

Electronic Supplementary Information

Asymmetric epoxidation of olefins with sodium percarbonate catalyzed by *bis*-amino-*bis*-pyridine manganese complexes

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Table of contents

Table S1. ¹ H NMR data for the epoxides.	2
Table S2. HPLC data for the epoxides.	3
Figure S1. Selected examples of ¹ H NMR spectra of reaction mixtures.	4
Figure S2. Selected examples of chiral HPLC chromatograms of reaction mixtures.	17

Table S1. ^1H NMR data for the epoxides.

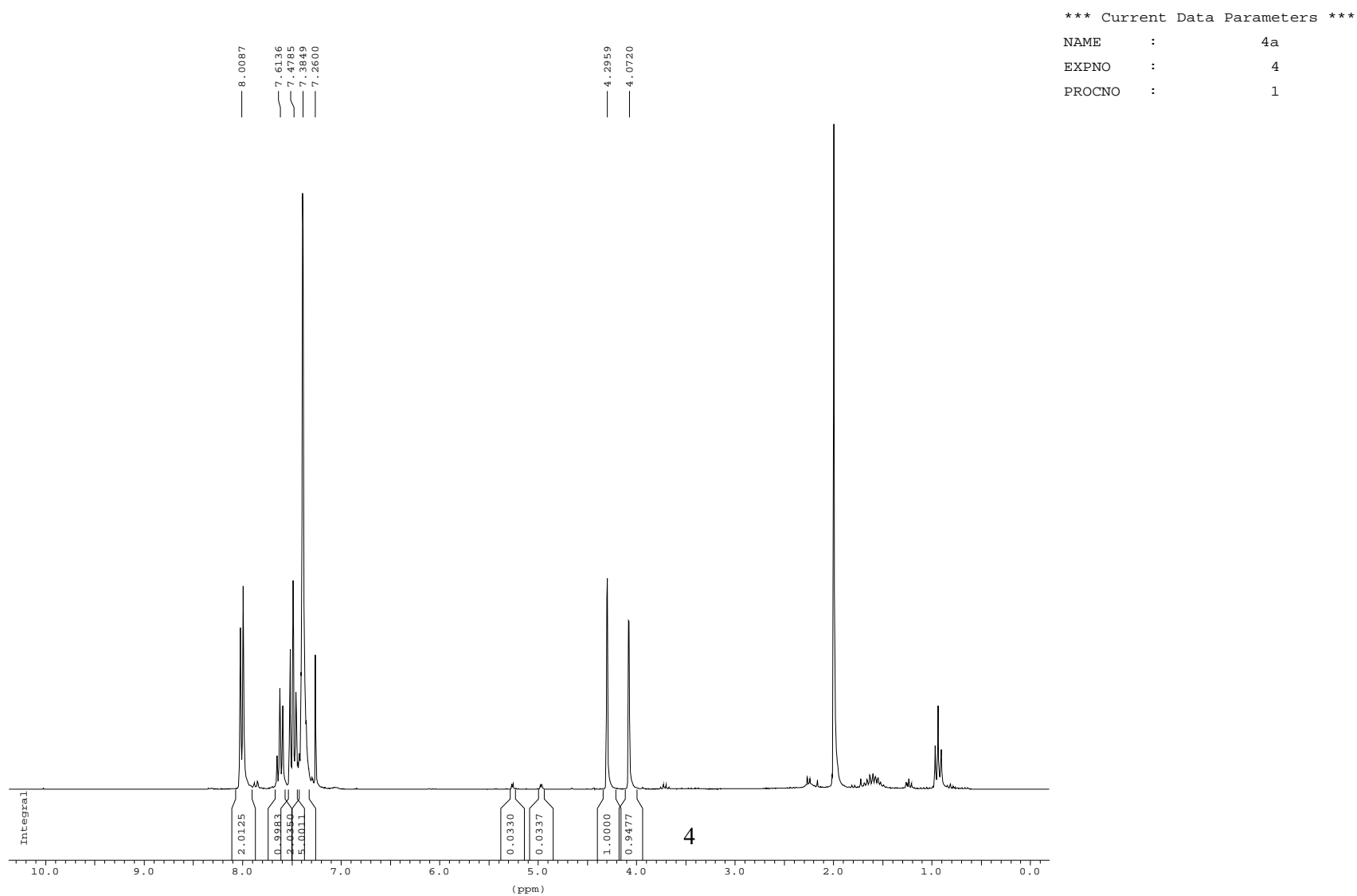
Epoxide	^1H NMR data
4a	δ (250 MHz, CDCl_3): 8.04-7.97 (m, 2H), 7.66-7.58 (m, 1H), 7.49 (t, 2H, $J = 7.9$ Hz), 7.42-7.34 (m, 5H), 4.30 (d, 1H, $J = 1.9$ Hz), 4.08 (d, 1H, $J = 1.9$ Hz)
4b	δ (400 MHz, CDCl_3): 7.38-7.25 (m, 5H), 3.87 (dd, 1H, $J = 2.6$ and 4.0 Hz), 3.15 (dd, 1H, $J = 4.0$ and 5.6 Hz), 2.80 (dd, 1H, $J = 5.6$ and 2.6 Hz)
4c	δ (250 MHz, CDCl_3): 7.40-7.27 (m, 5H), 4.06 (d, 1H, $J = 4.2$ Hz), 3.34 (dq, 1H, $J = 4.2$ and 5.4 Hz), 1.09 (d, 3H, $J = 5.5$ Hz)
4d	δ (250 MHz, CDCl_3): 7.51 (d, 1H, $J = 7.1$ Hz), 7.32-7.12 (m, 3H), 4.27 (dd, 1H, $J = 2.9$ and 1.0 Hz), 4.14 (t, 1H, $J = 2.9$ Hz), 3.23 (d, 1H, $J = 18.0$ Hz), 2.99 (dd, 1H, $J = 18.0$ and 2.9 Hz)
4e	δ (250 MHz, CDCl_3): 7.39 (dd, 1H, $J = 7.0$ and 1.8 Hz), 7.25-7.18 (m, 2H), 7.09 (d, $J = 7.0$ Hz), 3.85 (d, 1H, $J = 4.2$ Hz), 3.73 (t, 1H, $J = 3.5$ Hz), 2.79 (td, 1H, $J = 14.5$ and 6.6 Hz), 5.53 (dd, 1H, $J = 15.4$ and 5.5 Hz), 2.42 (dddd, 1H, $J = 14.4$, 6.5, 2.9 and 1.7 Hz), 1.77 (m, 1H)
4f	δ (400 MHz, CDCl_3): 7.64 (d, 1H, $J = 2.0$ Hz), 7.51 (dd, 1H, $J = 8.5$ and 2.1 Hz), 6.85 (d, 1H, $J = 8.5$ Hz), 3.90 (d, 1H, $J = 4.4$ Hz), 3.53 (d, 1H, $J = 4.4$ Hz), 1.58 (s, 3H), 1.28 (s, 3H)
4g	δ (250 MHz, CDCl_3): 7.85 (d, 1H, $J = 7.6$ Hz), 7.71-7.54 (m, 2H), 7.48-7.28 (m, 6H), 4.48 (s, 1H), 3.26 (d, 1H, $J = 18.3$ Hz), 2.93 (d, 1H, $J = 18.3$ Hz)
4h	δ (250 MHz, CDCl_3): 7.40-7.27 (m, 5H), 4.09 (d, 1H, $J = 1.7$ Hz), 3.82, (s, 3H), 3.51 (d, 1H, $J = 1.7$ Hz)
4i	δ (250 MHz, CDCl_3): 7.39-7.23 (m, 5H), 5.12 (sept, 1H, $J = 6.3$ Hz), 4.05 (d, 1H, $J = 1.7$ Hz), 3.46 (d, 1H, $J = 1.7$ Hz), 1.30 (d, 3H, $J = 6.3$ Hz), 1.28 (d, 3H, $J = 6.3$ Hz)
4j	δ (250 MHz, CDCl_3): 7.40-7.10 (m, 15H), 4.65 (d, 2H, $J = 4.7$ Hz), 4.55 (s, 2H), 4.13 (d, 1H, $J = 1.8$ Hz), 3.69 (d, 2H, $J = 1.8$ Hz)
4k	δ (250 MHz, CDCl_3): 7.43-7.25 (m, 5H), 4.25 (d, 1H, $J = 4.6$ Hz), 4.00 (qd, 2H, $J = 7.1$ and 2.5 Hz), 3.80 (d, 1H, $J = 4.6$ Hz), 1.00 (t, 3H, $J = 7.1$ Hz)
4l	δ (250 MHz, CDCl_3): 7.41-7.19 (m, 5H), 4.81 (sept, 1H, $J = 6.3$ Hz), 4.23 (d, 1H, $J = 4.6$ Hz), 3.76 (d, 1H, $J = 4.6$ Hz), 1.30 (d, 3H, $J = 6.3$ Hz), 1.28 (d, 3H, $J = 6.3$ Hz)
4m	δ (250 MHz, CDCl_3): 7.38-7.27 (m, 5H), 5.84 (br s, 1H), 5.62 (br s, 1H), 4.32 (d, 1H, $J = 4.8$ Hz), 3.75 (d, 1H, $J = 4.8$ Hz)

Table S2. HPLC data for the epoxides.

Epoxide	Column	Eluent: <i>i</i> -PrOH/hexane	λ , nm	v , mL/min	T, °C	t_{R1} , min	t_{R2} , min
4a	Chiralcel OD-H	2:98	254	1.00	20	20.8	22.0
4b	Chiralcel OD-H	1:99	216	0.60	20	11.7	12.9
4c	Chiralcel OD-H	1:99	216	0.40	20	13.3	18.6
4d	Chiralcel OB-H	10:90	216	1.00	20	12.0	16.2
4e	Chiralcel OB-H	2:98	216	0.70	25	14.8	18.7
4f	Chiralcel OJ-H	30:70	254	1.00	20	12.6	22.3
4g	Chiralpak AD-H	8:92	254	0.80	20	21.5	22.6
4h	Chiralcel OD-H	10:90	216	0.80	20	12.9	18.4
4i	Chiralpak AD-H	5:95	216	1.00	40	5.9	6.7
4j	Chiralpak AS-3	25:75	210	0.72	35	52.0	55.3
4k	Chiralpak AD-H	2:98	216	1.00	25	7.4	8.2
4l	Chiralcel OJ-H	10:90	216	1.00	25	10.6	11.2
4m	Chiralcel OJ-H	10:90	210	0.88	20	22.7	27.2

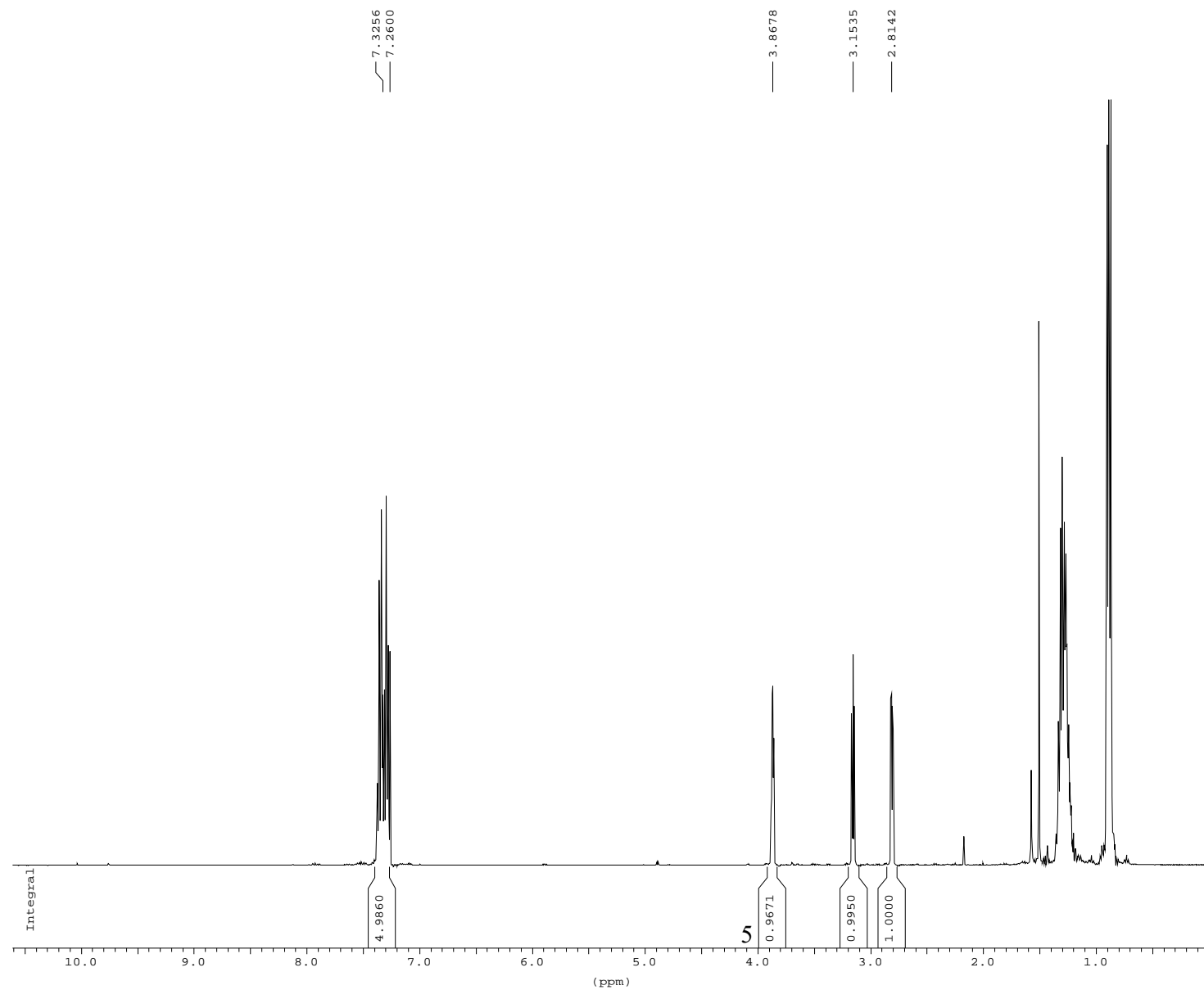
Figure S1. Selected examples of ^1H NMR spectra of reaction mixtures.

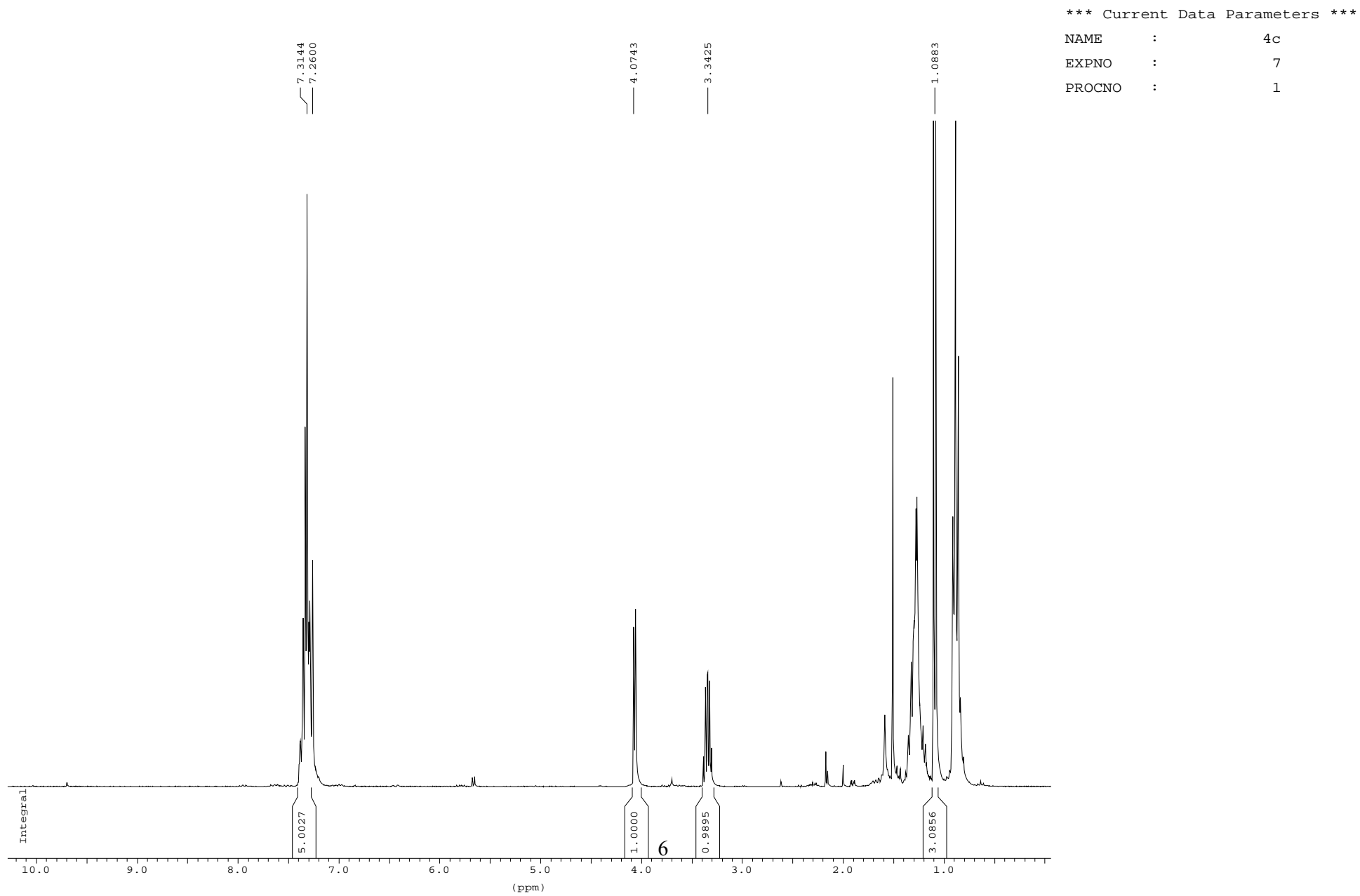
The most common admixtures were diethyl ether (q 3.47 ppm, t 1.21 ppm), CH_3CN (s 1.96 ppm) and EBA (broad signals from 1.8 to 0.8 ppm)

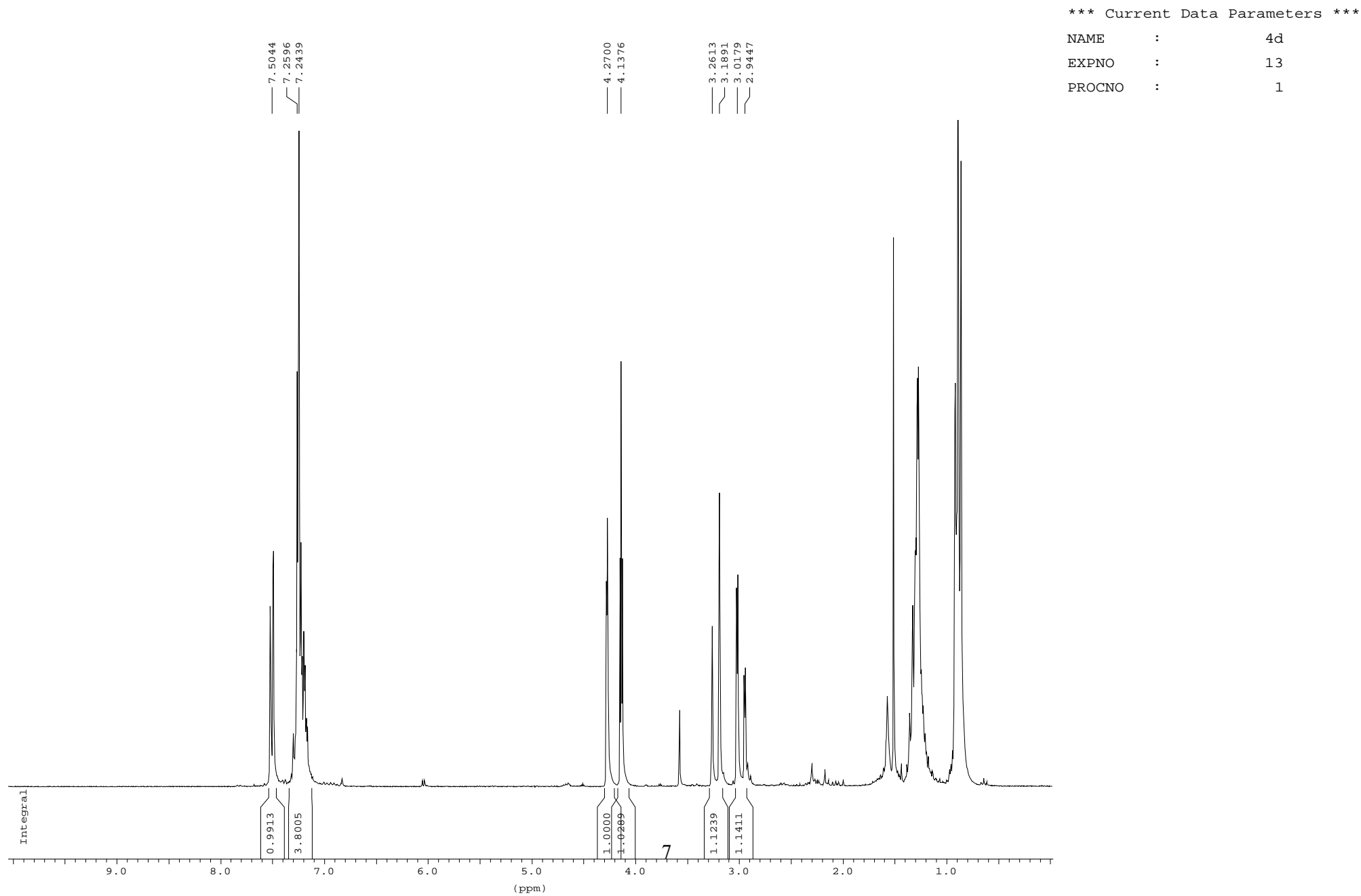


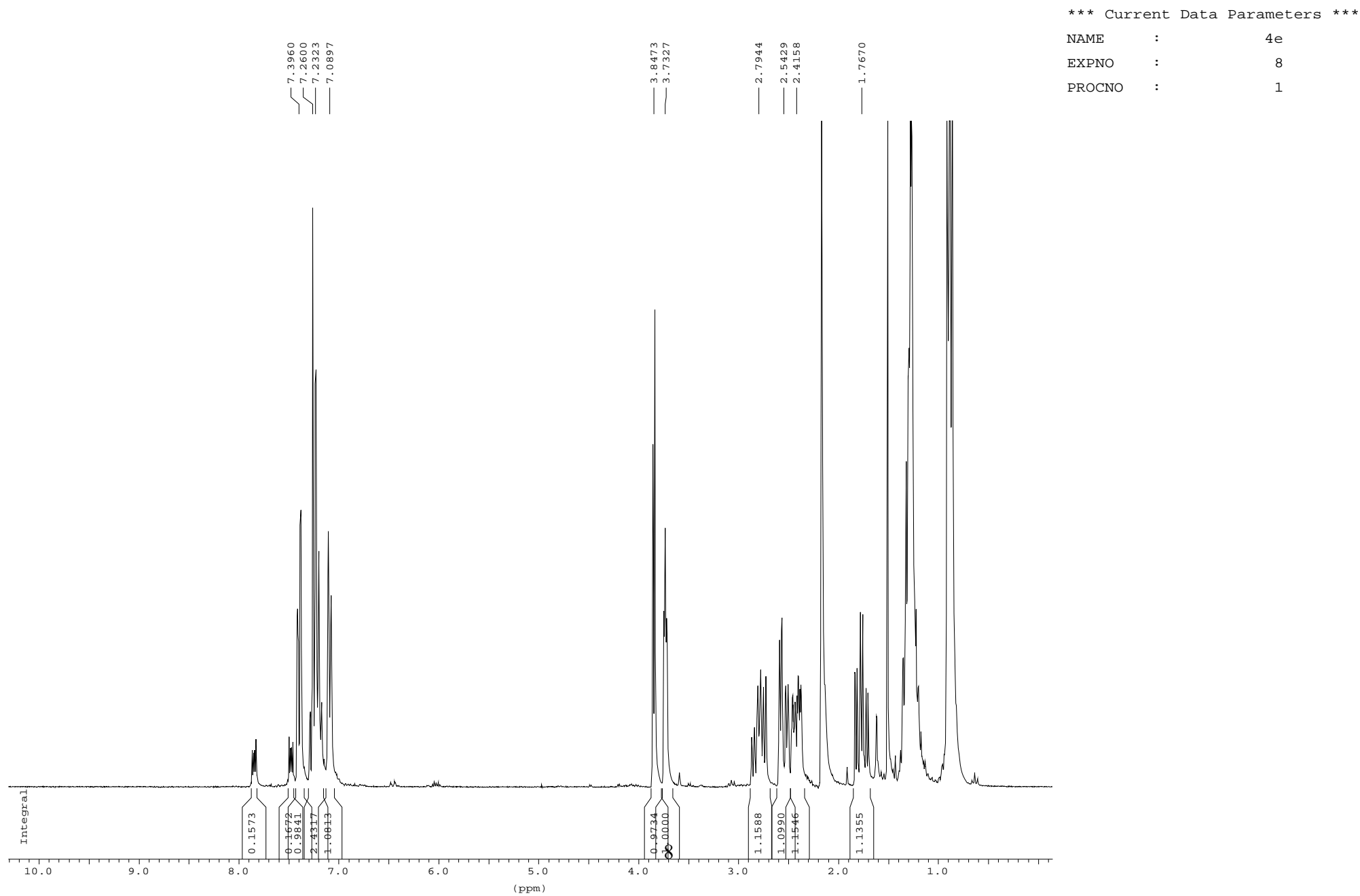
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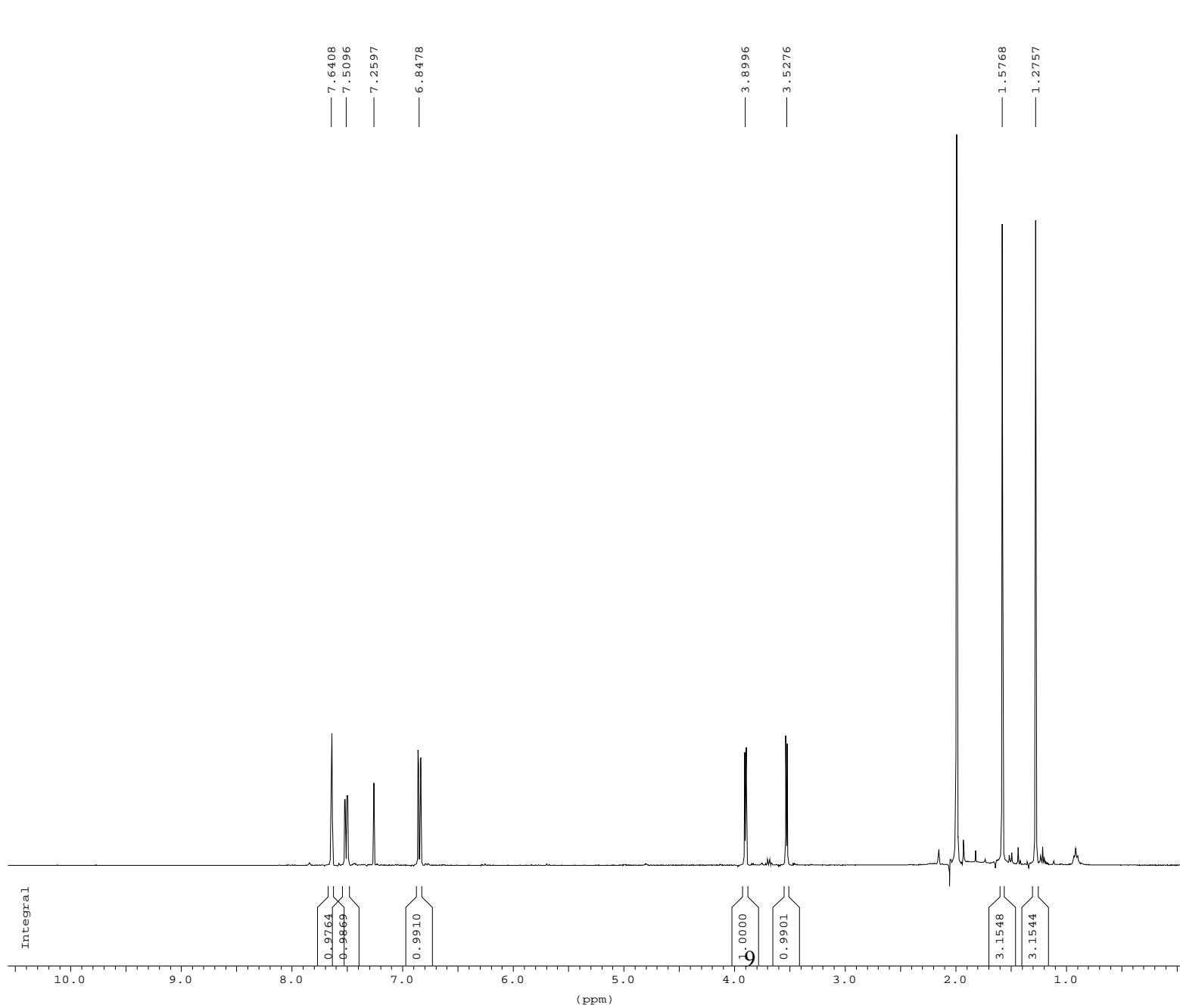
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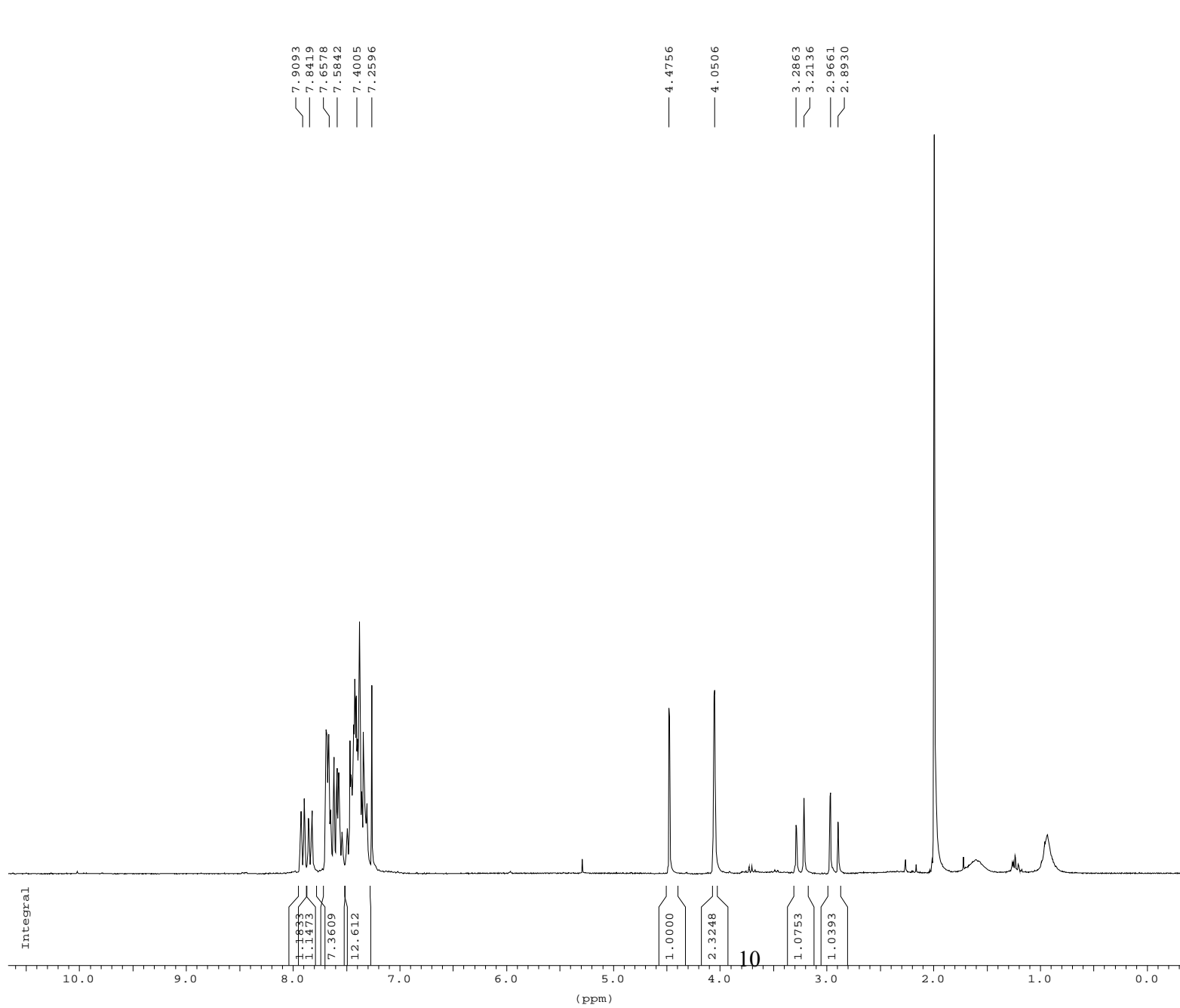






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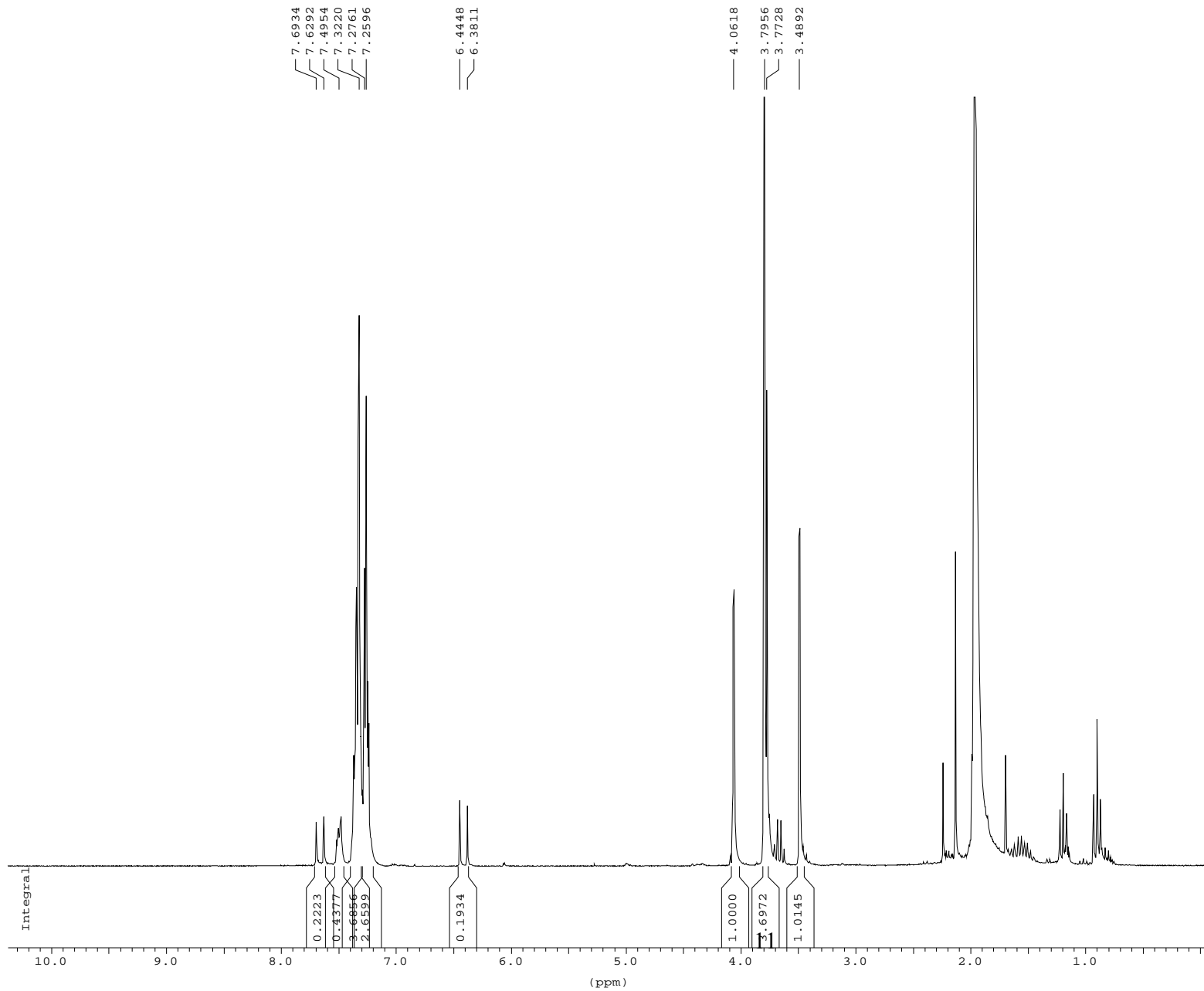


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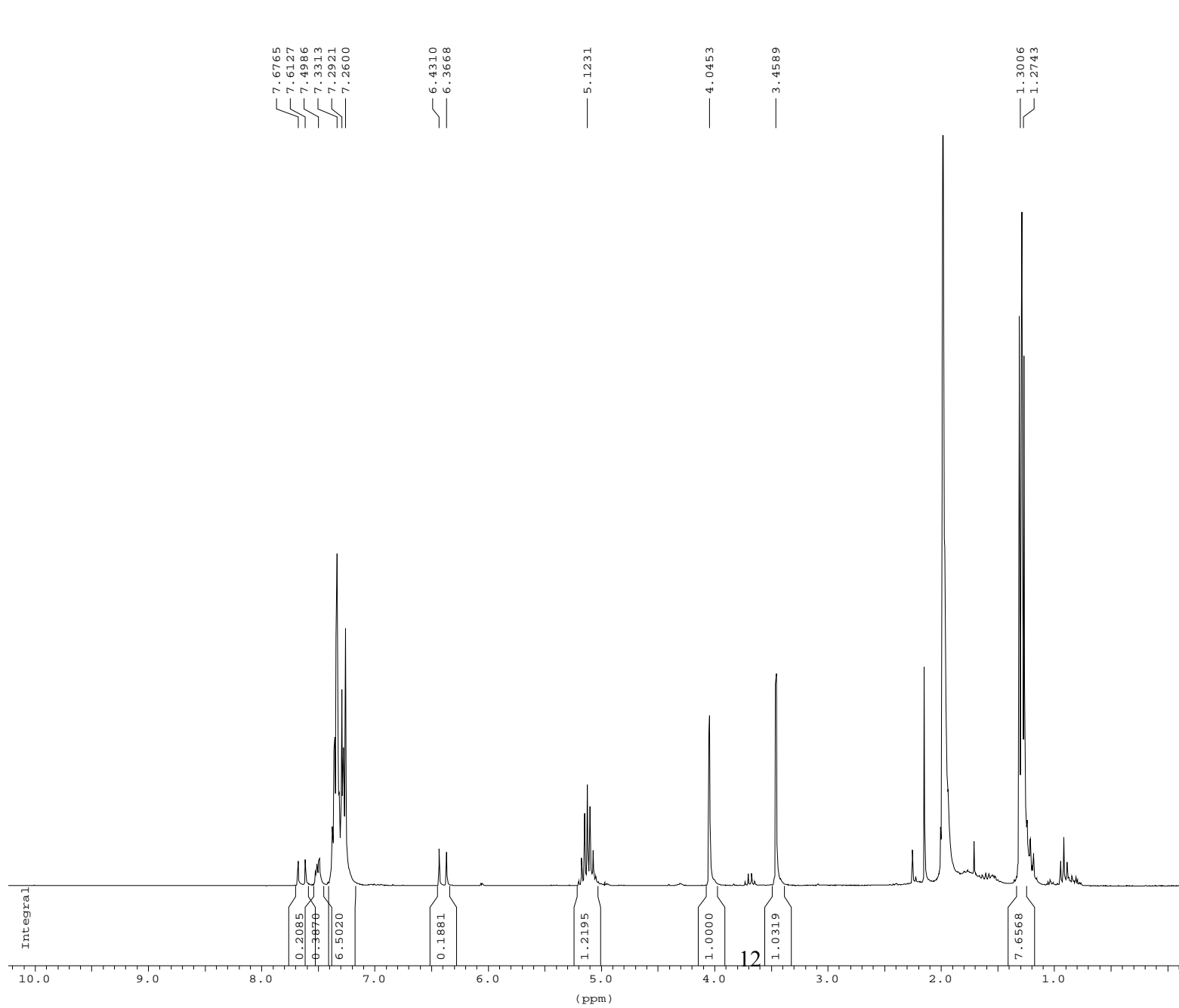


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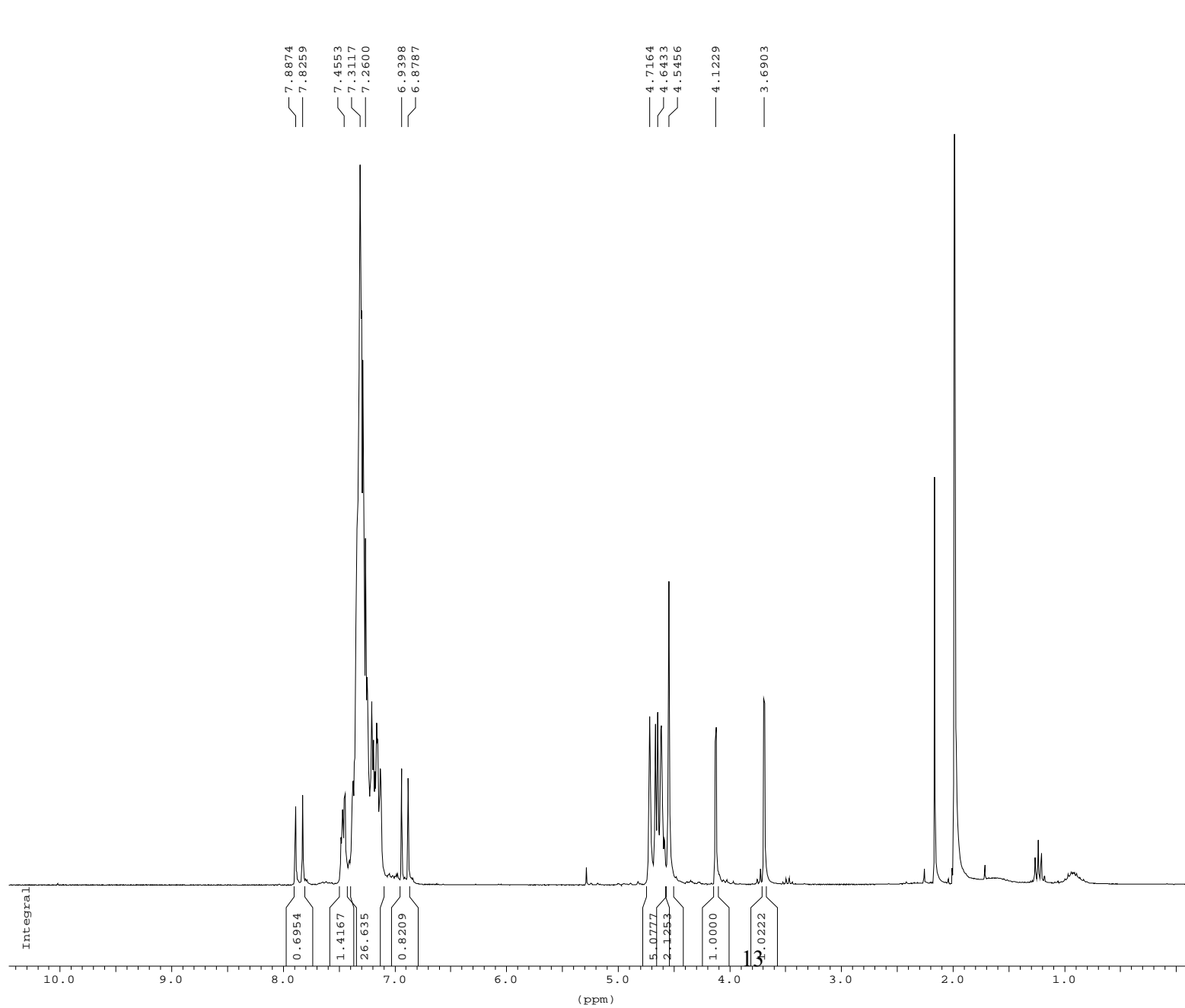
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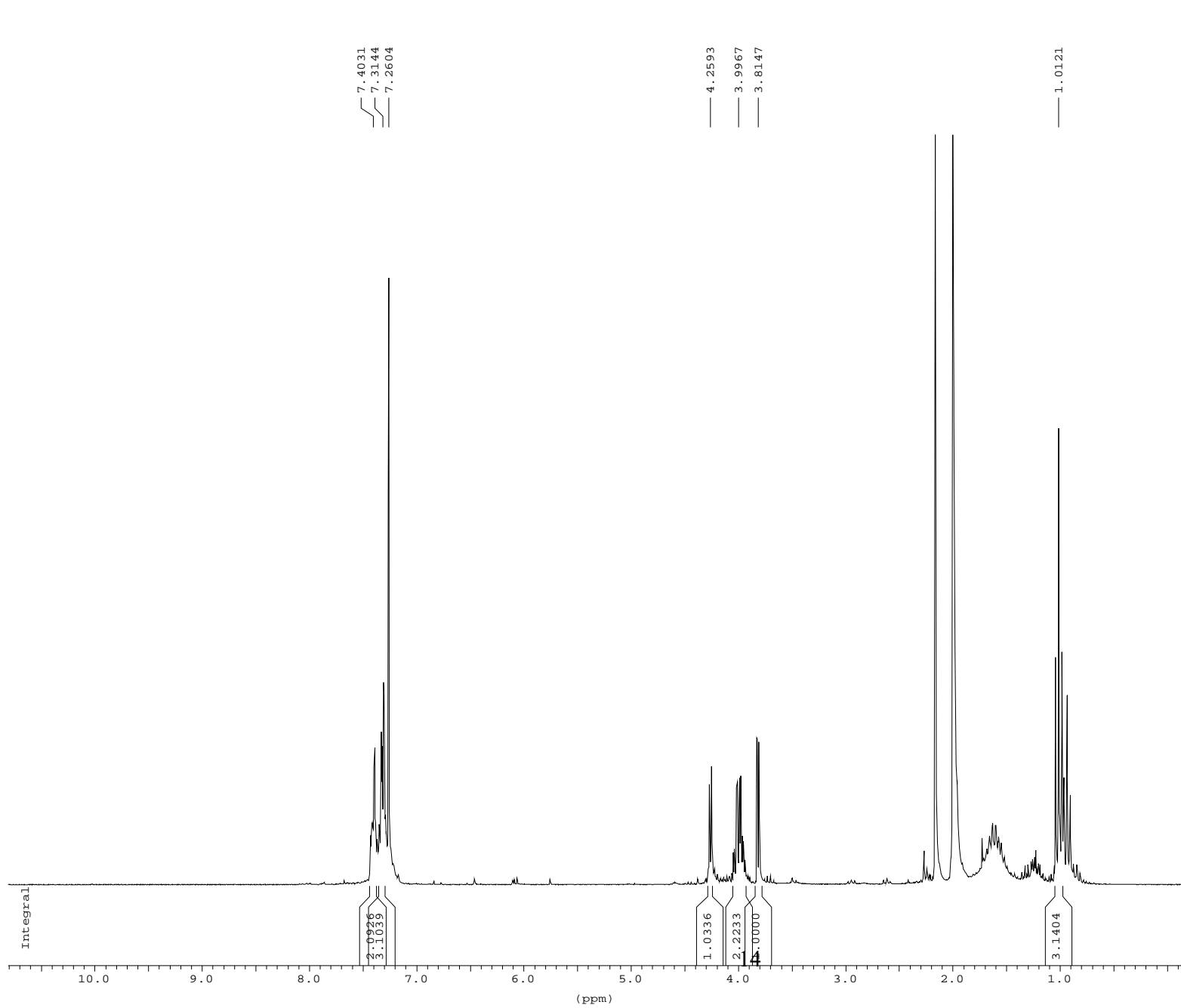
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*** Current Data Parameters ***

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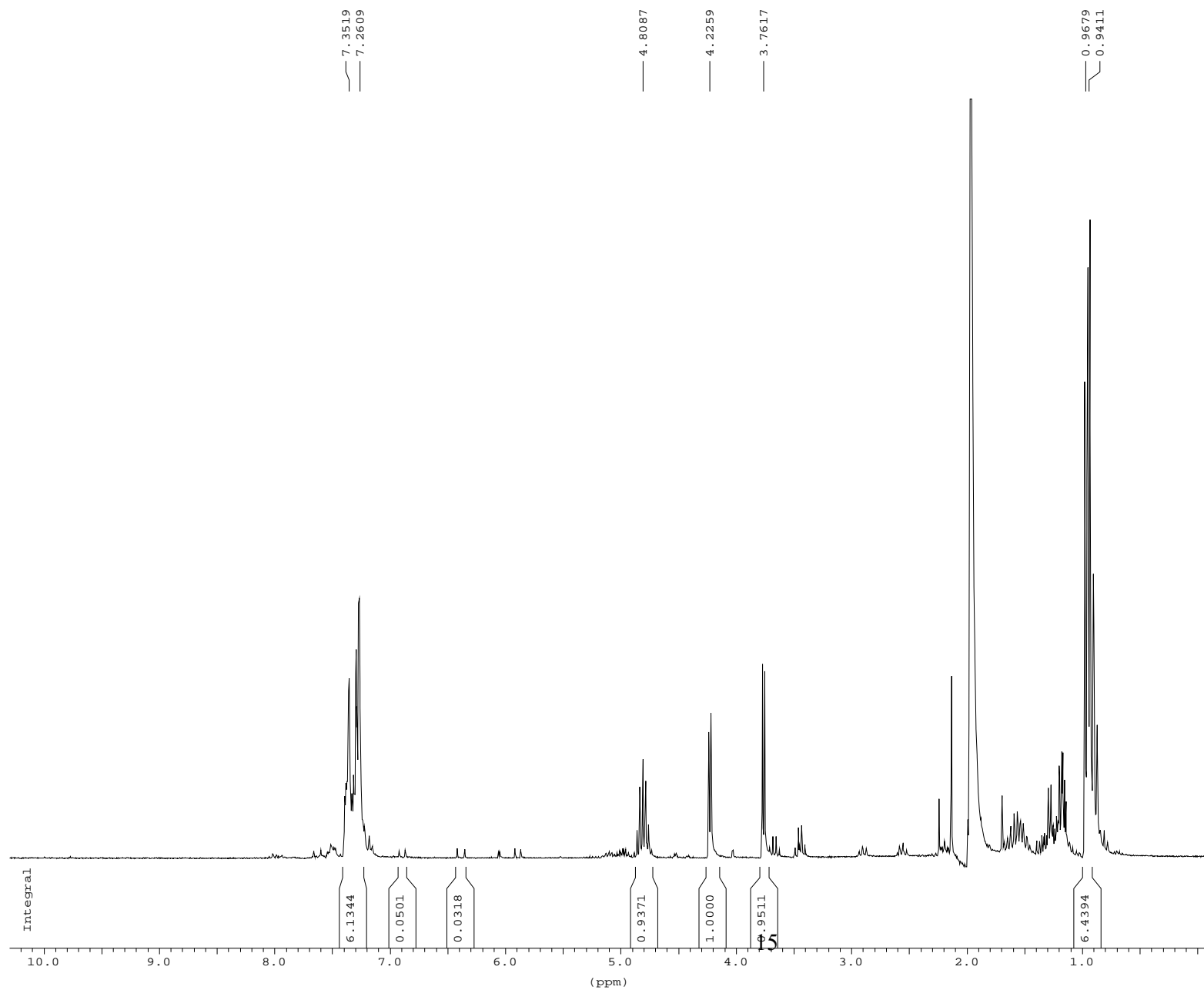


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*** Current Data Parameters ***

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PROCNO : 1



*** Current Data Parameters ***

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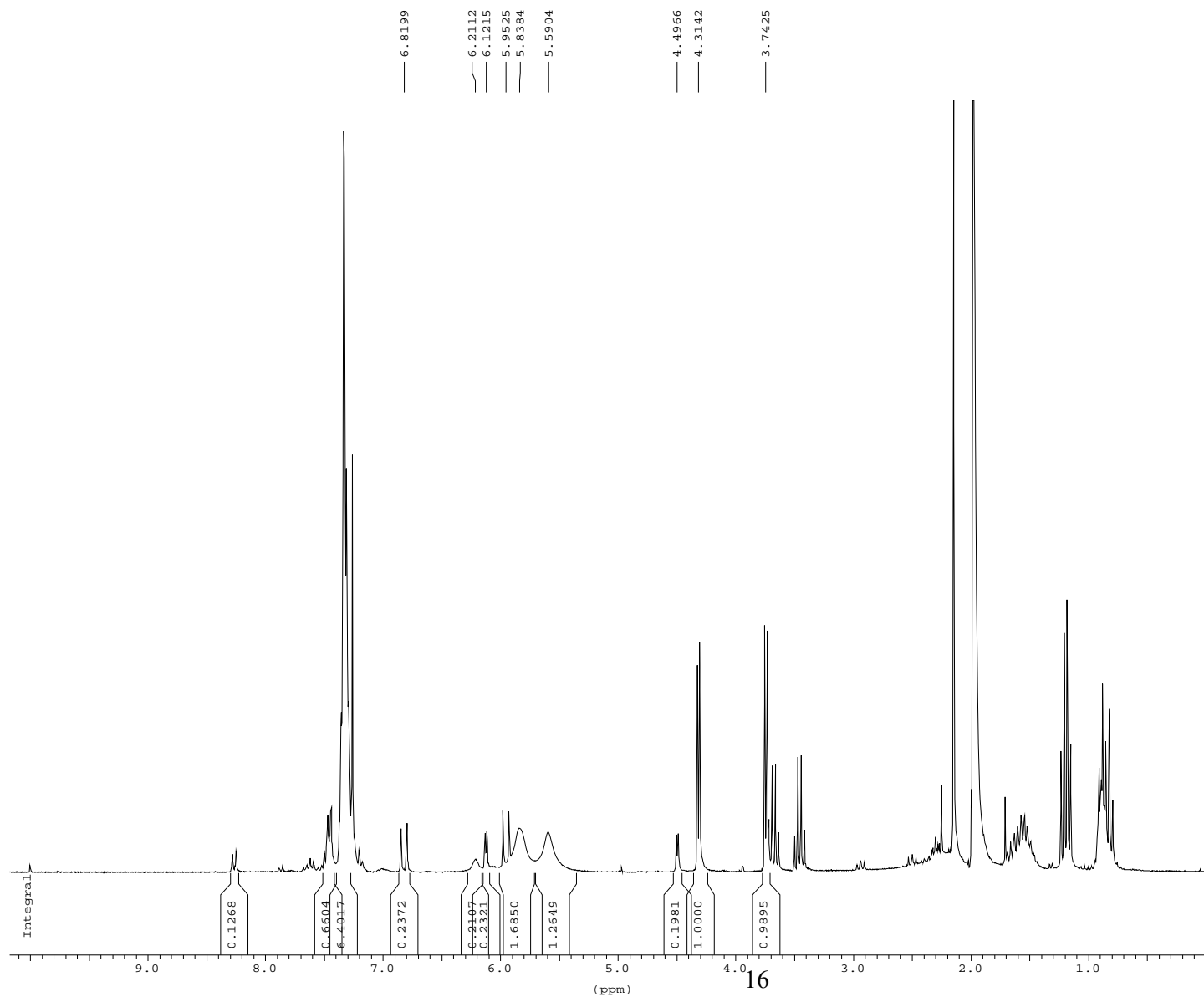
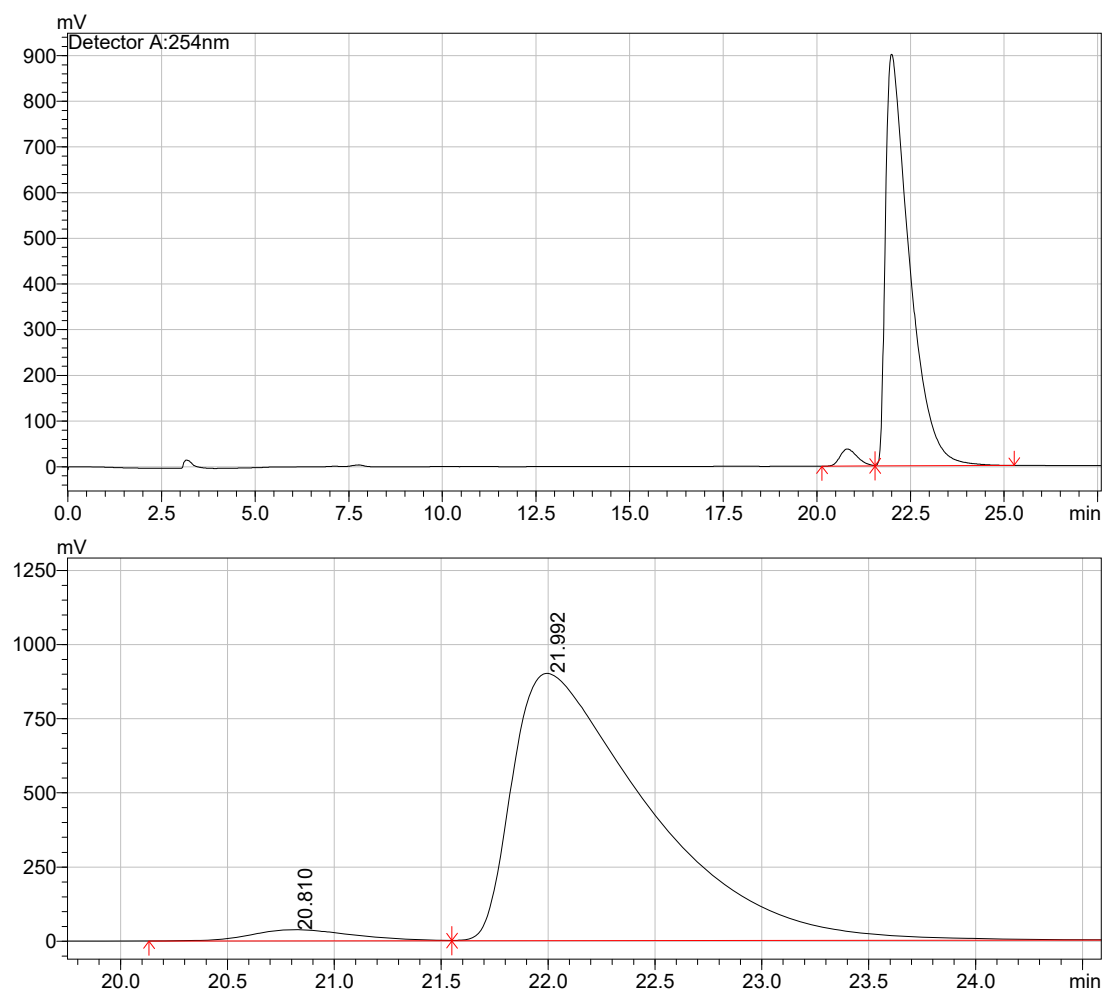
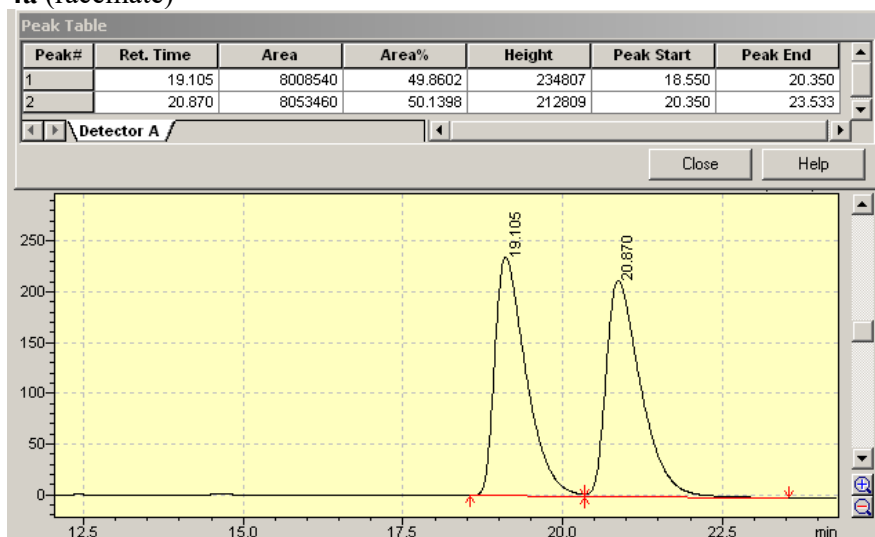


Figure S2. Selected examples of chiral HPLC chromatograms of reaction mixtures.

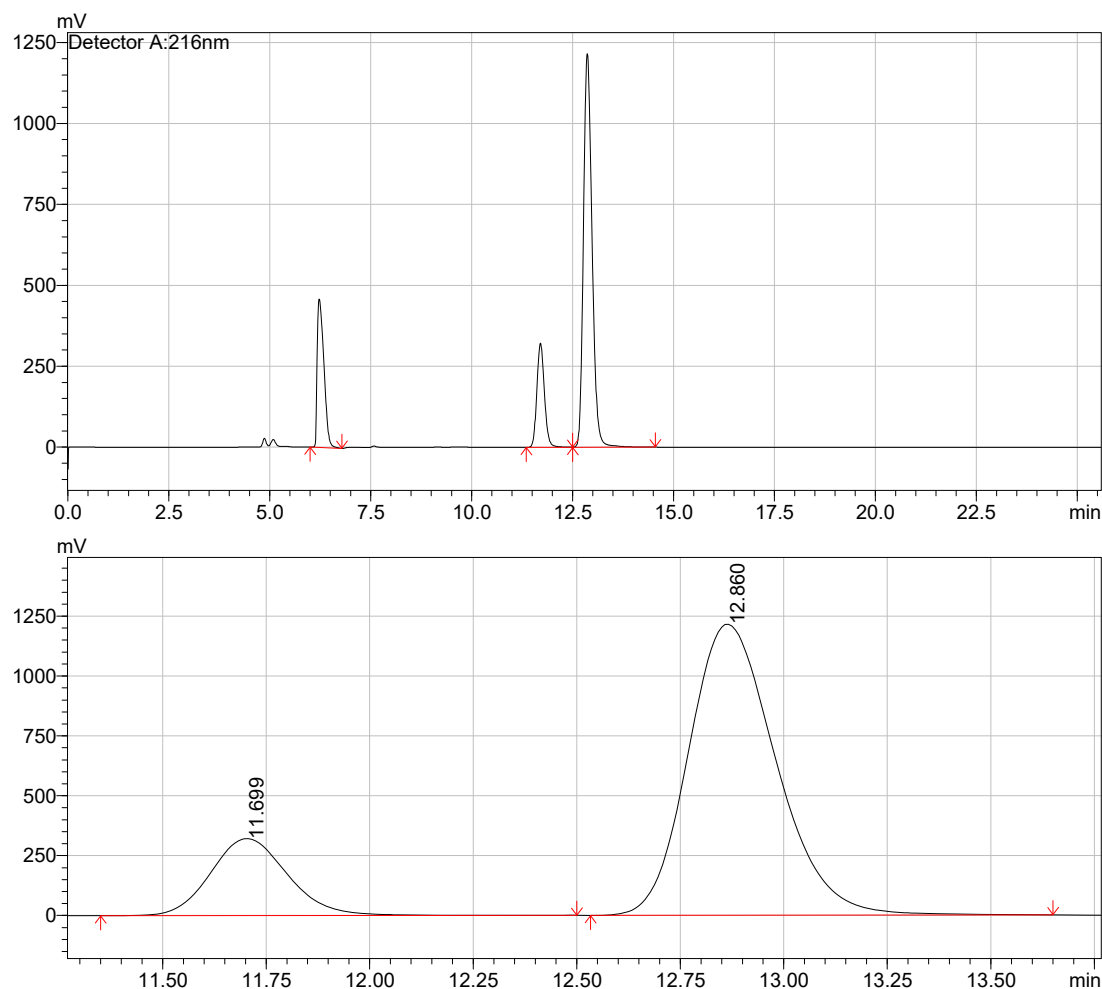
4a



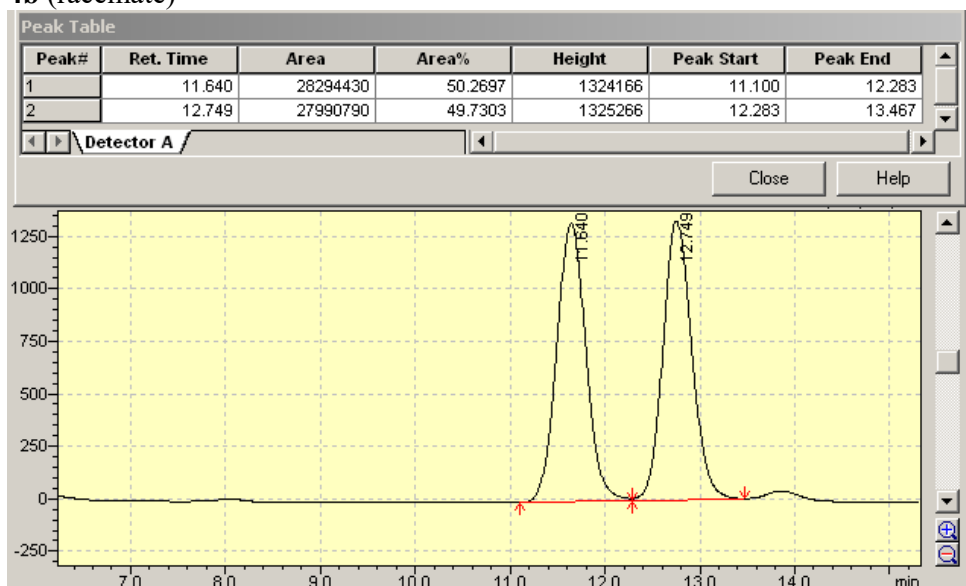
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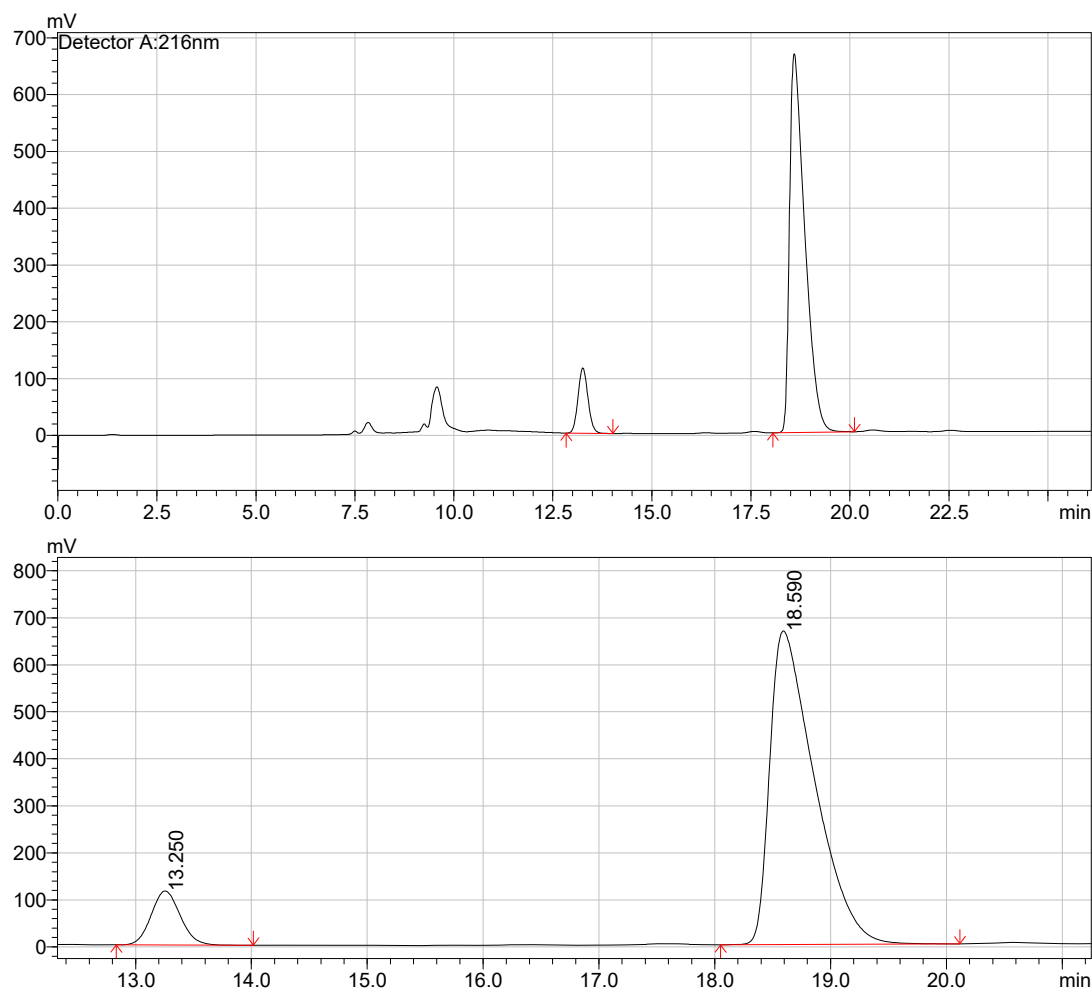
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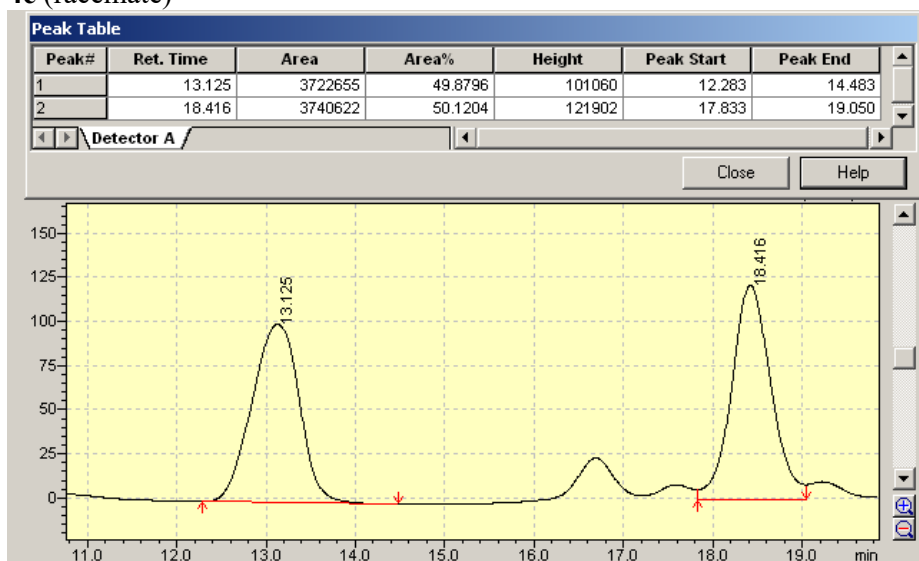
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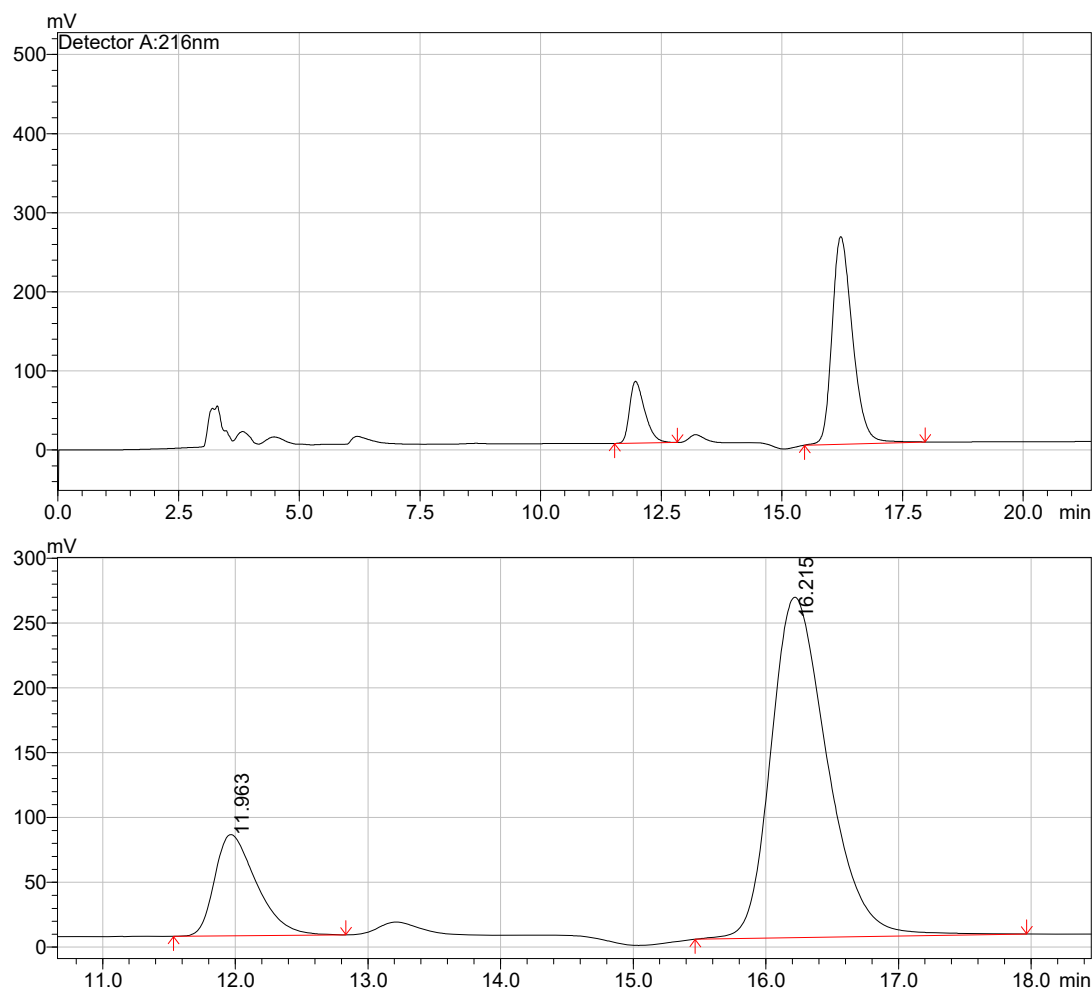
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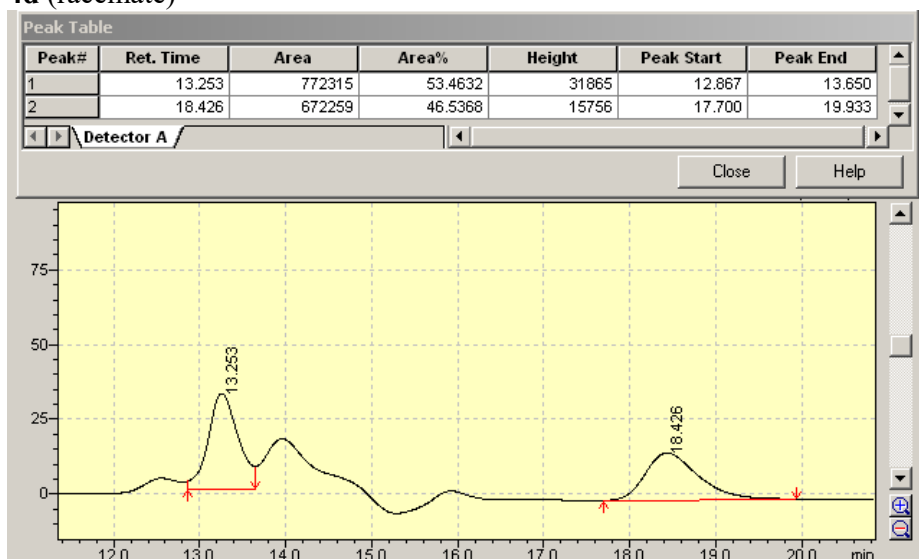
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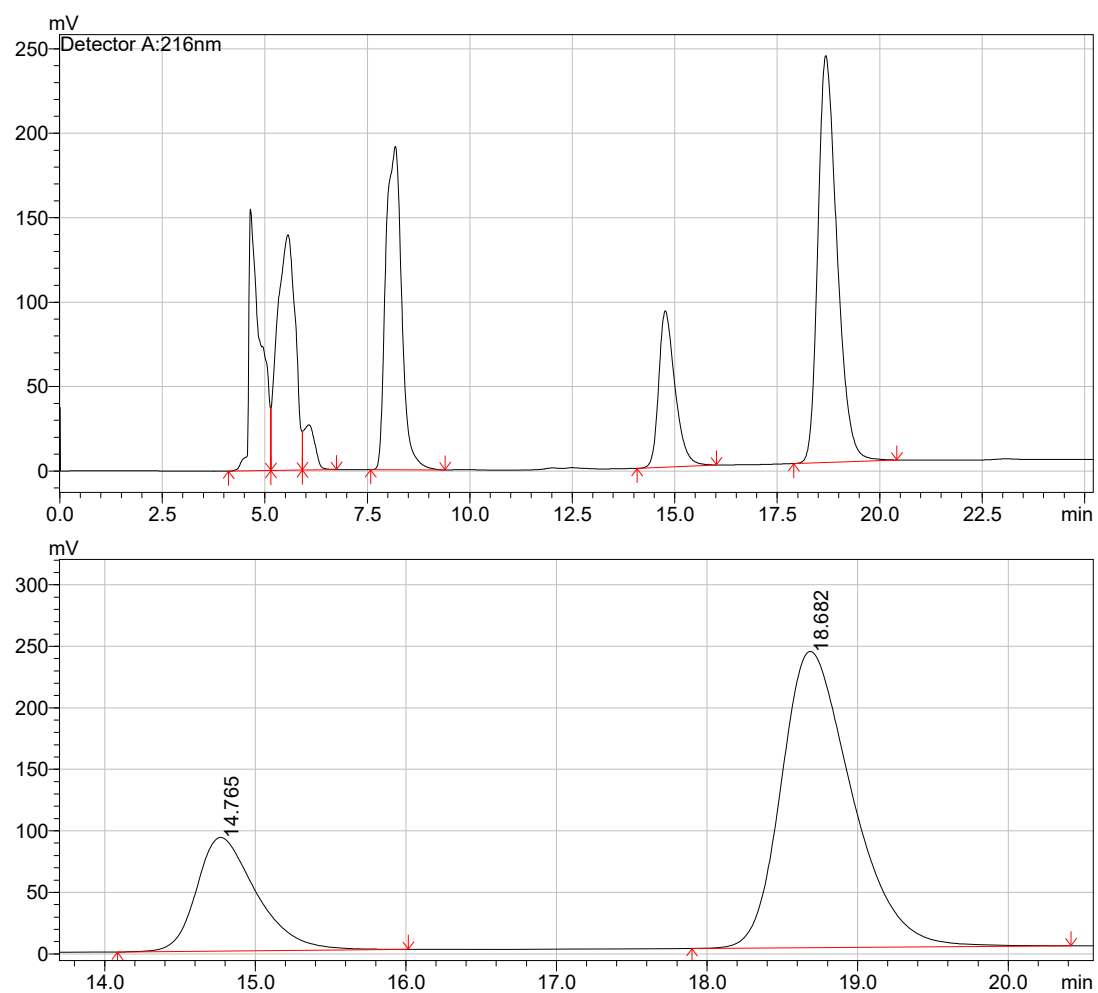
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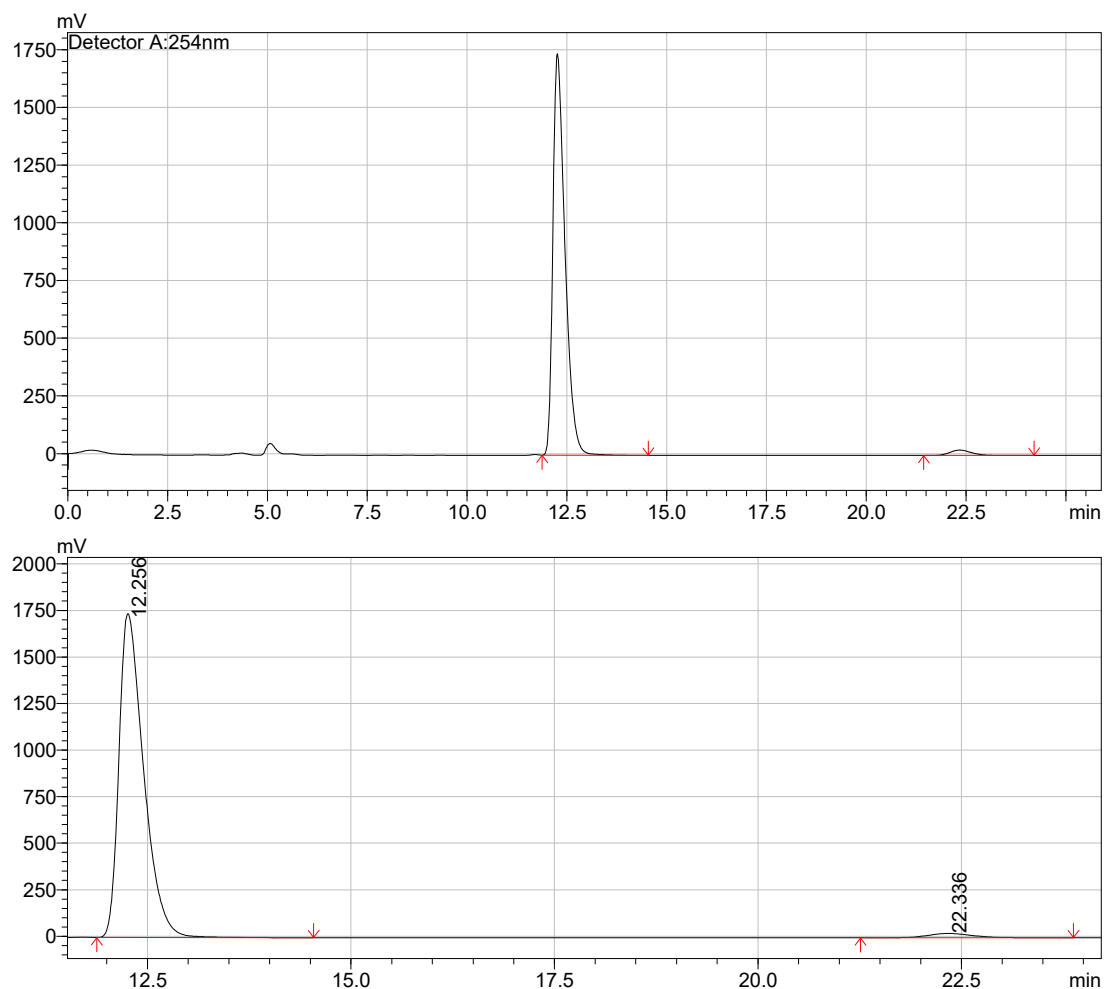
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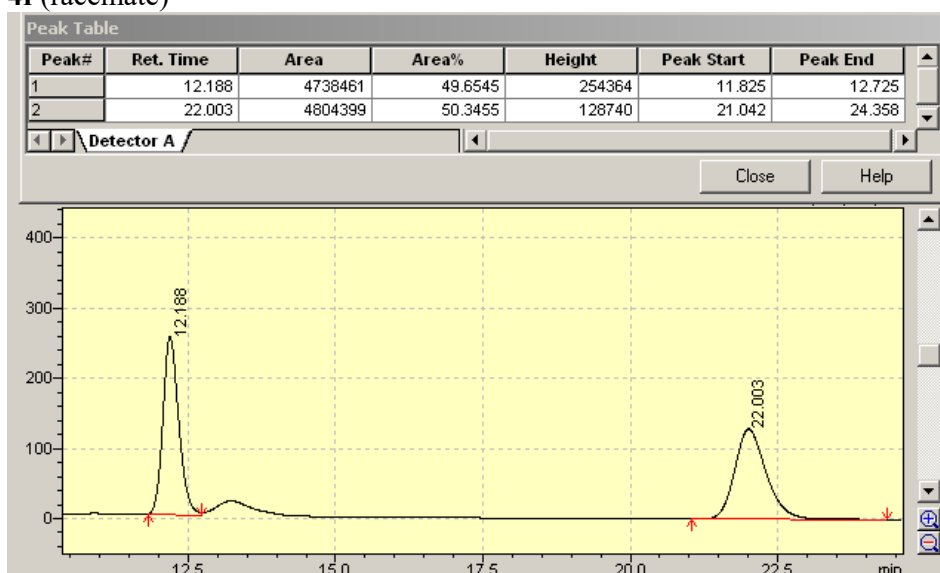
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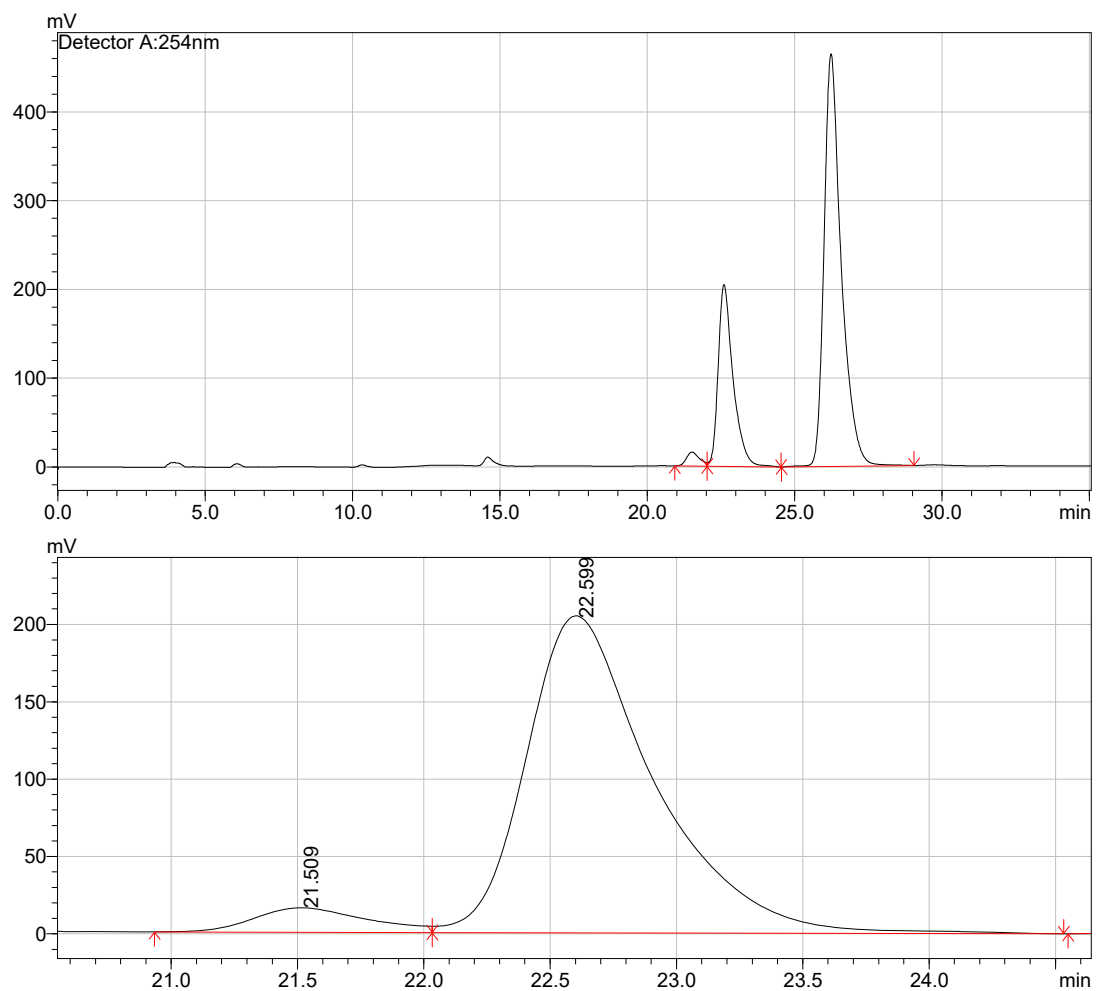
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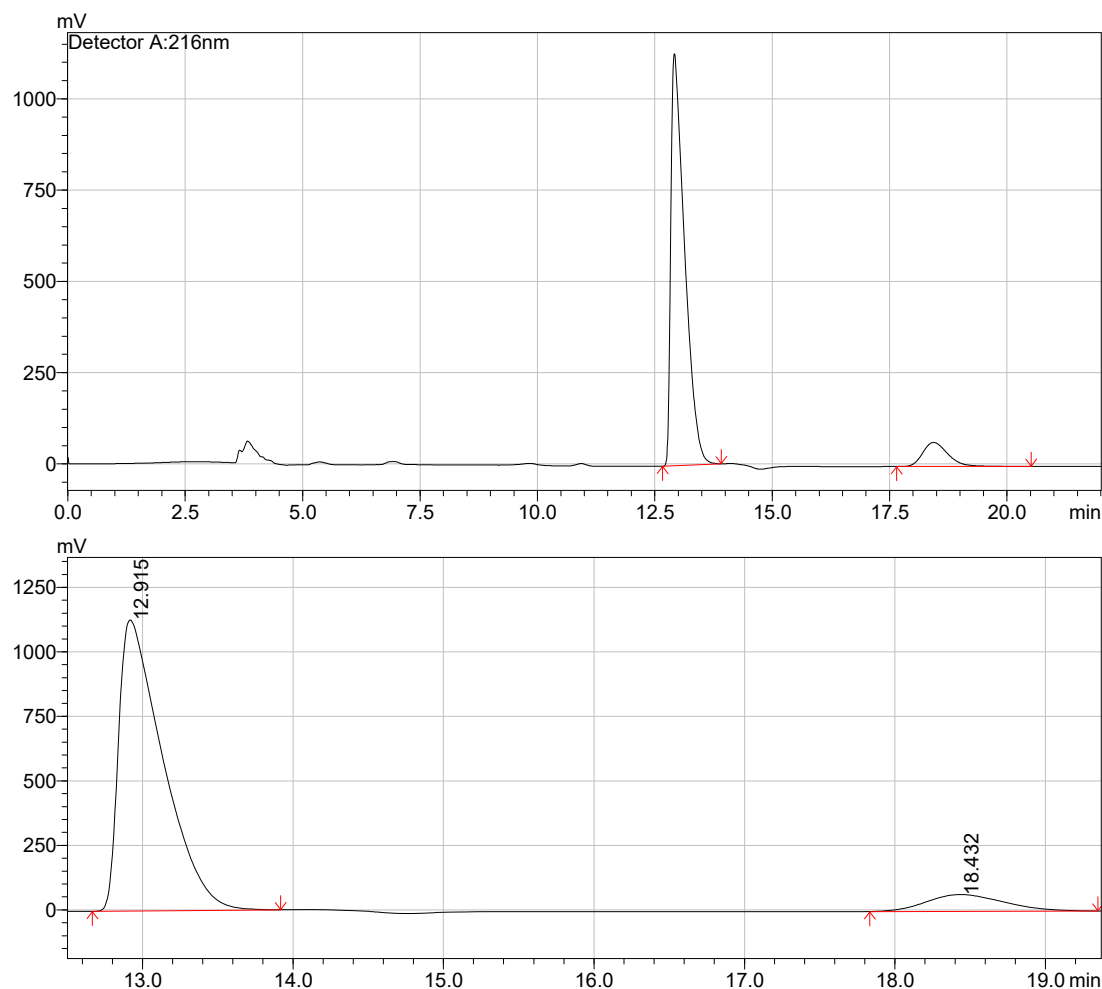
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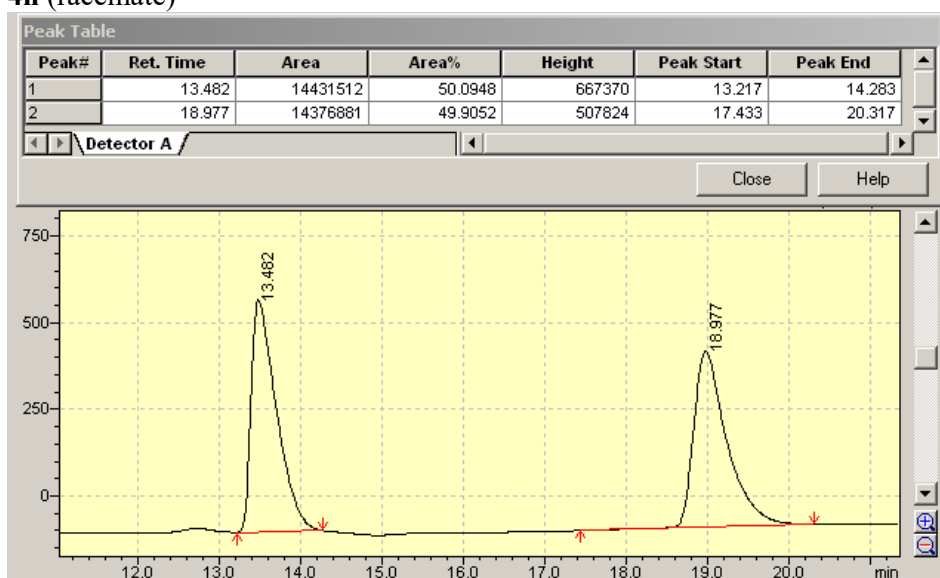
4g



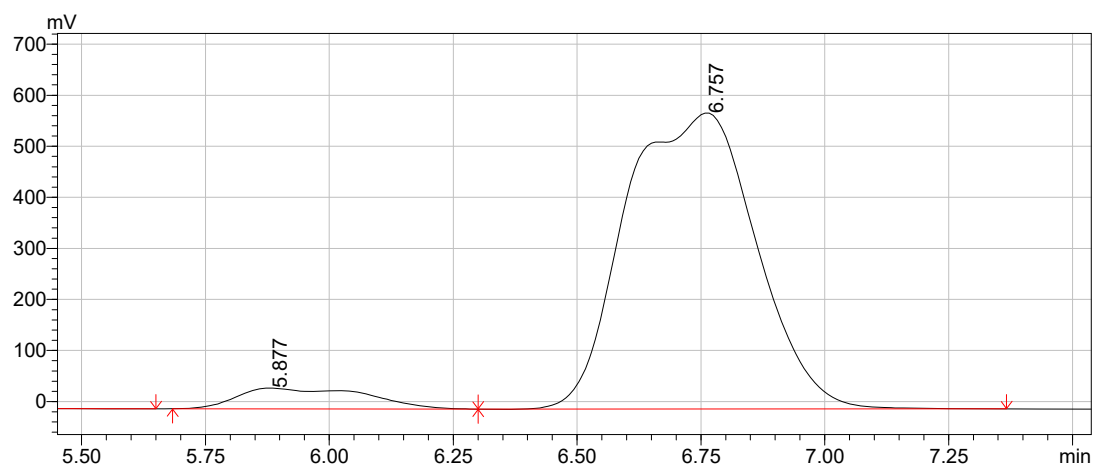
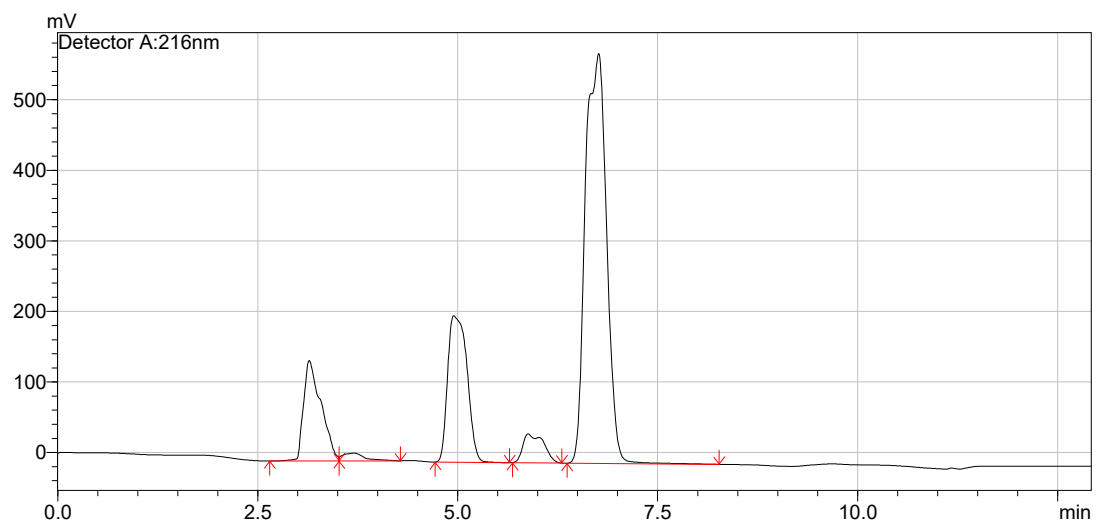
4h



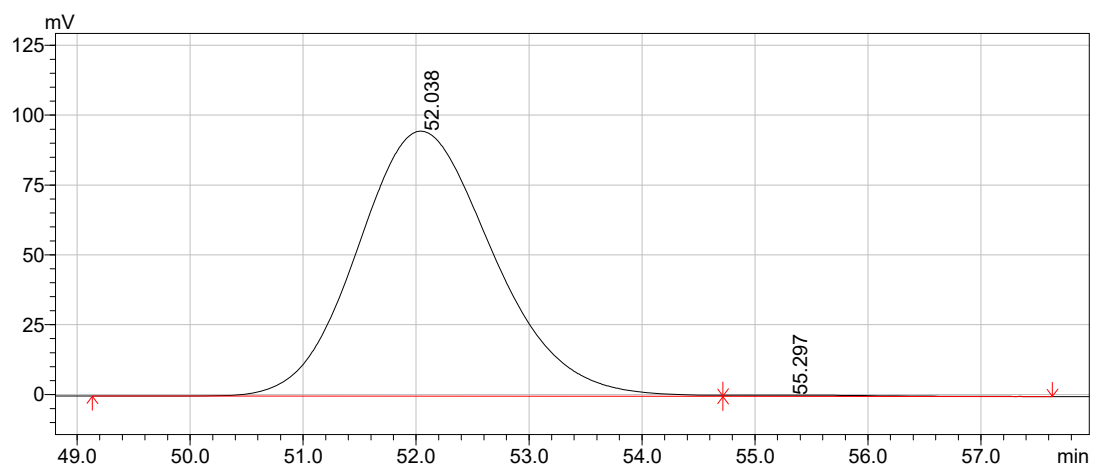
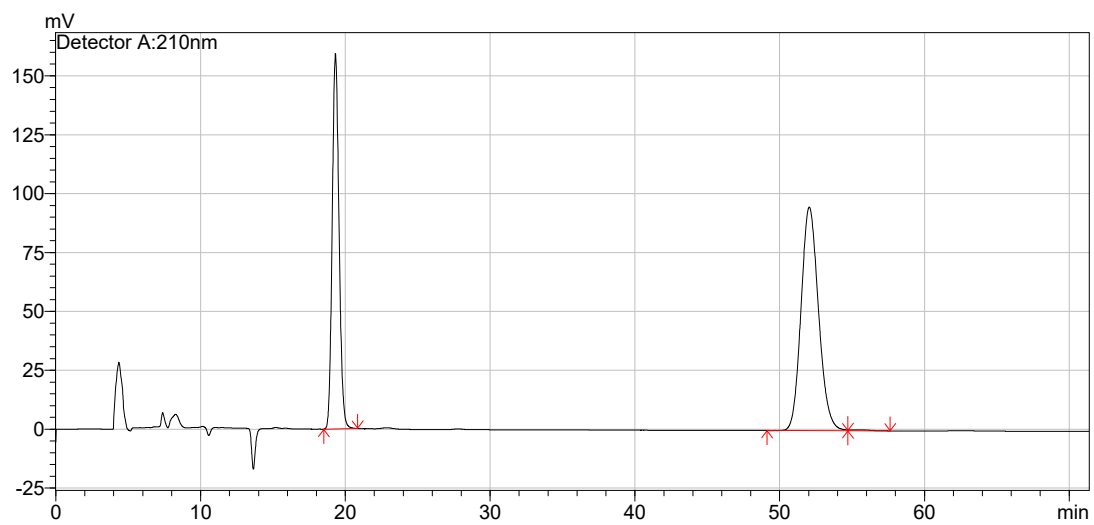
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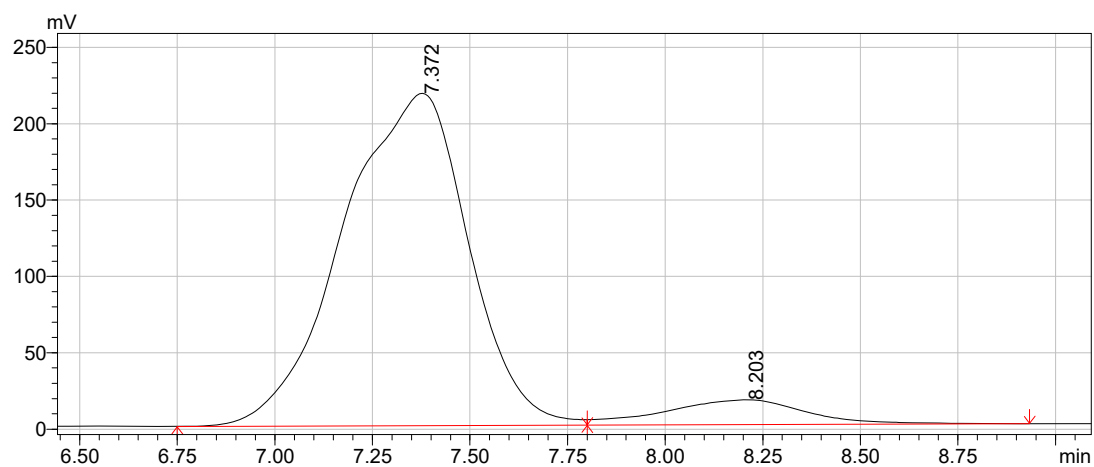
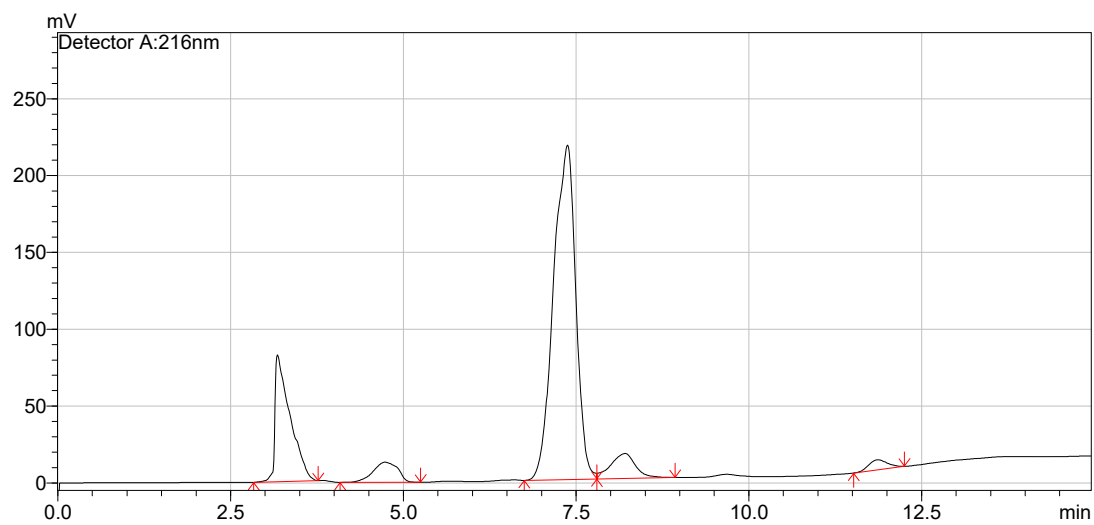
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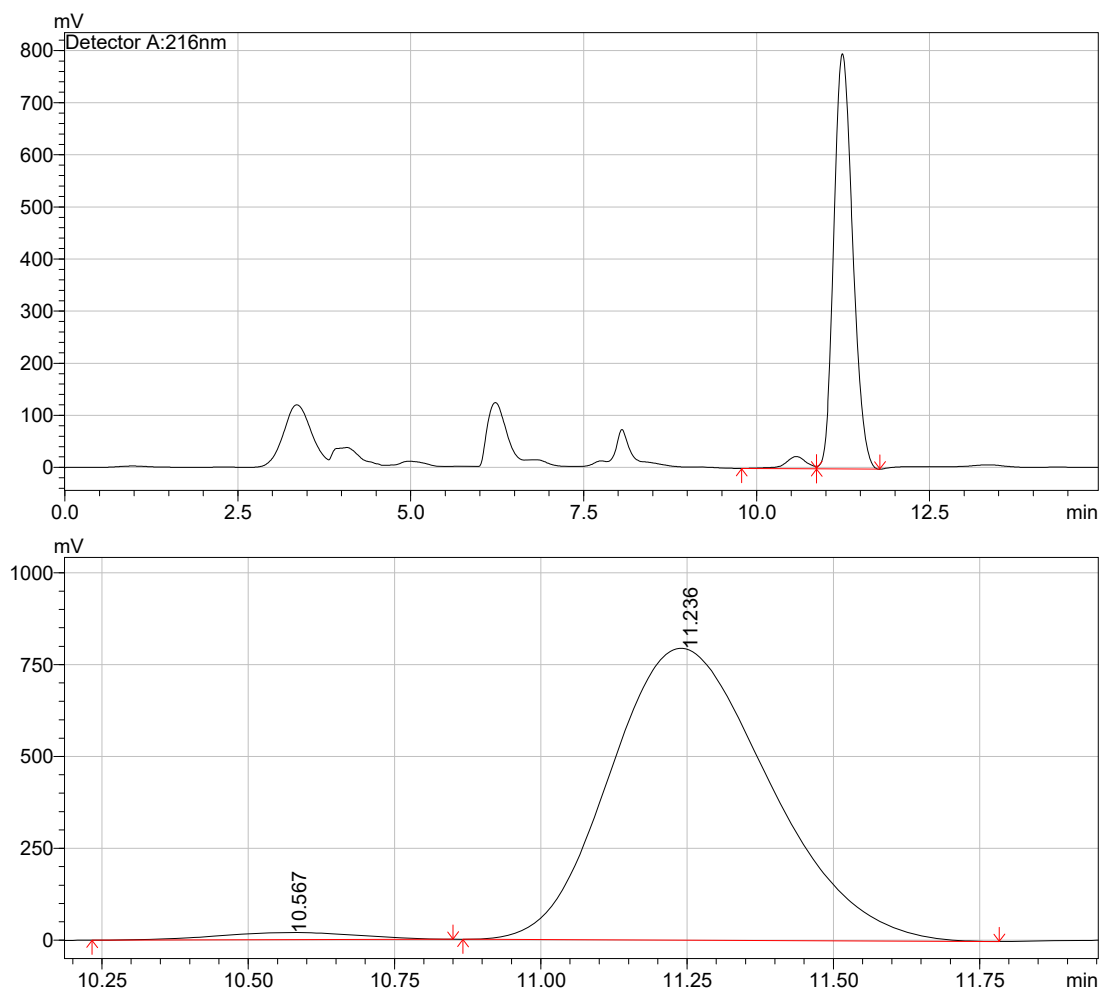
4j



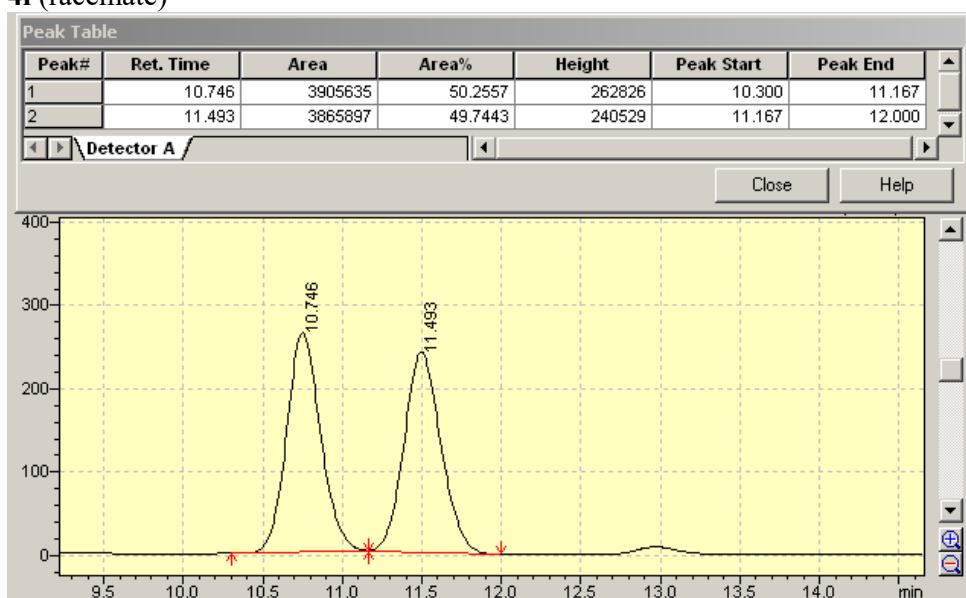
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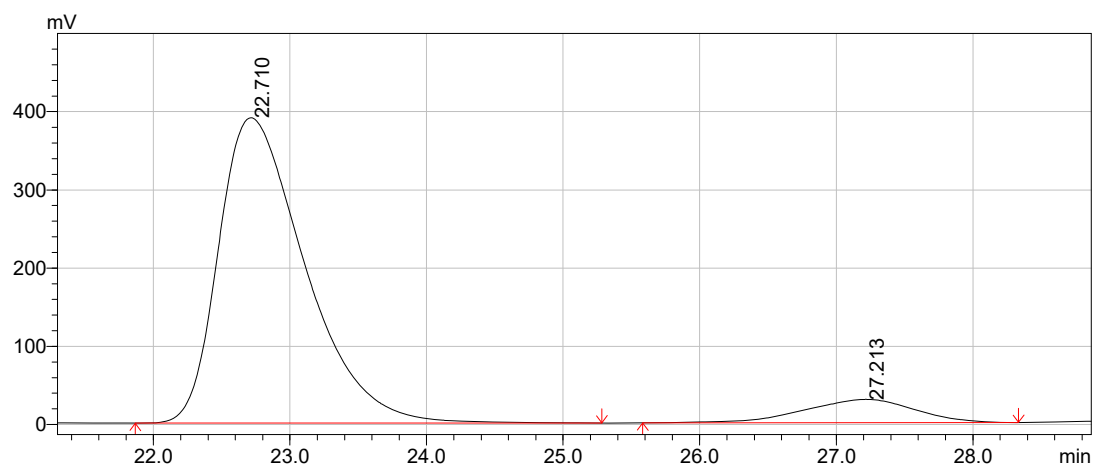
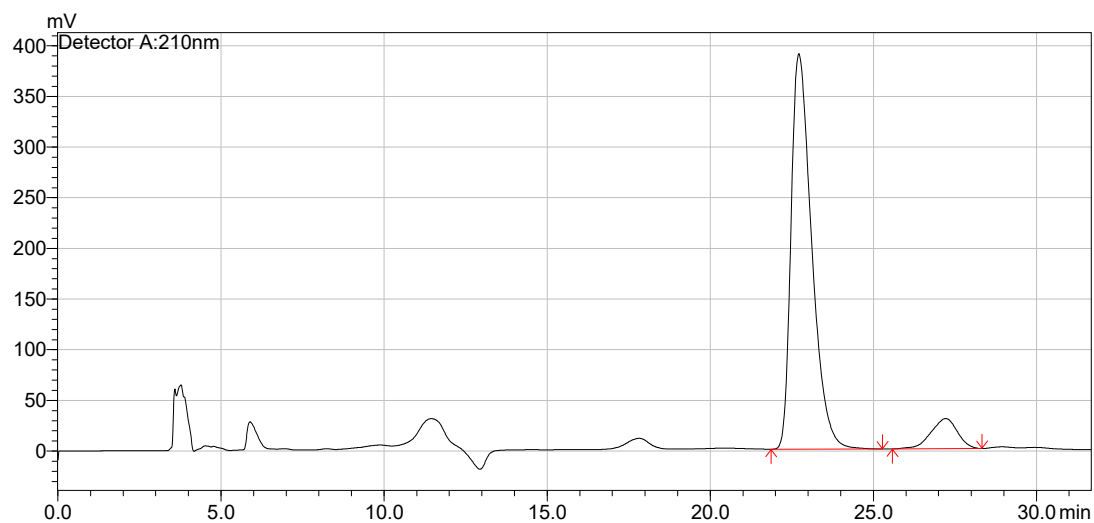
41



41 (racemate)



4m



4m (racemate)

