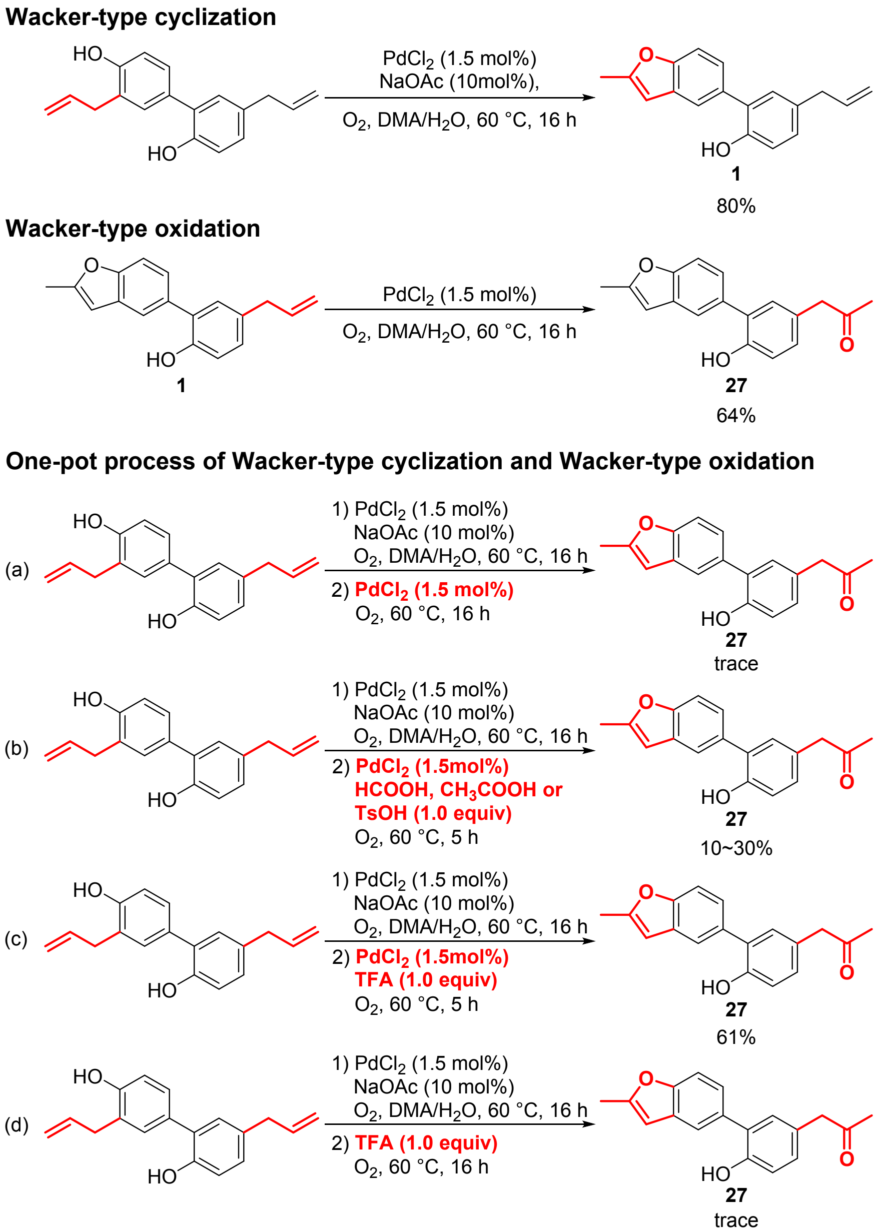
Electronic Supplementary Material (ESI) for RSC Advances.

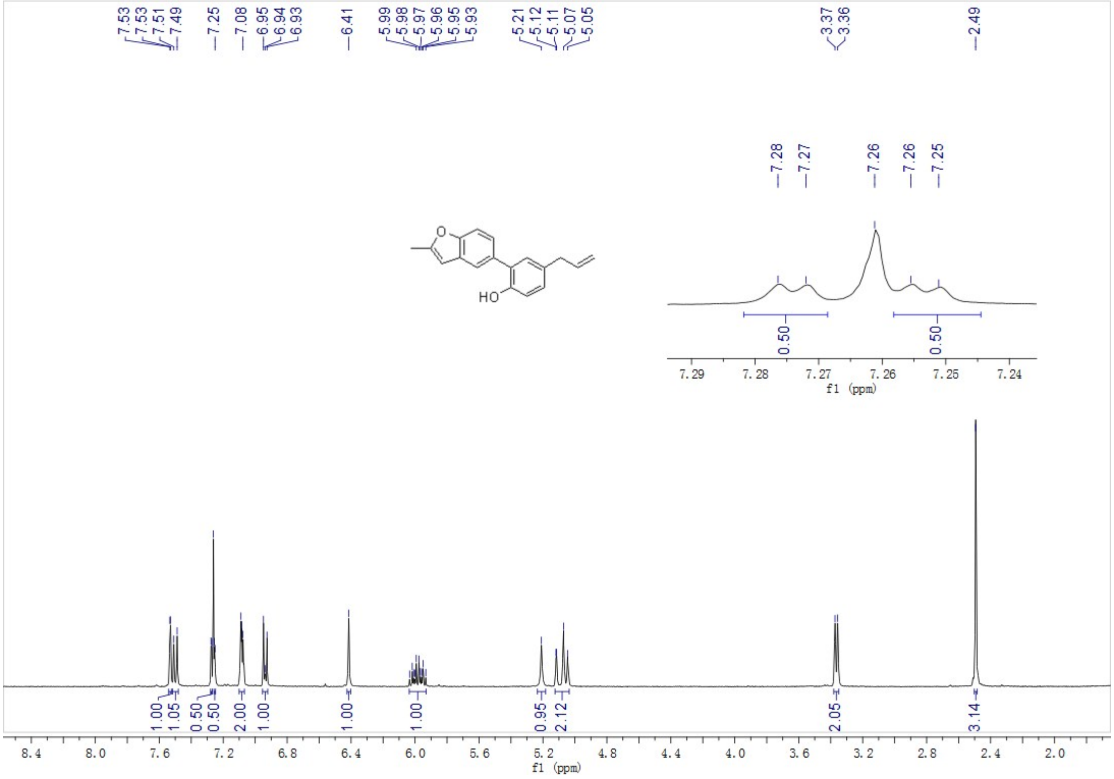
Supplement material

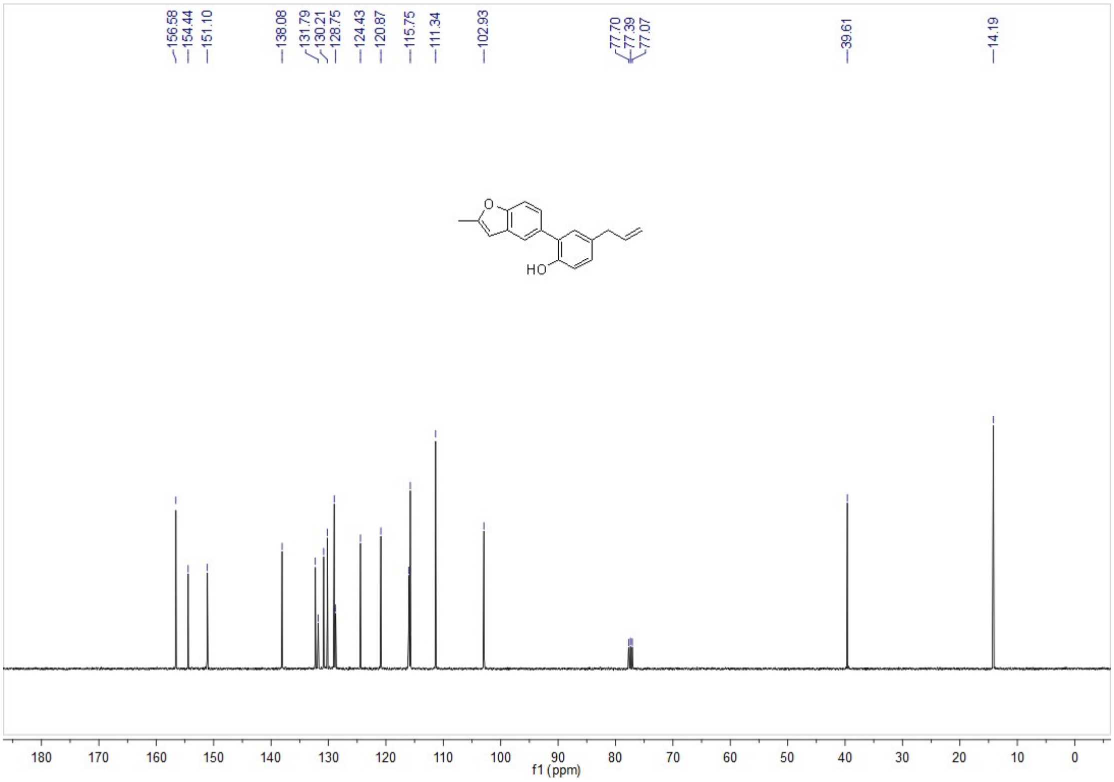
A one-pot method of Waker-type cyclization and Wacker-type oxidation was developed (Scheme 1S). Wacker-type cyclization required the participation of base which inhibited the process of Wacker-type oxidation (Scheme 1S-a). For removing the impact of base and realizing one-pot method, a variety of acids such as HCOOH, CH_3COOH and TsOH were added respectively in the middle of reaction (Scheme 1S-b). Among them, the reaction in the presence of trifluoroacetic acid (TFA) showed the highest yield of 61% for two-step (Scheme 1S-c). However, the supplement of catalyst was necessary in our batch reactor (Scheme 1S-d), because the palladium chloride of first step was deactivated in the charging process, which may be solved in continuous reactor.



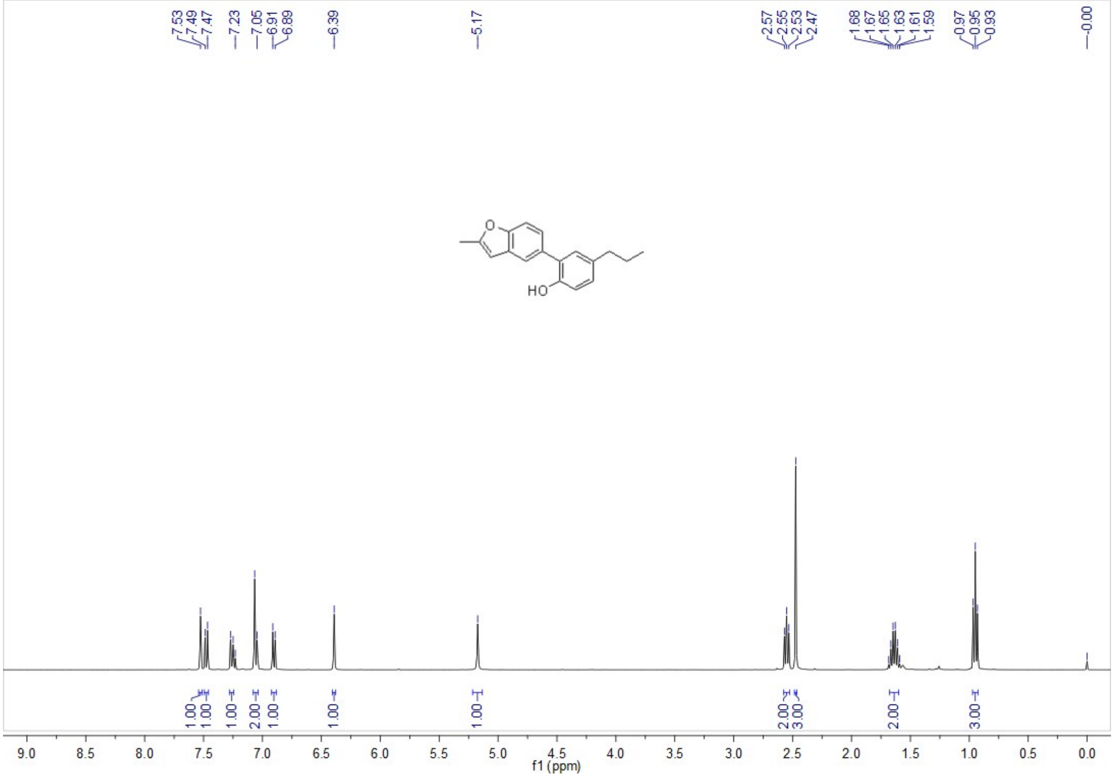
Scheme 1S One-pot process of Wacker-type cyclization and Wacker-type oxidation.

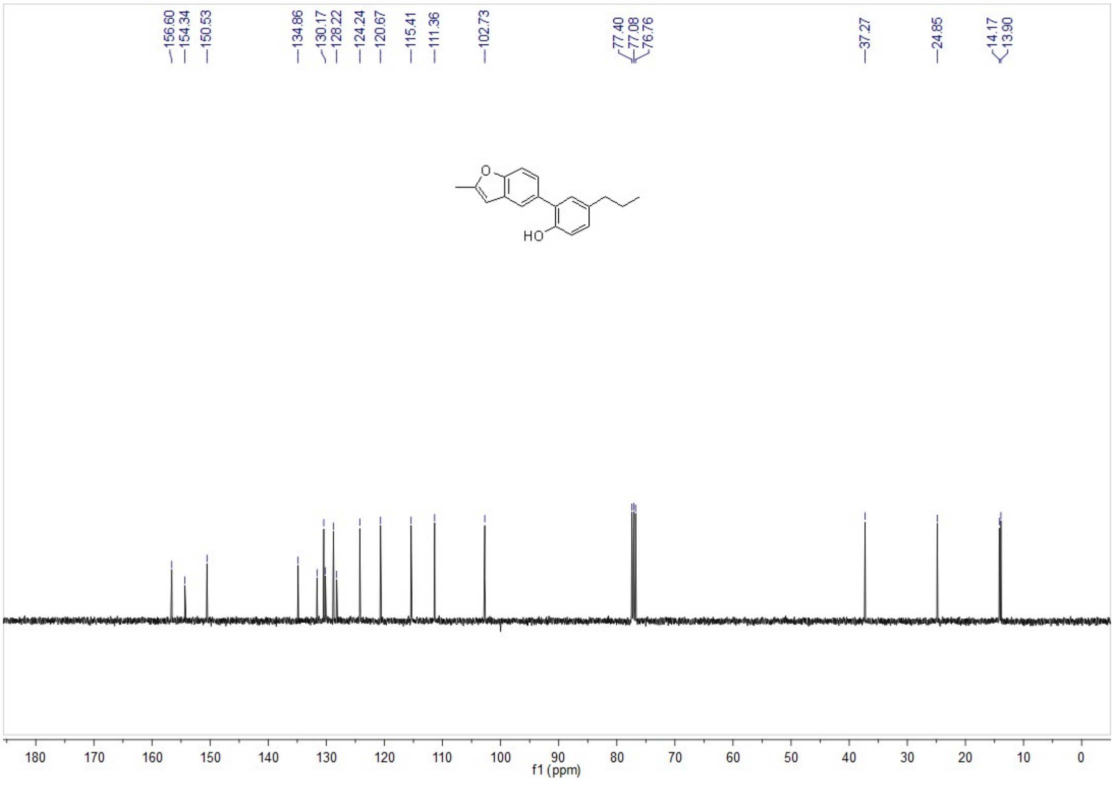
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **1**



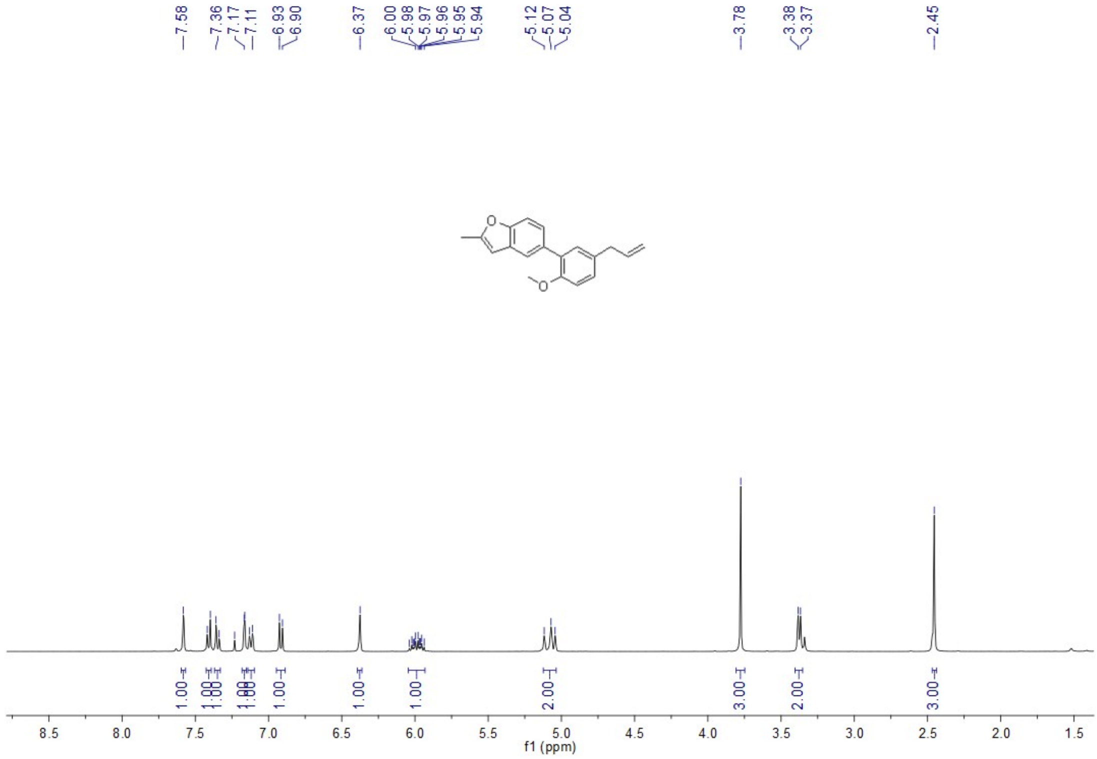


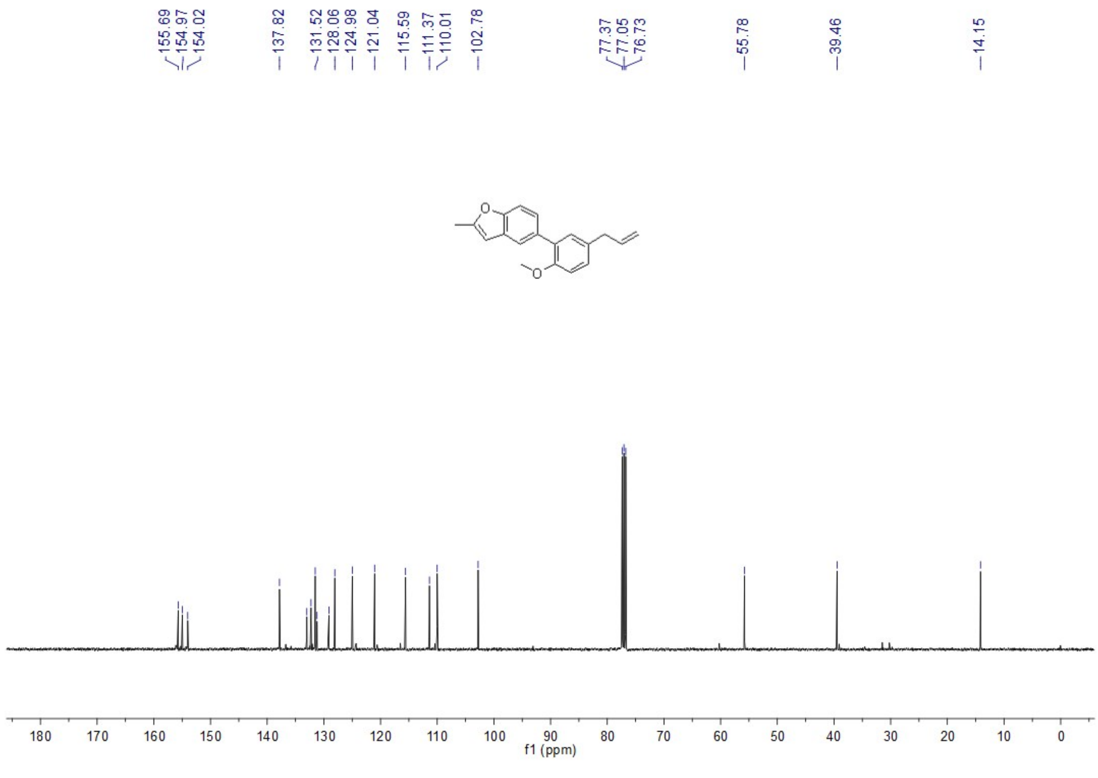
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **2**



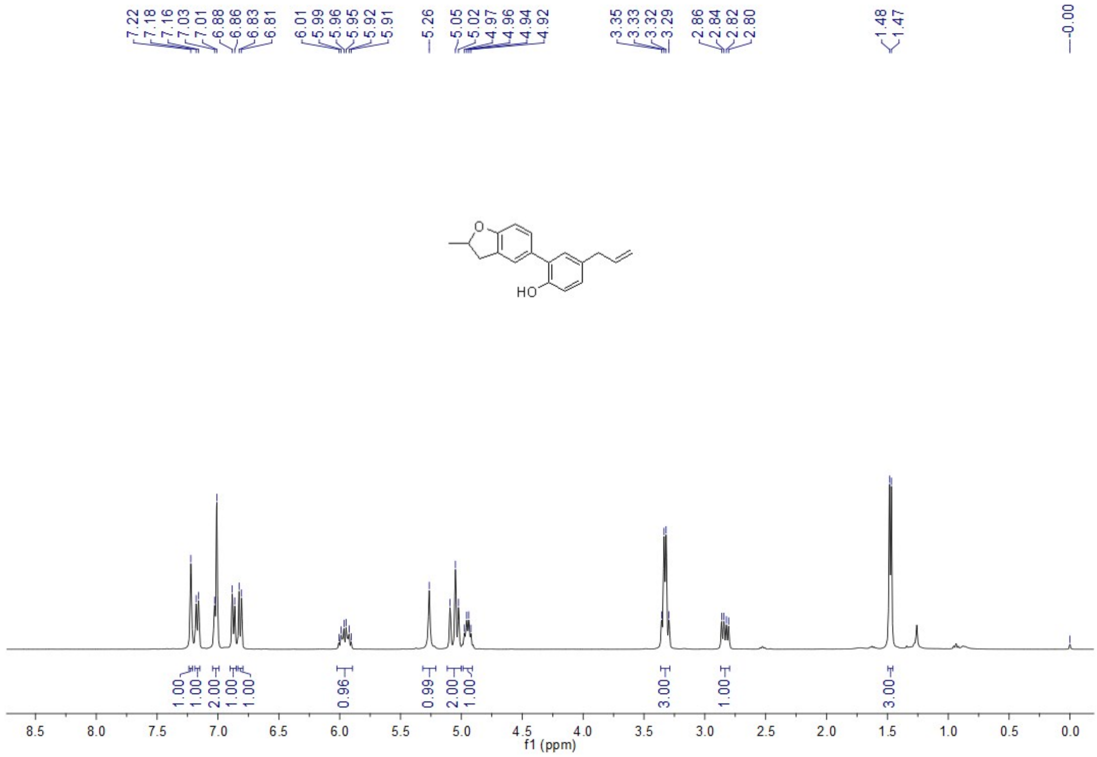


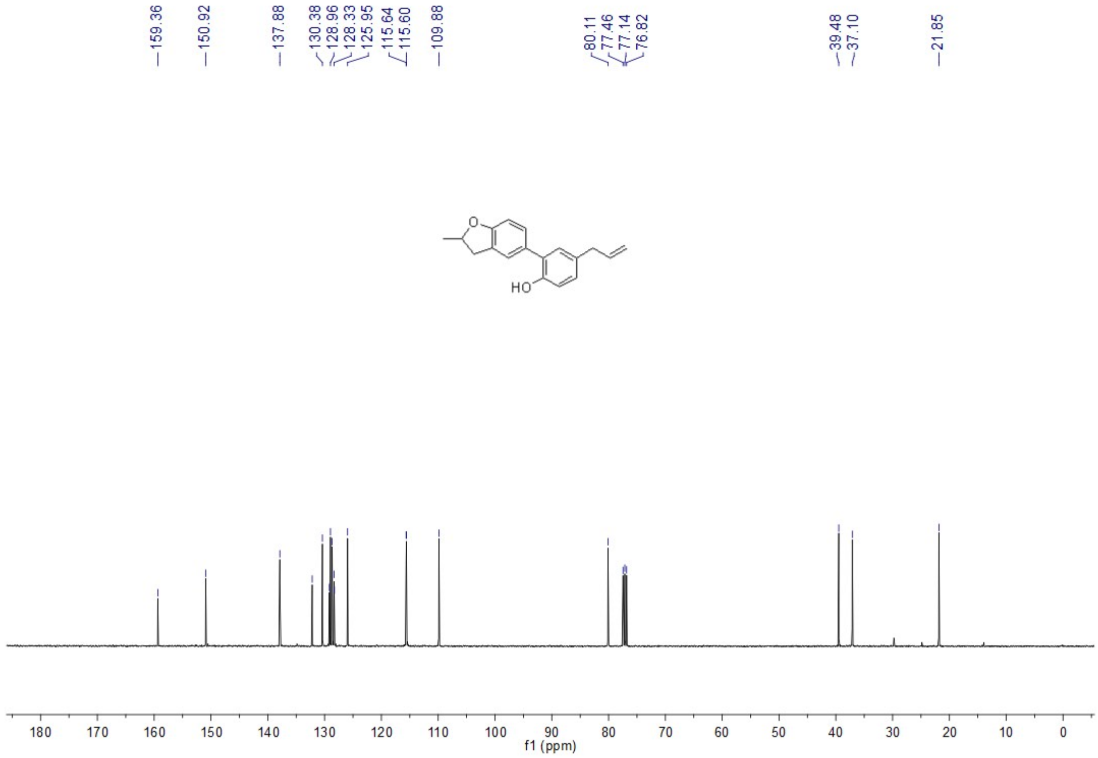
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **3**



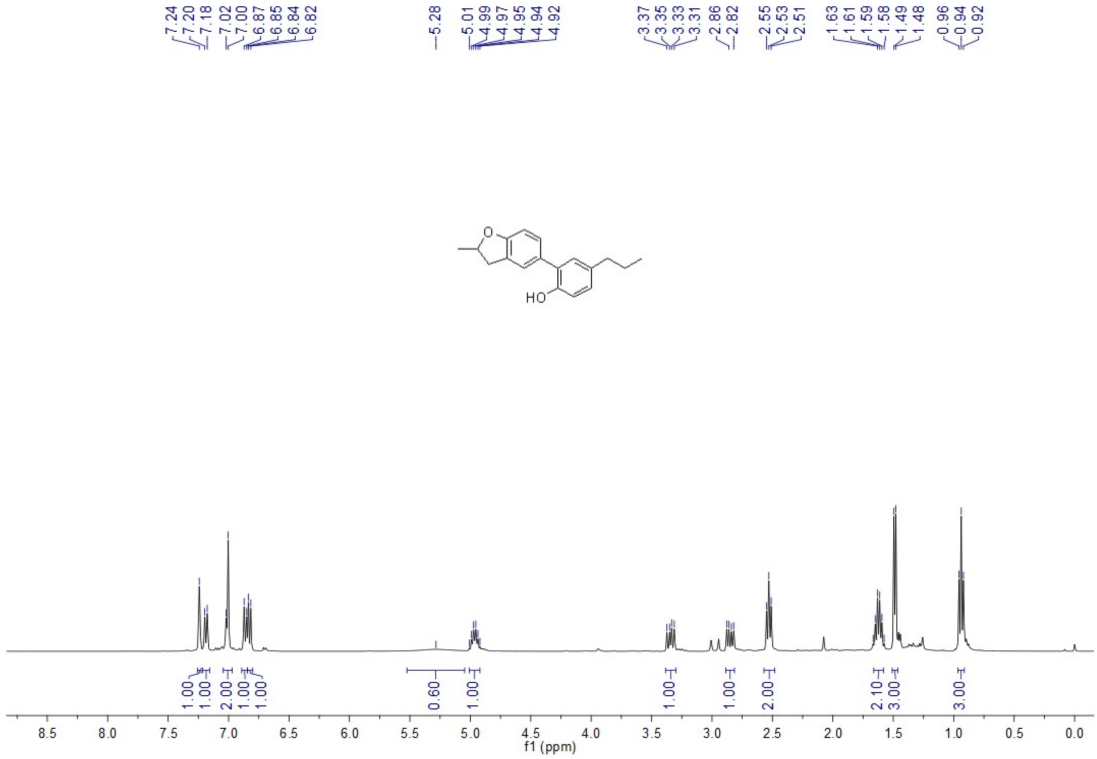


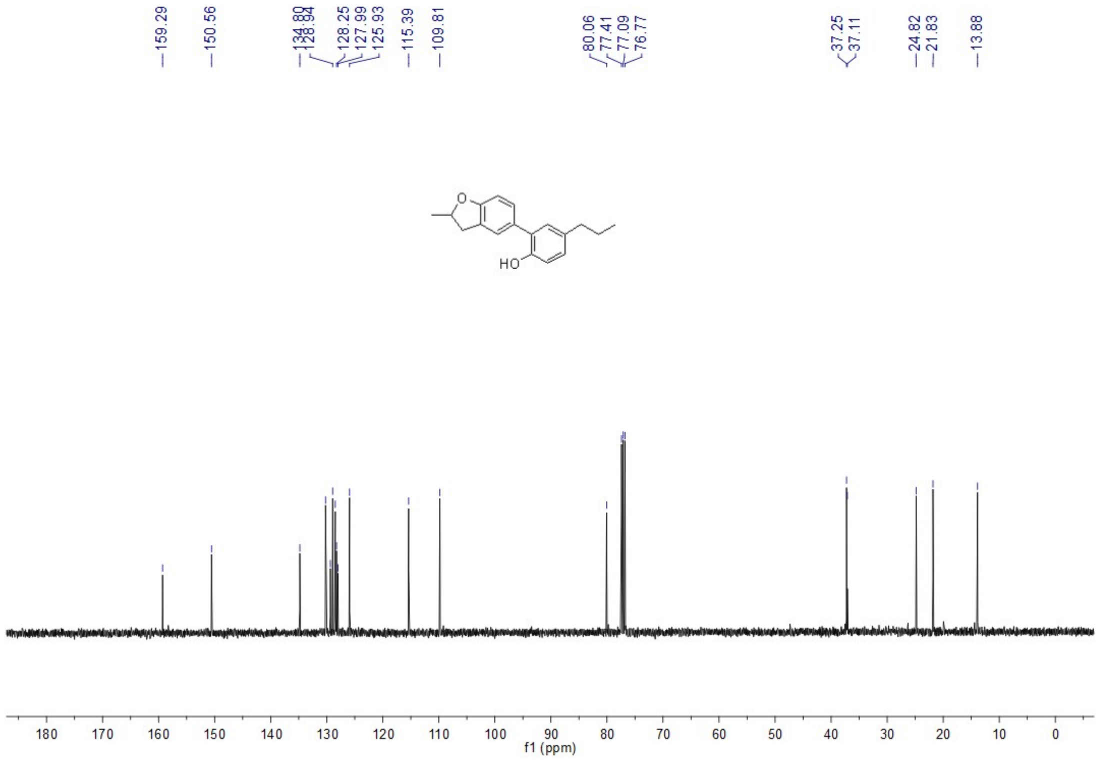
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **4**



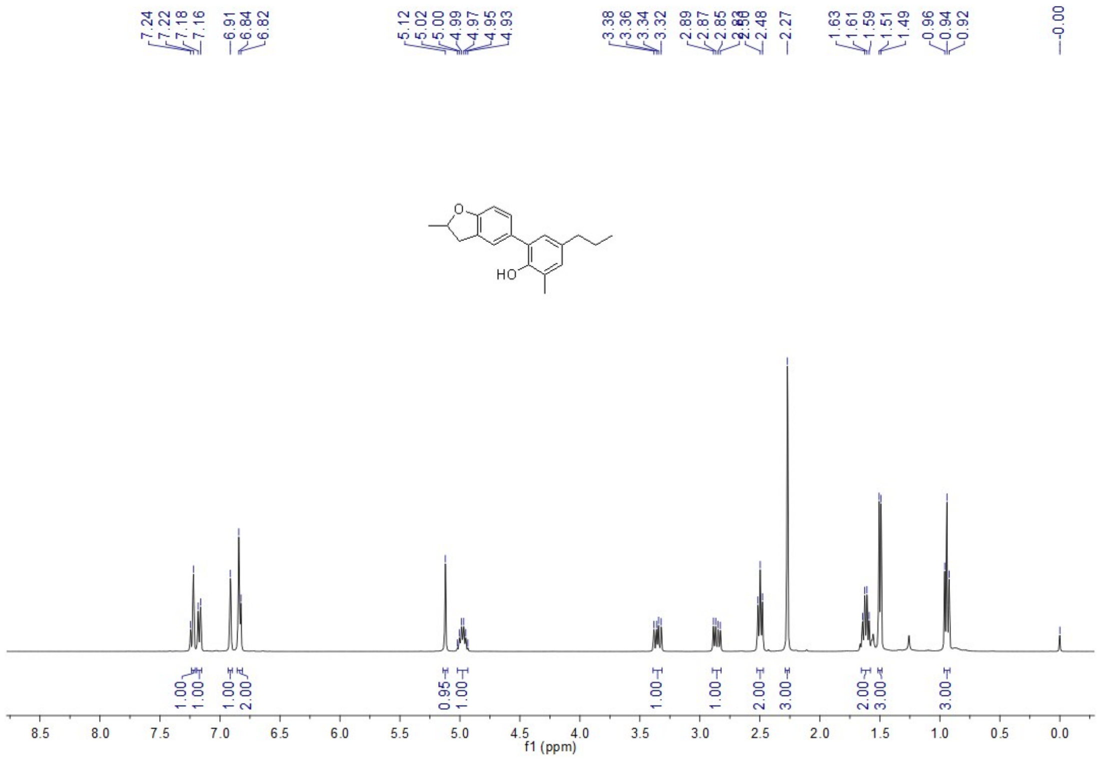


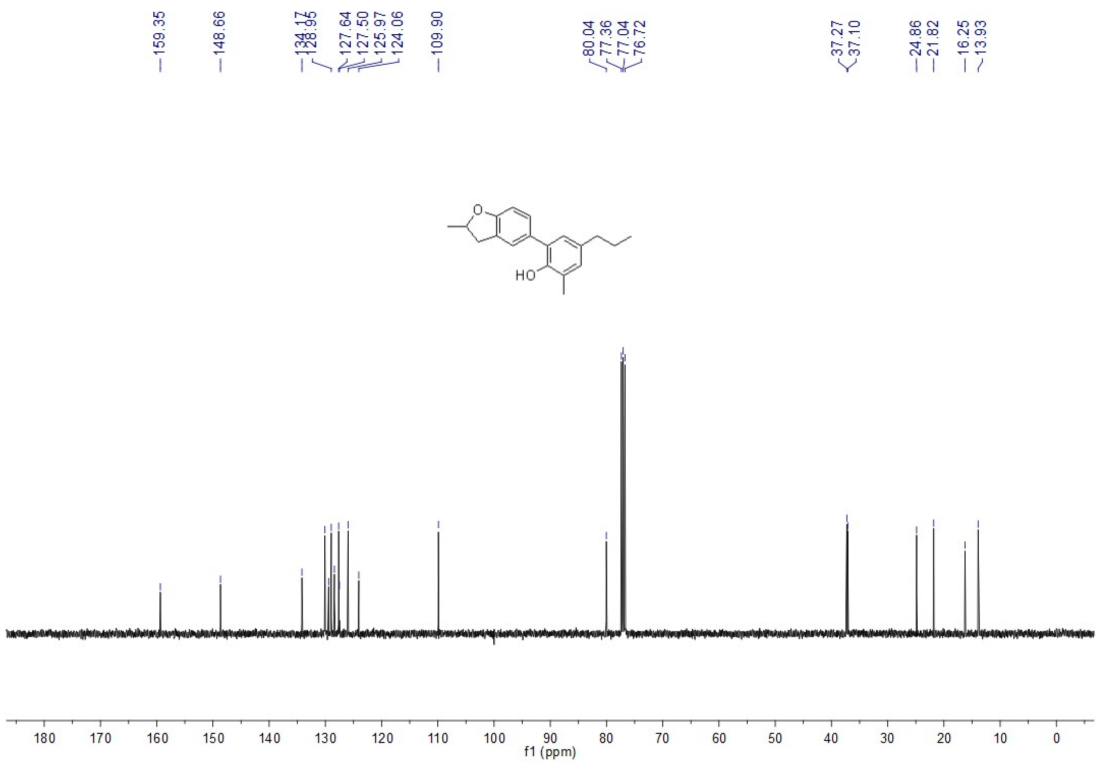
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **5**



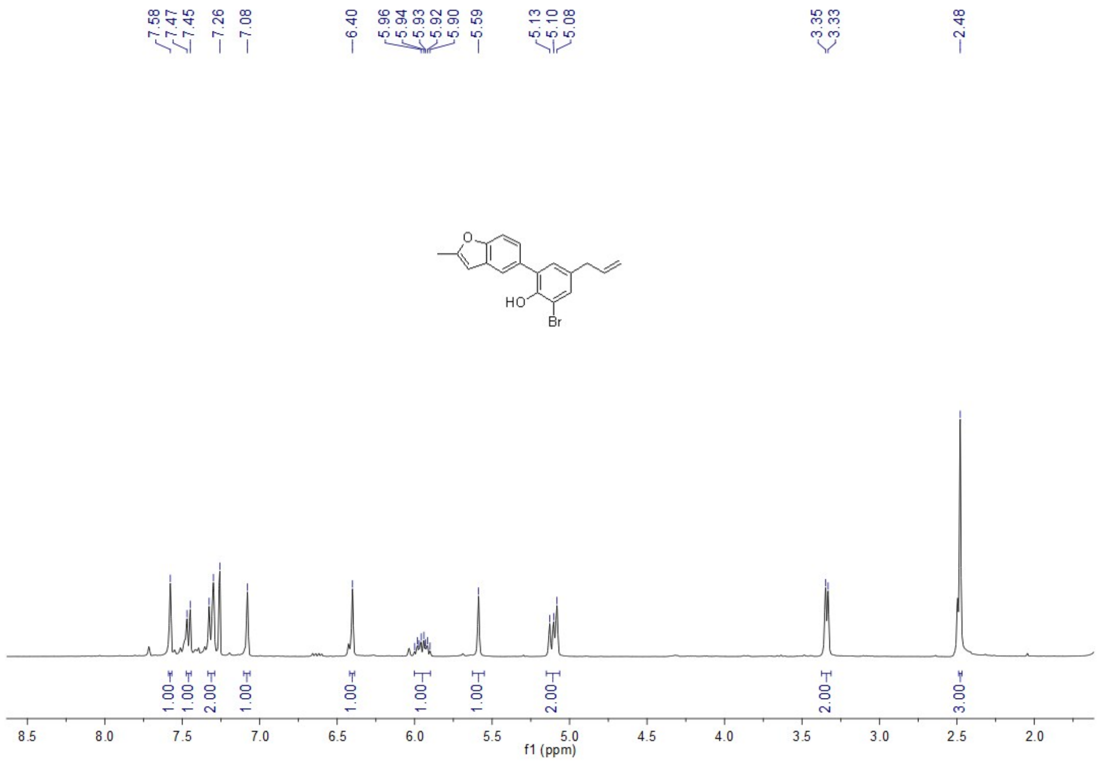


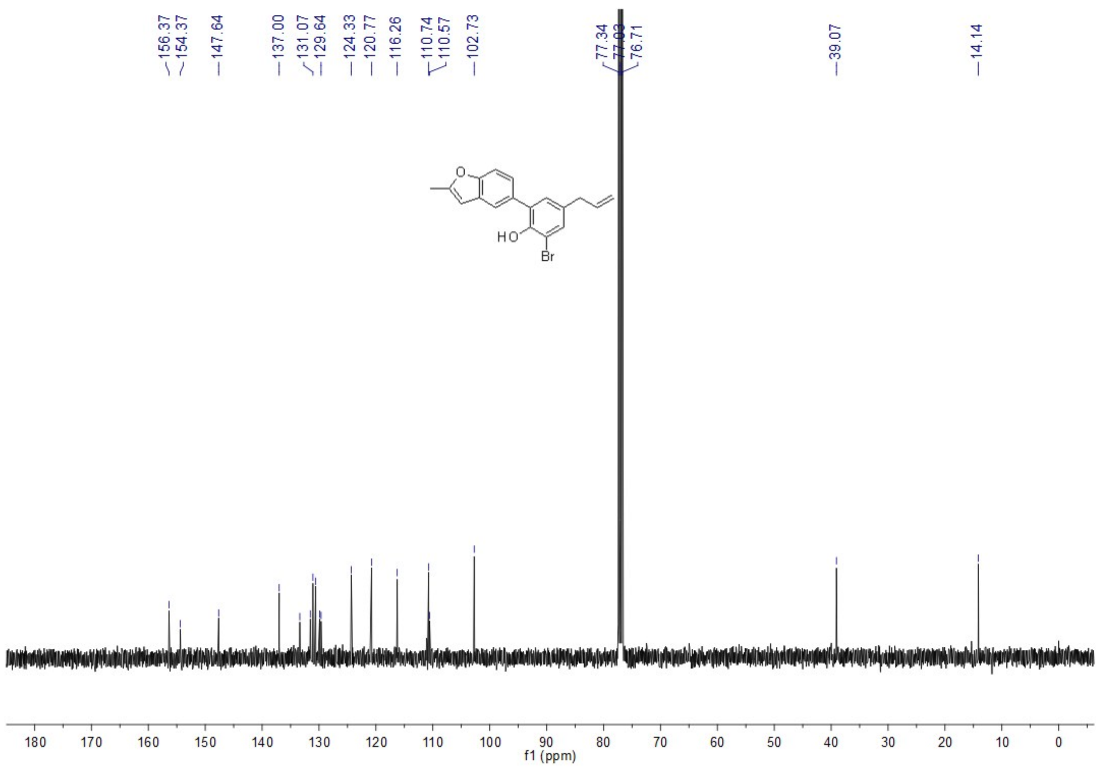
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **6**



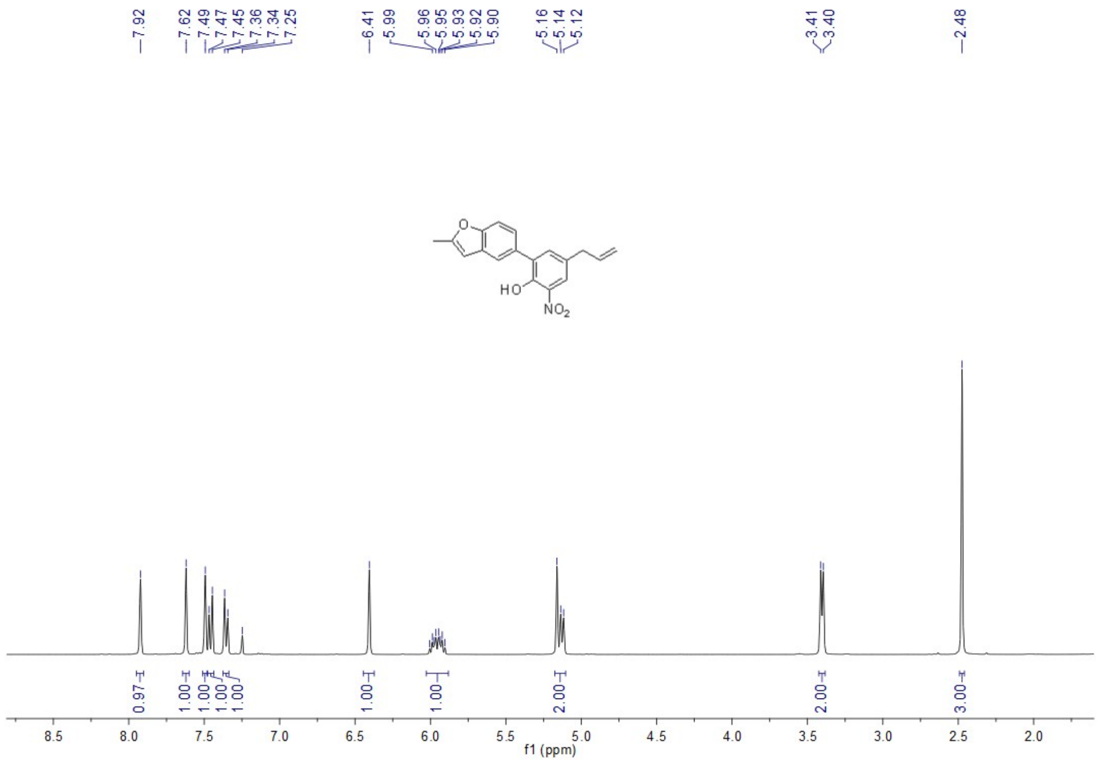


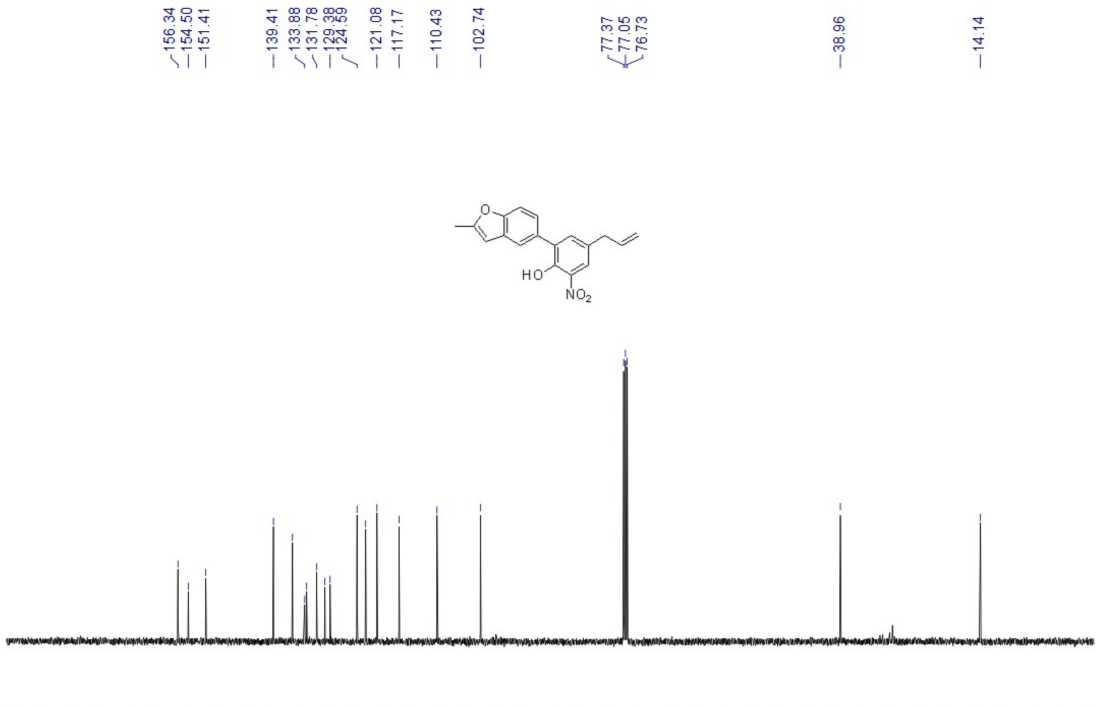
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **7**



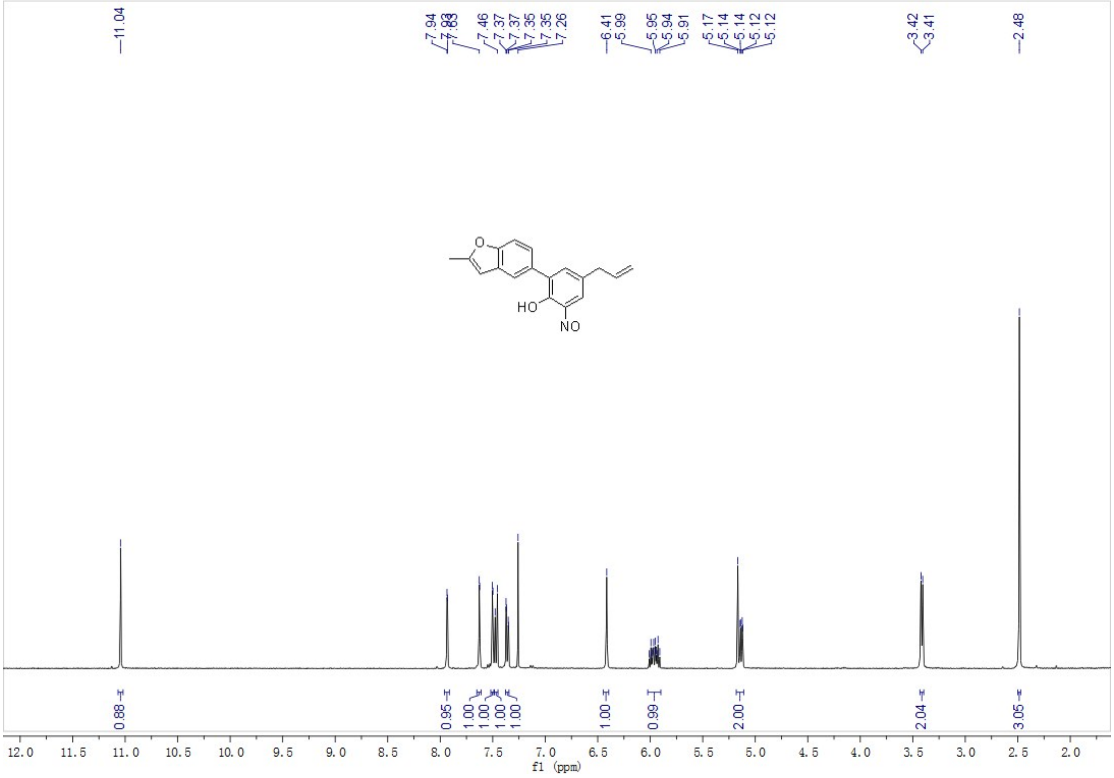


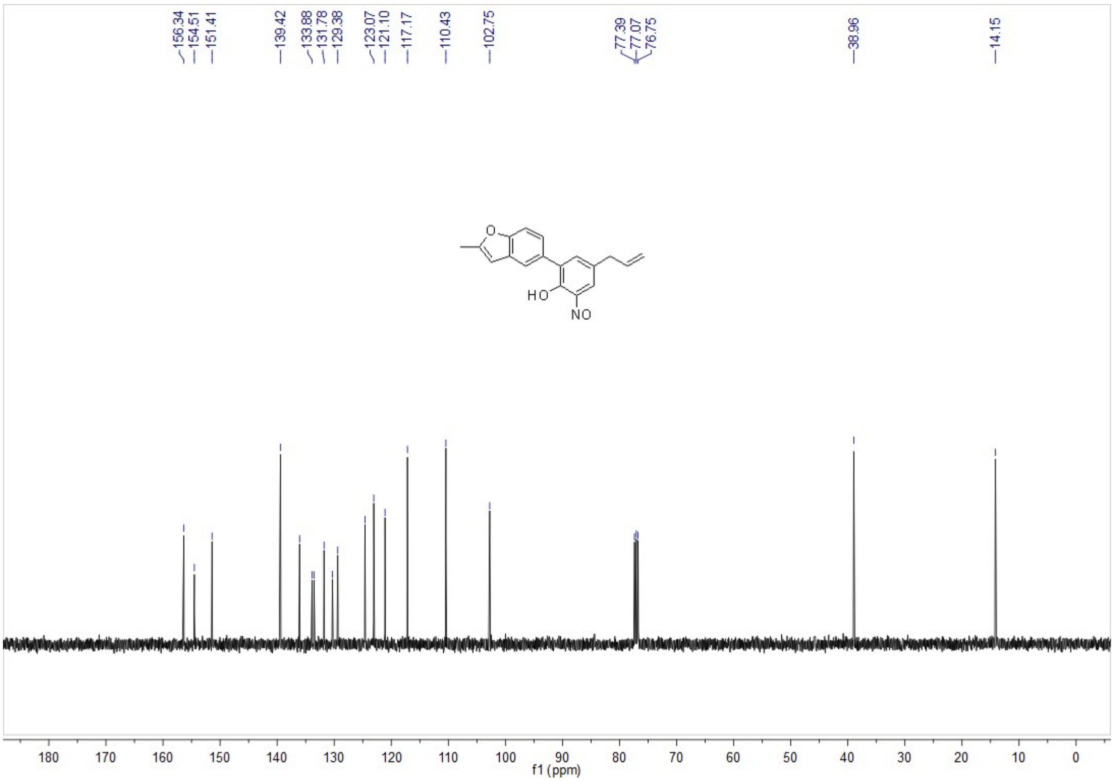
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **8**



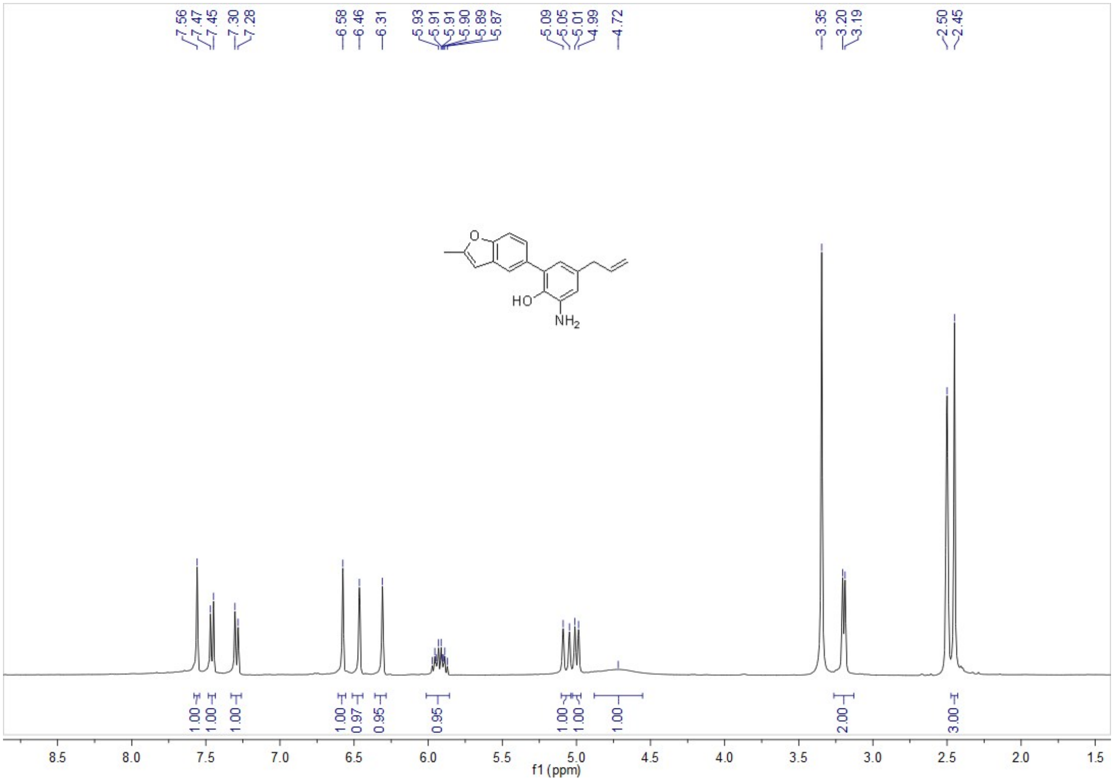


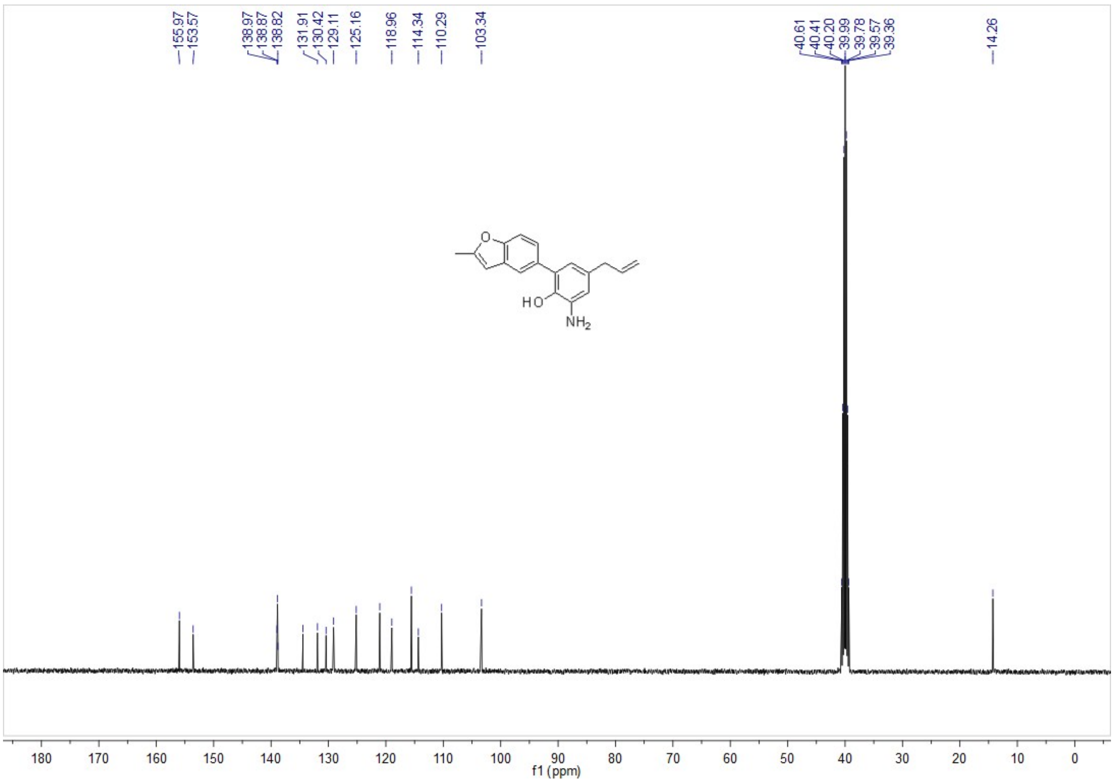
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **9**



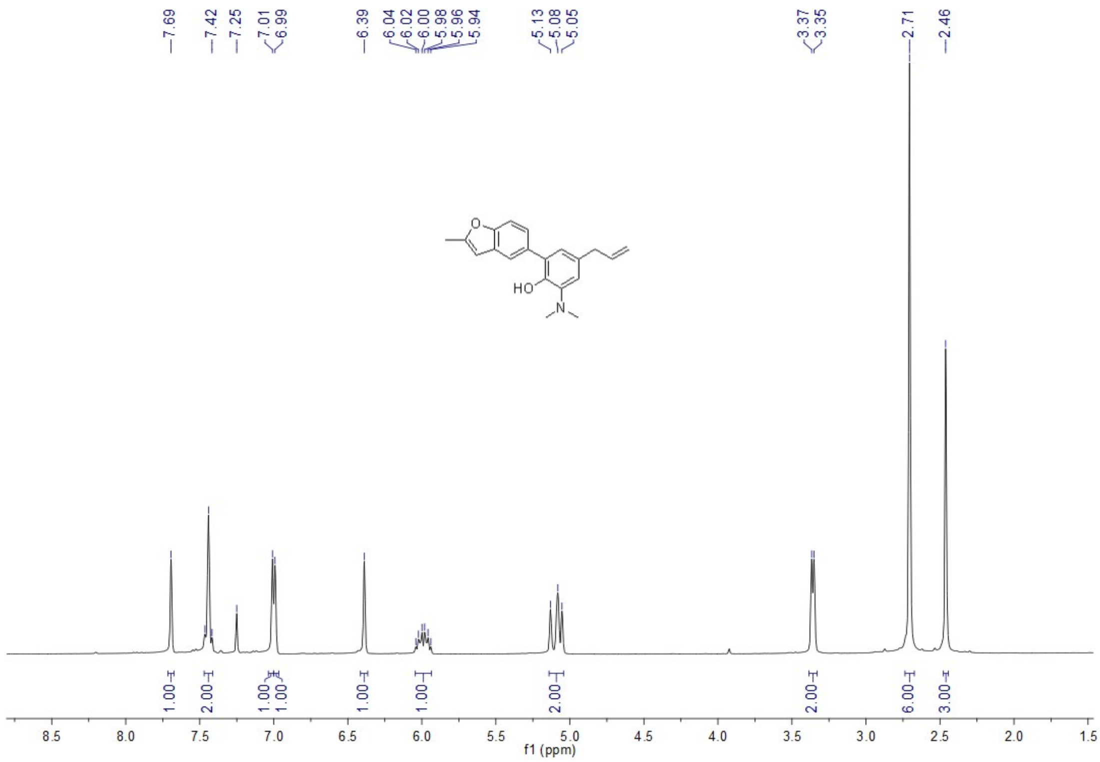


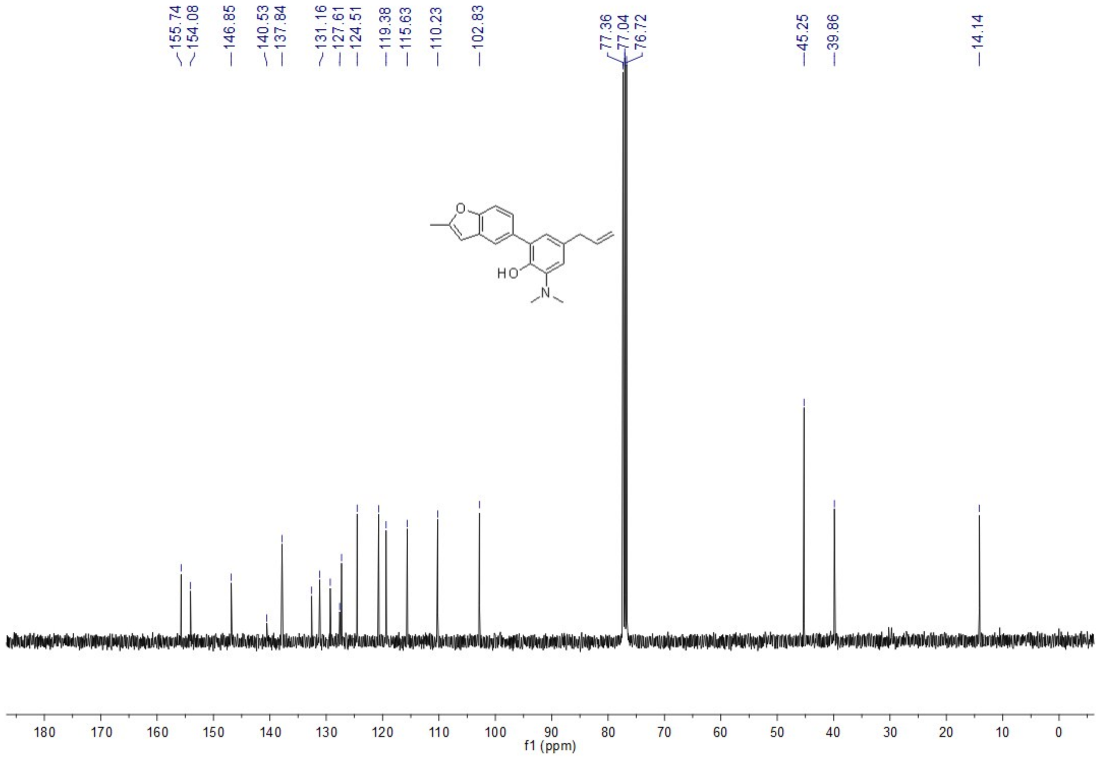
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **10**



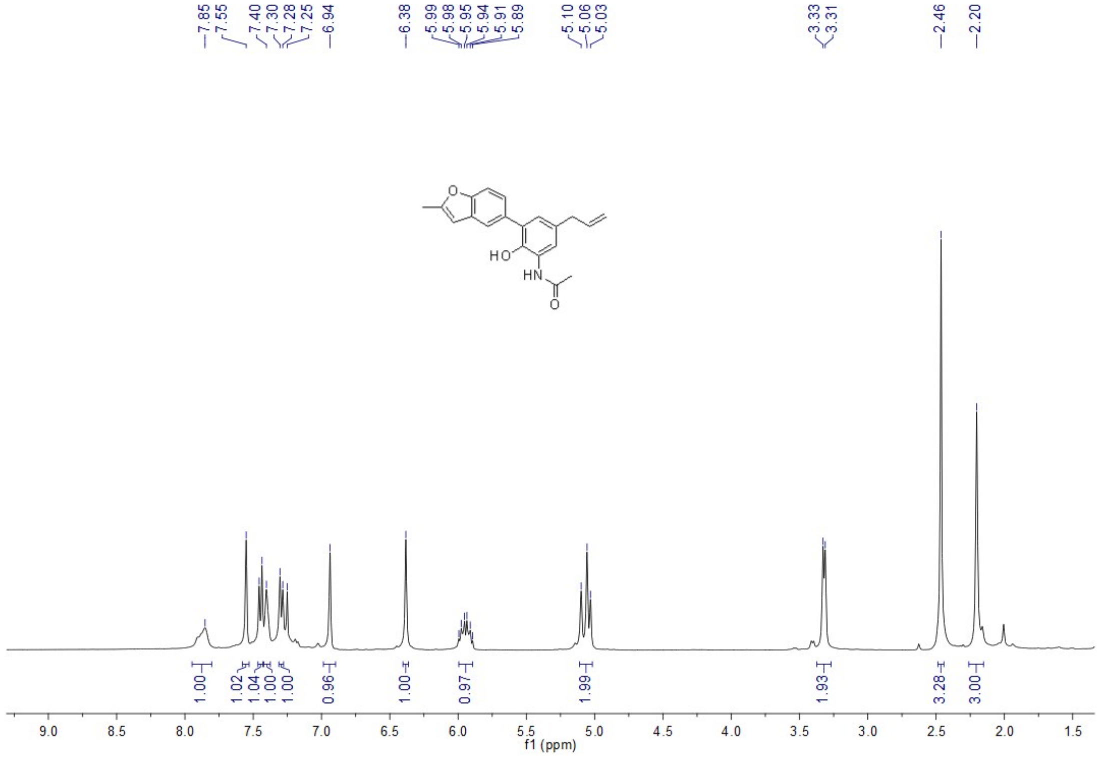


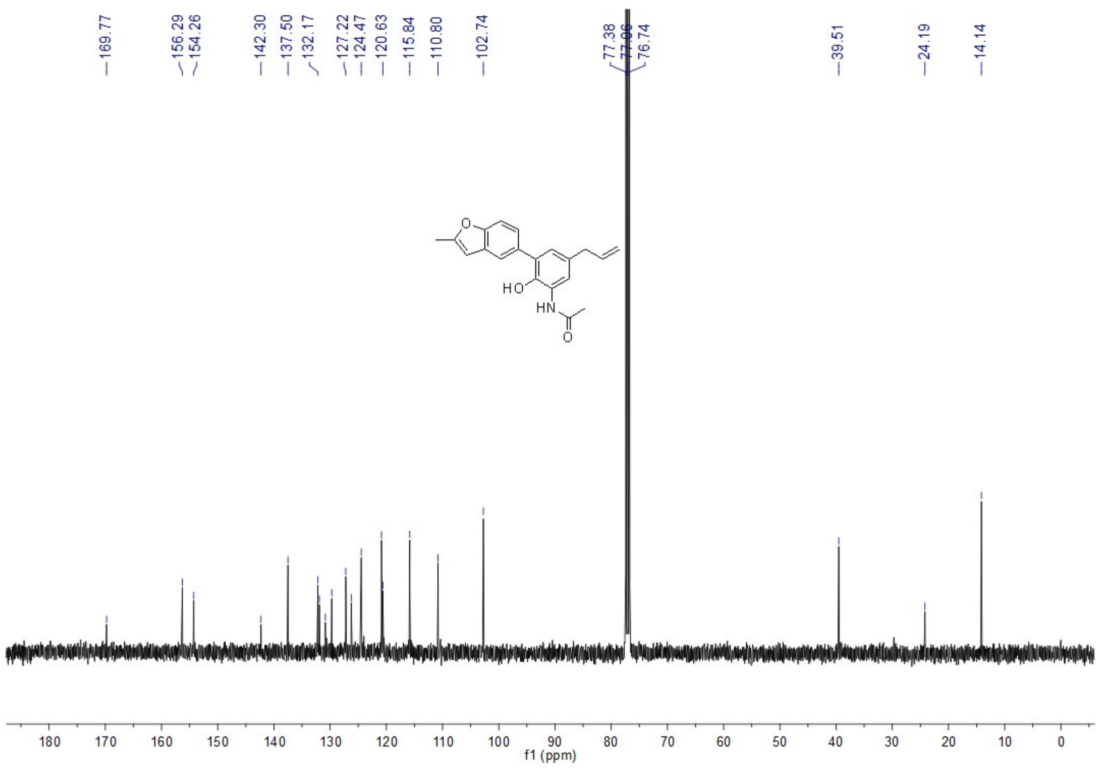
The ^1H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **11**



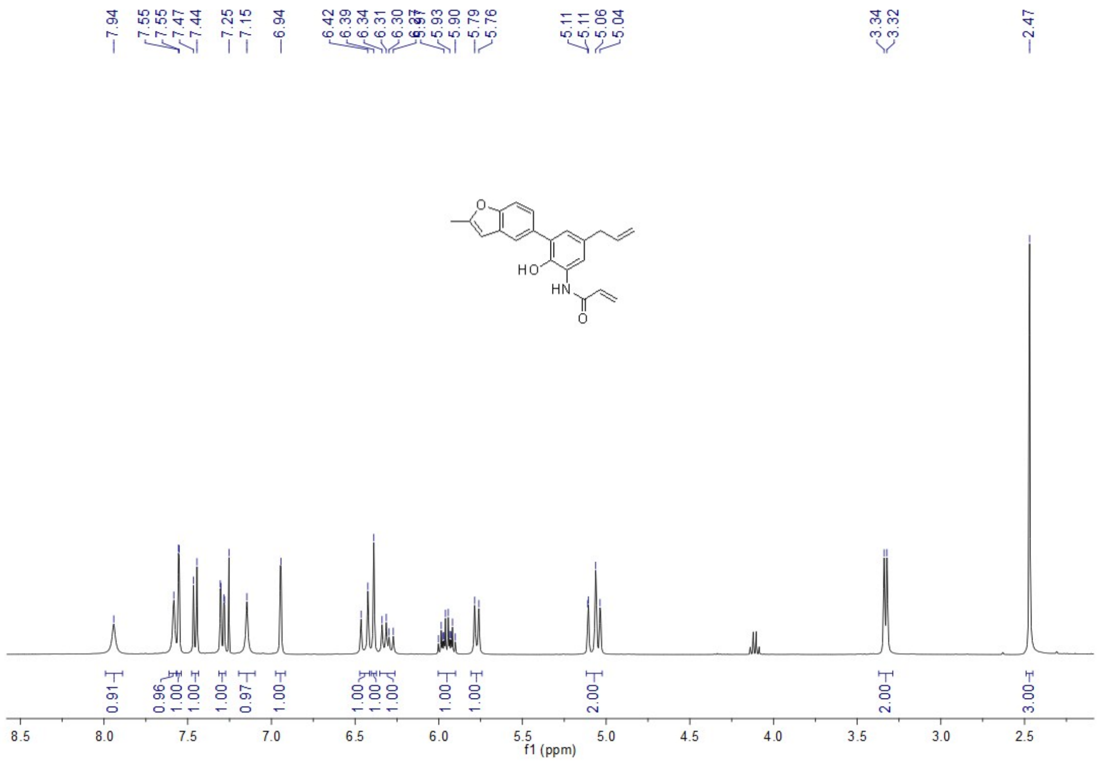


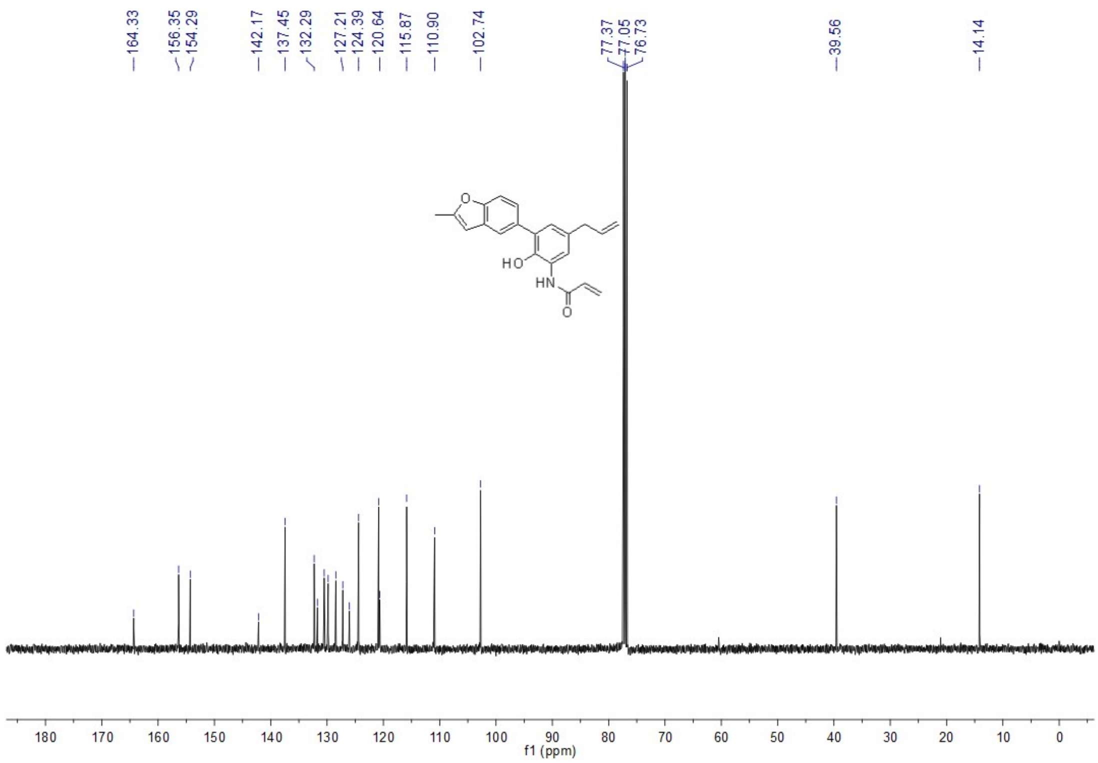
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **12**



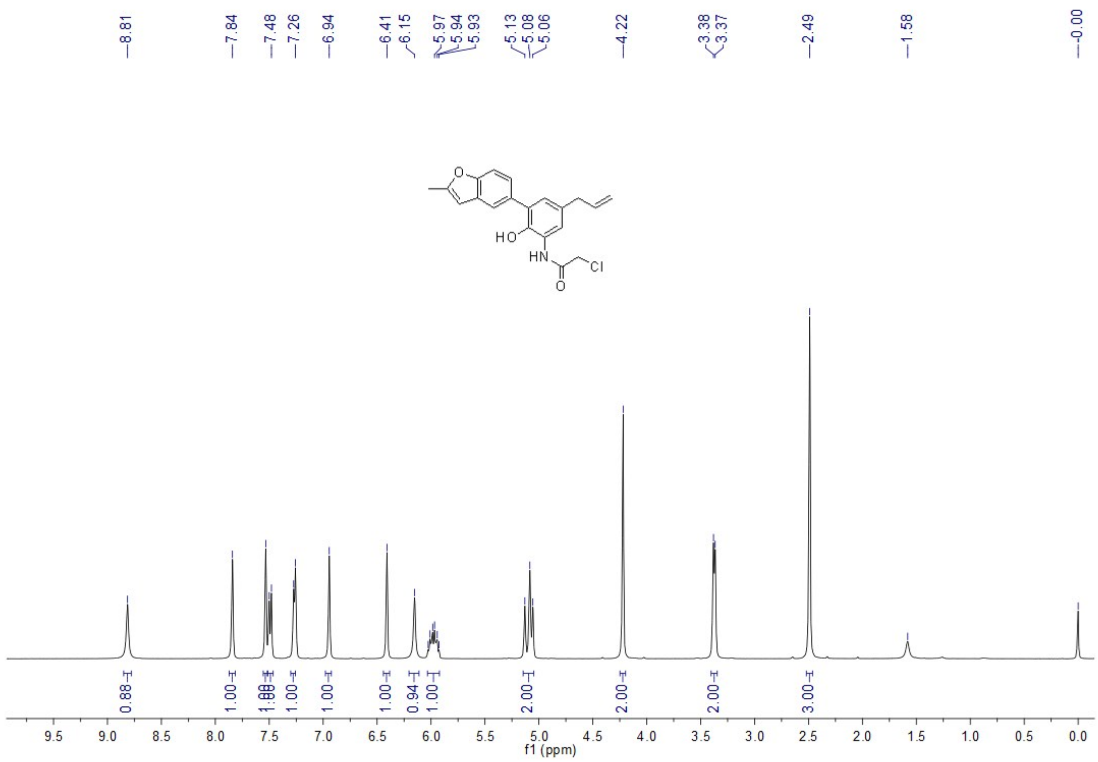


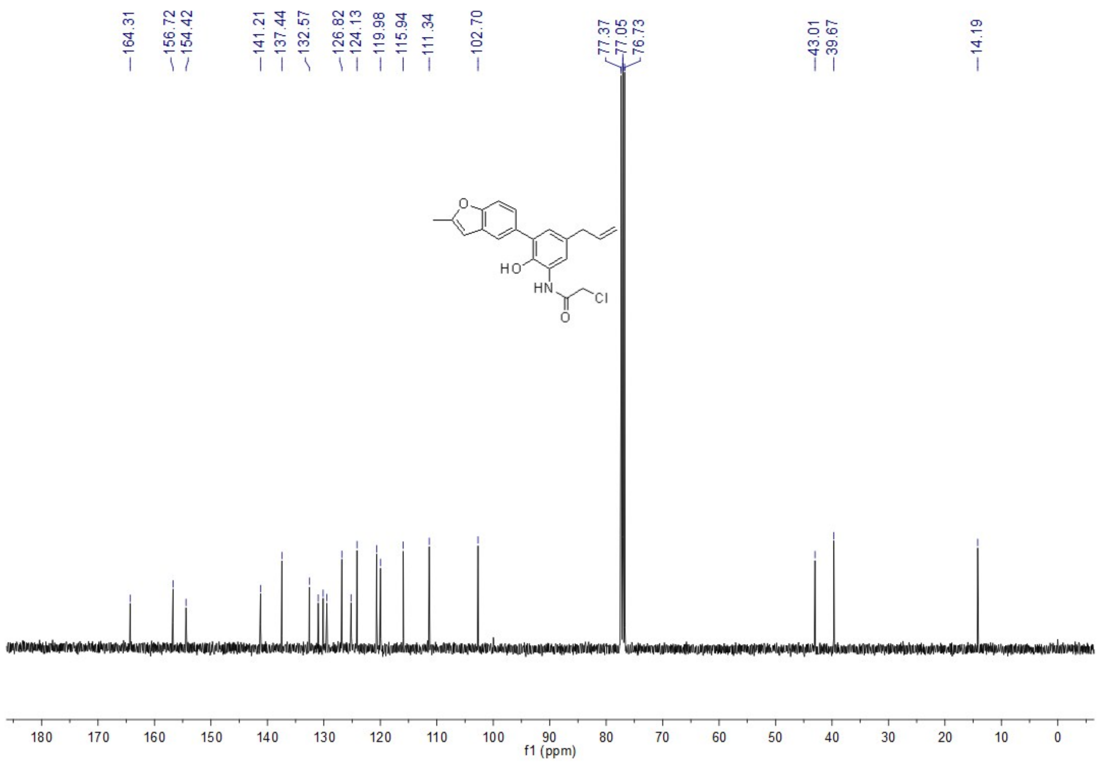
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **13**



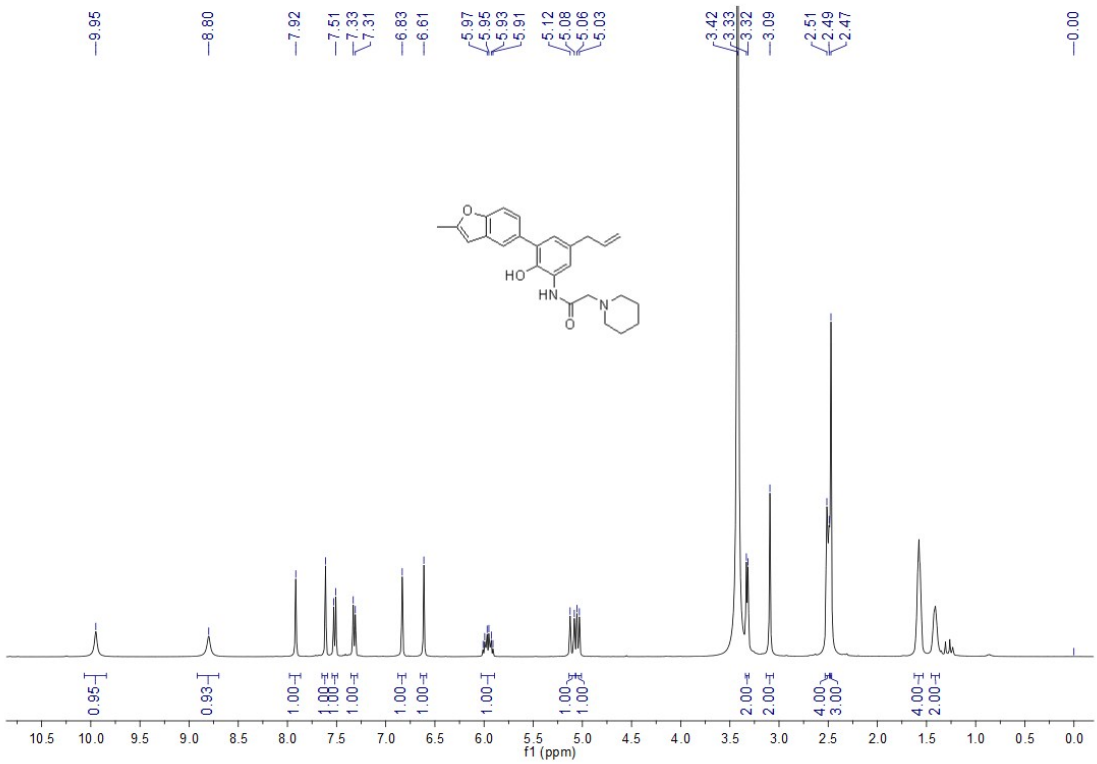


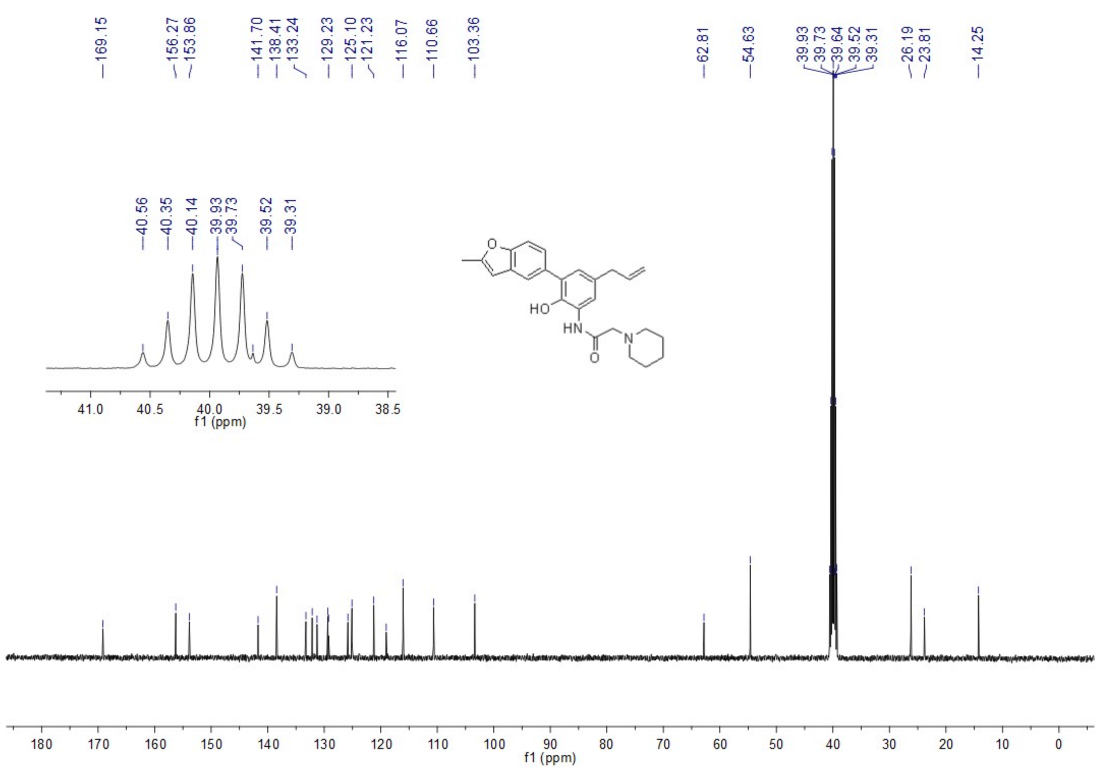
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **14**



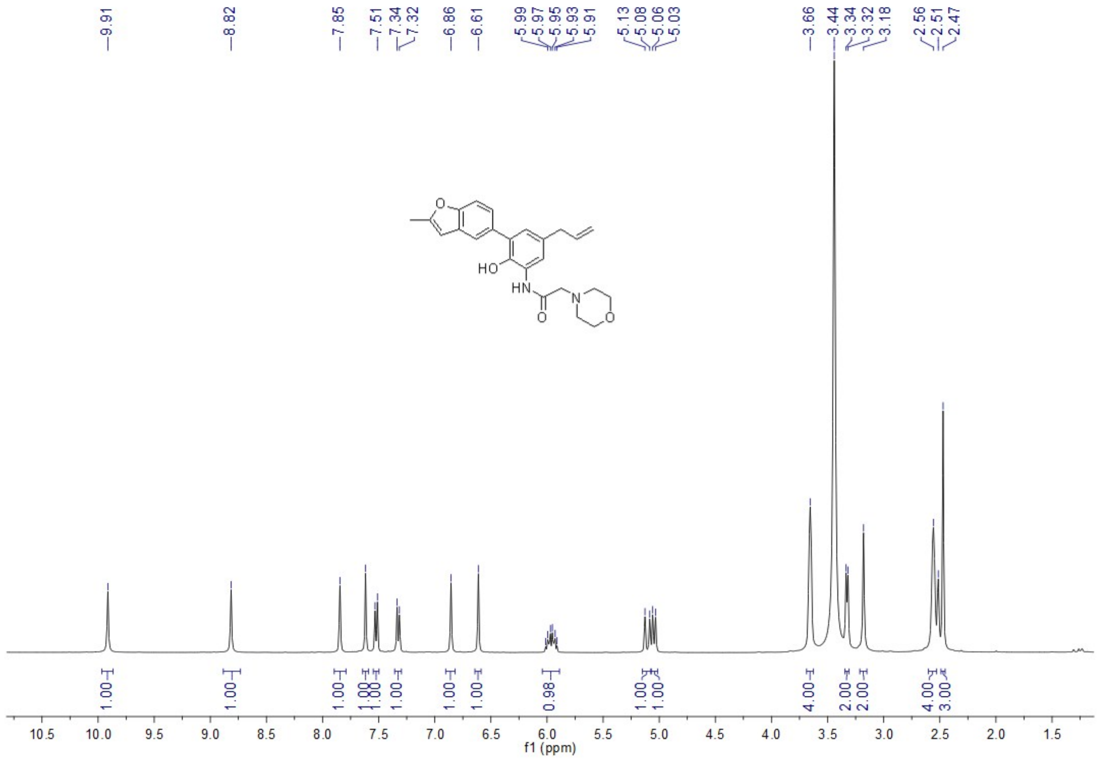


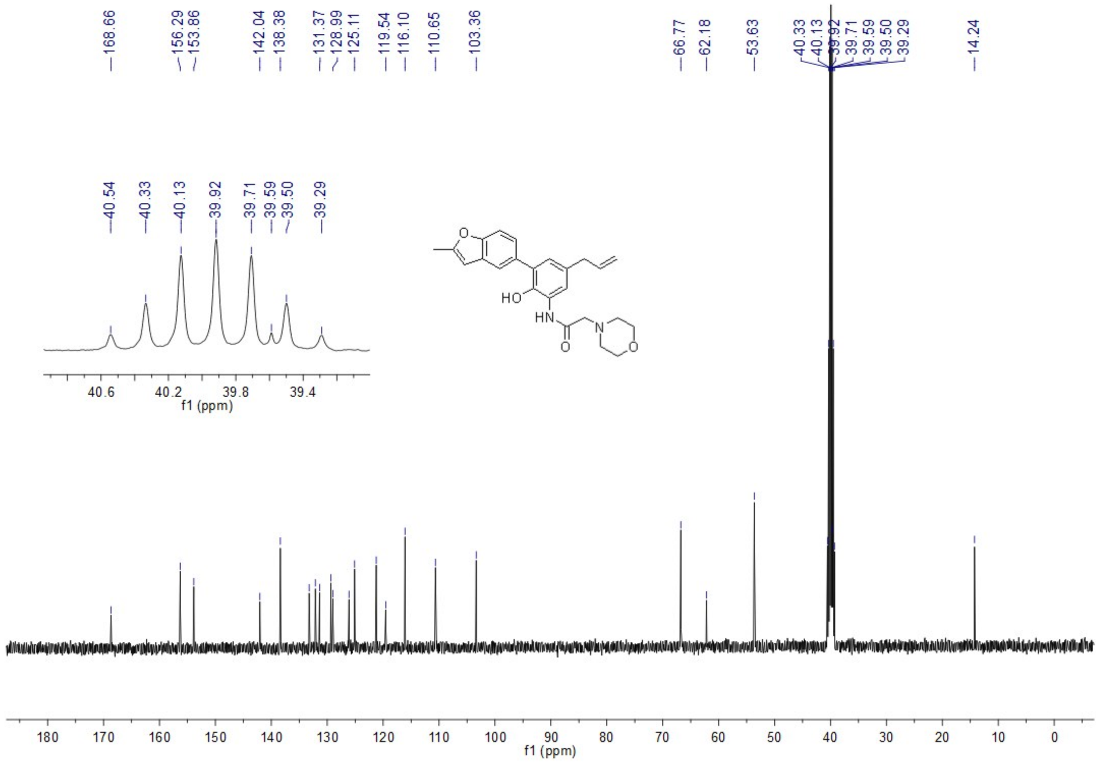
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **15**



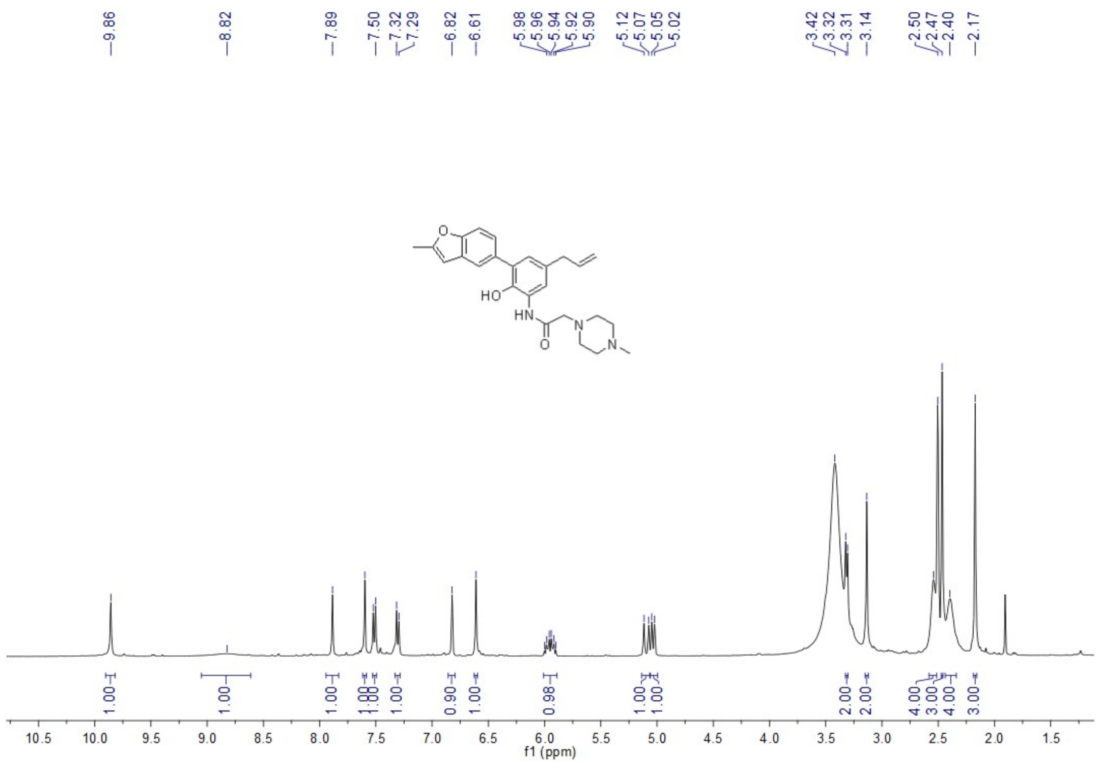


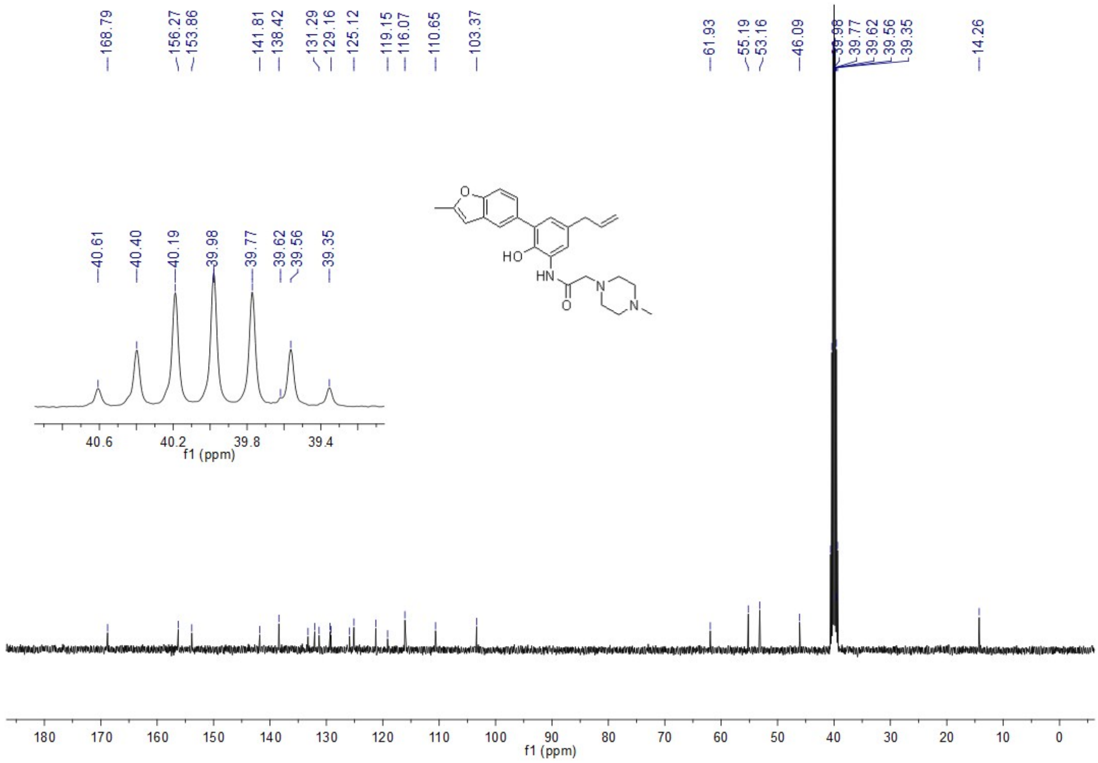
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **16**



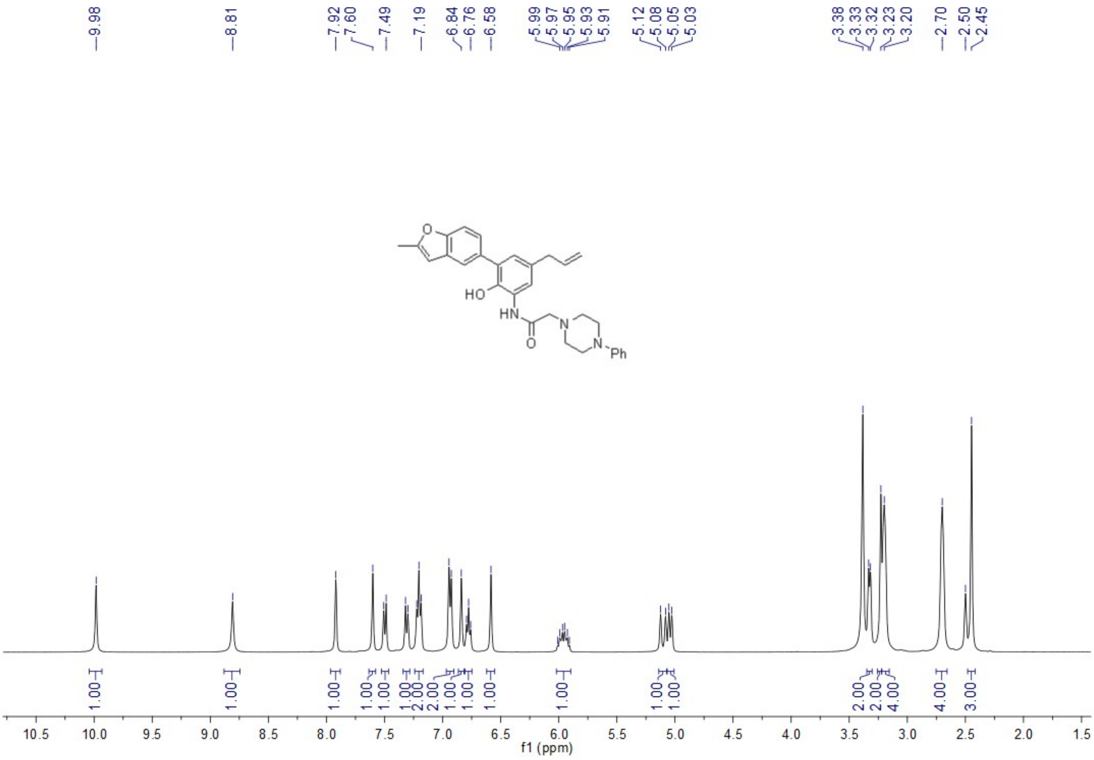


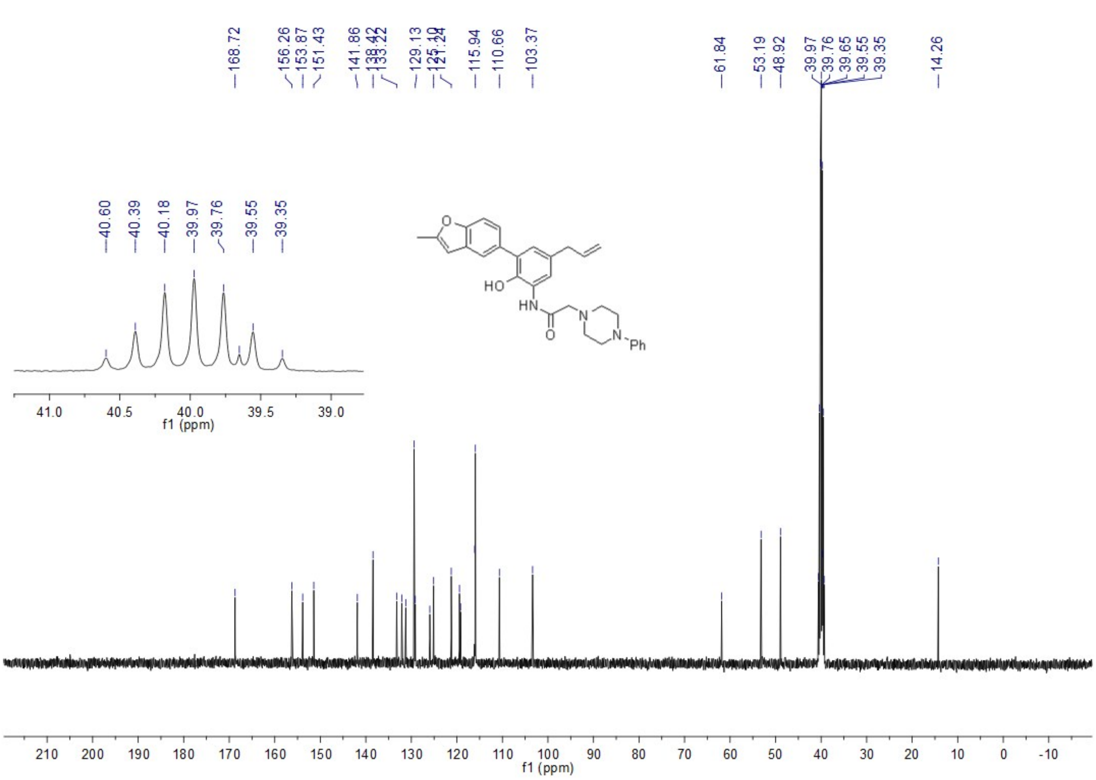
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **17**



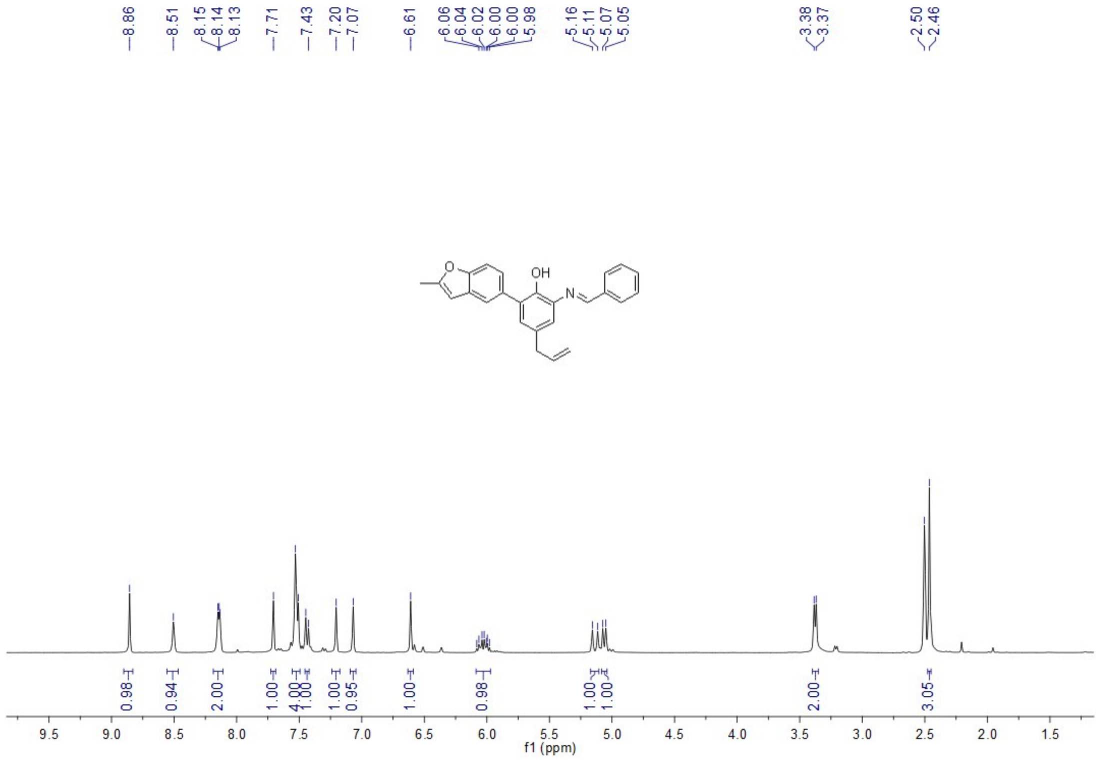


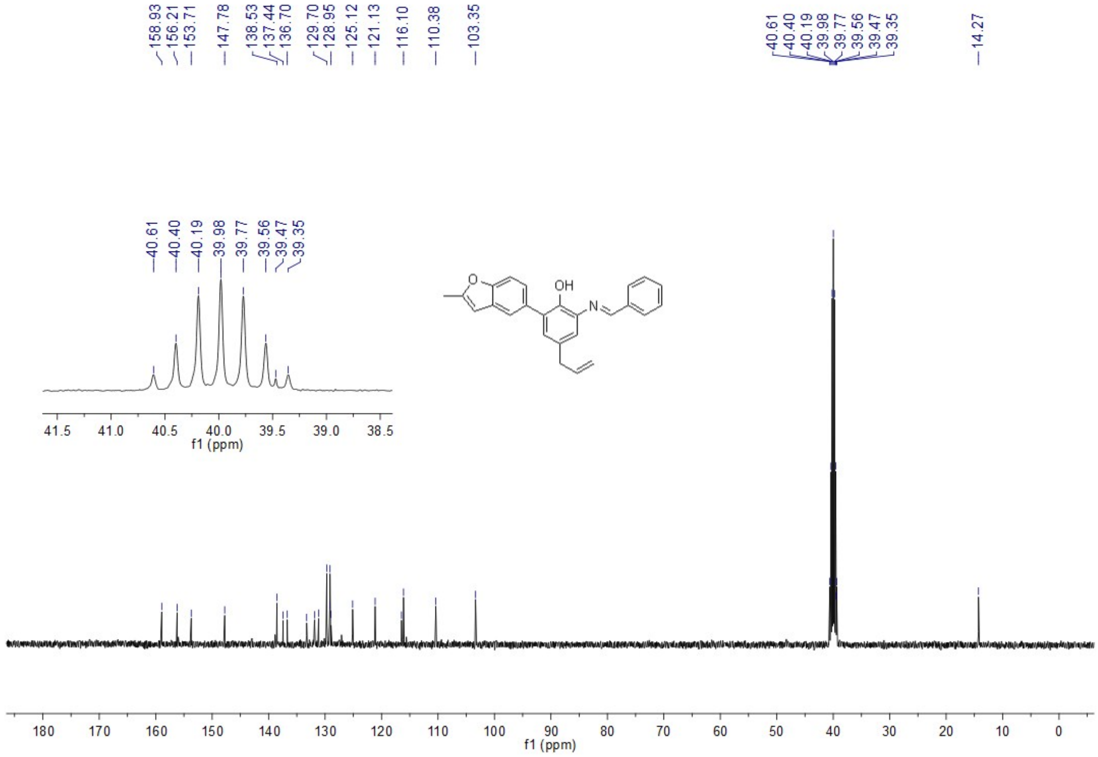
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **18**



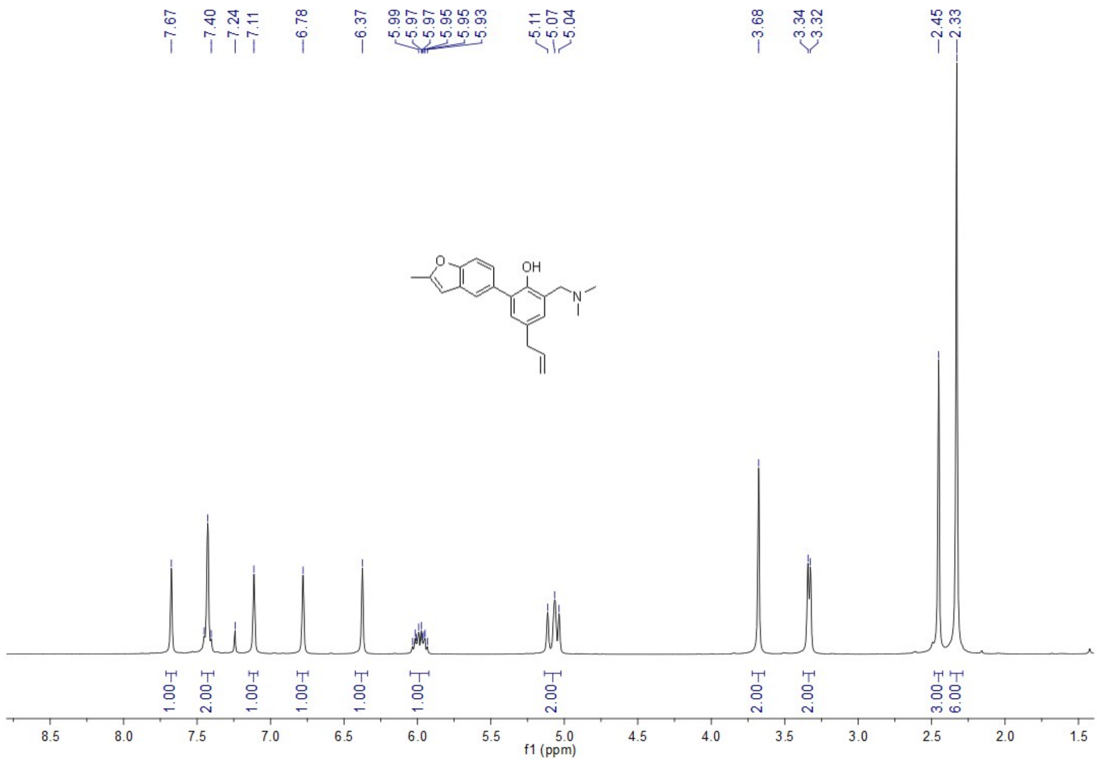


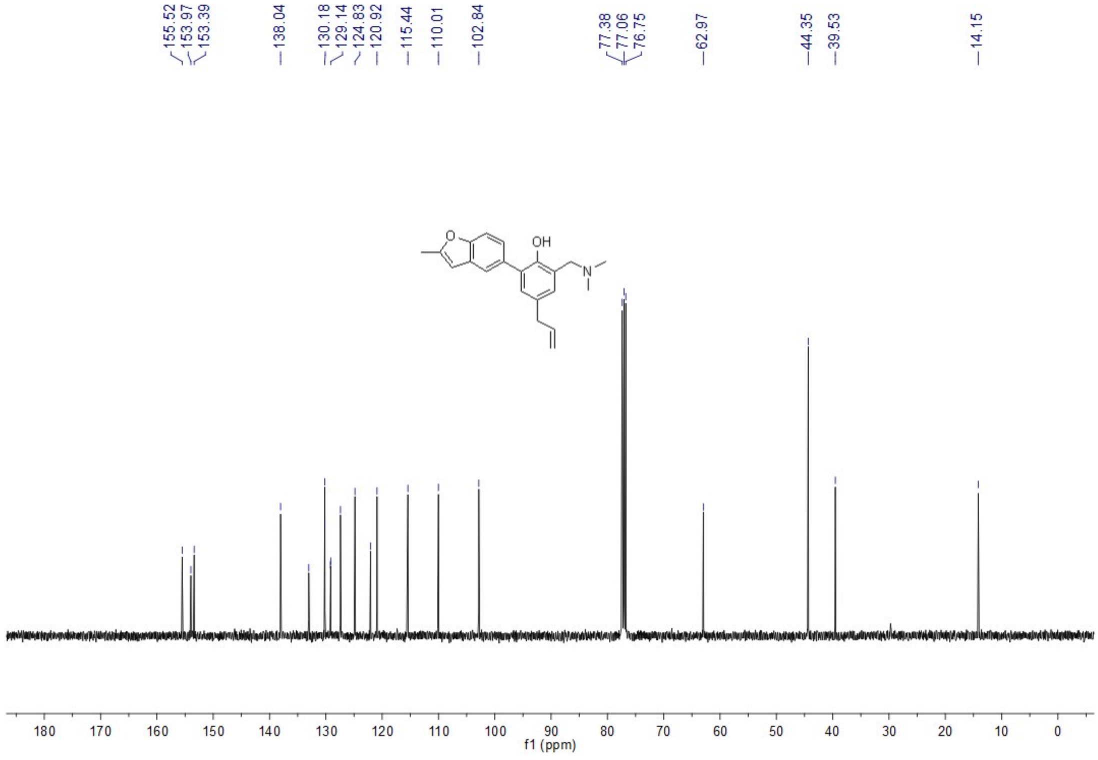
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **19**



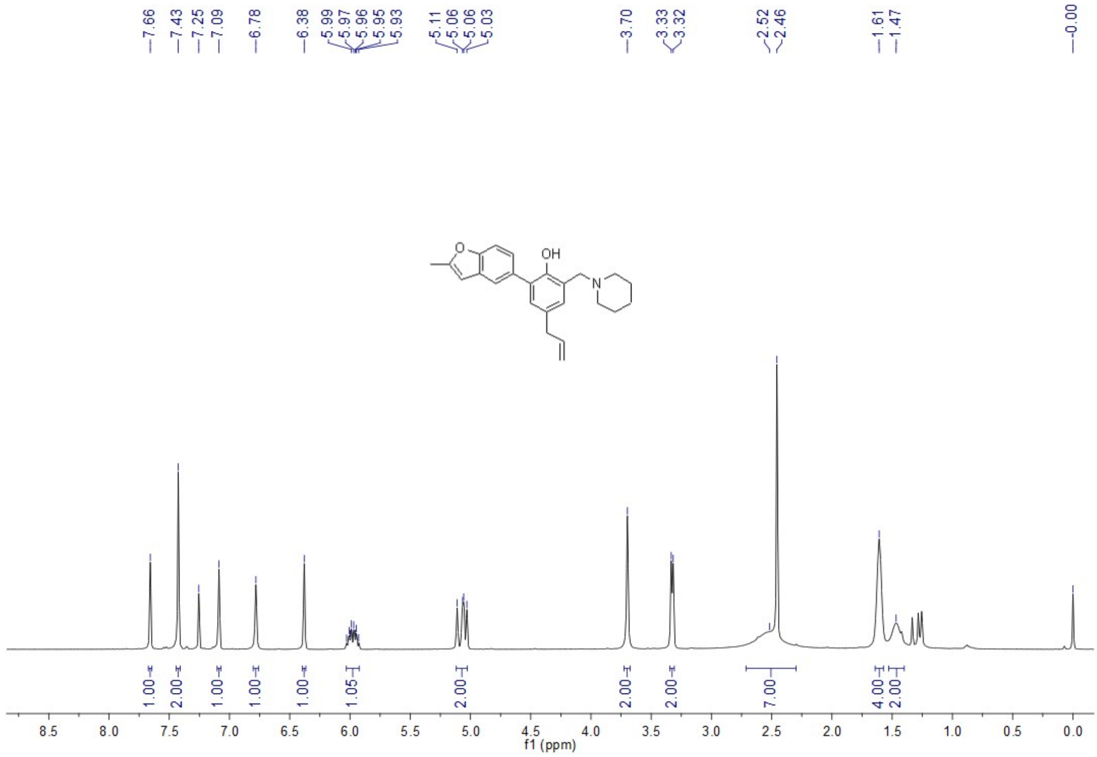


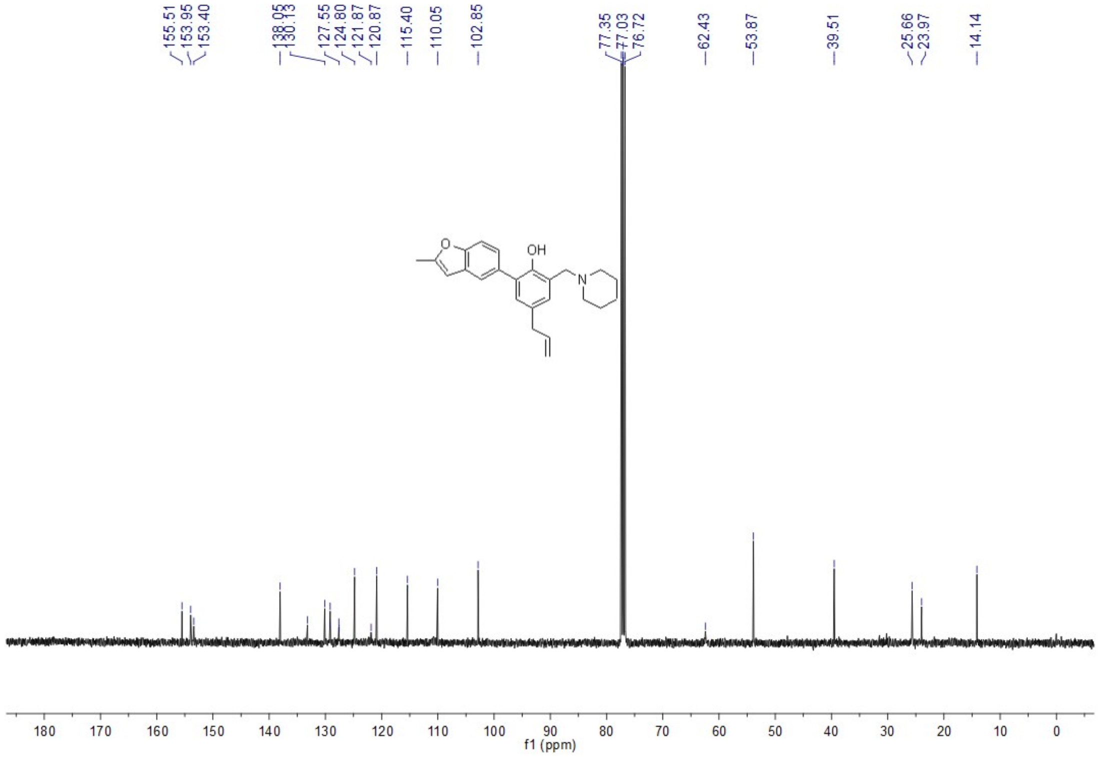
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **20**



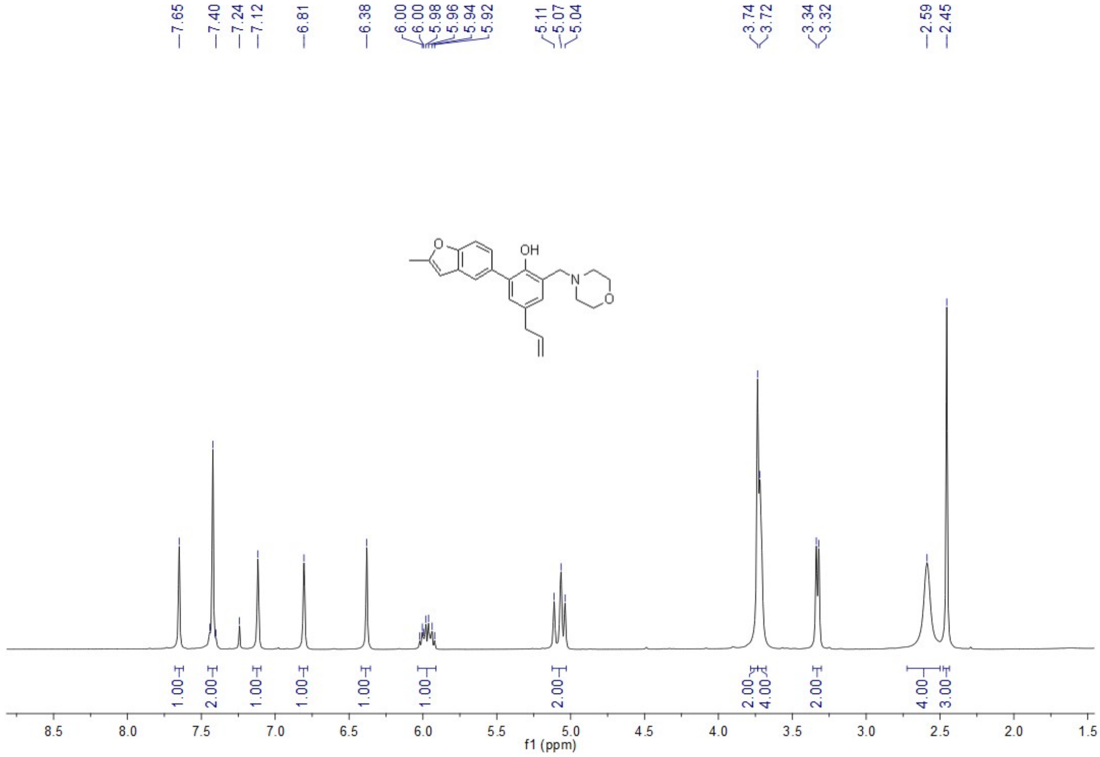


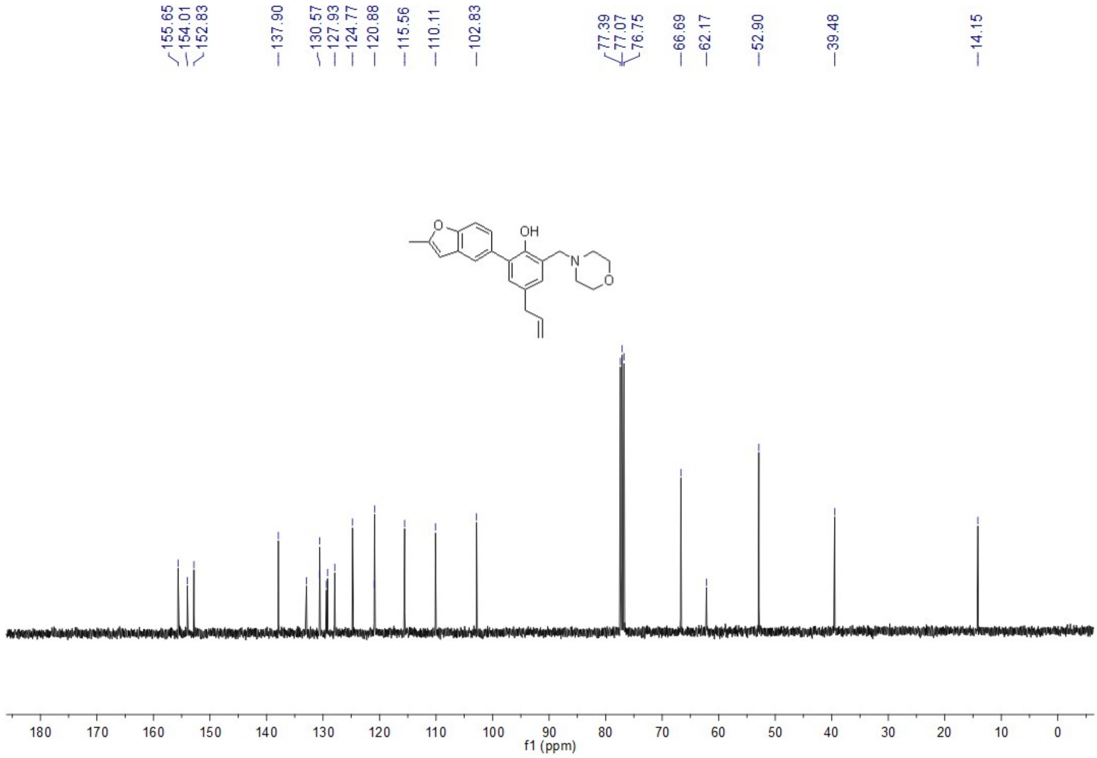
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **21**



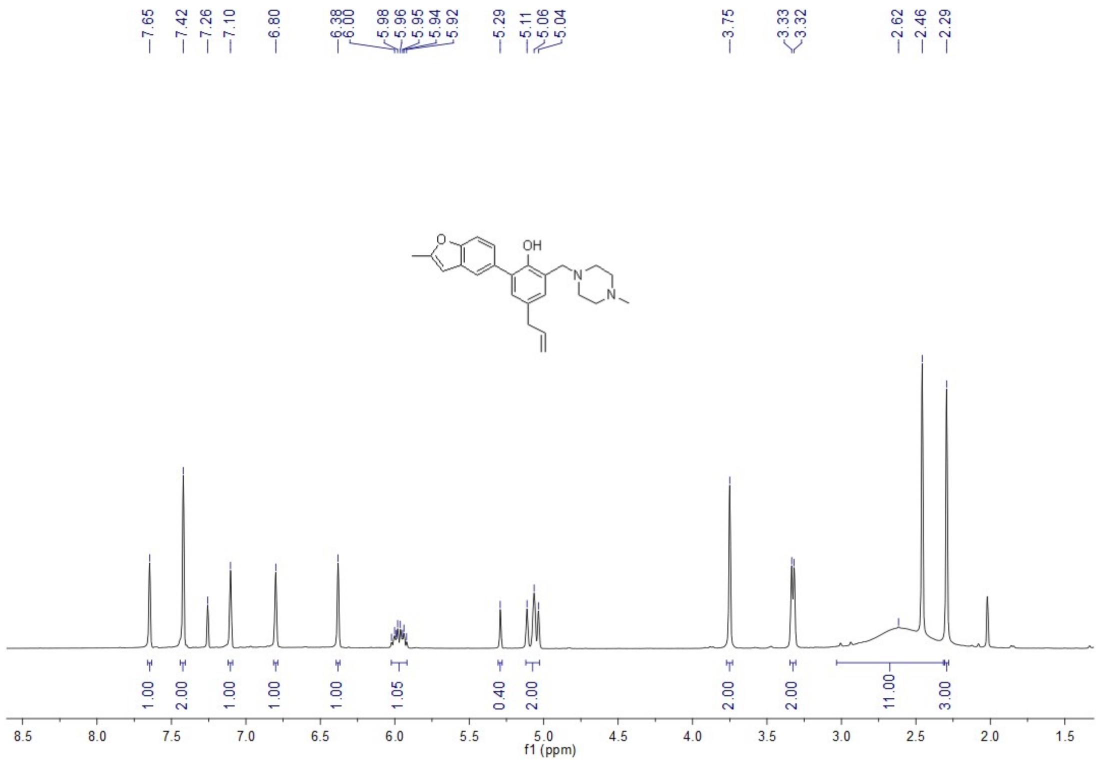


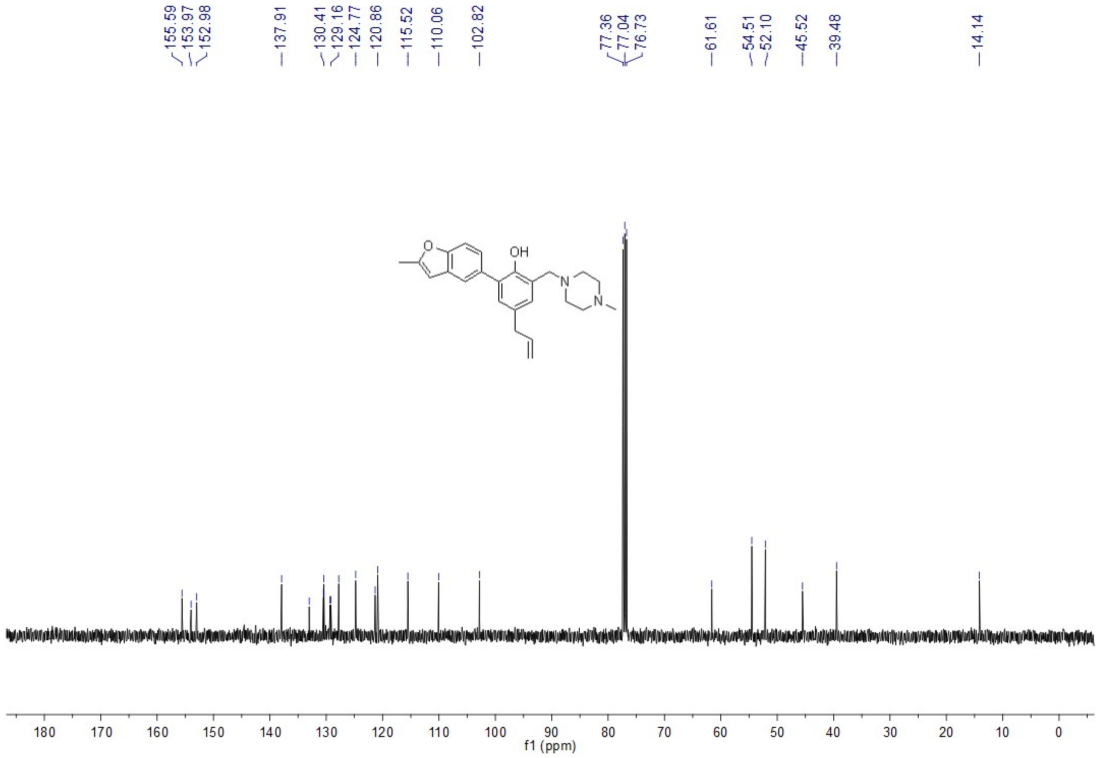
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **22**



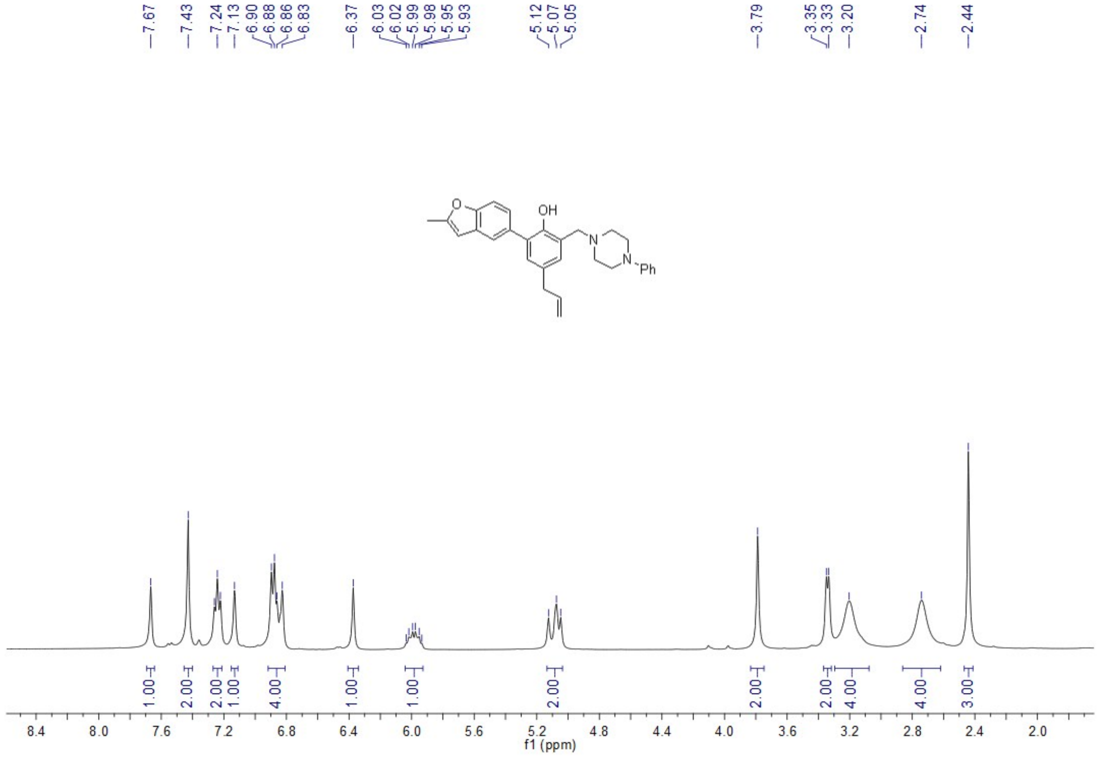


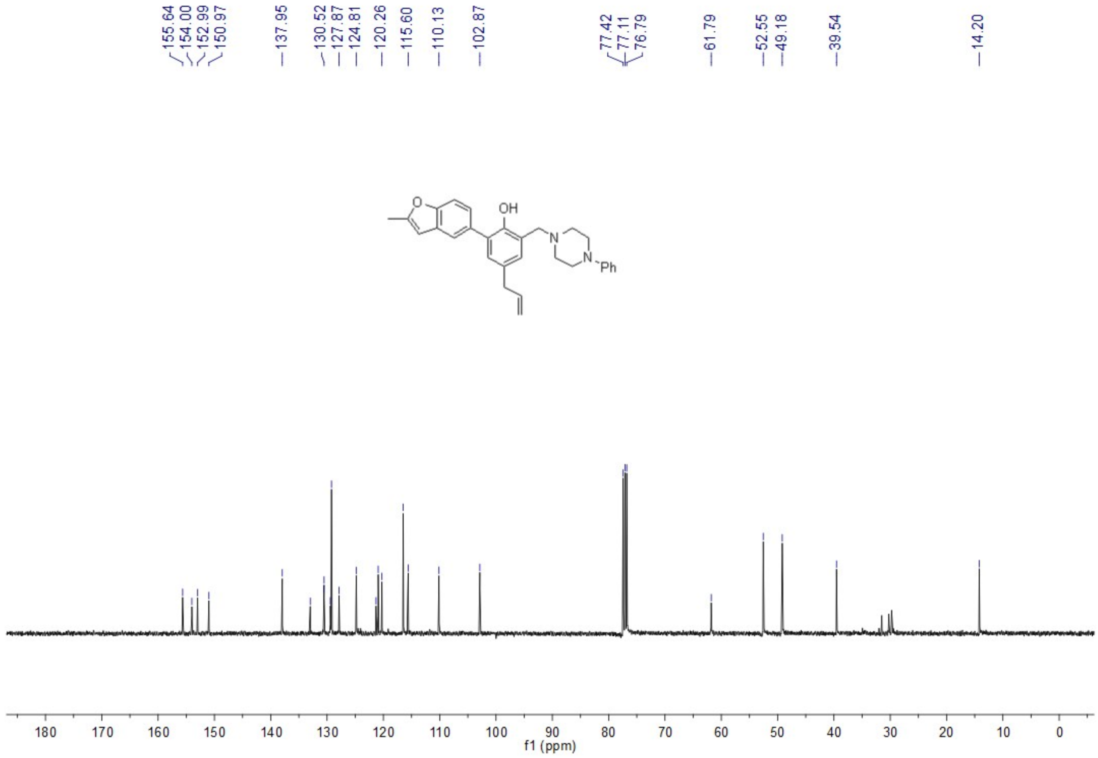
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **23**



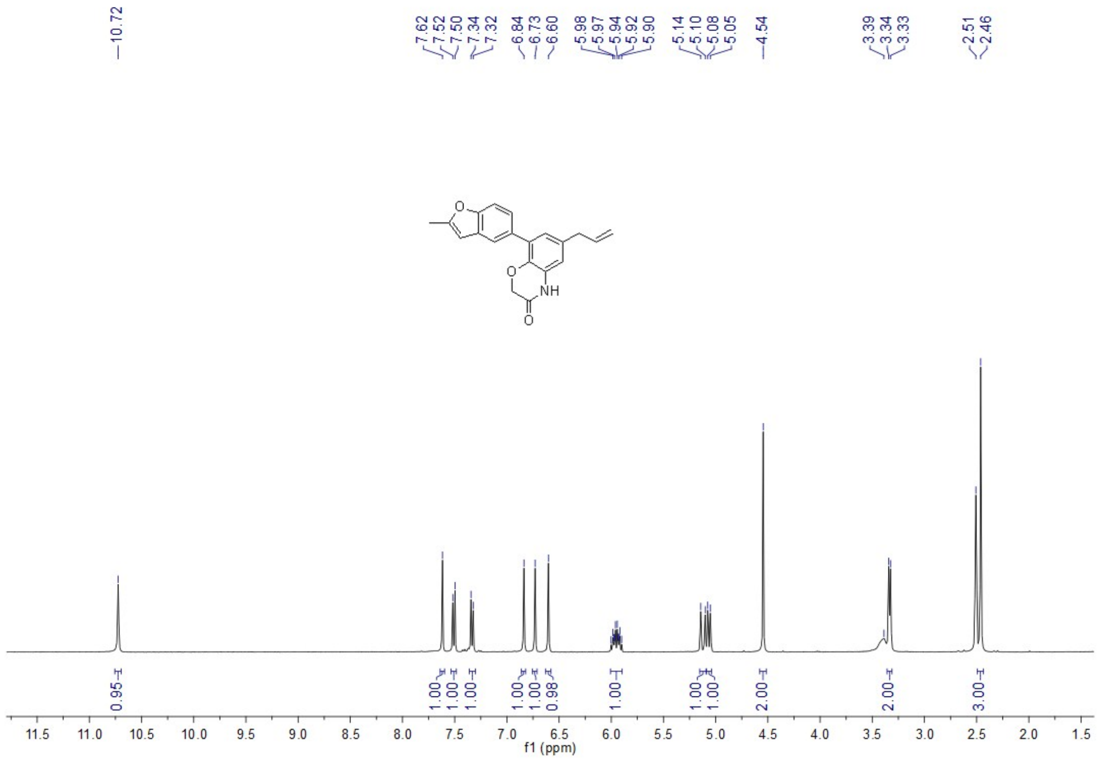


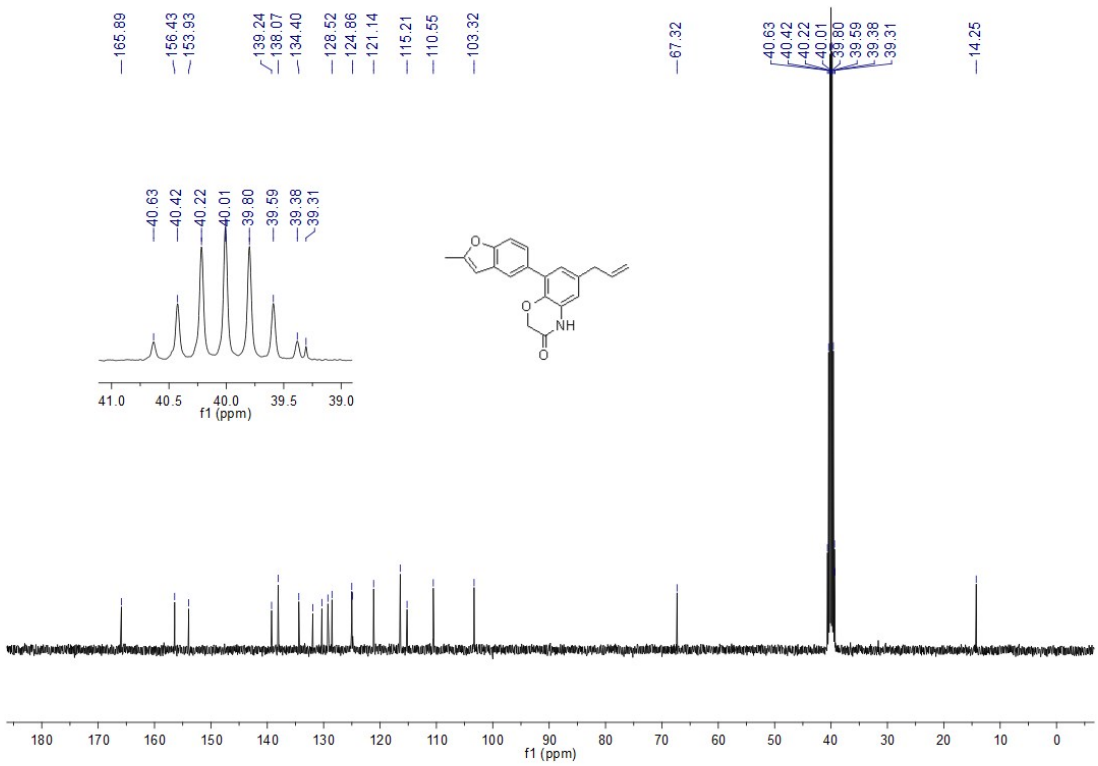
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **24**



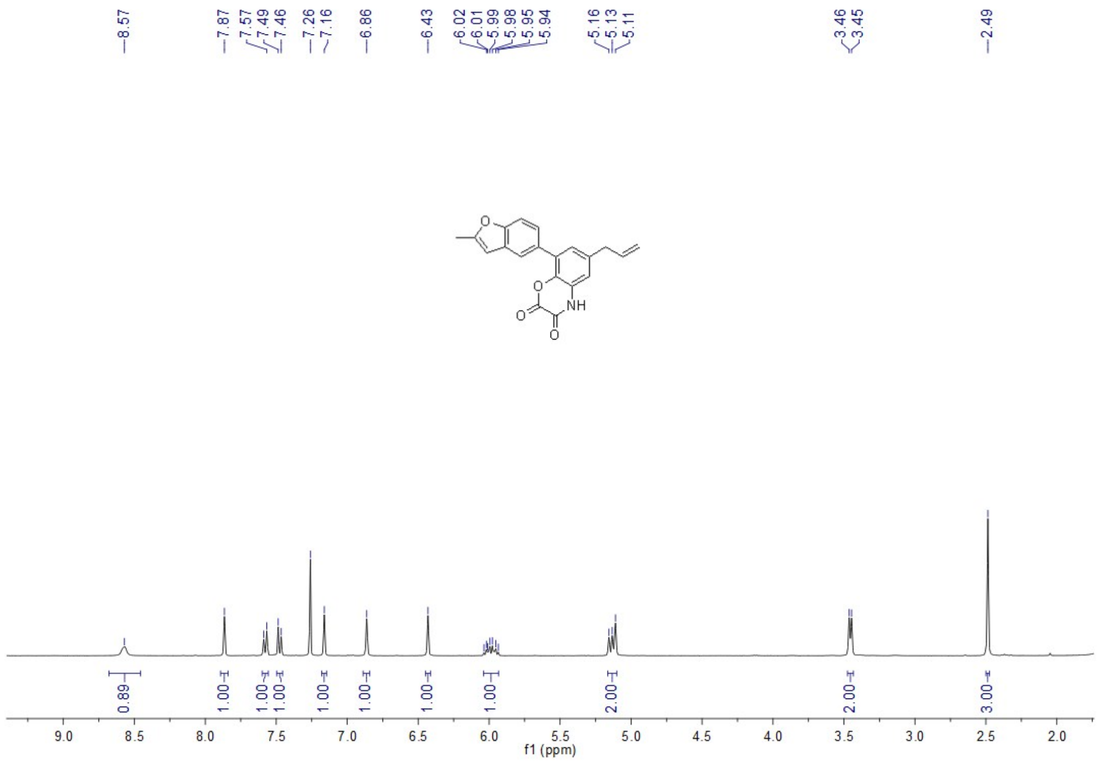


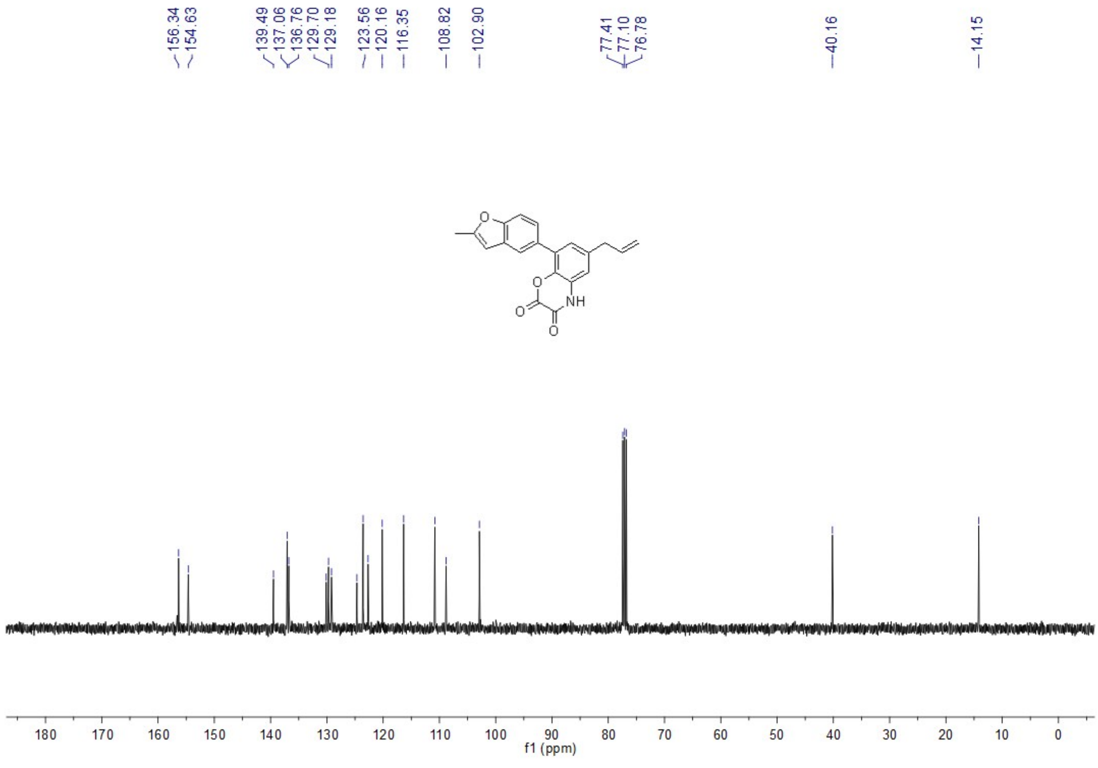
The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **25**



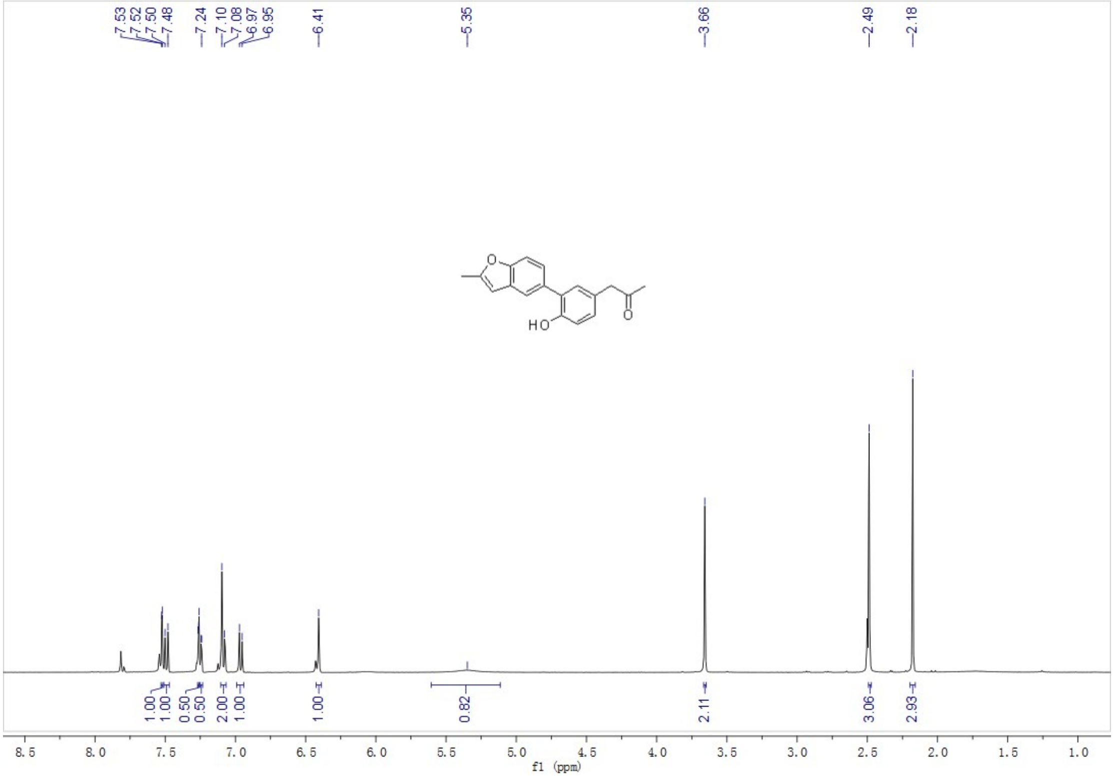


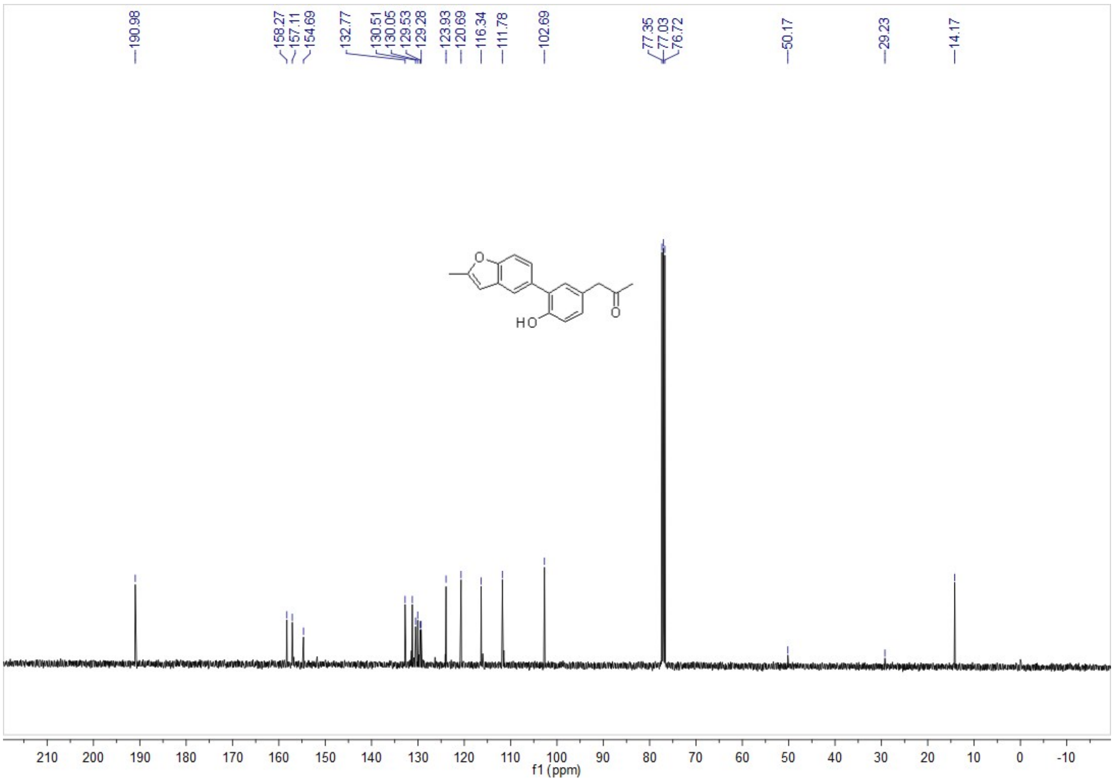
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **26**



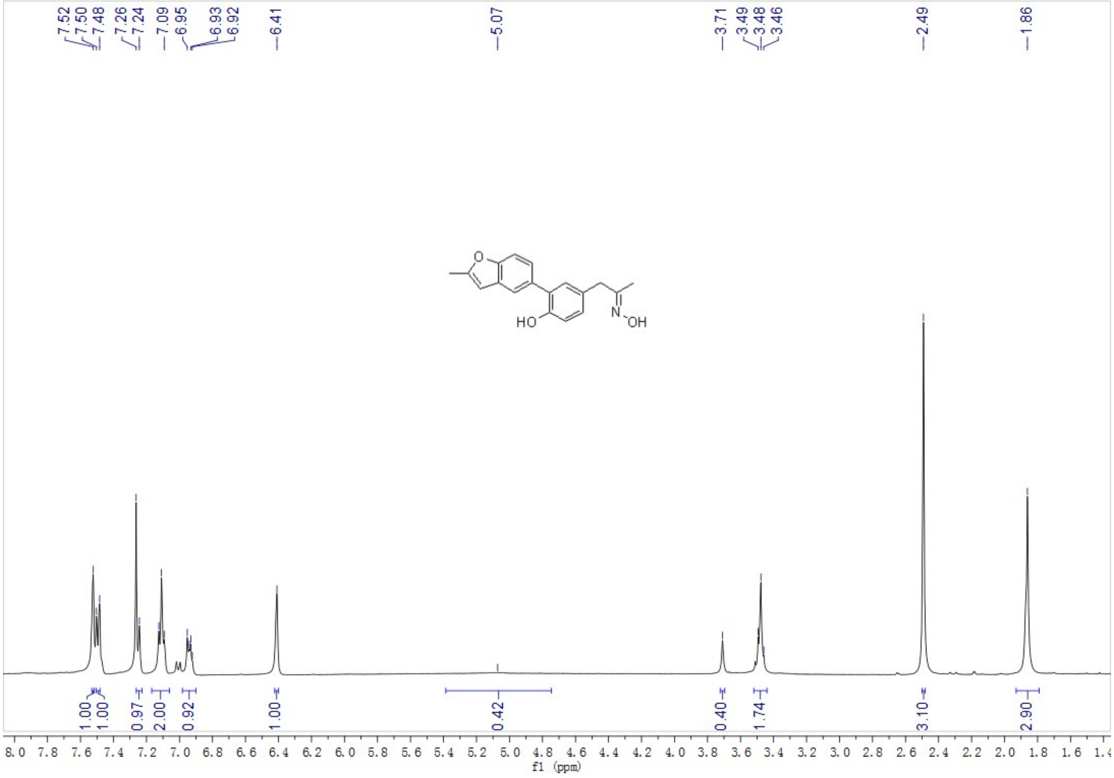


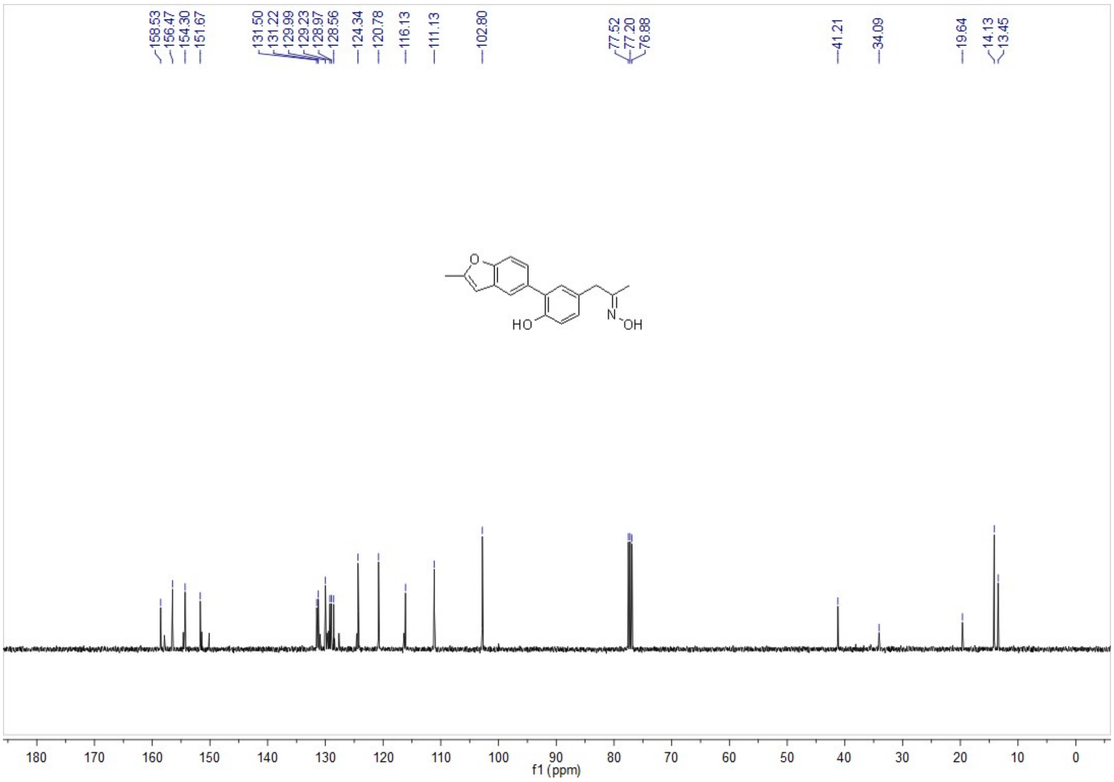
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **27**



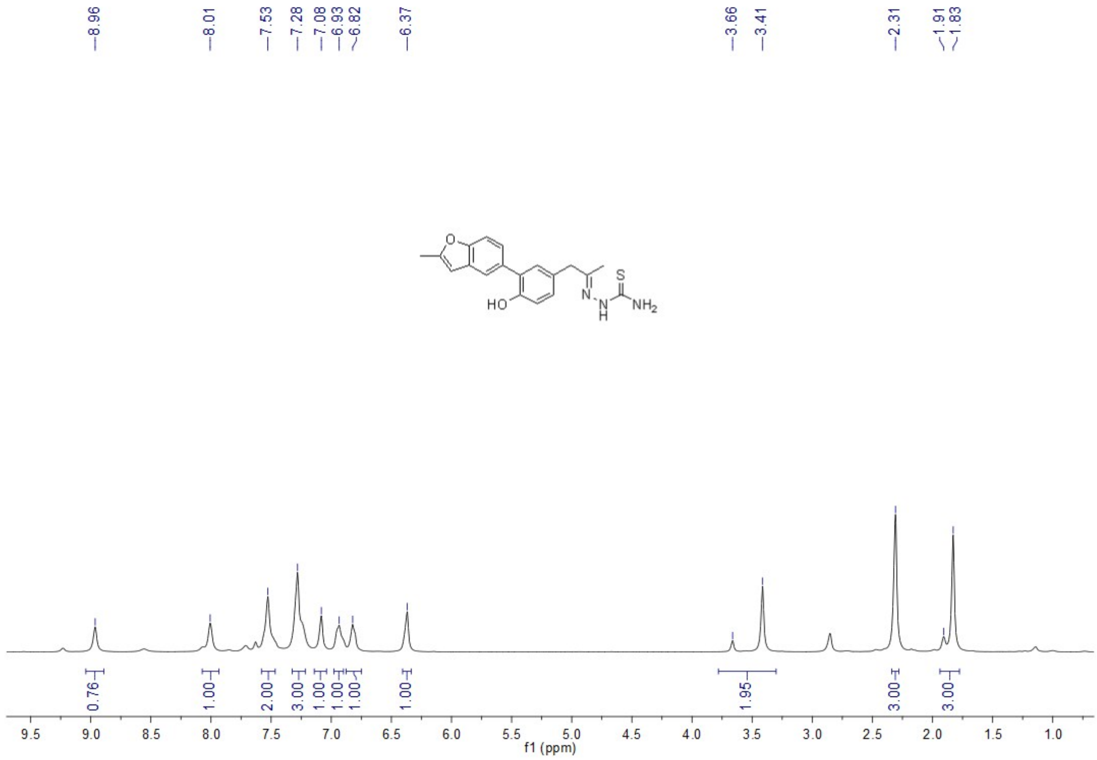


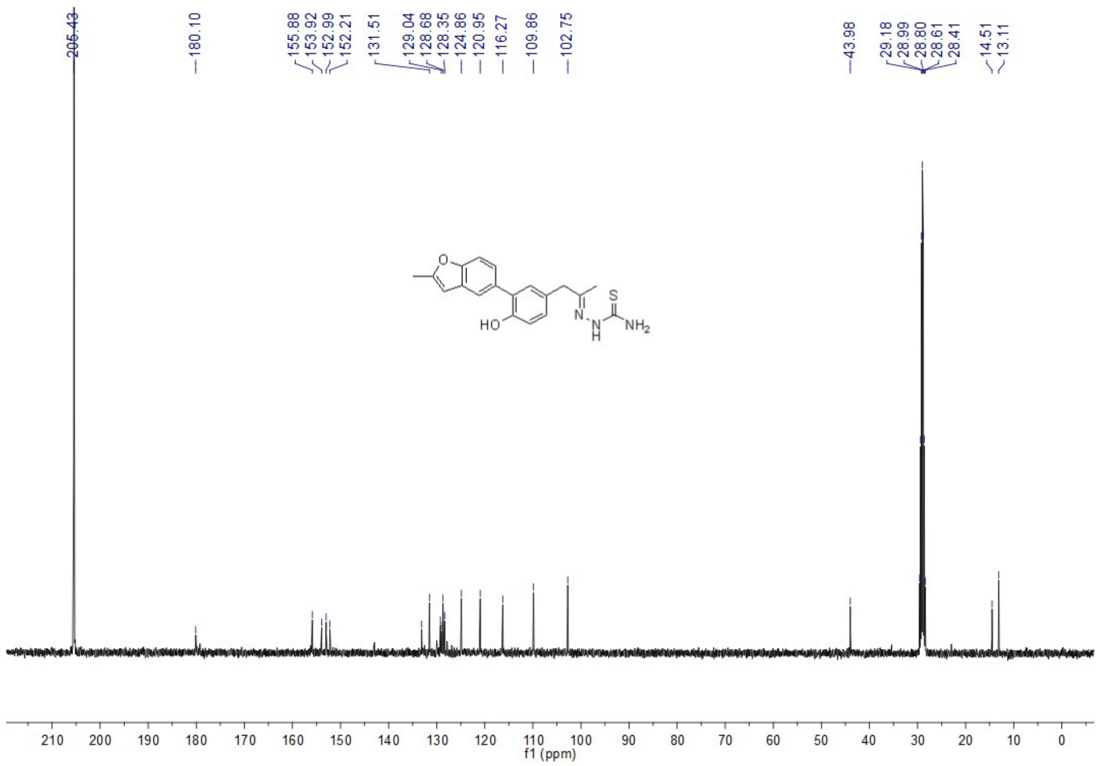
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, $CDCl_3$) of compound **28**



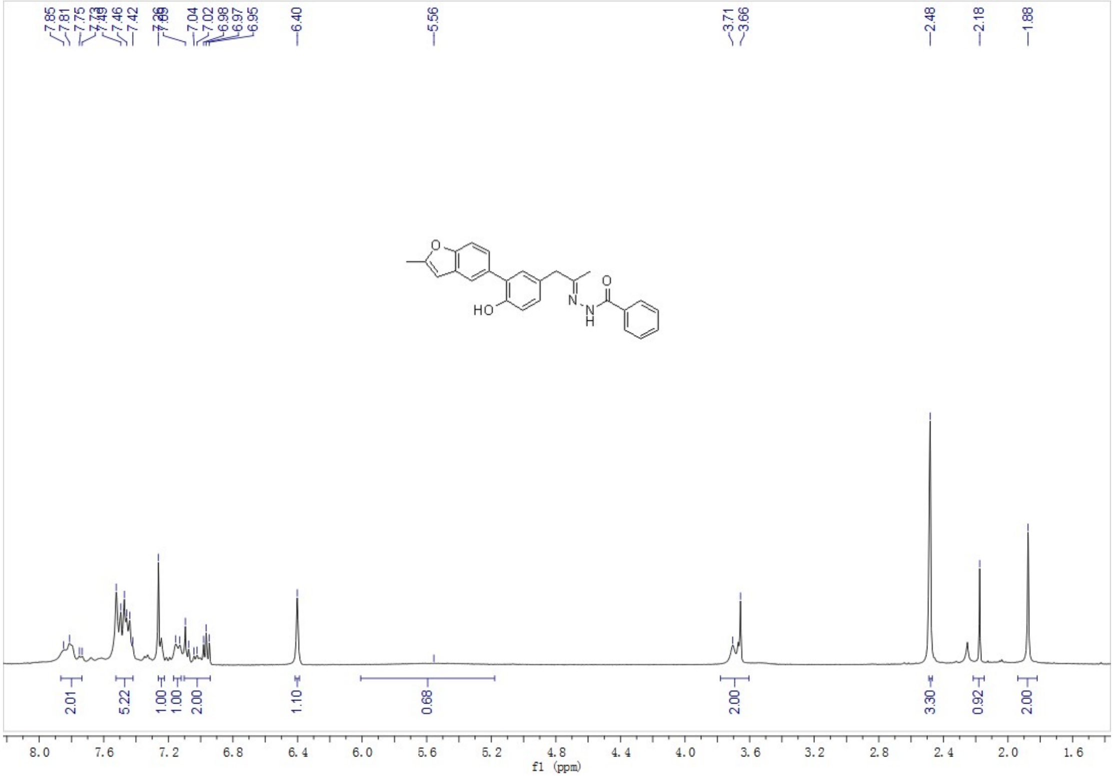


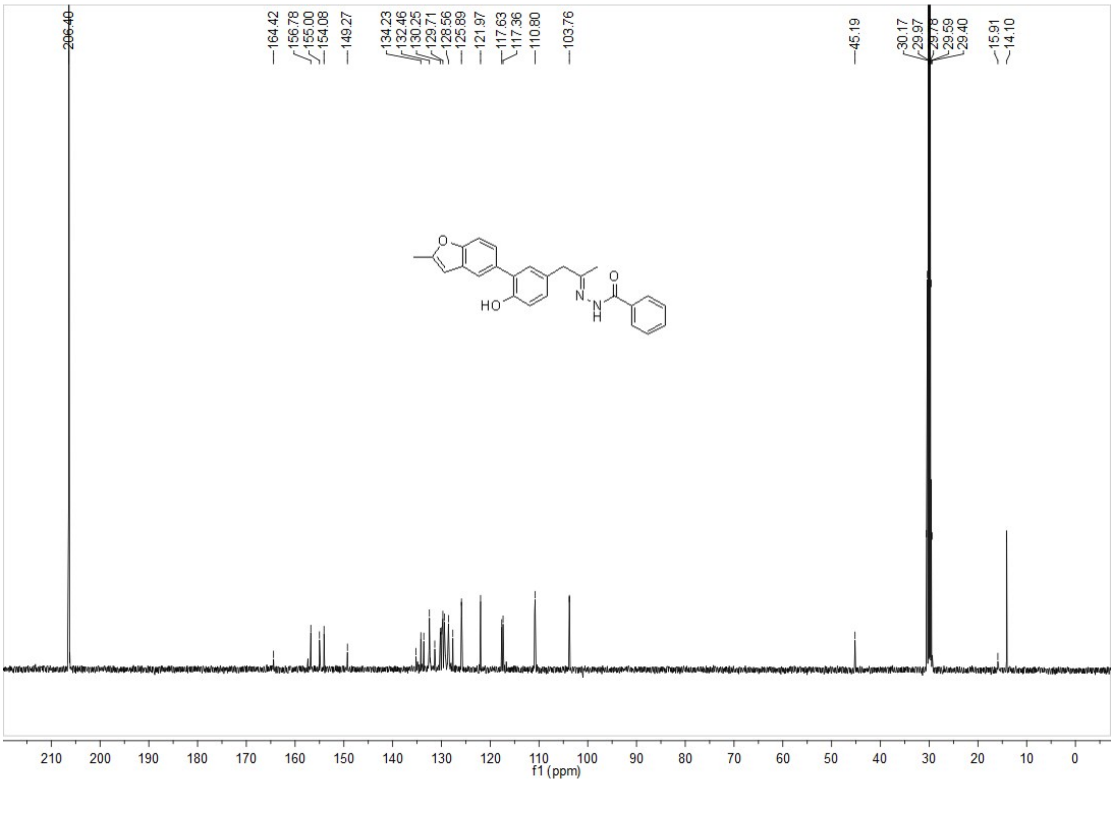
The ^{1}H NMR (400MHz, Acetone-d_6) and ^{13}C NMR (101 MHz, Acetone-d_6) of compound **29**



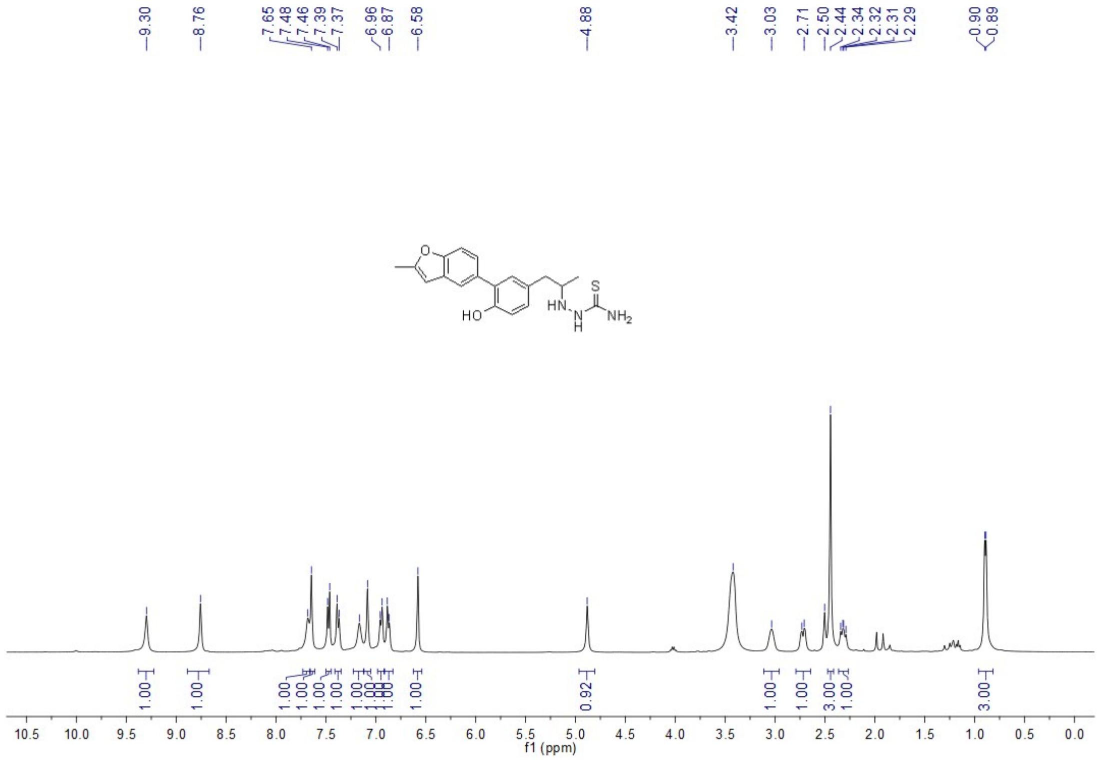


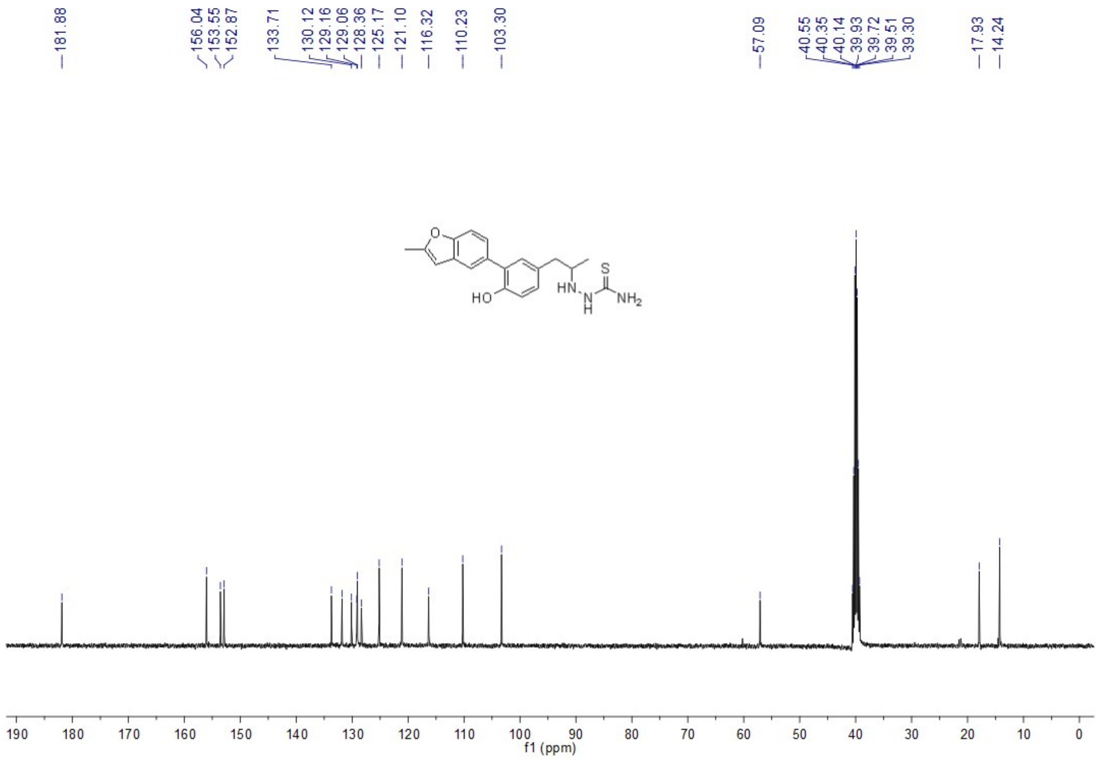
The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, Acetone-d_6) of compound **30**





The ^{1}H NMR (400MHz, DMSO-d_6) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **31**





The ^{1}H NMR (400MHz, $CDCl_3$) and ^{13}C NMR (101 MHz, DMSO-d_6) of compound **32**