Supporting Information

Enantioselective α-Hydroxylation of β-Ketoamides

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General Methods

All reactions requiring dry or inert conditions were conducted in flame dried glassware under a positive pressure of nitrogen. THF was freshly distilled prior to use from LiAlH₄, chloroform was dried over molecular sieves. Molecular sieves (Aldrich Molecular Sieves, 3 Å, 1.6 mm pellets) were activated under vacuum at 200°C overnight.

Reactions were monitored by thin layer chromatography (TLC) on Merck silica gel plates (0.25 mm) and visualized by UV light. Flash chromatography was performed on Merck silica gel (60, particle size: 0.040–0.063 mm). ¹H NMR and ¹³C NMR spectra were recorded on Bruker DRX 400 spectrometer at room temperature in CDCl₃ as solvent. Chemical shifts for protons are reported using residual CHCl₃ as internal reference (δ=7.26 ppm). Carbon spectra were referenced to the shift of the ¹³C signal of CDCl₃ (δ=77.0 ppm). Optical rotation measurement of compounds 3a-k was performed on a Jasco Dip-1000 digital polarimeter using the Na lamp (582 nm). FTIR spectra were recorded as thin films on KBr plates using Bruker Vertex 70 spectrometer and absorption maxima are reported in wavenumber (cm⁻¹). ESI-MS was performed using a Bio-Q triple quadrupole mass spectrometer (Micromass, Manchester, UK) equipped with an electrospray ion source. Melting points were measured on a digital Electrothermal 9100 apparatus.

Petrol ether (PE) refers to light petroleum ether (boiling point 40-60°C). Anhydrous toluene, TBHP (5-6 M in decane), and all starting materials (unless otherwise noted) were purchased from Aldrich and used as received. 1-Isocyanato-4-(pentyloxy)benzene was synthesized according to procedures reported in the literature.¹ The cinchona derived thiourea eHQNT has been synthetized as reported in the literature.²

Enantiomeric excess of products 3 was determined by HPLC analysis (Waters-Breeze 2487, UV dual λ absorbance detector and 1525 Binary HPLC Pump) using Daicel chiral columns.

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Experimental Procedures and Compounds Characterization

General procedure for the synthesis of β-ketoamides

METHOD A

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\begin{align*}
\text{METHOD A} & \\
\begin{array}{c}
\text{METHOD A} \\
\text{METHOD B}
\end{array}
\end{align*}
\]

METHOD B

\[
\begin{align*}
\text{METHOD A:} & \quad \beta\text{-ketoamides 1a-j, m were prepared following a general procedure reported in the literature.}^3 \\
\text{In a two necked round bottom flask under a positive pressure of nitrogen, NaH (60% w/w dispersion in mineral oil, 10 mmol) was suspended in dry THF (10 mL) for 10 minutes under stirring. The suspension was allowed to settle and after removal of the supernatant, fresh THF (10 mL) was added. A solution of the appropriate indanone or α-tetralone (4 mmol) and isocyanate (4.8 mmol) in dry THF (1.5 mL) was added dropwise over 10 minutes to the refluxing suspension. After completion, monitored by TLC (eluent: PE/ AcOEt 8:2) the mixture was cooled to 0°C and 1 N HCl was added cautiously until the solid completely dissolved (∼ 15 mL). The solution was extracted with ethyl acetate (2 x 20 mL) and the organic phase was washed with saturated NaHCO₃ (20 mL), brine (20 mL), dried (Na₂SO₄) and concentrated. The residue was triturated with Et₂O to give the desired compound as yellow/white solid.}
\end{align*}
\]

METHOD B: β-ketoamides 1k and 1l were prepared by using a general procedure reported in the literature.⁴

The β-ketoester (4 mmol) and appropriate benzylamine (8 mmol) in dry toluene (40 mL) were heated to reflux or to 70°C under nitrogen over molecular sieves for the necessary time (monitoring

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by TLC, PE/AcOEt 8:2 as eluent). Then molecular sieves were filtered off, and the mixture was purified by flash chromatography, using PE/AcOEt 9:1 to 7:3 as eluent, to give compounds 1k, 1l.

**General procedure for the racemic hydroxylation of compounds 1**

In a sample vial, the appropriate β-ketoamide 1 (0.10 mmol), TBHP (0.12 mmol), and 2-piperidinemethanol (3.5 mg, 0.03 mmol) were dissolved in dry CHCl₃ or anhydrous toluene (0.5 mL). The reaction was stirred at room temperature for 17-41 h until completion, monitored by TLC (PE/AcOEt 8:2 or 7:3). After removing the solvent under vacuum, the mixture was directly purified by flash chromatography (PE/AcOEt 9:1 to 7:3) to give products 3 in 34-97%.

**General procedure for the asymmetric hydroxylation of compounds 1a-n**

To a sample vial charged with the appropriate β-ketoamide 1 (0.10 mmol) and the hydroquinine (6.5 mg, 0.02 mmol) in anhydrous chloroform (2.0 mL), TBHP (0.12 mmol) was added and the reaction was stirred at –20 °C for 64-144 h until completion (monitored by TLC, PE/AcOEt 8:2 or 7:3). The solvent was removed under vacuum and the product 3 was isolated by flash chromatography (PE/AcOEt 9:1 to 7:3). The absolute configuration of compounds 3 was assigned to be (S) by analogy to the structure determined by single-crystal X-ray analysis performed on compound 3b (see the X-ray analysis section). Crystallization using n-hexane/CHCl₃ or n-pentane/CHCl₃ mixtures performed at room temperature gave needle-shaped crystals in an enantioenriched form.
**Reaction Scheme:**

(S)-2-hydroxy-1-oxo-N-phenyl-2,3-dihydro-1H-indene-2-carboxamide (3a)

![Chemical Structure](image)

White solid (83% yield, 66% after crystallization), mp 149.9-151.3 °C. \[\alpha\]$_D^{25}$ = +6.4 (c 0.6, CHCl$_3$), ee 87%. **FTIR** $\nu_{max}$ (KBr)/cm$^{-1}$ 3342, 1719, 1654, 1599, 1533, 1445, 750. $^1$H NMR (CDCl$_3$, 400 MHz): $\delta$ 8.83 (bs, 1H), 7.77 (d, 1H, $J$ = 7.7 Hz), 7.67 (t, 1H, $J$ = 7.2 Hz), 7.52-7.50 (m, 3H), 7.42 (t, 1H, $J$ = 7.2 Hz), 7.29 (t, 2H, $J$ = 7.5 Hz), 7.11 (t, 1H, $J$ = 7.1 Hz), 4.36 (bs, 1H), 3.87 (d, 1H, $J$ = 16.8 Hz), 3.18 (d, 1H, $J$ = 16.8 Hz). $^{13}$C NMR (CDCl$_3$, 100 MHz): $\delta$ 203.2, 168.4, 153.1, 136.9, 136.5, 133.7, 129.0, 128.1, 126.4, 125.2, 124.7, 119.7, 82.6, 40.8. **MS** (ESI m/z) 268.10 [MH$^+$, 100%], 290.09 [MNa+, 85%]. HPLC analysis with Chiralcel ODH column, 70:30 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer $t_R$ = 9.1 min, major enantiomer $t_R$ = 6.4 min.

(S)-4-bromo-2-hydroxy-1-oxo-N-phenyl-2,3-dihydro-1H-indene-2-carboxamide (3b)

![Chemical Structure](image)

White solid (88% yield, 66% after crystallization), mp 171.9-173.6 °C. \[\alpha\]$_D^{25}$ = +50.0 (c 0.6, CHCl$_3$), ee 96%. **FTIR** $\nu_{max}$ (KBr)/cm$^{-1}$ 3339, 1728, 1657, 1598, 1533, 1445, 1267, 1120, 943, 753, 692. $^1$H NMR (CDCl$_3$, 400 MHz): $\delta$ 8.70 (bs, 1H), 7.84 (d, 1H, $J$ = 7.8 Hz), 7.76 (d, 1H, $J$ = 7.6 Hz), 7.53 (d, 2H, $J$ = 8.4 Hz), 7.36-7.29 (m, 3H), 7.15-7.11 (m, 1H), 3.84 (d, 1H, $J$ = 17.3 Hz), 3.72 (bs, 1H), 3.12 (d, 1H, $J$ = 17.3 Hz). $^{13}$C NMR (CDCl$_3$, 100 MHz): $\delta$ 202.6, 168.0, 152.7, 139.1, 136.7, 135.7, 129.8, 129.0, 124.9, 123.9, 121.7, 119.7, 82.2, 41.9. **MS** (ESI m/z) 346.00 [MH$^+$, 100%], 368.05 [MNa$,^+$, 25%]. HPLC analysis with Chiralcel ODH column, 80:20 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer $t_R$ = 8.5 min, major enantiomer $t_R$ = 9.4 min.
Pale yellow solid (85% yield), **mp** 182.7-183.1 °C. \[^{[a]D}_{23} = +48.9 (c 0.6, CHCl_3), ee 79\%.

**FTIR** \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3307, 1732, 1646, 1449, 1081, 759. **\(^1\)H NMR** (CDCl\(_3\), 400 MHz): \(\delta\) 8.70 (bs, 1H), 7.73 (d, 1H, \(J= 8.2\) Hz), 7.53-7.51 (m, 3H), 7.41 (d, 1H, \(J= 7.9\) Hz), 7.33-7.29 (m, 2H), 7.13 (t, 1H, \(J= 7.4\) Hz), 3.84 (d, 1H, \(J= 16.9\) Hz), 3.80 (bs, 1H), 3.17 (d, 1H, \(J= 16.9\) Hz) **\(^{13}\)C NMR** (CDCl\(_3\), 100 MHz): \(\delta\) 201.6, 167.8, 154.3, 136.7, 132.1, 129.1, 126.2, 124.9, 119.7, 82.8, 40.6. **MS** (ESI m/z) 301.97 [MH\(^+\), 8\%], 324.02 [MNa\(^+\), 100\%]. HPLC analysis with Chiralcel ODH column, 70:30 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer \(t_R = 9.6\) min, major enantiomer \(t_R = 7.0\) min.

*(S)-5-bromo-2-hydroxy-1-oxo-N-phenyl-2,3-dihydro-1H-indene-2-carboxamide (3d)*

White solid (87% yield), **mp** 187.1-188.3 °C. \[^{[a]D}_{26} = +45.1 (c 0.9, CHCl_3), ee 78\%.

**FTIR** \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3355, 1723, 1659, 1595, 1532, 1445, 1219, 772. **\(^1\)H NMR** (CDCl\(_3\), 400 MHz): \(\delta\) 8.70 (bs, 1H), 7.71 (s, 1H), 7.66 (d, 1H, \(J= 8.2\) Hz), 7.58 (d, 1H, \(J= 8.0\) Hz), 7.52 (d, 2H, \(J= 8.6\) Hz), 7.33-7.30 (m, 2H), 7.15-7.11 (m, 1H), 3.84 (d, 1H, \(J= 17.1\) Hz), 3.75 (bs, 1H), 3.18 (d, 1H, \(J= 17.1\) Hz) **\(^{13}\)C NMR** (CDCl\(_3\), 100 MHz): \(\delta\) 201.8, 167.8, 154.3, 136.8, 132.5, 132.2, 131.9, 129.7, 129.1, 126.2, 124.9, 119.7, 82.8, 40.5 **MS** (ESI m/z) 367.91 [MNa\(^+\), 100\%]. HPLC analysis with Chiralcel ODH column, 70:30 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer \(t_R = 10.0\) min, major enantiomer \(t_R = 7.8\) min.
(S)-2-hydroxy-6-methoxy-1-oxo-N-phenyl-2,3-dihydro-1H-indene-2-carboxamide (3e)

![Chemical structure](attachment:structure.png)

White solid (84% yield, 60% after crystallization), mp 146.0-147.2 °C. $[\alpha]_D^{20} = -31.3$ (c 0.9, CHCl$_3$), ee 98%. FTIR $\nu_{\text{max}}$ (KBr)/cm$^{-1}$ 3343, 1717, 1661, 1600, 1532, 1494, 1445, 1281, 1241, 1026, 754. $^1$H NMR (CDCl$_3$, 400 MHz): $\delta$ 8.79 (bs, 1H), 7.48 (d, 2H, $J$ = 7.7 Hz), 7.36 (d, 1H, $J$ = 8.4 Hz), 7.29-7.27 (m, 1H), 7.25-7.23 (m, 2H) 7.15 (d, 1H, $J$ = 2.5 Hz), 7.09 (t, 1H, $J$ = 7.4 Hz), 4.40 (bs, 1H), 3.80 (s, 3H), 3.75 (d, 1H, $J$ = 16.6 Hz), 3.08 (d, 1H, $J$ = 16.5 Hz). $^{13}$C NMR (CDCl$_3$, 100 MHz): $\delta$ 203.1, 168.5, 159.7, 146.1, 136.9, 134.8, 128.9, 127.1, 125.9, 124.7, 119.7, 106.1, 83.2, 55.6, 40.2, MS (ESI m/z) 297.95 [MH$^+$, 17%], 320.07 [MNa$^+$, 100%], 336.07 [MK$^+$, 8%]. HPLC analysis with Chiralcel ODH column, 70:30 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer $t_R$ = 10.9 min, major enantiomer $t_R$ = 7.5 min.

(S)-2-hydroxy-N-(naphthalen-1-yl)-1-oxo-2,3-dihydro-1H-indene-2-carboxamide (3f)

![Chemical structure](attachment:structure.png)

Pale yellow solid (82% yield), mp 166.2-167.5 °C. $[\alpha]_D^{21} = +28.9$ (c 0.6, CHCl$_3$), ee 74%. FTIR $\nu_{\text{max}}$ (KBr)/cm$^{-1}$ 3368, 1722, 1661, 1538, 1532, 1500, 1219, 772. $^1$H NMR (CDCl$_3$, 400 MHz): $\delta$ 9.23 (bs, 1H), 7.98 (d, 1H, $J$ = 7.5 Hz), 7.89-7.81 (m, 3H), 7.68-7.66 (m, 2H), 7.57-7.48 (m, 3H), 7.44-7.40 (m, 2H), 4.09 (bs, 1H), 3.94 (d, 1H, $J$ = 16.7 Hz), 3.26 (d, 1H, $J$ = 16.7 Hz). $^{13}$C NMR (CDCl$_3$, 100 MHz): $\delta$ 203.0, 168.6, 153.0, 136.5, 134.0, 133.7, 131.3, 128.7, 128.2, 126.53, 126.48, 126.42, 126.0, 125.8, 125.6, 125.3, 120.2, 119.6, 83.1, 40.8 MS (ESI m/z) 318.10 [MH$^+$, 40%], 340.09 [MNa$^+$, 100%], 355.90 [MK$^+$, 25%]. HPLC analysis with Chiralpak AS H column, 70:30 n-hexane:2-propanol, 0.8 mL/min, detection at 254 nm; minor enantiomer $t_R$ = 12.4 min, major enantiomer $t_R$ = 16.4 min.
(S)-N-(2-chlorophenyl)-2-hydroxy-1-oxo-2,3-dihydro-1H-indene-2-carboxamide (3g)

White solid (76% yield, 48% after crystallization), mp 90.3-93.0 °C. \([\alpha]_D^{21} = +22.8\) (c 0.6, CHCl₃), ee 99%. FTIR \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3352, 1723, 1685, 1594, 1529, 1443, 1304, 1214, 751. \(^1\)H NMR (CDCl₃, 400 MHz): \(\delta\) 9.31 (bs, 1H), 8.31 (dd, 1H, \(J_1 = 8.2, J_2 = 1.3\) Hz), 7.84 (d, 1H, \(J = 7.8\) Hz), 7.73-7.69 (m, 1H), 7.54 (d, 1H, \(J = 7.8\) Hz), 7.48-7.44 (m, 1H), 7.38 (dd, 1H, \(J_1 = 8.1, J_2 = 1.3\) Hz), 7.23-7.21 (m, 1H), 7.08-7.03 (m, 1H), 3.86 (d, 1H, \(J = 16.8\) Hz), 3.78 (bs, 1H), 3.27 (d, 1H, \(J = 16.8\) Hz) \(^{13}\)C NMR (CDCl₃, 100 MHz): \(\delta\) 202.6, 168.6, 152.7, 136.5, 133.7, 129.1, 128.2, 127.7, 126.4, 125.3, 125.1, 123.2, 121.0, 82.9, 40.8 MS (ESI m/z) 302.10 [MH\(^+\), 13%], 324.02 [MNa\(^+\), 100%], 340.03 [MK\(^+\), 5%]. HPLC analysis with Chiralcel ODH column, 80:20 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer \(t_R = 6.4\) min, major enantiomer \(t_R = 7.4\) min.

(S)-2-hydroxy-1-oxo-N-(3-(trifluoromethyl)phenyl)-2,3-dihydro-1H-indene-2-carboxamide (3h)

Pale yellow solid (88% yield), mp 138.4-139.8 °C. \([\alpha]_D^{26} = +9.7\) (c 0.5, CHCl₃), ee 56%. FTIR \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3333, 1719, 1682, 1603, 1542, 1449, 1333, 1167, 1125, 772, 698. \(^1\)H NMR (CDCl₃, 400 MHz): \(\delta\) 8.93 (bs, 1H), 7.93 (s, 1H), 7.80 (d, 1H, \(J = 7.7\) Hz), 7.72-7.68 (m, 1H), 7.64 (d, 1H, \(J = 7.9\) Hz), 7.52 (d, 1H, \(J = 7.7\) Hz), 7.46-7.41 (m, 1H), 7.39-7.35 (m, 2H), 3.95 (bs, 1H), 3.88 (d, 1H, \(J = 16.7\) Hz), 3.21 (d, 1H, \(J = 16.7\) Hz) \(^{13}\)C NMR (CDCl₃, 100 MHz): \(\delta\) 202.8, 168.6, 152.9, 137.4, 136.7, 133.5, 131.5 (q, \(J = 32\) Hz), 129.5, 128.3, 126.4, 125.3, 122.6, 121.3 (d, \(J = 36\) Hz), 116.5 (d, \(J = 36\) Hz), 82.9, 40.8 MS (ESI m/z) 336.06 [MH\(^+\), 5%], 358.04 [MNa\(^+\), 100%]. HPLC analysis with Chiralpak ASH column, 70:30 n-hexane:2-propanol, 0.8 mL/min, detection at 254 nm; minor enantiomer \(t_R = 6.5\) min, major enantiomer \(t_R = 8.1\) min.
(S)-2-hydroxy-1-oxo-N-(4-(pentyloxy)phenyl)-2,3-dihydro-1H-indene-2-carboxamide (3i)

White solid (89% yield), mp 125.6-127.0 °C. \([\alpha]_D^{23} = +2.8 \ (c \ 0.6, \ CHCl_3)\), ee 76%. **FTIR** \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3325, 2930, 1721, 1645, 1512, 1220, 828, 772. \(^1H\text{ NMR}\) (CDCl\(_3\), 400 MHz): \(\delta\) 8.70 (bs, 1H), 7.74 (d, 1H, \(J = 7.7\) Hz), 7.66-7.62 (m, 1H), 7.46 (d, 1H, \(J = 7.7\) Hz), 7.40-7.35 (m, 3H), 6.77 (d, 2H, \(J = 9.0\) Hz), 4.35 (bs, 1H), 3.88 (t, 2H, \(J = 6.6\) Hz), 3.82 (d, 1H, \(J = 16.8\) Hz), 3.13 (d, 1H, \(J = 16.8\) Hz), 1.79-1.73 (m, 2H), 1.44-1.34 (m, 4H), 0.92 (t, 3H, \(J = 7.0\) Hz). \(^{13}C\text{ NMR}\) (CDCl\(_3\), 100 MHz): \(\delta\) 203.4, 168.1, 156.2, 136.4, 133.7, 129.9, 128.0, 126.4, 125.1, 121.3, 114.7, 82.5, 68.2, 40.8, 28.9, 28.1, 22.4, 14.0. **MS** (ESI \(m/z\)) 354.24 [MH\(^+\), 100%], 376.17 [MNa\(^+\), 10%]. HPLC analysis with Chiralcel ODH column, 70:30 \(n\)-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer \(t_R = 7.3\) min, major enantiomer \(t_R = 8.7\) min.

(S)-N-cyclohexyl-2-hydroxy-1-oxo-2,3-dihydro-1H-indene-2-carboxamide (3j)

White wax (37% yield). \([\alpha]_D^{30} = -7.2 \ (c \ 0.7, \ CHCl_3)\), ee 40%. **FTIR** \(\nu_{\text{max}}\) (KBr)/cm\(^{-1}\) 3353, 2930, 2855, 1723, 1646, 1530, 1465, 1215, 752. \(^1H\text{ NMR}\) (CDCl\(_3\), 400 MHz): \(\delta\) 7.76 (d, 1H, \(J = 7.7\) Hz), 7.64 (t, 1H, \(J = 7.0\) Hz), 7.47 (d, 1H, \(J = 7.7\) Hz), 7.40 (t, 1H, \(J = 7.5\) Hz), 6.69 (d, 1H, \(J = 6.6\) Hz), 3.79 (bs, 1H), 3.72 (d, 1H, \(J = 16.8\) Hz), 3.68-3.63 (m, 1H), 3.10 (d, 1H, \(J = 16.8\) Hz), 1.89-1.86 (m, 2H), 1.70-1.57 (m, 4H), 1.36-1.14 (m, 4H). \(^{13}C\text{ NMR}\) (CDCl\(_3\), 100 MHz): \(\delta\) 203.4, 169.2, 152.9, 136.2, 133.9, 128.0, 126.3, 125.1, 82.1, 48.4, 40.7, 32.83, 32.77, 29.7, 25.4, 24.7. **MS** (ESI \(m/z\)) 274.13 [MH\(^+\), 97%], 296.06 [MNa\(^+\), 100%]. HPLC analysis with Chiralcel ODH column, 80:20 \(n\)-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer \(t_R = 5.3\) min, major enantiomer \(t_R = 6.2\) min.
(S)-N-benzyl-2-hydroxy-1-oxo-2,3-dihydro-1H-indene-2-carboxamide (3k)

Yellow wax (50% yield). $[\alpha]_D^{23} = -4.1$ (c 0.6, CHCl$_3$), ee 29%. FTIR $\nu_{\text{max}}$ (KBr)/cm$^{-1}$ 3394, 2924, 1722, 1653, 1608, 1528, 1455, 1218, 772, 699. $^1$H NMR (CDCl$_3$, 400 MHz): $\delta$ 7.77 (d, 1H, $J = 7.6$ Hz), 7.65 (t, 1H, $J = 7.5$ Hz), 7.47 (d, 1H, $J = 7.6$ Hz), 7.40 (t, 1H, $J = 7.5$ Hz), 7.35-7.29 (m, 2H), 7.27-7.25 (m, 3H), 7.18 (bs, 1H), 4.41 (d, 2H, $J = 5.9$Hz), 3.83 (bs, 1H), 3.77 (d, 1H, $J = 16.8$ Hz), 3.13 (d, 1H, $J = 16.8$ Hz). $^{13}$C NMR (CDCl$_3$, 100 MHz): $\delta$ 203.2, 170.3, 153.0, 137.6, 136.3, 133.8, 128.7, 128.1, 127.7, 127.6, 126.4, 125.2, 82.2, 43.4, 40.7 MS (ESI m/z) 282.00 [MH$^+$, 10%], 304.05 [MNa$^+$, 100%]. HPLC analysis with Chiralcel ODH column, 80:20 n-hexane:2-propanol, 1 mL/min, detection at 254 nm; minor enantiomer $t_R = 10.1$ min, major enantiomer $t_R = 12.1$ min.
X-Ray Data for the Absolute Configuration Assignment of Compound 3b

X-ray diffraction quality single crystals of 3b were obtained by slow evaporation of a solution of 3b in n-pentane/CHCl₃ mixture performed at room temperature.

A suitable crystal of 3b was selected and glued on a glass fiber and measured at room temperature with a Rigaku AFC7S diffractometer equipped with a Mercury CCD detector using MoKα radiation. Data reduction was performed with the crystallographic package CrystalClear. Data have been corrected for Lorentz, polarization and absorption. The structures were solved by direct methods using the program SIR2002 and refined by means of full matrix least-squares based on F² using the program SHELXL97.

All non-hydrogen atoms were refined anisotropically, hydrogen atoms were positioned geometrically and included in structure factors calculations but not refined.

A total of 190 refinable parameters were finally considered, final disagreement indices are $R = 0.079$ (2339 reflections $F^2 > 2\sigma(F^2)$), $wR^2 = 0.199$ (all 3466 independent reflections).

Flack parameter is 0.018(19).

ORTEP plot is obtained by means of the program ORTEP3.

Crystal data:

$\text{C}_{16}\text{H}_{12}\text{BrNO}_3$, orthorhombic, space group $P\overline{2}_12_12_1$, $Z=4$, $a = 9.801(3)$ Å, $b = 10.969(3)$ Å, $c = 14.070(4)$ Å, $V = 1512.6(8)$ Å³, $D_\chi = 1.520$ g cm⁻³, $\mu_{\text{calc}} = 2.73$ mm⁻¹.

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5 CrystalClear, Crystal Structure Analysis Package, Rigaku-Molecular Structure Corp.
HPLC Chromatograms