

Supplementary Materials

Bioactive Compounds from *Euphorbia usambarica* Pax. with HIV-1 Latency Reversal Activity

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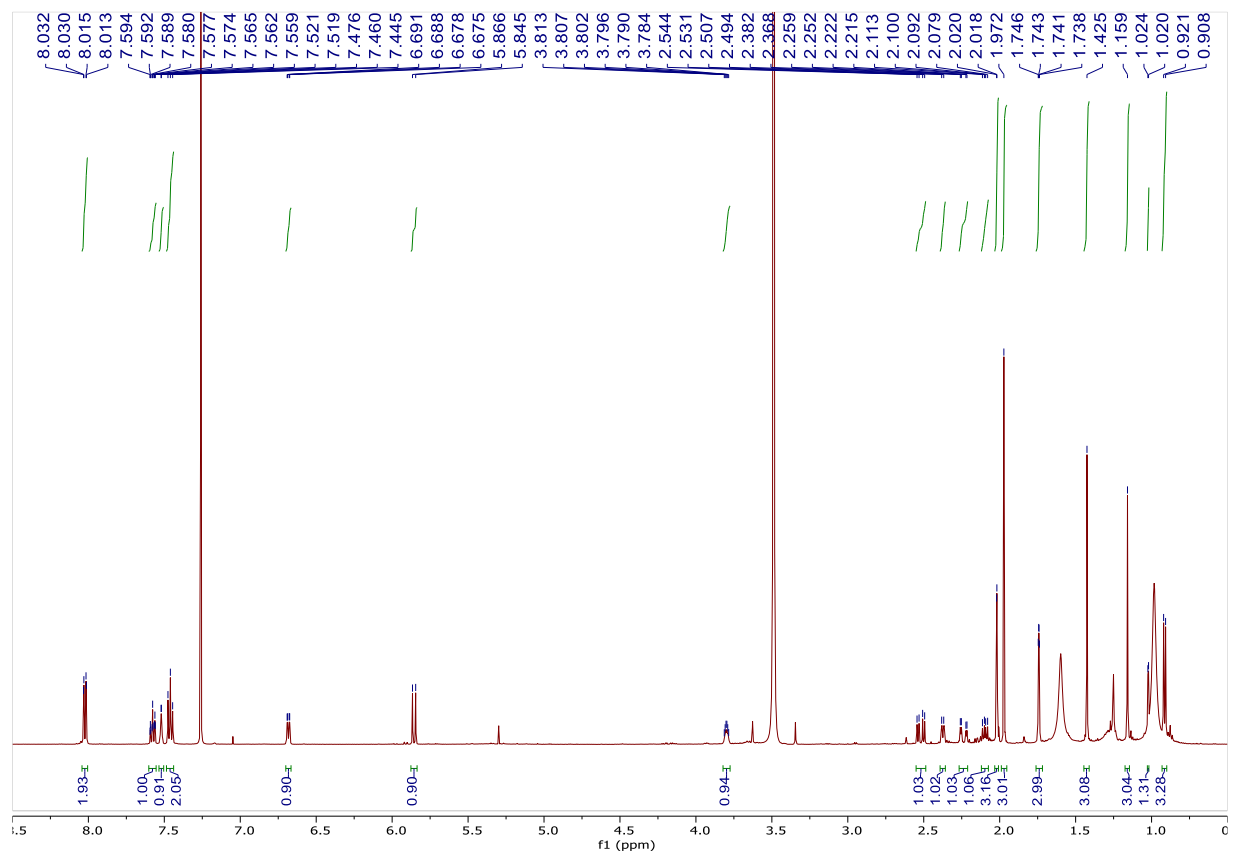


Figure S1. The ^1H -NMR spectrum of euphordraculoate C (**1**) (500 MHz, CDCl_3).

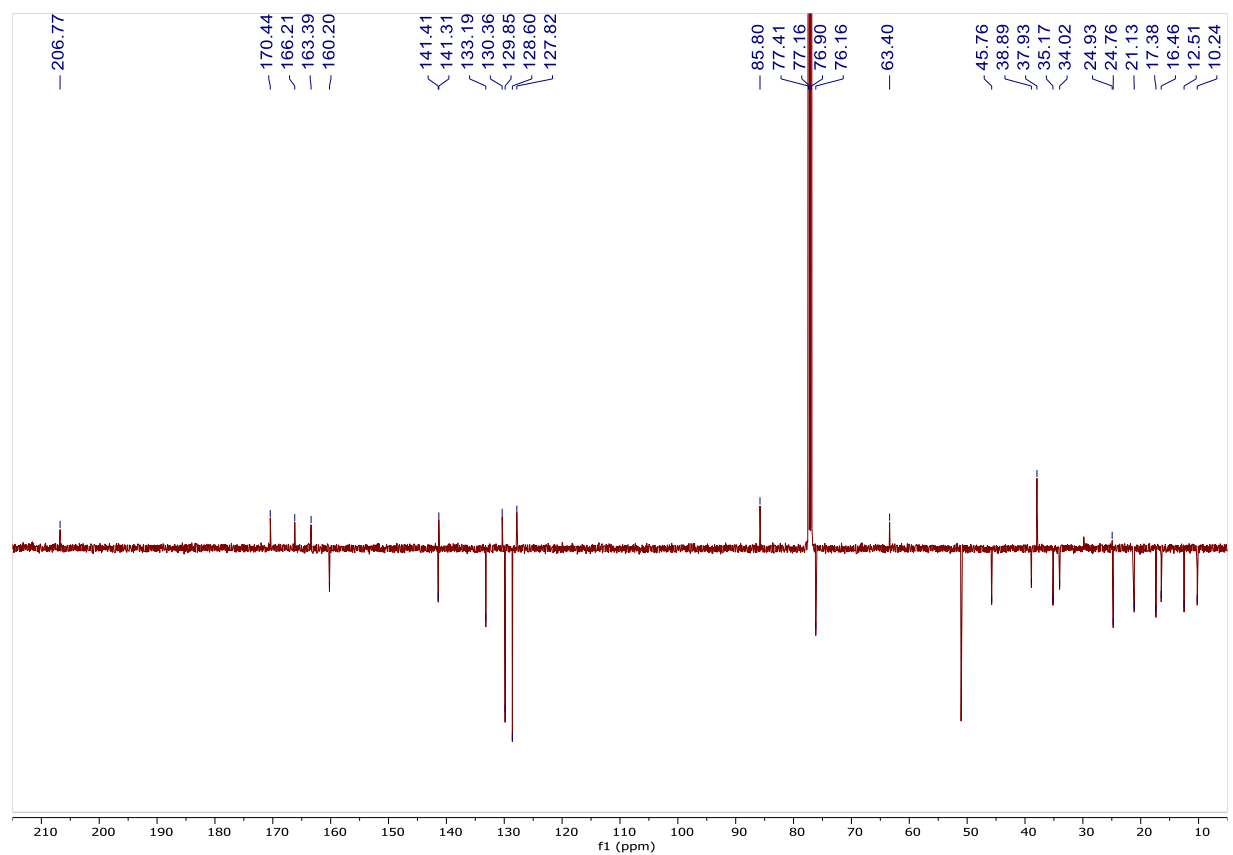


Figure S2. The ^{13}C -JMOD spectrum of euphordraculoate C (**1**) (125 MHz, CDCl_3).

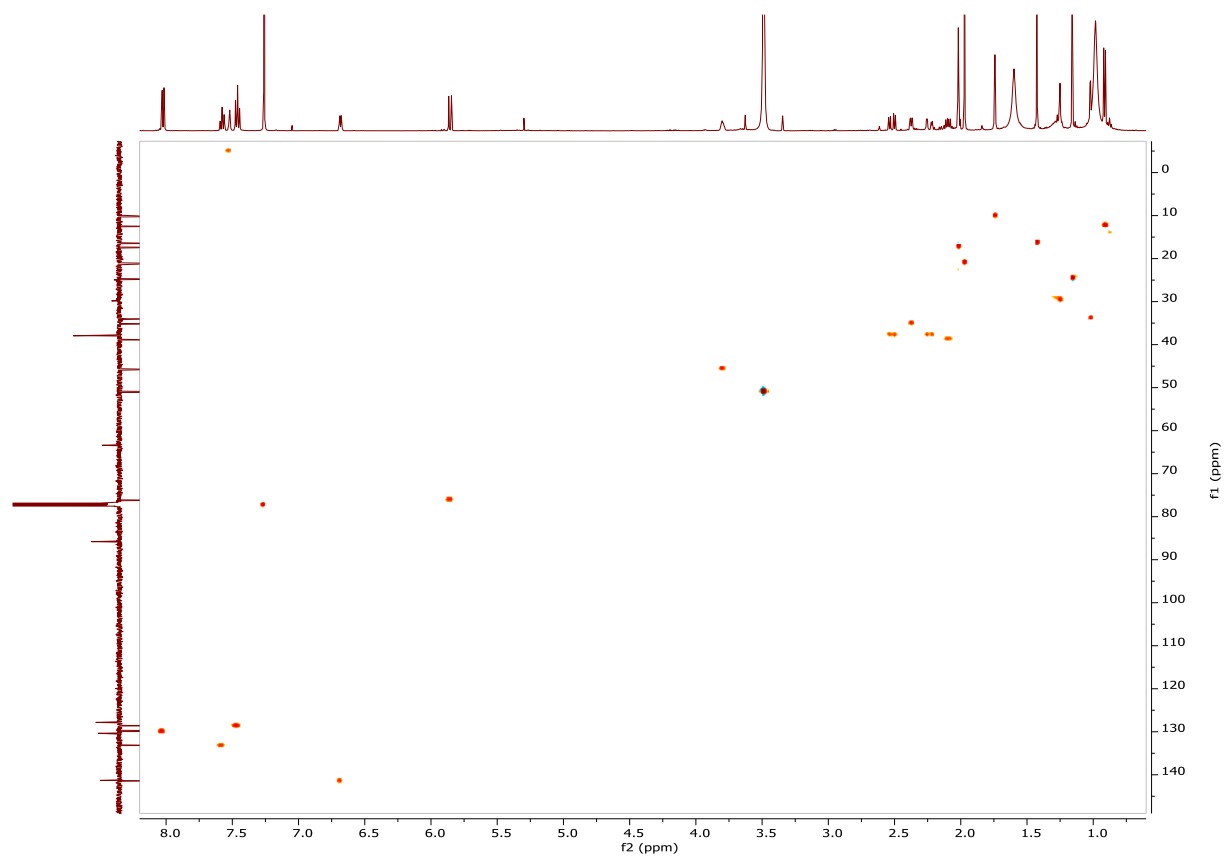


Figure S3. The HSQC spectrum of euphordraculoate C (**1**).

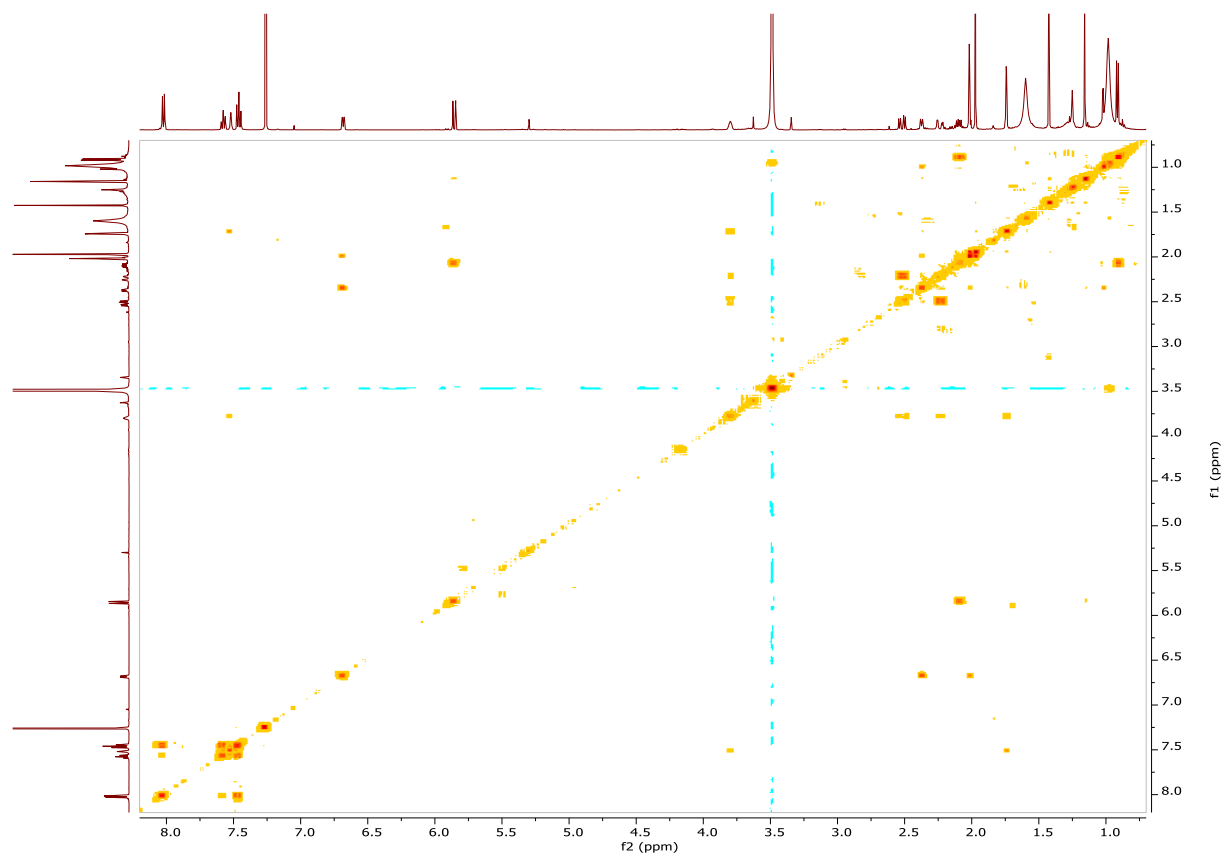


Figure S4. The ^1H - ^1H COSY spectrum of euphordraculoate C (**1**).

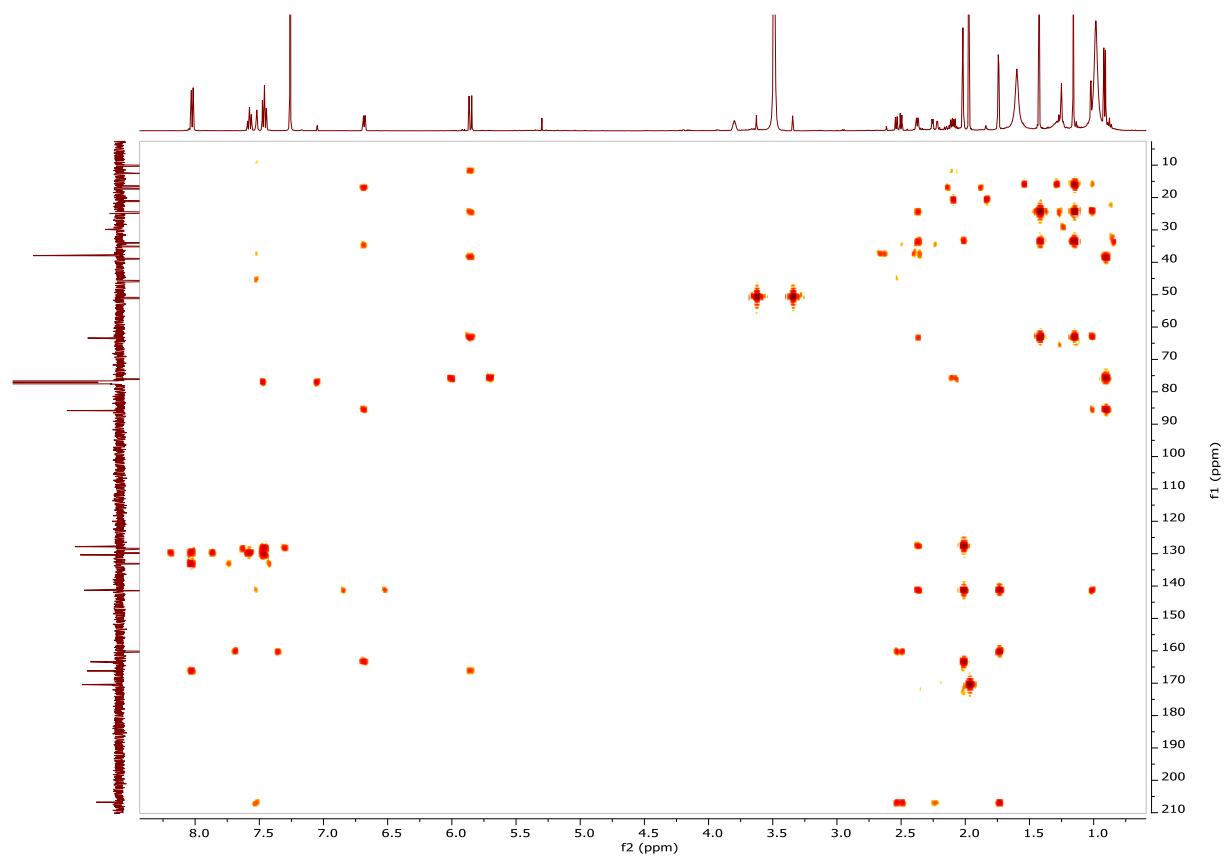


Figure S5. The HMBC spectrum of euphordraculoate C (**1**).

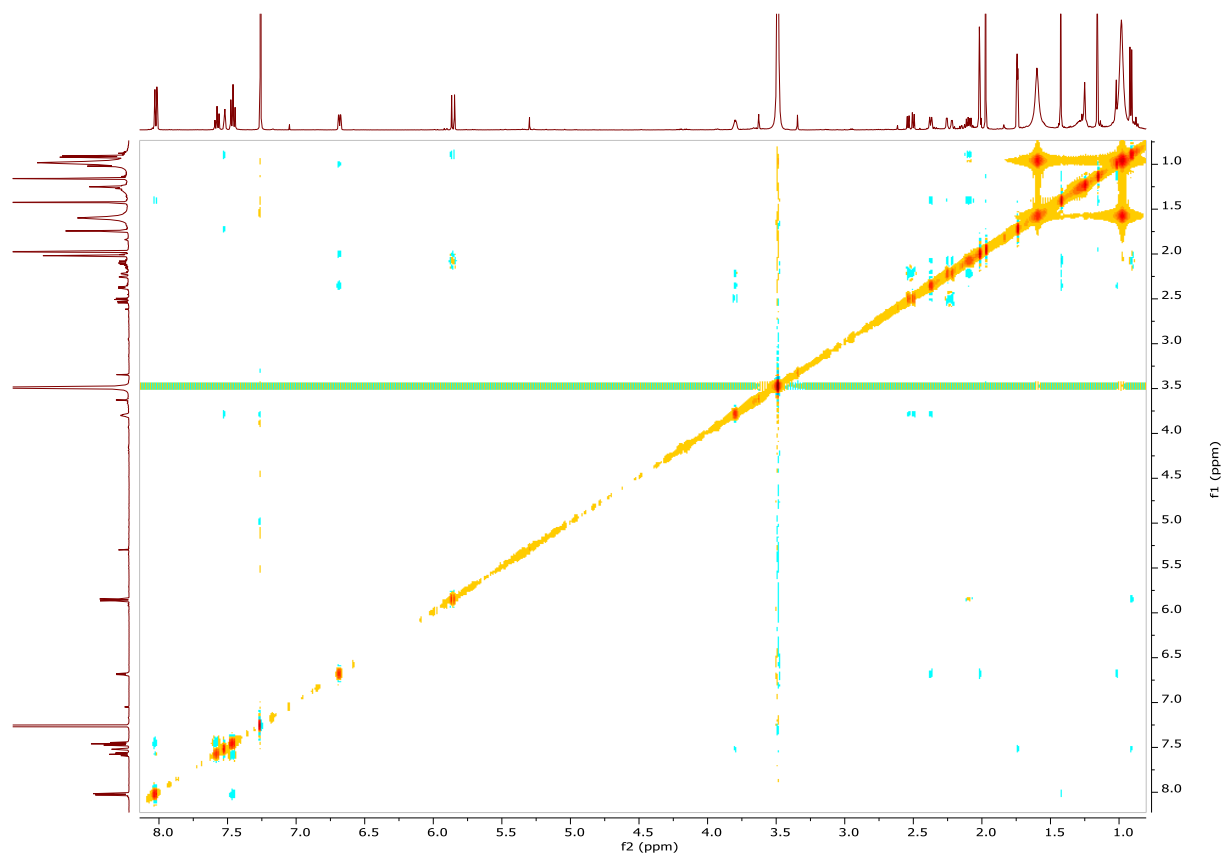
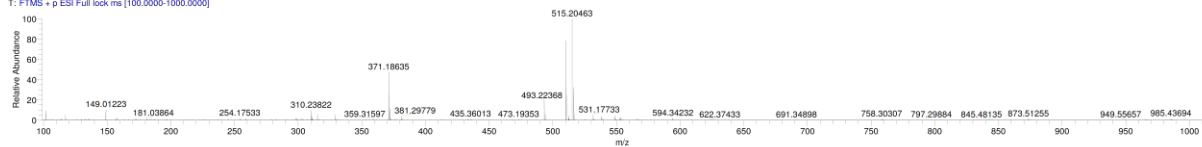
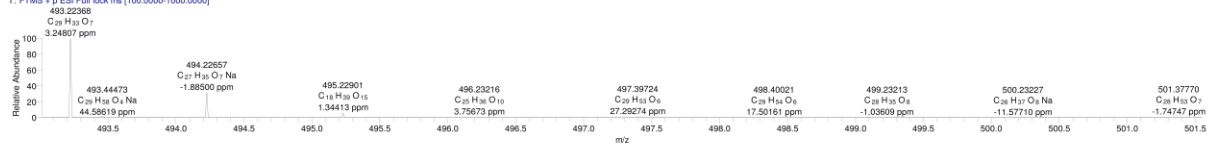
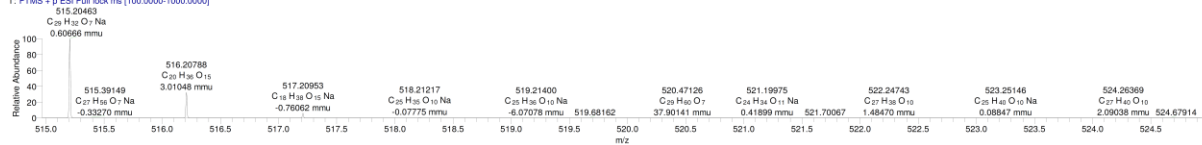
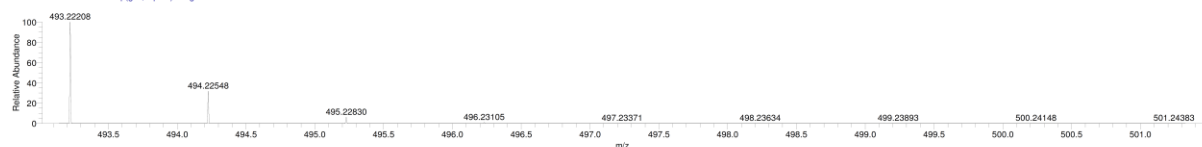


Figure S6. The NOESY spectrum of euphordraculoate C (**1**).

YC-20200917 #924-954 RT: 4.74-4.89 AV: 31 NL: 2.56E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #924-954 RT: 4.74-4.89 AV: 31 NL: 4.92E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #924-954 RT: 4.74-4.89 AV: 31 NL: 2.56E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C29H32O7 +H: C29 H33 O7 p(gss, s/p:40) Chrg 1R: 70...



C29H32O7 +Na: C29 H32 O7 Na1 p(gss, s/p:40) Chrg 1...

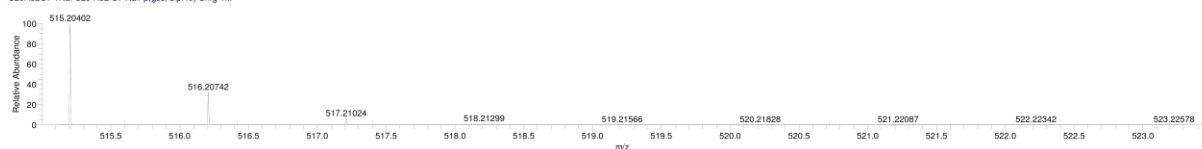


Figure S7. The HR-ESIMS spectra of euphordraculoate C (1).

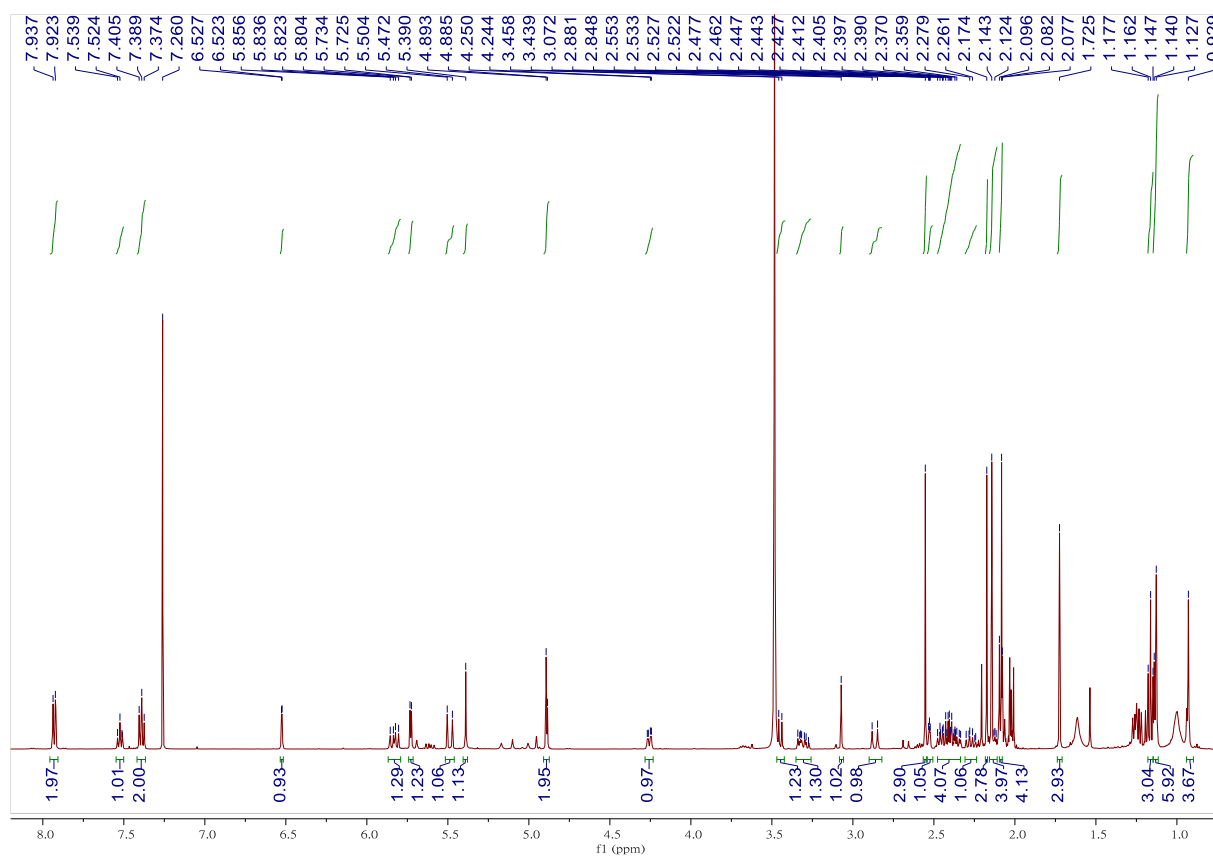


Figure S8. The ¹H-NMR spectrum of usambariphane A (2) (500 MHz, CDCl₃).

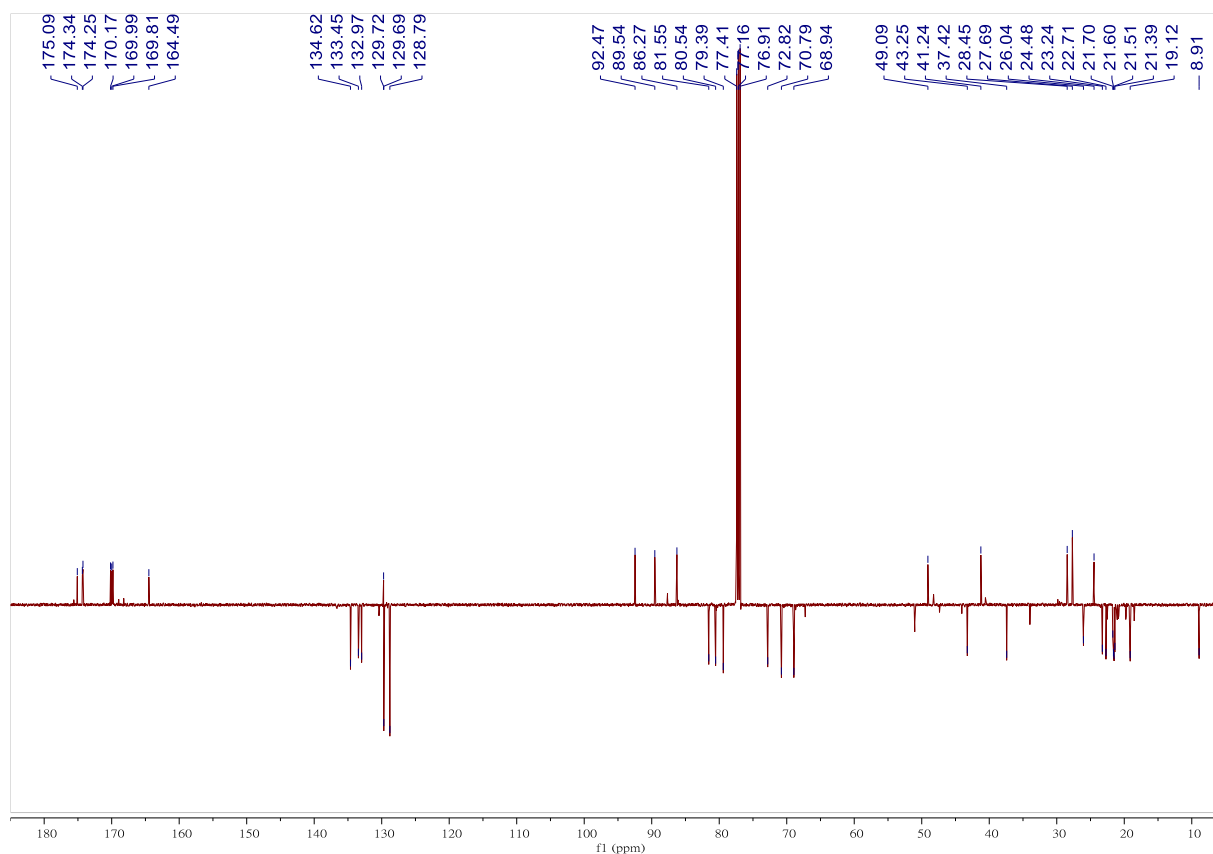


Figure S9. The ¹³C-JMOD spectrum of usambariphane A (2) (125 MHz, CDCl₃).

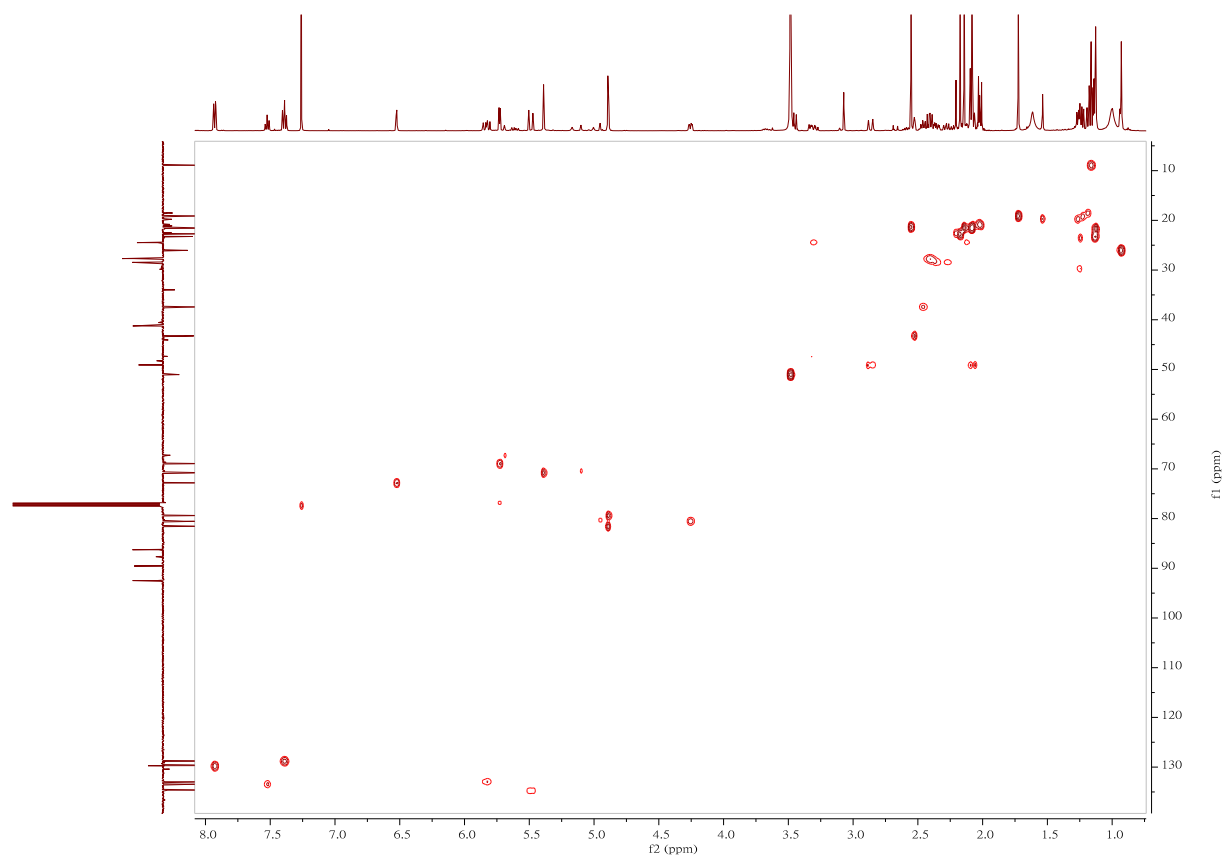


Figure S10. The HSQC spectrum of usambariphane A (2).

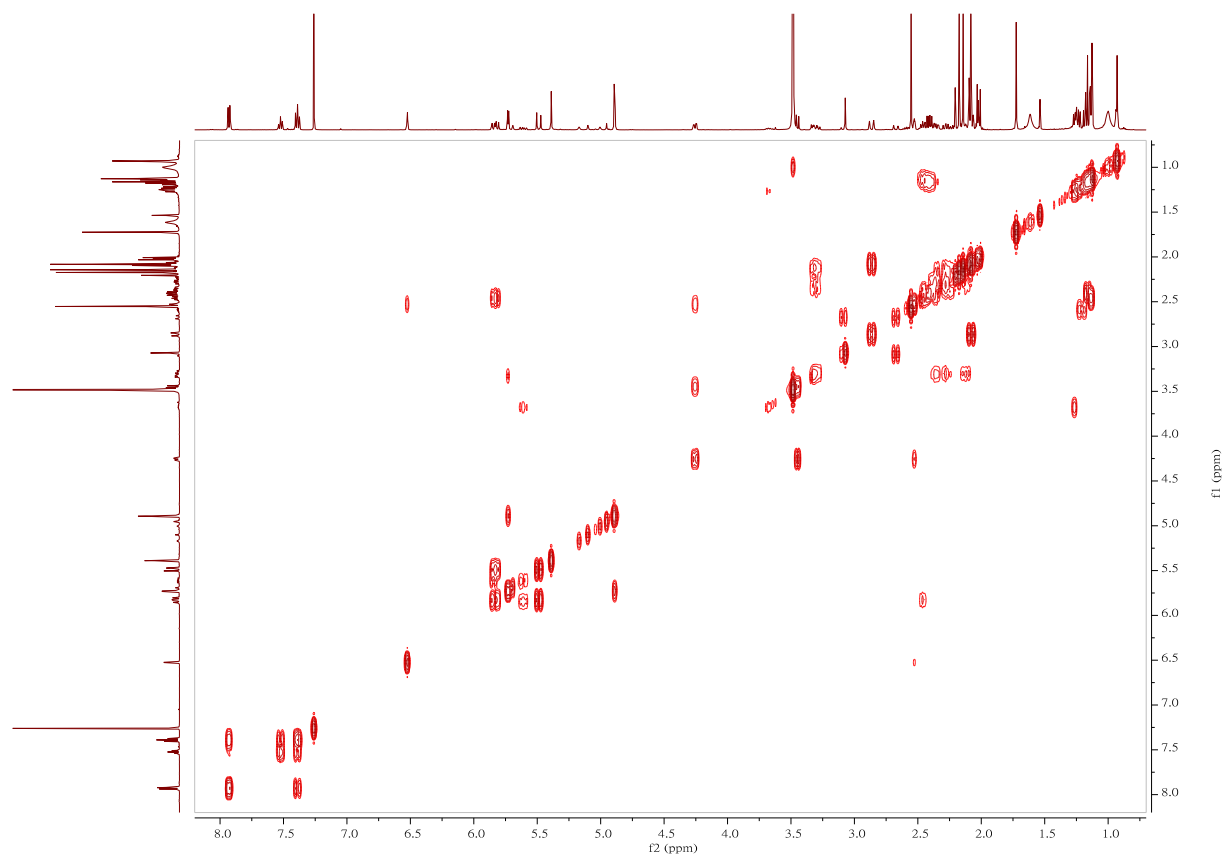


Figure S11. The ^1H - ^1H COSY spectrum of usambariphane A (2).

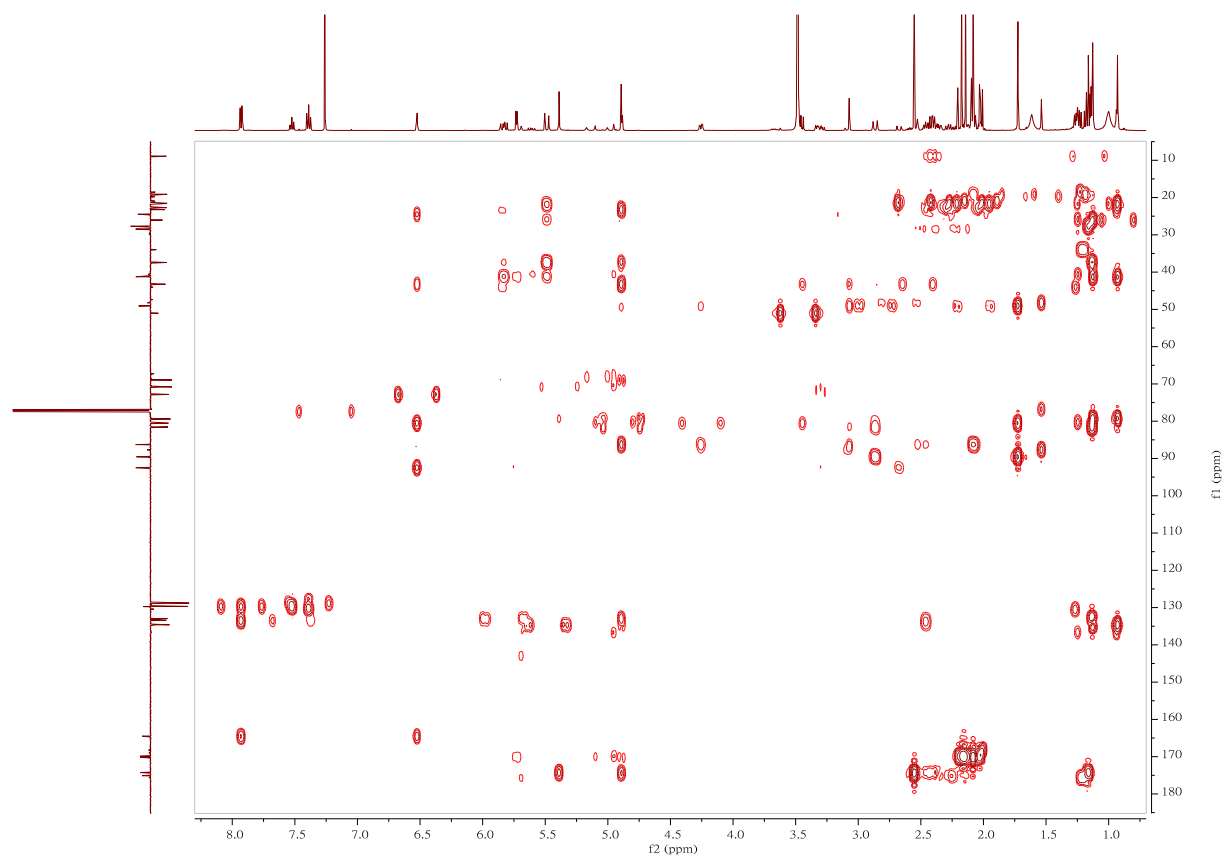


Figure S12. The HMBC spectrum of usambariphanes A (2).

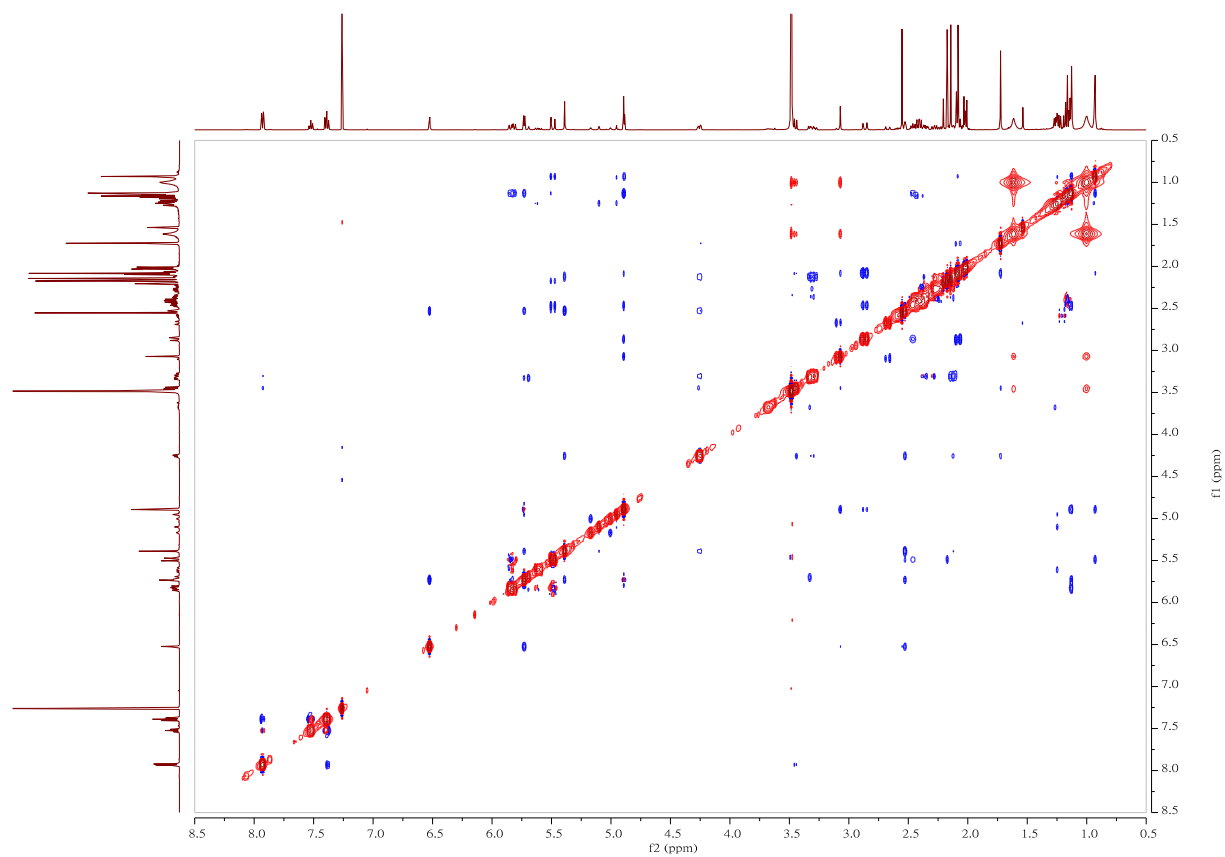
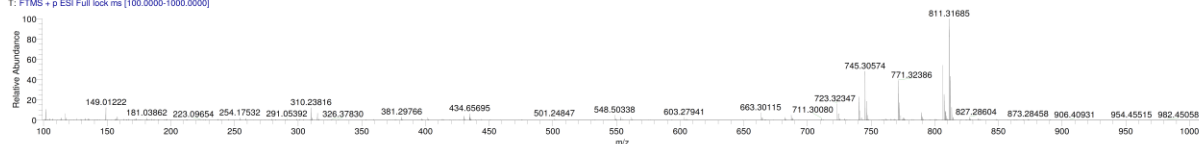
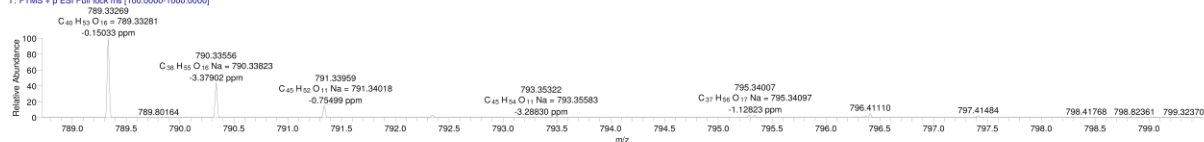
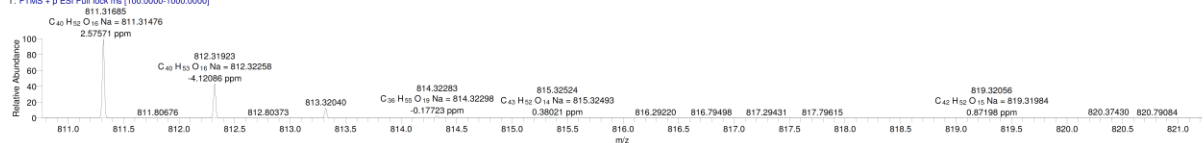
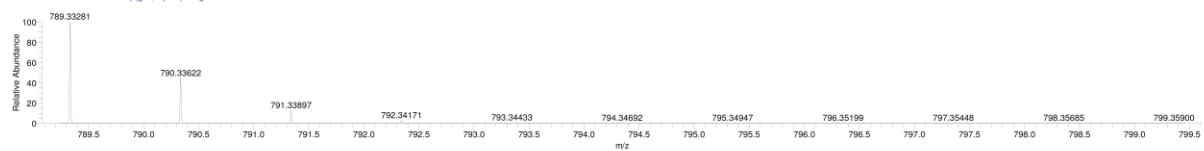


Figure S13. The NOESY spectrum of usambariphanes A (2).

YC-20200917 #1510-1540 RT: 7.75-7.91 AV: 31 NL: 1.67E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1510-1540 RT: 7.75-7.91 AV: 31 NL: 1.28E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1510-1540 RT: 7.75-7.91 AV: 31 NL: 1.67E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C40H52O16 +H: C40 H53 O16 p(gss, s/p:40) Chrg 1R: ...



C40H52O16 +Na: C40 H52 O16 Na1 p(gss, s/p:40) Chrg 1: ...

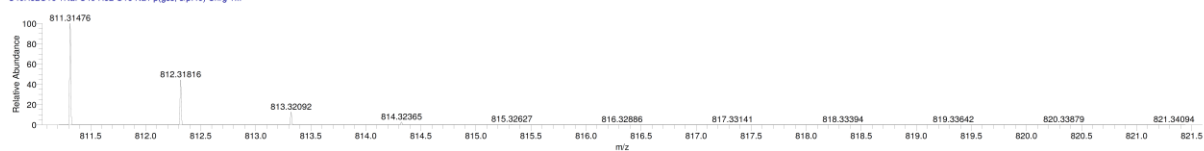


Figure S14. The HR-ESIMS spectra of usambariphane A (2).

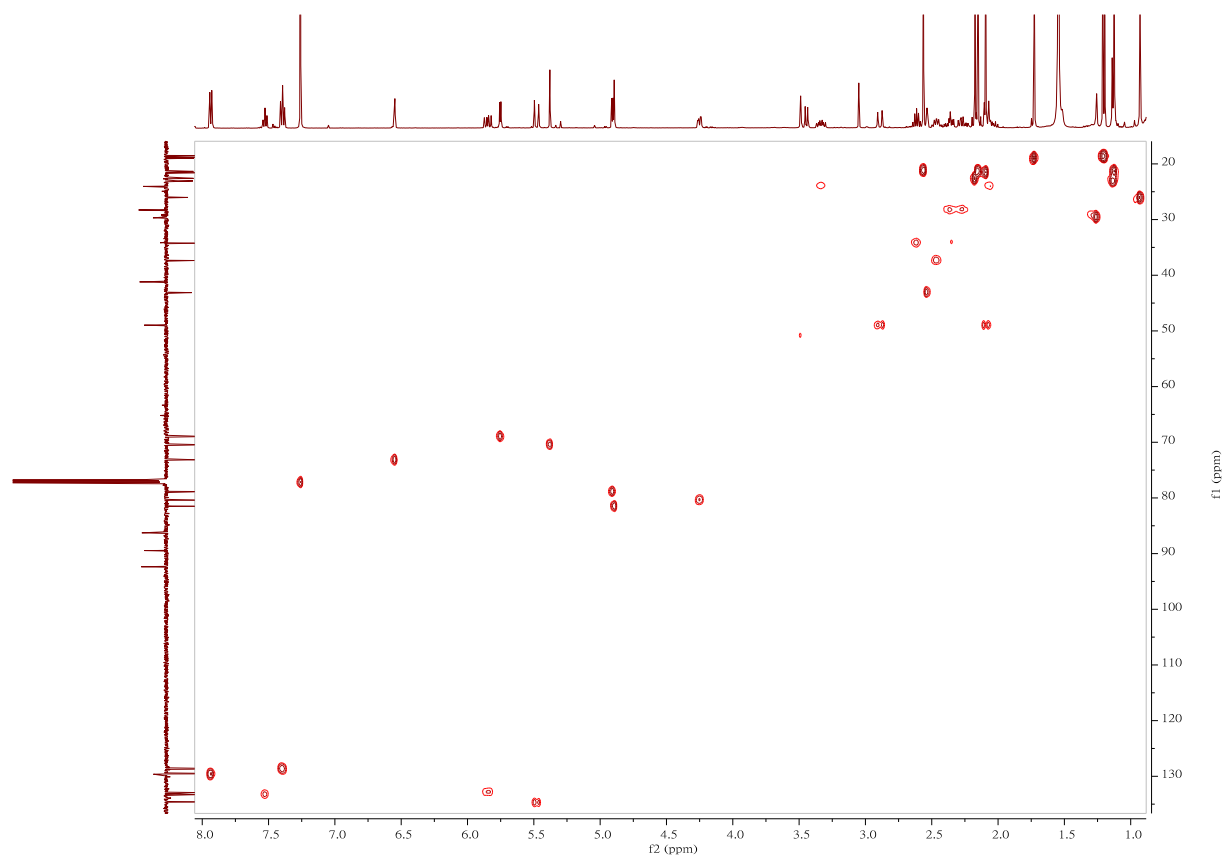


Figure S17. The HSQC spectrum of usambariphane B (3).

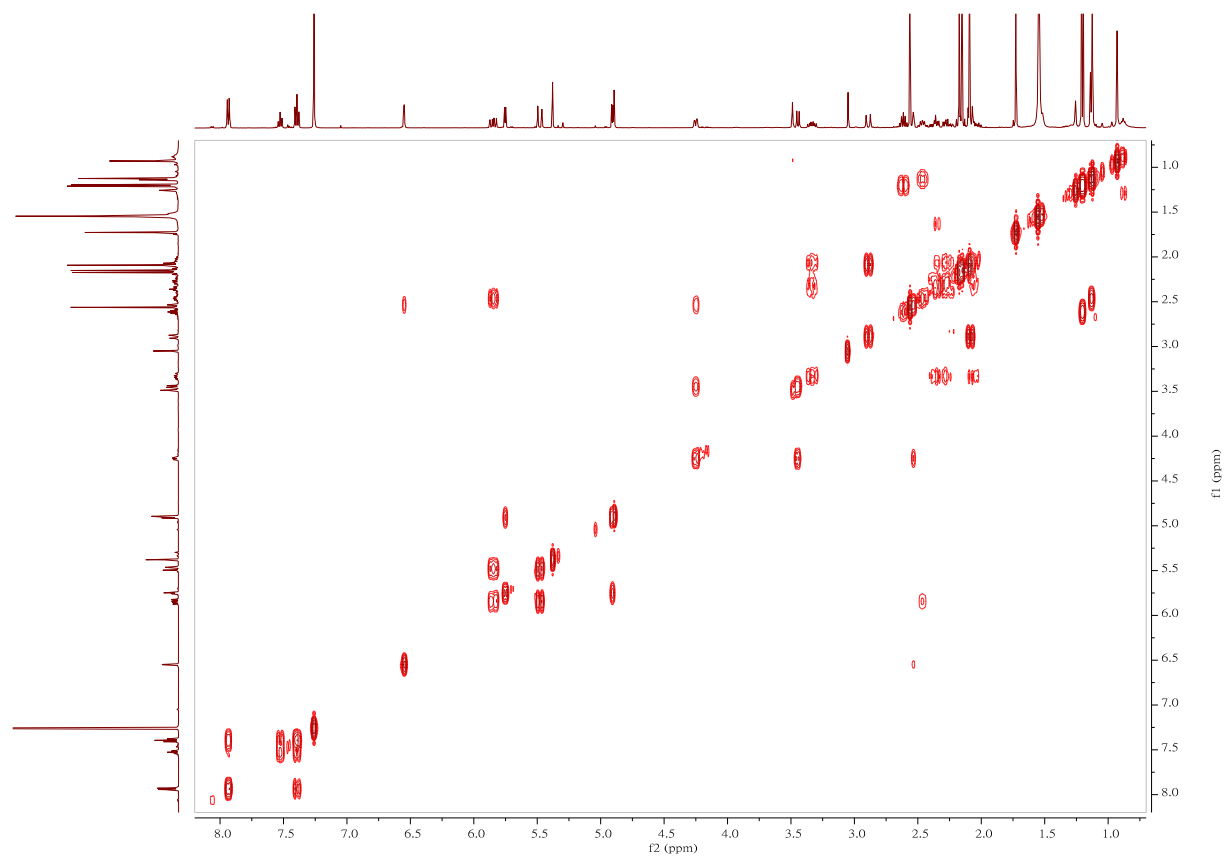


Figure S18. The ^1H - ^1H COSY spectrum of usambariphane B (3).

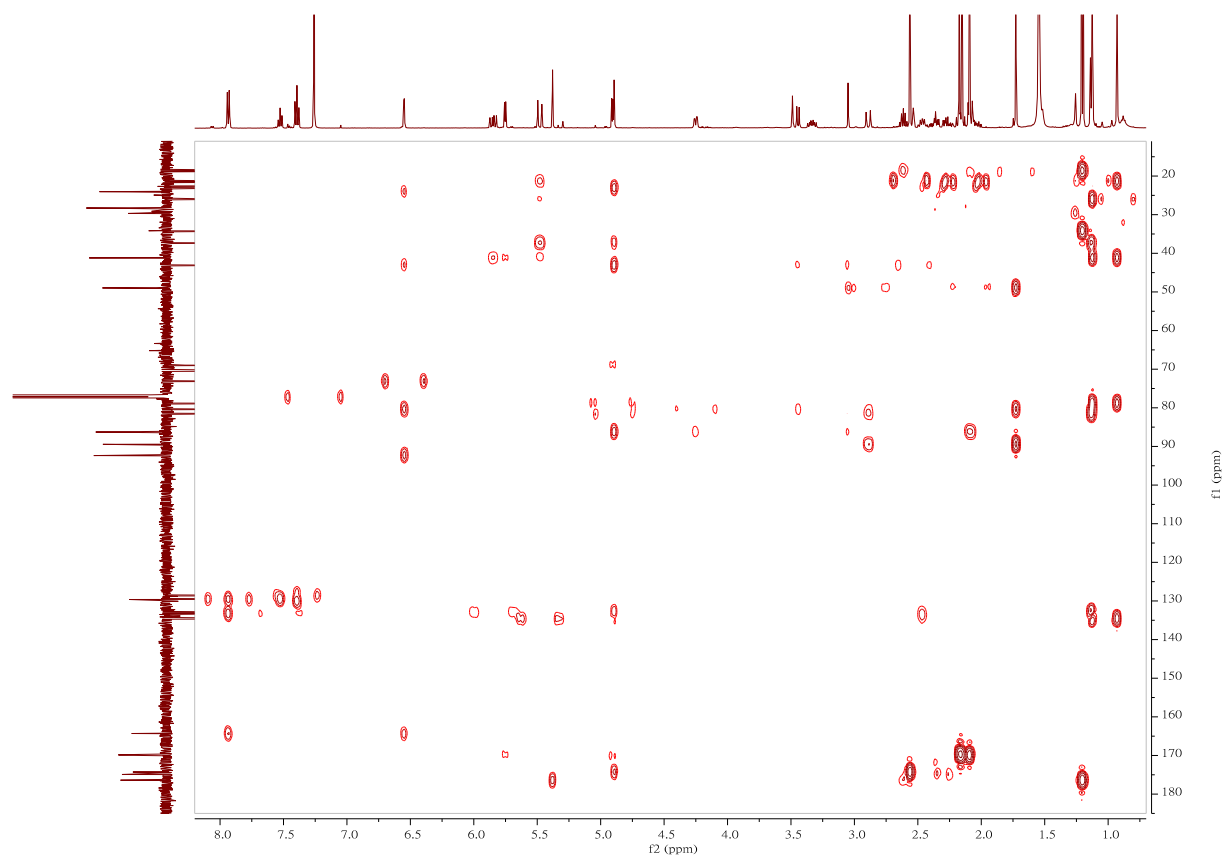


Figure S19. The HMBC spectrum of usambariphane B (**3**).

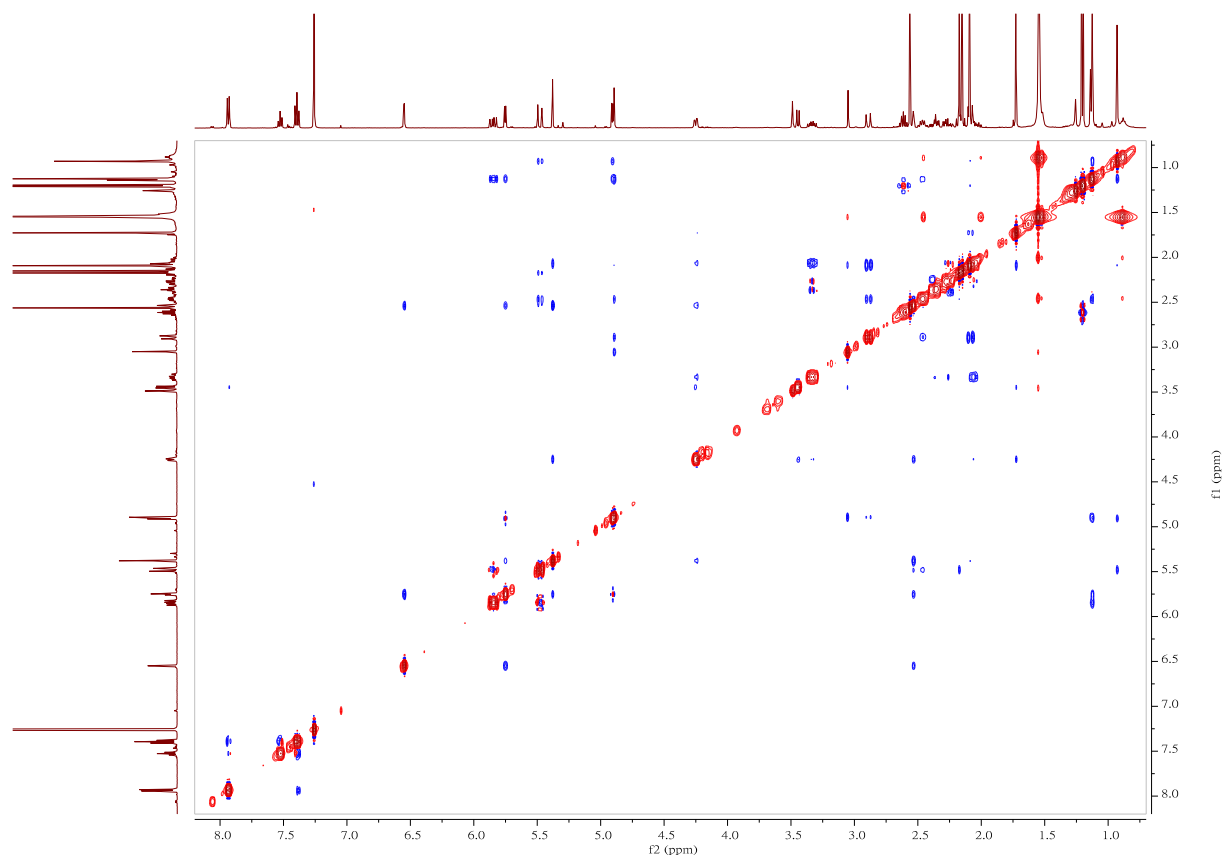
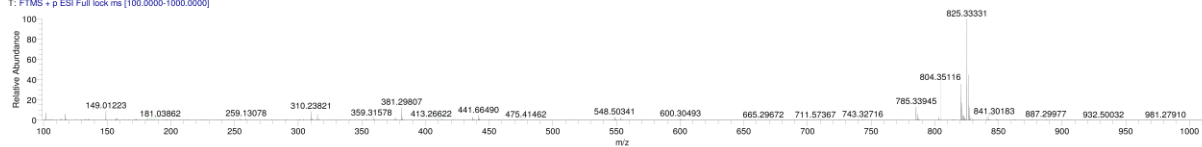
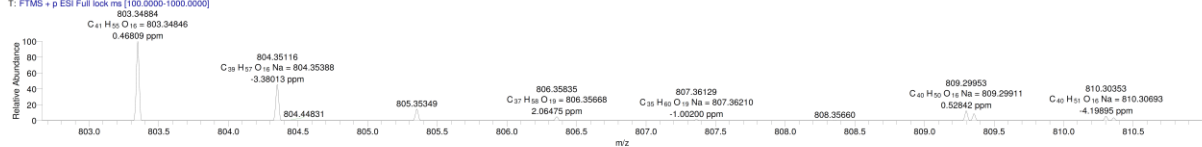
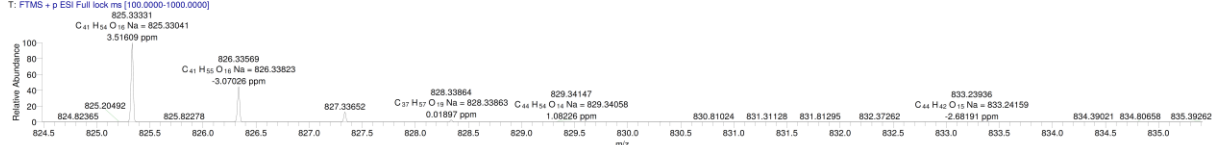
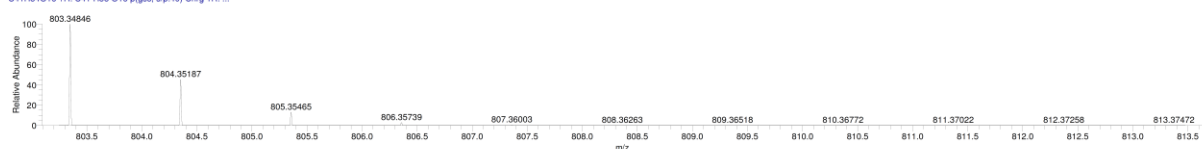


Figure S20. The NOESY spectrum of usambariphane B (**3**).

1-5, 11-14

YC-20200917 #4038-4064 RT: 20.74-20.87 AV: 27 NL: 2.64E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #4038-4064 RT: 20.74-20.87 AV: 27 NL: 7.31E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #4038-4064 RT: 20.74-20.87 AV: 27 NL: 2.64E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C41H54O16 +H: C41 H55 O16 p(gss, s/p:40) Chrg 1R: ...



C41H54O16 +Na: C41 H54 O16 Na1 p(gss, s/p:40) Chrg 1: ...

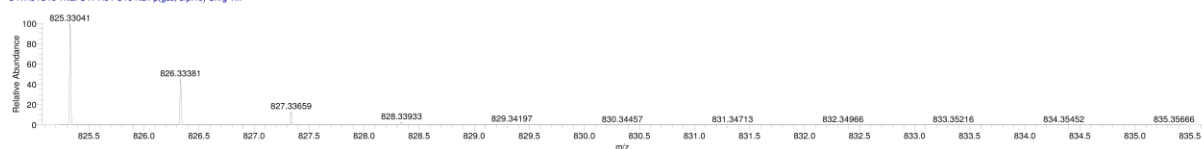


Figure S21. The HR-ESIMS spectra of usambariphane B (3).

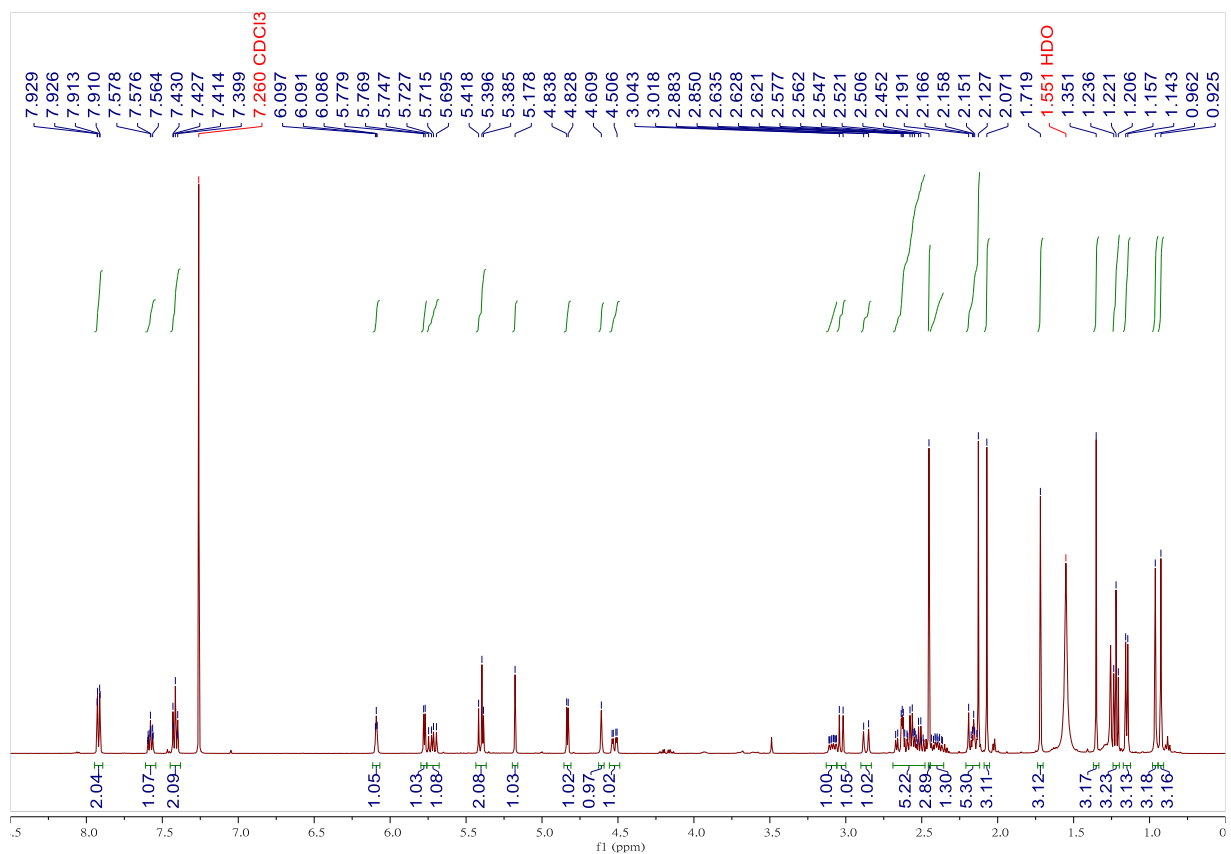


Figure S22. The ¹H-NMR spectrum of usambariphane C (**4**) (500 MHz, CDCl₃).

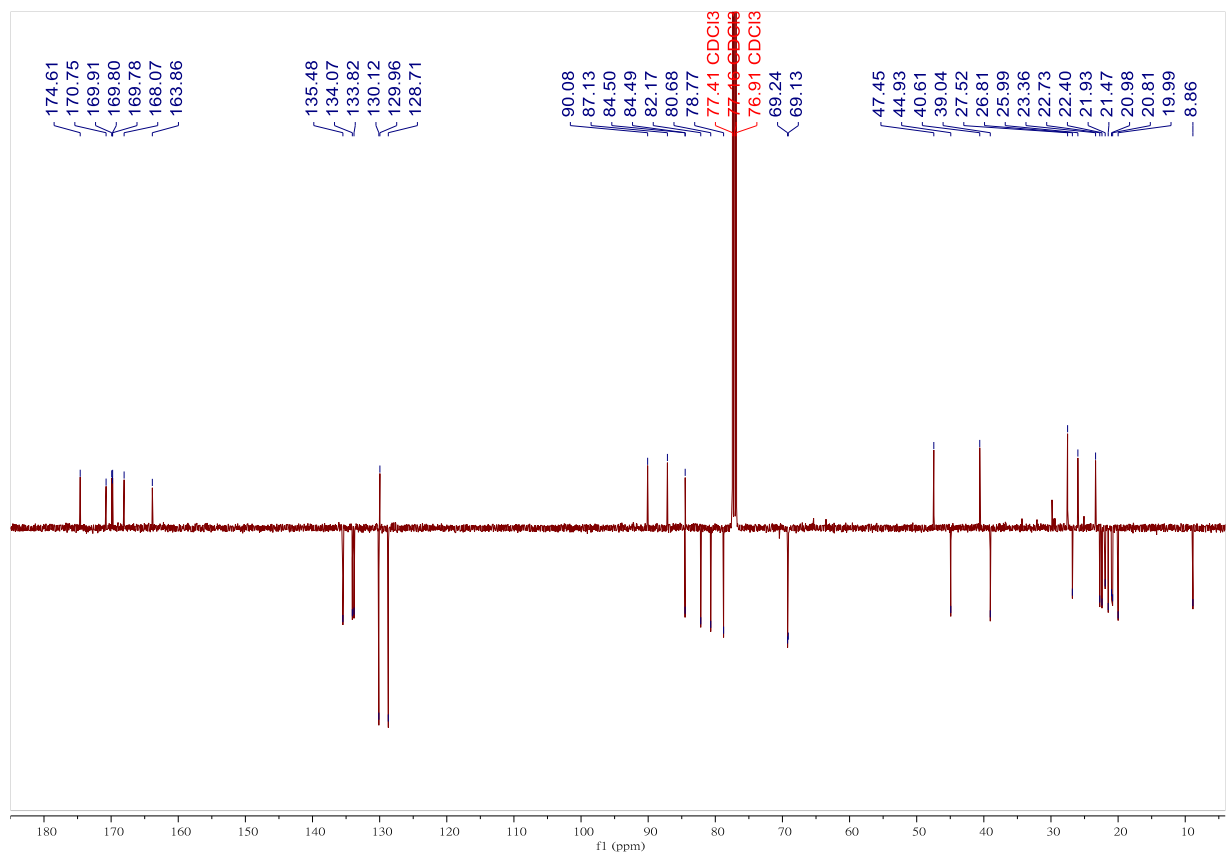


Figure S23. The ¹³C-JMOD spectrum of usambariphane C (**4**) (125 MHz, CDCl₃).

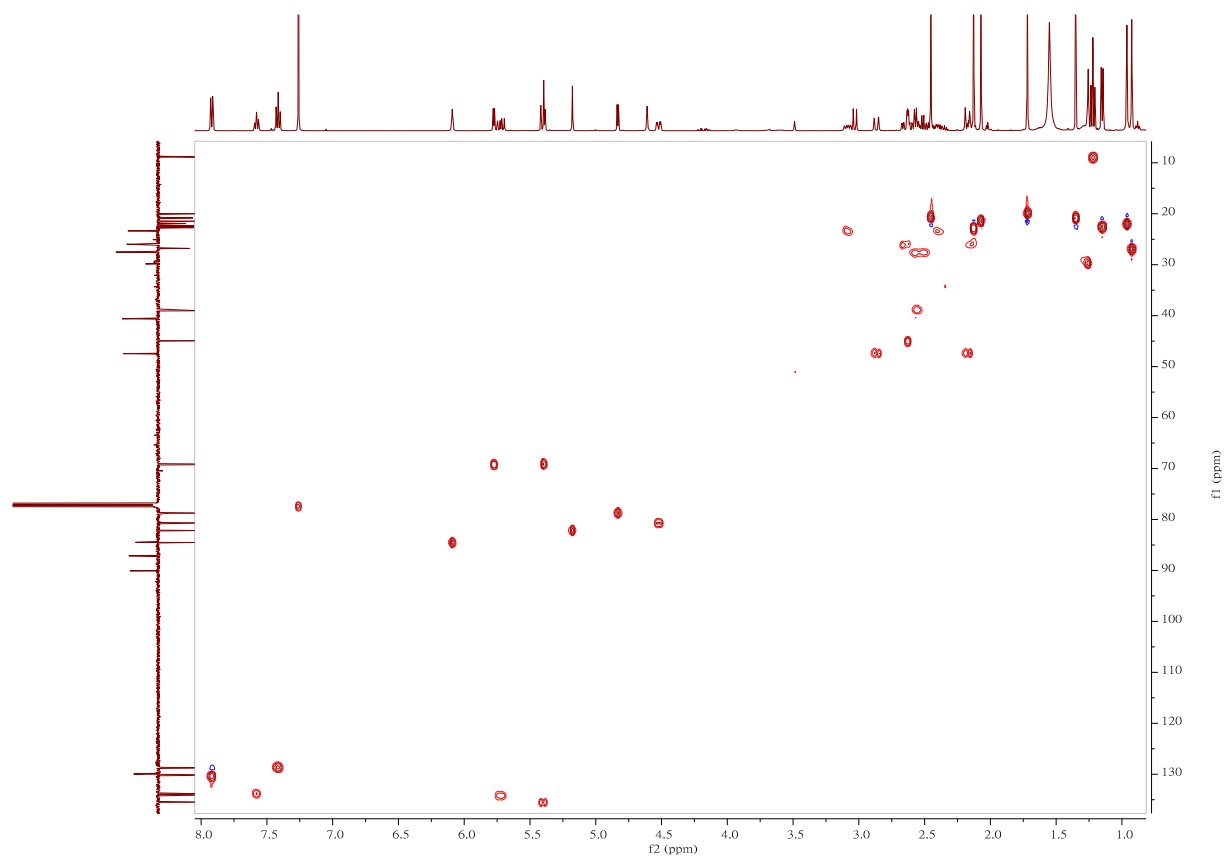


Figure S24. The HSQC spectrum of usambariphane C (**4**).

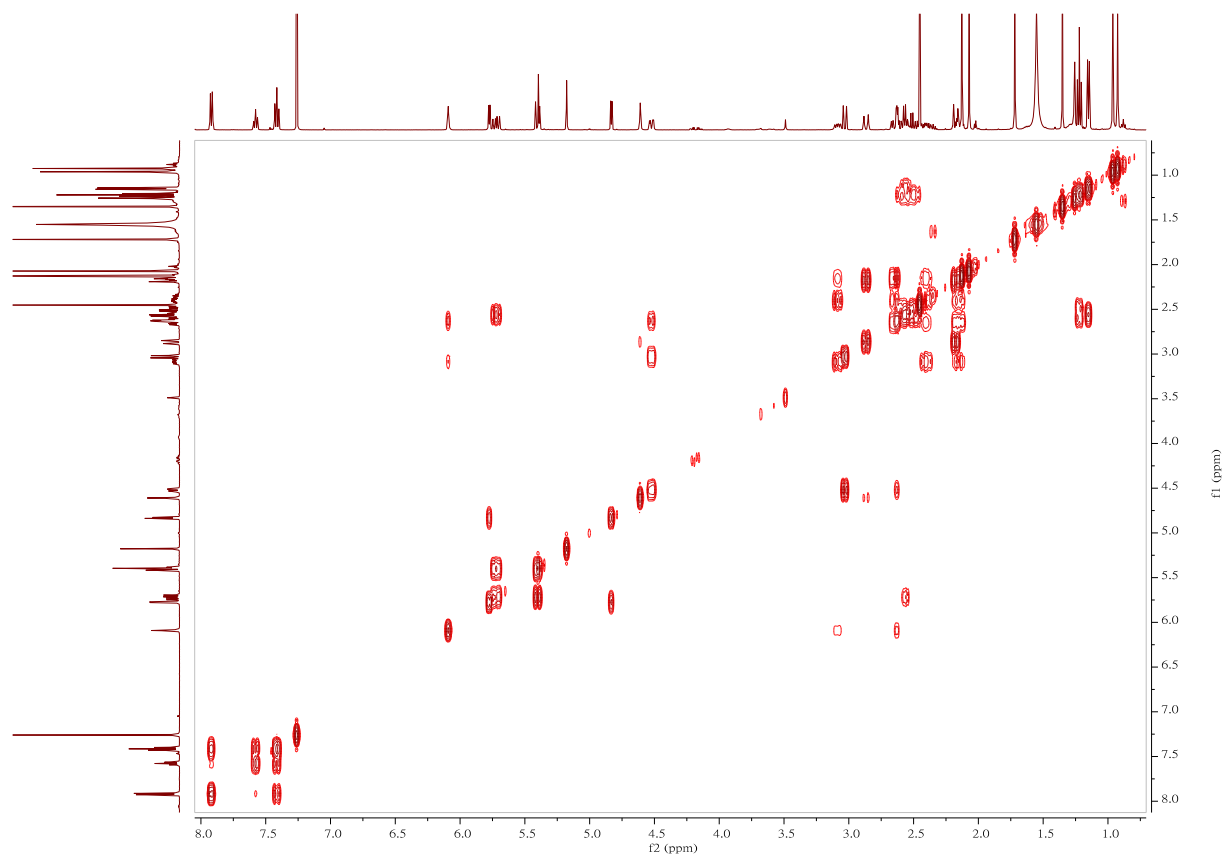


Figure S25. The ^1H - ^1H COSY spectrum of usambariphane C (**4**).

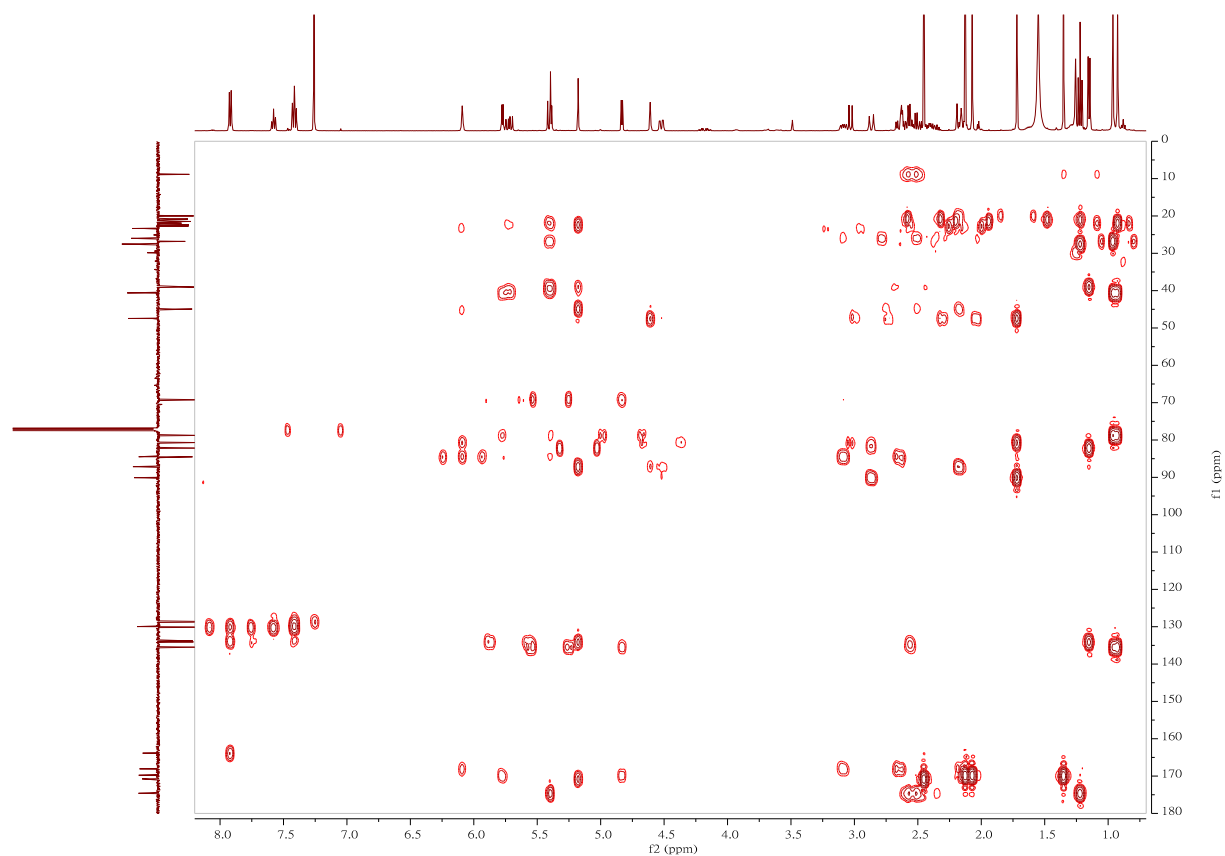


Figure S26. The HMBC spectrum of usambariphane C (4).

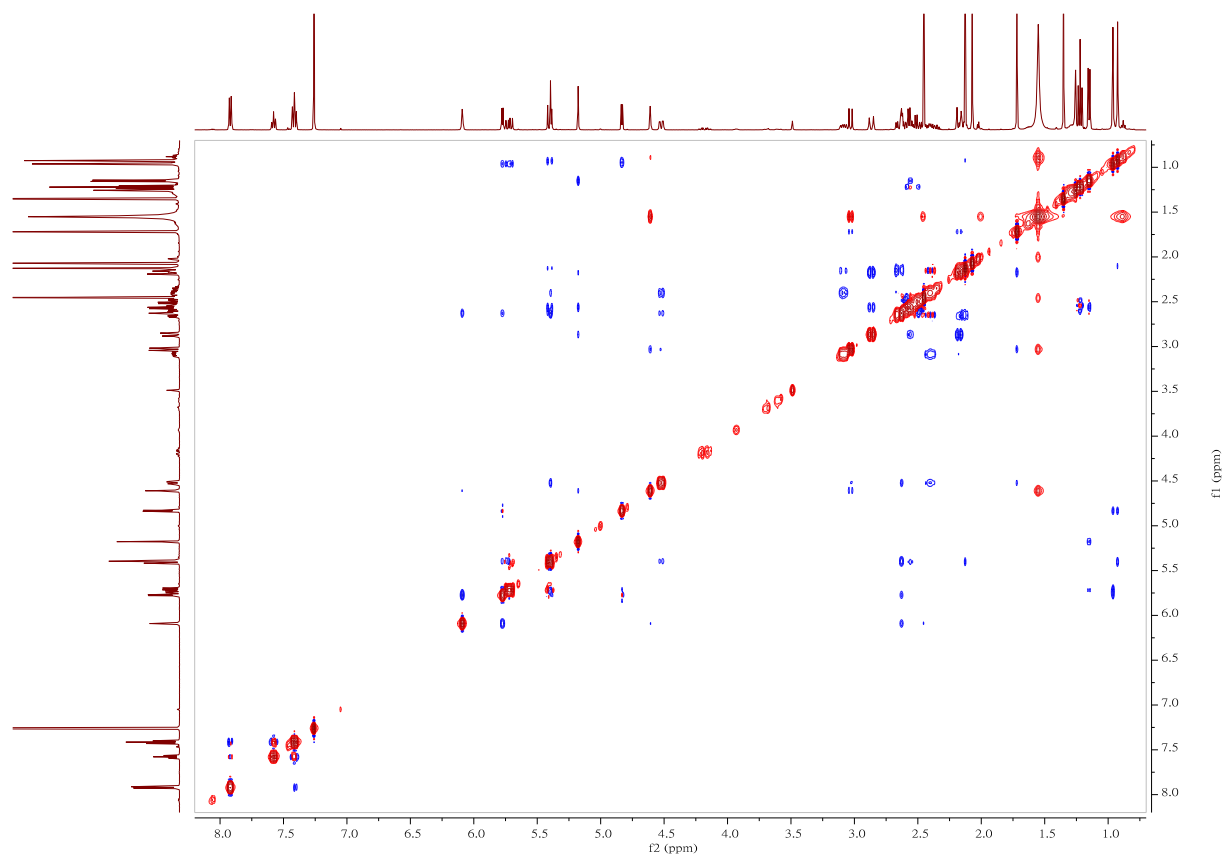
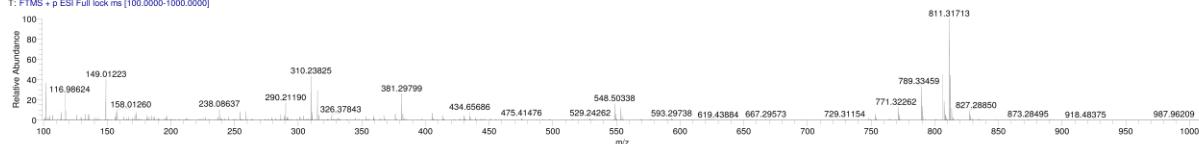
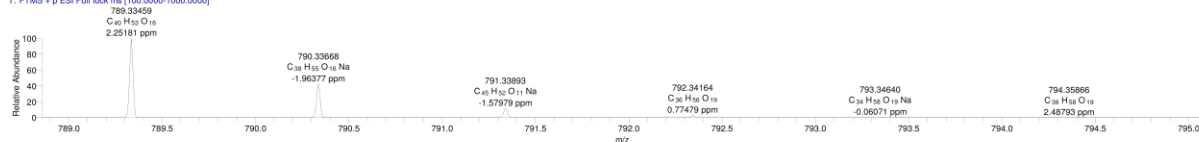
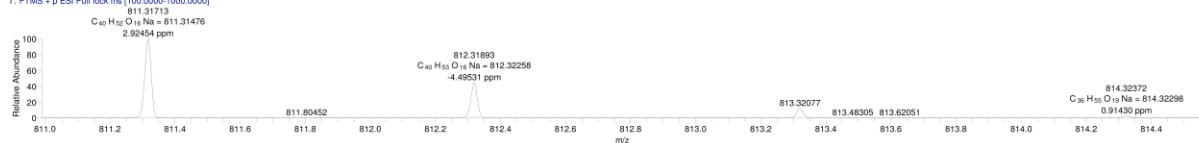
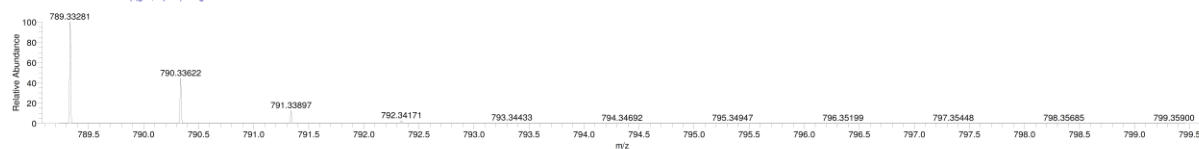


Figure S27. The NOESY spectrum of usambariphane C (4).

YC-20200917 #3798-3846 RT: 19.51-19.76 AV: 49 NL: 6.52E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3798-3846 RT: 19.51-19.76 AV: 49 NL: 2.17E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3798-3846 RT: 19.51-19.76 AV: 49 NL: 6.52E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C40H52O16 +H: C40 H53 O16 p(gss, s/p:40) Chrg 1R: ...



C40H52O16 +Na: C40 H52 O16 Na1 p(gss, s/p:40) Chrg 1R: ...

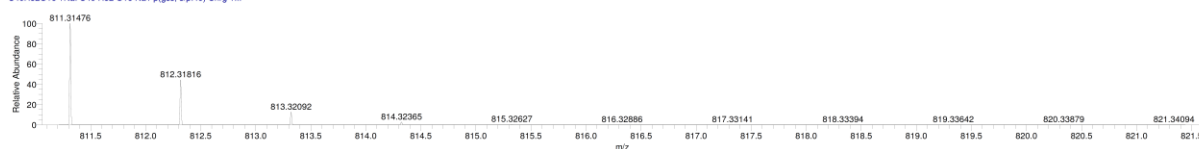


Figure S28. The HR-ESIMS spectra of usambariphane C (4).

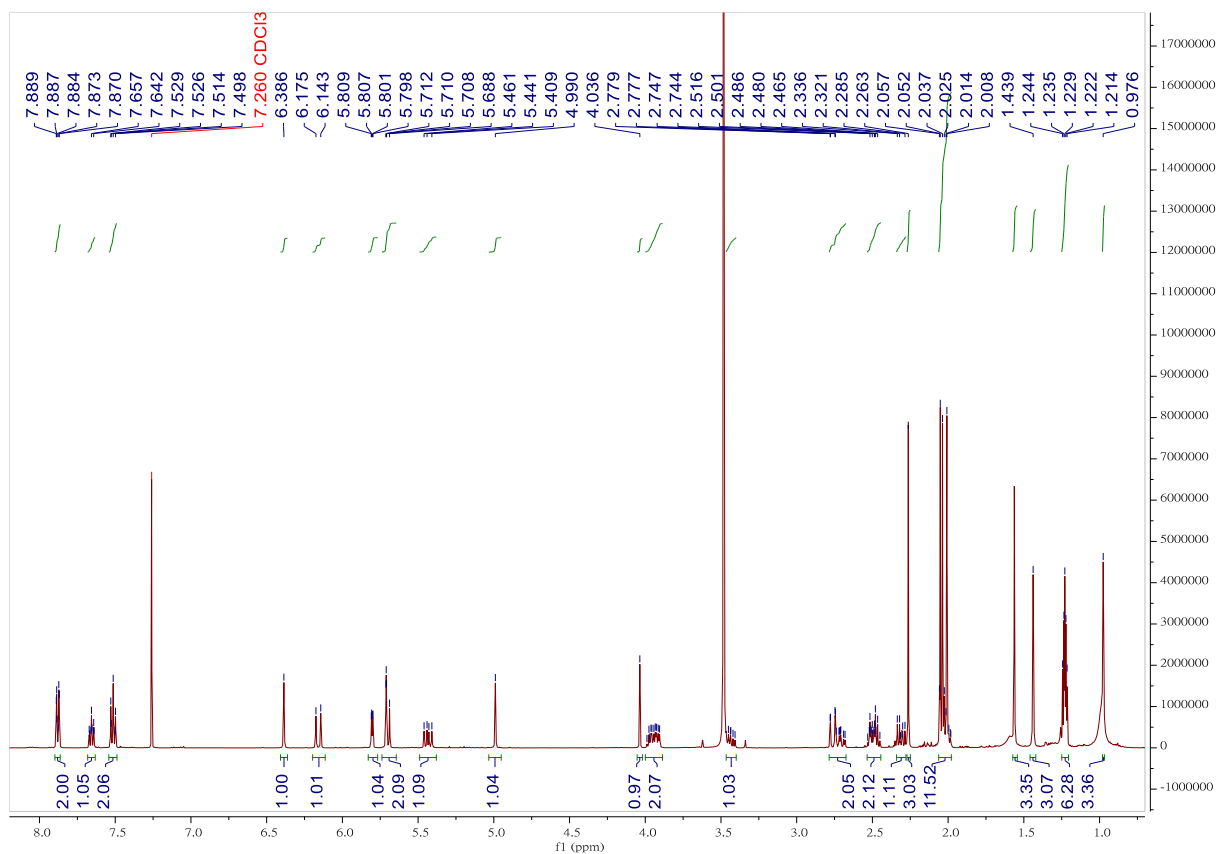


Figure S29. The ¹H-NMR spectrum of usambariphane D (5) (500 MHz, CDCl₃).

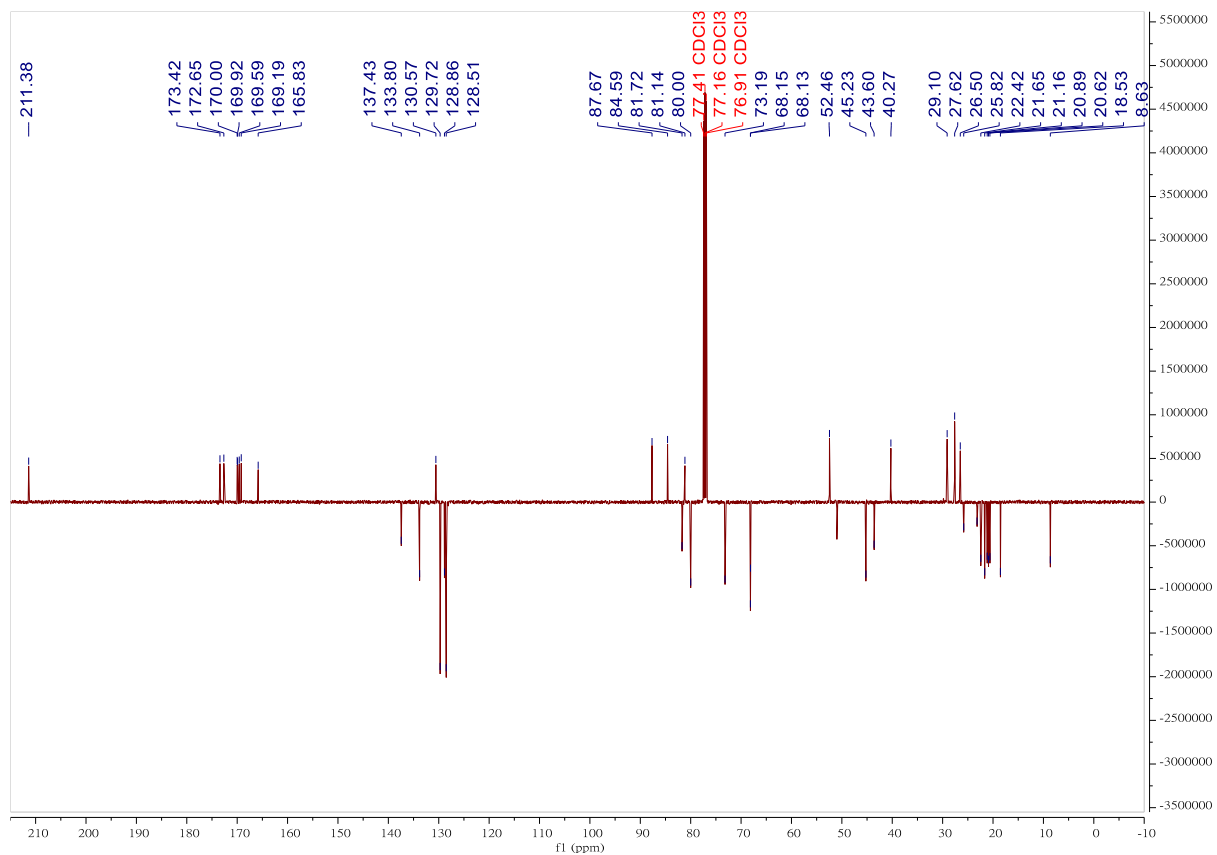


Figure S30. The ¹³C-JMOD spectrum of usambariphane D (5) (125 MHz, CDCl₃).

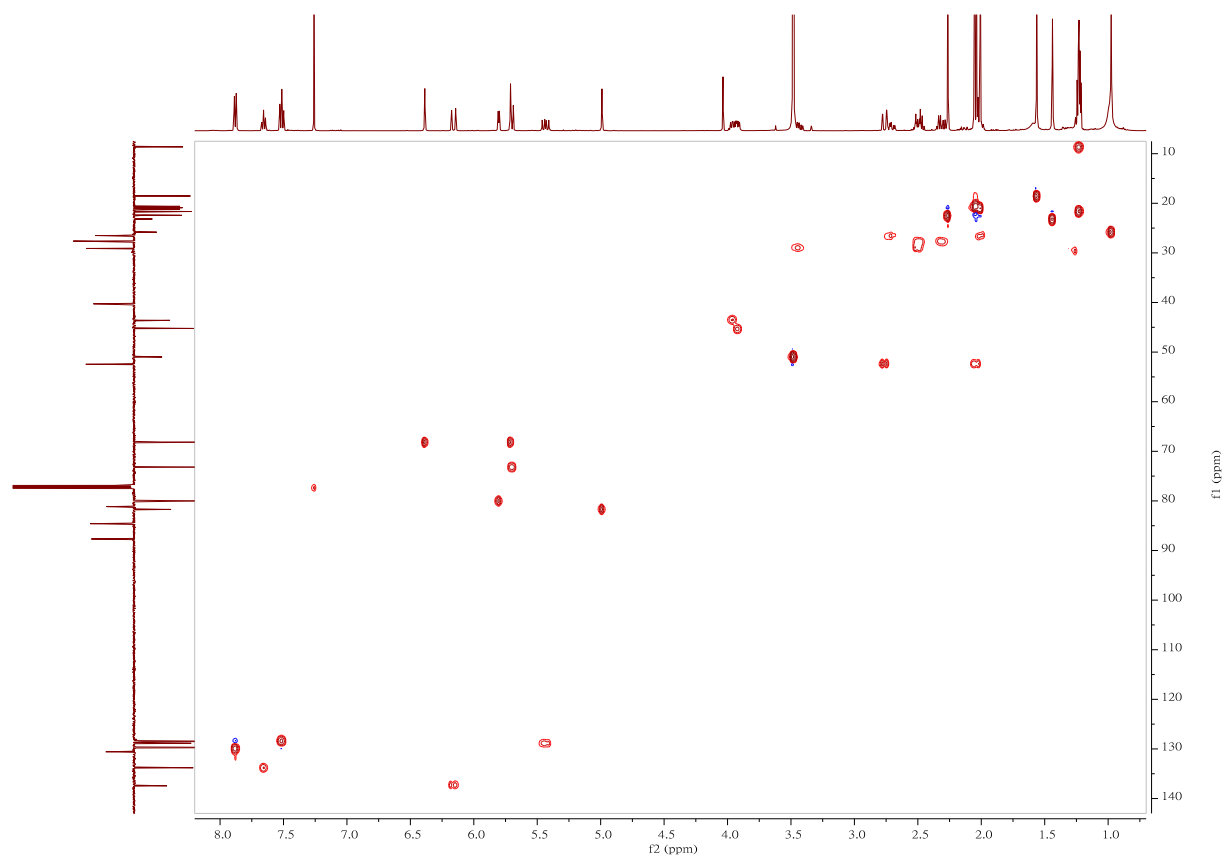


Figure S31. The HSQC spectrum of usambariphane D (5).

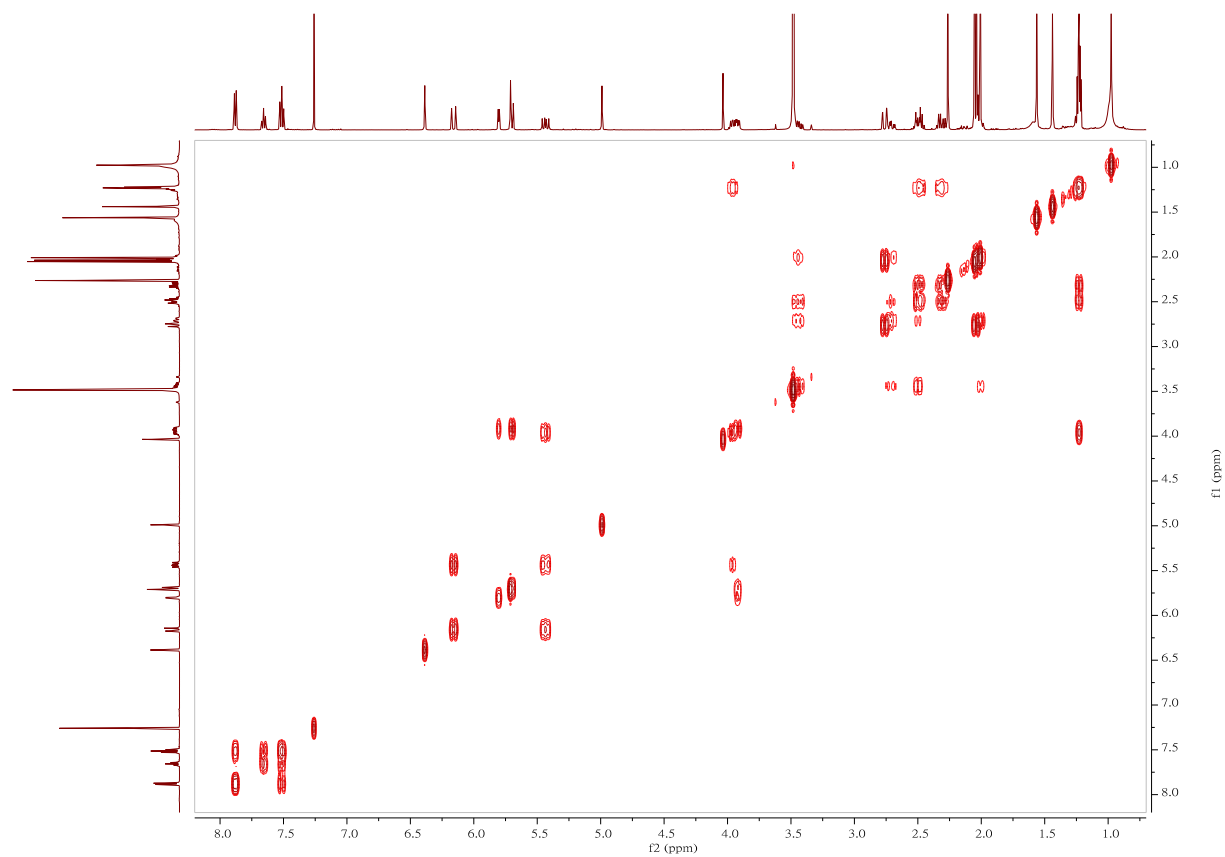


Figure S32. The ^1H - ^1H COSY spectrum of usambariphane D (5).

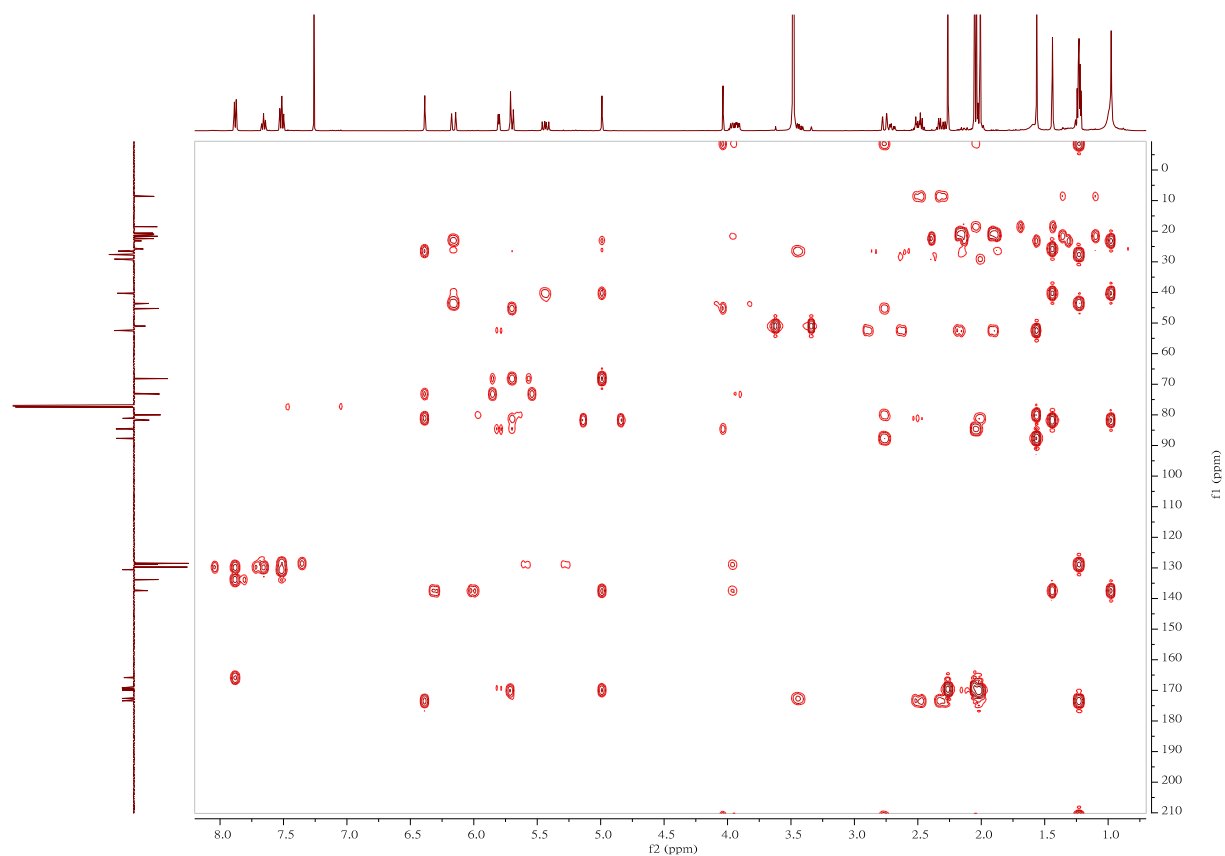


Figure S33. The HMBC spectrum of usambariphane D (5).

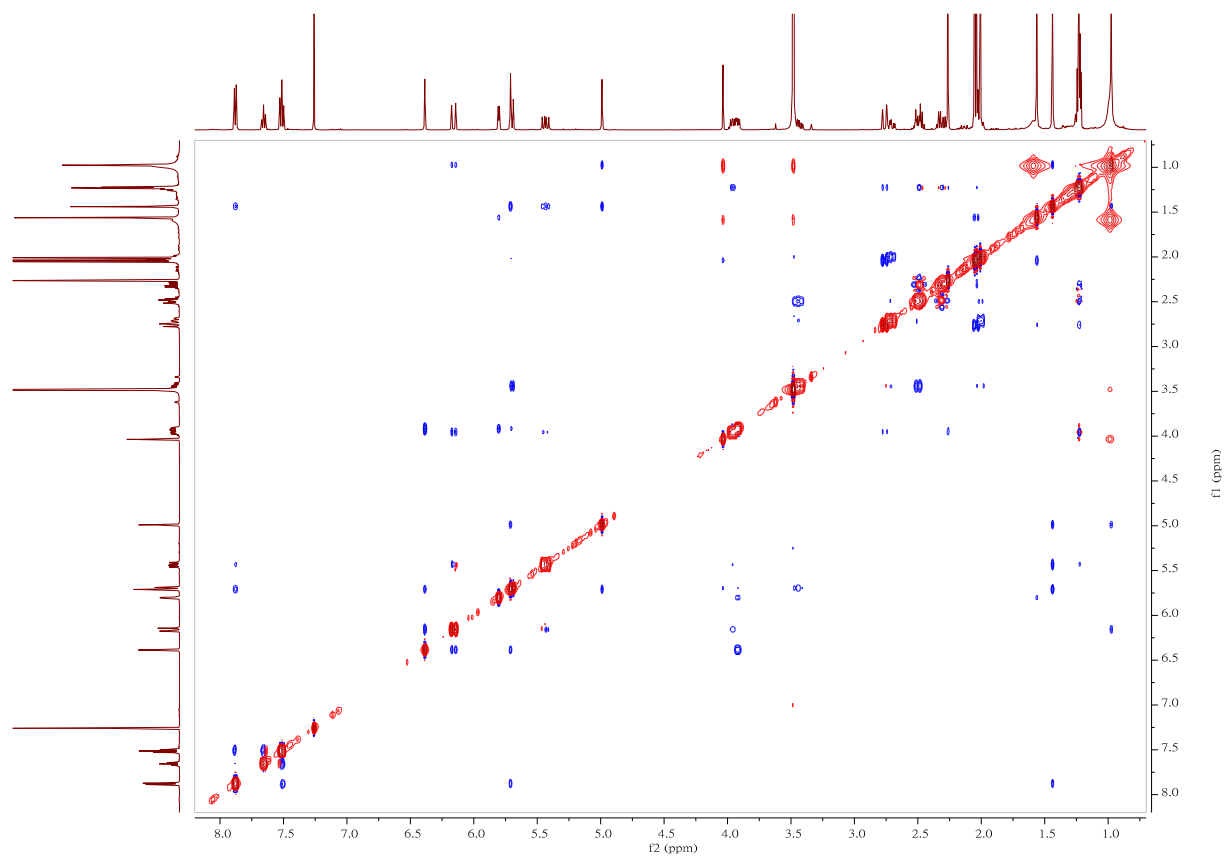
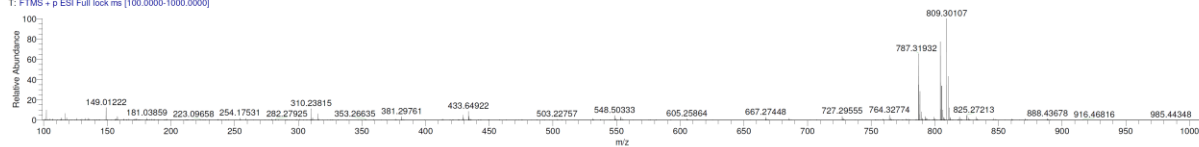
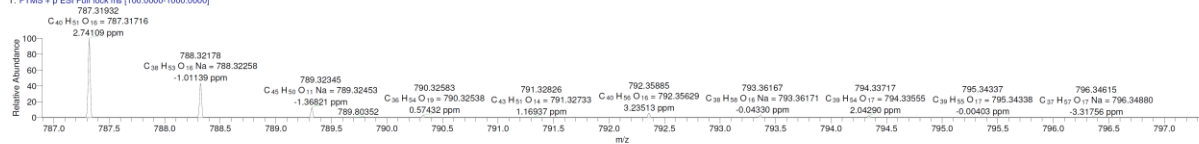
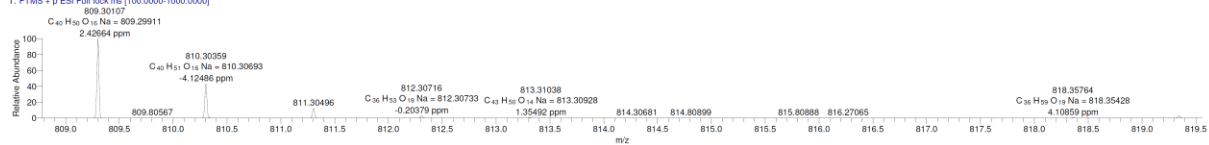
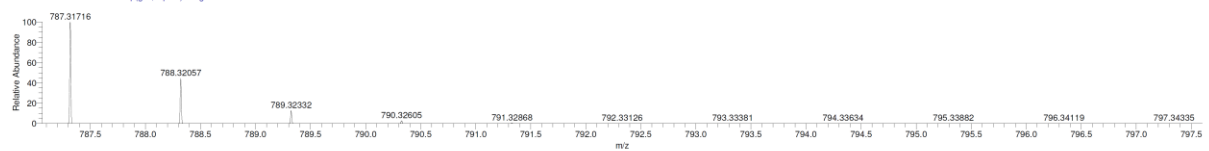


Figure S34. The NOESY spectrum of usambariphane D (5).

YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.66E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.09E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.66E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C40H50O16 +H: C40 H51 O16 p16s, s/p:40 Chrg 1R: ...



C40H50O16 +Na: C40 H50 O16 Na1 p16s, s/p:40 Chrg 1...

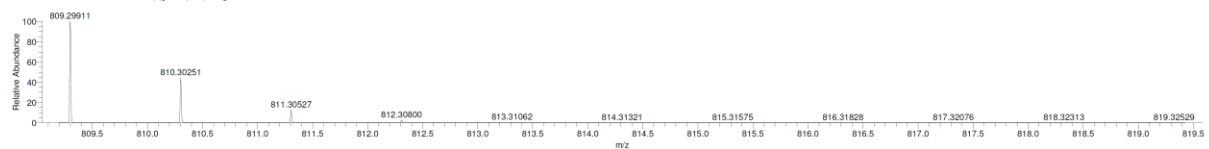


Figure S35. The HR-ESI-MS spectra of usambariphane D (5).

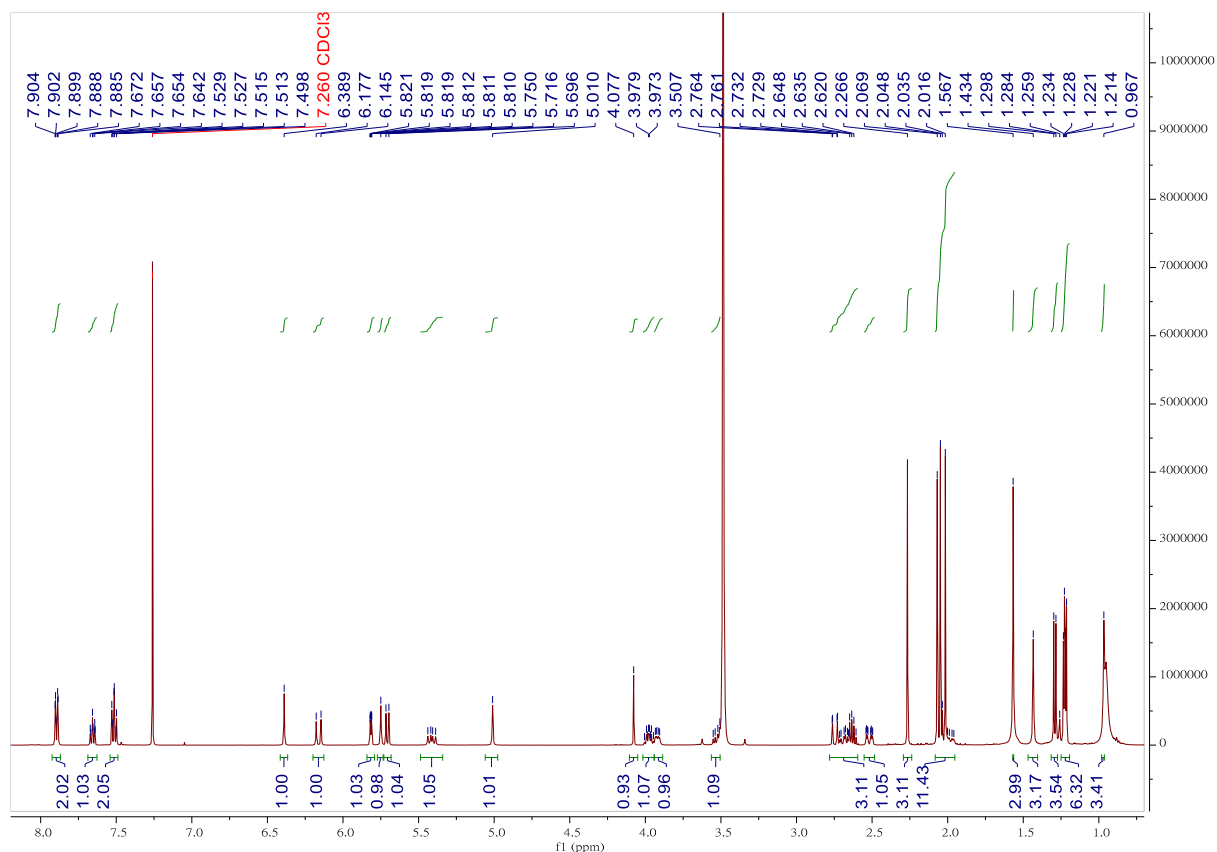


Figure S36. The ¹H-NMR spectrum of usambariphane E (6) (500 MHz, CDCl₃).

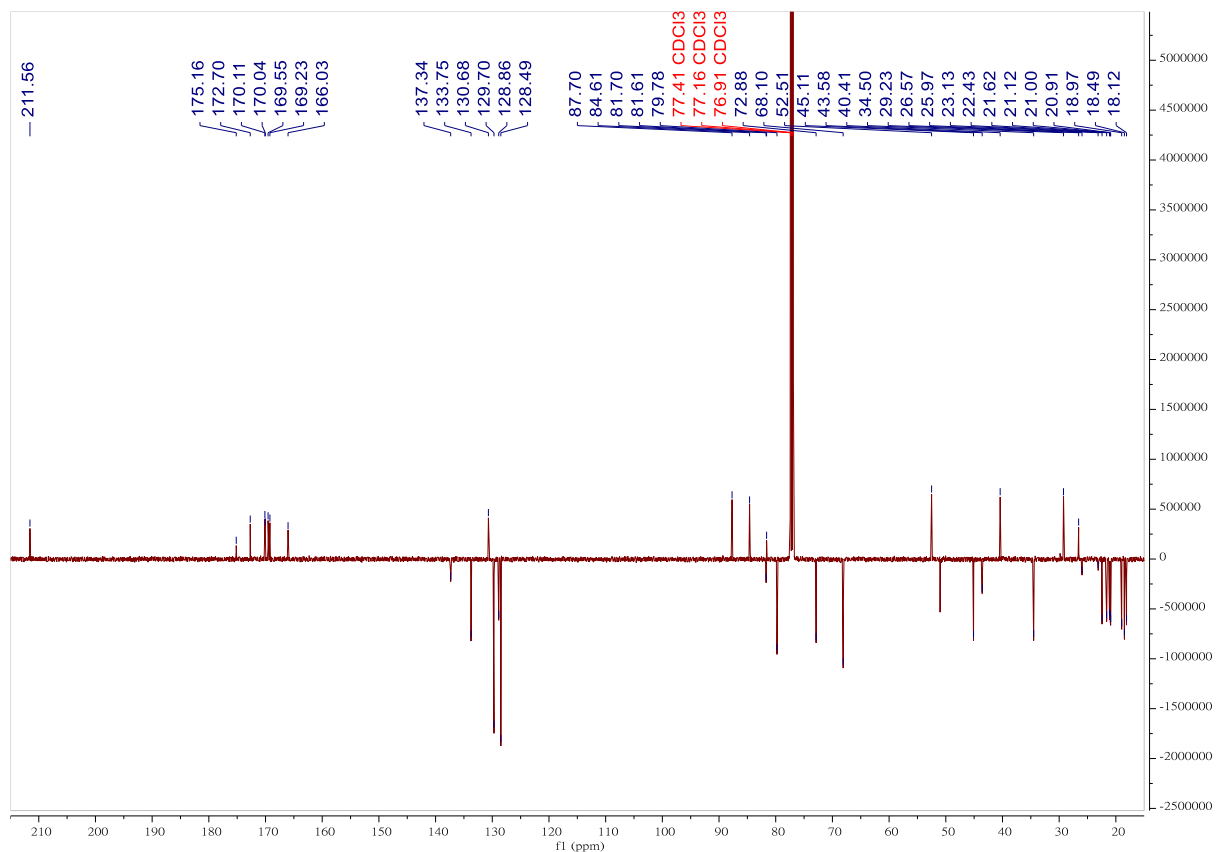


Figure S37. The ¹³C-JMOD spectrum of usambariphane E (6) (125 MHz, CDCl₃).

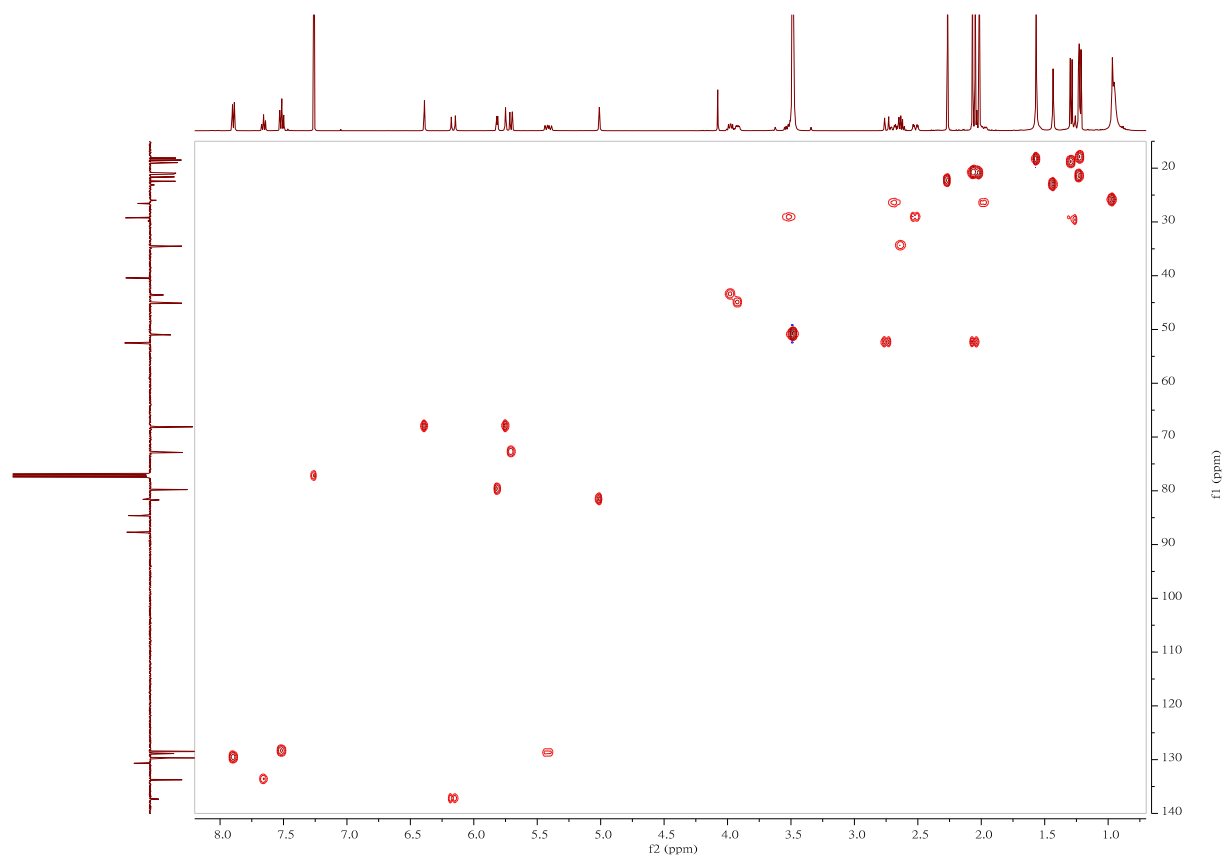


Figure S38. The HSQC spectrum of usambariphane E (**6**).

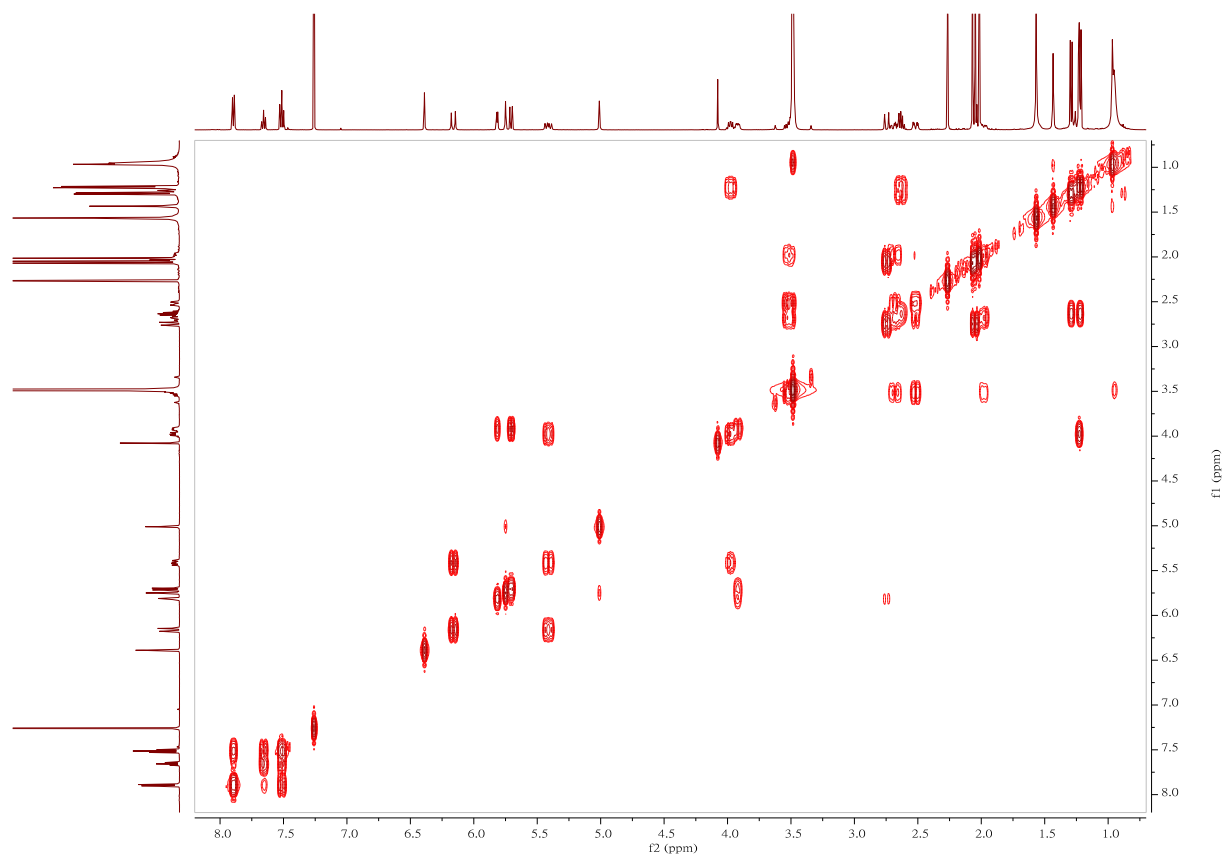


Figure S39. The ^1H - ^1H COSY spectrum of usambariphane E (**6**).

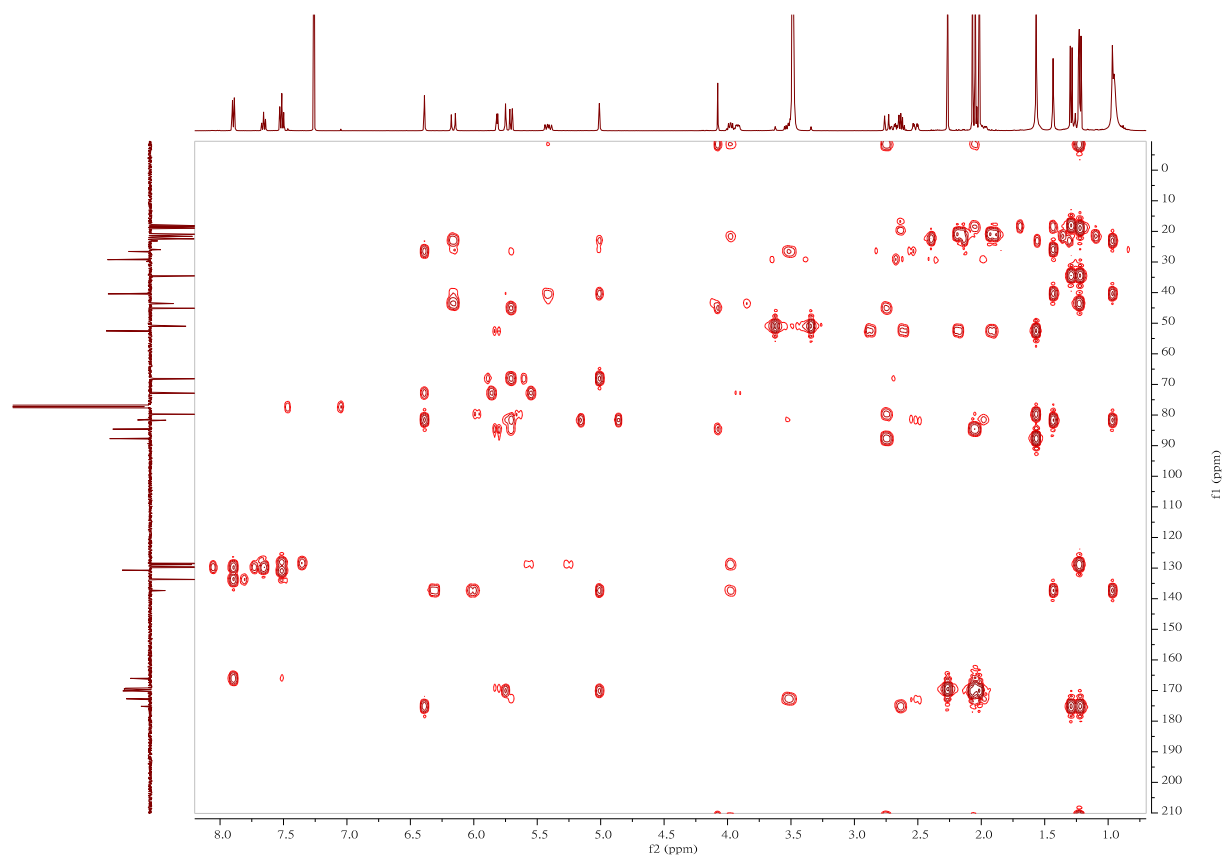


Figure S40. The HMBC spectrum of usambariphane E (**6**).

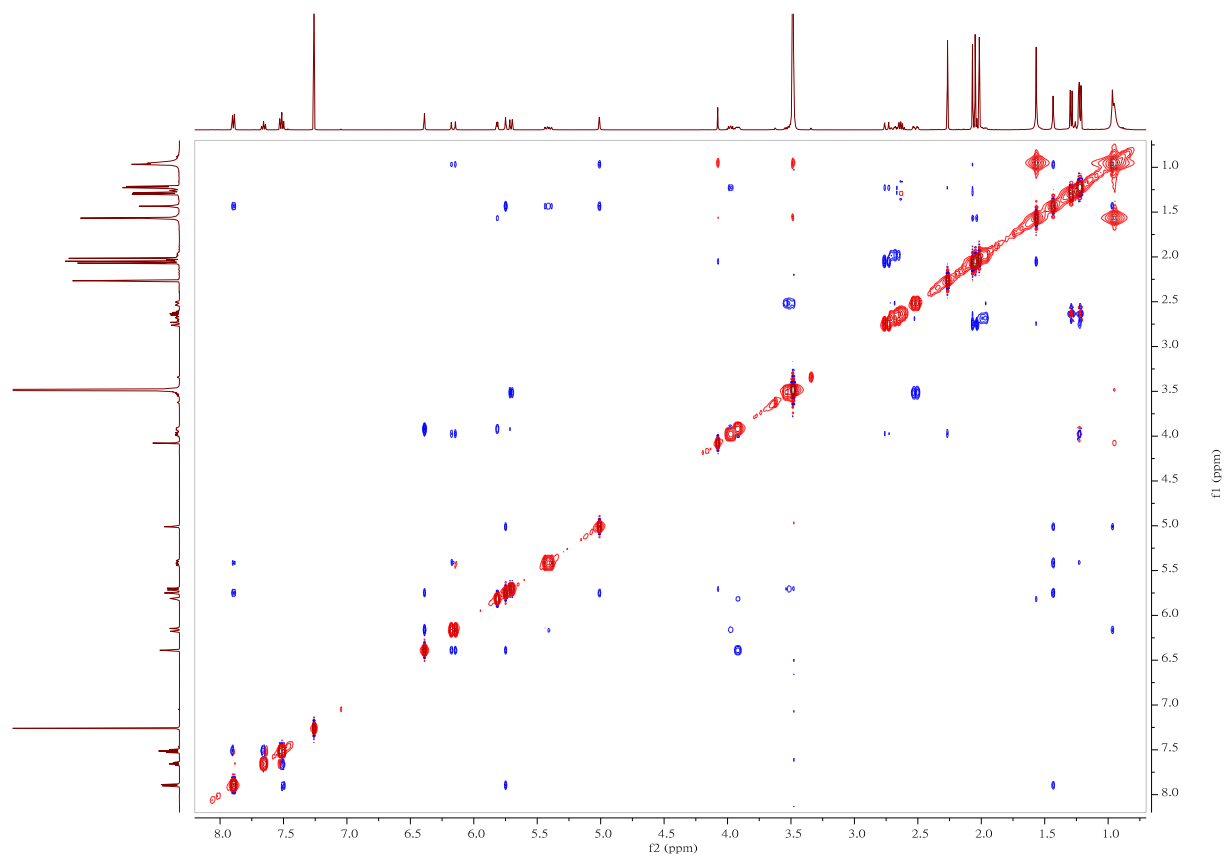
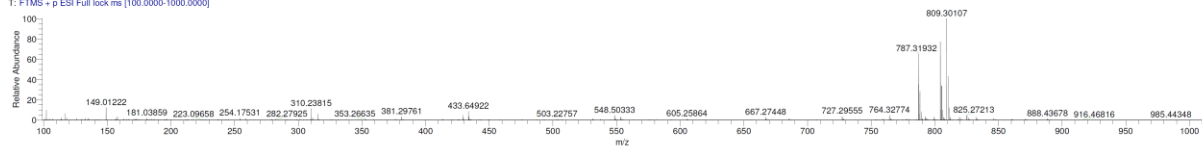
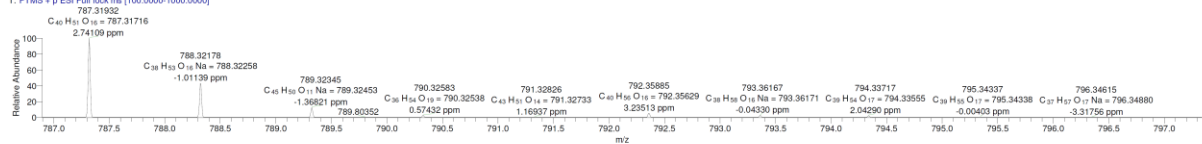
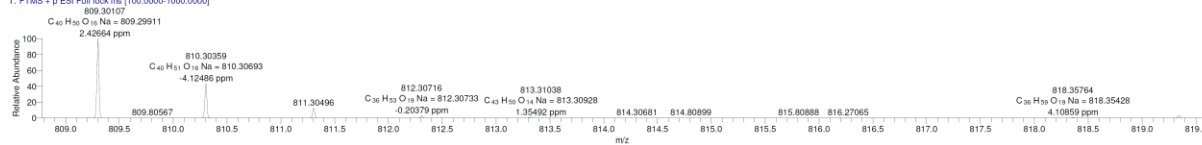
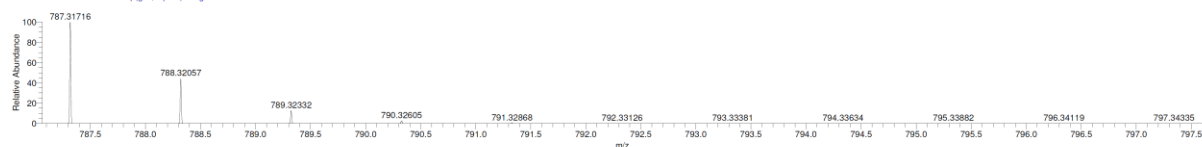


Figure S41. The NOESY spectrum of usambariphane E (**6**).

YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.66E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.09E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1743-1769 RT: 8.95-9.08 AV: 25 NL: 1.66E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C40H50O16 +H: C40 H51 O16 p1gss, s/p:40 Chrg 1R: ...



C40H50O16 +Na: C40 H50 O16 Na1 p1gss, s/p:40 Chrg 1R: ...

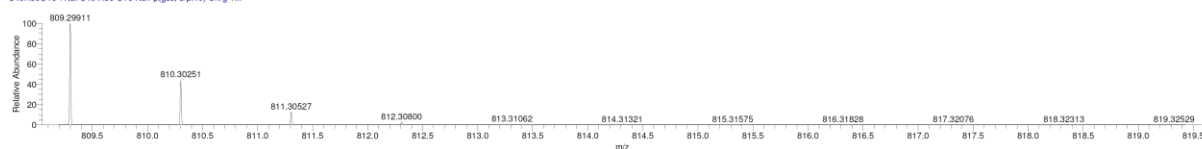


Figure S42. The HR-ESI-MS spectra of usambariphane E (6).

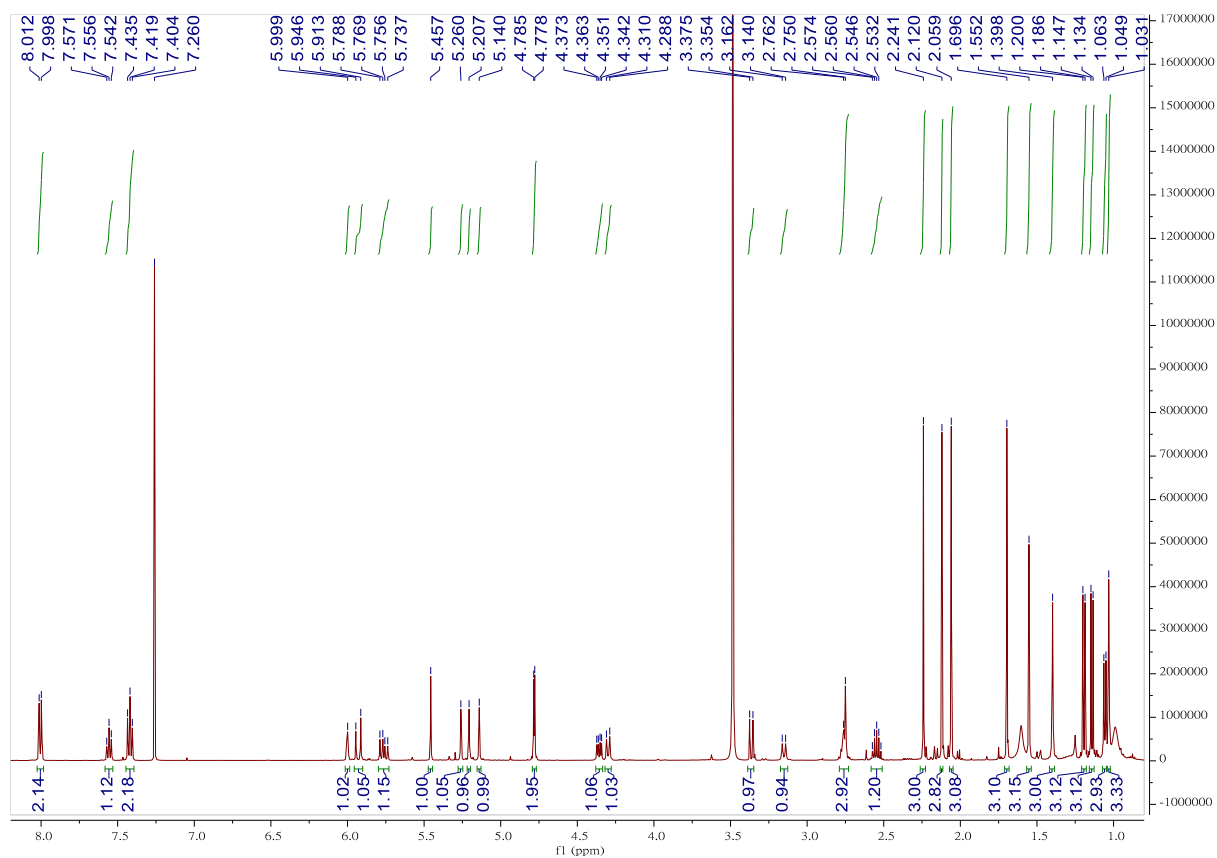


Figure S43. The ¹H-NMR spectrum of usambariphane F (7) (500 MHz, CDCl₃).

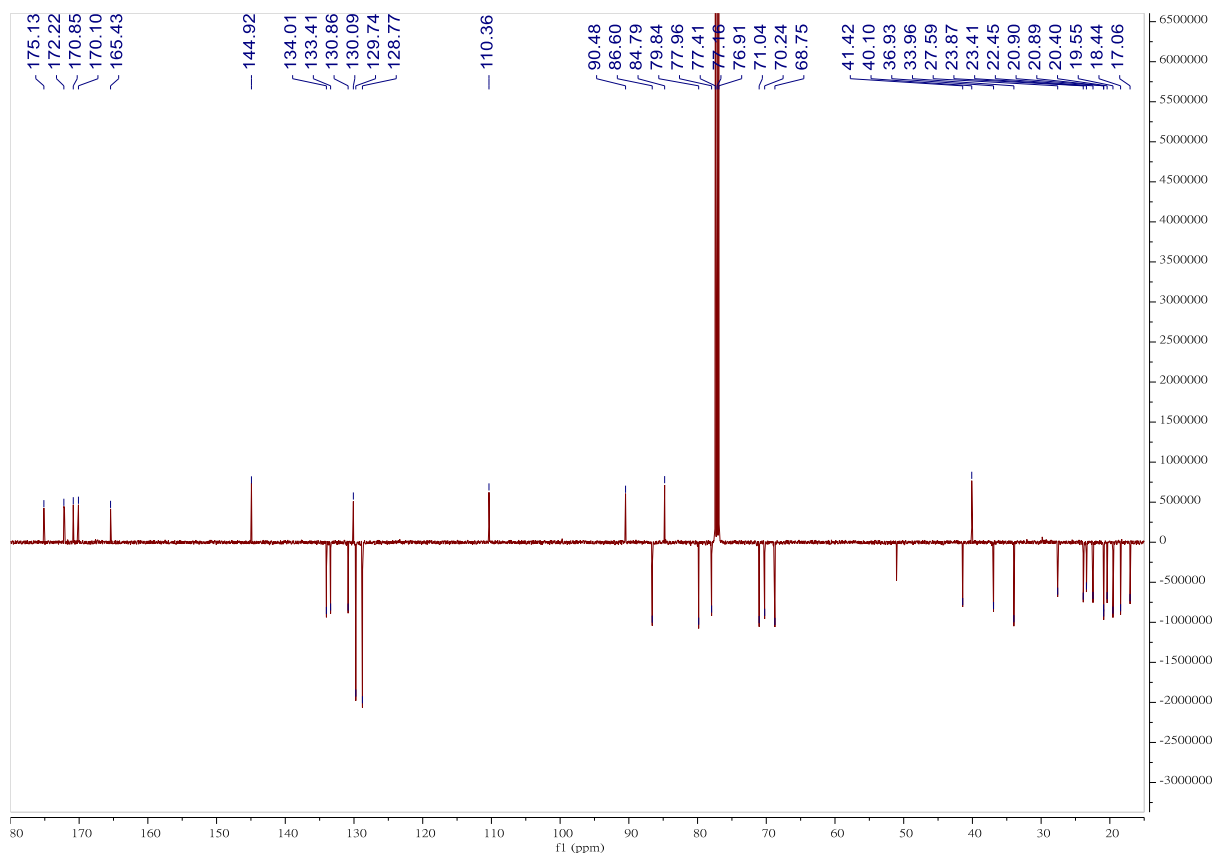


Figure S44. The ¹³C-JMOD spectrum of usambariphane F (7) (125 MHz, CDCl₃).

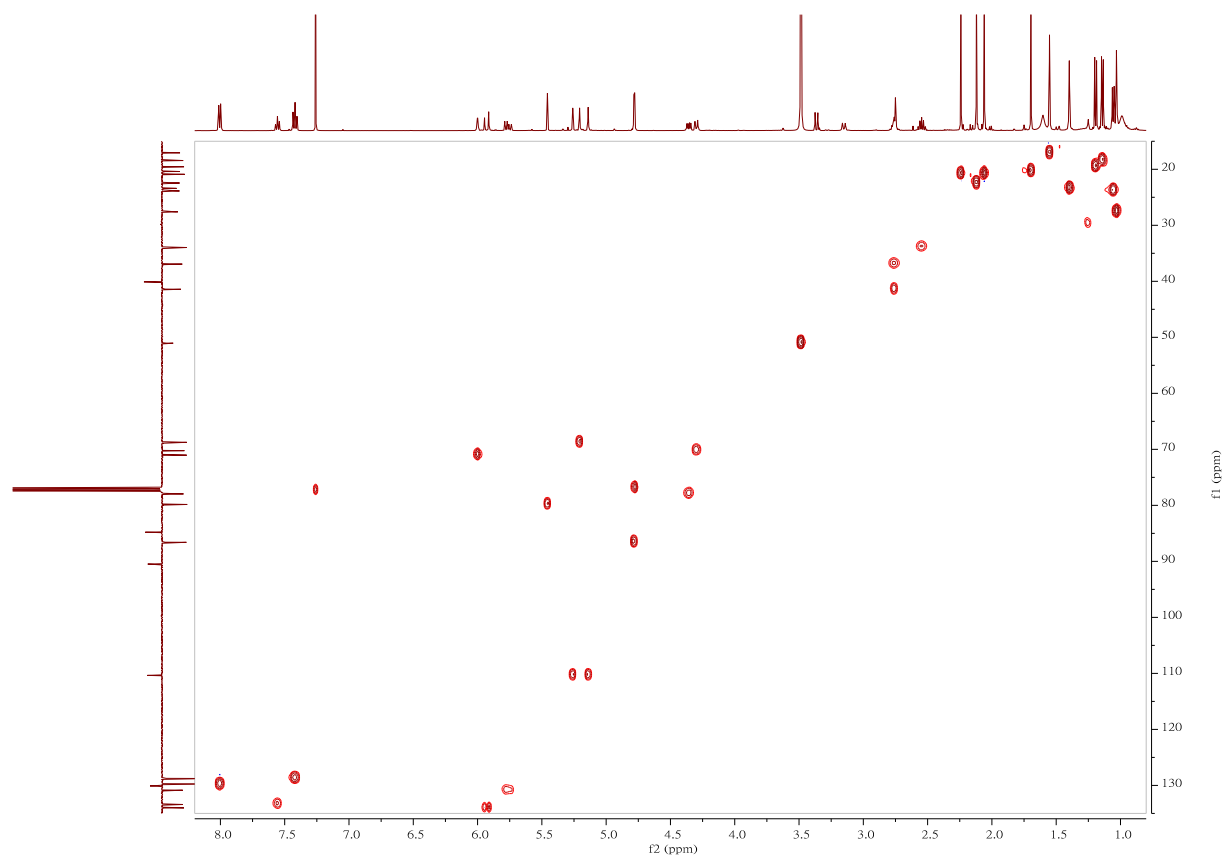


Figure S45. The HSQC spectrum of usambariphane F (7).

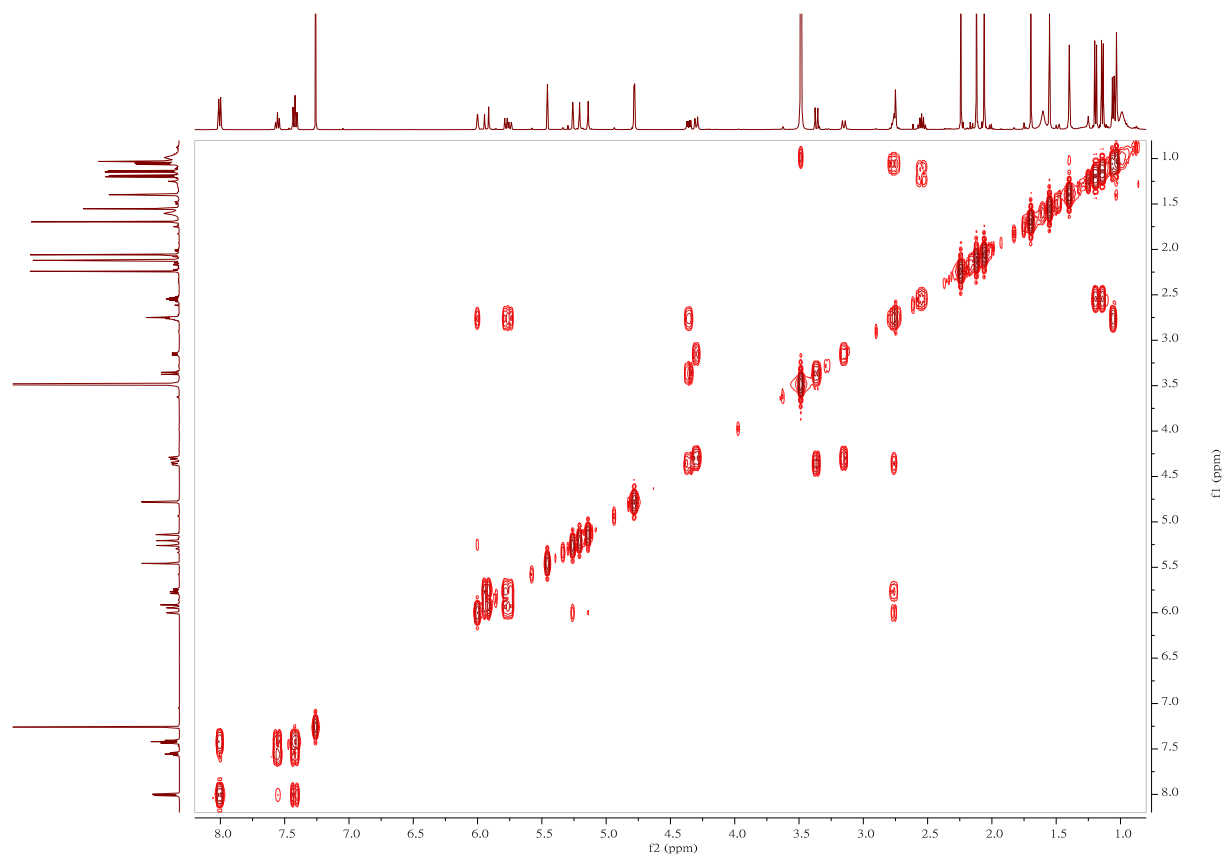


Figure S46. The ^1H - ^1H COSY spectrum of usambariphane F (7).

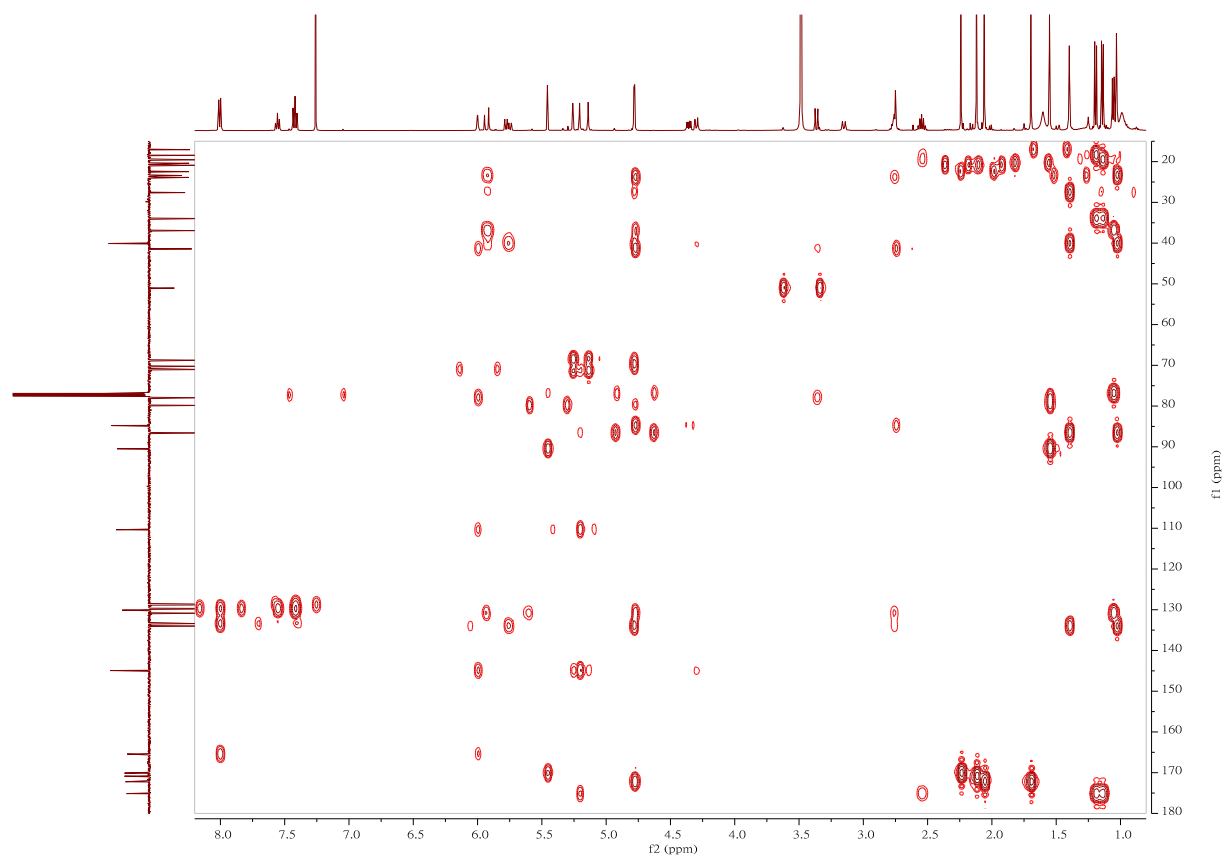


Figure S47. The HMBC spectrum of usambariphane F (7).

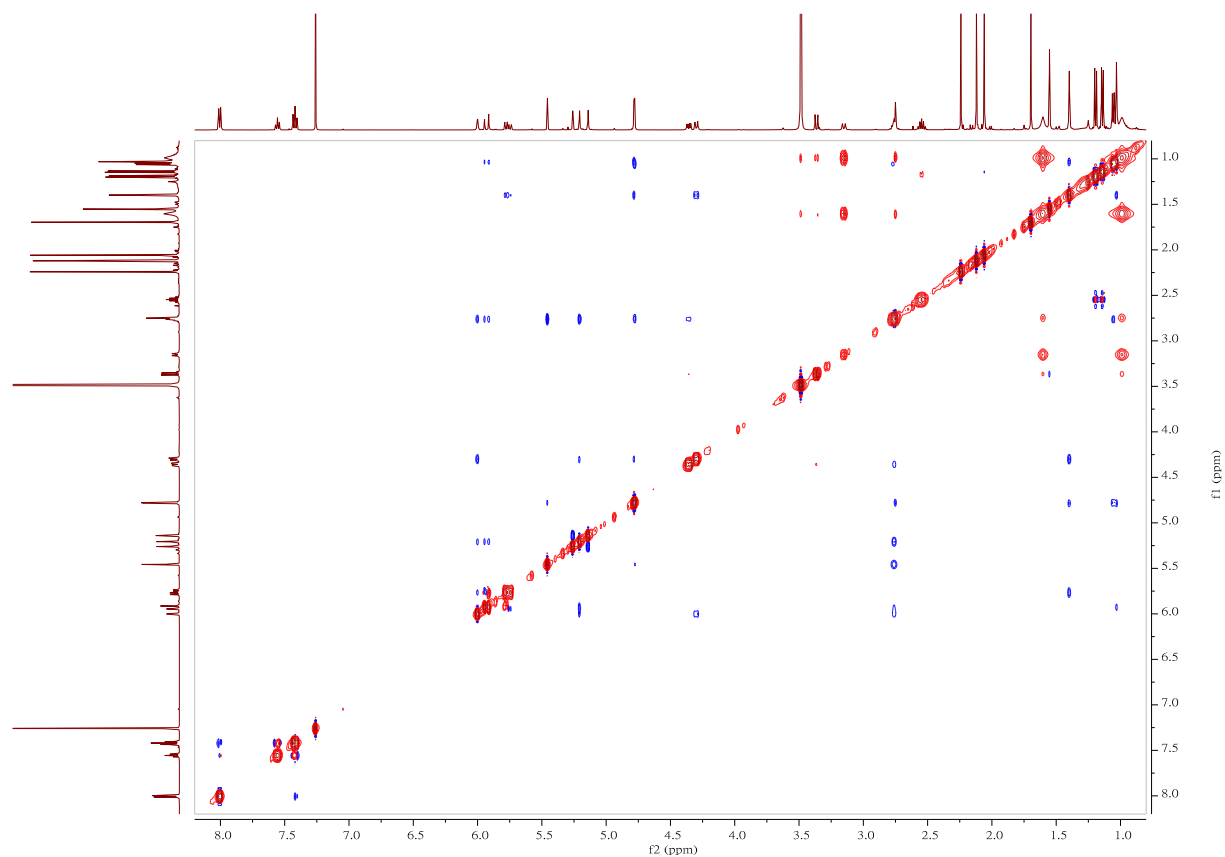
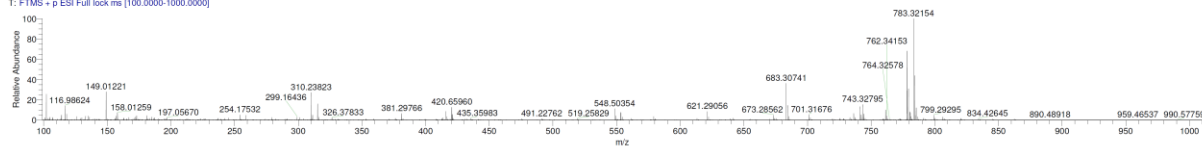
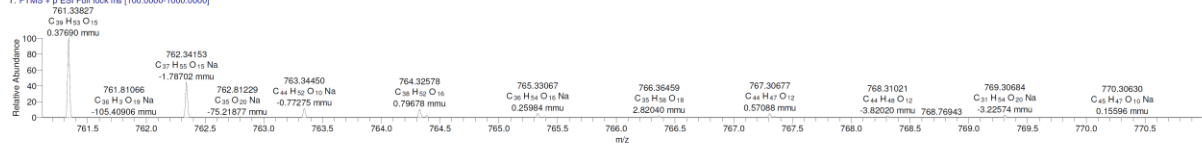
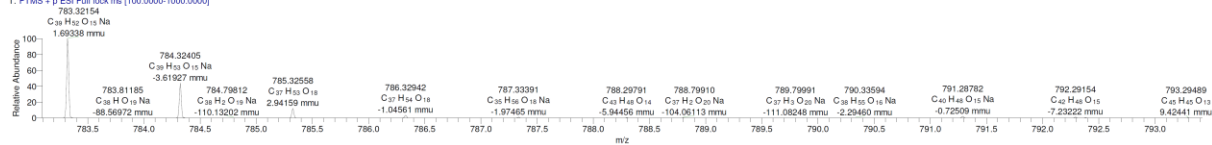
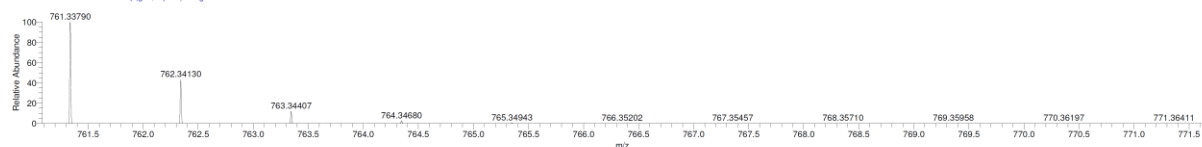


Figure S48. The NOESY spectrum of usambariphane F (7).

YC-20200917 #1230-1263 RT: 6.31-6.48 AV: 34 NL: 9.05E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1230-1263 RT: 6.31-6.48 AV: 34 NL: 9.19E6
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #1230-1263 RT: 6.31-6.48 AV: 34 NL: 9.05E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C39H52O15 +H: C39 H53 O15 p1gms, s/p:40 Chrg 1R: ...



C39H52O15 +Na: C39 H52 O15 Na1 p1gms, s/p:40 Chrg 1: ...

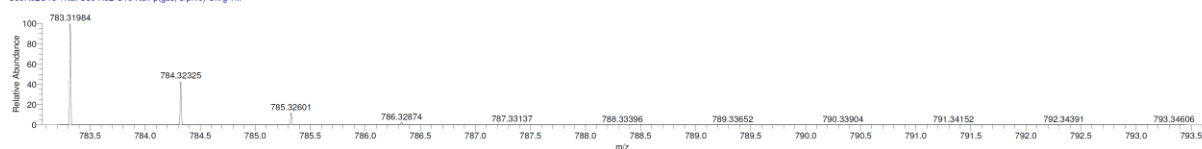


Figure S49. The HR-ESI-MS spectra of usambariphane F (7).



Figure S50. The ¹H-NMR spectrum of usambariphane G (8) (500 MHz, CDCl₃).

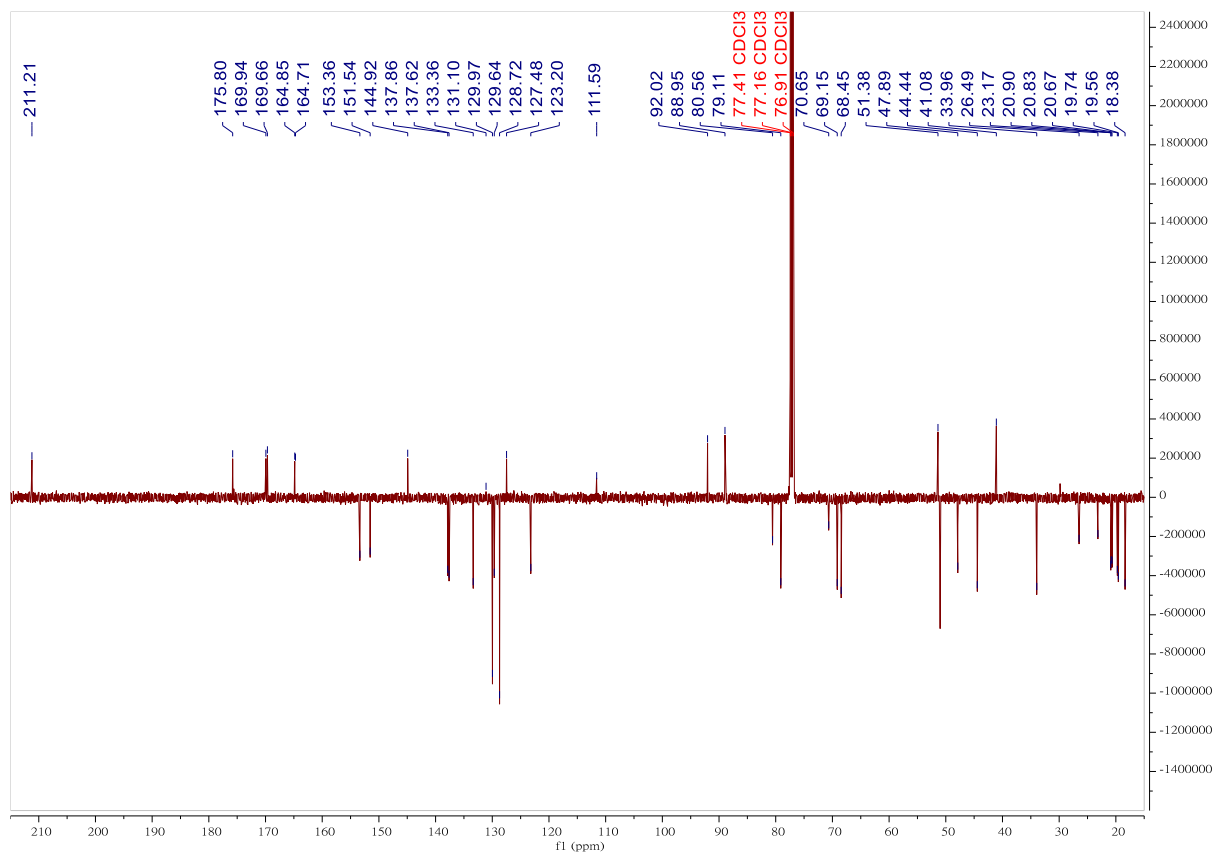


Figure S51. The ¹³C-JMOD spectrum of usambariphane G (8) (125 MHz, CDCl₃).

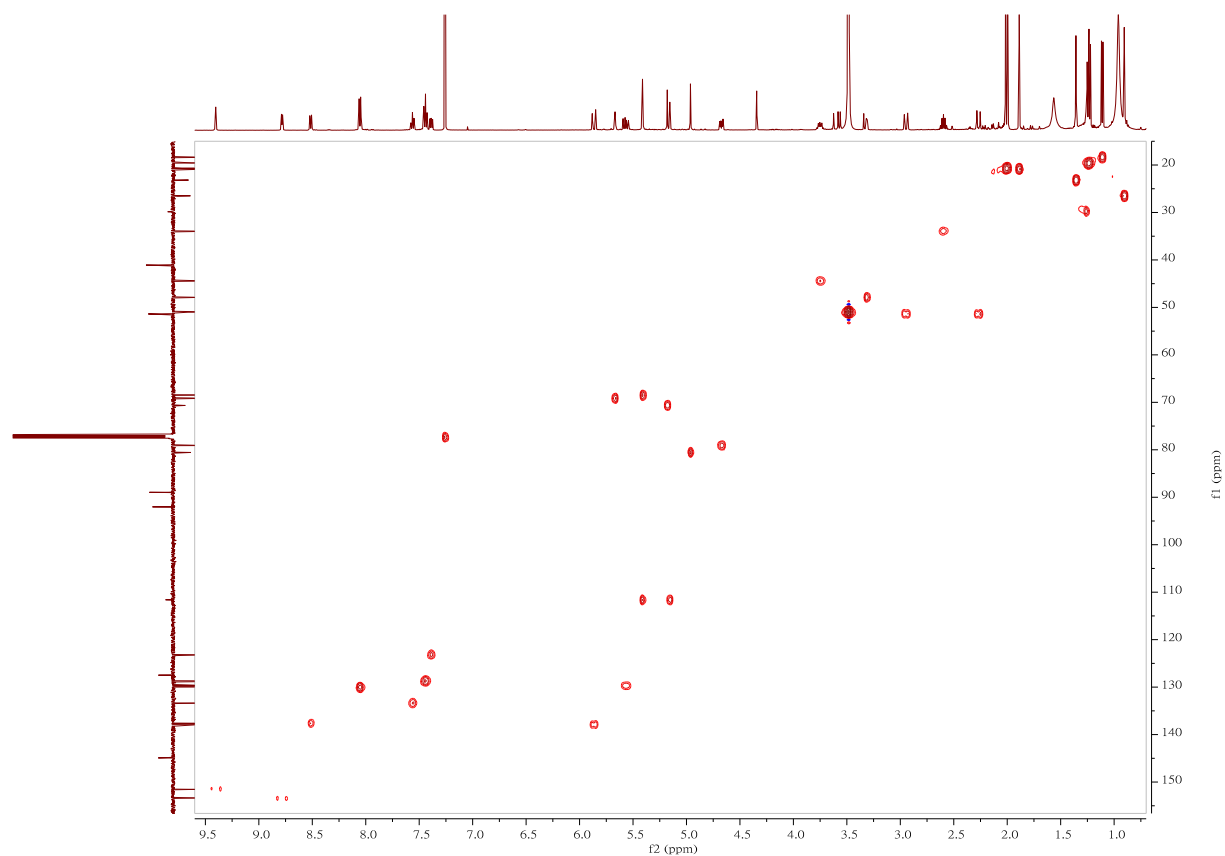


Figure S52. The HSQC spectrum of usambariphane G (8).

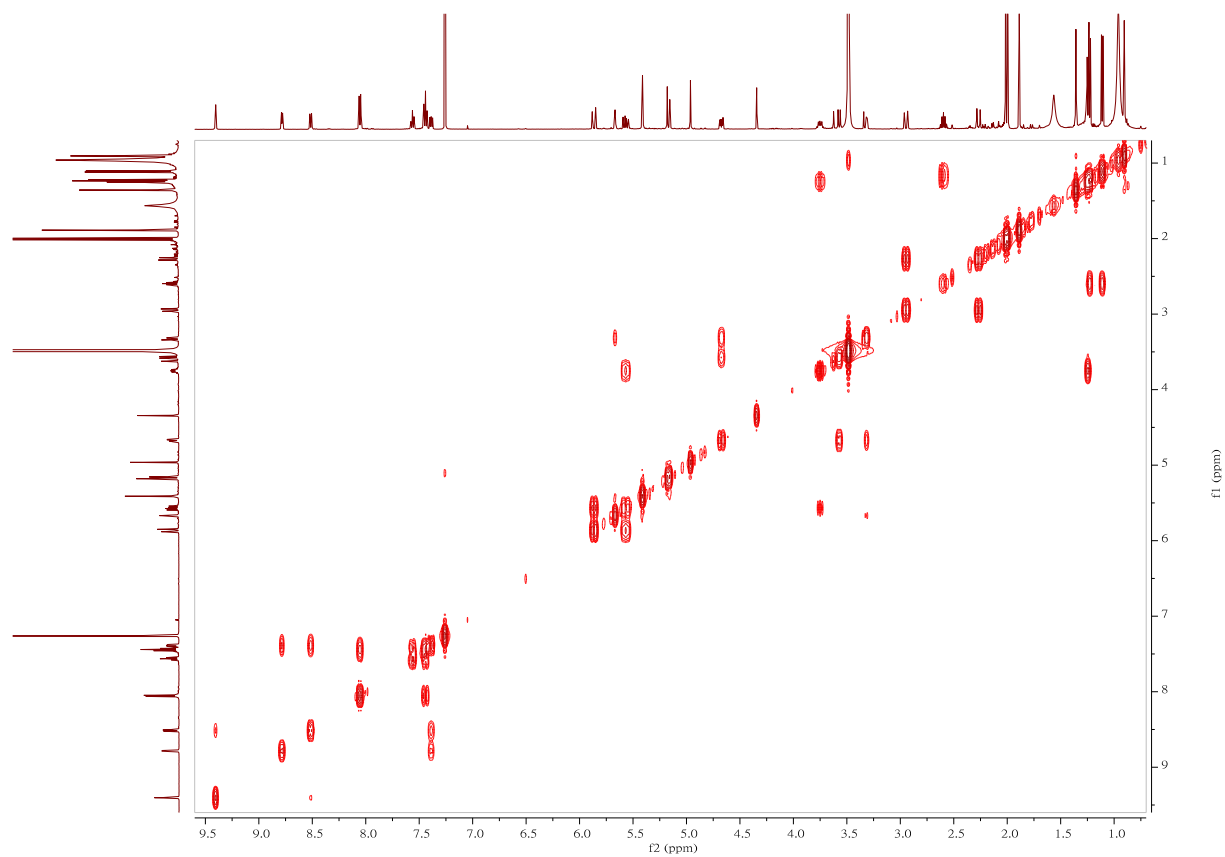


Figure S53. The ^1H - ^1H COSY spectrum of usambariphane G (8).

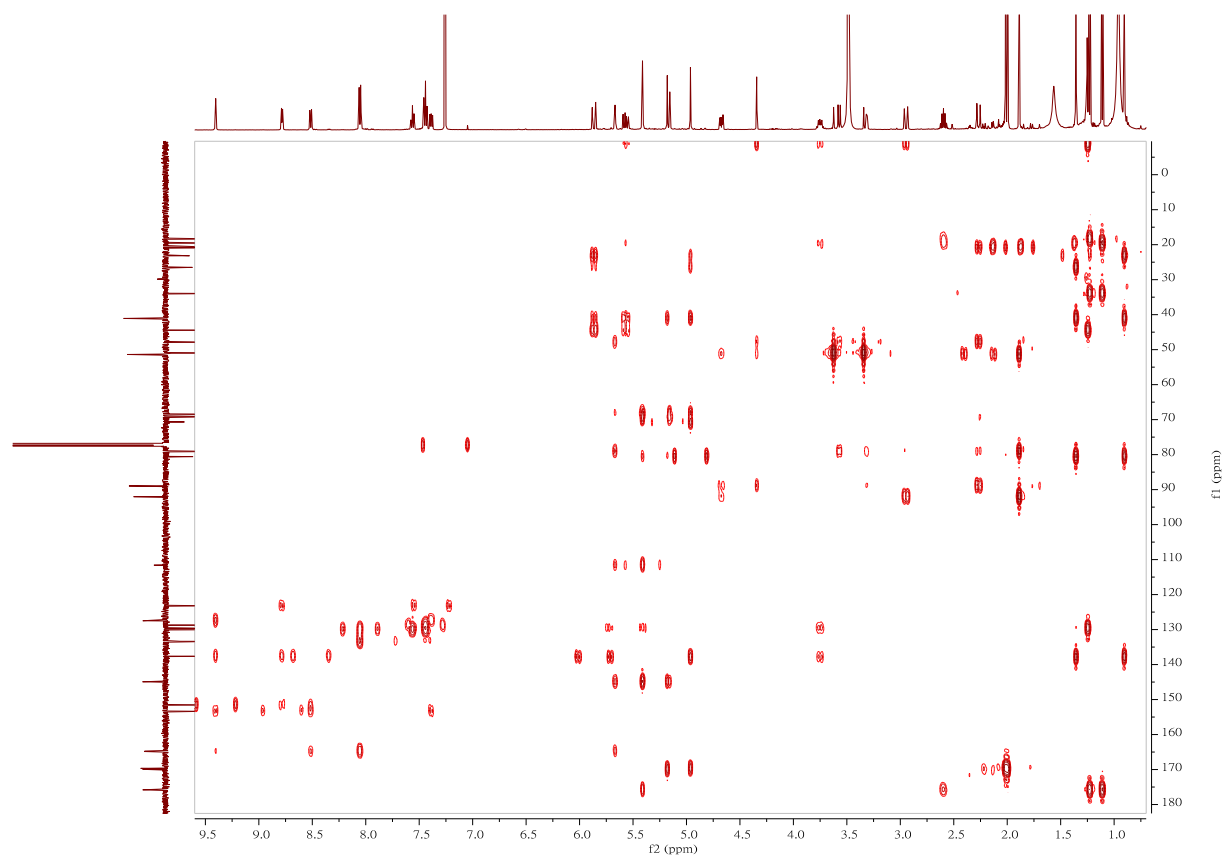


Figure S54. The HMBC spectrum of usambariphane G (8).

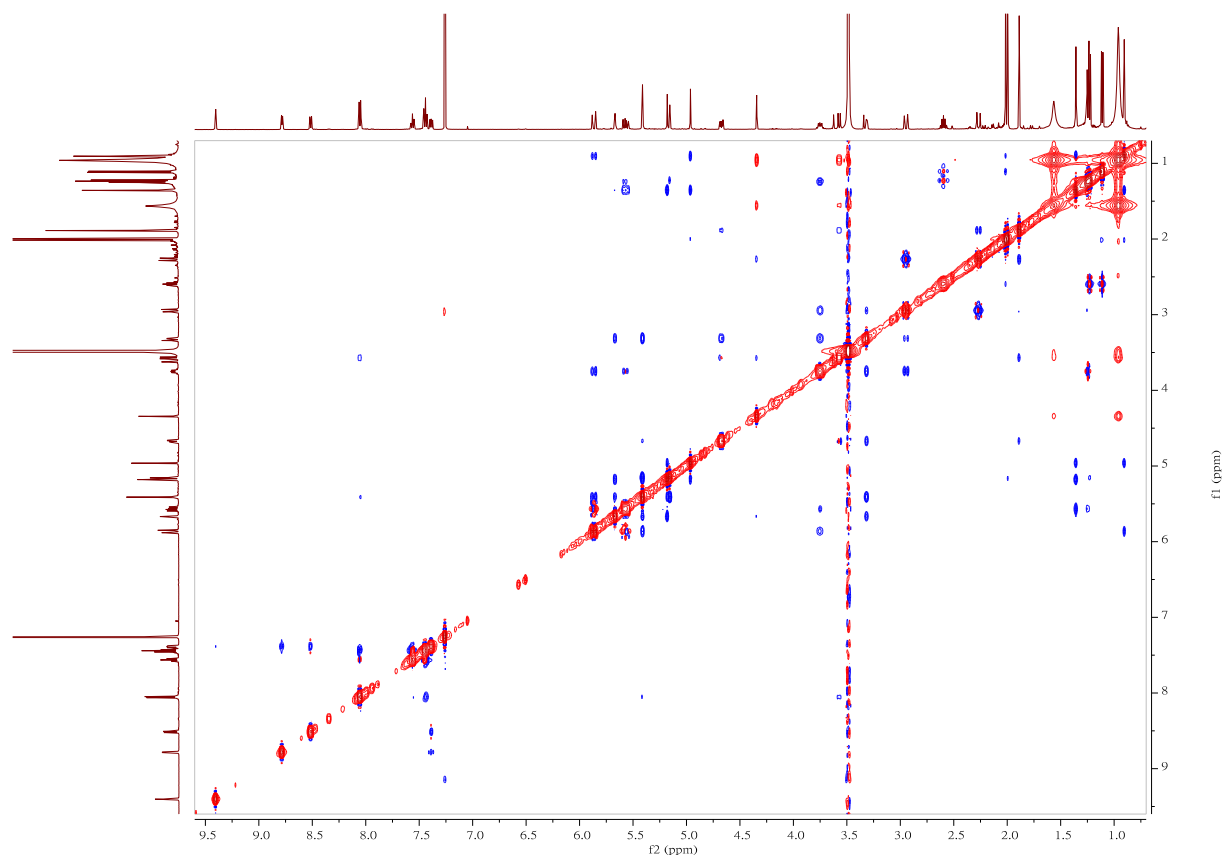
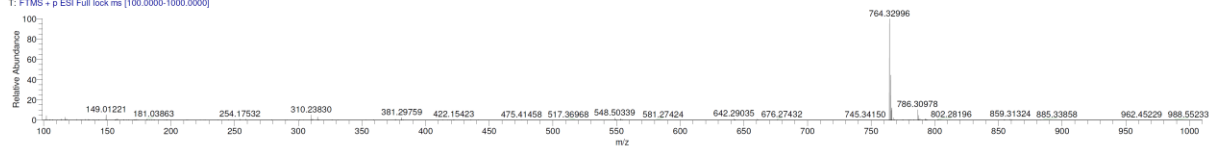
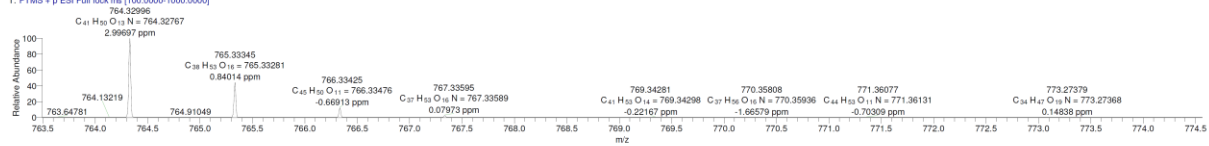
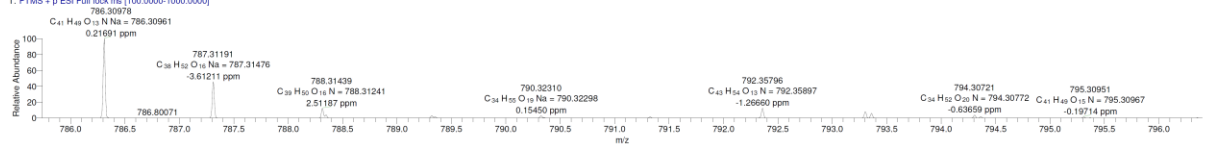
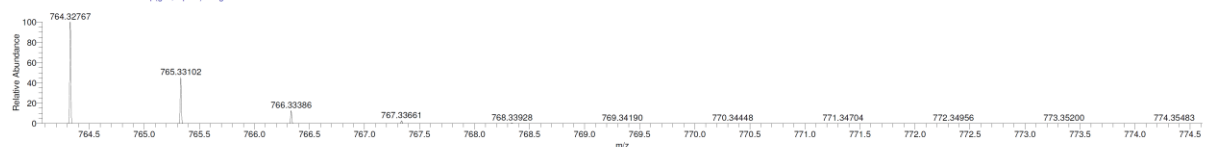


Figure S55. The NOESY spectrum of usambariphane G (8).

YC-20200917 #2034-2078 RT: 10.45-10.67 AV: 45 NL: 4.73E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #2034-2078 RT: 10.45-10.67 AV: 45 NL: 4.73E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #2034-2078 RT: 10.45-10.67 AV: 45 NL: 4.85E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C41H49NO13 +H: C41 H50 N1 O13 p(gas, s/p:40) Chrg 1...



C41H49NO13 +Na: C41 H49 N1 O13 Na1 p(gas, s/p:40) Ch...

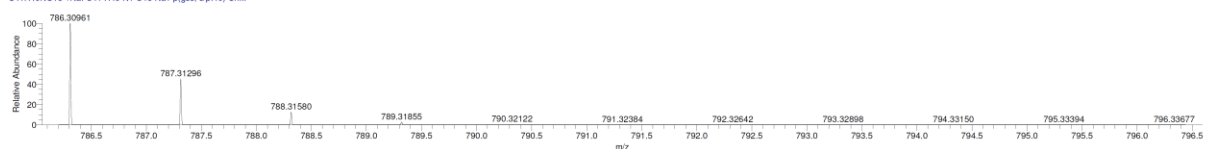


Figure S56. The HR-ESI-MS spectra of usambariphane G (8).

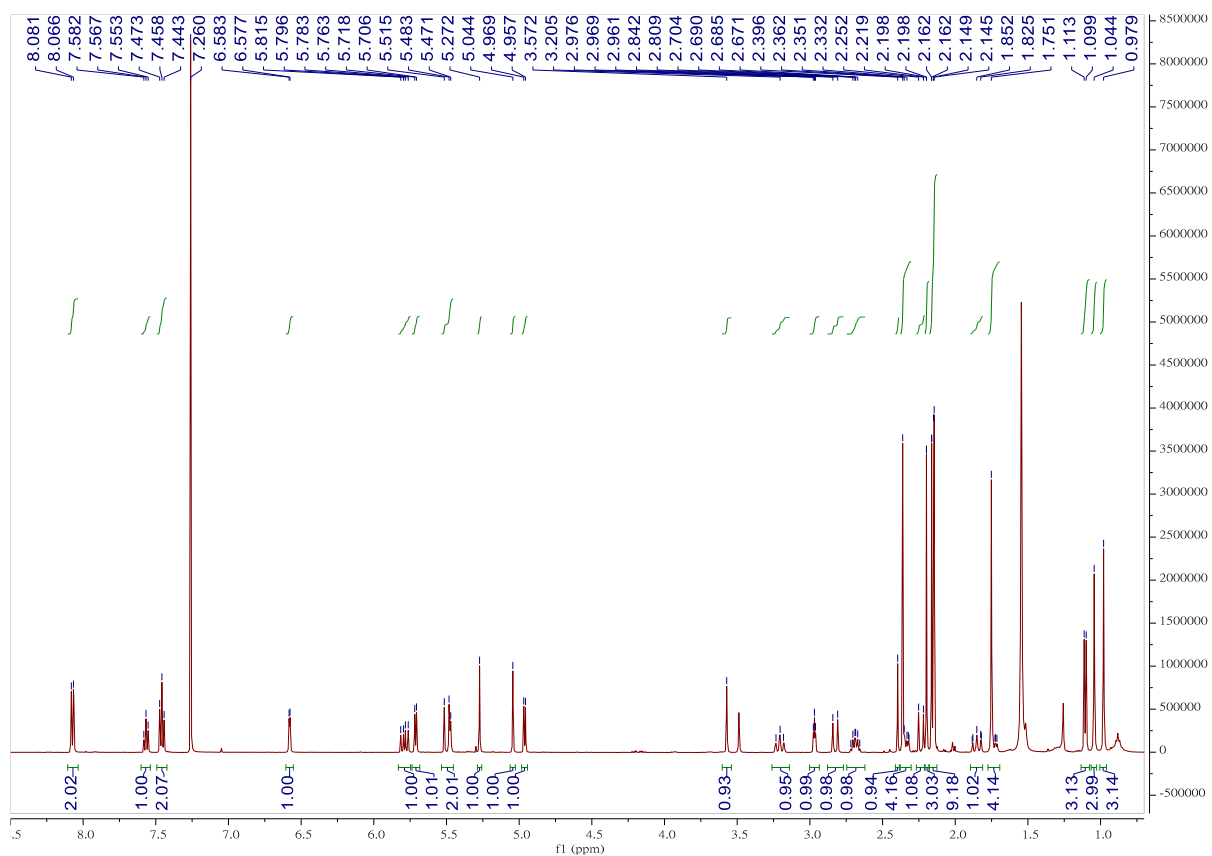


Figure S57. The ^1H -NMR spectrum of isoterracinolide C (**9**) (500 MHz, CDCl_3).

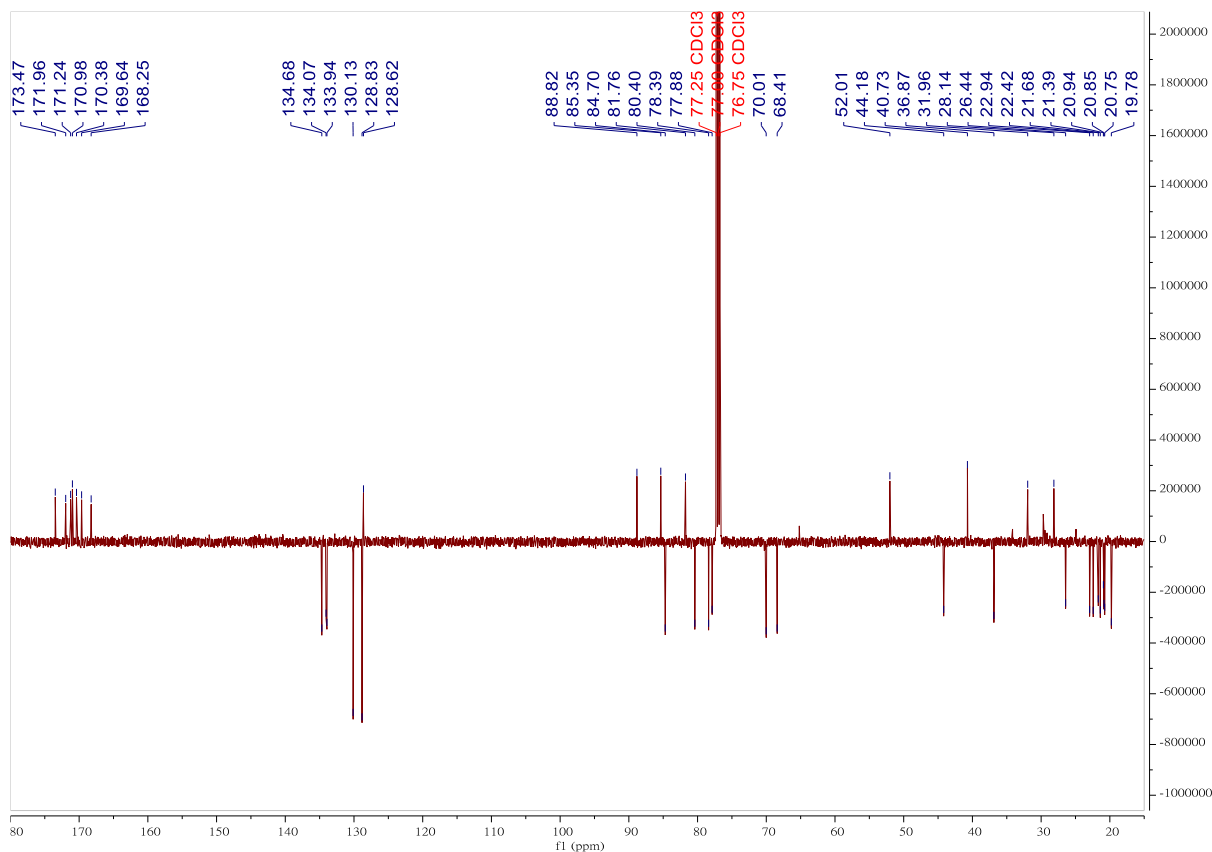


Figure S58. The ^{13}C -JMOD spectrum of isoterracinolide C (**9**) (500 MHz, CDCl_3).

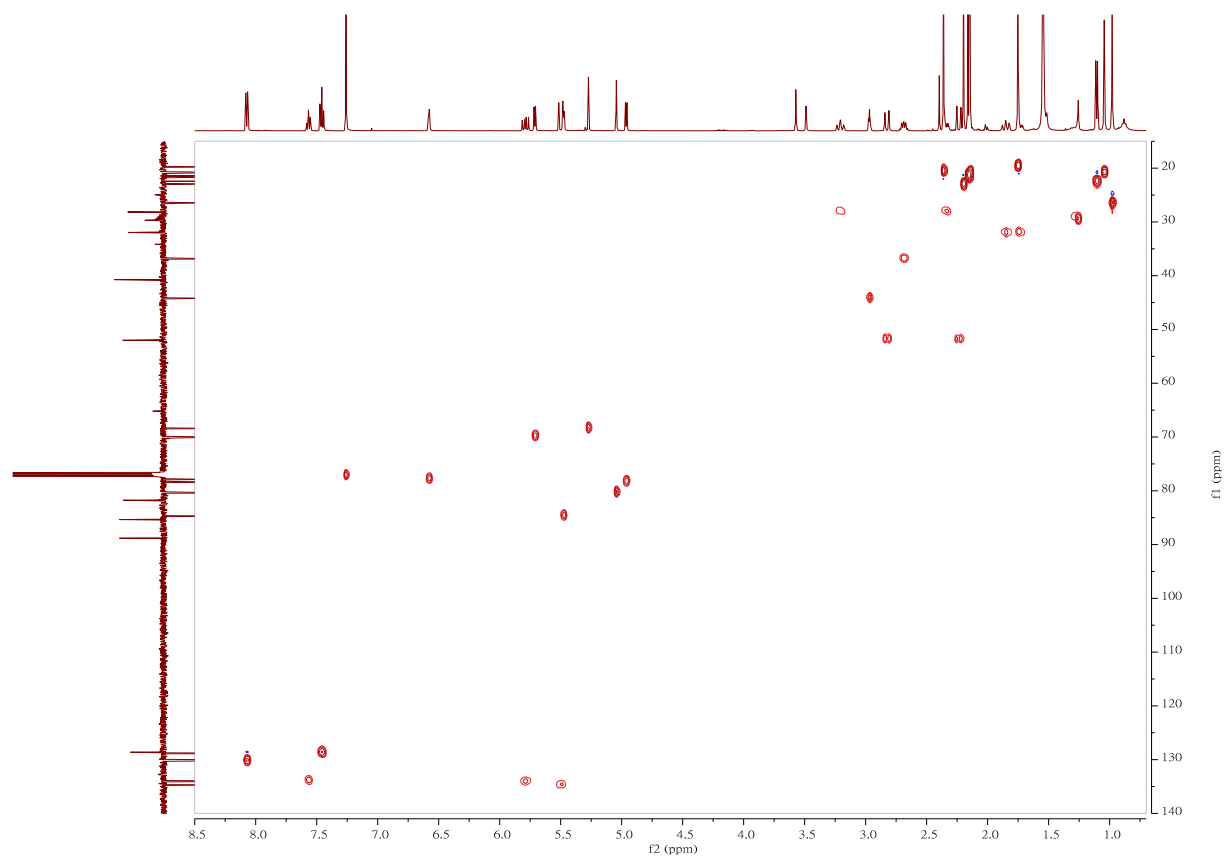


Figure S59. The HSQC spectrum of isoterracinolide C (9).

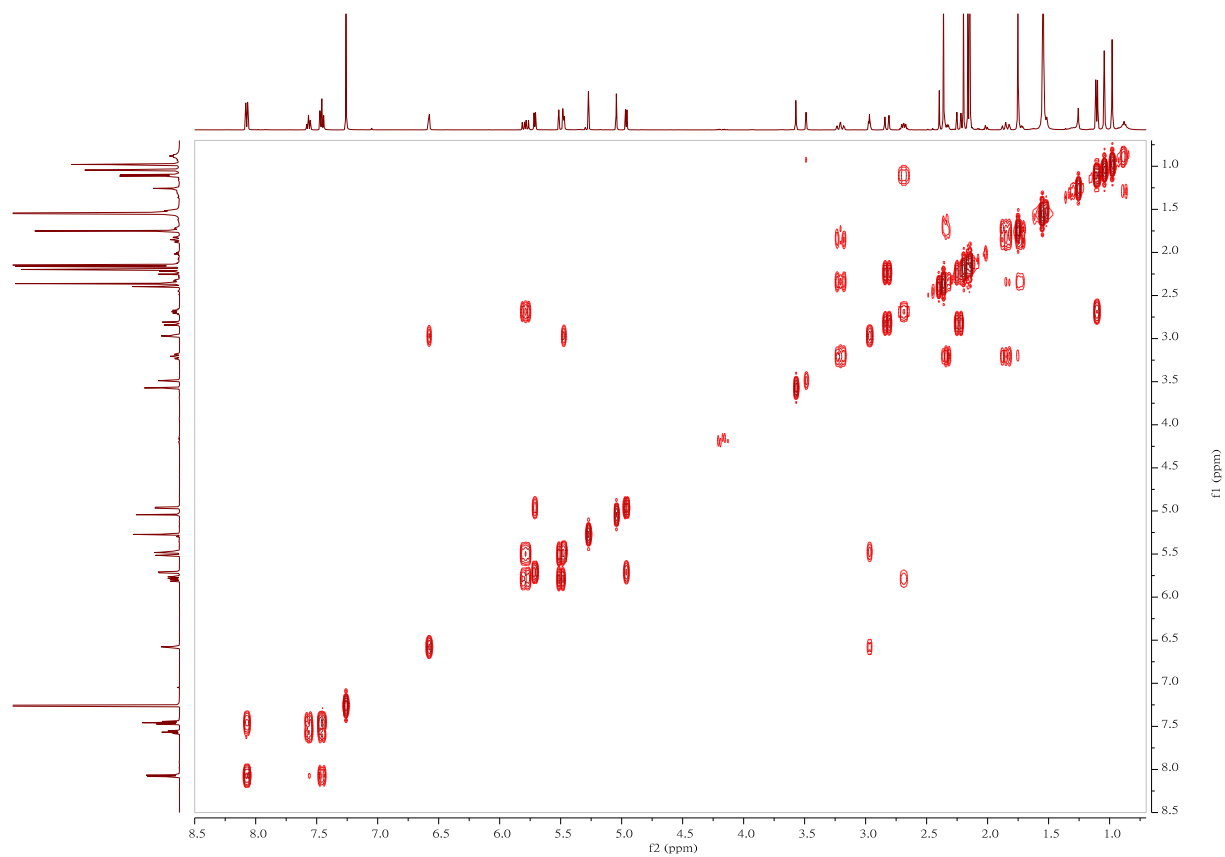


Figure S60. The ^1H - ^1H COSY spectrum of isoterracinolide C (9).

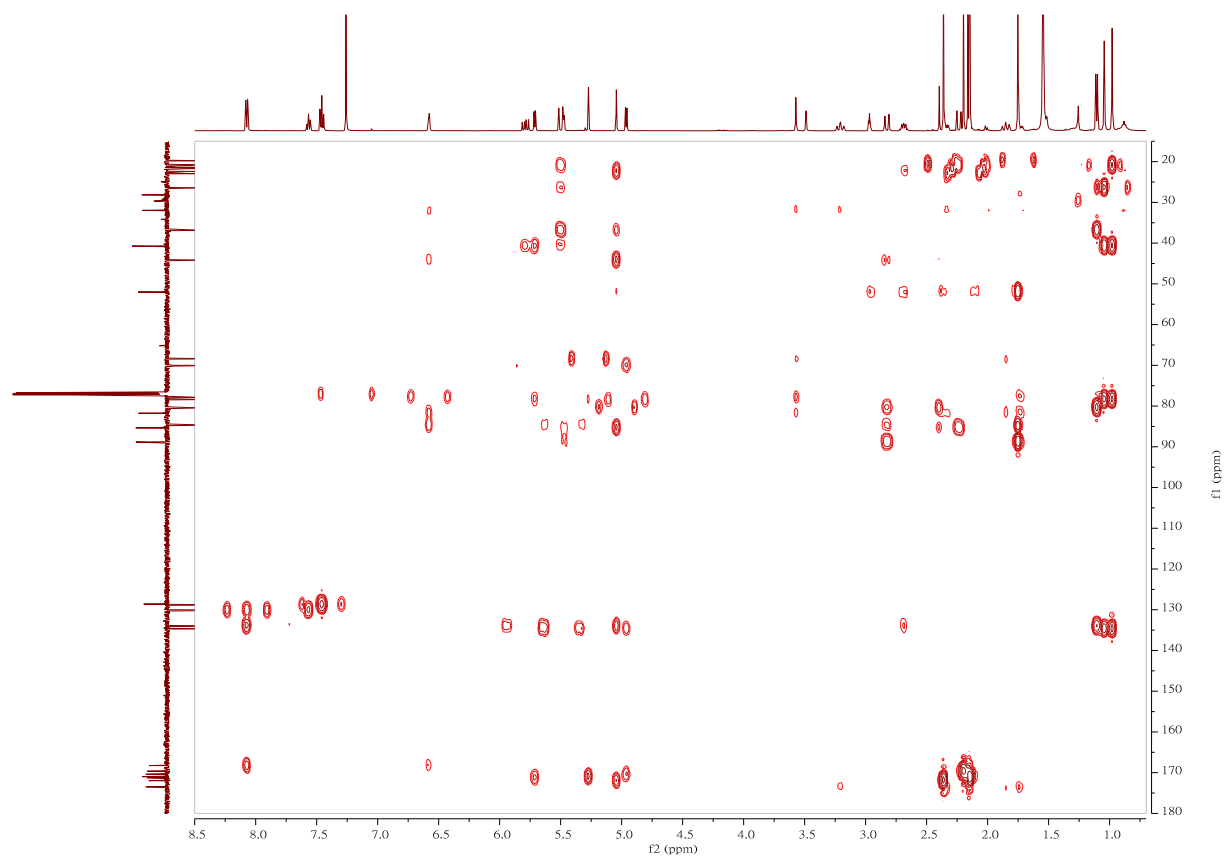


Figure S61. The HMBC spectrum of isoterracinolide C (**9**).

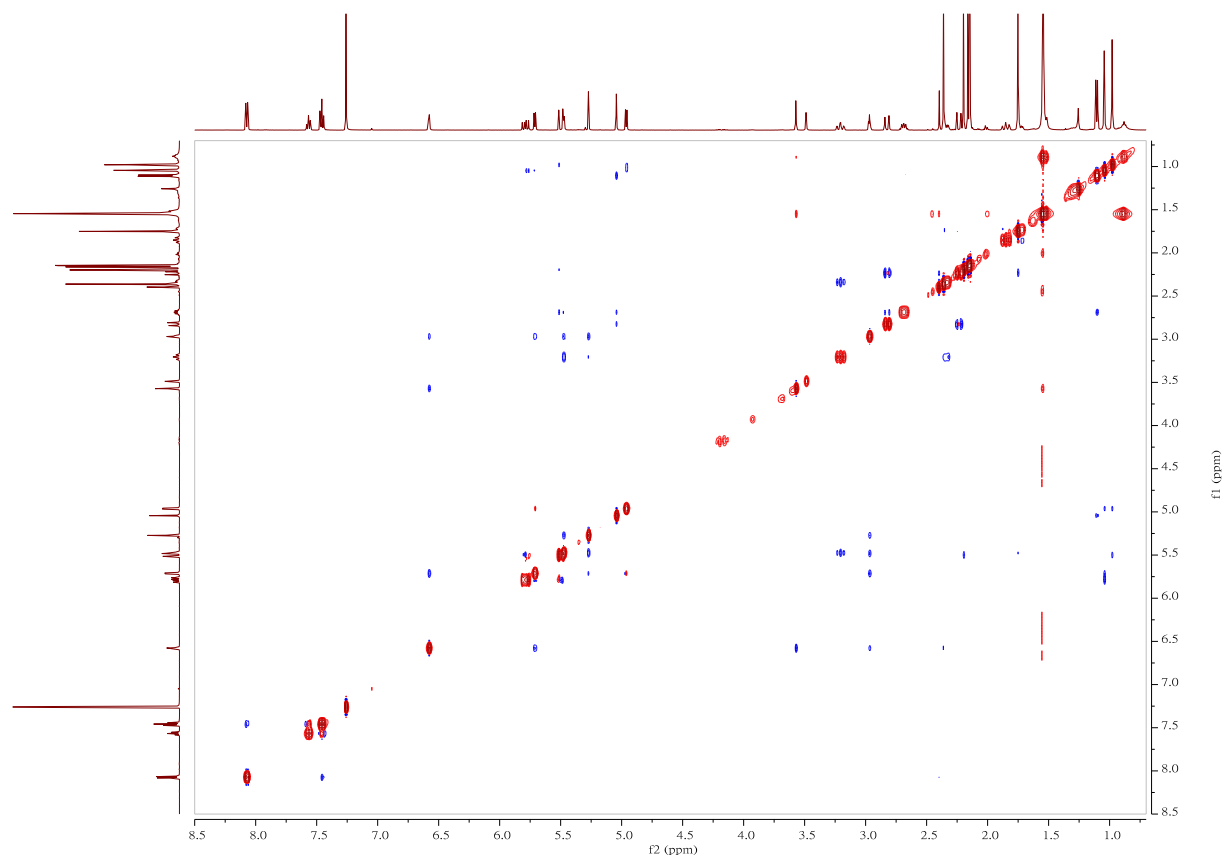
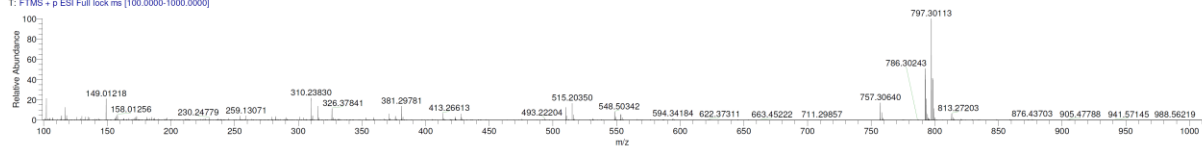
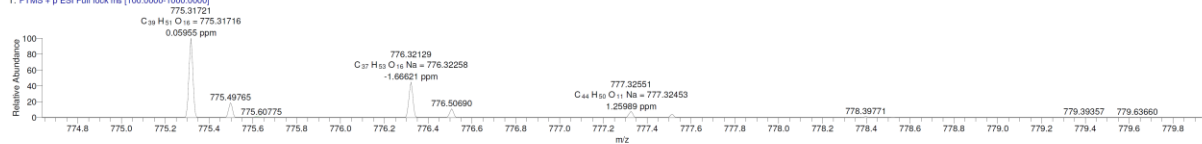
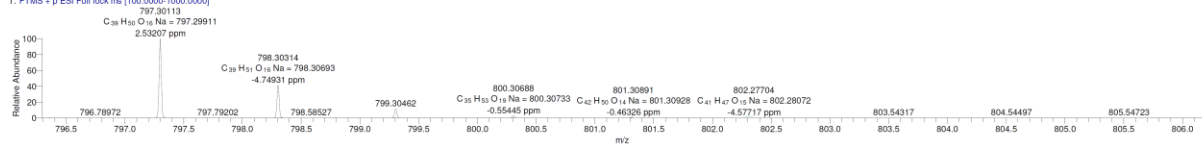
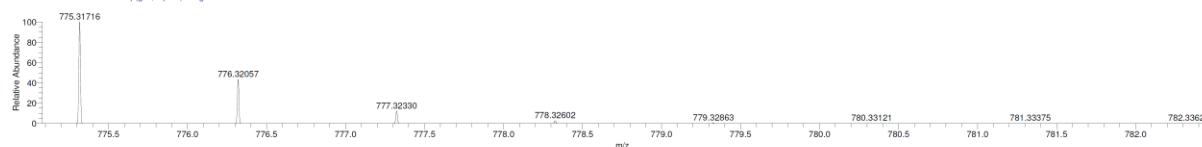


Figure S62. The NOESY spectrum of isoterracinolide C (**9**).

YC-20200917 #3245-3285 RT: 16.67-16.87 AV: 41 NL: 7.04E5
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3245-3285 RT: 16.67-16.87 AV: 41 NL: 7.04E5
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3245-3285 RT: 16.67-16.87 AV: 41 NL: 1.26E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C39H50O16 +H: C39 H51 O16 p1gms, s/p:40) Chrg 1R: ...



C39H50O16 +Na: C39 H50 O16 Na1 p1gms, s/p:40) Chrg 1...

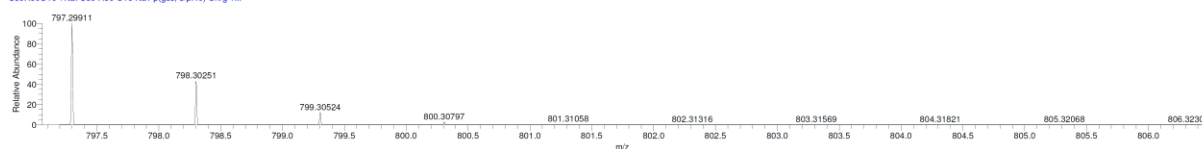


Figure S63. The HR-ESI-MS spectra of isoterracinolide C (9).

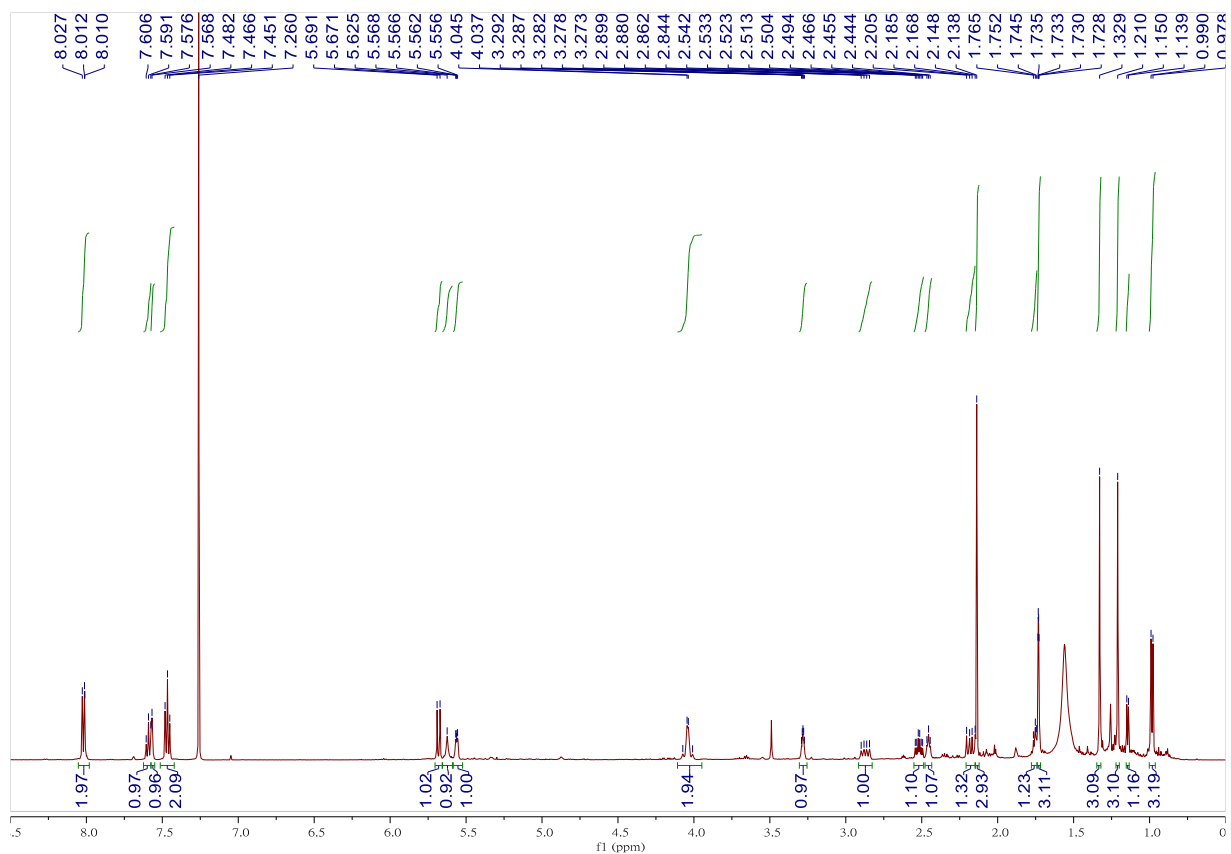


Figure S64. The ¹H-NMR spectrum of 4β-crotignoid K (**14**) (500 MHz, CDCl₃).

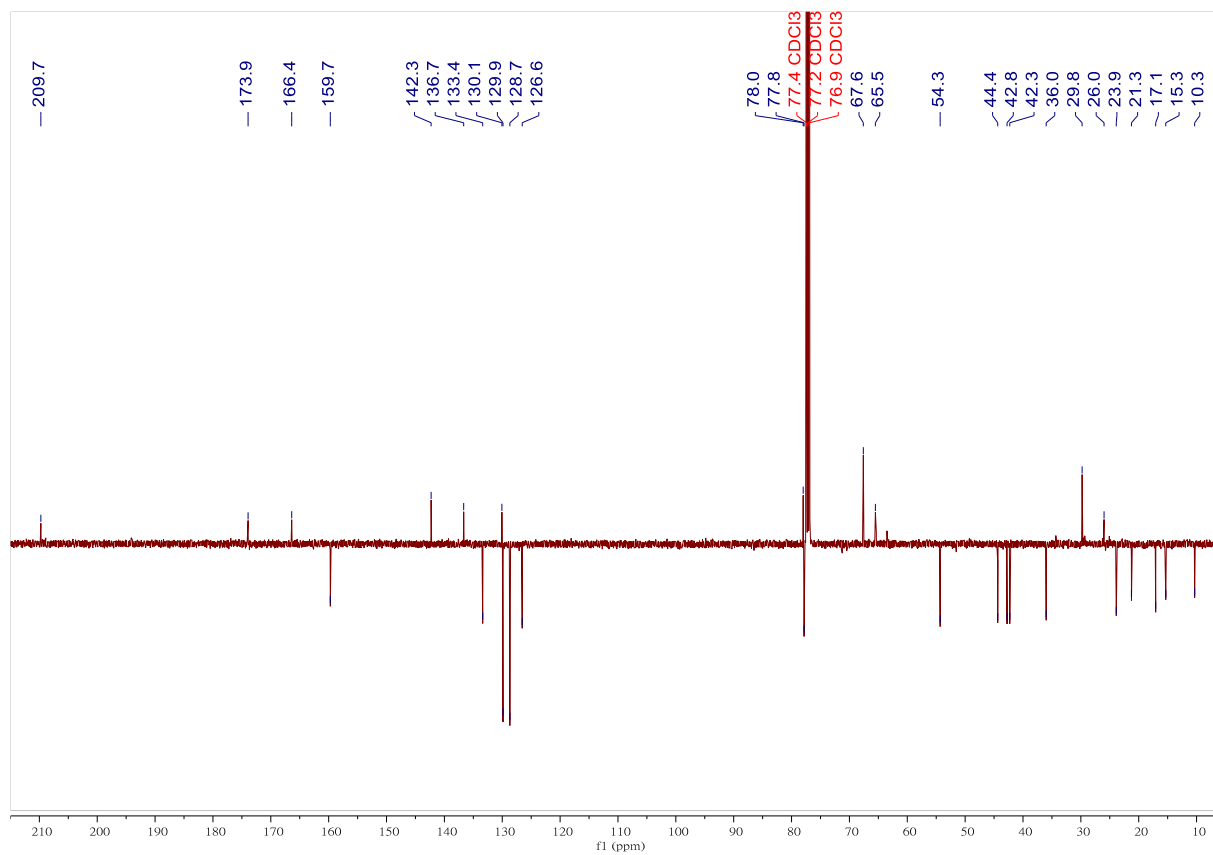


Figure S65. The ¹³C-JMOD spectrum of 4β-crotignoid K (**14**) (125 MHz, CDCl₃).

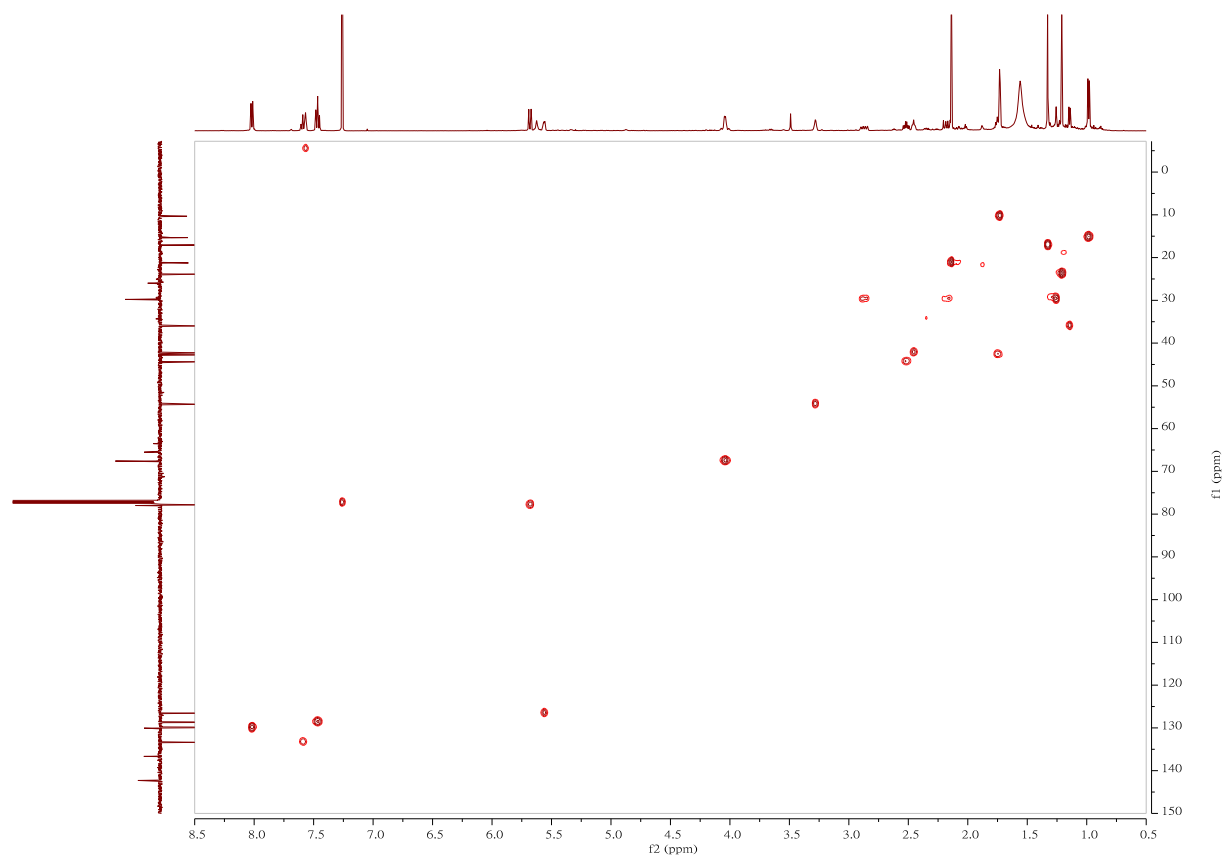


Figure S66. The HSQC spectrum of 4 β -crotignoid K (**14**).

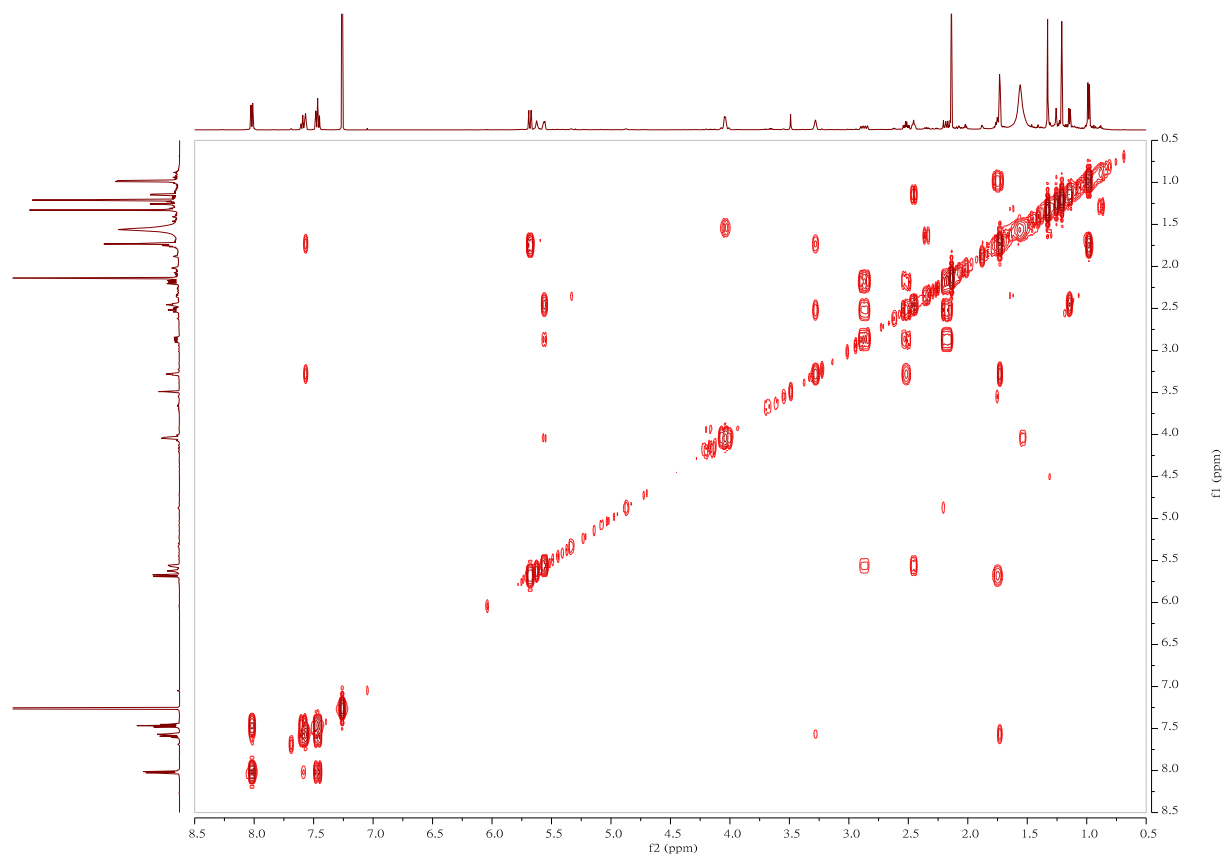


Figure S67. The ^1H - ^1H COSY spectrum of 4 β -crotignoid K (**14**).

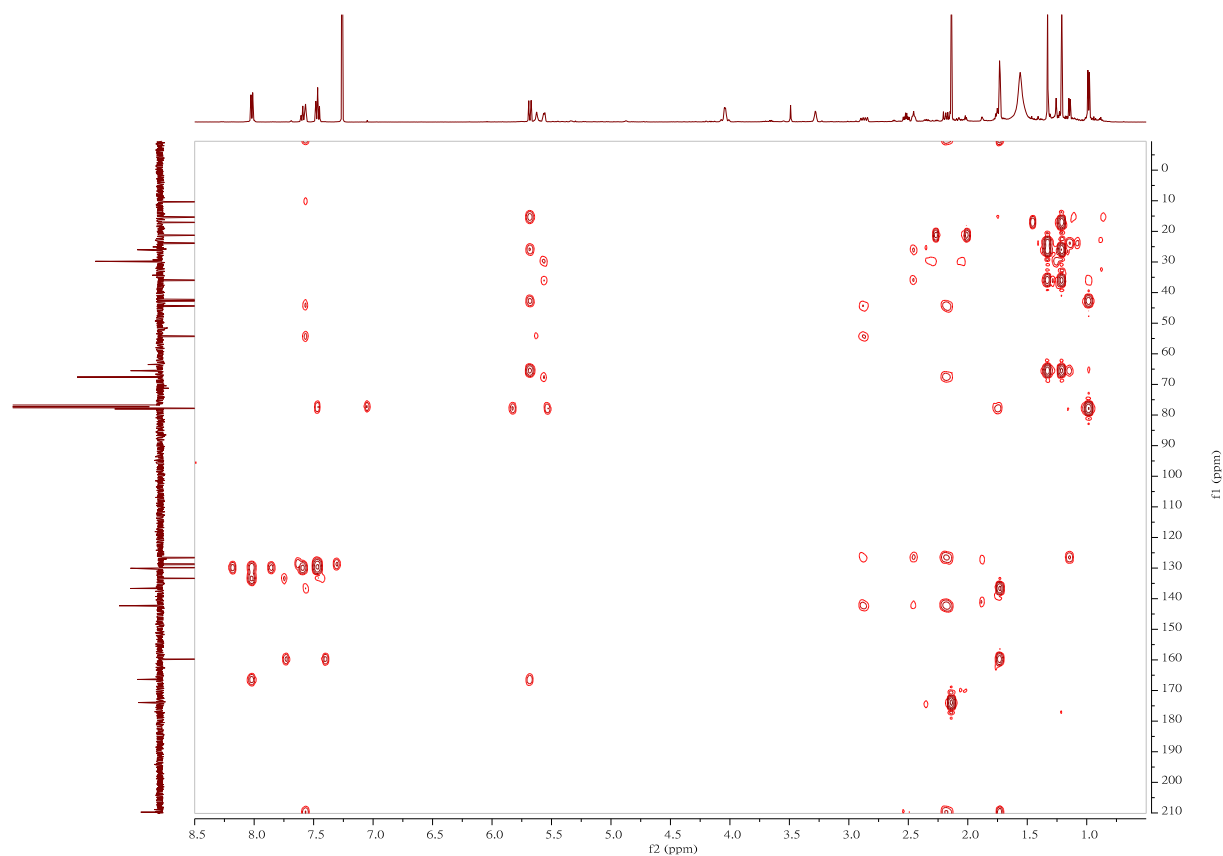


Figure S68. The HMBC spectrum of 4 β -crotignoid K (**14**).

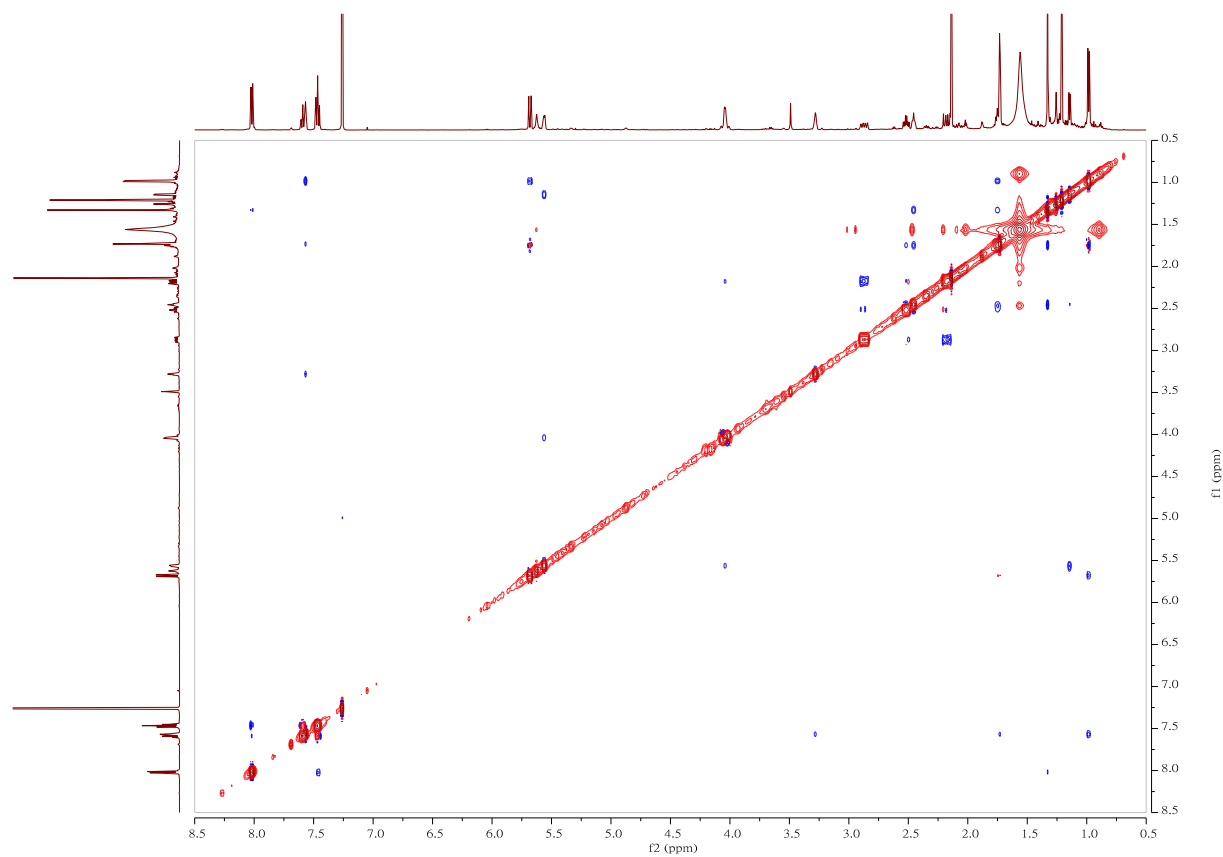
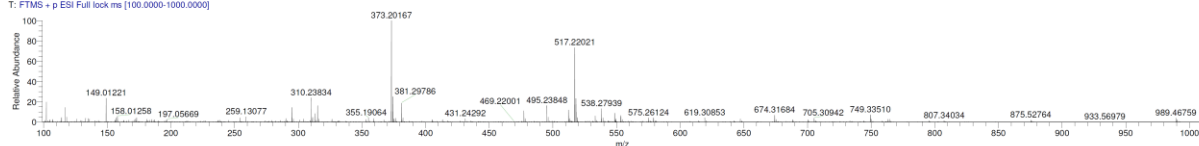
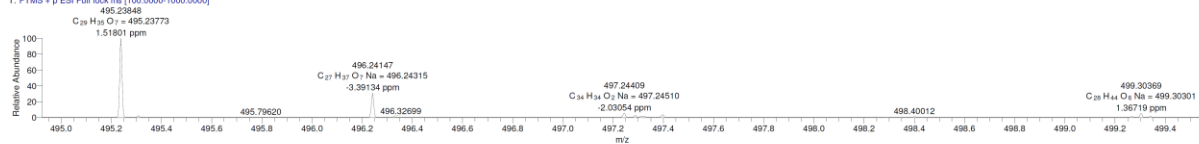
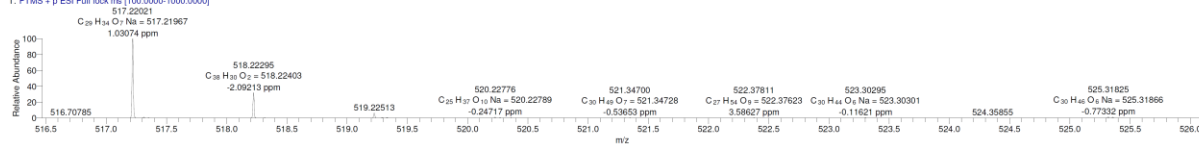
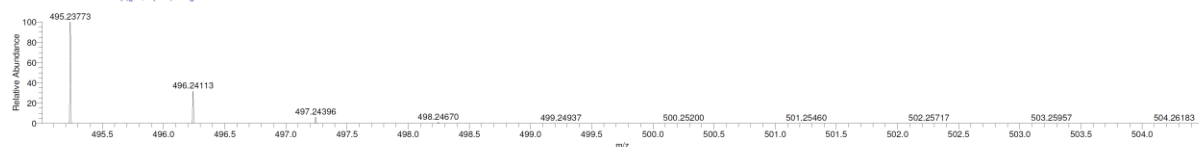


Figure S69. The NOESY spectrum of 4 β -crotignoid K (**14**).

YC-20200917 #4248-4285 RT: 21.82-22.01 AV: 38 NL: 1.09E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #4248-4285 RT: 21.82-22.01 AV: 38 NL: 1.78E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #4248-4285 RT: 21.82-22.01 AV: 38 NL: 8.03E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C29H34O7 +H: C29 H35 O7 [p(gss, s/p:40) Chrg 1R: 70...



C29H34O7 +Na: C29 H34 O7 Na1 [p(gss, s/p:40) Chrg 1...

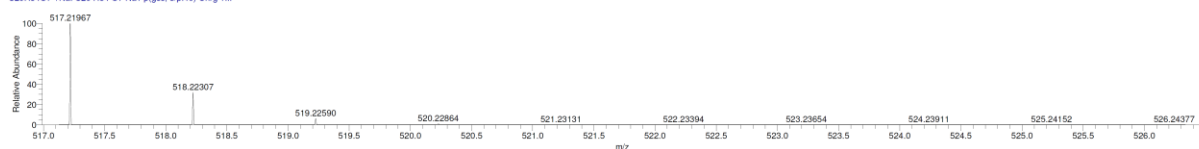


Figure S70. The HR-ESI-MS spectra of 4 β -crotigroid K (14).

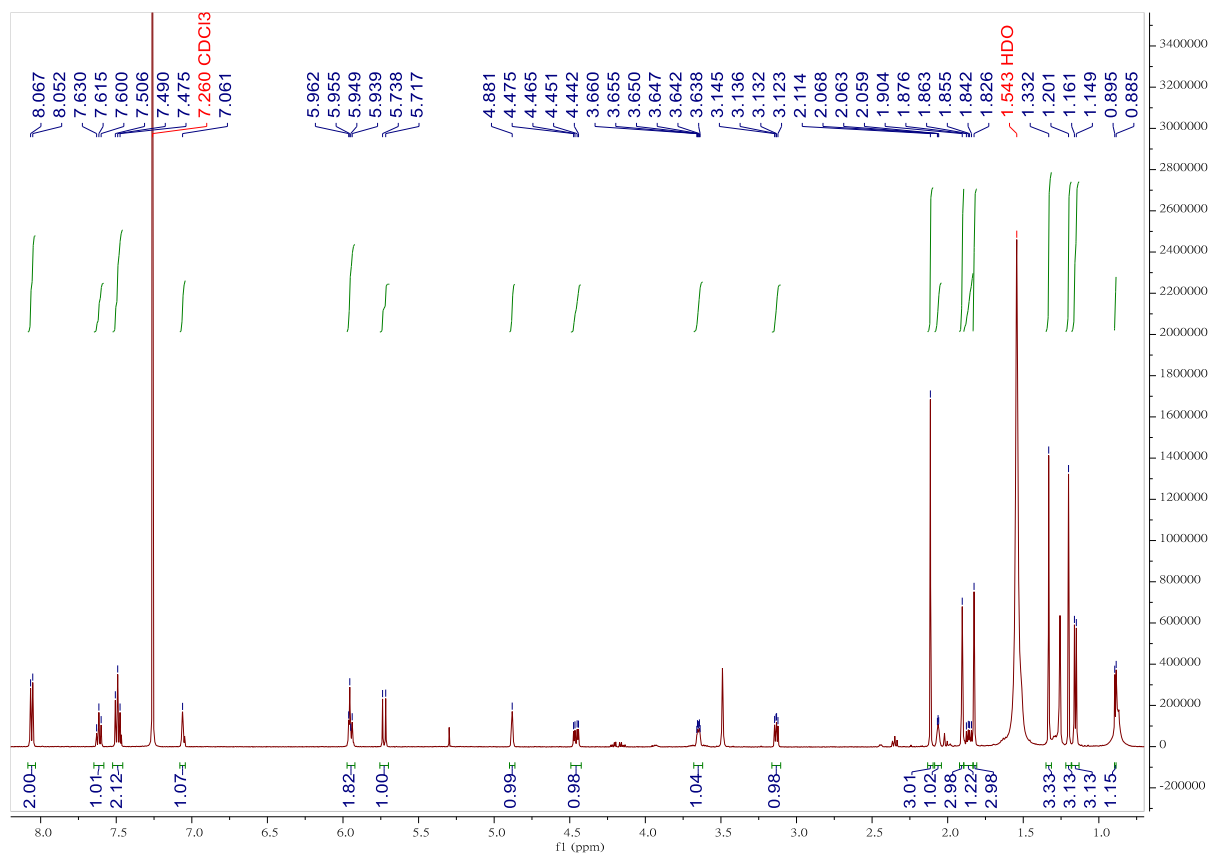


Figure S71. The ¹H-NMR spectrum of euphodendriane B (**15**) (500 MHz, CDCl₃).

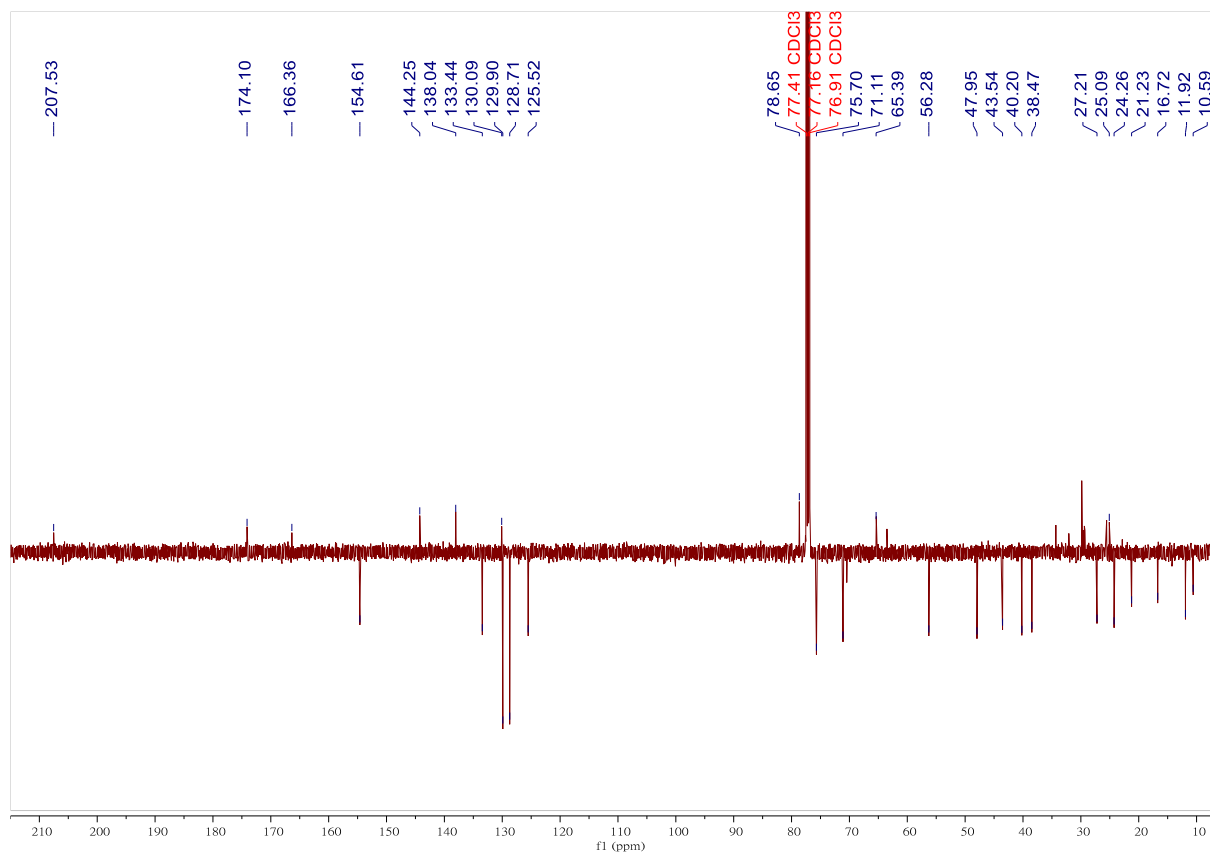


Figure S72. The ¹³C-JMOD spectrum of euphodendriane B (**15**) (125 MHz, CDCl₃).

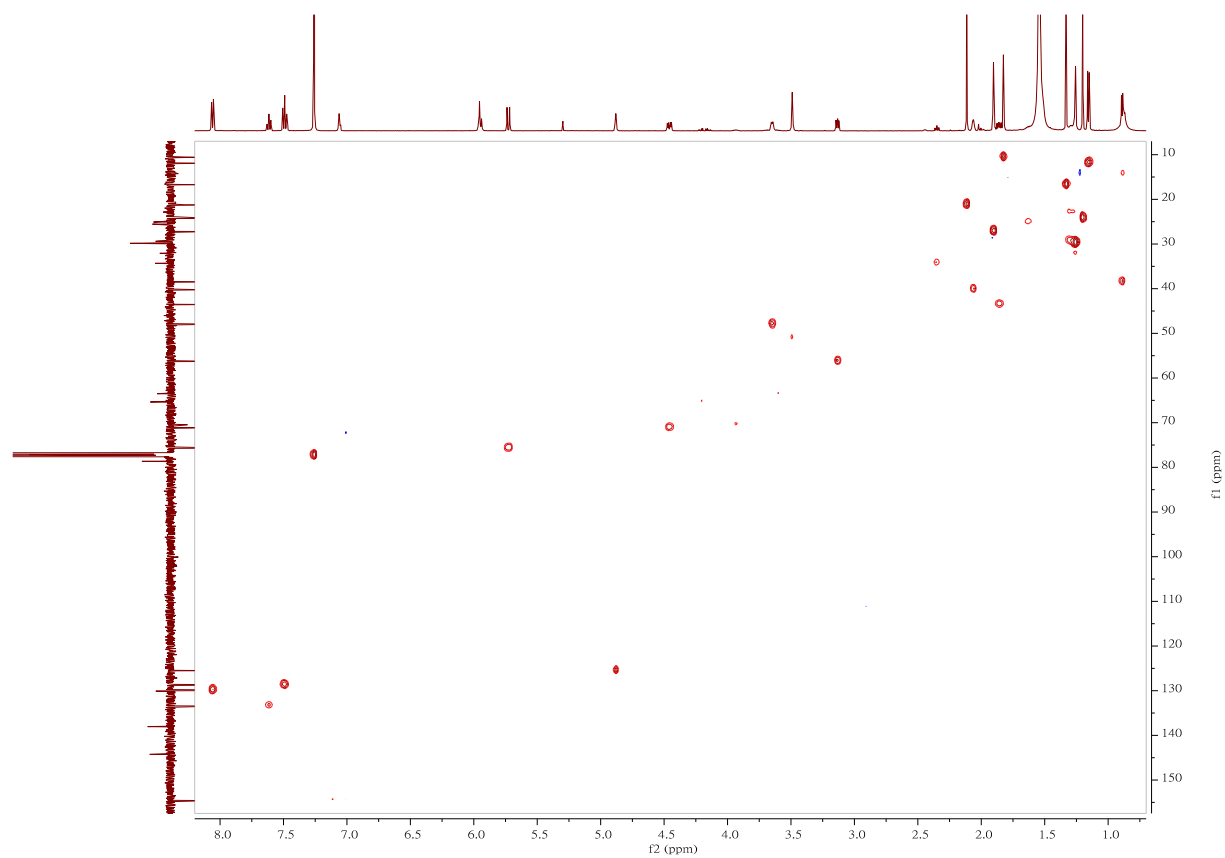


Figure S73. The HSQC spectrum of euphodendriane B (15).

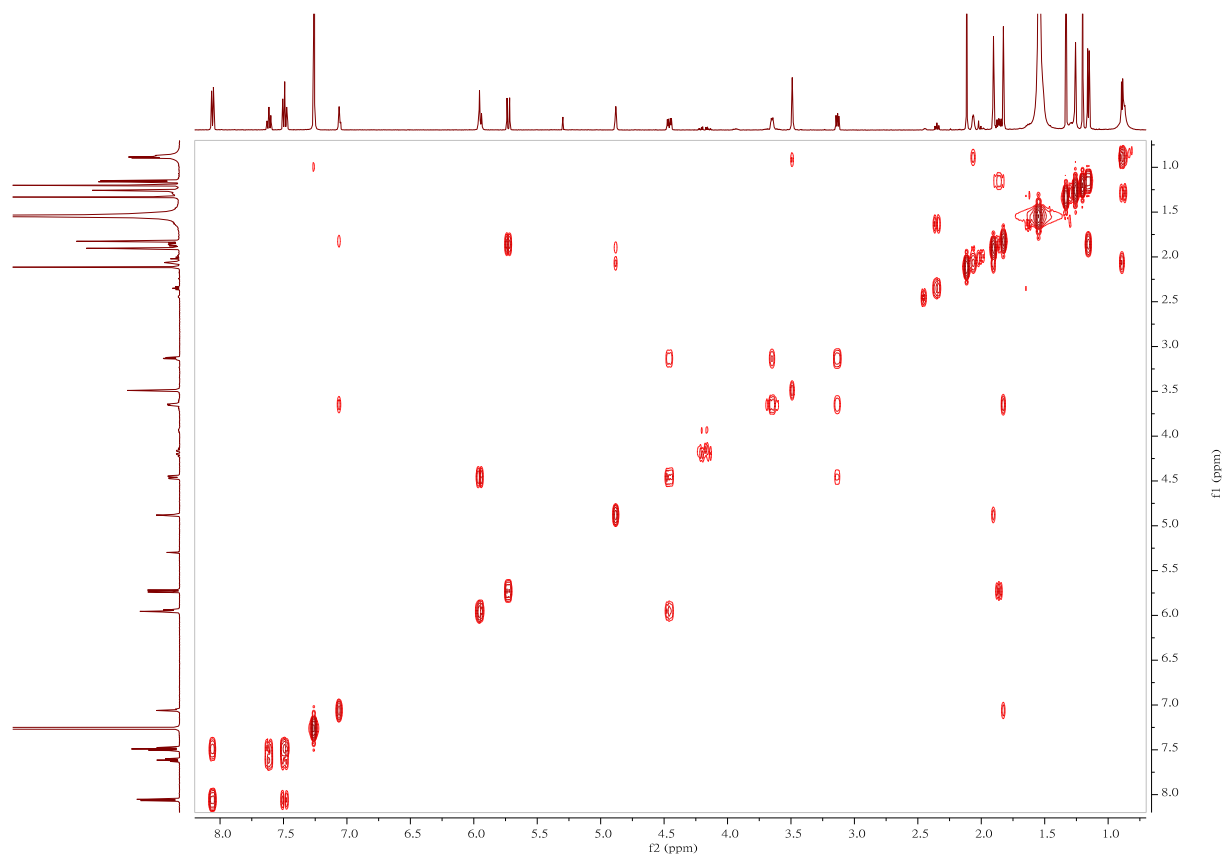


Figure S74. The ^1H - ^1H COSY spectrum of euphodendriane B (15).

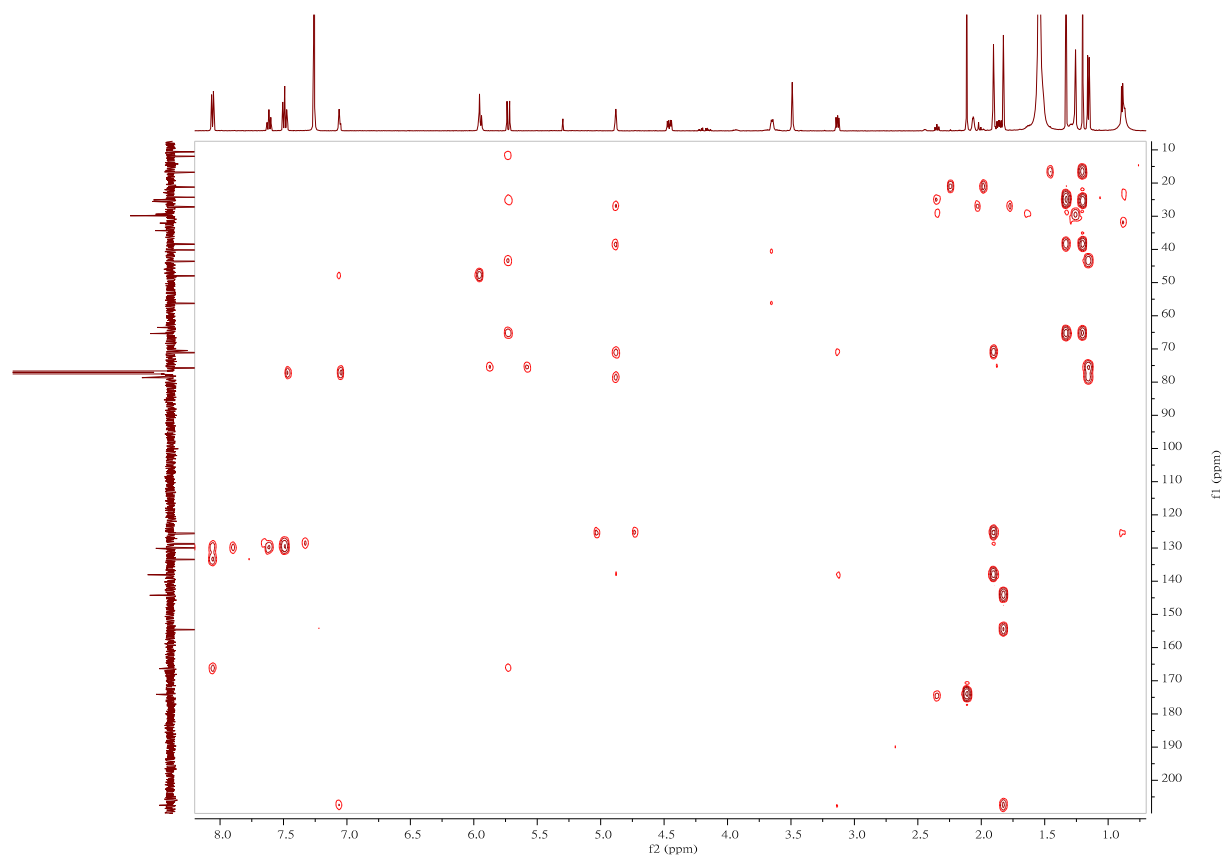


Figure S75. The HMBC spectrum of euphodendriane B (15).

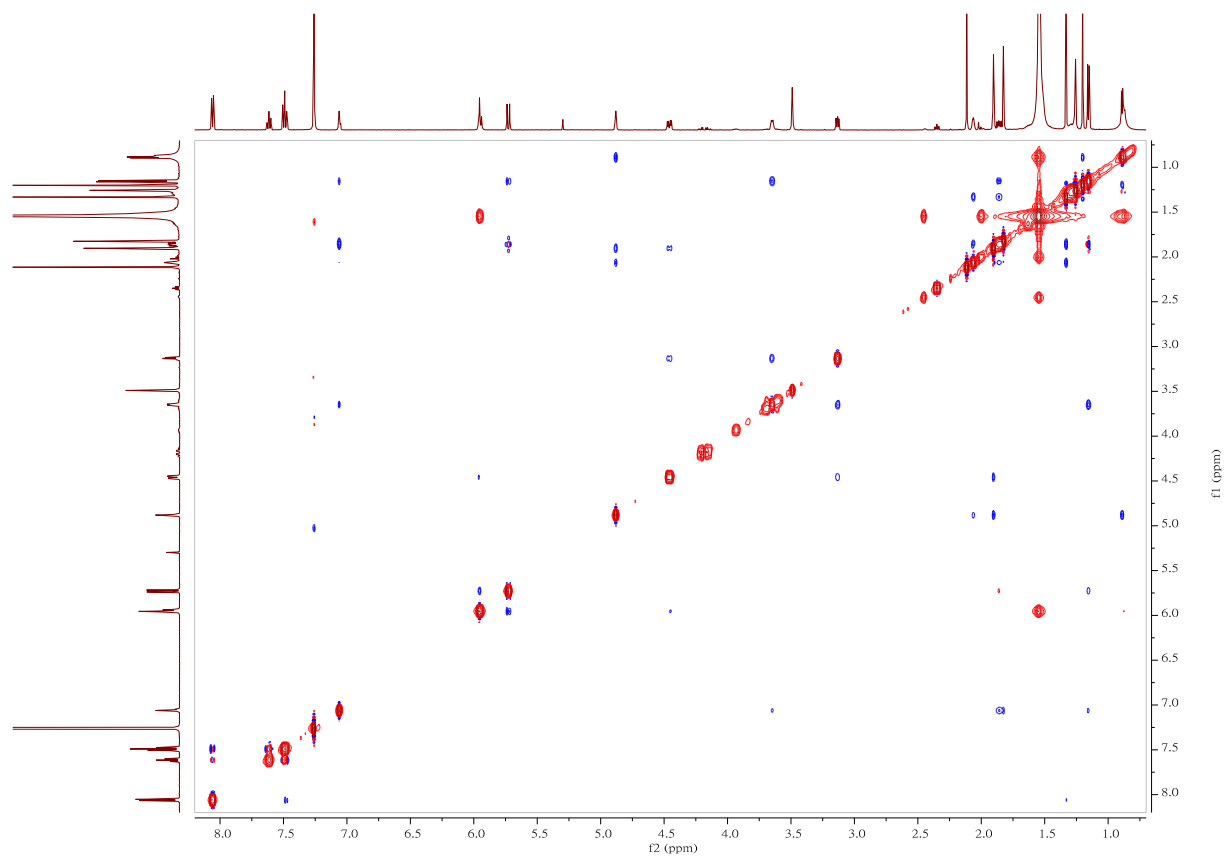
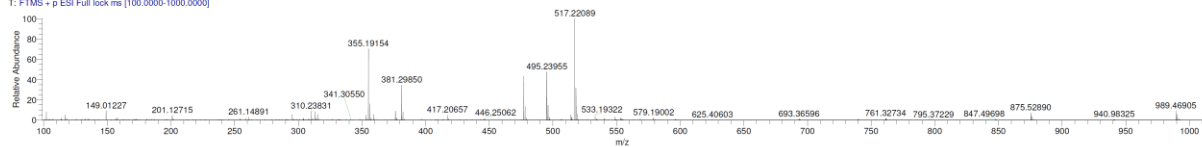
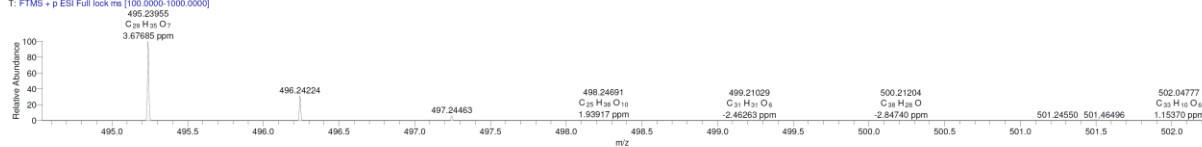
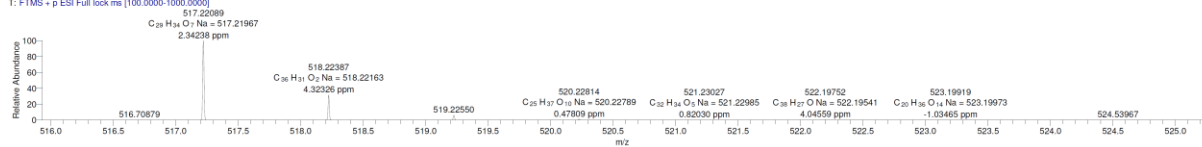
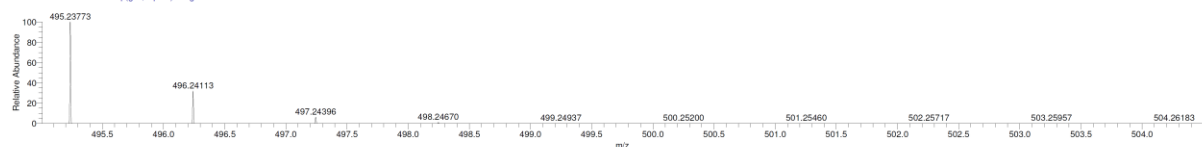


Figure S76. The NOESY spectrum of euphodendriane B (15).

YC-20200917 #3053-3075 RT: 15.68-15.79 AV: 23 NL: 2.45E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3053-3075 RT: 15.68-15.79 AV: 23 NL: 1.17E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #3053-3075 RT: 15.68-15.79 AV: 23 NL: 2.45E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C29H34O7 +H: C29 H35 O7 p(gss, s/p:40) Chrg 1R: 70...



C29H34O7 +Na: C29 H34 O7 Na1 p(gss, s/p:40) Chrg 1...

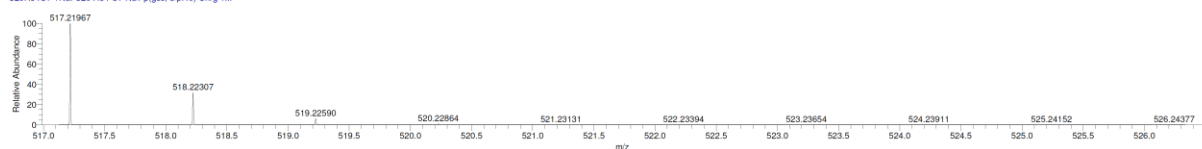


Figure S77. The HR-ESI-MS spectra of euphodendriane B (15).

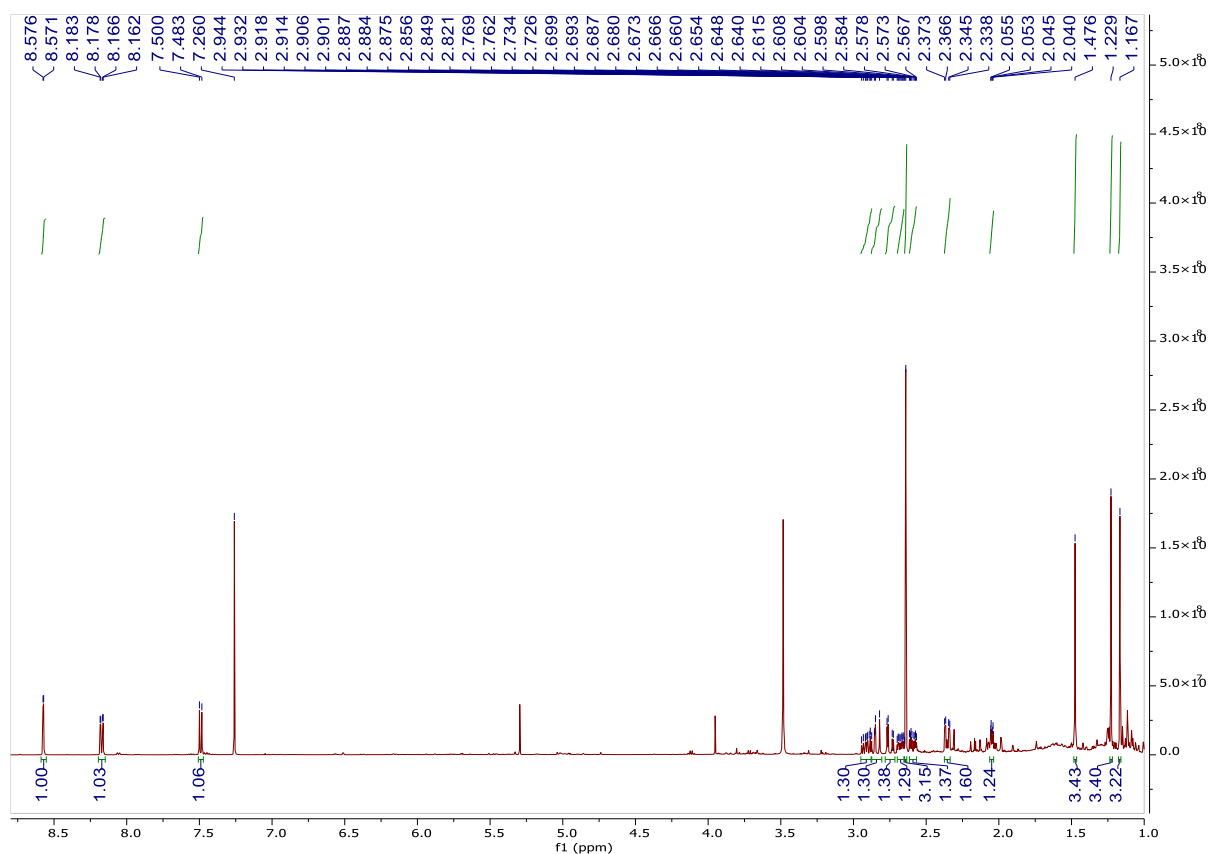


Figure S78. The ^1H -NMR spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**) (500 MHz, CDCl_3).

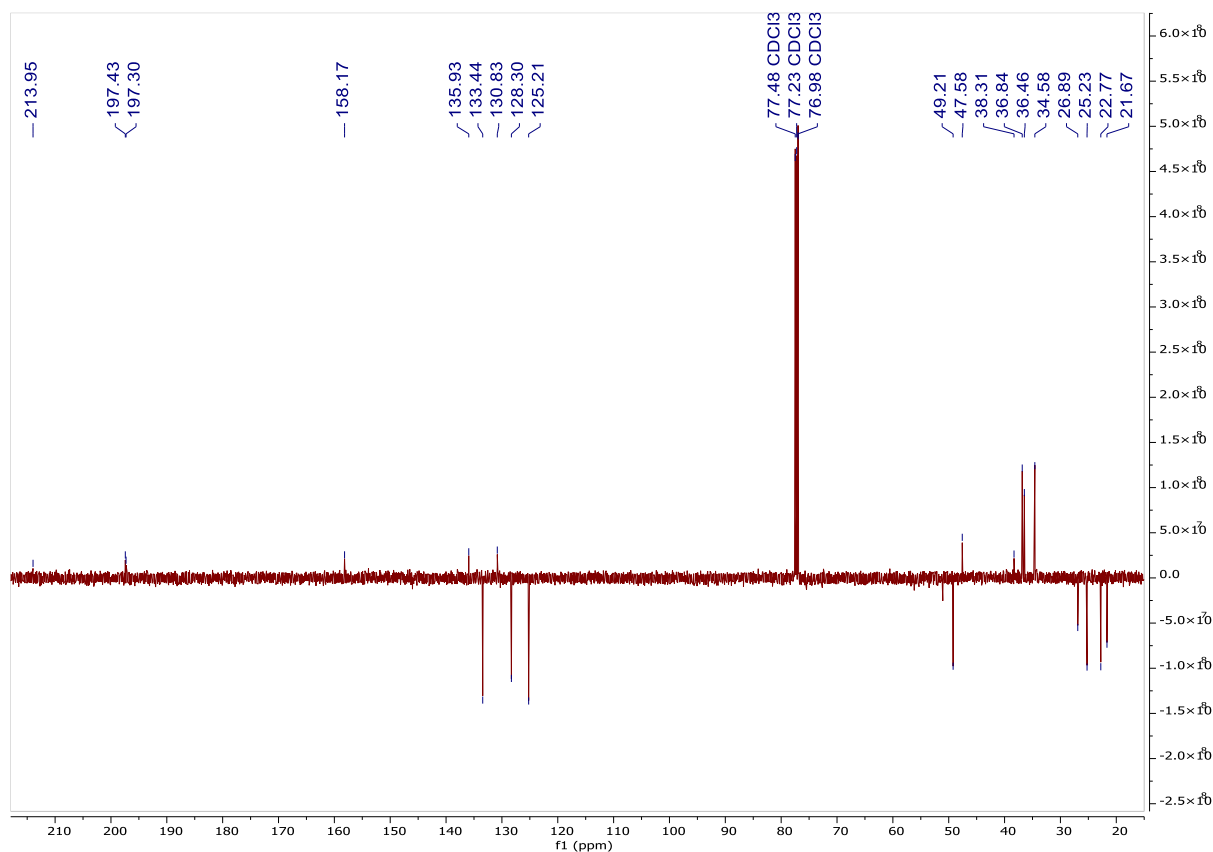


Figure S79. The ^{13}C -JMOD spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**) (125 MHz, CDCl_3).

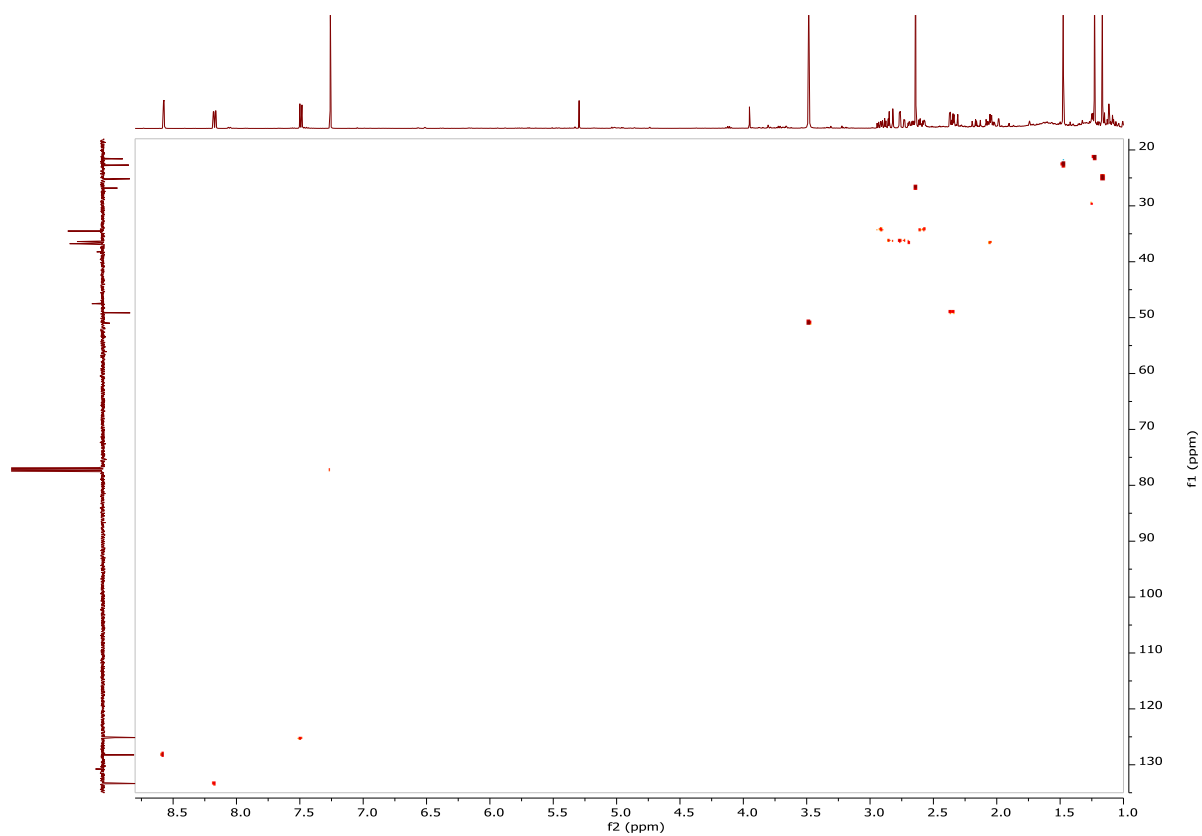


Figure S80. The HSQC spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**).

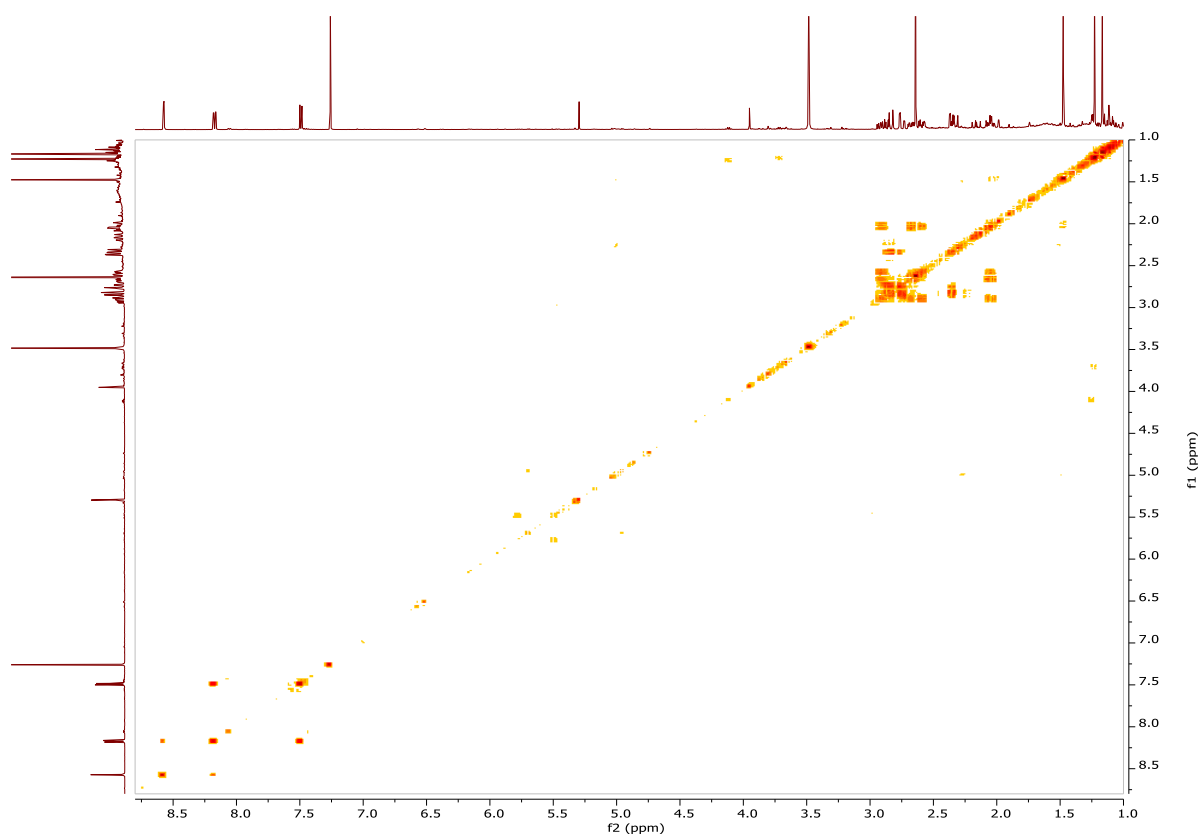


Figure S81. The ^1H - ^1H COSY spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**).

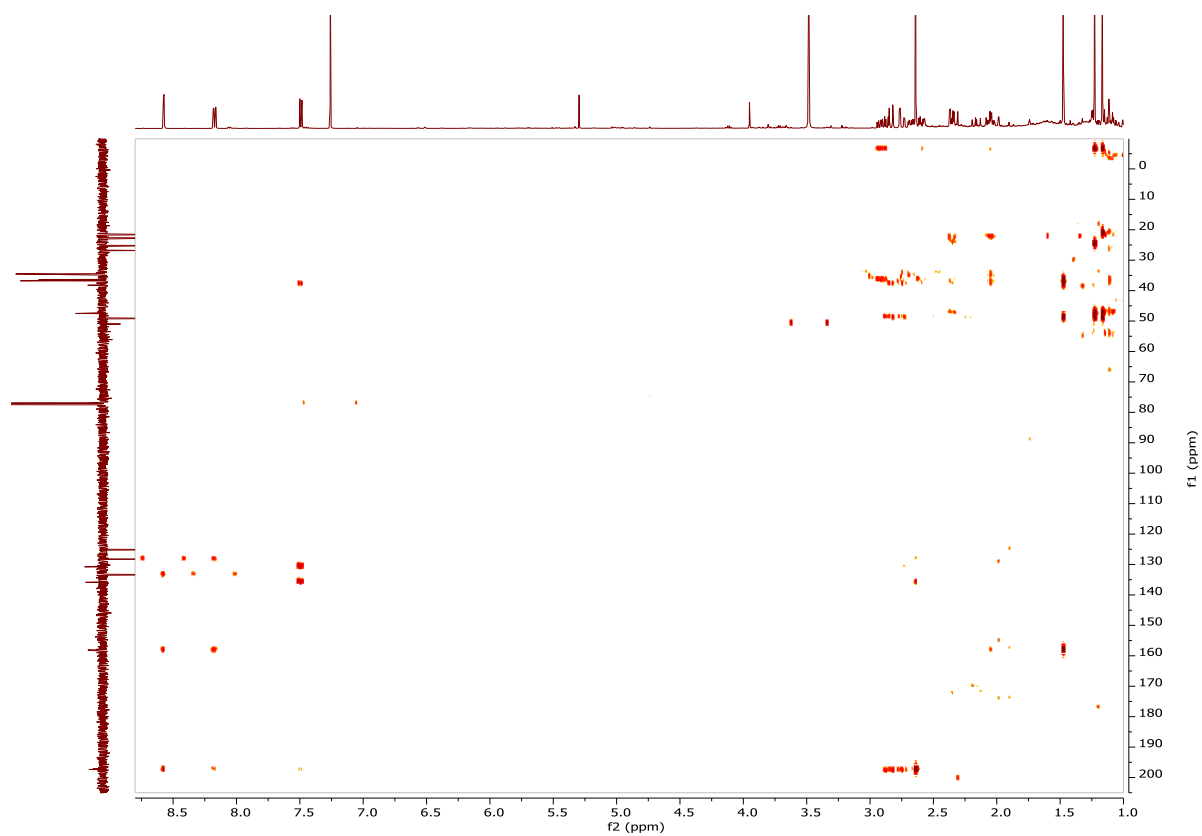


Figure S82. The HMBC spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**).

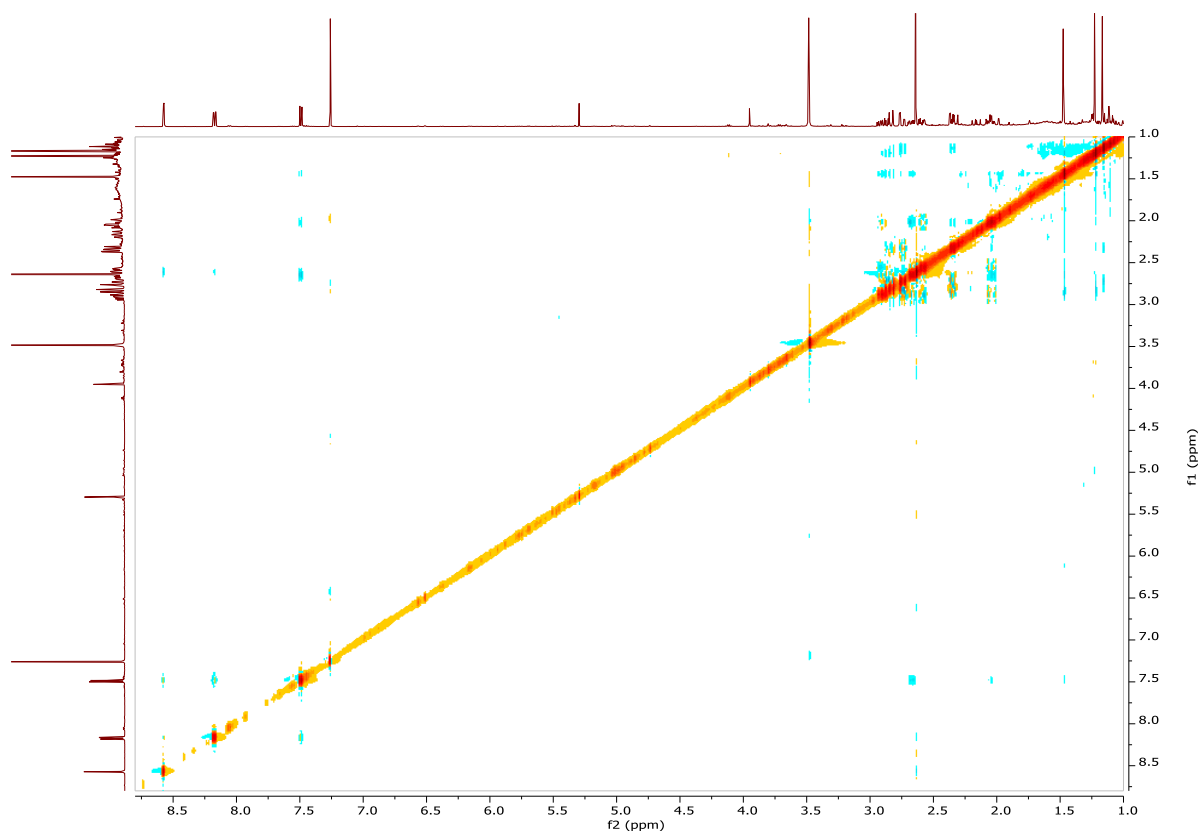
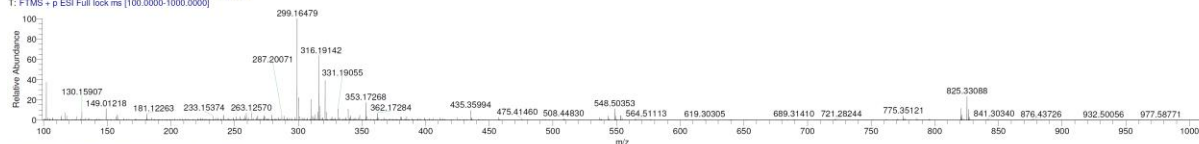
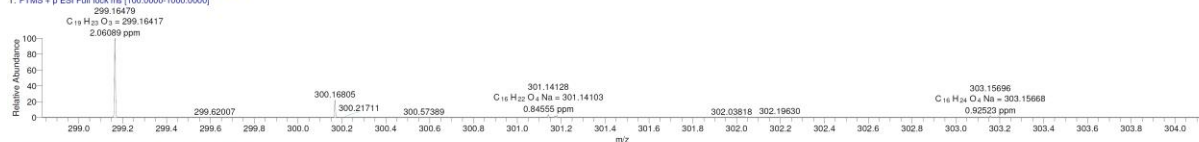
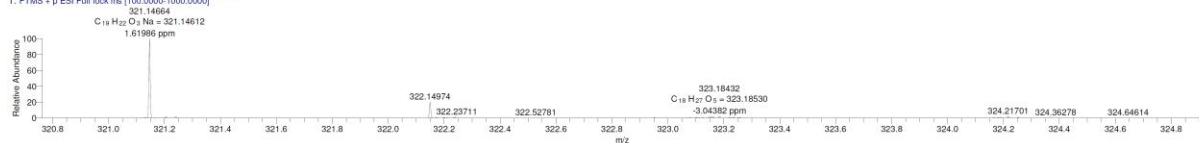
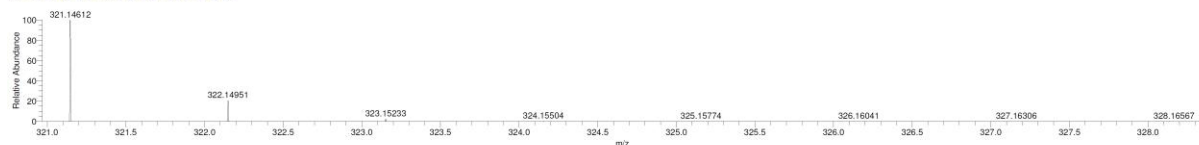


Figure S83. The NOESY spectrum of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**).

YC-20200917 #182-227 RT: 0.93-1.16 AV: 43 NL: 1.55E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #182-227 RT: 0.93-1.16 AV: 43 NL: 1.55E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #182-227 RT: 0.93-1.16 AV: 43 NL: 6.04E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C19H22O3 +Na: C19H22O3 Na1 p(gss, s/p-40) Chg 1...



C19H22O3 +Na: C19H22O3 Na1 p(gss, s/p-40) Chg 1...

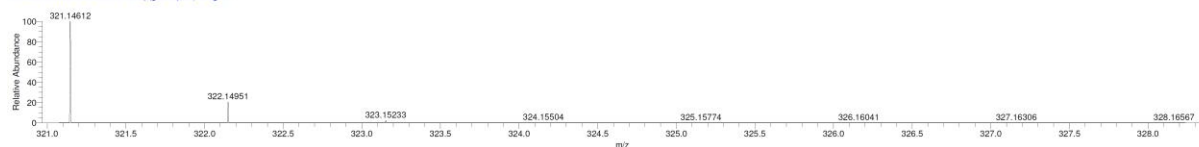


Figure S84. The HR-ESI-MS spectra of 16-nor-abieta-8,11,13-trien-3,7,15-trione (**16**).

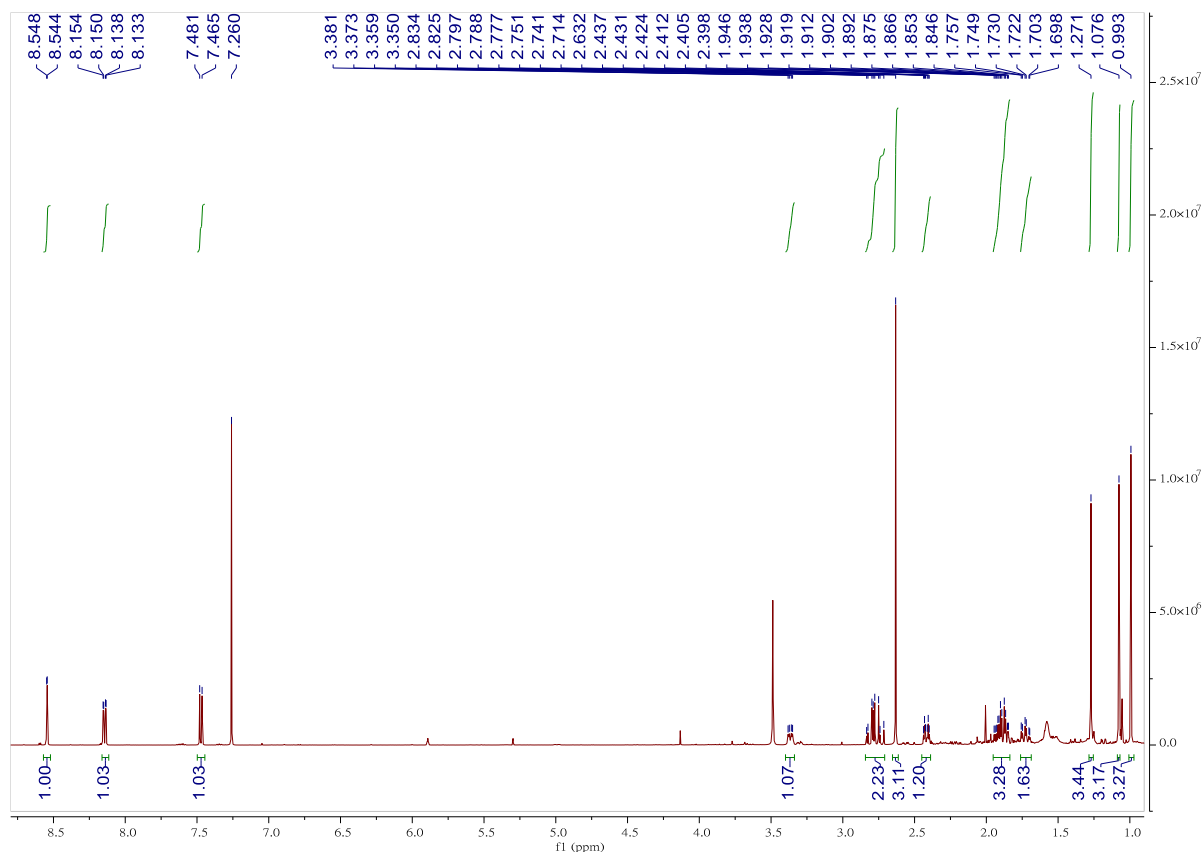


Figure S85. The ¹H-NMR spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**) (500 MHz, CDCl₃).

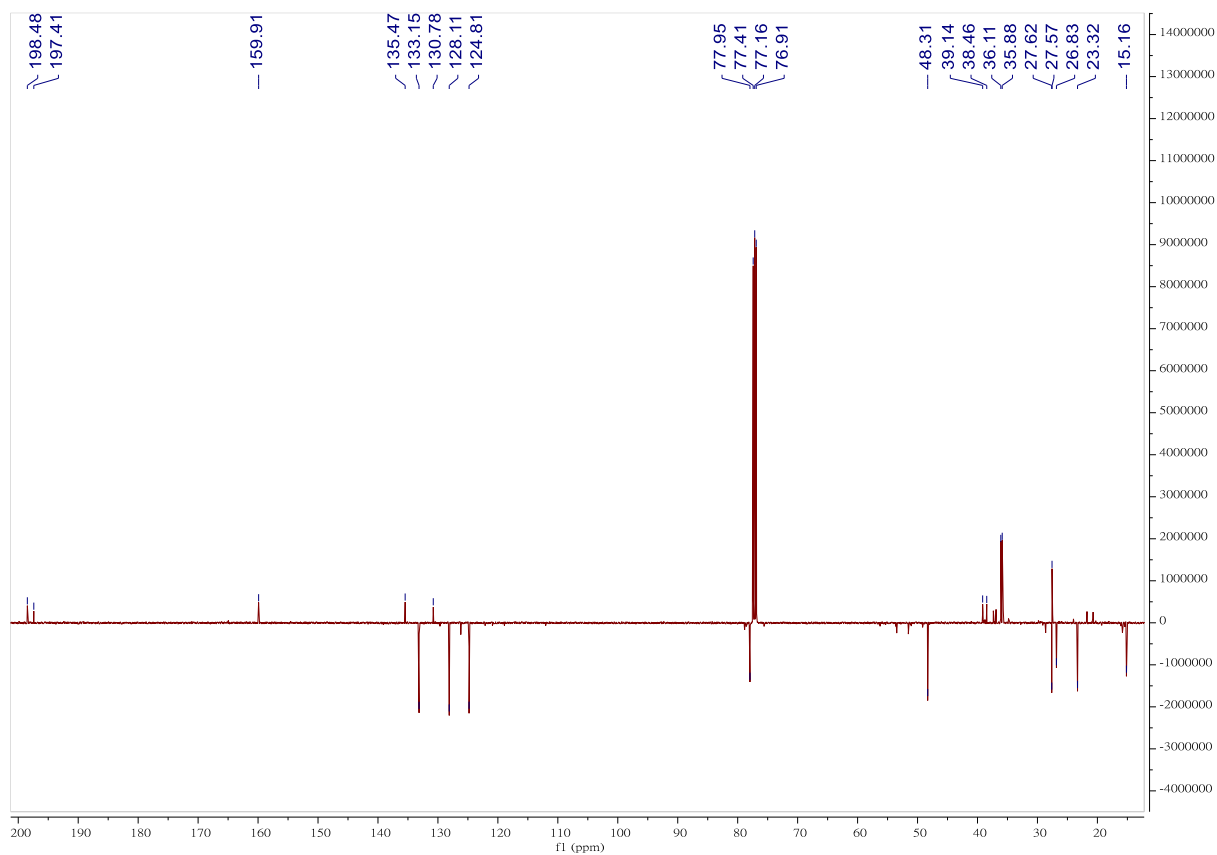


Figure S86. The ¹³C-JMOD spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**) (125 MHz, CDCl₃).

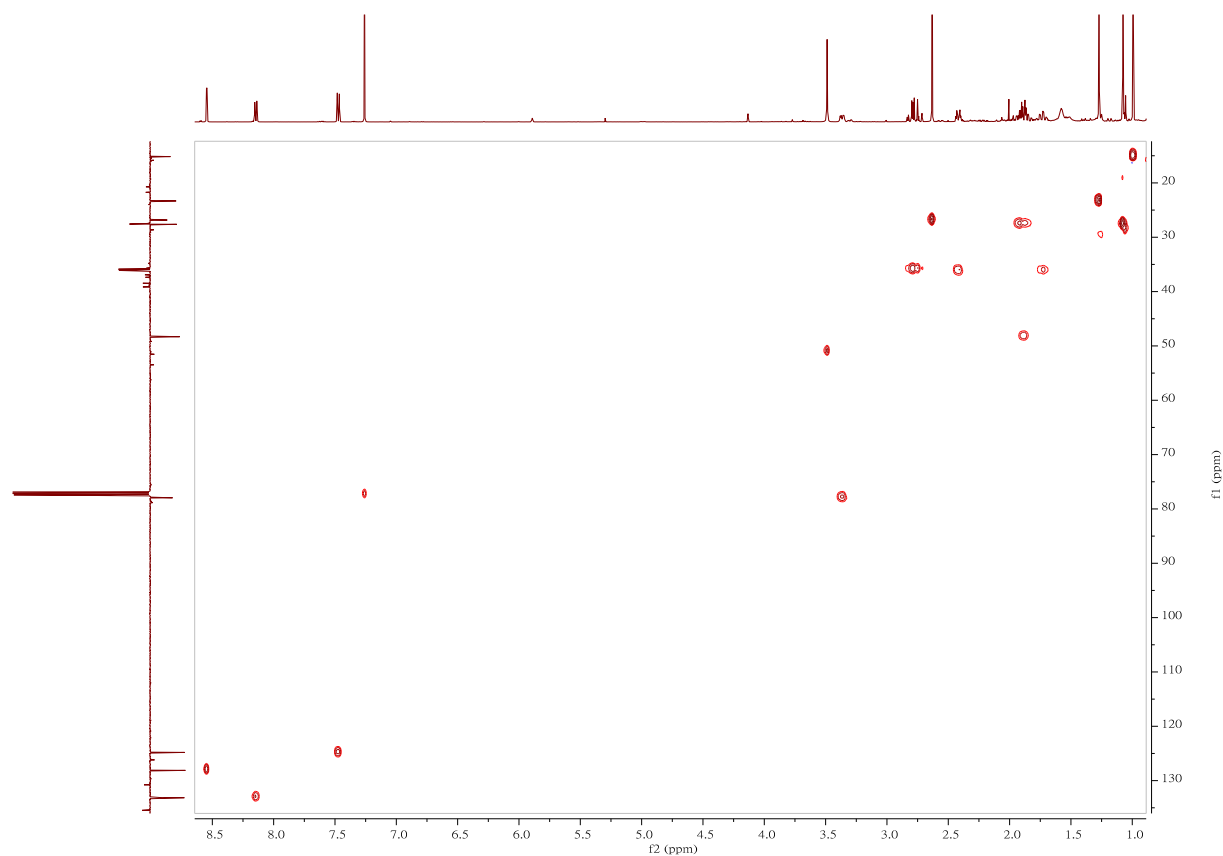


Figure S87. The HSQC spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**).

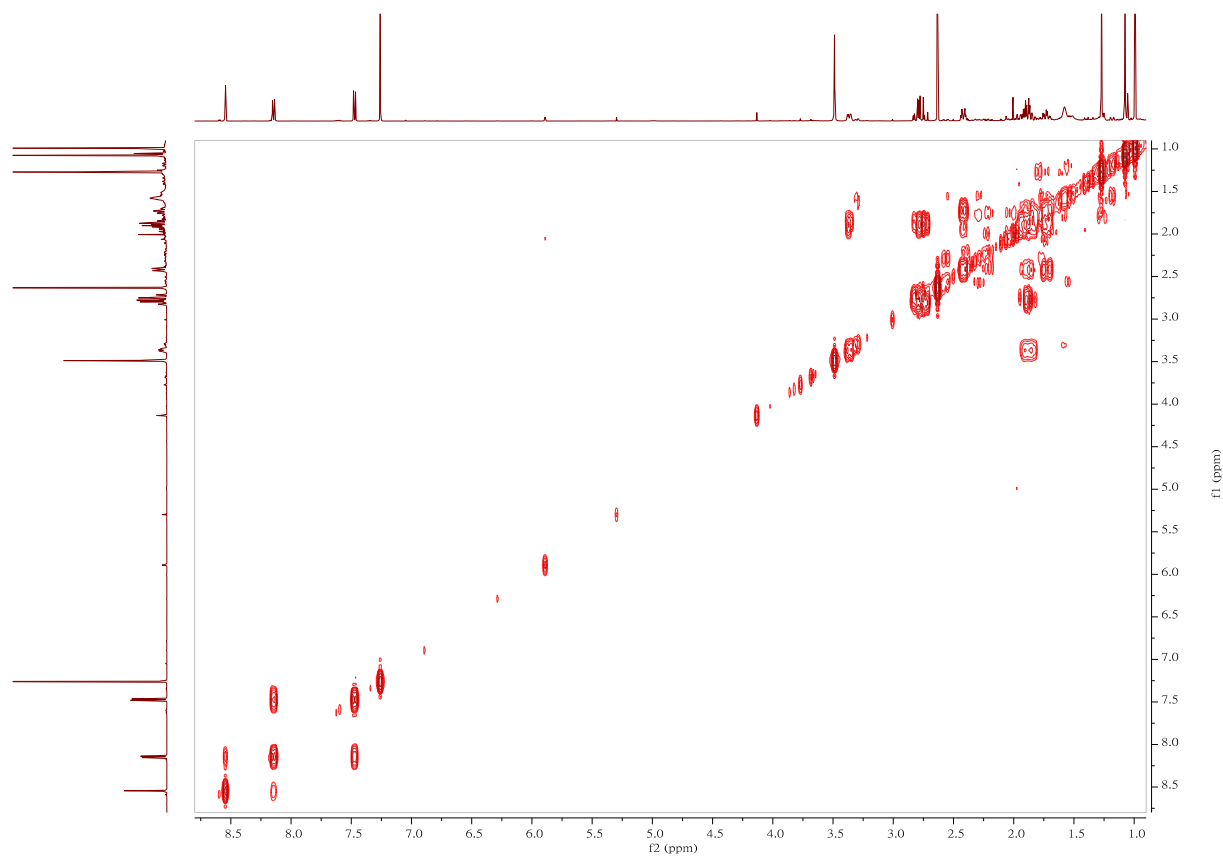


Figure S88. The ¹H-¹H COSY spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**).

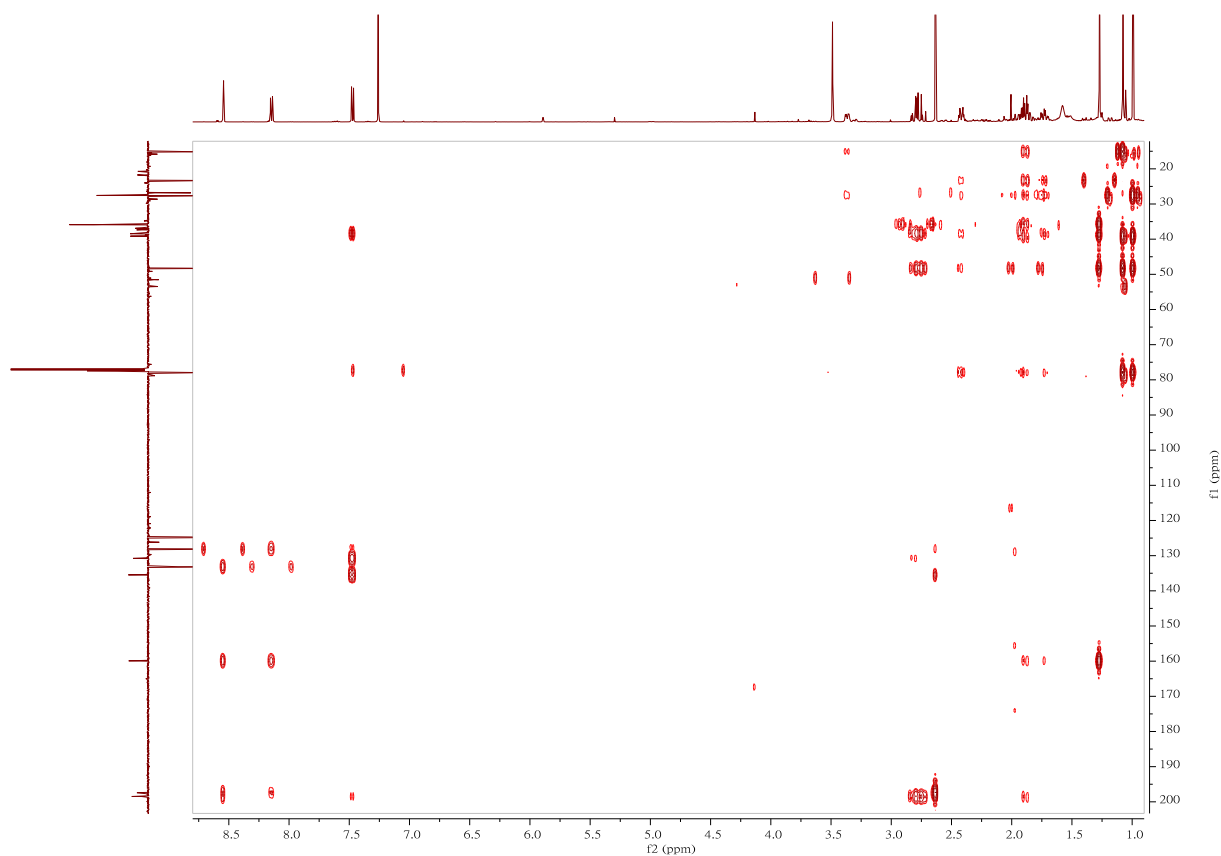


Figure S89. The HMBC spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**).

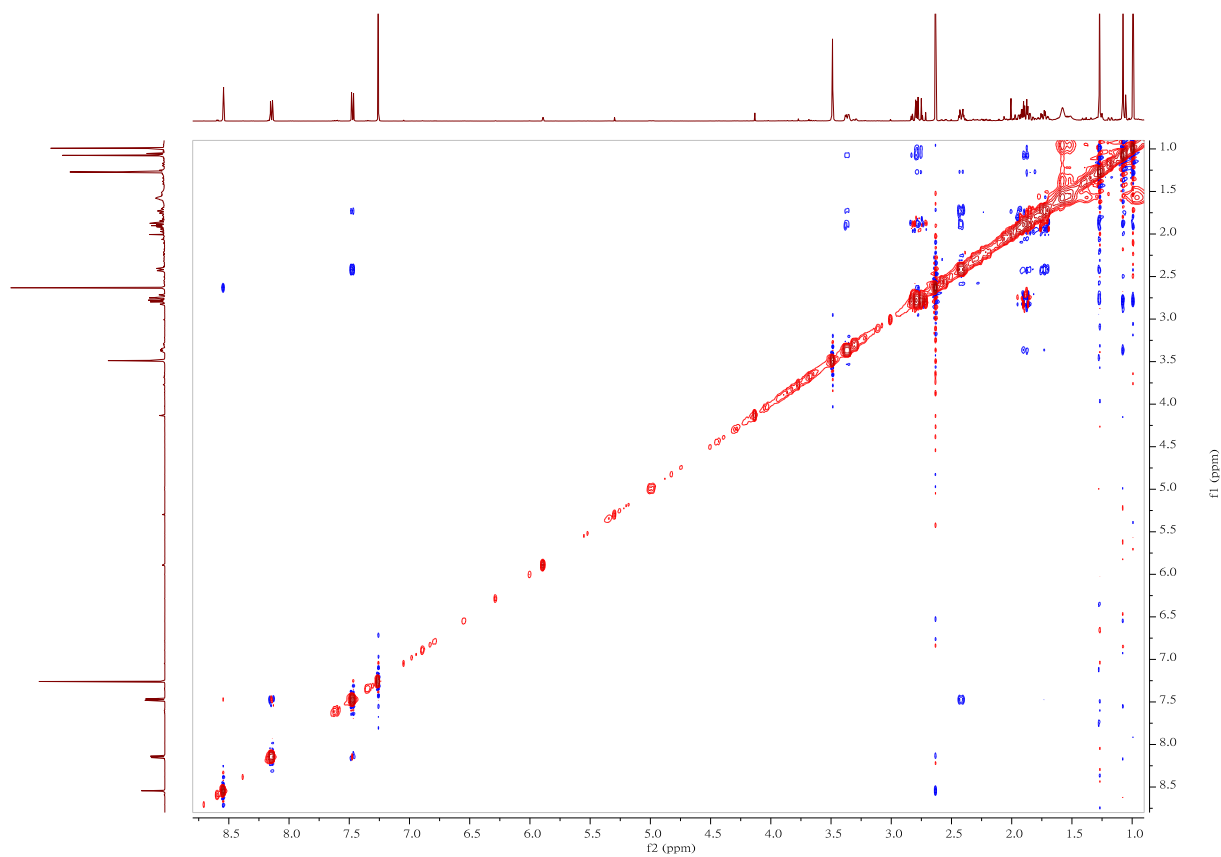
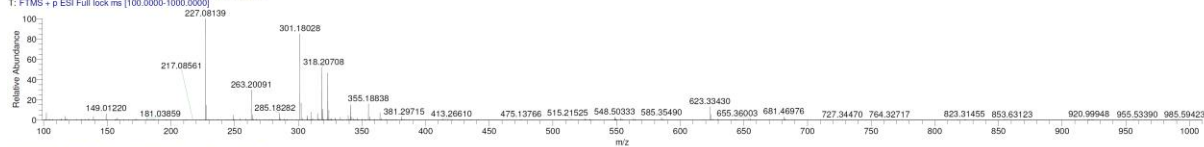
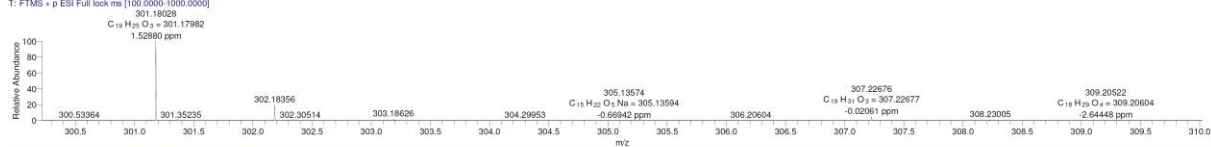
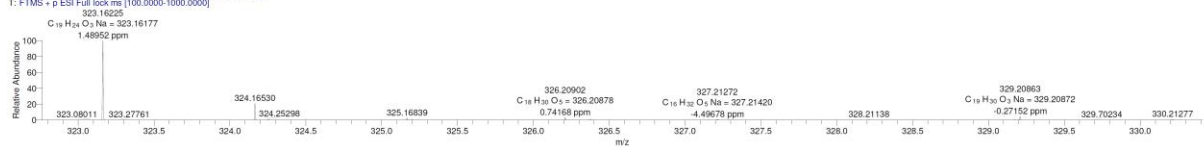
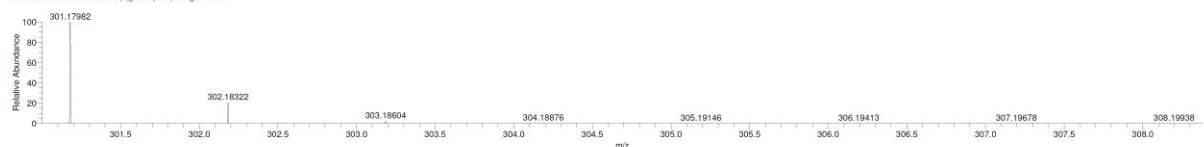


Figure S90. The NOESY spectrum of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**).

YC-20200917 #2539-2569 RT: 13.04-13.19 AV: 29 NL: 3.41E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #2539-2569 RT: 13.04-13.19 AV: 29 NL: 2.90E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #2539-2569 RT: 13.04-13.19 AV: 29 NL: 1.59E8
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C19H24O3 +H: C19 H25 O3 p(gss, s/p:40) Chrg 1R: 70...



C19H24O3 +Na: C19 H24 O3 Na1 p(gss, s/p:40) Chrg 1...

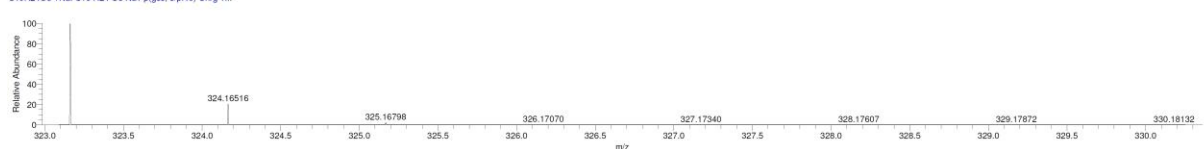


Figure S91. The HR-ESI-MS spectra of 16-nor-3 β -hydroxy-abieta-8,11,13-trien-7,15-dione (**17**).

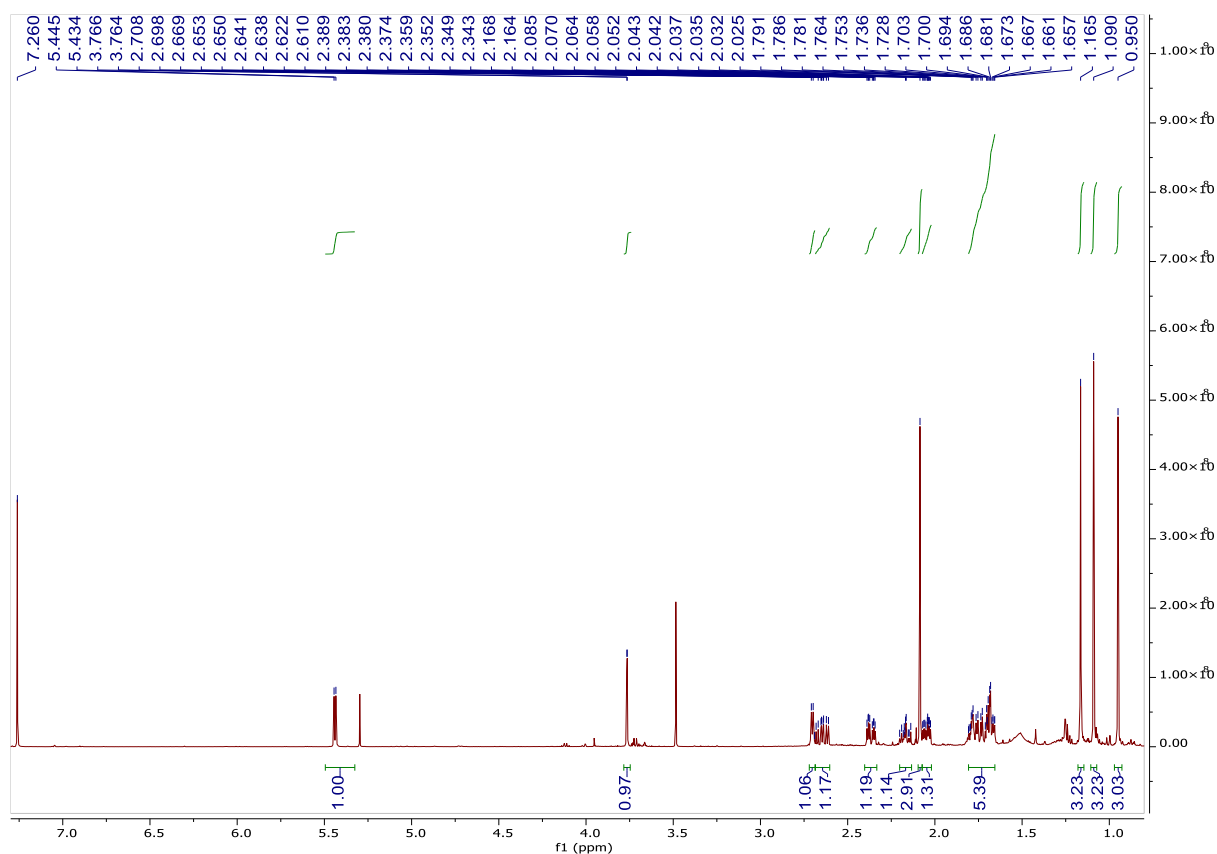


Figure S92. The ¹H-NMR spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (**19**) (500 MHz, CDCl₃).

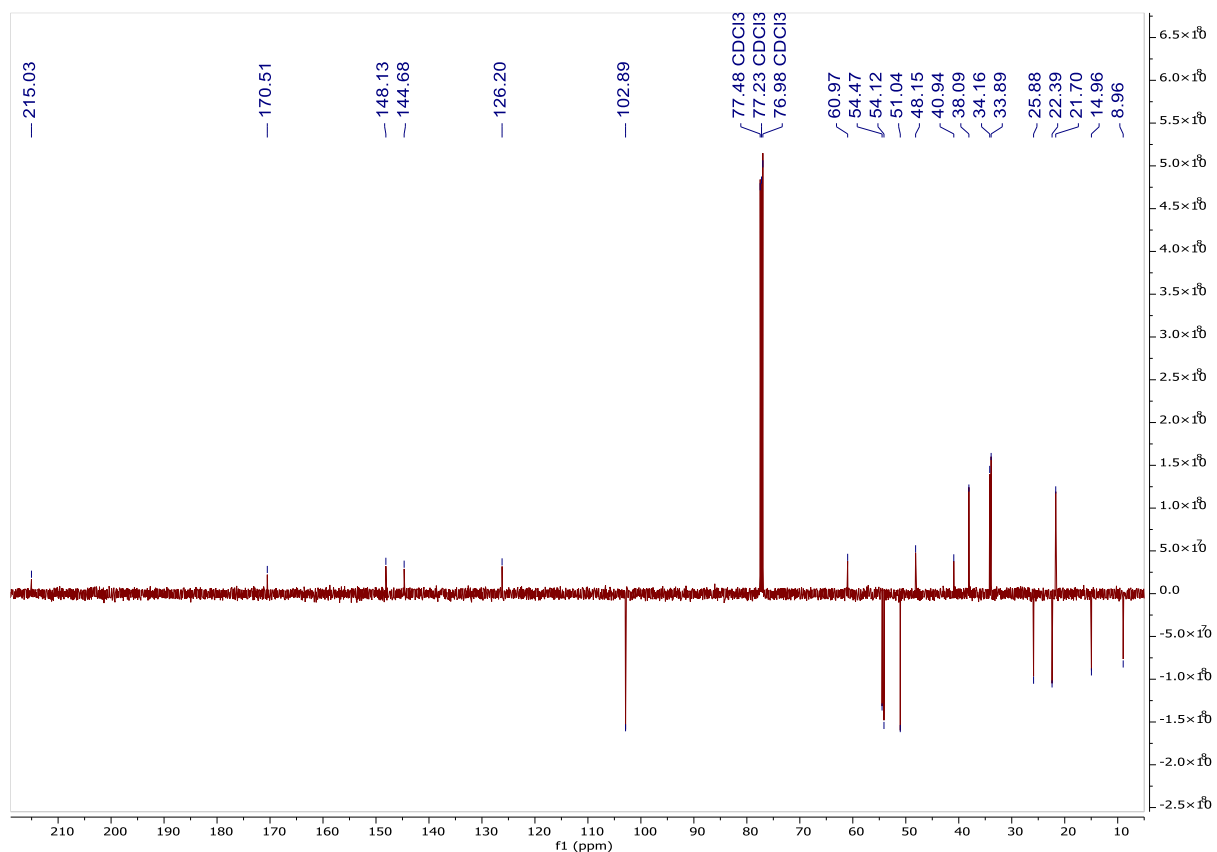


Figure S93. The ¹³C-JMOD spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (**19**) (125 MHz, CDCl₃).

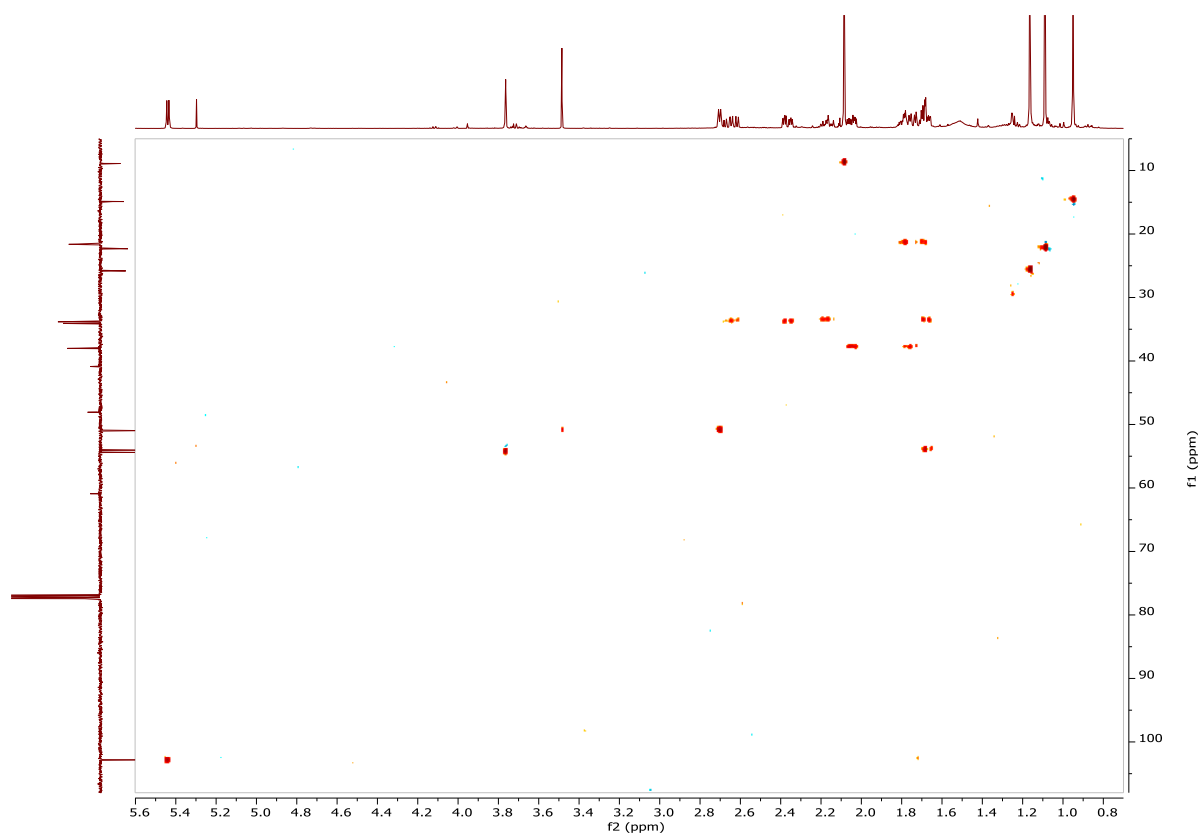


Figure S94. The HSQC spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (19).

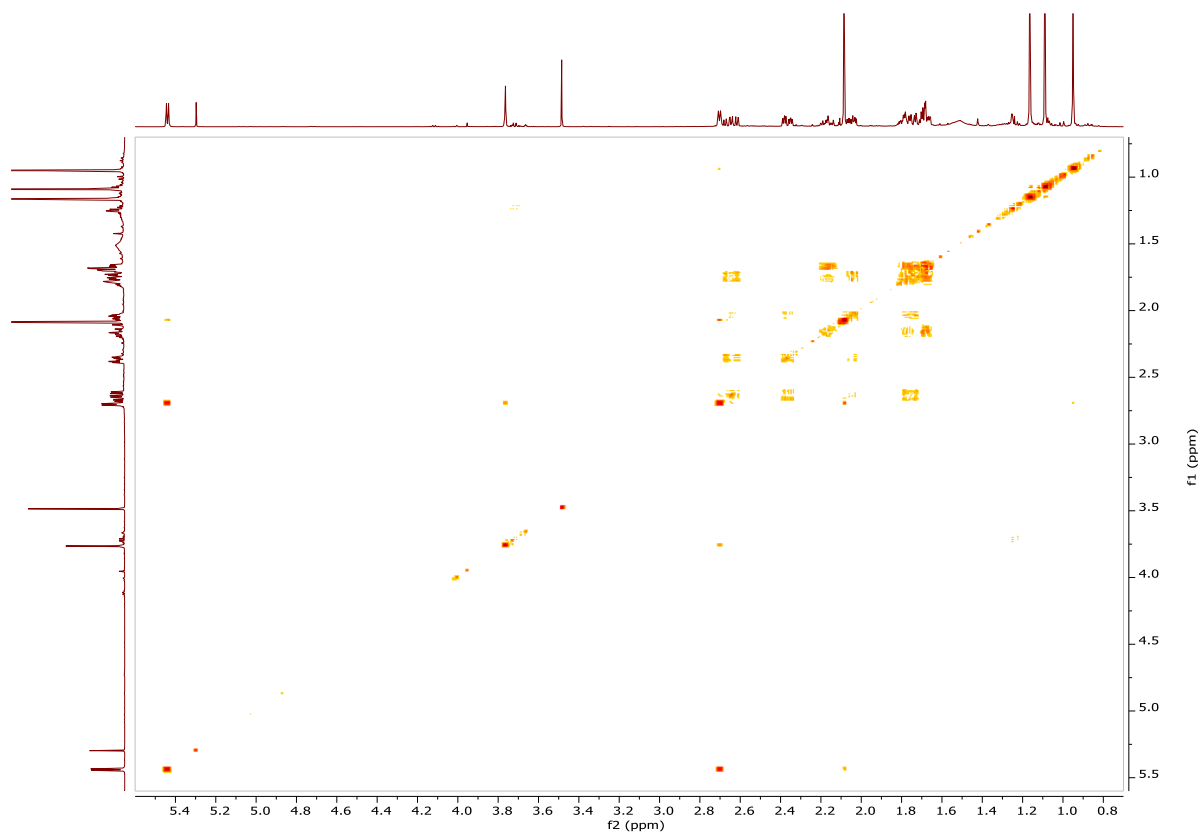


Figure S95. The ¹H-¹H COSY spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (19).

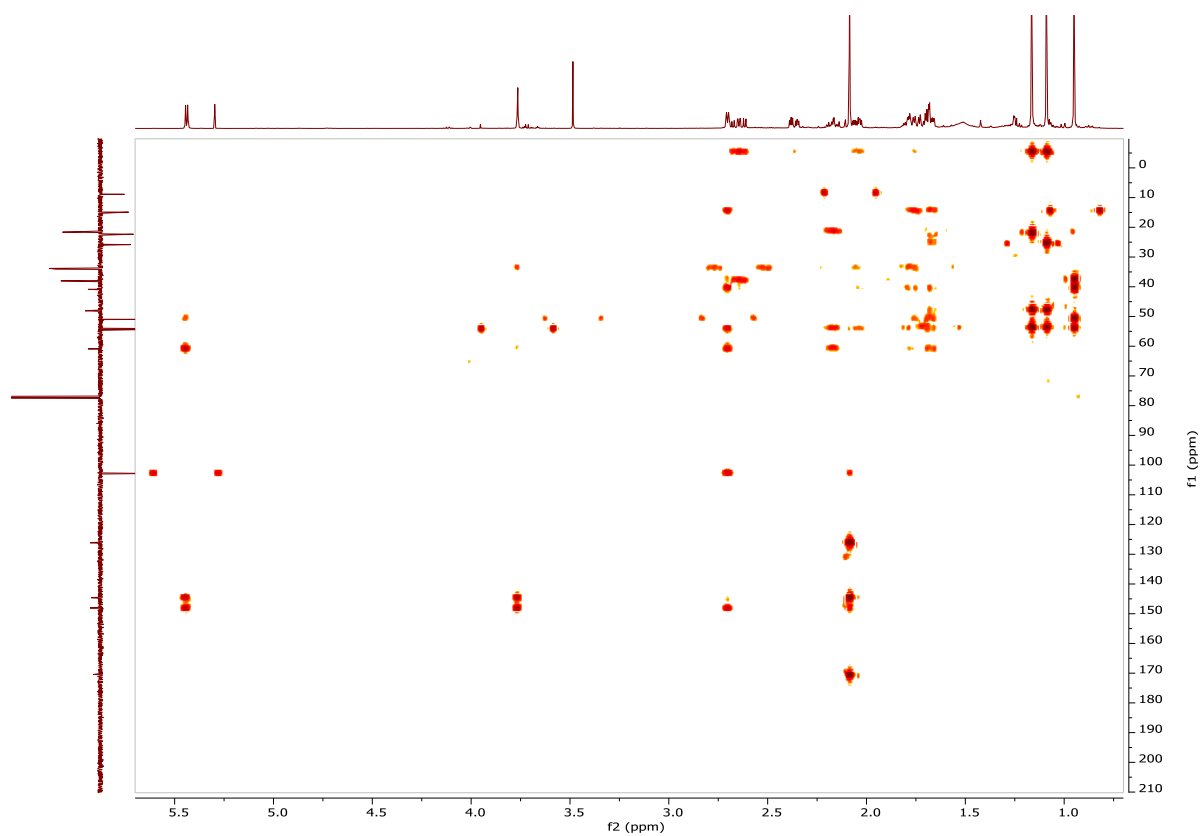


Figure S96. The HMBC spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (19).

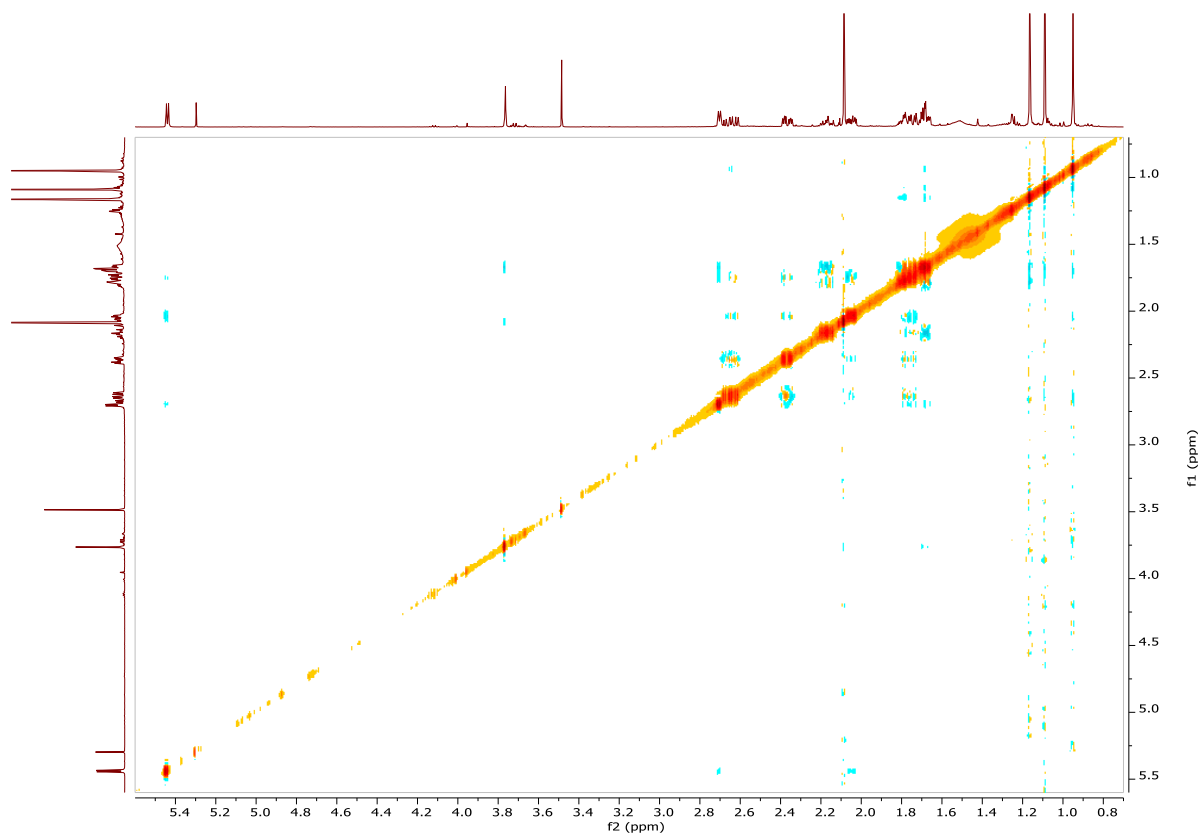
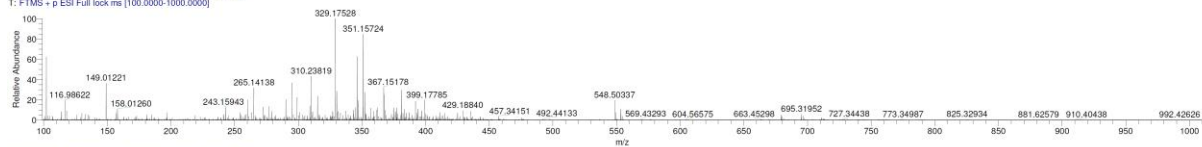
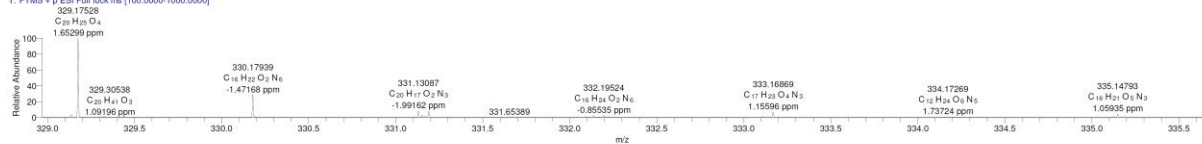
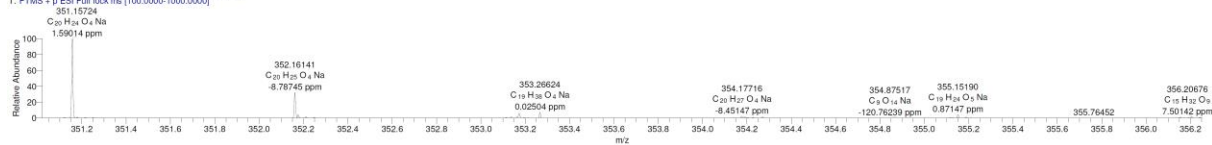
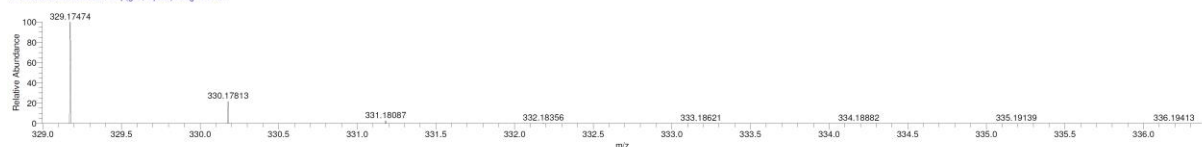


Figure S97. The NOESY spectrum of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (19).

1-5, 11-14

YC-20200917 #487-508 RT: 2.49-2.60 AV: 22 NL: 6.18E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #487-508 RT: 2.49-2.60 AV: 22 NL: 6.18E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]YC-20200917 #487-508 RT: 2.49-2.60 AV: 22 NL: 5.24E7
T: FTMS + p ESI Full lock ms [100.0000-1000.0000]

C20H24O4 +H: C20 H25 O4 p(gss, s/p:40) Chrg 1R: 70...



C20H24O4 +Na: C20 H24 O4 Na1 p(gss, s/p:40) Chrg 1...

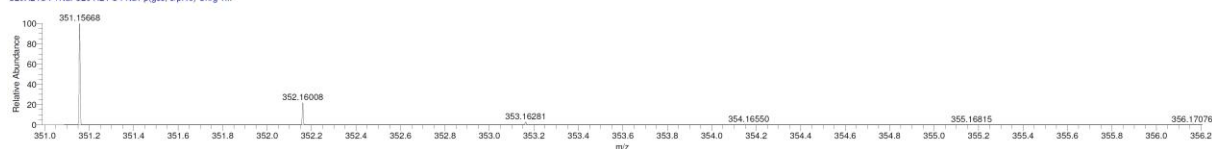


Figure S98. The HR-ESI-MS spectra of *ent*-8 β ,14 β -epoxyabieta-3-one-11,13(15)-dien-16,12-olide (19).

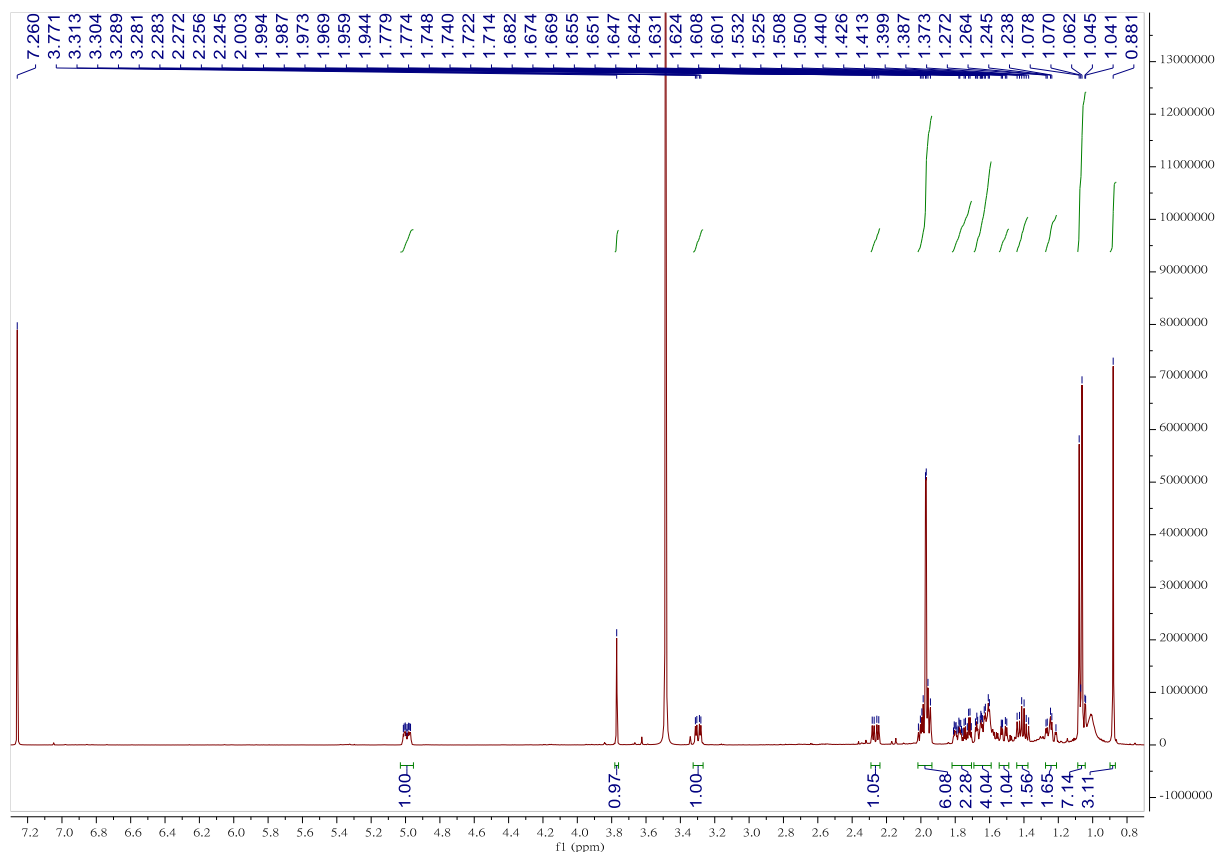


Figure S99. The ^1H -NMR spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (**20**) (500 MHz, CDCl_3).

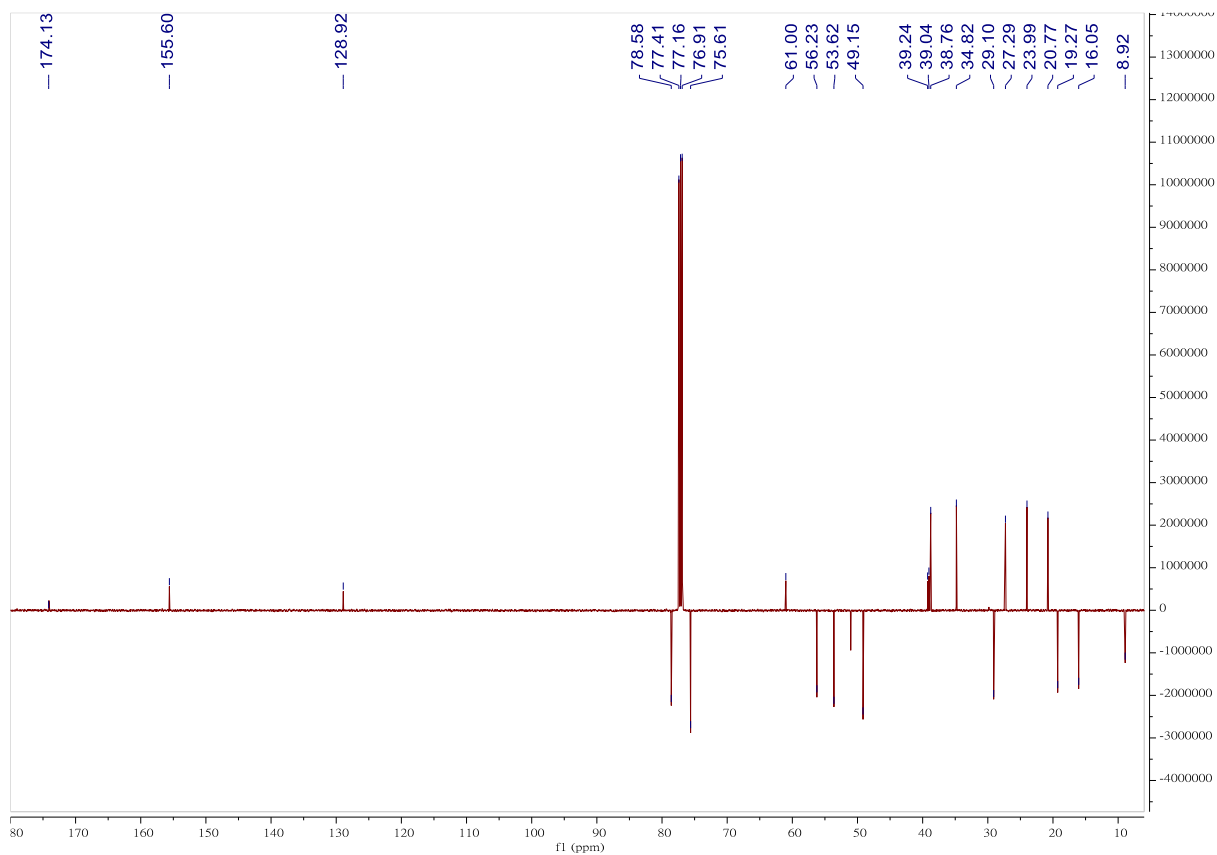


Figure S100. The ^{13}C -JMOD spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (**20**) (125 MHz, CDCl_3).

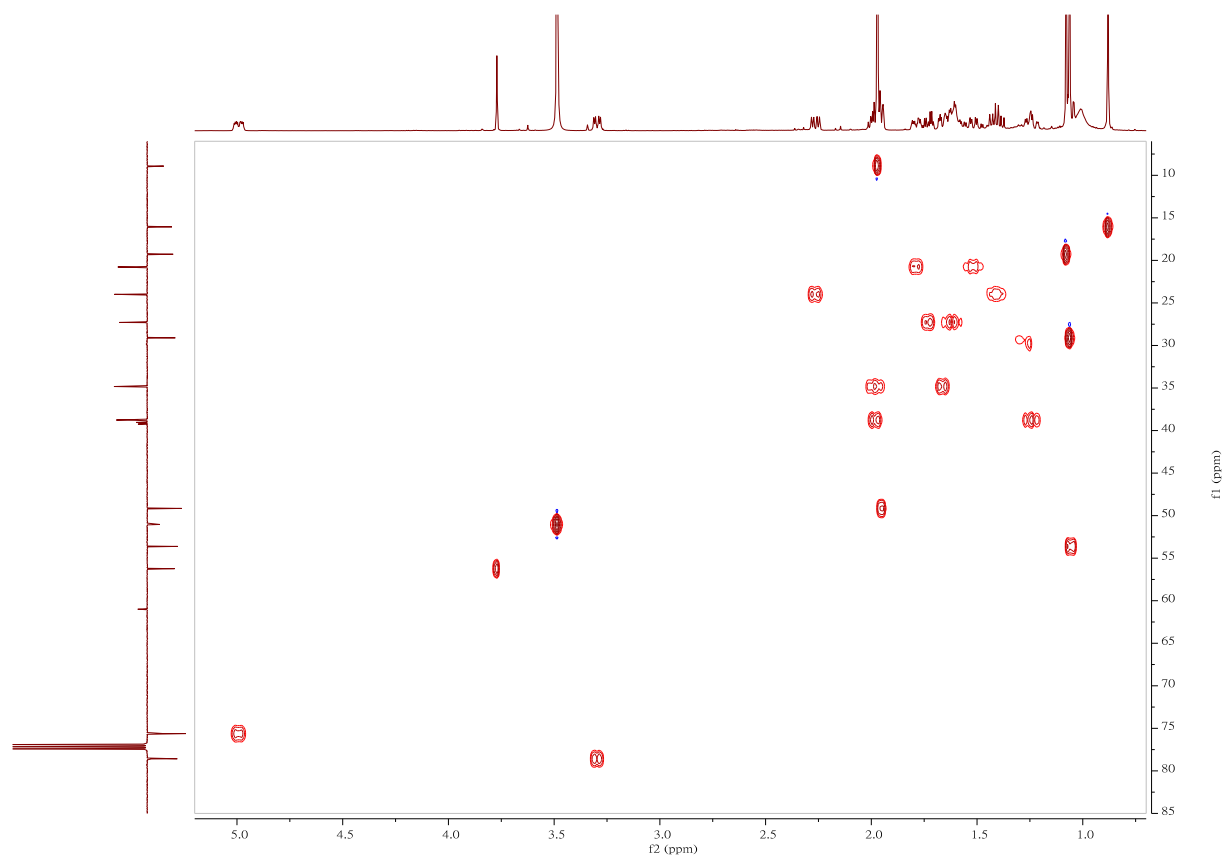


Figure S101. The HSQC spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (20).

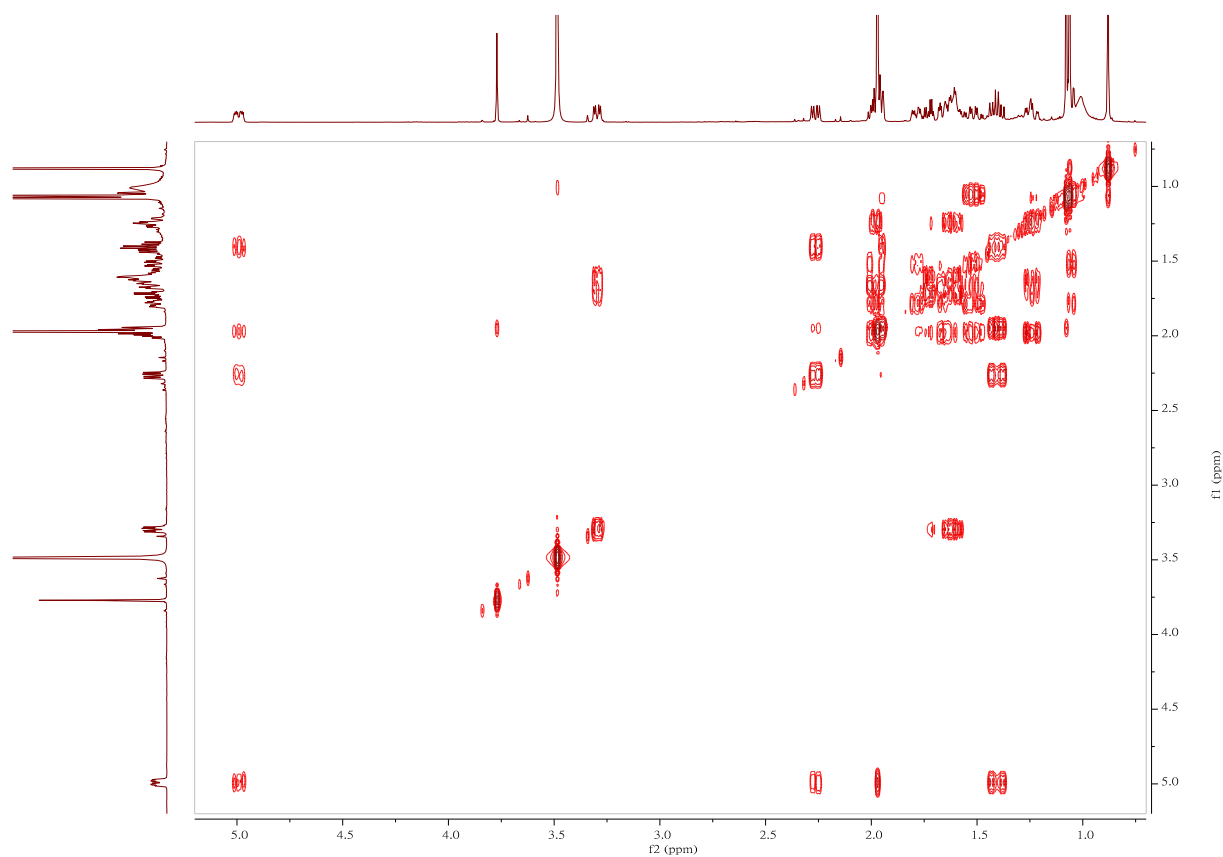


Figure S102. The ¹H-¹H COSY spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (20).

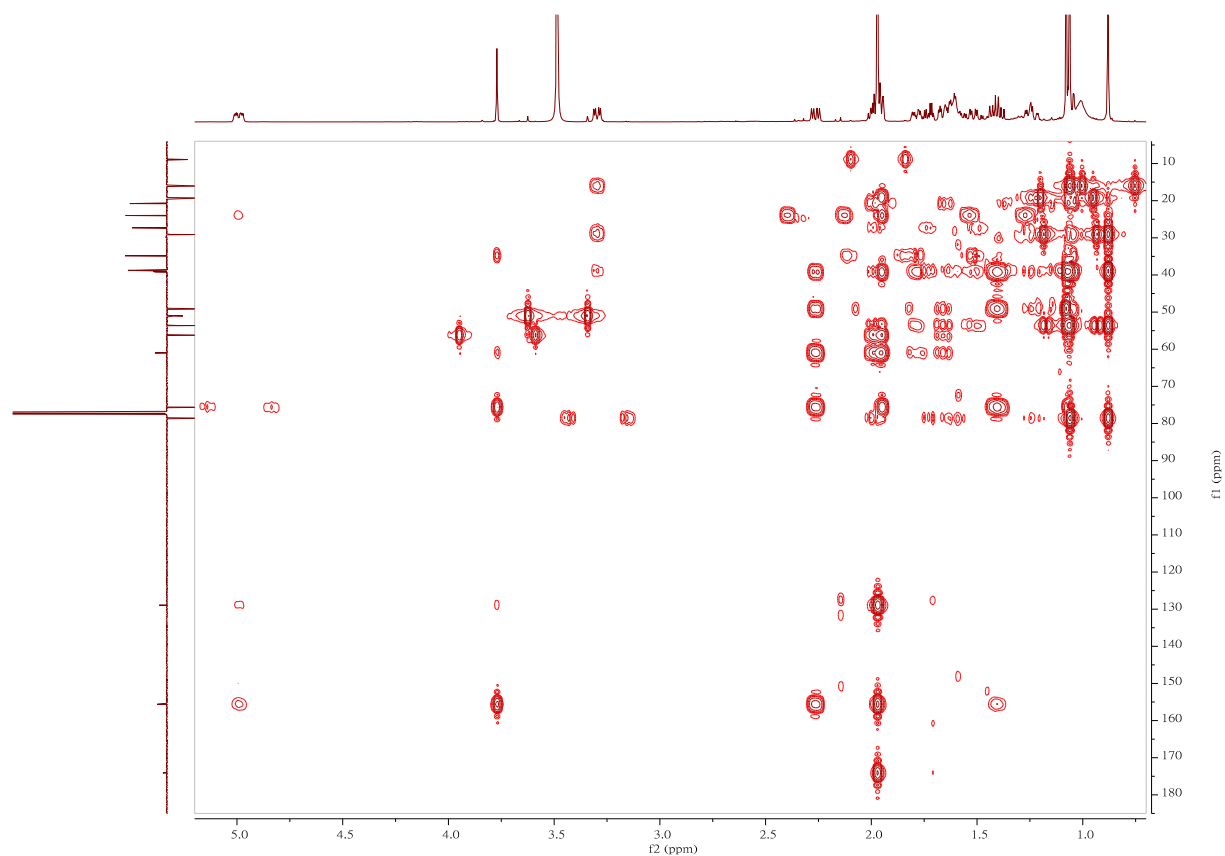


Figure S103. The HMBC spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (**20**).

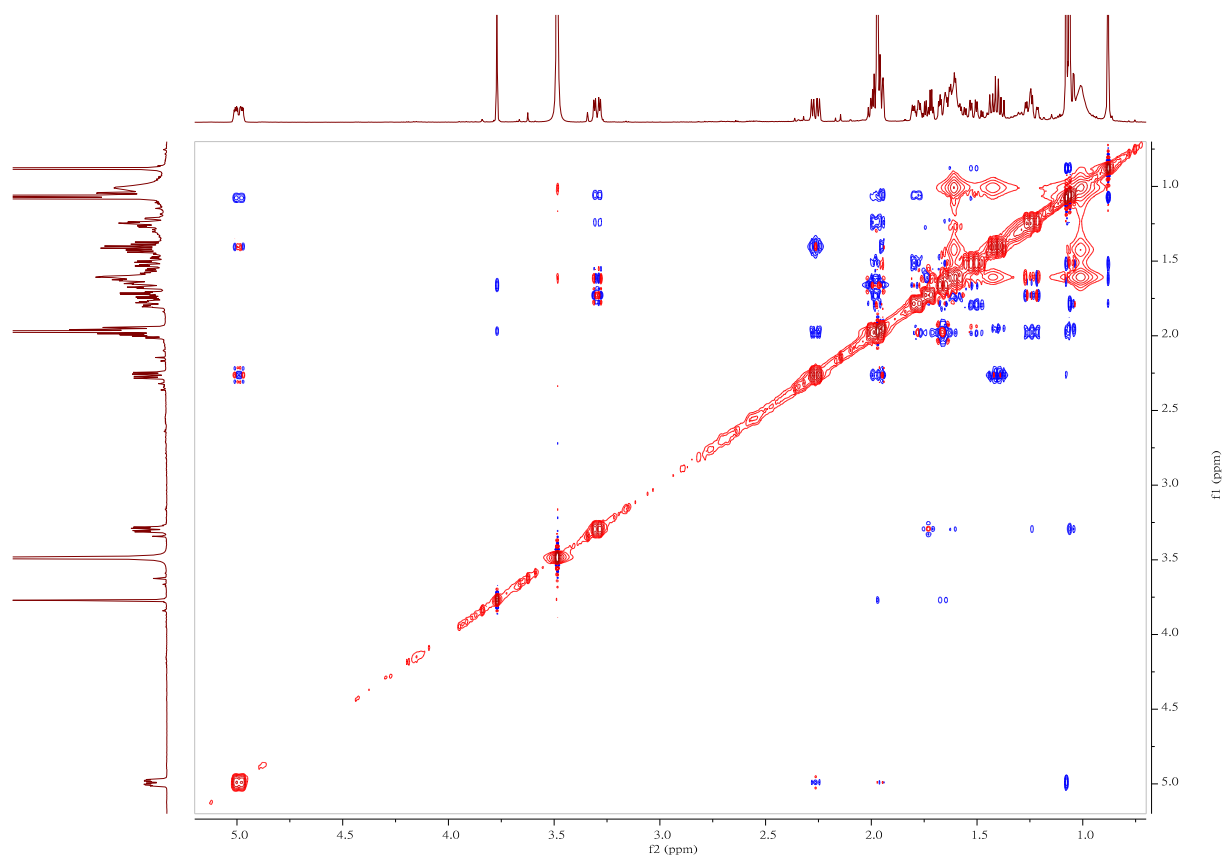
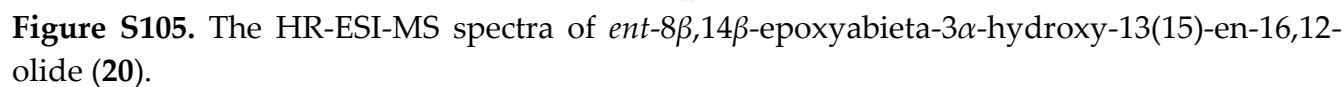


Figure S104. The NOESY spectrum of *ent*-8 β ,14 β -epoxyabieta-3 α -hydroxy-13(15)-en-16,12-olide (**20**).



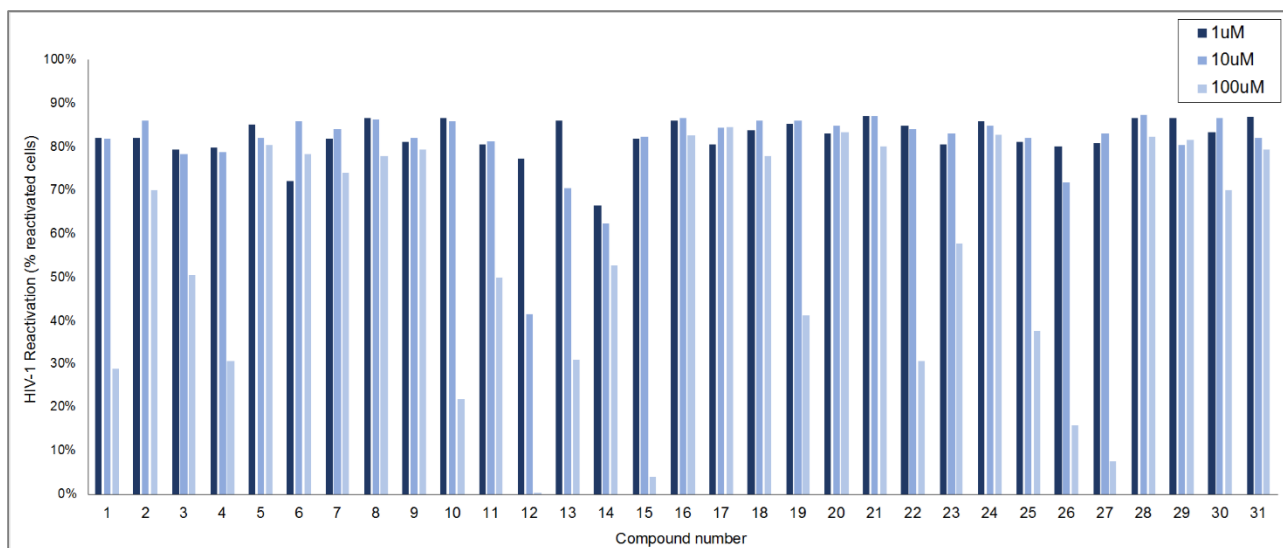


Figure S106. 24 hours cell viability after exposure to the compounds **1–31**.

All compounds were resuspended in DMSO at a concentration of 10 mM, and diluted with PBS and tested with J-lat 10.6 cells at concentrations of 100 μ M, 10 μ M, and 1 μ M. 1% DMSO was used as a control to account for any effect of DMSO in the highest dilution of compounds.