Supporting Information

Regio- and Stereo-selective Concurrent Oxidations with Whole Cell Biocatalyst: Simple and Green Syntheses of Enantiopure 1,2-Diols *via* Oxidative Kinetic Resolution

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1. Cell Growth of *Sphingomonas* sp. HXN-200

Sphingomonas sp. HXN-200 in an E2 agar plate was inoculated into a 100 mL LB preculture in a shaking flask. The pre-culture was shaken at 250 rpm and 30˚C to a cell density of 3.0 g cdw/L. The preculture (100 mL) was then inoculated into 2 L E2 medium in a 2 L fermentor at 30˚C, and *n*- n-Octane saturated air flow was introduced into the vessel at 0.5~1.0 L/min as carbon source for cell growth (Ref. S2). The culture broth was agitated at 1800 rpm and the pH was maintained at 7.10 with 25% phosphoric acid solution and 25% ammonia solution. The cell growth was followed by taking sample at different time points and measuring the OD at 450 nm. The growth curve is shown in Figure S1. The cells were harvested at their late exponential phase, and washed with KP buffer. The cell pellets were stored at -80°C.

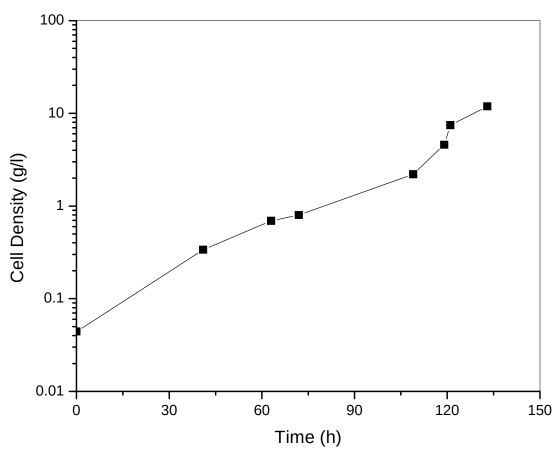


Figure S1. Cell growth curve during fermentation of *Sphingomonas* sp. HXN-200.

2. ¹H-NMR spectrum of the hydroxy acid 6 prepared from biotransformation

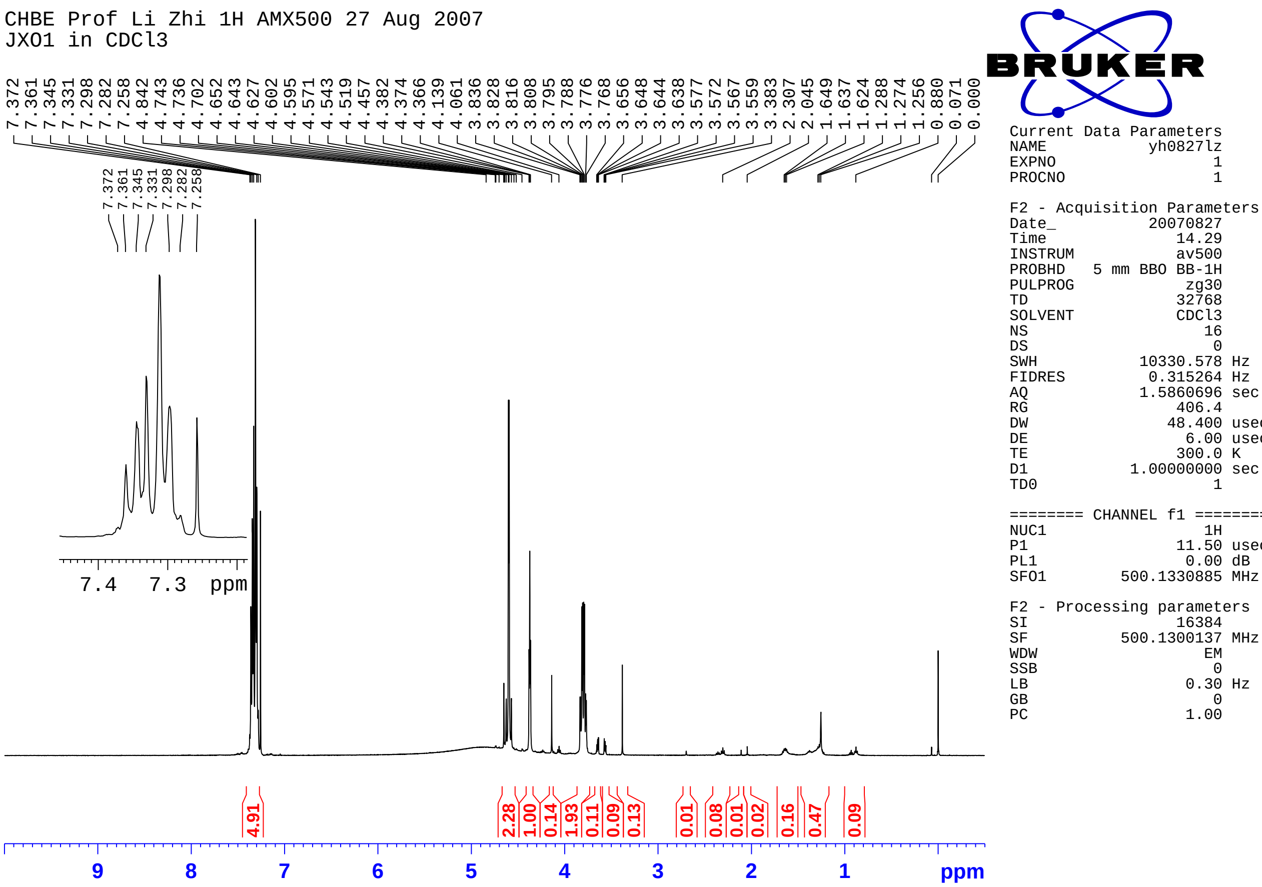
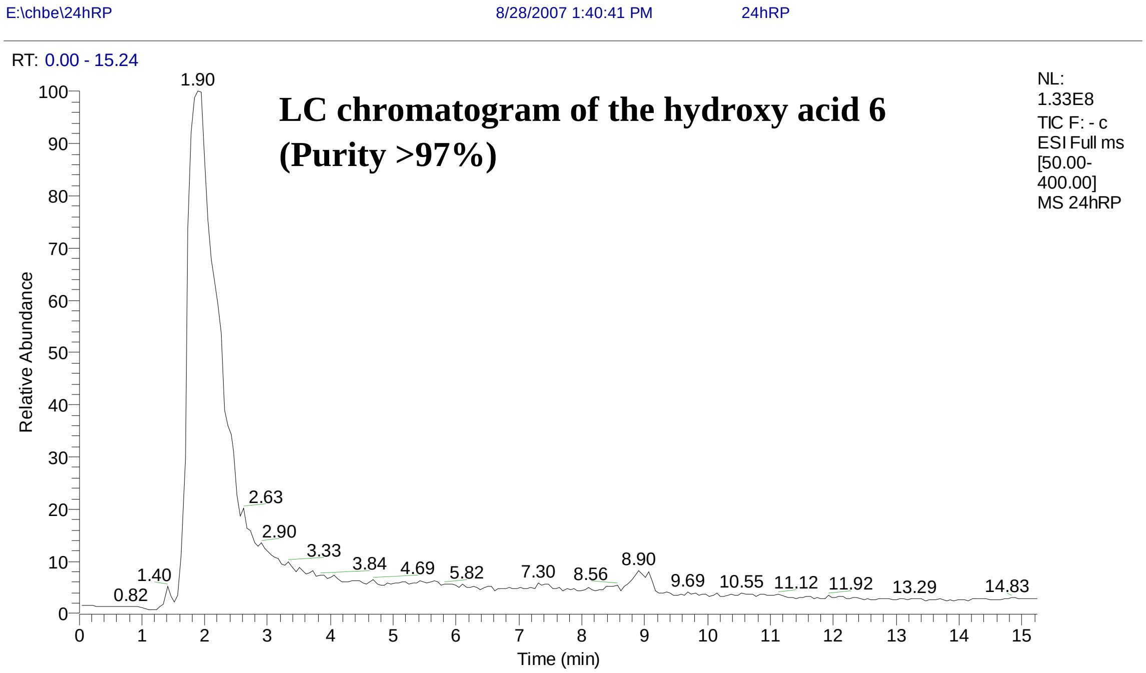


Figure S2. ¹H-NMR spectrum ($CDCl_3$, 500 MHz) of the hydroxy acid **6** prepared from bioconversion of with resting cells of *Sphingomonas* sp. HXN-200.

3. LC-MS (ESI) of the hydroxy acid 6 prepared from biotransformation.



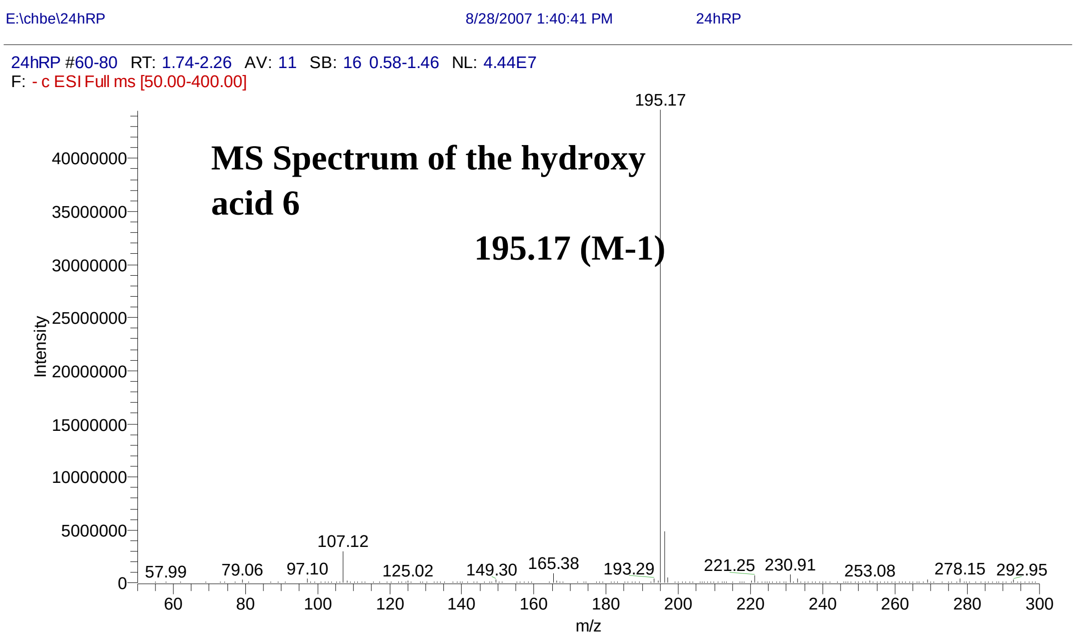


Figure S3. LC-MS spectra of the hydroxy acid **6** prepared from bioconversion of with resting cells of *Sphingomonas* sp. HXN-200.

4. Reverse-Phase HPLC chromatograms for bioconversion of compound 1-4 with resting cells of *Sphingomonas* sp. HXN-200.

Bioconversion of compound **1: 3-*O*-benzylglycerol**

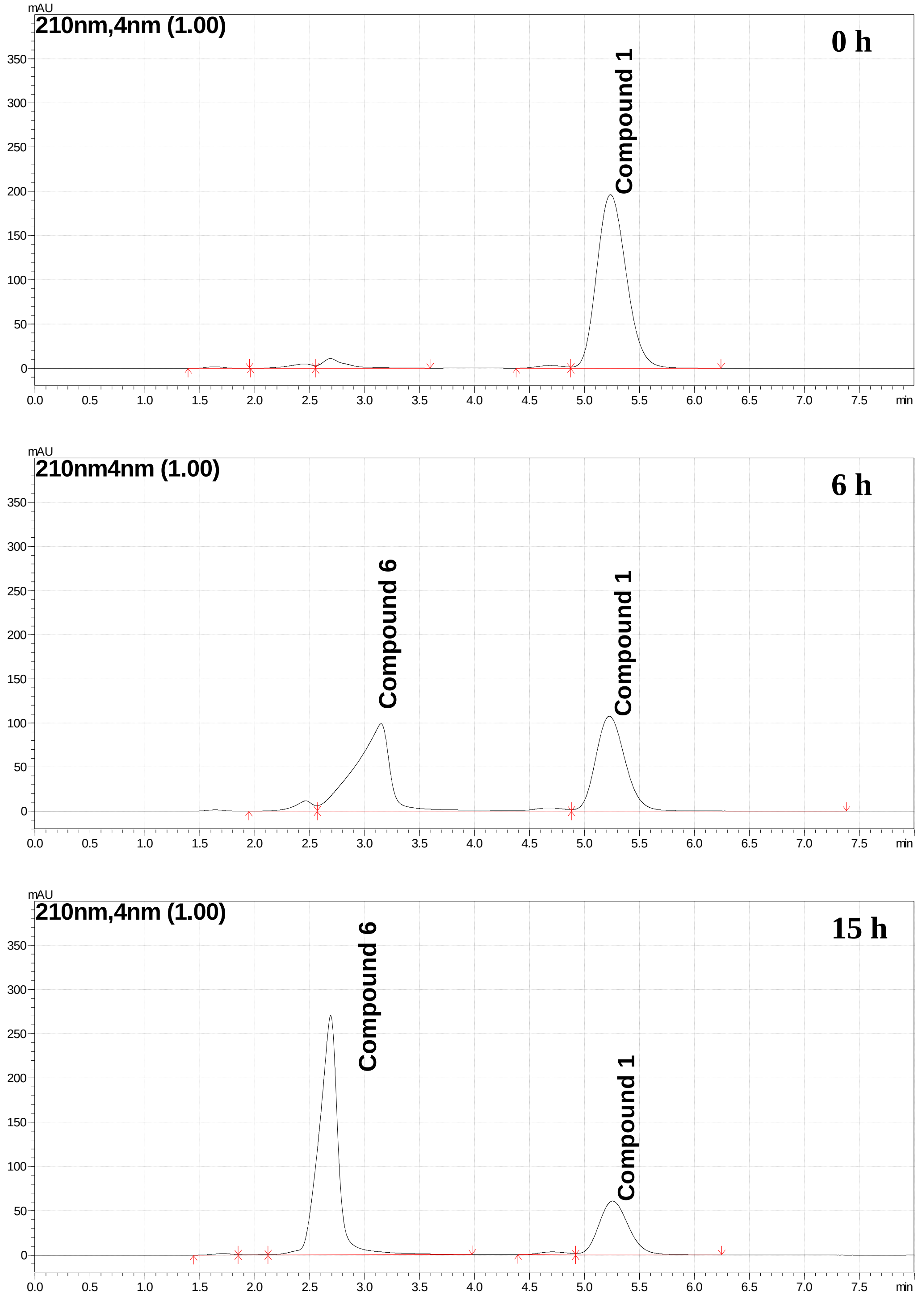


Figure S4. Reverse-phase HPLC chromatogram of bioconversion of **1** (Entry **3**, Table **1**).

Bioconversion of compound **2**: **1-(4-Chlorophenyl)-1,2-ethanediol**

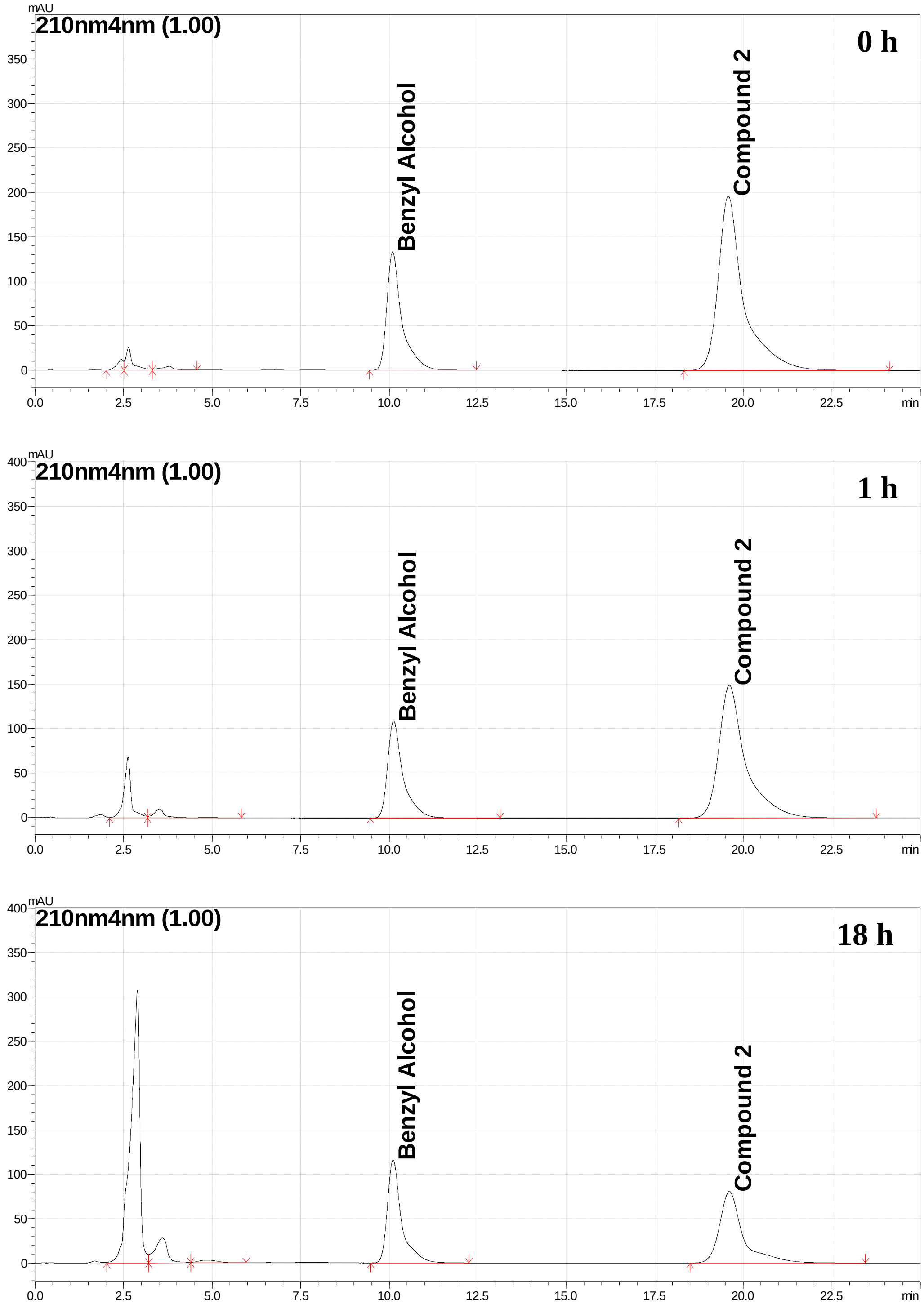


Figure S5. Reverse-phase HPLC chromatogram of bioconversion of **2** (Entry **5**, Table **1**).

Bioconversion of compound **3**: **1-(4-methylphenyl)-1,2-ethanediol**

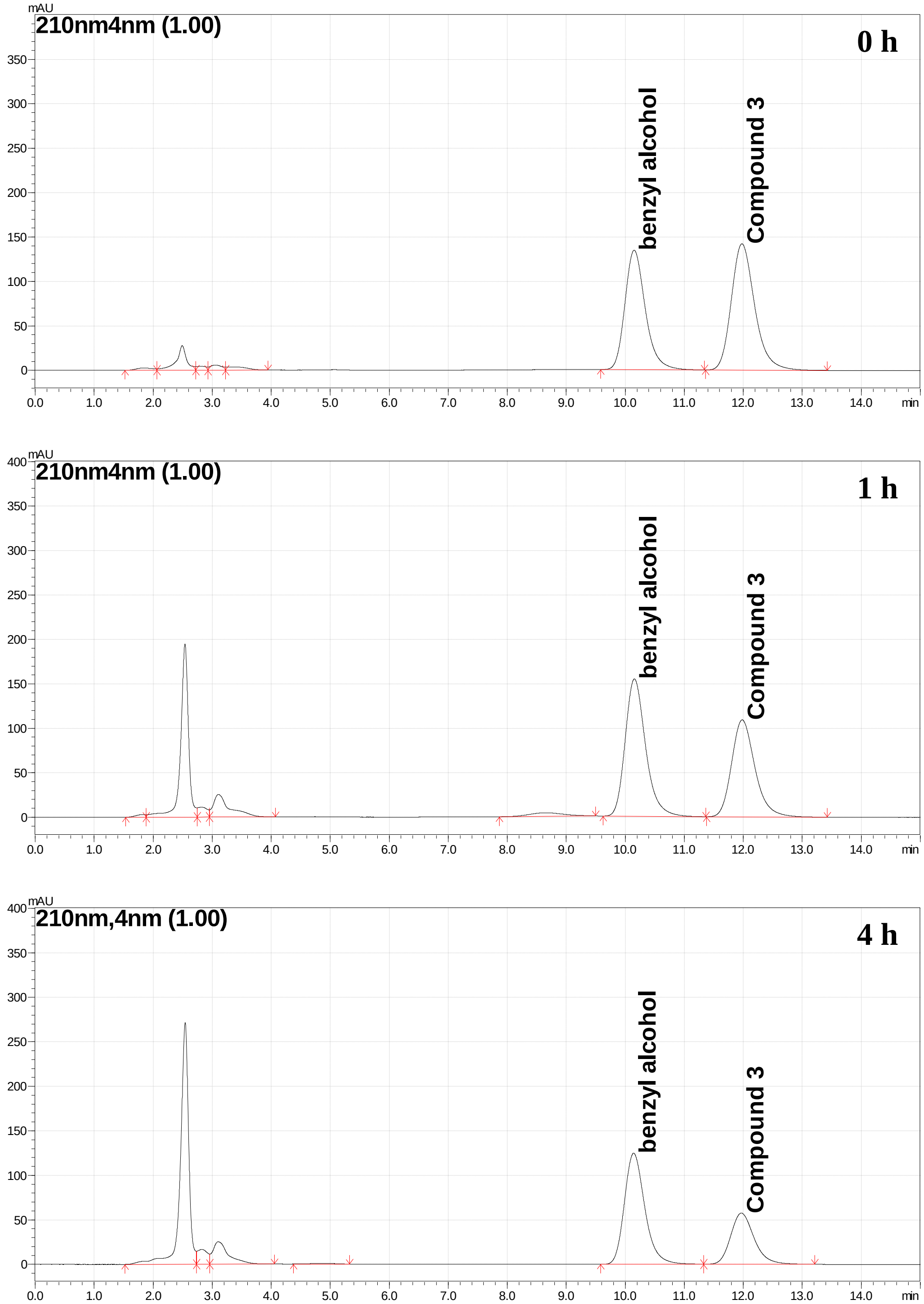


Figure S6. Reverse-Phase HPLC chromatogram of bioconversion of **3** (Entry **6**, Table **1**).

Bioconversion of compound **4**: **Phenyl-1,2-ethanediol**

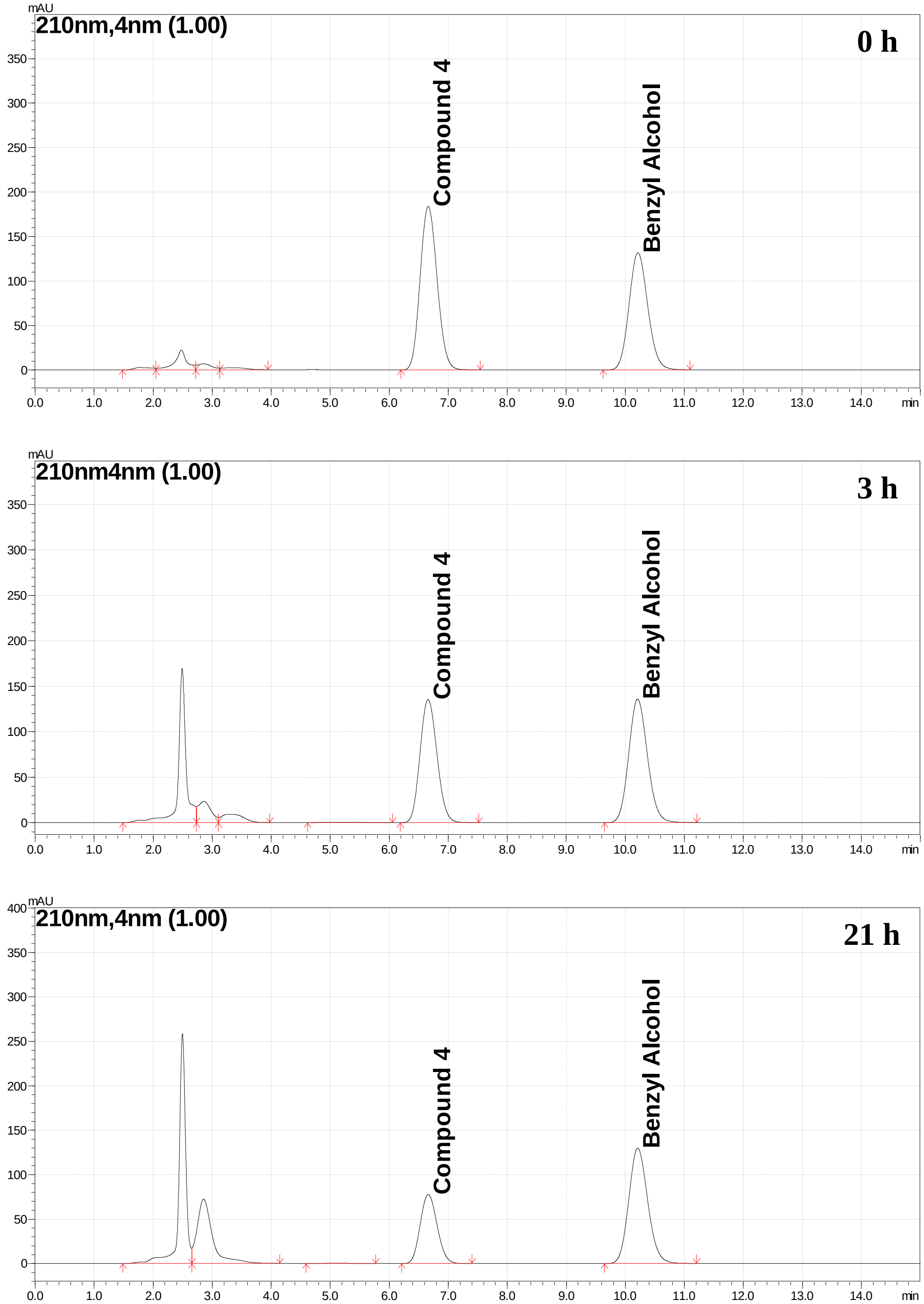


Figure S7. Reverse-phase HPLC chromatogram of bioconversion of **4** (Entry **8**, Table **1**).

5. Chiral HPLC chromatograms for analyzing the ee and purity of bioproduct 1-4.

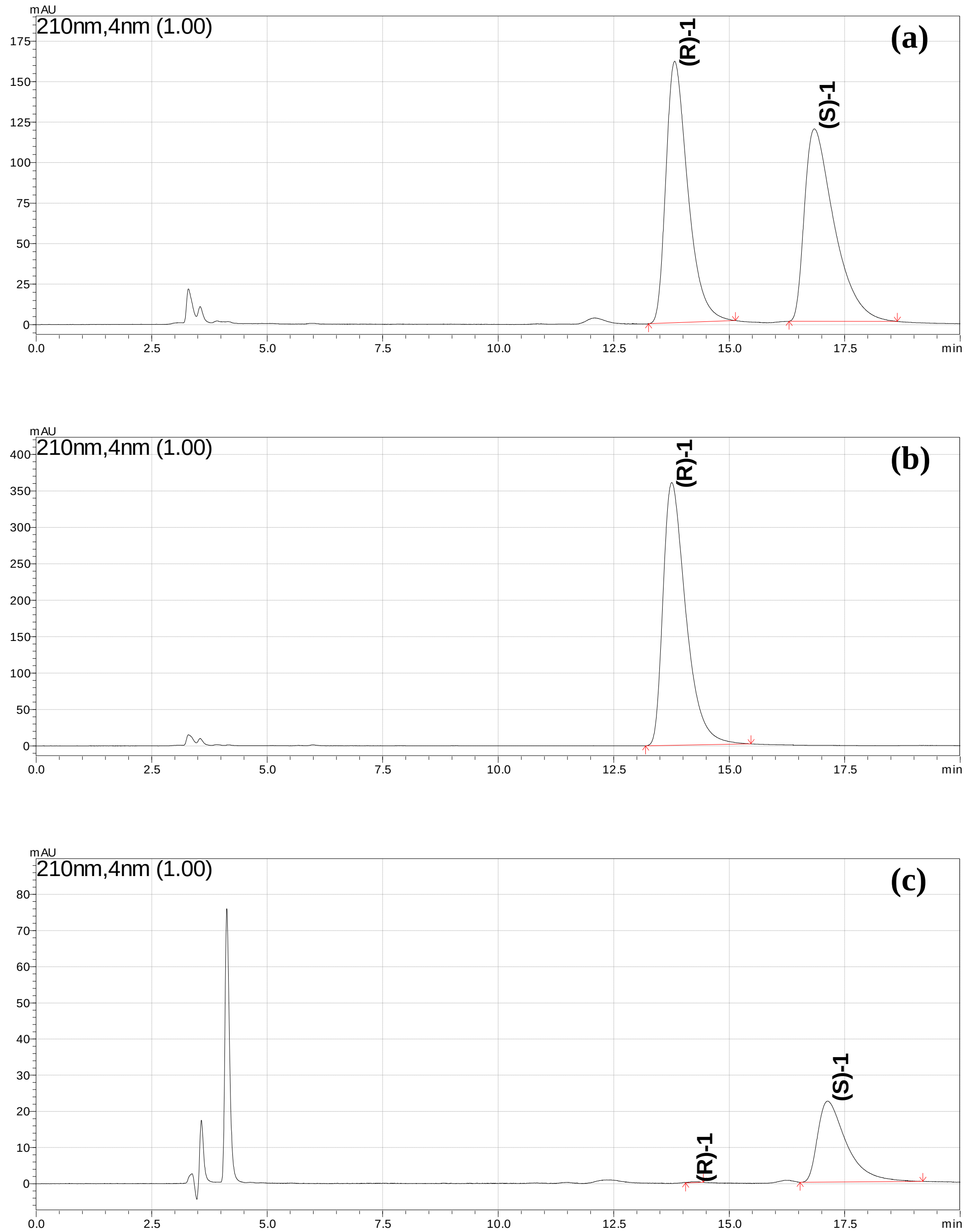


Figure S8. HPLC chromatogram of *rac*-**1** (a), (*R*)-**1** (b), and bioproduct (*S*)-**1** (c, Entry **3**, Table **1**).

[ee: 99.2%; purity: >98%]

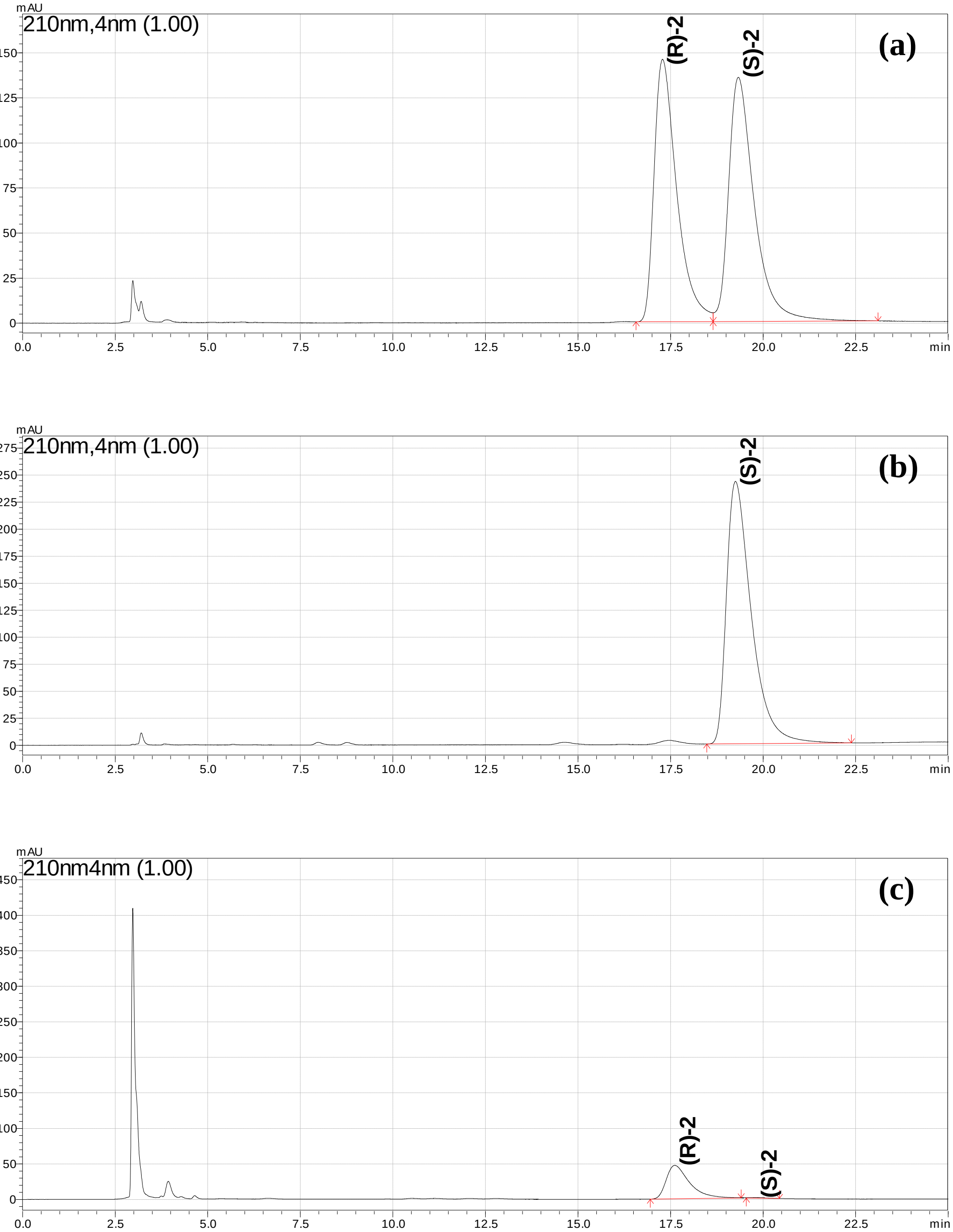


Figure S9. HPLC chromatogram of *rac*-**2** (a), (*S*)-**2** (b) and bioproduct (*R*)-**2** (c, Entry **5**, Table **1**).

[ee: 98.4%; purity: >98%]

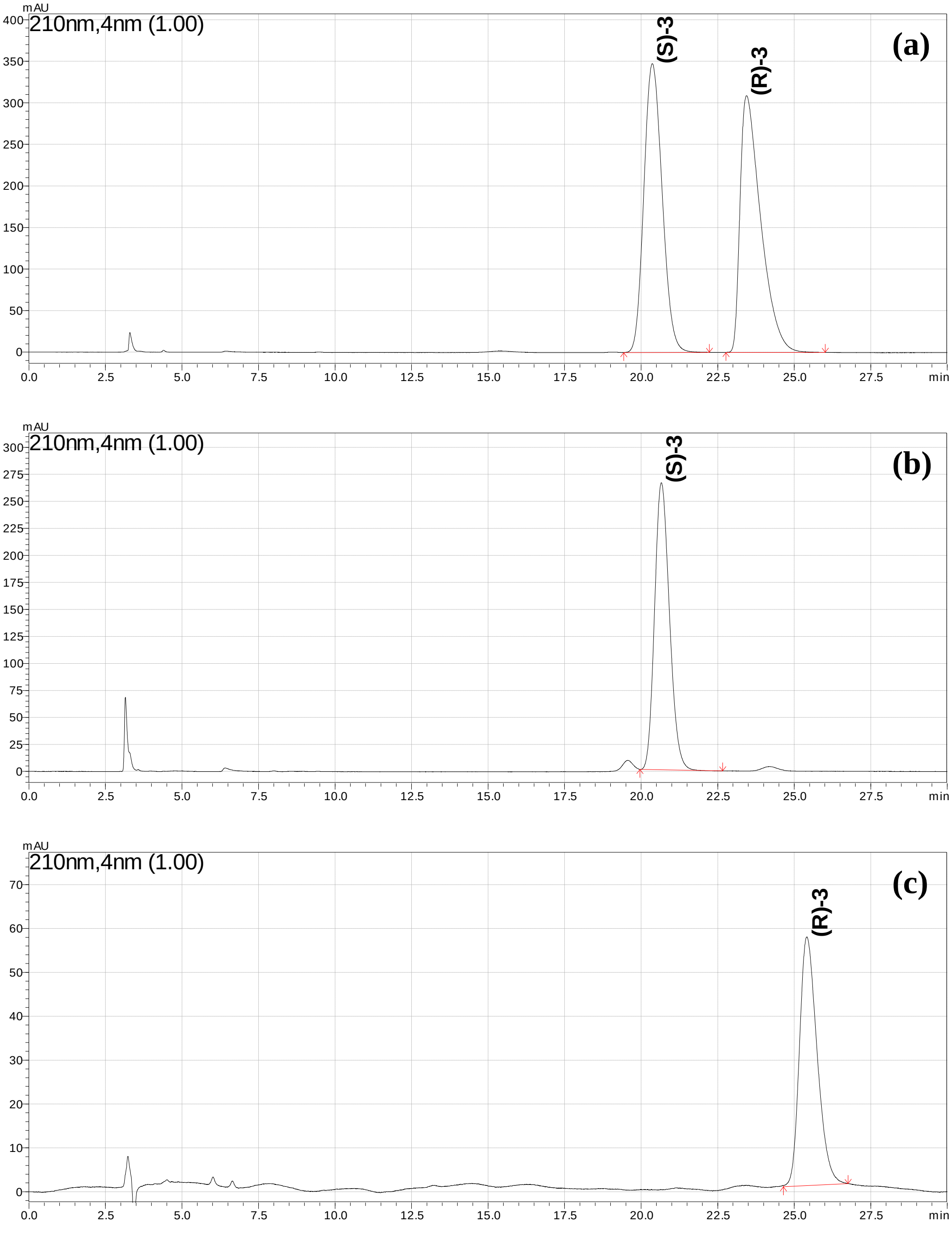


Figure S10. HPLC chromatogram of *rac*-**3** (a), (*S*)-**3** (b) and bioproduct (*R*)-**3** (c, Entry **6**, Table **1**).

[ee: 99.6%; purity: >98%]

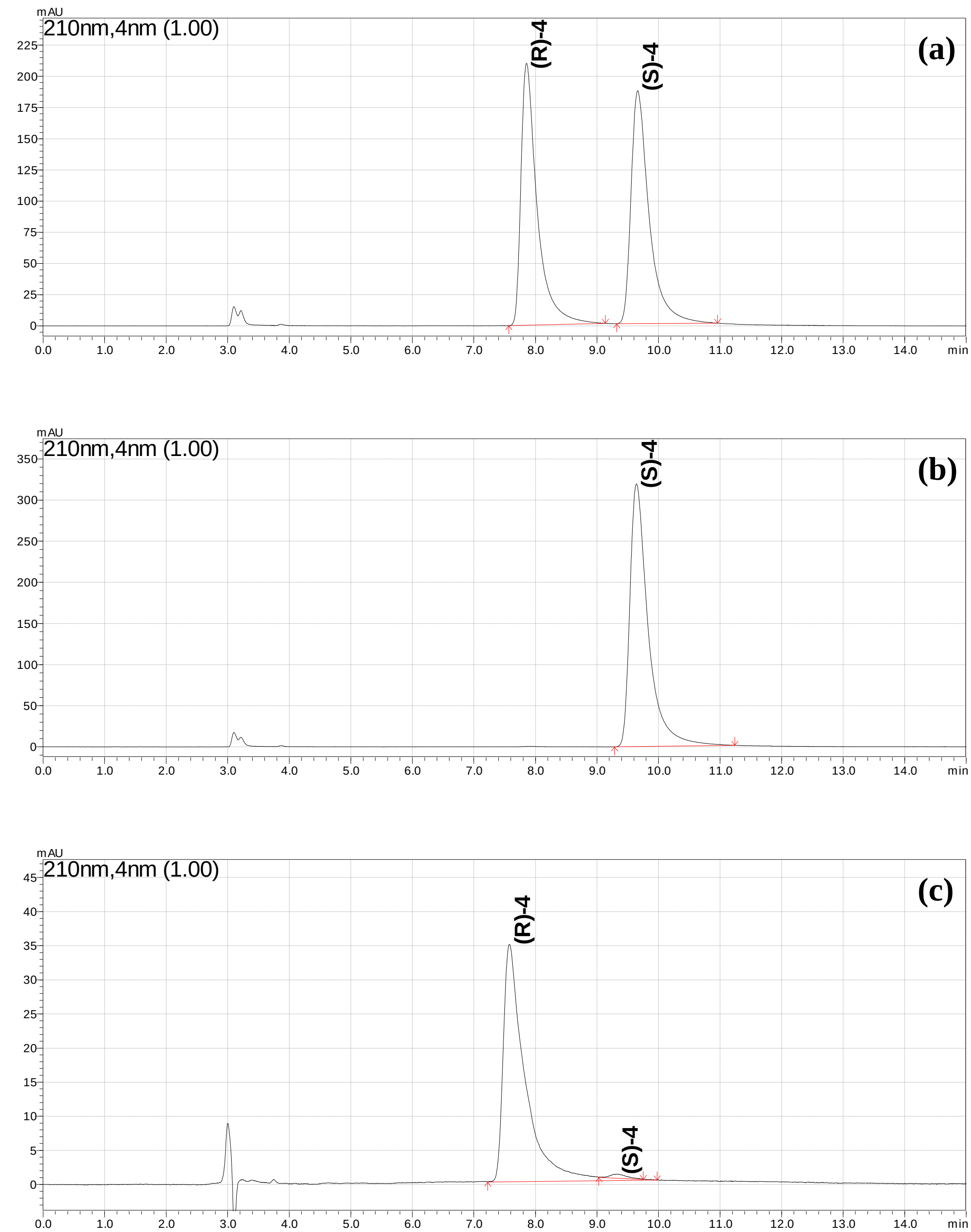


Figure S11. HPLC chromatogram of *rac*-**4** (a), (*S*)-**4** (b) and bioproduct (*R*)-**4** (c, Entry **8**, Table **1**).

[ee: 98.7%; purity: >98%]