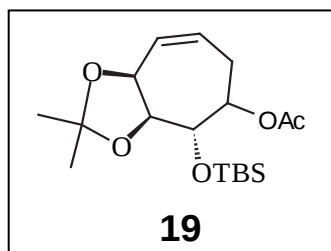
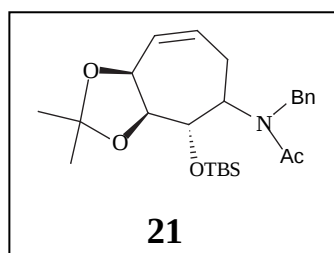


Supporting Information:

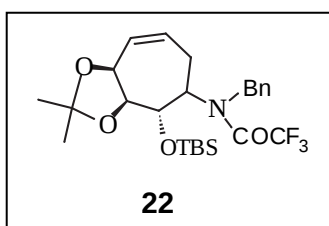
Analytical and spectroscopic data for compounds 19, 21, 22, 24, 25 27-29.



19 was obtained from the major isomer. $R_f = 0.45$ (1:9 EtOAc/PE). Oil, $[\alpha]_D = -41.4^\circ$ (c 1.16, CHCl_3), IR ν_{max} 1742 cm^{-1} . ^1H NMR (CDCl_3 400 MHz) δ 5.68 (br d, $J=10.3$ Hz, 1H), 5.53-5.65 (m, 1H), 4.89 (d, $J=7.7$ Hz, 1H), 4.77-4.82 (m, 1H), 4.05 (dd, $J=9.6$, 7.8 Hz, 1H), 3.73 (dd, $J=9.4$, 7.5 Hz, 1H), 2.30-2.34 (m, 1H), 2.15-2.21 (m, 1H), 2.06 (s, 3H), 1.47 (s, 3H), 1.34 (s, 3H), 0.86 (s, 9H), 0.08 (s, 3H), 0.06 (s, 3H) ppm. ^{13}C NMR (CDCl_3) δ 170.4 (C), 132.5 (CH), 122.9 (CH), 108.0 (C), 78.1 (CH), 74.9 (CH), 74.7 (CH), 74.0 (CH), 30.9 (CH_2), 27.0 (CH_3), 25.9 (3 CH_3), 23.9 (CH_3), 21.5 (CH_3), 18.3 (C), -3.9 (CH_3), -4.7 (CH_3), ppm.

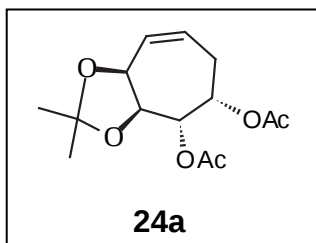


21 was obtained from the major isomer and was isolated as a mixture of atropoisomers. $R_f = 0.35$ (1:6 EtOAc/PE). Oil, $[\alpha]_D = +14.4^\circ$ (c 3.6, CHCl_3), IR ν_{max} 1654 cm^{-1} . Major atropoisomer ^{13}C NMR (CDCl_3) δ 171.7 (C), 138.5 (C), 132.3 (CH), 129.0 (2CH), 128.5 (2CH), 126.9 (CH), 126.8 (CH), 123.3 (CH), 108.2 (C), 80.0 (CH), 74.7 (CH), 72.7 (CH), 72.5 (CH), 58.7 (CH), 45.7 (CH_2), 29.9 (CH_2), 27.0 (CH_3), 26.2 (3 CH_3), 24.0 (CH_3), 23.0 (CH_3), 18.5 (C) -3.7 (CH_3), -3.9 (CH_3), ppm. MS (CI, NH_3), m/z 446 (M+1).



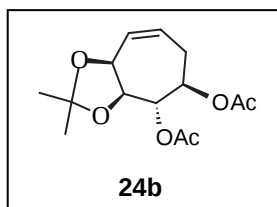
22 was isolated as a mixture of atropoisomers.

$R_f = 0.55$ (1:9 EtOAc/PE). Oil, $[\alpha]_D = +21.8^\circ$ (c 2.7, CHCl_3), IR ν_{max} 1697 cm^{-1} . MS (CI, NH_3), m/z 500.7 (M+1).



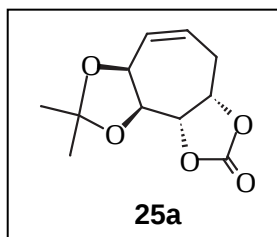
$R_f = 0.55$ (1:4 EtOAc/PE). oil, $[\alpha]_D = +116.5^\circ$ (c 2.6, CHCl_3), IR ν_{max} 1748 cm^{-1} . ^1H NMR (CDCl_3 400 MHz) δ 5.67 (br. d, $J=12$ Hz, 1H), 5.47-5.57 (m, 1H), 5.33 (td, $J= 5.7$ and 1.5 Hz, 1H),

5.08 (dd, $J=8$ and 1.5 Hz, $1H$), 4.90-4.95 (m, $1H$), 4.40 (dd, $J=6.9$, 6.8 Hz, $1H$), 2.50-2.62 (m, $1H$), 2.32-2.42 (m, $1H$), 2.07 (s, $3H$), 2.05 (s, $3H$), 1.44 (s, $3H$), 1.37 (s, $3H$) ppm. ^{13}C NMR ($CDCl_3$) δ 170.2 (C), 169.9 (C), 130.2 (CH), 123.7 (CH), 108.7 (C), 77.1 (CH), 74.4 (2CH), 70.5 (CH), 31.6 (CH_2), 27.5 (CH_3), 25.5 (CH_3), 21.0 ($2CH_3$) ppm.

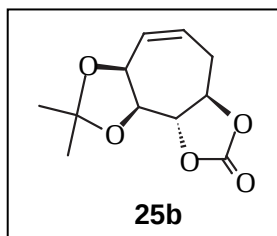


$R_f = 0.50$ (1:4 EtOAc/PE). Colorless crystalline solid mp $79-80^\circ C$ (petroleum ether), $[\alpha]_D = -18.5^\circ$ (c 2.0, $CHCl_3$), IR ν_{max} 1749 cm^{-1} . 1H NMR ($CDCl_3$ 400 MHz) δ 5.85 (dt, $J=10.7$, 2 Hz, $1H$), 5.65-5.75 (m, $1H$), 5.19 (dd, $J=10.5$, 7.7 Hz, $1H$), 5.02-5.07 (m, $1H$), 4.95-4.98 (m, $1H$), 4.20 (dd, $J=10.5$, 7.0 Hz, $1H$), 2.25-2.42 (m, $2H$), 2.07 (s, $3H$), 2.03 (s, $3H$), 1.42 (s, $3H$), 1.36 (s, $3H$) ppm. ^{13}C NMR ($CDCl_3$) δ 170.5 (C), 170.2 (C), 130.5 (CH), 123.3 (CH), 108.5 (C), 76.8 (CH), 75.2 (CH), 74.5 (CH), 72.8 (CH), 28.8 (CH_2), 26.9 (CH_3), 24.9 (CH_3), 21.2 (CH_3), 21.1 (CH_3) ppm.

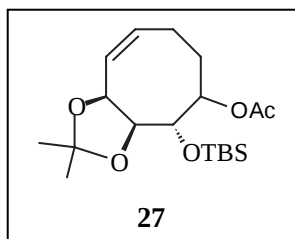
$R_f = 0.30$ (1:3 EtOAc/PE). Colorless crystalline solid mp $136-138^\circ C$ (EtOAc/PE), $[\alpha]_D = +152$



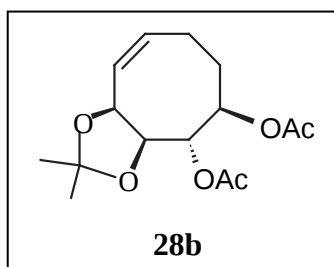
(c 1.2, $CHCl_3$), IR ν_{max} 1822 cm^{-1} . 1H NMR ($CDCl_3$ 400 MHz) δ 5.85 (dt, $J=7$, 2 Hz, $1H$), 5.72-5.82 (m, $1H$), 5.01-5.07 (m, $1H$), 4.78 (ddd, $J=12$, 7.7 , 5 Hz, $1H$), 4.59 (dd, $J=10$, 7.7 Hz, $1H$), 4.51 (dd, $J=10$, 5 Hz, $1H$), 2.63-2.72 (m, $1H$), 2.35-2.46 (m, $1H$), 1.54 (s, $3H$), 1.41 (s, $3H$) ppm. ^{13}C NMR ($CDCl_3$) δ 154.0 (C), 131.0 (CH), 122.1 (CH), 108.5 (C), 78.6 (CH), 75.2 (CH), 74.7 ($2CH$), 27.6 (CH_3), 26.5 (CH_2), 24.7 (CH_3) ppm



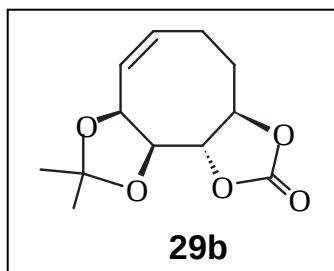
$R_f = 0.33$ (1:3 EtOAc/PE). Colorless crystalline solid mp $145-146.5^\circ C$ (EtOAc/PE), $[\alpha]_D = -43$ (c 2.4, $CHCl_3$), IR ν_{max} 1822 cm^{-1} . 1H NMR ($CDCl_3$ 400 MHz) δ 5.60-5.65 (m, $1H$), 5.58-5.50 (m, $1H$), 4.85-4.95 (m, $1H$), 4.45-4.53 (m, $2H$), 2.90-3.05 (m, $1H$), 2.35-2.50 (m, $1H$), 1.48 (s, $3H$), 1.38 (s, $3H$) ppm. ^{13}C NMR ($CDCl_3$) δ 153.9 (C), 129.0 (CH), 121.1 (CH), 110.3 (C), 82.8 (CH), 78.4 (CH), 74.7 ($1CH$), 73.6 ($1CH$), 33.0 (CH_2), 27.3 (CH_3), 25.0 (CH_3) ppm



27 Was obtained from the major isomer. $R_f = 0.40$ (7:93 EtOAc/PE). Oil, IR $\nu_{\max}$ 1742 cm^{-1} . ^1H NMR (CDCl_3 400 MHz) δ 5.55-5.62 (m, 1H), 5.44 (dd, $J=12, 4$ Hz, 1H), 5.15 (td, $J=5.7, 1.7$ Hz, 1H), 5.10 (br s, 1H), 4.21 (dd, $J=8.4, 5.6$ Hz, 1H), 4.03 (dd, $J=8.8, 1.8$, 1H), 2.20-2.41 (m, 1H), 2.09 (s, 3H), 1.91-2.05 (m, 1H), 1.71-1.90 (m, 2H), 1.46 (s, 3H), 1.36 (s, 3H), 0.86 (s, 9H), 0.07 (s, 3H), 0.05 (s, 3H) ppm. ^{13}C NMR (CDCl_3) δ 170.2 (C), 132.1 (CH), 129.4 (CH), 108.0 (C), 79.2 (CH), 77.1 (CH), 74.3 (CH), 73.0 (CH), 28.8 (CH_2), 28.2 (CH_3), 26.3 (CH_3), 25.9 (3 CH_3), 24.2 (CH_3), 21.3 (CH_2), 18.5 (C) -4.3 (CH_3), -4.9 (CH_3), ppm. MS (CI, NH_3), m/z 313 (M+1), 371 (M+18).



$R_f = 0.35$ (1:3 EtOAc/PE). Colorless crystalline solid mp 116-118°C (EtOAc/PE), $[\alpha]_D^{+19^\circ}$ (c 3.3, CHCl_3), IR $\nu_{\max}$ 1748 cm^{-1} . ^1H NMR (CDCl_3 400 MHz) δ 5.62-5.68 (m, 1H), 5.54 (t, $J=9.7$ Hz, 1H), 5.12-5.22 (m, 2H), 4.20 (dd, $J=10, 6.1$ Hz, 1H), 2.36-2.50 (m, 1H), 2.09-2.26 (m, 1H), 2.06 (s, 3H), 2.04 (s, 3H), 1.88-1.95 (m, 2H), 1.50 (s, 3H), 1.35 (s, 3H) ppm. ^{13}C NMR (CDCl_3) δ 170.1 (C), 169.9 (C), 130.8 (CH), 129.9 (CH), 109.3 (C), 77.8 (CH), 75.2 (CH), 73.4 (CH), 73.2 (CH), 27.8 (CH_2), 27.6 (CH_3), 26.0 (CH_3), 24.4 (CH_2), 21.0 (CH_3) ppm.



$R_f = 0.30$ (1:3 EtOAc/PE). Colorless crystalline solid mp 130-131°C (EtOAc/PE), $[\alpha]_D^{+160^\circ}$ (c 2.3, CHCl_3), IR $\nu_{\max}$ 1833, 1819 cm^{-1} . ^1H NMR (CDCl_3 400 MHz) δ 5.72-5.85 (m, 1H), 5.56 (dd, $J=11, 6.1$ Hz, 1H), 5.00 (t, $J=1.5$ Hz, 1H), 4.58 (t, $J=9$ Hz, 1H), 4.39 (td, $J=12.4, 3$ Hz, 1H), 4.25 (dd, $J=8.6, 5.7$ Hz, 1H), 2.27-2.41 (m, 2H), 1.93-2.12 (m, 1H), 1.68-1.80 (m, 1H), 1.60 (s, 3H), 1.42 (s, 3H) ppm. ^{13}C NMR (CDCl_3) δ 154.3 (C), 132.9 (CH), 129.7 (CH), 111.7 (C), 81.5 (CH), 80.5 (CH), 78.9 (CH), 73.1 (CH), 30.1 (CH_2), 28.0 (CH_3), 26.4 (CH_3), 22.2 (CH_2) ppm. MS (CI, NH_3), m/z 241 (M+1), 258 (M+18).