

Supplementary information: Pentacyclic triterpene profile and its biosynthetic pathway in *Cecropia telenitida* as a prospect type 2 diabetes dietary supplement

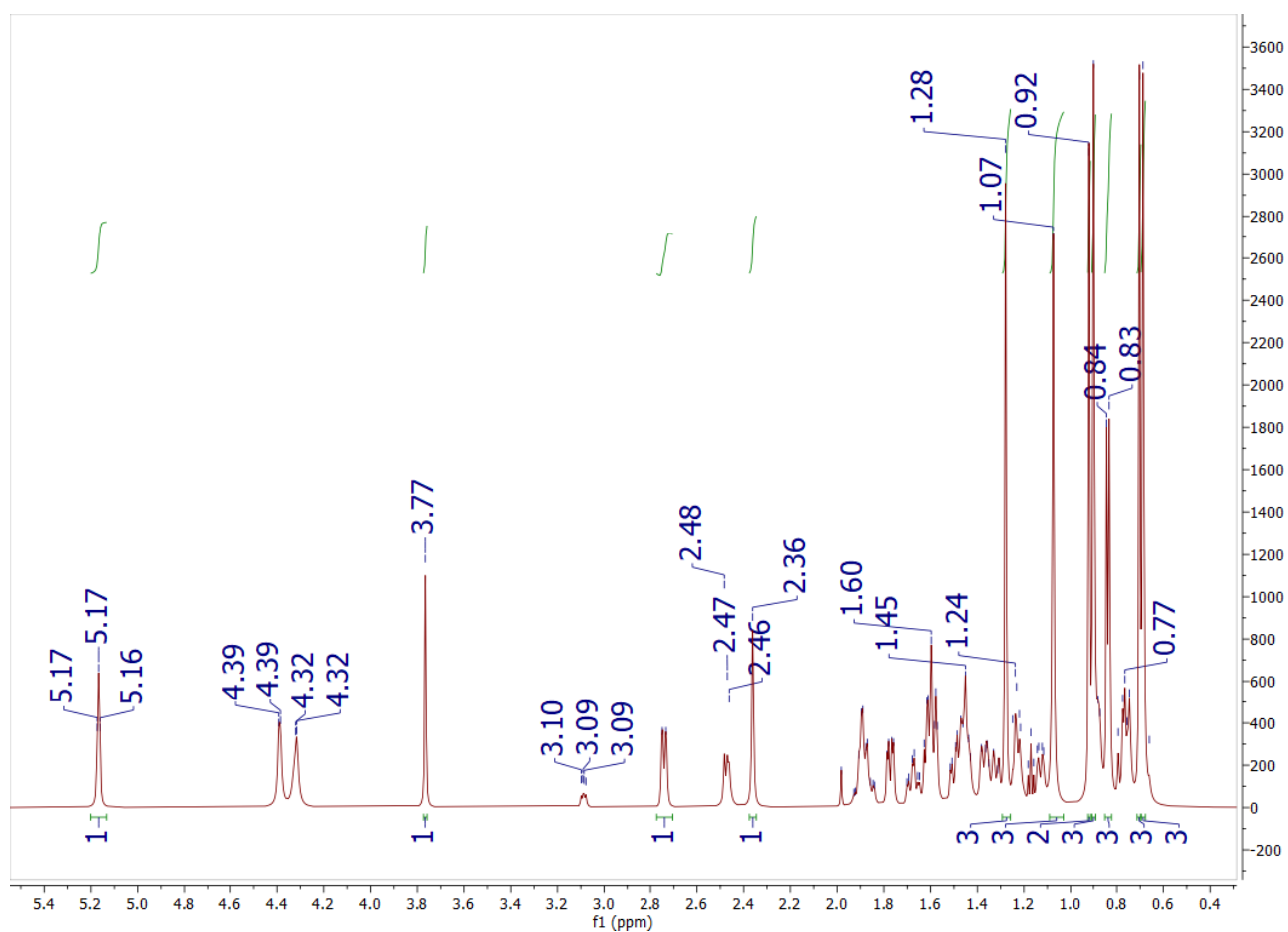


Figure S1. R_t 17.94 min peak ¹H-NMR spectrum. Isoyarumic acid.

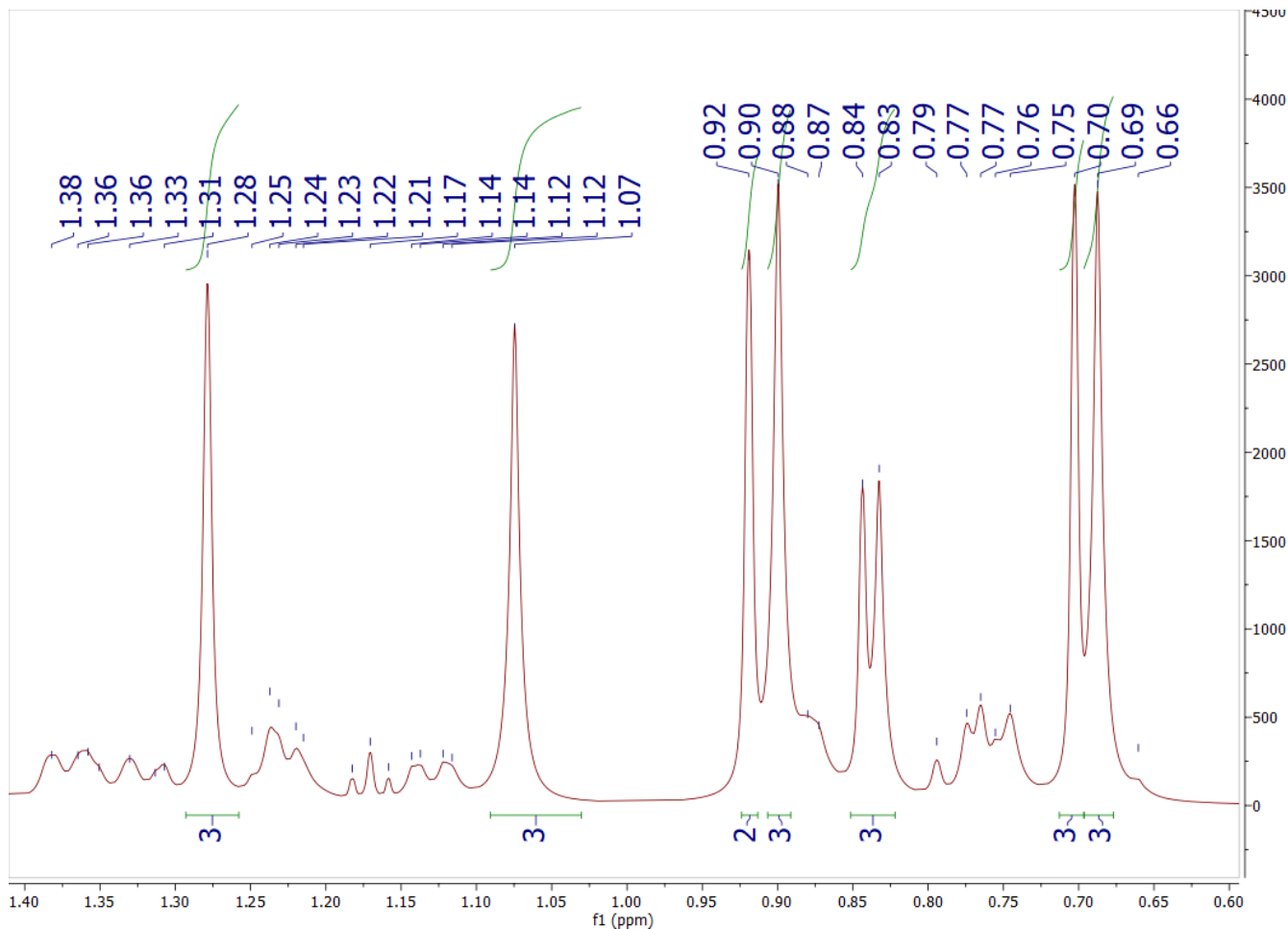


Figure S2. R_t 17.94 min peak ¹H-NMR spectrum, zoom over 0.60 to 1.40 ppm region. Isoyaramic acid

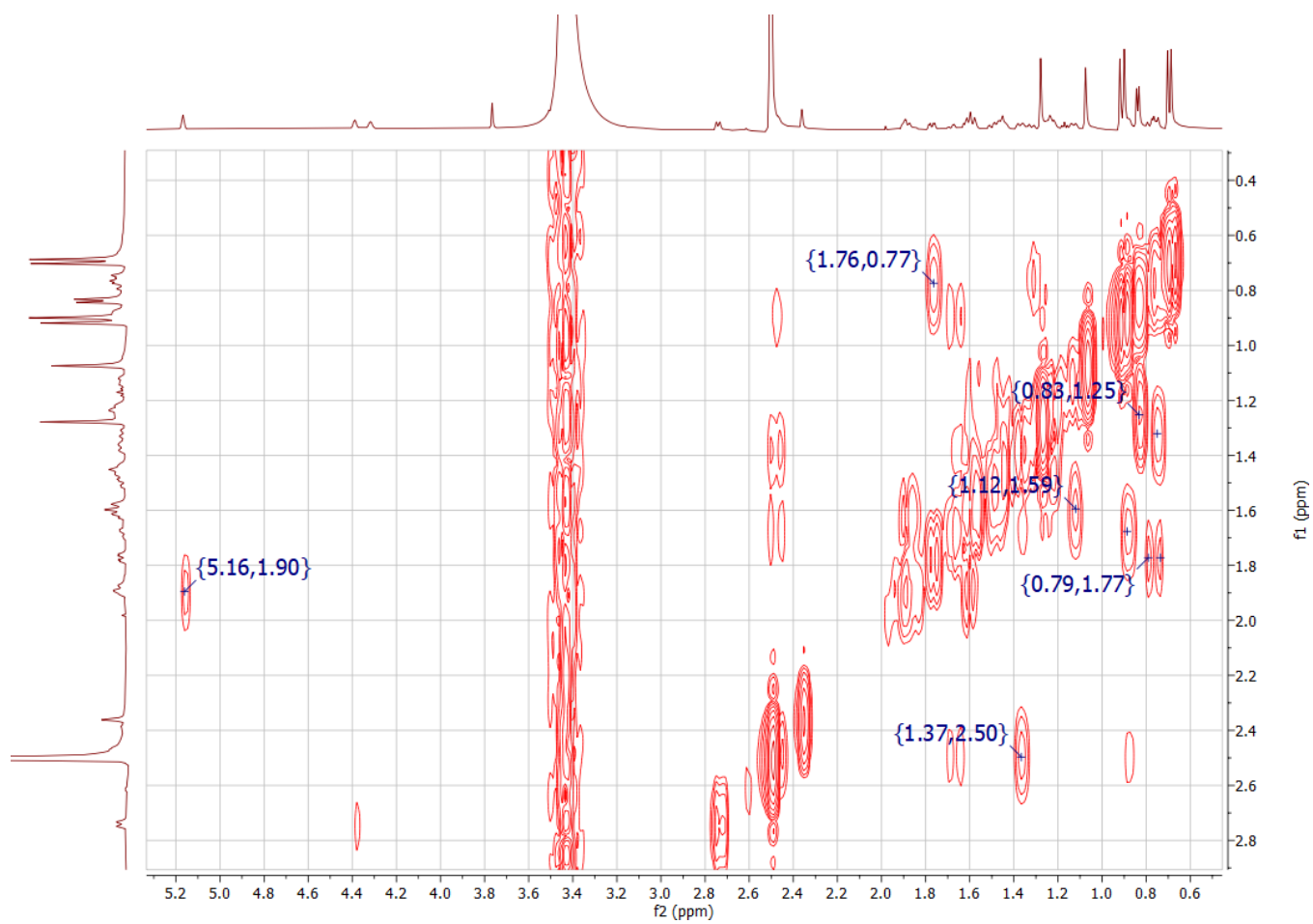


Figure S3. R_t 17.94 min peak ^1H - ^1H NMR correlation (COSY) spectrum. Isoyarumic acid.

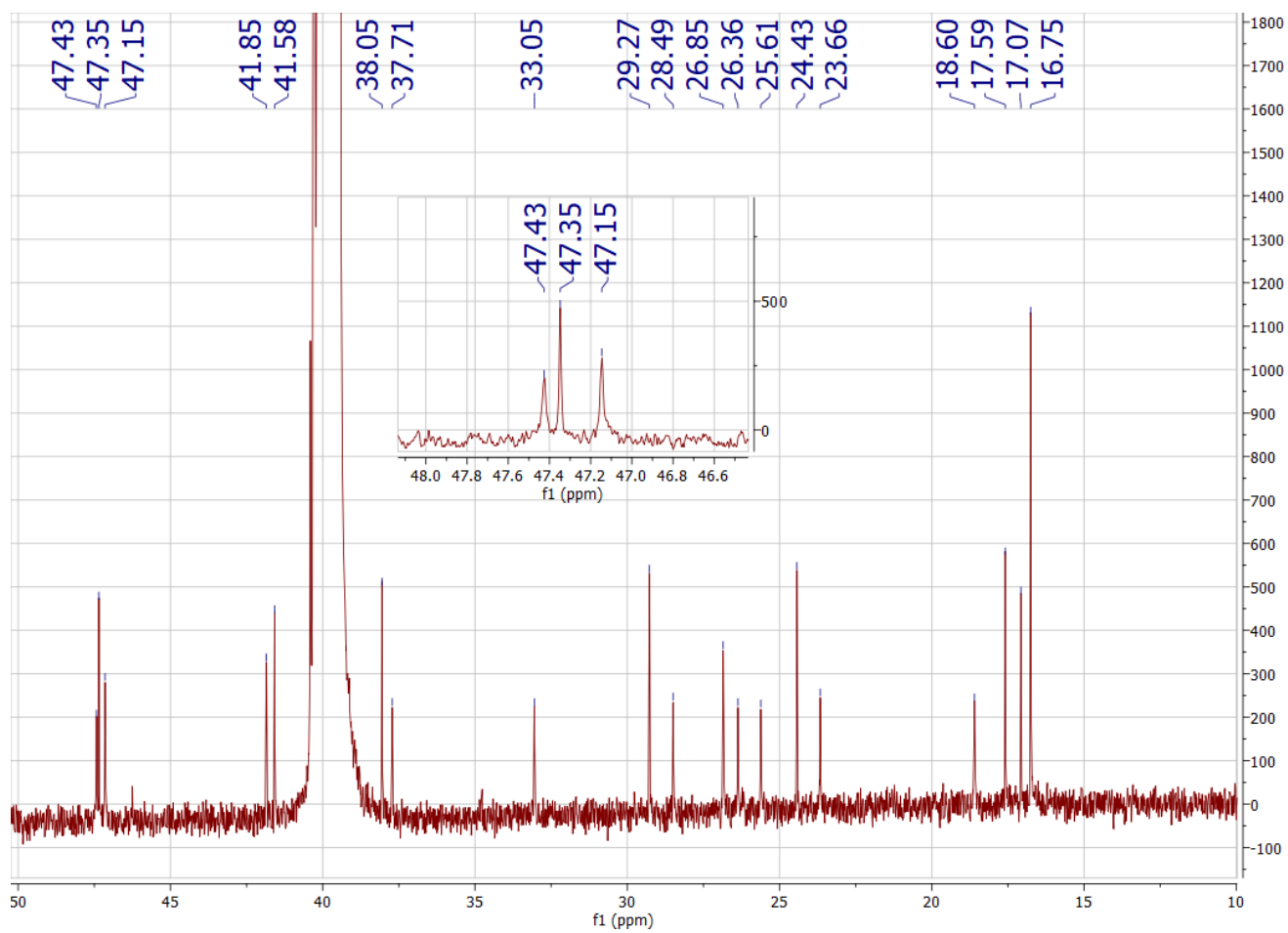


Figure S4. R_t 17.94 min peak ^{13}C -NMR spectrum, zoom over 10 to 50 ppm region. Isoyarumic acid.

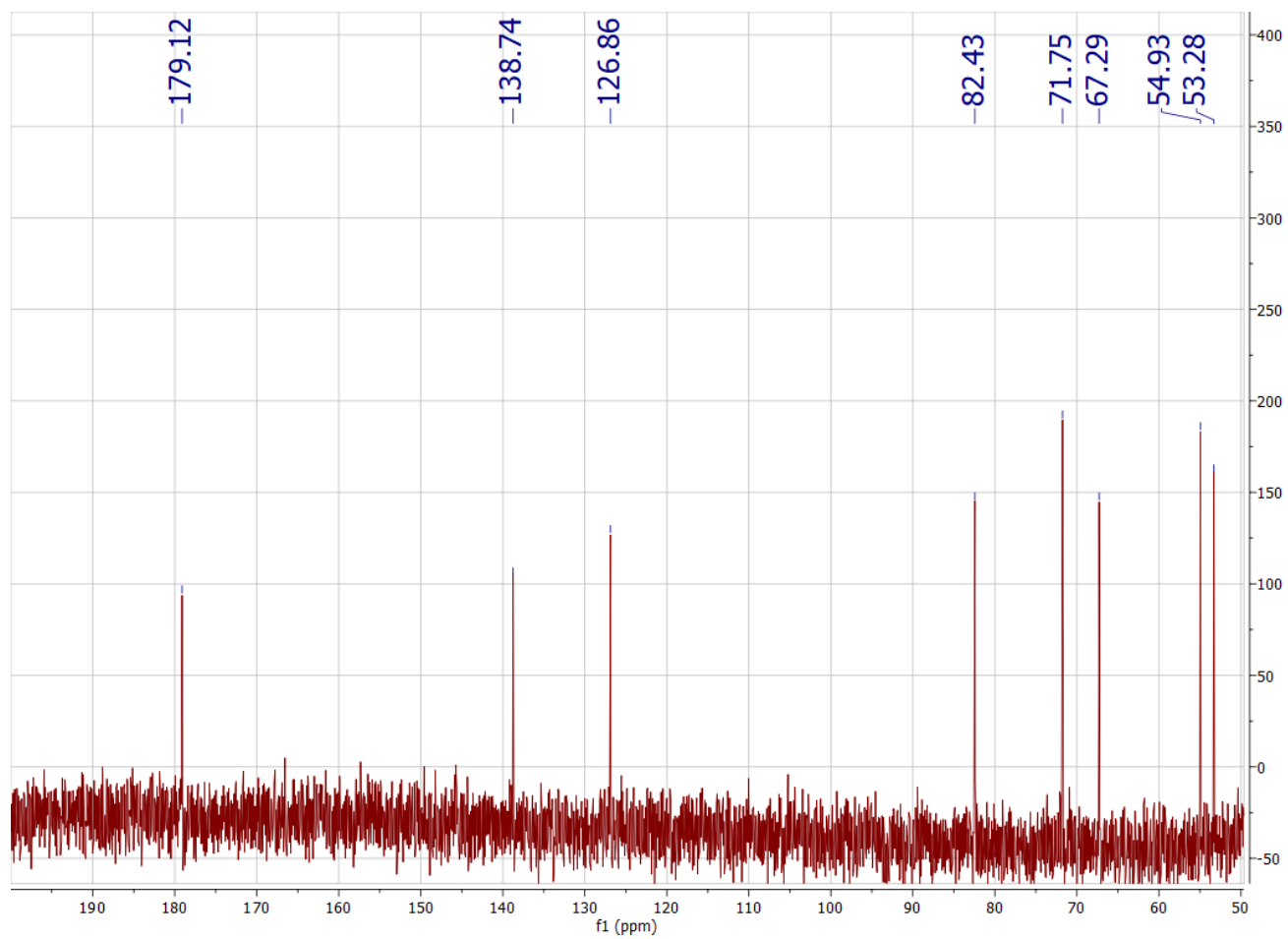


Figure S5. R_t 17.94 min peak ^{13}C -NMR spectrum, zoom over 50 to 200 ppm region. Isoyarumic acid.

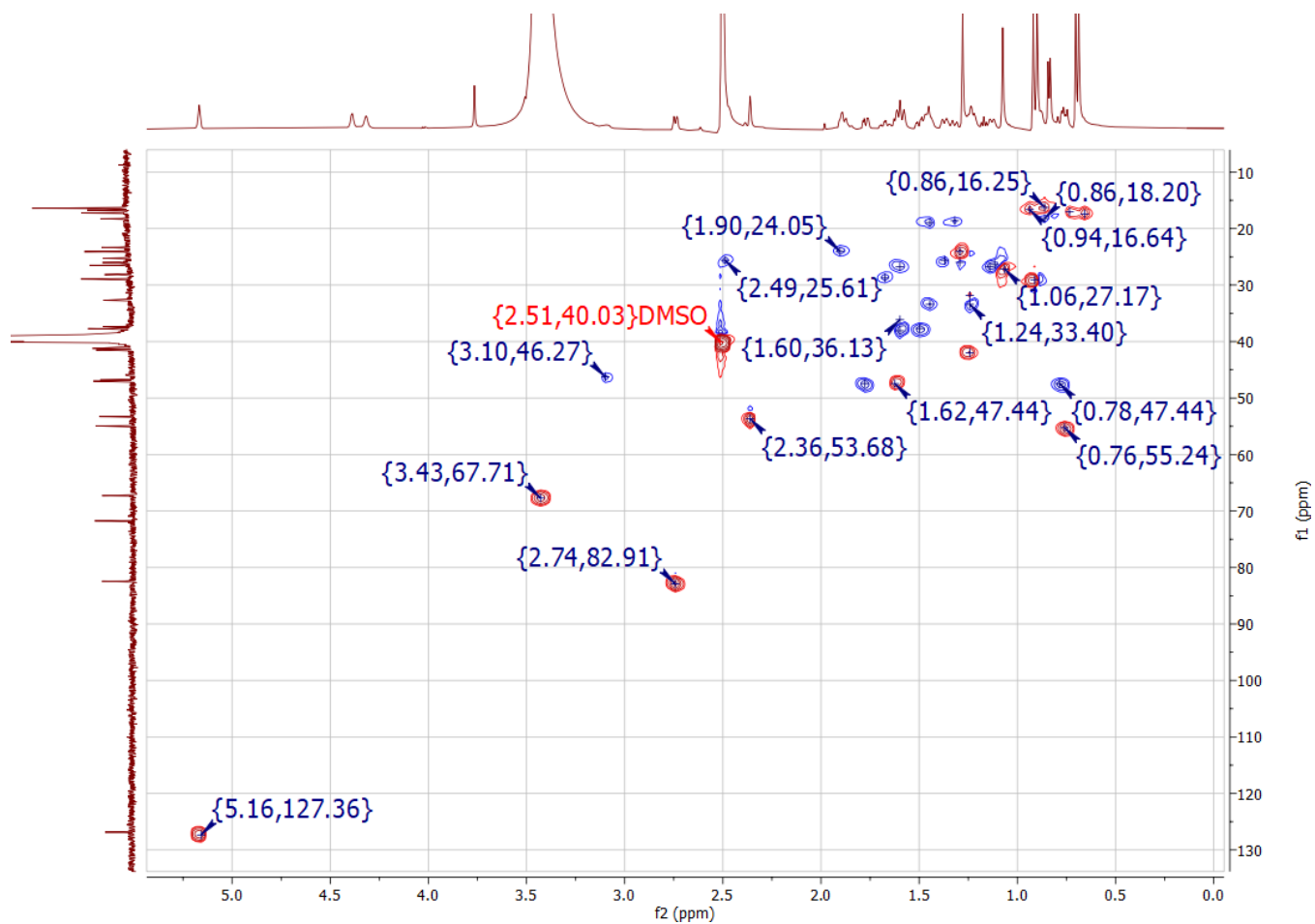


Figure S6. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum. Isoyarumic acid.

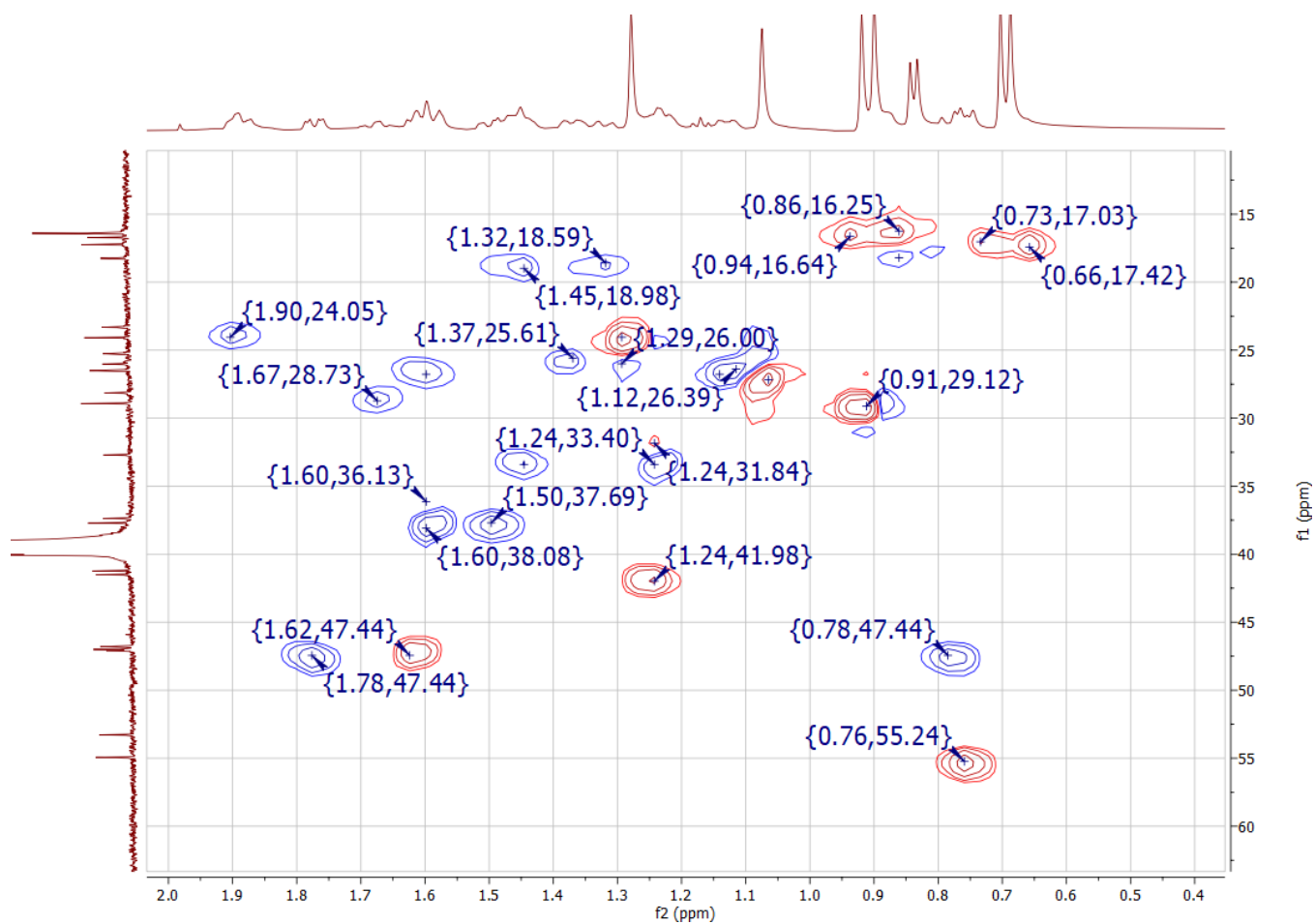


Figure S7. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum, zoom over 15 to 60 ppm (f_1) and 0.4 to 2.0 ppm (f_2). Isoyarumic acid.

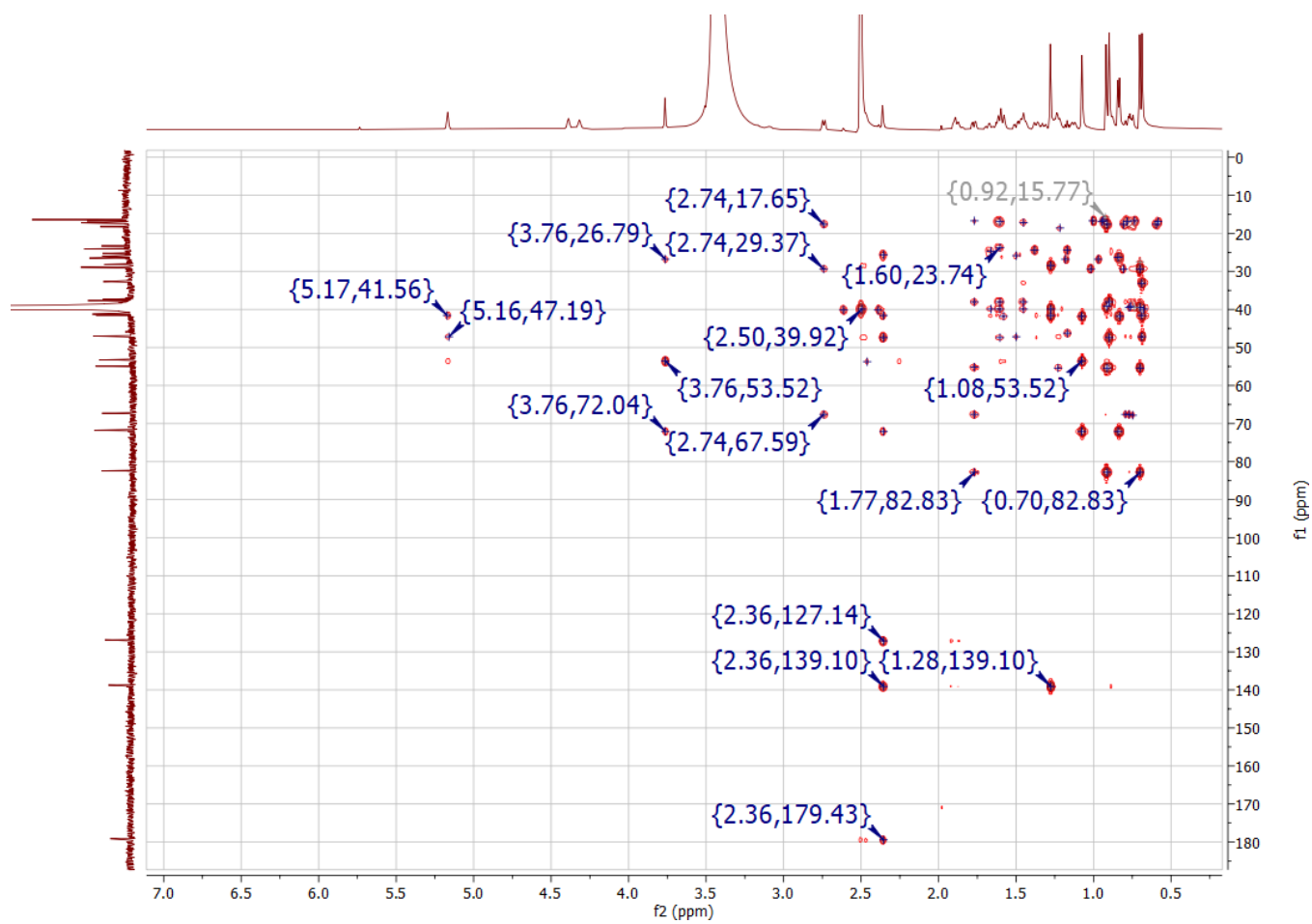


Figure S8. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum. Isoyarumic acid.

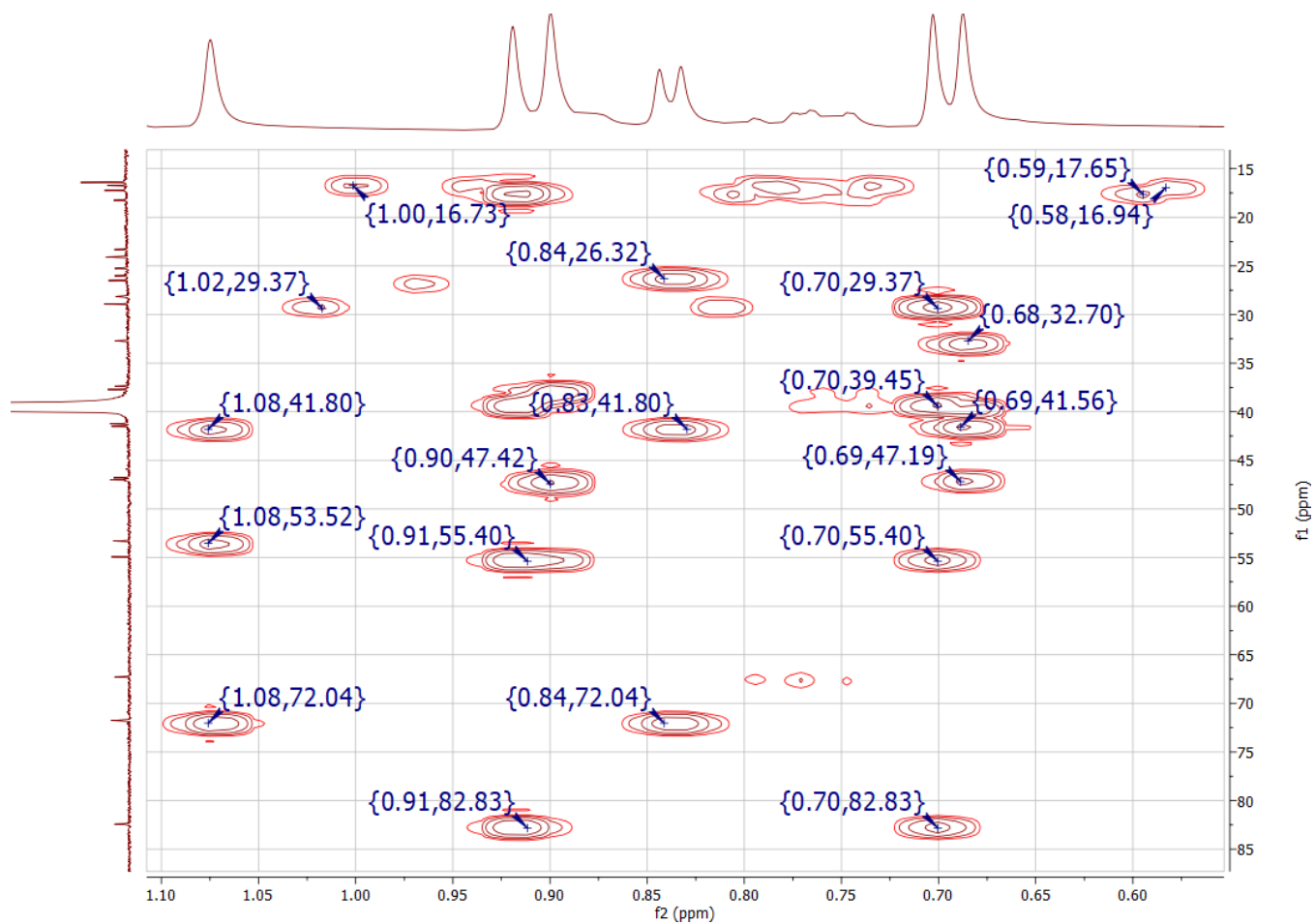


Figure S9. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 15 to 85 ppm (f_1) and 0.5 to 1.10 ppm (f_2). Isoyarumic acid.

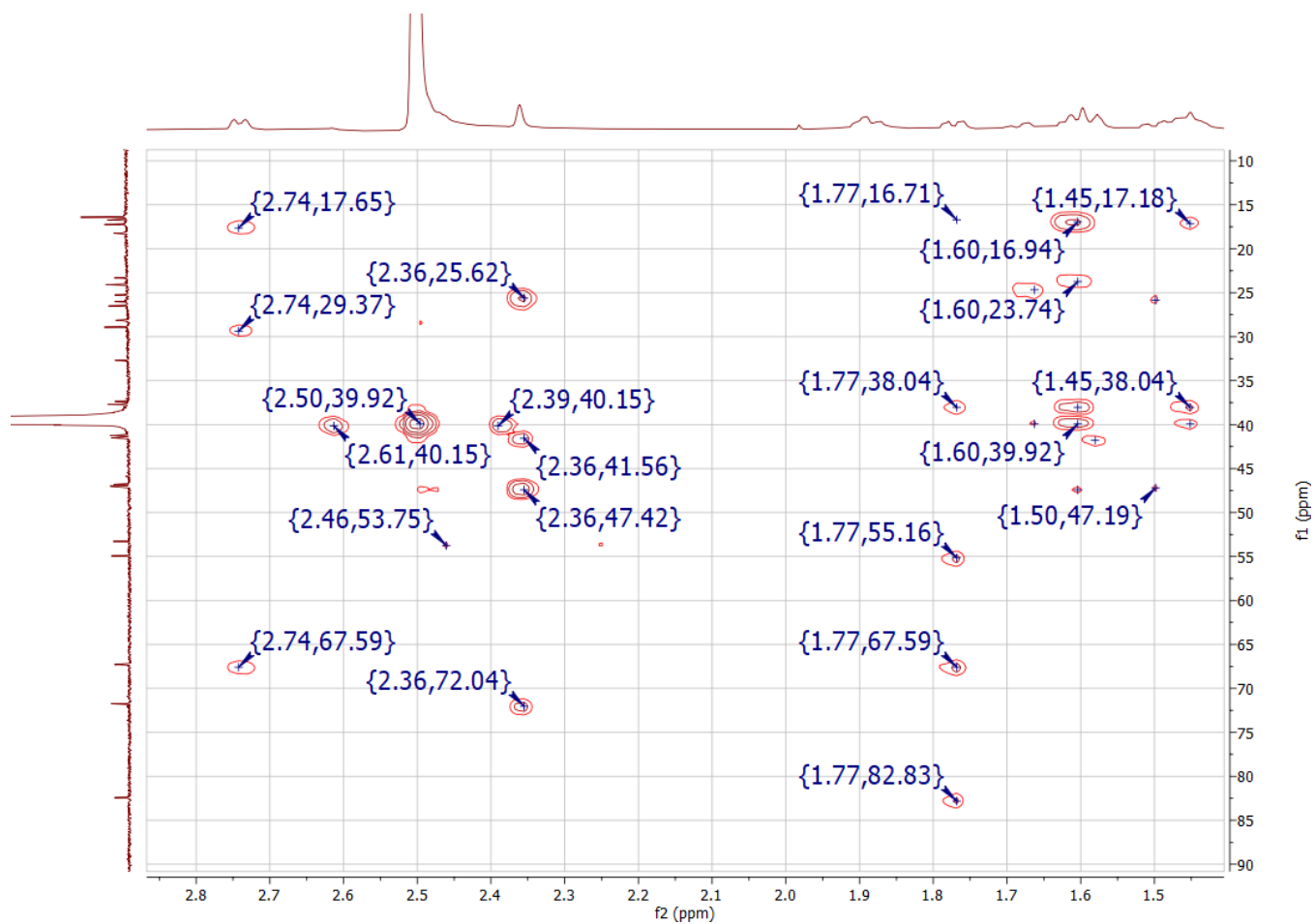


Figure S9. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 10 to 90 ppm (f_1) and 1.0 to 2.8 ppm (f_2). Isoyarumic acid.

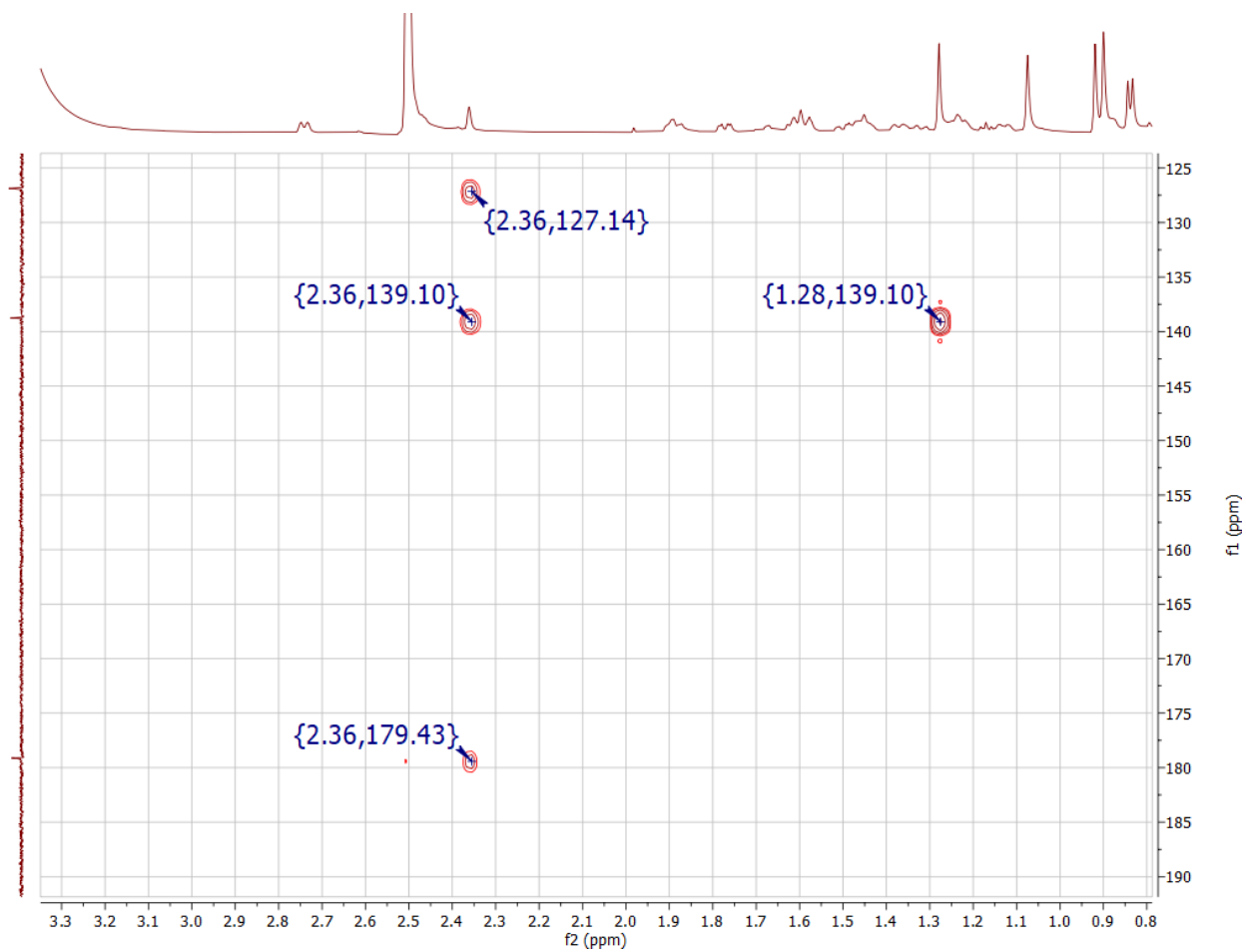


Figure S9. R_t 17.94 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 125 to 190 ppm (f_1) and 0.8 to 3.3 ppm (f_2). Isoyarumic acid.

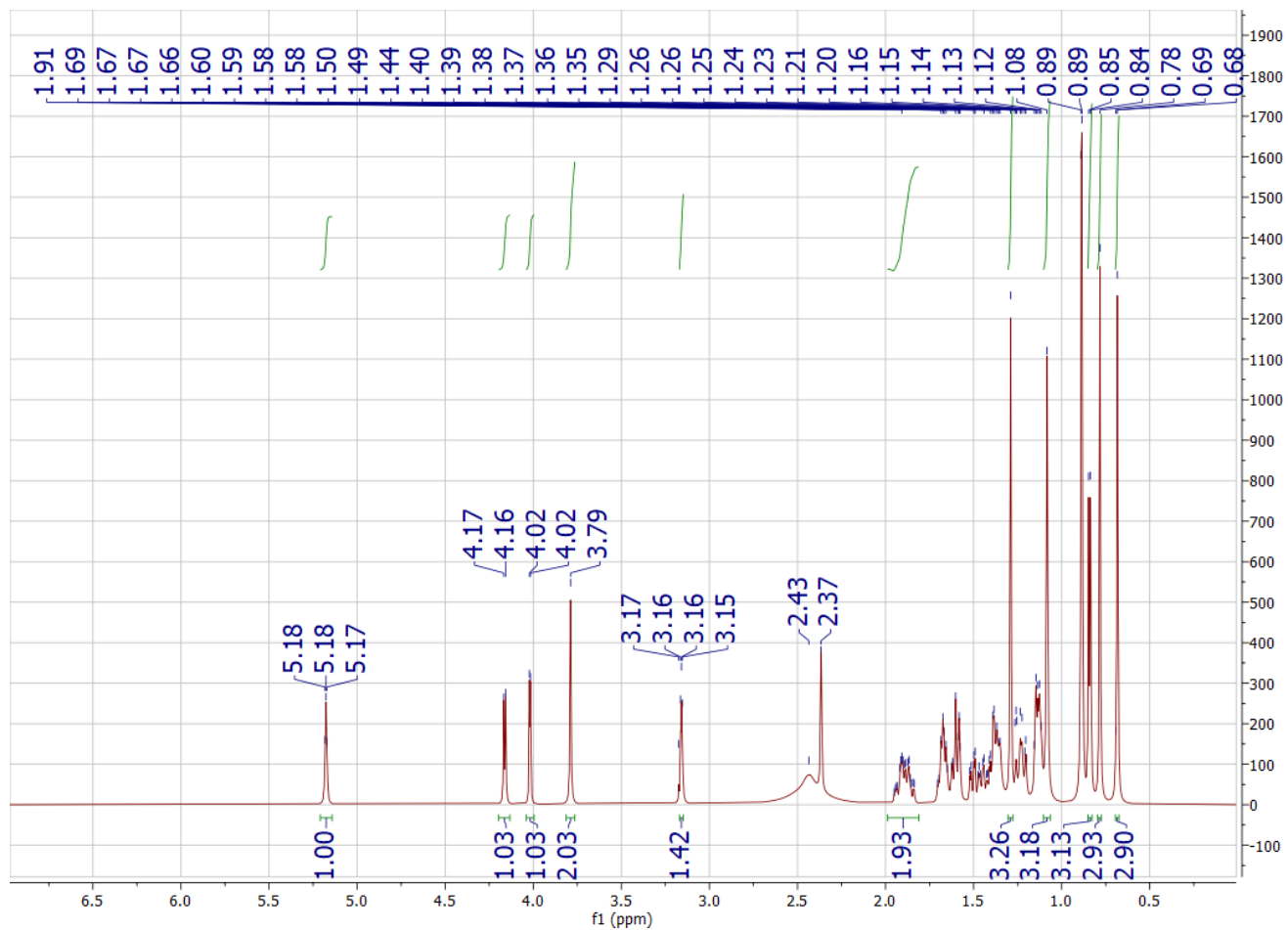


Figure S10. R_t 23.31 min peak ¹H-NMR spectrum. Tormentica acid.

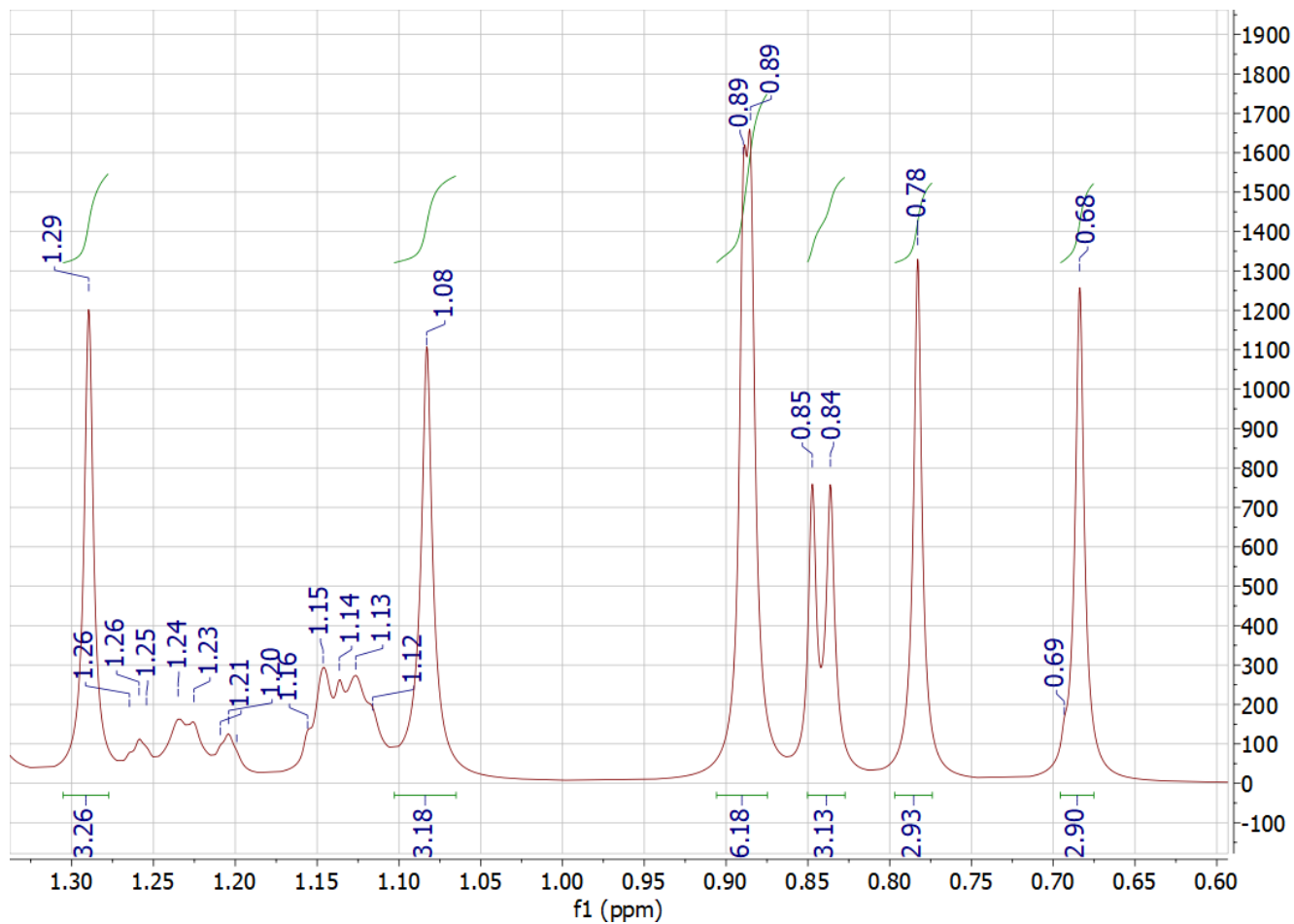


Figure S11. R_t 23.31 min peak $^1\text{H-NMR}$ spectrum, zoom over 0.60 to 1.40 ppm region. Tormentic acid.

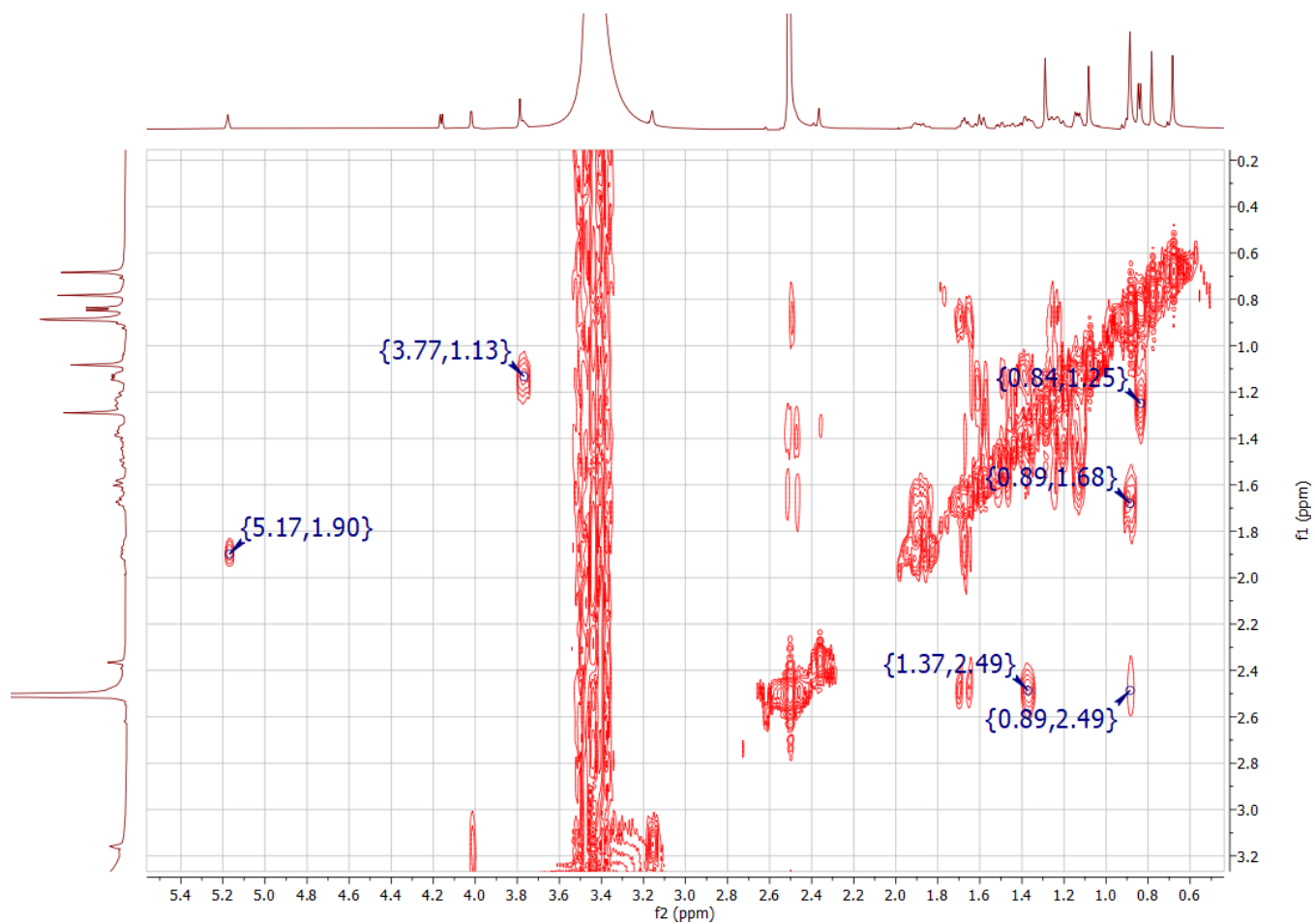


Figure S12. R_t 23.31 min peak ^1H - ^1H NMR correlation (COSY) spectrum. Tormentic acid.

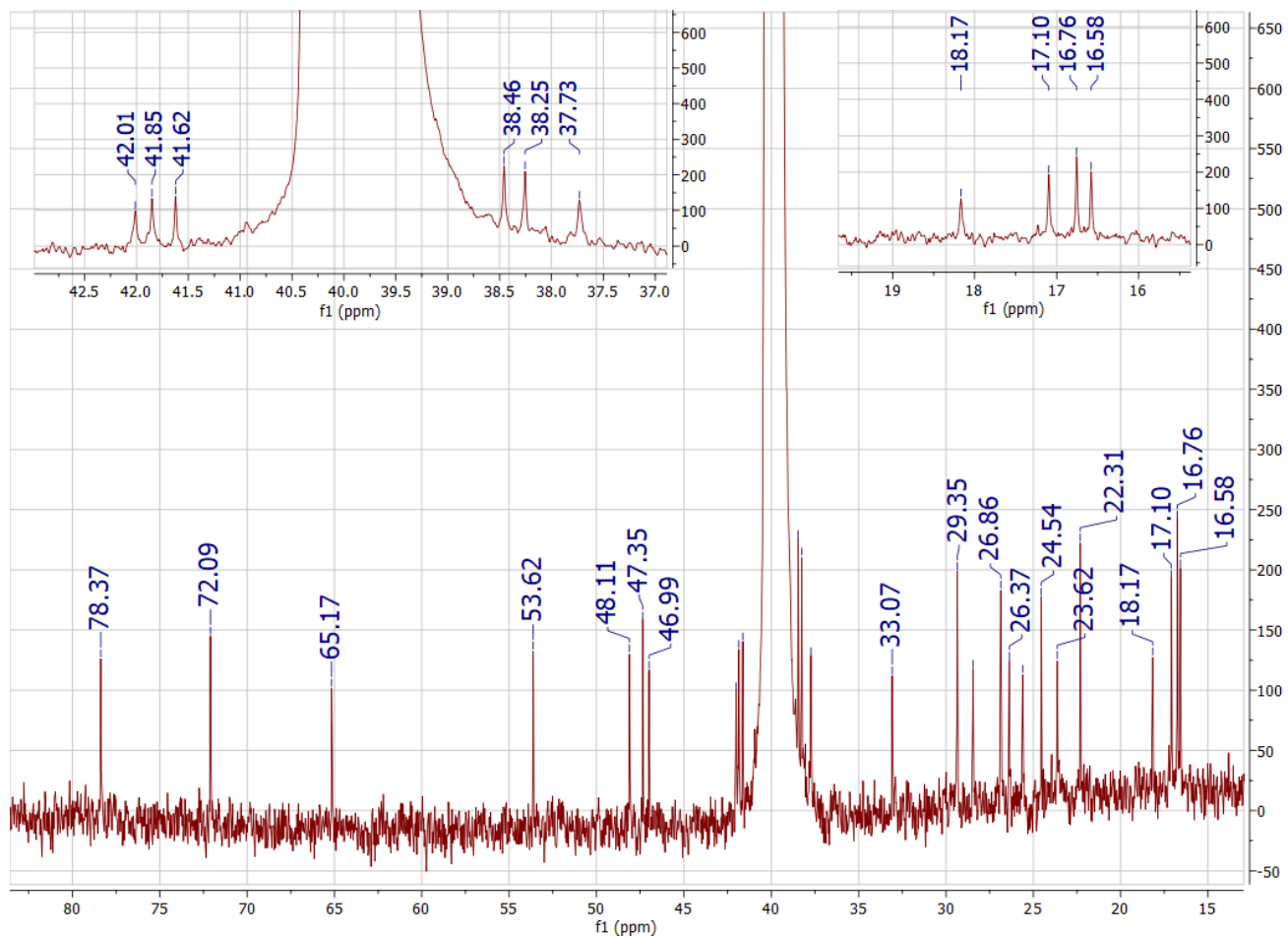


Figure S13. R_t 23.31 min peak ^{13}C -NMR spectrum, zoom over 15 to 80 ppm region. Tormentic acid.

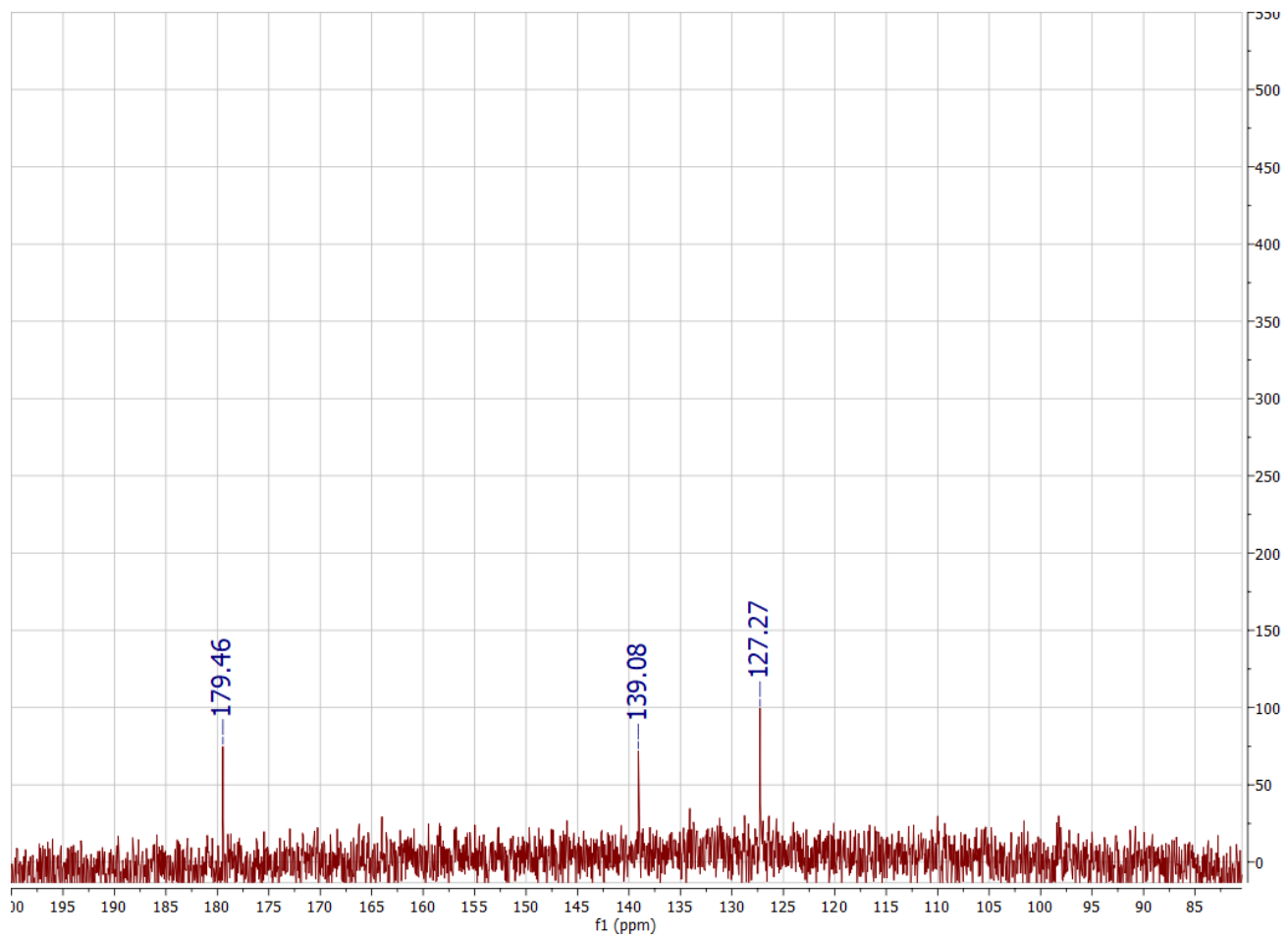


Figure S14. R_t 23.31 min peak ^{13}C -NMR spectrum, zoom over 80 to 200 ppm region. Tormentica acid.



Figure S15. R_t 23.31 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum. Tormentica acid.

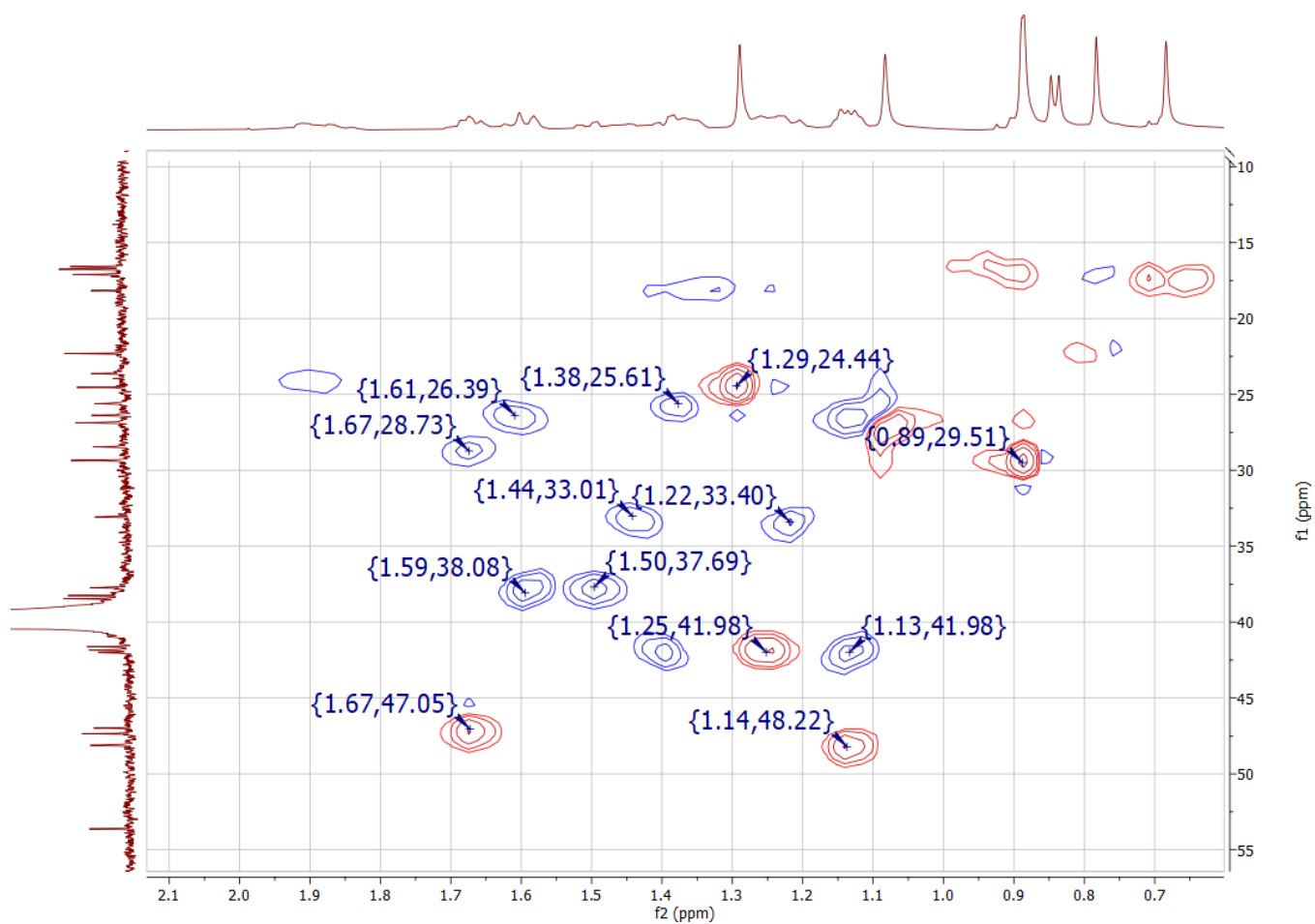


Figure S16. R_t 23.31 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum, zoom over 10 to 55 ppm (f_1) and 0.6 to 2.1 ppm (f_2). Tormentic acid.

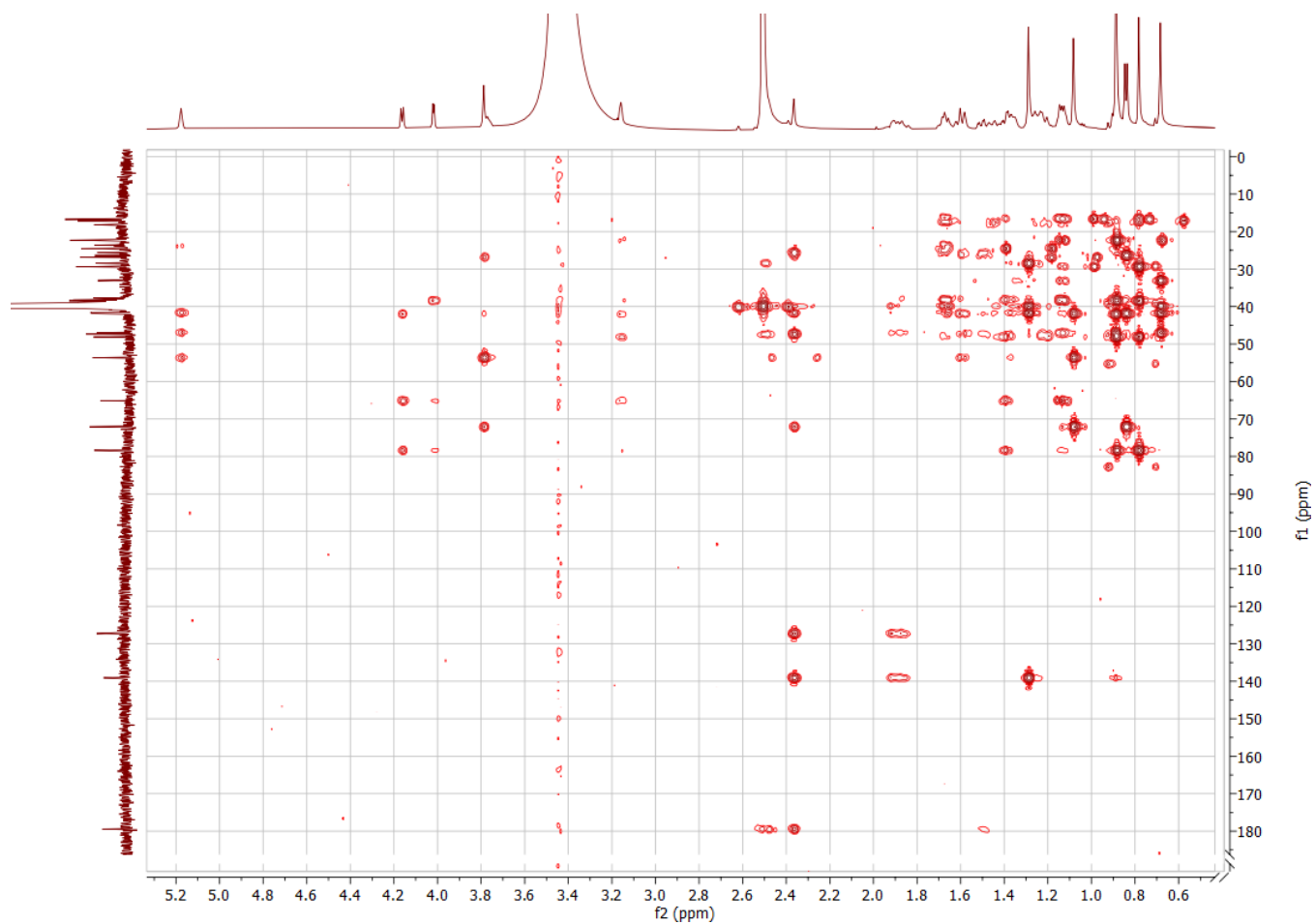


Figure S17. R_t 23.31 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum. Tormentica acid.

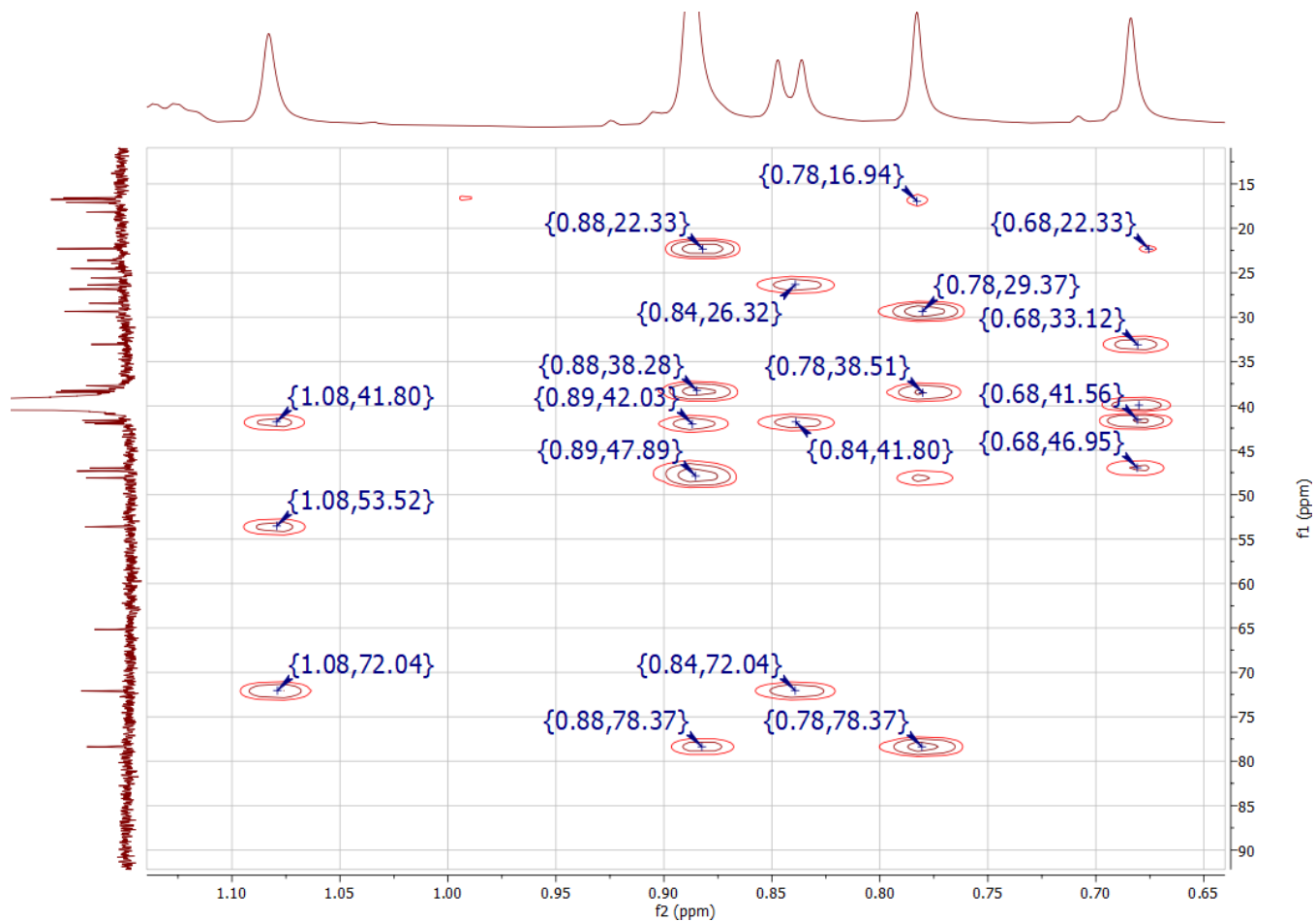


Figure S18. R_t 23.31 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 15 to 90 ppm (f_1) and 0.65 to 1.10 ppm (f_2). Tormentonic acid.

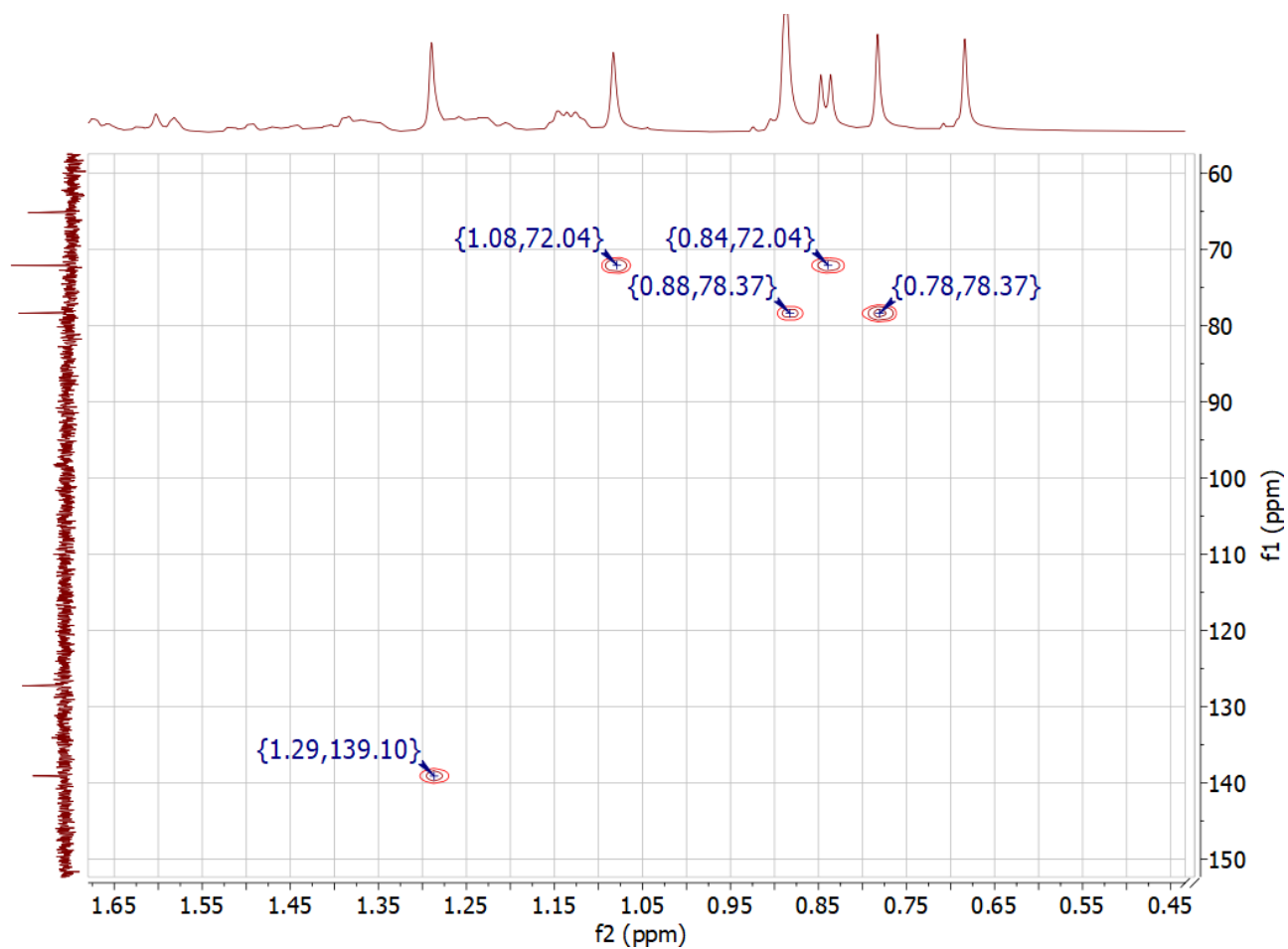


Figure S19. R_t 23.31 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 60 to 150 ppm (f_1) and 0.45 to 1.65 ppm (f_2). Tormentonic acid.

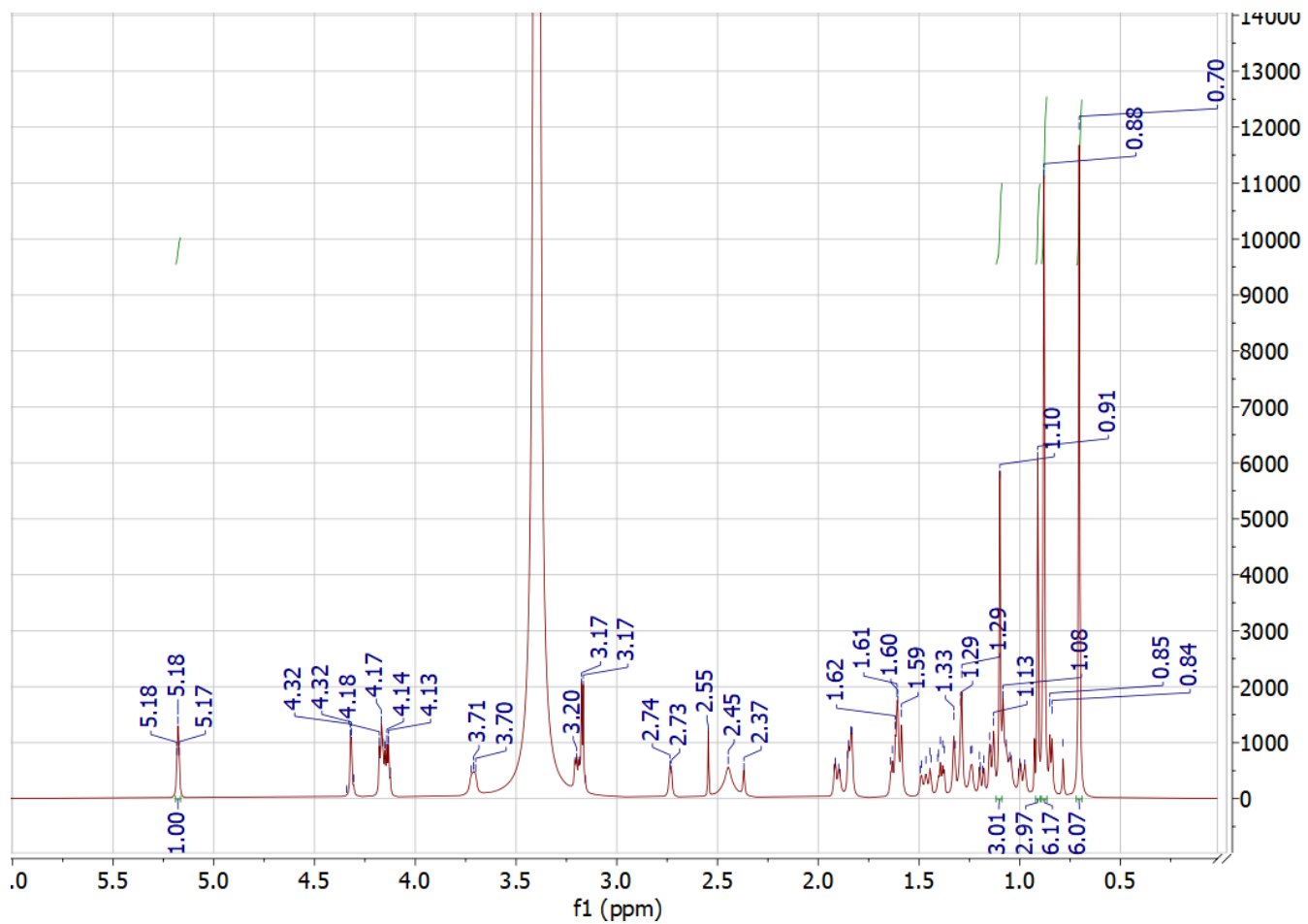


Figure S20. R_t 27.47 min peak ¹H-NMR spectrum. Hederagenic acid.

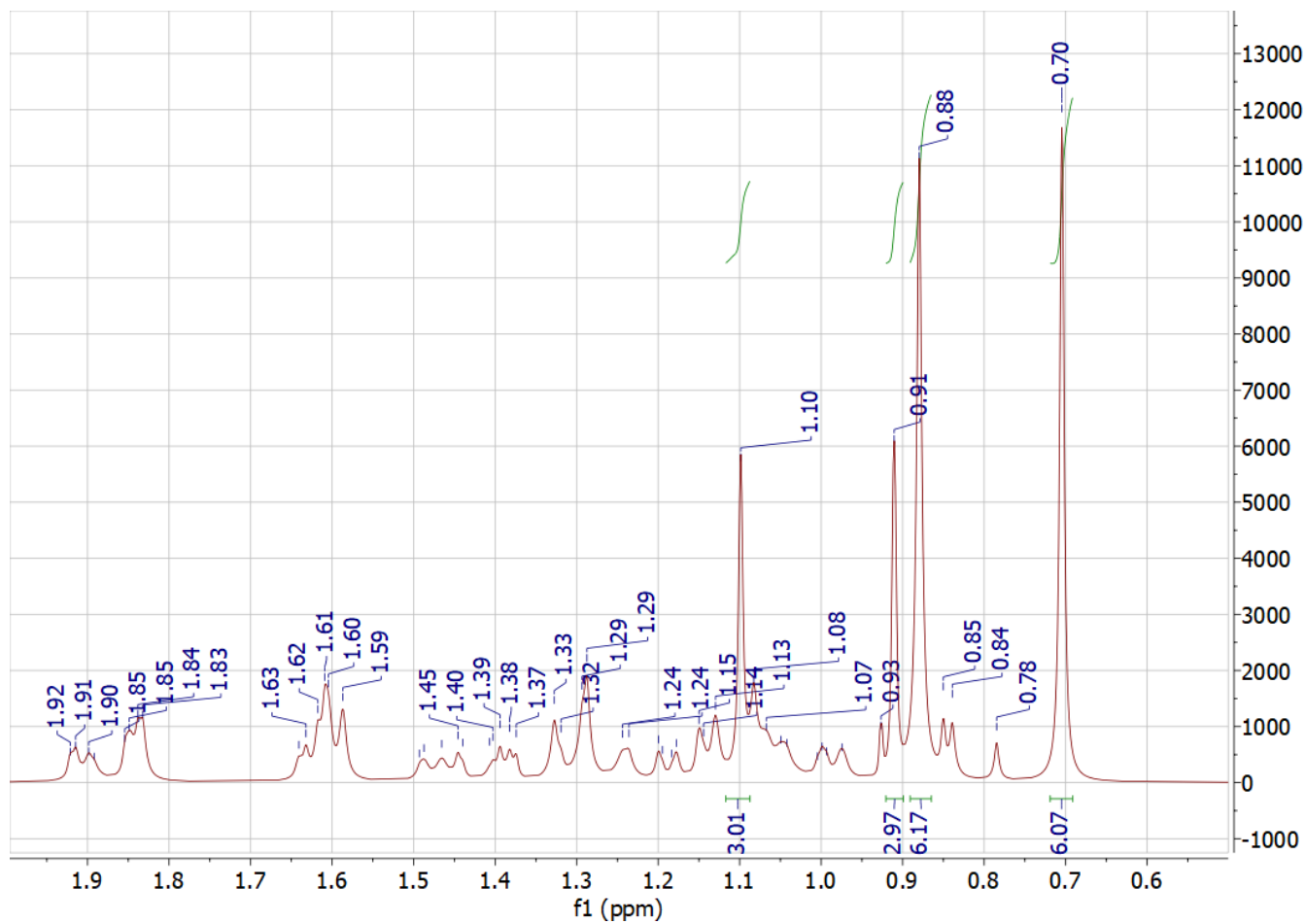


Figure S21. R_t 27.47 min peak ¹H-NMR spectrum, zoom from 0.5 to 2.0 ppm. Hederagenic acid.

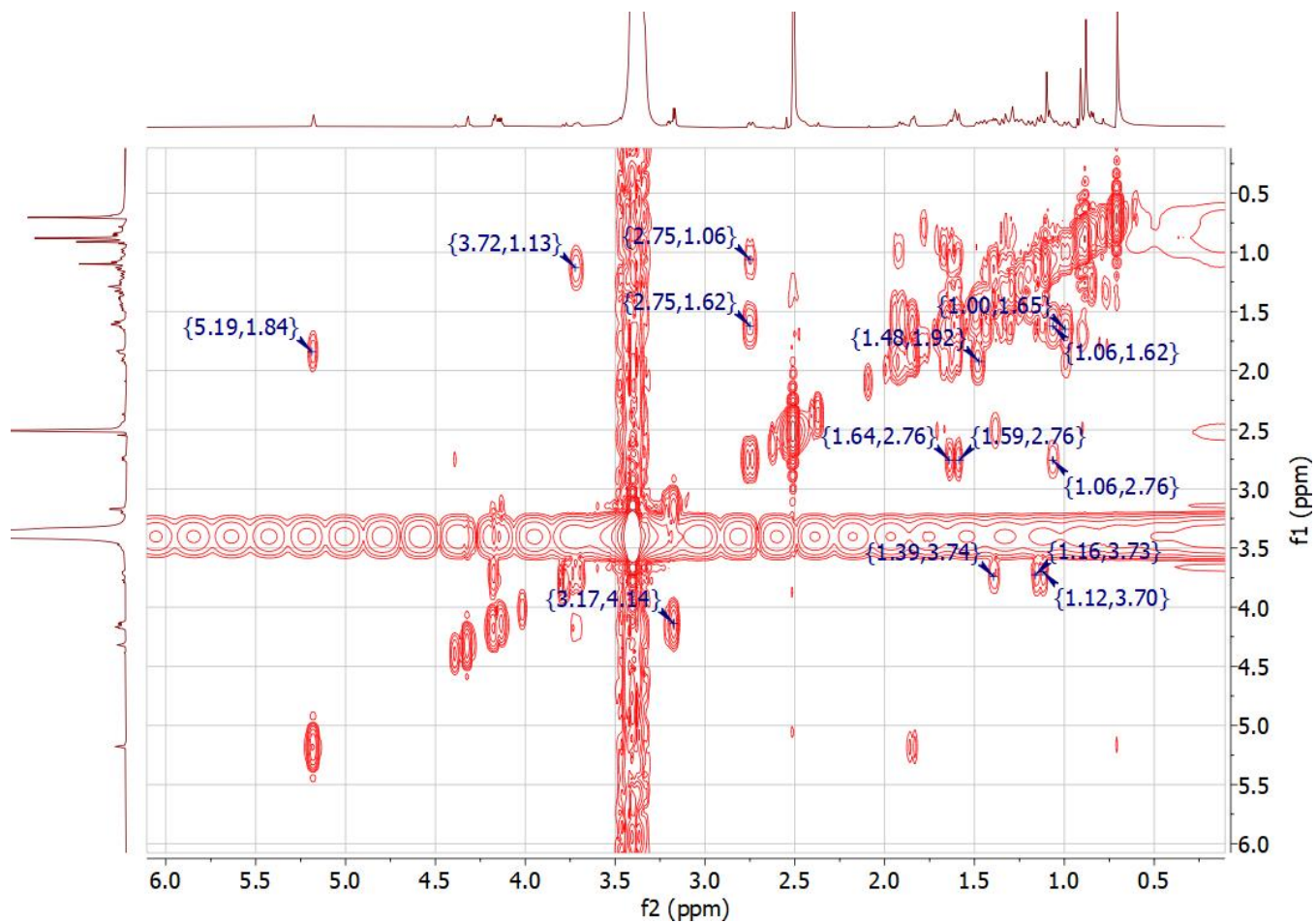


Figure S22. R_t 27.47 min peak ^1H - ^1H NMR correlation (COSY) spectrum. Hederagenic acid.

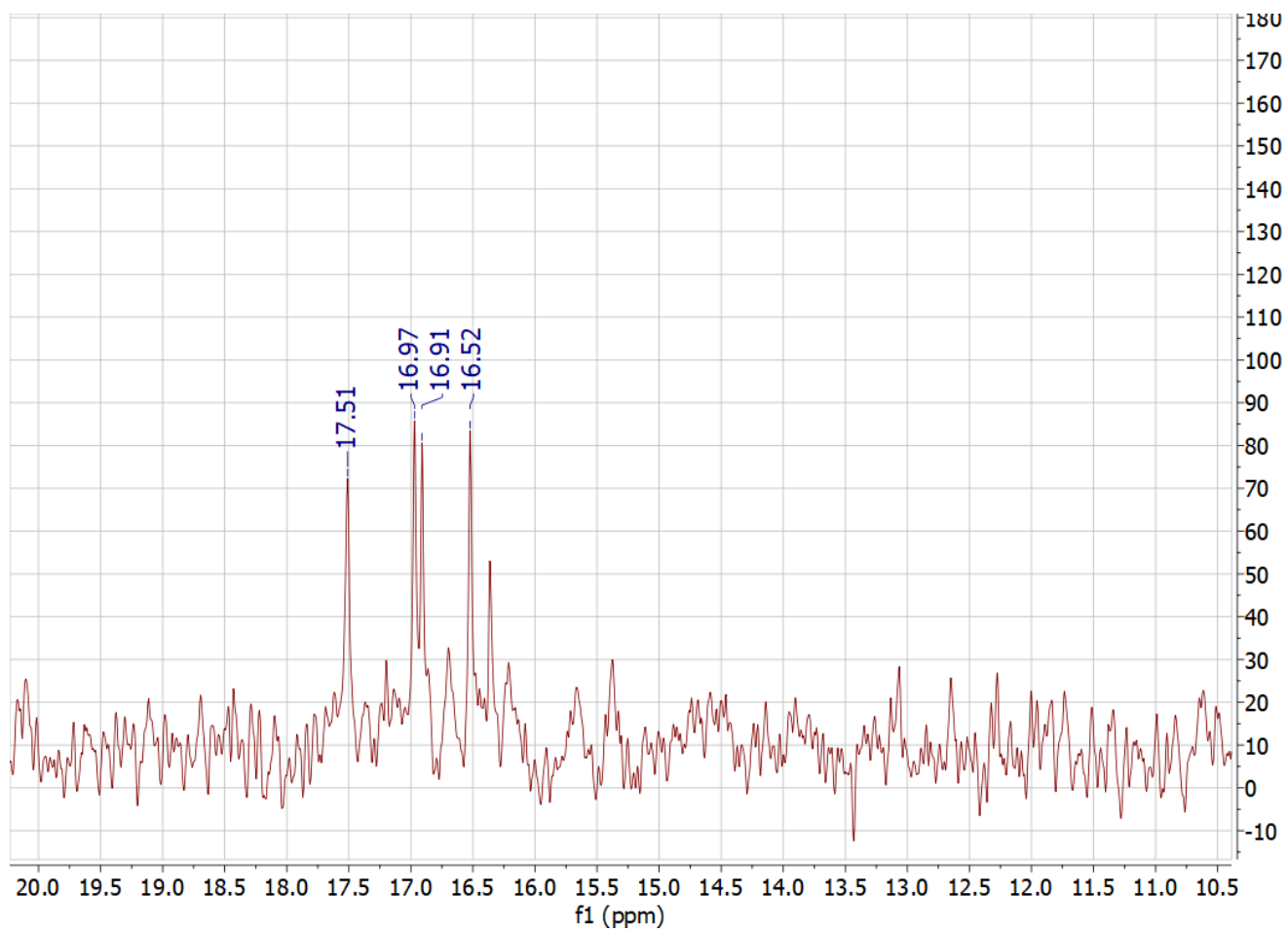


Figure S23. R_t 27.47 min peak ^{13}C -NMR spectrum, zoom over 10 to 20 ppm region. Hederagenic acid.

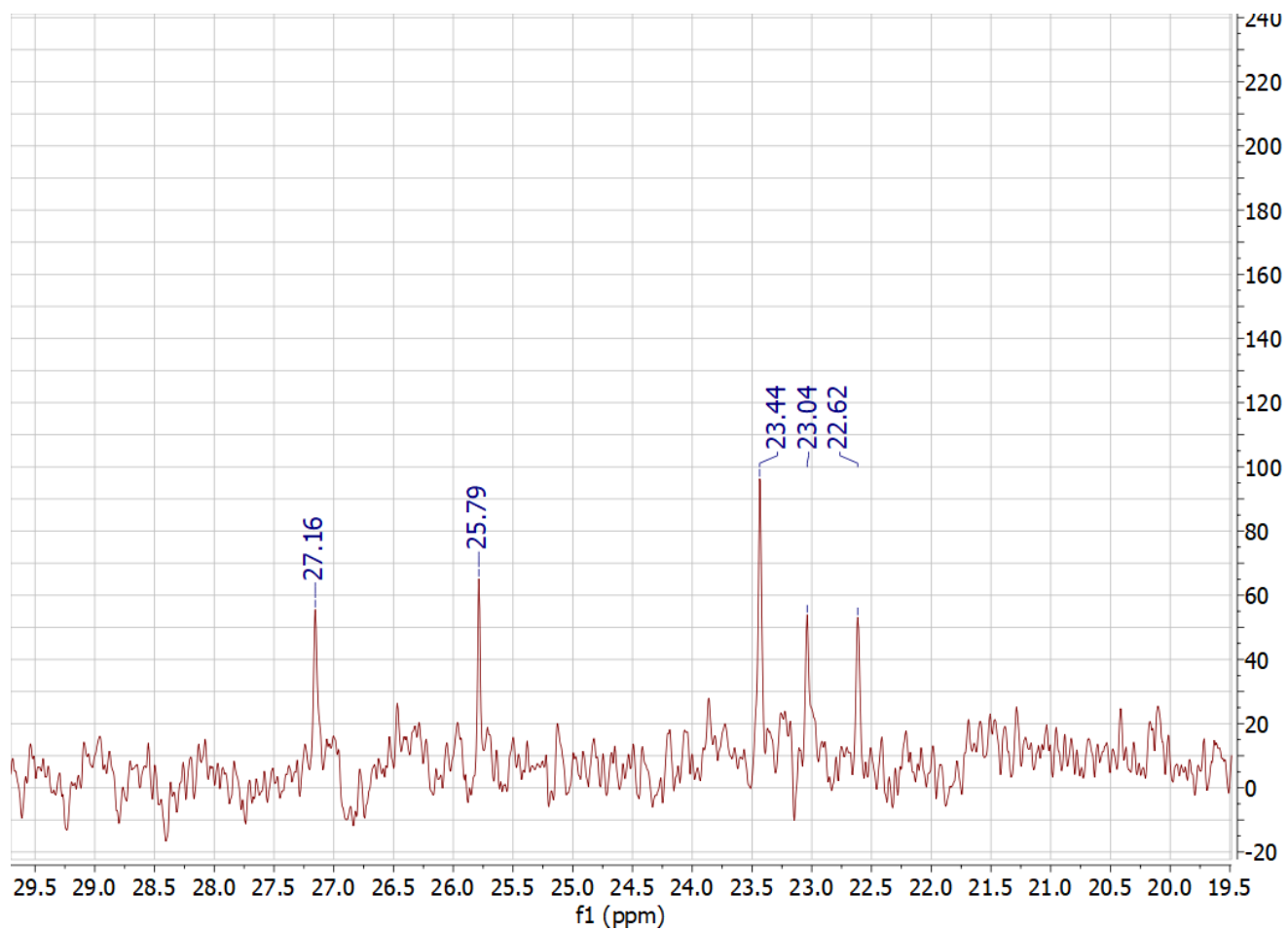


Figure S24. R_t 27.47 min peak ^{13}C -NMR spectrum, zoom over 20 to 30 ppm region. Hederagenic acid.

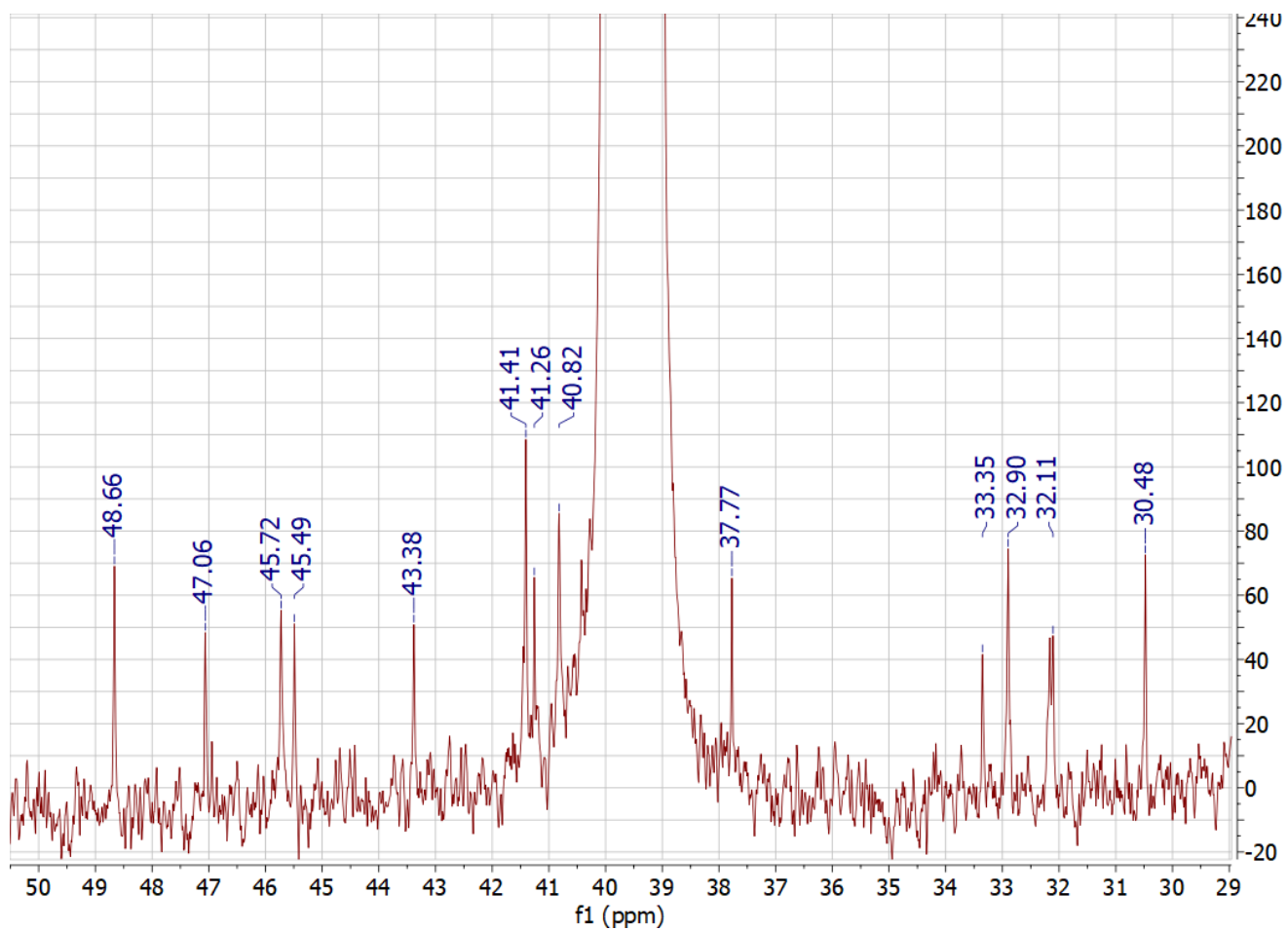


Figure S25. R_t 27.47 min peak ^{13}C -NMR spectrum, zoom over 30 to 50 ppm region. Hederagenic acid.

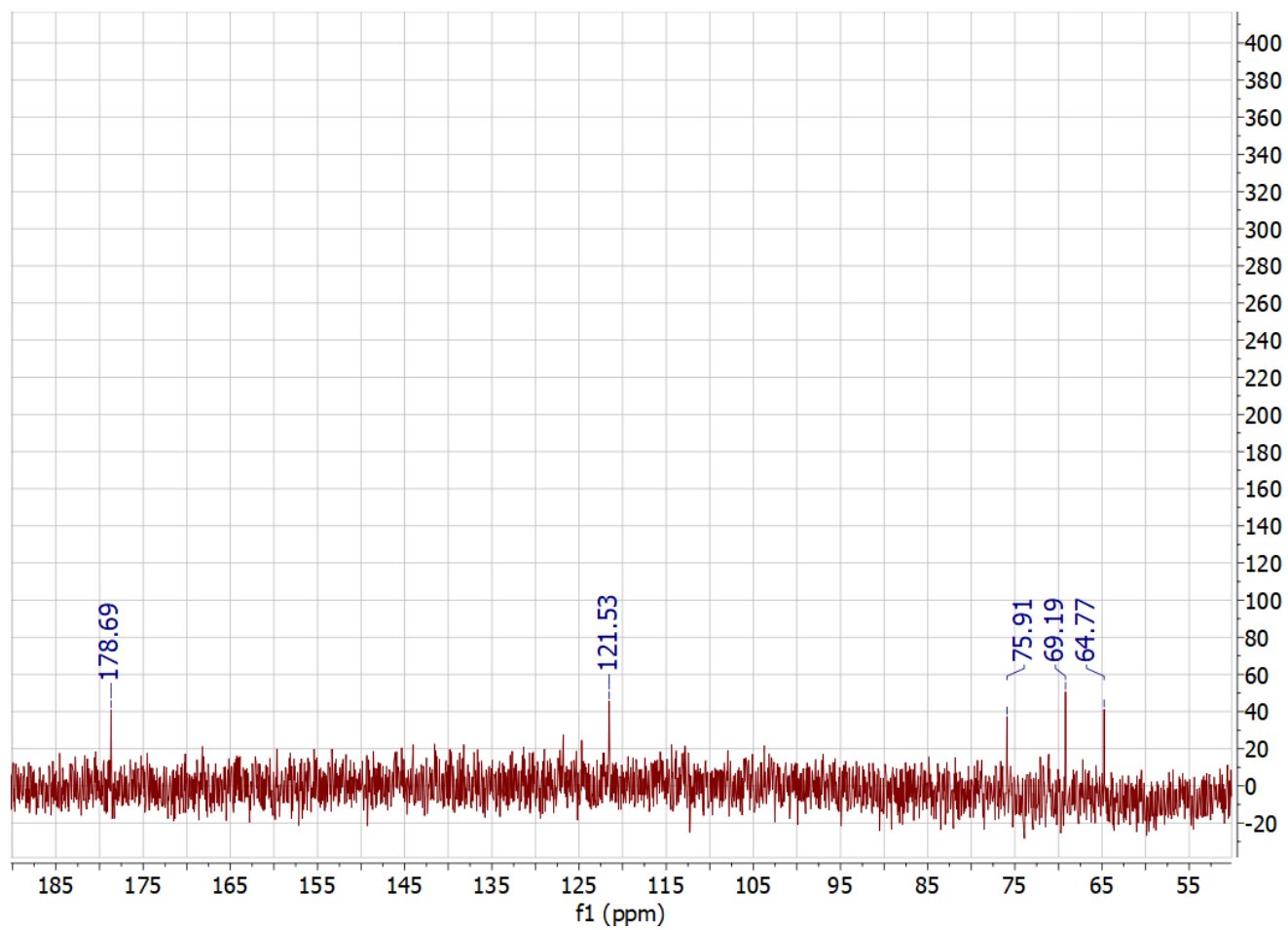


Figure S26. R_t 27.47 min peak ^{13}C -NMR spectrum, zoom over 50 to 185 ppm region. Hederagenic acid.

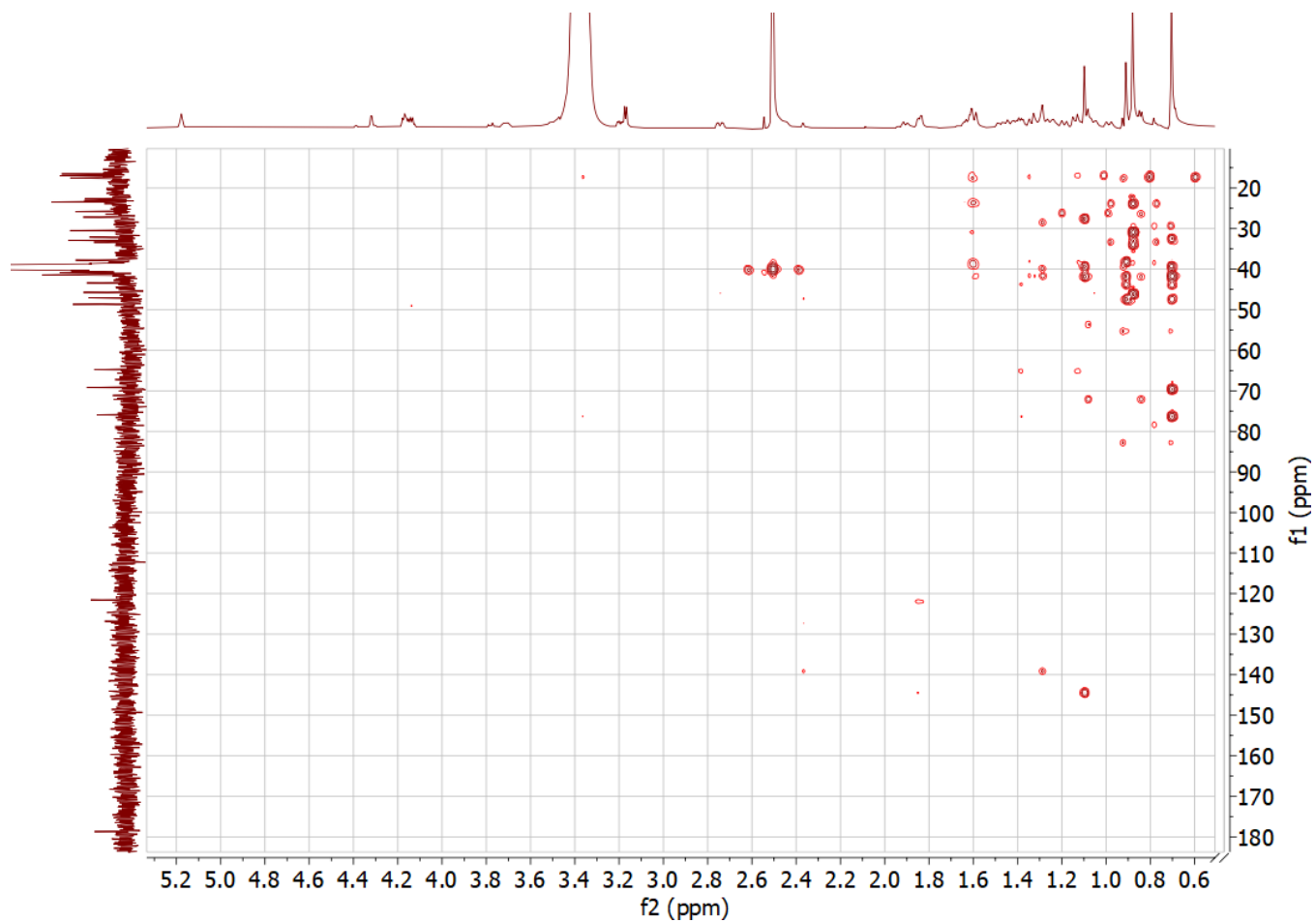


Figure S27. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum. Hederagenic acid.

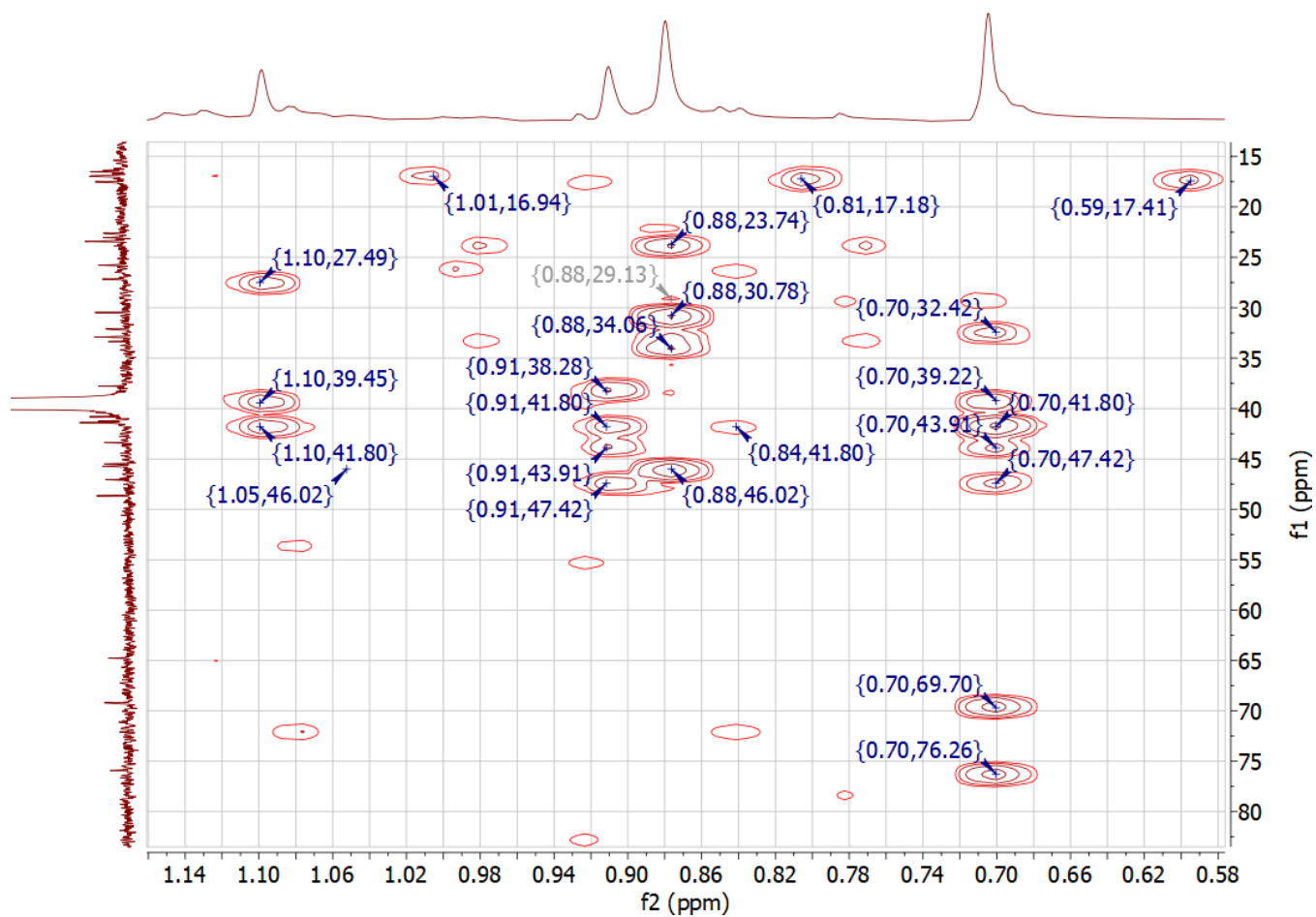


Figure S28. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 15 to 80 ppm (f_1) and 0.58 to 1.14 ppm (f_2). Hederagenic acid.

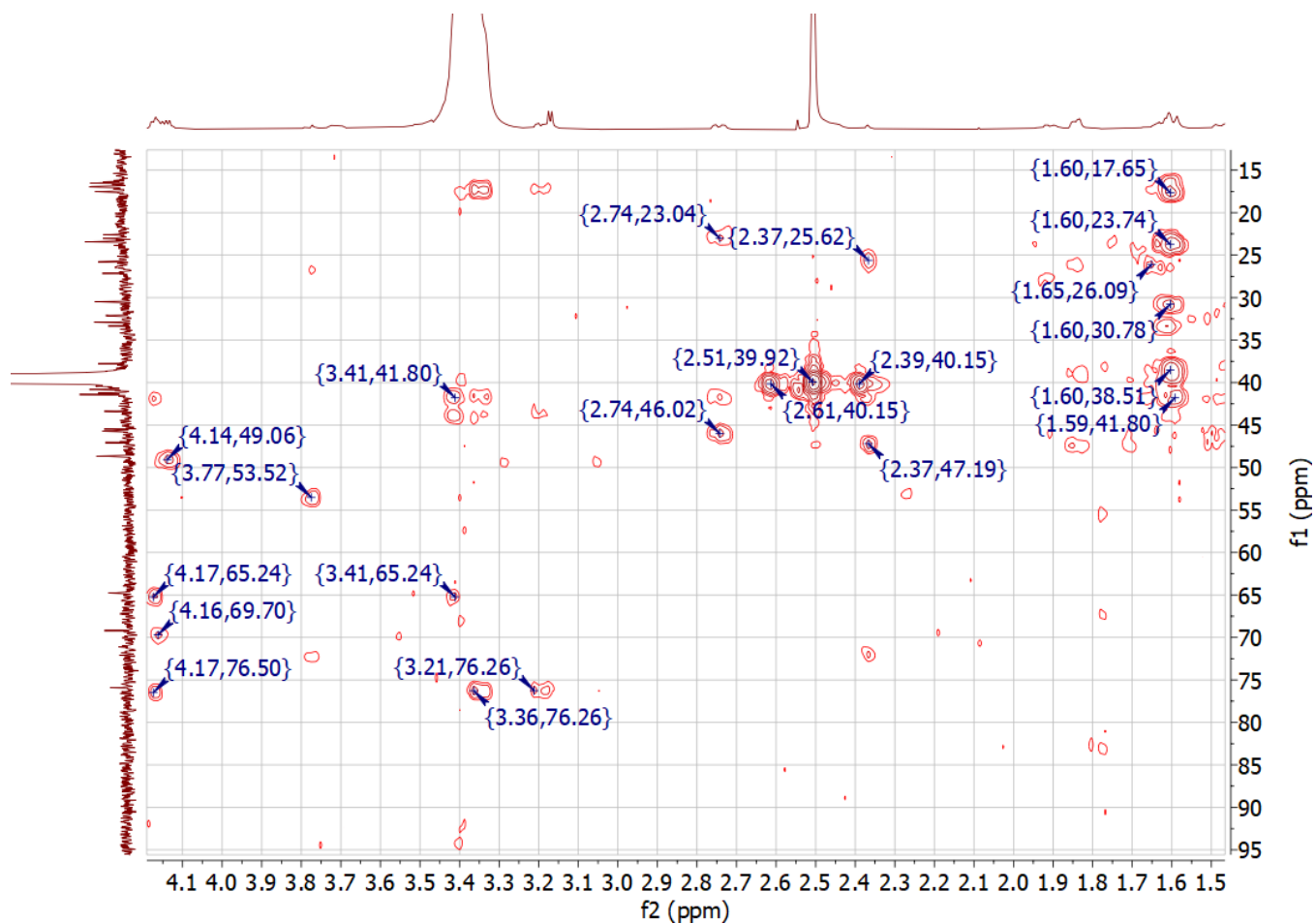


Figure S29. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 15 to 95 ppm (f_1) and 1.50 to 4.20 ppm (f_2). Hederagenic acid.

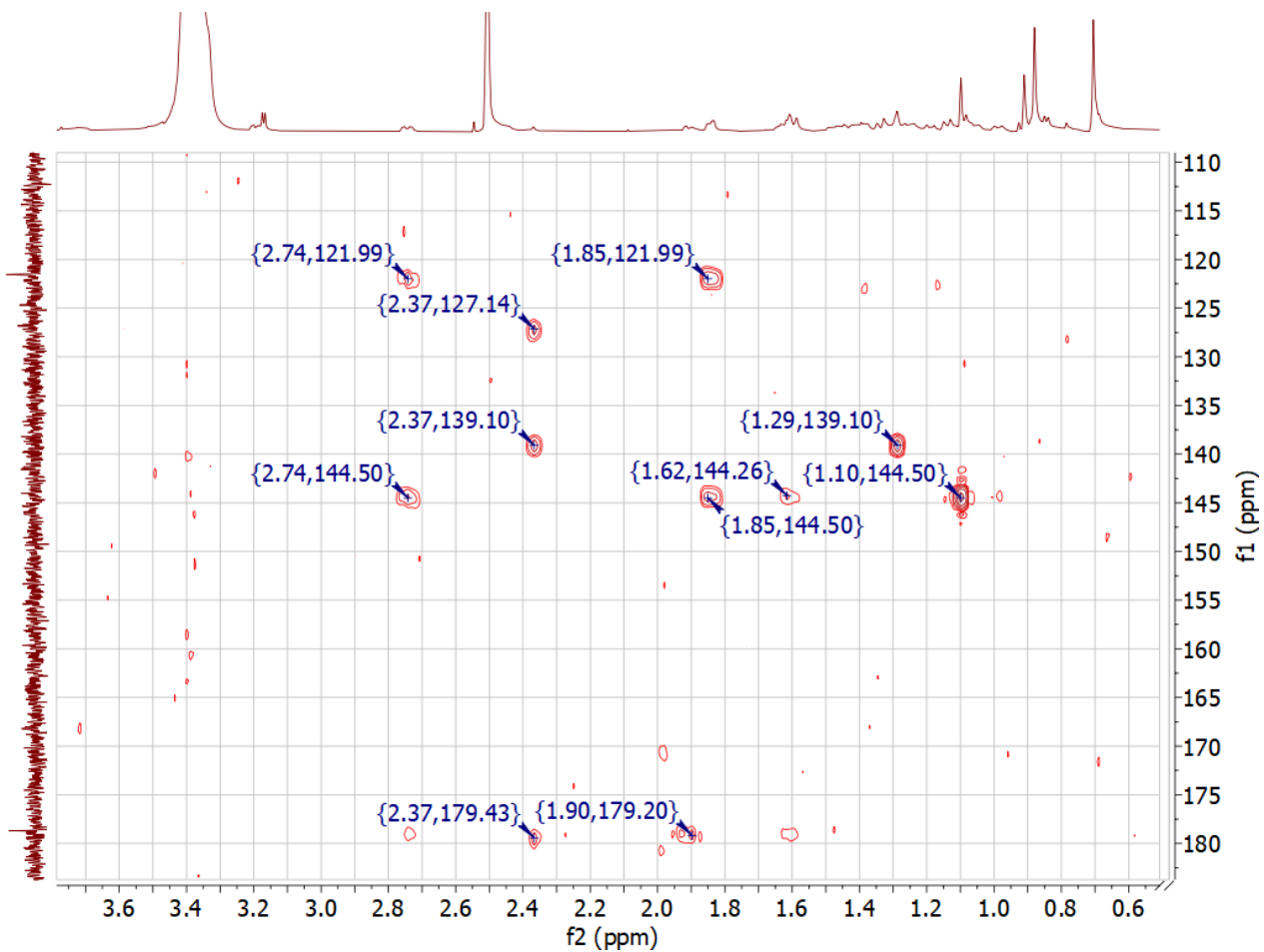


Figure S30. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, zoom over 110 to 180 ppm (f_1) and 0.60 to 3.60 ppm (f_2). Hederagenic acid.

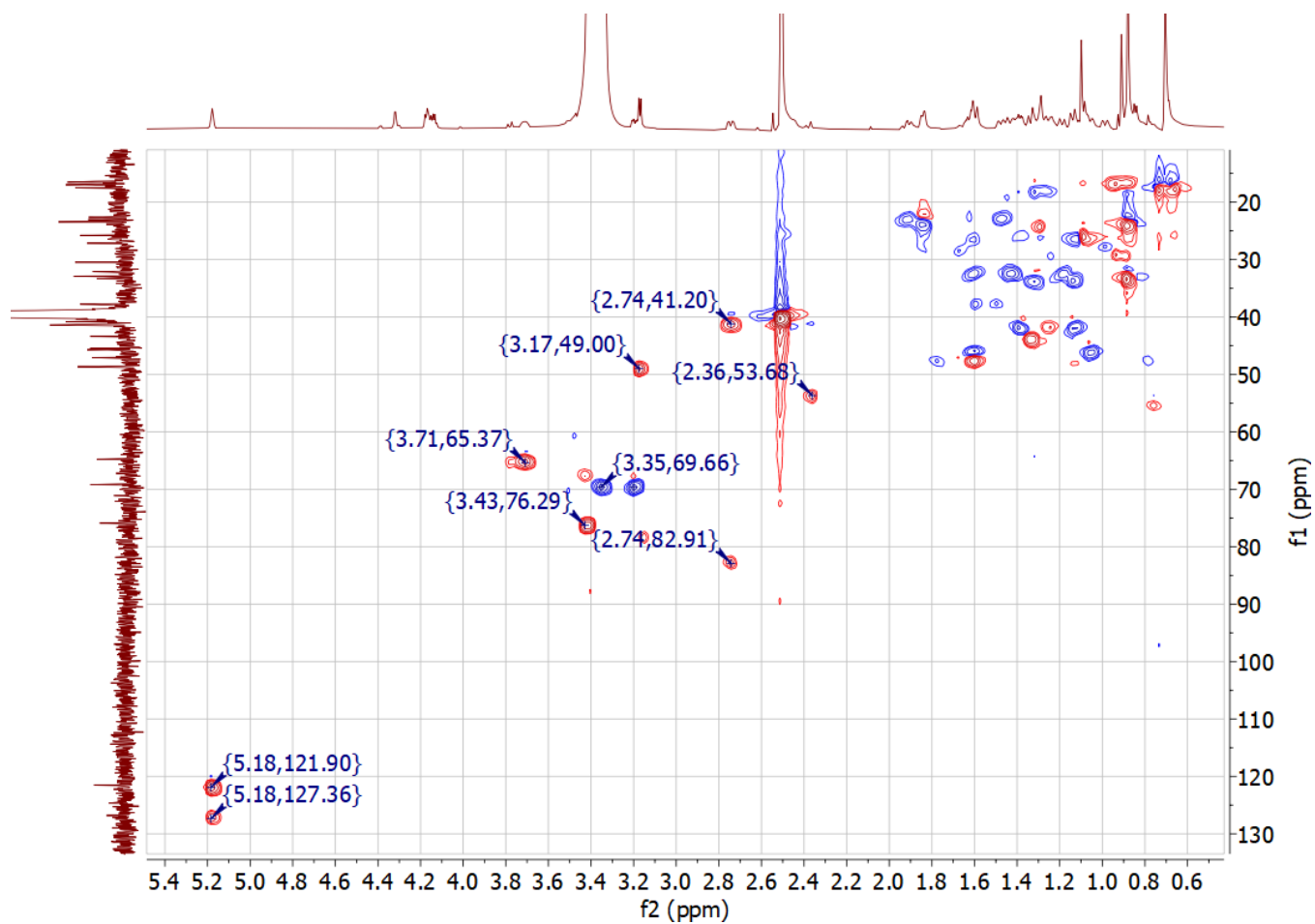


Figure S31. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum. Hederagenic acid.

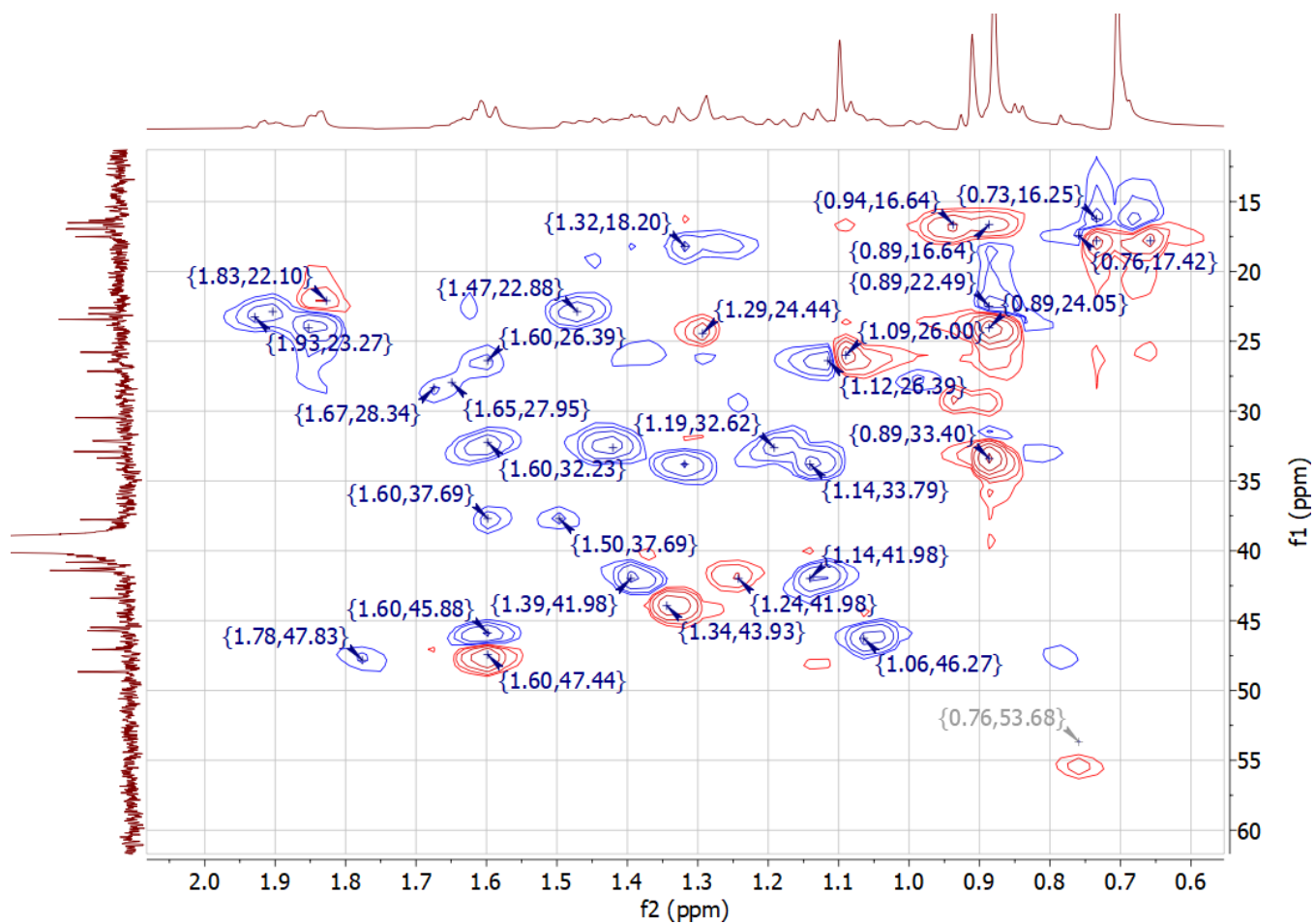


Figure S32. R_t 27.47 min peak ^1H - ^{13}C NMR correlation (HSQC) spectrum, zoom over 15 to 60 ppm (f_1) and 0.60 to 3.0 ppm (f_2). Hederagenic acid.

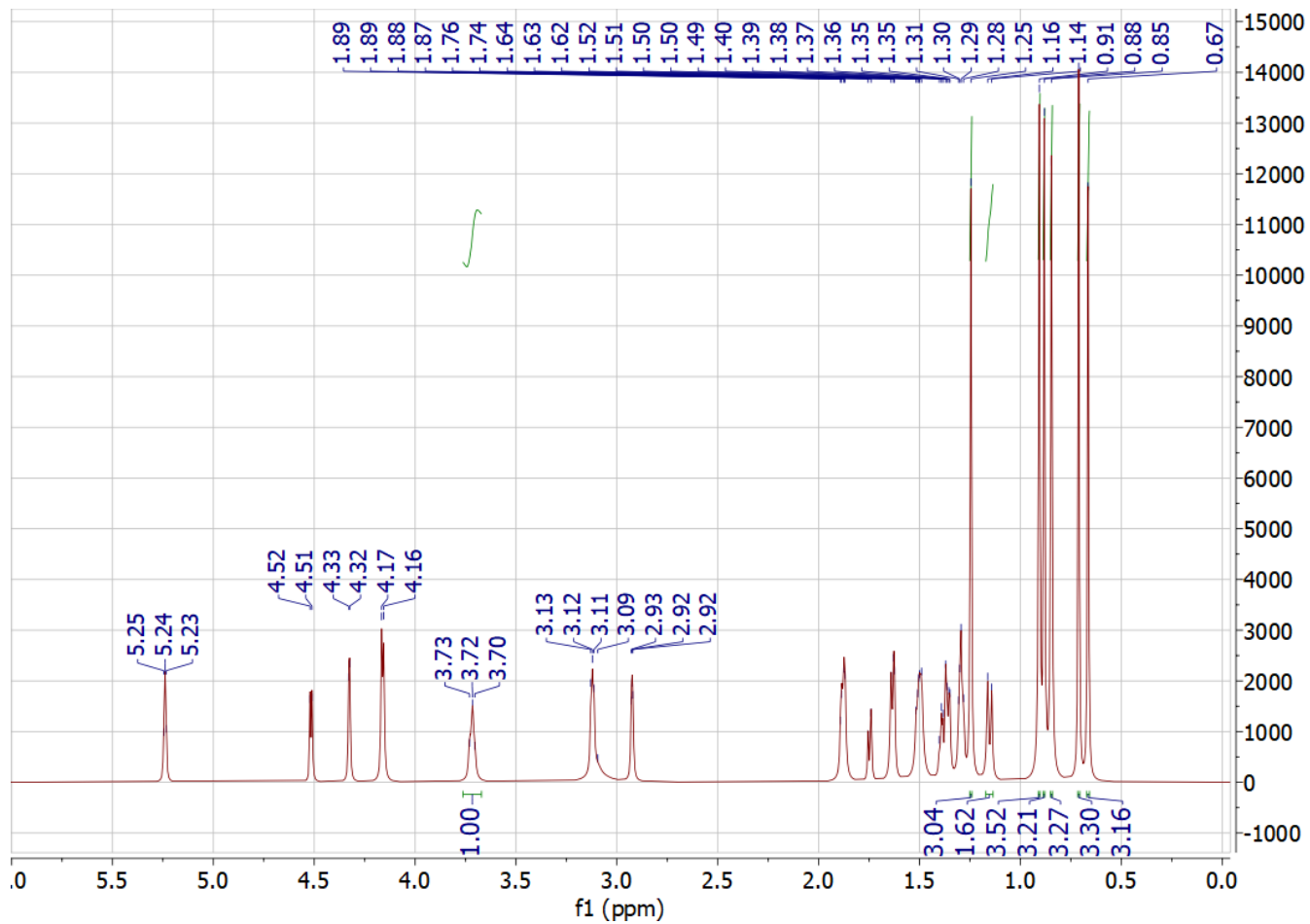


Figure S33. R_t 28.57 min peak $^1\text{H-NMR}$ spectrum. Arjunolic acid.

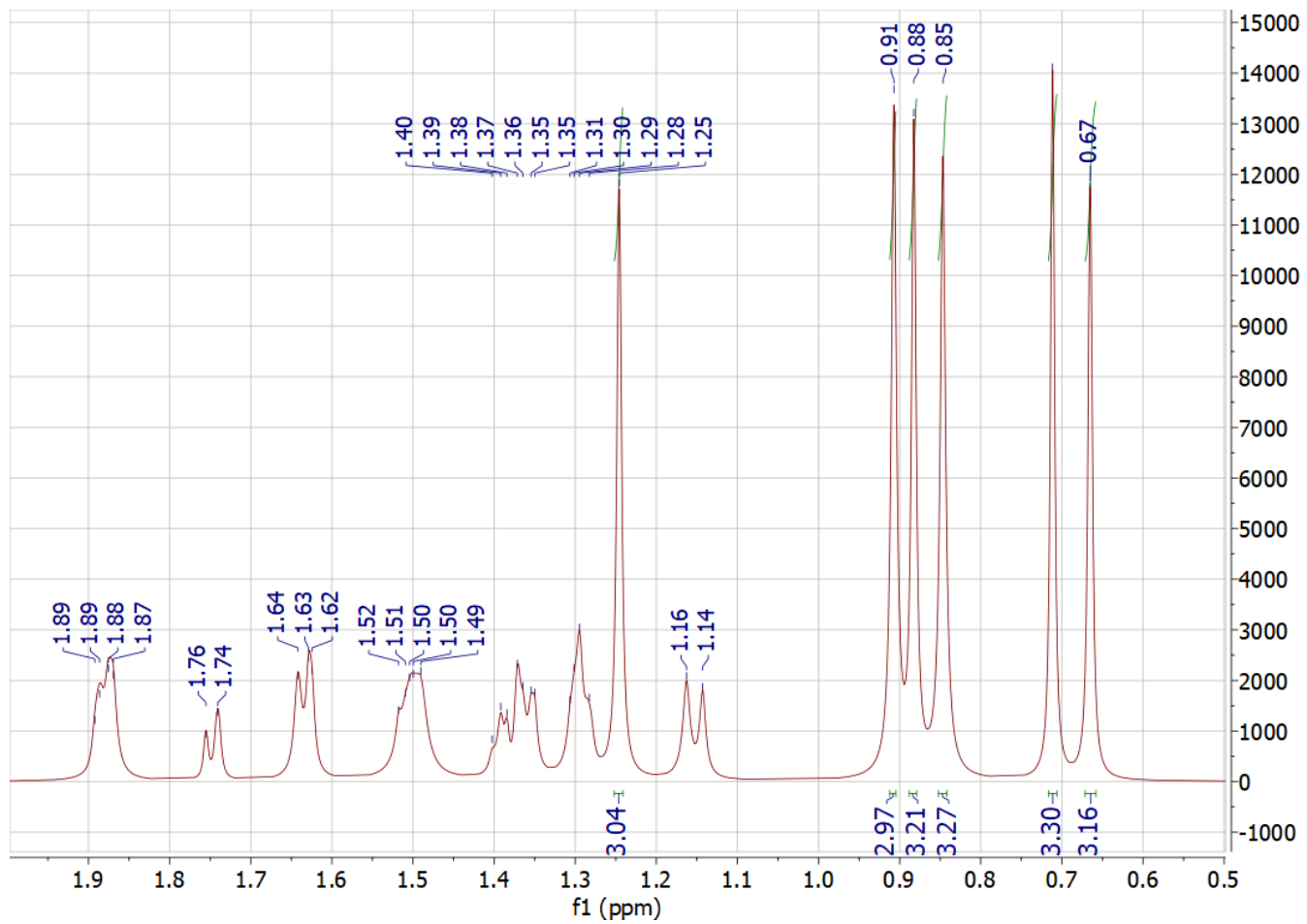


Figure S34. R_t 28.57 min peak ¹H-NMR spectrum, zoom over 0.5 to 1.9 ppm region. Arjunolic acid.

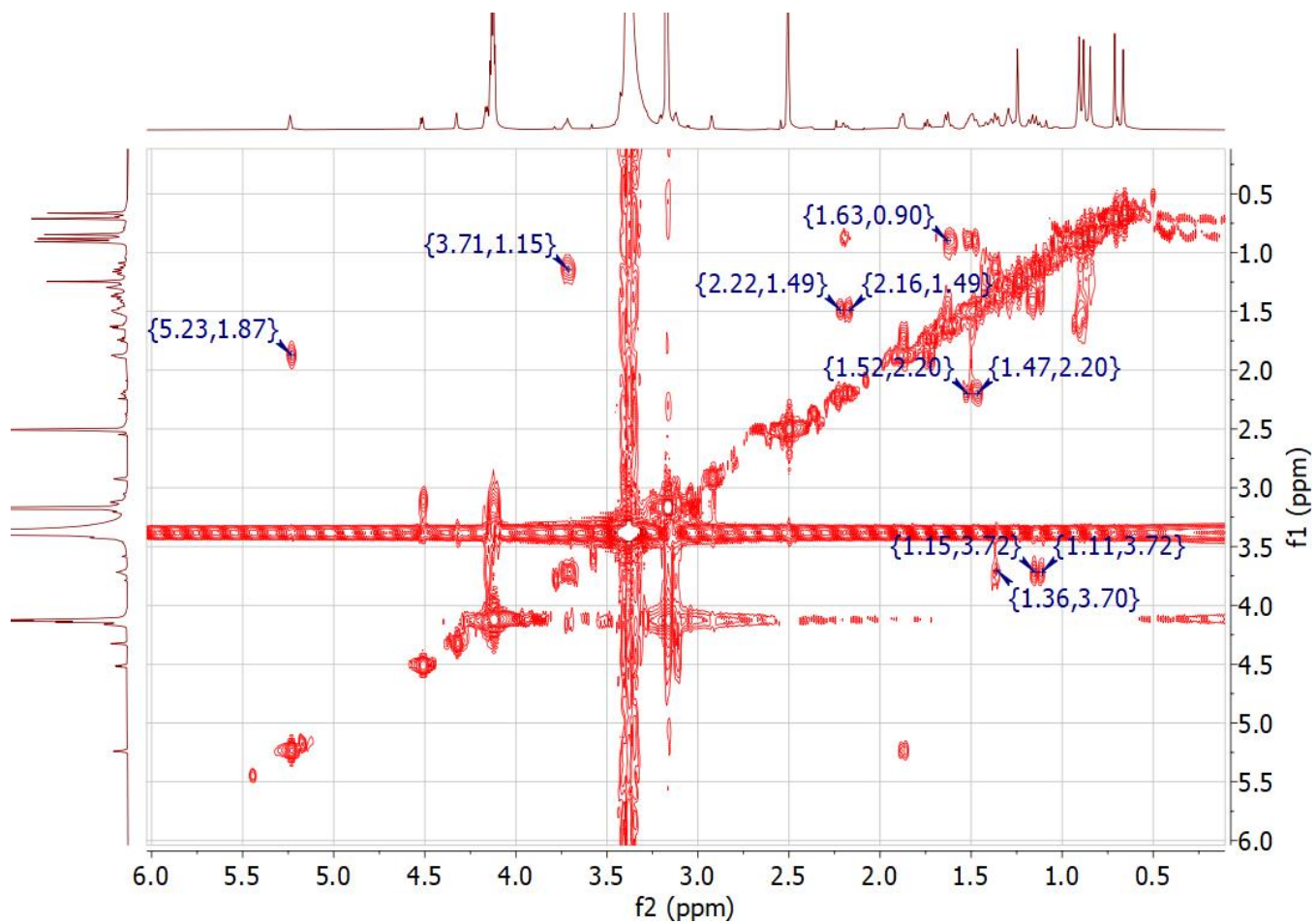


Figure S35. R_t 28.57 min peak peak ^1H - ^1H NMR correlation (COSY) spectrum. Arjunolic acid.

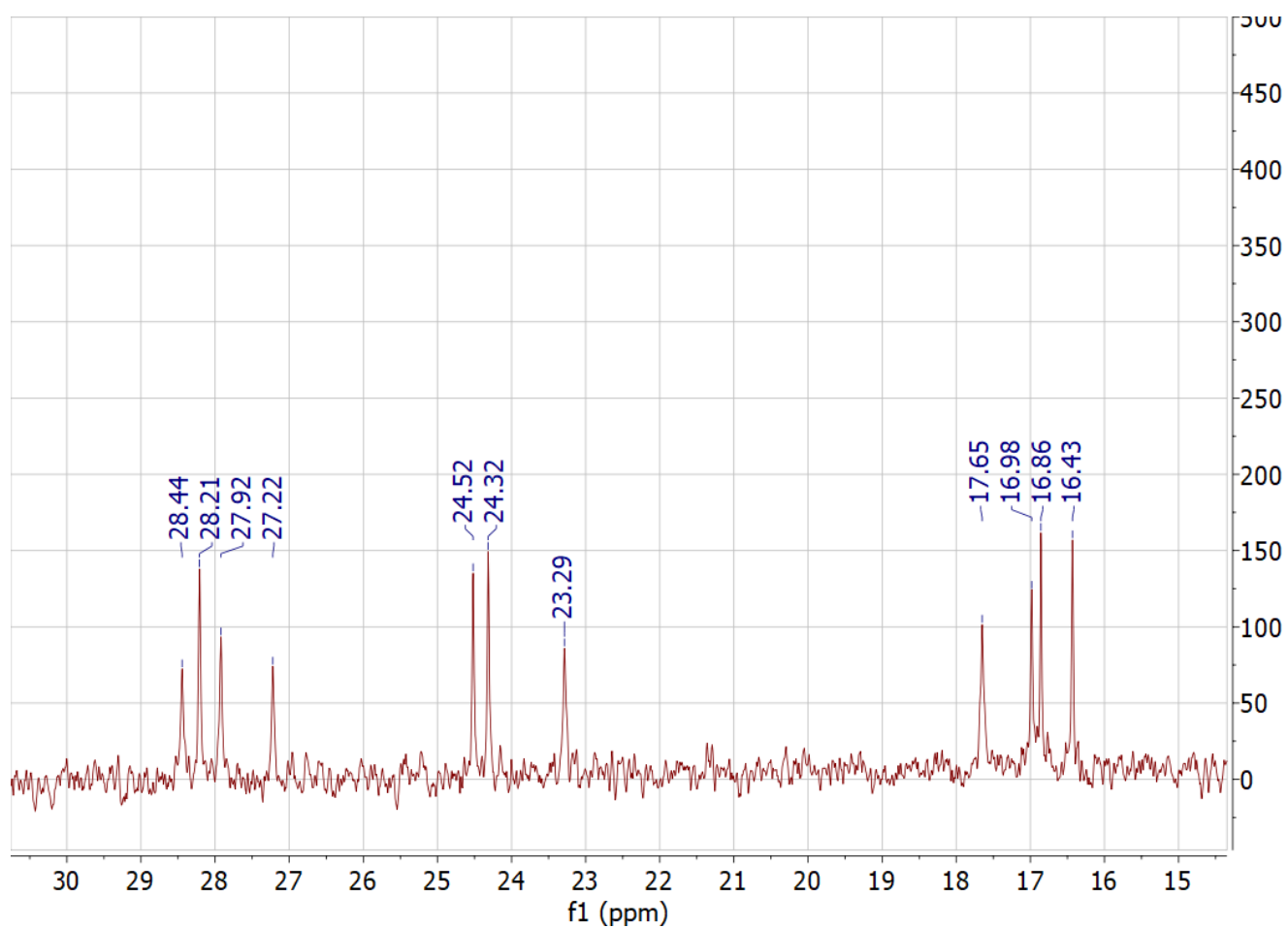


Figure S36. R_t 28.57 min peak peak ^{13}C -NMR spectrum, zoom over 15 to 30 ppm region. Arjunolic acid

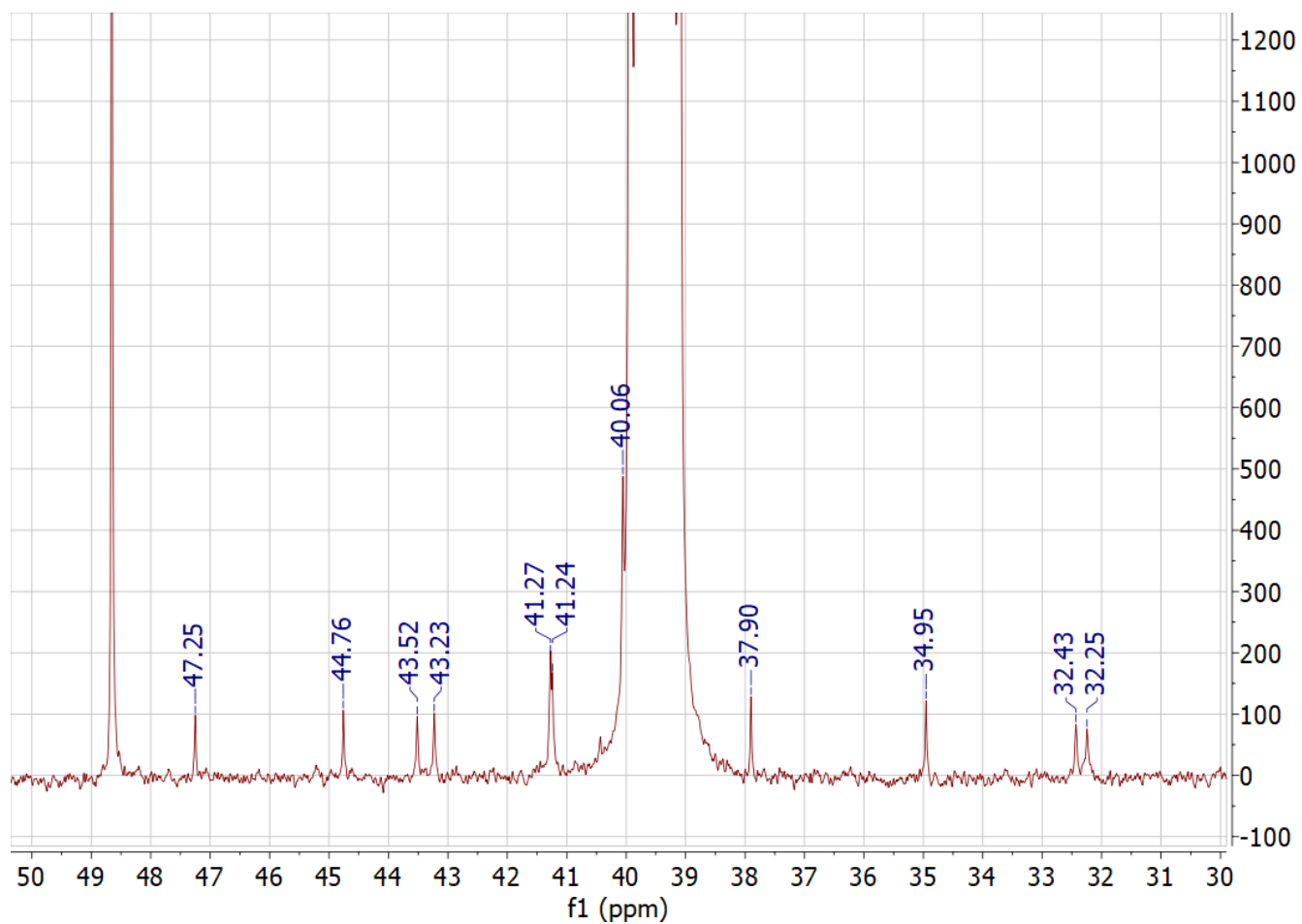


Figure S37. R_t 28.57 min peak peak ^{13}C -NMR spectrum, zoom over 30 to 50 ppm region. Arjunolic acid

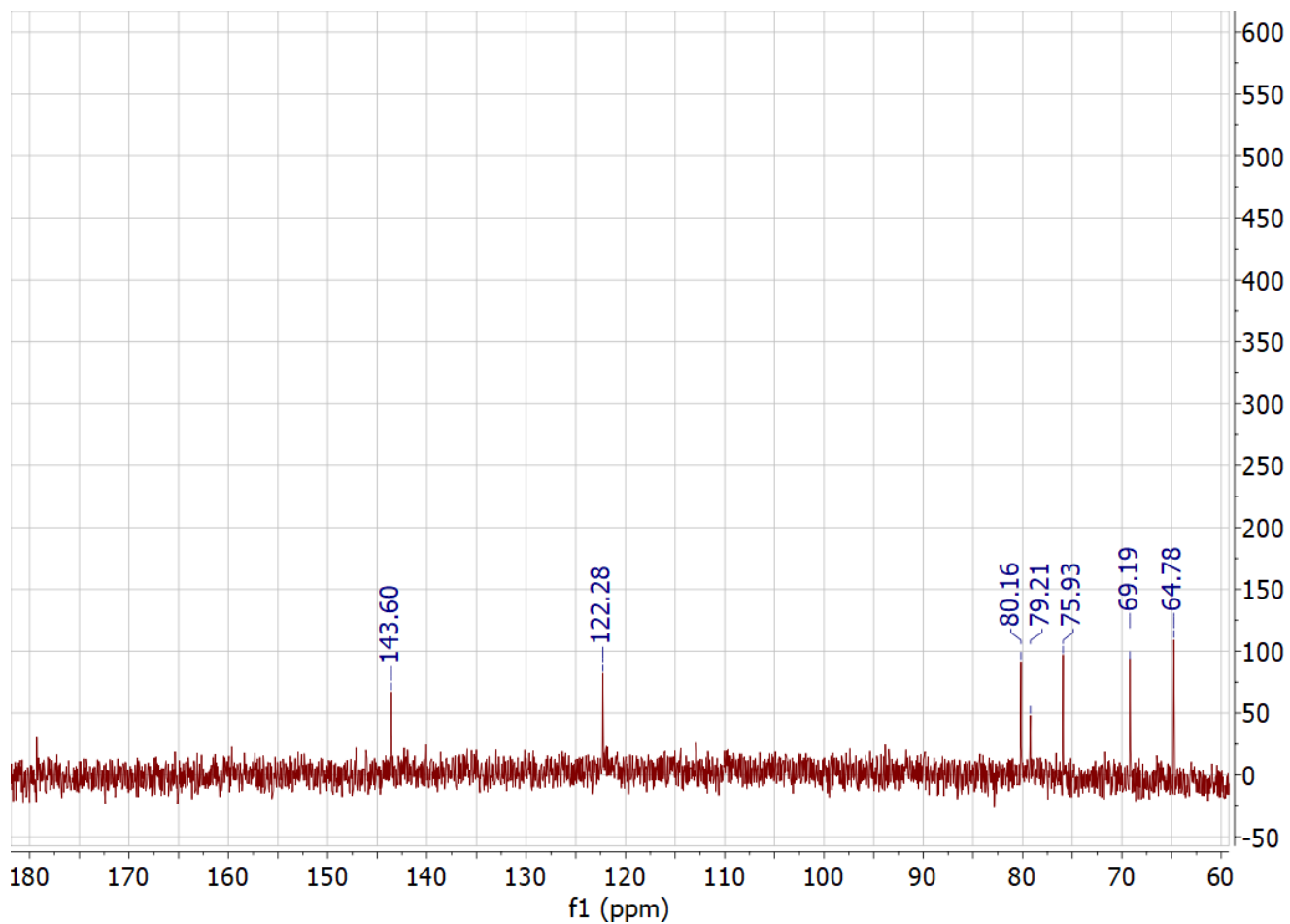


Figure S38. R_t 28.57 min peak peak ^{13}C -NMR spectrum, zoom over 60 to 180 ppm region. Arjunolic acid

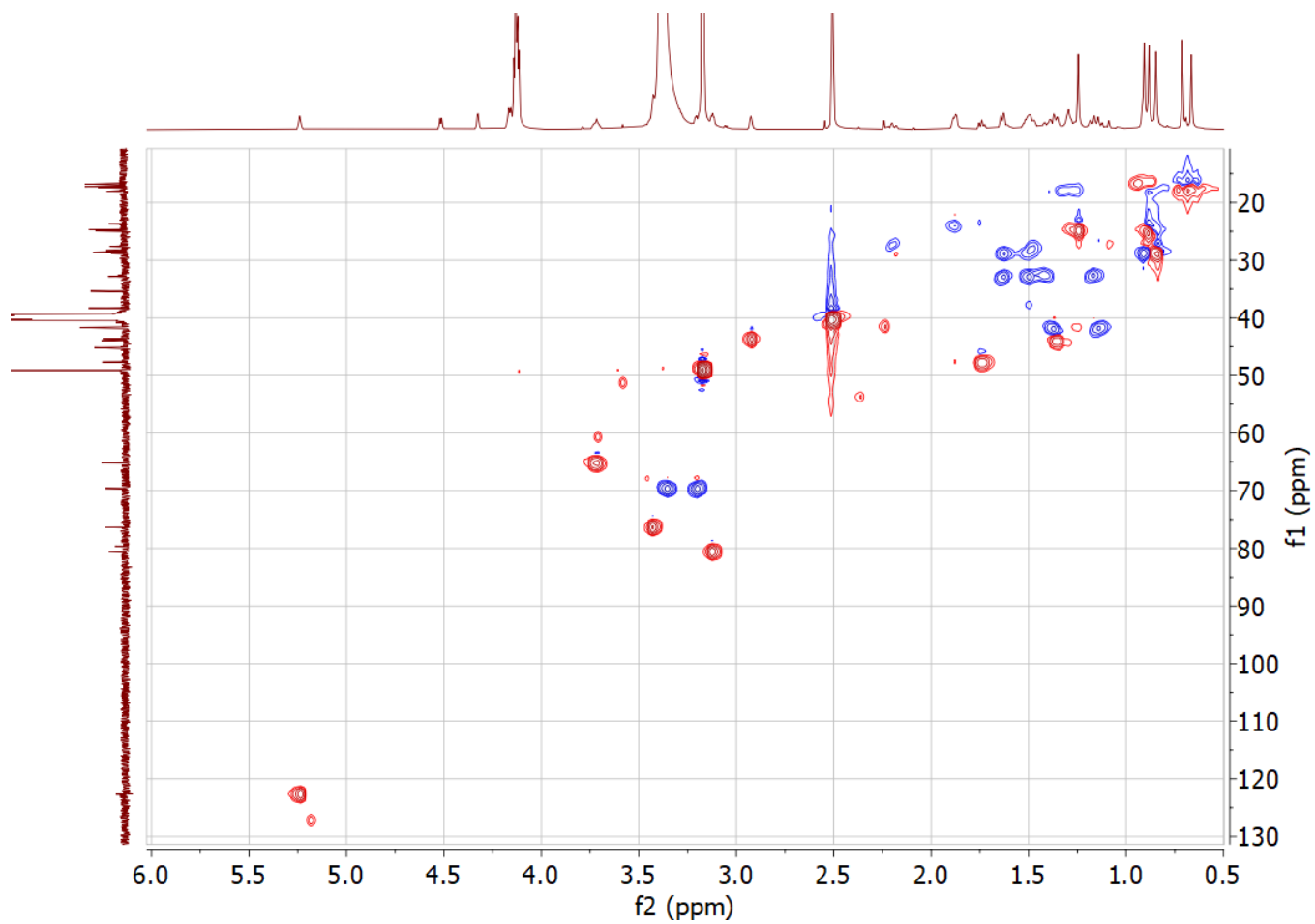


Figure S39. R_t 28.57 min peak peak ^1H - ^{13}C NMR correlation (HSQC) spectrum. Arjunolic acid

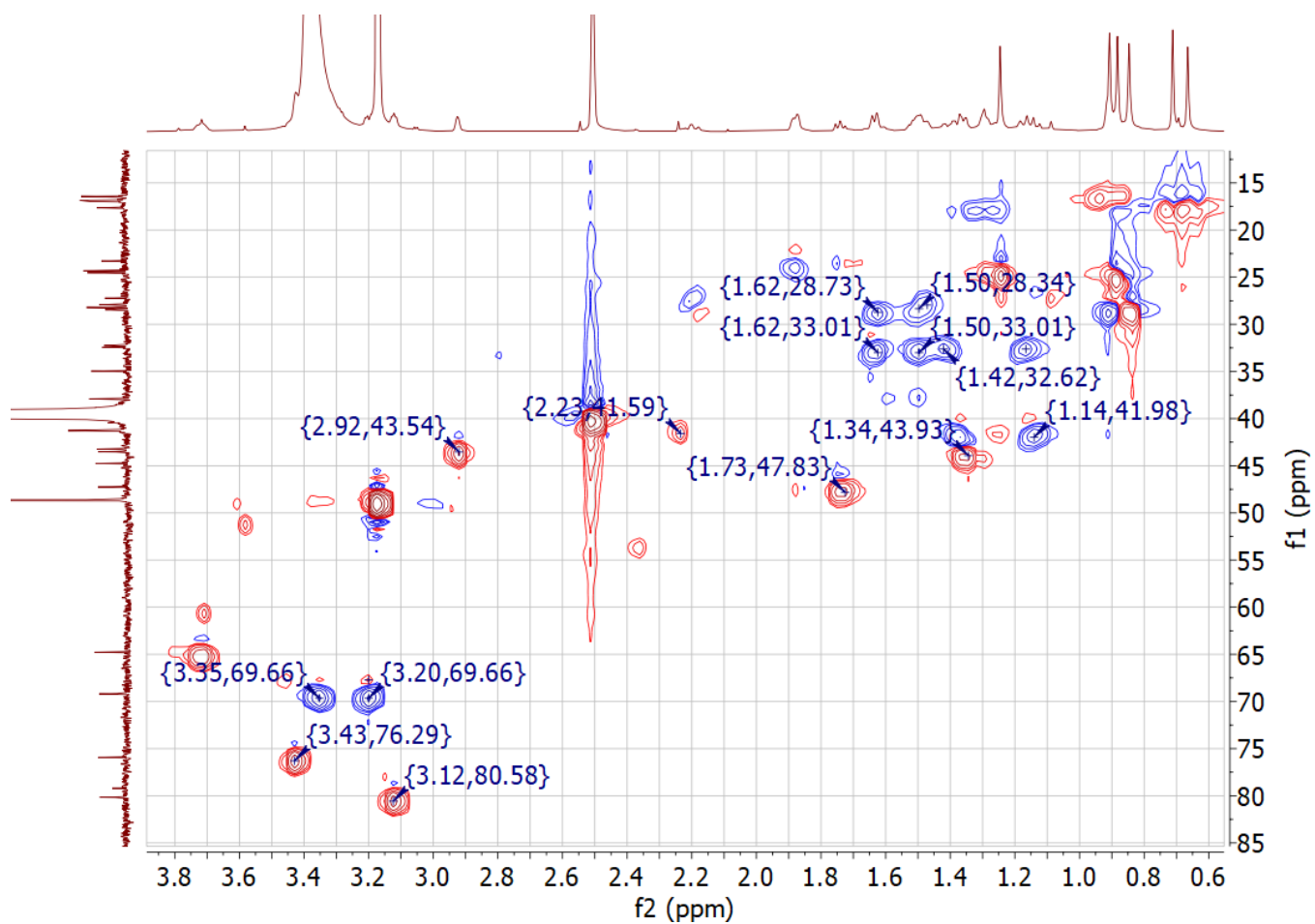


Figure S40. R_t 28.57 min peak peak ^1H - ^{13}C NMR correlation (HSQC) spectrum, 15 to 85 ppm (f_1) and 0.60 to 3.8 ppm (f_2). Arjunolic acid

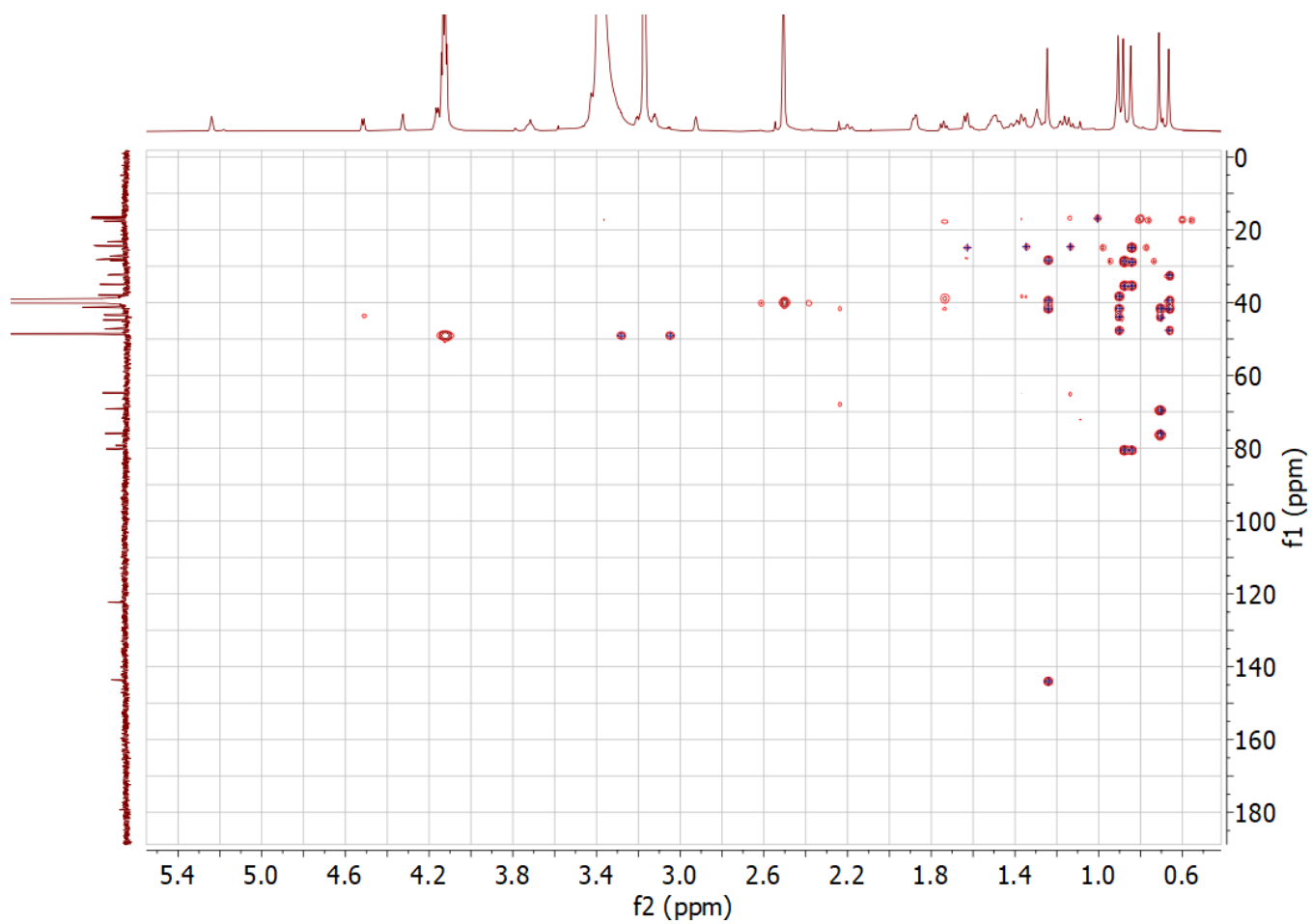


Figure S41. R_t 28.57 min peak peak ^1H - ^{13}C NMR correlation (HMBC) spectrum. Arjunolic acid

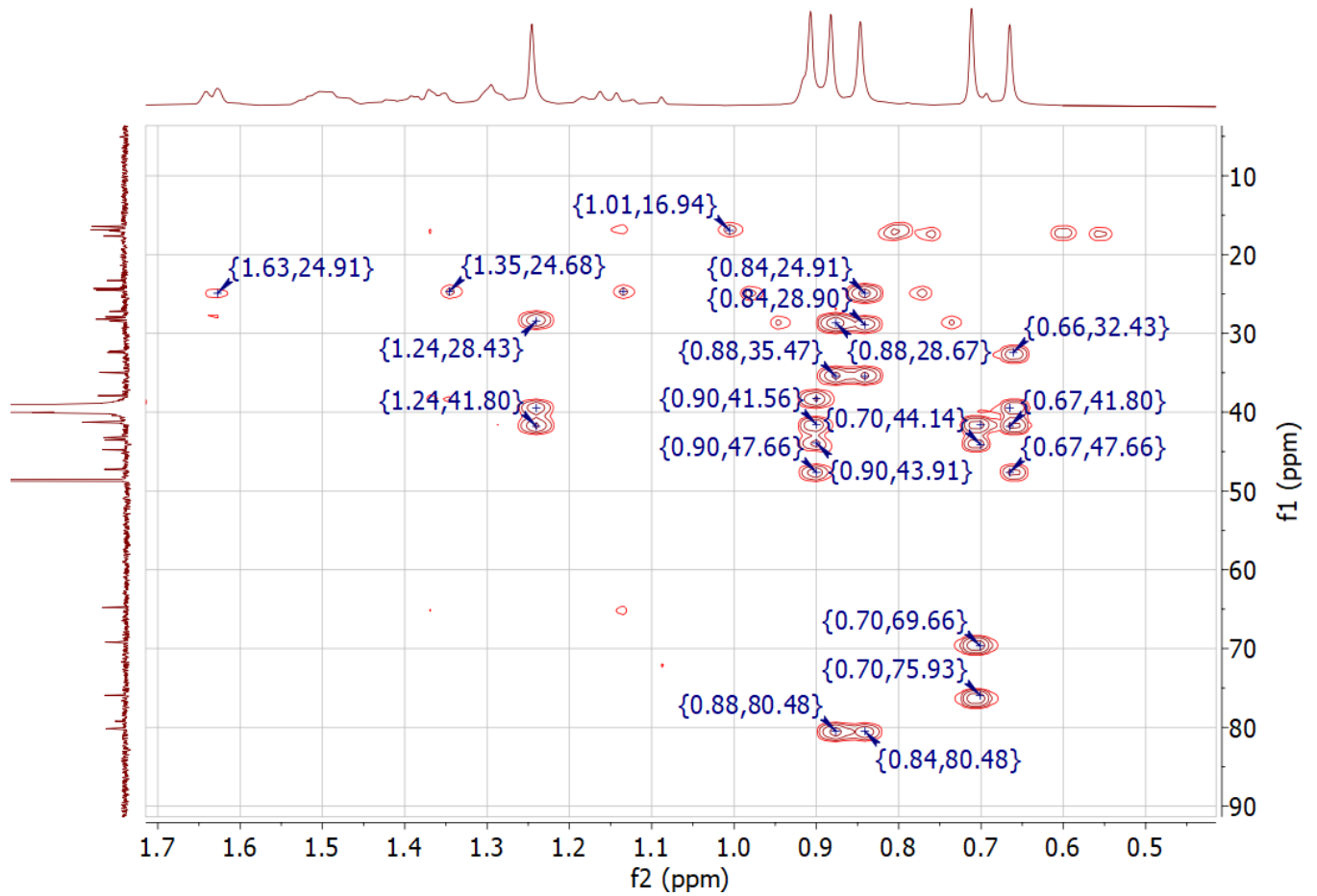


Figure S42. R_t 28.57 min peak peak ^1H - ^{13}C NMR correlation (HMBC) spectrum, 10 to 90 ppm (f_1) and 0.50 to 1.7 ppm (f_2). Arjunolic acid