

## One-pot synthesis of dihydropyrazinones as Xaa-Ser dipeptide isosteres through morpholine acetal rearrangement

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### ELECTRONIC SUPPLEMENTARY INFORMATION

<sup>1</sup>H and <sup>13</sup>C NMR spectra for compounds **2a–9**, **2b** and **2d**

S2-S11

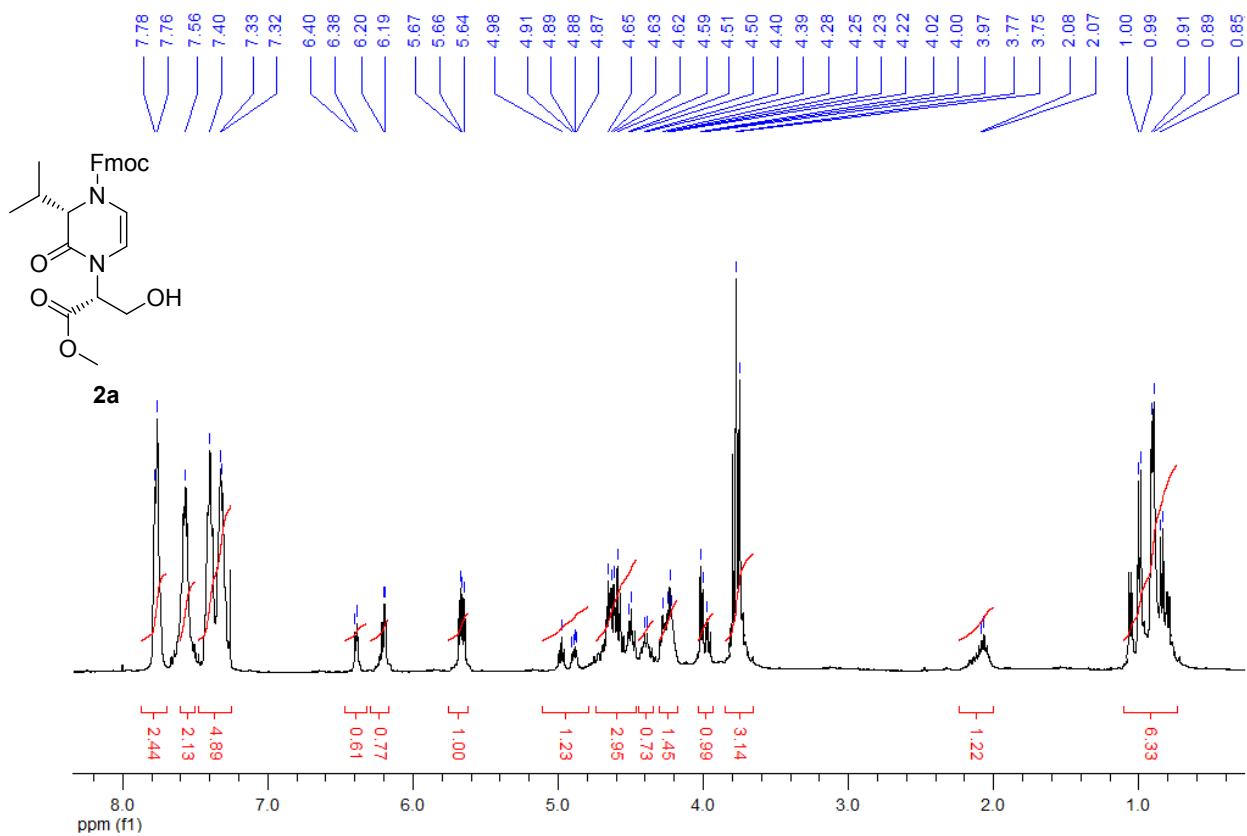


Figure S1. <sup>1</sup>H NMR spectrum of compound **2a** (400 MHz, CDCl<sub>3</sub>).

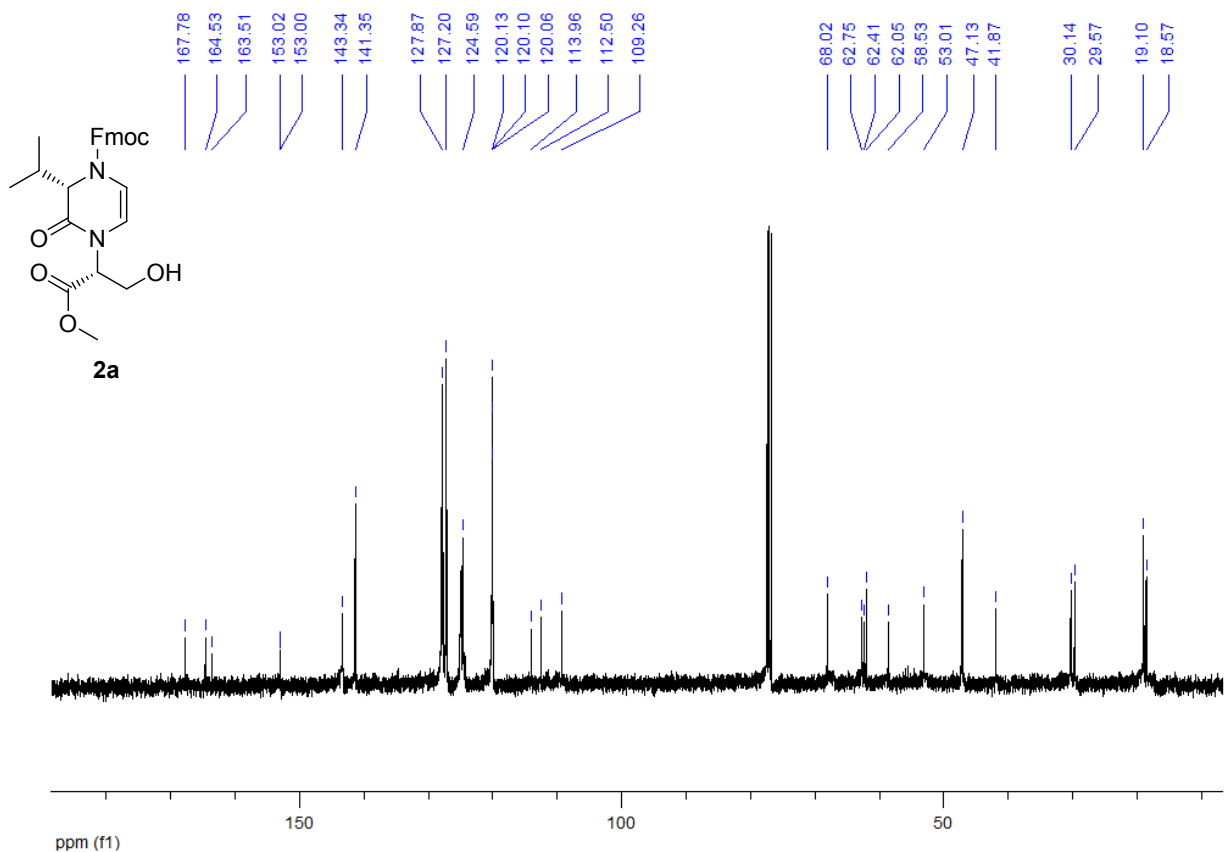


Figure S2. <sup>13</sup>C NMR spectrum of compound **2a** (50 MHz, CDCl<sub>3</sub>).

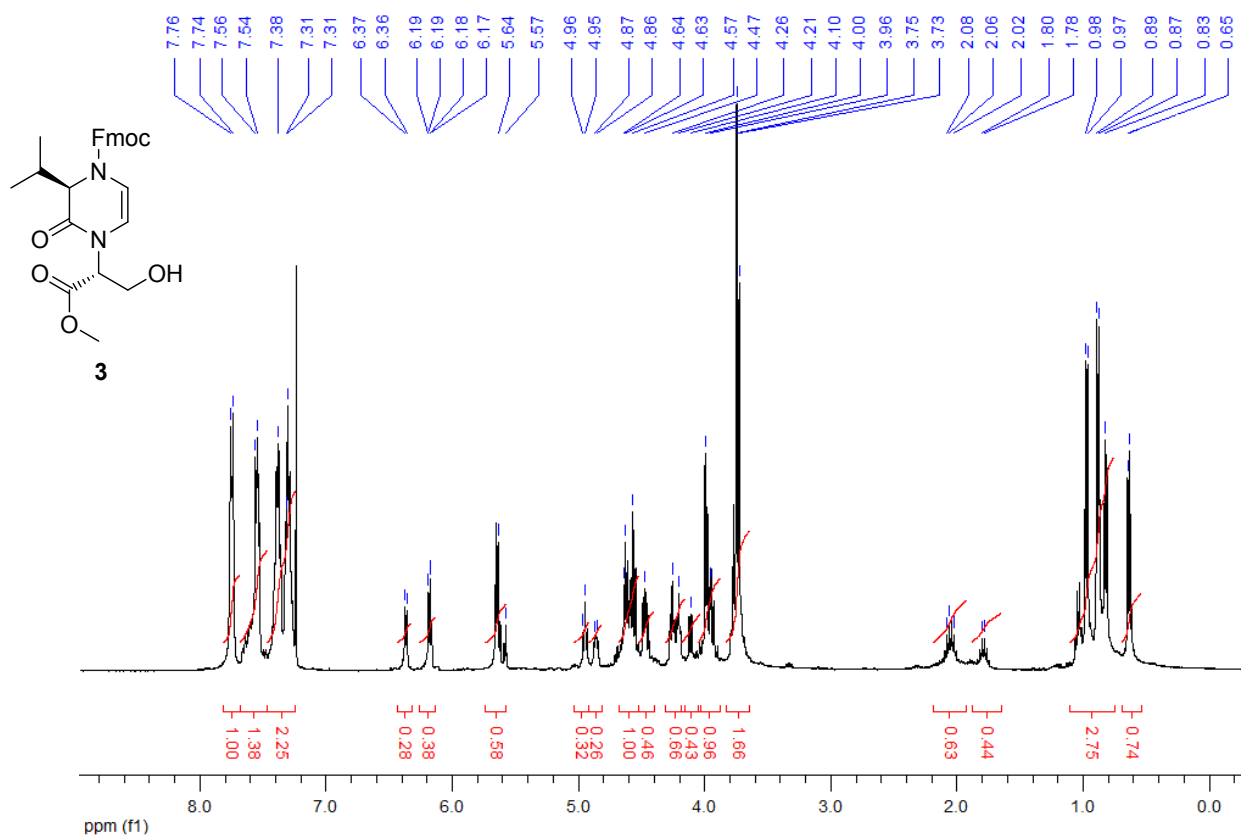


Figure S3. <sup>1</sup>H NMR spectrum of compound **3** (400 MHz, CDCl<sub>3</sub>).

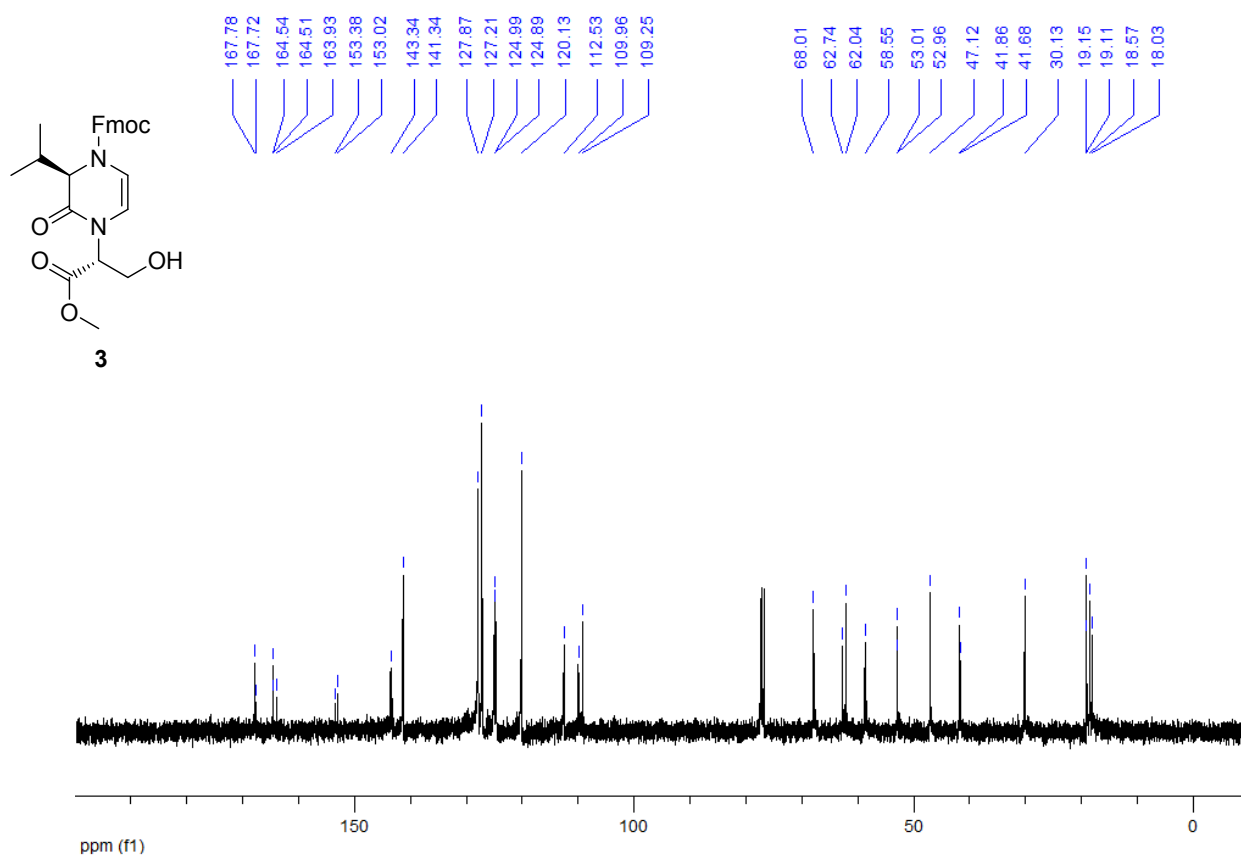


Figure S4. <sup>13</sup>C NMR spectrum of compound **3** (100 MHz, CDCl<sub>3</sub>).

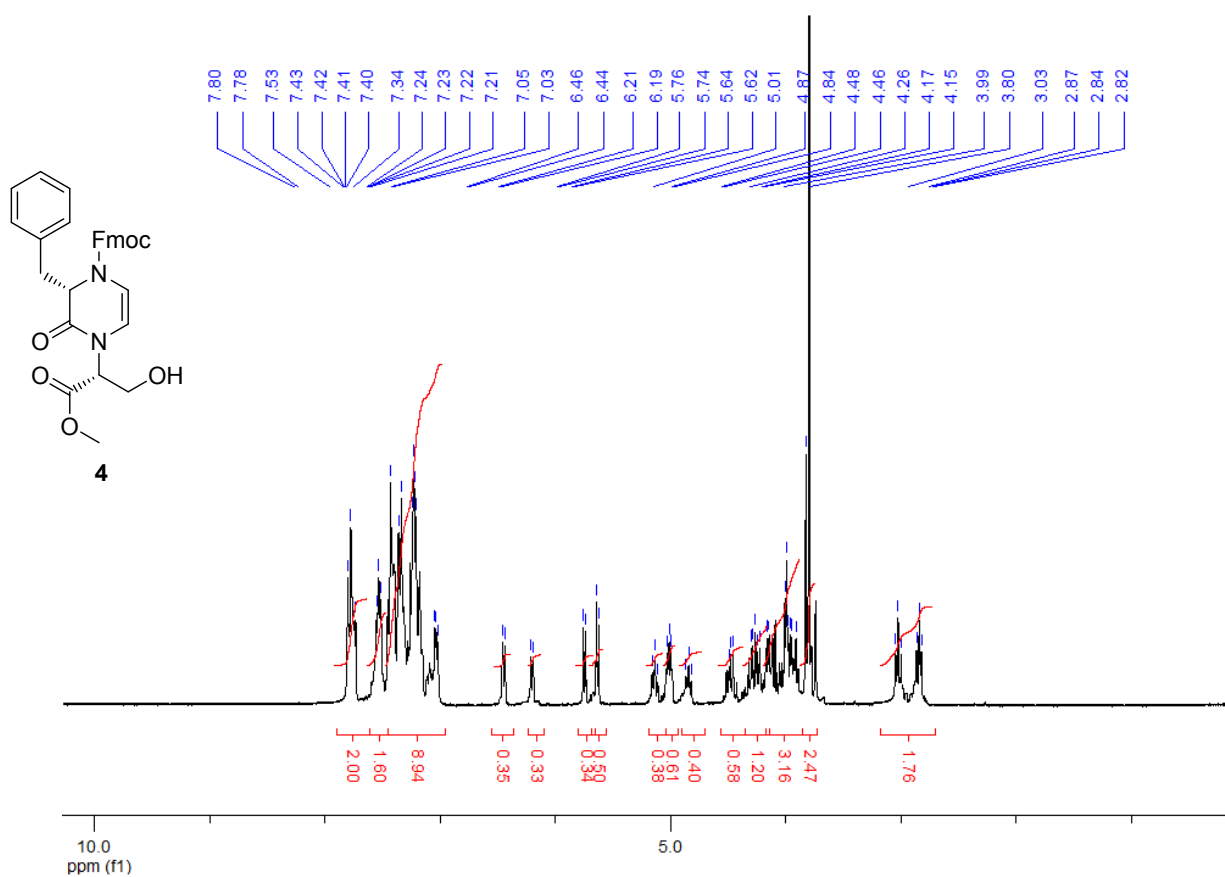


Figure S5.  $^1\text{H}$  NMR spectrum of compound 4 (400 MHz,  $\text{CDCl}_3$ ).

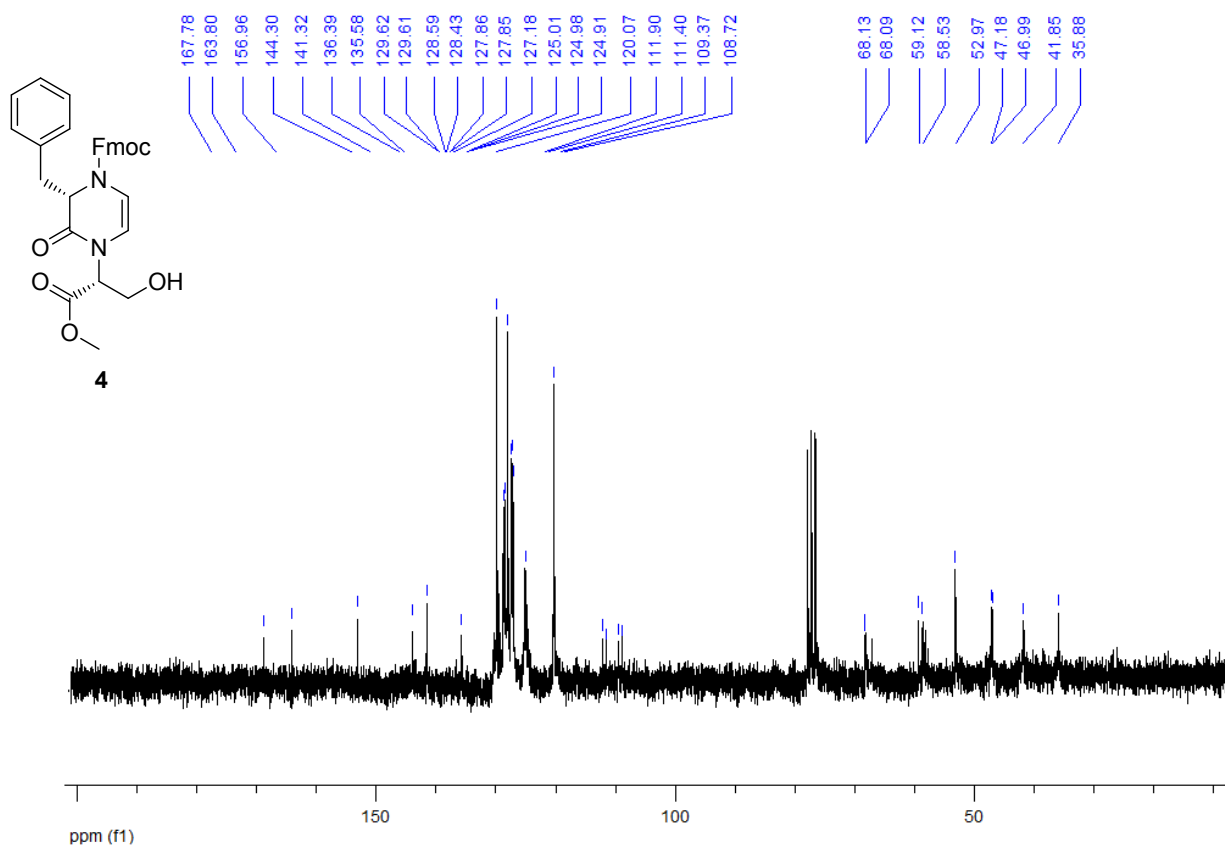


Figure S6.  $^{13}\text{C}$  NMR spectrum of compound 4 (50 MHz,  $\text{CDCl}_3$ ).

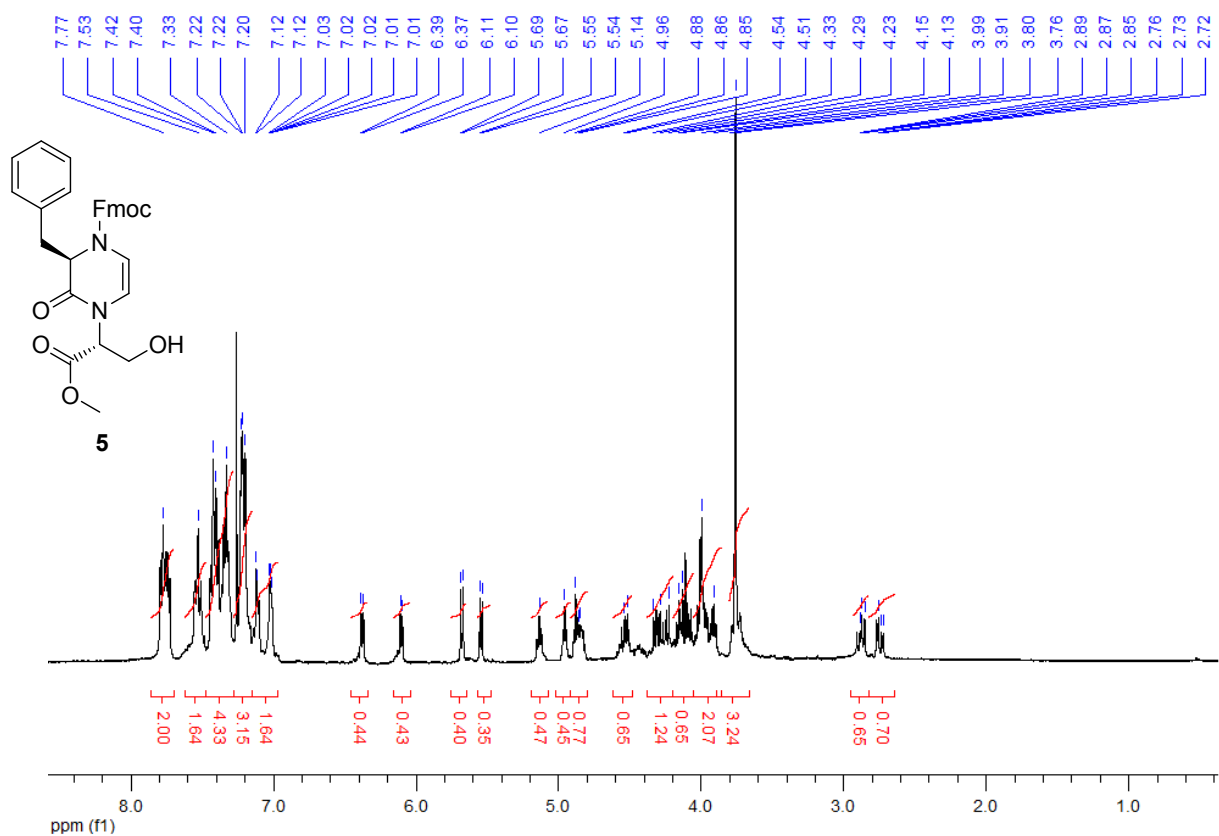


Figure S7. <sup>1</sup>H NMR spectrum of compound **5** (400 MHz, CDCl<sub>3</sub>).

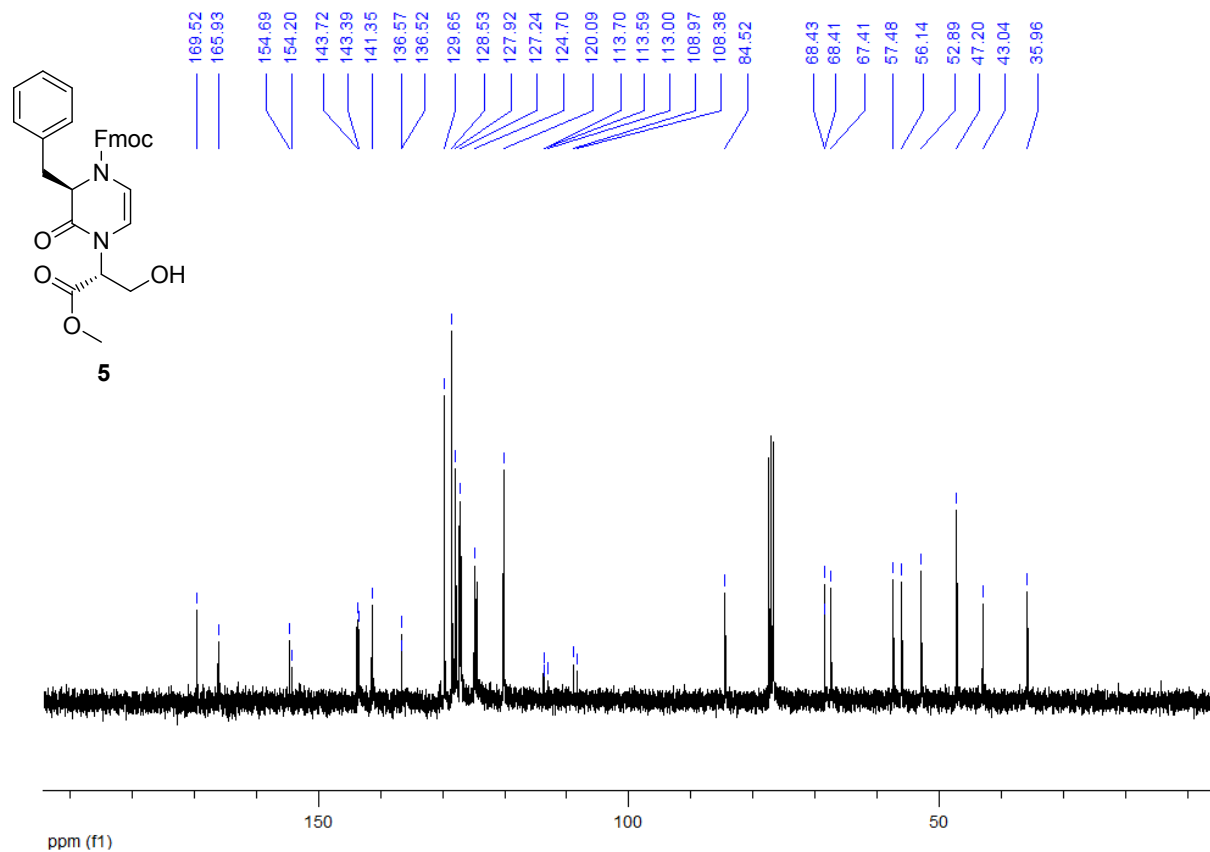


Figure S8. <sup>13</sup>C NMR spectrum of compound **5** (100 MHz, CDCl<sub>3</sub>).

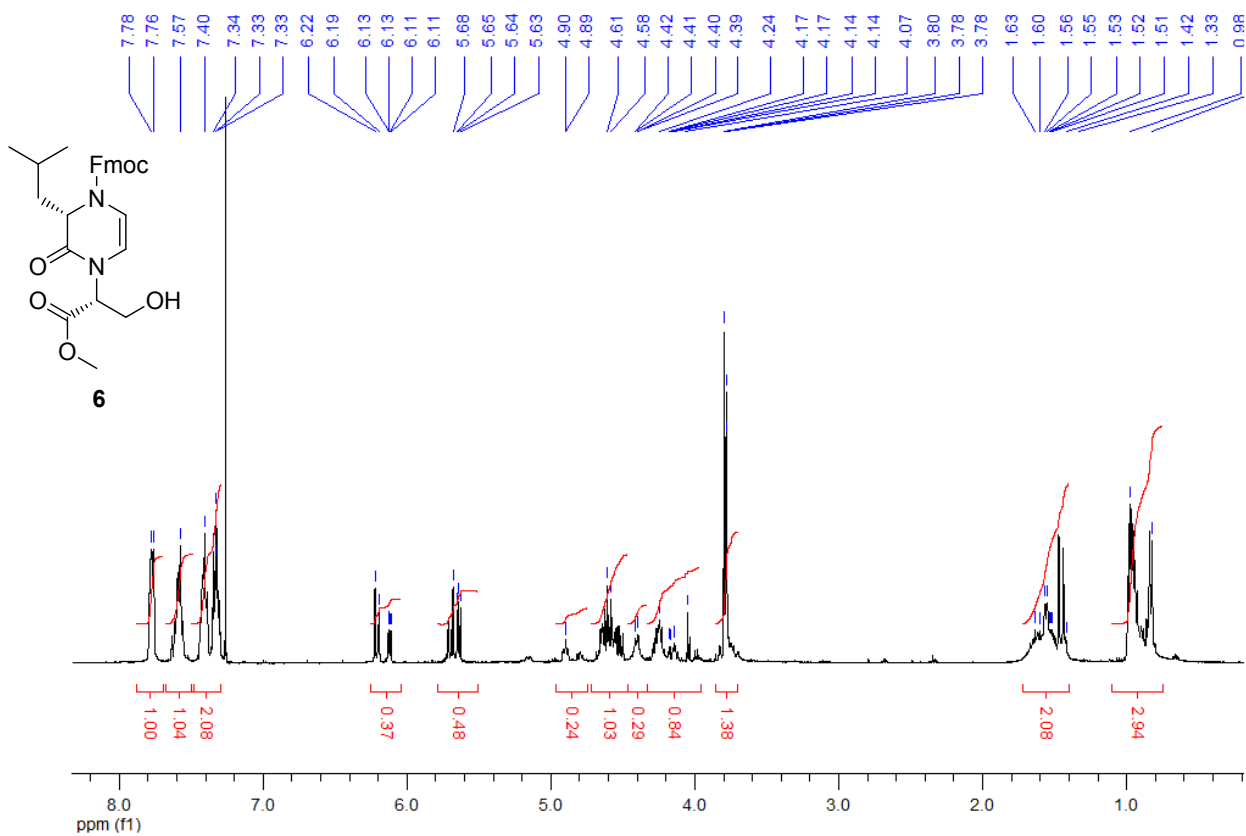


Figure S9. <sup>1</sup>H NMR spectrum of compound **6** (400 MHz, CDCl<sub>3</sub>).

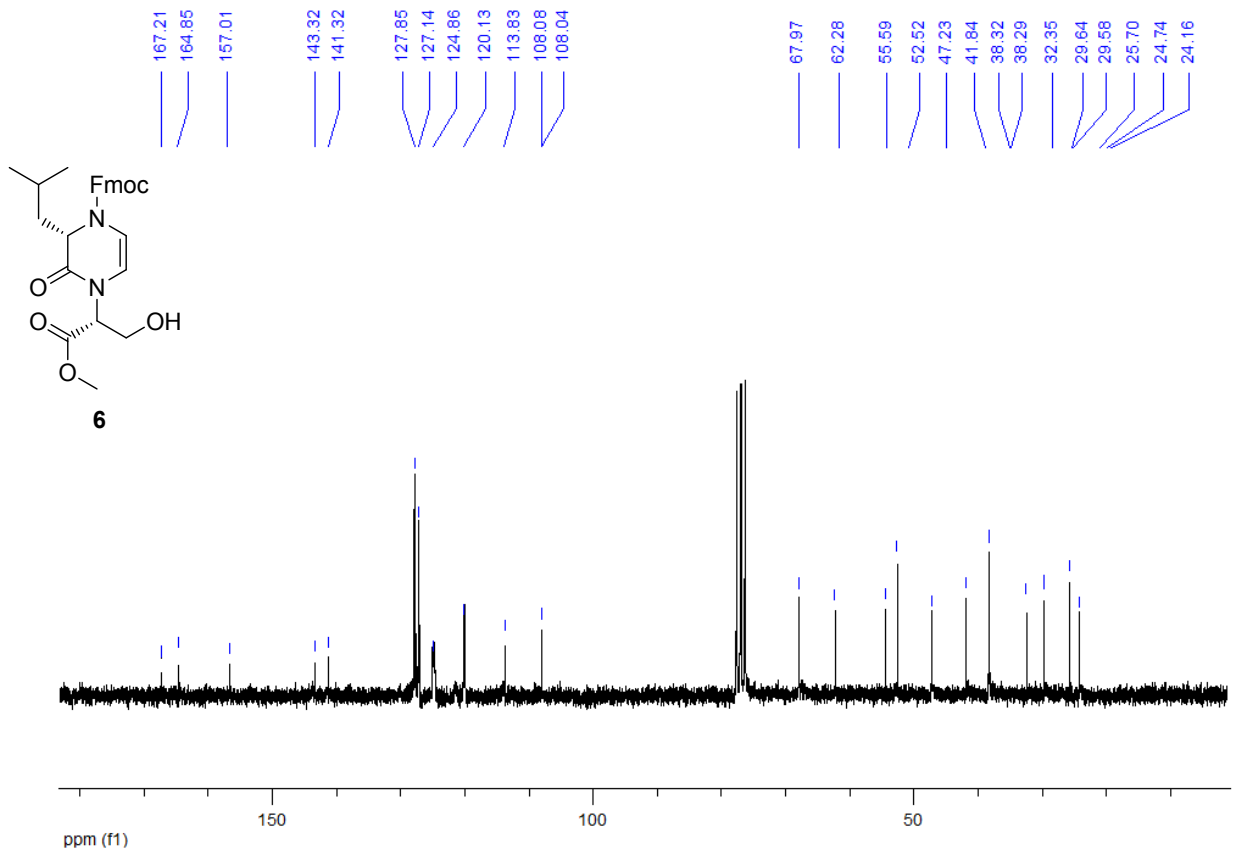


Figure S10. <sup>13</sup>C NMR spectrum of compound **6** (50 MHz, CDCl<sub>3</sub>).

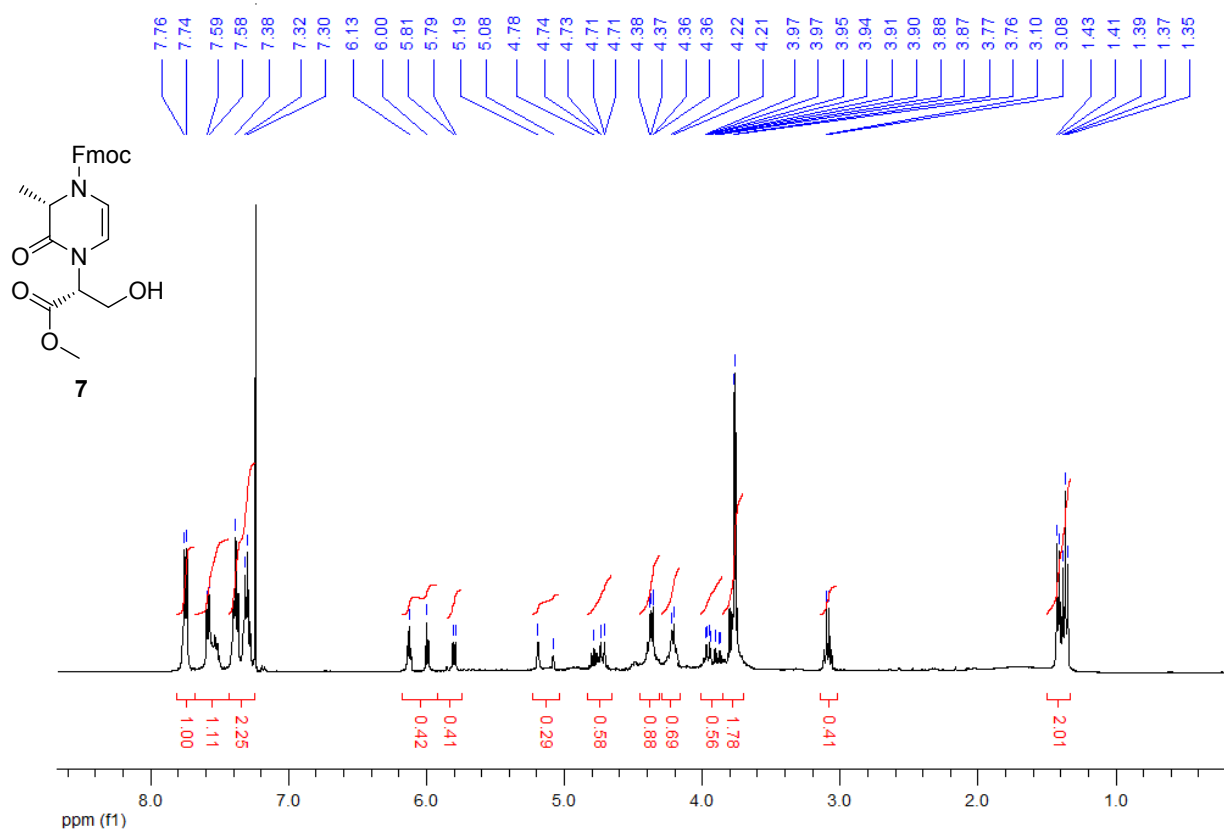


Figure S11. <sup>1</sup>H NMR spectrum of compound VI (400 MHz, CDCl<sub>3</sub>).

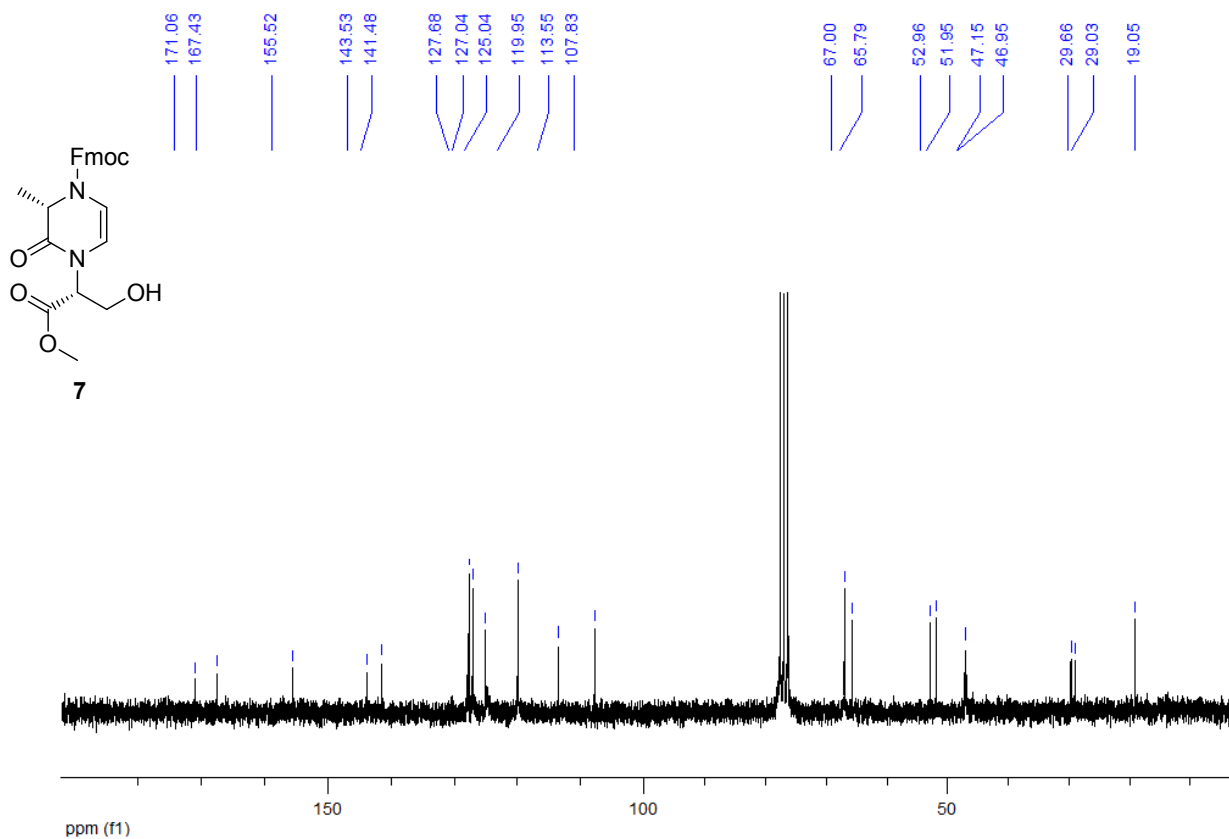


Figure S12. <sup>13</sup>C NMR spectrum of compound 7 (50 MHz, CDCl<sub>3</sub>).

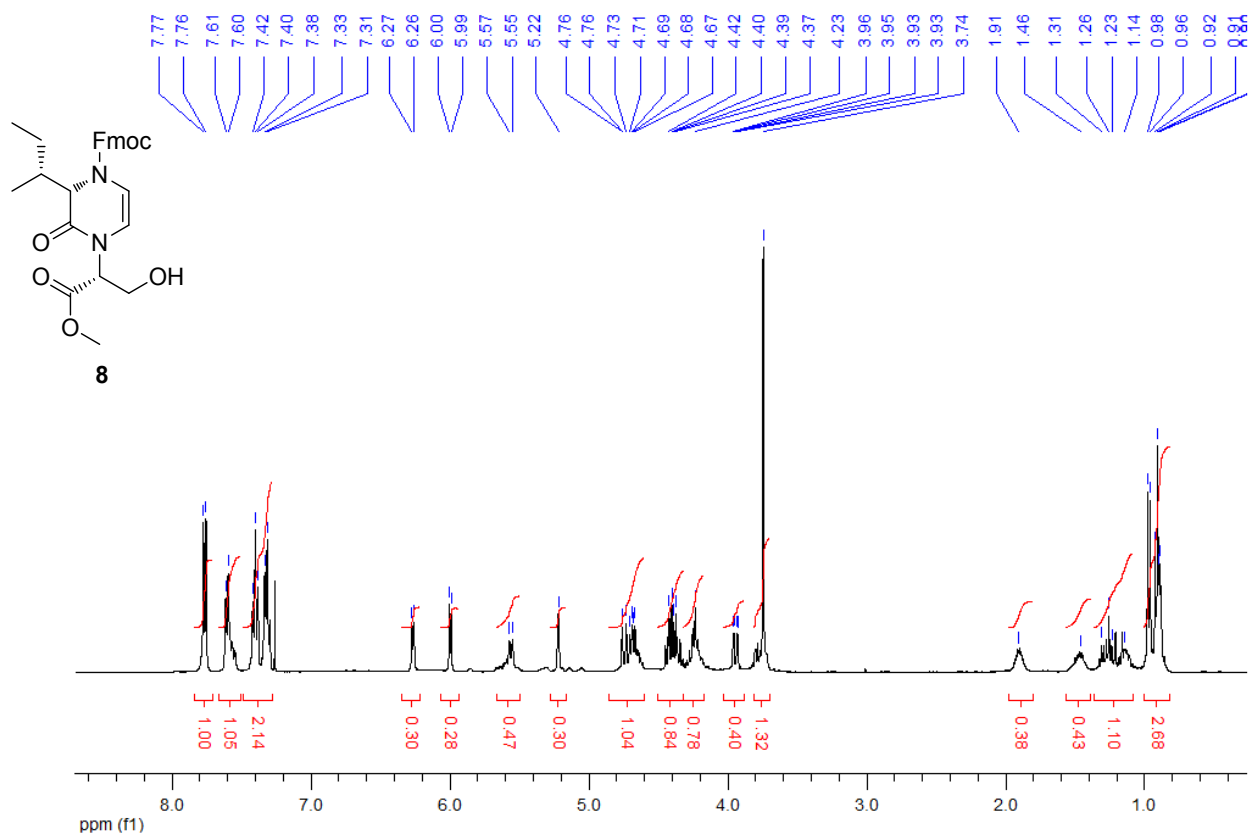


Figure S13. <sup>1</sup>H NMR spectrum of compound **8** (400 MHz, CDCl<sub>3</sub>).

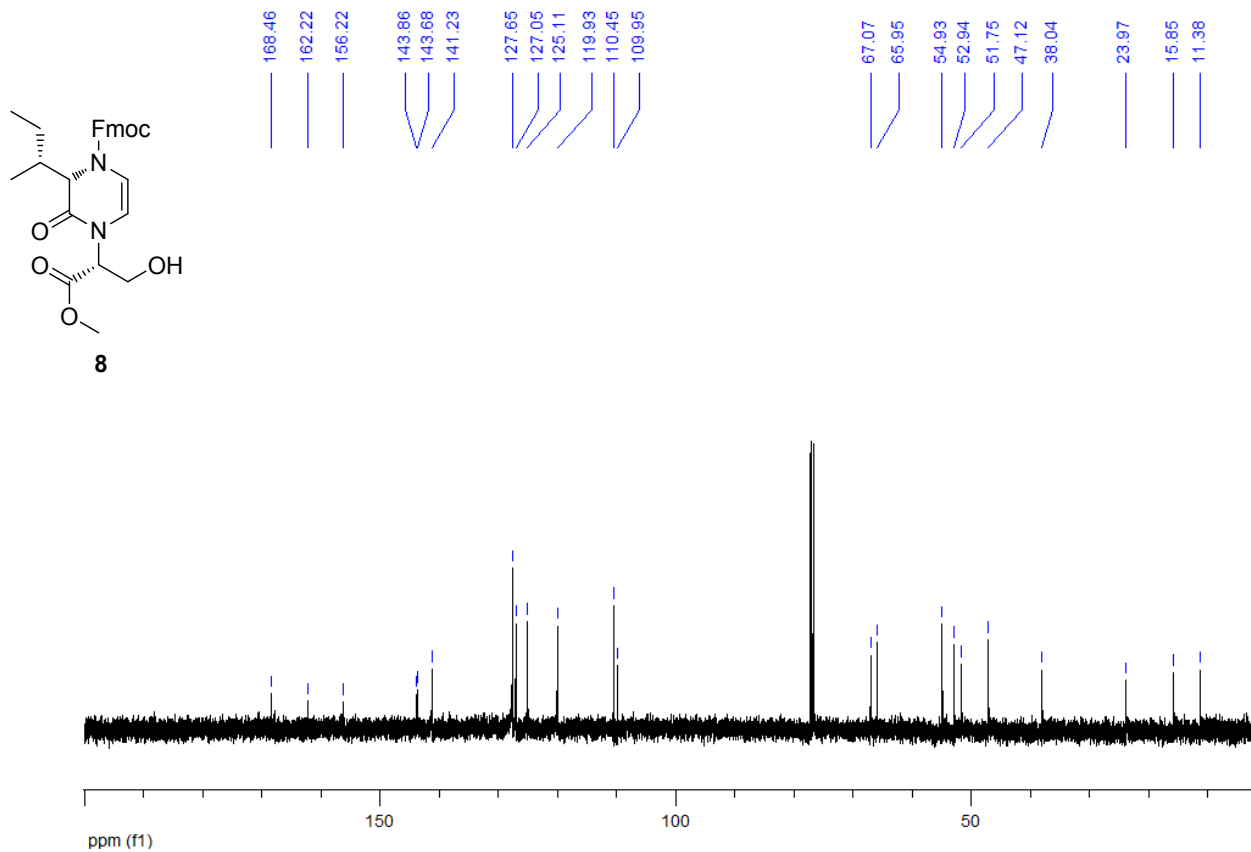


Figure S14. <sup>13</sup>C NMR spectrum of compound **8** (100 MHz, CDCl<sub>3</sub>).



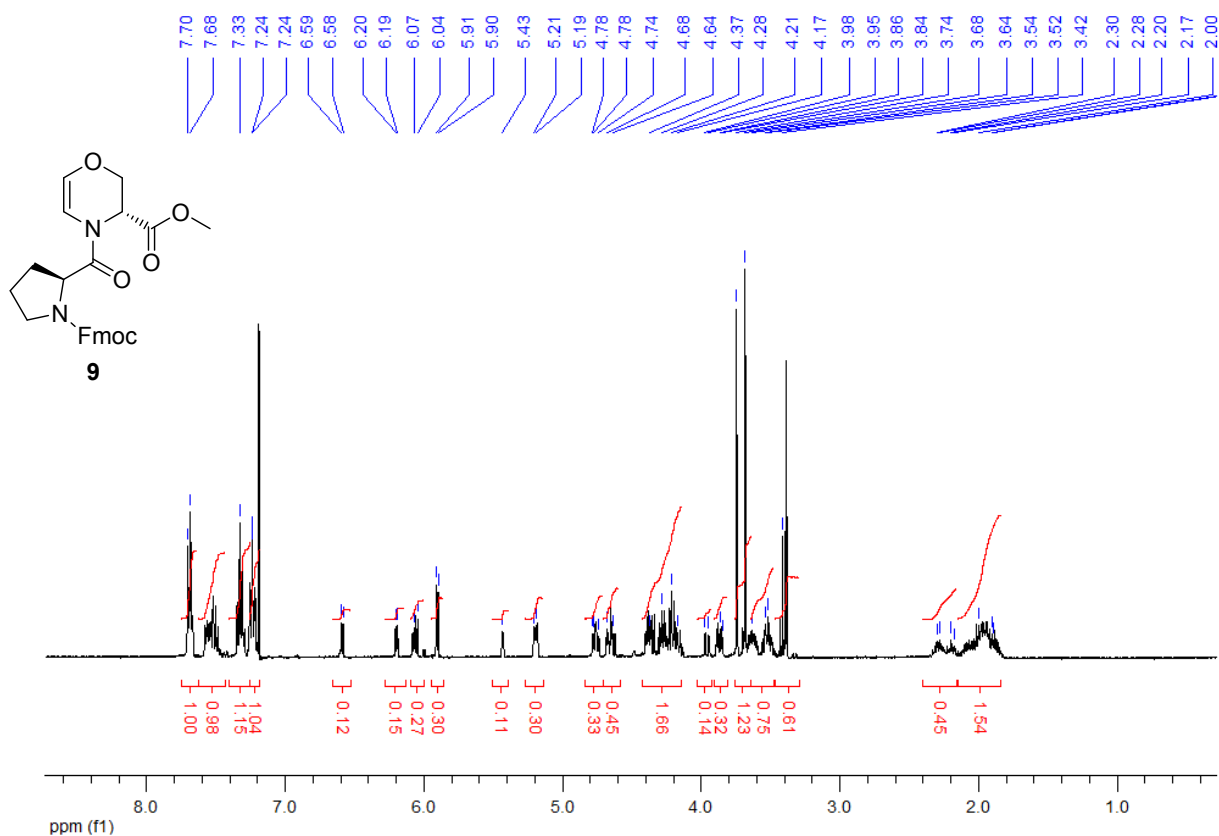


Figure S15. <sup>1</sup>H NMR spectrum of compound **9** (400 MHz, CDCl<sub>3</sub>).

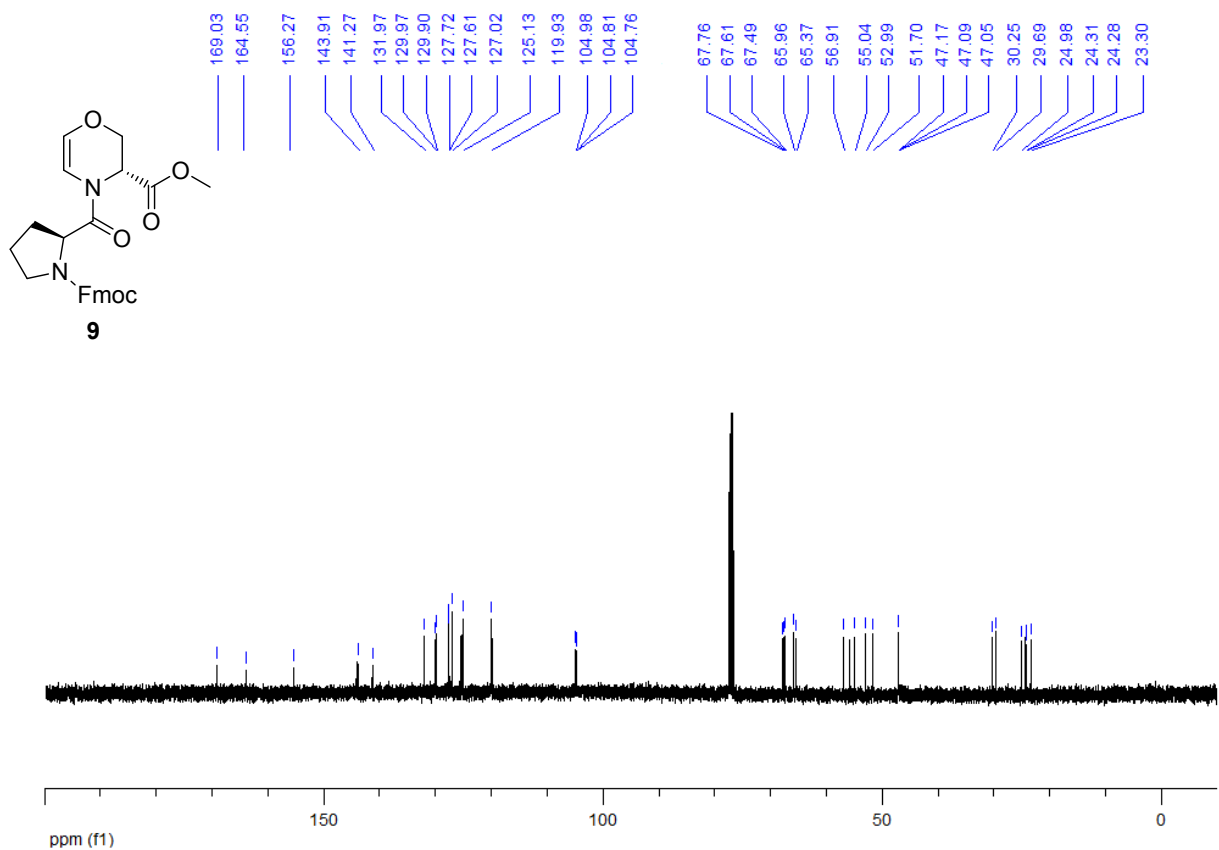


Figure S16. <sup>13</sup>C NMR spectrum of compound **9** (100 MHz, CDCl<sub>3</sub>).

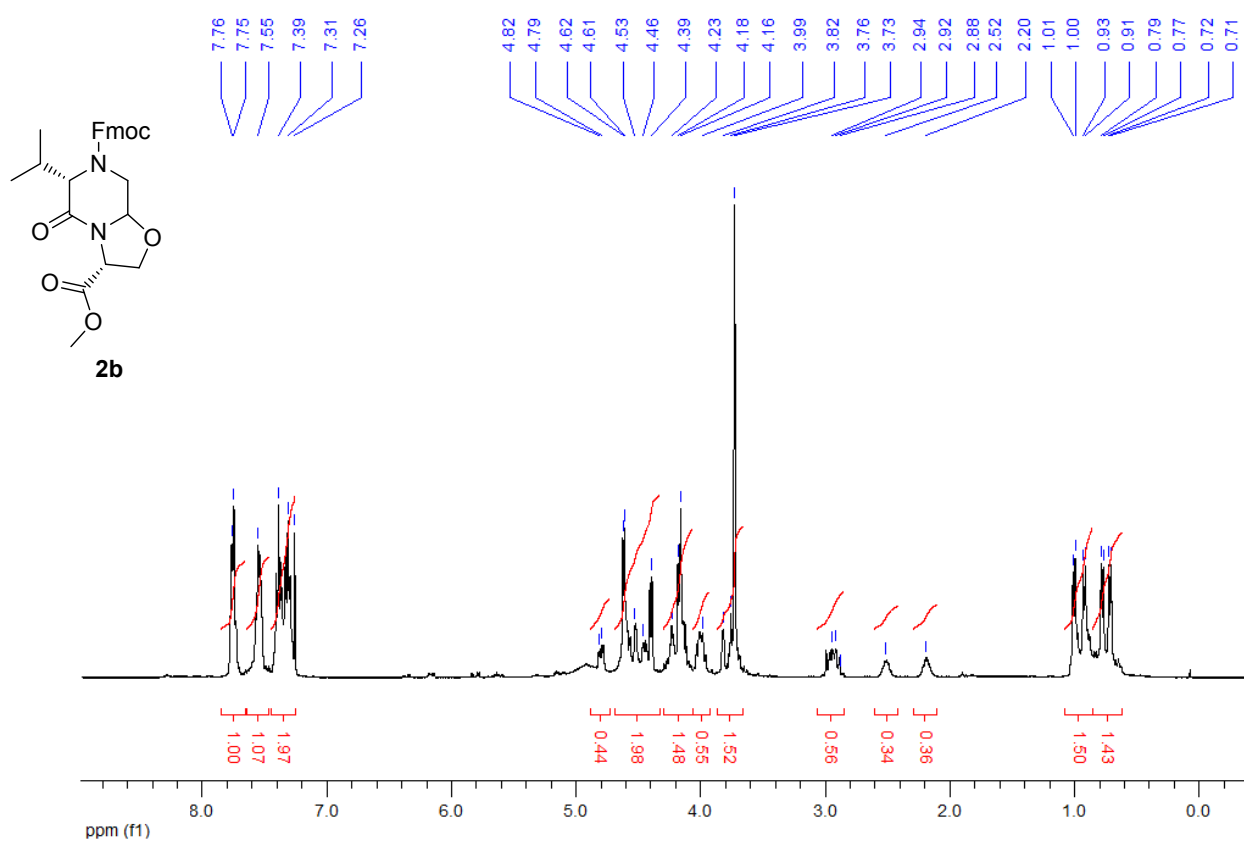


Figure S17. <sup>1</sup>H NMR spectrum of compound **2b** (400 MHz, CDCl<sub>3</sub>).

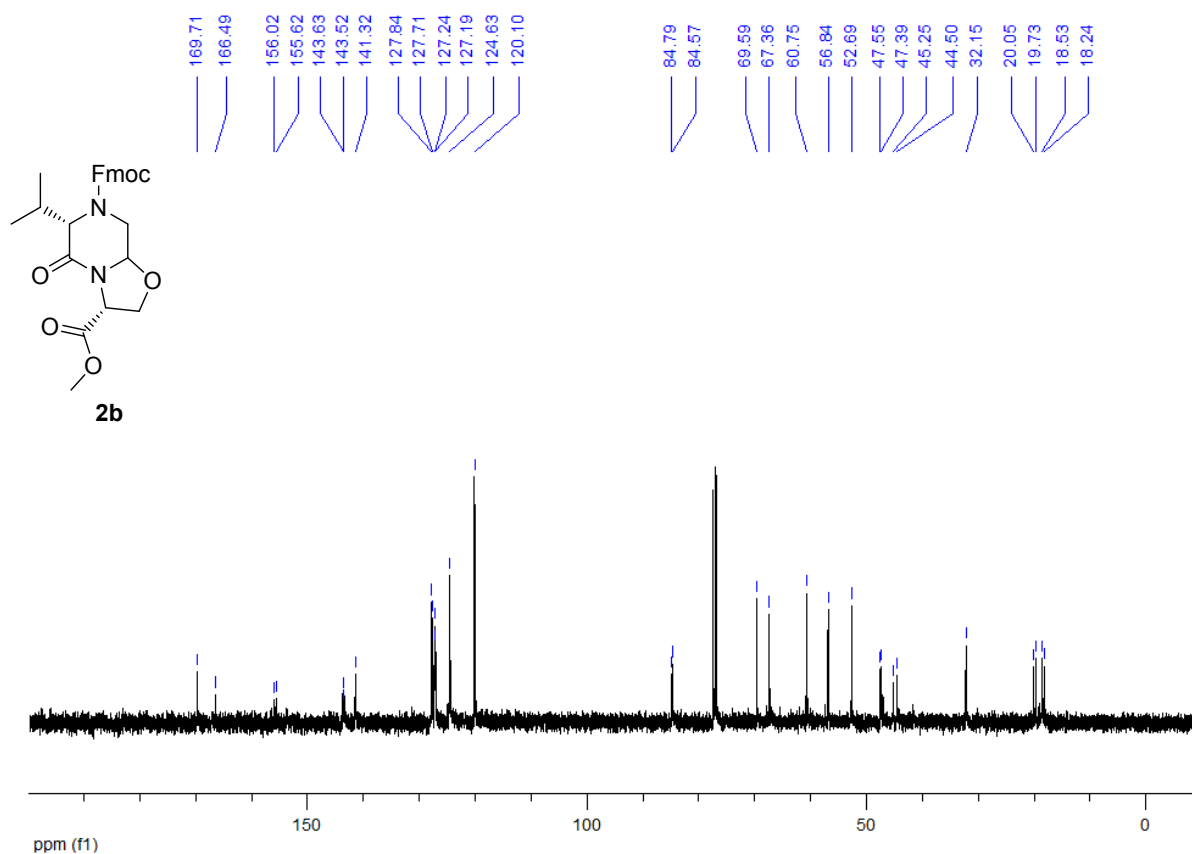


Figure S18. <sup>13</sup>C NMR spectrum of compound **2c** (100 MHz, CDCl<sub>3</sub>).

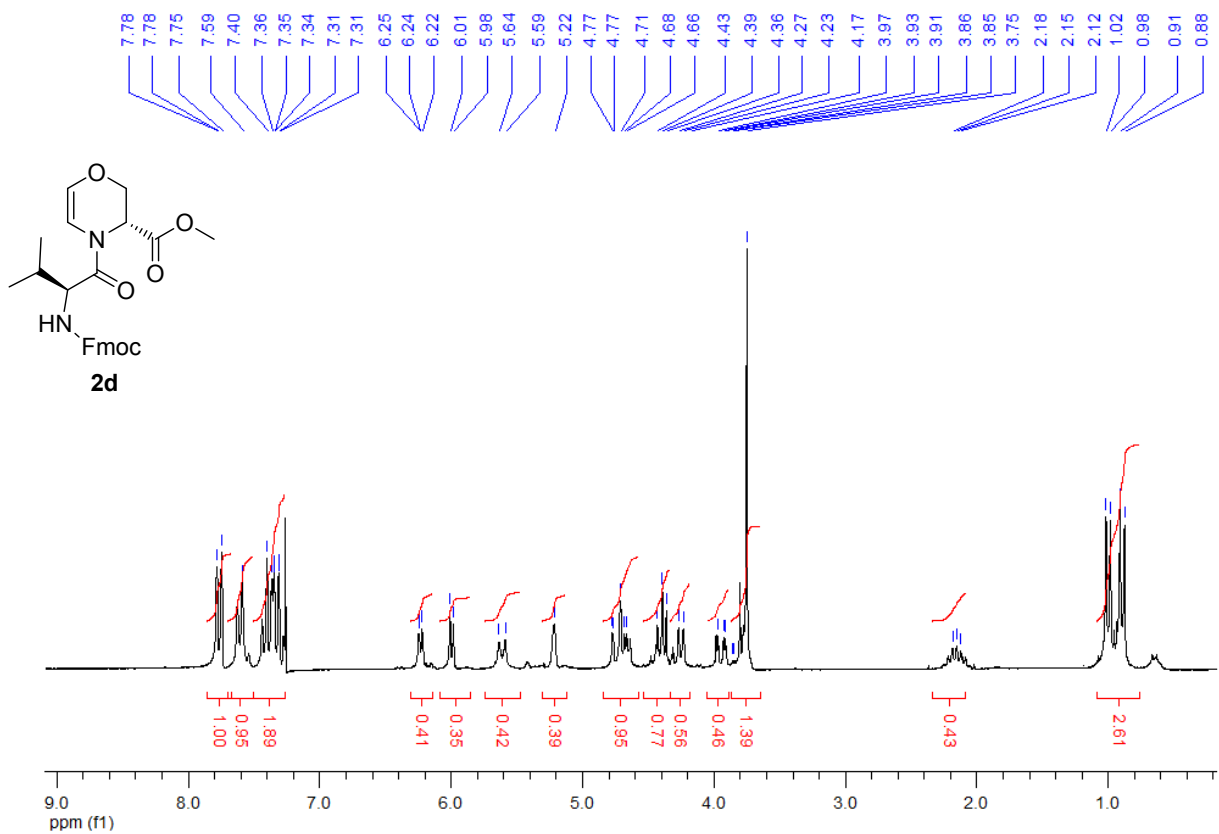


Figure S19. <sup>1</sup>H NMR spectrum of compound **2d** (400 MHz, CDCl<sub>3</sub>).

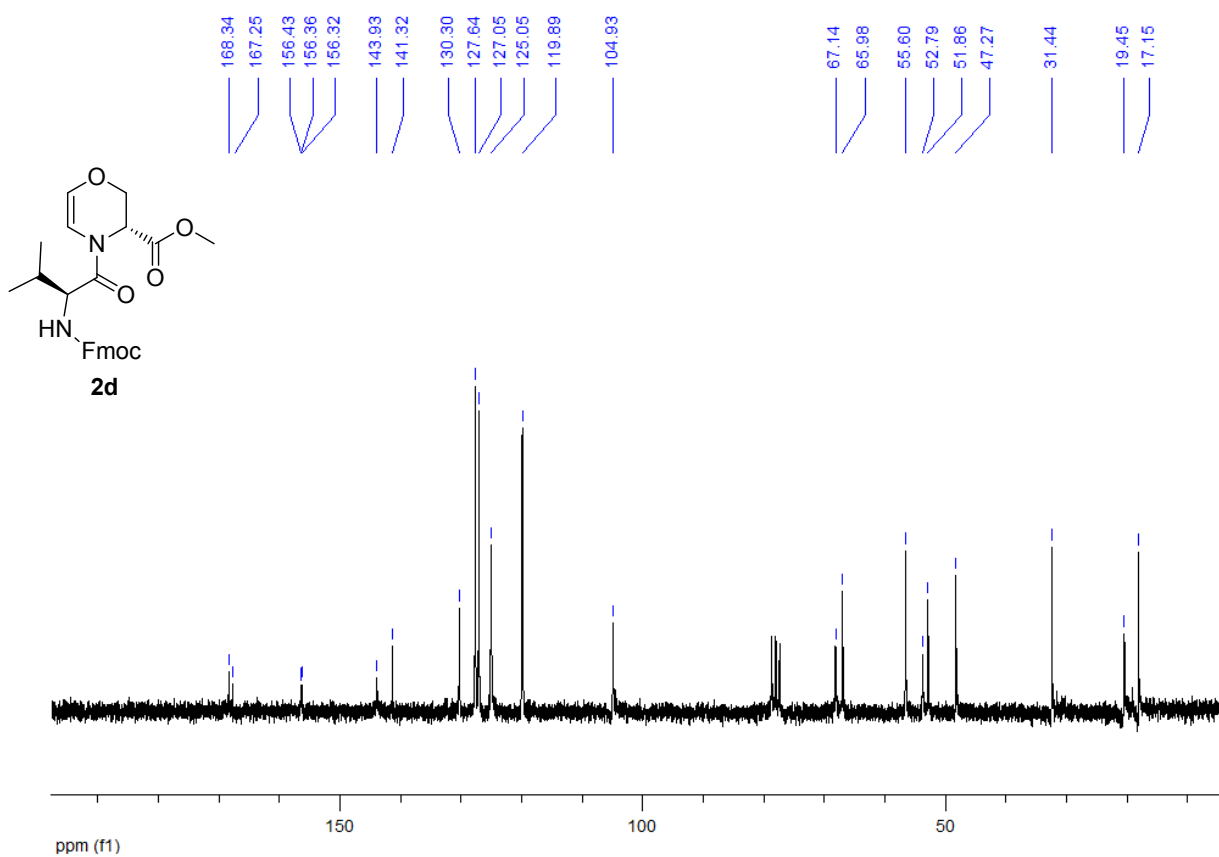


Figure S20. <sup>13</sup>C NMR spectrum of compound **2d** (100 MHz, CDCl<sub>3</sub>).