Supplementary Information

The total syntheses of guttiferone A and 6-*epi*-guttiferone A

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Experimental procedures

General Remarks

All reactions and manipulations which are sensitive to air or moisture were performed under dry nitrogen by using standard Schlenk techniques. All solvents were purified prior to use. All chemicals were purchased from Acros Organics, Sigma Aldrich or Alfa Aesar. Reactions were monitored with thin layer chromatography on 0.20 mm Macherey – Nagel Alugram Xtra Sil silica gel plates. Purification via semi-preparative HPLC was carried out with a Knauer System, pump K-501 and RI-detector K-2400, and a Nucleodur 100-5 Si (250 mm x 20 mm) column. NMR spectra were recorded on a spectrometer at 300 MHz (^{1}H-NMR), 75 MHz (^{13}C-NMR) from Burker Avance 300 or on a spectrometer at 500 MHz (^{1}H-NMR), 125.6 MHz (^{13}C-NMR) from Bruker Avance 500.^{1}H-chemical shifts are expressed in ppm with residual chloroform (δ = 7.26 ppm) as reference. Chemical shifts (δ) are reported with multiplicity (s = singlet, d = doublet, t = triplet, dd = doublet of doublets, m = multiplet) and coupling constants (*J*) in Hz. ^{13}C-chemical shifts are reported as chemical shifts (δ) with residual chloroform (δ = 77.16 ppm) as internal reference. IR spectra were measured on a FT-IR spectrometer, Vektor 22 from Bruker, in an ATR mode. Mass spectra were measured using electrospray ionization on a Bruker Micro-TOF-Q.

General procedures GP-I – GP-VII:

General procedure I (GP-I):[1]

Methanol (40 mL) was cooled to 0 °C and methylmagnesium chloride (3 M in THF, 14 mL, 40 mmol, 2 eq.) and dimethyl 1,3-acetonedicarboxylate (2.95 mL, 20 mmol, 1 eq.) were added dropwise. After stirring for 1 h at this temperature the corresponding enone (20 mmol, 1 eq.) was added and the mixture was stirred at 60 °C over night. The solution was hydrolysed with 2N HCl (15 mL) and extracted with ethyl acetate (3 x 40 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via flash chromatography. The product was isolated as a mixture of diastereomers.

General procedure II (GP-II): [2]

The corresponding diester (10 mmol, 1 eq.) was dissolved in THF (30 mL) cooled to 0 °C and NaH (60% in mineral oil, 440 mg, 11 mmol, 1.1 eq.) was added portionwise. After stirring for 1 h at this temperature methyllithium (1.6 M in THF, 14.4 mL, 23 mmol, 2.3 eq.) was added dropwise and the mixture was stirred for 3 h at 0 °C. The solution was hydrolysed with sat. NH_4Cl-solution (3 mL) and extracted with ethyl acetate (3 x 25 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was used without further purification.

The crude product (10 mmol, 1 eq.) and 18-crown-6 (264 mg, 1 mmol, 0.1 eq.) was dissolved in THF (30 mL) cooled to 0 °C and NaH (60% in mineral oil, 440 mg, 11 mmol, 1.1 eq.) was added portionwise. After stirring for 1 h at this temperature the corresponding alkyl halide (1.5 - 2.5 eq.) was added. Subsequently, the mixture was allowed to warm to room temperature. After stirring over night, the solution was hydrolysed with sat. NH_4Cl-solution (25 mL) and extracted with ethyl acetate (3 x 30 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via column chromatography.

General procedure III (GP-III):[3]

LiCl (428 mg, 10.1 mmol, 2.05 eq.) was heated at 80 °C for 3 h under vacuo (1 mbar). THF (40 mL) and CuI (1.90 g, 10 mmol, 2 eq.) were added at room

temperature. After stirring for 5 minutes at this temperature the suspension was cooled to -78 °C and the methylmagnesium bromide (3 M in THF, 10 mmol, 2 eq.), TMSCl (1.28 mL, 10 mmol, 2 eq.) and a solution of corresponding educt (5 mmol, 1 eq.) in THF (30 mL) were successively added. The resulting mixture was stirred at -78 °C for 5 h. The reaction was hydrolysed with NH_4Cl/2N HCl (1:1, 100 mL) and extracted with ethyl acetate (3 x 100 mL). The combined organic layers were washed with NH_4Cl/NH_3 (1:1, until the organic layer was colourless), brine, dried over Na_2SO_4 filtered and concentrated in vacuo. The crude product was purified via flash chromatography. The product was isolated as a mixture of diastereomers

General procedure IV (GP-IV): [4]

Substrate (335 mg, 1 mmol, 1 eq.) was dissolved in dimethyl formamide (5 mL) and cooled to 0 °C. Sodium hydride (60% in mineral oil, 48 mg, 1.2 mmol, 1.2 eq.) was added portionwise and after one hour allyl chloroformate (128 µL, 1.2 mmol, 1.2 eq.) was added. The reaction mixture was stirred over night at room temperature. The solution was quenched with sat. NH_4Cl-solution (5 mL) and extracted with ethyl acetate (3 x 10 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via column chromatography.

General procedure V (GP-V): [4]

Tris(dibenzylideneacetone)dipalladium(0) (23 mg, 25 µmol, 0.05 eq.) and Tri(*p*-tolyl)phosphine (38 mg, 0.125 mmol, 0.25 eq.) were dissolved in 1,4-dioxane (5 mL) and stirred for 15 min. at 60 °C. Substrate was added dissolved in 1,4-dioxane (1 mL). The resulting mixture was stirred at 60 °C for 1 h and then filtered through silica (petroleum ether/ethyl acetate, 5:1) The crude product was purified via HPLC. The product was isolated as a mixture of diastereomers.

General procedure VI (GP-VI): [1]

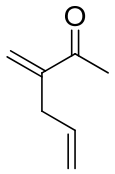
Substrate (0.41 mmol, 1 eq.) was dissolved in THF (12 mL) and cooled to 0 °C. potassium *tert*-butanolate (0.82 mmol, 2 eq.) was added. The reaction mixture was stirred for 15 min at 0 °C. The solution was quenched with sat. NH_4Cl-solution (10 mL) and extracted with ethyl acetate (3 x 20 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via flash column chromatography.

General procedure VII (GP-VII):[5]

The corresponding educt (0.13 mmol, 1 eq.), 2-methyl-2-butene (13.0 mmol, 100 eq.) and Grubb`s II (0.0013 mmol, 1 mol%) were dissolved in DCM (4 mL) and heated to reflux for 2h. The solvent was removed in vacuo and the crude product filtered over silica (petroleum ether/ethyl acetate; 4:1). The crude product was used without further purification.

The crude product (0.12 mmol, 1 eq.) was dissolved in THF (4 mL) and cooled to 0 °C. Potassium *tert*-butanolate (0.12 mmol, 10 eq.) was added and the mixture stirred for 45 minutes at 0 °C. The corresponding cyanide (0.3 mmol, 25 eq.) was added portionwise and the mixture was allowed to warm to room temperature. After stirring for 48h methanol (2.8 mL) and potassium carbonate (934 mg) were added and the suspension was stirred for 2h. The solution was quenched with sat. NH_4Cl-solution (2 mL) and extracted with ethyl acetate (3 x 10 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via column chromatography.

Preparation of compound 9: [6]



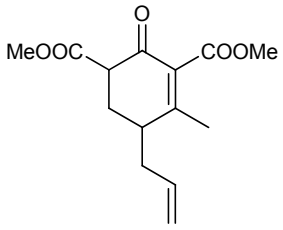
9

According to the procedure described by Biber et al.,[1] acetyl acetone **7** (1.0 mL, 10 mmol, 1 eq.) was dissolved in ethanol (7 mL) cooled to 0° C and sodium hydride (60% in mineral oil, 440 mg, 11 mmol, 1.1 eq.) was added portionwise. After stirring for 5 minutes allyl bromide (1.0 mL, 12 mmol, 1.2 eq.) was added to the mixture. The mixture was allowed to warm to room temperature and stirred over night. Subsequently formaldehyde (30% in water, 2.5 mL) and potassium carbonate (2.76 g, 20 mmol, 2 eq.), solved in demin. water (14 mL) were added. After stirring over night at room temperature the mixture was hydrolysed with demin. water (20 mL) and extracted with *n*-pentane (3 x 15 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product

was purified by column chromatography (silica gel, pentane/diethyl ether 10:1) yielding **9** (517 mg, 4.7 mmol, 47%) as a colourless liquid.

R_f = 0.39 (petroleum ether/ethyl acetate 15:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 6.07 (s, 1H), 5.91 – 5.62 (m, 2H), 5.12 – 4.97 (m, 2H), 3.02 (d, *J* = 6.8 Hz, 2H), 2.35 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz): δ 199.2, 147.4, 135.4, 125.7, 116.7, 52.1, 25.8 ppm; **IR** (film): v = 3079 (w), 2957 (m), 2923 (s), 2853 (m), 1717 (m), 1701 (m), 1681 (s), 1641 (m), 1466 (m), 1431 (m), 1364 (m) cm^{-1}; **MS** (EI, 70eV): m/z (%) = 110 (28), 95 (40), 67 (85), 43 (100); **HRMS:** [$C_7H_{10}O$]: calculated: 110.0733, found: 110.0732.

Preparation of compound 10:

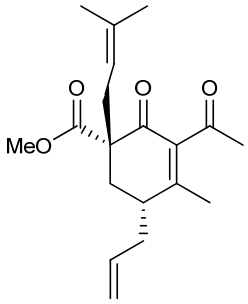


10

According to **GP-I** methylmagnesium chloride (3 M in THF, 7 mL, 20 mmol) in methanol was treated with dimethyl 1,3-acetonedicarboxylate (1.5 mL, 10 mmol) and **9** (1.38 g, 10 mmol) to yield **10** after flash chromatography (silica gel, petroleum ether/ethyl acetate; 8:1) as a pale yellow oil (2.23 g, 8.40 mmol, 84 %) and a mixture of diastereomers.

R_f = 0.25 (petroleum ether/ethyl acetate 6:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.86 – 5.64 (m, 1H), 5.22 – 4.98 (m, 2H), 3.82 (s, 3H), 3.76 (s, 3H), 3.54 (dd, *J* = 5.2, 11.9 Hz, 1H), 2.63 – 2.08 (m, 5H), 2.03 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz): δ 189.5, 170.0, 166.6, 163.0, 134.9, 134.0, 132.3, 118.4, 52.3, 48.9, 38.6, 35.4, 28.3, 20.9 ppm; **IR** (film): v = 2954 (w), 1744 (s), 1730 (vs), 1671 (s), 1627 (m), 1435 (m), 1330 (m), 1244 (s) cm^{-1}; **MS** (EI, 70eV): m/z (%) = 289 (100), 267 (4), 235 (3);
HRMS: [$C_{14}H_{18}O_5$ + Na] calculated: 289.1046, found: 289.1047.

Preparation of compound 11:

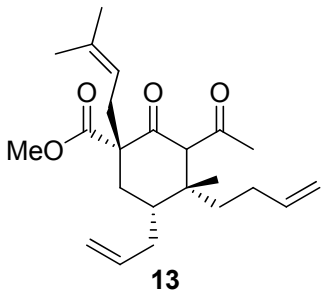


11

According to **GP-II 10** (1.33 g, 5 mmol) was treated with sodium hydride (60% in mineral oil, 240 mg, 6 mmol), and methyllithium (1.6 M in THF, 7.2 mL, 11.5 mmol). The crude product was treated directly with sodium hydride (60% in mineral oil, 300 mg, 7.5 mmol) and isoprenyl bromide (866 µL, 7.5 mmol, 1.5 eq.) to yield **11** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 6:1) as a yellow oil (827 mg, 2.6 mol, 52 and a mixture of diastereomers (> 95:5).

R_f = 0.56 (petroleum ether/ethyl acetate 3:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.83 – 5.66 (m, 1H), 5.20 – 5.00 (m, 2H), 3.74 (s, 3H), 2.67 – 2.36 (m, 5H), 2.31 (s, 3H), 2.28 – 2.05 (m, 3H), 1.95 (s, 3H), 1.69 (s, 3H), 1.63 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz): δ 204.0, 194.5, 172.8, 159.5, 139.2, 135.6, 134.8, 118.5, 118.2, 56.1, 52.5, 38.0, 36.1, 32.4, 32.0, 31.3, 28.0, 19.5, 18.1 ppm; **IR** (film): v = 2952 (w), 2914 (w), 2857 (w), 1739 (s), 1659 (s), 1616 (m), 1434 (m), 1379 (m), 1353 (m), 1320 (m), 1280 (m, 1240 S), 1205 (s) cm^{-1}; **MS** (ESI): m/z (%) = 341 (100), 319 (6), 265 (3), 219 (3); **HRMS:** [$C_{19}H_{26}O_4$ + Na] calculated: 341.1723, found: 341.1716.

Preparation of compound 13:



13

According to **GP-III 11** (756 mg, 2.37 mmol) was treated with lithium chloride (201 mg, 4.75 mmol), copper iodide (900 mg, 4.75 mmol), homoallylmagnesium bromide (3 M in THF, 1.58 mL, 4.75 mmol) and TMSCl (500 mg, 4,75 mmol) to yield **13** after

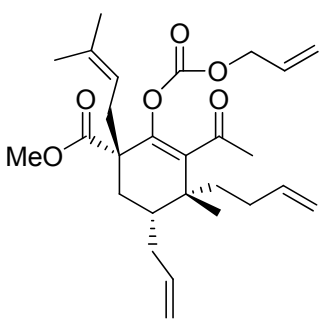
flash chromatography (silica gel, petroleum ether/ethyl acetate; 10:1) as yellow oil (798 mg, 2.13 mmol, 90%) and a mixture of diastereomers (**a**/**b** 1 : 1.4).

Diasteromere a:

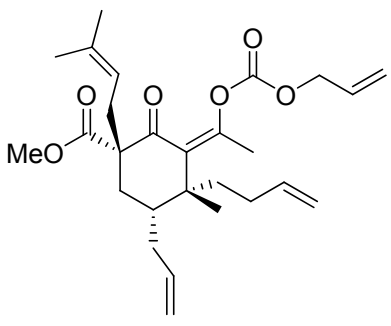
R_f = 0.50 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 500 MHz): δ 5.87 - 5.69 (m, 2H), 5.14 – 4.93 (m, 5H), 3.89 (s, 1H) 3.75 (s, 3H), 2.46 – 2.34 (m, 3H), 2.33 – 2.28 (m, 1H), 2.17 (s, 3H), 2.05 – 1.84 (m, 4H), 1.82 – 1.76 (m, 1H), 1.67 (s, 3H), 1.59 (s, 3H), 1.58 – 1.53 (m, 1H), 1.45 – 1.37 (m, 1H), 1.11 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.9, 204.6, 173.6, 138.2, 136.9, 135.7, 118.5, 116.7, 114.7, 67.9, 59.2, 52.4, 43.9, 40.8, 35.6, 33.8, 32.5, 32.3, 31.7, 27.1, 25.9, 21.4, 17.9 ppm; **IR** (film): v = 2974 (w), 2914 (m), 2883 (w), 1727 (s), 1706 (s), 1640 (w), 1434 (m), 1355 (m), 1215 (m) cm^{-1}; **MS** (ESI): m/z (%) = 397 (100); **HRMS:** [$C_{23}H_{34}O_4$ + Na] calculated: 397.2349, found: 397.2360.

Diasteromere b: R_f = 0.49 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.87 - 5.71 (m, 2H), 5.12 – 4.93 (m, 5H), 3.90 (s, 1H) 3.73 (s, 3H), 2.46 – 2.35 (m, 3H), 2.34 – 2.28 (m, 1H), 2.17 (s, 3H), 2.05 - 1.87 (m, 4H), 1.83 – 1.76 (m, 1H), 1.67 (s, 3H), 1.60 (s, 3H), 1.59 – 1.53 (m, 1H), 1.44 – 1.37 (m, 1H), 1.11 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.9, 204.6, 173.6, 138.2, 136.9, 135.7, 118.5, 116.7, 114.7, 67.9, 59.2, 52.4, 43.9, 40.8, 35.6, 33.8, 32.5, 32.3, 31.7, 27.1, 25.9, 21.4, 17,9 ppm; **IR** (film): v = 2974 (w), 2883 (w), 1727 (s), 1706 (s), 1640 (w), 1434 (m), 1333 (m), 1215 (m), 911 (s) cm^{-1}; **MS** (ESI): m/z (%) = 397 (100); **HRMS:** [$C_{23}H_{34}O_4$ + Na] calculated: 397.2349, found: 397.2350.

Preparation of compounds 15 and 16:



15



16

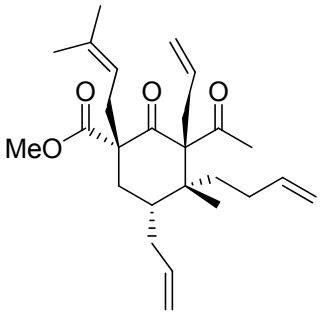
According to **GP-IV 13** (558 mg, 1.5 mmol) was treated with sodium hydride (60% in mineral oil, 66 mg, 1.65 mmol) and allyl chloroformate (240 µL, 2.25 mmol) to yield

15 and **16** after HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (646 , 1.41mol, 94) in a ratio of **a**/**b** 1 : 2.

Regioisomere 15: R_f = 0.39 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 6.00 - 5.90 (m, 1H), 5.79 – 5.71 (m, 1H), 5.68 – 5.60 (m, 1H), 5.41 – 5.31 (m, 2H), 5.05 – 4.89 (m, 5H), 4.70 – 4.66 (m, 2H), 3.76 (s, 3H), 2.77 – 2.70 (m, 1H), 2.64 – 2.57 (m, 1H), 2.41 - 2.36 (m, 1H), 2.23 - 2.19 (m, 1H), 2.05 – 1.95 (m, 3H), 1.93 (s, 3H), 1.83 – 1.70 (m, 2H), 1.69 (s, 3H), 1.66 (s, 3H), 1.52 – 1.44 (m, 1H), 1.34 – 1.29 (m, 1H),1.30 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.8, 172.1, 152.2, 147.4, 138.7, 136.9, 136.1, 132.5, 131.0, 119.5, 117.9, 116.6, 114.3, 69.0, 62.6, 52.3, 46.9, 42.3, 33.7, 33.3, 31.9, 30.5, 28.4, 26.0, 23.4, 19.0, 18.2 ppm; **IR** (film): v = 2951 (w), 2914 (w), 1755 (s), 1737 (s), 1640 (m), 1435 (m), 1234 (s), 1210 (s), 910 (m) cm^{-1}; **MS** (ESI): m/z (%) = 481 (100), 459 (3), 376 (12); **HRMS:** [$C_{27}H_{38}O_6$+Na] calculated: 481.2561, found 481.2560.

Regioisomere 16: R_f = 0.31 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.94 - 5.86 (m, 1H), 5.83 – 5.74 (m, 1H), 5.70 – 5.61 (m, 1H), 5.39 – 5.26 (m, 2H), 5.09 – 4.90 (m, 5H), 4.62 – 4.58 (m, 2H), 3.65 (s, 3H), 2.81 – 2.75 (m, 1H), 2.42 – 2.37 (m, 2H), 2.29 (s, 3H), 2.28 - 2.22 (m, 1H), 2.20 – 2.10 (m, 2H), 1.90 – 1.77 (m, 2H), 1.68 (s, 3H), 1.66 – 1.49 (m, 3H), 1.62 (s, 3H), 1.10 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 203.4, 173.0, 152.3, 145.4, 139.1, 138.3, 137.1, 135.1, 131.0, 119.4, 119.1, 116.7, 114.1, 69.3, 52.5, 50.1, 40.8, 40.3, 35.3, 34.2, 34.0, 32.3, 31.1, 30.4, 26.4, 26.0, 18.2 ppm; **IR** (film): v = 2974 (w), 2933 (w), 2914 (w), 1767 (s), 1734 (m), 1699 (m), 1452 (m), 1236 (s), 1210 (s) cm^{-1}; **MS** (ESI): m/z (%) = 481 (100), 459 (3), 376 (12); **HRMS:** [$C_{27}H_{38}O_6$] calculated: 458.2668 und 458.2669.

Preparation of compound 19:

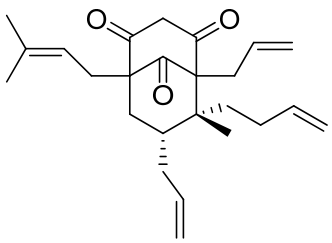


19

According to **GP-V** **15** and **16** (178 mg, 0.38 mmol) were treated with tris(dibenzylideneacetone)dipalladium(0) (17.8 mg, 19.0 µmol) and tri(*p*-tolyl)phosphine (29.0 mg, 95.0 µmol) to yield product **19** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (149.5 mg, 0.34 mmol, 90%) and a mixture of diastereomers. (> cis/trans 95:5).

R_f = 0.51 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.78 - 5.62 (m, 2H), 5.38 – 5.30 (m, 1H), 5.17 – 5.12 (m, 1H), 5.06 – 4.88 (m, 6H), 3.77 (s, 3H), 3.20 – 3.14 (m, 1H), 2.54 – 2.48 (m, 1H), 2.44 - 2.36 (m, 2H), 2.28 - 2.23 (m, 1H), 2.20 (s, 3H), 2.17 – 2.11 (m, 1H), 2.08 – 1.98 (m, 2H), 1.87 – 1.81 (m, 4H), 1.71 (s, 3H), 1.62 (s, 3H), 1.57 – 1.54 (m, 1H), 1.02 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 208.9, 207.2, 172.9, 138.2, 137.1, 135.4, 133.7, 119.3, 117.5, 116.7, 114.7, 73.9, 59.9, 52.5, 43.5, 38.6, 37.7, 34.5, 34.0, 33.9, 32.9, 30.5, 29.2, 25.9, 18.3, 18.2 ppm; **IR** (film): v = 2977 (m), 2959 (m), 1748 (s), 1697 (s), 1686 (s), 1640 (m), 1433 (m), 1233 (m), 1213 (m) cm^{-1}; **MS** (ESI): m/z (%) = 437 (100); **HRMS:** [$C_{26}H_{38}O_4$ + Na] calculated: 437.2662, found: 437.2656.

Preparation of compound 20:



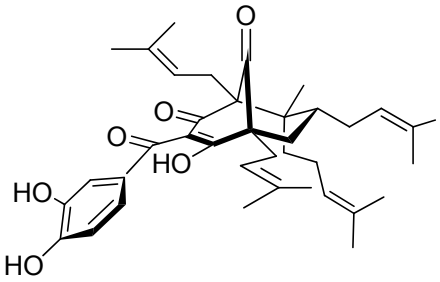
20

According to **GP-VI** **19** (64 mg, 0.15 mmol) was treated with potassium *tert*-butanolate (35 mg, 0.3 mmol) to yield product **20** after flash column chromatography (silica gel, petroleum ether/ethyl acetate; 4:1) as a colourless oil (57.4 mg, 0.15 mmol, quant.).

R_f = 0.6 (petroleum ether/ethyl acetate 1:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.85 - 5.78 (m, 1H), 5.75 – 5.66 (m, 1H), 5.57 – 5.48 (m, 1H), 5.09 – 4.95 (m, 7H), 3.61 (d, *J* = 15.3 Hz, 1H), 2.92 (d, *J* = 15.3 Hz, 1H), 2.70 – 2.65 (m, 1H), 2.58 – 2.53 (m, 1H), 2.49 - 2.44 (m, 2H), 2.39 – 2.35 (m, 1H), 2.25 – 2.14 (m, 2H), 2.05 – 1.96 (m, 2H), 1.89 – 1.81 (m, 1H), 1.65 (s, 3H), 1.64 (s, 3H), 1.56 – 1.41 (m, 3H), 0.99 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 210.0, 203.2, 201.9, 138.0, 135.9, 135.8, 132.1, 120.6, 117.8, 117.6, 155.0, 71.5, 64.3, 64.2, 53.5, 41.6, 39.8, 34.16, 33.0, 32.4, 31.9,

27.8, 26.0, 22.3, 17.9 ppm; **IR** (film): v = 3077 (w), 2928 (w), 1728 (m), 1639 (m), 1591 (s), 1432 (m), 1241 (m), 1219 (m) cm^{-1}; **MS** (ESI): m/z (%) = 405 (100), 383 (30), 329 (10); **HRMS:** [$C_{25}H_{34}O_3$ + Na] calculated: 405.2400, found: 405.2393.

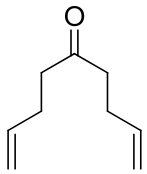
Preparation of 6-*epi*-Guttiferone



Acorrding to **GP-VII 20** (0.07 mmol, 27 mg) was treated with 2-methyl-2-butene (7 mmol; 900 mg), Grubb`s II (0.7 µmol, 0.6 mg), potassium *tert*-butanolate (0.7 mmol, 90 mg) and 3,4 bisacetoxybenzoyl cyanide (3.25 mmol, 530 mg, 25 eq.) to yield 6 -*epi*- guttiferone A after purification by HPLC (petroleum ether/ethyl acetate; 1:1) as a yellow oil (21 mg, 0.035 mmol, 50%).

R_f = 0.69 (Petrolether/Ethylacetat 1:1); **^{1}H-NMR** (Pyridin-d5, 500 MHz): δ 7.86 (d, *J* = 1.7 Hz, 1H), 7.59 (dd, *J* = 8.3, 1.8 Hz, 1H), 7.11 (d, *J* = 8.3 Hz, 1H), 5.76 – 5.71 (m, 1H), 5.57 – 5.52 (m, 1H), 5.18 – 5.16 (m, 1H), 5.10 – 5.08 (m, 1H), 3.12 (dd, *J* = 13.6, 7.8 Hz, 1H), 3.08-2.98 (m, 1H), 2.87 (d, *J* = 6.4 Hz, 2H), 2.85-2.82 (m, 1H), 2.54-2.33 (m, 3H), 2.19 (dd, *J* = 14.0, 7.2 Hz, 1H), 2.15-2.06 (m, 1H), 2.01-1.92 (m, 1H), 1.83 (dd, *J* = 13.1, 4.7 Hz, 1H), 1.80-1.75 (m, 1H), 1.77 (s, 3H), 1.73 (s, 3H), 1.71 (s, 3H), 1.70 (s, 3H), 1.65 (s, 3H), 1.64 (s, 3H), 1.62 (s, 3H), 1.60 (s, 3H), 1.58 (s, 3H), 1.18 (s, 3H) ppm; **^{13}C-NMR** (Pyridin-d5, 125 MHz): δ 212.3, 197.7, 192.4, 190.9, 172.3, 154.4, 148.4, 135.0, 134.6, 134.4, 132.8, 132.6, 127.3, 127.0, 123.8, 123.4, 121.5, 118.7, 117.2, 69.2, 62.2, 61.9, 51.6, 44.9, 39.8, 36.1, 33.6, 30.7, 28.6, 27.7, 27.6, 27.4, 24.6, 22.4, 20.0, 19.8, 19.3, 15.8 ppm; **IR** (film): v = 3368 (m), 2971 (m), 2917 (m), 2360 (m), 2340 (m), 1730 (m), 1641 (m), 1602 (s), 1519 (s), 1442 (s), 1379 (s), 1290 (s), 1192 (m), 1117 (m) cm^{-1}; **MS** (ESI): m/z (%) = 603 (100) 533 (98), 467 (58), 263 (10), 179 (13).; **HRMS**: [$C_{38}H_{50}O_6$ + H] calculated: 603.3680, found: 603.3692.

Preparation of compound 21: [7]



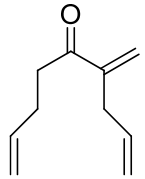
21

To a solution of nona-1,8-dien-5-ol (1.0 g, 7 mmol, 1 eq.) in acetone (10 mL) was added dropwise Jone`s reagent (4.0 mL, 10.5 mmol, 1.5 eq.). The reaction mixture was stirred at room temperature for 30 minutes and quenched by aq. NH_4Cl. The resulting mixture was extracted twice with Et_2O and the combined organic layers were washed with aq. $NaHCO_3$ and brine, dried over anhydrous $MgSO_4$ and concentrated in vacuo to give the nona-1,8-dien-5-one **21** (918 mg, 95%) as a yellow liquid. Spectroscopicdata were identical to those described in the literature.[7]

^{1}H-NMR ($CDCl_3$, 300 MHz) δ 5.89 - 5.72 (m, 2H), 5.10 - 4.93 (m, 4H), 2.55 - 2.47 (m, 4H), 2.37 - 2.29 (m, 4H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz) δ 209.4, 137.1, 115.2, 41.8, 27.7 ppm; **IR** (film) v 2919 (w), 1712 (s), 1641 (m), 1412 (w), 994 (m), 908 (s) cm^{-1}

GC/MS (EI, 70 eV): m/z 138 (13), 83 (89), 55 (100), 39 (12); **HRMS** [$C_9H_{14}O$]:calculated 138.1045, found: 138.1045.

Preparation of compound 22:



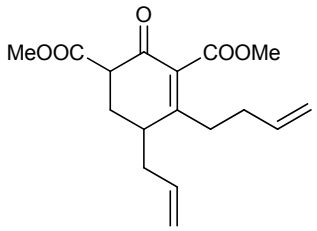
22

Nona-1,8-dien-5-one **21** (2.0 g, 15 mmol, 1 eq) was dissolved in THF (25 mL) cooled to -78°C and LiHMDS (18 mmol, 1.2 eq.) dissolved in THF (25mL) was added dropwise. After stirring for 1h benzoyl cyanide (2.9 g, 22.5 mmol, 1.5 eq.) was added portionwise. The mixture was allowed to warm to room temperature and stirred over night. It was hydrolysed with demin. water (30 mL) and extracted with ethyl acetate (3 x 100 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was used without further purification.

The crude product (3.7 g, 15 mmol, 1 eq.) was dissolved in ethanol (30 mL) and formaldehyde (37% in water, 3 mL) and potassium carbonate (4.1 g, 30 mmol, 2 eq.), dissolved in demin. water (3 mL), were added. After stirring over night at room temperature the mixture was hydrolysed with demin. water (40 mL) and extracted with pentane (3 x 40 mL). The combined organic layers were washed with brine, dried over Na_2SO_4, filtered and concentrated in vacuo. The crude product was purified via column chromatography (silica gel, pentane/ diethyl ether 20:1) yielding **22** (1.8 g, 11.7 mmol, 78%) as a colourless liquid.

R_f = 0.53 (petroleum ether/ ethyl acetate 20:1);**^{1}H-NMR** ($CDCl_3$, 300 MHz) δ 6.07 (s, 1H), 5.90 - 5.74 (m, 3H), 5.11 - 4.99 (m, 4H) 3.06 - 3.00 (m,2H), 2.54 - 2.48 (m, 2H), 2.41 - 2.28 (m, 2H); **^{13}C-NMR** ($CDCl_3$, 75 MHz) δ 200.5, 147.0, 137.3, 135.4, 124.6, 116.7, 115.1, 36.8, 34.9, 28.3 ppm; **IR** (film) v 2979 (w), 2921 (w), 1677 (s), 1674 (s), 1641 (m), 1413 (m), 995 (m), 908 (s), 712 (m) cm^{-1}; **HRMS** [$C_{10}H_{14}O$ + Na]: calculated: 173.0945, found: 173.0958.

Preparation of compound 23:

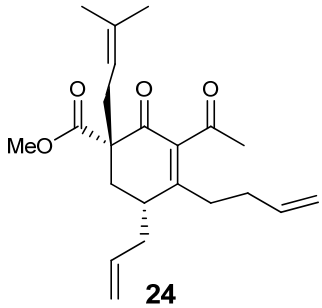


23

According to **GP-I** methylmagnesium chloride (3 M in THF, 14 mL, 40 mmol) in methanol was treated with dimethyl 1,3-acetonedicarboxylate (2.95 mL, 20 mmol) and **22** (2.76 g, 20 mmol) to yield **23** after flash chromatography (silica gel, petroleum ether/ethyl acetate; 6:1) as a pale yellow oil (17.8 mmol, 5.24 g, 89 %) and a mixture of diastereomers.

R_f = 0.51 (petroleum ether/ethyl acetate 6:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ = 5.84 – 5.65 (m, 2H), 5.14 – 4.91 (m, 4H), 3.77 (s, 3H), 3.74 (s, 3H), 3.45 (m, 1H), 2.58 – 2.49 (m, 1H), 2.39 – 2.06 (m, 5H), 1.98 – 1.37 (m, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz): δ = 171.6, 170.6, 163.4, 137.1, 135.9, 115.6, 114.1, 97.2, 76.2, 72.7, 51.8, 51.7, 50.8, 37.4, 32.1, 25.8, 23.7 ppm; **IR** (film): v = 2953 (w), 1744 (s), 1713 (m), 1667 (w), 1624 (w), 1436 (m), 632 (s), 560 (s) cm^{-1}; **MS** (EI, 70eV): m/z (%) = 329 (100), 307 (6), 297 (2), 275 (4); **HRMS:** [$C_{17}H_{22}O_5$ + Na] calculated: 329.1365, found: 329.1348.

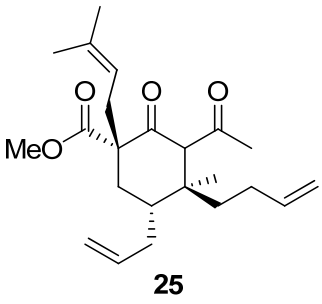
Preparation of compound 24:



24

According to **GP-II 23** (3.06 g, 10.0 mmol) was treated with NaH (60% in mineral oil, 440 mg, 11.0 mmol), and methyllithium (1.6 M in THF, 14.4 mL, 23.0 mmol). The crude product was treated directly with NaH (60% in mineral oil, 428 mg, 10.7 mmol), 18-crown-6 (257 mg, 0.94 mmol) and isoprenyl bromide (2.20 mL, 19.4 mmol) to yield **24** after column chromatography (silica gel, petroleum ether/ethyl acetate; 10:1) as a yellow oil (1.72 g, 4.8 mmol, 48%) and a mixture of diastereomers (>95:5).
R_f = 0.21 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ = 5.83 – 5.68 (m, 2H), 5.18 – 5.01 (m, 5H), 3.73 (s, 3H), 2.64 – 2.40 (m, 4H), 2.38 – 2.32 (m, 2H) 2.31 (s, 3H), 2.30 – 2.19 (m, 3H), 2.17 – 2.04 (m, 2H), 1.70 (s, 3H), 1.62 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 75 MHz): δ = 204.0, 194.9, 172.7, 161.9, 139.5, 136.5, 135.5, 134.8, 118.4, 118.2, 116.1, 56.1, 52.4, 36.2, 35.1, 32.5, 32.3, 32.1, 31.6, 31.5, 26.0, 18.0 ppm; **IR** (film): v = 2951 (w), 2930 (w), 2858 (w), 1736 (s), 1702 (s), 1658 (m), 1611 (w), 1434 (m), 1354 (m), 1229 (s), 1199 (s), 993 (m) cm^{-1}; **MS** (ESI): m/z (%) = 381 (100); **HRMS:** [$C_{22}H_{30}O_4$ + Na] calculated: 381.2036, found: 381.2010.

Preparation of compound 25:



25

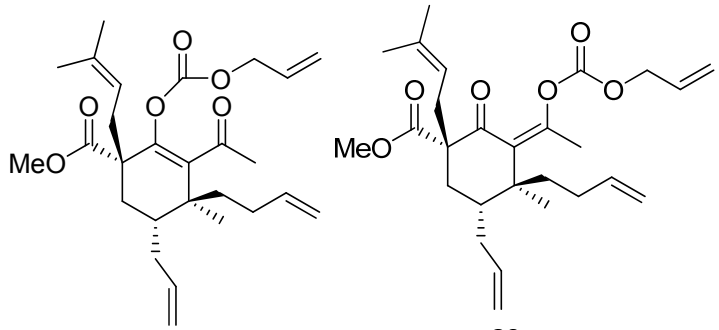
According to **GP-III 24** (358 mg, 1.0 mmol) was treated with lithium chloride (85 mg, 2.0 mmol), copper iodide (381 mg, 2.0 mmol), methylmagnesium bromide (3 M in Et_2O, 0.66 mL, 2.0 mmol) and TMSCl (253 µL, 2.0 mmol) to yield **25** after flash

chromatography (silica gel, petroleum ether/ethyl acetate; 6:1) as yellow oil (333 mg, 1 mmol, 89%) and a mixture of diastereomers (**a**/**b** 1 : 2.2).

Diasteromere a: R_f = 0.57 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.78 - 5.69 (m, 2H), 5.14 – 4.96 (m, 5H), 3.75 (s, 3H) 3.73 (s, 1H), 2.72 – 2.66 (m, 1H), 2.63 – 2.57 (m, 1H), 2.36 - 2.29 (m, 1H), 2.22 - 2.06 (m, 2H), 2.05 (s, 3H), 2.02 – 1.95 (m, 1H), 1.96 – 1.87 (m, 2H), 1.77 - 1.72 (m, 1H), 1.71 (s, 3H), 1.60 - 1.57 (m, 2H), 1.56 (s, 3H), 1.10 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 207.3, 204.3, 172.1, 137.7, 136.4, 135.4, 118.7, 117.0, 115.2, 65.6, 61.7, 52.4, 44.8, 37.4, 35.5, 34.2, 32.7, 32.6, 32.1, 27.6, 25.9, 18.2, 17.4 ppm; **IR** (film): v = 2916 (w), 2851 (w), 1727 (s), 1700 (s), 1640 (w), 1433 (m), 1354 (m), 1352 (m), 1283 (w), 1228 (s), 911 (s) cm^{-1}; **MS** (ESI): m/z (%) = 397 (100), 375 (6); **HRMS:** [$C_{23}H_{34}O_4$ + Na] calculated: 397.2355, found: 397.2368.

Diasteromere b: R_f = 0.56 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.85 - 5.65 (m, 2H), 5.09 – 4.90 (m, 5H), 3.75 (s, 3H) 3.73 (s, 1H), 2.46 – 2.36 (m,1H), 2.25 – 2.17 (m, 2H), 2.16 (s, 3H), 2.15 - 2.04 (m, 2H), 1.97 – 1.85 (m, 2H), 1.83 – 1.69 (m, 2H), 1.66 (s, 3H), 1.59 (s, 3H), 1.38 – 1.27 (m, 1H), 0.97 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.7, 203.6, 173.2, 138.3, 137.2, 135.8, 118.6, 116.6, 114.6, 77.2, 70.1, 60.6, 52.4, 43.0, 37.8, 34.9, 32.9, 32.7, 31.3, 27.7, 25.9, 20.7, 18.0, 17.4 ppm; **IR** (film): v = 2916 (w), 2851 (w), 1727 (s), 1700 (s), 1640 (w), 1433 (m), 1354 (m), 1352 (m), 1283 (w), 1228 (s), 911 (s) cm^{-1}; **MS** (ESI): m/z (%) = 397 (100), 375 (6); **HRMS:** [$C_{23}H_{34}O_4$ + Na] calculated: 397.2355, found: 397.2368.

Preparation of compounds 27 and 28:



27 **28**

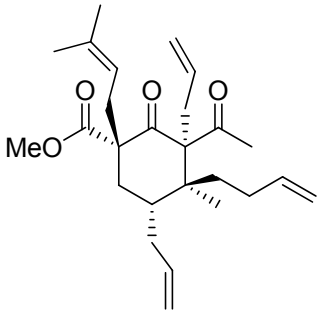
According to **GP-IV 25** (1.16 g, 3.0 mmol) was treated with sodium hydride (60% in mineral oil, 132 mg, 3.3 mmol) and allyl chloroformate (480 µL, 4.5 mmol) to yield **27**

and **28** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (1.35 g, 2.94 mmol, 98%) in a ratio of **a**/**b** 1 : 1.5.

Regioisomere 27: R_f = 0.38 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.99 - 5.90 (m, 1H), 5.78 – 5.70 (m, 1H), 5.65 – 5.58 (m, 1H), 5.43 – 5.29 (m, 2H), 5.05 – 4.89 (m, 5H), 4.69 – 4.65 (m, 2H), 3.69 (s, 3H), 2.63 – 2.58 (m, 1H), 2.48 – 2.37 (m, 2H), 2.24 - 2.19 (m, 1H), 2.00 (s, 3H), 1.93 – 1.72 (m, 4H), 1.68 (s, 3H), 1.67 – 1.62 (m, 1H), 1.61 (s, 3H), 1.58 – 1.49 (m, 1H), 1.46 – 1.40 (m, 1H),1.18 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 202.5, 171.9, 151.6, 150.5, 138.7, 136.9, 135.6, 133.5, 131.0, 119.5, 118.2, 116.6, 114.3, 69.0, 59.9, 52.5, 44.7, 37.7, 36.9, 33.6, 32.9, 31.2, 28.4, 26.0, 19.2, 18.3, 18.0 ppm; **IR** (film): v = 2975 (w), 2913 (w), 1758 (m), 1738 (m), 1703 (m), 1640 (w), 1434 (w), 1380 (m), 1261 (m), 1209 (s), 1161 (m) cm^{-1}; **MS** (ESI): m/z (%) = 481 (100), 459 (2), 413 (20), 376 (12); **HRMS:** [$C_{27}H_{38}O_6$ + Na] calculated: 481.2561, found: 481.2583.

Regioisomere 28: R_f = 0.38 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.95 - 5.85 (m, 1H), 5.82 – 5.73 (m, 1H), 5.69 – 5.60 (m, 1H), 5.38 – 5.28 (m, 2H), 5.10 – 4.94 (m, 5H), 4.61 – 4.59 (m, 2H), 3.68 (s, 3H), 2.78 – 2.71 (m, 1H), 2.46 – 2.40 (m, 1H), 2.29 (s, 3H), 2.27 – 2.22 (m, 1H), 2.07 – 1.97 (m, 3H), 1.92 – 1.86 (m, 1H), 1.83 – 1.75 (m, 1H), 1.69 (s, 3H), 1.68 – 1.64 (m, 1H), 1.63 (s, 3H), 1.62 – 1.56 (m, 1H), 1.47 – 1.40 (m, 1H), 1.15 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 203.0, 173.3, 152.3, 146.6, 139.0, 138.2, 136.9, 134.7, 131.0, 119.5 (2C), 116.6, 114.5, 69.2, 52.5, 50.7, 41.9, 35.3, 34.0, 33.9, 33.3, 32.1, 30.5, 28.9, 26.0, 21.8, 18.2 ppm; **IR** (film): v = 2975 (w), 2919 (w), 1767 (s), 1734 (m), 1695 (m), 1433 (m), 1232 (s), 1170 (m) cm^{-1}; **HRMS**: [$C_{27}H_{38}O_6$ + Na] calculated: 458.2668, found: 458.2674.

Preparation of compound 31:

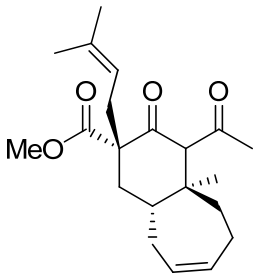


31

According to **GP-V 27** and **28** (46 mg, 0.1 mmol) were treated with tris(dibenzylideneacetone)dipalladium(0) (4.5 mg, 5.0 µmol) and tri(*p*-tolyl)phosphine (7.3 mg, 24.0 µmol) to yield product **31** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (37 mg, 0.09 mmol, 92%) and a mixture of diastereomers (cis/trans < 5:95).

R_f = 0.56 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.74 - 5.61 (m, 3H), 5.11 – 4.88 (m, 7H), 3.73 (s, 3H), 3.09 – 3.03 (m, 1H), 2.73 – 2.66 (m, 1H), 2.49 - 2.35 (m, 4H), 2.09 (s, 3H), 2.08 – 1.96 (m, 2H), 1.95 – 1.76 (m, 4H), 1.67 (s, 3H), 1.65 – 1.61 (m, 1H), 1.59 (s, 3H), 0.90 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 207.5, 205.1, 172.5, 138.4, 137.4, 136.3, 134.3, 118.6, 117.3, 116.5, 114.3, 76.4, 62.1, 52.4, 44.5, 38.6, 36.9, 36.8, 34.6, 33.2, 30.8, 29.8, 29.7, 25.9, 18.5, 16.3 ppm; **IR** (film): ν = 2976 (w), 1744 (m), 1684 (s), 1434 (m), 1236 (m), 1172 (m) cm^{-1}; **MS** (ESI): m/z (%) = 505 (2), 437 (100), 415 (3); **HRMS:** [$C_{26}H_{38}O_4$ + Na] calculated: 437.2662, found: 437.2673.

Preparation of compound 32:



32

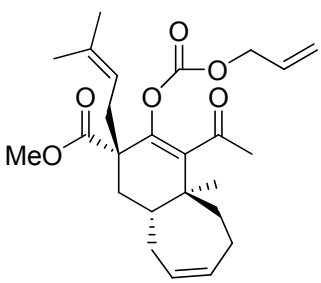
Substrate **25** (834 mg, 2.2 mmol) was dissolved in abs. DCM (21 mL) and Grubb`s II (9 mg, 1 mol%) was added at room temperature. The reaction mixture was heated to reflux for 2h.[8] The solvent was removed under vacuo and the crude product purified via flash chromatography. The product **32** (715 mg, 2.0 mmol, 94%) was isolated as a mixture of diastereomers.

Diasteromere a: R_f = 0.54 (petroleum ether/ethyl acetate 15:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.85 - 5.79 (m, 1H), 5.75 – 5.70 (m, 1H), 4.97 – 4.93 (m, 1H), 3.74 (s, 3H) 3.46 (s, 1H), 2.84 – 2.77 (m, 1H), 2.68 – 2.62 (m, 1H), 2.47 - 2.42 (m, 1H), 2.23 - 2.15 (m, 3H), 2.14 (s, 3H), 2.07 – 1.99 (m, 1H), 1.88 – 1.80 (m, 2H), 1.71 - 1.67 (m, 1H), 1.66 (s, 3H), 1.62 (s, 3H), 1.24 – 1.18 (m, 1H), 1.03 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.1, 203.4, 172.5, 135.7, 132.6, 129.8, 119.2, 76.4, 62.5,

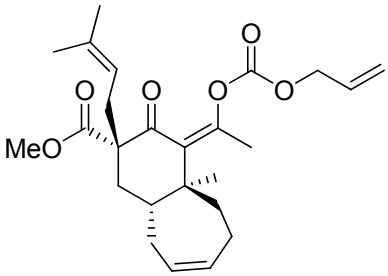
52.4, 43.3, 37.4, 37.1, 33.5, 32.8, 32.4, 31.3, 25.9, 23.0, 19.6, 18.0 ppm; **IR** (film): v = 2928 (w), 2853 (w), 1744 (s), 1688 (s), 1457 (w), 1434 (w), 1234 (m), 1200 (m), 1080 (w), 995 (w) cm^{-1}; **MS** (ESI): m/z (%) = 369 (100), 347 (5), 279 (2); **HRMS:** [$C_{21}H_{30}O_4$ + Na] calculated: 369.2044, found: 369.2043.

Diasteromere b: R_f = 0.54 (petroleum ether/ethyl acetate 15:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.81 - 5.75 (m, 1H), 5.73 – 5.68 (m, 1H), 5.17 – 5.12 (m, 1H), 3.75 (s, 3H) 3.66 (s, 1H), 2.77 – 2.72 (m, 1H), 2.68 – 2.63 (m, 1H), 2.36 - 2.29 (m, 2H), 2.21 - 2.08 (m, 4H), 2.14 (s, 3H), 1.71 (s, 3H), 1.70 (s, 3H), 1.69 – 1.63 (m, 2H), 1.55 – 1.49 (m, 1H), 1.19 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 206.8, 204.9, 172.1, 135.4, 132.1, 130.2, 118.9, 68.8, 61.7, 52.4, 44.9, 41.2, 38.3, 37.1, 32.9, 32.7, 29.9, 25.9, 23.0, 18.0, 15.4 ppm; **IR** (film): v = 2913 (w), 2839 (w), 1725 (s), 1699 (s), 1454 (m), 1433 (m), 1231 (s), 1174 (m), 1076 (w), 1000 (w) cm^{-1}; **MS** (ESI): m/z (%) = 369 (100), 347 (5); **HRMS:** [$C_{21}H_{30}O_4$ + Na] calculated: 369.2044, found: 369.2041.

Preparation of compounds 33 and 34:



33



34

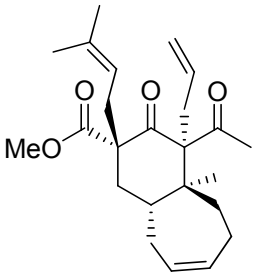
According to **GP-IV 32** (585 mg, 1.6 mmol) was treated with sodium hydride (60% in mineral oil, 81 mg, 2.0 mmol) and allyl chloroformate (204 µL, 1.92 mmol) to yield **33** and **34** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (675 mg, 1.57 mmol, 98 %) in a ratio of **a**/**b** 1 : 1.4.

Regioisomere 33: R_f = 0.37 (petroleum ether/ethyl acetate 20:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.99 - 5.90 (m, 1H), 5.69 – 5.63 (m, 1H), 5.59 – 5.54 (m, 1H), 5.41 – 5.31 (m, 1H), 5.33 – 5.30 (m, 1H), 5.04 – 5.00 (m, 1H), 4.69 – 4.66 (m, 2H), 3.69 (s, 3H), 2.73 – 2.67 (m, 1H), 2.65 – 2.59 (m, 1H), 2.47 - 2.41 (m, 1H), 2.28 - 2.20 (m, 1H), 2.10 – 2.05 (m, 2H), 1.97 (s, 3H), 1.82 – 1.71 (m, 4H), 1.69 (s, 3H), 1.62 (s, 3H), 1.54 – 1.50 (dd, *J*= 2.8, 13.7 Hz, 1H), 1.20 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 202.7, 171.6, 151.6, 149.1, 135.8, 135.7, 131.7, 131.0, 129.1, 119.5, 118.1, 69.0, 60.5, 52.4, 44.7, 41.8, 39.1, 35.5, 33.2, 31.4, 26.0, 24.7, 18.1, 17.9, 17.0 ppm;

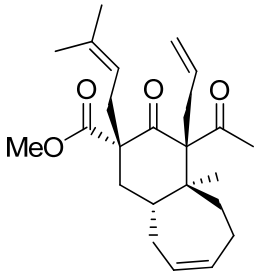
IR (film): v = 2950 (w), 2913 (w), 1766 (m), 1730 (s), 1696 (w), 1452 (w), 1432 (m), 1233 (s), 1167 (m), 904 (m), 730 (s) cm^{-1}; **HRMS:** [$C_{25}H_{34}O_6$ + Na] calculated: 453.2253, found: 453.2248.

Regioisomere 34: R_f = 0.37 (petroleum ether/ethyl acetate 20:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.94 - 5.85 (m, 1H), 5.70 – 5.67 (m, 2H), 5.38 – 5.26 (m, 2H), 5.07 – 5.00 (m, 1H), 4.59 – 4.57 (m, 2H), 3.63 (s, 3H), 2.84 – 2.74 (m, 1H), 2.47 – 2.41 (m, 1H), 2.37 - 2.32 (m, 1H), 2.28 (s, 3H), 2.26 – 2.04 (m, 3H), 1.88 – 1.76 (m, 2H), 1.70 (s, 3H), 1.63 (s, 3H), 1.62 – 1.41 (m, 3H), 1.30 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 204.3, 172.7, 152.4, 144.2, 142.1, 135.8, 131.0 (2C), 130.2, 119.3, 119.1, 69.2, 52.5, 50.6, 41.8, 39.2, 37.5, 34.0, 33.3, 32.5, 32.0, 26.0, 24.2, 18.2, 18.0 ppm; **IR** (film): v = 2949 (w), 2913 (w), 1768 (m), 1730 (s), 1670 (w), 1452 (w), 1444 (m), 1233 (s), 1167 (m), 904 (m), 729 (s) cm^{-1}; **HRMS**: [$C_{25}H_{34}O_6$ + Na] calculated: 453.2253, found: 453.2247.

Preparation of compound 37 and 38:



37



38

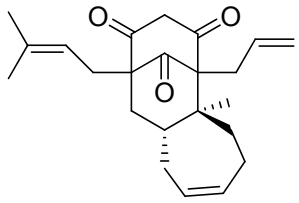
According to **GP-V 33** and **34** (43 mg, 0.1 mmol) were treated with tris(dibenzylideneacetone)dipalladium(0) (4.5 mg, 5.0 µmol) and tri(*p*-tolyl)phosphine (7.3 mg, 24.0 µmol) to yield products **37** and **38** after purification by HPLC (silica gel, petroleum ether/ethyl acetate; 20:1) as a yellow oil (36 mg, 0.09 mmol, 94%) and a mixture of diastereomers. (cis/trans >95:5).

Diastereomere 38 (cis): R_f = 0.52 (petroleum ether/ethyl acetate 10:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.79 - 5.74 (m, 1H), 5.65 – 5.60 (m, 1H), 5.35 – 5.26 (m, 1H), 5.22 – 5.18 (m, 1H), 4.95 – 4.87 (m, 2H), 3.75 (s, 3H), 3.29 – 3.24 (m, 1H), 2.51 – 2.47 (m, 2H), 2.43 - 2.34 (m, 3H), 2.31 - 2.22 (m, 2H), 2.13 (s, 3H), 2.12 – 2.05 (m, 1H), 1.91 – 1.79 (m, 2H), 1.73 (s, 3H), 1.72 – 1.69 (m, 1H), 1.64 (s, 3H), 1.43 – 1.37 (m, 1H), 1.15 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 208.7, 206.6, 172.7, 135.7, 133.8, 132.5, 128.5, 119.4, 117.6, 74.8, 60.3, 52.5, 42.9, 37.3, 35.0, 34.6, 34.5, 33.5,

32.9, 31.6, 25.9, 24.6, 21.2, 18.1 ppm; **IR** (film): **v** = 3020 (w), 1747 (m), 1685 (m), 1433 (m), 1234 (m), 1173 (m), 905 (s), 728 (s) cm^{-1}; **MS** (ESI): m/z (%) = 409 (100), 387 (3), 327 (3); **HRMS:** [$C_{24}H_{34}O_4$ + Na] calculated: 409.2349, found: 409.2344.

Diastereomere 37 (trans/ minor diastereomere): R_f = 0.52 (petroleum ether/ethyl acetate 10:1);**^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.88 - 5.82 (m, 1H), 5.74 – 5.64 (m, 2H), 5.10 – 4.99 (m, 3H), 3.74 (s, 3H), 3.05 – 2.98 (m, 1H), 2.73 – 2.66 (m, 2H), 2.61 - 2.56 (m, 1H), 2.49 - 2.44 (m, 1H), 2.37 – 2.30 (m, 1H), 2.28 – 2.22 (m, 1H), 2.12 – 2.07 (m, 2H), 2.04 (s, 3H), 2.03 – 1.97 (m, 1H), 1.77 – 1.71 (m, 1H), 1.70 (s, 3H), 1.67 – 1.62 (m, 1H), 1.61 (s, 3H), 1.59 – 1.57 (m, 1H), 1.03 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 207.7, 205.5, 172.3, 136.4, 135.8, 133.2, 129.5, 118.9, 117.0, 74.9, 62.3, 52.4, 46.7, 35.8, 35.4, 35.1, 34.5, 33.8, 31.7, 30.5, 25.9, 23.1, 18.3, 18.2 ppm; **IR** (film): v = 2855 (w), 2253 (w), 1737 (m), 1685 (m), 1434 (w), 1236 (w) cm^{-1}; **MS** (ESI): m/z (%) = 386 (35), 327 (40), 275 (40), 243 (100), 69 (78); **HRMS:** [$C_{24}H_{34}O_4$] calculated: 386.2457, found: 386.2454.

Preparation of compound 39:



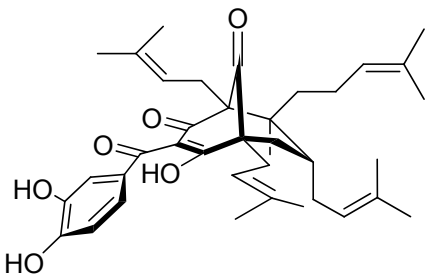
39

According to **GP-VI 37** (53 mg, 0.14 mmol) was treated with potassium *tert*-butanolate (31 mg, 0.27 mmol) to yield product **39** after flash column chromatography (silica gel, petroleum ether/ethyl acetate; 4:1) as a colourless oil (45 mg, 0.13 mmol, 90%).

R_f = 0.43 (petroleum ether/ethyl acetate 1:1); **^{1}H-NMR** ($CDCl_3$, 300 MHz): δ 5.53 - 5.49 (m, 2H), 5.29 – 5.24 (m, 1H), 5.08 – 5.02 (m, 2H), 3.56 (d, *J* = 19.7 Hz, 1H), 2.89 (d, *J* = 19.7 Hz, 1H), 2.88 – 2.84 (m, 1H), 2.70 – 2.64 (m, 1H), 2.55 - 2.50 (m, 1H), 2.27 – 2.22 (m, 2H), 2.19 – 2.10 (m, 1H), 2.02 – 1.94 (m, 2H), 1.85 – 1.75 (m, 2H), 1.70 (s, 3H), 1.67 (s, 3H), 1.65 – 1.58 (m, 2H), 1.35 – 1.29 (m, 1H), 1.12 (s, 3H) ppm; **^{13}C-NMR** ($CDCl_3$, 125 MHz): δ 209.3, 202.9, 198.2, 135.0, 132.2, 128.8, 128.0, 120.8, 119.0, 70.3, 68.0, 56.1, 52.2, 43.8, 39.7, 35.7, 34.3, 32.5, 26.8, 25.9, 25.2, 17.9, 15.2 ppm;.**IR** (film): v = 3014 (w), 2926 (w), 1729 (m), 1638 (m), 1587 (s), 1451

(m), 1237 (m), 1170 (m) cm^{-1}; **MS** (ESI): m/z (%) = 377 (100), 355 (10), 301 (3); **HRMS:** [$C_{23}H_{30}O_3$ + H] calculated: 355.2268, found: 355.2287.

Preparation of Guttiferone A:

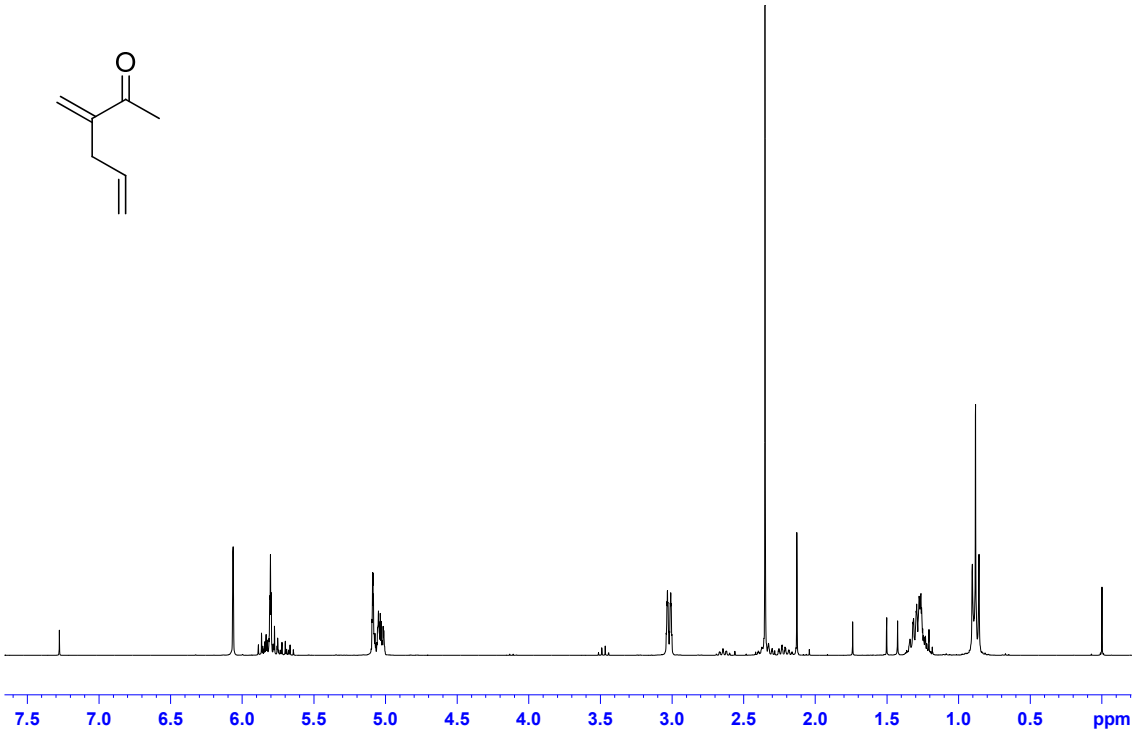


According to **GP-VII 39** (0.017 mmol, 7 mg) was treated with 2-methyl-2-butene (1,7 mmol; 238 mg), Grubb`s II (0.2 µmol, 0.2 mg), potassium *tert*-butanolate (0.17 mmol, 22 mg) and 3,4 bisacetoxybenzoyl cyanide (0.43 mmol, 106 mg) to yield guttiferone A after purification by HPLC (petroleum ether/ethyl acetate; 1:1) as a yellow oil (6.0 mg, 0.01 mmol, 58%). Spectroscopicdata were identical to those described in the literature.[9]

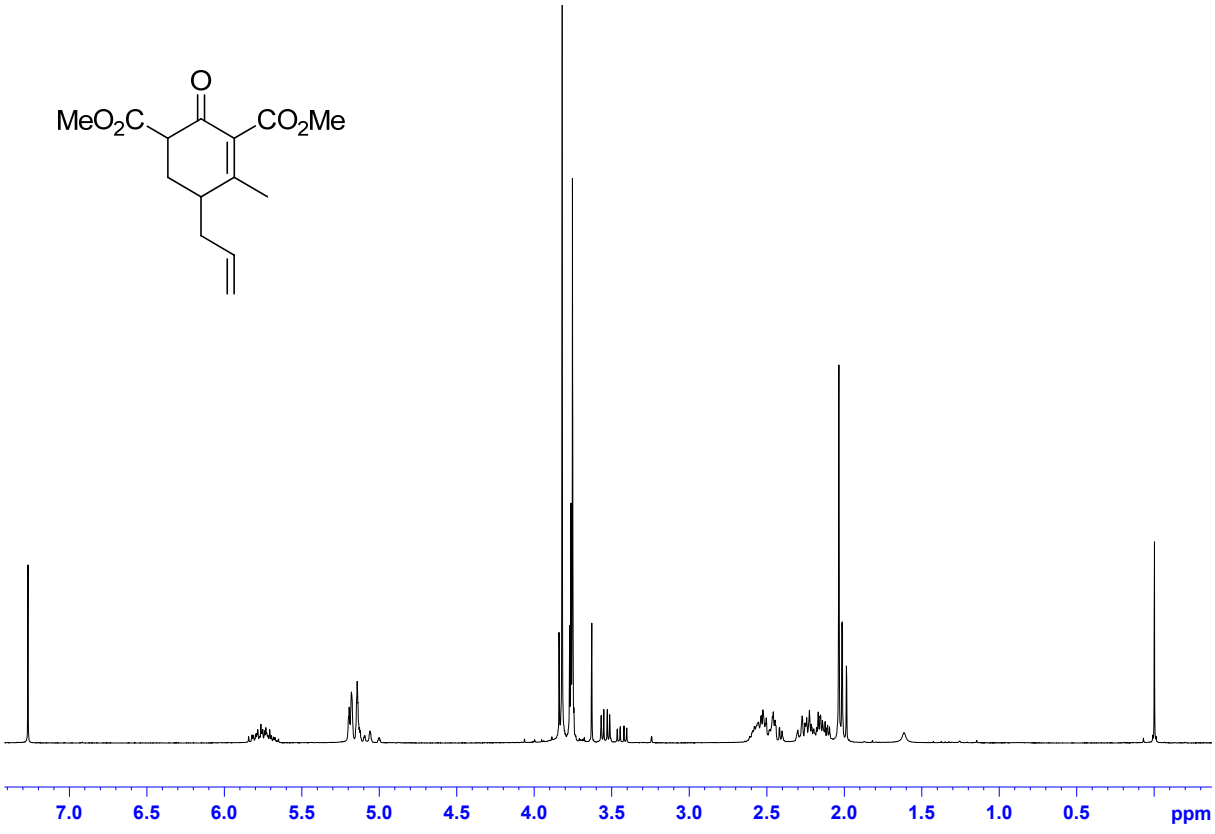
R_f = 0.63 (petroleum ether/ethyl acetate 1:1); **^{1}H-NMR** (MeOD + 0.1% TFA, 500 MHz): δ 7.16 (d, *J* = 2.2 Hz, 1H), 6.97 (dd, *J* = 8.4, 2.2 Hz, 1H), 6.69 (d, *J* = 8.3 Hz, 1H), 5.20 (m_c, 1H), 5.07 (m_c, 1H), 2.66 – 2.62 (m, 2H), 2.50 – 2.44 (m, 3H), 2.12 – 2.05 (m, 3H), 1.98 (m_c, 1H), 1.90 – 1.82 (m, 3H), 1.72 (s, 3H), 1.67 (s, 9H), 1.65 (s, 3H), 1.64 – 1.61 (m, 4H), 1.59 (s, 3H), 1.58 – 1.56 (m, 1H), 1.47 (s, 3H), 1.39 (m_c, 1H), 1.24 (s, 3H), 1.23 – 1.19 (m, 1H) ppm; **^{13}C-NMR** (MeOD + 0.1% TFA, 125 MHz): δ 209.6, 195.6, 195.4, 195.2, 152.7, 146.4, 135.7, 135.6, 133.8, 132.9, 129.4, 125.5, 125.1, 125.0, 120.9, 120.7, 117.8, 117.4, 115.2, 51.8, 41.1, 40.1, 36.9, 32.0, 29.8, 26.6, 26.3 (2C), 26.0, 25.9, 23.7, 19.7, 18.3, 18.2, 18.1, 17.7 ppm; **IR** (film): v = 2967 (m), 2927 (s), 1729 (m), 1671 (s), 1439 (s), 1380 (s), 1291 (s), 1201 (s), 1180 (m) cm^{-1}; **MS** (ESI): m/z (%) = 647 (20), 625 (100), 453 (10); **HRMS:** [$C_{38}H_{50}O_6$ + Na] calculated: 625.3500, found: 625.3490.

Part II – NMR Spectra

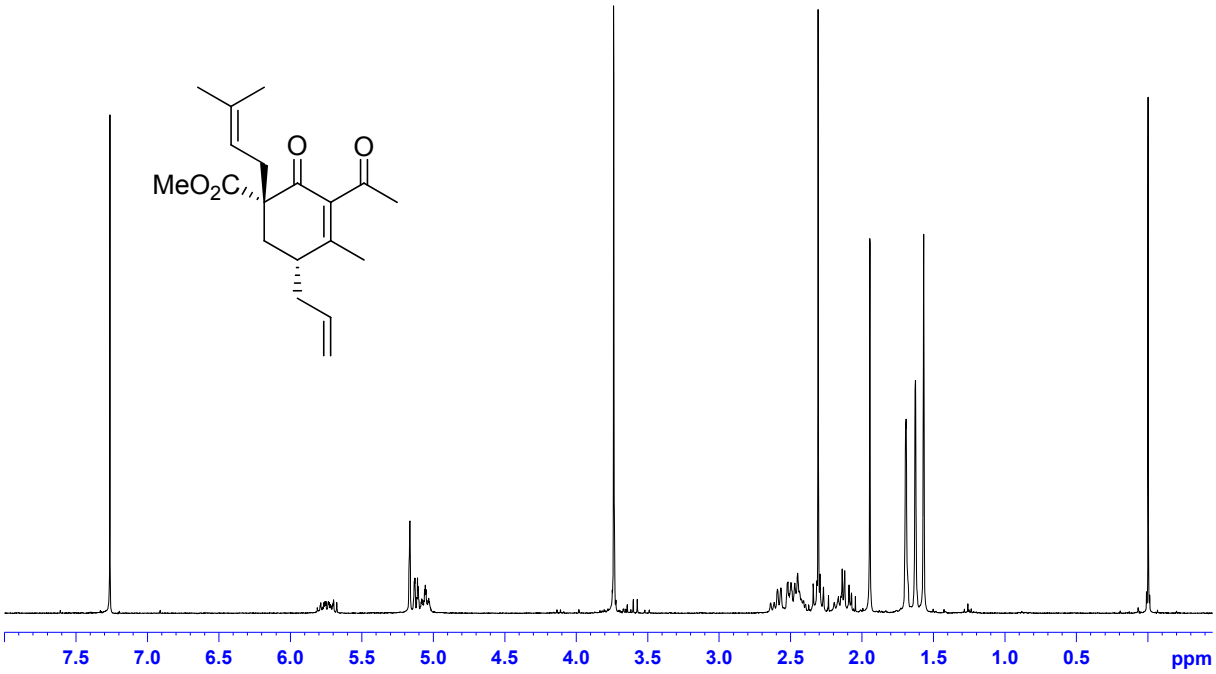
Supplementary Figure 1. ^{1}H NMR spectrum of synthetic **9** $CDCl_3$ (300 MHz):



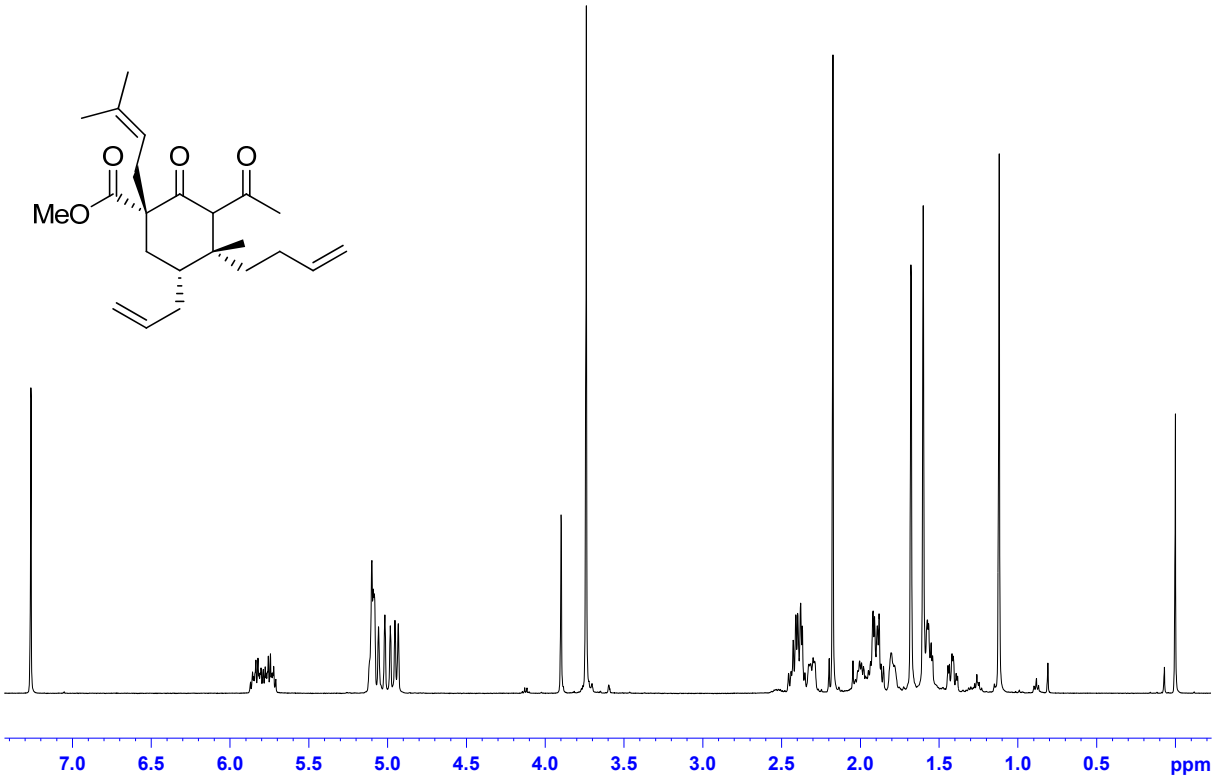
Supplementary Figure 2. ^{1}H NMR spectrum of synthetic **10** $CDCl_3$ (300 MHz):



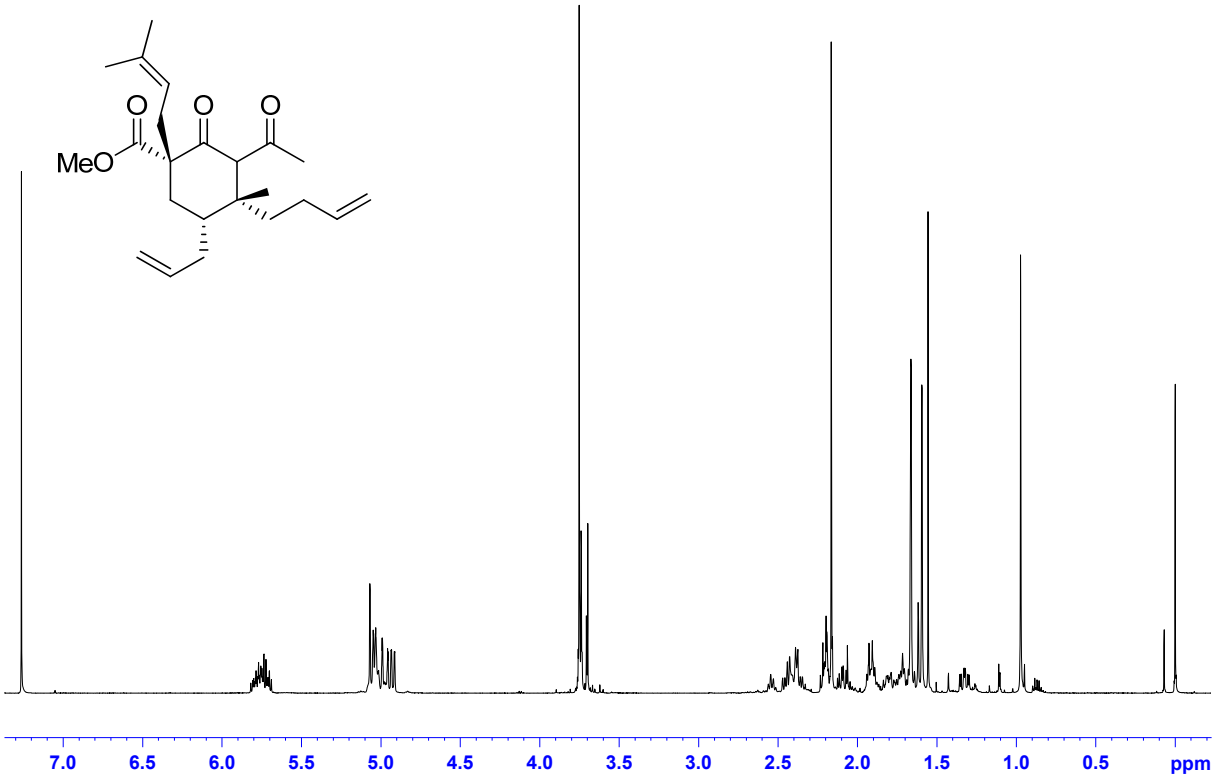
Supplementary Figure 3. ^{1}H NMR spectrum of synthetic **11** $CDCl_3$ (300 MHz):



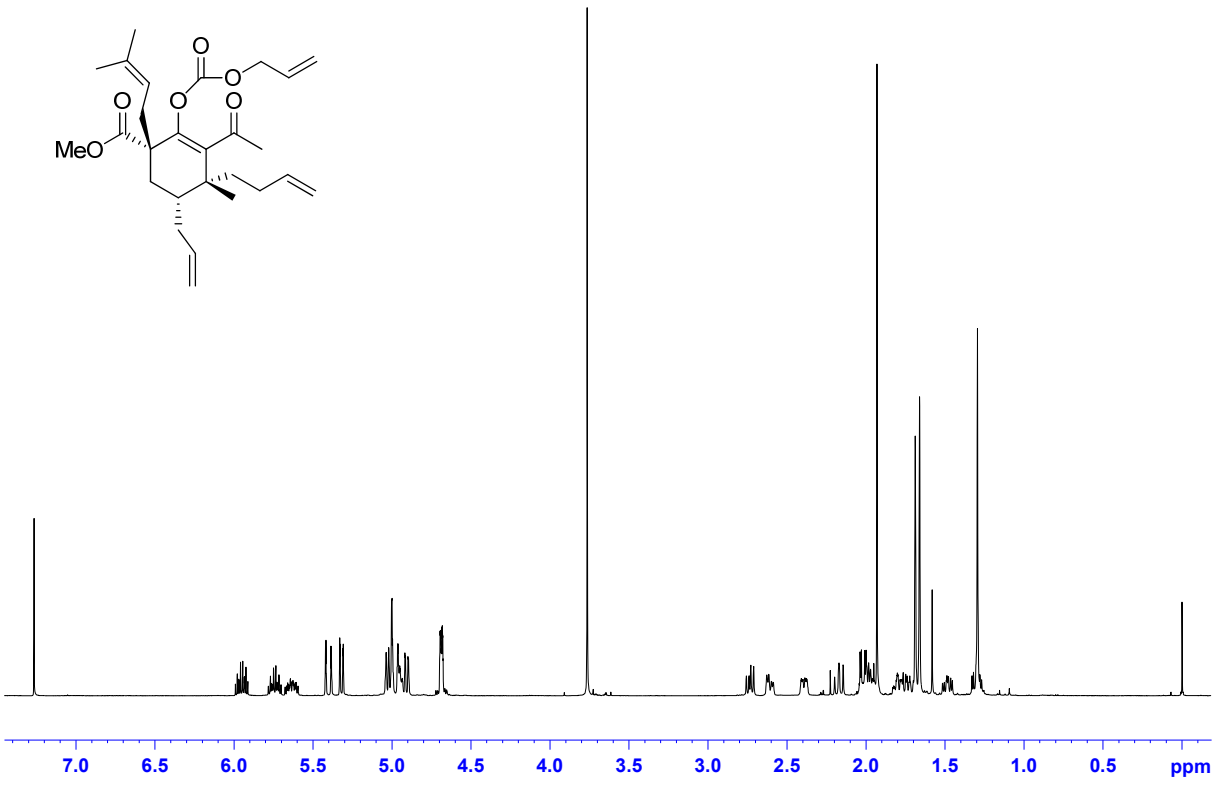
Supplementary Figure 4. ^{1}H NMR spectrum of synthetic **13** (diastereomere a) $CDCl_3$ (500 MHz):



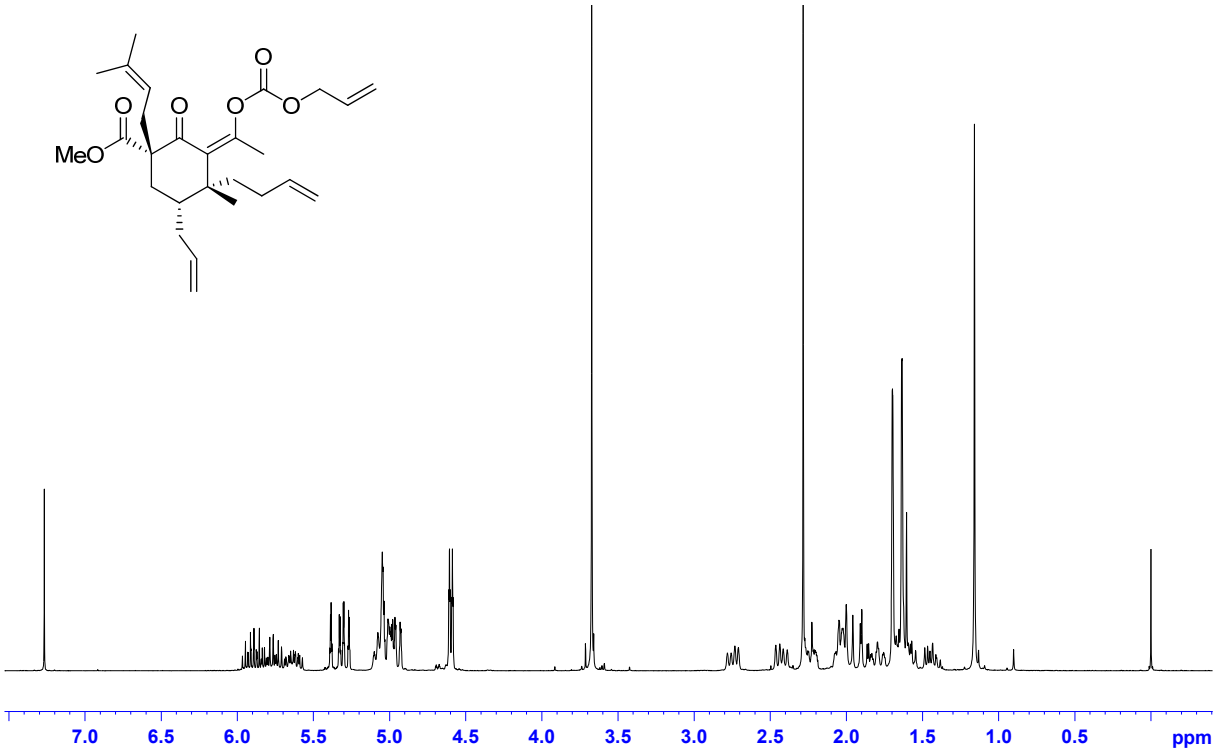
Supplementary Figure 5. ^{1}H NMR spectrum of synthetic **13** (diastereomere b) $CDCl_3$ (500 MHz):



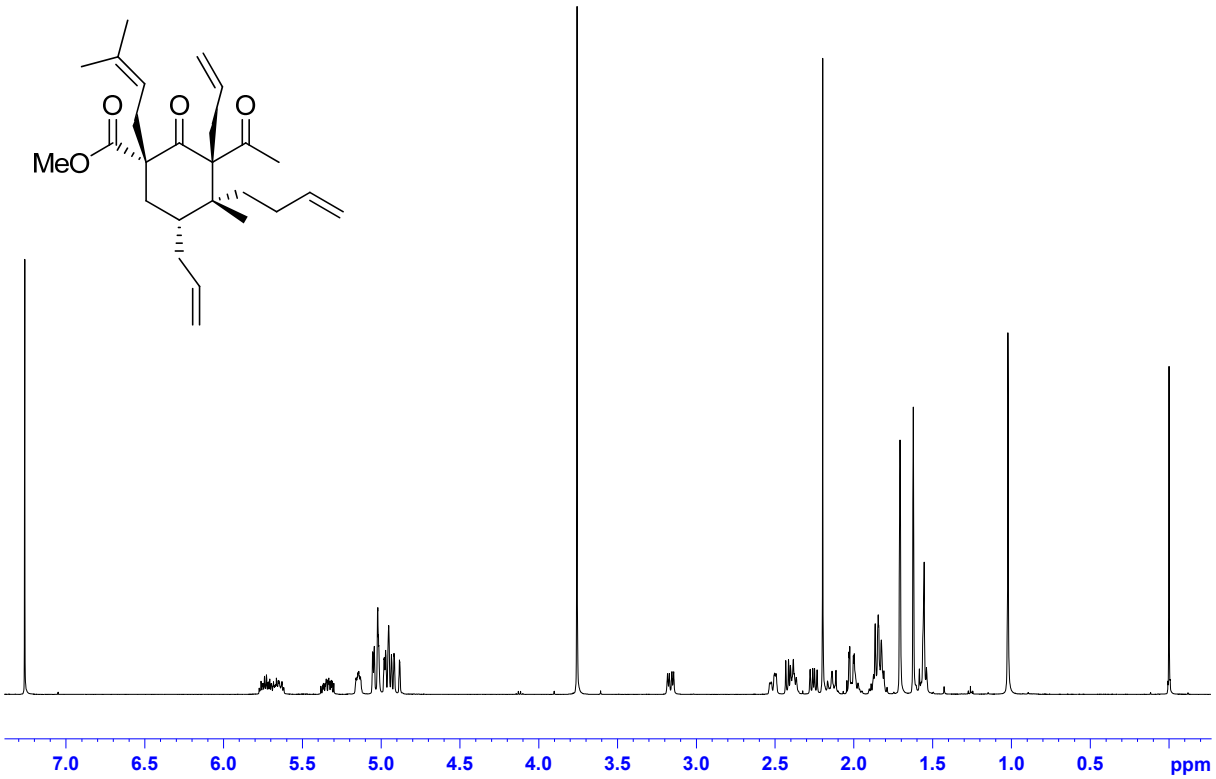
Supplementary Figure 6. ^{1}H NMR spectrum of synthetic **15** $CDCl_3$ (500 MHz):



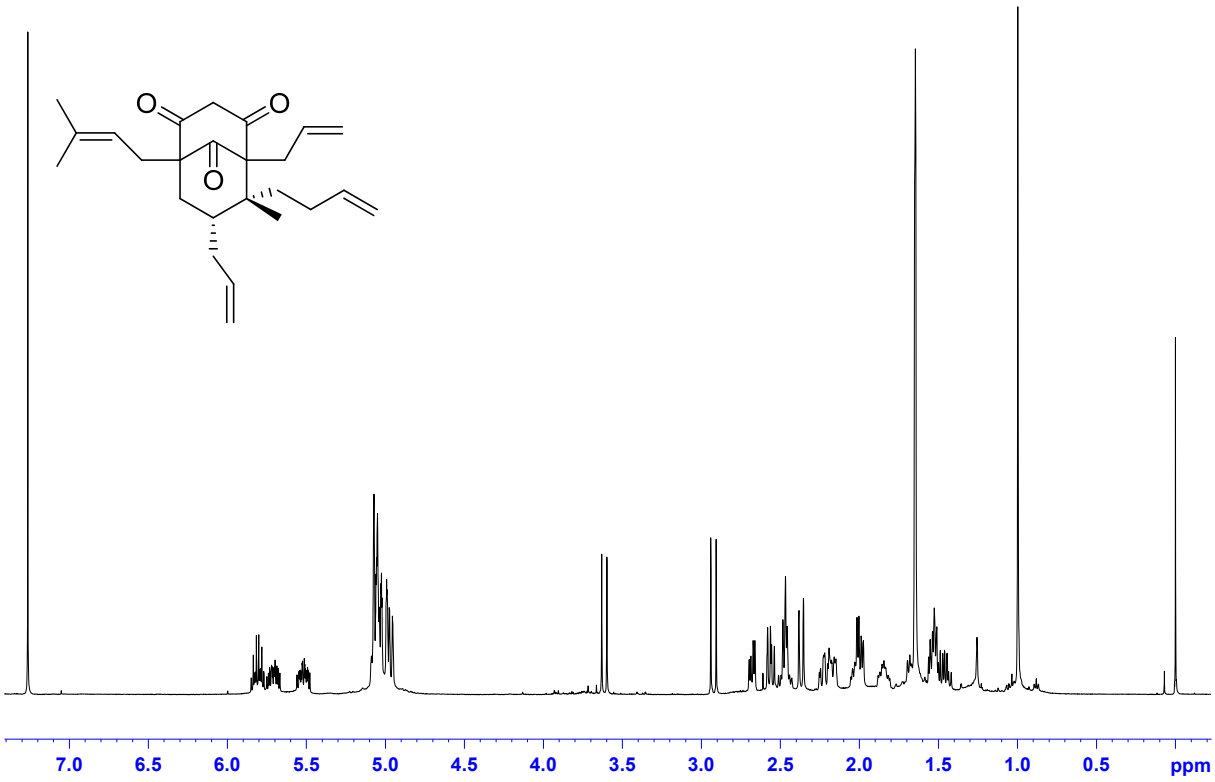
Supplementary Figure 7. ^{1}H NMR spectrum of synthetic **16** $CDCl_3$ (500 MHz):



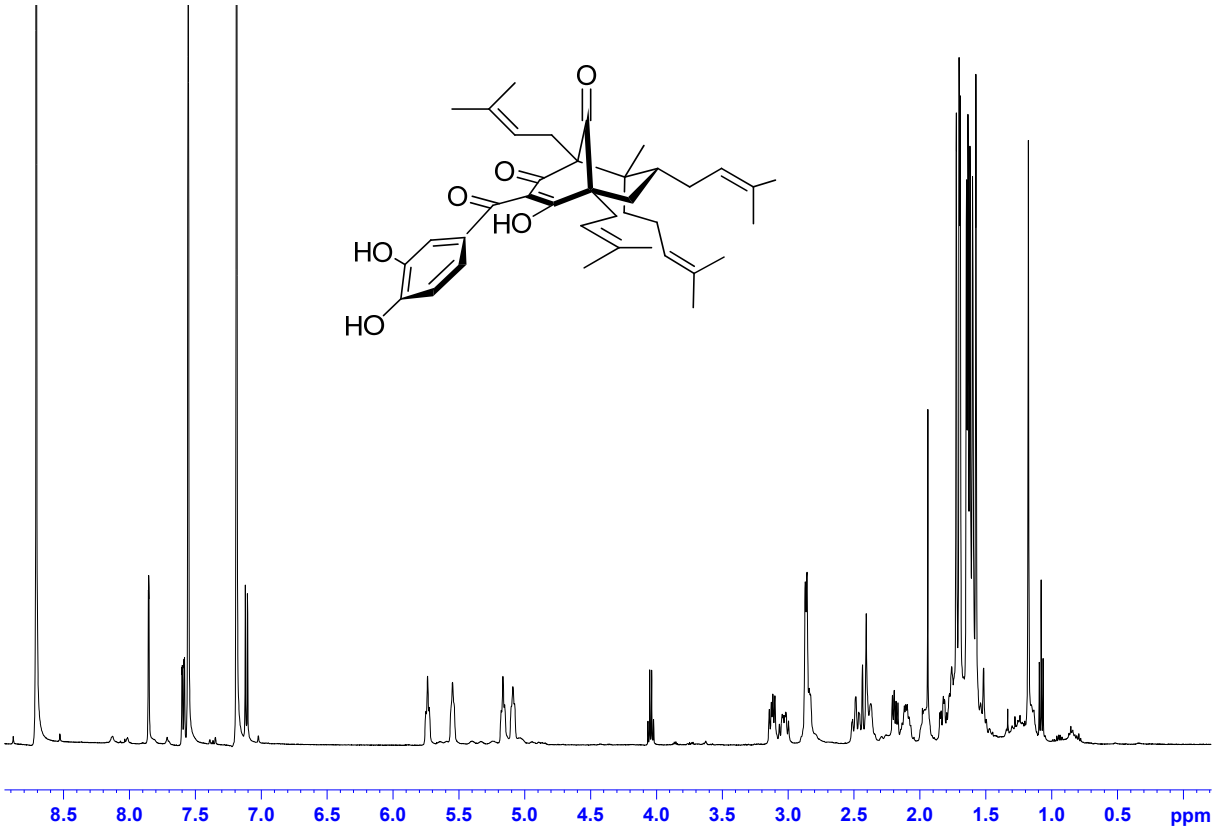
Supplementary Figure 8. ^{1}H NMR spectrum of synthetic **19** $CDCl_3$ (500 MHz):



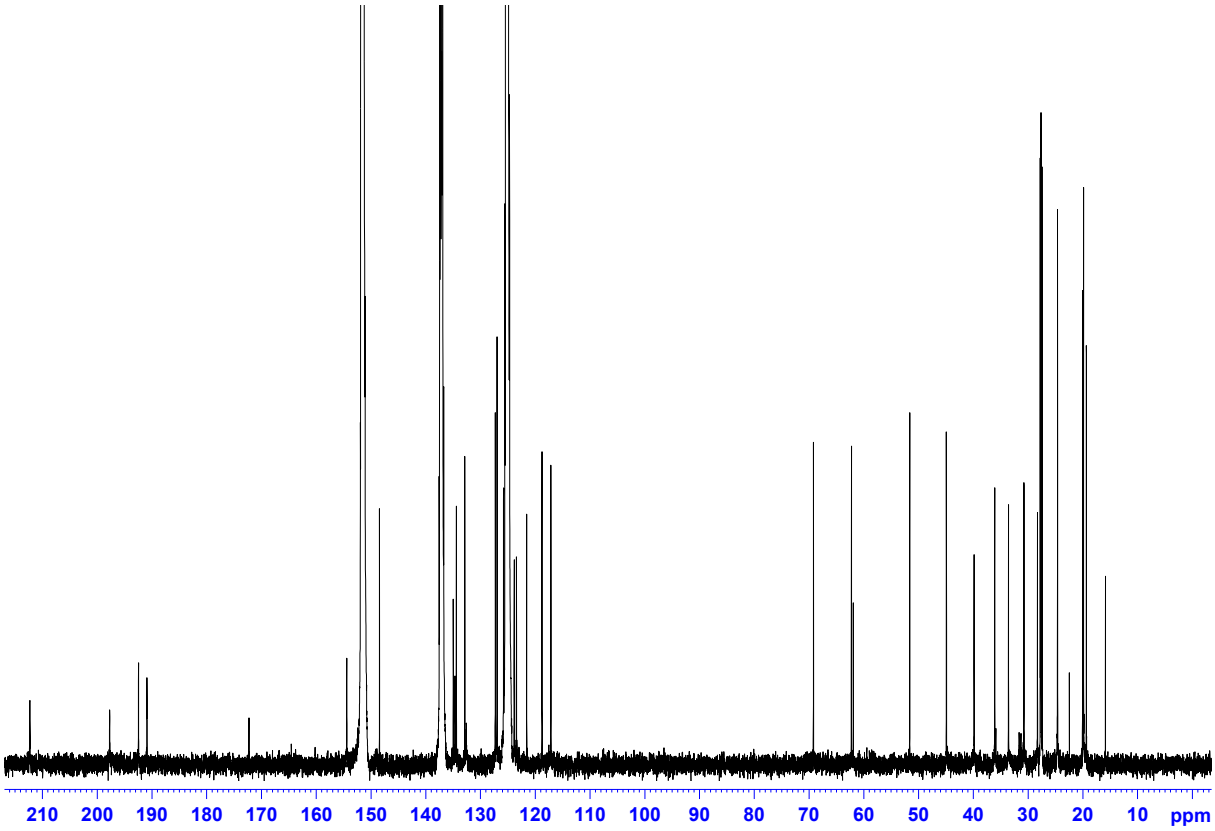
Supplementary Figure 9. ^{1}H NMR spectrum of synthetic **20** $CDCl_3$ (500 MHz):



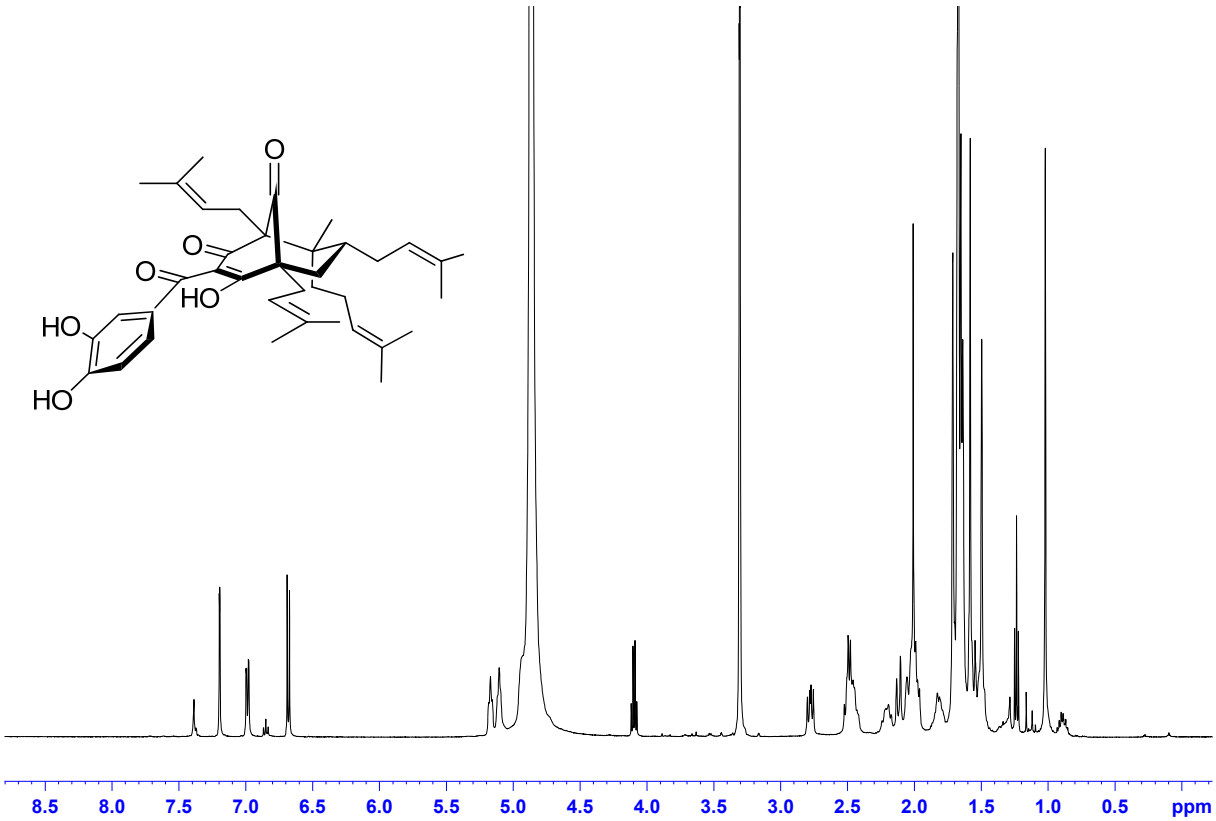
Supplementary Figure 10. ^{1}H NMR spectrum of synthetic **6-*epi*- guttiferone A** pyridine-d5 (500 MHz):



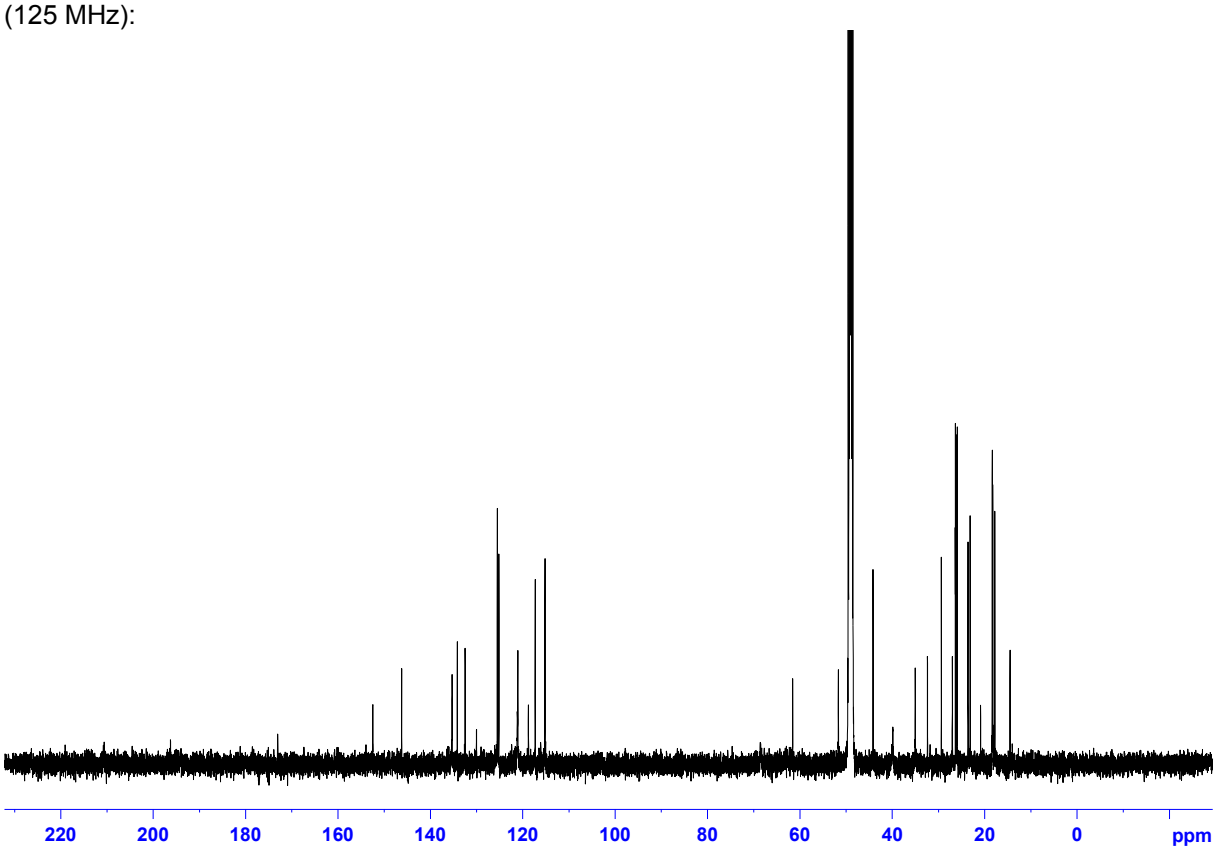
Supplementary Figure 11. ^{13}C NMR spectrum of synthetic **6- *epi*- guttiferone A** pyridine-d5 (125 MHz):



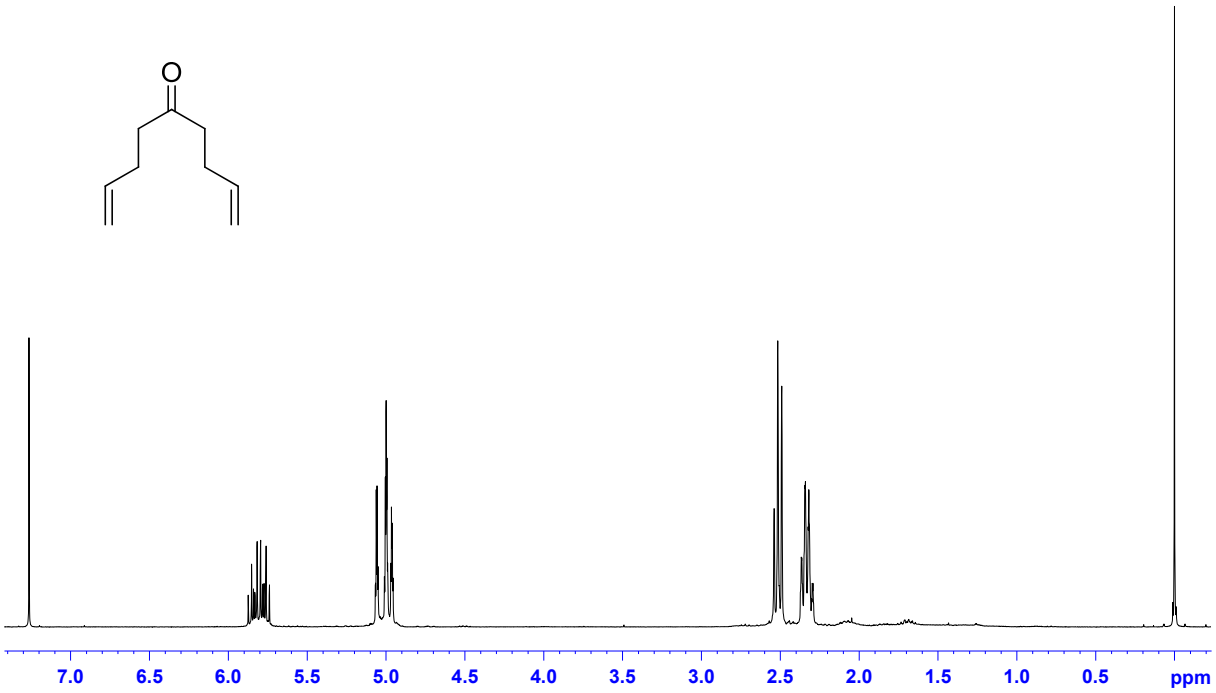
Supplementary Figure 12. ^{1}H NMR spectrum of synthetic **6- *epi*- guttiferone A** MeOD (500 MHz):



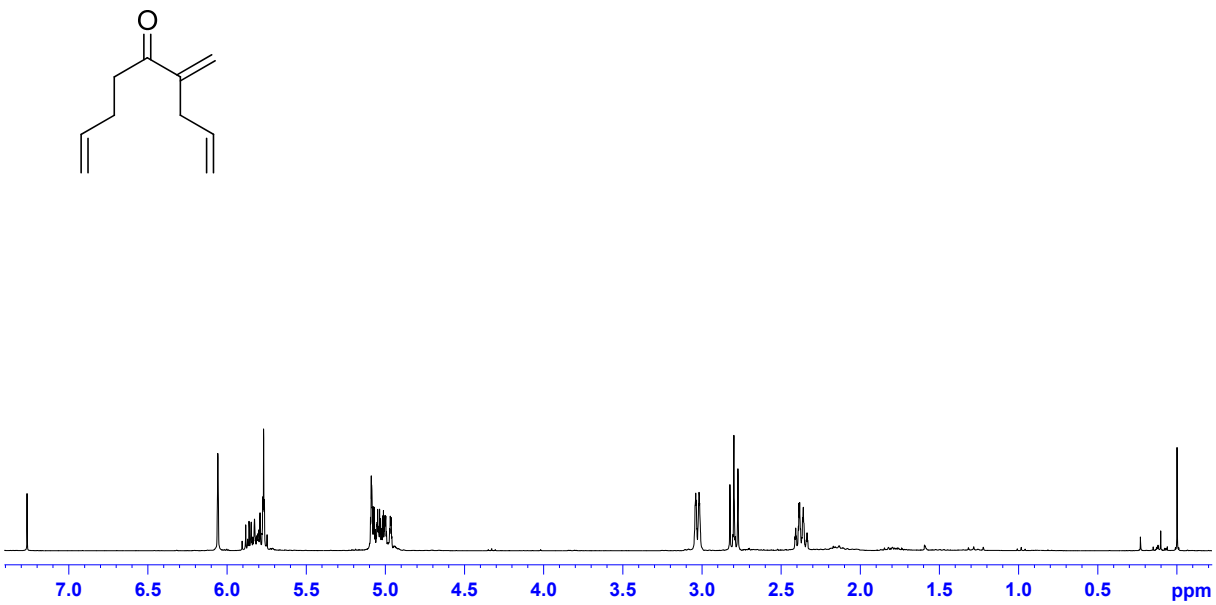
Supplementary Figure 13. ^{13}C NMR spectrum of synthetic **6-** ***epi*****- guttiferone A** MeOD (125 MHz):



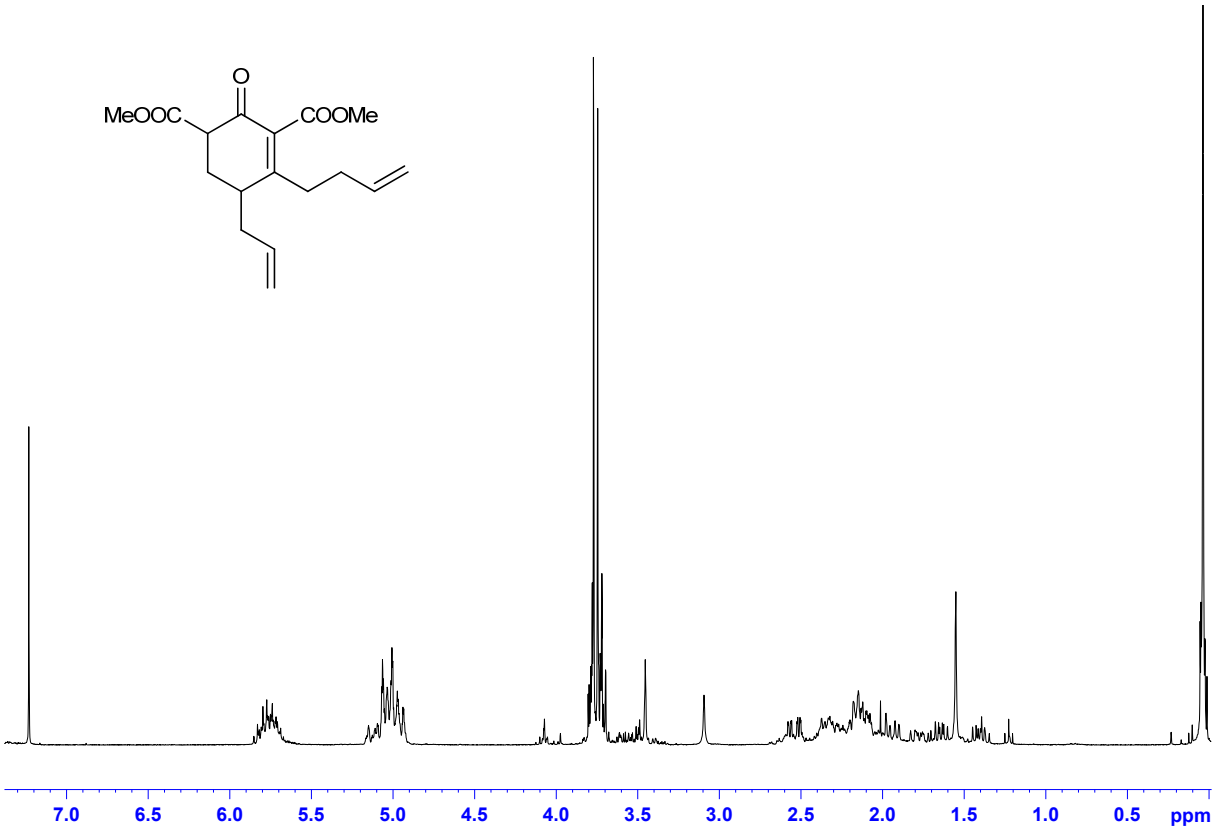
Supplementary Figure 14. ^{1}H NMR spectrum of synthetic **21** $CDCl_3$ (300 MHz):



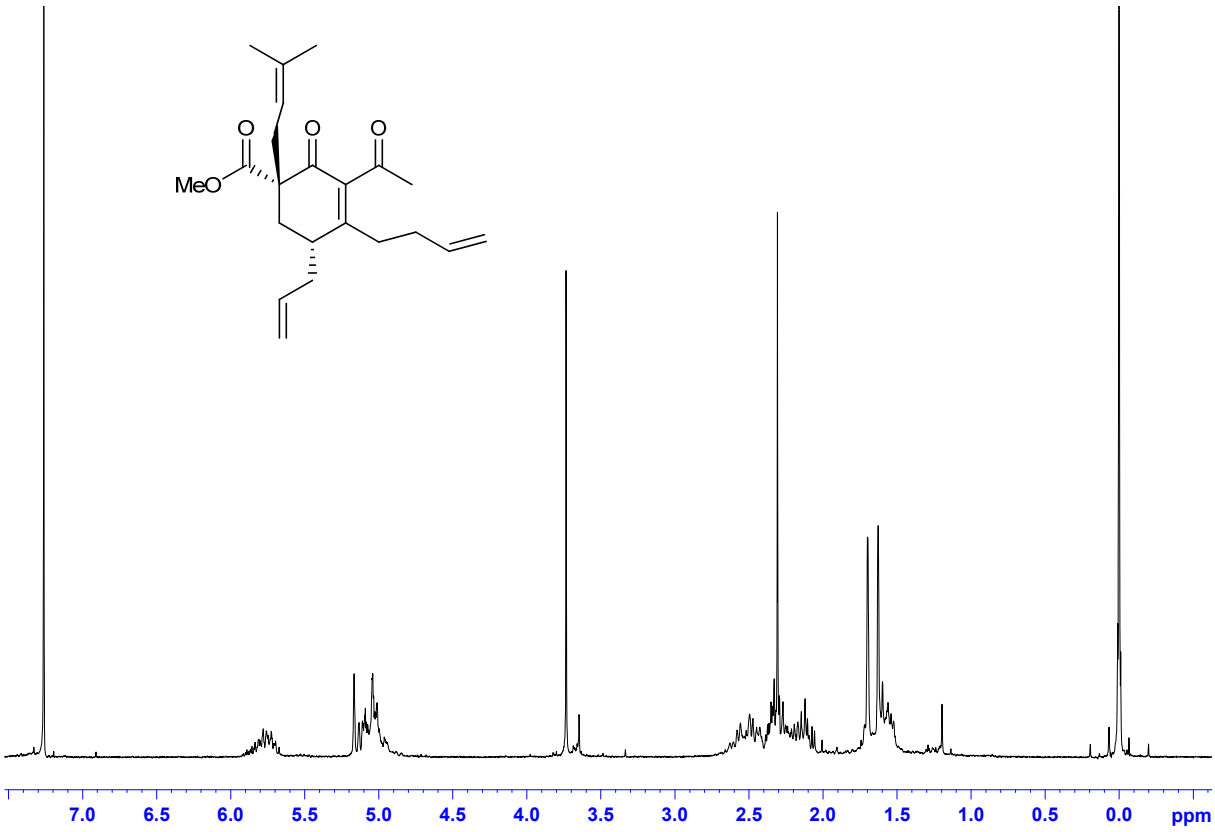
Supplementary Figure 15. ^{1}H NMR spectrum of synthetic **22** $CDCl_3$ (300 MHz):



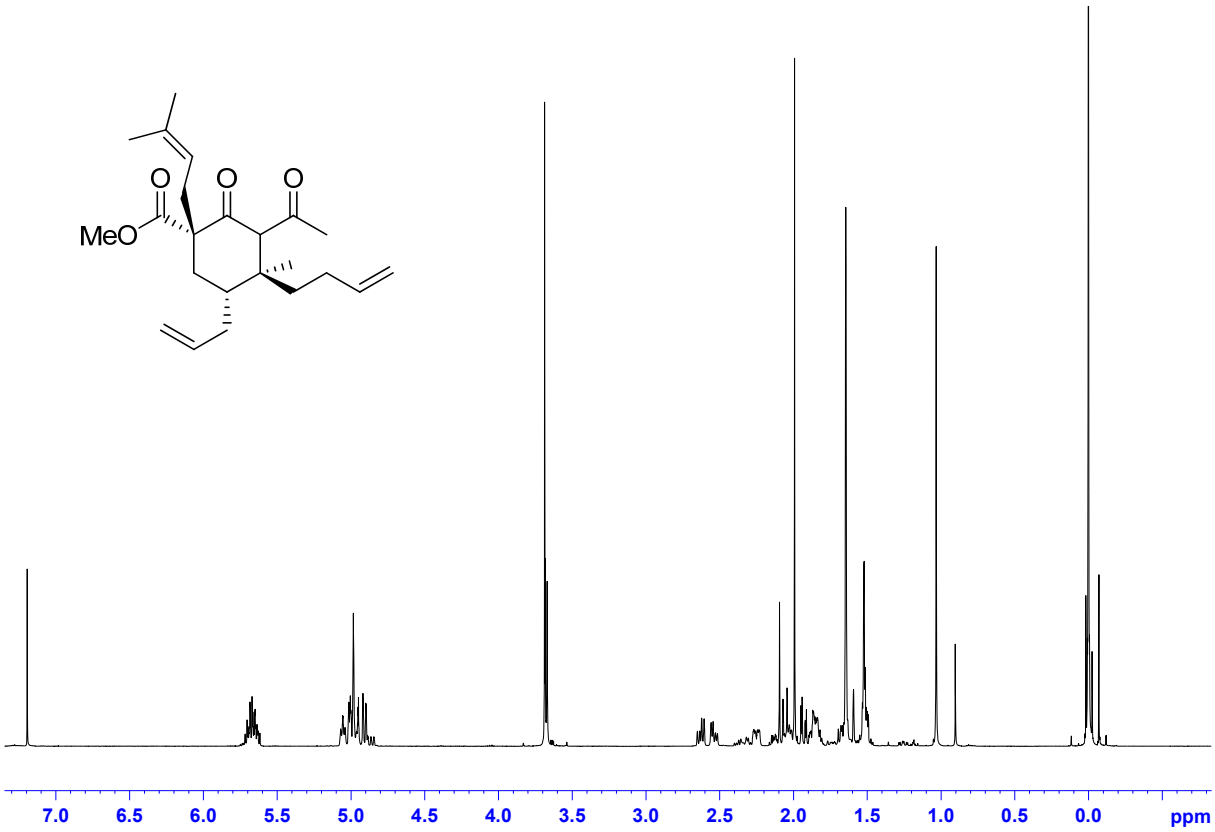
Supplementary Figure 16. ^{1}H NMR spectrum of synthetic **23** $CDCl_3$ (300 MHz):



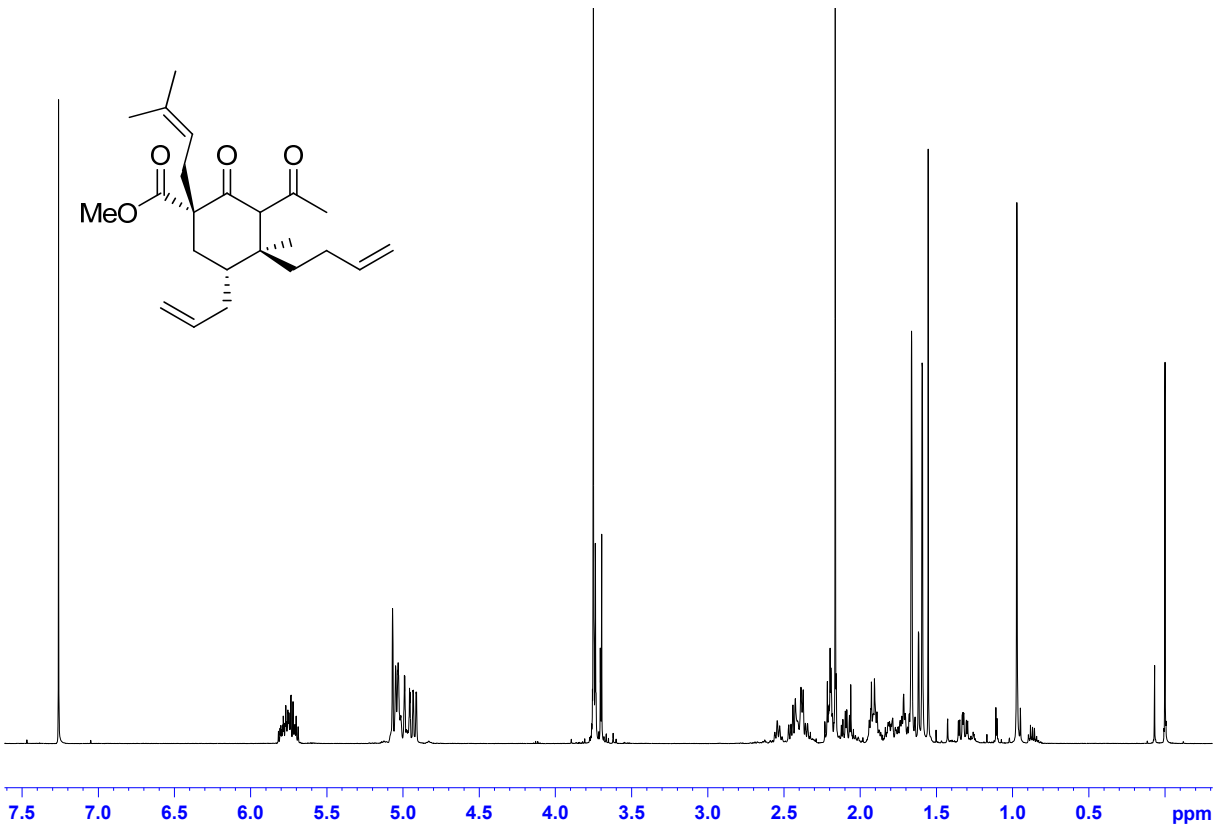
Supplementary Figure 17. ^{1}H NMR spectrum of synthetic **24** $CDCl_3$ (300 MHz):



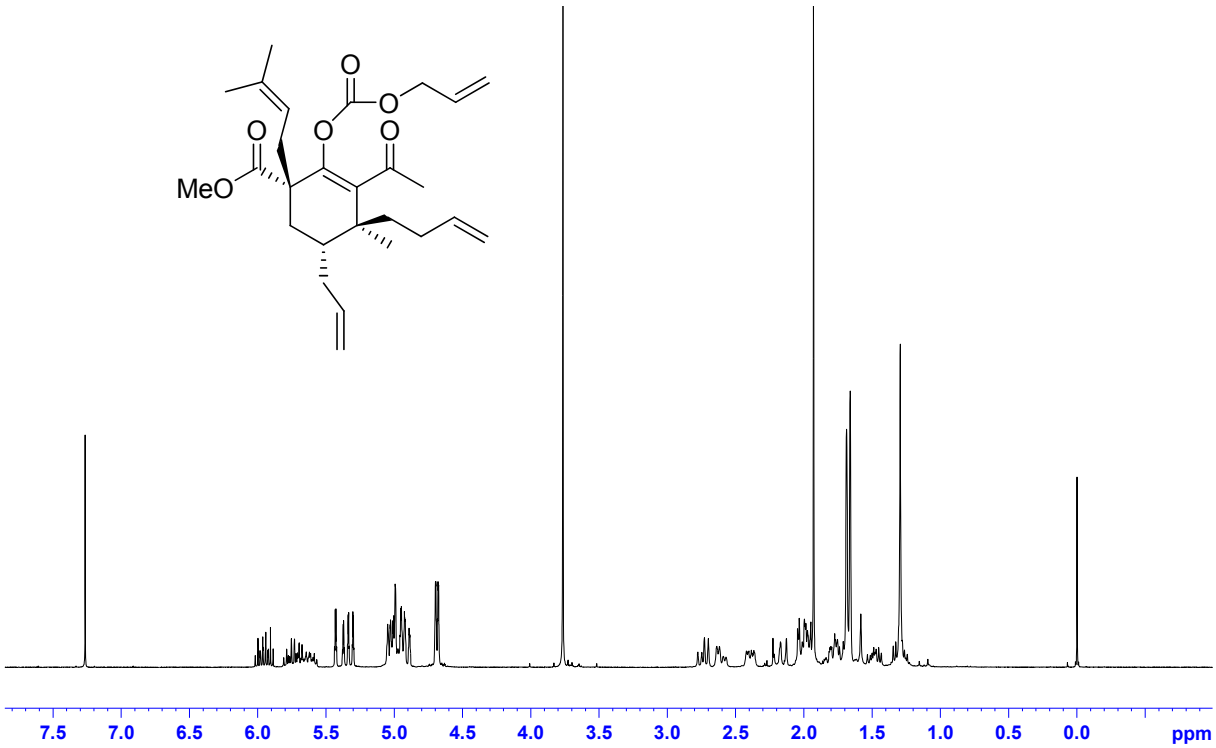
Supplementary Figure 18. ^{1}H NMR spectrum of synthetic **25** (diastereomere a) $CDCl_3$ (300 MHz):



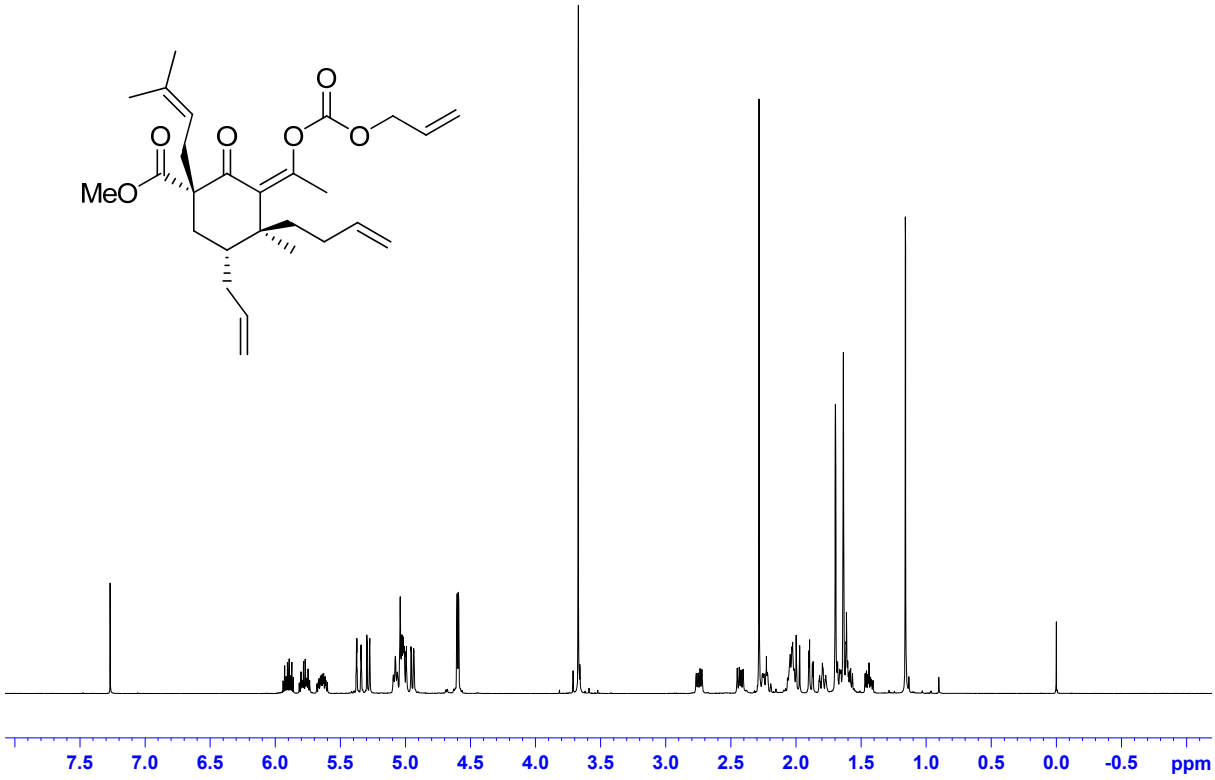
Supplementary Figure 19. ^{1}H NMR spectrum of synthetic **25** (diastereomere b) $CDCl_3$ (300 MHz):



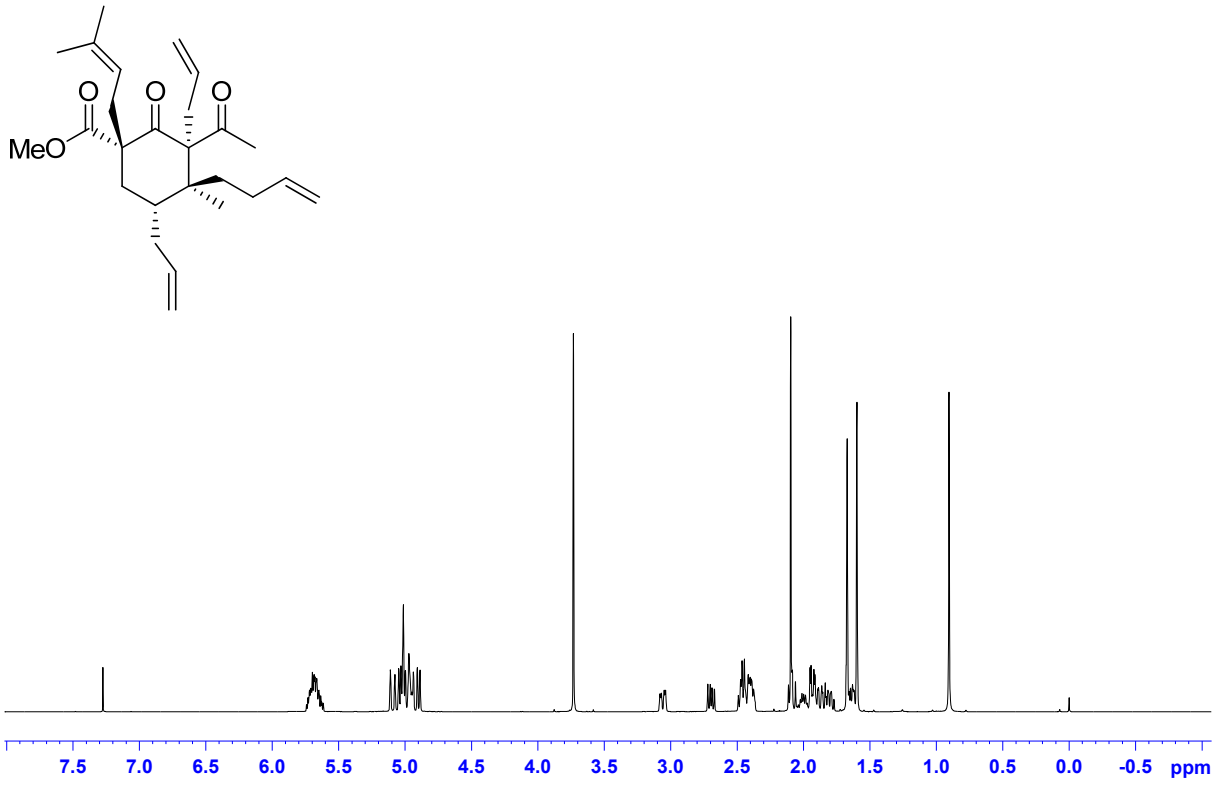
Supplementary Figure 20. ^{1}H NMR spectrum of synthetic **27** $CDCl_3$ (500 MHz):



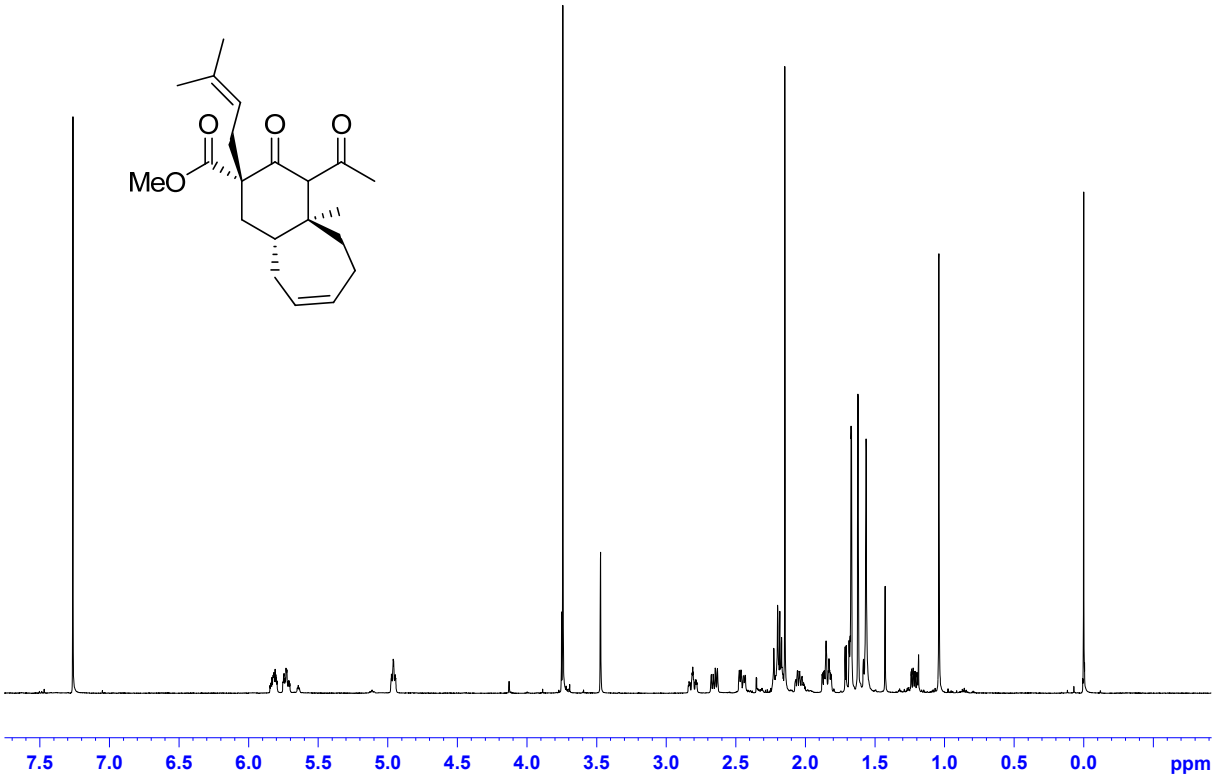
Supplementary Figure 21. ^{1}H NMR spectrum of synthetic **28** $CDCl_3$ (500 MHz):



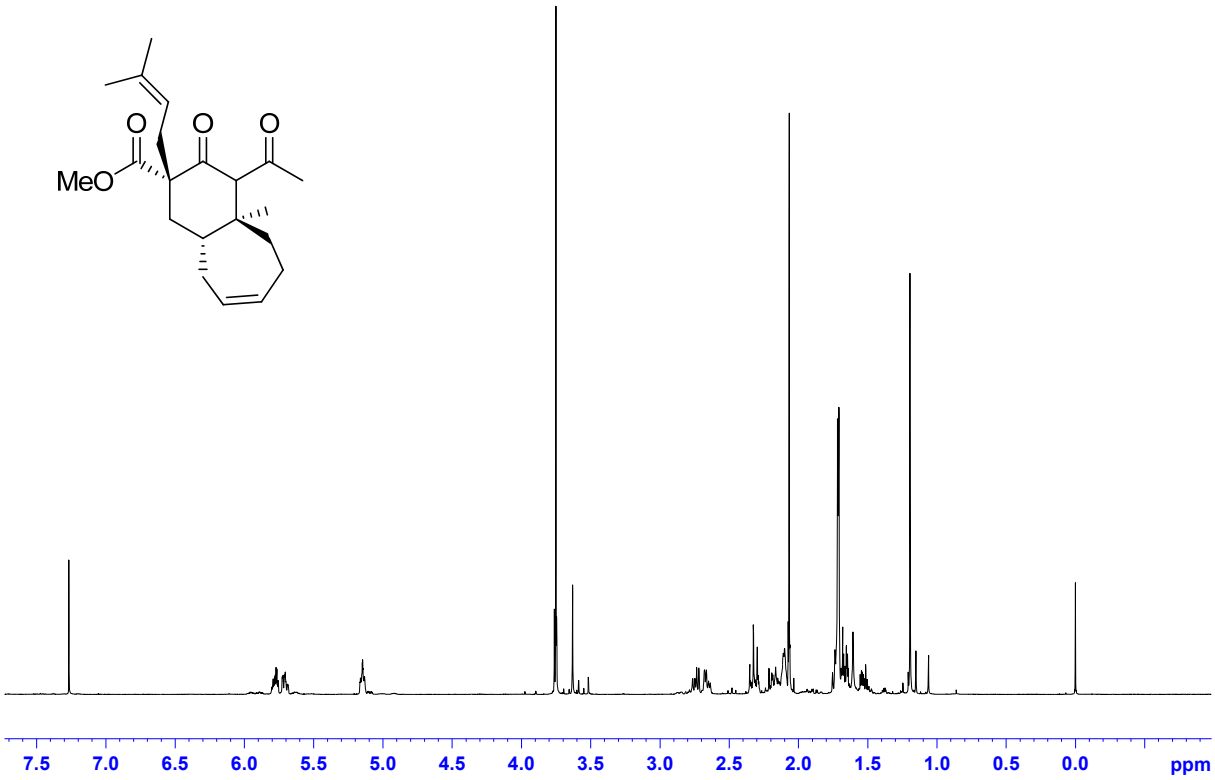
Supplementary Figure 22. ^{1}H NMR spectrum of synthetic **31** $CDCl_3$ (500 MHz):



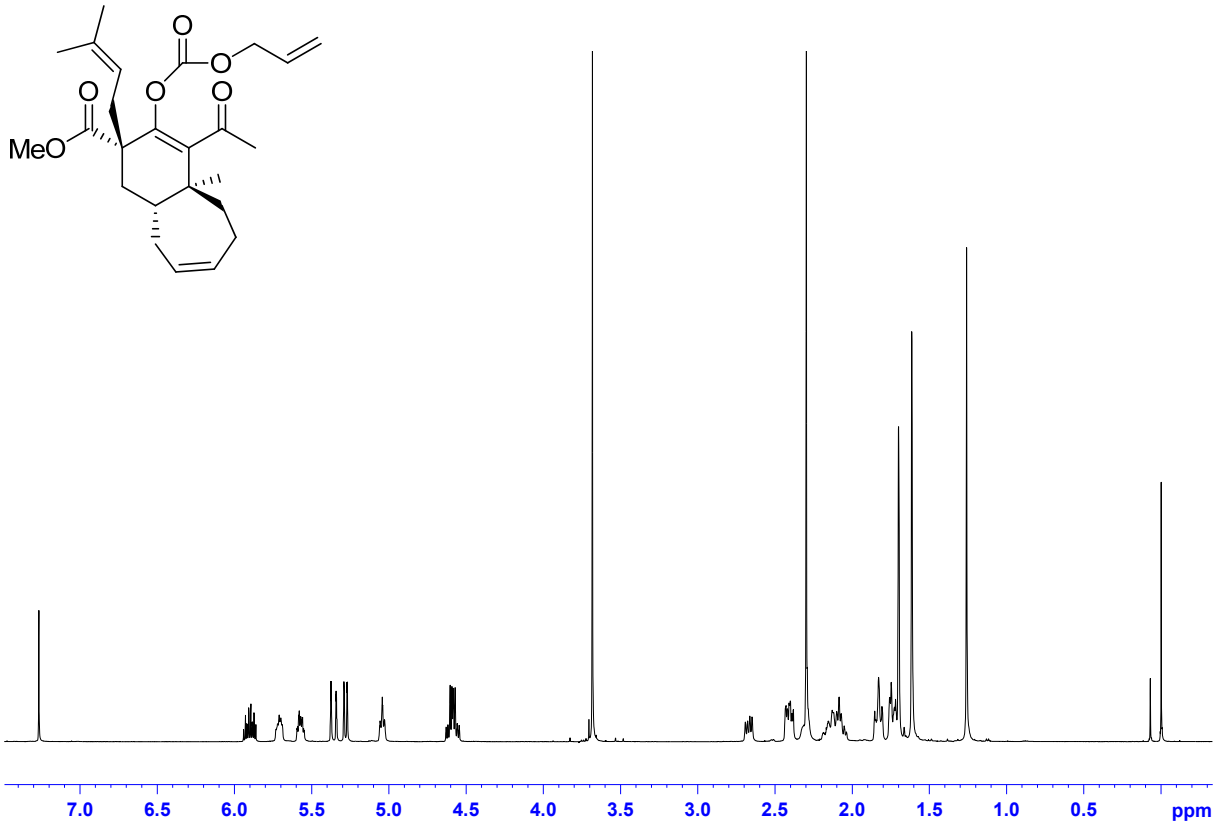
Supplementary Figure 23. ^{1}H NMR spectrum of synthetic **32** (diastereomere a) $CDCl_3$ (500 MHz):



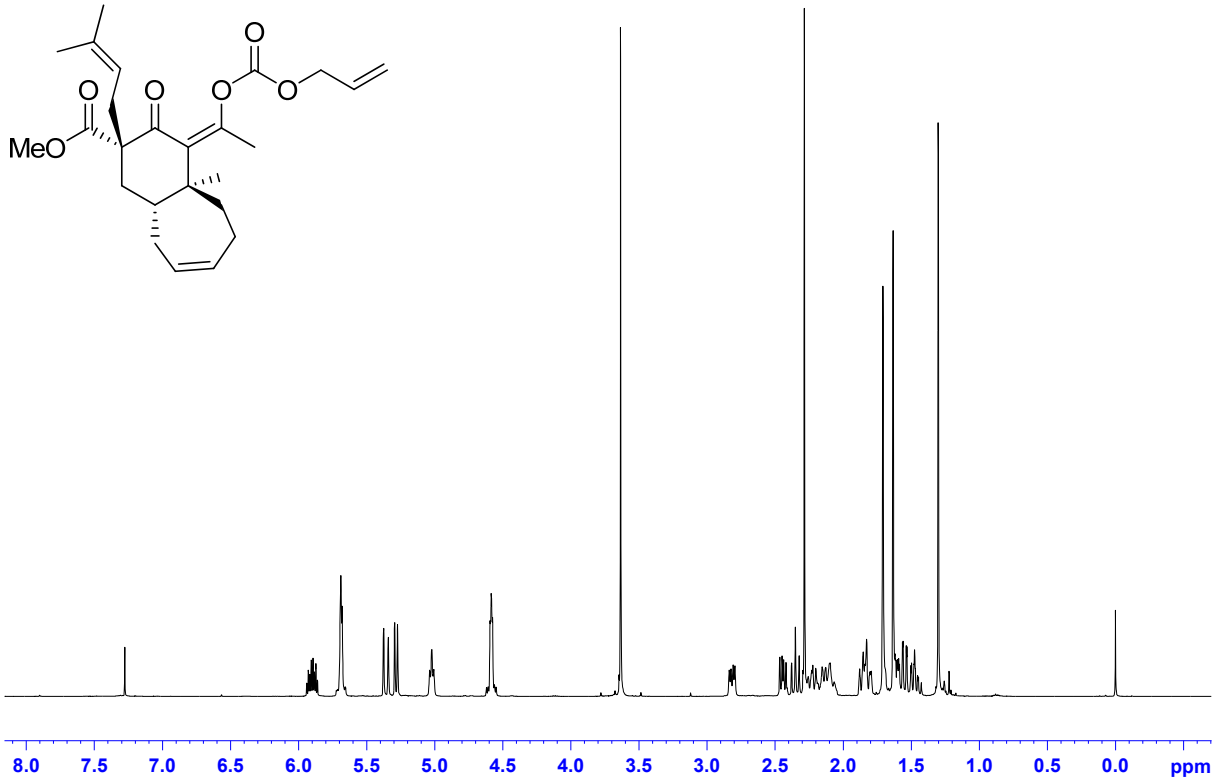
Supplementary Figure 24. ^{1}H NMR spectrum of synthetic **32** (diastereomere b) $CDCl_3$ (500 MHz):



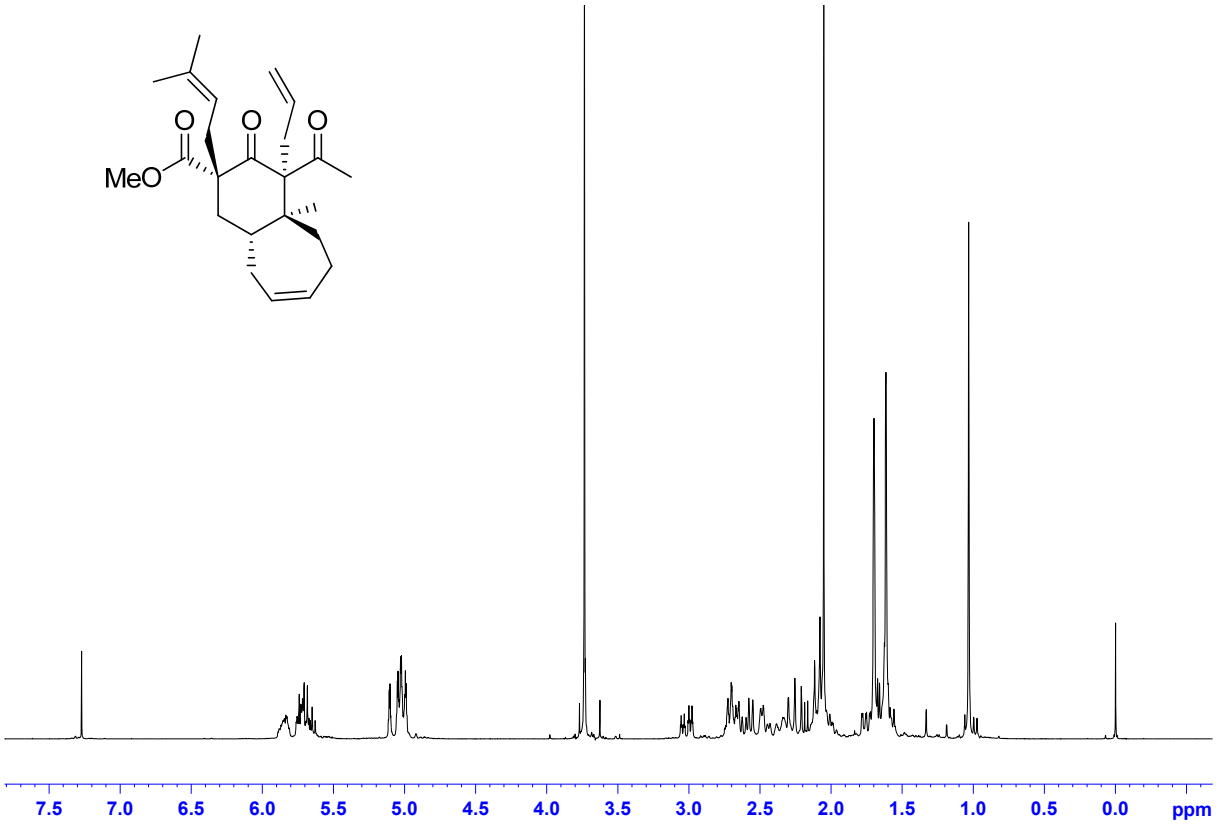
Supplementary Figure 25. ^{1}H NMR spectrum of synthetic **33** $CDCl_3$ (500 MHz):



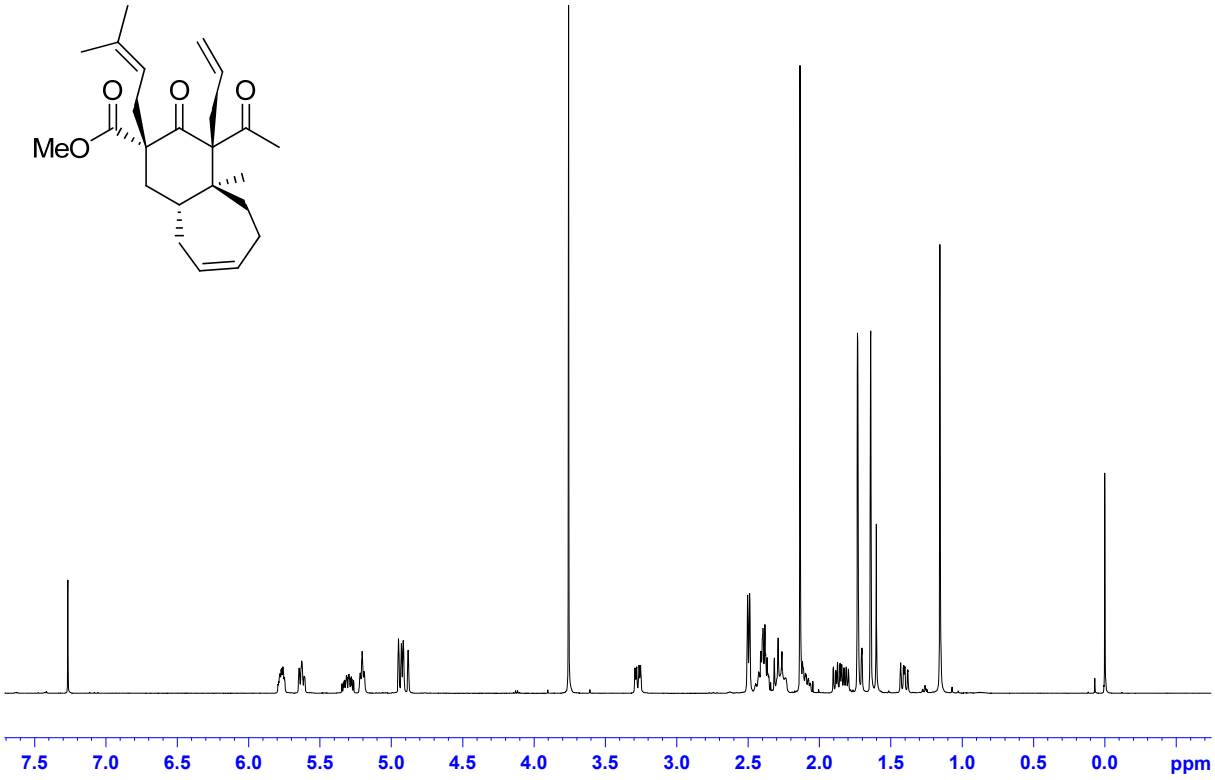
Supplementary Figure 26. ^{1}H NMR spectrum of synthetic **34** $CDCl_3$ (500 MHz):



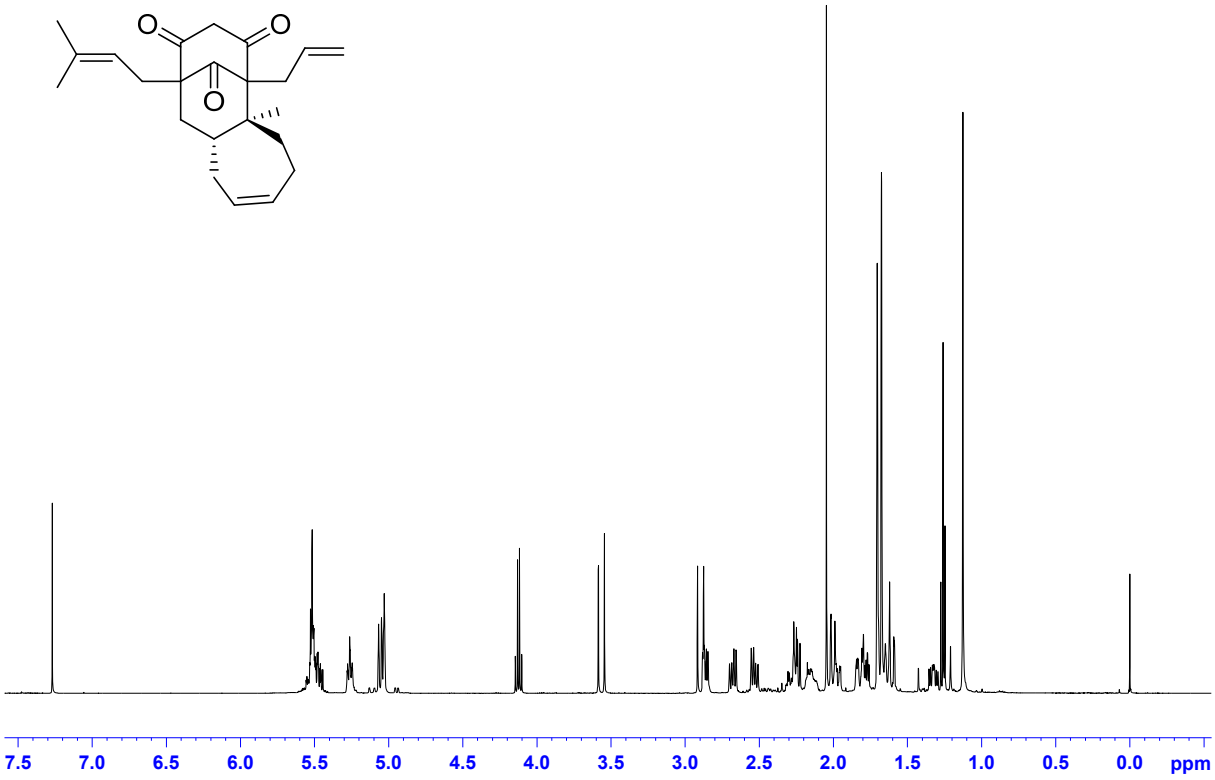
Supplementary Figure 27. ^{1}H NMR spectrum of synthetic **37** $CDCl_3$ (500 MHz):



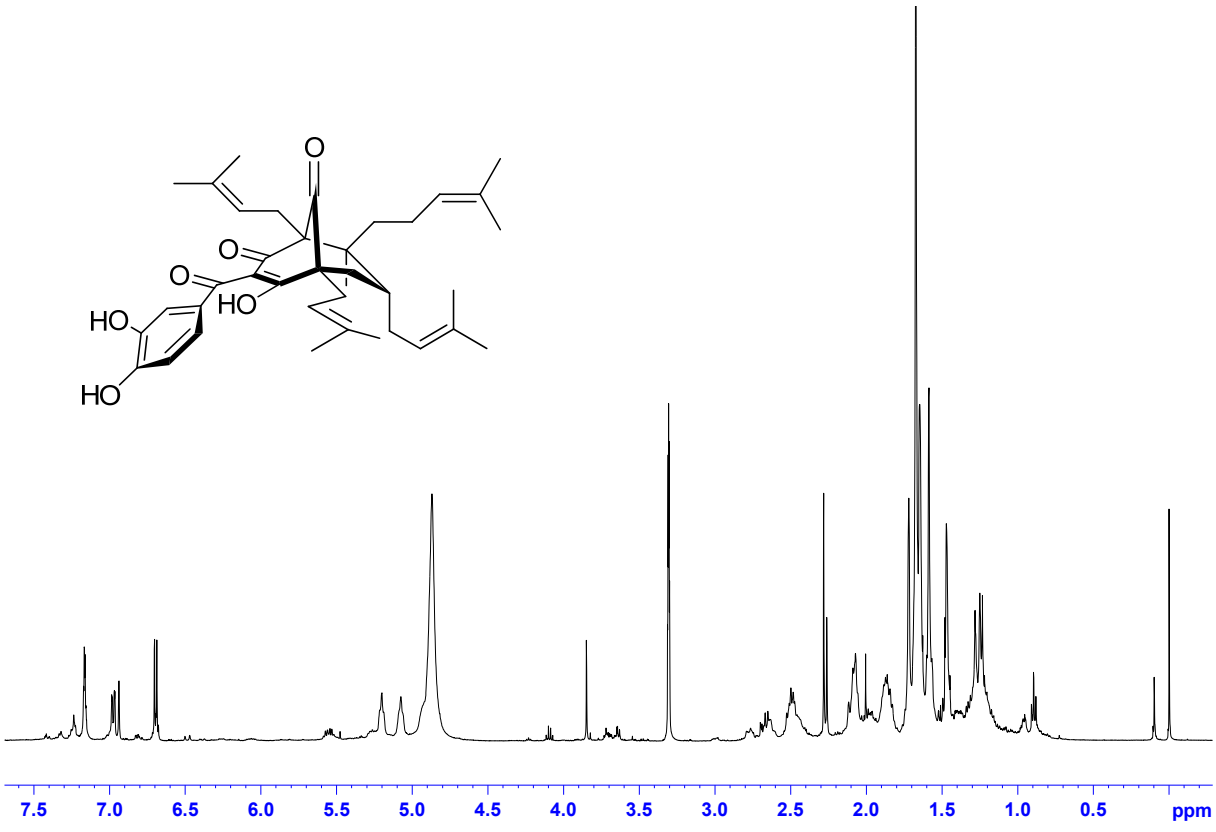
Supplementary Figure 28. ^{1}H NMR spectrum of synthetic **38** $CDCl_3$ (500 MHz):



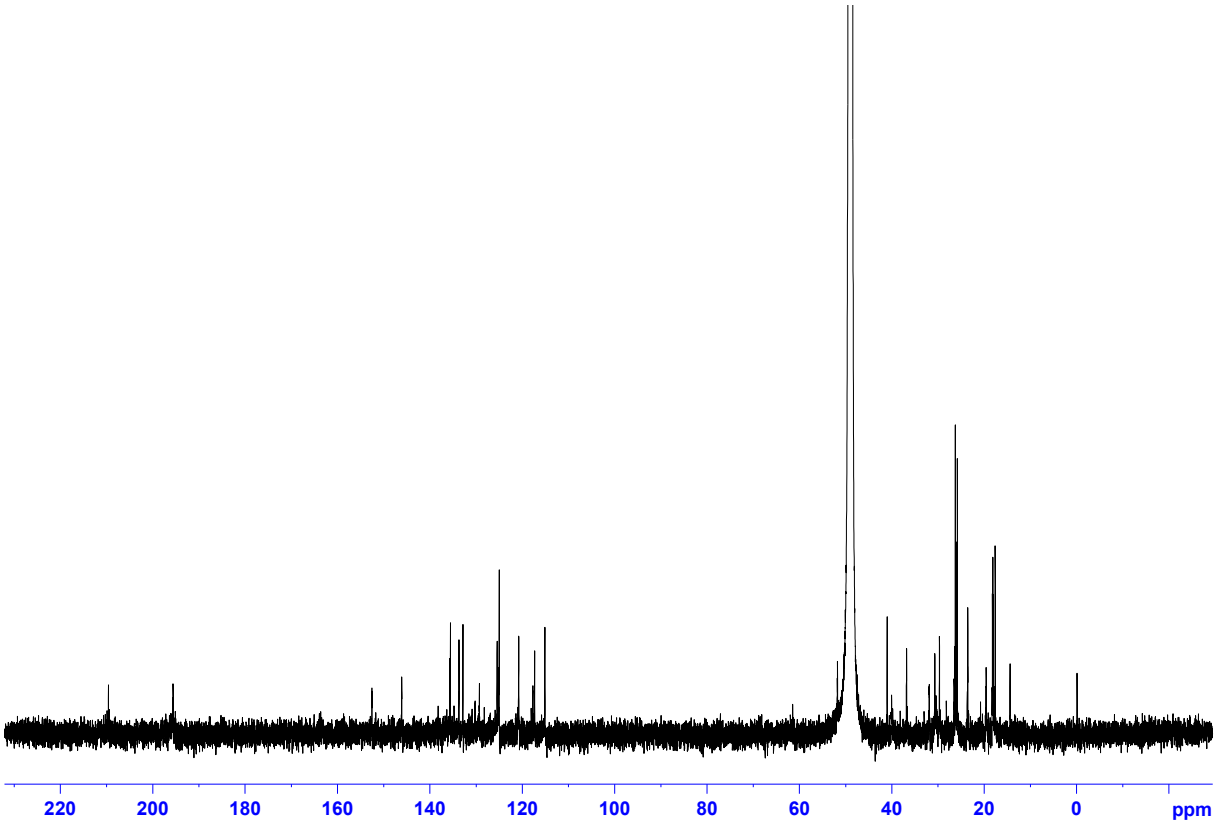
Supplementary Figure 29. ^{1}H NMR spectrum of synthetic **39** $CDCl_3$ (500 MHz):



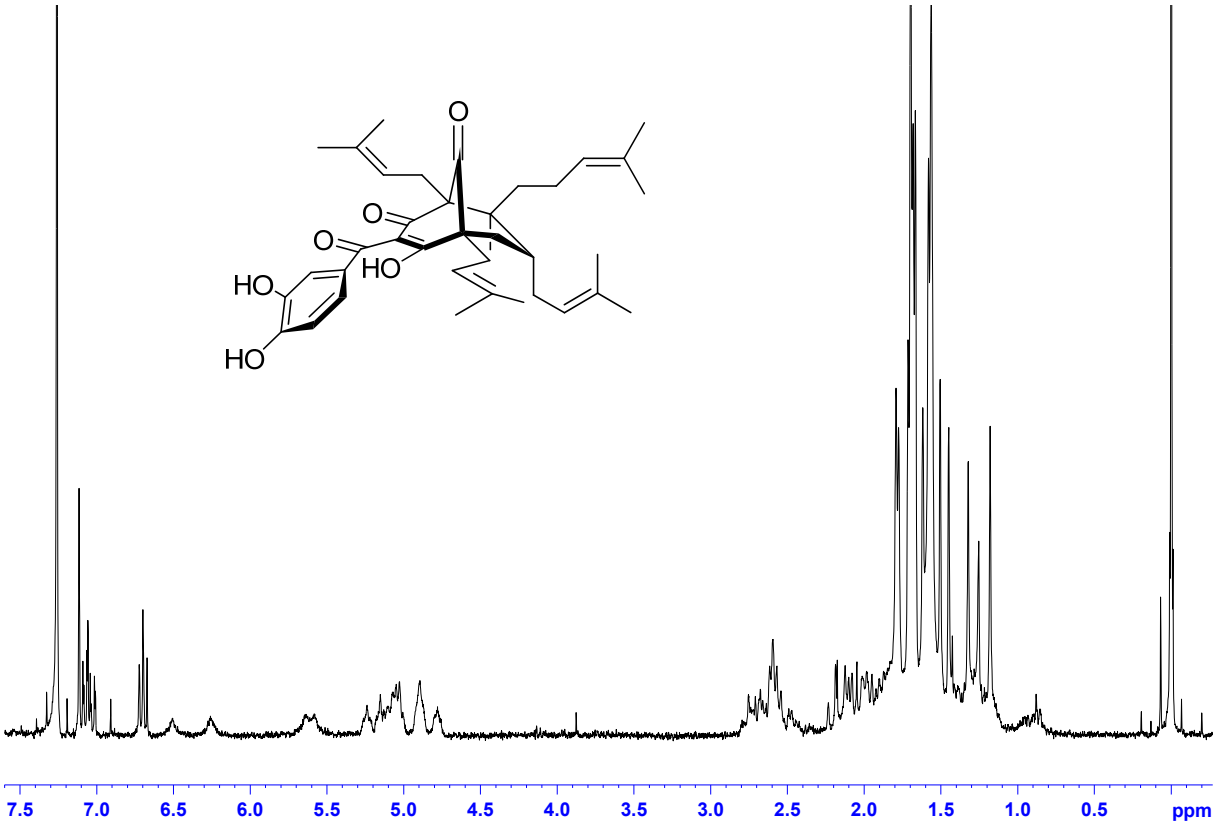
Supplementary Figure 30. ^{1}H NMR spectrum of synthetic **guttiferone A** MeOD + 0.1% TFA (500 MHz)



Supplementary Figure 31 ^{13}C NMR spectrum of synthetic **guttiferone A** MeOD + 0.1% TFA (125 MHz)



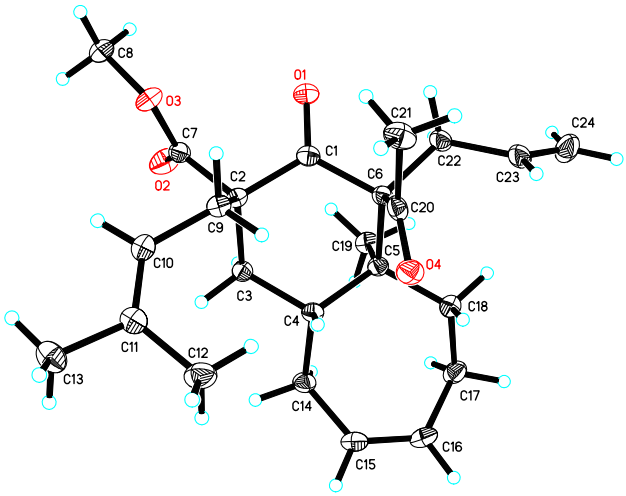
Supplementary Figure 32. ^{1}H NMR spectrum of synthetic **guttiferone A** $CDCl_3$(300 MHz)



Part III

Additional Information

Supplementary Figure 33 X-ray of compound **38**



Supplementary Table 1. Crystal data and structure refinement for **38**

Identification code	s2007lm
Empirical formula	C24 H34 O4
Formula weight	386.51
Temperature	110(2) K
Wavelength	0.71073 A
Crystal system, space group	Triclinic, P -1
Unit cell dimensions	a = 8.6352(6) A alpha = 79.150(3) b = 10.1575(7) A beta = 77.585(3)

c = 13.0283(8) A gamma = 74.196(4)

Volume	1063.56(12) A^3
Z, Calculated density	2, 1.207 Mg/m^3
Absorption coefficient	0.080 mm^-1
F(000)	420
Crystal size	0.33 x 0.24 x 0.14 mm
Theta range for data collection	1.62 to 28.28 deg.
Limiting indices	-11<=h<=11, -13<=k<=13, -17<=l<=16
Reflections collected / unique	21223 / 5269 [R(int) = 0.0399]
Completeness to theta = 28.28	99.8 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.7455 and 0.7243
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	5269 / 0 / 258
Goodness-of-fit on F^2	1.026
Final R indices [I>2sigma(I)]	R1 = 0.0439, wR2 = 0.1004
R indices (all data)	R1 = 0.0721, wR2 = 0.1087

Largest diff. peak and hole 0.305 and -0.229 e.A^-3

Supplementary Table 2 Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters (A^2 x 10^3) for s2007lm.
U(eq) is defined as one third of the trace of the orthogonalized
Uij tensor.

	x	y	z	U(eq)
O(1)	11270(1)	4572(1)	1125(1)	26(1)
C(1)	10956(2)	5533(1)	1630(1)	16(1)
O(2)	11015(1)	3065(1)	3550(1)	27(1)
C(2)	9985(2)	5422(1)	2765(1)	14(1)
O(3)	8797(1)	3541(1)	2789(1)	21(1)
C(3)	10822(2)	5892(1)	3512(1)	15(1)
O(4)	9703(1)	9135(1)	1290(1)	21(1)
C(4)	11377(2)	7233(1)	3073(1)	15(1)
C(5)	12547(2)	7122(1)	1981(1)	15(1)
C(6)	11570(2)	6864(1)	1157(1)	15(1)
C(7)	10011(2)	3884(1)	3091(1)	17(1)
C(8)	8857(2)	2079(1)	2967(1)	24(1)
C(9)	8201(2)	6318(1)	2762(1)	16(1)
C(10)	7133(2)	6247(1)	3841(1)	17(1)
C(11)	6559(2)	7258(1)	4446(1)	19(1)
C(12)	6914(2)	8663(2)	4165(1)	27(1)
C(13)	5469(2)	7062(2)	5501(1)	26(1)
C(14)	12076(2)	7579(1)	3961(1)	18(1)
C(15)	12155(2)	9059(1)	3860(1)	21(1)

C(16)	13121(2)	9639(2)	3079(1)	22(1)
C(17)	14198(2)	8850(2)	2212(1)	22(1)
C(18)	13225(2)	8422(1)	1528(1)	20(1)
C(19)	14026(2)	5873(1)	2088(1)	19(1)
C(20)	10061(2)	8055(1)	928(1)	18(1)
C(21)	9052(2)	7840(2)	184(1)	25(1)
C(22)	12632(2)	6579(1)	50(1)	19(1)
C(23)	13119(2)	7768(2)	-701(1)	25(1)
C(24)	14595(2)	7701(2)	-1262(1)	39(1)

Supplementary Table 3. Bond lengths [A] and angles [deg] for s2007lm.

O(1)-C(1)	1.2165(15)
C(1)-C(2)	1.5355(17)
C(1)-C(6)	1.5577(18)
O(2)-C(7)	1.2017(15)
C(2)-C(7)	1.5355(18)
C(2)-C(3)	1.5372(16)
C(2)-C(9)	1.5617(17)
O(3)-C(7)	1.3428(15)
O(3)-C(8)	1.4473(16)
C(3)-C(4)	1.5350(17)
C(3)-H(3A)	0.9900
C(3)-H(3B)	0.9900
O(4)-C(20)	1.2118(16)
C(4)-C(14)	1.5473(16)
C(4)-C(5)	1.5613(17)
C(4)-H(4)	1.0000
C(5)-C(19)	1.5449(18)
C(5)-C(18)	1.5545(18)
C(5)-C(6)	1.5959(17)
C(6)-C(20)	1.5572(18)
C(6)-C(22)	1.5658(17)
C(8)-H(8A)	0.9800
C(8)-H(8B)	0.9800
C(8)-H(8C)	0.9800
C(9)-C(10)	1.5073(17)
C(9)-H(9A)	0.9900
C(9)-H(9B)	0.9900
C(10)-C(11)	1.3345(18)
C(10)-H(10)	0.9500
C(11)-C(13)	1.5028(19)

C(11)-C(12)	1.503(2)
C(12)-H(12A)	0.9800
C(12)-H(12B)	0.9800
C(12)-H(12C)	0.9800
C(13)-H(13A)	0.9800
C(13)-H(13B)	0.9800
C(13)-H(13C)	0.9800
C(14)-C(15)	1.5033(19)
C(14)-H(14A)	0.9900
C(14)-H(14B)	0.9900
C(15)-C(16)	1.3249(19)
C(15)-H(15)	0.9500
C(16)-C(17)	1.5052(19)
C(16)-H(16)	0.9500
C(17)-C(18)	1.5353(18)
C(17)-H(17A)	0.9900
C(17)-H(17B)	0.9900
C(18)-H(18A)	0.9900
C(18)-H(18B)	0.9900
C(19)-H(19A)	0.9800
C(19)-H(19B)	0.9800
C(19)-H(19C)	0.9800
C(20)-C(21)	1.5134(18)
C(21)-H(21A)	0.9800
C(21)-H(21B)	0.9800
C(21)-H(21C)	0.9800
C(22)-C(23)	1.4985(19)
C(22)-H(22A)	0.9900
C(22)-H(22B)	0.9900
C(23)-C(24)	1.317(2)
C(23)-H(23)	0.9500
C(24)-H(24A)	0.9500
C(24)-H(24B)	0.9500

O(1)-C(1)-C(2)	119.86(11)
O(1)-C(1)-C(6)	121.03(11)
C(2)-C(1)-C(6)	119.09(10)
C(1)-C(2)-C(7)	105.42(10)
C(1)-C(2)-C(3)	110.19(10)
C(7)-C(2)-C(3)	109.77(10)
C(1)-C(2)-C(9)	109.18(10)
C(7)-C(2)-C(9)	111.12(10)
C(3)-C(2)-C(9)	111.01(10)
C(7)-O(3)-C(8)	115.26(10)
C(4)-C(3)-C(2)	114.56(10)
C(4)-C(3)-H(3A)	108.6
C(2)-C(3)-H(3A)	108.6
C(4)-C(3)-H(3B)	108.6
C(2)-C(3)-H(3B)	108.6
H(3A)-C(3)-H(3B)	107.6
C(3)-C(4)-C(14)	106.65(10)
C(3)-C(4)-C(5)	111.55(10)
C(14)-C(4)-C(5)	115.76(10)
C(3)-C(4)-H(4)	107.5
C(14)-C(4)-H(4)	107.5
C(5)-C(4)-H(4)	107.5
C(19)-C(5)-C(18)	107.48(10)
C(19)-C(5)-C(4)	109.97(10)
C(18)-C(5)-C(4)	113.80(10)
C(19)-C(5)-C(6)	108.10(10)
C(18)-C(5)-C(6)	109.20(10)
C(4)-C(5)-C(6)	108.17(9)
C(20)-C(6)-C(1)	107.91(10)
C(20)-C(6)-C(22)	106.09(10)
C(1)-C(6)-C(22)	105.69(10)
C(20)-C(6)-C(5)	114.86(10)
C(1)-C(6)-C(5)	107.36(9)
C(22)-C(6)-C(5)	114.39(10)

O(2)-C(7)-O(3)	123.23(12)
O(2)-C(7)-C(2)	124.29(11)
O(3)-C(7)-C(2)	112.47(10)
O(3)-C(8)-H(8A)	109.5
O(3)-C(8)-H(8B)	109.5
H(8A)-C(8)-H(8B)	109.5
O(3)-C(8)-H(8C)	109.5
H(8A)-C(8)-H(8C)	109.5
H(8B)-C(8)-H(8C)	109.5
C(10)-C(9)-C(2)	113.20(10)
C(10)-C(9)-H(9A)	108.9
C(2)-C(9)-H(9A)	108.9
C(10)-C(9)-H(9B)	108.9
C(2)-C(9)-H(9B)	108.9
H(9A)-C(9)-H(9B)	107.8
C(11)-C(10)-C(9)	126.52(12)
C(11)-C(10)-H(10)	116.7
C(9)-C(10)-H(10)	116.7
C(10)-C(11)-C(13)	121.23(13)
C(10)-C(11)-C(12)	125.03(12)
C(13)-C(11)-C(12)	113.74(12)
C(11)-C(12)-H(12A)	109.5
C(11)-C(12)-H(12B)	109.5
H(12A)-C(12)-H(12B)	109.5
C(11)-C(12)-H(12C)	109.5
H(12A)-C(12)-H(12C)	109.5
H(12B)-C(12)-H(12C)	109.5
C(11)-C(13)-H(13A)	109.5
C(11)-C(13)-H(13B)	109.5
H(13A)-C(13)-H(13B)	109.5
C(11)-C(13)-H(13C)	109.5
H(13A)-C(13)-H(13C)	109.5
H(13B)-C(13)-H(13C)	109.5
C(15)-C(14)-C(4)	115.15(11)

C(15)-C(14)-H(14A)	108.5
C(4)-C(14)-H(14A)	108.5
C(15)-C(14)-H(14B)	108.5
C(4)-C(14)-H(14B)	108.5
H(14A)-C(14)-H(14B)	107.5
C(16)-C(15)-C(14)	123.14(12)
C(16)-C(15)-H(15)	118.4
C(14)-C(15)-H(15)	118.4
C(15)-C(16)-C(17)	121.48(13)
C(15)-C(16)-H(16)	119.3
C(17)-C(16)-H(16)	119.3
C(16)-C(17)-C(18)	112.92(11)
C(16)-C(17)-H(17A)	109.0
C(18)-C(17)-H(17A)	109.0
C(16)-C(17)-H(17B)	109.0
C(18)-C(17)-H(17B)	109.0
H(17A)-C(17)-H(17B)	107.8
C(17)-C(18)-C(5)	117.17(11)
C(17)-C(18)-H(18A)	108.0
C(5)-C(18)-H(18A)	108.0
C(17)-C(18)-H(18B)	108.0
C(5)-C(18)-H(18B)	108.0
H(18A)-C(18)-H(18B)	107.2
C(5)-C(19)-H(19A)	109.5
C(5)-C(19)-H(19B)	109.5
H(19A)-C(19)-H(19B)	109.5
C(5)-C(19)-H(19C)	109.5
H(19A)-C(19)-H(19C)	109.5
H(19B)-C(19)-H(19C)	109.5
O(4)-C(20)-C(21)	119.86(12)
O(4)-C(20)-C(6)	123.08(11)
C(21)-C(20)-C(6)	117.03(11)
C(20)-C(21)-H(21A)	109.5
C(20)-C(21)-H(21B)	109.5

H(21A)-C(21)-H(21B)	109.5
C(20)-C(21)-H(21C)	109.5
H(21A)-C(21)-H(21C)	109.5
H(21B)-C(21)-H(21C)	109.5
C(23)-C(22)-C(6)	118.43(11)
C(23)-C(22)-H(22A)	107.7
C(6)-C(22)-H(22A)	107.7
C(23)-C(22)-H(22B)	107.7
C(6)-C(22)-H(22B)	107.7
H(22A)-C(22)-H(22B)	107.1
C(24)-C(23)-C(22)	123.55(14)
C(24)-C(23)-H(23)	118.2
C(22)-C(23)-H(23)	118.2
C(23)-C(24)-H(24A)	120.0
C(23)-C(24)-H(24B)	120.0
H(24A)-C(24)-H(24B)	120.0

Symmetry transformations used to generate equivalent atoms:

Supplementary Table 4. Anisotropic displacement parameters (A^2 x 10^3) for s2007lm.

The anisotropic displacement factor exponent takes the form:

-2 pi^2 [h^2 a*^2 U11 + ... + 2 h k a* b* U12]

	U11	U22	U33	U23	U13	U12
O(1)	36(1)	21(1)	22(1)	-9(1)	1(1)	-11(1)
C(1)	14(1)	17(1)	17(1)	-3(1)	-6(1)	-2(1)
O(2)	30(1)	17(1)	37(1)	1(1)	-18(1)	-3(1)
C(2)	14(1)	13(1)	16(1)	-2(1)	-4(1)	-3(1)
O(3)	21(1)	16(1)	29(1)	-3(1)	-8(1)	-7(1)
C(3)	15(1)	16(1)	15(1)	-2(1)	-4(1)	-4(1)
O(4)	25(1)	15(1)	21(1)	-4(1)	-5(1)	0(1)
C(4)	15(1)	15(1)	15(1)	-3(1)	-4(1)	-2(1)
C(5)	15(1)	13(1)	16(1)	-3(1)	-2(1)	-2(1)
C(6)	17(1)	14(1)	14(1)	-3(1)	-2(1)	-3(1)
C(7)	17(1)	18(1)	16(1)	-4(1)	-2(1)	-4(1)
C(8)	31(1)	18(1)	25(1)	-4(1)	-3(1)	-11(1)
C(9)	15(1)	15(1)	18(1)	-3(1)	-4(1)	-2(1)
C(10)	13(1)	17(1)	21(1)	0(1)	-5(1)	-3(1)
C(11)	11(1)	25(1)	21(1)	-5(1)	-5(1)	-2(1)
C(12)	23(1)	27(1)	33(1)	-13(1)	-1(1)	-5(1)
C(13)	18(1)	35(1)	23(1)	-6(1)	-4(1)	-2(1)
C(14)	20(1)	20(1)	17(1)	-4(1)	-5(1)	-6(1)
C(15)	20(1)	21(1)	23(1)	-10(1)	-4(1)	-3(1)

C(16)	22(1)	18(1)	30(1)	-9(1)	-6(1)	-6(1)
C(17)	19(1)	19(1)	28(1)	-6(1)	-1(1)	-8(1)
C(18)	22(1)	19(1)	19(1)	-3(1)	-1(1)	-8(1)
C(19)	15(1)	20(1)	23(1)	-5(1)	-4(1)	-2(1)
C(20)	21(1)	17(1)	13(1)	1(1)	-2(1)	-3(1)
C(21)	26(1)	26(1)	23(1)	-4(1)	-11(1)	0(1)
C(22)	23(1)	16(1)	16(1)	-5(1)	0(1)	-3(1)
C(23)	38(1)	17(1)	17(1)	-5(1)	2(1)	-5(1)
C(24)	54(1)	23(1)	35(1)	-12(1)	18(1)	-18(1)

Supplementary Table 5. Hydrogen coordinates (x 10^4) and isotropic displacement parameters (A^2 x 10^3) for s2007lm.

	x	y	z	U(eq)
H(3A)	10054	6023	4189	18
H(3B)	11786	5147	3670	18
H(4)	10381	7983	2955	18
H(8A)	8802	1738	3726	36
H(8B)	9880	1581	2572	36
H(8C)	7929	1928	2723	36
H(9A)	8235	7292	2500	19
H(9B)	7706	6002	2263	19
H(10)	6838	5397	4117	21
H(12A)	7515	8760	3437	41
H(12B)	7575	8772	4654	41

H(12C)	5884	9375	4221	41
H(13A)	5283	6131	5631	39
H(13B)	4421	7746	5496	39
H(13C)	5992	7183	6063	39
H(14A)	11396	7344	4652	22
H(14B)	13192	6982	3970	22
H(15)	11480	9604	4380	25
H(16)	13135	10574	3066	27
H(17A)	14920	8011	2535	26
H(17B)	14901	9430	1751	26
H(18A)	13936	8263	835	24
H(18B)	12291	9211	1389	24
H(19A)	14500	5905	2700	29
H(19B)	14850	5909	1442	29
H(19C)	13667	5015	2190	29
H(21A)	9467	8202	-545	38
H(21B)	7908	8328	386	38
H(21C)	9127	6851	231	38
H(22A)	13645	5875	175	23
H(22B)	12026	6162	-314	23
H(23)	12319	8617	-776	30
H(24A)	15418	6865	-1202	46
H(24B)	14836	8487	-1726	46

Supplementary Table 6. Torsion angles [deg] for s2007lm.

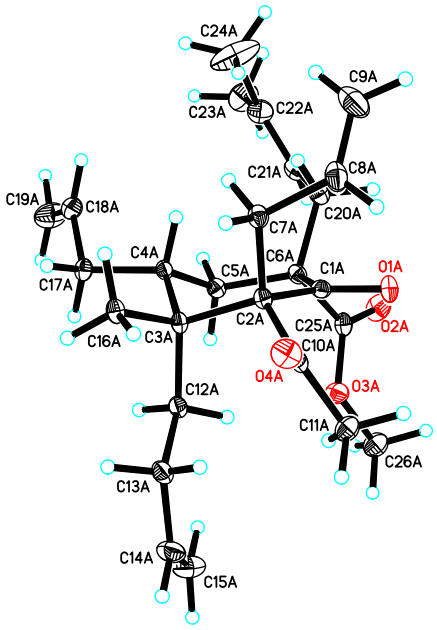
O(1)-C(1)-C(2)-C(7)	14.18(15)
C(6)-C(1)-C(2)-C(7)	-163.97(10)
O(1)-C(1)-C(2)-C(3)	132.56(12)
C(6)-C(1)-C(2)-C(3)	-45.59(15)
O(1)-C(1)-C(2)-C(9)	-105.27(13)
C(6)-C(1)-C(2)-C(9)	76.58(13)
C(1)-C(2)-C(3)-C(4)	45.21(14)
C(7)-C(2)-C(3)-C(4)	160.88(10)
C(9)-C(2)-C(3)-C(4)	-75.88(13)
C(2)-C(3)-C(4)-C(14)	176.35(10)
C(2)-C(3)-C(4)-C(5)	-56.36(14)
C(3)-C(4)-C(5)-C(19)	-56.21(13)
C(14)-C(4)-C(5)-C(19)	65.97(14)
C(3)-C(4)-C(5)-C(18)	-176.84(10)
C(14)-C(4)-C(5)-C(18)	-54.66(15)
C(3)-C(4)-C(5)-C(6)	61.63(13)
C(14)-C(4)-C(5)-C(6)	-176.19(10)
O(1)-C(1)-C(6)-C(20)	110.01(13)
C(2)-C(1)-C(6)-C(20)	-71.86(13)
O(1)-C(1)-C(6)-C(22)	-3.16(16)
C(2)-C(1)-C(6)-C(22)	174.97(10)
O(1)-C(1)-C(6)-C(5)	-125.65(12)
C(2)-C(1)-C(6)-C(5)	52.48(14)
C(19)-C(5)-C(6)-C(20)	-178.14(10)
C(18)-C(5)-C(6)-C(20)	-61.50(13)
C(4)-C(5)-C(6)-C(20)	62.83(13)
C(19)-C(5)-C(6)-C(1)	61.86(12)
C(18)-C(5)-C(6)-C(1)	178.50(10)
C(4)-C(5)-C(6)-C(1)	-57.18(12)

C(19)-C(5)-C(6)-C(22)	-55.07(13)
C(18)-C(5)-C(6)-C(22)	61.56(13)
C(4)-C(5)-C(6)-C(22)	-174.11(10)
C(8)-O(3)-C(7)-O(2)	-5.44(18)
C(8)-O(3)-C(7)-C(2)	173.46(10)
C(1)-C(2)-C(7)-O(2)	92.39(14)
C(3)-C(2)-C(7)-O(2)	-26.27(17)
C(9)-C(2)-C(7)-O(2)	-149.46(12)
C(1)-C(2)-C(7)-O(3)	-86.50(12)
C(3)-C(2)-C(7)-O(3)	154.83(10)
C(9)-C(2)-C(7)-O(3)	31.65(14)
C(1)-C(2)-C(9)-C(10)	178.48(10)
C(7)-C(2)-C(9)-C(10)	62.62(13)
C(3)-C(2)-C(9)-C(10)	-59.84(14)
C(2)-C(9)-C(10)-C(11)	109.95(14)
C(9)-C(10)-C(11)-C(13)	178.58(12)
C(9)-C(10)-C(11)-C(12)	-1.5(2)
C(3)-C(4)-C(14)-C(15)	-159.85(11)
C(5)-C(4)-C(14)-C(15)	75.40(14)
C(4)-C(14)-C(15)-C(16)	-66.12(17)
C(14)-C(15)-C(16)-C(17)	1.4(2)
C(15)-C(16)-C(17)-C(18)	64.43(17)
C(16)-C(17)-C(18)-C(5)	-80.28(15)
C(19)-C(5)-C(18)-C(17)	-63.39(14)
C(4)-C(5)-C(18)-C(17)	58.62(15)
C(6)-C(5)-C(18)-C(17)	179.58(11)
C(1)-C(6)-C(20)-O(4)	124.12(13)
C(22)-C(6)-C(20)-O(4)	-122.98(13)
C(5)-C(6)-C(20)-O(4)	4.42(17)
C(1)-C(6)-C(20)-C(21)	-57.98(13)
C(22)-C(6)-C(20)-C(21)	54.92(14)
C(5)-C(6)-C(20)-C(21)	-177.68(11)
C(20)-C(6)-C(22)-C(23)	53.23(15)
C(1)-C(6)-C(22)-C(23)	167.66(11)

C(5)-C(6)-C(22)-C(23)	-74.45(15)
C(6)-C(22)-C(23)-C(24)	136.86(15)

Symmetry transformations used to generate equivalent atoms:

Supplementary Figure 34 X-ray of compound **19**



Supplementary Table 7. Crystal data and structure refinement for s2024lm.

Identification code	s2024lm
Empirical formula	C26 H38 O4
Formula weight	414.56
Temperature	100(2) K

Wavelength 0.71073 A

Crystal system, space group Monoclinic, P 21/c

Unit cell dimensions a = 28.6041(14) A alpha = 90 deg.
b = 8.1727(4) A beta = 110.543(2)
c = 22.0769(11) A gamma = 90 deg.

Volume 4832.8(4) A^3

Z, Calculated density 8, 1.140 Mg/m^3

Absorption coefficient 0.075 mm^-1

F(000) 1808

Crystal size 0.28 x 0.24 x 0.19 mm

Theta range for data collection 1.52 to 28.42 deg.

Limiting indices -37<=h<=38, -10<=k<=10, -29<=l<=22

Reflections collected / unique 82103 / 12054 [R(int) = 0.0495]

Completeness to theta = 28.42 99.3 %

Absorption correction Semi-empirical from equivalents

Max. and min. transmission 0.7406 and 0.7089

Refinement method Full-matrix least-squares on F^2

Data / restraints / parameters 12054 / 0 / 569

Goodness-of-fit on F^2	1.031
Final R indices [I>2sigma(I)]	R1 = 0.0486, wR2 = 0.1055
R indices (all data)	R1 = 0.0778, wR2 = 0.1138
Largest diff. peak and hole	0.379 and -0.330 e.A^-3

Supplementary Table 8. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters (A^2 x 10^3) for s2024lm.
U(eq) is defined as one third of the trace of the orthogonalized Uij tensor.

	x	y	z	U(eq)
O(1A)	8472(1)	7653(1)	6373(1)	17(1)
C(1A)	8533(1)	8838(2)	6724(1)	12(1)
O(2A)	9693(1)	7116(1)	7487(1)	24(1)
C(2A)	8159(1)	10246(2)	6513(1)	12(1)
O(3A)	9483(1)	9203(1)	6783(1)	18(1)
C(3A)	8358(1)	11914(2)	6886(1)	12(1)
O(4A)	7593(1)	10838(1)	5443(1)	21(1)
C(4A)	8594(1)	11448(2)	7616(1)	12(1)
C(5A)	9065(1)	10429(2)	7745(1)	13(1)
C(6A)	8959(1)	8778(2)	7383(1)	12(1)
C(7A)	7676(1)	9689(2)	6632(1)	14(1)
C(8A)	7475(1)	8028(2)	6394(1)	21(1)
C(9A)	7362(1)	6919(2)	6754(1)	32(1)
C(10A)	8018(1)	10447(2)	5769(1)	14(1)
C(11A)	8397(1)	10153(2)	5448(1)	19(1)
C(12A)	8763(1)	12729(2)	6665(1)	13(1)
C(13A)	8580(1)	13814(2)	6062(1)	16(1)
C(14A)	8982(1)	14406(2)	5828(1)	23(1)
C(15A)	9464(1)	14111(2)	6083(1)	28(1)
C(16A)	7923(1)	13113(2)	6778(1)	14(1)
C(17A)	8699(1)	12905(2)	8092(1)	14(1)

C(18A)	8798(1)	12349(2)	8772(1)	19(1)
C(19A)	9198(1)	12683(2)	9273(1)	30(1)
C(20A)	8805(1)	7433(2)	7774(1)	16(1)
C(21A)	9147(1)	7281(2)	8462(1)	17(1)
C(22A)	9021(1)	7274(2)	8988(1)	22(1)
C(23A)	9409(1)	7091(2)	9652(1)	32(1)
C(24A)	8499(1)	7424(3)	8983(1)	51(1)
C(25A)	9420(1)	8228(2)	7238(1)	14(1)
C(26A)	9911(1)	8849(2)	6604(1)	23(1)
O(1B)	6534(1)	-628(1)	8370(1)	18(1)
C(1B)	6511(1)	795(2)	8514(1)	13(1)
O(2B)	5368(1)	-549(1)	8302(1)	31(1)
C(2B)	6941(1)	1934(2)	8537(1)	12(1)
O(3B)	5542(1)	1184(1)	7622(1)	26(1)
C(3B)	6798(1)	3832(2)	8481(1)	13(1)
O(4B)	7557(1)	1588(1)	8041(1)	24(1)
C(4B)	6510(1)	4100(2)	8956(1)	13(1)
C(5B)	6009(1)	3204(2)	8721(1)	15(1)
C(6B)	6072(1)	1335(2)	8711(1)	14(1)
C(7B)	7380(1)	1556(2)	9179(1)	15(1)
C(8B)	7505(1)	-216(2)	9311(1)	20(1)
C(9B)	7543(1)	-961(2)	9855(1)	27(1)
C(10B)	7122(1)	1426(2)	7976(1)	16(1)
C(11B)	6764(1)	753(2)	7346(1)	19(1)
C(12B)	6483(1)	4202(2)	7764(1)	17(1)
C(13B)	6254(1)	5915(2)	7597(1)	20(1)
C(14B)	5869(1)	5930(4)	6912(2)	18(1)
C(15B)	5929(2)	6787(4)	6437(2)	33(1)
C(14C)	6117(1)	6308(4)	6893(2)	21(1)
C(15C)	5664(2)	6535(5)	6508(2)	36(1)
C(16B)	7272(1)	4882(2)	8676(1)	17(1)
C(17B)	6430(1)	5883(2)	9135(1)	17(1)
C(18B)	6353(1)	5934(2)	9770(1)	24(1)
C(19B)	5944(1)	6435(2)	9856(1)	36(1)

C(20B)	6165(1)	568(2)	9387(1)	18(1)
C(21B)	5777(1)	1017(2)	9670(1)	21(1)
C(22B)	5846(1)	1728(2)	10235(1)	25(1)
C(23B)	5410(1)	2151(2)	10437(1)	36(1)
C(24B)	6345(1)	2198(2)	10721(1)	36(1)
C(25B)	5617(1)	530(2)	8208(1)	19(1)
C(26B)	5137(1)	503(2)	7088(1)	38(1)

Supplementary Table 9. Bond lengths [A] and angles [deg] for s2024lm.

O(1A)-C(1A)	1.2150(15)
C(1A)-C(2A)	1.5290(18)
C(1A)-C(6A)	1.5360(17)
O(2A)-C(25A)	1.1991(16)
C(2A)-C(10A)	1.5551(17)
C(2A)-C(7A)	1.5642(18)
C(2A)-C(3A)	1.5907(17)
O(3A)-C(25A)	1.3446(16)
O(3A)-C(26A)	1.4407(16)
C(3A)-C(16A)	1.5357(17)
C(3A)-C(12A)	1.5559(18)
C(3A)-C(4A)	1.5609(17)
O(4A)-C(10A)	1.2190(16)
C(4A)-C(5A)	1.5244(17)
C(4A)-C(17A)	1.5463(17)
C(4A)-H(4A)	1.0000
C(5A)-C(6A)	1.5428(17)
C(5A)-H(5A1)	0.9900
C(5A)-H(5A2)	0.9900
C(6A)-C(25A)	1.5274(18)
C(6A)-C(20A)	1.5545(18)
C(7A)-C(8A)	1.4948(19)
C(7A)-H(7A1)	0.9900
C(7A)-H(7A2)	0.9900
C(8A)-C(9A)	1.319(2)
C(8A)-H(8A)	0.9500
C(9A)-H(9A1)	0.9500
C(9A)-H(9A2)	0.9500
C(10A)-C(11A)	1.5094(19)
C(11A)-H(11A)	0.9800

C(11A)-H(11B)	0.9800
C(11A)-H(11C)	0.9800
C(12A)-C(13A)	1.5300(17)
C(12A)-H(12A)	0.9900
C(12A)-H(12B)	0.9900
C(13A)-C(14A)	1.4966(19)
C(13A)-H(13A)	0.9900
C(13A)-H(13B)	0.9900
C(14A)-C(15A)	1.316(2)
C(14A)-H(14A)	0.9500
C(15A)-H(15A)	0.9500
C(15A)-H(15B)	0.9500
C(16A)-H(16A)	0.9800
C(16A)-H(16B)	0.9800
C(16A)-H(16C)	0.9800
C(17A)-C(18A)	1.4968(18)
C(17A)-H(17A)	0.9900
C(17A)-H(17B)	0.9900
C(18A)-C(19A)	1.311(2)
C(18A)-H(18A)	0.9500
C(19A)-H(19A)	0.9500
C(19A)-H(19B)	0.9500
C(20A)-C(21A)	1.4969(18)
C(20A)-H(20A)	0.9900
C(20A)-H(20B)	0.9900
C(21A)-C(22A)	1.3312(19)
C(21A)-H(21A)	0.9500
C(22A)-C(24A)	1.494(2)
C(22A)-C(23A)	1.504(2)
C(23A)-H(23A)	0.9800
C(23A)-H(23B)	0.9800
C(23A)-H(23C)	0.9800
C(24A)-H(24A)	0.9800
C(24A)-H(24B)	0.9800

C(24A)-H(24C)	0.9800
C(26A)-H(26A)	0.9800
C(26A)-H(26B)	0.9800
C(26A)-H(26C)	0.9800
O(1B)-C(1B)	1.2131(16)
C(1B)-C(2B)	1.5289(18)
C(1B)-C(6B)	1.5331(18)
O(2B)-C(25B)	1.1974(17)
C(2B)-C(10B)	1.5561(17)
C(2B)-C(7B)	1.5602(17)
C(2B)-C(3B)	1.5981(18)
O(3B)-C(25B)	1.3453(18)
O(3B)-C(26B)	1.4441(17)
C(3B)-C(16B)	1.5330(18)
C(3B)-C(12B)	1.5517(17)
C(3B)-C(4B)	1.5581(17)
O(4B)-C(10B)	1.2110(16)
C(4B)-C(5B)	1.5275(18)
C(4B)-C(17B)	1.5479(18)
C(4B)-H(4B)	1.0000
C(5B)-C(6B)	1.5391(18)
C(5B)-H(5B1)	0.9900
C(5B)-H(5B2)	0.9900
C(6B)-C(25B)	1.5303(18)
C(6B)-C(20B)	1.5526(18)
C(7B)-C(8B)	1.4956(19)
C(7B)-H(7B1)	0.9900
C(7B)-H(7B2)	0.9900
C(8B)-C(9B)	1.316(2)
C(8B)-H(8B)	0.9500
C(9B)-H(9B1)	0.9500
C(9B)-H(9B2)	0.9500
C(10B)-C(11B)	1.5104(18)
C(11B)-H(11D)	0.9800

C(11B)-H(11E)	0.9800
C(11B)-H(11F)	0.9800
C(12B)-C(13B)	1.5340(19)
C(12B)-H(12C)	0.9900
C(12B)-H(12D)	0.9900
C(13B)-C(14C)	1.500(3)
C(13B)-C(14B)	1.527(3)
C(13B)-H(13C)	0.9900
C(13B)-H(13D)	0.9900
C(14B)-C(15B)	1.321(5)
C(14B)-H(14B)	0.9500
C(15B)-H(15C)	0.9500
C(15B)-H(15D)	0.9500
C(14C)-C(15C)	1.289(5)
C(14C)-H(14C)	0.9500
C(15C)-H(15E)	0.9500
C(15C)-H(15F)	0.9500
C(16B)-H(16D)	0.9800
C(16B)-H(16E)	0.9800
C(16B)-H(16F)	0.9800
C(17B)-C(18B)	1.4964(19)
C(17B)-H(17C)	0.9900
C(17B)-H(17D)	0.9900
C(18B)-C(19B)	1.314(2)
C(18B)-H(18B)	0.9500
C(19B)-H(19C)	0.9500
C(19B)-H(19D)	0.9500
C(20B)-C(21B)	1.4982(19)
C(20B)-H(20C)	0.9900
C(20B)-H(20D)	0.9900
C(21B)-C(22B)	1.326(2)
C(21B)-H(21B)	0.9500
C(22B)-C(24B)	1.504(2)
C(22B)-C(23B)	1.506(2)

C(23B)-H(23D)	0.9800
C(23B)-H(23E)	0.9800
C(23B)-H(23F)	0.9800
C(24B)-H(24D)	0.9800
C(24B)-H(24E)	0.9800
C(24B)-H(24F)	0.9800
C(26B)-H(26D)	0.9800
C(26B)-H(26E)	0.9800
C(26B)-H(26F)	0.9800

O(1A)-C(1A)-C(2A)	118.48(11)
O(1A)-C(1A)-C(6A)	117.90(11)
C(2A)-C(1A)-C(6A)	123.42(11)
C(1A)-C(2A)-C(10A)	107.24(10)
C(1A)-C(2A)-C(7A)	107.16(10)
C(10A)-C(2A)-C(7A)	106.95(10)
C(1A)-C(2A)-C(3A)	113.68(10)
C(10A)-C(2A)-C(3A)	111.69(10)
C(7A)-C(2A)-C(3A)	109.80(10)
C(25A)-O(3A)-C(26A)	115.92(10)
C(16A)-C(3A)-C(12A)	109.25(10)
C(16A)-C(3A)-C(4A)	110.40(10)
C(12A)-C(3A)-C(4A)	109.23(10)
C(16A)-C(3A)-C(2A)	110.09(10)
C(12A)-C(3A)-C(2A)	112.01(10)
C(4A)-C(3A)-C(2A)	105.82(10)
C(5A)-C(4A)-C(17A)	110.24(10)
C(5A)-C(4A)-C(3A)	111.02(10)
C(17A)-C(4A)-C(3A)	115.10(10)
C(5A)-C(4A)-H(4A)	106.7
C(17A)-C(4A)-H(4A)	106.7
C(3A)-C(4A)-H(4A)	106.7
C(4A)-C(5A)-C(6A)	112.39(10)
C(4A)-C(5A)-H(5A1)	109.1

C(6A)-C(5A)-H(5A1)	109.1
C(4A)-C(5A)-H(5A2)	109.1
C(6A)-C(5A)-H(5A2)	109.1
H(5A1)-C(5A)-H(5A2)	107.9
C(25A)-C(6A)-C(1A)	105.45(10)
C(25A)-C(6A)-C(5A)	109.81(10)
C(1A)-C(6A)-C(5A)	114.13(10)
C(25A)-C(6A)-C(20A)	110.01(10)
C(1A)-C(6A)-C(20A)	105.22(10)
C(5A)-C(6A)-C(20A)	111.93(10)
C(8A)-C(7A)-C(2A)	117.22(11)
C(8A)-C(7A)-H(7A1)	108.0
C(2A)-C(7A)-H(7A1)	108.0
C(8A)-C(7A)-H(7A2)	108.0
C(2A)-C(7A)-H(7A2)	108.0
H(7A1)-C(7A)-H(7A2)	107.2
C(9A)-C(8A)-C(7A)	123.84(14)
C(9A)-C(8A)-H(8A)	118.1
C(7A)-C(8A)-H(8A)	118.1
C(8A)-C(9A)-H(9A1)	120.0
C(8A)-C(9A)-H(9A2)	120.0
H(9A1)-C(9A)-H(9A2)	120.0
O(4A)-C(10A)-C(11A)	119.81(11)
O(4A)-C(10A)-C(2A)	119.15(11)
C(11A)-C(10A)-C(2A)	121.04(11)
C(10A)-C(11A)-H(11A)	109.5
C(10A)-C(11A)-H(11B)	109.5
H(11A)-C(11A)-H(11B)	109.5
C(10A)-C(11A)-H(11C)	109.5
H(11A)-C(11A)-H(11C)	109.5
H(11B)-C(11A)-H(11C)	109.5
C(13A)-C(12A)-C(3A)	117.06(11)
C(13A)-C(12A)-H(12A)	108.0
C(3A)-C(12A)-H(12A)	108.0

C(13A)-C(12A)-H(12B)	108.0
C(3A)-C(12A)-H(12B)	108.0
H(12A)-C(12A)-H(12B)	107.3
C(14A)-C(13A)-C(12A)	114.62(11)
C(14A)-C(13A)-H(13A)	108.6
C(12A)-C(13A)-H(13A)	108.6
C(14A)-C(13A)-H(13B)	108.6
C(12A)-C(13A)-H(13B)	108.6
H(13A)-C(13A)-H(13B)	107.6
C(15A)-C(14A)-C(13A)	127.64(13)
C(15A)-C(14A)-H(14A)	116.2
C(13A)-C(14A)-H(14A)	116.2
C(14A)-C(15A)-H(15A)	120.0
C(14A)-C(15A)-H(15B)	120.0
H(15A)-C(15A)-H(15B)	120.0
C(3A)-C(16A)-H(16A)	109.5
C(3A)-C(16A)-H(16B)	109.5
H(16A)-C(16A)-H(16B)	109.5
C(3A)-C(16A)-H(16C)	109.5
H(16A)-C(16A)-H(16C)	109.5
H(16B)-C(16A)-H(16C)	109.5
C(18A)-C(17A)-C(4A)	111.72(11)
C(18A)-C(17A)-H(17A)	109.3
C(4A)-C(17A)-H(17A)	109.3
C(18A)-C(17A)-H(17B)	109.3
C(4A)-C(17A)-H(17B)	109.3
H(17A)-C(17A)-H(17B)	107.9
C(19A)-C(18A)-C(17A)	125.85(14)
C(19A)-C(18A)-H(18A)	117.1
C(17A)-C(18A)-H(18A)	117.1
C(18A)-C(19A)-H(19A)	120.0
C(18A)-C(19A)-H(19B)	120.0
H(19A)-C(19A)-H(19B)	120.0
C(21A)-C(20A)-C(6A)	114.21(11)

C(21A)-C(20A)-H(20A)	108.7
C(6A)-C(20A)-H(20A)	108.7
C(21A)-C(20A)-H(20B)	108.7
C(6A)-C(20A)-H(20B)	108.7
H(20A)-C(20A)-H(20B)	107.6
C(22A)-C(21A)-C(20A)	127.19(13)
C(22A)-C(21A)-H(21A)	116.4
C(20A)-C(21A)-H(21A)	116.4
C(21A)-C(22A)-C(24A)	124.73(13)
C(21A)-C(22A)-C(23A)	121.05(14)
C(24A)-C(22A)-C(23A)	114.22(13)
C(22A)-C(23A)-H(23A)	109.5
C(22A)-C(23A)-H(23B)	109.5
H(23A)-C(23A)-H(23B)	109.5
C(22A)-C(23A)-H(23C)	109.5
H(23A)-C(23A)-H(23C)	109.5
H(23B)-C(23A)-H(23C)	109.5
C(22A)-C(24A)-H(24A)	109.5
C(22A)-C(24A)-H(24B)	109.5
H(24A)-C(24A)-H(24B)	109.5
C(22A)-C(24A)-H(24C)	109.5
H(24A)-C(24A)-H(24C)	109.5
H(24B)-C(24A)-H(24C)	109.5
O(2A)-C(25A)-O(3A)	123.66(12)
O(2A)-C(25A)-C(6A)	126.76(12)
O(3A)-C(25A)-C(6A)	109.57(10)
O(3A)-C(26A)-H(26A)	109.5
O(3A)-C(26A)-H(26B)	109.5
H(26A)-C(26A)-H(26B)	109.5
O(3A)-C(26A)-H(26C)	109.5
H(26A)-C(26A)-H(26C)	109.5
H(26B)-C(26A)-H(26C)	109.5
O(1B)-C(1B)-C(2B)	118.39(11)
O(1B)-C(1B)-C(6B)	118.39(12)

C(2B)-C(1B)-C(6B)	123.07(11)
C(1B)-C(2B)-C(10B)	107.36(10)
C(1B)-C(2B)-C(7B)	106.94(10)
C(10B)-C(2B)-C(7B)	106.59(10)
C(1B)-C(2B)-C(3B)	113.96(10)
C(10B)-C(2B)-C(3B)	110.21(10)
C(7B)-C(2B)-C(3B)	111.42(10)
C(25B)-O(3B)-C(26B)	116.35(12)
C(16B)-C(3B)-C(12B)	108.47(10)
C(16B)-C(3B)-C(4B)	110.88(10)
C(12B)-C(3B)-C(4B)	113.78(11)
C(16B)-C(3B)-C(2B)	110.10(10)
C(12B)-C(3B)-C(2B)	108.03(10)
C(4B)-C(3B)-C(2B)	105.49(10)
C(5B)-C(4B)-C(17B)	109.47(11)
C(5B)-C(4B)-C(3B)	110.96(10)
C(17B)-C(4B)-C(3B)	117.64(10)
C(5B)-C(4B)-H(4B)	106.0
C(17B)-C(4B)-H(4B)	106.0
C(3B)-C(4B)-H(4B)	106.0
C(4B)-C(5B)-C(6B)	112.40(11)
C(4B)-C(5B)-H(5B1)	109.1
C(6B)-C(5B)-H(5B1)	109.1
C(4B)-C(5B)-H(5B2)	109.1
C(6B)-C(5B)-H(5B2)	109.1
H(5B1)-C(5B)-H(5B2)	107.9
C(25B)-C(6B)-C(1B)	104.07(10)
C(25B)-C(6B)-C(5B)	111.36(11)
C(1B)-C(6B)-C(5B)	113.60(11)
C(25B)-C(6B)-C(20B)	109.84(11)
C(1B)-C(6B)-C(20B)	105.93(10)
C(5B)-C(6B)-C(20B)	111.64(11)
C(8B)-C(7B)-C(2B)	115.41(11)
C(8B)-C(7B)-H(7B1)	108.4

C(2B)-C(7B)-H(7B1)	108.4
C(8B)-C(7B)-H(7B2)	108.4
C(2B)-C(7B)-H(7B2)	108.4
H(7B1)-C(7B)-H(7B2)	107.5
C(9B)-C(8B)-C(7B)	124.26(13)
C(9B)-C(8B)-H(8B)	117.9
C(7B)-C(8B)-H(8B)	117.9
C(8B)-C(9B)-H(9B1)	120.0
C(8B)-C(9B)-H(9B2)	120.0
H(9B1)-C(9B)-H(9B2)	120.0
O(4B)-C(10B)-C(11B)	119.00(12)
O(4B)-C(10B)-C(2B)	119.44(12)
C(11B)-C(10B)-C(2B)	121.55(11)
C(10B)-C(11B)-H(11D)	109.5
C(10B)-C(11B)-H(11E)	109.5
H(11D)-C(11B)-H(11E)	109.5
C(10B)-C(11B)-H(11F)	109.5
H(11D)-C(11B)-H(11F)	109.5
H(11E)-C(11B)-H(11F)	109.5
C(13B)-C(12B)-C(3B)	117.98(11)
C(13B)-C(12B)-H(12C)	107.8
C(3B)-C(12B)-H(12C)	107.8
C(13B)-C(12B)-H(12D)	107.8
C(3B)-C(12B)-H(12D)	107.8
H(12C)-C(12B)-H(12D)	107.1
C(14C)-C(13B)-C(14B)	30.15(14)
C(14C)-C(13B)-C(12B)	112.28(15)
C(14B)-C(13B)-C(12B)	110.08(15)
C(14C)-C(13B)-H(13C)	130.5
C(14B)-C(13B)-H(13C)	109.6
C(12B)-C(13B)-H(13C)	109.6
C(14C)-C(13B)-H(13D)	81.3
C(14B)-C(13B)-H(13D)	109.6
C(12B)-C(13B)-H(13D)	109.6

H(13C)-C(13B)-H(13D)	108.2
C(15B)-C(14B)-C(13B)	122.8(3)
C(15B)-C(14B)-H(14B)	118.6
C(13B)-C(14B)-H(14B)	118.6
C(14B)-C(15B)-H(15C)	120.0
C(14B)-C(15B)-H(15D)	120.0
H(15C)-C(15B)-H(15D)	120.0
C(15C)-C(14C)-C(13B)	123.5(4)
C(15C)-C(14C)-H(14C)	118.3
C(13B)-C(14C)-H(14C)	118.3
C(14C)-C(15C)-H(15E)	120.0
C(14C)-C(15C)-H(15F)	120.0
H(15E)-C(15C)-H(15F)	120.0
C(3B)-C(16B)-H(16D)	109.5
C(3B)-C(16B)-H(16E)	109.5
H(16D)-C(16B)-H(16E)	109.5
C(3B)-C(16B)-H(16F)	109.5
H(16D)-C(16B)-H(16F)	109.5
H(16E)-C(16B)-H(16F)	109.5
C(18B)-C(17B)-C(4B)	110.42(11)
C(18B)-C(17B)-H(17C)	109.6
C(4B)-C(17B)-H(17C)	109.6
C(18B)-C(17B)-H(17D)	109.6
C(4B)-C(17B)-H(17D)	109.6
H(17C)-C(17B)-H(17D)	108.1
C(19B)-C(18B)-C(17B)	125.17(15)
C(19B)-C(18B)-H(18B)	117.4
C(17B)-C(18B)-H(18B)	117.4
C(18B)-C(19B)-H(19C)	120.0
C(18B)-C(19B)-H(19D)	120.0
H(19C)-C(19B)-H(19D)	120.0
C(21B)-C(20B)-C(6B)	113.53(11)
C(21B)-C(20B)-H(20C)	108.9
C(6B)-C(20B)-H(20C)	108.9

C(21B)-C(20B)-H(20D)	108.9
C(6B)-C(20B)-H(20D)	108.9
H(20C)-C(20B)-H(20D)	107.7
C(22B)-C(21B)-C(20B)	127.76(14)
C(22B)-C(21B)-H(21B)	116.1
C(20B)-C(21B)-H(21B)	116.1
C(21B)-C(22B)-C(24B)	124.95(14)
C(21B)-C(22B)-C(23B)	120.96(15)
C(24B)-C(22B)-C(23B)	114.08(14)
C(22B)-C(23B)-H(23D)	109.5
C(22B)-C(23B)-H(23E)	109.5
H(23D)-C(23B)-H(23E)	109.5
C(22B)-C(23B)-H(23F)	109.5
H(23D)-C(23B)-H(23F)	109.5
H(23E)-C(23B)-H(23F)	109.5
C(22B)-C(24B)-H(24D)	109.5
C(22B)-C(24B)-H(24E)	109.5
H(24D)-C(24B)-H(24E)	109.5
C(22B)-C(24B)-H(24F)	109.5
H(24D)-C(24B)-H(24F)	109.5
H(24E)-C(24B)-H(24F)	109.5
O(2B)-C(25B)-O(3B)	123.73(13)
O(2B)-C(25B)-C(6B)	126.69(13)
O(3B)-C(25B)-C(6B)	109.55(11)
O(3B)-C(26B)-H(26D)	109.5
O(3B)-C(26B)-H(26E)	109.5
H(26D)-C(26B)-H(26E)	109.5
O(3B)-C(26B)-H(26F)	109.5
H(26D)-C(26B)-H(26F)	109.5
H(26E)-C(26B)-H(26F)	109.5

Symmetry transformations used to generate equivalent atoms:

Supplementary Table 10. Anisotropic displacement parameters (A^2 x 10^3) for s2024lm.

The anisotropic displacement factor exponent takes the form:

-2 pi^2 [h^2 a*^2 U11 + ... + 2 h k a* b* U12]

	U11	U22	U33	U23	U13	U12
O(1A)	19(1)	12(1)	19(1)	-5(1)	5(1)	1(1)
C(1A)	12(1)	12(1)	14(1)	1(1)	6(1)	0(1)
O(2A)	25(1)	24(1)	23(1)	6(1)	9(1)	14(1)
C(2A)	12(1)	10(1)	12(1)	-1(1)	3(1)	0(1)
O(3A)	15(1)	17(1)	23(1)	3(1)	10(1)	3(1)
C(3A)	13(1)	9(1)	12(1)	-1(1)	3(1)	1(1)
O(4A)	18(1)	24(1)	16(1)	2(1)	0(1)	0(1)
C(4A)	14(1)	9(1)	12(1)	0(1)	4(1)	1(1)
C(5A)	13(1)	12(1)	12(1)	0(1)	3(1)	-1(1)
C(6A)	12(1)	10(1)	14(1)	1(1)	4(1)	1(1)
C(7A)	12(1)	13(1)	16(1)	-2(1)	4(1)	0(1)
C(8A)	15(1)	17(1)	32(1)	-8(1)	9(1)	-1(1)
C(9A)	24(1)	16(1)	61(1)	2(1)	20(1)	-1(1)
C(10A)	18(1)	9(1)	14(1)	-2(1)	3(1)	-3(1)
C(11A)	25(1)	21(1)	12(1)	-2(1)	6(1)	-1(1)
C(12A)	15(1)	10(1)	13(1)	-1(1)	4(1)	0(1)
C(13A)	20(1)	12(1)	16(1)	1(1)	5(1)	0(1)
C(14A)	29(1)	20(1)	21(1)	7(1)	10(1)	-1(1)
C(15A)	29(1)	34(1)	27(1)	4(1)	15(1)	-5(1)
C(16A)	15(1)	11(1)	16(1)	-1(1)	4(1)	2(1)

C(17A)	16(1)	14(1)	13(1)	-3(1)	4(1)	0(1)
C(18A)	24(1)	18(1)	16(1)	-3(1)	10(1)	-2(1)
C(19A)	31(1)	42(1)	16(1)	1(1)	7(1)	-5(1)
C(20A)	18(1)	13(1)	17(1)	2(1)	5(1)	1(1)
C(21A)	16(1)	14(1)	19(1)	4(1)	4(1)	2(1)
C(22A)	22(1)	23(1)	19(1)	4(1)	6(1)	1(1)
C(23A)	34(1)	39(1)	19(1)	3(1)	5(1)	4(1)
C(24A)	28(1)	101(2)	27(1)	11(1)	15(1)	7(1)
C(25A)	15(1)	13(1)	14(1)	-3(1)	3(1)	1(1)
C(26A)	20(1)	25(1)	30(1)	-1(1)	15(1)	2(1)
O(1B)	21(1)	11(1)	23(1)	-3(1)	8(1)	0(1)
C(1B)	13(1)	13(1)	11(1)	0(1)	1(1)	0(1)
O(2B)	29(1)	29(1)	39(1)	-12(1)	17(1)	-16(1)
C(2B)	11(1)	13(1)	12(1)	0(1)	3(1)	0(1)
O(3B)	20(1)	27(1)	23(1)	-2(1)	-4(1)	-7(1)
C(3B)	14(1)	10(1)	13(1)	0(1)	3(1)	-1(1)
O(4B)	18(1)	35(1)	23(1)	-4(1)	11(1)	-3(1)
C(4B)	14(1)	10(1)	14(1)	0(1)	4(1)	-1(1)
C(5B)	13(1)	11(1)	21(1)	-1(1)	5(1)	1(1)
C(6B)	11(1)	12(1)	20(1)	-1(1)	5(1)	-2(1)
C(7B)	13(1)	17(1)	14(1)	0(1)	2(1)	2(1)
C(8B)	17(1)	20(1)	20(1)	-2(1)	2(1)	5(1)
C(9B)	27(1)	23(1)	25(1)	4(1)	2(1)	5(1)
C(10B)	17(1)	13(1)	17(1)	2(1)	7(1)	3(1)
C(11B)	22(1)	21(1)	16(1)	-3(1)	7(1)	2(1)
C(12B)	21(1)	14(1)	13(1)	0(1)	3(1)	0(1)
C(13B)	30(1)	15(1)	15(1)	1(1)	6(1)	3(1)
C(14B)	14(2)	18(2)	21(2)	3(1)	4(1)	0(1)
C(15B)	37(2)	36(2)	20(2)	8(2)	0(2)	-10(2)
C(14C)	26(2)	16(2)	20(2)	2(1)	8(2)	2(1)
C(15C)	31(2)	43(2)	28(2)	12(2)	5(2)	-2(2)
C(16B)	18(1)	16(1)	18(1)	-1(1)	6(1)	-5(1)
C(17B)	20(1)	12(1)	20(1)	-2(1)	7(1)	0(1)
C(18B)	34(1)	14(1)	24(1)	-2(1)	11(1)	3(1)

C(19B)	51(1)	24(1)	46(1)	-2(1)	33(1)	4(1)
C(20B)	21(1)	13(1)	22(1)	2(1)	10(1)	0(1)
C(21B)	20(1)	20(1)	26(1)	2(1)	11(1)	-1(1)
C(22B)	33(1)	21(1)	24(1)	5(1)	14(1)	4(1)
C(23B)	48(1)	37(1)	33(1)	3(1)	26(1)	10(1)
C(24B)	44(1)	38(1)	22(1)	-1(1)	9(1)	-3(1)
C(25B)	14(1)	16(1)	28(1)	-6(1)	8(1)	-3(1)
C(26B)	24(1)	47(1)	30(1)	-12(1)	-6(1)	-10(1)

Supplementary Table 11. Hydrogen coordinates (x 10^4) and isotropic displacement parameters (A^2 x 10^3) for s2024lm.

	x	y	z	U(eq)
H(4A)	8347	10730	7715	14
H(5A1)	9219	10222	8215	15
H(5A2)	9307	11058	7608	15
H(7A1)	7744	9728	7104	17
H(7A2)	7410	10500	6427	17
H(8A)	7427	7756	5958	25
H(9A1)	7406	7156	7192	39
H(9A2)	7236	5883	6575	39
H(11A)	8321	10851	5065	29
H(11B)	8386	9002	5319	29
H(11C)	8732	10414	5752	29
H(12A)	8981	13399	7028	16
H(12B)	8973	11851	6585	16
H(13A)	8332	13192	5710	19
H(13B)	8407	14776	6158	19
H(14A)	8876	15073	5452	27
H(15A)	9591	13452	6459	34
H(15B)	9684	14557	5889	34
H(16A)	7717	13136	6318	21
H(16B)	8055	14211	6918	21
H(16C)	7720	12758	7030	21
H(17A)	8991	13523	8073	17
H(17B)	8408	13652	7958	17

H(18A)	8549	11694	8847	22
H(19A)	9457	13333	9221	36
H(19B)	9229	12275	9688	36
H(20A)	8464	7678	7768	19
H(20B)	8792	6368	7555	19
H(21A)	9493	7176	8532	20
H(23A)	9738	6943	9614	47
H(23B)	9330	6135	9866	47
H(23C)	9413	8075	9907	47
H(24A)	8386	6360	9084	76
H(24B)	8279	7784	8555	76
H(24C)	8490	8228	9308	76
H(26A)	9905	7694	6483	35
H(26B)	10217	9077	6971	35
H(26C)	9902	9536	6236	35
H(4B)	6714	3557	9370	16
H(5B1)	5811	3586	8279	18
H(5B2)	5822	3481	9008	18
H(7B1)	7682	2134	9170	18
H(7B2)	7296	2011	9544	18
H(8B)	7560	-845	8980	24
H(9B1)	7490	-367	10195	33
H(9B2)	7624	-2092	9907	33
H(11D)	6812	-431	7331	29
H(11E)	6828	1275	6983	29
H(11F)	6420	978	7316	29
H(12C)	6696	4006	7503	20
H(12D)	6207	3397	7623	20
H(13C)	6092	6233	7909	24
H(13D)	6521	6719	7630	24
H(14B)	5574	5295	6824	22
H(15C)	6221	7431	6515	40
H(15D)	5680	6761	6018	40
H(14C)	6377	6395	6721	25

H(15E)	5397	6456	6667	43
H(15F)	5598	6782	6065	43
H(16D)	7181	6024	8556	26
H(16E)	7491	4486	8452	26
H(16F)	7446	4807	9144	26
H(17C)	6725	6551	9160	21
H(17D)	6135	6354	8794	21
H(18B)	6621	5575	10141	28
H(19C)	5668	6804	9498	43
H(19D)	5925	6429	10277	43
H(20C)	6175	-638	9350	22
H(20D)	6496	929	9686	22
H(21B)	5442	761	9414	25
H(23D)	5101	1746	10112	54
H(23E)	5390	3341	10476	54
H(23F)	5455	1641	10856	54
H(24D)	6607	1997	10537	53
H(24E)	6412	1541	11113	53
H(24F)	6343	3361	10827	53
H(26D)	4823	629	7169	56
H(26E)	5200	-661	7043	56
H(26F)	5112	1079	6689	56

Supplementary Table 12. Torsion angles [deg] for s2024lm.

O(1A)-C(1A)-C(2A)-C(10A)	-38.50(15)
C(6A)-C(1A)-C(2A)-C(10A)	146.63(11)
O(1A)-C(1A)-C(2A)-C(7A)	76.03(14)
C(6A)-C(1A)-C(2A)-C(7A)	-98.83(13)
O(1A)-C(1A)-C(2A)-C(3A)	-162.47(11)
C(6A)-C(1A)-C(2A)-C(3A)	22.67(16)
C(1A)-C(2A)-C(3A)-C(16A)	-165.42(10)
C(10A)-C(2A)-C(3A)-C(16A)	73.06(13)
C(7A)-C(2A)-C(3A)-C(16A)	-45.40(13)
C(1A)-C(2A)-C(3A)-C(12A)	72.81(13)
C(10A)-C(2A)-C(3A)-C(12A)	-48.71(13)
C(7A)-C(2A)-C(3A)-C(12A)	-167.17(10)
C(1A)-C(2A)-C(3A)-C(4A)	-46.12(13)
C(10A)-C(2A)-C(3A)-C(4A)	-167.64(10)
C(7A)-C(2A)-C(3A)-C(4A)	73.90(12)
C(16A)-C(3A)-C(4A)-C(5A)	-172.93(10)
C(12A)-C(3A)-C(4A)-C(5A)	-52.77(13)
C(2A)-C(3A)-C(4A)-C(5A)	67.98(12)
C(16A)-C(3A)-C(4A)-C(17A)	-46.82(14)
C(12A)-C(3A)-C(4A)-C(17A)	73.33(13)
C(2A)-C(3A)-C(4A)-C(17A)	-165.91(10)
C(17A)-C(4A)-C(5A)-C(6A)	168.34(10)
C(3A)-C(4A)-C(5A)-C(6A)	-62.90(13)
O(1A)-C(1A)-C(6A)-C(25A)	49.62(15)
C(2A)-C(1A)-C(6A)-C(25A)	-135.49(12)
O(1A)-C(1A)-C(6A)-C(5A)	170.22(11)
C(2A)-C(1A)-C(6A)-C(5A)	-14.89(16)
O(1A)-C(1A)-C(6A)-C(20A)	-66.69(14)
C(2A)-C(1A)-C(6A)-C(20A)	108.21(13)

C(4A)-C(5A)-C(6A)-C(25A)	151.43(10)
C(4A)-C(5A)-C(6A)-C(1A)	33.30(14)
C(4A)-C(5A)-C(6A)-C(20A)	-86.07(12)
C(1A)-C(2A)-C(7A)-C(8A)	-47.87(14)
C(10A)-C(2A)-C(7A)-C(8A)	66.86(14)
C(3A)-C(2A)-C(7A)-C(8A)	-171.79(11)
C(2A)-C(7A)-C(8A)-C(9A)	129.18(15)
C(1A)-C(2A)-C(10A)-O(4A)	144.60(12)
C(7A)-C(2A)-C(10A)-O(4A)	29.93(15)
C(3A)-C(2A)-C(10A)-O(4A)	-90.22(14)
C(1A)-C(2A)-C(10A)-C(11A)	-34.89(15)
C(7A)-C(2A)-C(10A)-C(11A)	-149.56(12)
C(3A)-C(2A)-C(10A)-C(11A)	90.29(14)
C(16A)-C(3A)-C(12A)-C(13A)	-37.52(14)
C(4A)-C(3A)-C(12A)-C(13A)	-158.37(11)
C(2A)-C(3A)-C(12A)-C(13A)	84.73(13)
C(3A)-C(12A)-C(13A)-C(14A)	-173.20(11)
C(12A)-C(13A)-C(14A)-C(15A)	-0.6(2)
C(5A)-C(4A)-C(17A)-C(18A)	-68.09(14)
C(3A)-C(4A)-C(17A)-C(18A)	165.41(11)
C(4A)-C(17A)-C(18A)-C(19A)	124.00(16)
C(25A)-C(6A)-C(20A)-C(21A)	72.52(14)
C(1A)-C(6A)-C(20A)-C(21A)	-174.35(11)
C(5A)-C(6A)-C(20A)-C(21A)	-49.86(15)
C(6A)-C(20A)-C(21A)-C(22A)	128.87(15)
C(20A)-C(21A)-C(22A)-C(24A)	0.0(3)
C(20A)-C(21A)-C(22A)-C(23A)	179.30(14)
C(26A)-O(3A)-C(25A)-O(2A)	-0.42(19)
C(26A)-O(3A)-C(25A)-C(6A)	178.85(11)
C(1A)-C(6A)-C(25A)-O(2A)	-127.71(14)
C(5A)-C(6A)-C(25A)-O(2A)	108.90(15)
C(20A)-C(6A)-C(25A)-O(2A)	-14.72(18)
C(1A)-C(6A)-C(25A)-O(3A)	53.05(13)
C(5A)-C(6A)-C(25A)-O(3A)	-70.34(13)

C(20A)-C(6A)-C(25A)-O(3A)	166.04(10)
O(1B)-C(1B)-C(2B)-C(10B)	37.16(15)
C(6B)-C(1B)-C(2B)-C(10B)	-147.42(11)
O(1B)-C(1B)-C(2B)-C(7B)	-76.91(14)
C(6B)-C(1B)-C(2B)-C(7B)	98.51(13)
O(1B)-C(1B)-C(2B)-C(3B)	159.51(11)
C(6B)-C(1B)-C(2B)-C(3B)	-25.07(16)
C(1B)-C(2B)-C(3B)-C(16B)	165.95(10)
C(10B)-C(2B)-C(3B)-C(16B)	-73.28(12)
C(7B)-C(2B)-C(3B)-C(16B)	44.83(13)
C(1B)-C(2B)-C(3B)-C(12B)	-75.75(13)
C(10B)-C(2B)-C(3B)-C(12B)	45.01(13)
C(7B)-C(2B)-C(3B)-C(12B)	163.13(10)
C(1B)-C(2B)-C(3B)-C(4B)	46.26(13)
C(10B)-C(2B)-C(3B)-C(4B)	167.03(10)
C(7B)-C(2B)-C(3B)-C(4B)	-74.85(12)
C(16B)-C(3B)-C(4B)-C(5B)	173.66(11)
C(12B)-C(3B)-C(4B)-C(5B)	51.07(14)
C(2B)-C(3B)-C(4B)-C(5B)	-67.17(12)
C(16B)-C(3B)-C(4B)-C(17B)	46.54(15)
C(12B)-C(3B)-C(4B)-C(17B)	-76.05(14)
C(2B)-C(3B)-C(4B)-C(17B)	165.71(10)
C(17B)-C(4B)-C(5B)-C(6B)	-164.38(11)
C(3B)-C(4B)-C(5B)-C(6B)	64.15(14)
O(1B)-C(1B)-C(6B)-C(25B)	-44.63(15)
C(2B)-C(1B)-C(6B)-C(25B)	139.95(12)
O(1B)-C(1B)-C(6B)-C(5B)	-165.92(11)
C(2B)-C(1B)-C(6B)-C(5B)	18.66(17)
O(1B)-C(1B)-C(6B)-C(20B)	71.18(14)
C(2B)-C(1B)-C(6B)-C(20B)	-104.24(13)
C(4B)-C(5B)-C(6B)-C(25B)	-153.41(11)
C(4B)-C(5B)-C(6B)-C(1B)	-36.29(15)
C(4B)-C(5B)-C(6B)-C(20B)	83.41(13)
C(1B)-C(2B)-C(7B)-C(8B)	48.38(14)

C(10B)-C(2B)-C(7B)-C(8B)	-66.21(14)
C(3B)-C(2B)-C(7B)-C(8B)	173.51(11)
C(2B)-C(7B)-C(8B)-C(9B)	-128.27(15)
C(1B)-C(2B)-C(10B)-O(4B)	-148.17(12)
C(7B)-C(2B)-C(10B)-O(4B)	-33.87(16)
C(3B)-C(2B)-C(10B)-O(4B)	87.18(14)
C(1B)-C(2B)-C(10B)-C(11B)	32.55(16)
C(7B)-C(2B)-C(10B)-C(11B)	146.85(12)
C(3B)-C(2B)-C(10B)-C(11B)	-92.10(14)
C(16B)-C(3B)-C(12B)-C(13B)	-66.63(15)
C(4B)-C(3B)-C(12B)-C(13B)	57.27(16)
C(2B)-C(3B)-C(12B)-C(13B)	174.04(11)
C(3B)-C(12B)-C(13B)-C(14C)	160.2(2)
C(3B)-C(12B)-C(13B)-C(14B)	-167.48(18)
C(14C)-C(13B)-C(14B)-C(15B)	-14.4(3)
C(12B)-C(13B)-C(14B)-C(15B)	-114.4(3)
C(14B)-C(13B)-C(14C)-C(15C)	23.0(3)
C(12B)-C(13B)-C(14C)-C(15C)	114.9(3)
C(5B)-C(4B)-C(17B)-C(18B)	75.99(14)
C(3B)-C(4B)-C(17B)-C(18B)	-156.18(11)
C(4B)-C(17B)-C(18B)-C(19B)	-117.00(17)
C(25B)-C(6B)-C(20B)-C(21B)	-70.16(15)
C(1B)-C(6B)-C(20B)-C(21B)	178.02(11)
C(5B)-C(6B)-C(20B)-C(21B)	53.88(15)
C(6B)-C(20B)-C(21B)-C(22B)	-123.55(16)
C(20B)-C(21B)-C(22B)-C(24B)	-1.6(3)
C(20B)-C(21B)-C(22B)-C(23B)	177.80(14)
C(26B)-O(3B)-C(25B)-O(2B)	-0.6(2)
C(26B)-O(3B)-C(25B)-C(6B)	177.53(12)
C(1B)-C(6B)-C(25B)-O(2B)	111.88(15)
C(5B)-C(6B)-C(25B)-O(2B)	-125.35(15)
C(20B)-C(6B)-C(25B)-O(2B)	-1.14(19)
C(1B)-C(6B)-C(25B)-O(3B)	-66.18(13)
C(5B)-C(6B)-C(25B)-O(3B)	56.59(14)

C(20B)-C(6B)-C(25B)-O(3B)	-179.21(11)

Symmetry transformations used to generate equivalent atoms:

Supplementary References

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