

Supporting Information

Isolation, structures and biological activities of triterpenoids from a *Penares* sp. marine sponge

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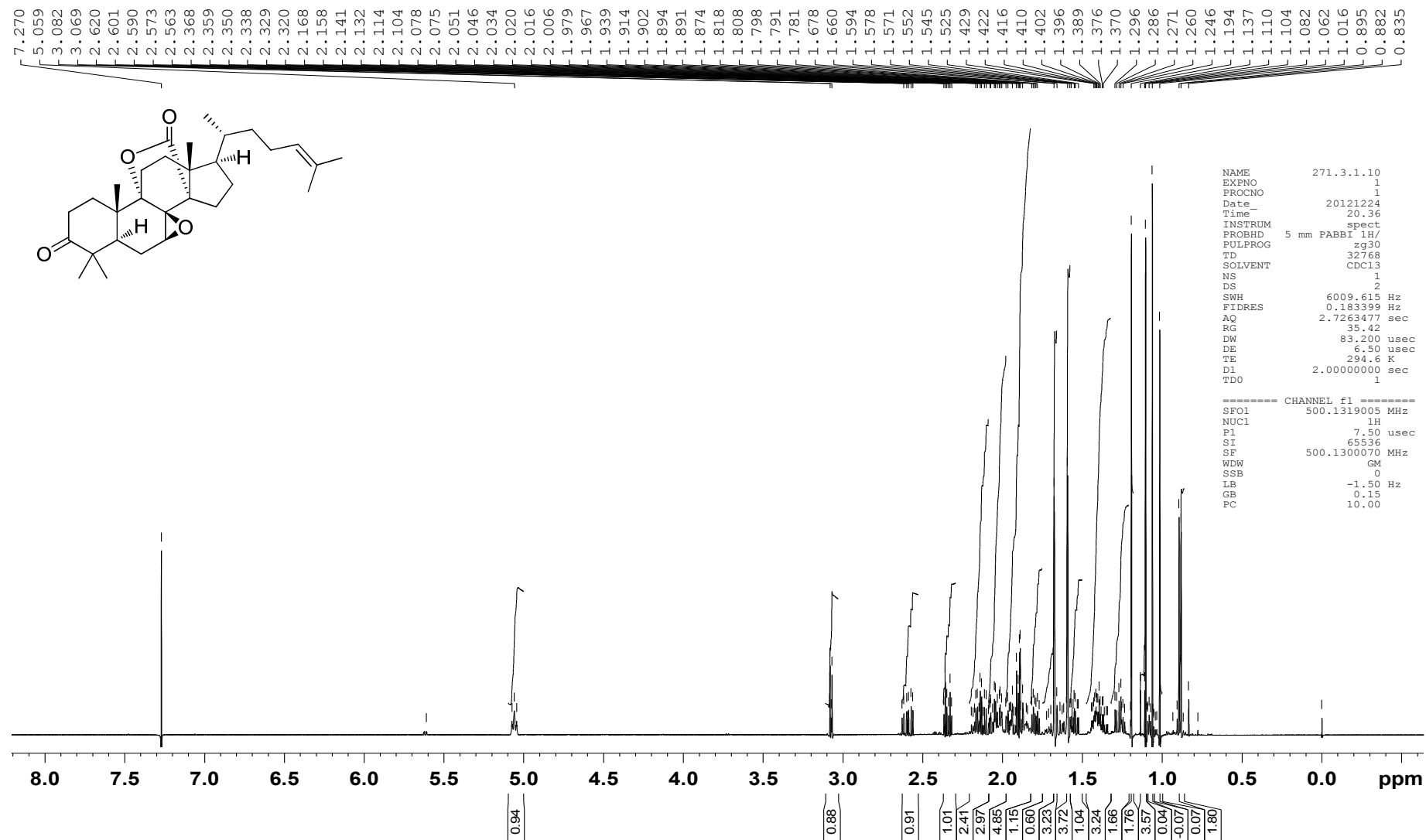
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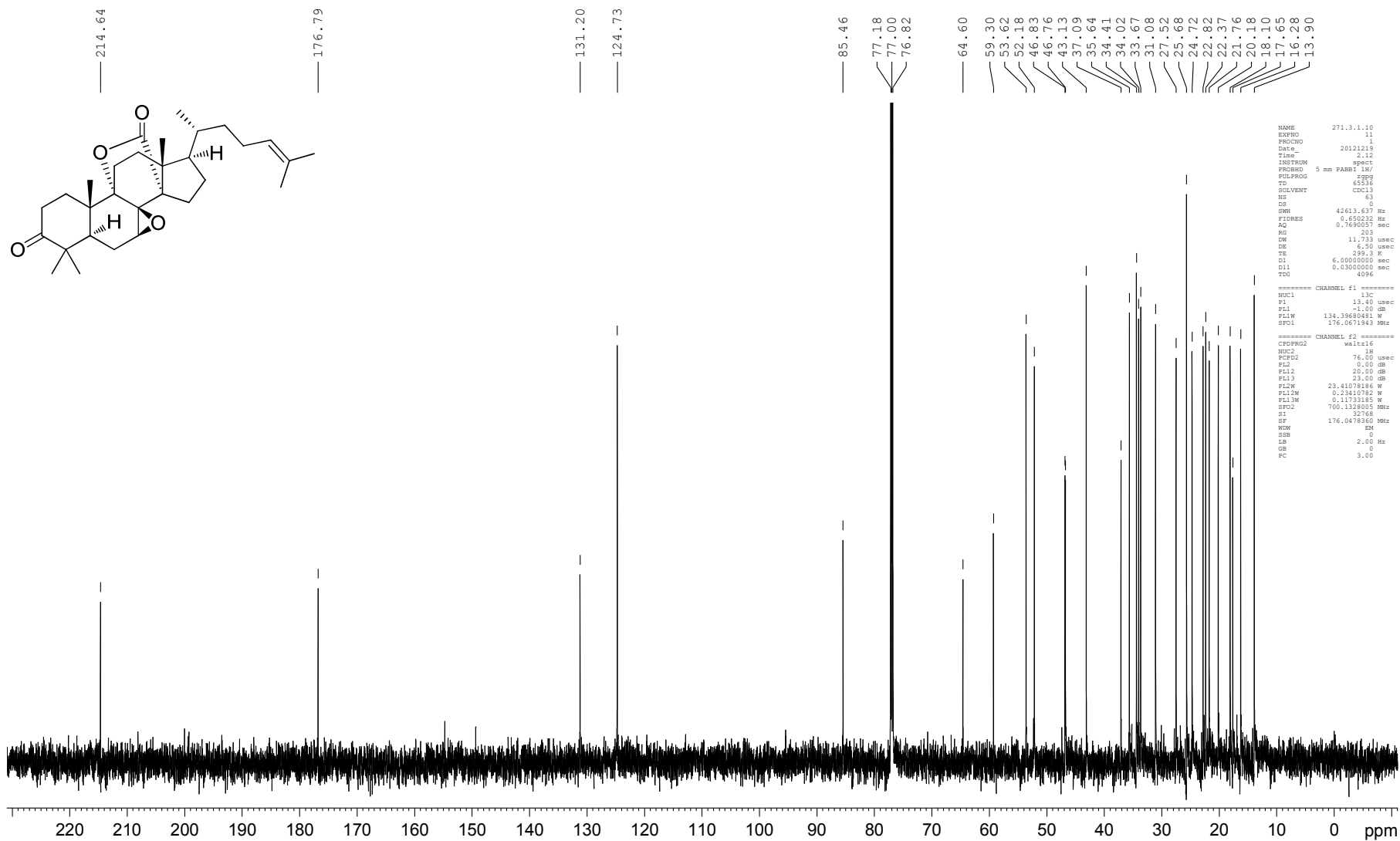
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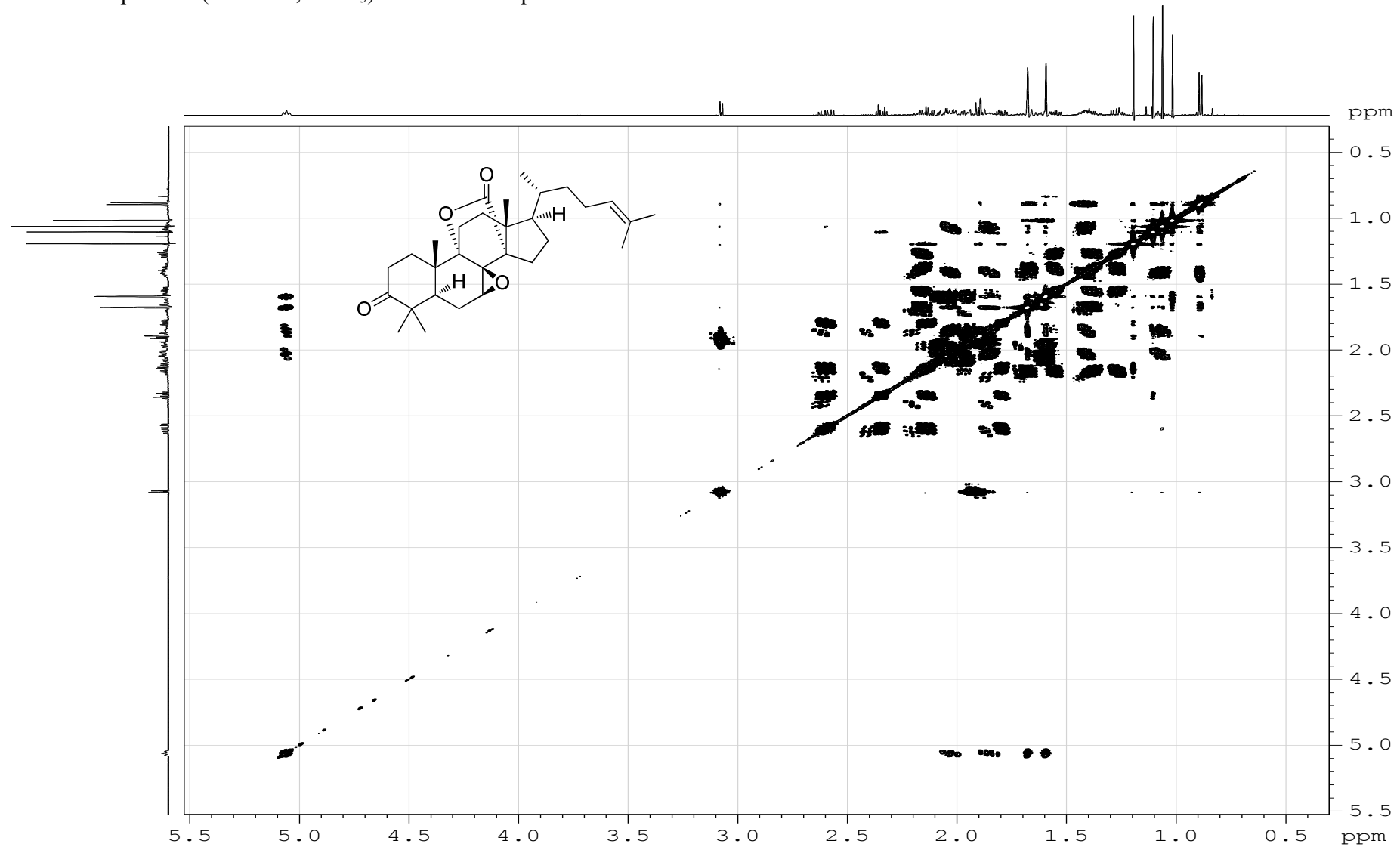
S2. ^1H NMR spectrum (500 MHz, CDCl_3) of the new compound **1**



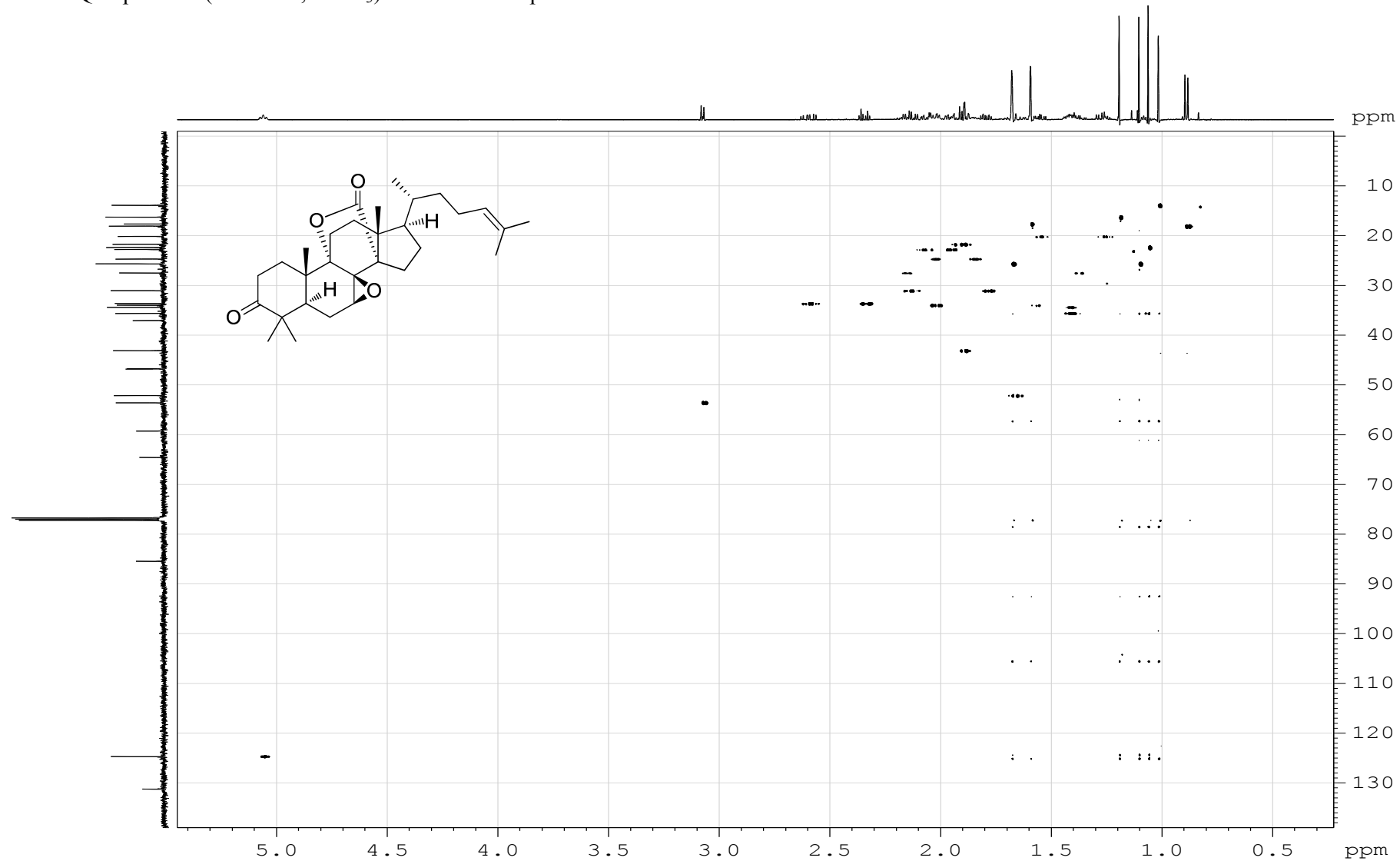
S3. ^{13}C NMR spectrum (175 MHz, CDCl_3) of the new compound **1**



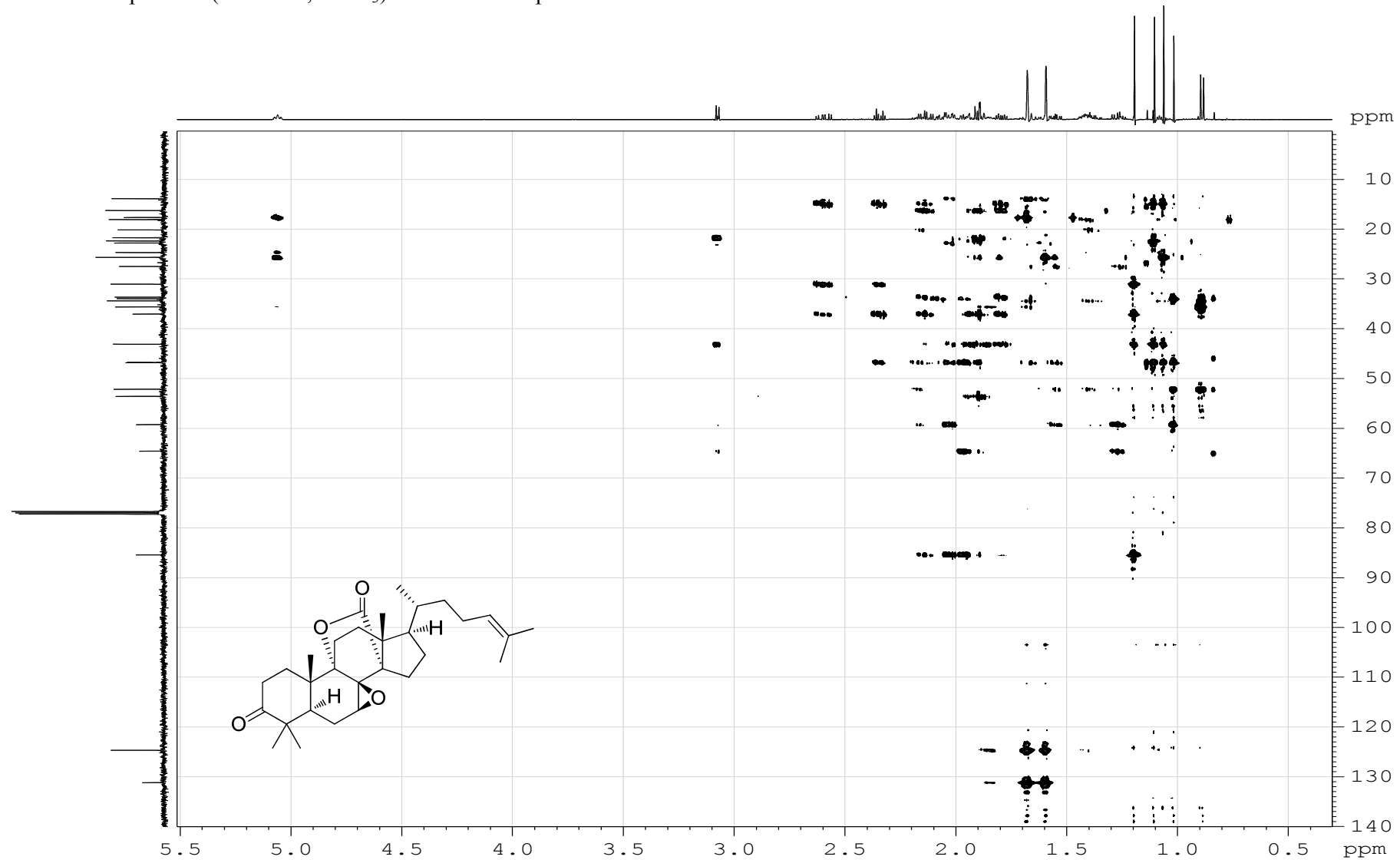
S4. COSY spectrum (500 MHz, CDCl₃) of the new compound **1**



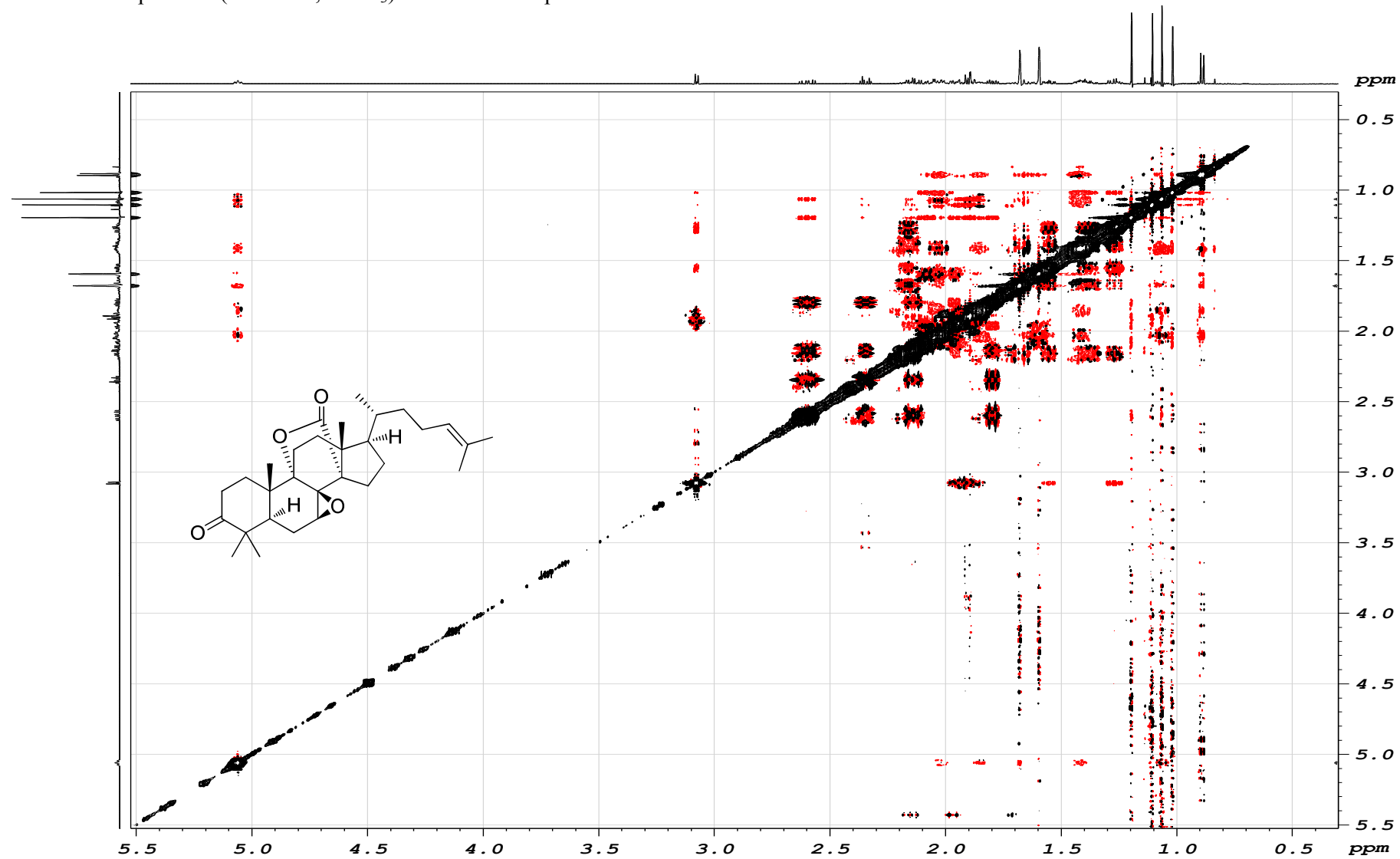
S5. HSQC spectrum (500 MHz, CDCl₃) of the new compound **1**



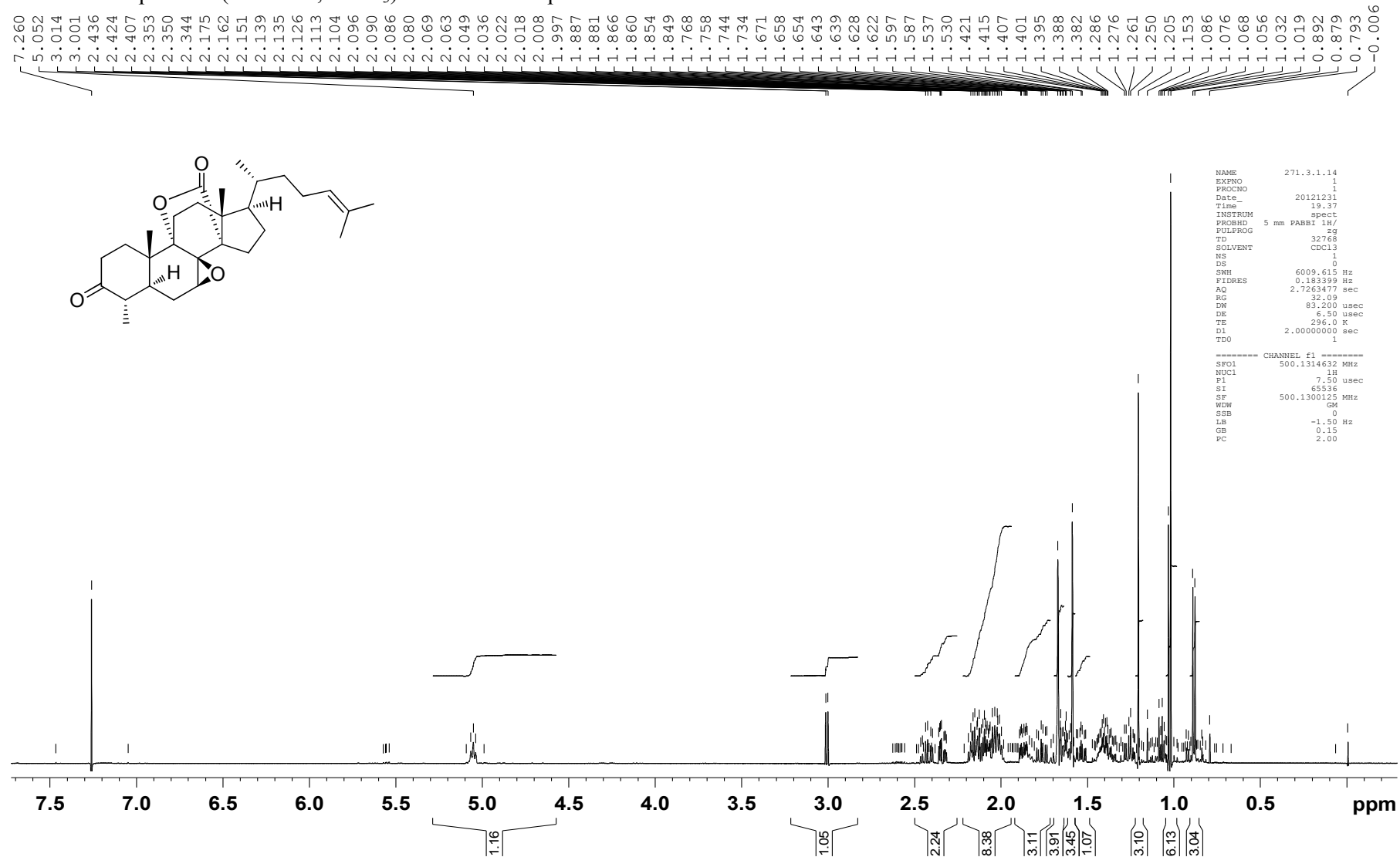
S6. HMBC spectrum (500 MHz, CDCl₃) of the new compound **1**



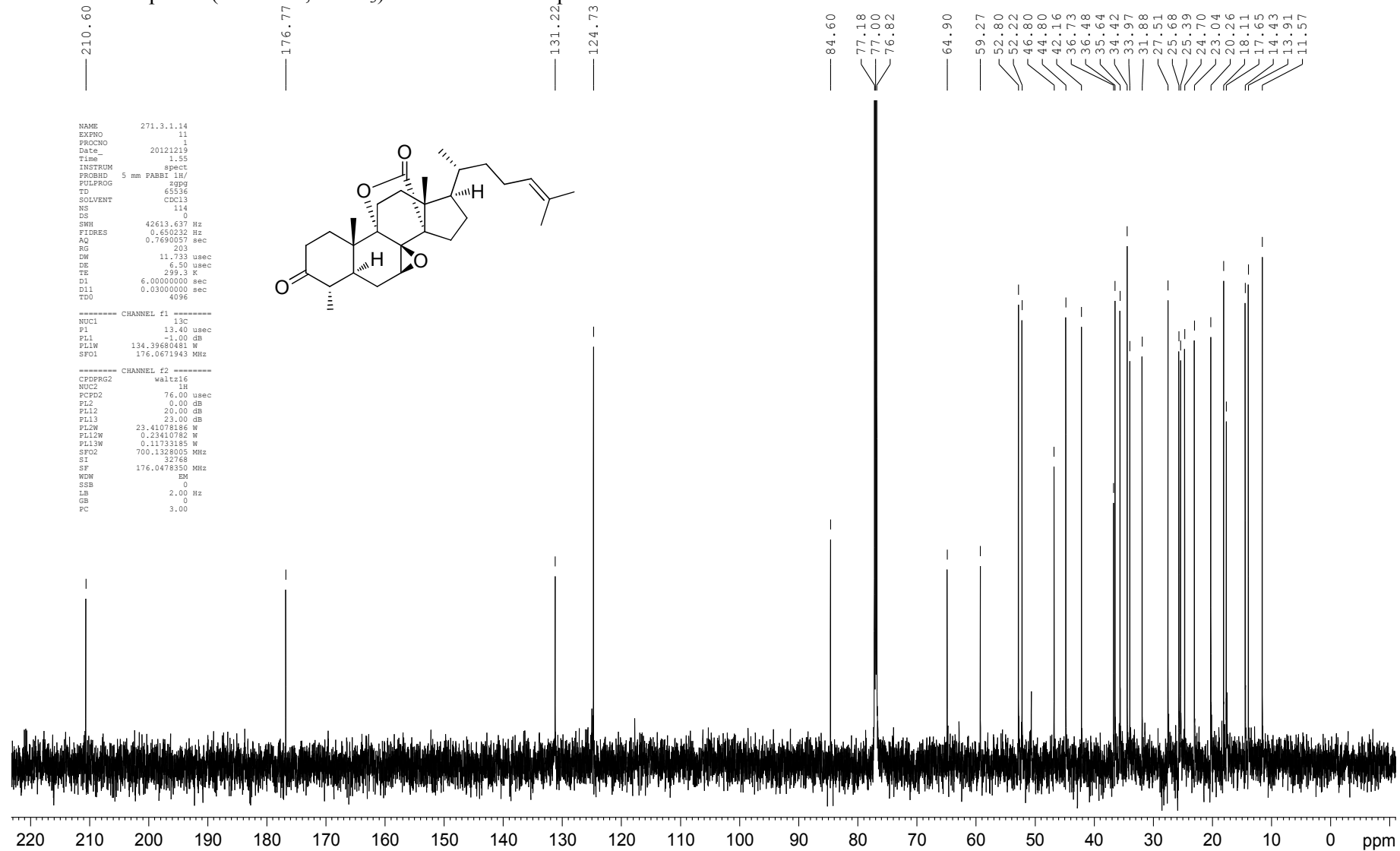
S7. NOESY spectrum (500 MHz, CDCl₃) of the new compound **1**



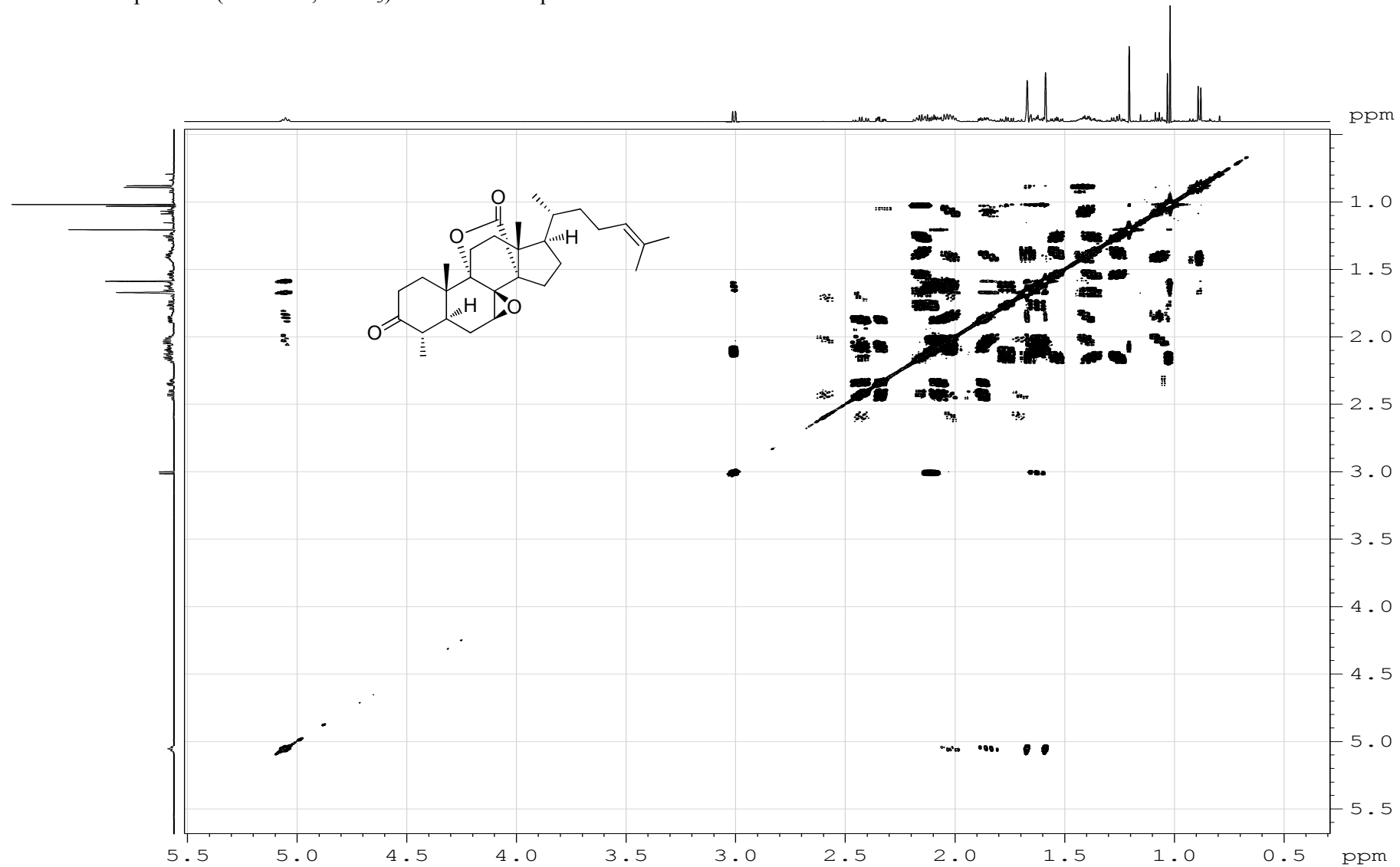
S8. ^1H NMR spectrum (500 MHz, CDCl_3) of the new compound **2**



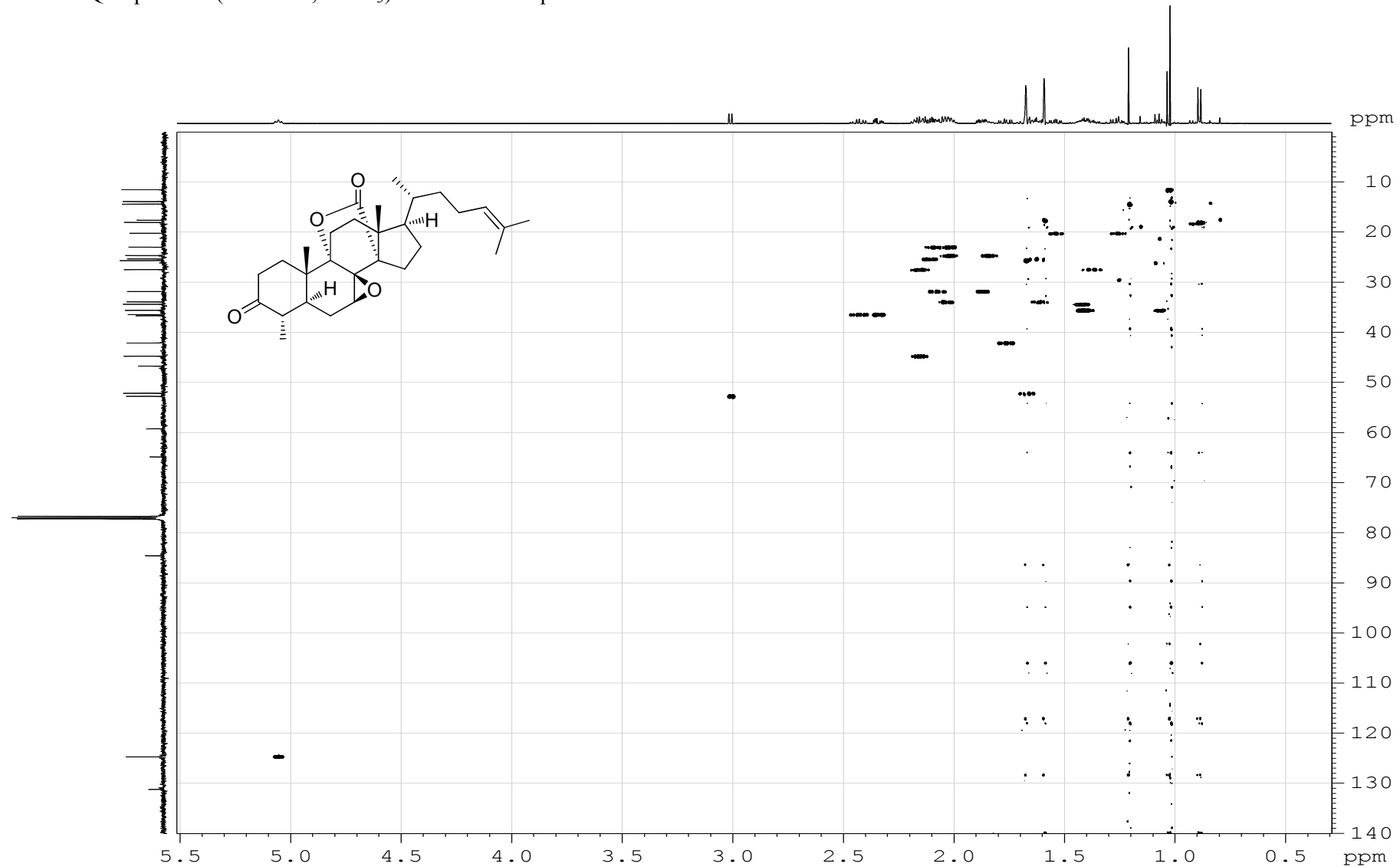
S9. ^{13}C NMR spectra (176 MHz, CDCl_3) of of the new compound **2**



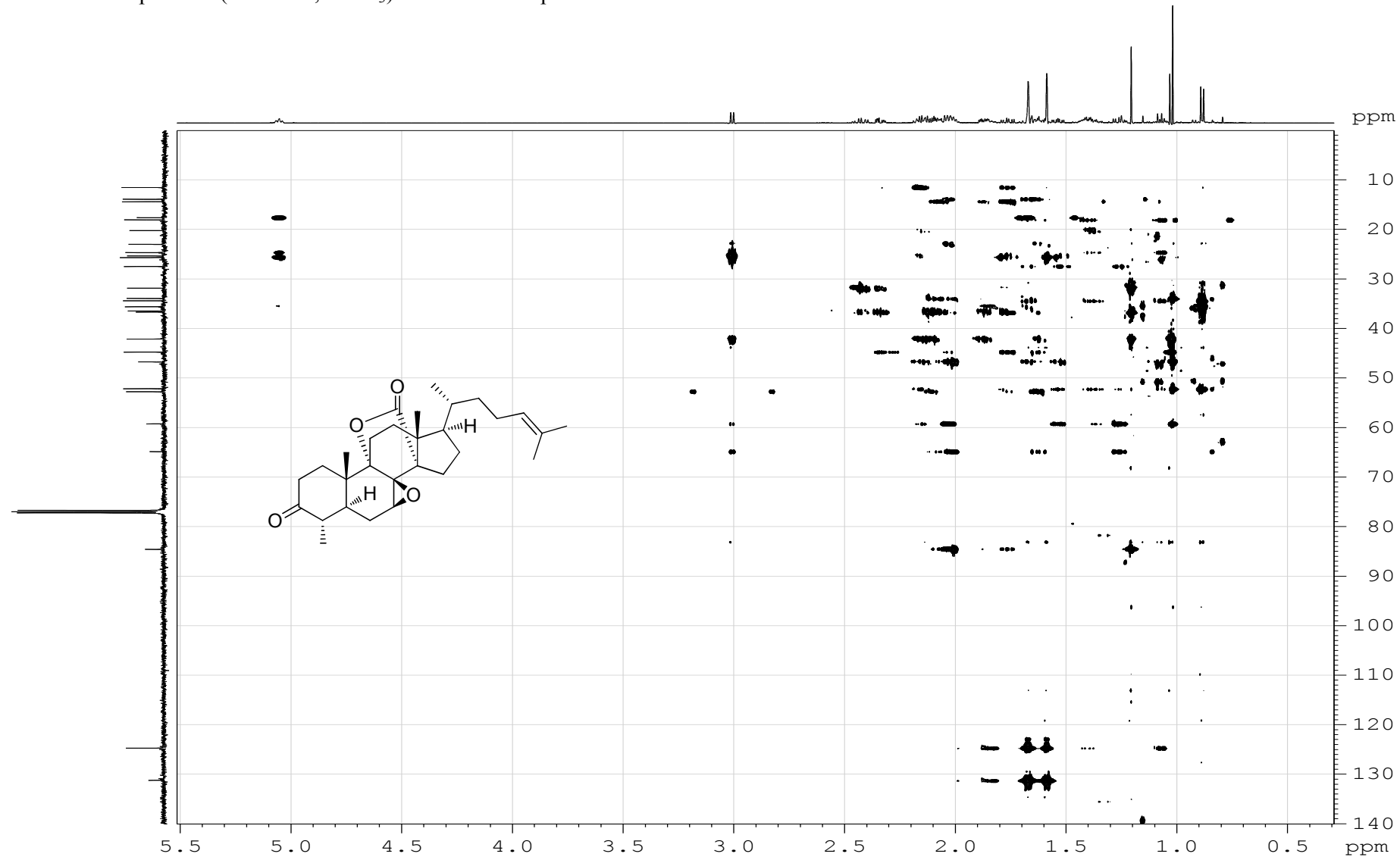
S10. COSY spectrum (500 MHz, CDCl₃) of the new compound **2**



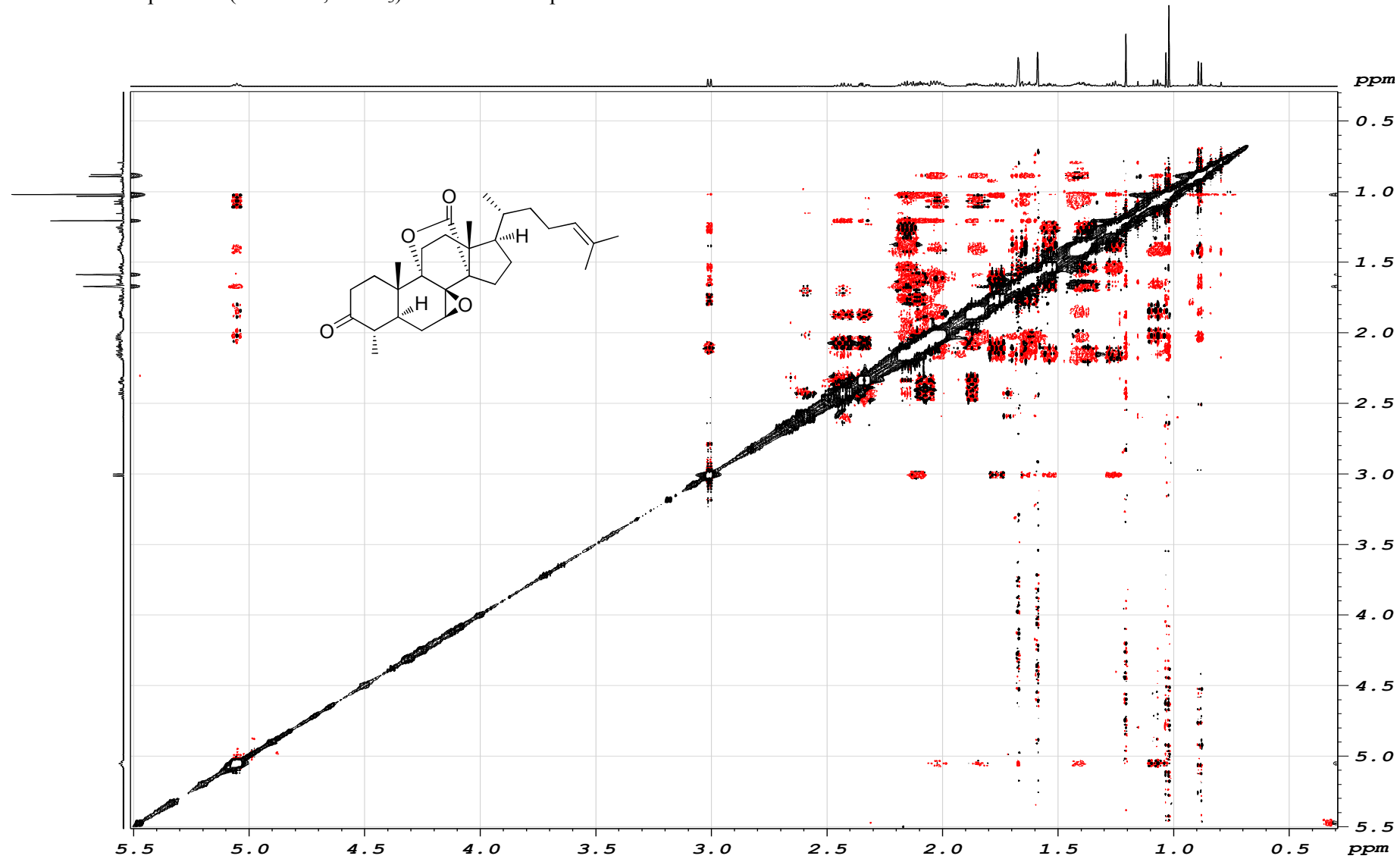
S11. HSQC spectrum (500 MHz, CDCl₃) of the new compound **2**



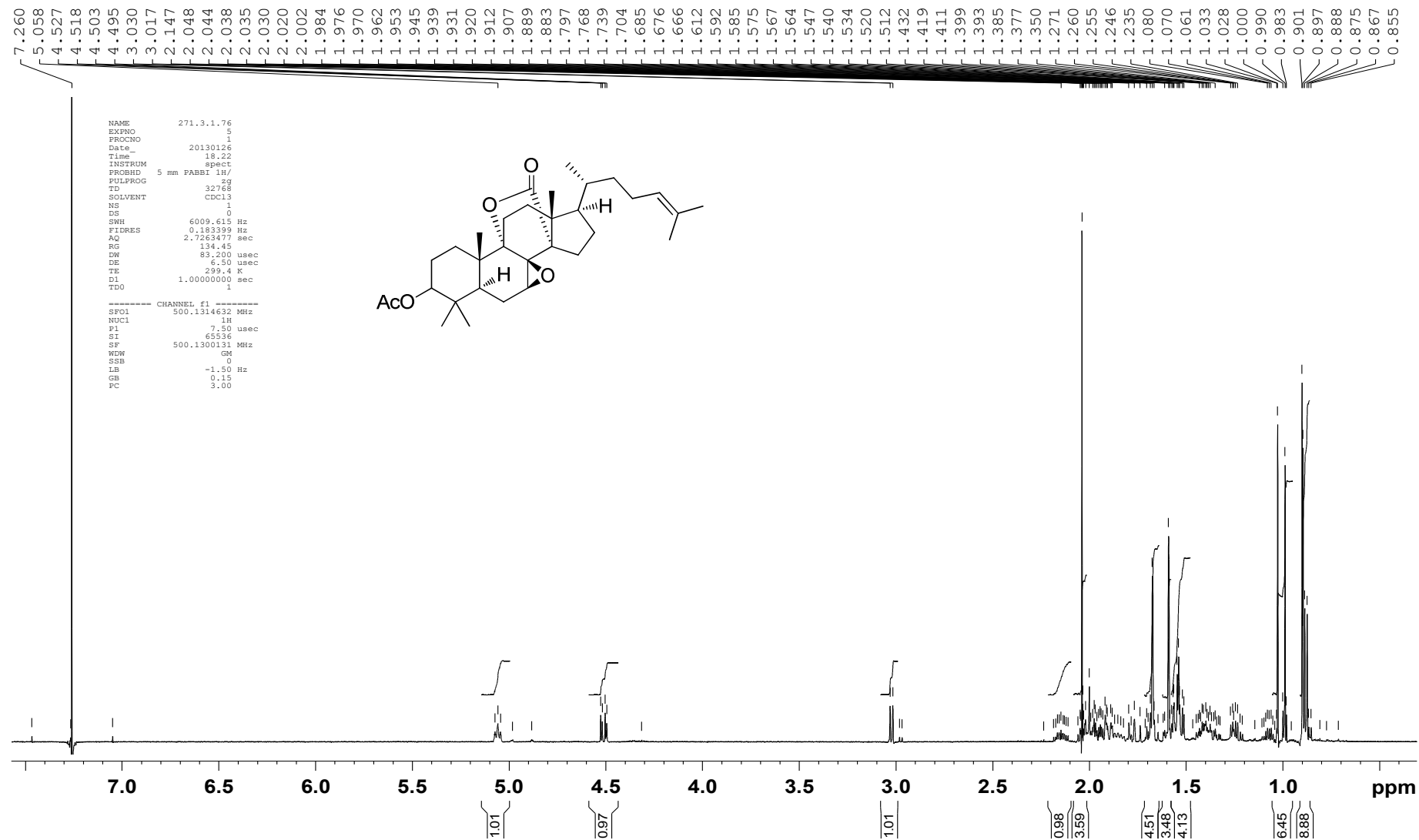
S12. HMBC spectrum (500 MHz, CDCl₃) of the new compound **2**



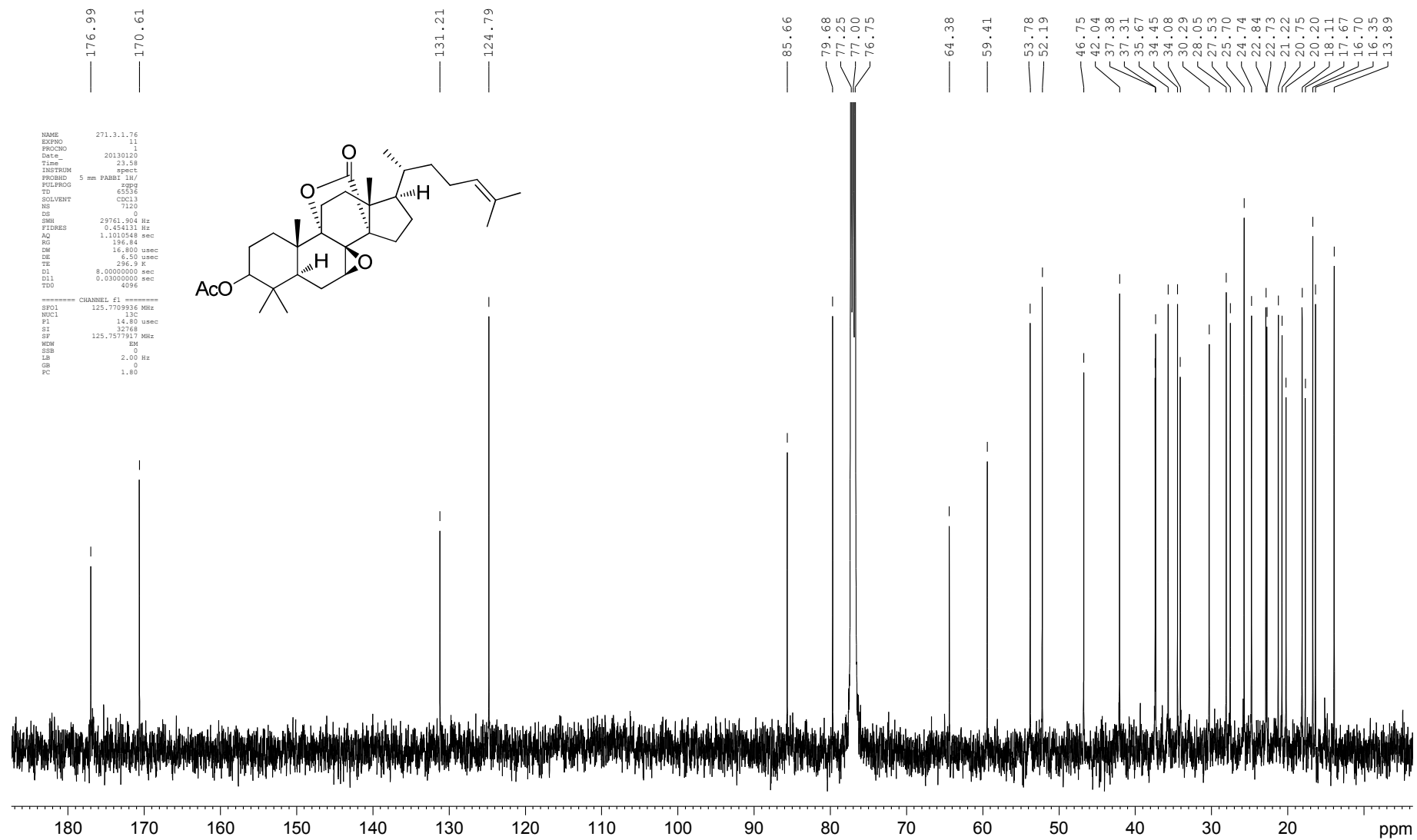
S13. NOESY spectrum (500 MHz, CDCl₃) of the new compound 2



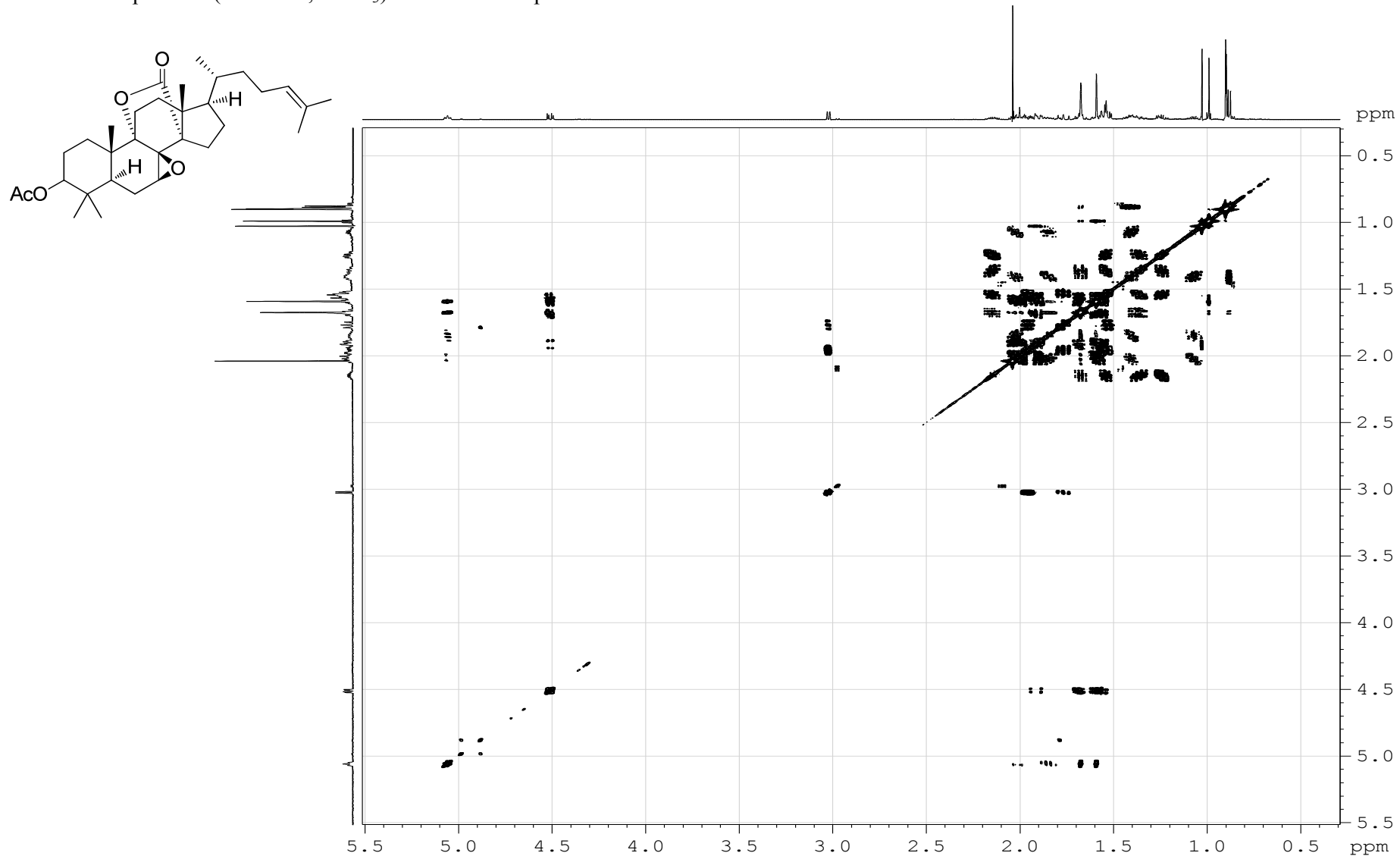
S14. ^1H NMR spectrum (500 MHz, CDCl_3) of the new compound **3**



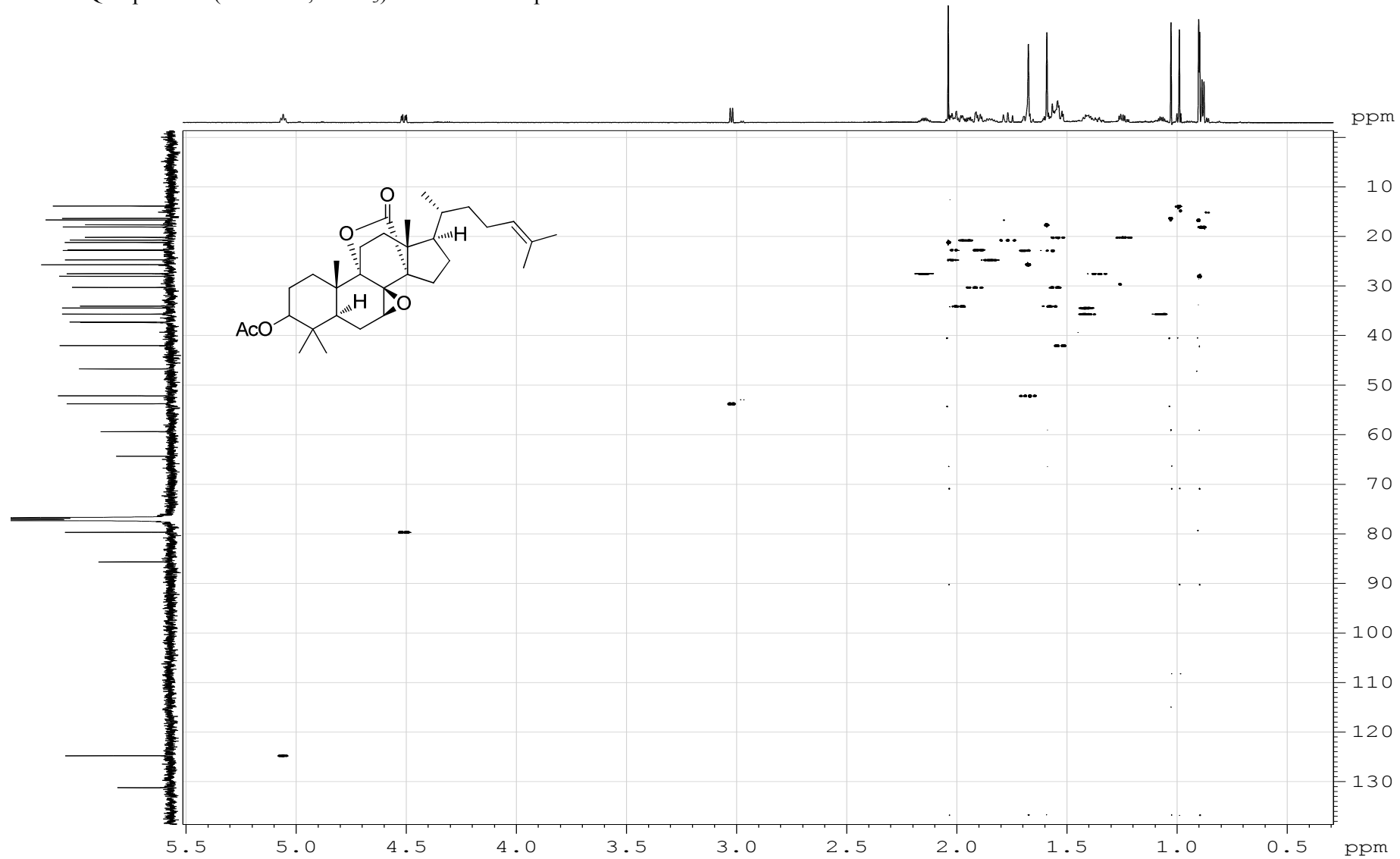
S15. ^{13}C NMR spectrum (125 MHz, CDCl_3) of the new compound **3**



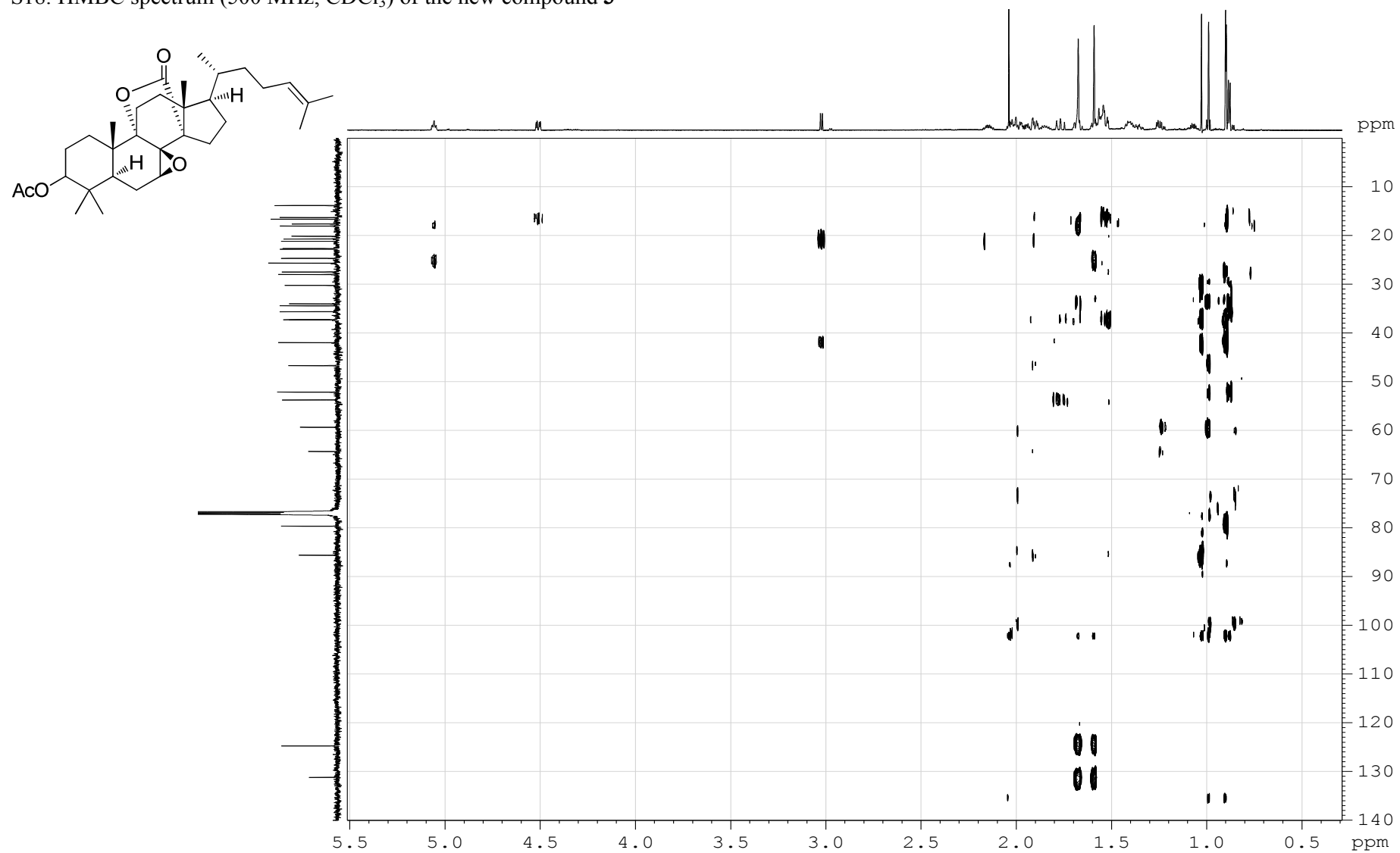
S16. COSY spectrum (500 MHz, CDCl₃) of the new compound **3**



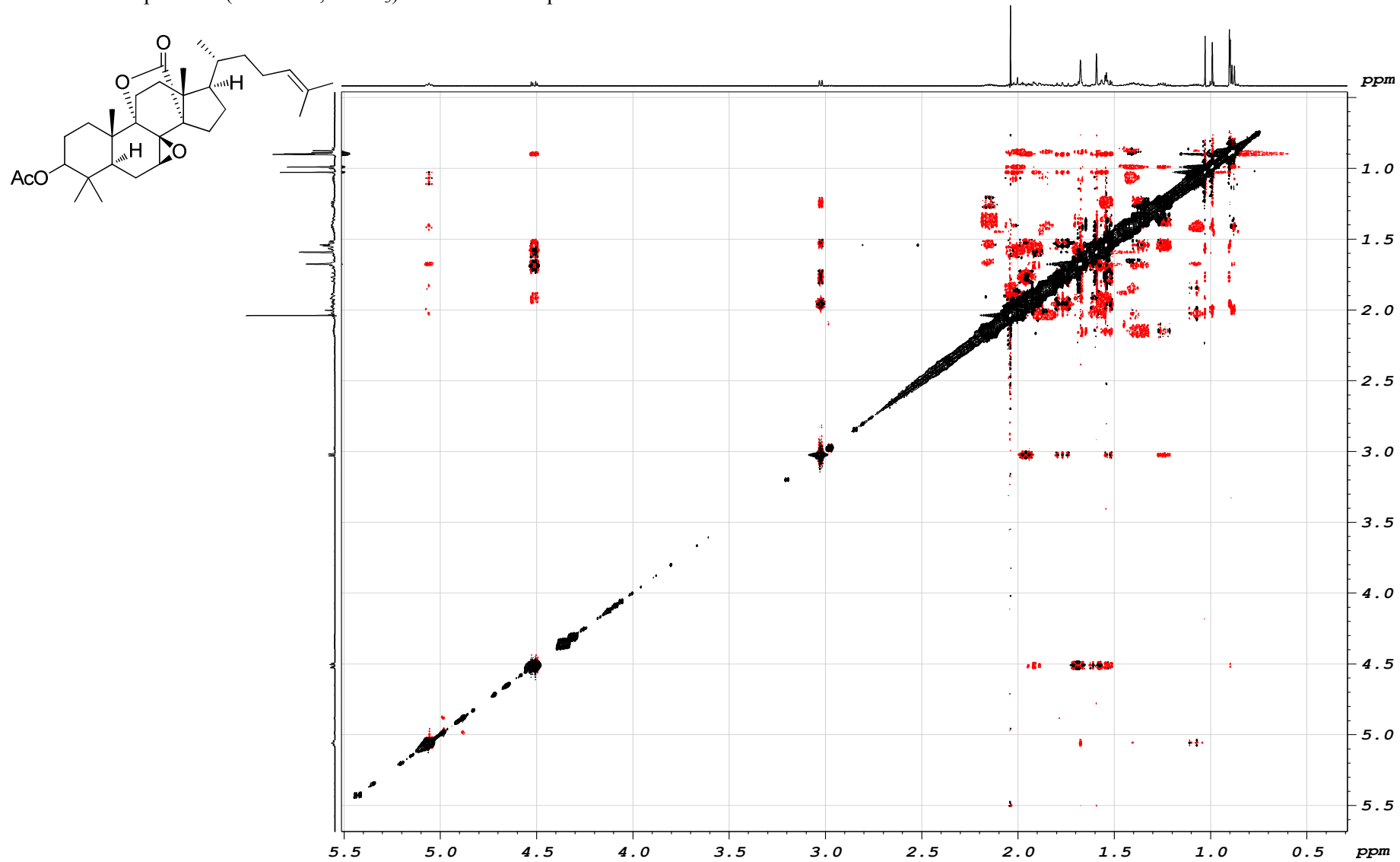
S17. HSQC spectrum (500 MHz, CDCl₃) of the new compound **3**



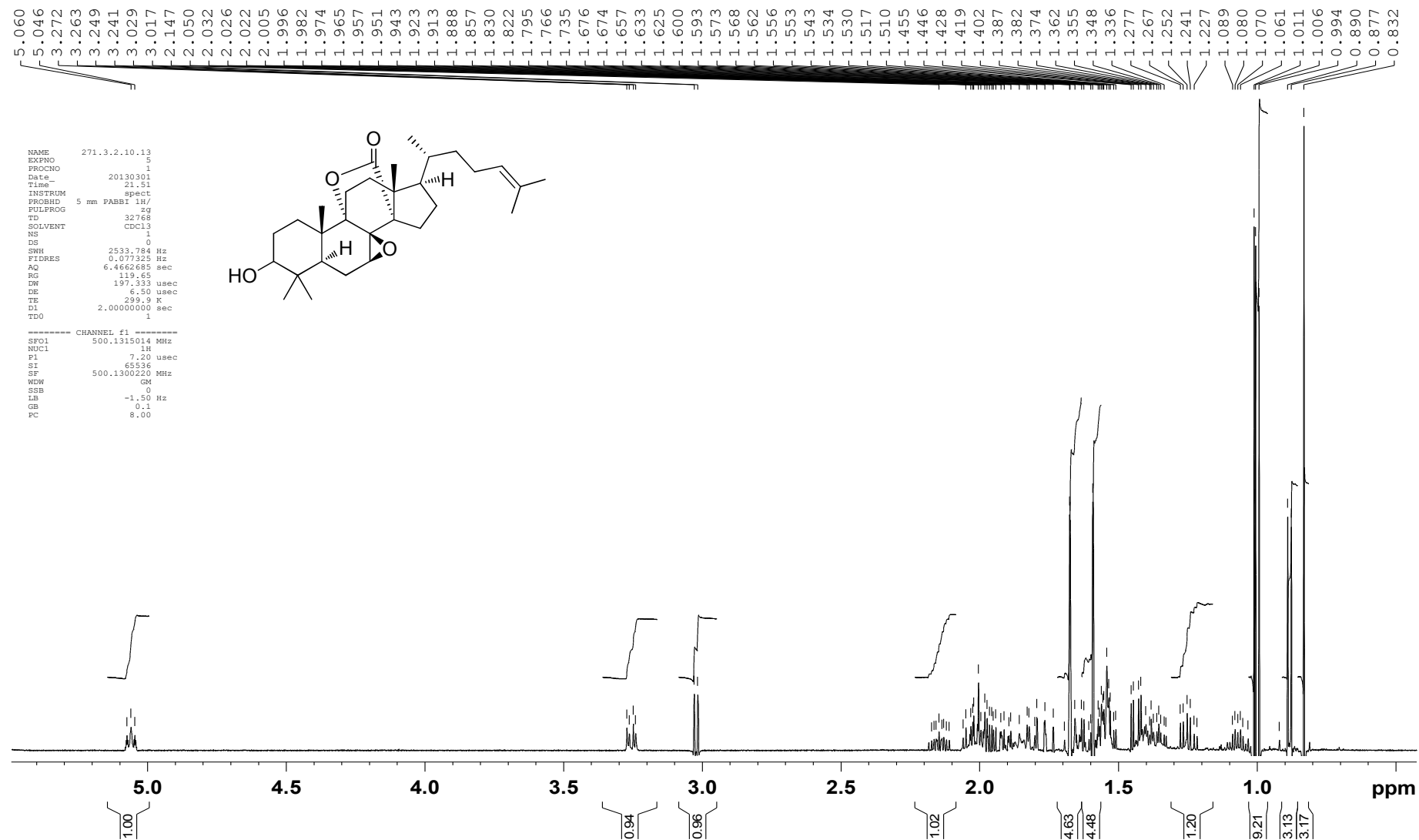
S18. HMBC spectrum (500 MHz, CDCl₃) of the new compound **3**



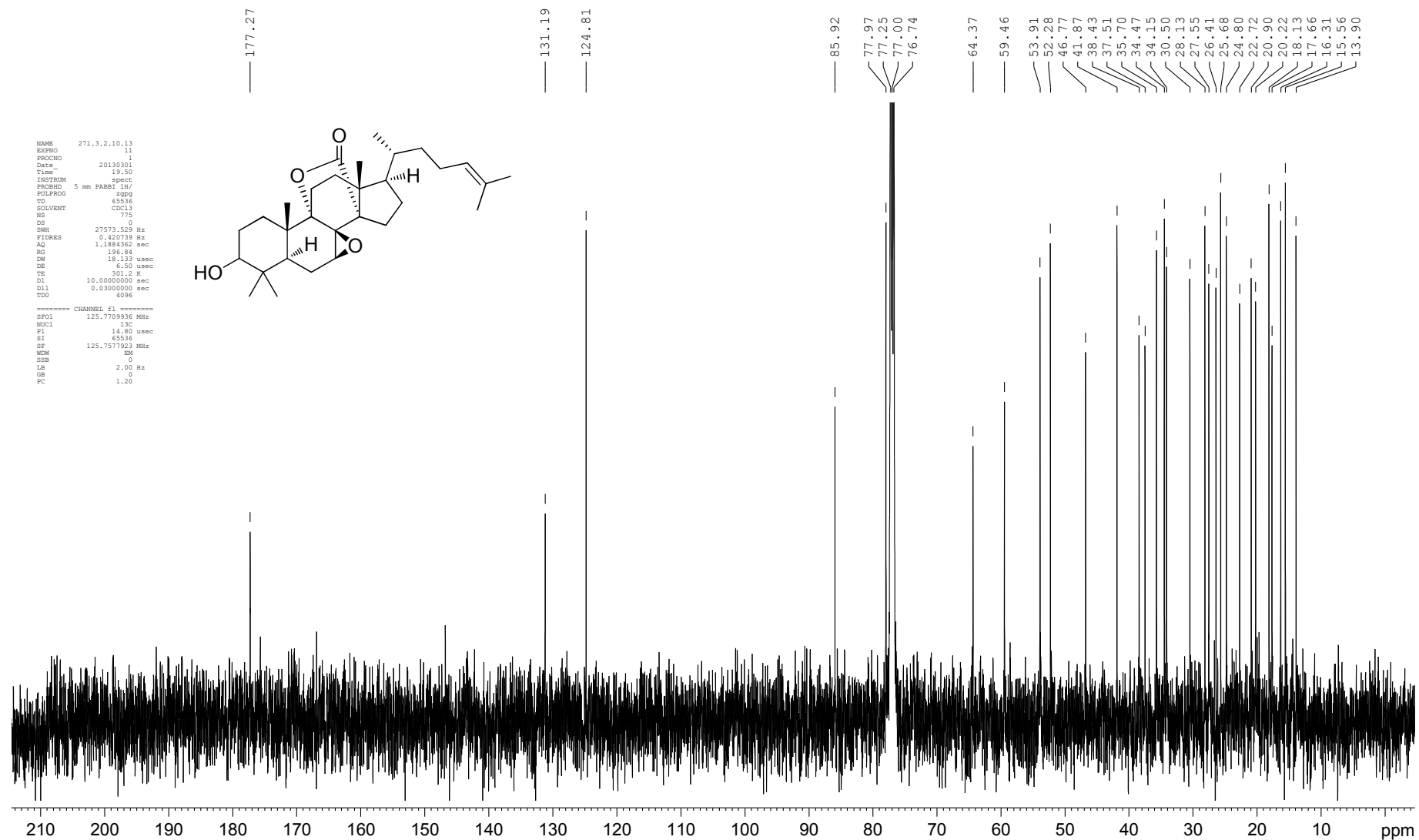
S19. NOESY spectrum (500 MHz, CDCl₃) of the new compound 3



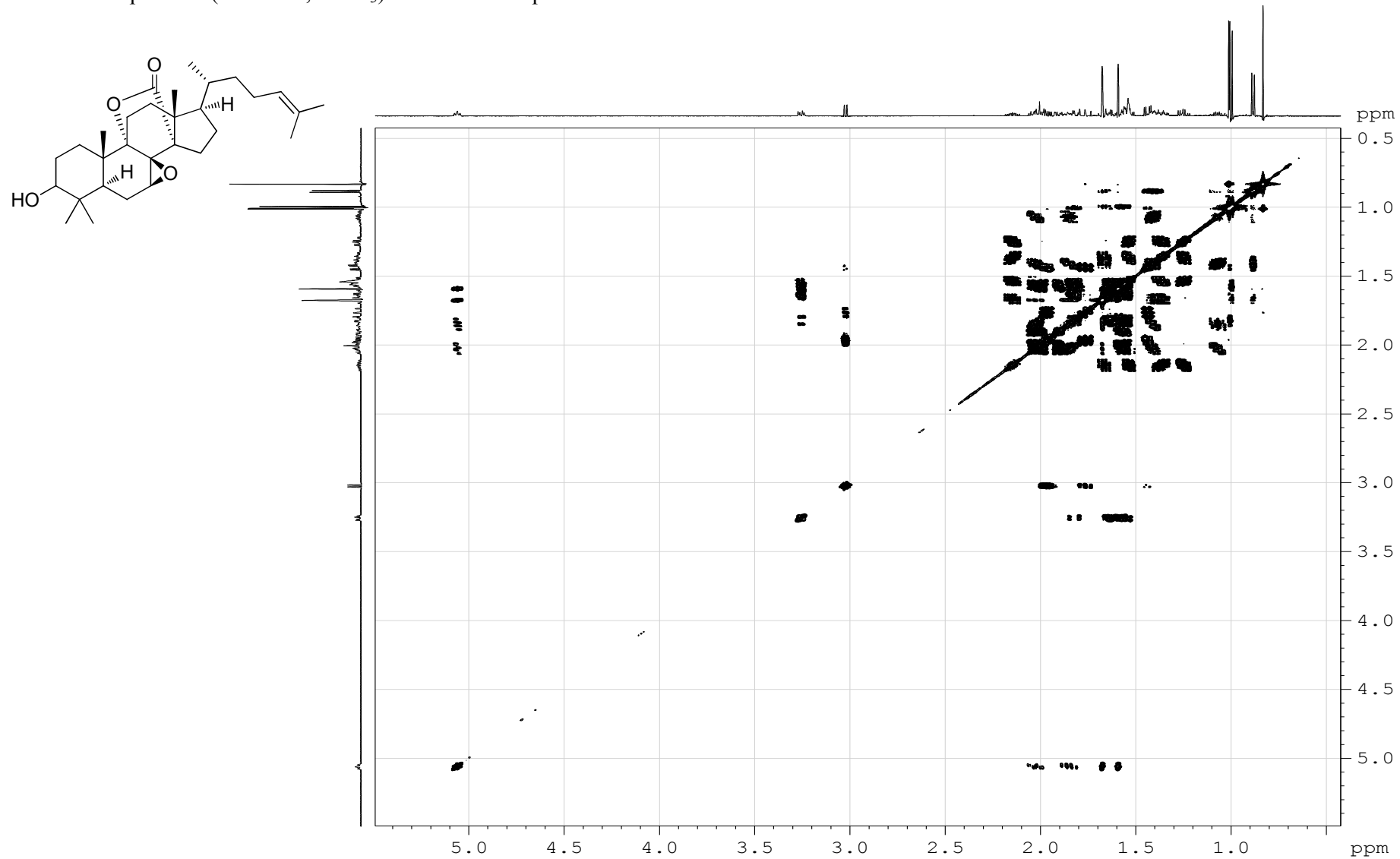
S20. ^1H NMR spectrum (500 MHz, CDCl_3) of the new compound **4**



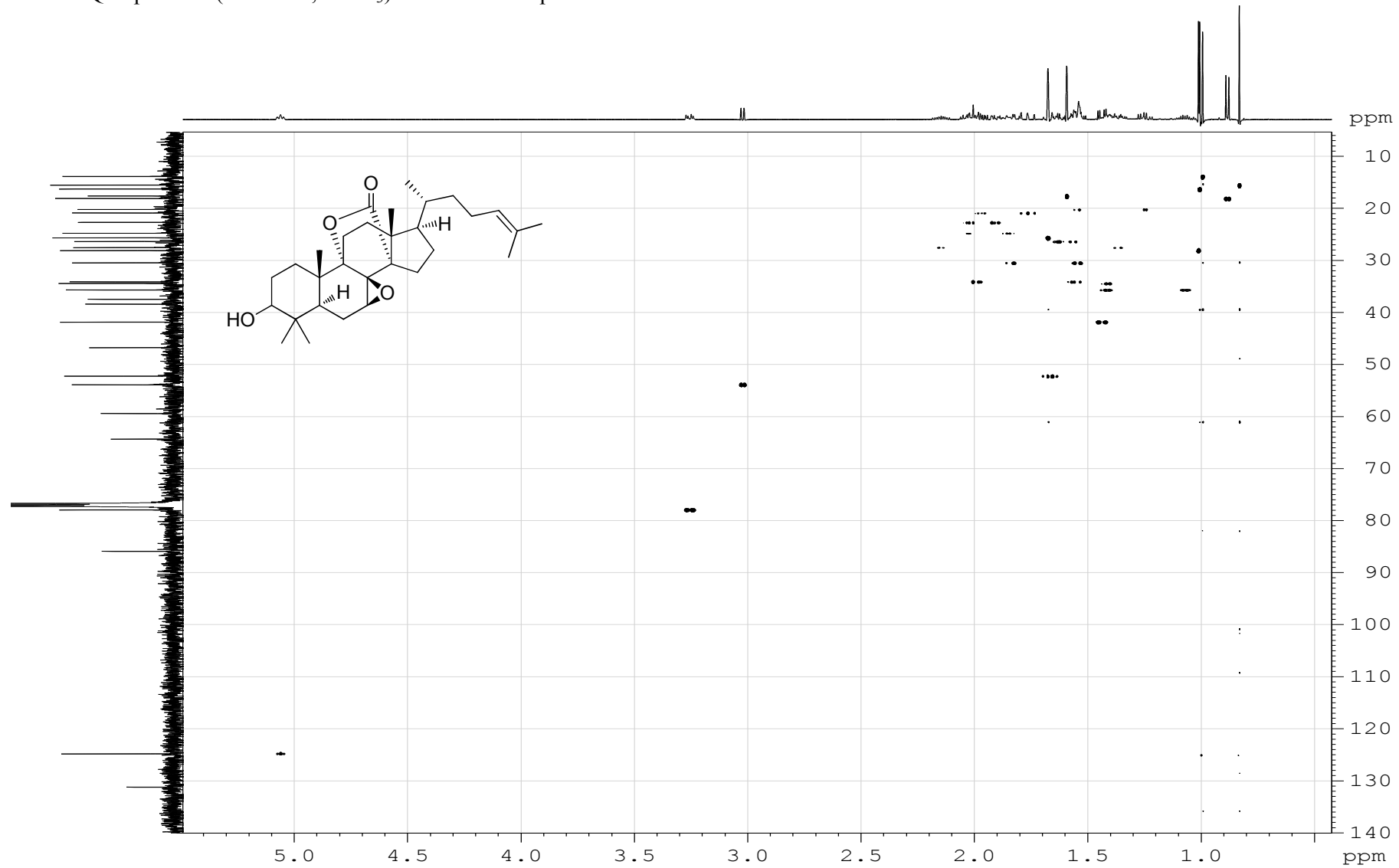
S21. ^{13}C NMR spectrum (125 MHz, CDCl_3) of the new compound **4**



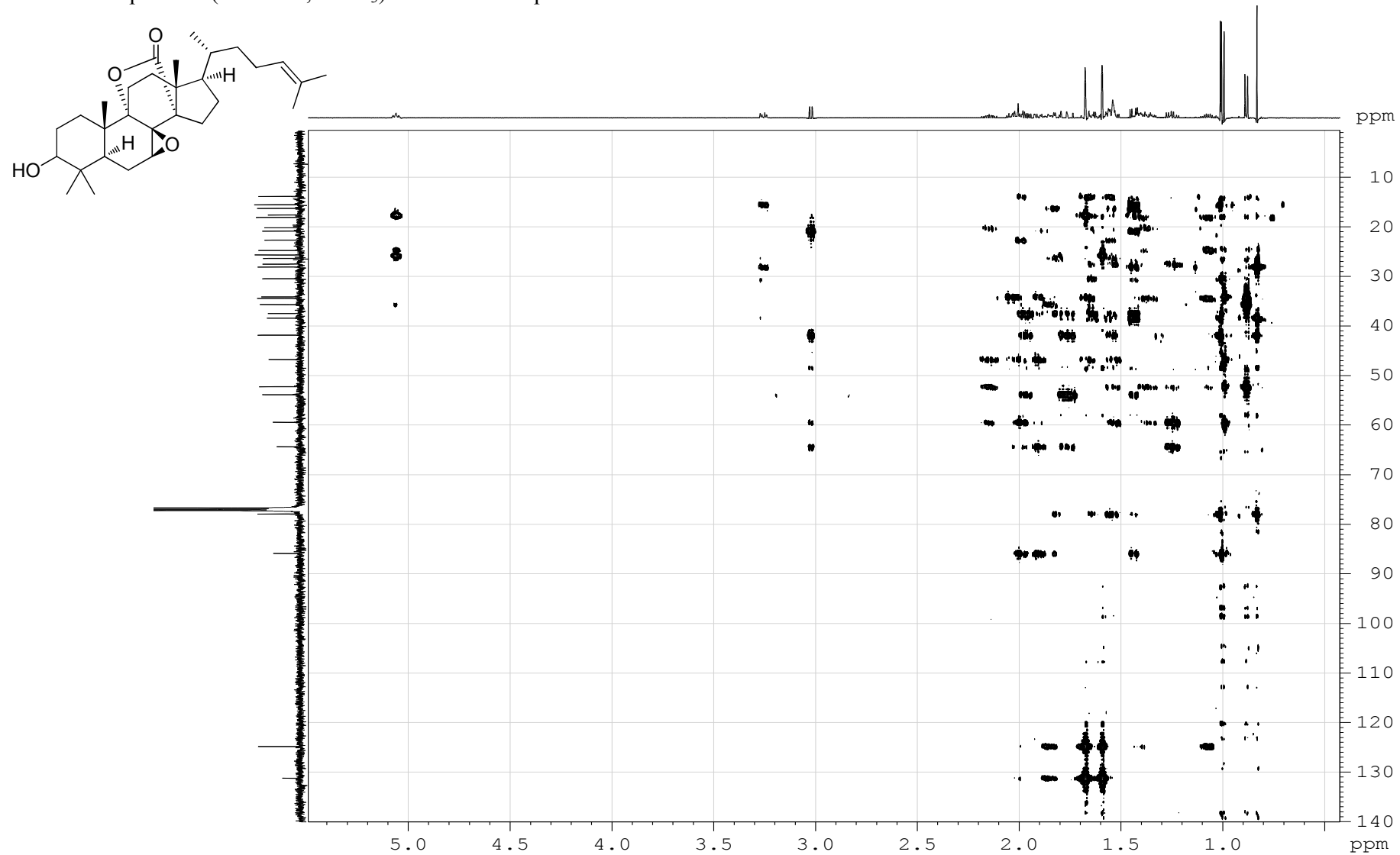
S22. COSY spectrum (500 MHz, CDCl₃) of the new compound 4



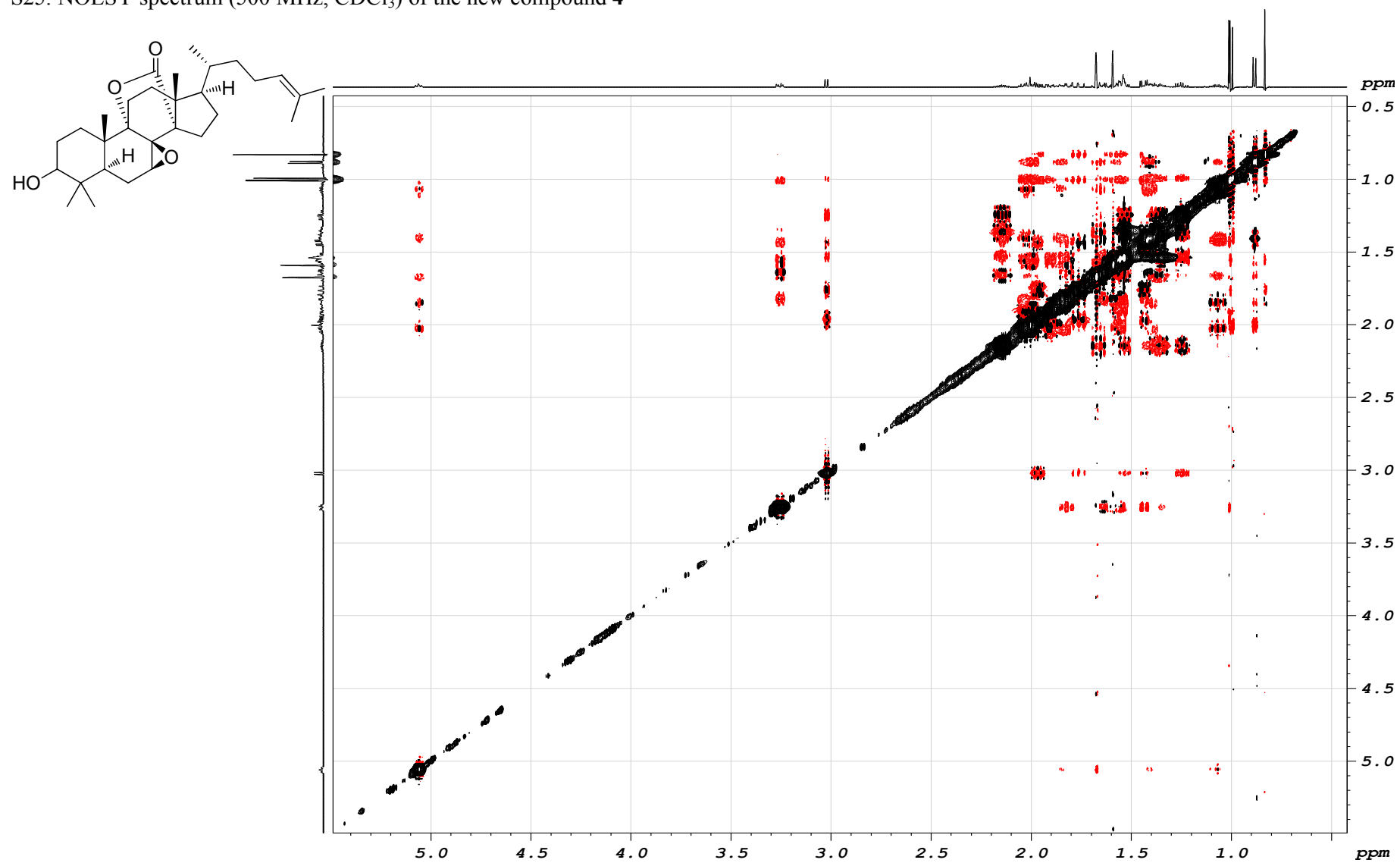
S23. HSQC spectrum (500 MHz, CDCl₃) of the new compound **4**



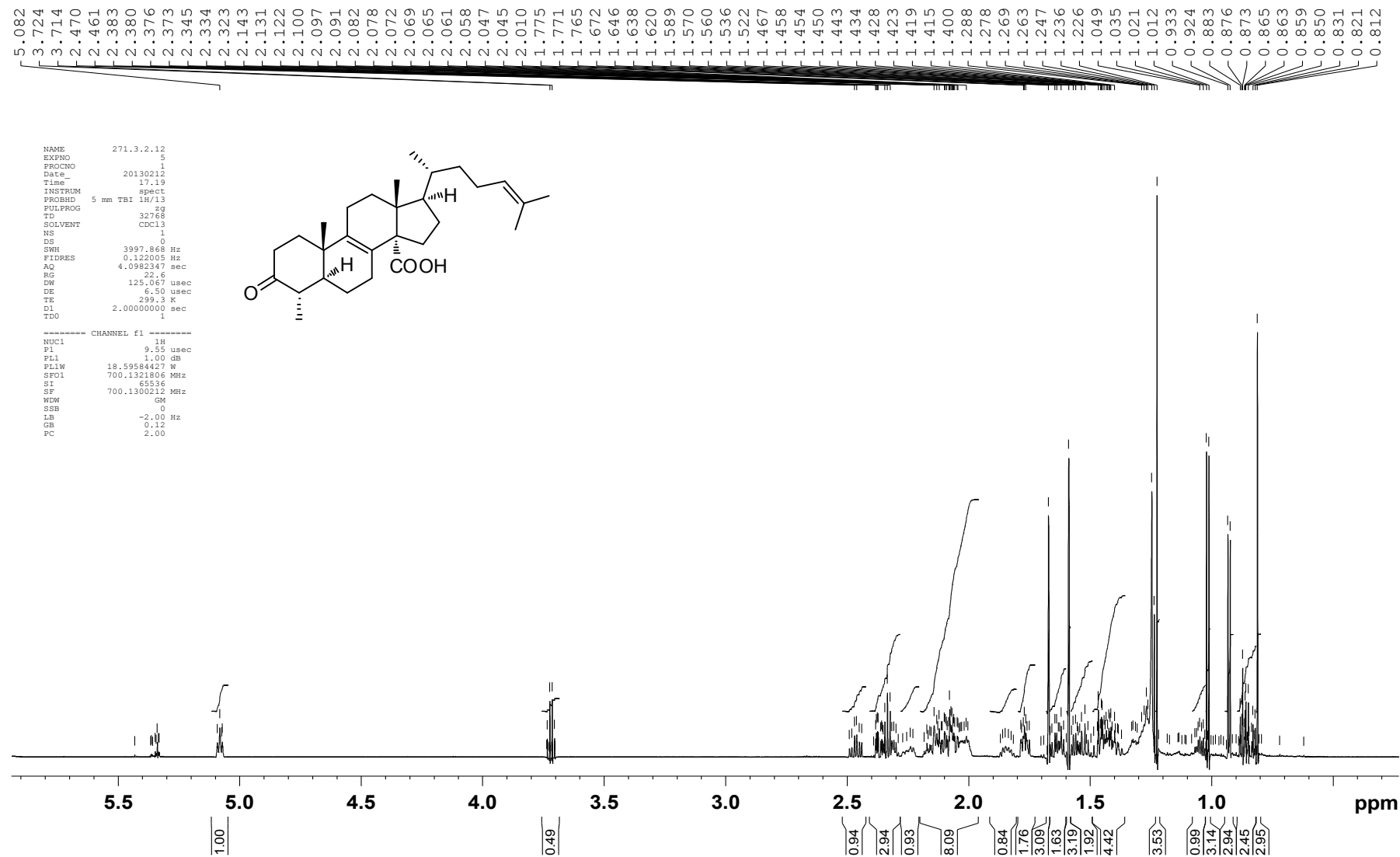
S24. HMBC spectrum (500 MHz, CDCl₃) of the new compound 4



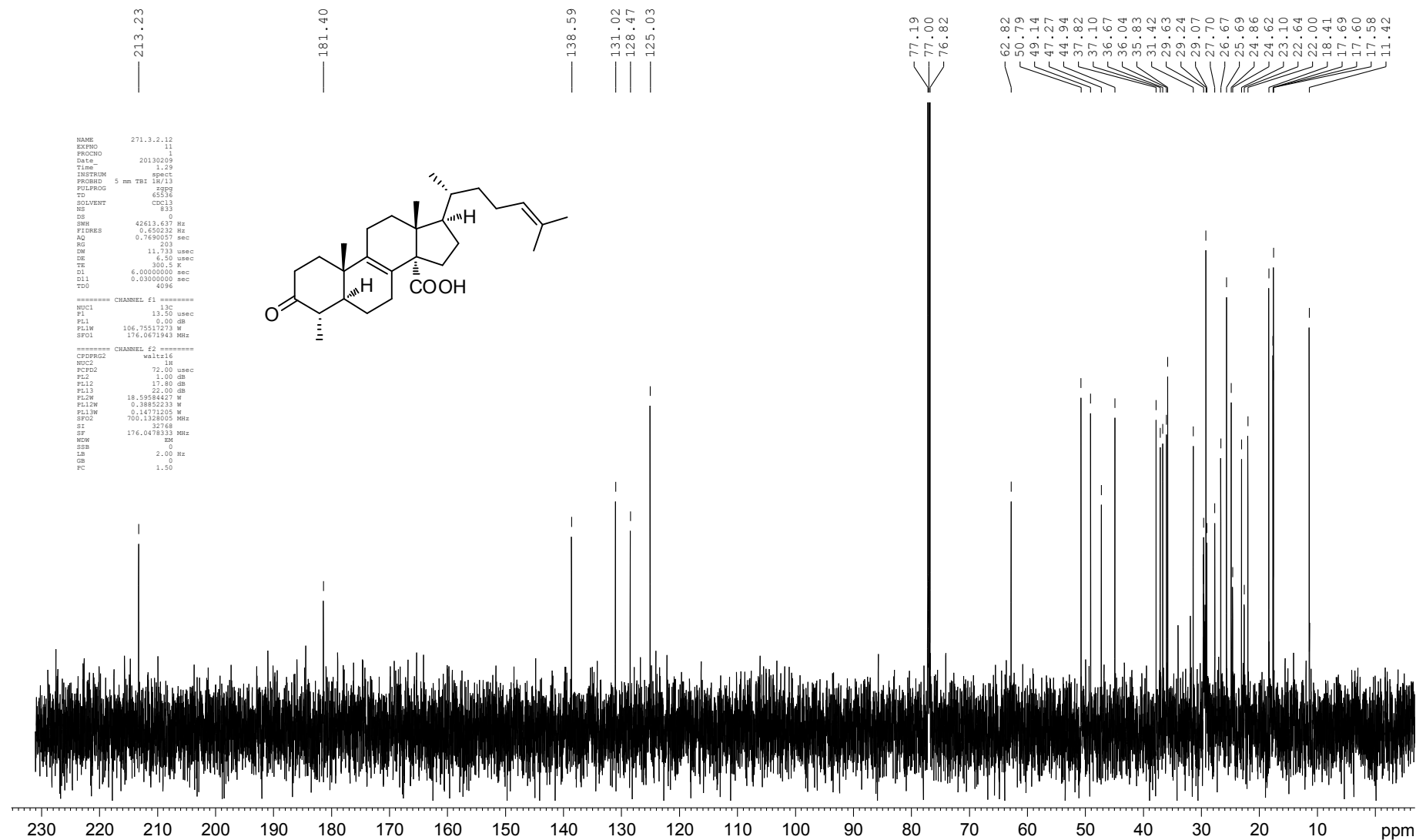
S25. NOESY spectrum (500 MHz, CDCl₃) of the new compound 4



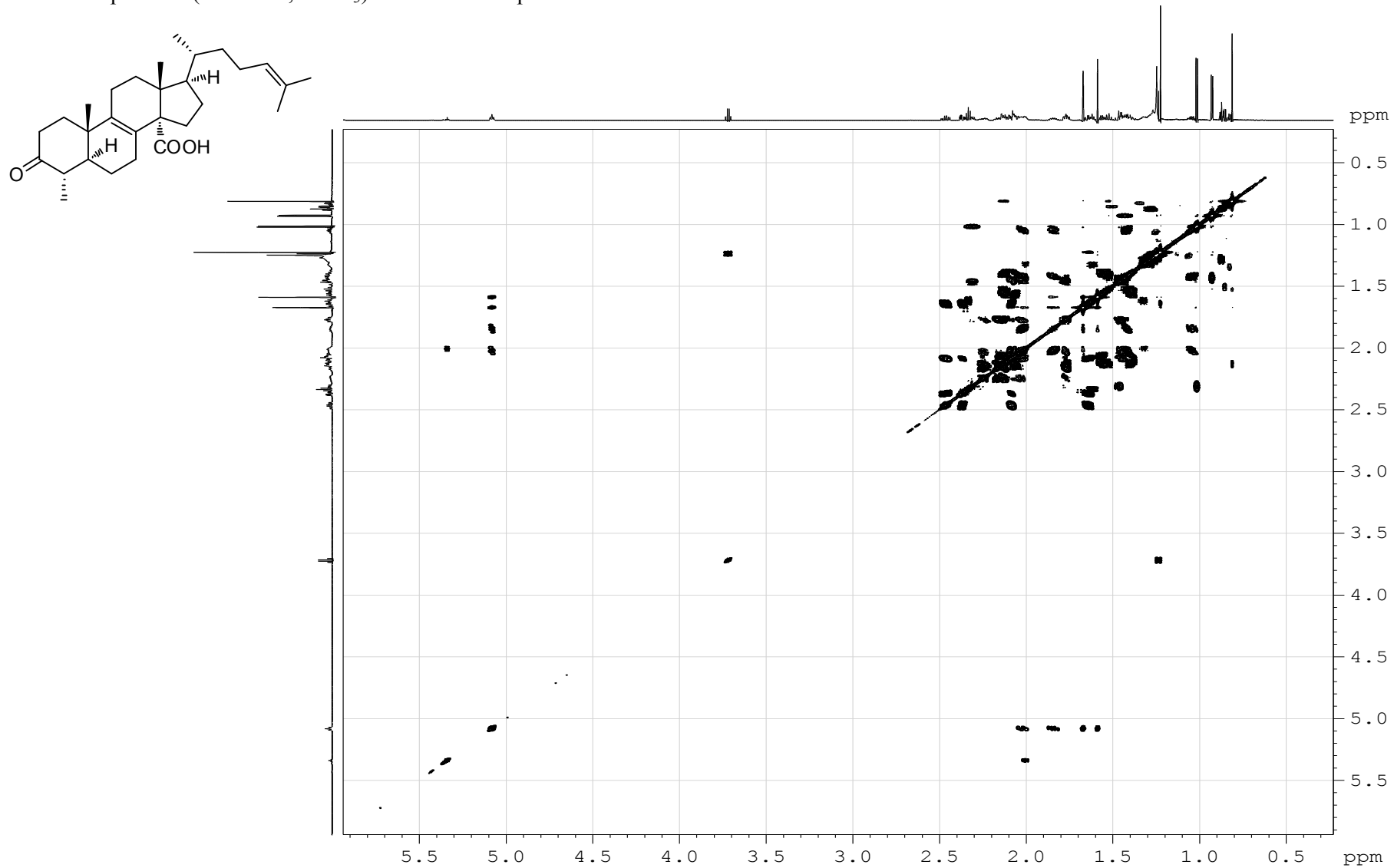
S26. ^1H NMR spectrum (700 MHz, CDCl_3) of the new compound **5**



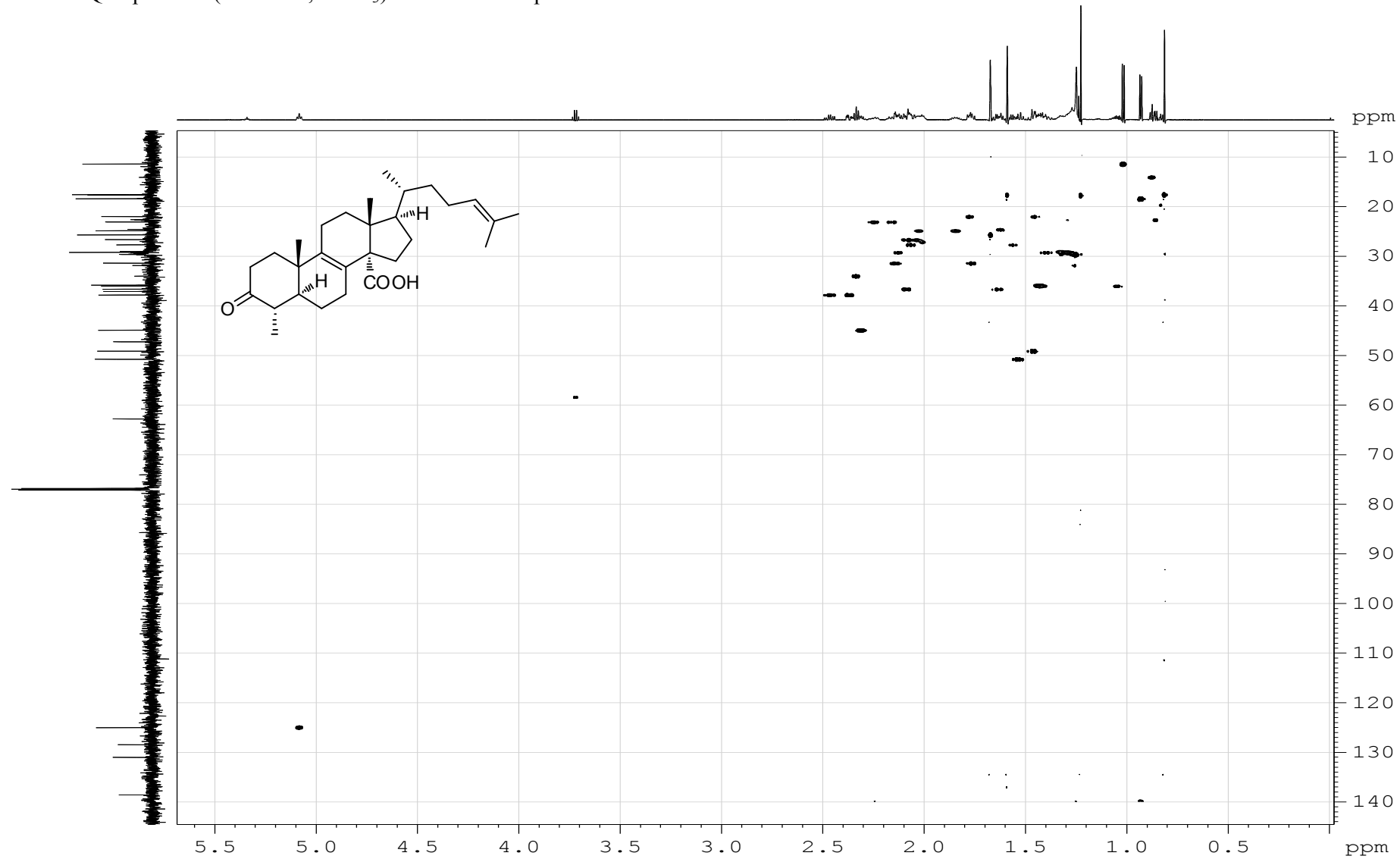
S27. ^{13}C NMR spectrum (176 MHz, CDCl_3) of the new compound **5**

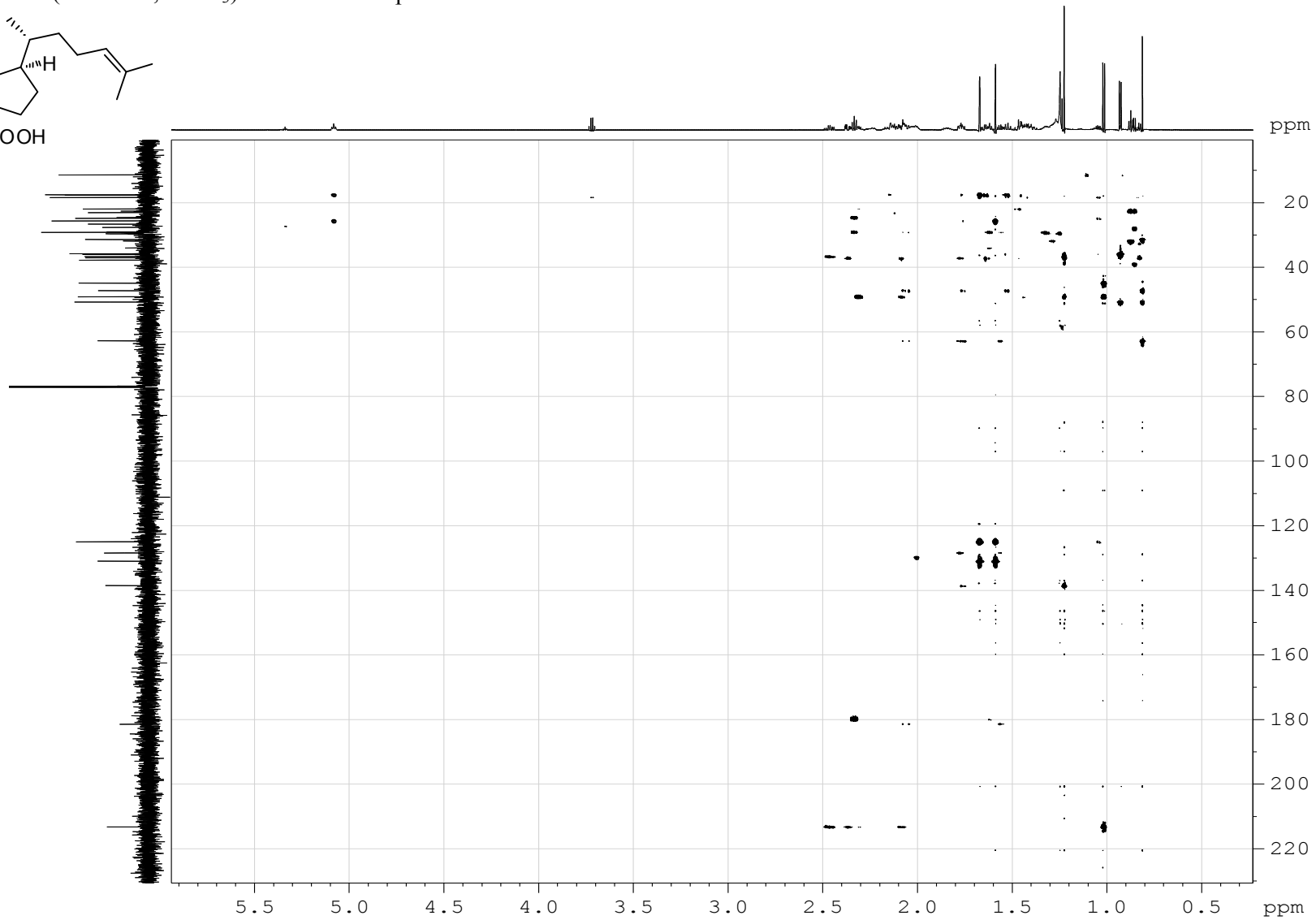


S28. COSY spectrum (700 MHz, CDCl₃) of the new compound **5**

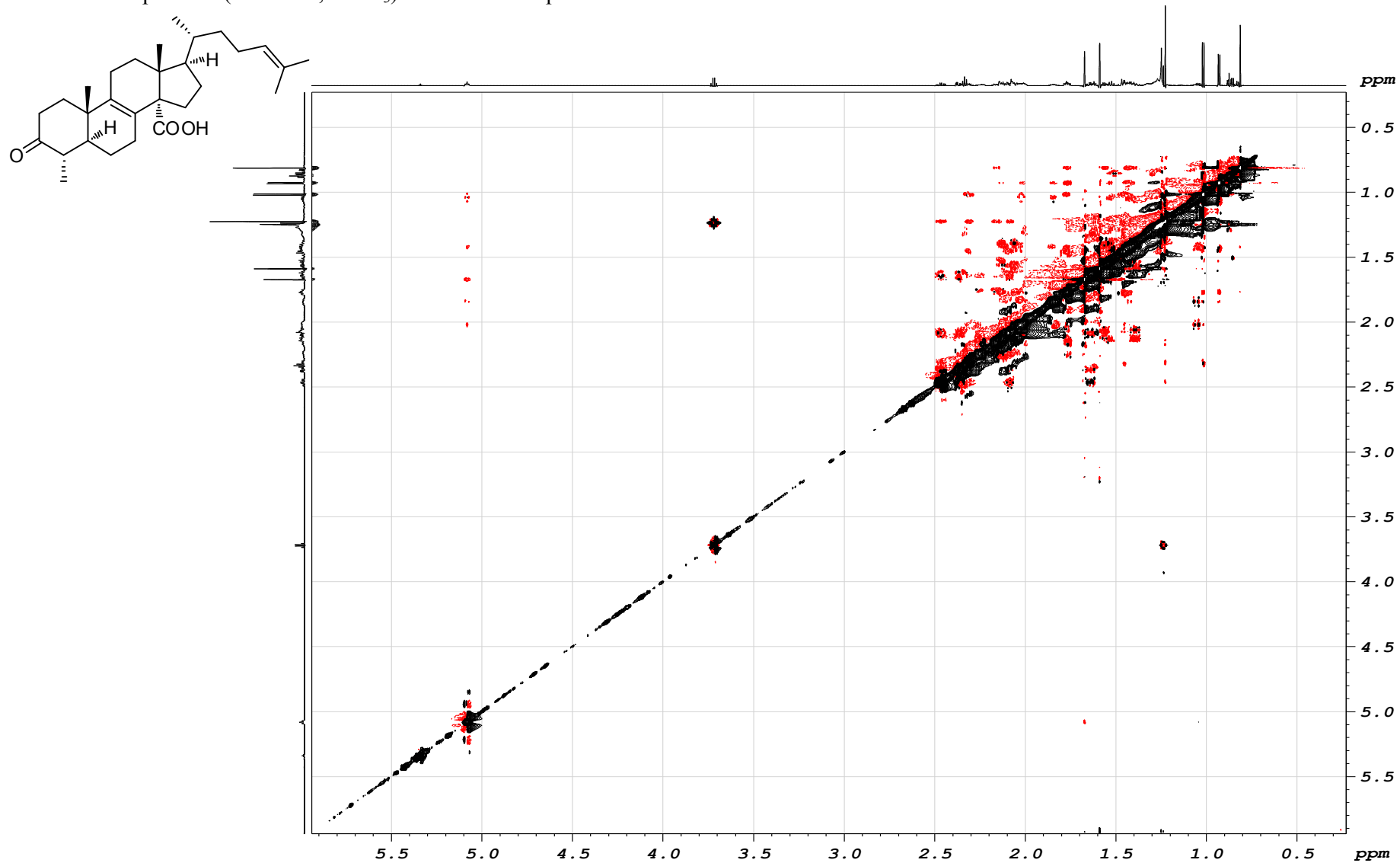


S29. HSQC spectrum (700 MHz, CDCl₃) of the new compound **5**

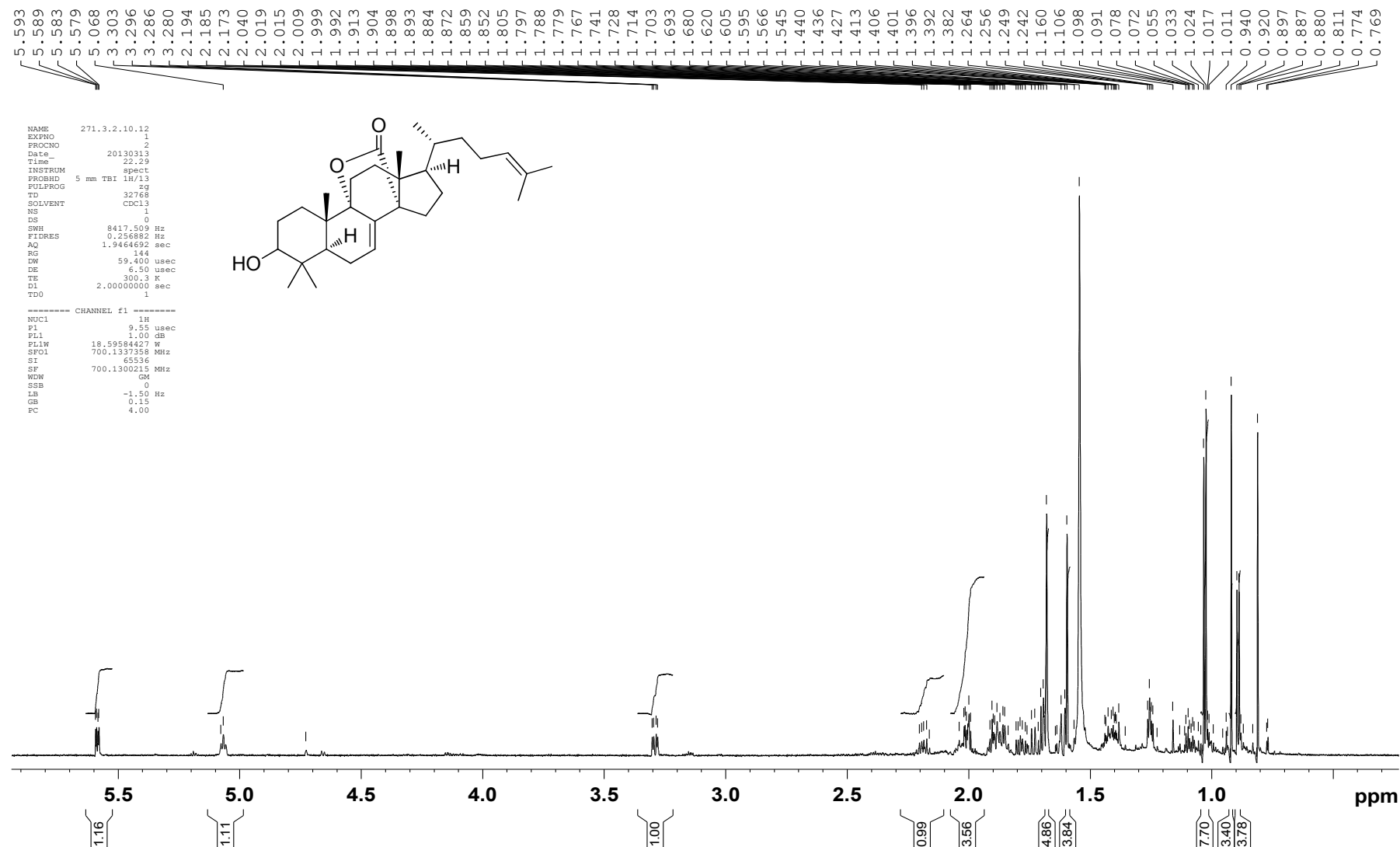


CC(C)=CC[C@H]1[C@@H](C(=O)O)[C@H]2[C@@H]1CC[C@H]3[C@H]2CC=C4[C@@]3(CC[C@@H](C4)C)C(=O)CC[C@]5(C)[C@H]1CC[C@@H](C=C)C[C@@H]5C

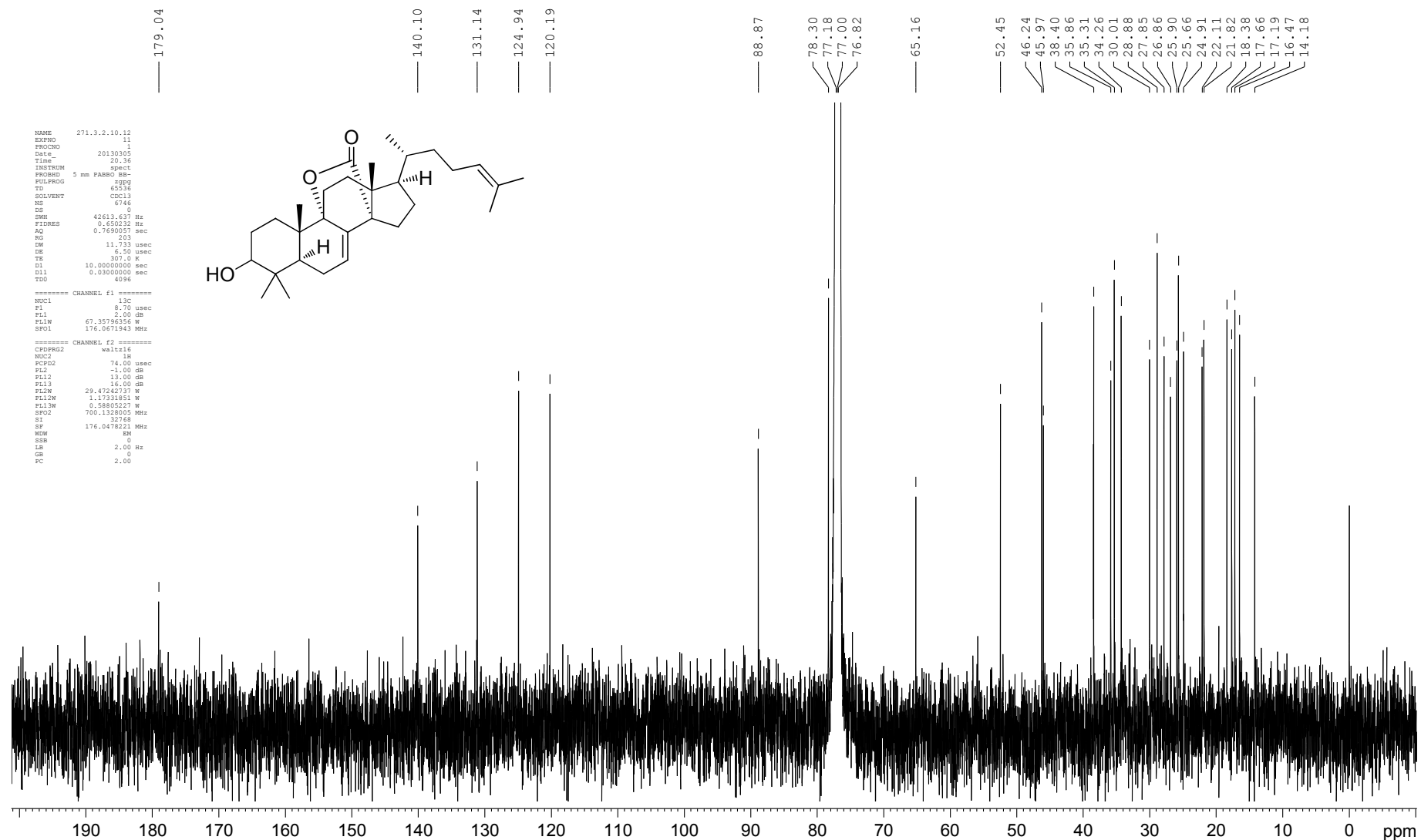
S31. NOESY spectrum (700 MHz, CDCl₃) of the new compound **5**



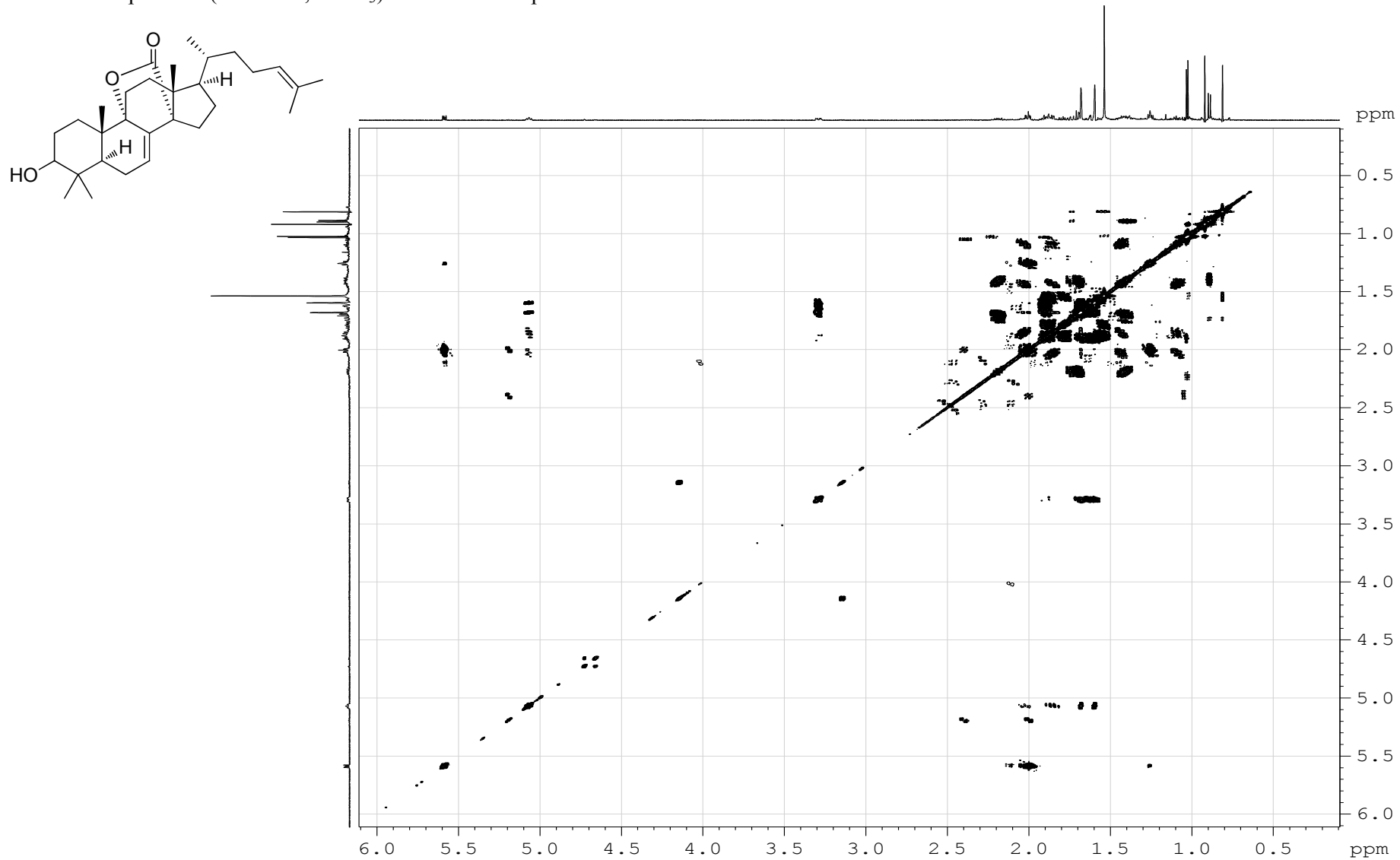
S32. ^1H NMR spectrum (700 MHz, CDCl_3) of the new compound **6**



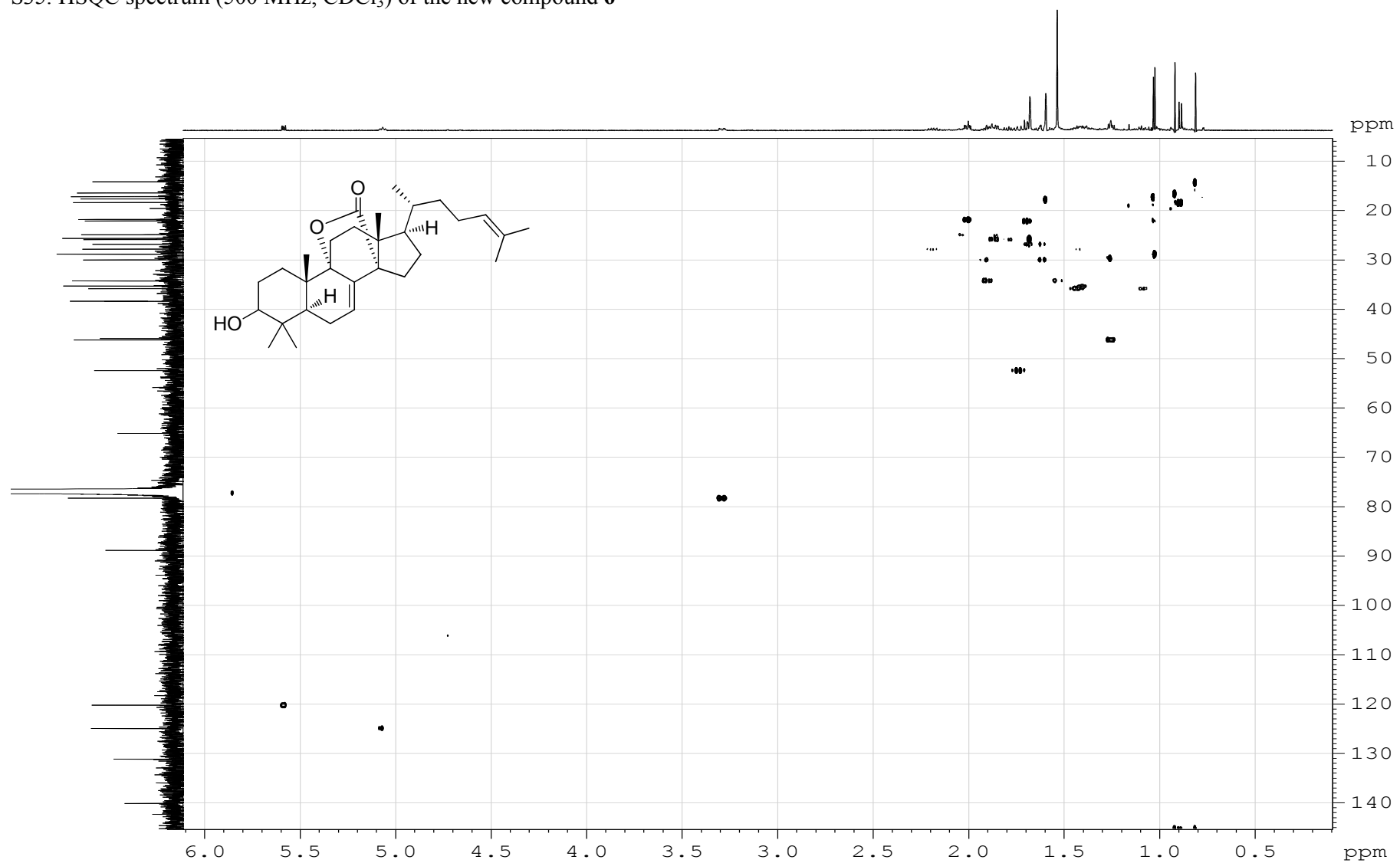
S33. ^{13}C NMR spectrum (176 MHz, CDCl_3) of the new compound **6**



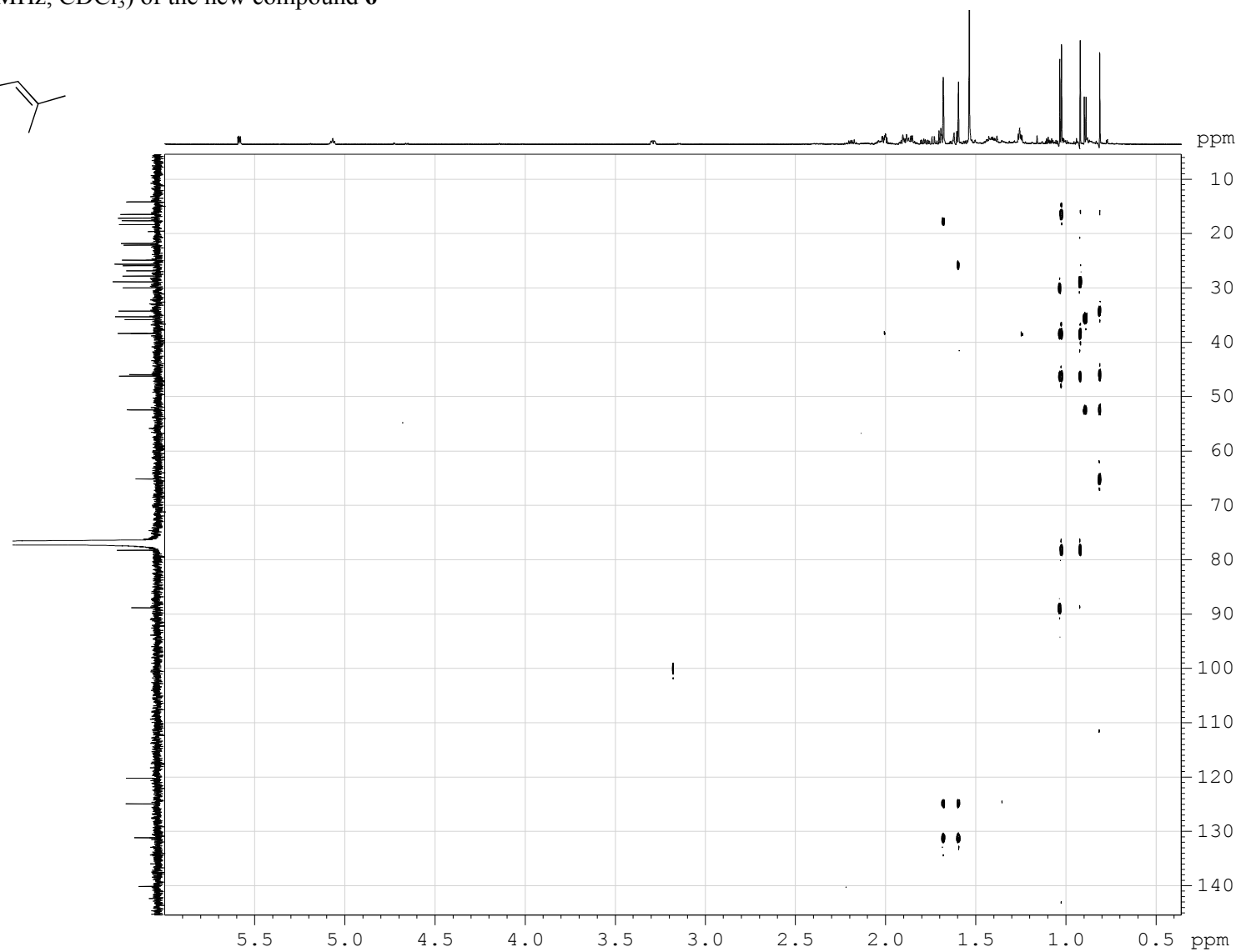
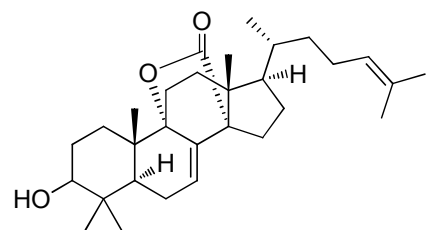
S34. COSY spectrum (500 MHz, CDCl₃) of the new compound **6**



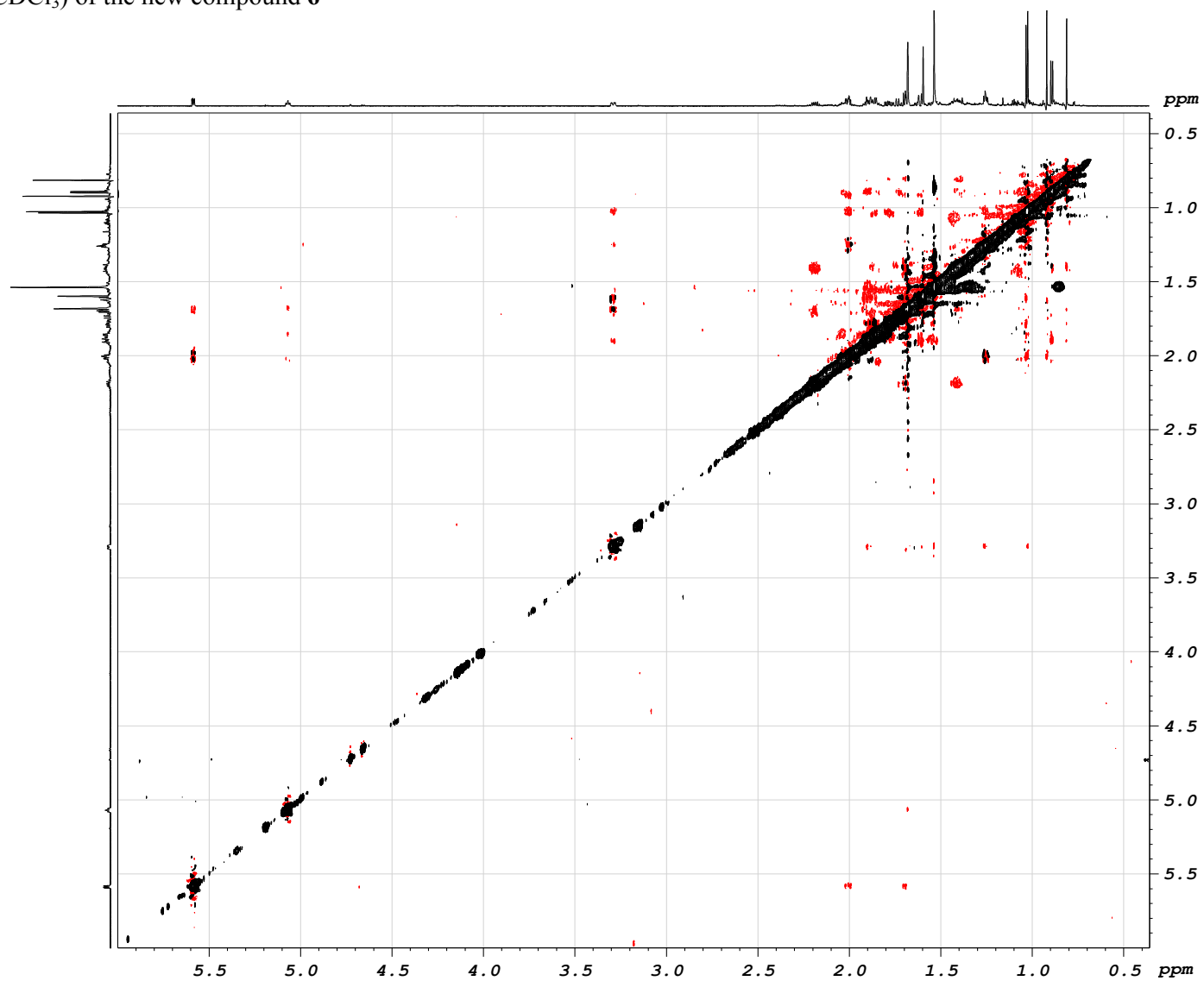
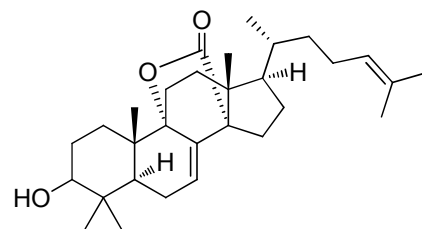
S35. HSQC spectrum (500 MHz, CDCl₃) of the new compound **6**



S36. HMBC spectrum (700 MHz, CDCl₃) of the new compound 6



S37. NOESY spectrum (700 MHz, CDCl₃) of the new compound 6



S38. The details of the bioassay experiments and a photograph of a *Penares* sp. (PIBOC O30-271) marine sponge

The MTS test: cells were cultured for 12 h in 96-well plates (3×10^3 cells per well), 100 μL /well for HeLa and JB6 Cl41 cells or 50 μL /well for HL-60 cells. The medium was then replaced with fresh medium containing substances at various concentrations in a total volume of 100 μL /well (for HeLa and JB6 Cl41 cells) or 50 μL /well of fresh substance-containing medium were added (for HL-60 cells) and the cells were incubated for 46 h. Subsequently 20 μL of Cell Titer 96 Aqueous One Solution Reagent (Promega) was added into each well, and MTS reduction was measured 2 h later spectrophotometrically at 492 and 690 nm as background using μQuant equipment (Bio-Tek Instruments).

The MTT method: The EtOH solutions (20 μL) of tested substances at different concentrations and cell suspension (200 μL) were added to the wells of 96-well plate and incubated for 18 h at 37 °C and 5% CO_2 . After incubation the cells were pelleted by centrifugation, the medium in each well were replaced by 100 μL of fresh medium. Then 10 μL of MTT solution (5 $\mu\text{g}/\text{mL}$ in dH_2O , Sigma) were added to each well and the plate was incubated for 4 h. Further 100 μL of SDS-HCl were added to each well and the plate was incubated at 37 °C for 18 h. The optical density was measured at 570 nm and 690 nm (Multiscan FC, Thermo Scientific).



A photograph of a *Penares* sp. (PIBOC O30-271) marine sponge