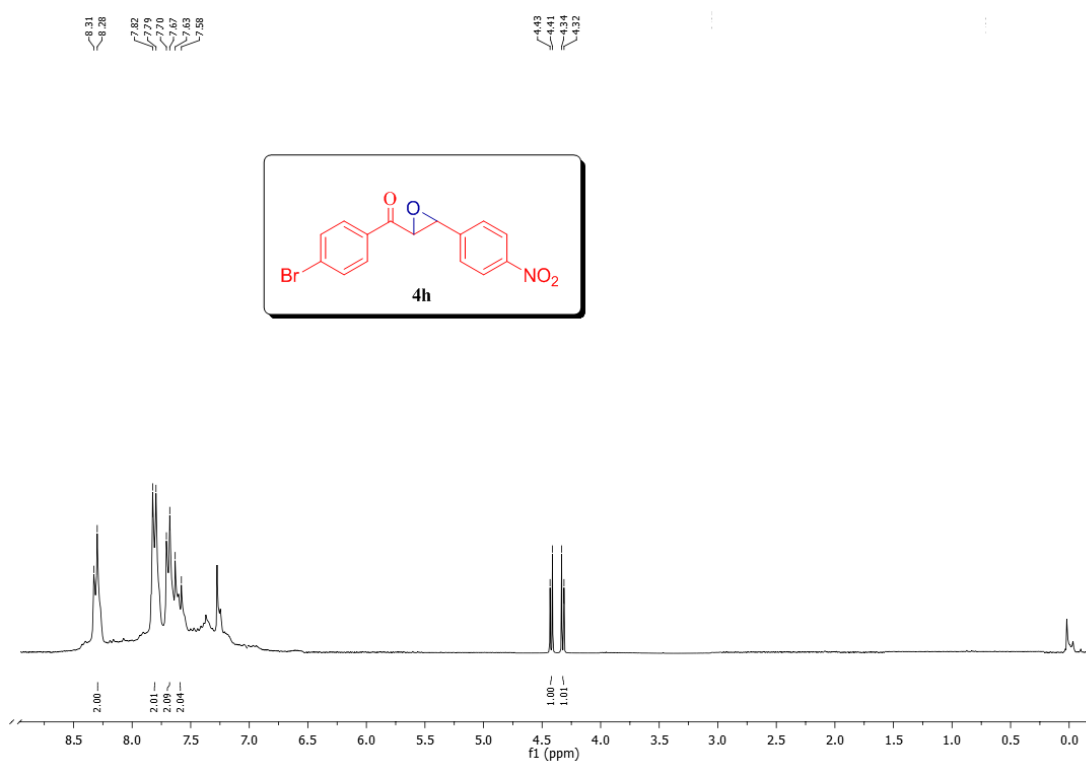
S 40: ^{13}C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-methoxyphenyl)propan-1-one (**4f**).

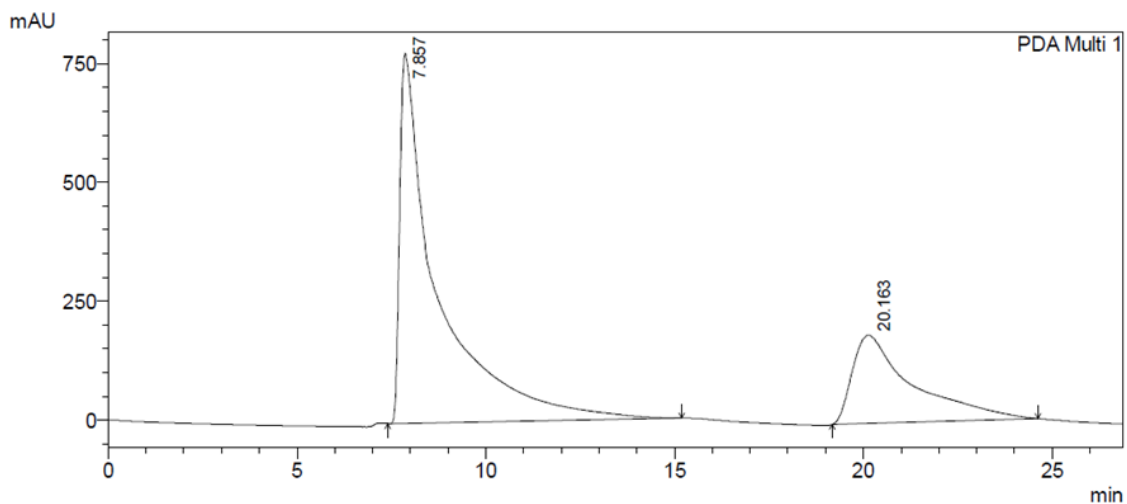


S 41: ¹H NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-chlorophenyl)proan-1-one (4g**).**



S 42: ¹³C NMR Spectrum of *trans*-(2*S*, 3*R*)-Epoxy-1-(4-bromophenyl)-3-(4-chlorophenyl)proan-1-one (4g**).**



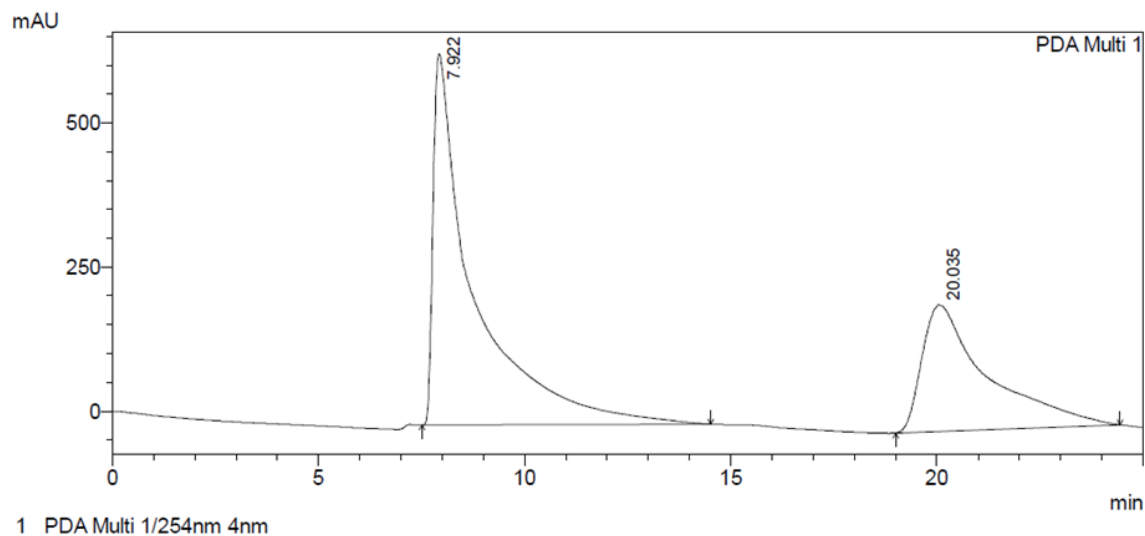


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.857	54464703	778097	72.455	80.730
2	20.163	20705331	185730	27.545	19.270
Total		75170034	963828	100.000	100.000

S 45: HPLC spectrum of 4a in the presence of CMPTC (10a) and NaOH/H₂O₂ condition.



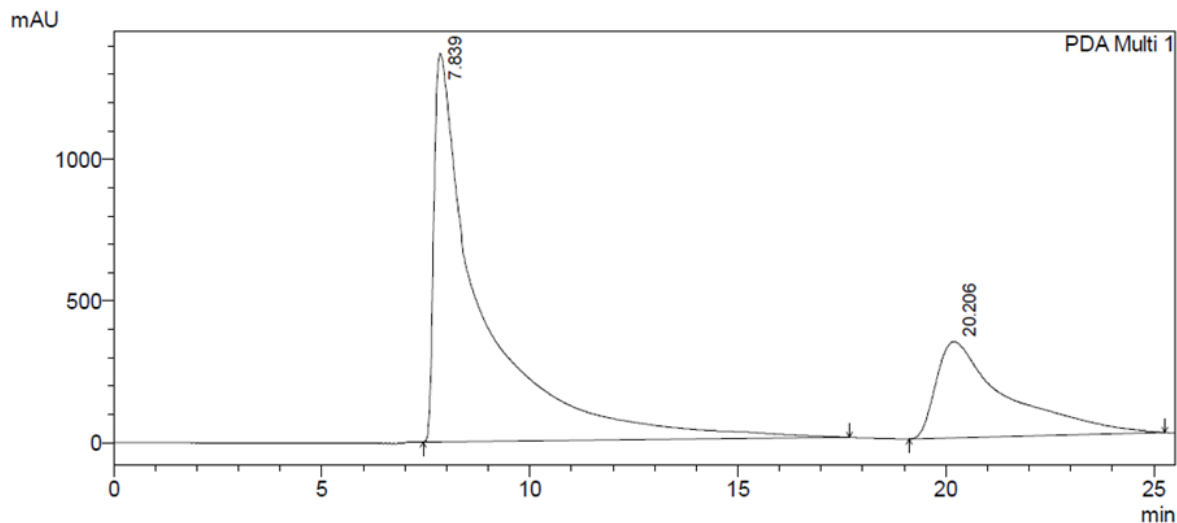
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.922	44027272	643831	64.576	74.554
2	20.035	24151986	219749	35.424	25.446
Total		68179258	863580	100.000	100.000

S46: HPLC spectrum of 4a in the presence of CMPTC (10b) and NaOH/H₂O₂ condition.

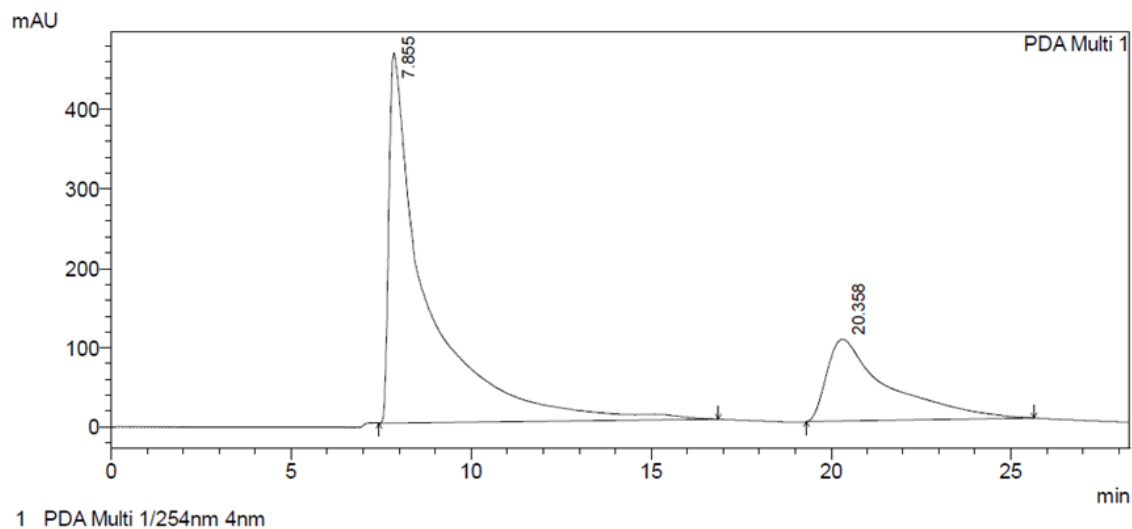
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.839	109844267	1371093	73.287	80.101
2	20.206	40038701	340607	26.713	19.899
Total		149882969	1711700	100.000	100.000

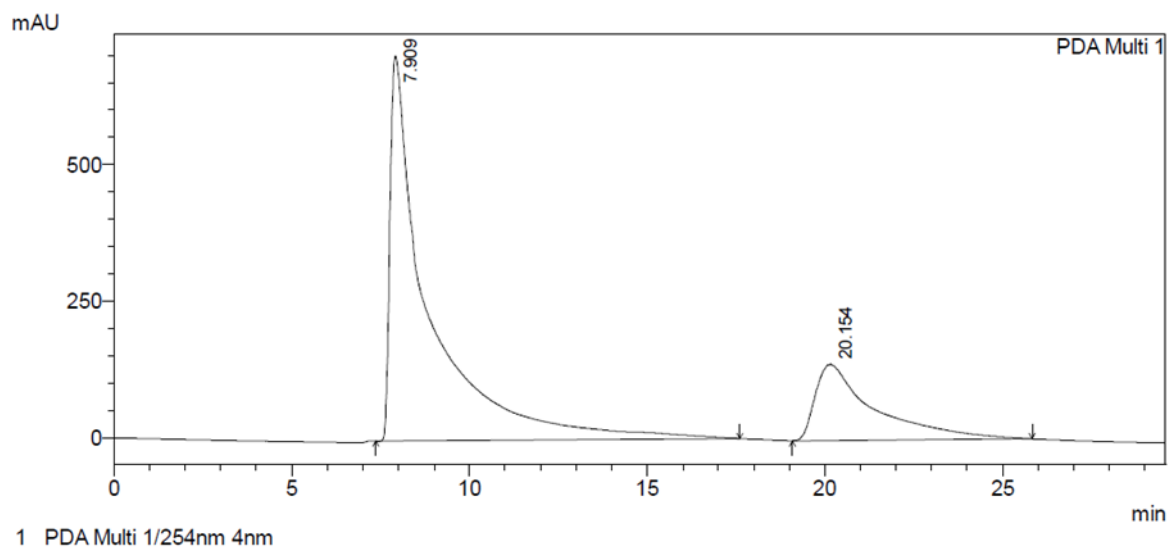
S 47: HPLC spectrum of 4a in the presence of CMPTC (10a) and NaOH/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.855	34222554	466412	73.685	81.877
2	20.358	12221778	103238	26.315	18.123
Total		46444332	569650	100.000	100.000

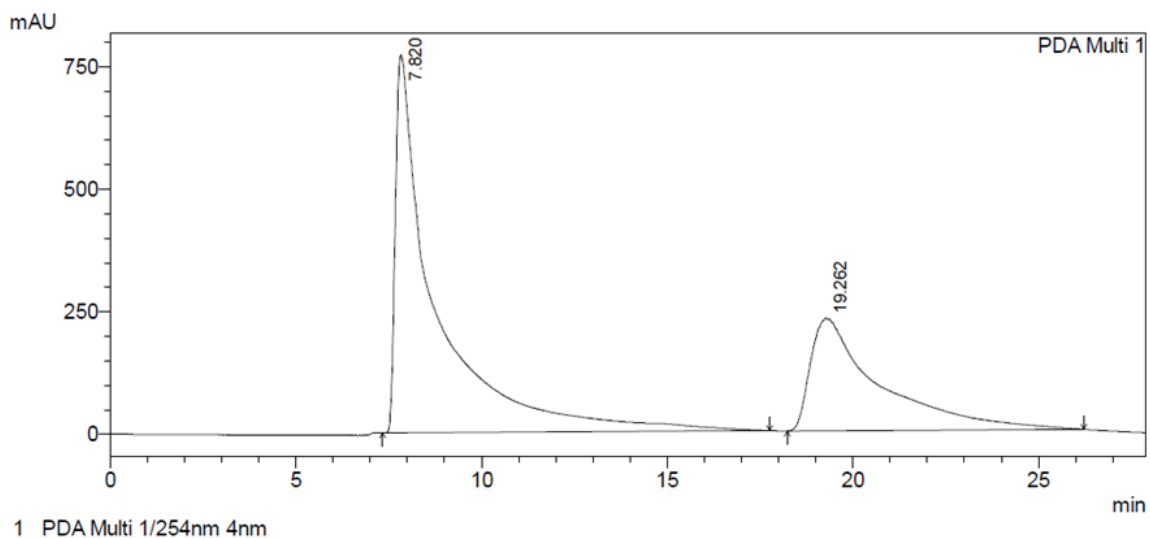
S 48: HPLC spectrum of 4a in the presence of CMPTC (10b) and NaOH/NaOCl condition.



PeakTable

PDA Ch1 254nm 4nm					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.909	53509094	704650	76.891	83.421
2	20.154	16081459	140045	23.109	16.579
Total		69590552	844695	100.000	100.000

S 49: HPLC spectrum of 4a in the presence of CMPTC (10a) and KOH/H₂O₂ condition.

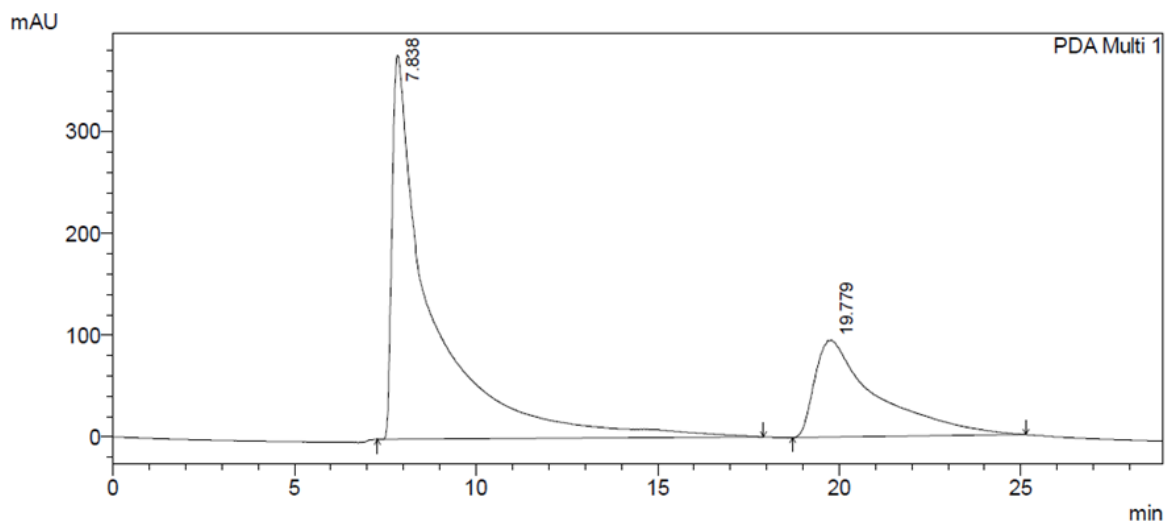


PeakTable

PDA Ch1 254nm 4nm					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.820	58134003	770678	66.209	76.991
2	19.262	29670237	230326	33.791	23.009
Total		87804240	1001004	100.000	100.000

S 50: HPLC spectrum of 4a in the presence of CMPTC (10b) and KOH/H₂O₂ condition.

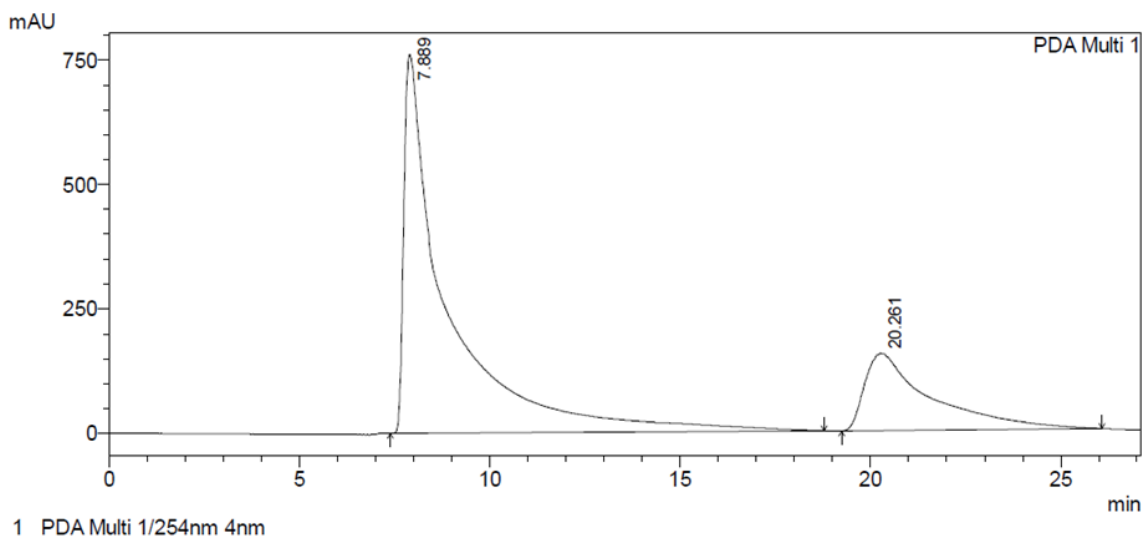
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.838	28487015	377498	71.571	79.780
2	19.779	11315537	95676	28.429	20.220
Total		39802551	473174	100.000	100.000

S 51: HPLC spectrum of 4a in the presence of CMPTC (10a) and KOH/NaOCl condition.

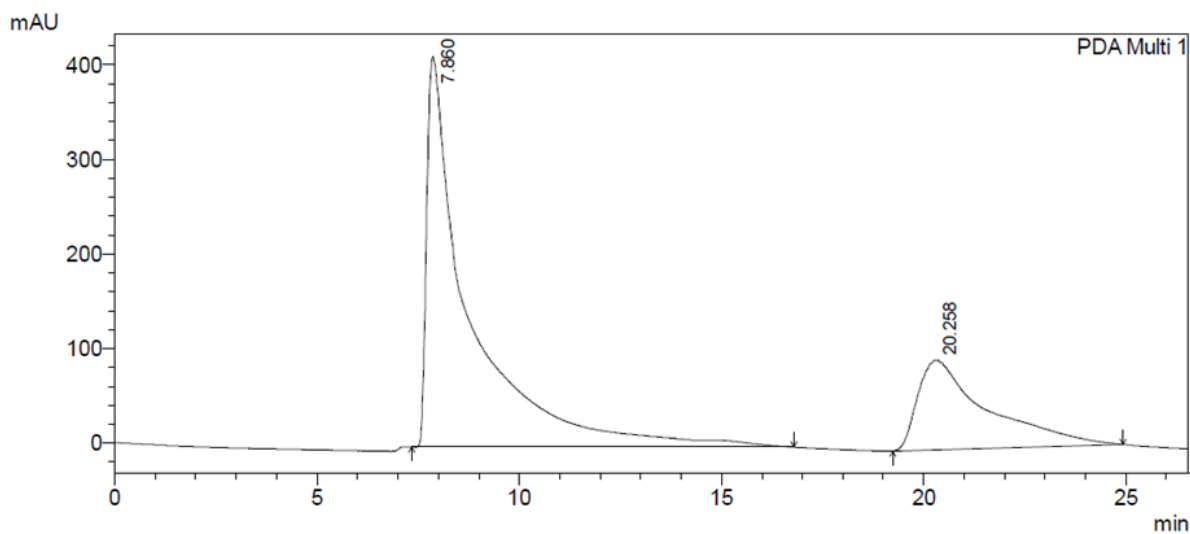


PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.889	60089715	761490	76.241	83.003
2	20.261	18725998	155938	23.759	16.997
Total		78815713	917428	100.000	100.000

S 52: HPLC spectrum of 4a in the presence of CMPTC (10b) and KOH/NaOCl condition.

Supporting Information

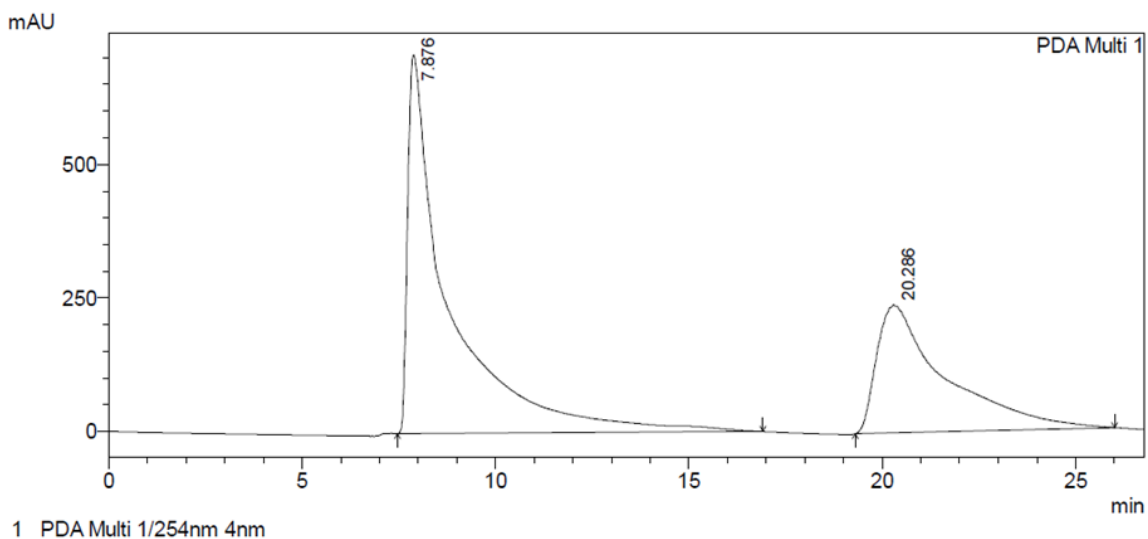


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.860	30389487	413299	72.925	81.320
2	20.258	11282955	94939	27.075	18.680
Total		41672442	508237	100.000	100.000

S 53: HPLC spectrum of 4a in the presence of CMPTC (10a) and K^tOBu/H₂O₂ condition.



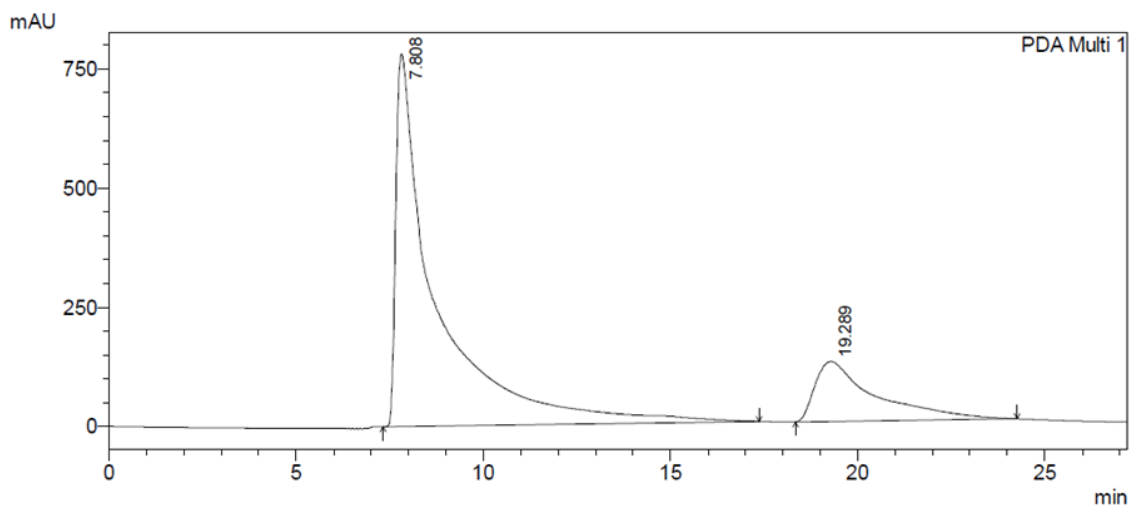
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.876	52668009	709037	64.138	74.698
2	20.286	29448349	240171	35.862	25.302
Total		82116359	949208	100.000	100.000

S 54: HPLC spectrum of 4a in the presence of CMPTC (10b) and K^tOBu/H₂O₂ condition.

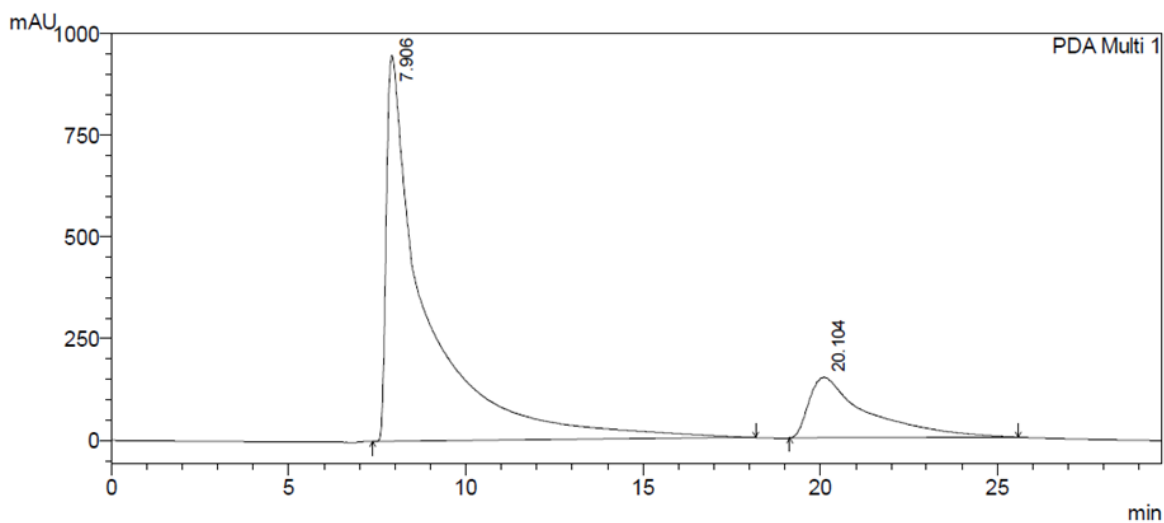
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.808	58495258	780820	80.586	86.071
2	19.289	14092196	126359	19.414	13.929
Total		72587454	907179	100.000	100.000

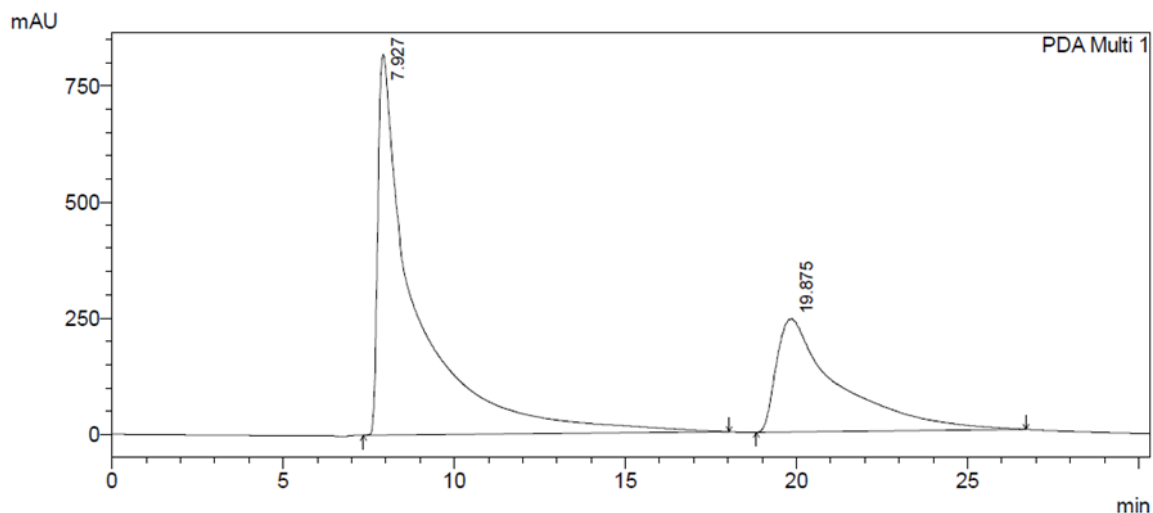
S 55: HPLC spectrum of 4a in the presence of CMPTC (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.906	74234860	948445	81.232	86.377
2	20.104	17151253	149585	18.768	13.623
Total		91386113	1098030	100.000	100.000

S 56: HPLC spectrum of 4a in the presence of CMPTC (10b) and K^tOBu/NaOCl condition.



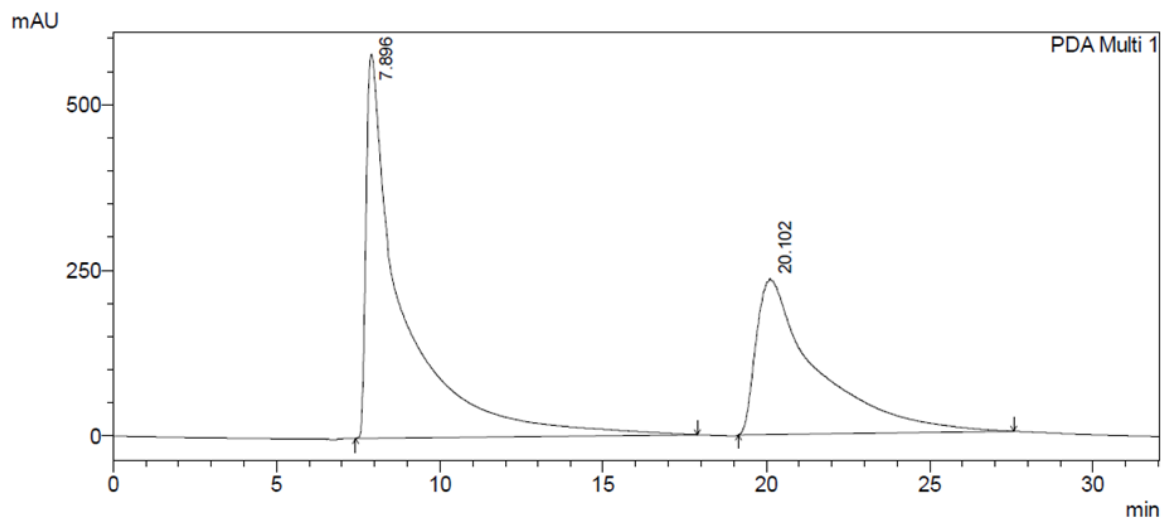
1 PDA Multi 1/254nm 4nm

PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.927	63029324	819174	67.130	76.991
2	19.875	30862240	244817	32.870	23.009
Total		93891564	1063991	100.000	100.000

S 57: HPLC spectrum of 4a in the presence of CMPTC (10a) and K_2CO_3/H_2O_2 condition.



1 PDA Multi 1/254nm 4nm

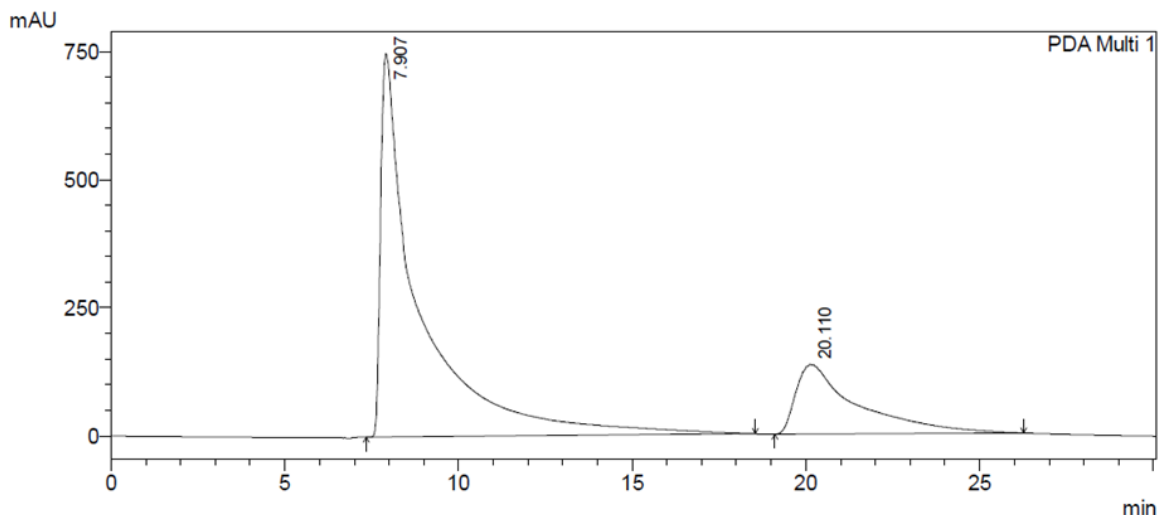
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.896	44803061	579271	59.425	71.108
2	20.102	30591768	235366	40.575	28.892
Total		75394828	814637	100.000	100.000

S 58: HPLC spectrum of 4a in the presence of CMPTC (10b) and K_2CO_3/H_2O_2 condition.

Supporting Information

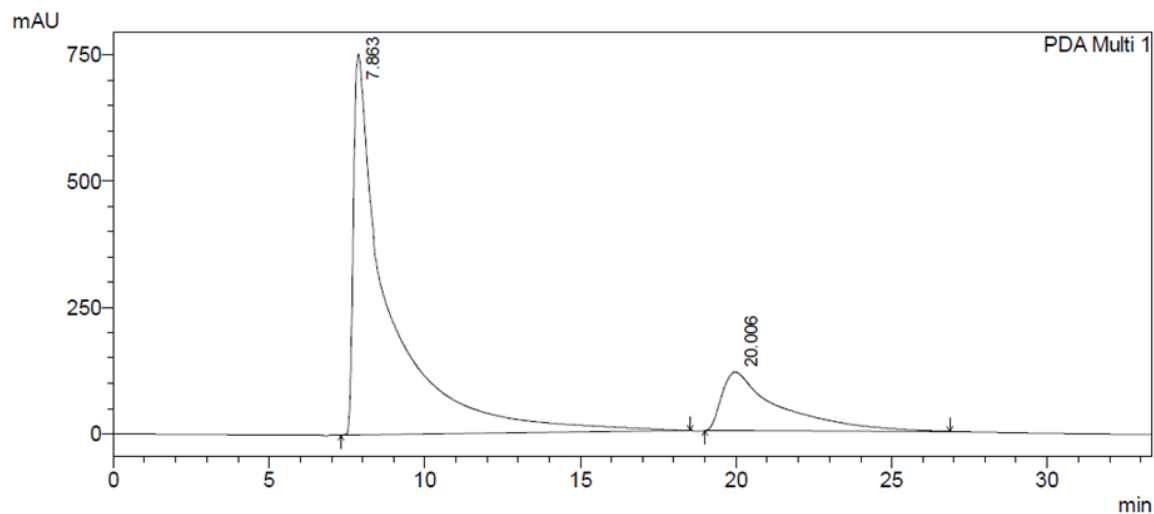


PDA Ch1 254nm 4nm

PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.907	58116670	747366	77.796	84.598
2	20.110	16587564	136062	22.204	15.402
Total		74704234	883429	100.000	100.000

S 59: HPLC spectrum of 4a in the presence of CMPTC (10a) and $K_2CO_3/NaOCl$ condition.



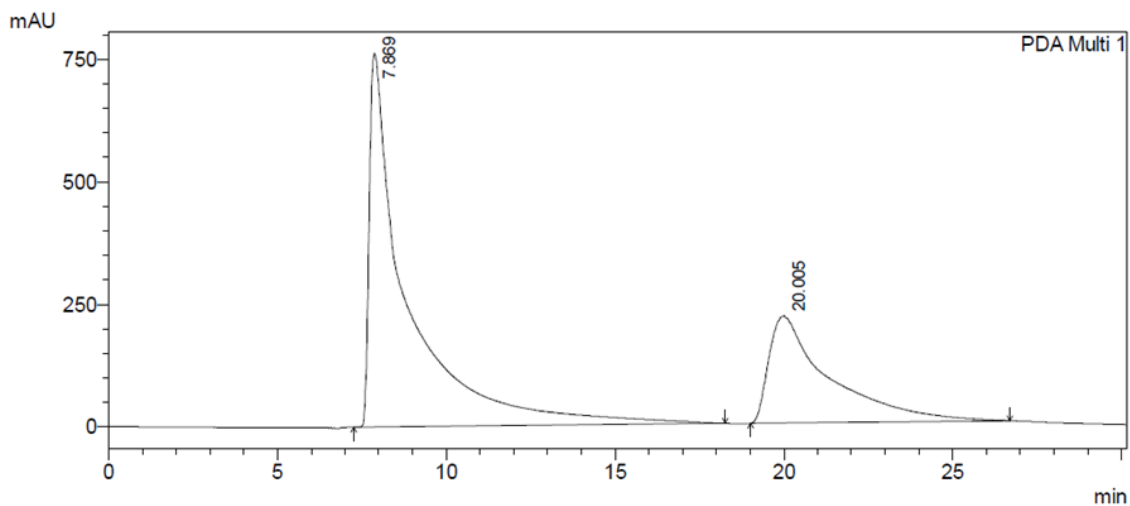
PDA Ch1 254nm 4nm

PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.863	59077266	753103	79.998	86.633
2	20.006	14771069	116201	20.002	13.367
Total		73848335	869304	100.000	100.000

S 60: HPLC spectrum of 4a in the presence of CMPTC (10b) and $K_2CO_3/NaOCl$ condition.

Supporting Information

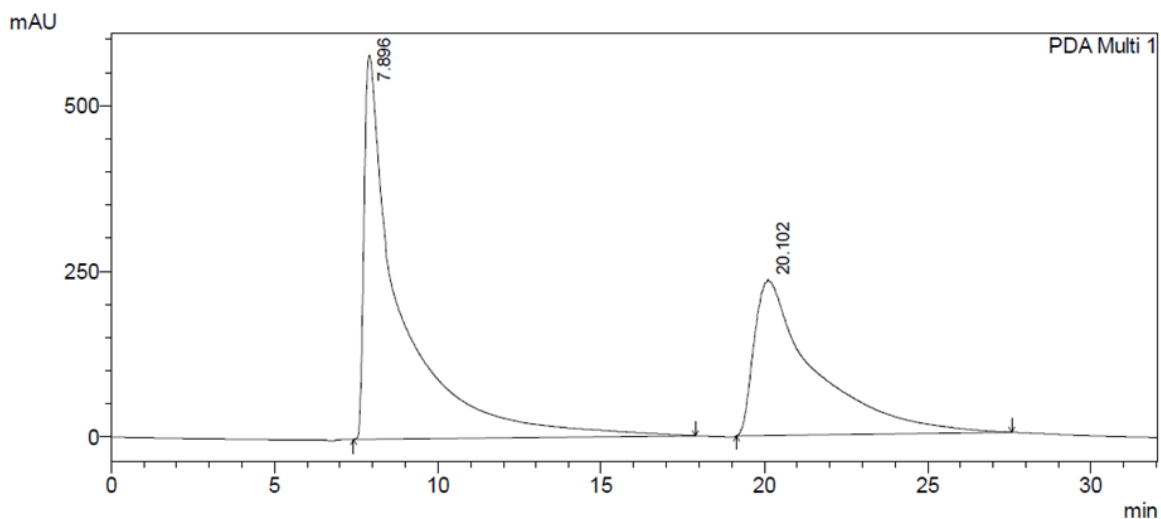


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.869	59722901	763703	68.682	77.663
2	20.005	27232277	219658	31.318	22.337
Total		86955178	983361	100.000	100.000

S 61: HPLC spectrum of 4a in the presence of CMPTC (10a) and $\text{Cs}_2\text{CO}_3/\text{H}_2\text{O}_2$ condition.

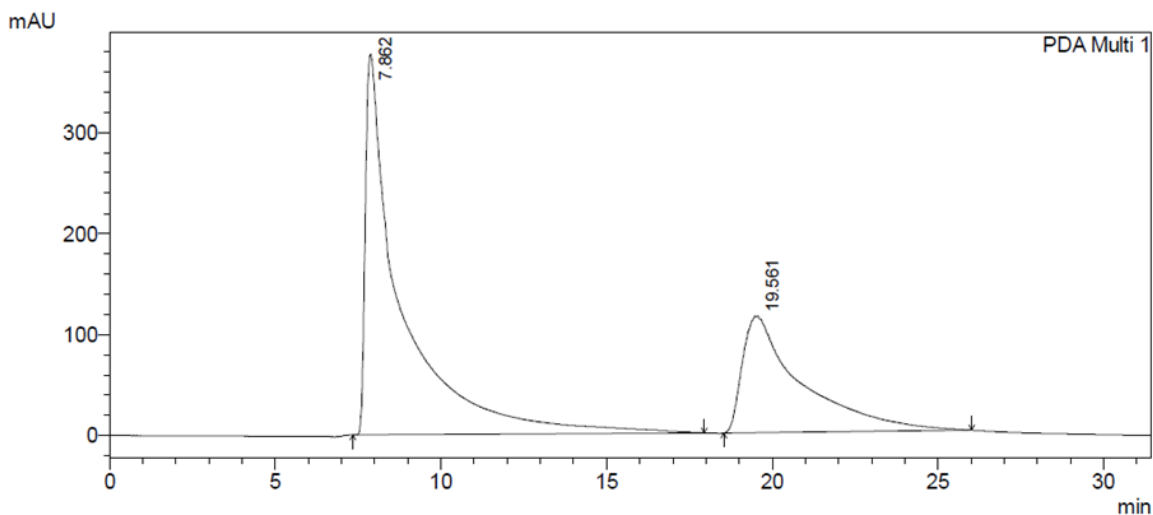


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.896	44803061	579271	59.425	71.108
2	20.102	30591768	235366	40.575	28.892
Total		75394828	814637	100.000	100.000

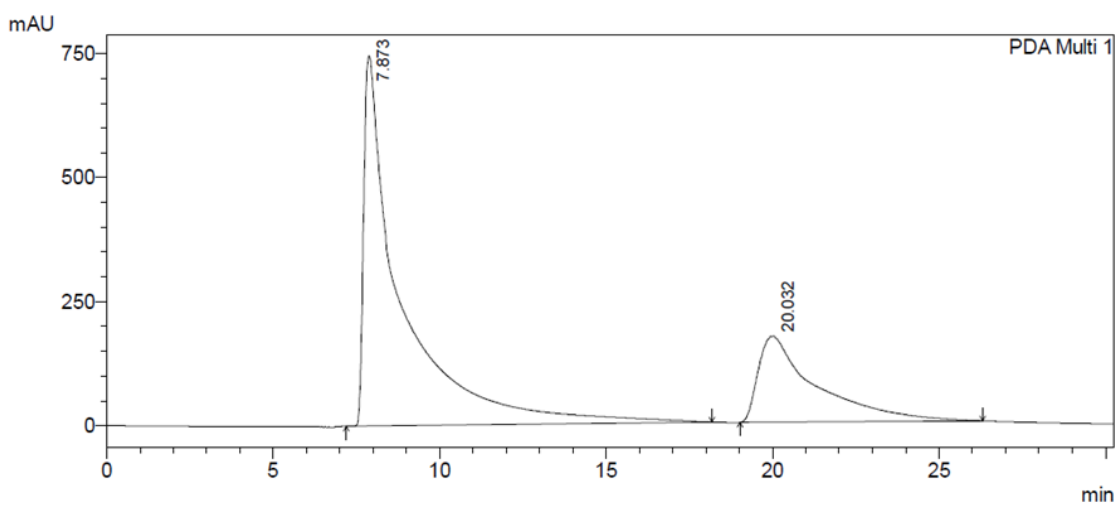
S 62: HPLC spectrum of 4a in the presence of CMPTC (10b) and $\text{Cs}_2\text{CO}_3/\text{H}_2\text{O}_2$ condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.862	28408505	376989	66.510	76.527
2	19.561	14304518	115634	33.490	23.473
Total		42713024	492624	100.000	100.000

S 63: HPLC spectrum of 4a in the presence of CMPTC (10a) and Cs₂CO₃/ NaOCl condition.

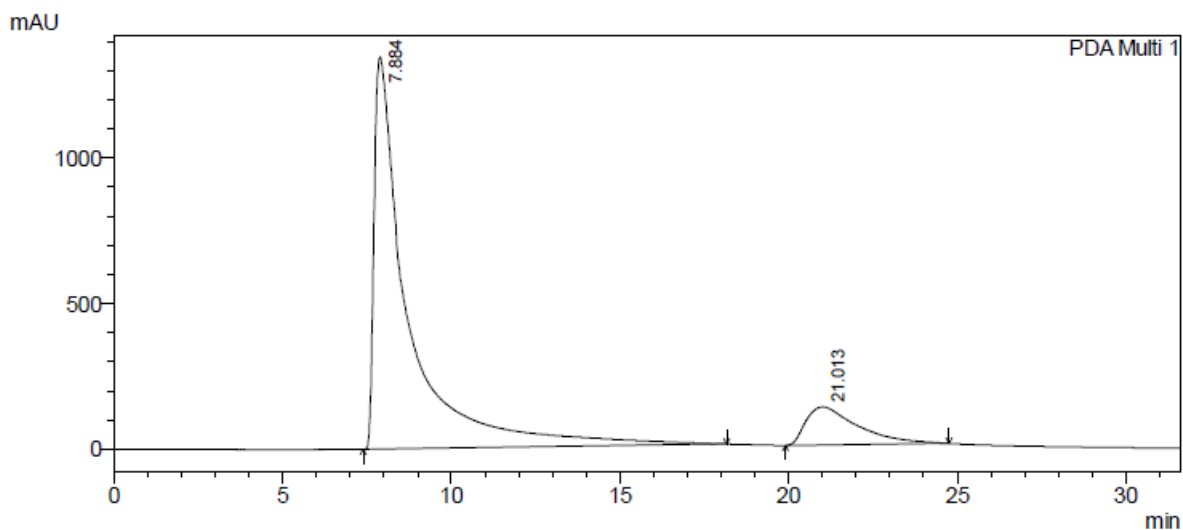


PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.873	58262728	745492	73.624	81.102
2	20.032	20872825	173706	26.376	18.898
Total		79135553	919198	100.000	100.000

S 64: HPLC spectrum of 4a in the presence of CMPTC (10b) and Cs₂CO₃/ NaOCl condition.

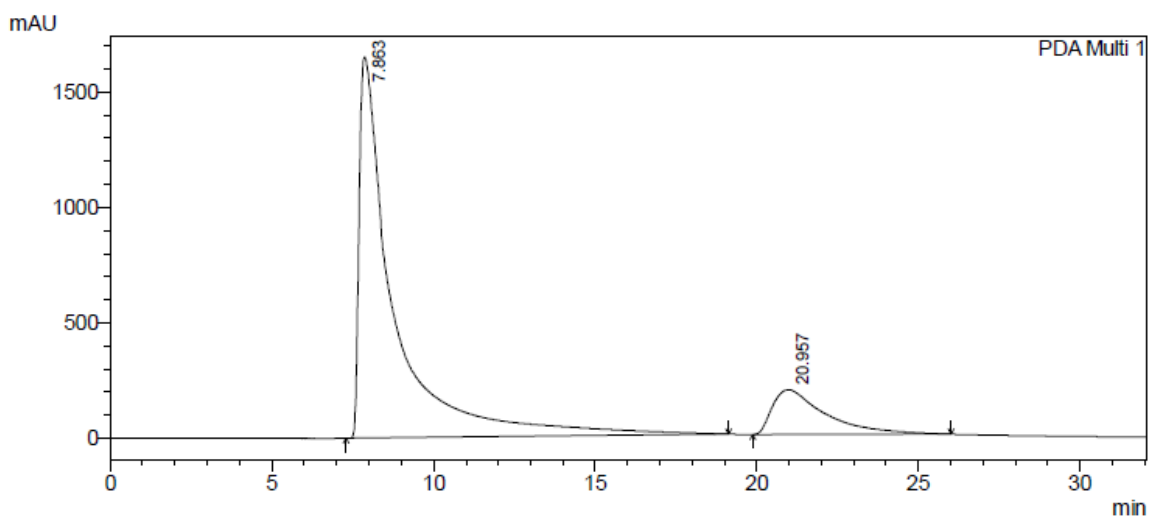
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.884	95159980	1346376	87.142	91.121
2	21.013	14040478	131196	12.858	8.879
Total		109200457	1477573	100.000	100.000

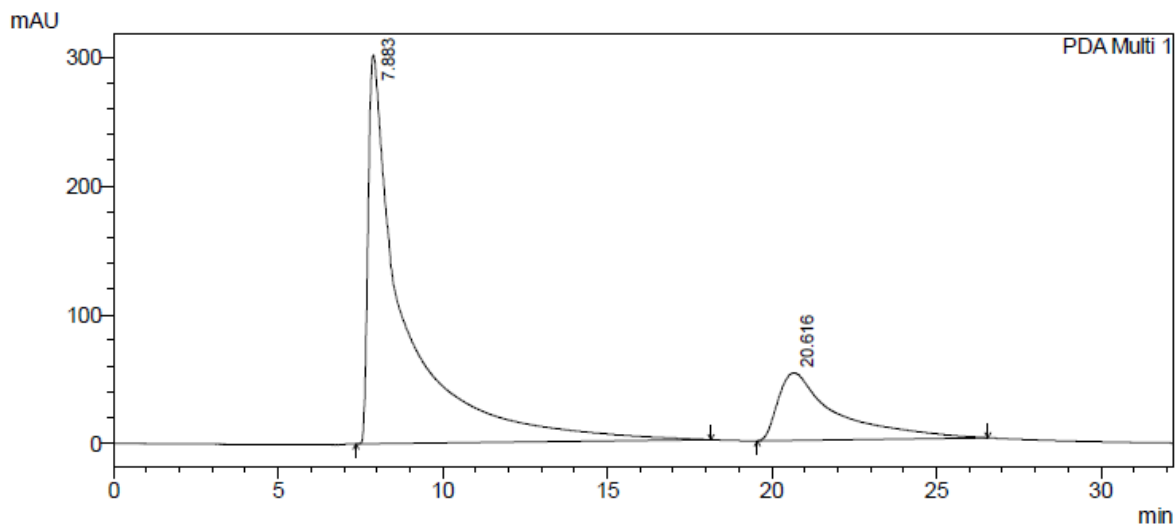
S 65: HPLC spectrum of 4a in the presence of CMPTC (10a) and K^tOBu/O₂ condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.863	123692230	1651982	84.817	89.436
2	20.957	22141722	195124	15.183	10.564
Total		145833952	1847106	100.000	100.000

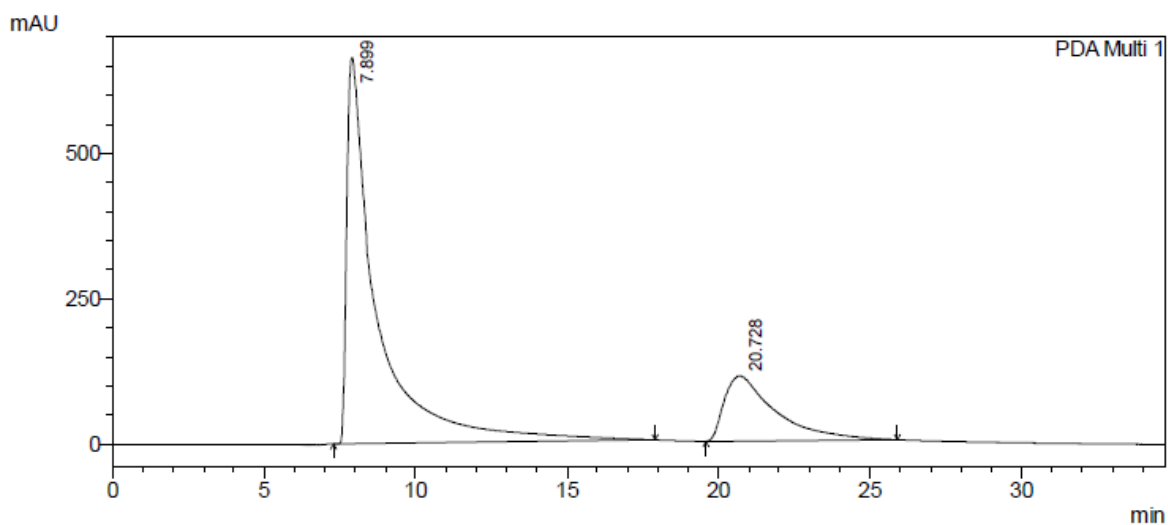
S 66: HPLC spectrum of 4a in the presence of CMPTC (10b) and K^tOBu/O₂ condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.883	23180738	301901	78.299	85.159
2	20.616	6424572	52614	21.701	14.841
Total		29605310	354515	100.000	100.000

S 67: HPLC spectrum of 4a in the presence of CMPTC (10a) and K^tOBu/ PMS condition.

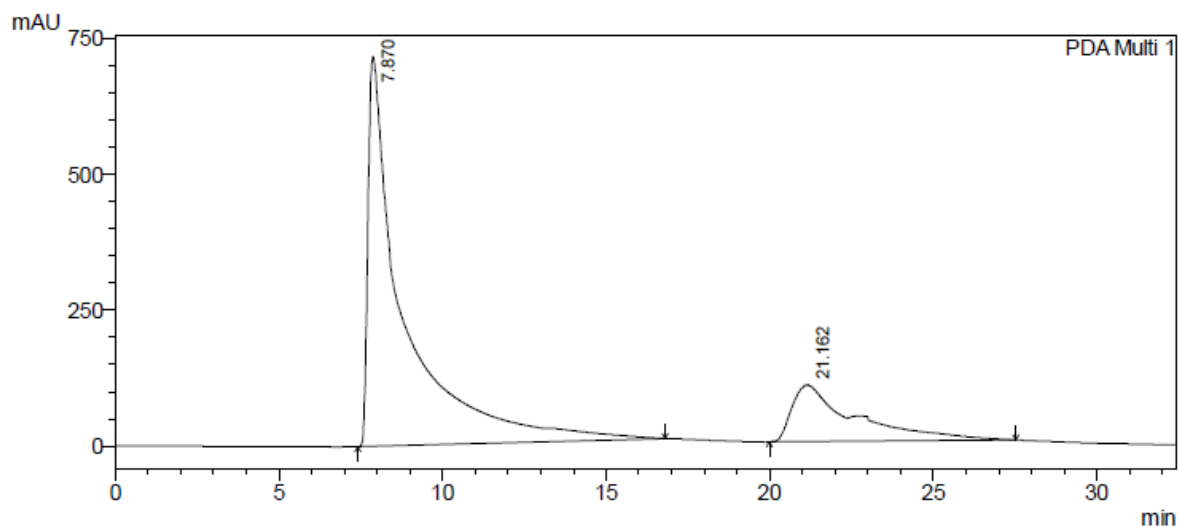


PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.899	46058693	663658	77.790	85.538
2	20.728	13150608	112209	22.210	14.462
Total		59209301	775867	100.000	100.000

S 68: HPLC spectrum of 4a in the presence of CMPTC (10b) and K^tOBu/ PMS condition.

Supporting Information

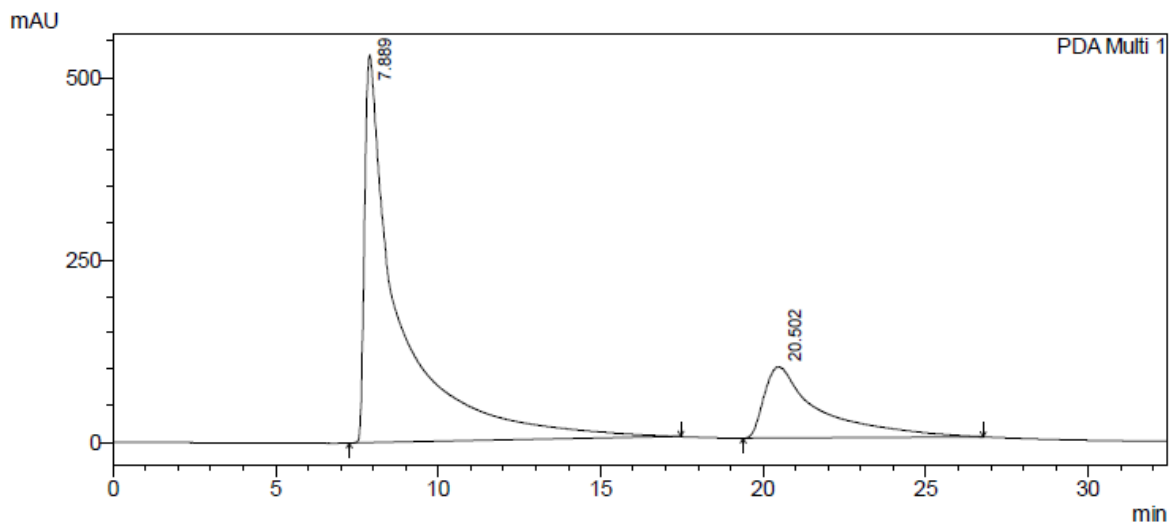


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.870	54619257	717319	79.648	87.274
2	21.162	13956671	104600	20.352	12.726
Total		68575928	821919	100.000	100.000

S 69: HPLC spectrum of 4a in the presence of CMPTC (10a) and K^tOBu/ APS condition.



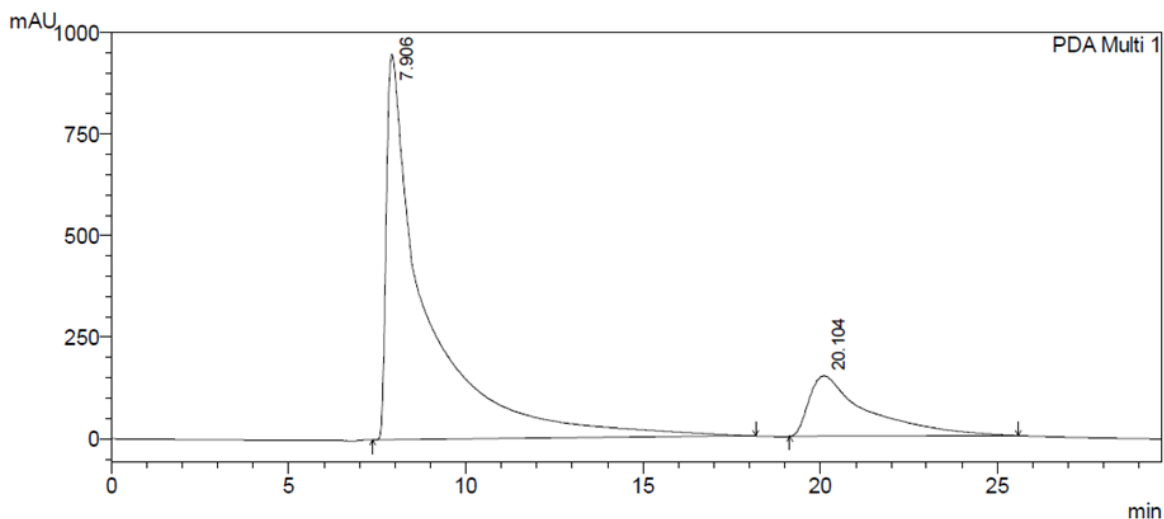
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.889	39672934	530913	77.340	84.410
2	20.502	11623650	98056	22.660	15.590
Total		51296584	628970	100.000	100.000

S 70: HPLC spectrum of 4a in the presence of CMPTC (11b) and K^tOBu/ APS condition.

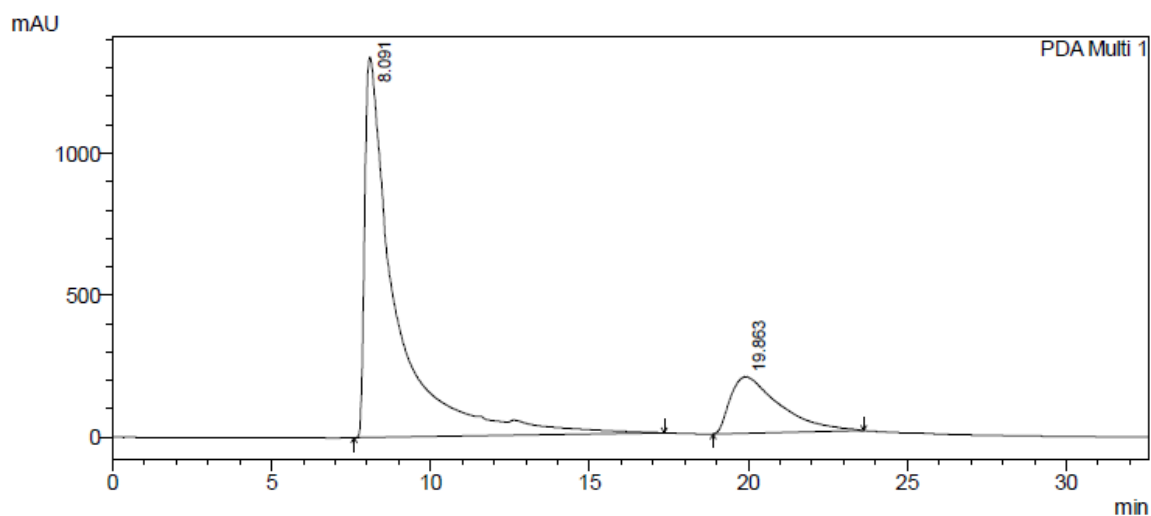
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.906	74234860	948445	81.232	86.377
2	20.104	17151253	149585	18.768	13.623
Total		91386113	1098030	100.000	100.000

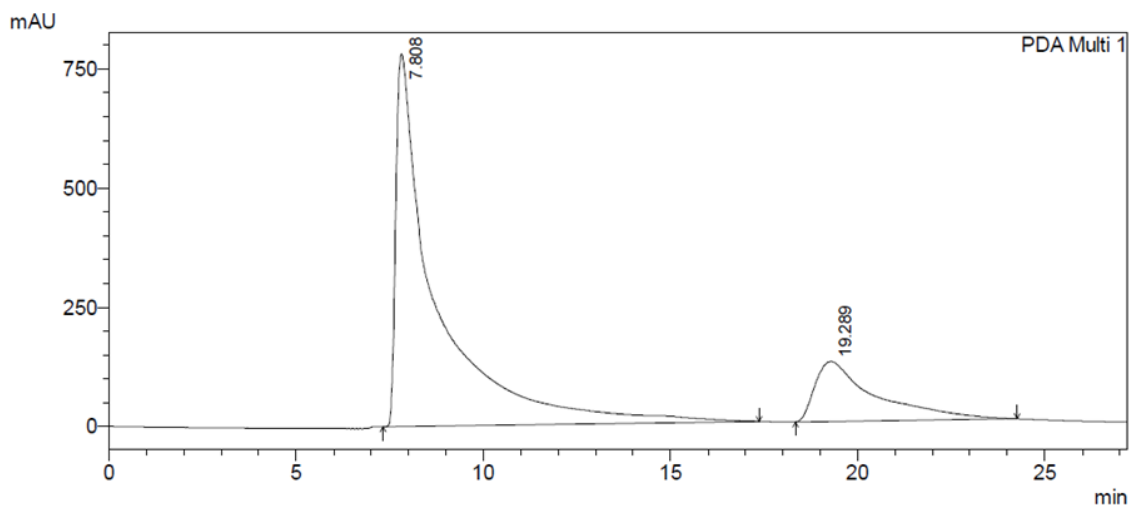
S 71: HPLC spectrum of 4a in the presence of 1 mol% of CMPTC (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	8.091	90825096	1339385	80.879	87.046
2	19.863	21472798	199323	19.121	12.954
Total		112297894	1538708	100.000	100.000

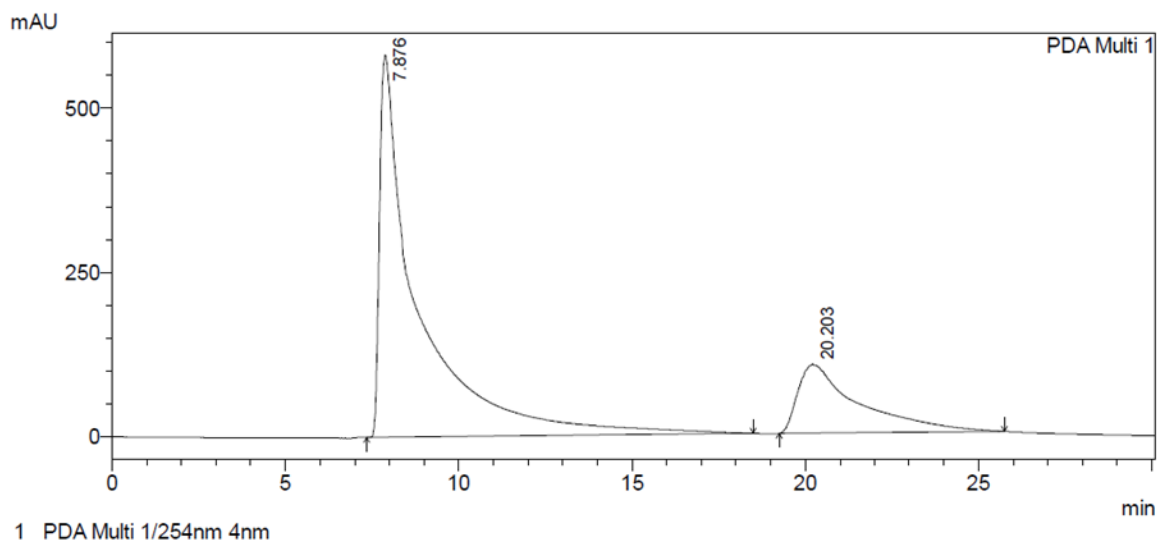
S 72: HPLC spectrum of 4a in the presence of 3 mol% of CMPTC (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.808	58495258	780820	80.586	86.071
2	19.289	14092196	126359	19.414	13.929
Total		72587454	907179	100.000	100.000

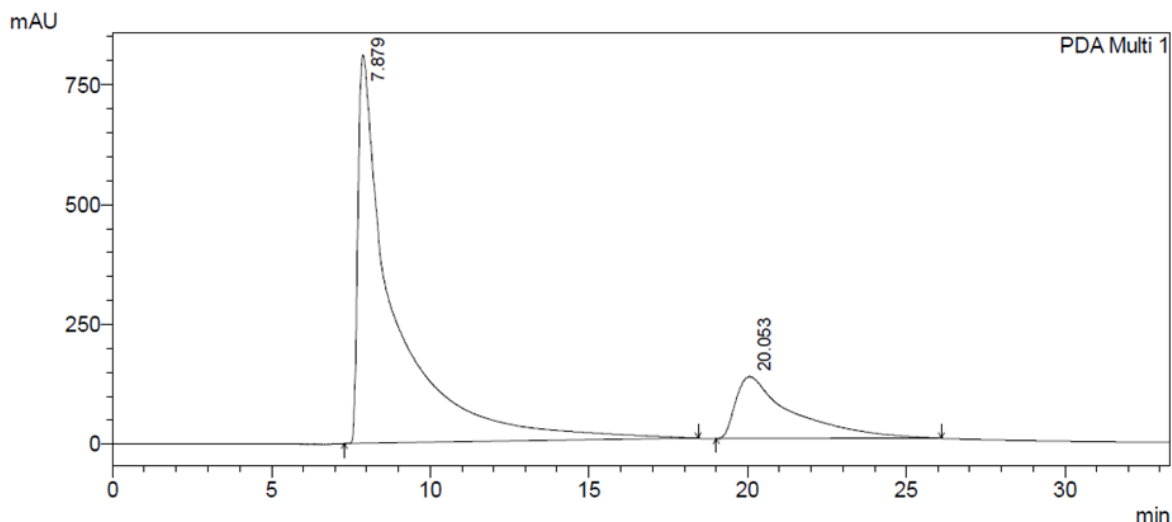
S 73: HPLC spectrum of 4a in the presence of 5 mol% of CMPTC (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.876	45121261	581107	78.003	84.734
2	20.203	12724564	104694	21.997	15.266
Total		57845826	685801	100.000	100.000

S 74: HPLC spectrum of 4a in the presence of 10 mol% of CMPTC (10a) and K^tOBu/NaOCl condition.

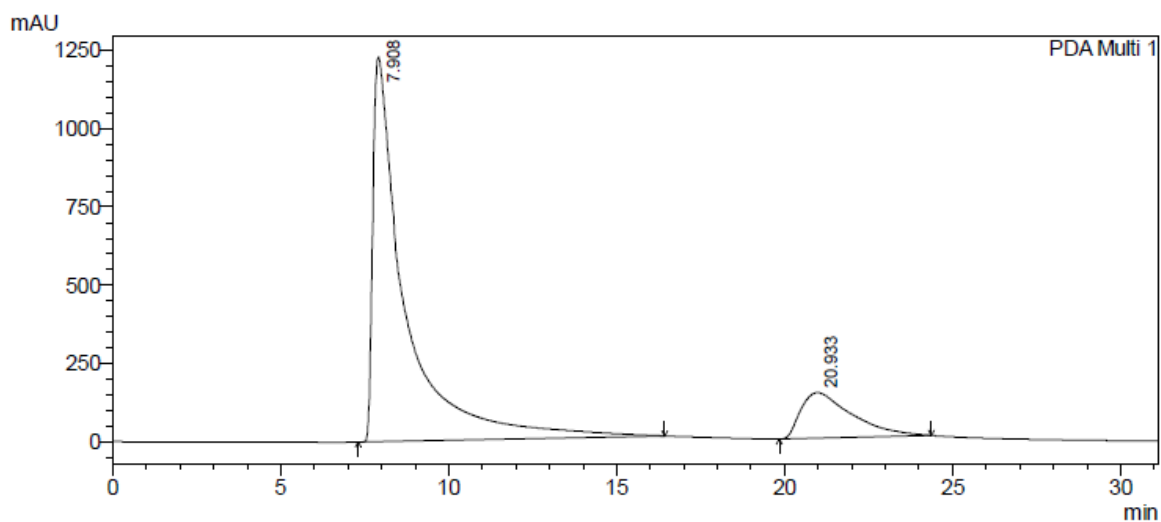


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.879	64762441	810865	80.132	86.149
2	20.053	16057488	130373	19.868	13.851
Total		80819928	941238	100.000	100.000

S 75: HPLC spectrum of 4a in the presence of 15 mol% of CMPTC (10a) and K^tOBu/NaOCl condition.



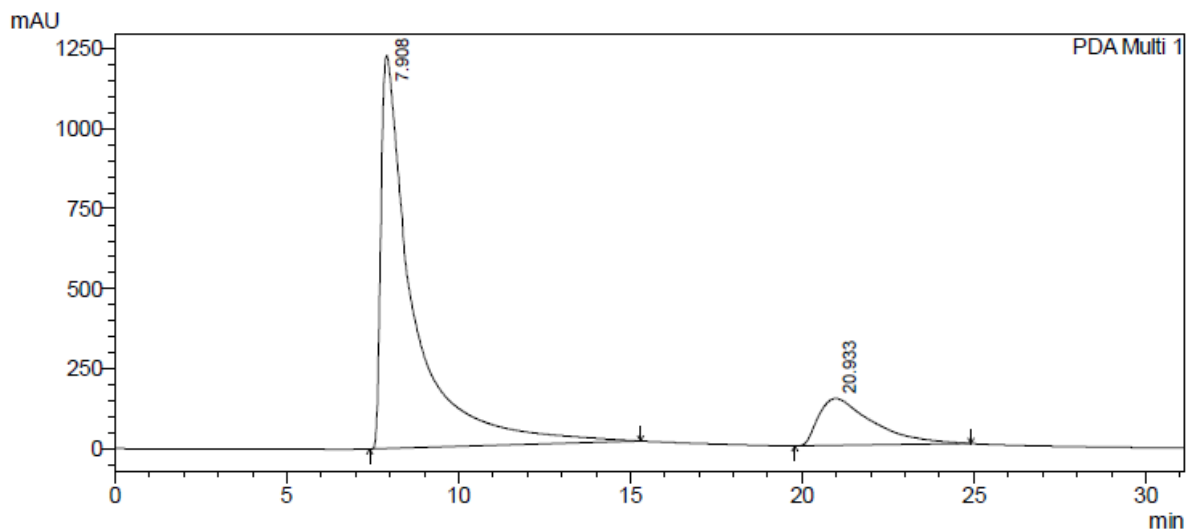
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.908	82476300	1229240	84.189	89.337
2	20.933	15489060	146722	15.811	10.663
Total		97965360	1375962	100.000	100.000

S 76: HPLC spectrum of 4a in the presence of 1 mol% of CMPTC (10b) and K^tOBu/NaOCl condition.

Supporting Information

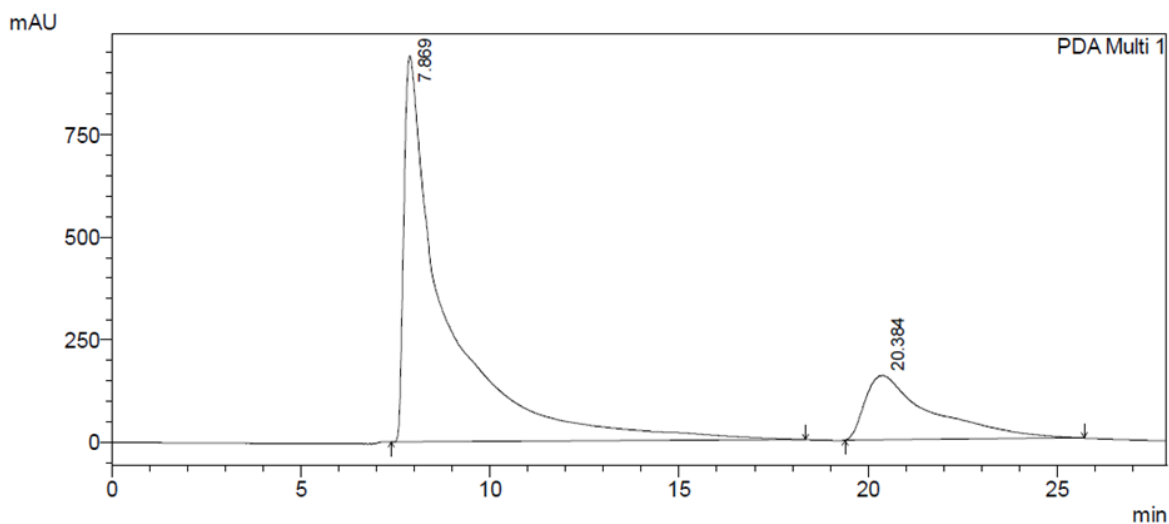


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.908	80349127	1228849	83.209	89.260
2	20.933	16213425	147865	16.791	10.740
Total		96562551	1376714	100.000	100.000

S 77: HPLC spectrum of 4a in the presence of 3 mol% of CMPTC (10b) and K^tOBu/NaOCl condition.

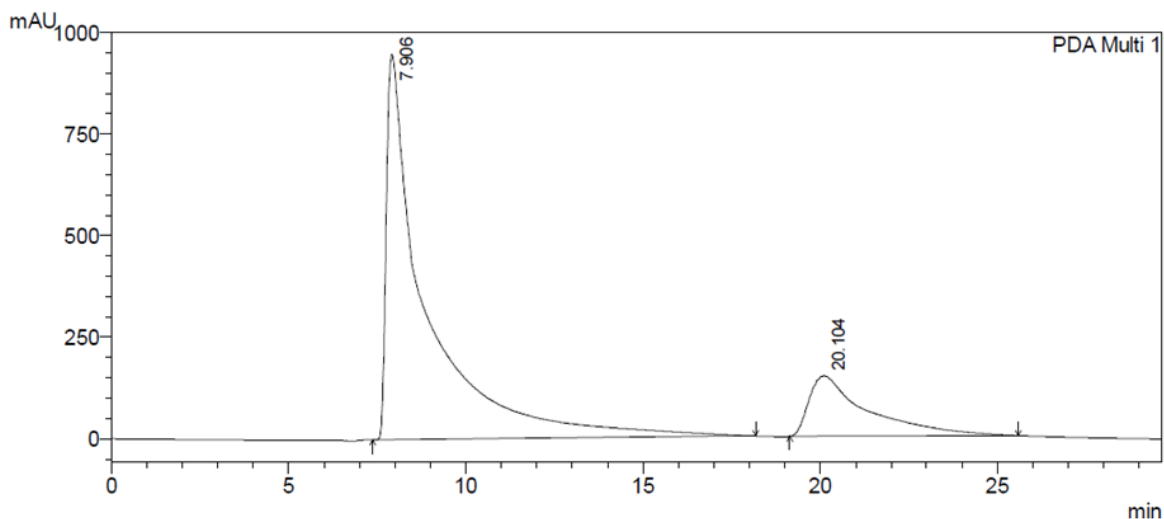


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.869	73304641	941379	79.347	85.658
2	20.384	19080246	157624	20.653	14.342
Total		92384887	1099003	100.000	100.000

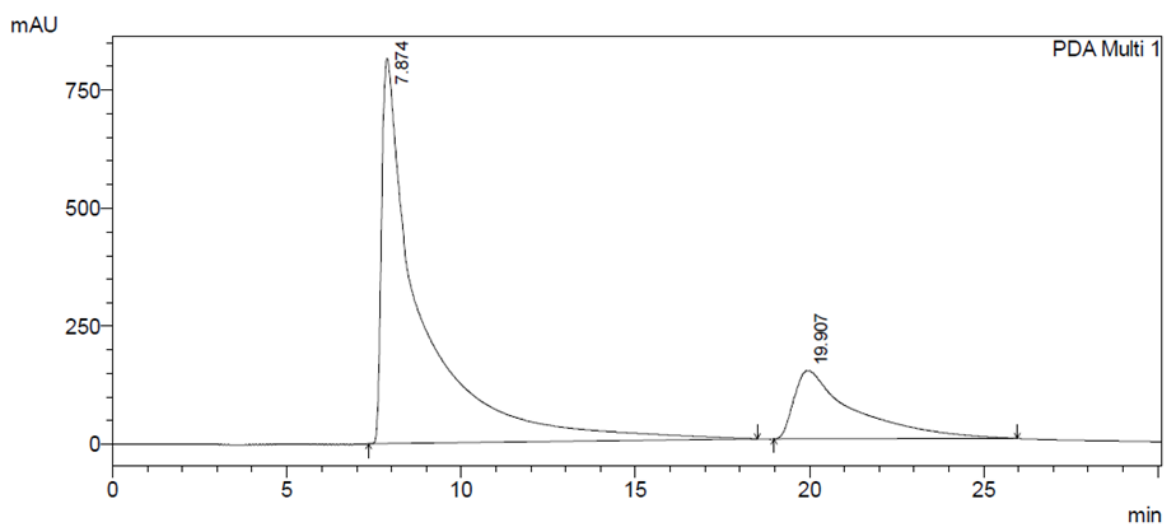
S 78: HPLC spectrum of 4a in the presence of 5 mol% of CMPTC (10b) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.906	74234860	948445	81.232	86.377
2	20.104	17151253	149585	18.768	13.623
Total		91386113	1098030	100.000	100.000

S 79: HPLC spectrum of 4a in the presence of 10 mol% of CMPTC (10b) and K^tOBu/NaOCl condition.

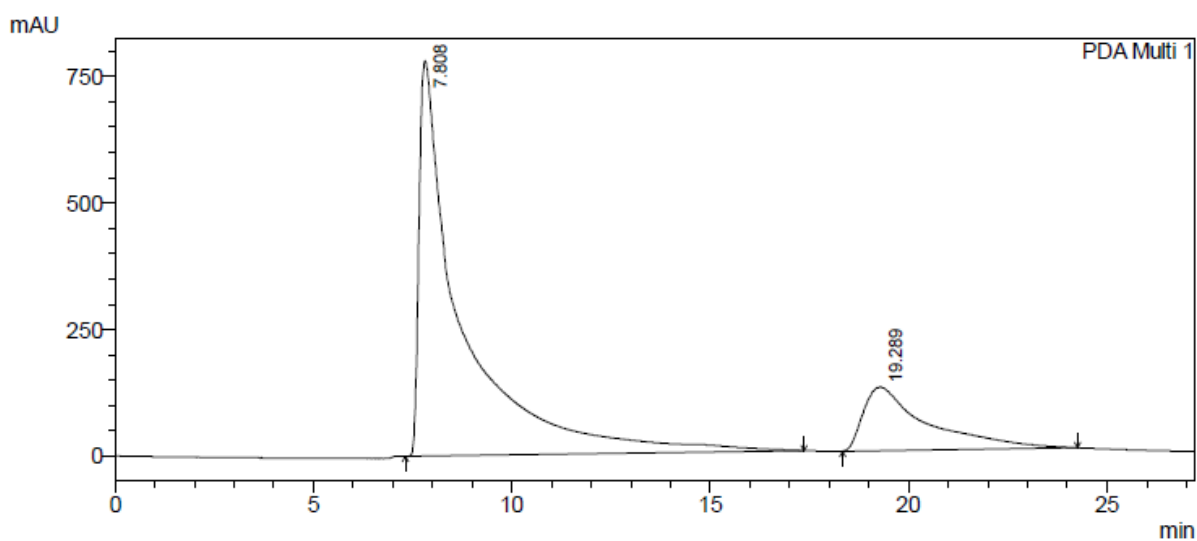


PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.874	64200405	816497	78.620	84.880
2	19.907	17458835	145451	21.380	15.120
Total		81659240	961947	100.000	100.000

S 80: HPLC spectrum of 4a in the presence of 15 mol% of CMPTC (10b) and K^tOBu/NaOCl condition.

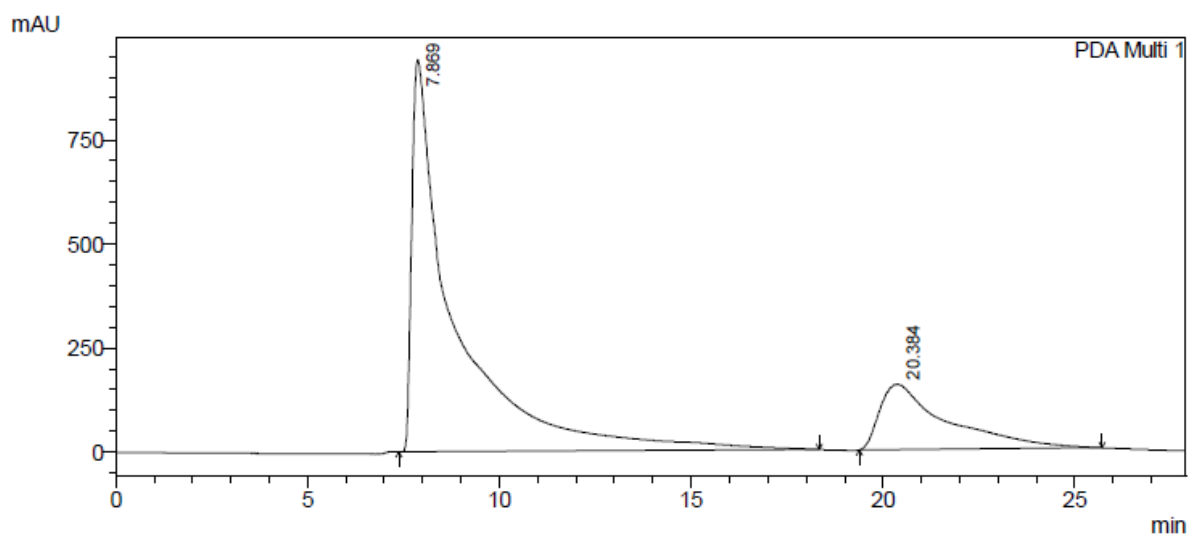
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.808	58495258	780820	80.586	86.071
2	19.289	14092196	126359	19.414	13.929
Total		72587454	907179	100.000	100.000

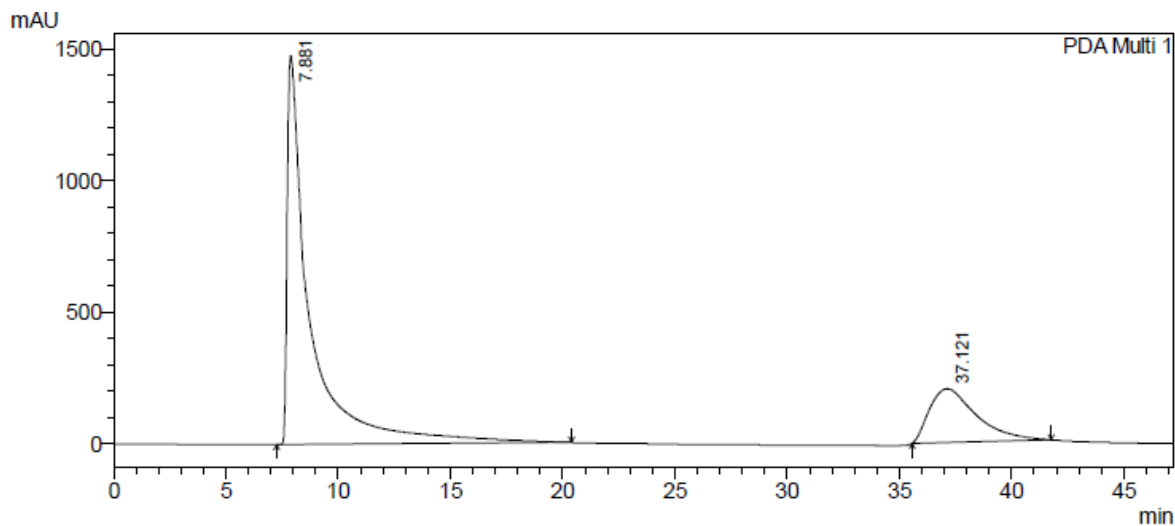
S 81: HPLC spectrum of 4a in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.869	73304641	941379	79.347	85.658
2	20.384	19080246	157624	20.653	14.342
Total		92384887	1099003	100.000	100.000

S 82: HPLC spectrum of 4a in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

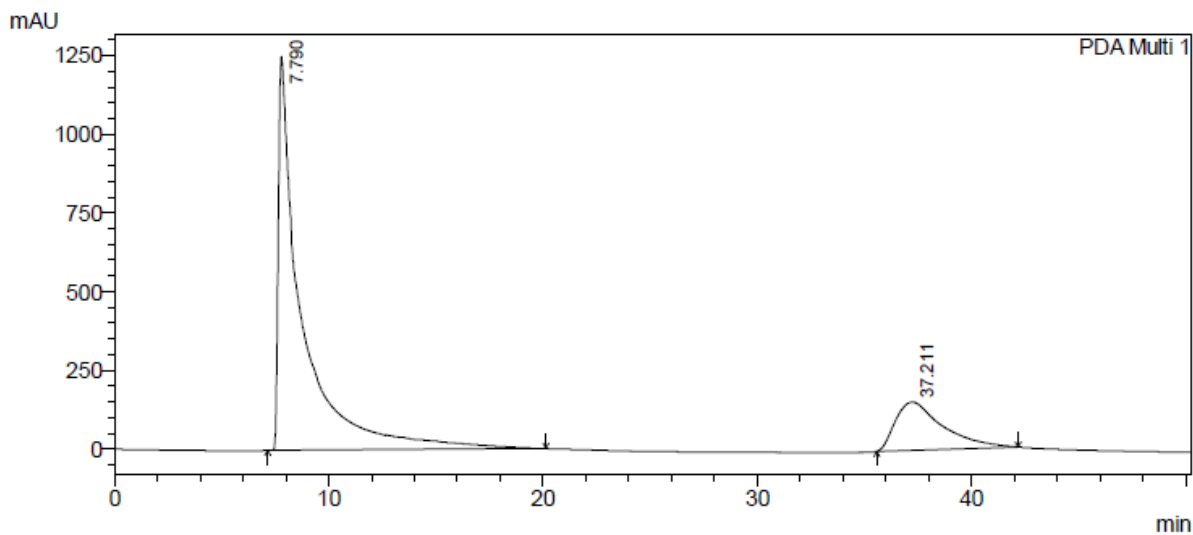


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.881	103920403	1478508	77.778	87.822
2	37.121	29690929	205023	22.222	12.178
Total		133611333	1683531	100.000	100.000

S 83: HPLC spectrum of 4b in the presence of CMPTCs (10a) and K⁺OBU/NaOCl condition.

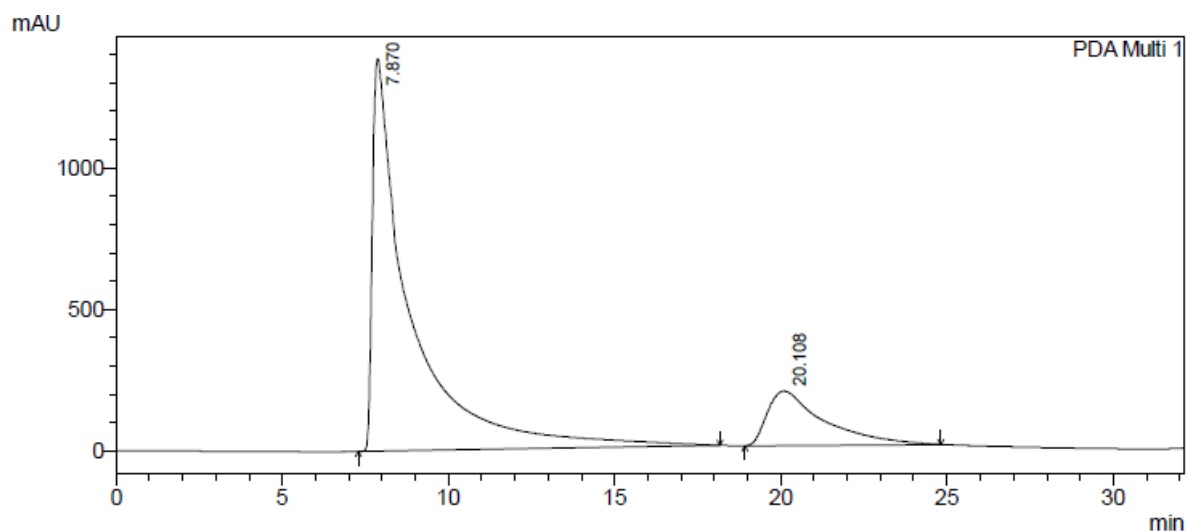


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.790	94686876	1249027	80.058	89.034
2	37.211	23585725	153840	19.942	10.966
Total		118272601	1402868	100.000	100.000

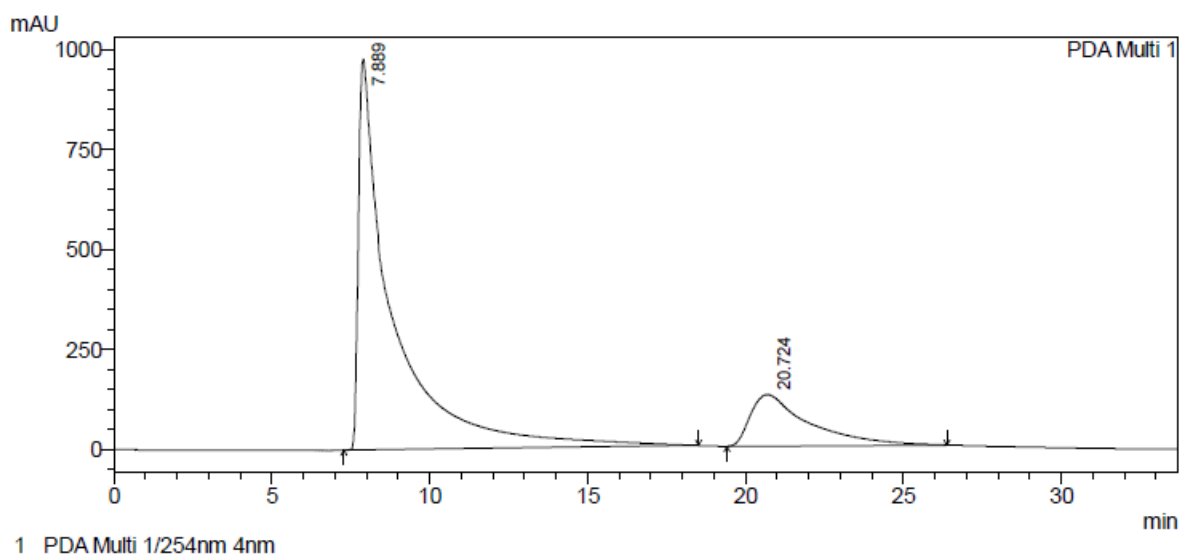
S 84: HPLC spectrum of 4b in the presence of CMPTCs (10b) and K⁺OBU/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.870	109928313	1387466	82.819	87.755
2	20.108	22805302	193595	17.181	12.245
Total		132733615	1581061	100.000	100.000

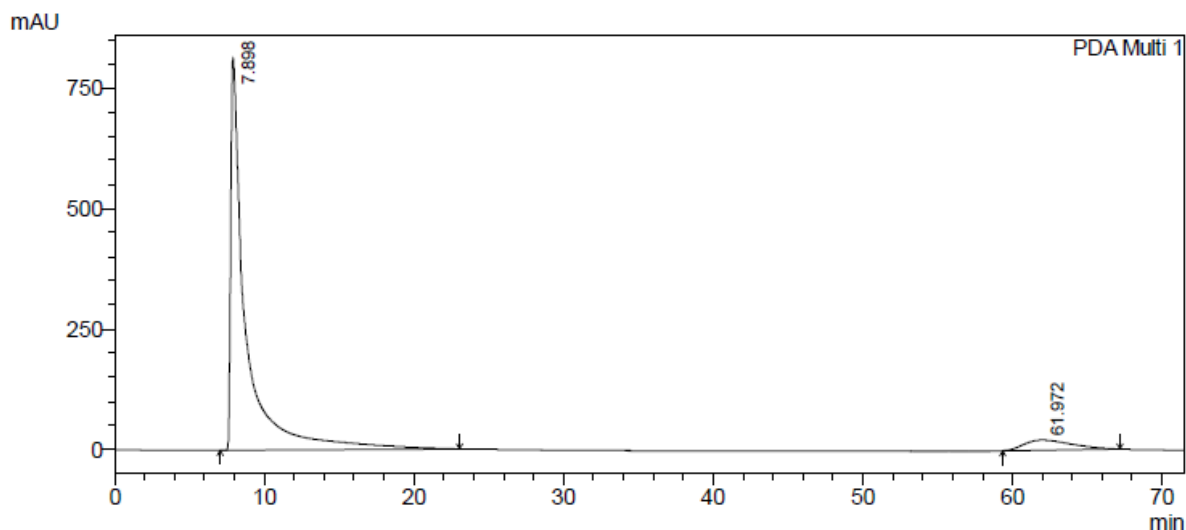
S 85: HPLC spectrum of 4c in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.889	73169319	975861	81.604	88.315
2	20.724	16494515	129117	18.396	11.685
Total		89663834	1104978	100.000	100.000

S 86: HPLC spectrum of 4c in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

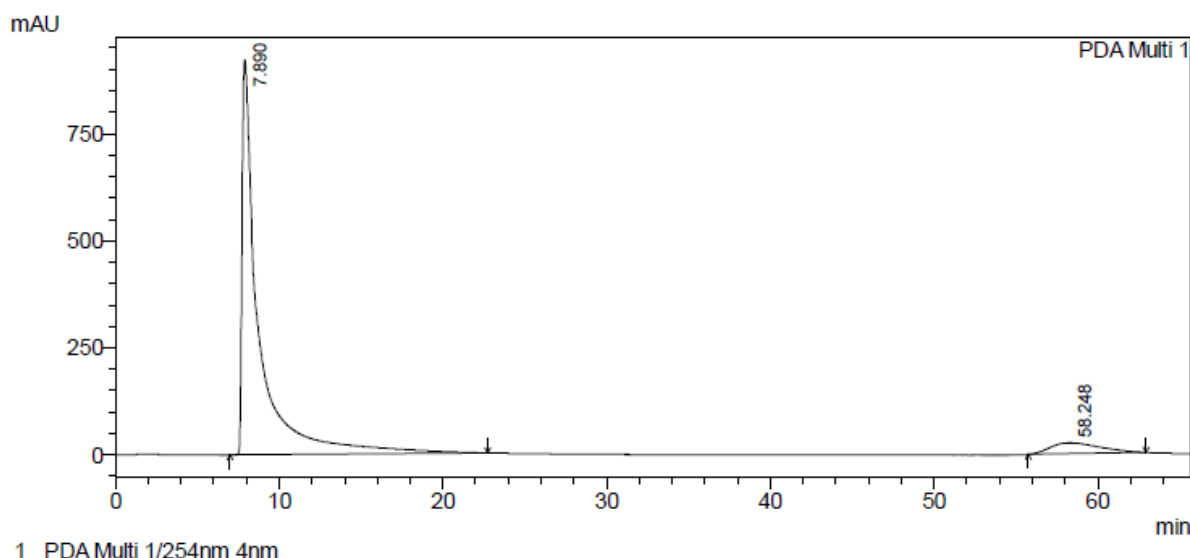


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.898	56742198	813778	92.469	97.488
2	61.972	4621317	20965	7.531	2.512
Total		61363515	834744	100.000	100.000

S 87: HPLC spectrum of 4d in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.

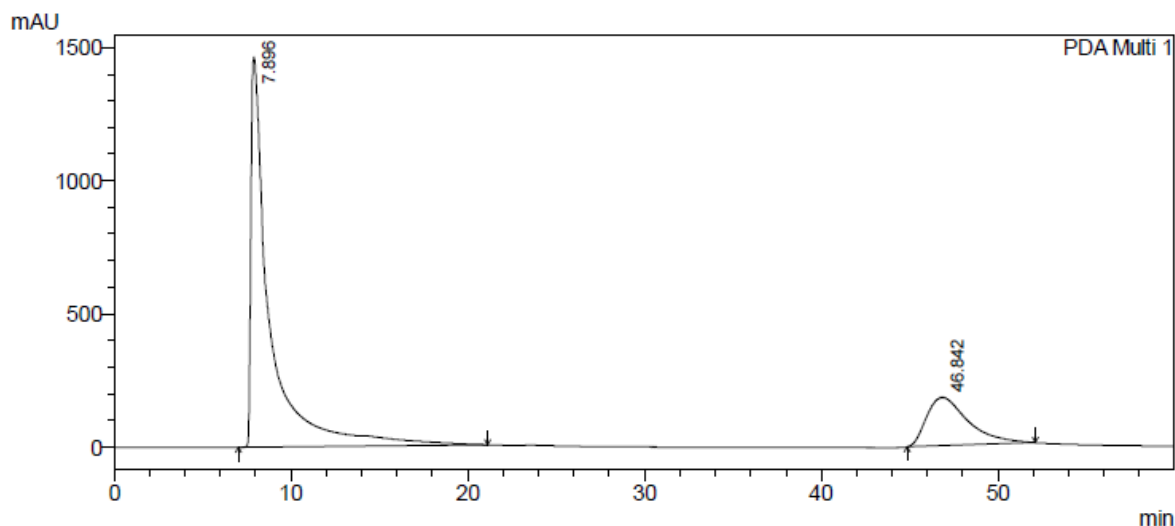


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.890	65513766	922889	92.460	97.302
2	58.248	5342664	25588	7.540	2.698
Total		70856430	948477	100.000	100.000

S 88: HPLC spectrum of 4d in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

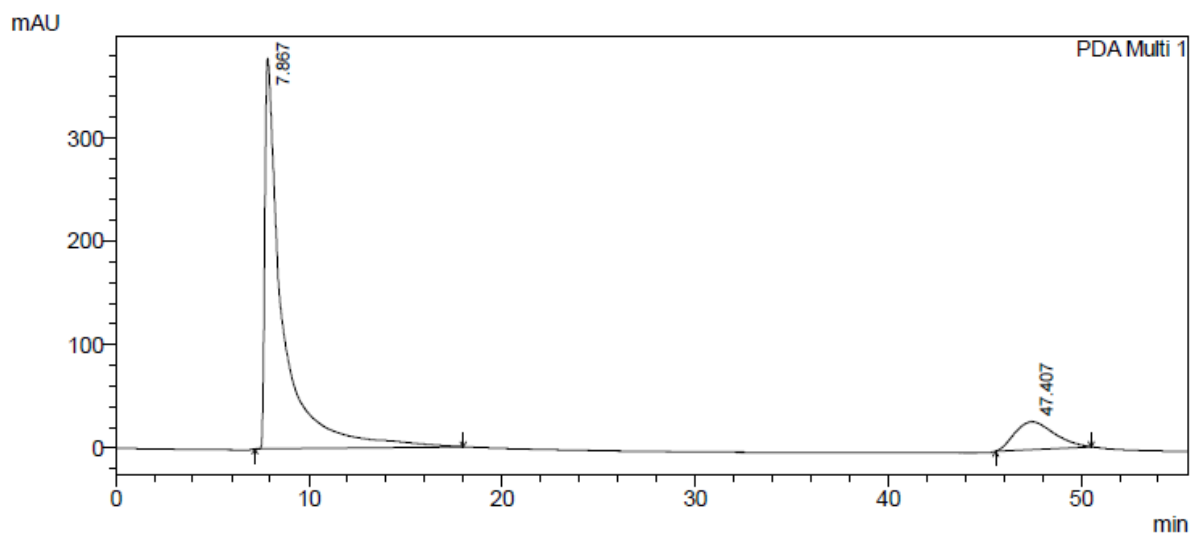


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.896	108039149	1463424	78.385	88.916
2	46.842	29792738	182417	21.615	11.084
Total		137831887	1645841	100.000	100.000

S 89: HPLC spectrum of 4e in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.



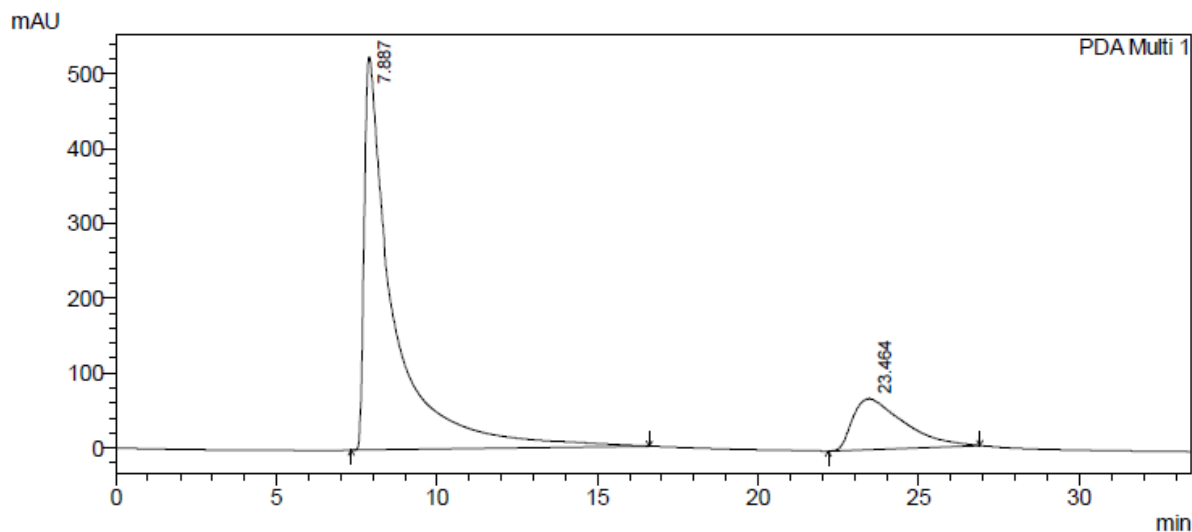
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.867	24206970	377437	86.330	93.313
2	47.407	3833205	27046	13.670	6.687
Total		28040175	404483	100.000	100.000

S 90: HPLC spectrum of 4e in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

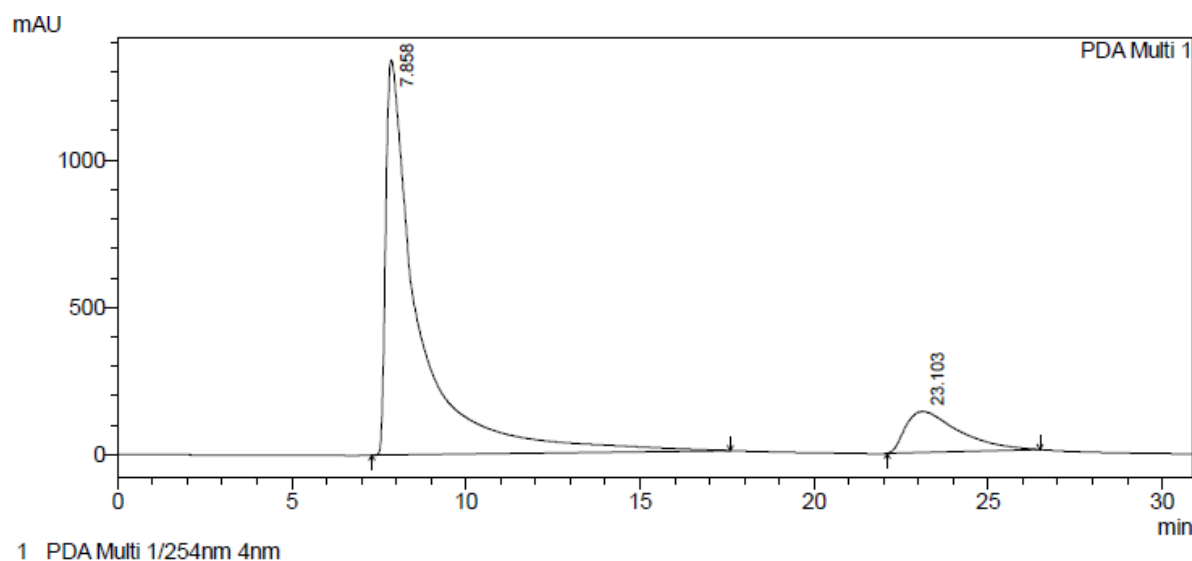
Supporting Information



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.887	33365253	524805	81.672	88.465
2	23.464	7487717	68430	18.328	11.535
Total		40852970	593235	100.000	100.000

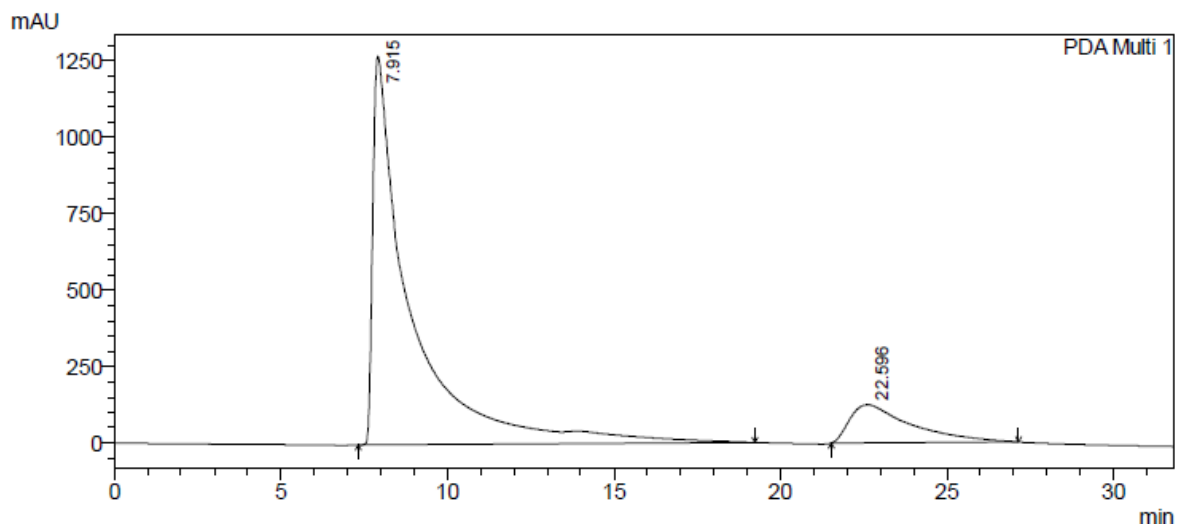
S 91: HPLC spectrum of 4f in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.858	88552673	1342609	85.619	90.549
2	23.103	14873599	140136	14.381	9.451
Total		103426273	1482746	100.000	100.000

S 92: HPLC spectrum of 4f in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

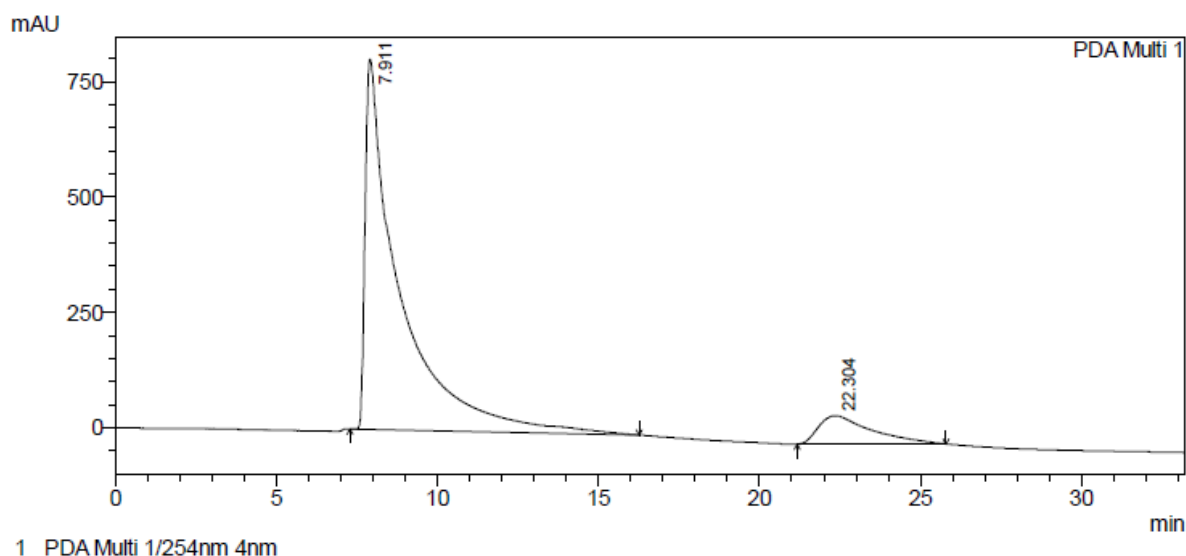


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.915	100086741	1267818	86.231	90.961
2	22.596	15981867	125988	13.769	9.039
Total		116068608	1393806	100.000	100.000

S 93: HPLC spectrum of 4g in the presence of CMPTCs (10a) and K⁺OBU/NaOCl condition.



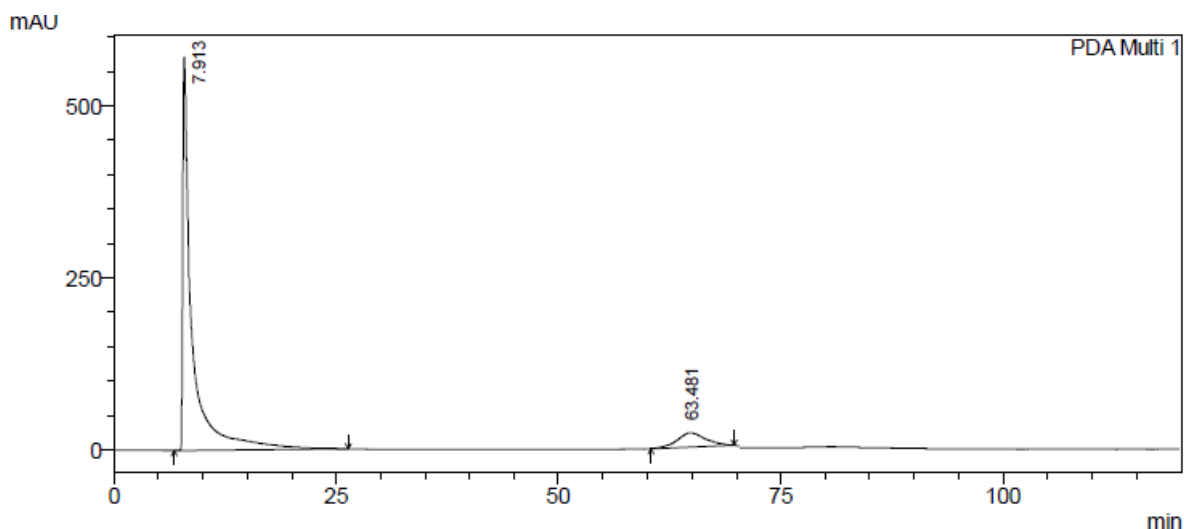
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.911	59537156	802160	89.347	92.841
2	22.304	7098571	61859	10.653	7.159
Total		66635728	864019	100.000	100.000

S 94: HPLC spectrum of 4g in the presence of CMPTCs (10b) and K⁺OBU/NaOCl condition.

Supporting Information

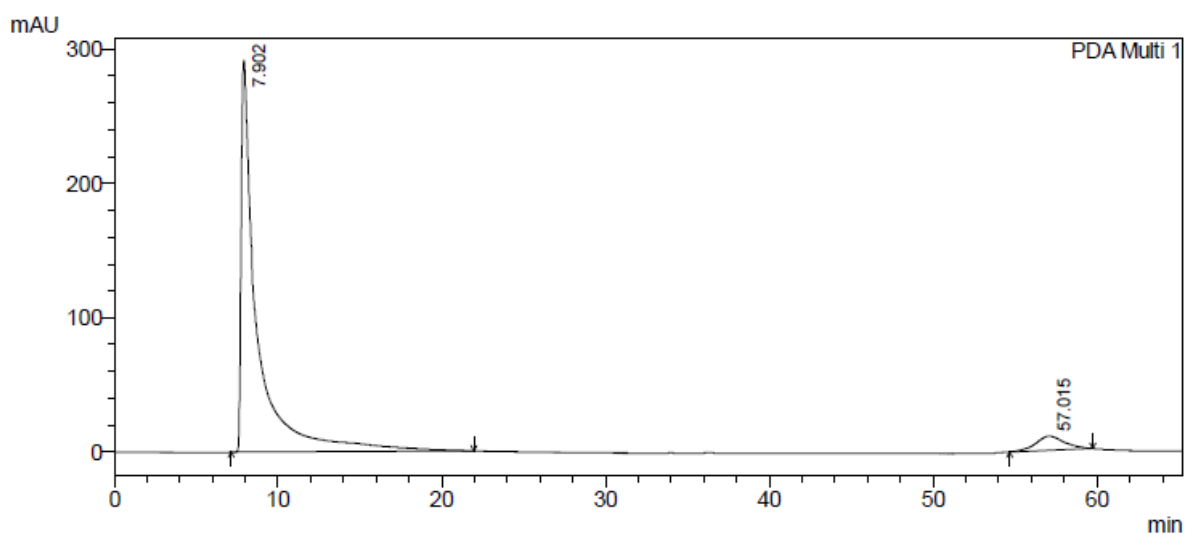


PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.913	41115620	571284	97.957	99.449
2	63.481	857526	3163	2.043	0.551
Total		41973146	574447	100.000	100.000

S 95: HPLC spectrum of 4h in the presence of CMPTCs (10a) and K^tOBu/NaOCl condition.



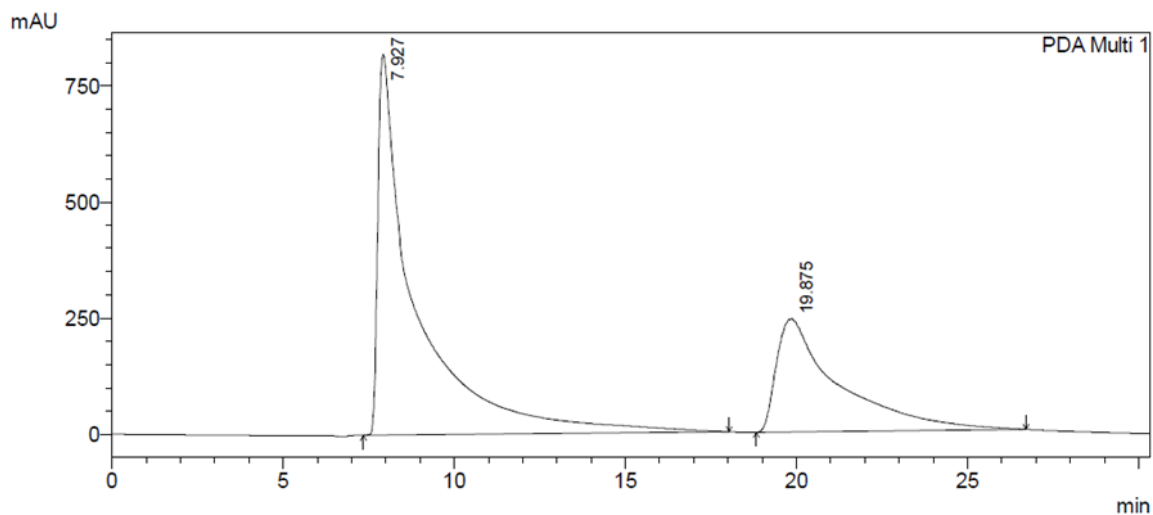
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.902	19722088	291776	93.892	96.490
2	57.015	1282964	10614	6.108	3.510
Total		21005052	302390	100.000	100.000

S 96: HPLC spectrum of 4h in the presence of CMPTCs (10b) and K^tOBu/NaOCl condition.

Supporting Information



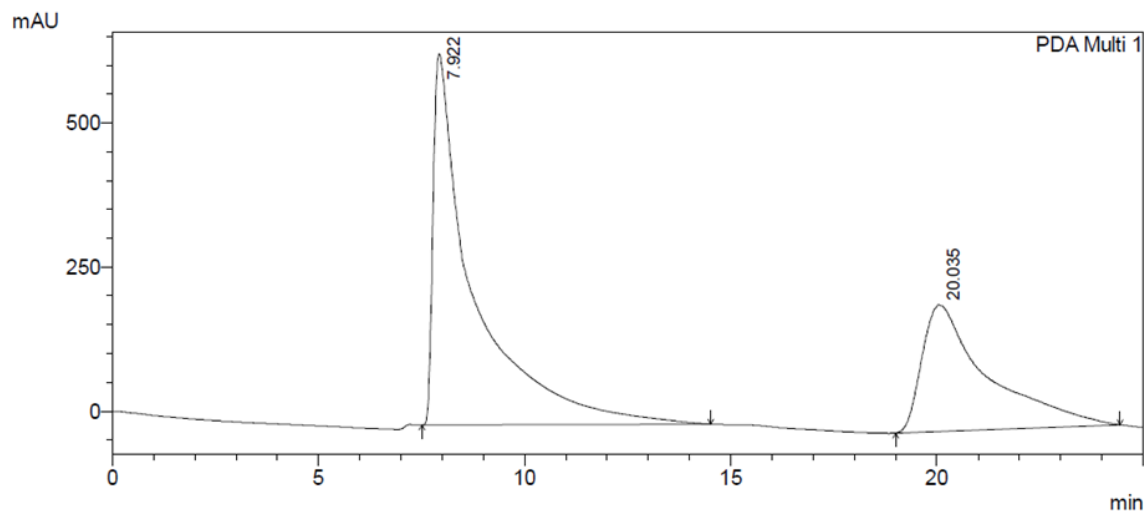
1 PDA Multi 1/254nm 4nm

PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.927	63029324	819174	67.130	76.991
2	19.875	30862240	244817	32.870	23.009
Total		93891564	1063991	100.000	100.000

S 97: HPLC spectrum of 4a in the presence of CMPTCs (10a) and K⁺OBu/NaOCl at 10°C.



1 PDA Multi 1/254nm 4nm

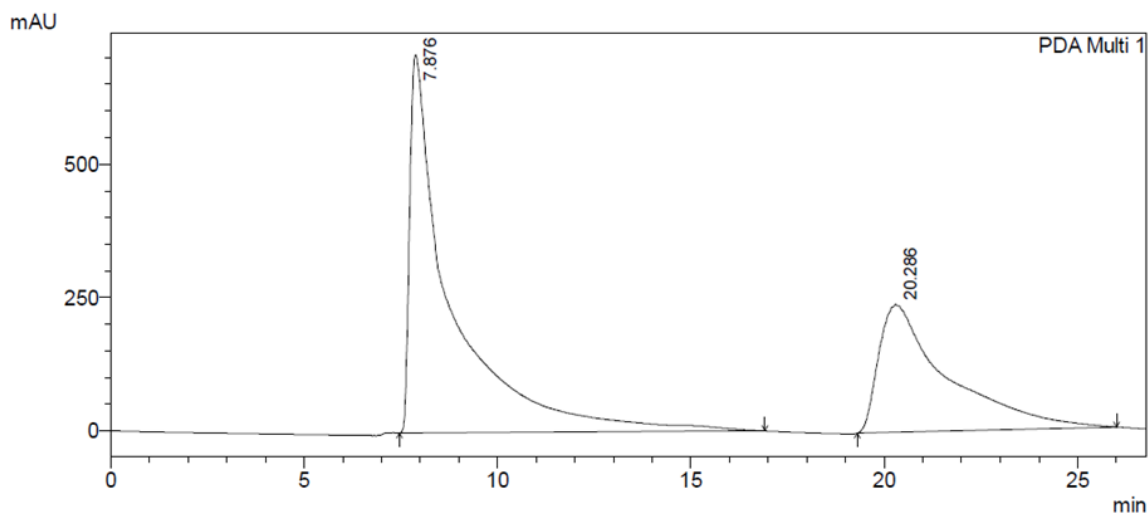
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.922	44027272	643831	64.576	74.554
2	20.035	24151986	219749	35.424	25.446
Total		68179258	863580	100.000	100.000

S 98: HPLC spectrum of 4a in the presence of CMPTCs (10b) and K⁺OBu/NaOCl at 10°C.

Supporting Information



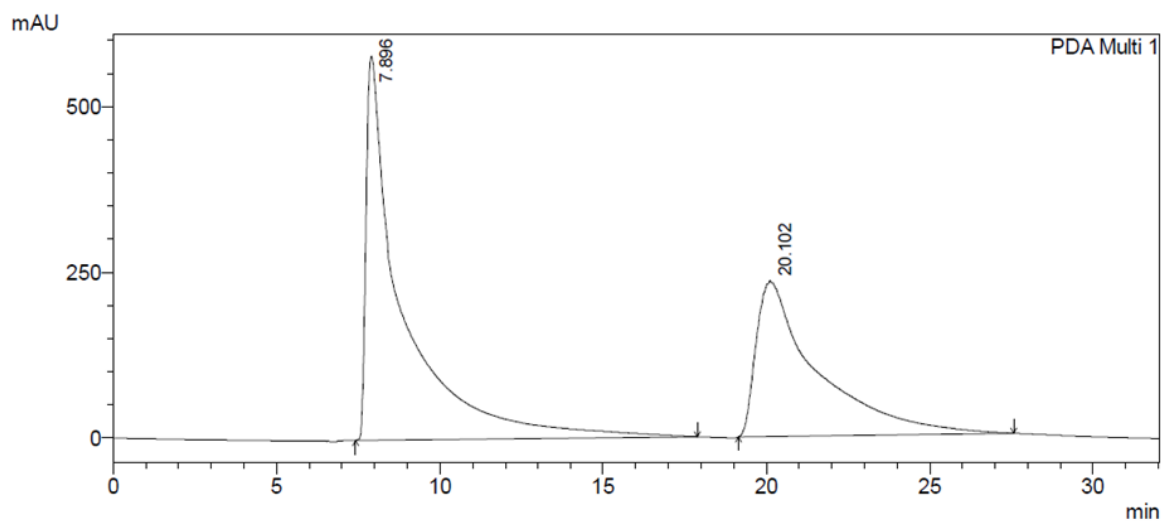
1 PDA Multi 1/254nm 4nm

PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.876	52668009	709037	64.138	74.698
2	20.286	29448349	240171	35.862	25.302
Total		82116359	949208	100.000	100.000

S 99: HPLC spectrum of 4a in the presence of CMPTCs (10a) and K^tOBu/NaOCl at -10°C.



1 PDA Multi 1/254nm 4nm

PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	7.896	44803061	579271	59.425	71.108
2	20.102	30591768	235366	40.575	28.892
Total		75394828	814637	100.000	100.000

S 100: HPLC spectrum of 4a in the presence of CMPTCs (10b) and K^tOBu/NaOCl at -10°C.