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Bismuth triflate-catalyzed Wagner-Meerwein rearrangements in terpenes. Application to the synthesis of the 18α-oleanane core and A-*neo*-18α-oleanene compounds from lupanes .

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Supplementary Data

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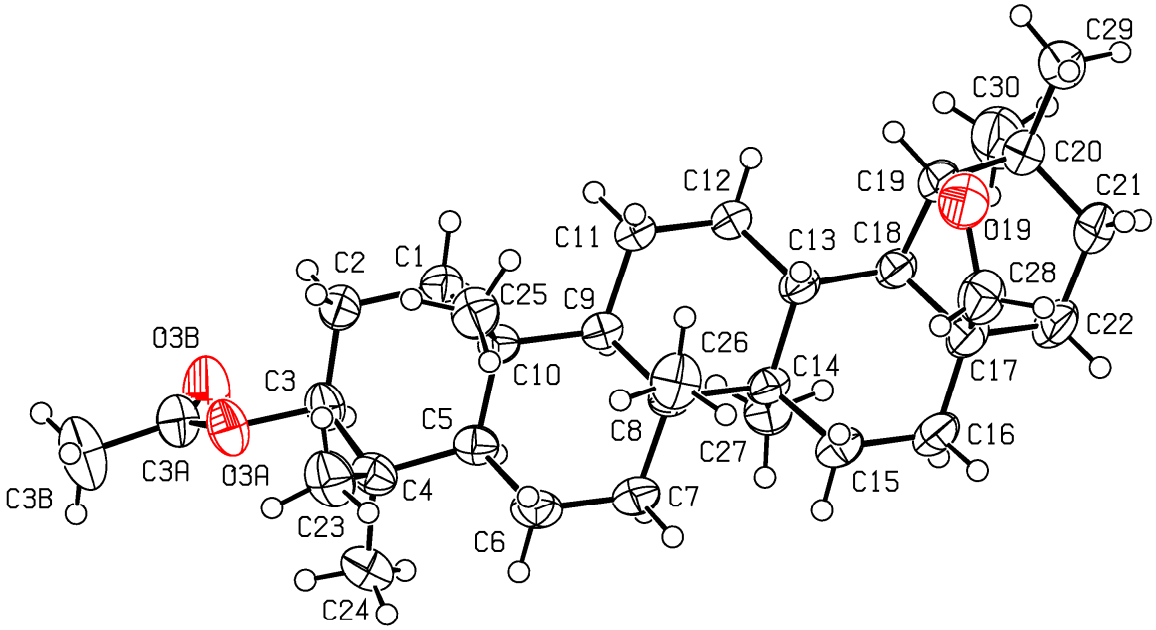
Single crystal X-ray diffraction data for compound **5**



ORTEP diagram of compound **5** (50% probability level, H atoms of arbitrary sizes)

Crystal data for compound 5. $C_{32}H_{52}O_3$, M = 484.76, monoclinic, a = 13.3520(2), b = 6.54000(10), c = 32.4439(5) Å, V = 2798.13(7) Å^3, T = 293(2) K, space group $C2$, Z = 4, 26879 reflections measured, 3074 unique (R_{int} = 0.027) which were used in all calculations. Final R indices: $R1$ = 0.036 for 2759 reflections with $I > 2\sigma(I)$, $wR(F^2)$ was 0.099 (all data).

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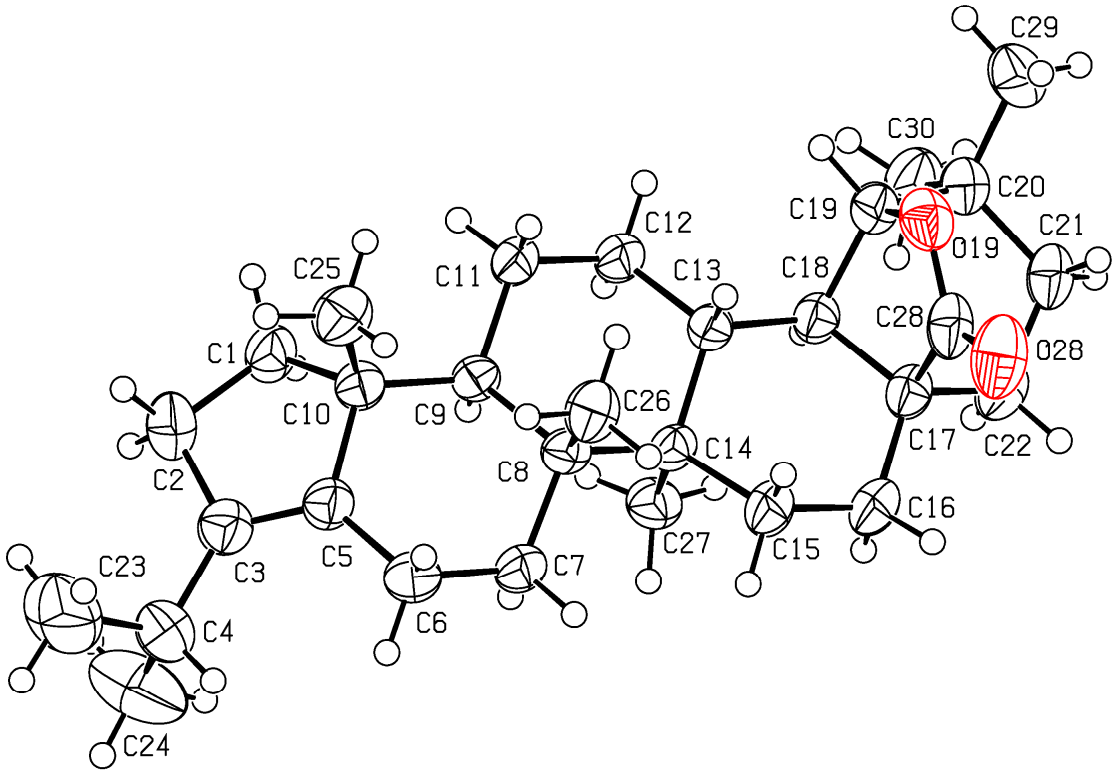
Single crystal X-ray diffraction data for compound **17**



ORTEP diagram of compound **17** (50% probability level, H atoms of arbitrary sizes)

Crystal data for compound 17. $C_{30}H_{46}O_2$, M = 438.67, monoclinic, a = 13.2214(4), b = 6.4962(2), c = 29.8420(9) Å, V = 2558.00(13) Å^3, T = 293(2) K, space group $C2$, Z = 4, 22819 reflections measured, 2655 unique (R_{int} = 0.061) which were used in all calculations. Final R indices: $R1$ = 0.046 for 1677 reflections with $I > 2\sigma(I)$, $wR(F^2)$ was 0.116 (all data).

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NMR data for compound **7**

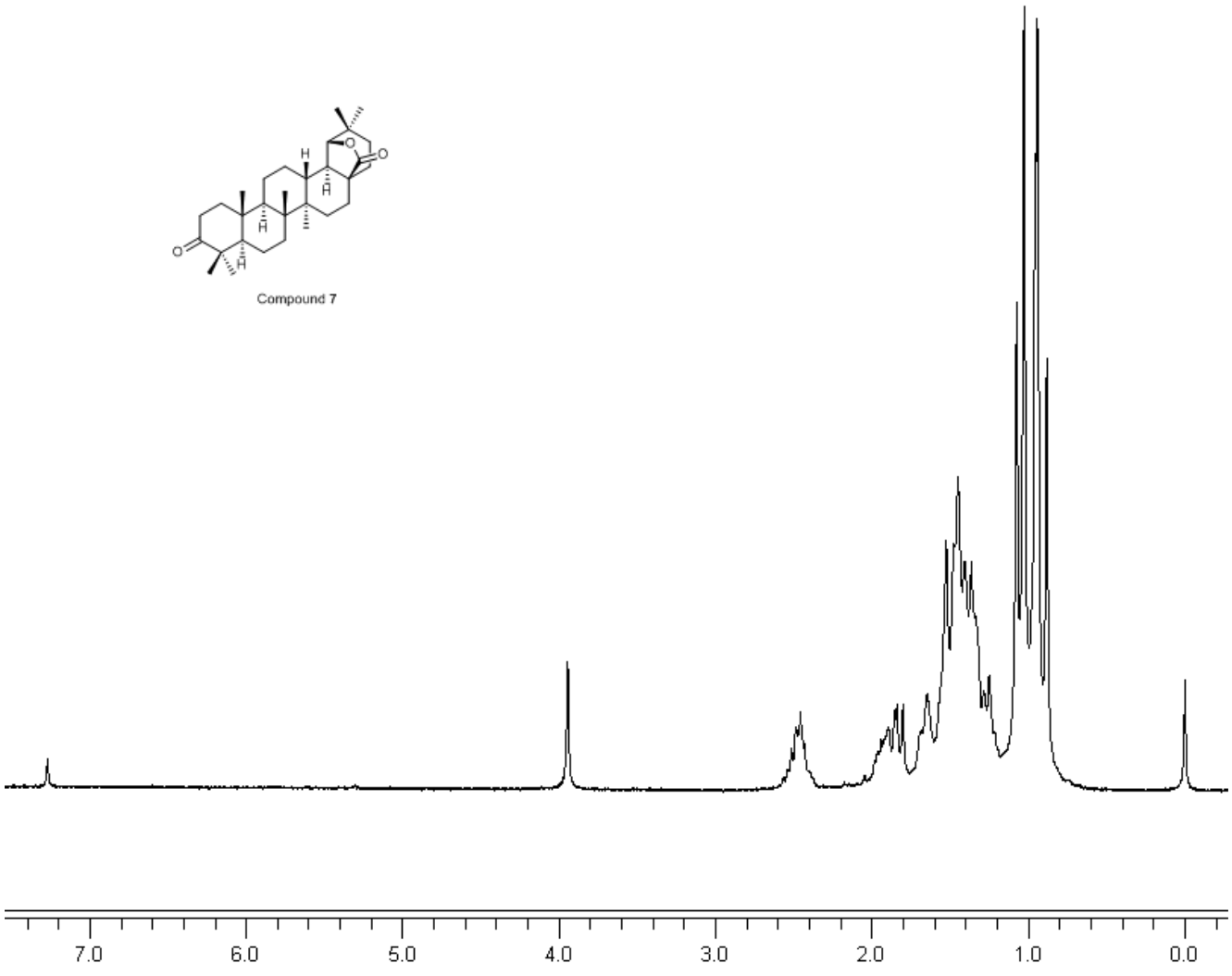

Fig. S1. ^{1}H NMR of compound **7** in $CDCl_3$.

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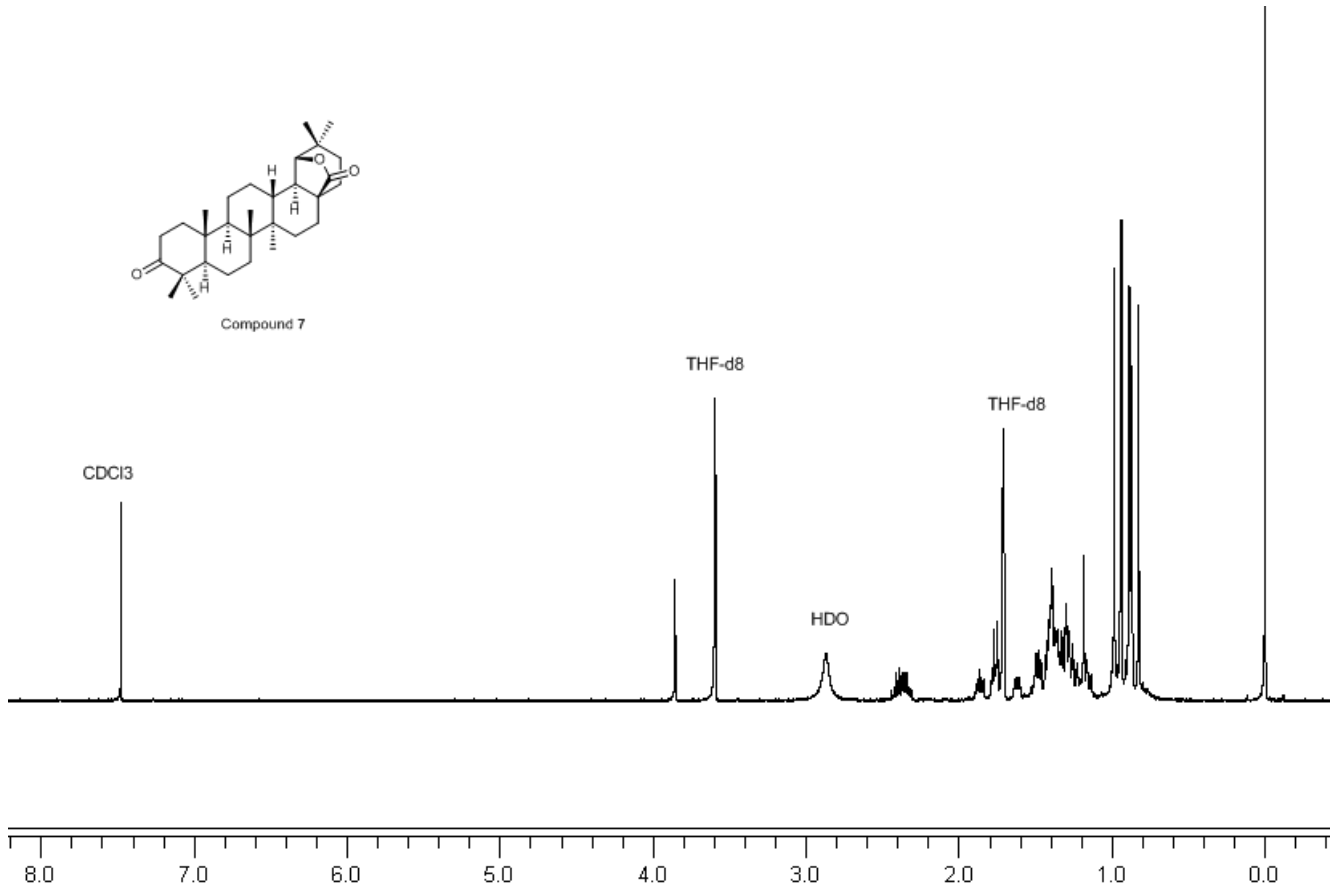

Fig. S2. ^{1}H NMR of compound **7** in $CDCl_3$/THF-*d*8.

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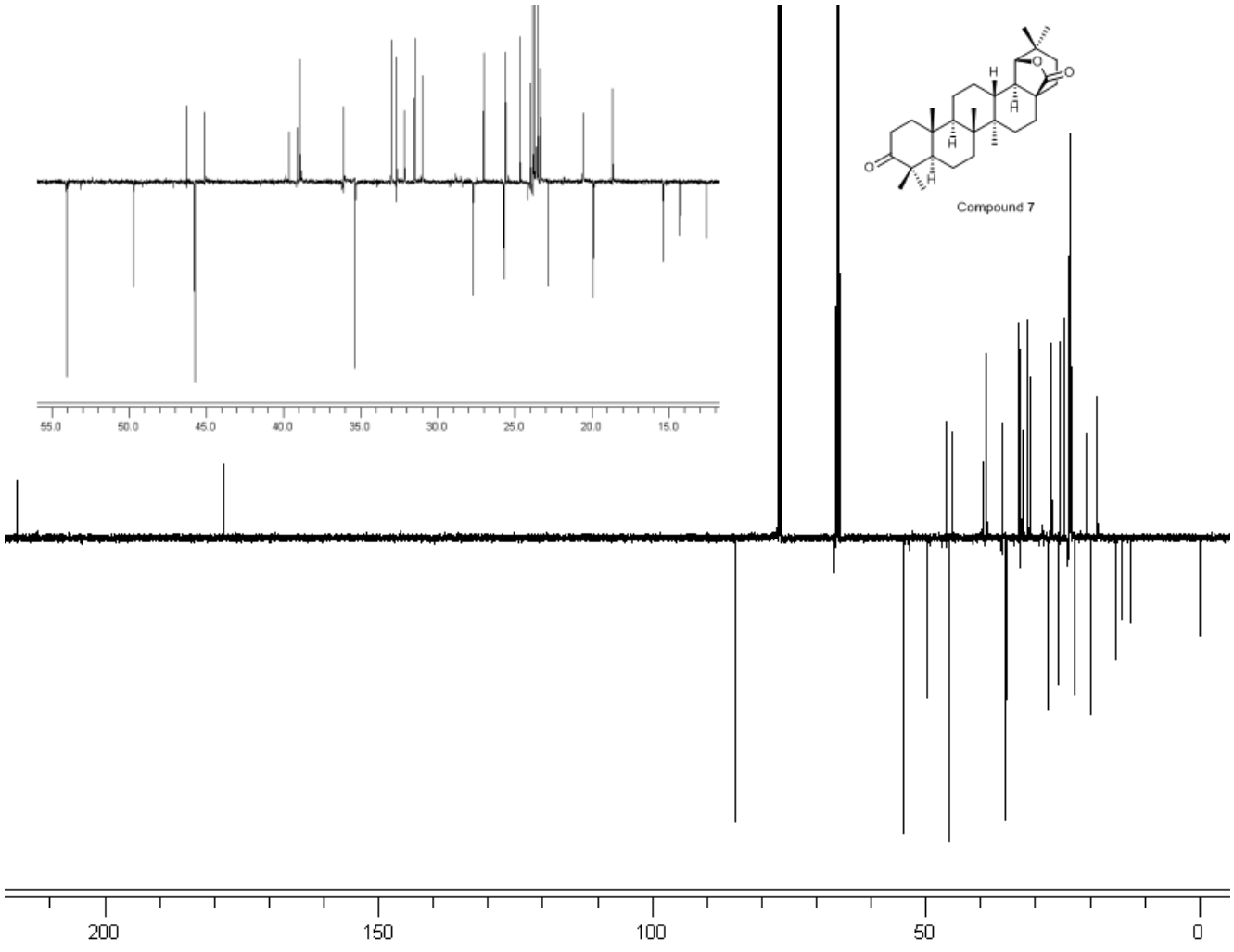

Fig. S3. ^{13}C NMR/J-MOD of compound **7** in $CDCl_3$/THF-*d*8.

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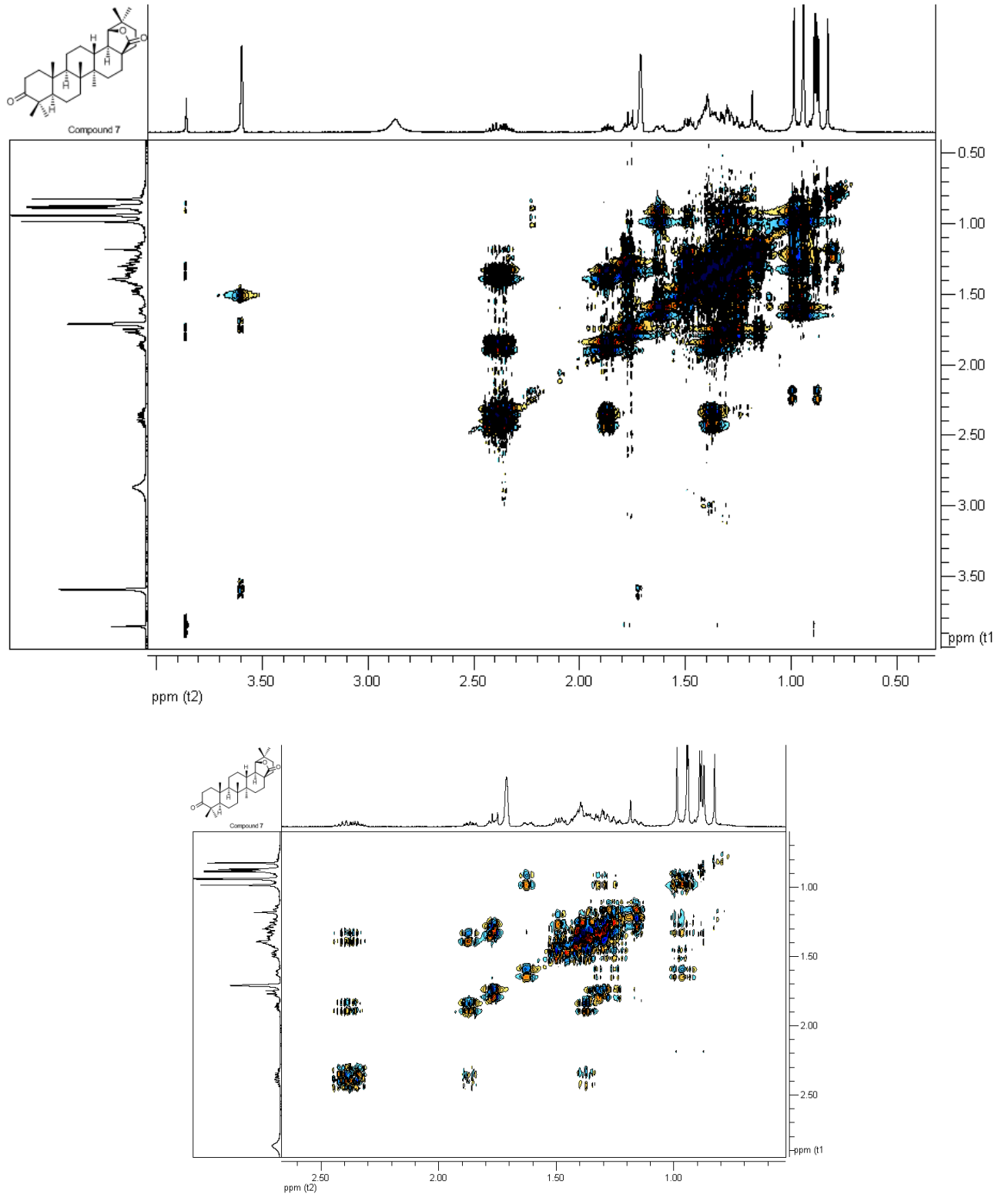

Fig. S4. ^{1}H-^{1}H COSY of compound **7** in $CDCl_3$/THF-*d*8.

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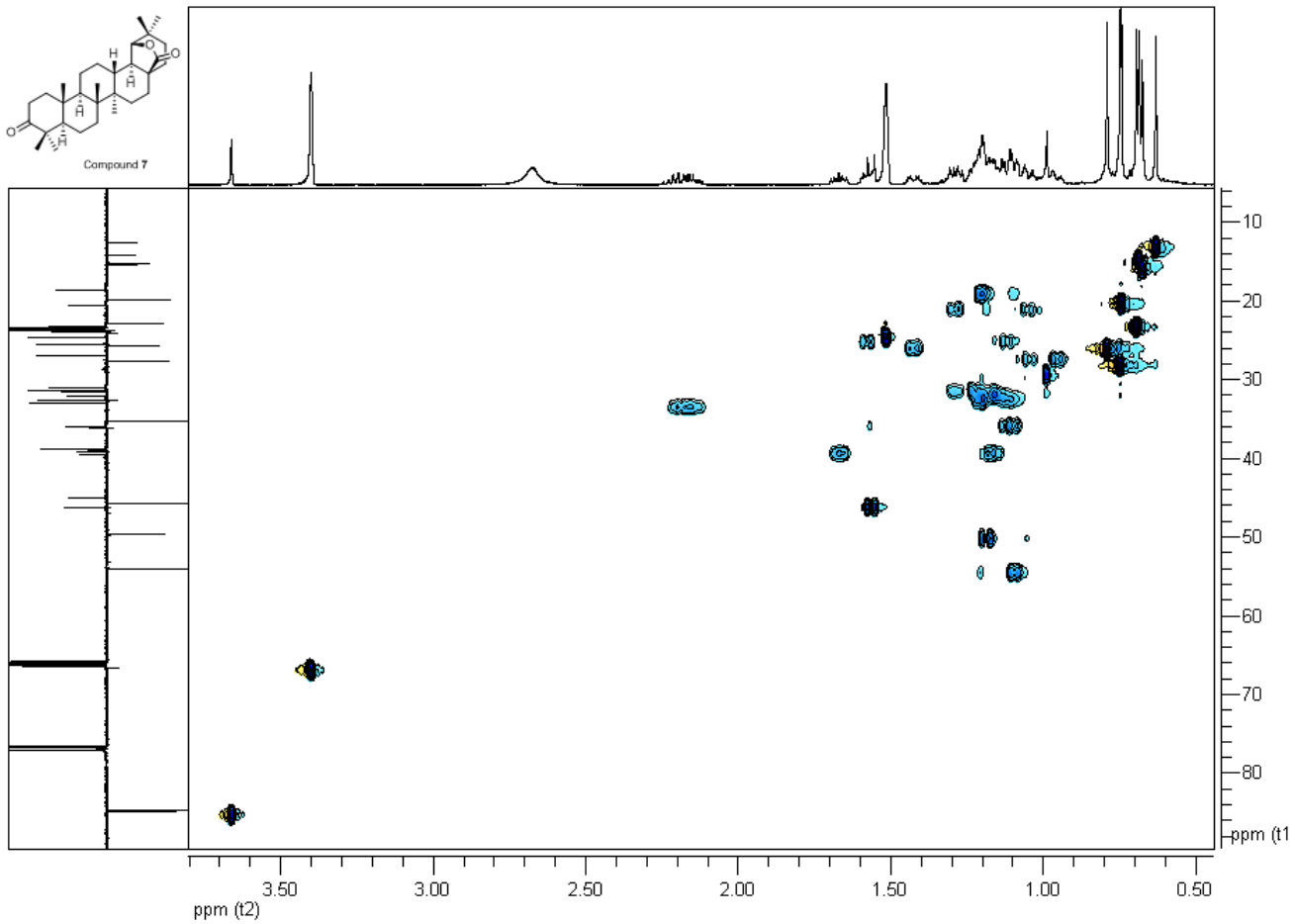

Fig. S5. HSQC of compound **7** in $CDCl_3$/THF-*d*8.

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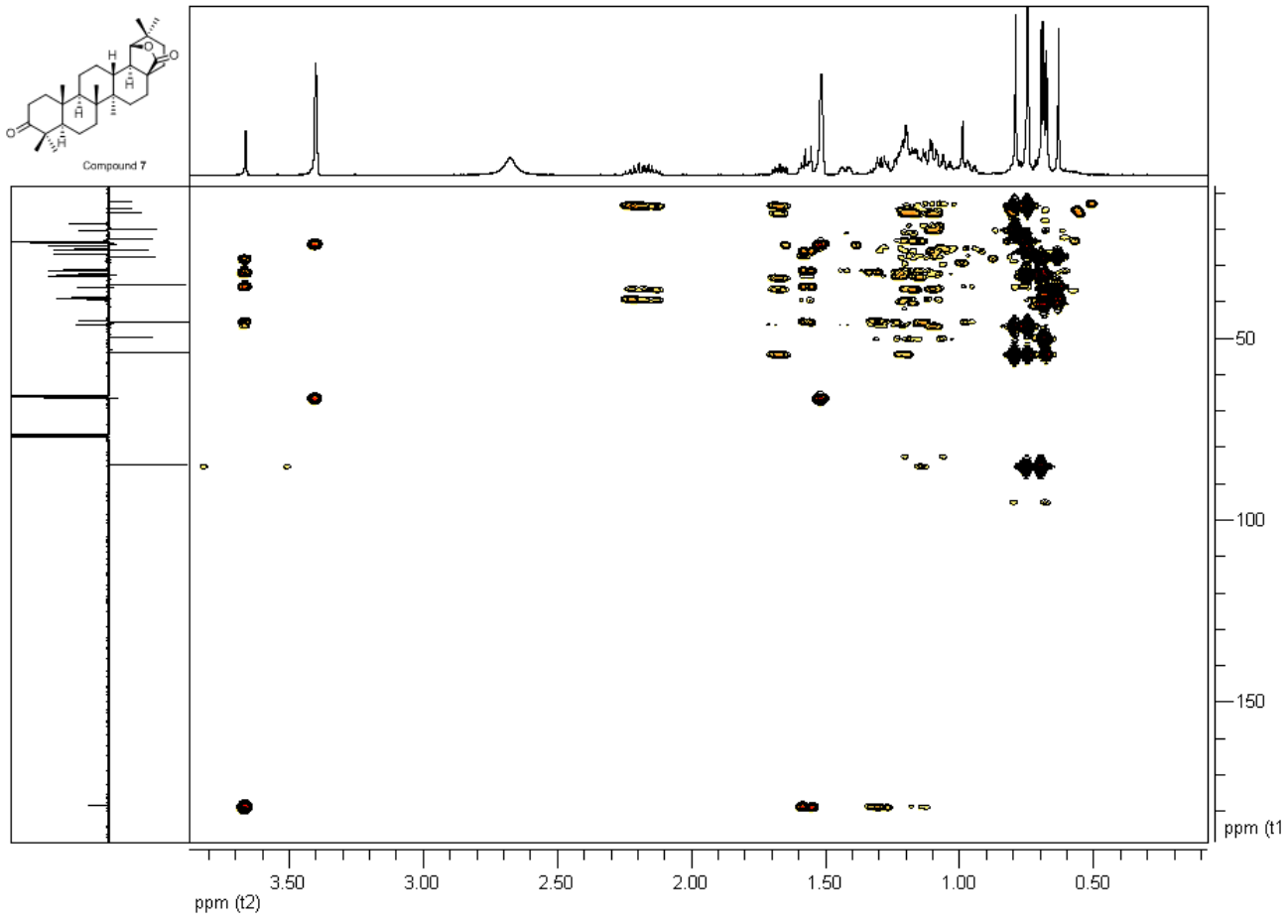

Fig. S6. HMBC of compound **7** in $CDCl_3$/THF-*d*8.

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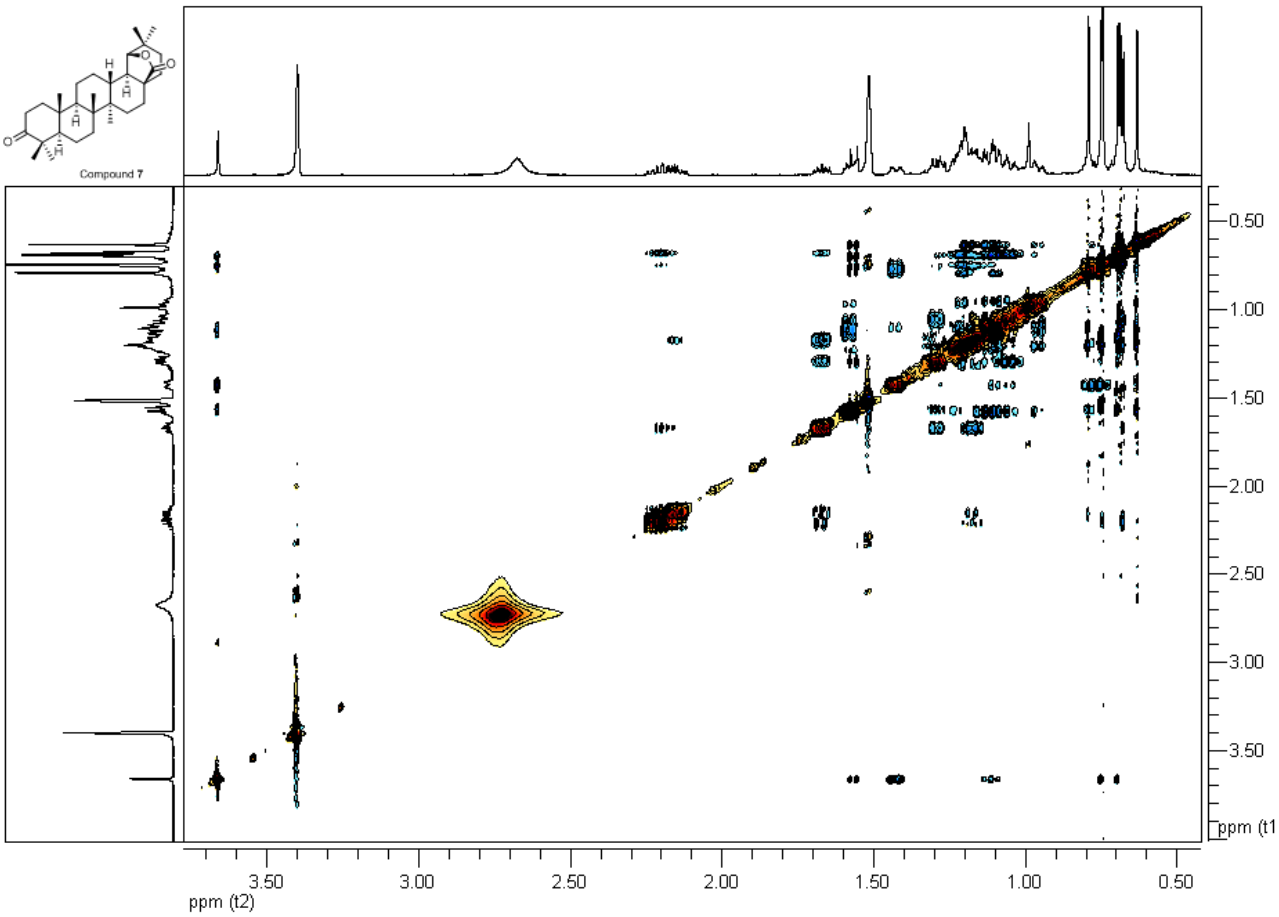

Fig. S7. NOESY of compound **7** in $CDCl_3$/THF-*d*8.

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NMR data for compound **11**

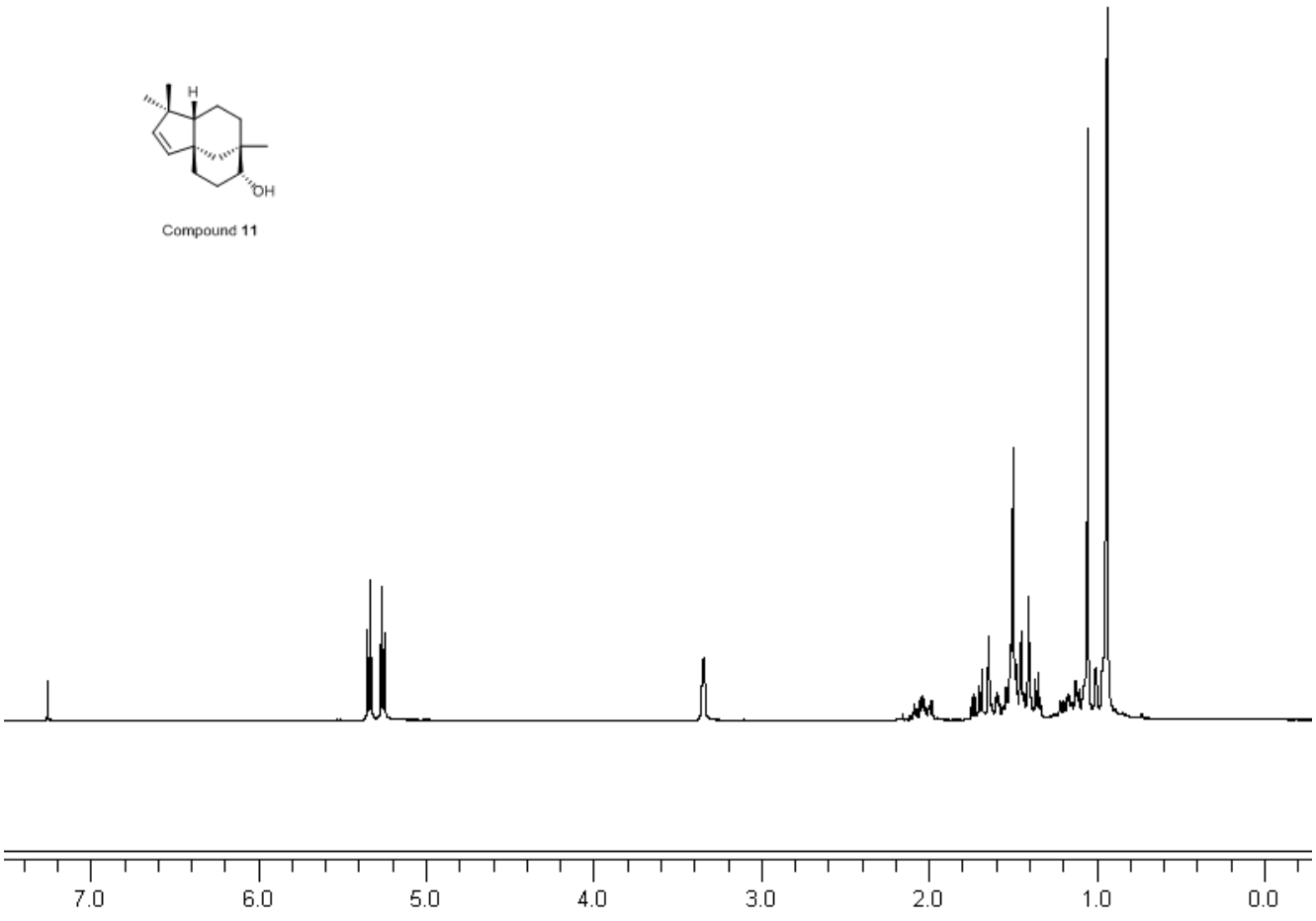

Fig. S8. ^{1}H NMR of compound **11** in $CDCl_3$.

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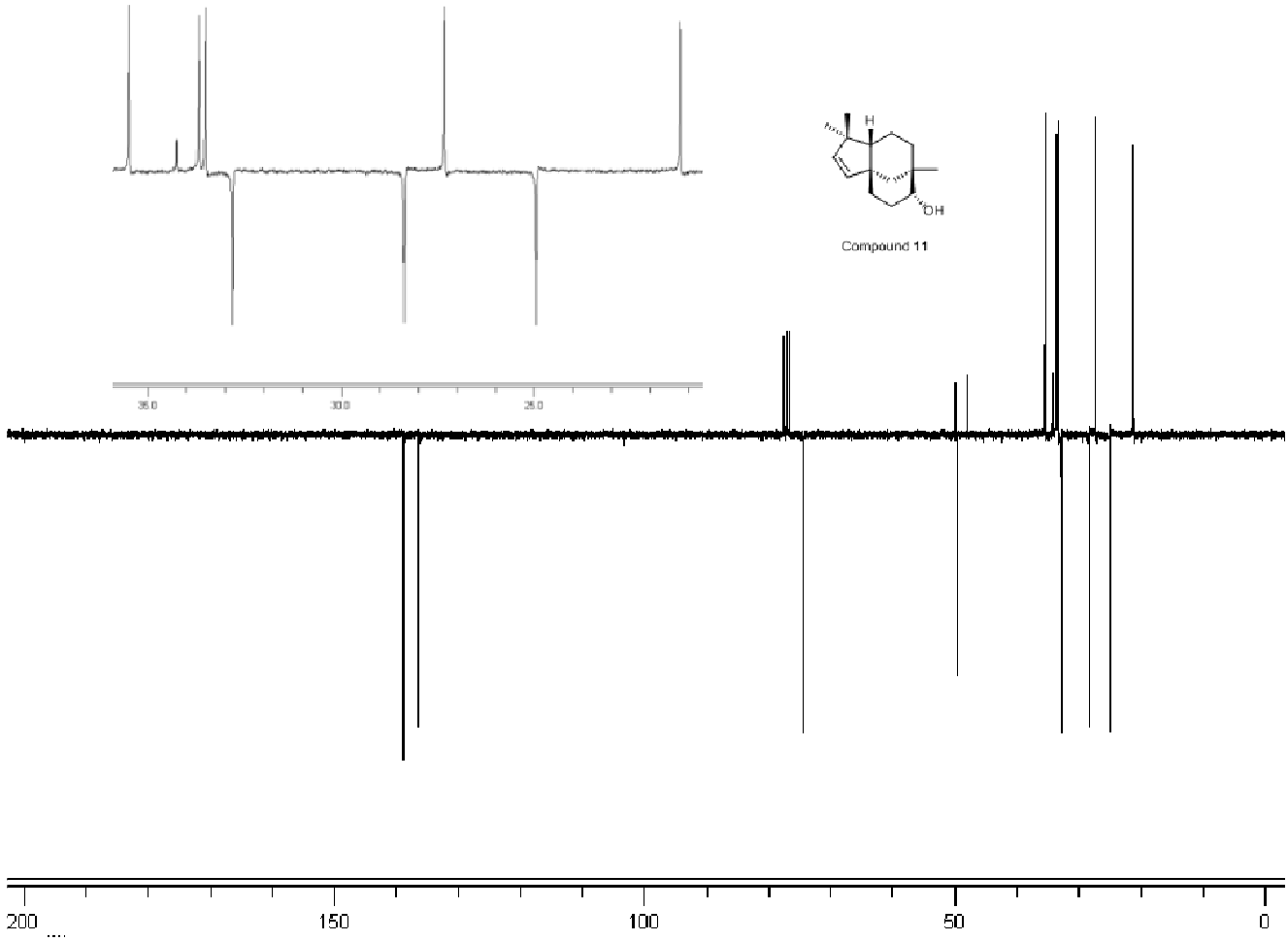

Fig. S9. ^{13}C NMR/J-MOD of compound **11** in $CDCl_3$.

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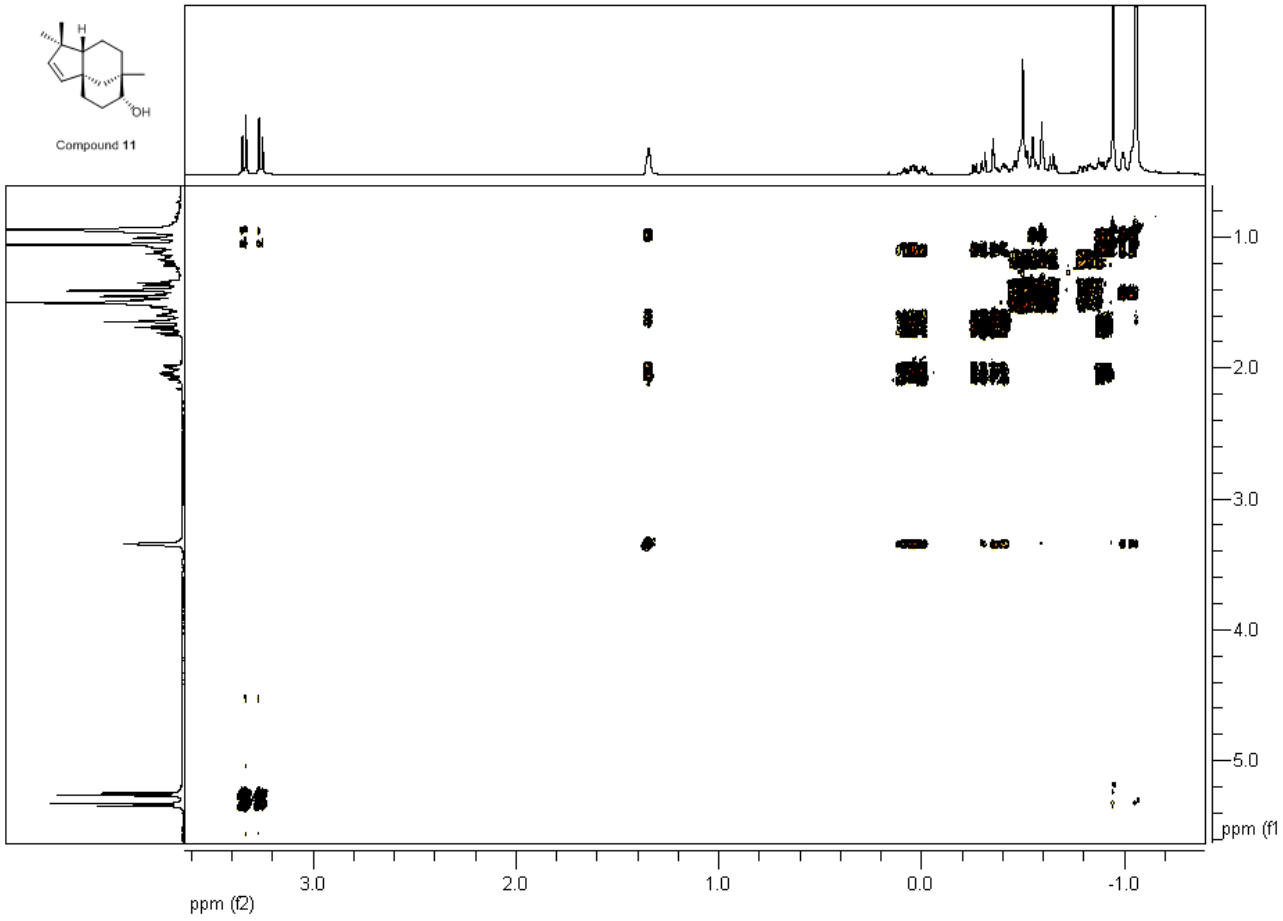

Fig. S10. ^{1}H-^{1}H COSY of compound **11** in $CDCl_3$.

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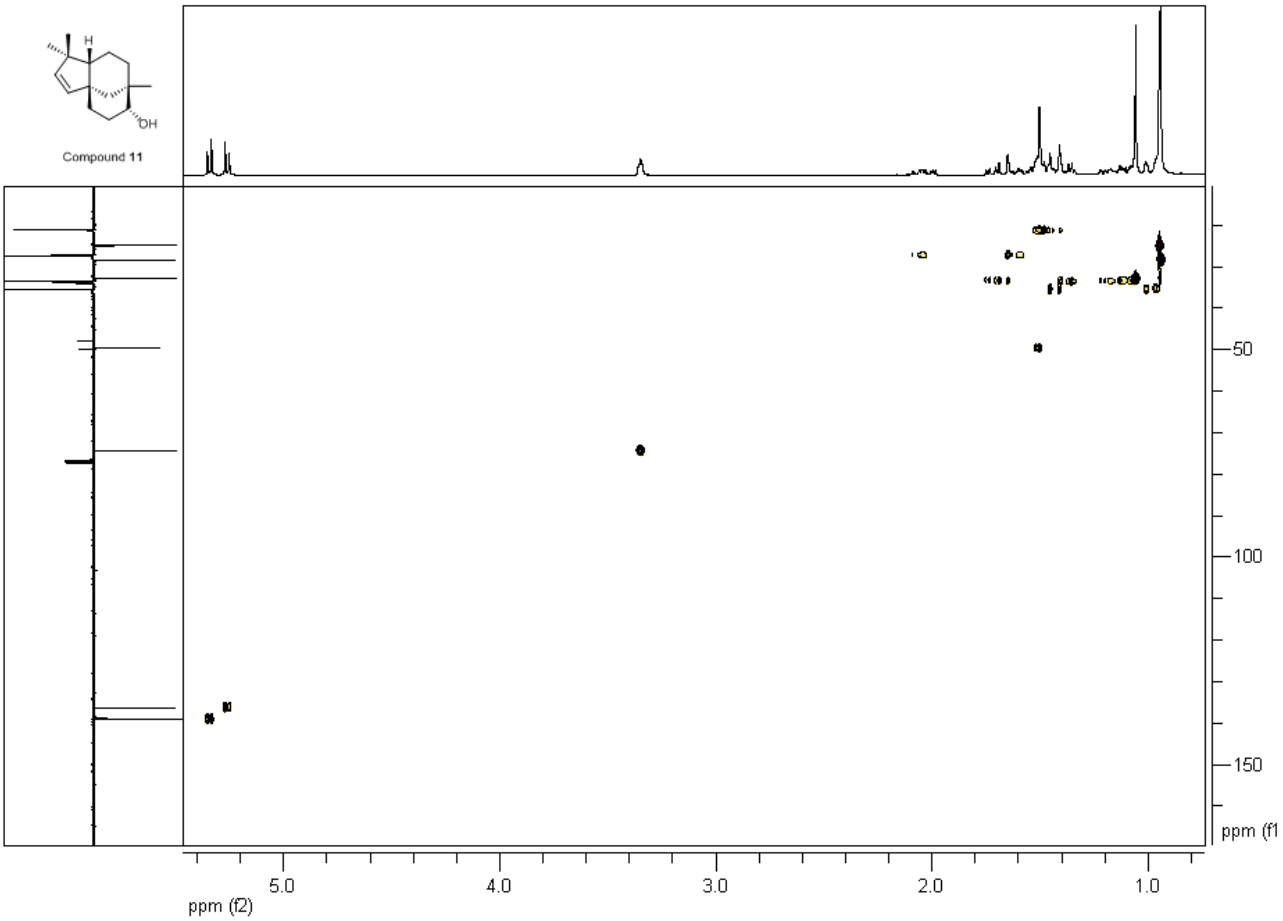

Fig. S11. HSQC of compound **11** in $CDCl_3$.

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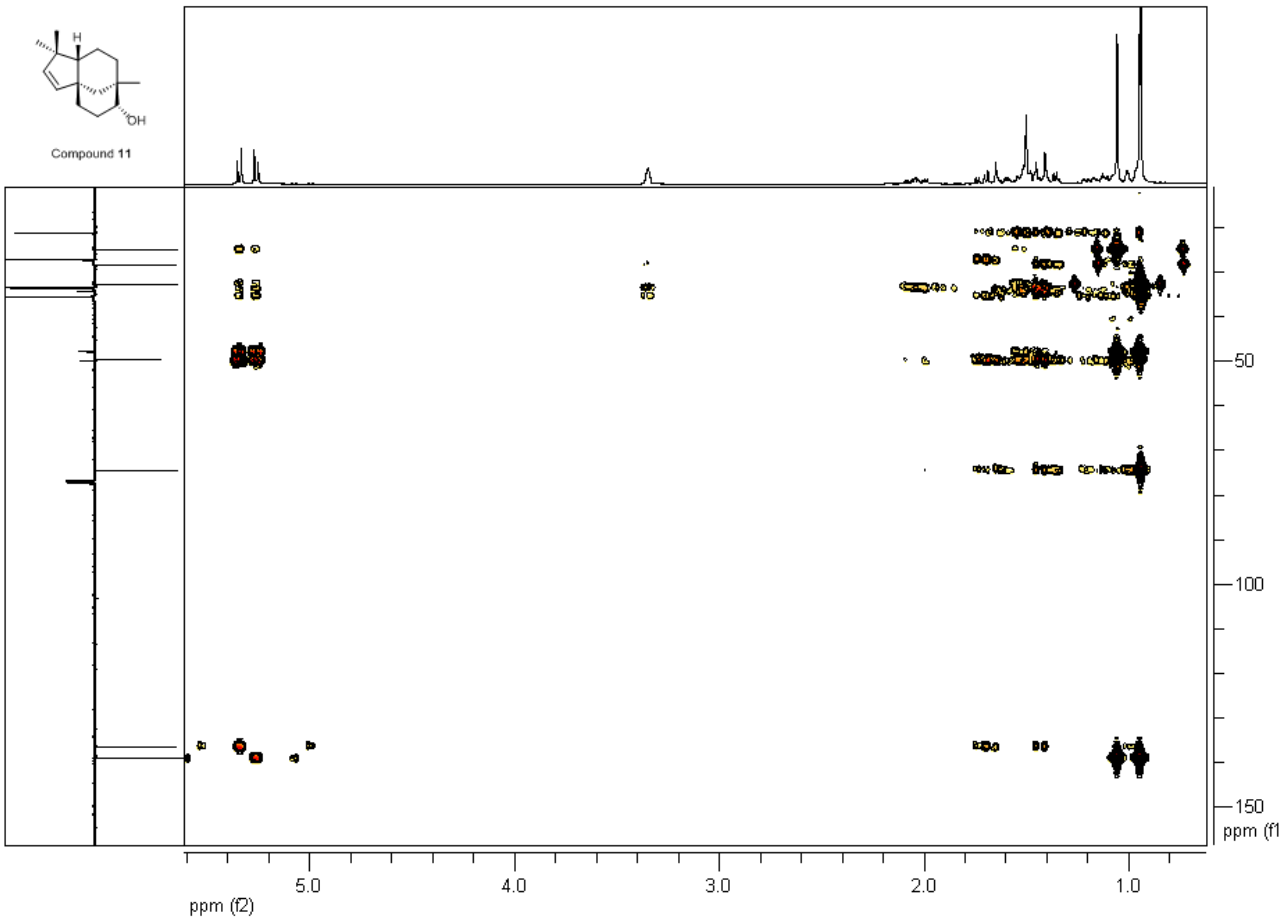

Fig. S12. HMBC of compound **11** in $CDCl_3$.

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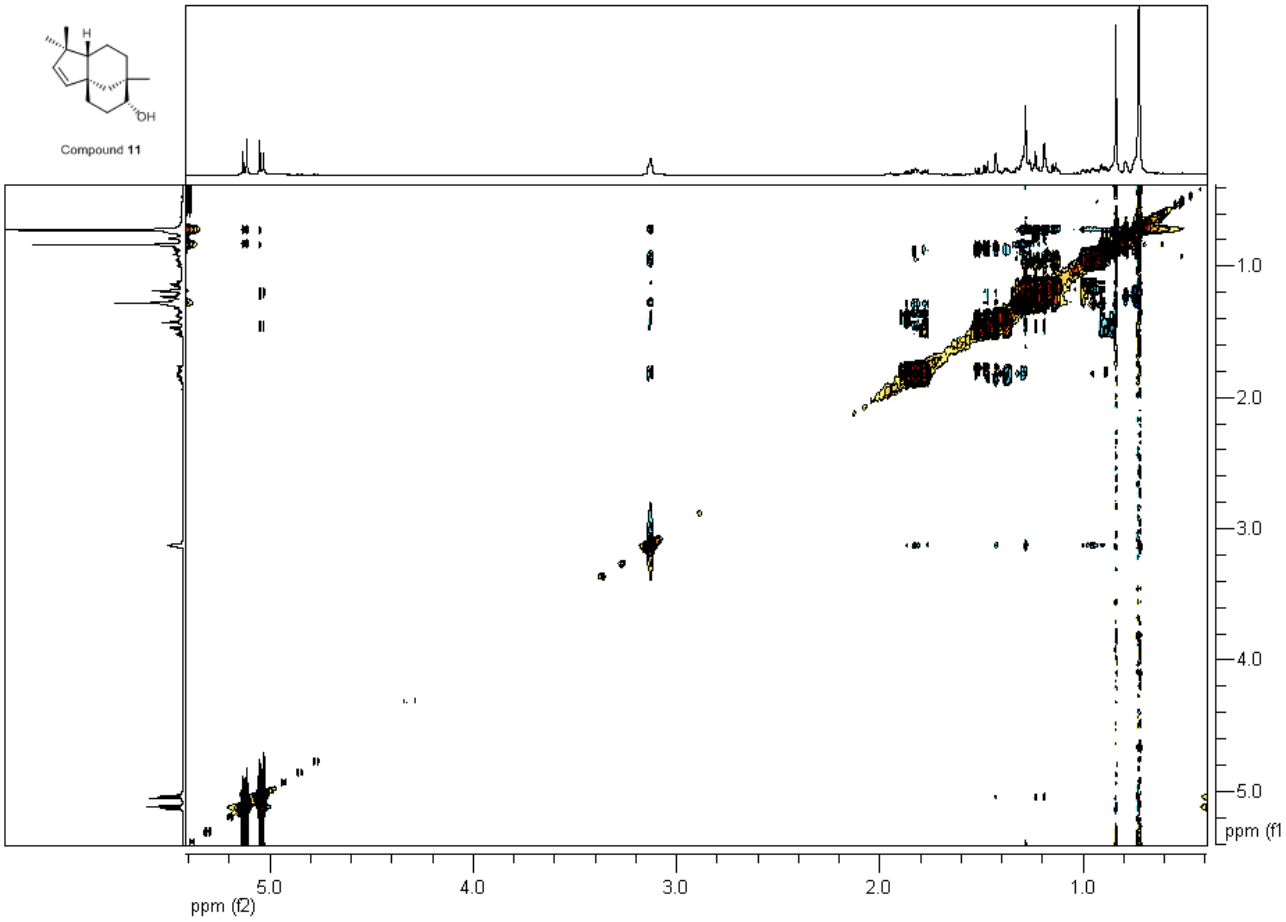

Fig. S13. NOESY of compound **7** in $CDCl_3$.

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NMR data for compound **14**

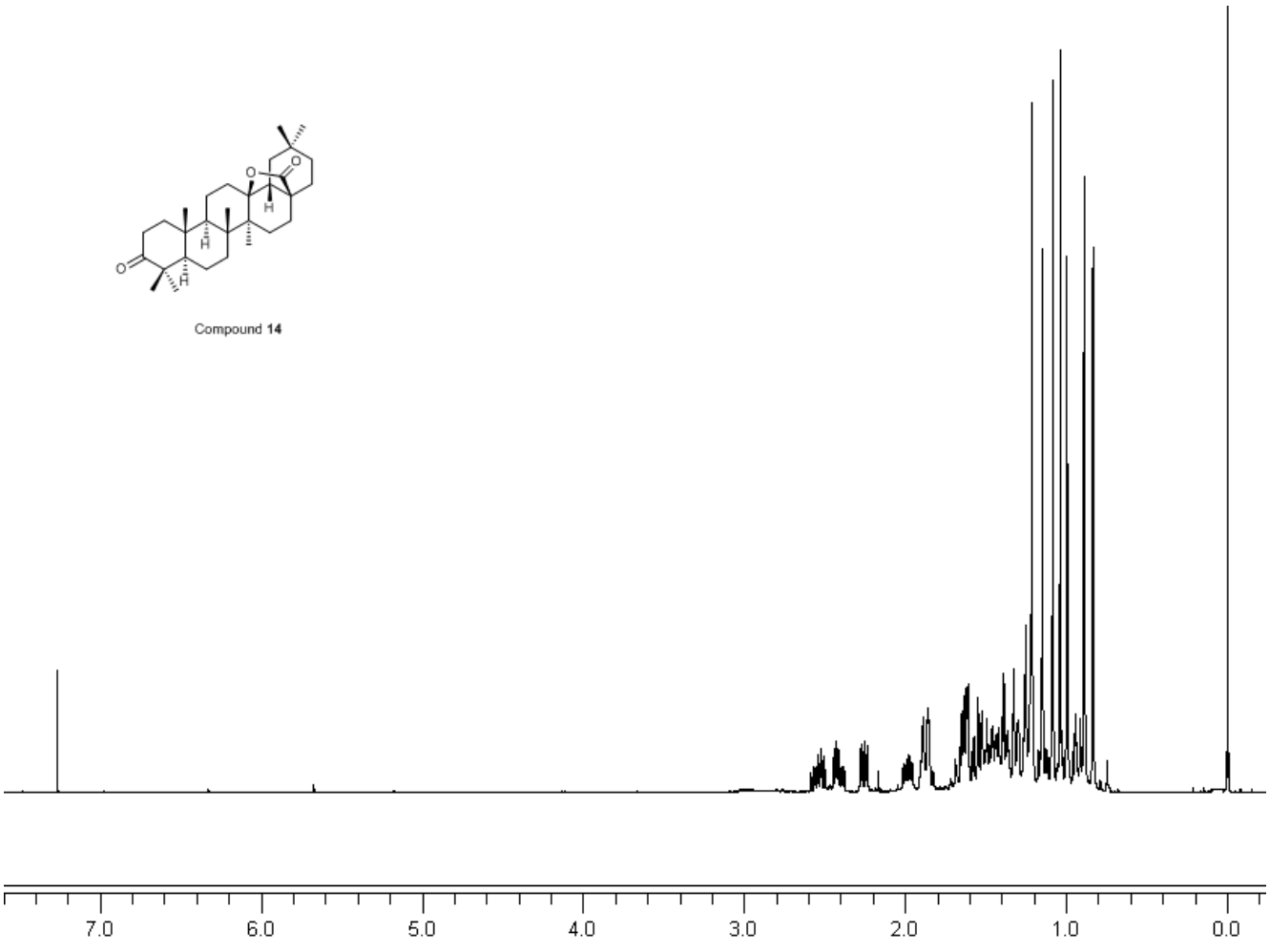

Fig. S14. ^{1}H NMR of compound **14** in $CDCl_3$.

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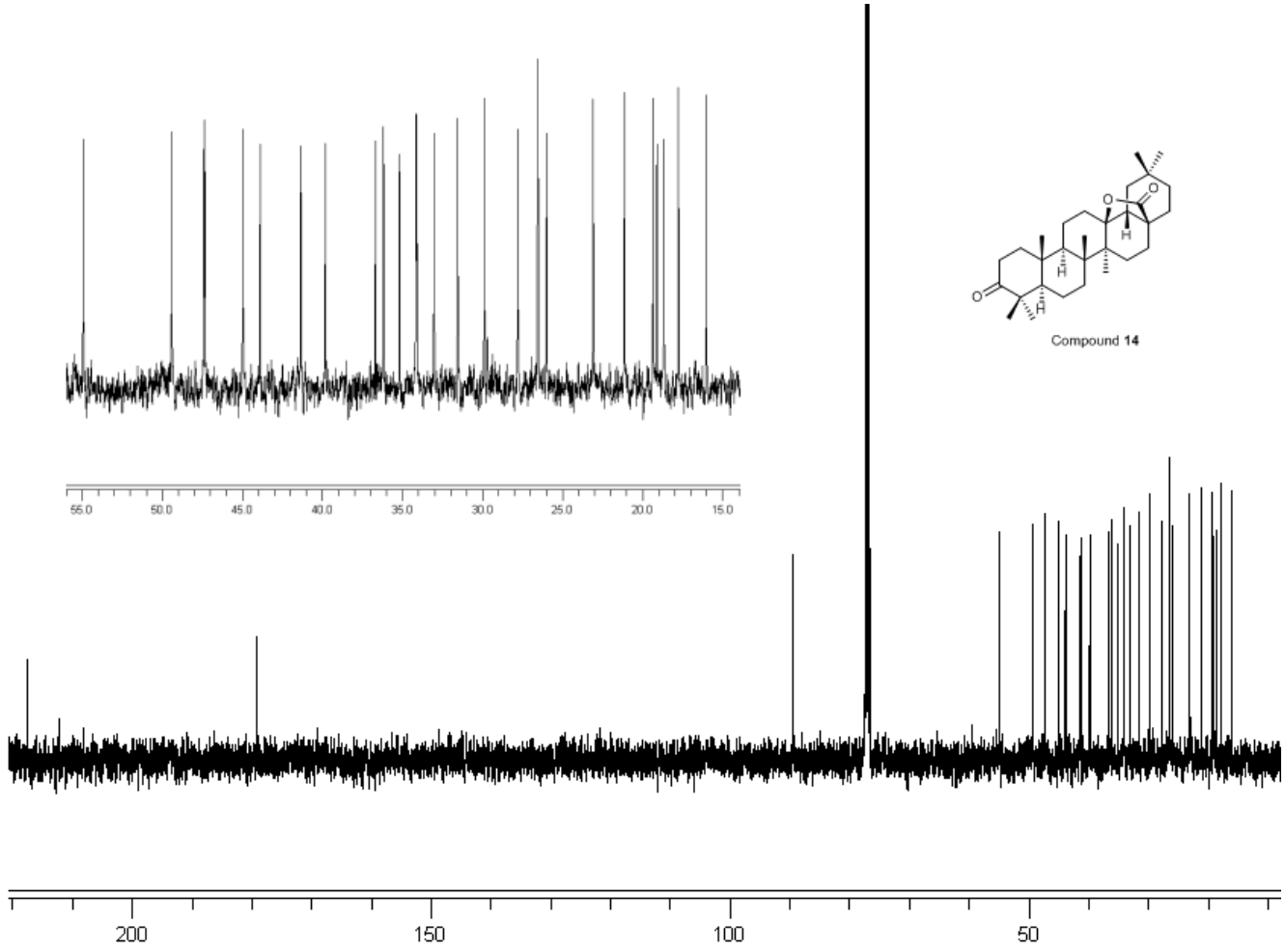

Fig. S15. ^{13}C NMR of compound **14** in $CDCl_3$.

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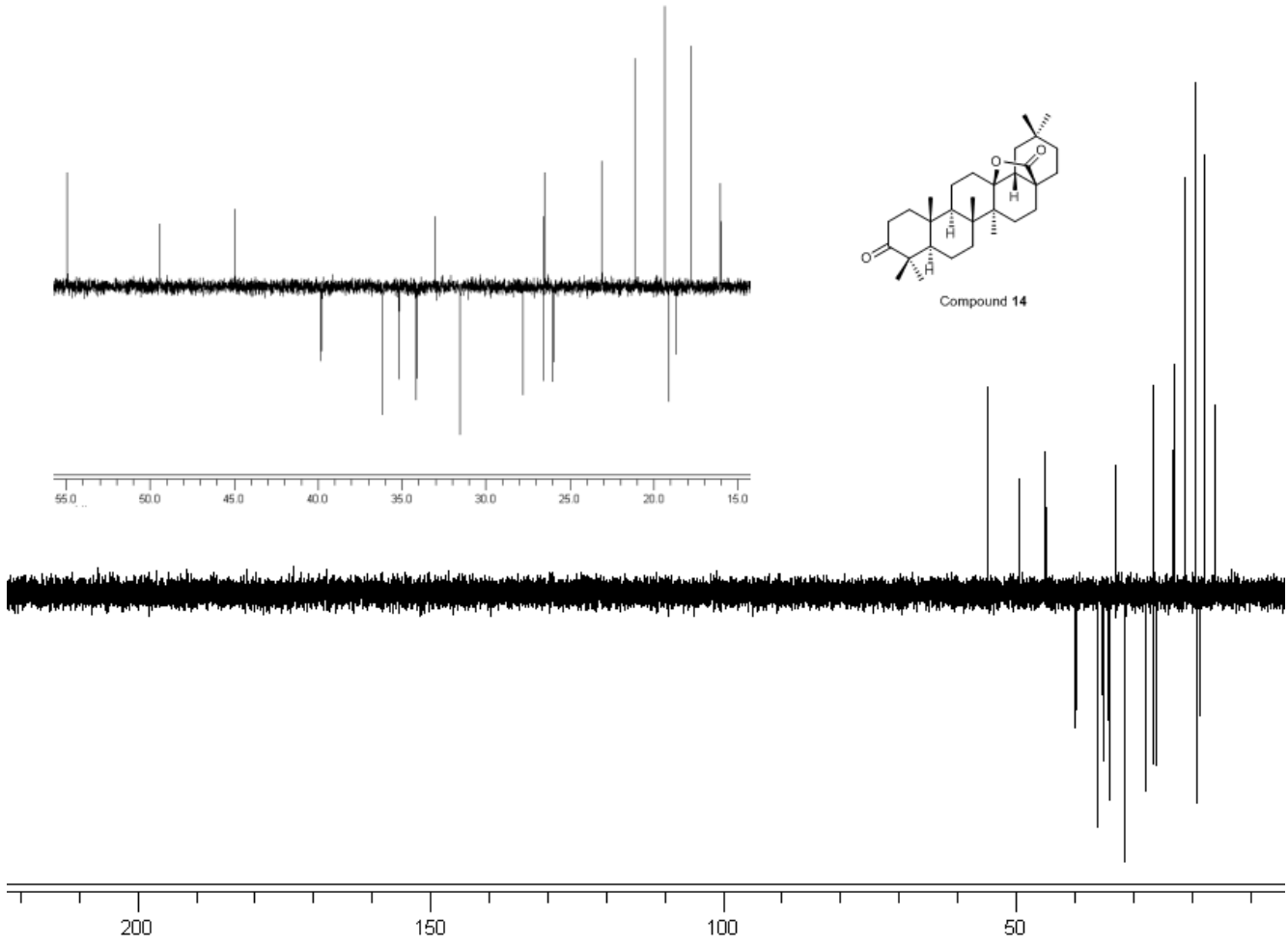

Fig. S16. DEPT 135 of compound **14** in $CDCl_3$.

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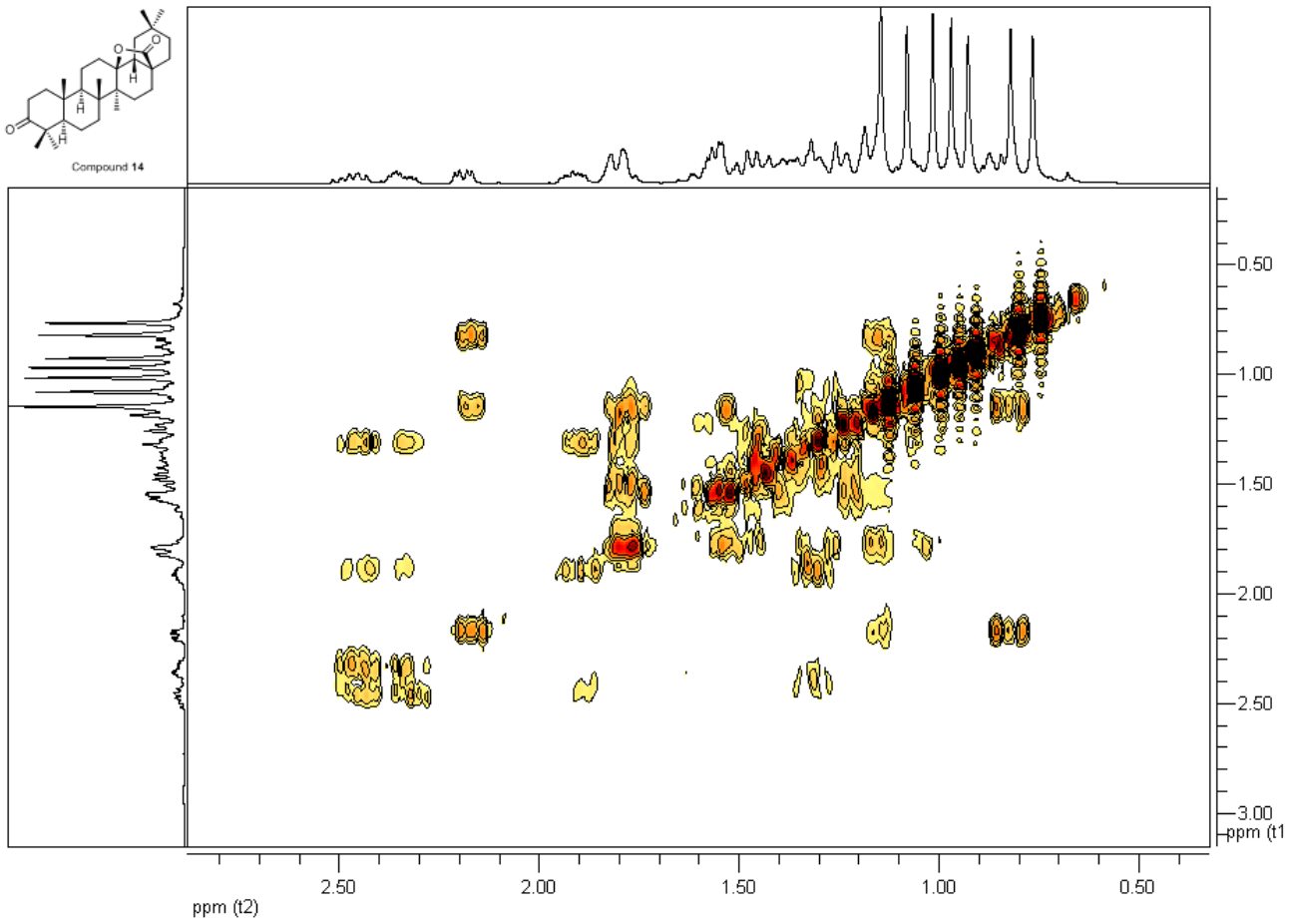

Fig. S17. ^{1}H-^{1}H COSY of compound **14** in $CDCl_3$.

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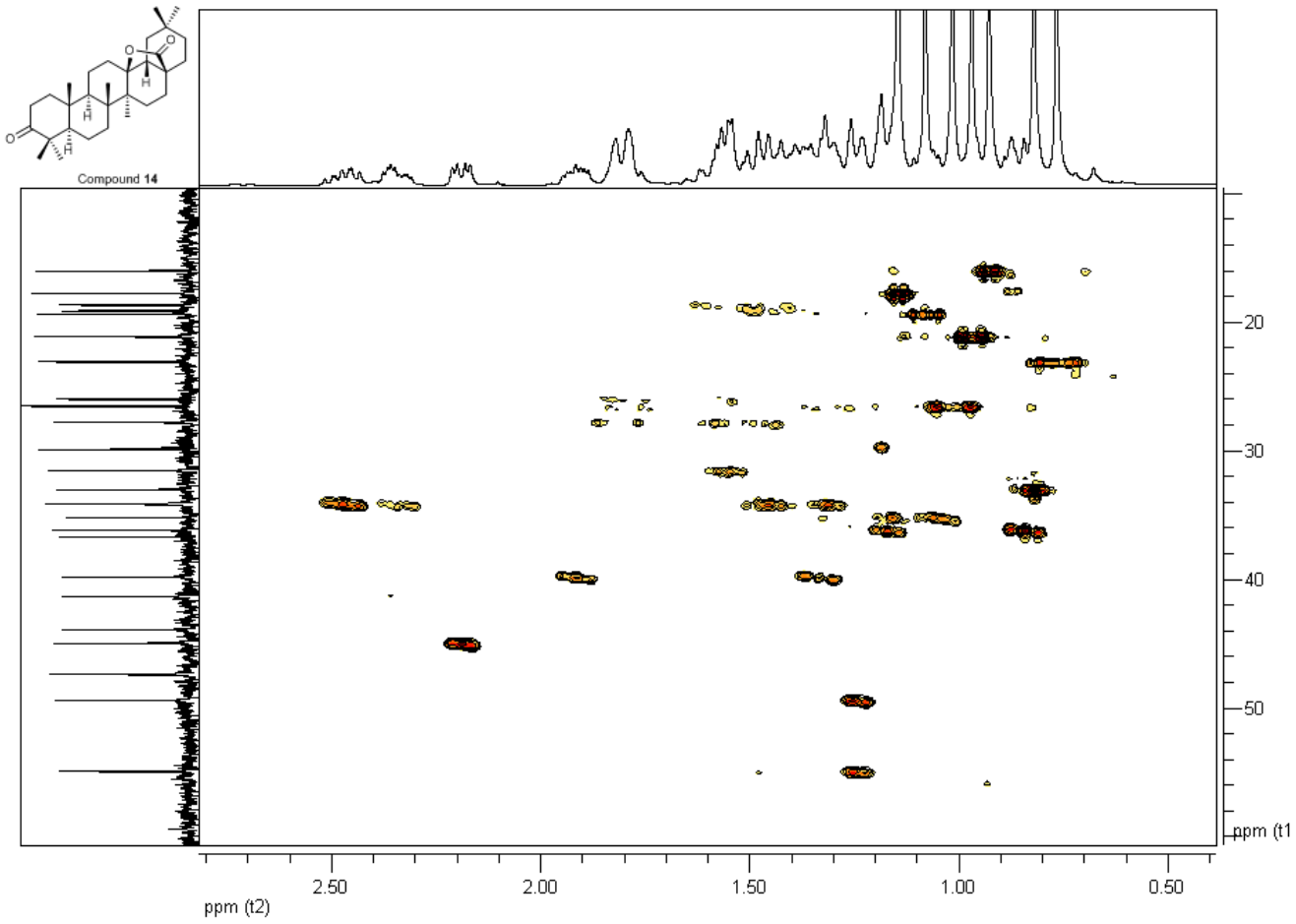

Fig. S18. HMQC of compound **14** in $CDCl_3$.

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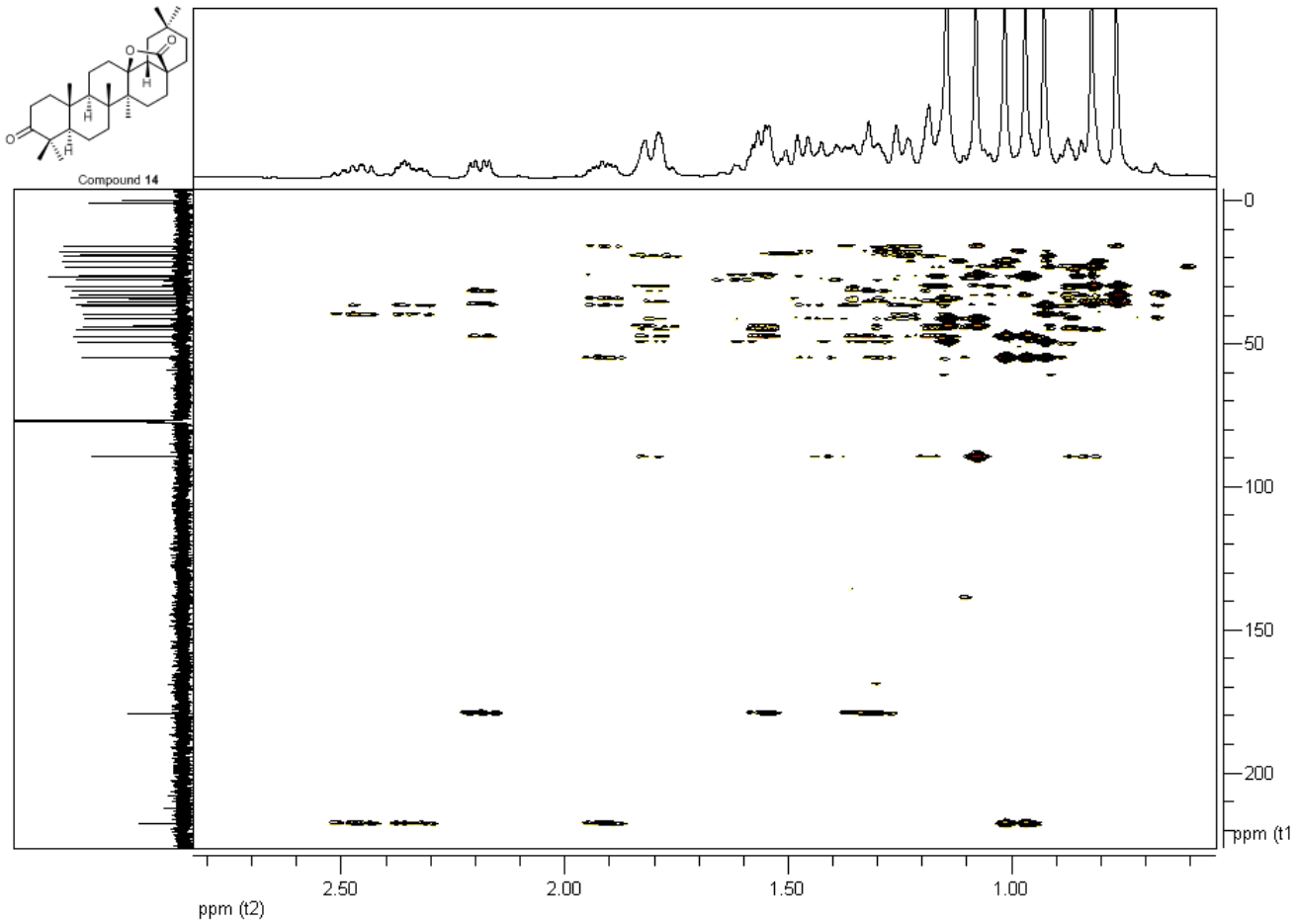

Fig. S19. HMBC of compound **14** in $CDCl_3$.

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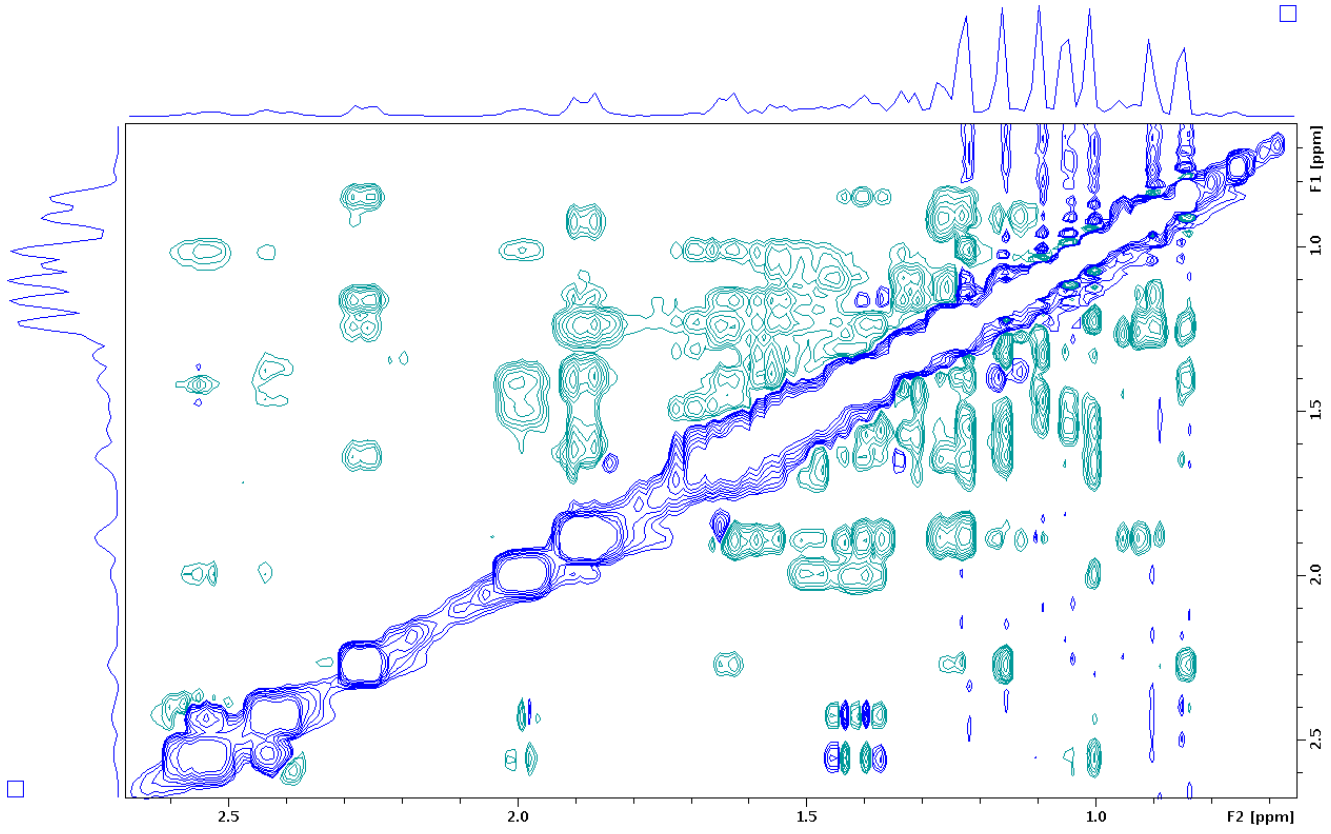

Fig. S20. NOESY of compound **14** in $CDCl_3$.

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NMR data for compound **16**

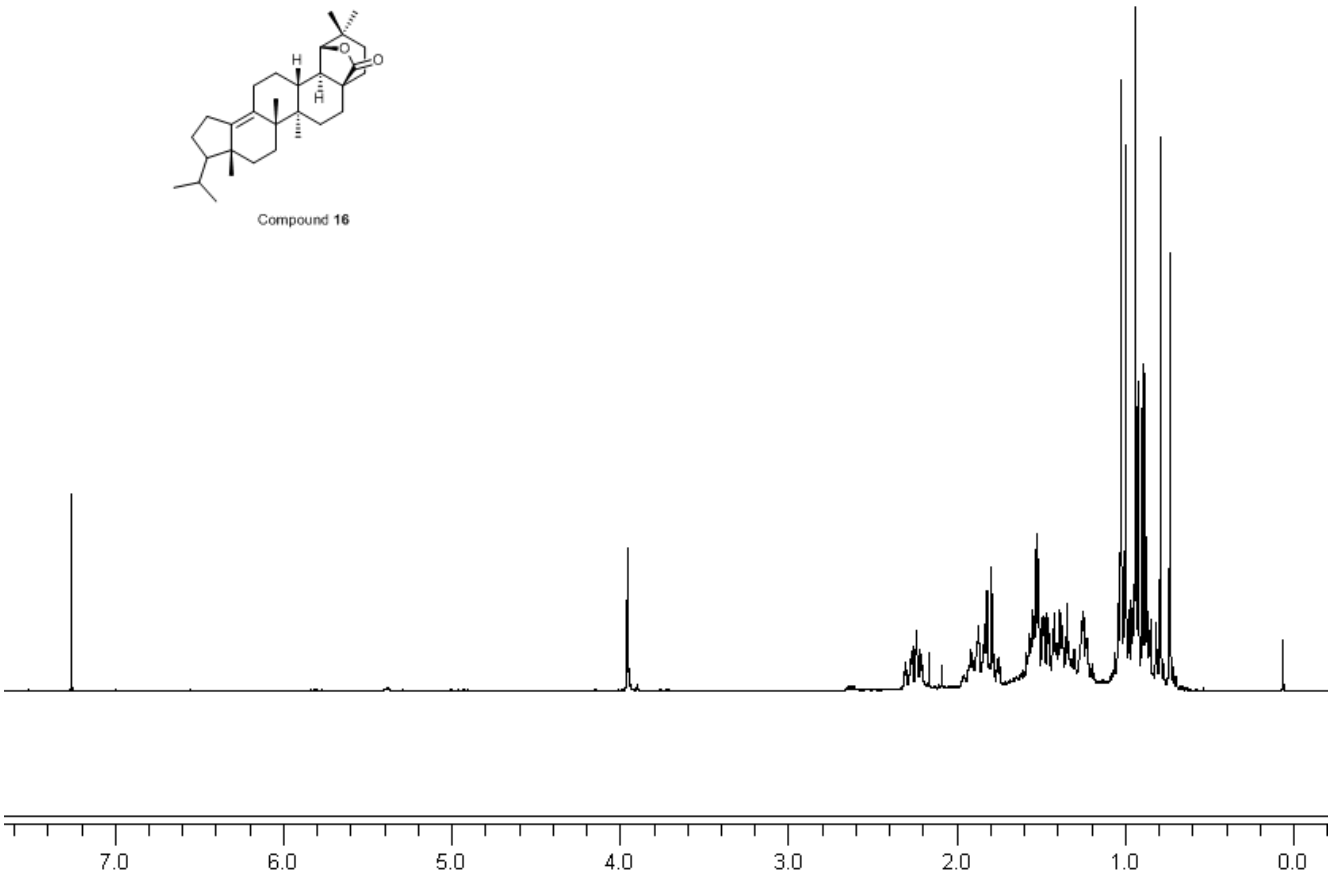

Fig. S21. ^{1}H NMR of compound **16** in $CDCl_3$.

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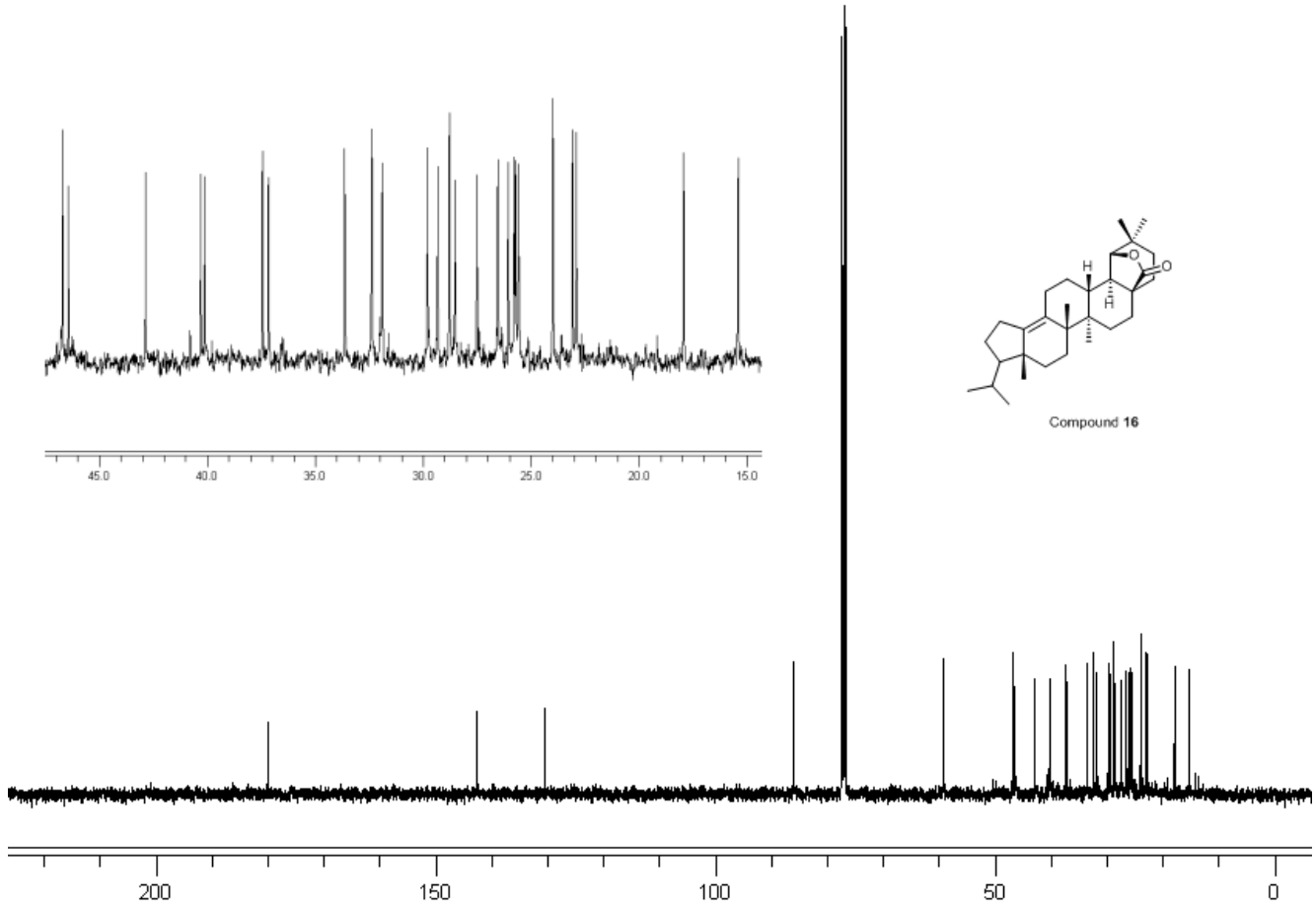

Fig. S22. ^{13}C NMR of compound **16** in $CDCl_3$.

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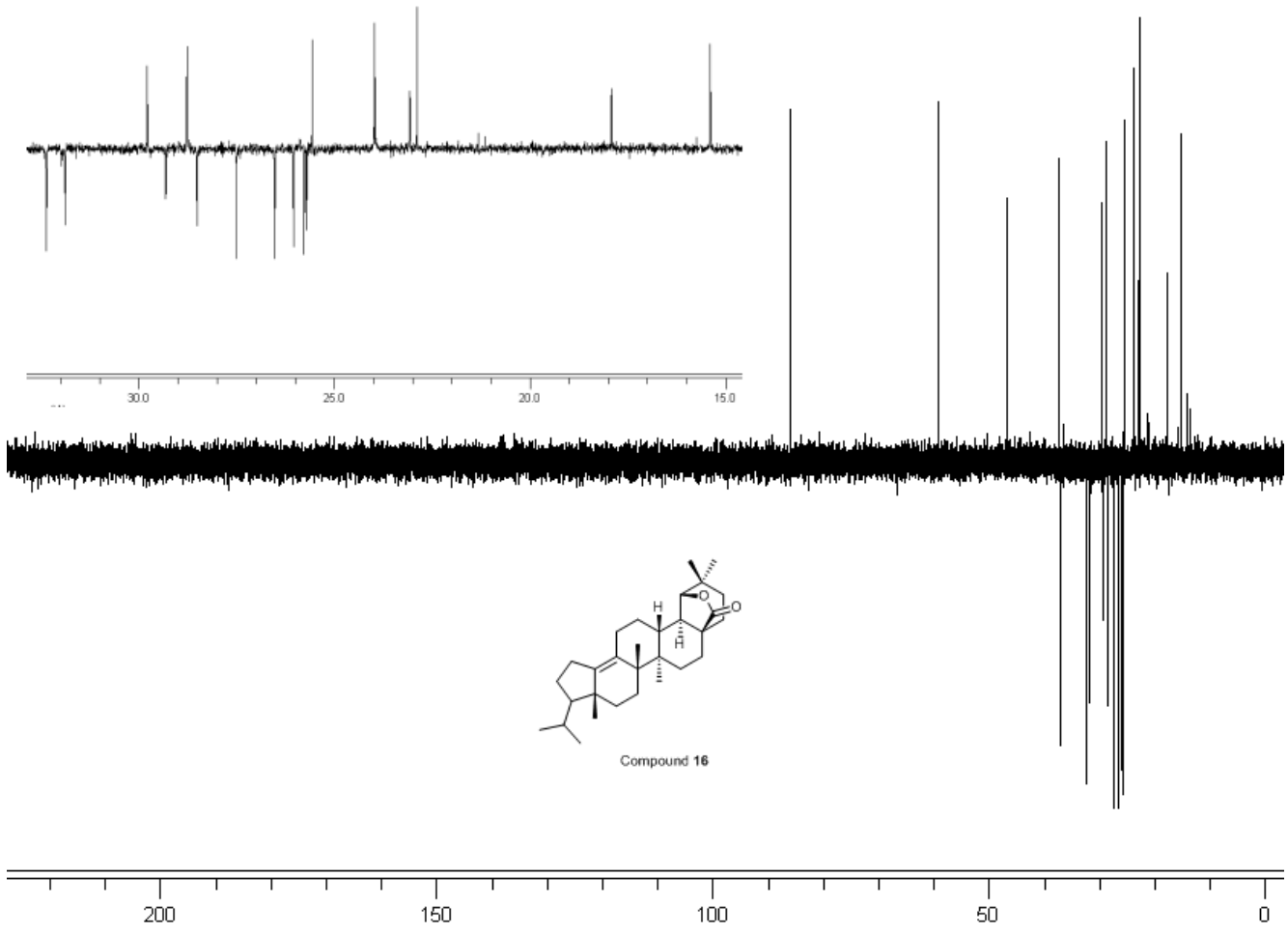

Fig. S23. DEPT 135 of compound **16** in $CDCl_3$.

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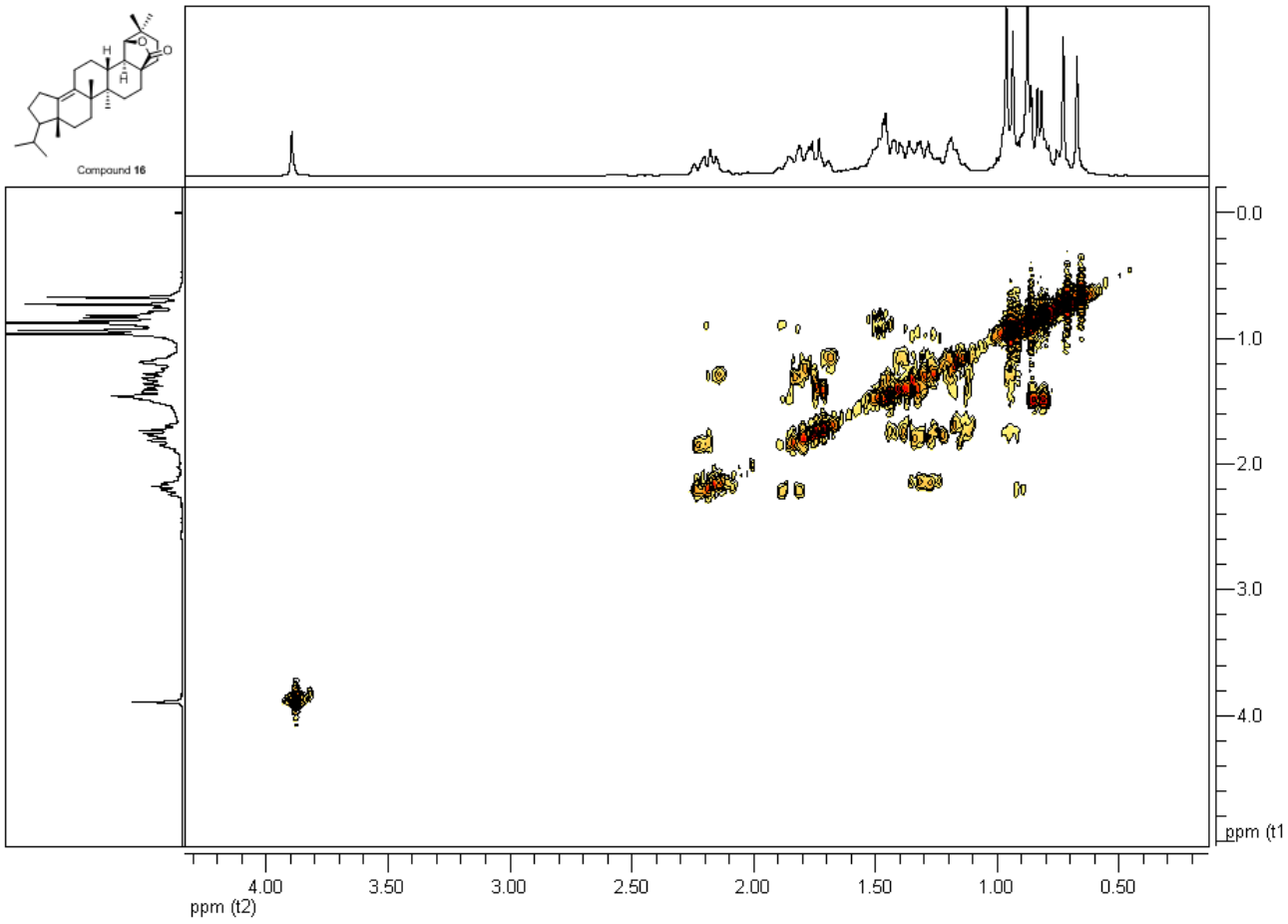

Fig. S24. ^{1}H-^{1}H COSY of compound **16** in $CDCl_3$.

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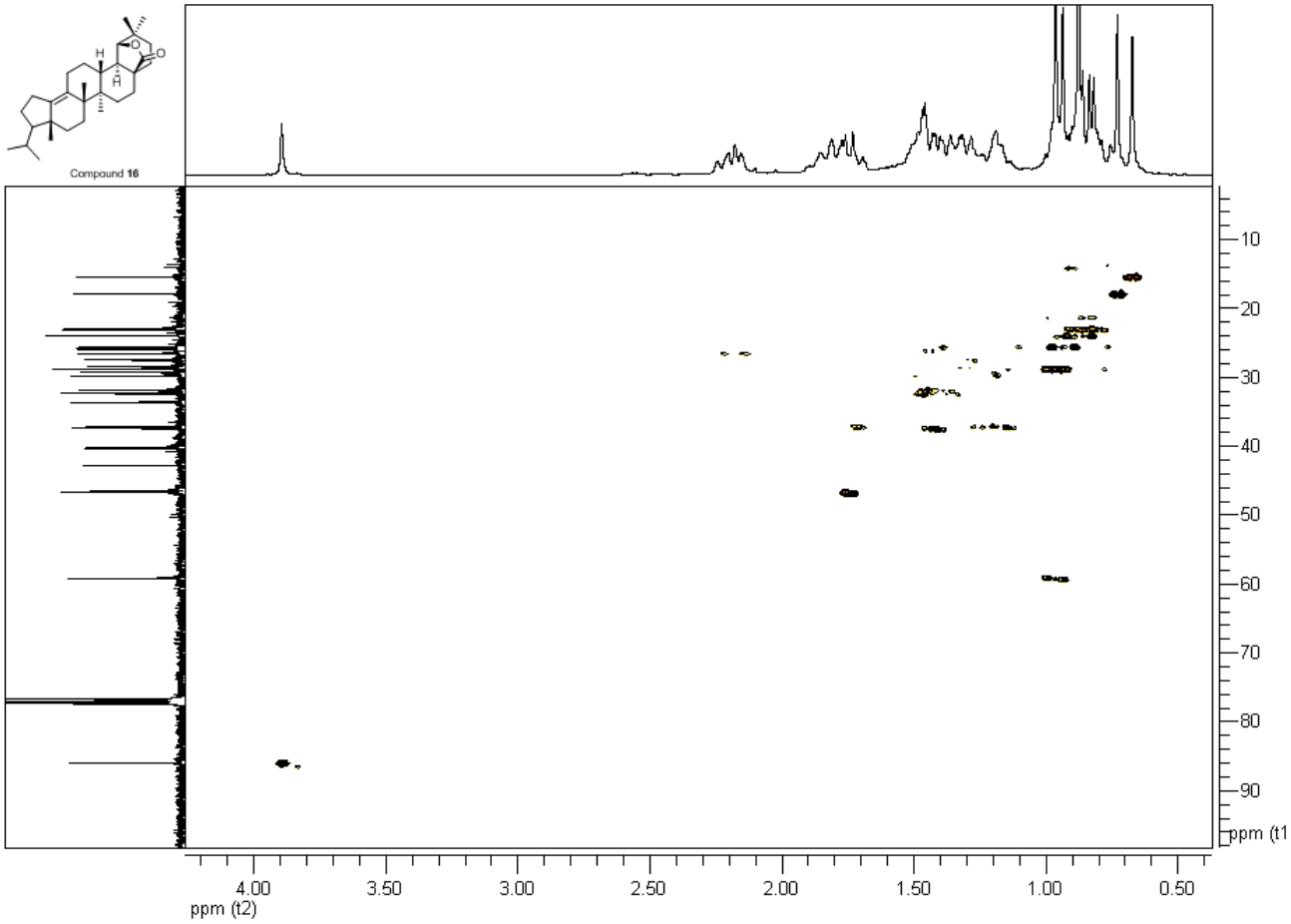

Fig. S25. HMQC of compound **16** in $CDCl_3$.

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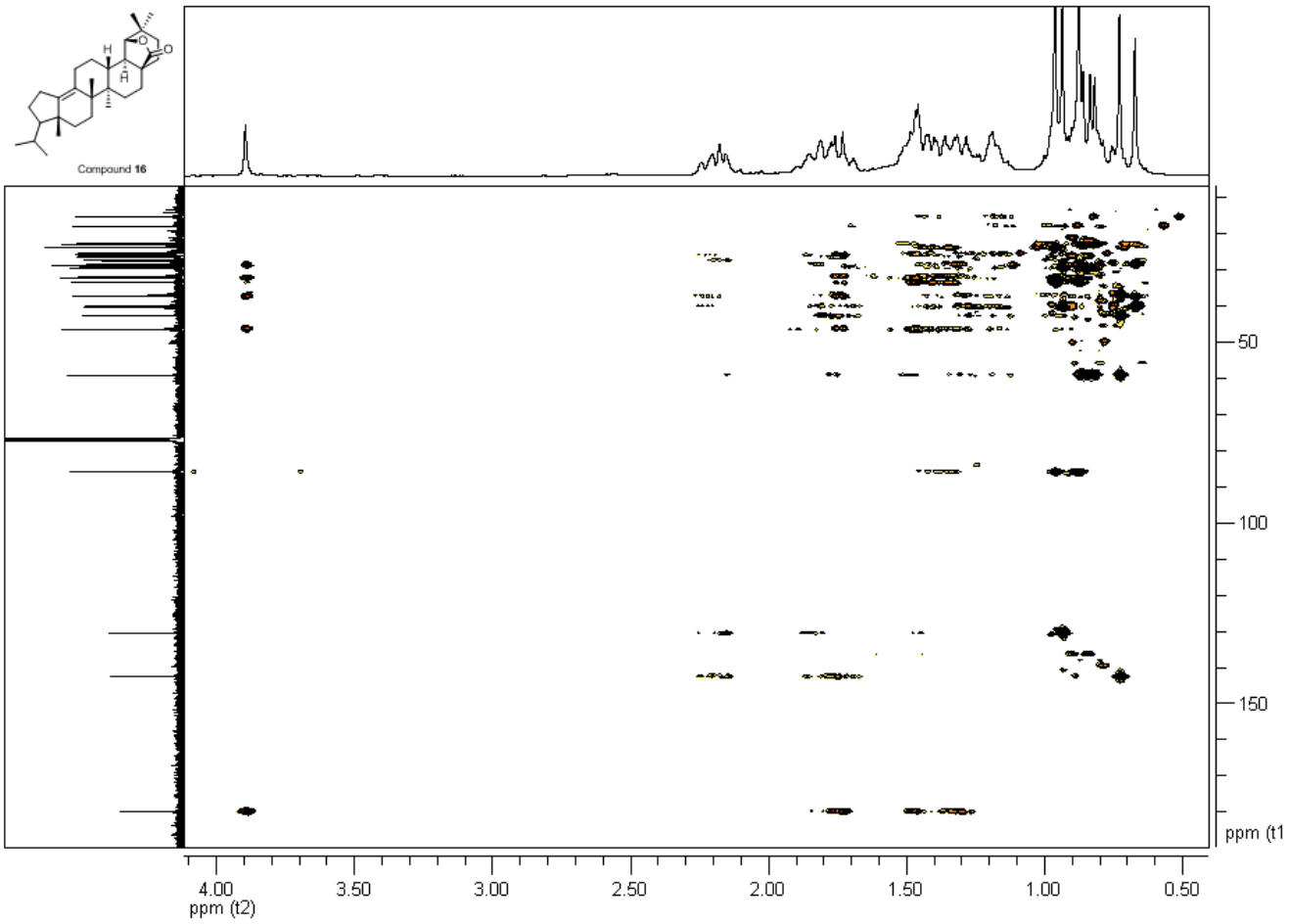

Fig. S26. HMBC of compound **16** in $CDCl_3$.

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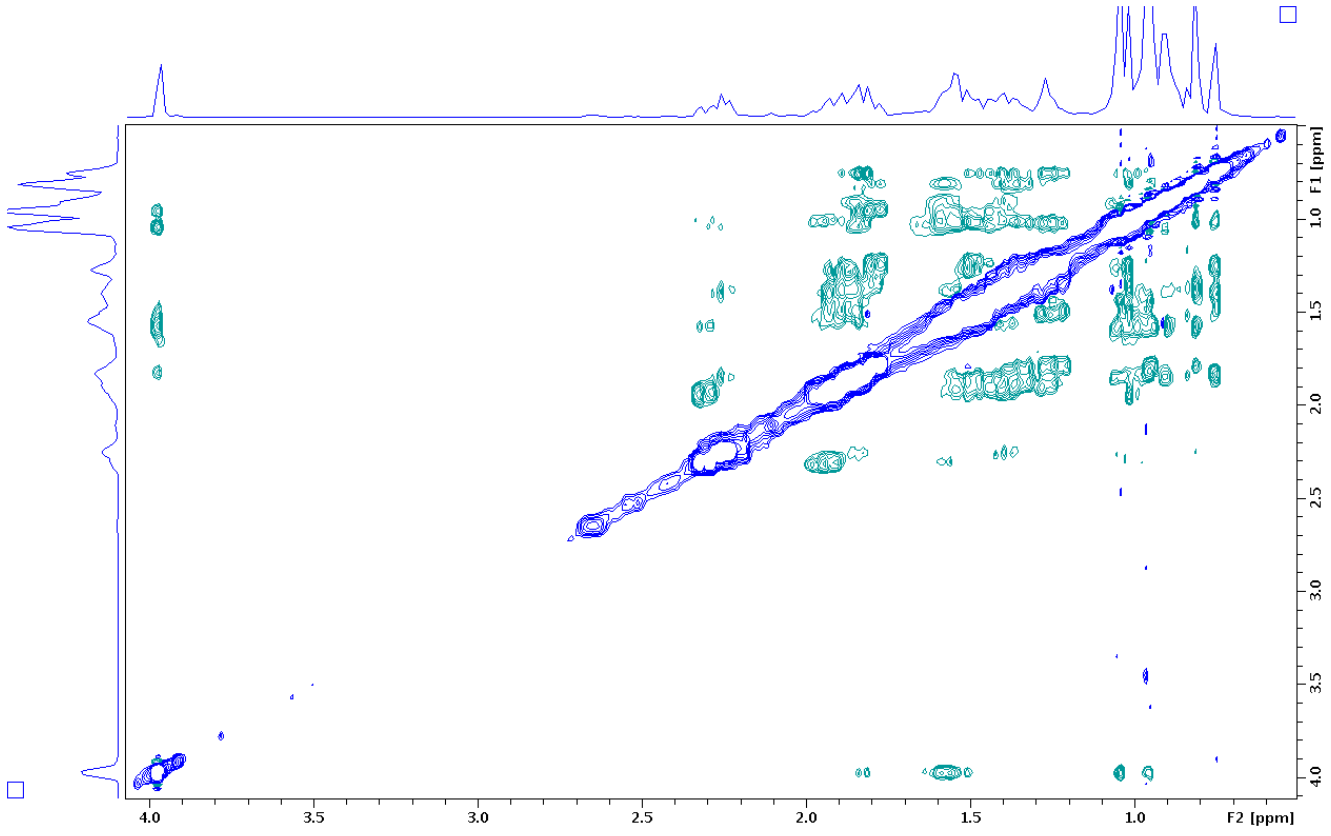

Fig. S27. NOESY of compound **16** in $CDCl_3$.