

## **SUPPORTING INFORMATION**

### **Highly Efficient Asymmetric Morita-Baylis-Hillman Reaction Promoted by Chiral Aziridine-Phosphines**

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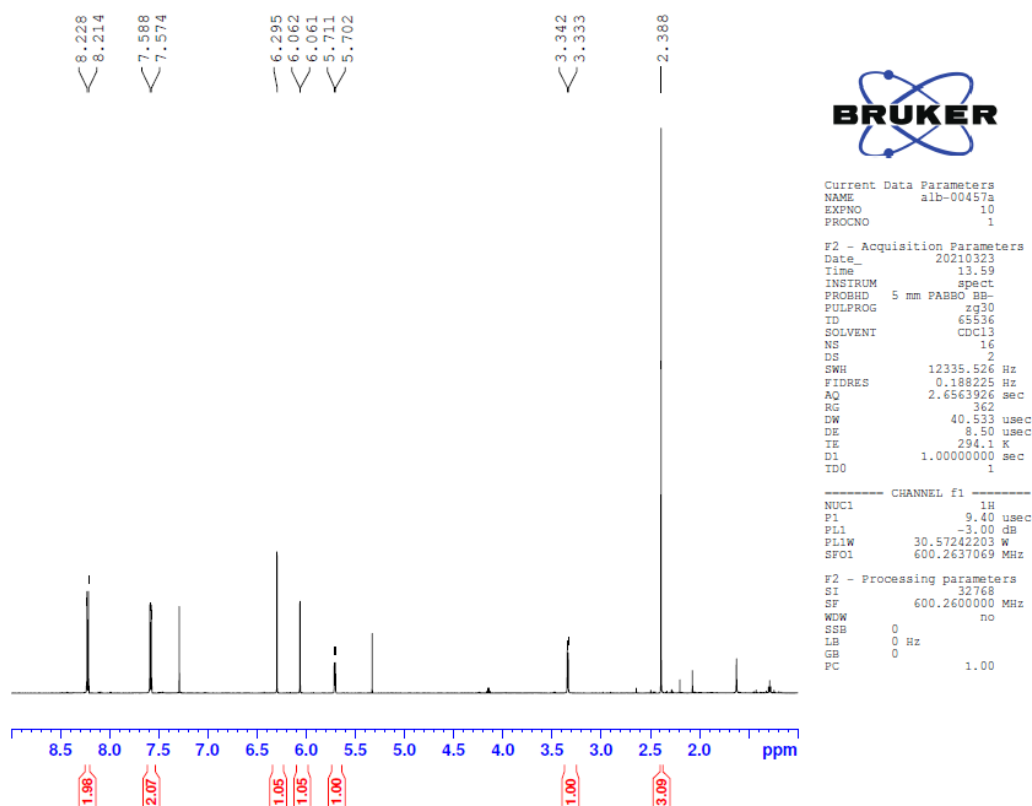
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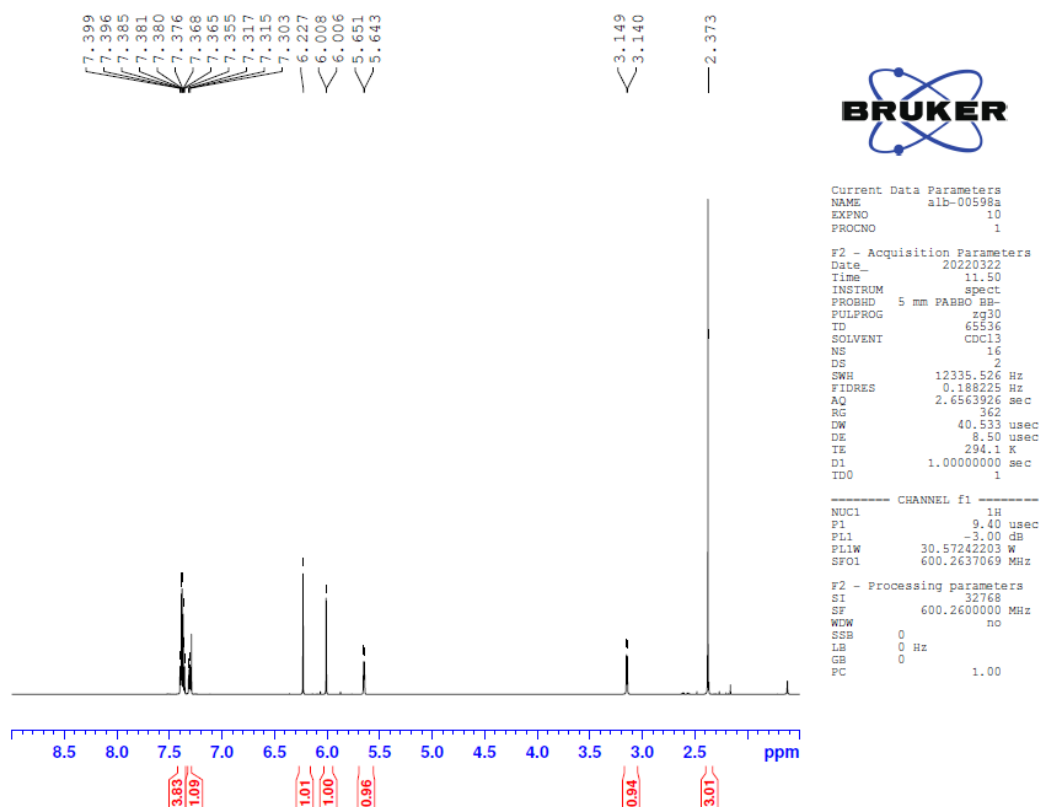
<b>1. <math>^1\text{H}</math> NMR of MBH products-----</b>	<b>S2-S4</b>
<b>2. HPLC chromatograms of MBH products-----</b>	<b>S5-S14</b>

# 1. $^1\text{H}$ NMR of MBH products

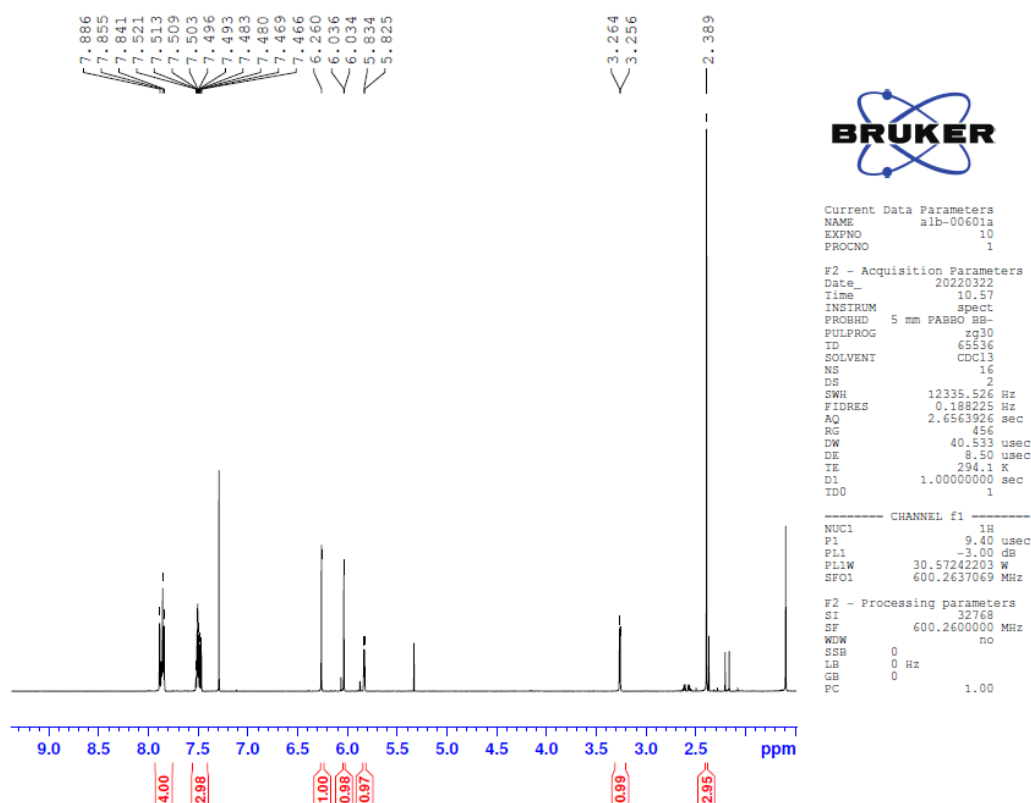
## (S)-3-(hydroxy(4-nitrophenyl)methyl)but-3-en-2-one **11**



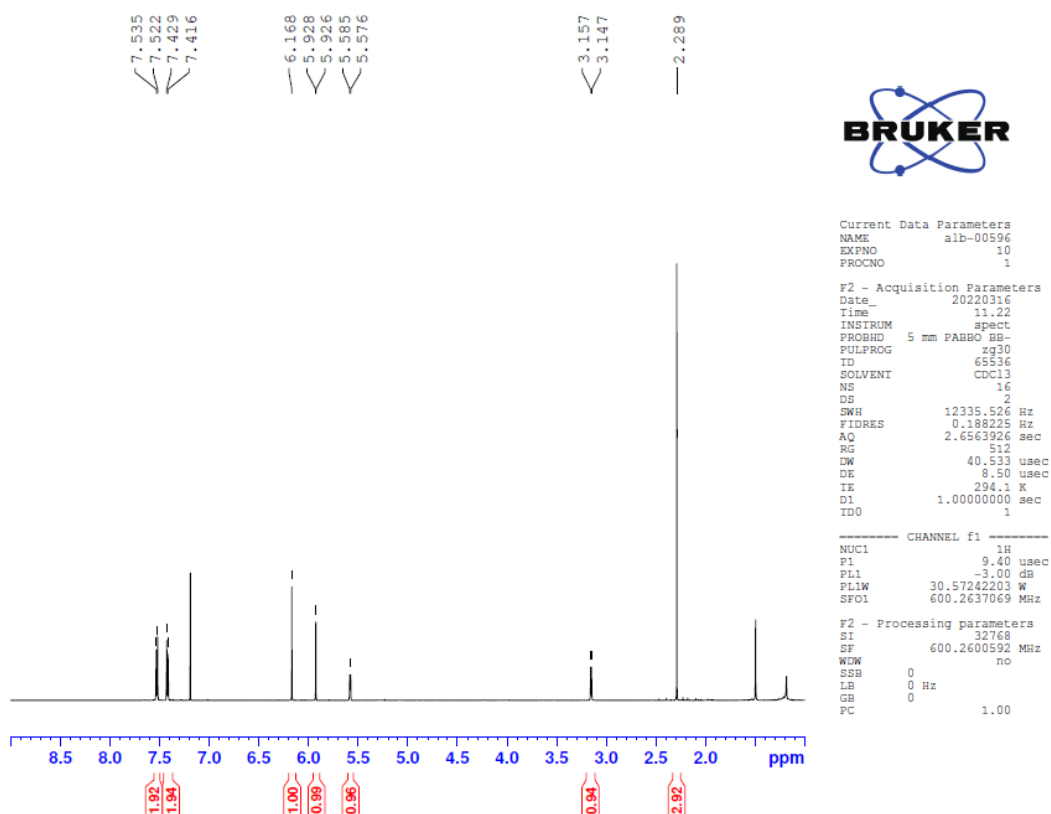
## (S)-3-(hydroxyphenyl)methyl)but-3-en-2-one **12**



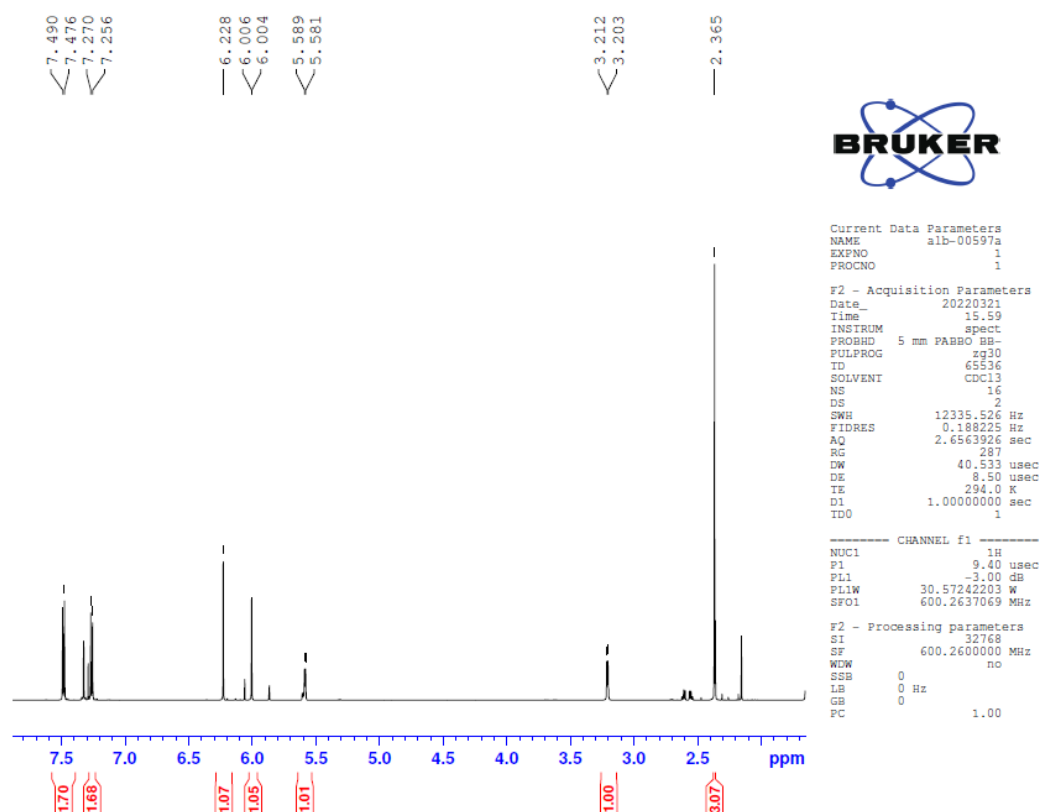
(S)-3-(hydroxy(naphthalene-2-yl)methyl)but-3-en-2-one **13**



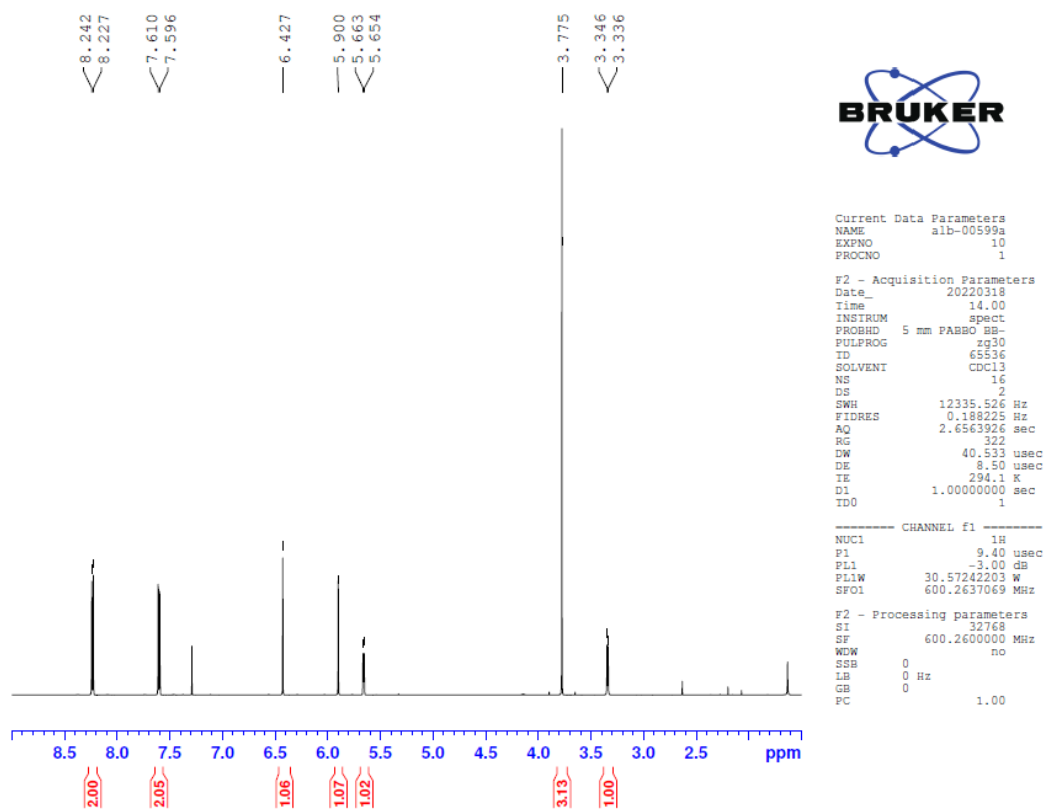
(S)-3-(hydroxy(4-fluorophenyl)methyl)but-3-en-2-one **14**



(S)-3-(hydroxy(4-bromophenyl)methyl)but-3-en-2-one **15**



Methyl (S)-2-(hydroxy(4-nitrophenyl)methyl) acrylate **17**

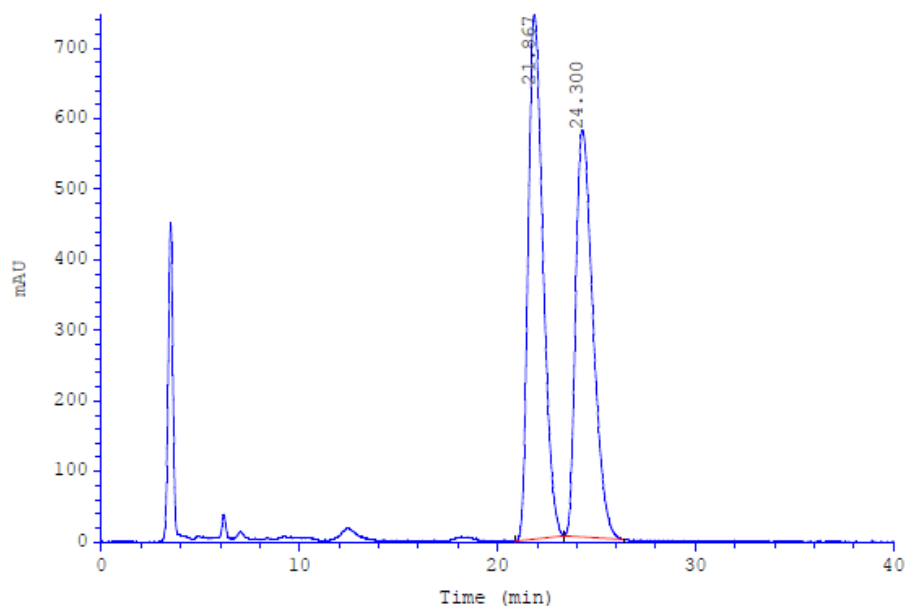


## 2. HPLC chromatograms of MBH products

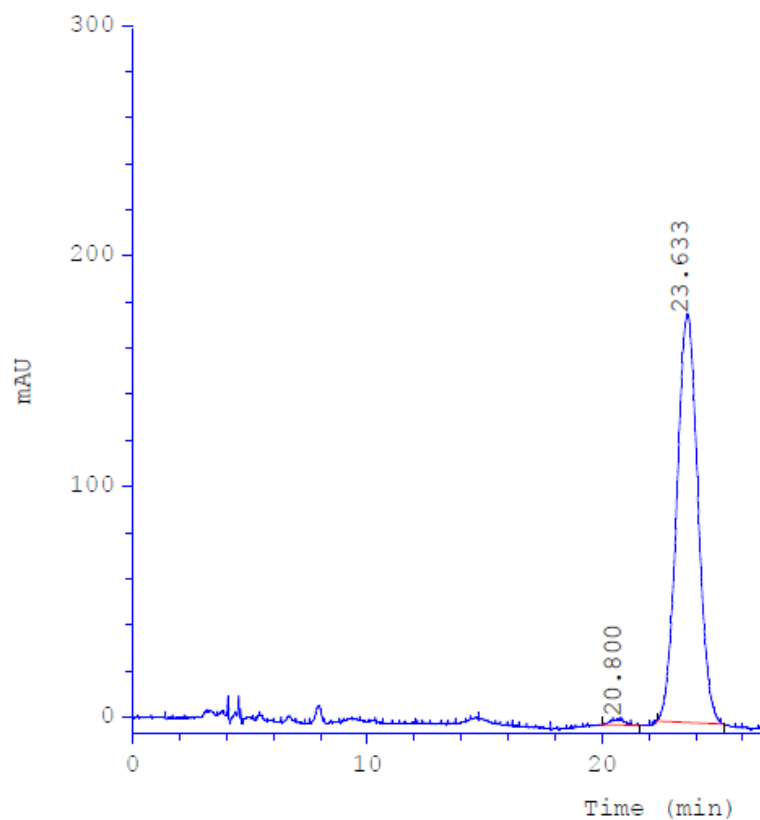
### (S)-3-(hydroxy(4-nitrophenyl)methyl)but-3-en-2-one 11

*ee* (98%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 20.80 (minor), 23.63 (major). For the racemic sample times were slightly higher: 21.87 and 24.30 min., respectively.

#### Racemic



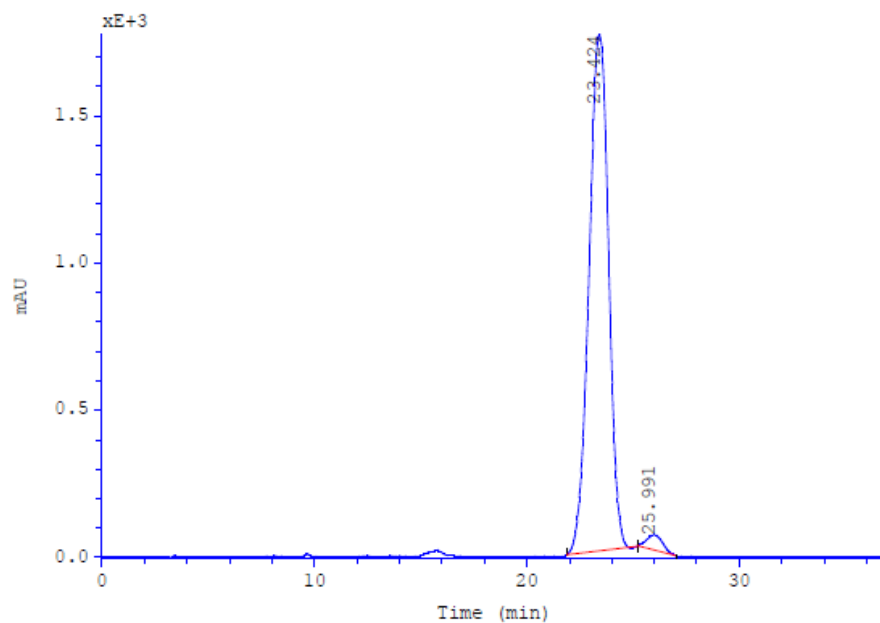
	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	21.867	20.90	23.37		0		644.098	743.176	52.5334	0.813	BB
2	24.300	23.37	26.38		0		581.976	576.865	47.4666	0.945	BB



	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	20.800	19.99	21.64		-1		1.80569	3.58028	0.9704	0.379	BB+
2	23.633	22.34	25.19		-1		184.278	177.316	99.0296	0.956	BB+

**(*R*)-3-(hydroxy(4-nitrophenyl)methyl)but-3-en-2-one 11**

*ee* (96%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 23.42 (major), 25.99 (minor).

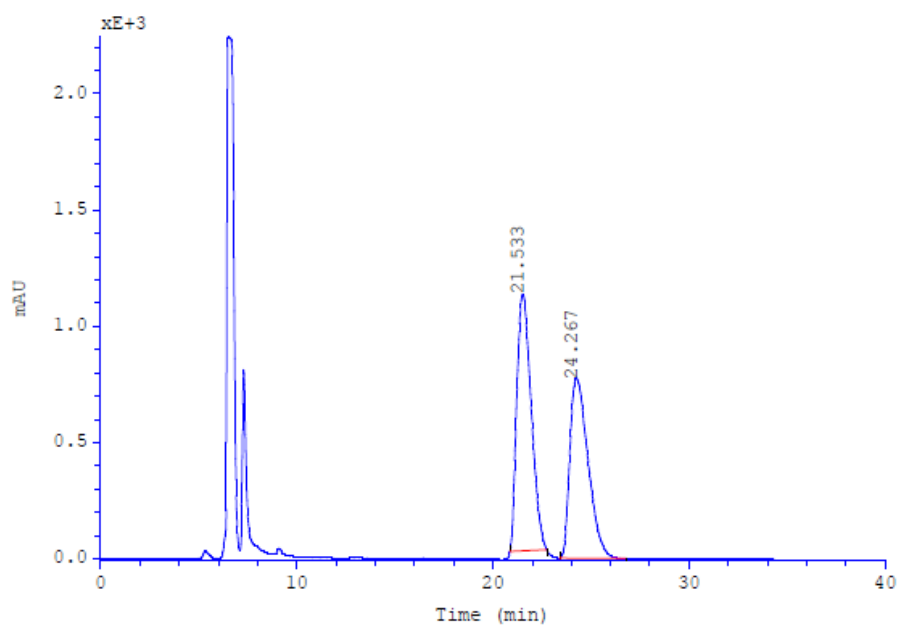


	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	23.424	21.88	25.21		-1		1871.1	1754.46	97.7295	1.002	BB+
2	25.991	25.25	27.02		-1		43.4701	50.615	2.2705	0.851	BB+

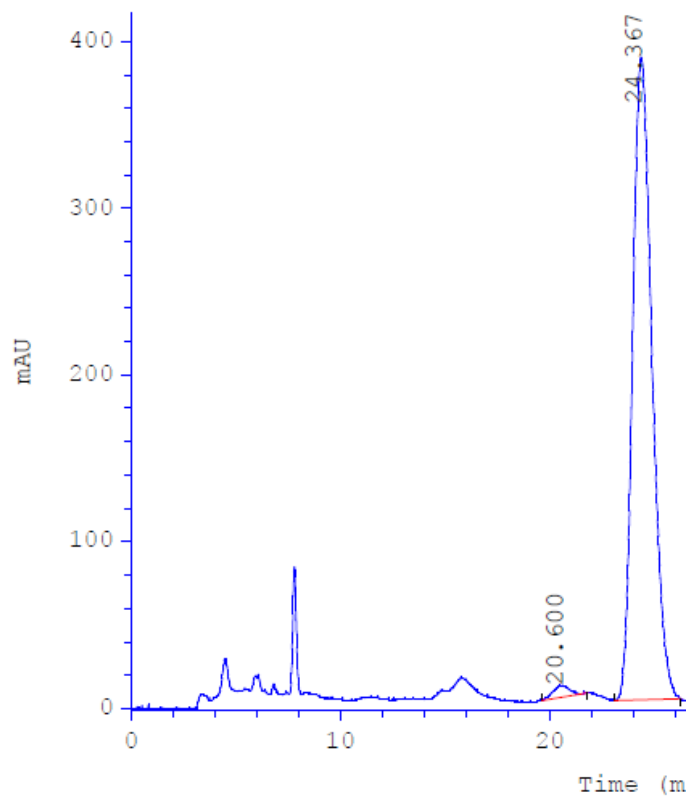
### (S)-3-(hydroxyphenyl)methyl)but-3-en-2-one 12

*ee* (97%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 20.60 (minor), 24.37 (major).

### Racemic



	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	21.533	20.88	22.75		-1		933.999	1100.93	52.9000	0.819	BB+
2	24.267	23.41	26.79		-1		831.596	772.197	47.1000	1.015	BB+



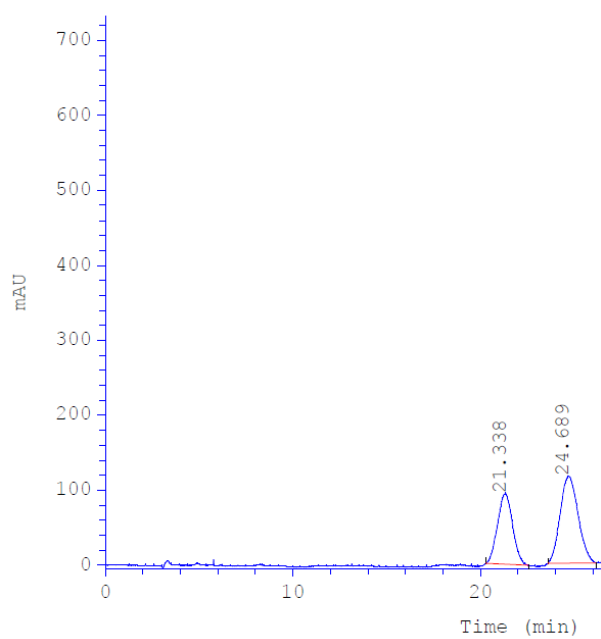
	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	20.600	19.65	21.82		-1		6.36259	7.07424	1.5258	0.789	BB+
2	24.367	23.10	26.27		0		410.627	385.269	98.4742	0.989	BB

### (S)-3-(hydroxy(naphthalene-2-yl)methyl)but-3-en-2-one 13

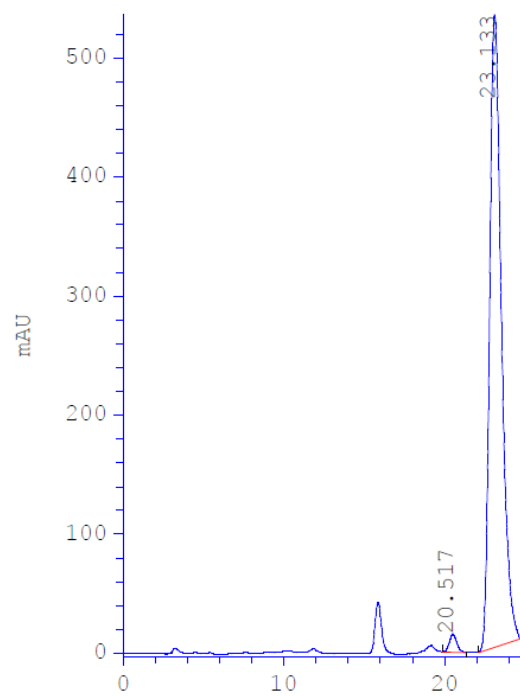
*ee* (96%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 20.52 (minor), 23.13 (major).



## Racemic



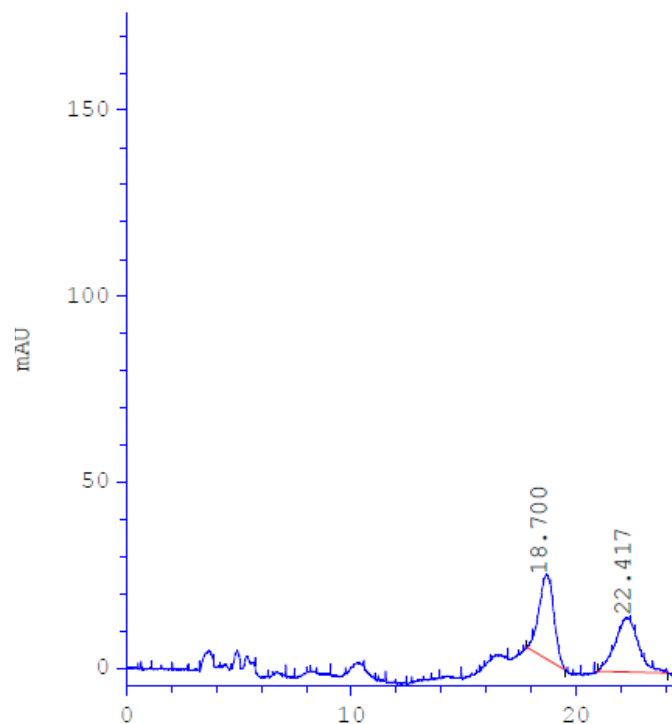
	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	21.338	20.30	22.56		-1		87.7749	95.3792	40.4195	0.877	BB+
2	24.689	23.59	26.15		-1		129.385	116.258	59.5805	1.043	BB+



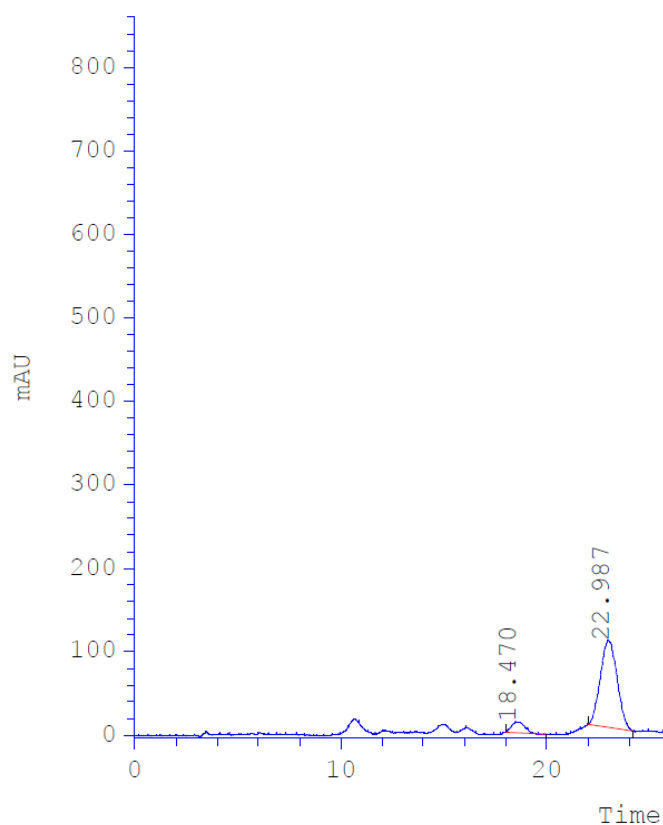
	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	20.517	19.87	21.40		0		8.25118	15.4123	1.8084	0.497	BB
2	23.133	22.13	24.80		0		448.007	531.29	98.1916	0.751	BB

**(S)-3-(hydroxy(4-fluorophenyl)methyl)but-3-en-2-one 14**

*ee* (82%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 18.47 (minor), 22.98 (major).

**Racemic**

	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	18.700	17.84	19.54		-1		17.5134	22.6649	49.8587	0.720	BB+
2	22.417	20.99	24.09		-1		17.6127	15.2256	50.1414	1.045	BB+

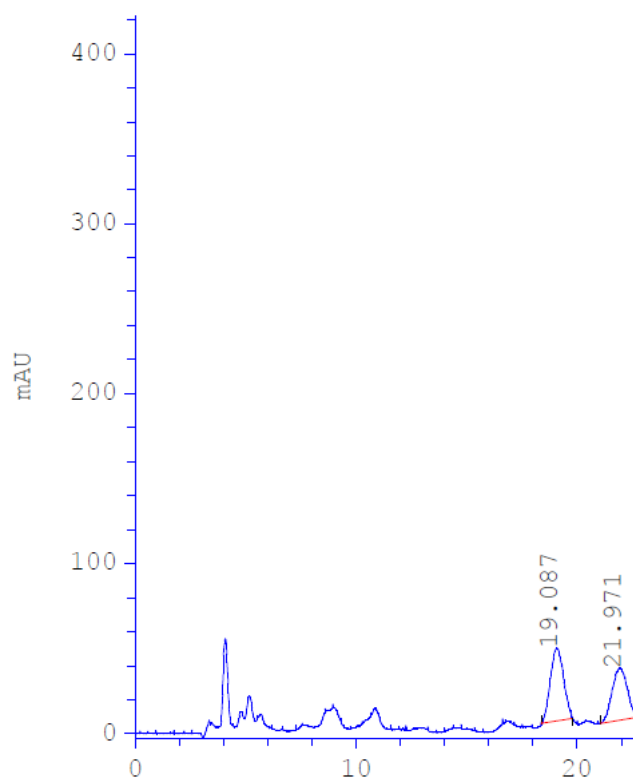


	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	18.470	17.99	19.98		-1		9.62815	13.7258	8.9008	0.727	BB+
2	22.987	22.02	24.19		0		98.5435	104.034	91.0992	0.909	BB

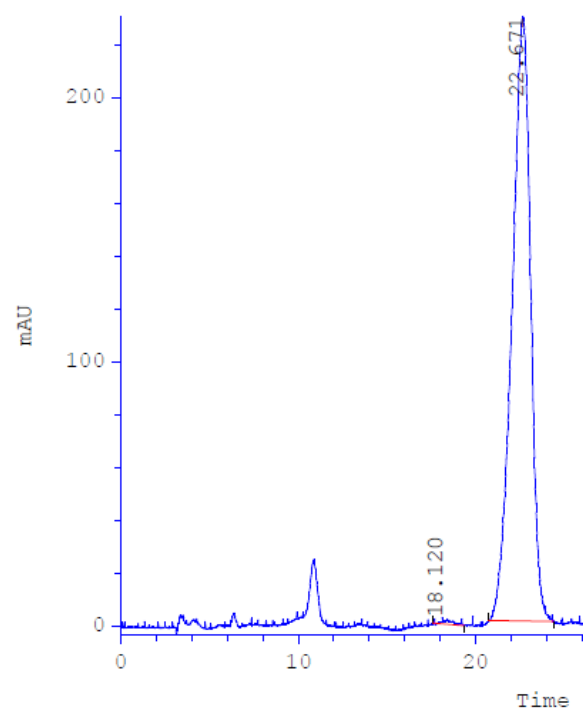
**(S)-3-(hydroxy(4-bromophenyl)methyl)but-3-en-2-one 15**

*ee* (98%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 18.12 (minor), 22.67 (major).

# Racemic



	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	19.087	18.38	19.80		-1		30.181	43.3392	55.7563	0.672	BB+
2	21.971	21.09	22.72		0		23.9492	30.343	44.2437	0.765	BB

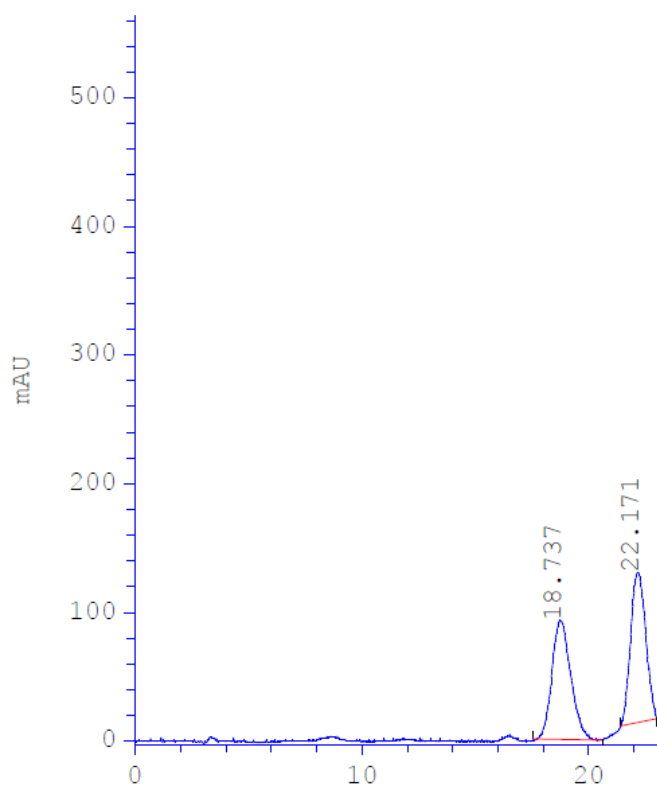


	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	18.120	17.61	19.35		-1		1.49706	2.81402	0.5387	0.464	BB+
2	22.671	20.74	24.40		-1		276.407	228.727	99.4613	1.120	BB+

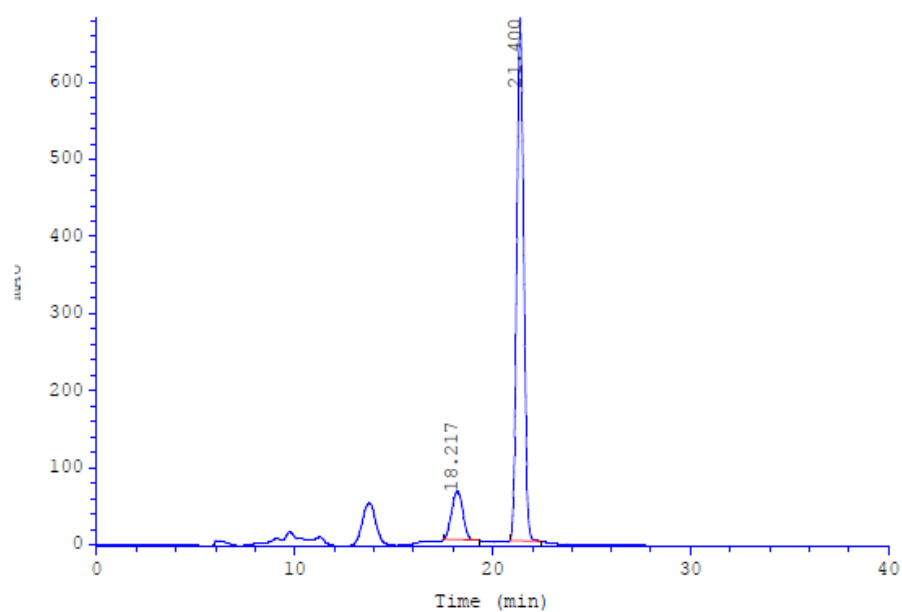
### Methyl (*S*)-2-(hydroxy(4-nitrophenyl)methyl) acrylate **17**

*ee* (74%) determined by HPLC analysis: Chiralcel OD-H column, Hexane : *i*PrOH = 90:10, flow = 1.0 mL/min, retention times (min): 18.22 (minor), 21.40 (major).

#### Racemic



	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	18.737	17.55	20.60		-1		88.8175	92.4384	49.7975	0.908	BB+
2	22.171	21.40	23.00		-1		89.5399	116.547	50.2025	0.734	BB+



	Ret.time [min]	Start [min]	End [min]	Compound	Amount	Units	Area [mAU*min]	Height [mAU]	% Area	Width [min]	Type
1	18.217	17.54	19.32		-1		41.4139	62.4659	13.0727	0.644	BB+
2	21.400	20.88	22.48		-1		275.383	678.664	86.9273	0.384	BB+