Supporting information

Natural compounds and their structural analogs in regio- and stereoselective synthesis of new families of water-soluble 2**H**,3**H**-[1,3]thia- and -selenazolo[3,2-**a**]pyridin-4-ium heterocycles by annulation reactions

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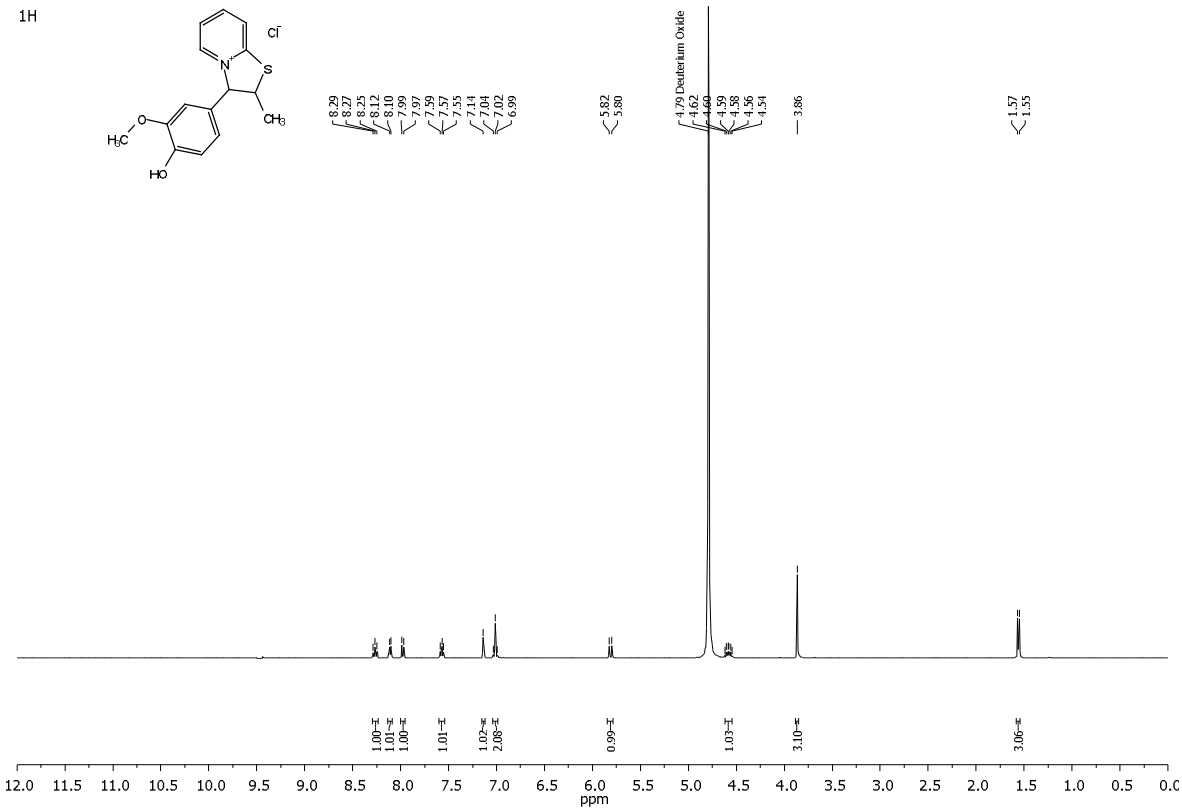
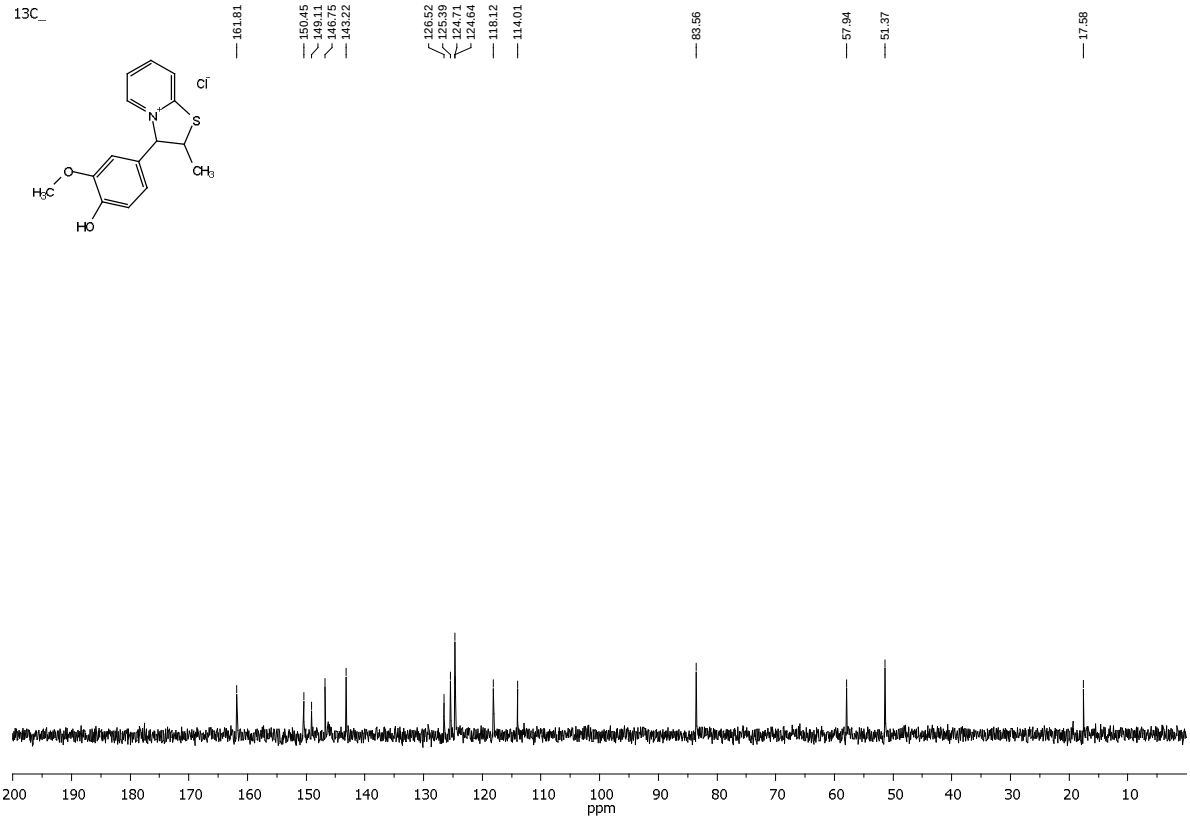
Experimental (General Information)

^{1}H (400.1 MHz) and ^{13}C (100.6 MHz) NMR spectra were recorded on a Bruker DPX-400 spectrometer in 5-10% solution in D_2O or DMSO-*d*6 or $CDCl_3$. ^{1}H and ^{13}C chemical shifts (δ) are reported in parts per million (ppm), relative to tetramethylsilane (external) or to the residual solvent peaks of DMSO-d6 (δ = 2.50 and 39.52 ppm in ^{1}H- and ^{13}C-NMR, respectively) or $CDCl_3$ (δ = 7.26 and 77.16 ppm in ^{1}H- and ^{13}C-NMR, respectively).

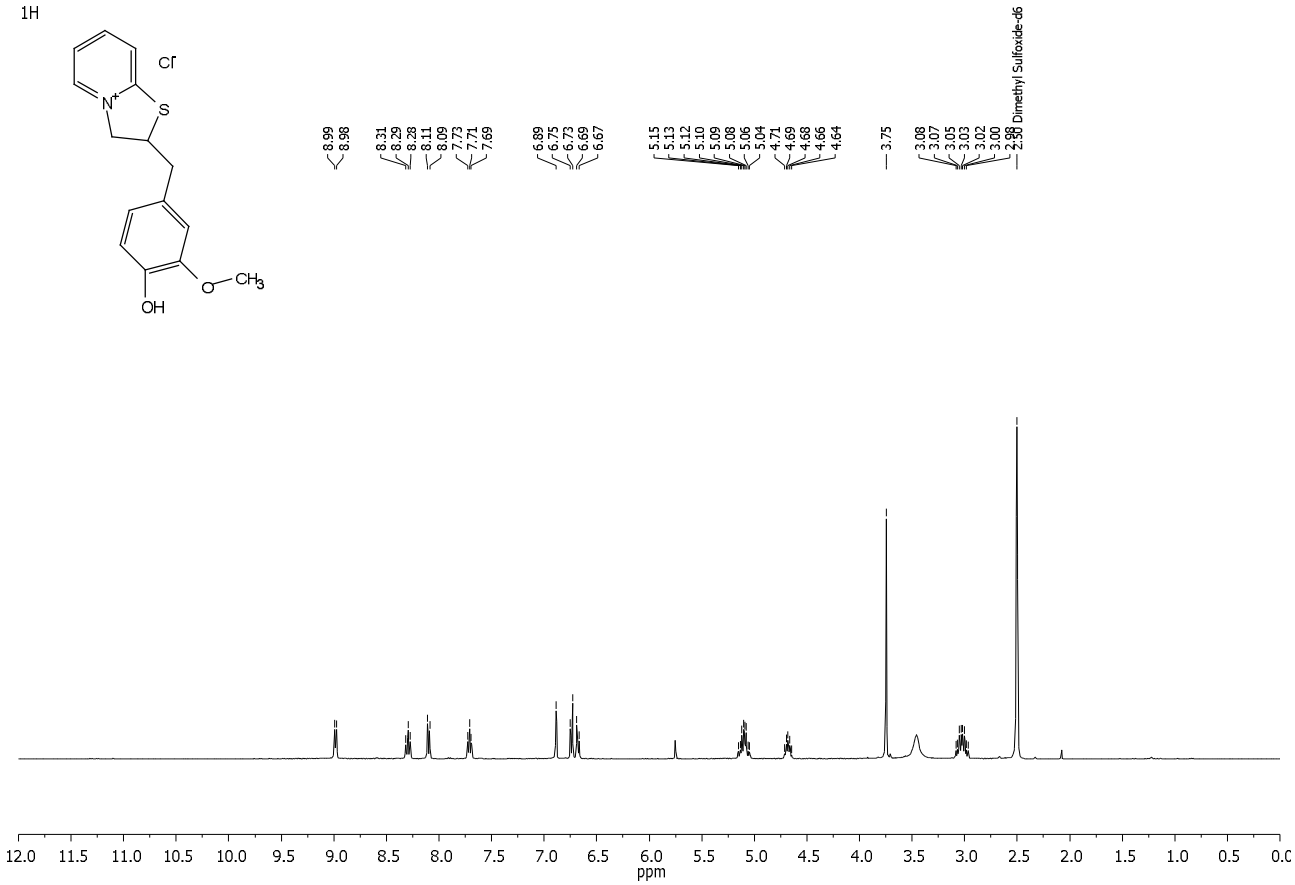
Examples of ^{1}H and ^{13}C-NMR spectra



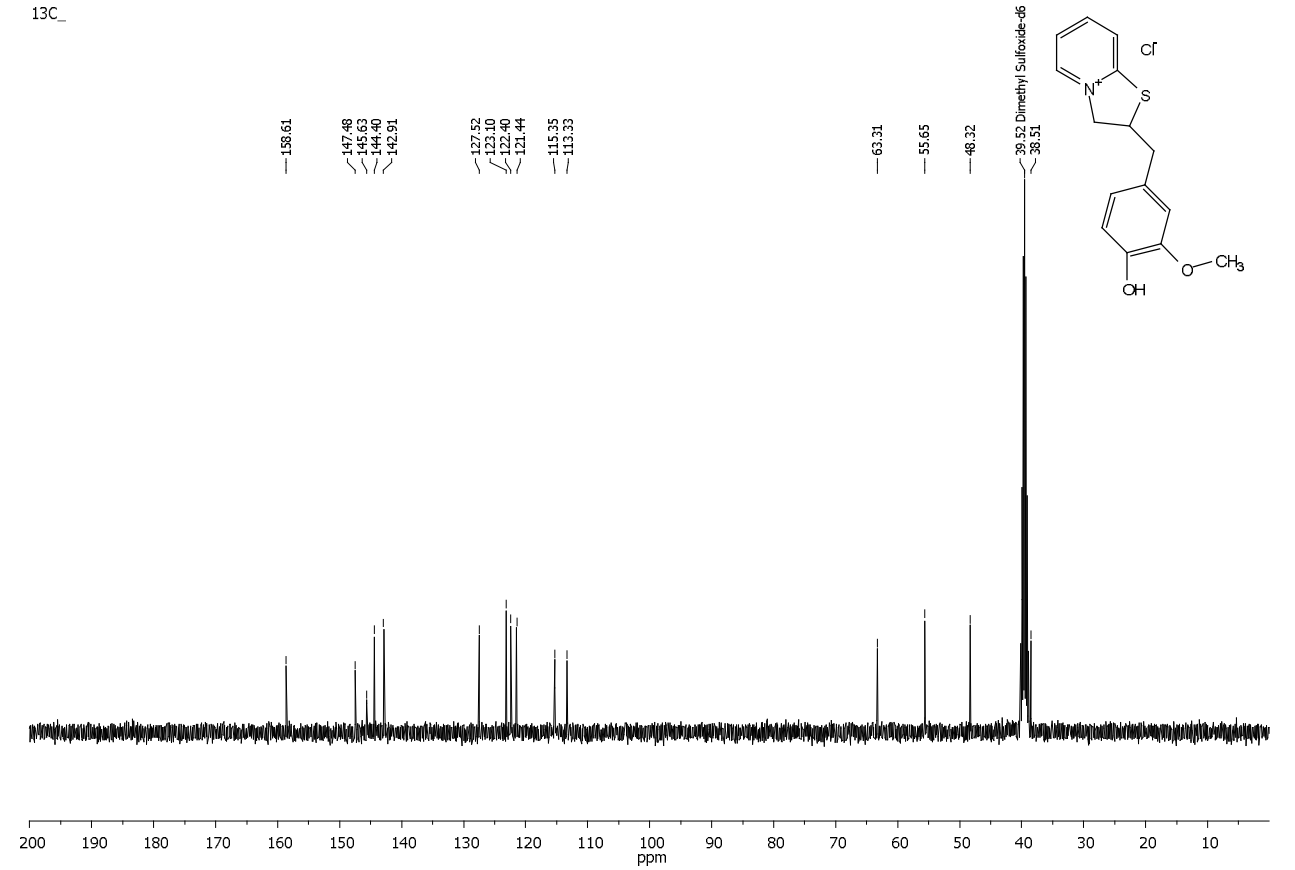
^{1}H-NMR (D_2O) spectrum of compound 1



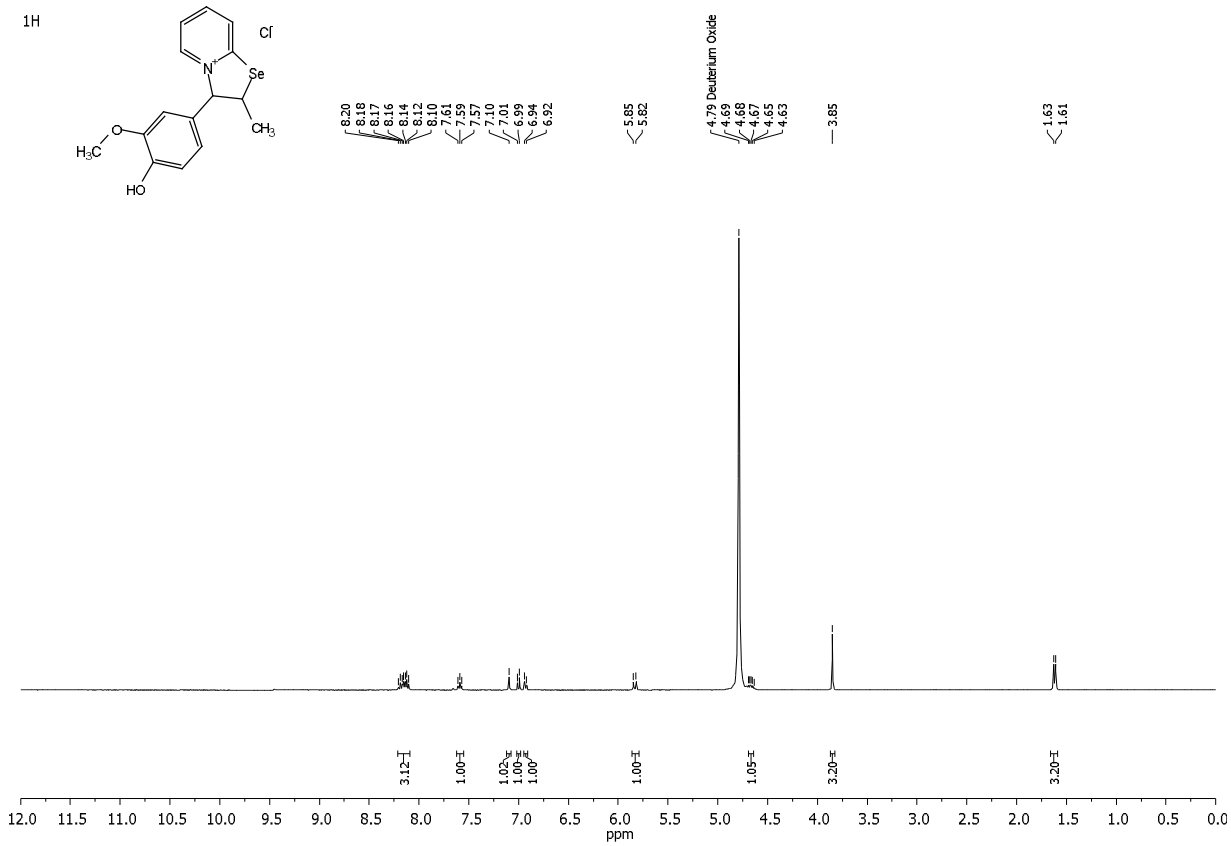
^{13}C-NMR (D_2O) spectrum of compound 1



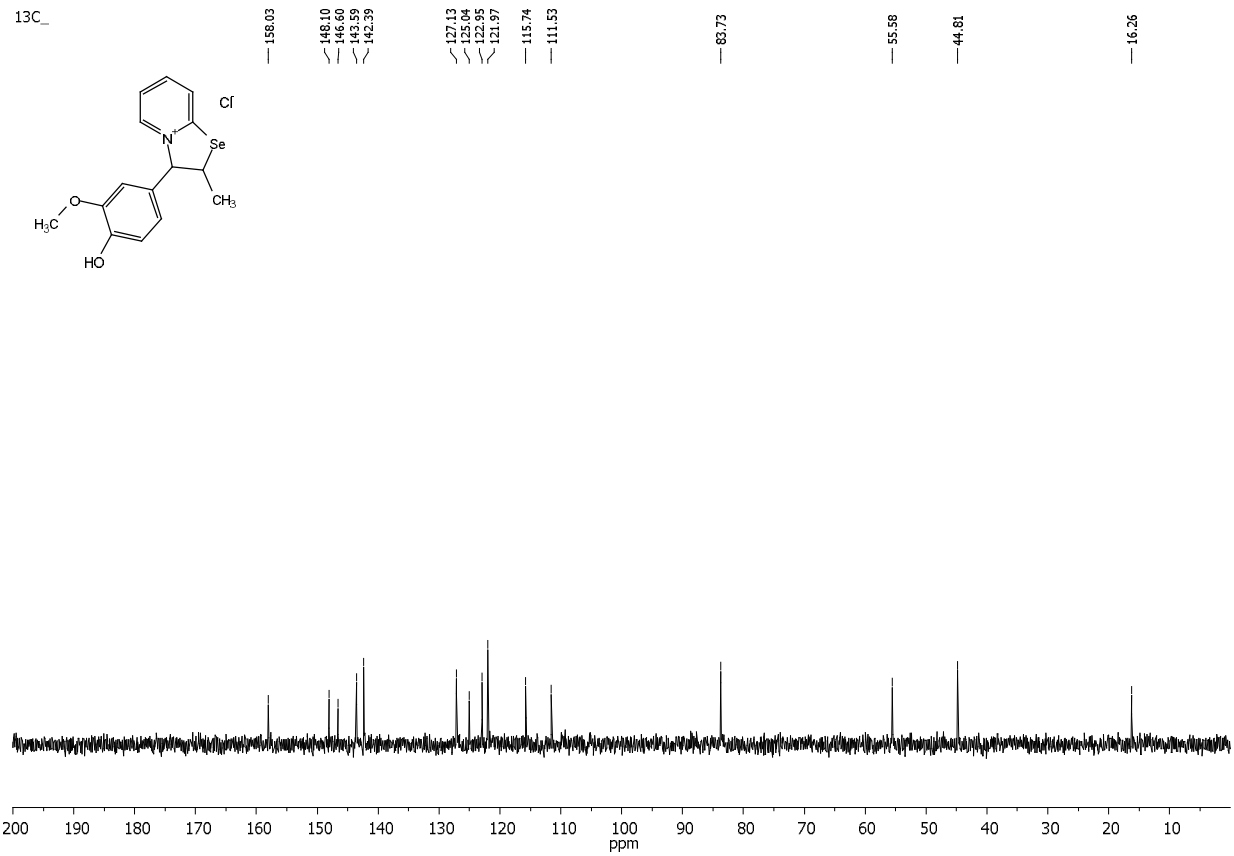
^{1}H-NMR (DMSO-d_6) spectrum of compound 2



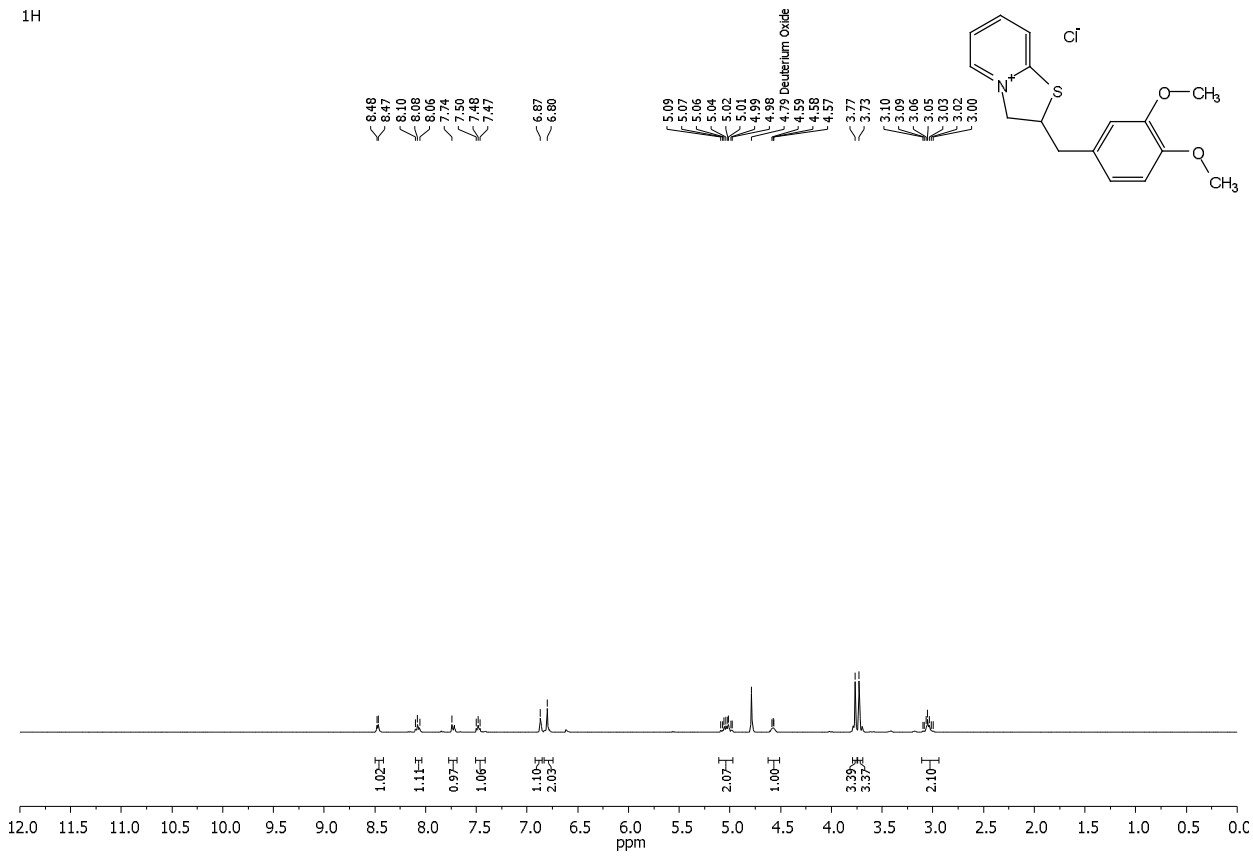
^{13}C-NMR (DMSO-d_6) spectrum of compound 2



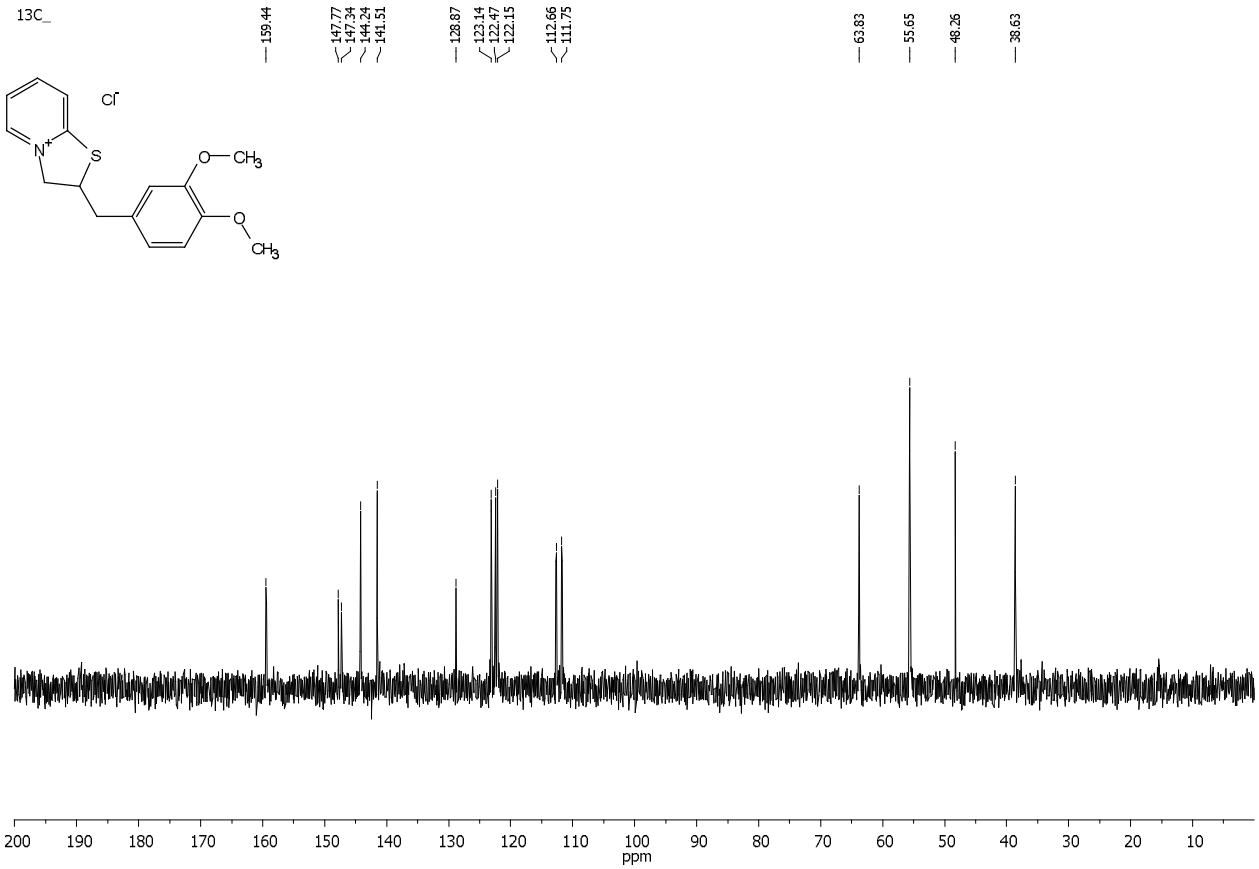
^{1}H-NMR (D_2O) spectrum of compound 3



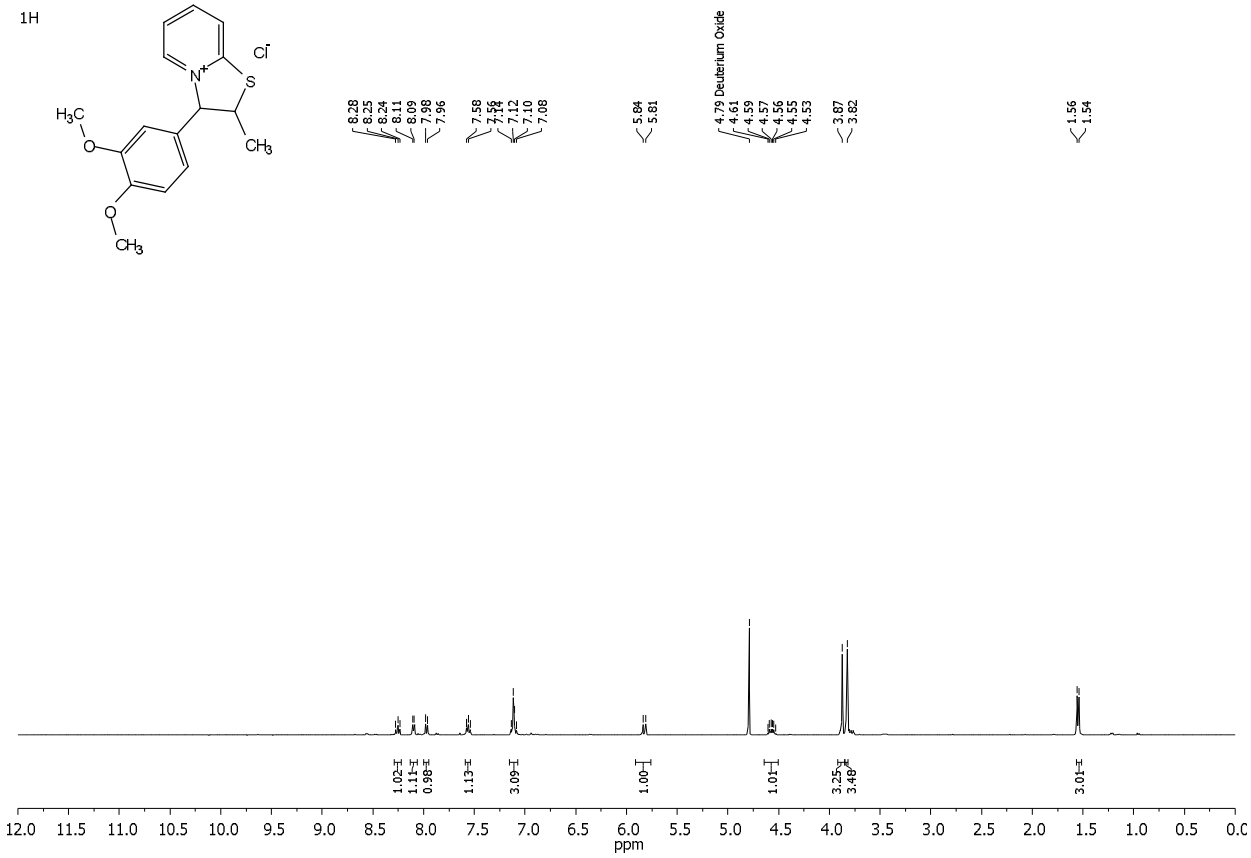
^{13}C-NMR (D_2O) spectrum of compound 3



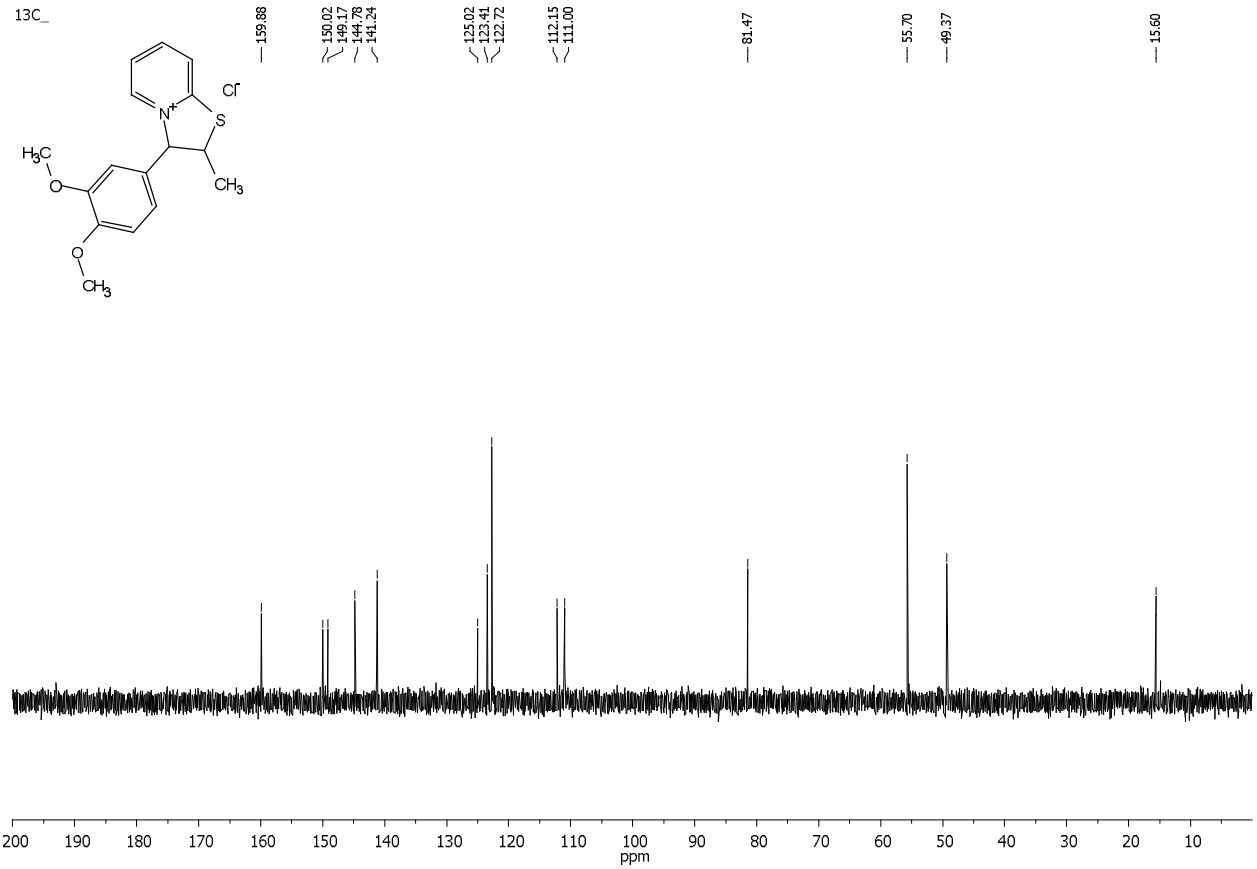
^{1}H-NMR (D_2O) spectrum of compound 5



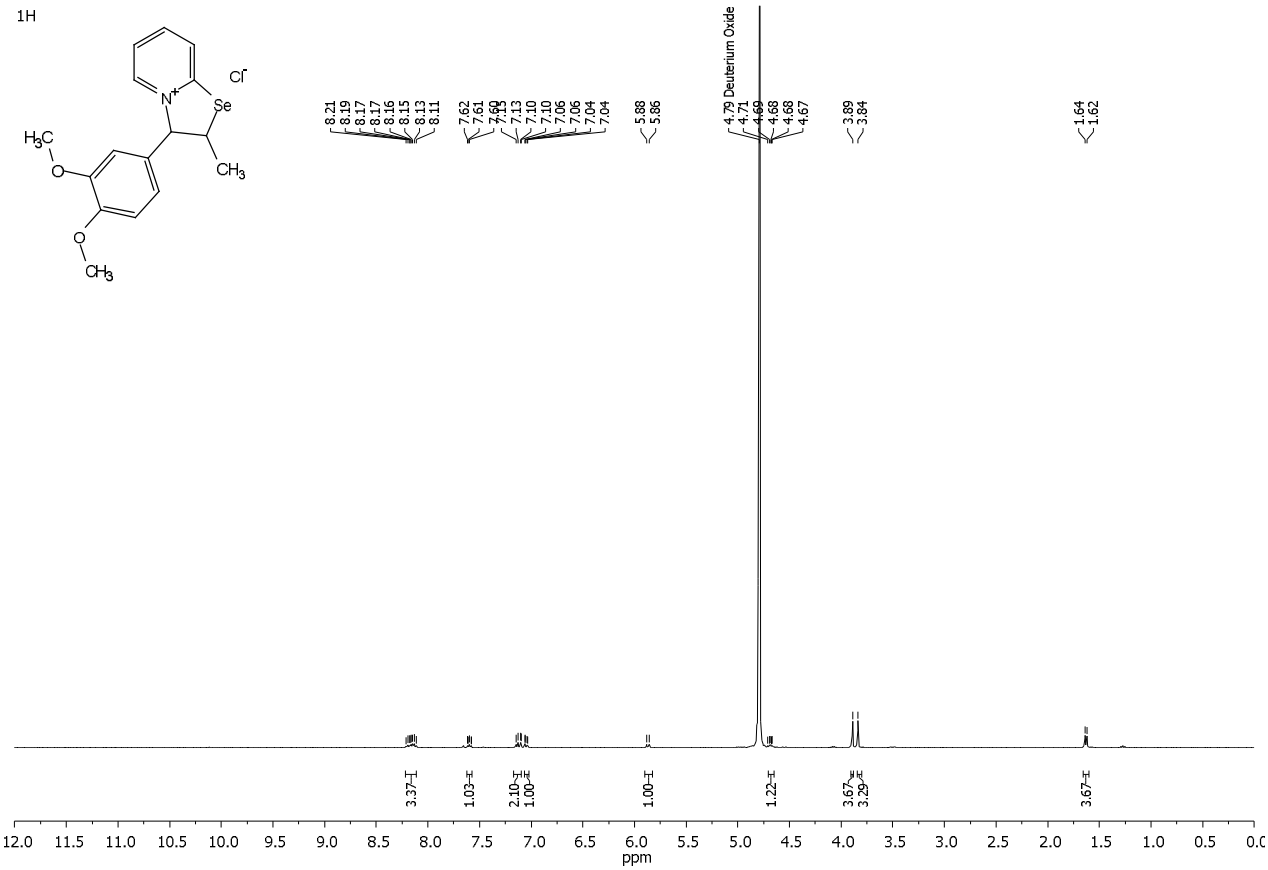
^{13}C-NMR (D_2O) spectrum of compound 5



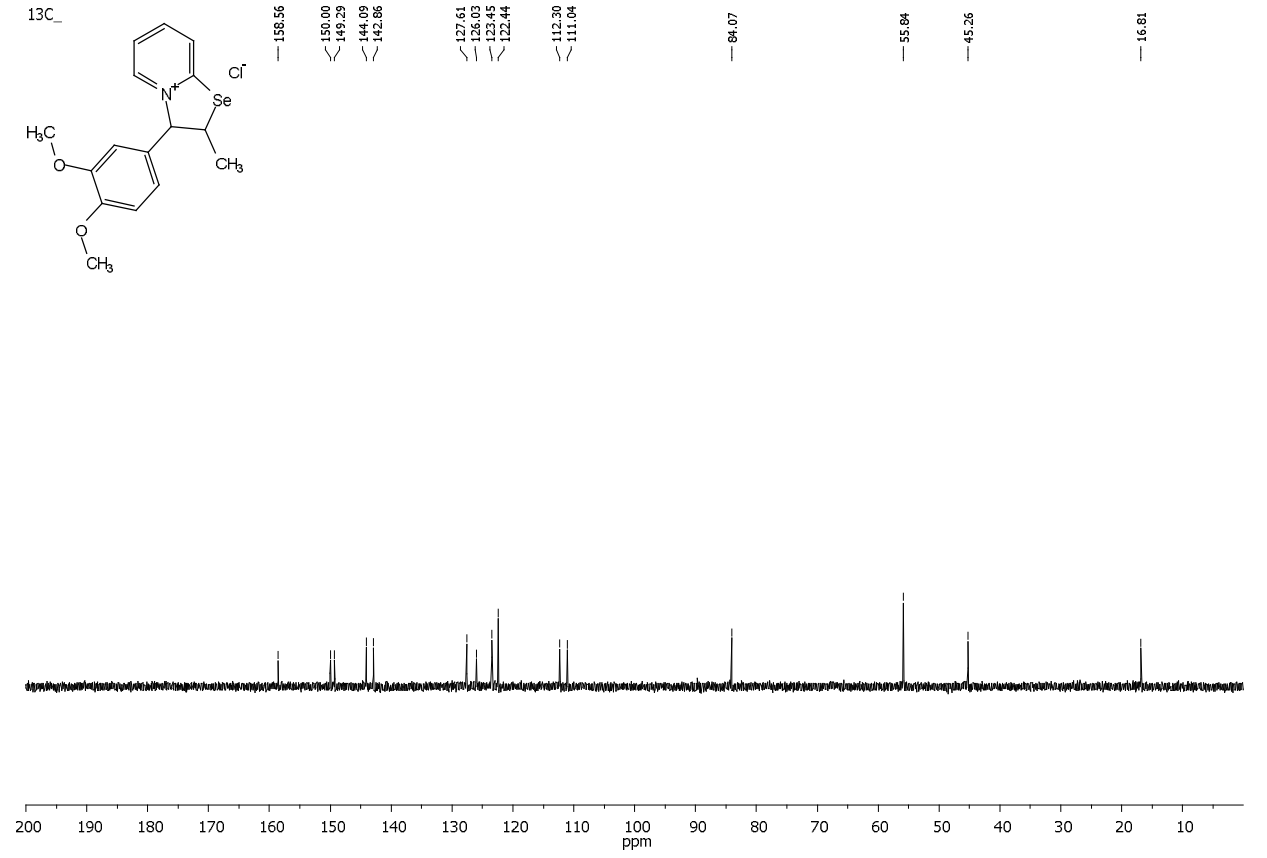
^{1}H-NMR (D_2O) spectrum of compound 6



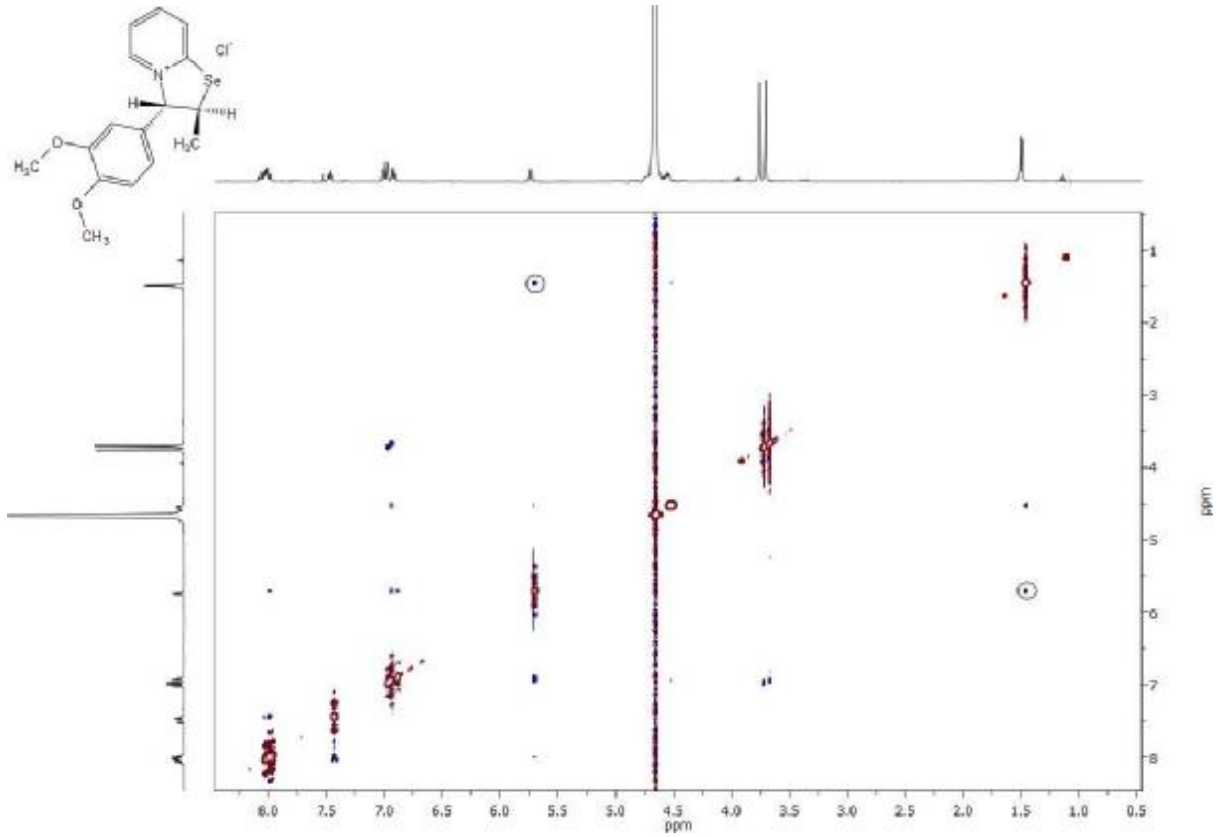
^{13}C-NMR (D_2O) spectrum of compound 6



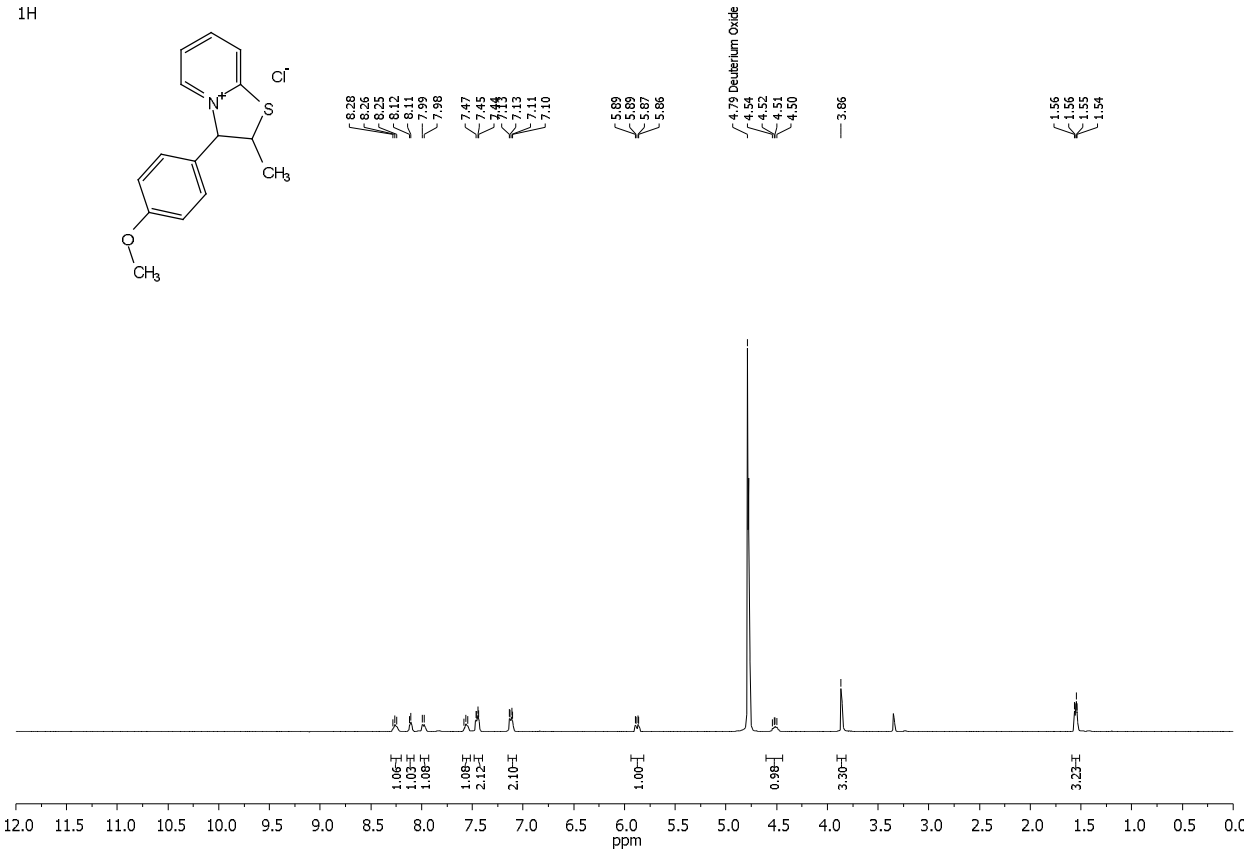
^{1}H-NMR (D_2O) spectrum of compound 8



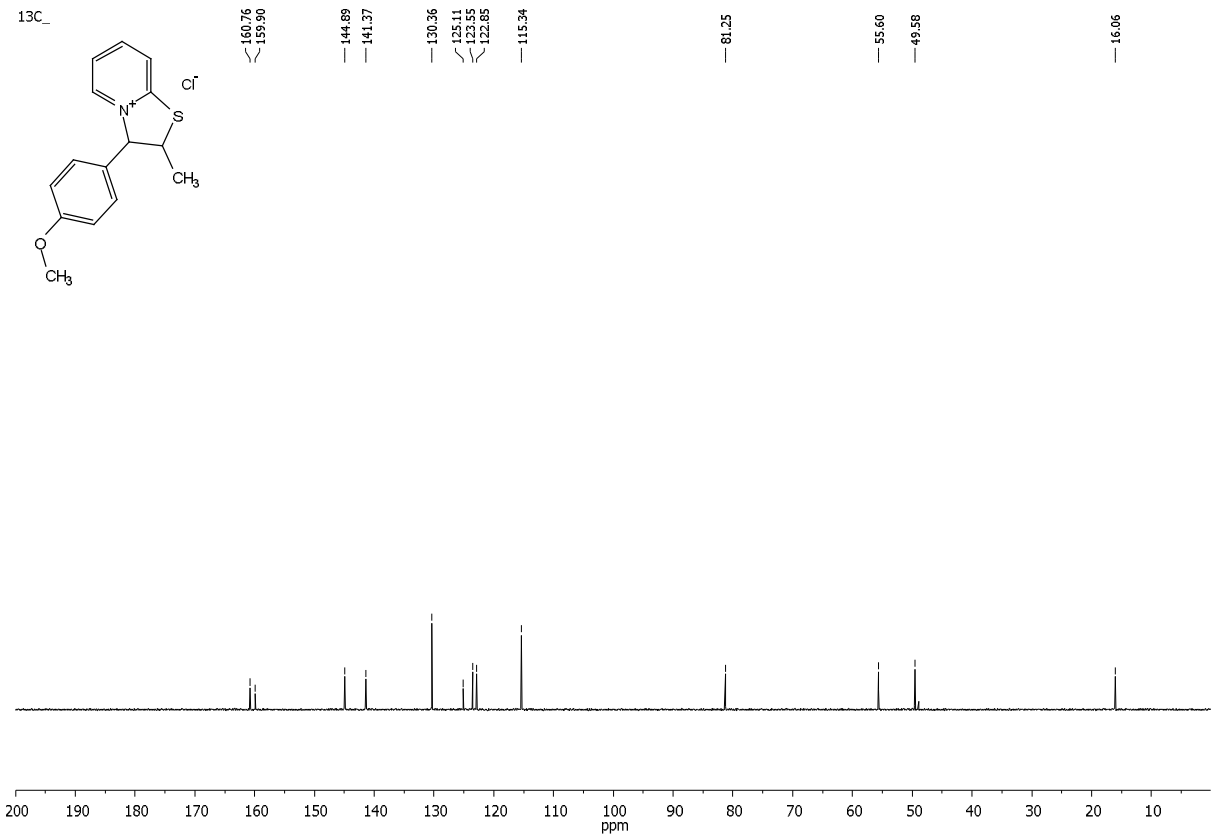
^{13}C-NMR (D_2O) spectrum of compound 8



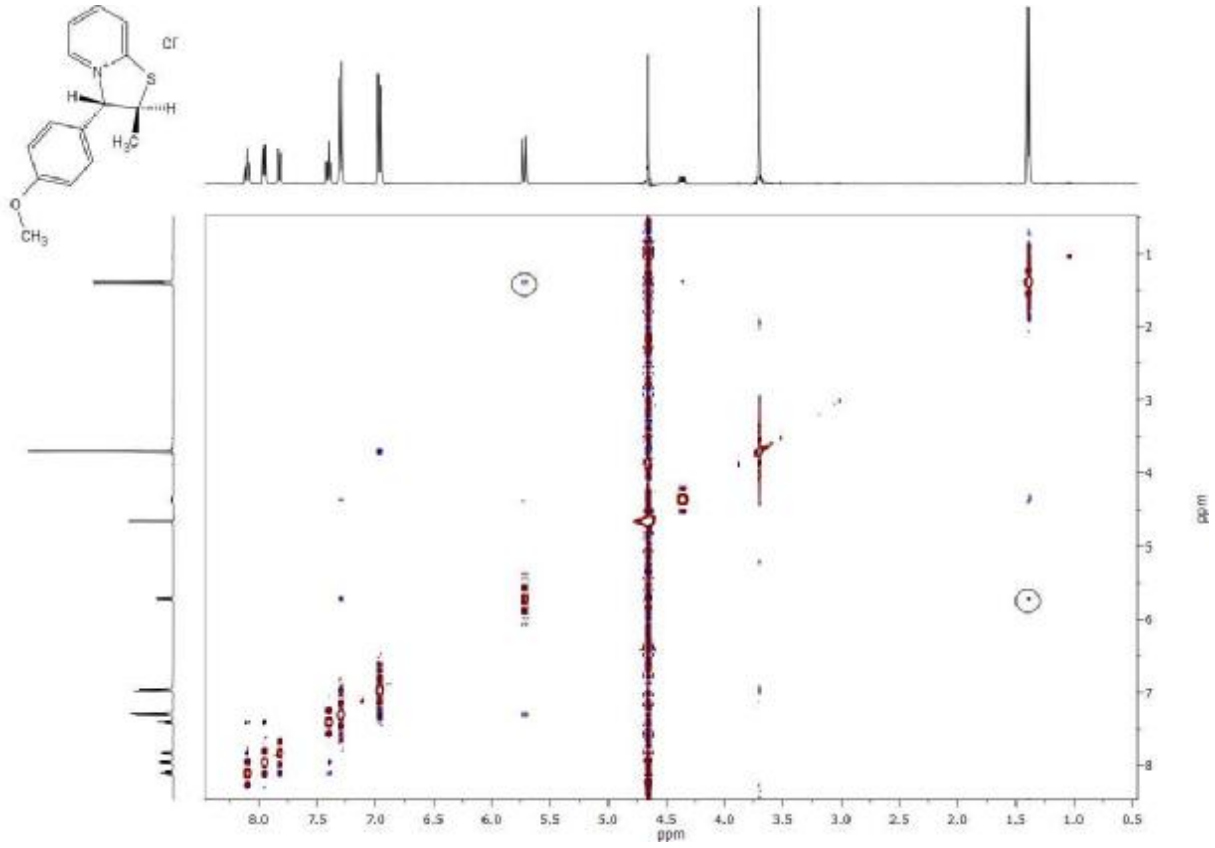
^{1}H-NMR NOESY (D_2O) spectrum of compound 8



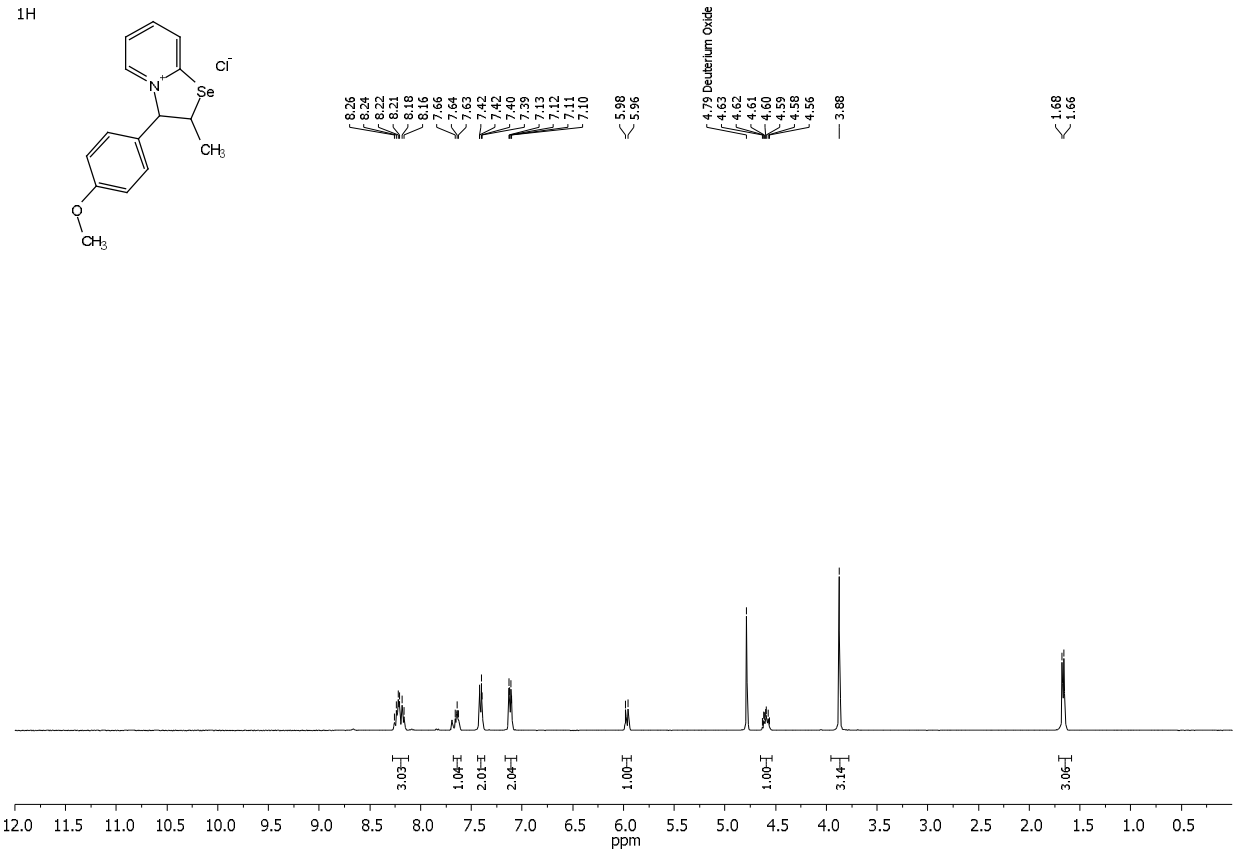
^{1}H-NMR (D_2O) spectrum of compound 11



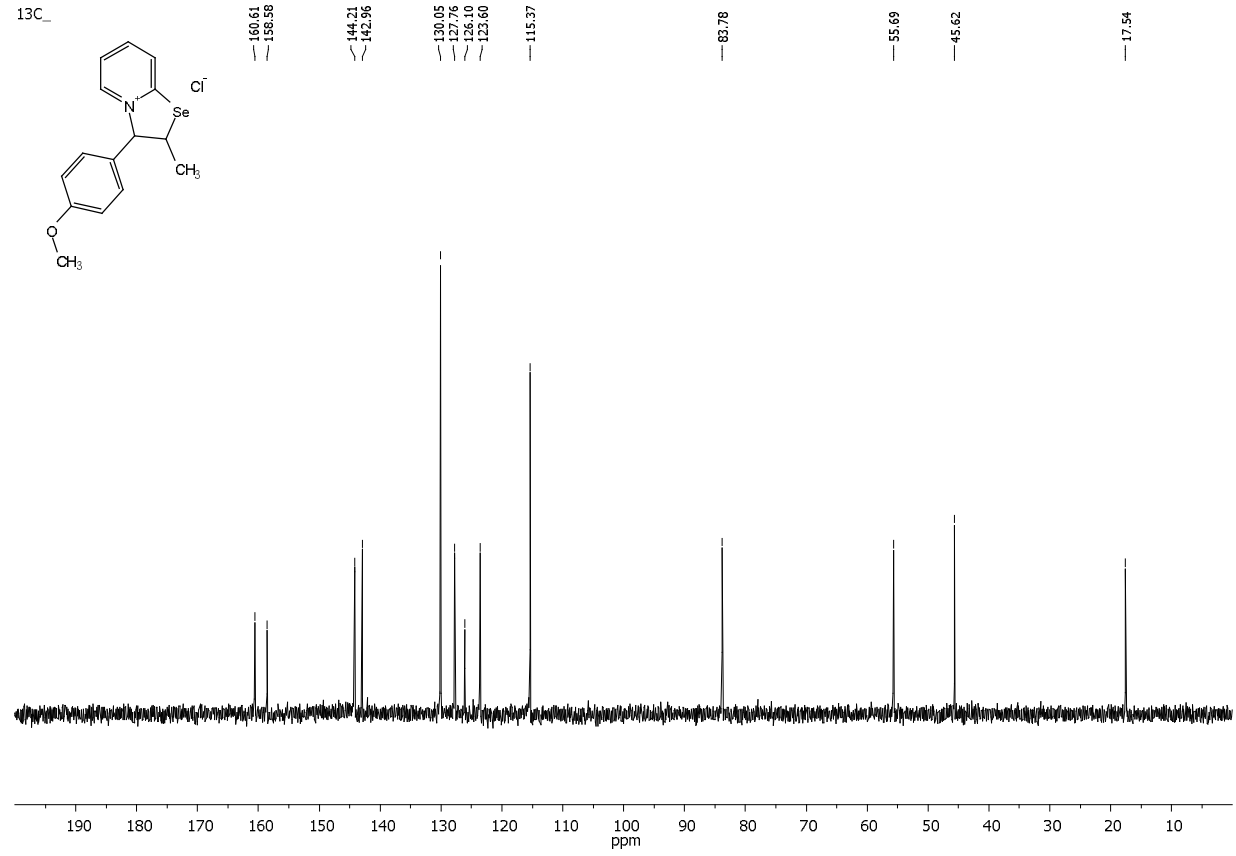
^{13}C-NMR (D_2O) spectrum of compound 11



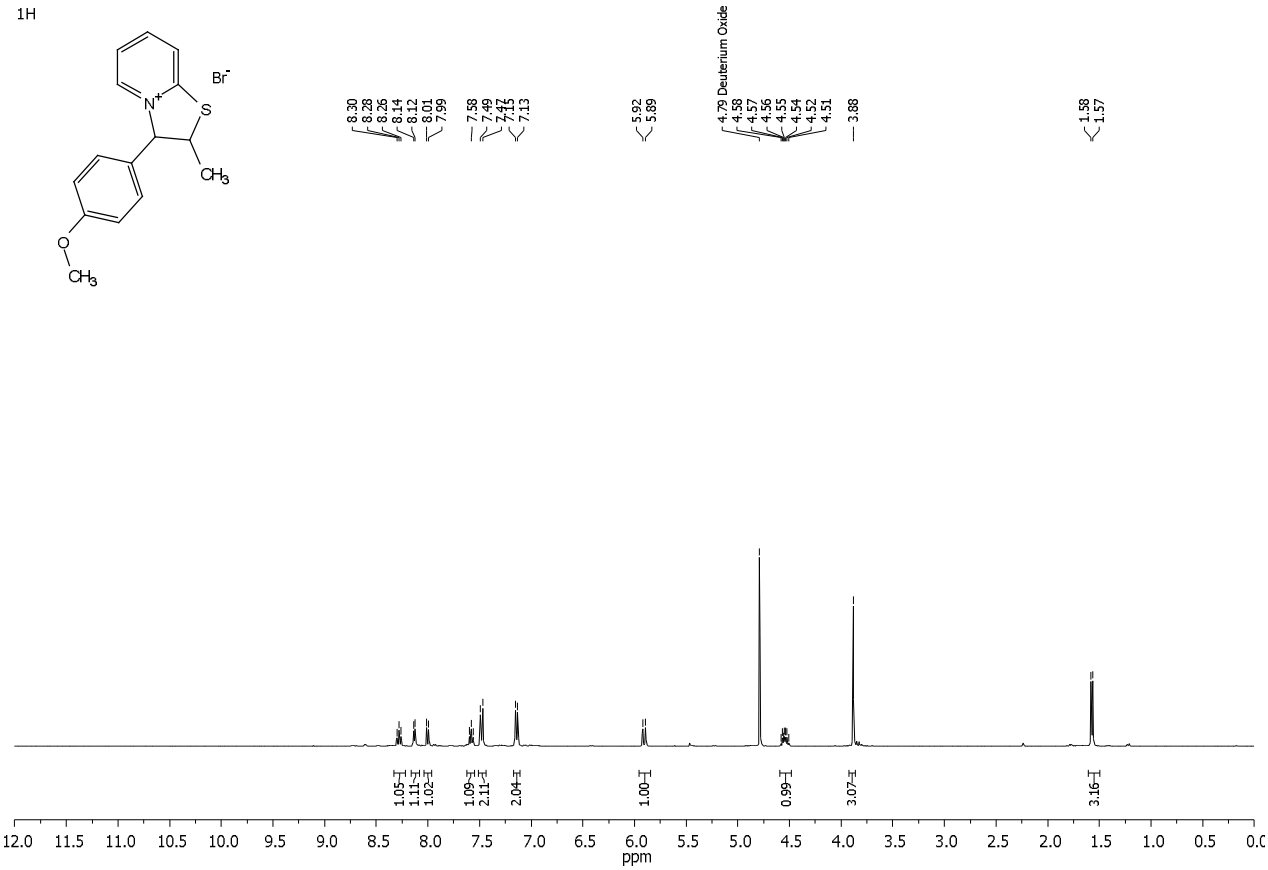
^{1}H-NMR NOESY (D_2O) spectrum of compound 11



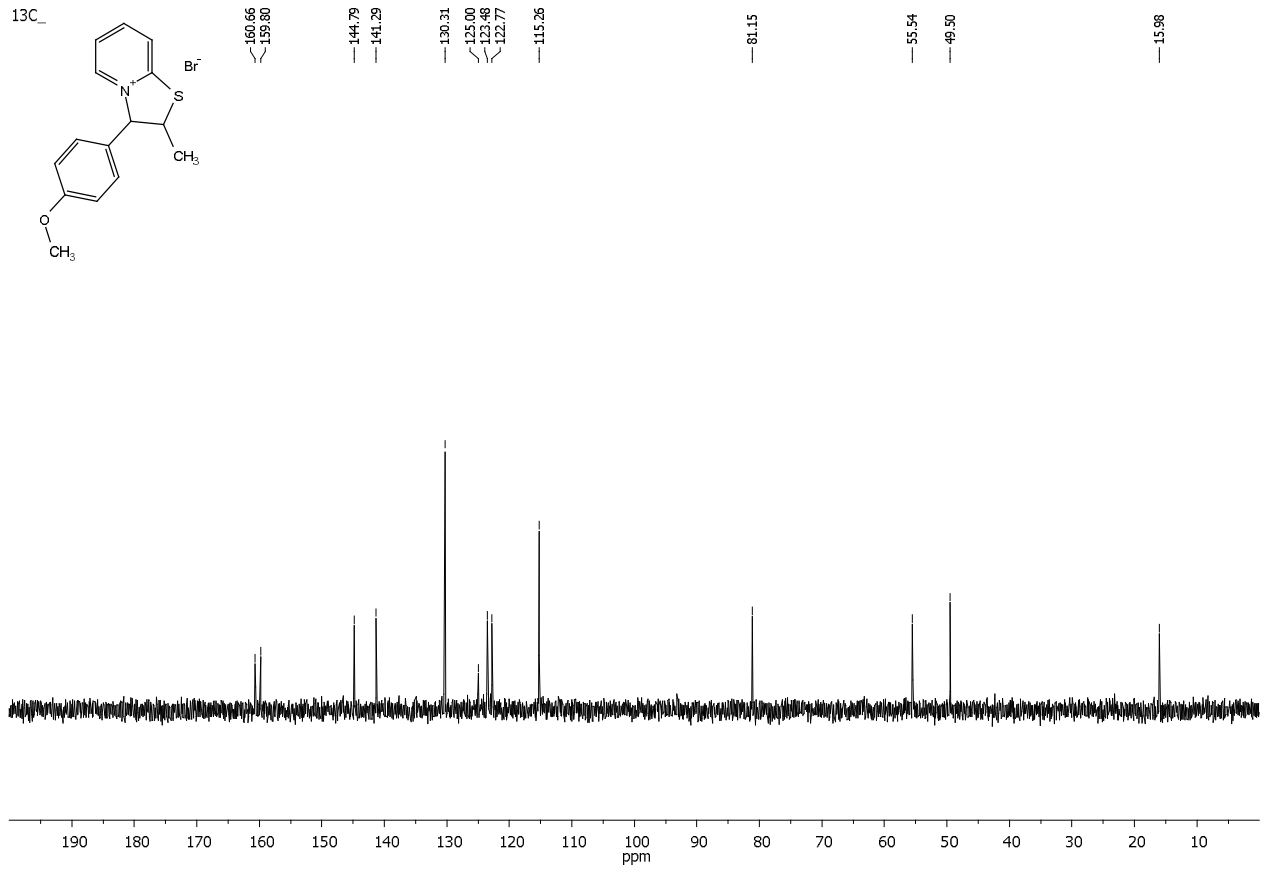
^{1}H-NMR (D_2O) spectrum of compound 12



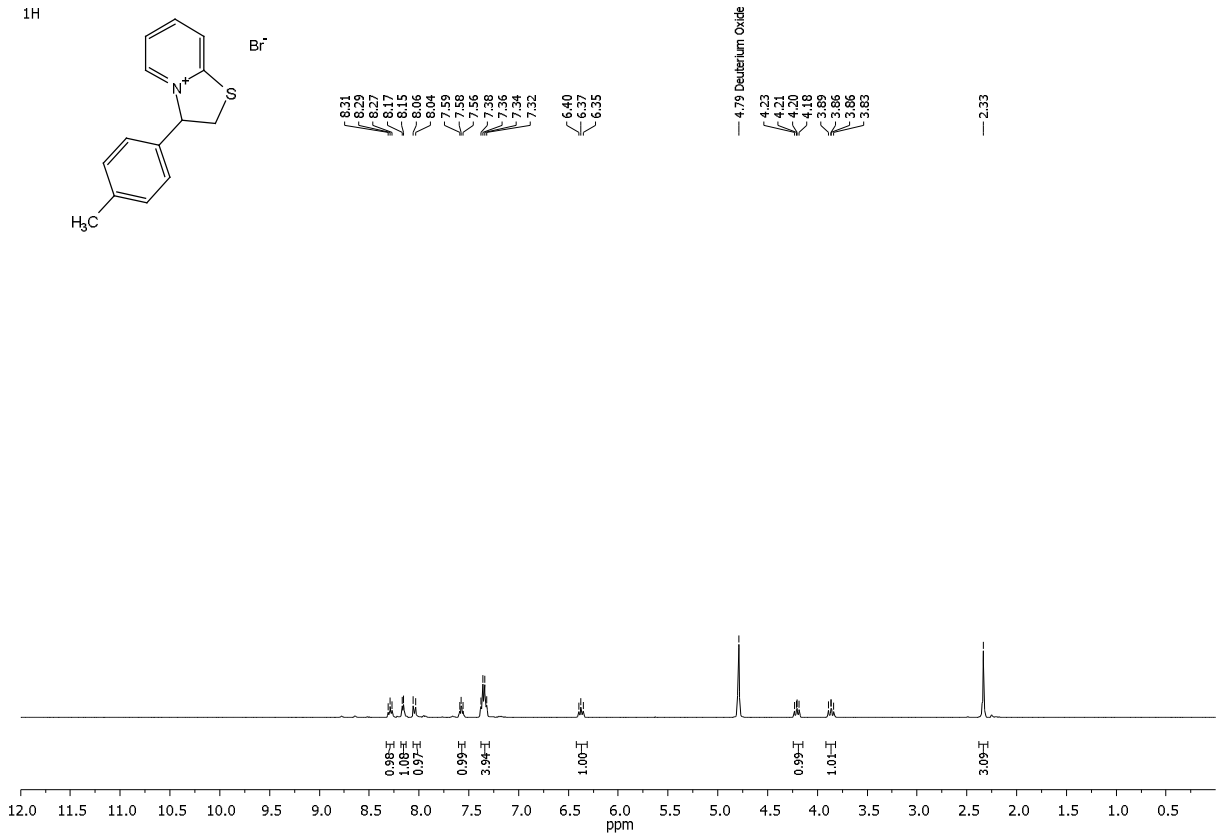
^{13}C-NMR (D_2O) spectrum of compound 12



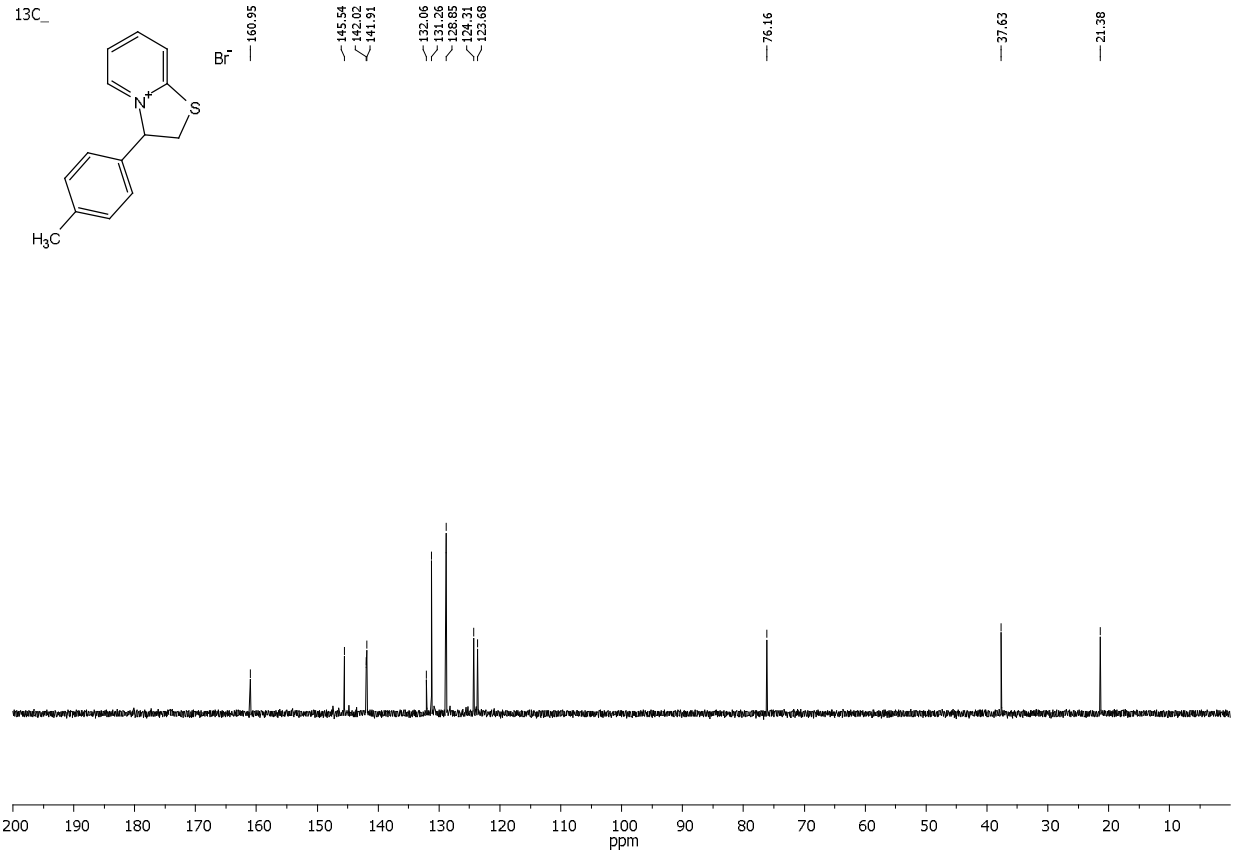
^{1}H-NMR (D_2O) spectrum of compound 13



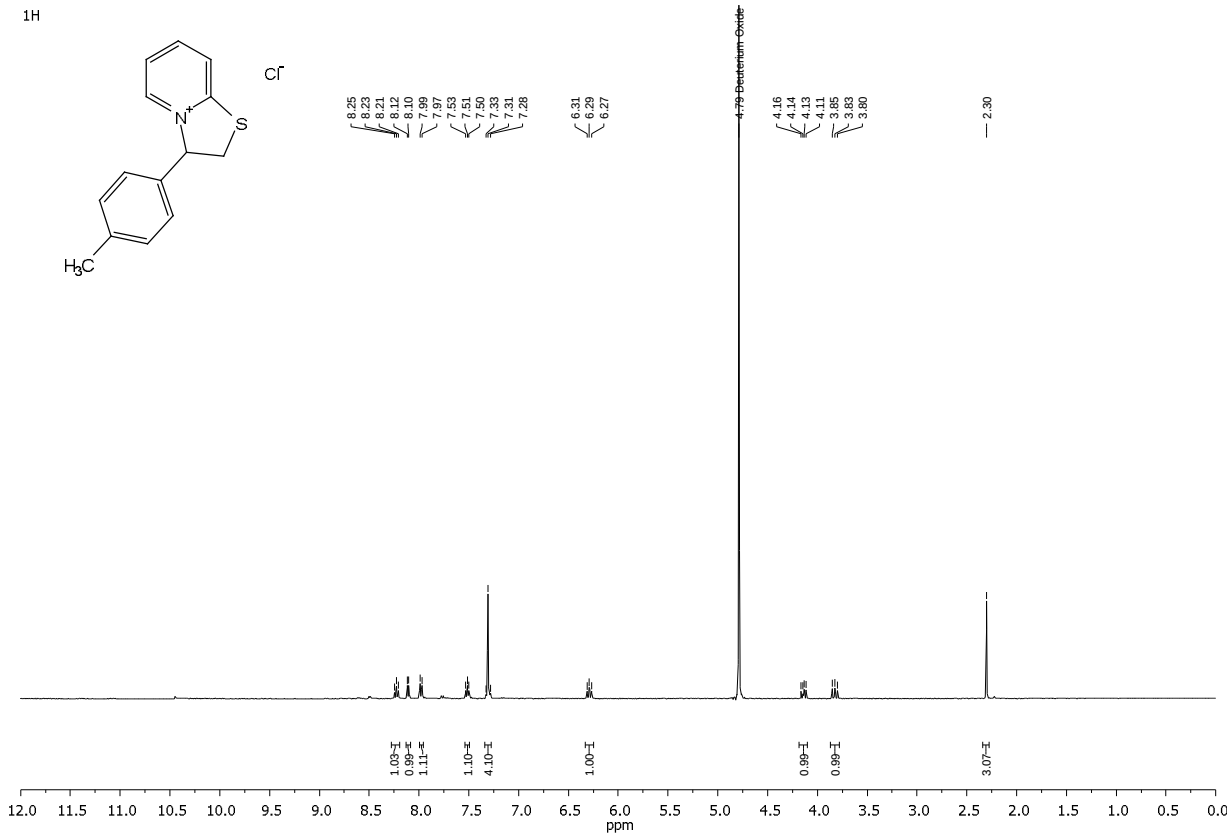
^{13}C-NMR (D_2O) spectrum of compound 13



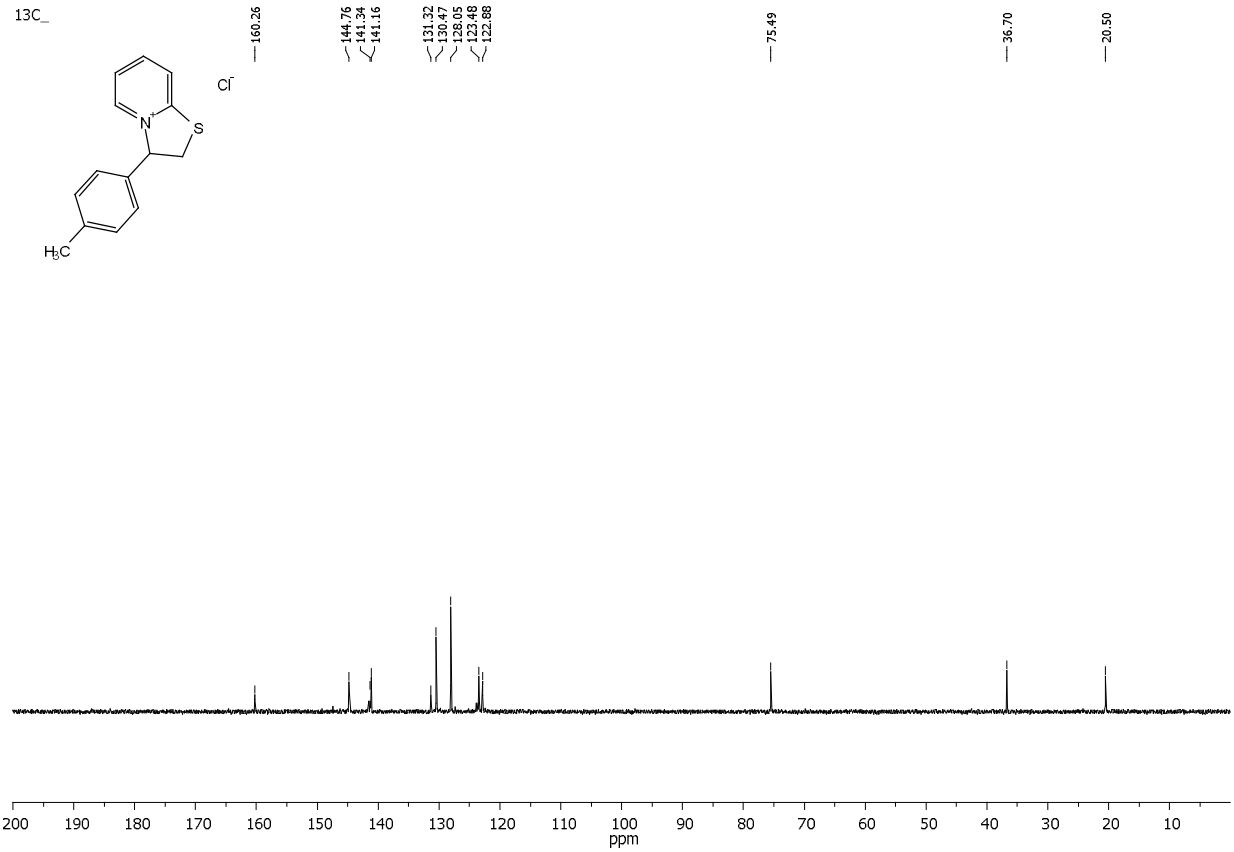
^{1}H-NMR (D_2O) spectrum of compound 14



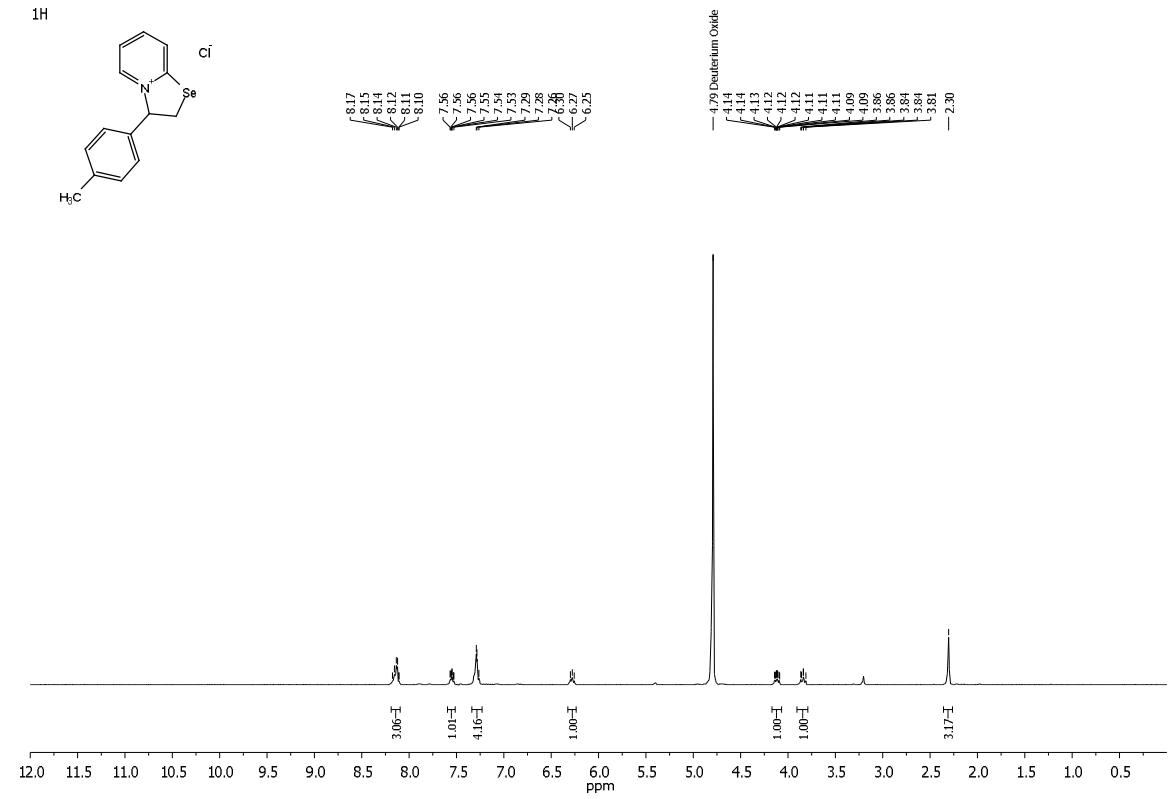
^{13}C-NMR (D_2O) spectrum of compound 14



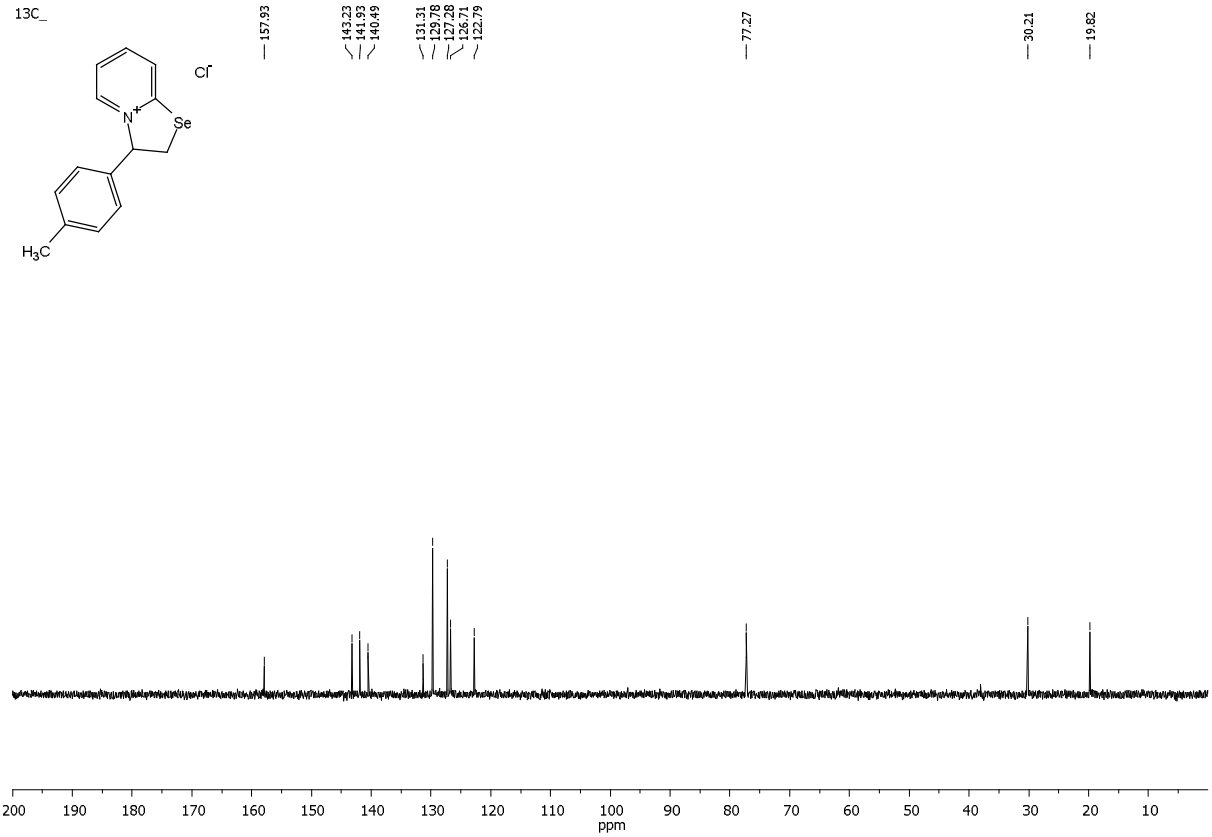
^{1}H-NMR (D_2O) spectrum of compound 15



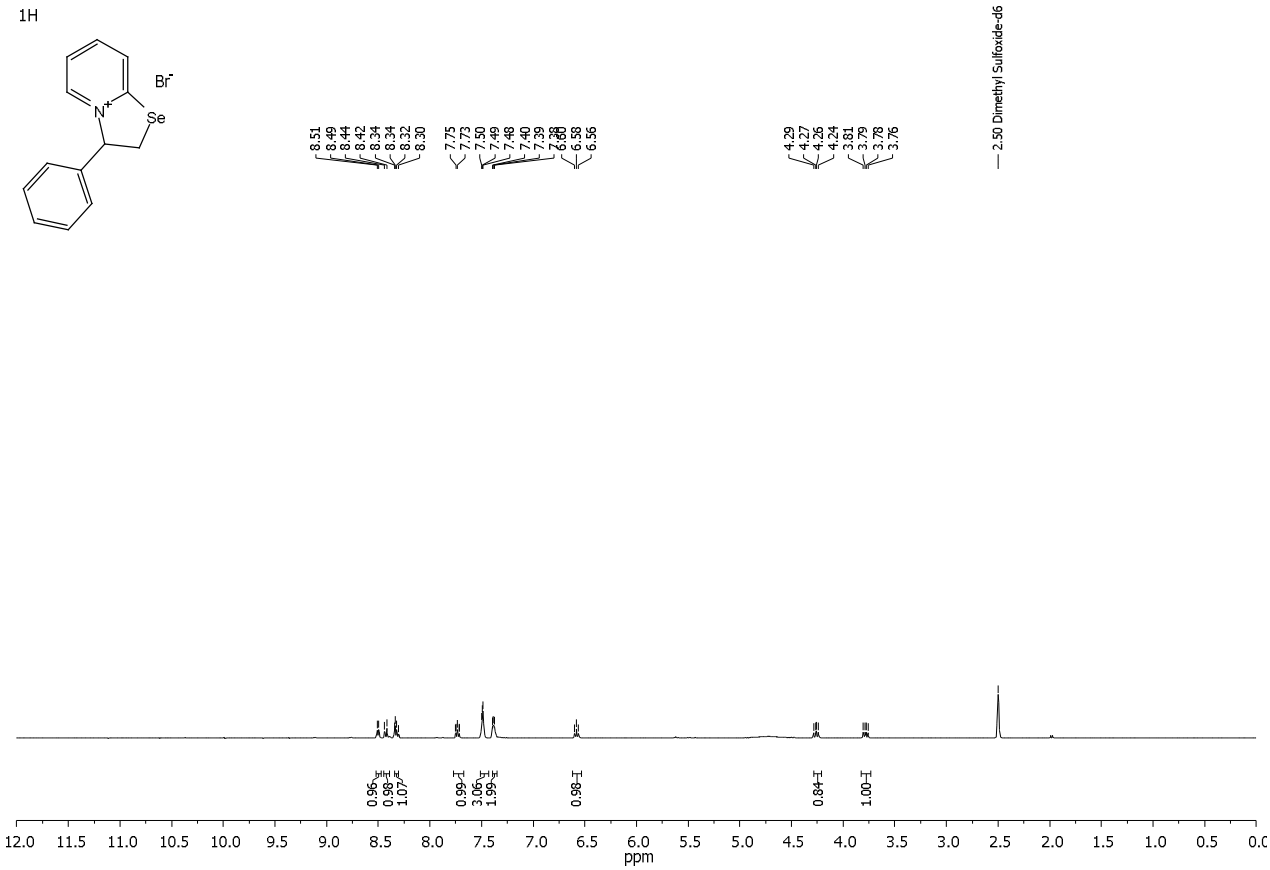
^{13}C-NMR (D_2O) spectrum of compound 15



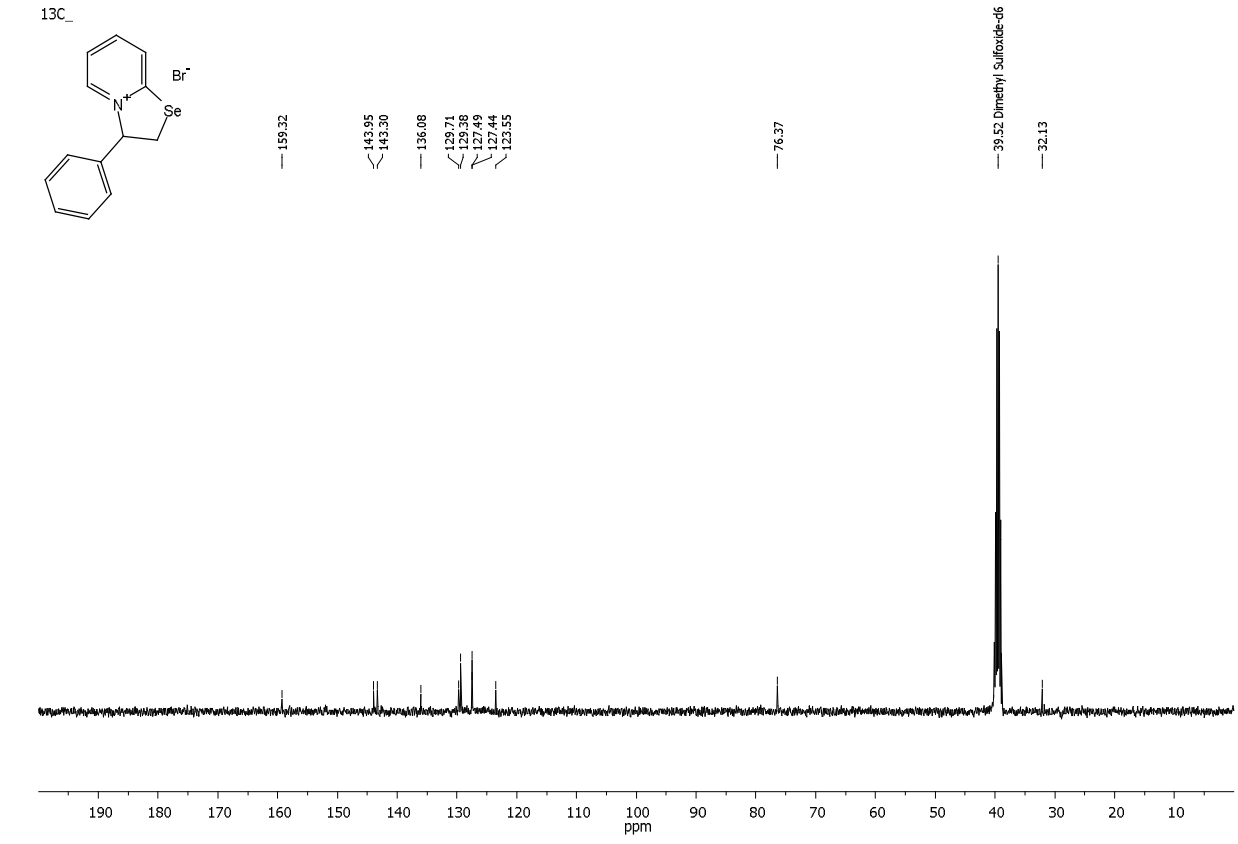
^{1}H-NMR (D_2O) spectrum of compound 17



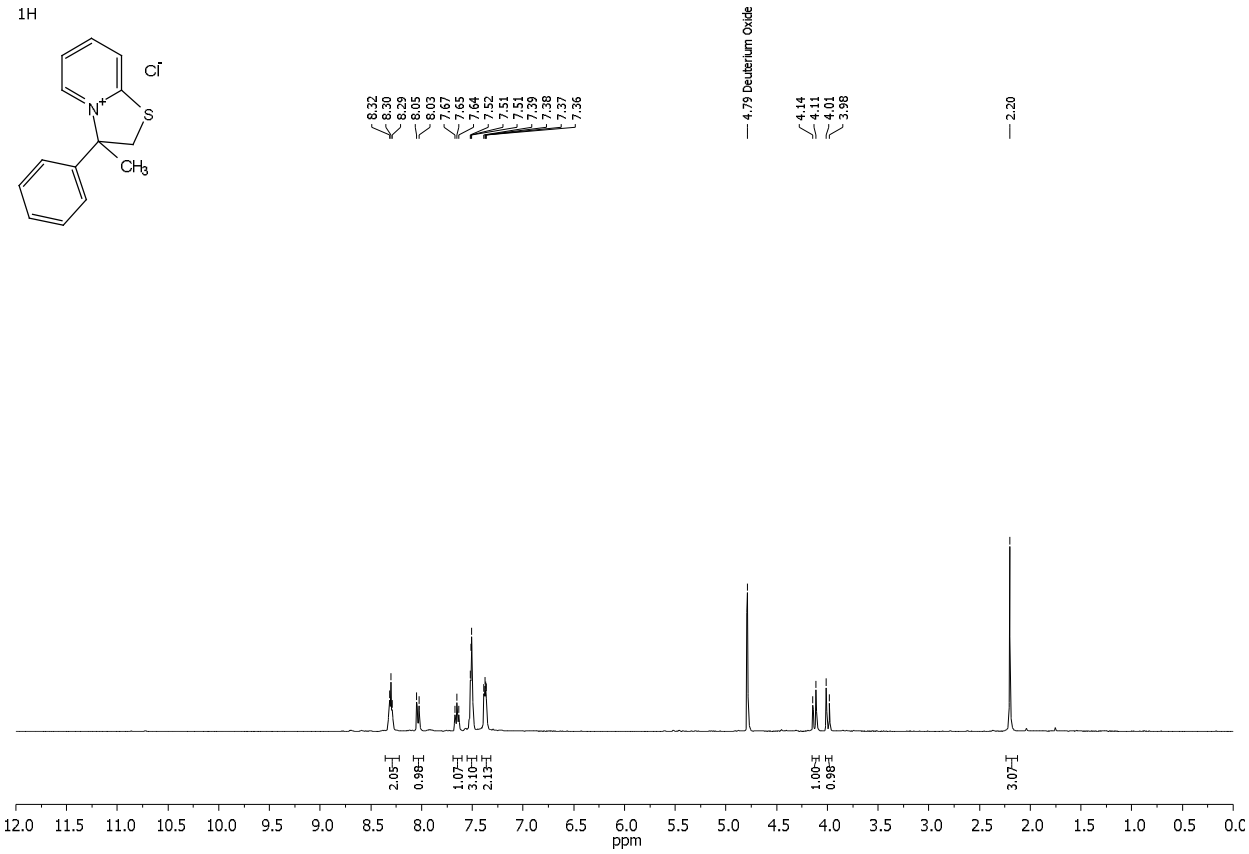
^{13}C-NMR (D_2O) spectrum of compound 17



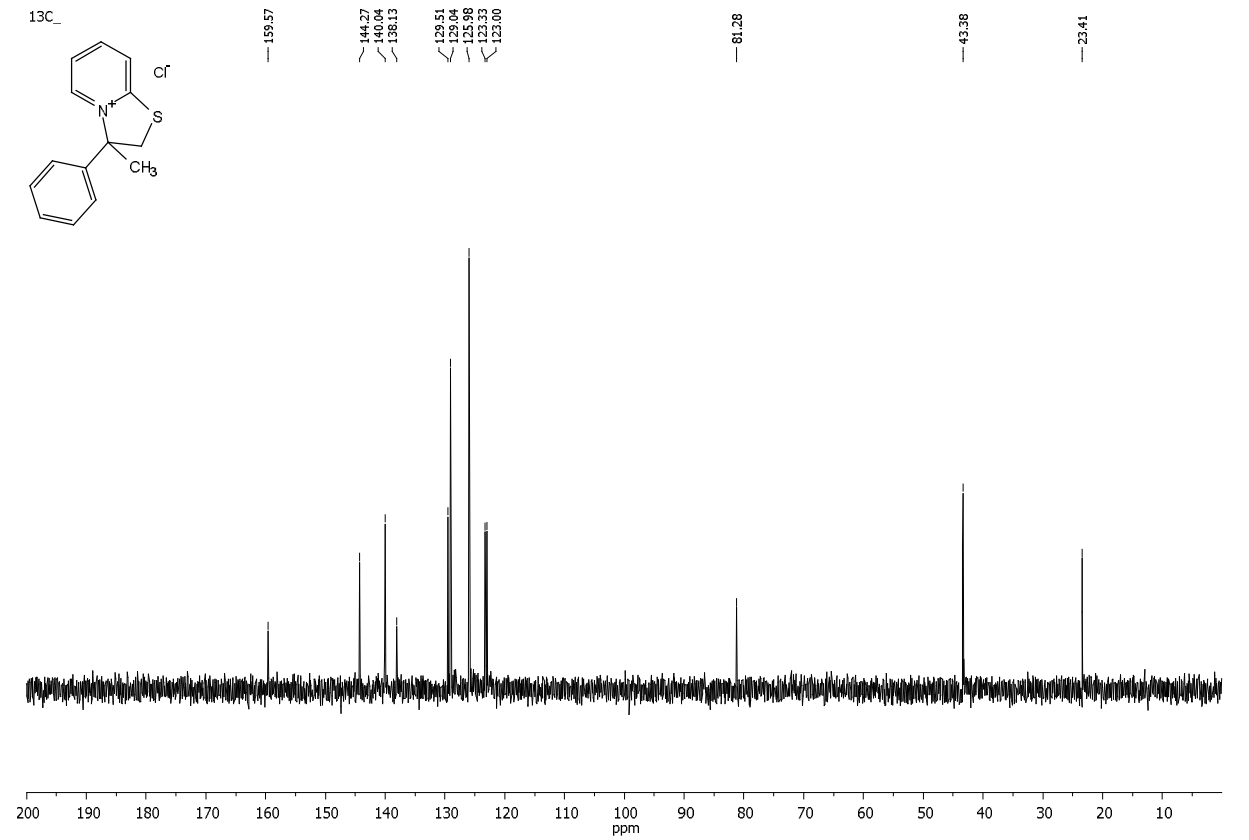
^{1}H-NMR (DMSO-d_6) spectrum of compound 18



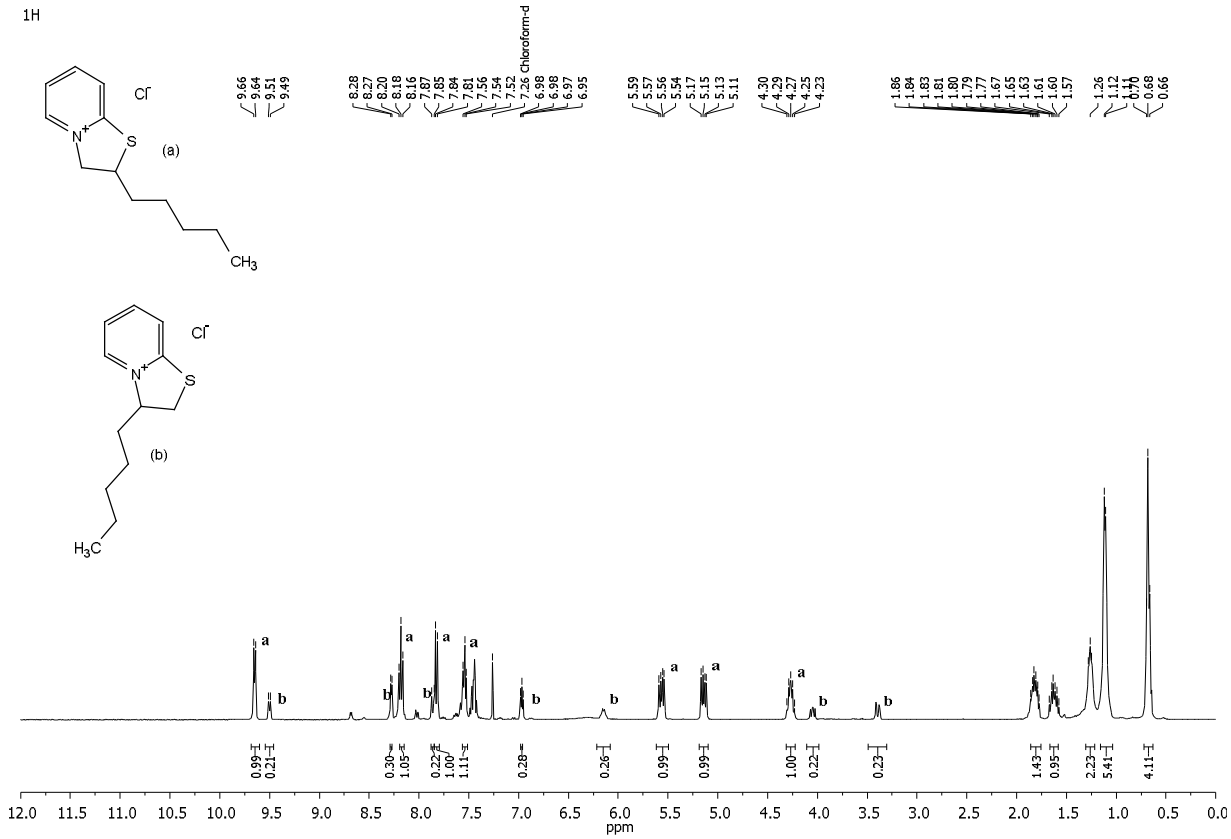
^{13}C-NMR (DMSO-d_6) spectrum of compound 18



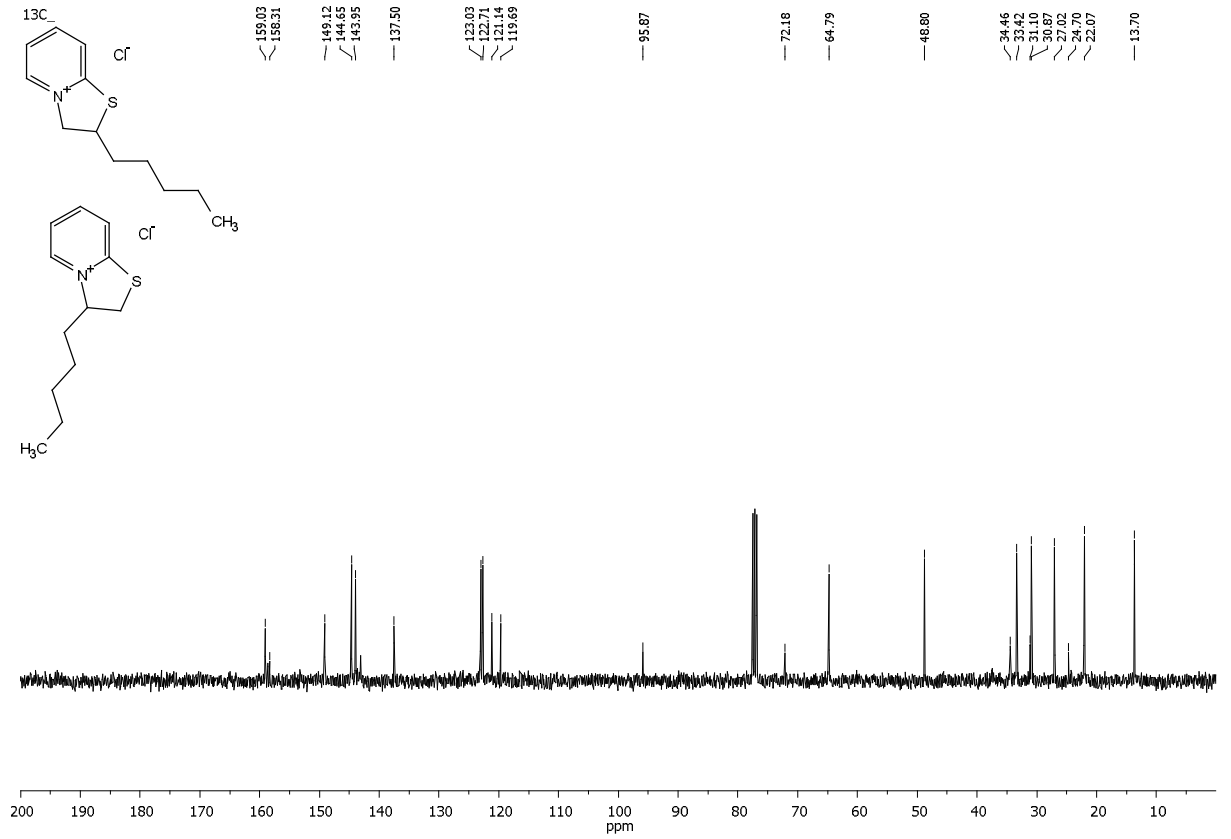
^{1}H-NMR (D_2O) spectrum of compound 22



^{13}C-NMR (D_2O) spectrum of compound 22



^{1}H-NMR ($CDCl_3$) spectrum of the mixture of compounds 24 (a) and 25 (b)



^{13}C-NMR ($CDCl_3$) spectrum of the mixture of compounds 24 and 25