Supporting information

Design and synthesis of tricyclic terpenoid derivatives as novel PTP1B inhibitors with improved pharmacological property and in vivo antihyperglycemic efficacy

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Cell viability in the MTT assay

The toxicities of the compounds were evaluated by (3-(4, 5-dimethylthiazolyl-2)-2, 5-diphenyltetrazolium bromide) test. HepG2 cells were routinely grown in Dulbecco's Modified Eagle Medium (DMEM) supplemented with 10% (v/v) fetal bovine serum, streptomycin (100mg/mL), and penicillin (100U/mL), in a humidified atmosphere of 95% air, 5% CO_2 at 37°C. HepG2 cells were planked in a 96 well plate with a concentration of 1×10^4 cells/well and cultured in 37°C and 5%CO_2 for 24 h. Then HepG2 cells were treated with 40 μM of the synthetic compound. HepG2 cells untreated were used as control. HepG2 cells were cultured in 37℃ and 5%CO_2 for 24 h, the old medium was carefully removed and were cultured for another 4 h in MTT (0.5%) containing DMEM, then the medium was carefully removed. 150 μL/well dimethyl sulfoxide was added and oscillated gently to make crystal dissolved. The absorbance at 560 nm was measured using a microplate reader. The cell viability was expressed as a percentage of OD560 (sample)/ OD560 (control) as shown in Fig.S1.

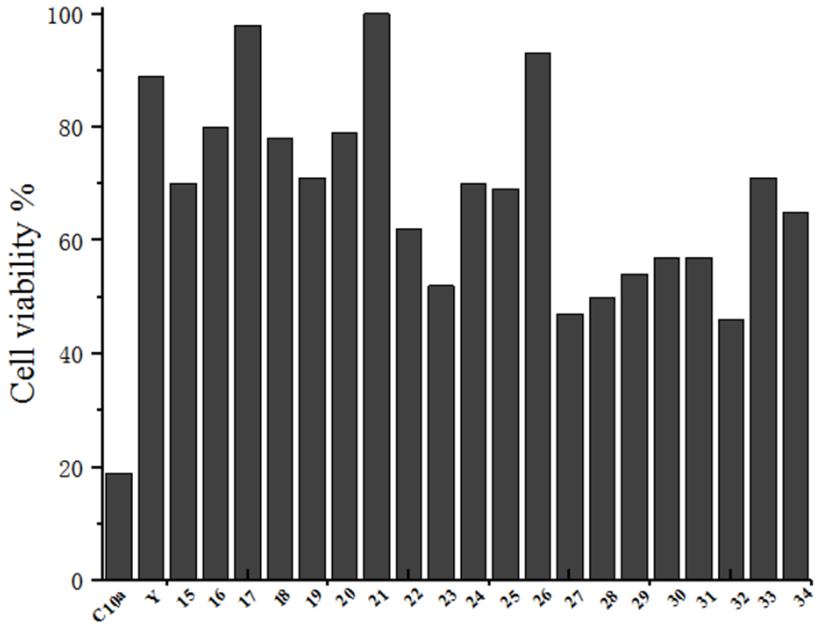
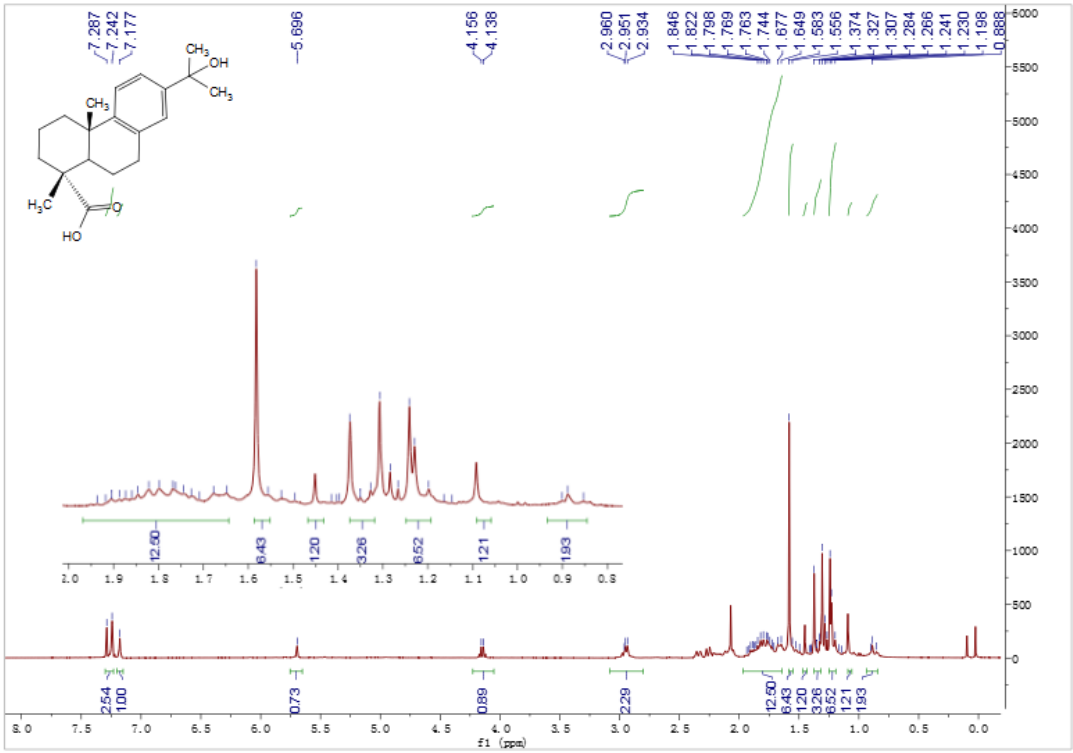
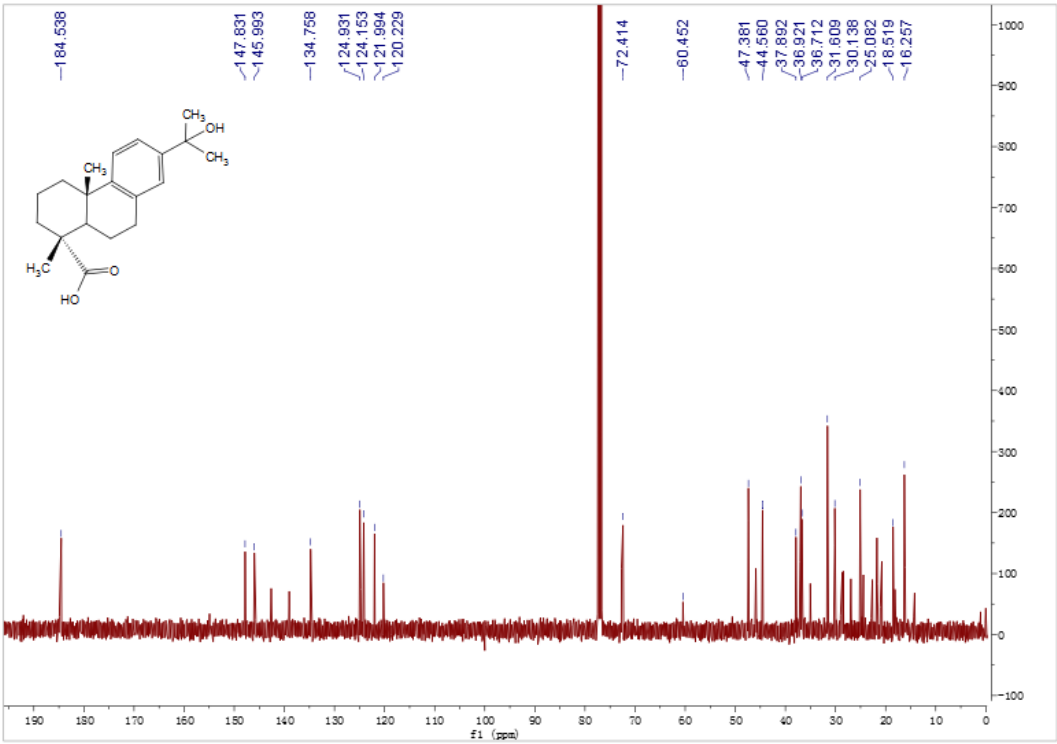


Fig. S1. Cell viability in the MTT assay.

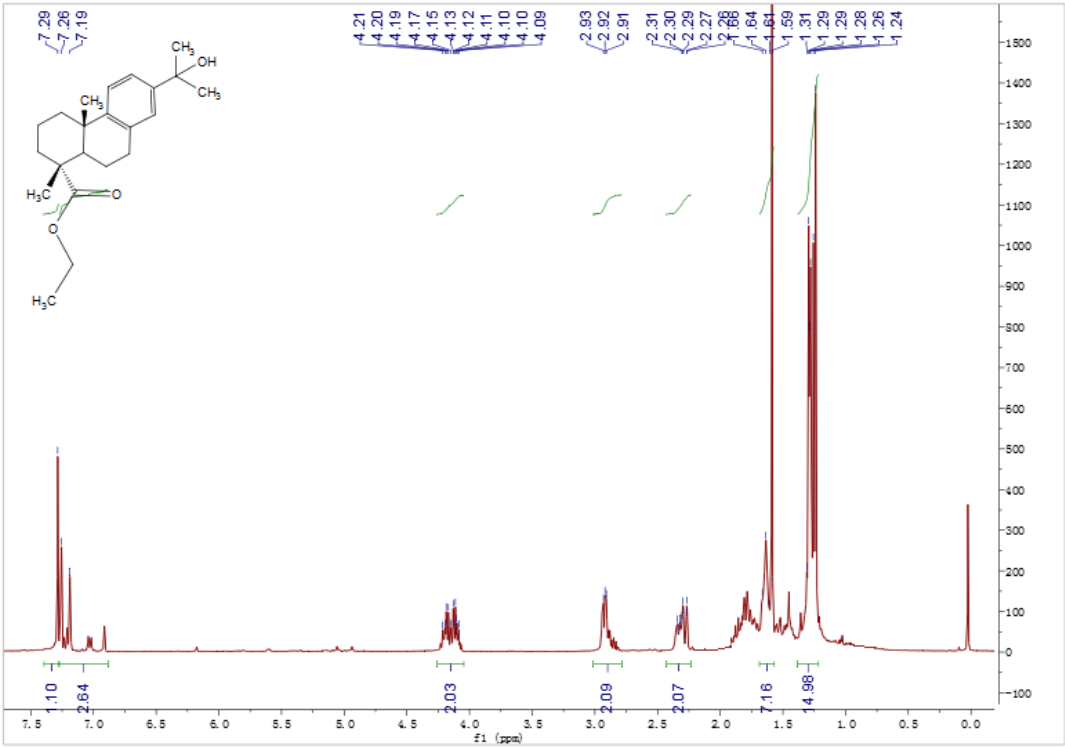
The ^{1}H-NMR and ^{13}C-NMR spectra of the compounds



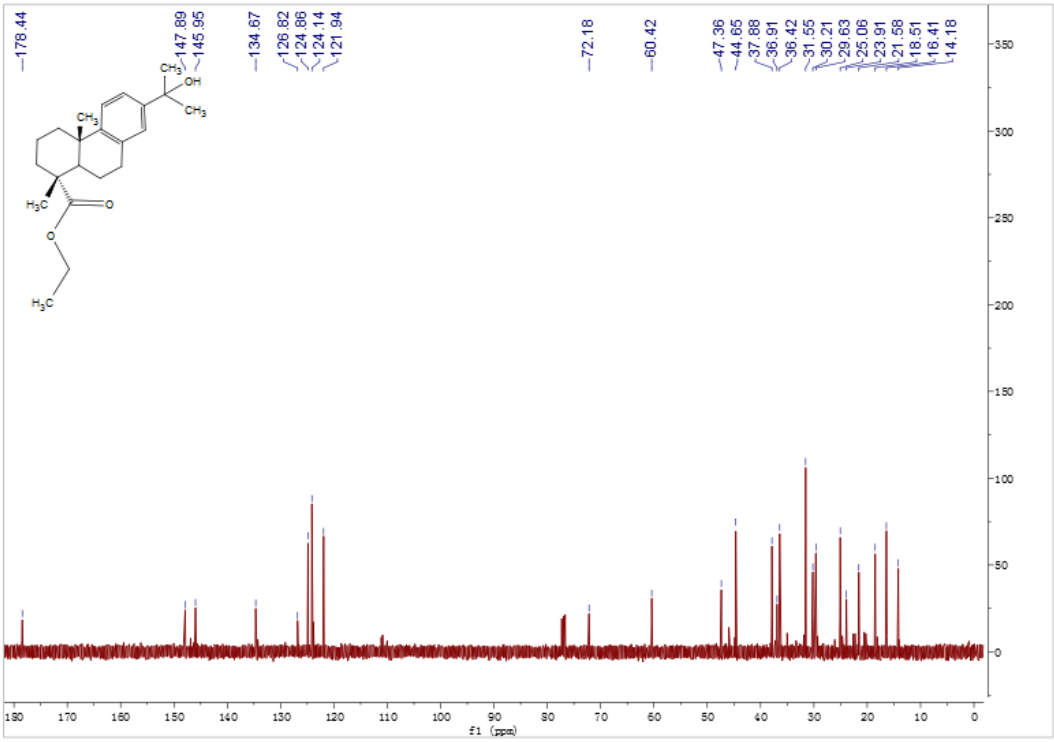
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 3



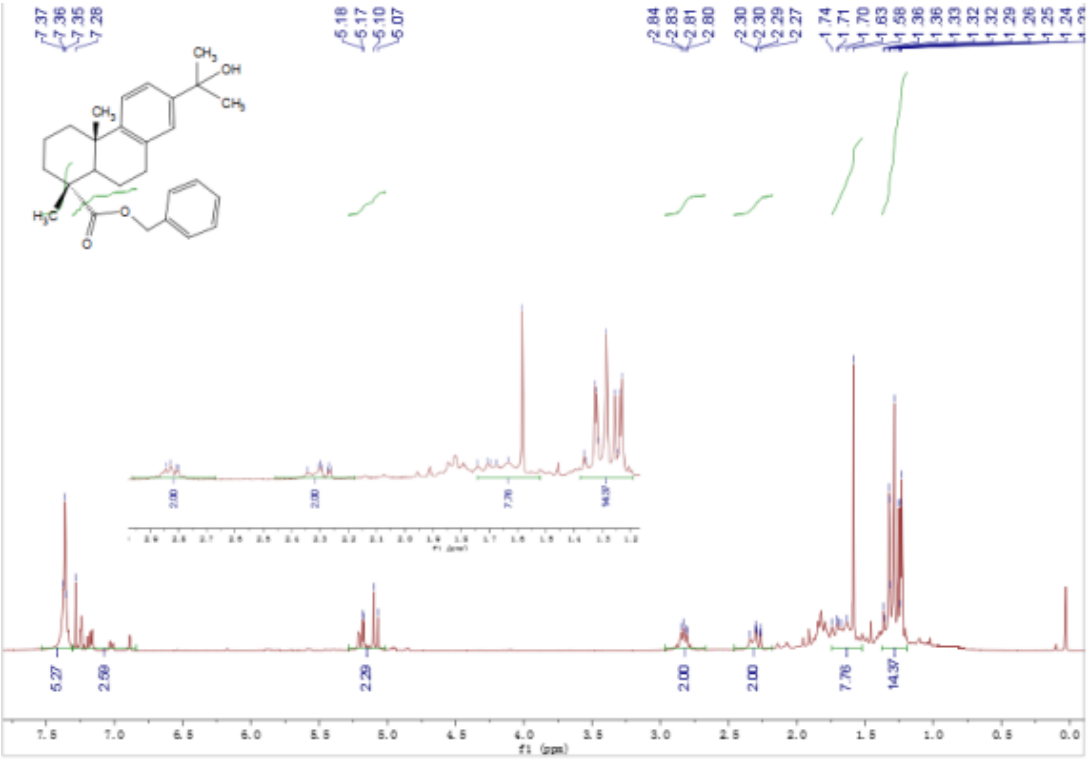
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 3



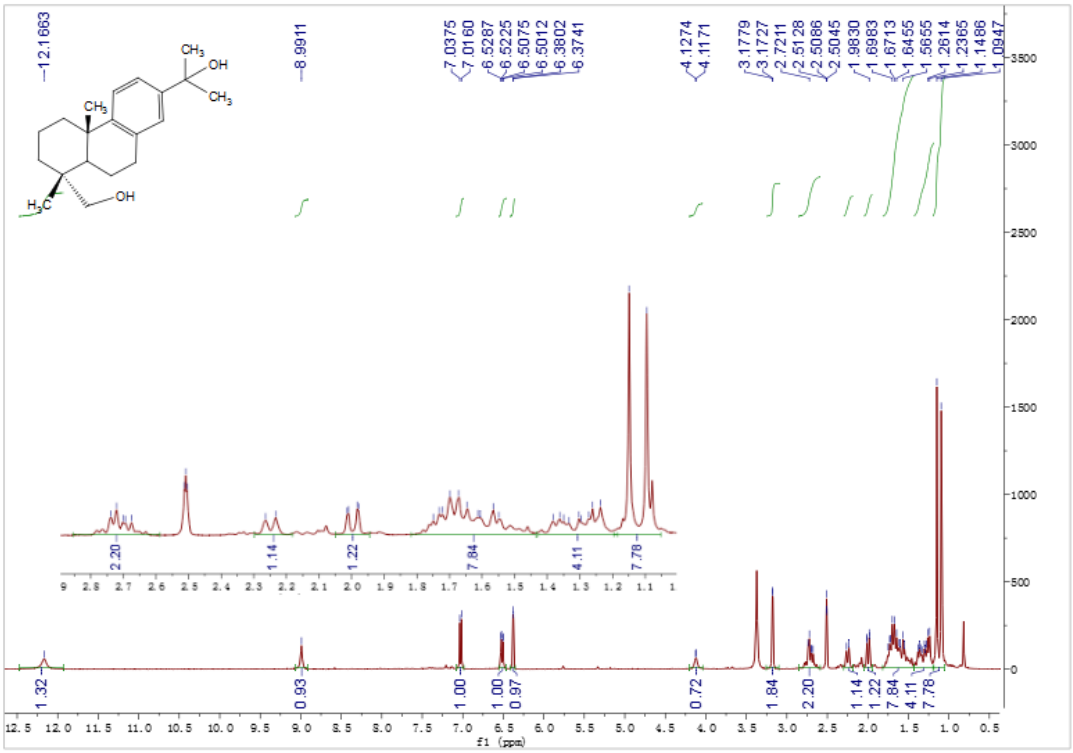
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 4a



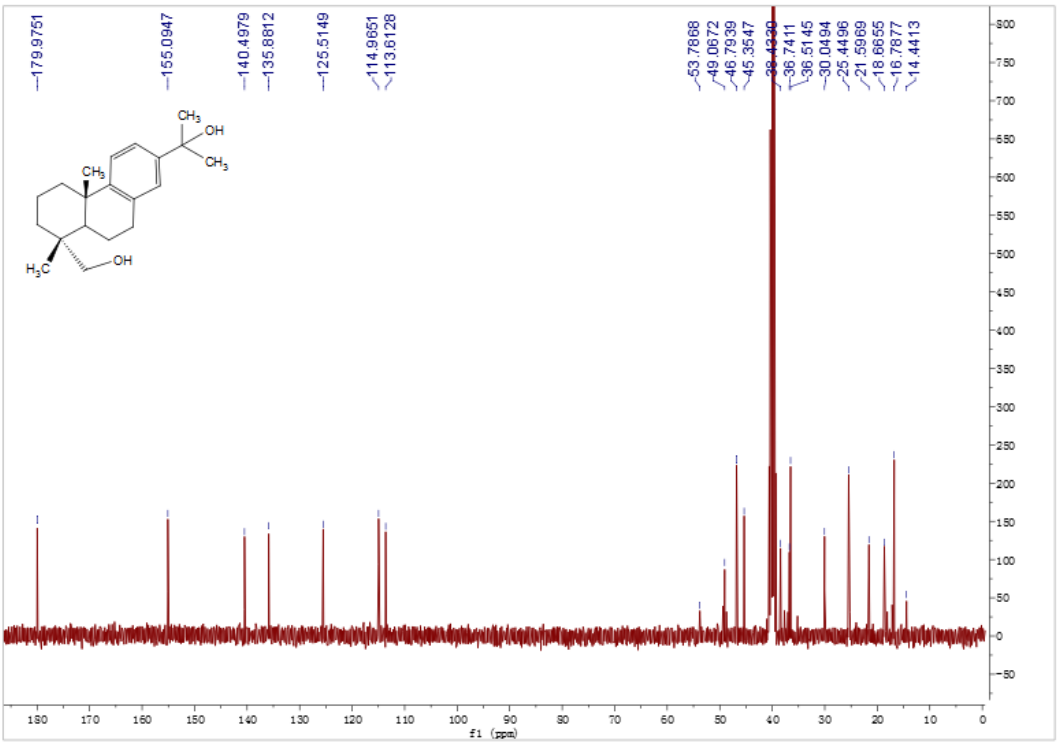
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 4a



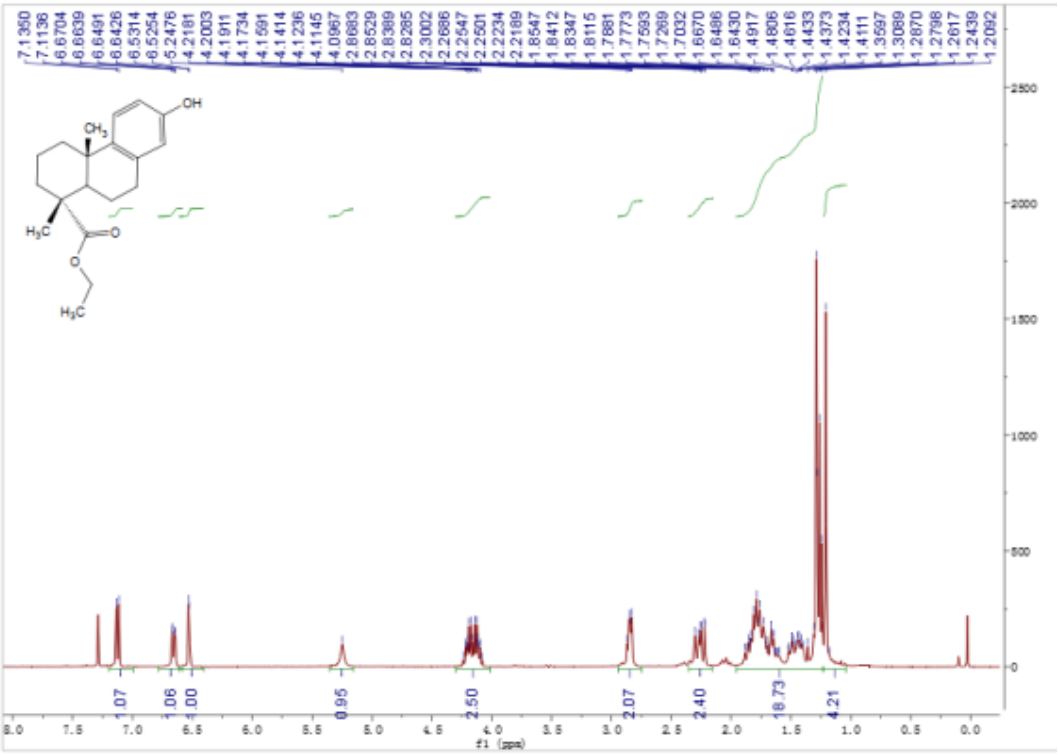
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 4b



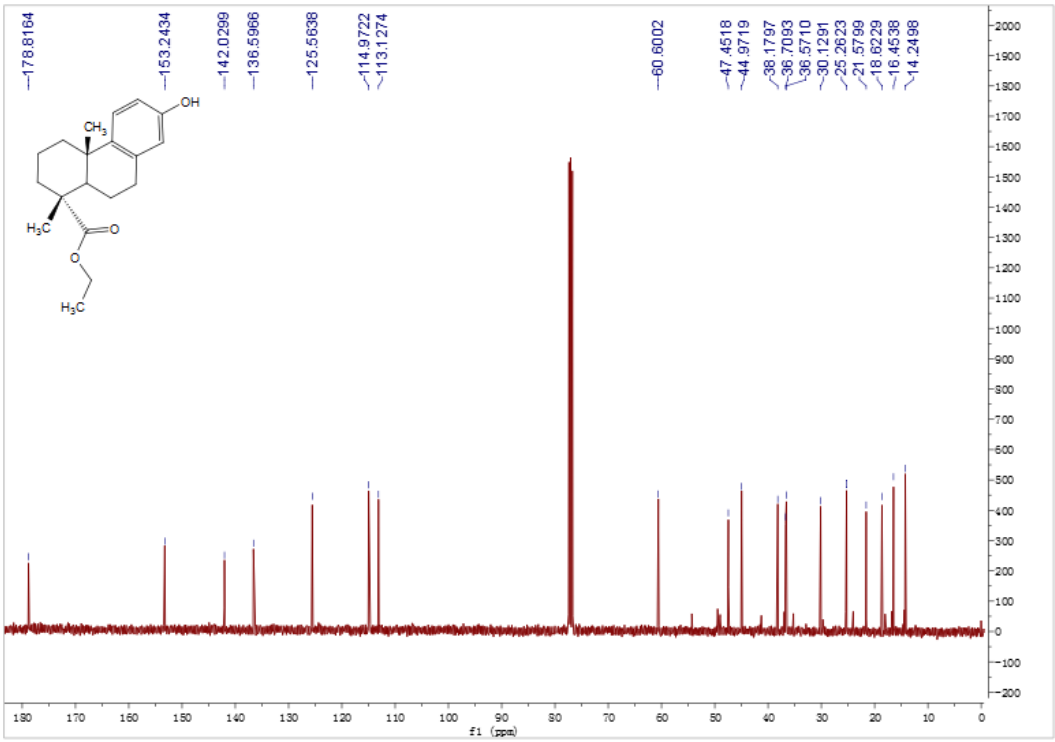
^{1}H NMR (400 MHz, DMSO) spectrum of compound 5



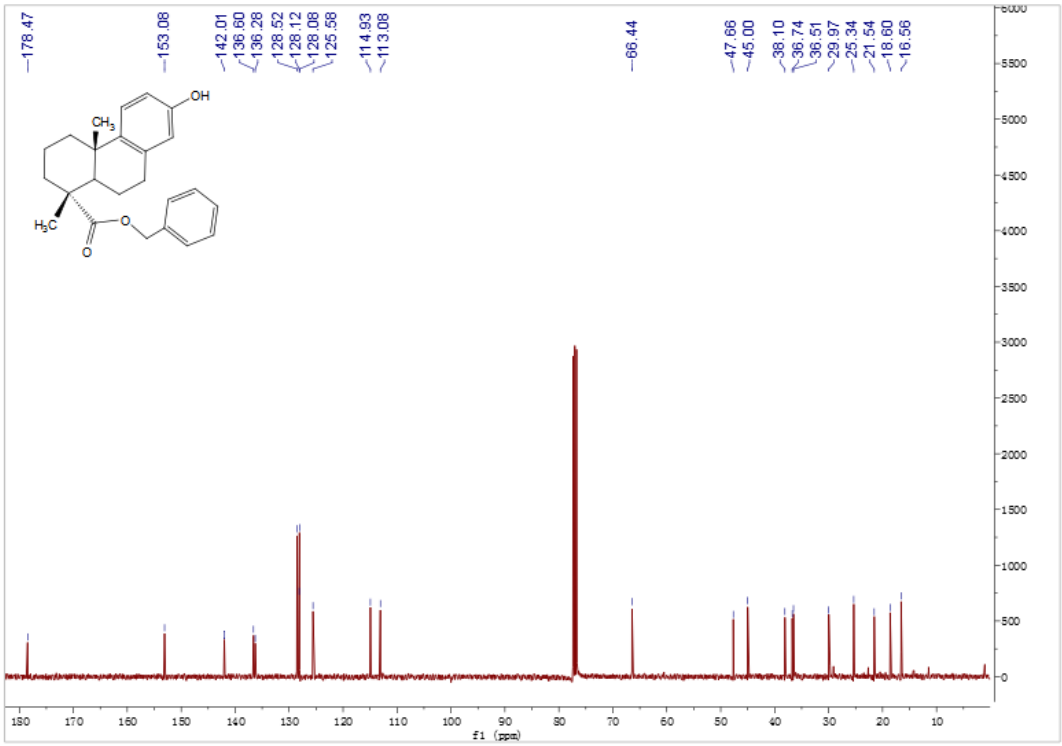
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 5



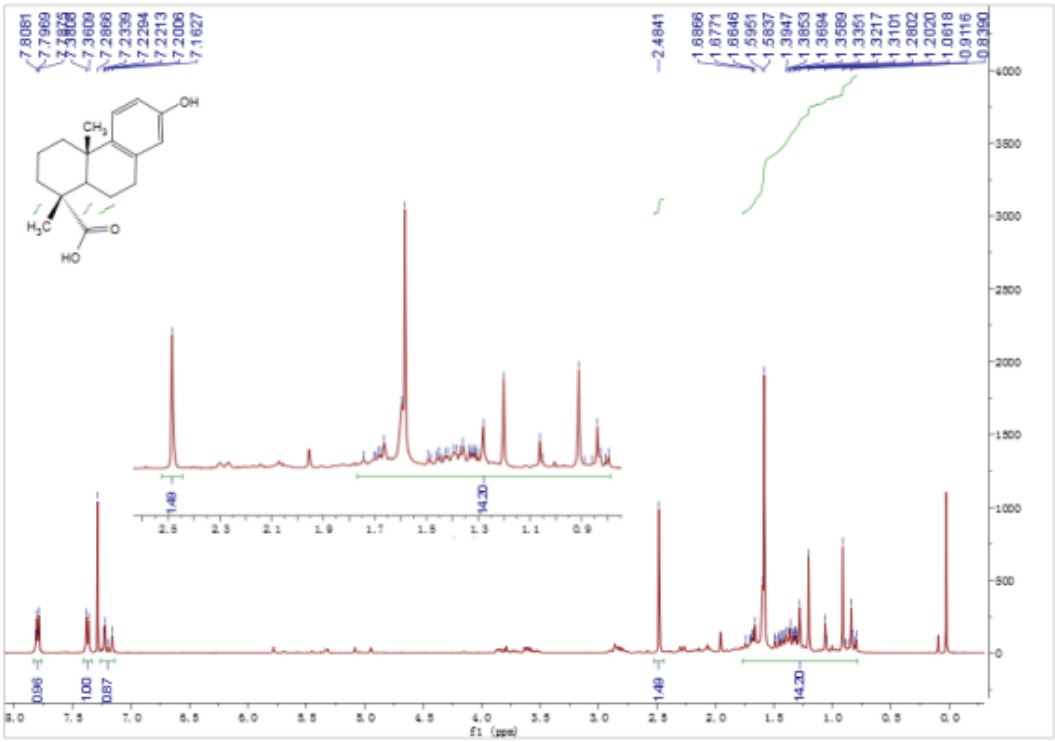
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 6a



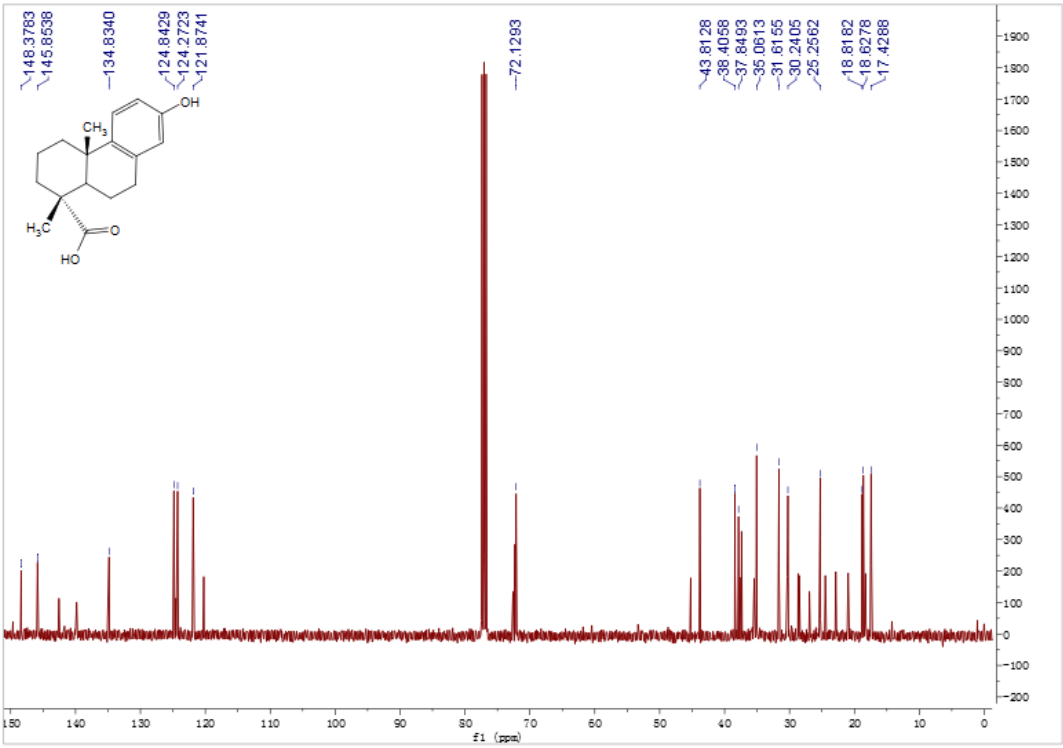
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 6a



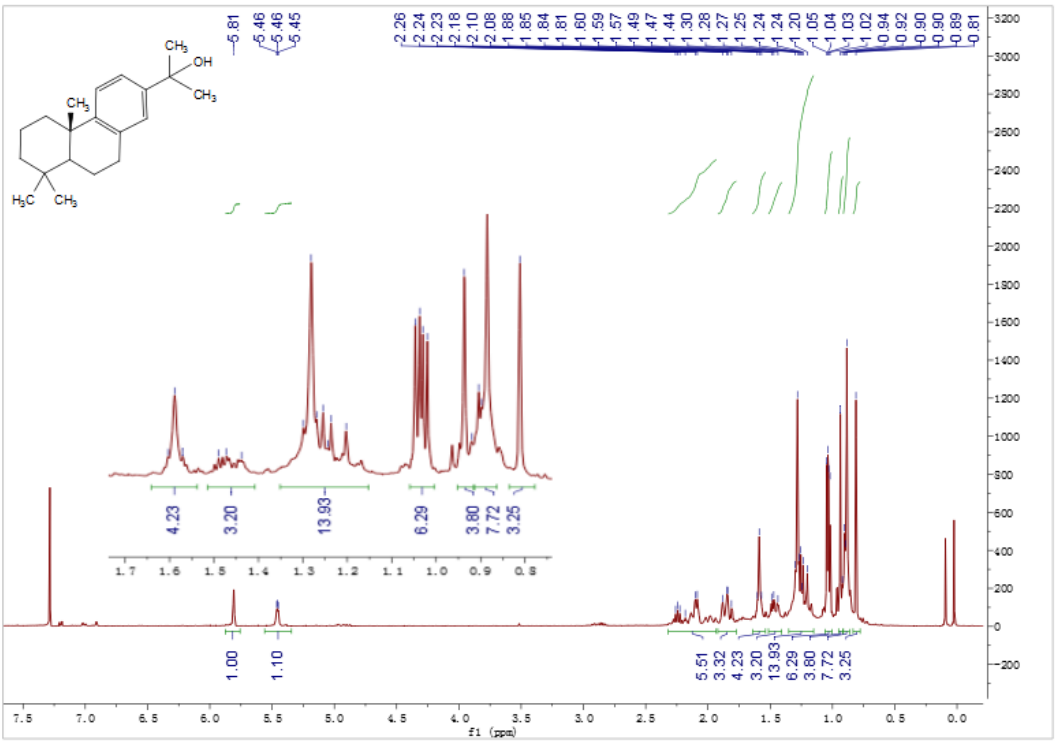
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 6b



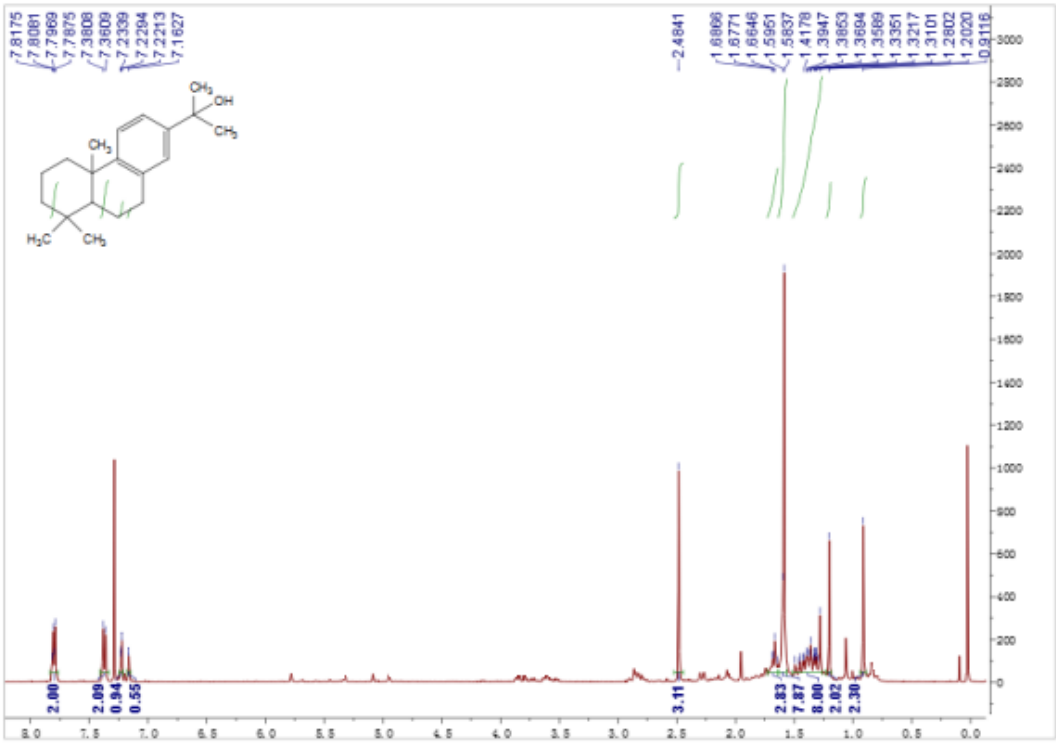
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 7



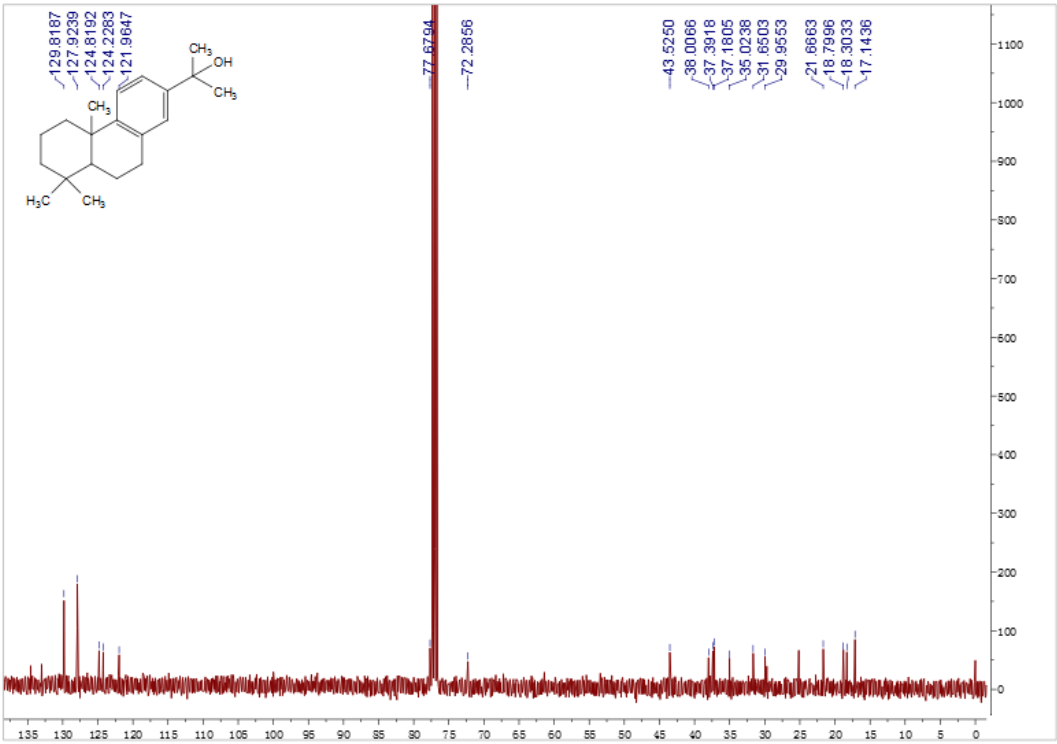
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 7



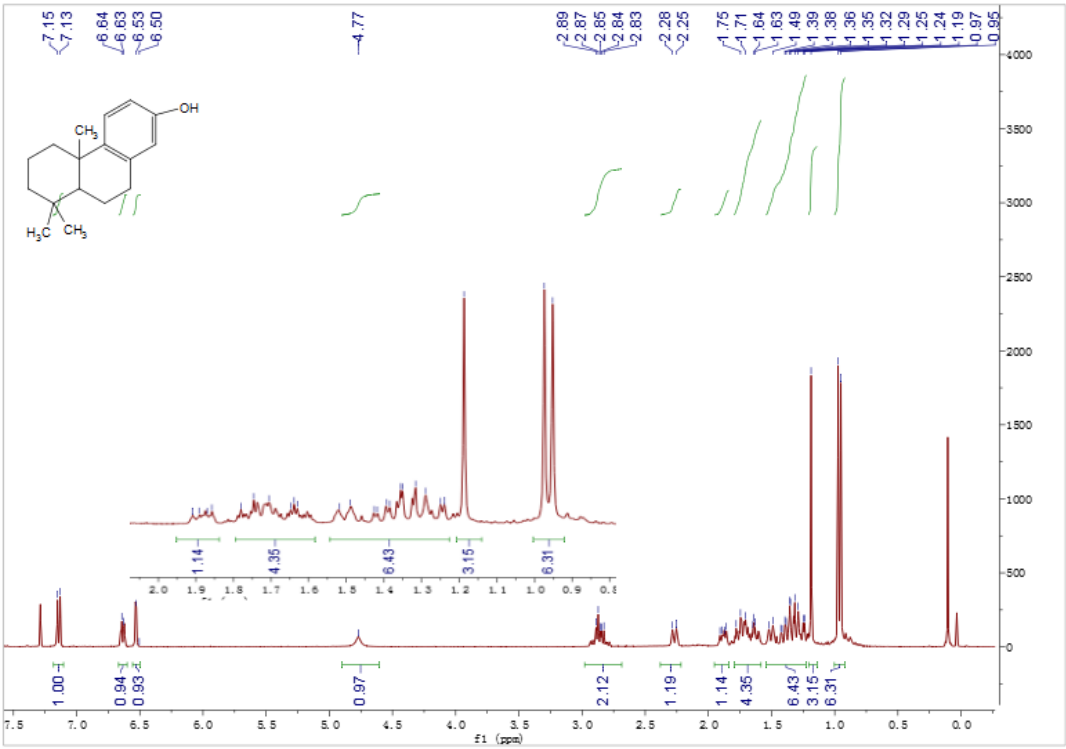
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 11



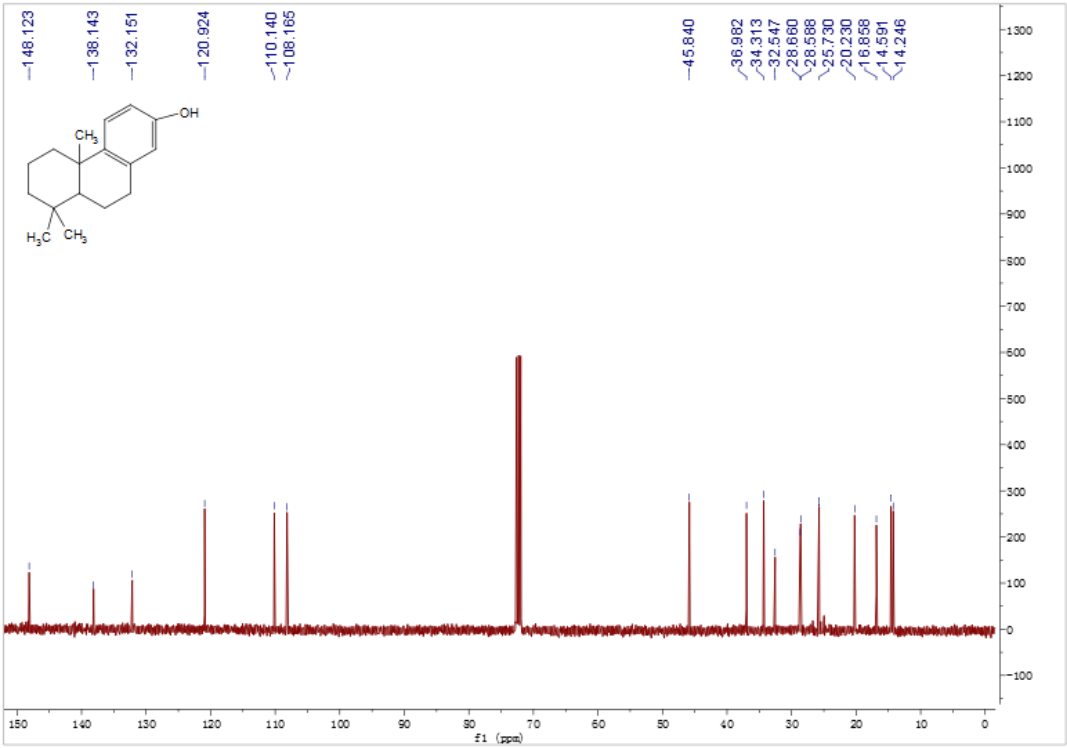
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 13



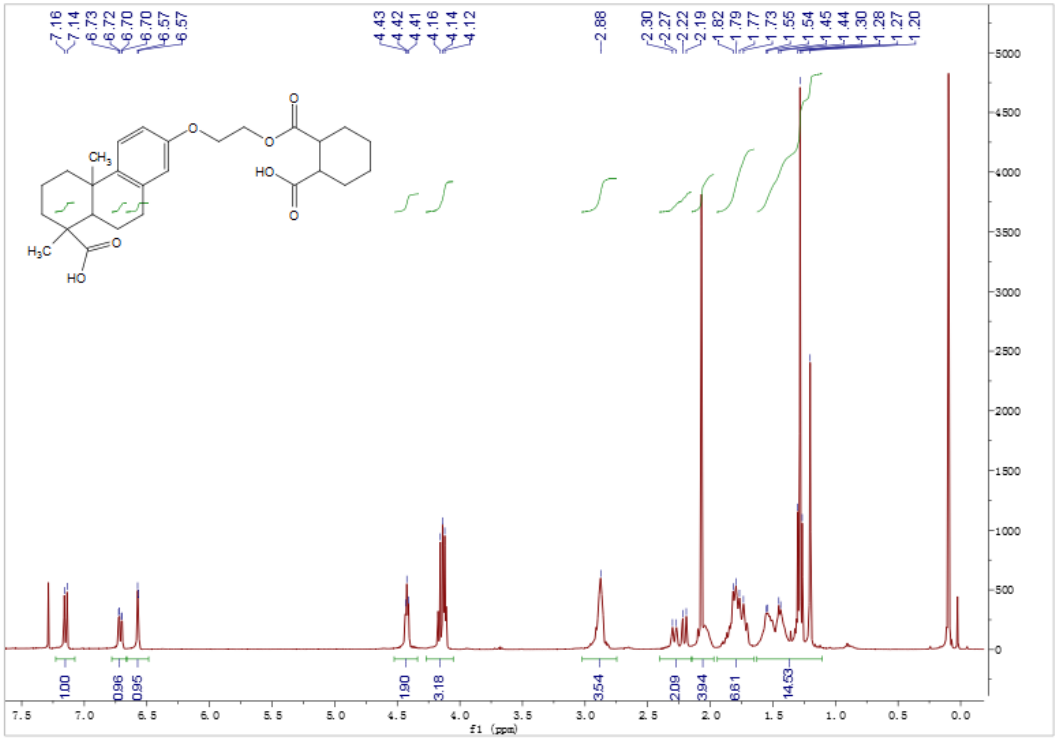
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 13



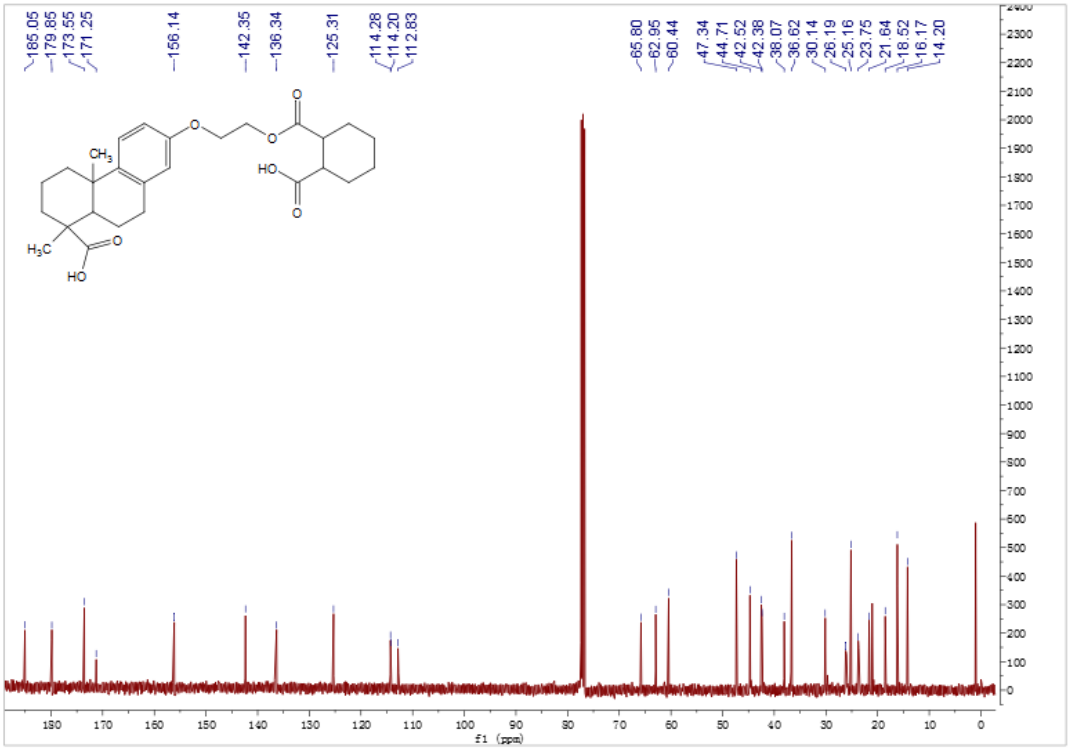
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 14



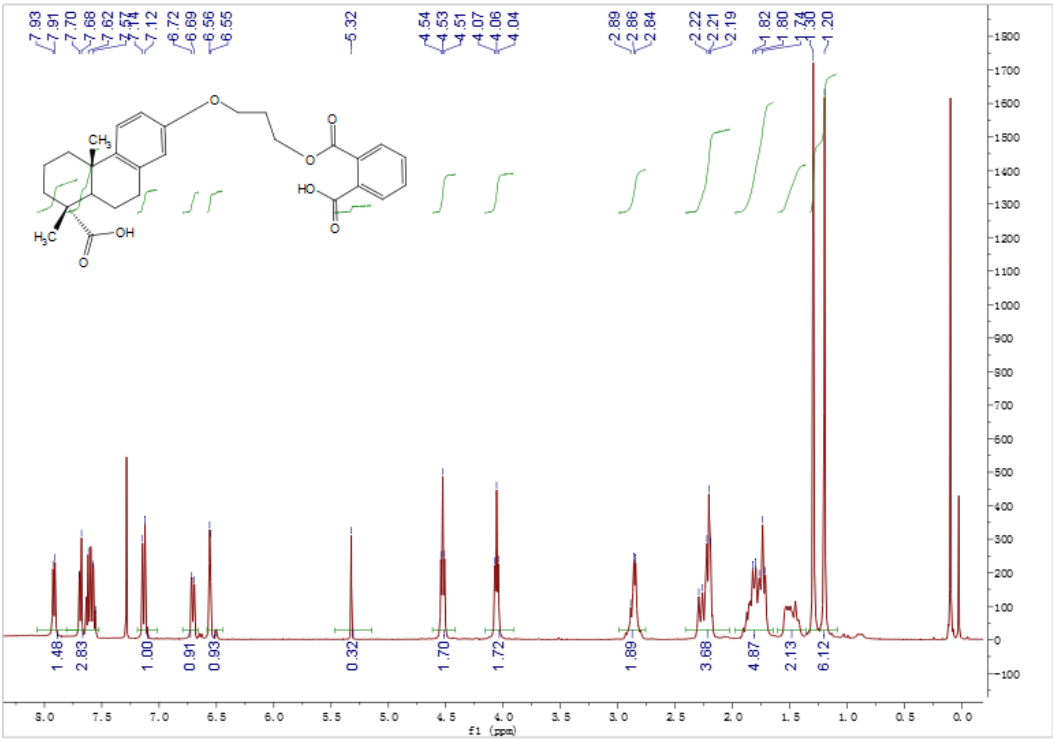
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 14



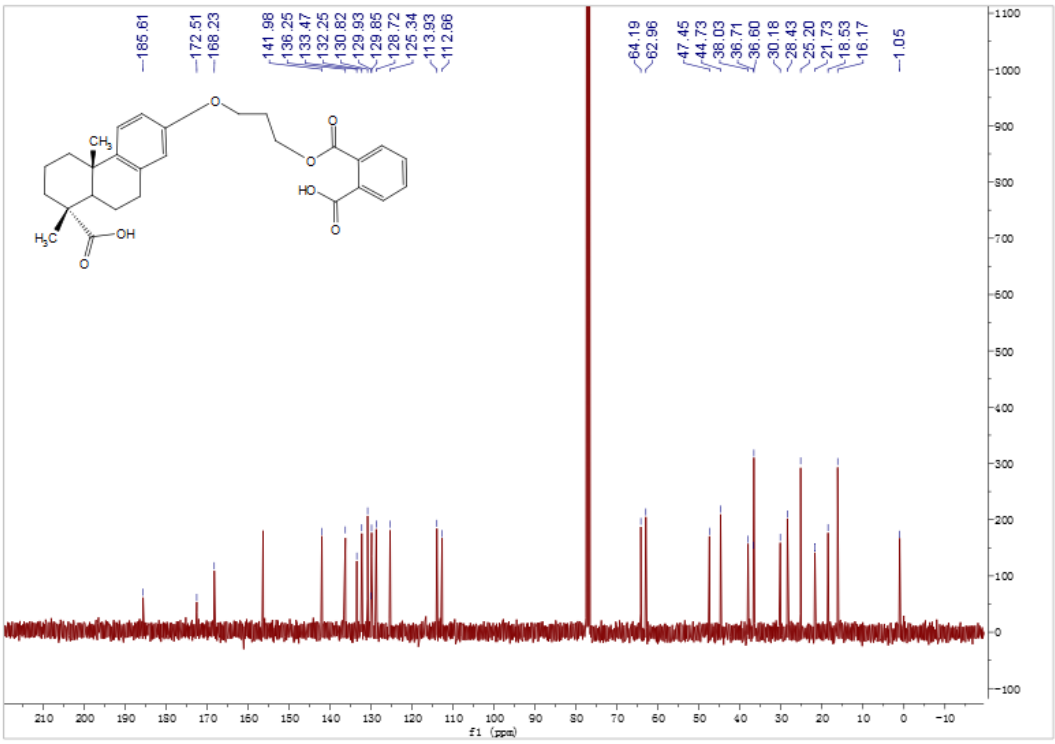
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 15



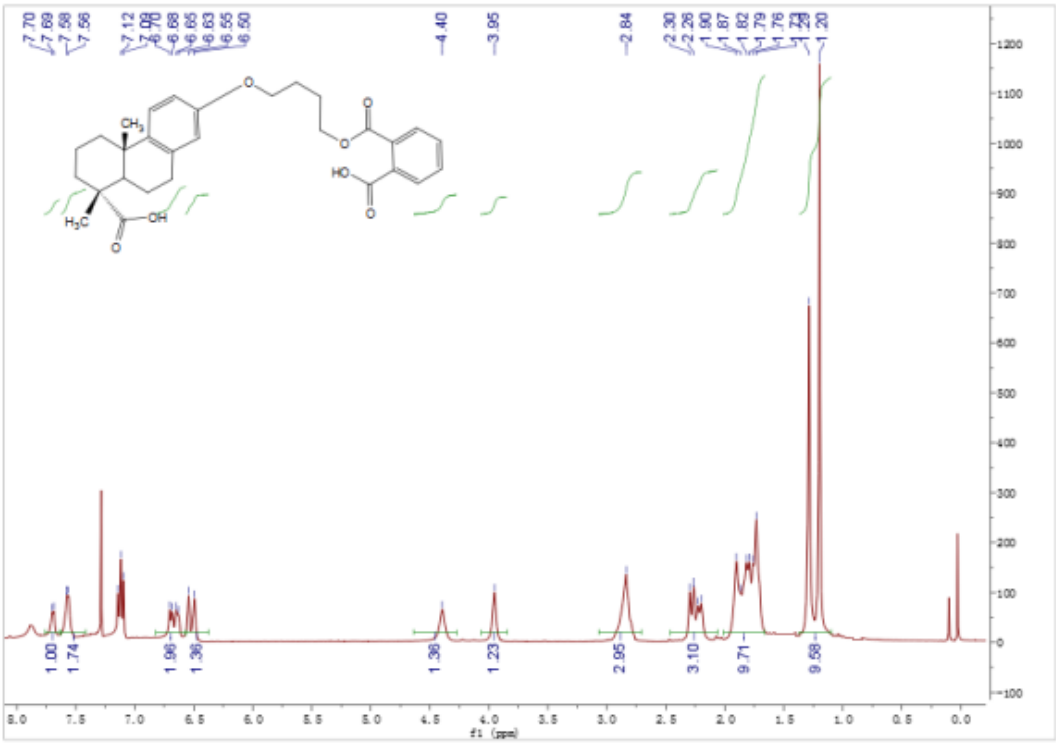
^{13}C NMR ((300 MHz, $CDCl_3$) spectrum of compound 15



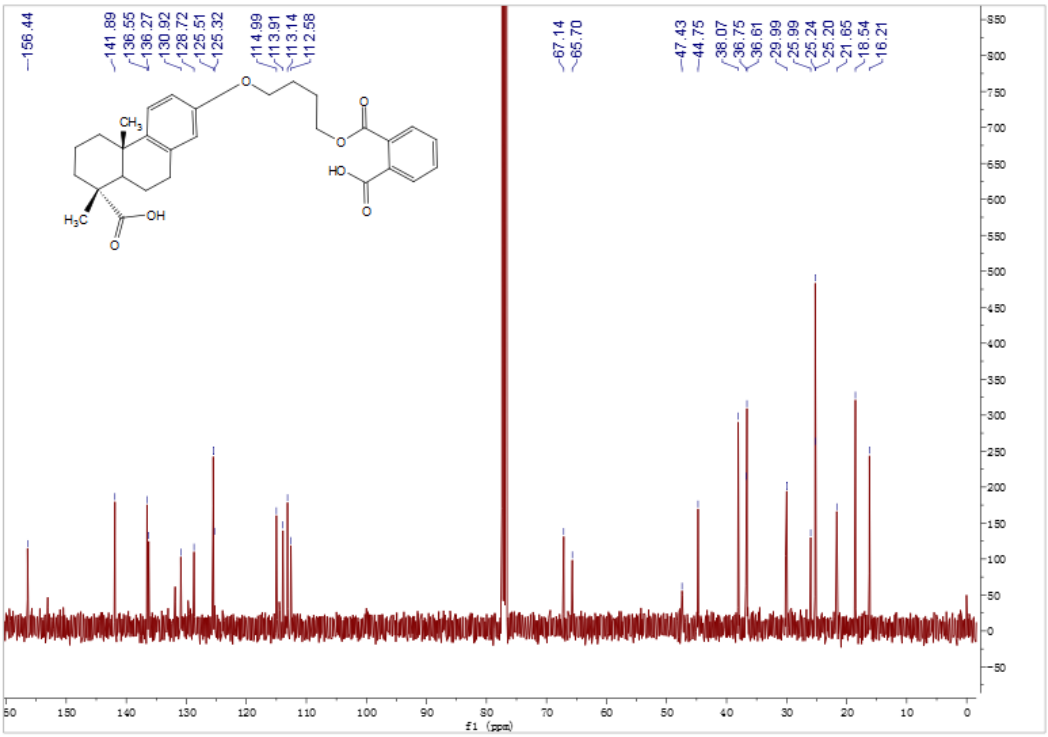
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 16



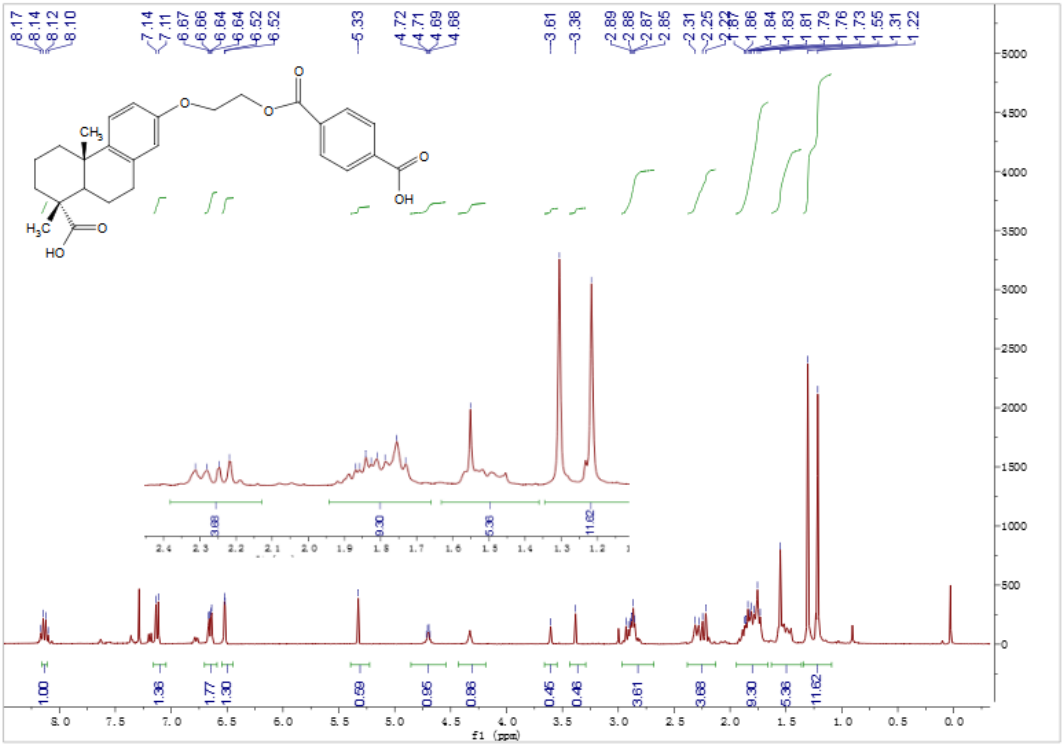
^{13}C NMR ((300 MHz, $CDCl_3$) spectrum of compound 16



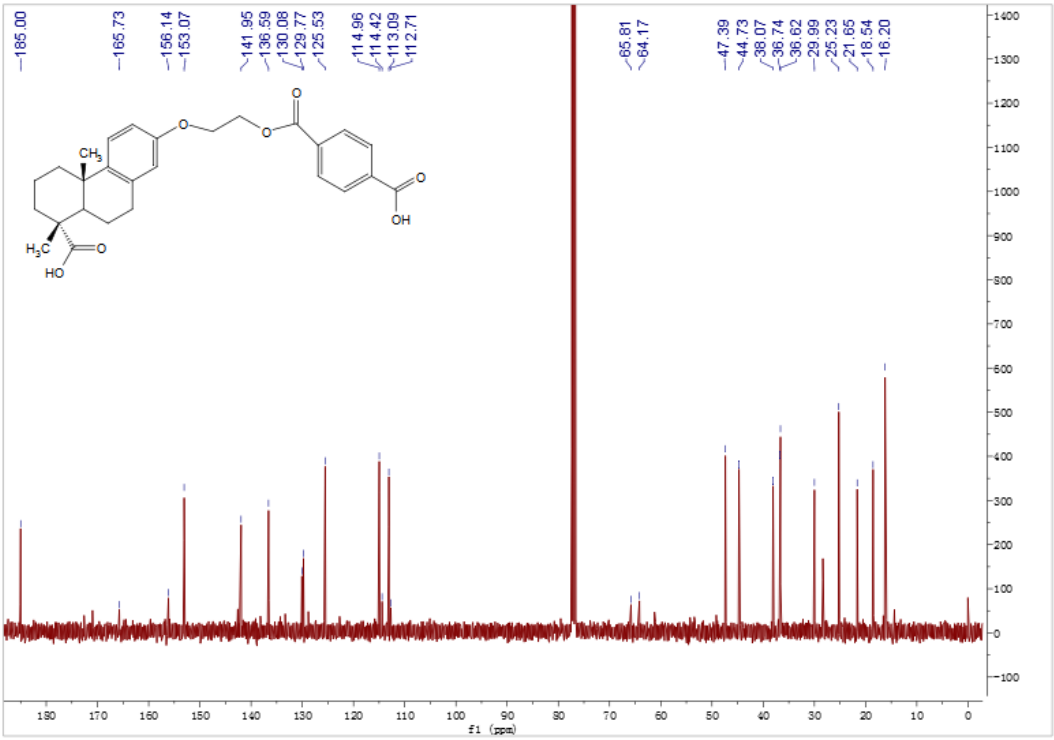
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 17



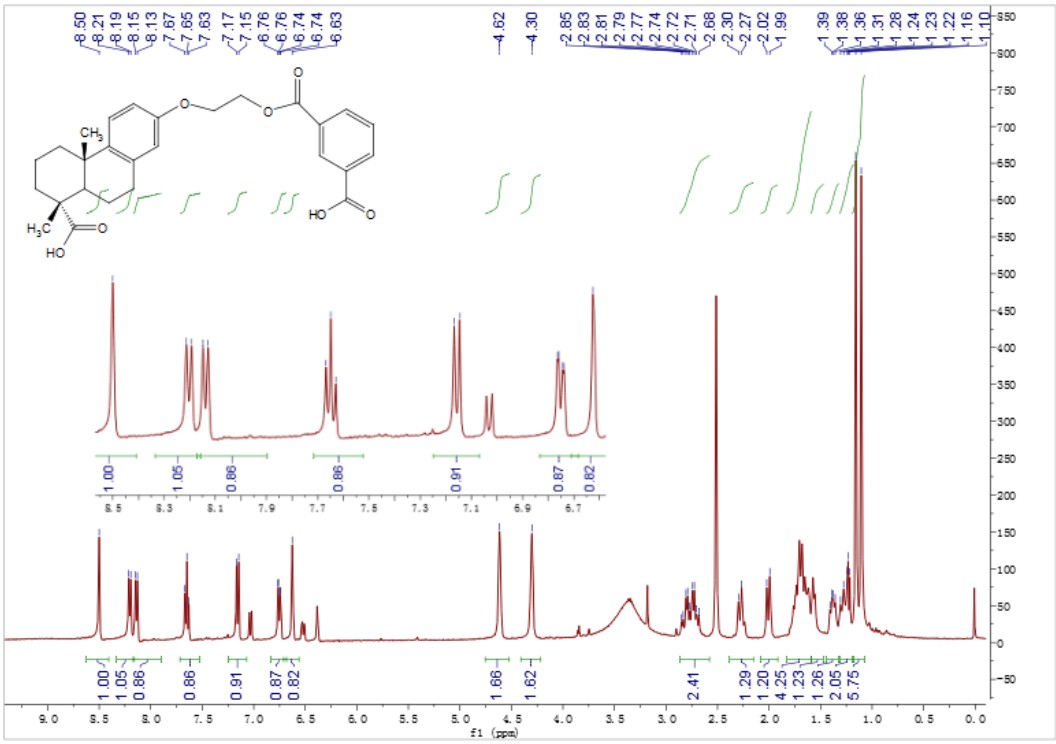
^{13}C NMR ((300 MHz, $CDCl_3$) spectrum of compound 17



^{1}H NMR (400 MHz, CDCl3) spectrum of compound 18

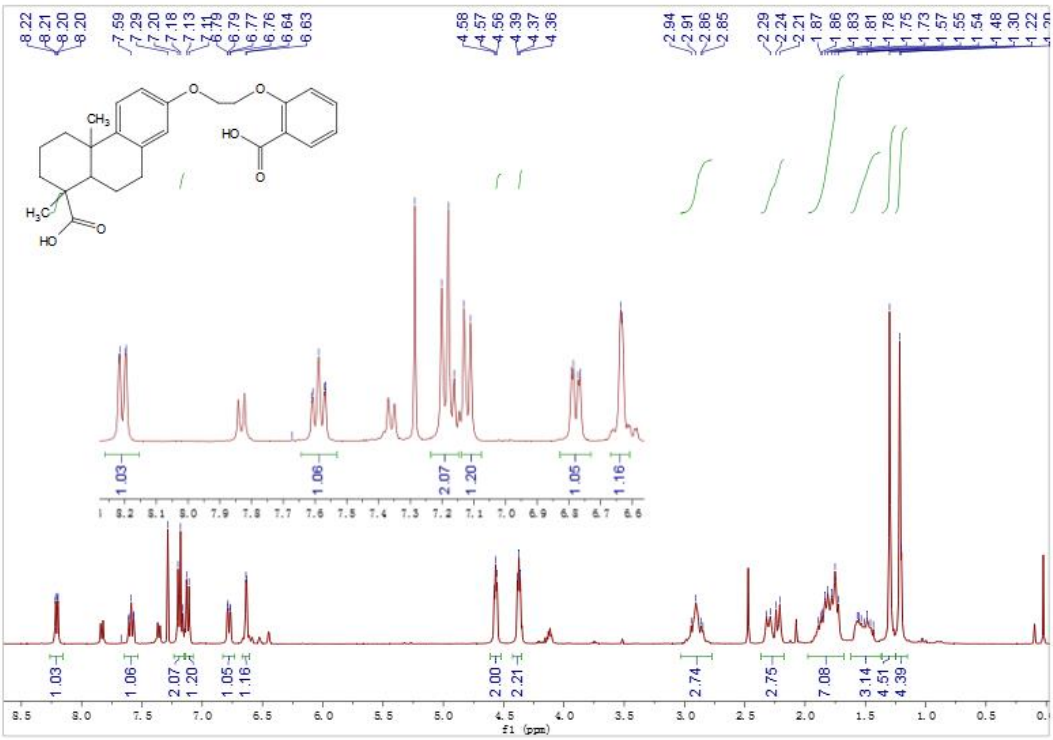


^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 18

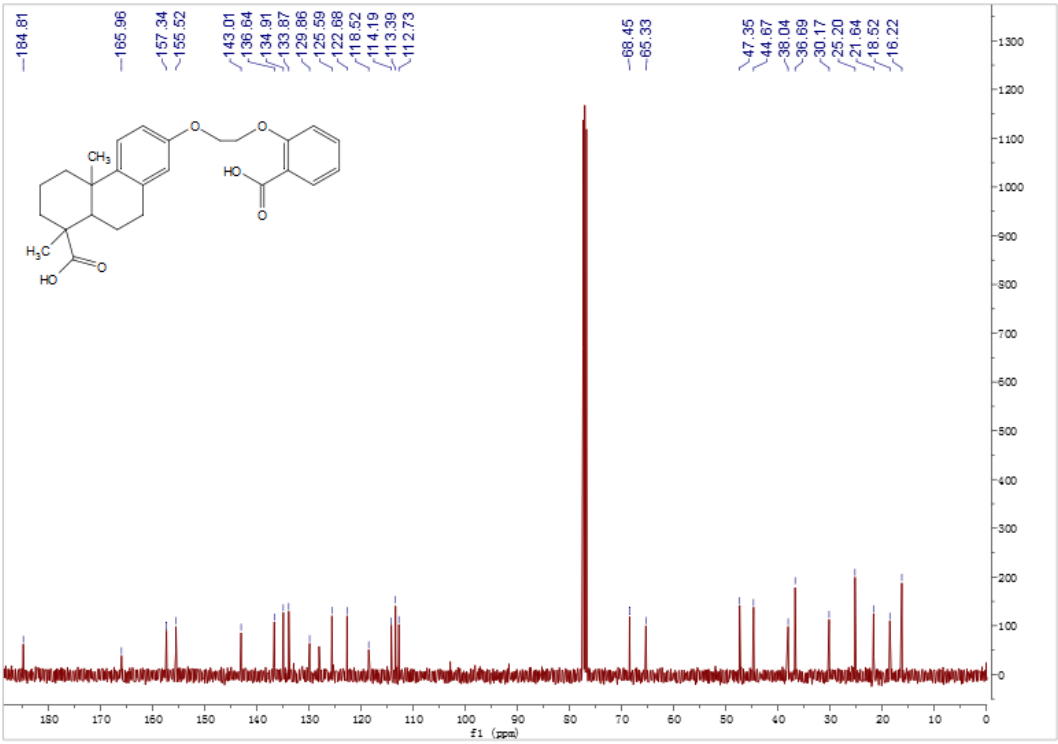


^{1}H NMR (400 MHz, d_6-DMSO) spectrum of compound 19

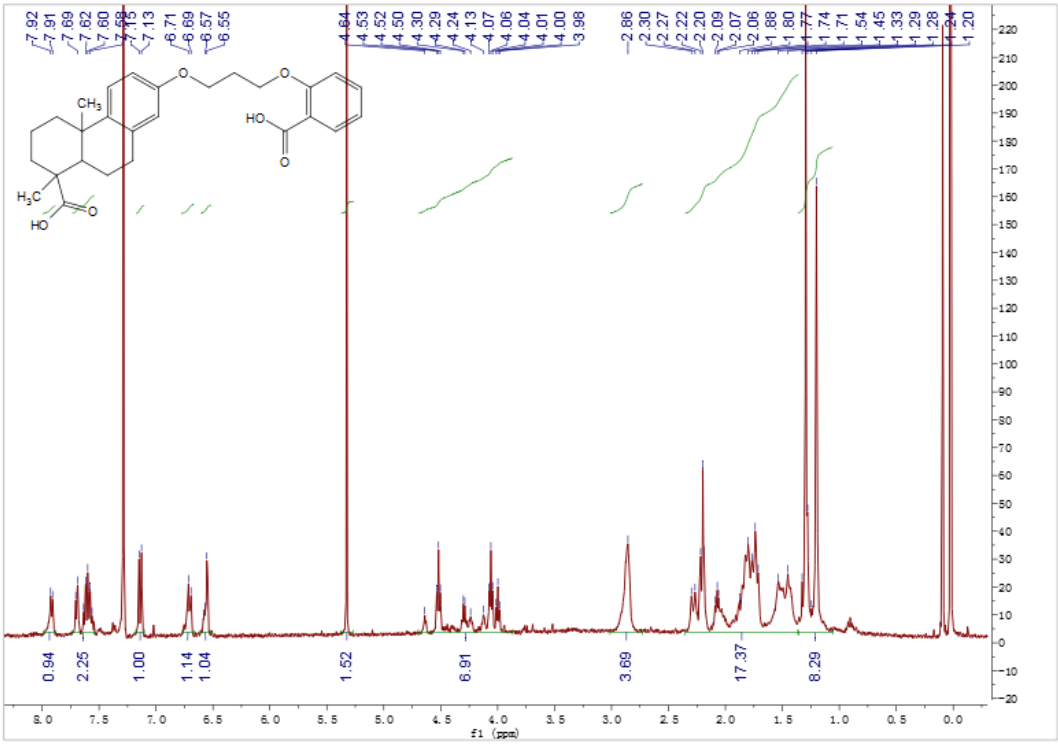
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 19



^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 20

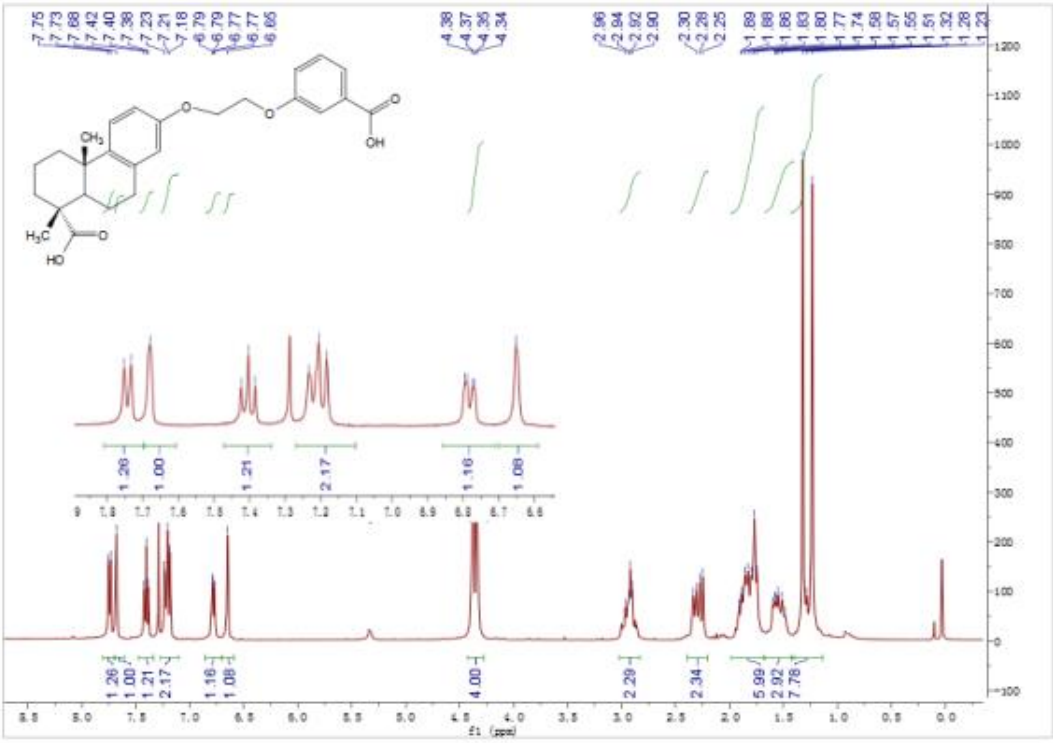


^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 20

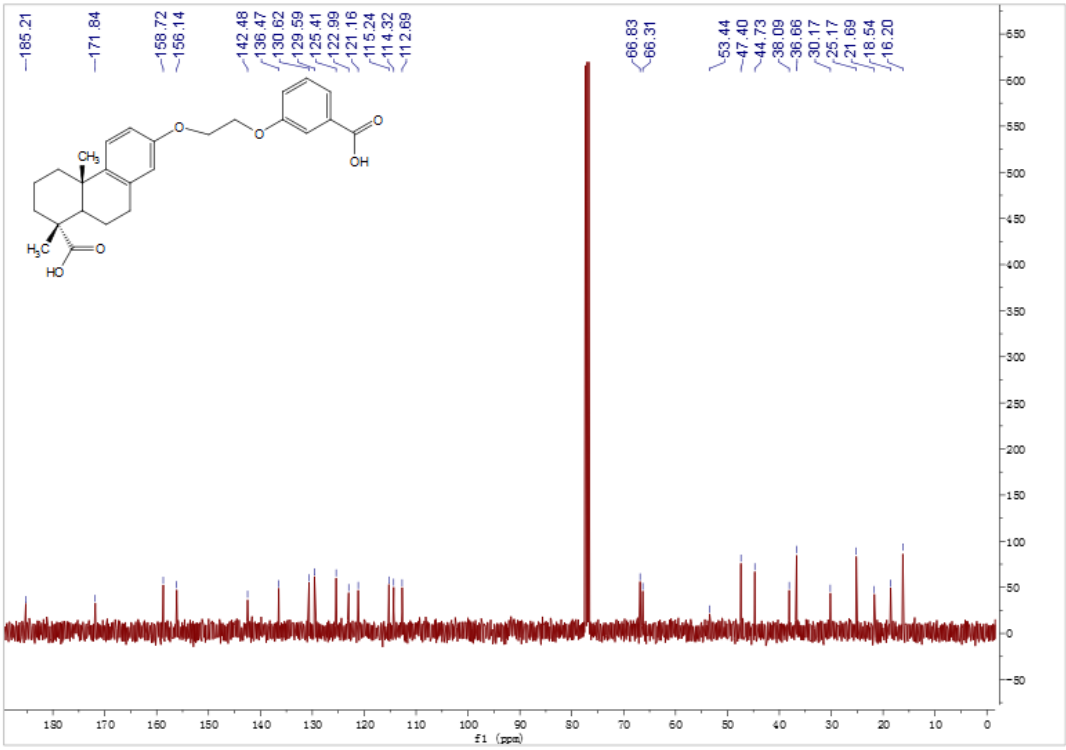


^{1}H NMR (400 MHz, CDCl3) spectrum of compound 21

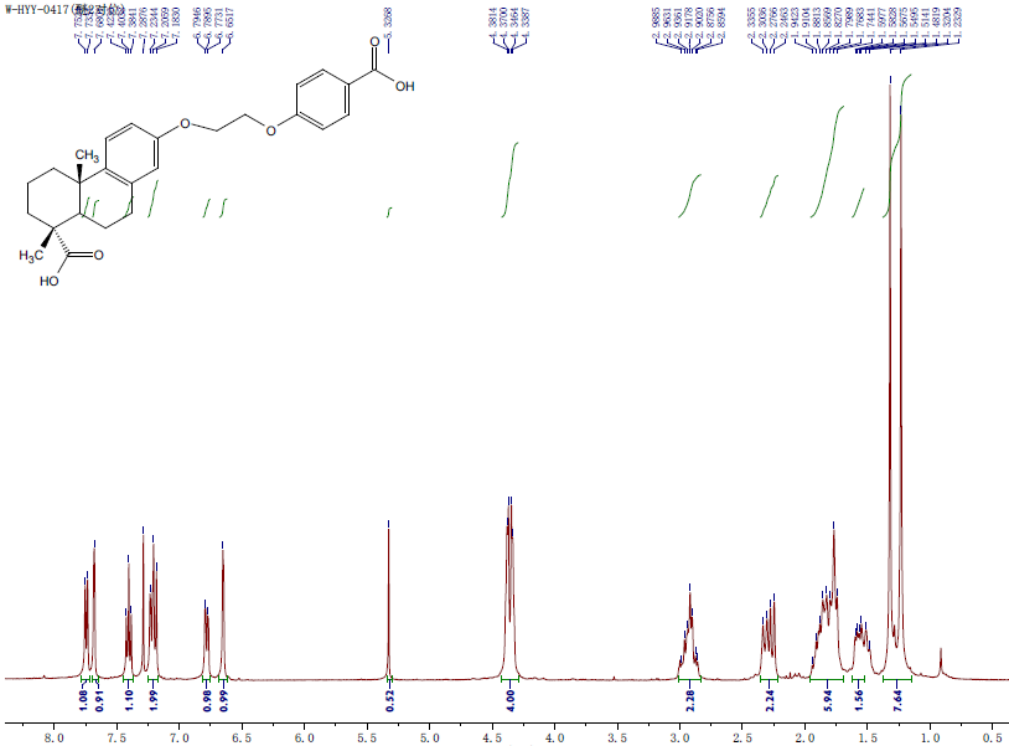
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 21



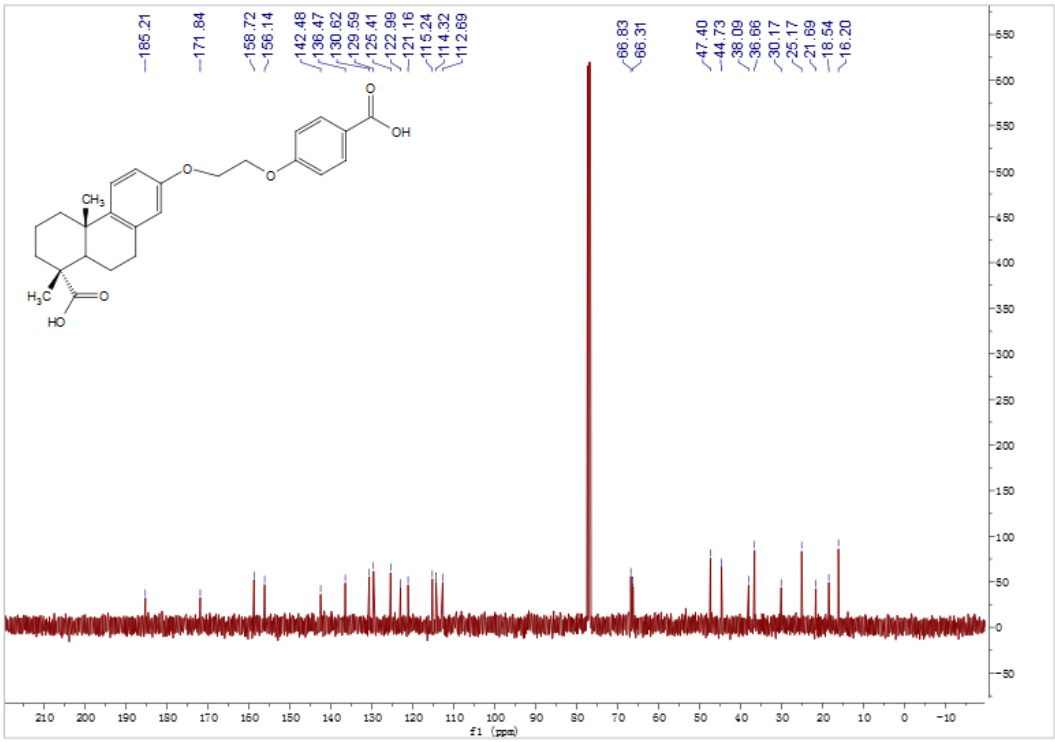
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 22



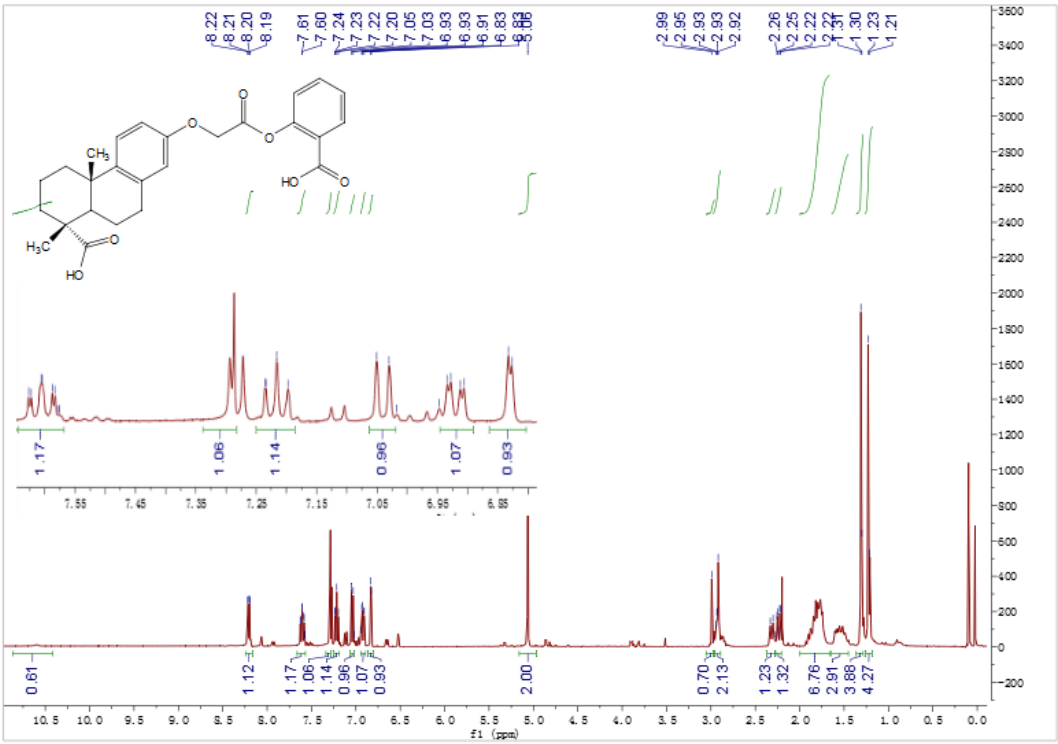
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 22



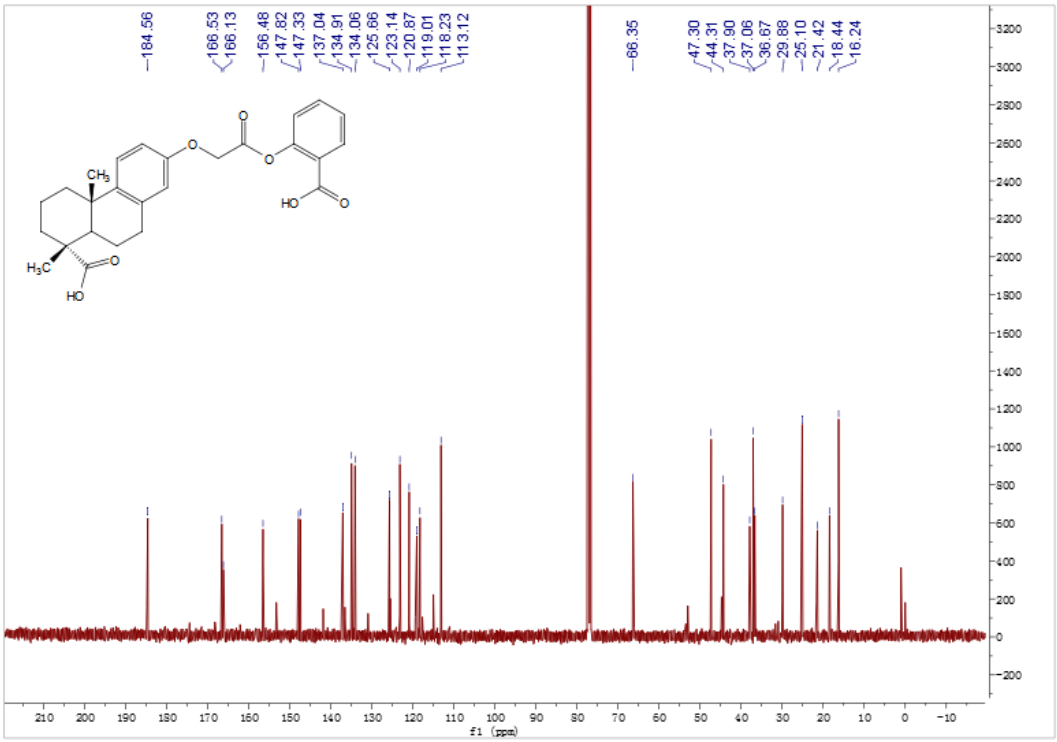
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 23



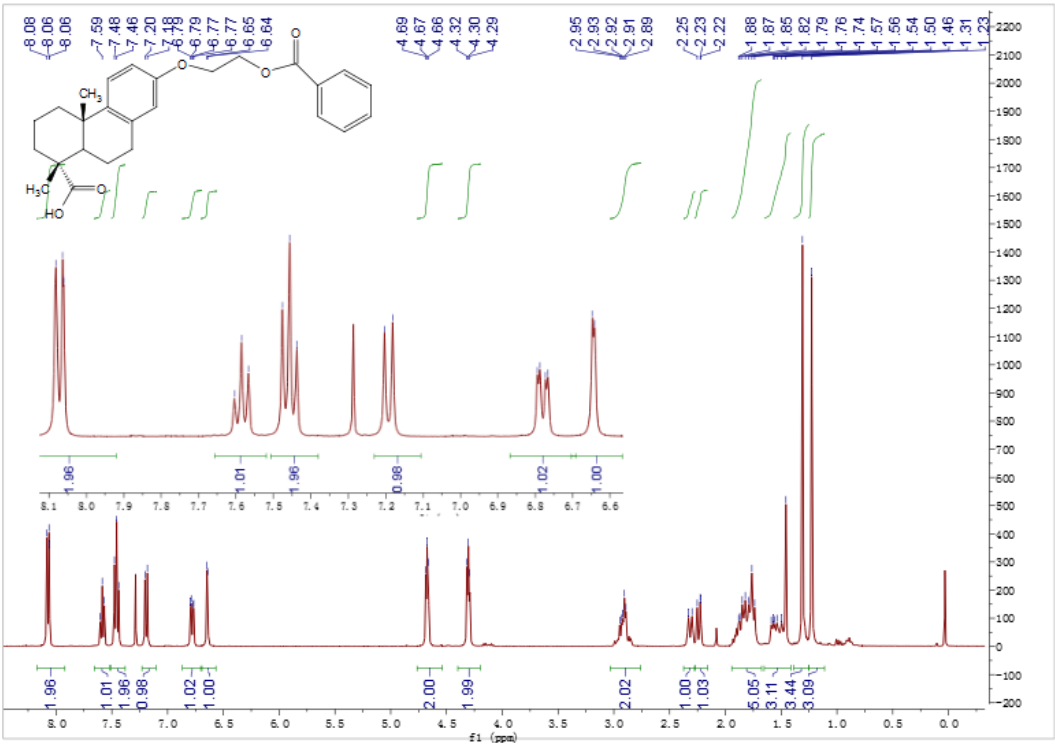
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 23



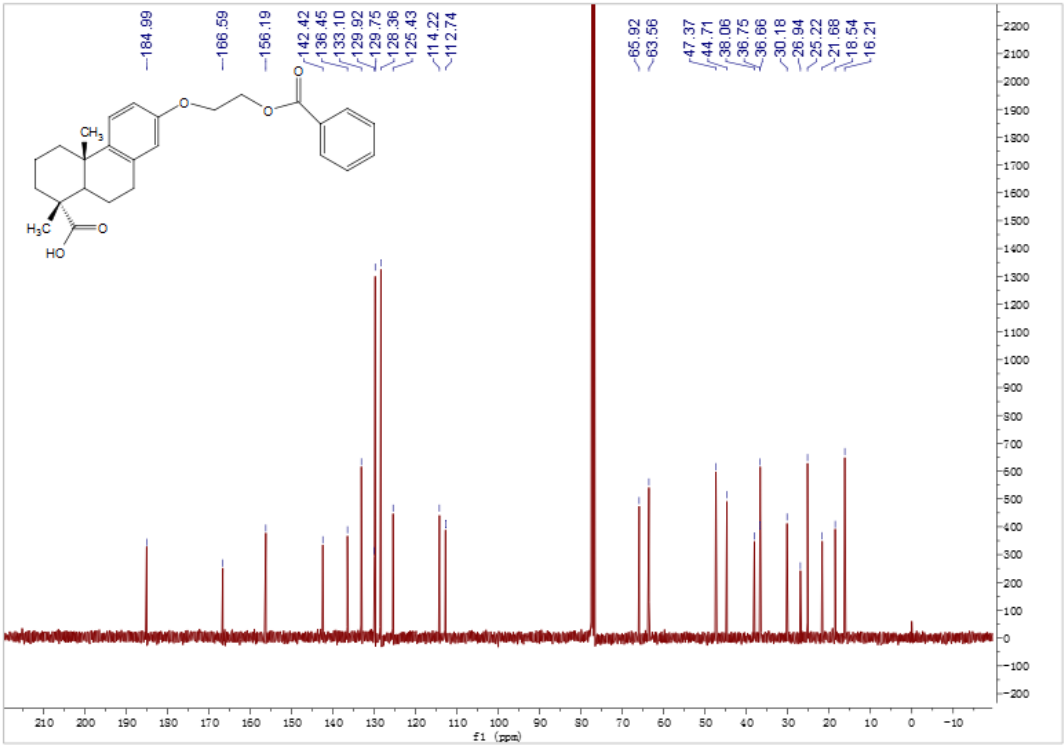
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 24



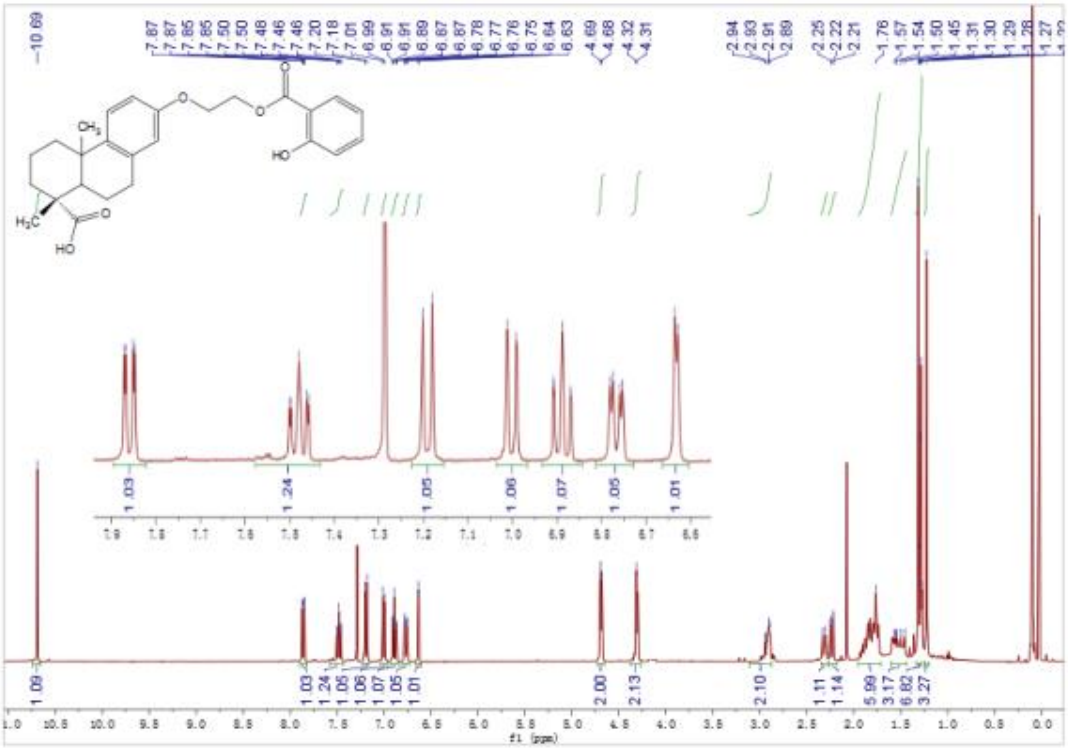
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 24



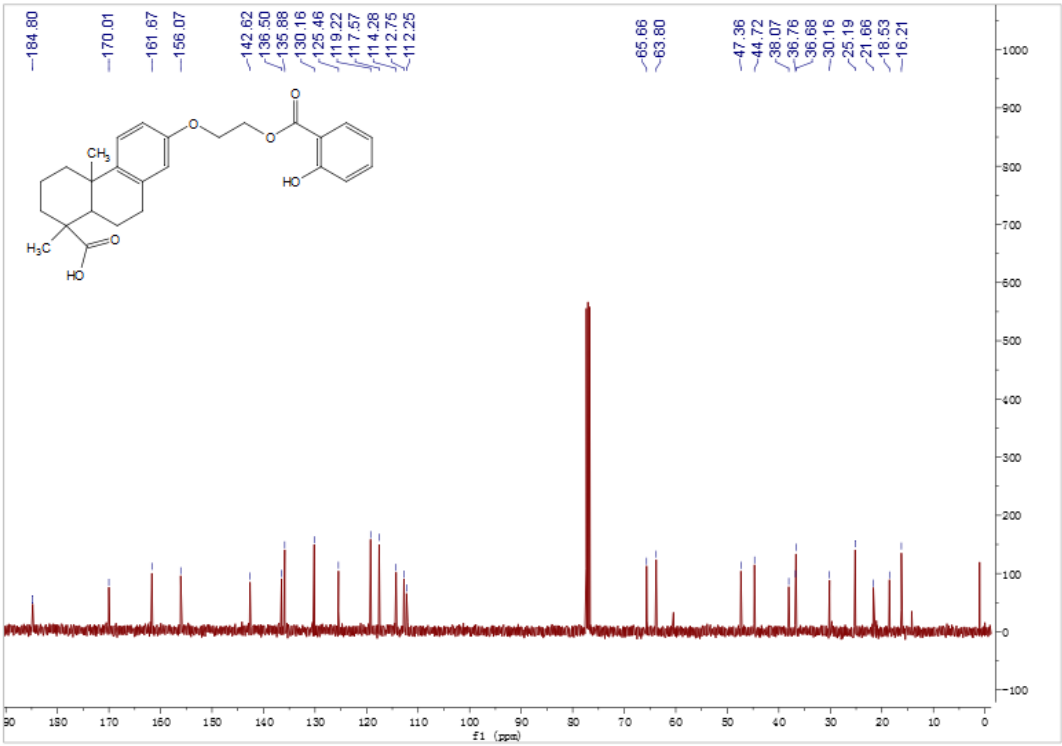
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 25



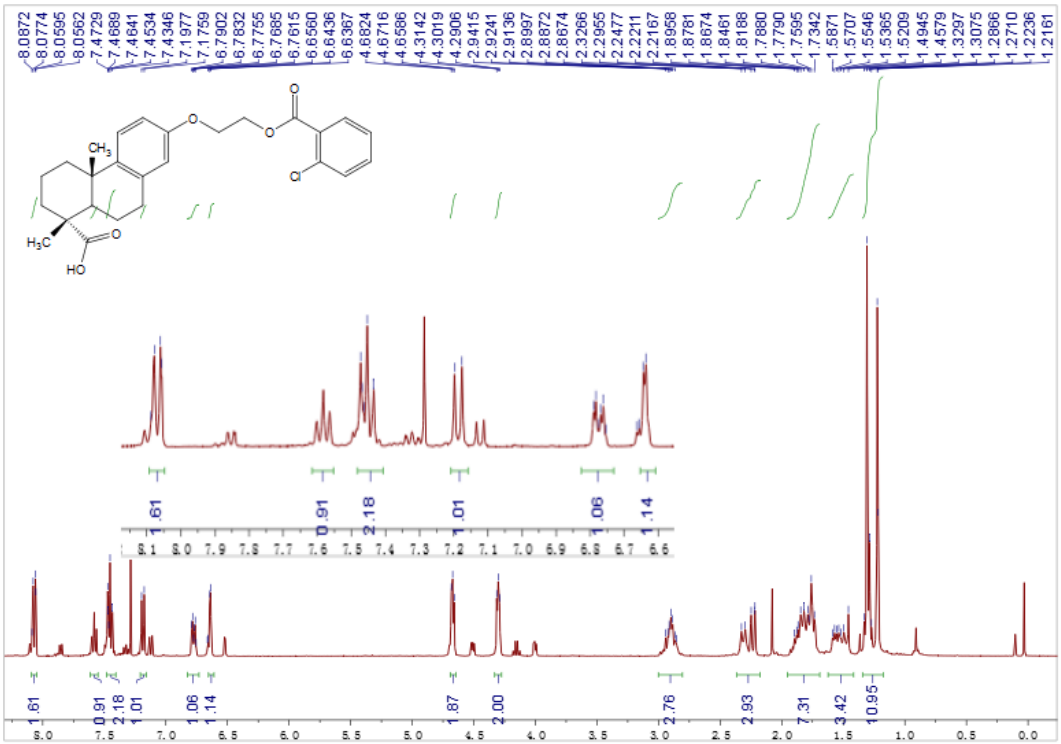
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 25



^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 26

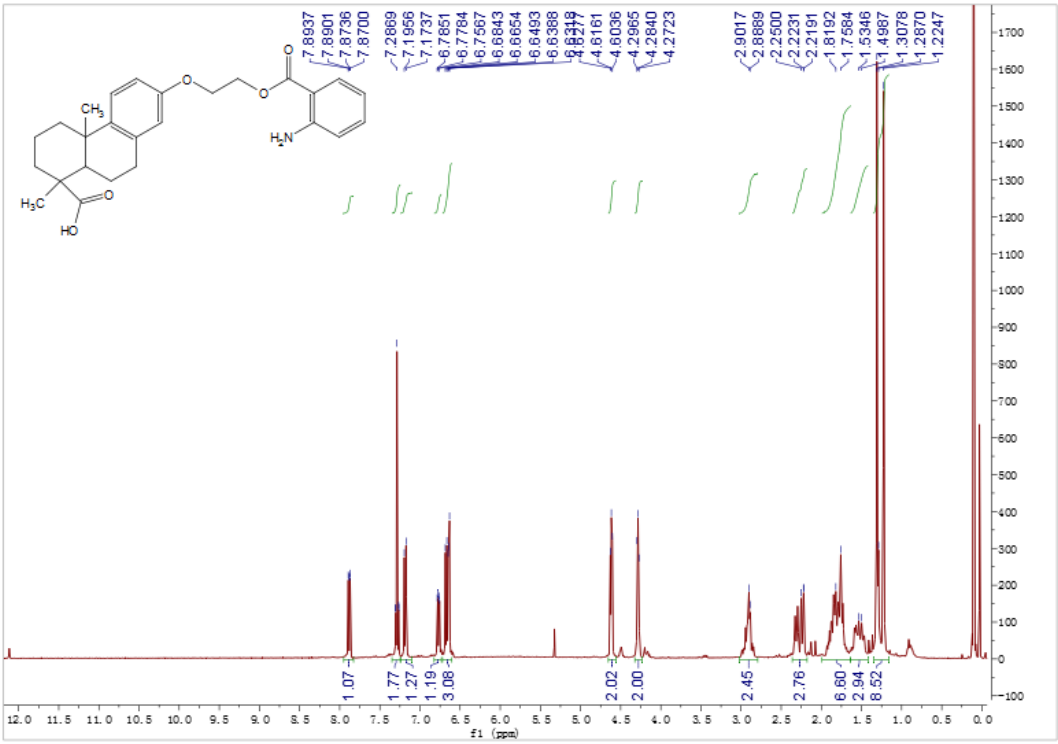


^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 26

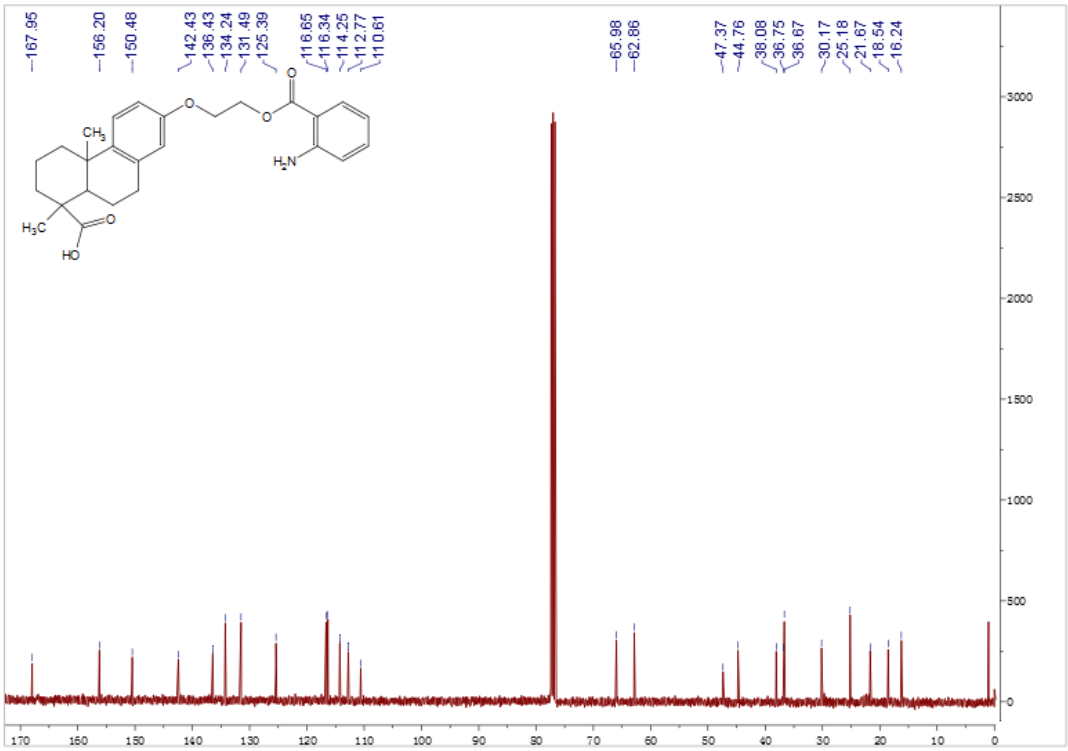


^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 27

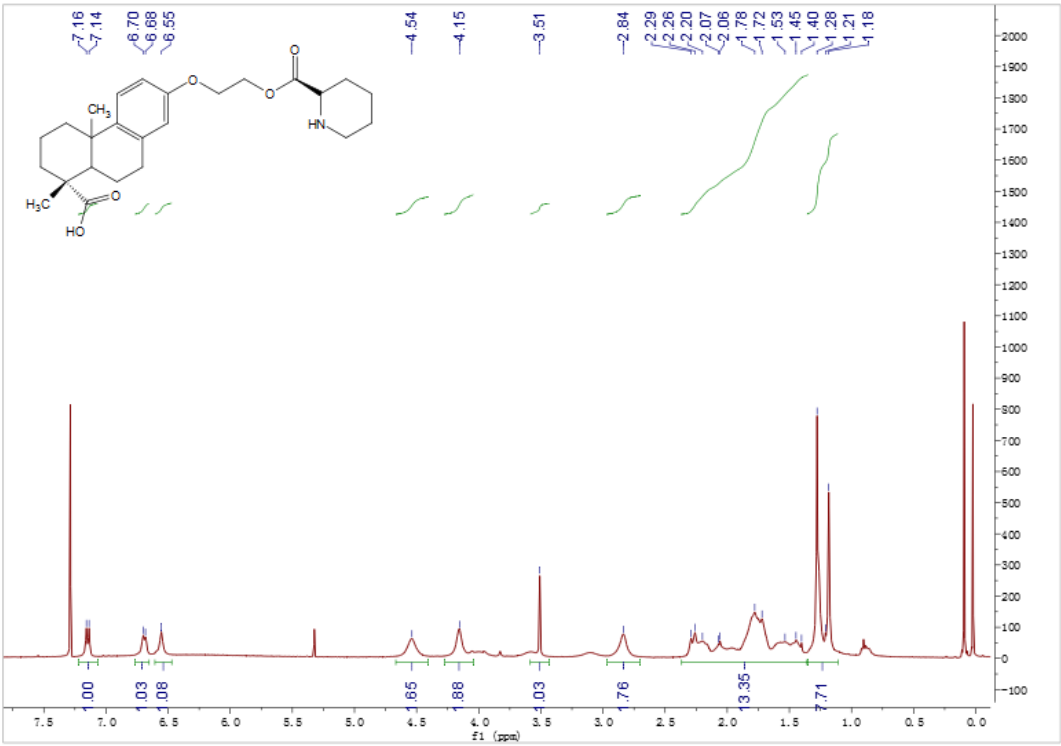
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 27



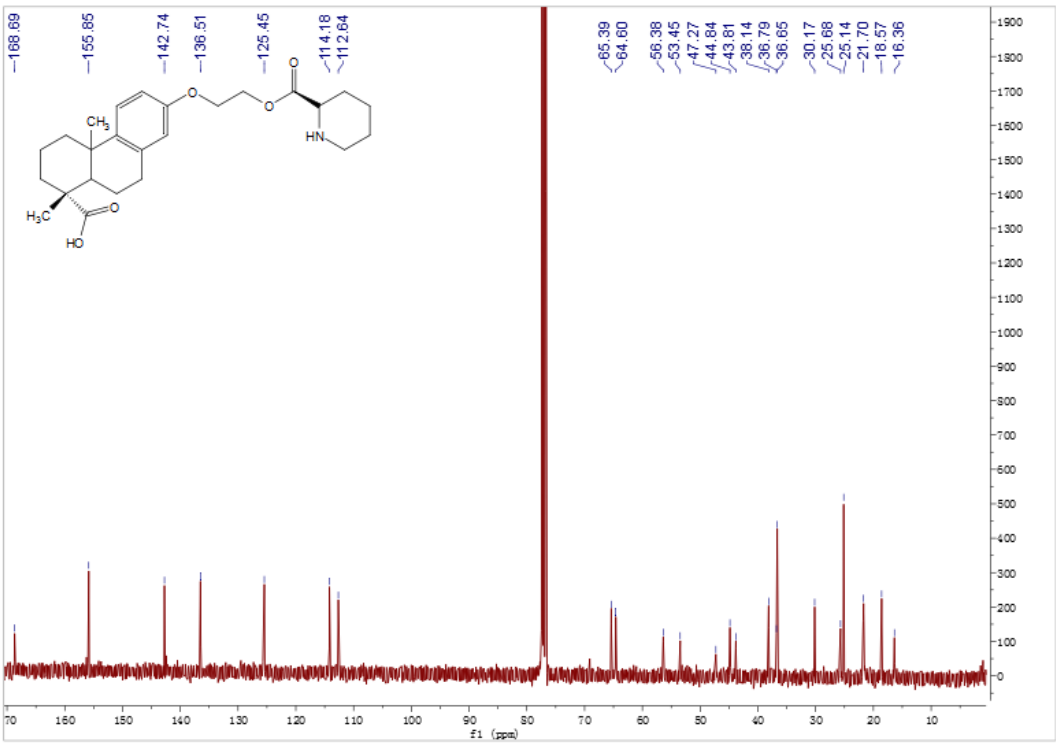
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 28



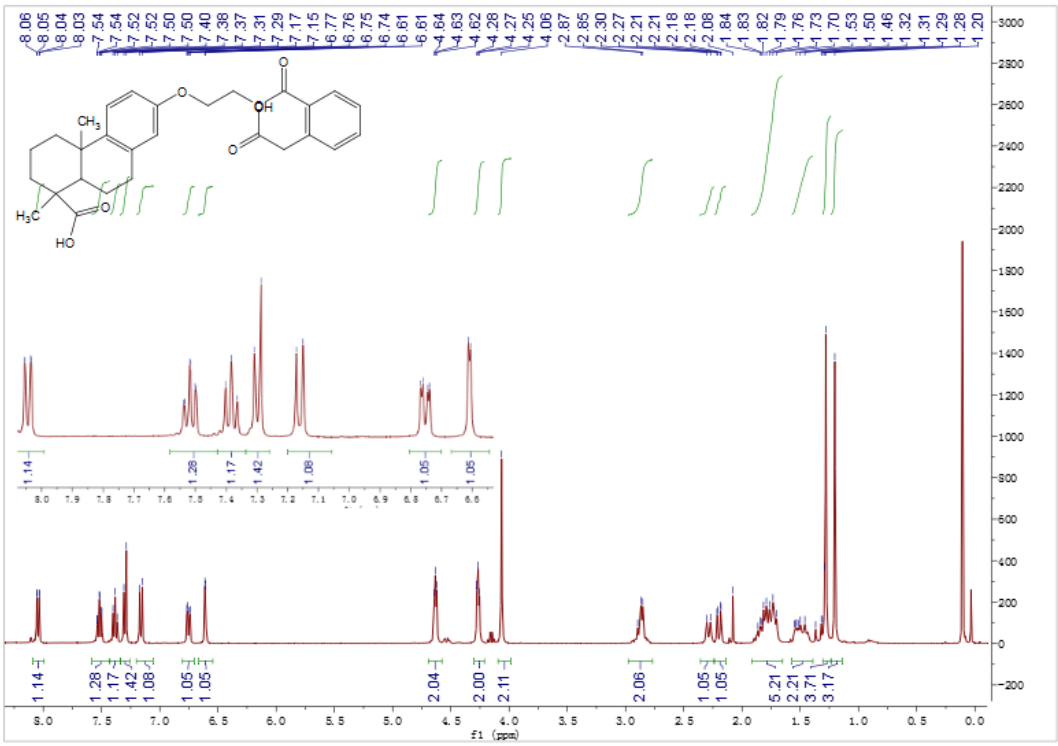
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 28



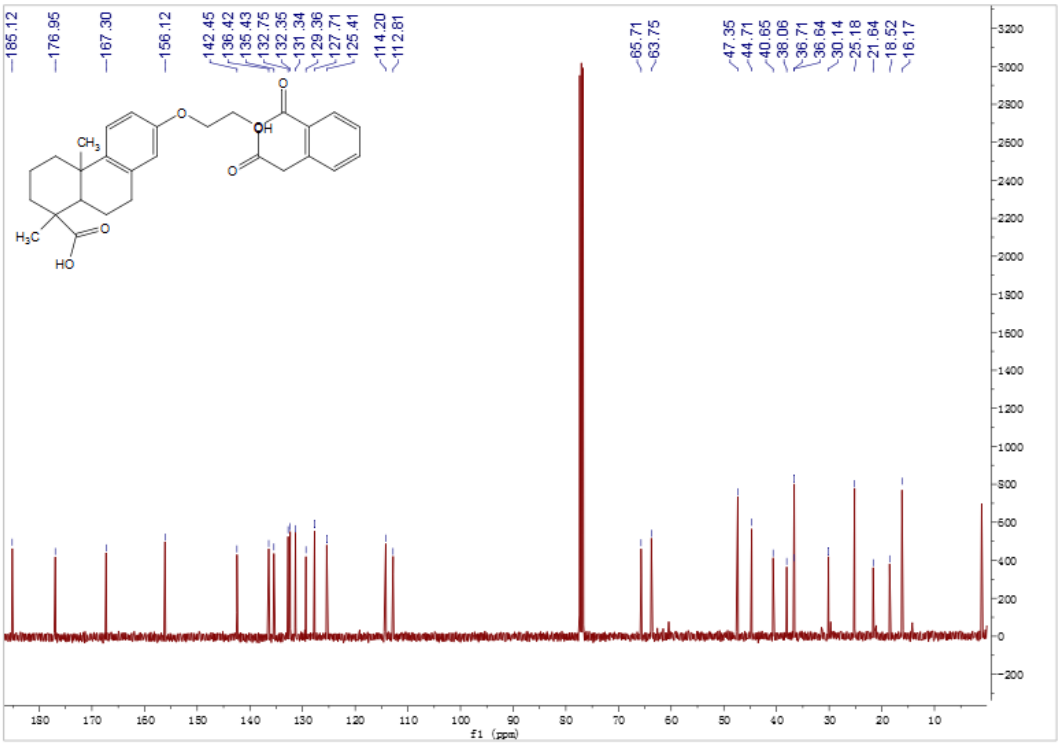
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 29



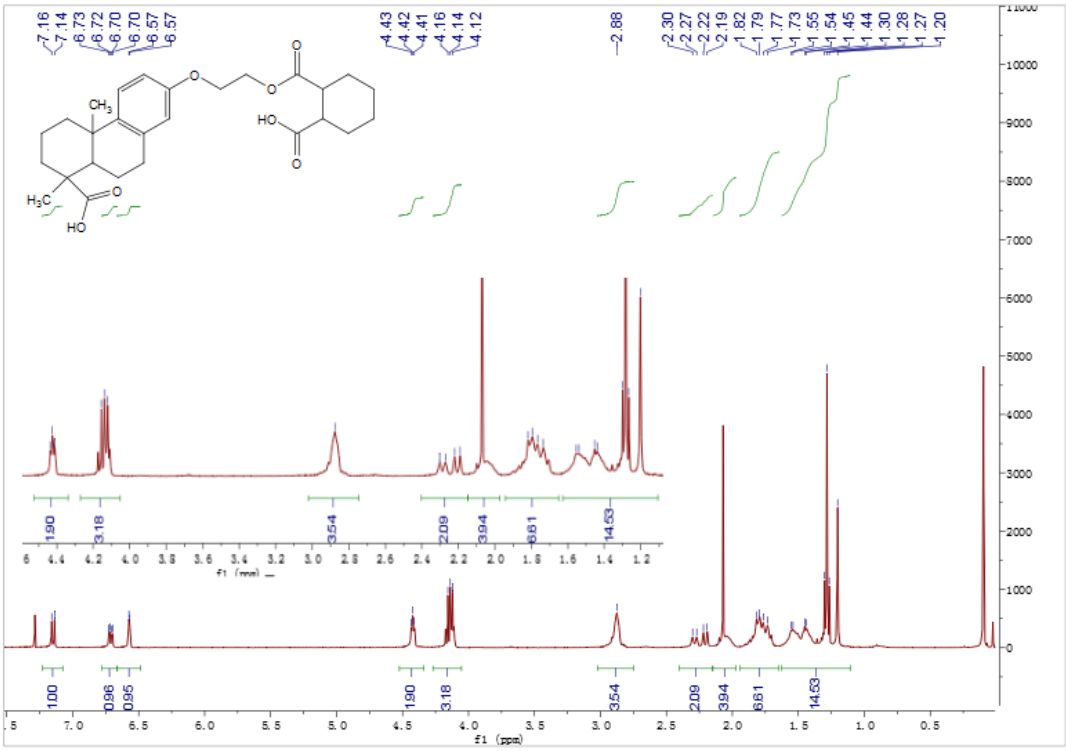
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 29



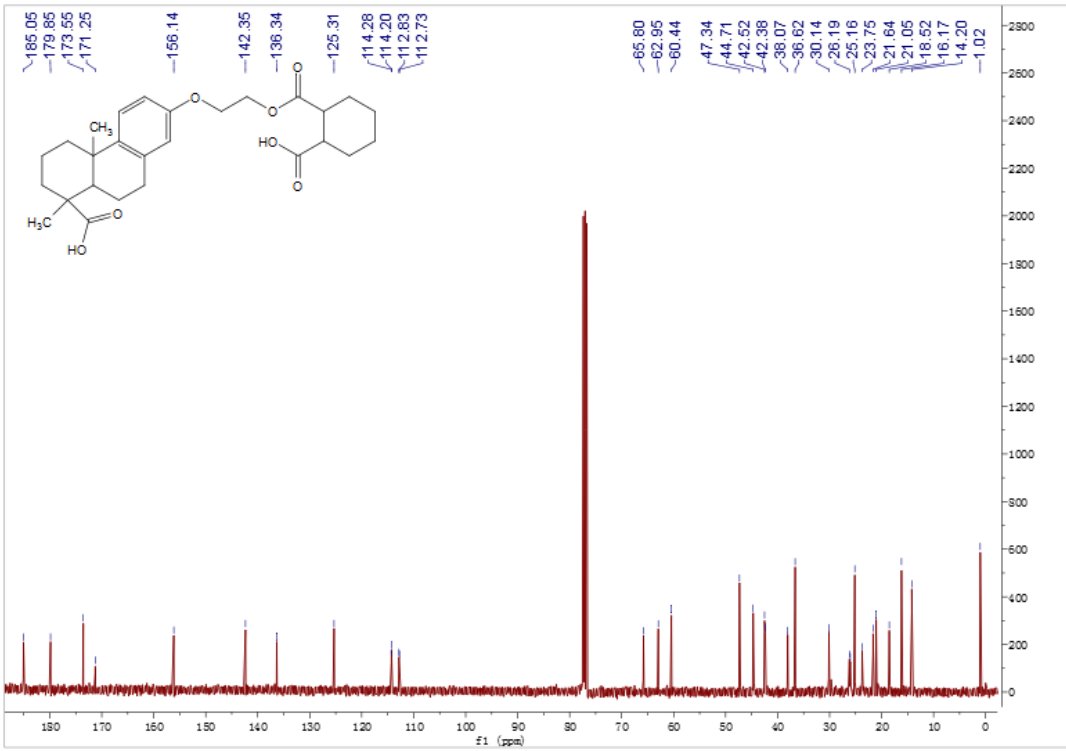
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 30



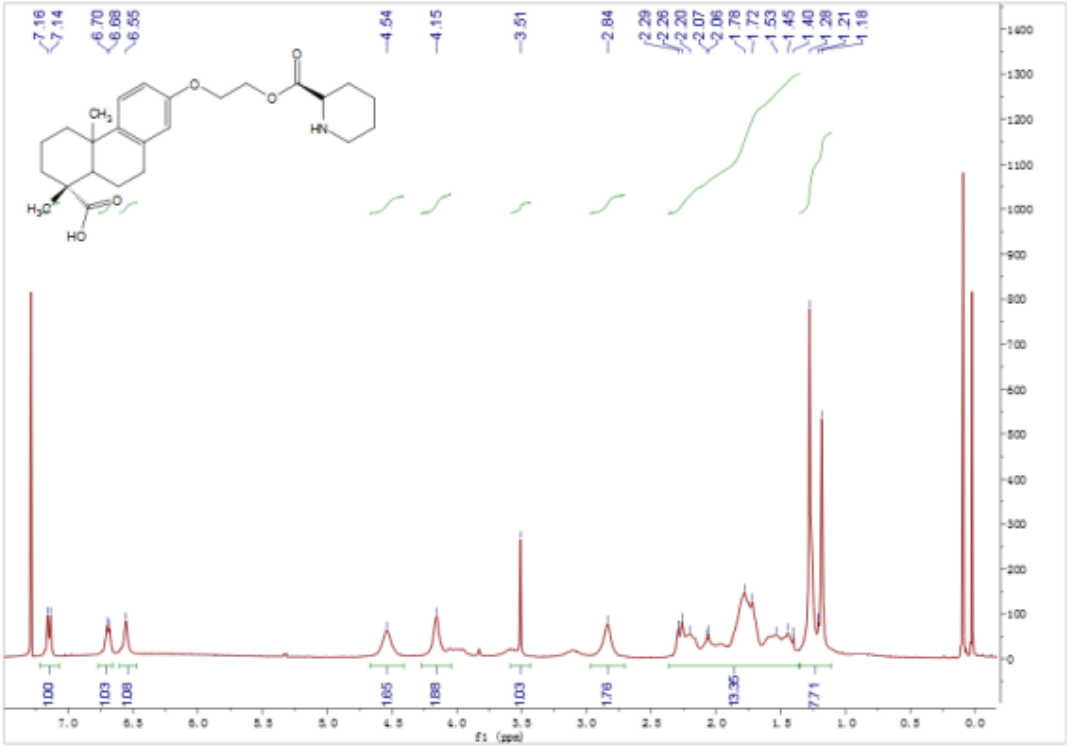
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 30



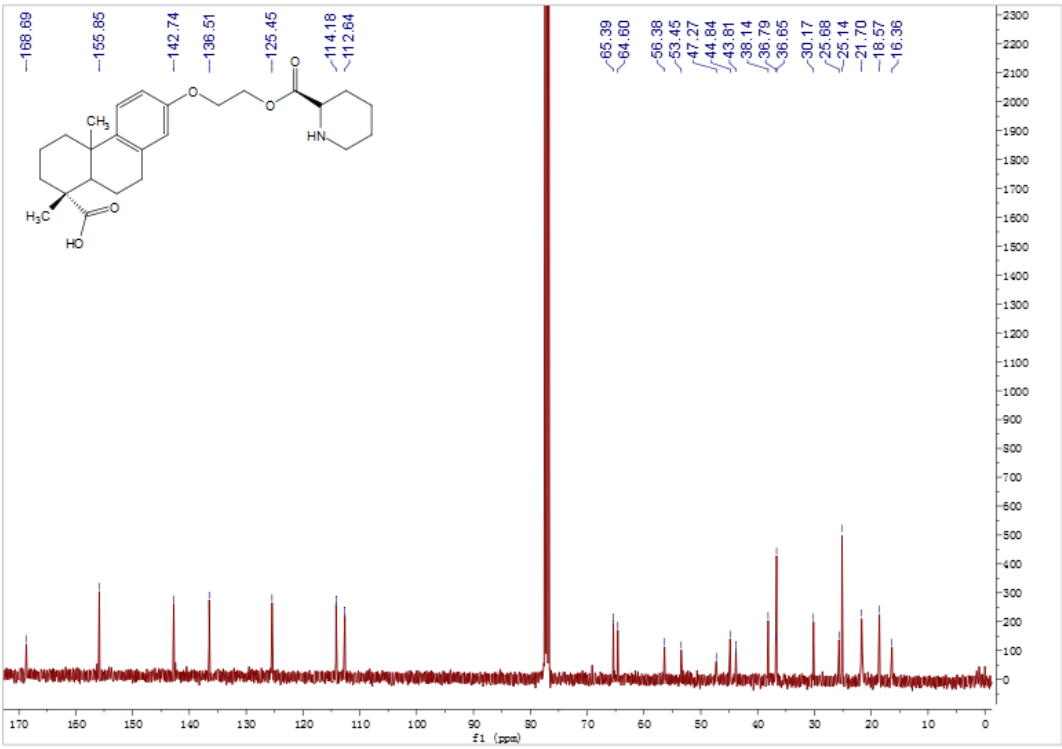
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 31



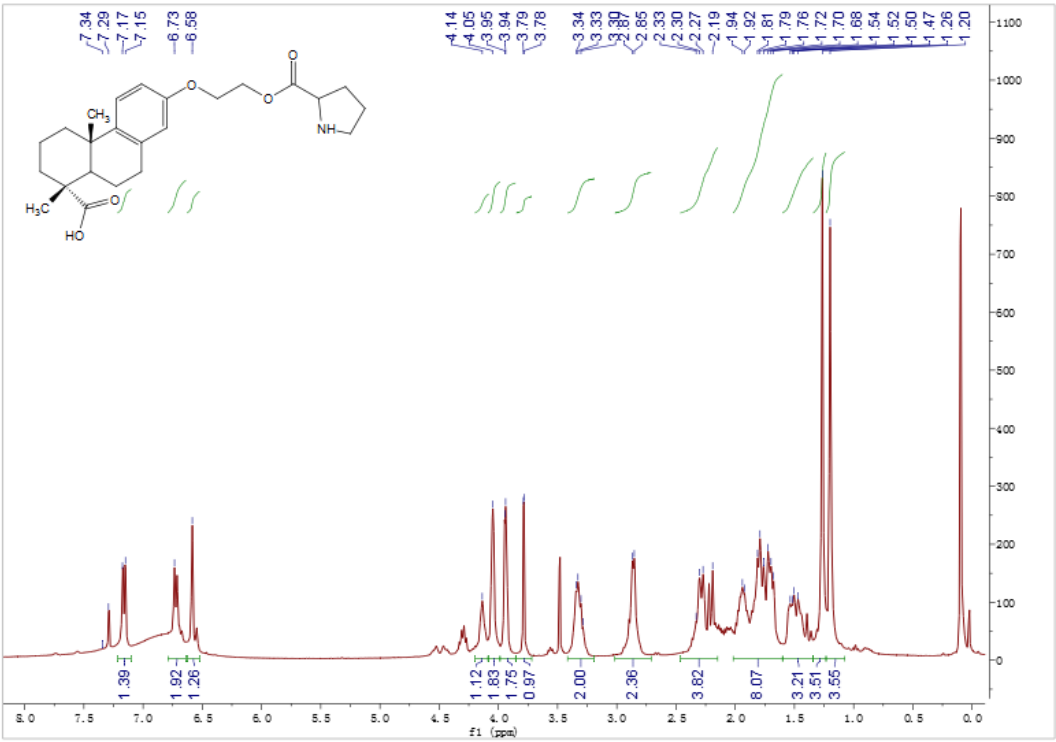
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 31



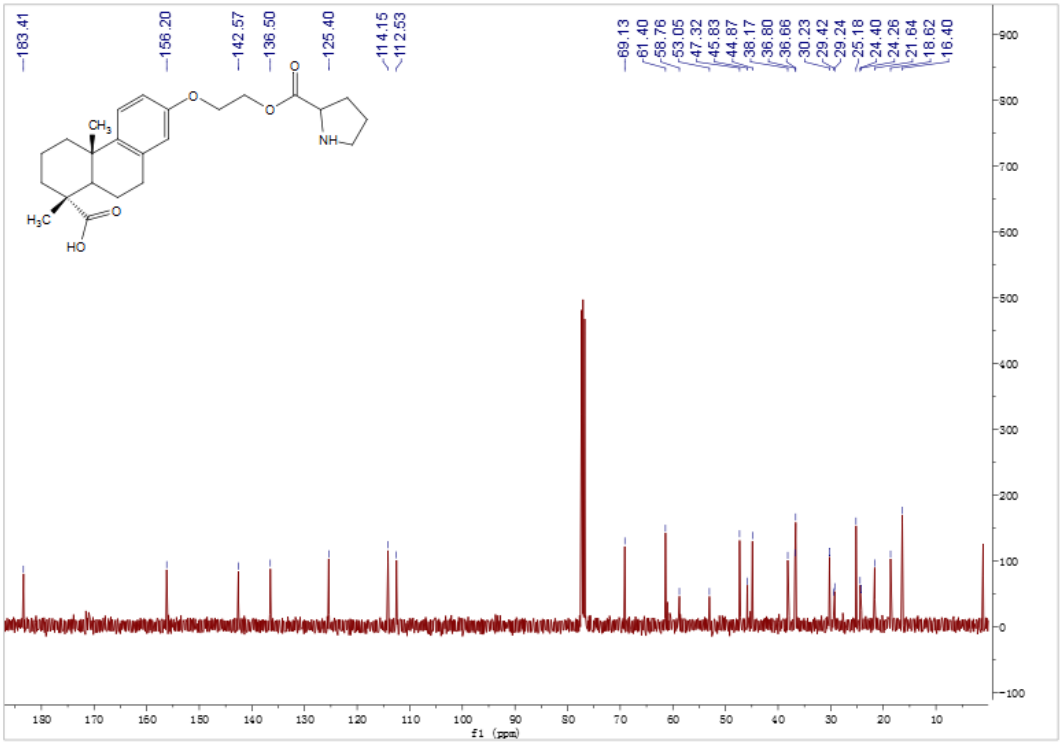
^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound 32



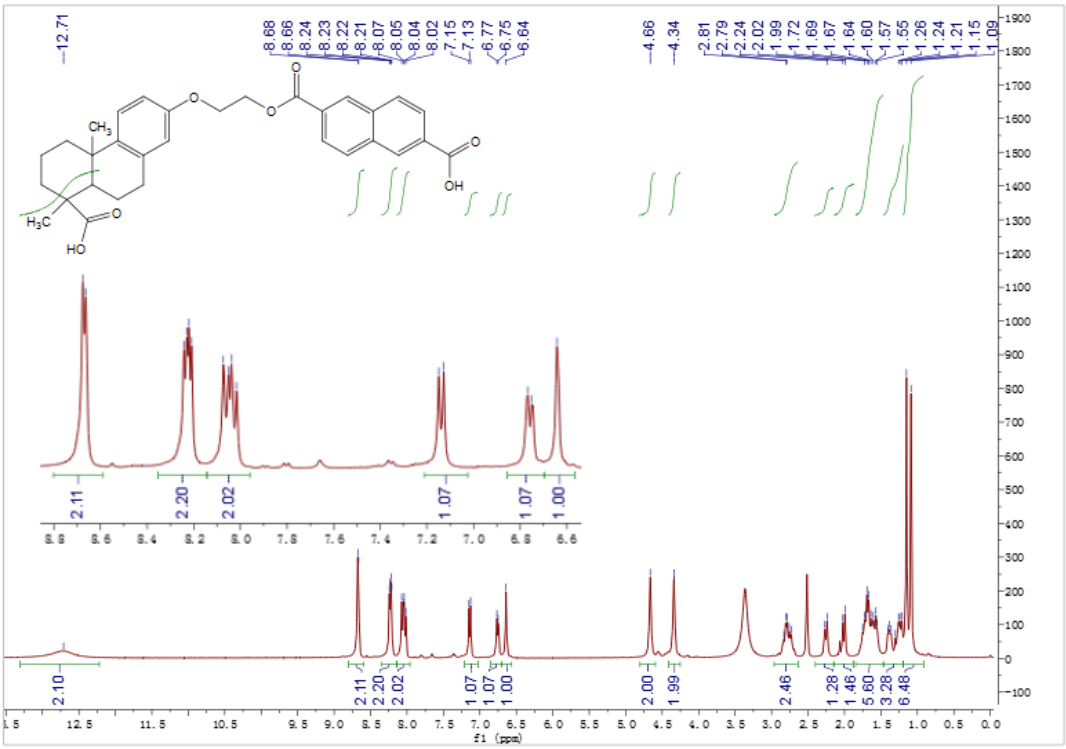
^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 32



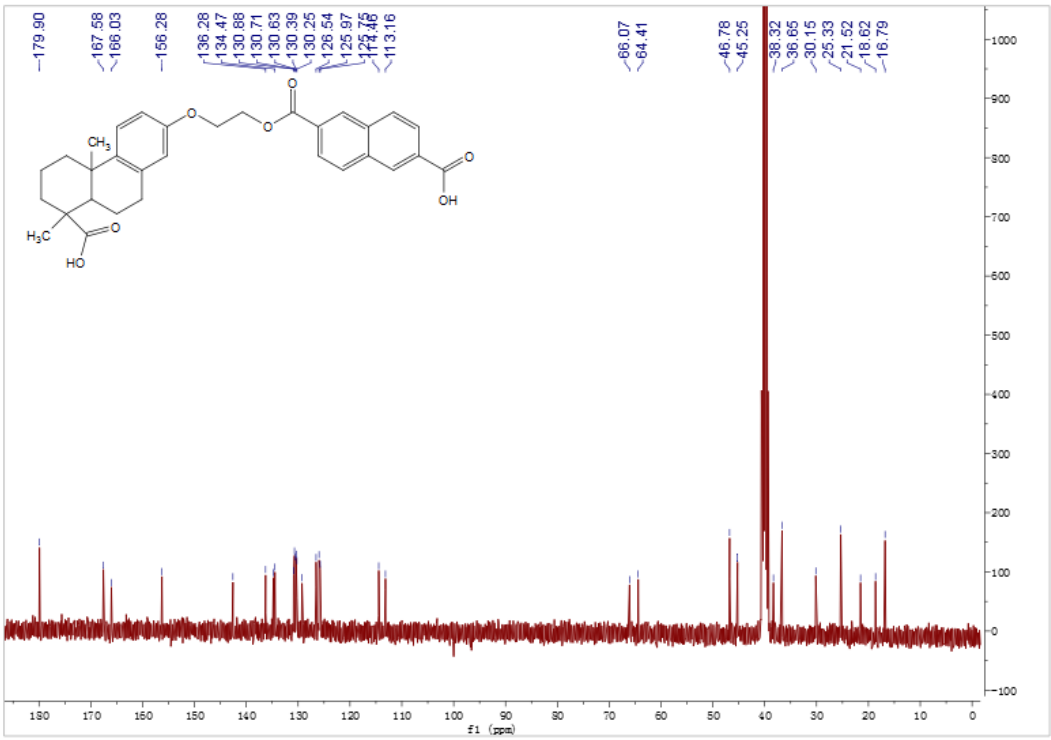
^{1}H NMR (400 MHz, CDC_{l3}) spectrum of compound 33



^{13}C NMR (300 MHz, $CDCl_3$) spectrum of compound 33



^{1}H NMR (400 MHz, d_6-DMSO) spectrum of compound 34



^{13}C NMR (300 MHz, d_6-DMSO) spectrum of compound 34