

Supporting Information

Cu(OAc)₂/FOXAP Complex Catalyzed Construction of 2,5-Dihydropyrrole Derivatives via Asymmetric 1,3-Dipolar Cycloaddition of Azomethine Ylides with Ethynyl Ketones

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of Science and Technology, 130 Meilong Road, Shanghai 200237, P. R. China

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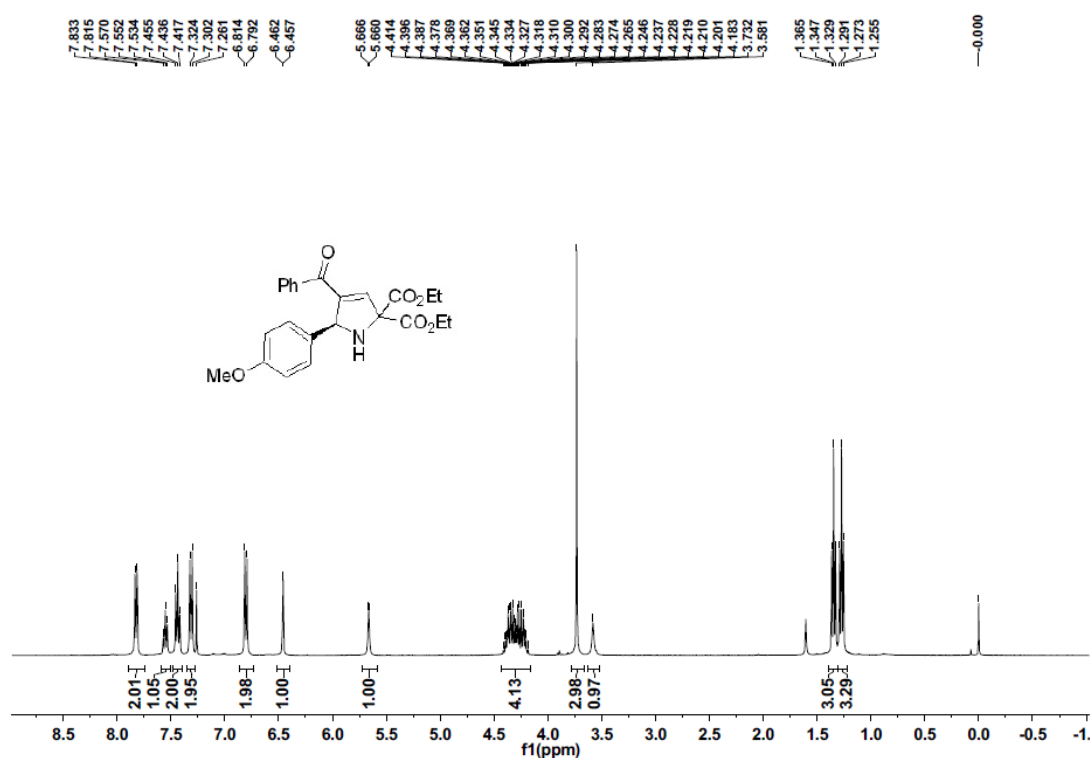
E-mail: xxyu@ecust.edu.cn; weiping_deng@ecust.edu.cn

Content

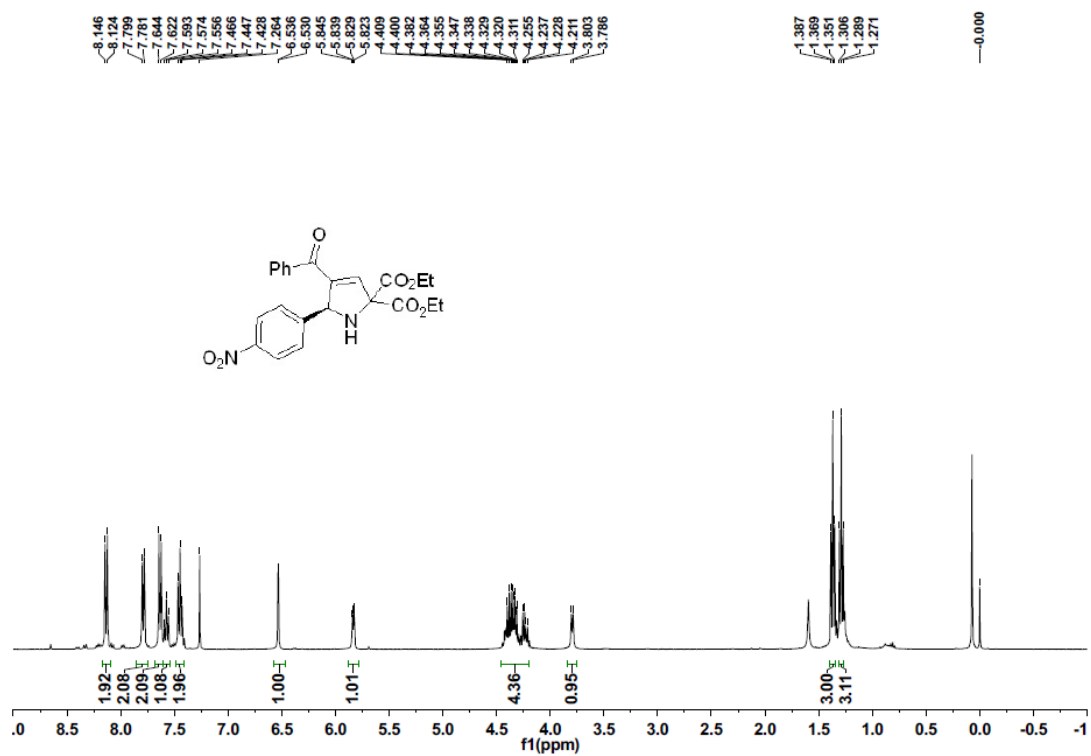
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NMR Spectra

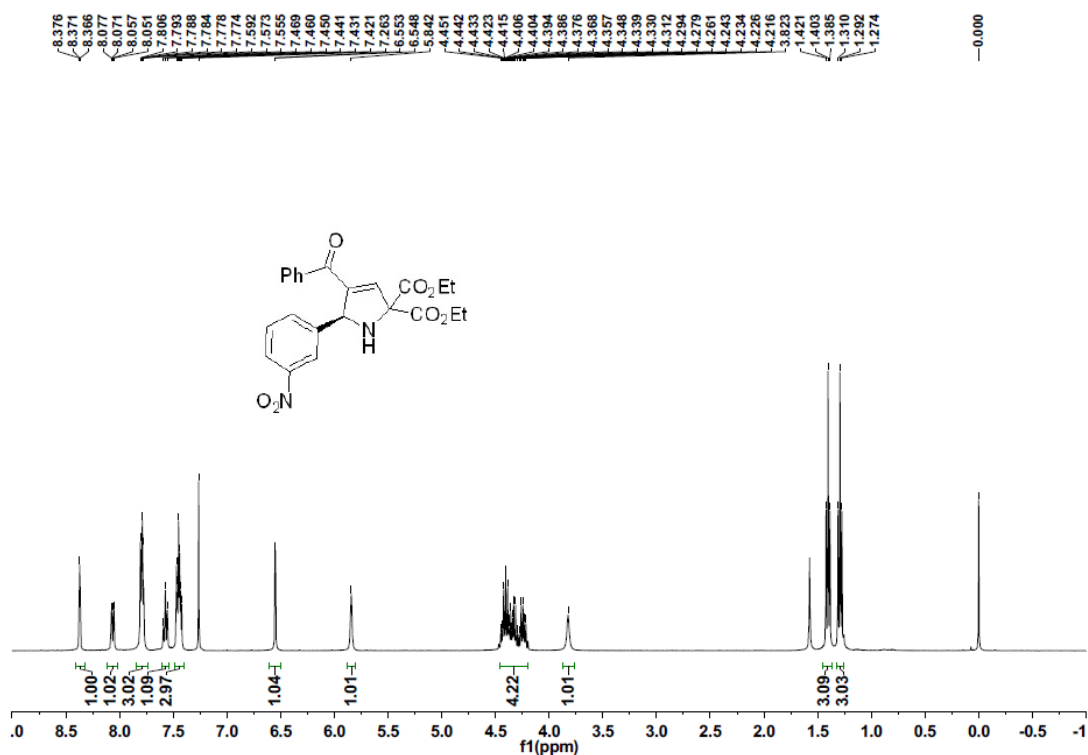
Copy of ^1H NMR spectrum of compound 3aa (CDCl_3)



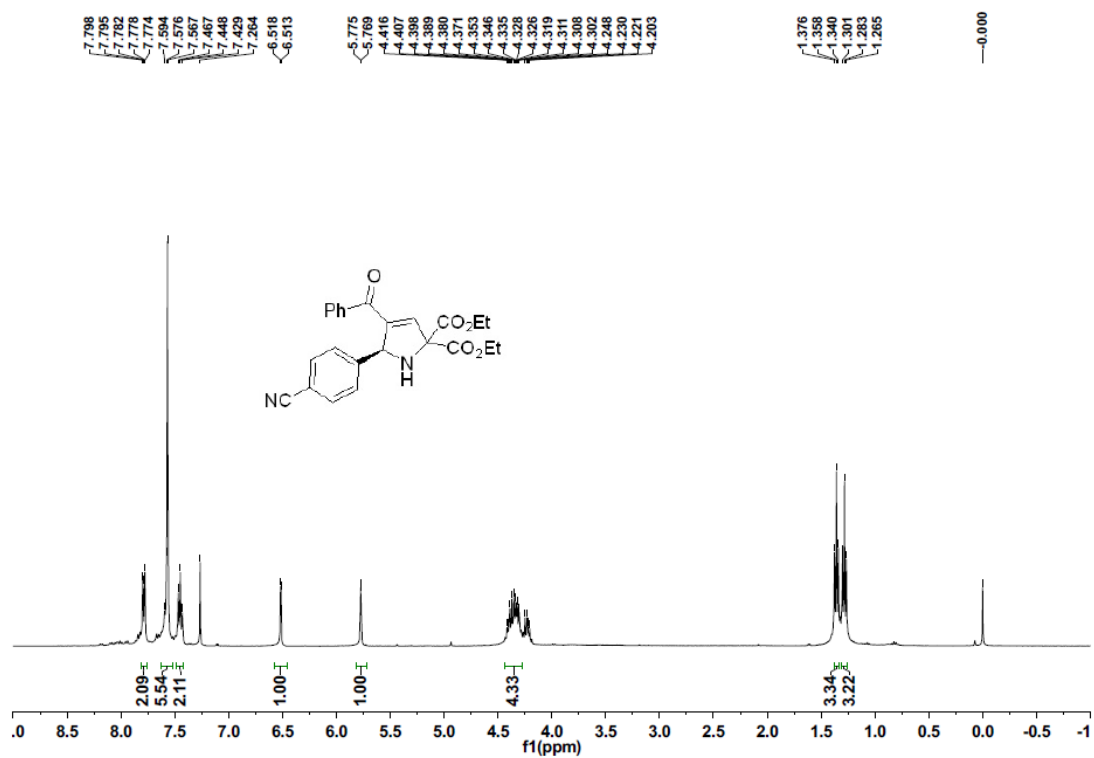
Copy of ^1H NMR spectrum of compound 3ab (CDCl_3)



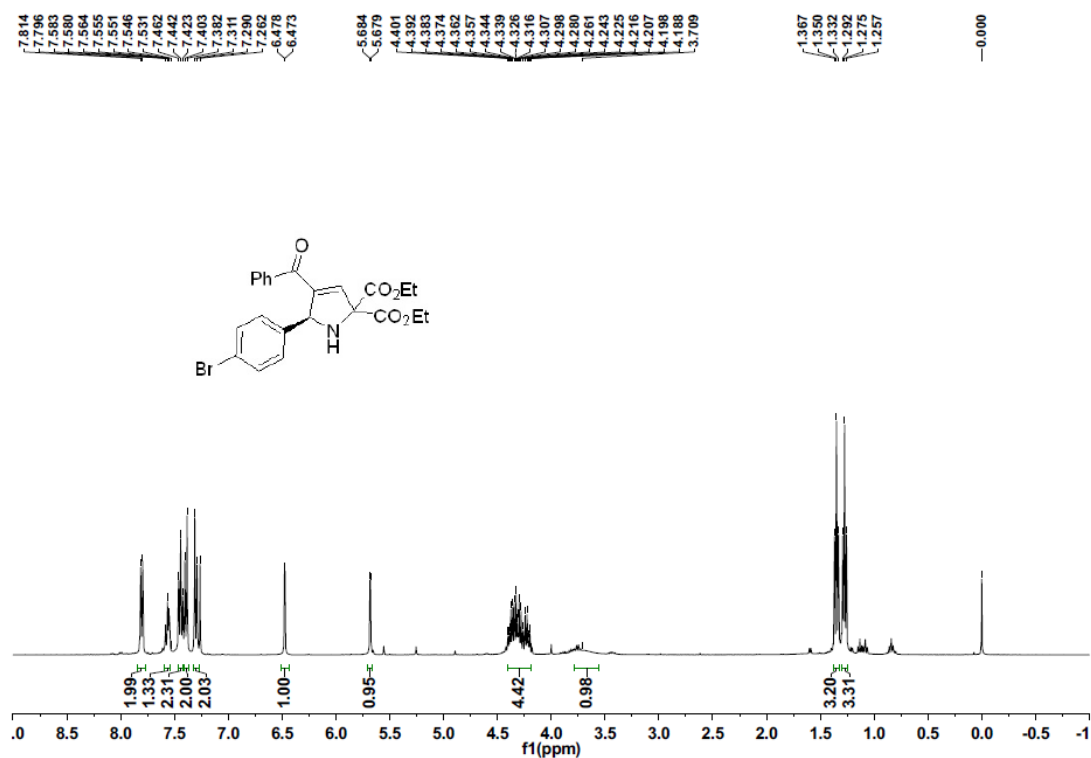
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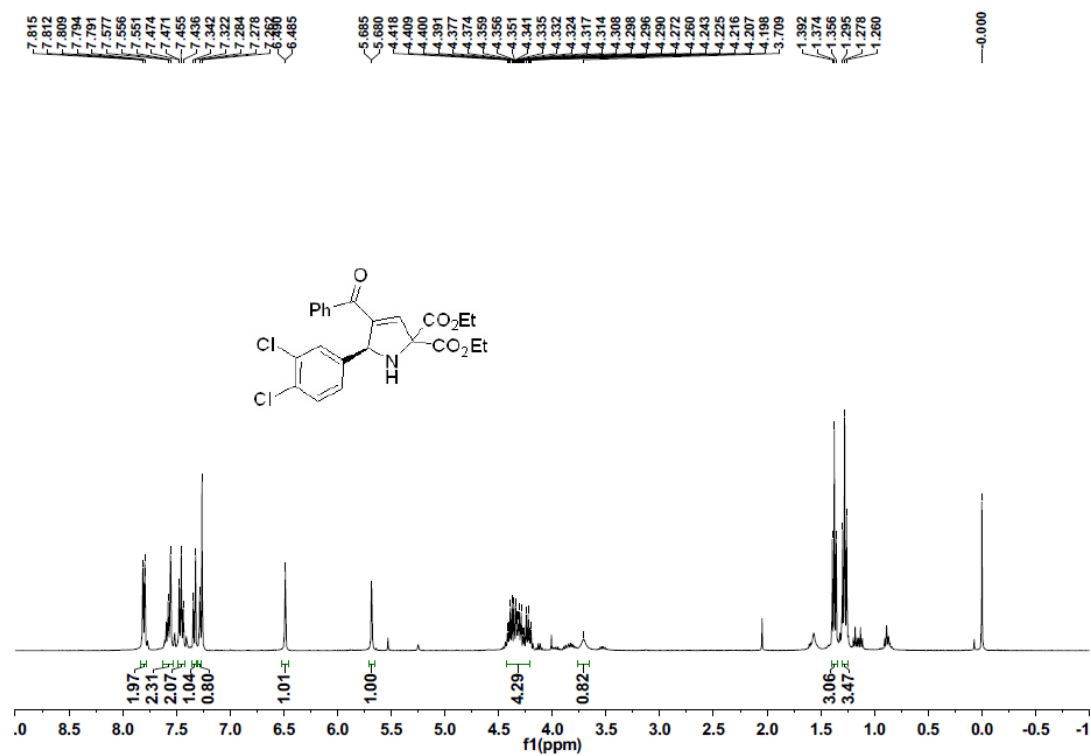
Copy of ^1H NMR spectrum of compound 3ad (CDCl_3)



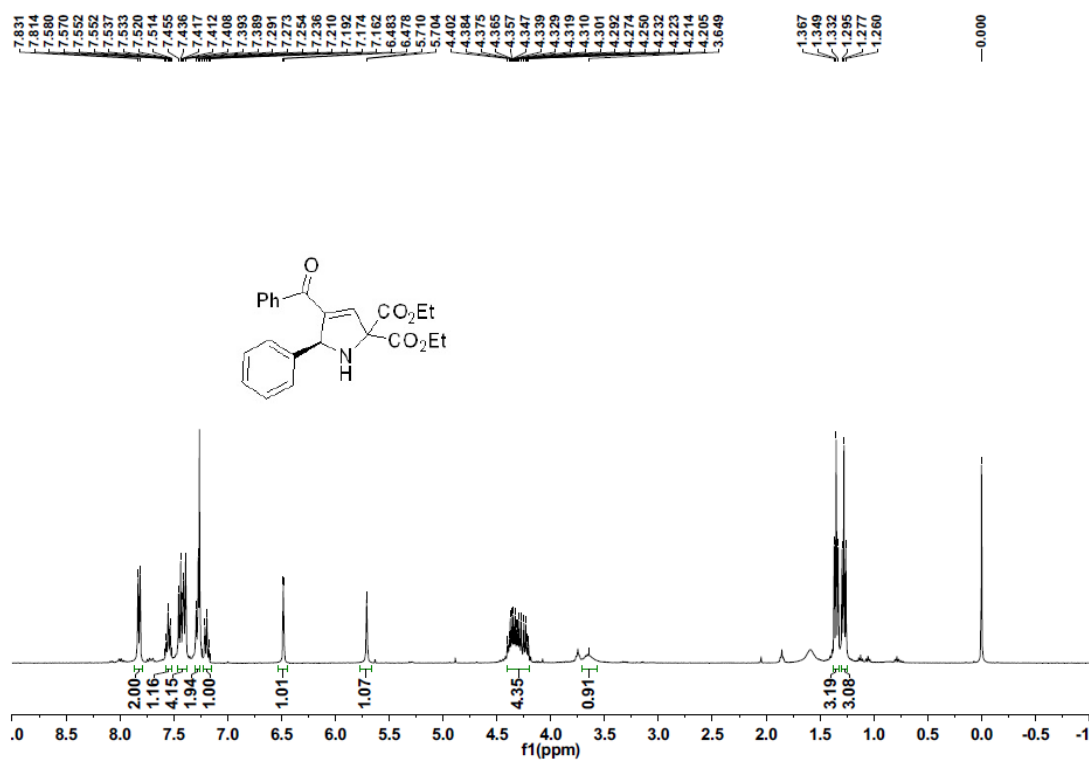
Copy of ^1H NMR spectrum of compound 3ae (CDCl_3)



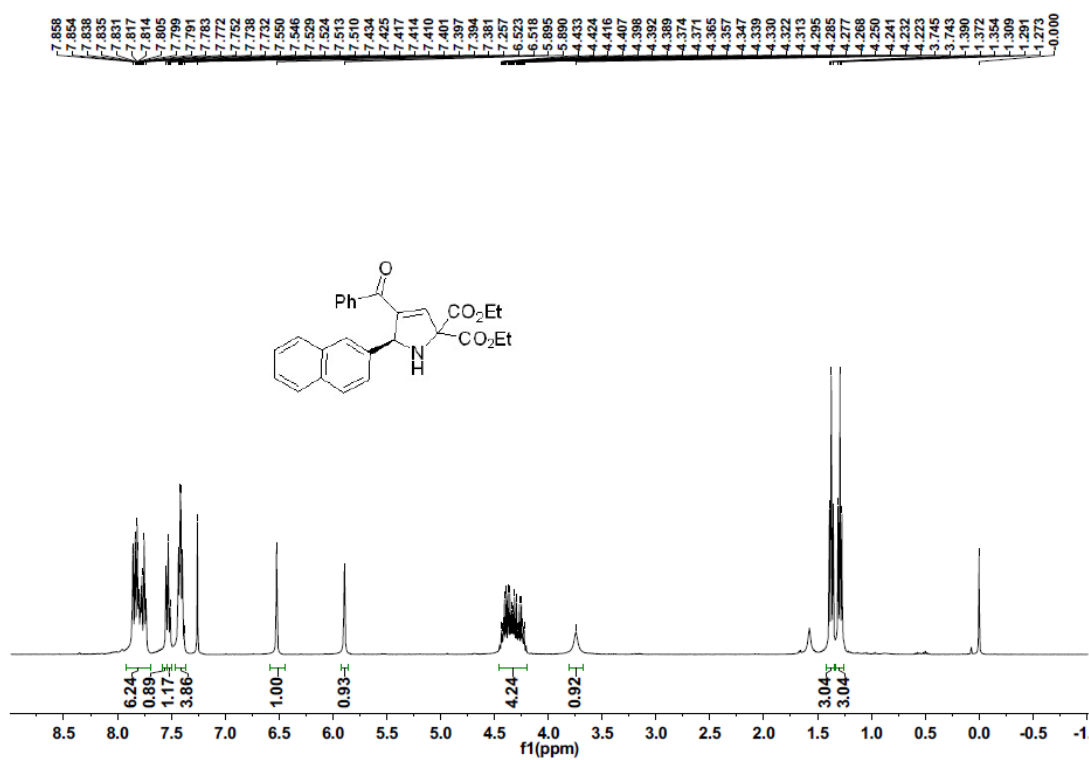
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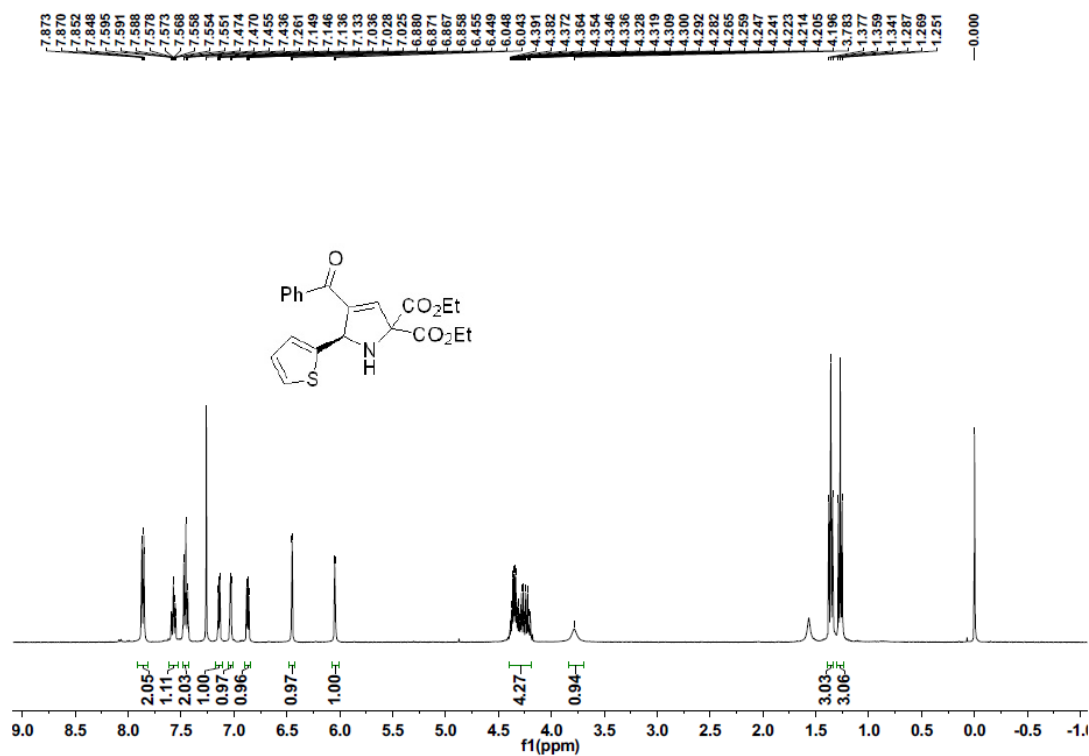
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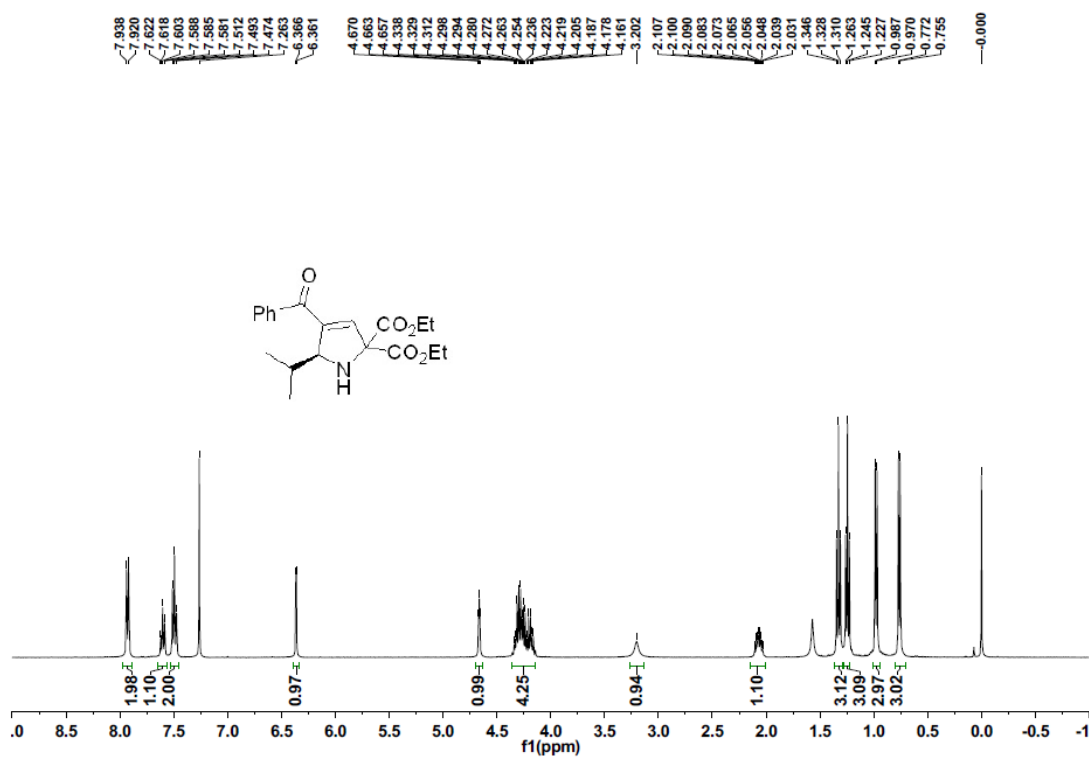
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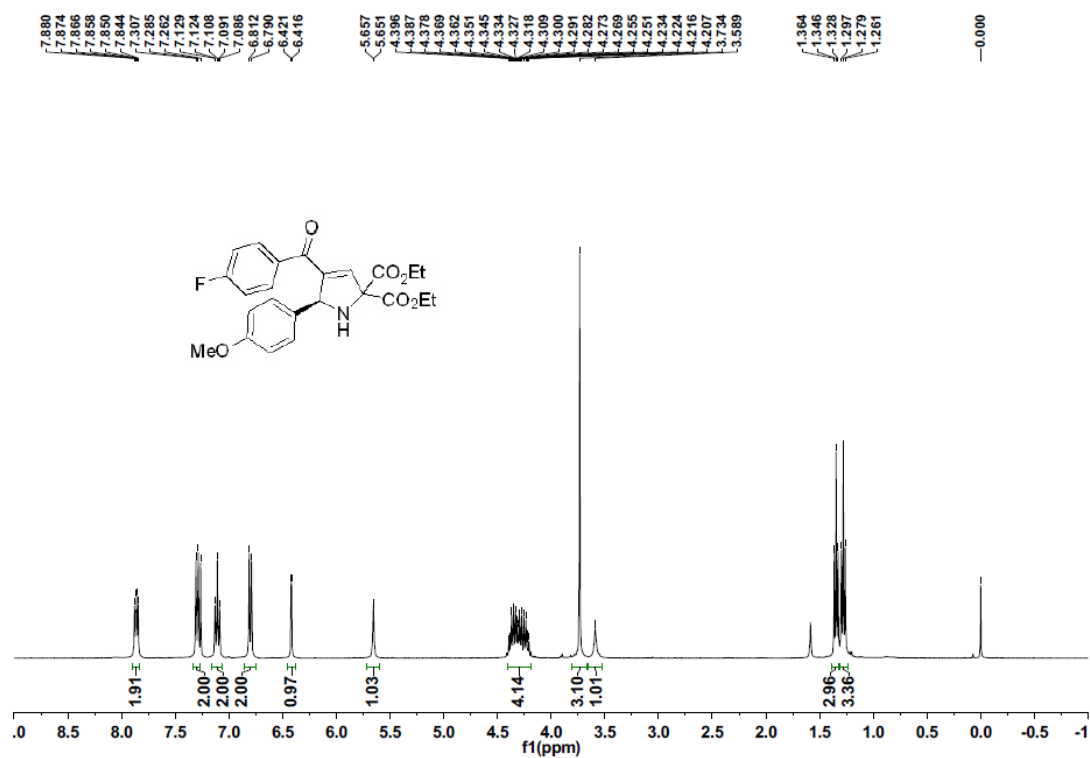
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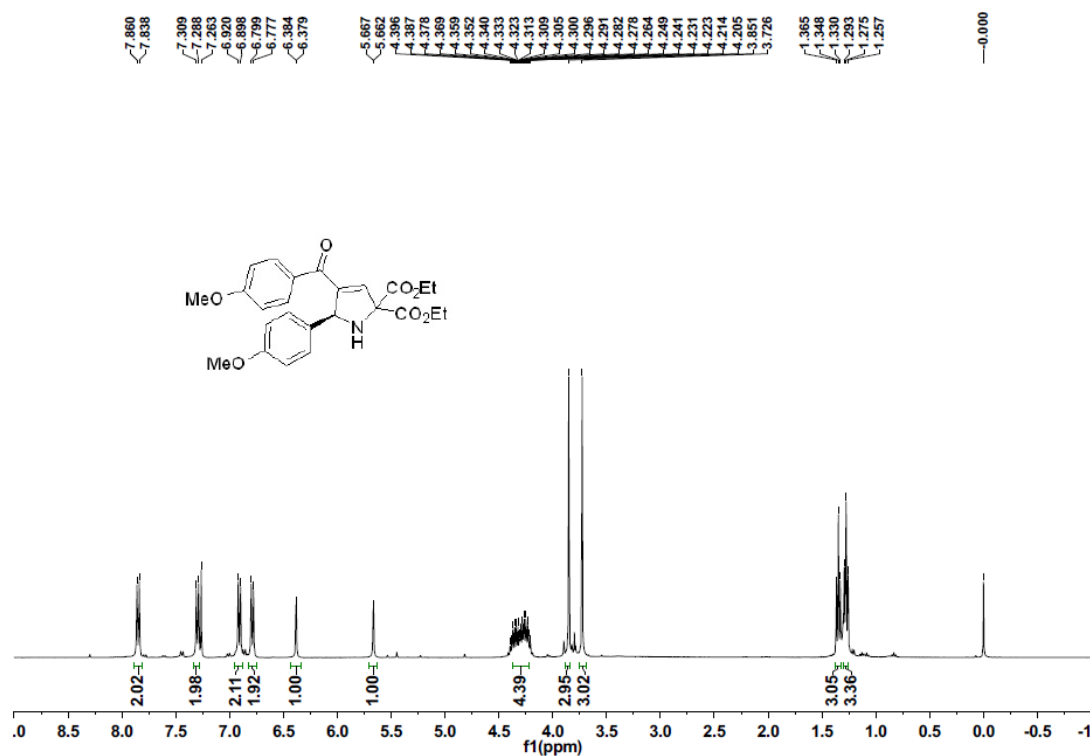
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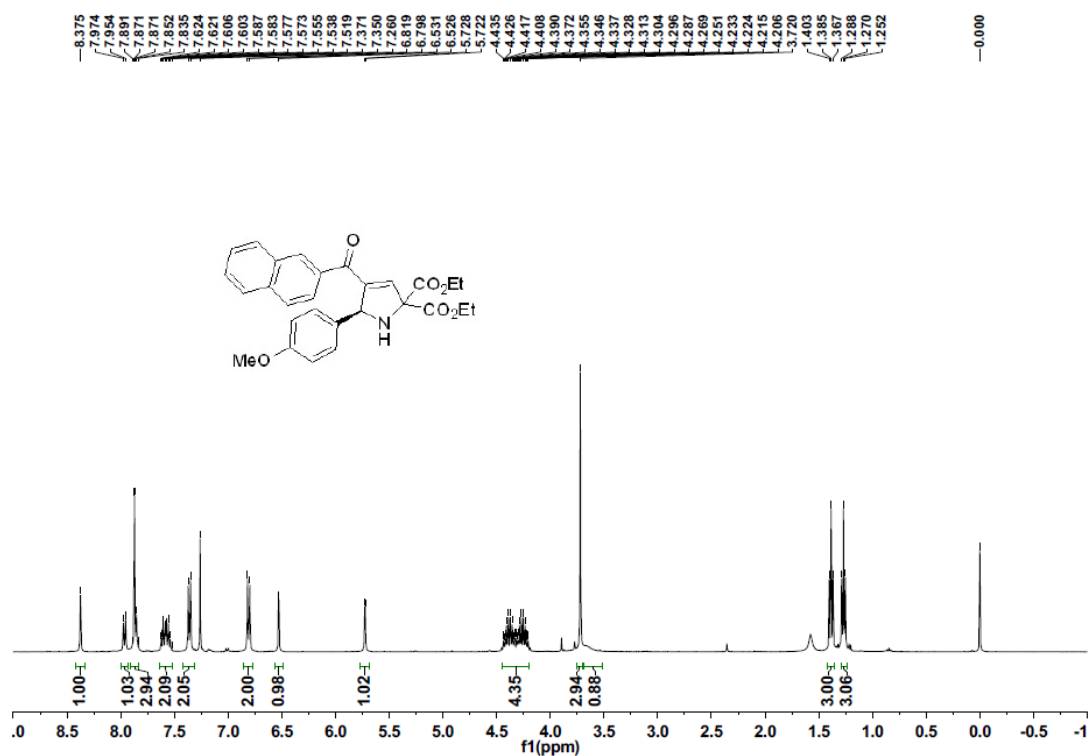
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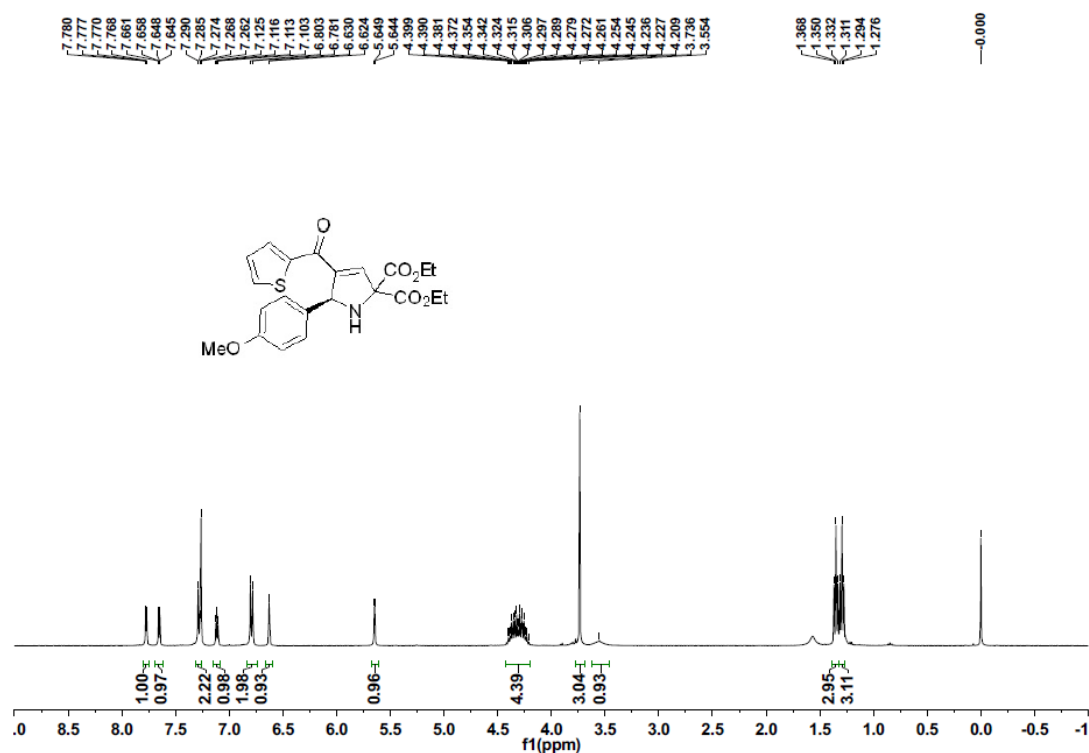
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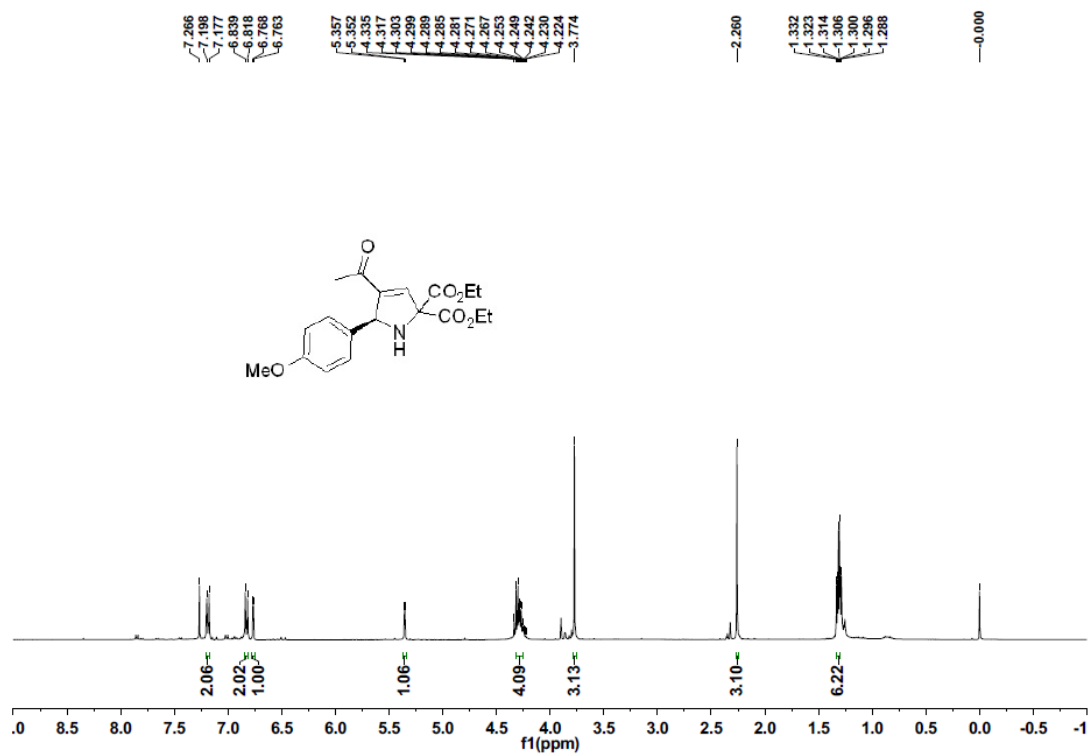
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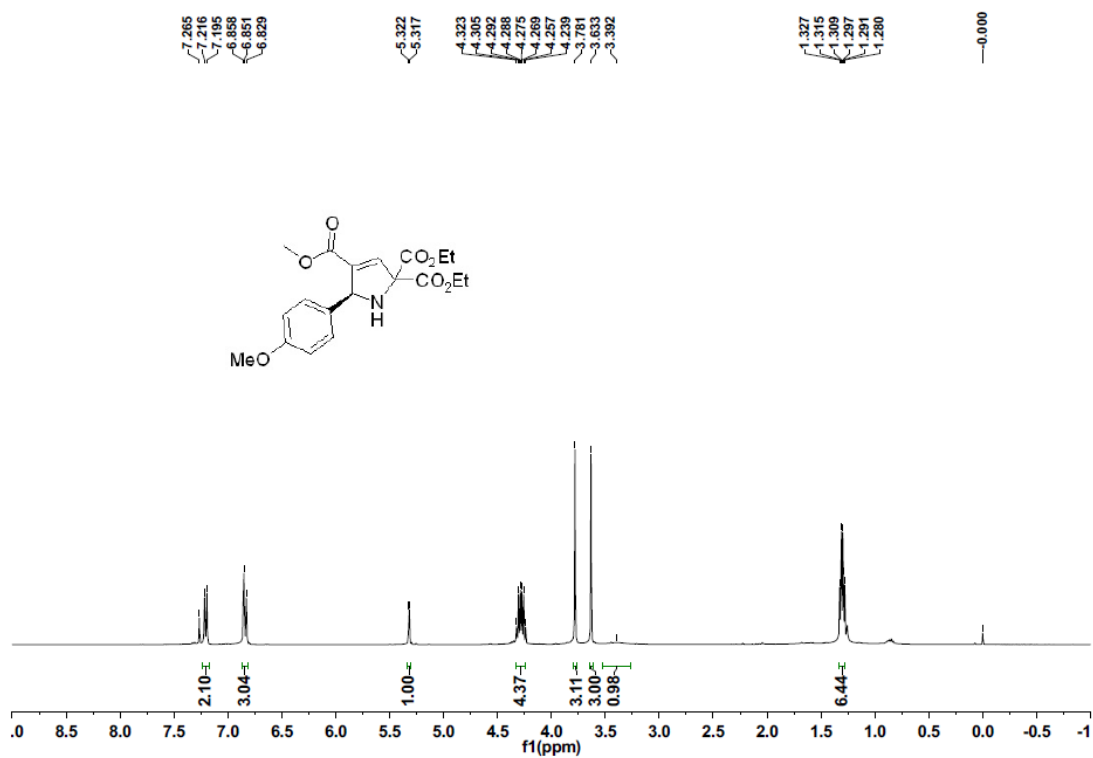
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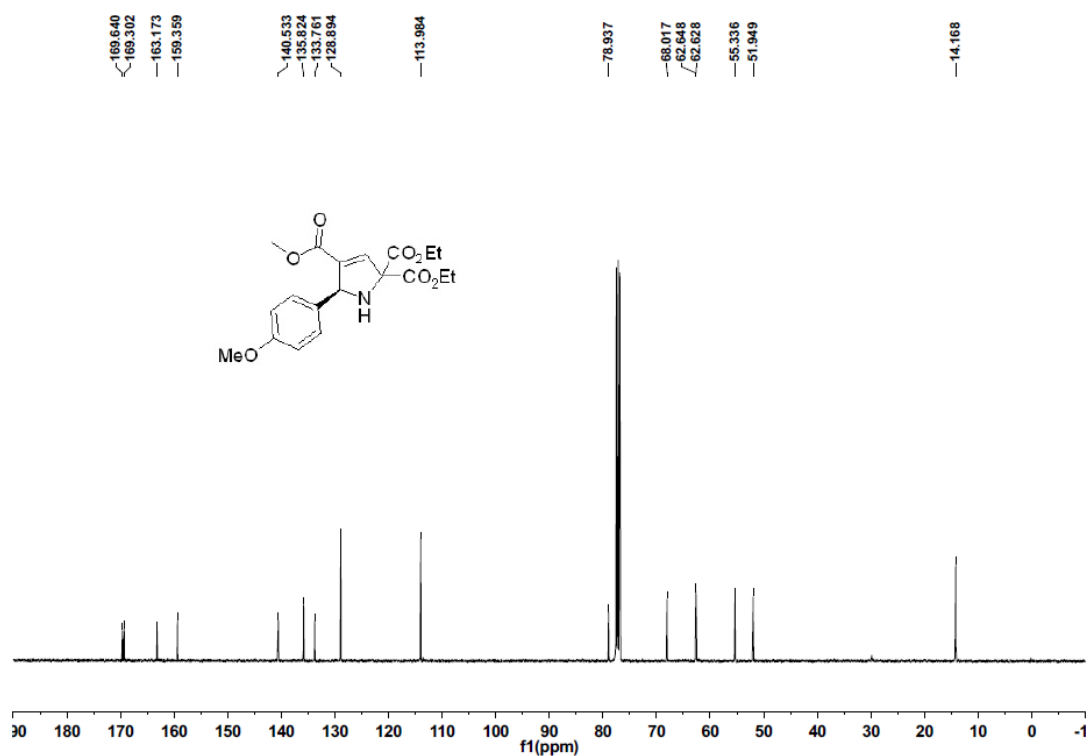
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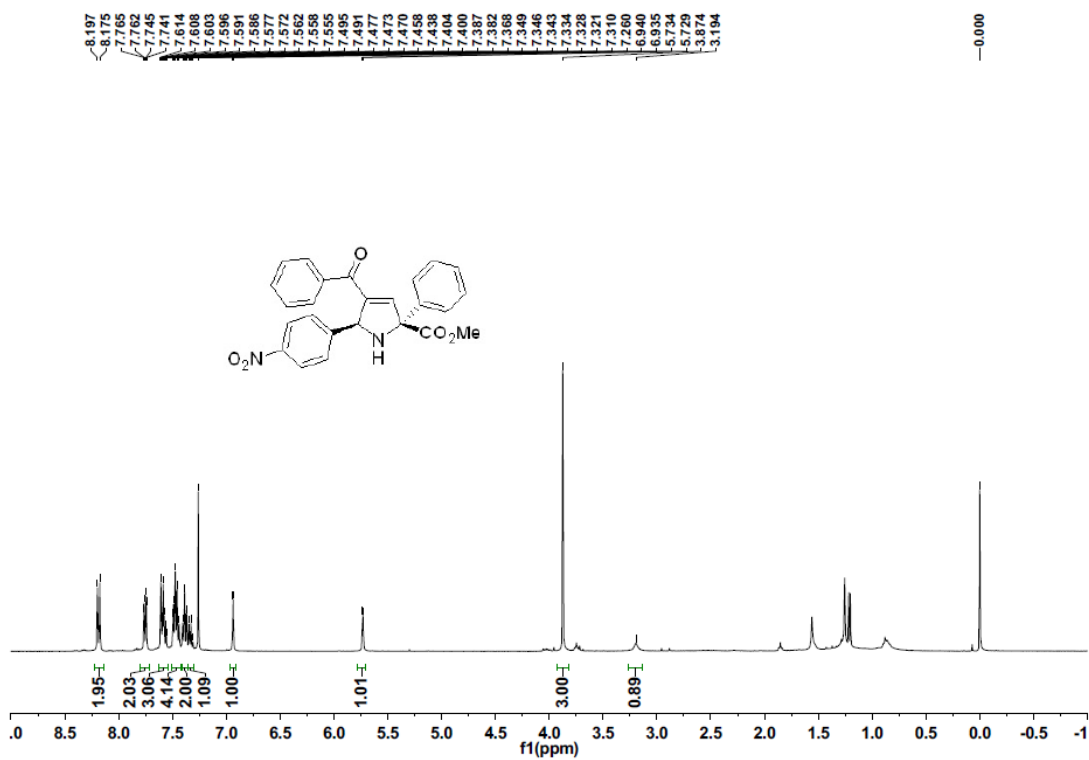
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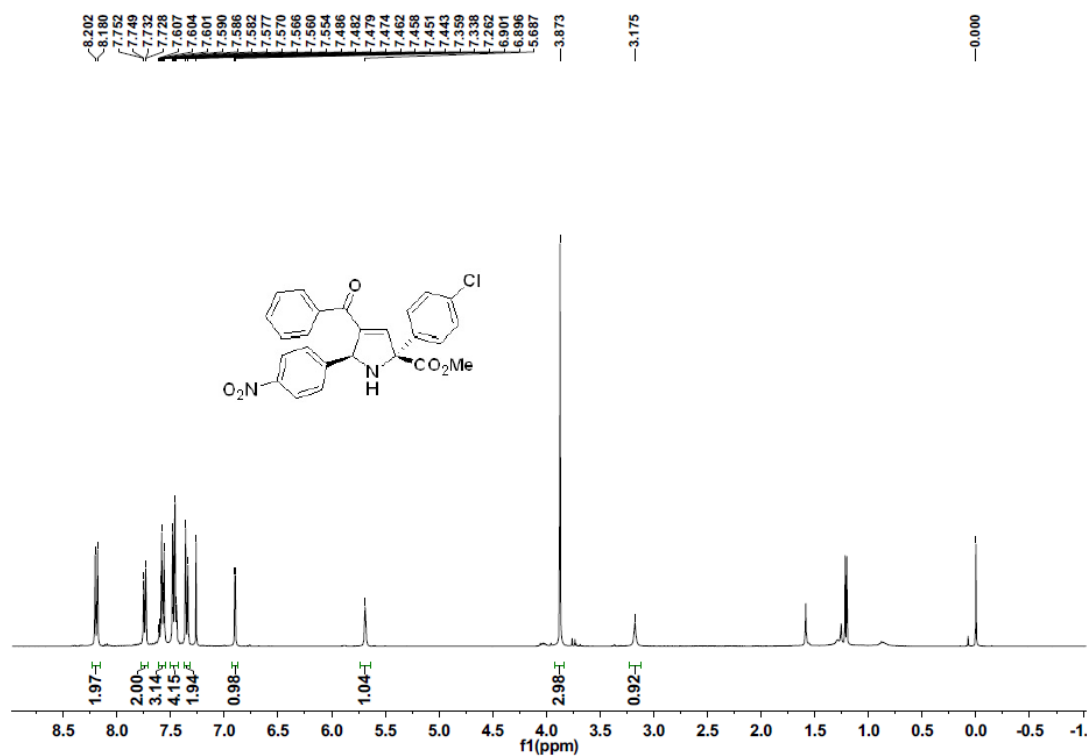
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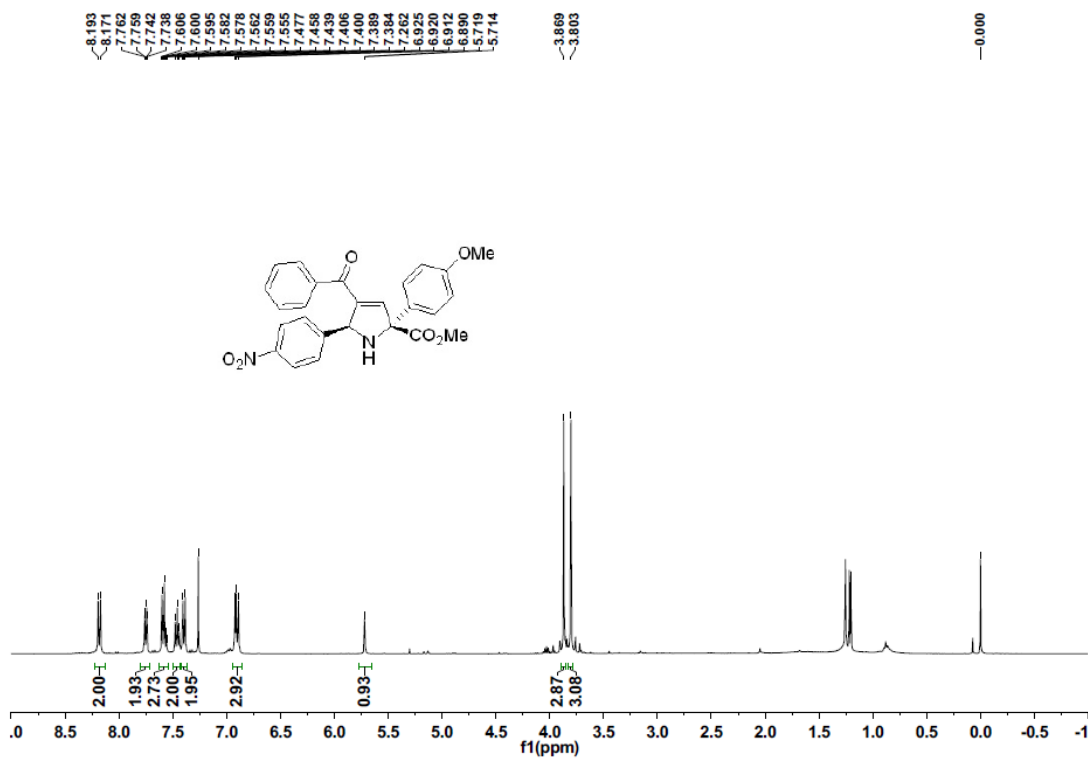
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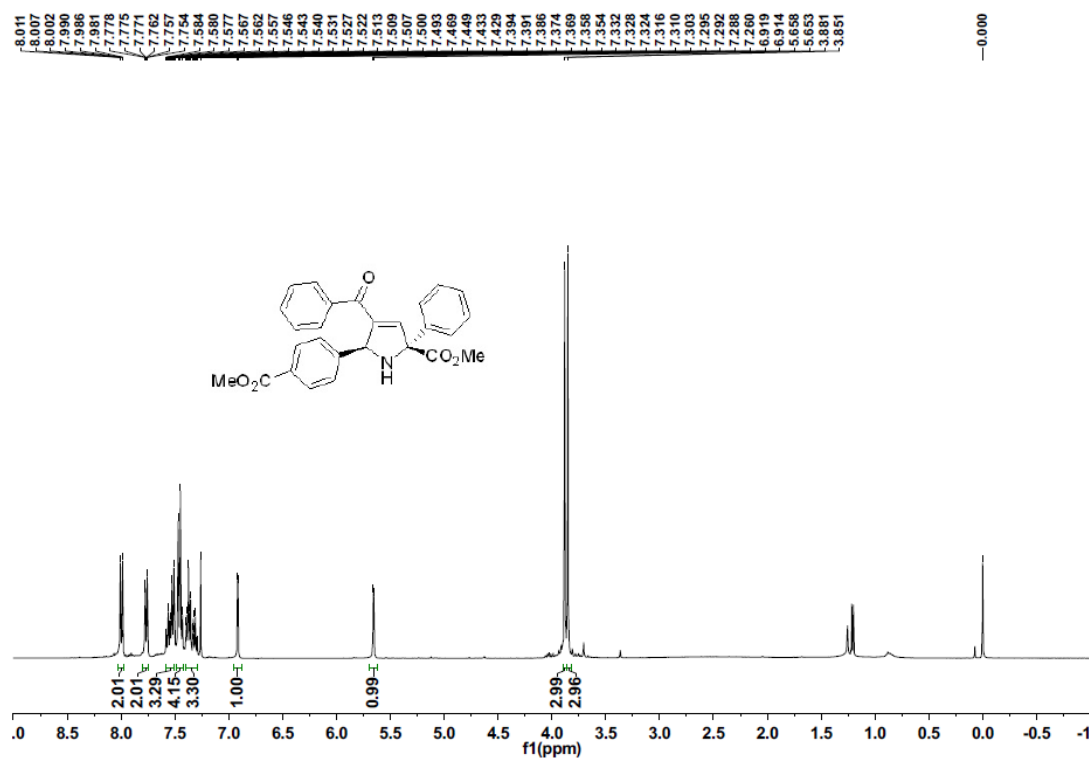
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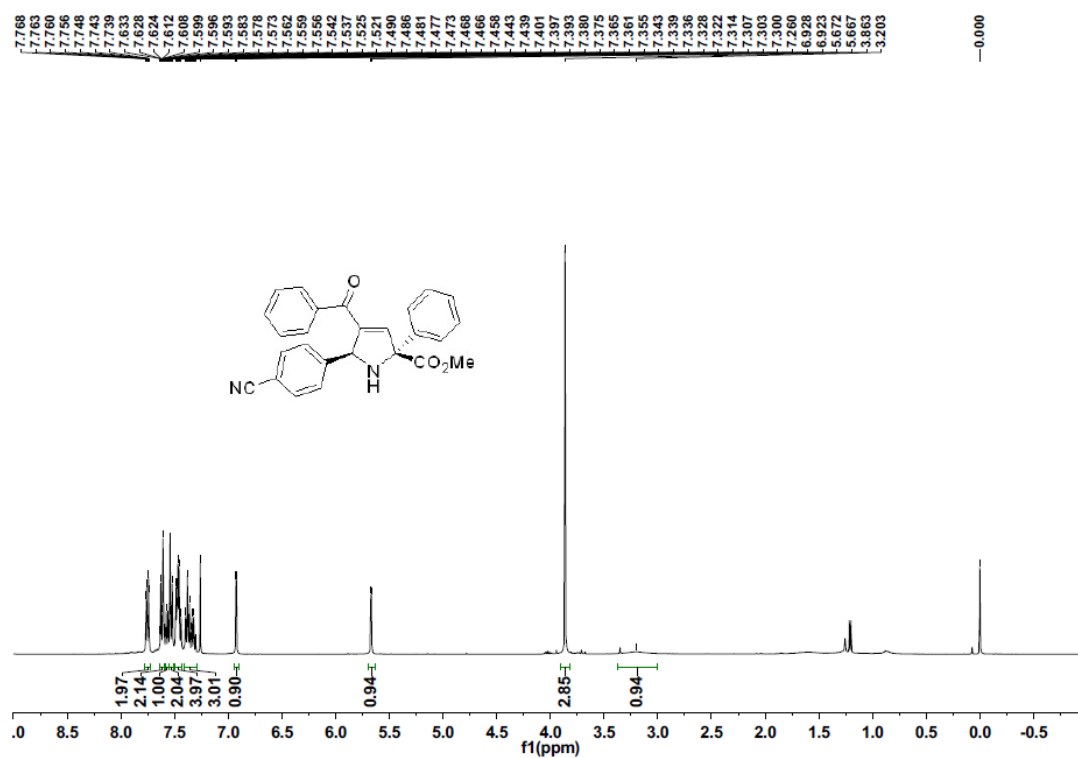
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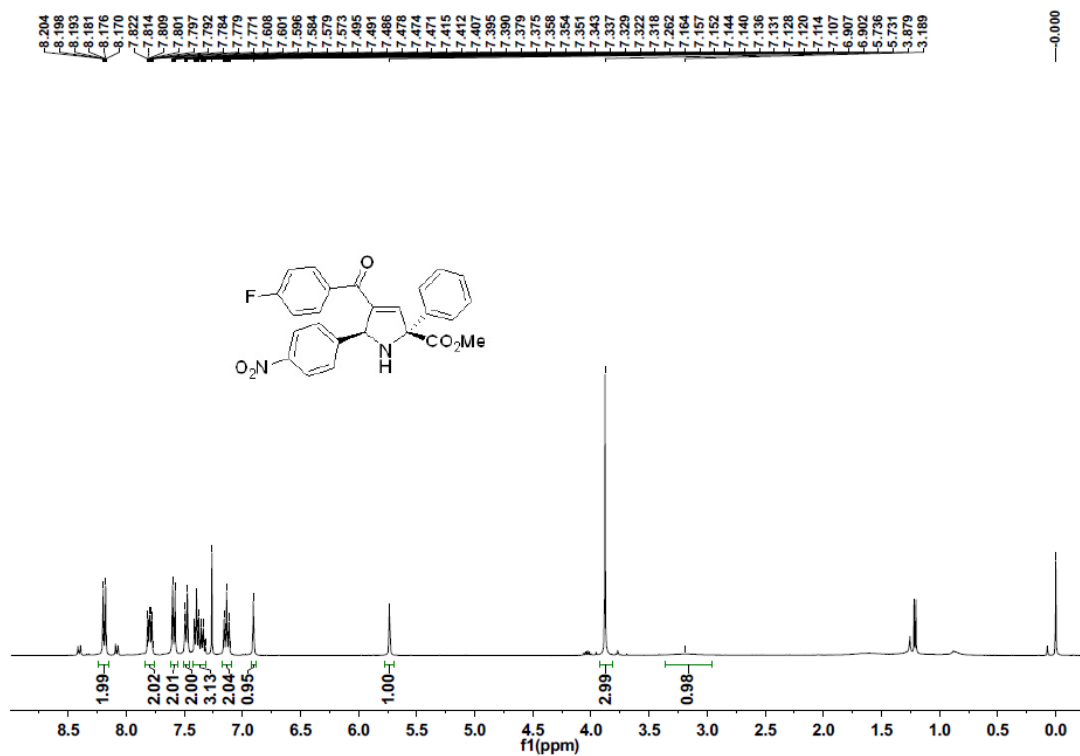
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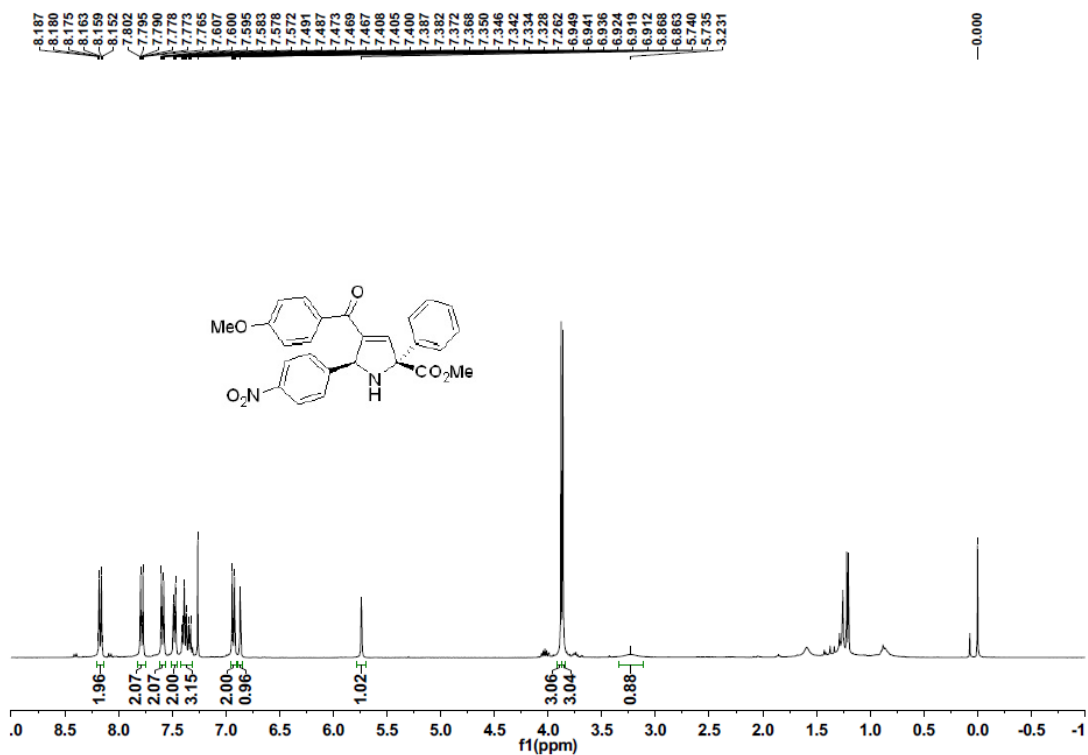
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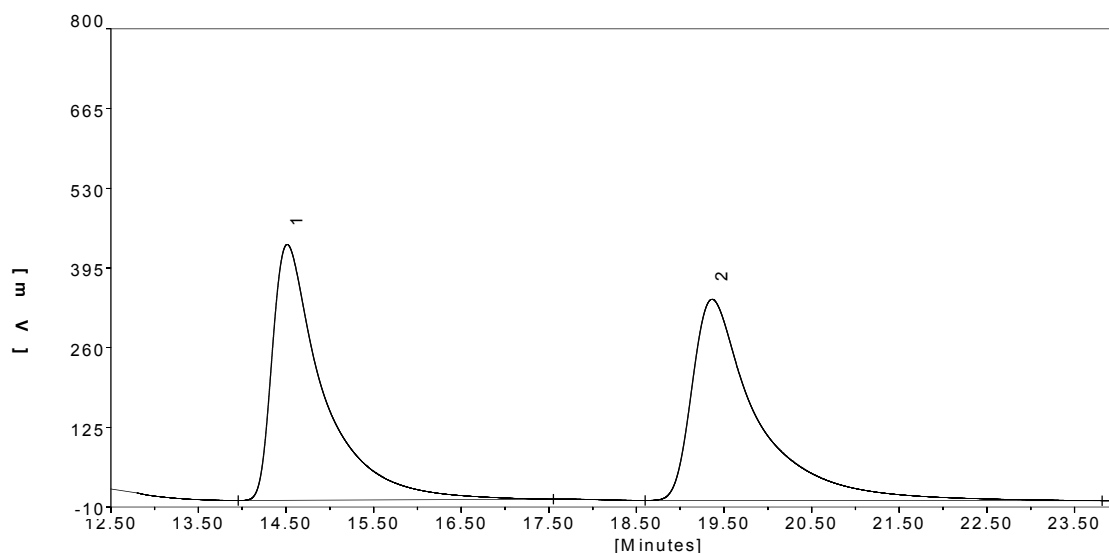
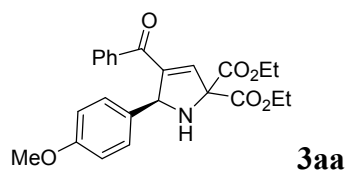
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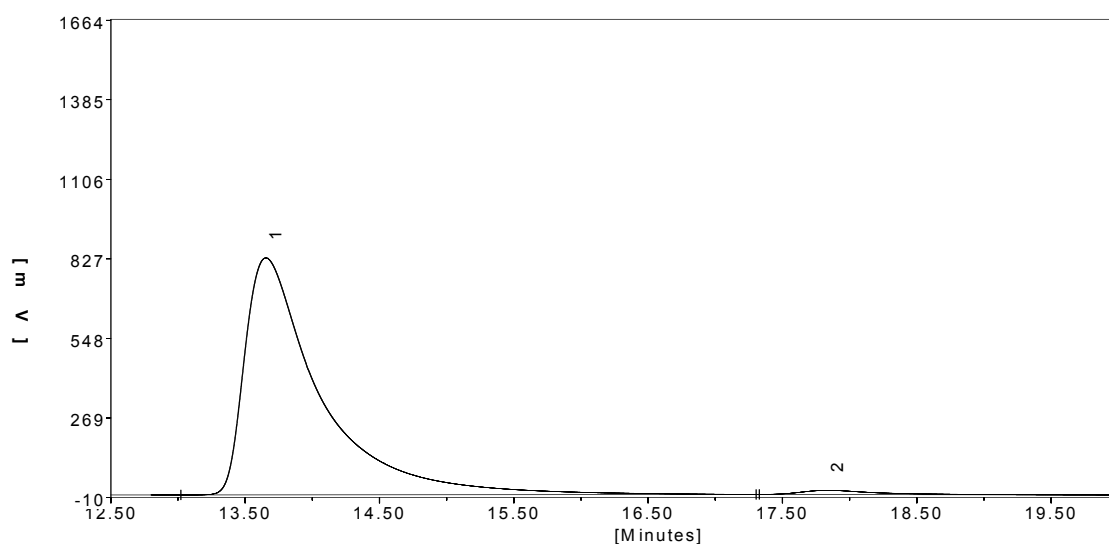
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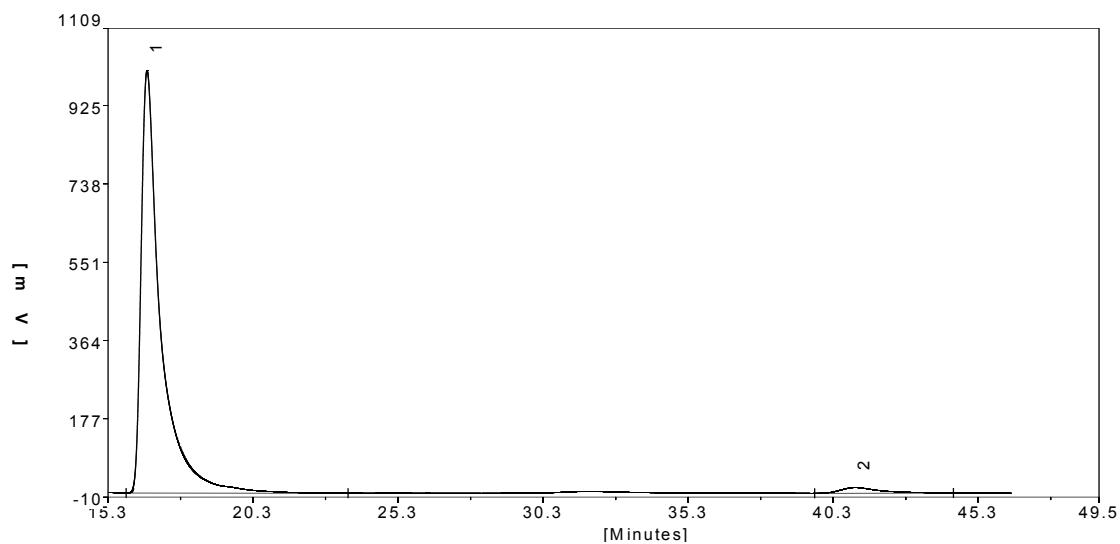
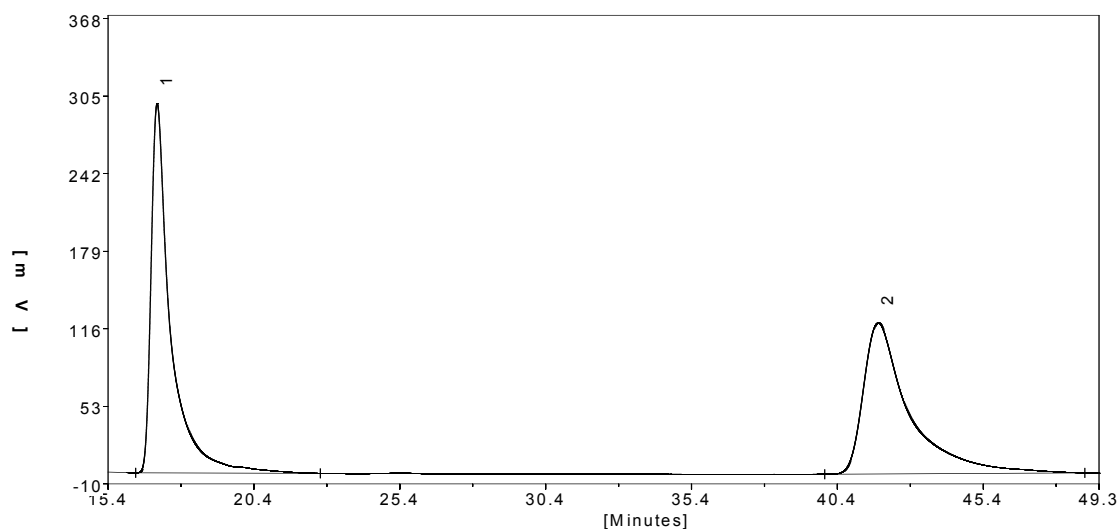
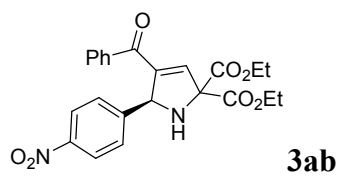
HPLC data of racemic substrates and stereoisomers

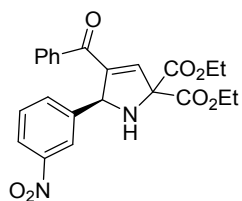


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	14.51417	433.43	17510.06	49.8420
2	19.36333	340.81	17621.21	50.1580

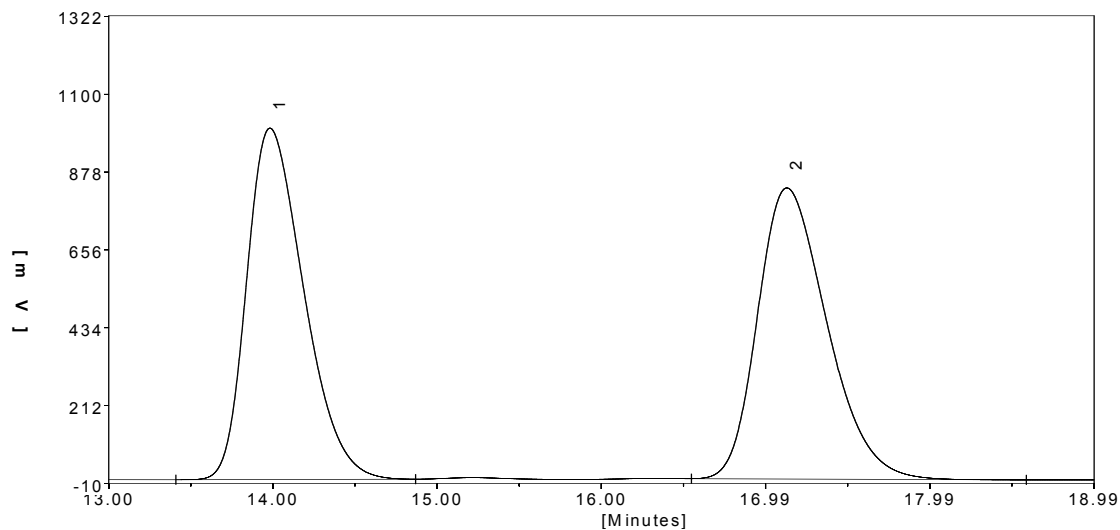


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	13.65500	831.14	32573.20	98.3061
2	17.83833	14.79	561.26	1.6939

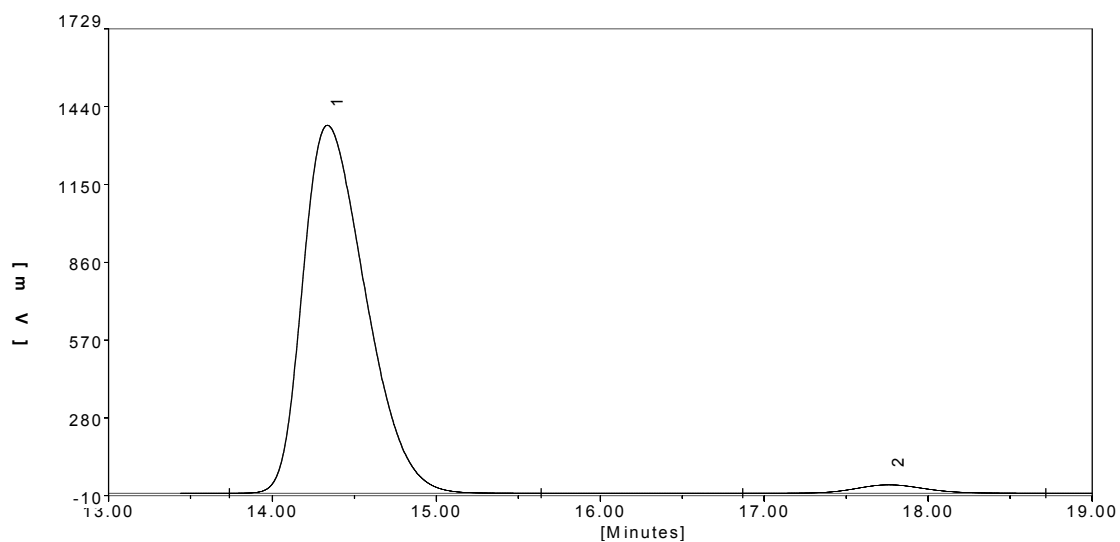




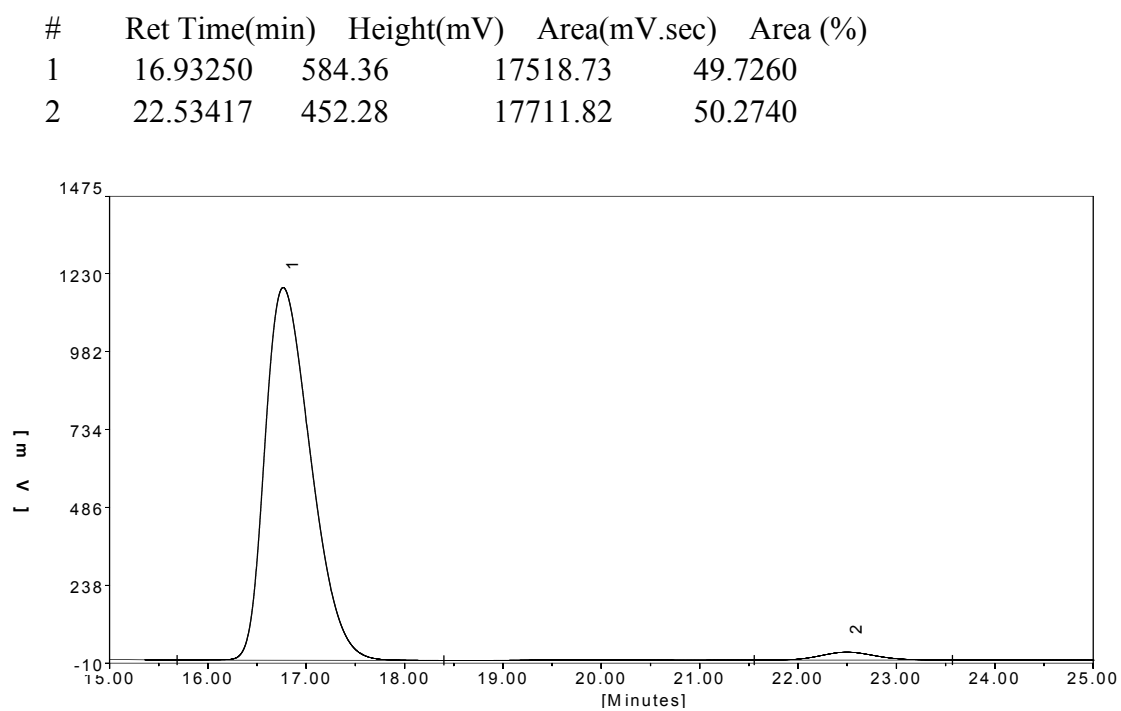
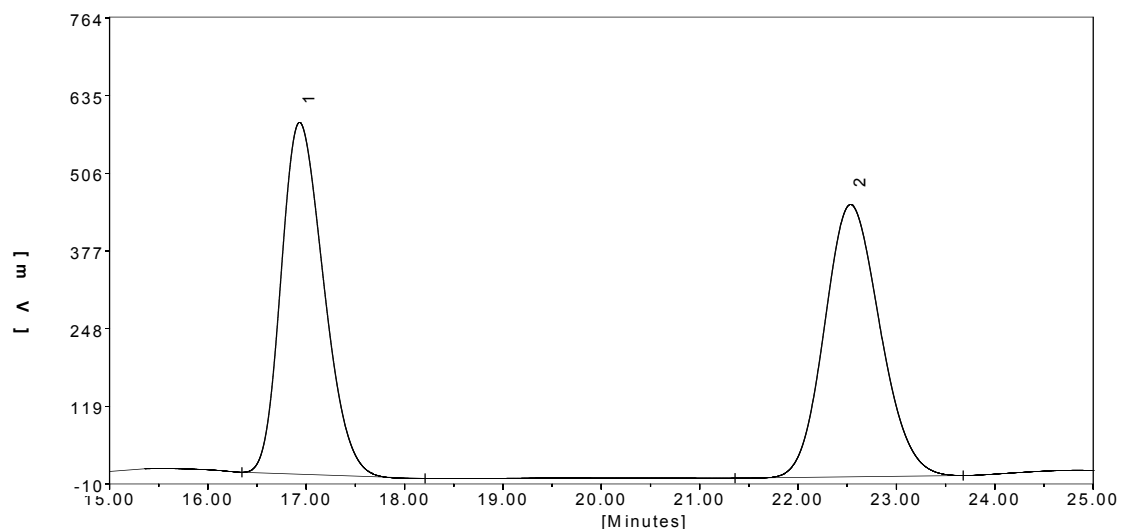
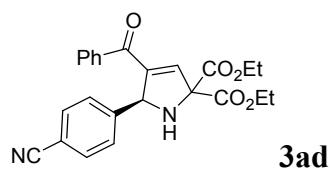
3ac

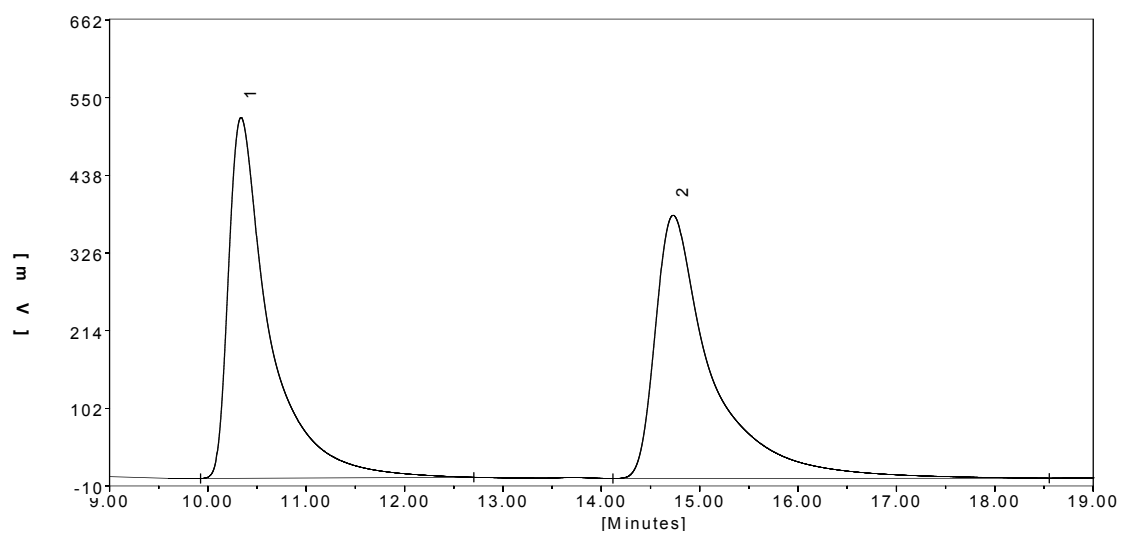
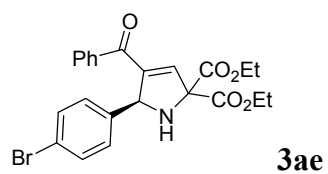


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	13.98083	1001.96	24151.98	49.8635
2	17.12333	829.97	24284.20	50.1365

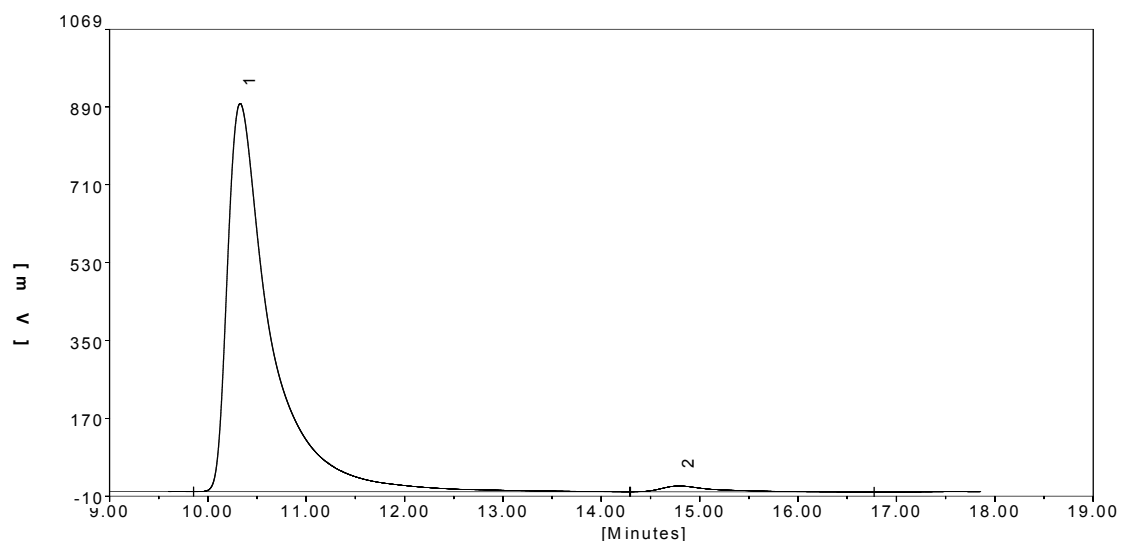


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
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2	17.76000	31.31	919.15	2.4636

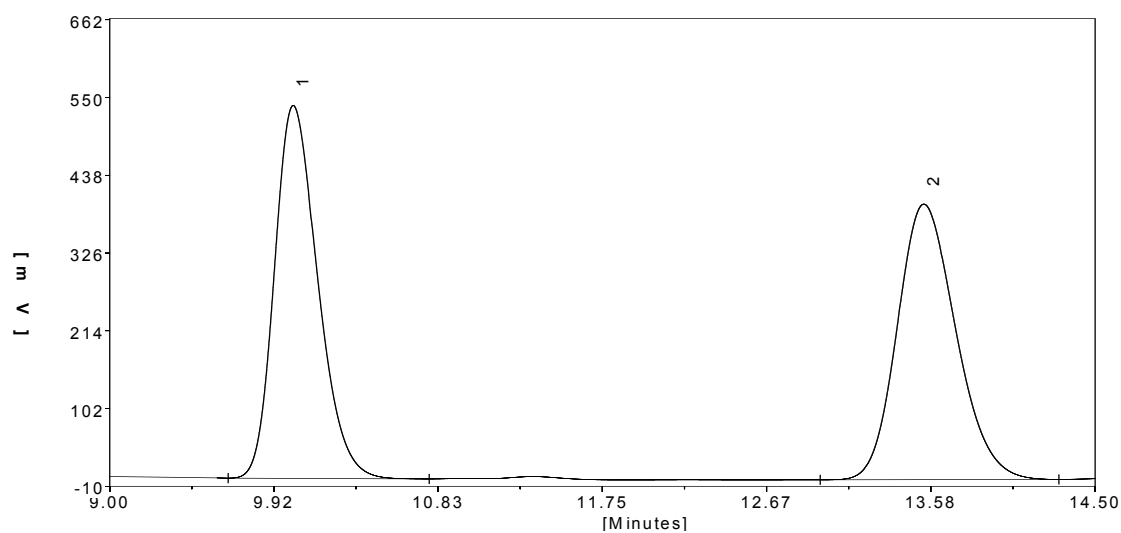
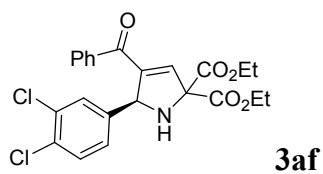




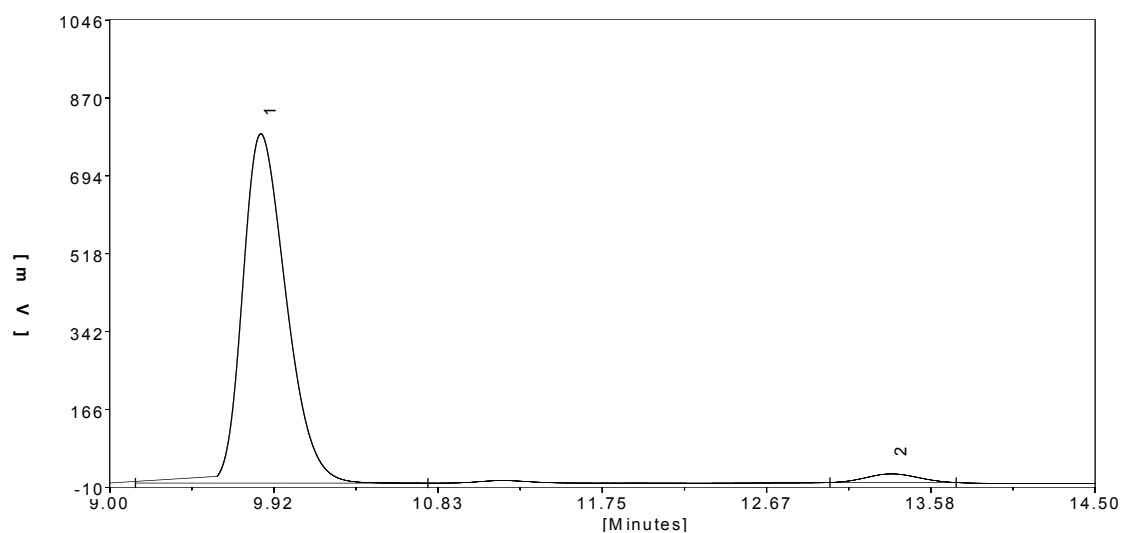
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1	10.33750	520.44	15051.63	49.7191
2	14.73083	379.60	15221.73	50.2809



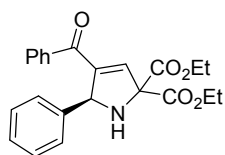
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2	14.78833	13.63	504.39	1.8034



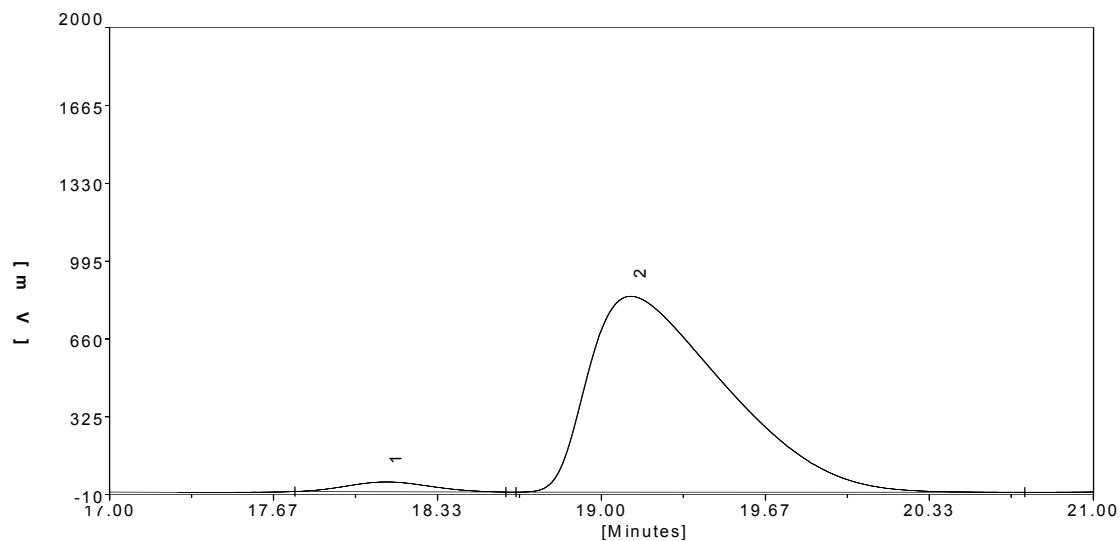
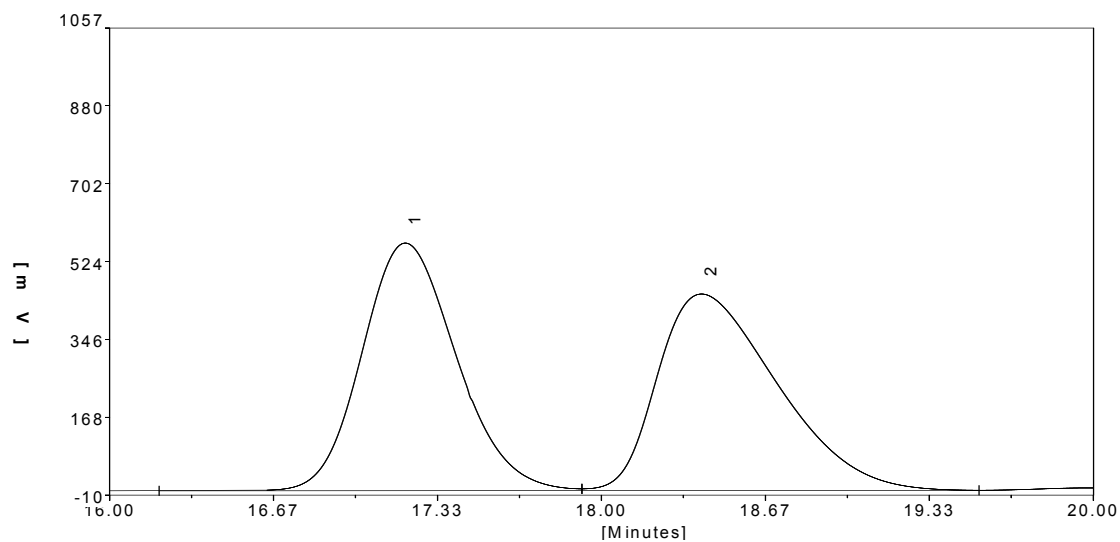
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1	10.02500	537.11	9009.79	49.9924
2	13.54500	396.84	9012.51	50.0076

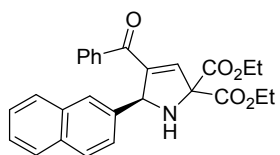


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1	9.84417	789.35	13258.73	97.1247
2	13.36333	19.53	392.52	2.8753

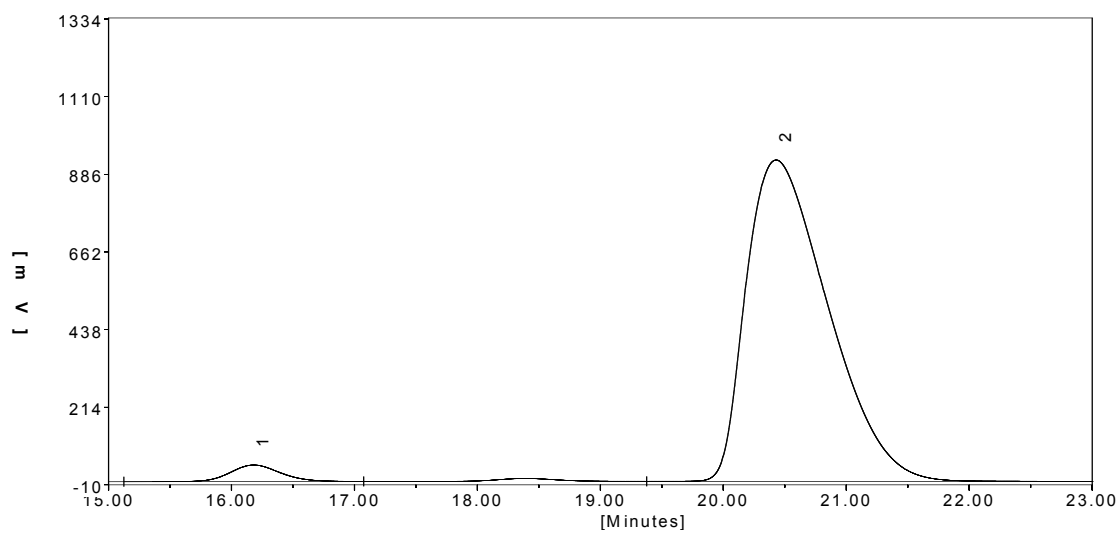
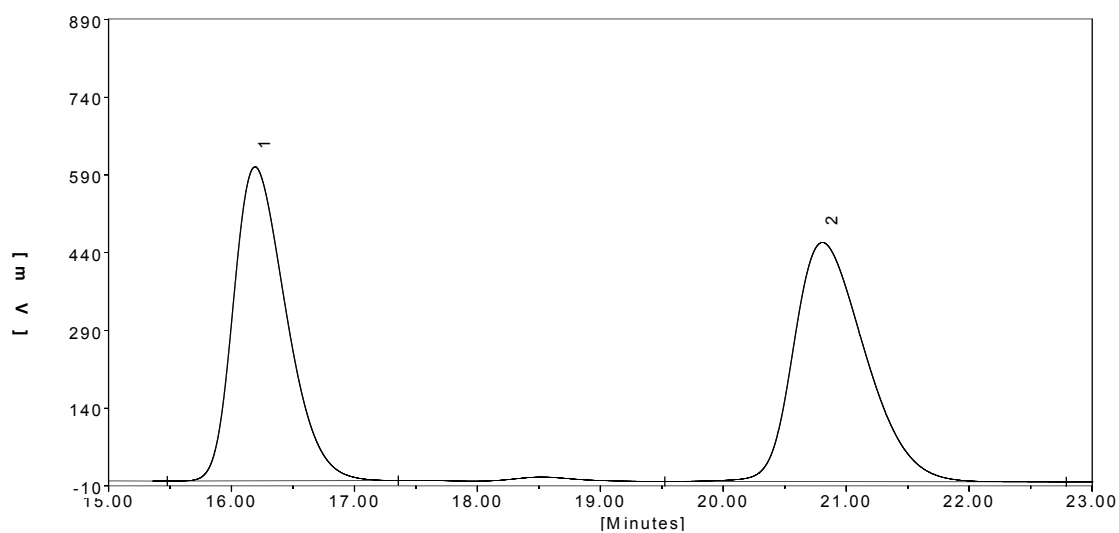


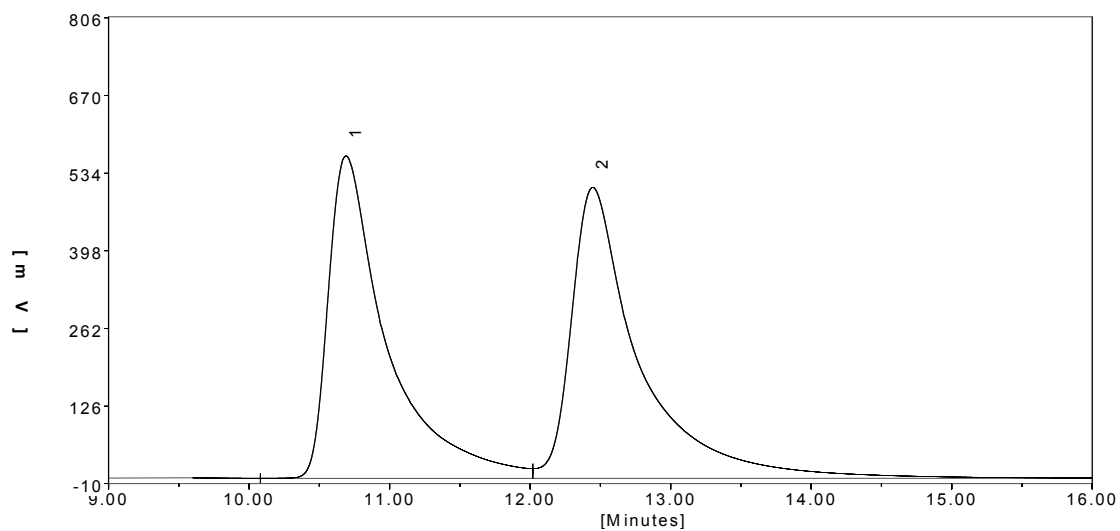
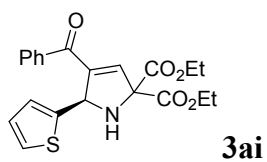
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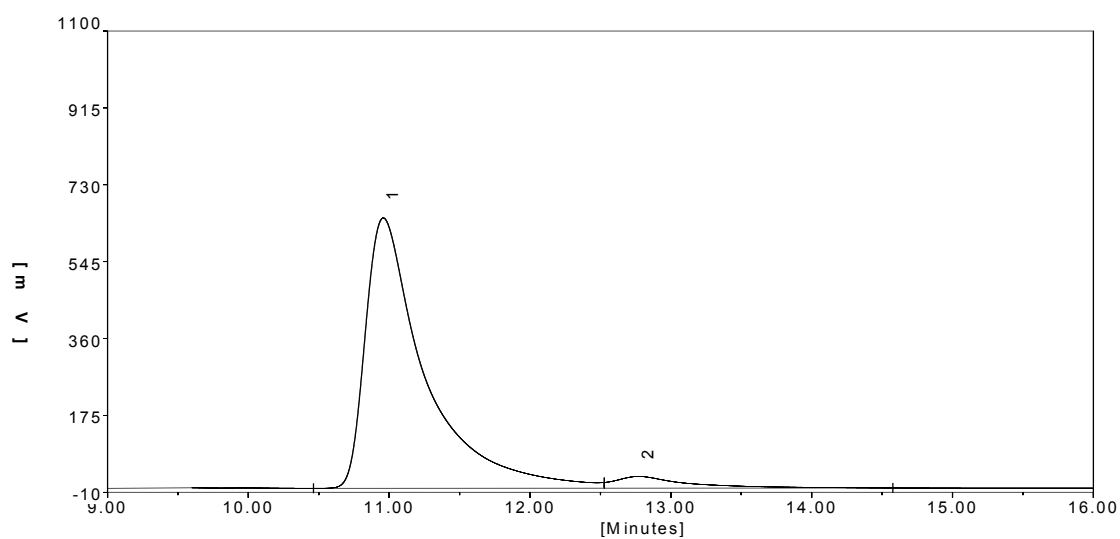


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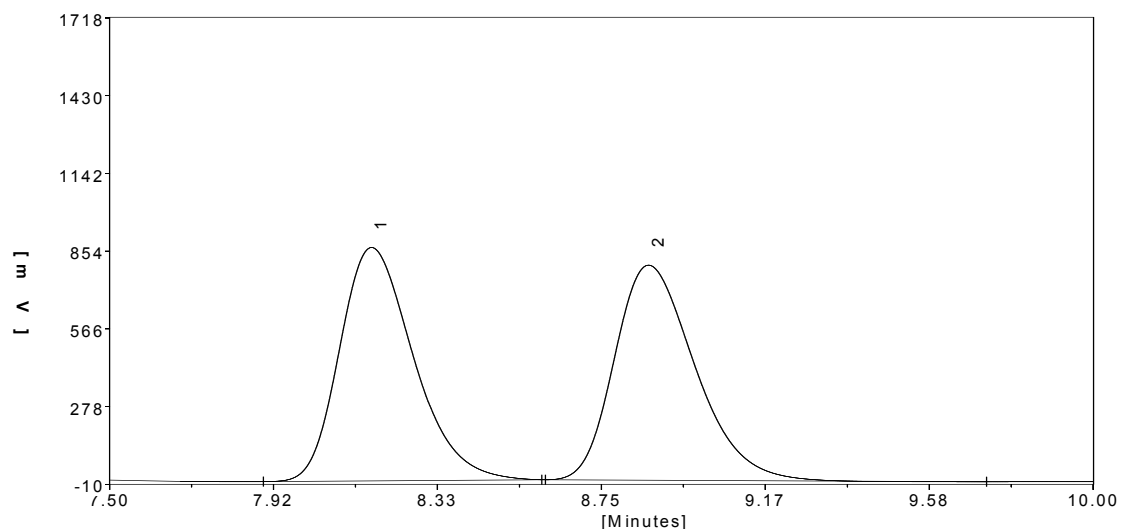
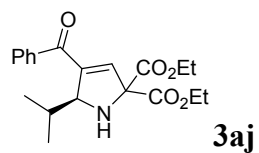




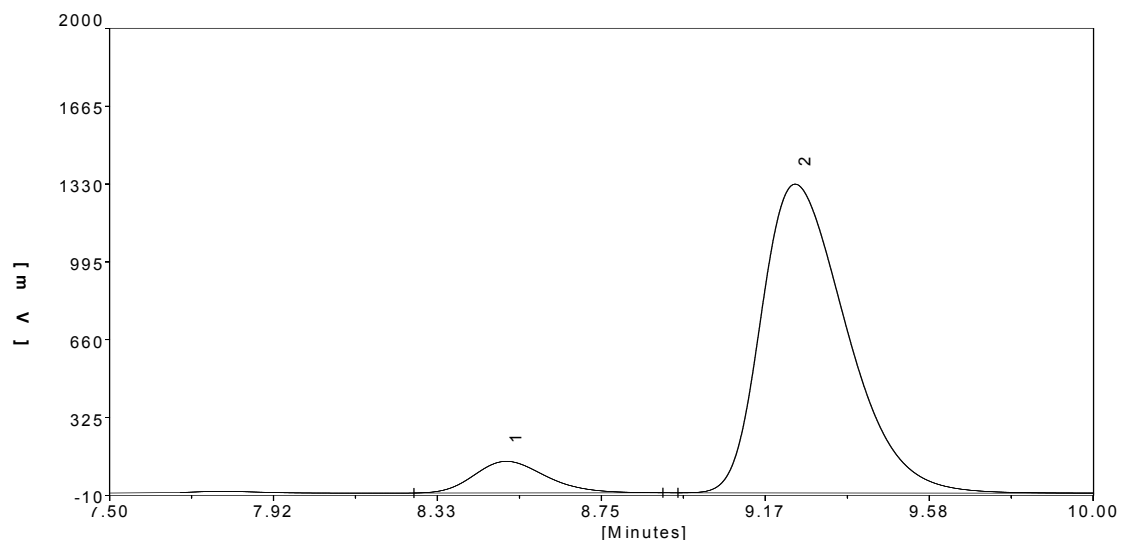
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
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2	12.44667	509.41	17116.48	51.1942



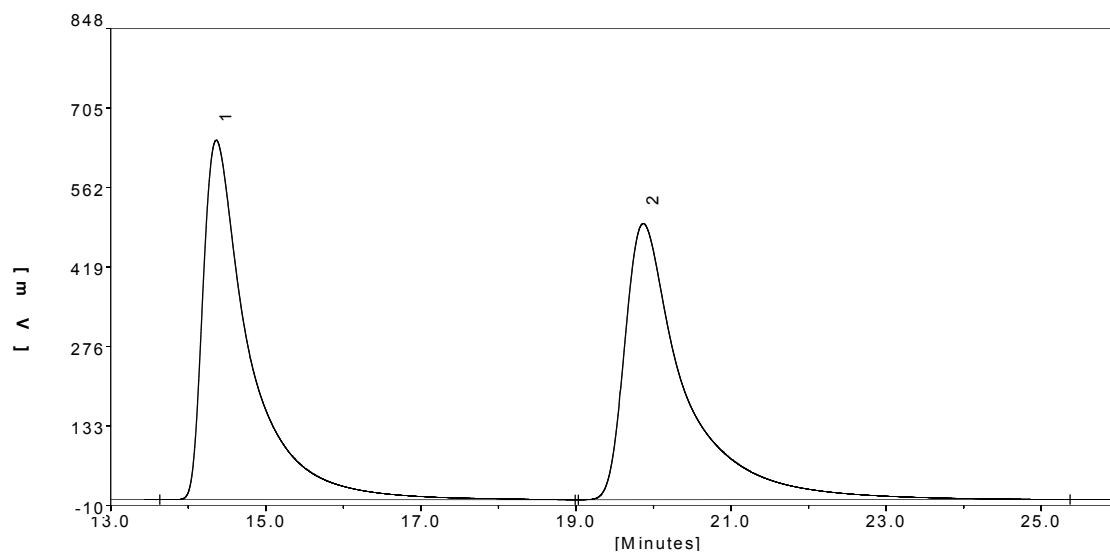
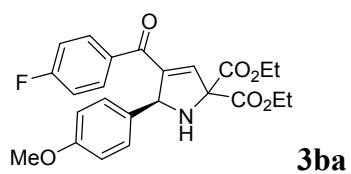
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1	10.95917	650.69	19202.90	95.0508
2	12.77167	28.15	999.88	4.9492



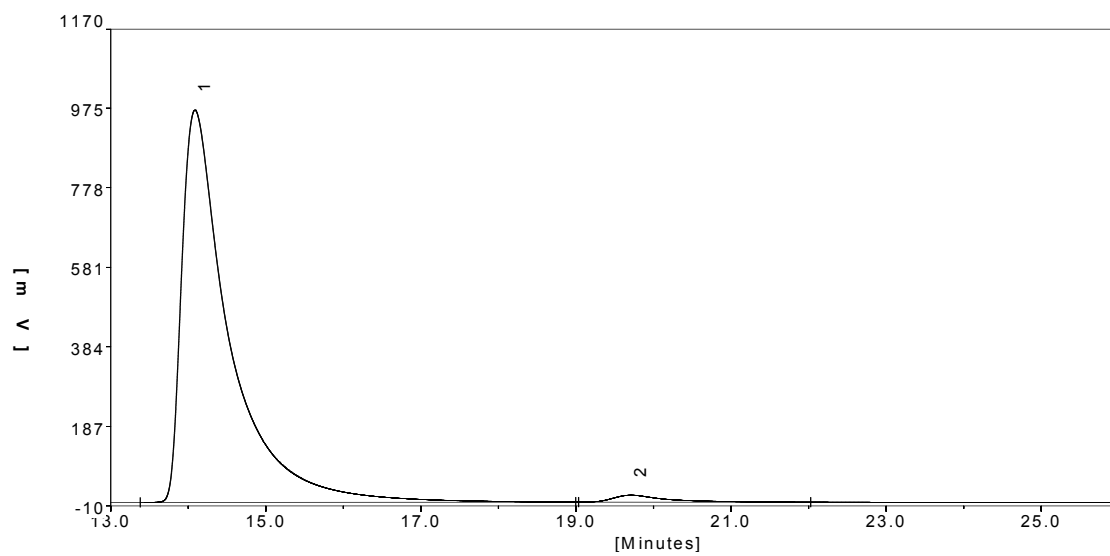
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2	8.87000	796.89	11287.17	49.9923



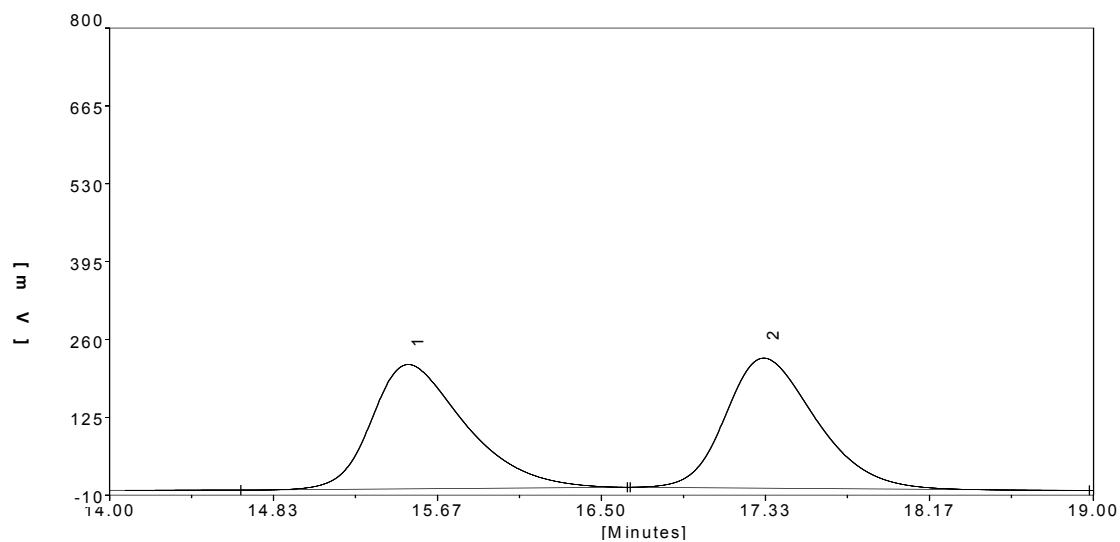
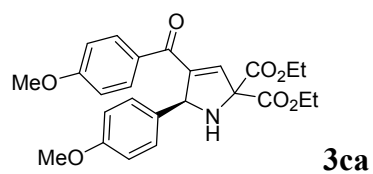
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1	8.50833	135.95	1726.82	7.9588
2	9.24250	1328.71	19970.32	92.0412



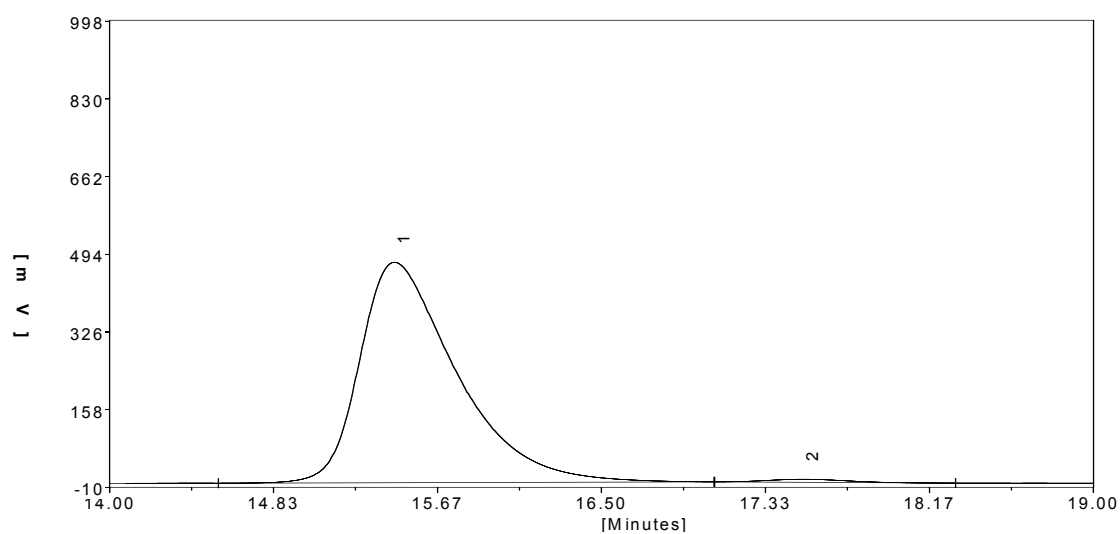
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1	14.36167	646.70	26974.51	50.1550
2	19.86667	496.87	26807.79	49.8450



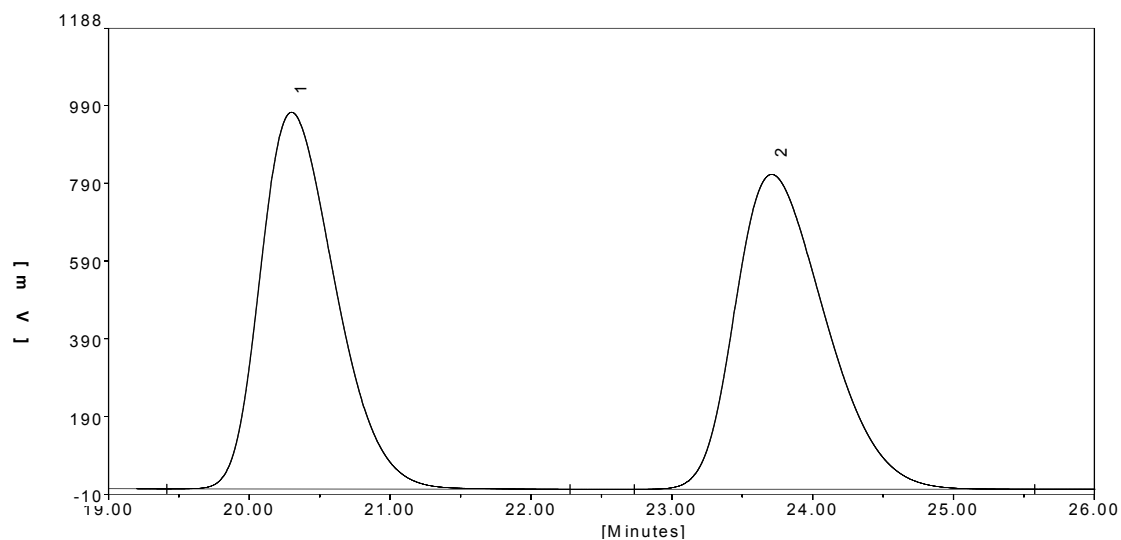
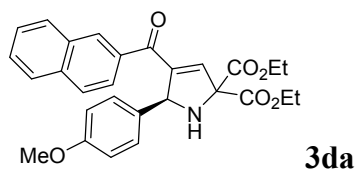
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1	14.08750	971.20	41549.96	98.0661
2	19.70833	17.31	819.37	1.9339



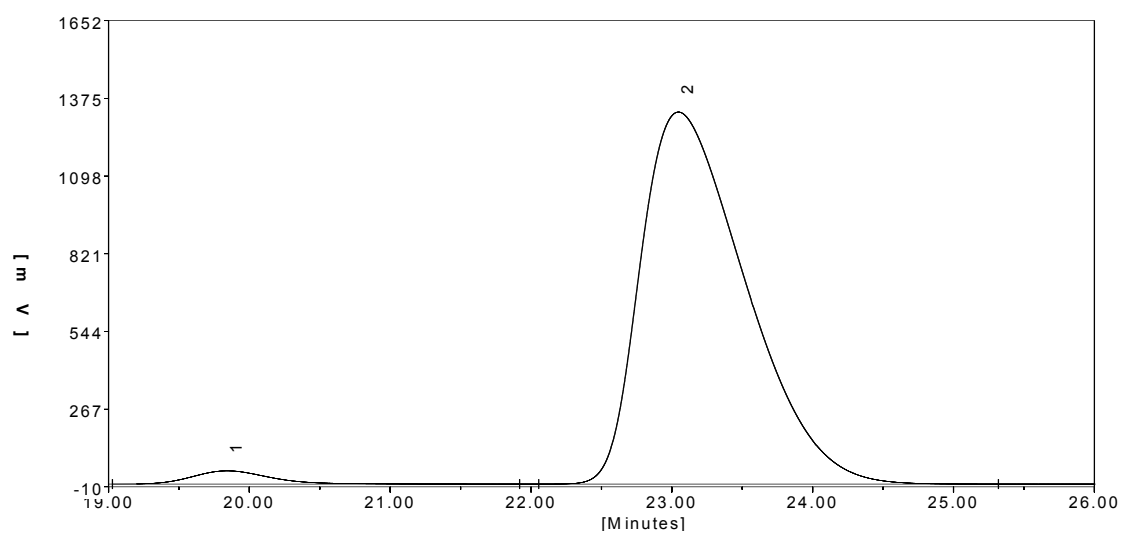
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1	15.51833	215.65	7171.54	49.8328
2	17.32500	225.52	7219.68	50.1672



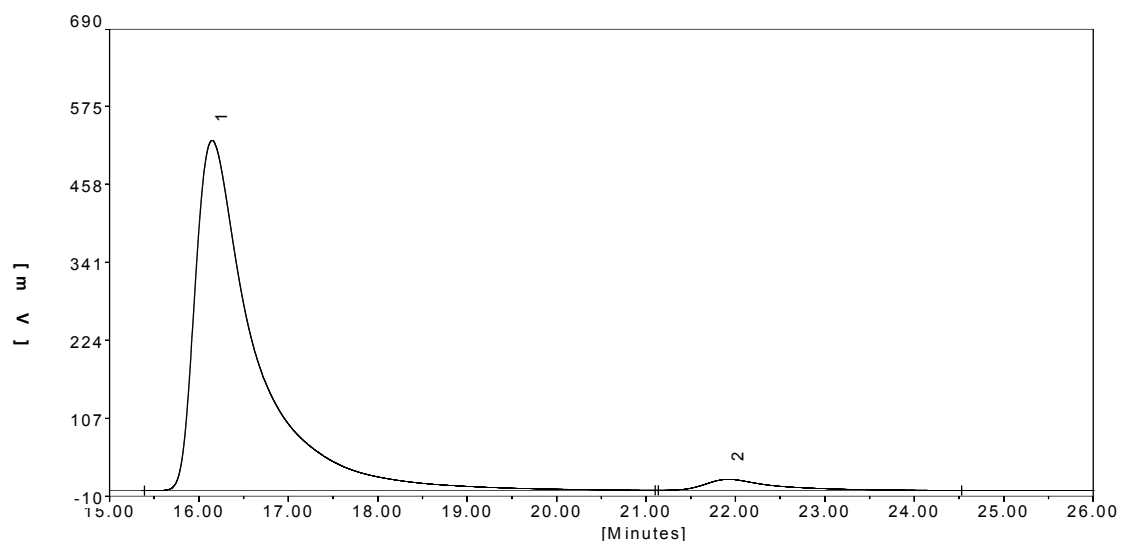
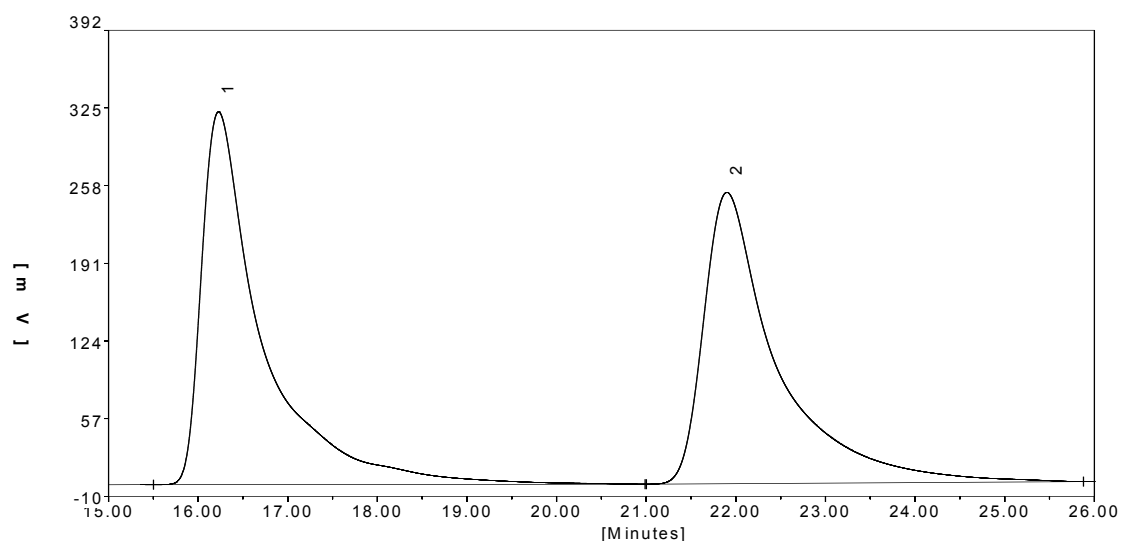
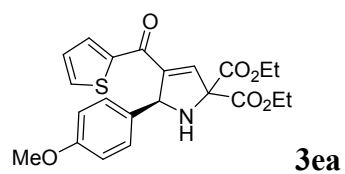
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1	15.44833	476.71	16289.62	98.8887
2	17.52417	6.63	183.06	1.1113

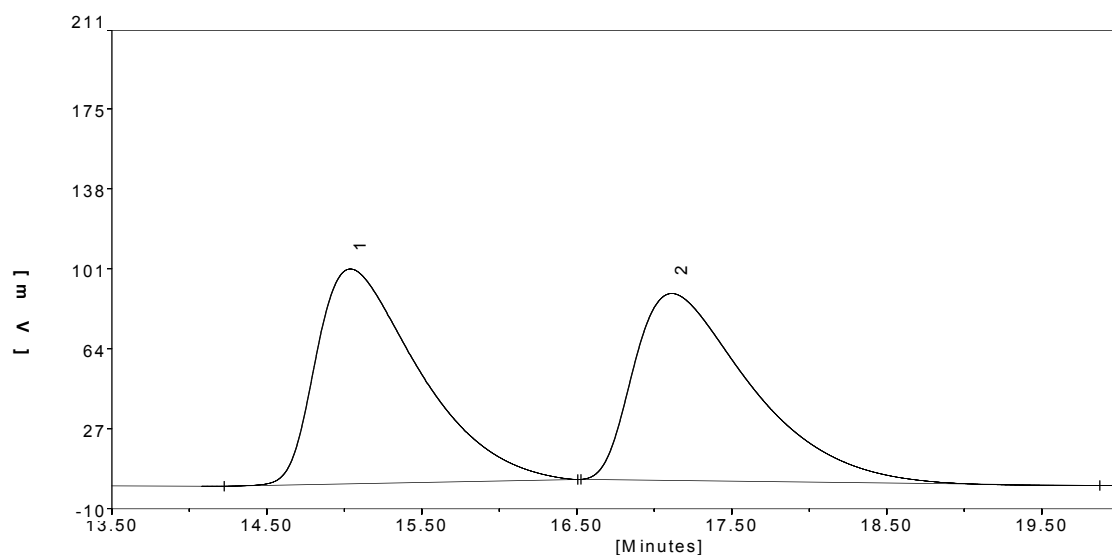
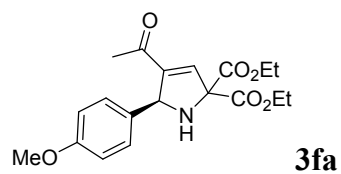


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	20.30000	968.22	35823.46	49.8320
2	23.71000	809.15	36065.07	50.1680

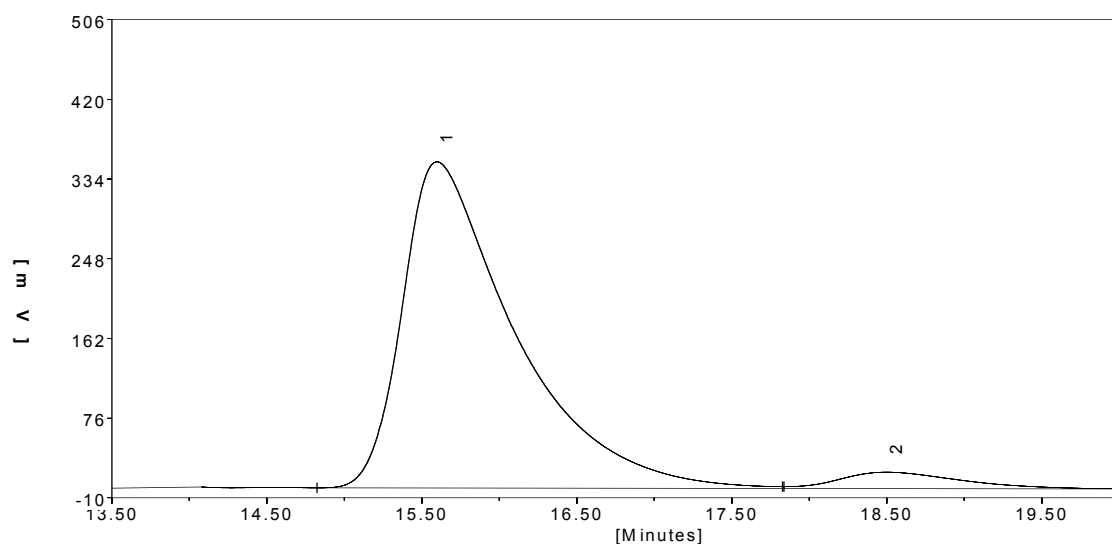


#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	19.84250	47.24	1811.98	2.5732
2	23.04750	1326.56	68604.79	97.4268

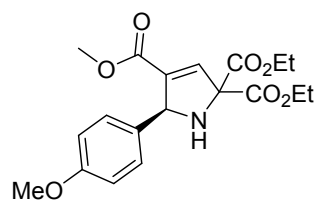




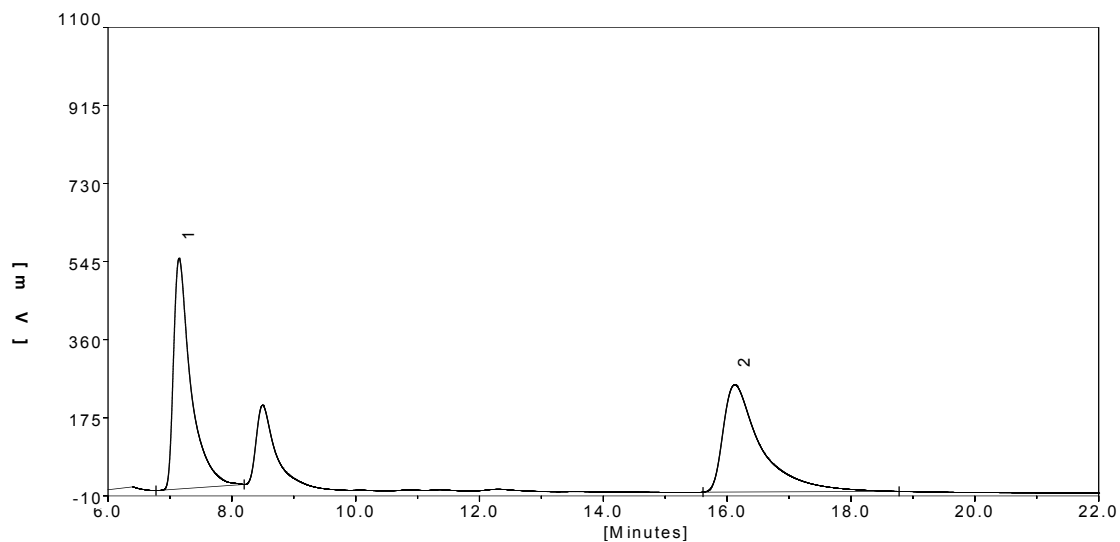
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1	15.03917	99.37	4592.38	50.3259
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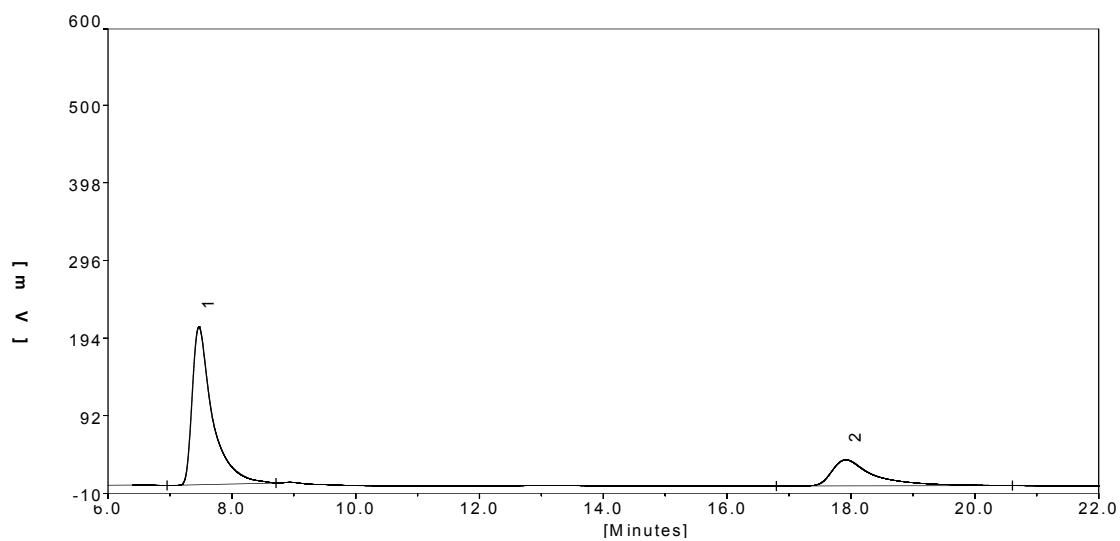
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1	15.59833	351.97	17734.73	94.8733
2	18.50083	17.74	958.33	5.1267



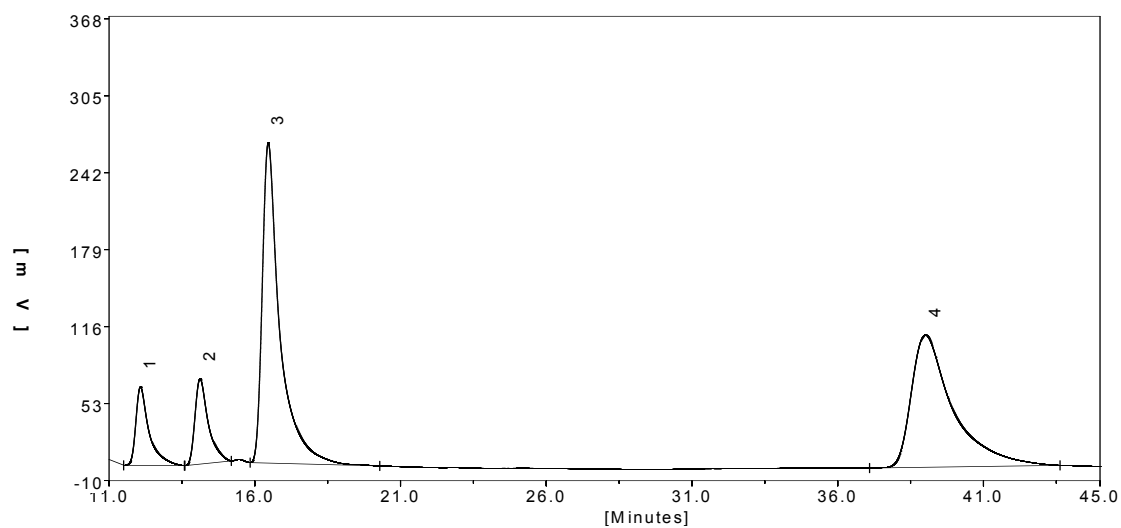
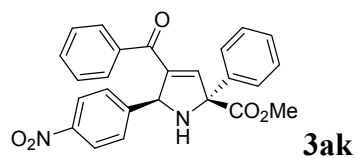
3ha



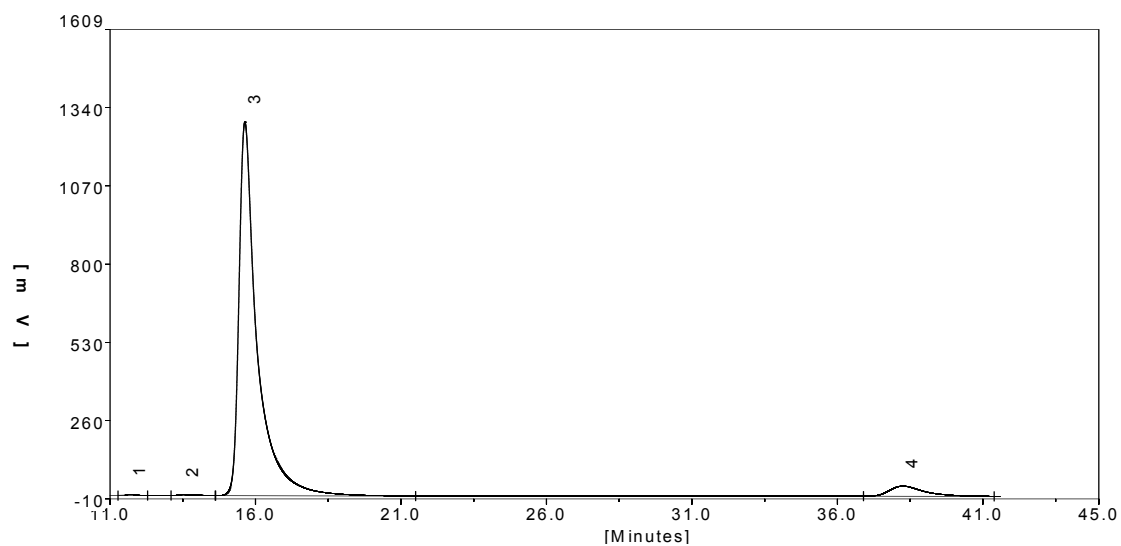
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	7.14833	546.85	10611.54	49.6038
2	16.12417	254.16	10781.06	50.3962



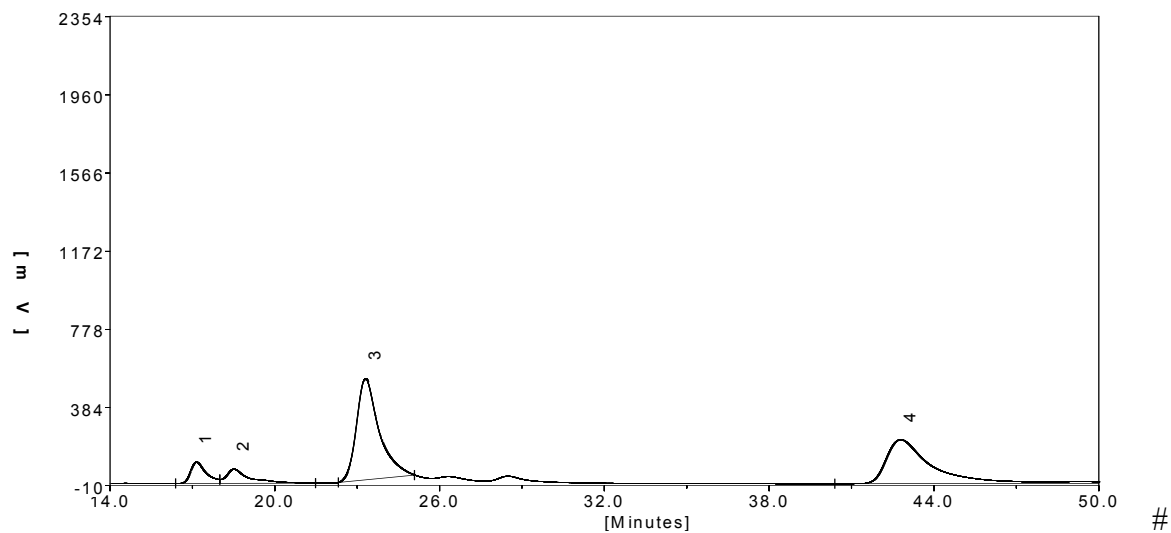
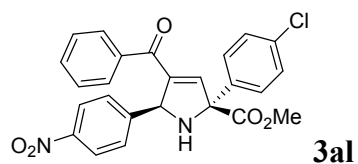
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	7.46833	207.94	4839.83	75.2566
2	17.91500	34.24	1591.09	24.7434



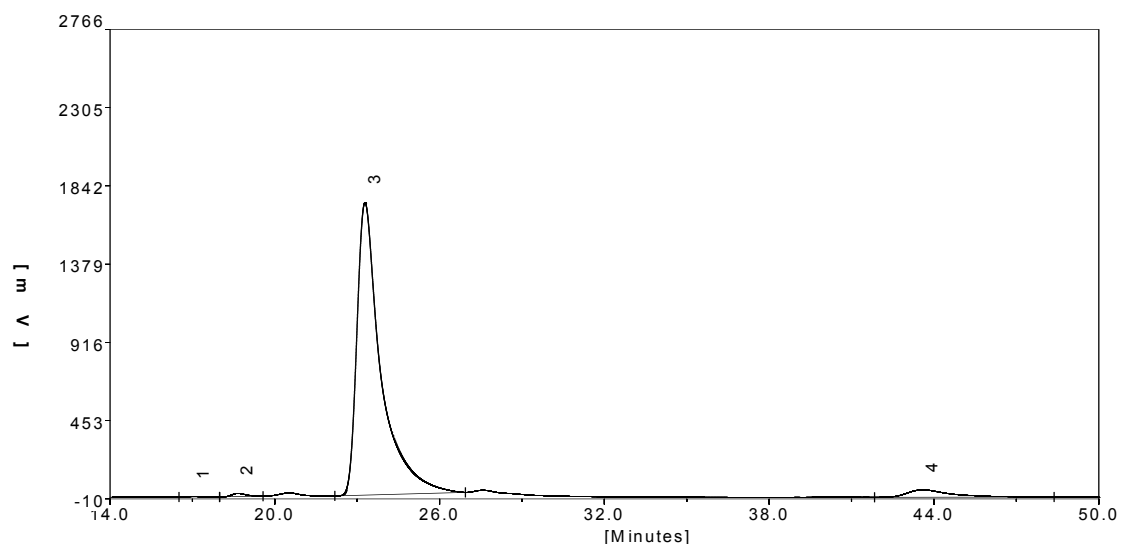
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	12.08000	64.30	2020.57	7.7987
2	14.12500	69.92	2211.07	8.5339
3	16.46500	262.21	11001.30	42.4611
4	39.01167	108.24	10676.19	41.2063



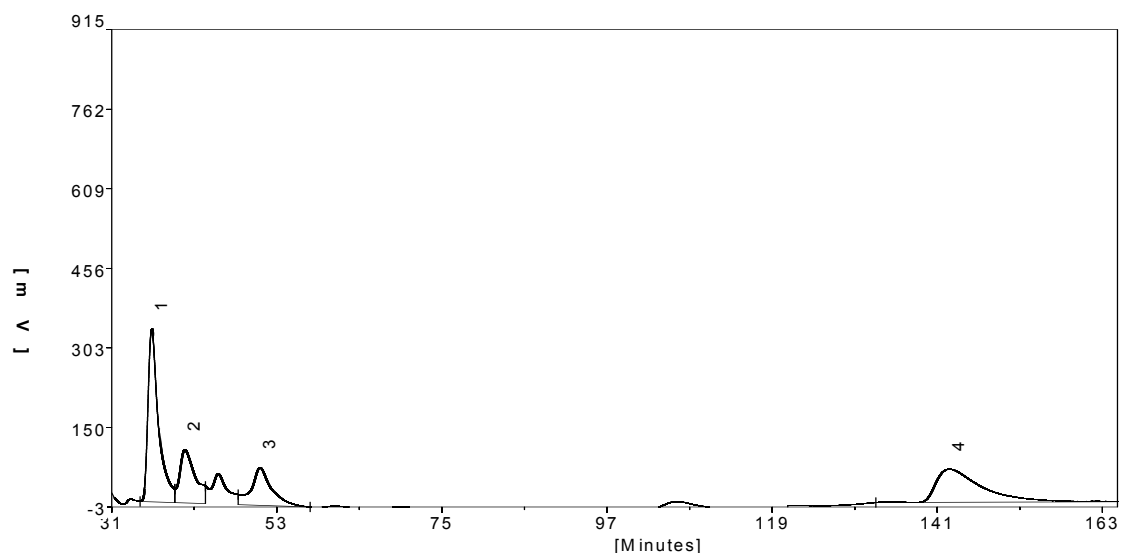
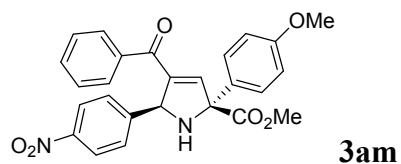
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	11.68667	4.16	94.63	0.1603
2	13.50542	3.25	120.84	0.2047
3	15.63583	1289.19	55909.99	94.6923
4	38.23750	35.15	2918.37	4.9427



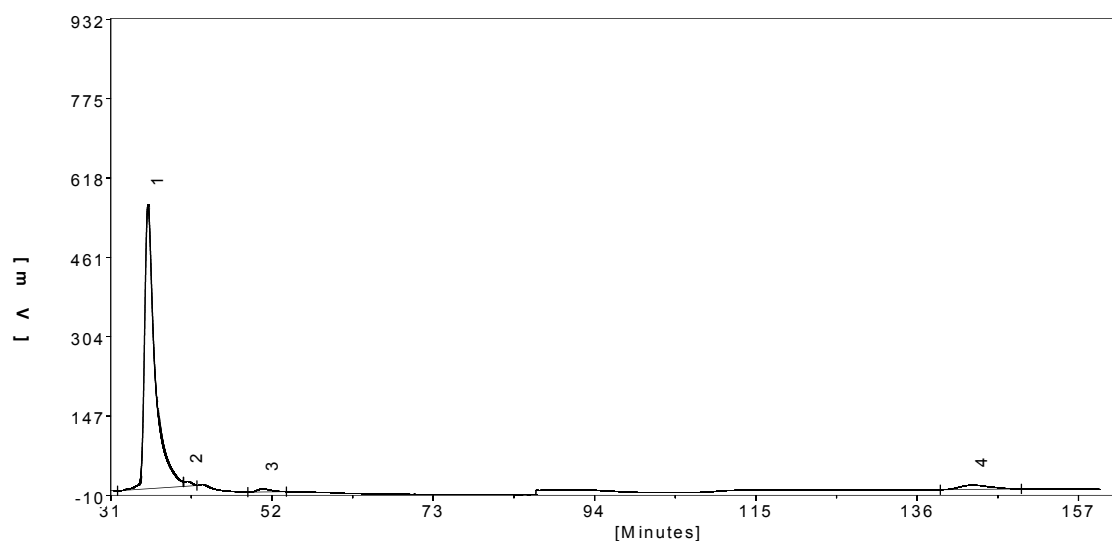
	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	17.14000	107.72	4223.44	6.6127
2	18.49917	71.86	4119.35	6.4498
3	23.30167	510.81	29246.49	45.7919
4	42.77500	221.75	26279.04	41.1457



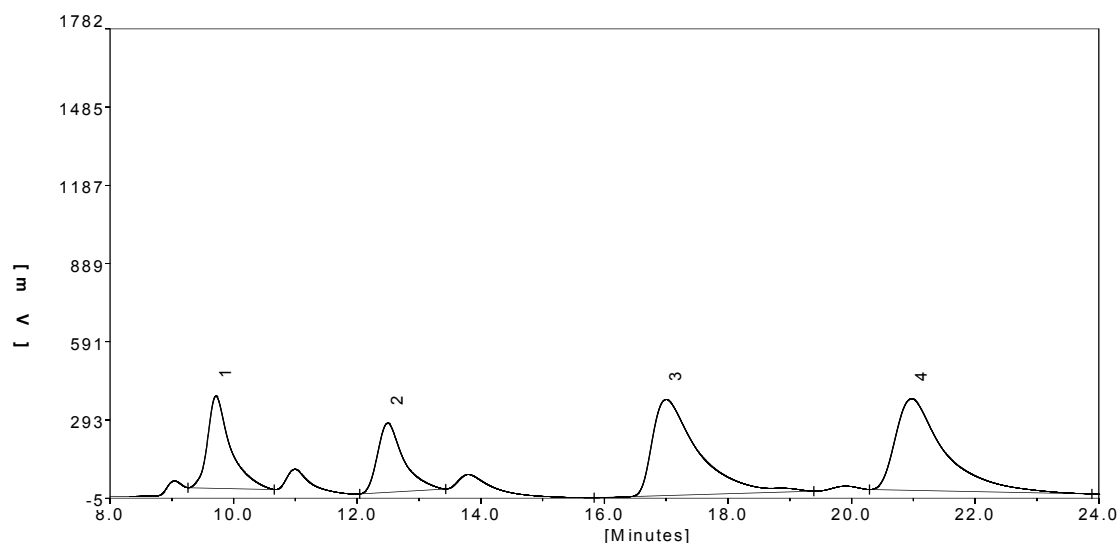
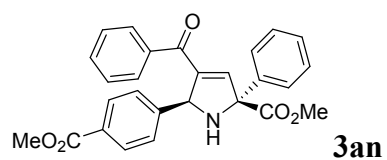
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	17.05000	1.91	2.61	0.0024
2	18.64333	18.28	610.45	0.5547
3	23.28333	1730.79	104576.32	95.0213
4	43.58000	43.92	4866.31	4.4217



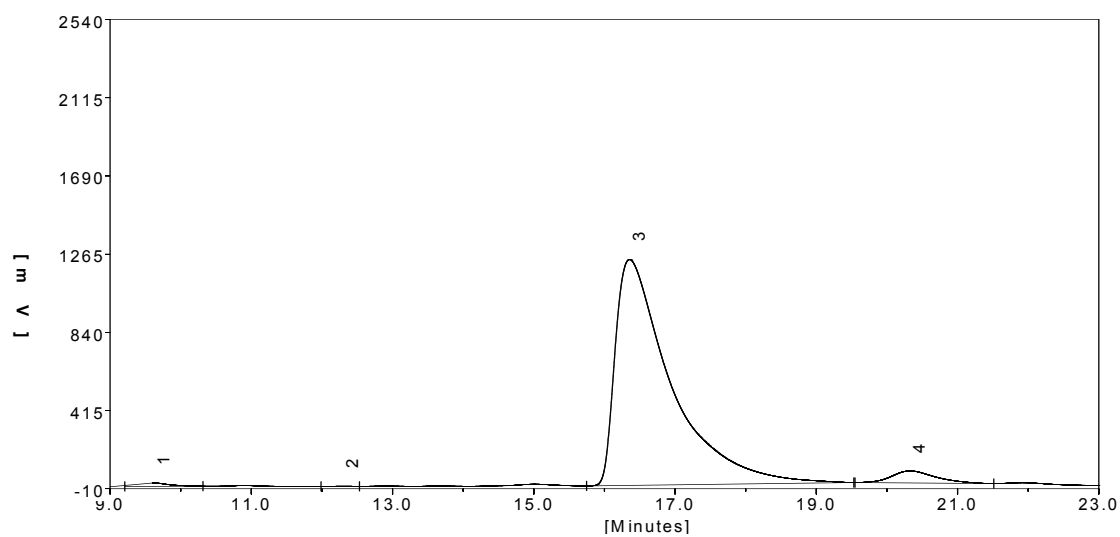
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	36.33667	332.21	32527.60	36.9843
2	40.69167	102.51	14690.38	16.7032
3	50.71333	72.56	13618.18	15.4841
4	142.54250	63.69	27113.50	30.8284



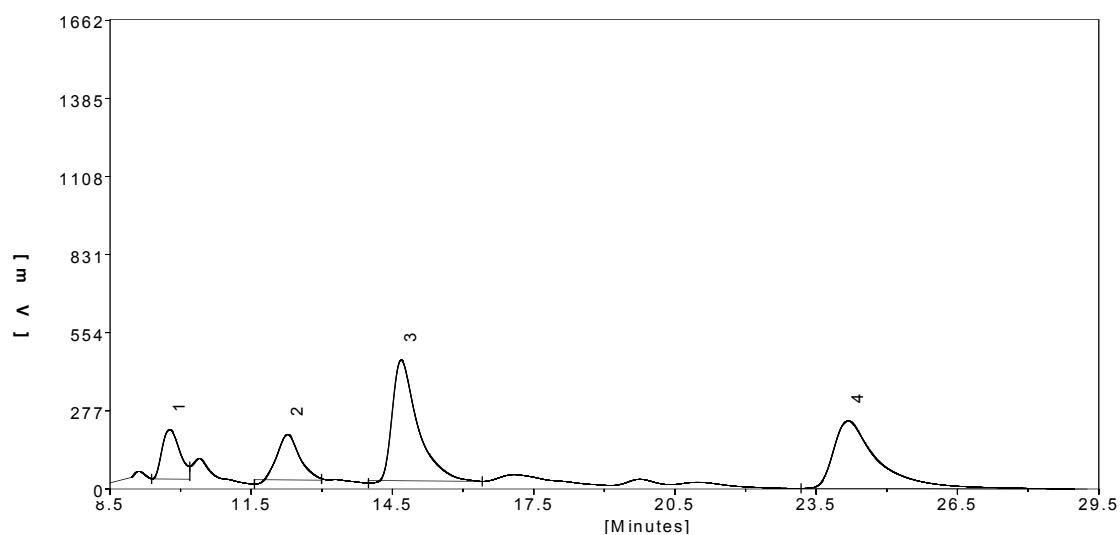
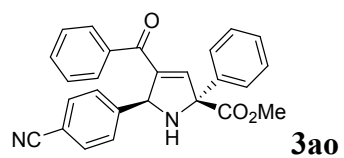
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	35.86250	562.45	53203.20	93.5515
2	40.92167	9.26	608.88	1.0706
3	50.78583	5.96	723.52	1.2722
4	143.10000	8.42	2334.89	4.1056



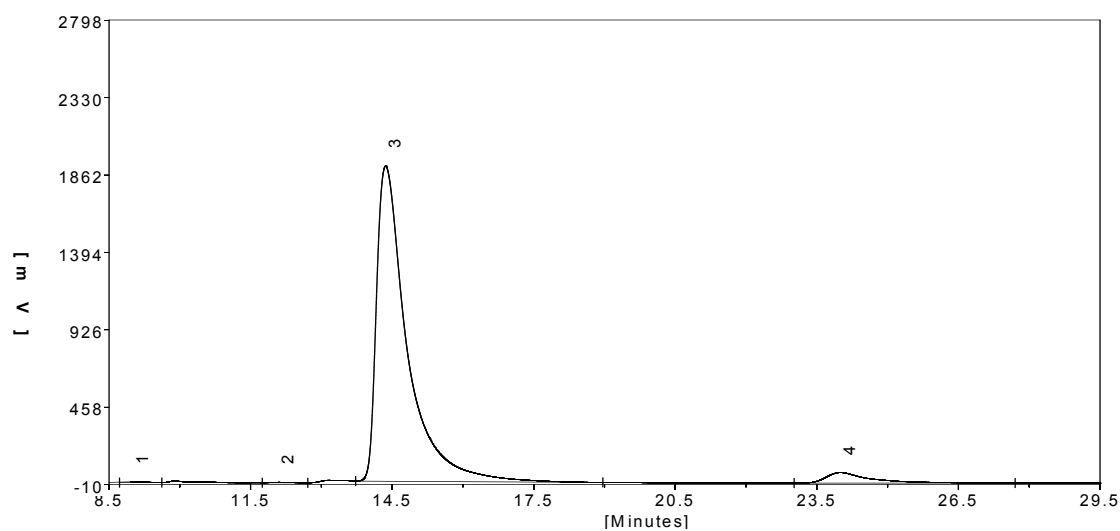
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	9.71500	351.59	9008.86	16.5449
2	12.49500	263.87	7662.00	14.0714
3	16.99833	365.96	18741.29	34.4188
4	20.97000	349.20	19038.66	34.9649



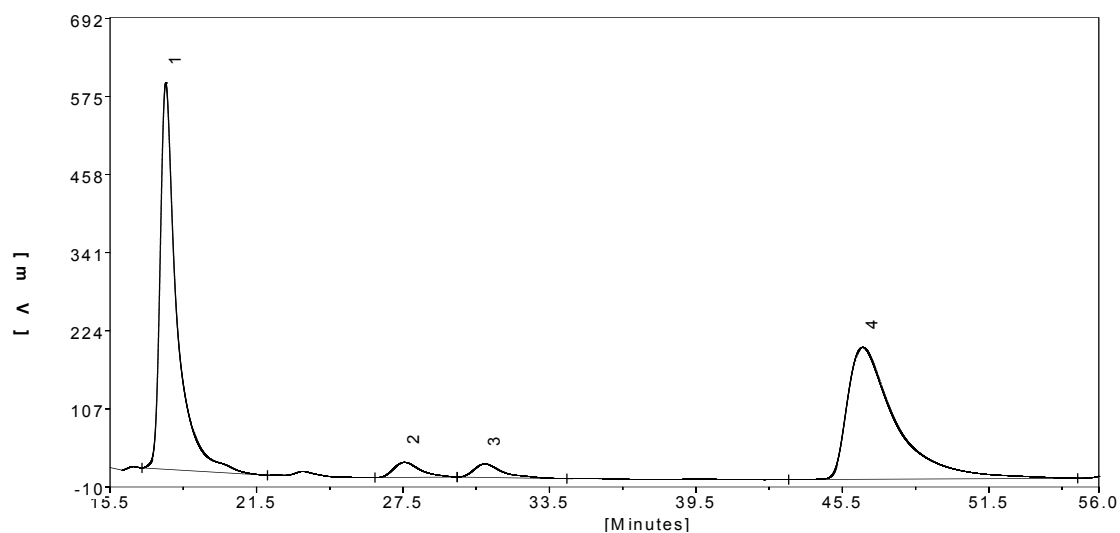
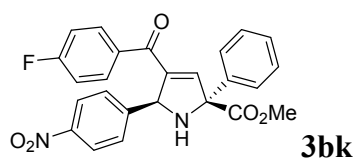
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	9.62833	18.51	497.08	0.7061
2	12.29750	0.79	12.34	0.0175
3	16.35667	1228.09	67080.74	95.2858
4	20.32417	65.48	2809.34	3.9906



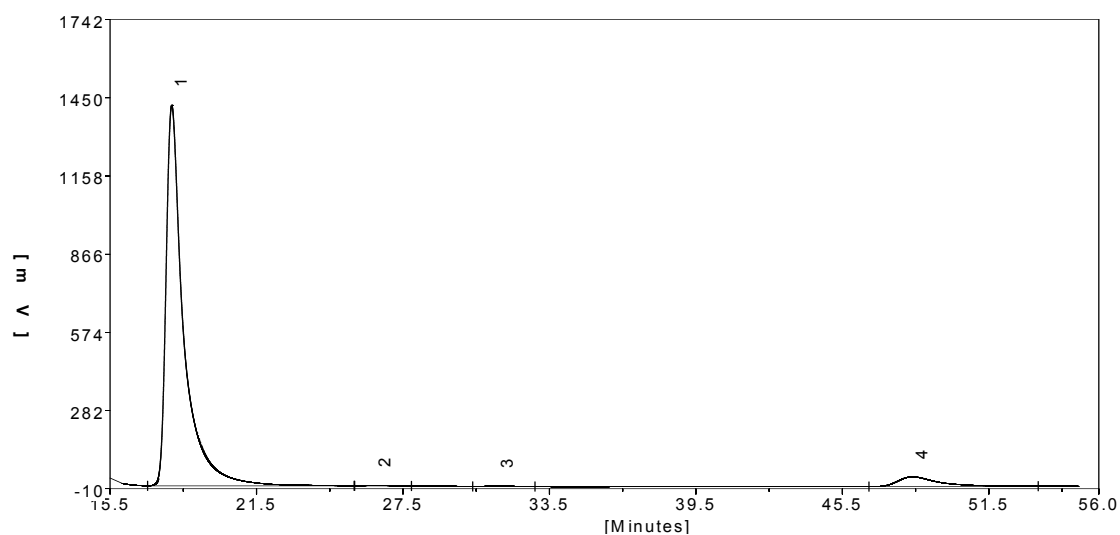
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	9.76583	175.28	4608.49	11.1676
2	12.27250	161.30	5152.55	12.4860
3	14.68417	428.04	15850.65	38.4104
4	24.17417	239.80	15654.89	37.9360



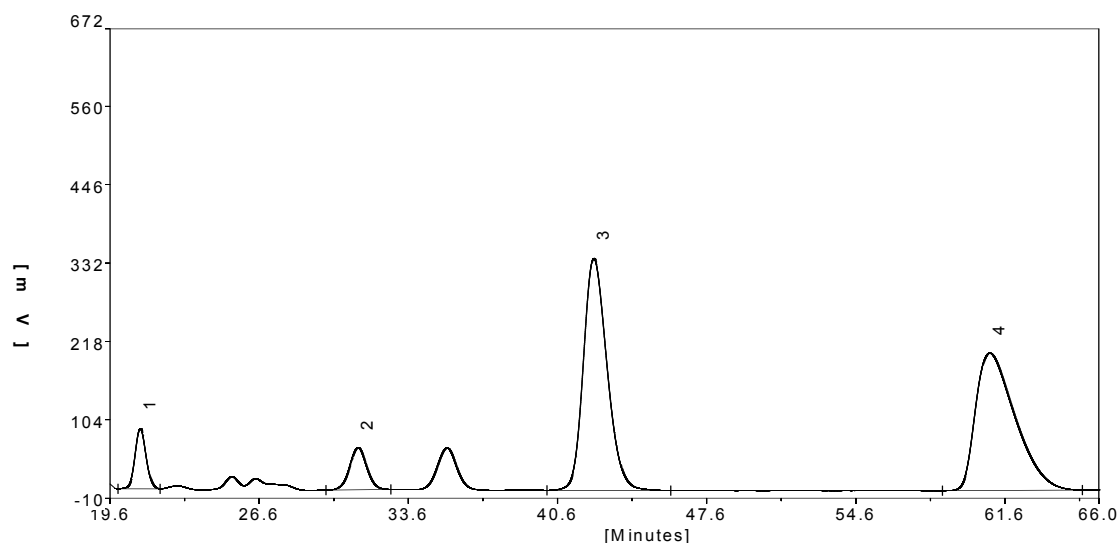
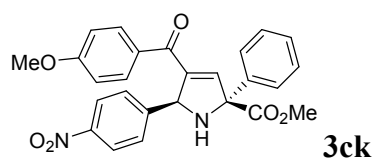
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	9.01417	5.29	120.06	0.1332
2	12.09083	2.76	67.00	0.0744
3	14.36167	1907.43	85804.39	95.2241
4	23.99417	63.76	4116.38	4.5683



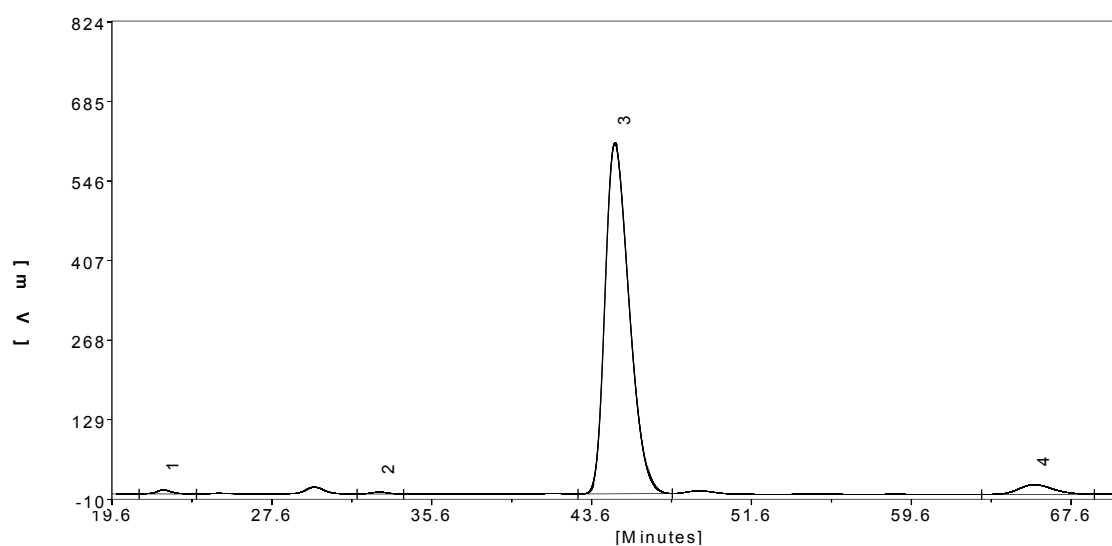
#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	17.78417	578.93	27384.00	47.4153
2	27.54083	22.65	1715.25	2.9700
3	30.84000	20.26	1623.38	2.8109
4	46.31667	197.82	27030.86	46.8039



#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	18.03083	1421.56	71610.82	94.1341
2	26.37083	2.06	124.57	0.1637
3	31.38625	2.17	147.35	0.1937
4	48.36750	36.32	4190.42	5.5084



#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	21.02000	87.83	3171.53	5.4472
2	31.22917	61.40	3421.56	5.8766
3	42.30333	337.54	26081.60	44.7960
4	60.87083	199.79	25548.39	43.8802



#	Ret Time(min)	Height(mV)	Area(mV.sec)	Area (%)
1	22.15750	7.29	378.05	0.7032
2	32.95667	3.41	193.60	0.3601
3	44.76583	612.71	51169.36	95.1753
4	65.72167	16.95	2022.26	3.7614