

Organocatalytic Domino Michael /Hemiacetalization of β -Tetralones and α,β -Unsaturated Aldehydes: Synthesis of 2,3,5,6-Tetrahydro-1-Alkyl/Aryl-1*H*-Benzo[*f*]Chromen-3-*Ol* Derivatives

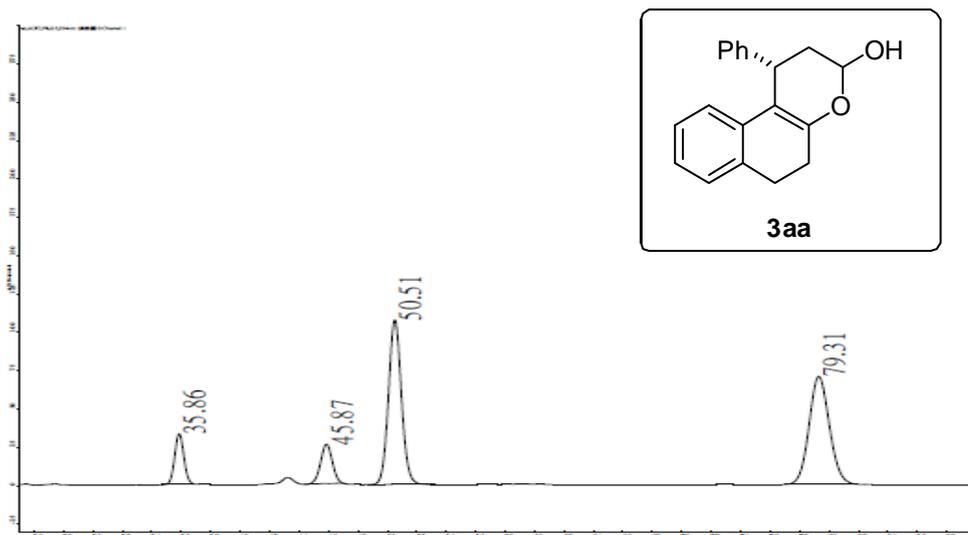
Jung-Hsuan Chen, Chihliang Chang, Hui-Ju Chang and Kwunmin Chen*

Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan 116,

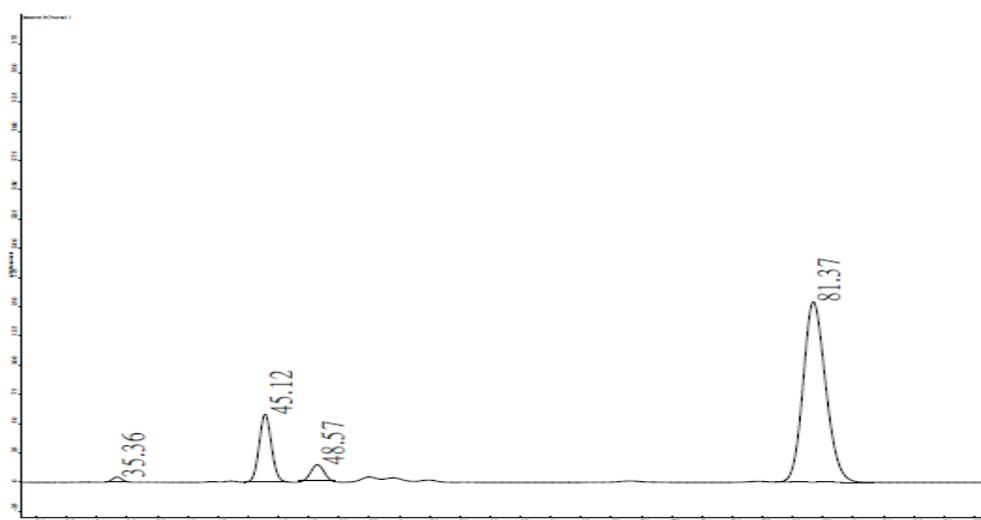
ROC.

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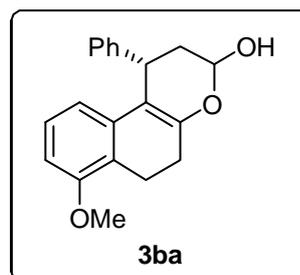
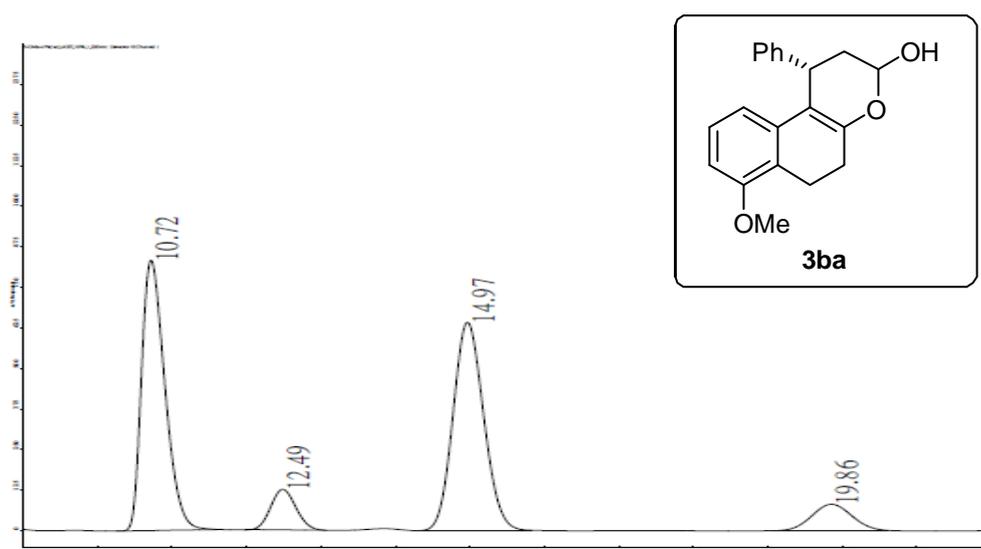
HPLC spectrum of compound 3aa -----	S2
HPLC spectrum of compound 3ba -----	S3
HPLC spectrum of compound 3ca -----	S4
HPLC spectrum of compound 3da -----	S5
HPLC spectrum of compound 3ea -----	S6
HPLC spectrum of compound 3fa -----	S7
HPLC spectrum of compound 3ab -----	S8
HPLC spectrum of compound 3ac -----	S9
HPLC spectrum of compound 3ad -----	S10
HPLC spectrum of compound 3ae -----	S11
HPLC spectrum of compound 3af -----	S12
HPLC spectrum of compound 3ag -----	S13
HPLC spectrum of compound 3bf -----	S14
HPLC spectrum of compound 3df -----	S15
HPLC spectrum of compound 3ef -----	S16
HPLC spectrum of compound 3ff -----	S17
HPLC spectrum of compound 5 -----	S18



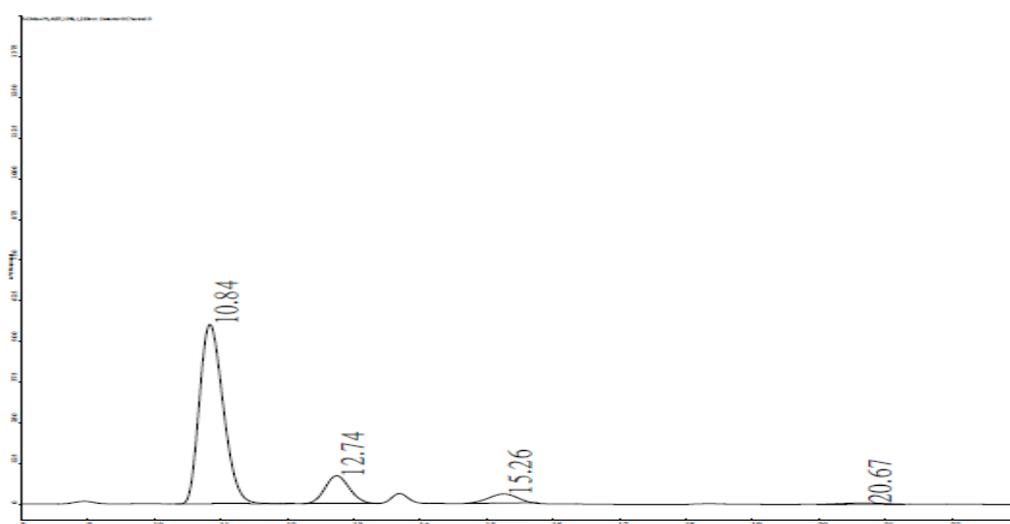
#	成分峰名稱	滯留時間	Area	百分比	濃度
0		35.860	1400.54	8.70	0.00
1		45.869	1413.55	8.78	0.00
2		50.509	6565.81	40.80	0.00
3		79.311	6712.31	41.71	0.00



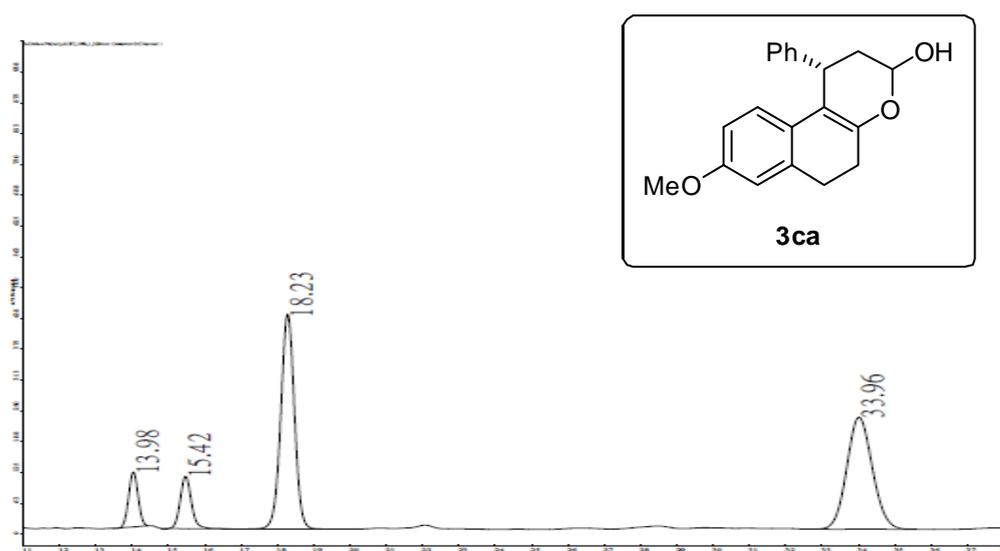
#	Peak name	max/min (min)	Area	Area %	Assay %
0		35.359	169.89	0.84	0.00
1		45.115	3227.49	15.97	0.00
2		48.568	820.46	4.06	0.00
3		81.366	15993.04	79.13	0.00



#	Peak name	max/min (min)	Area	Area %	Assay %
0		10.721	18130.90	42.88	0.00
1		12.488	2926.07	6.92	0.00
2		14.970	18284.82	43.25	0.00
3		19.856	2937.29	6.95	0.00



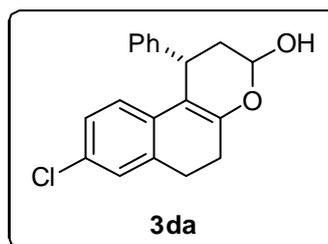
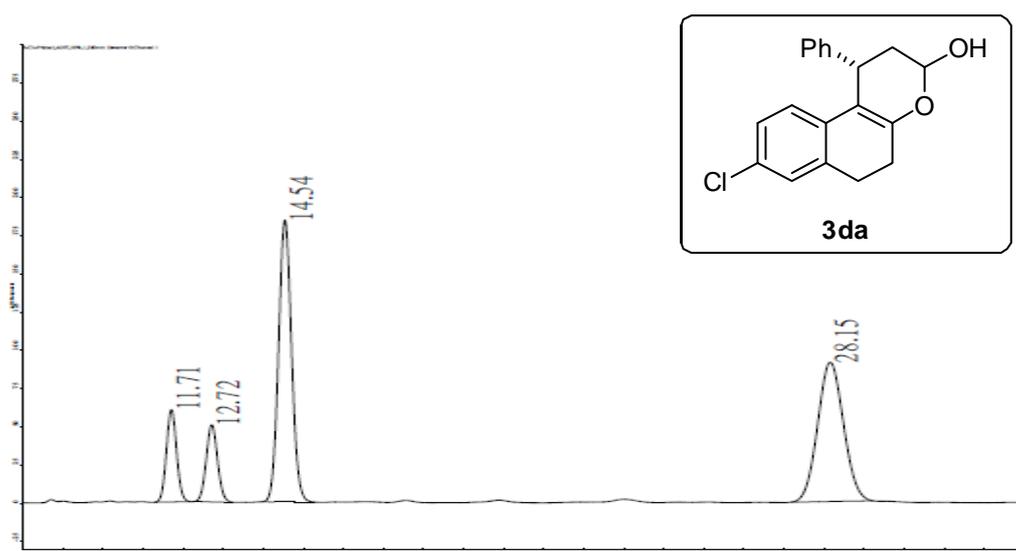
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0		10.837	13767.02	81.60	0.00
1		12.744	2155.75	12.78	0.00
2		15.258	826.90	4.90	0.00
3		20.673	121.78	0.72	0.00



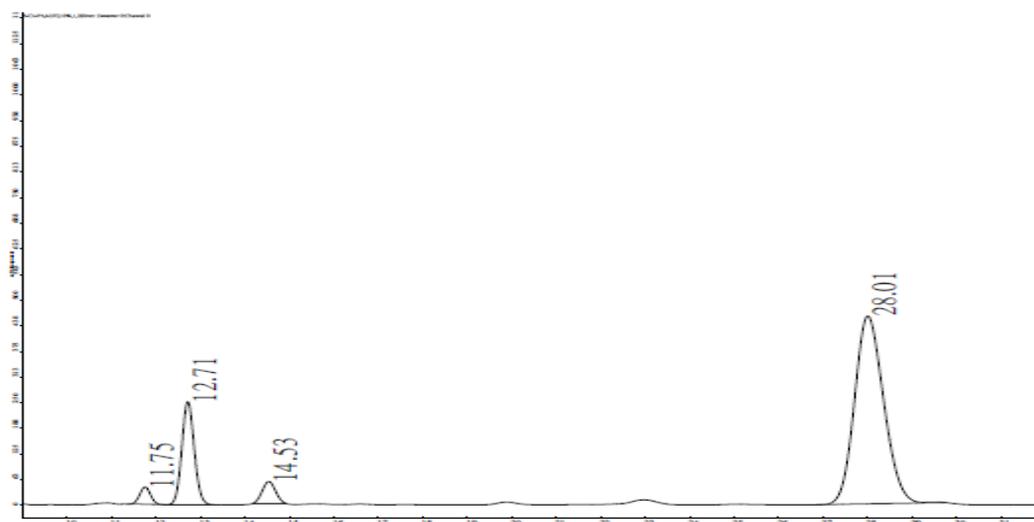
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0		13.979	2029.91	7.54	0.00
1		15.417	2290.78	8.51	0.00
2		18.227	11413.76	42.41	0.00
3		33.961	11175.88	41.53	0.00



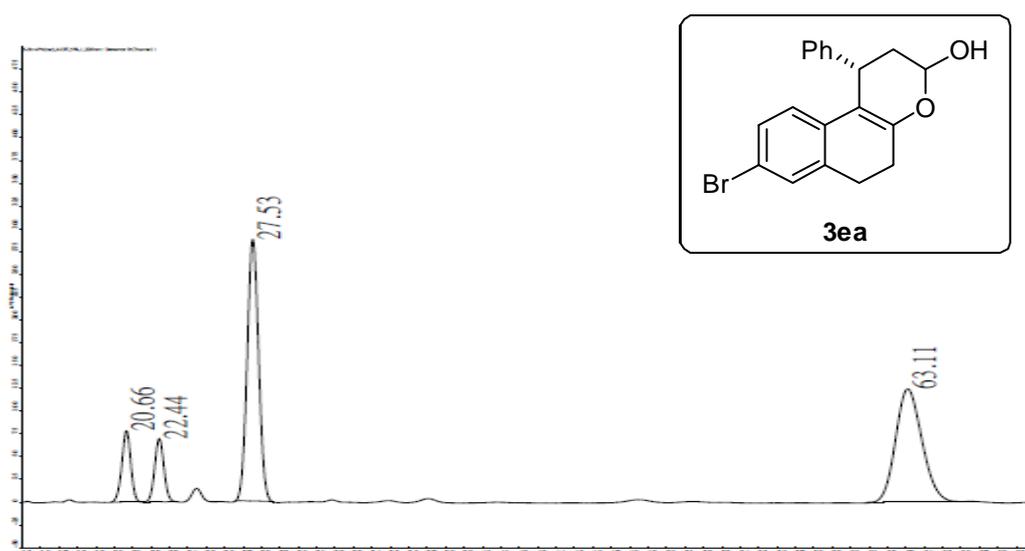
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0		13.988	175.61	0.77	0.00
1		15.448	3841.00	16.92	0.00
2		18.372	1128.62	4.97	0.00
3		34.677	17554.44	77.33	0.00



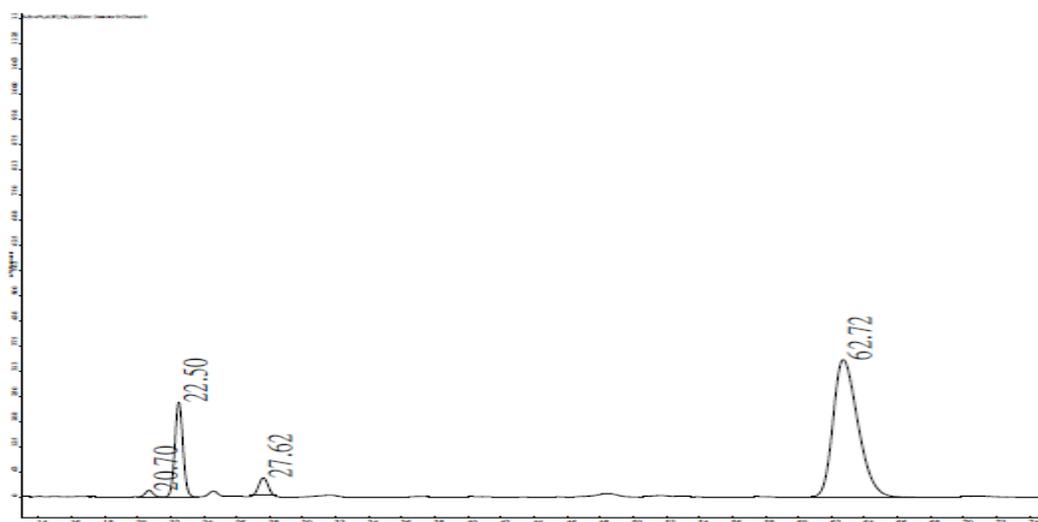
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0		11.709	1074.73	10.42	0.00
1		12.717	990.50	9.61	0.00
2		14.545	4156.51	40.31	0.00
3		28.146	4088.69	39.66	0.00



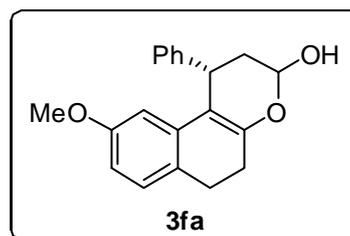
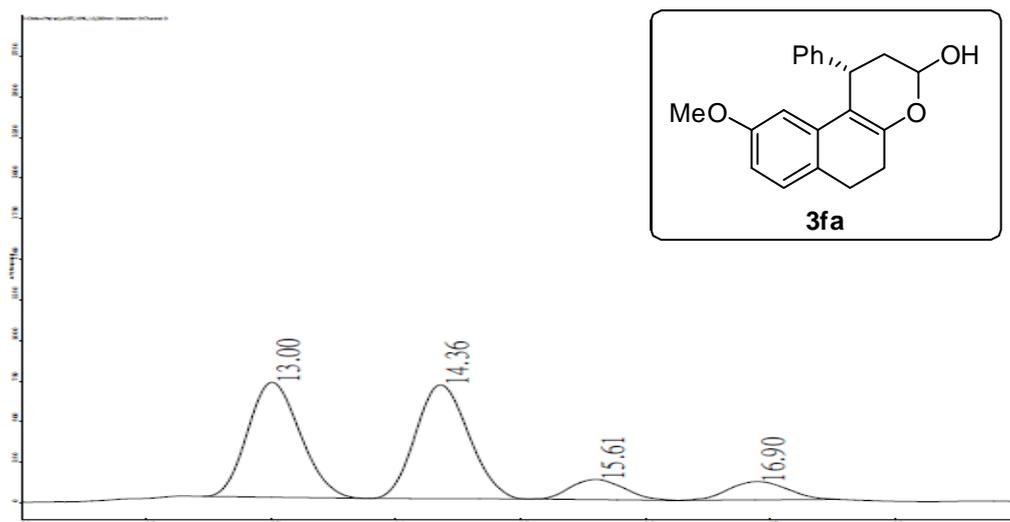
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0		11.753	702.93	2.54	0.00
1		12.715	4884.12	17.68	0.00
2		14.529	1130.91	4.09	0.00
3		28.010	20903.40	75.68	0.00



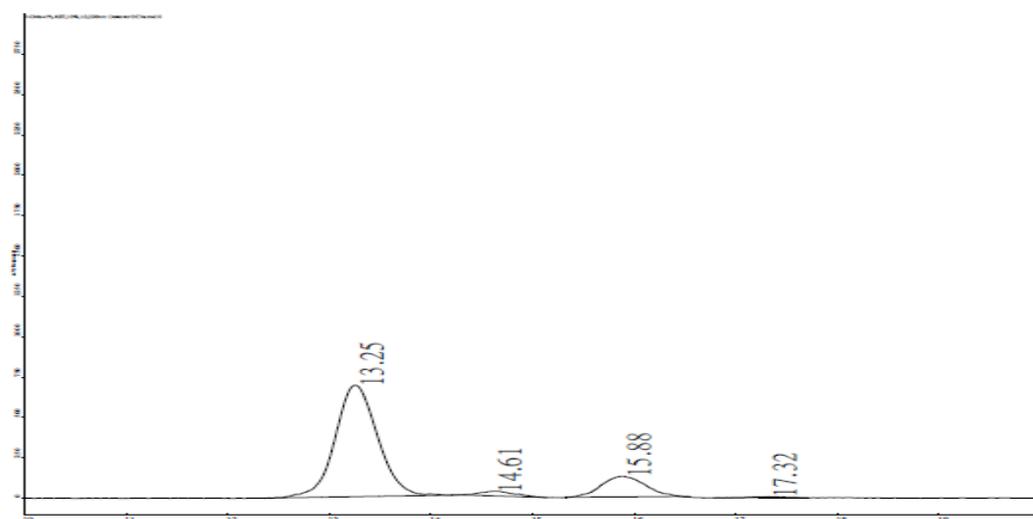
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0		20.661	2627.64	8.85	0.00
1		22.444	2416.76	8.14	0.00
2		27.526	12381.98	41.69	0.00
3		63.114	12273.09	41.32	0.00



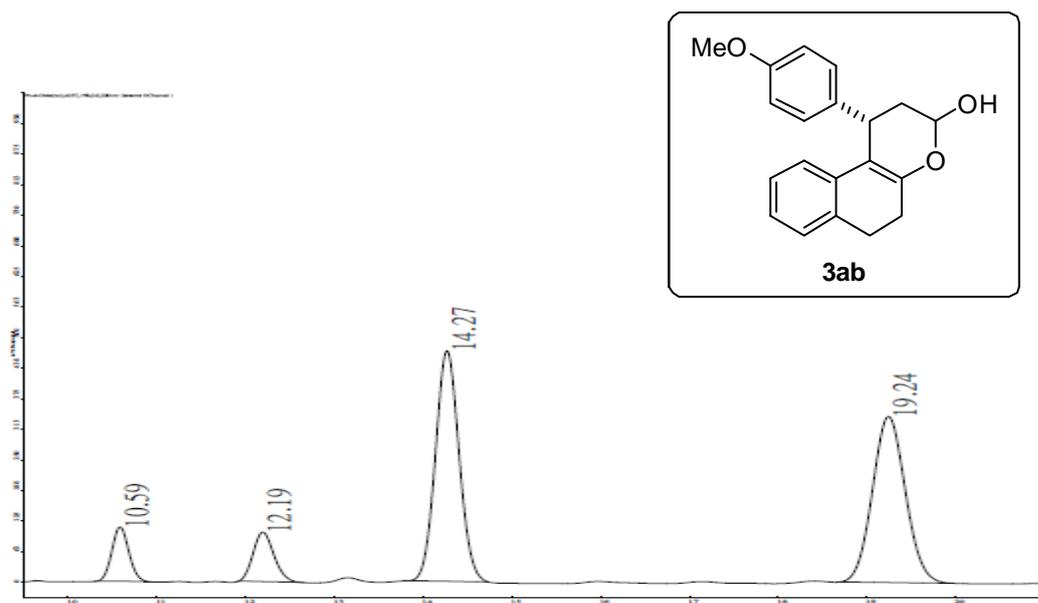
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0		20.698	520.01	1.13	0.00
1		22.498	8016.13	17.45	0.00
2		27.617	1676.22	3.65	0.00
3		62.722	35718.43	77.77	0.00



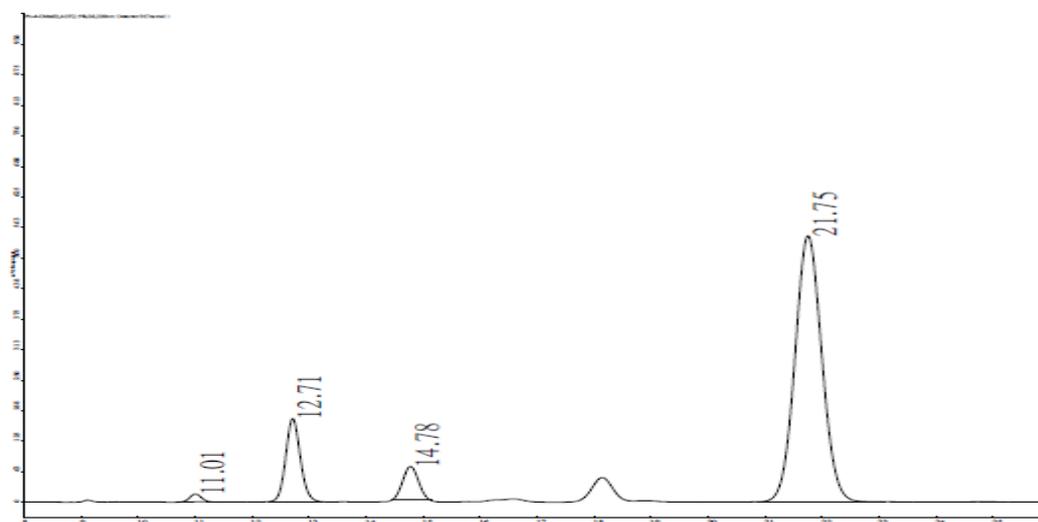
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0		13.005	20757.61	42.36	0.00
1		14.360	20832.01	42.51	0.00
2		15.608	3712.14	7.58	0.00
3		16.899	3699.45	7.55	0.00



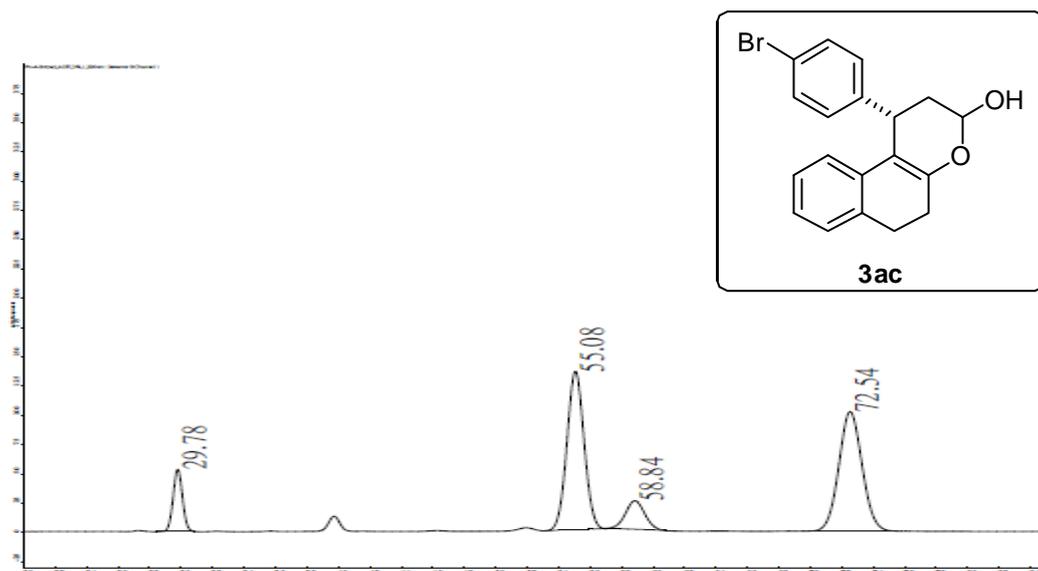
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0		13.255	20029.61	81.26	0.00
1		14.612	682.44	2.77	0.00
2		15.883	3792.98	15.39	0.00
3		17.318	142.97	0.58	0.00



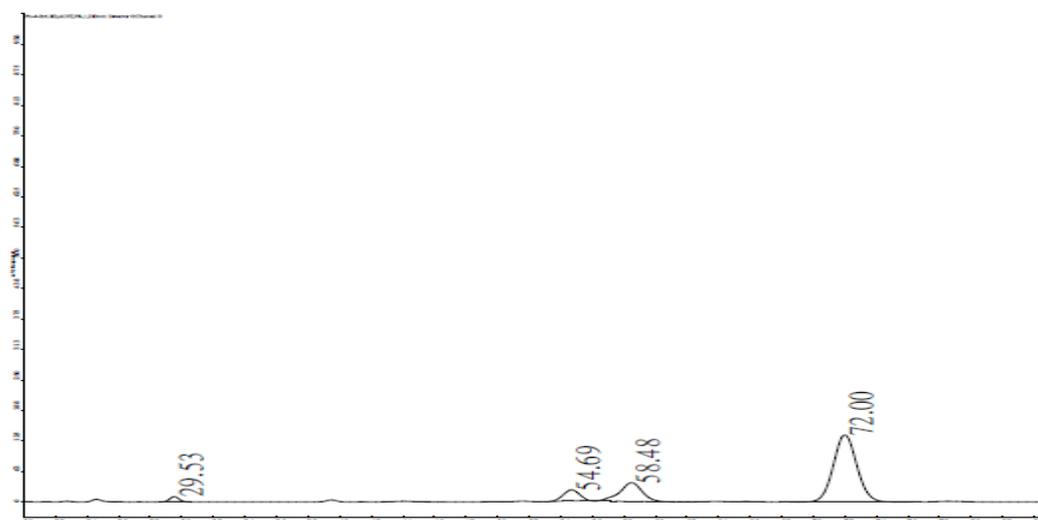
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0		10.586	1464.73	7.12	0.00
1		12.195	1642.56	7.98	0.00
2		14.271	8719.06	42.36	0.00
3		19.242	8755.81	42.54	0.00



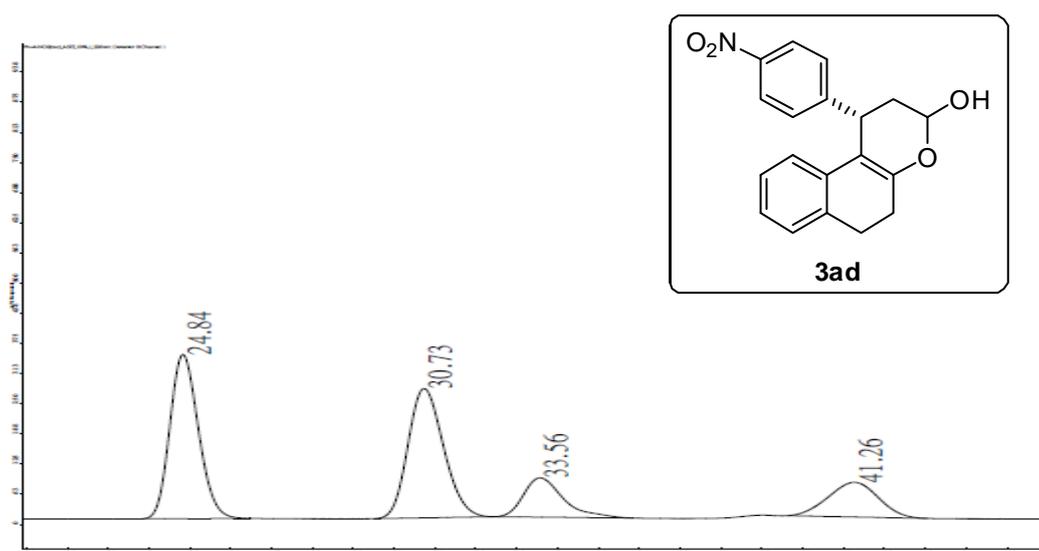
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0		11.010	216.61	0.97	0.00
1		12.715	3014.81	13.46	0.00
2		14.783	1311.27	5.86	0.00
3		21.754	17848.31	79.71	0.00



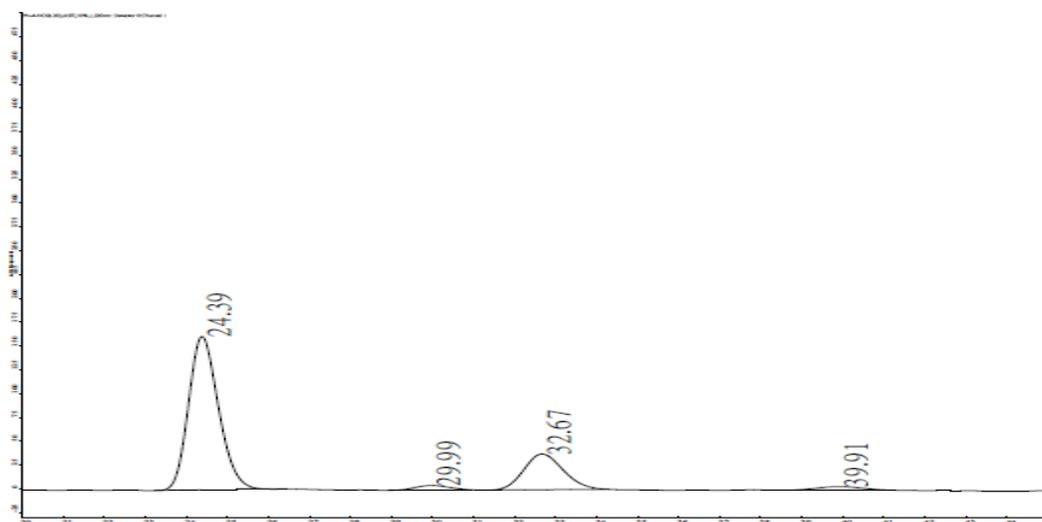
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0		29.785	2169.77	8.71	0.00
1		55.078	10280.29	41.26	0.00
2		58.845	2057.37	8.26	0.00
3		72.541	10406.37	41.77	0.00



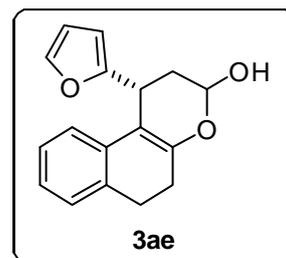
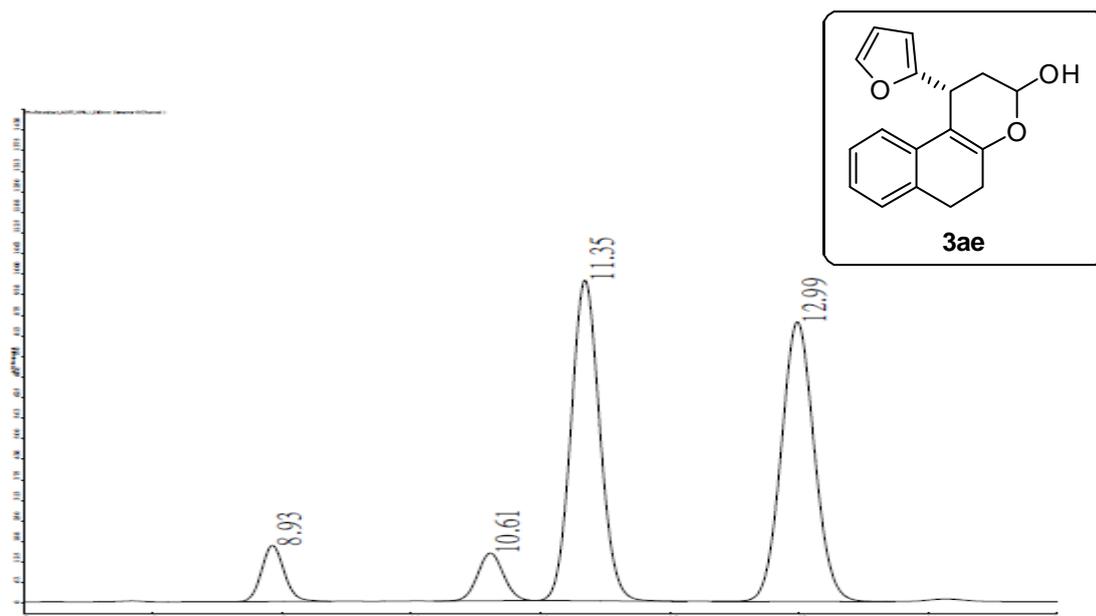
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0		29.528	405.22	2.02	0.00
1		54.687	1589.09	7.93	0.00
2		58.476	3791.93	18.91	0.00
3		71.997	14262.44	71.14	0.00



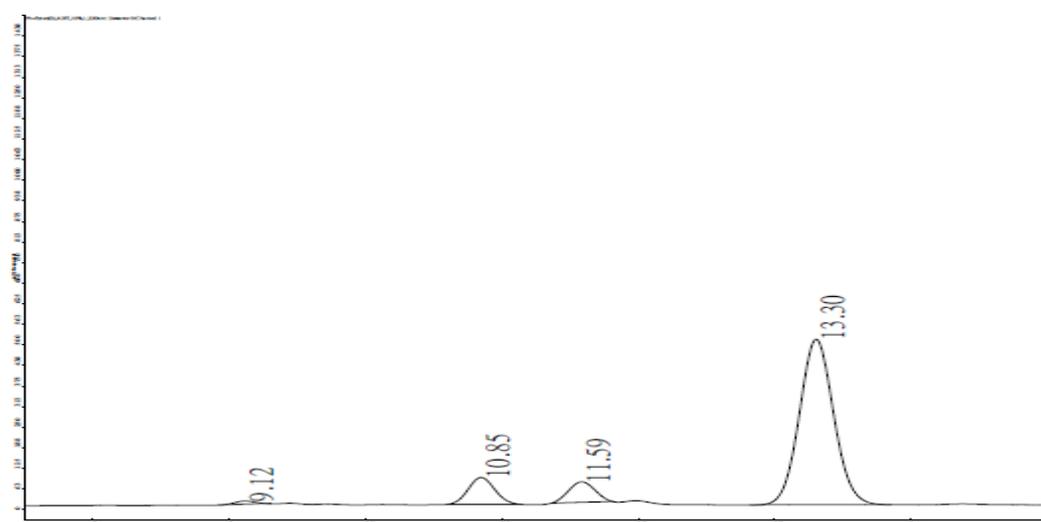
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0		24.836	16542.28	37.28	0.00
1		30.733	16208.41	36.53	0.00
2		33.562	5498.75	12.39	0.00
3		41.261	6124.61	13.80	0.00



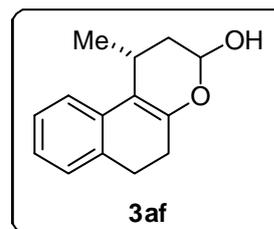
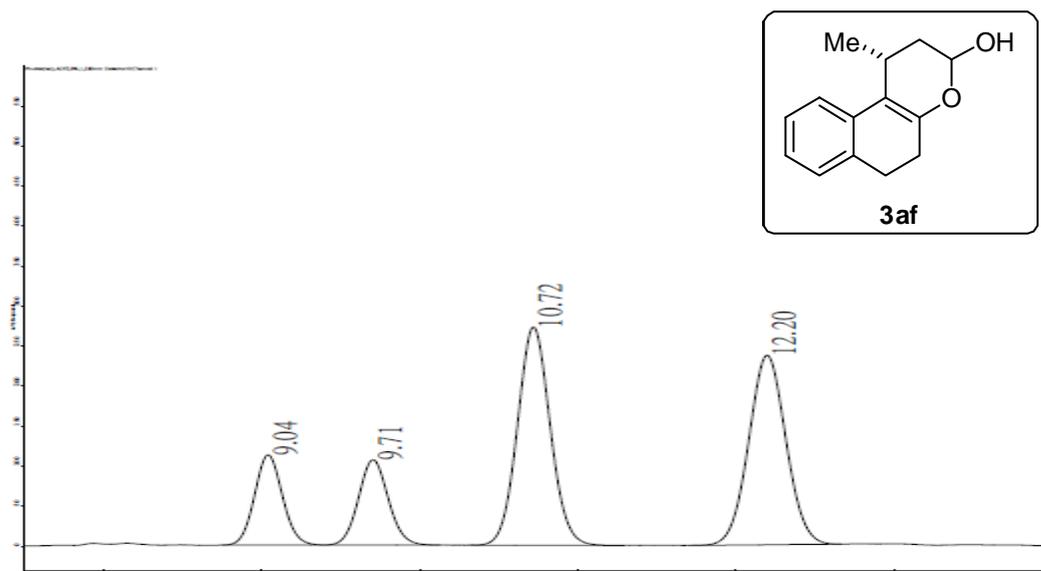
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0		24.389	8174.09	73.51	0.00
1		29.991	223.70	2.01	0.00
2		32.672	2488.36	22.38	0.00
3		39.910	233.93	2.10	0.00



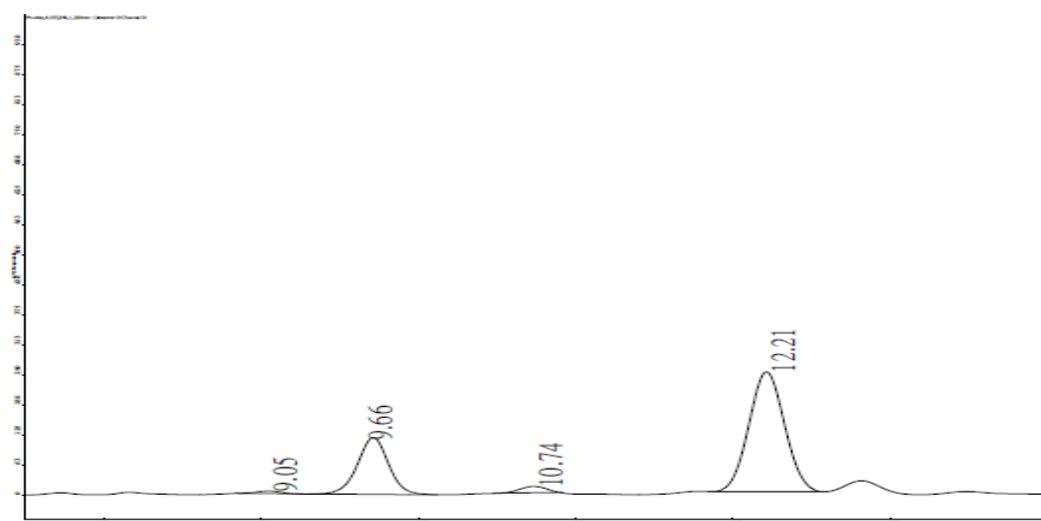
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0		8.925	2080.53	6.07	0.00
1		10.614	2021.68	5.90	0.00
2		11.347	15066.82	43.95	0.00
3		12.991	15115.75	44.09	0.00



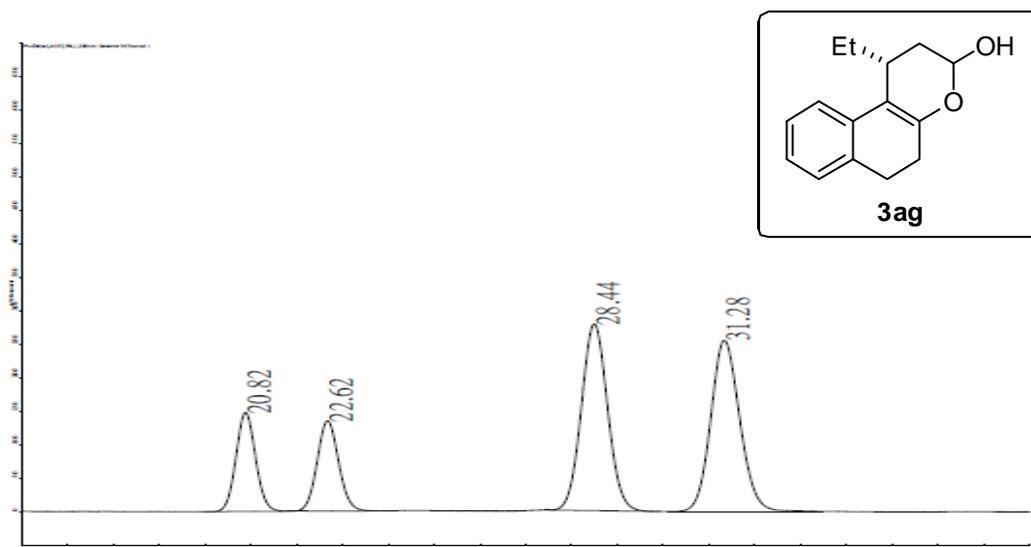
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0		9.115	89.29	0.83	0.00
1		10.848	1052.78	9.77	0.00
2		11.587	829.56	7.70	0.00
3		13.305	8807.72	81.71	0.00



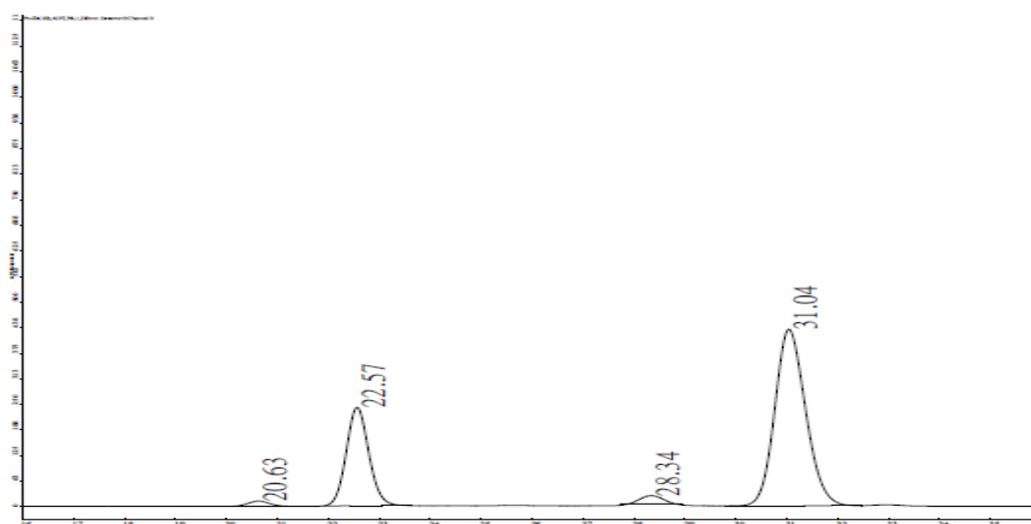
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0		9.044	1377.71	13.00	0.00
1		9.708	1393.93	13.15	0.00
2		10.722	3939.16	37.16	0.00
3		12.200	3889.85	36.69	0.00



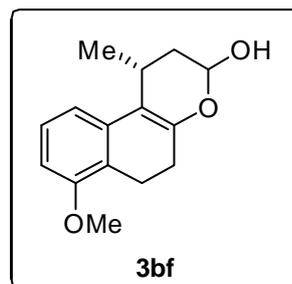
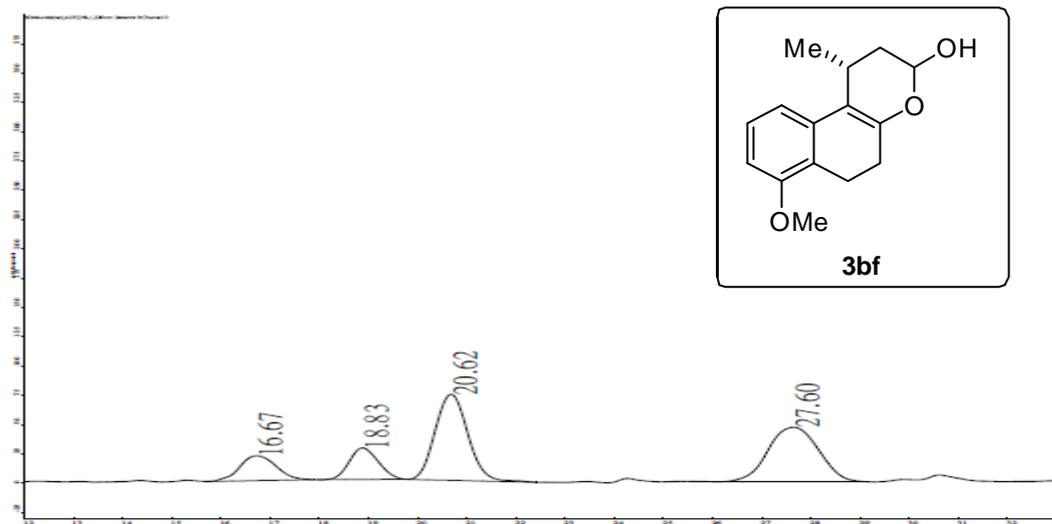
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0		9.049	53.37	0.93	0.00
1		9.656	1625.01	28.22	0.00
2		10.740	149.25	2.59	0.00
3		12.214	3931.13	68.26	0.00



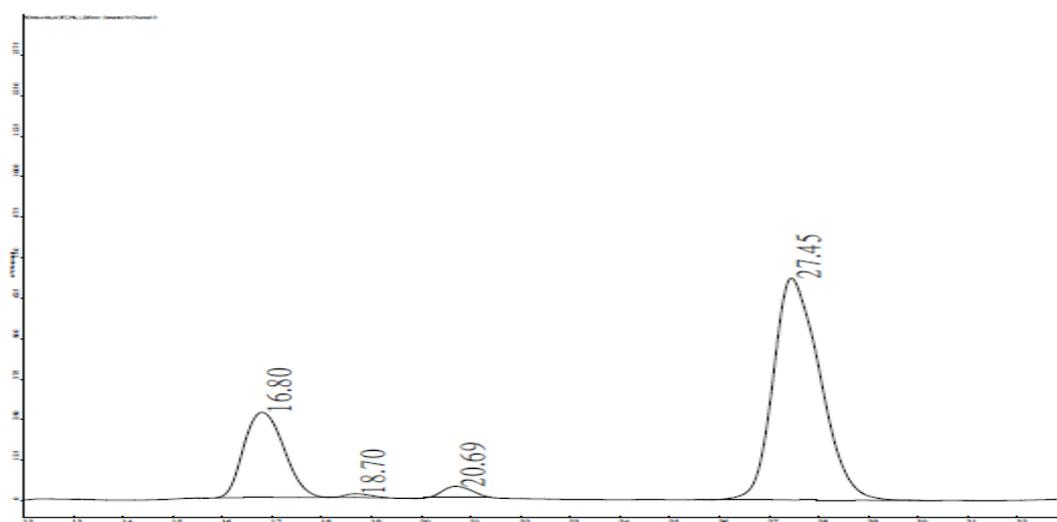
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0		20.824	4410.67	14.12	0.00
1		22.616	4396.86	14.08	0.00
2		28.442	11153.94	35.72	0.00
3		31.283	11268.77	36.08	0.00



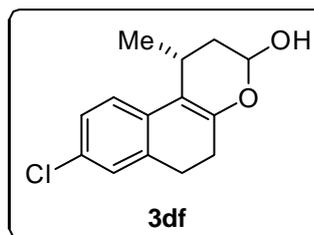
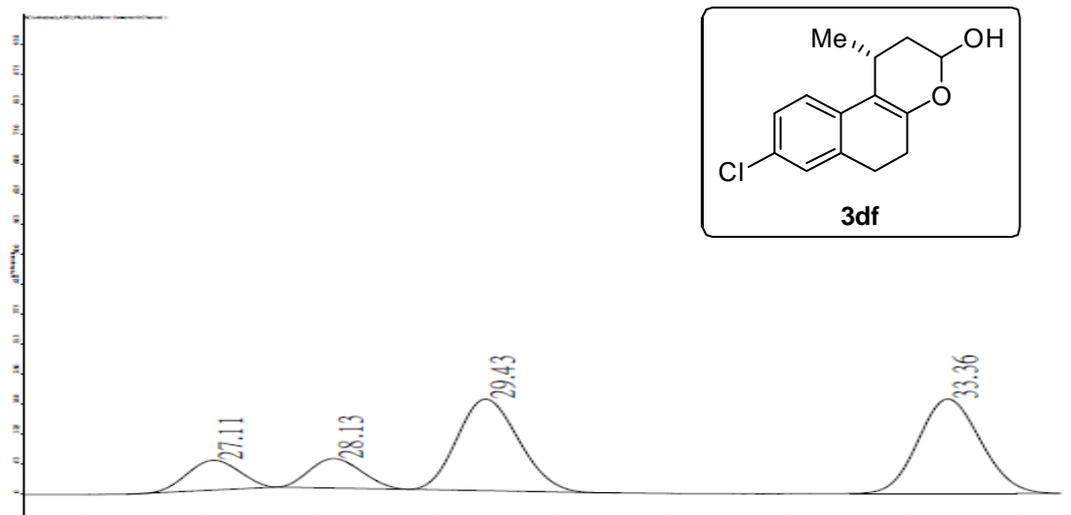
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0		20.626	334.88	1.26	0.00
1		22.567	7407.10	27.87	0.00
2		28.341	670.81	2.52	0.00
3		31.041	18160.56	68.34	0.00



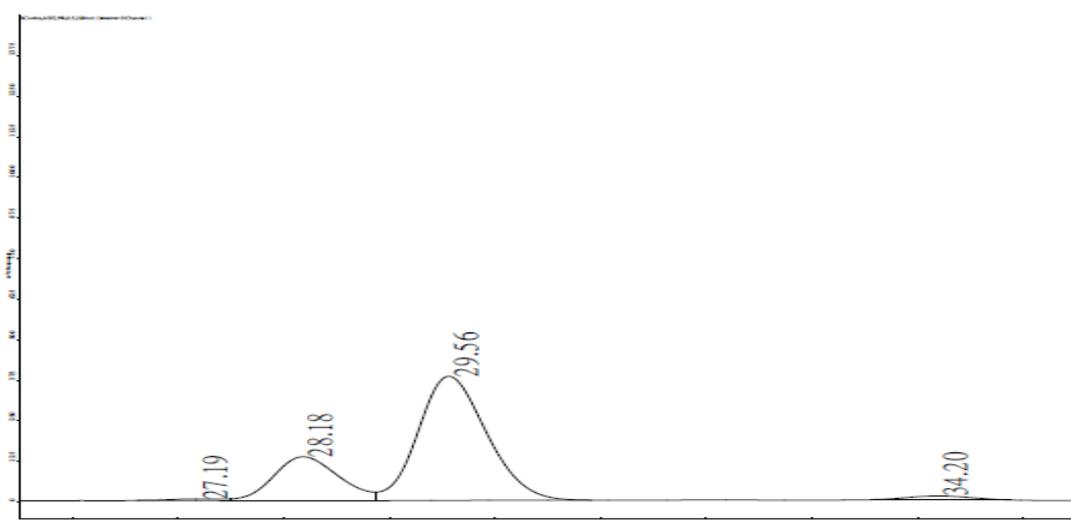
#	Peak name	max/min (min)	Area	Area %	Assay %
0		16.667	1098.52	12.30	0.00
1		18.827	1105.25	12.37	0.00
2		20.624	3391.59	37.96	0.00
3		27.596	3338.96	37.37	0.00



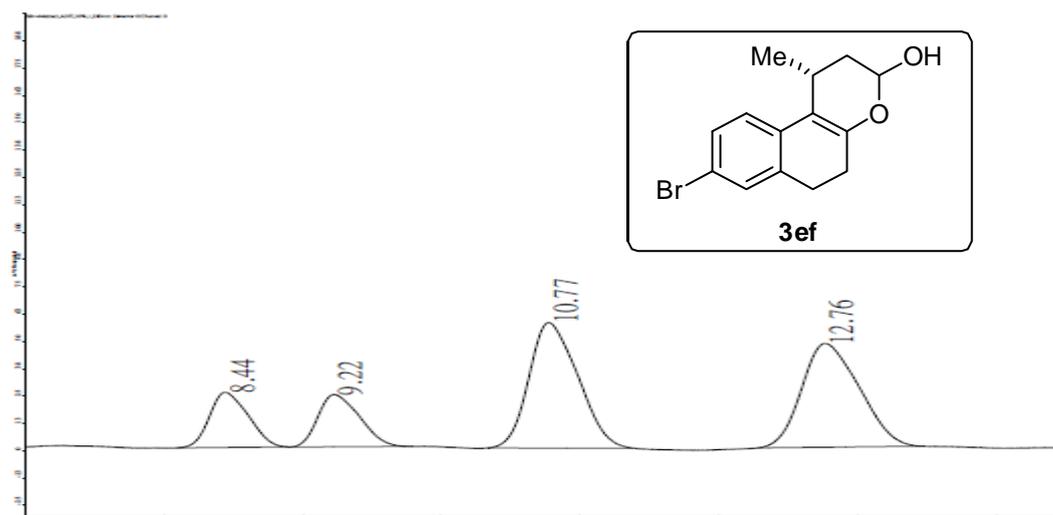
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0		16.804	14729.28	24.01	0.00
1		18.696	377.17	0.61	0.00
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3		27.449	44916.26	73.22	0.00



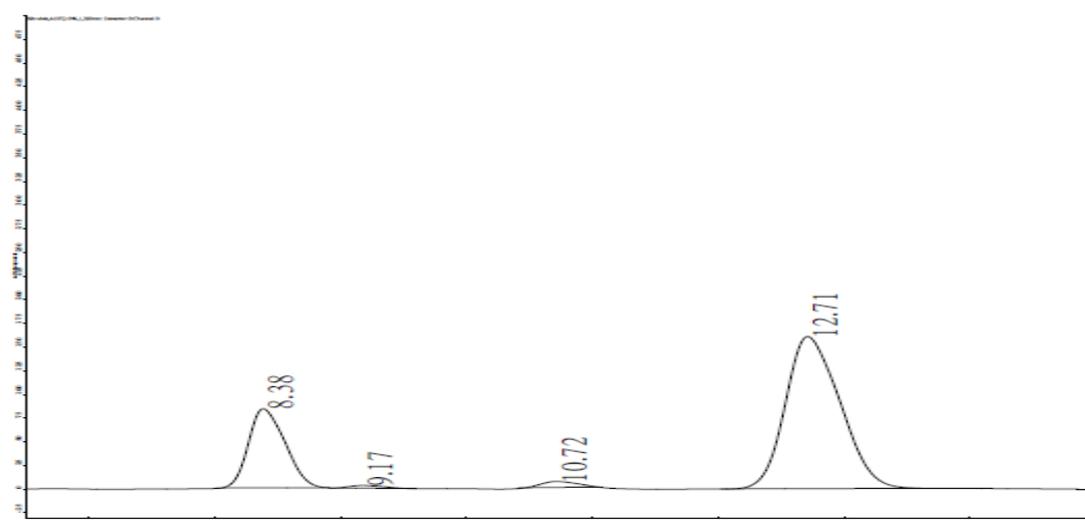
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0		27.114	1924.37	10.66	0.00
1		28.135	1890.63	10.47	0.00
2		29.428	6967.93	38.58	0.00
3		33.361	7276.95	40.29	0.00



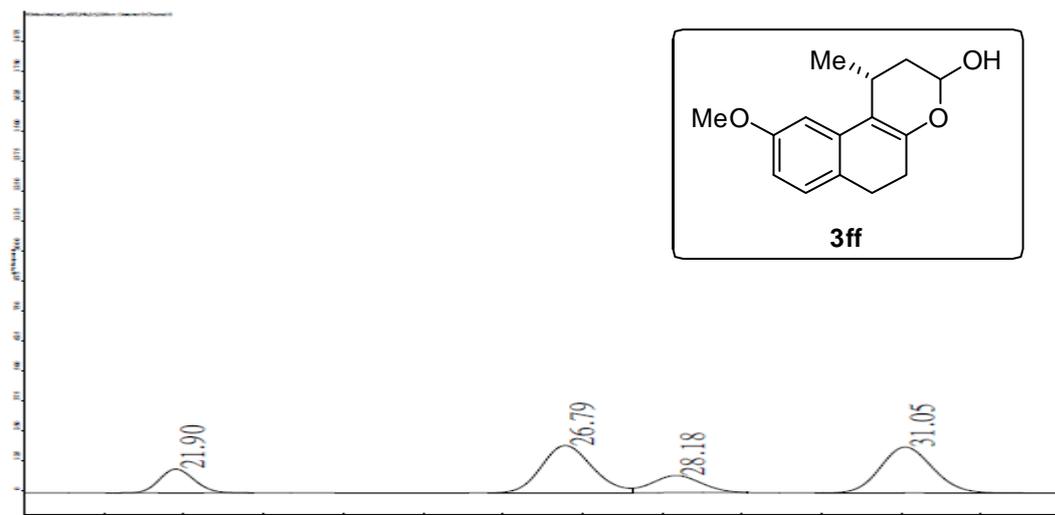
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0		27.185	170.63	0.72	0.00
1		28.182	5772.36	24.47	0.00
2		29.562	17225.19	73.01	0.00
3		34.196	425.33	1.80	0.00



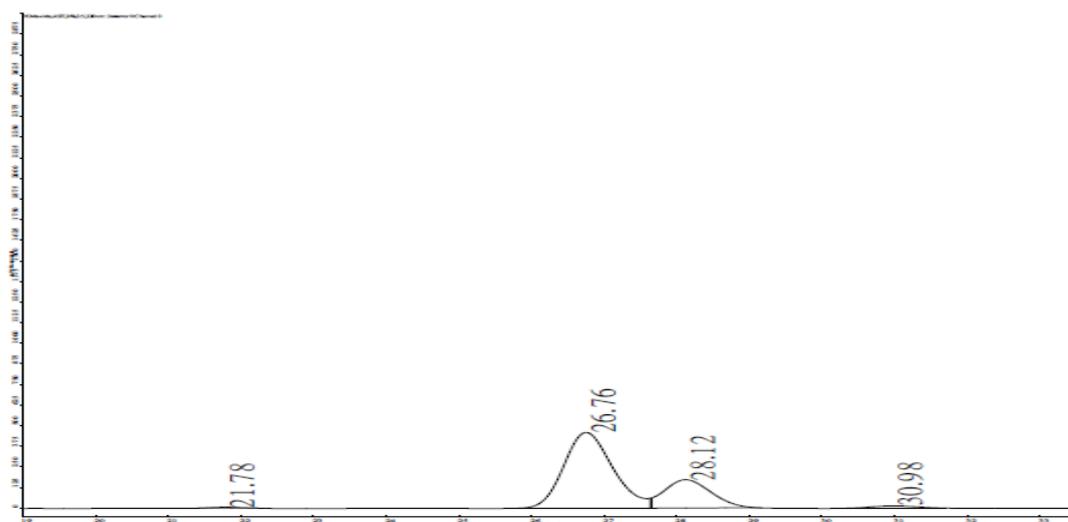
#	Peak name	max/min (min)	Area	Area %	Assay %
0		8.443	487.78	12.98	0.00
1		9.222	496.51	13.21	0.00
2		10.775	1407.85	37.45	0.00
3		12.759	1366.82	36.36	0.00



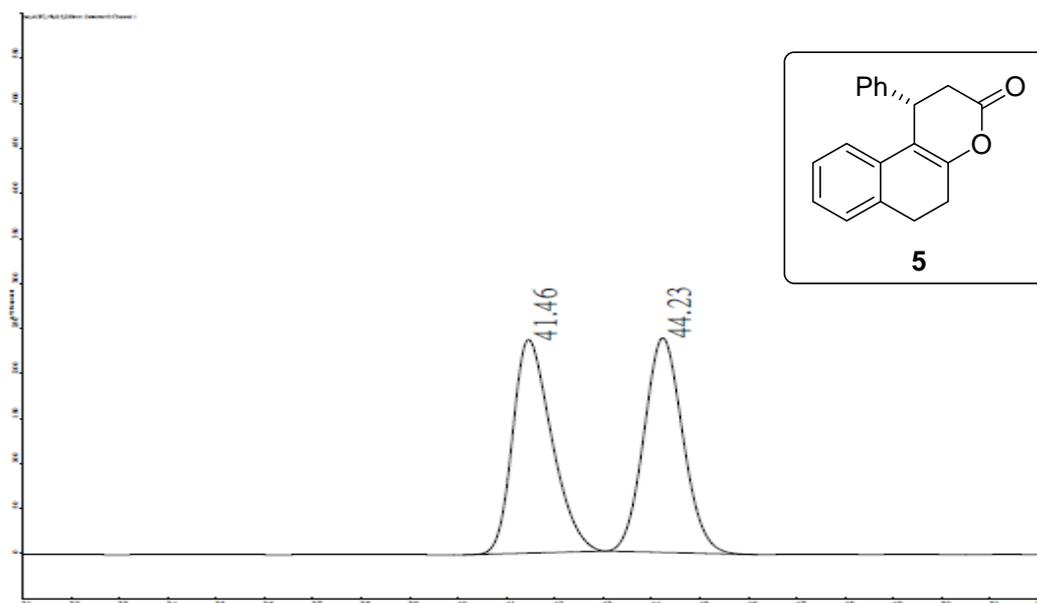
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0		8.383	1681.89	25.09	0.00
1		9.174	49.69	0.74	0.00
2		10.715	119.32	1.78	0.00
3		12.710	4852.66	72.39	0.00



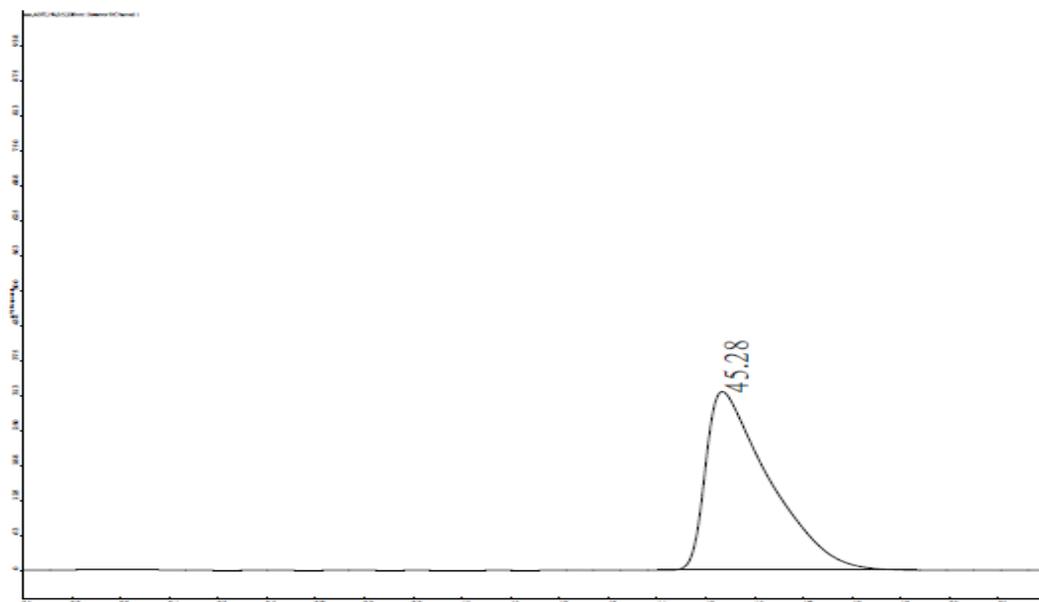
#	Peak name	max/min (min)	Area	Area %	Assay %
0		21.902	3020.29	12.81	0.00
1		26.786	8765.83	37.17	0.00
2		28.177	3030.09	12.85	0.00
3		31.050	8764.74	37.17	0.00



#	Peak name	max/min (min)	Area	Area %	Assay %
0		21.783	137.53	0.46	0.00
1		26.756	21596.22	72.22	0.00
2		28.124	7684.84	25.70	0.00
3		30.979	484.01	1.62	0.00



#	Peak name	max/min (min)	Area	Area %	Assay %
0		41.463	13305.97	49.96	0.00
1		44.235	13325.69	50.04	0.00



#	Peak name	max/min (min)	Area	Area %	Assay %
0		45.283	28799.08	100.00	0.00