Supporting Information

for

Application of the Ugi reaction with multiple amino acids-derived components: synthesis and conformational evaluation of piperazine-based minimalist peptidomimetics

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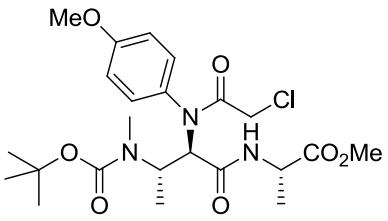
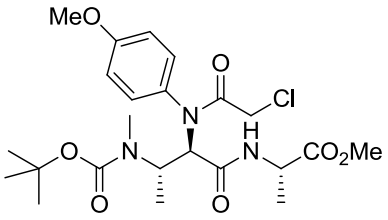
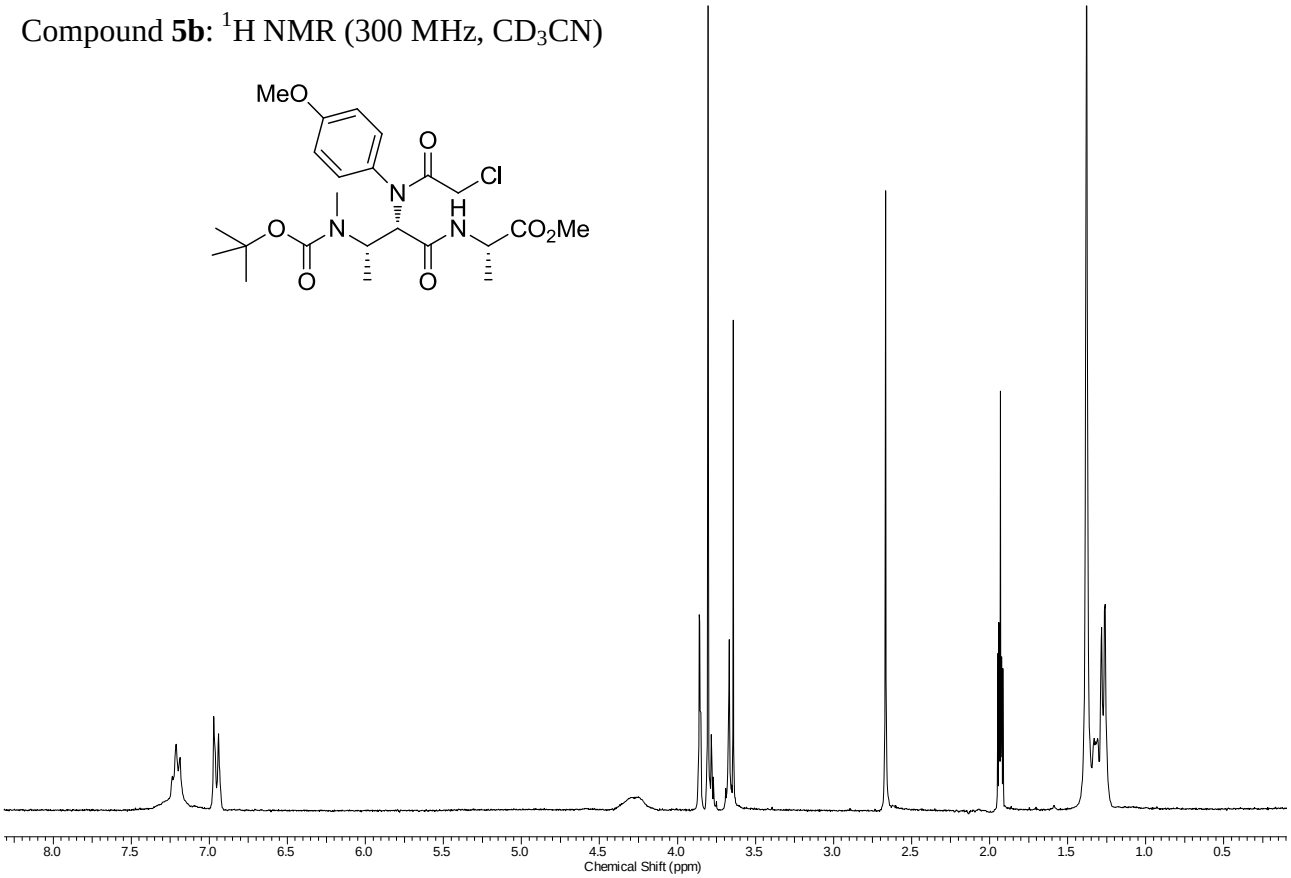
Compound **5a**: ^{1}H NMR (300 MHz, CD_3CN)



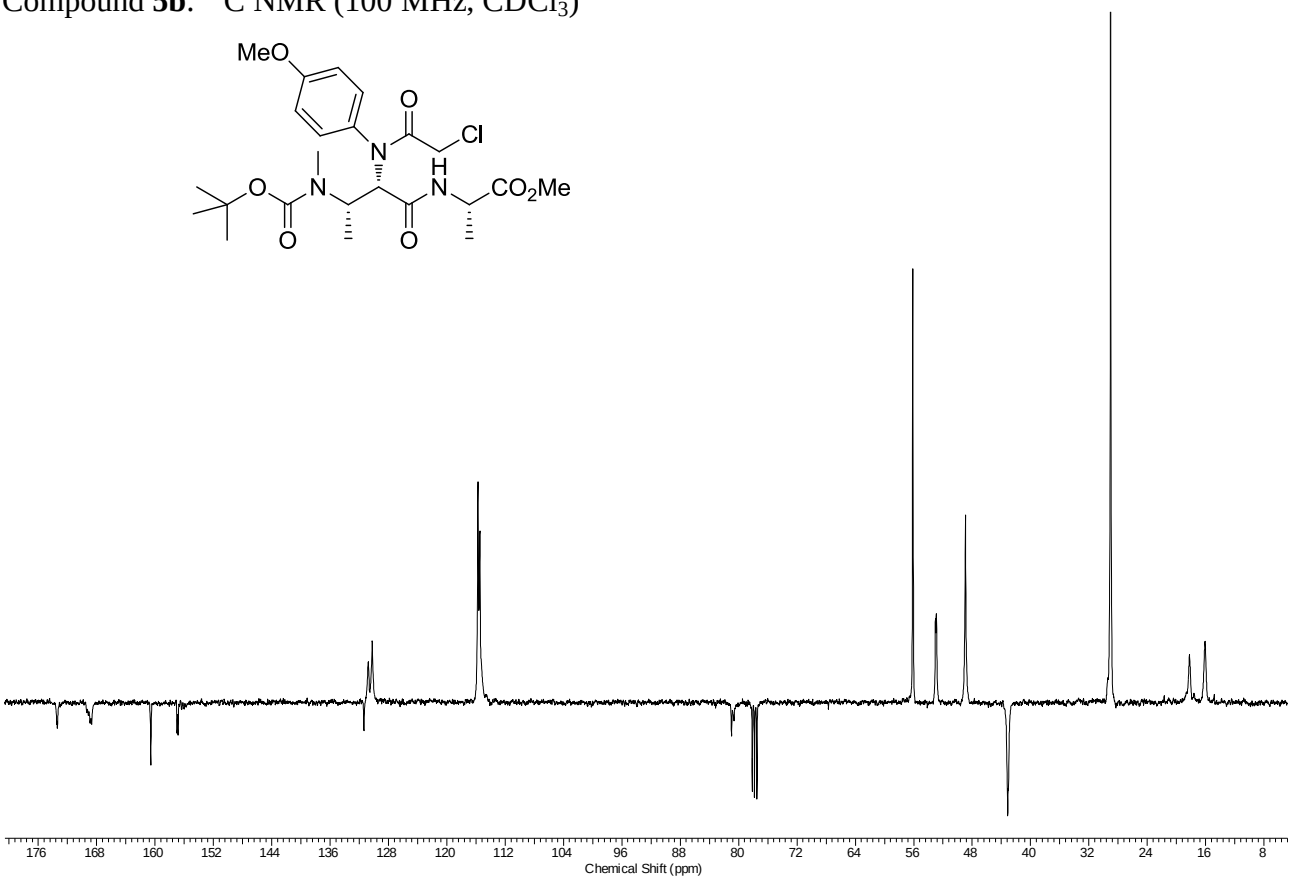
Compound **5a**: ^{13}C NMR (75 MHz, CD_3CN)



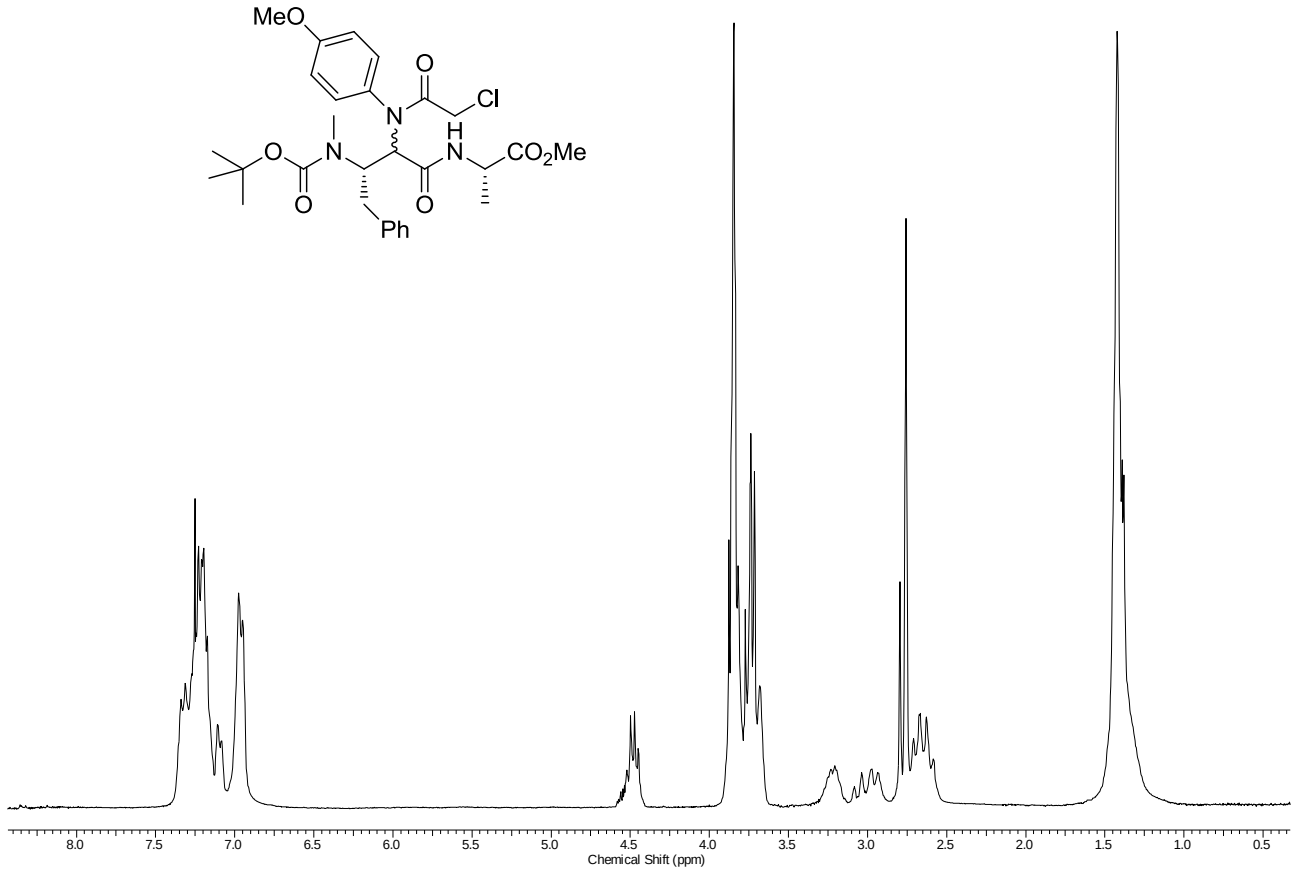
Compound **5b**: ^{1}H NMR (300 MHz, CD_3CN)



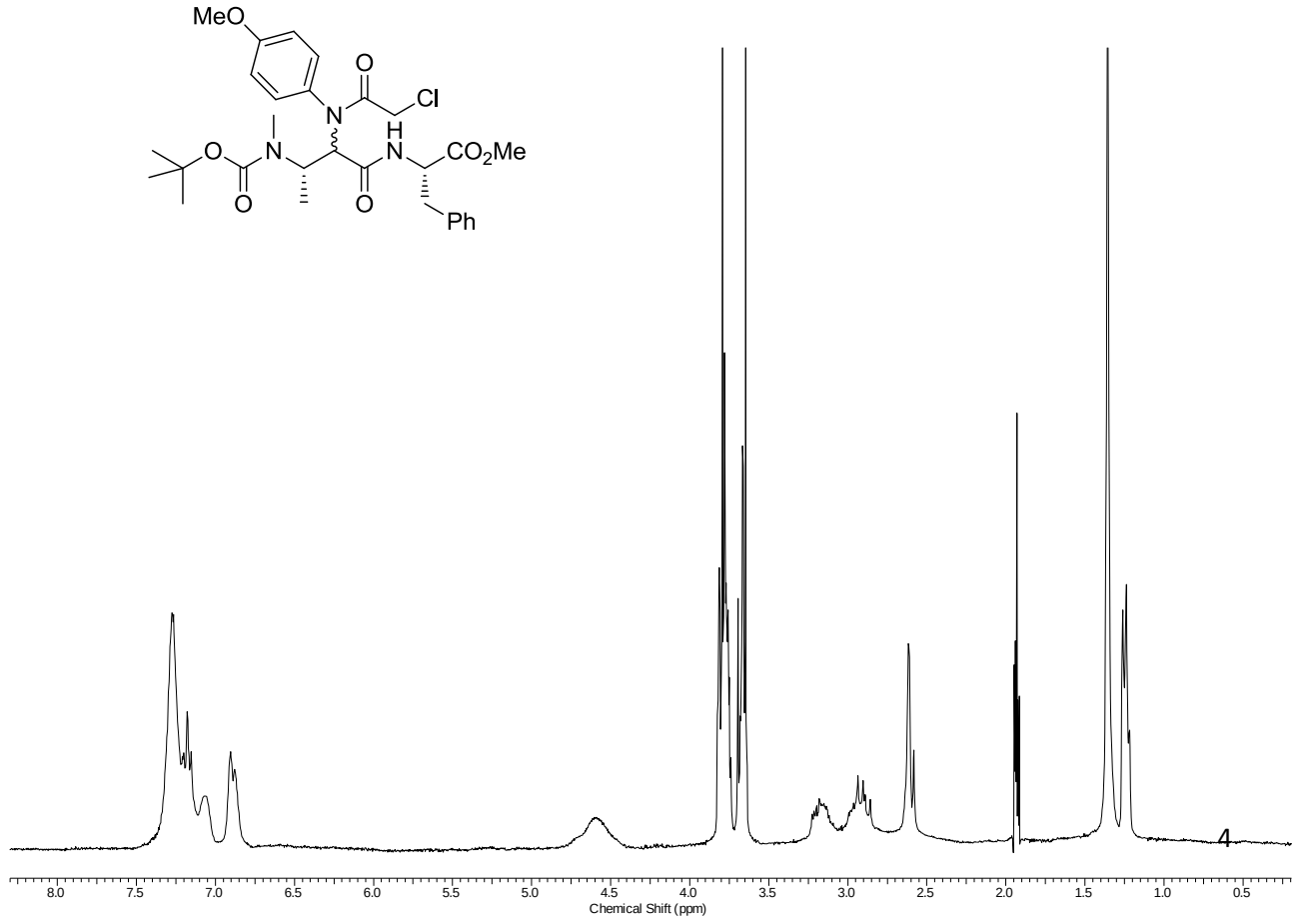
Compound **5b**: ^{13}C NMR (100 MHz, $CDCl_3$)



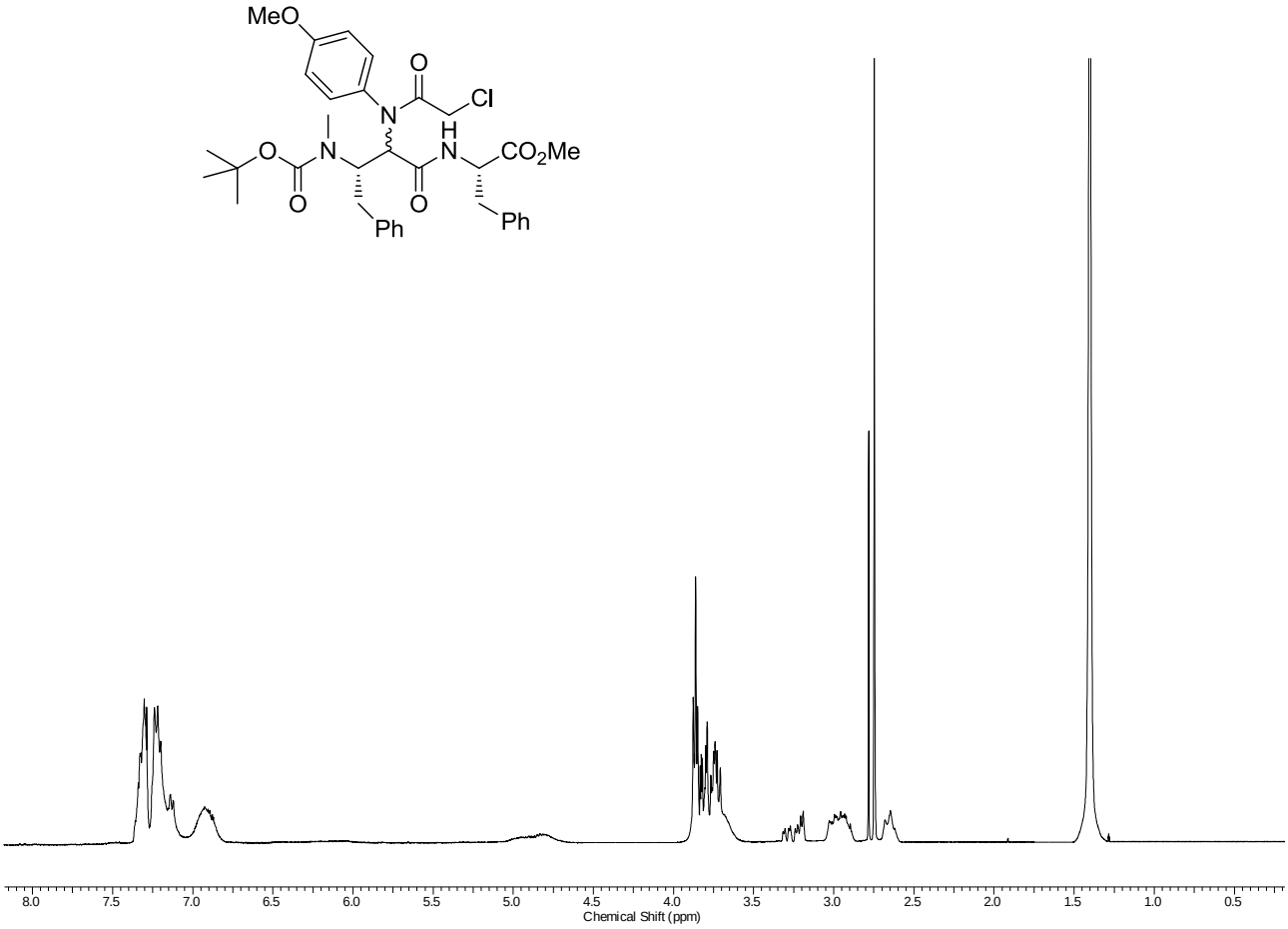
Compound **6**: ^{1}H NMR (300 MHz, CD_3CN)



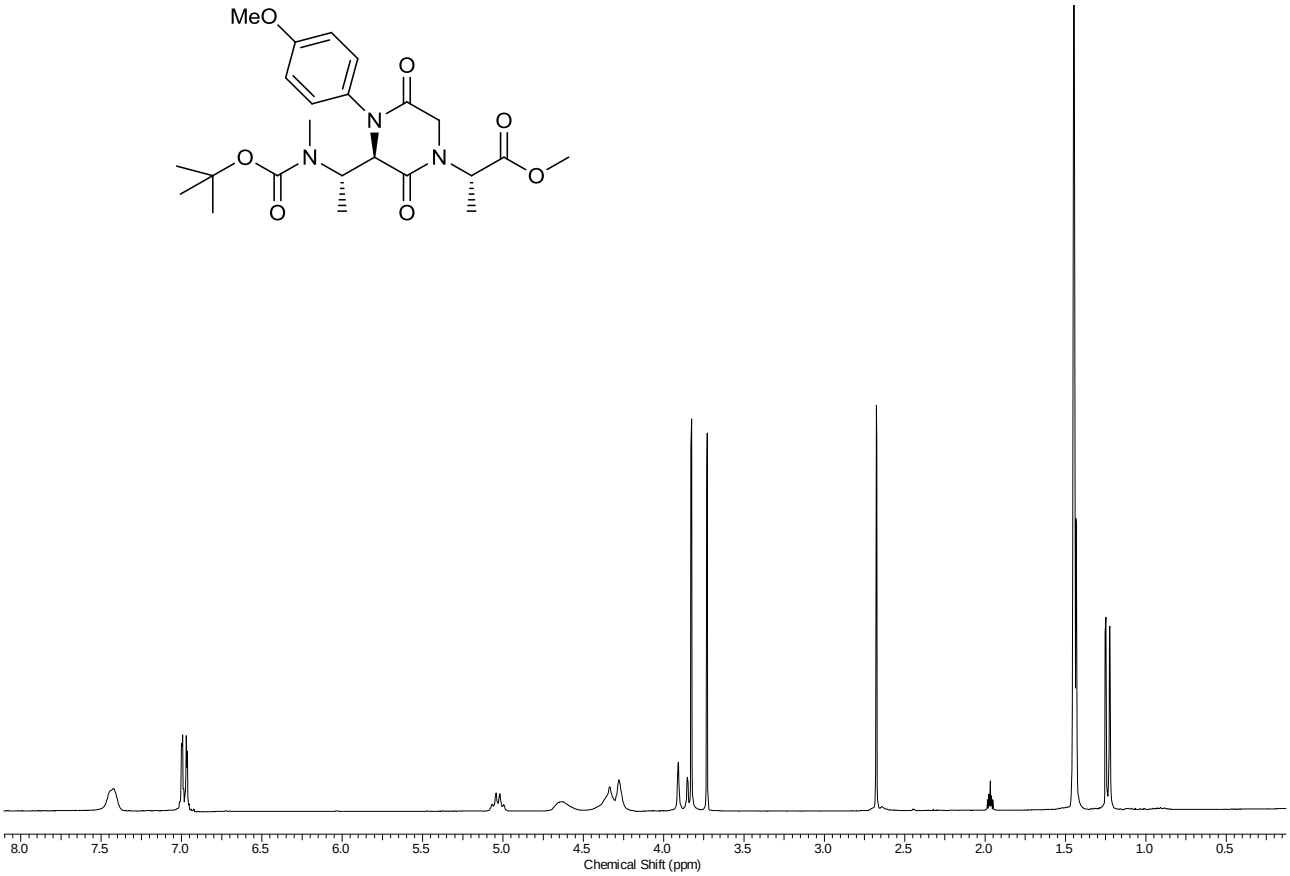
Compound **7**: ^{1}H NMR (300 MHz, CD_3CN)



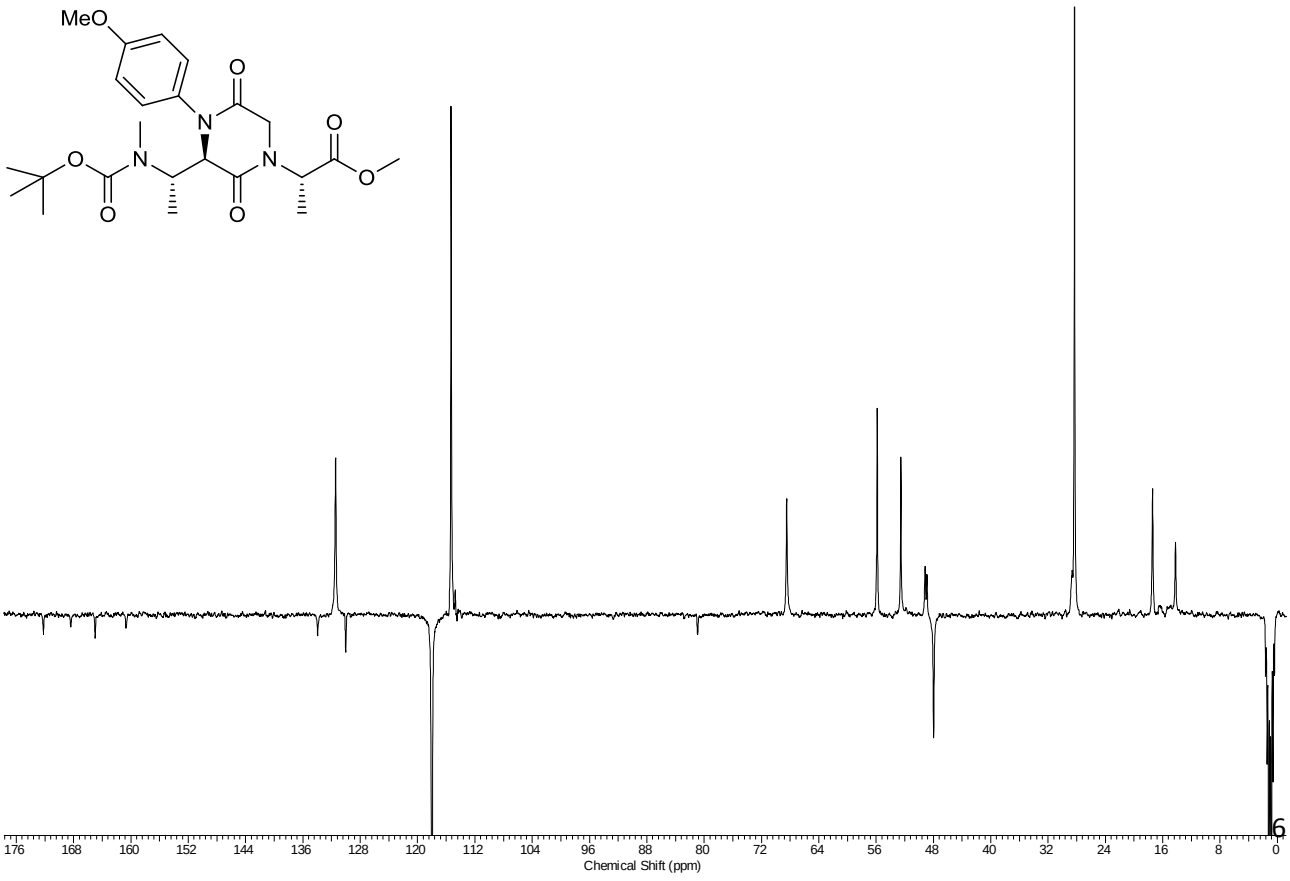
Compound **8**: ^{1}H NMR (400 MHz, $CDCl_3$)



Compound **9a**: ^{1}H NMR (300 MHz, CD_3CN)

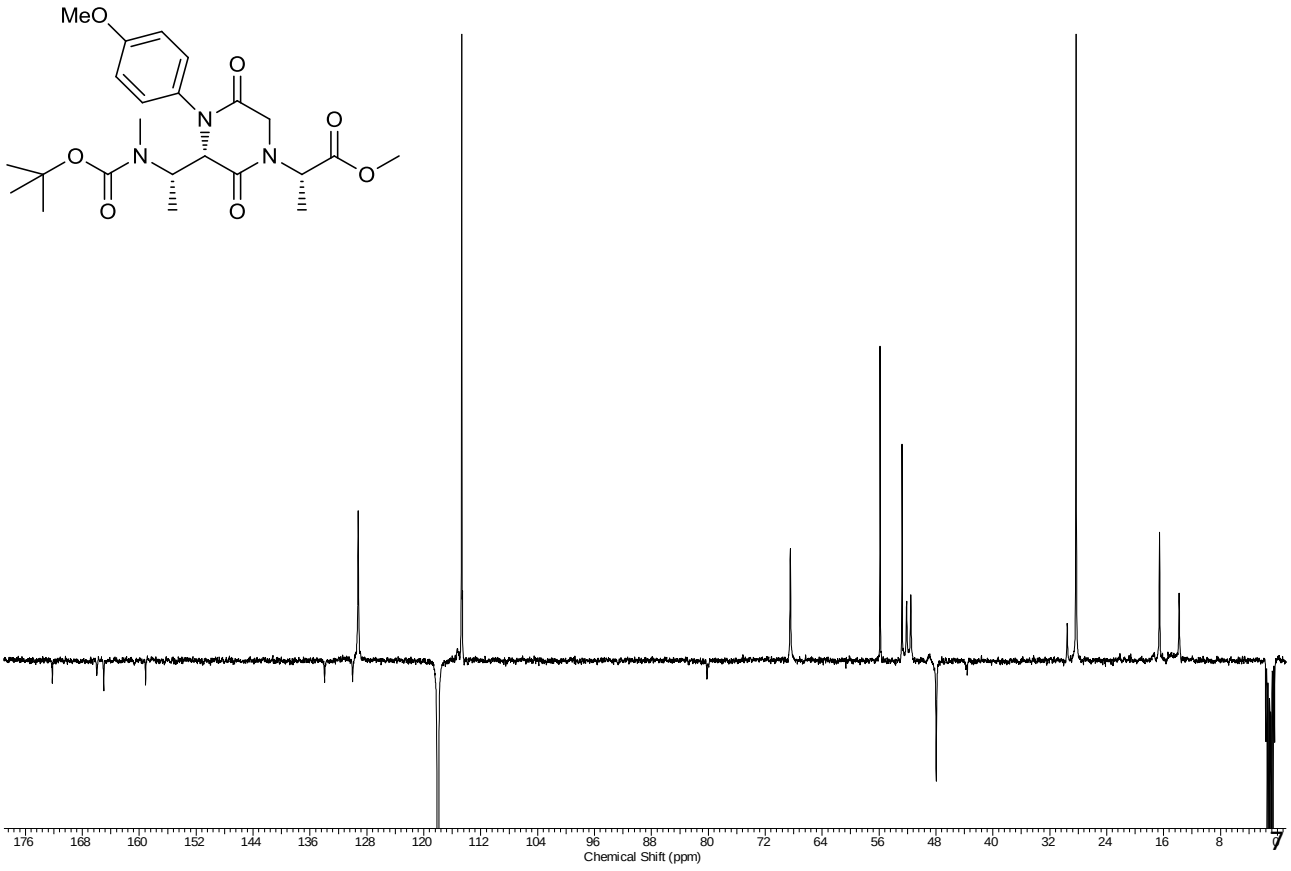


Compound **9a**: ^{13}C NMR (100 MHz, CD_3CN)

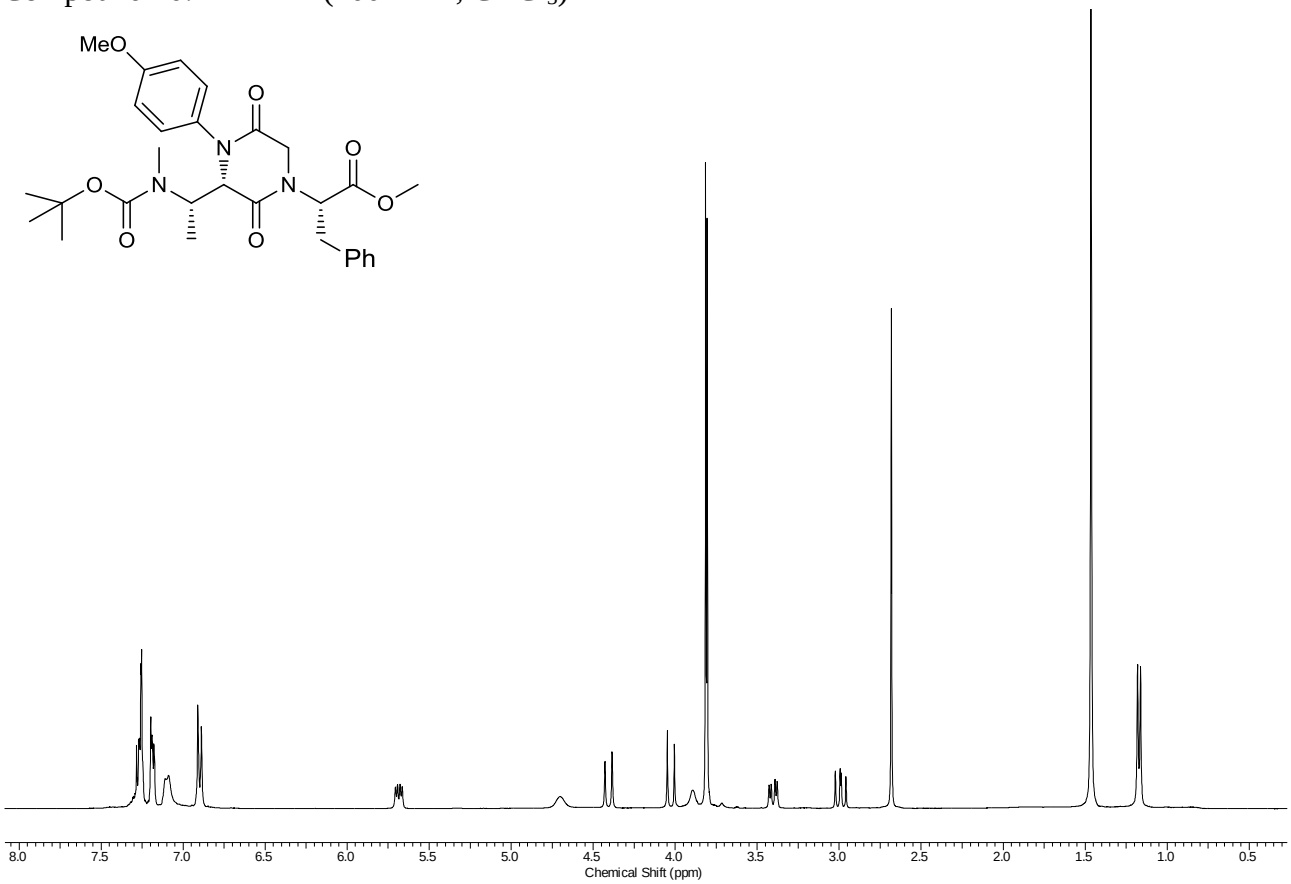


Compound **9b**: ^{1}H NMR (400 MHz, CD_3CN)

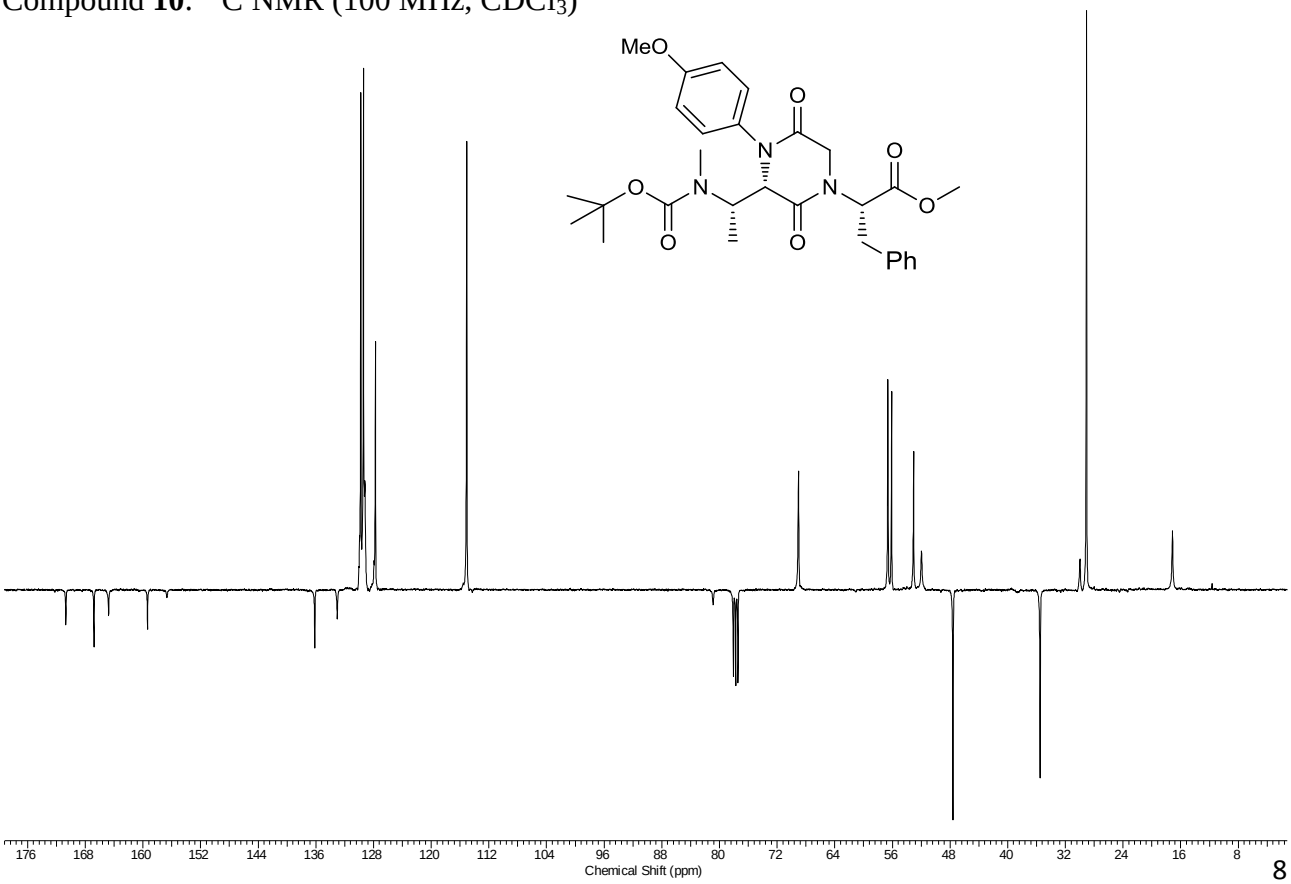
Compound **9b**: ^{13}C NMR (100 MHz, CD_3CN)



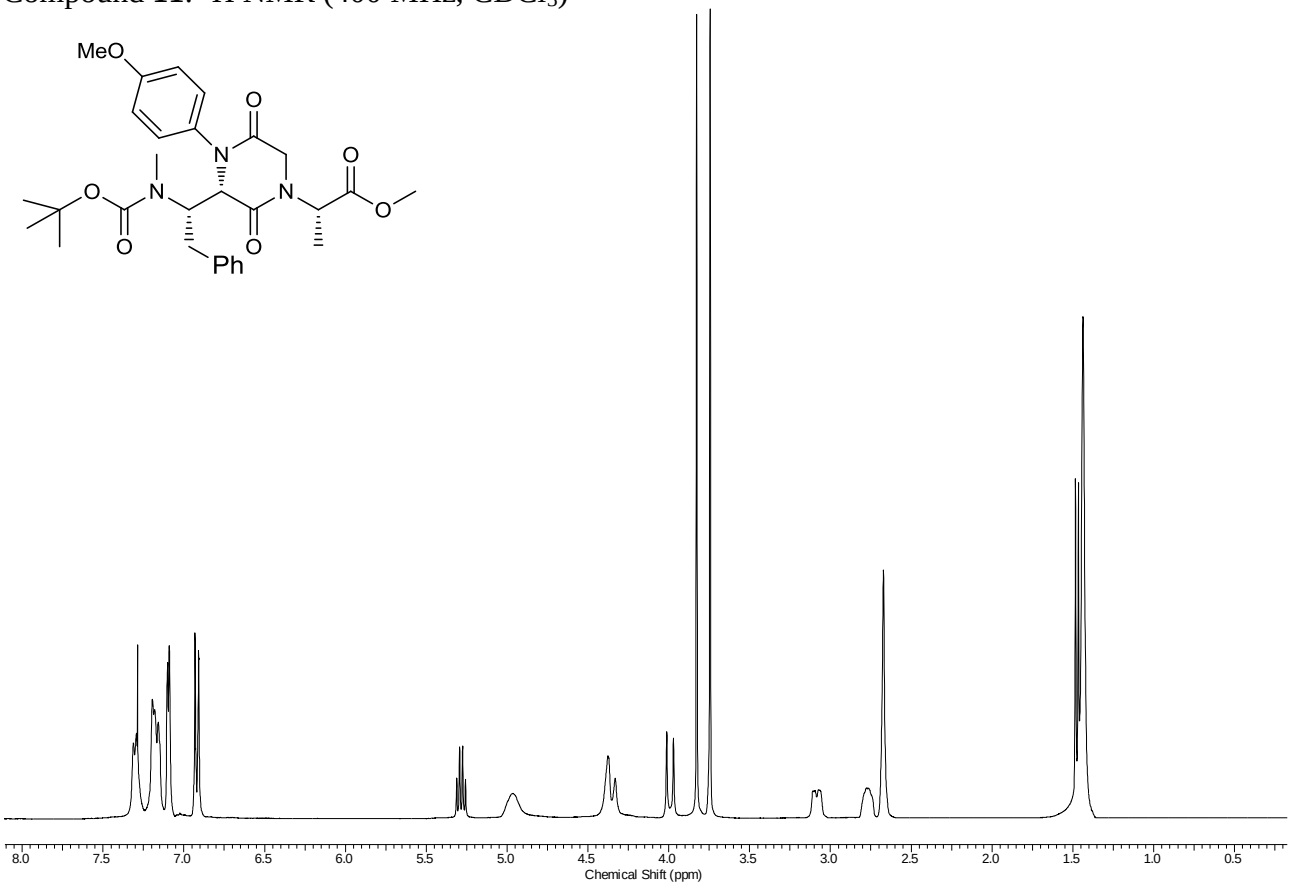
Compound **10**: ^{1}H NMR (400 MHz, $CDCl_3$)



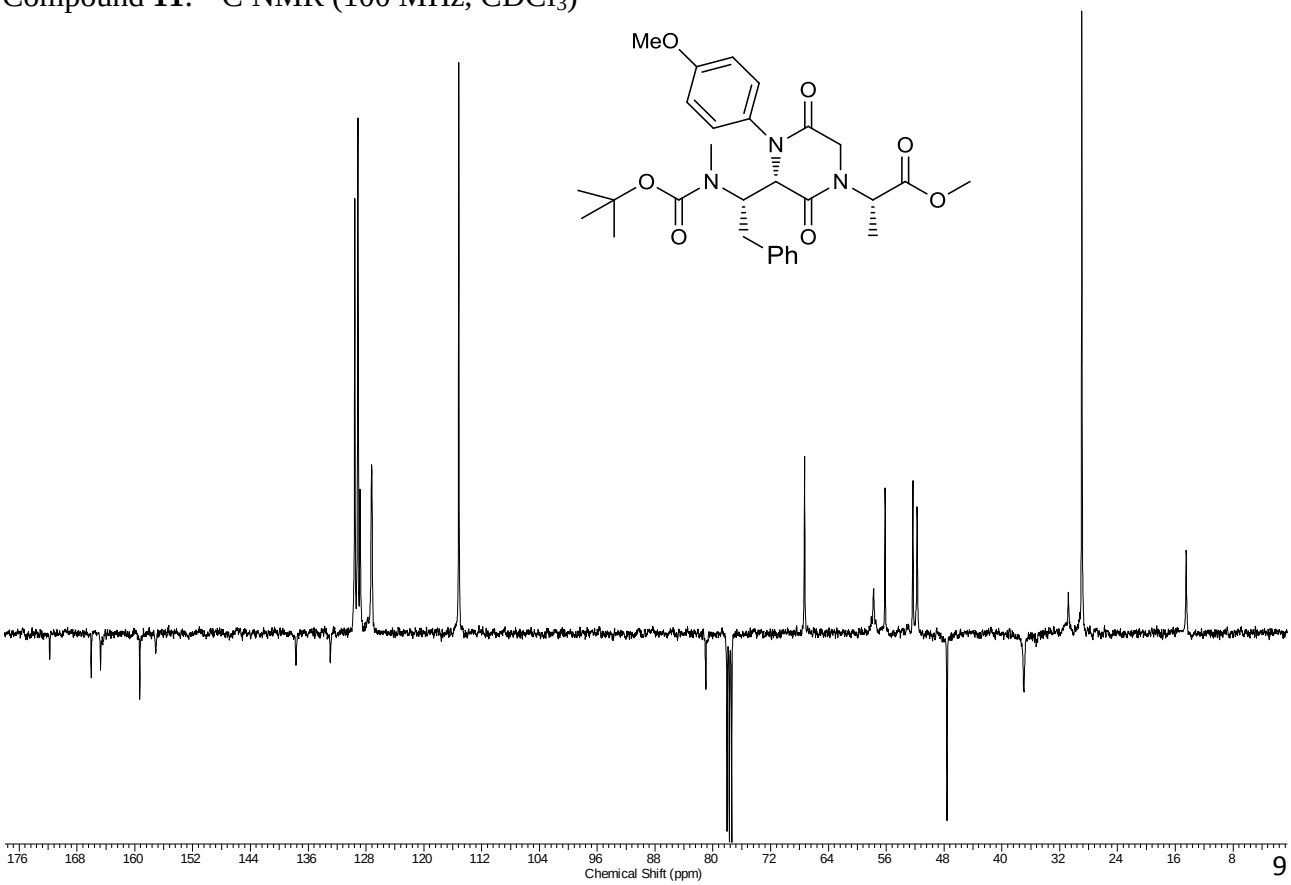
Compound **10**: ^{13}C NMR (100 MHz, $CDCl_3$)



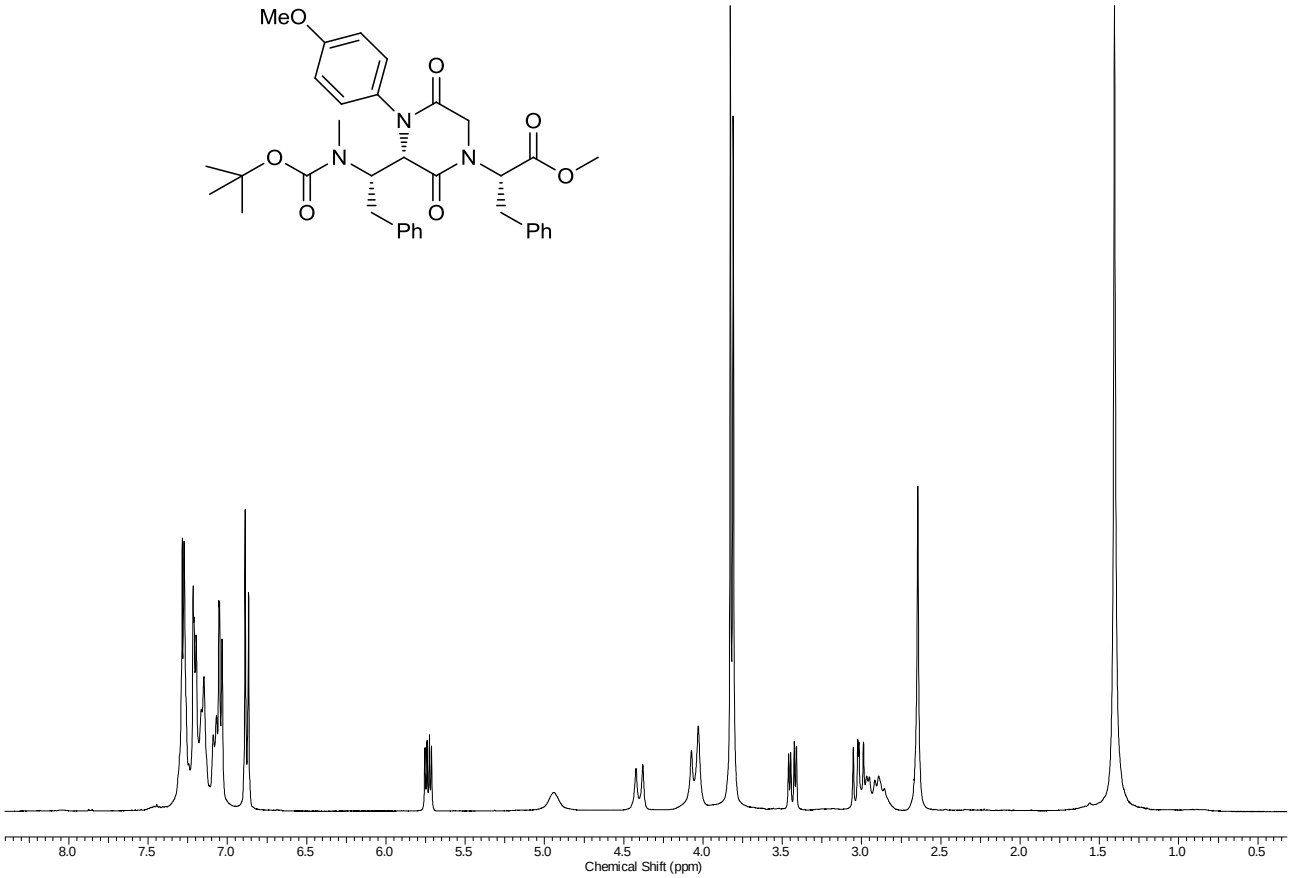
Compound **11**: ^{1}H NMR (400 MHz, $CDCl_3$)



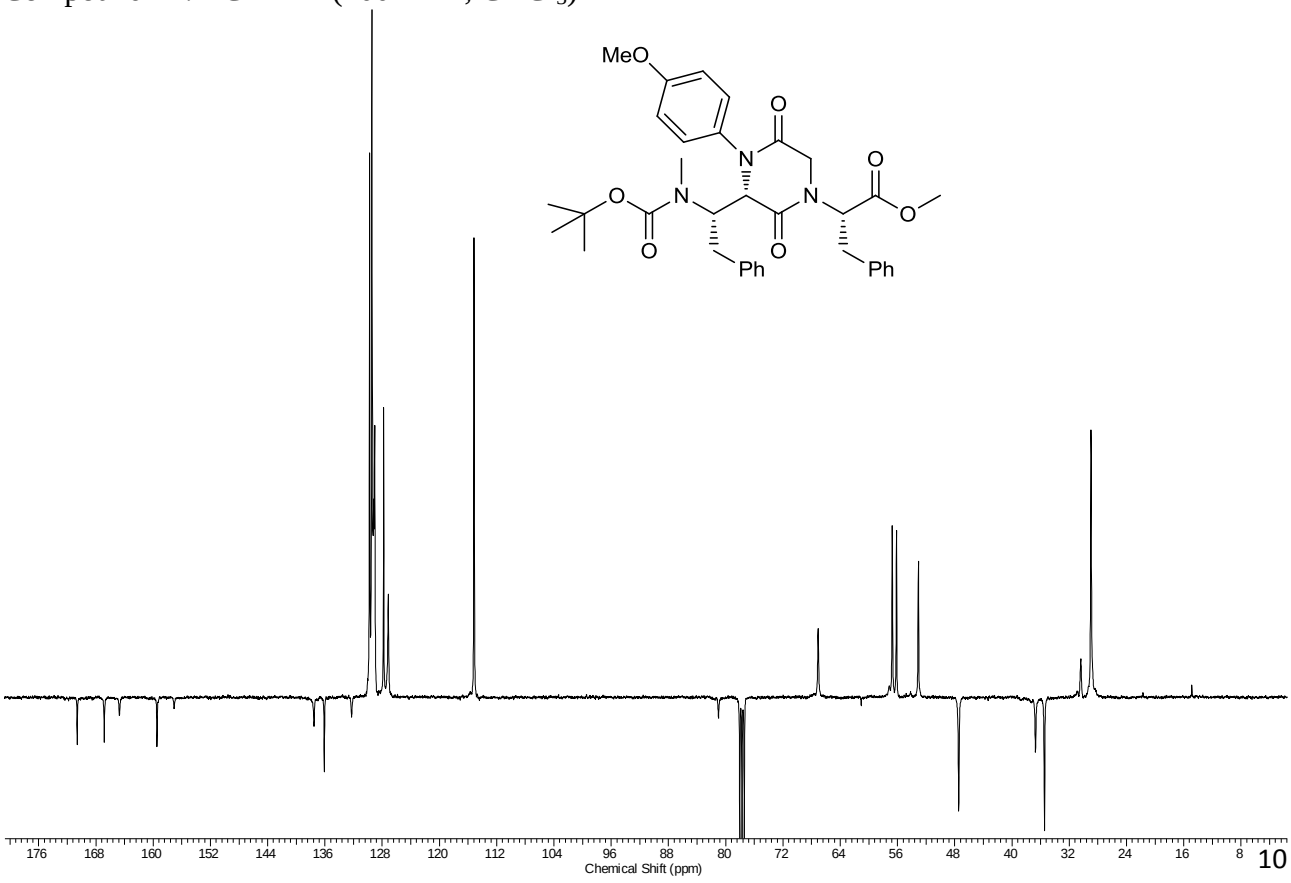
Compound **11**: ^{13}C NMR (100 MHz, $CDCl_3$)



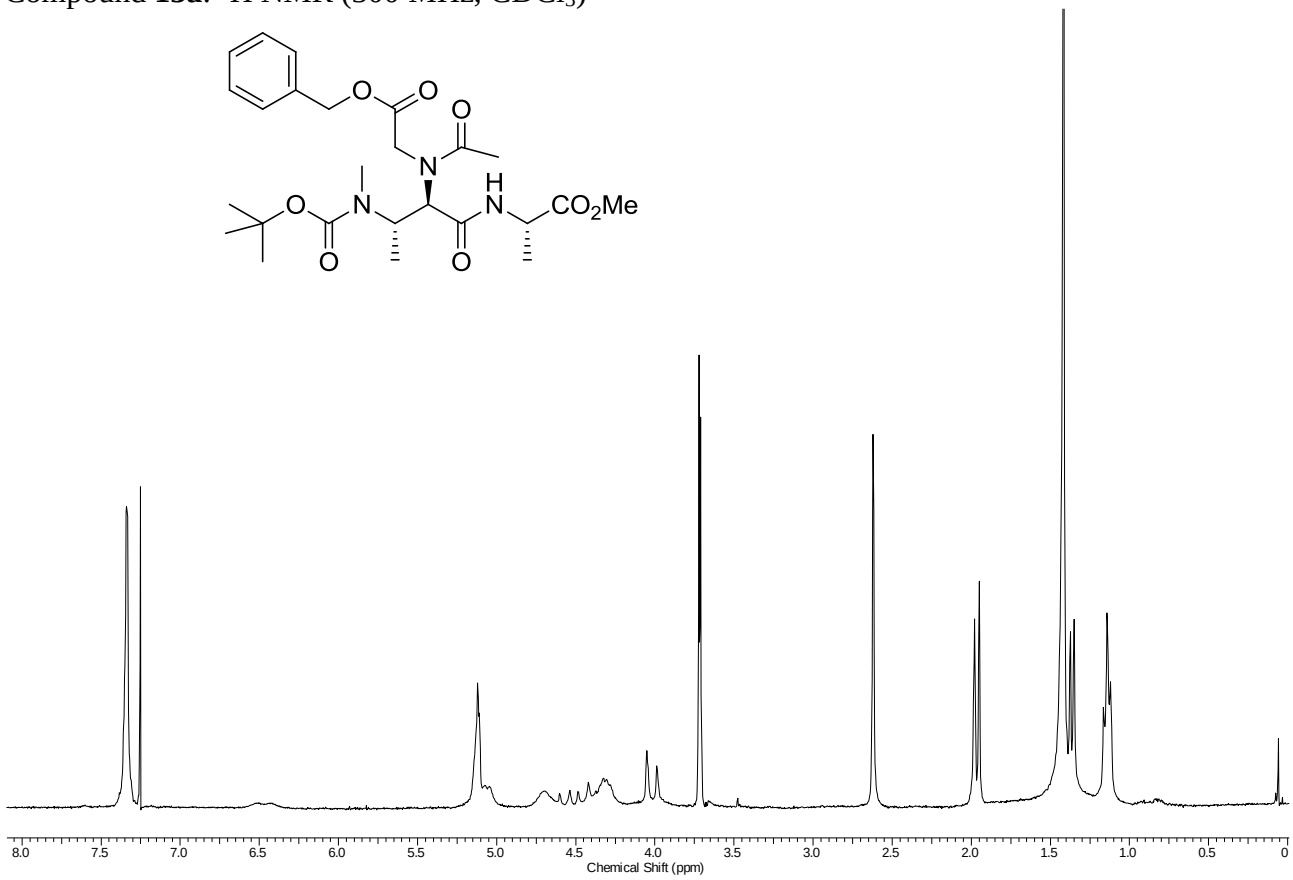
Compound **12**: ^{1}H NMR (400 MHz, $CDCl_3$)



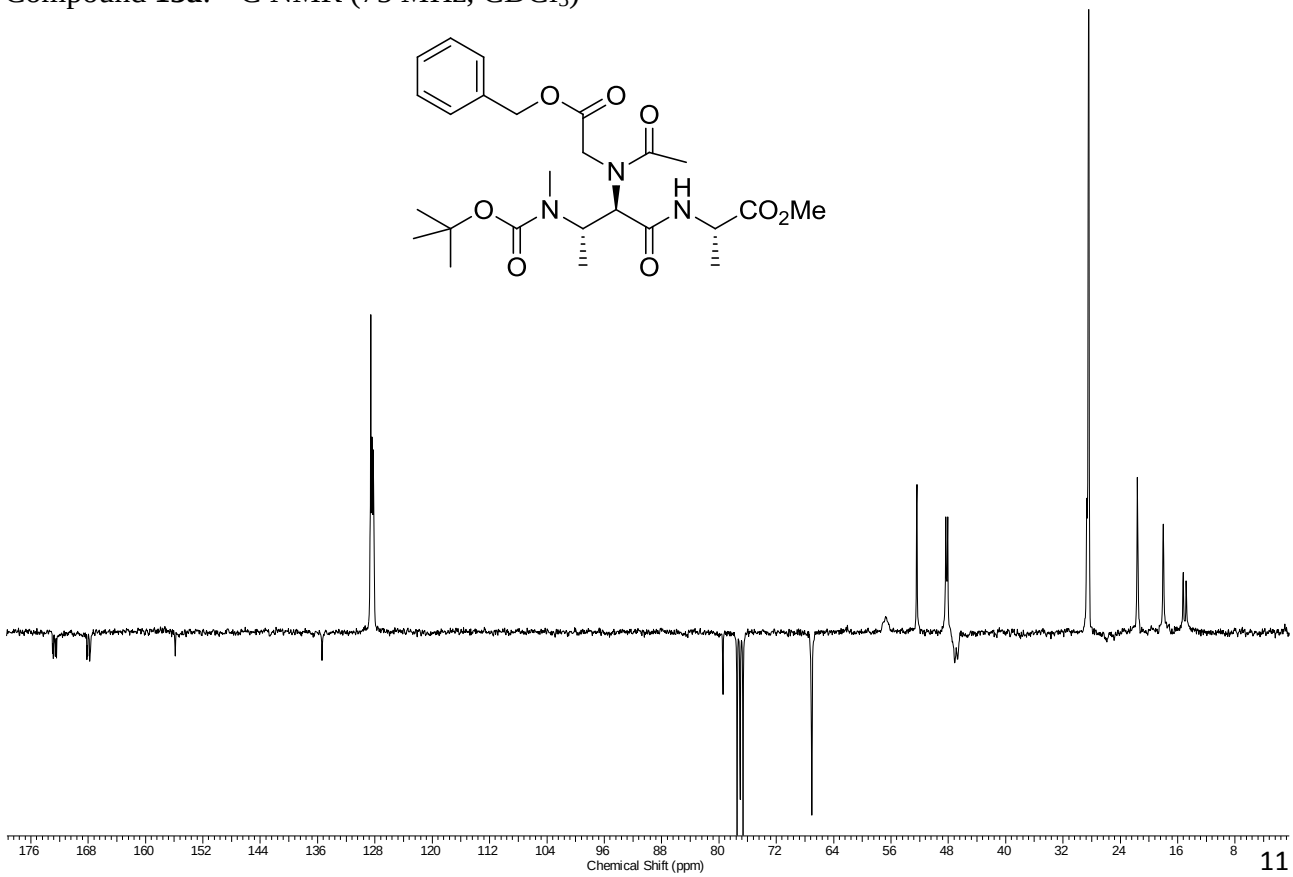
Compound **12**: ^{13}C NMR (100 MHz, $CDCl_3$)



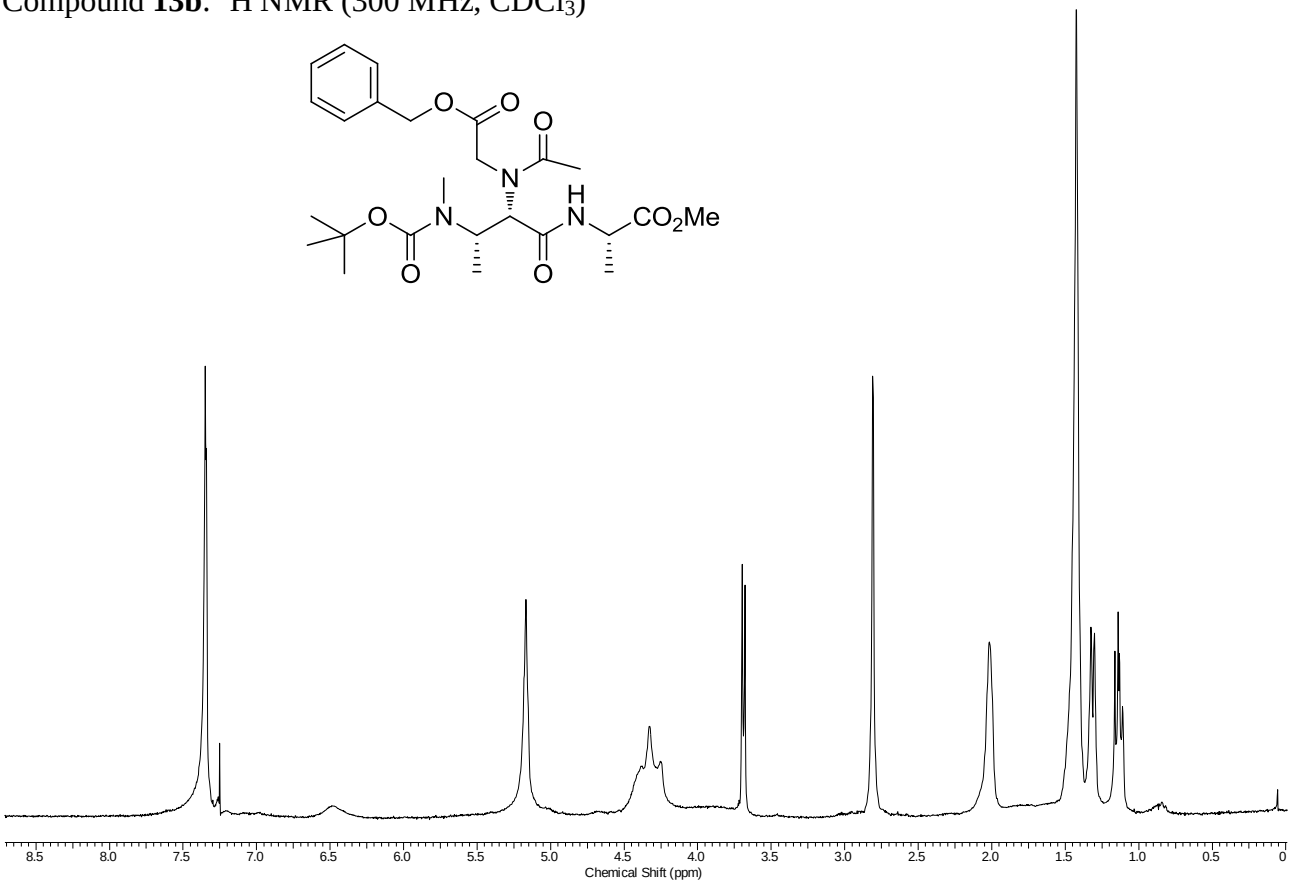
Compound **13a**: ^{1}H NMR (300 MHz, $CDCl_3$)



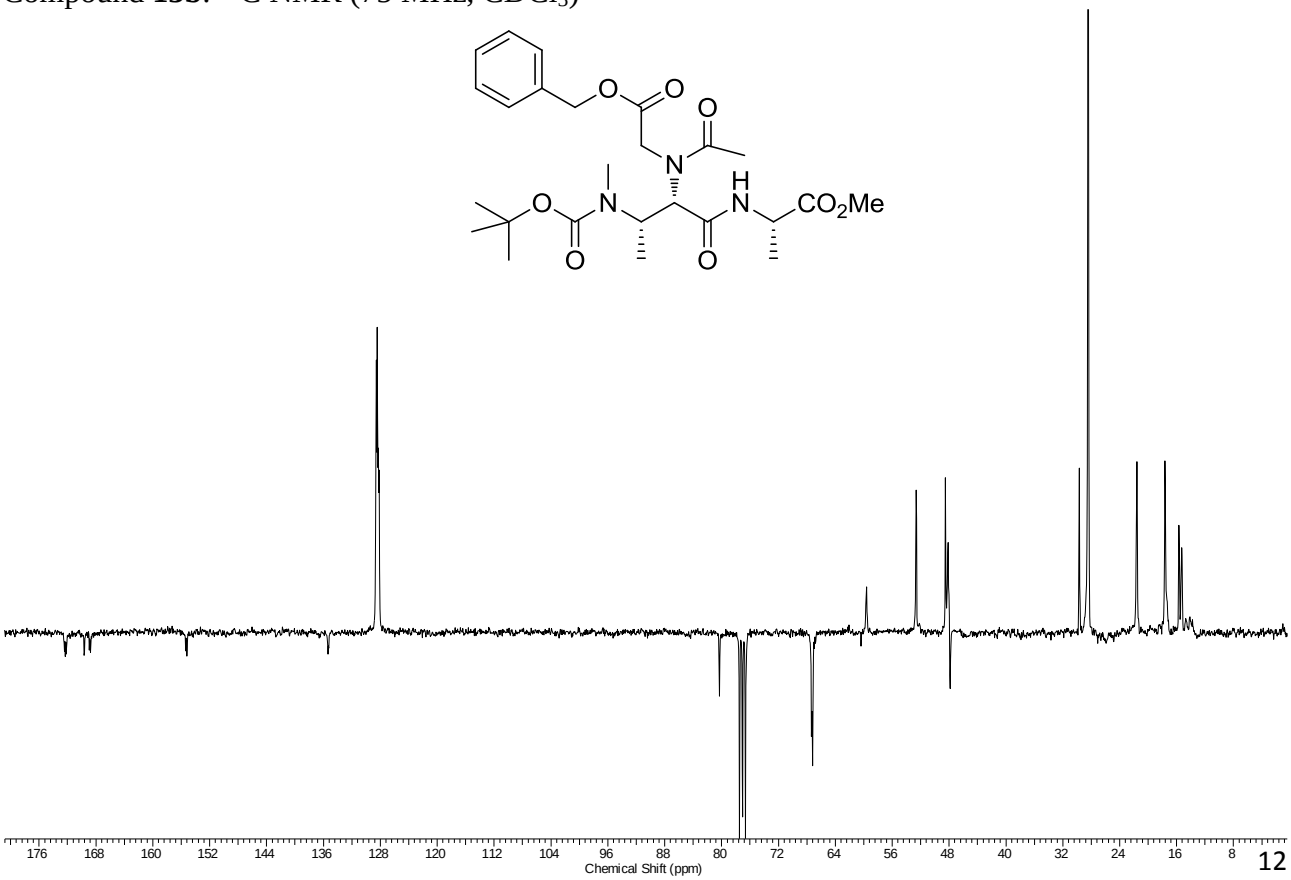
Compound **13a**: ^{13}C NMR (75 MHz, $CDCl_3$)



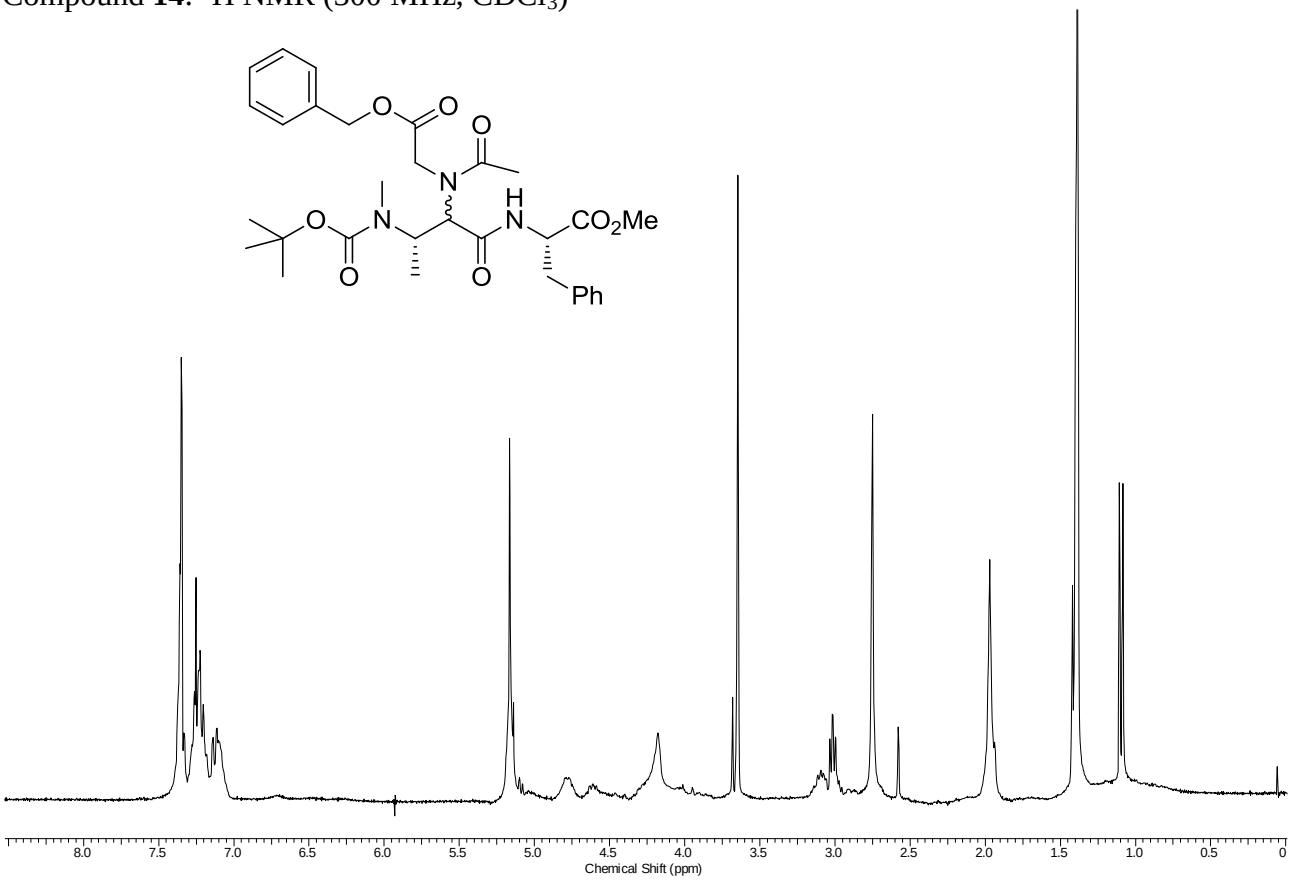
Compound **13b**: ^{1}H NMR (300 MHz, $CDCl_3$)



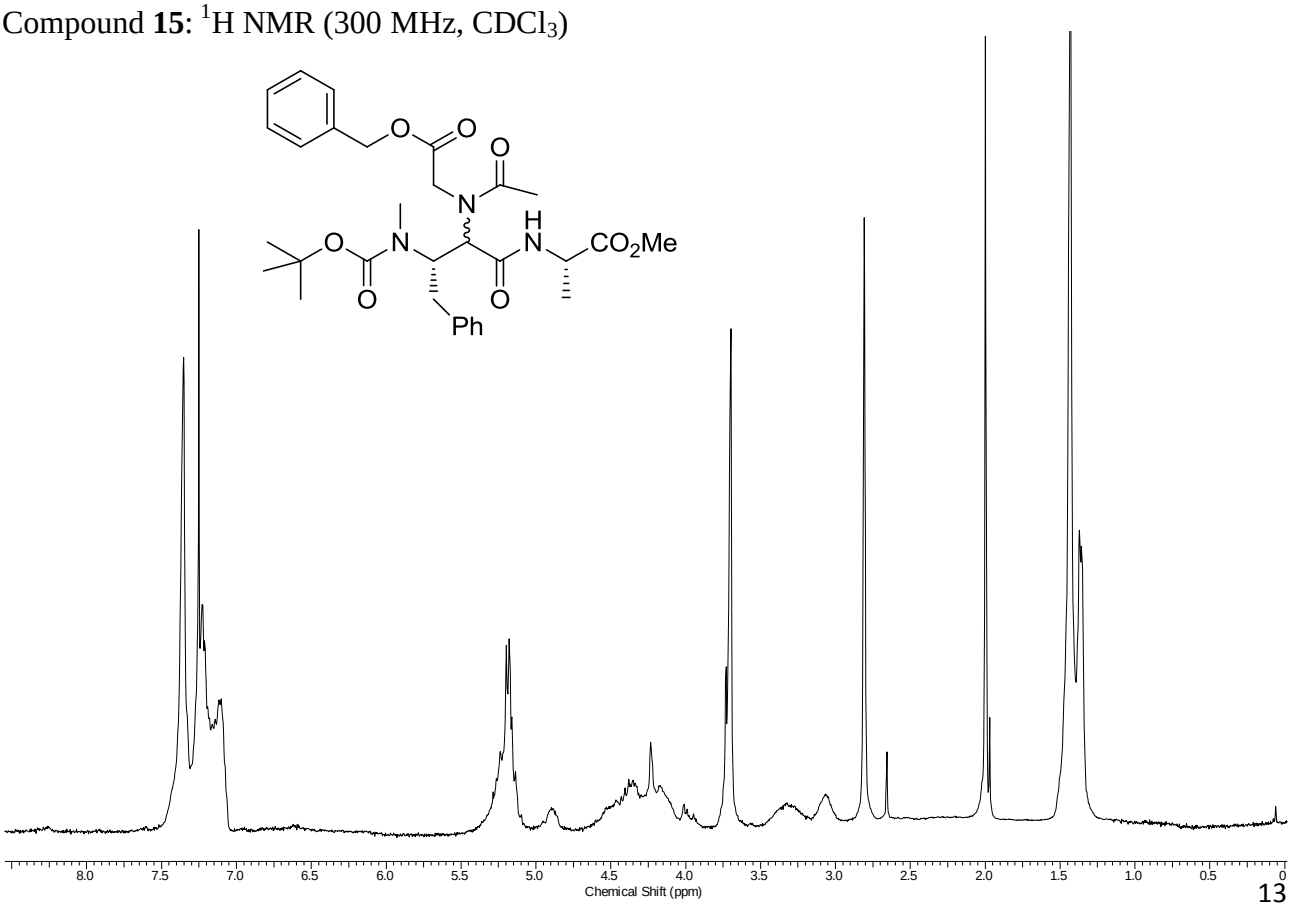
Compound **13b**: ^{13}C NMR (75 MHz, $CDCl_3$)



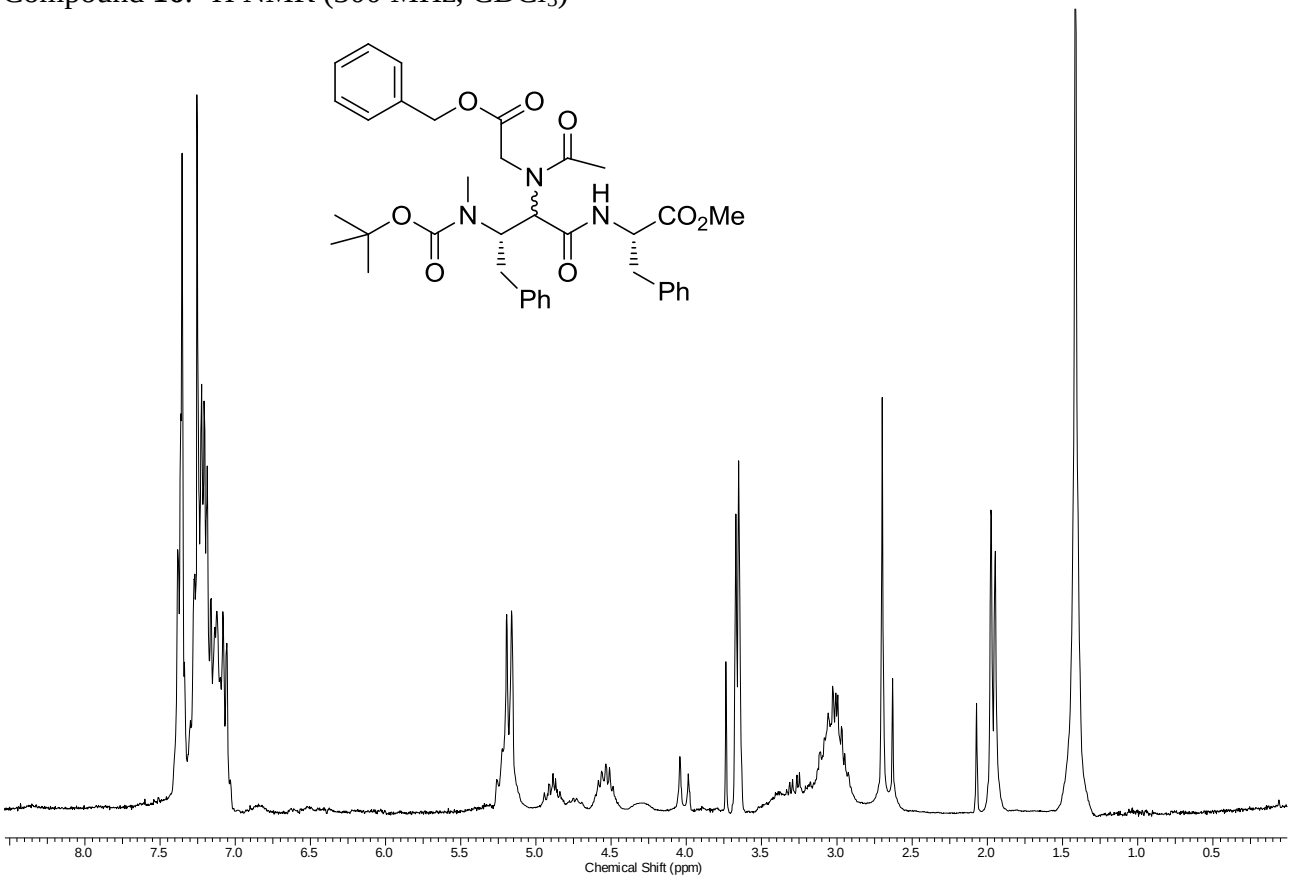
Compound **14**: ^{1}H NMR (300 MHz, $CDCl_3$)



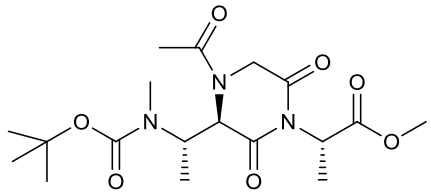
Compound **15**: ^{1}H NMR (300 MHz, $CDCl_3$)



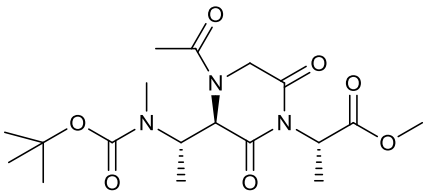
Compound **16**: ^{1}H NMR (300 MHz, $CDCl_3$)



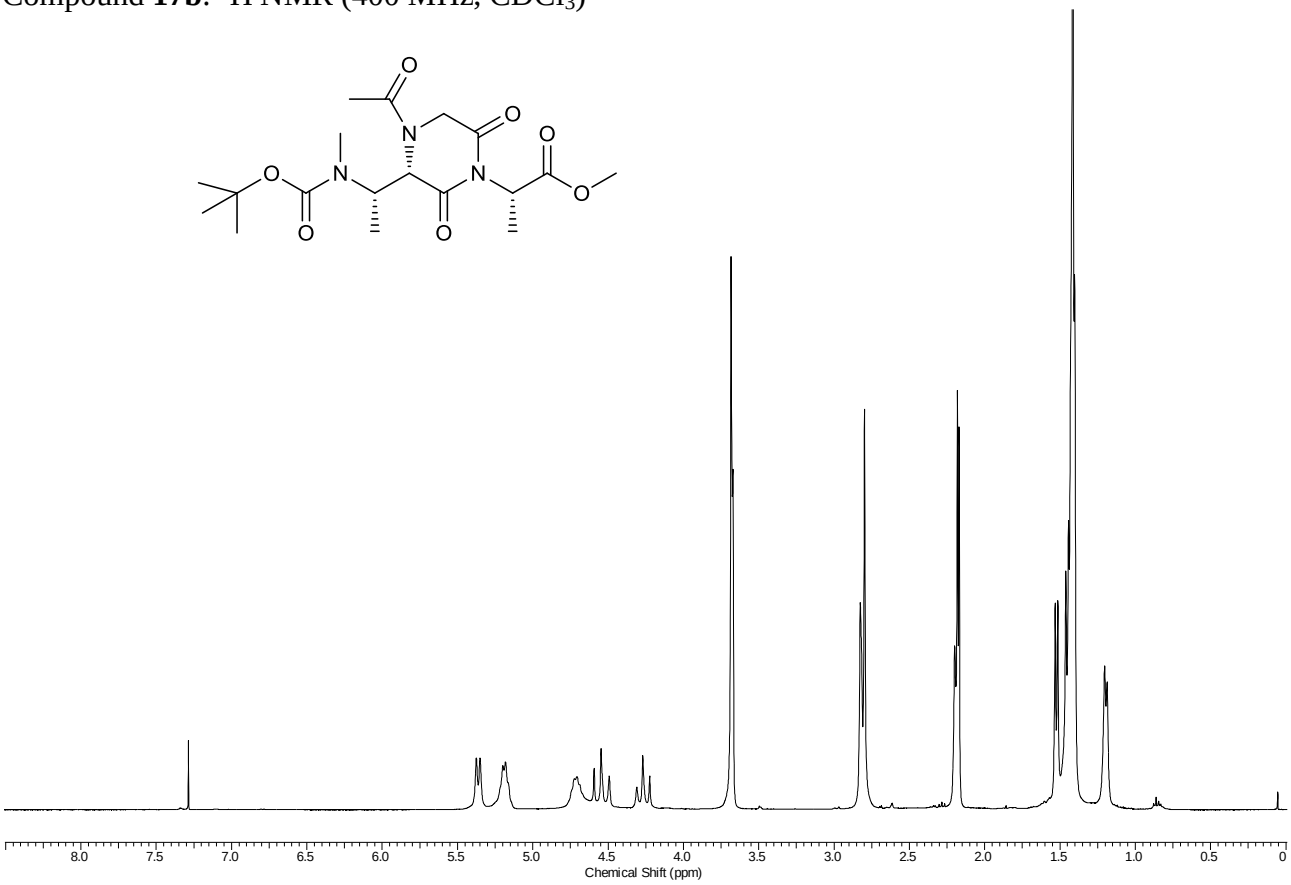
Compound **17a**: ^{1}H NMR (300 MHz, $CDCl_3$)



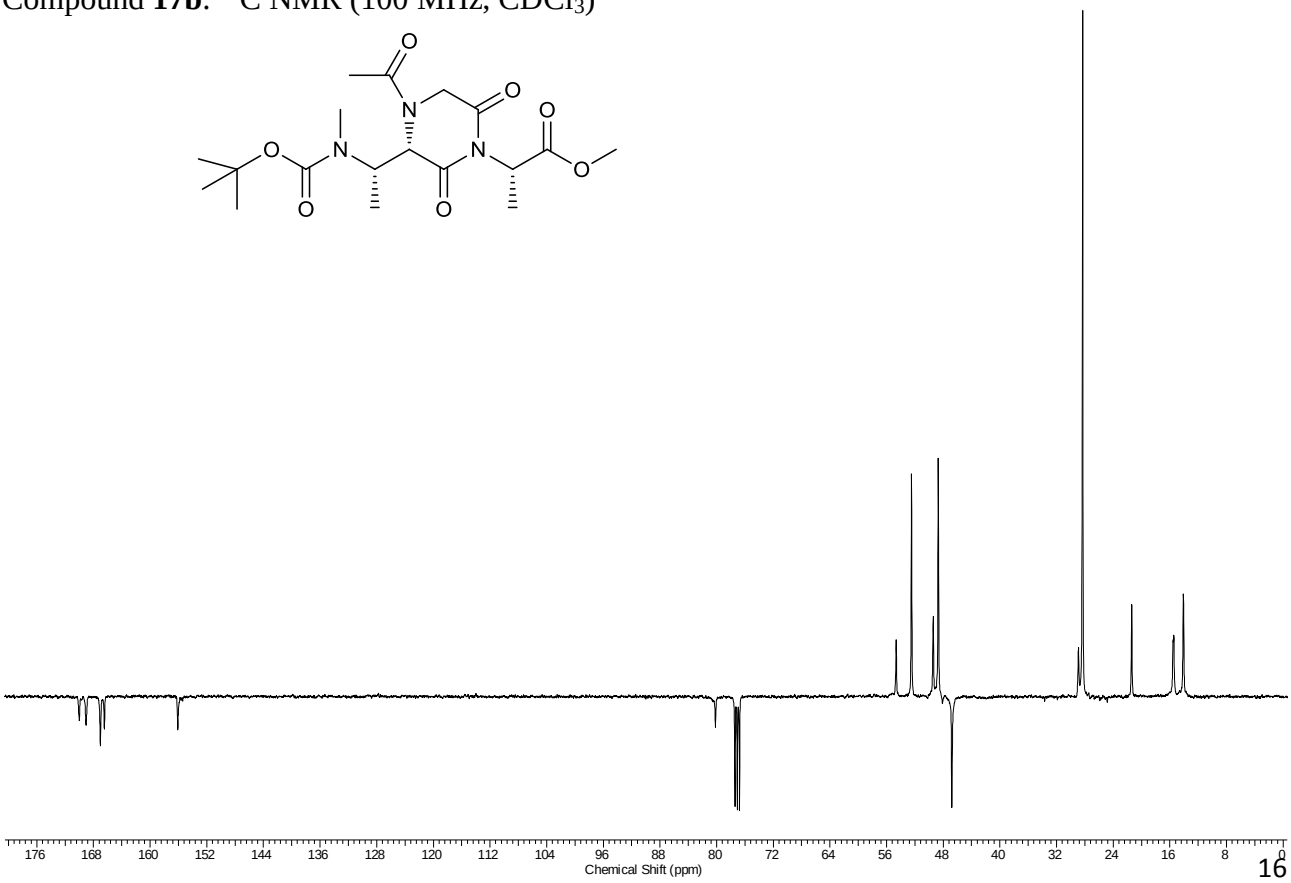
Compound **17a**: ^{13}C NMR (100 MHz, $CDCl_3$)



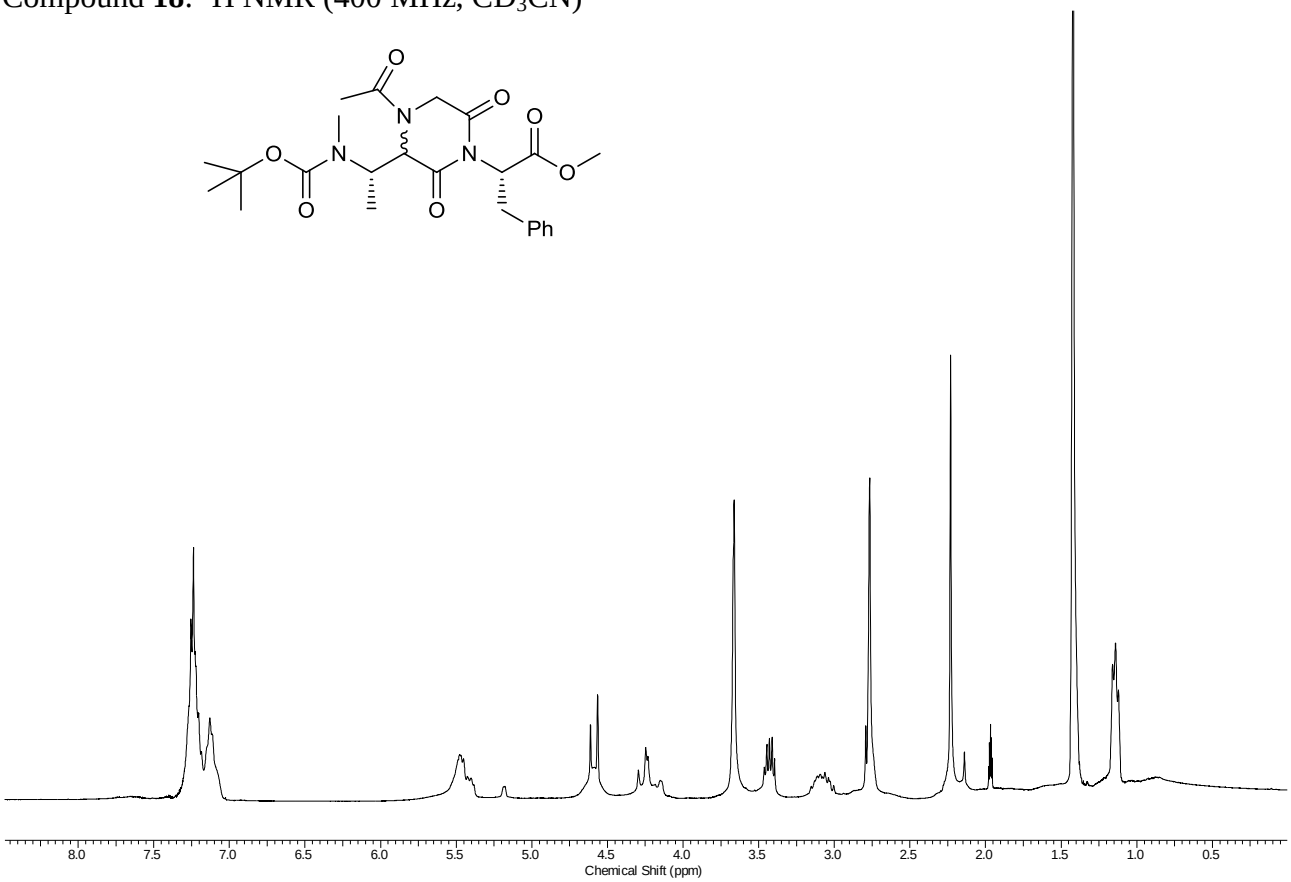
Compound **17b**: ^{1}H NMR (400 MHz, $CDCl_3$)



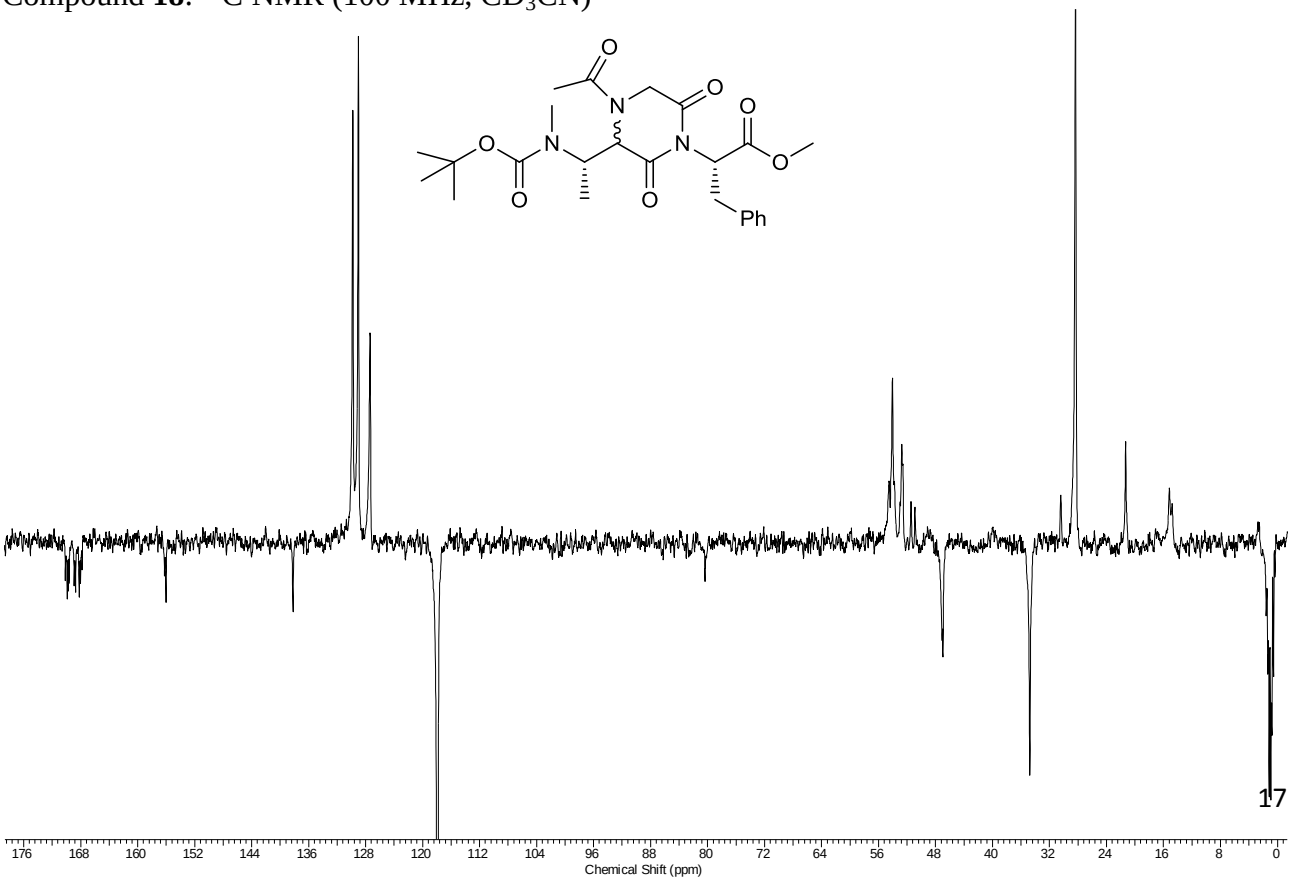
Compound **17b**: ^{13}C NMR (100 MHz, $CDCl_3$)



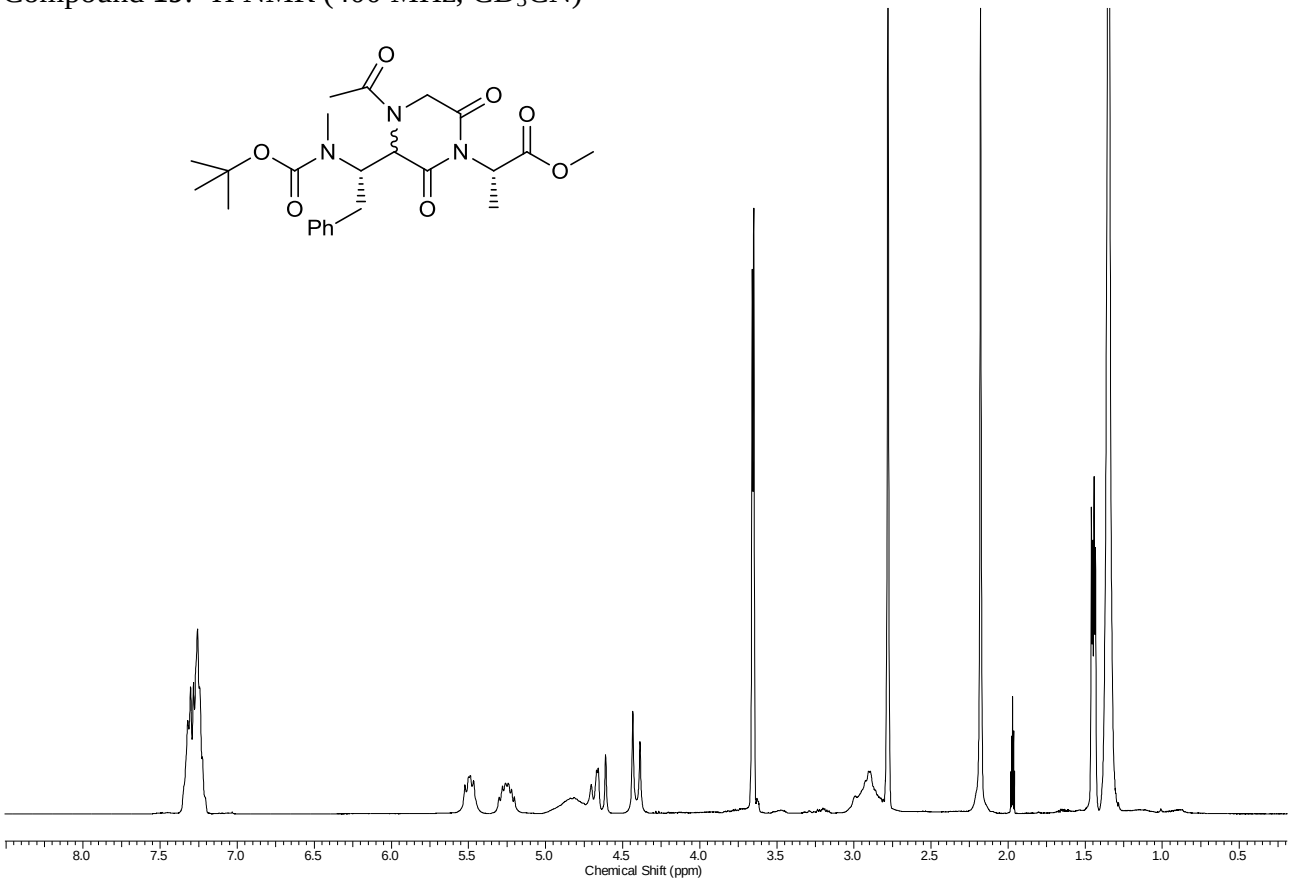
Compound **18**: ^{1}H NMR (400 MHz, CD_3CN)



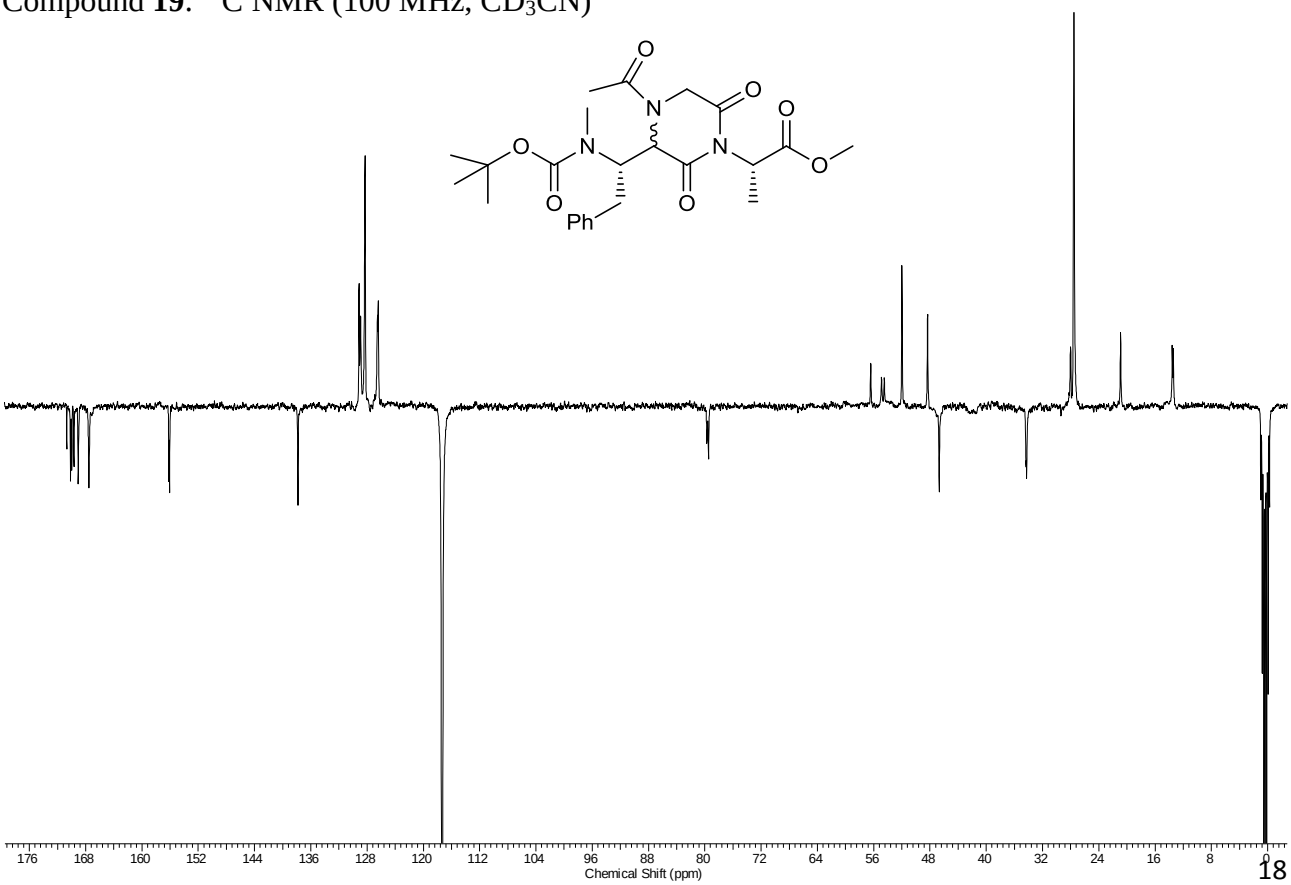
Compound **18**: ^{13}C NMR (100 MHz, CD_3CN)



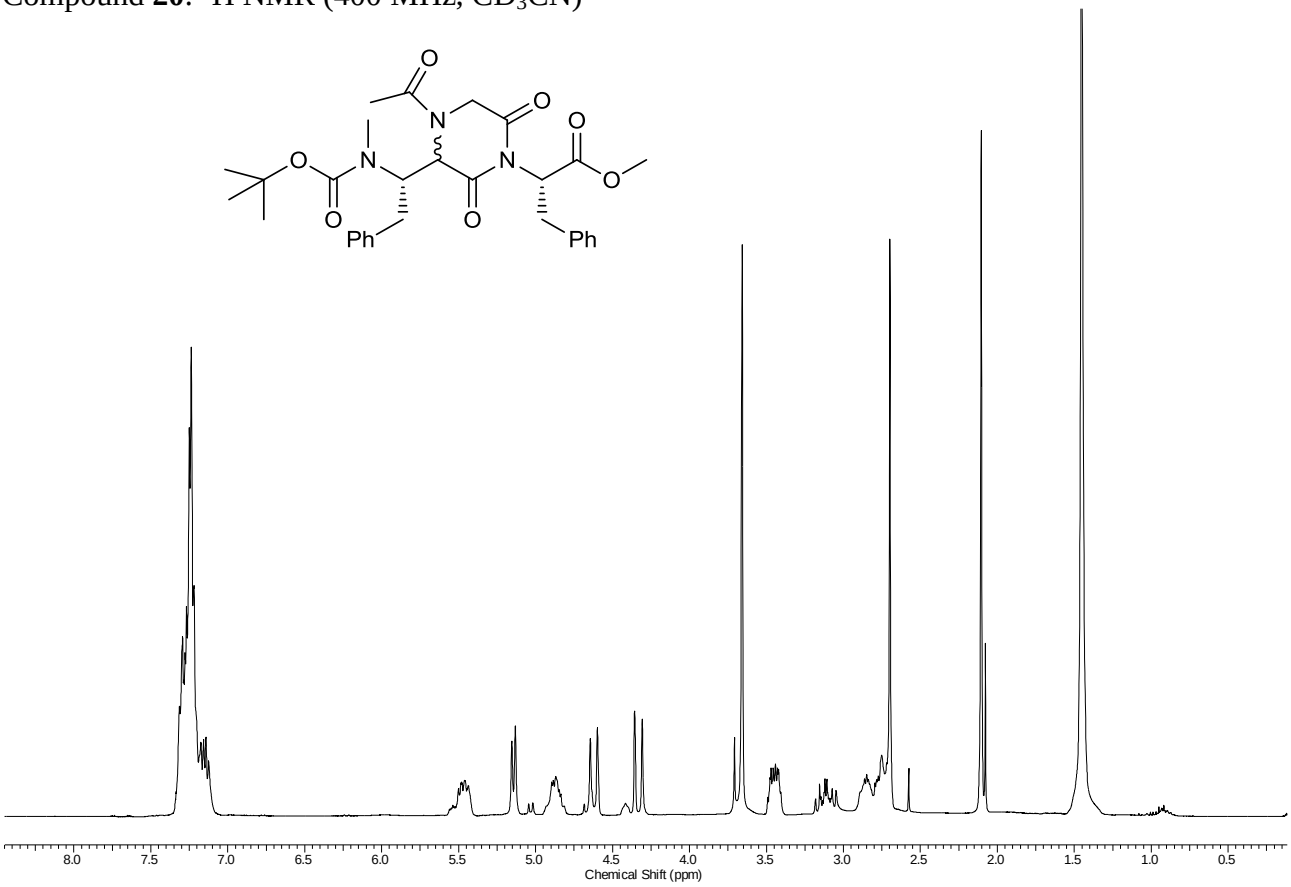
Compound **19**: ^{1}H NMR (400 MHz, CD_3CN)



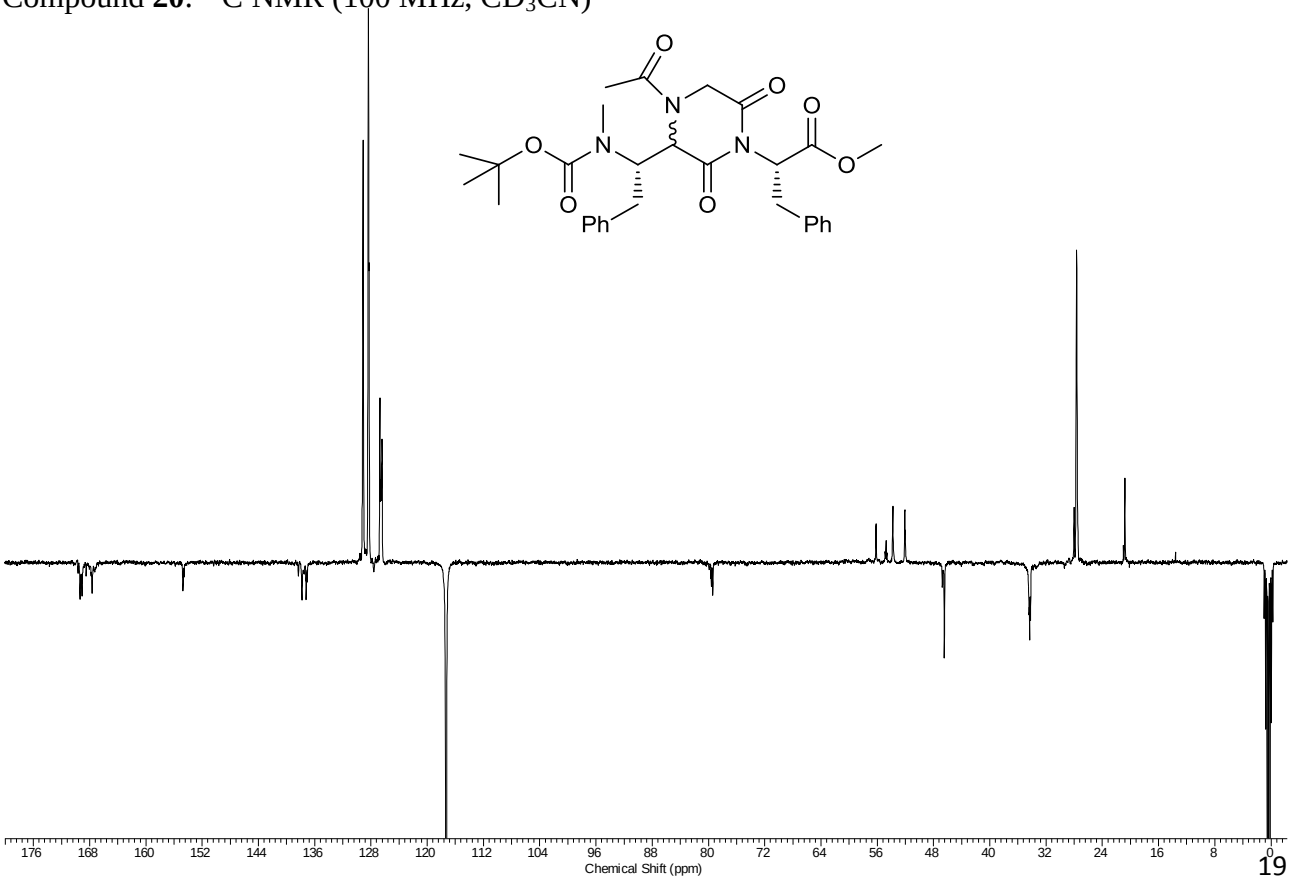
Compound **19**: ^{13}C NMR (100 MHz, CD_3CN)



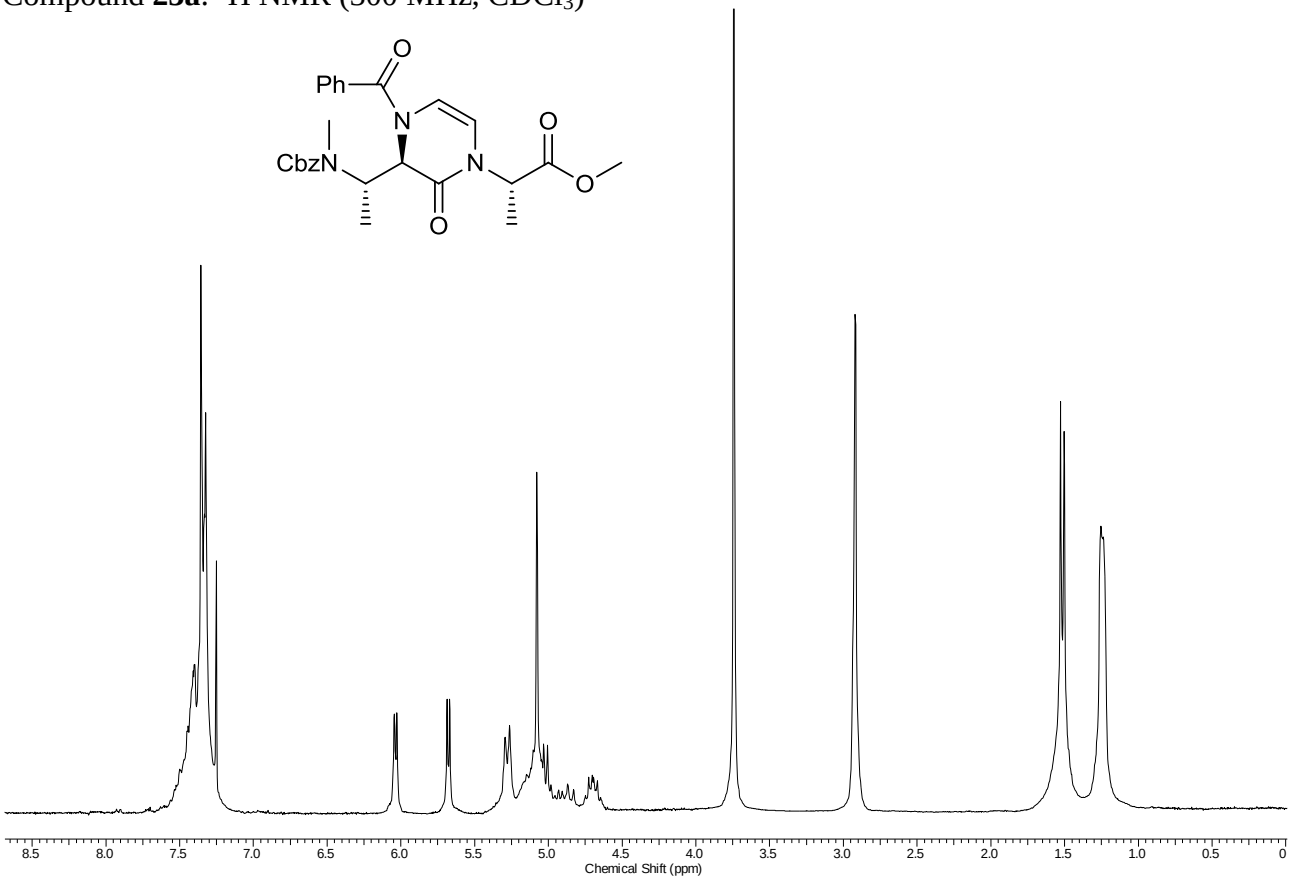
Compound **20**: ^{1}H NMR (400 MHz, CD_3CN)



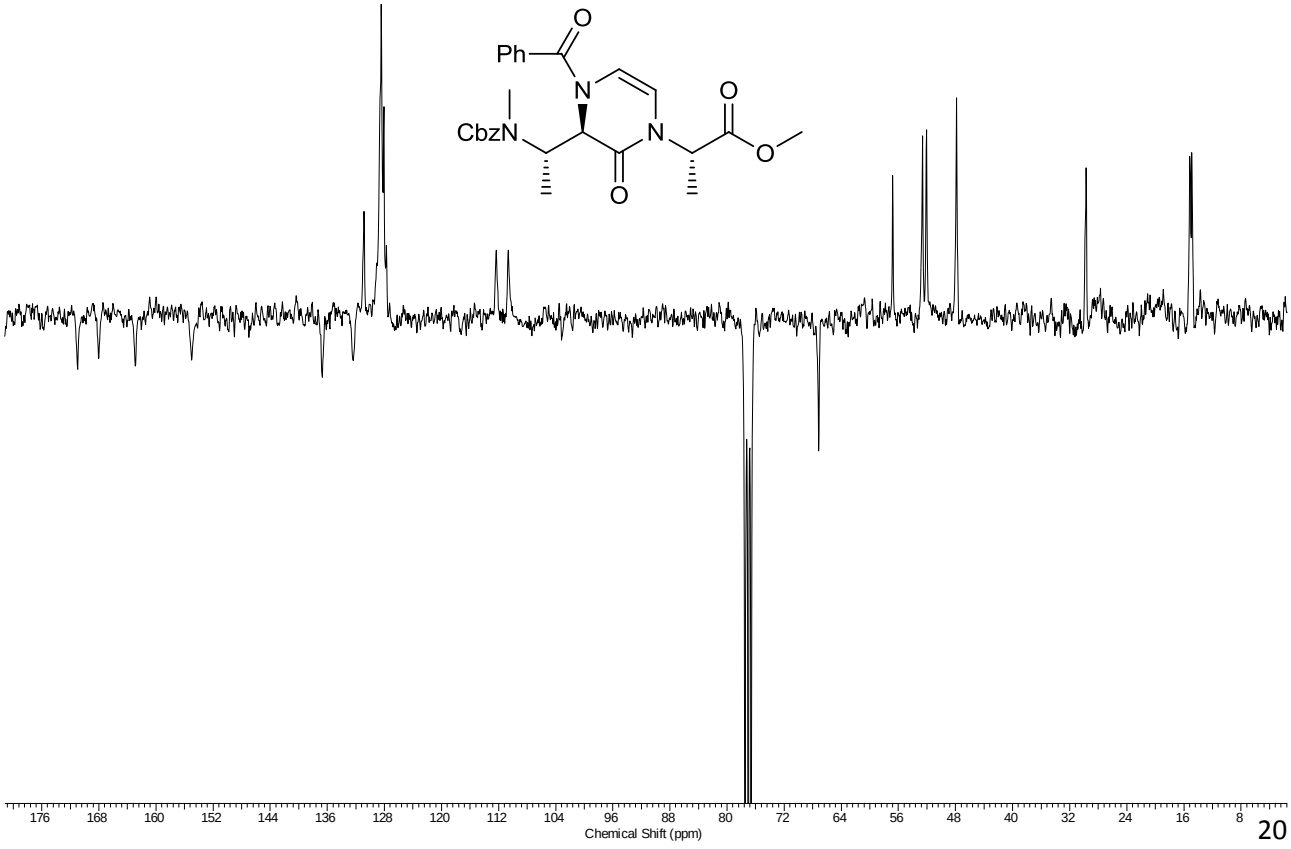
Compound **20**: ^{13}C NMR (100 MHz, CD_3CN)



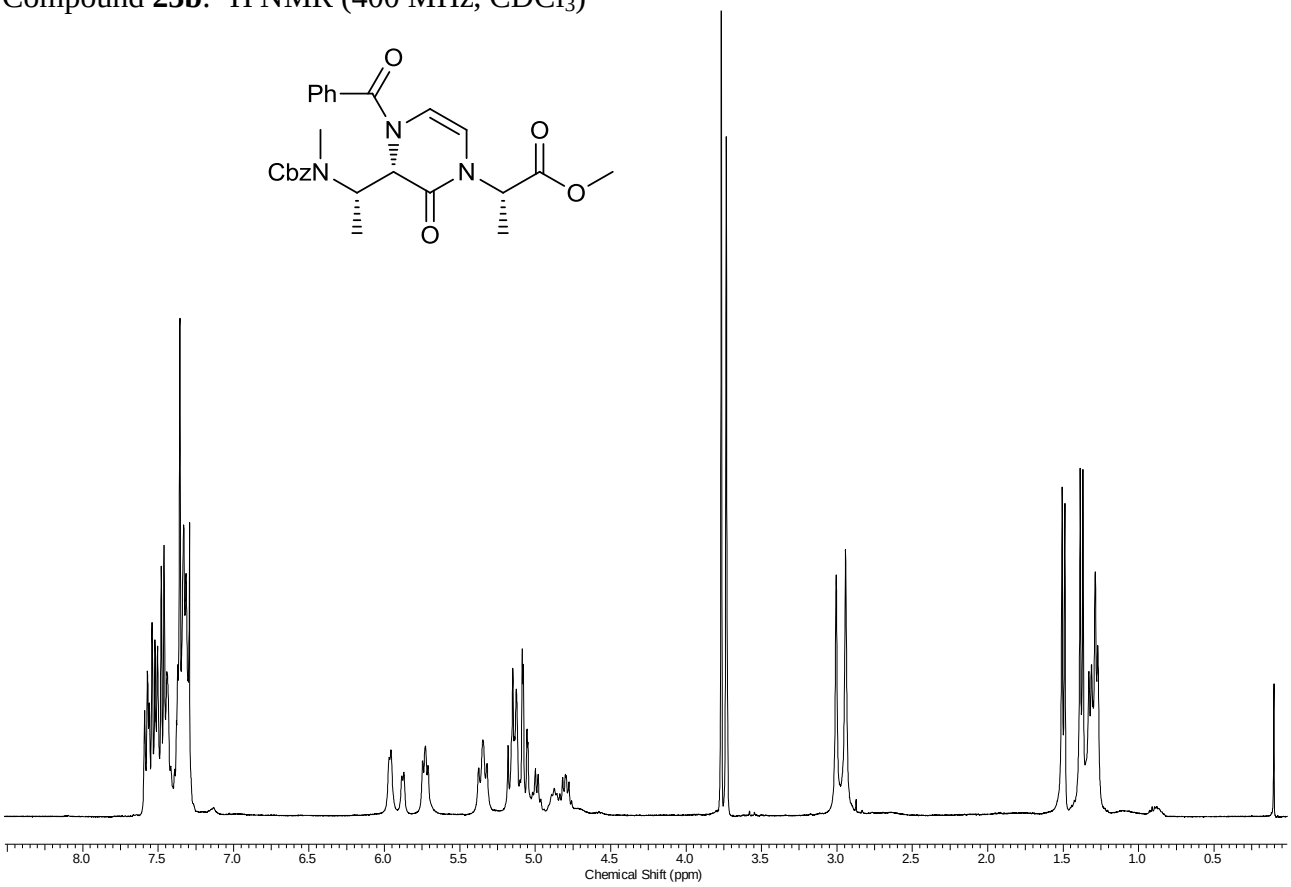
Compound **23a**: ^{1}H NMR (300 MHz, $CDCl_3$)



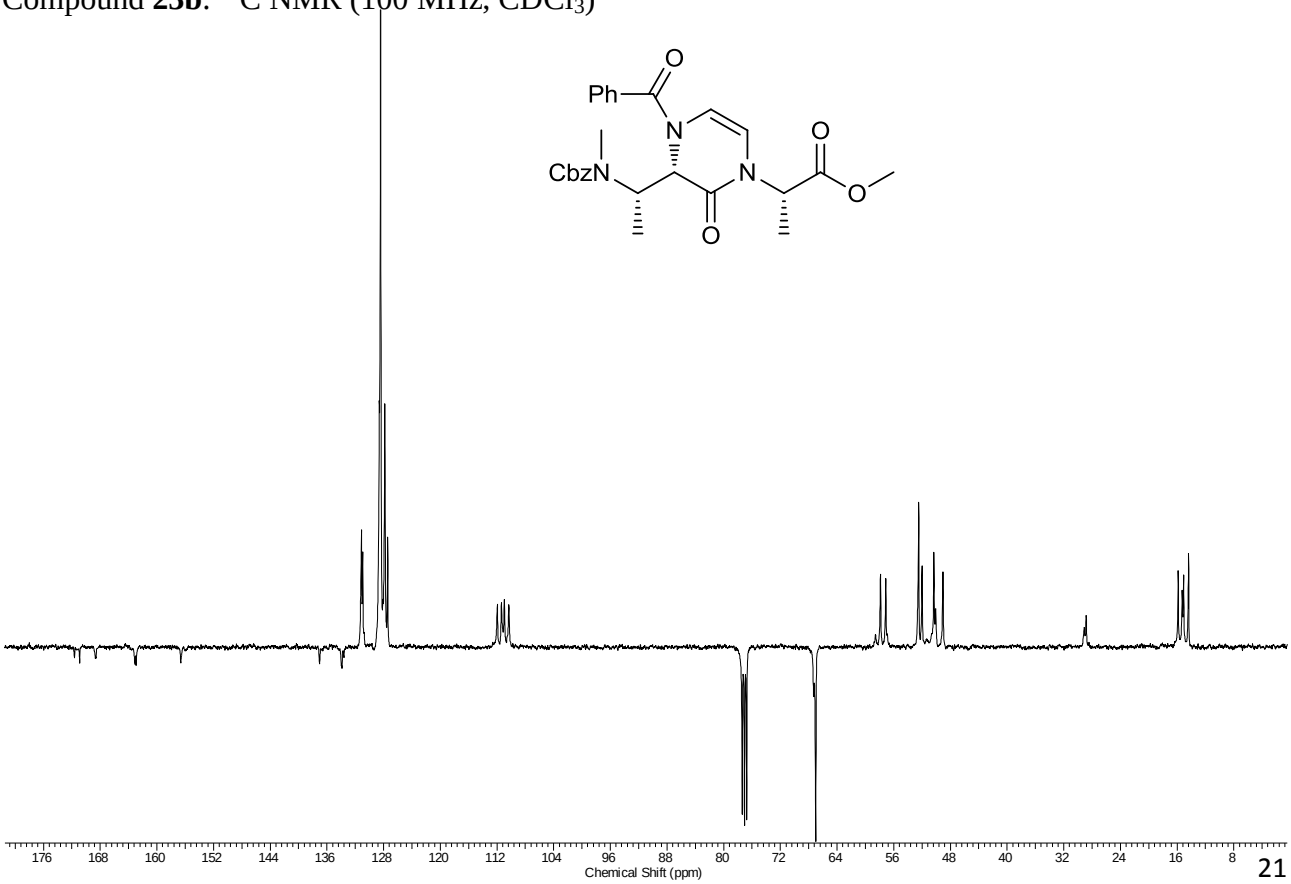
Compound **23a**: ^{13}C NMR (75 MHz, $CDCl_3$)



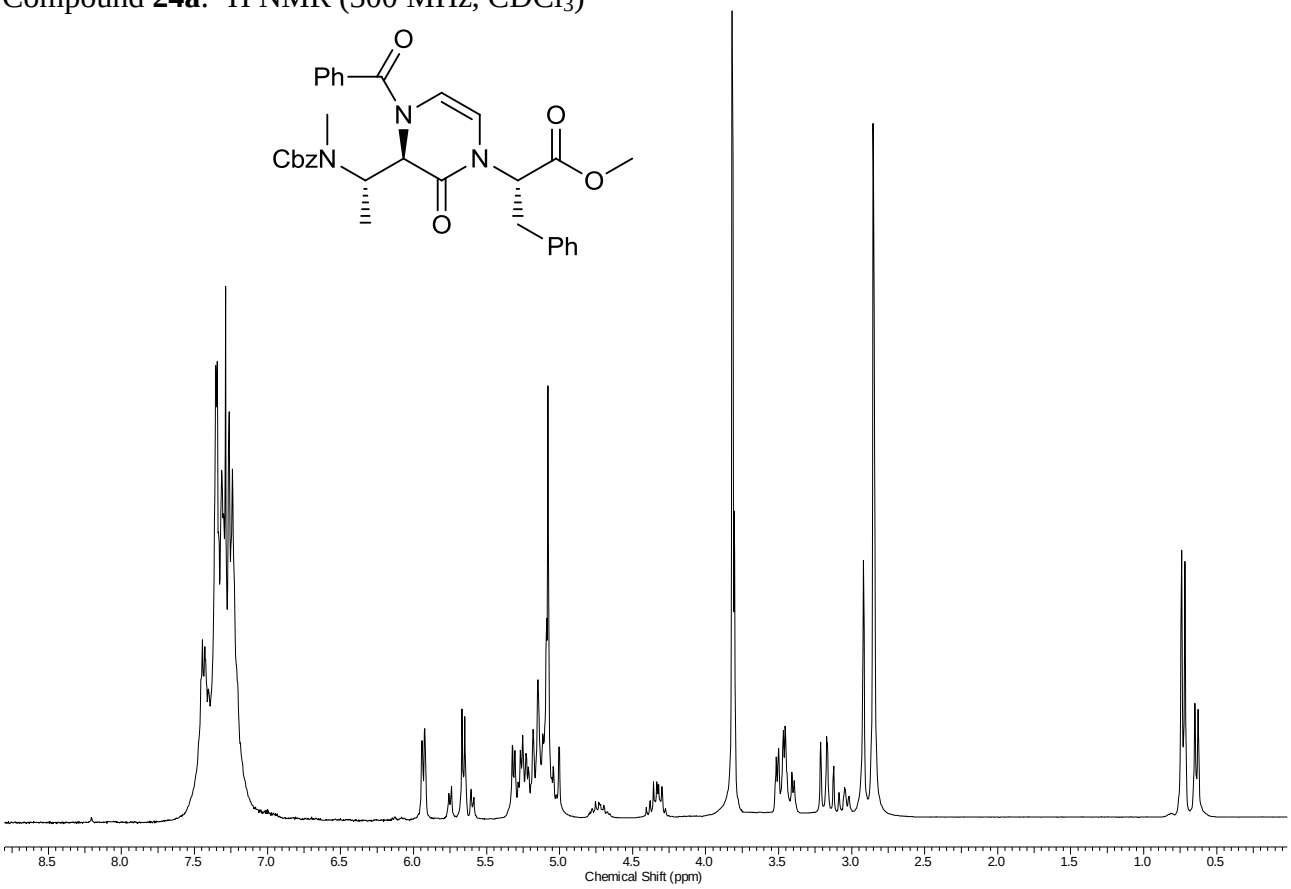
Compound **23b**: ^{1}H NMR (400 MHz, $CDCl_3$)



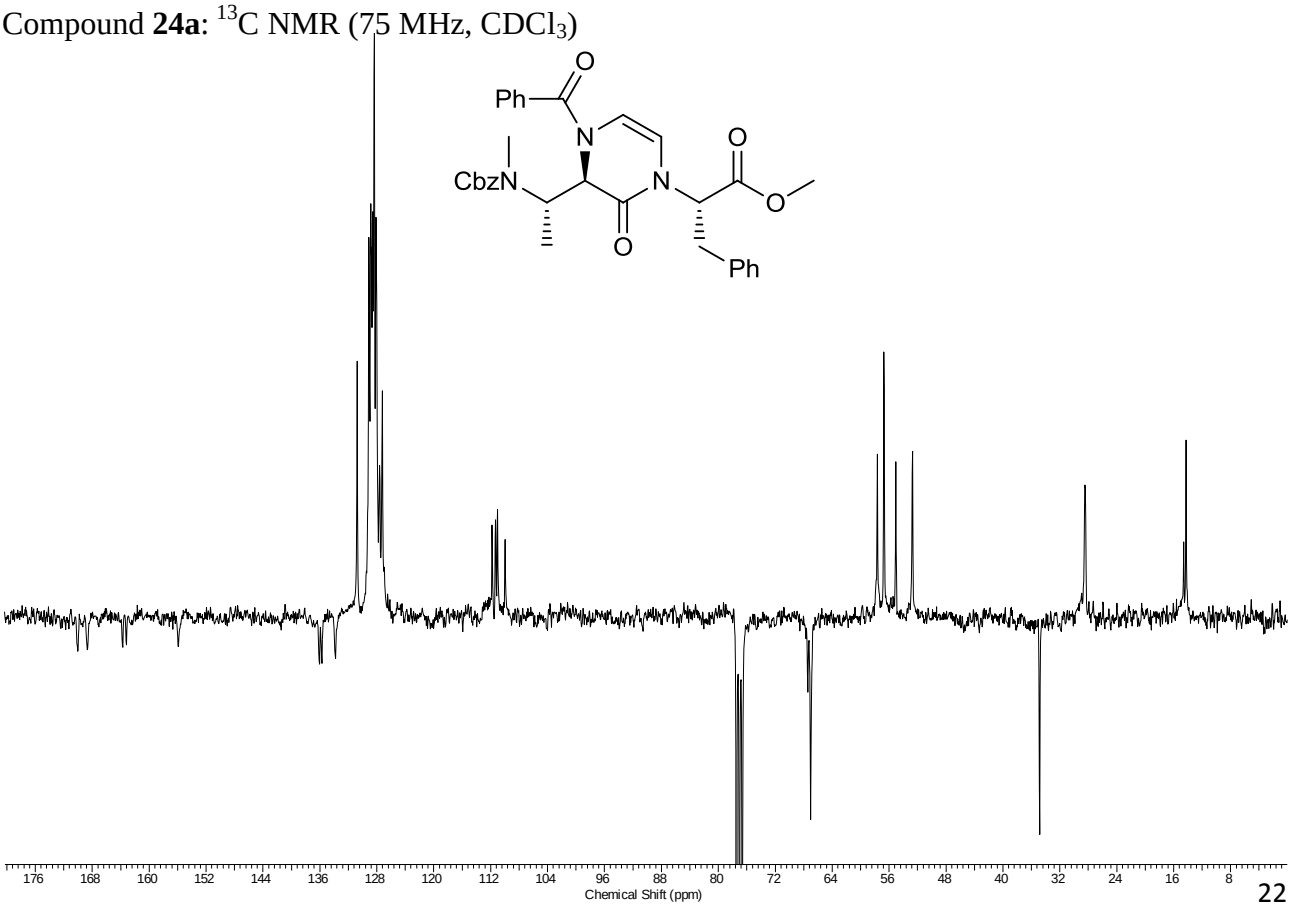
Compound **23b**: ^{13}C NMR (100 MHz, $CDCl_3$)



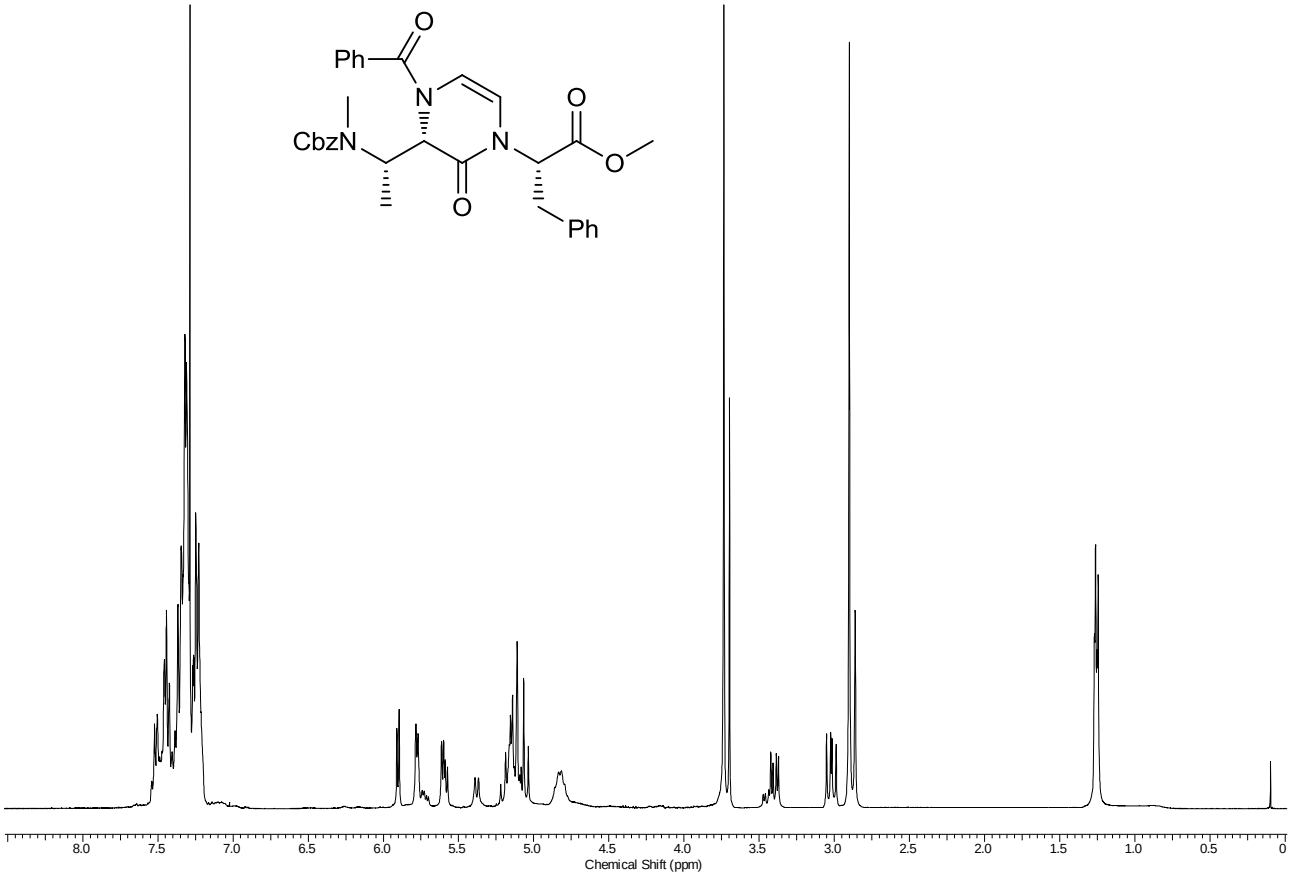
Compound **24a**: ^{1}H NMR (300 MHz, $CDCl_3$)



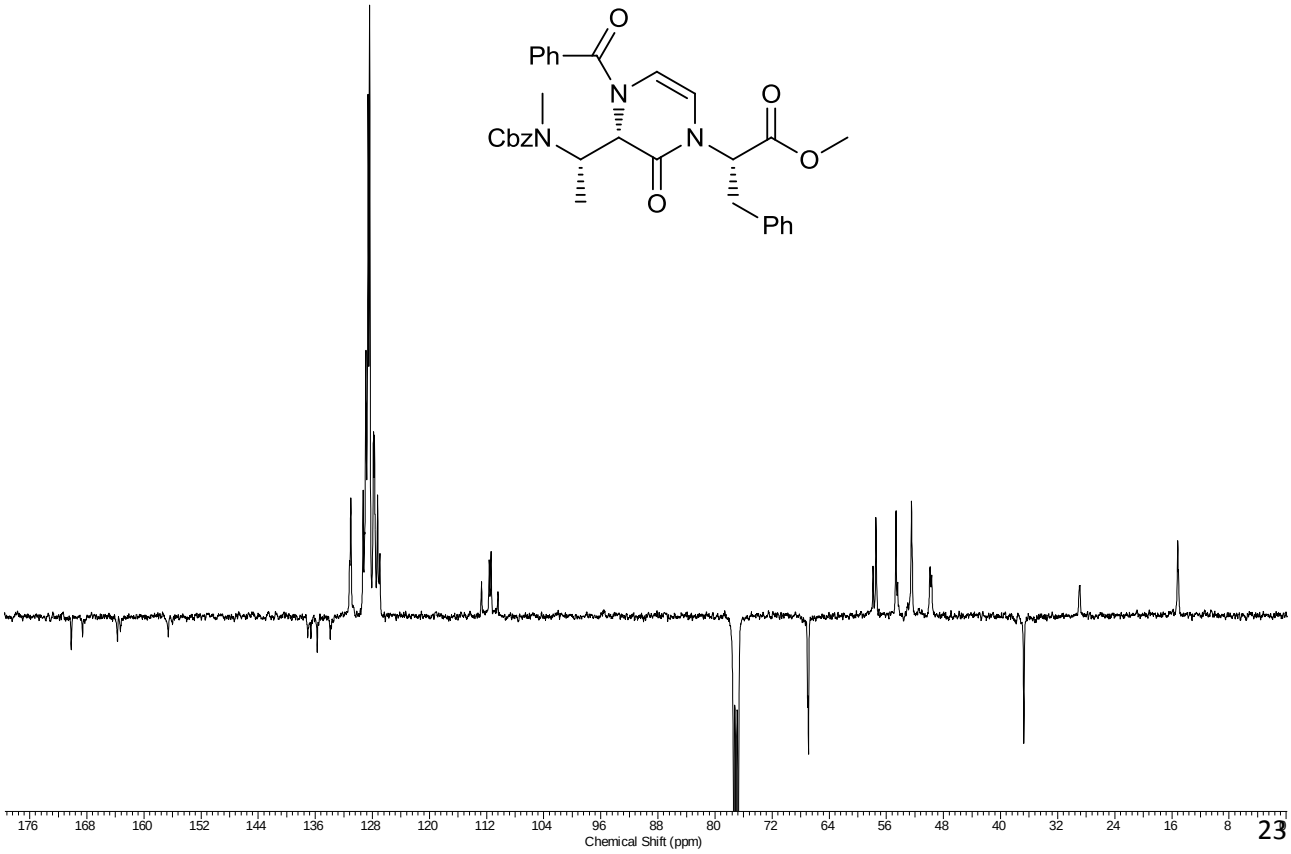
Compound **24a**: ^{13}C NMR (75 MHz, $CDCl_3$)



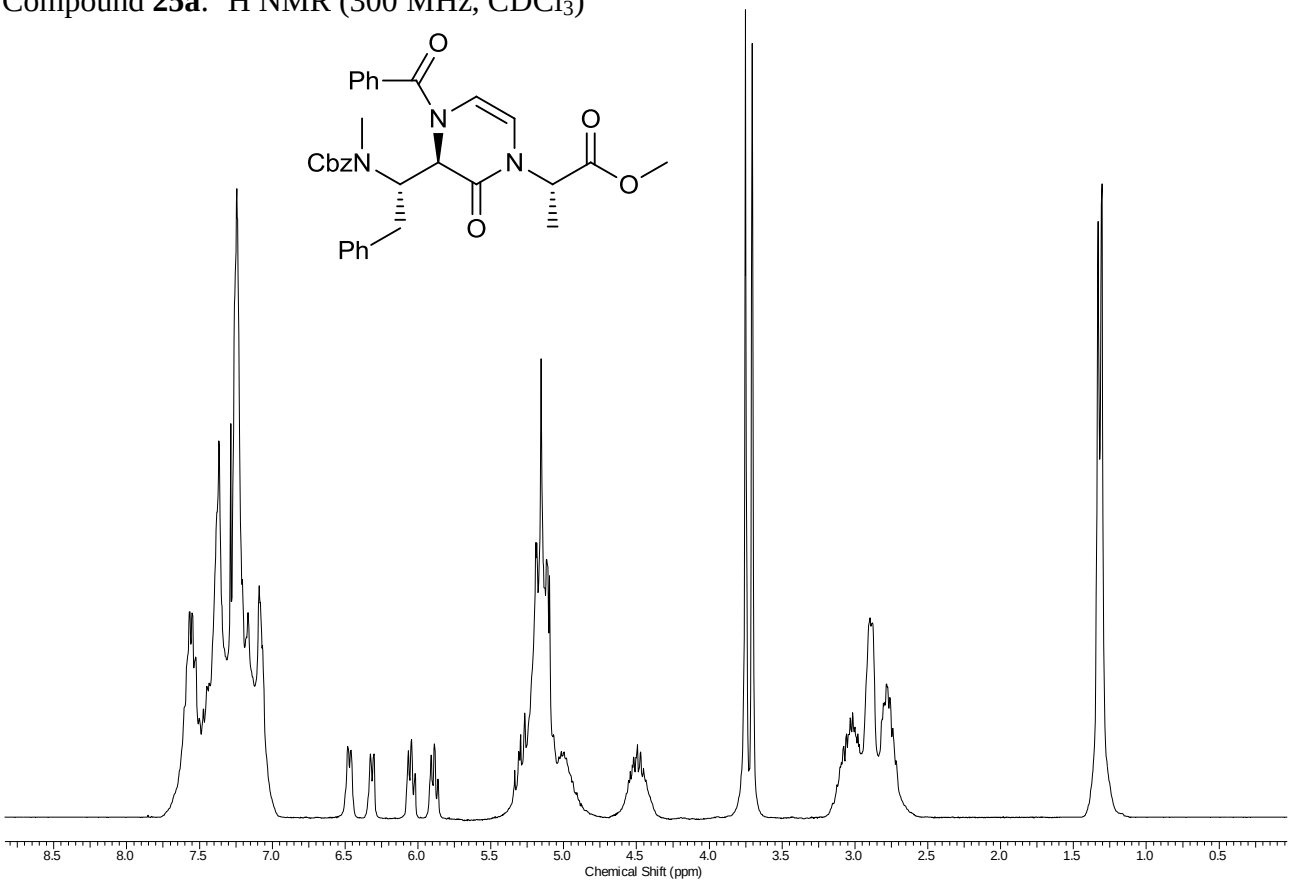
Compound **24b**: ^{1}H NMR (400 MHz, $CDCl_3$)



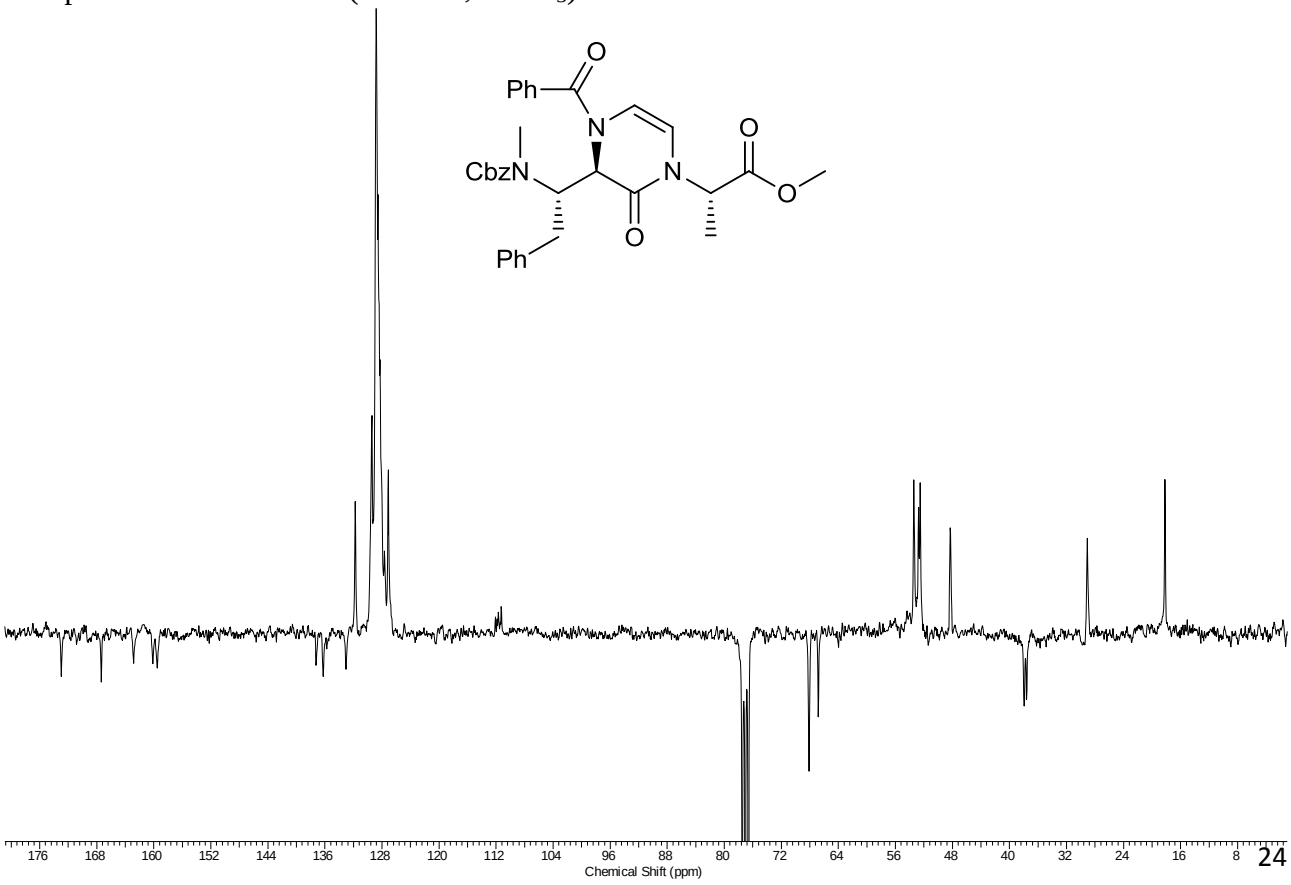
Compound **24b**: ^{13}C NMR (100 MHz, $CDCl_3$)



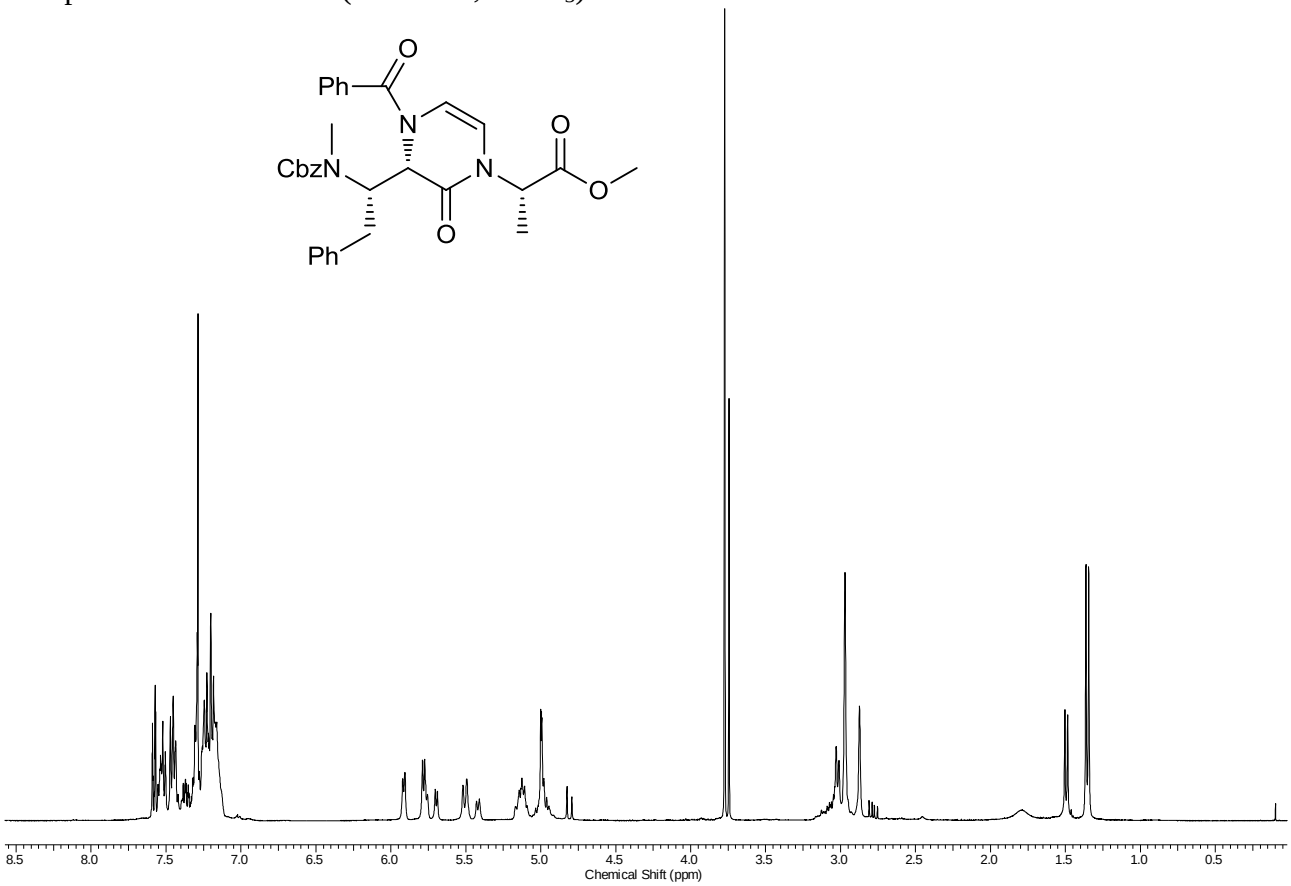
Compound **25a**: ^{1}H NMR (300 MHz, $CDCl_3$)



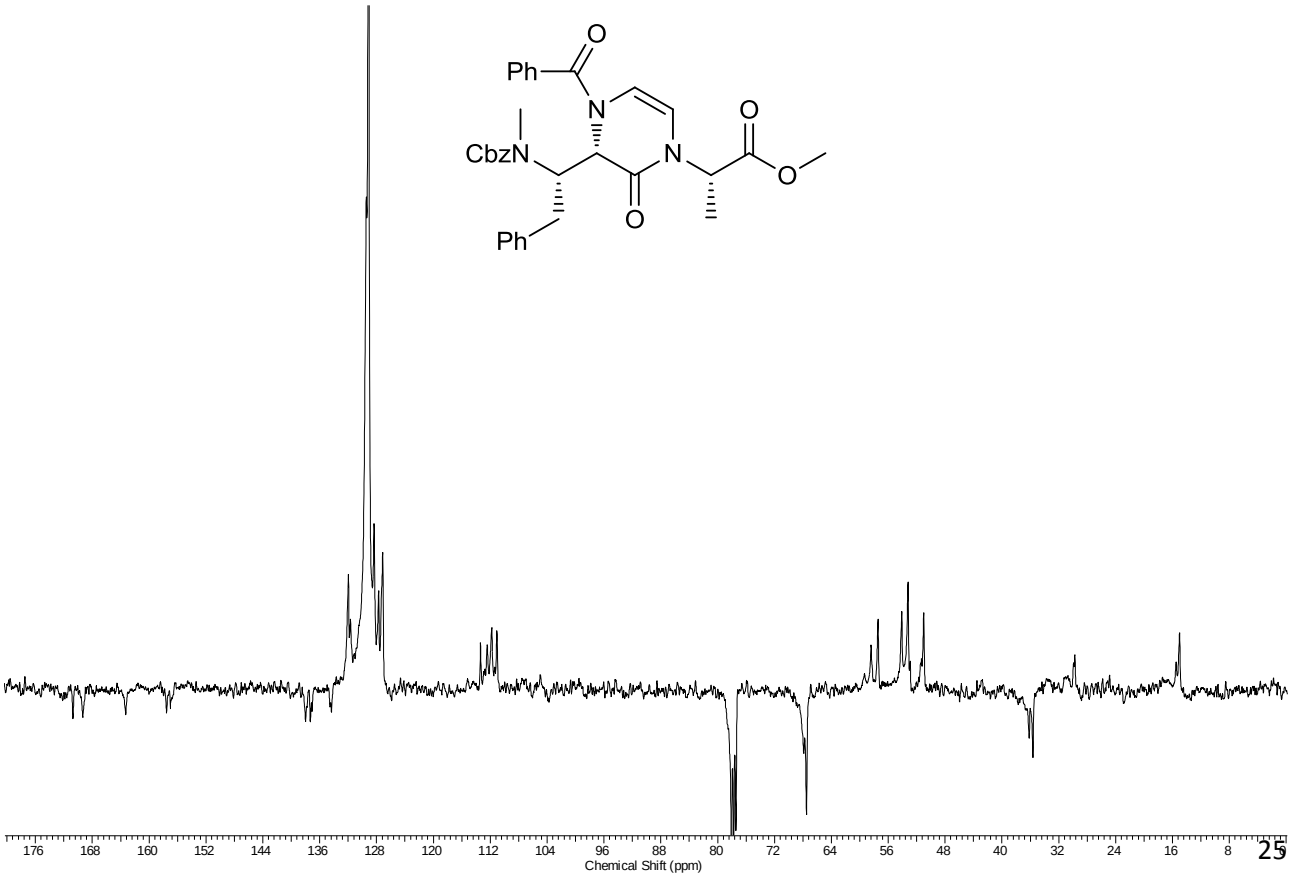
Compound **25a**: ^{13}C NMR (75 MHz, $CDCl_3$)



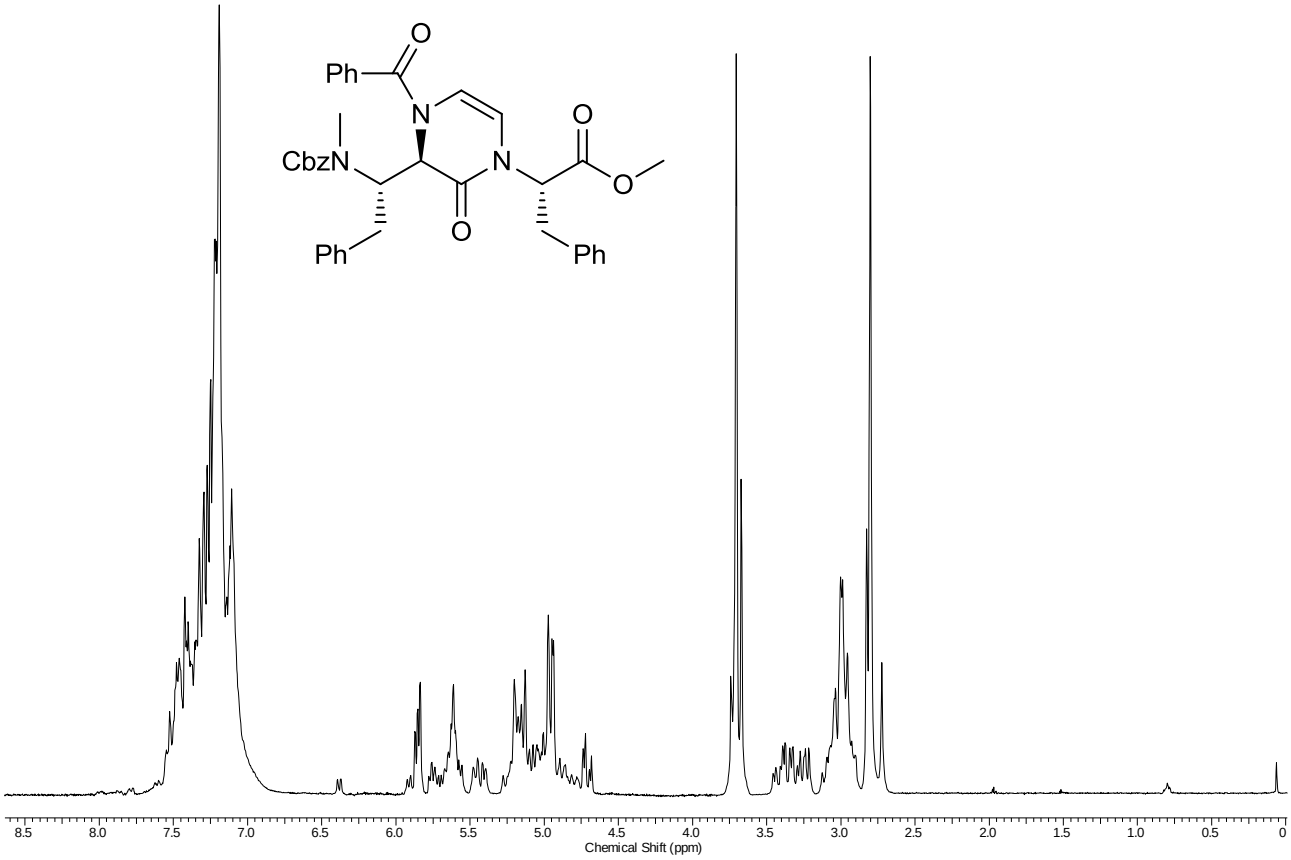
Compound **25b**: ^{1}H NMR (400 MHz, $CDCl_3$)



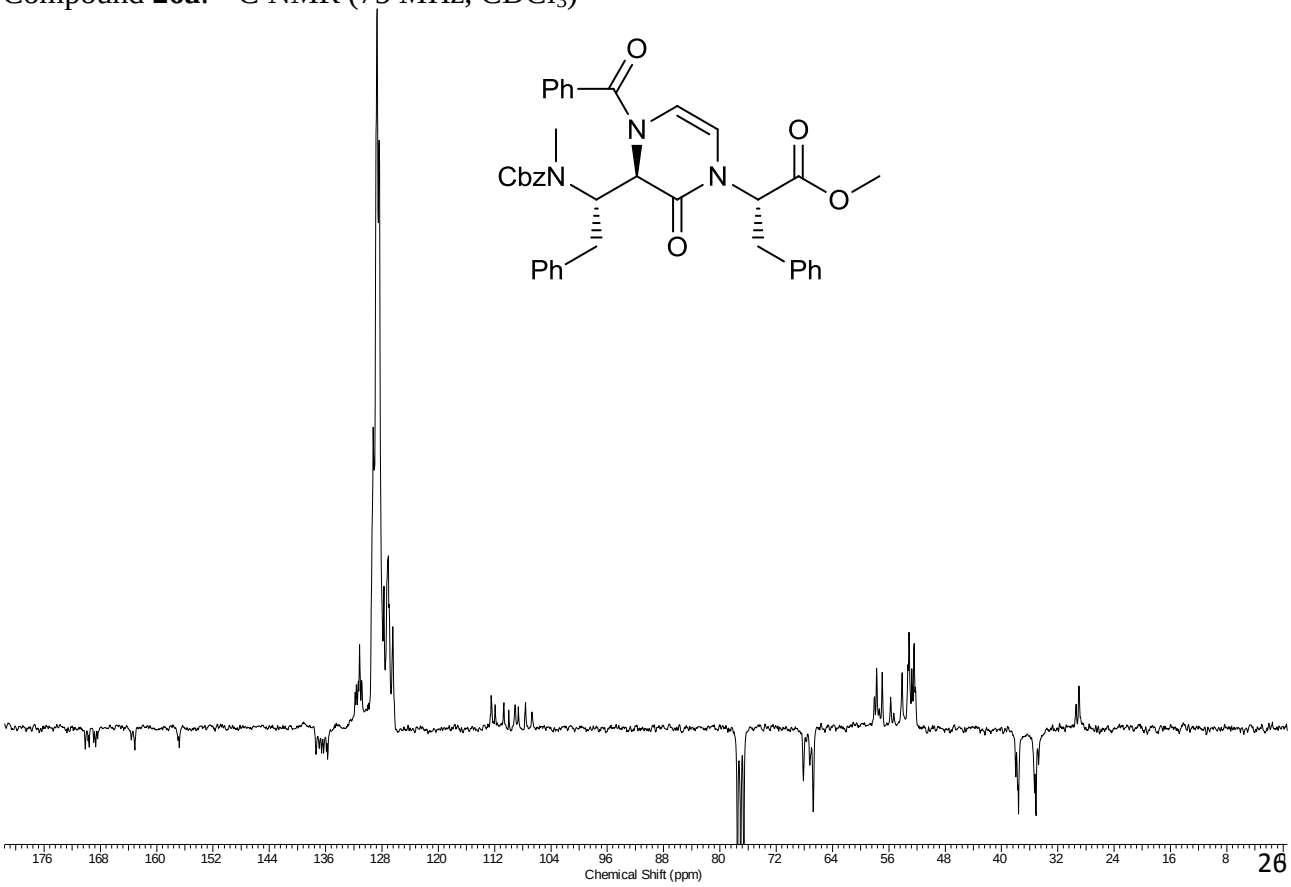
Compound **25b**: ^{13}C NMR (100 MHz, $CDCl_3$)



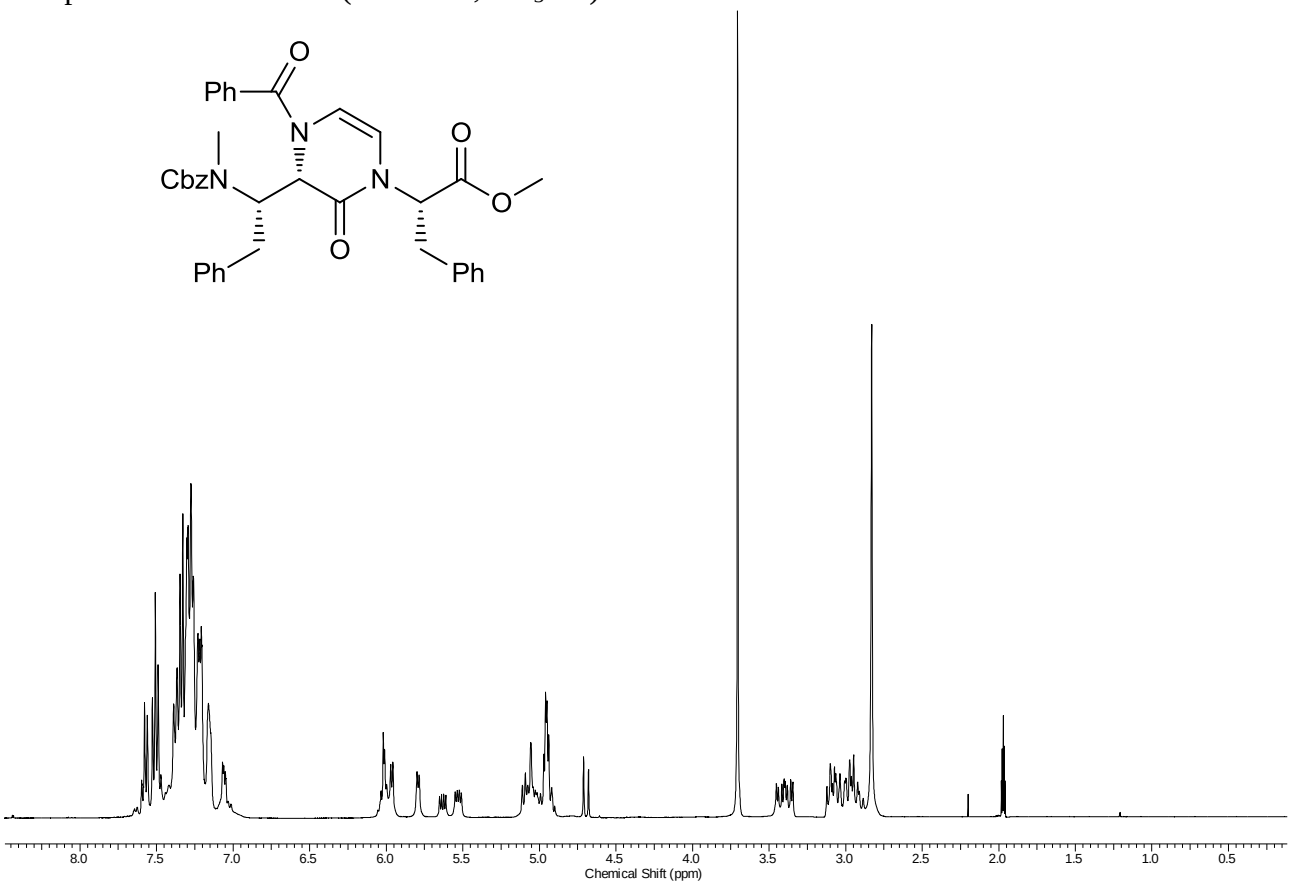
Compound **26a**: ^{1}H NMR (300 MHz, $CDCl_3$)



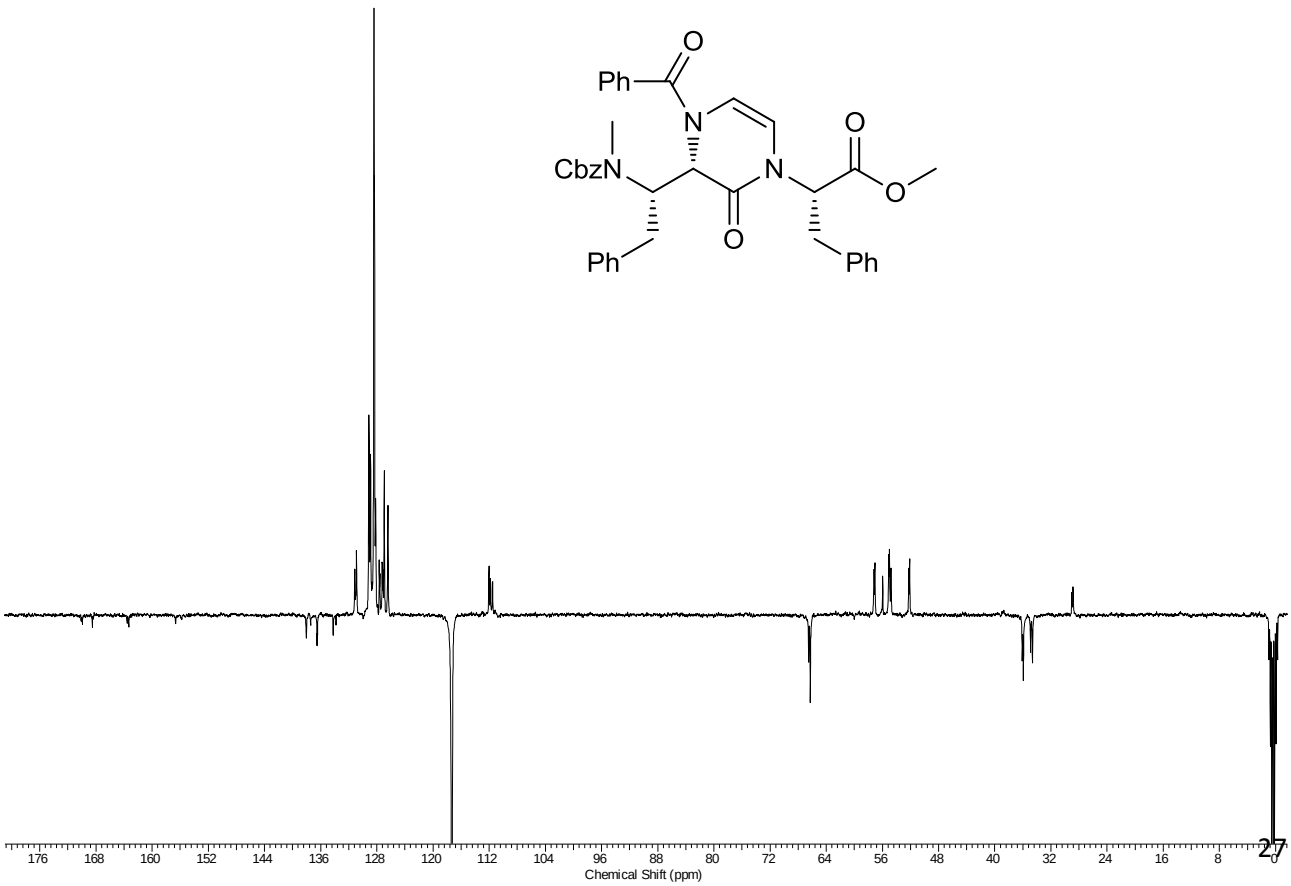
Compound **26a**: ^{13}C NMR (75 MHz, $CDCl_3$)



Compound **26b**: ^{1}H NMR (400 MHz, CD_3CN)



Compound **26b**: ^{13}C NMR (100 MHz, CD_3CN)



CD studies:

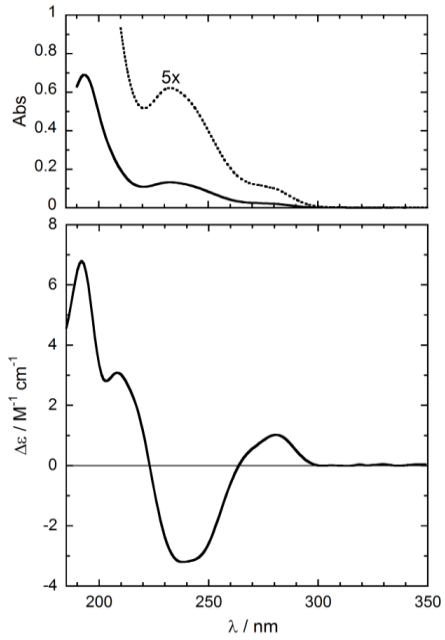


Fig. 1 Experimental UV (top) and CD (bottom) spectra of the major diastereoisomer **9b**, measured in acetonitrile solution (2.0 mM). Cell length 0.01 cm and 0.05 cm (expansion).

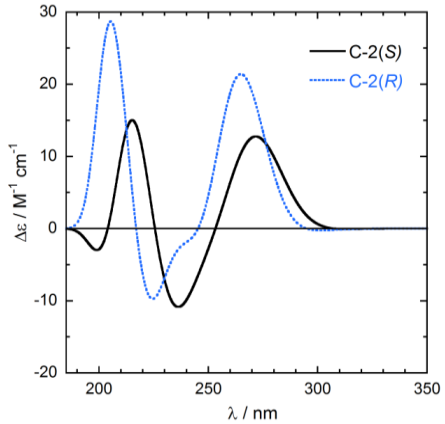


Fig. 2 Calculated CD spectra for C-2(*S*) and C-2(*R*) isomers of **9** with CAM-B3LYP/SVP//B3LYP/6-31G(d) method. Boltzmann averages at 300K; Gaussian bandshape with 0.3 eV width; red-shift 30 nm.

Biological evaluation (cytotoxicities of compounds 9-12, 17-20 and 23-26).

IC_{50} values in Huh7 and Mahlavu cell lines.

Compound	**Huh7**			**MV**		
	IC50(µM)	**R2**	**s.d**	**IC50(µM)**	**R2**	**s.d**
12	15,2	1,0	1,8	11,3	0,9	0,4
25b	16,2	0,9	1,1	30,5	0,8	3,7

Non growth inhibition for compounds **9-11, 17-20, 23, 24, 25a** and **26**.