Supporting Information

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First consecutive linear synthesis of hostmaniene, 5-formyl-2-(isopropyl-1'-ol)benzofuran and anadendroic acid using prenylated phenol

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S1. Experimental Procedure

*Synthesis of methyl-4-hydroxy-3-(3-methylbut-2-enyl)benzoate, (**8a**)*

Methyl 4-hydroxybenzoate, **7a**, (1.00g, 6.57 mmol) was added to a suspension of NaH in paraffin oil (60%, 0.29 g, 7.23 mmol) in dry benzene (50 mL) and allowed to stir for 15 minutes. Then, 3,3-dimethylallyl bromide, (0.80 mL, 6.57 mmol) was added to the mixture. The mixture was then refluxed at 80 °C for six hours under nitrogen. The reaction mixture was cooled to room temperature and the solvent was evaporated under reduced pressure. The residue was extracted with ethyl acetate. The organic layer was washed with brine and dried over $MgSO_4$, filtered and the solvent was evaporated under reduced pressure. The residue obtained was purified by column chromatography (ethyl acetate/n-hexane, 20/80) to give methyl 4-hydroxy-3-(3-methylbut-2-enyl)benzoate, **8a**, as yellowish solid (0.60, 42% yield), m.p. 86°C. ^{1}H NMR (400 MHz, $CDCl_3$) (δ/ppm): 1.75 (s, 6H), 3.36 (d, *J*=7.6 Hz, 2H), 3.86 (s, 3H), 5.27-5.32 (m, 1H), 6.36 (s, 1H), 6.82 (d, *J*=8.4 Hz, 1H), 7.77-7.80 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) (δ/ppm): 17.9, 25.8, 29.4, 52.0, 115.4, 129.7, 131.9, 121.2, 122.2, 127.2, 135.1, 158.9, 167.5; IR (ν/cm^{-1}): 3423 (OH), 1717 (C=O), 1611 (C=C) 1280 (C-O-C).

*Synthesis of methyl 3-((3,3-dimethyloxiran-2-yl)methyl)-4-hydroxybenzoate (**9**)*

To a stirred solution of methyl 4-hydroxy-3-(3-methylbut-2-enyl)benzoate, **8a**, (0.50 g, 2.27 mmol) and 0.5 N $NaHCO_3$ (5 mL) in chloroform (23 mL), *m*-chloroperoxybenzoic acid (77%, 1.07 g, 4.77 mmol) was added slowly at 0 ºC. The mixture was then allowed to stir at room temperature for 2 hours. Upon completion of the reaction, monitored by the TLC, chloroform and water were added to the reaction mixture at 0 ºC. The mixture was extracted with chloroform. The organic layer was washed with 0.5 *N* $NaHCO_3$ and H_2O and then dried over $MgSO_4$, filtered and the solvent was evaporated under reduced pressure. The crude methyl 3-((3,3-dimethyloxiran-2-yl)methyl)-4-hydroxybenzoate, **9**, (0.52 g, 97%) was used for the next step without purification.

*Synthesis of methyl 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carboxylate **(10)***

To a solution of crude epoxide, **9**, (0.71 g, 2.99 mmol) in methanol (60 mL), was added $LiOH.H_2O$ (0.44 g, 10.47 mmol) at room temperature and the resulting mixture was allowed to stir for three days. The solvent was then evaporated under reduced pressure. The residue was diluted with ethyl acetate and washed with aqueous 0.1 *N* HCl. The aqueous layer was extracted three times with ethyl acetate. The combined organic layers were washed with brine, dried over sodium sulfate, filtered and concentrated under reduced pressure. Purification by column chromatography (ethyl acetate/n-hexane, 40/60) furnished methyl 2-(2-hydroxypropan-2-*yl*)-2,3-dihydrobenzofuran-5-carboxylate, **10**, (0.45 g, 63%), m.p. 69 °C. ^{1}H NMR (400 MHz, $CDCl_3$) (δ/ppm):1.20 (s, 3H), 1.33 (s, 3H), 3.17 (d, *J*=9.6 Hz, 2H), 3.85 (s, 3H), 4.68 (t, *J*= 9.2 Hz, 1H), 6.77 (d, *J*= 8.4 Hz, 1H), 7.78-7.86 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) (δ/ppm): 24.1, 26.1, 30.1, 51.9, 71.8, 90.4, 108.9, 126.7, 131.1, 122.9, 127.6, 163.6, 167.0; IR (ν/cm^{-1}): 3498 (OH), 1701 (C=O), 1295 (C-O-C).

*Synthesis of 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carbaldehyde **(5)***

Epoxide, **9a**, (0.84 g, 4.09 mmol) in THF (50 mL) was cooled to 0 ºC and TBAF (1.0 M in THF, 8.18 mL, 8.18 mmol) was added dropwise *via* syringe. After 15 minutes, the reaction mixture was allowed to warm to room temperature, and stirring was continued for 24 hours. The solvent was removed under reduced pressure and the residue was purified by column chromatography (ethyl acetate/n-hexane, 40/60) to afford 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carbaldehyde, **5**, (0.44 g, 72%) as brownish

solid. m.p. 75 °C. ^{1}H NMR (400 MHz, $CDCl_3$) (δ/ppm): 1.20 (s, 3H), 1.33 (s, 3H), 3.19 (dd, *J*=8.4 Hz and 3.2 Hz, 2H), 4.70 (t, *J*= 8.8 Hz, 1H), 6.84 (d, *J*= 8.4 Hz, 1H), 7.63 (d, *J*= 8.4, 1H), 7.68 (s, 1H), 9.78 (s, 1H). ^{13}C NMR (100 MHz, $CDCl_3$) (δ/ppm): 24.2, 26.0, 29.8, 71.7, 90.8, 109.5, 126.0, 133.0, 128.8, 130.5), 165.2, 190.8; IR *v* cm^{-1}: 3467 (OH), 1677 (C=C), 1281 (C-O-C).

Synthesis of 2-(5-(hydroxymethyl)-2,3-dihydrobenzofuran-2-yl)propan-2-ol ***(11)***

To a solution of methyl 2-(2-hydroxypropan-2-*yl*)-2,3-dihydrobenzofuran-5-carboxylate, **10**, (1.01 g, 4.65 mmol) in dry THF (36 mL), lithium aluminium hydride (0.73 g, 19.16 mmol) was added at 0 ºC. The solution was allowed to warm to room temperature and stirred for 3 hours under nitrogen. After completion of the reaction (TLC), the reaction mixture was quenched with NH_4Cl. The solvent was removed under reduced pressure and water was added. The aqueous phase was extracted with dichloromethane (3×). The combined organic layers were dried over $MgSO_4$ and the solvent removed under reduced pressure to afford the crude alcohol, which was purified by column chromatography (ethyl acetate/n-hexane, 40/60) to obtain a white solid, **11**, (0.79 g, 82% yield), m.p 94 °C ^{1}H NMR (400 MHz, MeOD) (δ/ppm): 1.18 (s , 3H), 1.21 (s , 3H), 3.12 (d, *J*= 8.8, 2H), 4.45 (s, 2H), 4.55 (t, *J*= 8.8 Hz, 1H), 6.65 (d, *J*= 8.0 Hz, 1H), 7.07 (d, *J*= 7.2 Hz, 1H), 7.13 (s , 1H); ^{13}C NMR (100 MHz, MeOD) (δ/ppm): 23.7, 24.0, 30.1, 63.9, 71.8, 89.1, 108.1, 123.9, 126.9, 127.3, 133.2, 159.4 ; IR *v* cm^{-1}: 3295 (OH), 1256 (C-O-C).

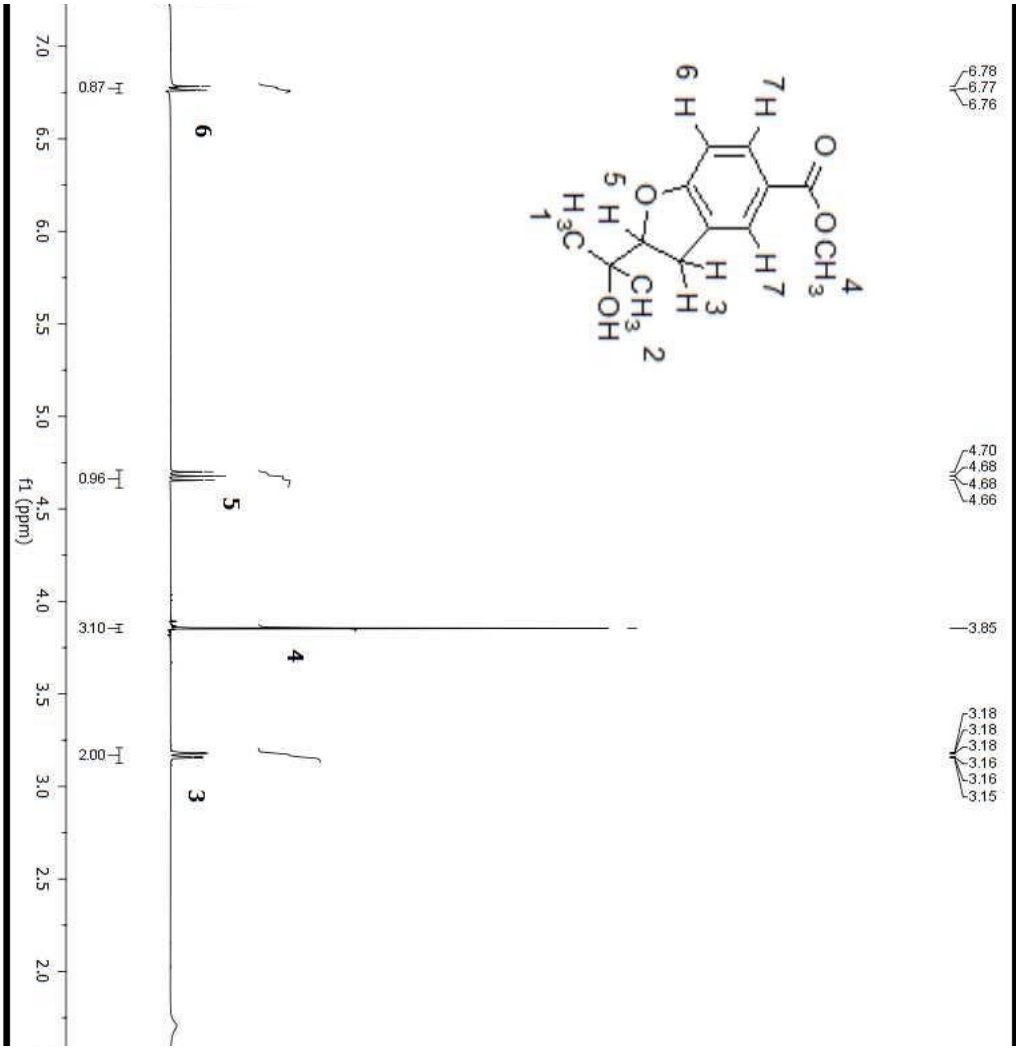
Synthesis 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carbaldehyde from compound ***11, (5)***

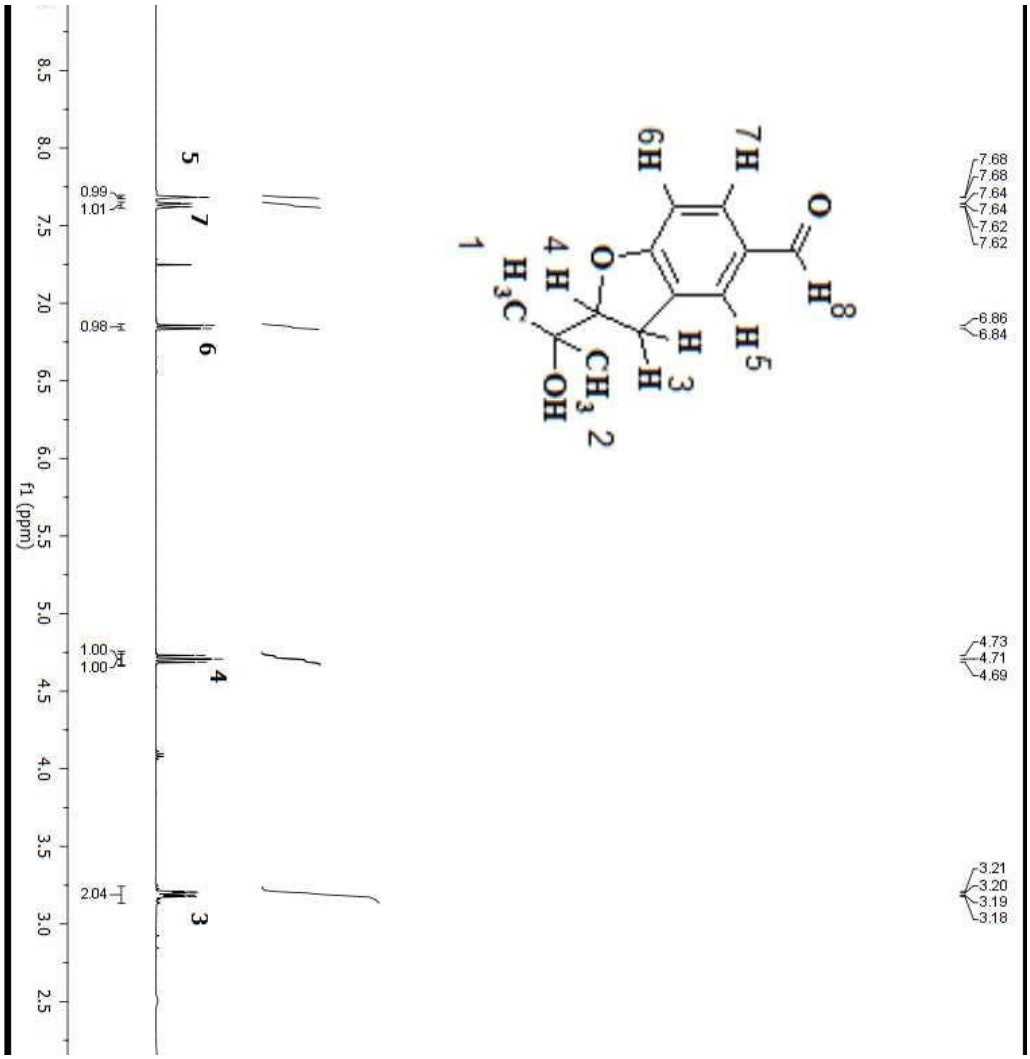
To a suspension of PCC (1.30 g, 6.01 mmol) in dichloromethane (7 mL), a solution of 2-(5-(hydroxymethyl)-2,3-dihydrobenzofuran-2-*yl*)propan-2-ol, **11**, (0.96 g, 4.62 mmol) in dichloromethane (30 mL) was added at room temperature. After stirring for 12 hours, diethyl ether (100 mL) was added and the black solid precipitate was filtered and washed with diethyl ether several times. The filtrate was concentrated under reduced pressure and the residue was purified by column chromatography on silica gel (ethyl acetate/n-haxane, 40/60) to furnished 2-(2-hydroxypropan-2-*yl*)-2,3-dihydrobenzofuran-5-carbaldehyde, **5**, (0.68 g, 71%)

Synthesis of 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carboxylic acid ***(6)***

To a solution of silver nitrate (0.380 g, 2.23 mmol) in water (3.5 mL), sodium hydroxide (0.200 g) was added. To this silver oxide suspension, a solution of 2-(2-hydroxypropan-2-yl)-2,3-dihydrobenzofuran-5-carbaldehyde, **5**, (0.200 g, 0.97 mmol) in ethanol (2 mL) was added. The mixture was then refluxed for 2 hours, which was then filtered, and the filtrate was washed with diethyl ether and acidified with 10% HCl to afford yellowish powder of 2-(2-hydroxypropan-2-*yl*)-2,3-dihydrobenzofuran-5-carboxylic acid, **6**, (0.15 g, 69% yield), m.p. 86 °C. ^{1}H NMR (400 MHz, MeOD) (δ/ppm): 1.19 (s, 3H), 1.24 (s, 3H), 3.18 (d, *J*= 9.2 Hz, 2H), 4.66 (t, *J*= 9.0 Hz, 1H), 6.75 (d, *J*= 8.8 Hz, 1H), 7.78 (d, *J*= 2.0 Hz, 1H), 7.80 (s, 1H); ^{13}C NMR (100 MHz, MeOD) (δ/ppm): 23.8, 23.9, 29.4, 71.0, 90.2, 108.2, 126.4, 130.8, 122.6, 127.9 164.2 168.6 ; IR *v* cm^{-1}: 3413 (OH), 1685 (C=O), 1262 (C-O-C).

S2. ^{1}H-NMR and ^{13}C-NMR Spectra of Compounds

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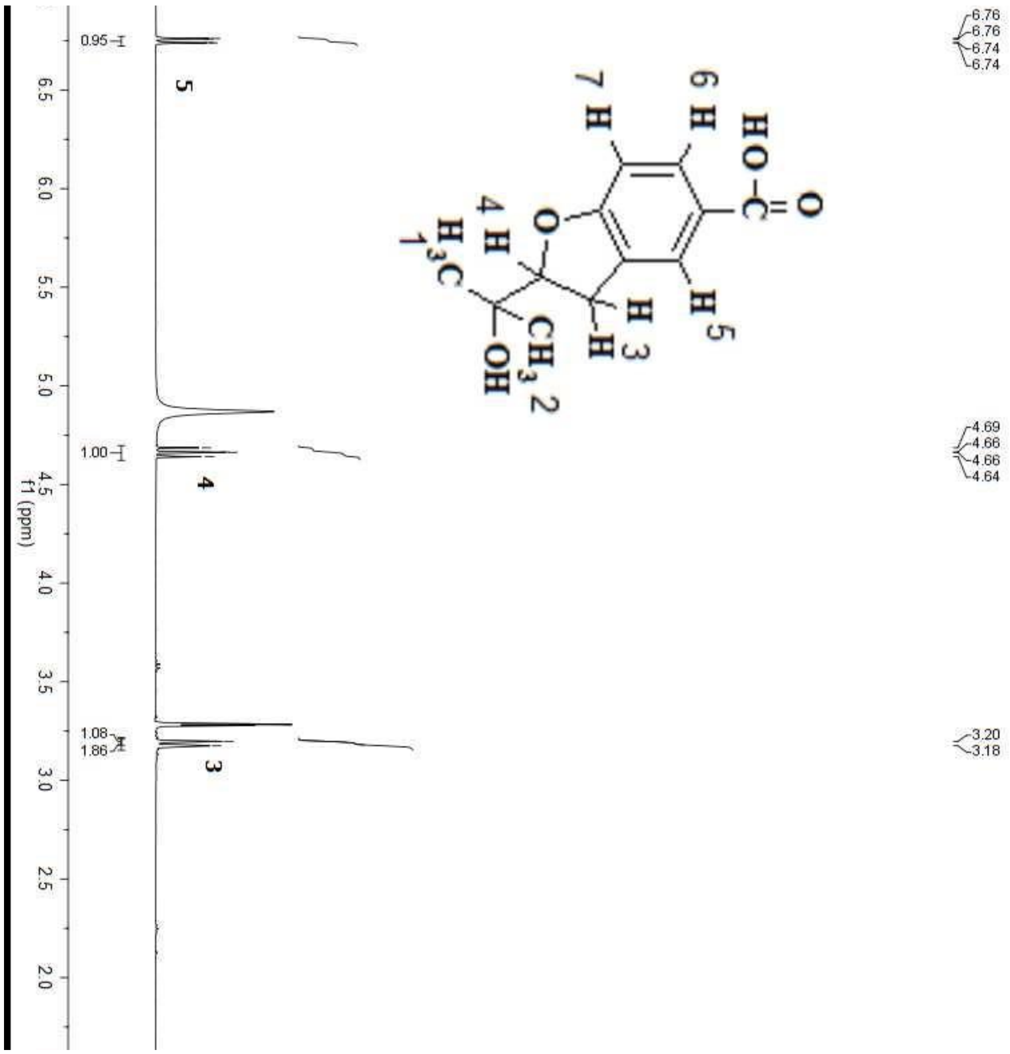
f1 (ppm)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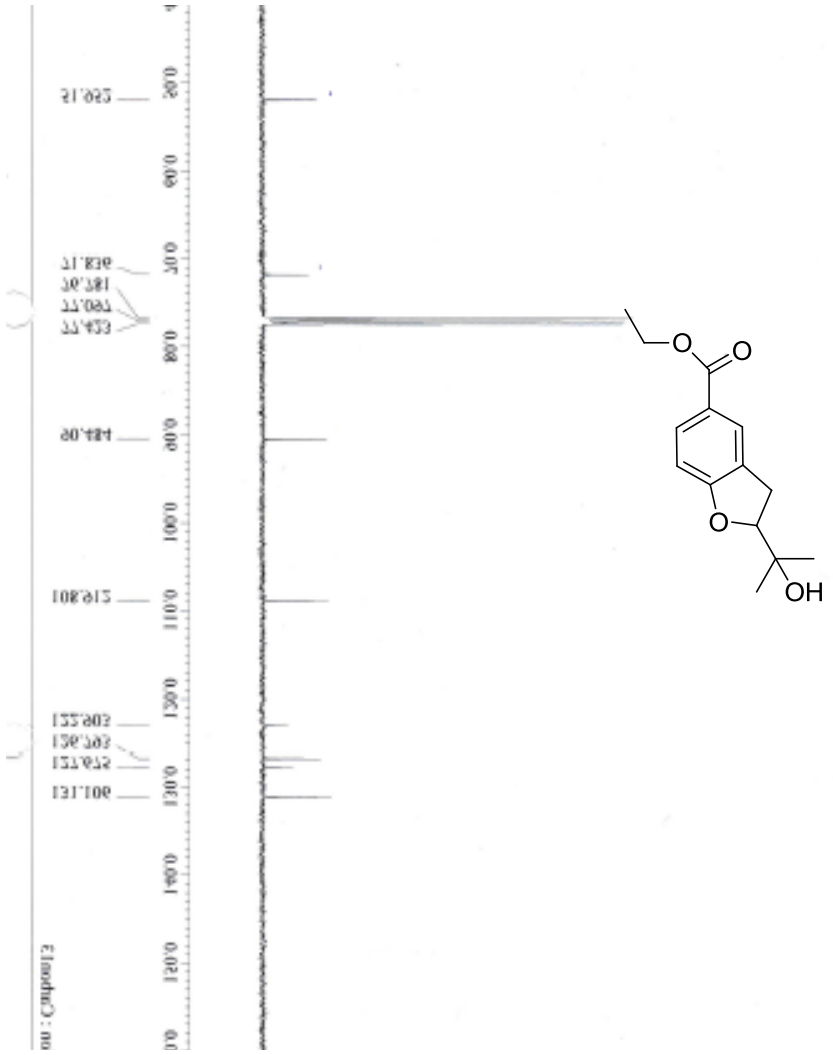
f1 (ppm)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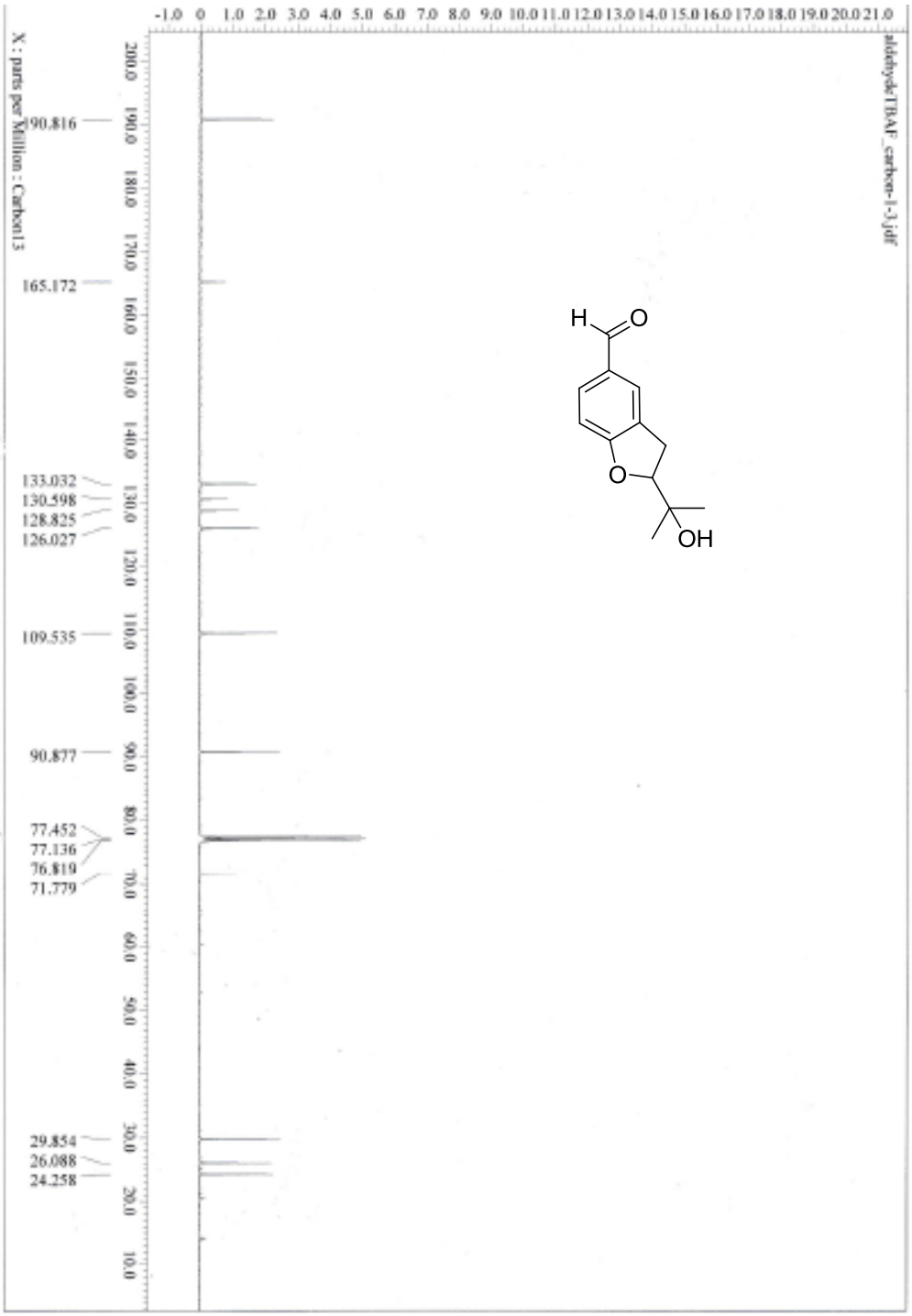
O
O
OH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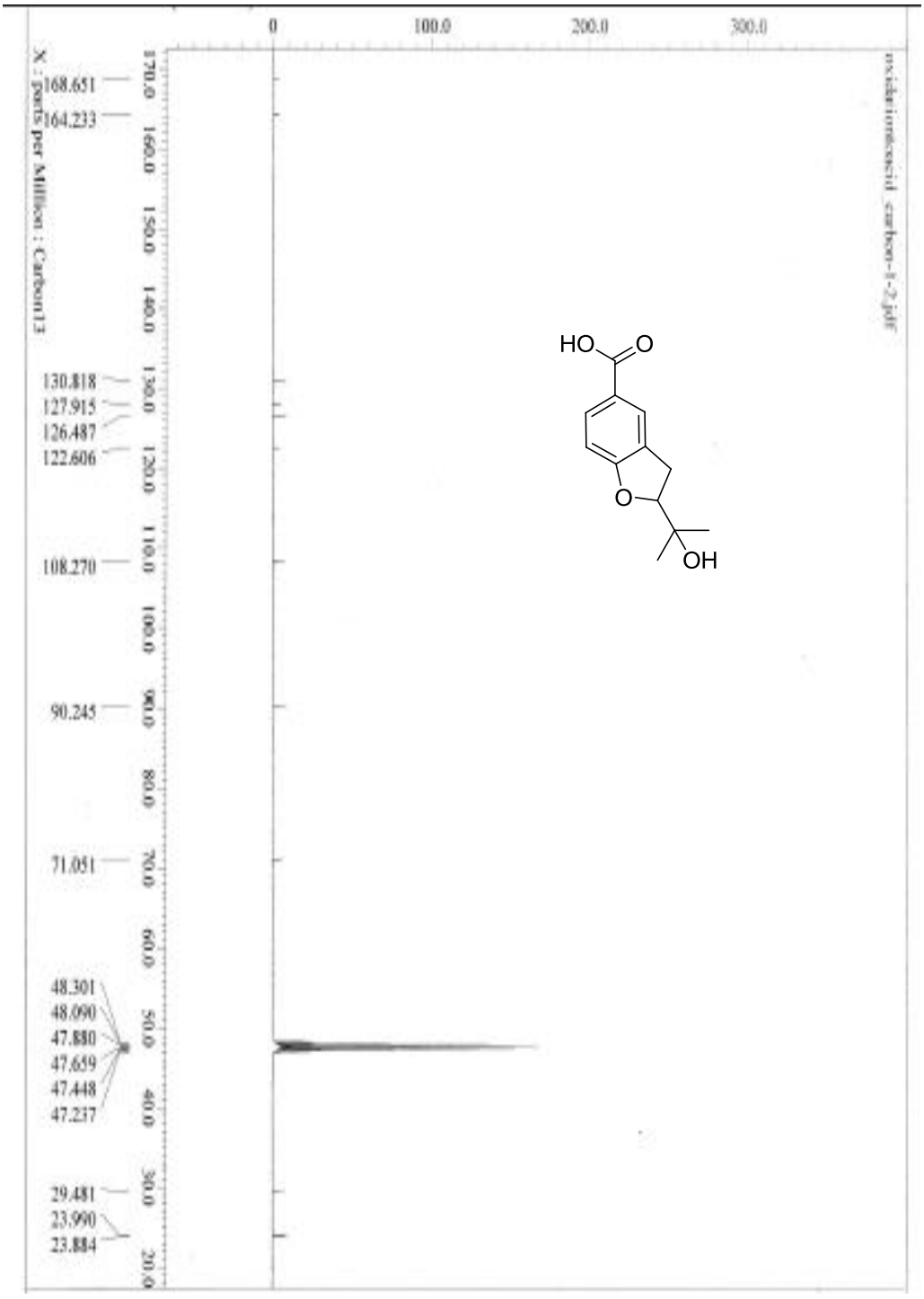
H
O
O
OH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S3. HPLC Chromatogram

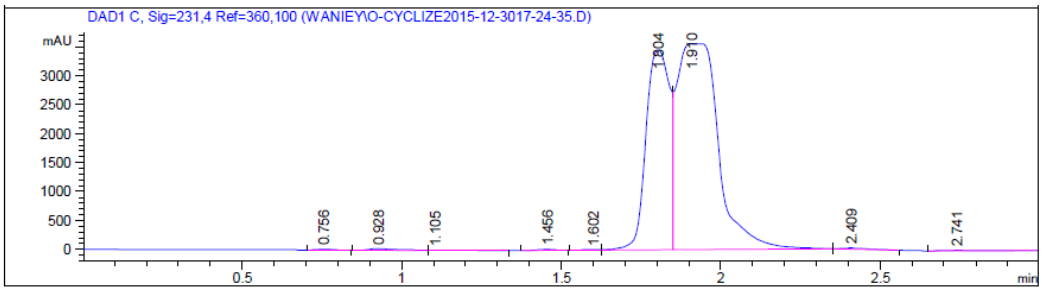

Figure S3 1: HPLC Chromatogram of Compound **10**

(100% MeOH, 1 mL/min, 25°C)

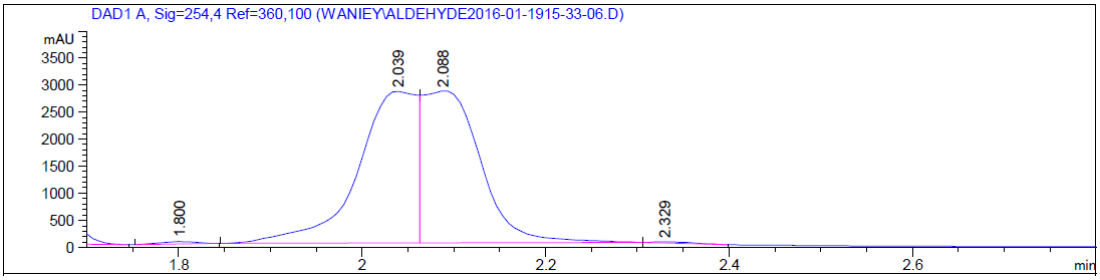

Figure S3 2: HPLC Chromatogram of Compound **5**

(100 CH_3CN, 1 mL/min, 25°C)