

Supplementary Materials: Design, Synthesis, and Antibacterial Evaluation of Some New 2-Phenyl-Quinoline-4-Carboxylic Acid Derivatives

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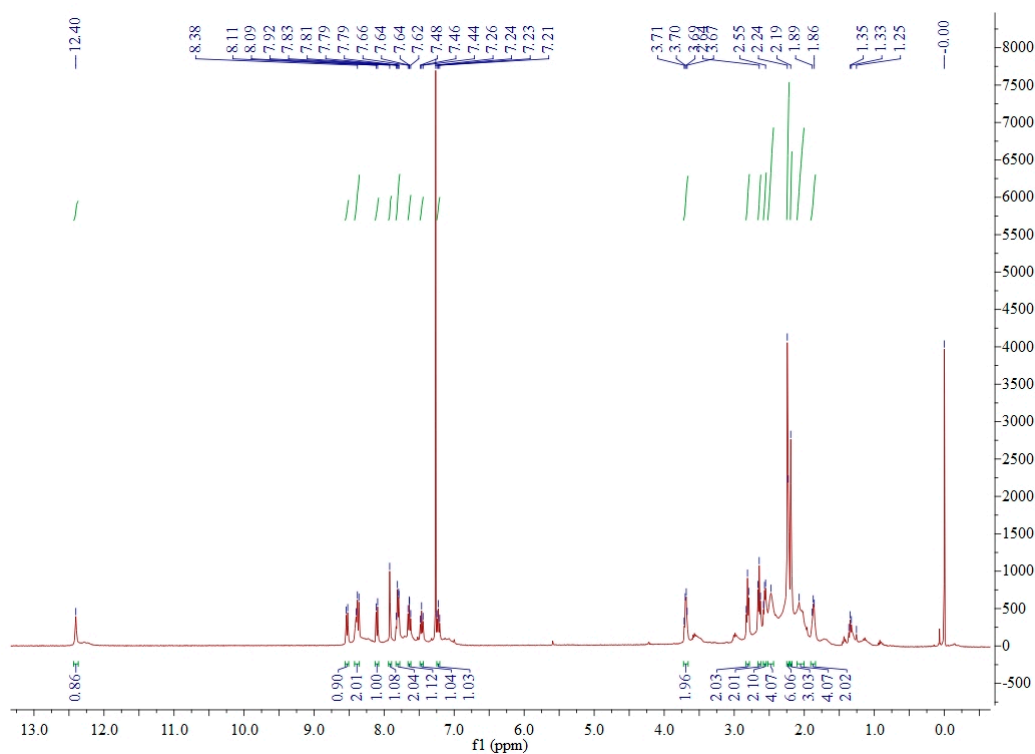


Figure S1. ¹H-NMR Spectrum of compound 5a1.

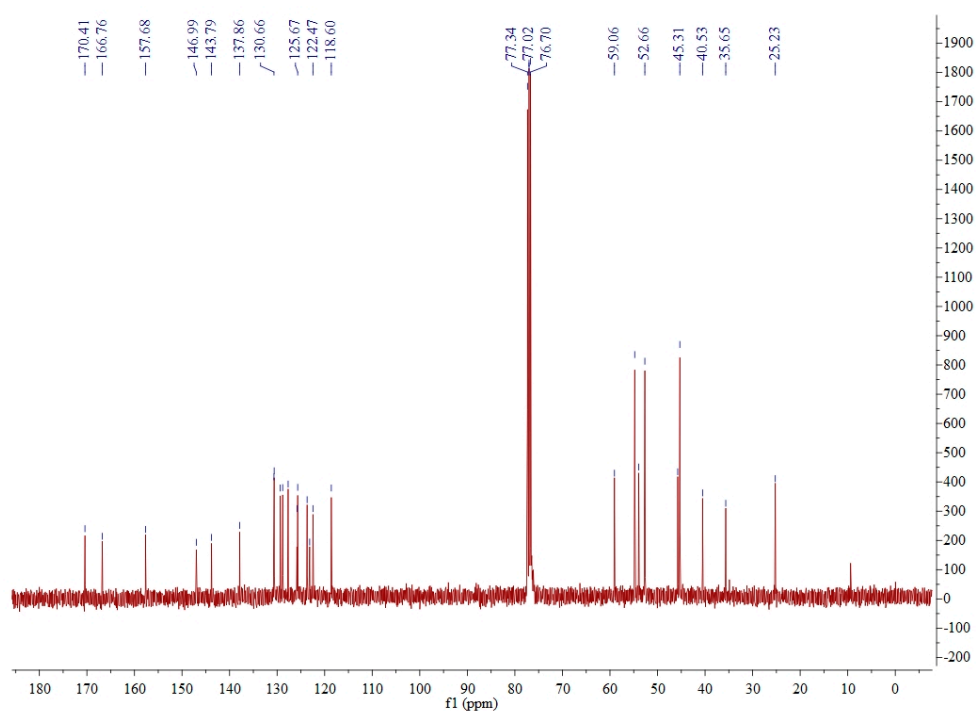
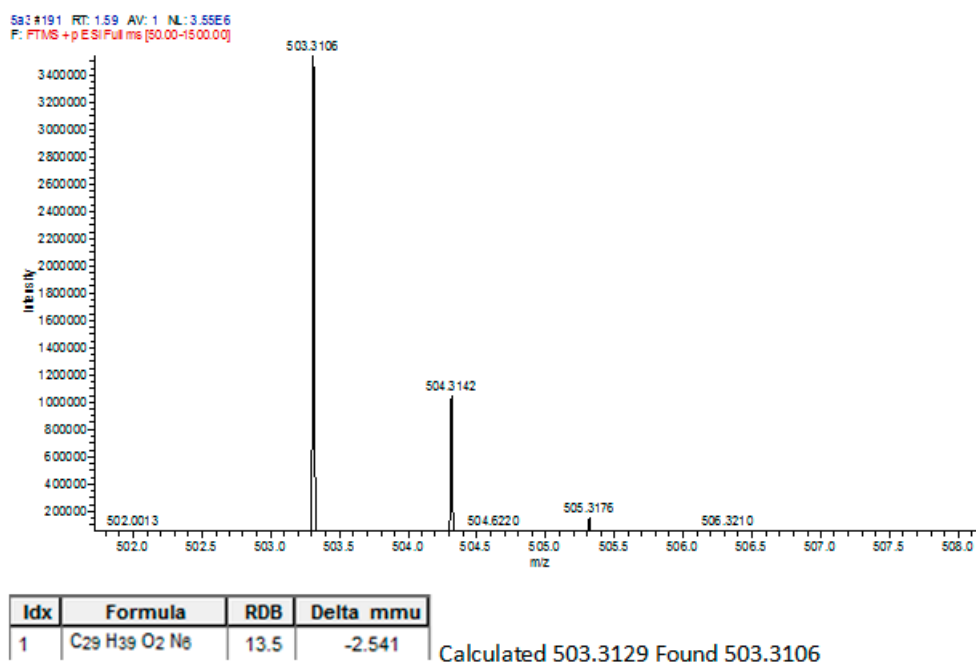
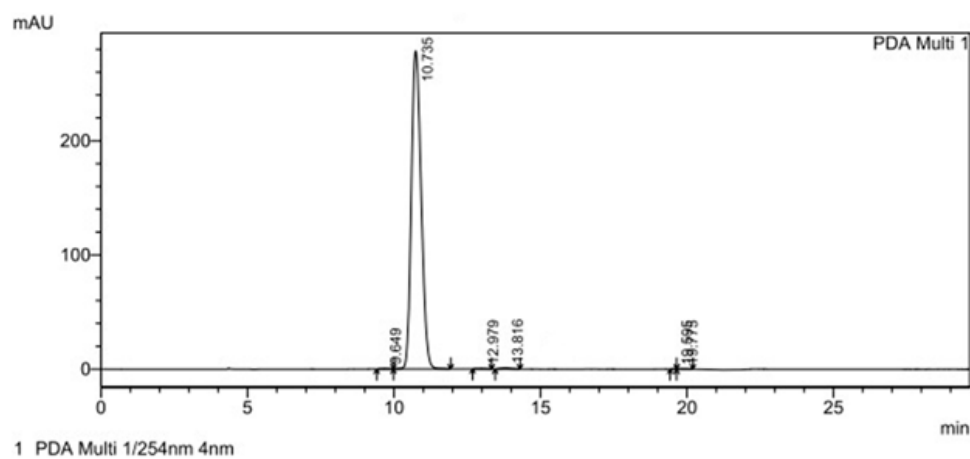
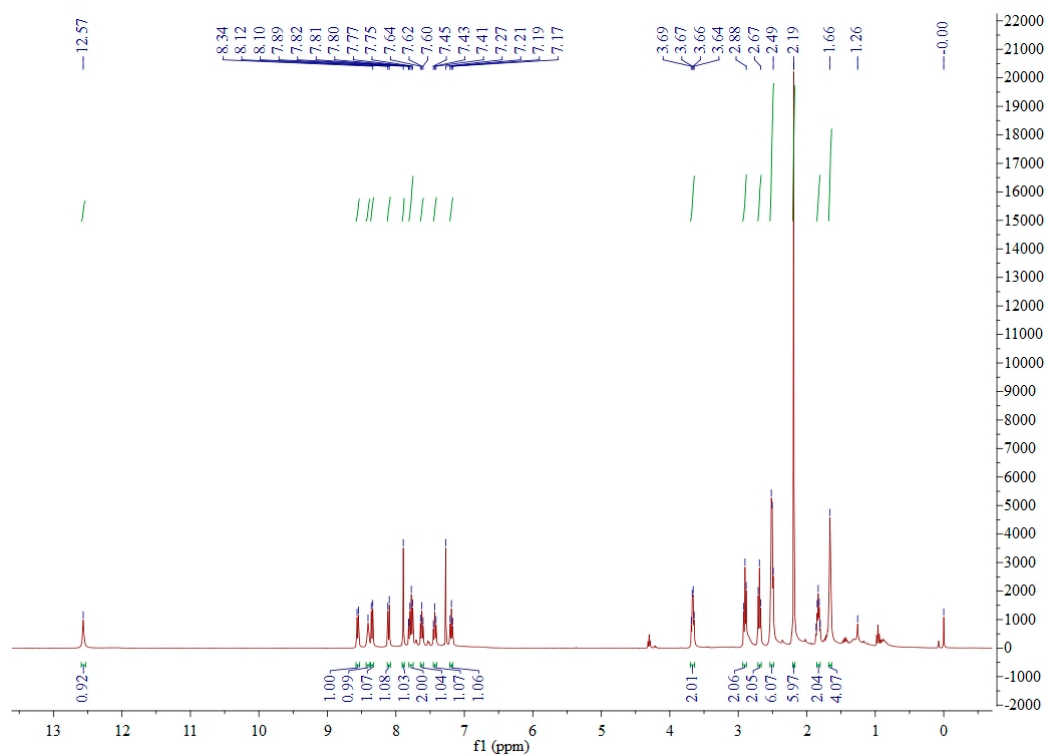
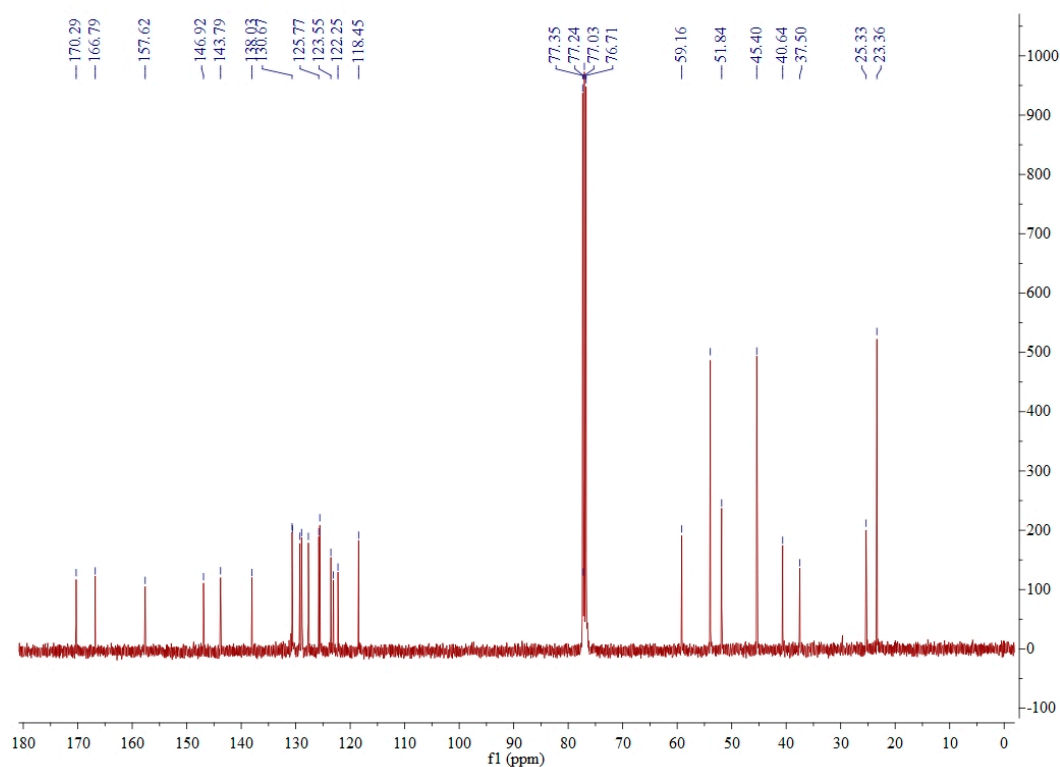


Figure S2. ¹³C-NMR Spectrum of compound 5a1.

Figure S3. HRMS Spectrum of compound 5a₁.

PeakTable					
PDA Ch1 254nm 4nm					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.649	5706	327	0.088	0.117
2	10.735	6443787	278615	99.377	99.286
3	12.979	5285	269	0.082	0.096
4	13.816	23472	1039	0.362	0.370
5	19.595	1096	138	0.017	0.049
6	19.775	4842	229	0.075	0.082
Total		6484188	280617	100.000	100.000

Figure S4. HPLC Spectrum of compound 5a₁.

Figure S5. ¹H-NMR Spectrum of compound 5a2.Figure S6. ¹³C-NMR Spectrum of compound 5a2.

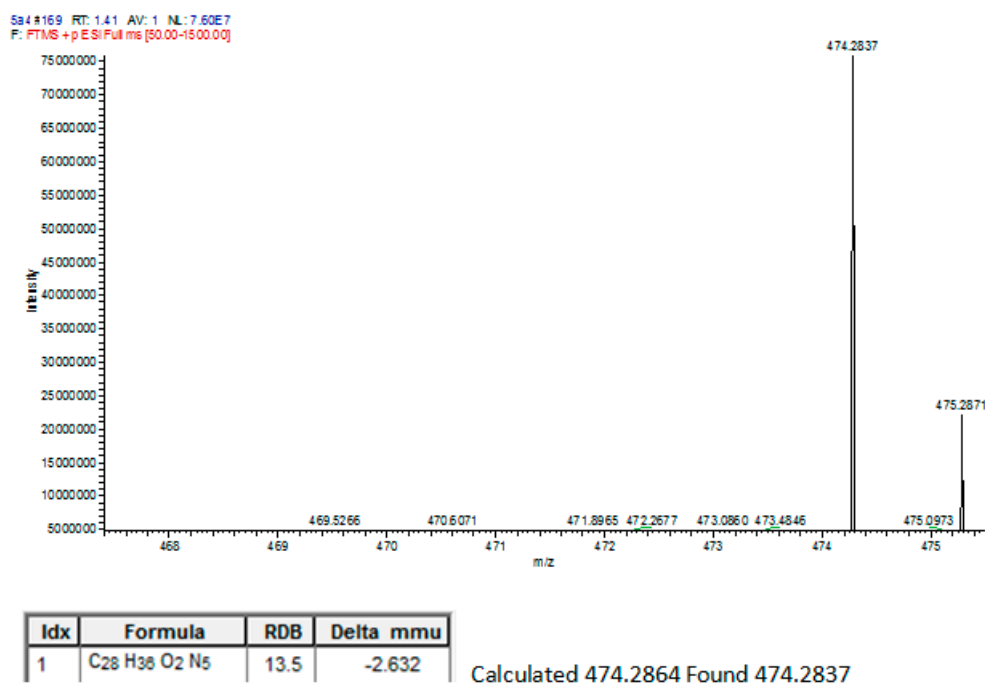


Figure S7. HRMS Spectrum of compound 5a2.

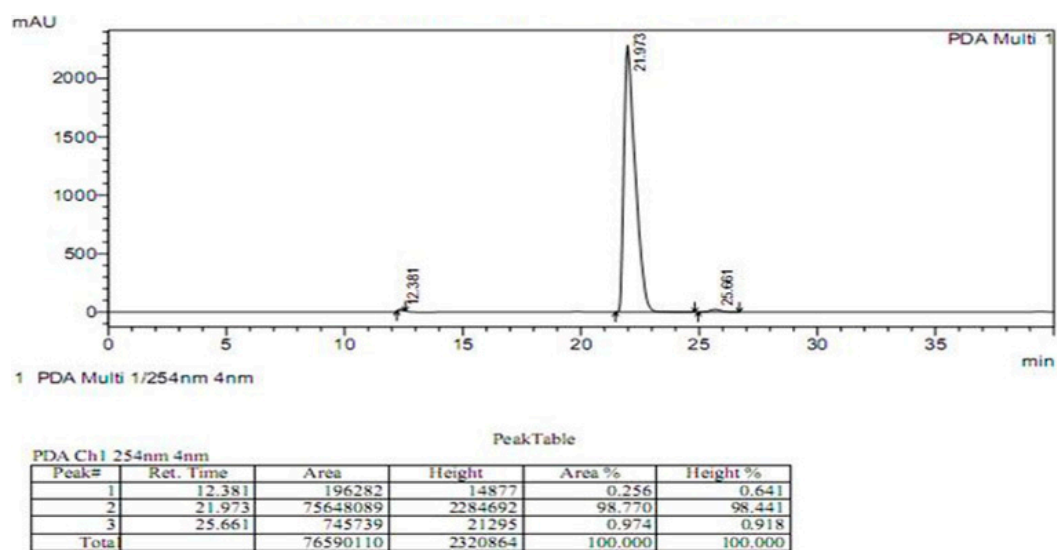
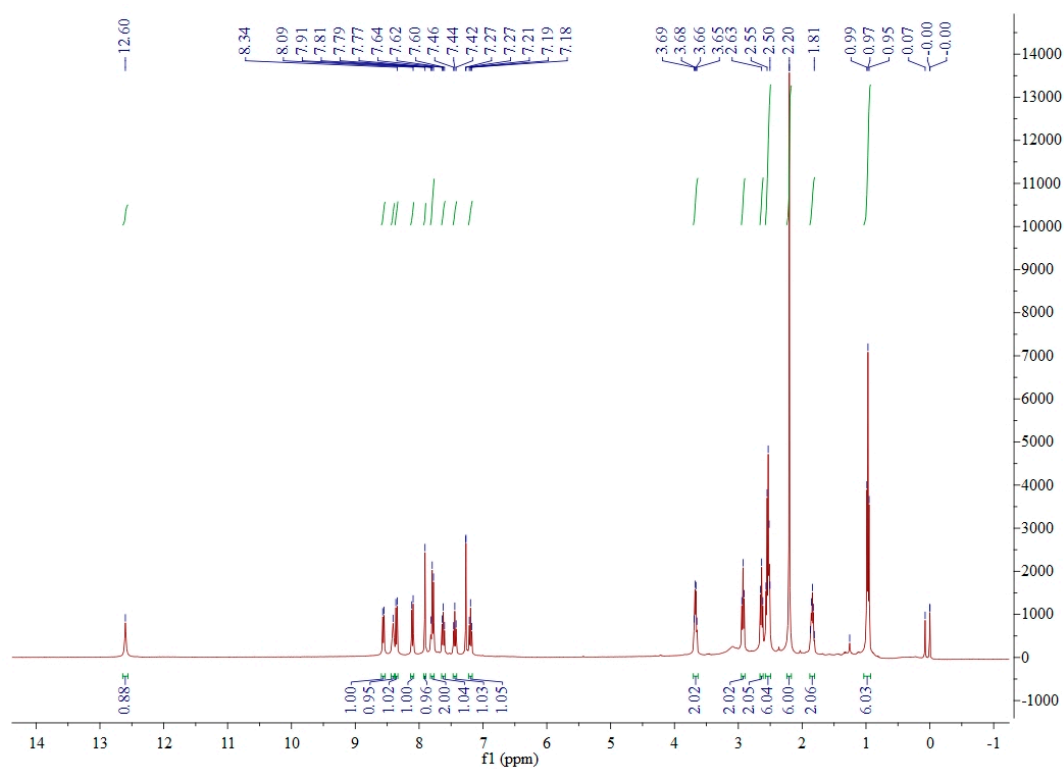
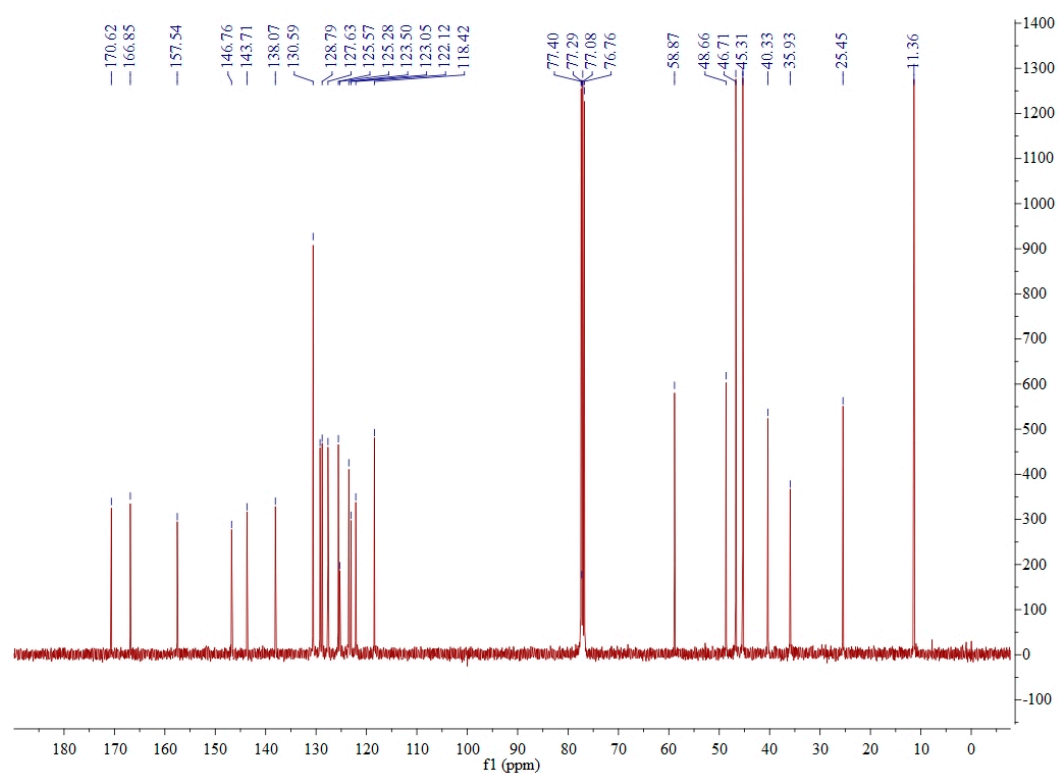


Figure S8. HPLC Spectrum of compound 5a2.

Figure S9. ¹H-NMR Spectrum of compound 5a₃.Figure S10. ¹³C-NMR Spectrum of compound 5a₃.

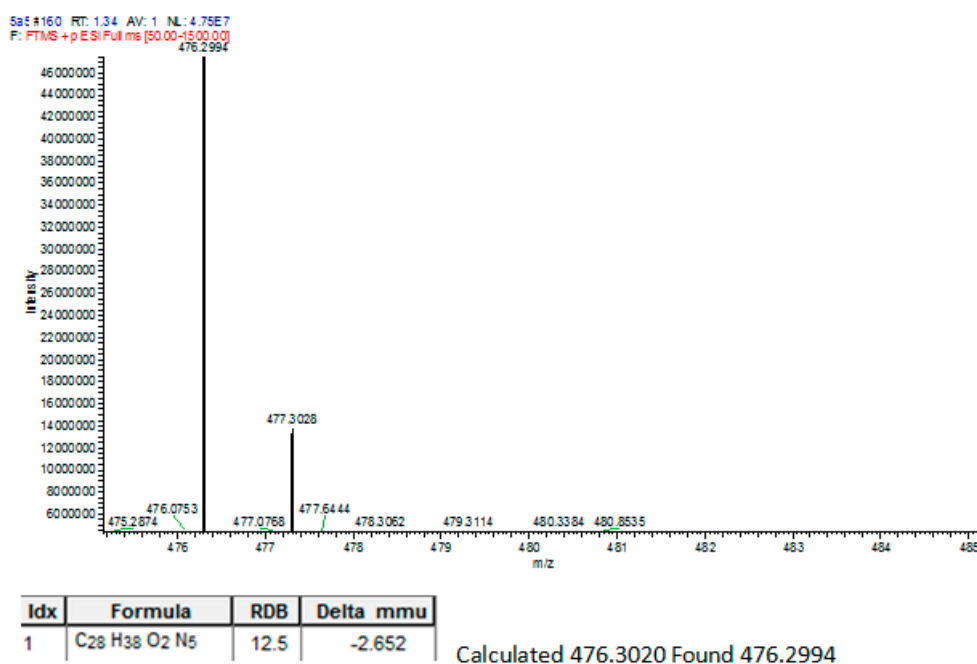
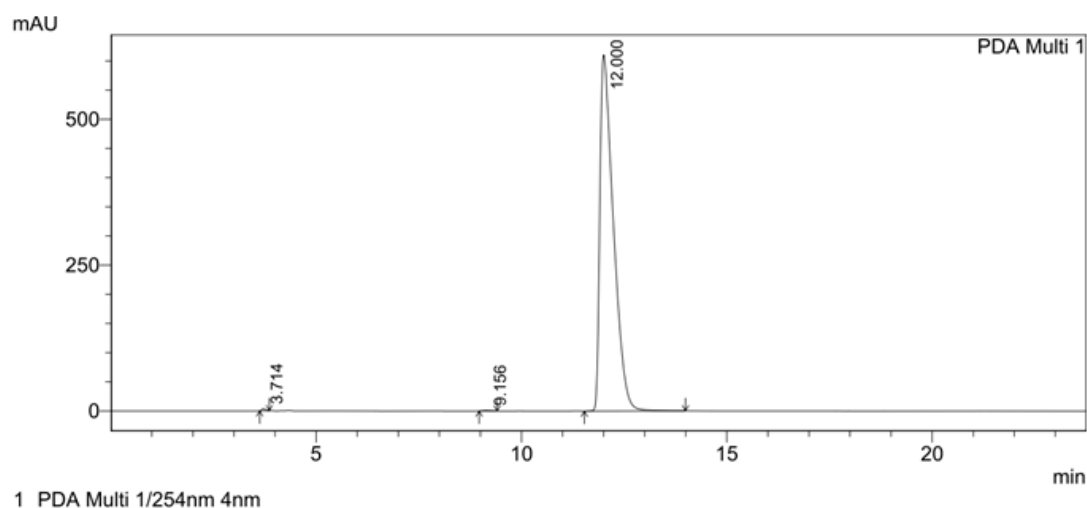
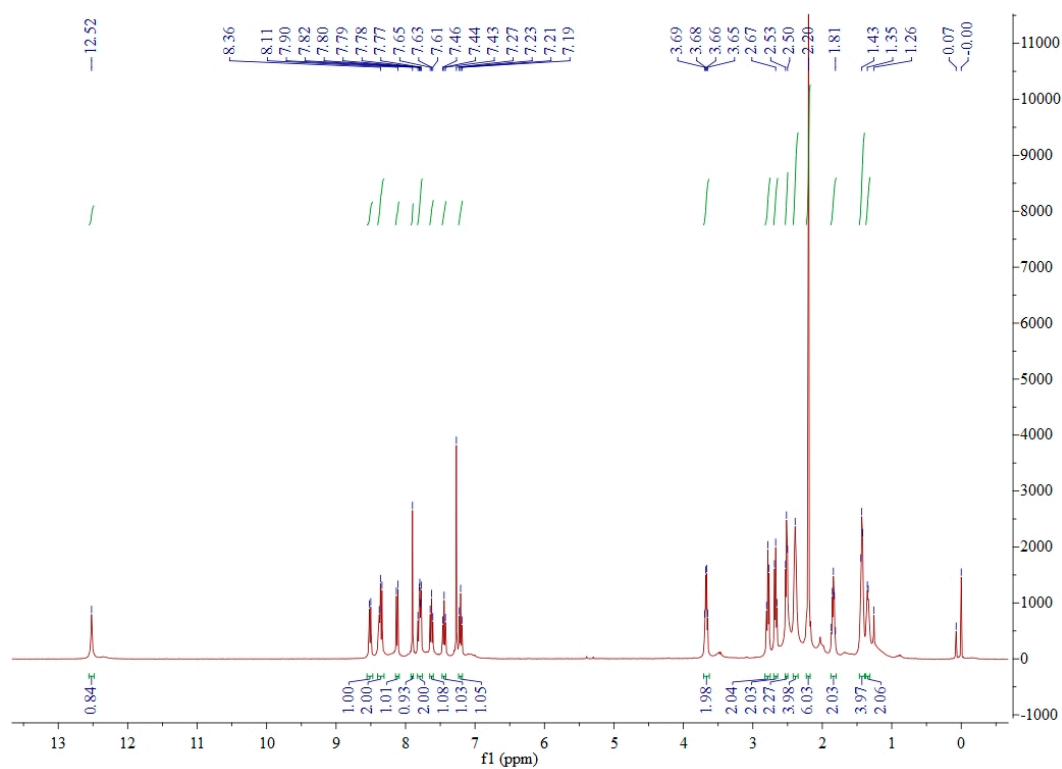
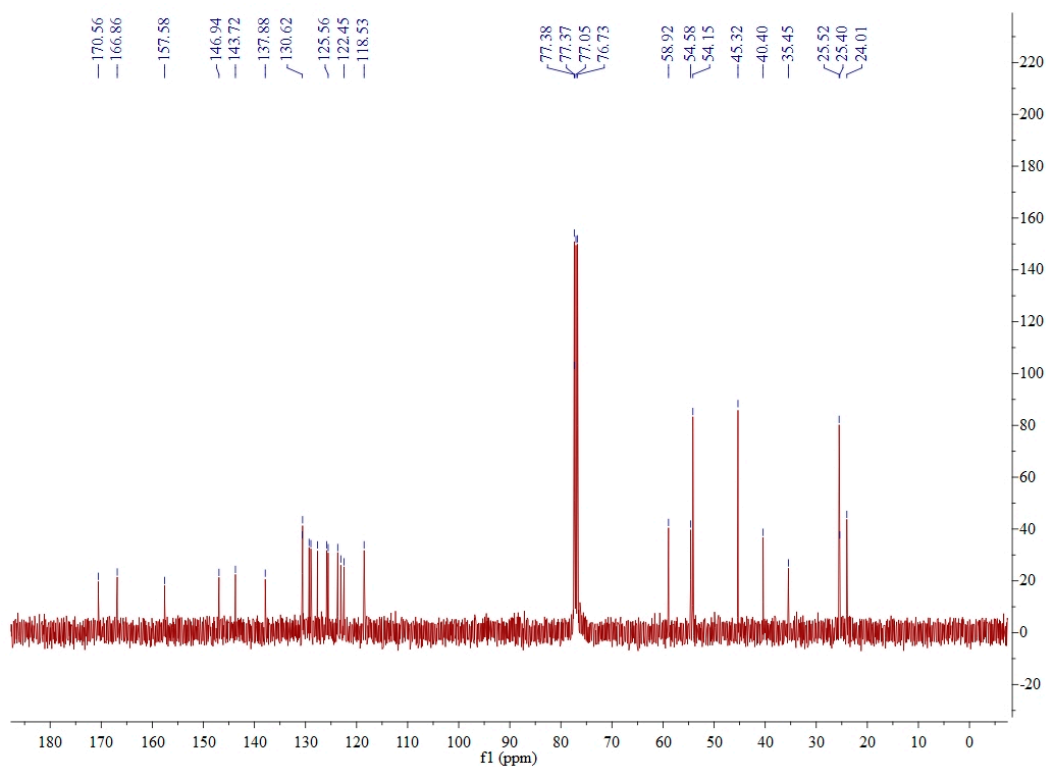


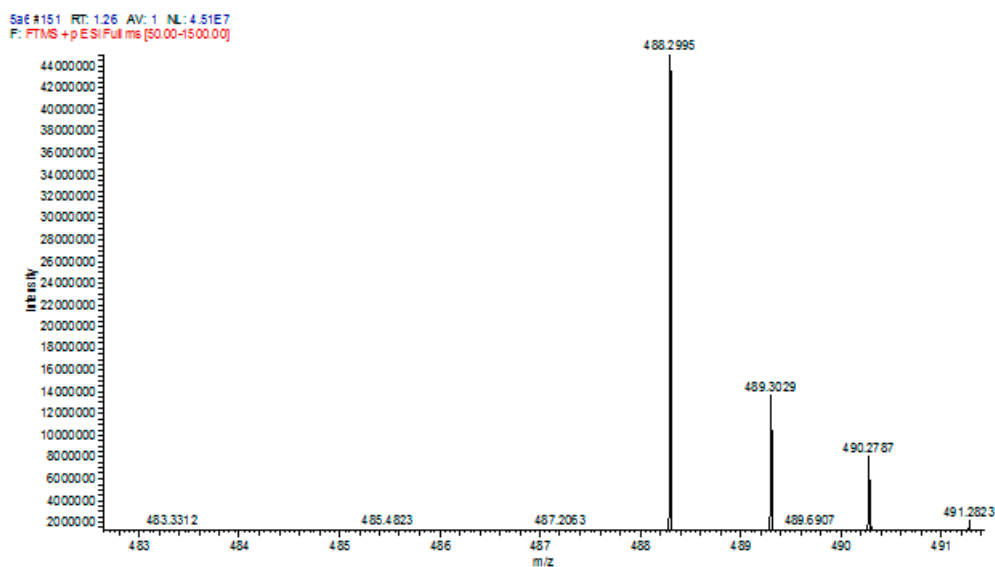
Figure S11. HRMS Spectrum of compound 5a.



PeakTable					
PDA Ch1 254nm 4nm					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	3.714	23334	3522	0.167	0.573
2	9.156	13924	1050	0.099	0.171
3	12.000	13969692	610445	99.734	99.257
Total		14006950	615017	100.000	100.000

Figure S12. HPLC Spectrum of compound 5a.

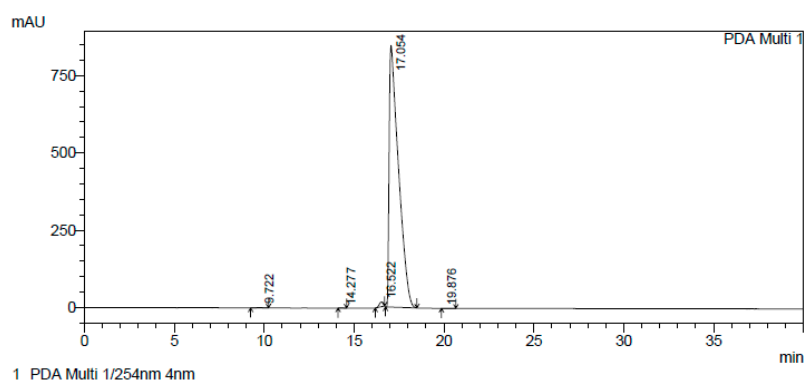
Figure S13. ¹H-NMR Spectrum of compound 5a₄.Figure S14. ¹³C-NMR Spectrum of compound 5a₄.



Idx	Formula	RDB	Delta mmu
1	C ₂₉ H ₃₈ O ₂ N ₅	13.5	-2.472

Calculated 488.3020 Found 488.2995

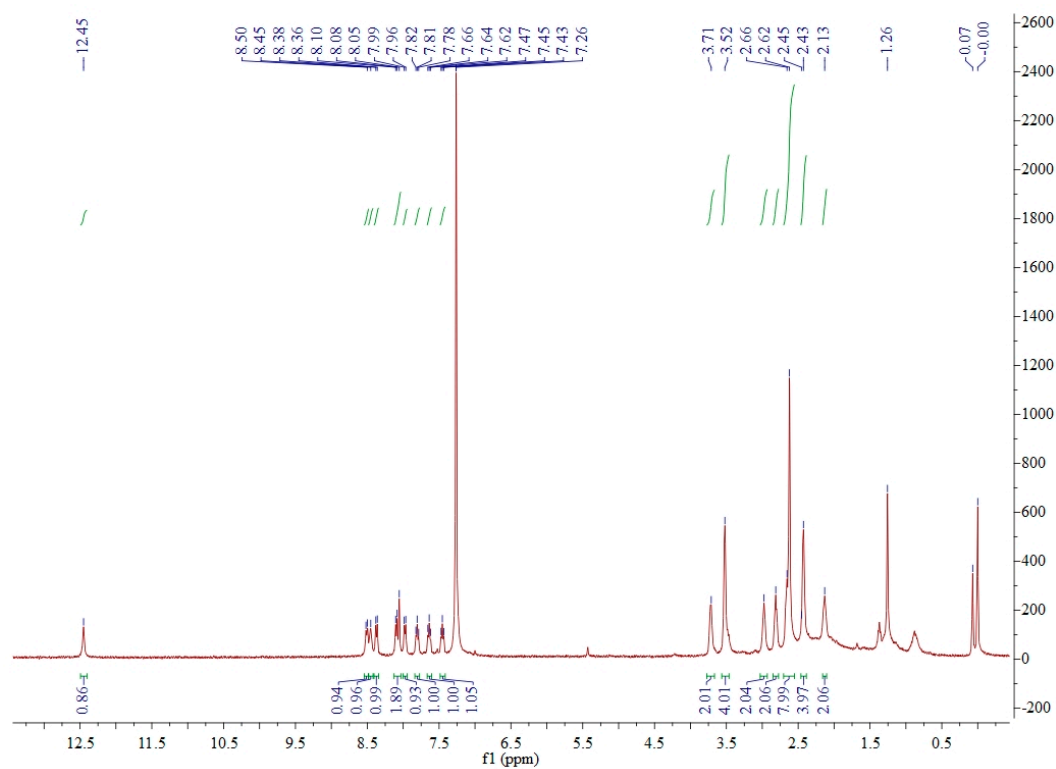
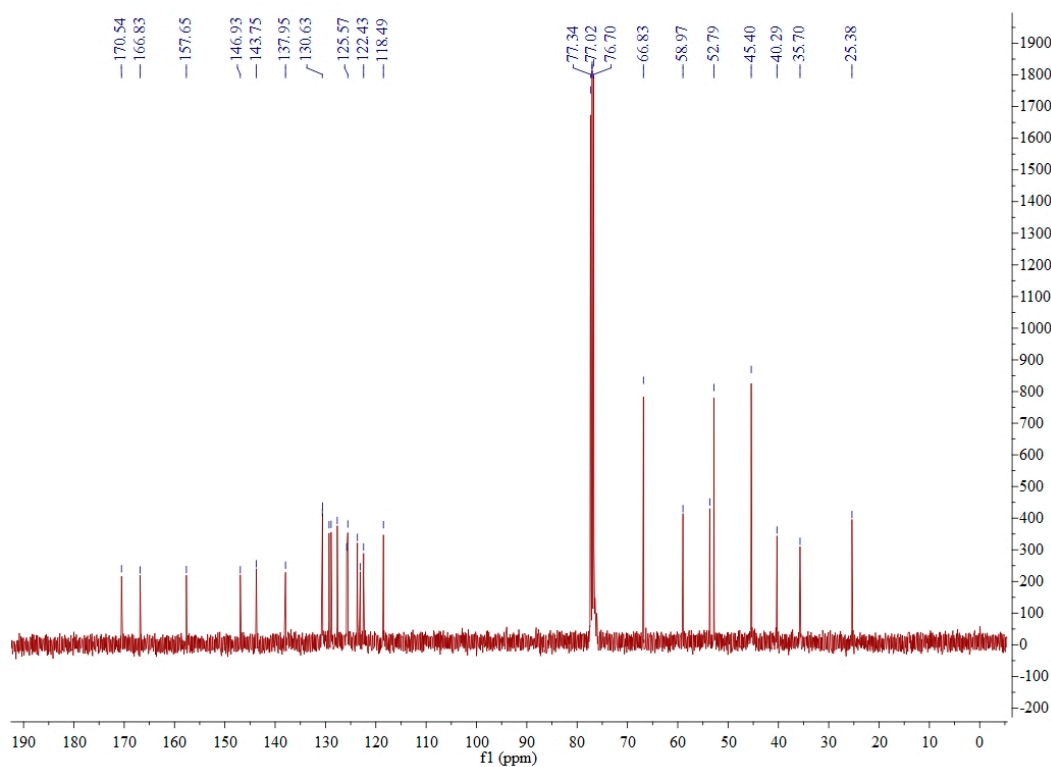
Figure S15. HRMS Spectrum of compound 5a₄.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.722	20263	1065	0.066	0.123
2	14.277	7824	559	0.025	0.065
3	16.522	229029	15481	0.744	1.794
4	17.054	30519574	845975	99.163	98.015
5	19.876	446	23	0.001	0.003
Total		30777136	863104	100.000	100.000

Figure S16. HPLC Spectrum of compound 5a₄.

Figure S17. ¹H-NMR Spectrum of compound 5as.Figure S18. ¹³C-NMR Spectrum of compound 5as.

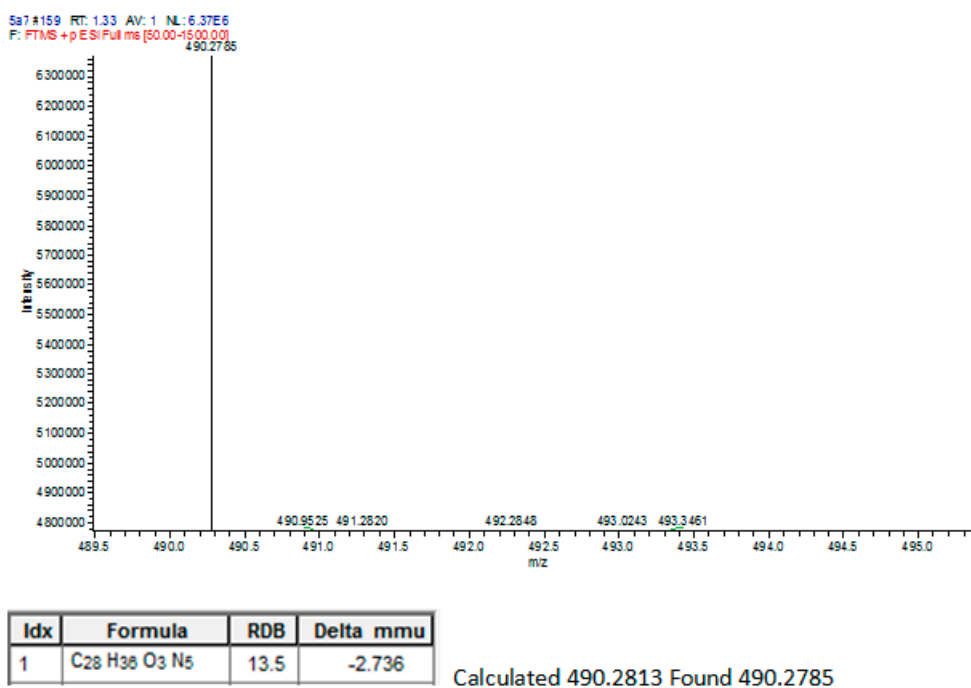
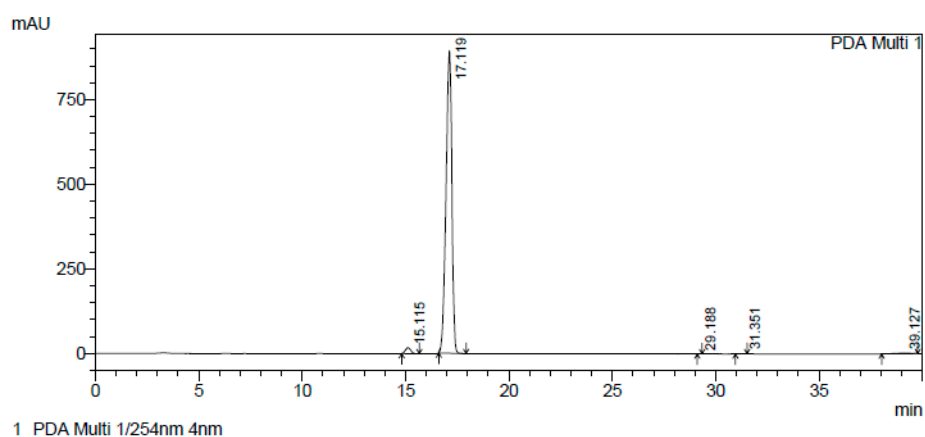
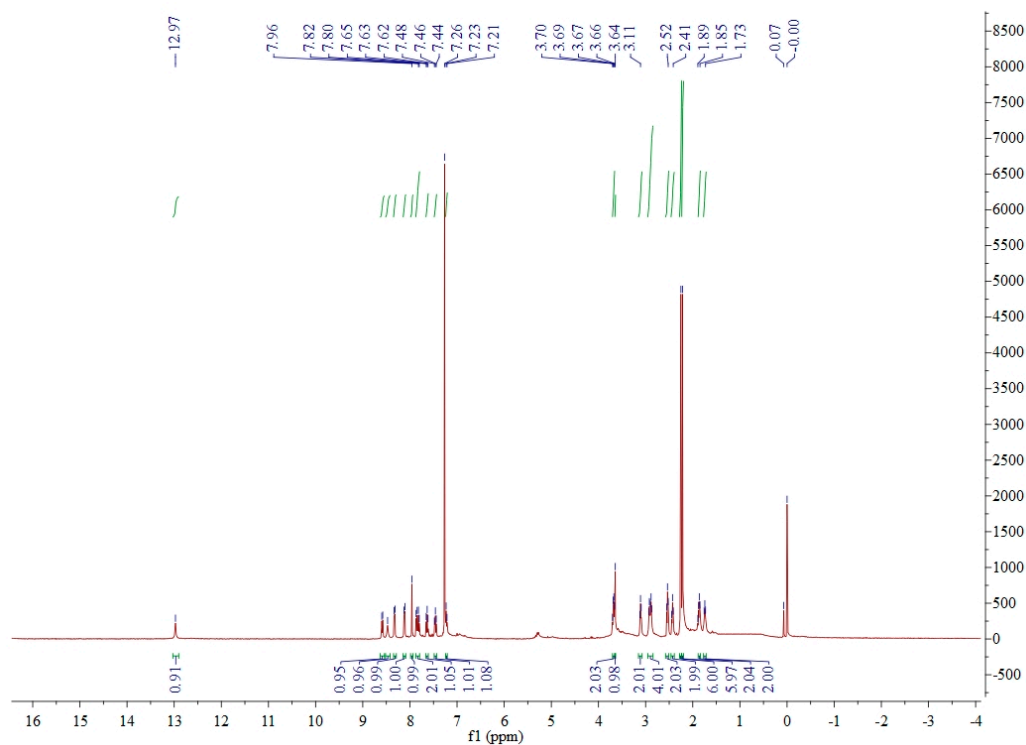
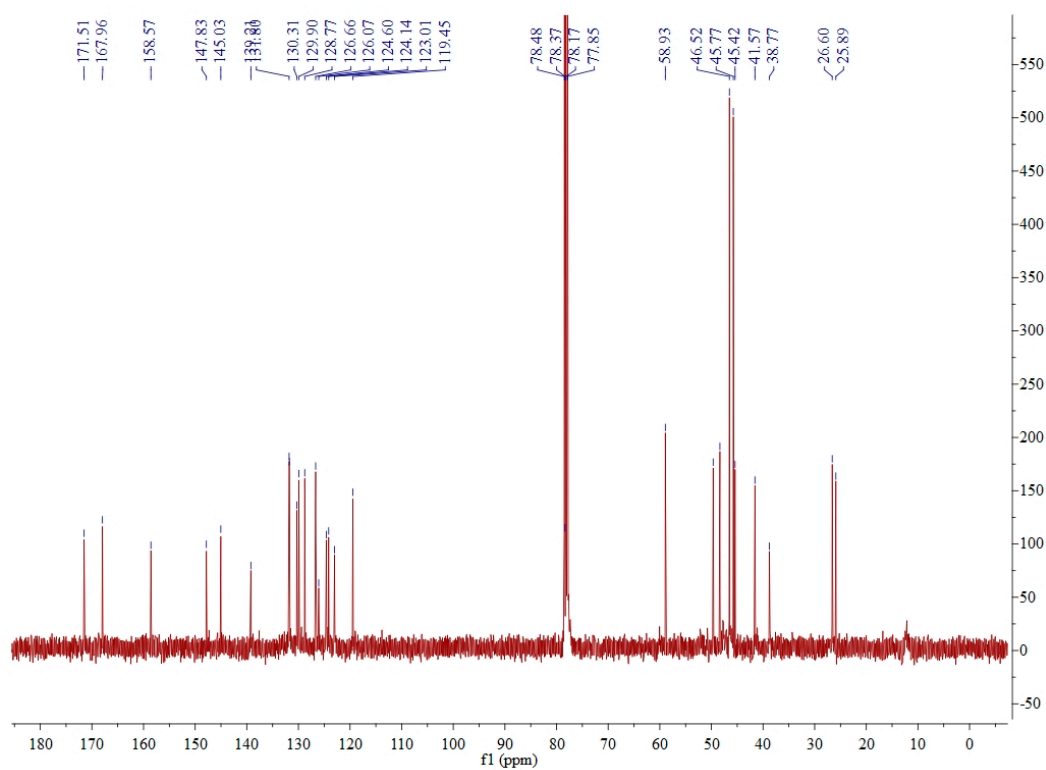


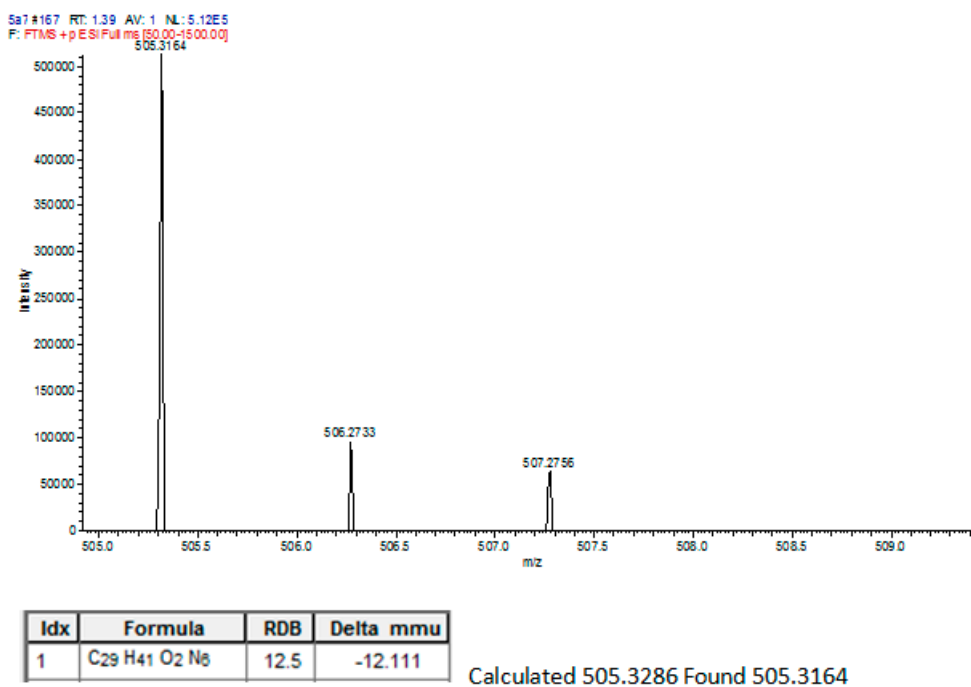
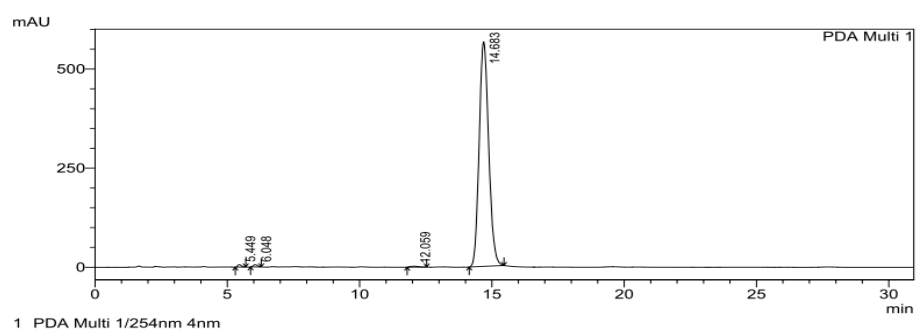
Figure S19. HRMS Spectrum of compound 5a.



Peak#	Ret. Time	Area	Height	Area %	Height %
1	15.115	317080	17821	1.766	1.951
2	17.119	17530804	893596	97.615	97.803
3	29.188	393	71	0.002	0.008
4	31.351	8292	404	0.046	0.044
5	39.127	102600	1773	0.571	0.194
Total		17959169	913665	100.000	100.000

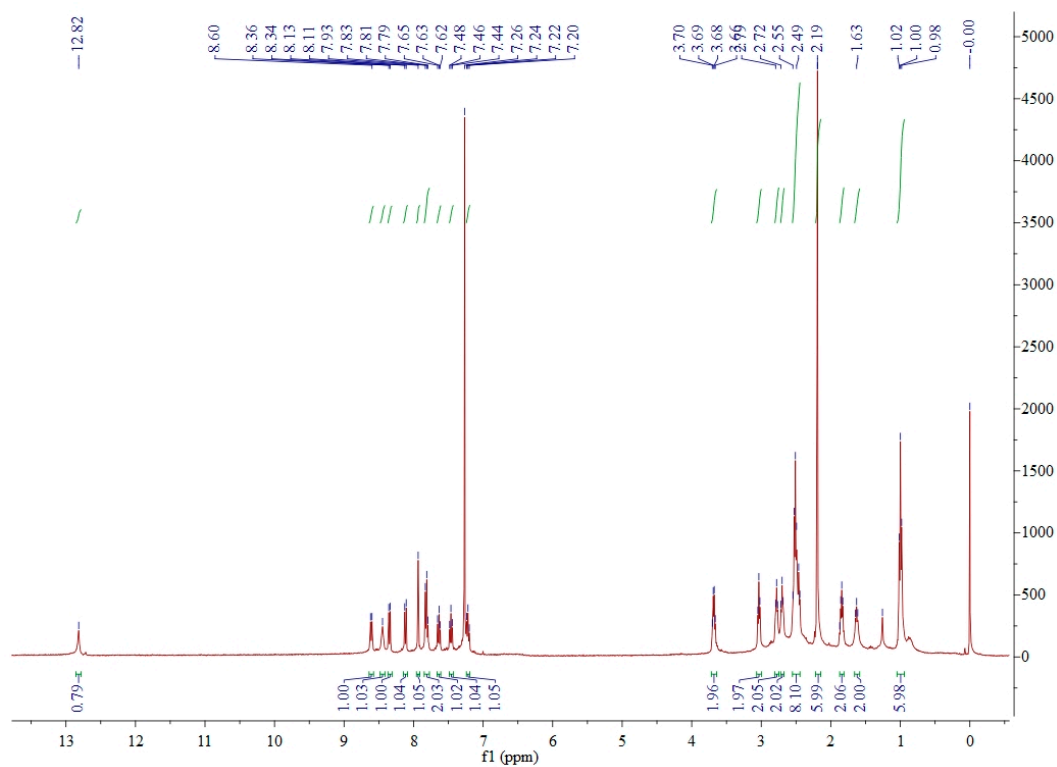
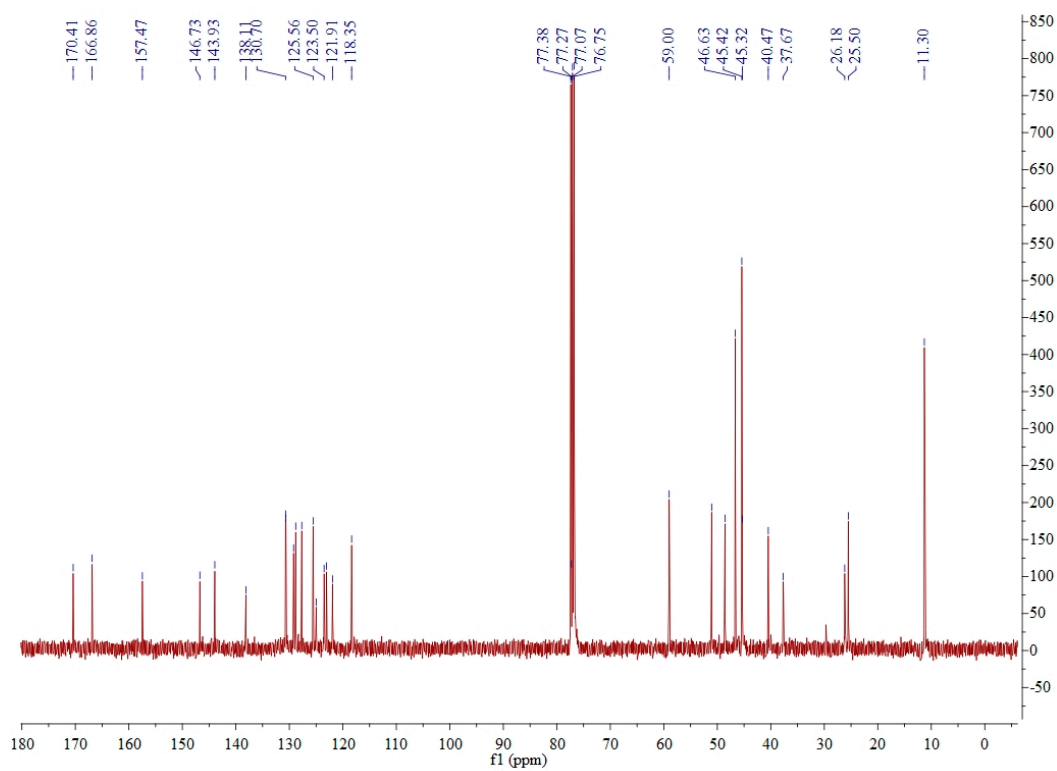
Figure S20. HPLC Spectrum of compound 5a.

Figure S21. ¹H-NMR Spectrum of compound 5a₆.Figure S22. ¹³C-NMR Spectrum of compound 5a₆.

Figure S23. HRMS Spectrum of compound 5a₆.

PeakTable					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	5.449	58406	6111	0.408	1.053
2	6.048	63630	5403	0.444	0.931
3	12.059	49454	2383	0.345	0.411
4	14.683	14143754	566399	98.802	97.605
Total		14315244	580296	100.000	100.000

Figure S24. HPLC Spectrum of compound 5a₆.

Figure S25. ¹H-NMR Spectrum of compound 5a7.Figure S26. ¹³C-NMR Spectrum of compound 5a7.

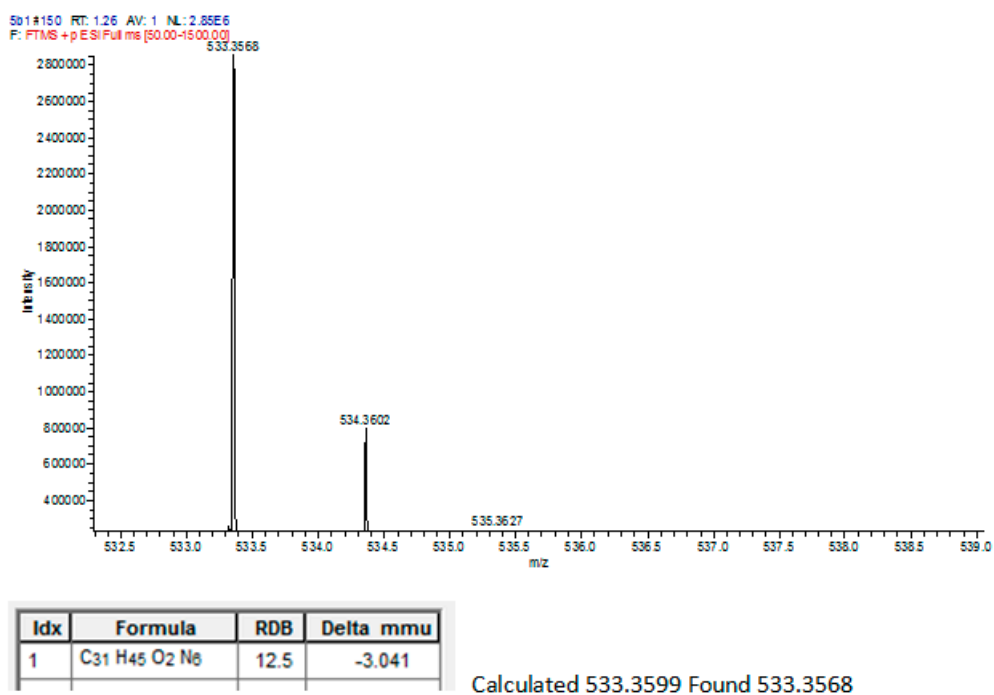
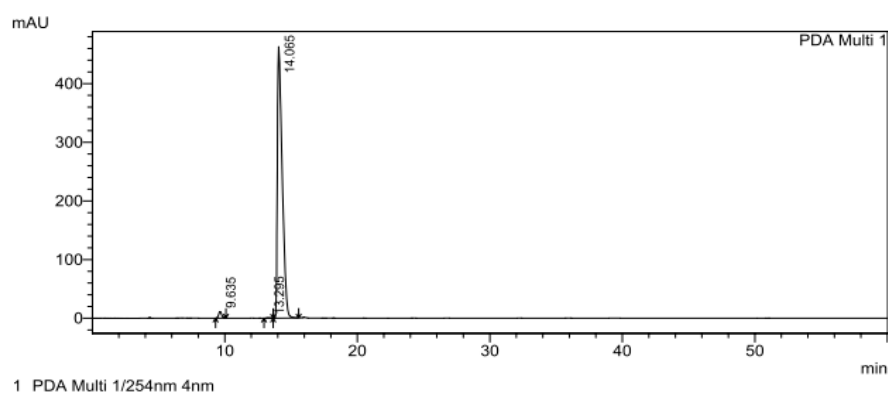
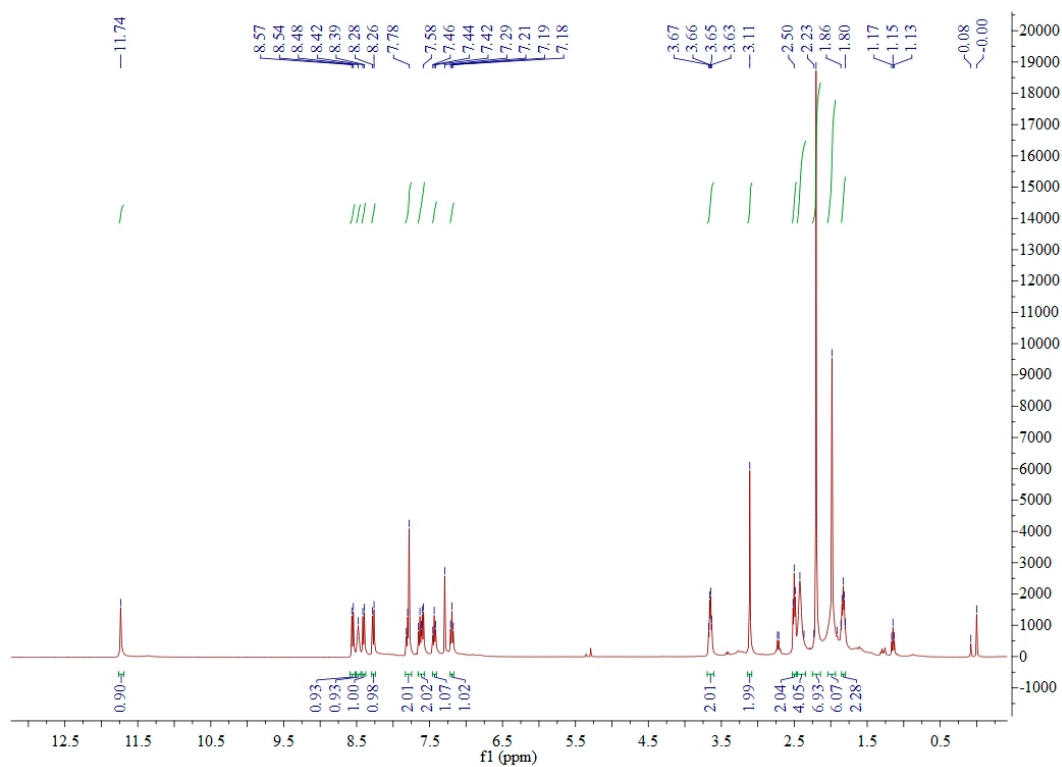
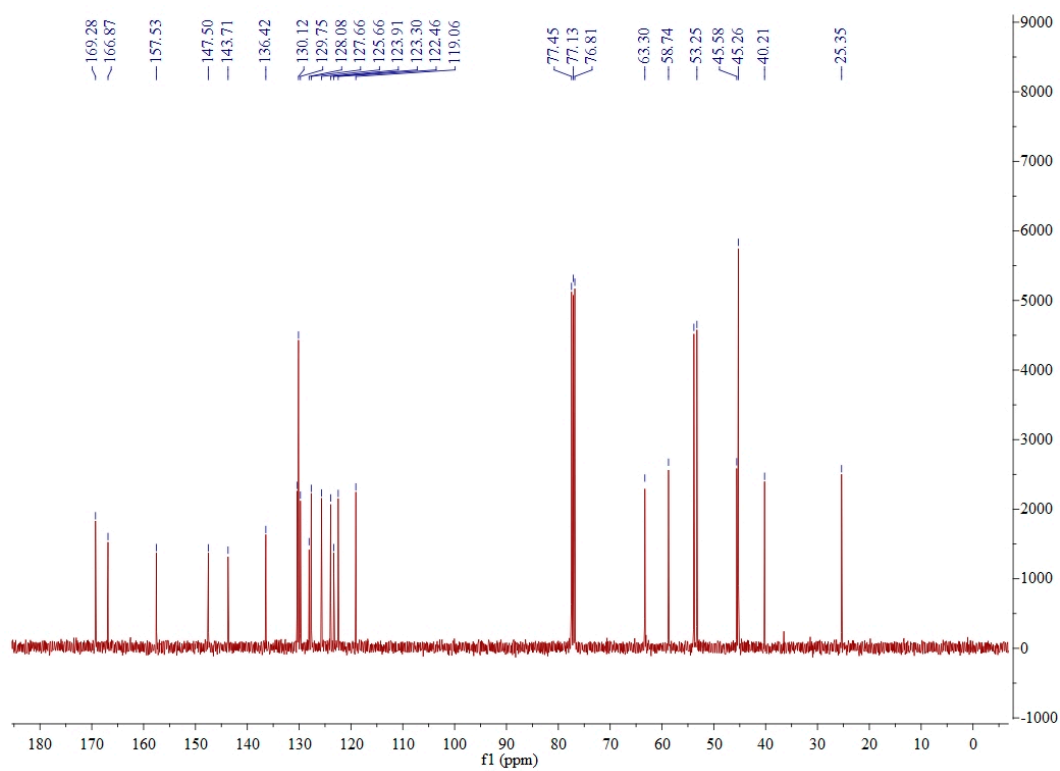


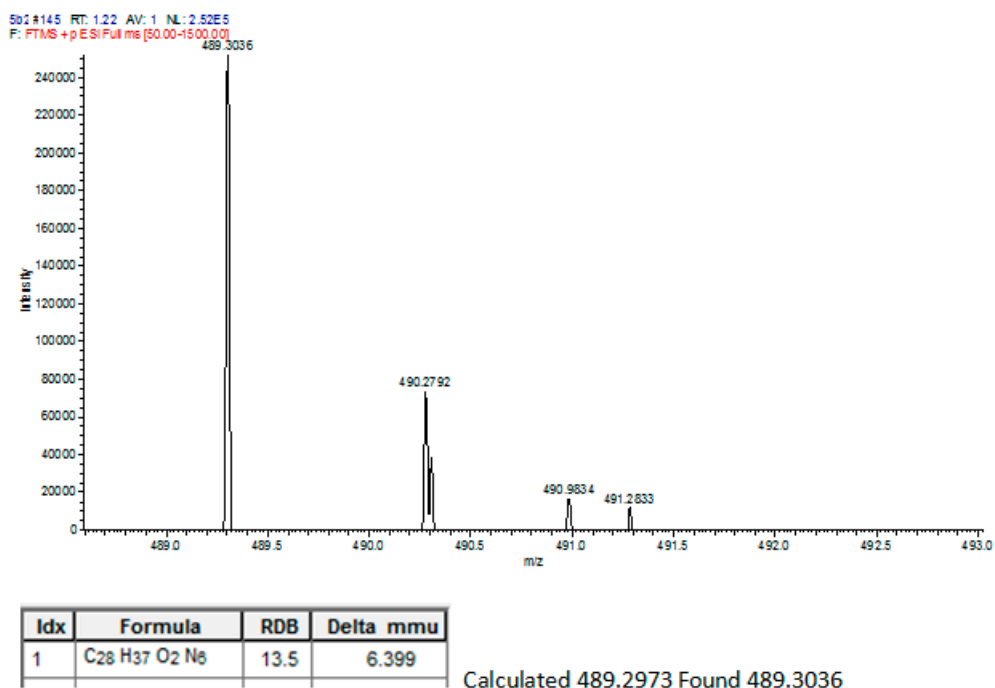
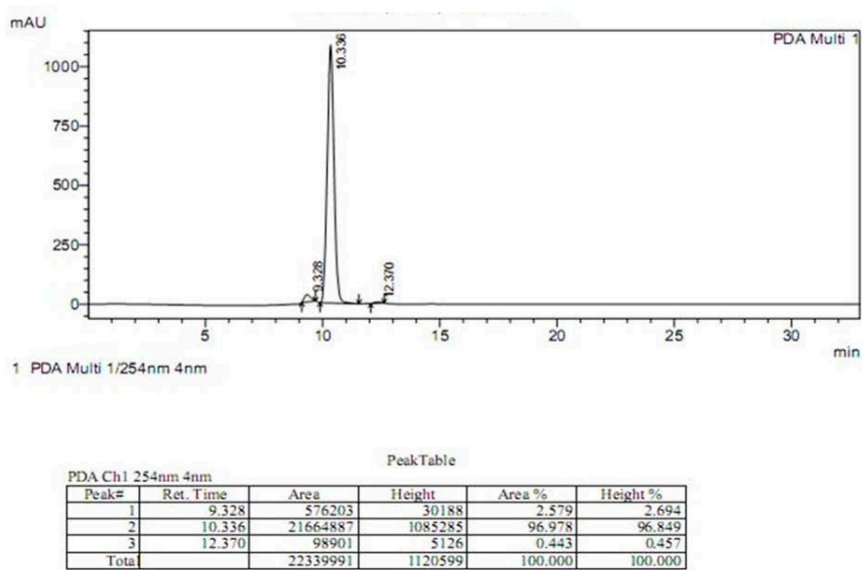
Figure S27. HRMS Spectrum of compound 5a7.



Peak#	Ret. Time	Area	Height	Area %	Height %
1	9.635	174187	11225	1.458	2.364
2	13.295	12076	660	0.101	0.139
3	14.065	11762079	462892	98.441	97.497
Total		11948341	474777	100.000	100.000

Figure S28. HPLC Spectrum of compound 5a7.

Figure S29. ¹H-NMR Spectrum of compound **5b₁**.Figure S30. ¹³C-NMR Spectrum of compound **5b₁**.

Figure S31. HRMS Spectrum of compound 5b₁.Figure S32. HPLC Spectrum of compound 5b₁.

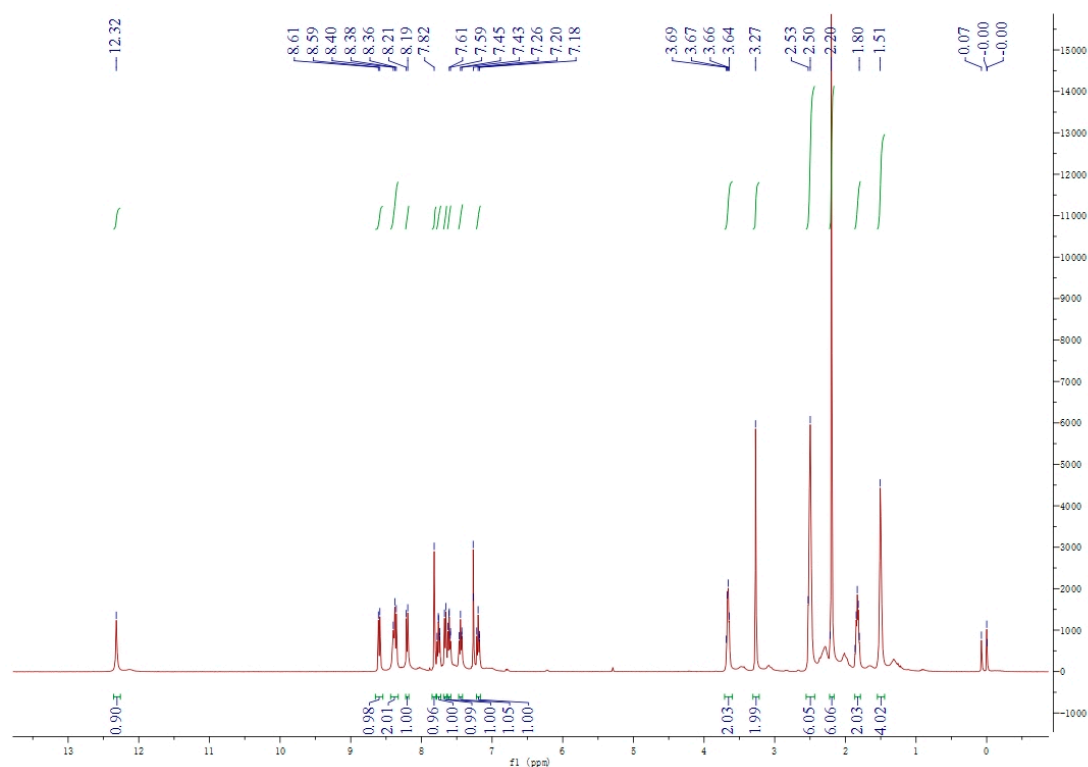


Figure S33. ¹H-NMR Spectrum of compound **5b2**.

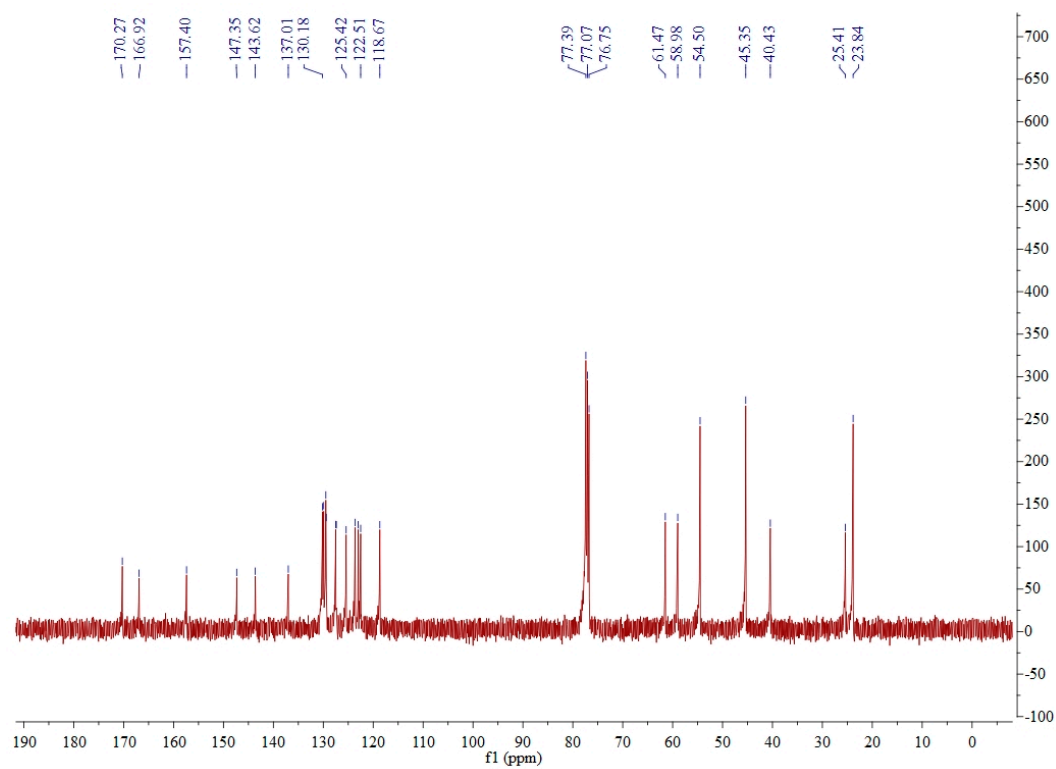
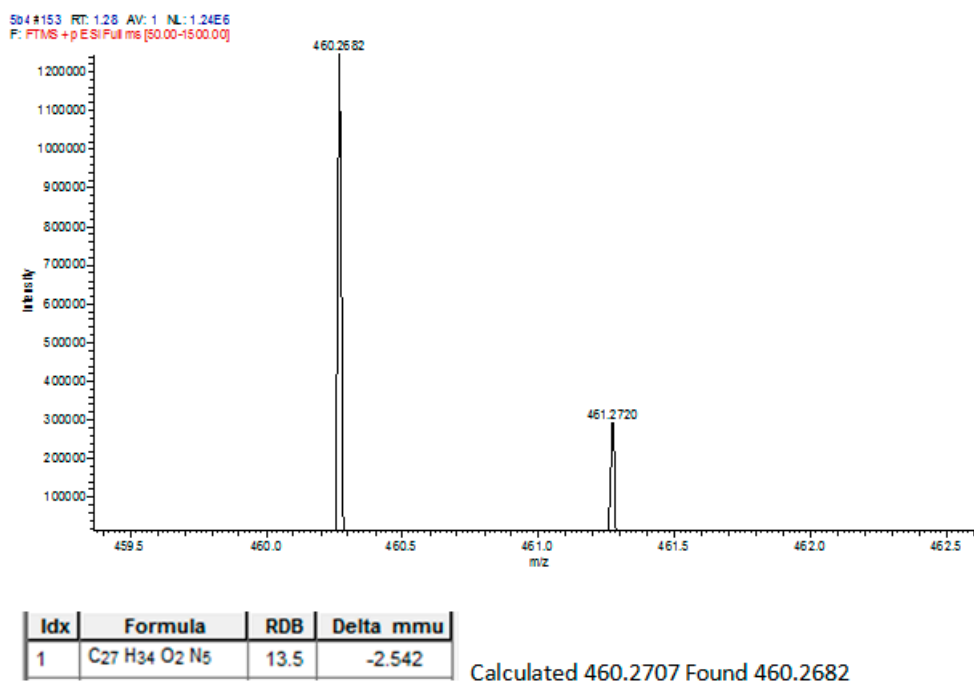
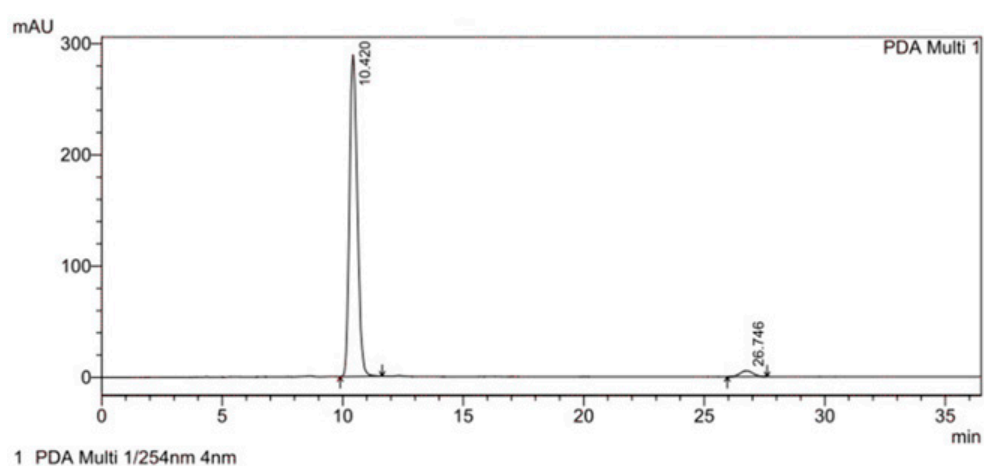


Figure S34. ¹³C-NMR Spectrum of compound **5b2**.

Figure S35. HRMS Spectrum of compound 5b₂.

PeakTable					
Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.420	6566769	289073	97.022	98.189
2	26.746	201554	5333	2.978	1.811
Total		6768323	294406	100.000	100.000

Figure S36. HPLC Spectrum of compound 5b₂.

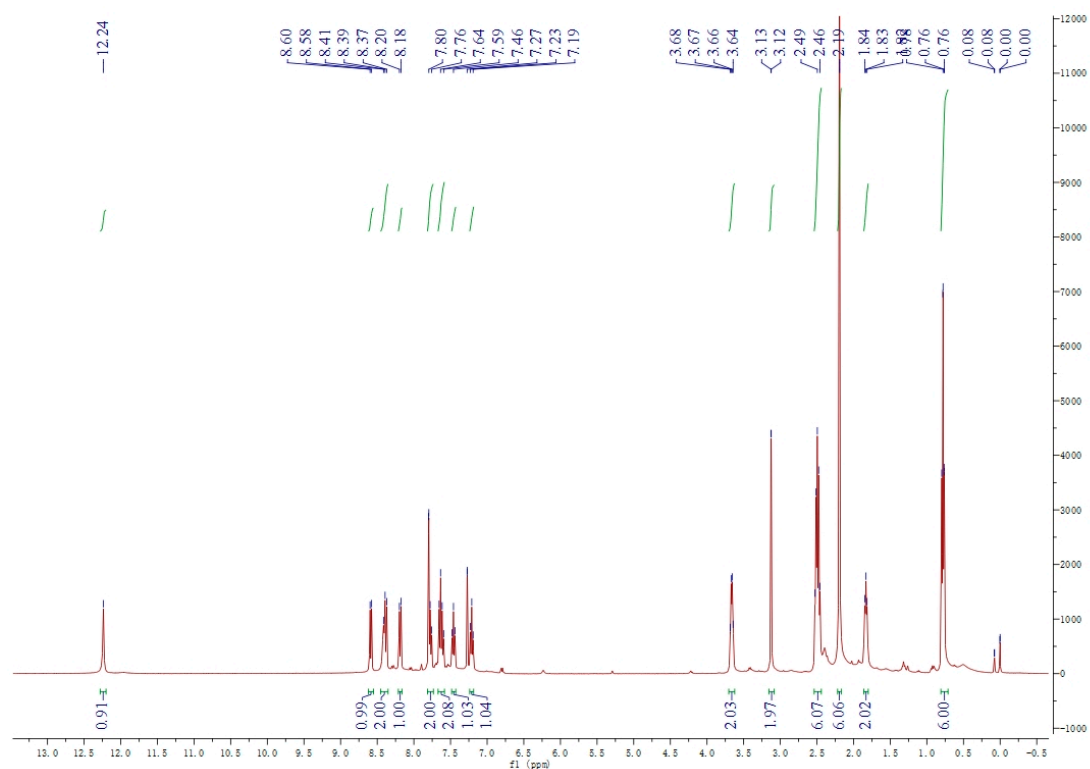


Figure S37. ¹H-NMR Spectrum of compound 5b₃.

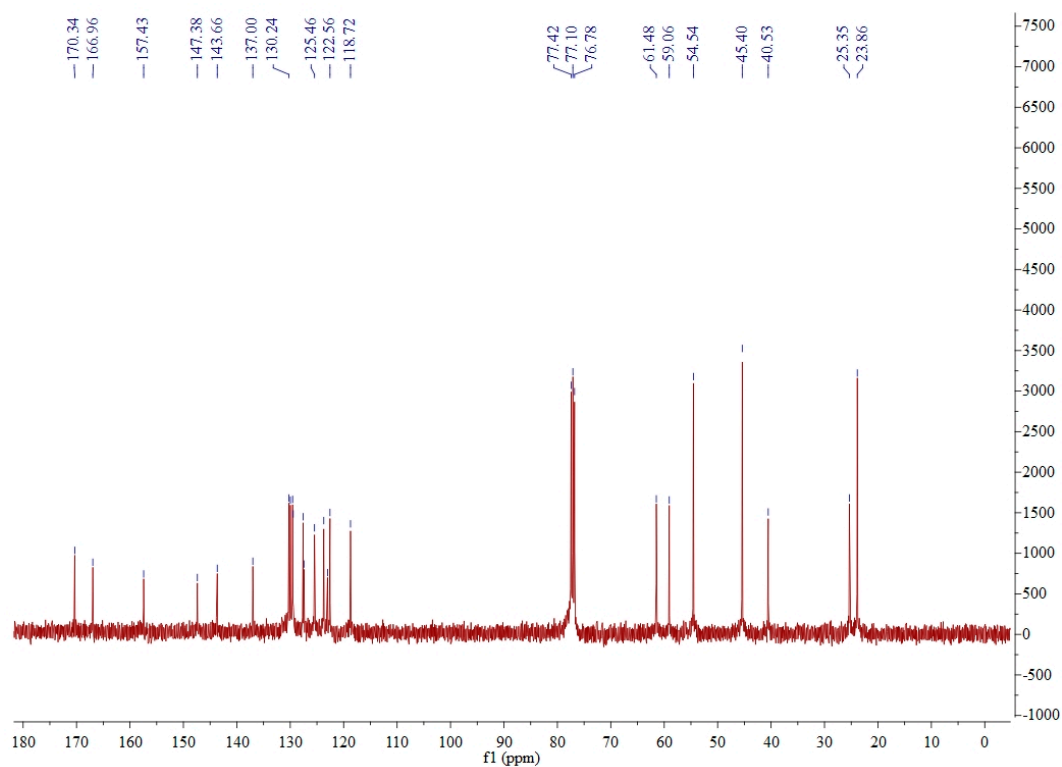
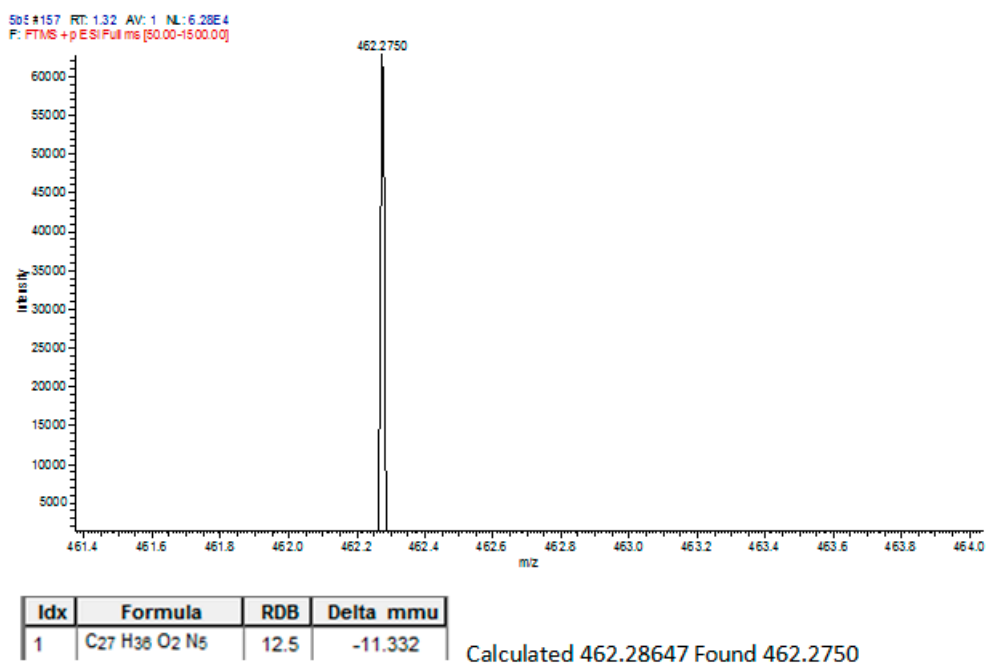
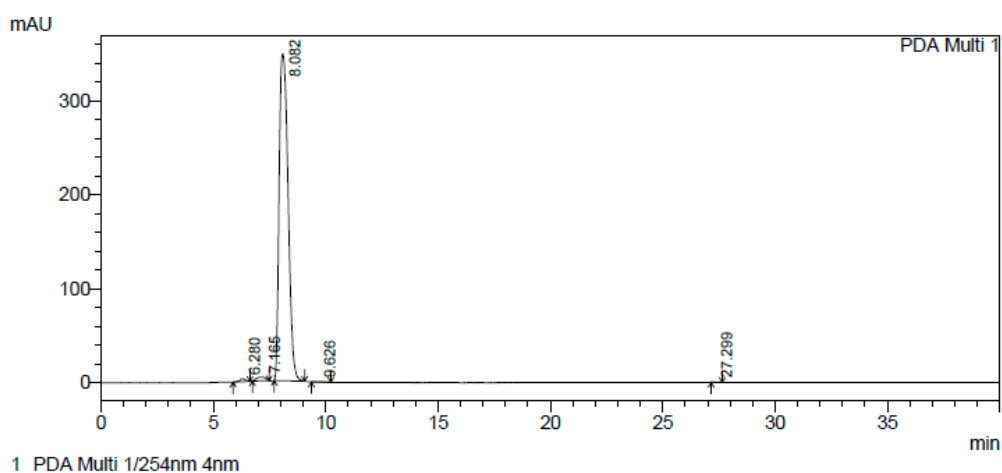


Figure S38. ¹³C-NMR Spectrum of compound 5b₃.

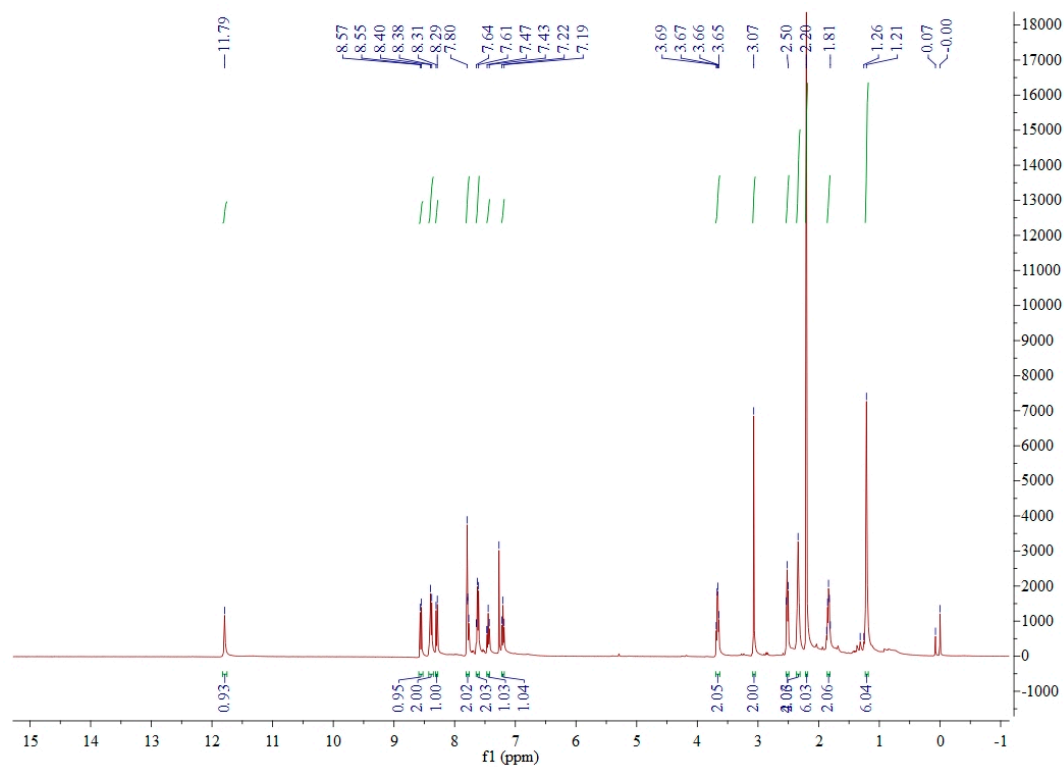
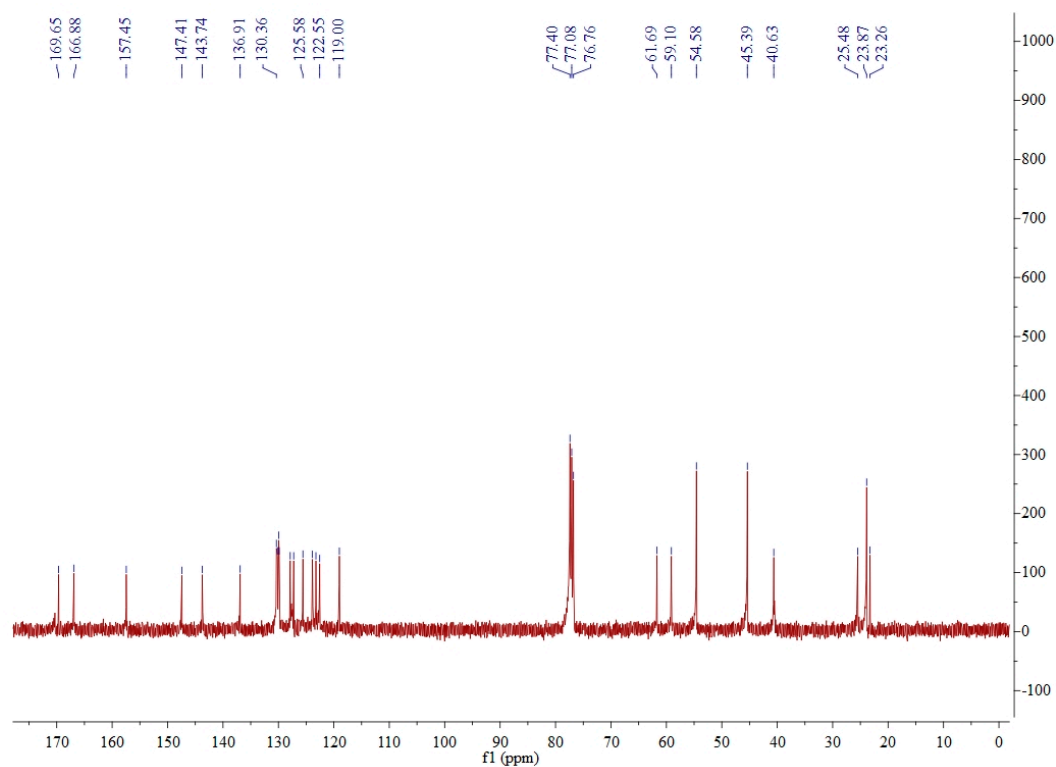
Figure S39. HRMS Spectrum of compound 5b₃.

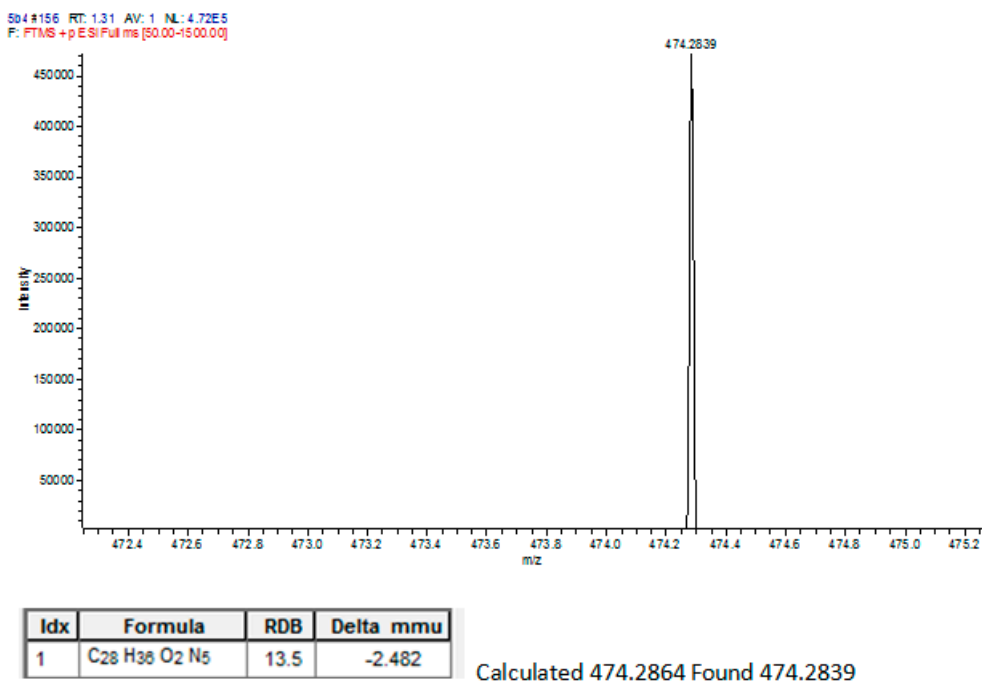
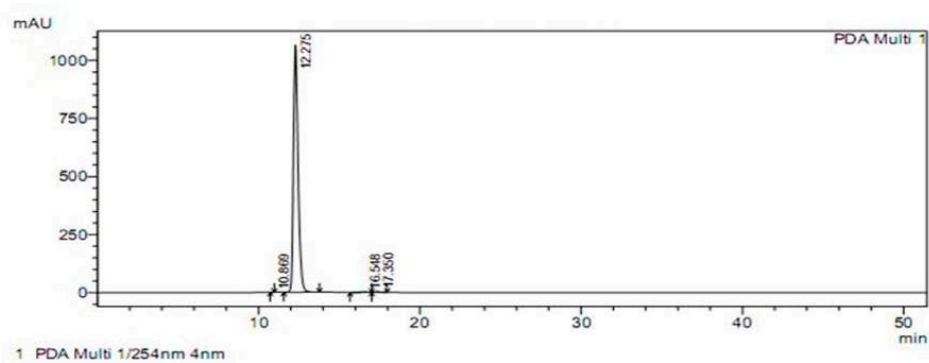
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	6.280	56723	3155	0.581	0.887
2	7.165	110137	3808	1.129	1.071
3	8.082	9577029	348164	98.164	97.886
4	9.626	9209	372	0.094	0.105
5	27.299	3039	183	0.031	0.052
Total		9756136	355682	100.000	100.000

Figure S40. HPLC Spectrum of compound 5b₃.

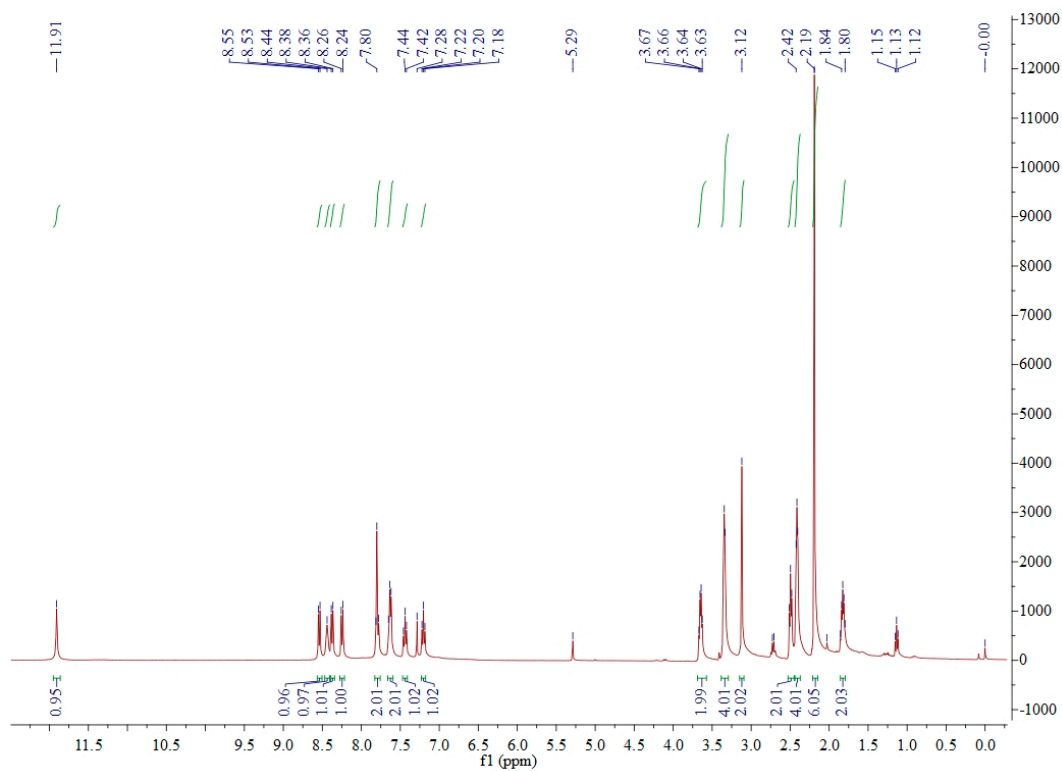
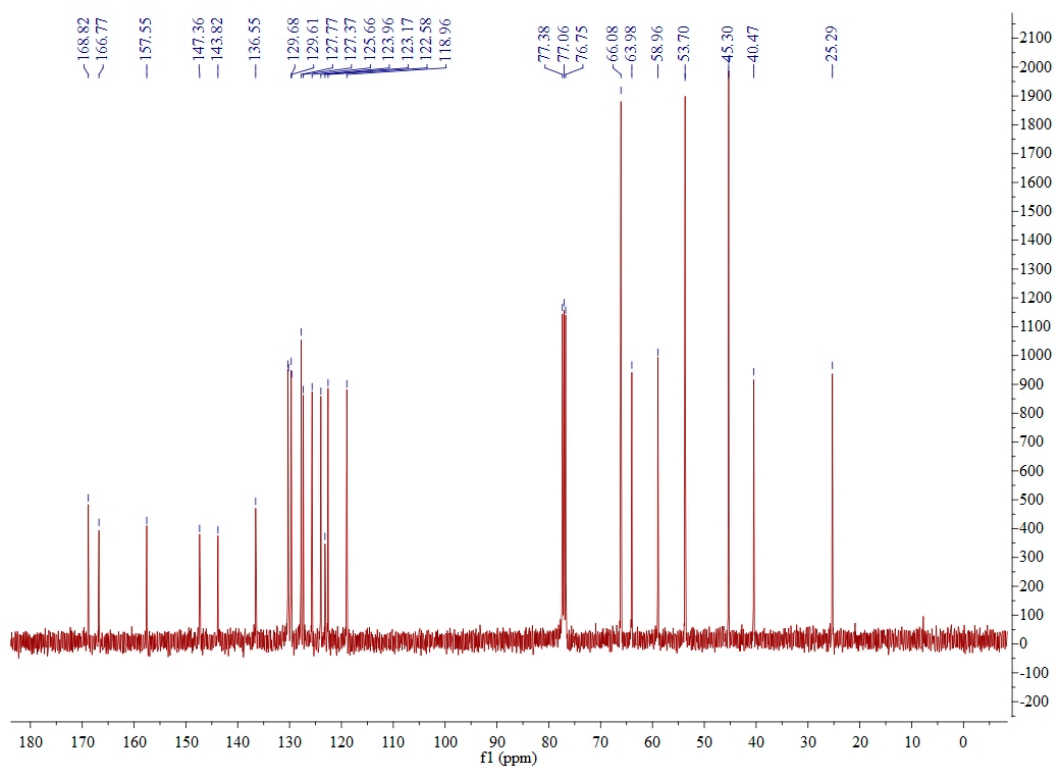
Figure S41. ¹H-NMR Spectrum of compound **5b₄**.Figure S42. ¹³C-NMR Spectrum of compound **5b₄**.

Figure S43. HRMS Spectrum of compound 5b₄.

PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	10.869	451	47	0.002	0.004
2	12.275	21237896	1065012	98.852	99.367
3	16.548	135893	2787	0.633	0.260
4	17.350	110326	3954	0.514	0.369
Total		21484567	1071799	100.000	100.000

Figure S44. HPLC Spectrum of compound 5b₄.

Figure S45. ¹H-NMR Spectrum of compound **5b_s**.Figure S46. ¹³C-NMR Spectrum of compound **5b_s**.

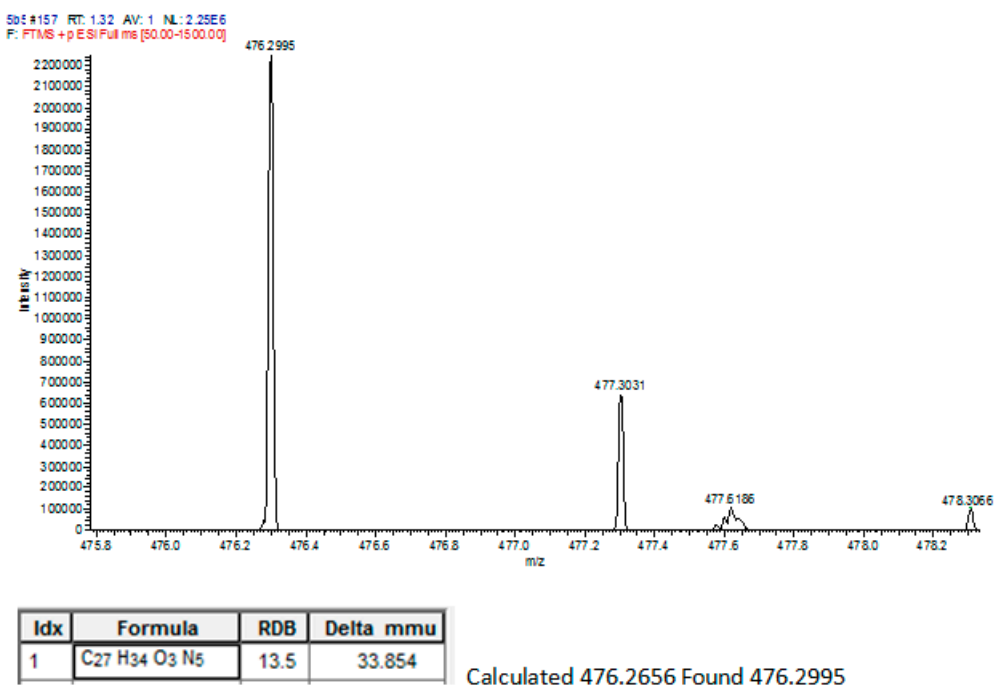
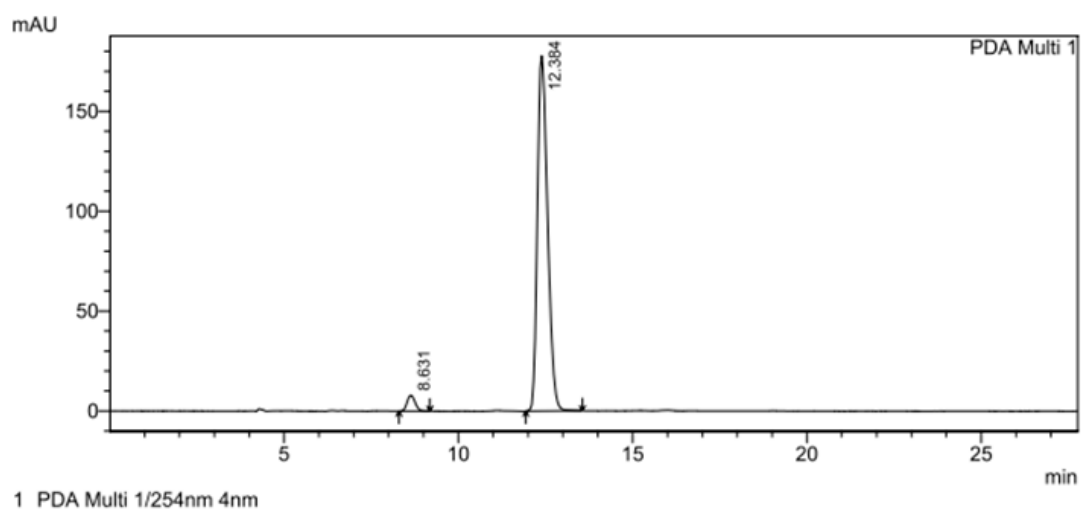


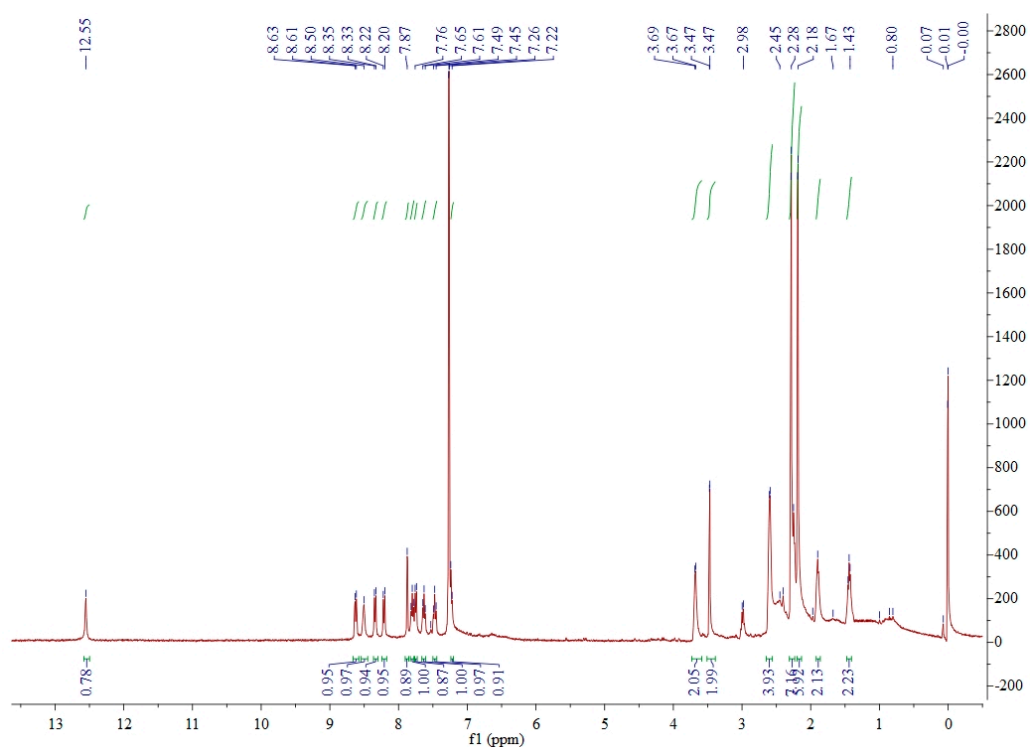
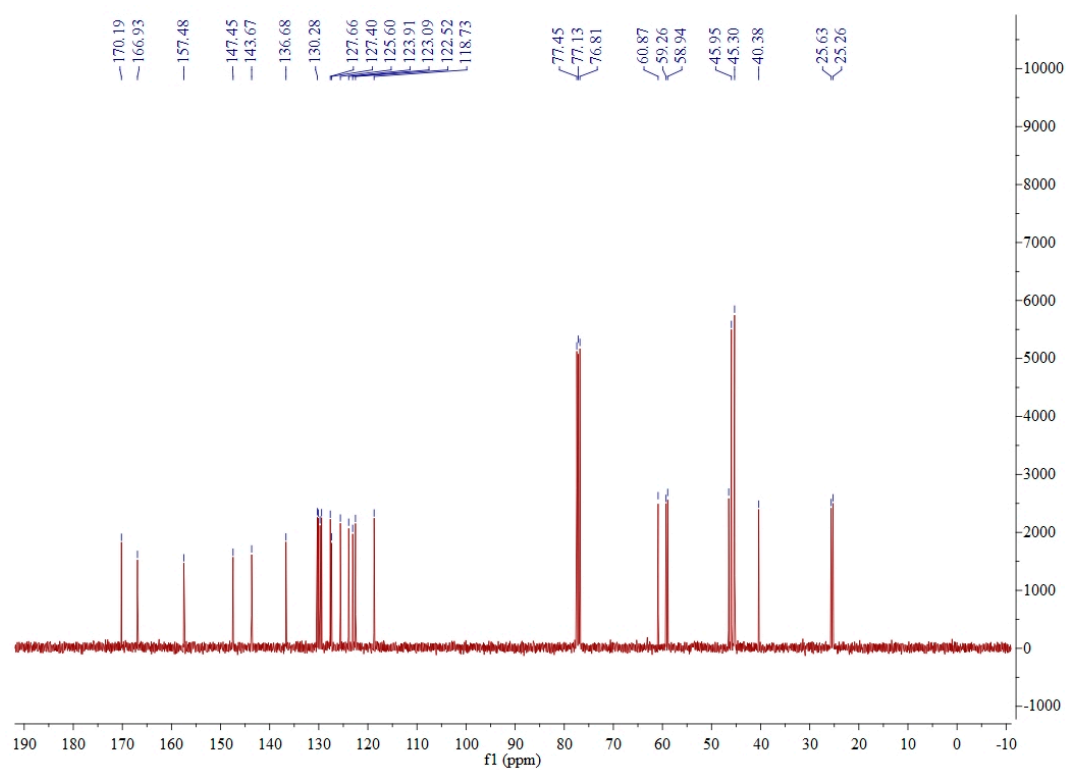
Figure S47. HRMS Spectrum of compound 5b.

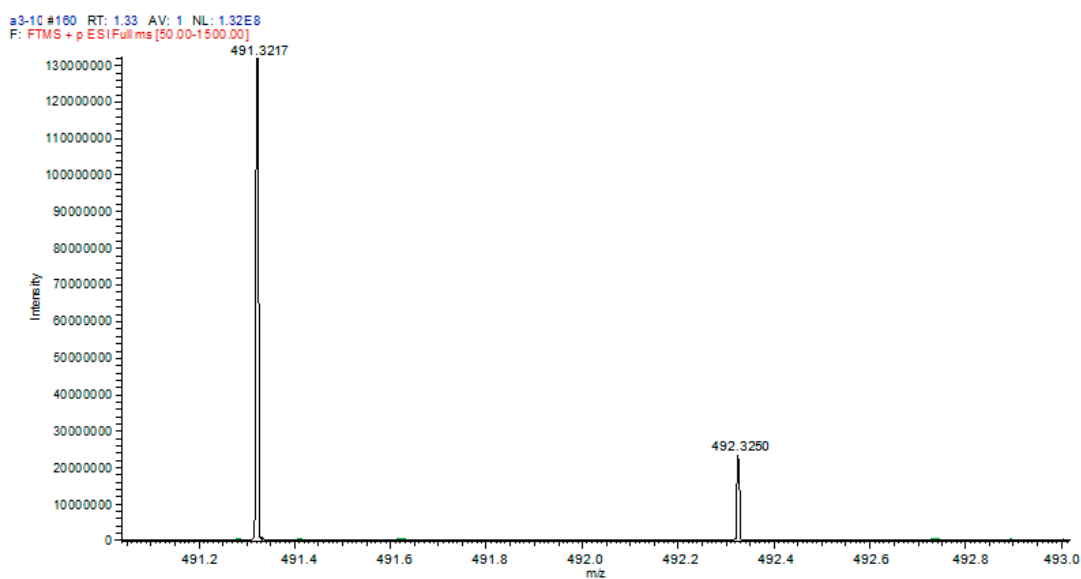


PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	8.631	126388	7876	3.386	4.244
2	12.384	3606432	177683	96.614	95.756
Total		3732820	185559	100.000	100.000

Figure S48. HPLC Spectrum of compound 5b.

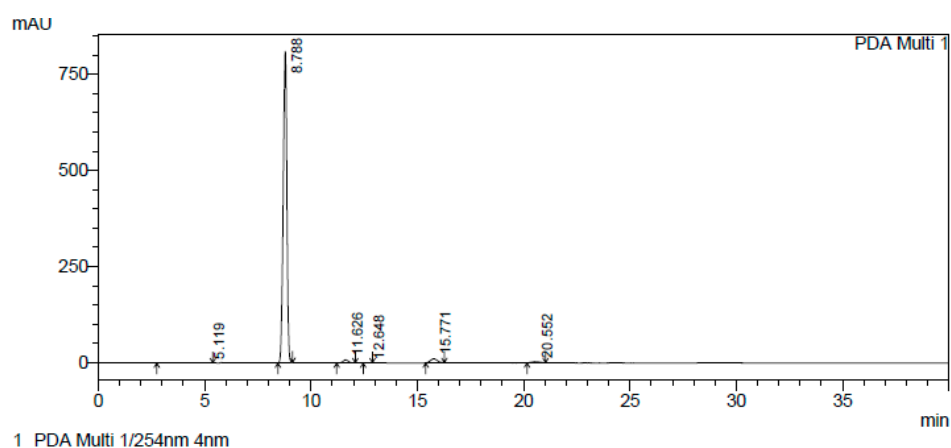
Figure S49. ¹H-NMR Spectrum of compound 5b₆.Figure S50. ¹³C-NMR Spectrum of compound 5b₆.



Idx	Formula	RDB	Delta mmu
1	C ₂₈ H ₃₉ N ₅ O ₂	10.5	8.176

Calculated 491.3135 Found 491.3217

Figure S51. HRMS Spectrum of compound **5b**₆.



PeakTable

Peak#	Ret. Time	Area	Height	Area %	Height %
1	5.119	-11560	156	-0.114	0.019
2	8.788	9709566	809390	95.647	97.385
3	11.626	131880	7782	1.299	0.936
4	12.648	5474	427	0.054	0.051
5	15.771	232582	10334	2.291	1.243
6	20.552	83477	3037	0.822	0.365
Total		10151419	831127	100.000	100.000

Figure S52. HPLC Spectrum of compound **5b**₆.