

# Supplementary Materials: New Phragmalin-Type Limonoids from *Chukrasia tabularis* and Their $\alpha$ -Glucosidase Inhibitory Activity

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**Figure S32.**  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound **5** in  $\text{CDCl}_3$ .

**Figure S33.** HMBC spectrum of the new compound **5** in  $\text{CDCl}_3$ .

**Figure S34.** ROESY spectrum of the new compound **5** in  $\text{CDCl}_3$ .

**Figure S35.** Partial enlarged ROESY spectra of compound **5** in  $\text{CDCl}_3$ .

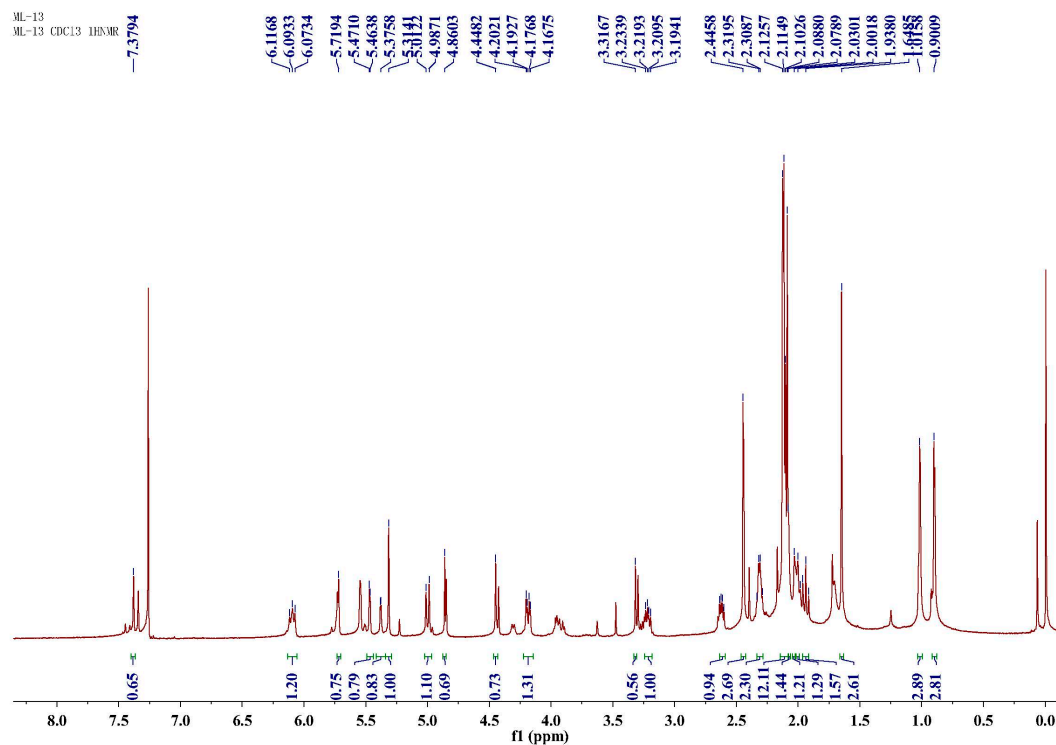
**Figure S36.** HR-ESI-MS spectrum of the new compound **1**.

**Figure S37.** HR-ESI-MS spectrum of the new compound **2**.

**Figure S38.** HR-ESI-MS spectrum of the new compound **3**.

**Figure S39.** HR-ESI-MS spectrum of the new compound **4**.

**Figure S40.** HR-ESI-MS spectrum of the new compound **5**.



**Figure S1.**  $^1\text{H}$ -NMR (500 MHz) spectrum of the new compound **1** in  $\text{CDCl}_3$ .

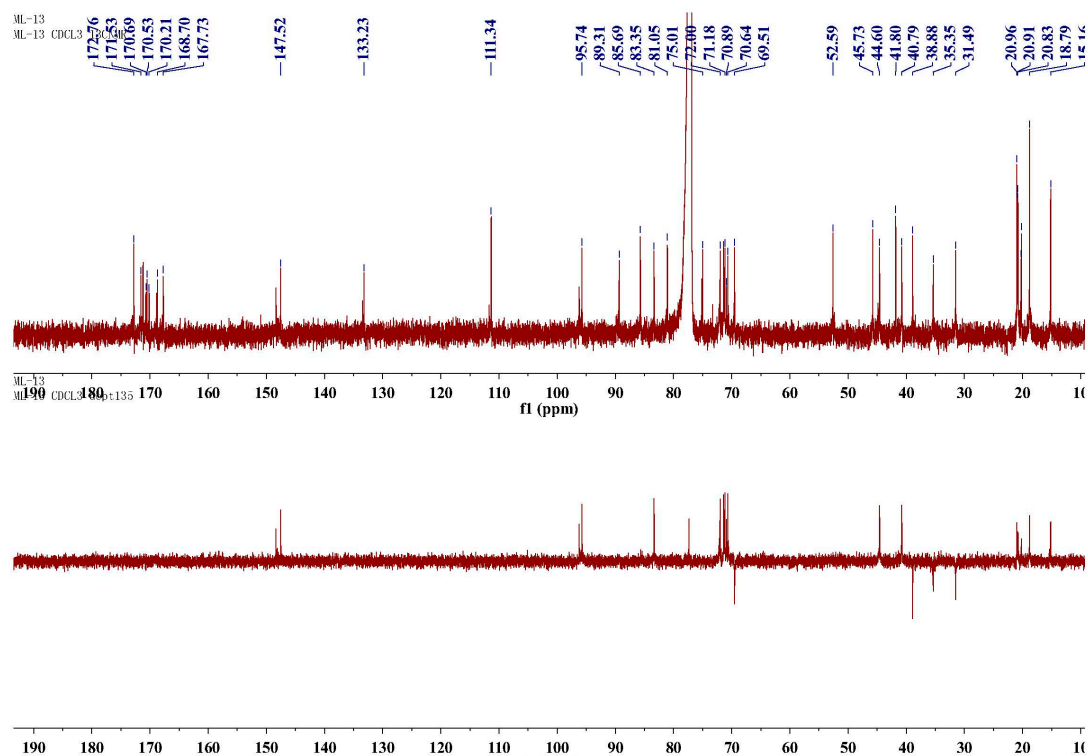


Figure S2.  $^{13}\text{C}$ -NMR (125 MHz) and DEPT NMR spectrum of the new compound **1** in  $\text{CDCl}_3$ .

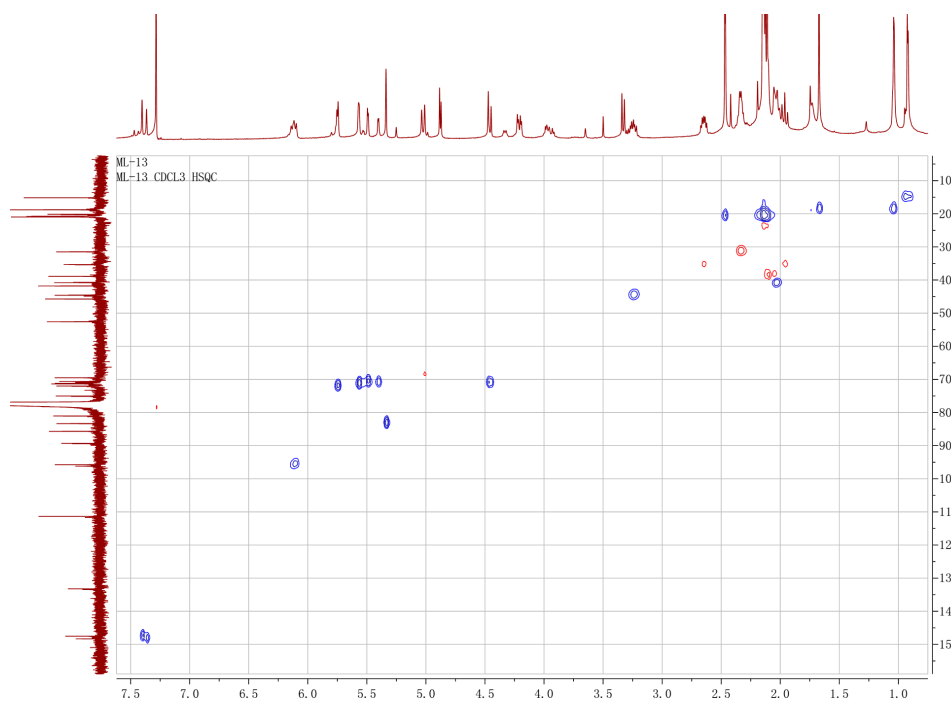
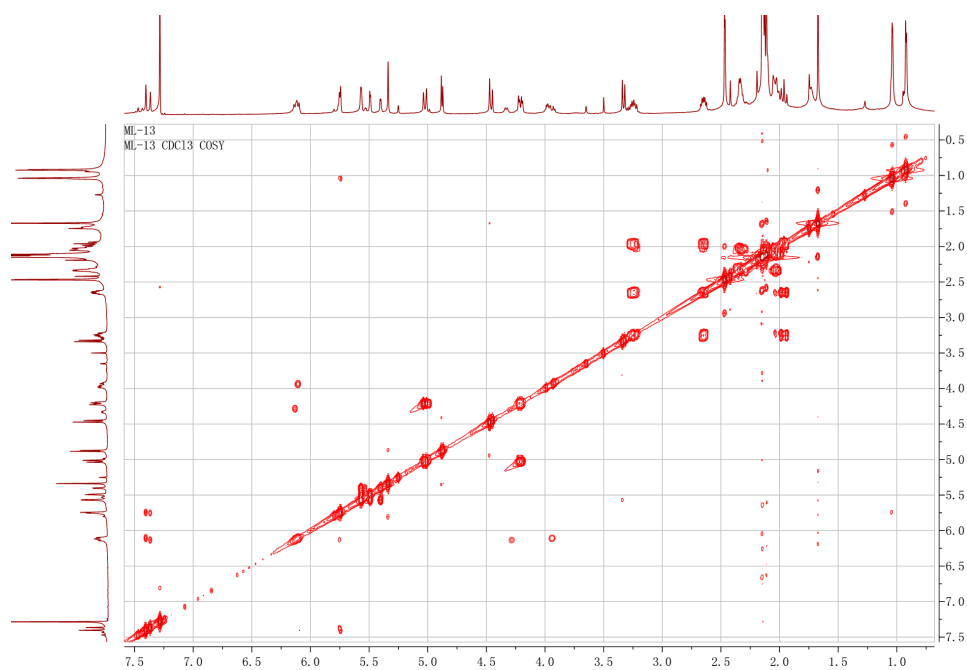
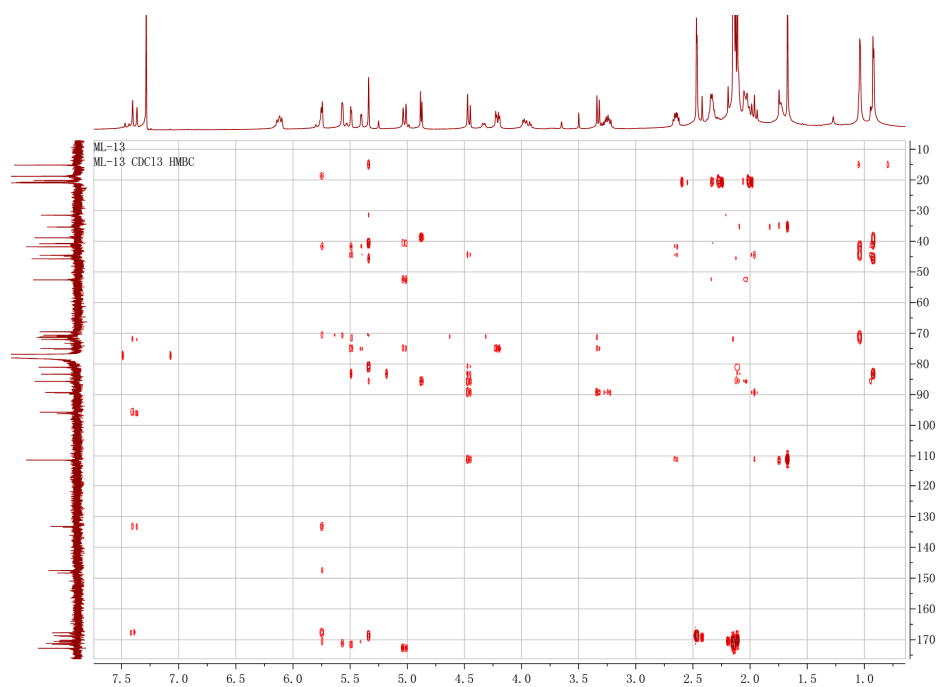


Figure S3. HSQC spectrum of the new compound **1** in  $\text{CDCl}_3$ .



**Figure S4.**  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound **1** in  $\text{CDCl}_3$ .



**Figure S5.** HMBC spectrum of the new compound **1** in  $\text{CDCl}_3$ .



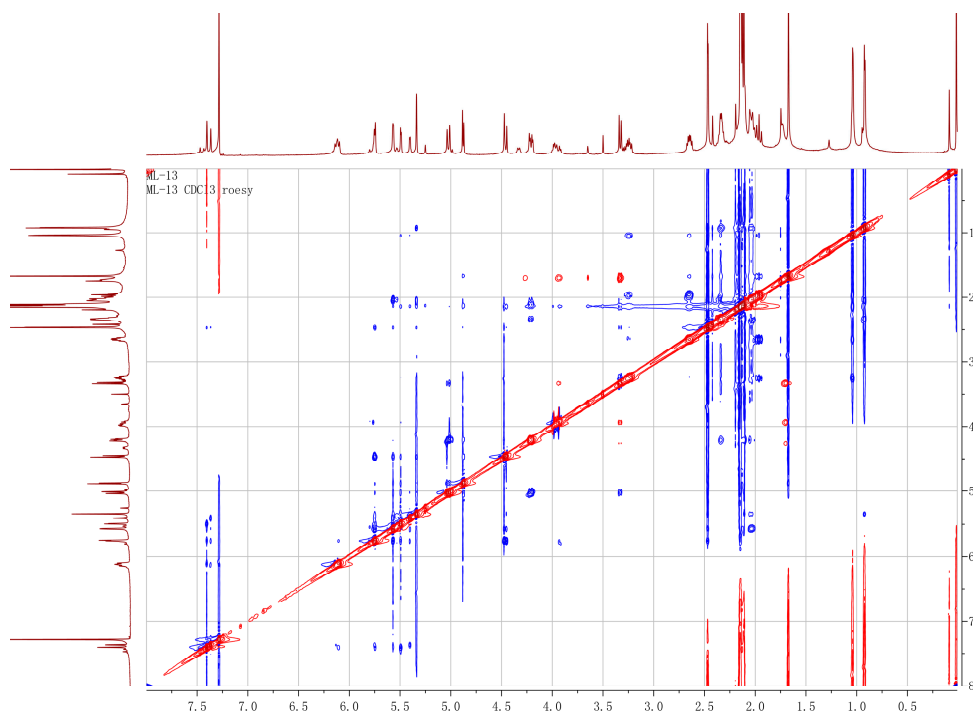


Figure S6. ROESY spectrum of the new compound 1 in CDCl<sub>3</sub>.

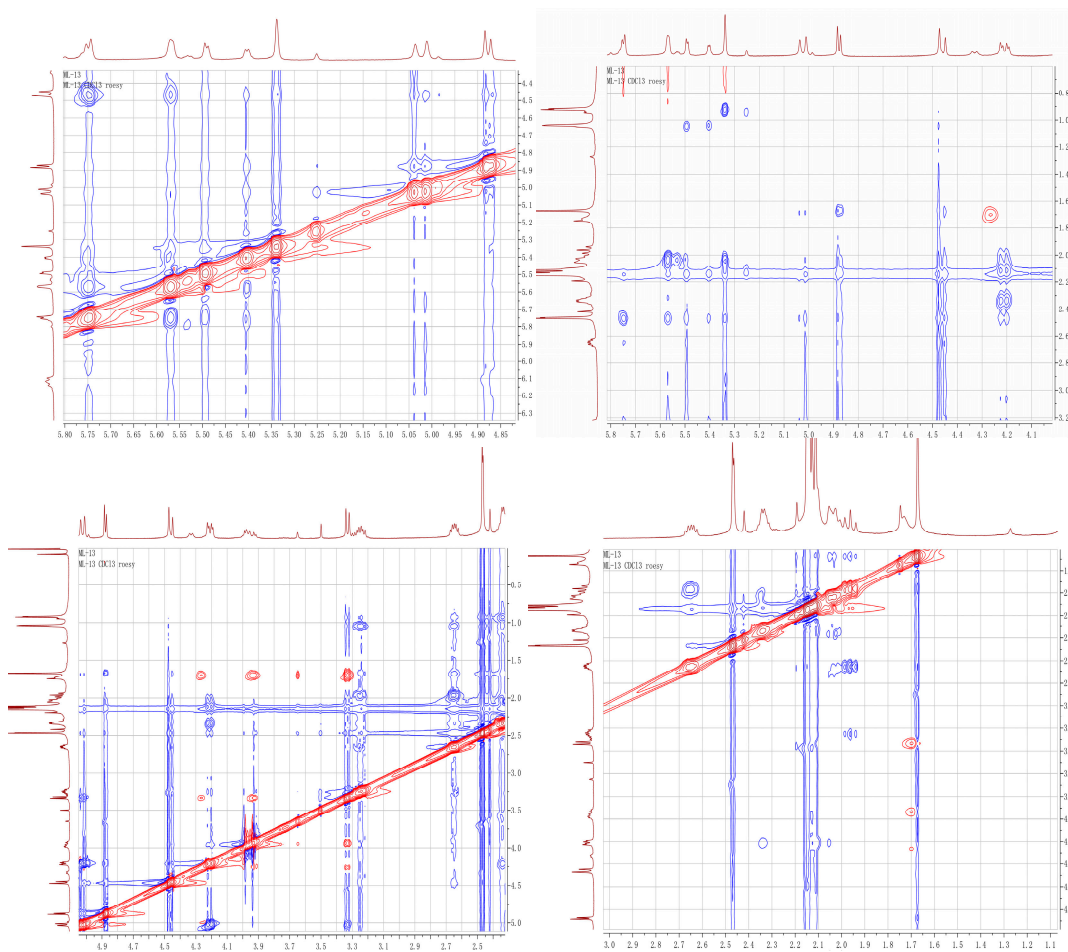


Figure S7. Cont.

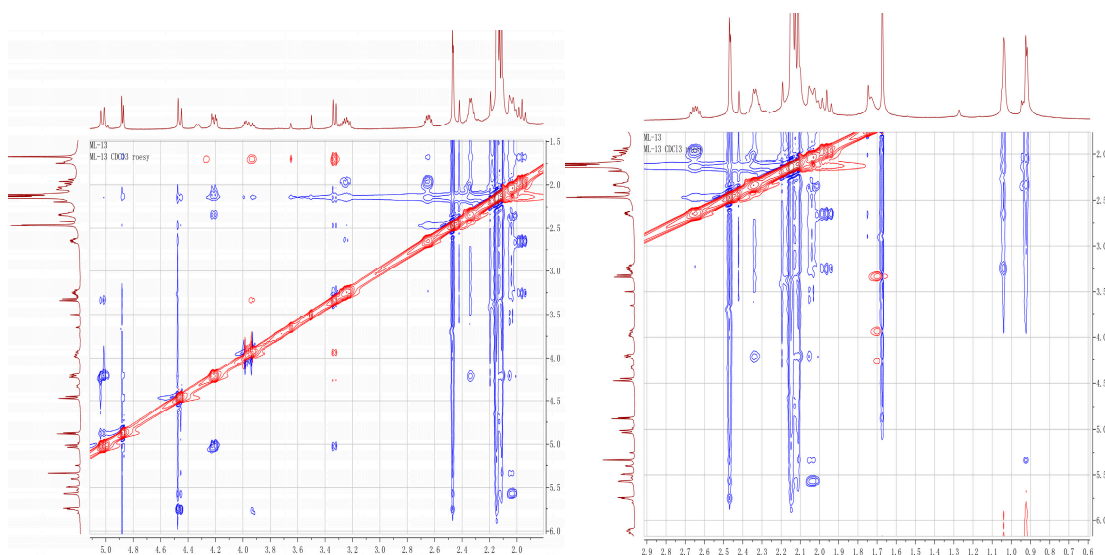


Figure S7. Partial enlarged ROESY spectra of compound **1** in CDCl<sub>3</sub>.

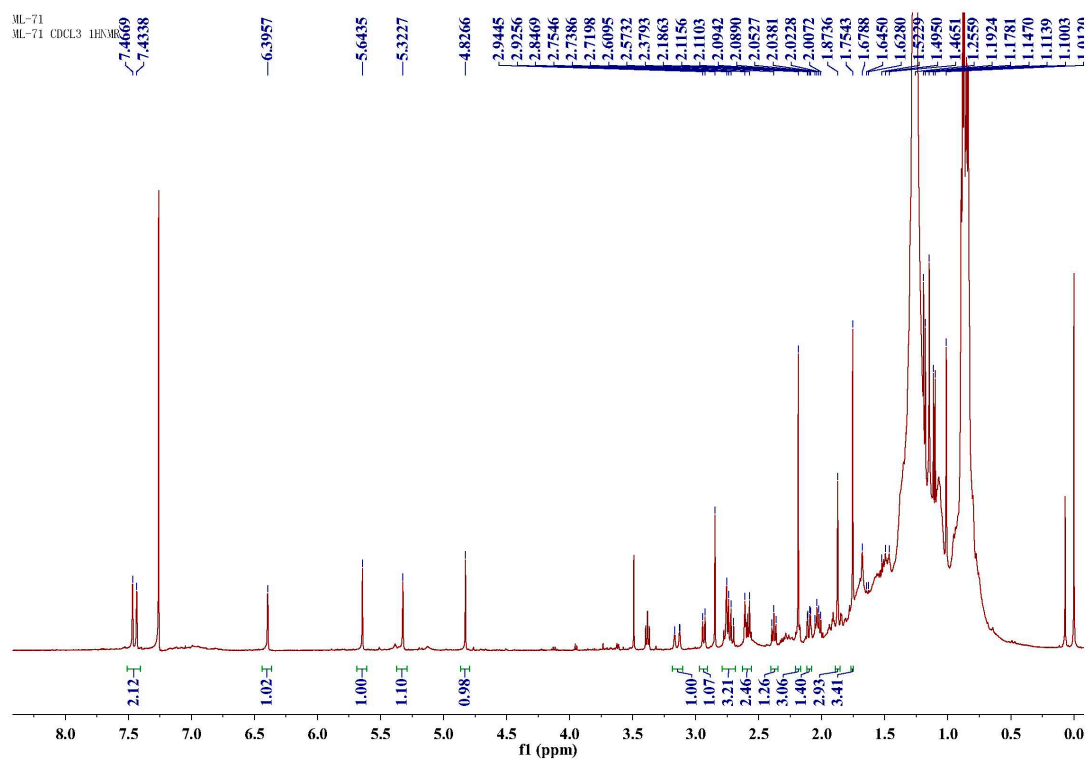
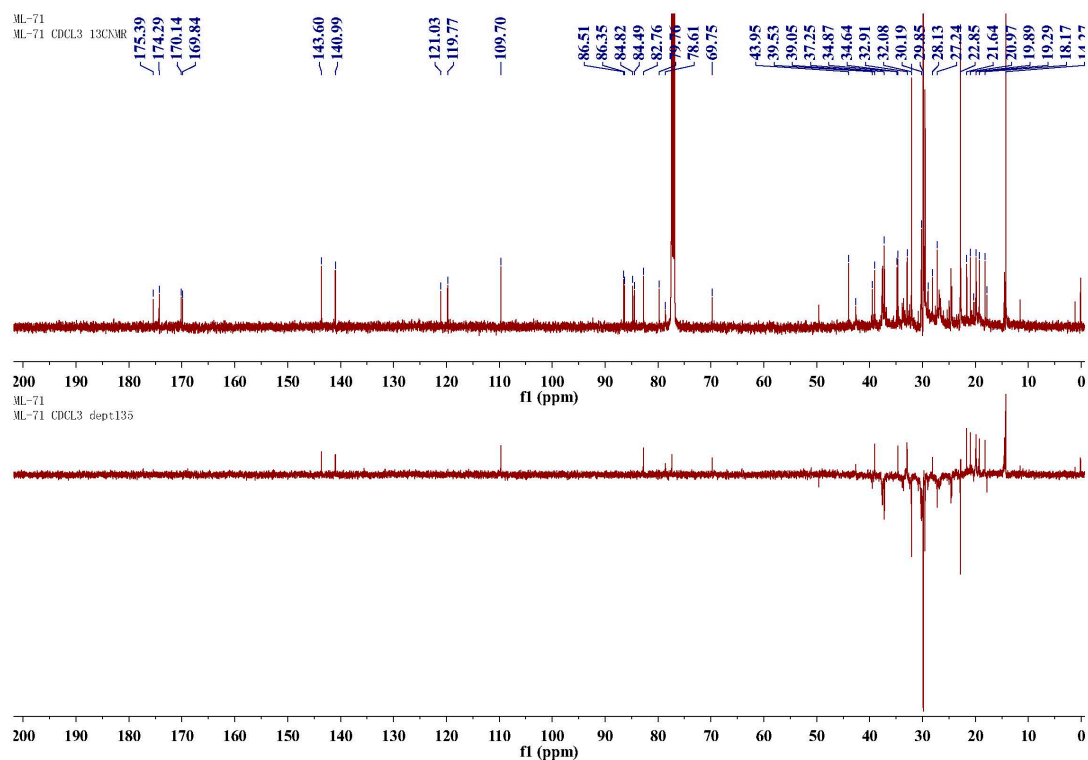
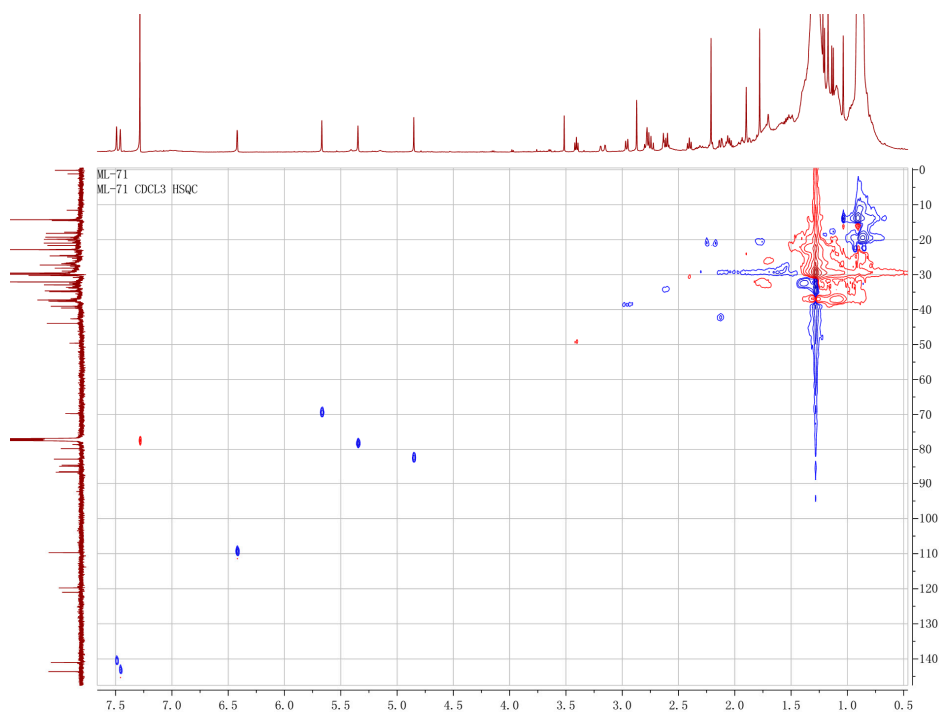


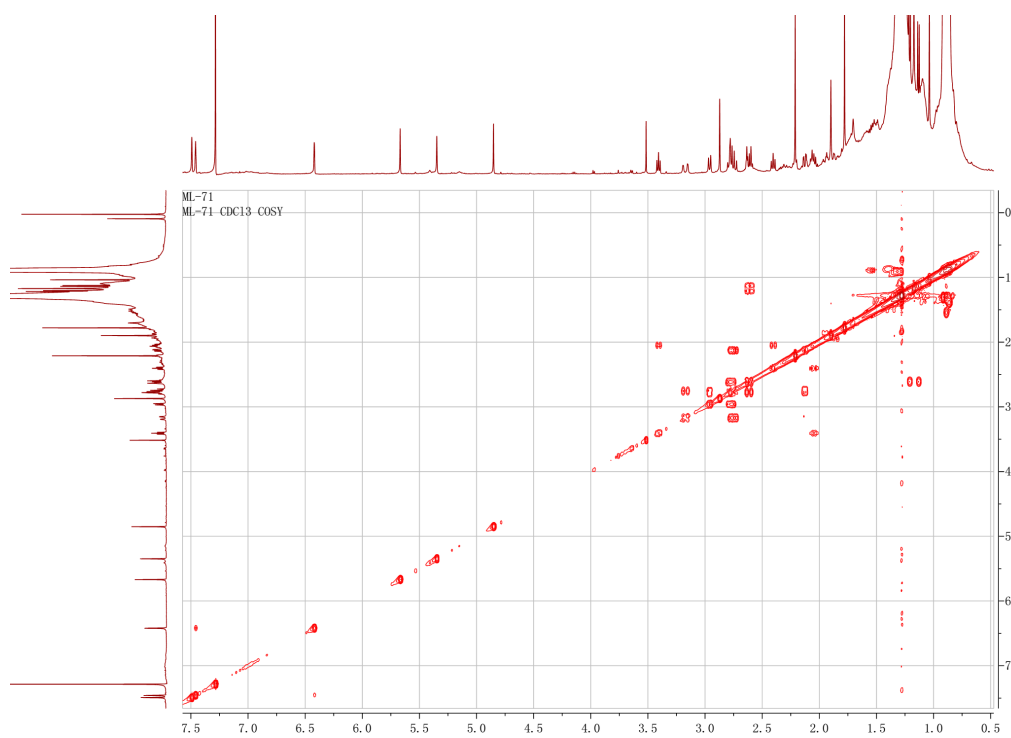
Figure S8. <sup>1</sup>H-NMR (500 MHz) spectrum of the new compound **2** in CDCl<sub>3</sub>.



**Figure S9.** <sup>13</sup>C-NMR (125 MHz) and DEPT NMR spectrum of the new compound **2** in CDCl<sub>3</sub>.



**Figure S10.** HSQC spectrum of the new compound **2** in CDCl<sub>3</sub>.



**Figure S11.**  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound **2** in  $\text{CDCl}_3$ .



**Figure S12.** HMBC spectrum of the new compound **2** in  $\text{CDCl}_3$ .

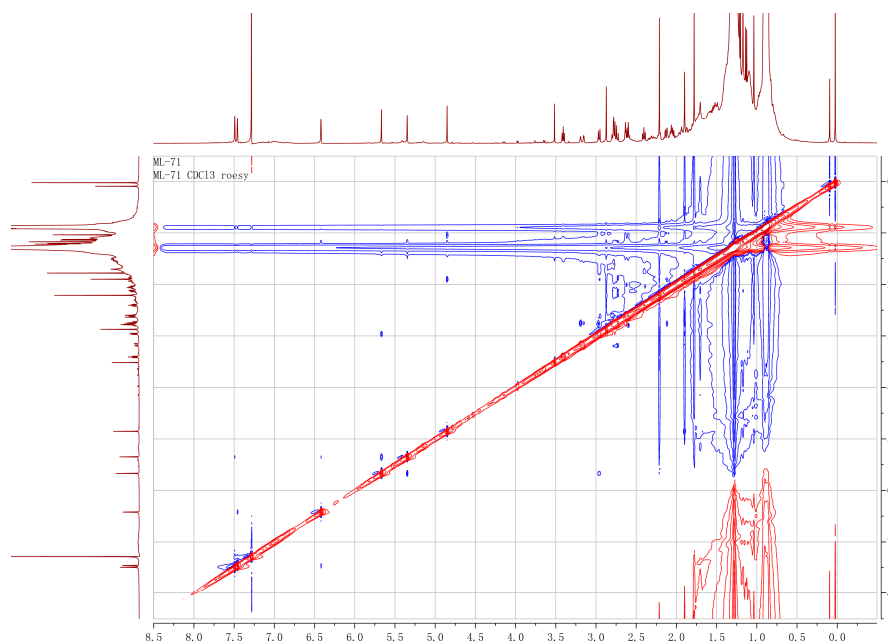


Figure S13. ROESY spectrum of the new compound 2 in CDCl<sub>3</sub>.

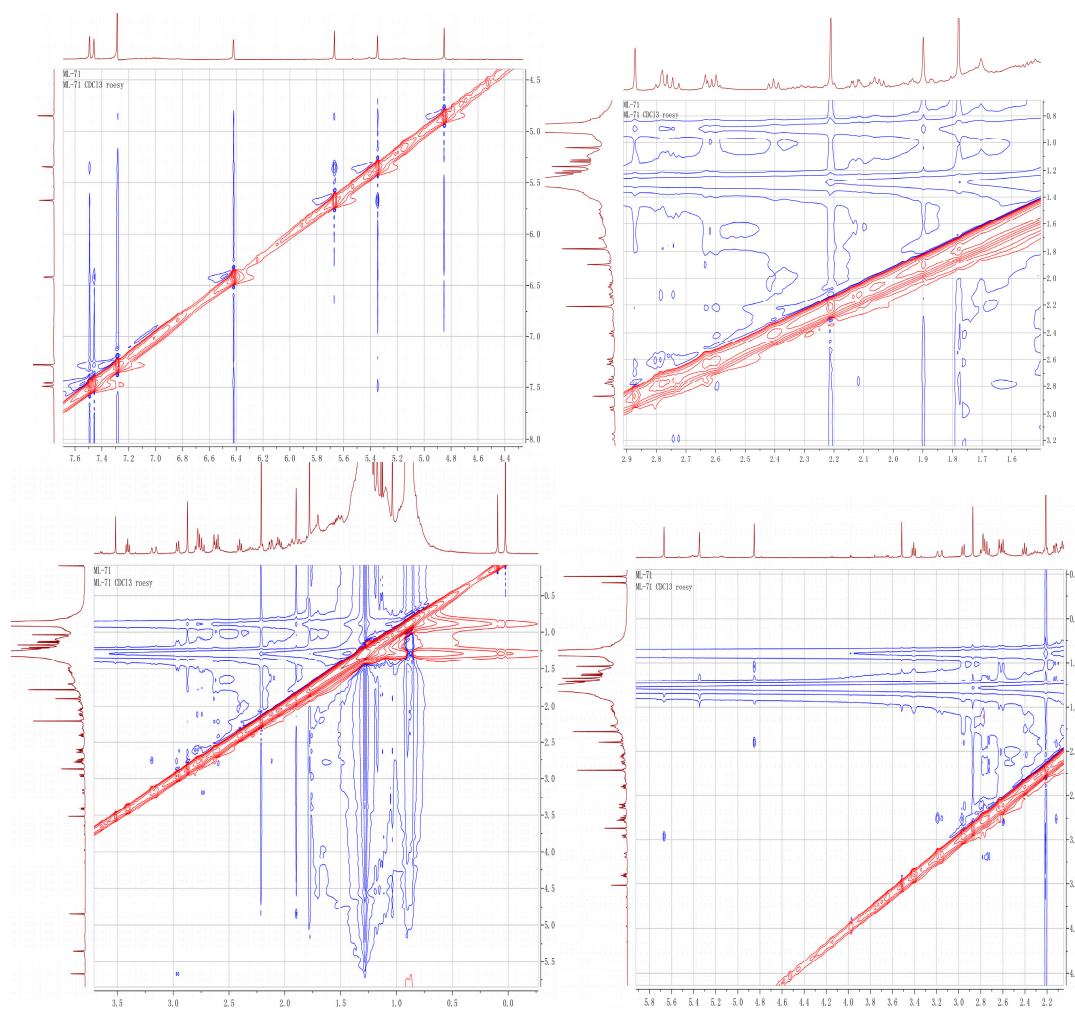
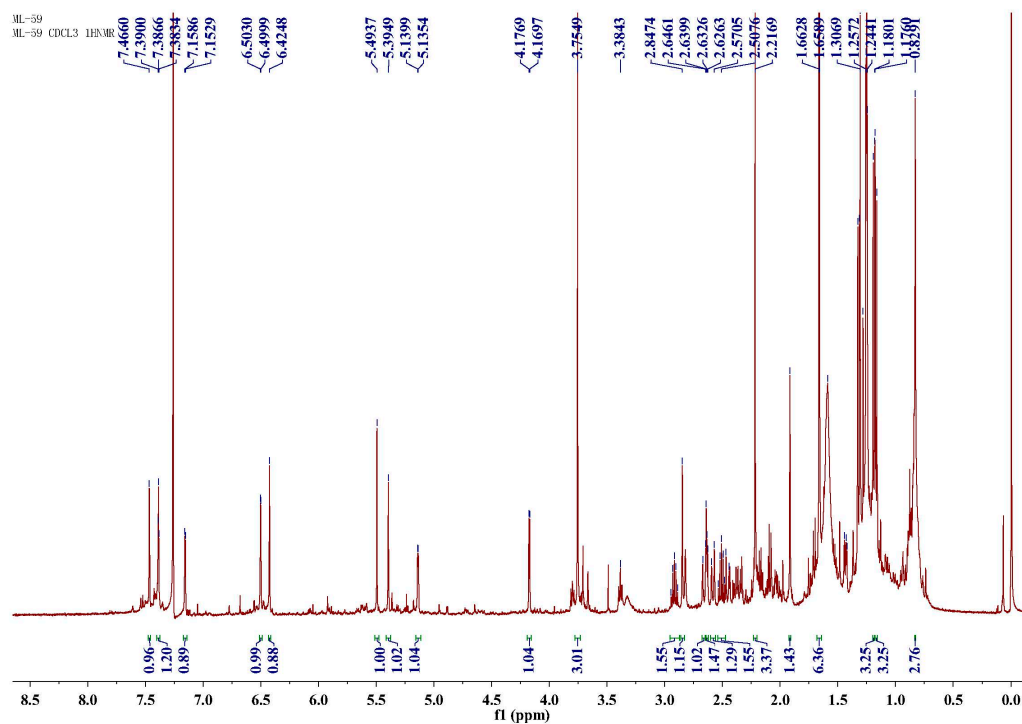
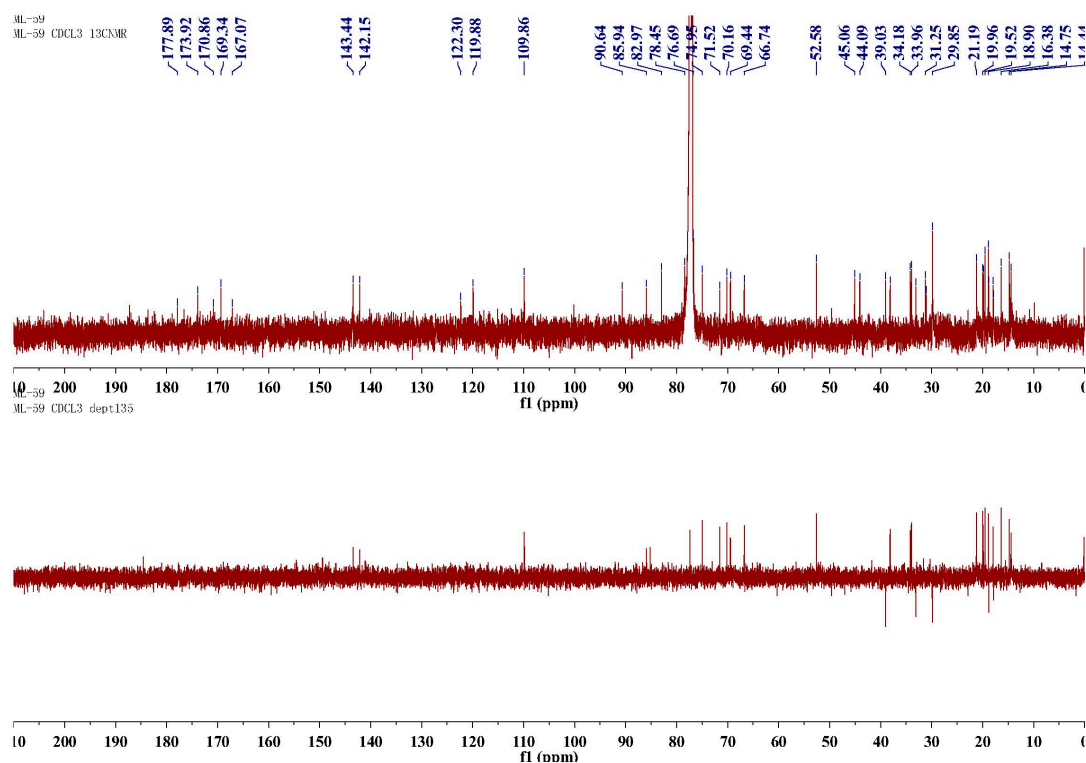


Figure S14. Partial enlarged ROESY spectra of compound 2 in CDCl<sub>3</sub>.



**Figure S15.** <sup>1</sup>H-NMR (500 MHz) spectrum of the new compound **3** in CDCl<sub>3</sub>.



**Figure S16.** <sup>13</sup>C-NMR (125 MHz) and DEPT NMR spectrum of the new compound **3** in CDCl<sub>3</sub>.

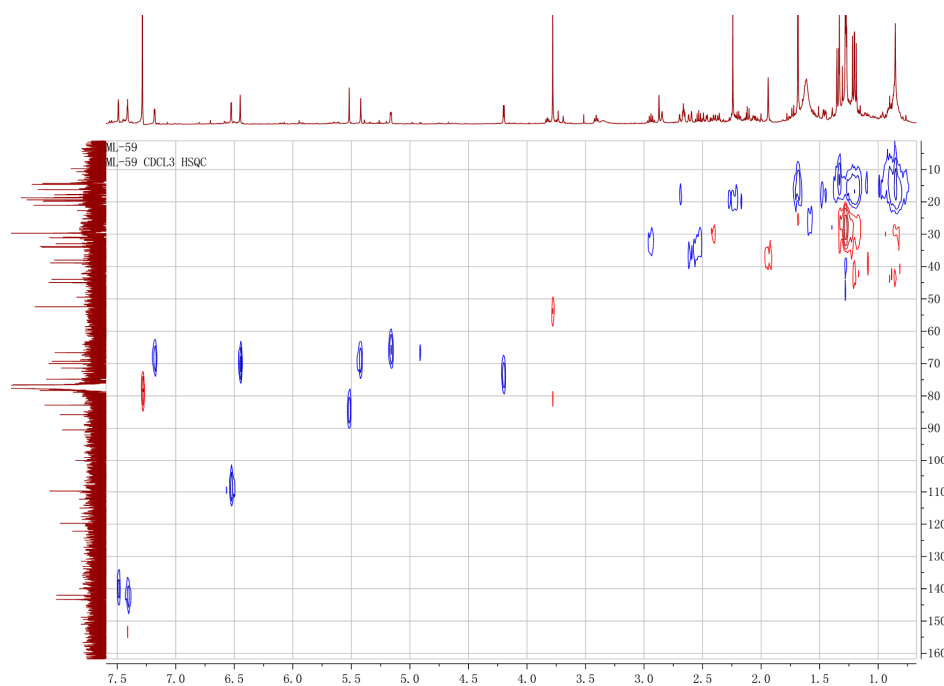


Figure S17. HSQC spectrum of the new compound 3 in  $\text{CDCl}_3$ .

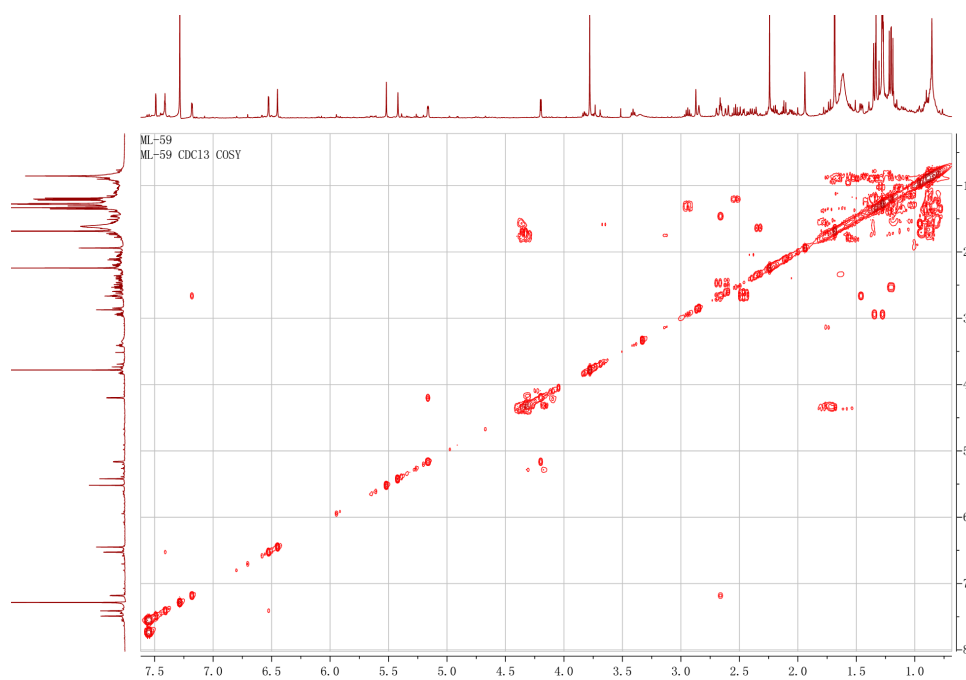


Figure S18.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound 3 in  $\text{CDCl}_3$ .

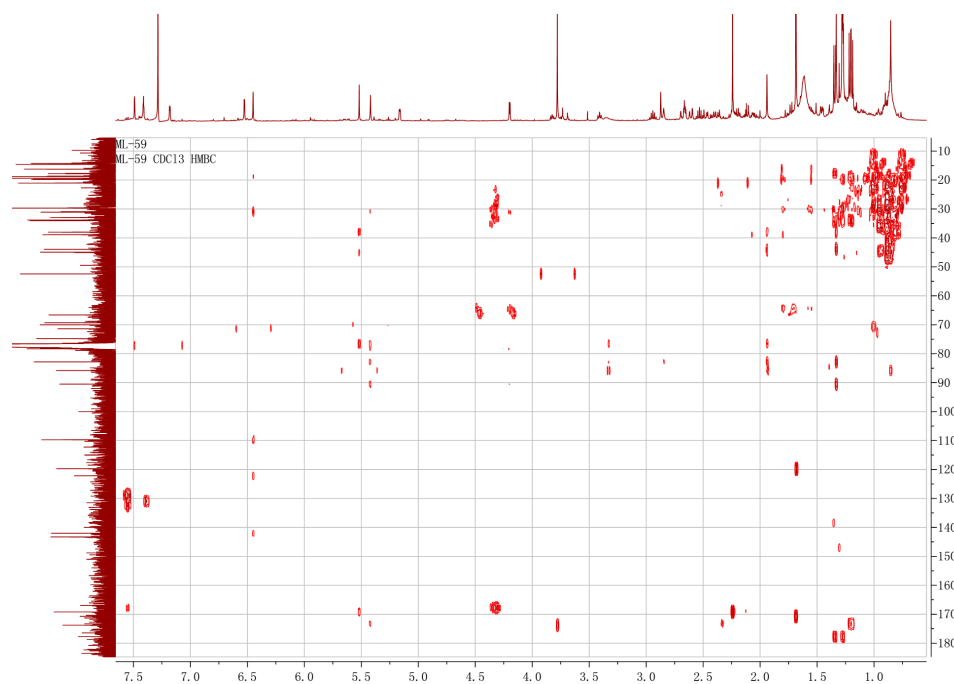


Figure S19. HMBC spectrum of the new compound 3 in  $\text{CDCl}_3$ .

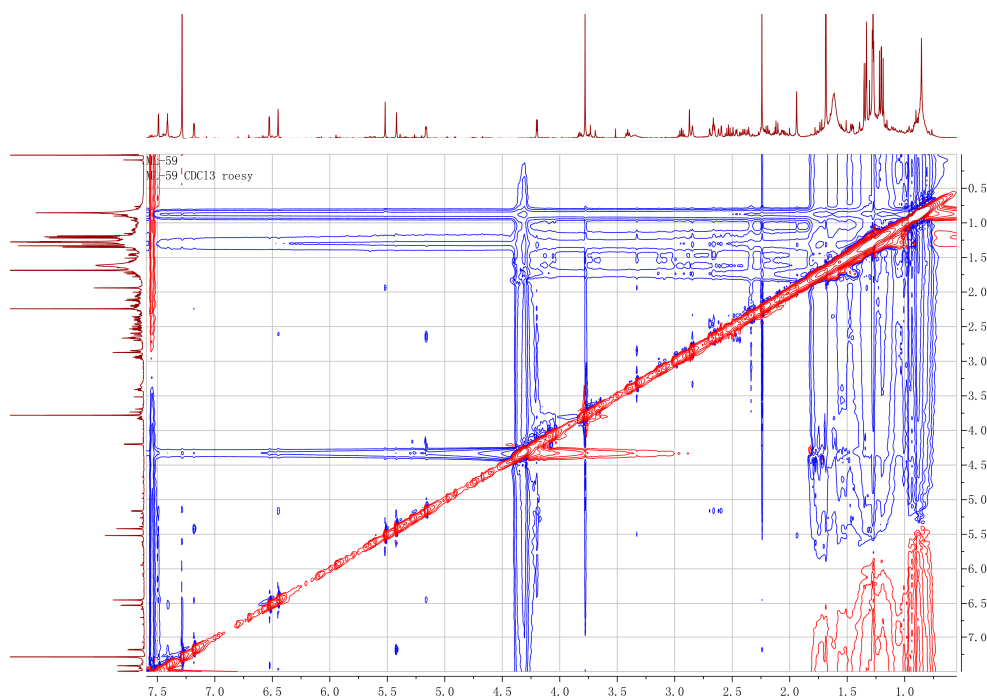
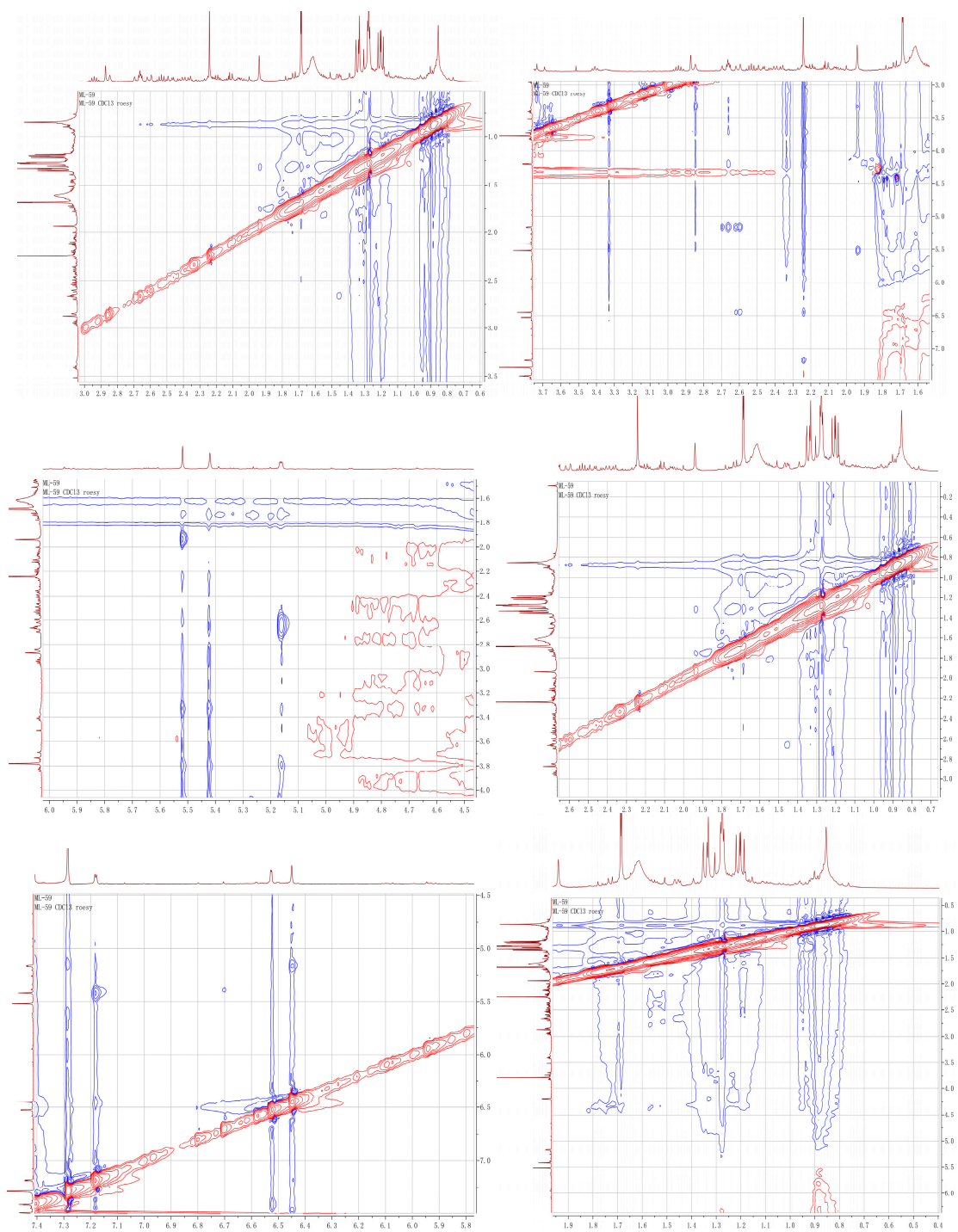


Figure S20. ROESY spectrum of the new compound 3 in  $\text{CDCl}_3$ .





**Figure S21.** Partial enlarged ROESY spectra of compound 3 in CDCl<sub>3</sub>.

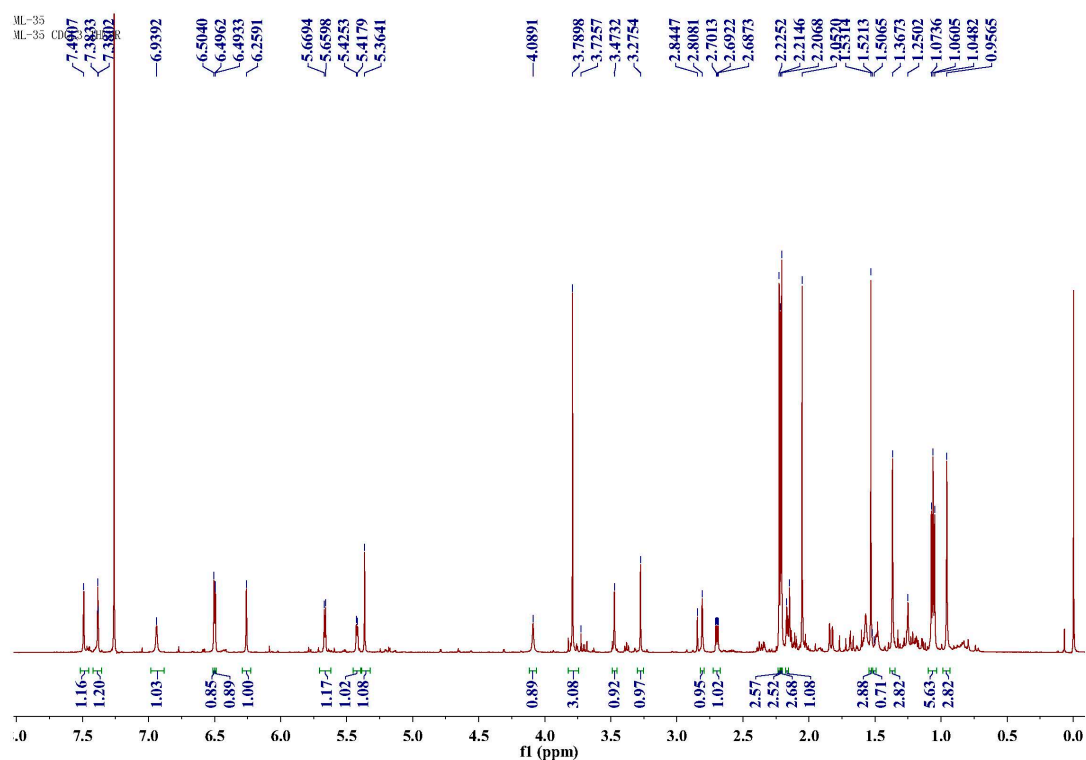


Figure S22.  $^1\text{H}$ -NMR (500 MHz) spectrum of the new compound **4** in  $\text{CDCl}_3$ .

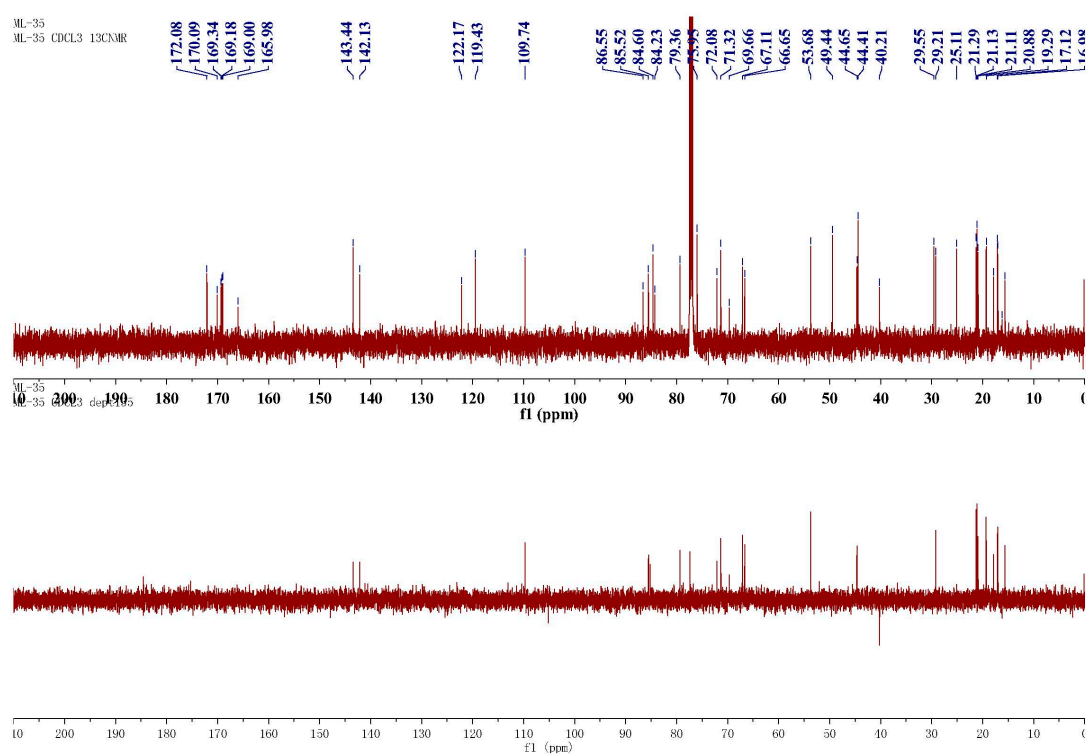


Figure S23.  $^{13}\text{C}$ -NMR (125 MHz) and DEPT NMR spectrum of the new compound **4** in  $\text{CDCl}_3$ .

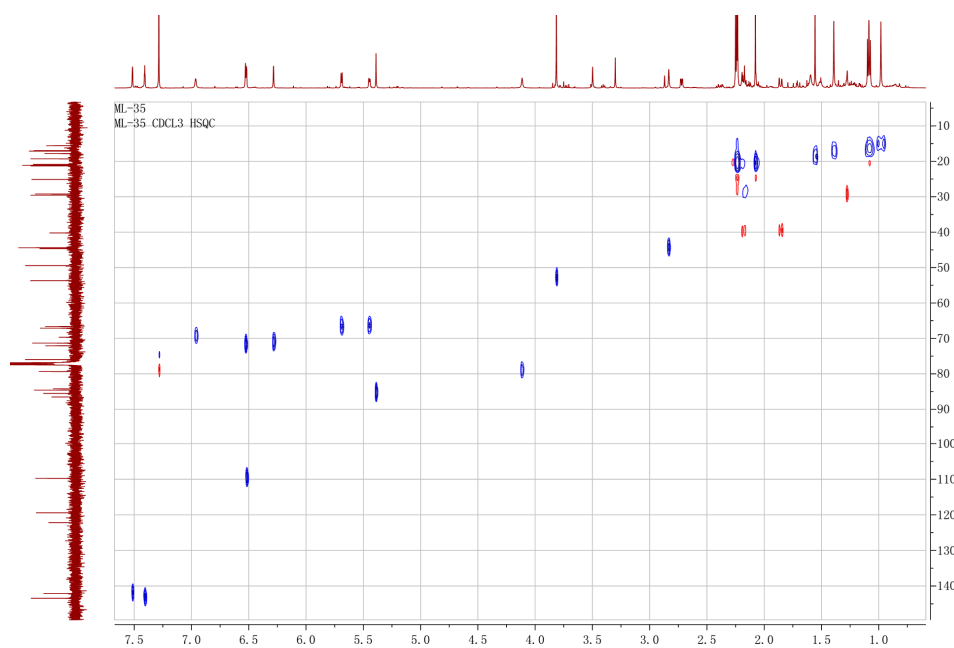


Figure S24. HSQC spectrum of the new compound 4 in  $\text{CDCl}_3$ .

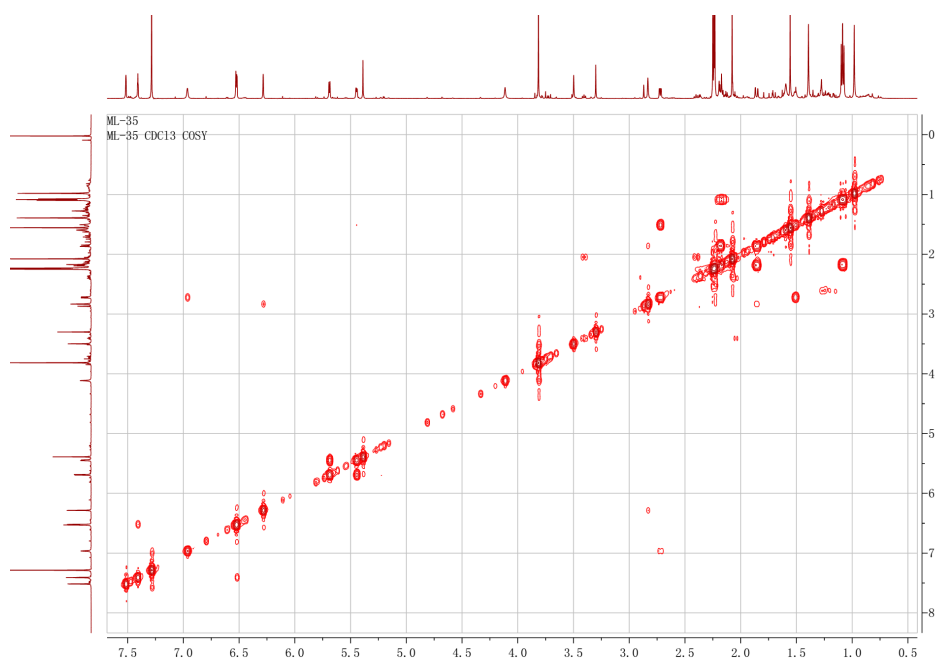


Figure S25.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound 4 in  $\text{CDCl}_3$ .



Figure S26. HMBC spectrum of the new compound 4 in CDCl<sub>3</sub>.

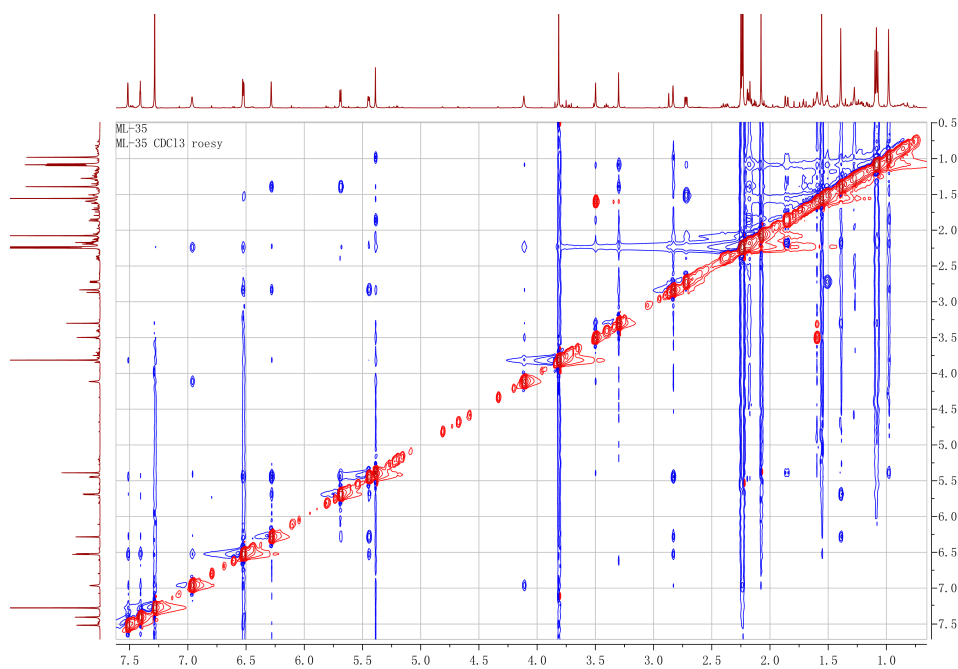


Figure S27. ROESY spectrum of the new compound 4 in CDCl<sub>3</sub>.

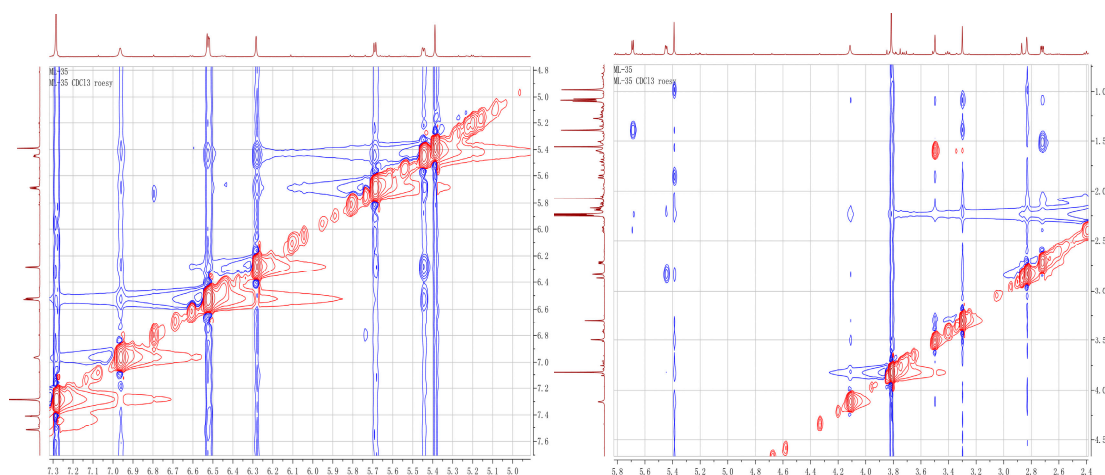


Figure S28. Partial enlarged ROESY spectra of compound 4 in CDCl<sub>3</sub>.

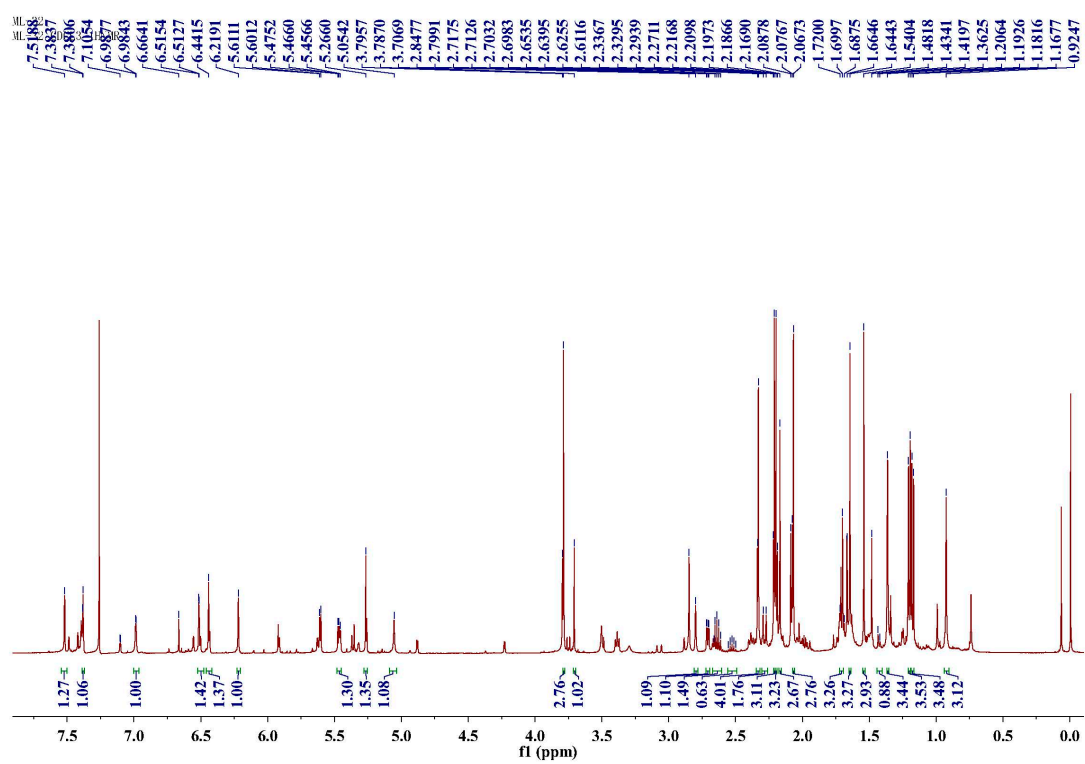


Figure S29. <sup>1</sup>H-NMR (500 MHz) spectrum of the new compound 5 in CDCl<sub>3</sub>.

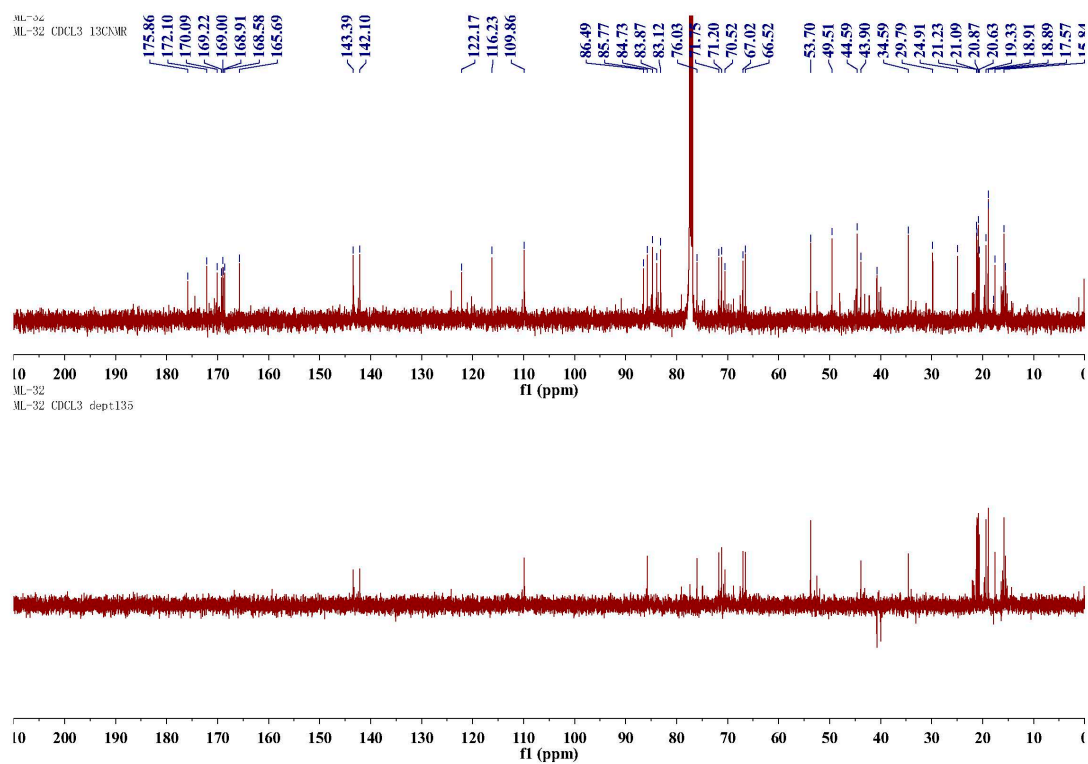


Figure S30.  $^{13}\text{C}$ -NMR (125 MHz) and DEPT NMR spectrum of the new compound 5 in  $\text{CDCl}_3$ .

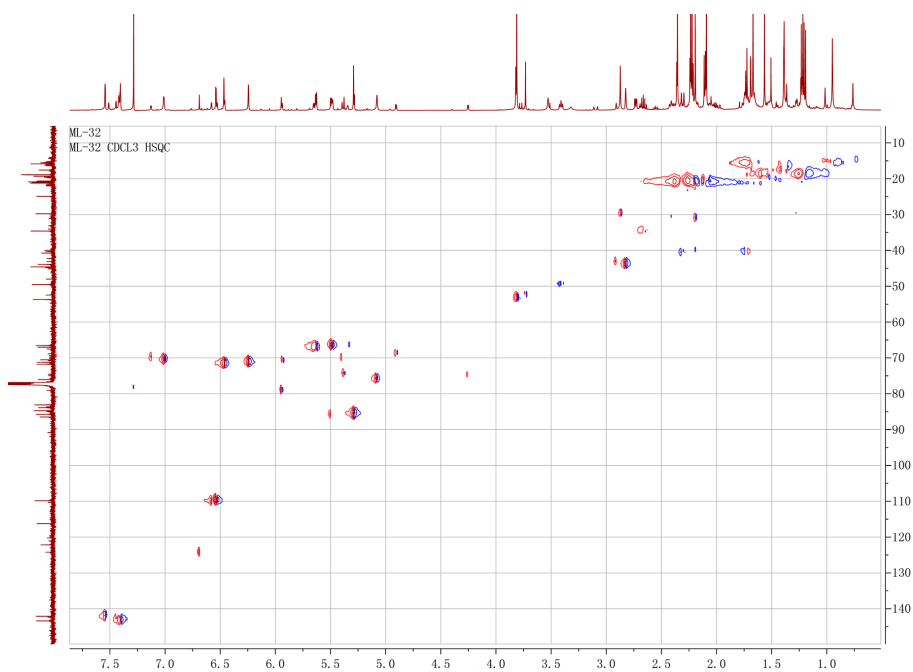
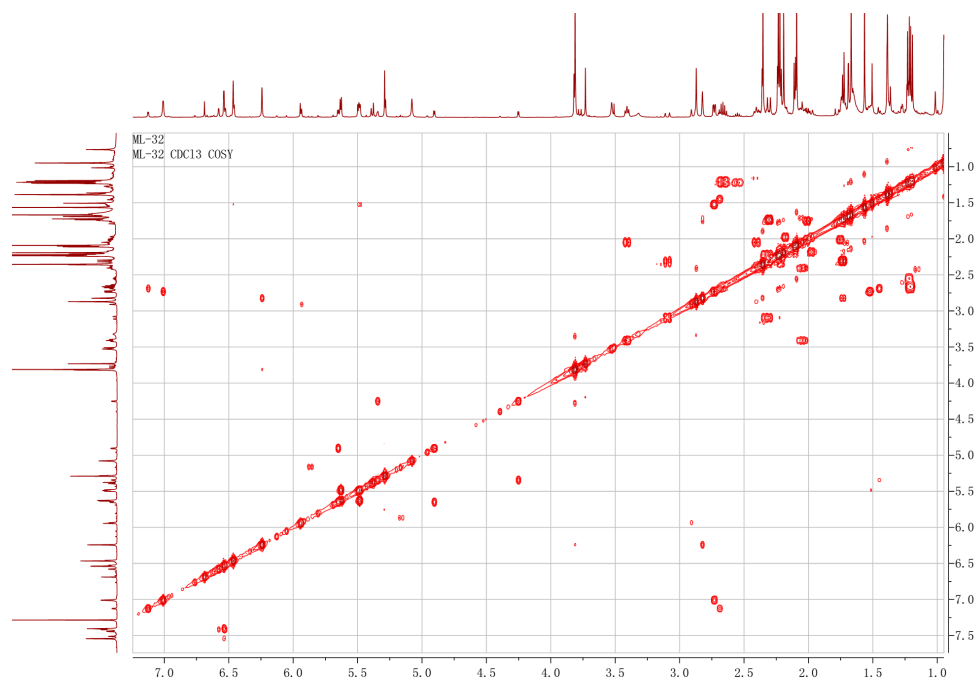
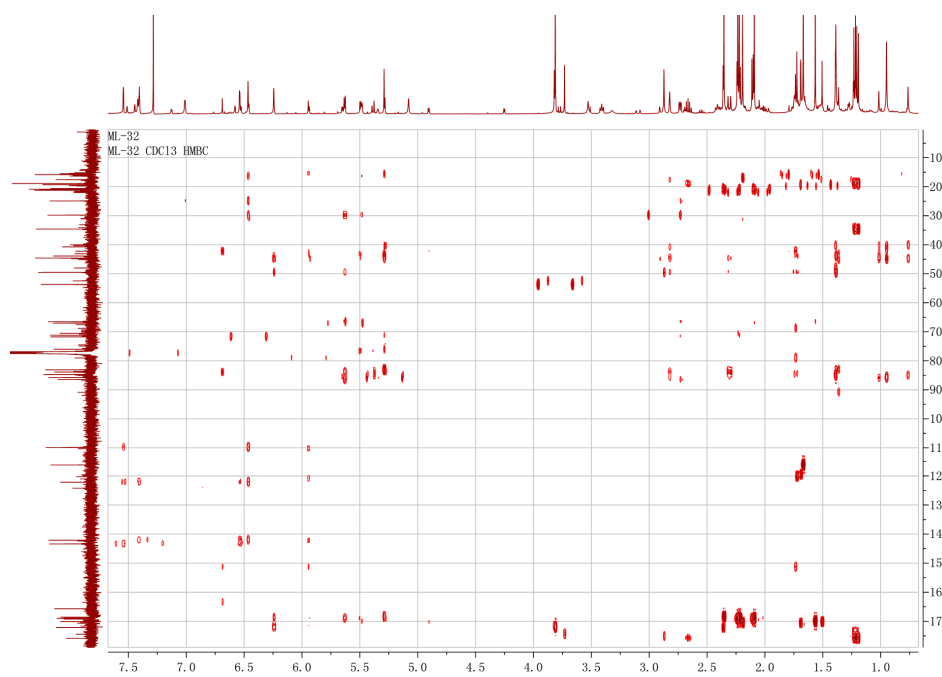


Figure S31. HSQC spectrum of the new compound 5 in  $\text{CDCl}_3$ .



**Figure S32.**  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of the new compound **5** in  $\text{CDCl}_3$ .



**Figure S33.** HMBC spectrum of the new compound **5** in  $\text{CDCl}_3$ .

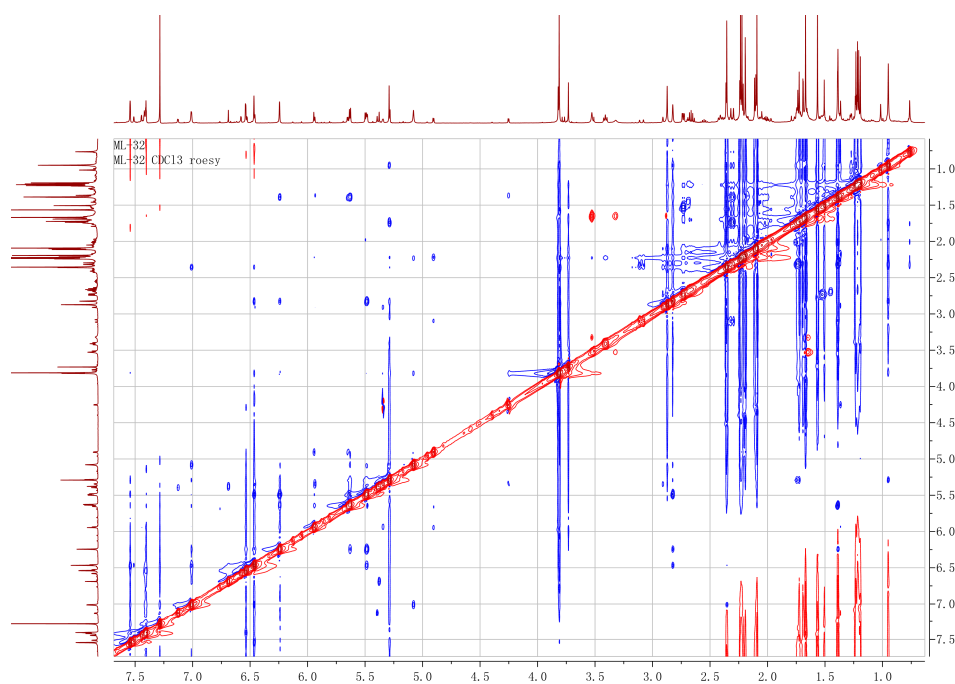


Figure S34. ROESY spectrum of the new compound **5** in CDCl<sub>3</sub>.

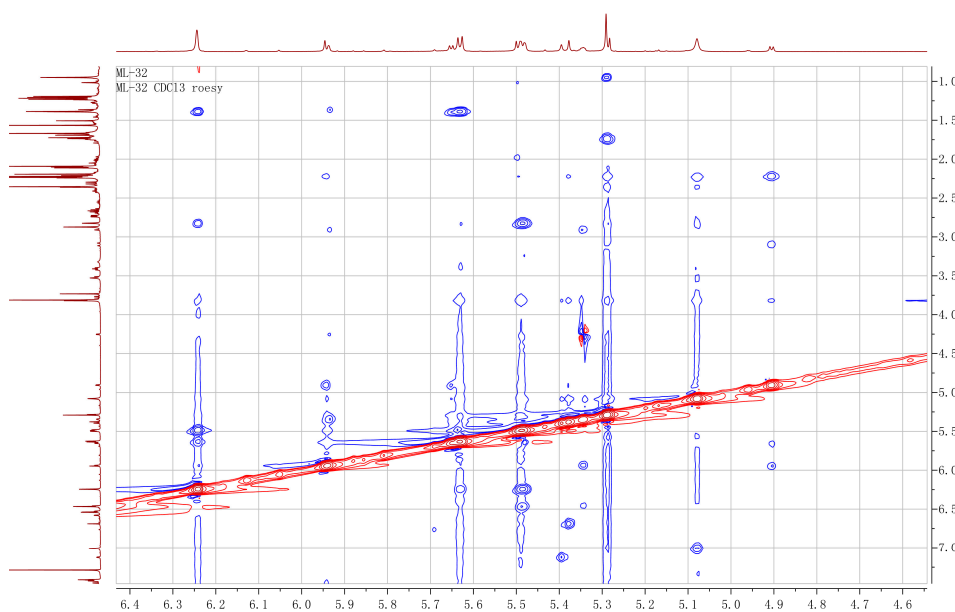
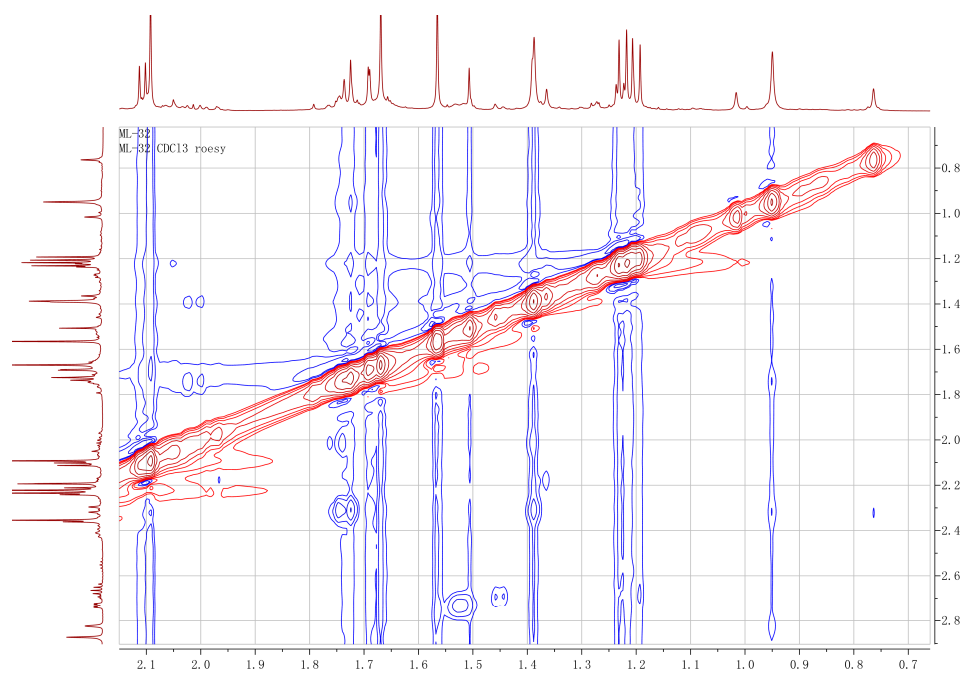


Figure S35. Cont.





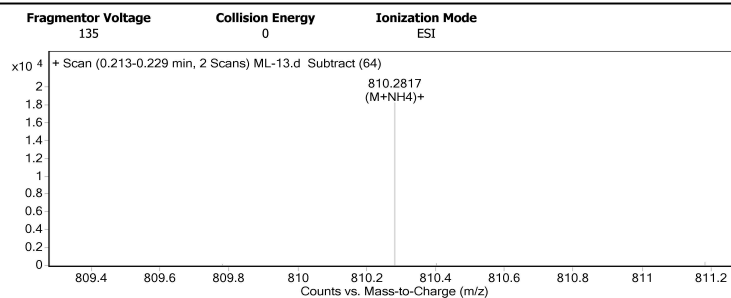
**Figure S35.** Partial enlarged ROESY spectra of compound **5** in CDCl<sub>3</sub>.

## Qualitative Analysis Report

<b>Data Filename</b>	ML-13.d	<b>Sample Name</b>	ML-13
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<b>IRM Calibration Status</b>	Success	<b>DA Method</b>	Default.m
<b>Comment</b>			

<b>Sample Group</b>		<b>Info.</b>
<b>Acquisition SW</b>	6200 series TOF/6500 series	
<b>Version</b>	Q-TOF B.05.01 (B5125.2)	

### User Spectra



### Peak List

<i>m/z</i>	<i>z</i>	Abund	Formula	Ion
318.3011		16140.07		
453.1673	1	19408.77		
460.2691	1	21296.88		
810.2817	1	18257.66	C37 H44 O19	(M+NH4)+
815.2368	1	38883.53		
816.2404	1	16098.89		
831.2107	1	15305.69		
861.3651	1	22889.48		

### Formula Calculator Element Limits

Element	Min	Max
C	3	60
H	0	120
O	0	30

### Formula Calculator Results

Formula	CalculatedMass	CalculatedMz	Mz	Diff. (mDa)	Diff. (ppm)	DBE
C37 H44 O19	792.2477	810.2815	810.2817	-0.1	-0.1	16.0000

--- End Of Report ---

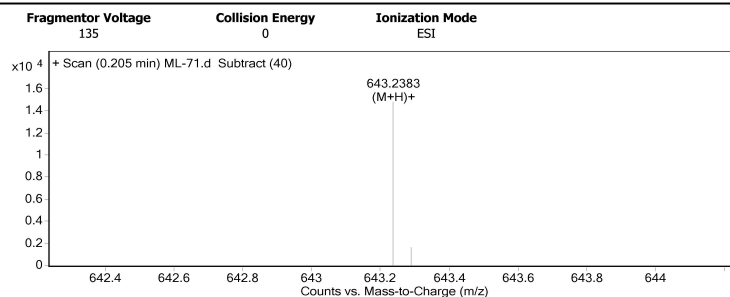
**Figure S36.** HR-ESI-MS spectrum of the new compound 1.

## Qualitative Analysis Report

<b>Data Filename</b>	ML-71.d	<b>Sample Name</b>	ML-71
<b>Sample Type</b>	Sample	<b>Position</b>	P1-B9
<b>Instrument Name</b>	Instrument 1	<b>User Name</b>	
<b>Acq Method</b>	SIBU.m	<b>Acquired Time</b>	8/27/2015 3:25:11 PM
<b>IRM Calibration Status</b>	Success	<b>DA Method</b>	Default.m
<b>Comment</b>			

<b>Sample Group</b>		<b>Info.</b>
<b>Acquisition SW</b>	6200 series TOF/6500 series	
<b>Version</b>	Q-TOF B.05.01 (B5125.2)	

### User Spectra



### Peak List

m/z	z	Abund	Formula	Ion
318.3001		27773.34		
415.2115		16415.18		
432.238		15571.8		
437.1935	1	20423.27		
453.1673	1	54216.02		
454.1704	1	13927.89		
460.2691	1	28567.01		
643.2383	1	14764.36	C33 H38 O13	(M+H)+

### Formula Calculator Element Limits

Element	Min	Max
C	3	60
H	0	120
O	0	30

### Formula Calculator Results

Formula	CalculatedMass	CalculatedMz	Mz	Diff. (mDa)	Diff. (ppm)	DBE
C33 H38 O13	642.2312	643.2385	643.2383	0.1	0.2	15.0000

--- End Of Report ---

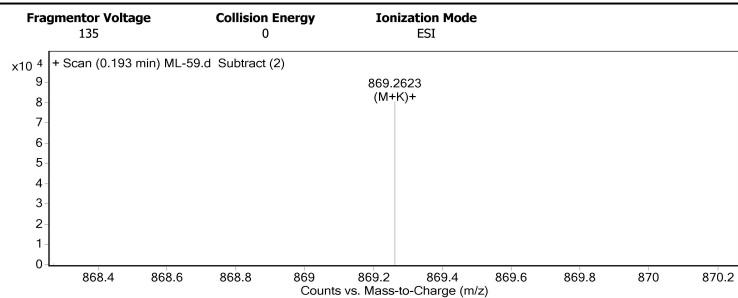
**Figure S37.** HR-ESI-MS spectrum of the new compound 2.

## Qualitative Analysis Report

Data Filename	ML-59.d	Sample Name	ML-59
Sample Type	Sample	Position	P1-B7
Instrument Name	Instrument 1	User Name	
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IRM Calibration Status	Success	DA Method	Default.m
Comment			

Sample Group		Info.	
Acquisition SW	6200 series TOF/6500 series		
Version	Q-TOF B.05.01 (B5125.2)		

### User Spectra



#### Peak List

m/z	z	Abund	Formula	Ion
274.2734	1	24594.75		
318.2999	1	25627.38		
453.167	1	20425.79		
848.3333	1	36407.78		
849.3373	1	17635.67		
853.2882	1	23147.75		
869.2623	1	80176.62	C41 H50 O18	(M+K)+
870.2657	1	37090.45	C41 H50 O18	(M+K)+

#### Formula Calculator Element Limits

Element	Min	Max
C	3	60
H	0	120
O	0	30

#### Formula Calculator Results

Formula	CalculatedMass	CalculatedMz	Mz	Diff. (mDa)	Diff. (ppm)	DBE
C41 H50 O18	830.2997	869.2629	869.2623	0.5	0.6	17.0000

--- End Of Report ---

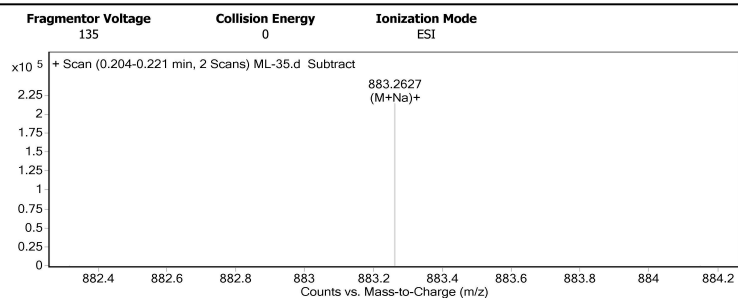
**Figure S38.** HR-ESI-MS spectrum of the new compound 3.

## Qualitative Analysis Report

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<b>Sample Type</b>	Sample	<b>Position</b>	P1-F9
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<b>Comment</b>			

<b>Sample Group</b>		<b>Info.</b>
<b>Acquisition SW</b>	6200 series TOF/6500 series	
<b>Version</b>	Q-TOF B.05.01 (B5125.2)	

### User Spectra



### Peak List

m/z	z	Abund	Formula	Ion
878.3071	1	51829.38		
883.2627	1	214023.44	C41 H48 O20	(M+Na)+
884.2661	1	93895.03	C41 H48 O20	(M+Na)+
885.2679	1	28165.18	C41 H48 O20	(M+Na)+
899.2366	1	148595.5		
900.2401	1	65833.95		
901.2405	1	29051.7		
906.3387	1	22616.06		

### Formula Calculator Element Limits

Element	Min	Max
C	3	60
H	0	120
O	0	30

### Formula Calculator Results

Formula	CalculatedMass	CalculatedMz	Mz	Diff. (mDa)	Diff. (ppm)	DBE
C41 H48 O20	860.2739	883.2631	883.2627	0.5	0.6	18.0000

--- End Of Report ---

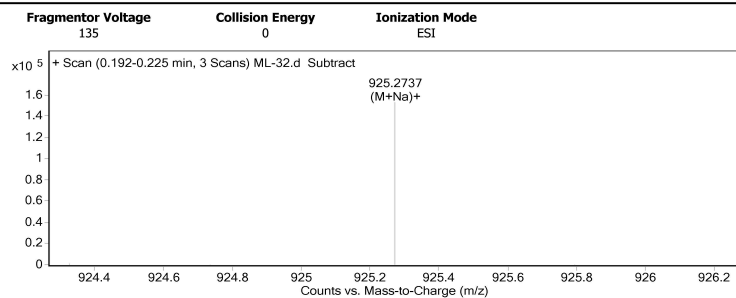
**Figure S39.** HR-ESI-MS spectrum of the new compound **4**.

## Qualitative Analysis Report

<b>Data Filename</b>	ML-32.d	<b>Sample Name</b>	ML-32
<b>Sample Type</b>	Sample	<b>Position</b>	P1-F8
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<b>IRM Calibration Status</b>	Success	<b>DA Method</b>	Default.m
<b>Comment</b>			

<b>Sample Group</b>		<b>Info.</b>
<b>Acquisition SW</b>	6200 series TOF/6500 series	
<b>Version</b>	Q-TOF B.05.01 (B5125.2)	

### User Spectra



### Peak List

m/z	z	Abund	Formula	Ion
899.2368	1	67953.05		
900.2403	1	31764.8		
920.3182	1	63077.2		
921.3218	1	28484.12		
925.2737	1	152962.28	C43 H50 O21	(M+Na)+
926.2772	1	67624.54	C43 H50 O21	(M+Na)+
941.2477	1	106957.15		
942.2508	1	51154.05		

### Formula Calculator Element Limits

Element	Min	Max
C	3	60
H	0	120
O	0	30

### Formula Calculator Results

Formula	CalculatedMass	CalculatedMz	Mz	Diff. (mDa)	Diff. (ppm)	DBE
C43 H50 O21	902.2845	925.2737	925.2737	0.0	0.0	19.0000

--- End Of Report ---

**Figure S40.** HR-ESI-MS spectrum of the new compound 5.