



Supporting Information

for

Green synthesis of new chiral 1-(arylamino)imidazo[2,1-a]isoindole-2,5-diones from the corresponding α -amino acid arylhydrazides in aqueous medium

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Beilstein J. Org. Chem. **2018**, *14*, 2923–2930. doi:10.3762/bjoc.14.271

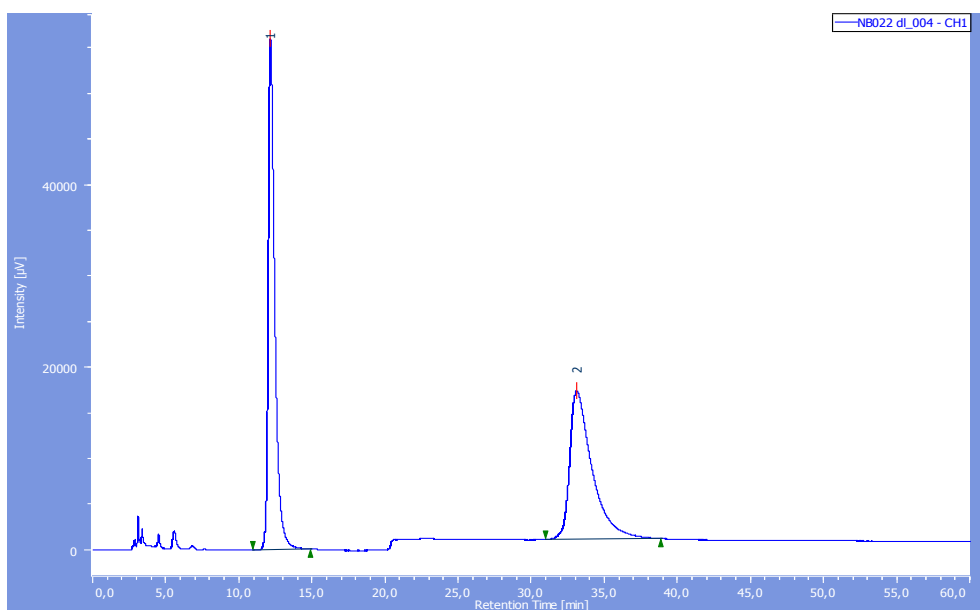
HPLC analysis of the products

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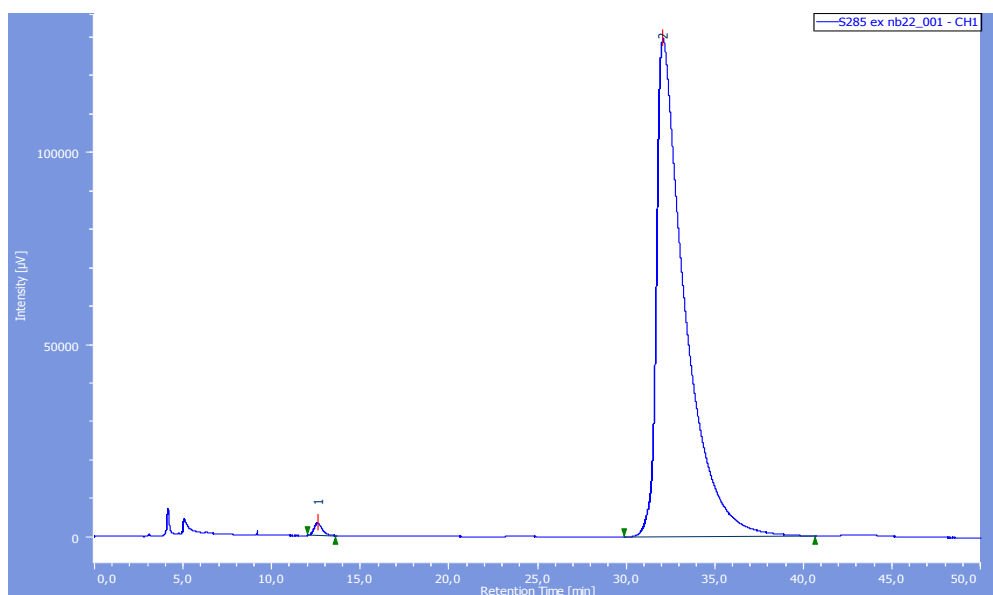
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1. HPLC analysis of **5a**

High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



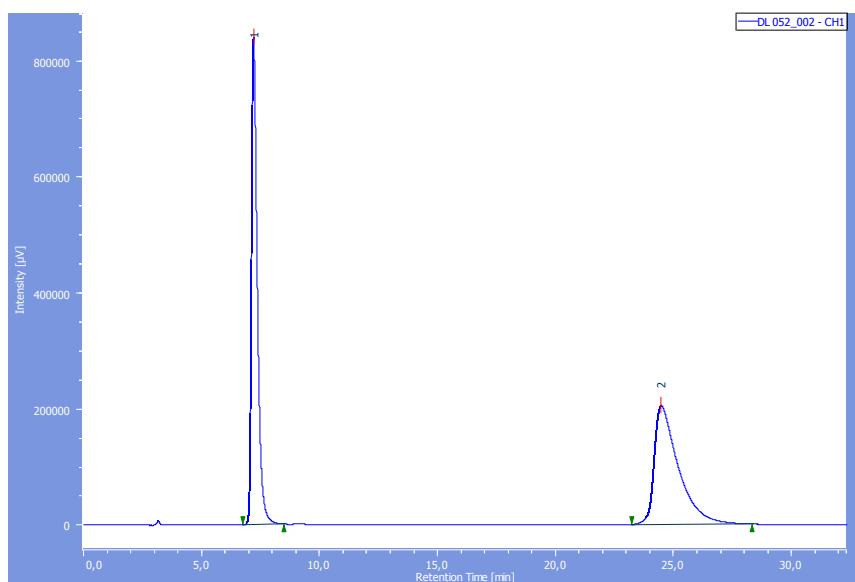
Chromatogram of the compound **5a** starting with the racemic phenylhydrazide **3a**



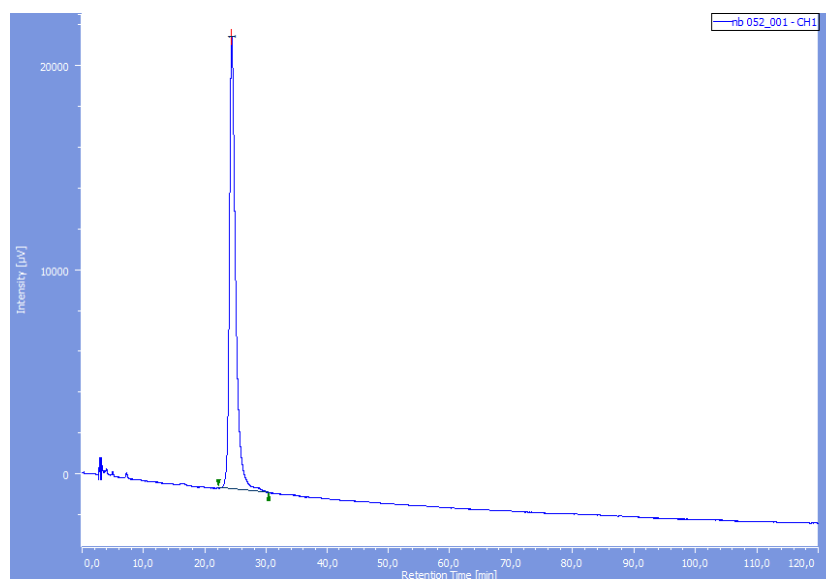
Chromatogram of the compound **5a** starting with (L)-phenylhydrazide **3a**

2. HPLC analysis of **5b**

High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



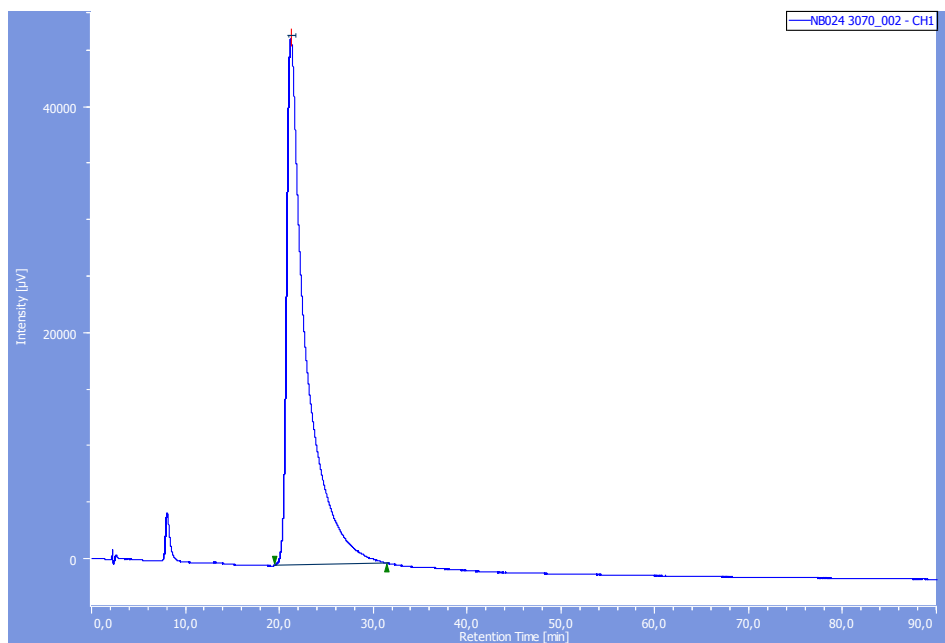
Chromatogram of the compound **5b** starting with the racemic phenylhydrazide **3b**



Chromatogram of the compound **5b** starting with (L)-phenylhydrazide **3b**

3. HPLC analysis of **5c**

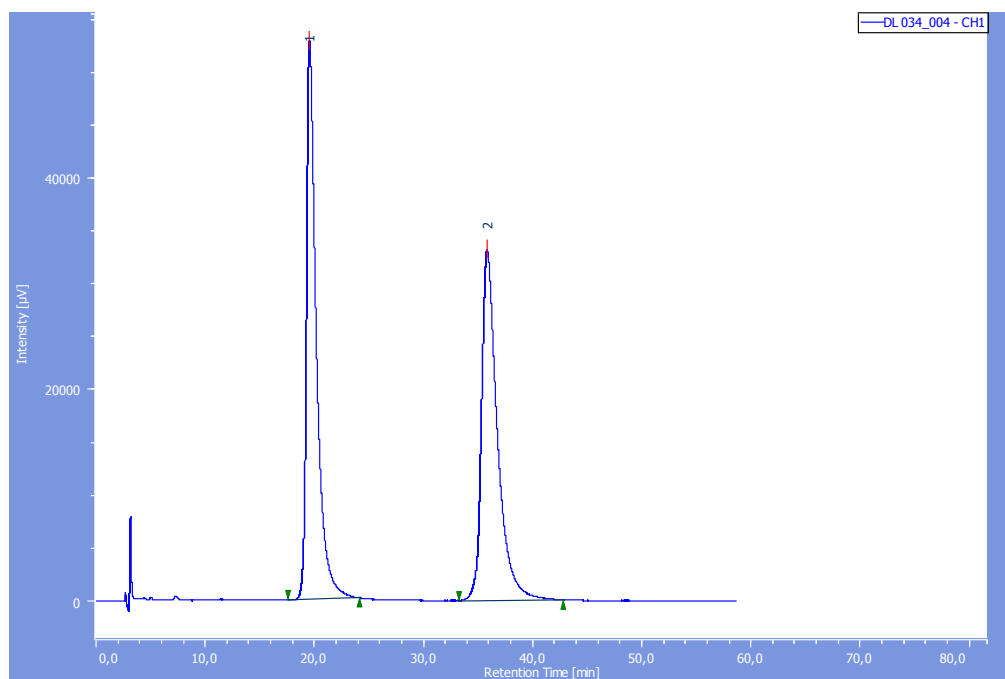
High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6×250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH (30/70) with a flow rate of 1.0 mL / min at 25 °C.



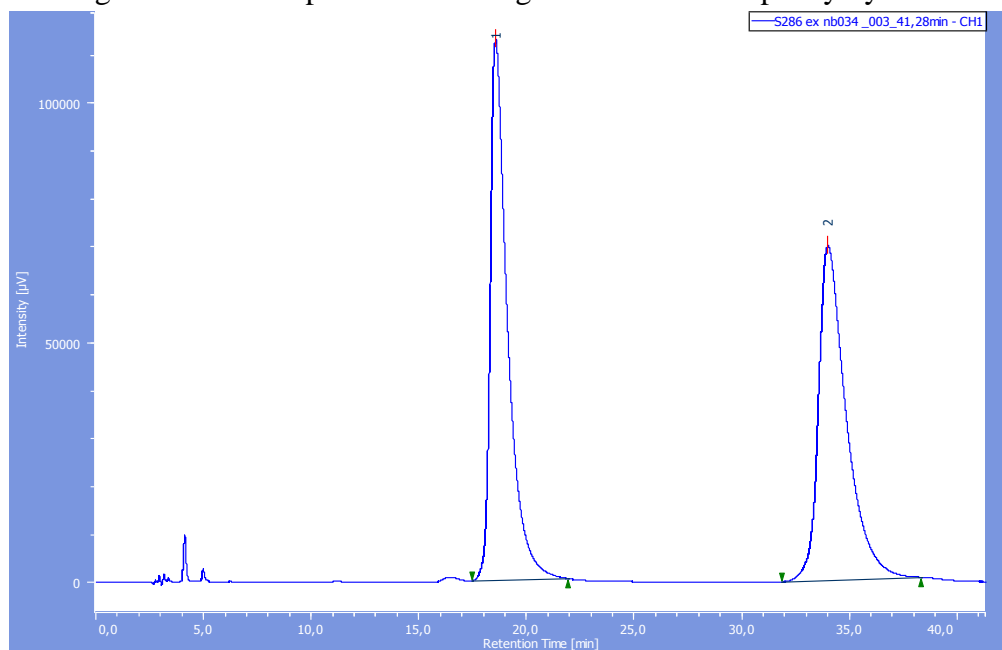
Chromatogram of the compound **5c** starting with (L)-phenylhydrazide **3c**

4. HPLC analysis of **5d**

High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



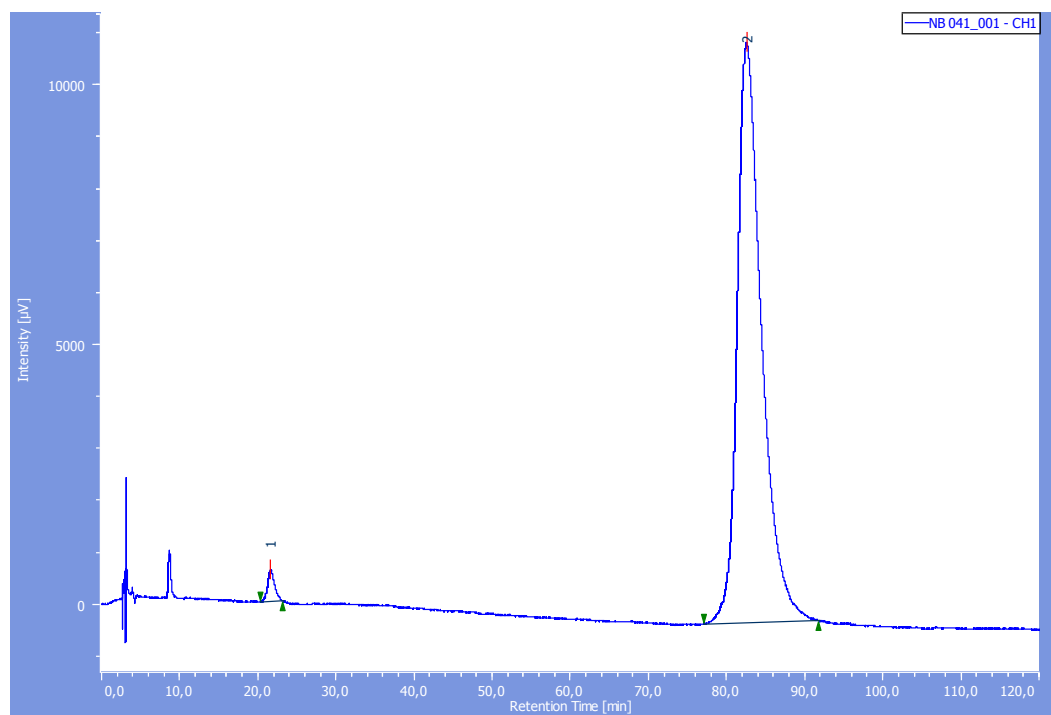
Chromatogram of the compound **5d** starting with the racemic phenylhydrazide **3d**



Chromatogram of the compound **5d** starting with (L)-phenylhydrazide **3d**

5. HPLC analysis of **5e**

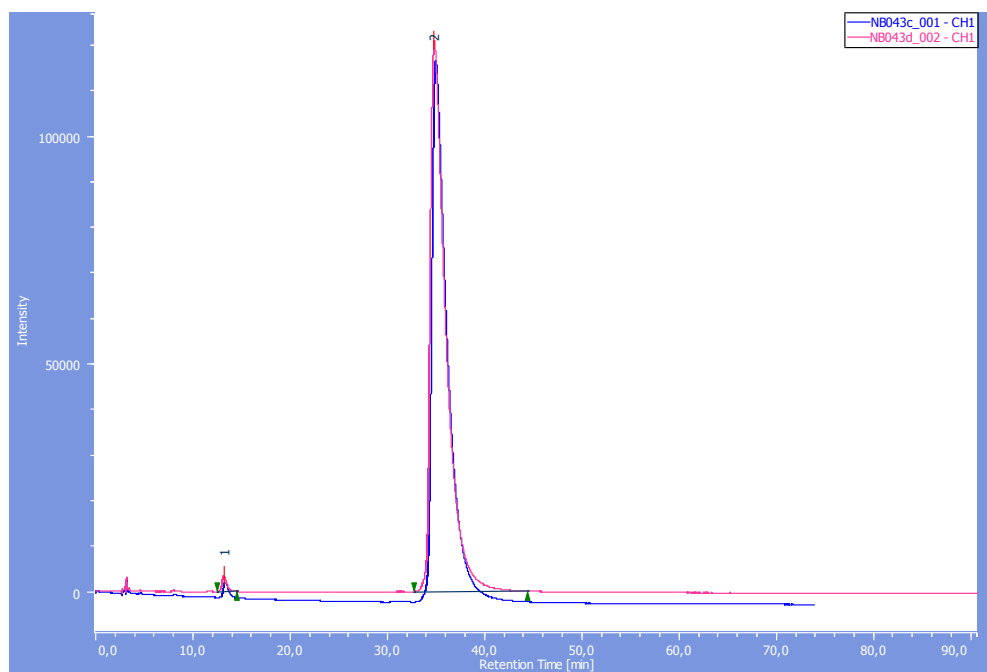
High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



Chromatogram of the compound **5e** starting with (L)-phenylhydrazide **3e**

6. HPLC analysis of **5f**

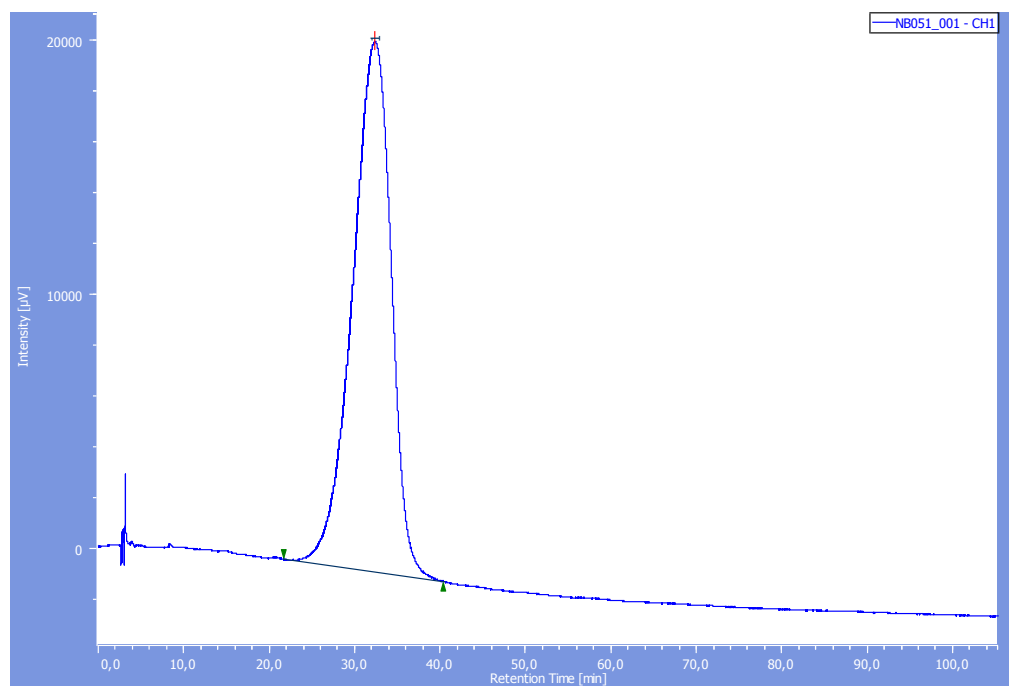
High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



Chromatogram of the compound **5f** starting with (L)-phenylhydrazide **3f**

7. HPLC analysis of **5g**

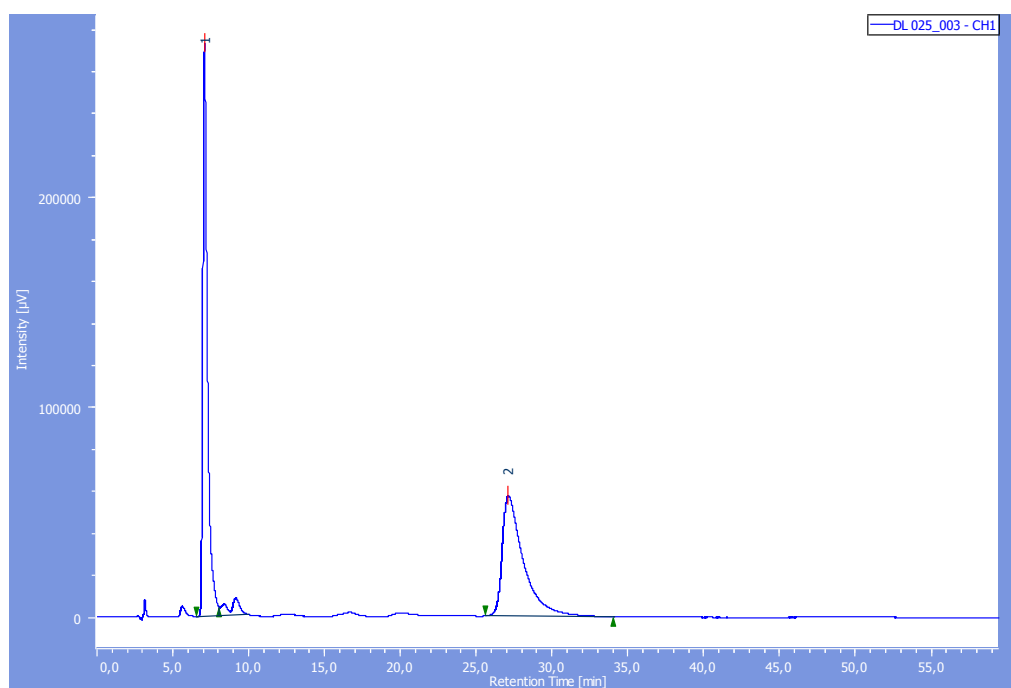
High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



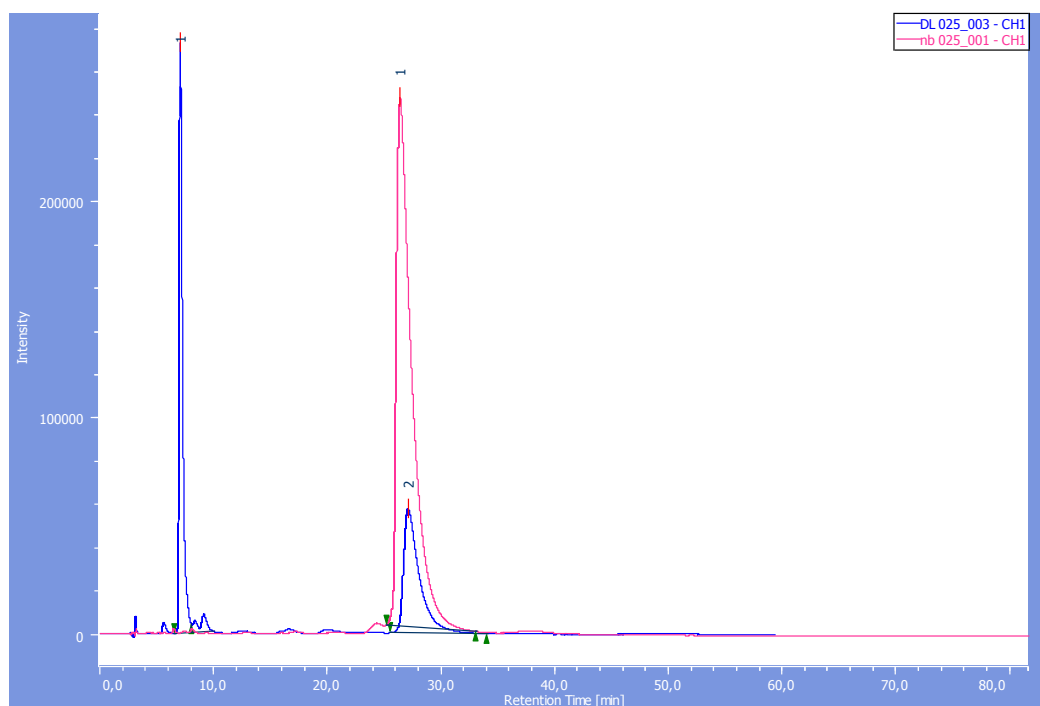
Chromatogram of the compound **5g** starting with (L)-phenylhydrazide **3g**

8. HPLC analysis of **5h**

High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



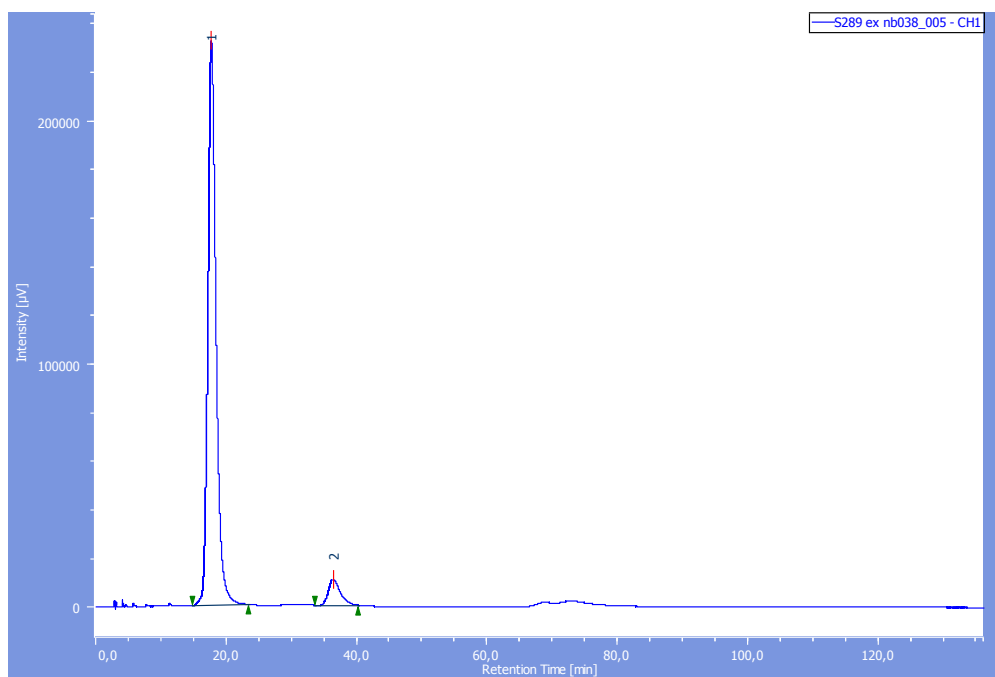
Chromatogram of the compound **5h** starting with the racemic phenylhydrazide **3h**



Chromatogram of the compound **5h** starting with (L)-phenylhydrazide **3h**

9. HPLC analysis of **5i**

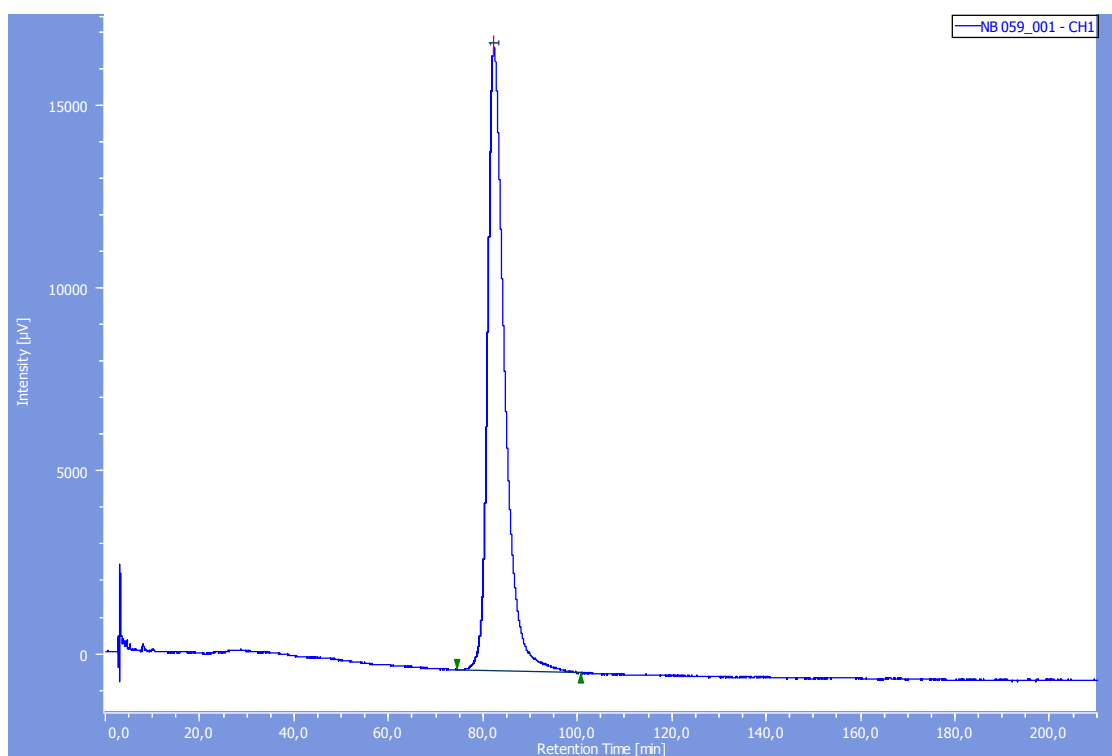
High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



Chromatogram of the compound **5i** in the racemic form and starting with (L)-phenylhydrazide **3i**

10. HPLC analysis of **5j**

High performance liquid chromatography (HPLC) was performed on a Welk RR column (4.6 × 250 mm) (REGIS Technologies) using a mobile phase: heptane / iPrOH / CH₂Cl₂ (50/40/10) with a flow rate of 1.0 mL / min at 25 °C.



Chromatogram of the compound **5j** starting with (L)-phenylhydrazide **3j**

11. Tables of retention times and ratios

Table 1: HPLC analysis of the compounds 5 starting with (L)-arylhydrazide 3					
Compound	Retention times (min)	Area	Height	Area (%)	Height (%)
5a	$t_r(1) = 12.56$ $t_r(2) = 33.04$	104274 14372948	3230 129432	0.72 99.28	2.435 97.565
5b	24.32	1549623	22079	100	100
5c	21.222	6602367	46520	100	100
5d	$t_r(1) = 18.55$ $t_r(2) = 33.96$	6289878 6255211	112666 69641	50.13 49.86	60.8 38.2
5e	$t_r(1) = 21.612$ $t_r(2) = 82.445$	36782 2417900	598 11143	1.498 98.502	5.093 94.907
5f	$t_r(1) = 13.172$ $t_r(2) = 34.792$	121372 13384956	3446 120671	0.899 99.101	2.777 97.223
5g	30.22	3073988	9823	100	100
5h	26.382	23202810	243831	100	100
5i	$t_r(1) = 17.738$ $t_r(2) = 36.418$	20256023 1354870	231702 10584	93.731 6.269	95.632 4.368
5j	82.245	4280786	17038	100	100

Table 2: HPLC analysis of the compounds 5 starting with the racemic arylhydrazides 3					
Compound	Retention times (min)	Area	Height	Area (%)	Height (%)
5a	$t_r(1) = 12.158$ $t_r(2) = 33.083$	1759890 1731411	55831 16224	50.408 49.592	77.484 22.516
5b	$t_r(1) = 7.2$ $t_r(2) = 24.46$	14584432 14619815	837955 204368	49.939 50.061	80.393 19.607
5d	$t_r(1) = 19.553$ $t_r(2) = 35.792$	2701250 2711097	39036 32914	49.926 50.074	61.427 38.573
5h	$t_r(1) = 7.075$ $t_r(2) = 27.085$	5697073 5544905	272298 57144	50.677 49.323	82.654 17.346