

## Supporting Information

### **Preliminary Evaluation of Artemisinin–Cholesterol Conjugates as Potential Drugs for the Treatment of Intractable Forms of Malaria and Tuberculosis**

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cmdc\_201700579\_sm\_miscellaneous\_information.pdf

## Author Contributions

*M.M. Conceptualization: Supporting; Data curation: Equal; Formal analysis: Equal; Investigation: Equal; Methodology: Equal; Resources: Equal; Validation: Equal; Writing – original draft: Lead; Writing – review & editing: Equal*

*D.C. Data curation: Equal; Formal analysis: Equal; Investigation: Equal; Methodology: Equal; Resources: Equal; Writing – review & editing: Supporting*

*A.N. Data curation: Lead; Formal analysis: Supporting; Investigation: Supporting; Methodology: Supporting; Resources: Supporting; Validation: Supporting*

*J.W. Data curation: Equal; Formal analysis: Supporting; Investigation: Supporting; Methodology: Supporting; Validation: Supporting; Writing – review & editing: Supporting*

*H.W. Conceptualization: Supporting; Data curation: Lead; Formal analysis: Equal; Investigation: Equal; Methodology: Equal; Supervision: Supporting; Writing – original draft: Supporting; Writing – review & editing: Equal*

*F.S. Investigation: Supporting; Methodology: Supporting; Resources: Supporting; Supervision: Supporting; Writing – original draft: Supporting; Writing – review & editing: Supporting*

*L.B. Data curation: Equal; Investigation: Supporting*

*R.P. Data curation: Supporting*

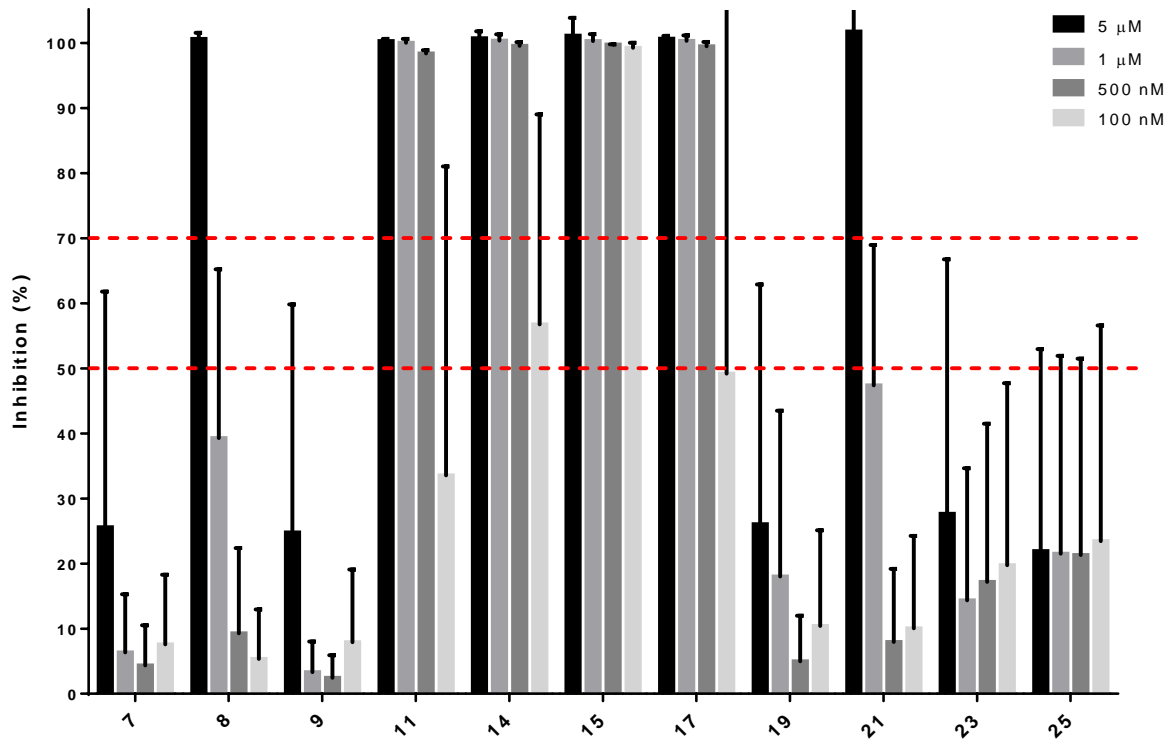
*B.B. Data curation: Supporting; Formal analysis: Supporting; Investigation: Supporting; Methodology: Supporting; Resources: Supporting; Supervision: Supporting*

*I.W. Data curation: Supporting; Formal analysis: Supporting; Investigation: Supporting; Methodology: Supporting; Resources: Supporting; Supervision: Supporting*

*D.N. Data curation: Supporting; Funding acquisition: Supporting; Investigation: Supporting; Project administration: Supporting; Resources: Lead; Software: Equal; Supervision: Lead; Writing – original draft: Supporting; Writing – review & editing: Supporting*

*R.H. Conceptualization: Lead; Data curation: Lead; Funding acquisition: Lead; Investigation: Lead; Methodology: Lead; Project administration: Lead; Supervision: Equal; Writing – original draft: Lead; Writing – review & editing: Lead.*

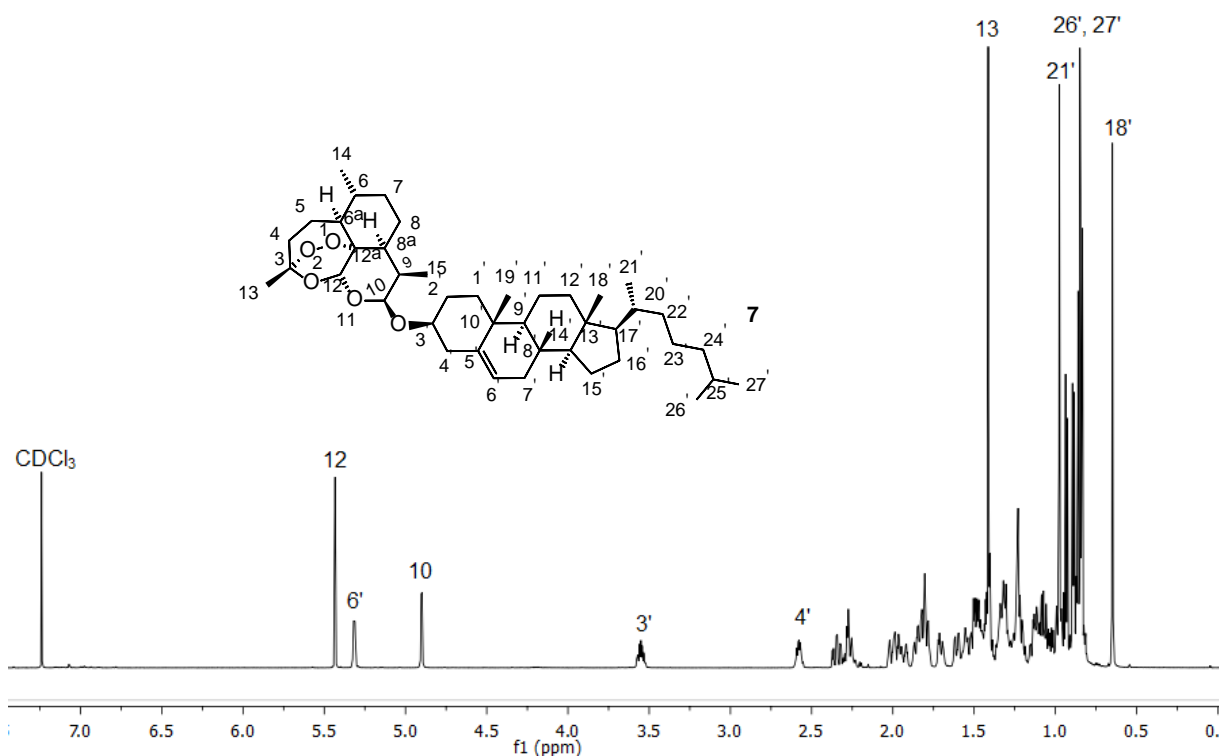
## Supporting Information 1: Fig S1



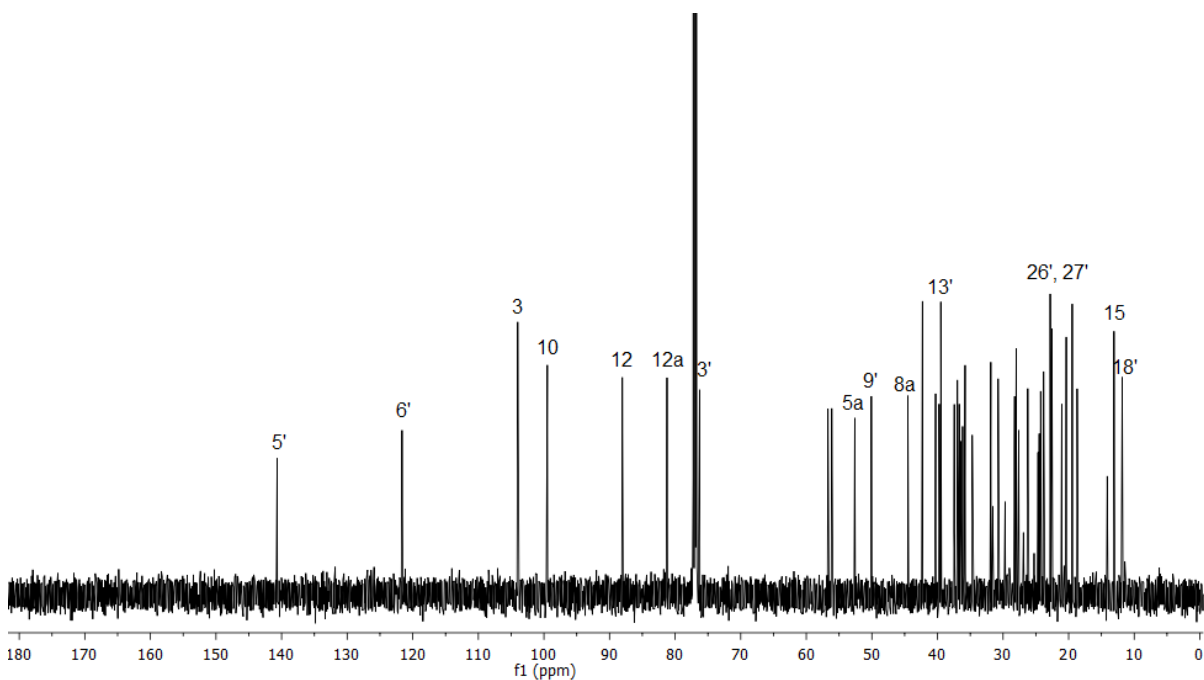
**Figure S1:** Primary activities of artemisinin cholesterol conjugates against *Pf* NF54 parasites. Artemisinin cholesterol conjugates **8** and **21** showed >70% inhibition (red dotted line) at 5  $\mu$ M (black bars) and **11**, **14**, **15**, **17** showed >70% at 5  $\mu$ M (black bars) and >50% inhibition (red dotted line) at 1  $\mu$ M and 500- to 100 nM (grey bars) against *Pf* NF54 parasites at 37°C for 96 h using the SYBR green-I based assay. Data are means of three biological repeats (n=3) performed in technical triplicates, error bars indicate SEM.

## Supporting Information 2: Cholesteryl Artemisinin Conjugates, Compound Numbering and Spectra.

### Compound 7

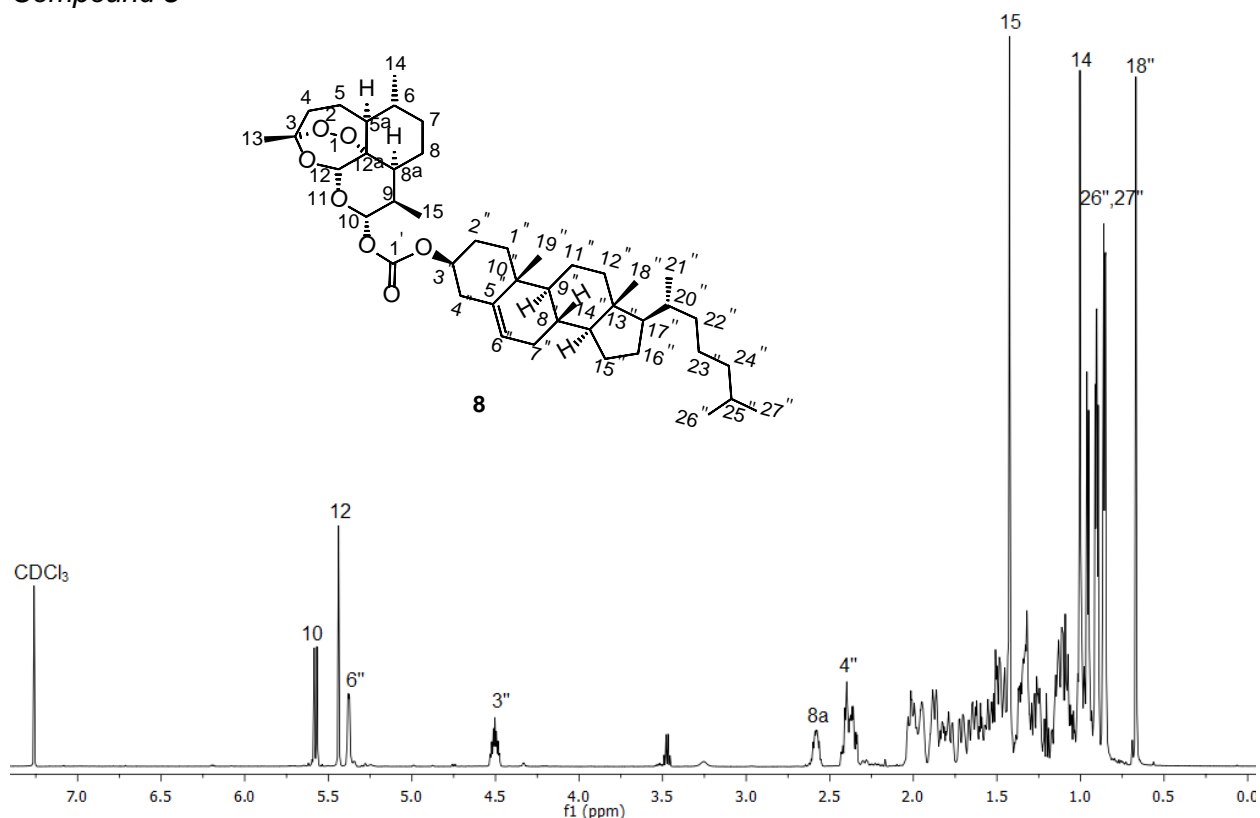


**<sup>1</sup>H NMR** (600 MHz, CDCl<sub>3</sub>)  $\delta$  (ppm): 5.41 (s, 1H, H-12), 5.30 (d, 1H,  $J = 5.1$  Hz, H-10), 4.88 (t, 1H,  $J = 5.1$  Hz, H-6'), 3.48 - 3.56 (m, 1H, 3'-H), 2.56 - 2.53 (m, 1H, H-4'), 1.40 (s, 3H, H-13), 0.96 (s, 3H, H-19'), 0.91 (d,  $J = 6.5$  Hz, 3H, H-14), 0.87 (d,  $J = 6.5$  Hz, 3H, H-15), 0.84 (s, 3H, 21'-H), 0.82 (dd,  $J = 6.5, 2.7$  Hz, 6H, H-26', H-27'), 0.63 (s, 3H, H-18').

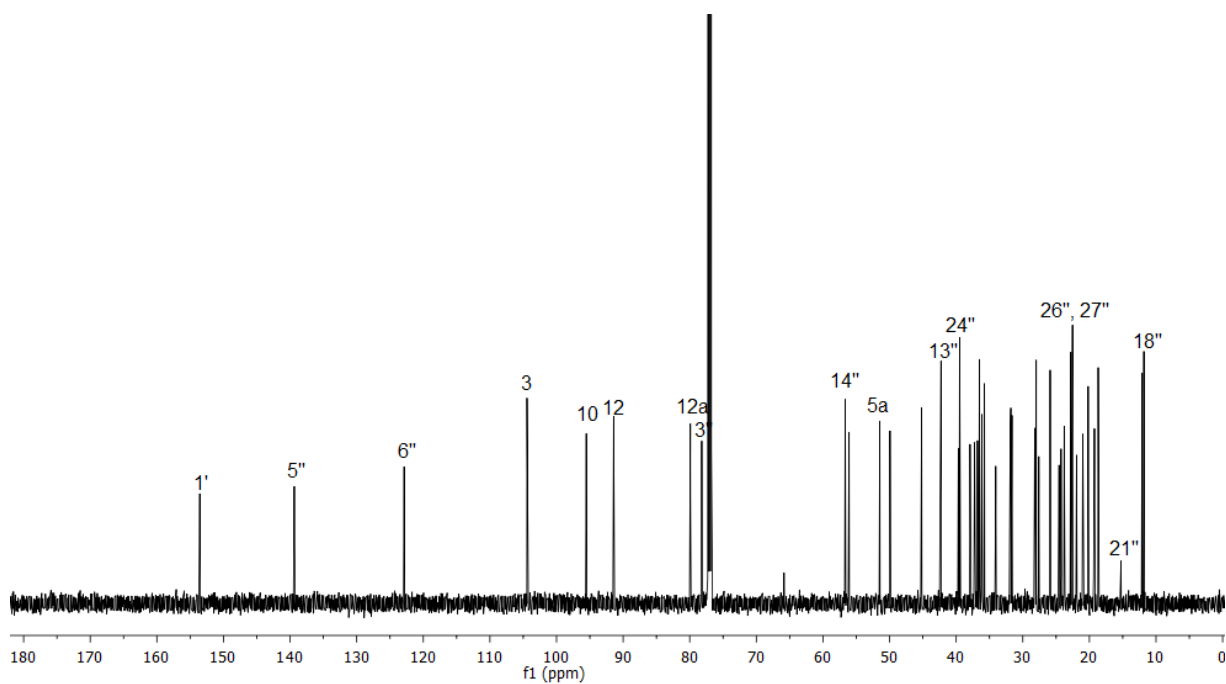


**<sup>13</sup>C NMR** (151 MHz, CDCl<sub>3</sub>): 141.04 (C-5'), 122.21 (C-6'), 104.21 (C-3), 99.84 (C-10), 88.52 (C-12), 81.60 (C-12a), 76.64 (C-3'), 57.05 (C-14'), 56.49 (C-17'), 52.97 (C-5a), 50.44 (C-9'), 44.87 (C-8a), 42.65 (C-13'), 23.18 (C-26', 27'), 14.48 (C-14), 13.56 (C-18').

## Compound 8



**<sup>1</sup>H NMR** (600 MHz, CDCl<sub>3</sub>) δ (ppm): 5.56 (d,  $J = 9.8$  Hz, 1H, H-10), 5.42 (s, 1H, H-12), 5.36 (d,  $J = 4.8$  Hz, 1H, H-6''), 4.46 – 4.51 (m, 1H, H-3''), 2.59 – 2.53 (m, 1H, H-8a), 2.35 (d,  $J = 2.9$  Hz, 2H, H-4''), 1.41 (s, 3H, H-13), 1.40 (s, 3H, H-15), 0.98 (s, 3H, H-14), 0.93 (d,  $J = 6.1$  Hz, 3H, H-19''), 0.88 (d,  $J = 1.8$  Hz, 3H, H-21''), 0.84 (dd,  $J = 6.6$  Hz, 2.6 Hz, 6H, H-26'', H-27''), 0.65 (s, 3H, H-18'').

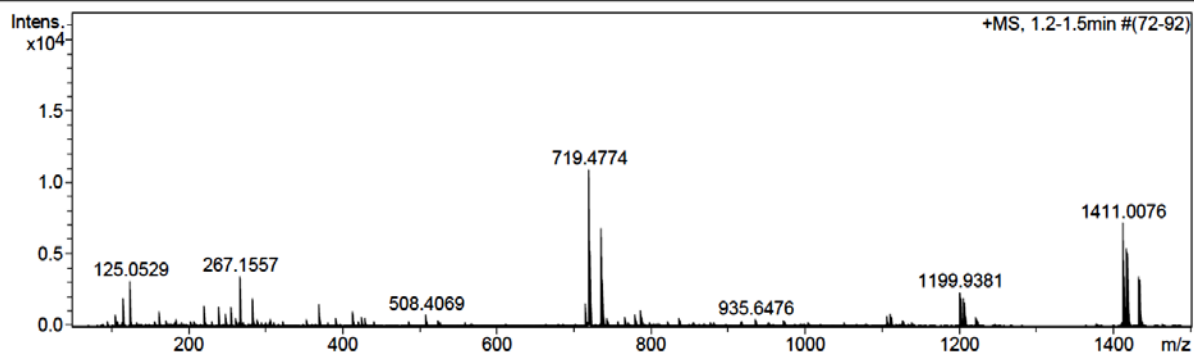


**<sup>13</sup>C NMR** (151 MHz, CDCl<sub>3</sub>): 153.56 (C-1'), 139.37 (C-5''), 122.88 (C-6''), 104.43 (C-3), 95.53 (C-10), 91.43 (C-12), 79.90 (C-12a), 78.20 (C-3''), 56.66 (C-14''), 56.08 (C-17''), 51.47 (C-5a), 49.94 (C-9''), 45.19 (C-8a), 42.28 (C-13''), 39.67 (C-24''), 22.80 (C-25'', C-26''), 19.25 (C-19''), 18.68 (C-21''), 12.09 (C-15), 11.83 (C-18'').

## Compound 8 (cont.)

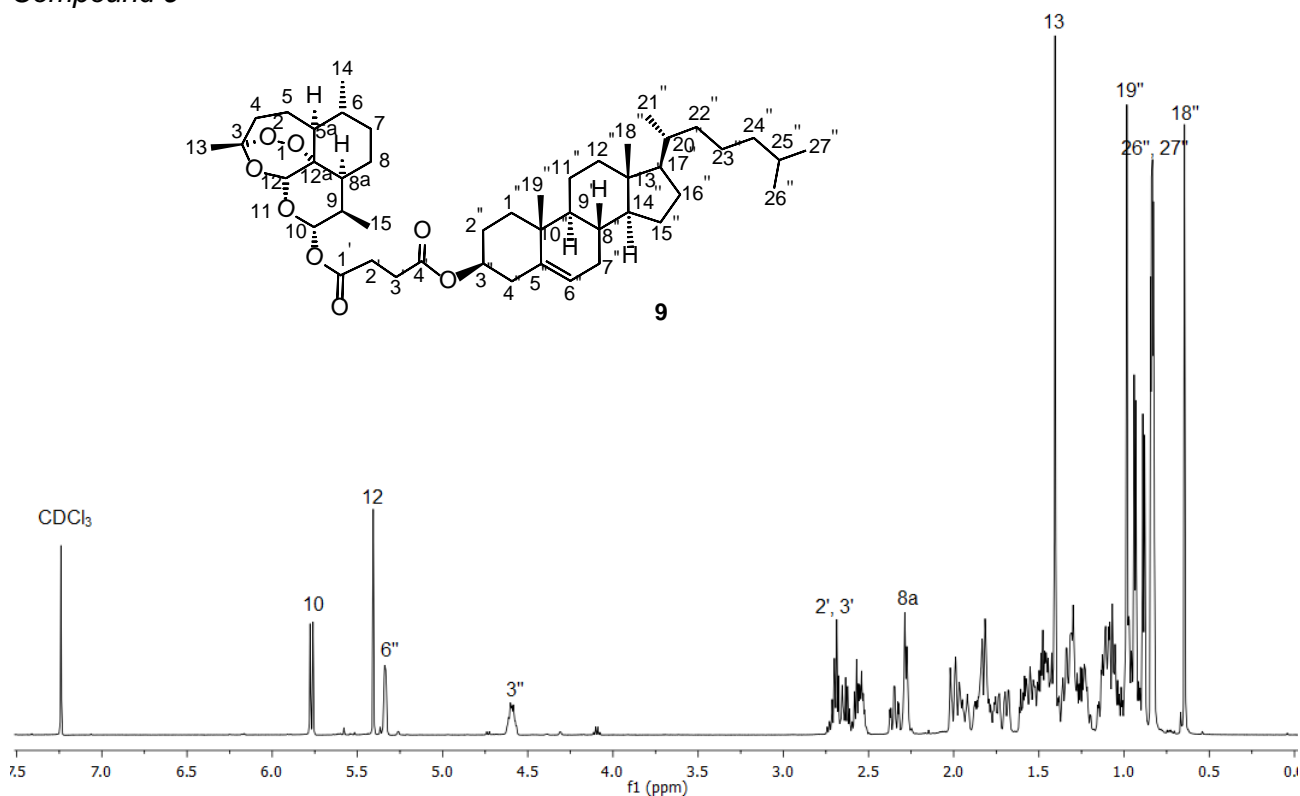
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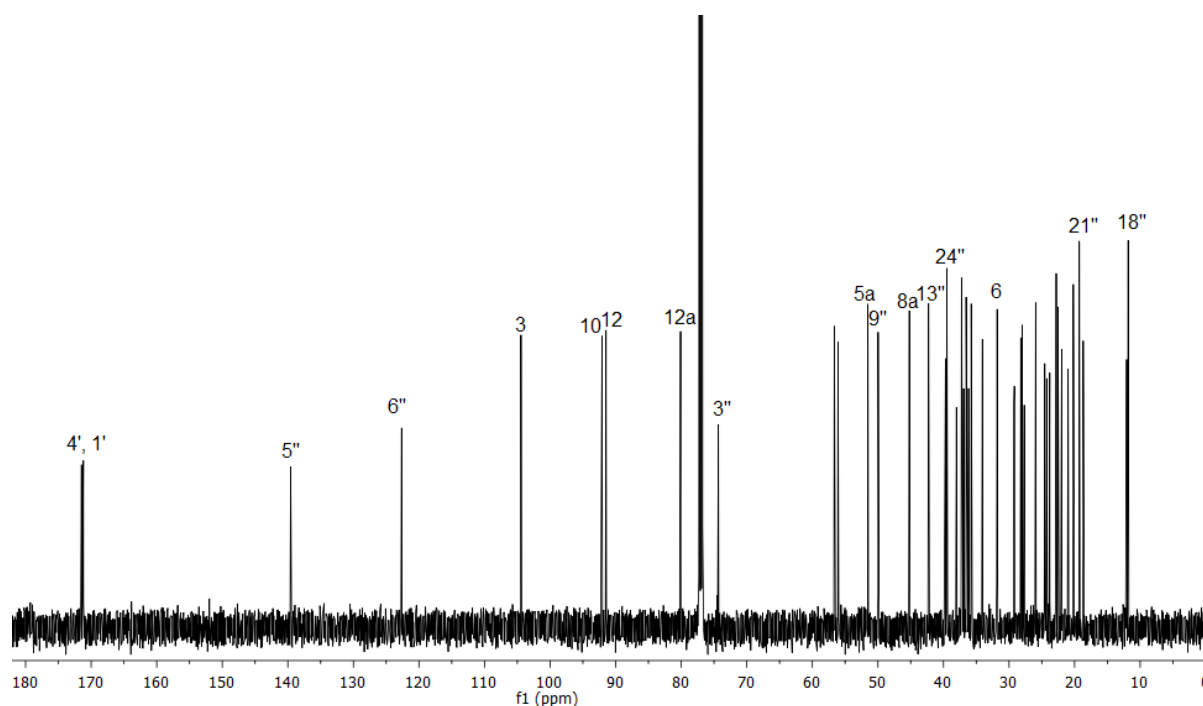


HRMS-ESI  $m/z$   $[M+Na]^+$  719.4774 (calcd for  $C_{43}H_{68}O_7Na$ : 719.4863).

## Compound 9



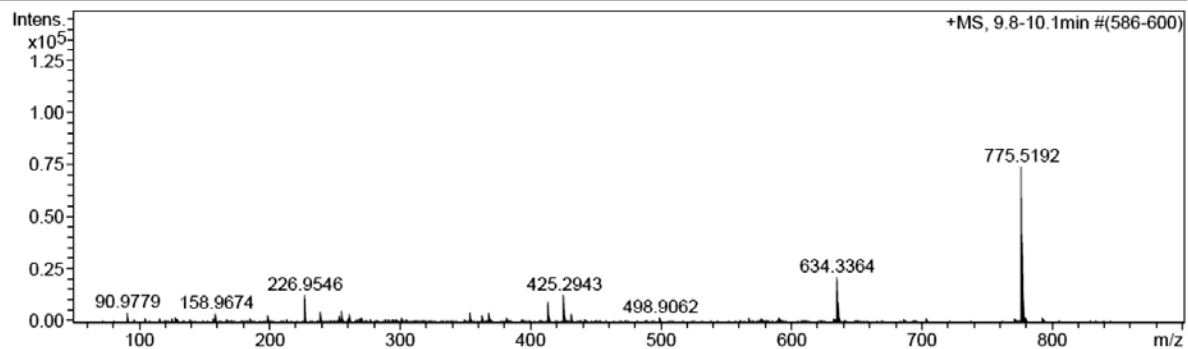
$^1H$  NMR (600 MHz,  $CDCl_3$ )  $\delta$  (ppm): 5.77 (d,  $J = 9.9$  Hz, 1H, H-10), 5.41 (s, 1H, H-12), 5.34 (d,  $J = 4.1$  Hz, 1H, H-6''), 4.62 - 4.57 (m, 1H, H-3''), 2.74 - 2.50 (m, 4H, H-2', H-3'), 2.37 - 2.32 (m,  $J = 3.2$  Hz, 1H, H-14''), 2.29 - 2.28 (m,  $J = 7.1$  Hz, 1H, H-8a), 1.41 (s, 3H, H-13), 0.98 (s, 3H, H-19''), 0.94 (d,  $J = 6.1$  Hz, 3H, H-14), 0.88 (d,  $J = 6.5$  Hz, 3H, H-15), 0.85 (d,  $J = 1.8$  Hz, 3H, H-21''), 0.82 (dd,  $J = 2.6, 2.9$  Hz, 6H, H-26'', H-27''), 0.65 (s, 1H, H-18'').

Compound **9** (cont.)

$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ ): 171.47 (C-4'), 171.19 (C-1'), 139.57 (C-5''), 122.65 (C-6''), 104.44 (C-3), 92.08 (C-10), 91.47 (C-12), 80.10 (C-12a), 74.33 (C-3''), 51.53 (C-5a), 49.97 (C-9''), 45.20 (C-8a), 42.27 (C-13''), 39.69 (C-24''), 31.86 (C-6), 18.68 (C-21''), 12.06 (C-15), 11.82 (C18'').

## Acquisition Parameter

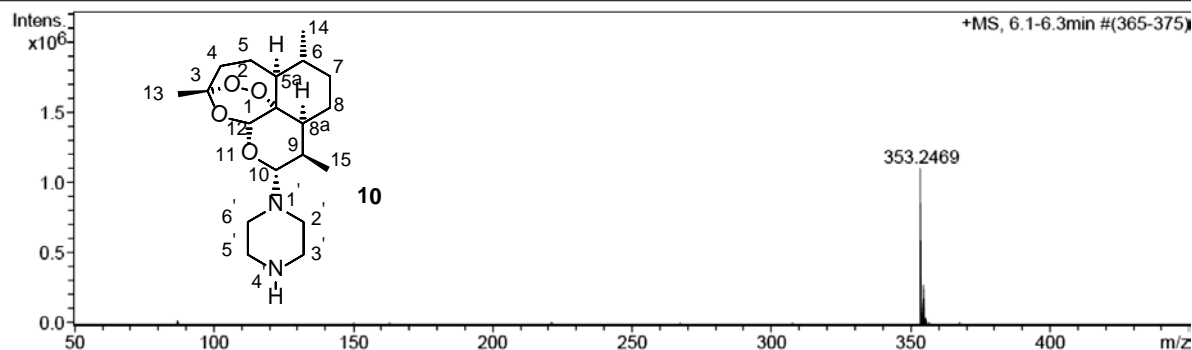
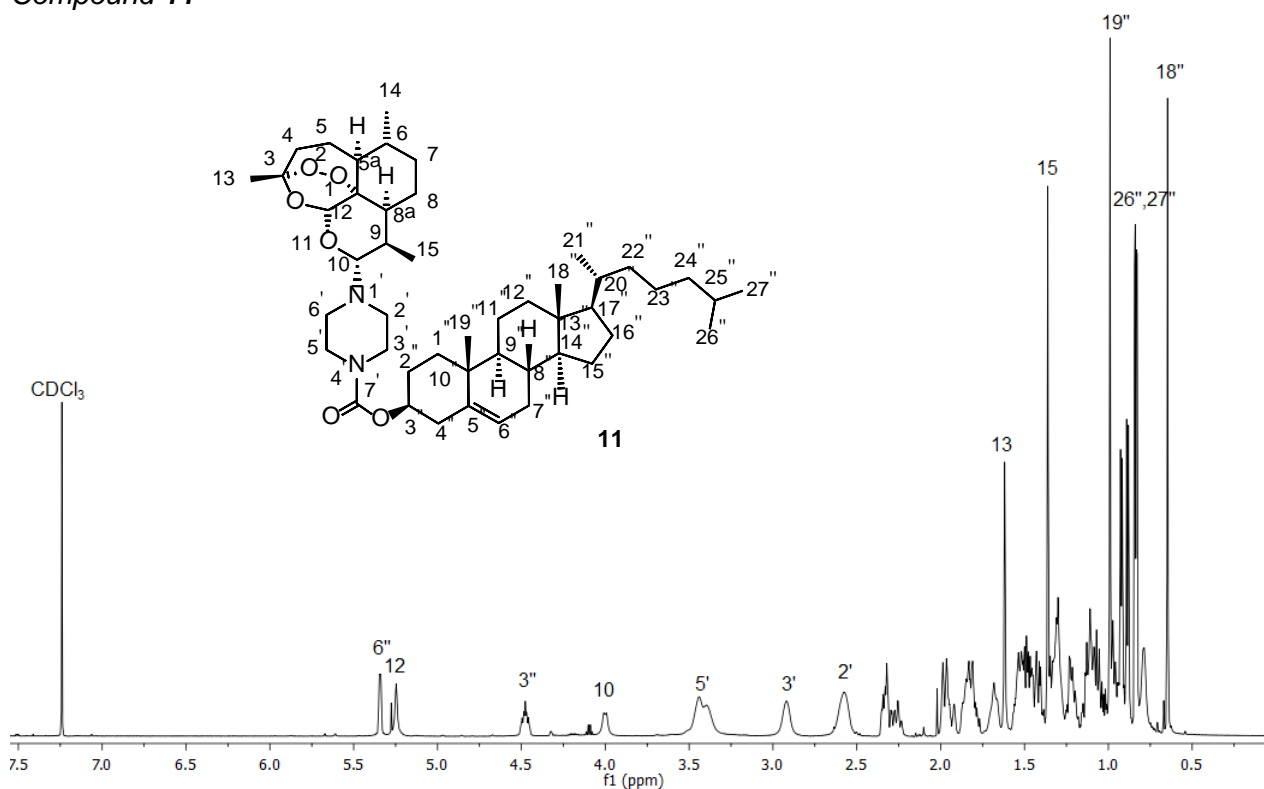
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Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste



HRMS-ESI  $m/z$   $[\text{M}+\text{Na}]^+$  775.5192 (calcd for  $\text{C}_{46}\text{H}_{72}\text{O}_8\text{Na}$ : 775.5125).

**Artemisinin-piperazine cholesterol conjugates: Compound 10.****Acquisition Parameter**

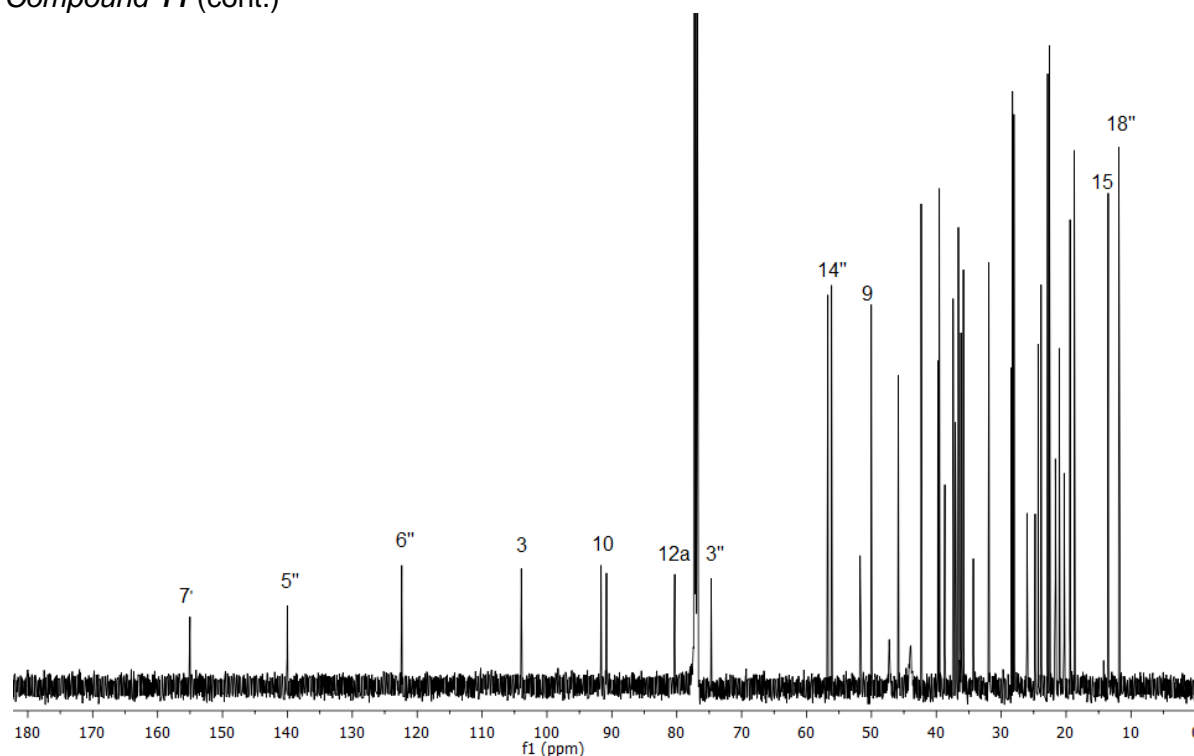
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Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste

**Compound 11**

<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) δ (ppm): 5.34 (d, *J* = 2.3 Hz, 1H, H-6''), 5.25 (s, 1H, H-12), 4.45 – 4.48 (m, 1H, H-3''), 4.00 (d, *J* = 8.5 Hz, 1H, H-10), 3.44 – 3.40 (m, 2H, H-5'), 2.88 – 2.96 (m, 2H, H-3'), 2.63 – 2.52 (m, 4H, H-6', H-2'), 1.62 (s, 3H, H-13), 1.36 (s, 3H, H-15), 0.99 (s, 3H, H-19''), 0.92 (d, *J* = 6.1 Hz, 3H, H-14), 0.89 (d, *J* = 6.5 Hz, 3H, H-21''), 0.84 (dd, *J* = 6.6, 2.8 Hz, 6H, H-26'', H-27''), 0.65 (s, 3H, H-18'').



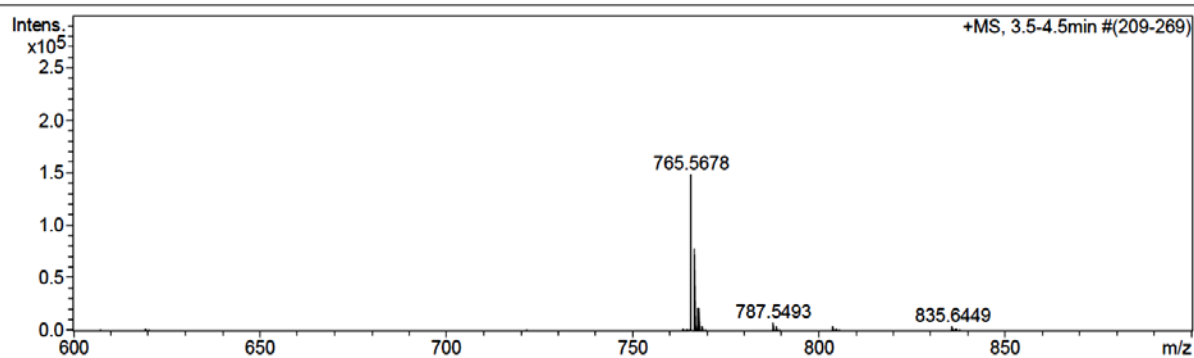
## Compound 11 (cont.)



$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 154.97 (C-7'), 140.07 (C-5''), 122.36 (C-6''), 103.84 (C-3), 91.79 (C-10), 90.75 (C-12), 80.26 (C-12a), 74.64 (C-3''), 56.65 (C-14''), 56.08 (C-17''), 45.80 (C-5', C-3'), 44.05 (C-8a), 42.28 (C-13''), 20.25 (C-14), 19.34 (C-19''), 18.68 (C-21''), 13.46 (C-15), 11.82 (C-18'').

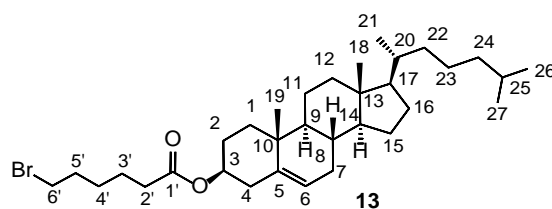
## Acquisition Parameter

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Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste

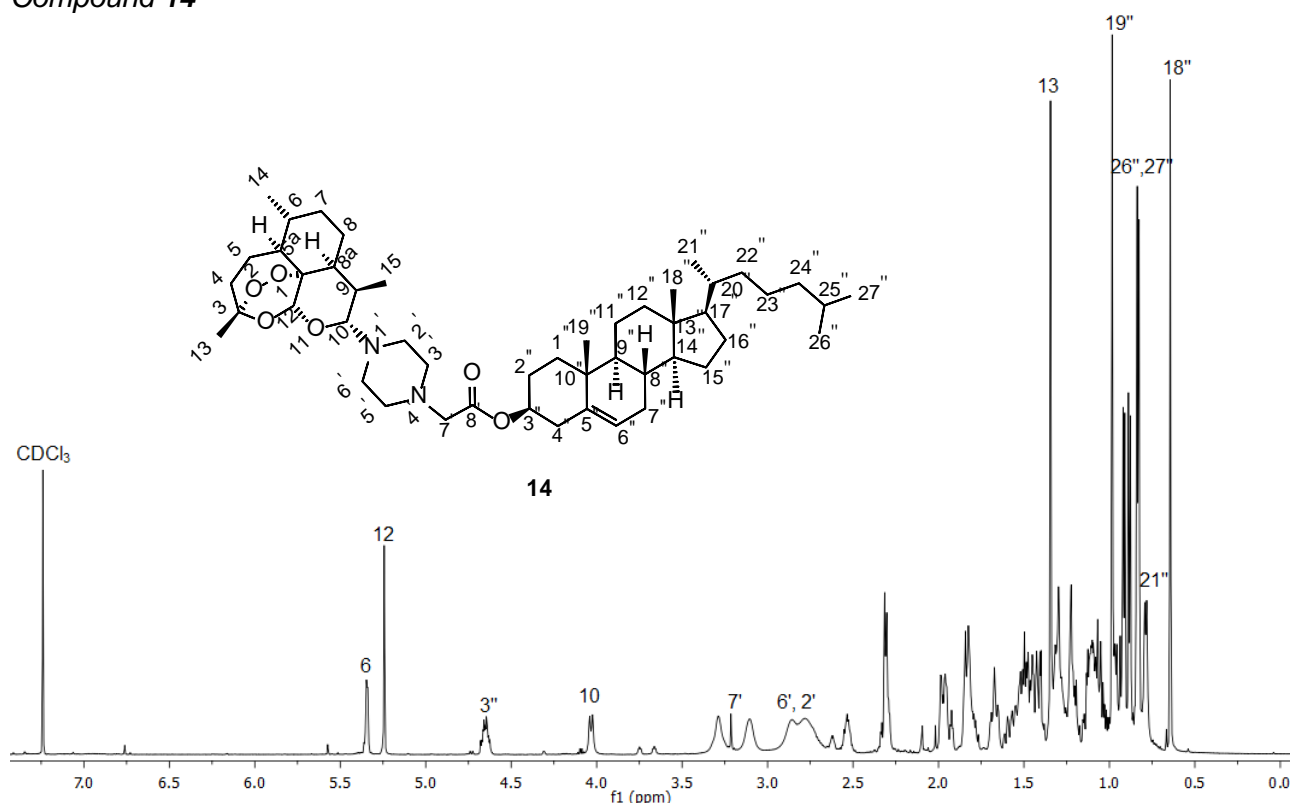


HRMS-ESI  $m/z$   $[\text{M}+\text{H}]^+$  765.5678 (calcd for  $\text{C}_{47}\text{H}_{76}\text{N}_2\text{O}_6\text{H}$ : 765.5782).

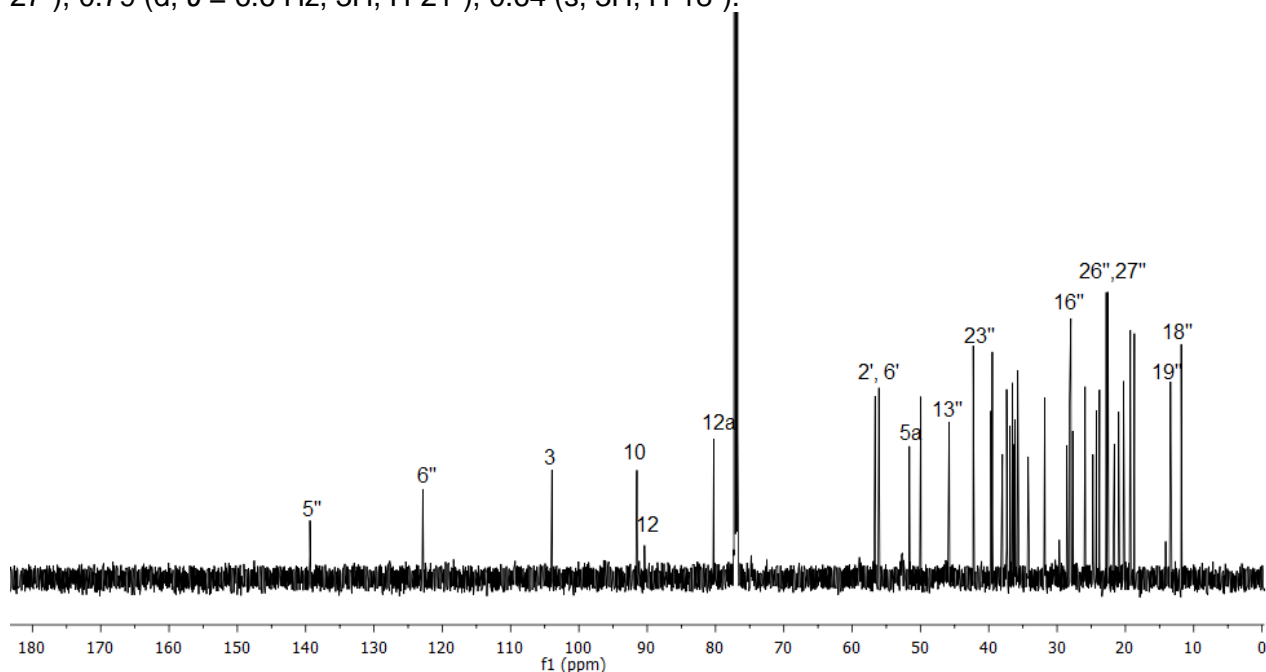
## Compound 13



## Compound 14



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 5.34 (d,  $J = 3.7$  Hz, 1H, H-6''), 5.24 (s, 1H, H-12), 4.64 (s, 1H, H-3''), 4.03 (d,  $J = 9.9$  Hz, 1H, H-10), 3.29 (s, 2H, H-6'), 3.21 (s, 2H, H-7'), 3.15-3.05 (m, 2H, H-5', H-3'), 2.90 – 2.73 (m, 2H, H-2'), 1.34 (s, 3H, H-13), 0.98 (s, 3H, H-19''), 0.91 (d,  $J = 6.2$  Hz, 3H, H-14), 0.88 (d,  $J = 6.5$  Hz, 3H, H-15), 0.83 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26'', H-27''), 0.79 (d,  $J = 6.6$  Hz, 3H, H-21''), 0.64 (s, 3H, H-18'').

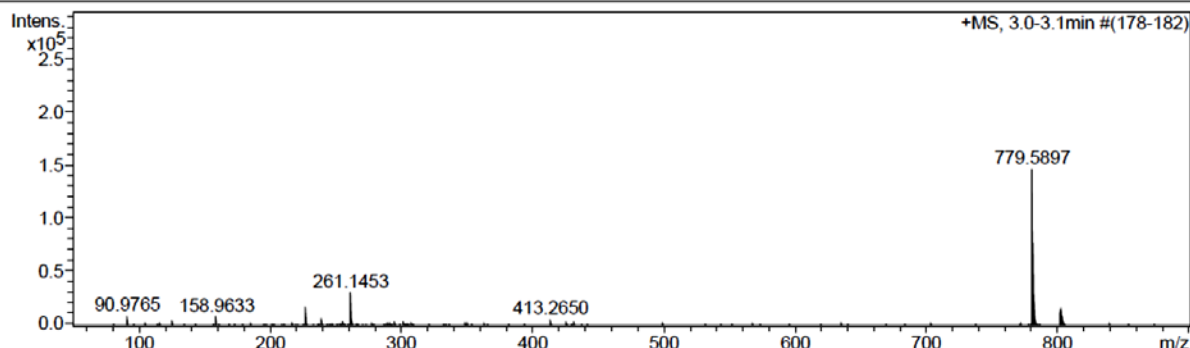


$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 139.37 (C-5''), 122.84 (C-6''), 103.94 (C-3), 91.51 (C-10), 90.41 (C-12), 80.25 (C-12a), 74.82 (C-3''), 56.63 (C-14''), 56.08 (C-17''), 51.62 (C-5a), 49.94 (C-6', C-2'), 45.79 (C-13''), 23.79 (C-23''), 22.79 (C-26'', C-27''), 20.26 (C-14), 19.27 (C-19''), 18.68 (C-21''), 13.39 (C-15), 11.82 (C-18'').

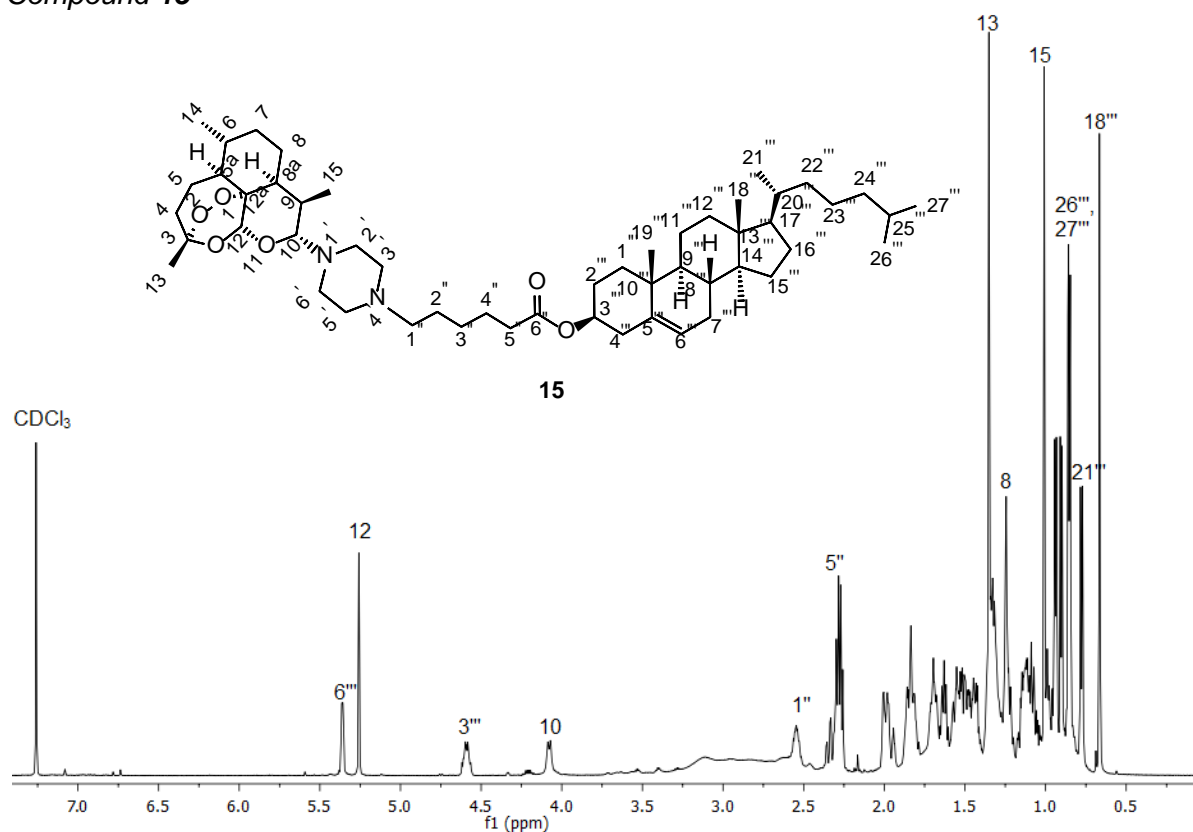
Compound **14** (cont.)

## Acquisition Parameter

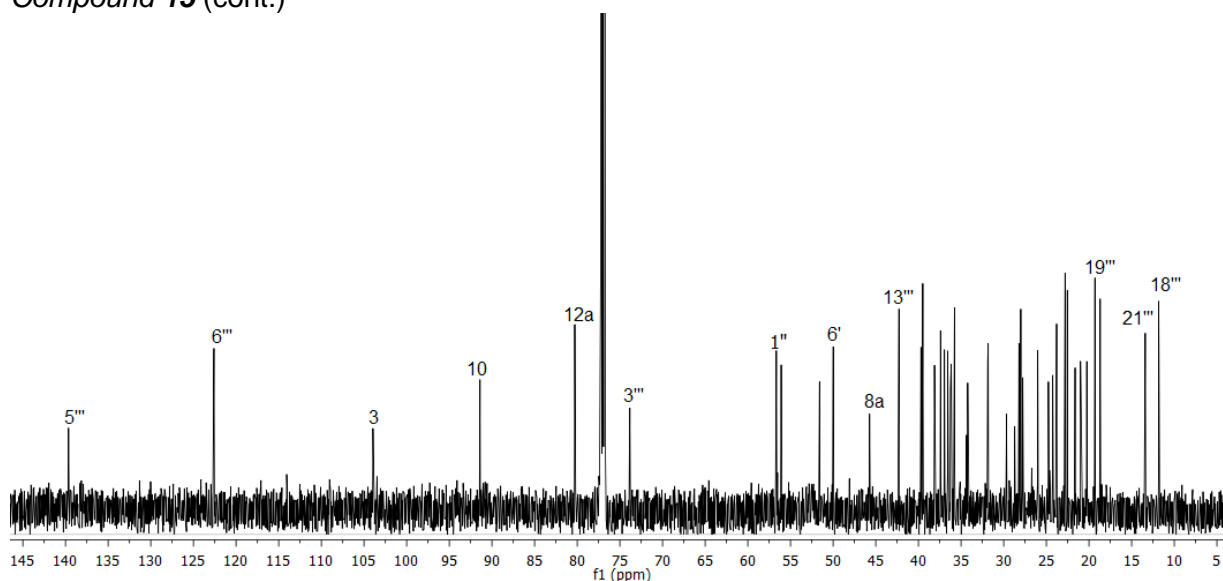
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Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste



HRMS-ESI  $m/z$   $[M+H]^+$  779.5897 (calcd for  $C_{48}H_{78}N_2O_6H$ : 779.5938).

Compound **15**

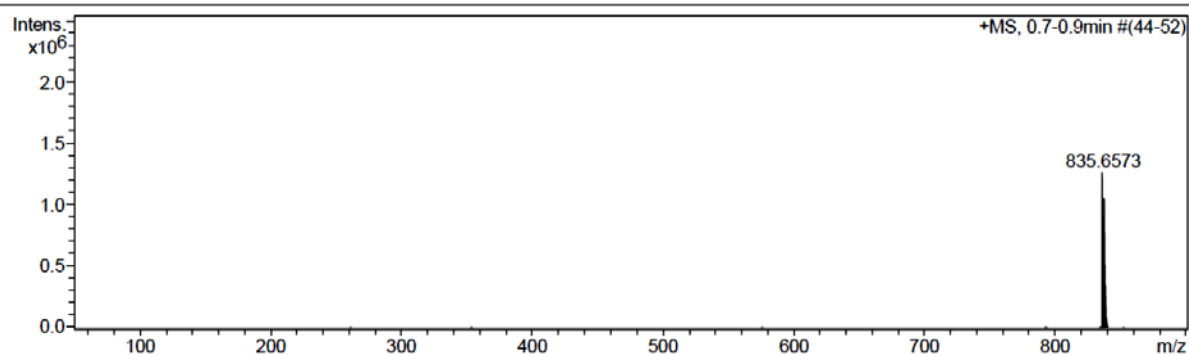
$^1H$  NMR (600 MHz,  $CDCl_3$ )  $\delta$  (ppm): 5.34 (d,  $J = 4.0$  Hz, 1H, H-6'''), 5.24 (s, 1H, H-12), 4.61 – 4.54 (m, 1H, H-3'''), 4.06 (d,  $J = 9.4$  Hz, 1H, H-10), 2.54 – 2.51 (m, 2H, H-1''), 2.33 – 2.24 (m, 2H, H-5''), 1.33 (s, 3H, H-13), 1.25 – 1.20 (m, 2H, H-8), 0.99 (s, 3H, H-15), 0.92 (d,  $J = 6.3$  Hz, 3H, H-14), 0.88 (d,  $J = 6.5$  Hz, 3H, H-19'''), 0.83 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26''', H-27'''), 0.76 (d,  $J = 7.1$  Hz, 3H, H-21'''), 0.65 (s, 3H, H-18''').

Compound **15** (cont.)

$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 139.64 (C-5'''), 122.59 (C-6'''), 103.95 (C-3), 91.40 (C-10), 80.28 (C-12a), 73.83 (C-3'''), 56.65 (C-1'), 56.08 (C-17'''), 51.58 (C-5a), 49.98 (C-5'), 45.72 (C-8a), 42.27 (C-13'''), 22.53 (C-26''', C-27'''), 20.25 (C-14), 19.29 (C-19'''), 18.68 (C-15), 13.39 (C-21'''), 11.82 (C-18''').

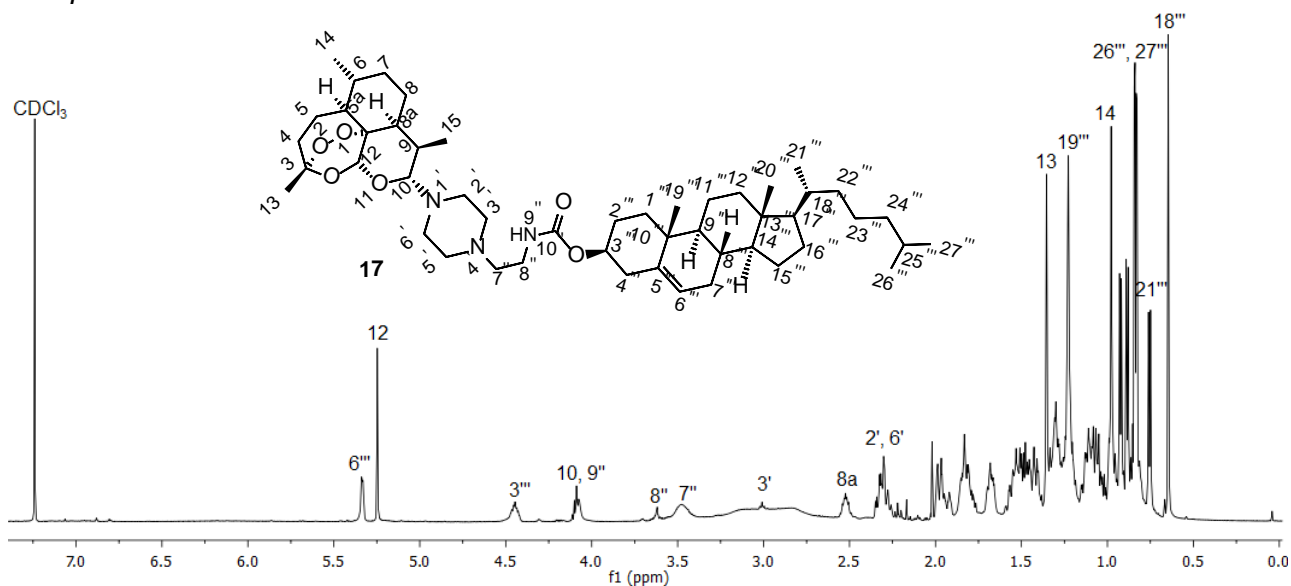
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Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste

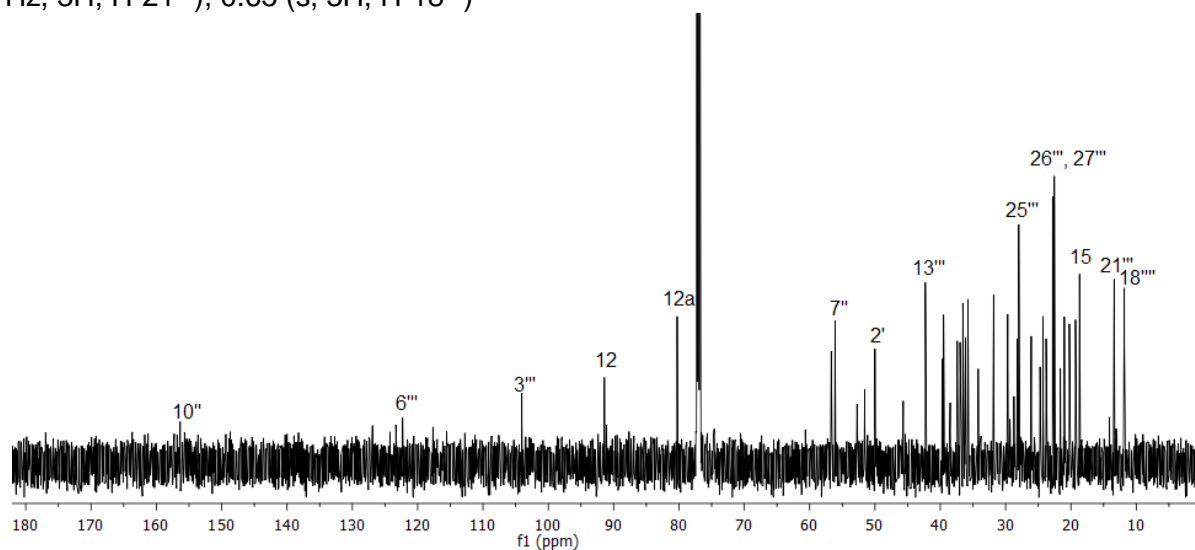


HRMS-ESI  $m/z$   $[\text{M}+\text{H}]^+$  835.6573 (calcd for  $\text{C}_{52}\text{H}_{86}\text{N}_2\text{O}_6\text{H}$ : 835.6564).

## Compound 17



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 5.33 (d,  $J = 4.8$  Hz, 1H, H-6'''), 5.25 (s, 1H, H-12), 4.45 (s, 1H, H-3'''), 4.09 (d,  $J = 7.2$  Hz, 1H, H-10), 3.52 – 3.43 (m, 2H, H-8''), 2.55 – 2.49 (m, 1H, H-8a), 2.35 – 2.28 (m, 4H, H-6', H-2'), 1.35 (s, 3H, H-13), 0.92 (d,  $J = 6.3$  Hz, 3H, H-15), 0.89 (d,  $J = 6.5$  Hz, 3H, H-14), 0.84 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26''', H-27'''), 0.76 (d,  $J = 7.1$  Hz, 3H, H-21'''), 0.65 (s, 3H, H-18''')

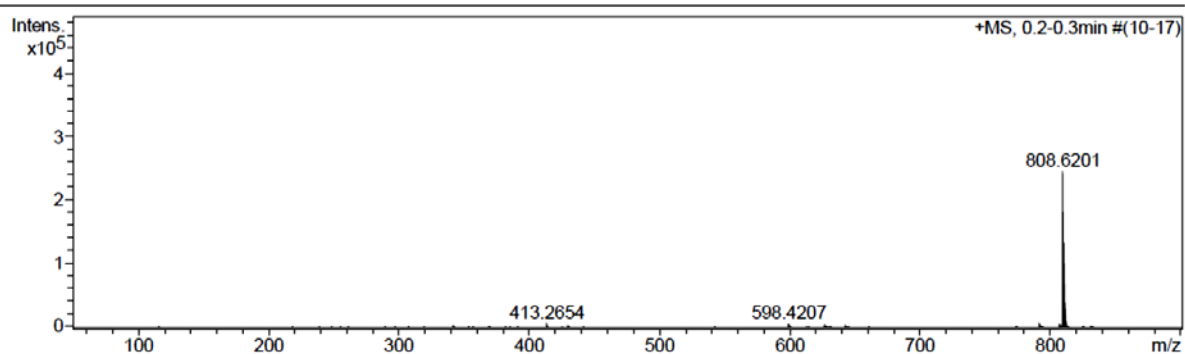


$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 156.49 (C-10''), 122.39 (C-6'''), 103.86 (C-3), 91.42 (C-12), 80.27 (C-12a), 74.53 (C-3'''), 56.69 (C-7''), 56.10 (C-17'''), 50.00 (C-2'), 42.28 (C-13'''), 27.98 (C-9''), 22.80 (C-26''', C-27'''), 20.24 (C-14), 19.29 (C-19'''), 18.68 (C-15), 13.39 (C-21'''), 11.82 (C-18''')

## Compound 17 (cont.)

## Acquisition Parameter

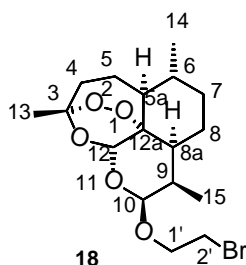
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Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste



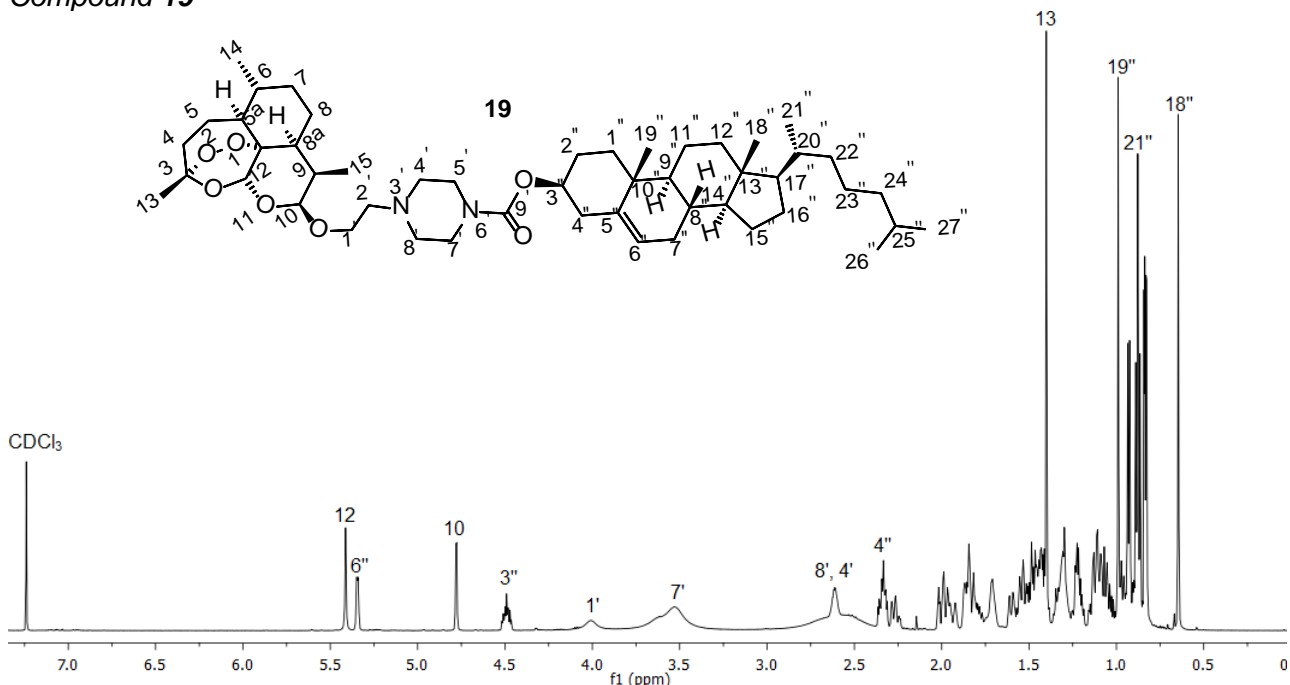
HRMS-ESI  $m/z$   $[M+H]^+$  808.6201 (calcd for  $C_{49}H_{81}N_3O_6H$ : 808.6204)

## Carbamates

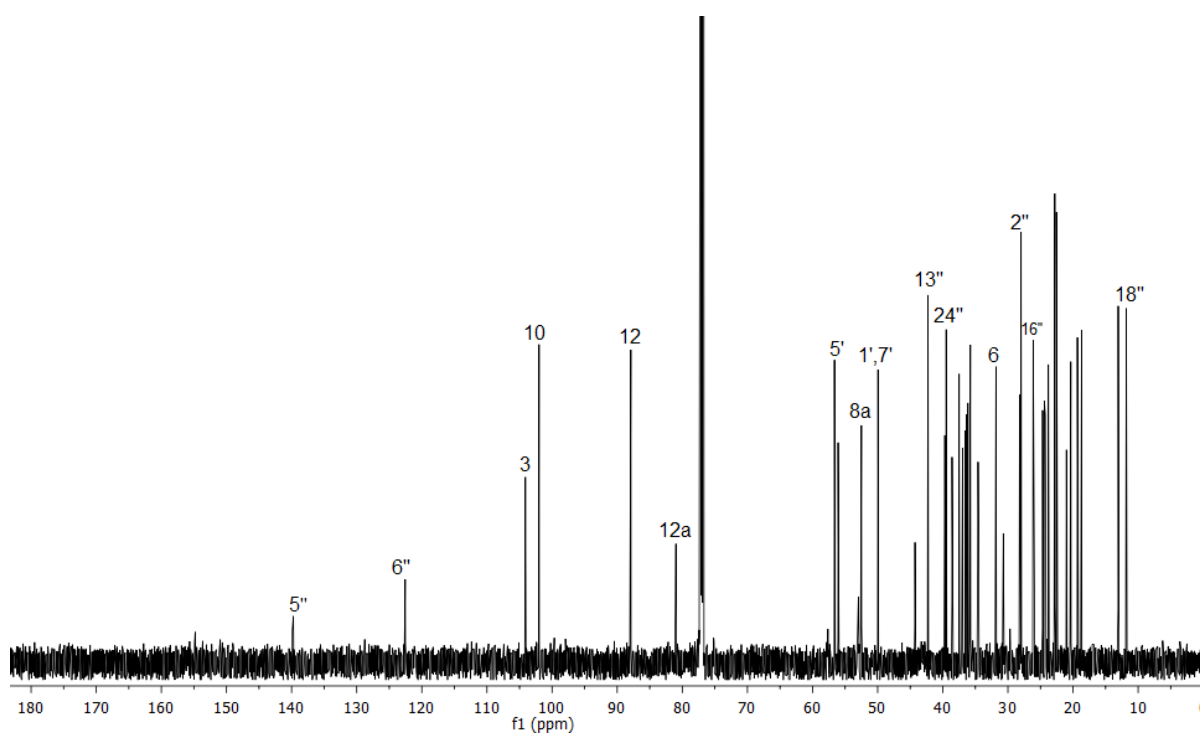
## Compound 18



## Compound 19



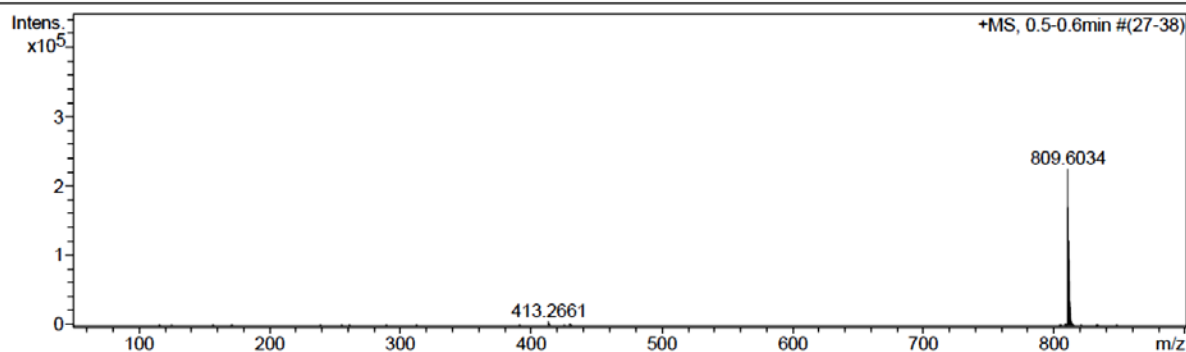
$^1H$  NMR (600 MHz,  $CDCl_3$ )  $\delta$  (ppm): 5.41 (s, 1H, H-12), 5.35 (t,  $J = 4.8$  Hz, 1H, H-6''), 4.78 (d,  $J = 3.3$  Hz, 1H, H-10), 4.52 – 4.46 (m, 1H, H-3''), 4.00 (s, 2H, H-1'), 3.64 – 3.45 (m, 4H, H-7', H-5'), 2.65 – 2.57 (m, 4H, H-8', H-4'), 2.36 – 2.25 (m, 2H, H-4''), 1.40 (s, 3H, H-13), 0.99 (s, 3H, H-19''), 0.93 (d,  $J = 6.3$  Hz, 3H, H-15), 0.88 (d,  $J = 7.0$  Hz, 3H, H-14), 0.86 (s, 3H, H-21''), 0.83 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26'', H-27''), 0.65 (s, 3H, H-18'').

Compound **19** (cont.)

$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 139.89 (C-5''), 122.55 (C-6''), 104.10 (C-3), 102.00 (C-10), 87.90 (C-12), 80.99 (C-12a), 56.63 (C-23), 56.08 (C-17''), 52.96 (C-2', C-8'), 52.50 (C-5a), 49.95 (C-1', C-7'), 44.27 (C-8a), 42.27 (C-13''), 31.87 (C-6), 28.17 (C-16''), 24.67 (C-13), 22.79 (C-26'', C-27''), 20.34 (C-14), 19.33 (C-19''), 18.68 (C-21''), 13.06 (C-15), 11.82 (C-18'').

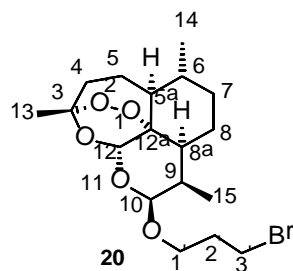
**Acquisition Parameter**

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active	Set Capillary	4500 V	Set Dry Heater	180 °C
Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste

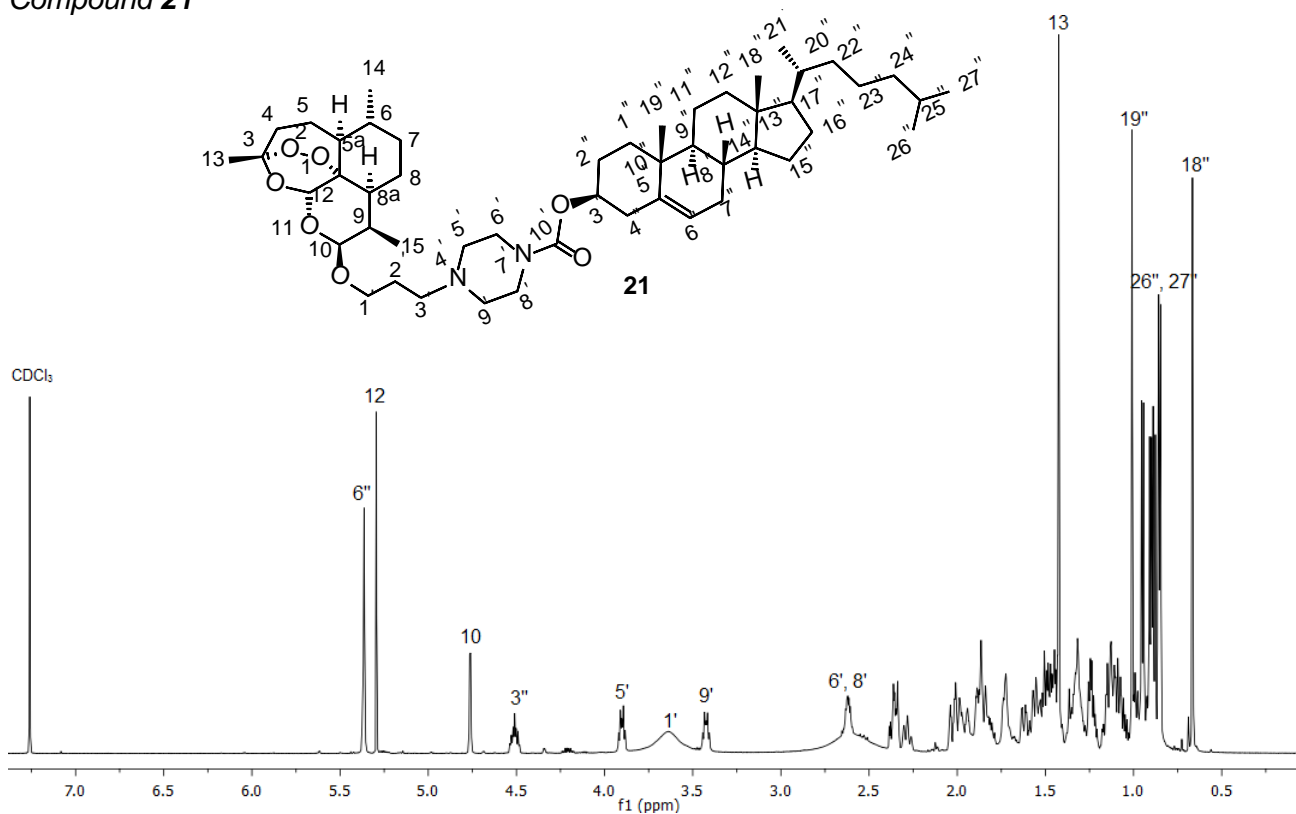


HRMS-ESI  $m/z$   $[\text{M}+\text{H}]^+$  809.6034 (calcd for  $\text{C}_{49}\text{H}_{80}\text{N}_2\text{O}_7\text{H}$ : 809.6044).

## Compound 20



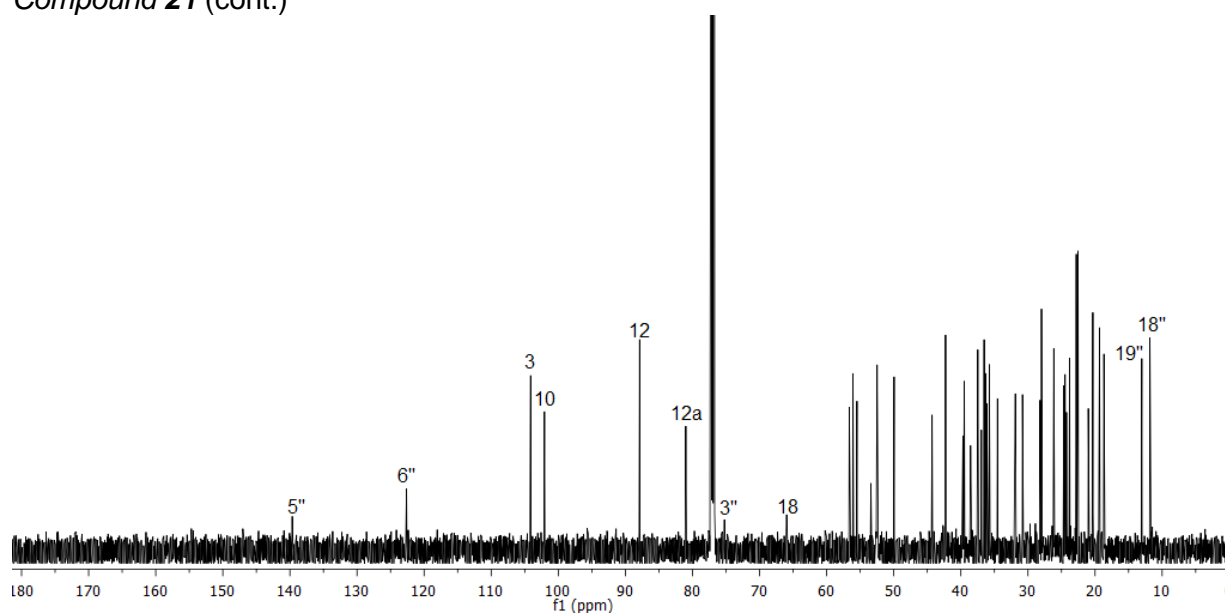
## Compound 21



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 5.34 (s, 1H, H-6''), 5.27 (s, 1H, H-12), 4.74 (d,  $J = 3.3$  Hz, 1H, H-10), 4.52 – 4.46 (m, 1H, H-3''), 3.88 (dd,  $J = 15.9, 5.9$  Hz, 2H, H-8'), 3.62 (s, 2H, H-1'), 3.40 (dd,  $J = 16.0, 6.1$  Hz, 2H, H-6'), 2.63 – 2.58 (m, 4H, H-9', H-5'), 2.31 - 2.25 (m, 5H, H-8a, H-3', H-4'), 1.40 (s, 3H, H-13), 0.99 (s, 3H, H-19''), 0.93 (d,  $J = 6.3$  Hz, 3H, H-14), 0.88 (d,  $J = 6.5$  Hz, 3H, H-15), 0.86 (d,  $J = 7.4$  Hz, 3H, H-21''), 0.83 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26'', H-27'), 0.65 (s, 3H, H-18'').



## Compound 21 (cont.)

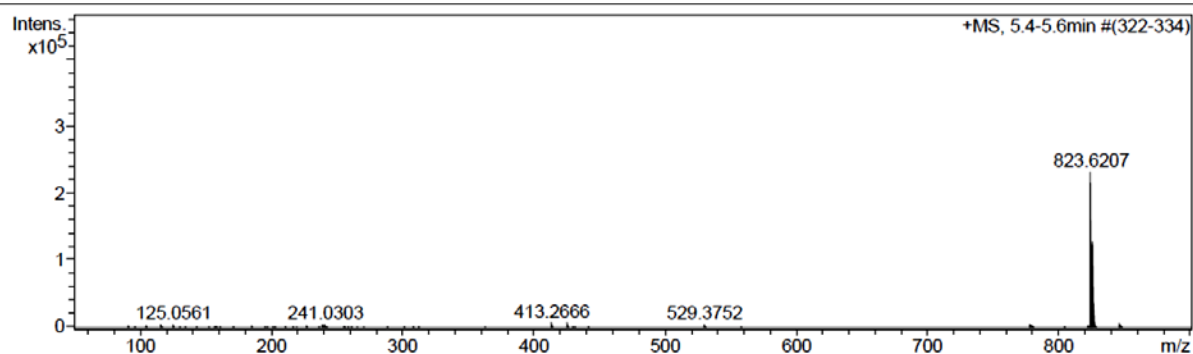


## Compound 21

$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 139.68 (C-5''), 122.62 (C-6''), 104.12 (C-3), 102.06 (C-10), 87.88 (C-12), 80.99 (C-12a), 75.32 (C-3''), 66.02 (C-1'), 53.41 (C-9', C-5'), 52.48 (C-5a, C-3'), 44.29 (C-8a, C-8', C-6'), 30.81 (C-2'), 24.64 (C-13), 22.80 (C-26'', C-27''), 20.32 (C-14), 19.32 (C-19''), 18.68 (C-21''), 13.02 (C-15), 11.82 (C-18'').

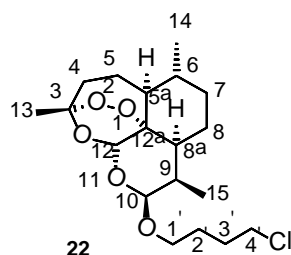
## Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active	Set Capillary	4500 V	Set Dry Heater	180 °C
Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste

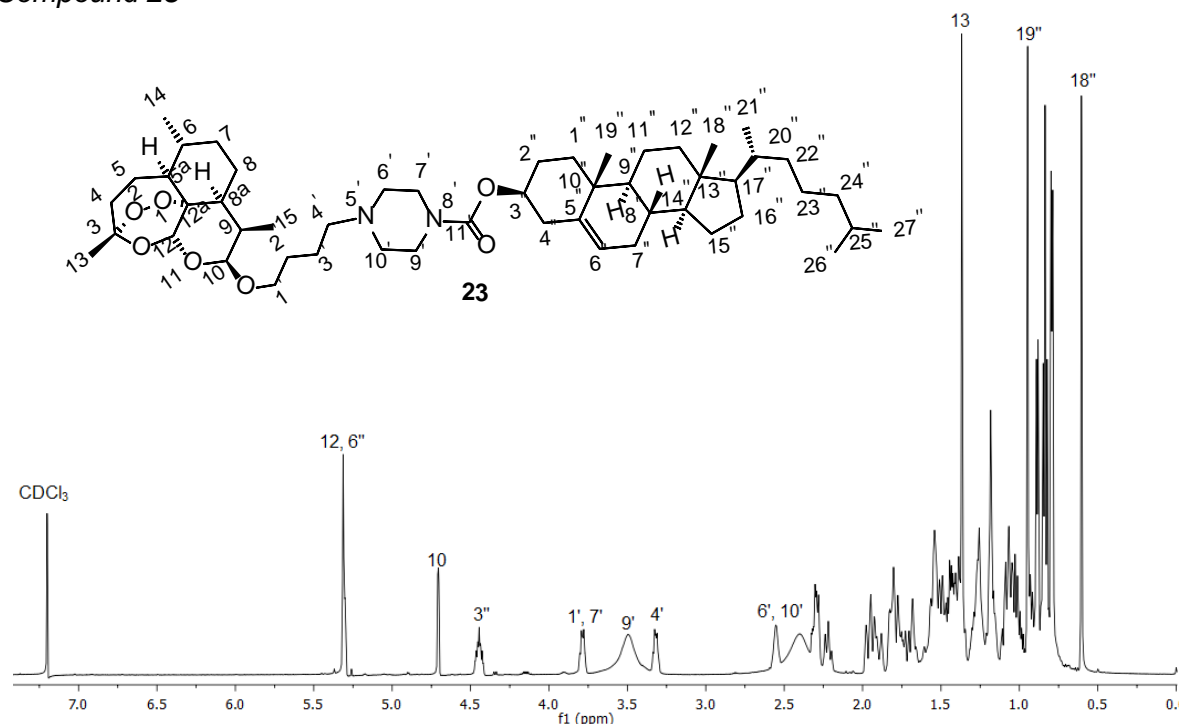


HRMS-ESI  $m/z$   $[\text{M}+\text{H}]^+$  823.6207 (calcd for  $\text{C}_{50}\text{H}_{82}\text{N}_2\text{O}_7\text{H}$ : 823.6200).

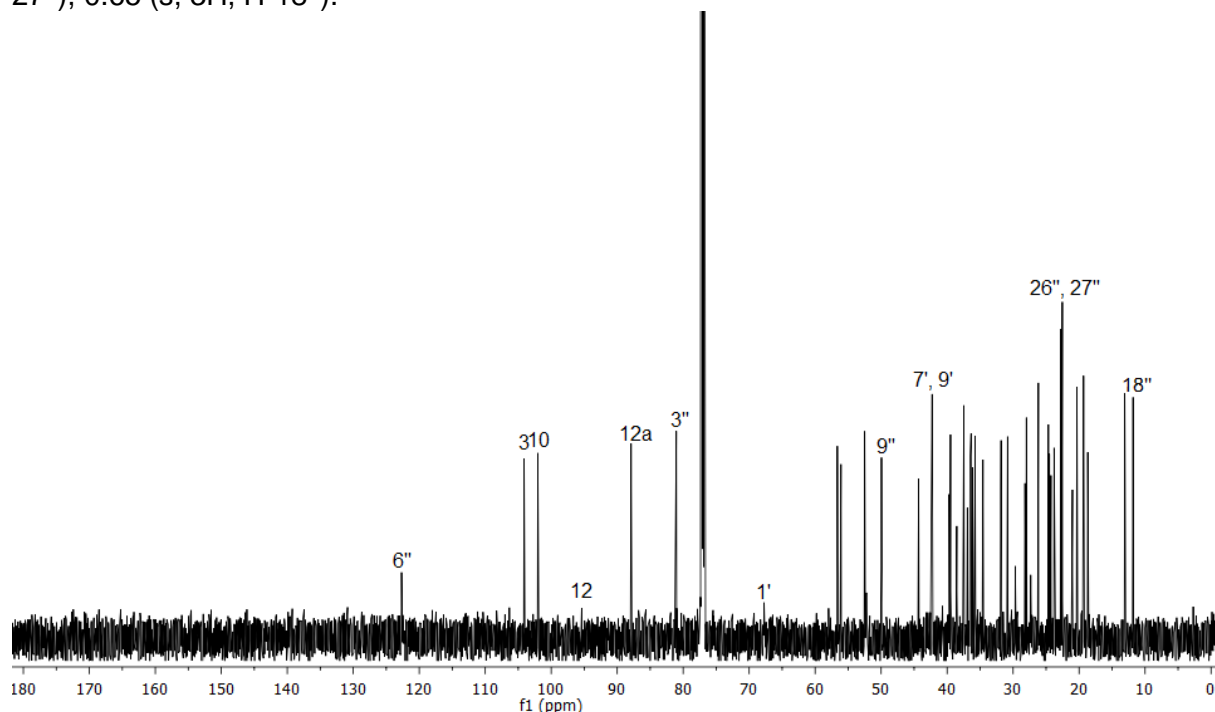
## Compound 22



## Compound 23



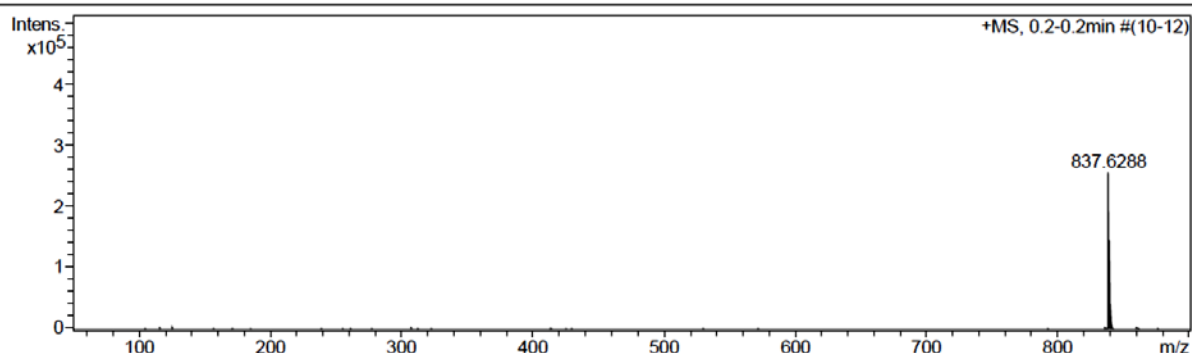
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 5.35 (s, 1H, H-12), 5.28 (s, 1H, H-6''), 4.74 (d,  $J = 3.3$  Hz, 1H, H-10), 4.49 (s, 1H, H-3''), 3.83 (dt,  $J = 9.9, 6.1$  Hz, 4H, H-1', H-7'), 3.65 (s, 2H, H-9'), 3.37 (t,  $J = 6.2$  Hz, 2H, H-4'), 2.63 – 2.58 (m, 4H, H-10', H-6'), 2.31 (dq,  $J = 26.5, 13.8$  Hz, 1H, H-8''), 1.41 (s, 3H, H-13), 0.99 (s, 3H, H-19''), 0.93 (d,  $J = 6.3$  Hz, 3H, H-14), 0.88 (d,  $J = 7.2$  Hz, 3H, H-15), 0.87 (d,  $J = 7.4$  Hz, 3H, H-21''), 0.84 (dd,  $J = 6.6, 2.8$  Hz, 6H, H-26'', H-27''), 0.65 (s, 3H, H-18'').



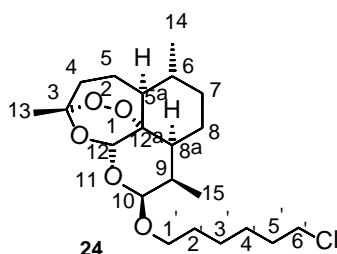
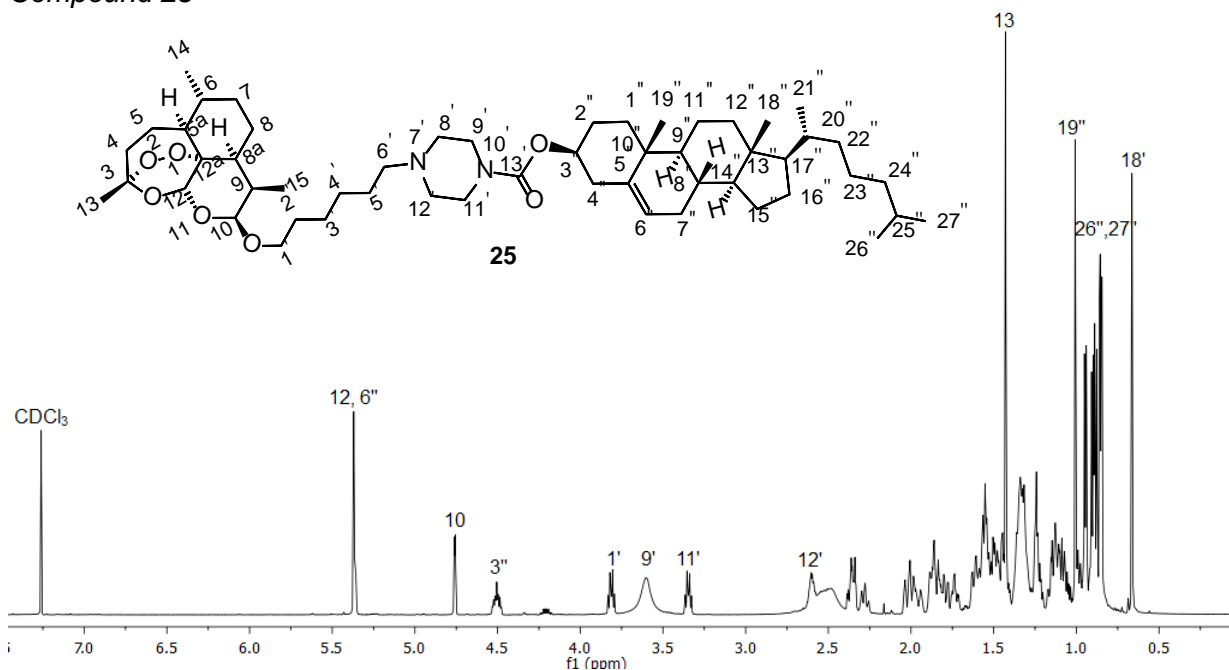
$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 122.68 (C-6''), 104.11 (C-3), 102.03 (C-10), 95.27 (C-12), 87.89 (C-12a), 81.04 (C-3''), 67.74 (C-1'), 56.63 (C-4'), 56.08 (C-17''), 49.95 (C-9''), 44.32 (C-7', C-9'), 24.65 (C-13), 22.80 (C-26'', C-27''), 22.54 (C-8), 21.01 (C-11''), 20.33 (C-14), 19.32 (C-19''), 18.68 (C-21''), 13.08 (C-15), 11.82 (C-18'').

**Compound 23** (cont.)**Acquisition Parameter**

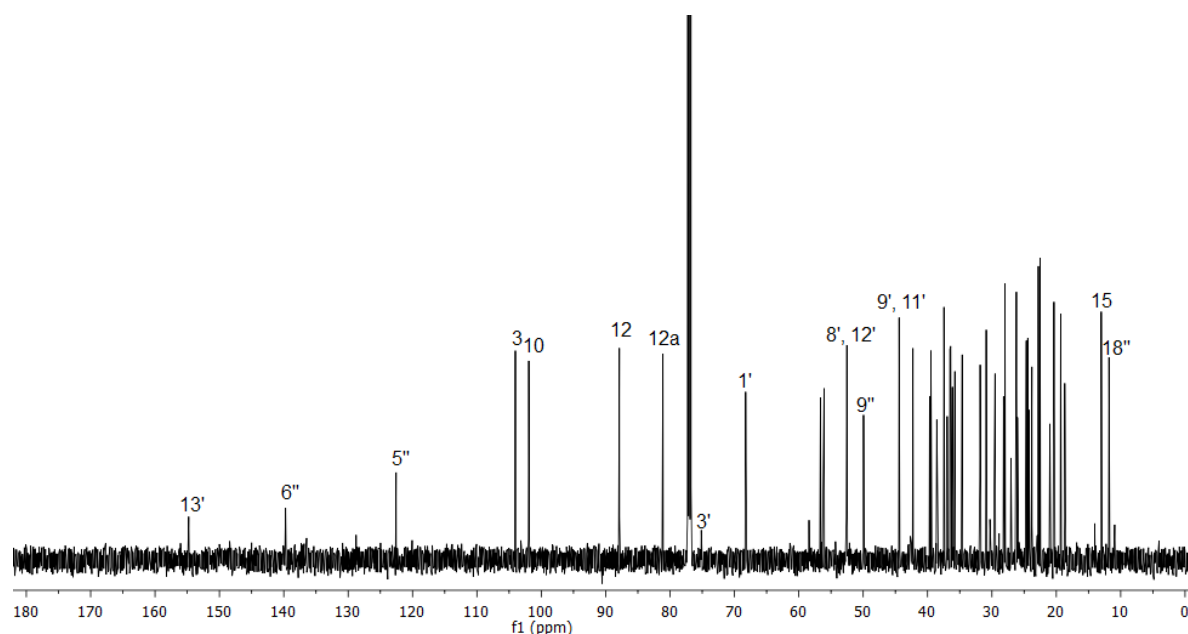
Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active	Set Capillary	4500 V	Set Dry Heater	180 °C
Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste



HRMS-ESI  $m/z$   $[M+H]^+$  837.6288 (calcd for  $C_{51}H_{84}N_2O_7H$ : 837.6357).

**Compound 24****Compound 25**

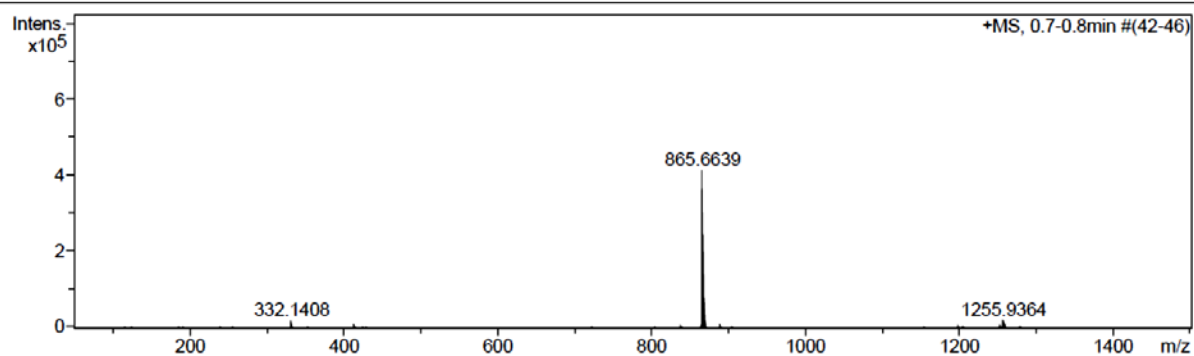
$^1H$  NMR (600 MHz,  $CDCl_3$ )  $\delta$  (ppm): 5.34 (d,  $J = 6.7$  Hz, 1H, H-12), 5.34 (s, 1H, H-6''), 4.74 (d,  $J = 3.2$  Hz, 1H, H-10), 4.52 – 4.45 (m, 1H, H-3''), 3.79 (dd,  $J = 16.1, 6.5$  Hz, 2H, H-1'), 3.58 (s, 2H, H-9'), 3.33 (dd,  $J = 16.1, 6.5$  Hz, 2H, H-11'), 2.61 – 2.56 (m, 2H, H-12'), 2.34 (dt,  $J = 14.1, 3.8$  Hz, 4H, H-6', H-8'), 2.26 (d,  $J = 12.3$  Hz, 2H, H-4''), 2.02 – 1.92 (m, 2H, H-8), 1.41 (s, 3H, H-13), 0.99 (s, 3H, H-19''), 0.93 (d,  $J = 6.3$  Hz, 3H, H-14), 0.88 (d,  $J = 6.6$  Hz, 3H, H-15), 0.86 (d,  $J = 7.4$  Hz, 3H, H-21''), 0.83 (dd,  $J = 6.6, 2.7$  Hz, 6H, H-26'', H-27''), 0.64 (s, 3H, H-18'').

Compound **25** (cont.)

$^{13}\text{C}$  NMR (151 MHz,  $\text{CDCl}_3$ )  $\delta$  (ppm): 154.77 (C-13'), 139.72 (C-5''), 122.55 (C-6''), 104.03 (C-3), 101.94 (C-10), 87.87 (C-12), 81.10 (C-12a), 75.05 (C-3''), 68.25 (C-1'), 58.41 (C-14''), 56.63 (C-6'), 52.54 (C-8', C-12'), 49.94 (C-9''), 44.42 (C-9', C-11'), 30.89 (C-2'), 27.98 (C-4'), 27.09 (C-5'), 26.20 (C-3'), 26.03 (C-13), 22.79 (C-26'', C-27''), 22.53 (C-11''), 20.36 (C-14), 19.32 (C-19''), 18.68 (C-21''), 13.01 (C-15), 11.82 (C-18'').

**Acquisition Parameter**

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active	Set Capillary	4500 V	Set Dry Heater	180 °C
Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	1500 m/z	Set Collision Cell RF	100.0 Vpp	Set Divert Valve	Waste



HRMS-ESI  $m/z$   $[\text{M}+\text{H}]^+$  865.6639 (calcd for  $\text{C}_{53}\text{H}_{88}\text{N}_2\text{O}_7\text{H}$ : 864.6670).