

# Bioactive Terphenyls Isolated from the Antarctic lichen *Stereocaulon alpinum*

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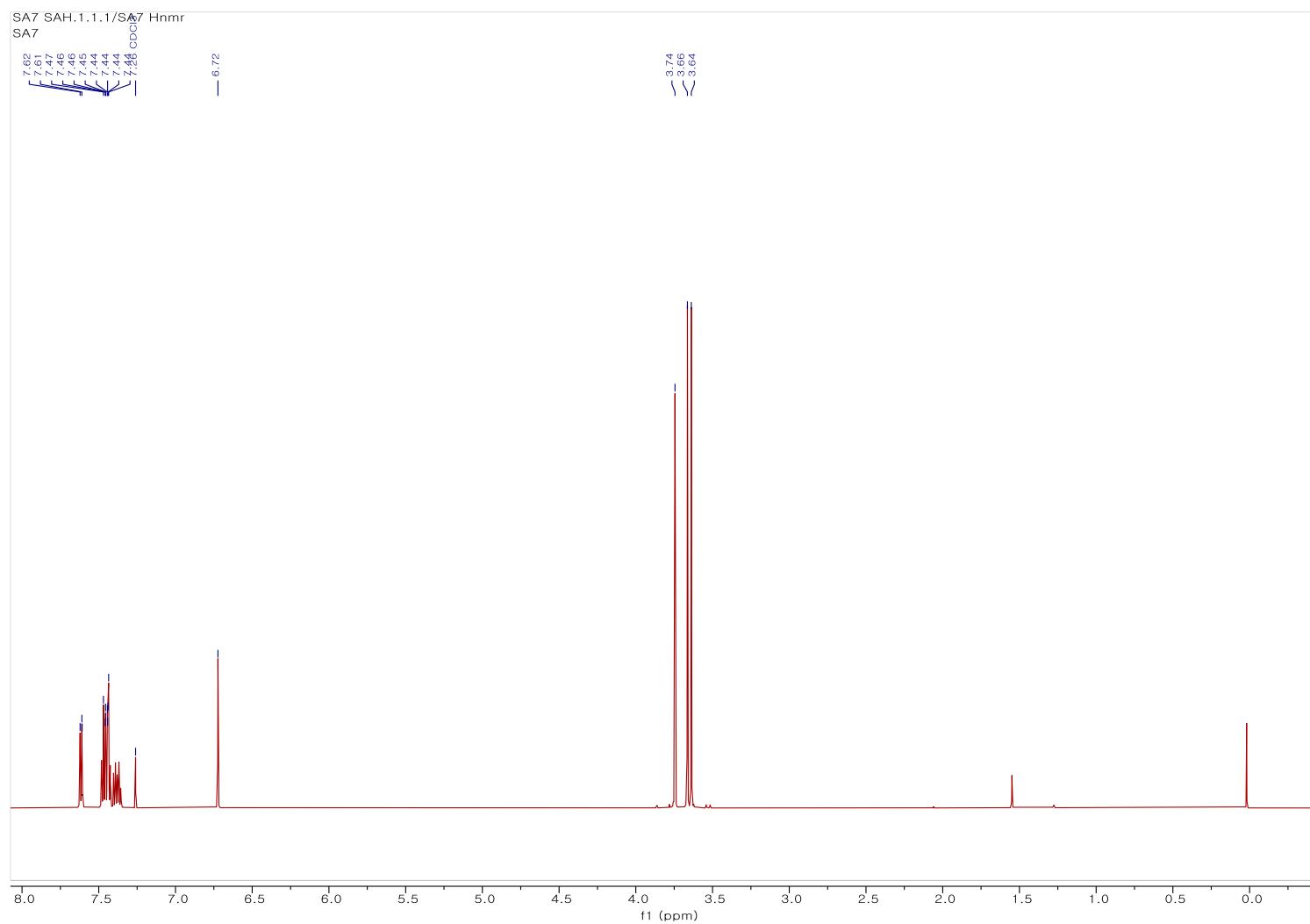
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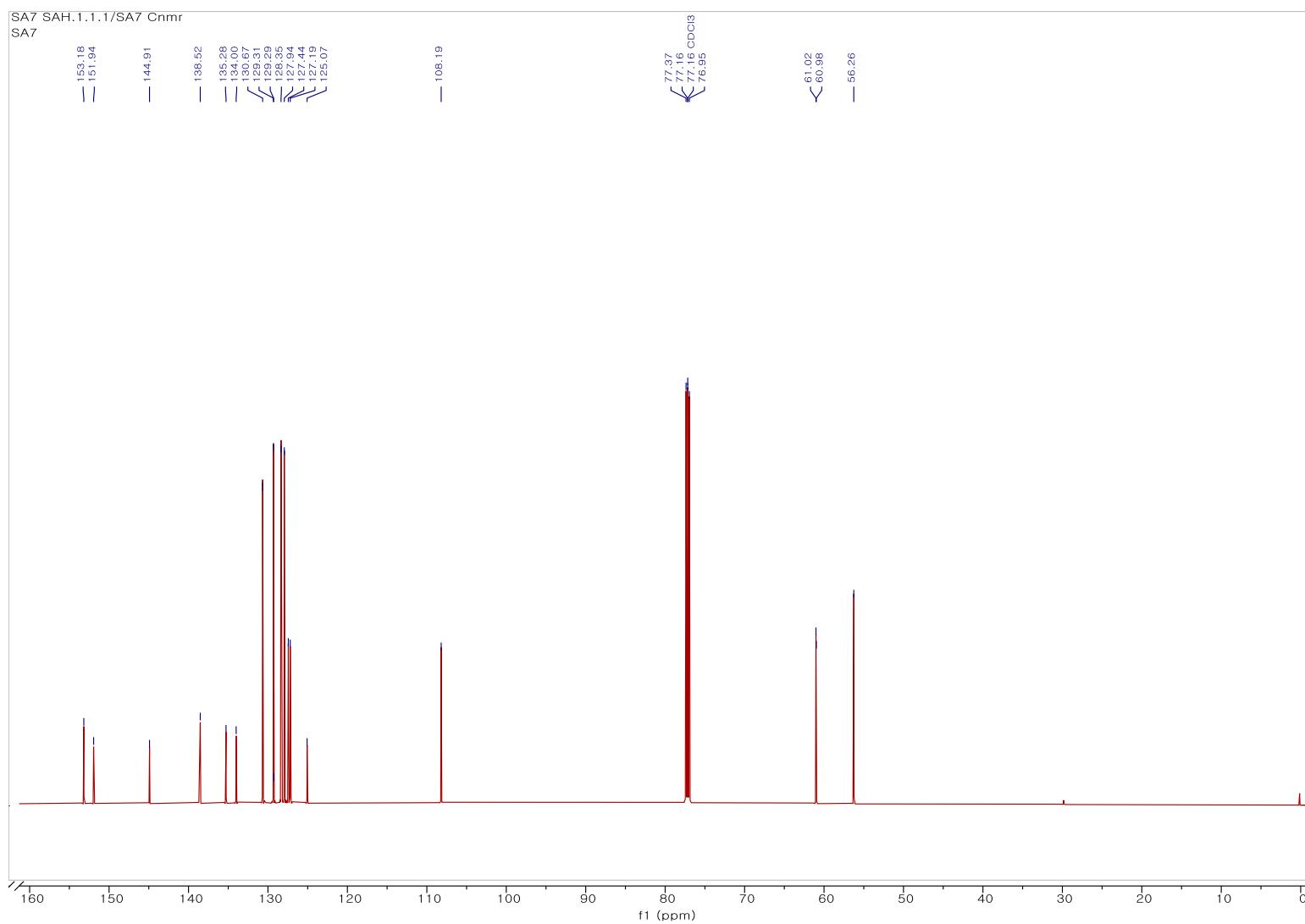
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**Figure S1.**  $^1\text{H}$  NMR spectrum of compound **1** in chloroform-*d* (600 MHz).



**Figure S2.**  $^{13}\text{C}$  NMR spectrum of compound **1** in chloroform-*d* (150 MHz).

[ Mass Spectrum ]

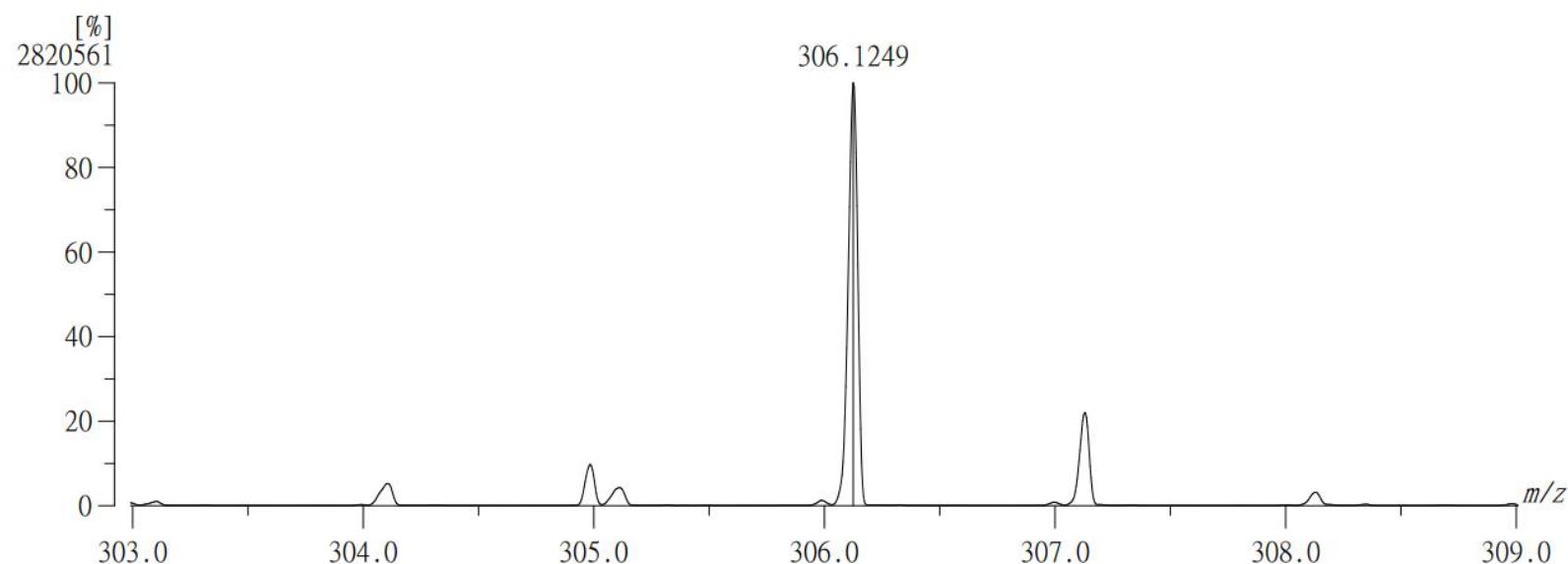
Data : EI-B026 Date : 06-Sep-2021 13:42

RT : 1.32 min Scan# : (73,103)

Elements : C 100/0, H 100/0, O 10/0

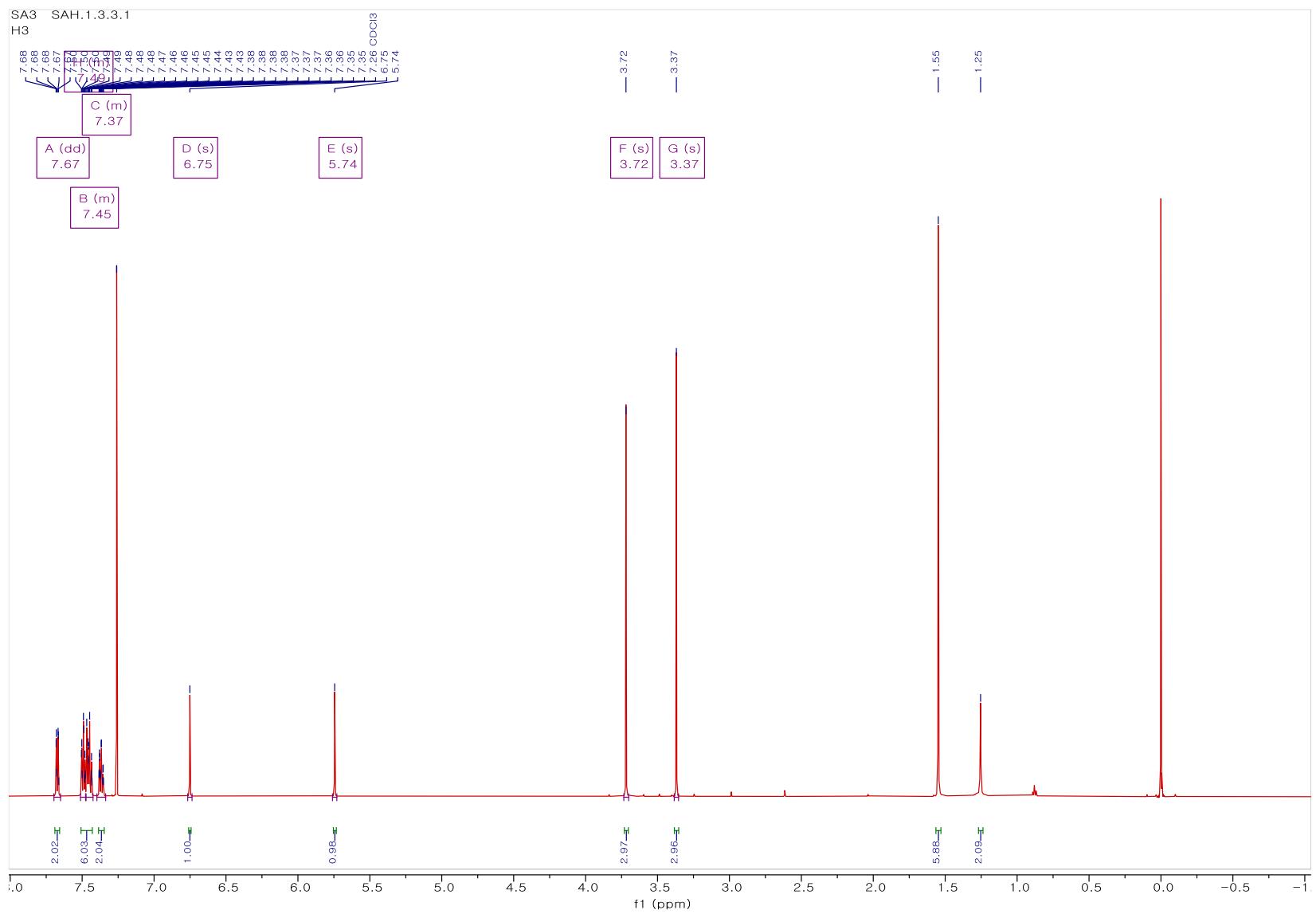
Mass Tolerance : 10ppm, 5mmu if m/z < 500, 10mmu if m/z > 1000

Unsaturation (U.S.) : -0.5 – 20.0

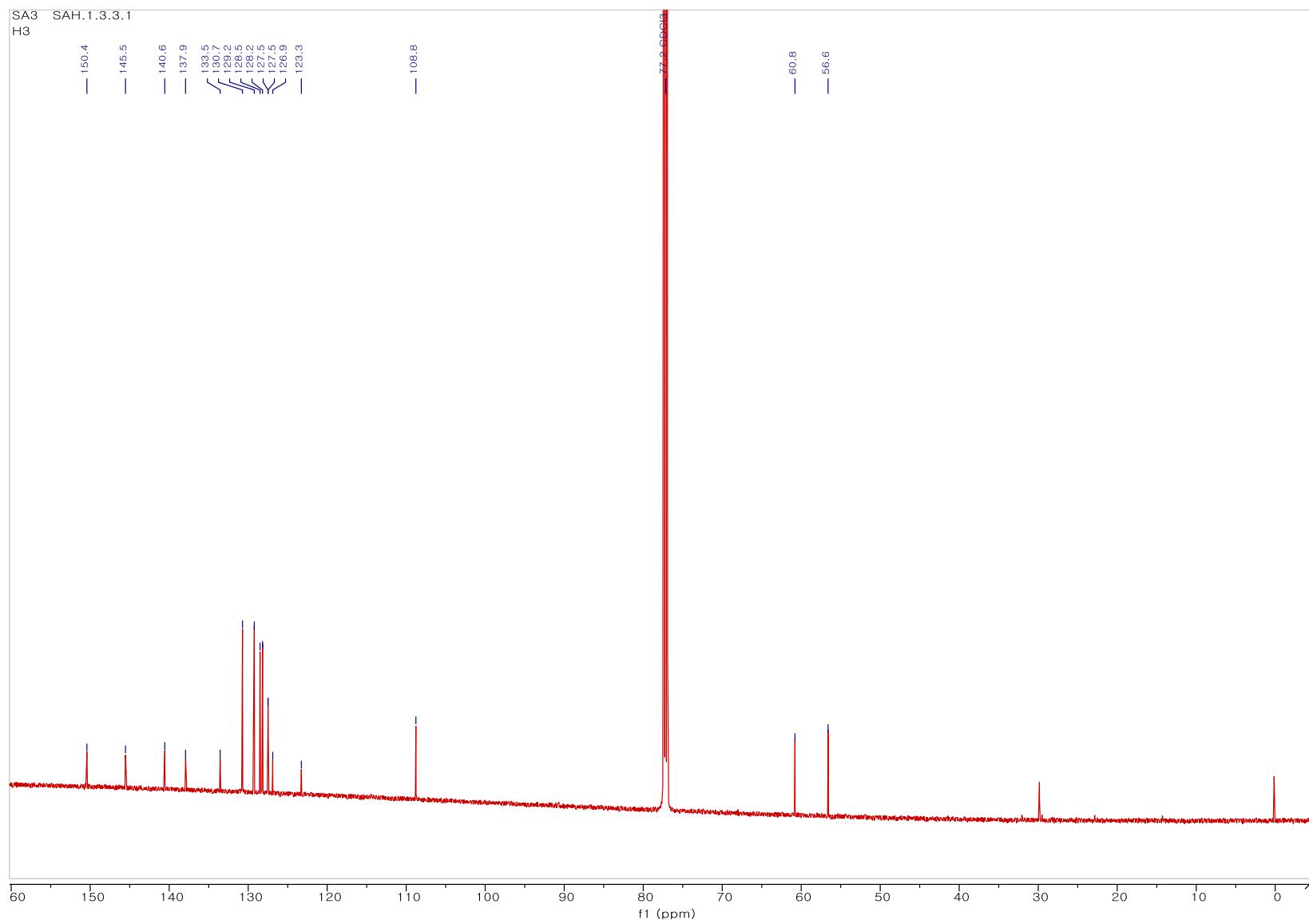


Observed m/z	Int%	Err [ ppm / mmu ]	U.S.	Composition
1 306.1249	100.00	-2.3 / -0.7	12.0	C20 H18 O3

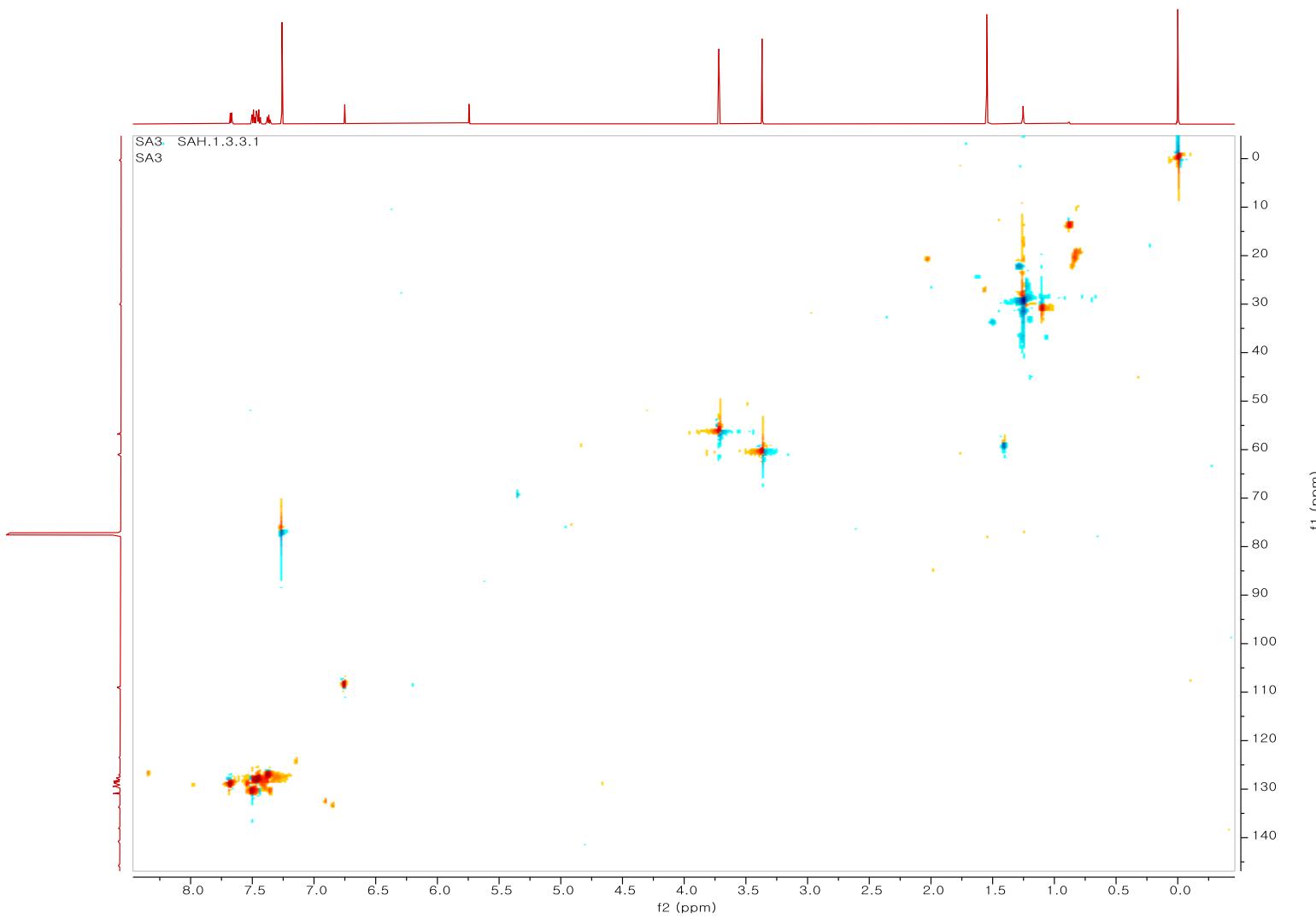
**Figure S3.** HR-EIMS positive spectrum of compound **2**.



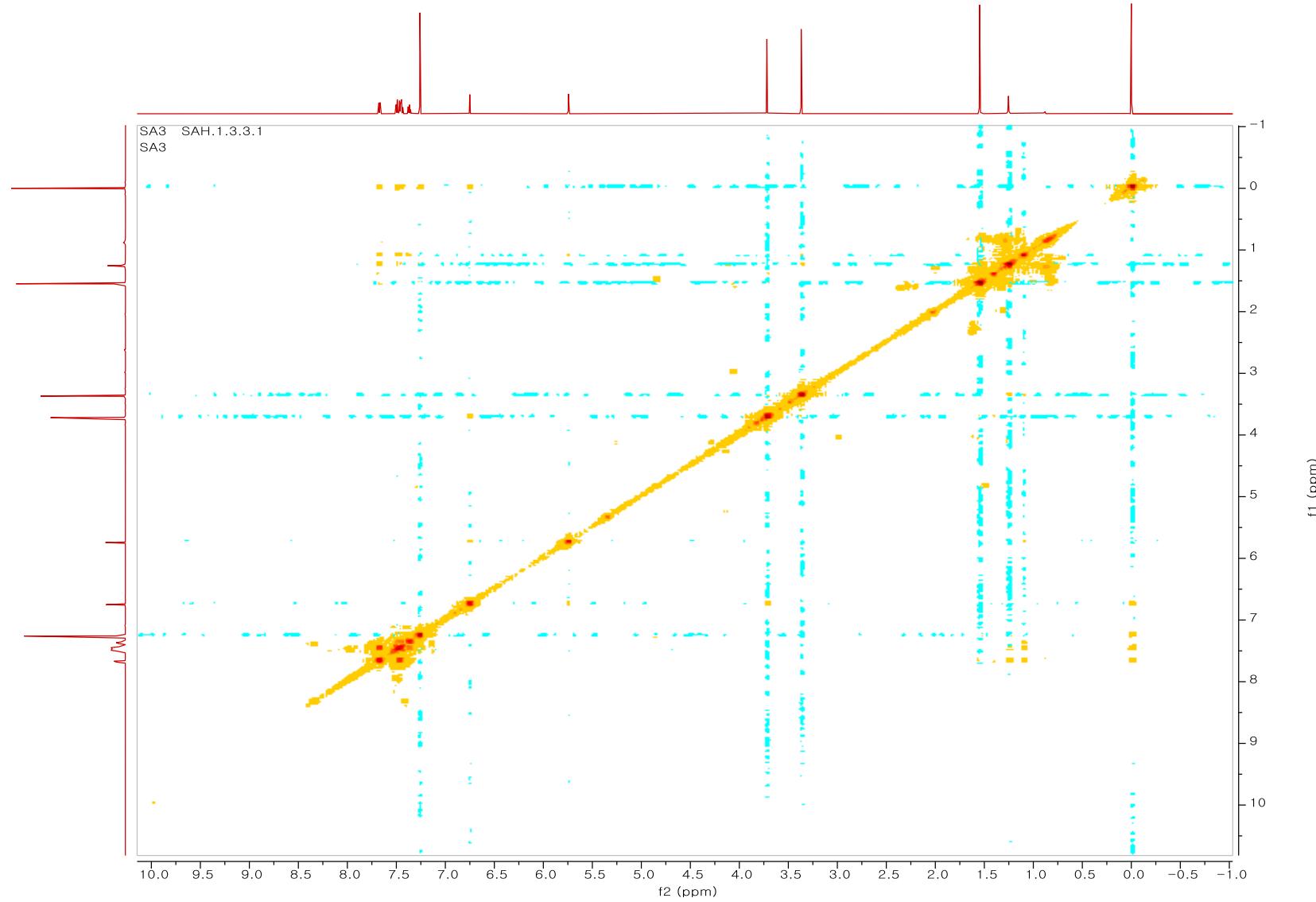
**Figure S4.** <sup>1</sup>H NMR spectrum of compound **2** in chloroform-*d* (600 MHz).



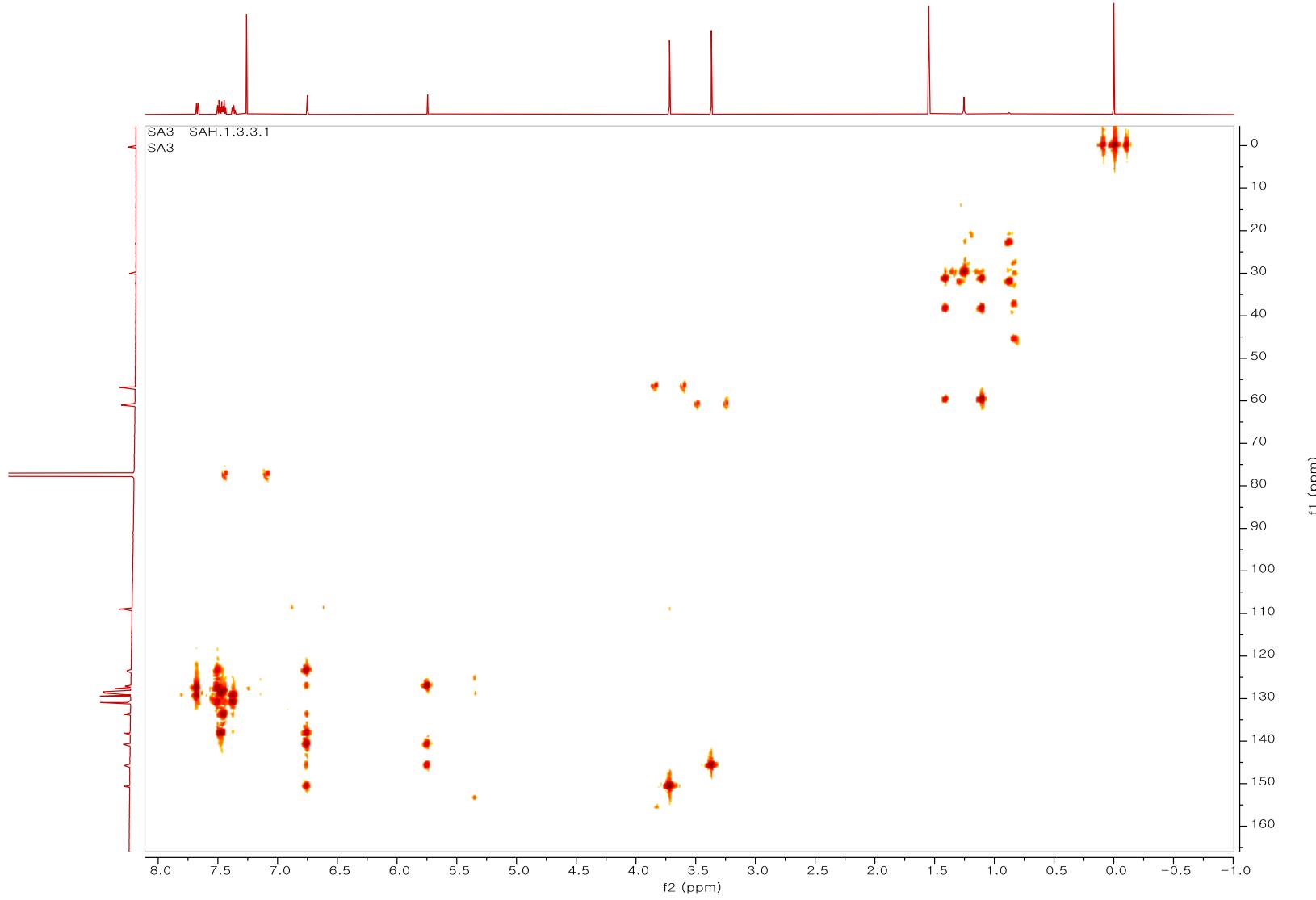
**Figure S5.**  $^{13}\text{C}$  NMR spectrum of compound **2** in chloroform-*d* (150 MHz).



**Figure S6.** HSQC NMR spectrum of compound **2** in chloroform-*d* (600 MHz).

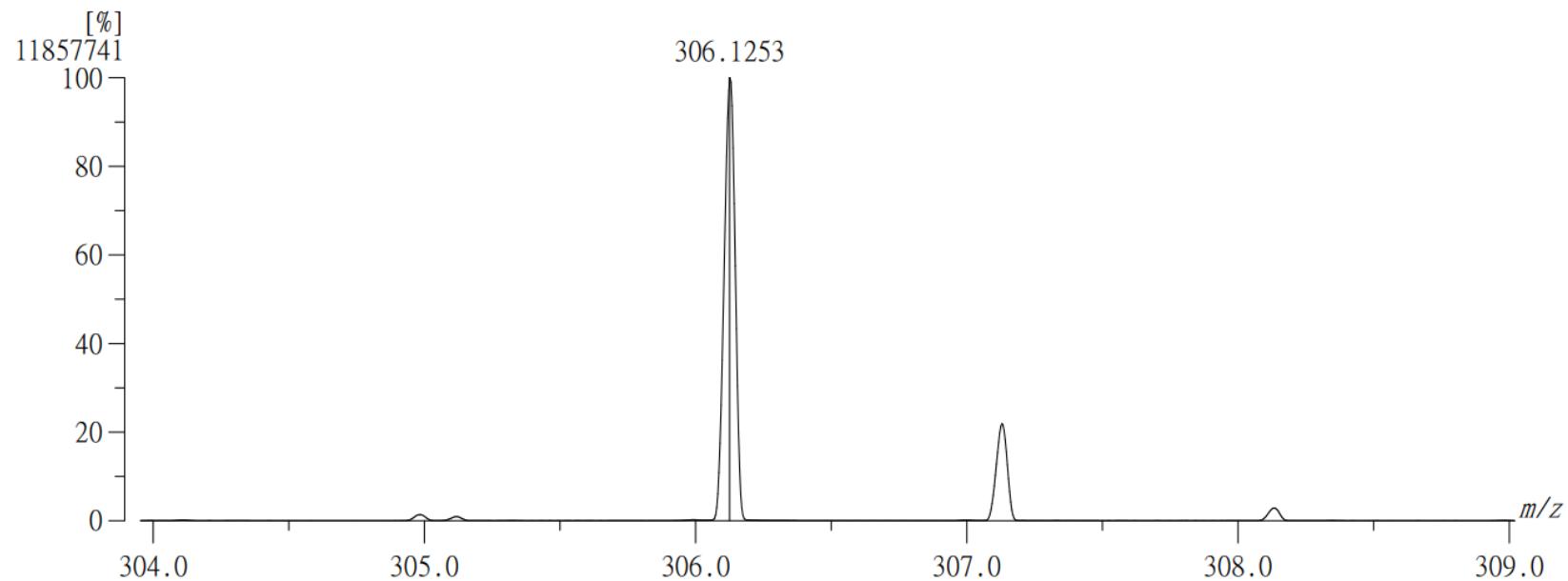


**Figure S7.** COSY NMR spectrum of compound **2** in chloroform-*d* (600 MHz).



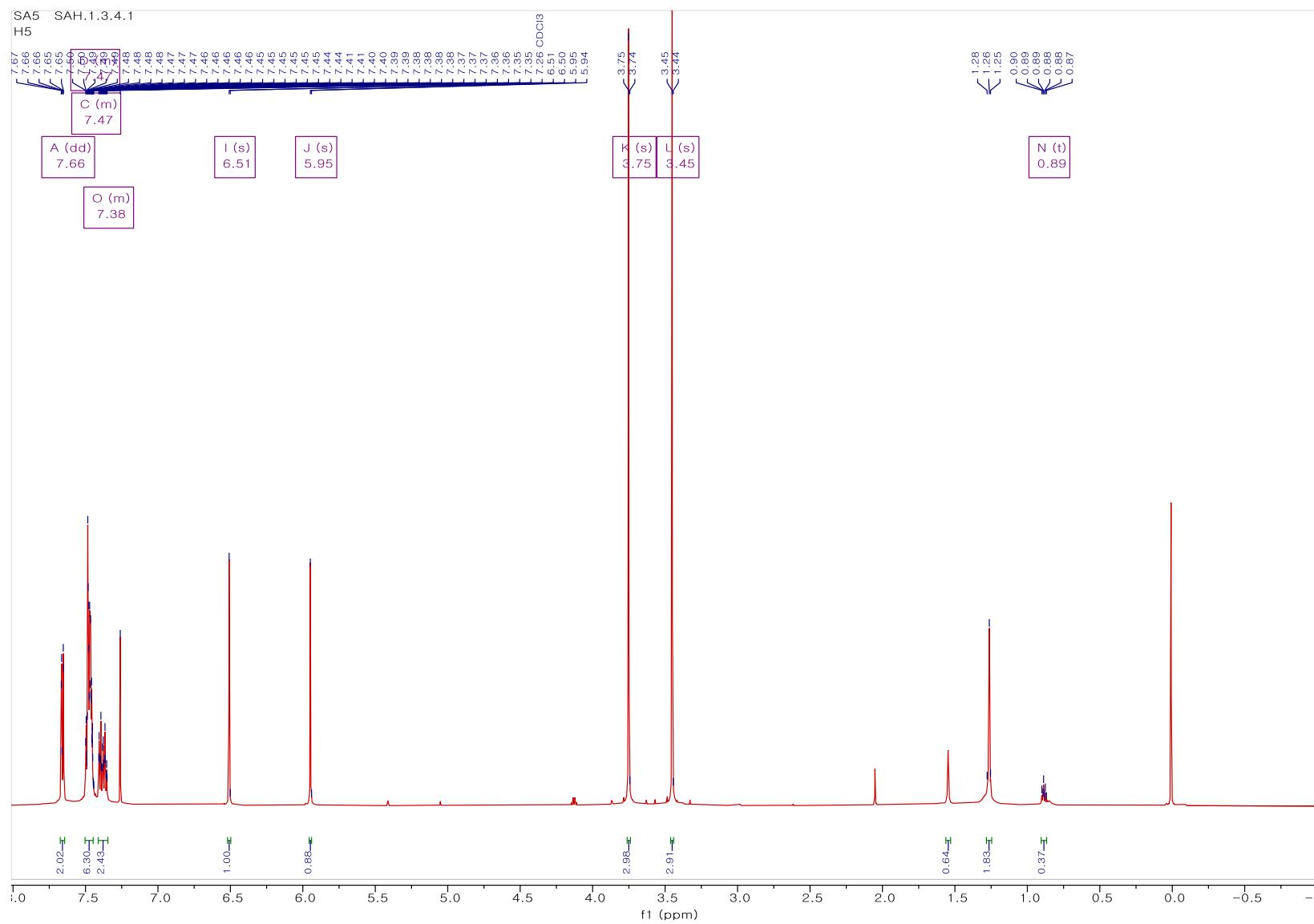
**Figure S8.** HMBC NMR spectrum of compound **2** in chloroform-*d* (600 MHz).

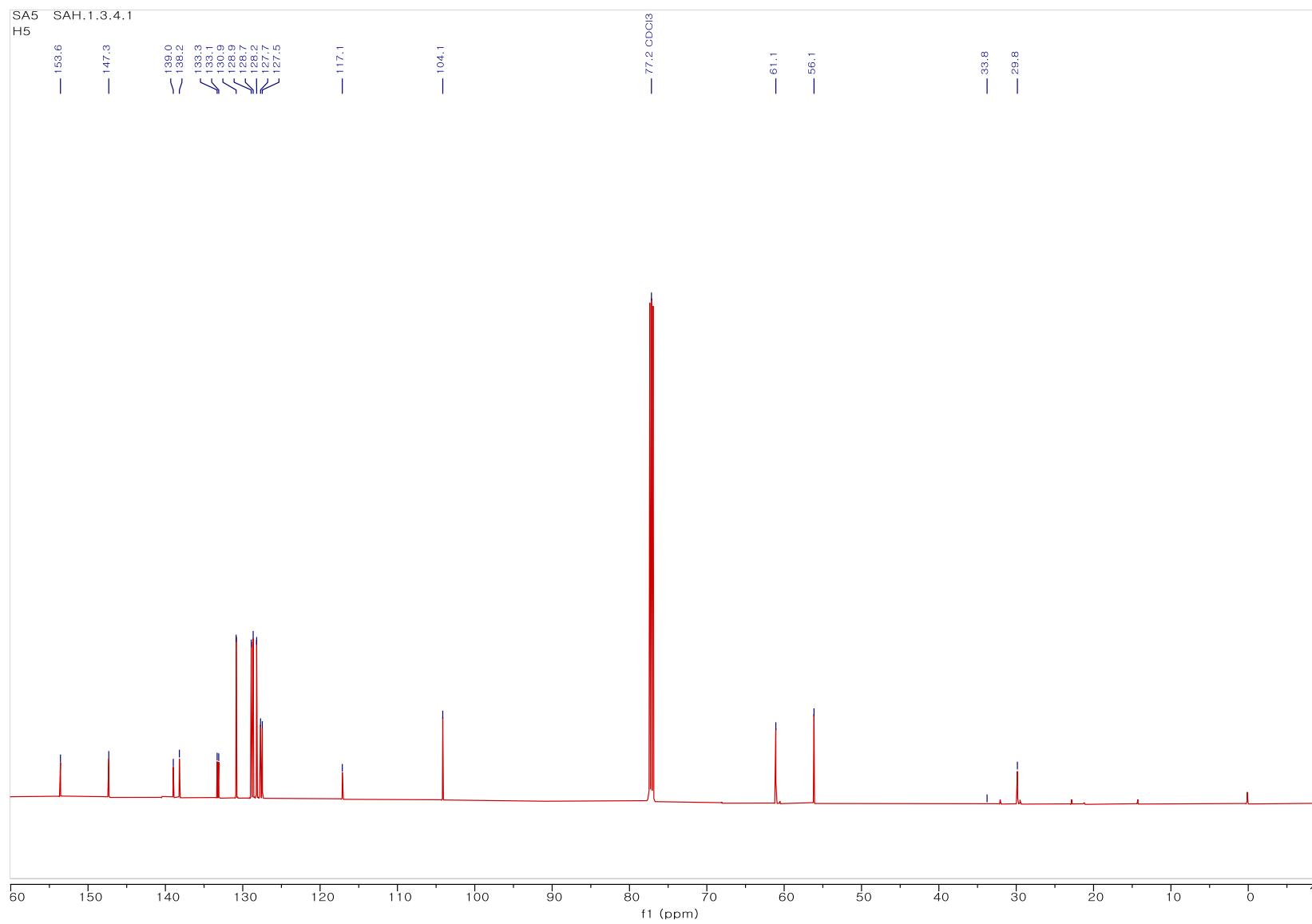
[ Mass Spectrum ]  
Data : EI-B027 Date : 06-Sep-2021 13:55  
RT : 0.88 min Scan# : (49,59)  
Elements : C 100/0, H 100/0, O 10/0  
Mass Tolerance : 10ppm, 5mmu if m/z < 500, 10mmu if m/z > 1000  
Unsaturation (U.S.) : -0.5 – 20.0



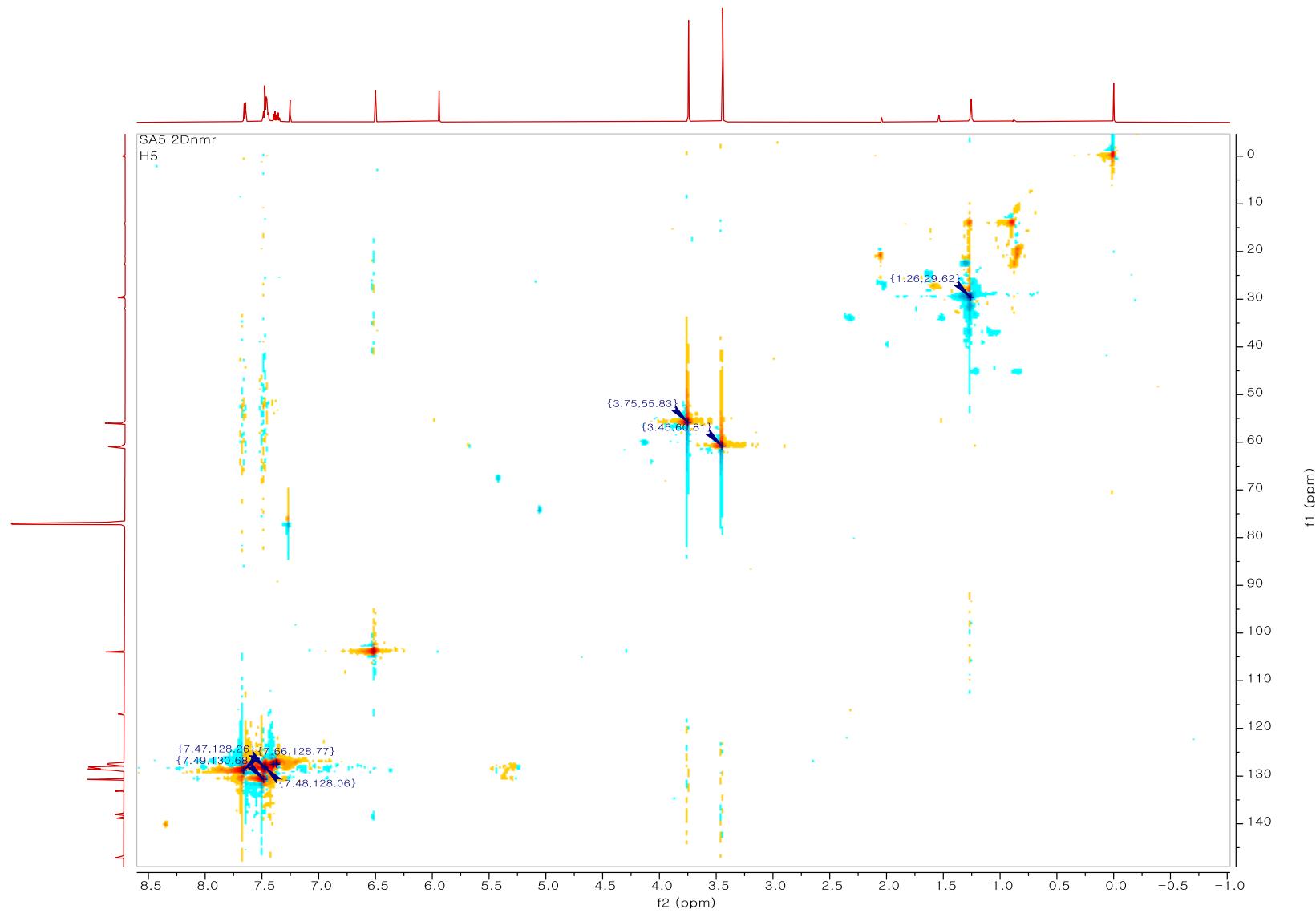
Observed <i>m/z</i>	Int %	Err [ ppm / mmu ]	U.S.	Composition
1 306.1253	100.00	-1.0 / -0.3	12.0	C20 H18 O3

**Figure S9.** HR-EIMS positive spectrum of compound 3.

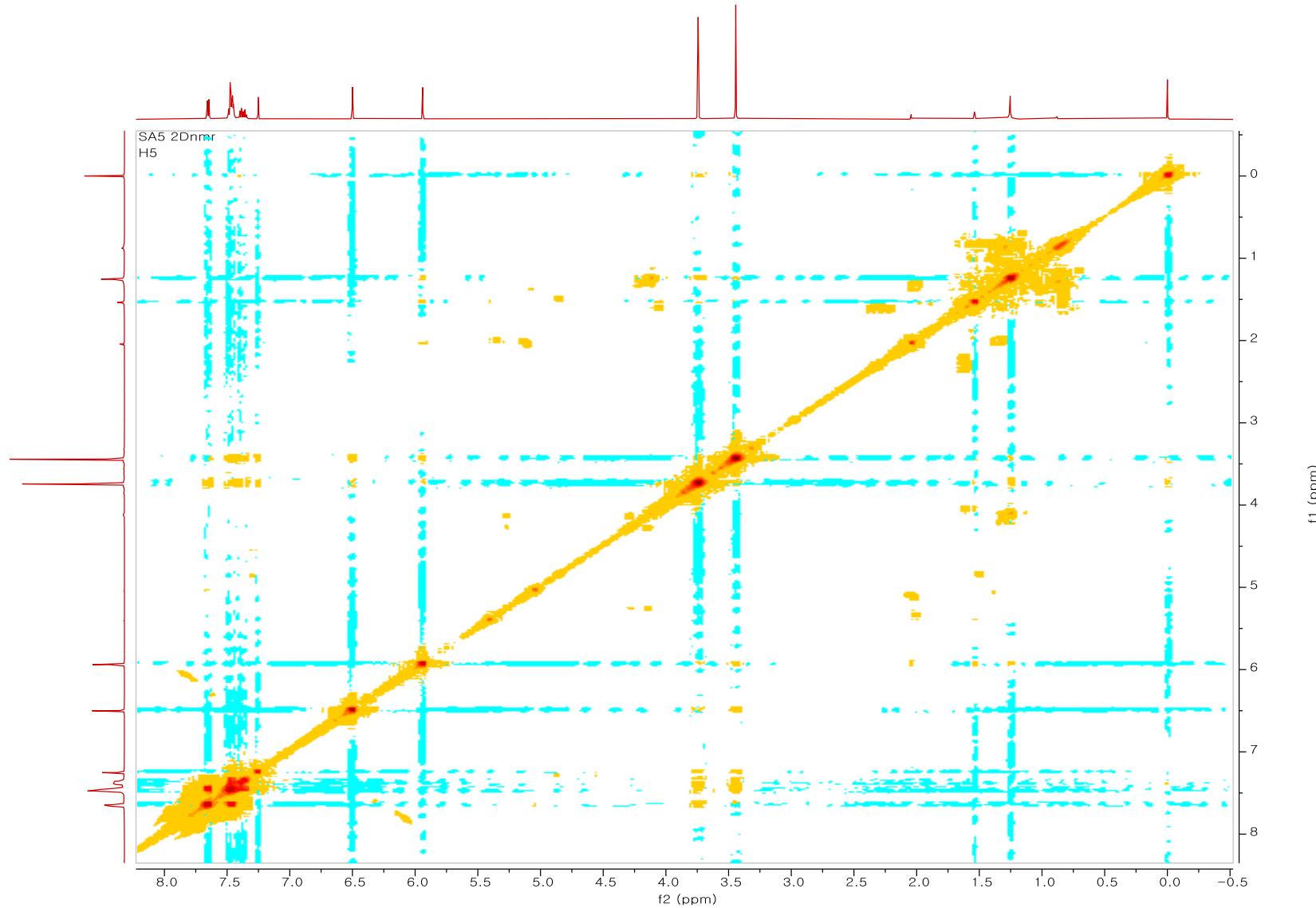




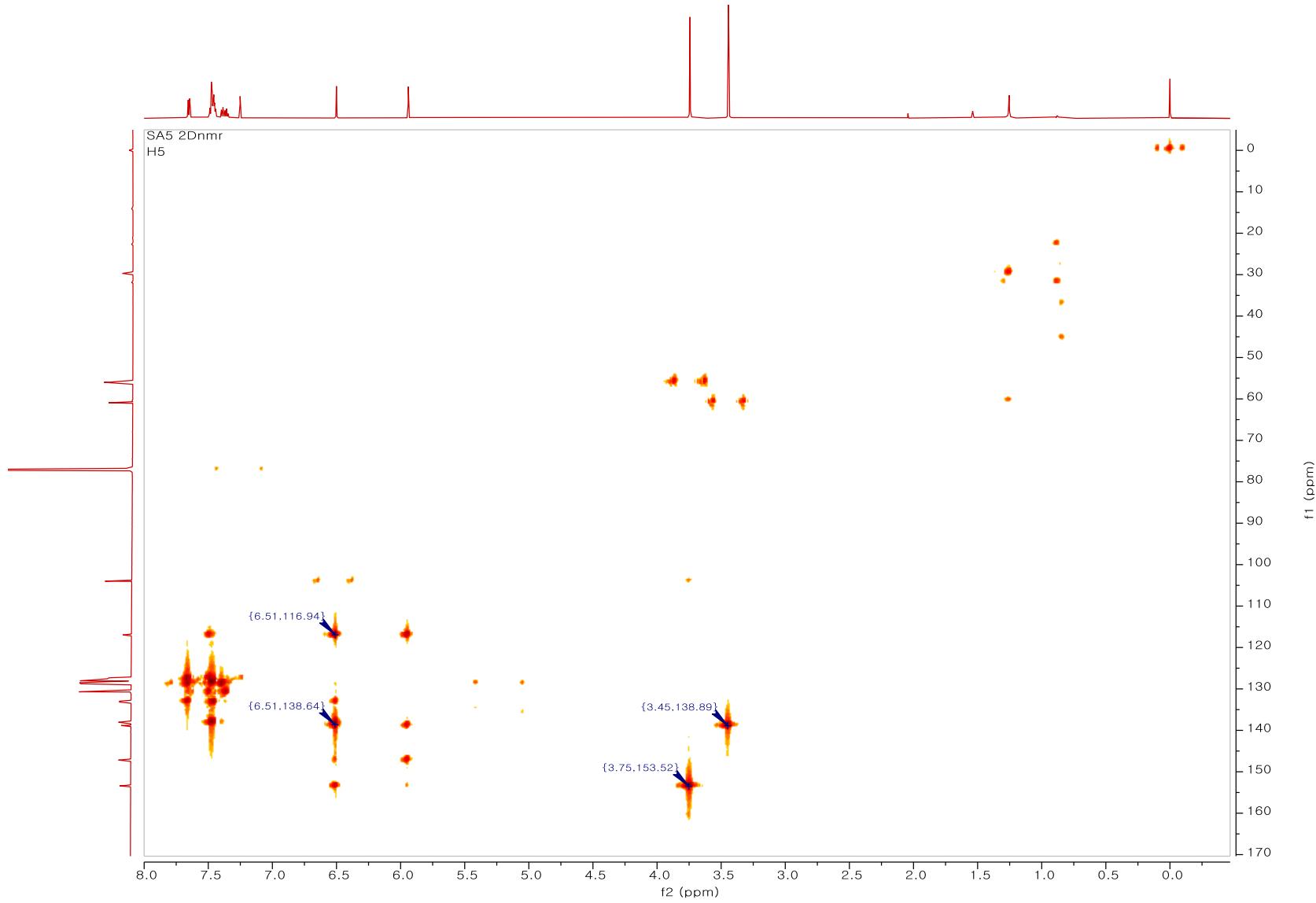
**Figure S11.**  $^{13}\text{C}$  NMR spectrum of compound 3 in chloroform-*d* (150 MHz).



**Figure S12.** HSQC NMR spectrum of compound **3** in chloroform-*d* (600 MHz).



**Figure S13.** COSY NMR spectrum of compound **3** in chloroform-*d* (600 MHz).



**Figure S14.** HMBC NMR spectrum of compound **3** in chloroform-*d* (600 MHz).

[ Mass Spectrum ]

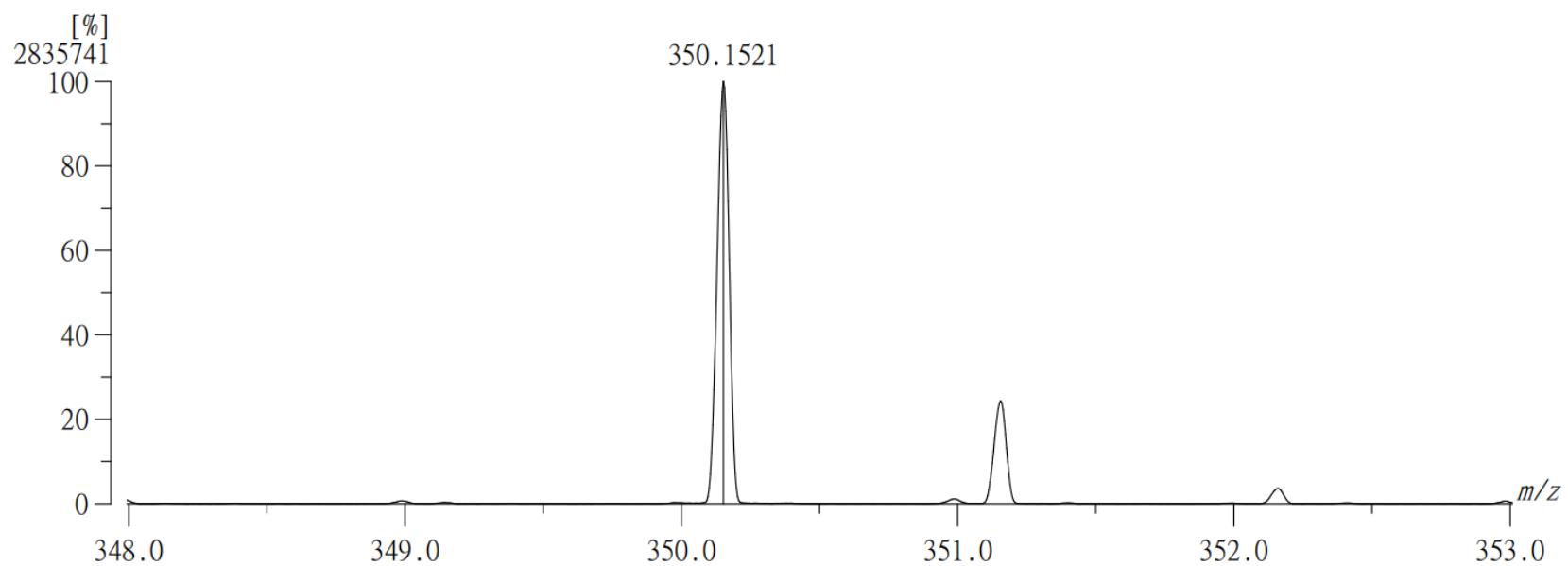
Data : EI-B029 Date : 06-Sep-2021 14:08

RT : 0.74 min Scan# : (42,48)

Elements : C 100/0, H 100/0, O 10/0

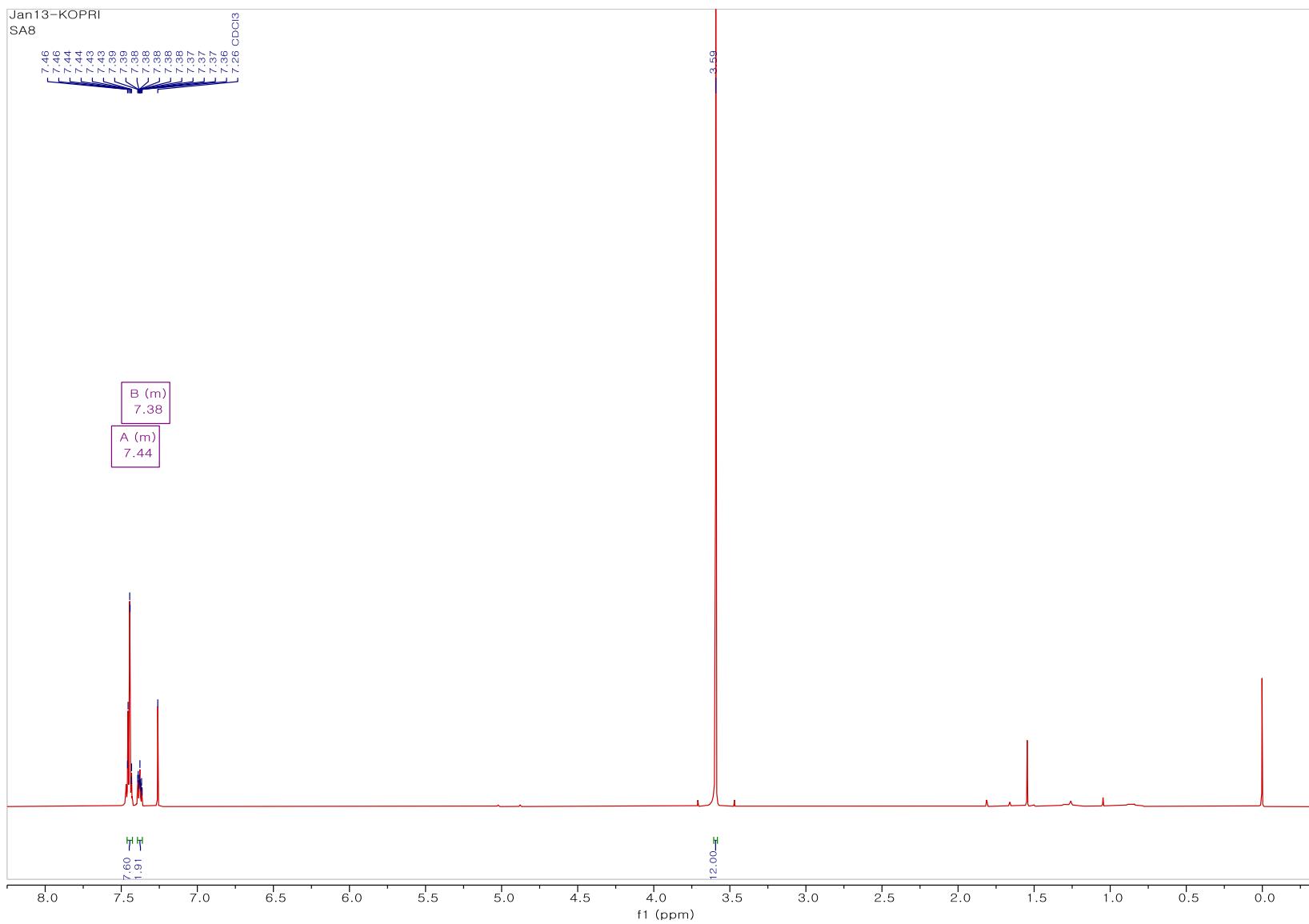
Mass Tolerance : 10ppm, 5mmu if m/z < 500, 10mmu if m/z > 1000

Unsaturation (U.S.) : -0.5 – 20.0

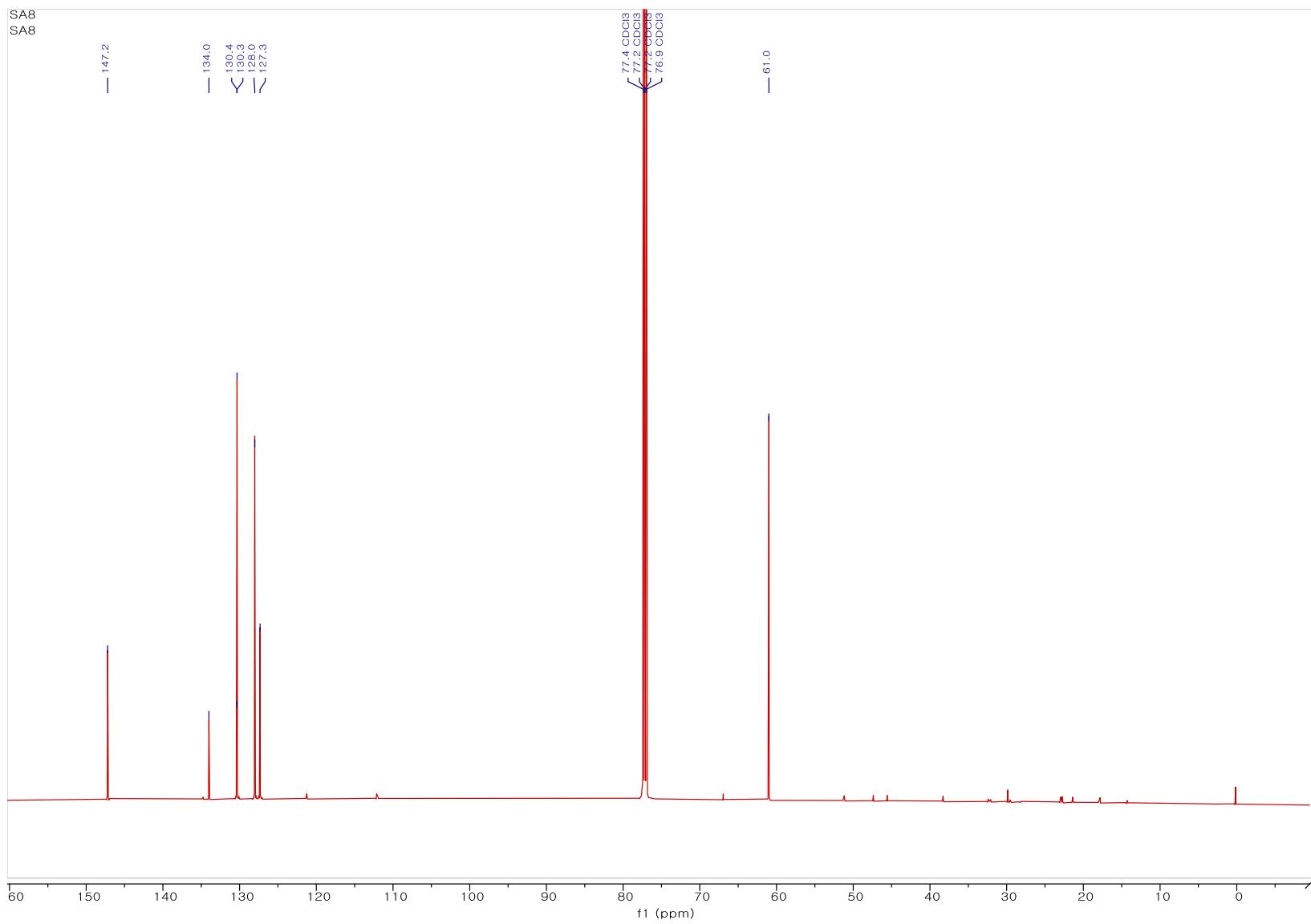


Observed m/z	Int%	Err [ppm / mmu]	U.S.	Composition
1 350.1521	100.00	+0.8 / +0.3	12.0	C22 H22 O4

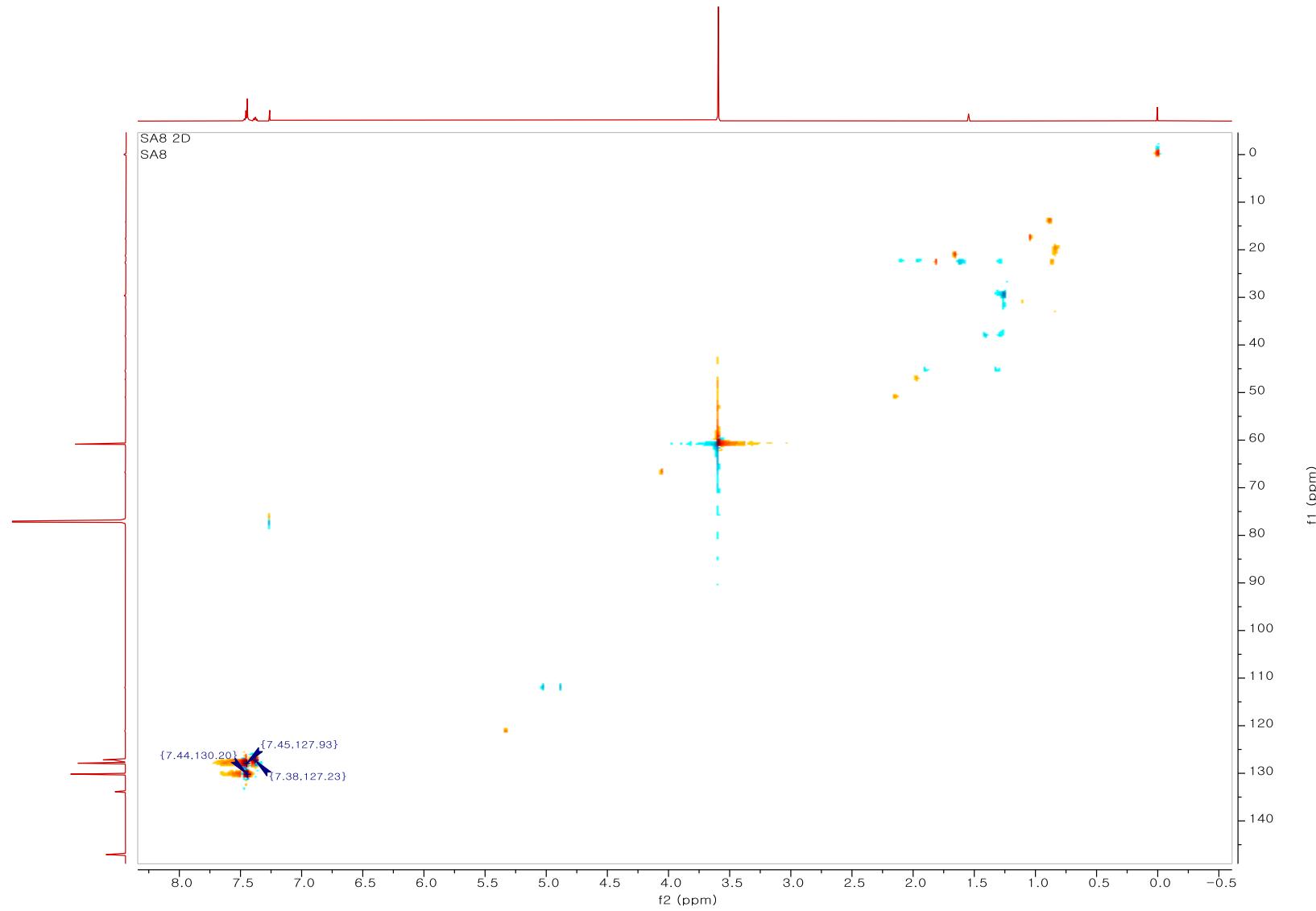
**Figure S15.** HR-EIMS positive spectrum of compound 4.



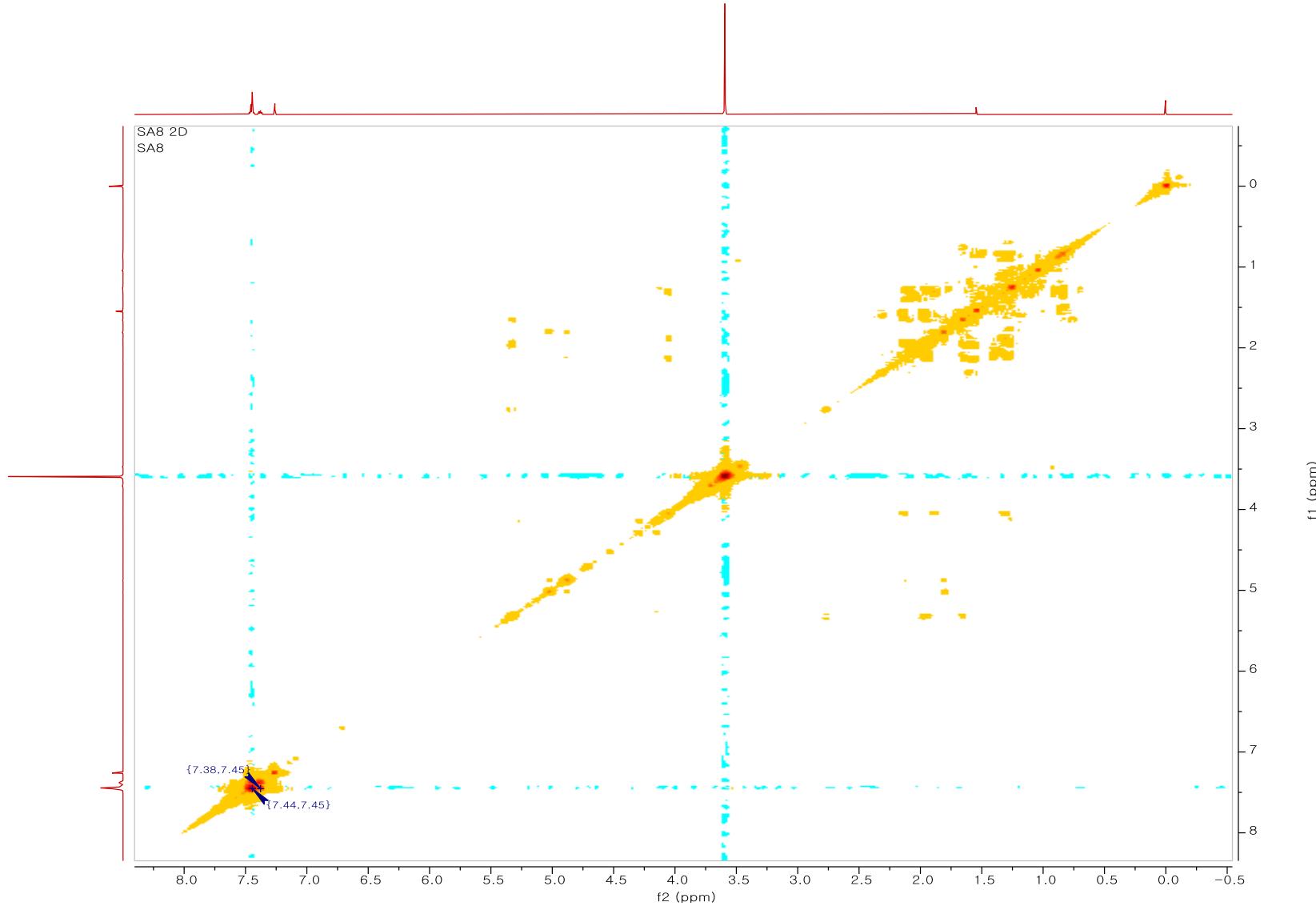
**Figure S16.**  $^1\text{H}$  NMR spectrum of compound **4** in chloroform-*d* (600 MHz).



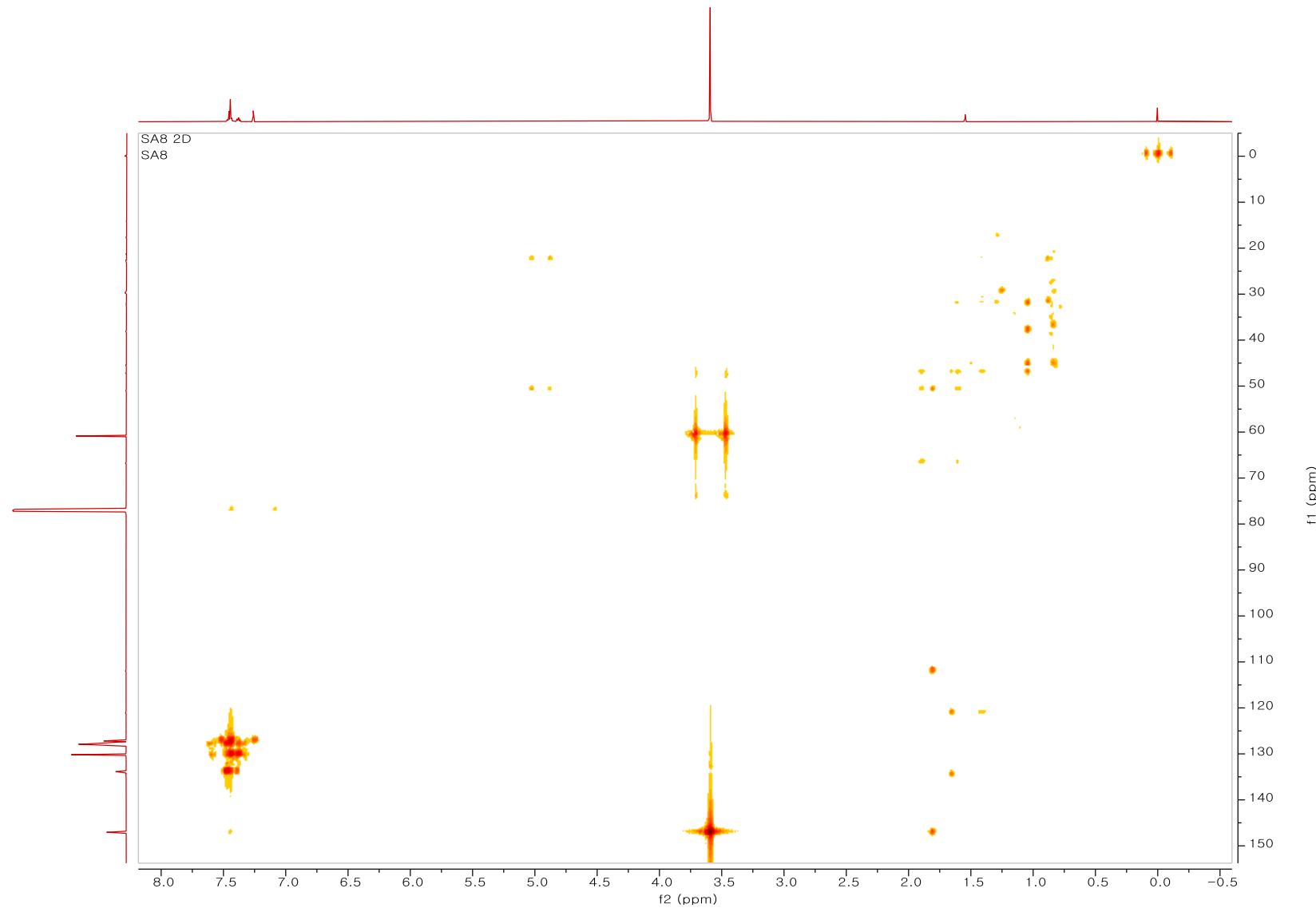
**Figure S17.**  $^{13}\text{C}$  NMR spectrum of compound **4** in chloroform-*d* (150 MHz).



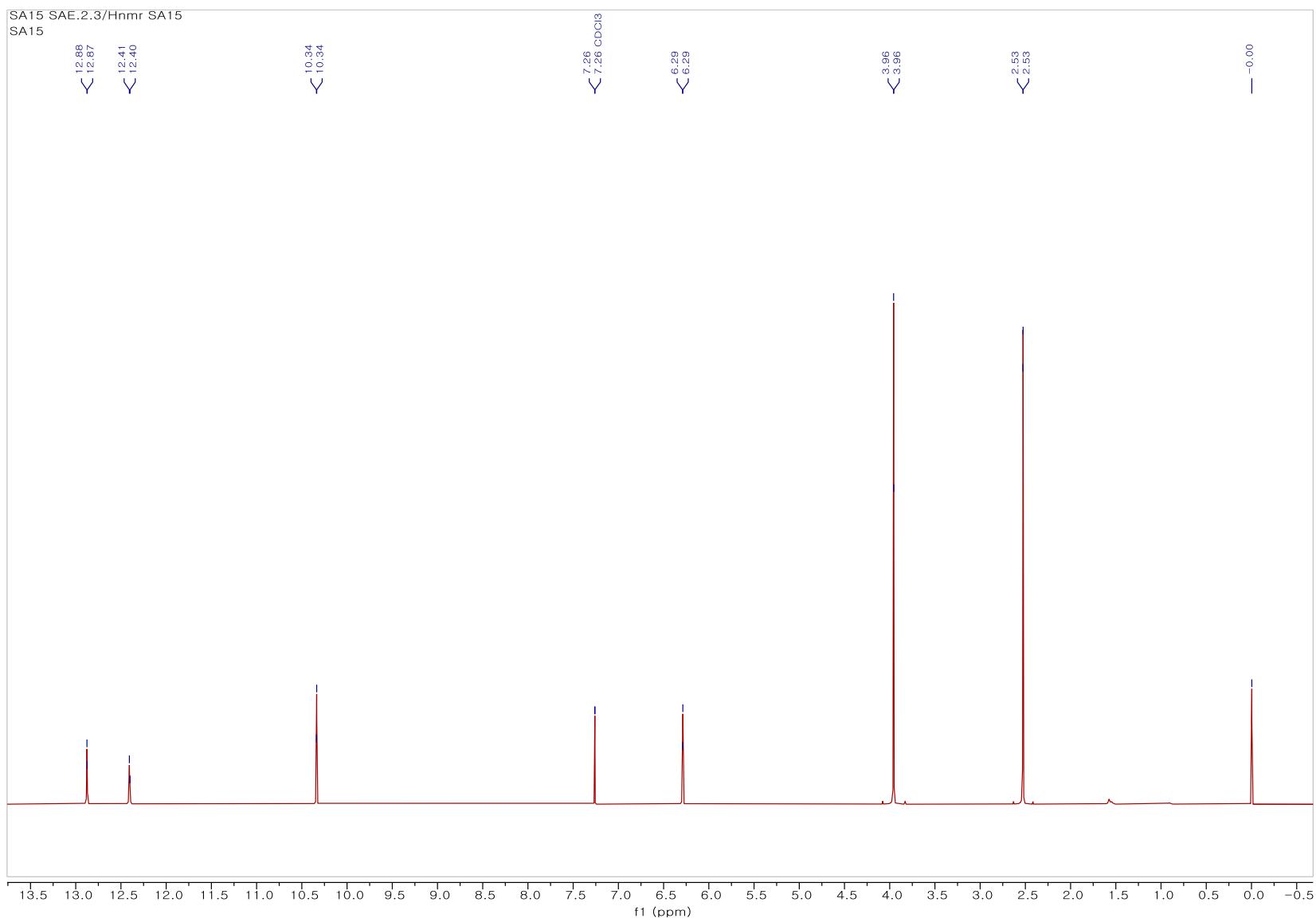
**Figure S18.** HSQC NMR spectrum of compound 4 in chloroform-*d* (600 MHz).



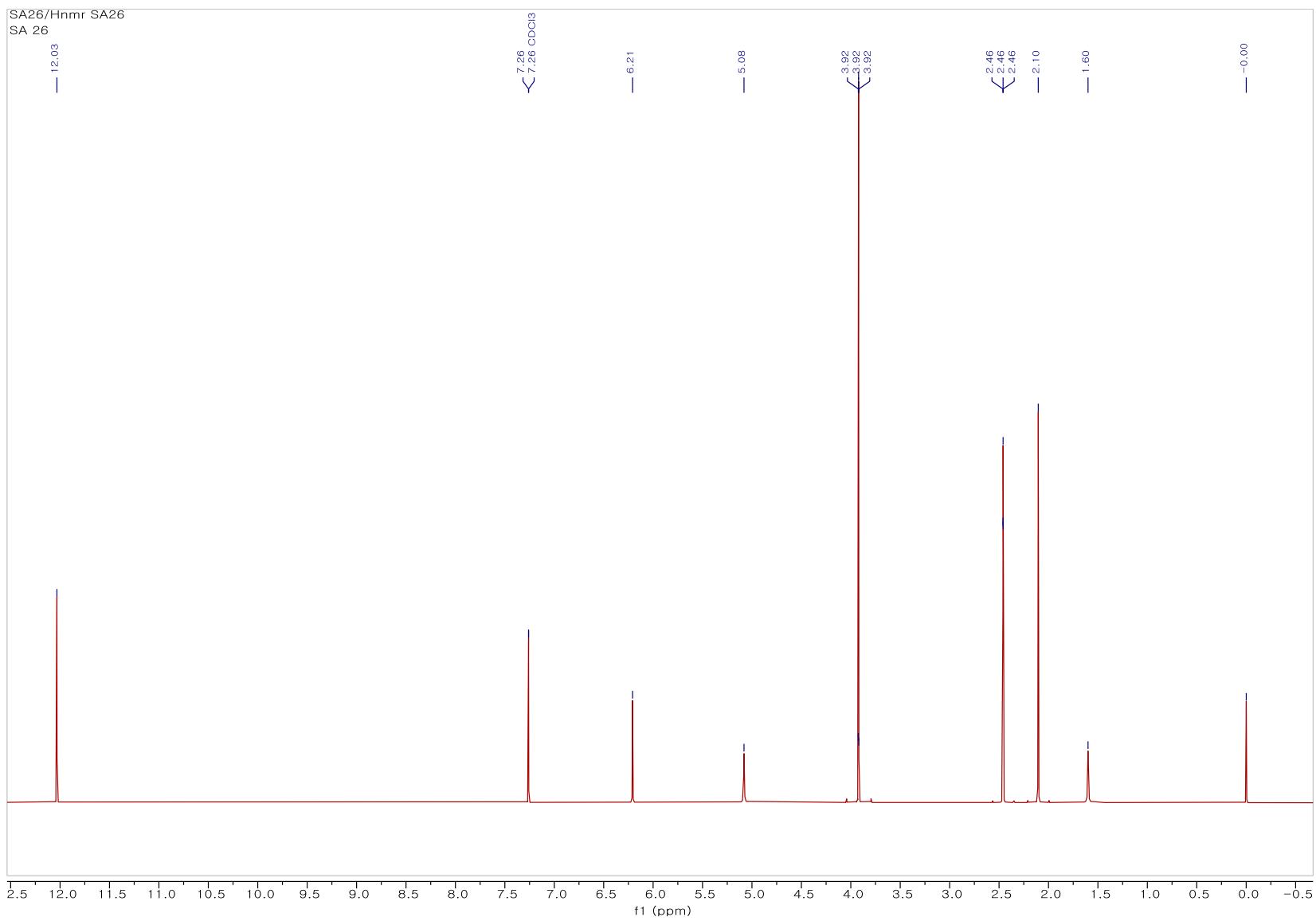
**Figure S19.** COSY NMR spectrum of compound **4** in chloroform-*d* (600 MHz).



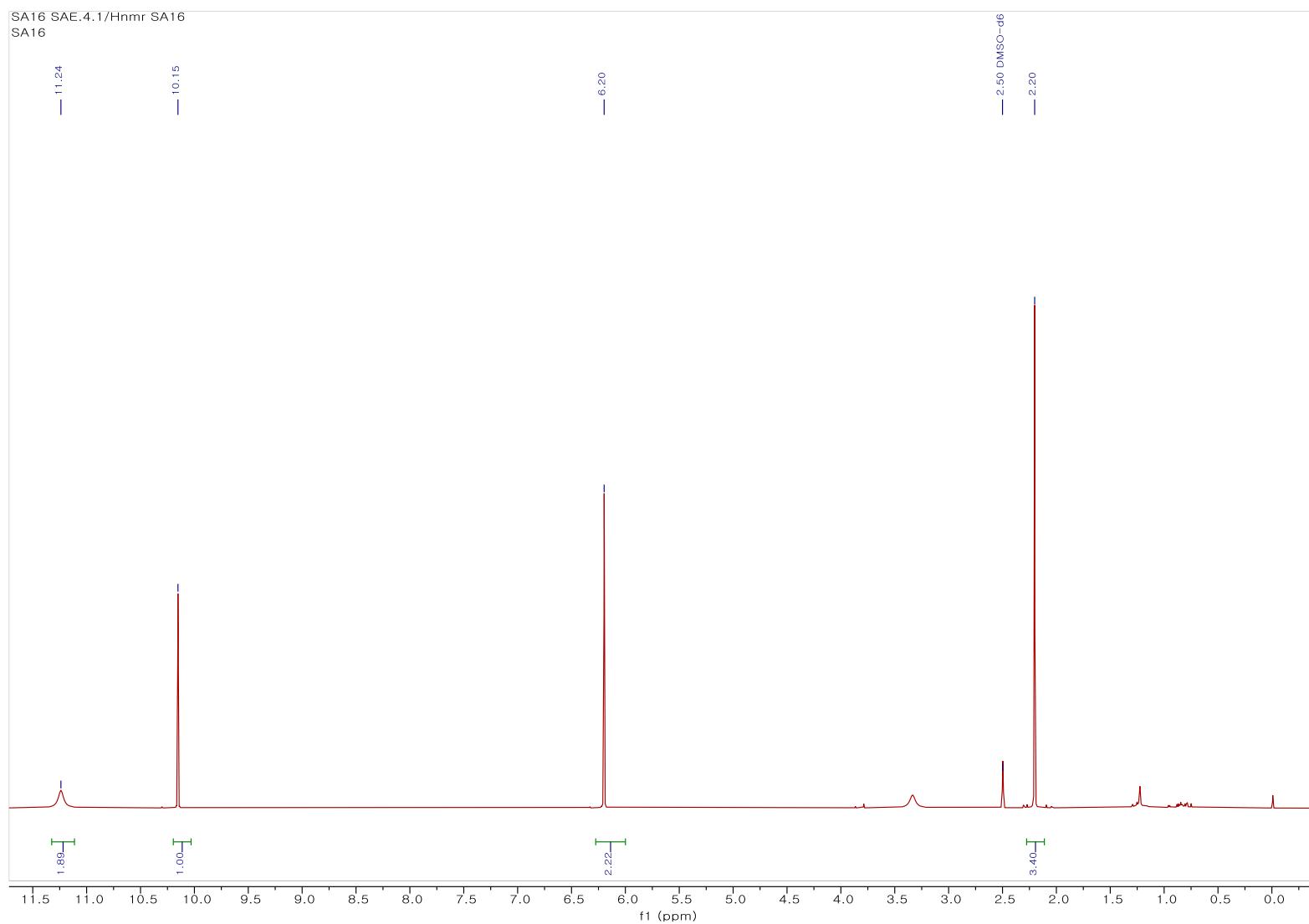
**Figure S20.** HMBC NMR spectrum of compound 4 in chloroform-*d* (600 MHz).



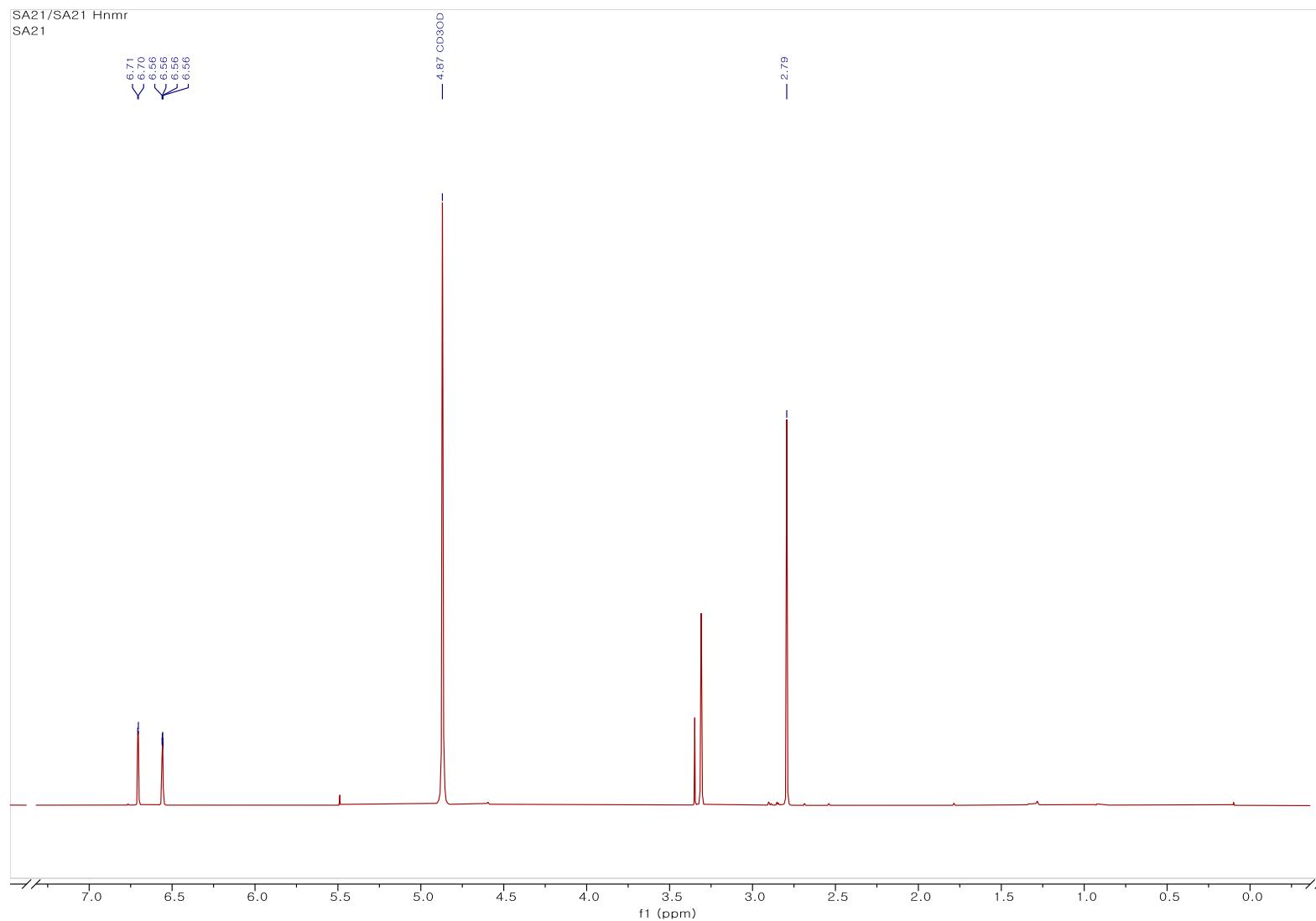
**Figure S21.**  $^1\text{H}$  NMR spectrum of compound **5** in chloroform-*d* (600 MHz).



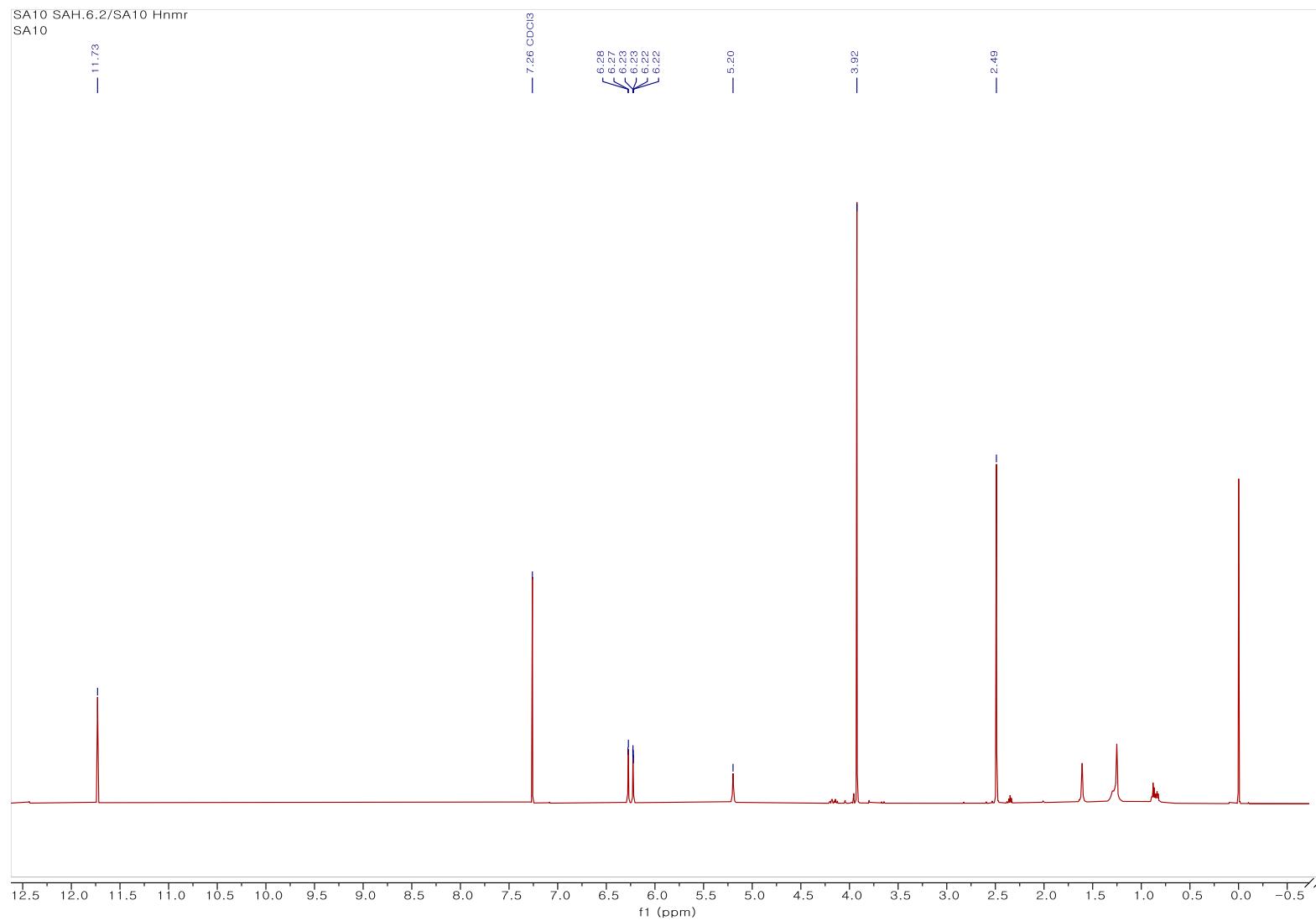
**Figure S22.**  $^1\text{H}$  NMR spectrum of compound **6** in chloroform-*d* (600 MHz).



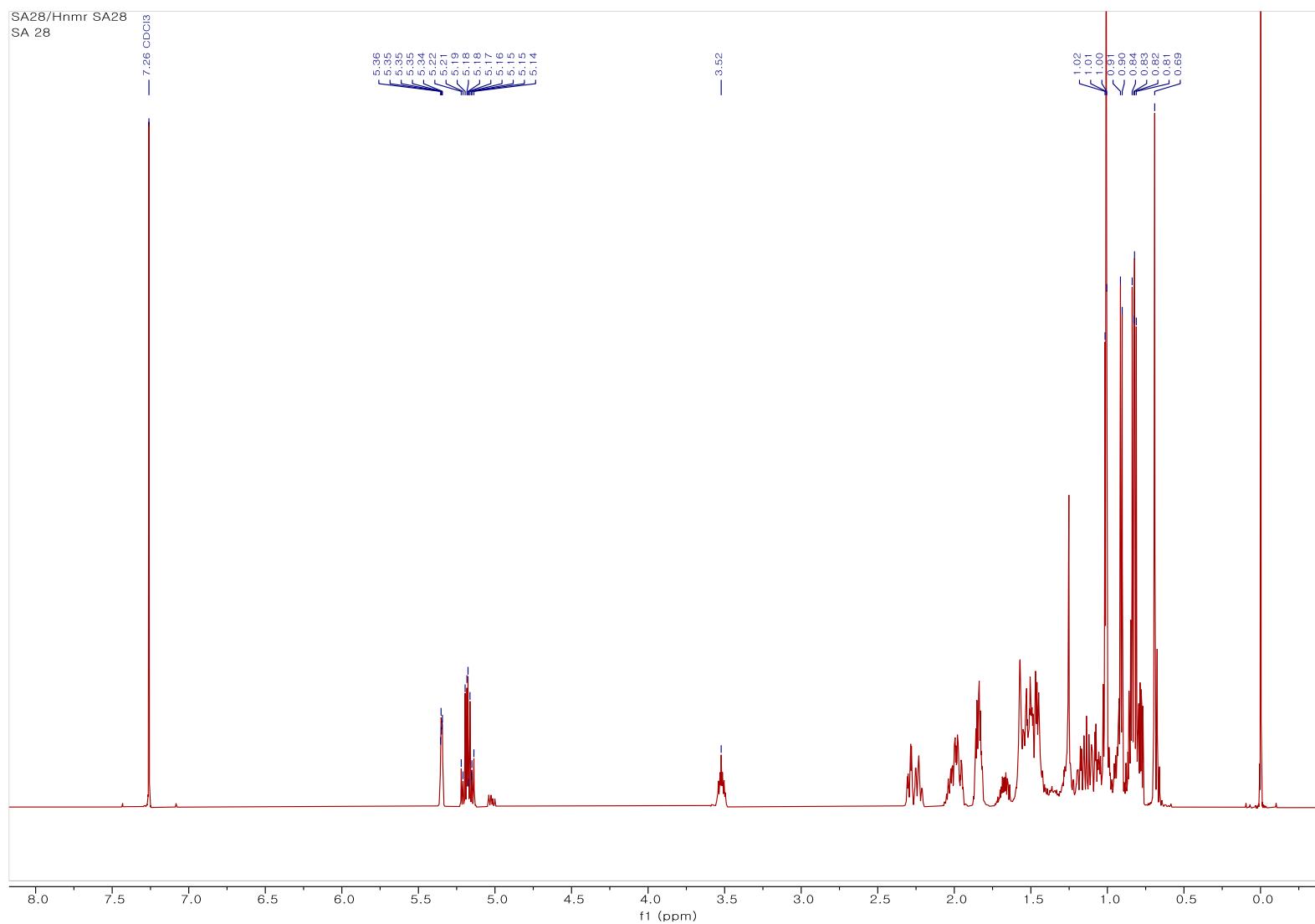
**Figure S23.**  $^1\text{H}$  NMR spectrum of compound **7** in  $\text{DMSO}-d_6$  (600 MHz).



**Figure S24.**  $^1\text{H}$  NMR spectrum of compound **8** in methanol-*d*4 (600 MHz).



**Figure S25.** <sup>1</sup>H NMR spectrum of compound **9** in chloroform-*d* (600 MHz).



**Figure S26.** <sup>1</sup>H NMR spectrum of compound **10** in chloroform-*d* (600 MHz).

**Table S1.** Cytotoxicity of compounds **3** against HCT116 cells.

Compound	IC <sub>50</sub> ( $\mu$ M) <sup>a</sup>
<b>3</b>	3.76 ± 0.03

<sup>a</sup>IC<sub>50</sub> value of each compound was defined as the concentration ( $\mu$ M) that caused 50% inhibition of NO production in LPS-activated RAW264.7 mouse macrophages. The results are the averages of three independent experiments, and the data are expressed as mean ± SD.

**Table S2.** NO inhibition of compounds **3** against LPS-induced RAW264.7 cells.

Compound	IC <sub>50</sub> ( $\mu$ M) <sup>a</sup>
<b>3</b>	22.82 ± 0.015

<sup>a</sup>IC<sub>50</sub> value of each compound was defined as the concentration ( $\mu$ M) that caused 50% inhibition of NO production in LPS-activated RAW264.7 mouse macrophages. The results are the averages of three independent experiments, and the data are expressed as mean ± SD.