

Supporting Information

Discovery of Two New Sorbicillinoids by Overexpression of the Global Regulator LaeA in a Marine-derived Fungus *Penicillium dipodomys YJ-11*

Jing Yu ¹, Huan Han ¹, Xianyan Zhang ¹, Chuanteng Ma ¹, Chunxiao Sun ¹, Qian Che ¹, Qianqun Gu ¹, Tianjiao Zhu ^{1,2}, Guojian Zhang ^{1,2} and Dehai Li ^{1,2,*}

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Table S1. The primers used in this study. (5' to 3')

Primers	Sequences
LaeA-F	CCGctcgagTTATTCTCGACGGGTTCCGG
LaeA-R	GCtctagaATGTTACGAACGGGGATTCCAG
gpda-1	TACAGACAAGCTGTGACCGTCTC
gpda-2	CGTTAAGTGGATCTCGGTGACGG
YZ-LaeA-F	CACAATTGGGTACCAGGTGACATAC
YZ-LaeA-R	GATACAAGTCCGAGTCAACCCAG

Note: The sites of the restriction endonucleases are represented by lowercase letters.

Figure S1. AntiSMASH analysis of the genome of the strain *Penicillium dipodomyis* YJ-11. The predicted 45 gene clusters include 15 PKS, 10 NRPS, 4 Terpene, 1 Indole, 2 PKS-NRPS hybrids, 1 Indole-NRPS hybrid, 1 Indole-Terpene hybrid and 11 Other clusters.

Cluster	Type	From	To	Most similar known cluster	MIBiG BGC-ID
Cluster 1	T1pks	88285	136041	-	-
Cluster 2	NrpS	229496	276992	-	-
Cluster 3	Other	65866	110360	-	-
Cluster 4	NrpS	333883	380632	Chaetocin_biosynthetic_gene_cluster (13% of genes show similarity)	BGC0000321_c1
Cluster 5	T1pks-NrpS	171695	223077	-	-
Cluster 6	Other	90173	130882	-	-
Cluster 7	NrpS	90722	146756	-	-
Cluster 8	T1pks	17089	62436	Yanuthone_D_biosynthetic_gene_cluster (70% of genes show similarity)	BGC0000170_c1
Cluster 9	T1pks	251997	299570	-	-
Cluster 10	T1pks	1253143	1300923	-	-
Cluster 11	T1pks	1503183	1563217	Sorbicillin_biosynthetic_gene_cluster (85% of genes show similarity)	BGC0001404_c1

Figure S2. Phylogenetic tree analysis of PdLaeA and its homologs from different species. Branch lengths are in proportion to distance.

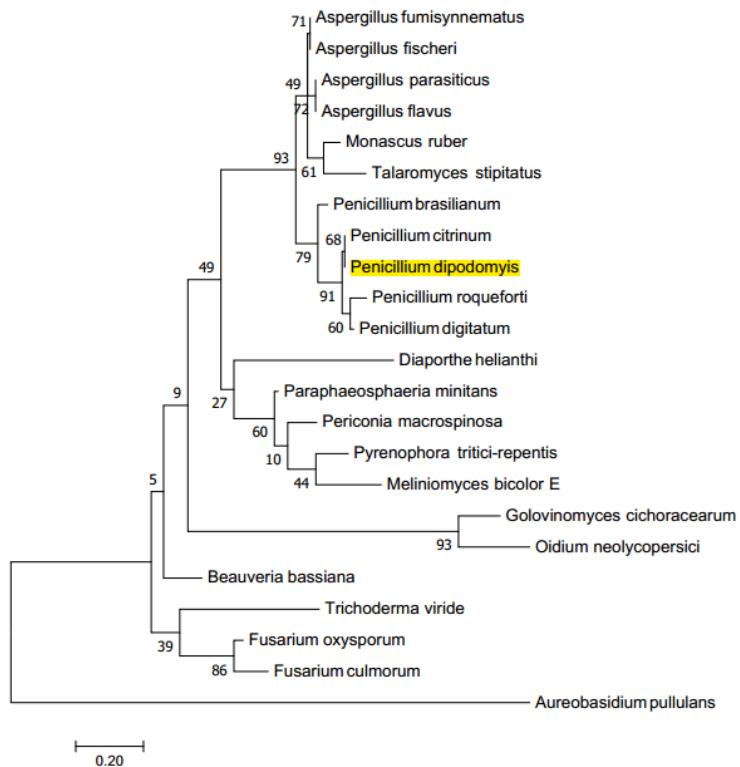


Figure S3. Map of the vector pZeo and PdLaeA overexpression plasmid pZeo-PdLaeA.

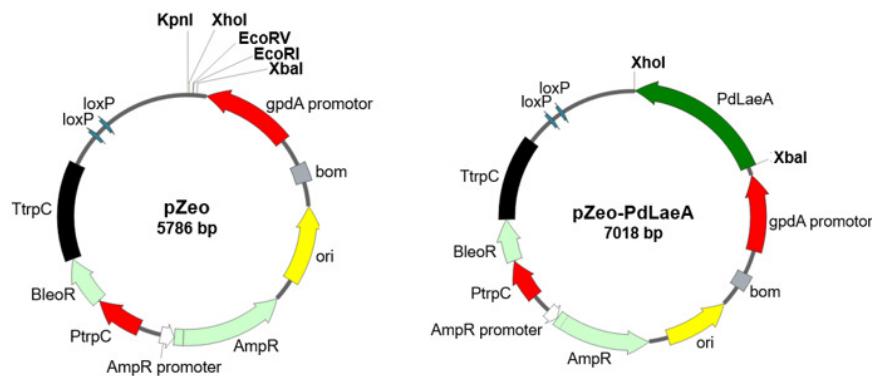


Figure S4. PCR analysis for confirming the gene insertion. The results showed that mutants 1-5 were desired.

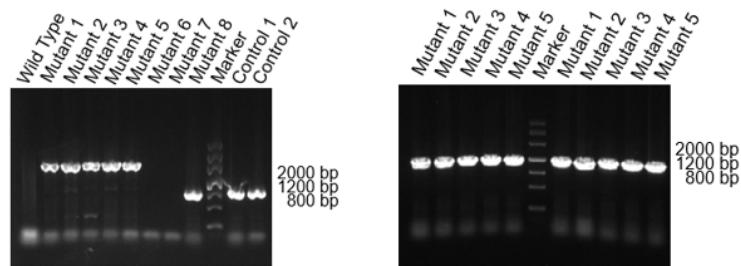
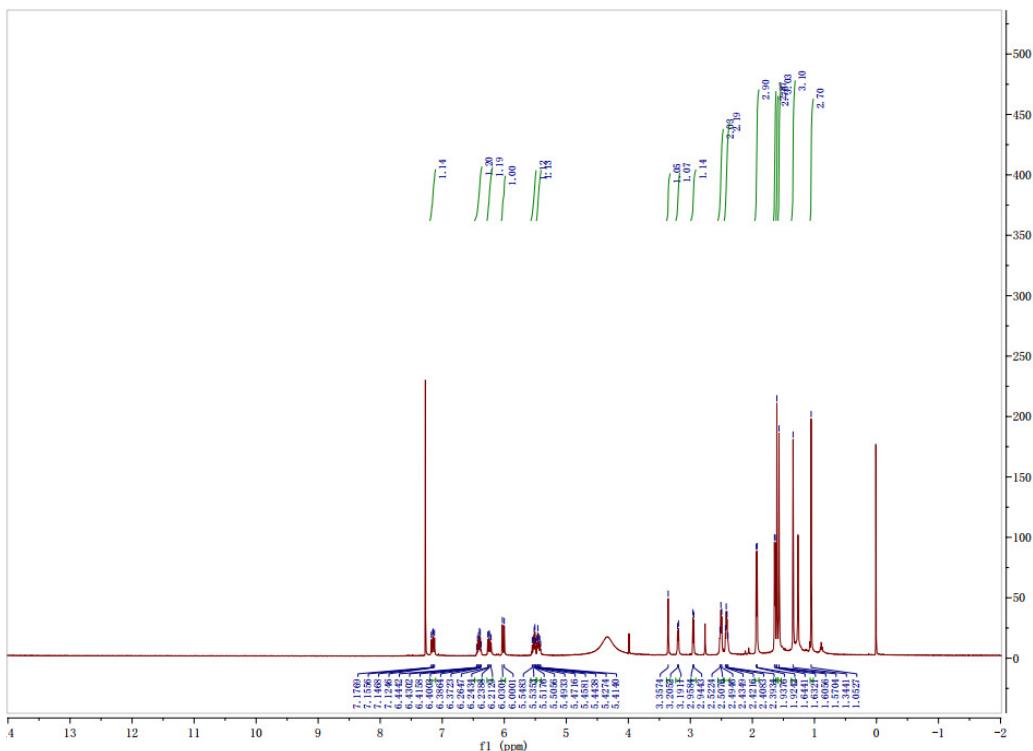


Figure S5. ^1H NMR (500 MHz, CDCl_3) spectrum of compound 1.



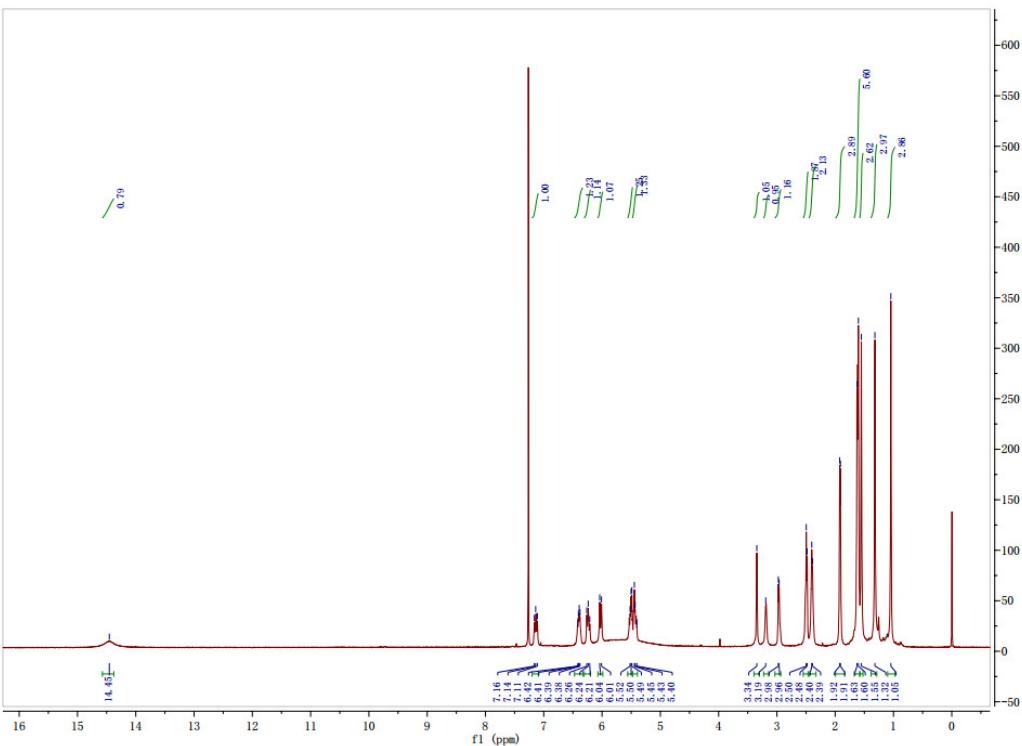


Figure S6. ^{13}C NMR (125 MHz, CDCl_3) spectrum of compound **1**.

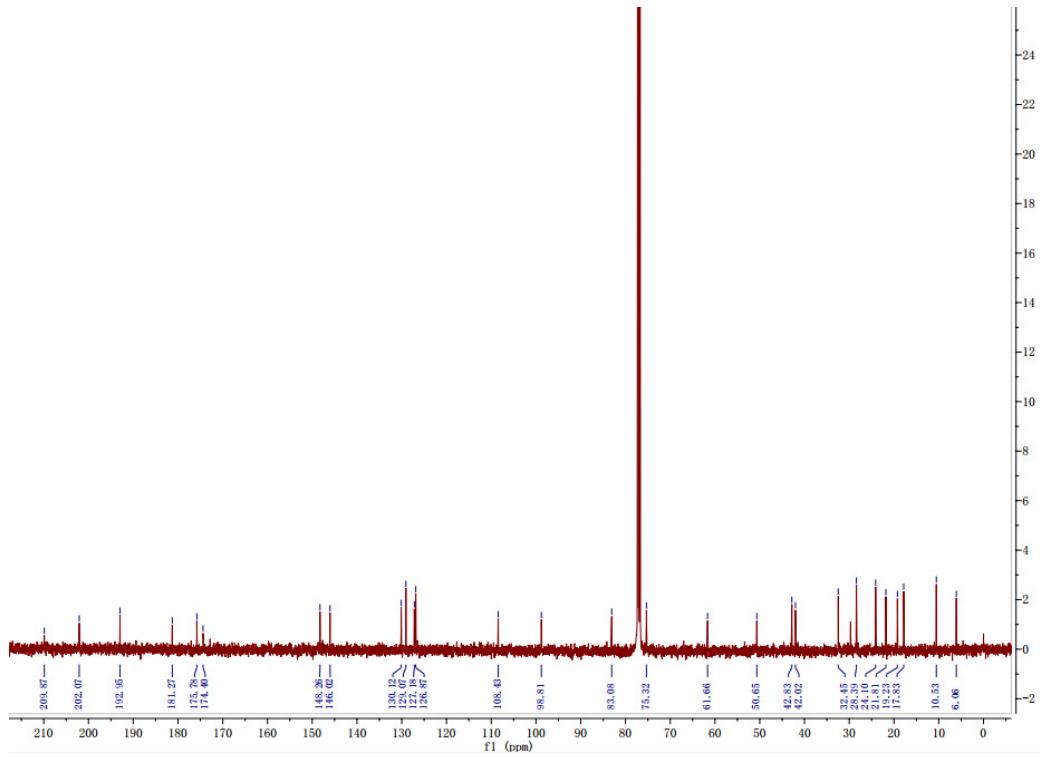


Figure S7. HSQC (500 MHz, CDCl_3) spectrum of compound **1**.

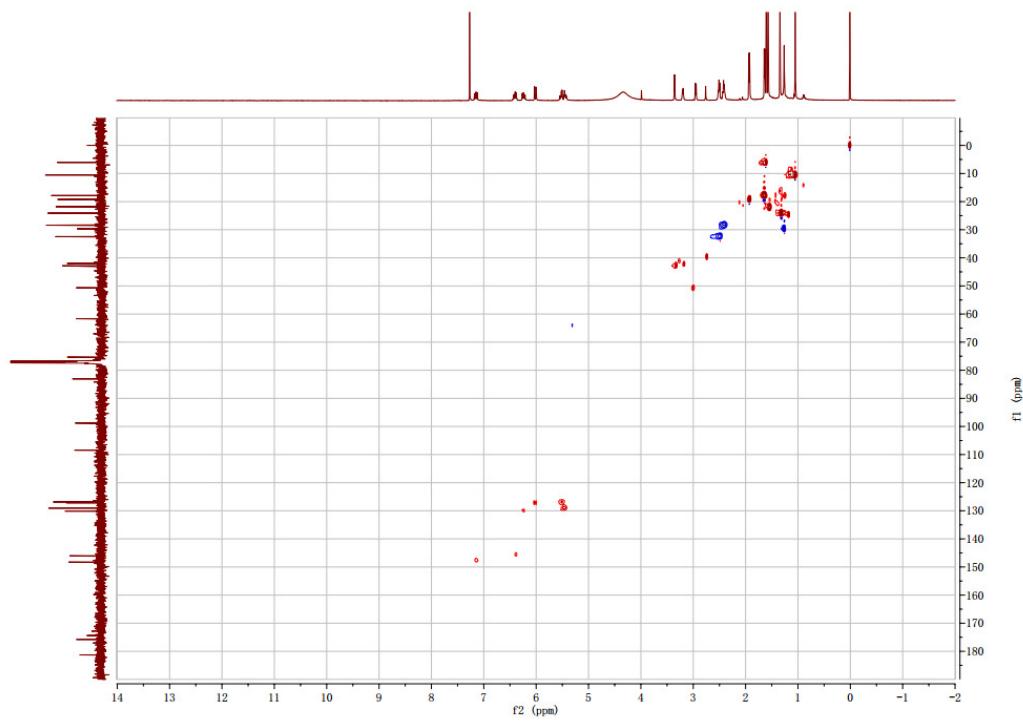


Figure S8. ^1H - ^1H COSY (500 MHz, CDCl_3) spectrum of compound **1**.

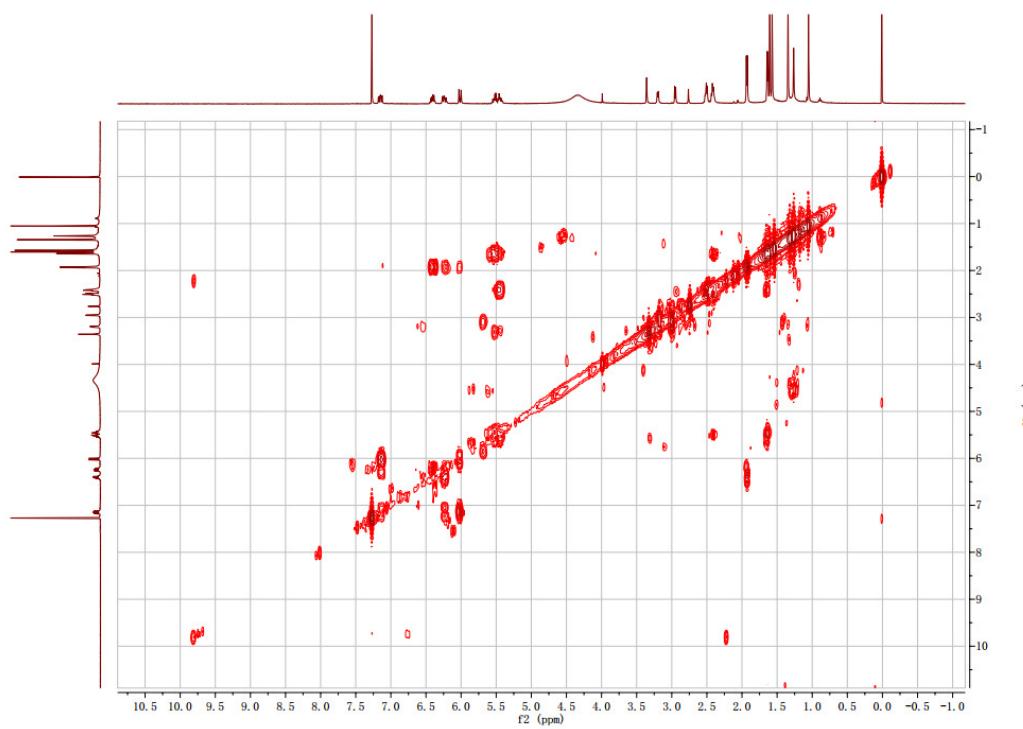


Figure S9. HMBC (500 MHz, CDCl_3) spectrum of compound **1**.

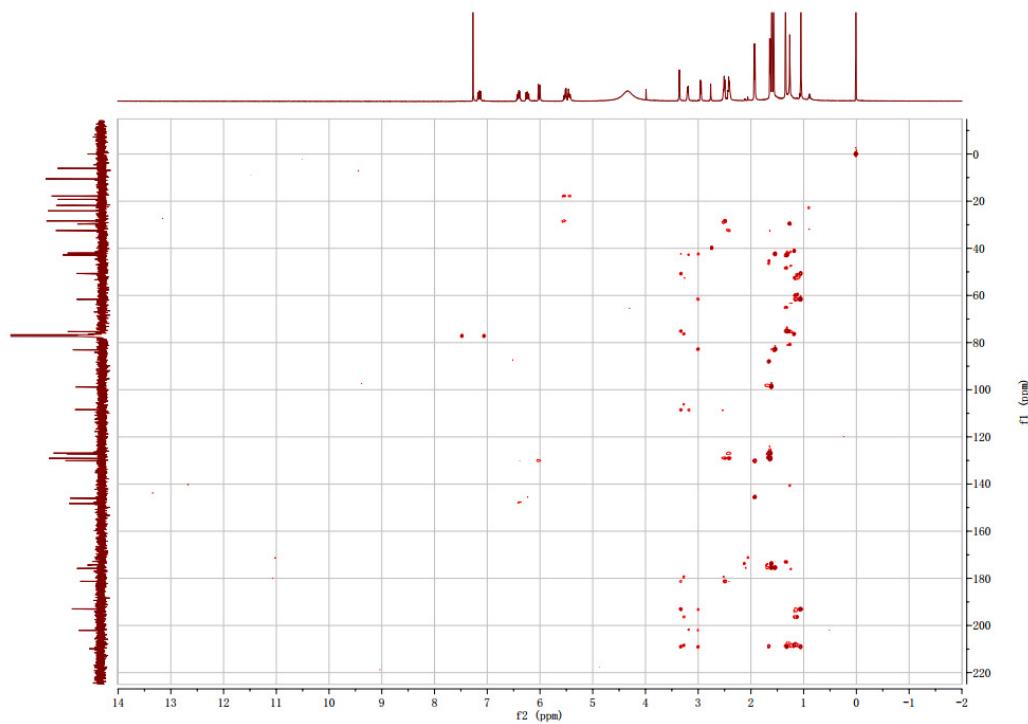


Figure S10. NOESY (500 MHz, CDCl_3) spectrum of compound **1**.

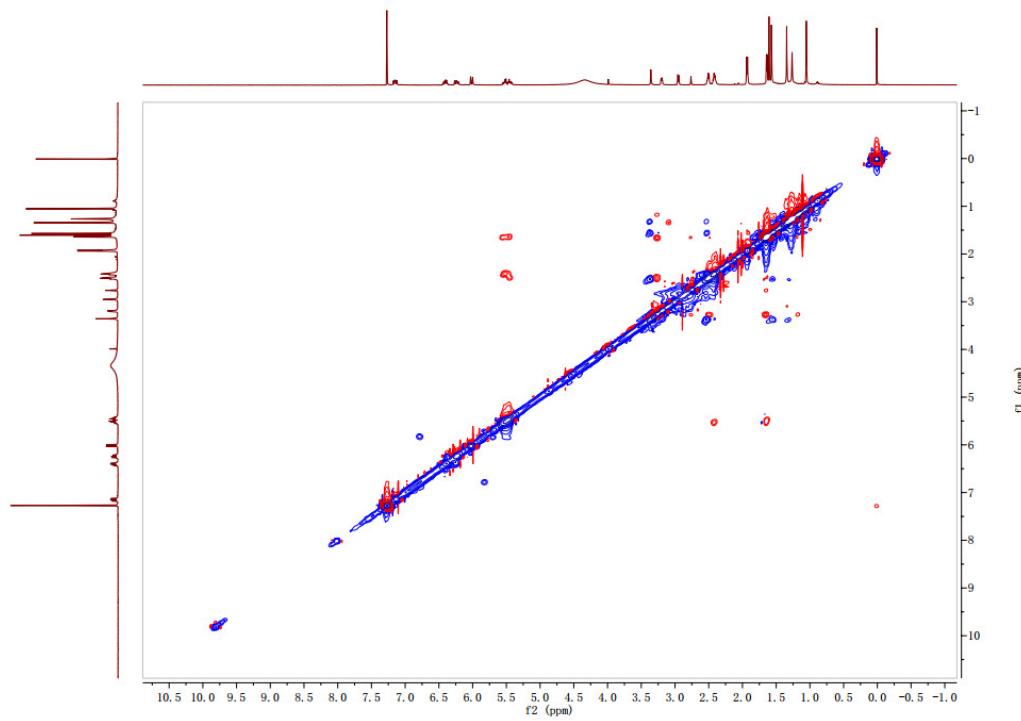


Figure S11. HRESIMS spectrum of compound 1.

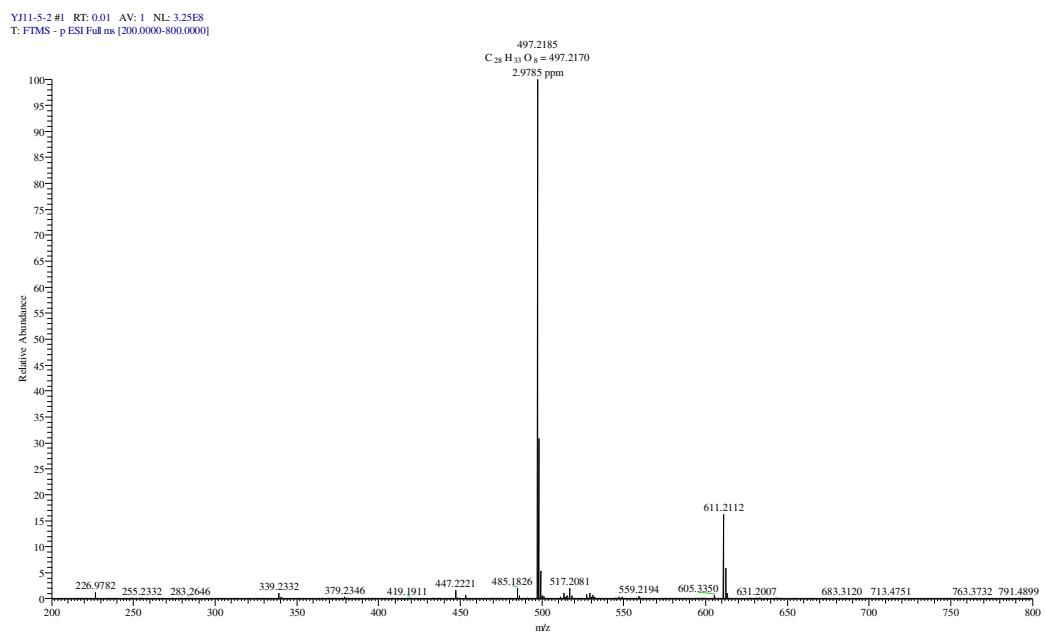
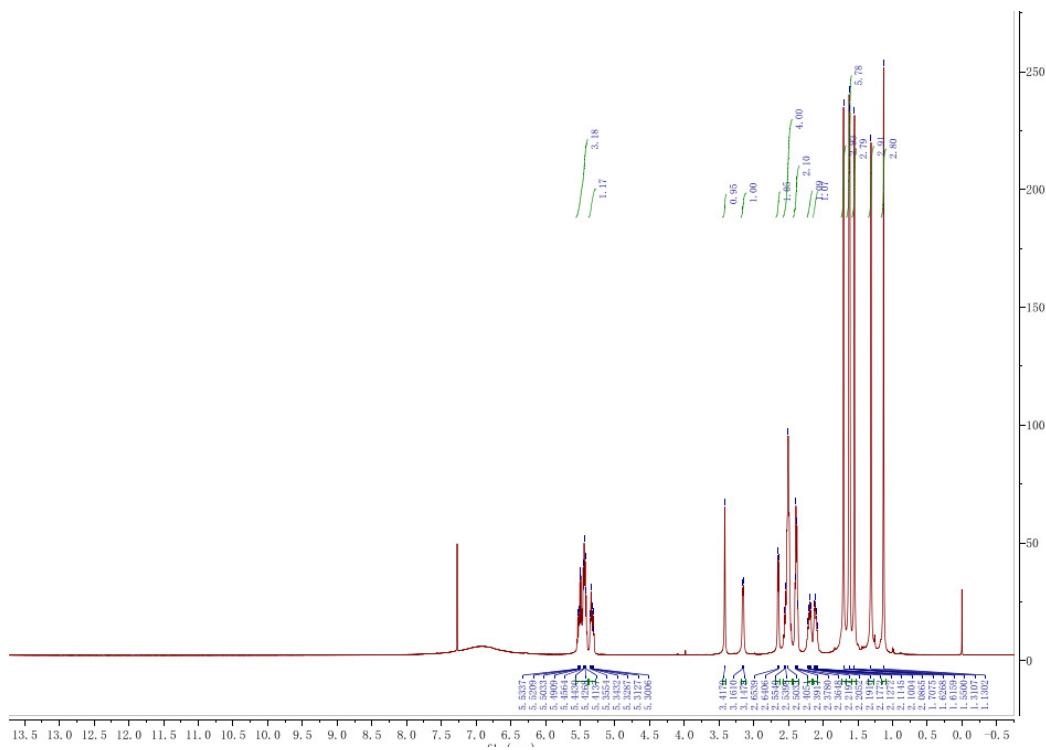


Figure S12. 1H NMR (500 MHz, $CDCl_3$) spectrum of compound 2.



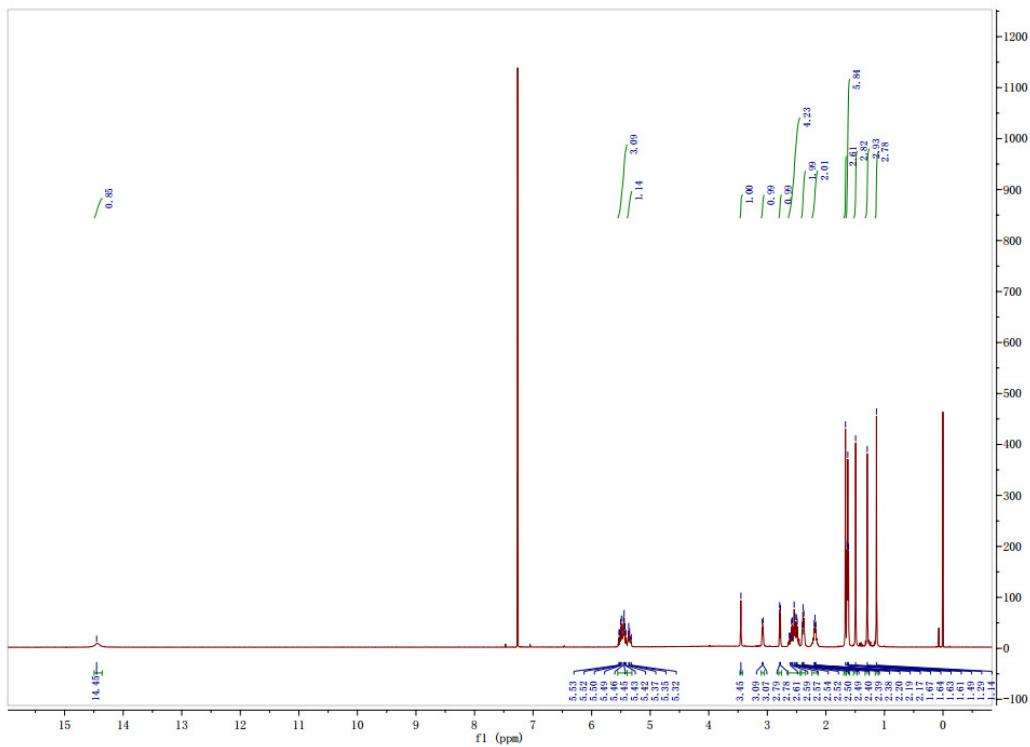


Figure S13. ^{13}C NMR (125 MHz, CDCl_3) spectrum of compound 2.

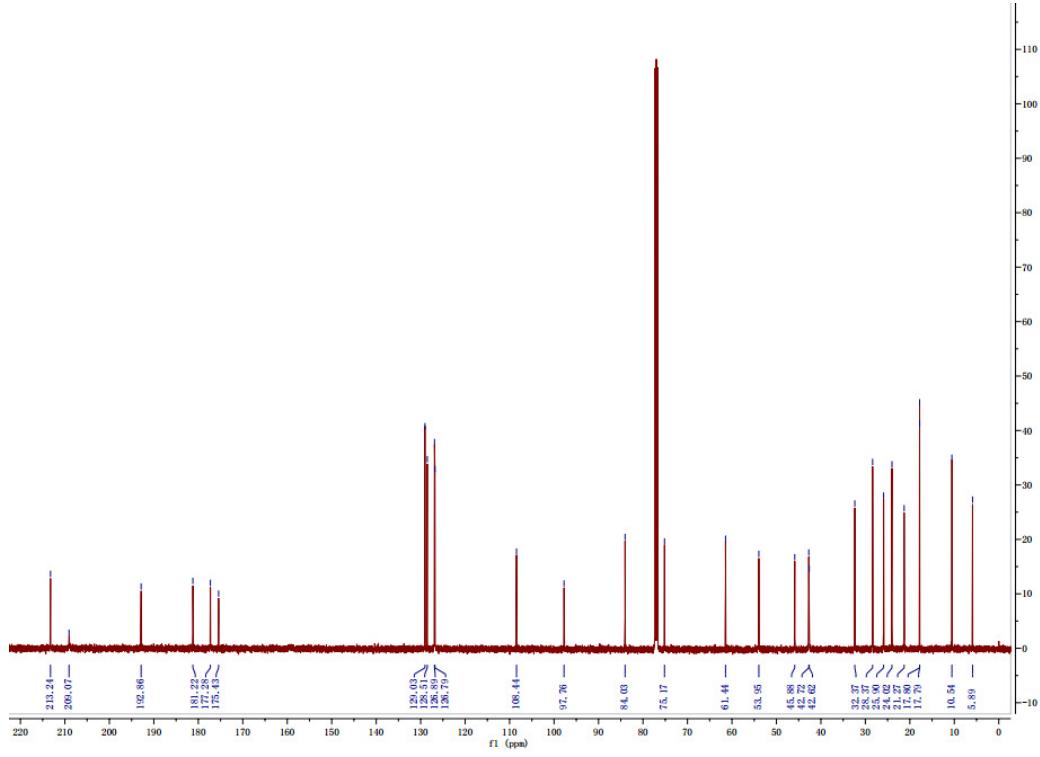


Figure S14. HSQC (500 MHz, CDCl_3) spectrum of compound **2**.

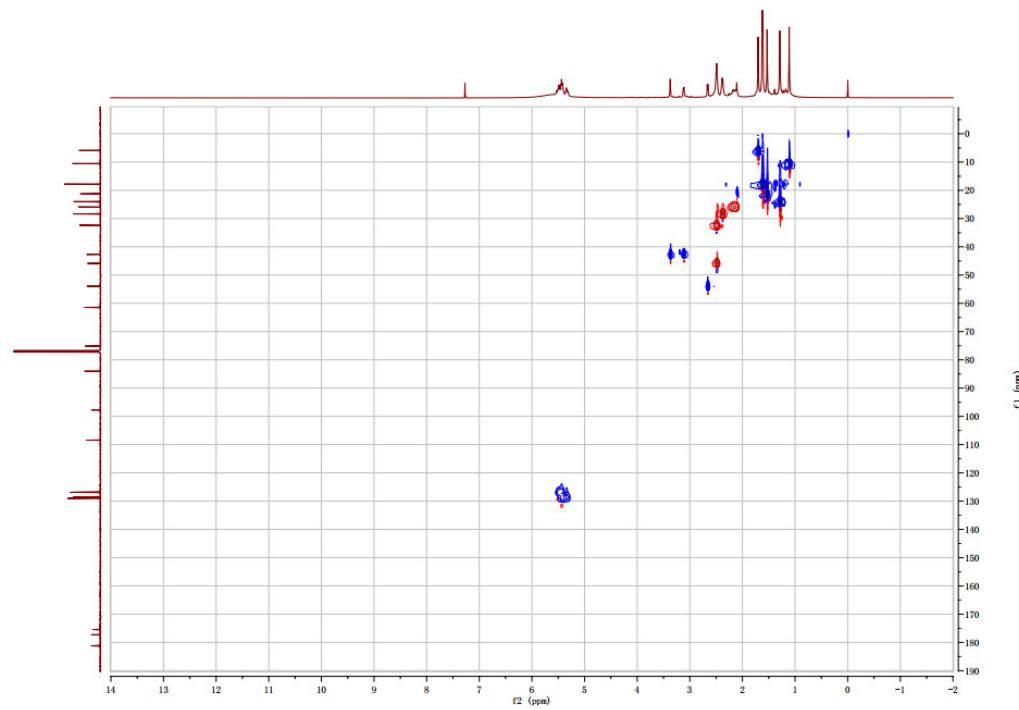


Figure S15. ^1H - ^1H COSY (500 MHz, CDCl_3) spectrum of compound **2**.

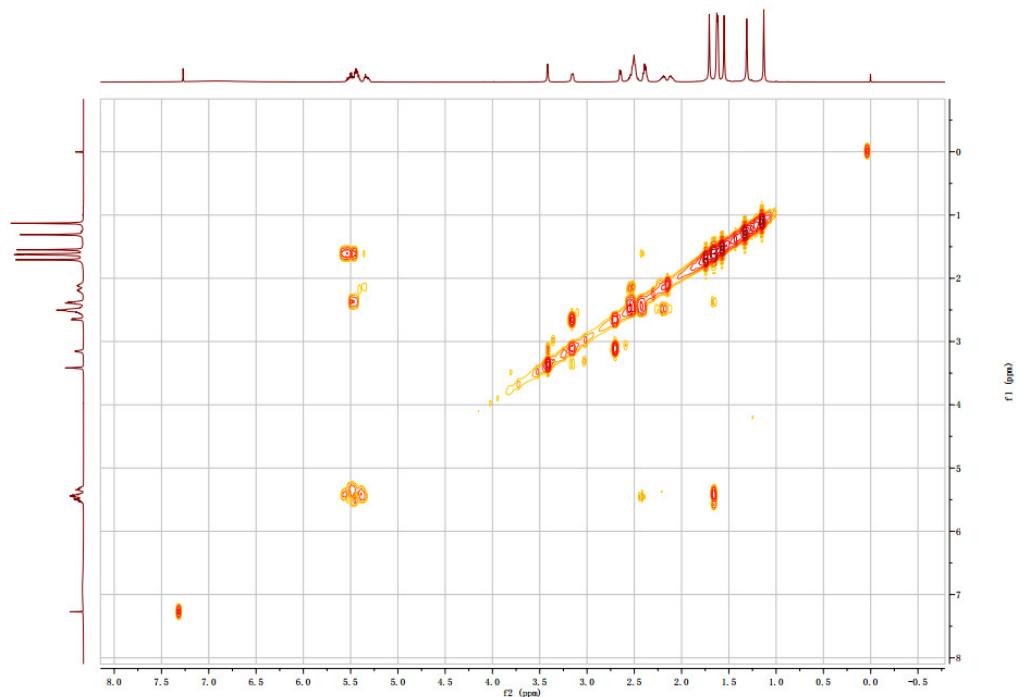


Figure S16. HMBC (500 MHz, CDCl_3) spectrum of compound **2**.

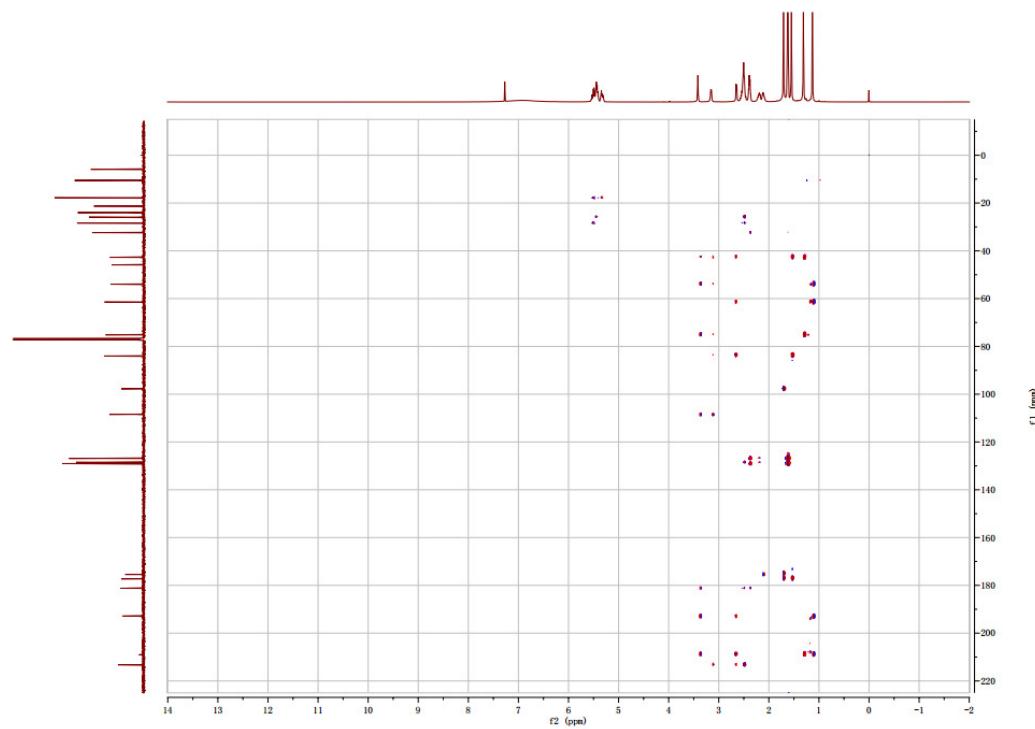


Figure S17. NOESY (500 MHz, CDCl_3) spectrum of compound **2**.

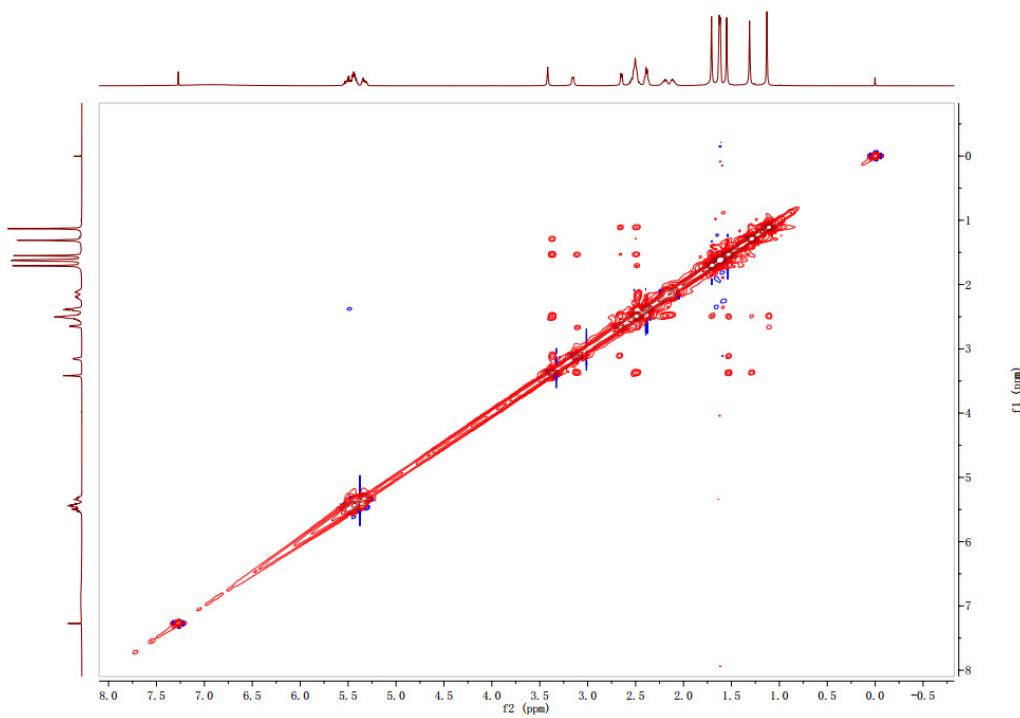


Figure S18. HRESIMS spectrum of compound **2**.

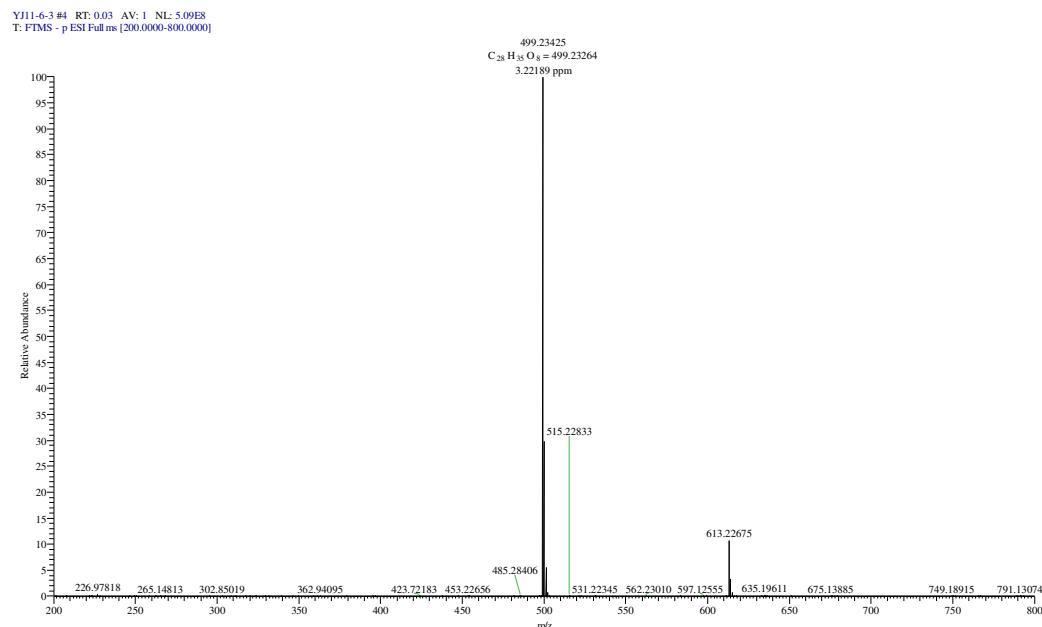


Figure S19. 1H NMR (500 MHz, $CDCl_3$) spectrum of compound **3**.

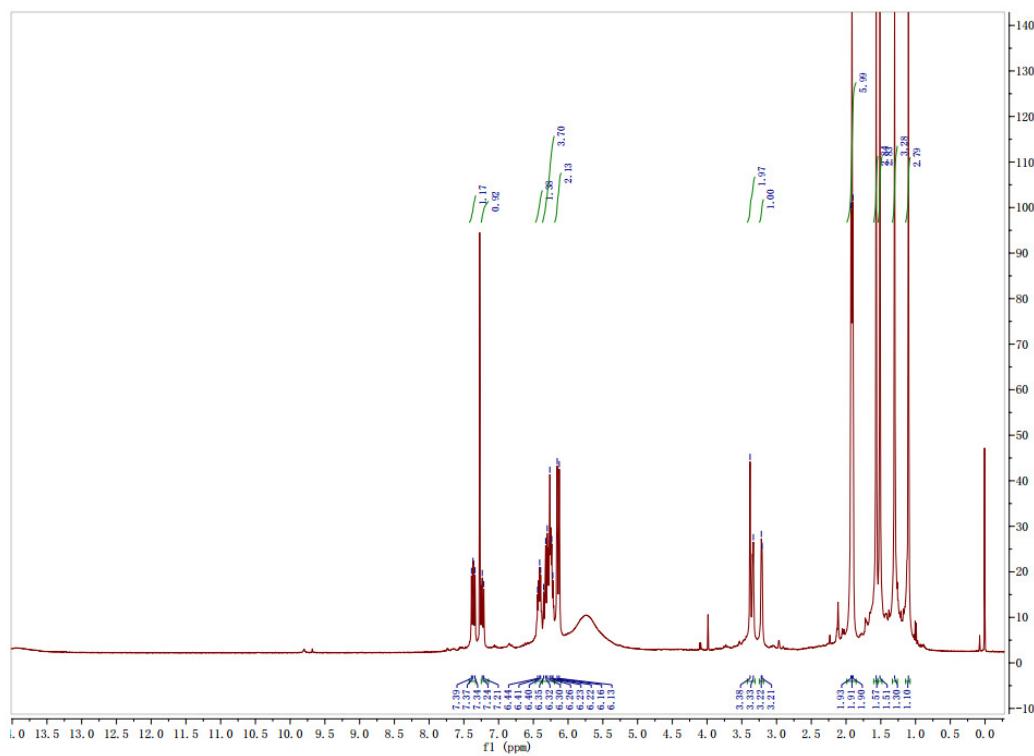


Figure S20. ^{13}C NMR (125 MHz, CDCl_3) spectrum of compound 3.

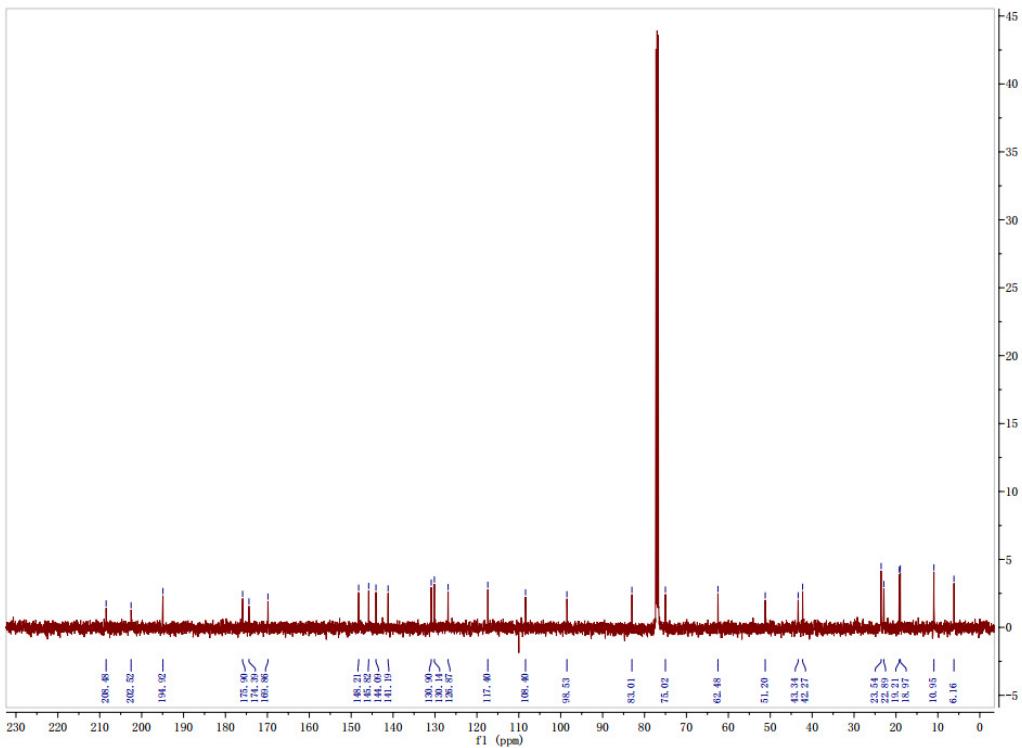


Figure S21. ^1H NMR (500 MHz, CDCl_3) spectrum of compound 4.

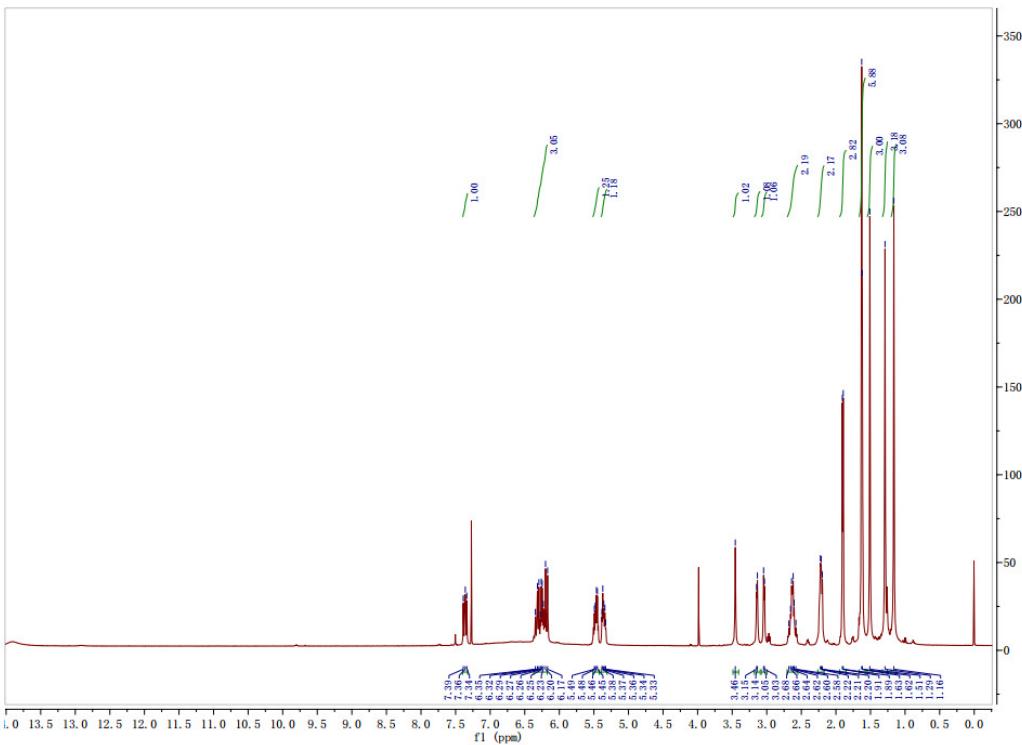


Figure S22. ^{13}C NMR (125 MHz, CDCl_3) spectrum of compound 4.

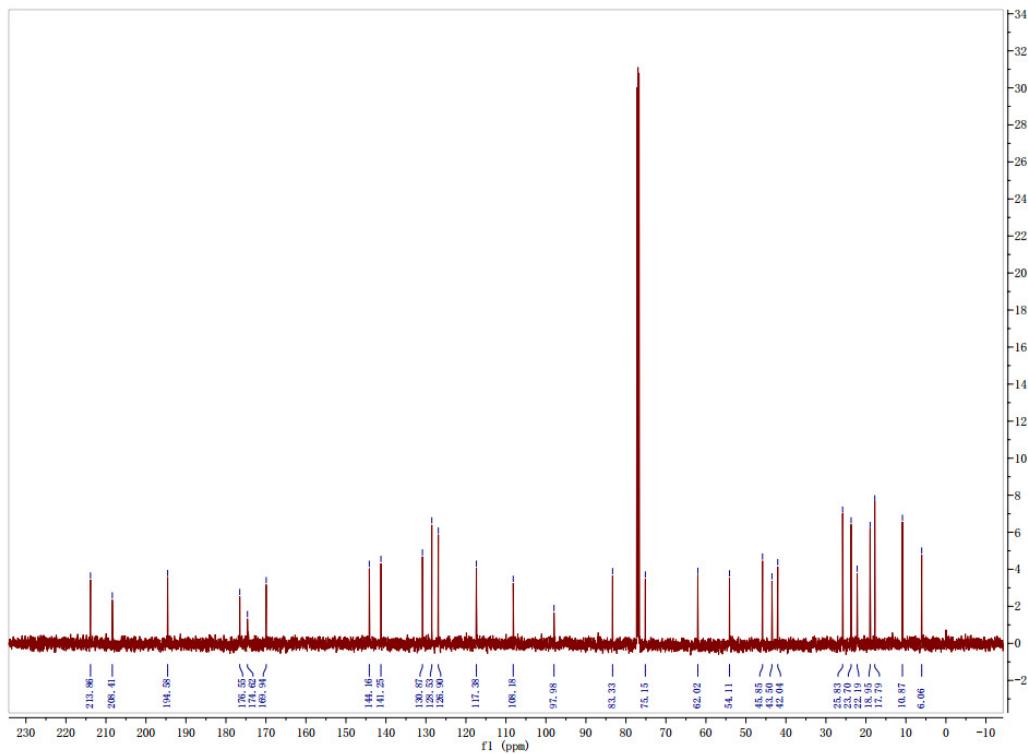


Figure S23. ^1H NMR (600 MHz, CDCl_3) spectrum of compound 7.

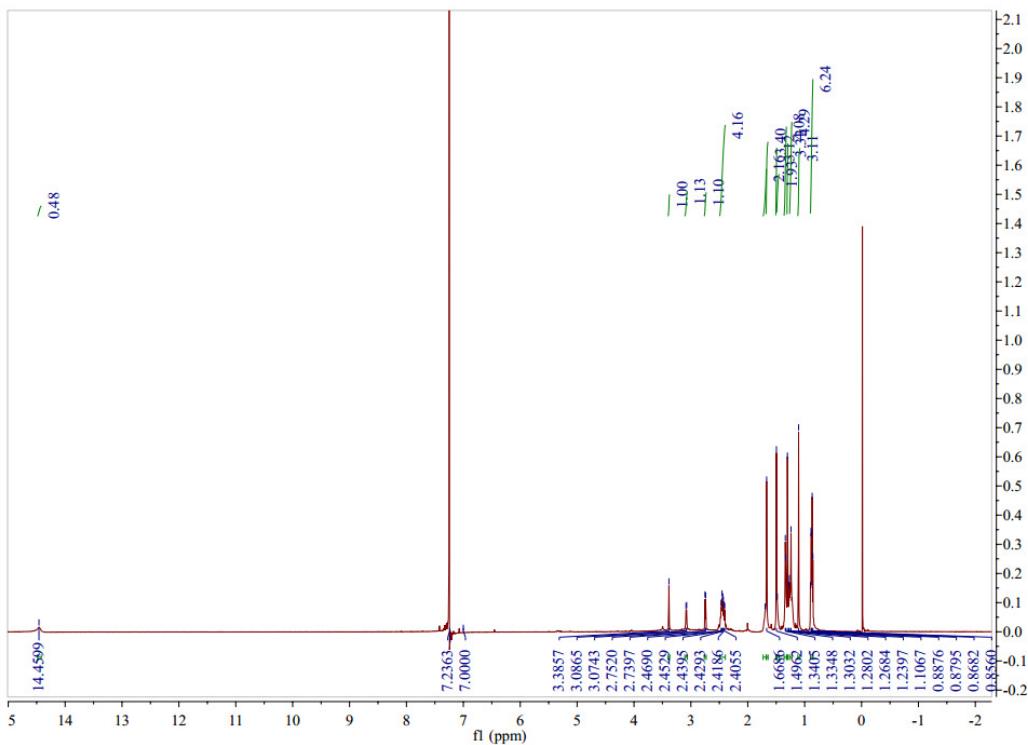


Figure S24. ^{13}C NMR (150 MHz, CDCl_3) spectrum of compound 7.

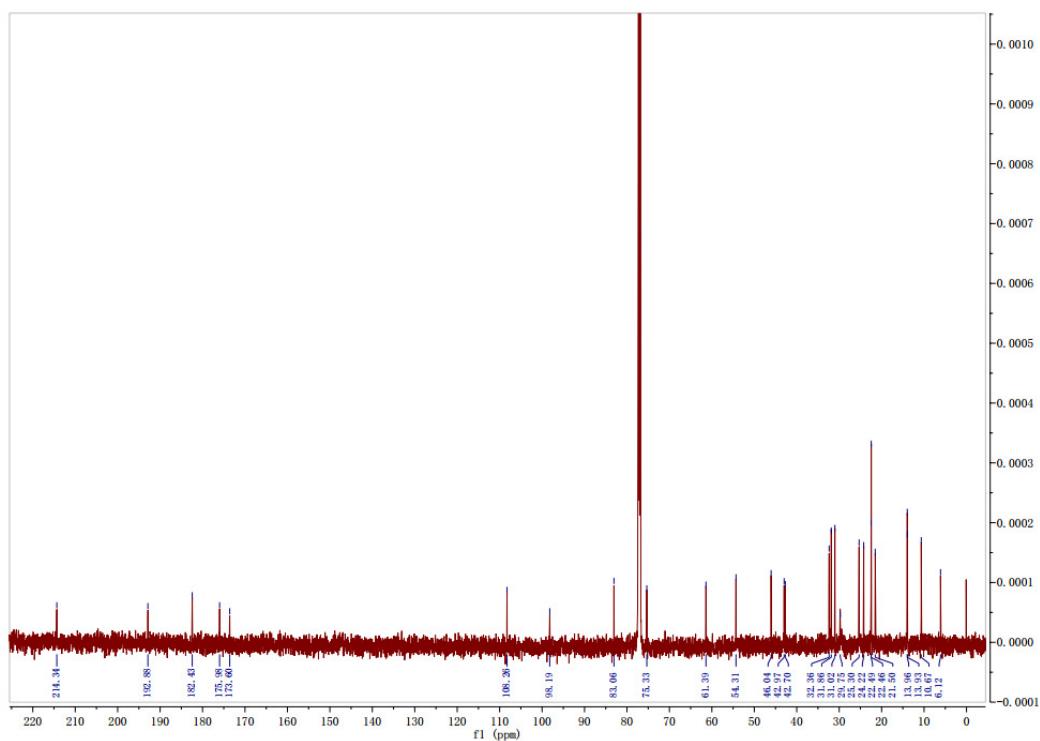
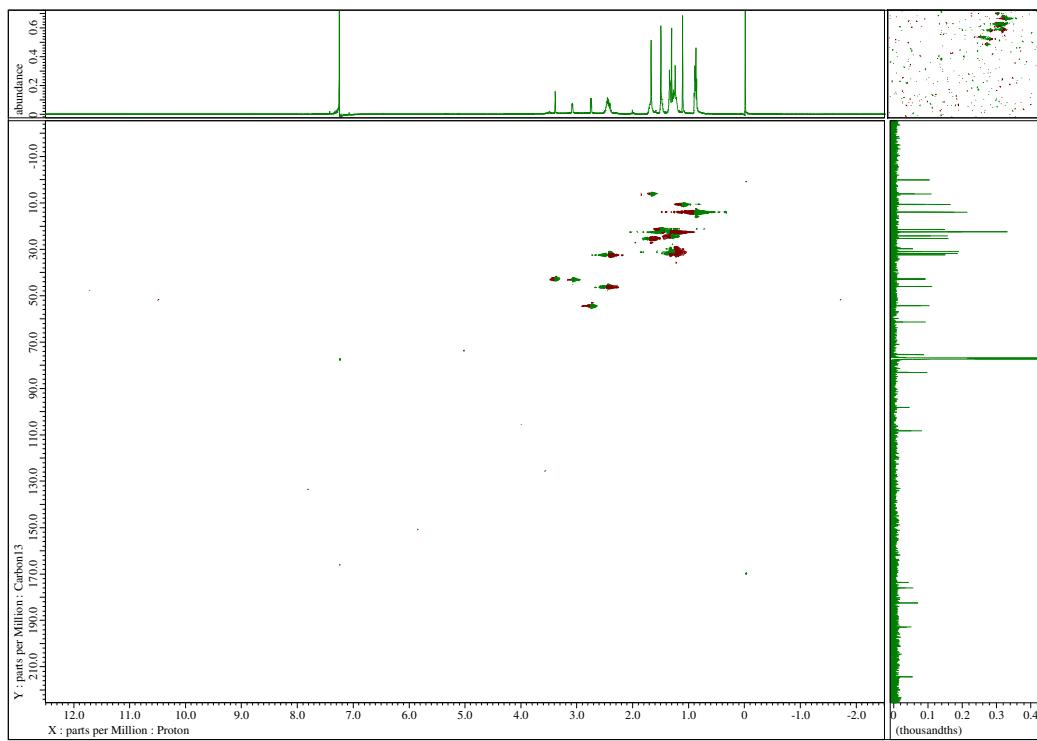


Figure S25. HSQC (600 MHz, CDCl_3) spectrum of compound 7.



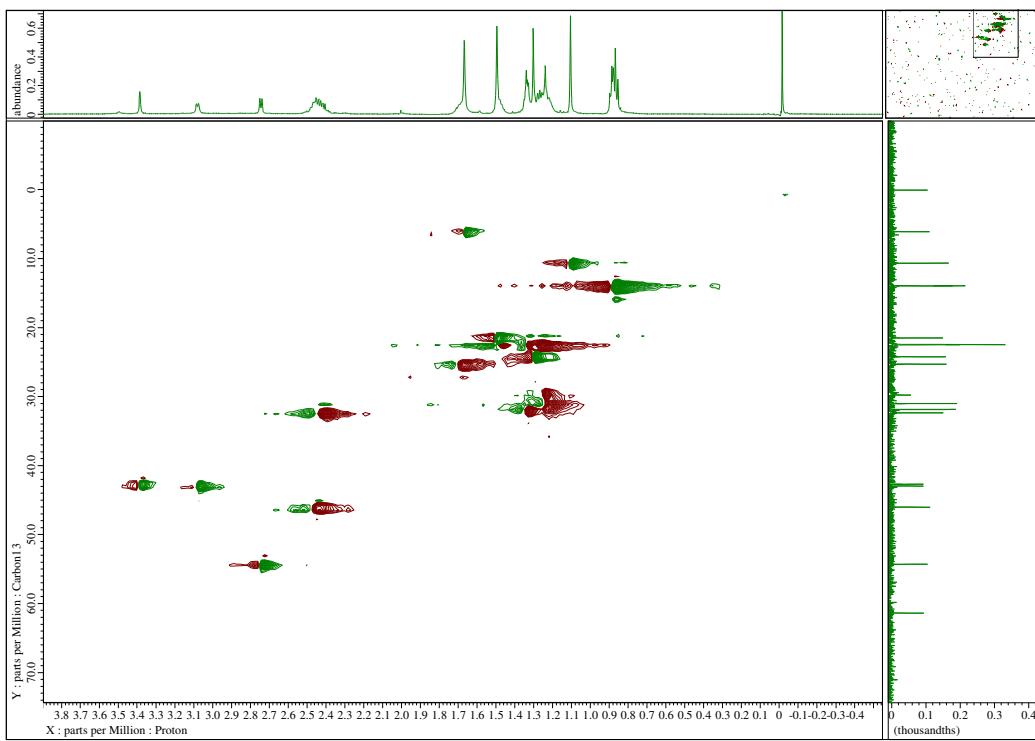


Figure S26. ^1H - ^{13}C COSY (600 MHz, CDCl_3) spectrum of compound 7.

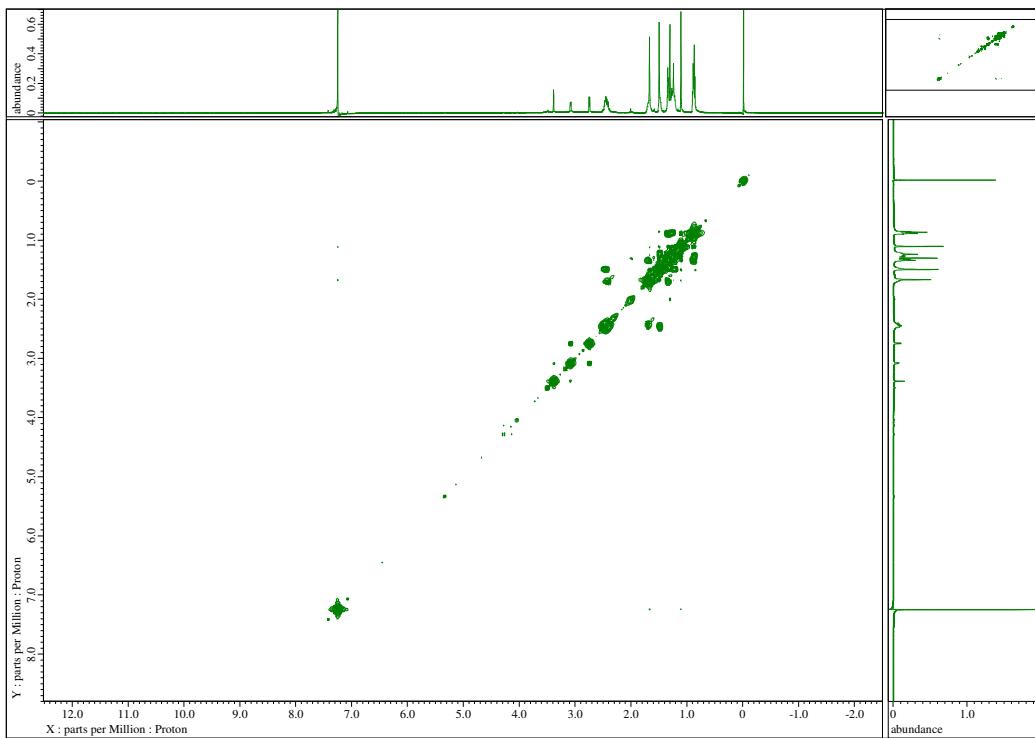


Figure S27. HMBC (600 MHz, CDCl_3) spectrum of compound 7.

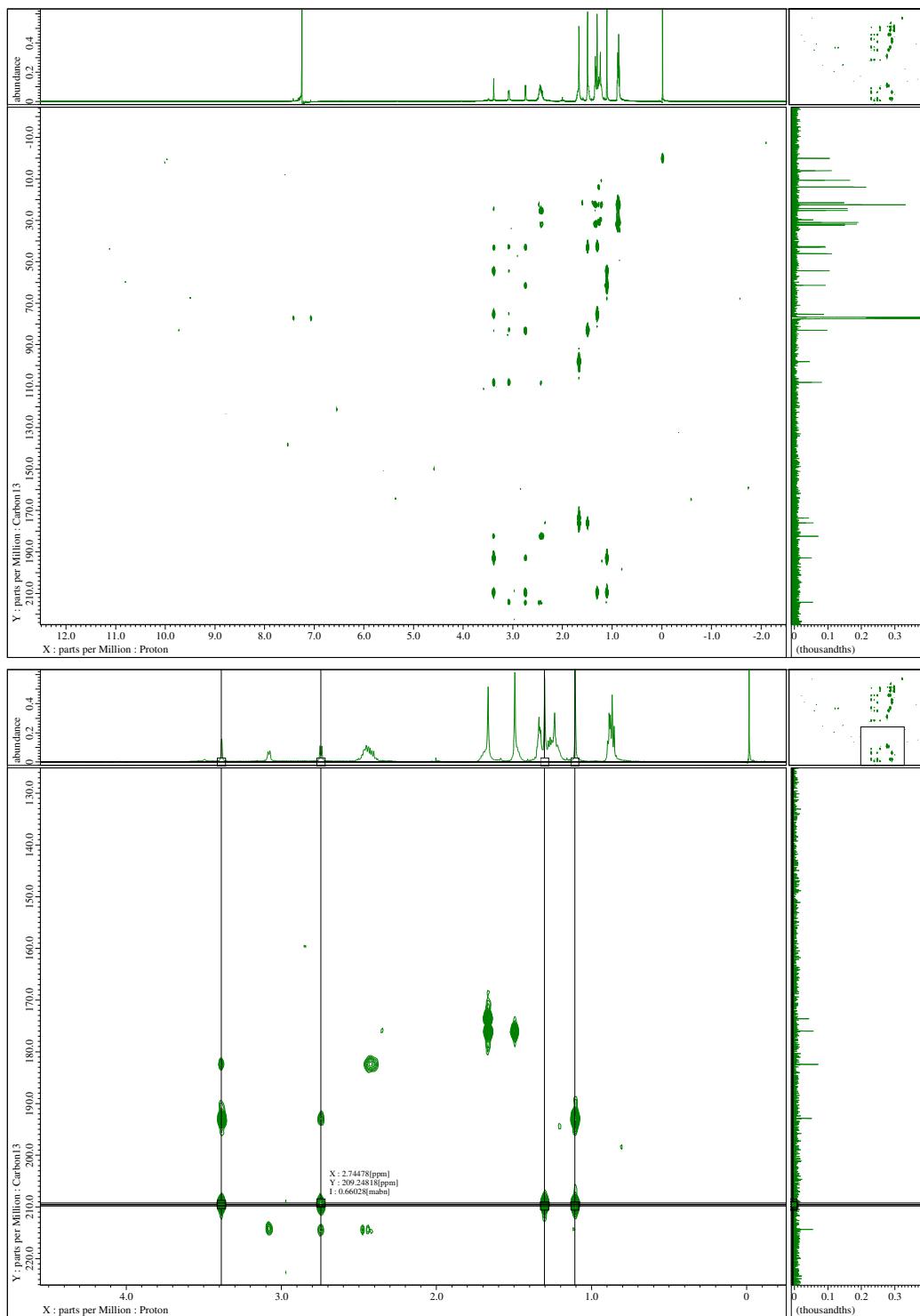


Figure S28. HRESIMS spectrum of compound 7.

