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Supporting Information

Regioselective Cleavage of Thioether Linkages in Microcystin Conjugates

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chem_201601660_sm_miscellaneous_information.pdf

Supporting Information

Content

NMR Spectra of Synthesized Compounds

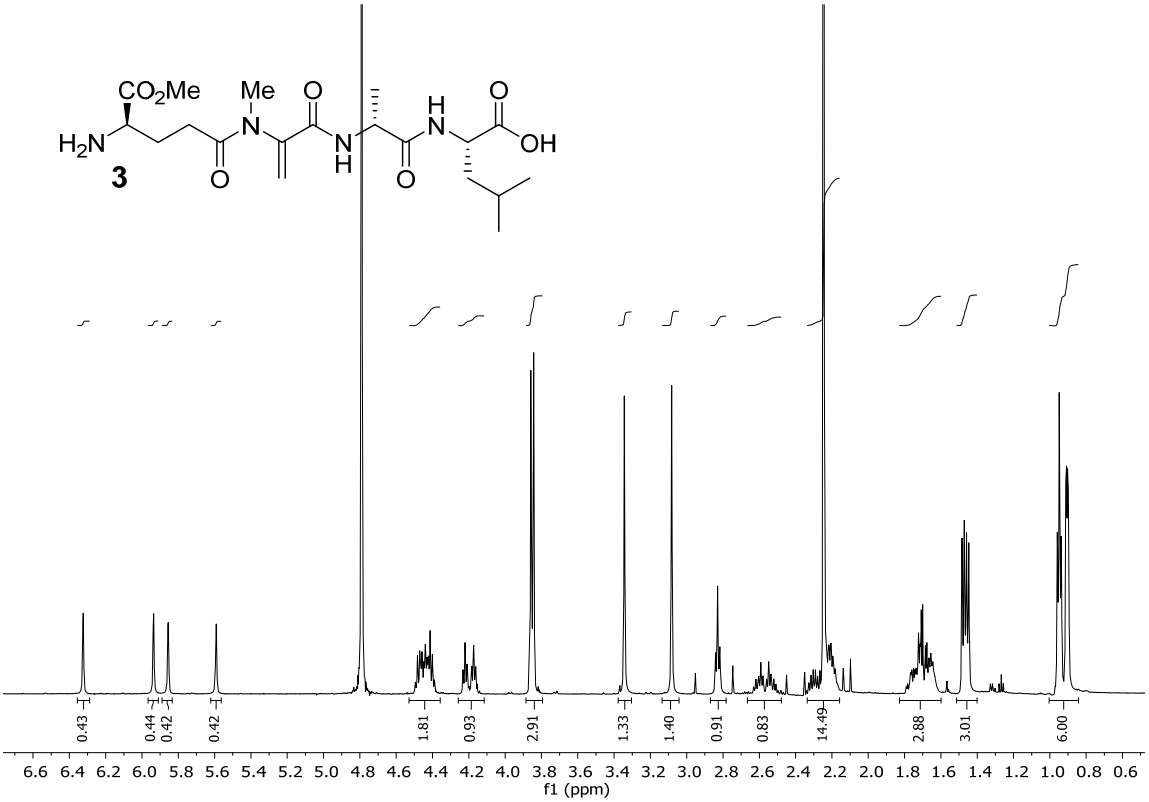


Figure S1. ^{1}H NMR spectrum (600 MHz, 300 K, D_2O) of H-D-γ-Glu(OMe)-Mdha-D-Ala-Leu-OH **3**. 2 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

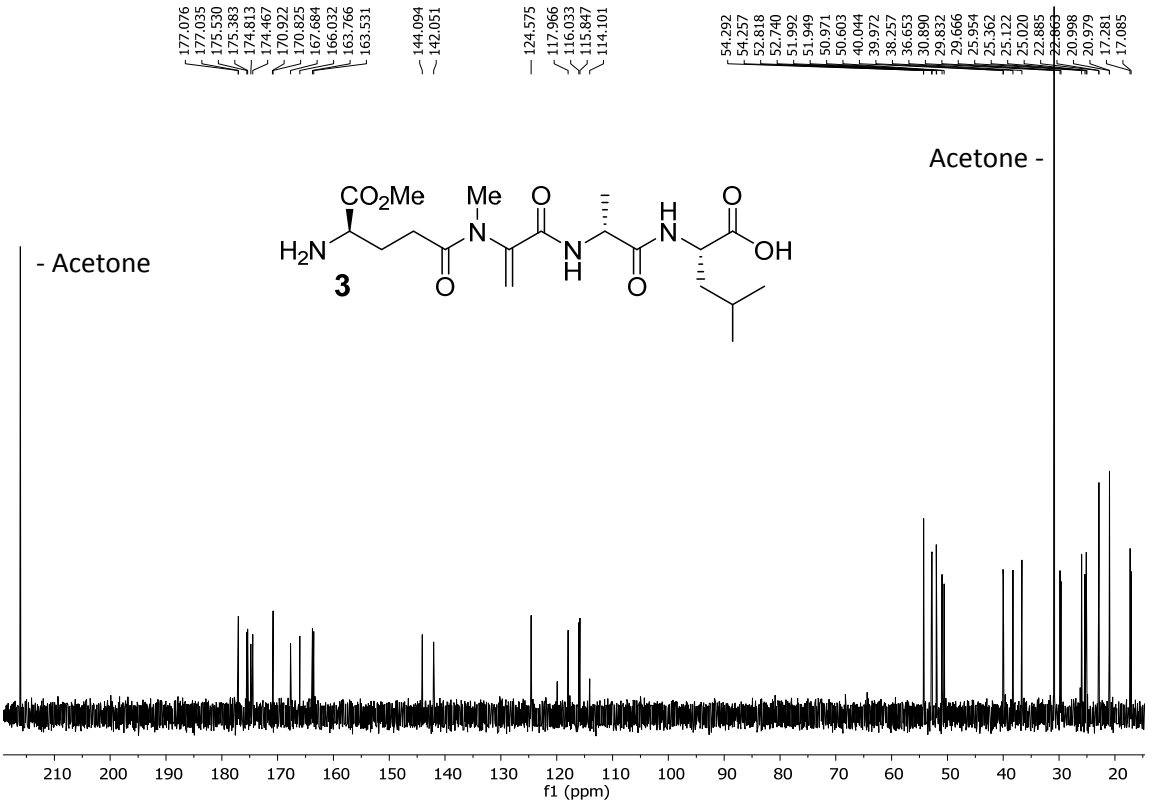


Figure S2. ^{13}C NMR spectrum (151 MHz, 300 K, D_2O) of H-D-γ-Glu(OMe)-Mdha-D-Ala-Leu-OH **3**. 2 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

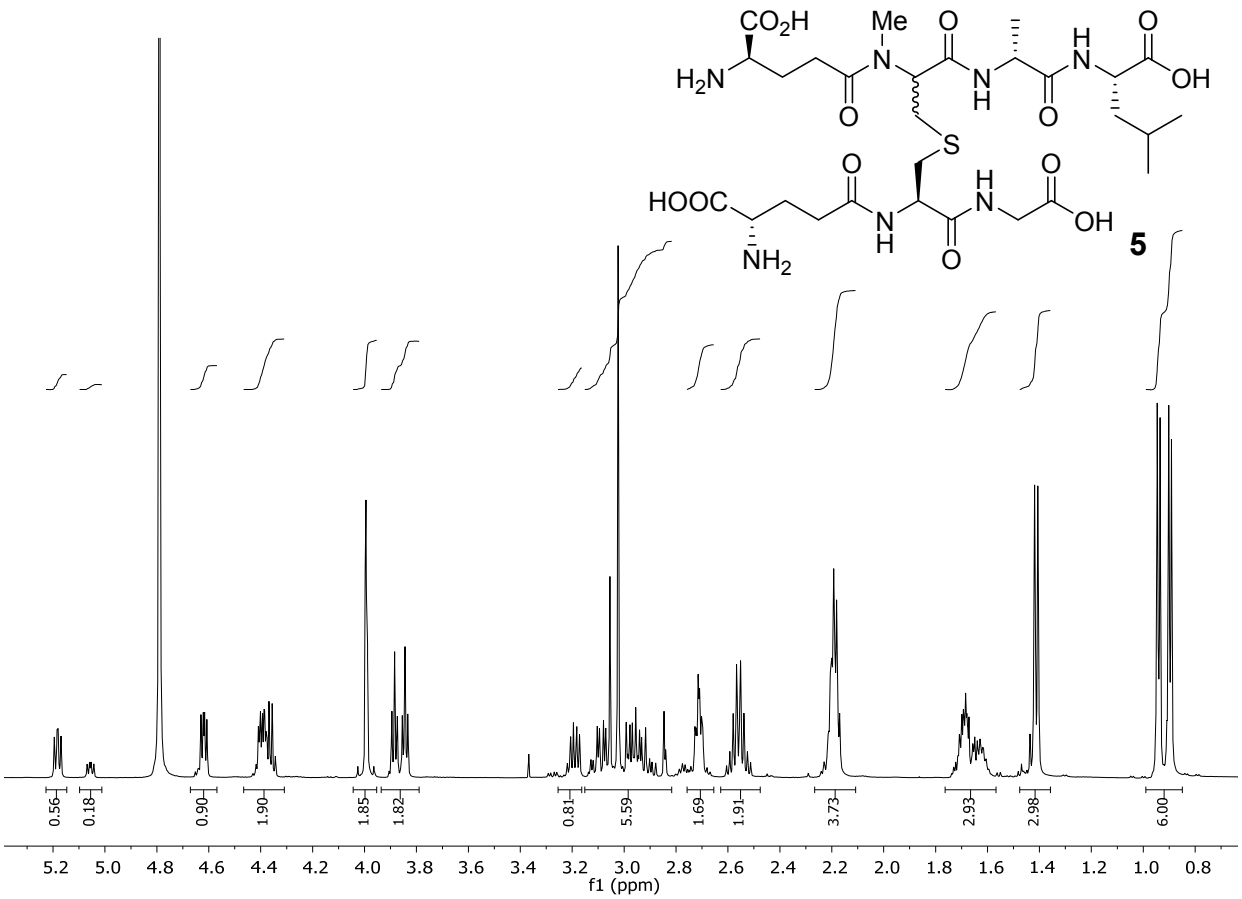


Figure S3. ^{1}H NMR spectrum (600 MHz, 305 K, D_2O) of thioether derivative **5**. 4 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

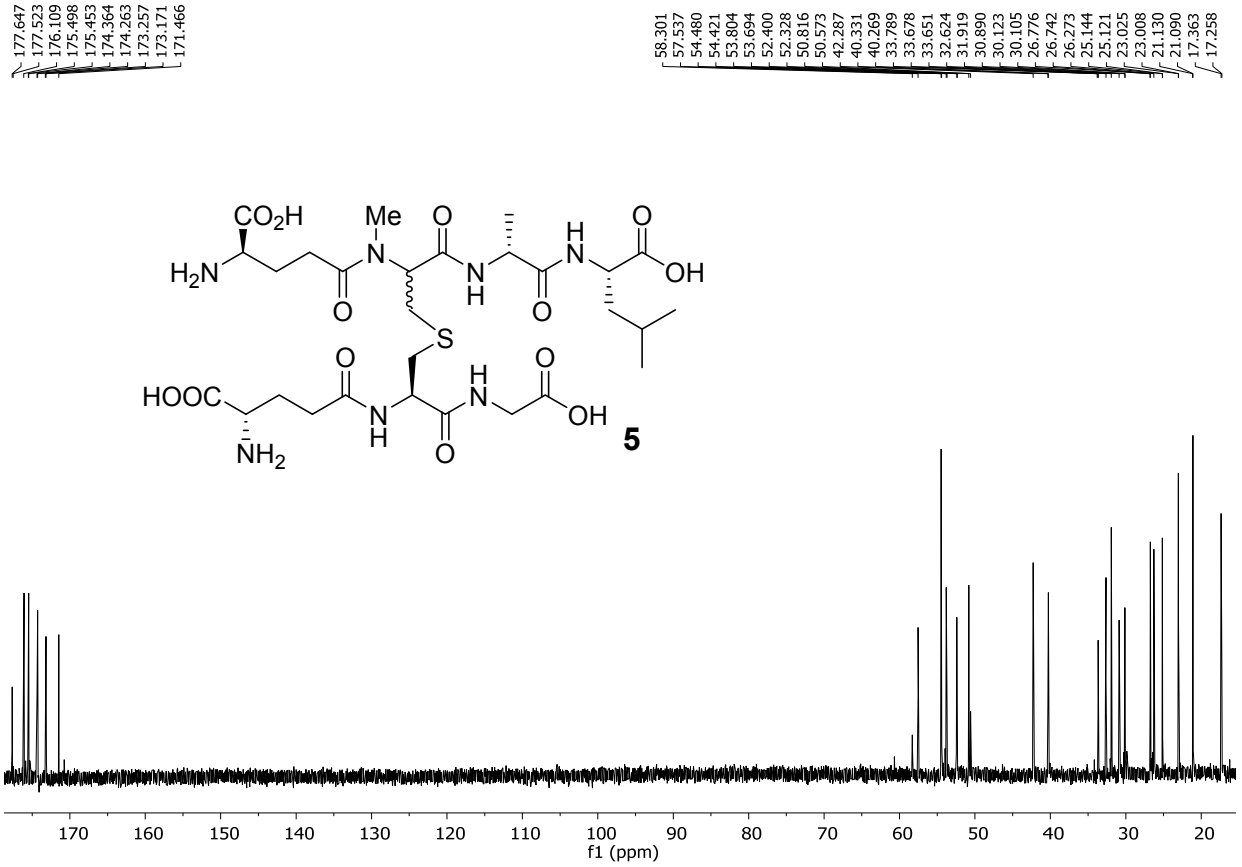


Figure S4. ^{13}C NMR spectrum (151 MHz, 305 K, D_2O) of thioether derivative **5**. 4 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

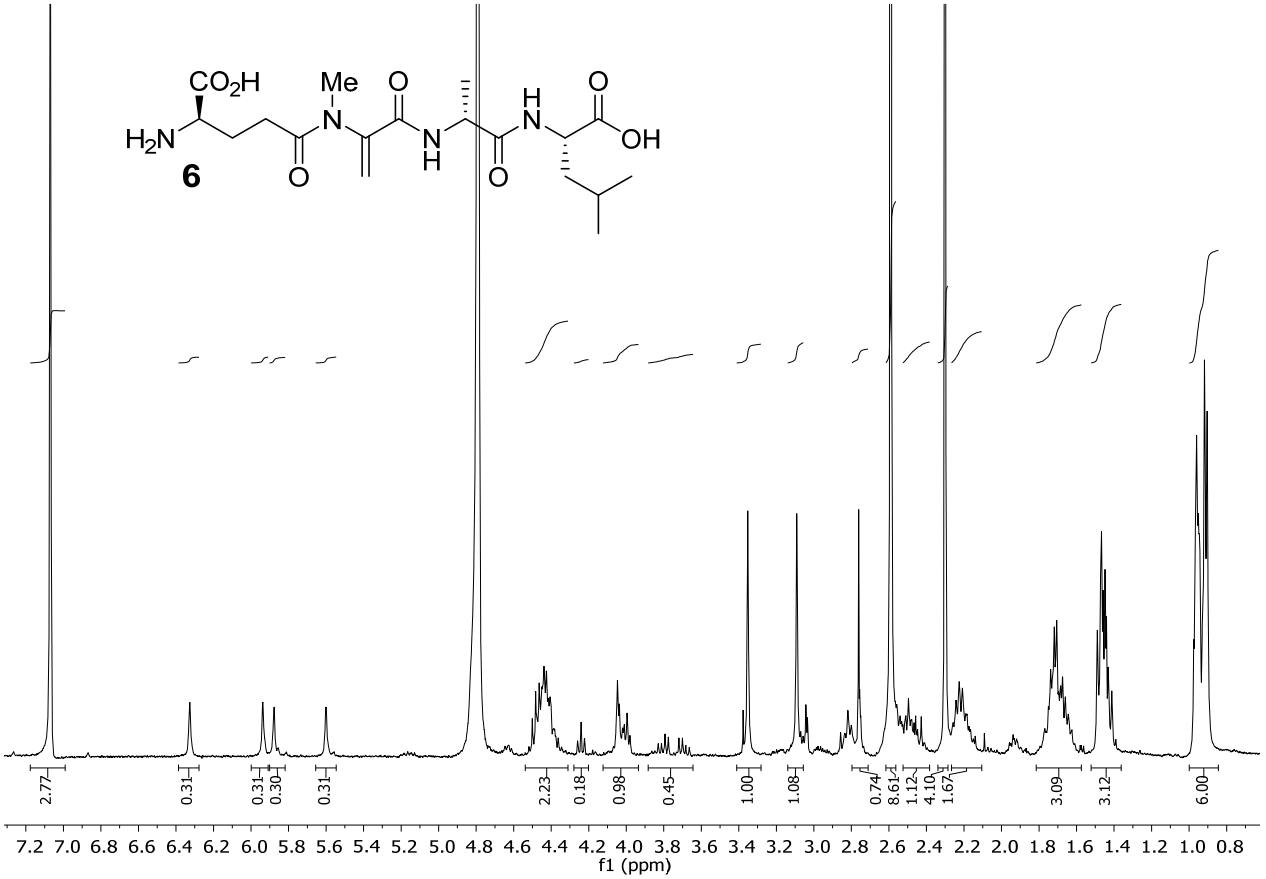


Figure S5. ^{1}H NMR spectrum (400 MHz, 300 K, D_2O) of H-D-γ-Glu-Mdha-D-Ala-Leu-OH **6**.

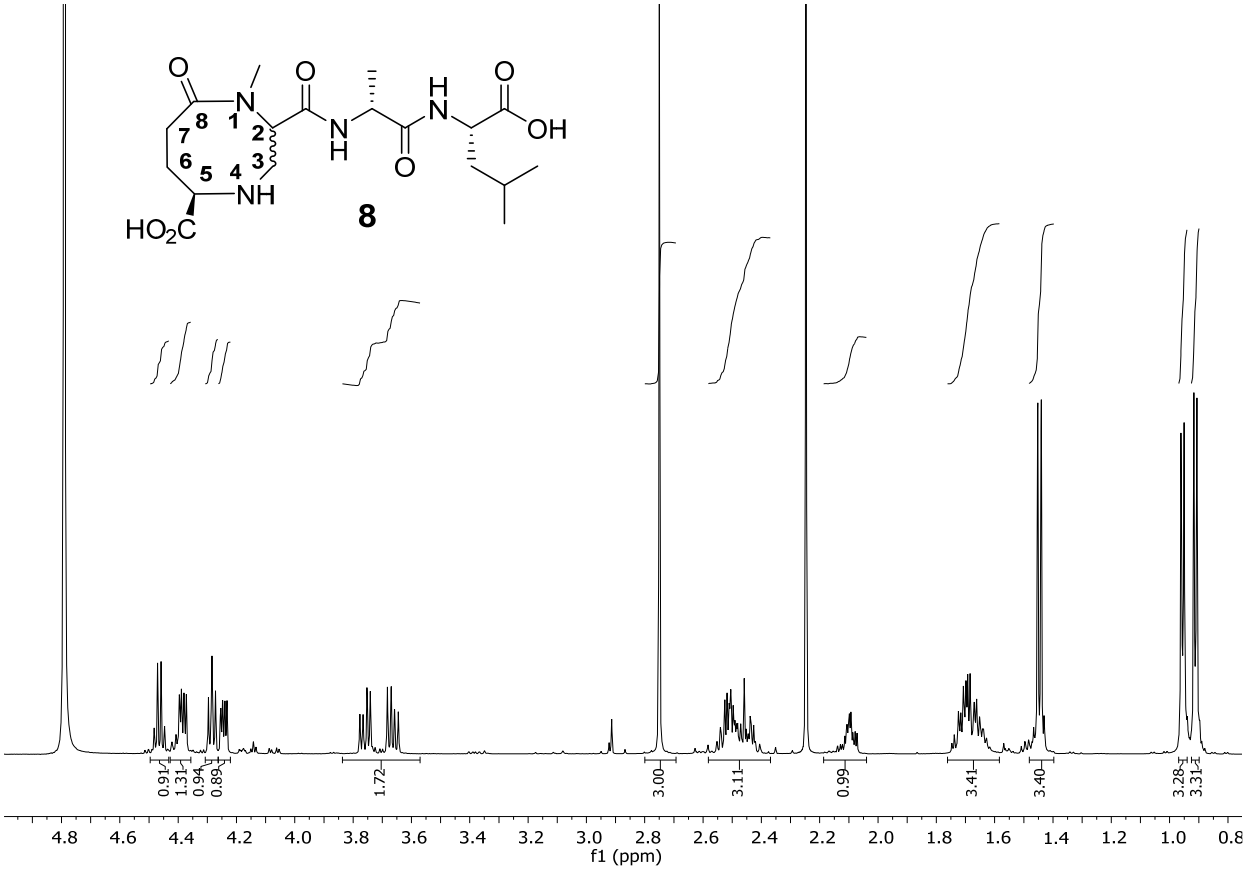


Figure S6. ^{1}H NMR spectrum (600 MHz, 300 K, D_2O) of **8**. 2 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

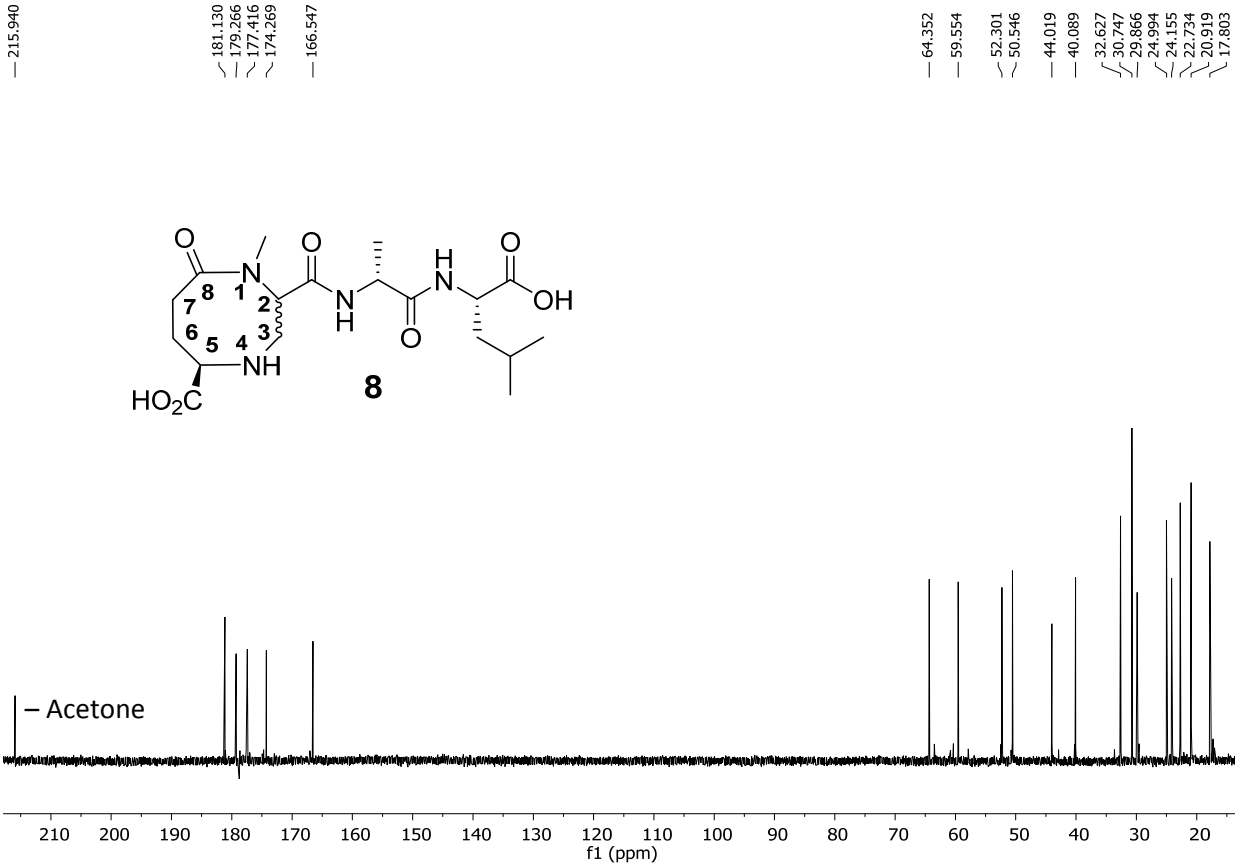


Figure S7. ^{13}C NMR spectrum (151 MHz, 300 K, D_2O) **8**. 2 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

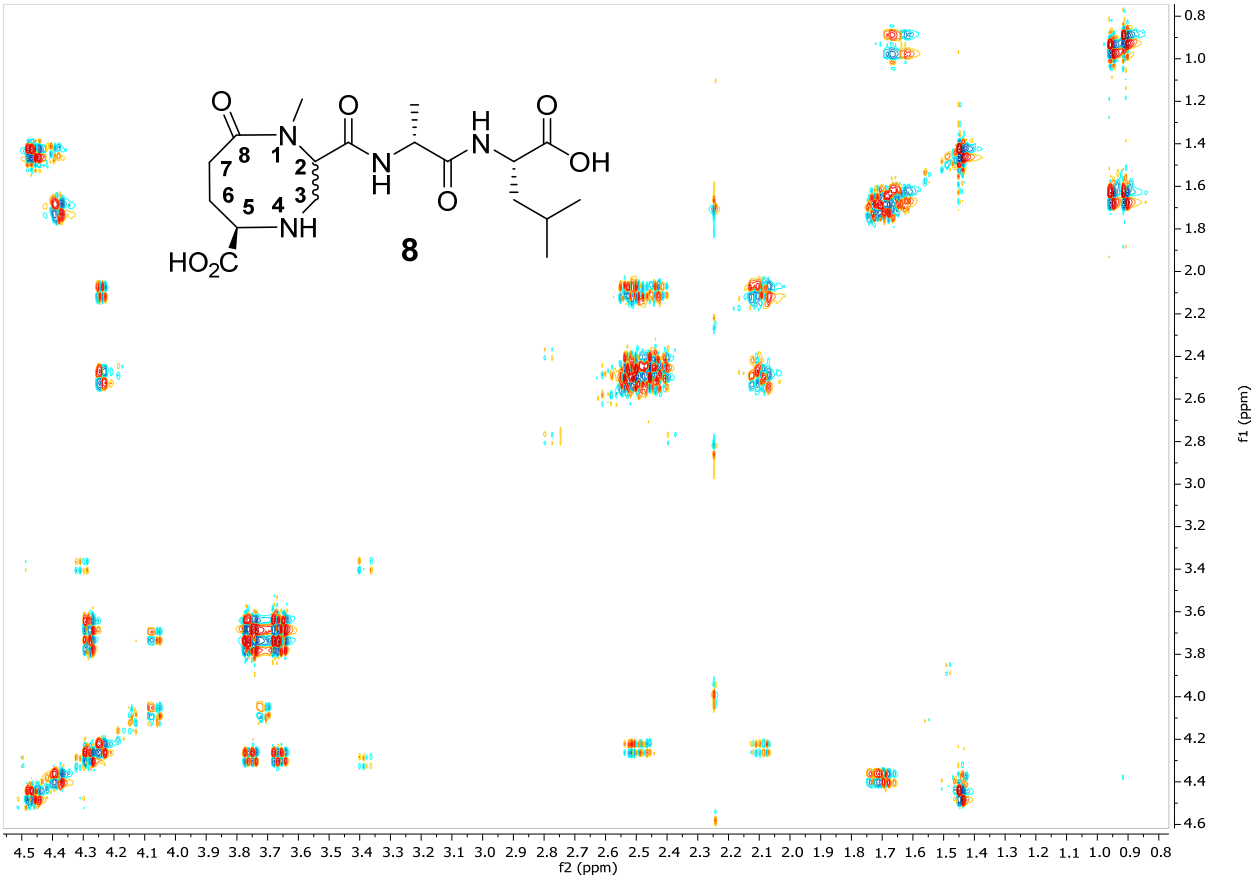


Figure S8. DQF-COSY spectrum (600 MHz, 300 K, D_2O) of **8.** 2 μL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

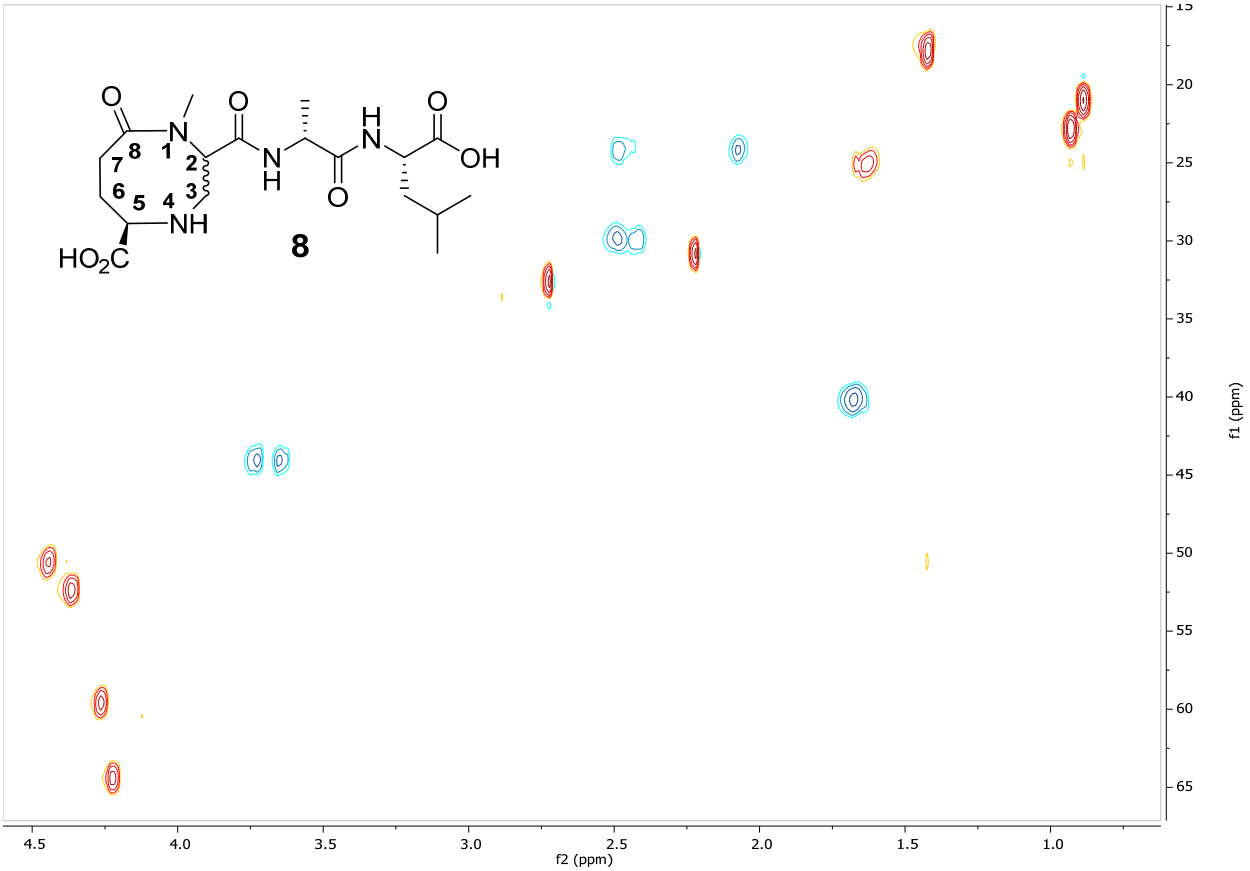


Figure S9. HSQC spectrum (151 MHz, 300 K, D_2O) of **8**. 2 µL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

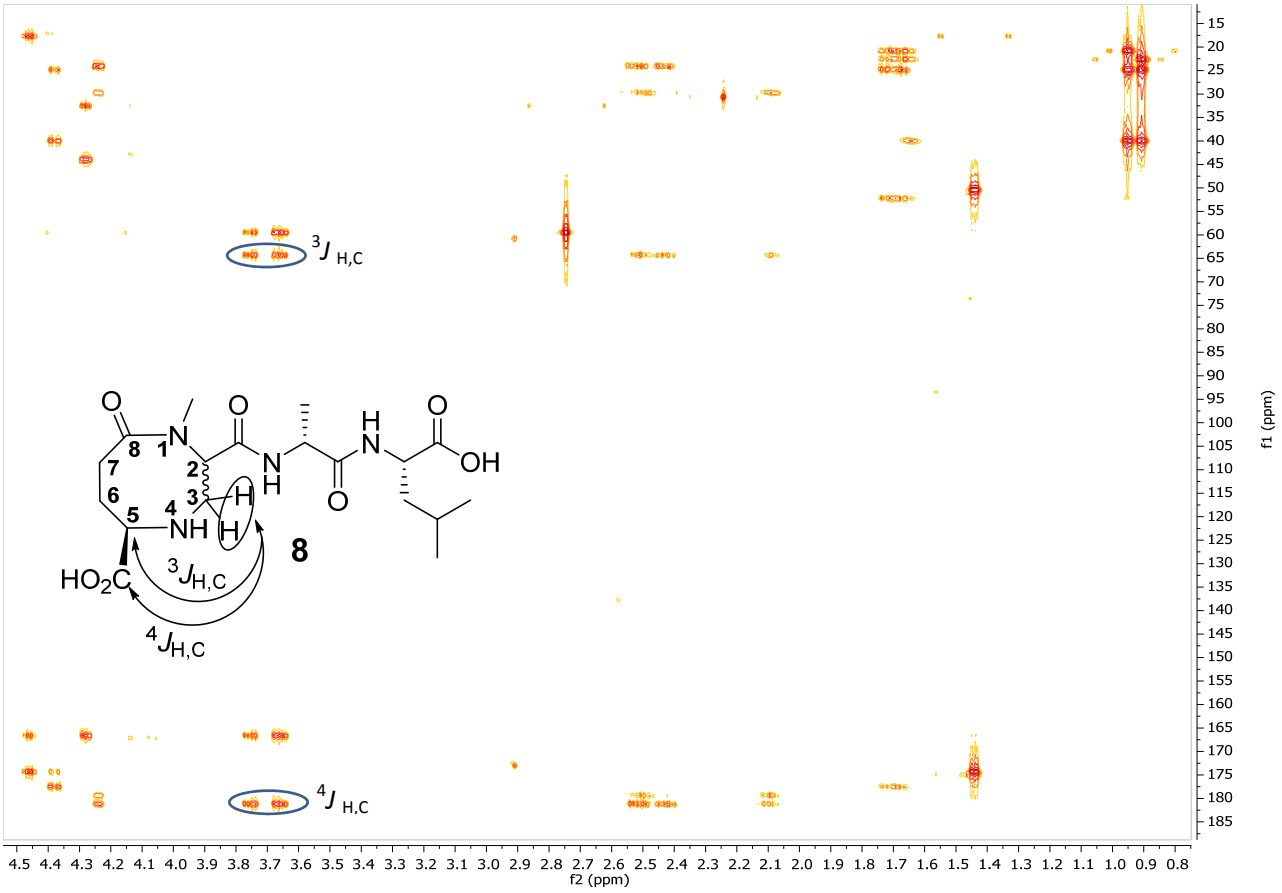


Figure S10. HMBC spectrum (151 MHz, 300 K, D_2O) of **8**. 2 µL of acetone were added as an internal standard for calibration of ^{13}C chemical shifts.

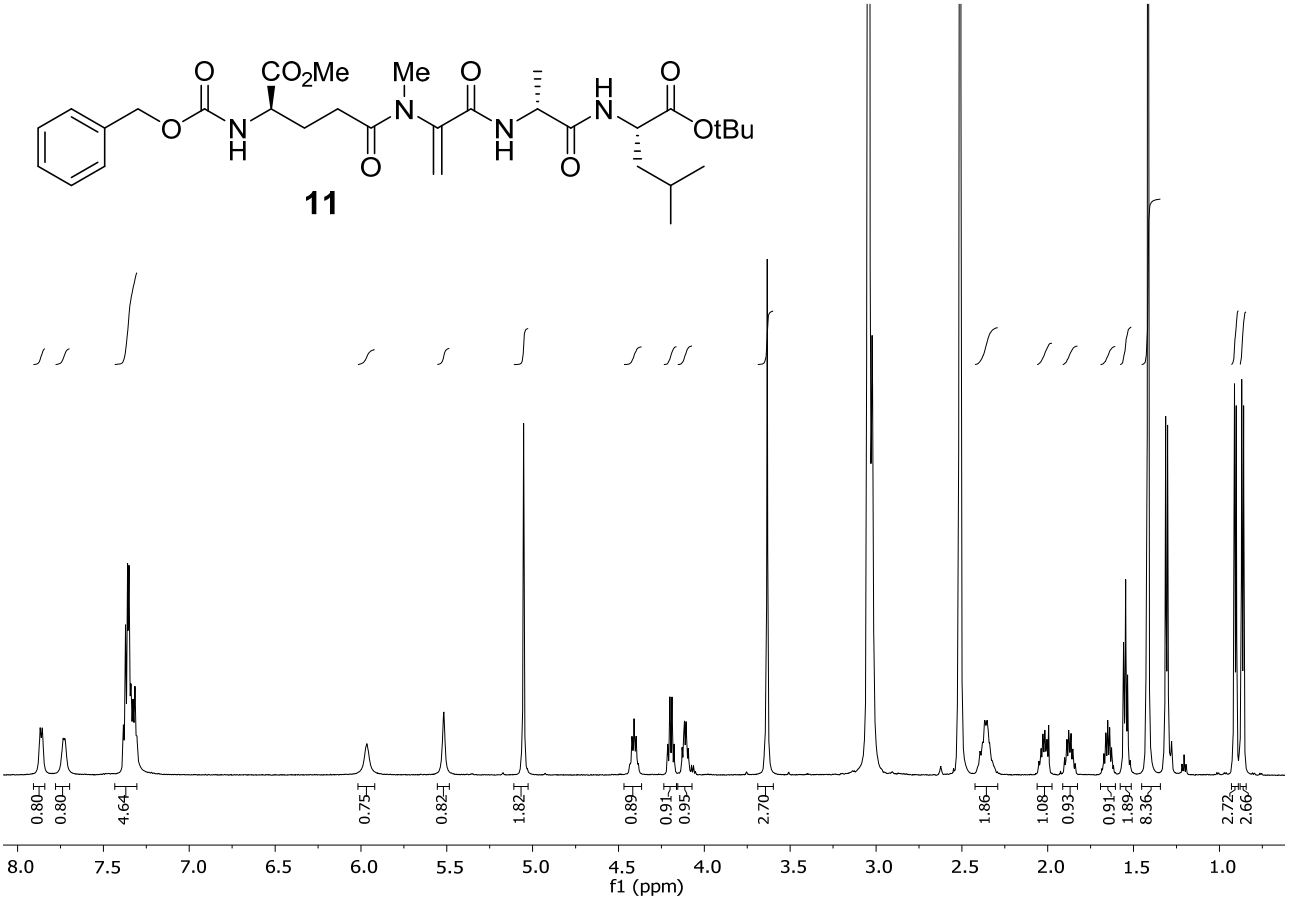


Figure S11. ^{1}H NMR spectrum (600 MHz, 360 K, [D_6]-DMSO) of Z-D-γ-Glu(OMe)-Mdha-D-Ala-L-Leu-OtBu **11.**

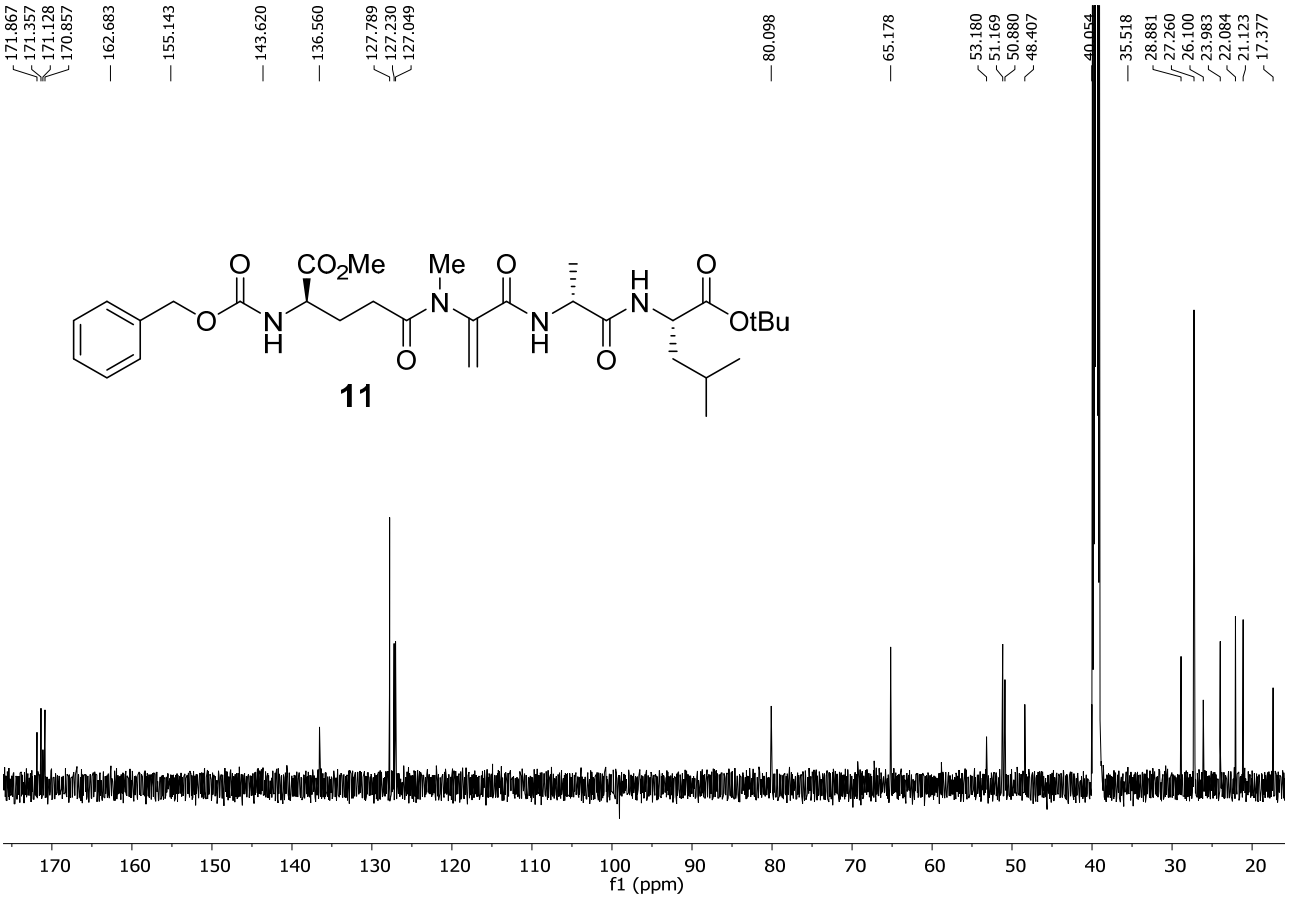


Figure S12. ^{13}C NMR spectrum (151 MHz, 360 K, [D_6]DMSO) of Z-D-γ-Glu(OMe)-Mdha-D-Ala-L-Leu-OtBu **11.**

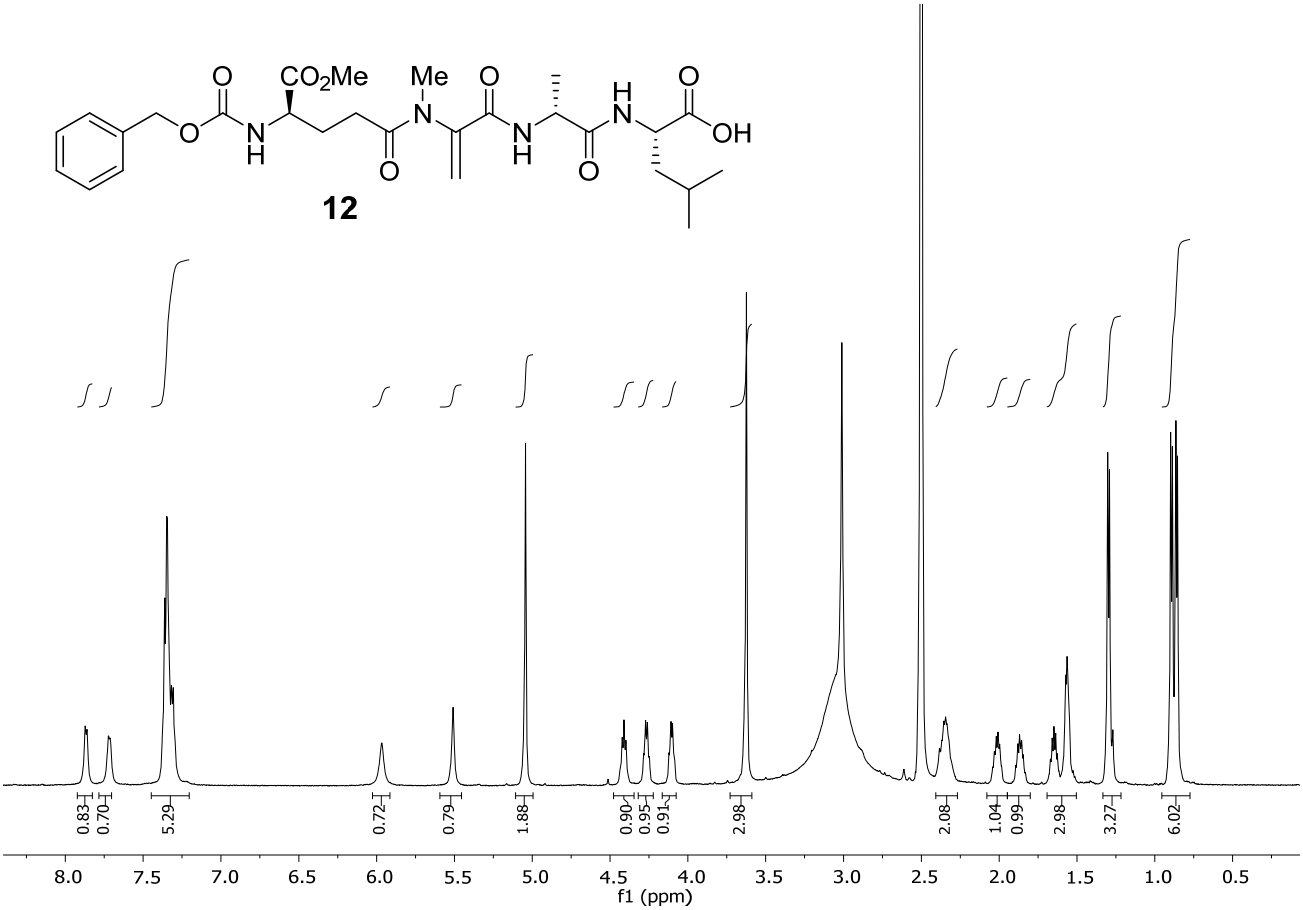


Figure S13. ^{1}H NMR spectrum (600 MHz, 360 K, [D_6]DMSO) of Z-D-γ-Glu(OMe)-Mdha-D-Ala-L-Leu-OH **12.**

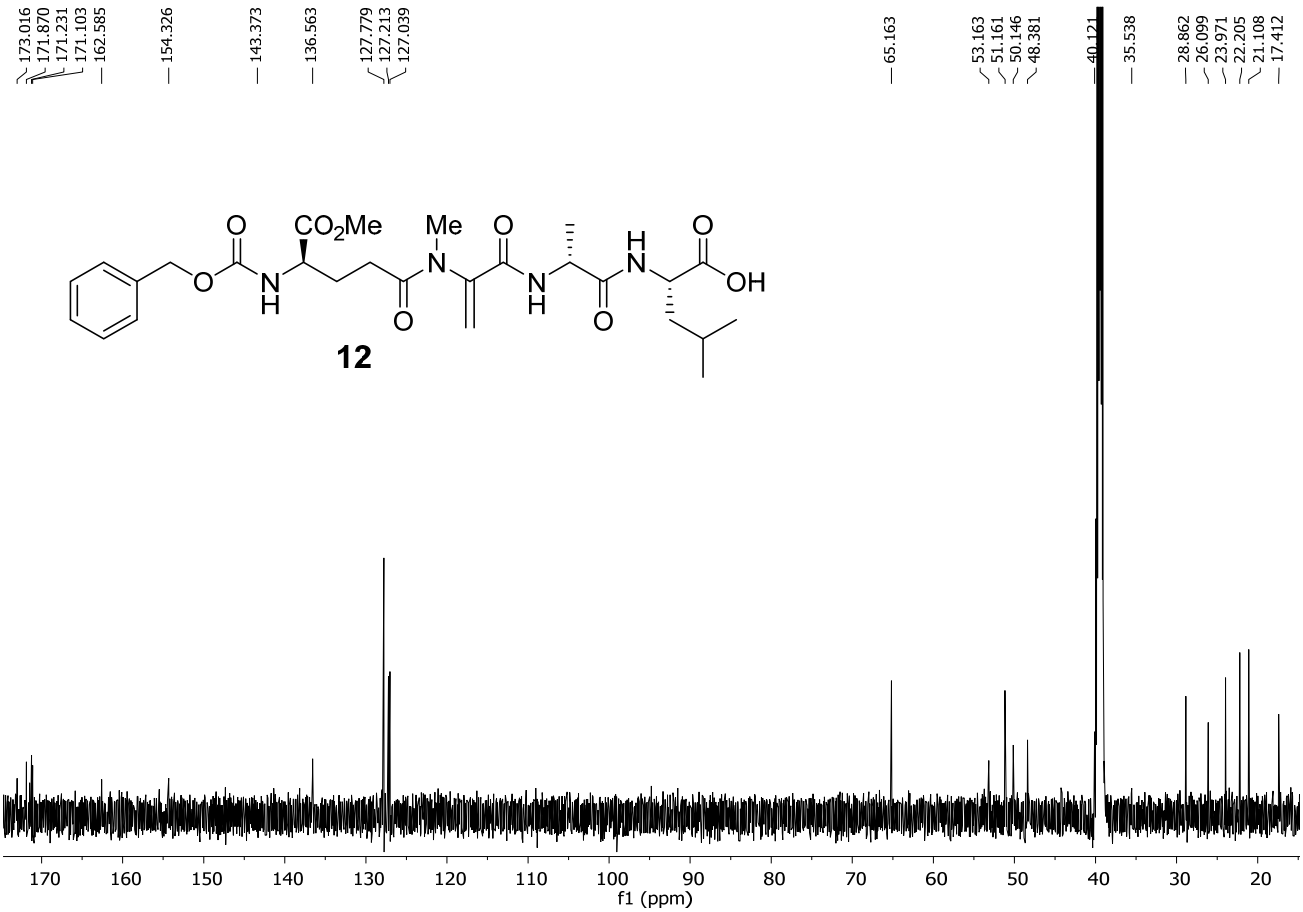


Figure S14. ^{13}C NMR spectrum (151 MHz, 360 K, [D_6]DMSO) of Z-D-γ-Glu(OMe)-Mdha-D-Ala-L-Leu-OH **12.**

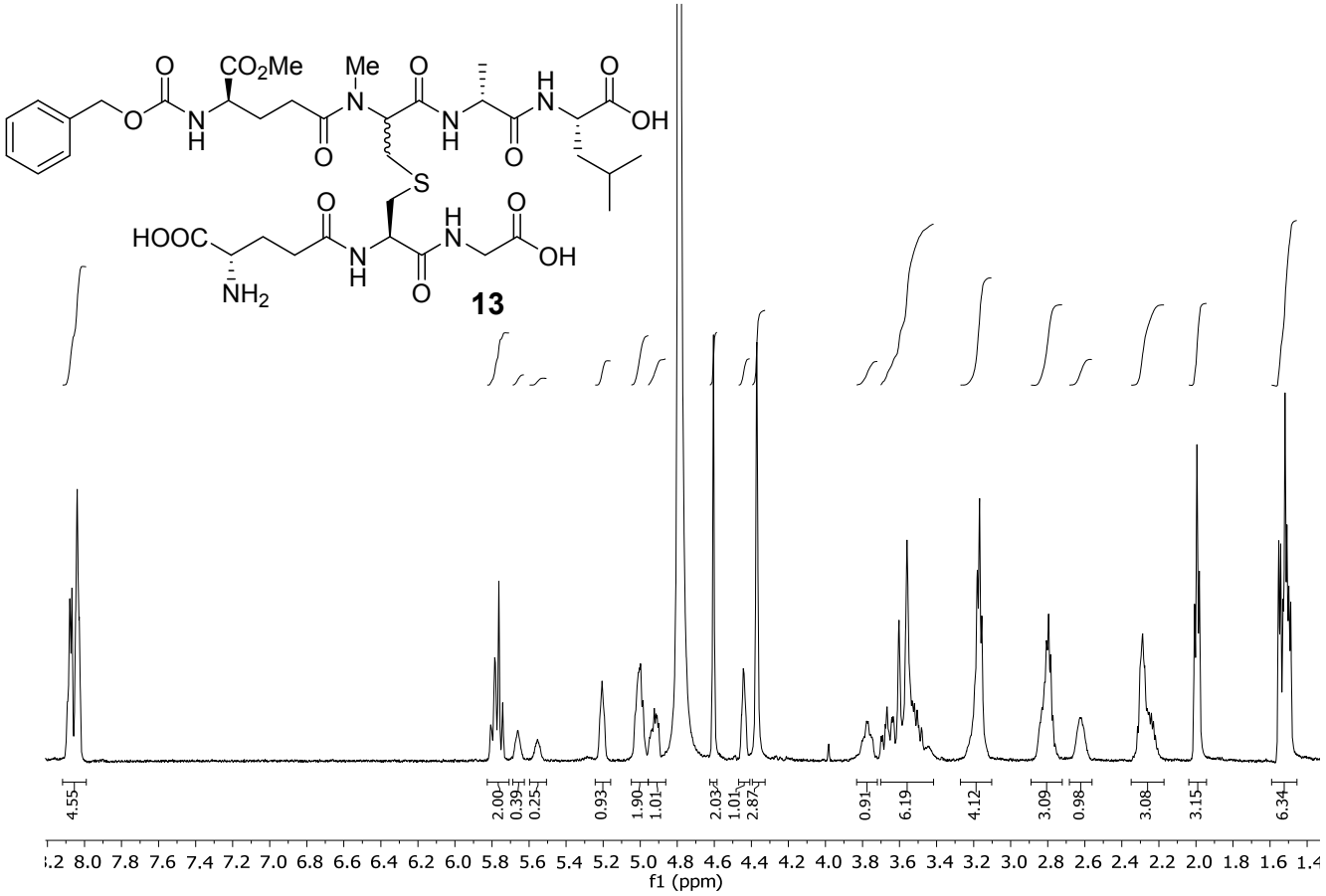


Figure S15. ^{1}H NMR spectrum (600 MHz, 300 K, D_2O) of thioether derivative **13**.

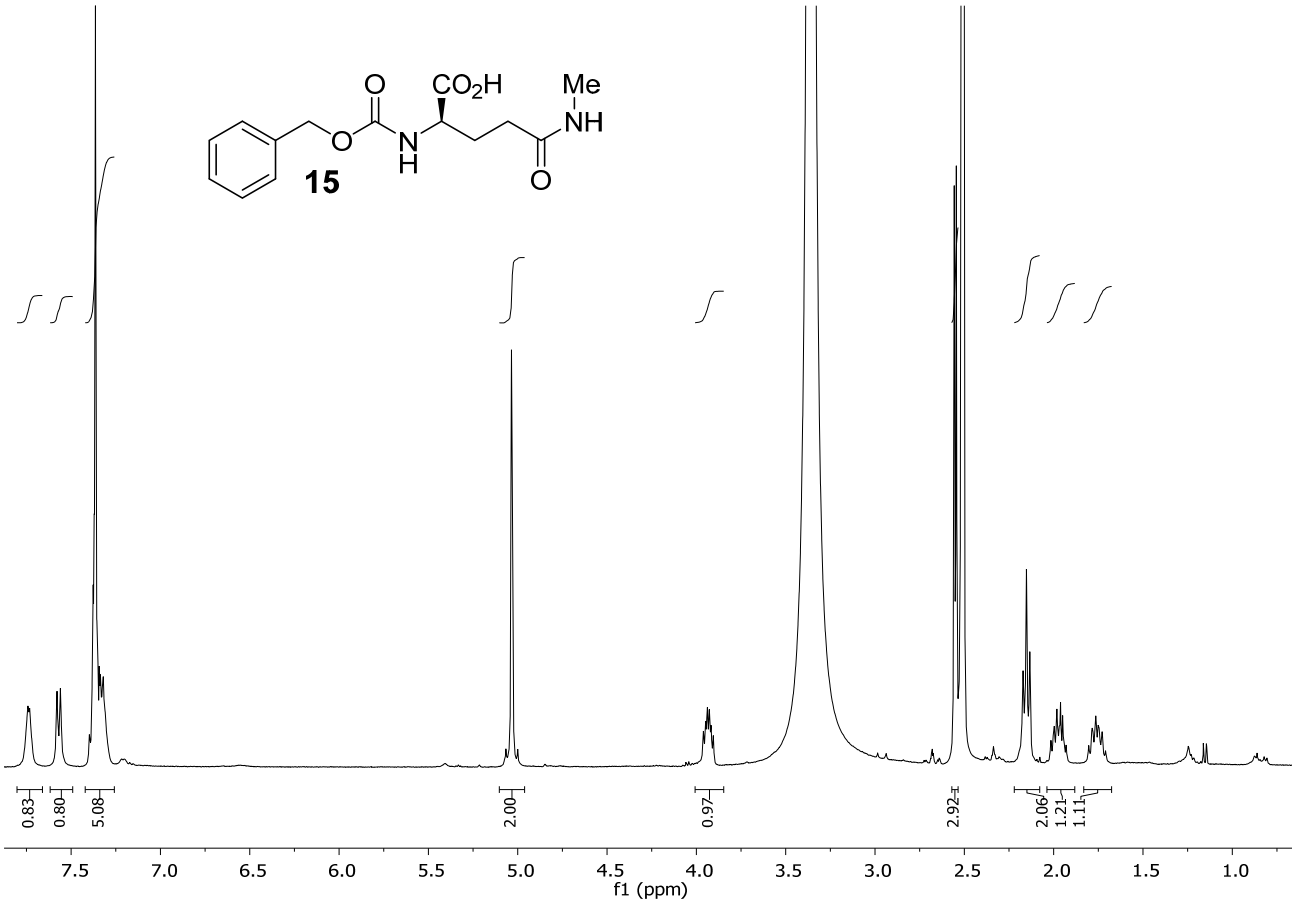


Figure S16. ^{1}H NMR spectrum (400 MHz, 300 K, [D_6]DMSO) of Z-D-Gln(Me)-OH **15.**

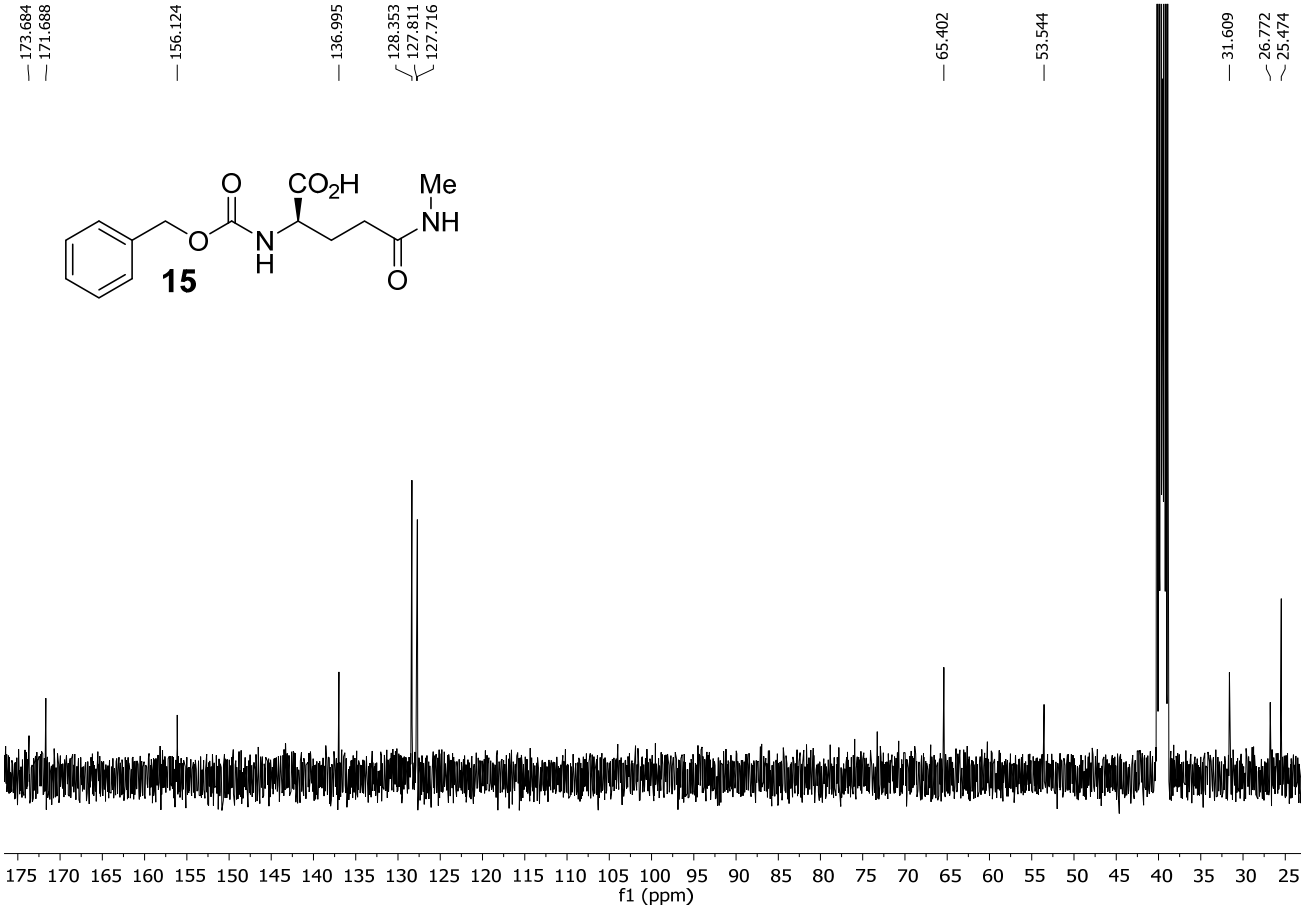
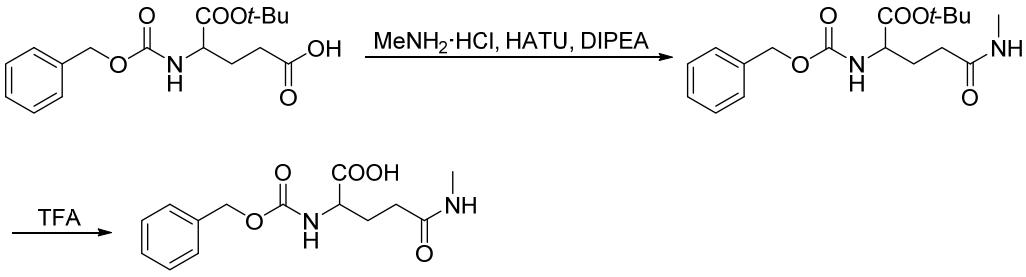


Figure S17. ^{13}C NMR spectrum (101 MHz, 300 K, [D_6]DMSO) of Z-D-Gln(Me)-OH **15.**

The identity of **15** was validated by comparison to an authentic synthetic sample that was prepared according to Scheme S1. Figures S18 and S19 show a comparison of the ^{1}H and ^{13}C NMR spectra of both samples.



Scheme S1. Synthesis of an authentic sample of Z-Gln(Me)-OH.

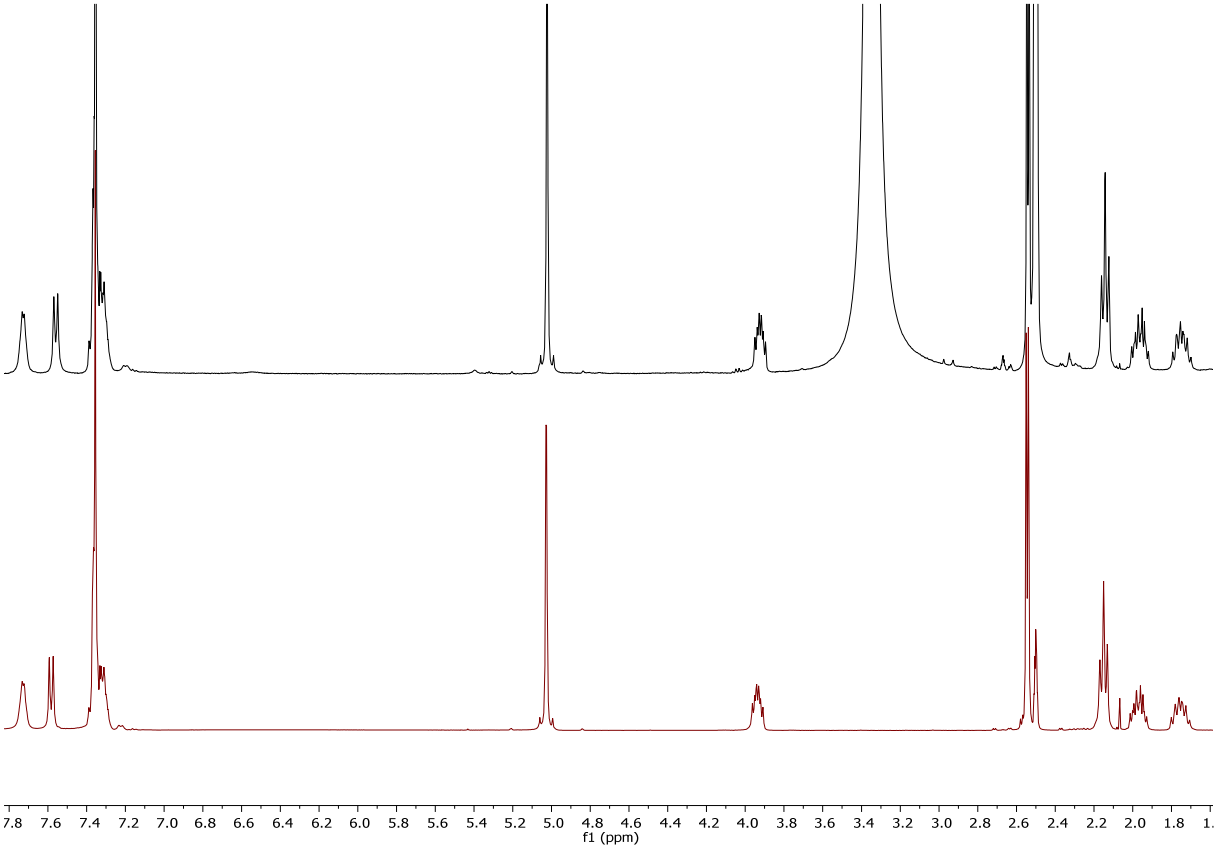


Figure S18. ^{1}H NMR spectra (400 MHz, 300 K, [D_6]DMSO) of Z-D-Gln(Me)-OH **15** (top) and authentic sample synthesized according to Scheme S1 (bottom).

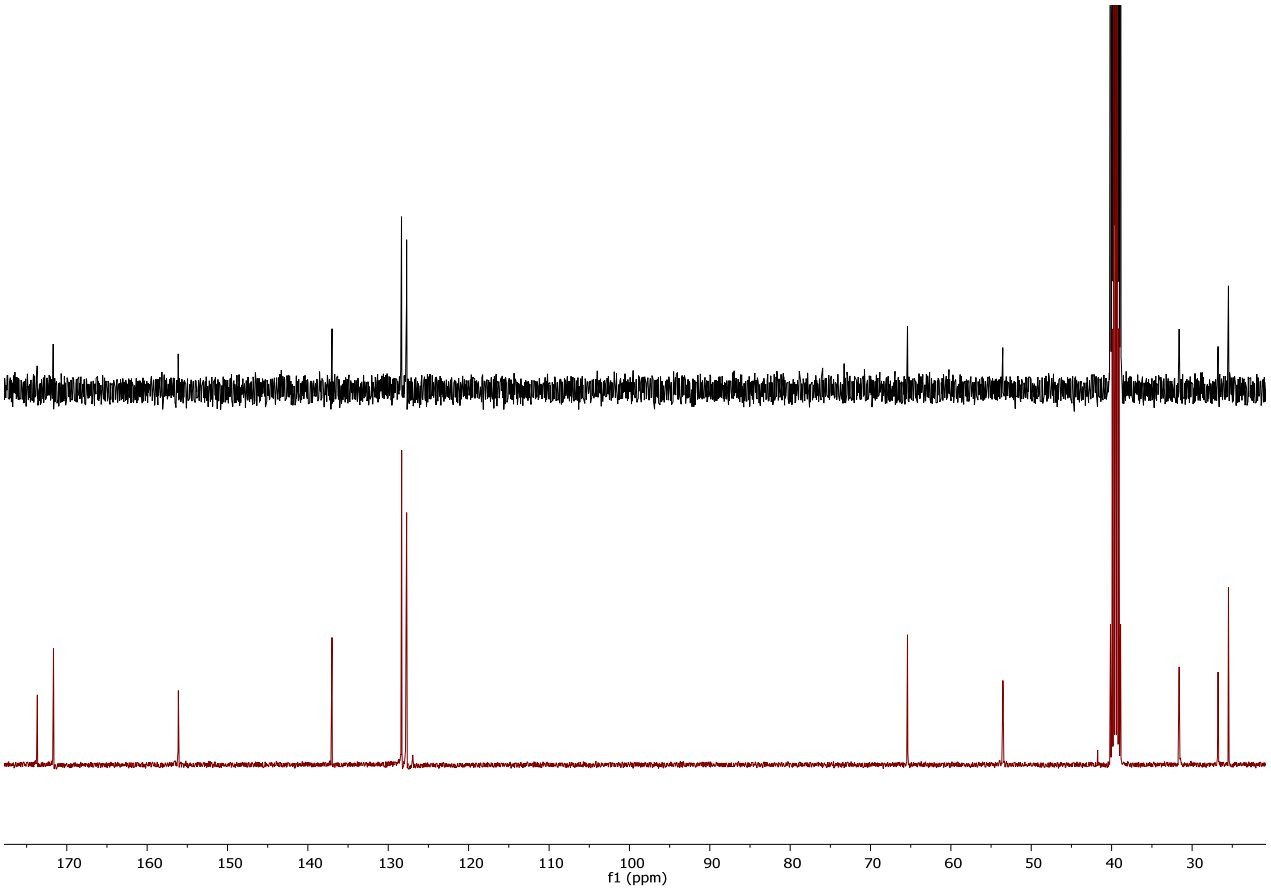


Figure S19. ^{13}C NMR spectra (101 MHz, 300 K, [D_6]DMSO) of Z-D-Gln(Me)-OH **15** (top) and authentic sample synthesized according to Scheme S1 (bottom).

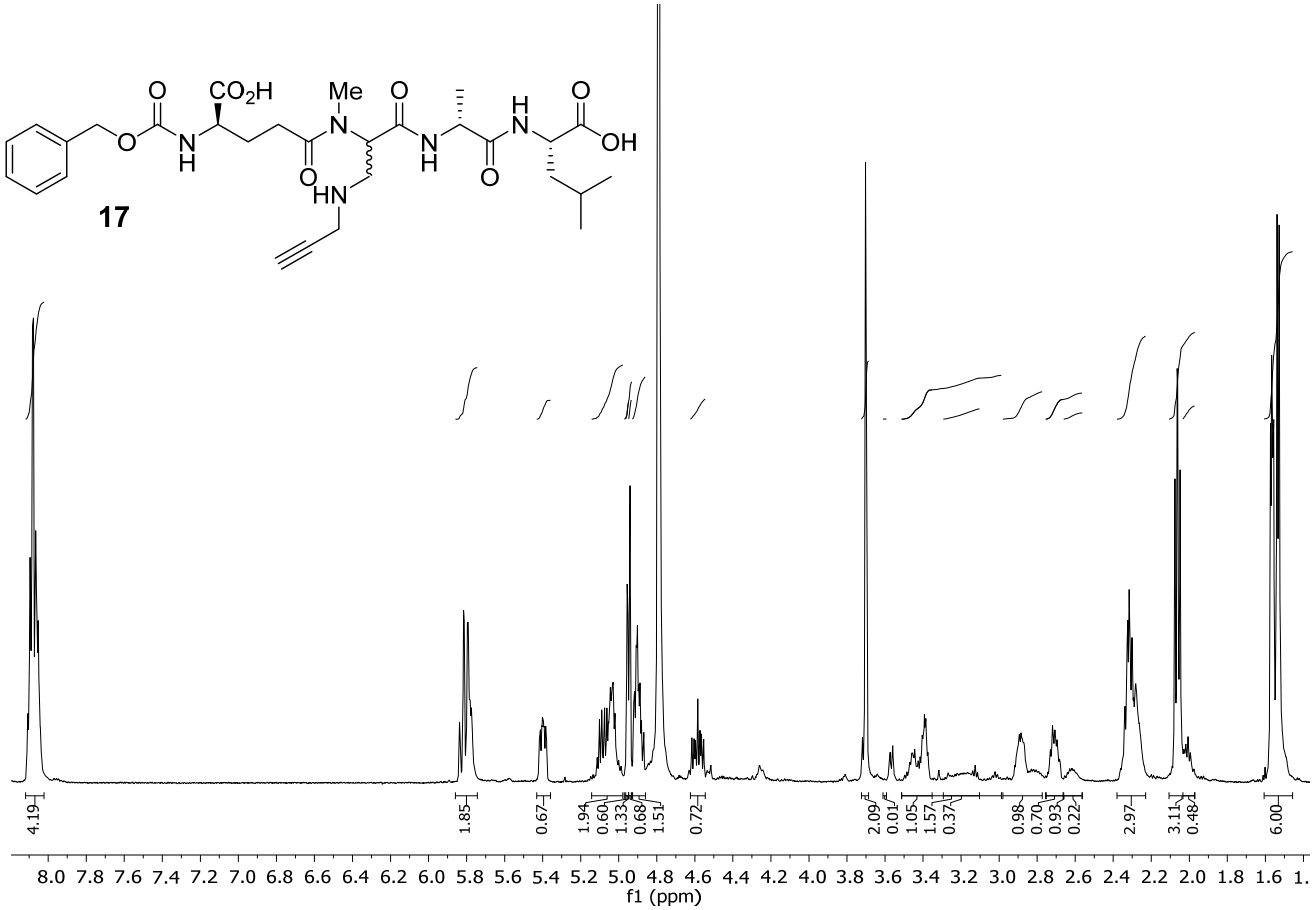


Figure S20. ^{1}H NMR spectrum (400 MHz, 300 K, D_2O) of Z-D-γ-Glu-D,L-Mapa-D-Ala-L-Leu-OH **17.**

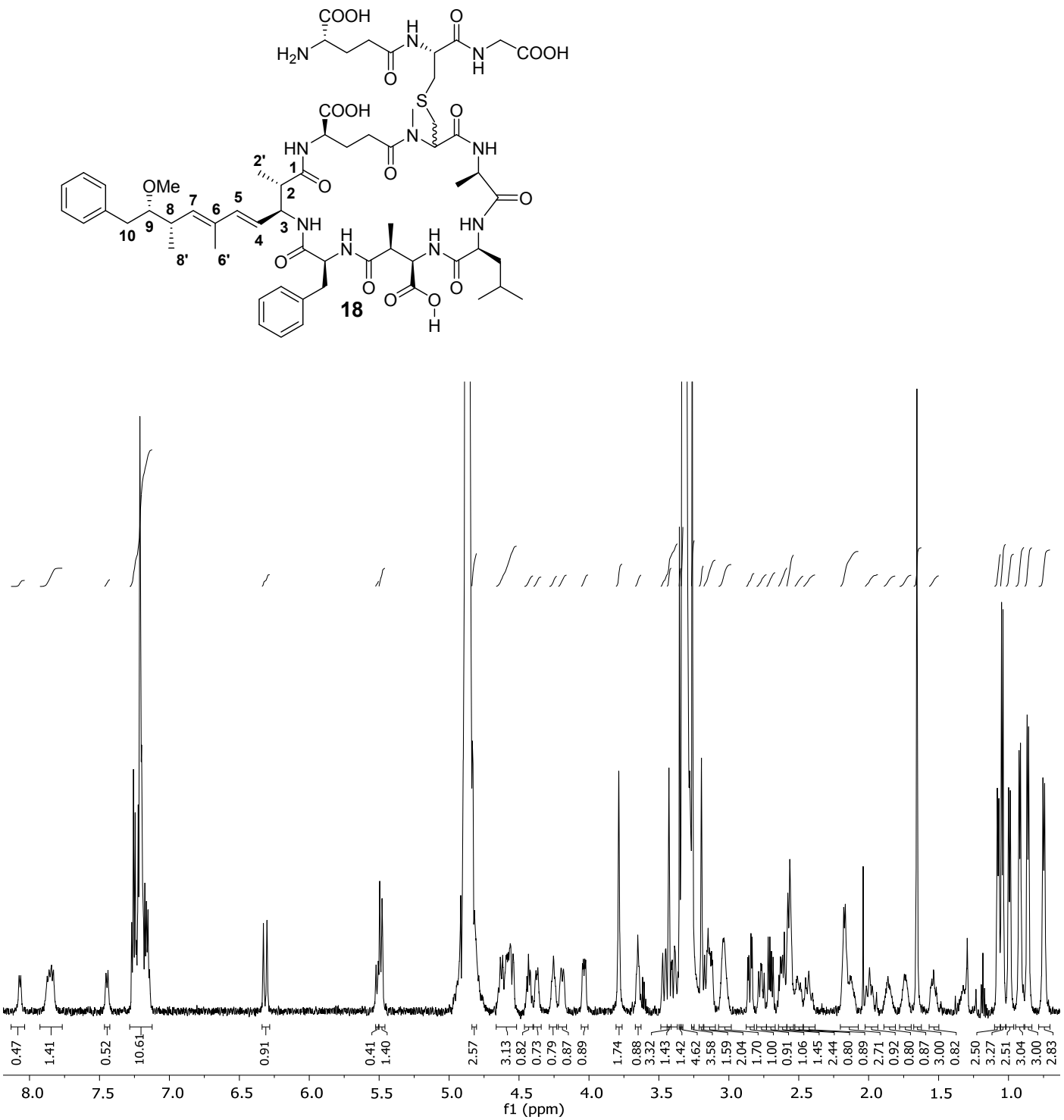


Figure S21. ^{1}H NMR spectrum (600 MHz, 300 K, CD_3OD) of microcystin-LF–GSH conjugate **18**.

LC-MS Chromatograms

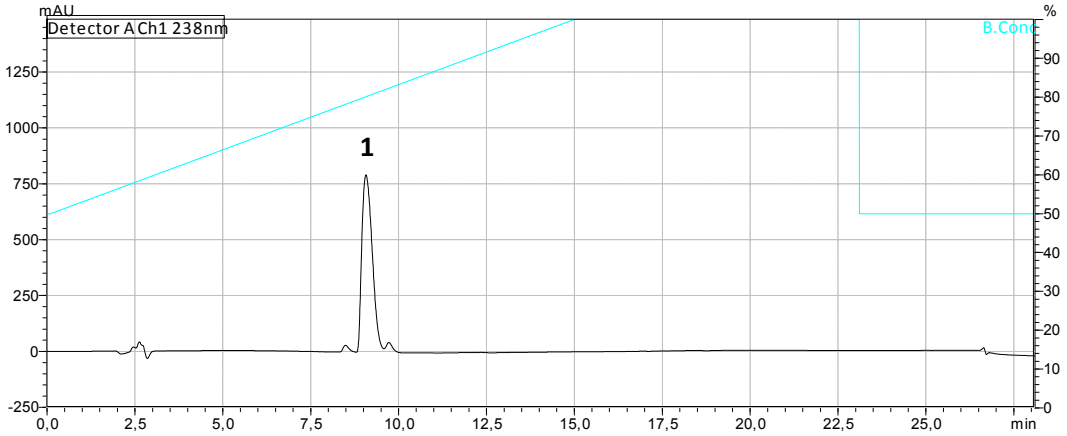


Figure S22. LC-MS chromatogram of microcystin-LF **1** (gradient: 50-100% B_{FA} in 15 min) used for preparation of **18**.

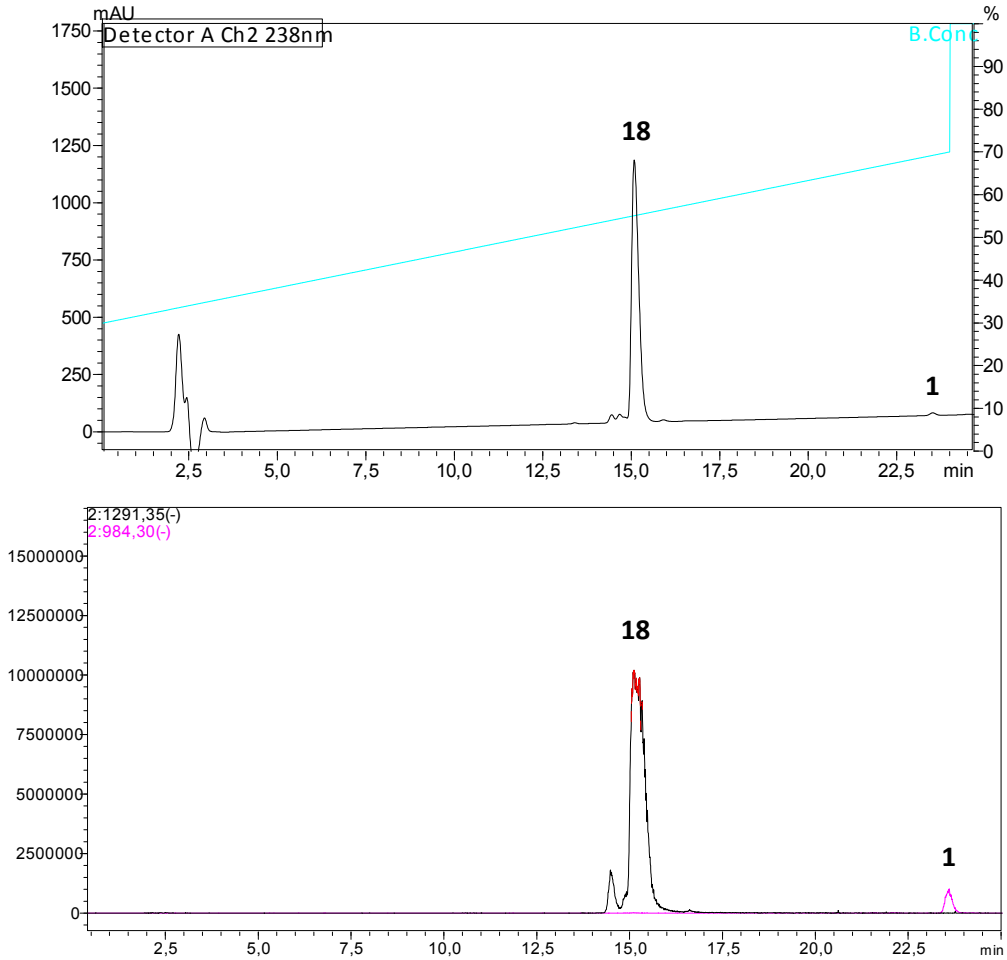


Figure S23. LC-MS chromatogram of a sample taken from the reaction mixture of **1** with an excess of GSH after 1h. (gradient: 35-70% B_{FA} in 15 min).