

Supplementary information

Synthesis and anticancer activity of novel heterocyclic glycyrrhetic acid derivatives

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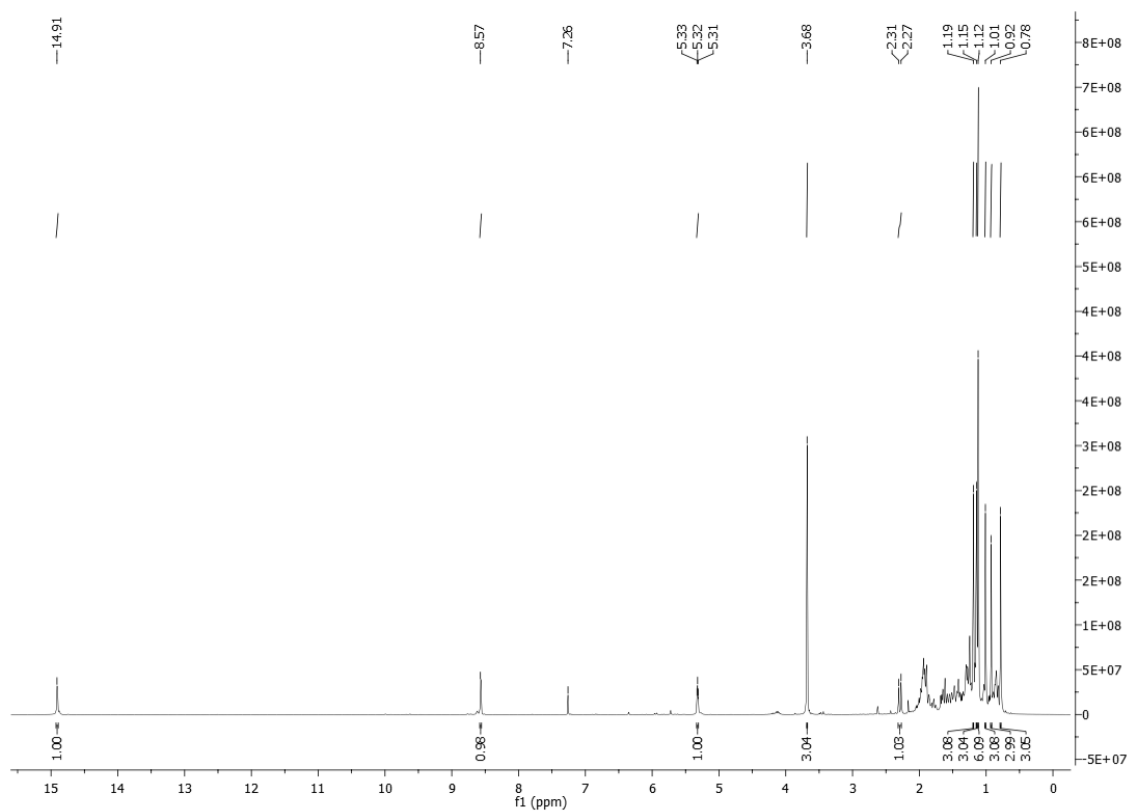
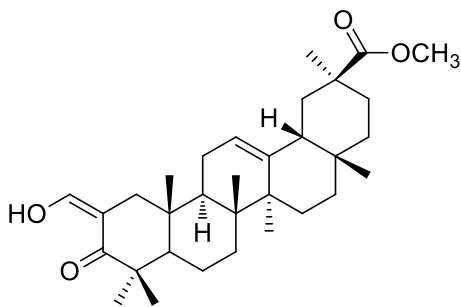
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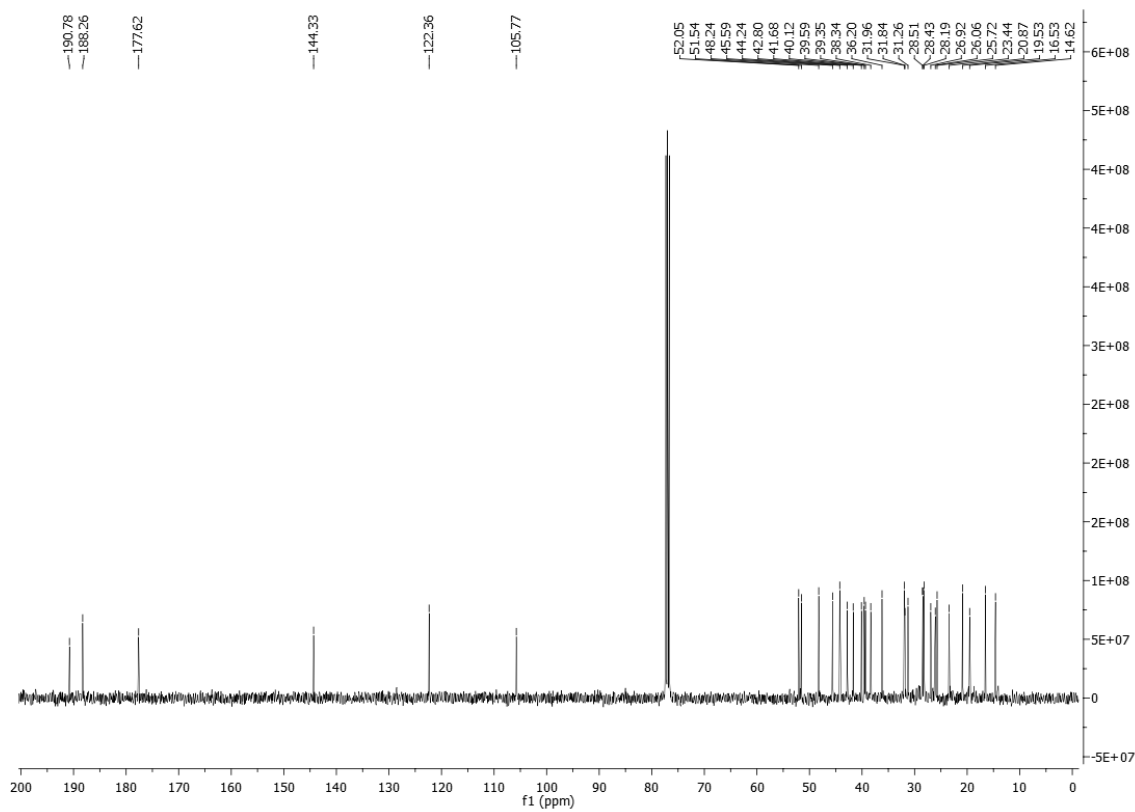
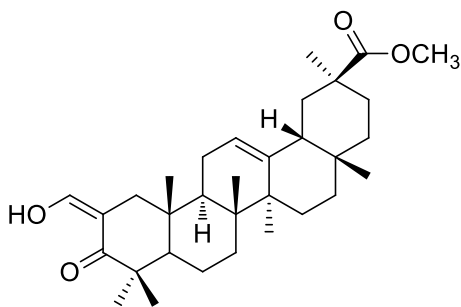
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1. NMR data for compound 8

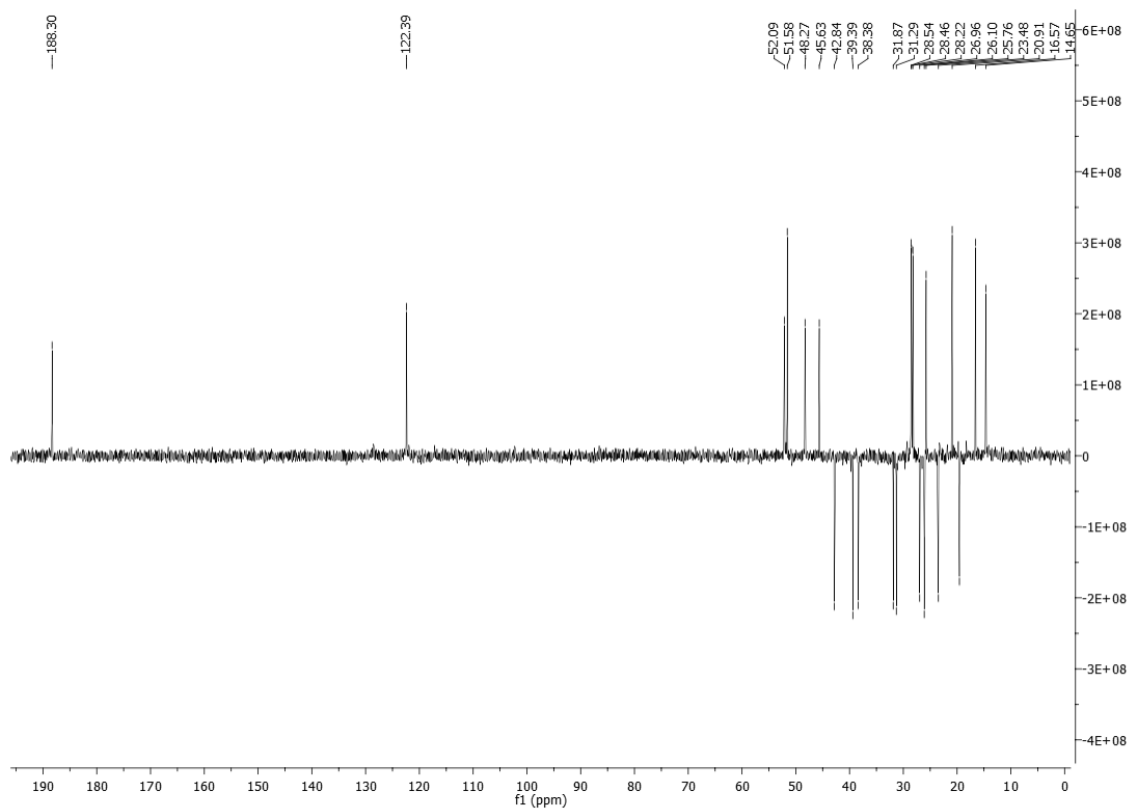
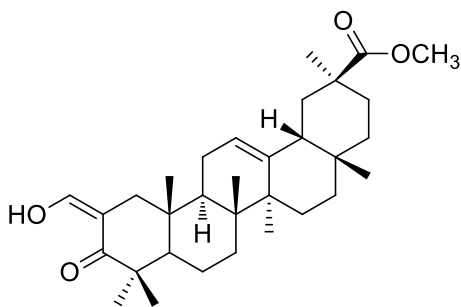
1.1. ^1H NMR spectrum for compound 8 recorded in CDCl_3



1.2. ^{13}C NMR spectrum for compound 8 recorded in CDCl_3

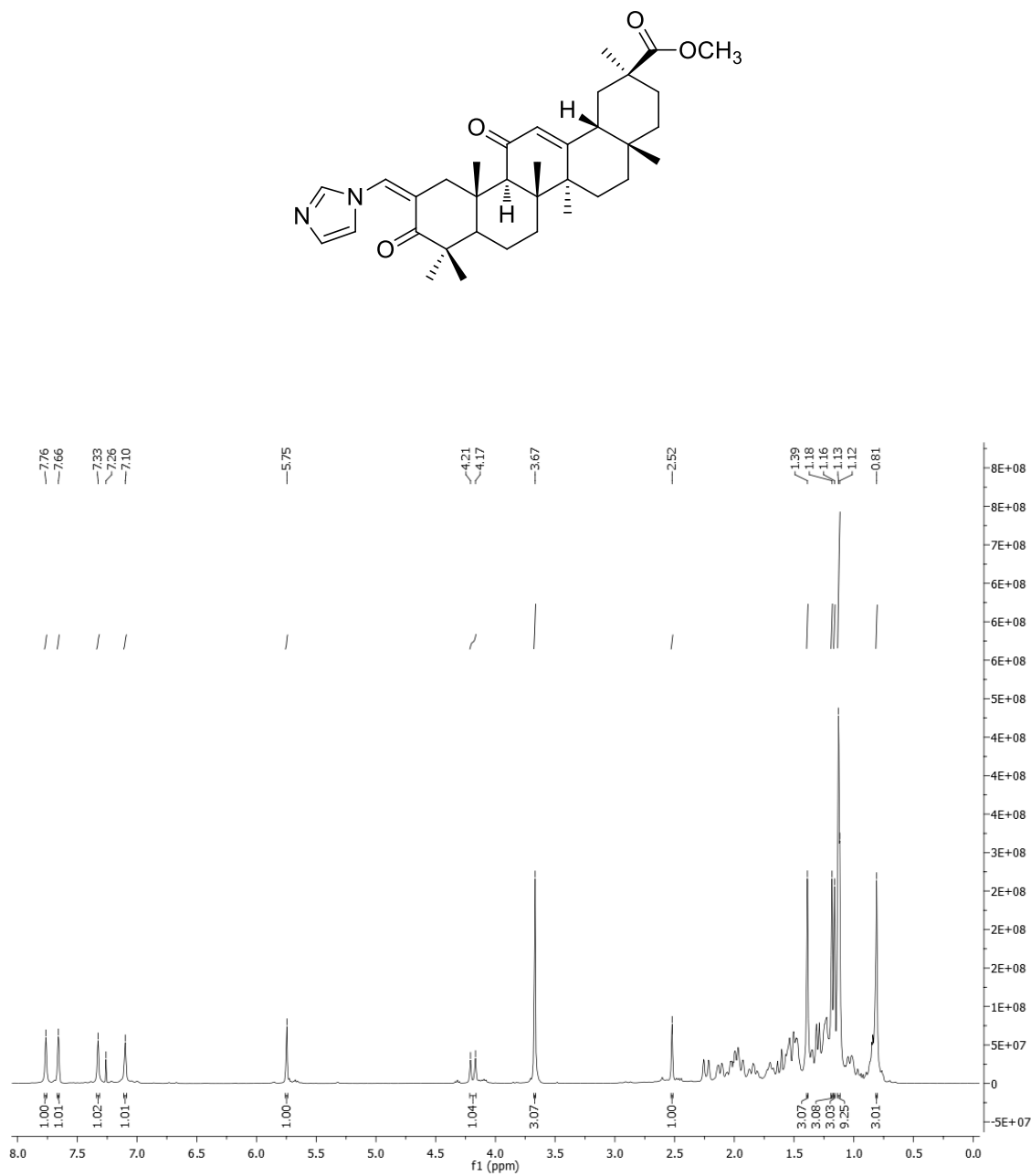


1.3. DEPT-135 spectrum for compound 8 recorded in CDCl₃

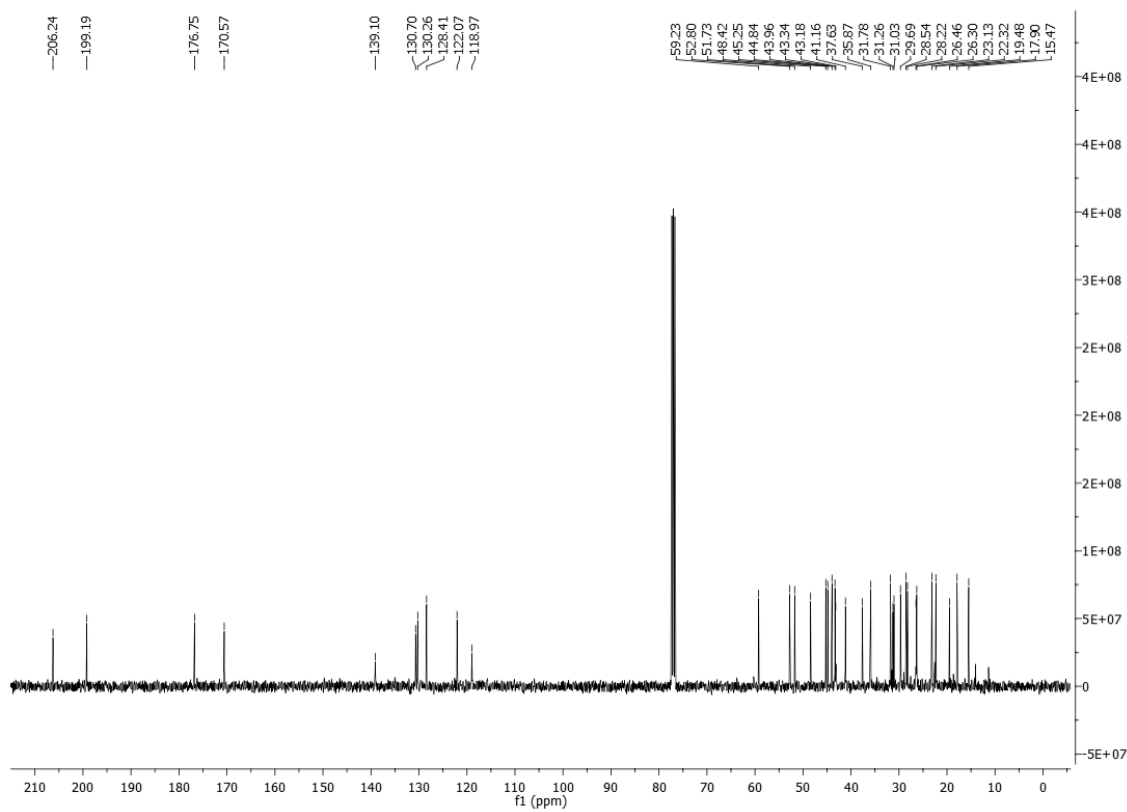
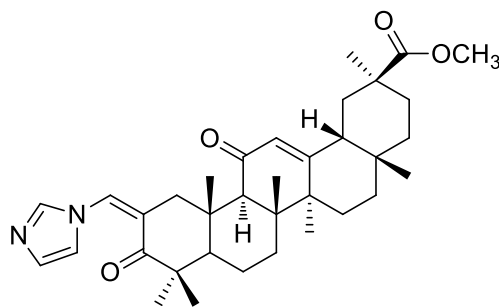


2. NMR data for compound 9

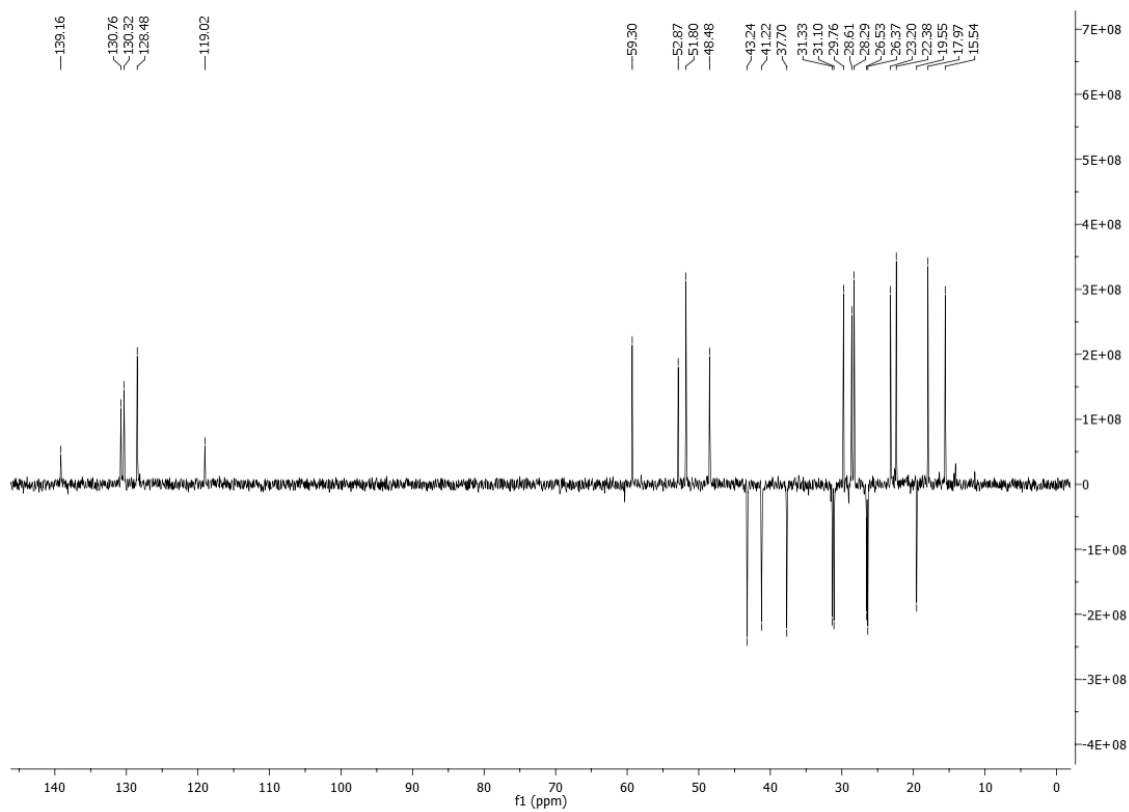
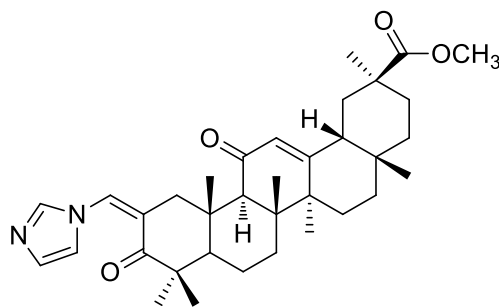
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2.2. ^{13}C NMR spectrum for compound 9 recorded in CDCl_3

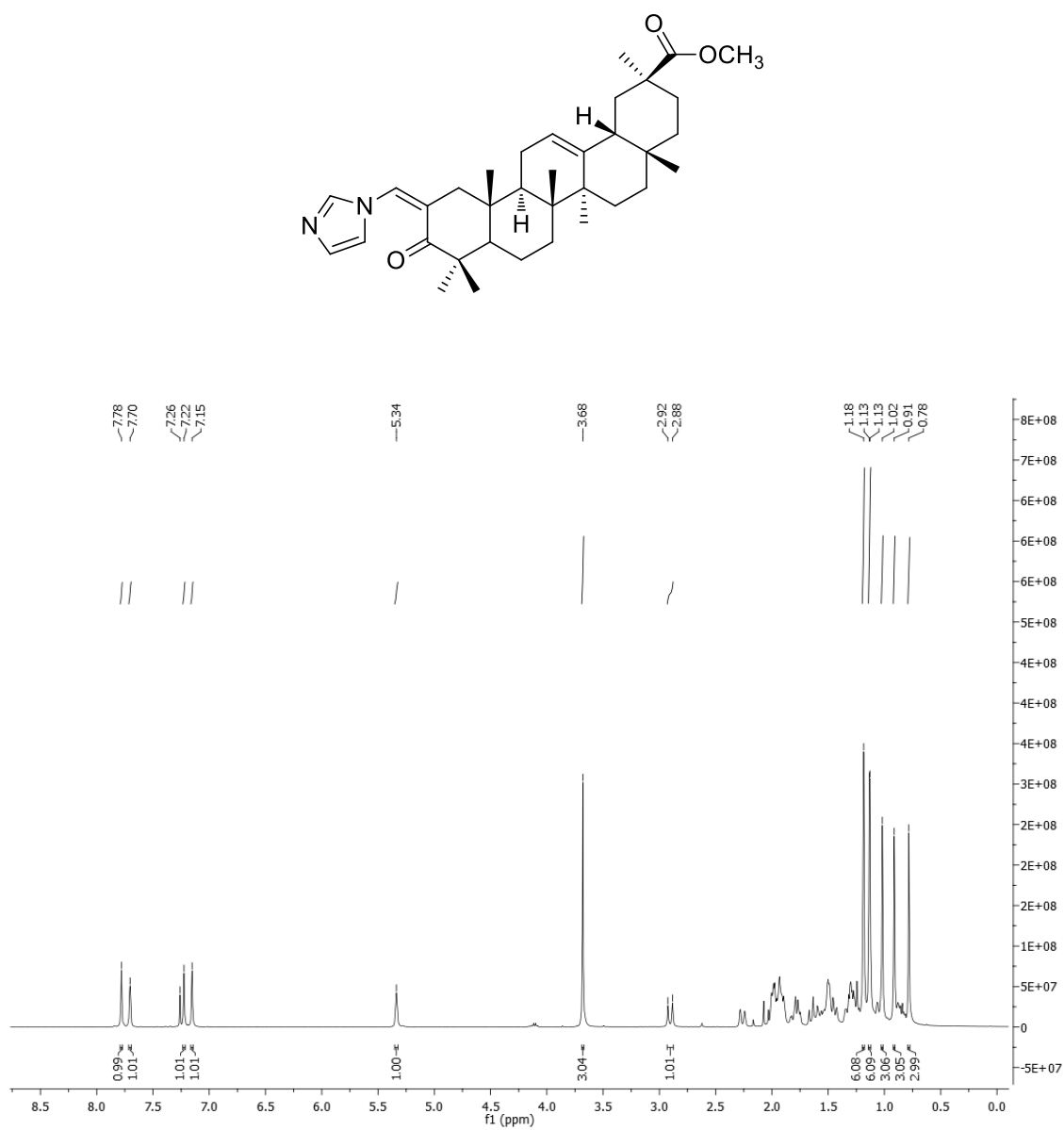


2.3. DEPT-135 spectrum for compound 9 recorded in CDCl₃

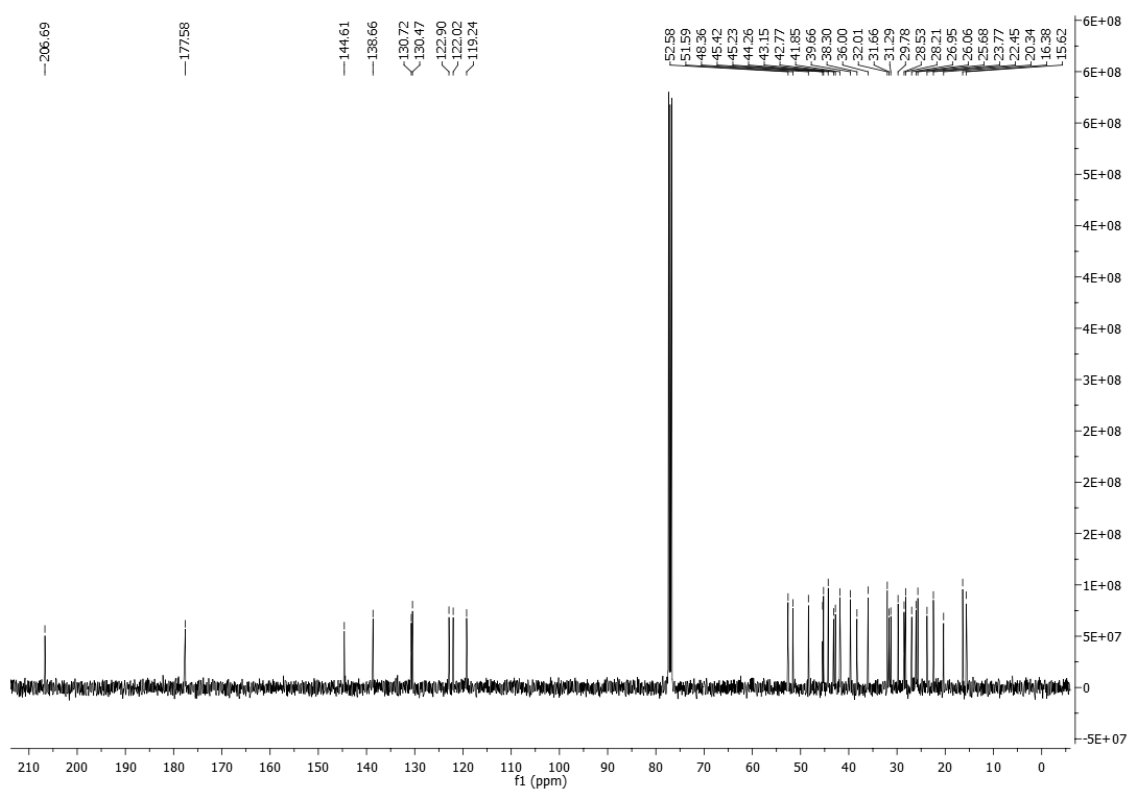
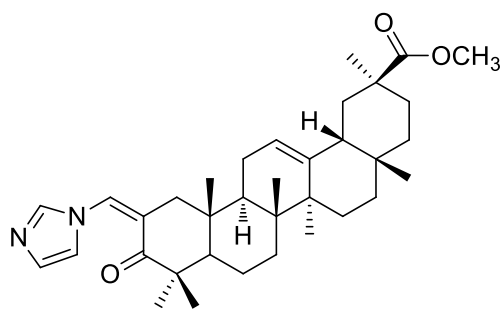


3. NMR data for compound 10

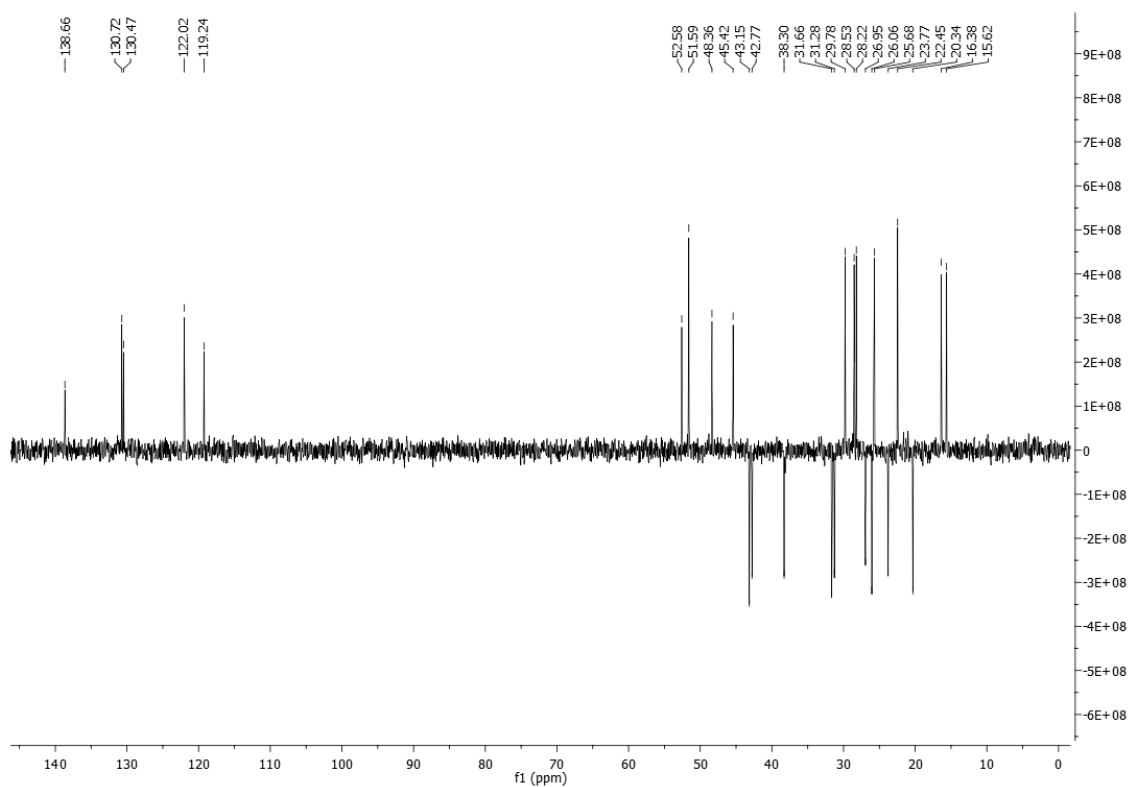
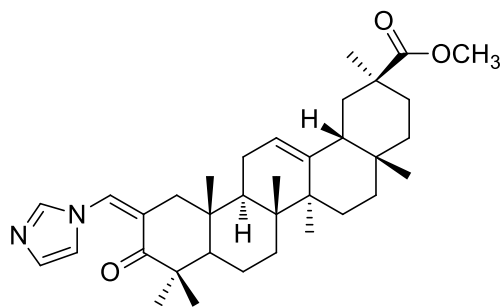
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3.2. ^{13}C NMR spectrum for compound 10 recorded in CDCl_3

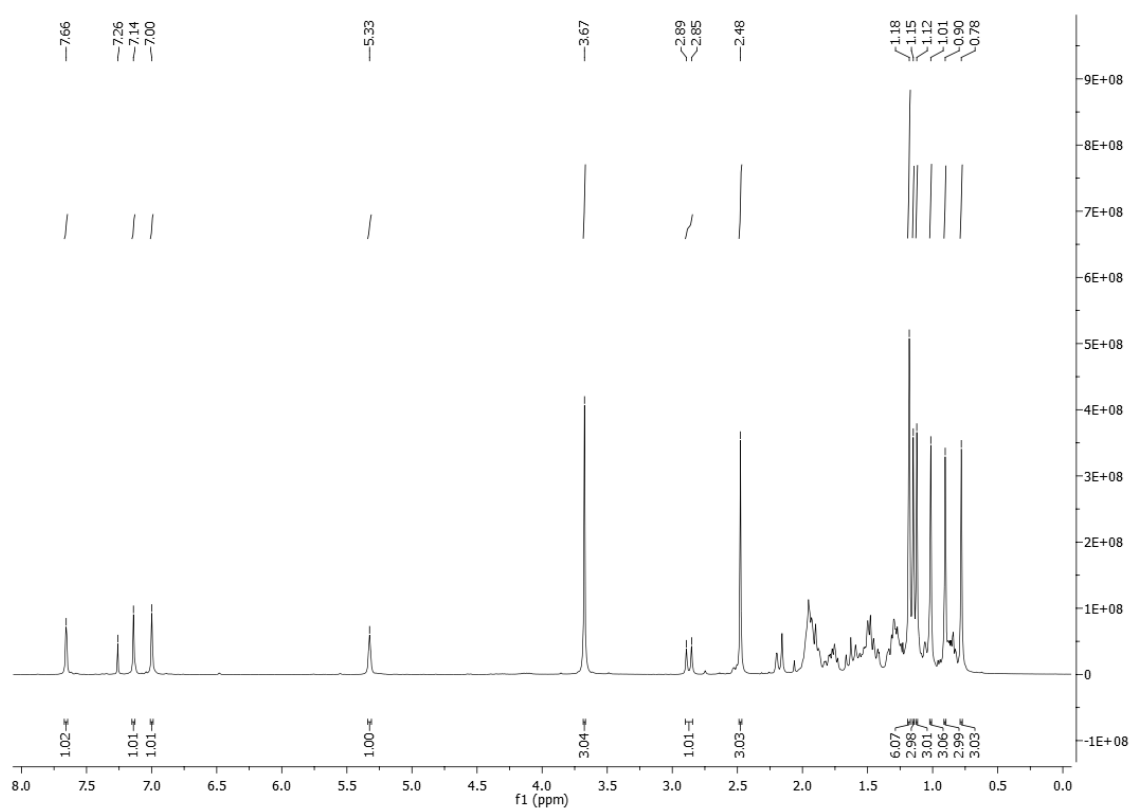
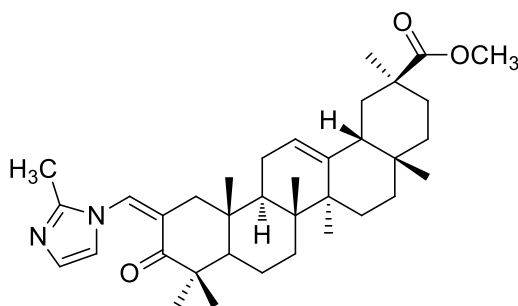


3.3. DEPT-135 spectrum for compound 10 recorded in CDCl₃

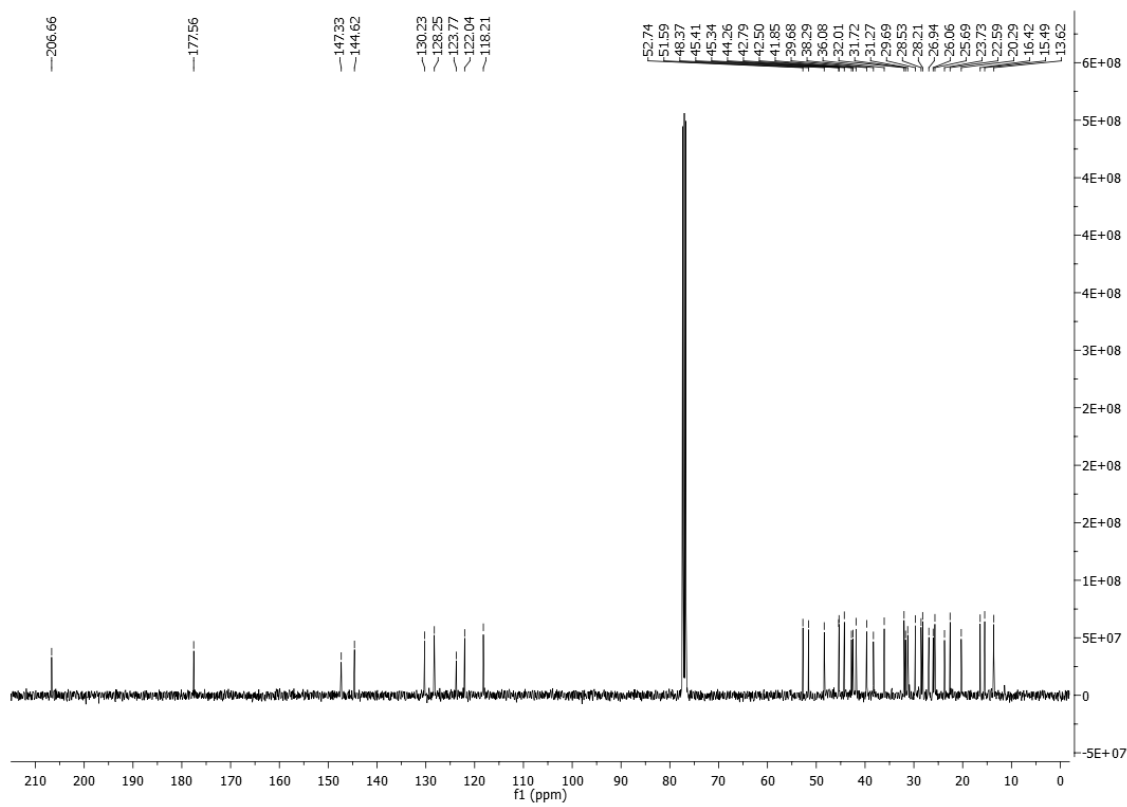
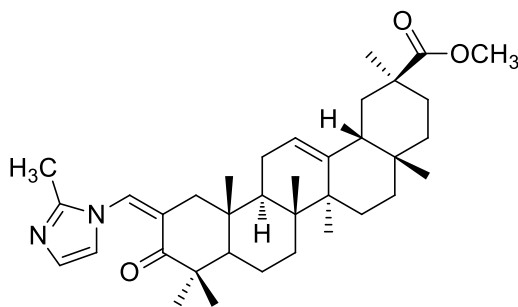


4. NMR data for compound 12

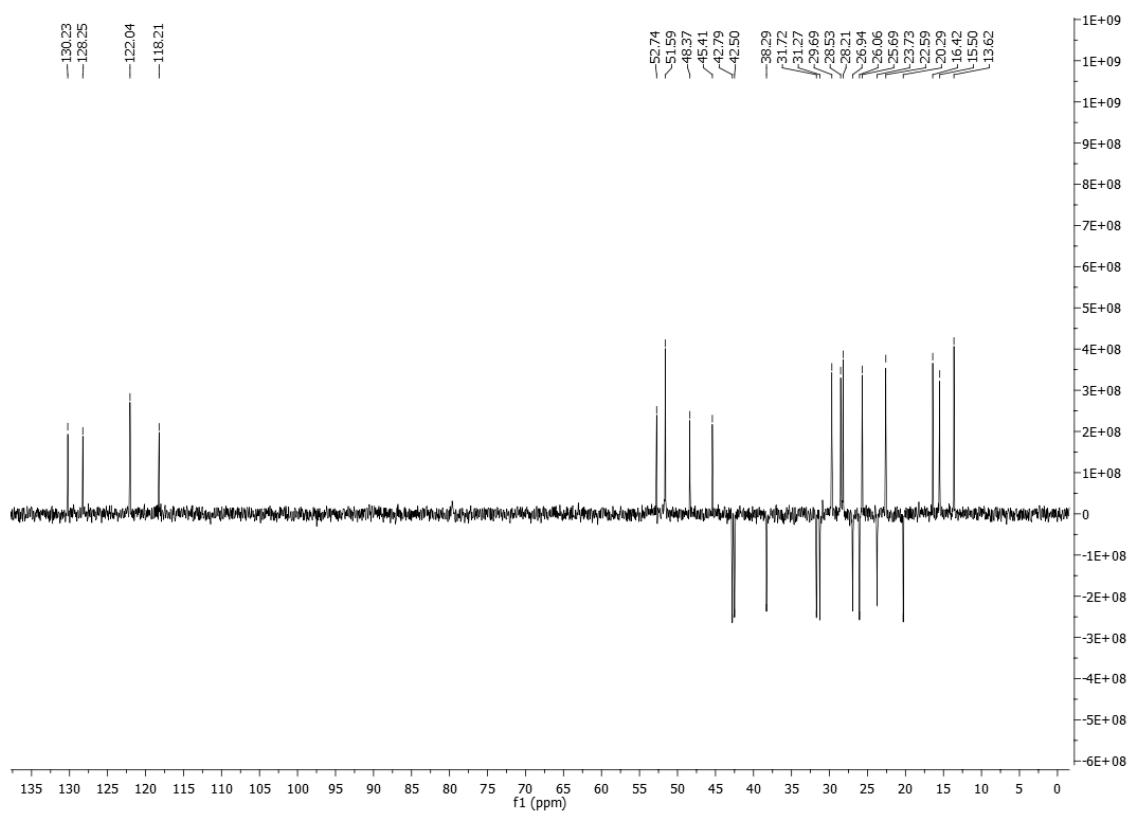
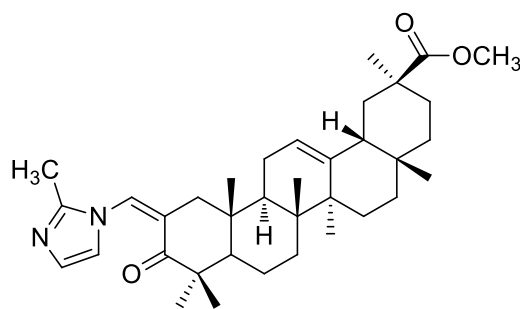
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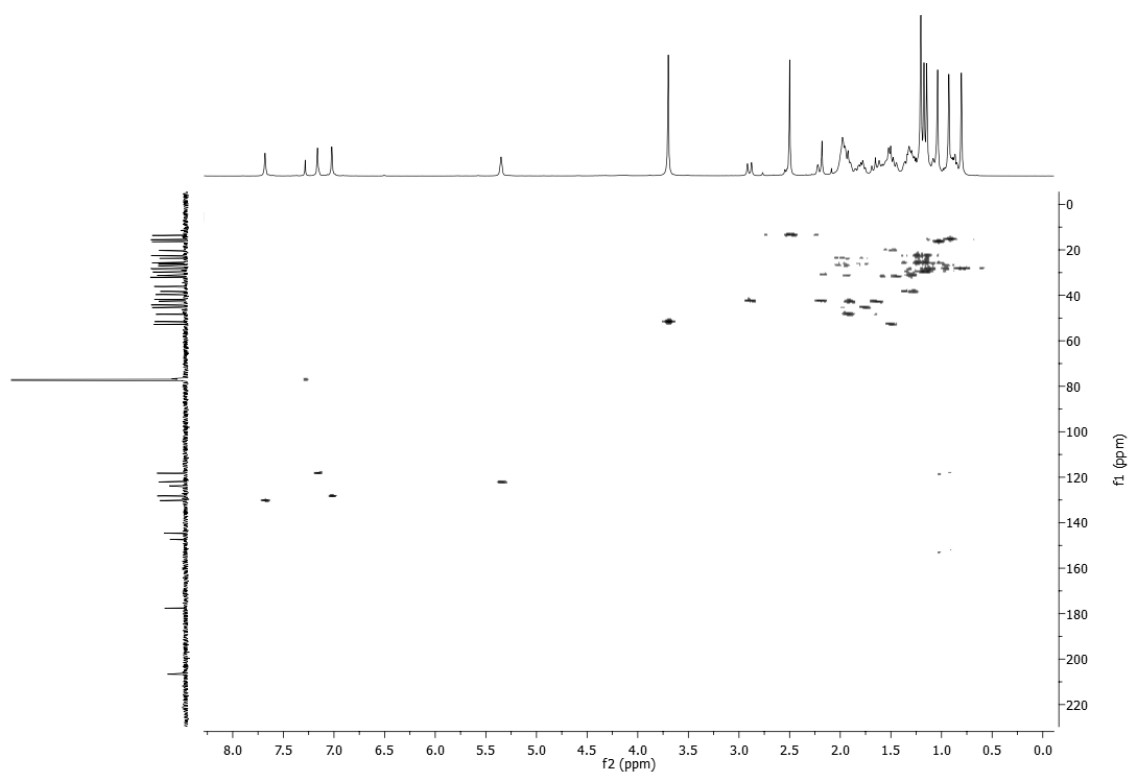
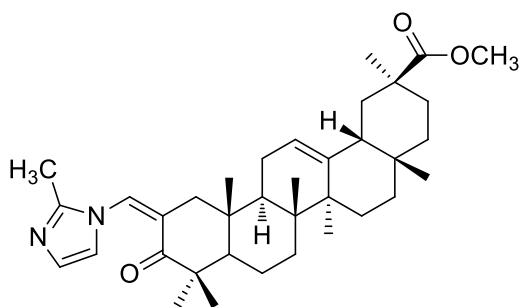
4.2. ^{13}C NMR spectrum for compound 12 recorded in CDCl_3



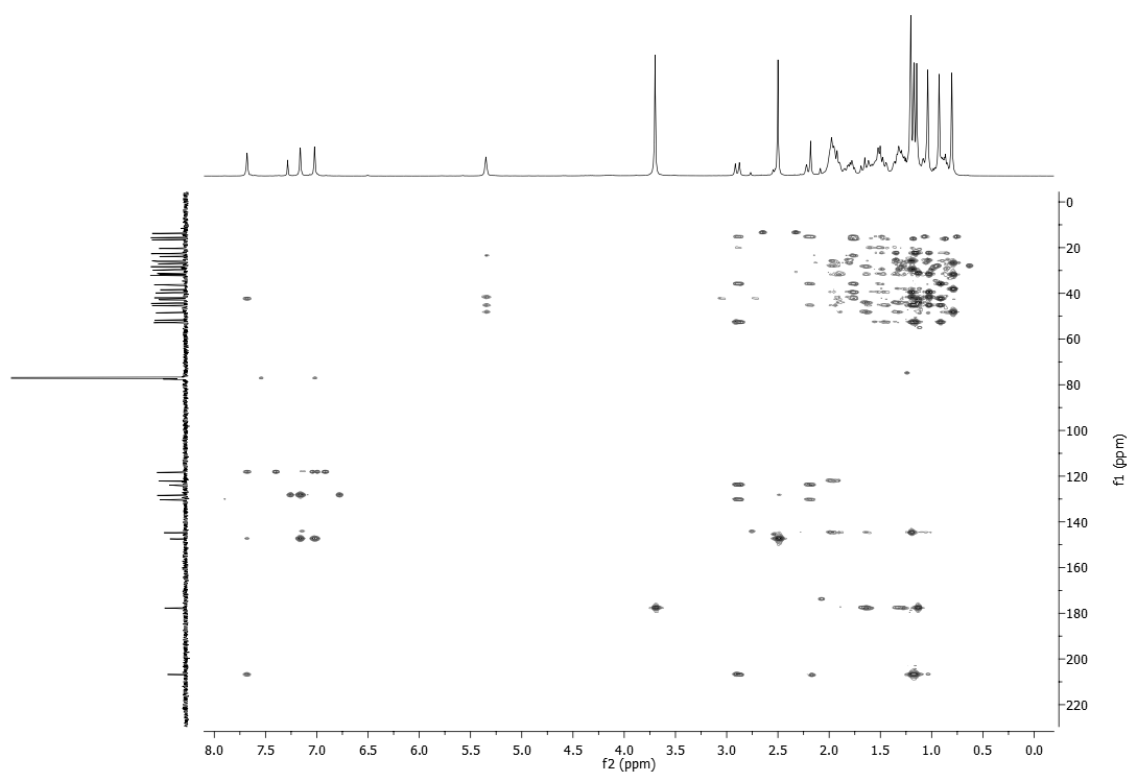
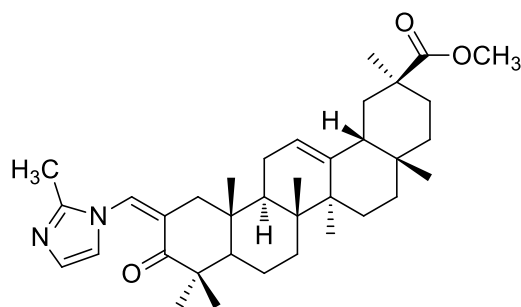
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4.4. HMQC NMR spectrum for compound 12 recorded in CDCl₃

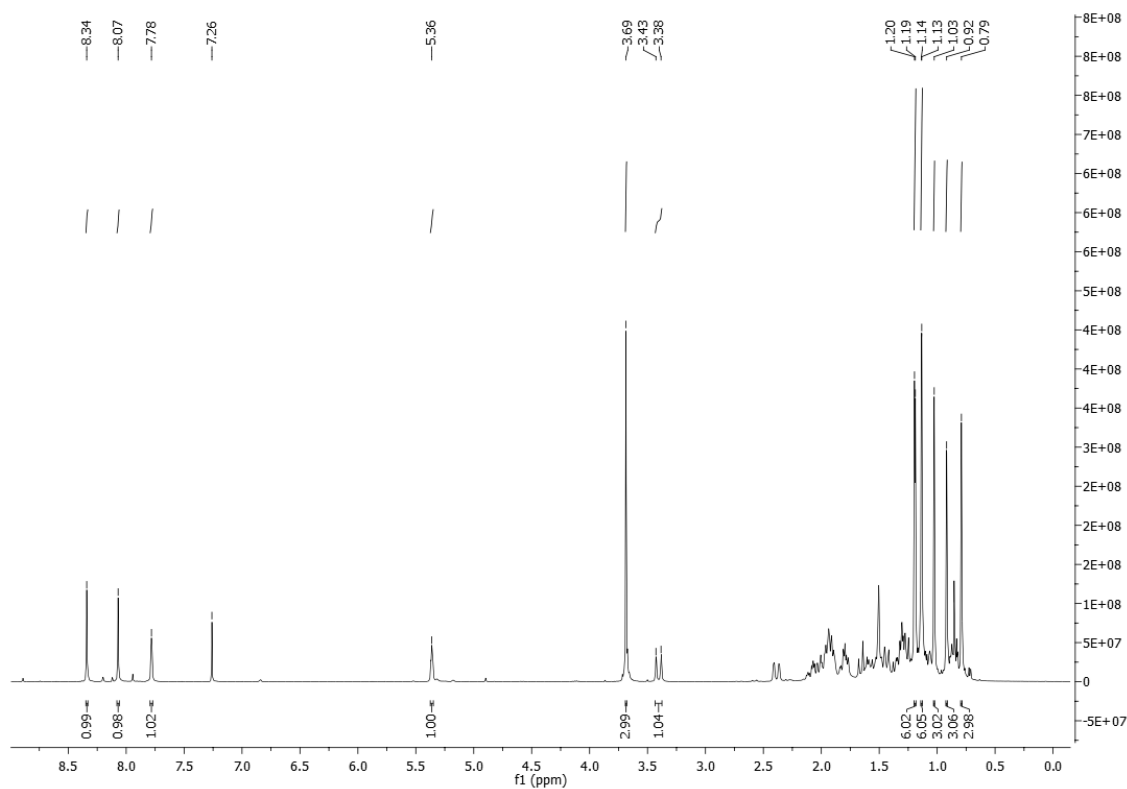
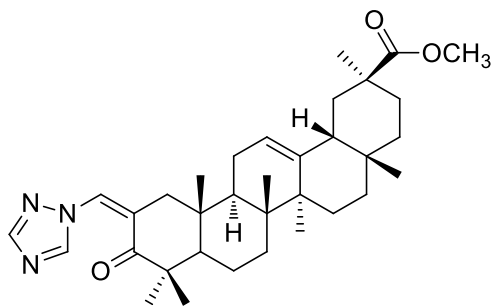


4.5. HMBC NMR spectrum for compound 12 recorded in CDCl₃

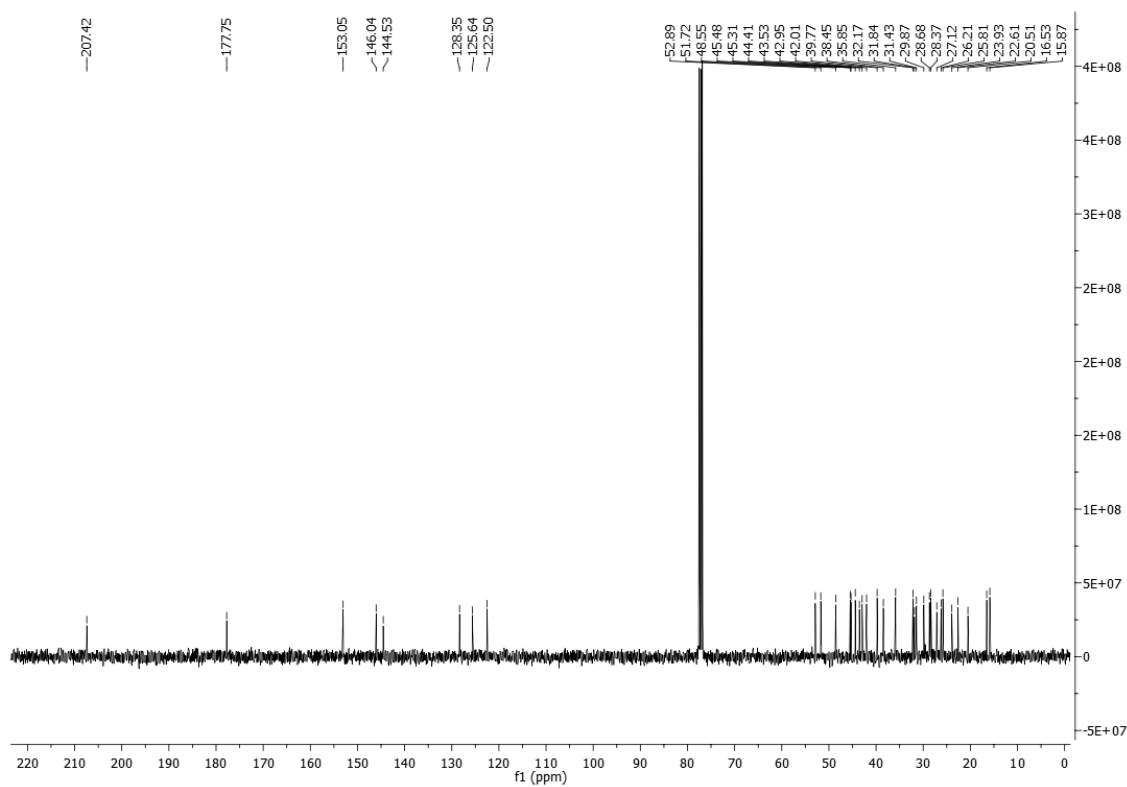
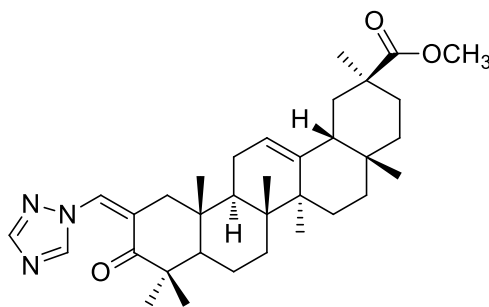


5. NMR data for compound 14

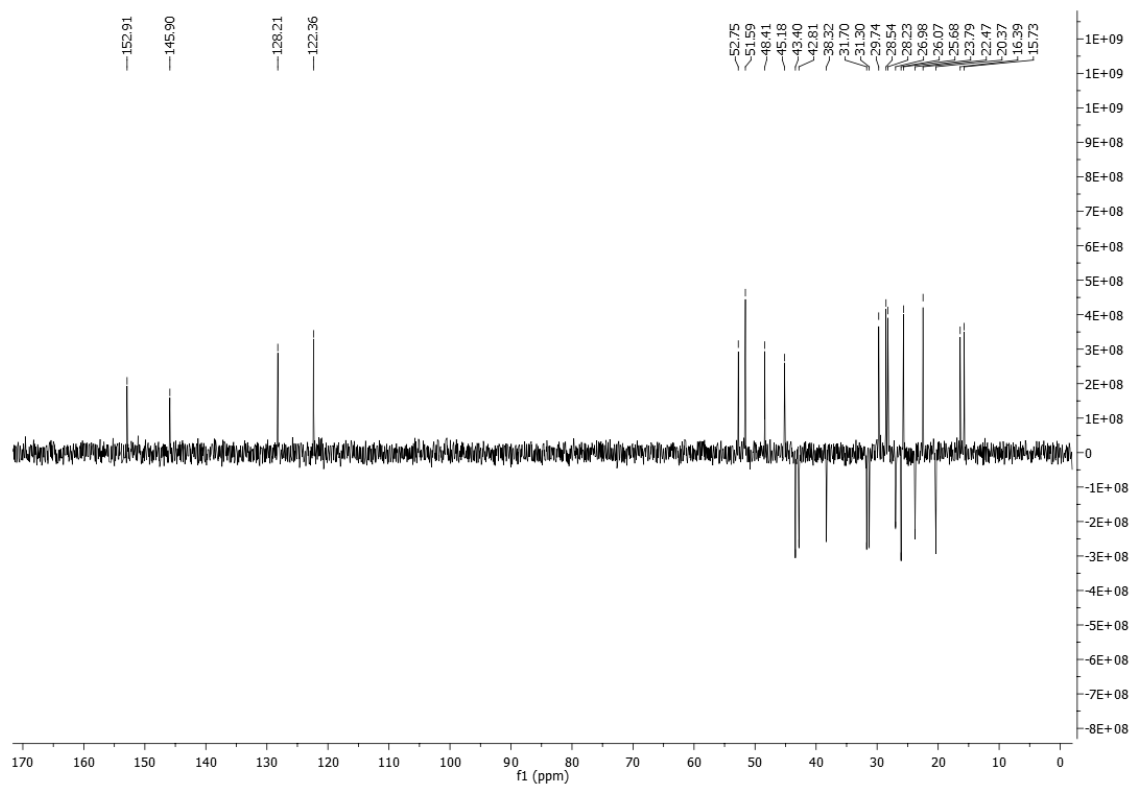
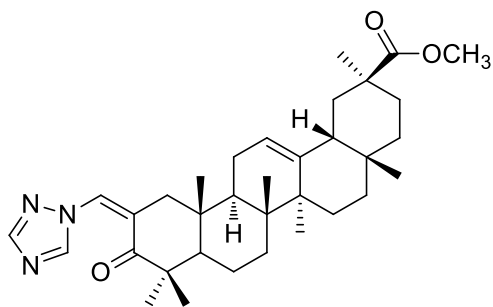
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5.2. ^{13}C NMR spectrum for compound 14 recorded in CDCl_3

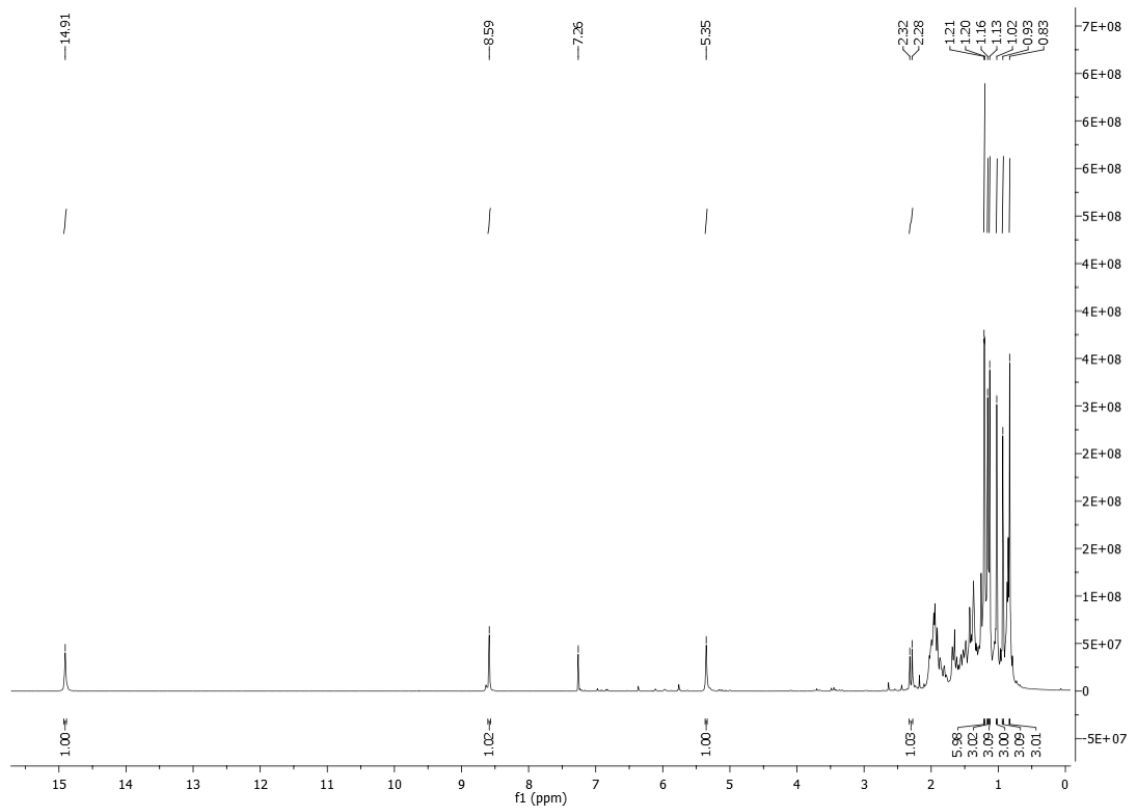
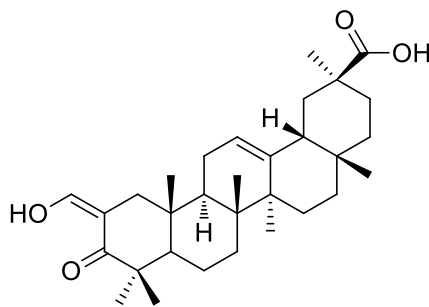


5.3. DEPT-135 spectrum for compound 14 recorded in CDCl₃

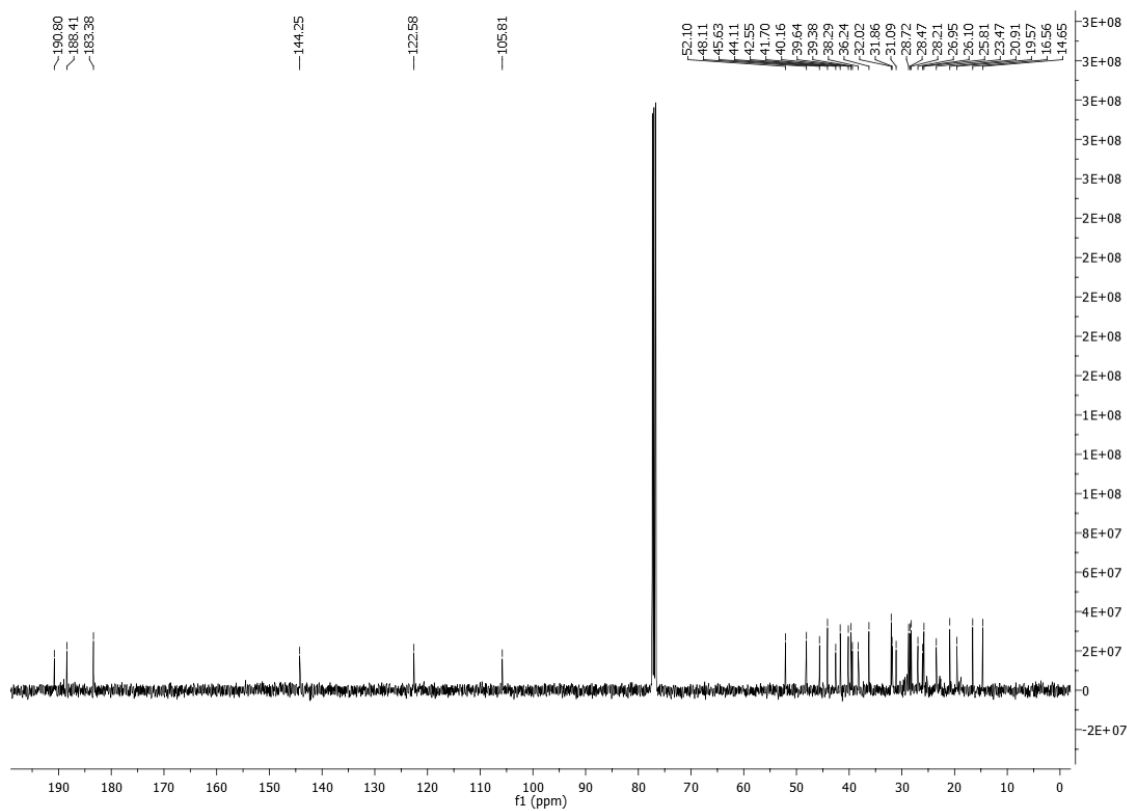
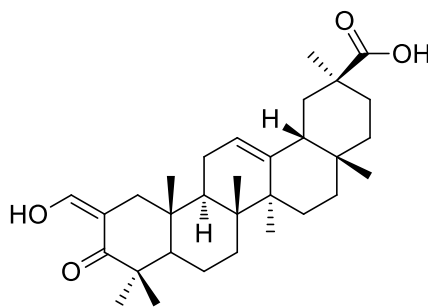


6. NMR data for compound 16

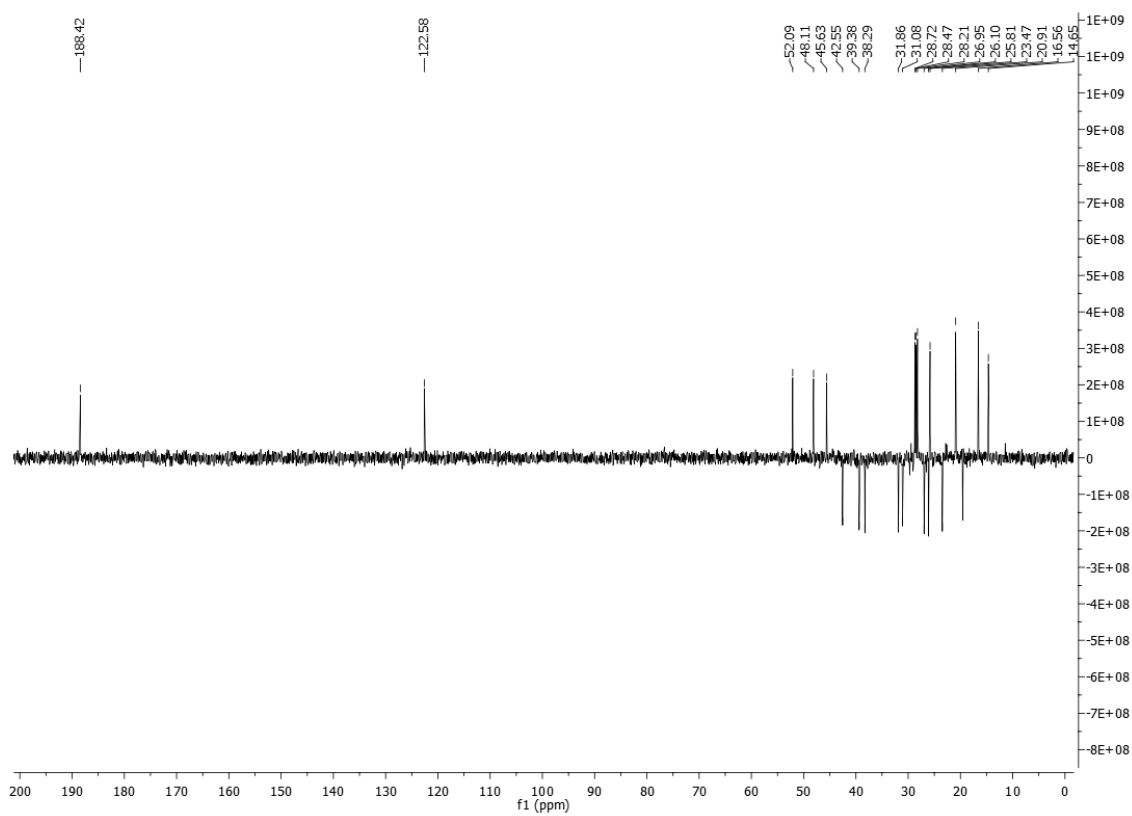
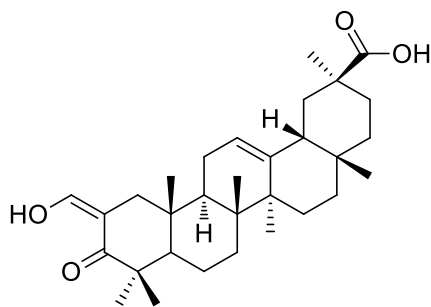
6.1. ^1H NMR spectrum for compound 16 recorded in CDCl_3



6.2. ^{13}C NMR spectrum for compound 16 recorded in CDCl_3



6.3. DEPT-135 spectrum for compound 16 recorded in CDCl₃

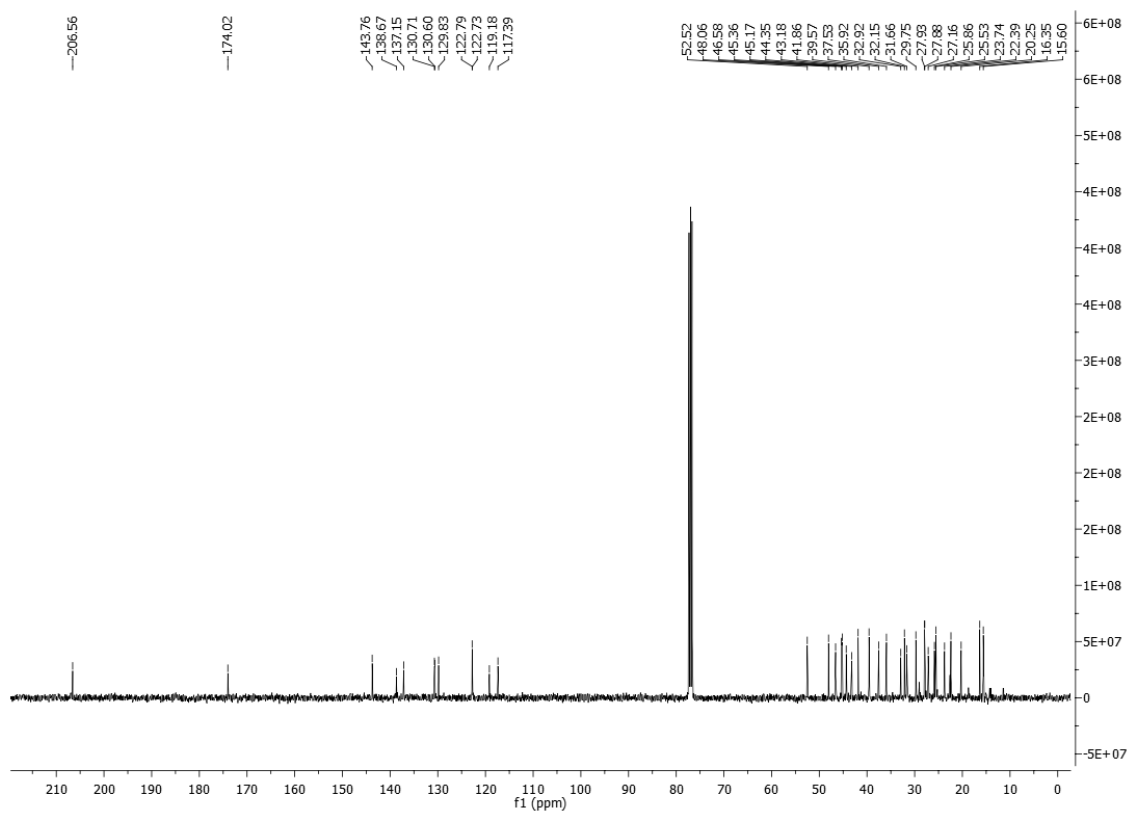
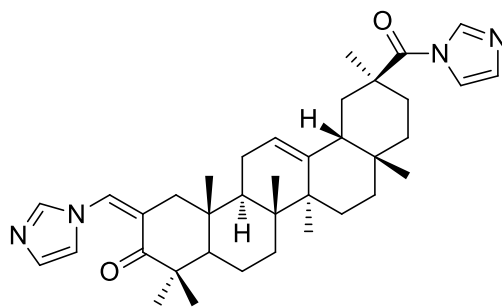


7. NMR data for compound 17

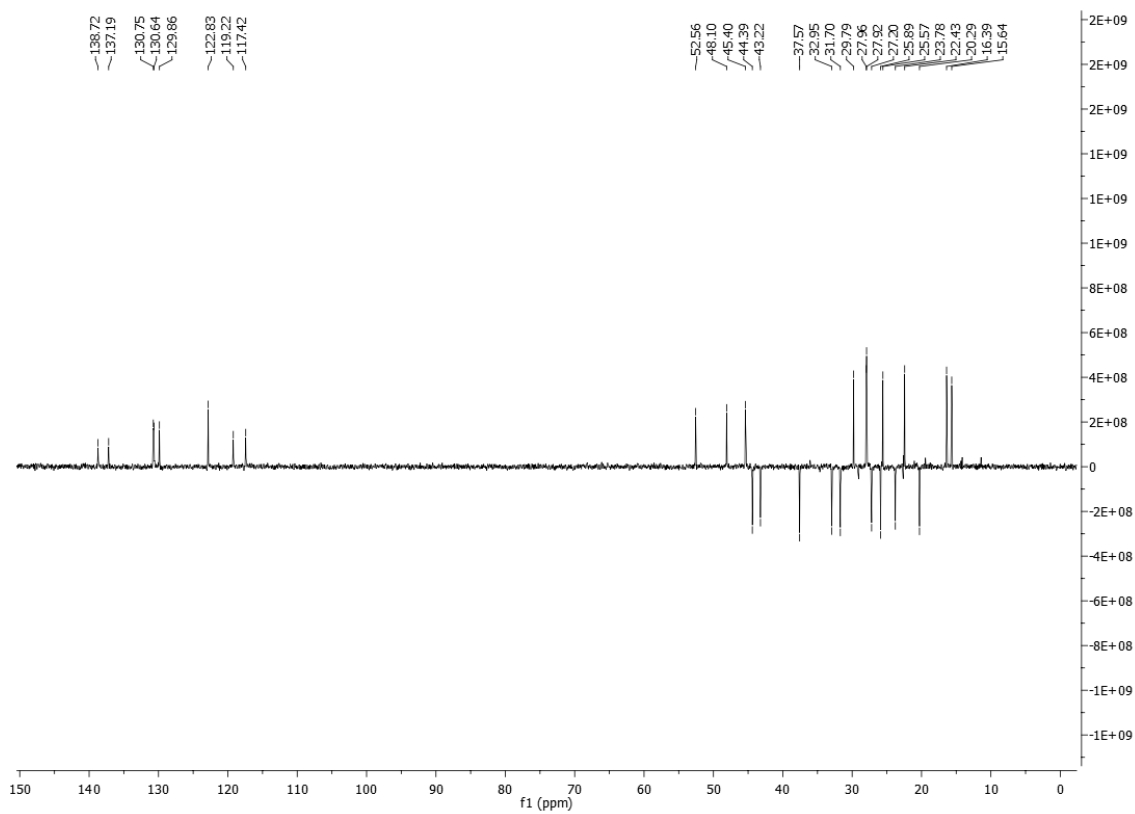
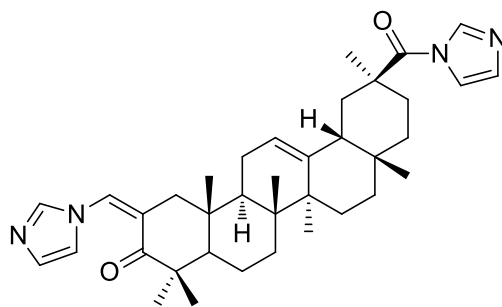
7.1. ^1H NMR spectrum for compound 17 recorded in CDCl_3



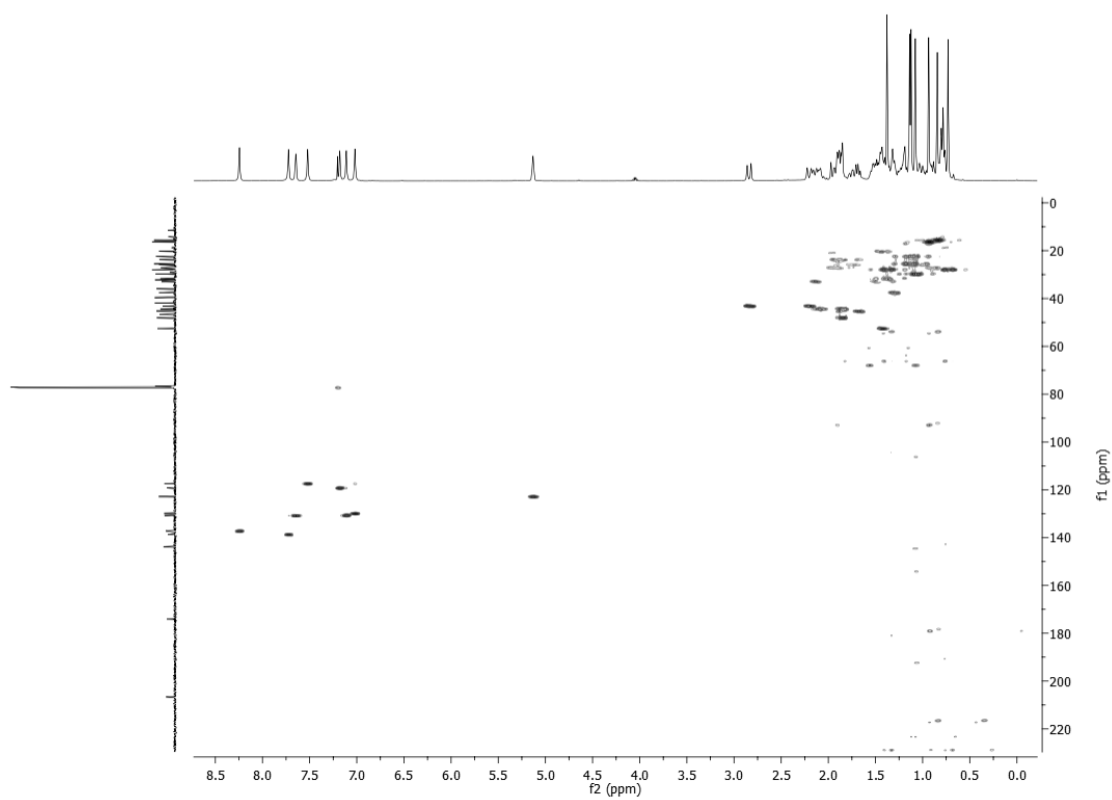
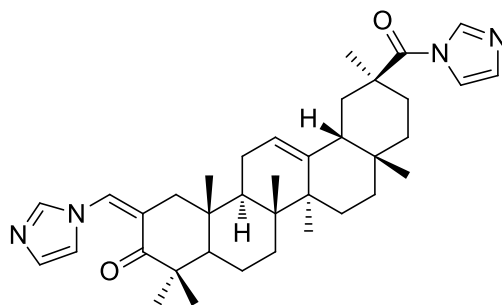
7.2. ^{13}C NMR spectrum for compound 17 recorded in CDCl_3



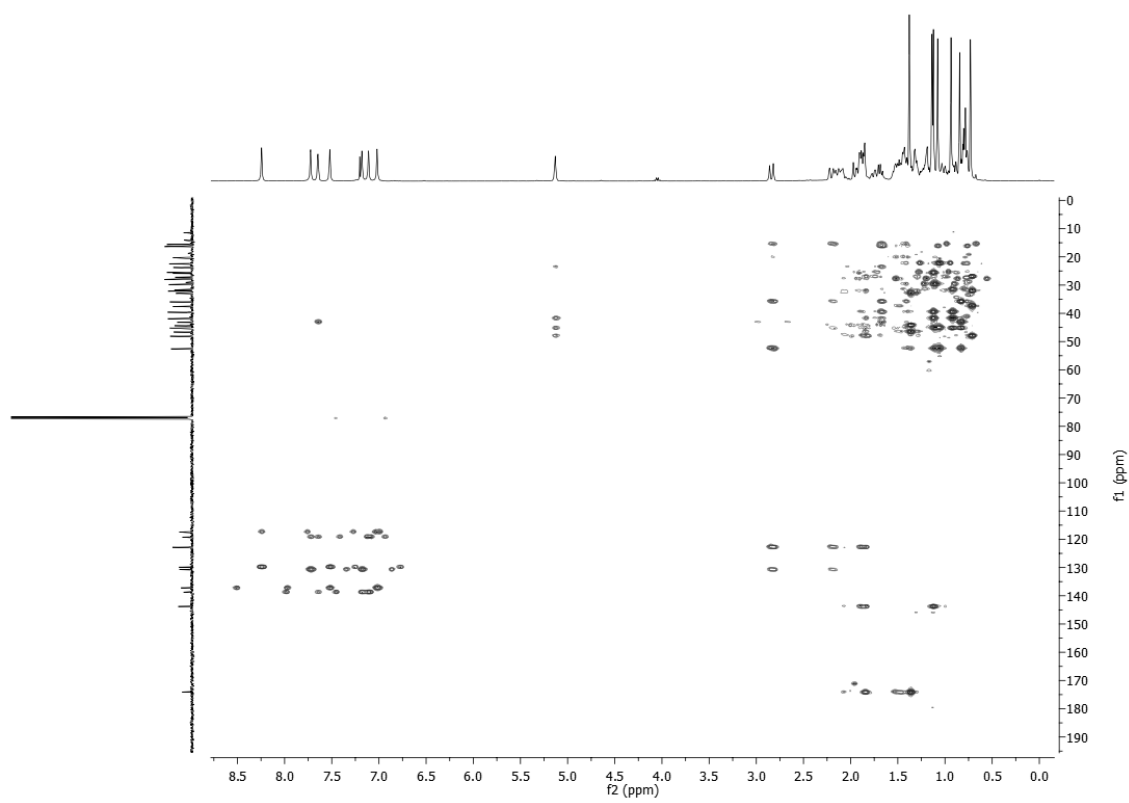
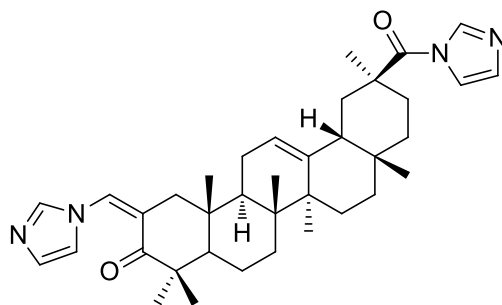
7.3. DEPT-135 spectrum for compound 17 recorded in CDCl₃



7.4. HMQC NMR spectrum for compound 17 recorded in CDCl₃

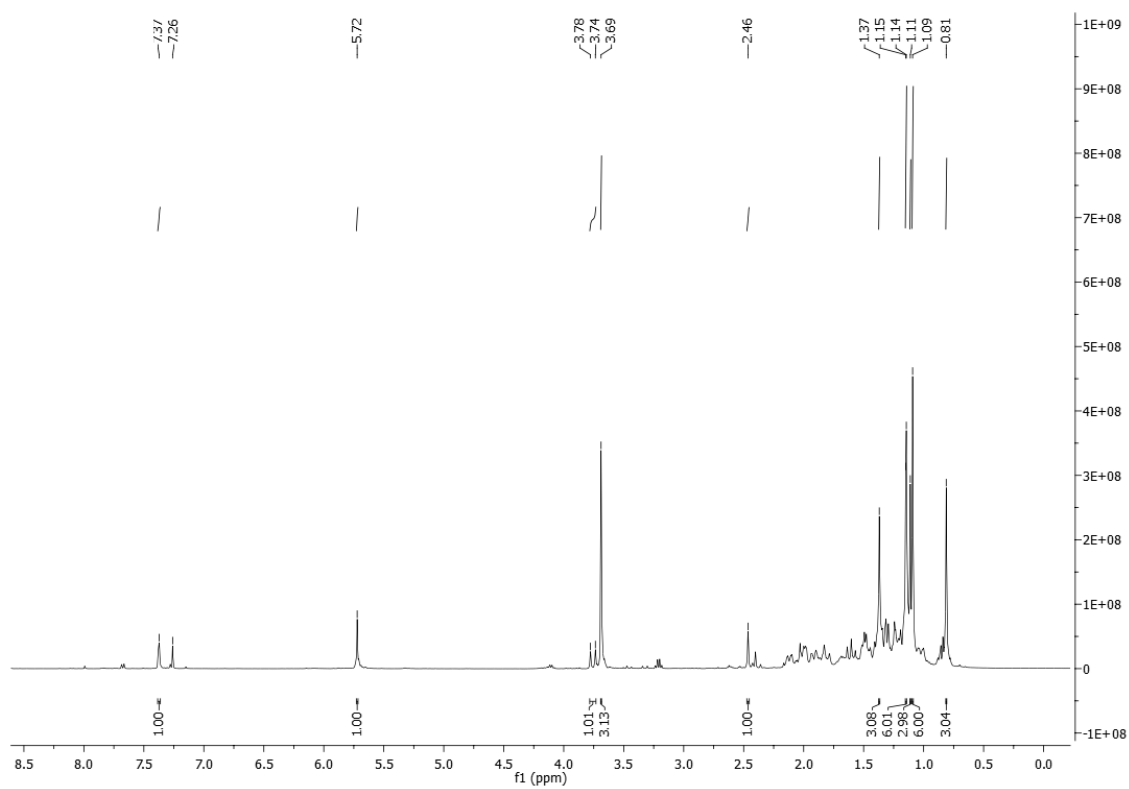
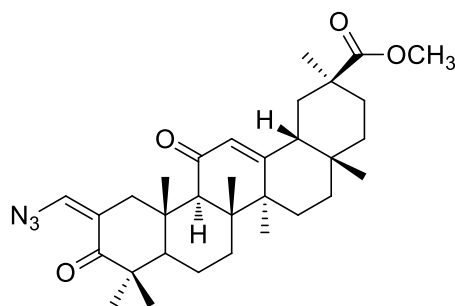


7.5. HMCB NMR spectrum for compound 17 in CDCl₃

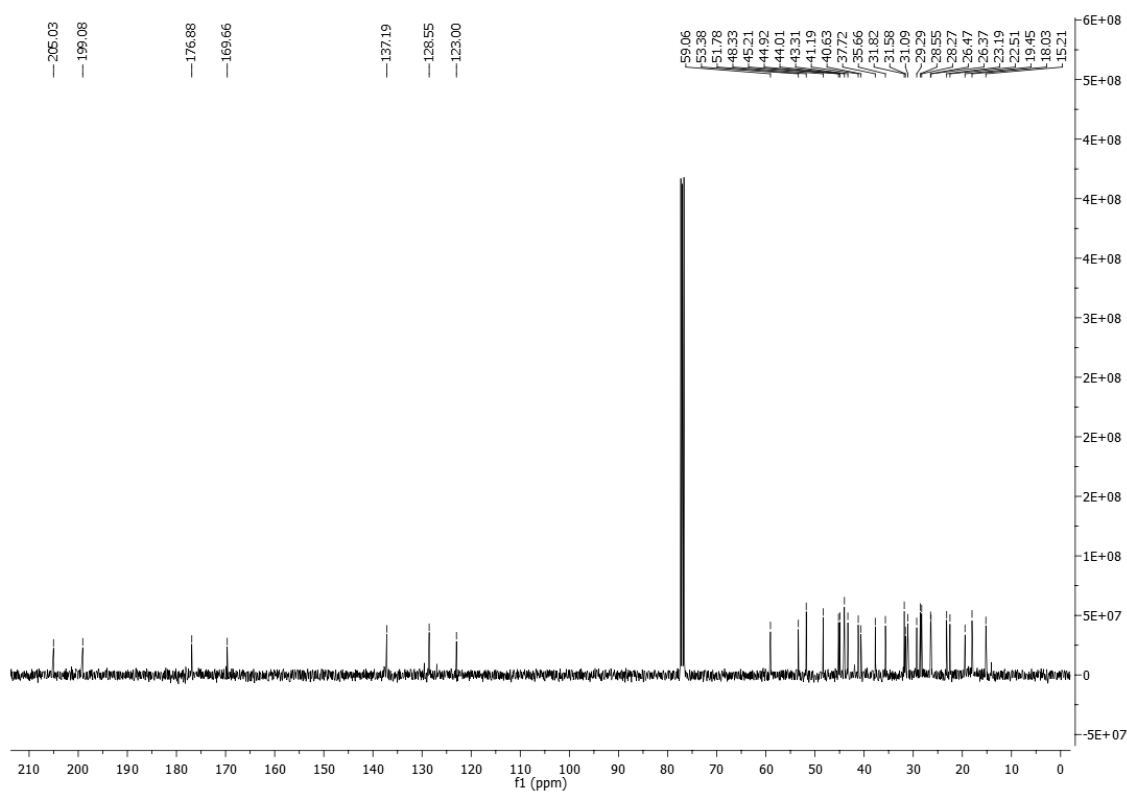
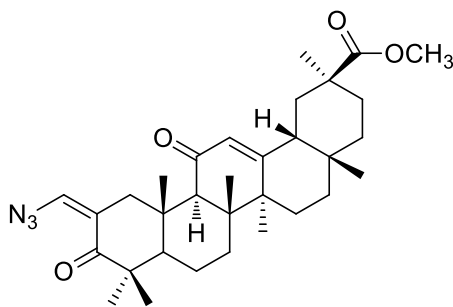


8. NMR data for compound 19

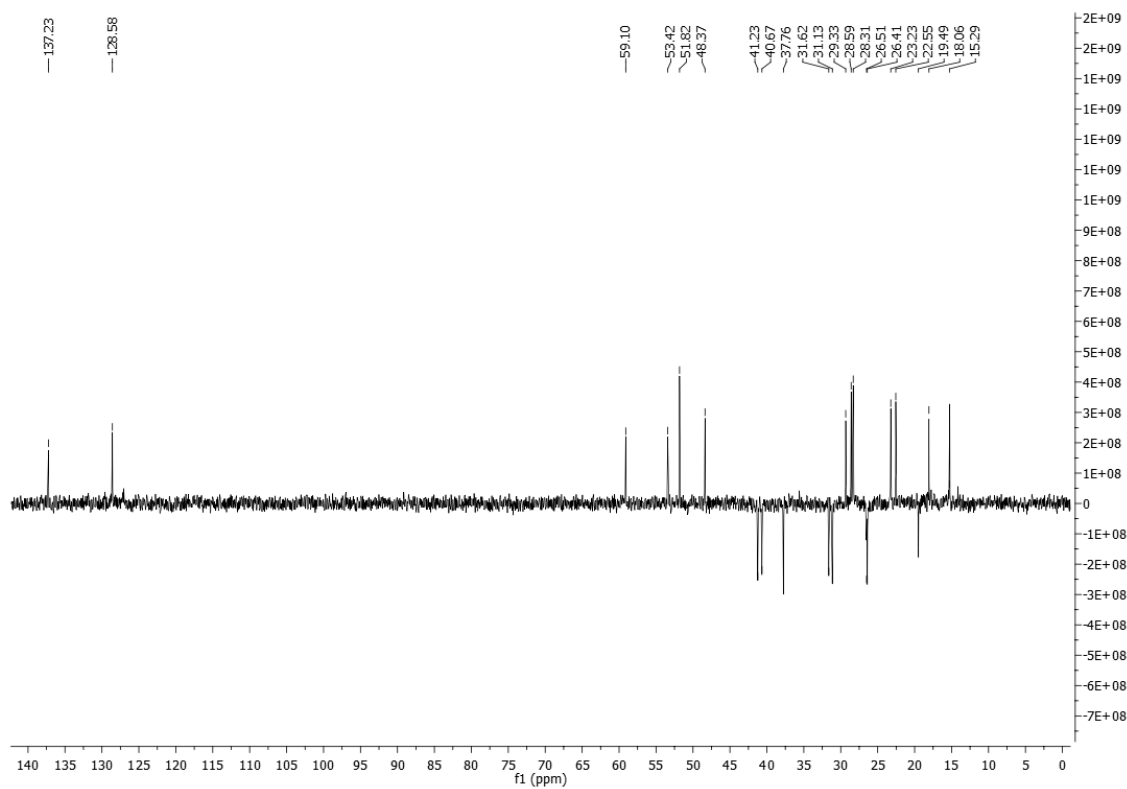
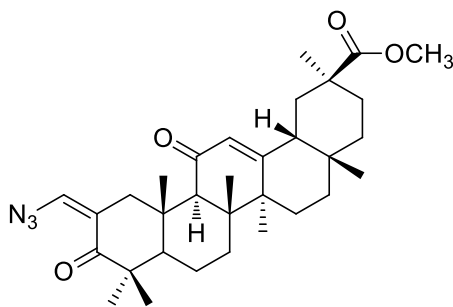
8.1. ^1H NMR spectrum for compound 19 recorded in CDCl_3



8.2. ^{13}C NMR spectrum for compound 19 recorded in CDCl_3

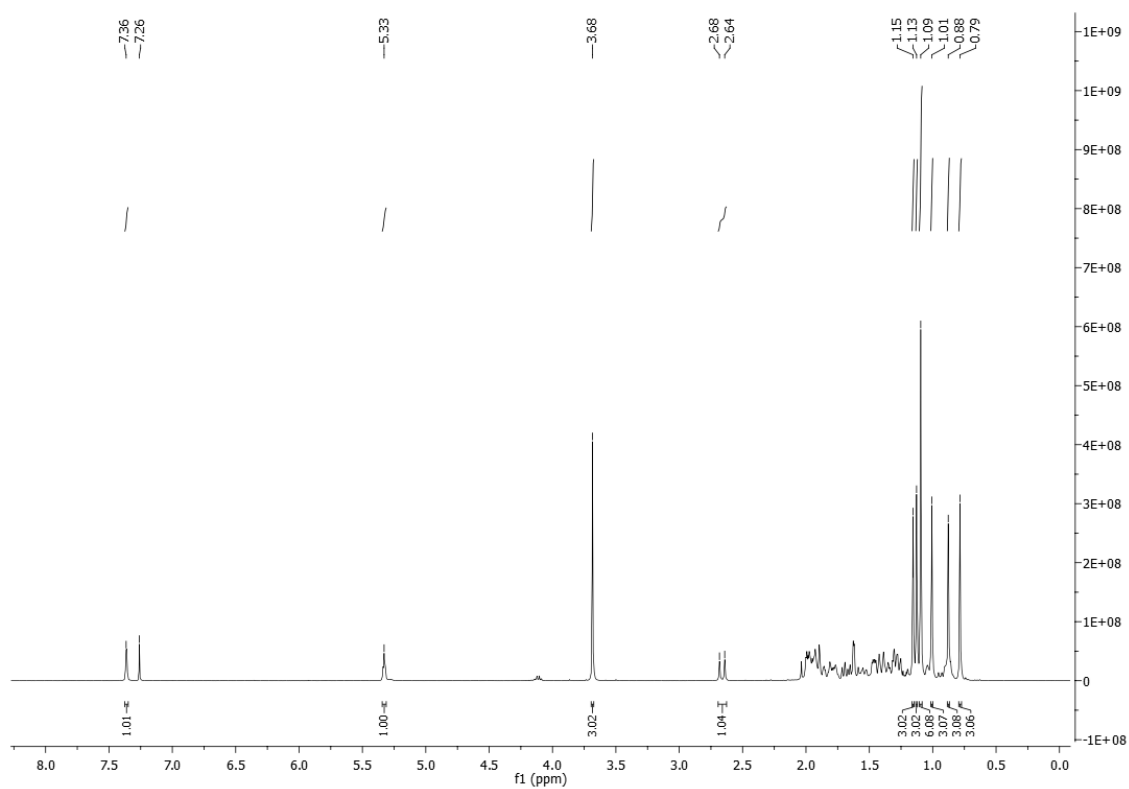
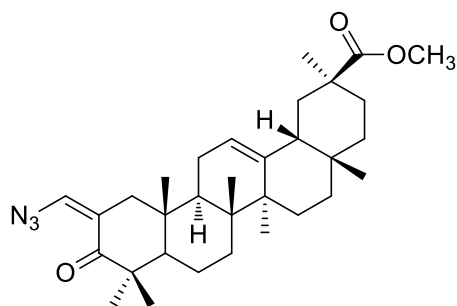


8.3. DEPT-135 spectrum for compound 19 recorded in CDCl₃

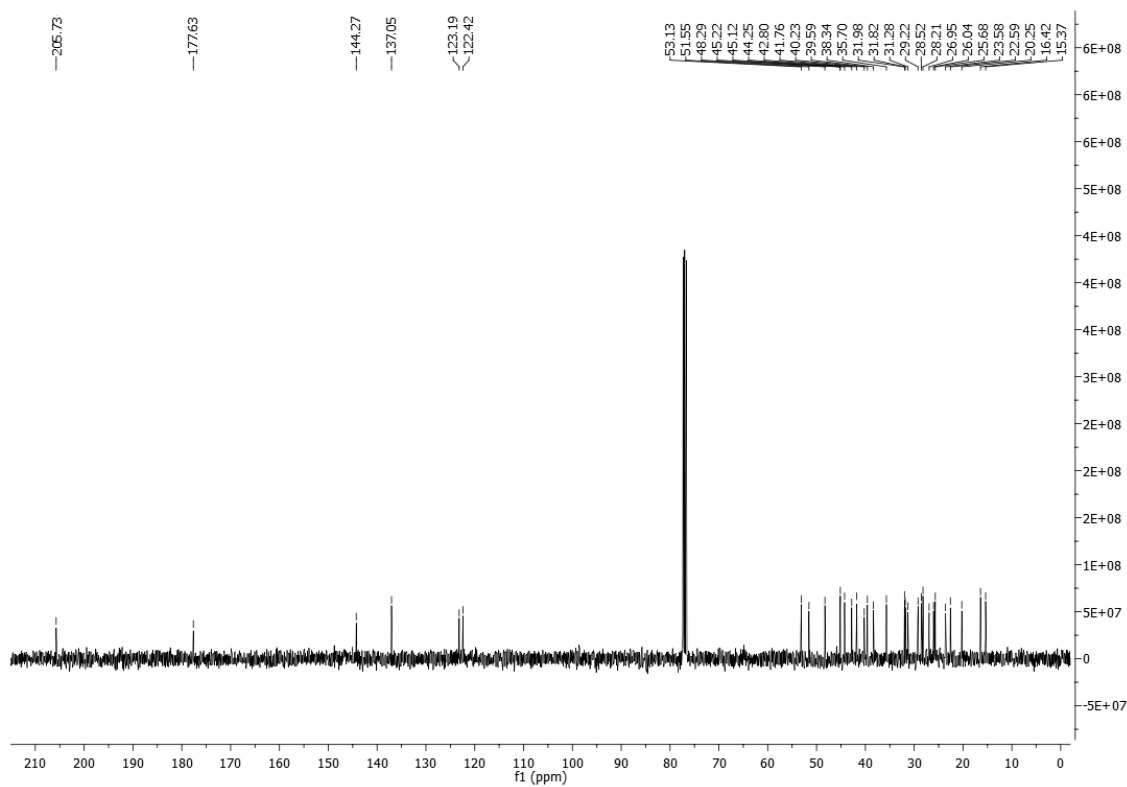
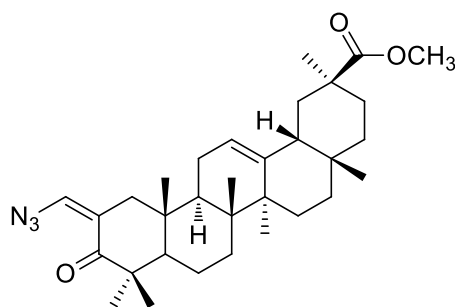


9. NMR data for compound 20

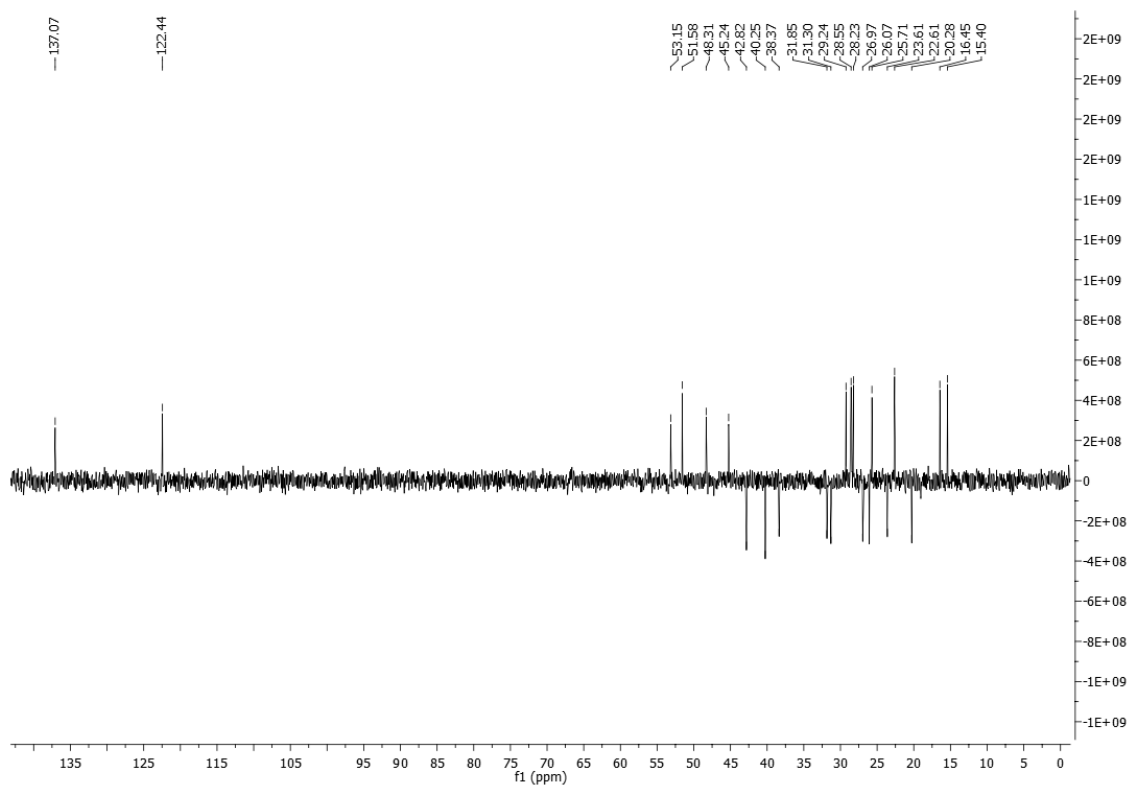
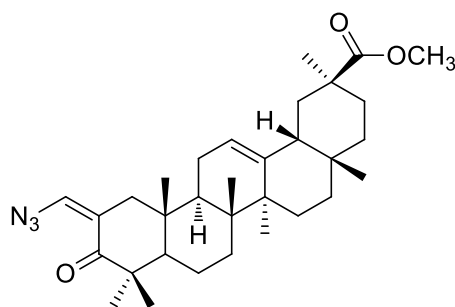
9.1. ^1H NMR spectrum for compound 20 recorded in CDCl_3



9.2. ^{13}C NMR spectrum for compound 20 recorded in CDCl_3

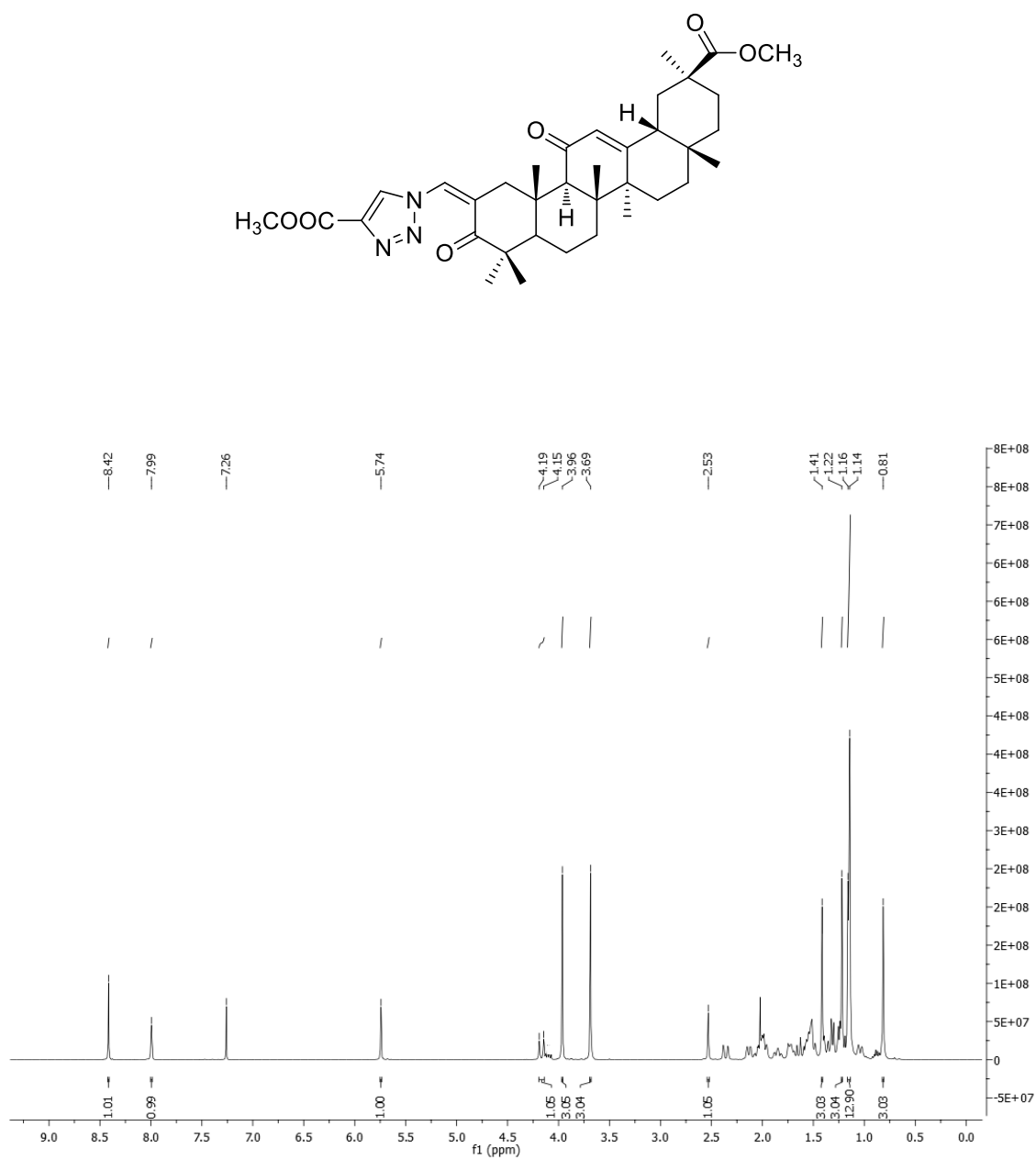


9.3. DEPT-135 spectrum for compound 20 recorded in CDCl₃

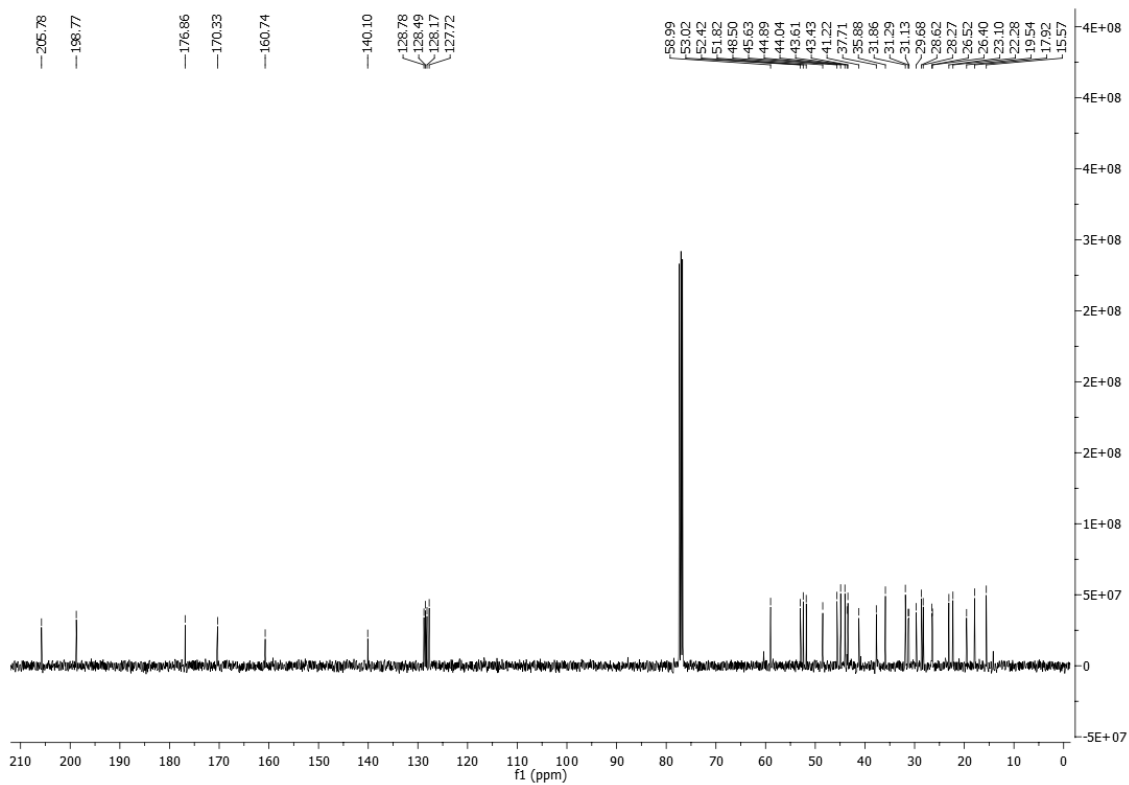
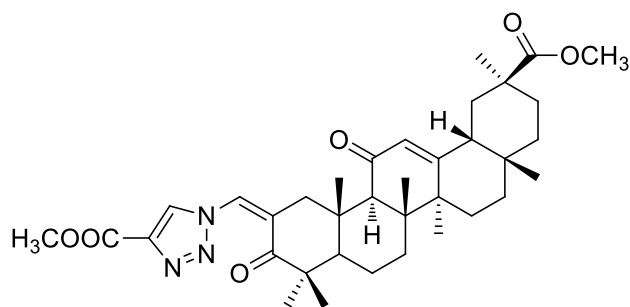


10. NMR data for compound 21

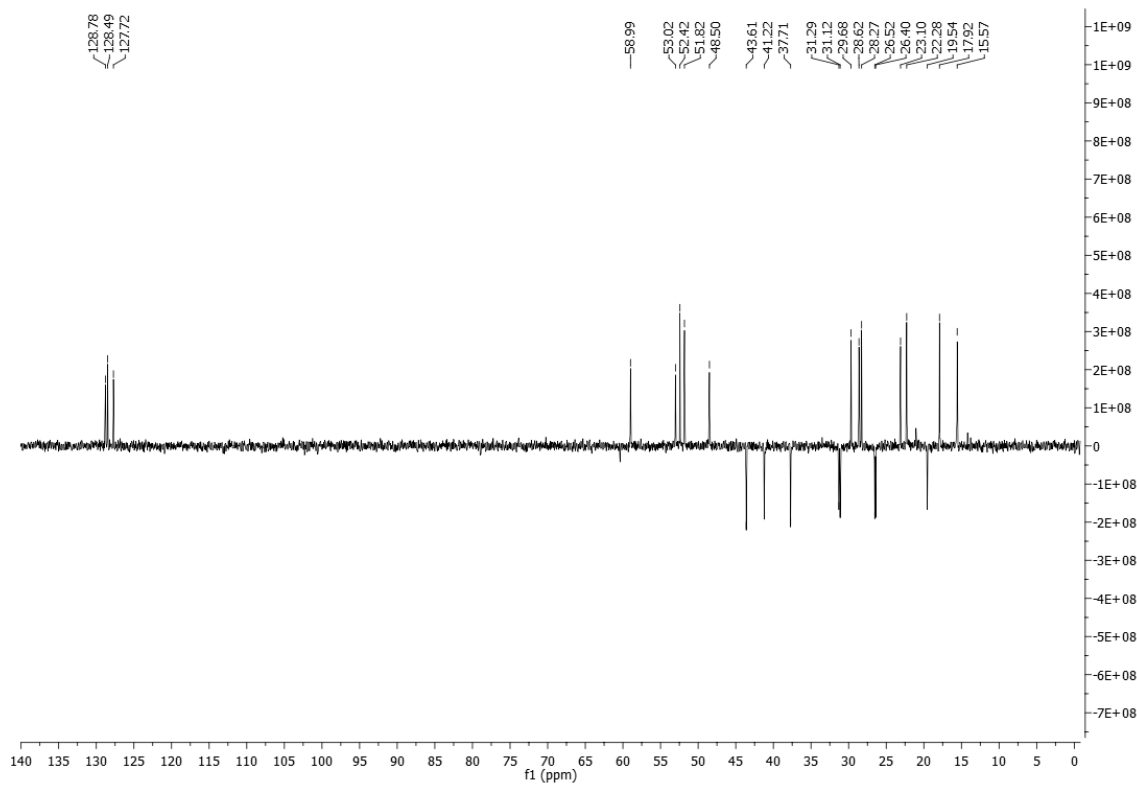
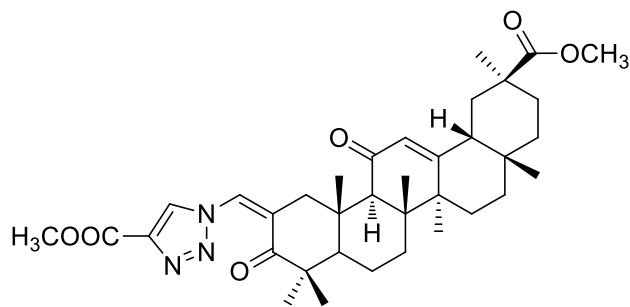
10.1. ^1H NMR spectrum for compound 21 recorded in CDCl_3



10.2. ^{13}C NMR spectrum for compound 21 recorded in CDCl_3

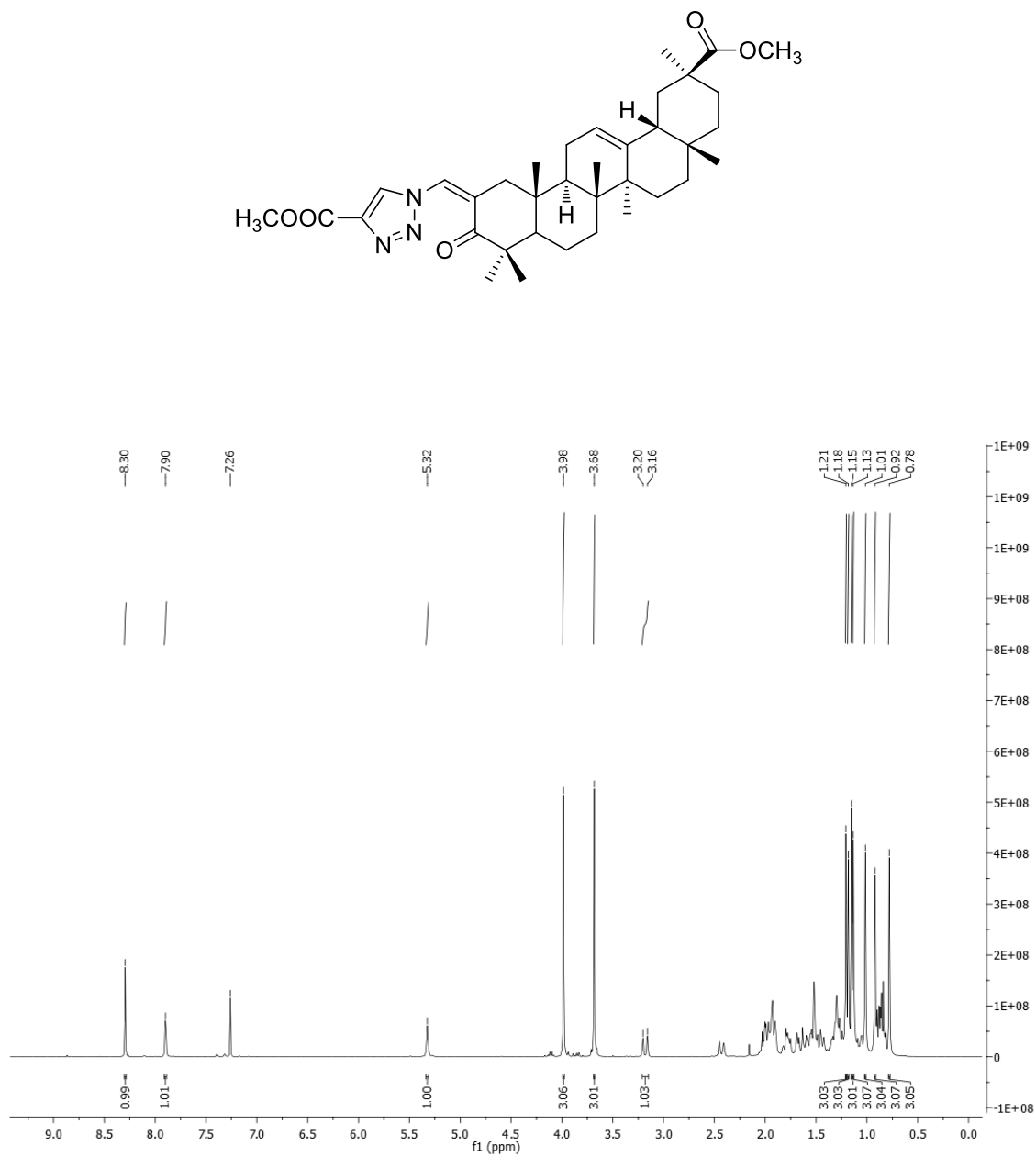


10.3. DEPT-135 spectrum for compound 21 recorded in CDCl₃

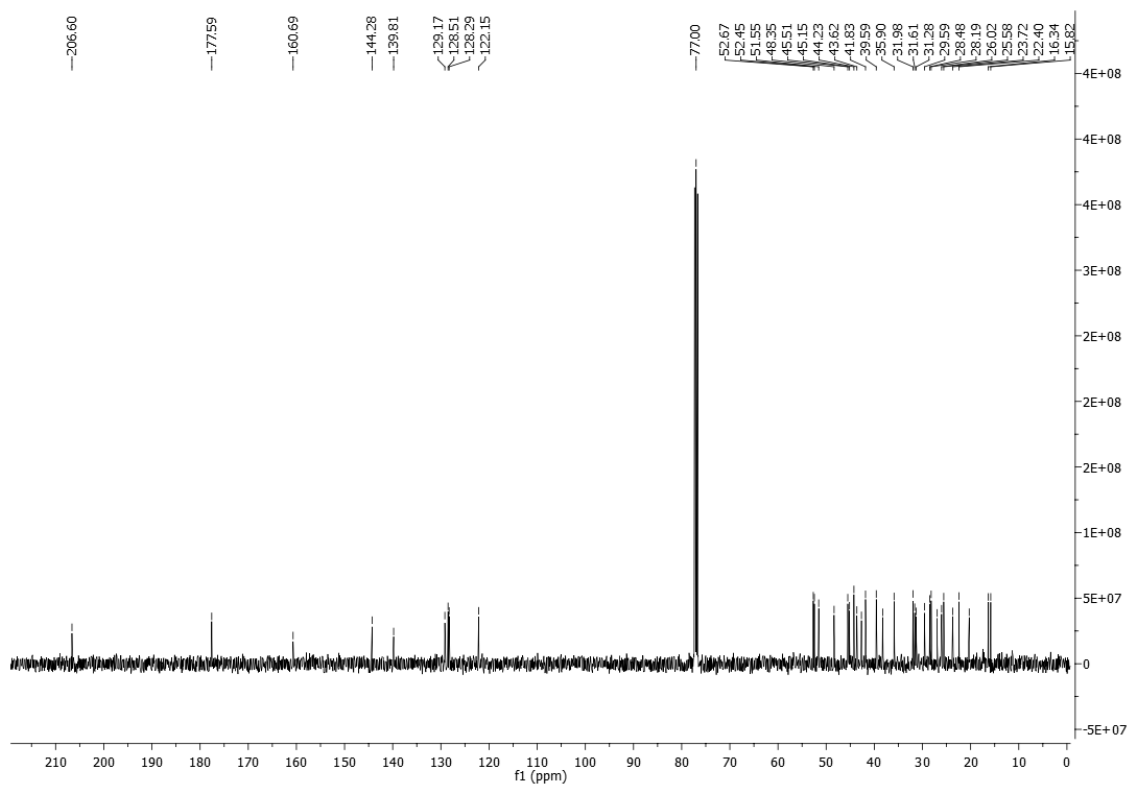
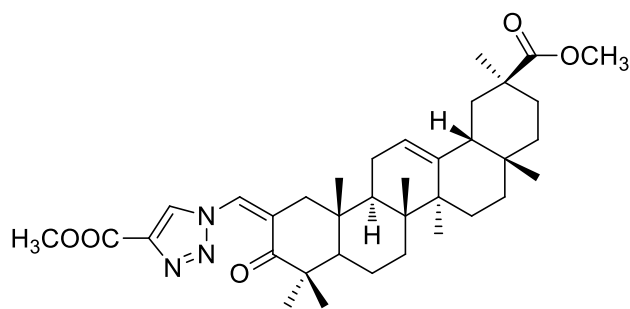


11. NMR data for compound 22

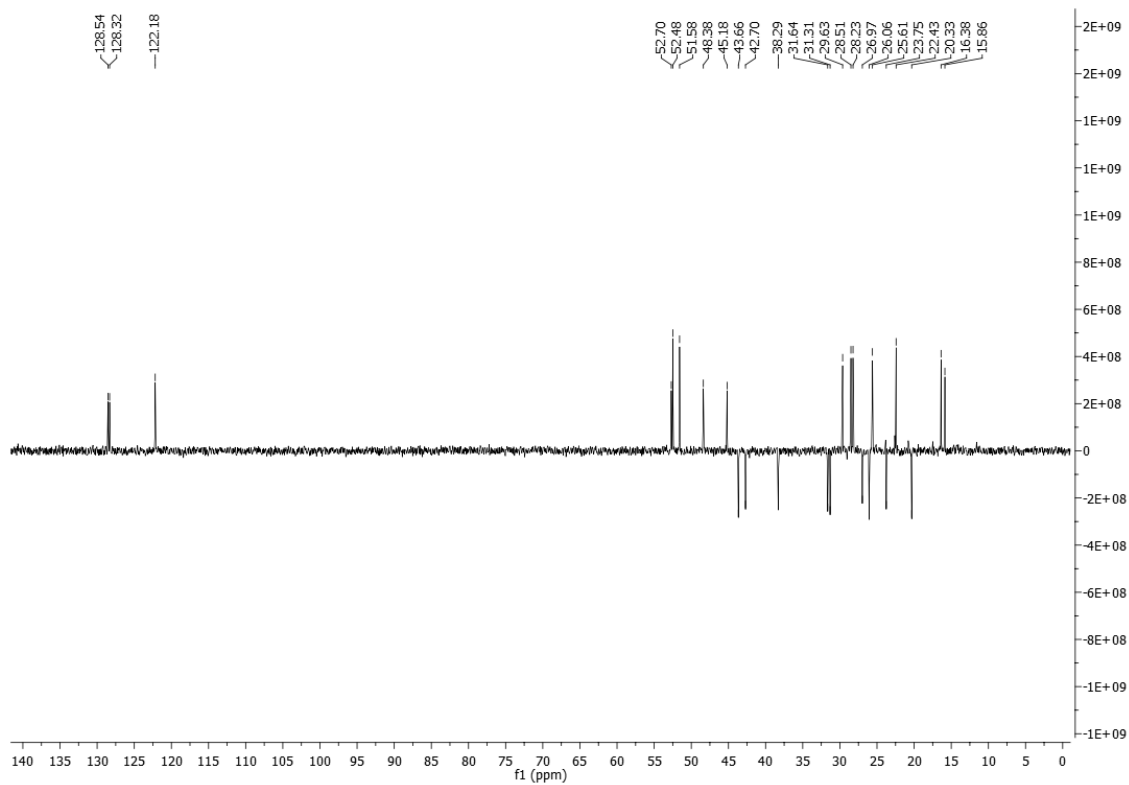
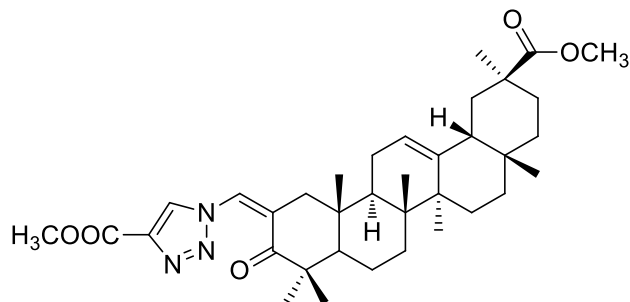
11.1. ^1H NMR spectrum for compound 22 recorded in CDCl_3



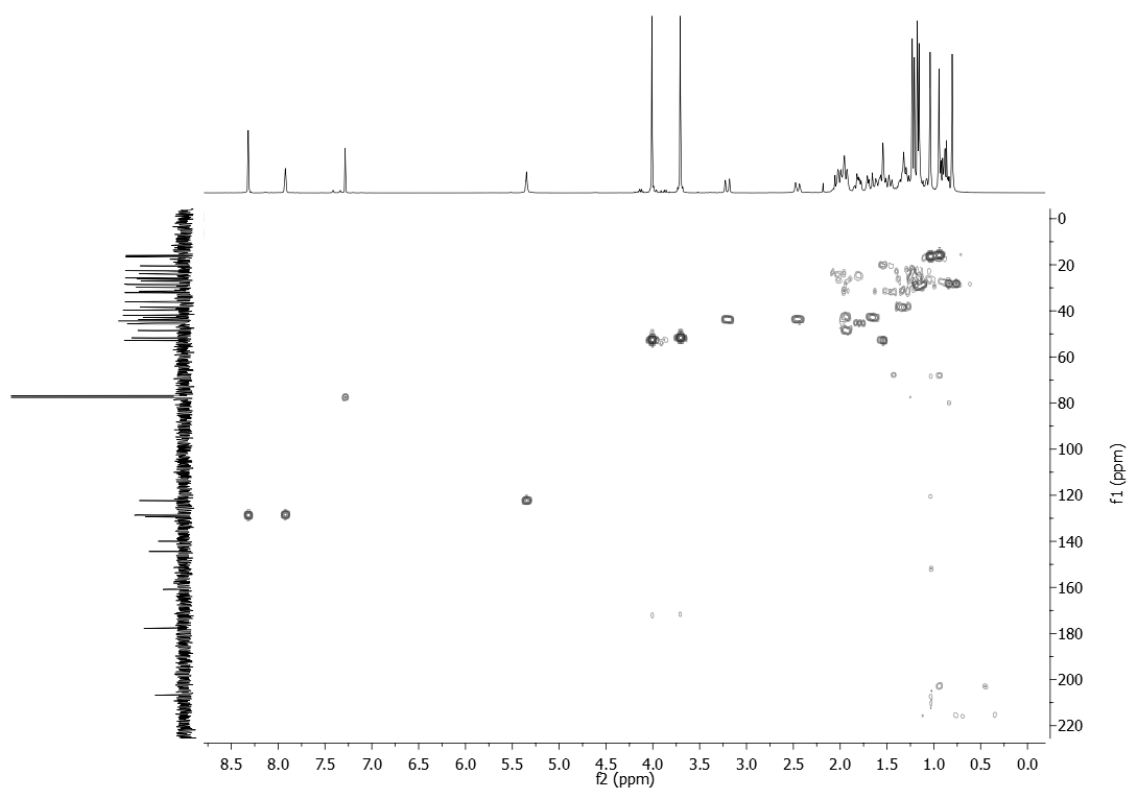
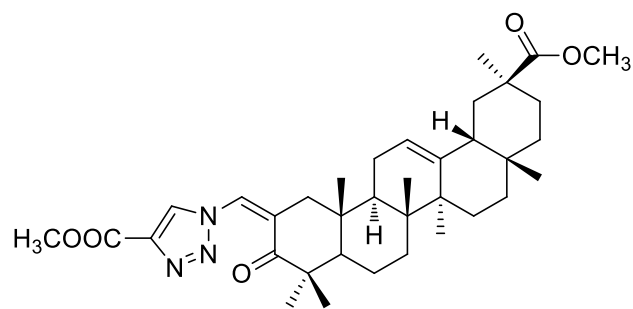
11.2. ^{13}C NMR spectrum for compound 22 recorded in CDCl_3



11.3. DEPT-135 spectrum for compound 22 recorded in CDCl₃



11.4. HMQC NMR spectrum for compound 22 recorded in CDCl₃



11.5. HMBC NMR spectrum for compound 22 recorded in CDCl₃

