

Supplementary Material

Antimicrobial Diterpenes from Rough Goldenrod (*Solidago rugosa* Mill.)

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Table of contents

No.	Legend	Page
Figure S1.	¹ H NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz).	S-4
Figure S2.	¹ H NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz, aliphatic region).	S-5
Figure S3.	¹³ C NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 151 MHz).	S-6
Figure S4.	¹³ C NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 151 MHz, aliphatic region).	S-7
Figure S5.	¹ H– ¹ H COSY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz).	S-8
Figure S6.	¹ H– ¹ H COSY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz, aliphatic region).	S-9
Figure S7.	¹ H– ¹³ C edHSQC NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 and 151 MHz).	S-10
Figure S8.	¹ H– ¹³ C edHSQC NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 and 151 MHz, aliphatic region).	S-11
Figure S9.	¹ H– ¹³ C HMBC NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 and 151 MHz).	S-12
Figure S10.	¹ H– ¹³ C HMBC NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 and 151 MHz, aliphatic region).	S-13
Figure S11.	¹ H– ¹ H TOCSY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz).	S-14
Figure S12.	¹ H– ¹ H TOCSY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz, aliphatic region).	S-15
Figure S13.	¹ H– ¹ H NOESY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz).	S-16
Figure S14.	¹ H– ¹ H NOESY NMR spectrum of (–)-hardwickiic acid (1) (CD ₃ OD, 600 MHz, aliphatic region).	S-17
Figure S15.	¹ H NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 MHz).	S-18
Figure S16.	¹ H NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 MHz, aliphatic region).	S-19
Figure S17.	¹³ C NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 151 MHz).	S-20
Figure S18.	¹³ C NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 151 MHz, aliphatic region).	S-21
Figure S19.	¹ H– ¹ H COSY NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 MHz).	S-22
Figure S20.	¹ H– ¹ H COSY NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 MHz, aliphatic region).	S-23
Figure S21.	¹ H– ¹³ C edHSQC NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 and 151 MHz).	S-24
Figure S22.	¹ H– ¹³ C edHSQC NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 and 151 MHz, aliphatic region).	S-25
Figure S23.	¹ H– ¹³ C bsHSQC NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 and 151 MHz).	S-26
Figure S24.	¹ H– ¹³ C bsHSQC NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 and 151 MHz, aliphatic region).	S-27
Figure S25.	¹ H– ¹³ C HMBC NMR spectrum of (–)-abietic acid (2) (CD ₃ OD, 600 and 151 MHz).	S-28

Figure S26.	^1H - ^{13}C HMBC NMR spectrum of (–)-abietic acid (2) (CD_3OD , 600 and 151 MHz, aliphatic region).	S-29
Figure S27.	^1H - ^{13}C bsHMBC NMR spectrum of (–)-abietic acid (2) (CD_3OD , 600 and 151 MHz).	S-30
Figure S28.	^1H - ^{13}C bsHMBC NMR spectrum of (–)-abietic acid (2) (CD_3OD , 600 and 151 MHz, aliphatic region).	S-31
Figure S29.	^1H - ^1H TOCSY NMR spectrum of (–)-abietic acid (2) (CD_3OD , 600 MHz).	S-32
Figure S30.	^1H - ^1H TOCSY NMR spectrum of (–)-abietic acid (2) (CD_3OD , 600 MHz, aliphatic region).	S-33

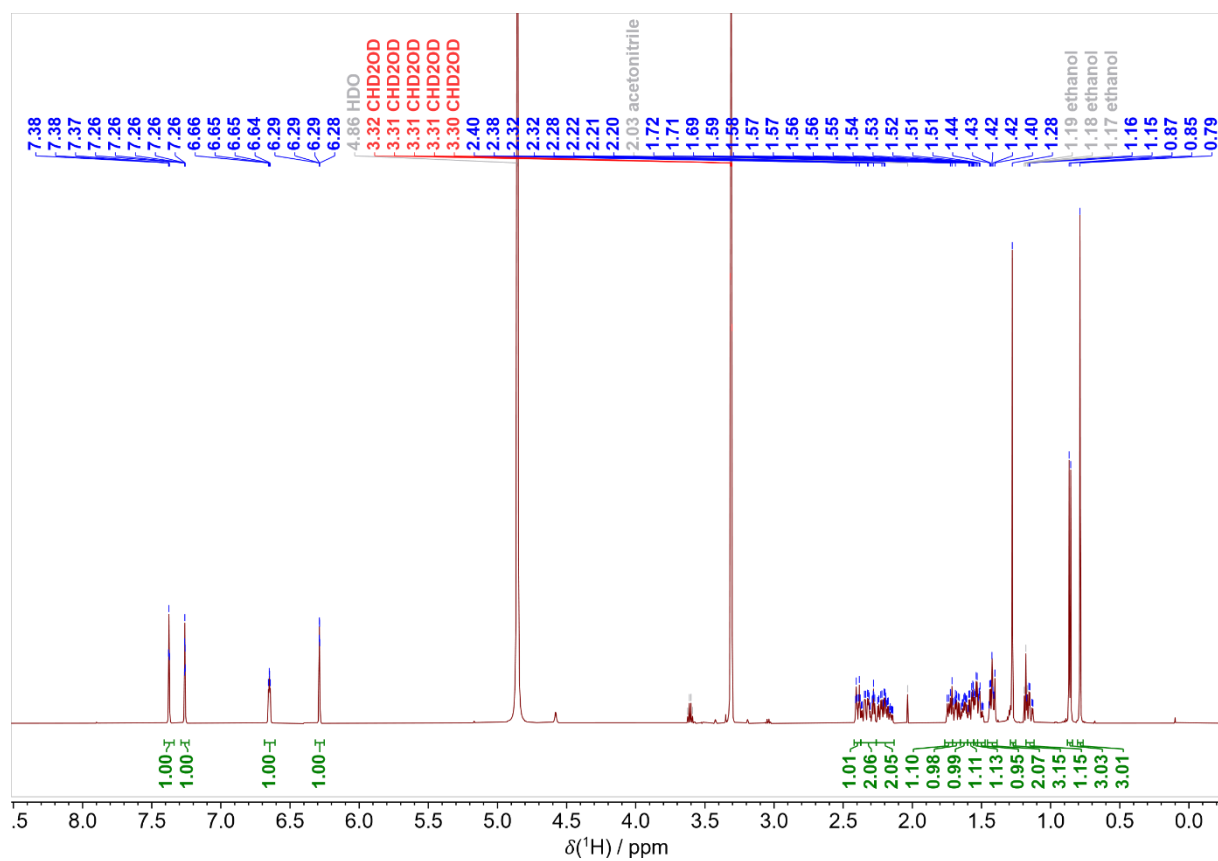


Figure S1. ^1H NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz).

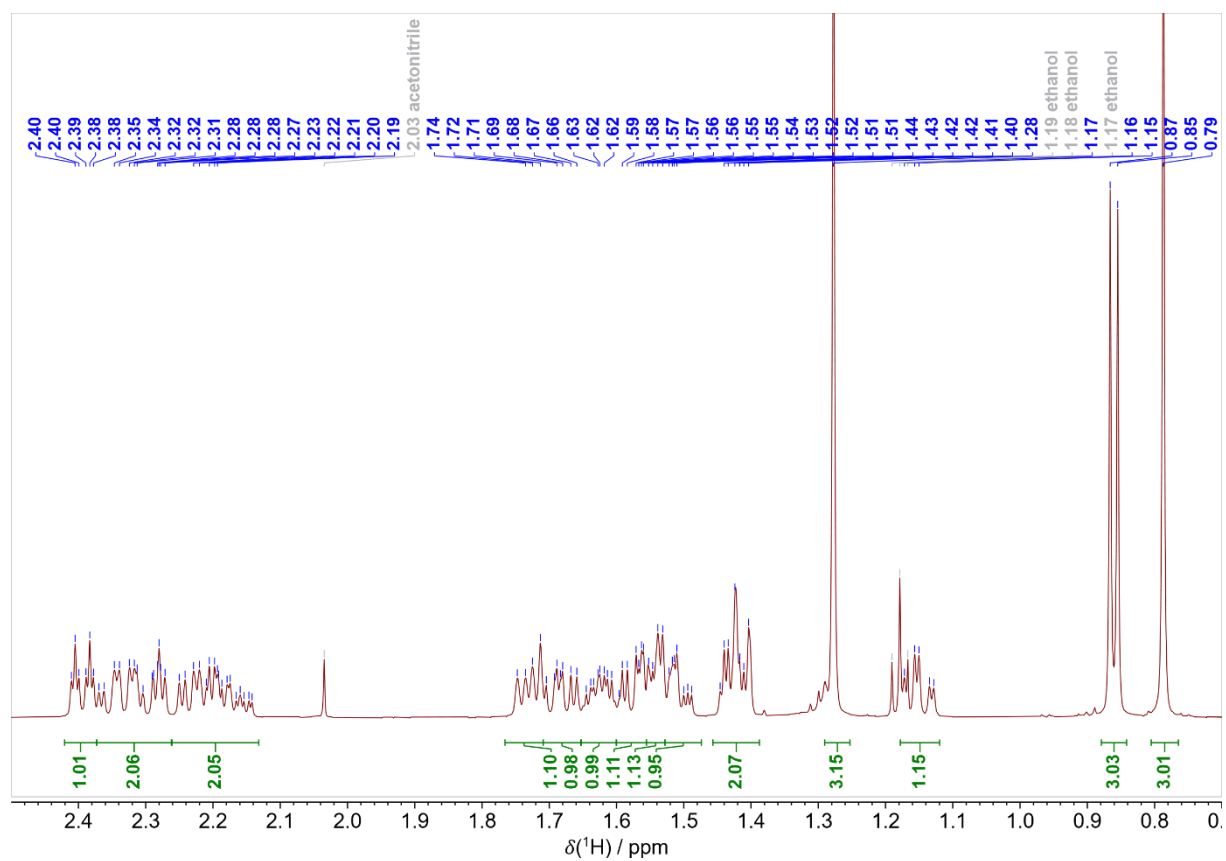


Figure S2. ^1H NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz, aliphatic region).

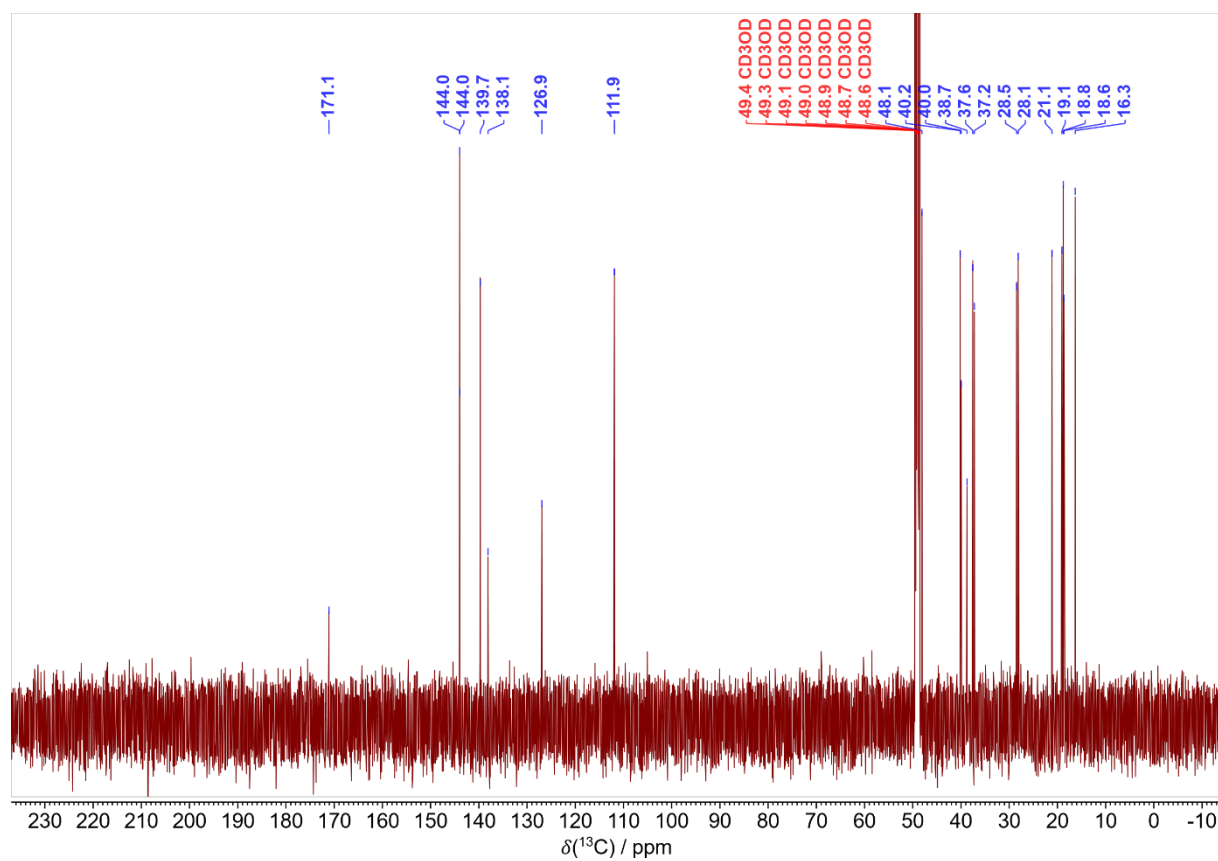


Figure S3. ^{13}C NMR spectrum of (-)-hardwickiic acid (**1**) (CD_3OD , 151 MHz).

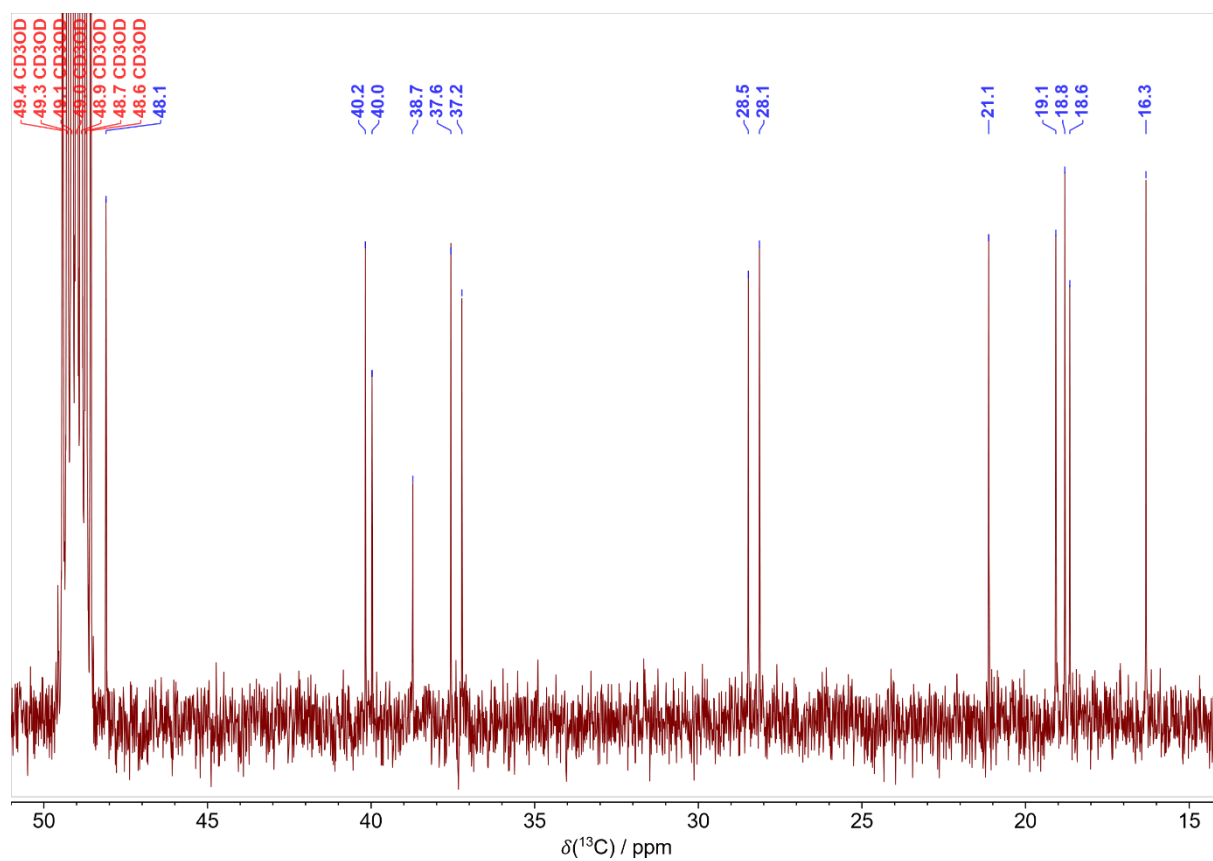


Figure S4. ^{13}C NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 151 MHz, aliphatic region).

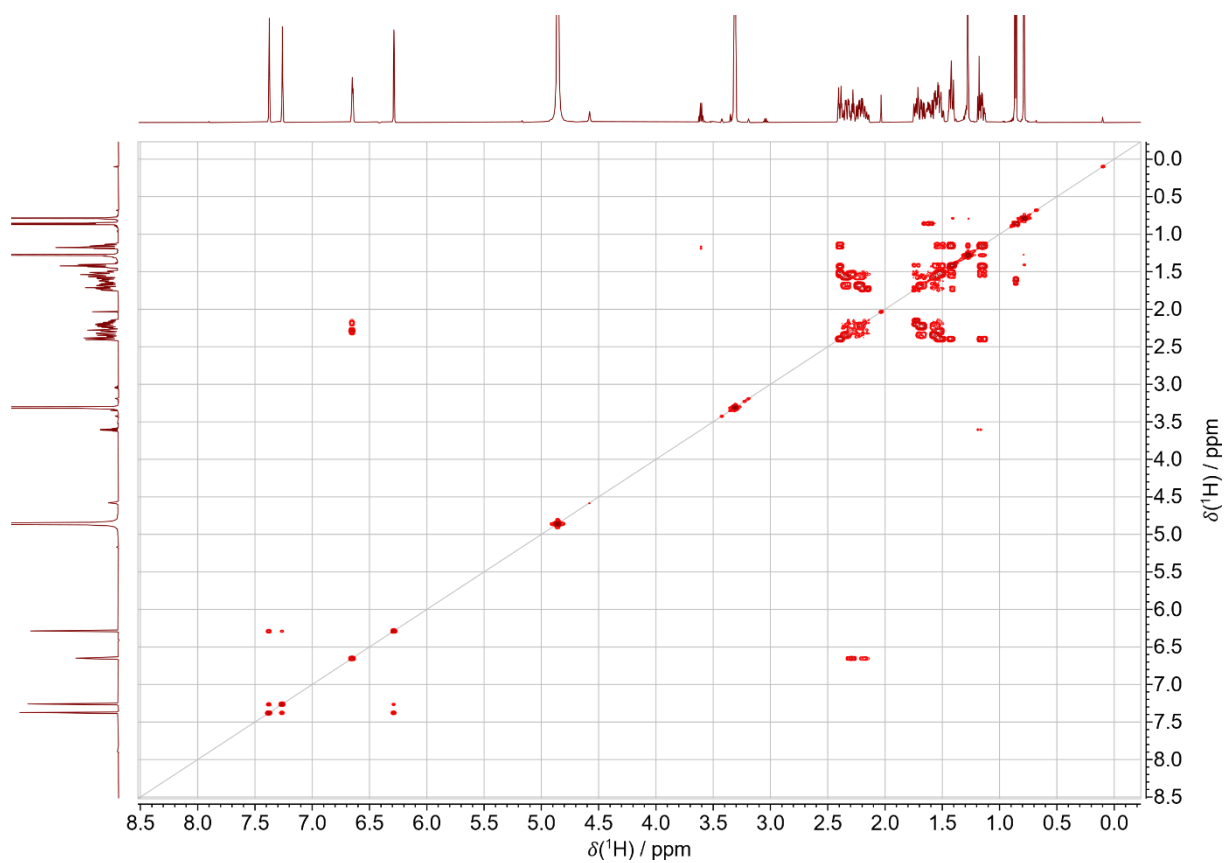


Figure S5. ^1H – ^1H COSY NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz).



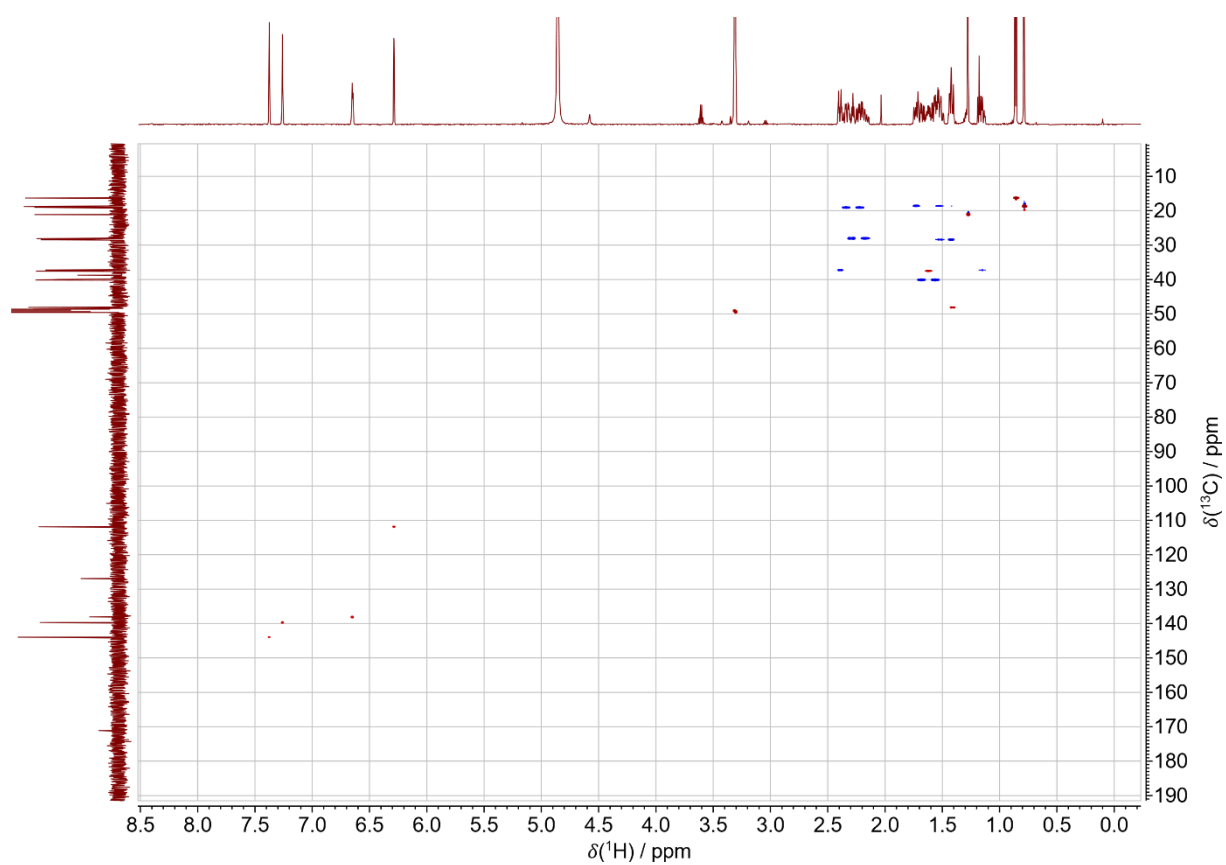


Figure S7. ^1H – ^{13}C edHSQC NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 and 151 MHz).

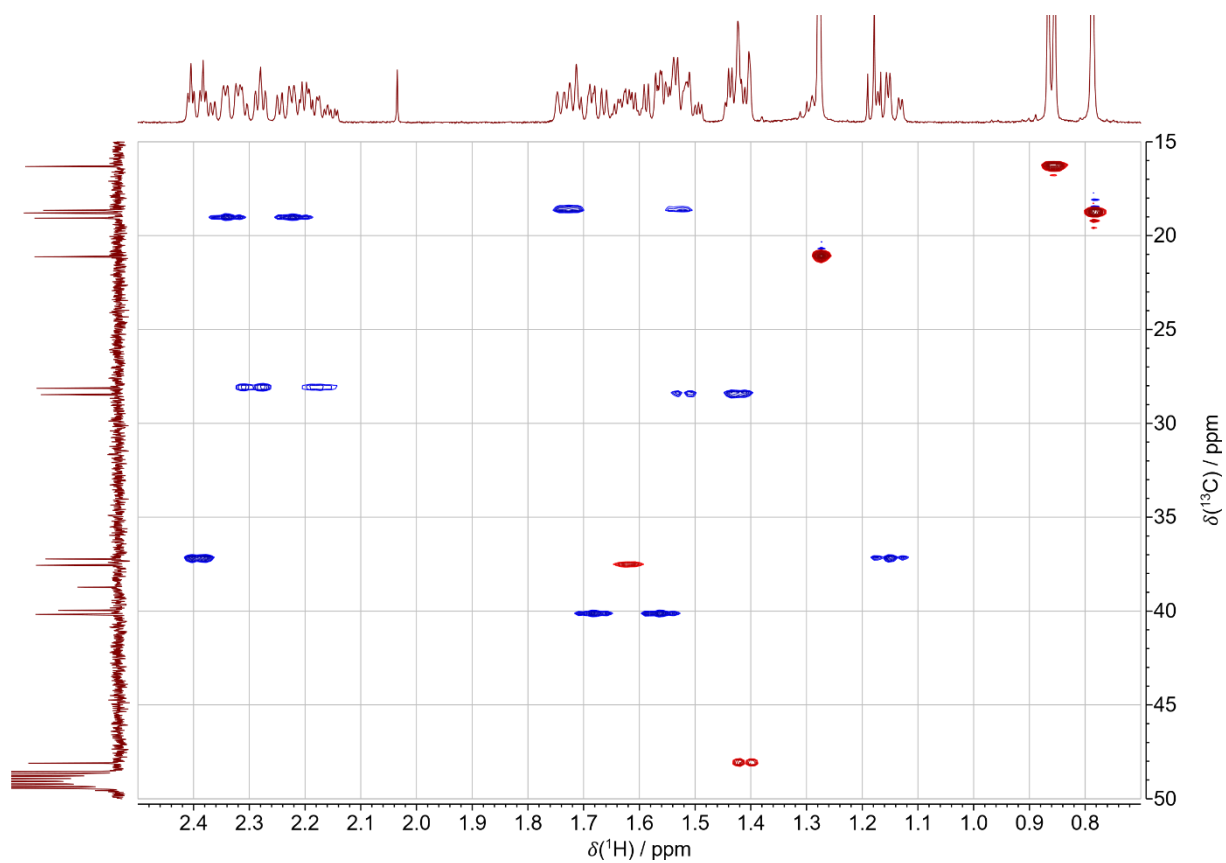


Figure S8. ^1H - ^{13}C edHSQC NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 and 151 MHz, aliphatic region).



Figure S9. ^1H – ^{13}C HMBC NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 and 151 MHz).

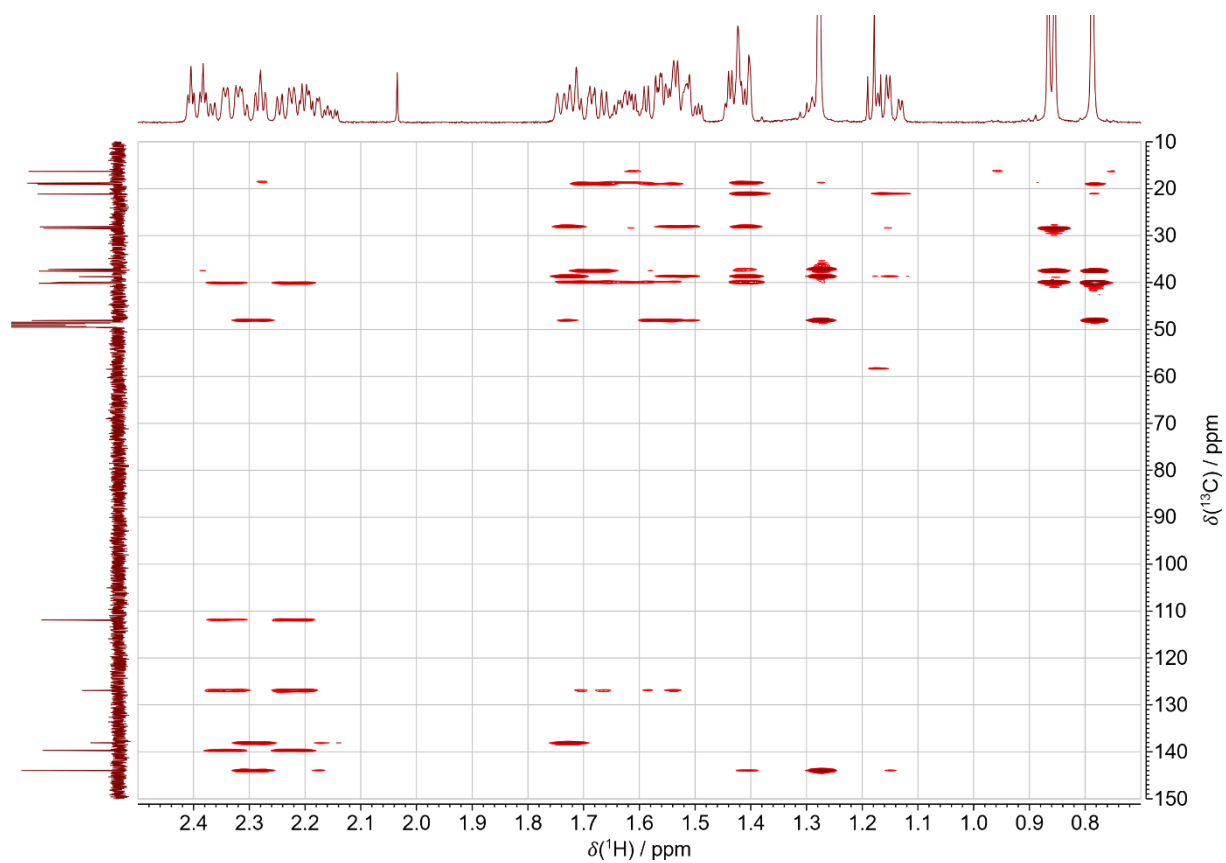


Figure S10. ^1H - ^{13}C HMBC NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 and 151 MHz, aliphatic region).

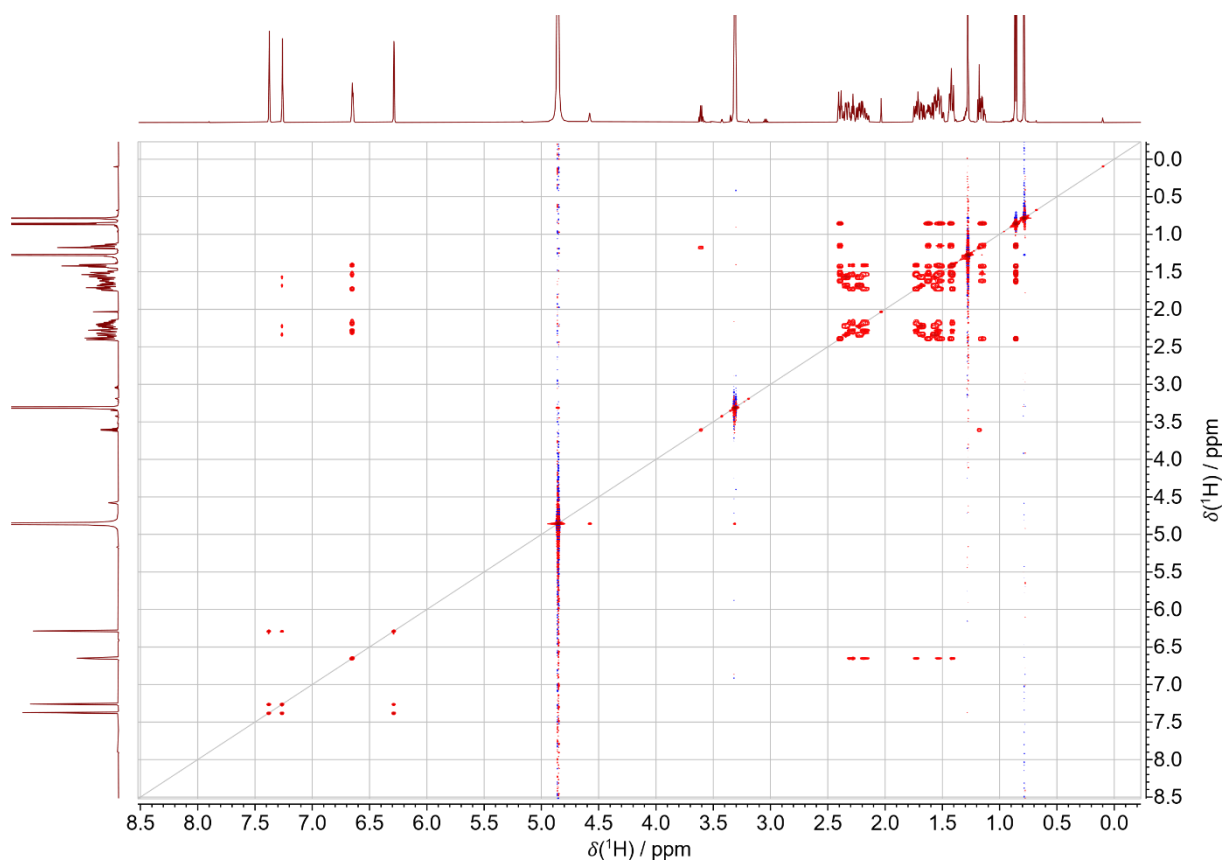


Figure S11. ^1H - ^1H TOCSY NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz).

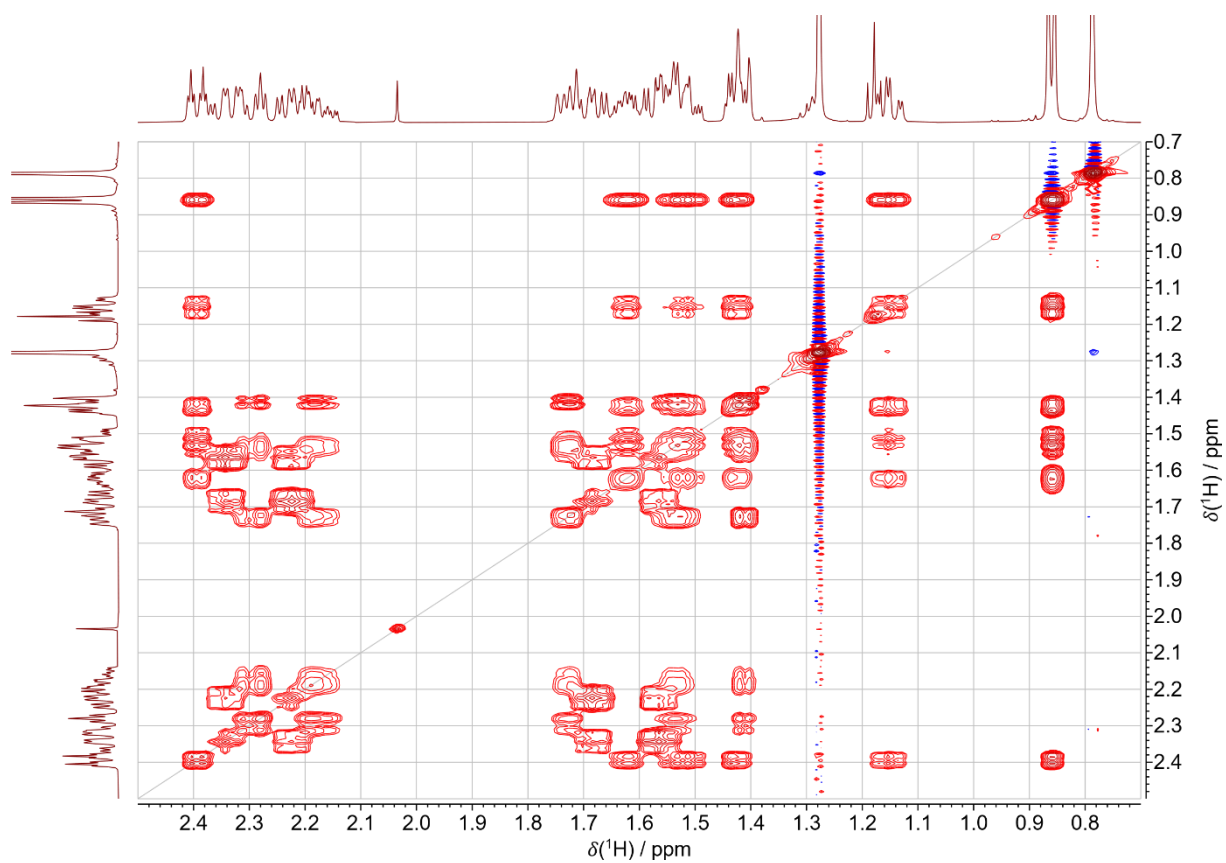


Figure S12. ^1H - ^1H TOCSY NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz, aliphatic region).

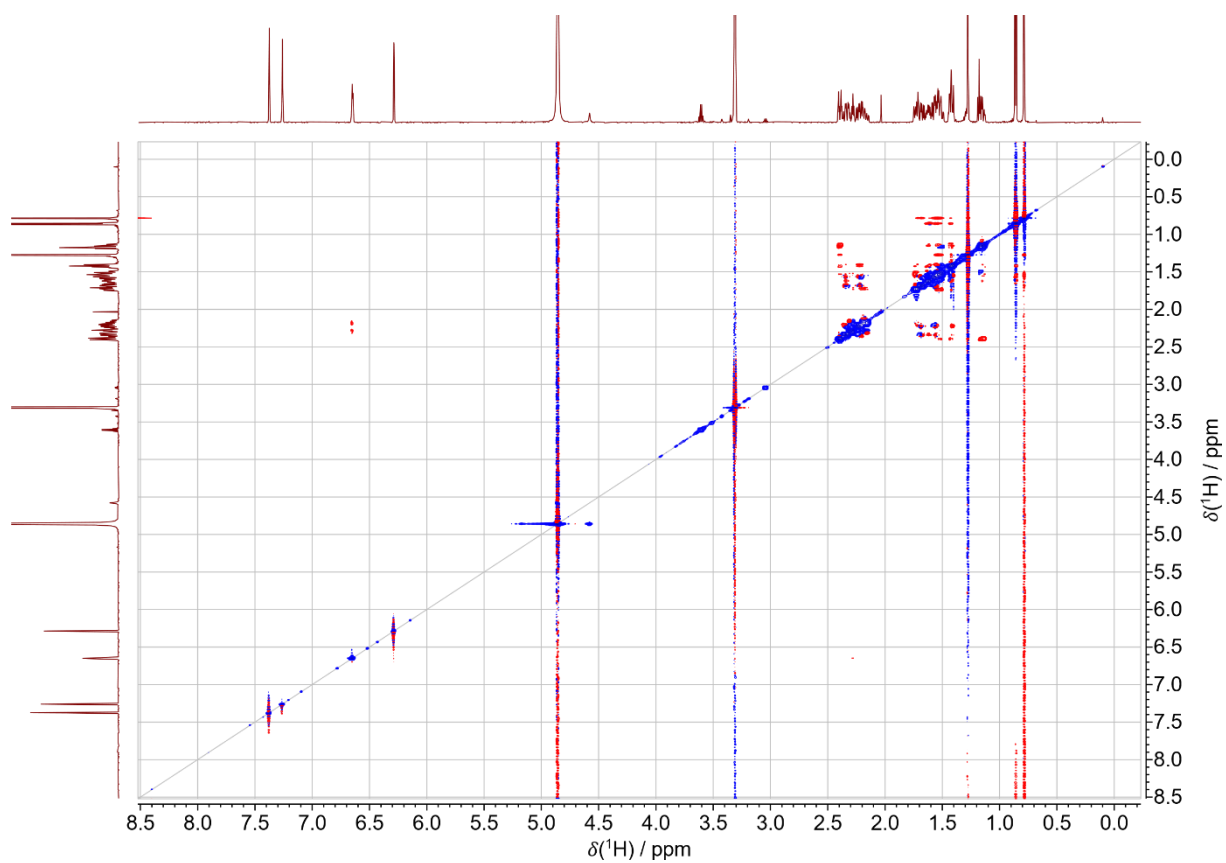


Figure S13. ^1H - ^1H NOESY NMR spectrum of (–)-hardwickiic acid (**1**) (CD_3OD , 600 MHz).

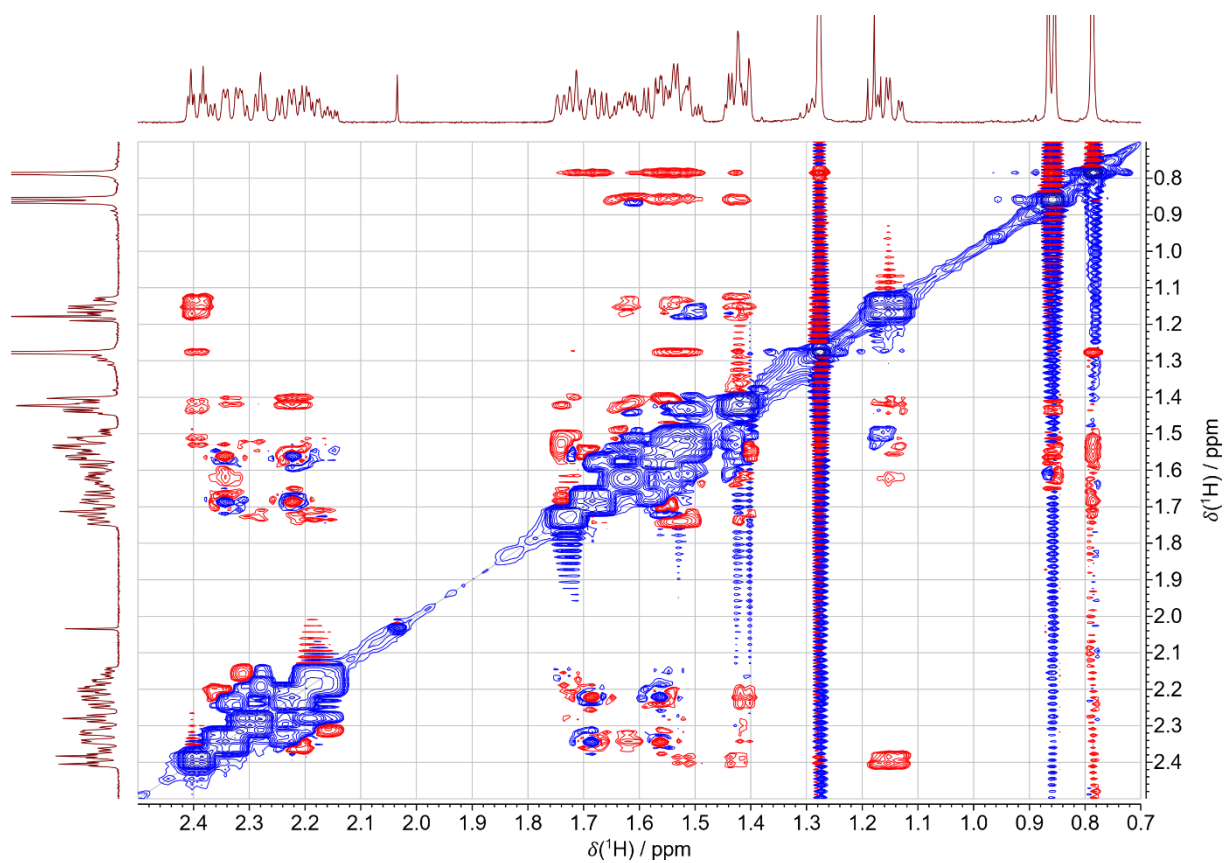


Figure S14. ^1H - ^1H NOESY NMR spectrum of (-)-hardwickiic acid (**1**) (CD_3OD , 600 MHz, aliphatic region).

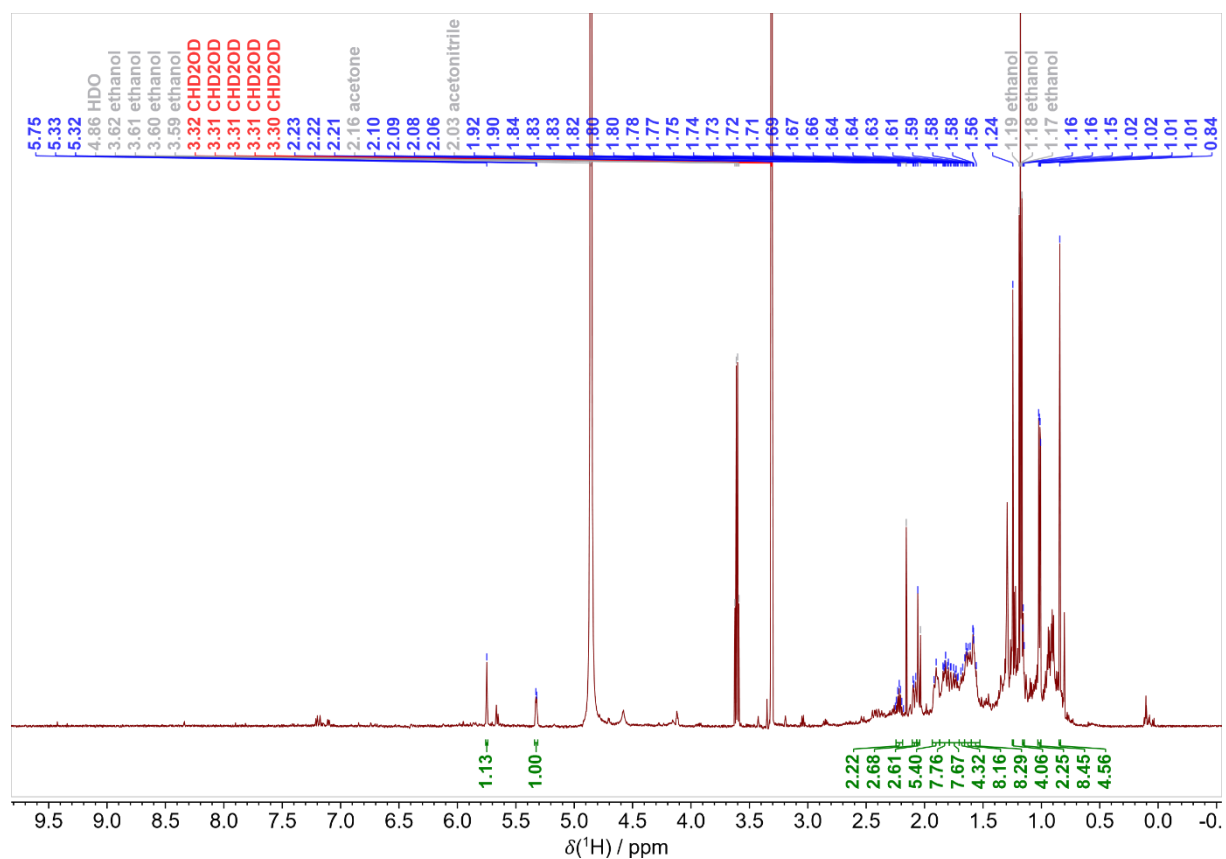


Figure S15. ¹H NMR spectrum of (–)-abietic acid (**2**) (CD₃OD, 600 MHz).

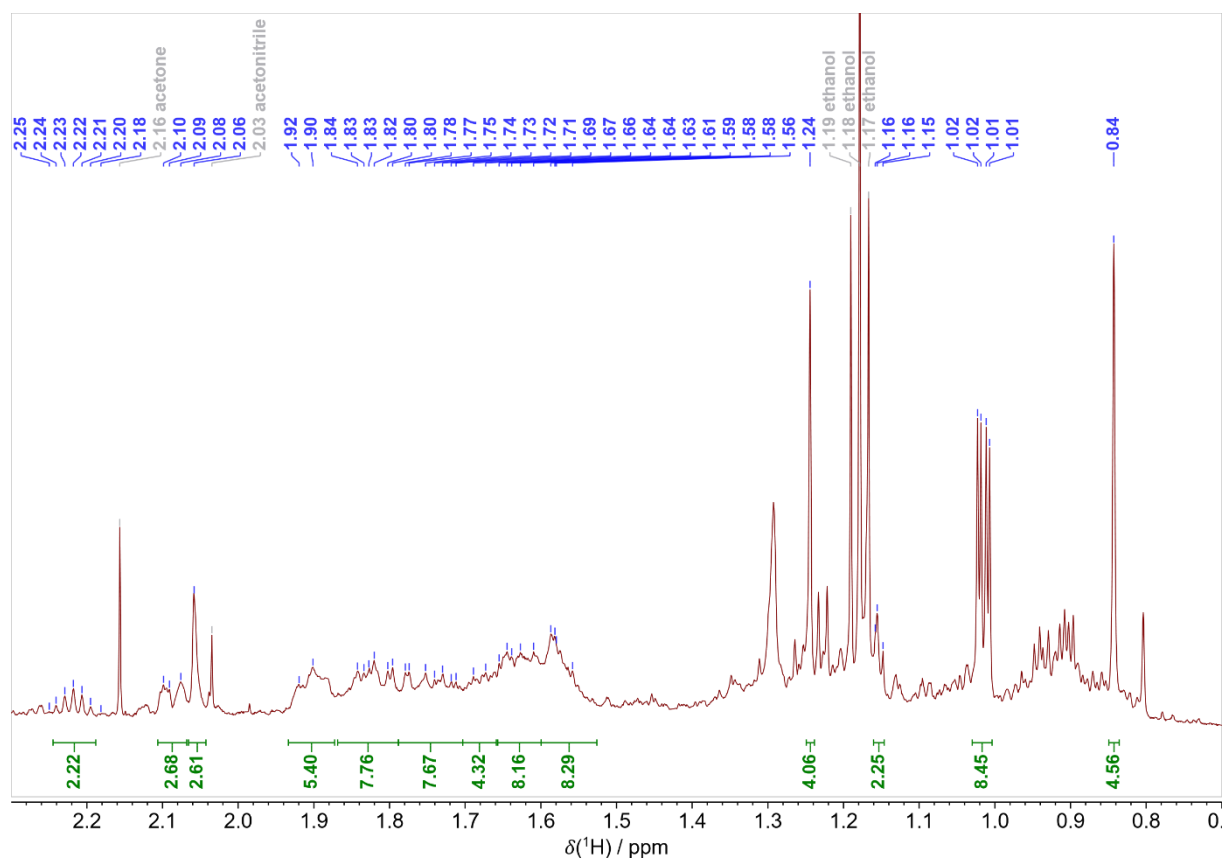


Figure S16. ^1H NMR spectrum of (-)-abietic acid (**2**) (CD_3OD , 600 MHz, aliphatic region).

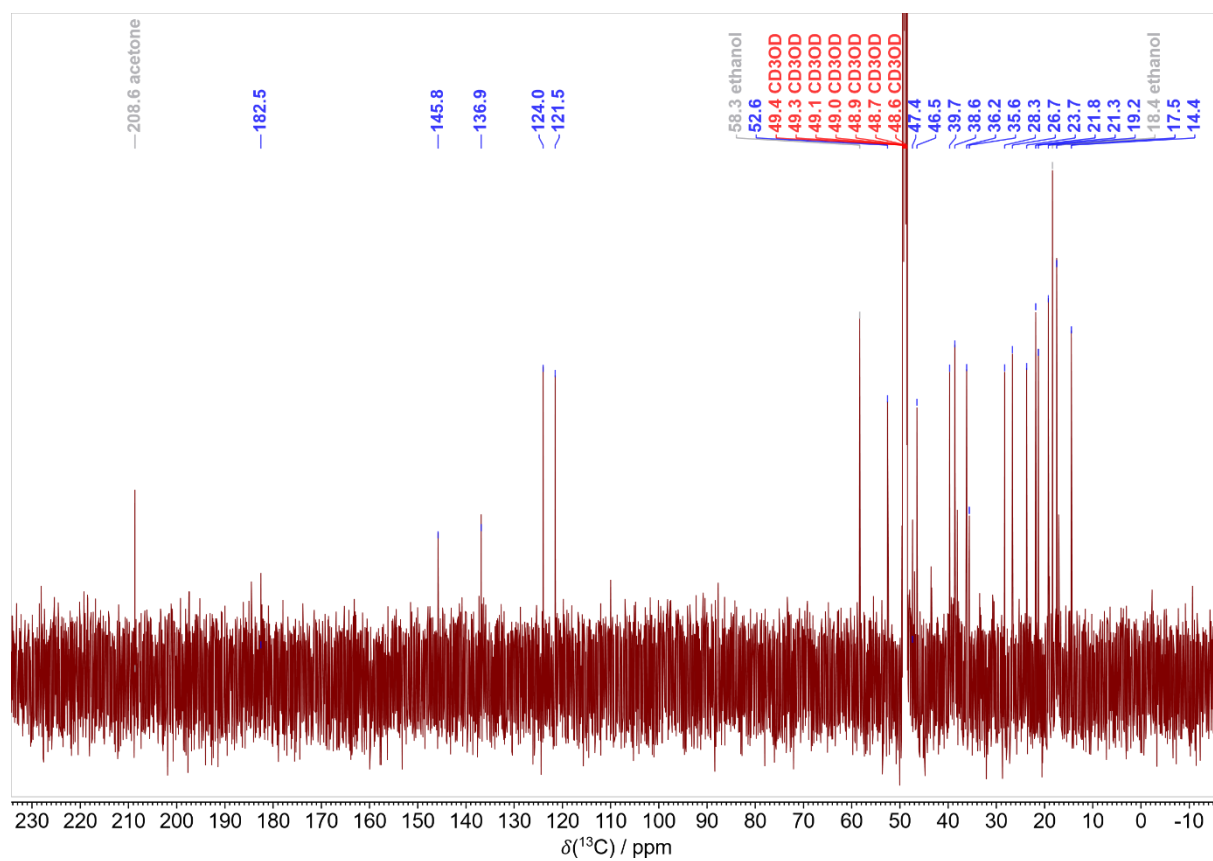


Figure S17. ^{13}C NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 151 MHz).

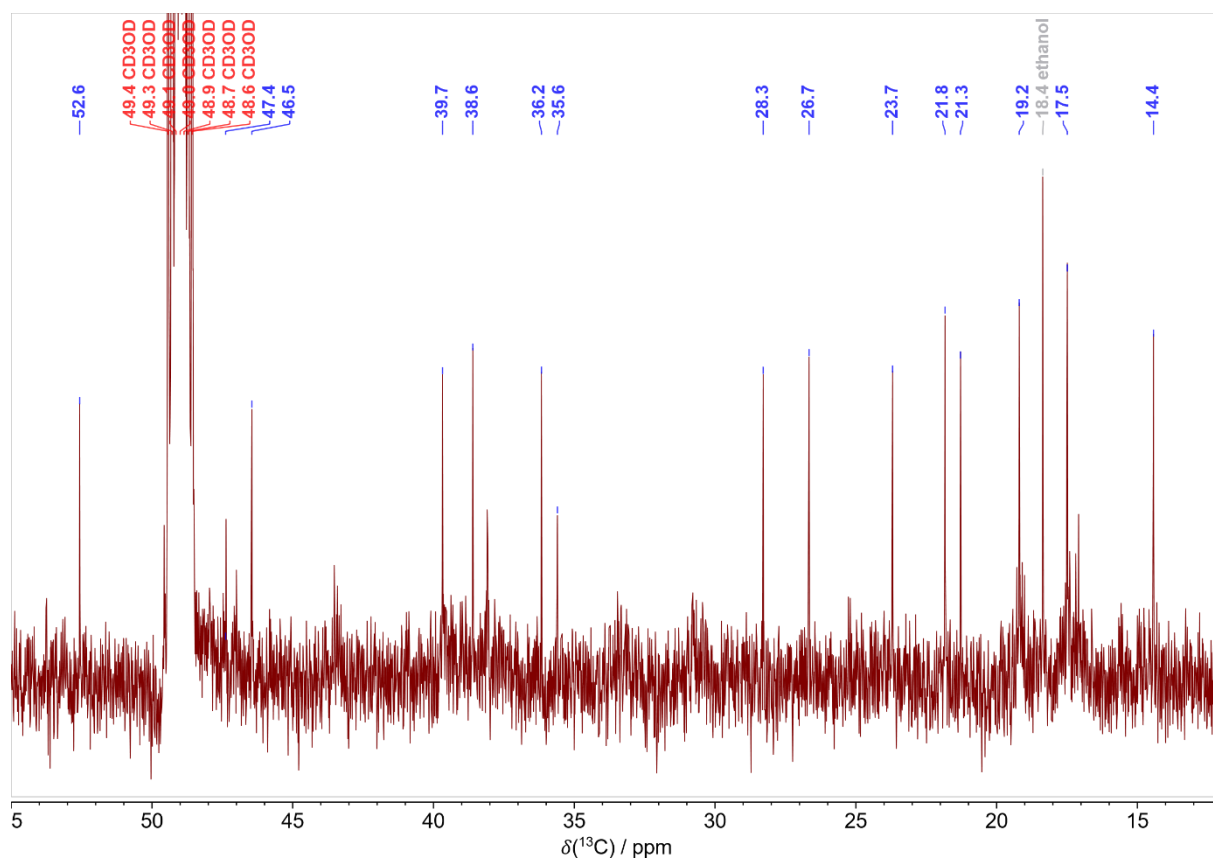


Figure S18. ^{13}C NMR spectrum of (–)-abietic acid (2) (CD_3OD , 151 MHz, aliphatic region).

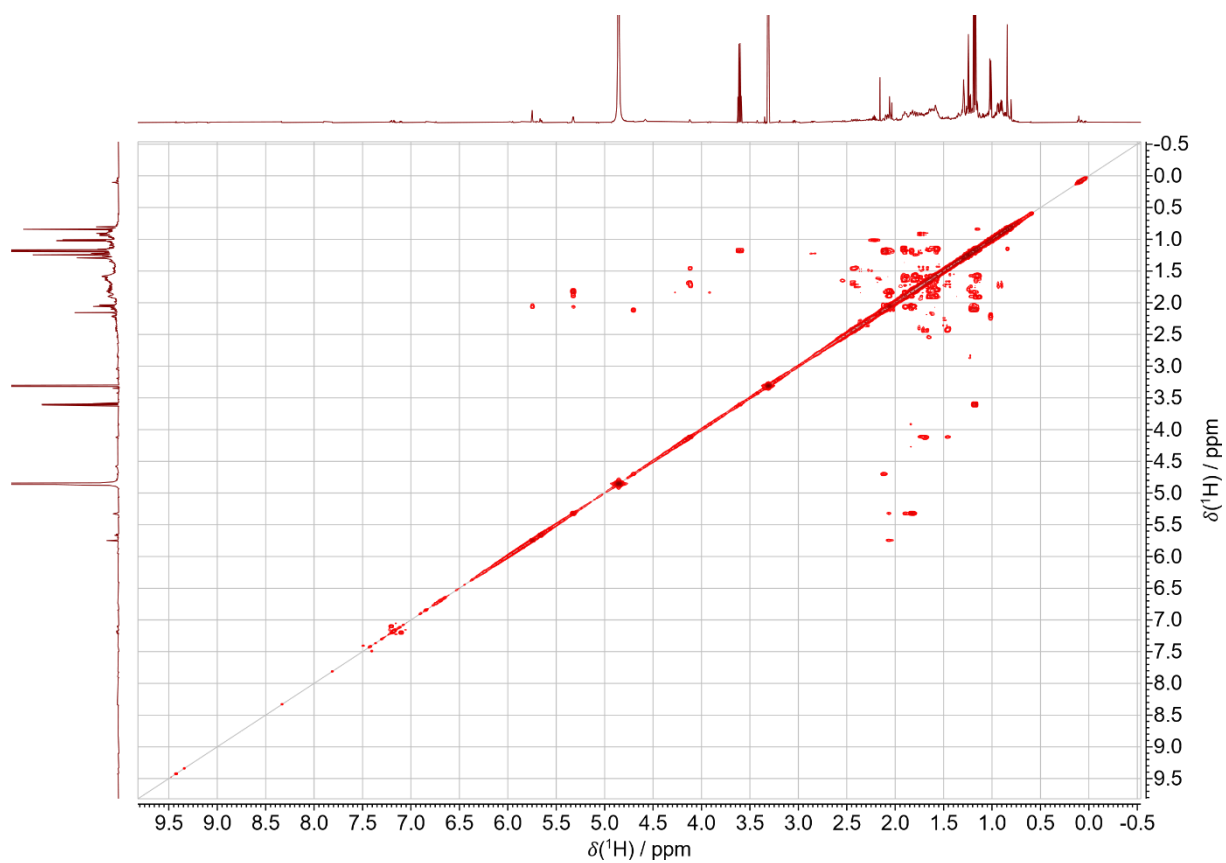


Figure S19. ^1H - ^1H COSY NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 MHz).

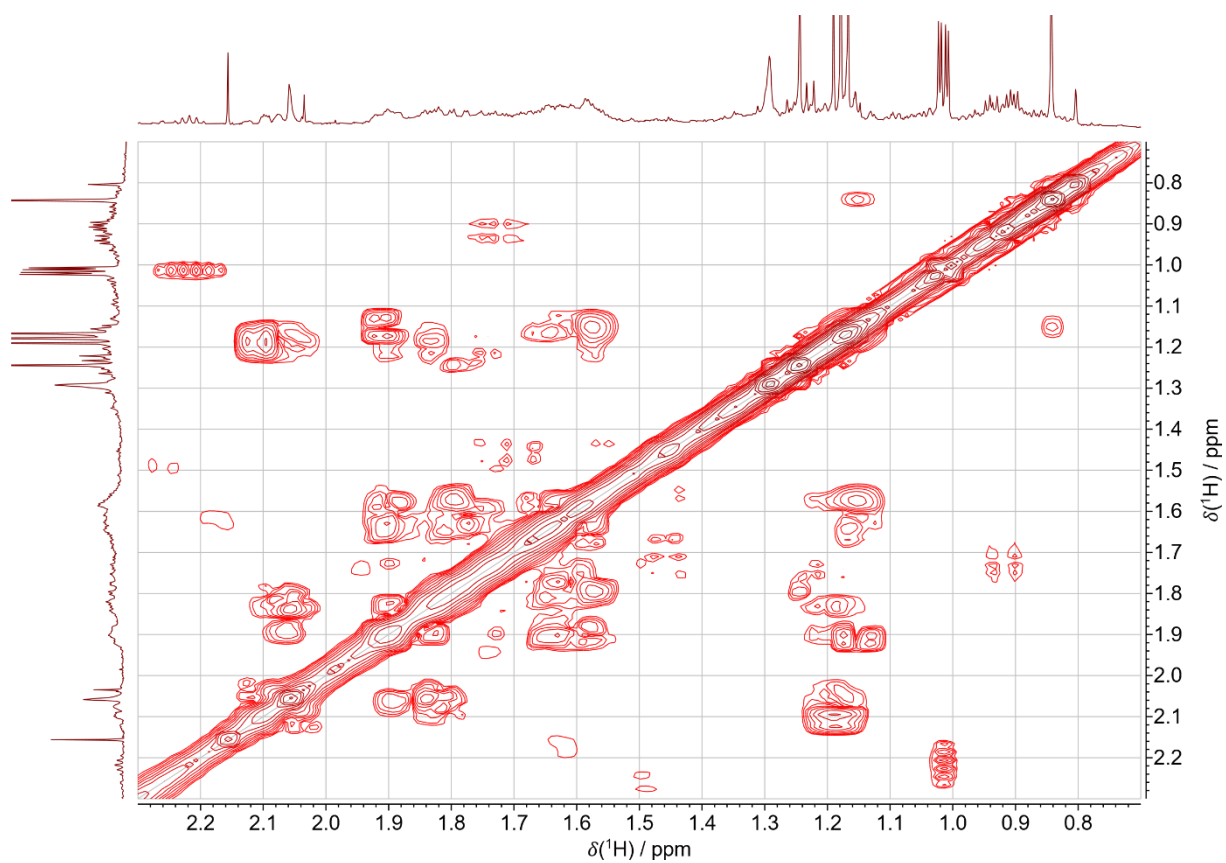


Figure S20. ^1H – ^1H COSY NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 MHz, aliphatic region).

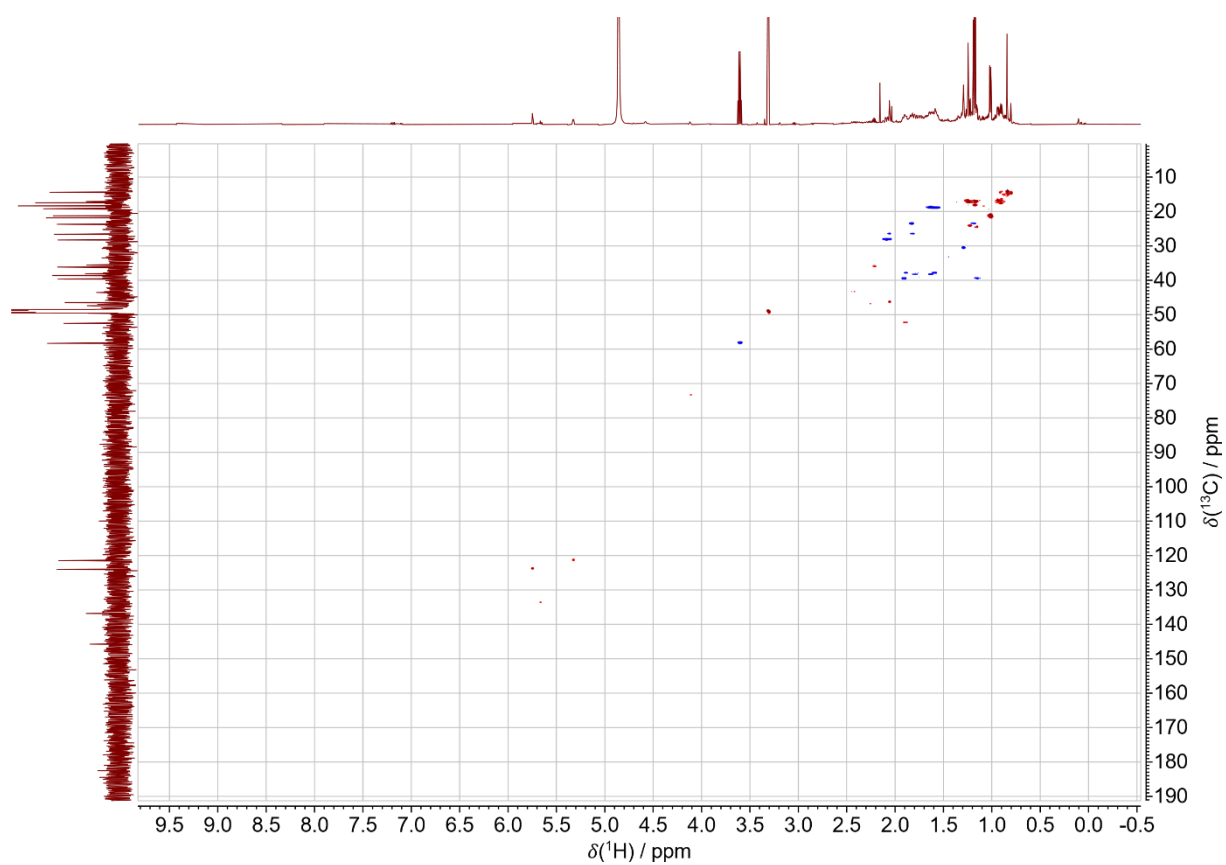


Figure S21. ^1H – ^{13}C edHSQC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz).

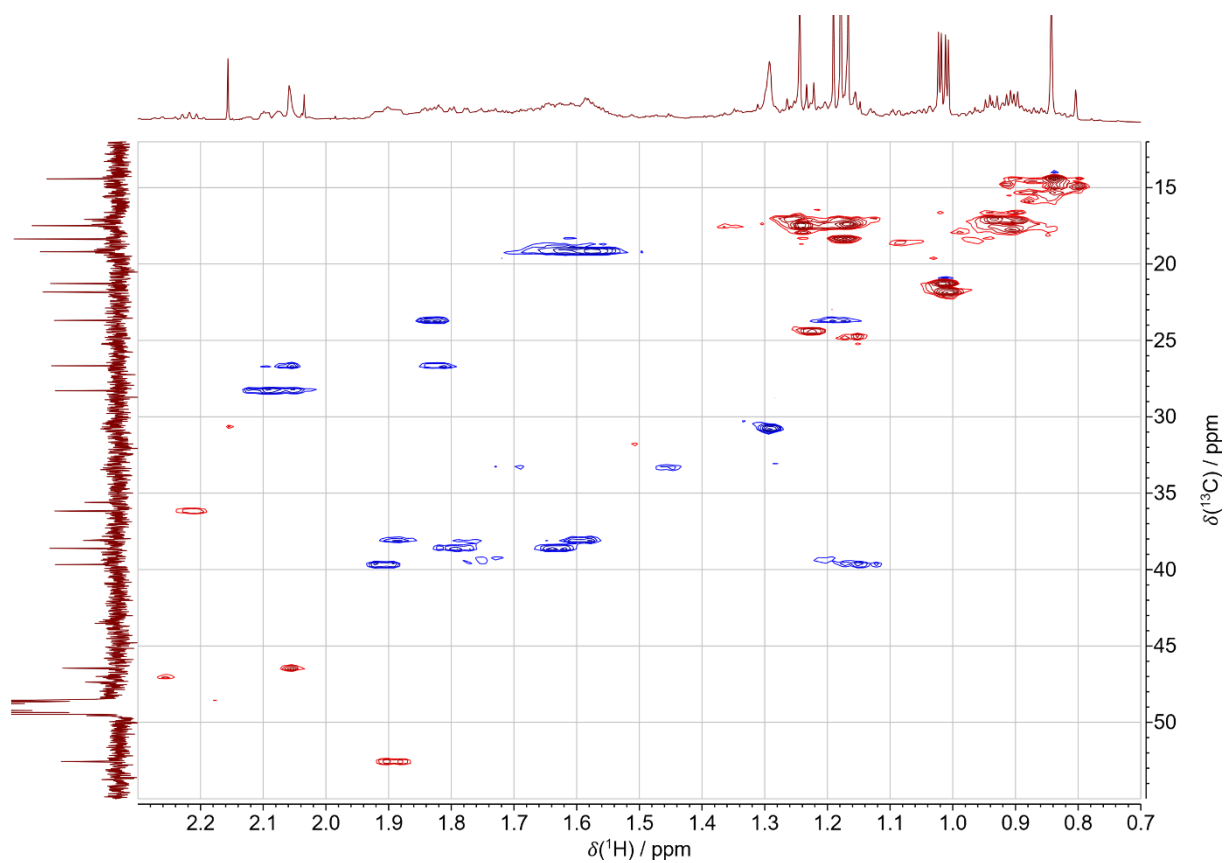


Figure S22. ^1H - ^{13}C edHSQC NMR spectrum of (-)-abietic acid (2) (CD_3OD , 600 and 151 MHz, aliphatic region).

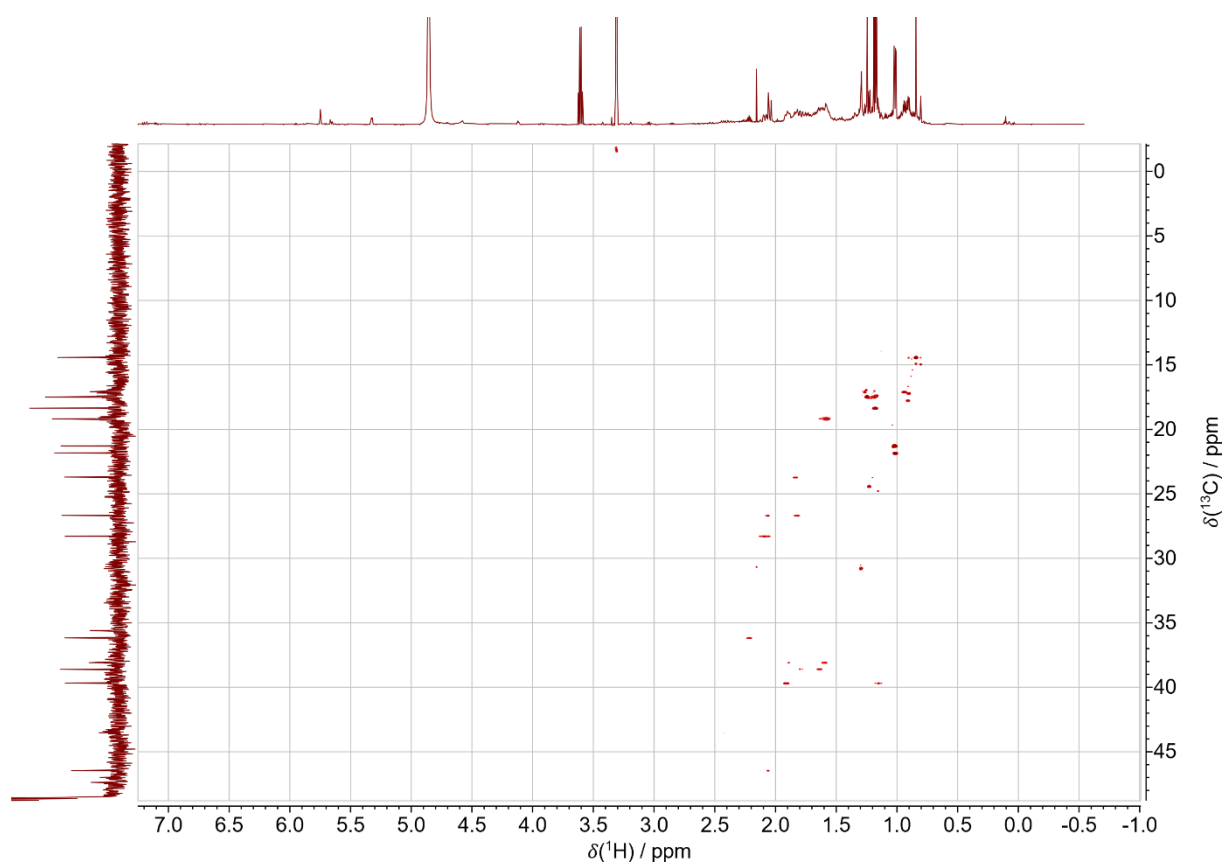


Figure S23. ^1H - ^{13}C bsHSQC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz).

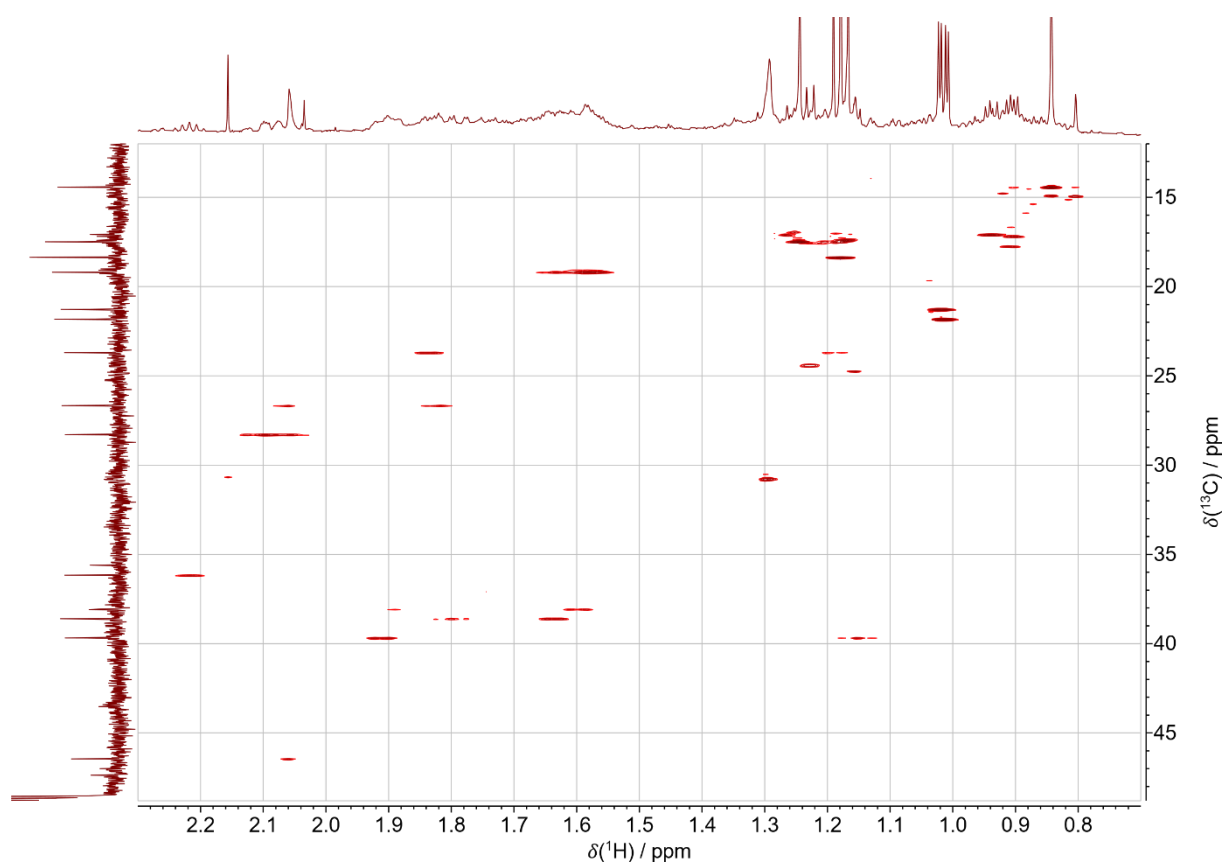


Figure S24. ^1H - ^{13}C bsHSQC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz, aliphatic region).

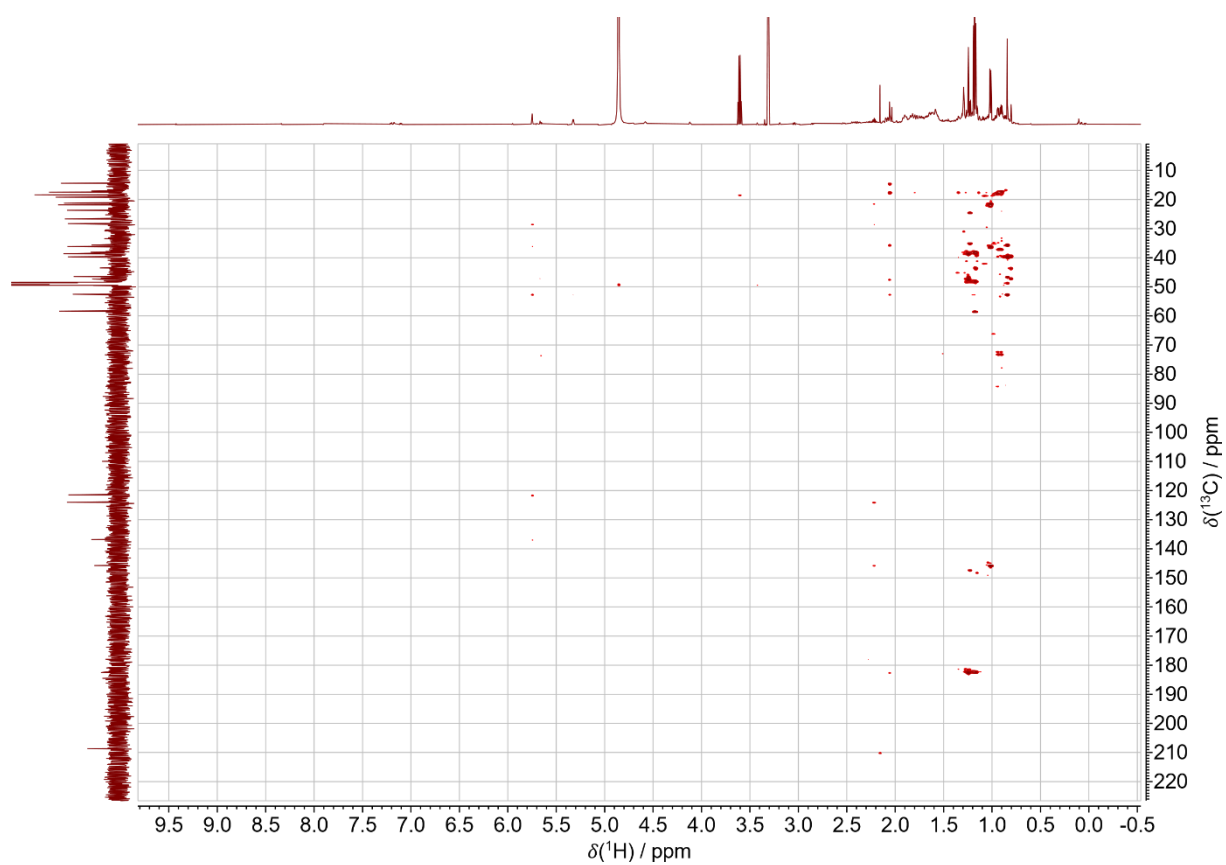


Figure S25. ^1H - ^{13}C HMBC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz).

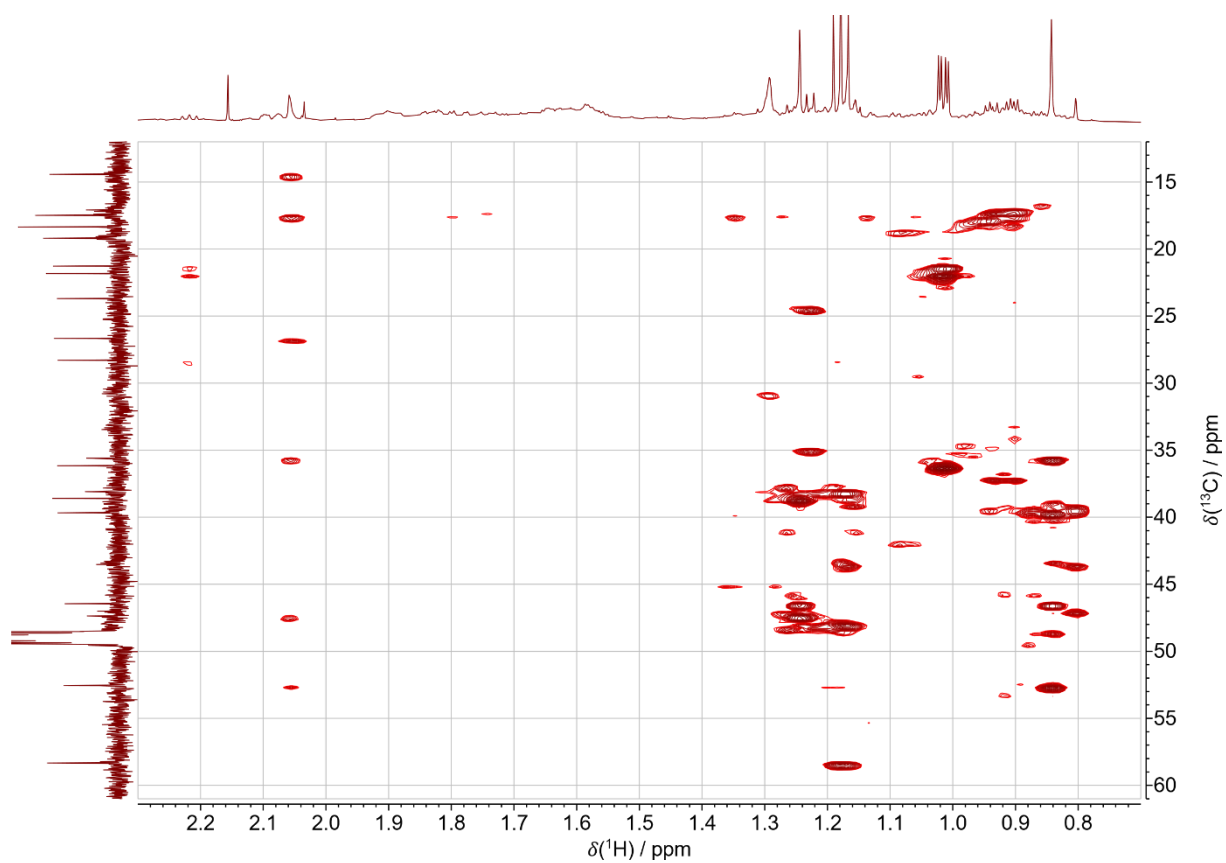


Figure S26. ^1H - ^{13}C HMBC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz, aliphatic region).

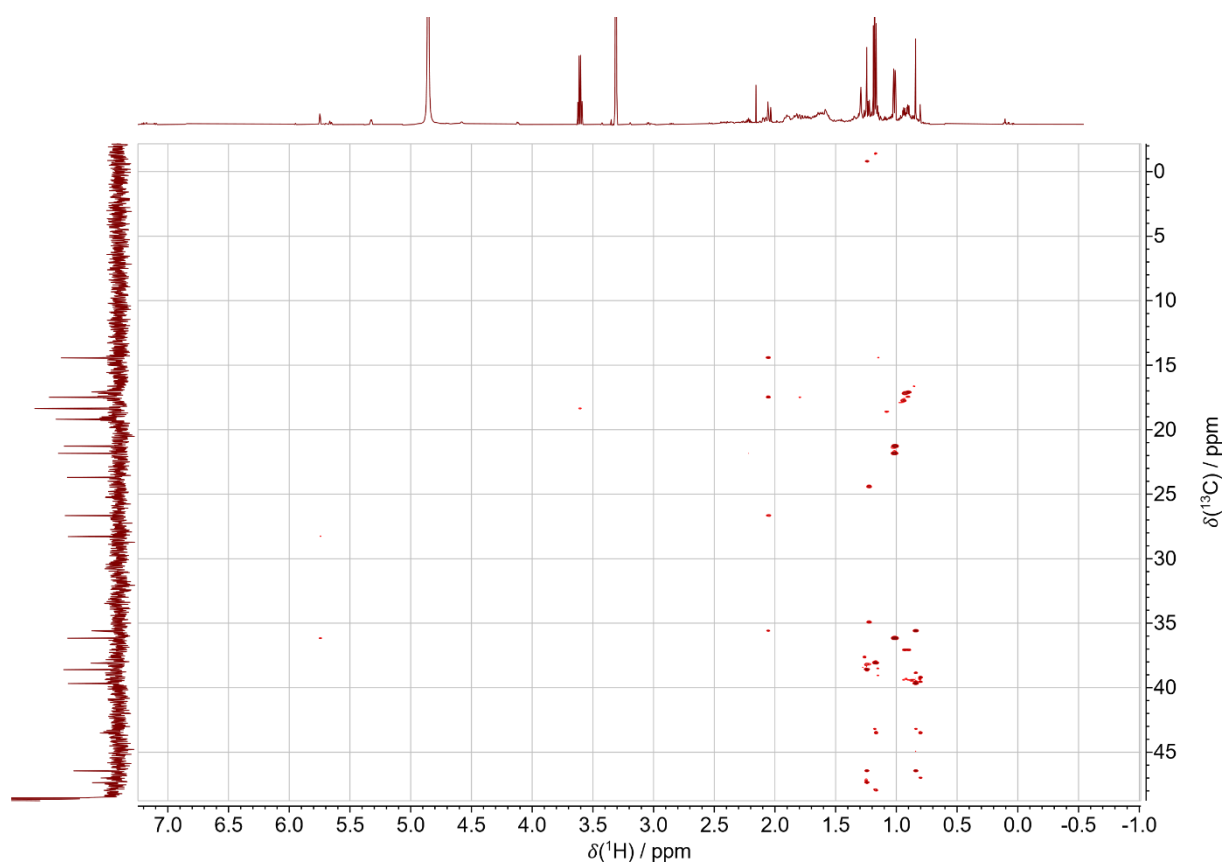


Figure S27. ^1H - ^{13}C bsHMBC NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz).

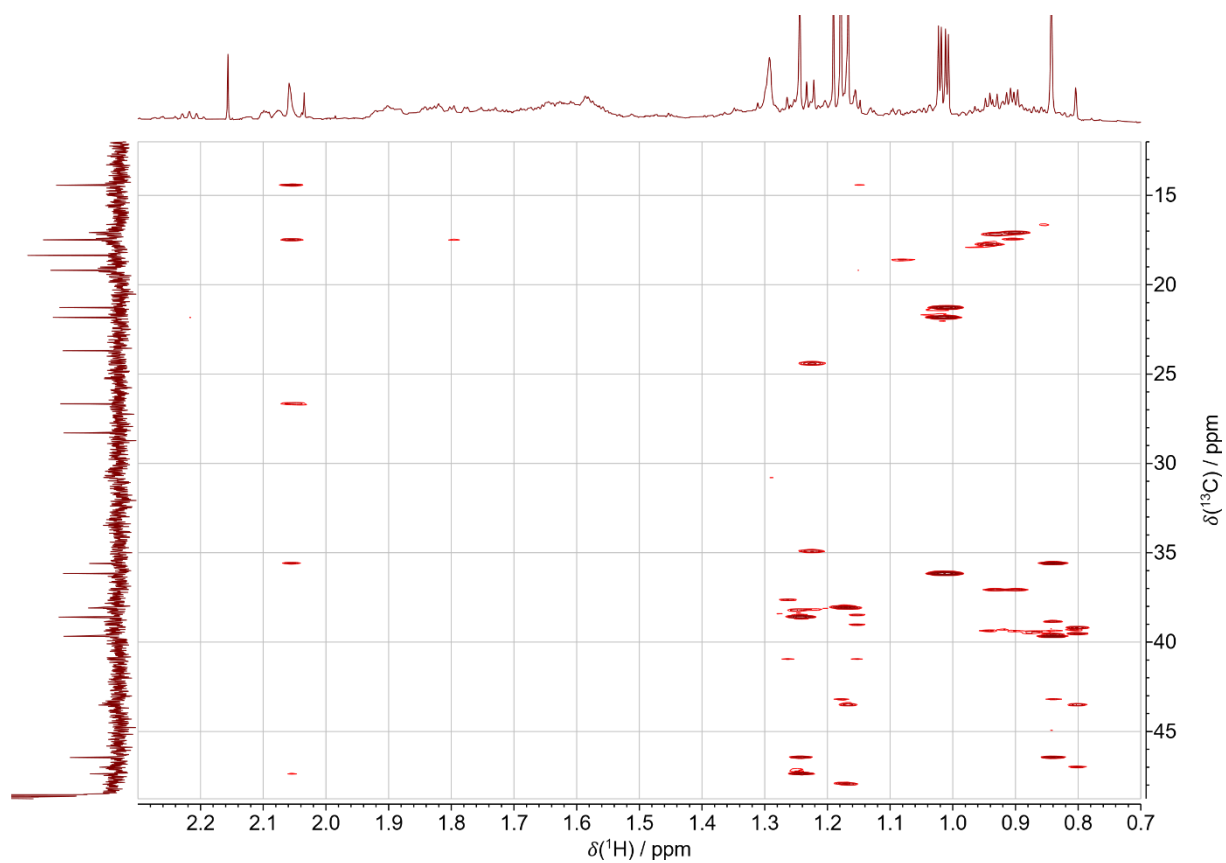


Figure S28. ^1H - ^{13}C bsHMBC NMR spectrum of (-)-abietic acid (**2**) (CD_3OD , 600 and 151 MHz, aliphatic region).

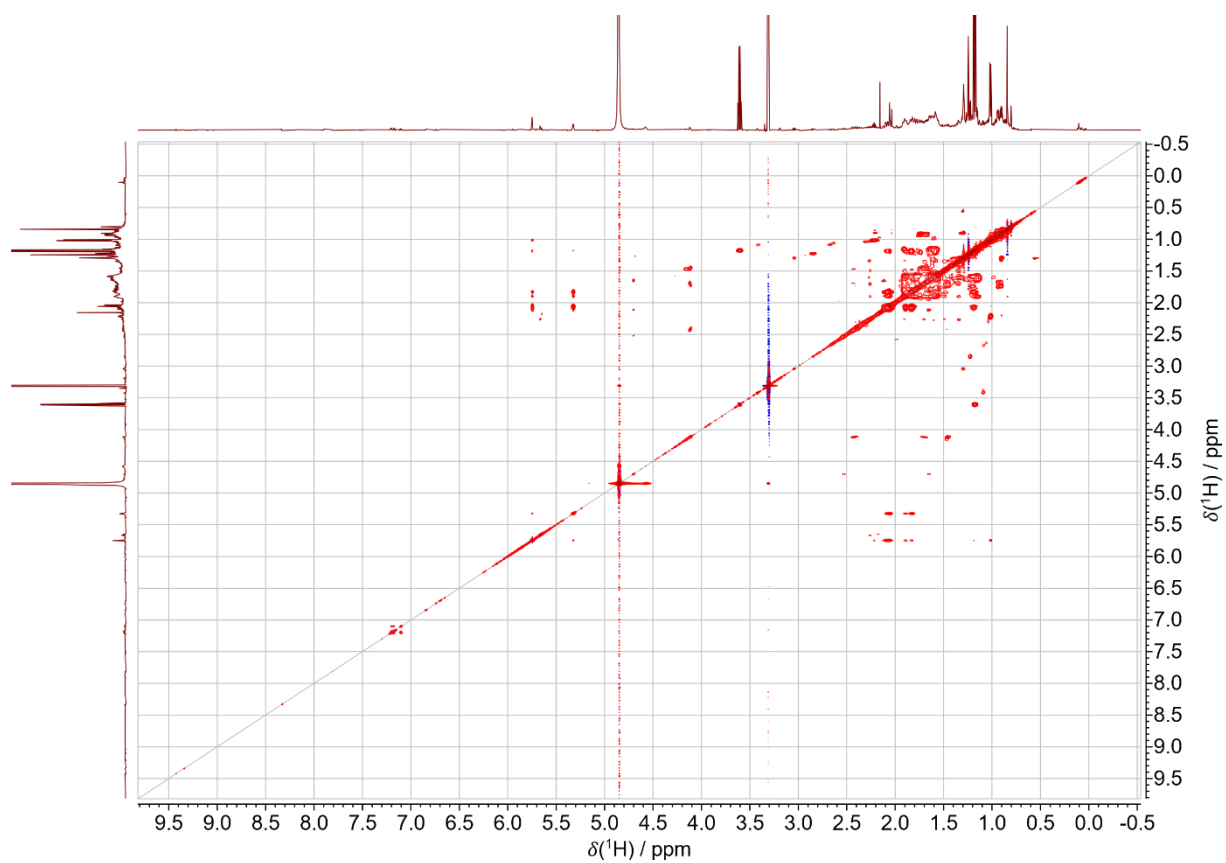


Figure S29. ^1H – ^1H TOCSY NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 MHz).

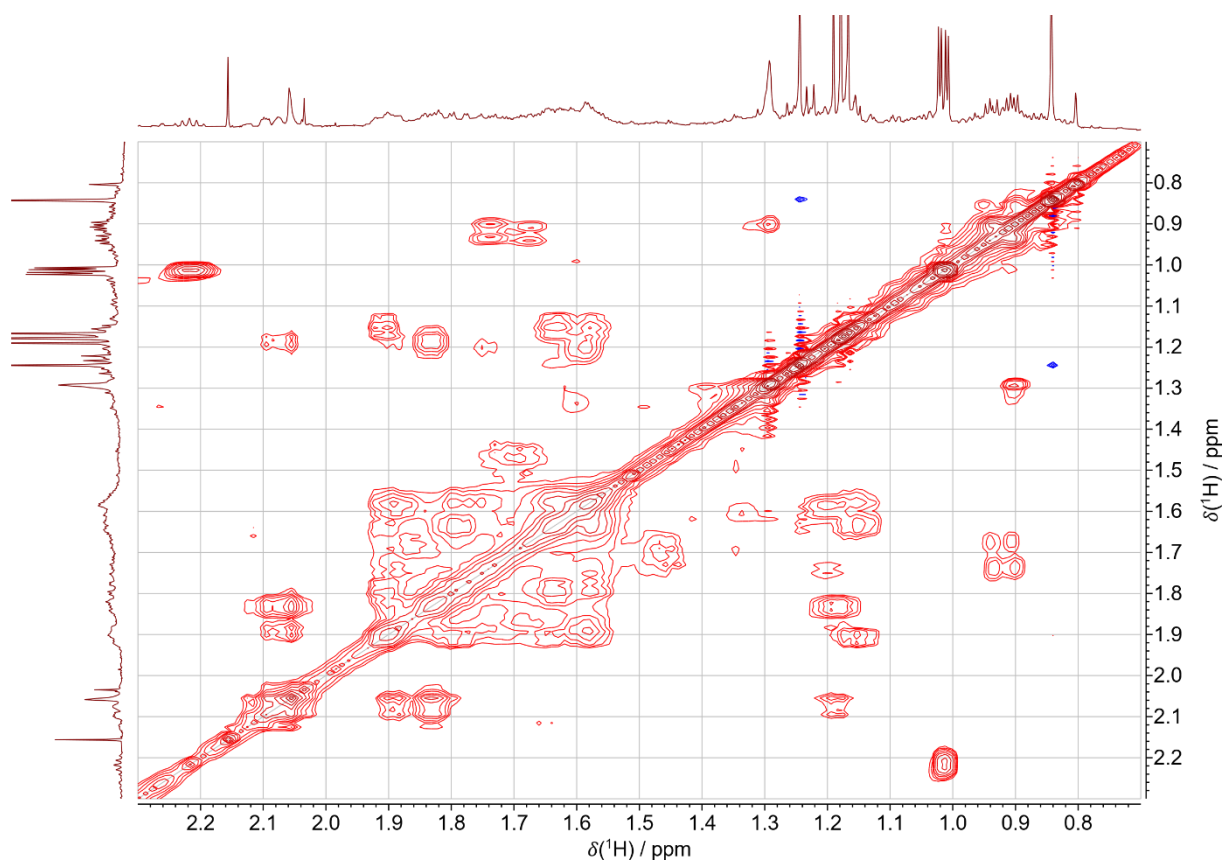


Figure S30. ^1H – ^1H TOCSY NMR spectrum of (–)-abietic acid (**2**) (CD_3OD , 600 MHz, aliphatic region).