

Supplementary Material

Section 1: Raw data for in vitro activity evaluation.

Table S1. Inhibitory effects of the curcumin derivatives **1-15** and their acetates **1a-15a** on LPS-induced NO production.

Group	The production of NO			
	Dose (5 μ M)	Dose (10 μ M)	Dose (15 μ M)	Dose (0 μ M)
Control				1.20 \pm 0.38
LPS				49.86 \pm 0.62
Curcumin	37.00 \pm 1.12	21.55 \pm 1.29	5.96 \pm 0.03	
Compound 1	44.55 \pm 0.55	34.25 \pm 0.96	12.30 \pm 0.90	
Compound 2	43.78 \pm 1.52	42.04 \pm 1.70	36.99 \pm 1.85	
Compound 3	39.26 \pm 2.12	30.62 \pm 1.71	10.36 \pm 3.69	
Compound 4	40.64 \pm 1.28	29.91 \pm 1.78	10.48 \pm 0.47	
Compound 5	34.62 \pm 0.76	16.89 \pm 1.33	9.97 \pm 1.11	
Compound 6	27.16 \pm 2.73	14.67 \pm 3.66	5.95 \pm 0.13	
Compound 7	35.15 \pm 2.72	18.46 \pm 2.34	10.47 \pm 1.32	
Compound 8	42.90 \pm 0.85	20.21 \pm 1.82	5.46 \pm 0.34	
Compound 9	42.38 \pm 2.73	29.76 \pm 1.48	19.69 \pm 0.78	
Compound 10	36.66 \pm 2.00	15.36 \pm 2.09	4.91 \pm 0.77	
Compound 11	35.85 \pm 0.30	19.36 \pm 1.66	7.59 \pm 0.35	
Compound 12	32.06 \pm 0.58	15.78 \pm 0.50	11.39 \pm 1.00	
Compound 13	26.57 \pm 1.74	21.53 \pm 0.35	10.02 \pm 0.61	
Compound 14	27.84 \pm 1.41	22.09 \pm 0.55	9.39 \pm 0.34	
Compound 15	41.85 \pm 1.07	28.31 \pm 0.33	14.00 \pm 0.92	
Compound 1a	44.93 \pm 0.35	32.32 \pm 1.94	5.77 \pm 0.09	
Compound 2a	41.89 \pm 1.95	38.68 \pm 0.96	36.24 \pm 0.50	
Compound 3a	32.92 \pm 2.00	16.27 \pm 1.74	5.29 \pm 0.97	

Compound 4a	31.54 ± 1.30	20.51 ± 1.88	9.45 ± 1.96
Compound 5a	33.90 ± 1.94	15.60 ± 2.78	9.88 ± 0.53
Compound 6a	27.02 ± 2.91	14.29 ± 1.71	5.23 ± 0.72
Compound 7a	35.35 ± 1.59	16.83 ± 0.42	9.77 ± 0.63
Compound 8a	35.08 ± 2.53	16.57 ± 1.70	4.61 ± 0.29
Compound 9a	36.91 ± 0.59	21.33 ± 0.19	11.29 ± 0.25
Compound 10a	24.20 ± 1.36	7.81 ± 0.85	3.91 ± 0.22
Compound 11a	35.82 ± 1.34	15.68 ± 3.02	4.63 ± 0.40
Compound 12a	18.38 ± 1.63	12.76 ± 0.83	9.05 ± 0.72
Compound 13a	17.80 ± 2.19	9.09 ± 1.21	5.58 ± 0.11
Compound 14a	29.10 ± 0.37	13.47 ± 0.31	7.49 ± 0.40
Compound 15a	33.79 ± 2.90	17.01 ± 0.60	4.71 ± 0.18

Table S2. Protection effects of the curcumin derivatives **1-15** and their acetates **1a-15a** on H₂O₂-induced oxidative damage.

Group	Cell viability			
	Dose (5 μM)	Dose (10 μM)	Dose (20 μM)	Dose (0 μM)
Control				100
H ₂ O ₂				49.69 ± 1.37
Curcumin	59.57 ± 2.21	71.83 ± 1.52	86.38 ± 1.28	
Compound 1	63.89 ± 2.86	74.67 ± 4.82	86.42 ± 3.89	
Compound 2	55.71 ± 0.79	58.21 ± 0.80	63.41 ± 1.13	
Compound 3	64.73 ± 2.69	71.68 ± 3.77	81.68 ± 2.41	
Compound 4	61.70 ± 2.59	70.99 ± 2.33	84.68 ± 2.76	
Compound 5	71.02 ± 0.56	84.44 ± 1.86	102.52 ± 3.36	
Compound 6	56.61 ± 1.66	67.85 ± 1.91	94.89 ± 0.58	
Compound 7	54.43 ± 1.18	61.94 ± 1.29	78.25 ± 1.43	
Compound 8	64.58 ± 1.64	67.81 ± 2.26	81.67 ± 3.21	
Compound 9	53.22 ± 0.26	58.53 ± 0.46	66.09 ± 1.09	

Compound 10	53.53 ± 2.28	58.20 ± 1.24	77.80 ± 2.65
Compound 11	63.24 ± 1.07	72.52 ± 0.32	96.33 ± 1.04
Compound 12	60.69 ± 1.53	70.31 ± 1.65	79.23 ± 1.18
Compound 13	62.94 ± 0.50	69.55 ± 1.06	80.61 ± 0.83
Compound 14	59.32 ± 2.89	65.73 ± 2.40	74.30 ± 1.25
Compound 15	60.18 ± 1.41	71.98 ± 3.71	87.82 ± 1.77
Compound 1a	66.25 ± 1.36	80.18 ± 1.38	89.36 ± 1.63
Compound 2a	56.60 ± 0.54	61.51 ± 1.77	65.65 ± 1.31
Compound 3a	61.60 ± 3.89	72.94 ± 2.65	86.90 ± 1.63
Compound 4a	67.52 ± 3.31	75.00 ± 2.39	86.52 ± 5.31
Compound 5a	75.15 ± 5.90	84.53 ± 2.36	106.17 ± 3.34
Compound 6a	60.05 ± 5.39	76.41 ± 2.29	100.96 ± 1.07
Compound 7a	54.89 ± 1.04	62.07 ± 4.16	79.65 ± 3.04
Compound 8a	74.54 ± 1.42	81.49 ± 3.47	87.62 ± 2.98
Compound 9a	63.56 ± 2.88	70.76 ± 3.98	81.08 ± 2.61
Compound 10a	54.92 ± 1.34	64.71 ± 2.00	83.99 ± 4.36
Compound 11a	61.54 ± 1.46	73.69 ± 3.89	97.27 ± 1.95
Compound 12a	76.29 ± 3.14	81.94 ± 2.30	88.14 ± 2.09
Compound 13a	71.47 ± 2.53	77.92 ± 3.02	90.25 ± 3.77
Compound 14a	68.03 ± 3.05	77.10 ± 0.64	81.93 ± 1.35
Compound 15a	62.21 ± 2.53	72.52 ± 2.02	89.22 ± 0.36

Table S3. Protection effects of the curcumin derivatives **1-15** and their acetates **1a-15a** on Radiation.

Group	Cell viability			
	Dose (5 µM)	Dose (10 µM)	Dose (20 µM)	Dose (0 µM)
Control				
Radiation				50.22 ± 1.08
Curcumin	55.12 ± 1.37	59.39 ± 0.57	75.47 ± 0.68	

Compound 1	47.61 ± 1.20	57.30 ± 1.29	89.72 ± 8.17
Compound 2	50.96 ± 1.31	52.89 ± 2.05	54.68 ± 1.78
Compound 3	49.57 ± 2.70	51.85 ± 2.04	57.44 ± 1.80
Compound 4	49.46 ± 1.97	51.75 ± 0.40	59.56 ± 0.59
Compound 5	58.70 ± 4.93	64.93 ± 4.67	104.23 ± 2.86
Compound 6	58.25 ± 1.05	62.18 ± 1.03	83.08 ± 6.65
Compound 7	61.54 ± 2.47	63.26 ± 3.00	69.98 ± 4.31
Compound 8	53.58 ± 0.78	55.23 ± 1.26	78.50 ± 2.59
Compound 9	56.32 ± 1.77	59.94 ± 1.26	65.00 ± 1.84
Compound 10	58.43 ± 1.95	63.89 ± 2.22	79.31 ± 3.13
Compound 11	65.09 ± 0.40	84.55 ± 3.40	94.25 ± 4.35
Compound 12	56.58 ± 1.03	63.12 ± 1.52	76.81 ± 1.27
Compound 13	61.42 ± 1.58	67.83 ± 2.32	87.38 ± 0.60
Compound 14	53.08 ± 0.34	54.44 ± 0.72	63.52 ± 1.49
Compound 15	58.64 ± 0.61	63.45 ± 0.21	76.99 ± 1.23
Compound 1a	60.01 ± 5.39	62.85 ± 6.12	75.47 ± 0.68
Compound 2a	57.71 ± 4.12	61.56 ± 4.11	92.24 ± 6.04
Compound 3a	57.10 ± 3.05	64.19 ± 0.94	69.11 ± 2.51
Compound 4a	56.43 ± 3.51	61.48 ± 3.74	97.55 ± 3.44
Compound 5a	58.17 ± 1.86	68.65 ± 5.90	104.65 ± 5.01
Compound 6a	65.56 ± 2.17	71.70 ± 2.56	84.86 ± 6.57
Compound 7a	62.11 ± 1.39	65.49 ± 2.03	75.74 ± 2.05
Compound 8a	60.33 ± 1.38	62.24 ± 0.75	81.89 ± 2.94
Compound 9a	56.88 ± 1.03	60.92 ± 1.55	70.15 ± 2.99
Compound 10a	61.98 ± 2.45	67.94 ± 4.69	81.14 ± 3.72
Compound 11a	60.93 ± 1.64	64.92 ± 0.58	106.32 ± 7.58
Compound 12a	59.04 ± 1.00	63.19 ± 1.90	77.34 ± 2.18
Compound 13a	66.55 ± 2.11	75.50 ± 1.73	88.50 ± 1.18
Compound 14a	64.83 ± 0.66	68.68 ± 1.31	77.66 ± 1.75

Compound 15a	61.29 ± 1.82	65.00 ± 2.78	77.64 ± 1.03
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Section 2: Structure data of curcumin derivatives **1-15** and their acetates **1a-15a**.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(3-ethoxy-4-hydroxyphenyl)hepta-1,6-diene-3,5-dione (**1**) ¹H NMR (600 MHz, CD₃OD) δ 7.57 (d, *J* = 15.6 Hz, 1H), 7.37 (s, 1H), 7.23 (d, *J* = 37.0 Hz, 2H), 7.12 (s, 2H), 7.03 (s, 1H), 6.83 (d, *J* = 8.1 Hz, 1H), 6.76 (s, 1H), 6.63 (d, *J* = 15.6 Hz, 1H), 5.33 (s, 1H), 4.32 (s, 2H), 4.15 (d, *J* = 6.9 Hz, 2H), 3.97 (s, 2H), 3.90 (s, 3H), 2.85 (s, 6H), 1.45 (t, *J* = 6.8 Hz, 3H). ¹³C NMR (151 MHz, DMSO-*d*₆) δ 183.67, 183.62, 150.09, 148.29, 147.59, 141.22, 139.88, 126.79, 125.69, 123.51, 121.53, 116.26, 113.14, 110.93, 101.26, 64.39, 60.61, 56.21, 44.56, 40.53, 15.18. HRMS(ESI) *m/z*: calcd for C₂₅H₃₀NO₆⁺ [M+H]⁺: 440.2073, found: 440.2069. Yield: 22.56%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3,5-dimethoxyphenyl)hepta-1,6-diene-3,5-dione (**2**) ¹H NMR (600 MHz, DMSO-*d*₆) δ 7.55 (dd, *J* = 15.7, 10.8 Hz, 2H), 7.26 (s, 1H), 7.05 (s, 2H), 6.78 (dd, *J* = 31.9, 15.8 Hz, 2H), 6.08 (s, 1H), 3.83 (s, 9H), 3.63 (s, 2H), 2.30 (s, 2H), 2.27 (s, 6H). ¹³C NMR (151 MHz, DMSO-*d*₆) δ 183.34, 182.96, 149.66, 148.12, 147.81, 140.98, 140.82, 138.41, 126.76, 125.20, 125.15, 122.90, 122.75, 121.46, 121.05, 110.51, 106.27, 100.79, 60.16, 59.83, 56.09, 55.73, 55.58, 44.07, 43.80. HRMS(ESI) *m/z*: calcd for C₂₅H₃₀NO₇⁺ [M+H]⁺: 456.2022, found: 456.2016. Yield: 38.46%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2-methylphenyl)hepta-1,6-diene-3,5-dione (**3**) ¹H NMR (600 MHz, CD₃OD) δ 7.84 (d, *J* = 15.6 Hz, 1H), 7.58 – 7.51 (m, 2H), 7.30 (d, *J* = 19.8 Hz, 2H), 7.08 (d, *J* = 38.5 Hz, 1H), 6.65 (d, *J* = 2.7 Hz, 2H), 6.53 (d, *J* = 15.6 Hz, 1H), 4.33 (d, *J* = 5.2 Hz, 2H), 3.95 (s, 3H), 3.90 (s, 2H), 2.88 (s, 7H), 2.34 (s, 3H). ¹³C NMR (151 MHz, CD₃OD) δ 190.50, 159.42, 148.58, 140.84, 139.93, 137.38, 127.74, 125.26, 125.09, 123.51, 121.29, 120.39, 116.97, 113.52, 109.75, 59.95, 59.86, 55.08, 54.69, 42.89. HRMS(ESI) *m/z*: calcd for C₂₄H₂₈NO₅⁺ [M+H]⁺: 410.1967, found: 410.1962. Yield: 24.52%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(2-fluoro-4-hydroxyphenyl)hepta-1,6-diene-3,5-dione (**4**) ¹H NMR (600 MHz, CD₃OD) δ 7.70 (t, *J* = 8.7 Hz, 1H), 7.65 – 7.36 (m, 4H), 6.83 (dd, *J* = 43.7, 15.9 Hz, 2H), 6.72 (dd, *J* = 20.3, 10.8 Hz, 2H),

4.26 (s, 2H), 3.92 (s, 3H), 2.73 (s, 6H), 2.51 (s, 2H). ^{13}C NMR (151 MHz, CD_3OD) δ 184.00, 182.34, 163.41, 161.74, 151.21, 148.56, 141.03, 132.49, 129.61, 129.58, 125.28, 123.69, 122.35, 120.54, 112.27, 109.89, 102.77, 59.89, 59.58, 55.08, 42.79. HRMS(ESI) m/z : calcd for $\text{C}_{23}\text{H}_{25}\text{FNO}_5^+$ $[\text{M}+\text{H}]^+$: 414.1716, found: 414.1714. Yield: 27.96%

(1E,6E)-1-(3,4-dimethoxyphenyl)-7-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)hepta-1,6-diene-3,5-dione (**5**) ^1H NMR (600 MHz, CD_3OD) δ 7.54 (dd, J = 15.6, 5.3 Hz, 2H), 7.31 (s, 1H), 7.25 (s, 1H), 7.18 (s, 1H), 7.14 (d, J = 8.1 Hz, 1H), 6.93 (d, J = 8.2 Hz, 1H), 6.67 (dd, J = 38.5, 15.7 Hz, 2H), 4.33 (s, 2H), 3.96 (s, 3H), 3.87 (s, 3H), 3.84 (s, 3H), 2.88 (s, 6H), 2.85 (s, 2H). ^{13}C NMR (151 MHz, $\text{DMSO}-d_6$) δ 183.84, 183.45, 151.48, 149.50, 148.66, 141.03, 140.54, 128.03, 126.55, 126.20, 123.51, 122.73, 122.49, 117.79, 112.42, 112.15, 110.95, 101.62, 56.64, 56.10, 56.08, 42.33. HRMS(ESI) m/z : calcd for $\text{C}_{25}\text{H}_{30}\text{NO}_6^+$ $[\text{M}+\text{H}]^+$: 440.2073, found: 440.2068. Yield: 35.95%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(2,3,4-trimethoxyphenyl)hepta-1,6-diene-3,5-dione (**6**) ^1H NMR (600 MHz, CD_3OD) δ 7.83 (d, J = 16.0 Hz, 1H), 7.58 (d, J = 15.8 Hz, 1H), 7.42 (d, J = 8.8 Hz, 1H), 7.37 (s, 1H), 7.27 (s, 1H), 6.84 (dd, J = 8.7, 4.9 Hz, 1H), 6.74 (t, J = 15.8 Hz, 2H), 4.35 (s, 2H), 3.97 (s, 3H), 3.91 (d, J = 2.2 Hz, 3H), 3.89 (s, 3H), 3.83 (s, 3H), 2.89 (s, 6H), 2.86 (d, J = 12.6 Hz, 2H). ^{13}C NMR (151 MHz, $\text{DMSO}-d_6$) δ 184.43, 182.88, 155.87, 153.11, 150.18, 148.31, 142.30, 141.59, 134.66, 125.67, 123.52, 123.42, 123.31, 121.57, 121.54, 110.93, 109.05, 101.71, 61.88, 60.93, 60.54, 56.52, 56.21, 44.54. HRMS(ESI) m/z : calcd for $\text{C}_{26}\text{H}_{32}\text{NO}_7^+$ $[\text{M}+\text{H}]^+$: 470.2178, found: 470.2173. Yield: 11.23%.

(1E,6E)-1-(3-chloro-4-hydroxyphenyl)-7-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)hepta-1,6-diene-3,5-dione (**7**) ^1H NMR (600 MHz, $\text{DMSO}-d_6$) δ 11.13 (s, 1H), 10.78 (d, J = 50.4 Hz, 1H), 9.97 (d, J = 171.7 Hz, 1H), 7.79 (d, J = 4.8 Hz, 1H), 7.61 (s, 1H), 7.55 (dd, J = 16.1, 7.4 Hz, 3H), 7.47 (s, 1H), 7.18 (d, J = 8.4 Hz, 1H), 6.87 (dd, J = 29.7, 15.8 Hz, 2H), 4.31 (d, J = 35.9 Hz, 2H), 3.94 (d, J = 1.9 Hz, 3H), 2.74 (s, 6H), 2.73 – 2.69 (m, 2H). ^{13}C NMR (151 MHz, $\text{DMSO}-d_6$) δ 183.84, 183.45, 151.48, 149.50, 148.66, 141.03, 140.55, 128.03, 126.55, 126.21, 123.52, 122.73, 122.49, 117.79, 112.42, 112.15, 110.95, 101.62, 56.64, 56.10, 56.08, 54.51, 42.33. HRMS(ESI) m/z : calcd for $\text{C}_{23}\text{H}_{25}\text{ClNO}_5^+$ $[\text{M}+\text{H}]^+$: 430.1421, found: 430.1416. Yield:

13.89%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3,5-dimethylphenyl)hepta-1,6-diene-3,5-dione (**8**) ^1H NMR (600 MHz, CD_3OD) δ 7.52 (dd, J = 23.3, 15.8 Hz, 2H), 7.32 (s, 1H), 7.24 (s, 1H), 7.20 (s, 2H), 6.71 (d, J = 15.8 Hz, 1H), 6.56 (d, J = 15.8 Hz, 1H), 4.32 (s, 2H), 3.96 (s, 3H), 2.87 (s, 6H), 2.85 (s, 2H), 2.22 (s, 6H). ^{13}C NMR (151 MHz, CD_3OD) δ 185.99, 183.27, 157.33, 149.57, 149.34, 142.81, 140.51, 130.09, 128.80, 127.76, 126.15, 126.02, 123.68, 122.99, 121.76, 117.79, 112.73, 112.60, 57.83, 57.49, 56.79, 43.35, 16.64. HRMS(ESI) m/z : calcd for $\text{C}_{25}\text{H}_{30}\text{NO}_5^+$ $[\text{M}+\text{H}]^+$: 424.2118, found: 424.2120. Yield: 25.53%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2-methoxyphenyl)hepta-1,6-diene-3,5-dione (**9**) ^1H NMR (600 MHz, CD_3OD) δ 7.88 (d, J = 15.9 Hz, 1H), 7.54 (d, J = 15.7 Hz, 1H), 7.46 (d, J = 8.4 Hz, 1H), 7.33 (d, J = 22.5 Hz, 1H), 7.25 (s, 1H), 7.13 – 7.01 (m, 1H), 6.69 (dd, J = 46.0, 15.8 Hz, 2H), 6.47 – 6.36 (m, 2H), 4.33 (d, J = 12.9 Hz, 2H), 3.96 (s, 3H), 3.90 (s, 2H), 3.85 (d, J = 14.7 Hz, 3H), 2.87 (d, J = 18.2 Hz, 6H). ^{13}C NMR (151 MHz, $\text{DMSO}-d_6$) δ 191.17, 162.03, 160.28, 149.98, 148.30, 140.90, 135.74, 130.46, 125.78, 123.37, 123.07, 121.61, 120.99, 114.91, 110.85, 108.84, 101.42, 99.60, 60.37, 56.20, 55.98, 55.35, 44.45. HRMS(ESI) m/z : calcd for $\text{C}_{24}\text{H}_{28}\text{NO}_6^+$ $[\text{M}+\text{H}]^+$: 426.1916, found: 426.1911. Yield: 10.80%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxyphenyl)hepta-1,6-diene-3,5-dione (**10**) ^1H NMR (600 MHz, CD_3OD) δ 7.61 – 7.53 (m, 2H), 7.46 (d, J = 8.5 Hz, 2H), 7.29 (d, J = 33.5 Hz, 2H), 6.82 (d, J = 8.5 Hz, 2H), 6.72 (d, J = 15.8 Hz, 1H), 6.58 (d, J = 15.8 Hz, 1H), 4.33 (s, 2H), 3.95 (s, 3H), 2.88 (s, 6H), 2.85 (s, 2H). ^{13}C NMR (151 MHz, CD_3OD) δ 185.67, 183.56, 161.15, 149.56, 149.37, 142.21, 140.69, 131.25, 128.73, 127.87, 126.19, 123.67, 123.01, 122.02, 117.80, 116.92, 112.78, 104.14, 57.77, 57.42, 56.82, 56.61, 43.35. HRMS(ESI) m/z : calcd for $\text{C}_{23}\text{H}_{26}\text{NO}_5^+$ $[\text{M}+\text{H}]^+$: 396.1811, found: 396.1808. Yield: 10.59%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(3-hydroxy-4-methoxyphenyl)hepta-1,6-diene-3,5-dione (**11**) ^1H NMR (600 MHz, CD_3OD) δ 7.55 (dd, J = 25.6, 15.8 Hz, 2H), 7.29 (s, 1H), 7.16 – 7.05 (m, 3H), 6.95 (d, J = 8.3 Hz, 1H), 6.67 (d, J = 15.8 Hz, 1H), 6.58 (d, J = 15.8 Hz, 1H), 4.10 (s, 2H), 3.94 (s, 3H), 3.90 (s, 3H), 2.69 (s, 6H). ^{13}C NMR (151 MHz, CD_3OD) δ 190.61, 149.99, 149.68, 148.45, 146.63, 140.54, 140.18, 128.30, 126.33, 124.30,

121.49, 118.65, 113.39, 111.18, 110.63, 57.81, 55.26, 55.02, 42.35. HRMS(ESI) m/z : calcd for $C_{24}H_{28}NO_6^+$ $[M+H]^+$: 426.1916, found: 426.1911. Yield: 15.63%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,5-dimethylphenyl)hepta-1,6-diene-3,5-dione (**12**) 1H NMR (600 MHz, DMSO- d_6) δ 9.81 (s, 1H), 7.78 (d, J = 9.5 Hz, 1H), 7.60 – 7.40 (m, 4H), 6.86 (d, J = 15.6 Hz, 1H), 6.80 – 6.61 (m, 2H), 4.32 (s, 2H), 3.93 (d, J = 5.3 Hz, 3H), 2.72 (s, 6H), 2.51 (s, 3H), 2.32 (s, 2H), 2.12 (s, 3H). ^{13}C NMR (151 MHz, CD_3OD) δ 183.80, 182.88, 157.68, 150.71, 148.52, 140.48, 137.75, 137.39, 128.61, 125.62, 124.76, 123.65, 122.75, 120.83, 120.65, 116.20, 113.28, 109.92, 59.33, 55.12, 53.40, 42.75, 18.01, 14.43. HRMS(ESI) m/z : calcd for $C_{25}H_{30}NO_5^+$ $[M+H]^+$: 424.2124, found: 424.2118. Yield: 36.71%

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,6-dimethylphenyl)hepta-1,6-diene-3,5-dione (**13**) 1H NMR (600 MHz, CD_3OD) δ 9.59 (s, 1H), 7.84 (d, J = 16.2 Hz, 1H), 7.60 (d, J = 15.8 Hz, 1H), 7.35 (dd, J = 5.5, 1.9 Hz, 2H), 7.20 (d, J = 1.8 Hz, 1H), 7.05 (d, J = 1.6 Hz, 1H), 6.64 (d, J = 15.8 Hz, 1H), 6.56 (s, 1H), 6.33 (d, J = 16.2 Hz, 1H), 4.04 (s, 2H), 3.92 (s, 2H), 3.89 (s, 3H), 2.65 (s, 6H), 2.45 (s, 3H), 2.37 (s, 3H). ^{13}C NMR (151 MHz, CD_3OD) δ 190.52, 162.00, 161.80, 150.42, 148.45, 139.76, 132.56, 125.78, 123.30, 122.26, 121.13, 120.80, 109.84, 104.80, 91.66, 59.54, 55.11, 54.78, 42.83. HRMS(ESI) m/z : calcd for $C_{25}H_{30}NO_5^+$ $[M+H]^+$: 424.2124, found: 424.2119. Yield: 23.05%

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,6-dimethoxyphenyl)hepta-1,6-diene-3,5-dione (**14**) 1H NMR (600 MHz, CD_3OD) δ 9.59 (s, 1H), 8.08 (d, J = 16.0 Hz, 1H), 7.53 (d, J = 15.7 Hz, 1H), 7.39 – 7.30 (m, 1H), 7.20 (d, J = 1.4 Hz, 1H), 7.04 (s, 1H), 6.99 (d, J = 16.0 Hz, 1H), 6.62 (d, J = 15.7 Hz, 1H), 6.14 (s, 2H), 3.93 (s, 3H), 3.89 (s, 6H), 3.84 (s, 2H), 2.65 (s, 2H), 2.48 (s, 6H). ^{13}C NMR (151 MHz, CD_3OD) δ 190.52, 162.00, 161.80, 150.42, 148.45, 139.76, 132.56, 125.78, 123.30, 122.26, 121.13, 120.80, 109.84, 104.80, 91.66, 59.54, 55.11, 54.78, 42.83. HRMS(ESI) m/z : calcd for $C_{25}H_{30}NO_7^+$ $[M+H]^+$: 456.2022, found: 456.2016. Yield: 20.9%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-3,5-dione (**15**) 1H NMR (600 MHz, DMSO- d_6) δ 7.57 – 7.53

(m, 1H), 7.32 (s, 1H), 7.26 (d, $J = 1.4$ Hz, 1H), 7.15 (dd, $J = 8.2, 1.7$ Hz, 1H), 7.07 (s, 1H), 6.83 (d, $J = 8.1$ Hz, 1H), 6.75 (d, $J = 15.8$ Hz, 2H), 6.06 (s, 1H), 3.84 (d, $J = 7.4$ Hz, 6H), 3.63 (s, 2H), 2.30 (s, 2H), 2.26 (s, 6H). ^{13}C NMR (151 MHz, DMSO- d_6) δ 191.18, 150.02, 149.82, 148.46, 148.32, 141.19, 141.15, 126.79, 125.75, 123.59, 123.52, 121.58, 116.17, 111.81, 111.04, 101.31, 60.12, 56.24, 56.16, 55.35, 44.36. HRMS(ESI) m/z : calcd for $\text{C}_{24}\text{H}_{28}\text{NO}_6^+$ $[\text{M}+\text{H}]^+$: 426.1916, found: 426.1914. Yield: 26.21%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(3-ethoxy-4-hydroxyphenyl)hepta-1,6-diene-3,5-dione acetate (**1a**) ^1H NMR (600 MHz, CD_3OD) δ 9.64 (s, 1H), 7.53 (d, $J = 6.7$ Hz, 2H), 7.41 (d, $J = 5.2$ Hz, 2H), 7.17 (dd, $J = 63.4, 52.3$ Hz, 3H), 6.84 (t, $J = 15.8$ Hz, 1H), 6.59 (d, $J = 15.1$ Hz, 1H), 4.18 – 4.10 (m, 5H), 3.89 (s, 3H), 2.74 (s, 3H), 2.72 (s, 3H), 1.94 (s, 3H). HRMS(ESI) m/z : calcd for $\text{C}_{25}\text{H}_{30}\text{NO}_6^+$ $[\text{M}+\text{H}]^+$: 440.2073, found: 440.2064. Yield: 94.82%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3,5-dimethoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**2a**) ^1H NMR (600 MHz, CD_3OD) δ 7.53 (dd, $J = 15.4, 7.0$ Hz, 2H), 7.39 (s, 1H), 7.25 (s, 1H), 7.10 (s, 1H), 6.90 (s, 2H), 6.62 (d, $J = 15.3$ Hz, 2H), 4.10 (s, 2H), 3.93 (s, 3H), 3.88 (d, $J = 3.7$ Hz, 6H), 2.70 (s, 6H), 1.94 (s, 3H). HRMS(ESI) m/z : calcd for $\text{C}_{25}\text{H}_{30}\text{NO}_7^+$ $[\text{M}-\text{CH}_3\text{COOH}+\text{H}]^+$: 456.2022, found: 456.2018. Yield: 93.87%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2-methylphenyl)hepta-1,6-diene-3,5-dione acetate (**3a**) ^1H NMR (600 MHz, CD_3OD) δ 7.88 (d, $J = 15.6$ Hz, 1H), 7.56 (t, $J = 11.1$ Hz, 2H), 7.40 (s, 1H), 7.29 (s, 1H), 7.15 (s, 1H), 6.66 (d, $J = 8.0$ Hz, 3H), 6.55 (d, $J = 15.5$ Hz, 1H), 4.14 (s, 2H), 3.94 (s, 3H), 2.72 (s, 6H), 2.38 (s, 3H), 1.94 (s, 3H). HRMS(ESI) m/z : calcd for $\text{C}_{24}\text{H}_{28}\text{NO}_5^+$ $[\text{M}-\text{CH}_3\text{COOH}+\text{H}]^+$: 410.1967, found: 410.1964. Yield: 86.21%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(2-fluoro-4-hydroxyphenyl)hepta-1,6-diene-3,5-dione acetate (**4a**) ^1H NMR (600 MHz, CD_3OD) δ 7.65 (d, $J = 15.8$ Hz, 1H), 7.58 – 7.49 (m, 2H), 7.28 (s, 1H), 7.17 (s, 1H), 6.65 (d, $J = 7.8$ Hz, 3H), 6.60 –

6.52 (m, 1H), 4.93 – 4.91 (m, 2H), 4.19 (s, 2H), 3.94 (s, 3H), 2.77 (s, 6H), 1.95 (s, 3H). HRMS(ESI) m/z: calcd for $C_{23}H_{25}FNO_5^+$ [M-CH₃COOH+H]⁺: 414.1716, found: 414.1713. Yield: 92.53%.

(1E,6E)-1-(3,4-dimethoxyphenyl)-7-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**5a**) ¹H NMR (600 MHz, CD₃OD) δ 9.68 (s, 1H), 7.54 (s, 1H), 7.45 (d, *J* = 13.9 Hz, 1H), 7.35 – 7.03 (m, 3H), 6.94 (d, *J* = 6.8 Hz, 1H), 6.65 (s, 1H), 4.21 (s, 2H), 4.03 – 3.74 (m, 9H), 2.78 (s, 2H), 2.75 (s, 6H), 1.95 (s, 3H). HRMS(ESI) m/z: calcd for $C_{25}H_{30}NO_6^+$ [M-CH₃COOH+H]⁺: 440.2073, found: 440.2069. Yield: 91.34%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(2,3,4-trimethoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**6a**) ¹H NMR (600 MHz, CD₃OD) δ 7.80 (d, *J* = 15.6 Hz, 1H), 7.54 (d, *J* = 14.8 Hz, 1H), 7.37 (s, 1H), 7.24 (s, 1H), 7.11 (s, 1H), 6.80 (d, *J* = 7.4 Hz, 1H), 6.66 (d, *J* = 19.3 Hz, 2H), 4.05 (s, 2H), 3.87 (dd, *J* = 36.0, 22.2 Hz, 12H), 2.76 – 2.52 (m, 8H), 1.93 (s, 3H). HRMS(ESI) m/z: calcd for $C_{26}H_{32}NO_7^+$ [M-CH₃COOH+H]⁺: 470.2178, found: 470.2174. Yield: 89.90%.

(1E,6E)-1-(3-chloro-4-hydroxyphenyl)-7-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**7a**) ¹H NMR (600 MHz, CD₃OD) δ 9.67 (s, 1H), 7.64 – 7.28 (m, 5H), 7.17 (s, 1H), 6.93 (d, *J* = 8.0 Hz, 1H), 6.78 – 6.51 (m, 2H), 4.19 (d, *J* = 8.8 Hz, 2H), 3.95 (s, 3H), 3.91 (s, 2H), 2.75 (d, *J* = 16.8 Hz, 6H), 1.95 (s, 3H). HRMS(ESI) m/z: calcd for $C_{23}H_{25}ClNO_5^+$ [M-CH₃COOH+H]⁺: 430.1421, found: 430.1415. Yield: 94.21%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3,5-dimethylphenyl)hepta-1,6-diene-3,5-dione acetate (**8a**) ¹H NMR (600 MHz, CD₃OD) δ 7.51 (t, *J* = 16.8 Hz, 2H), 7.27 (s, 1H), 7.20 (s, 2H), 7.16 (s, 1H), 6.60 (dd, *J* = 57.3, 15.2 Hz, 2H), 4.18 (s, 2H), 3.93 (s, 3H), 2.74 (d, *J* = 14.2 Hz, 8H), 2.22 (s, 6H), 1.95 (s, 3H). HRMS(ESI) m/z: calcd for $C_{25}H_{30}NO_5^+$ [M-CH₃COOH+H]⁺: 424.2118, found: 424.2120. Yield: 26.21%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2-methoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**9a**) ¹H NMR (600 MHz, CD₃OD) δ 7.86 (d, *J* = 15.8 Hz, 1H), 7.50 (d, *J* = 15.5 Hz, 1H), 7.44 (d, *J* = 8.4 Hz, 1H), 7.26 (s, 1H), 7.15 (s, 1H), 6.61

(d, $J = 15.3$ Hz, 2H), 6.43 (dd, $J = 11.5, 5.1$ Hz, 2H), 4.19 (s, 2H), 3.93 (s, 3H), 3.85 (s, 3H), 2.80 – 2.73 (m, 8H), 1.95 (s, 3H). HRMS(ESI) m/z : calcd for $C_{24}H_{28}NO_6^+$ $[M-CH_3COOH+H]^+$: 426.1916, found: 426.1912. Yield: 95.10%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxyphenyl)hepta-1,6-diene-3,5-dione acetate (**10a**) 1H NMR (600 MHz, CD_3OD) δ 7.53 (dd, $J = 15.3, 9.9$ Hz, 2H), 7.46 (dd, $J = 10.5, 5.2$ Hz, 2H), 7.27 (s, 1H), 7.17 (s, 1H), 6.81 (d, $J = 8.3$ Hz, 2H), 6.60 (dd, $J = 50.0, 15.2$ Hz, 2H), 4.21 (d, $J = 3.3$ Hz, 2H), 3.93 (s, 3H), 2.76 (d, $J = 13.3$ Hz, 8H), 1.96 (s, 3H). HRMS(ESI) m/z : calcd for $C_{23}H_{26}NO_5^+$ $[M-CH_3COOH+H]^+$: 396.1811, found: 396.1808. Yield: 96.62%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(3-hydroxy-4-methoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**11a**) 1H NMR (600 MHz, CD_3OD) δ 7.48 (dd, $J = 26.3, 15.7$ Hz, 2H), 7.24 (s, 1H), 7.16 (s, 1H), 7.06 (s, 1H), 7.01 (d, $J = 7.7$ Hz, 1H), 6.88 (d, $J = 8.2$ Hz, 1H), 6.61 (d, $J = 15.5$ Hz, 1H), 6.50 (d, $J = 15.7$ Hz, 1H), 4.21 (d, $J = 12.9$ Hz, 2H), 3.92 (s, 2H), 3.85 (s, 3H), 2.78 (s, 6H), 1.96 (s, 3H). HRMS(ESI) m/z : calcd for $C_{24}H_{28}NO_6^+$ $[M-CH_3COOH+H]^+$: 426.1916, found: 426.1913. Yield: 98.26%.

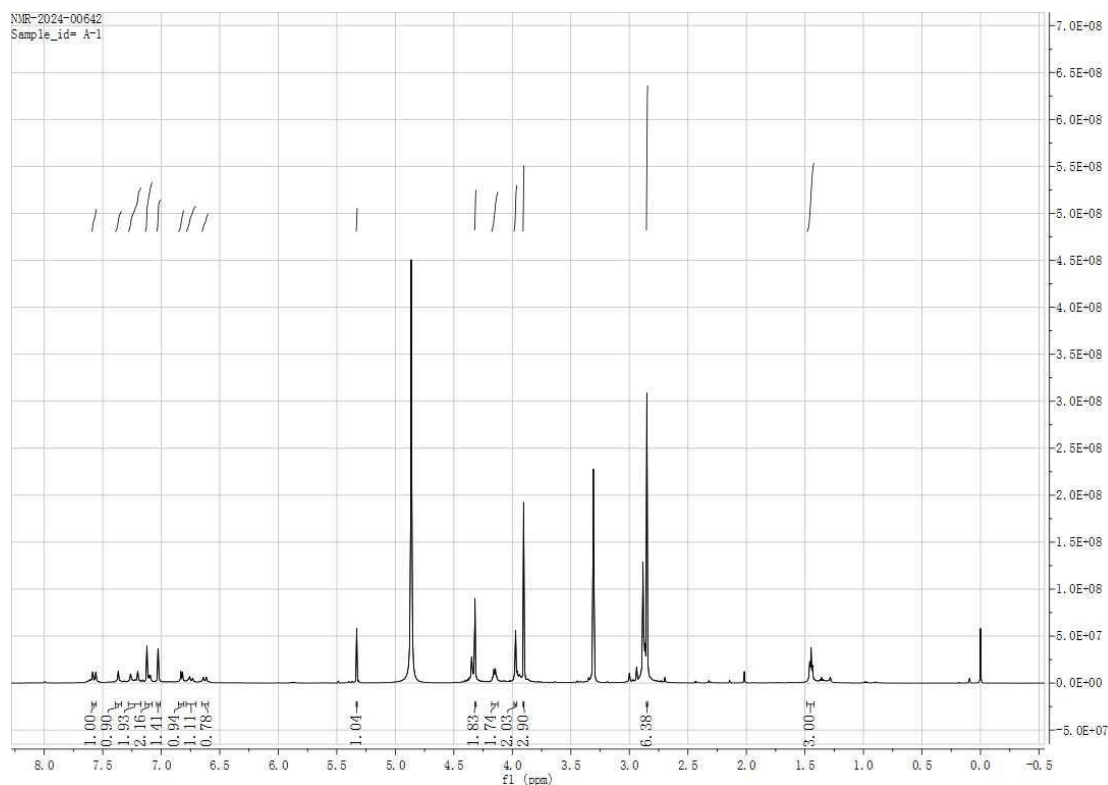
(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,5-dimethylphenyl)hepta-1,6-diene-3,5-dione acetate (**12a**) 1H NMR (600 MHz, $DMSO-d_6$) δ 9.81 (s, 1H), 7.78 (d, $J = 9.5$ Hz, 1H), 7.60 – 7.40 (m, 4H), 6.86 (d, $J = 15.6$ Hz, 1H), 6.80 – 6.61 (m, 2H), 4.32 (s, 2H), 3.93 (d, $J = 5.3$ Hz, 3H), 2.72 (s, 6H), 2.51 (s, 3H), 2.32 (s, 2H), 2.12 (s, 3H). HRMS(ESI) m/z : calcd for $C_{25}H_{30}NO_5^+$ $[M-CH_3COOH+H]^+$: 424.2124, found: 424.2118. Yield: 89.67%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,6-dimethylphenyl)hepta-1,6-diene-3,5-dione acetate (**13a**) 1H NMR (600 MHz, CD_3OD) δ 9.69 (s, 1H), 7.80 (d, $J = 16.1$ Hz, 1H), 7.47 (dd, $J = 27.8, 1.5$ Hz, 3H), 7.25 (d, $J = 51.8$ Hz, 1H), 6.76 – 6.38 (m, 2H), 6.28 (d, $J = 16.1$ Hz, 1H), 4.24 (s, 2H), 3.91 (s, 3H), 2.80 (s, 2H), 2.78 (s, 6H), 2.32 (s, 3H), 1.95 (s, 6H). HRMS(ESI) m/z : calcd for $C_{25}H_{30}NO_5^+$ $[M-CH_3COOH+H]^+$: 424.2124, found: 424.2120. Yield: 97.65%.

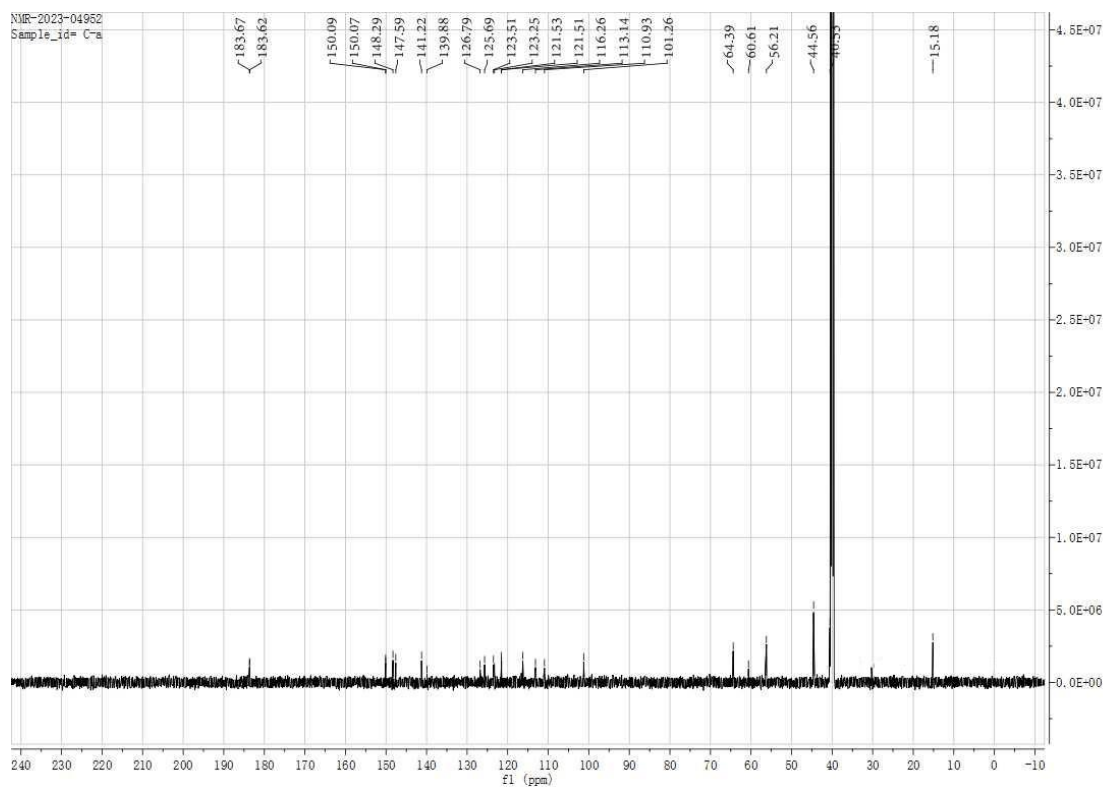
(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-2,6-dimethoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**14a**) ^1H NMR (600 MHz, CD_3OD) δ 8.04 (d, J = 15.9 Hz, 1H), 7.51 – 7.45 (m, 1H), 7.27 (s, 1H), 7.15 (s, 1H), 6.95 (d, J = 15.9 Hz, 1H), 6.63 (d, J = 15.2 Hz, 1H), 6.11 (s, 2H), 4.21 (d, J = 3.2 Hz, 2H), 3.94 (s, 3H), 3.83 (d, J = 24.1 Hz, 6H), 2.77 (d, J = 18.8 Hz, 8H), 1.96 (s, 3H). HRMS(ESI) m/z : calcd for $\text{C}_{25}\text{H}_{30}\text{NO}_7^+$ [$\text{M}-\text{CH}_3\text{COOH}+\text{H}$] $^+$: 456.2022, found: 456.2018. Yield: 96.21%.

(1E,6E)-1-(3-((dimethylamino)methyl)-4-hydroxy-5-methoxyphenyl)-7-(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-3,5-dione acetate (**15a**) ^1H NMR (600 MHz, CD_3OD) δ 7.56 – 7.43 (m, 2H), 7.22 (s, 1H), 7.13 (s, 2H), 7.04 (d, J = 5.6 Hz, 1H), 6.80 (d, J = 7.8 Hz, 1H), 6.57 (t, J = 16.9 Hz, 2H), 4.18 (s, 2H), 3.88 (d, J = 13.5 Hz, 6H), 2.76 (d, J = 11.0 Hz, 6H), 1.96 (s, 3H). HRMS(ESI) m/z : calcd for $\text{C}_{24}\text{H}_{28}\text{NO}_6^+$ [$\text{M}-\text{CH}_3\text{COOH}+\text{H}$] $^+$: 426.1916, found: 426.1912. Yield: 96.53%.

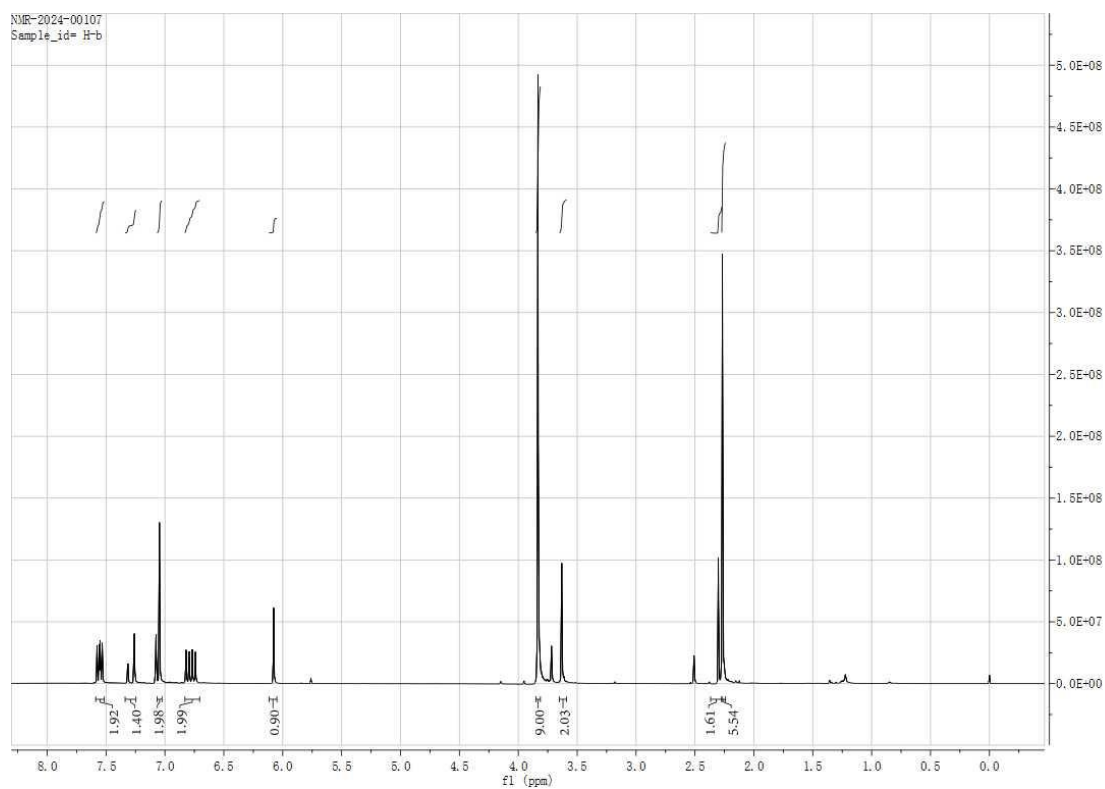
Section 3: NMR spectrums and HRMS of curcumin derivatives **1-15** and their acetates **1a-15a**.



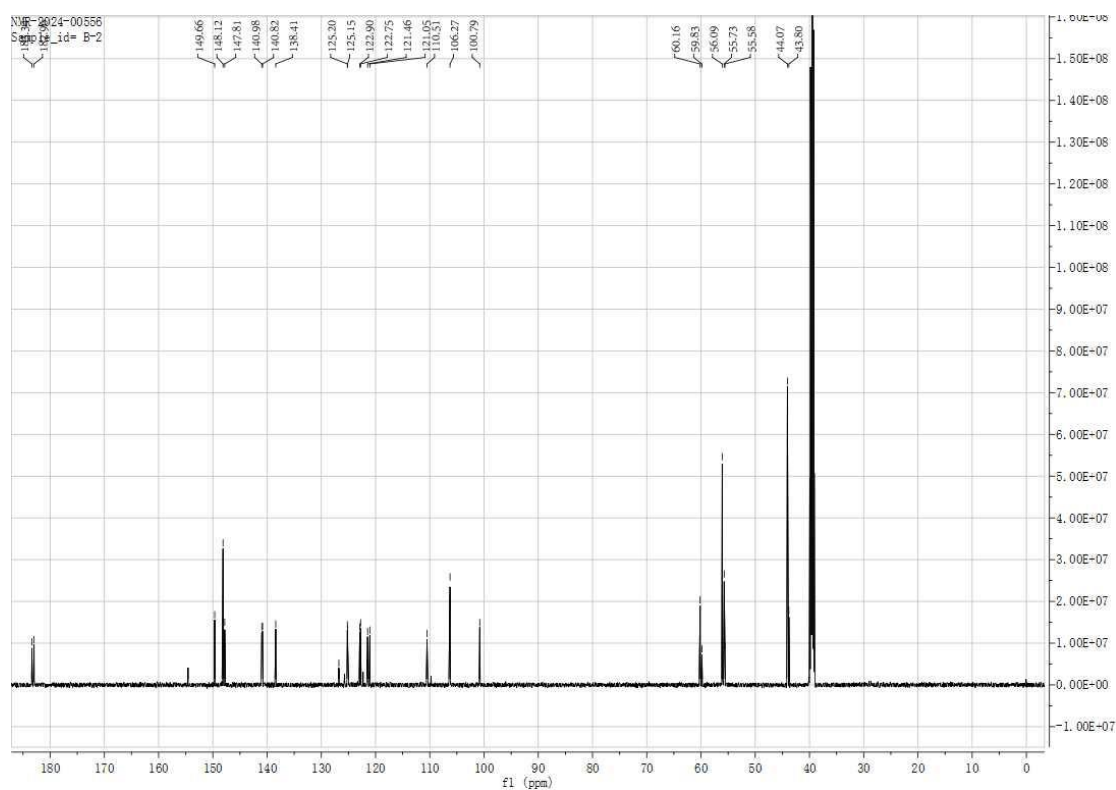
Supplementary Figure S1. ^1H -NMR spectrum of **1** in CD_3OD .



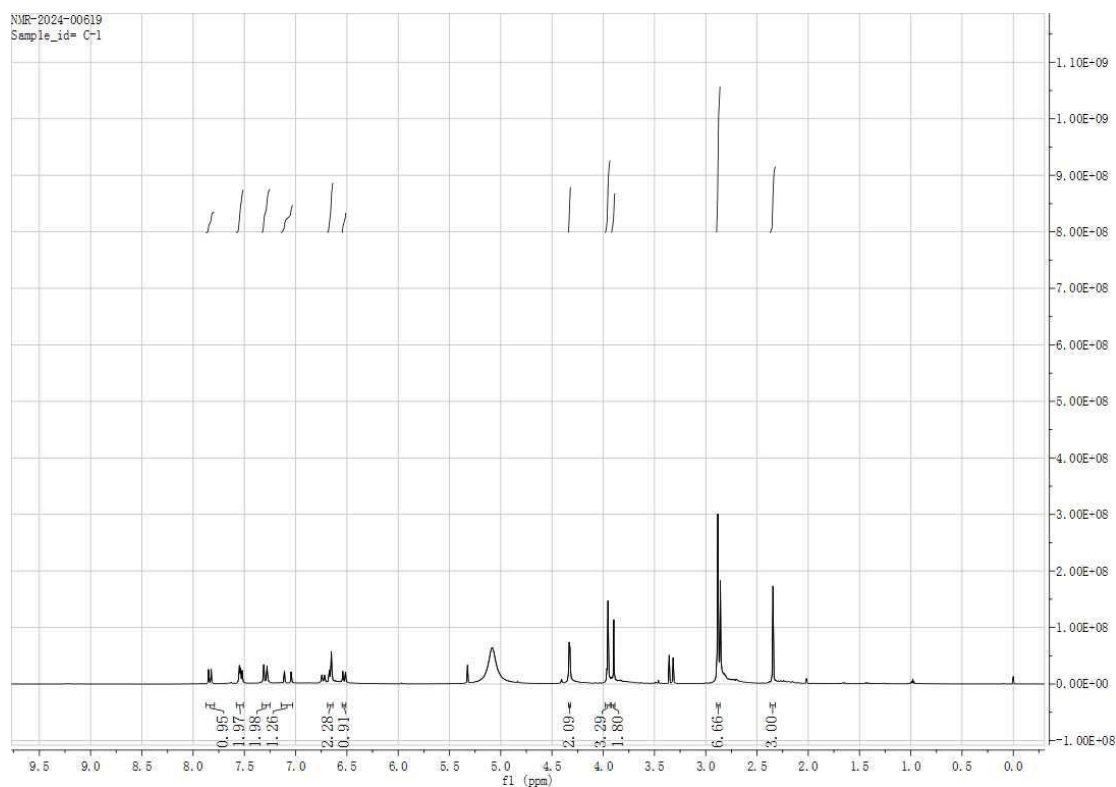
Supplementary Figure S2. ^{13}C -NMR spectrum of **1** in $\text{DMSO-}d_6$.



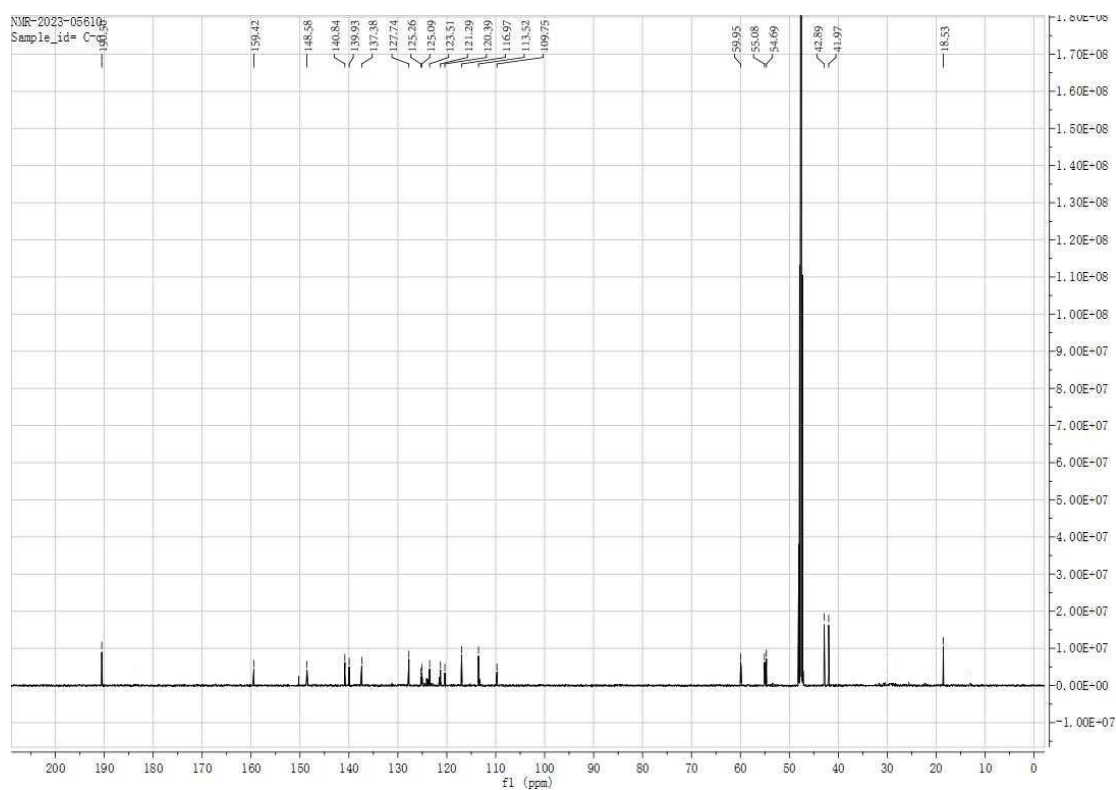
Supplementary Figure S3. ^1H -NMR spectrum of **2** in $\text{DMSO-}d_6$.



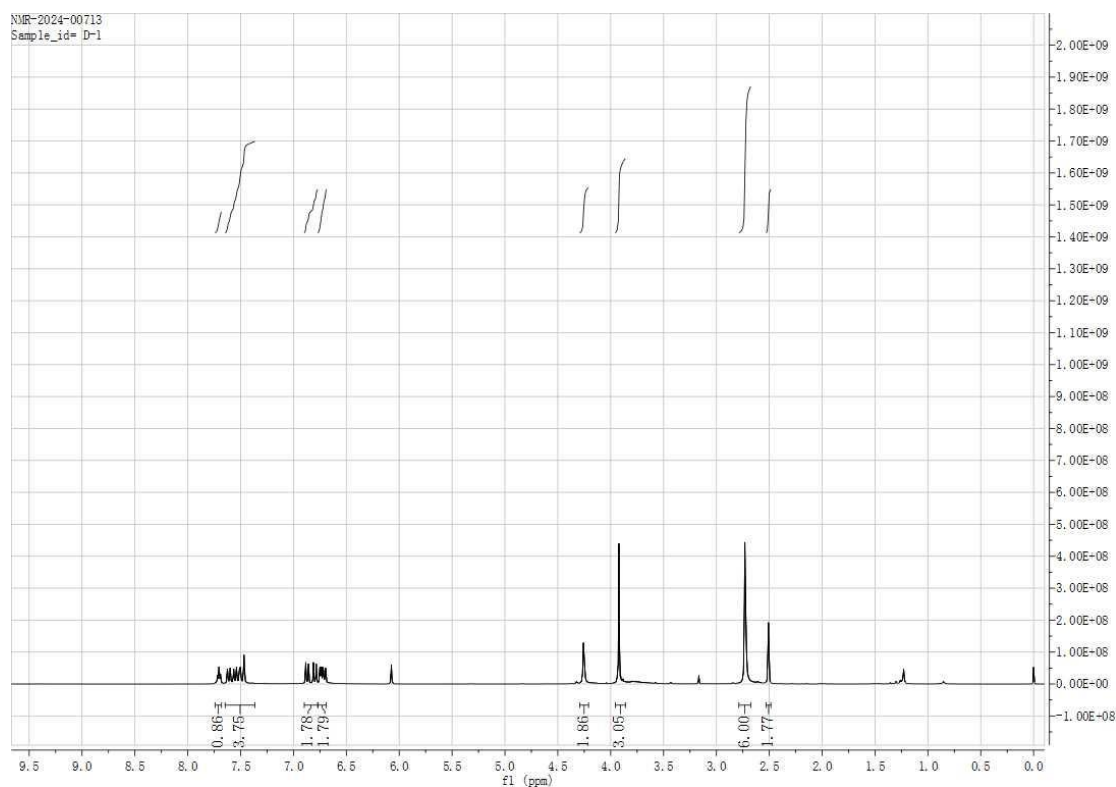
Supplementary Figure S4. ^{13}C -NMR spectrum of **2** in $\text{DMSO-}d_6$.



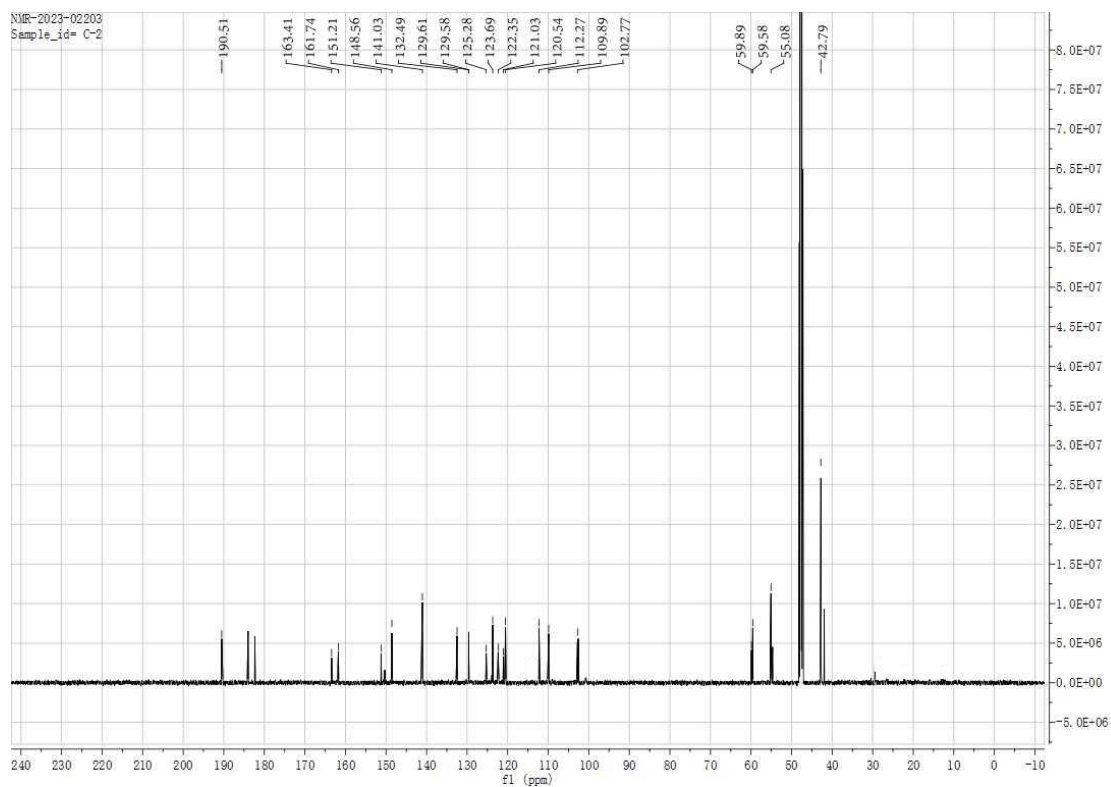
Supplementary Figure S5. ^1H -NMR spectrum of **3** in CD_3OD .



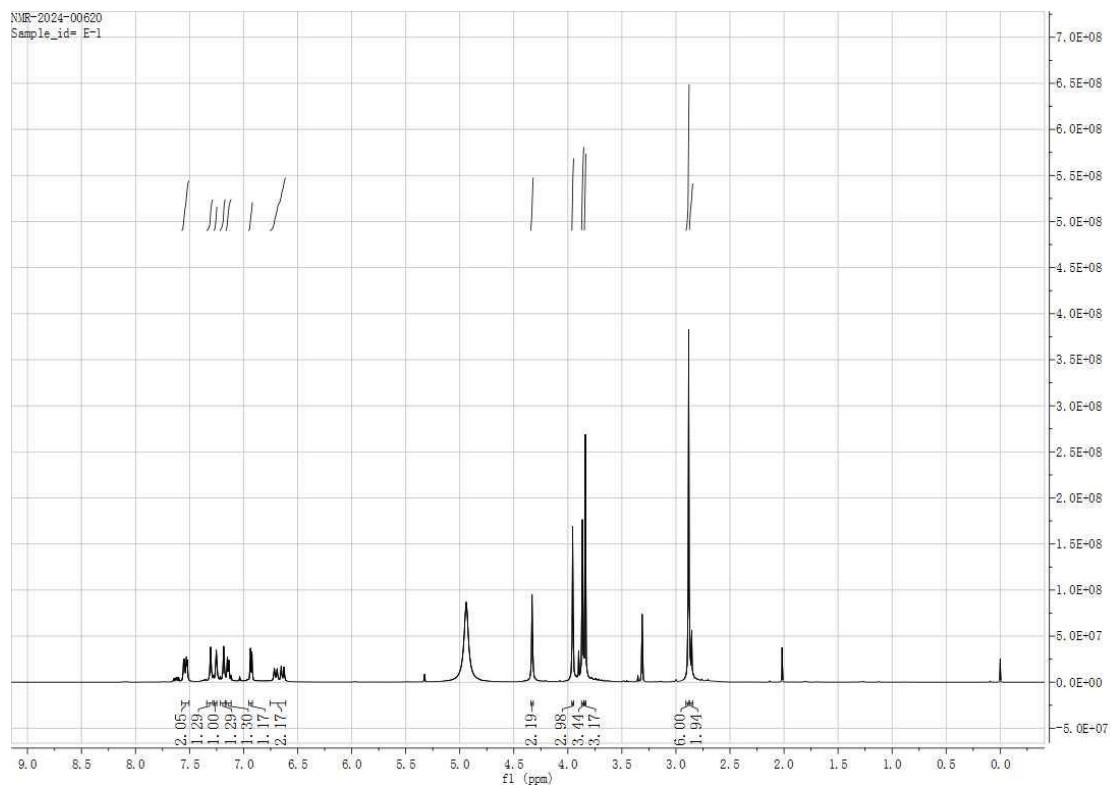
Supplementary Figure S6. ^{13}C -NMR spectrum of **3** in CD_3OD .



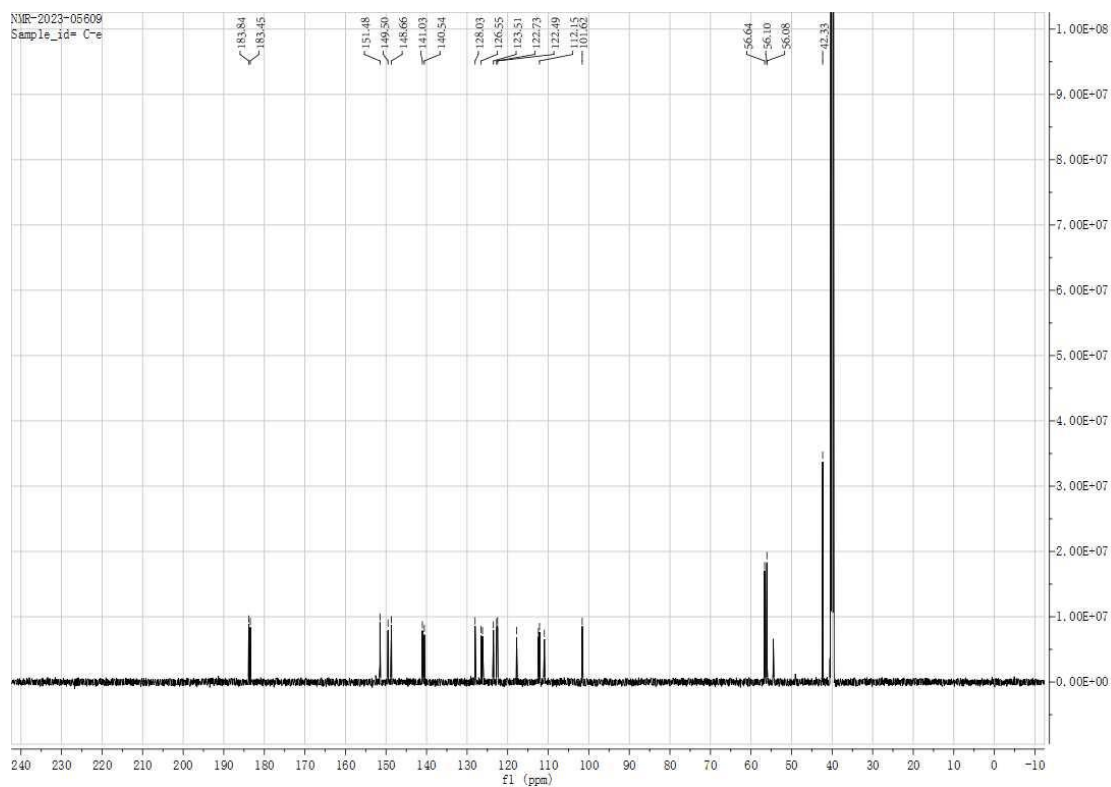
Supplementary Figure S7. ^1H -NMR spectrum of **4** in CD_3OD .



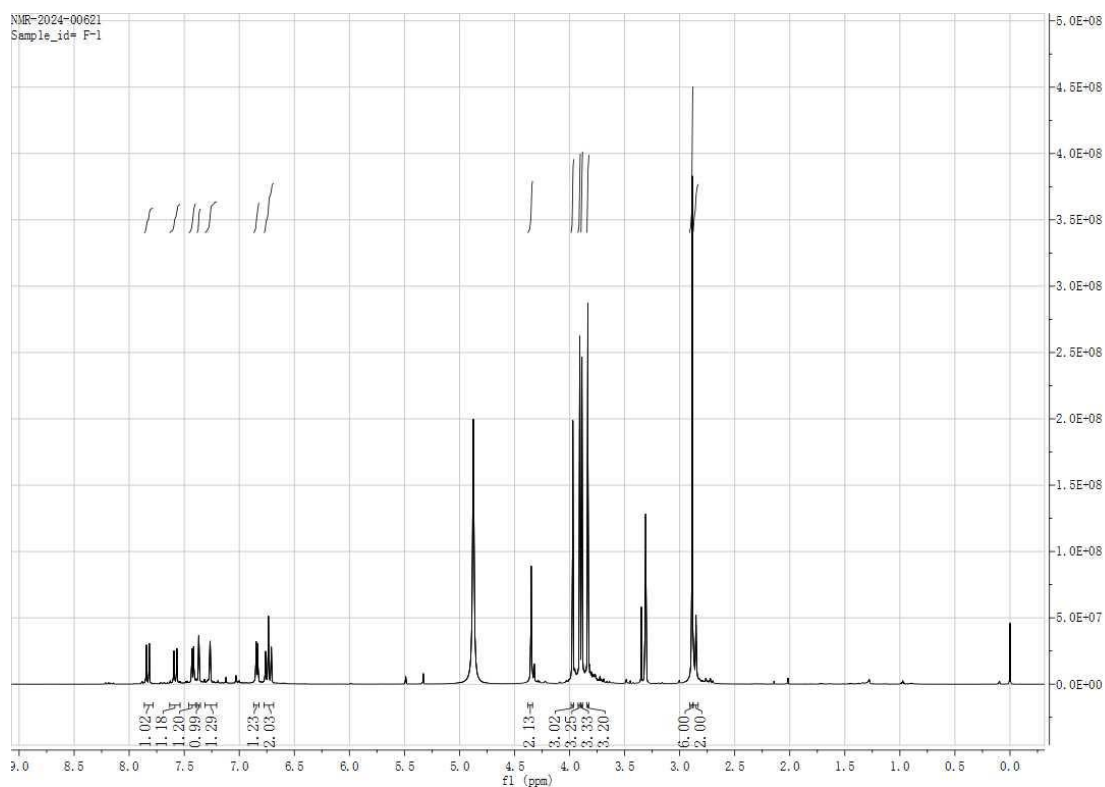
Supplementary Figure S8. ^{13}C -NMR spectrum of **4** in CD_3OD .



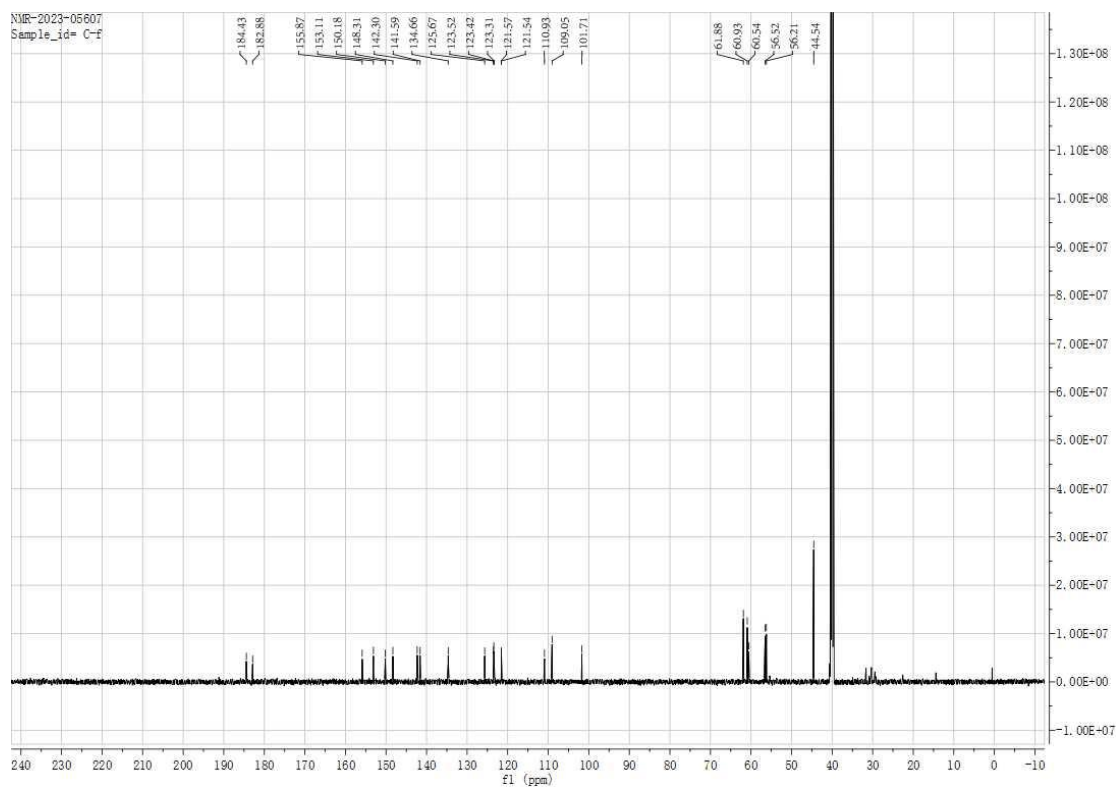
Supplementary Figure S9. ^1H -NMR spectrum of **5** in CD_3OD .



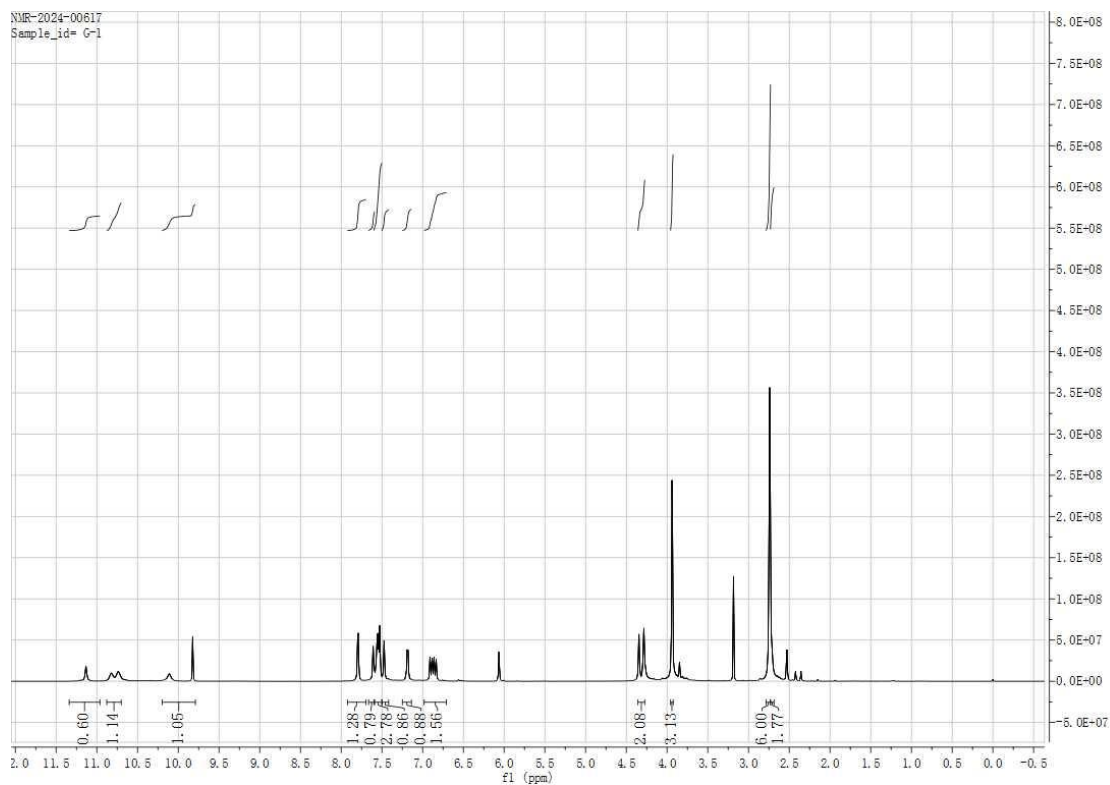
Supplementary Figure S10. ^{13}C -NMR spectrum of 5 in $\text{DMSO-}d_6$.



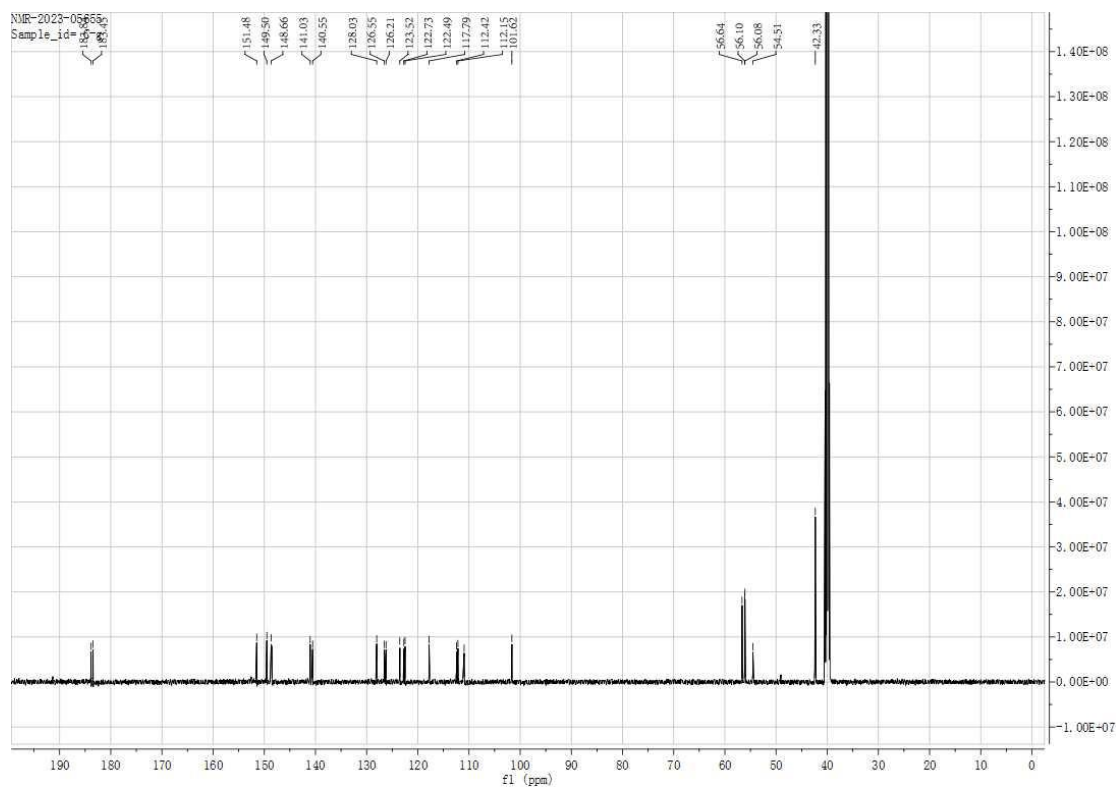
Supplementary Figure S11. ^1H -NMR spectrum of 6 in CD_3OD .



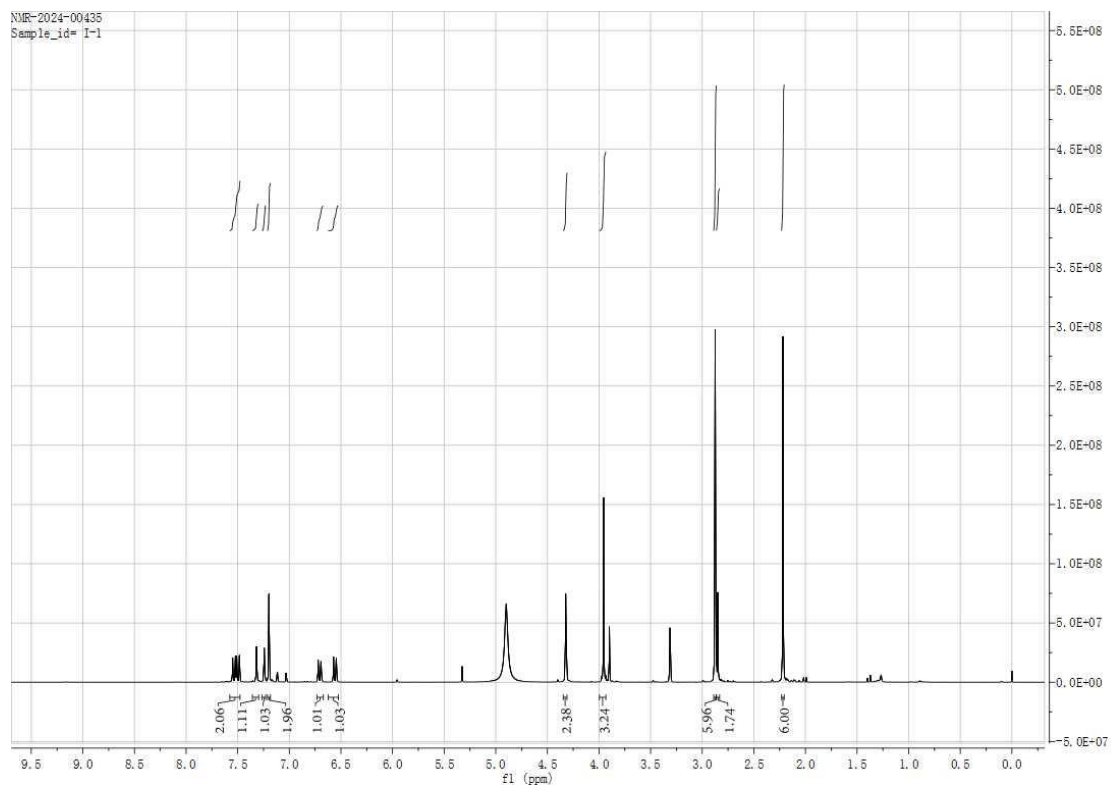
Supplementary Figure S12. ^{13}C -NMR spectrum of **6** in $\text{DMSO-}d_6$.



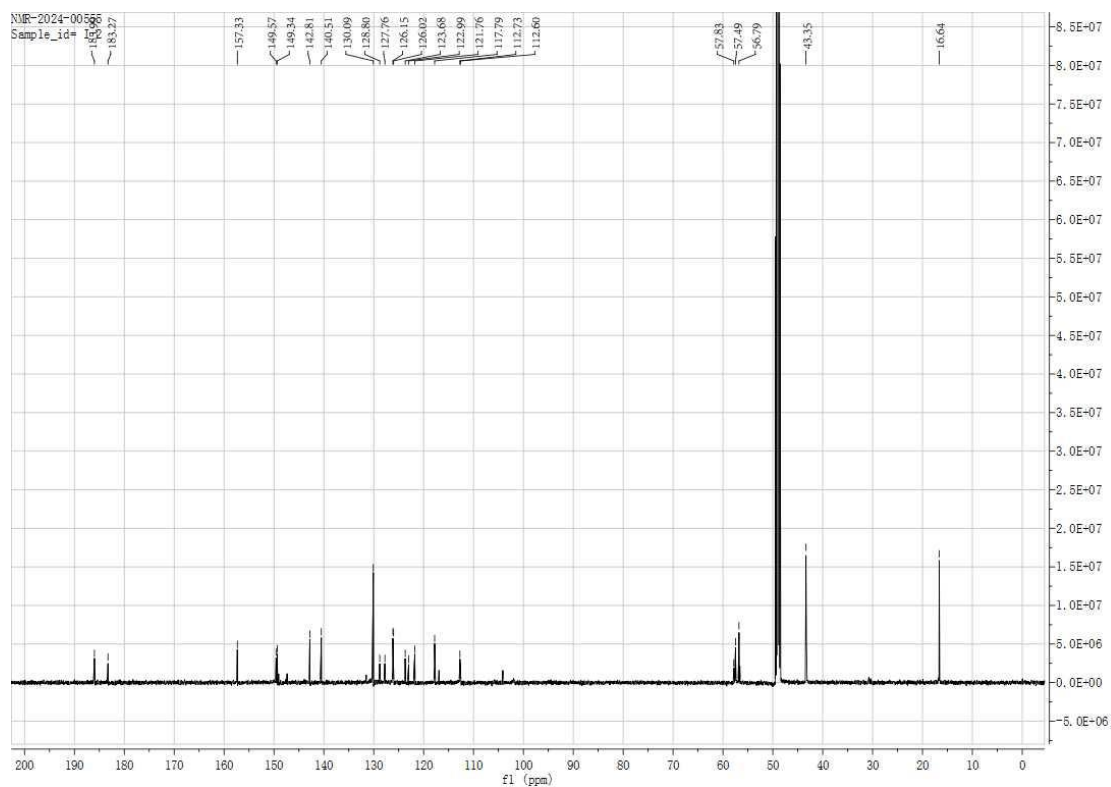
Supplementary Figure S13. ^1H -NMR spectrum of **7** in $\text{DMSO-}d_6$.



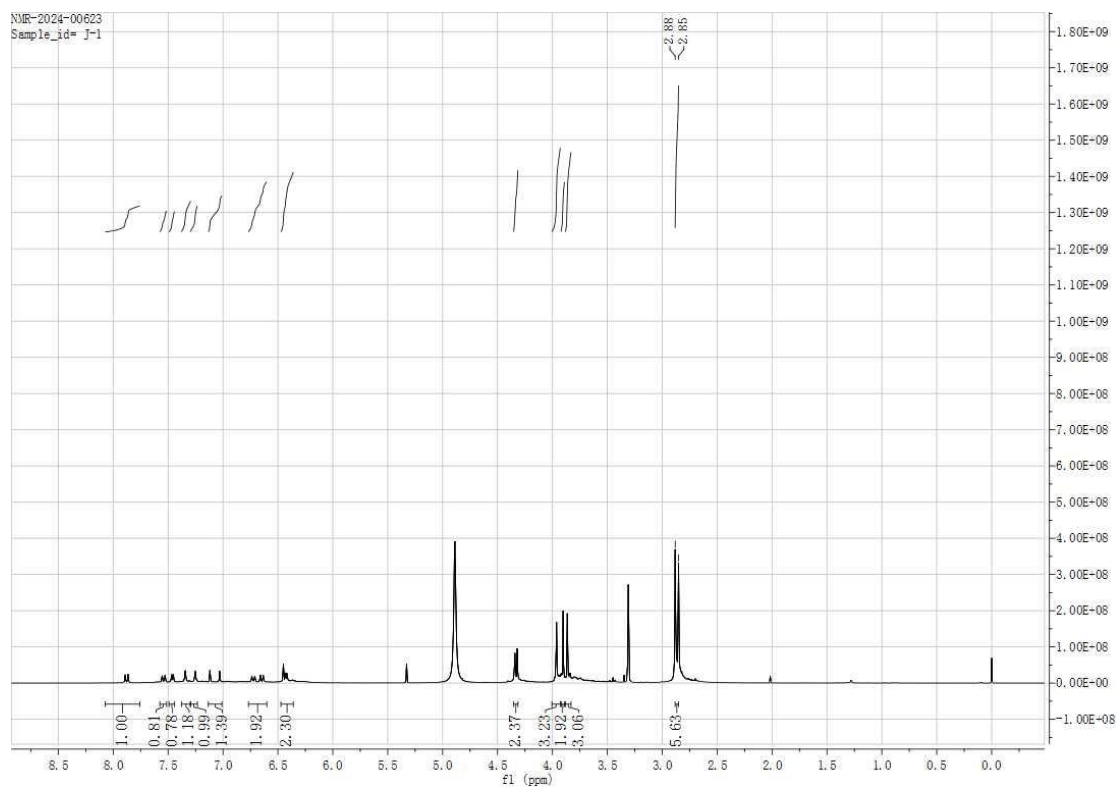
Supplementary Figure S14. ^{13}C -NMR spectrum of **7** in $\text{DMSO-}d_6$.



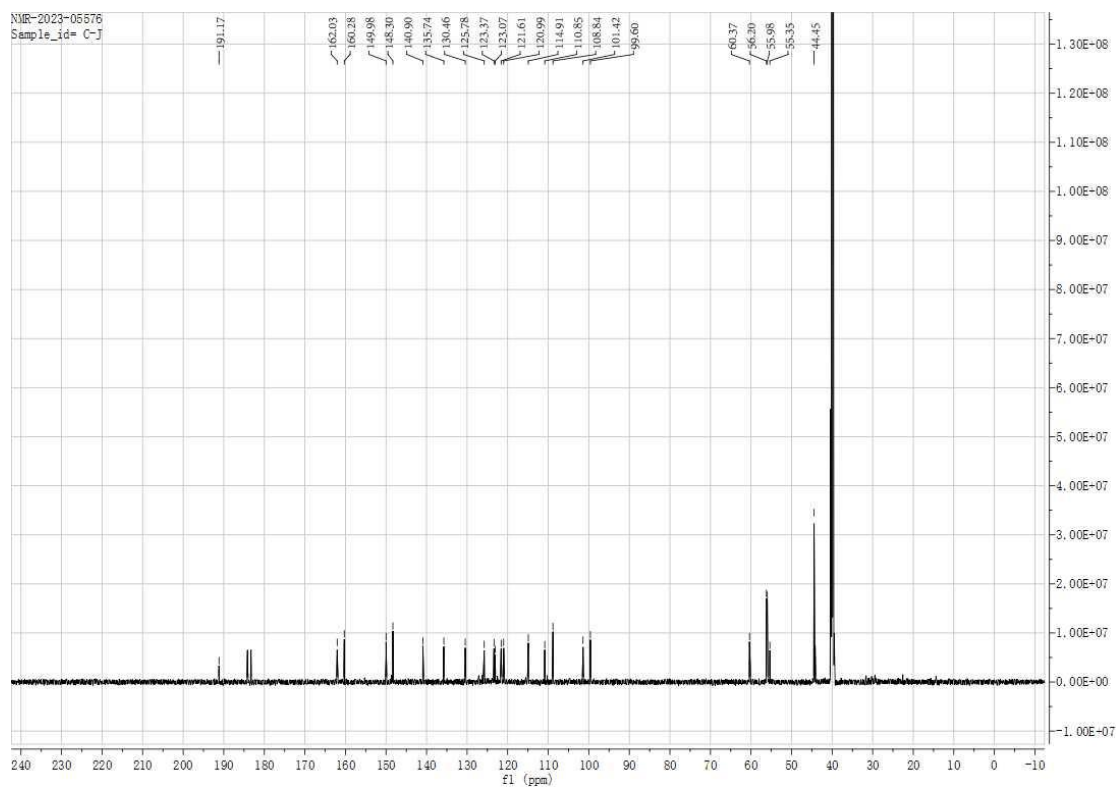
Supplementary Figure S15. ^1H -NMR spectrum of **8** in CD_3OD .



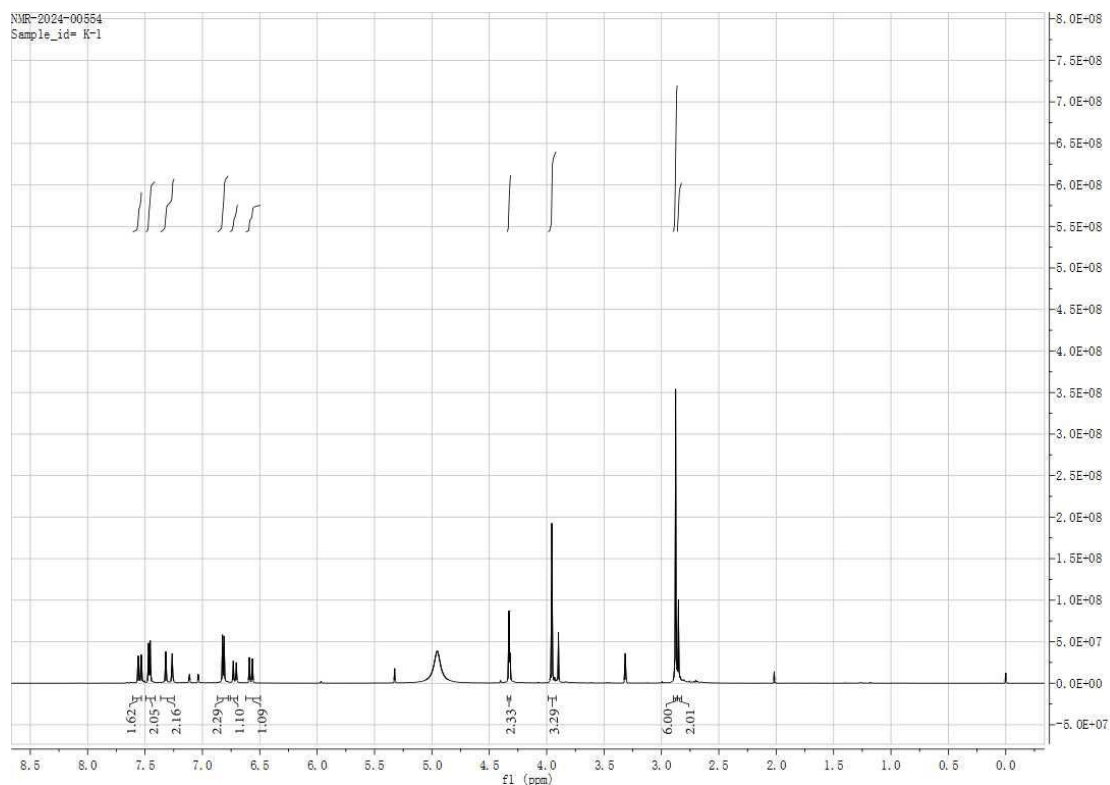
Supplementary Figure S16. ^{13}C -NMR spectrum of **8** in CD_3OD .



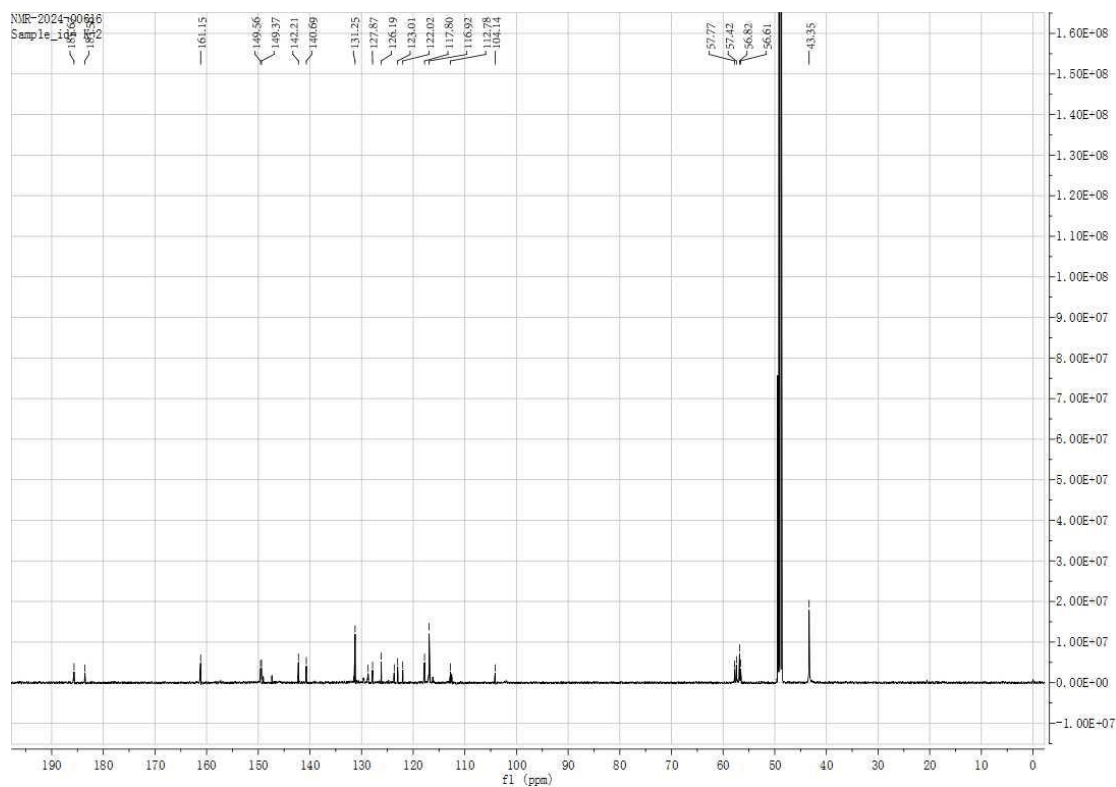
Supplementary Figure S17. ^1H -NMR spectrum of **9** in CD_3OD .



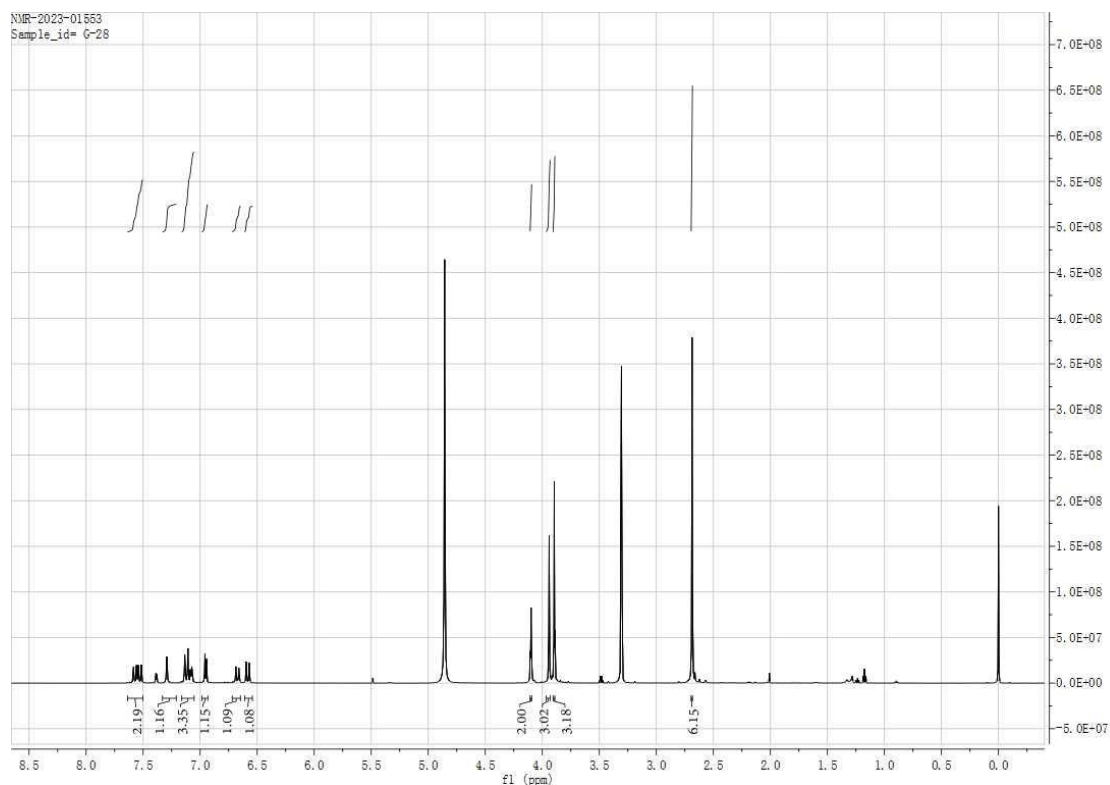
Supplementary Figure S18. ^{13}C -NMR spectrum of **9** in $\text{DMSO-}d_6$.



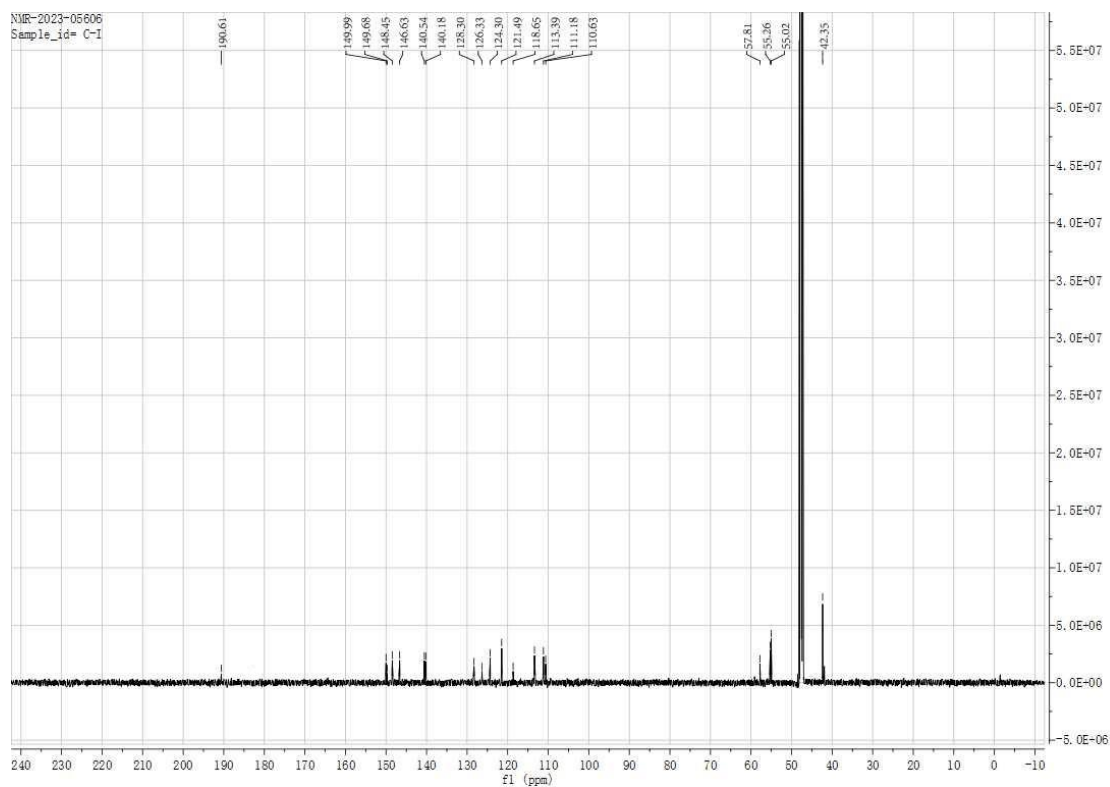
Supplementary Figure S19. ^1H -NMR spectrum of **10** in CD_3OD .



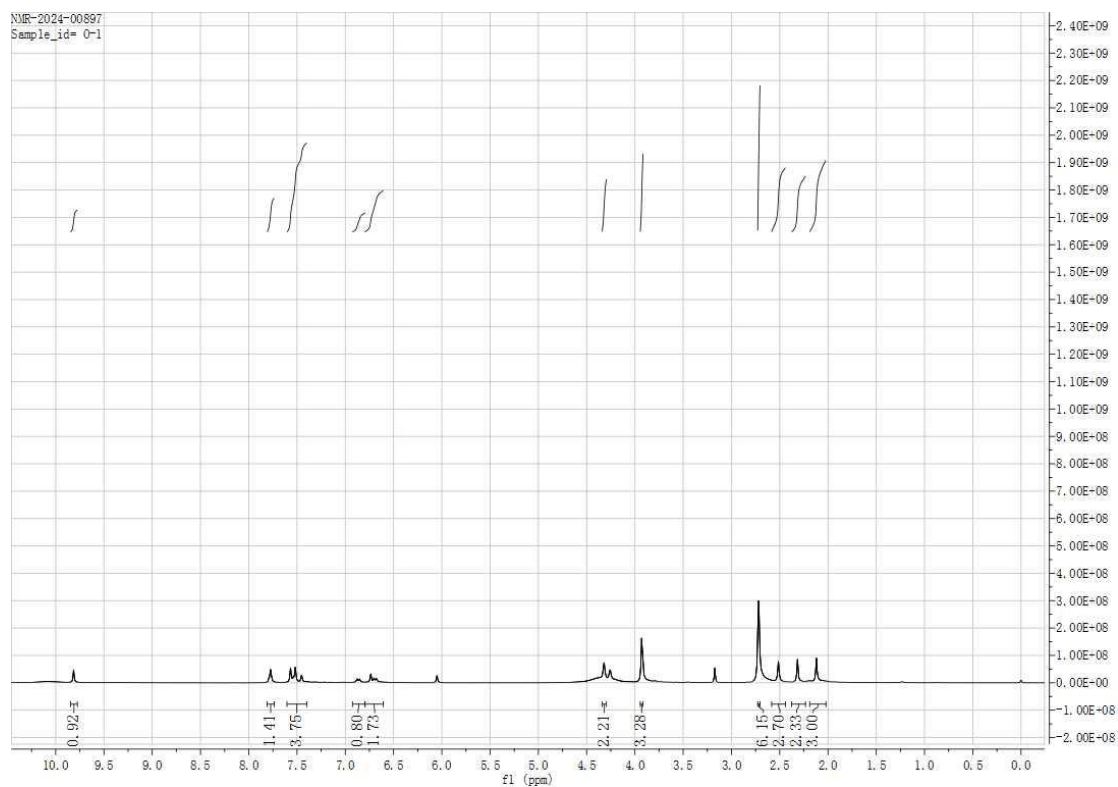
Supplementary Figure S20. ^{13}C -NMR spectrum of 10 in CD_3OD .



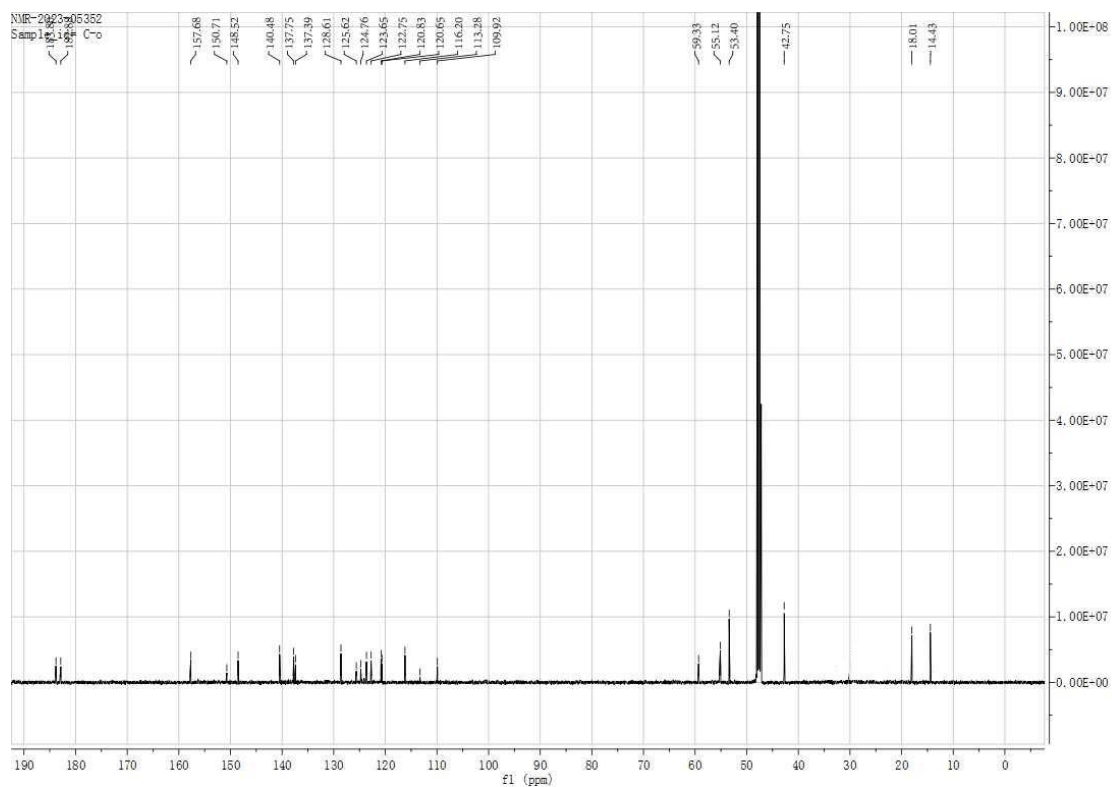
Supplementary Figure S21. ^1H -NMR spectrum of 11 in CD_3OD .



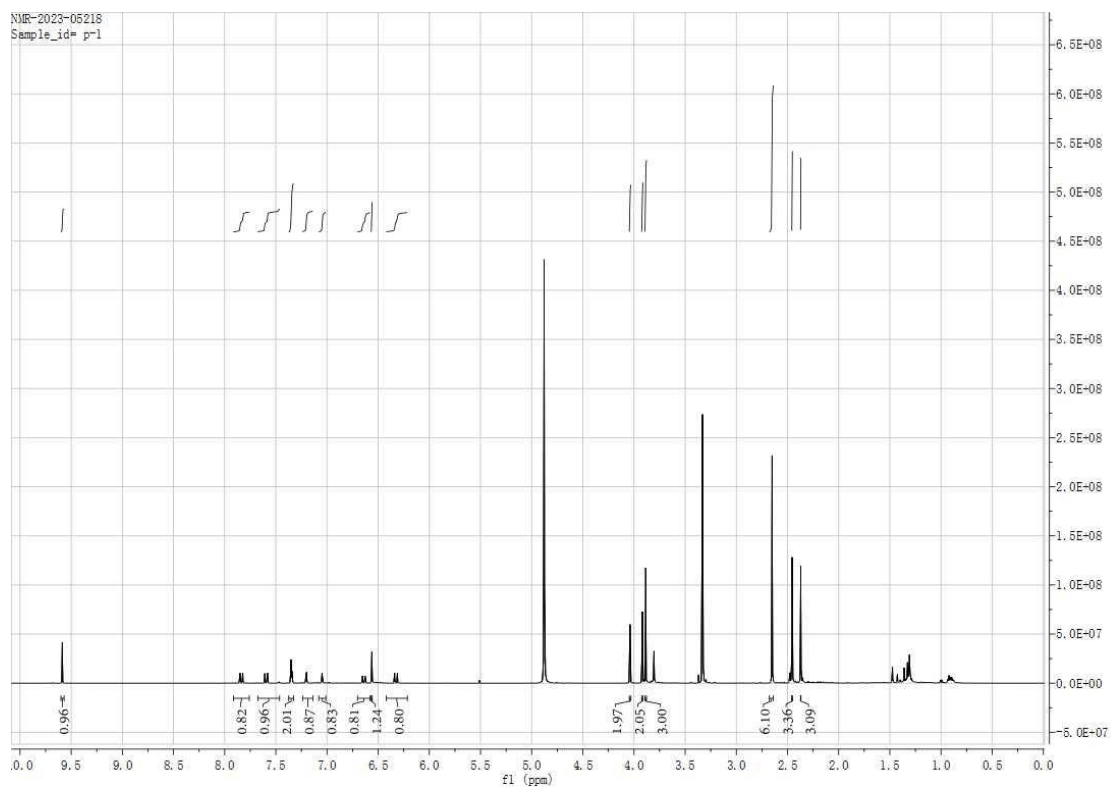
Supplementary Figure S22. ^{13}C -NMR spectrum of **11** in CD_3OD .



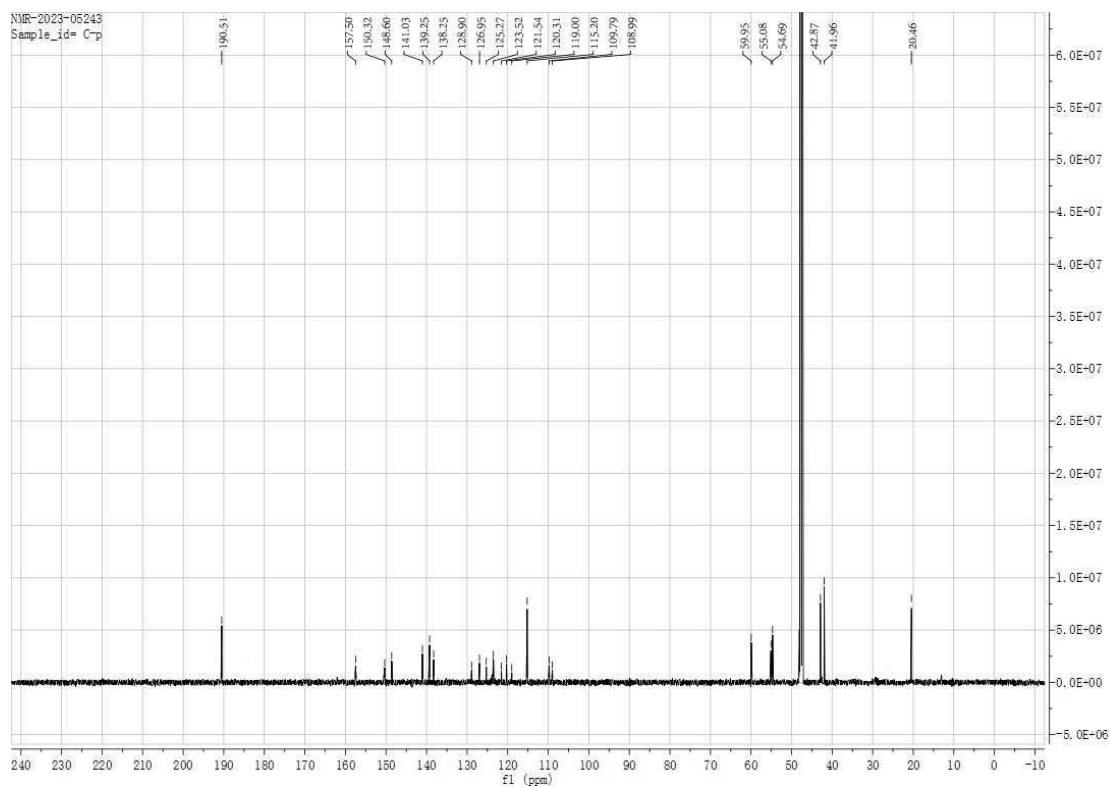
Supplementary Figure S23. ^1H -NMR spectrum of **12** in $\text{DMSO}-d_6$.



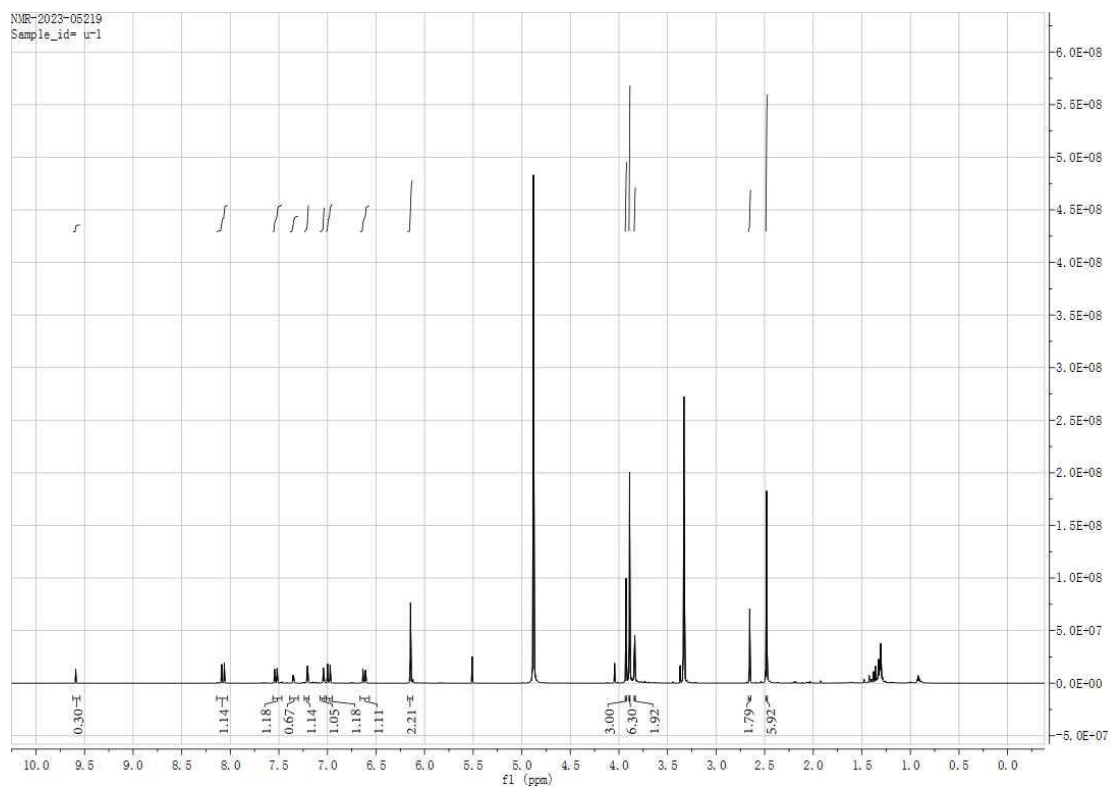
Supplementary Figure S24. ^{13}C -NMR spectrum of **12** in CD_3OD .



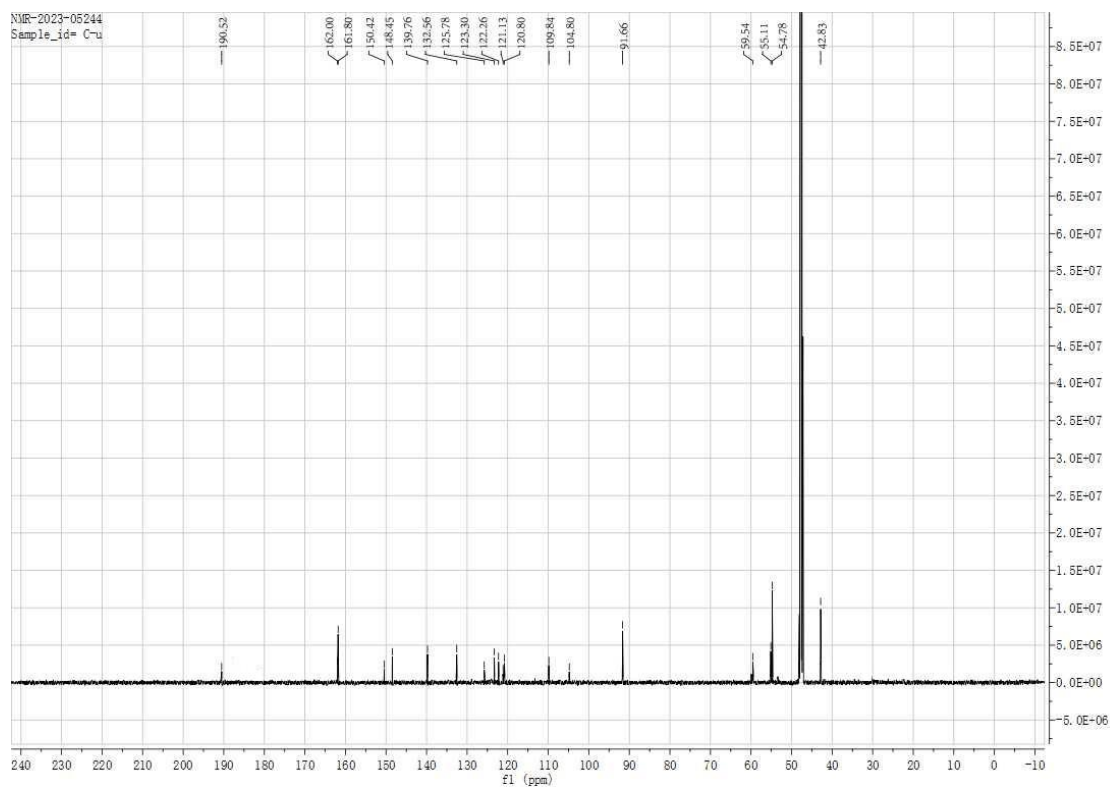
Supplementary Figure S25. ^1H -NMR spectrum of **13** in CD_3OD .



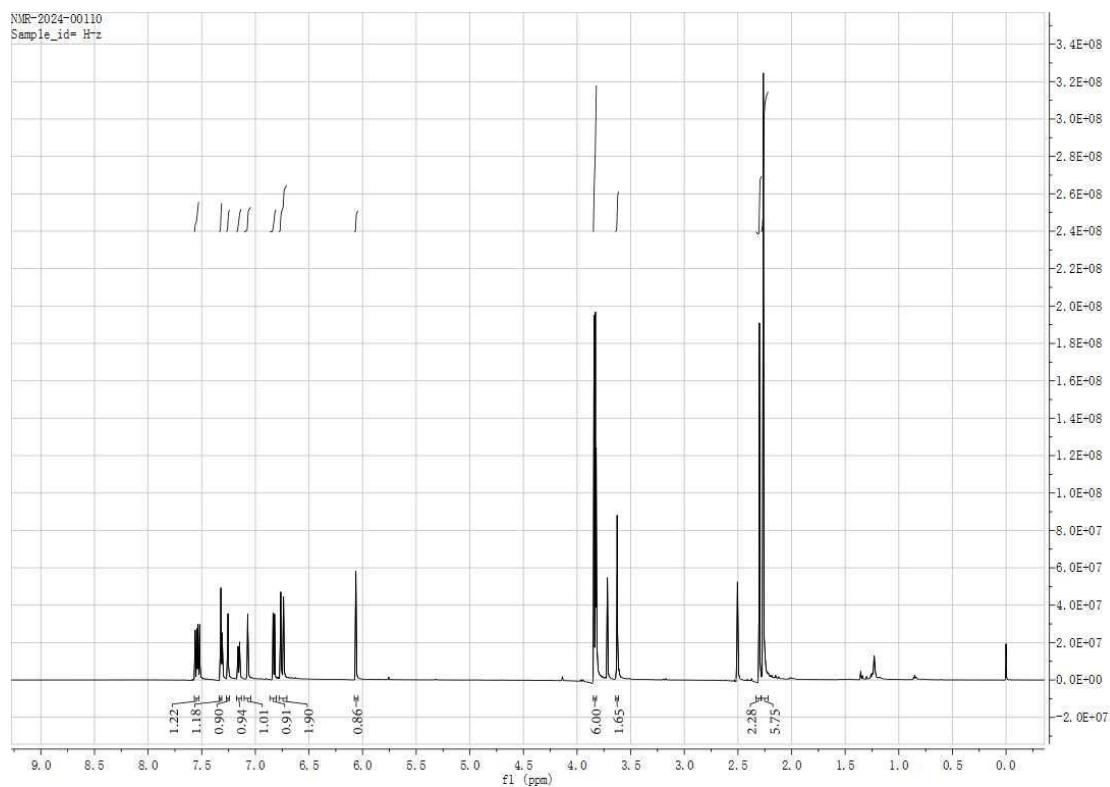
Supplementary Figure S26. ^{13}C -NMR spectrum of **13** in CD_3OD .



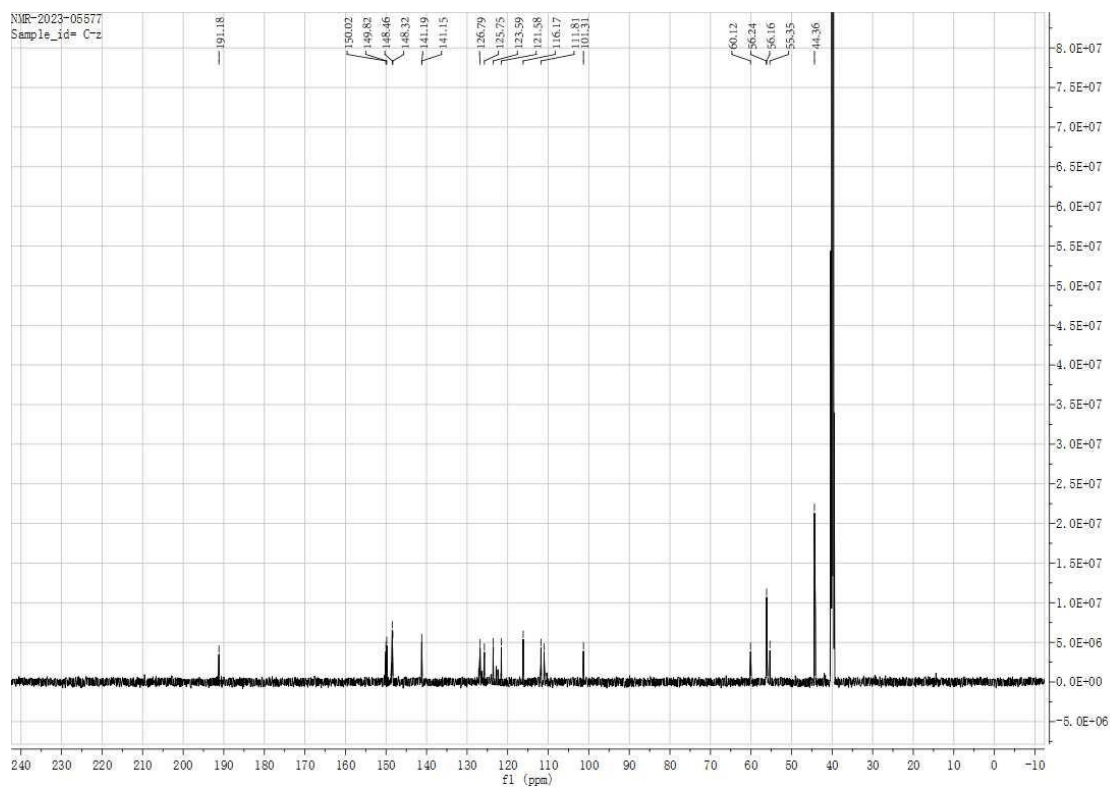
Supplementary Figure S27. ^1H -NMR spectrum of **14** in CD_3OD .



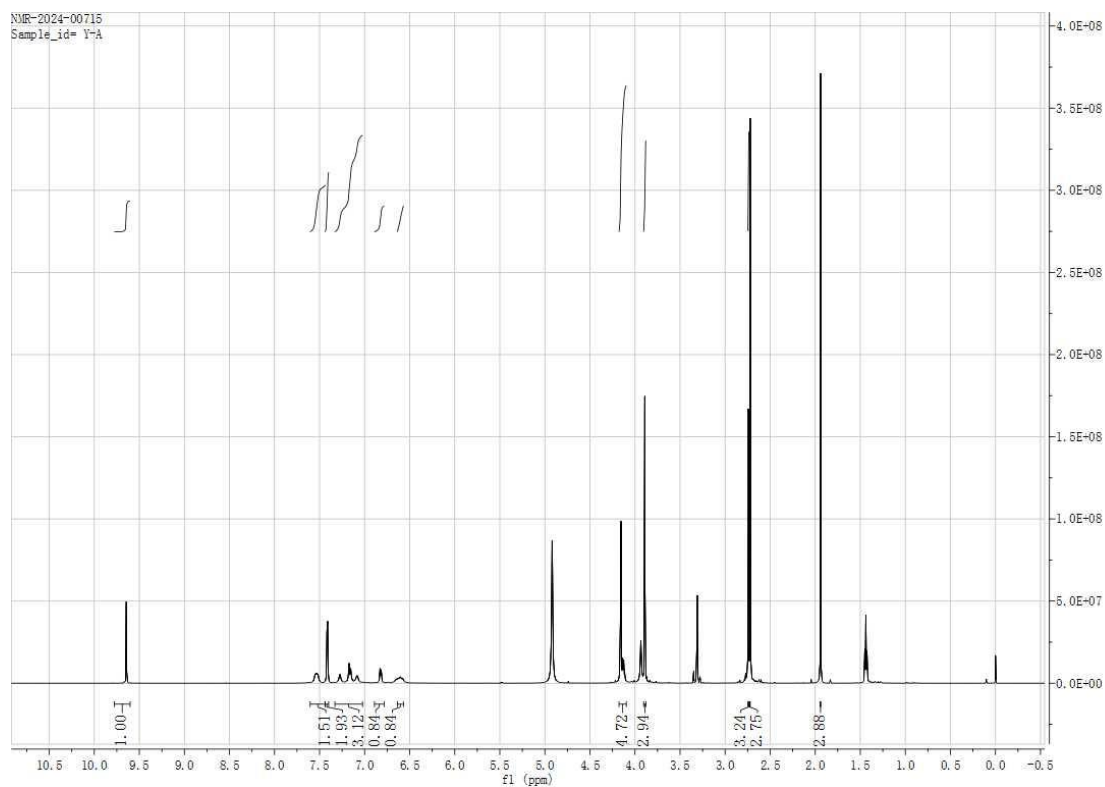
Supplementary Figure S28. ^{13}C -NMR spectrum of **14** in CD_3OD .



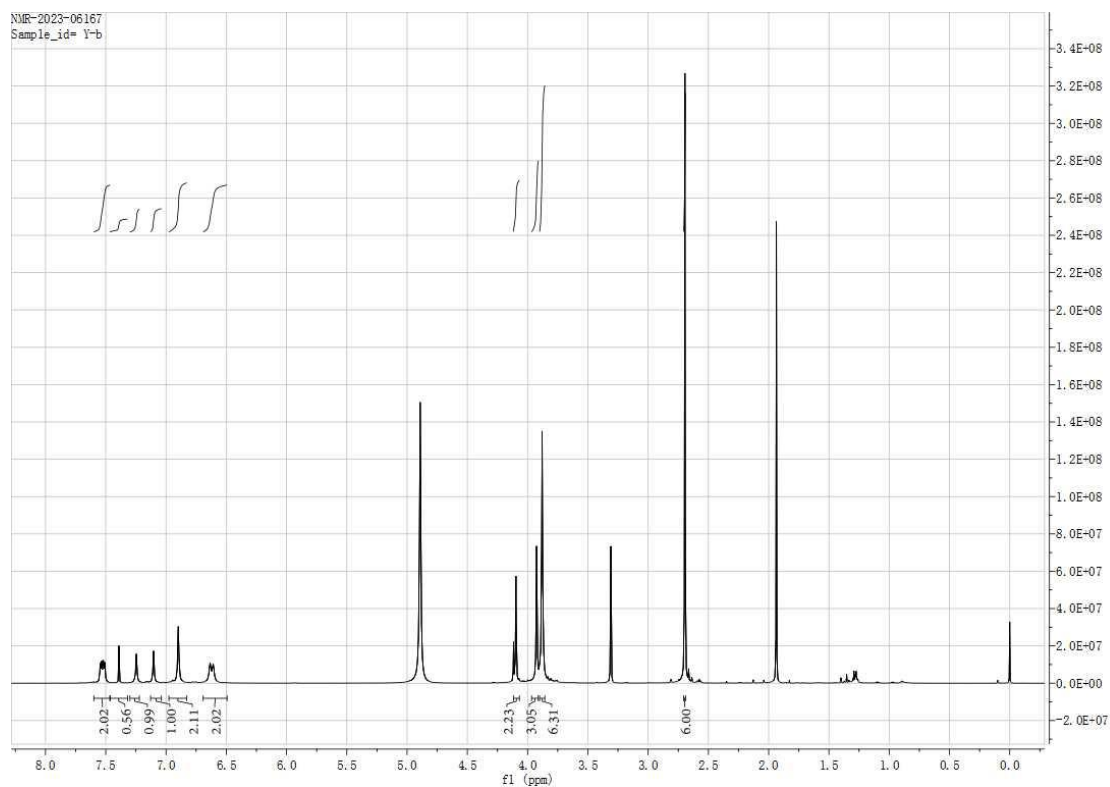
Supplementary Figure S29. ^1H -NMR spectrum of **15** in $\text{DMSO}-d_6$.



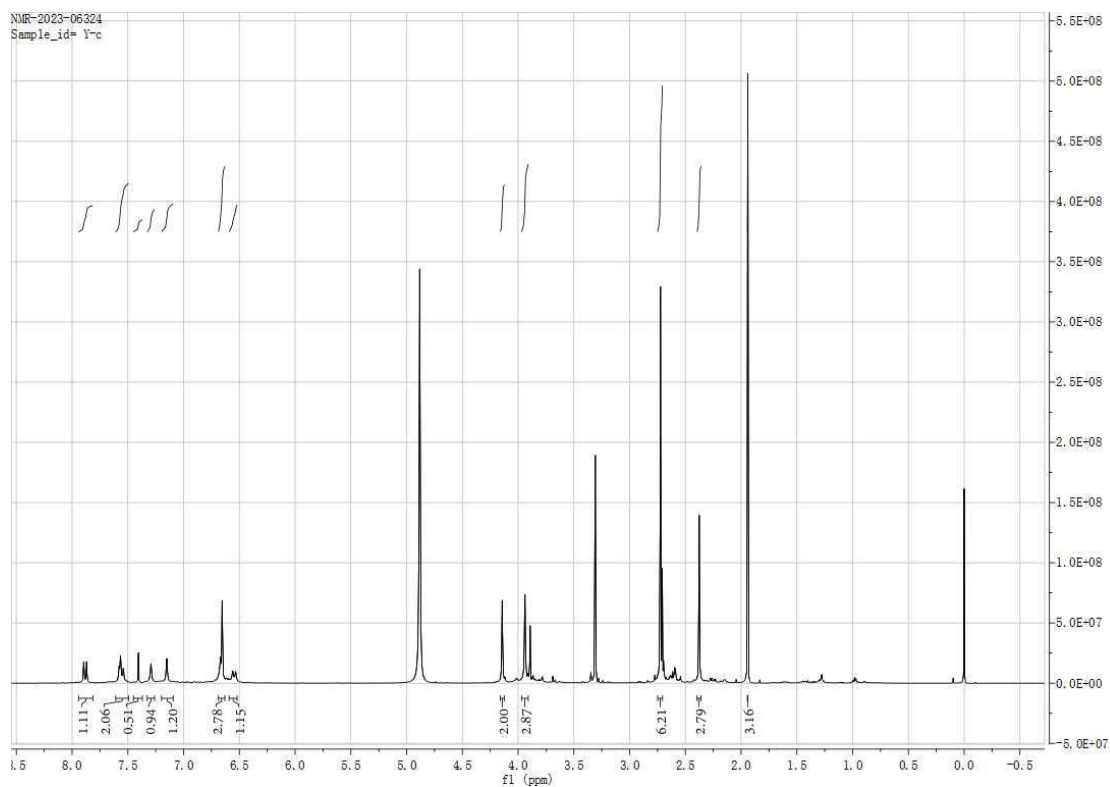
Supplementary Figure S30. ^{13}C -NMR spectrum of **15** in $\text{DMSO}-d_6$.



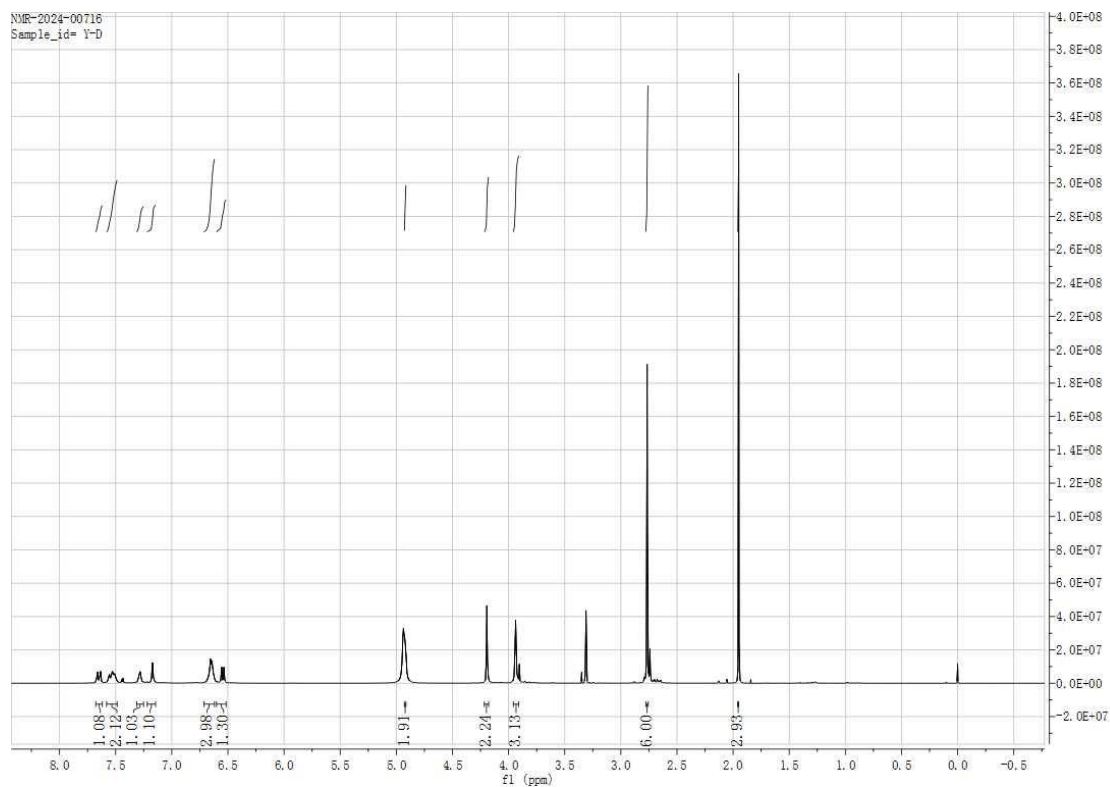
Supplementary Figure S31. ^1H -NMR spectrum of **1a** in CD_3OD .



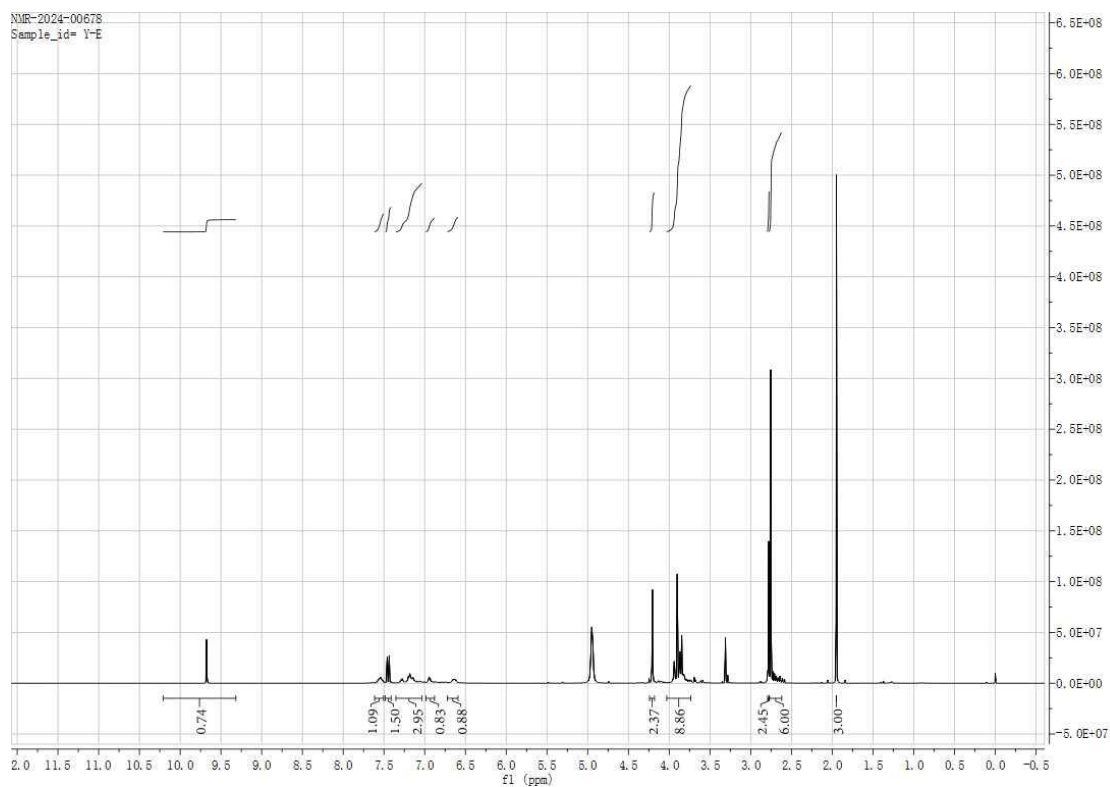
Supplementary Figure S32. ^1H -NMR spectrum of **2a** in CD_3OD .



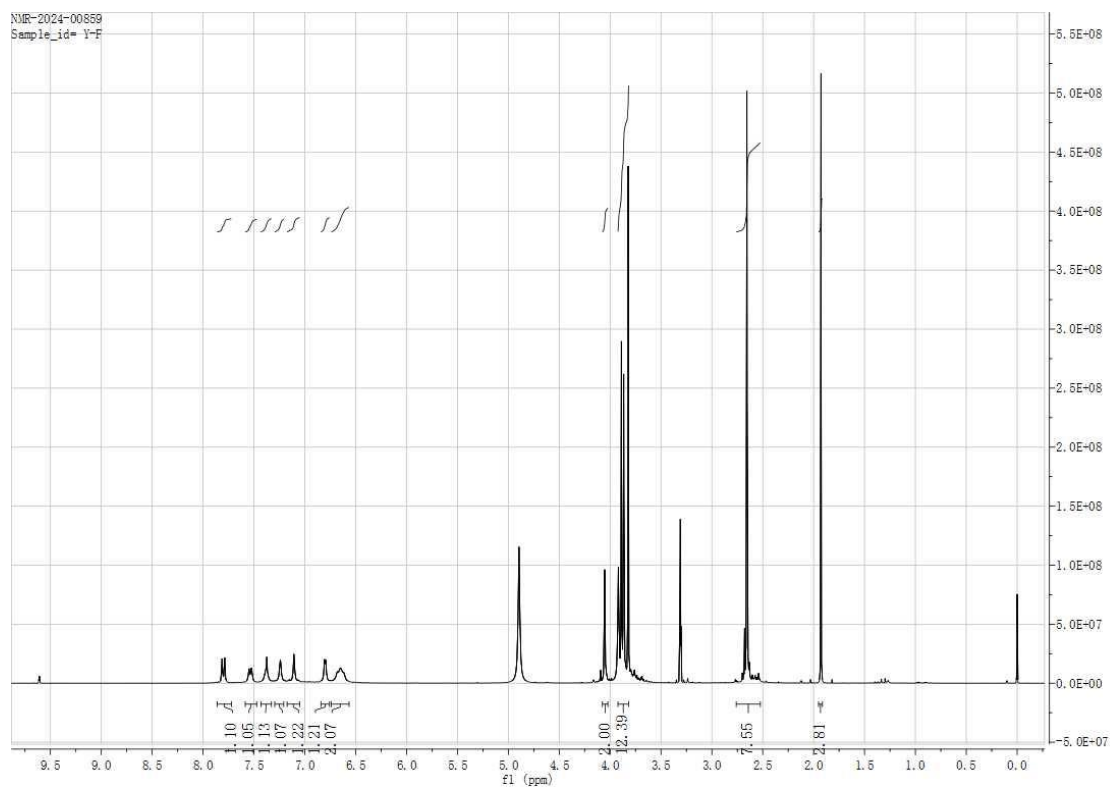
Supplementary Figure S33. ^1H -NMR spectrum of **3a** in CD_3OD .



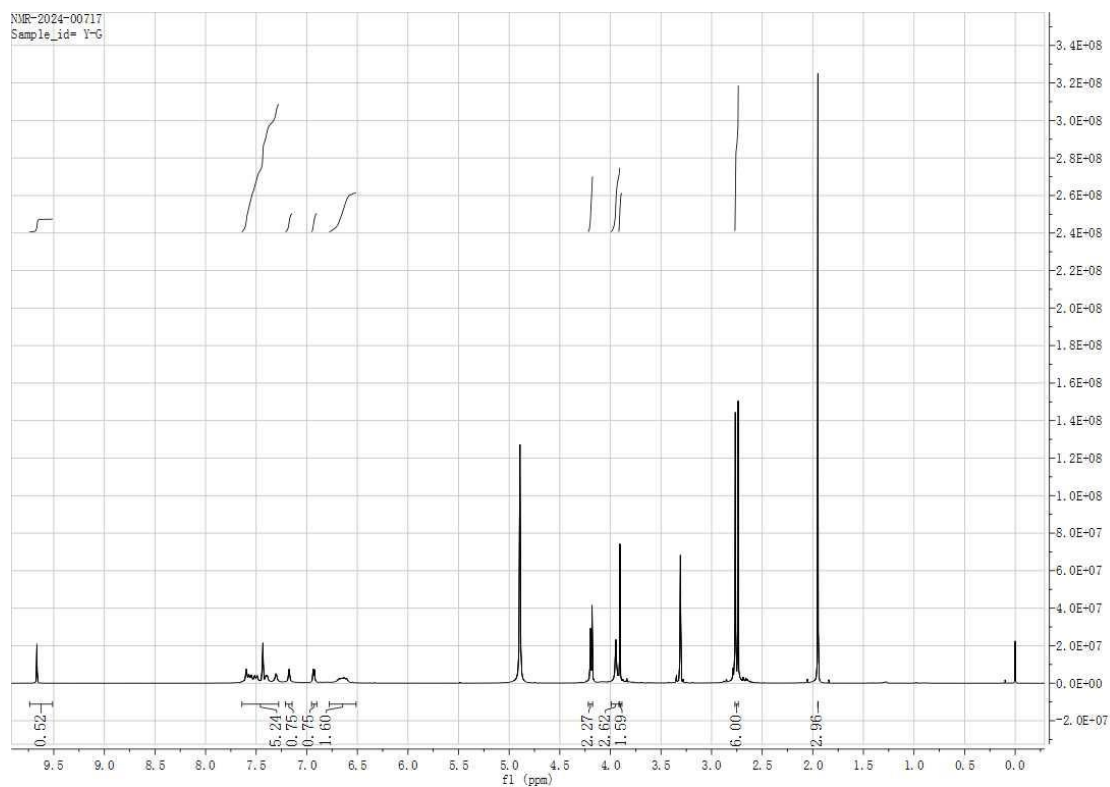
Supplementary Figure S34. ^1H -NMR spectrum of **4a** in CD_3OD .



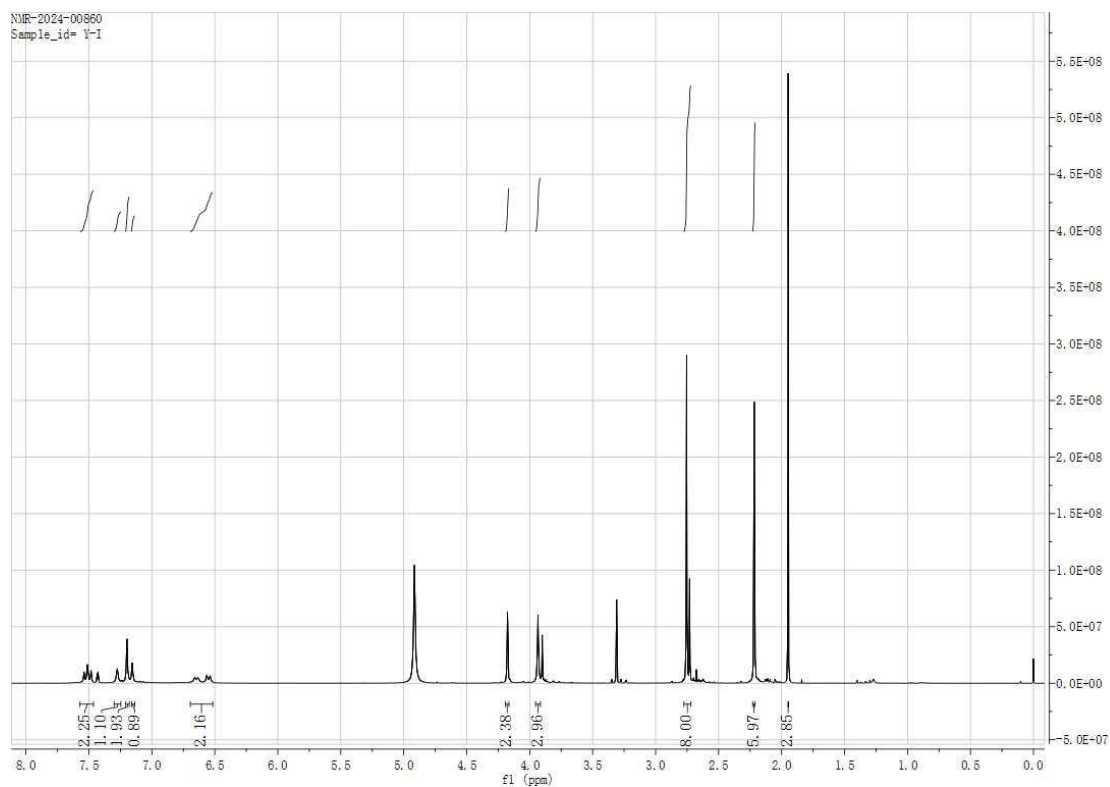
Supplementary Figure S35. ^1H -NMR spectrum of **5a** in CD_3OD .



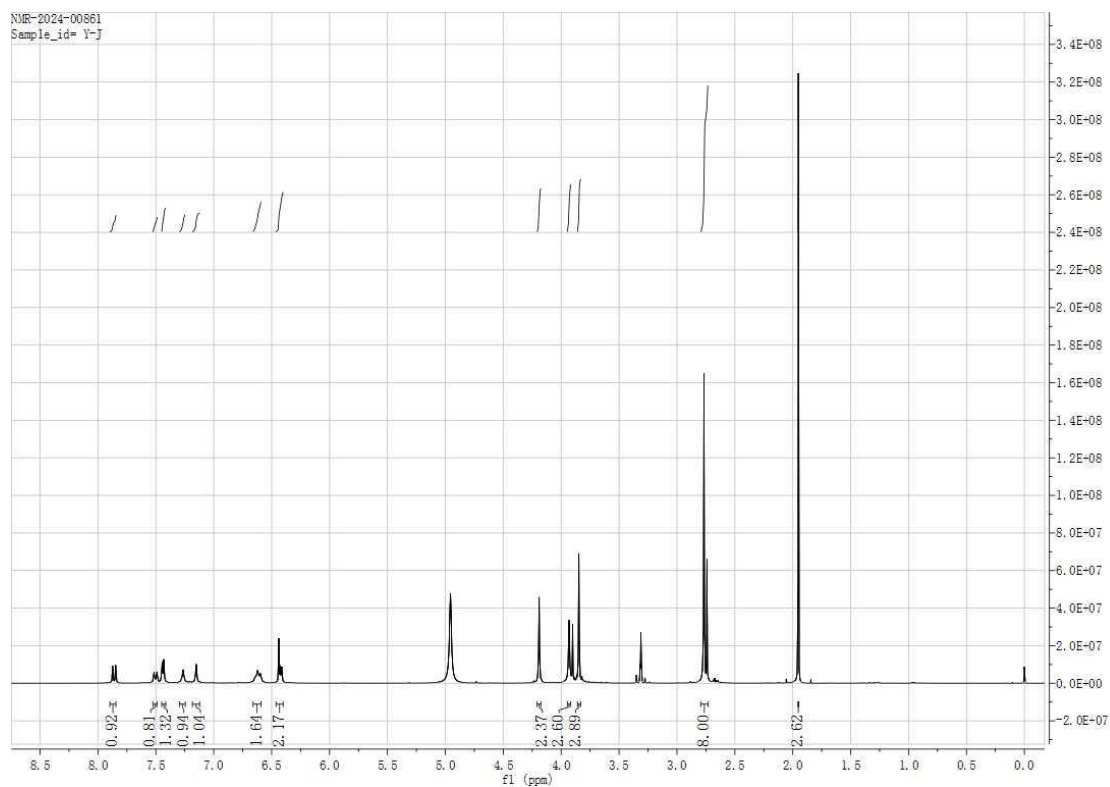
Supplementary Figure S36. ^1H -NMR spectrum of **6a** in CD_3OD .



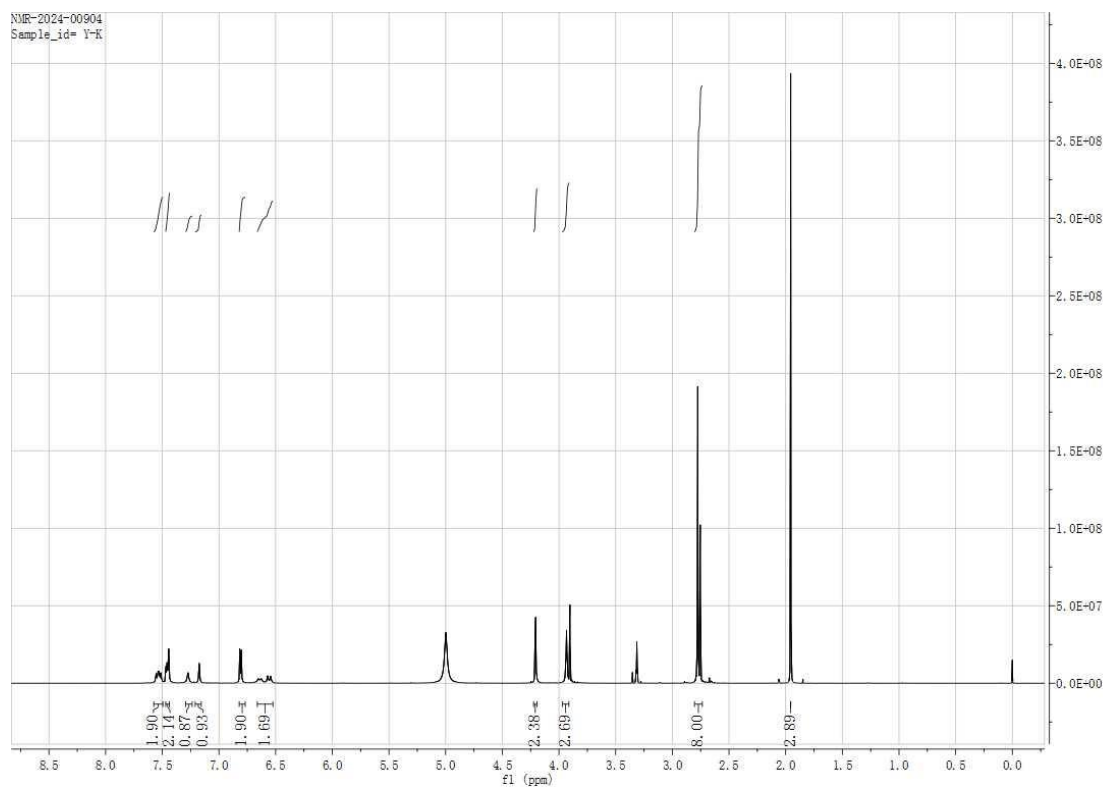
Supplementary Figure S37. ^1H -NMR spectrum of **7a** in CD_3OD .



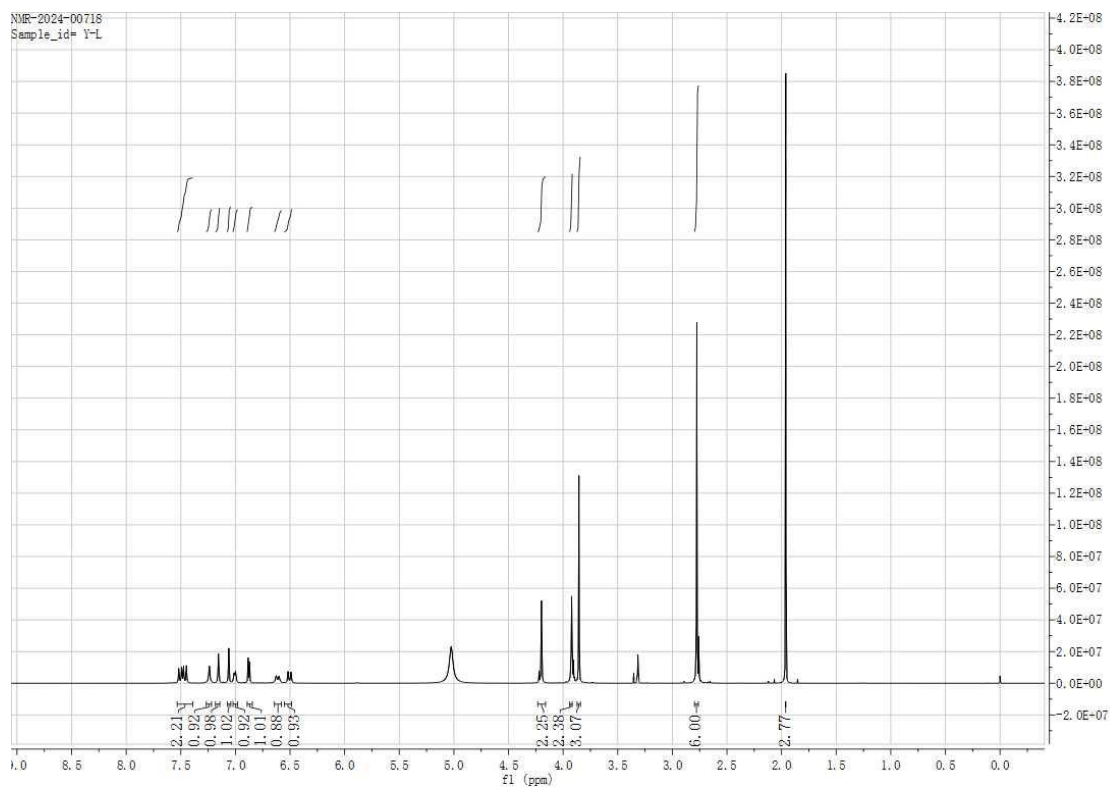
Supplementary Figure S38. ^1H -NMR spectrum of **8a** in CD_3OD .



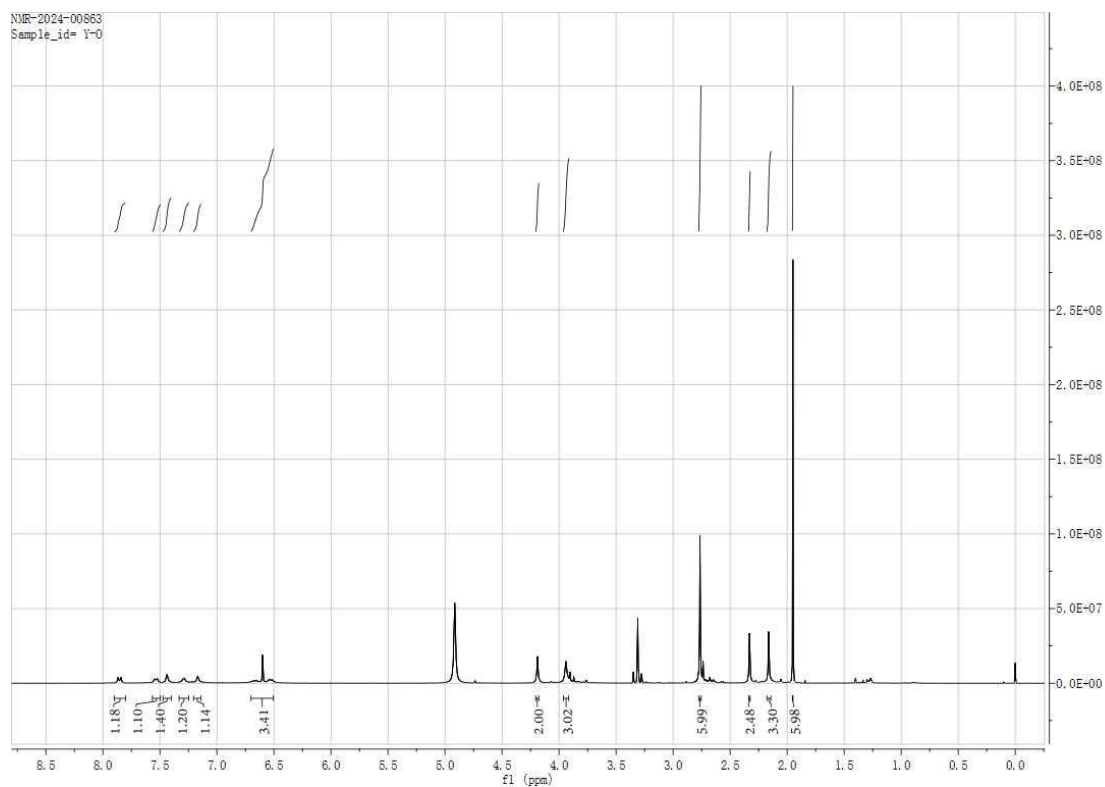
Supplementary Figure S39. ^1H -NMR spectrum of **9a** in CD_3OD .



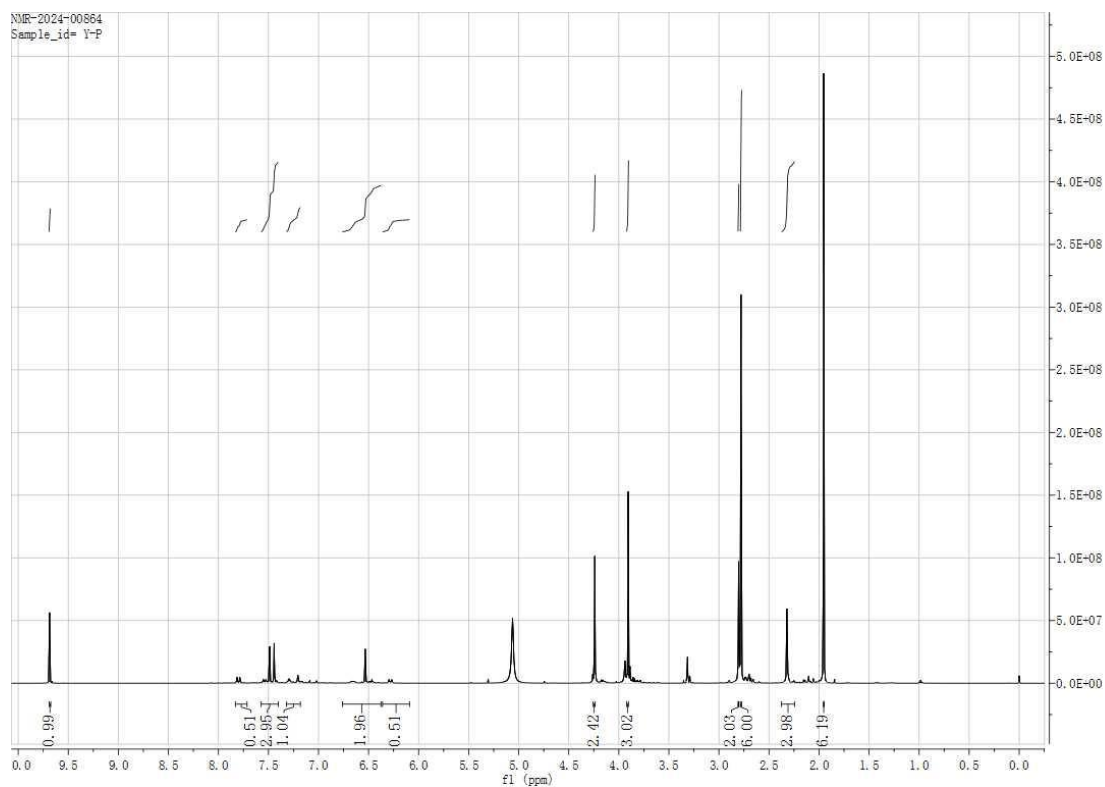
Supplementary Figure S40. ^1H -NMR spectrum of 10a in CD_3OD .



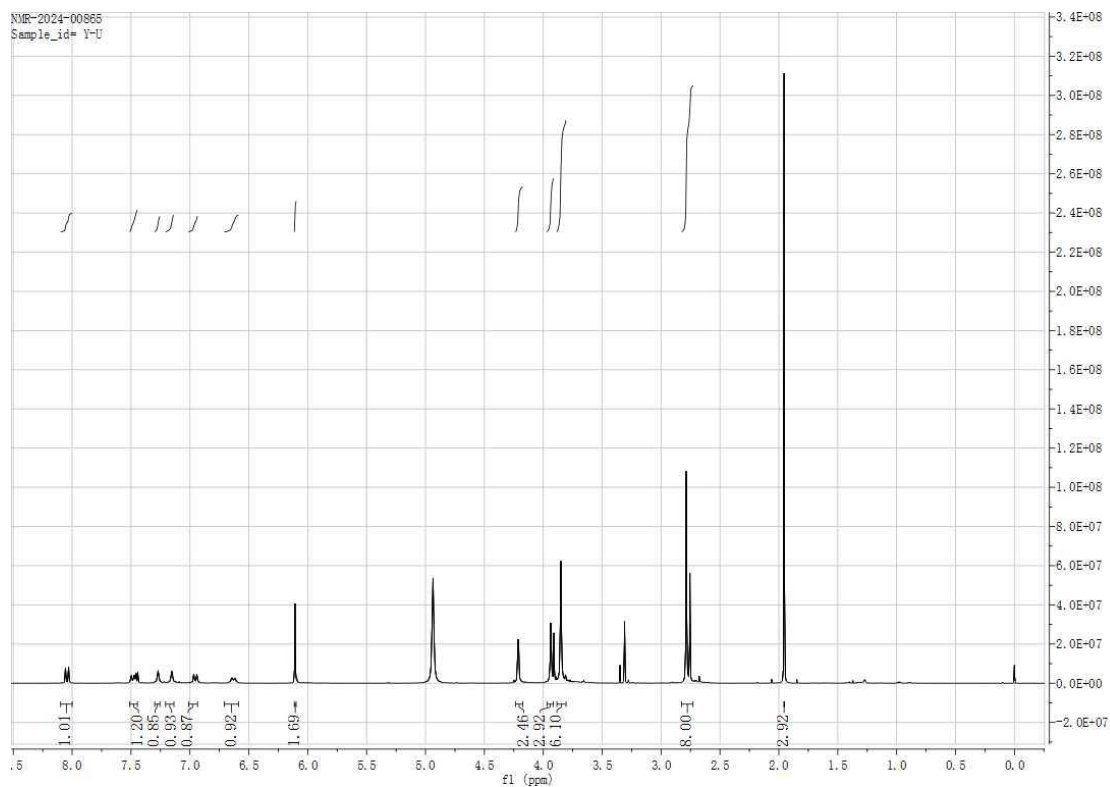
Supplementary Figure S41. ^1H -NMR spectrum of 11a in CD_3OD .



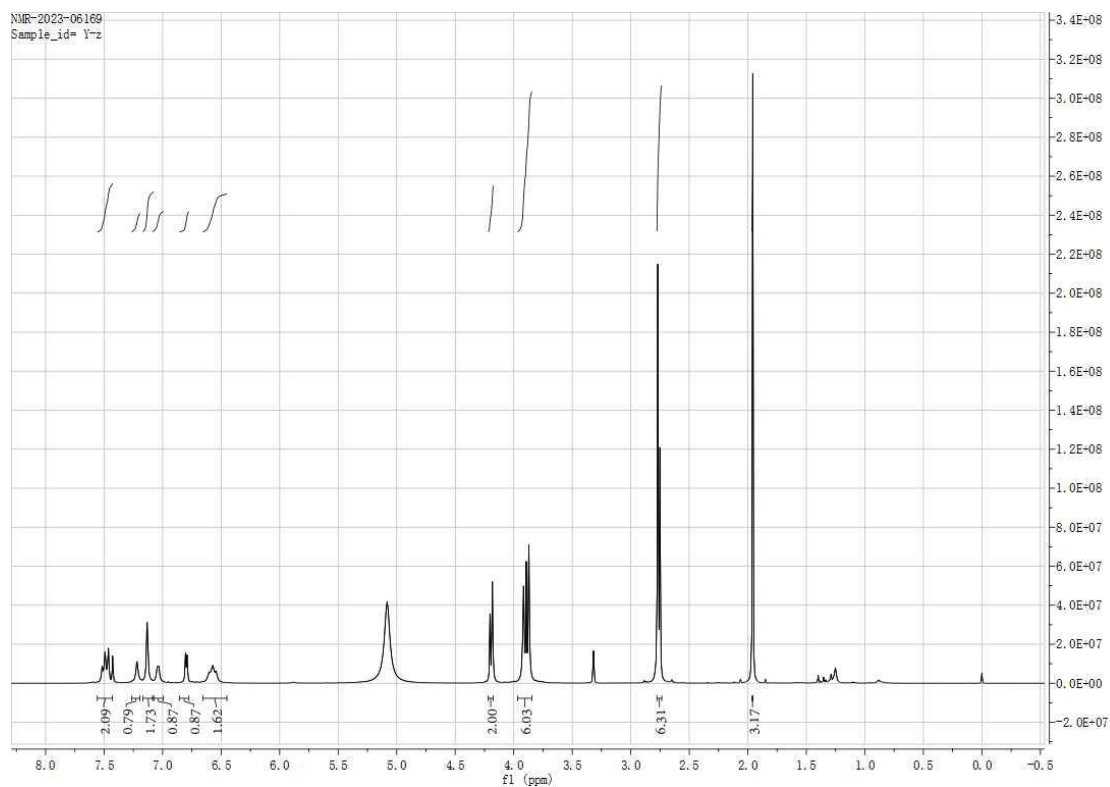
Supplementary Figure S42. ¹H-NMR spectrum of 12a in CD₃OD.



Supplementary Figure S43. ¹H-NMR spectrum of 13a in CD₃OD.



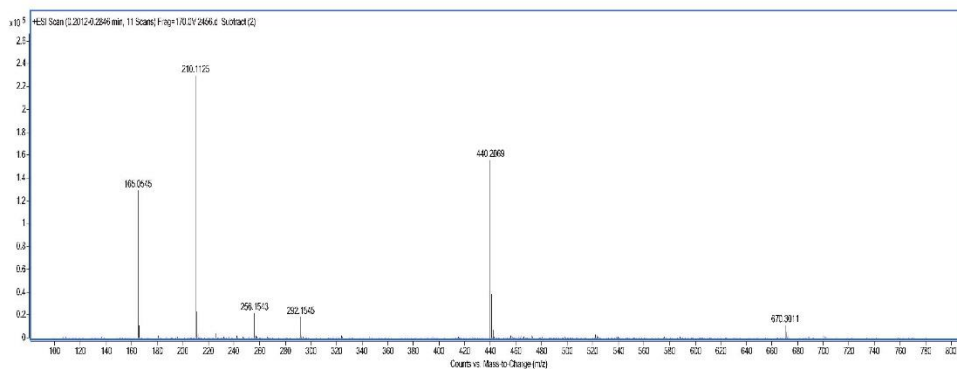
Supplementary Figure S44. ¹H-NMR spectrum of 14a in CD₃OD.



Supplementary Figure S45. ¹H-NMR spectrum of 15a in CD₃OD.

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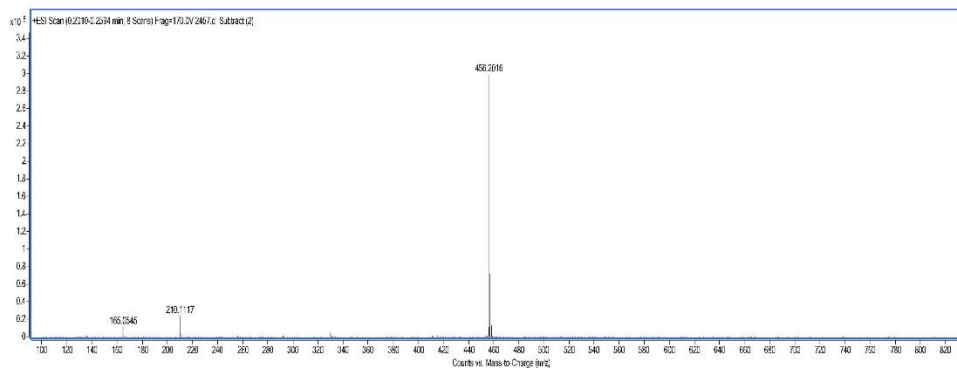
Data Filename	2456.d	Sample Name	L 2
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S46. HR-ESI-MS spectrum of 1.

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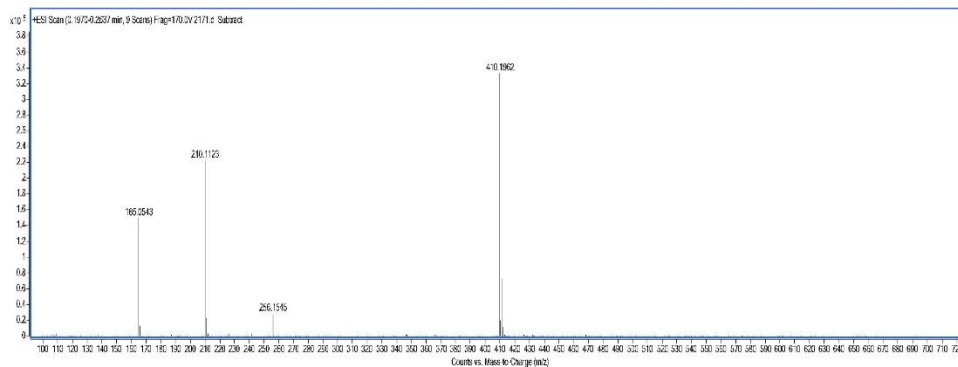
Data Filename	2457.d	Sample Name	L 4
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S47. HR-ESI-MS spectrum of 2.

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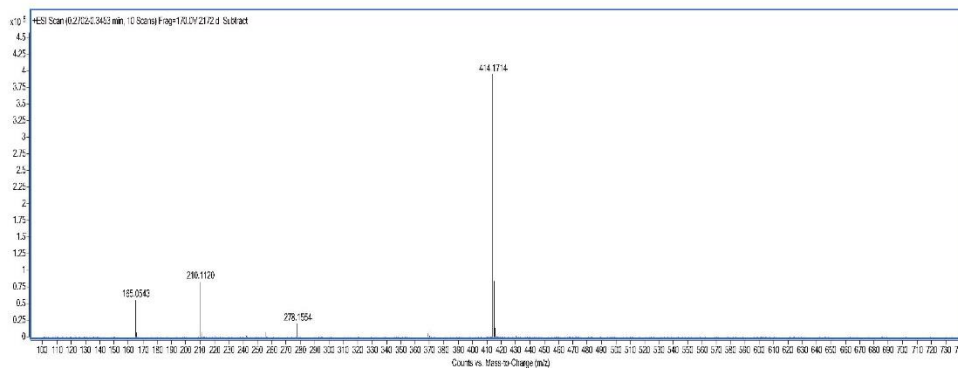
Data Filename	2171.d	Sample Name	L 6
Instrument Name	TOF G6230A	Acquired Time	2023-04-13
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S48. HR-ESI-MS spectrum of 3.

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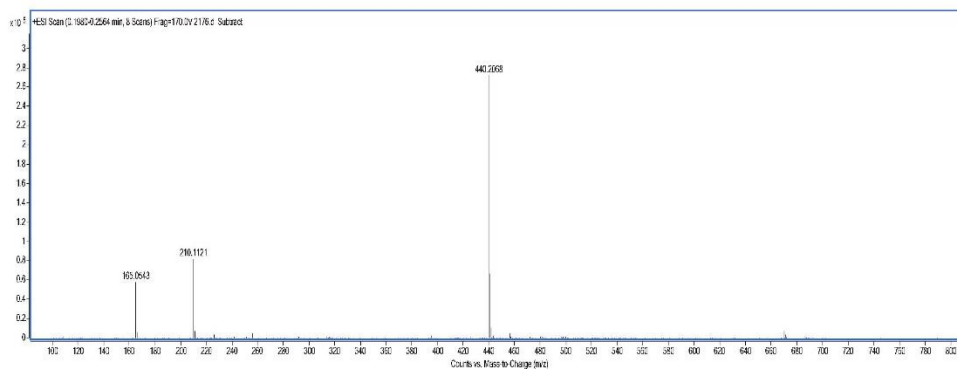
Data Filename	2172.d	Sample Name	L 8
Instrument Name	TOF G6230A	Acquired Time	2023-04-13
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S49. HR-ESI-MS spectrum of 4.

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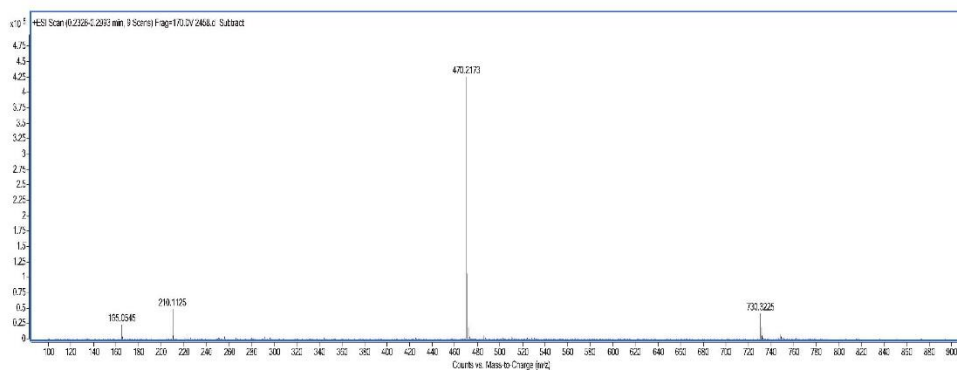
Data Filename	2176.d	Sample Name	L 10
Instrument Name	TOF G6230A	Acquired Time	2023-04-13
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S50. HR-ESI-MS spectrum of 5.

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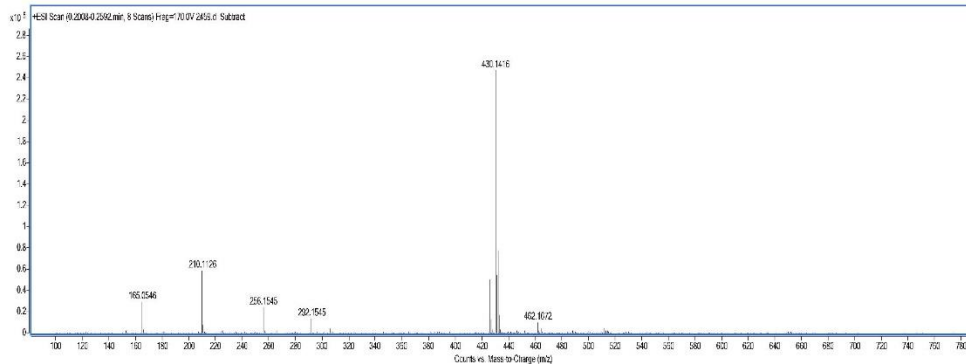
Data Filename	2458.d	Sample Name	L 12
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S51. HR-ESI-MS spectrum of 6.

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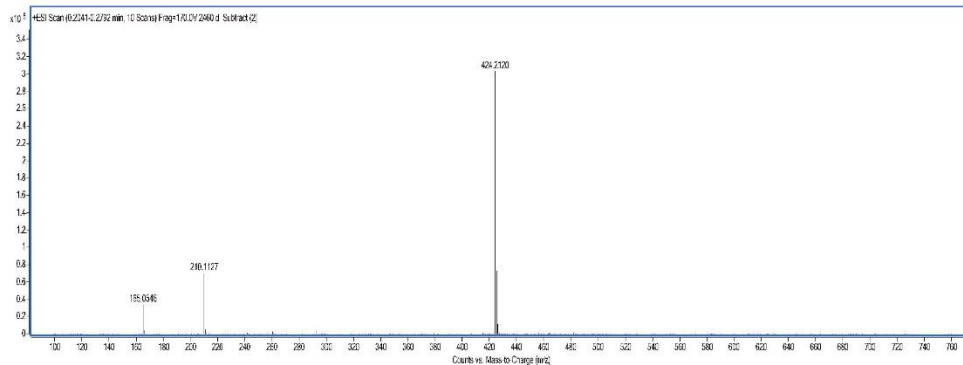
Data Filename	2459.d	Sample Name	L 14
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S52. HR-ESI-MS spectrum of 7.

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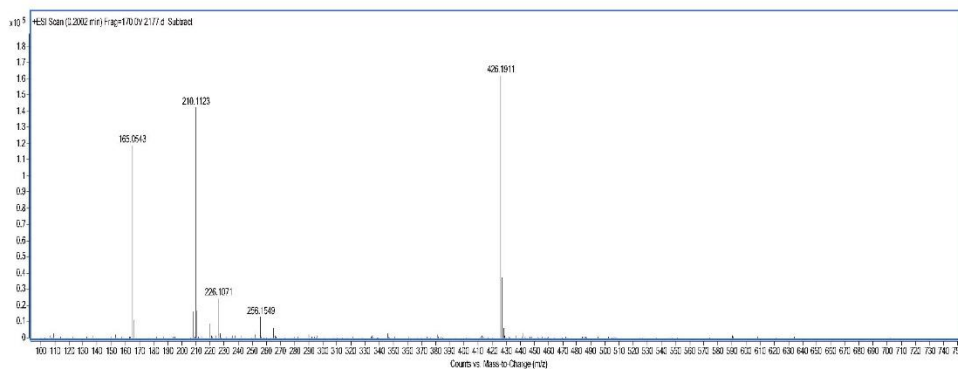
Data Filename	2460.d	Sample Name	L 16
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S53. HR-ESI-MS spectrum of 8.

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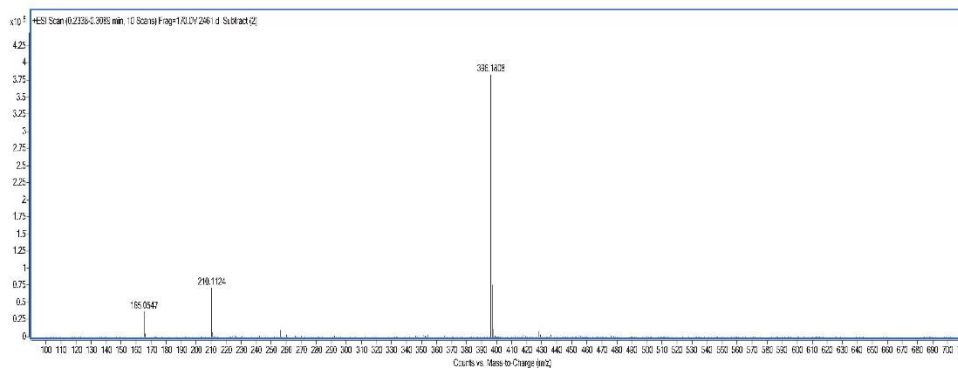
Data Filename	2177.d	Sample Name	L 18
Instrument Name	TOF G6230A	Acquired Time	2023-04-13
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S54. HR-ESI-MS spectrum of 9.

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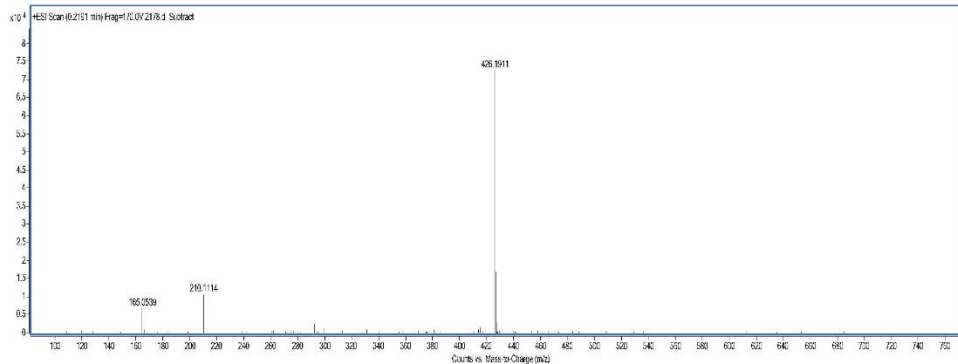
Data Filename	2461.d	Sample Name	L 20
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S55. HR-ESI-MS spectrum of 10.

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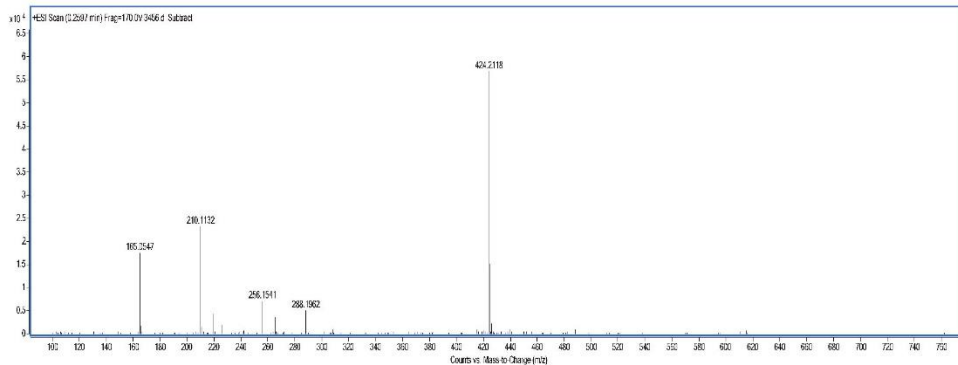
Data Filename	2178.d	Sample Name	L 22
Instrument Name	TOF G6230A	Acquired Time	2023-04-13
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S56. HR-ESI-MS spectrum of 11.

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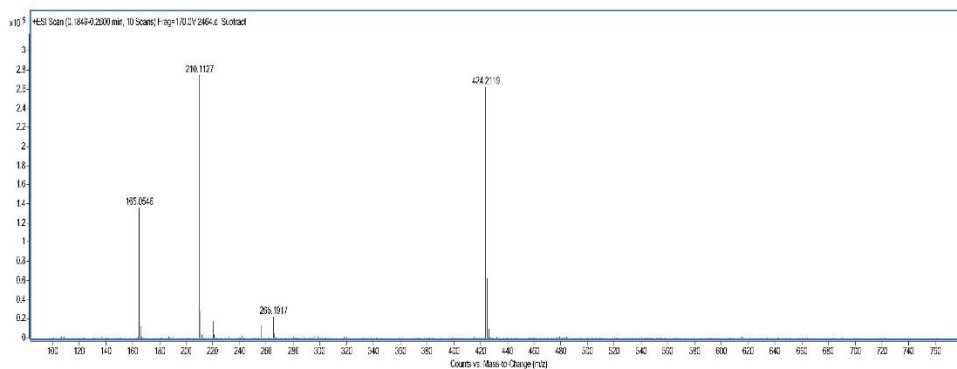
Data Filename	3456.d	Sample Name	L 24
Instrument Name	TOF G6230A	Acquired Time	2023-05-29
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S57. HR-ESI-MS spectrum of 12.

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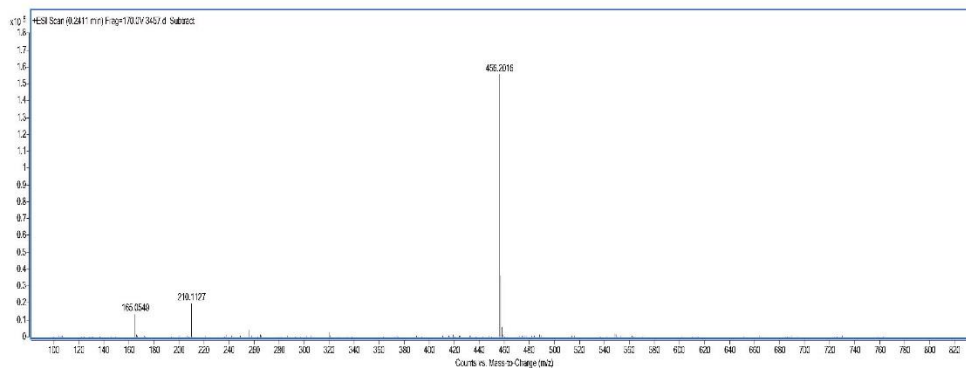
Data Filename	2464.d	Sample Name	L 26
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S58. HR-ESI-MS spectrum of 13.

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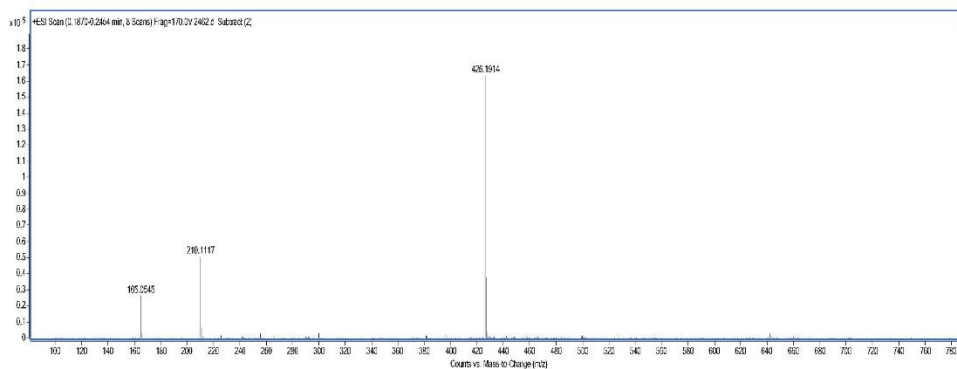
Data Filename	3457.d	Sample Name	L 28
Instrument Name	TOF G6230A	Acquired Time	2023-05-29
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S59. HR-ESI-MS spectrum of 14.

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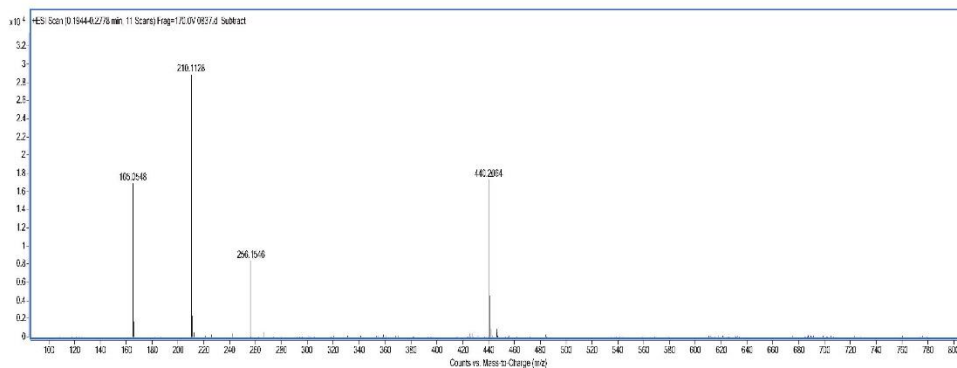
Data Filename	2462.d	Sample Name	L 30
Instrument Name	TOF G6230A	Acquired Time	2023-04-23
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S60. HR-ESI-MS spectrum of 15.

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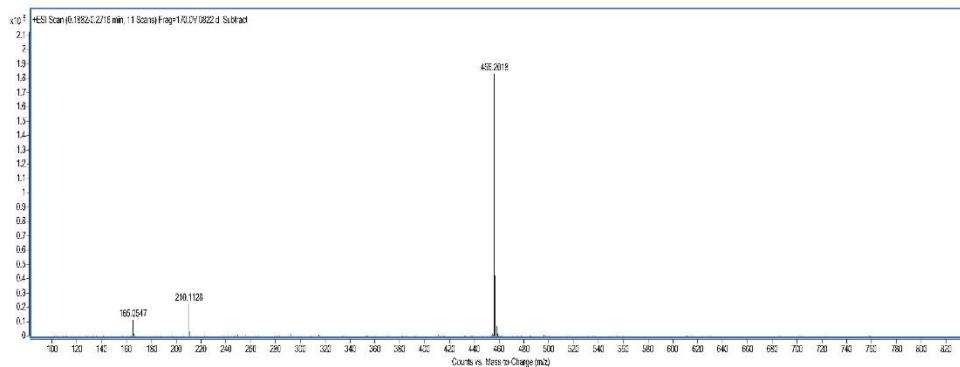
Data Filename	0837.d	Sample Name	YA 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S61. HR-ESI-MS spectrum of 1a.

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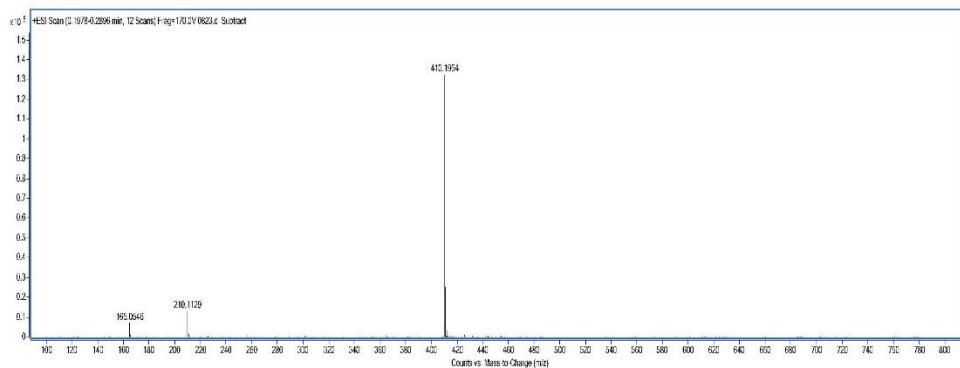
Data Filename	0822.d	Sample Name	YB 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S62. HR-ESI-MS spectrum of 2a.

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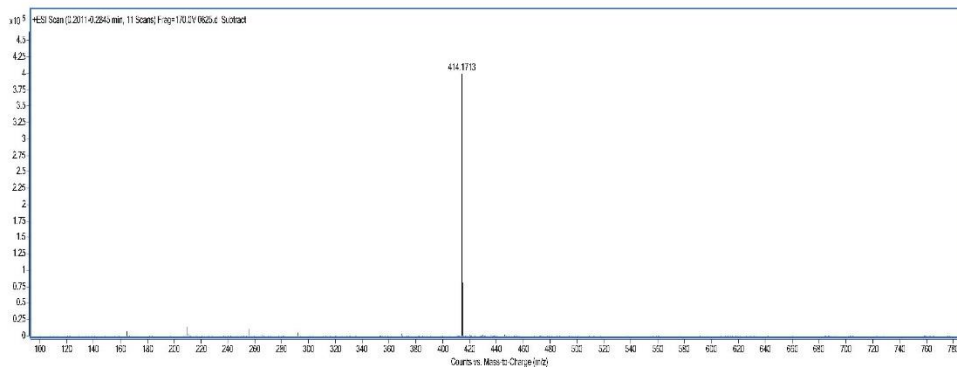
Data Filename	0823.d	Sample Name	YC 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S63. HR-ESI-MS spectrum of 3a.

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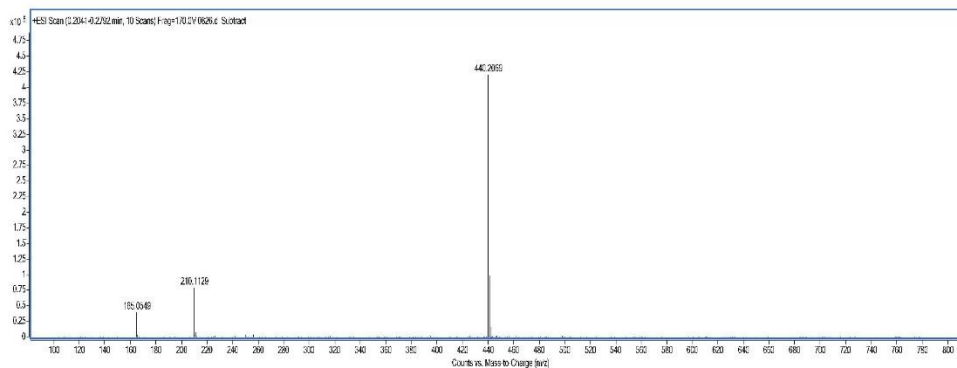
Data Filename	0825.d	Sample Name	YD 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S64. HR-ESI-MS spectrum of 4a.

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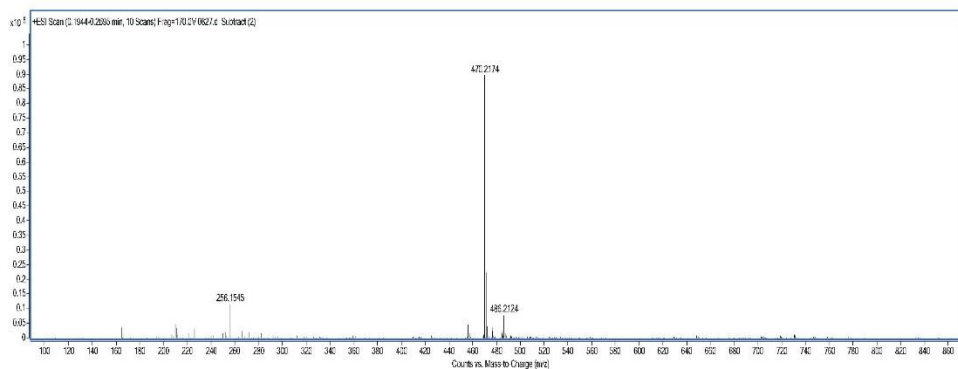
Data Filename	0826.d	Sample Name	YE 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S65. HR-ESI-MS spectrum of 5a.

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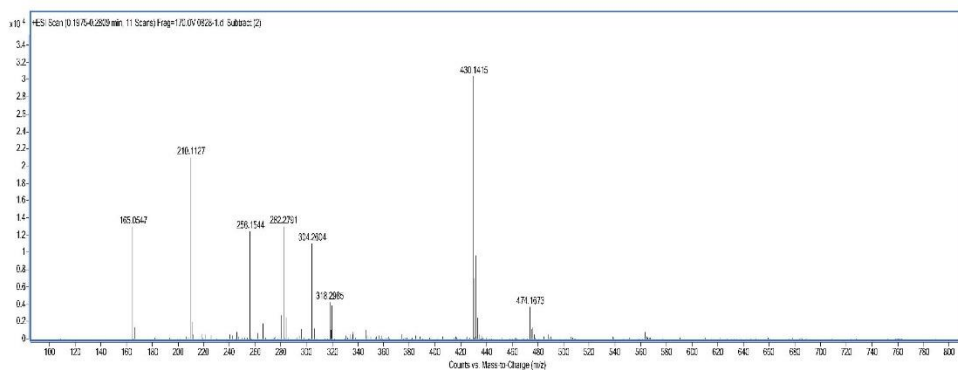
Data Filename	0827.d	Sample Name	YF 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S66. HR-ESI-MS spectrum of 6a.

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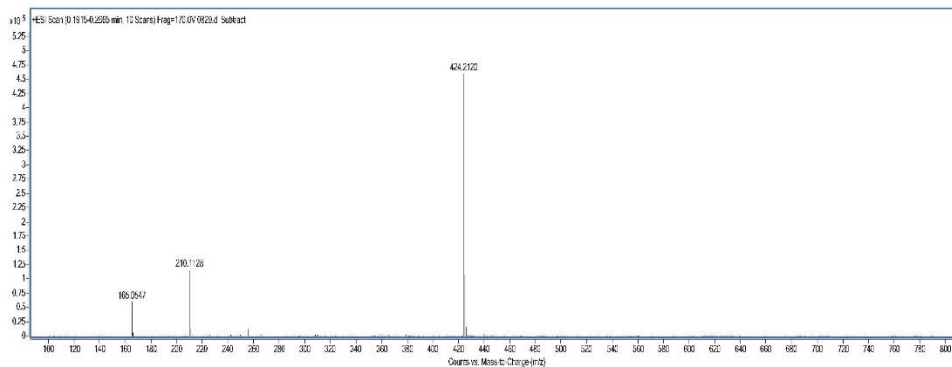
Data Filename	0828.d	Sample Name	YG 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S67. HR-ESI-MS spectrum of 7a.

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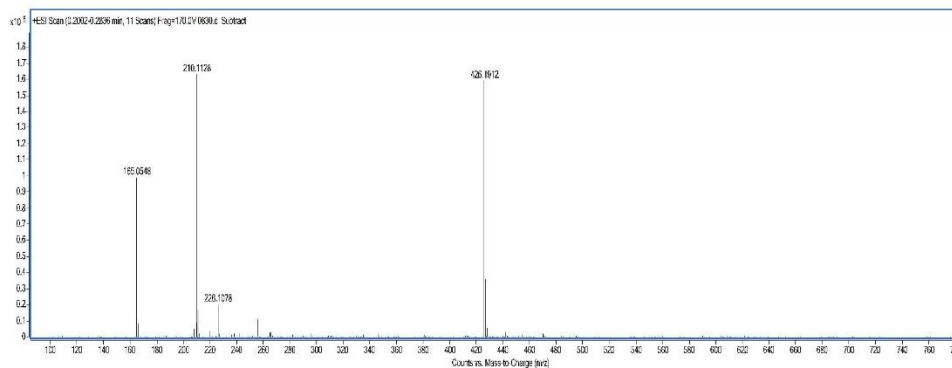
Data Filename	0829.d	Sample Name	Y1.1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S68. HR-ESI-MS spectrum of 8a.

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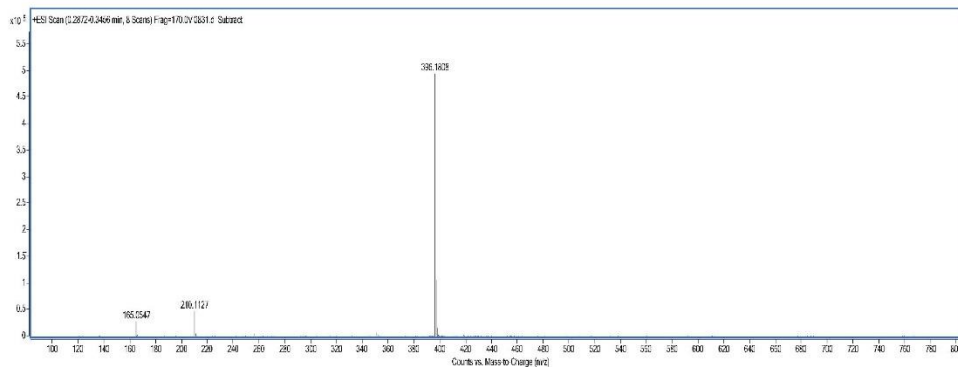
Data Filename	0830.d	Sample Name	Y1.1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S69. HR-ESI-MS spectrum of 9a.

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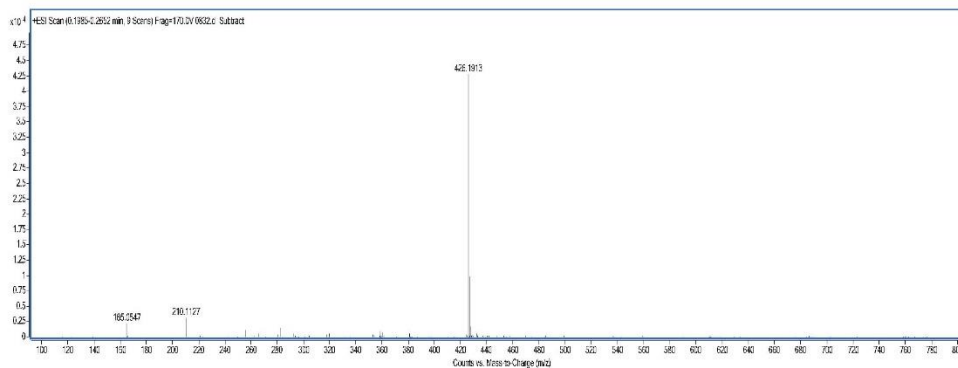
Data Filename	0831.d	Sample Name	YK 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S70. HR-ESI-MS spectrum of 10a.

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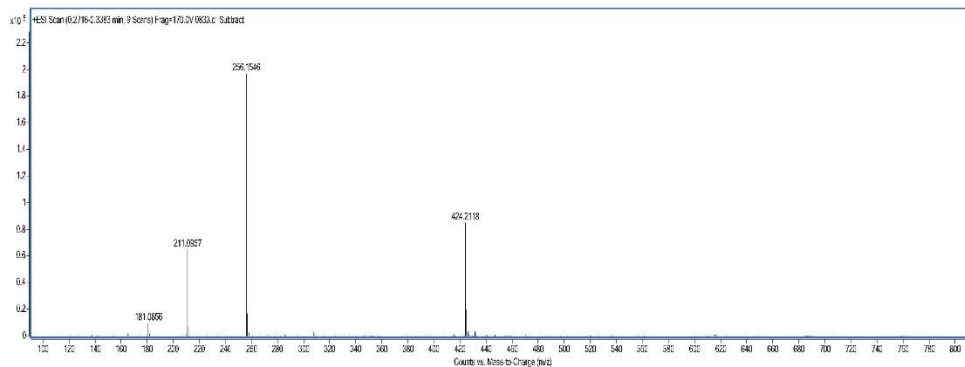
Data Filename	0832.d	Sample Name	YL 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S71. HR-ESI-MS spectrum of 11a.

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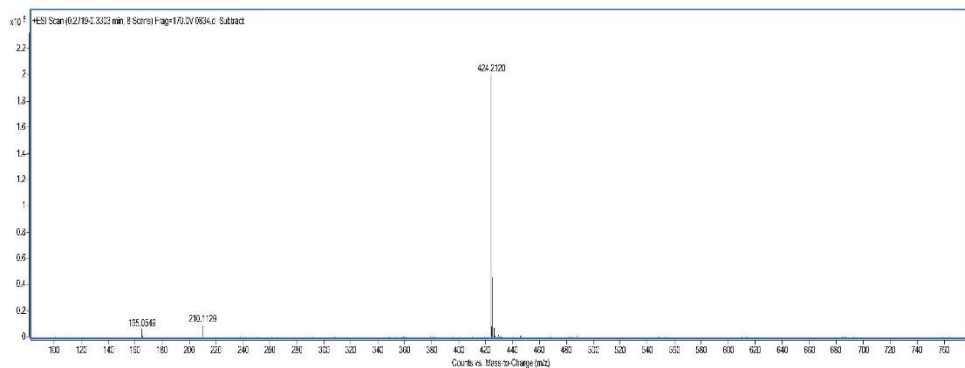
Data Filename	0833.d	Sample Name	YO 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S72. HR-ESI-MS spectrum of 12a.

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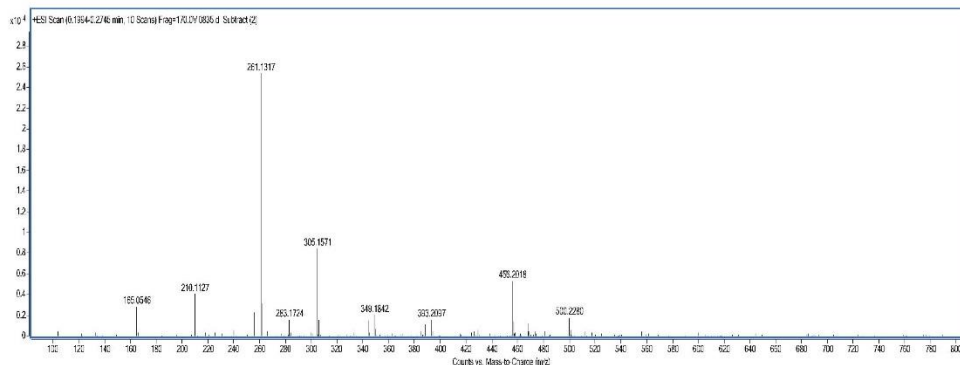
Data Filename	0834.d	Sample Name	YP 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCLM	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S73. HR-ESI-MS spectrum of 13a.

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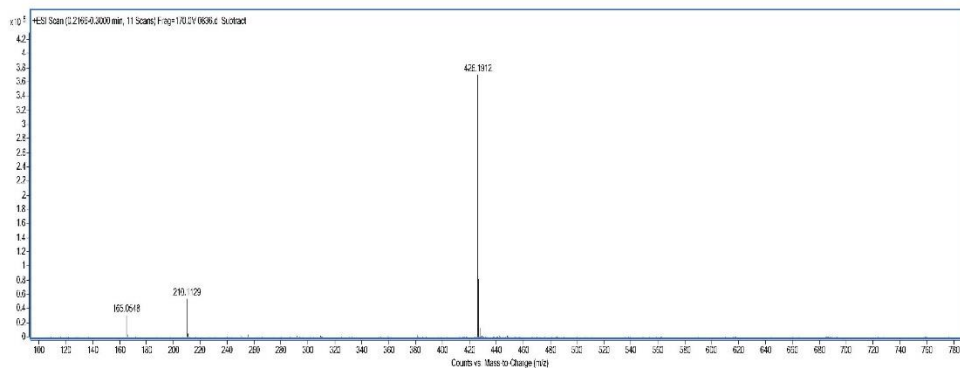
Data Filename	0835.d	Sample Name	YU 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCL.M	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			



Supplementary Figure S74. HR-ESI-MS spectrum of 14a.

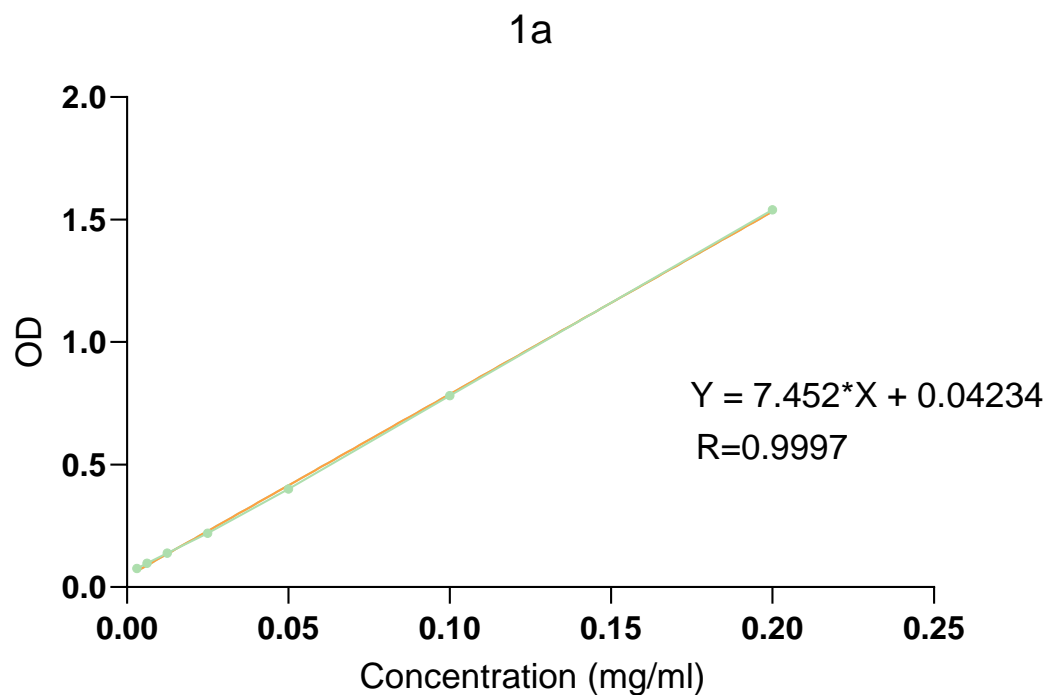
Qualitative Analysis Report

Data Filename	0836.d	Sample Name	YZ 1
Instrument Name	TOF G6230A	Acquired Time	2024-03-12
Acq Method	YCL.M	Acquired SW	6200 series TOF/6500 series
IRM Calibration Status	Success		
User Chromatograms			

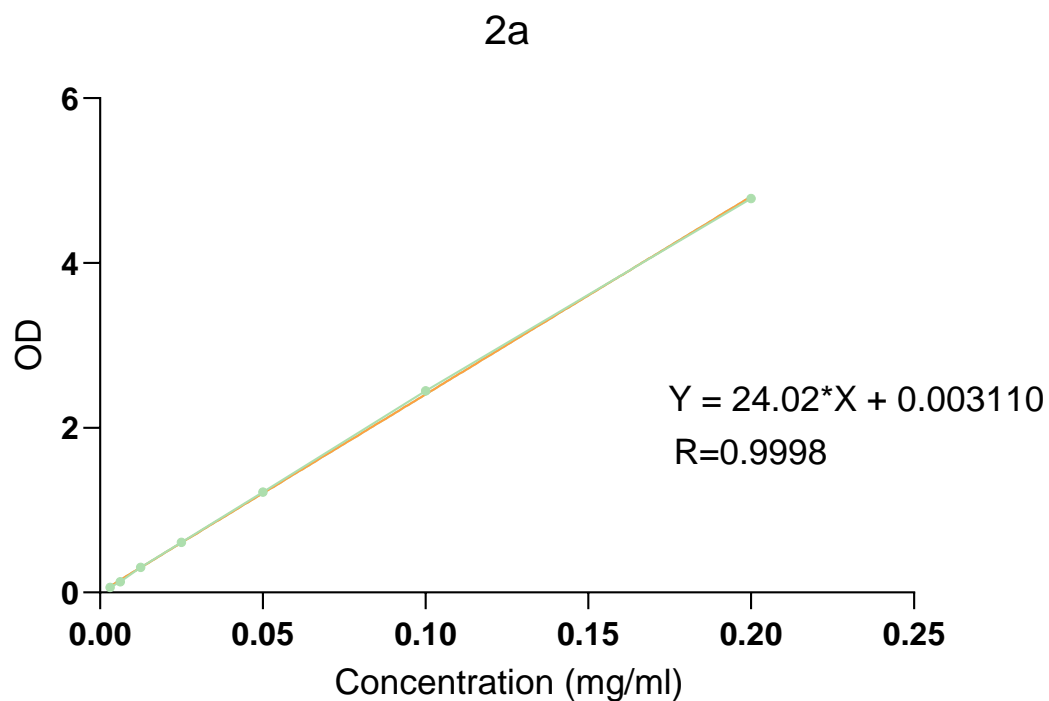


Supplementary Figure S75. HR-ESI-MS spectrum of 15a.

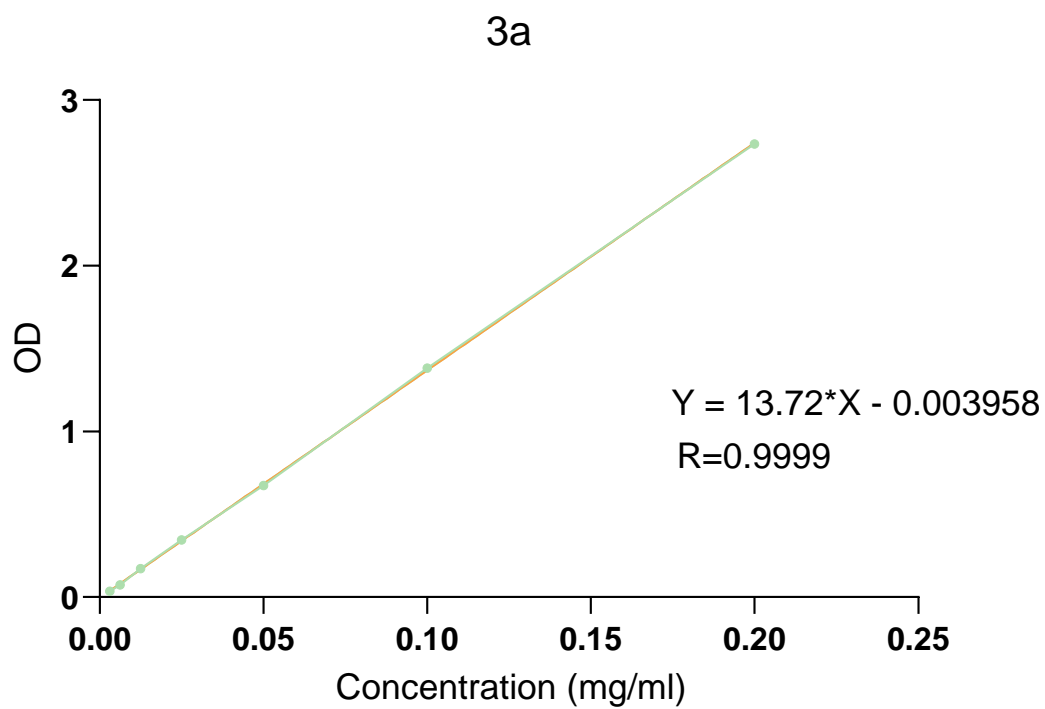
Section 4: Concentration-absorbance curve of curcumin derivative acetates **1a-15a**.



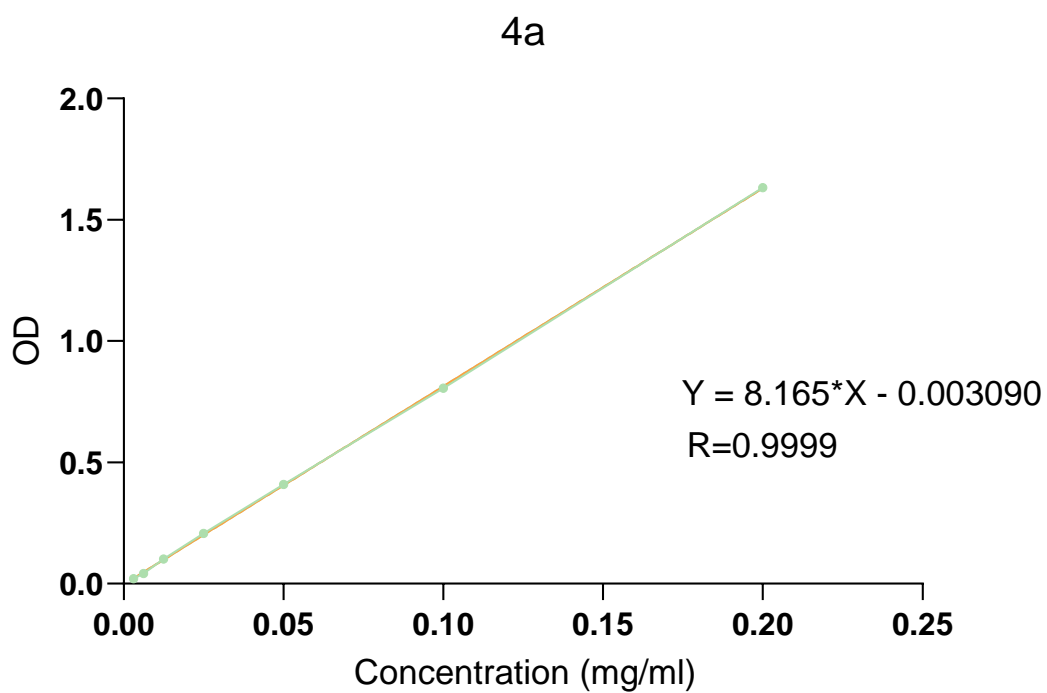
Supplementary Figure S76. Concentration-absorbance curve of **1a**.



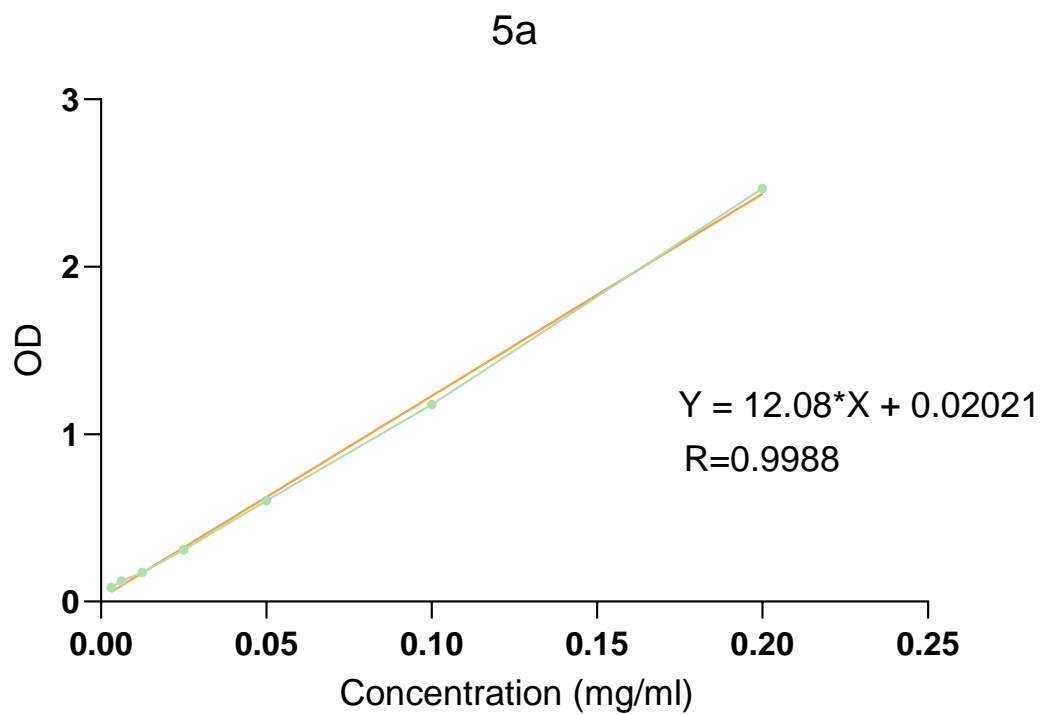
Supplementary Figure S77. Concentration-absorbance curve of **2a**.



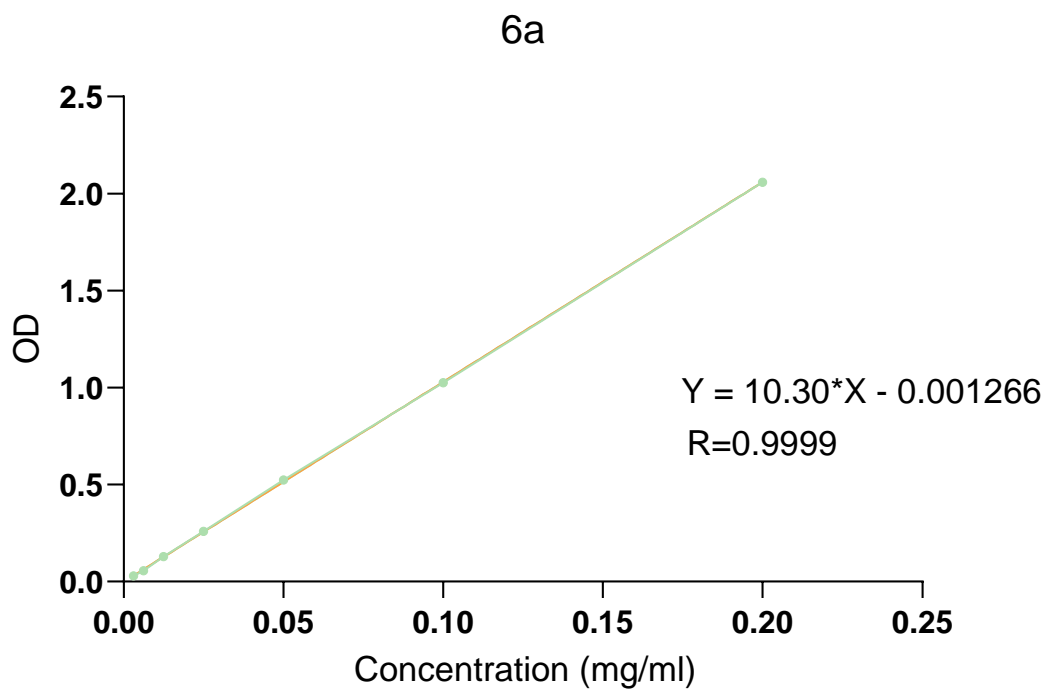
Supplementary Figure S78. Concentration-absorbance curve of 3a.



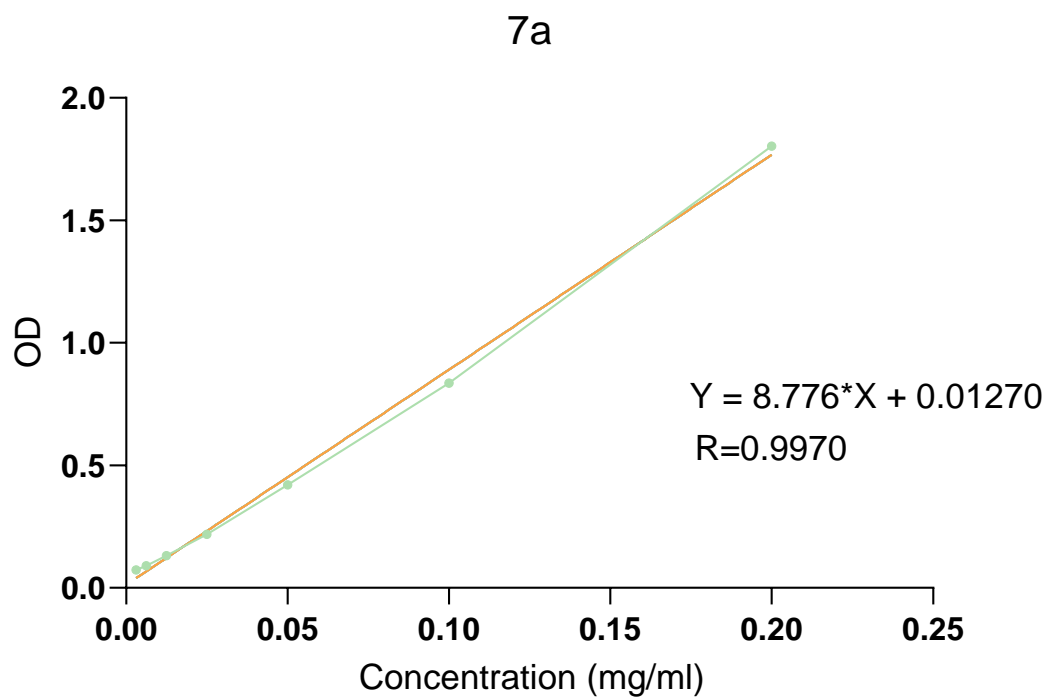
Supplementary Figure S79. Concentration-absorbance curve of 4a.



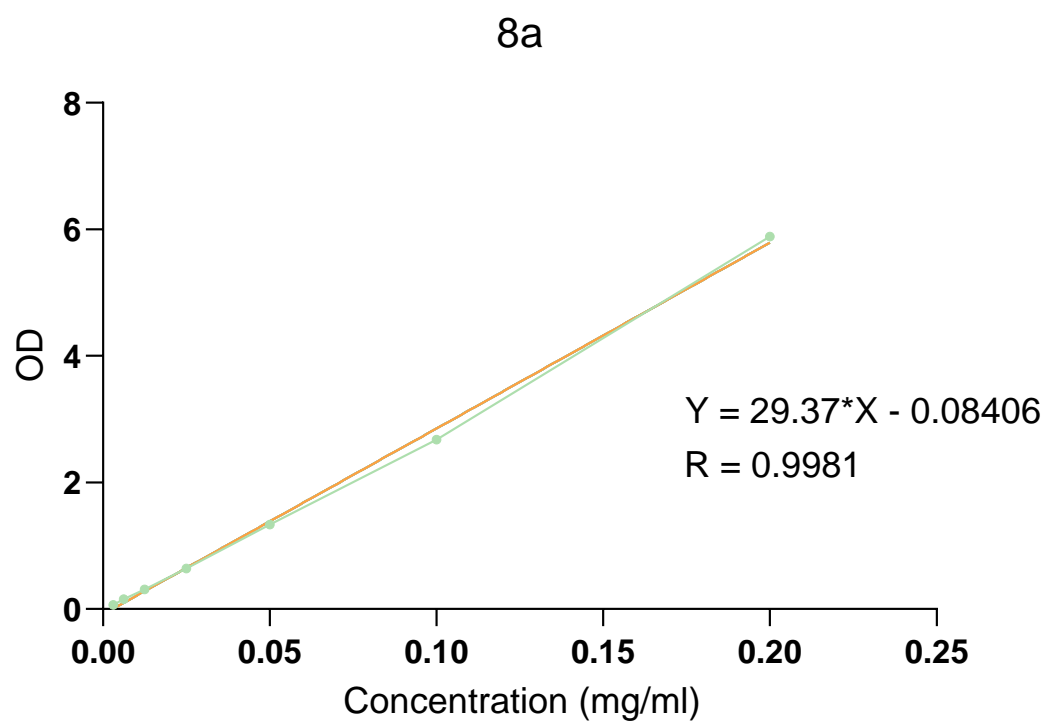
Supplementary Figure S80. Concentration-absorbance curve of 5a.



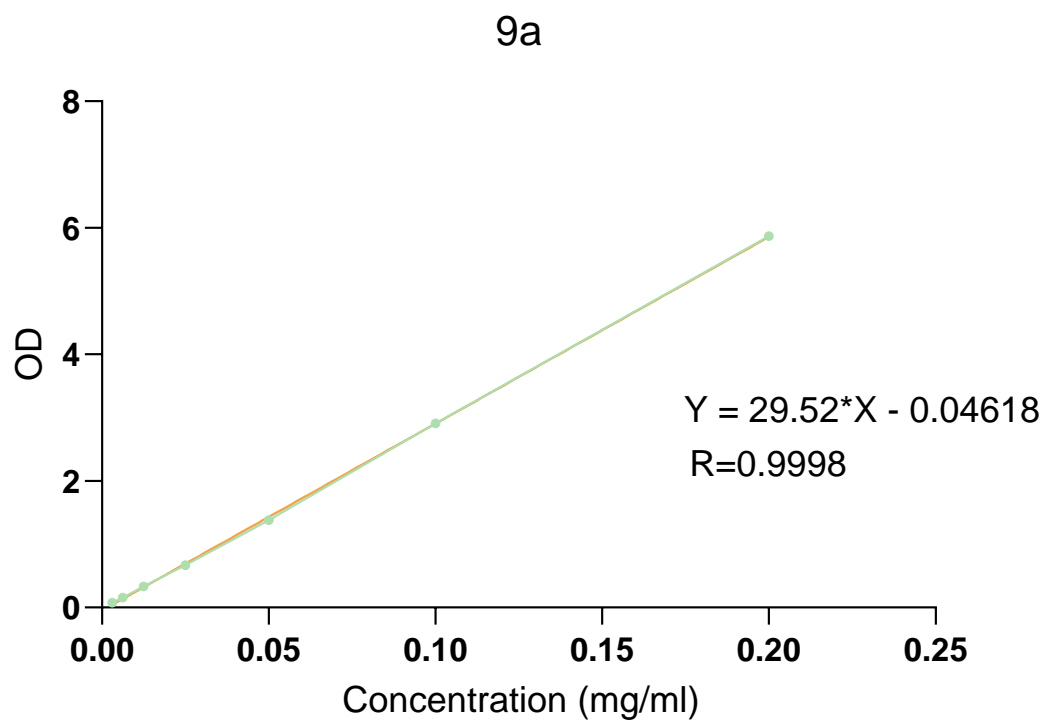
Supplementary Figure S81. Concentration-absorbance curve of 6a.



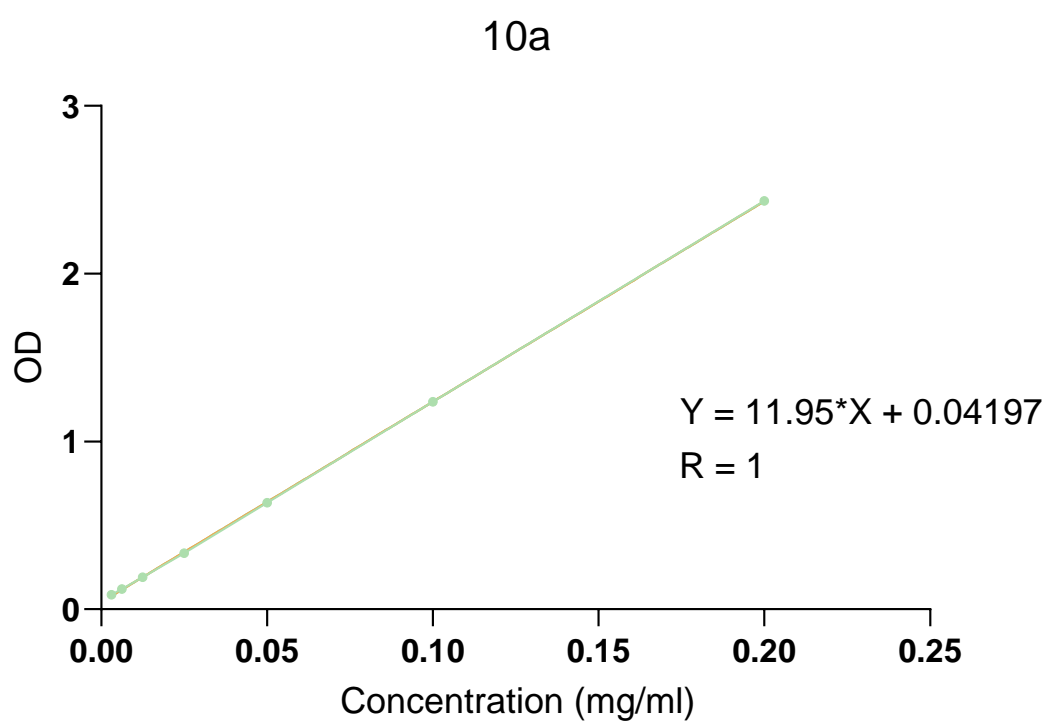
Supplementary Figure S82. Concentration-absorbance curve of 7a.



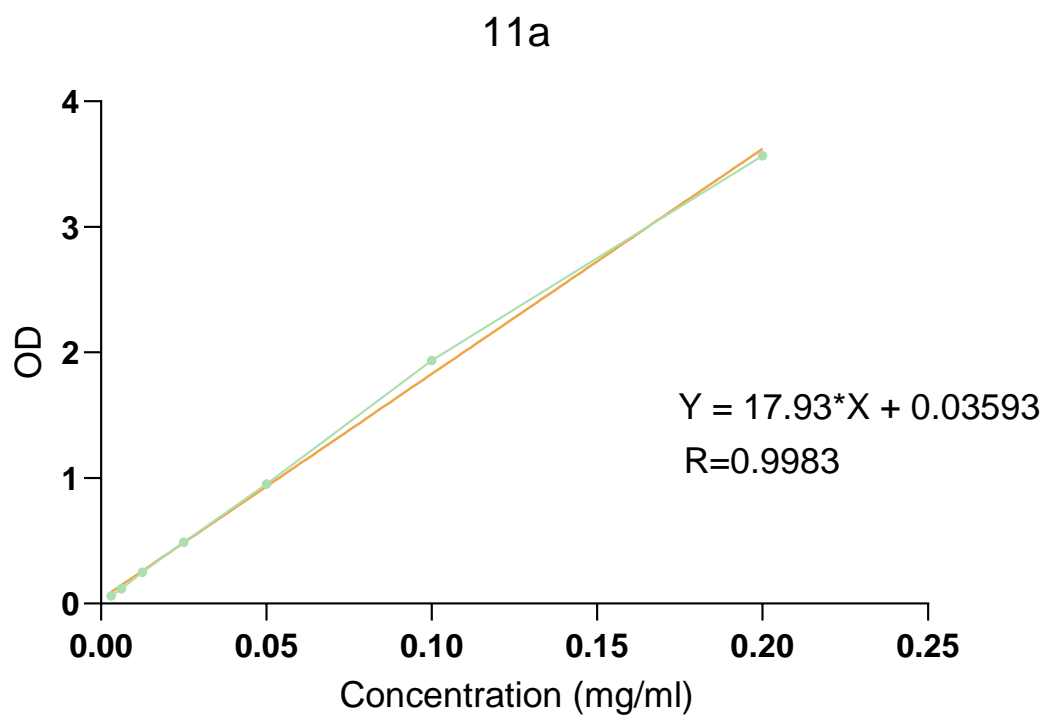
Supplementary Figure S83. Concentration-absorbance curve of 8a.



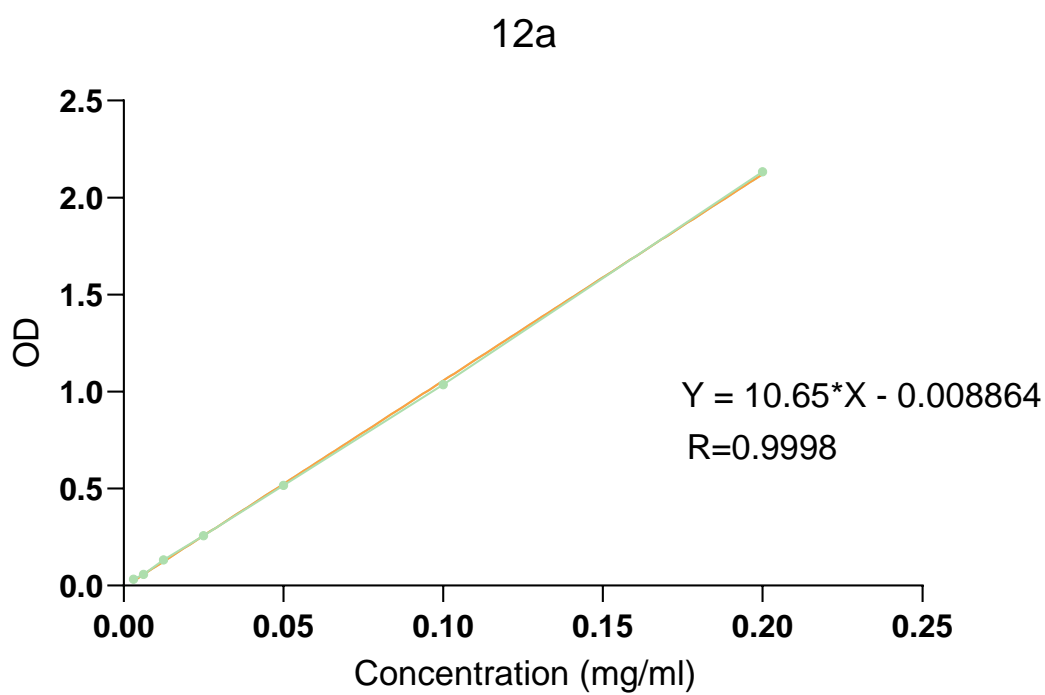
Supplementary Figure S84. Concentration-absorbance curve of 9a.



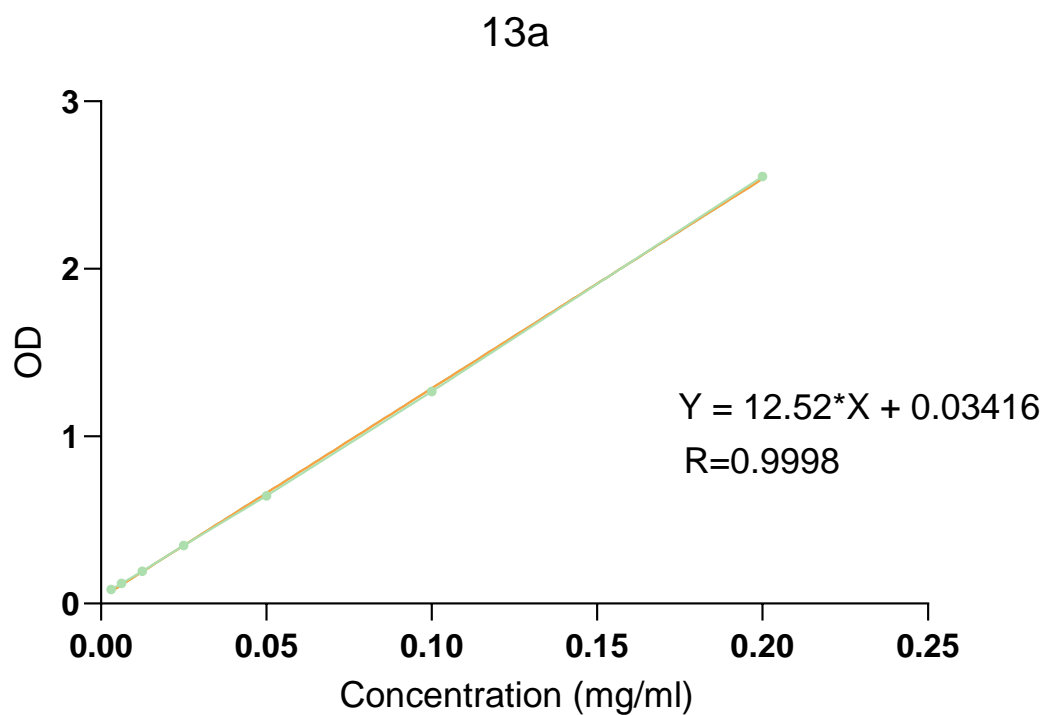
Supplementary Figure S85. Concentration-absorbance curve of 10a.



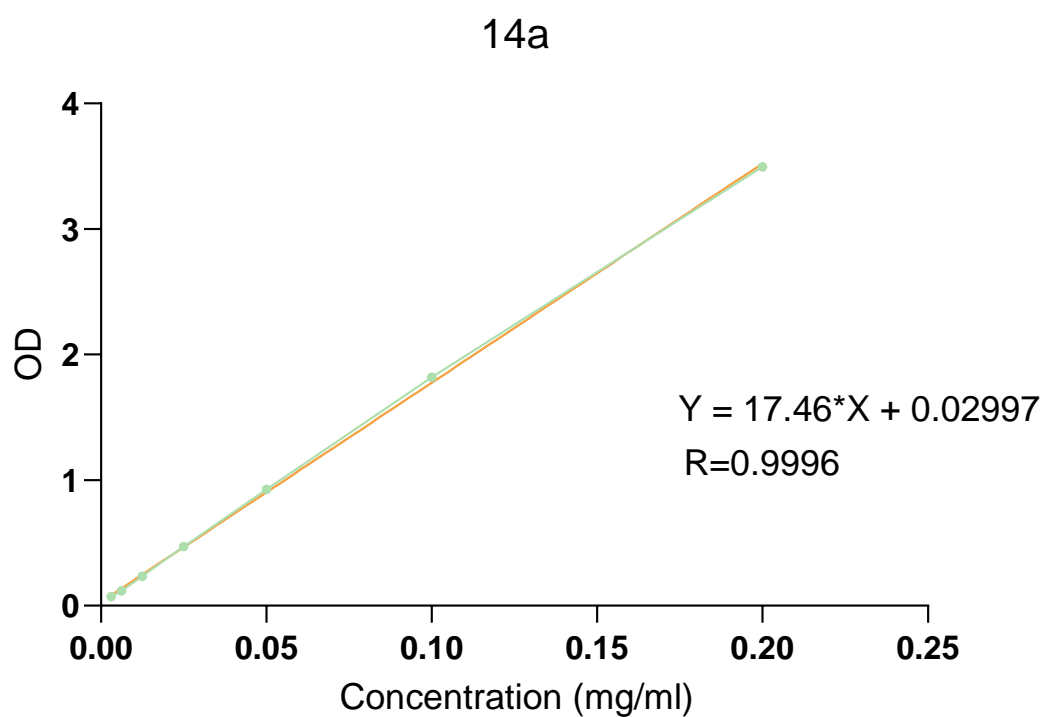
Supplementary Figure S86. Concentration-absorbance curve of **11a**.



Supplementary Figure S87. Concentration-absorbance curve of **12a**.

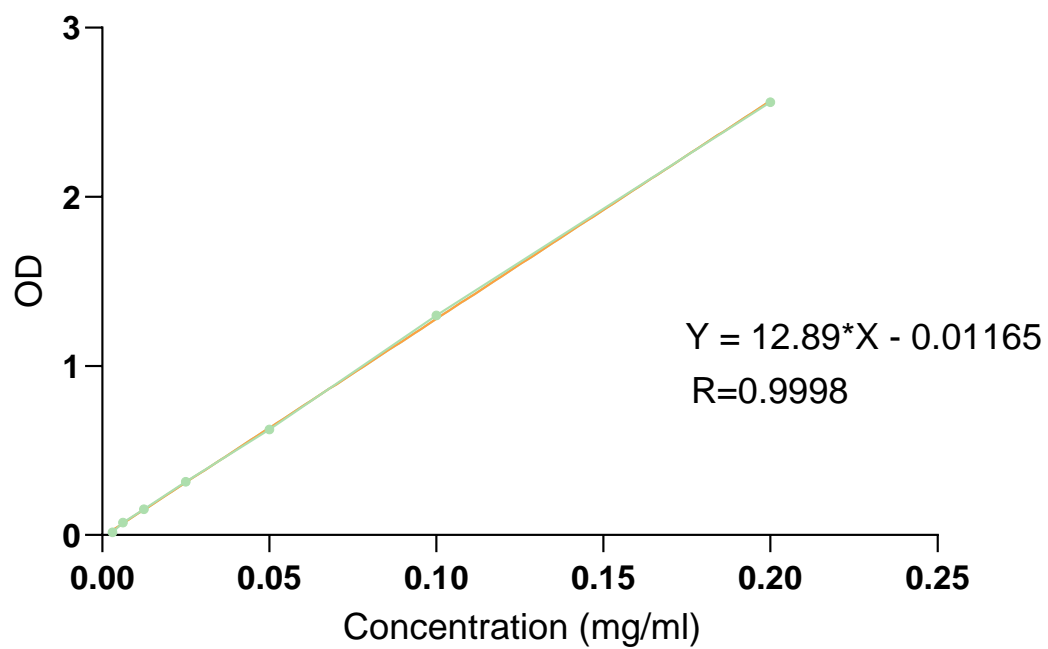


Supplementary Figure S88. Concentration-absorbance curve of 13a.



Supplementary Figure S89. Concentration-absorbance curve of 14a.

15a



Supplementary Figure S90. Concentration-absorbance curve of **15a**.