Supporting Information

For

A unique dithiocarbamate chemistry during design & synthesis of novel sperm-immobilizing agents

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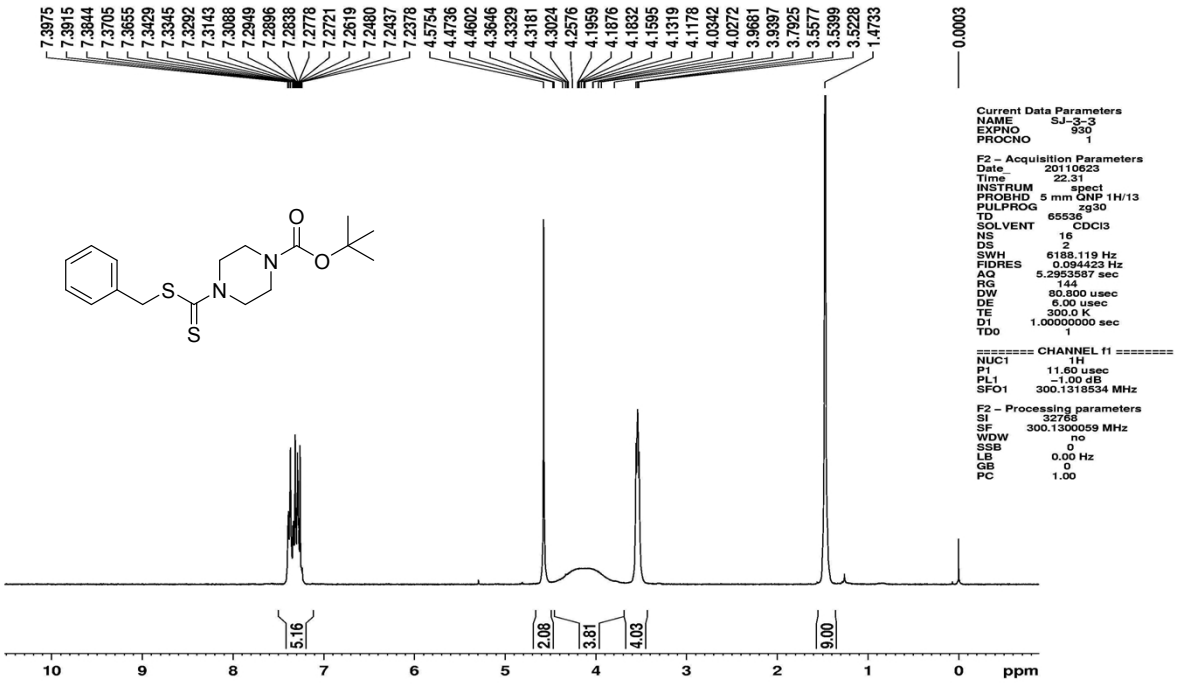
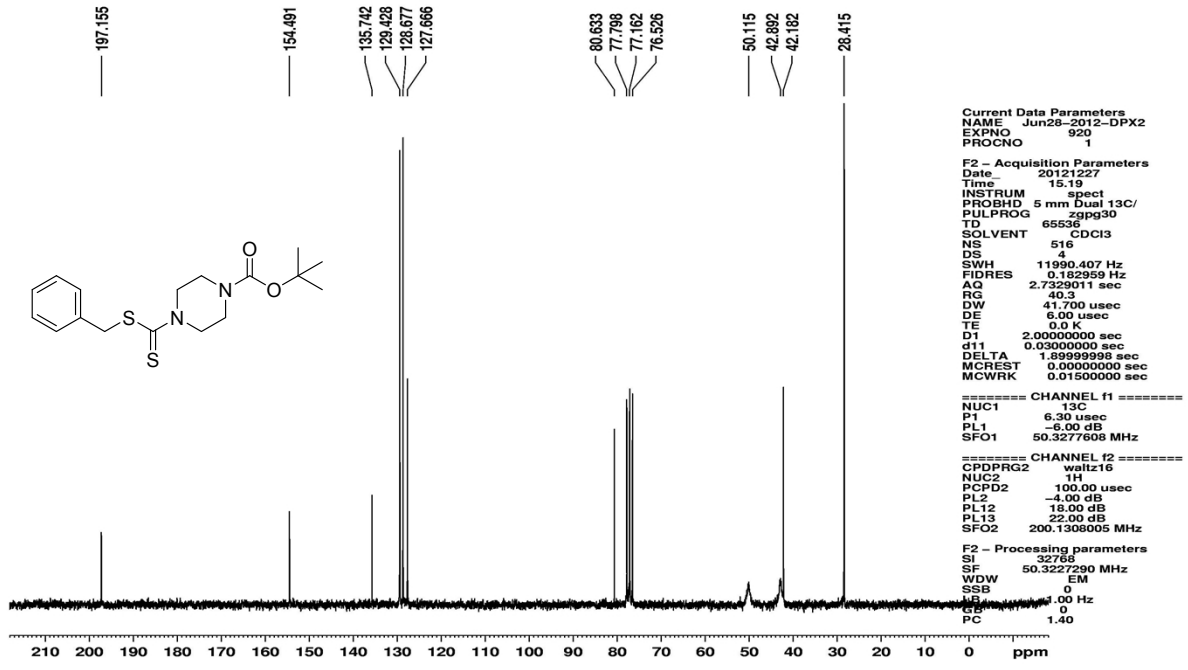
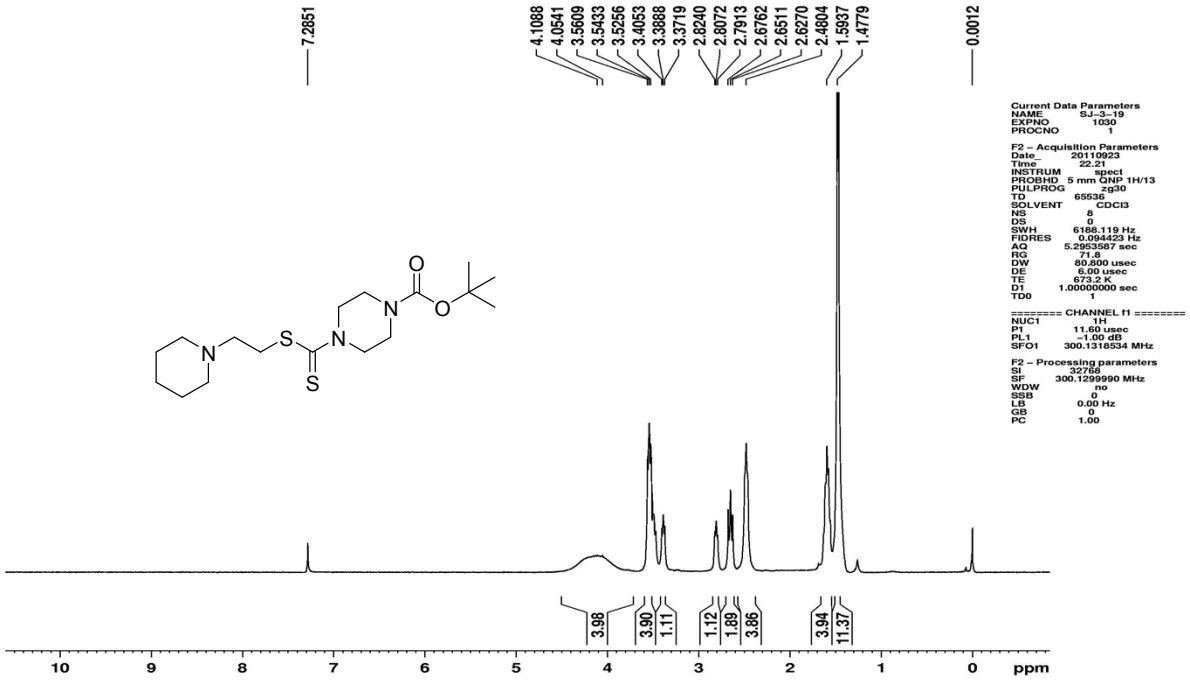


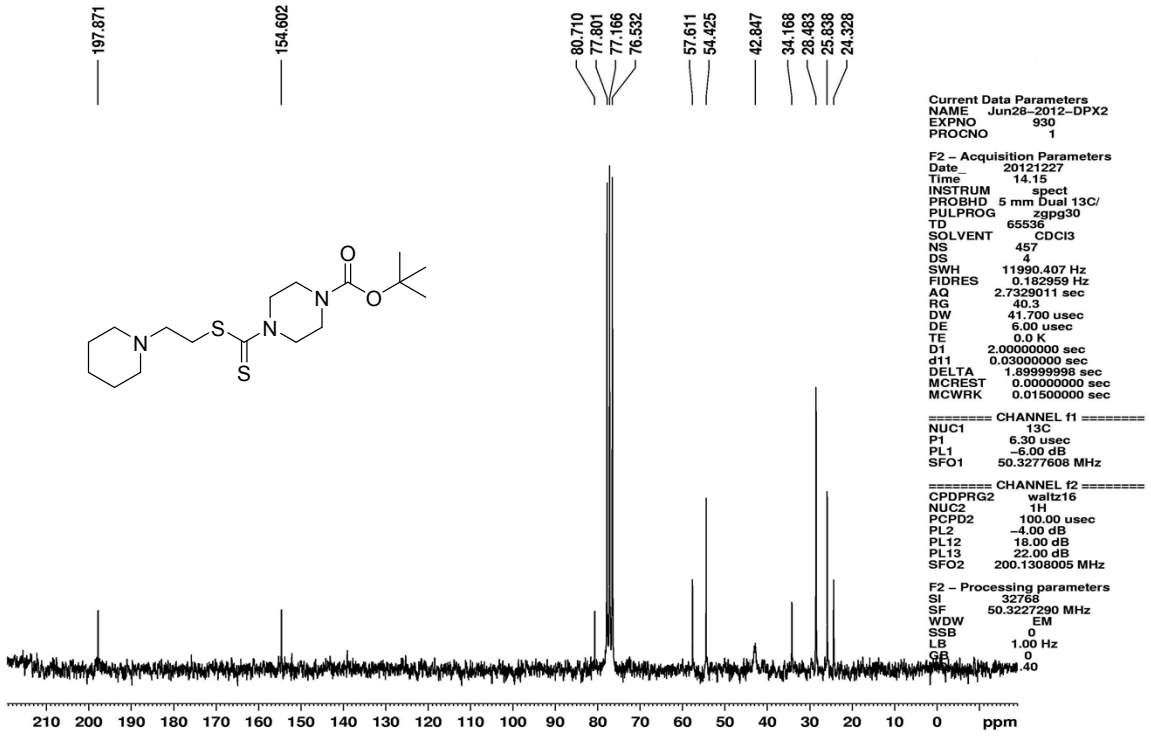
^{1}H NMR (300MHz, $CDCl_3$) of compound **4**



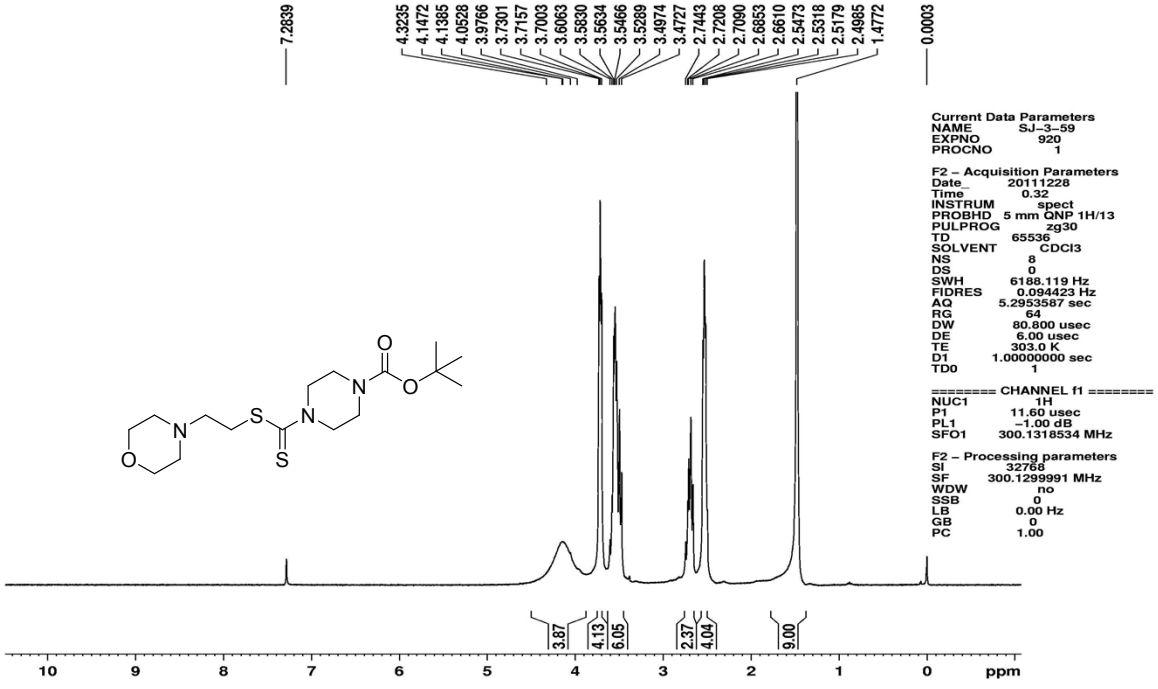
^{13}C NMR (50 MHz, $CDCl_3$) of compound **4**



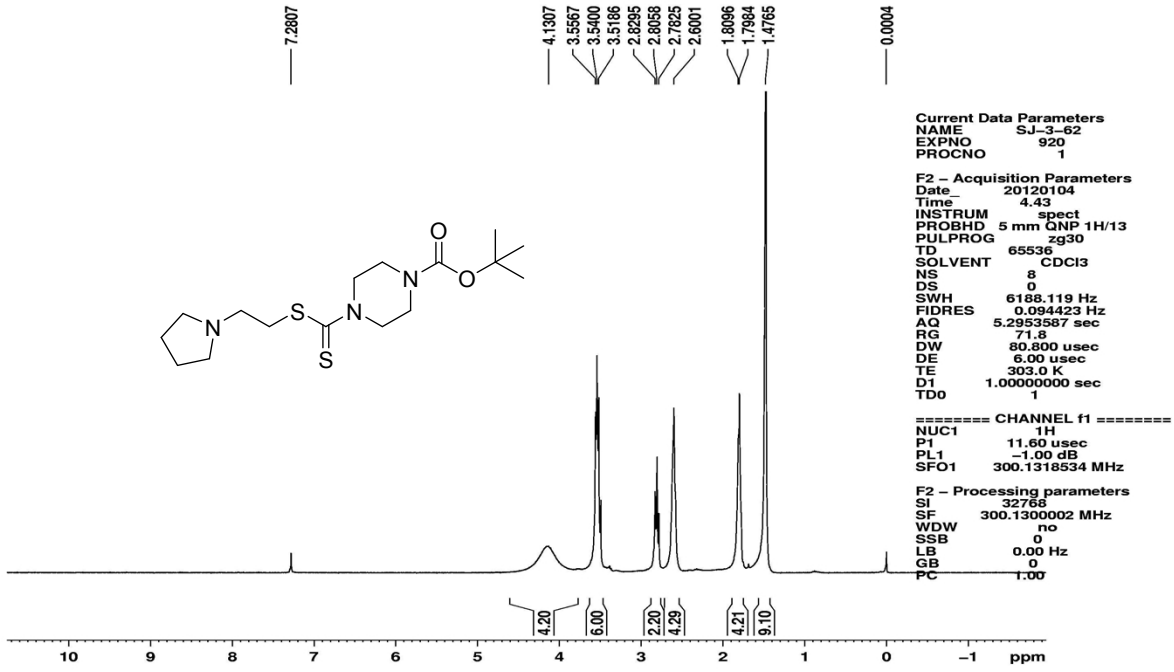
^{1}H NMR (300MHz, $CDCl_3$) of compound **5**



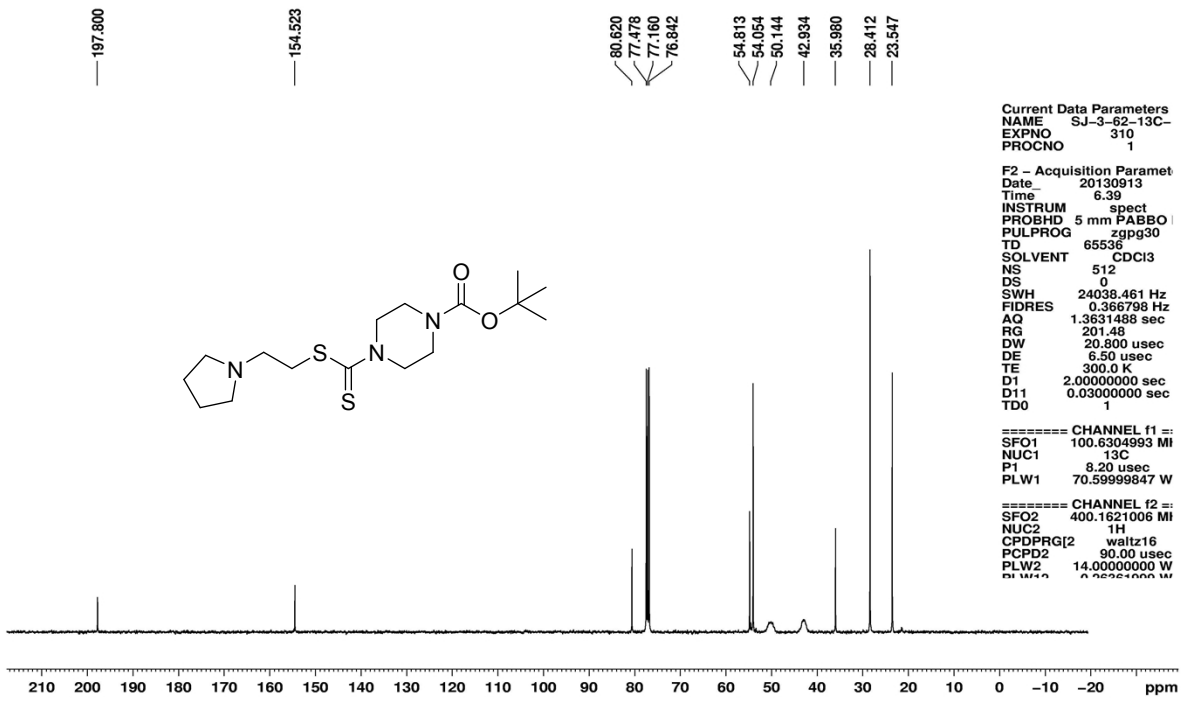
^{13}C NMR (50 MHz, $CDCl_3$) of compound **5**



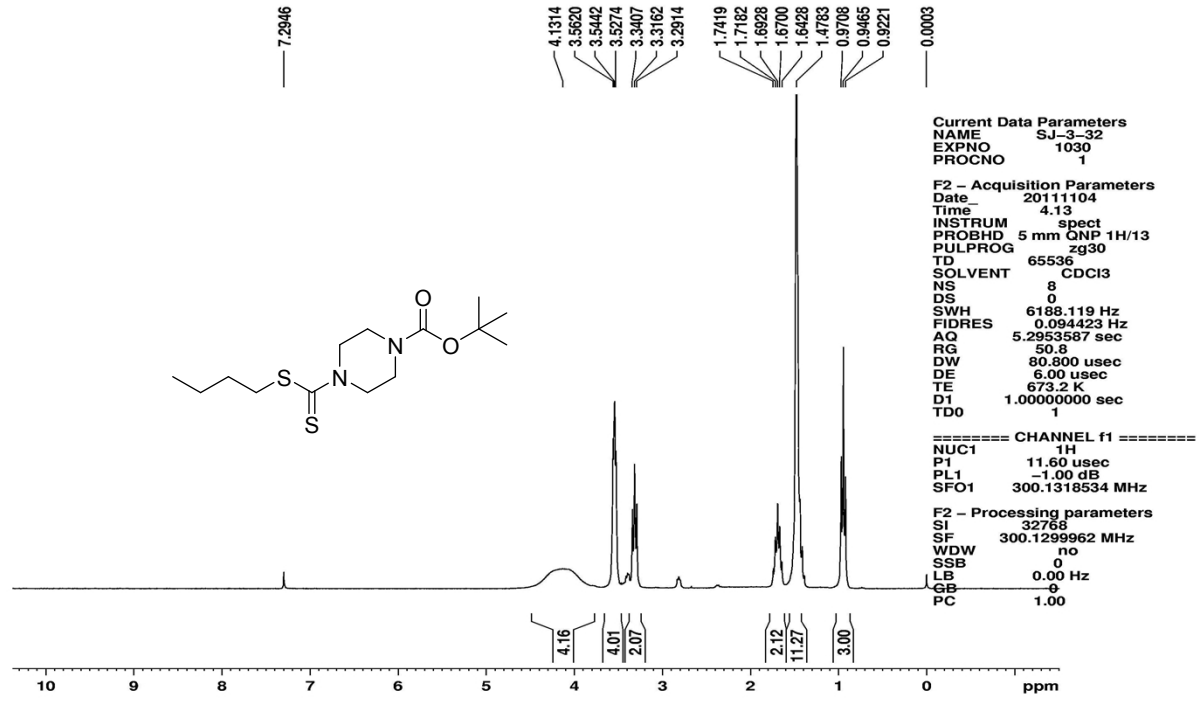
^{1}H NMR (300MHz, $CDCl_3$) of compound **6**



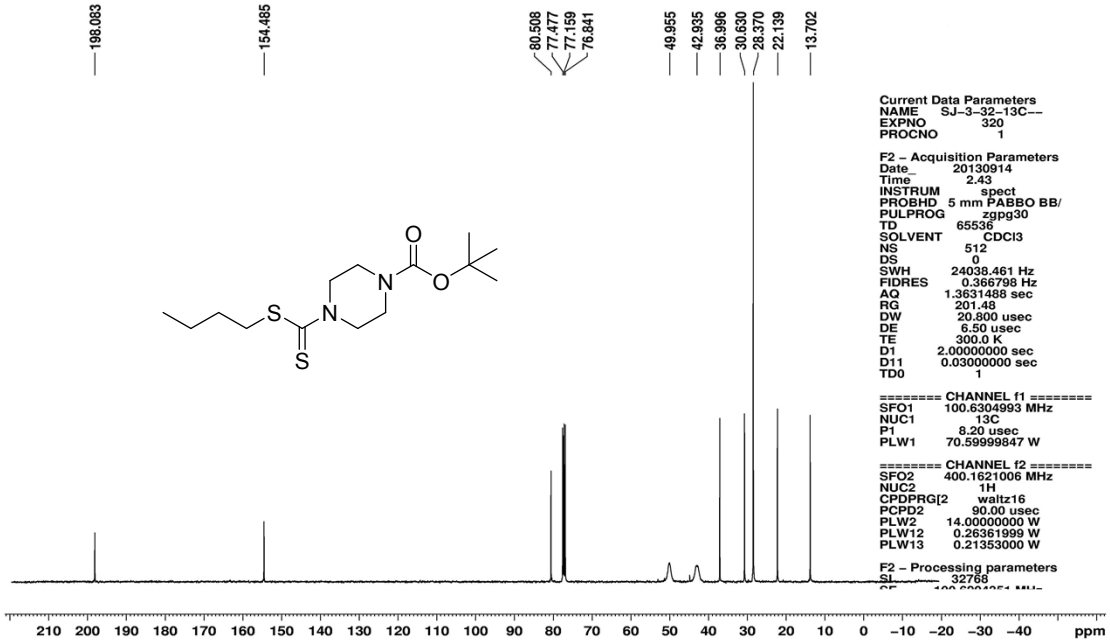
^{1}H NMR (300 MHz, $CDCl_3$) of compound **7**



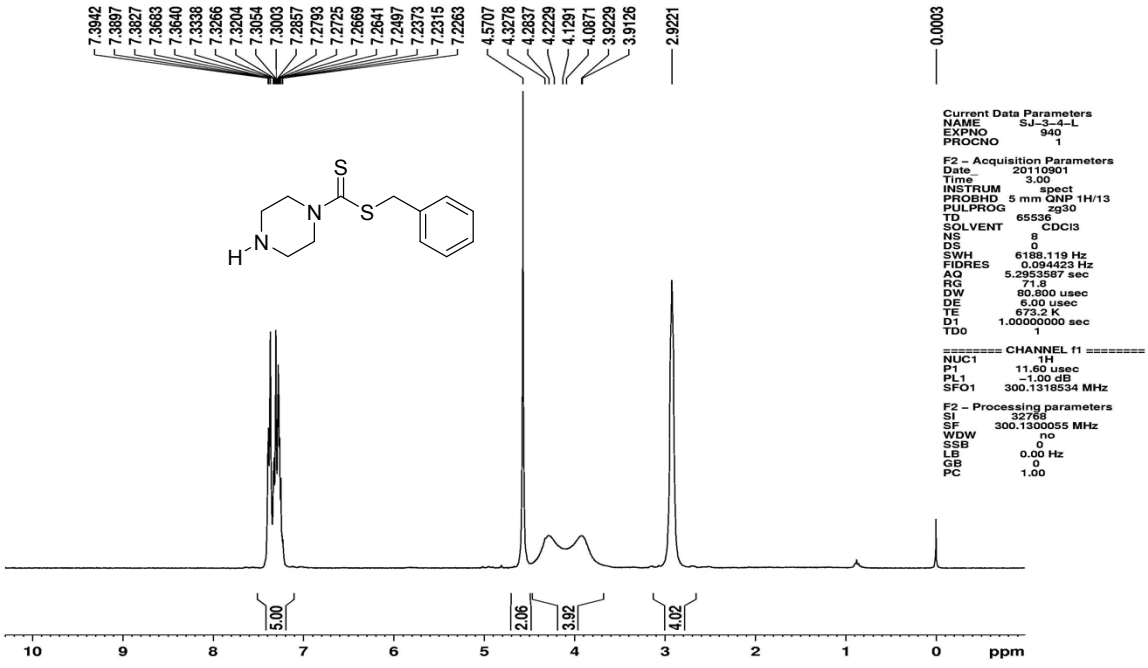
^{13}C NMR (100 MHz, $CDCl_3$) of compound **7**



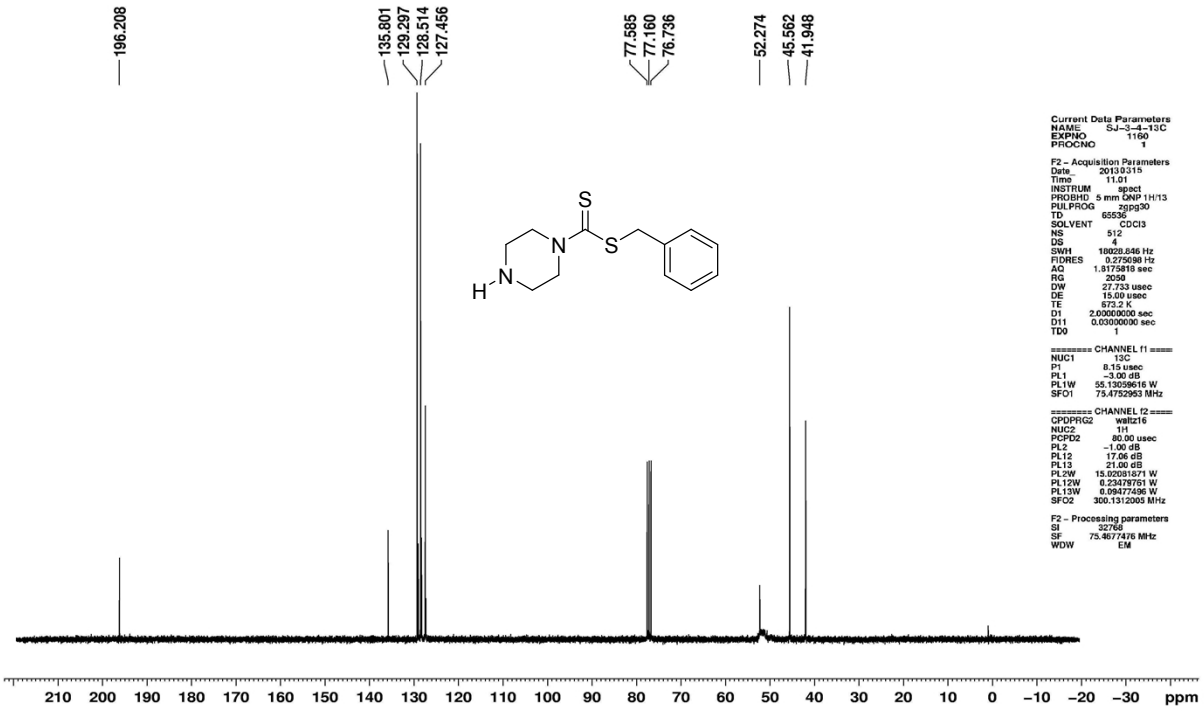
^{1}H NMR (300 MHz, $CDCl_3$) of compound **8**



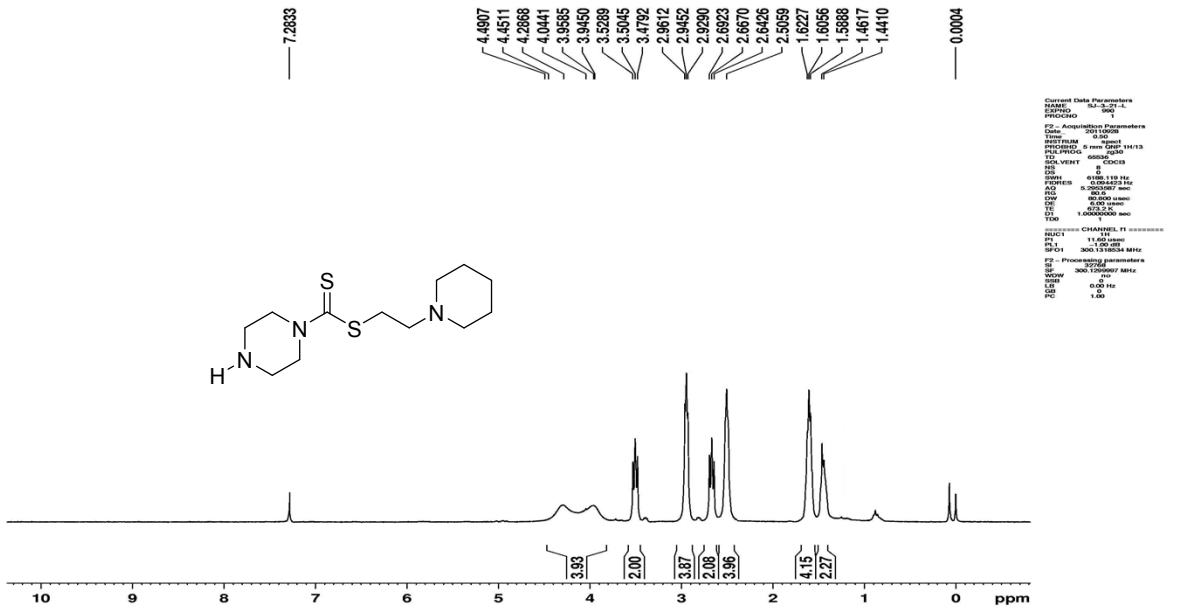
^{13}C NMR (100 MHz, $CDCl_3$) of compound **8**



^{1}H NMR (300 MHz, $CDCl_3$) of compound **9**

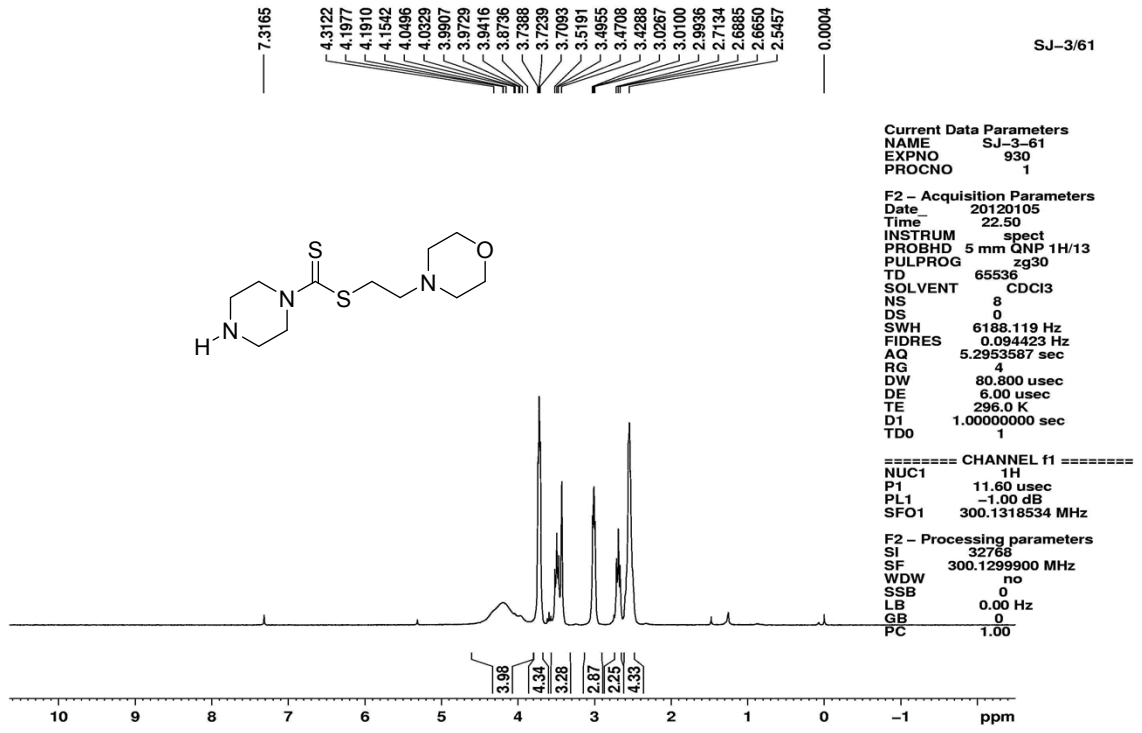


^{13}C NMR (75 MHz, $CDCl_3$) of compound **9**

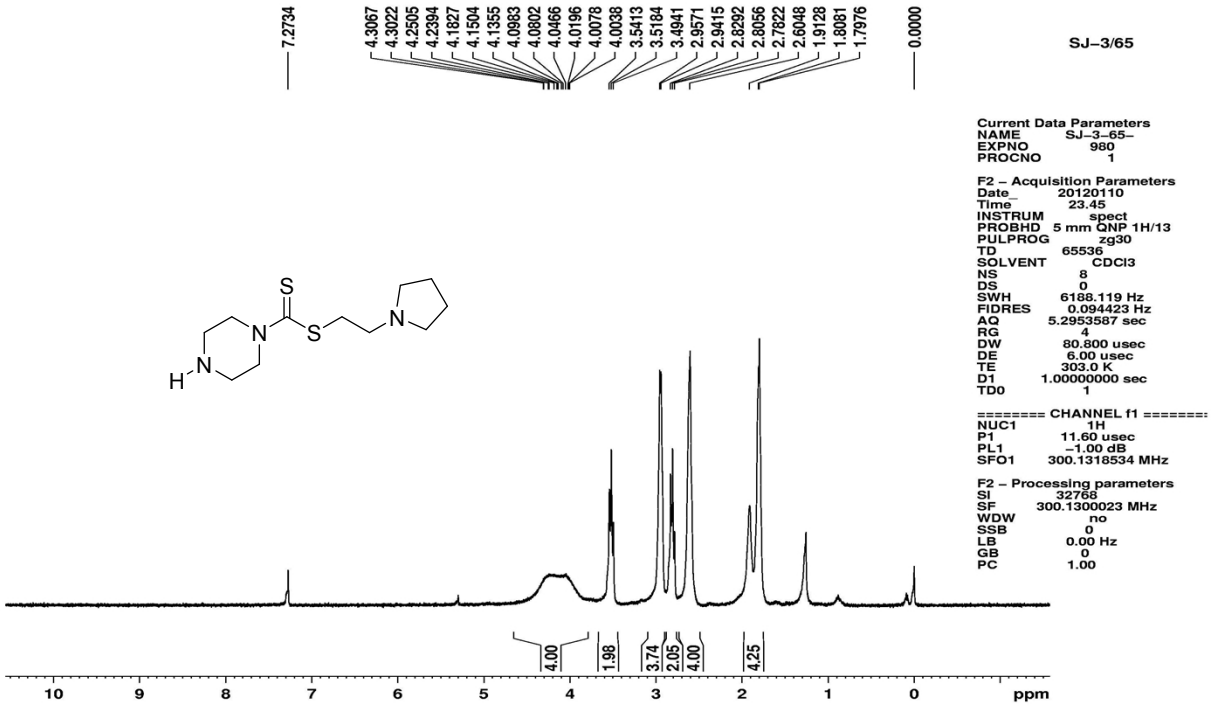


^{1}H NMR (300 MHz, $CDCl_3$) of compound **10**

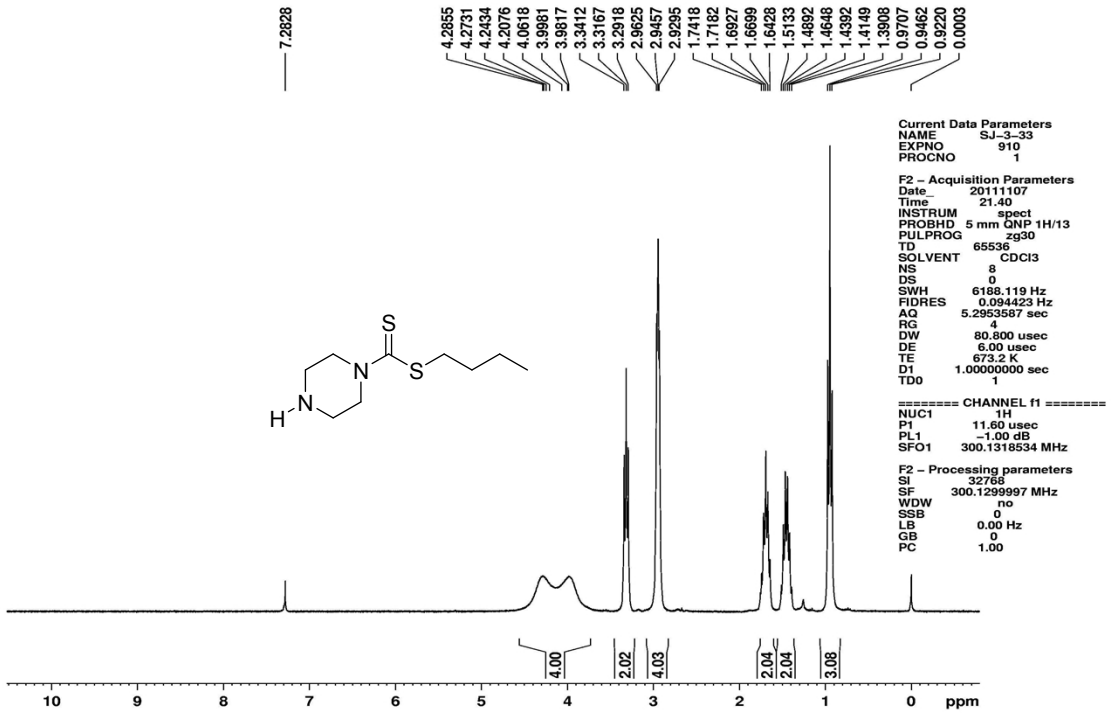
^{13}C NMR (100 MHz, $CDCl_3$) of compound **10**



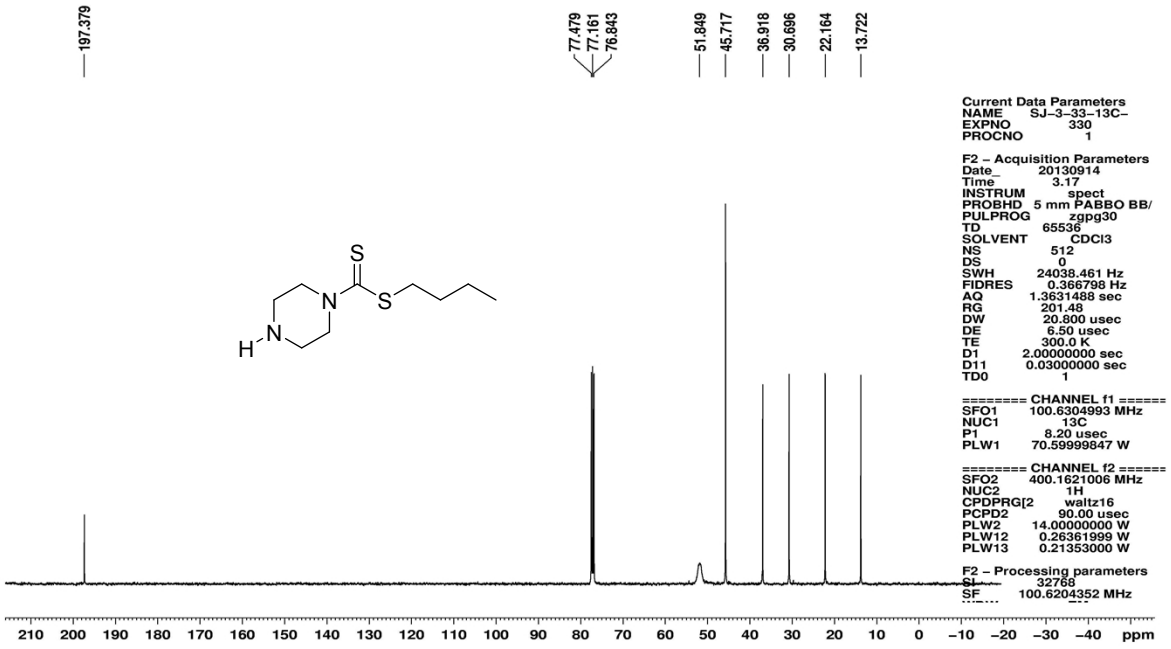
^{1}H NMR (300 MHz, $CDCl_3$) of compound **11**



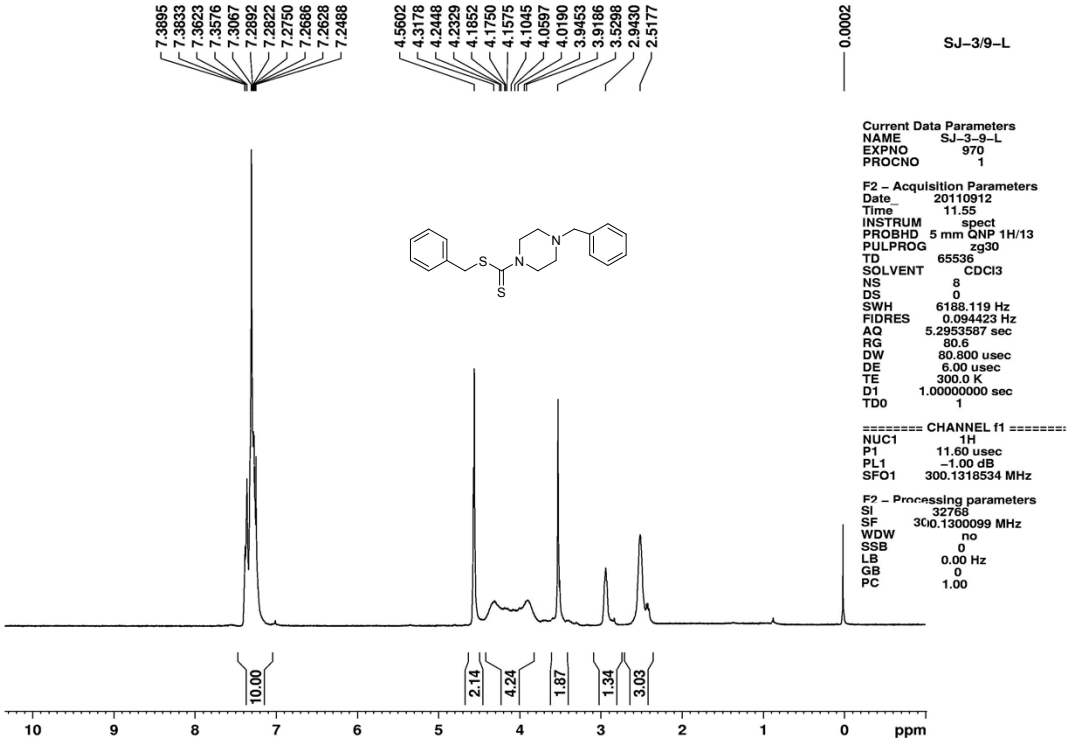
^{1}H NMR (300 MHz, $CDCl_3$) of compound **12**



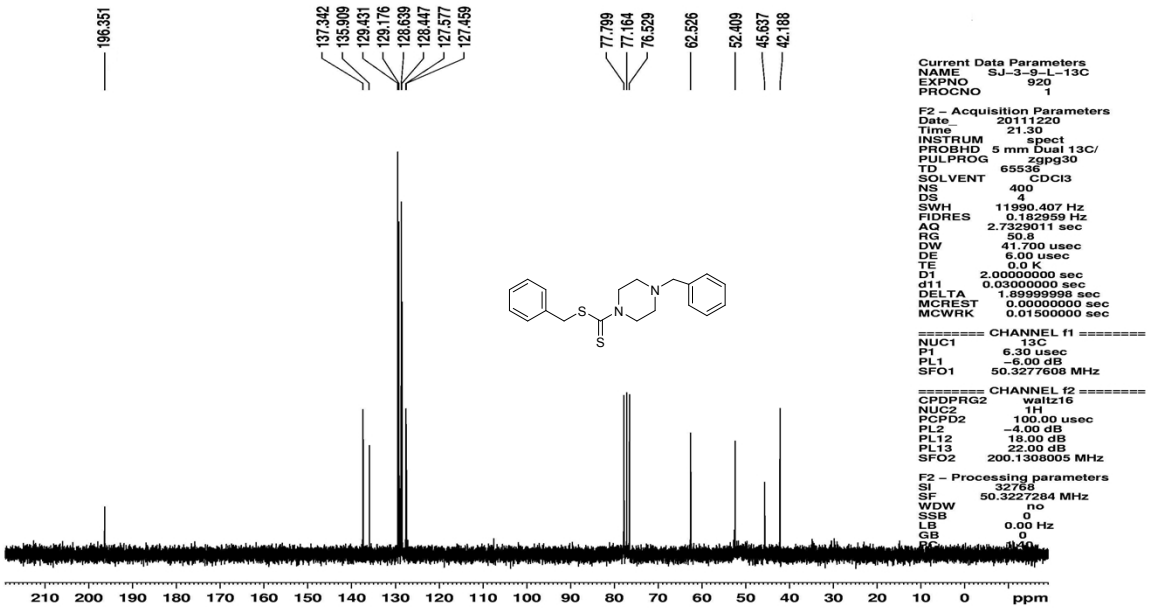
^{1}H NMR (300 MHz, $CDCl_3$) of compound **13**



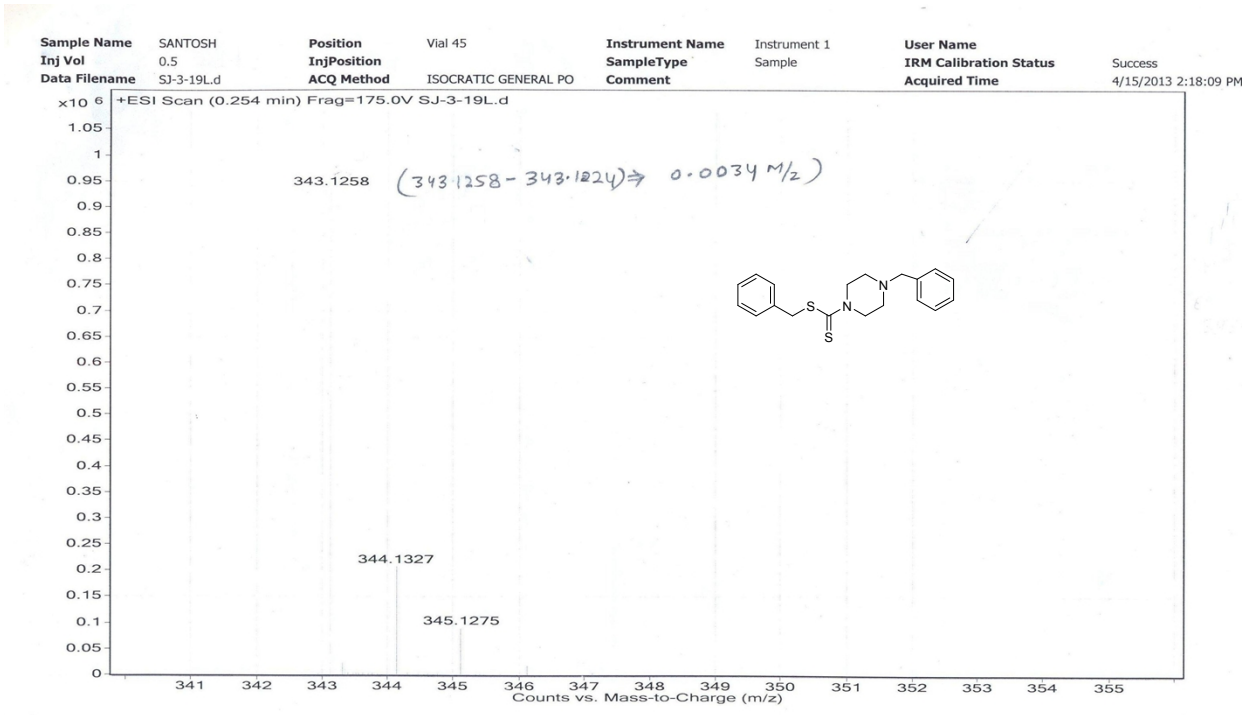
^{13}C NMR (100 MHz, $CDCl_3$) of compound **13**



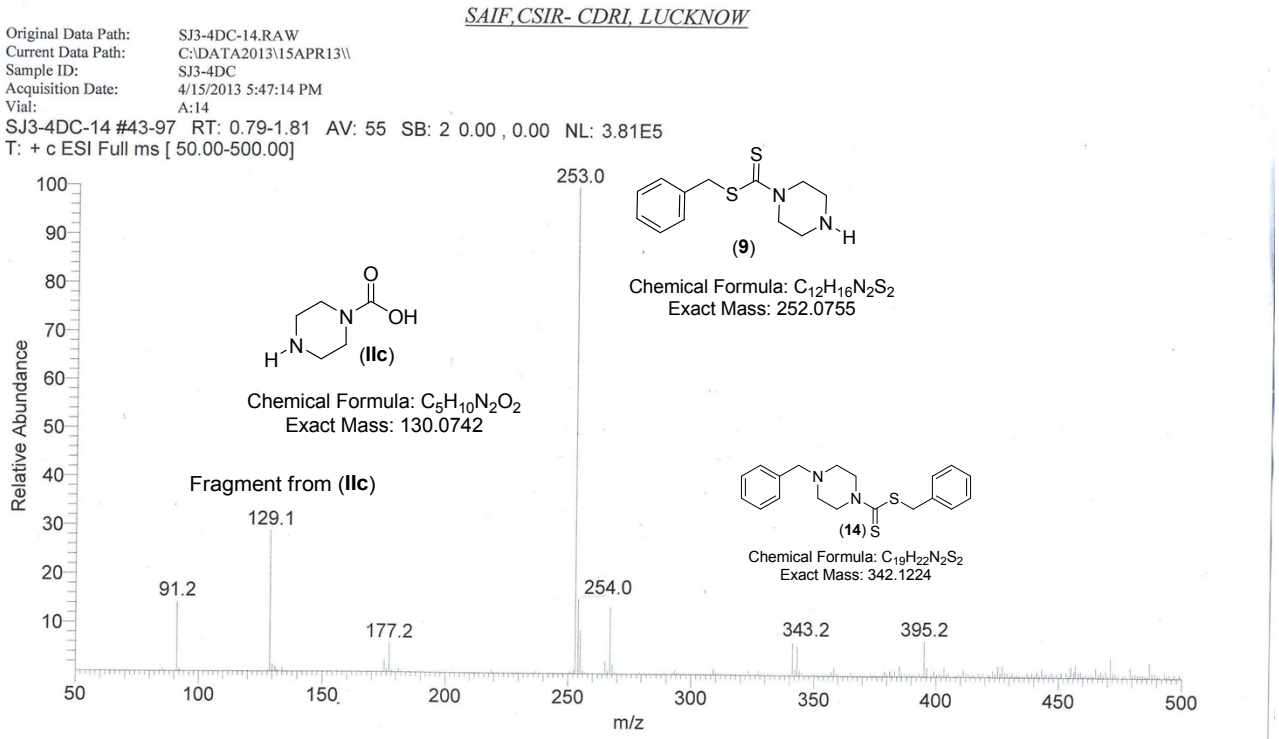
^{1}H NMR (300 MHz, $CDCl_3$) of compound **14**



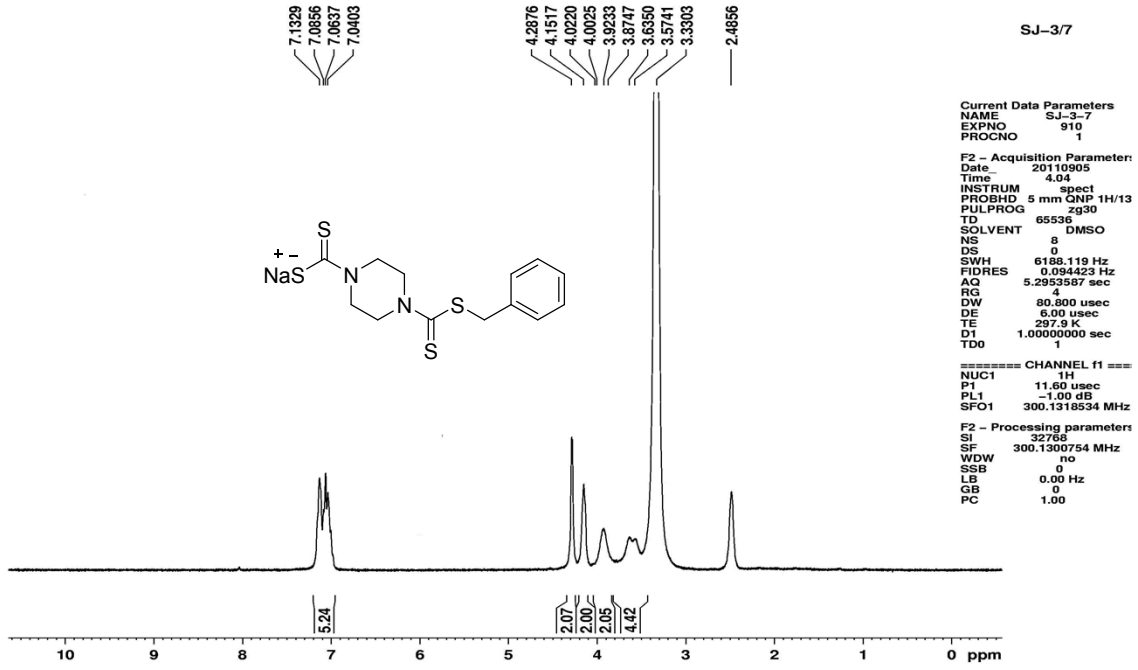
^{13}C NMR (50 MHz, $CDCl_3$) of compound **14**



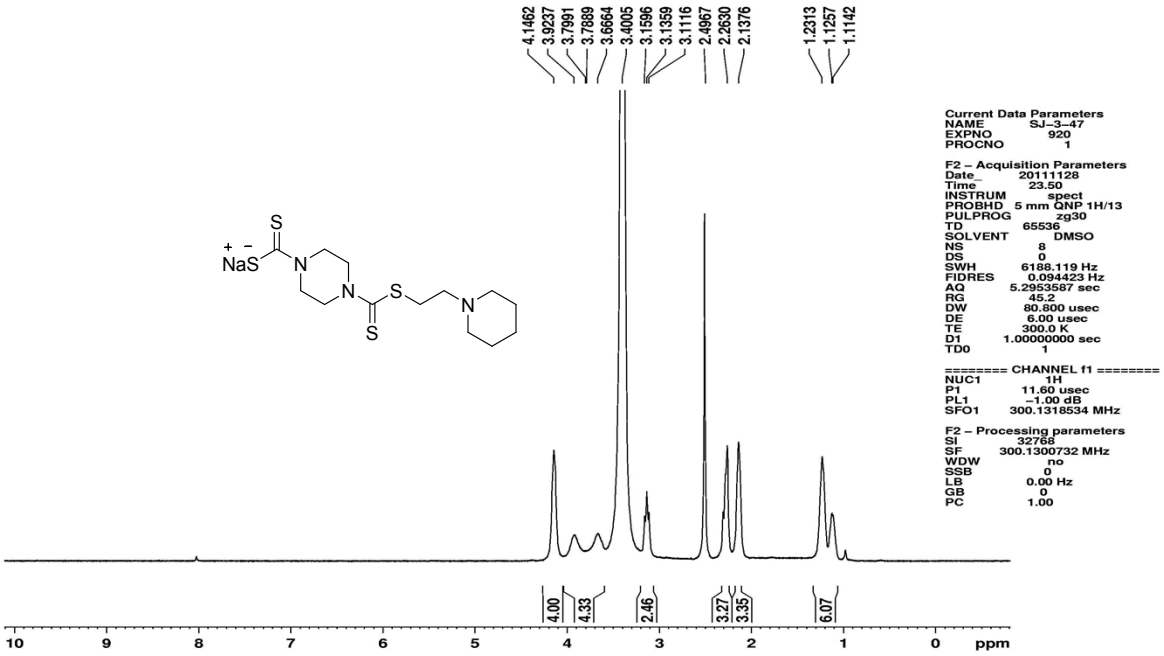
HRMS of compound **14**



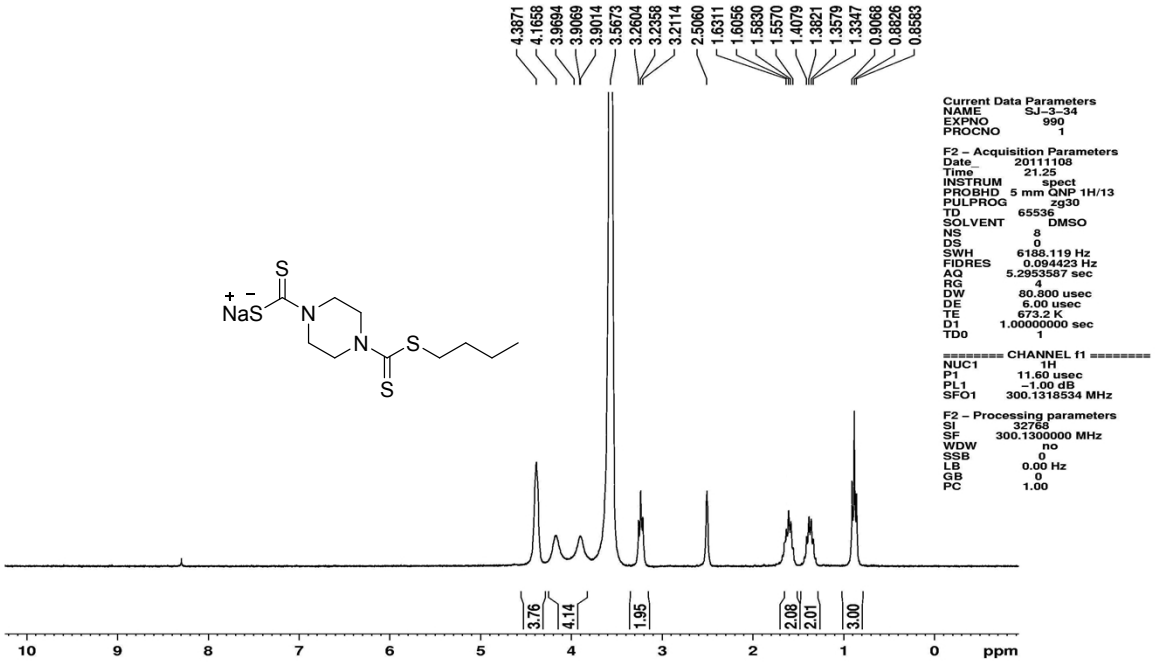
Mass spectra of reaction mixture (preparation of compound **9**)



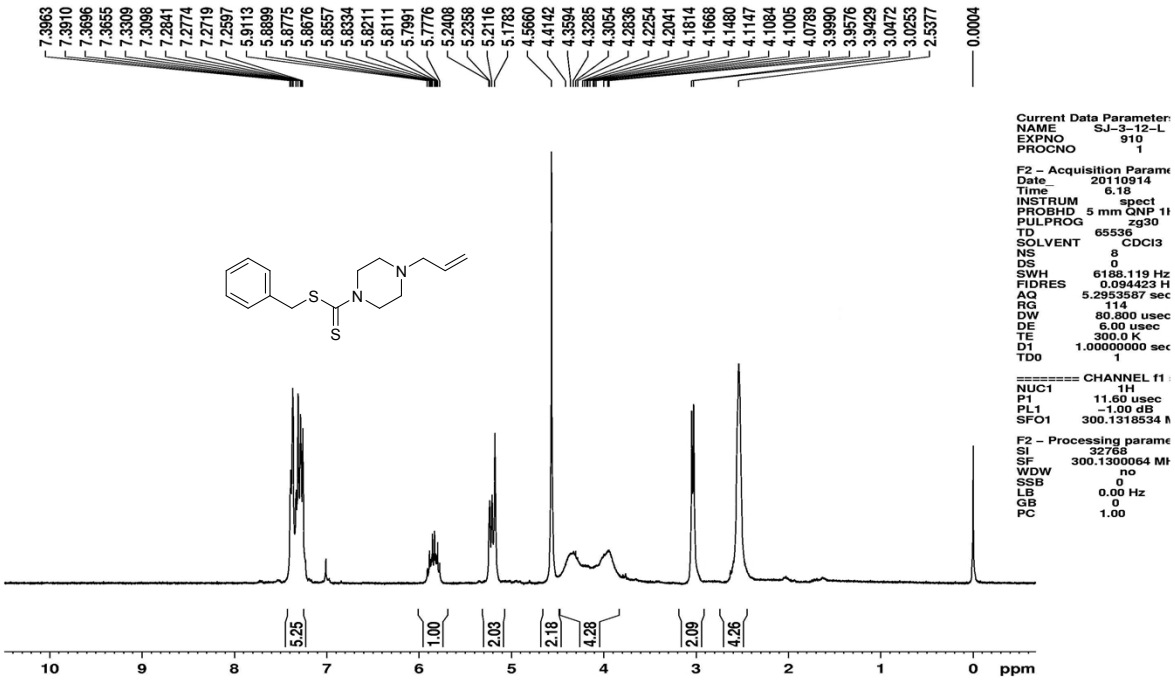
^{1}H NMR (300 MHz, DMSO-d_6) of compound **15**



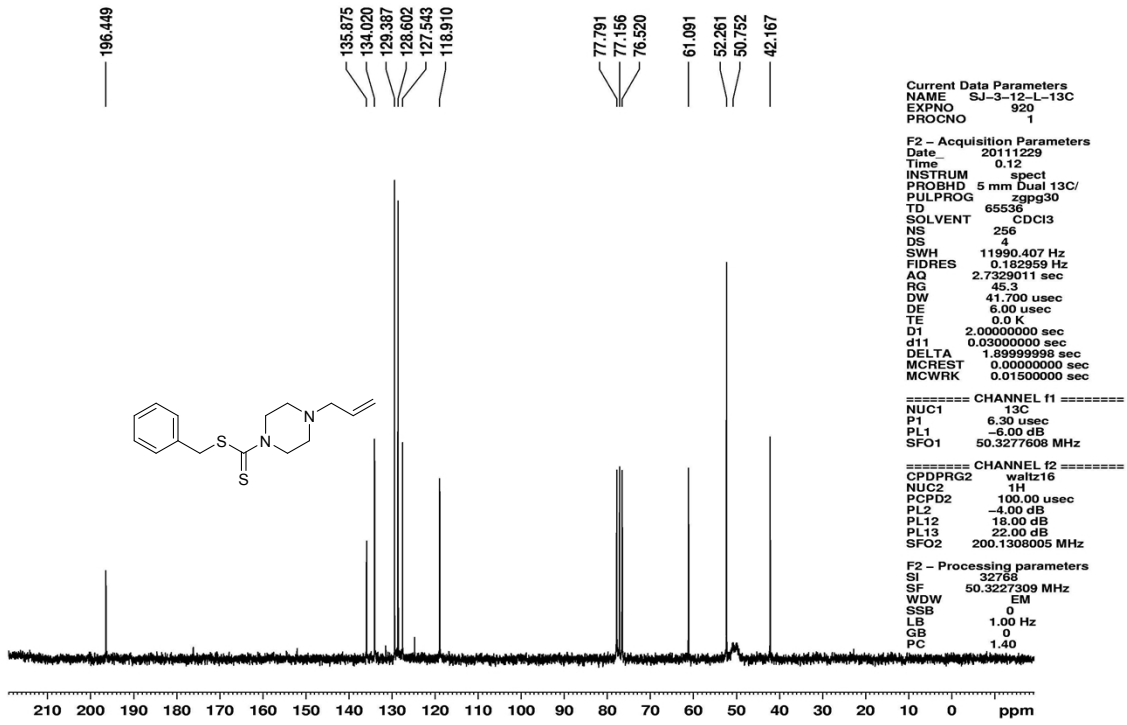
^{1}H NMR (300 MHz, DMSO-d_6) of compound **19**



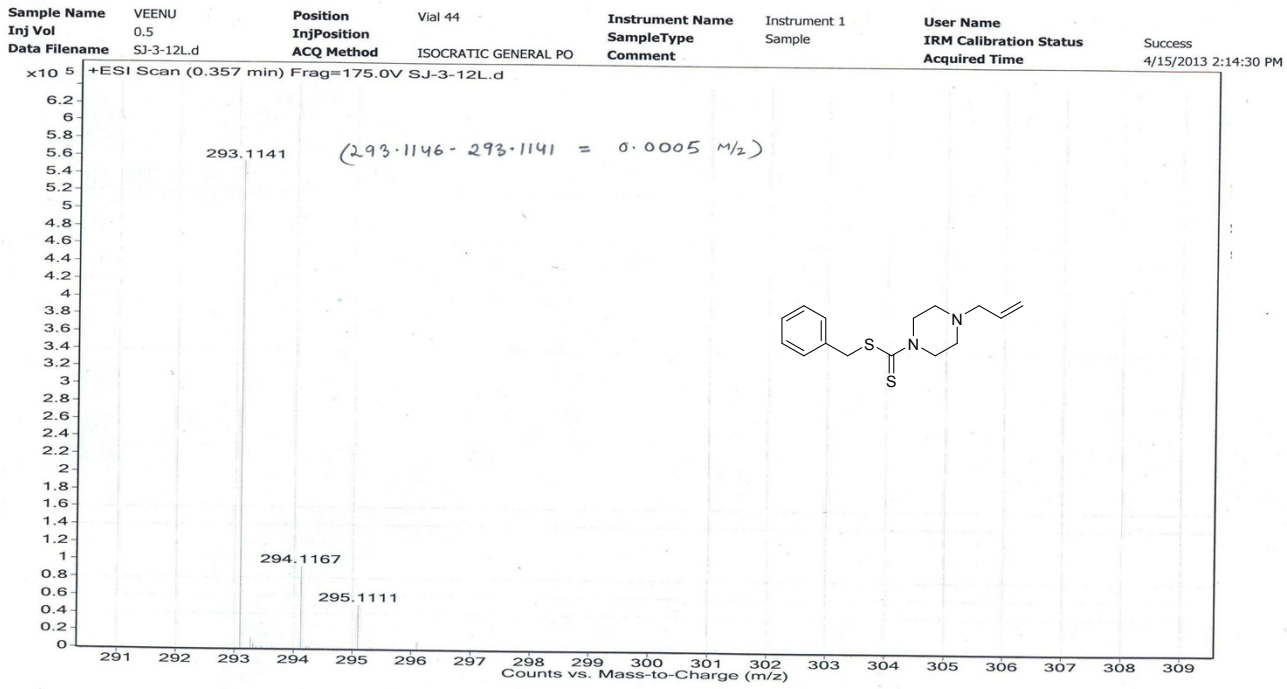
^{1}H NMR (300 MHz, DMSO-d_6) of compound **20**



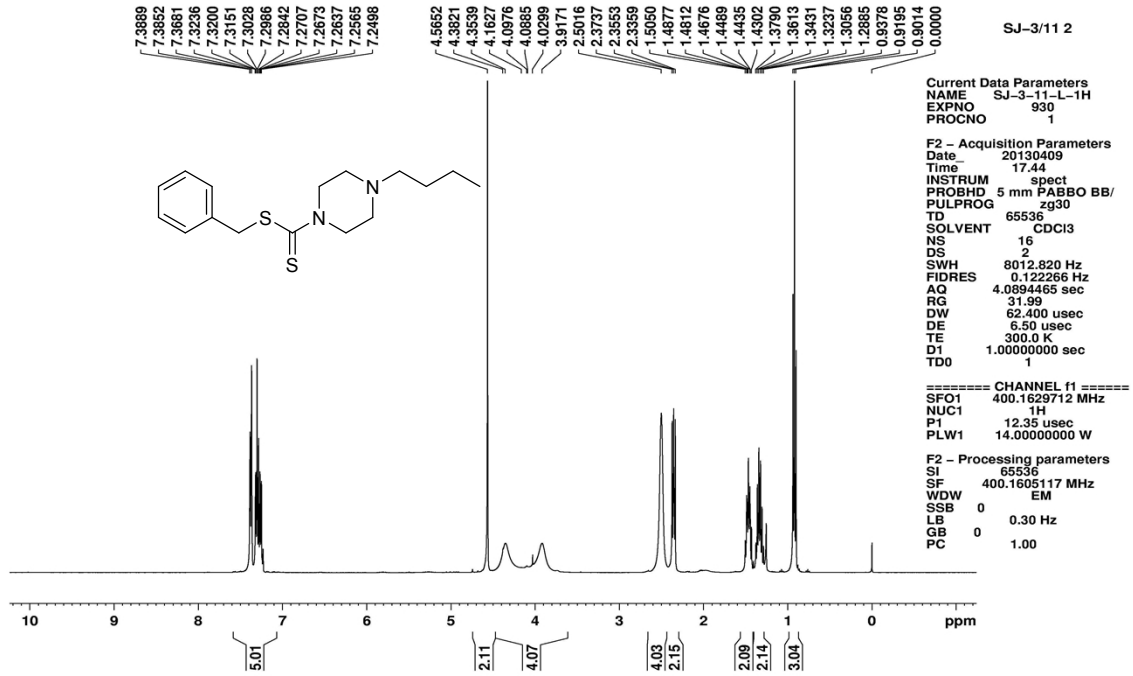
^{1}H NMR (300 MHz, $CDCl_3$) of compound **16**



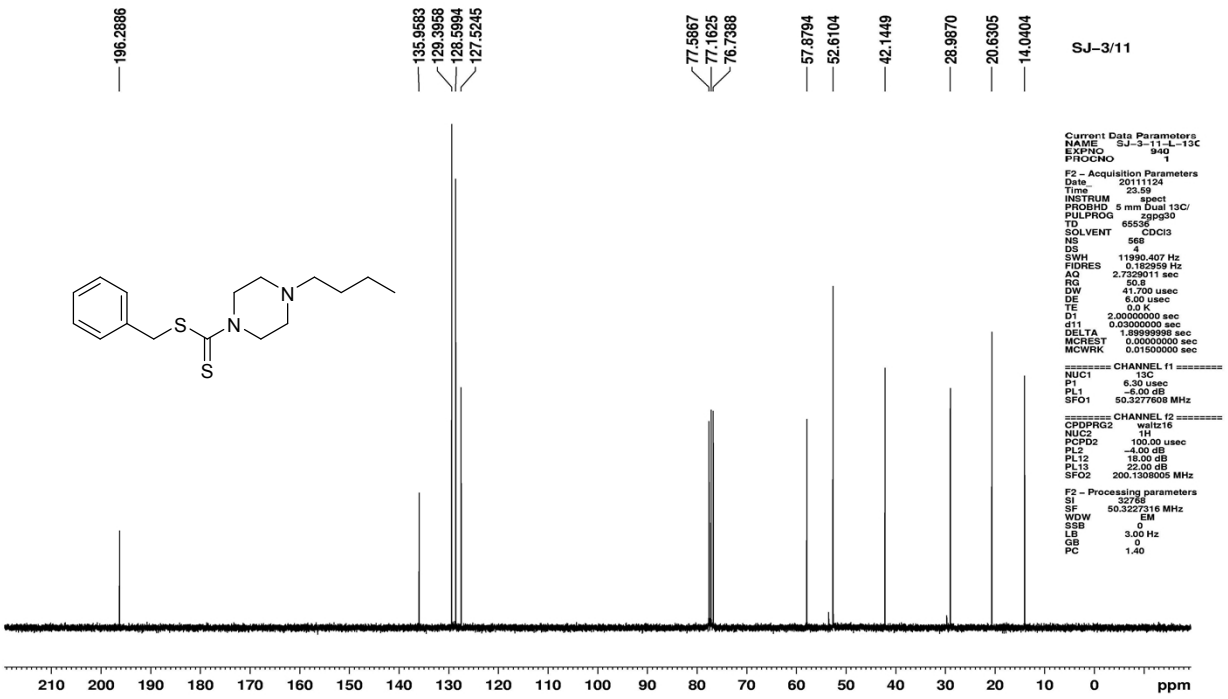
^{13}C NMR (50.3 MHz, $CDCl_3$) of compound **16**



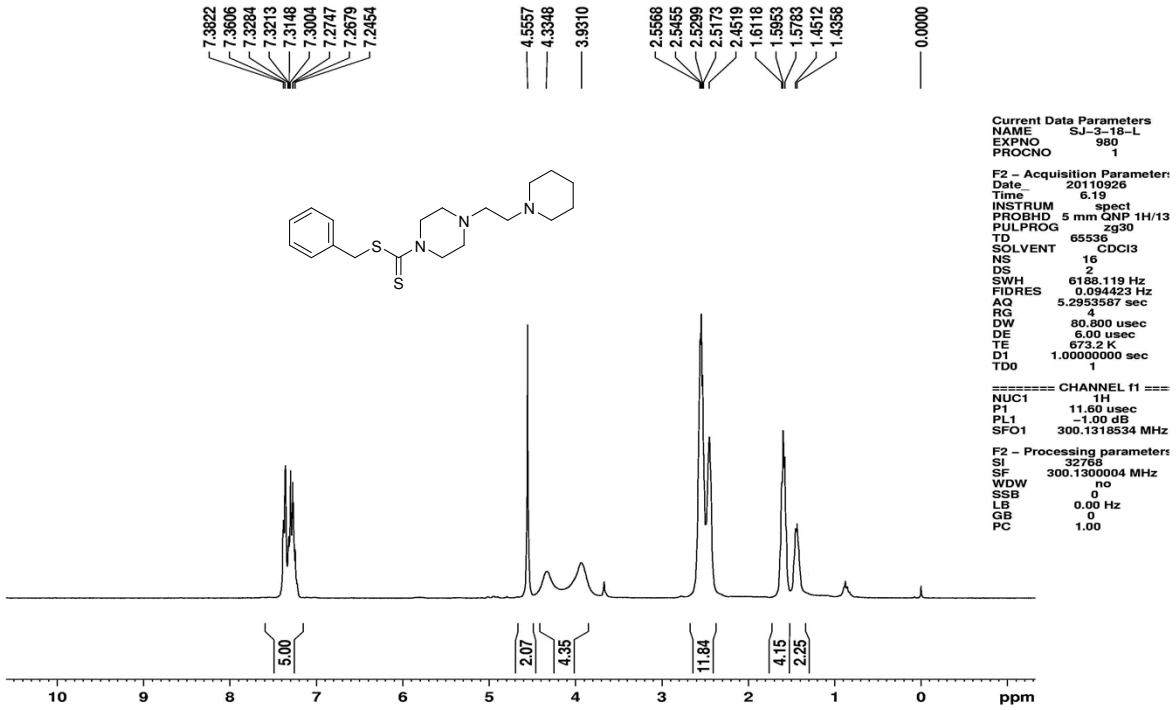
HRMS of compound **16**



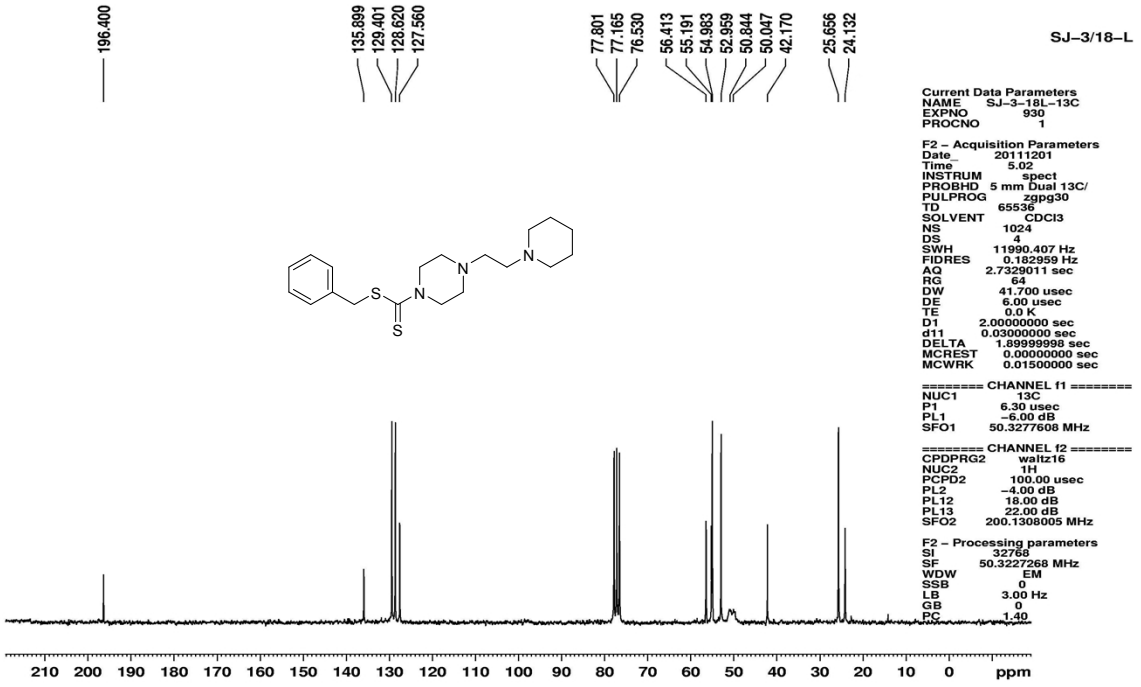
^{1}H NMR (300 MHz, $CDCl_3$) of compound **17**



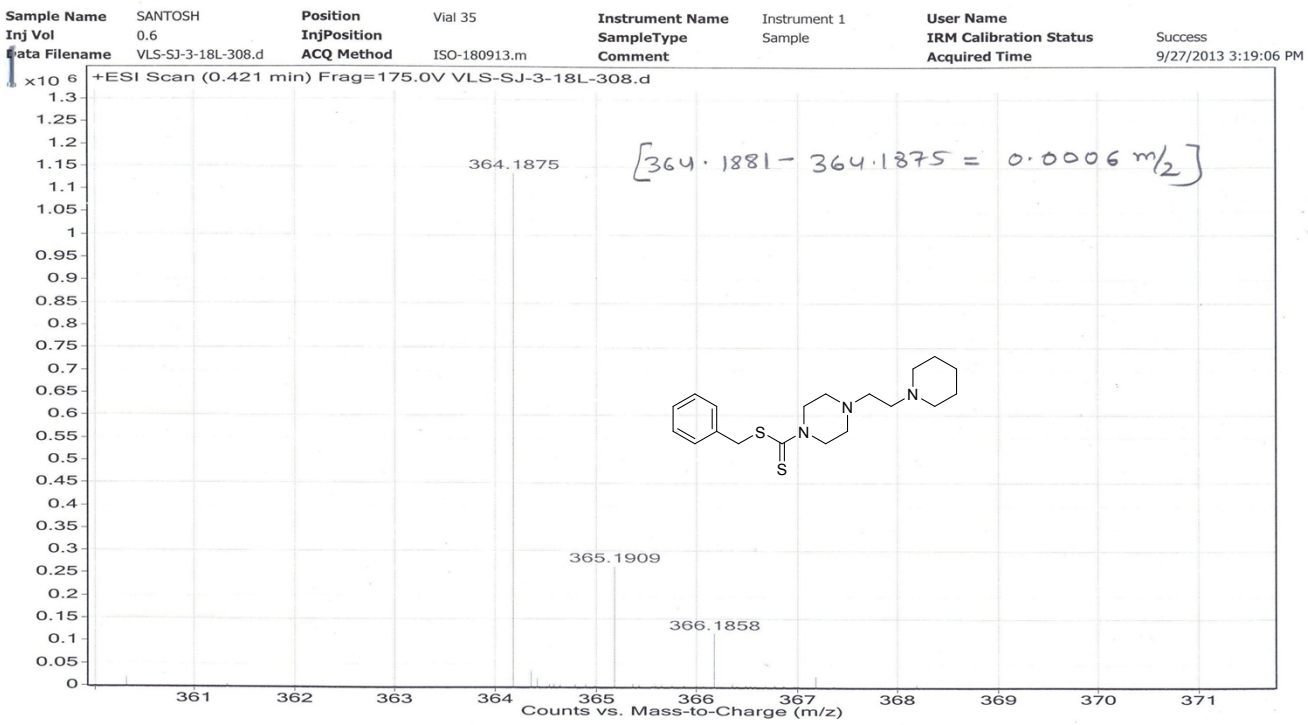
^{13}C NMR (50 MHz, $CDCl_3$) of compound **17**



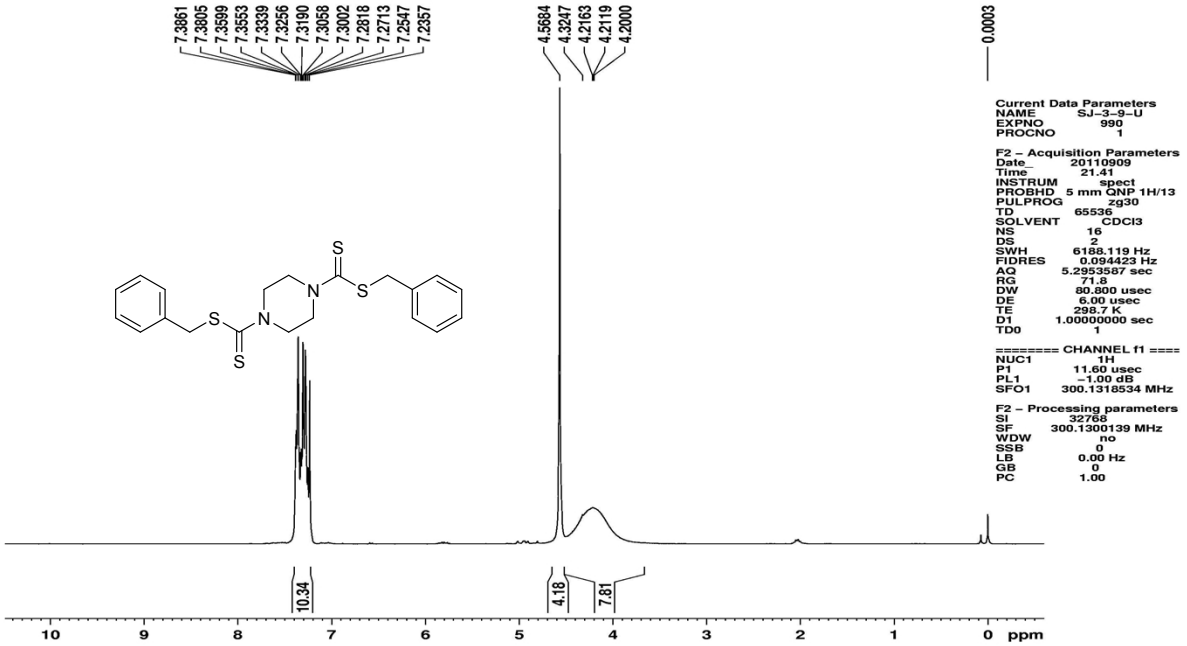
^{1}H NMR (300 MHz, $CDCl_3$) of compound **18**



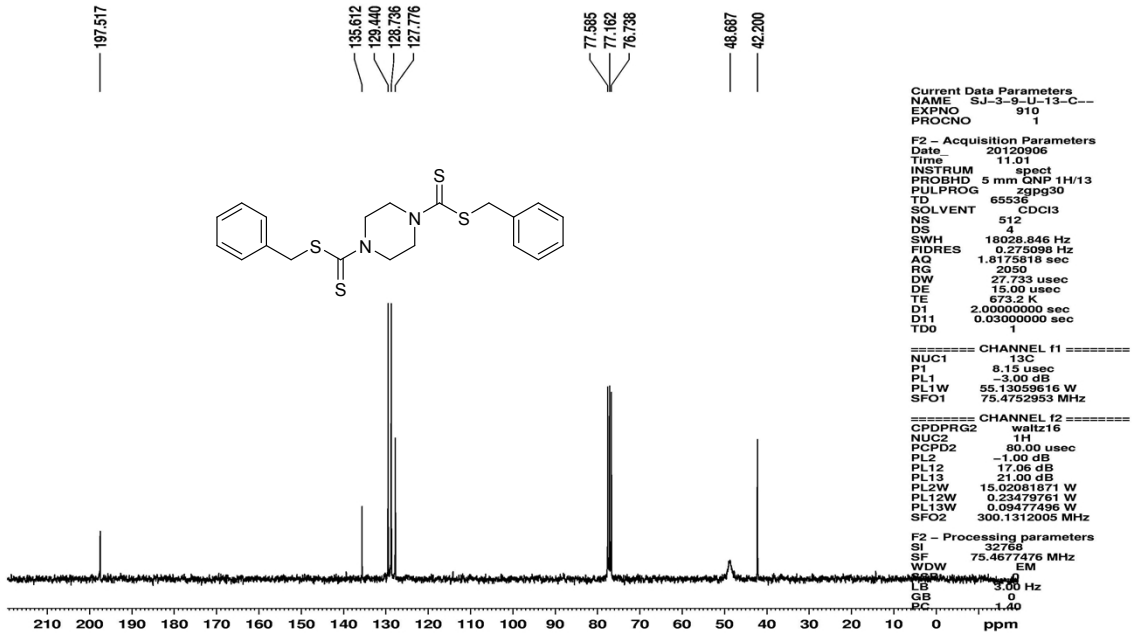
^{13}C NMR (50 MHz, $CDCl_3$) of compound **18**



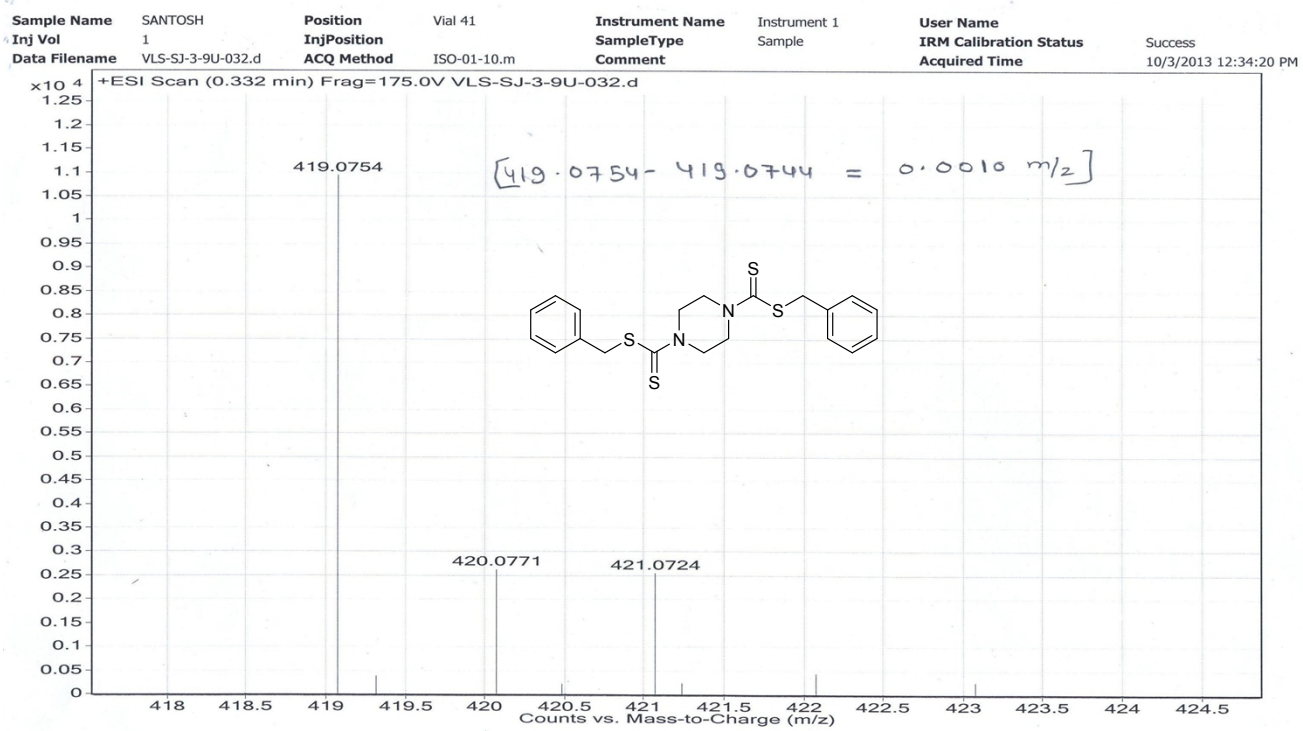
HRMS of compound **18**



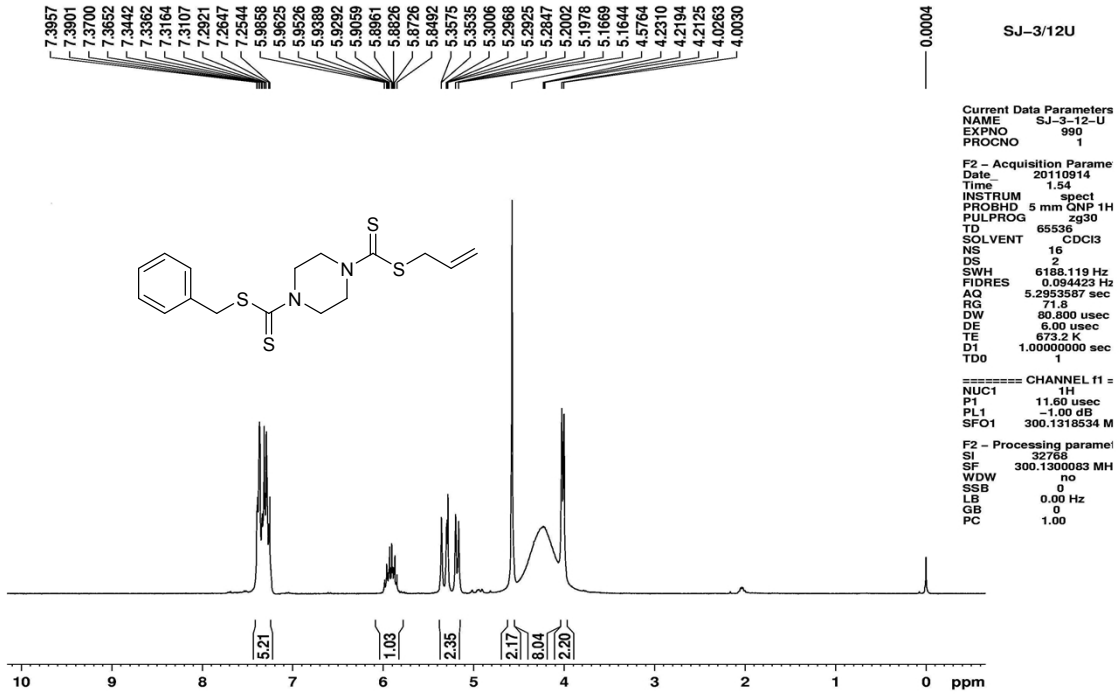
^{1}H NMR (300 MHz, $CDCl_3$) of compound **21**



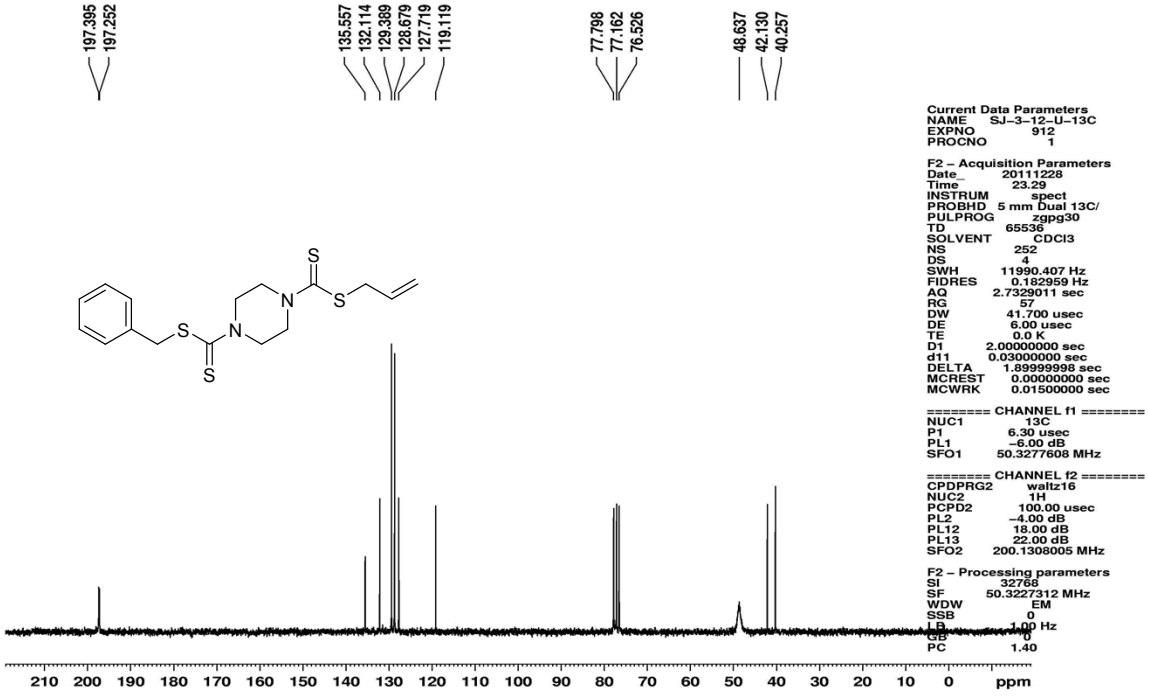
^{13}C NMR (75 MHz, $CDCl_3$) of compound **21**



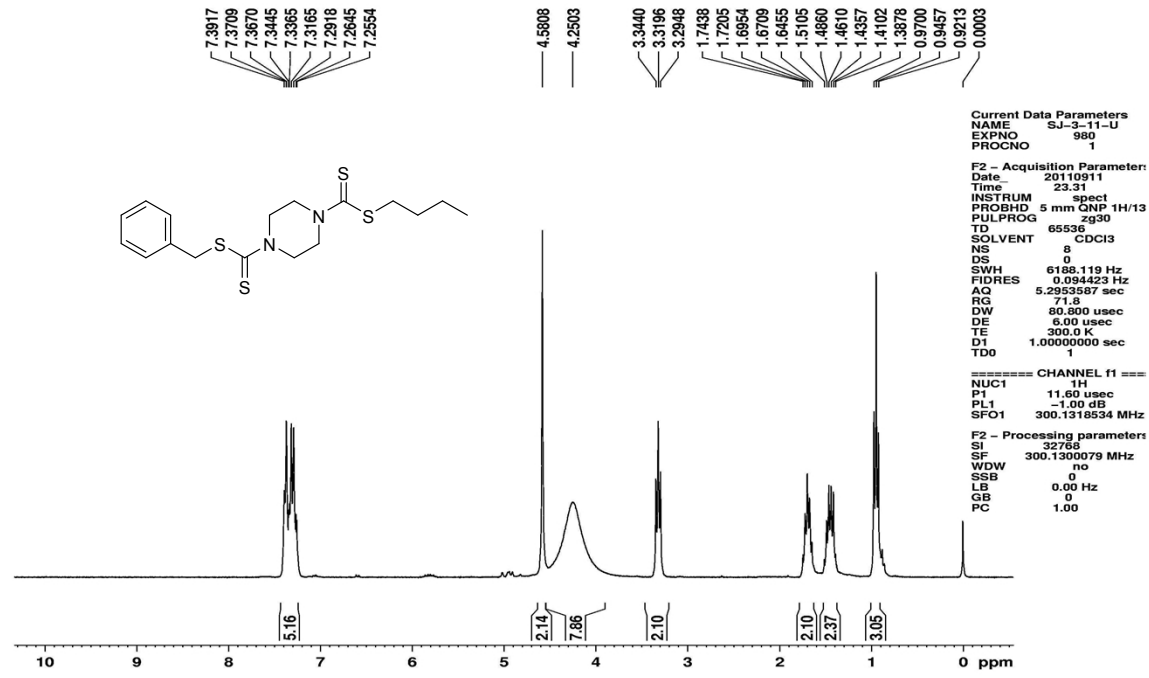
HRMS of compound **21**



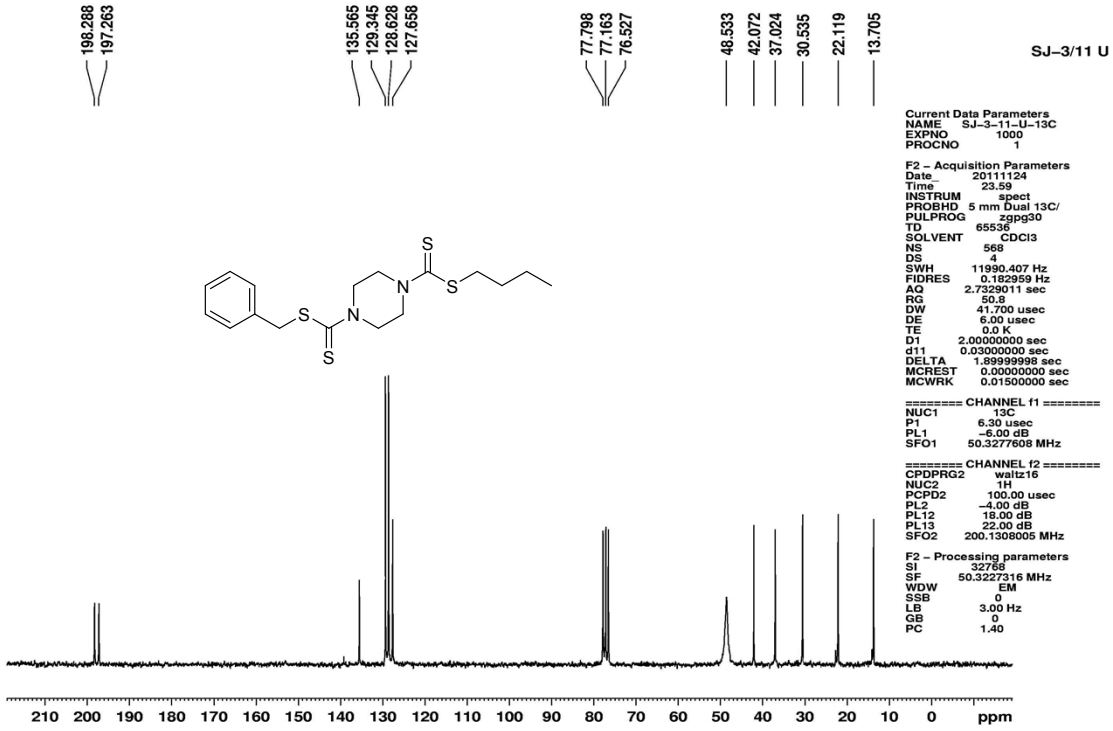
^{1}H NMR (300 MHz, $CDCl_3$) of compound **22**



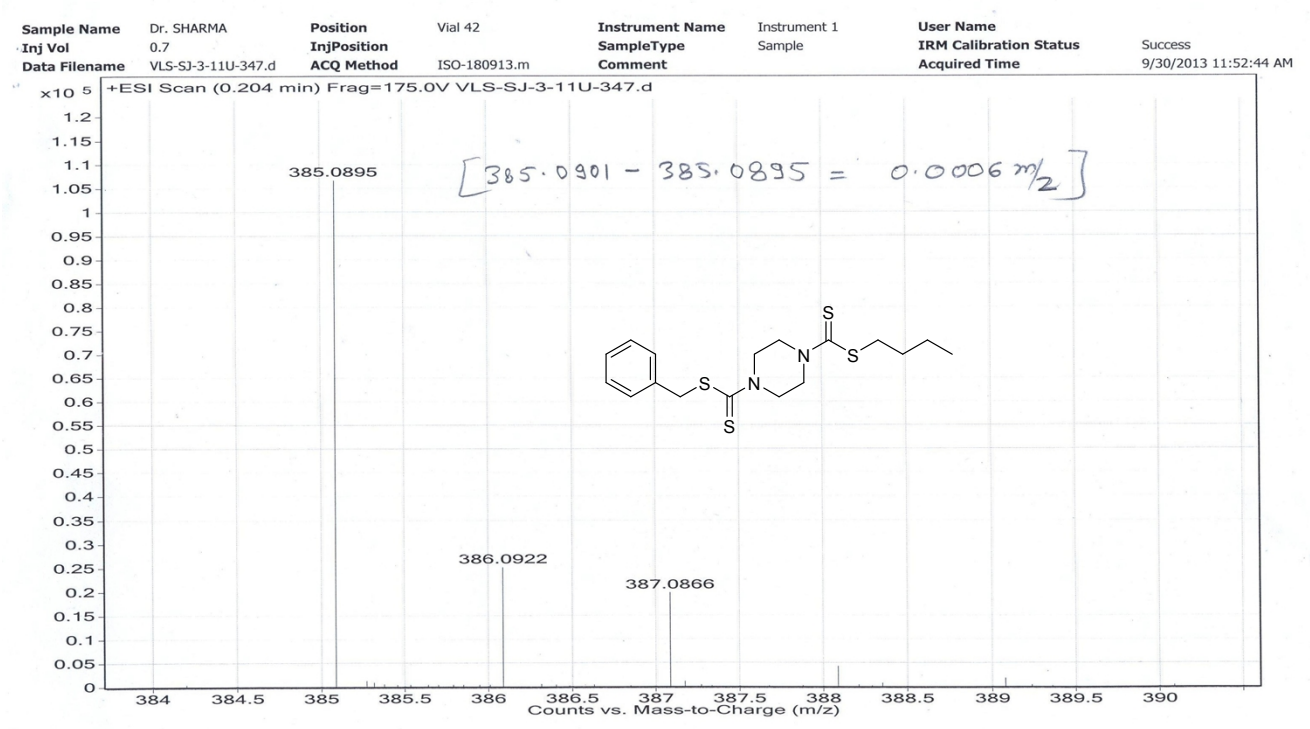
^{13}C NMR (50 MHz, $CDCl_3$) of compound **22**



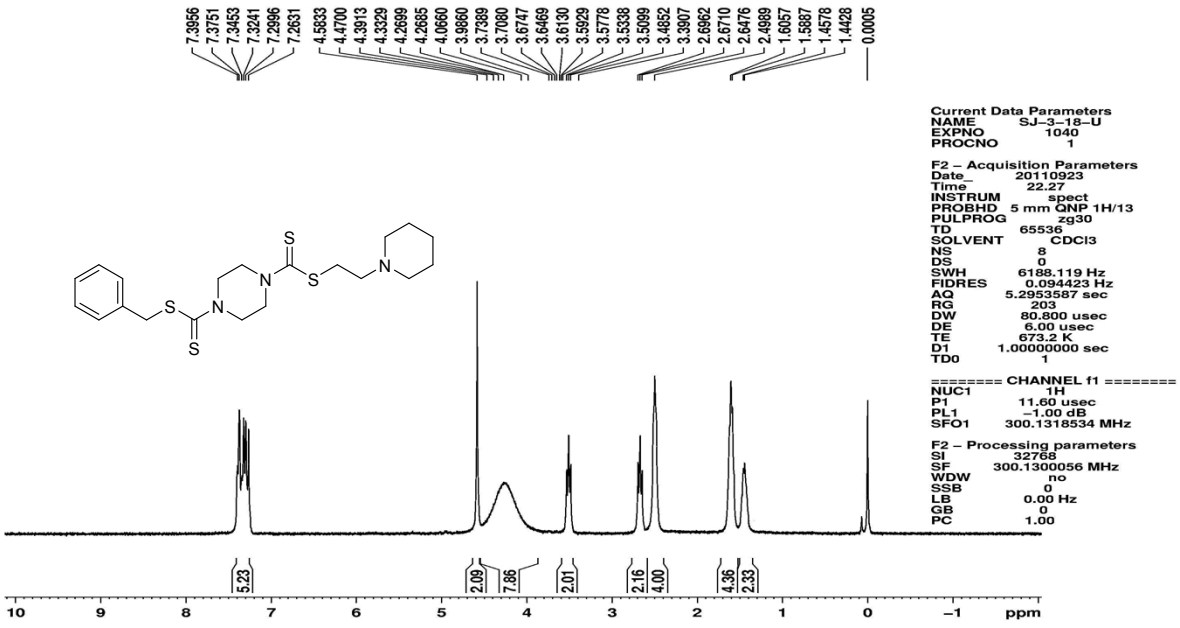
^{1}H NMR (300 MHz, $CDCl_3$) of compound **23**



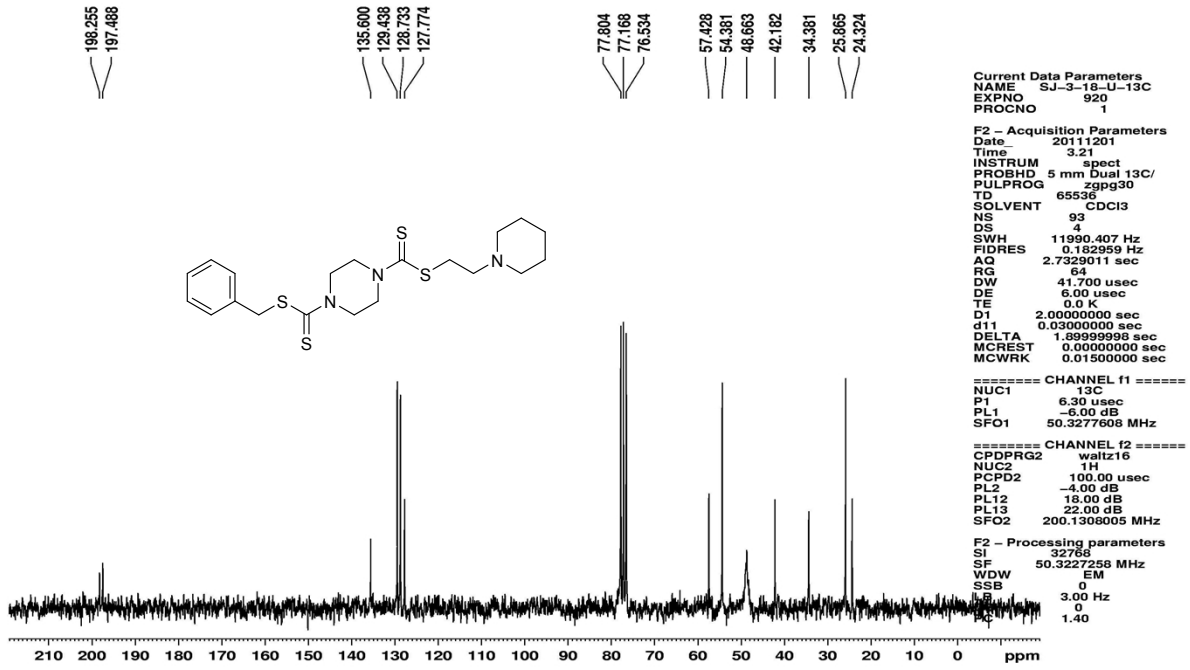
^{13}C NMR (50 MHz, $CDCl_3$) of compound **23**



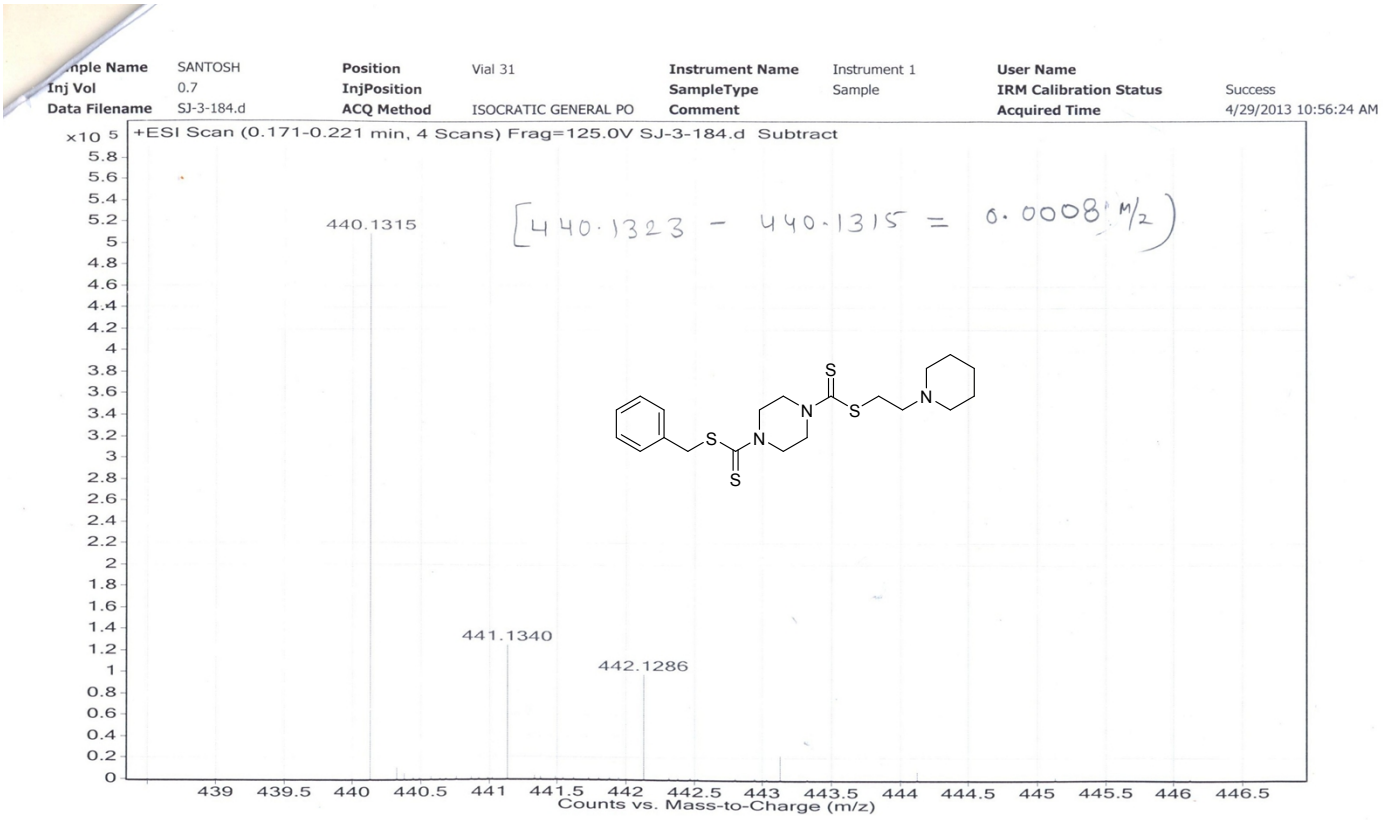
HRMS of compound **23**



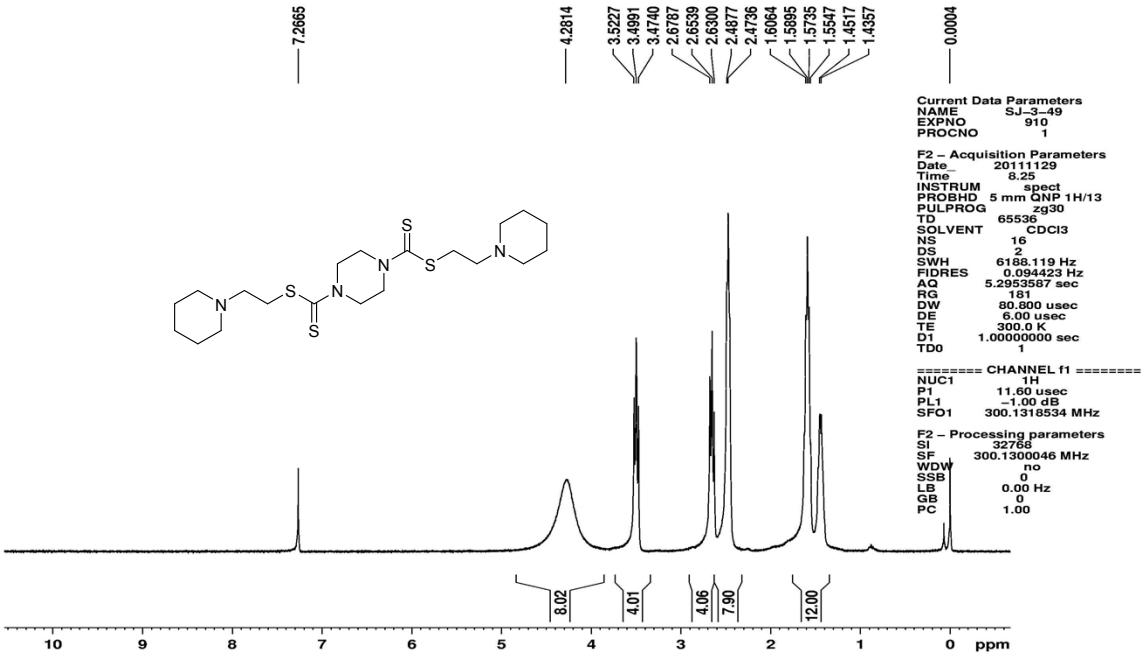
^{1}H NMR (300 MHz, $CDCl_3$) of compound **24**



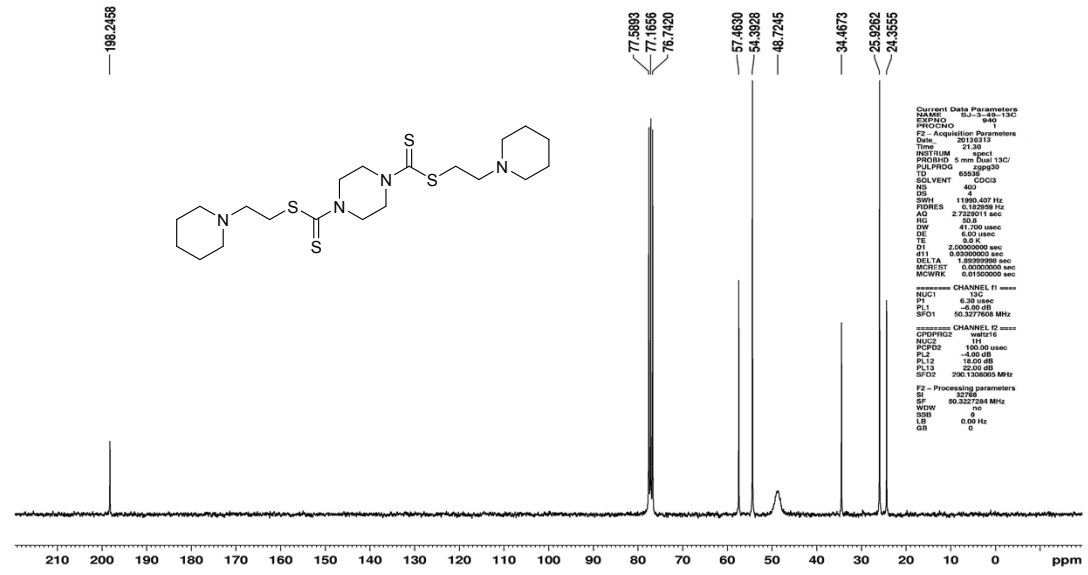
^{13}C NMR (50 MHz, $CDCl_3$) of compound **24**



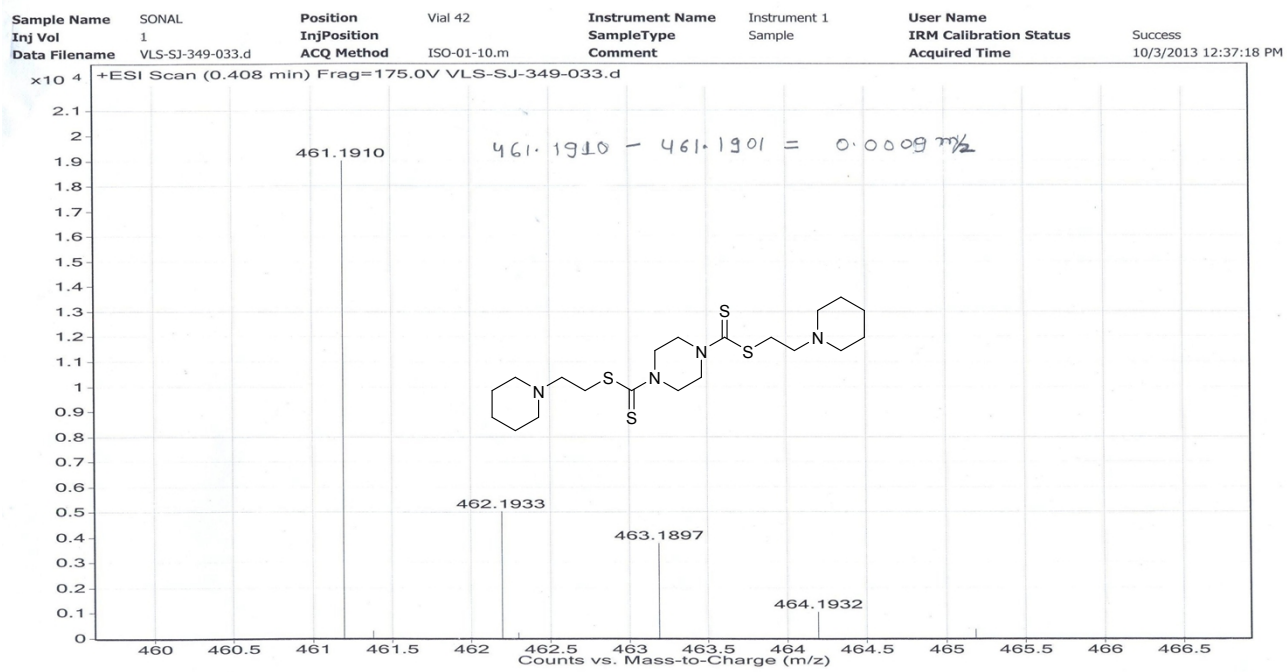
HRMS of compound **24**



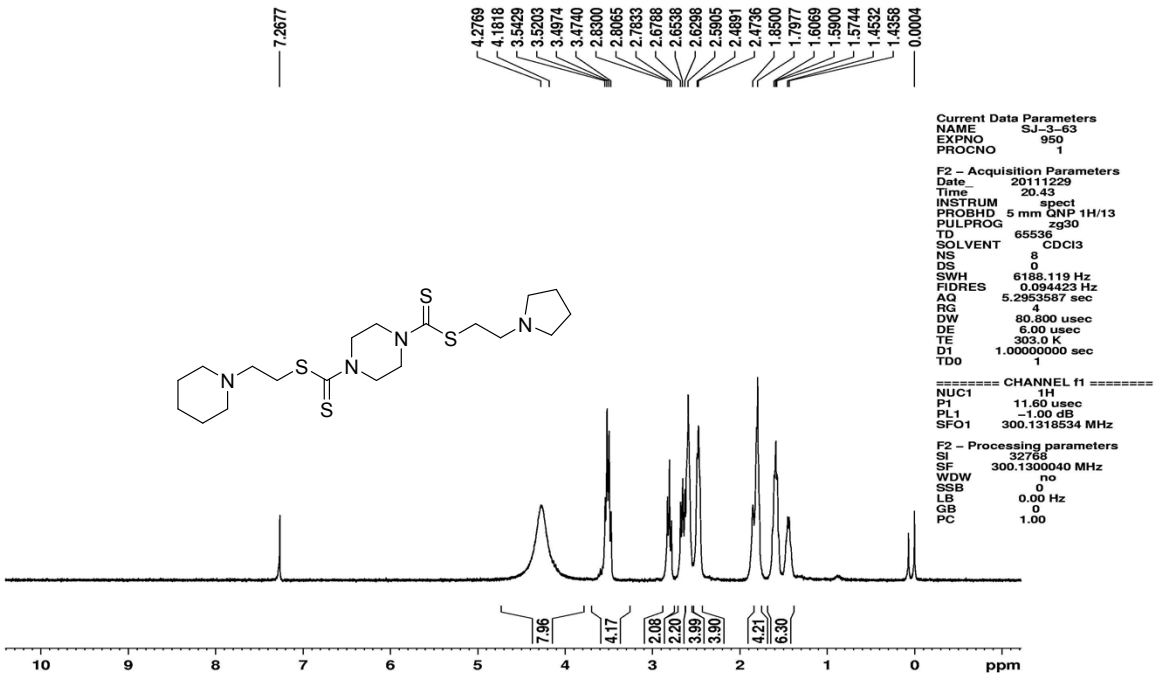
^{1}H NMR (300 MHz, $CDCl_3$) of compound **25**



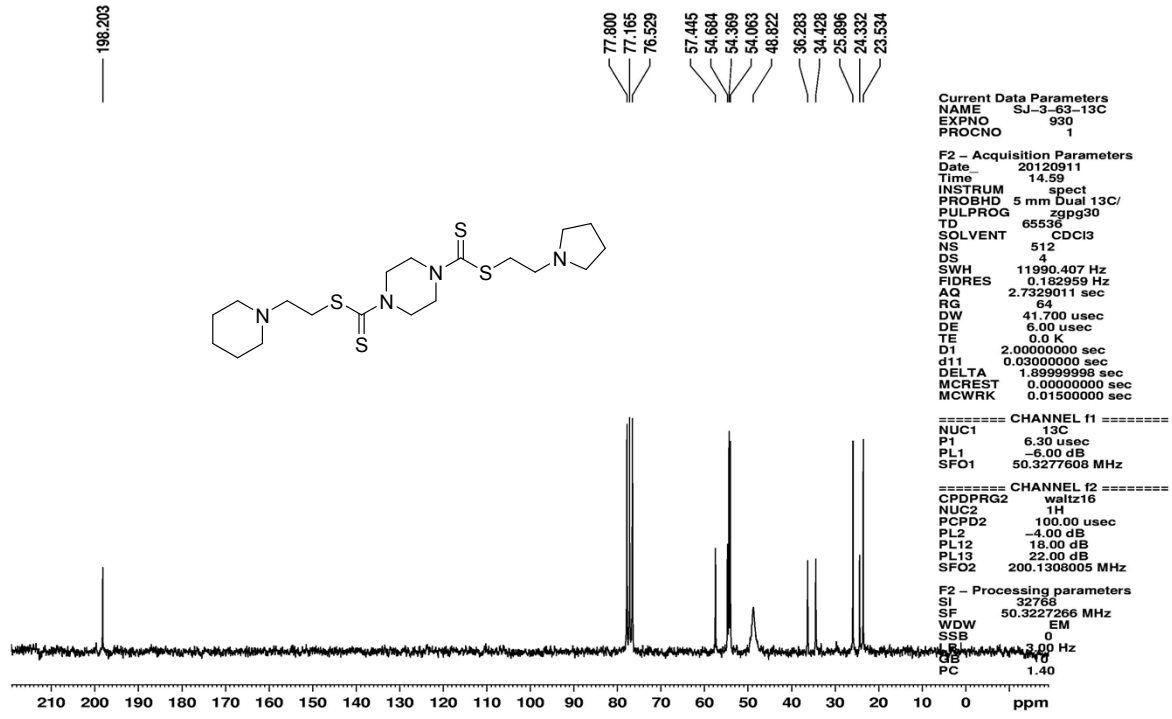
^{13}C NMR (50 MHz, $CDCl_3$) of compound **25**



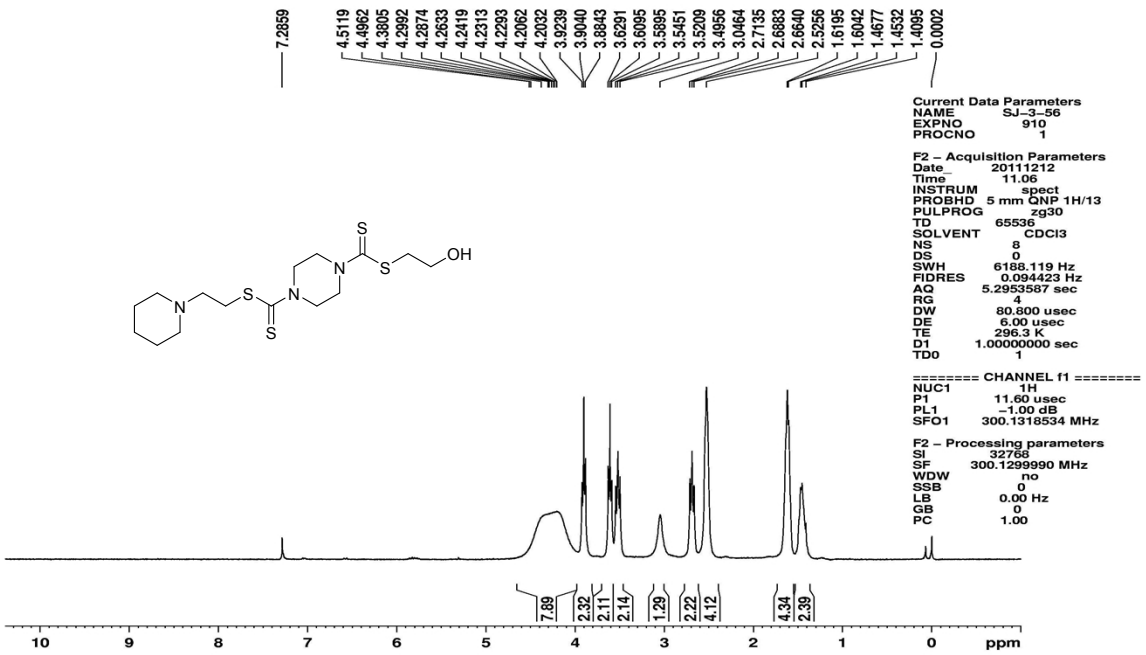
HRMS of compound **25**



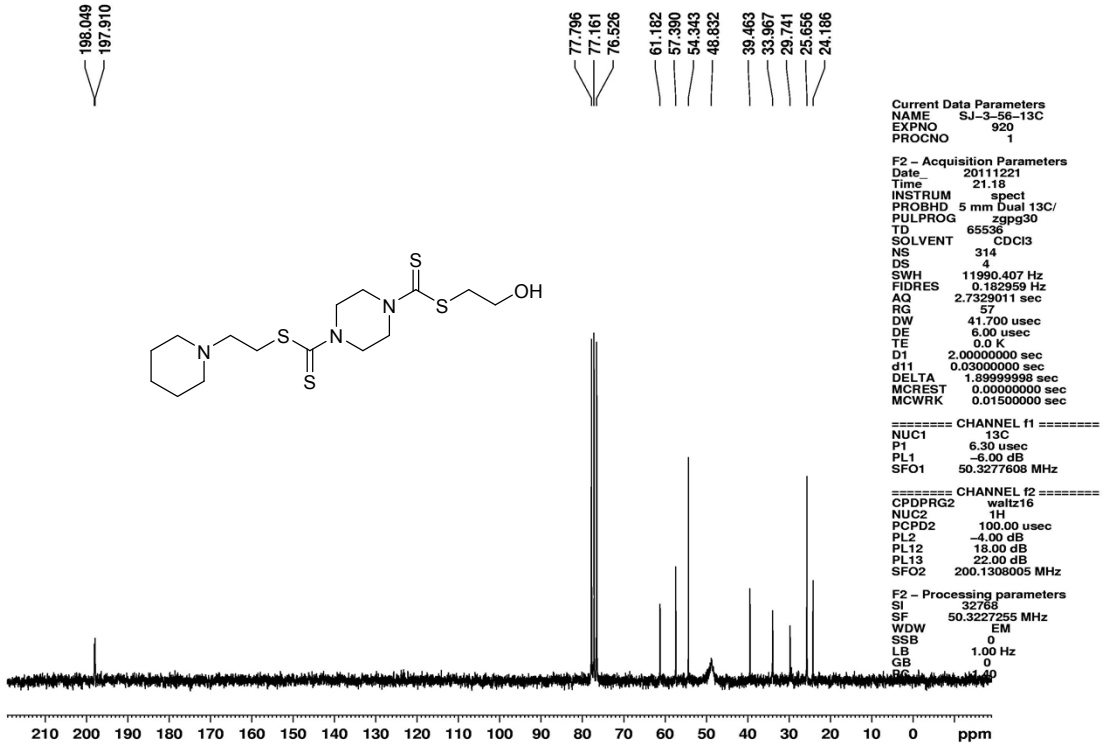
^{1}H NMR (300 MHz, $CDCl_3$) of compound **26**



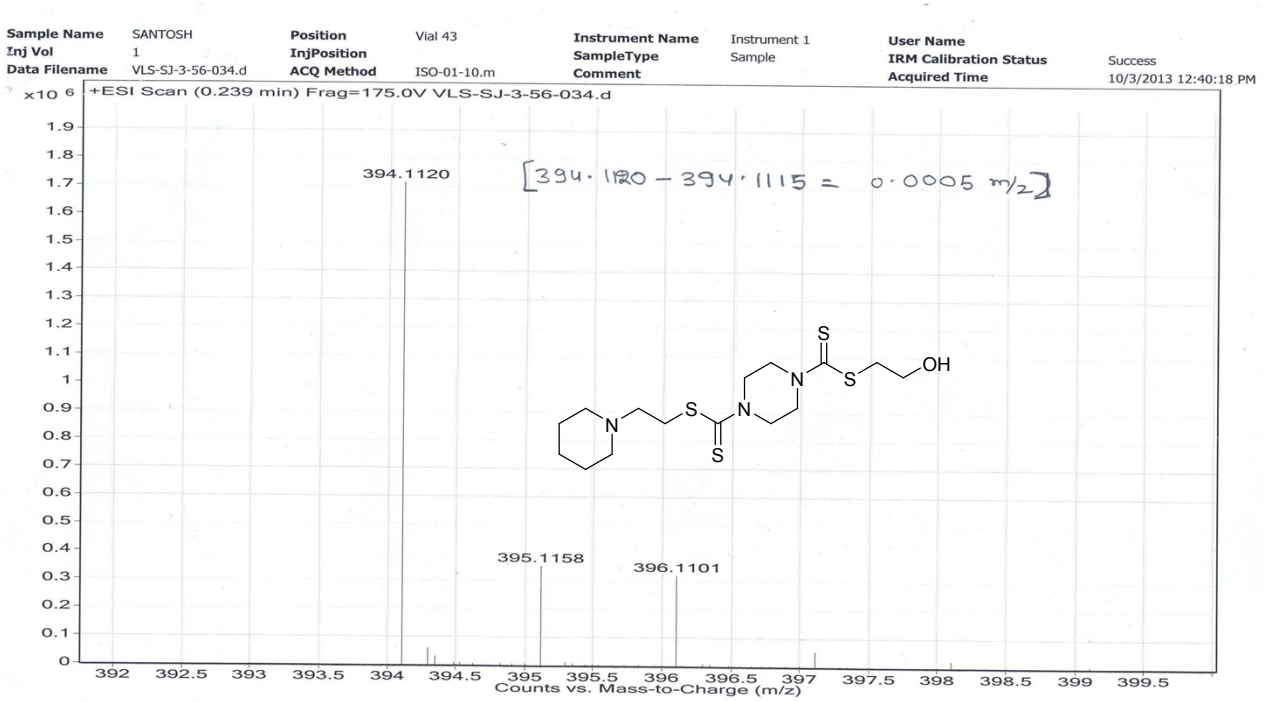
^{13}C NMR (50 MHz, $CDCl_3$) of compound **26**



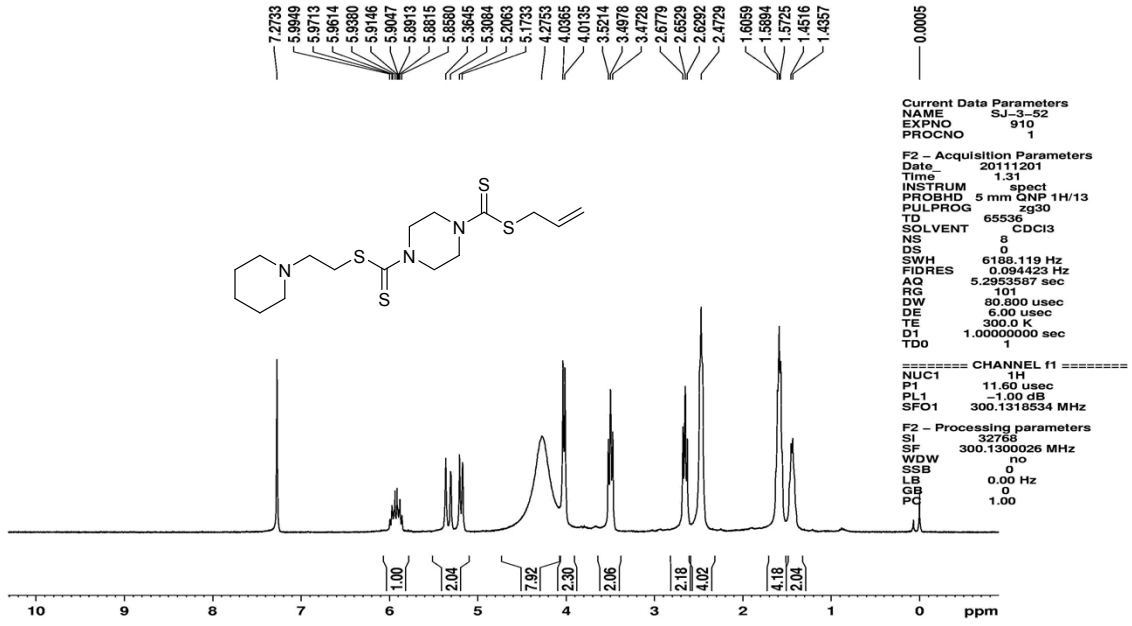
^{1}H NMR (300 MHz, $CDCl_3$) of compound **27**



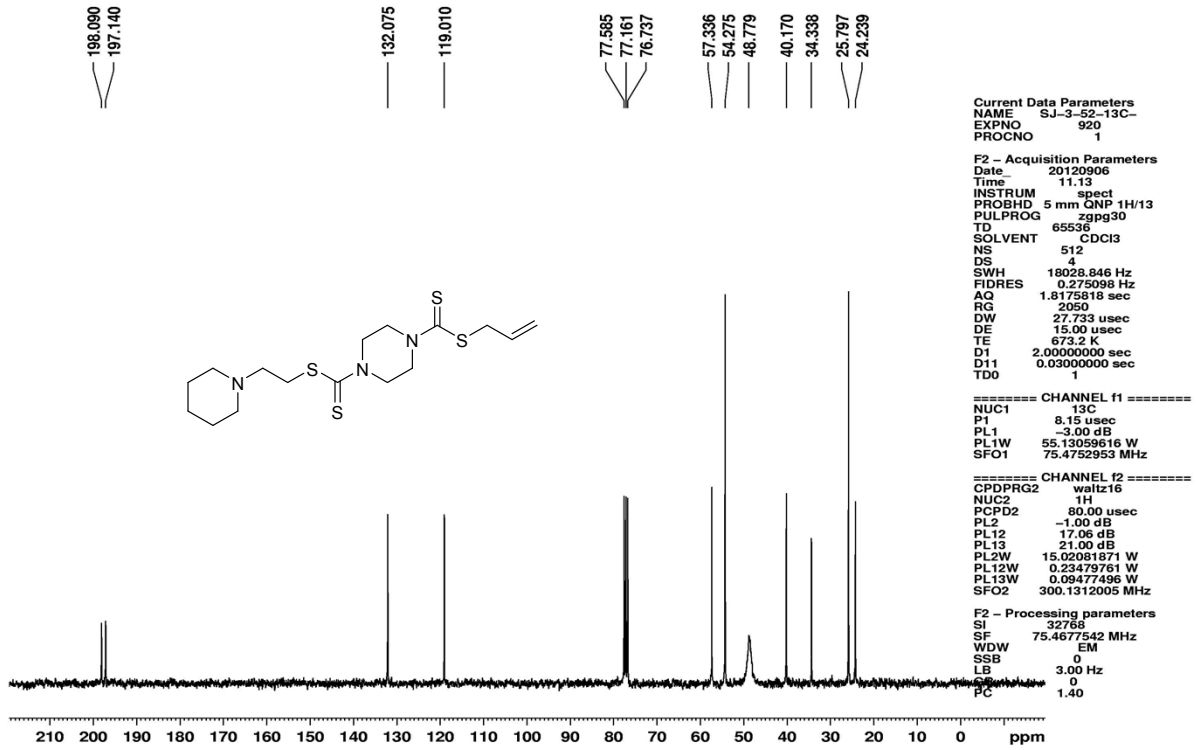
^{13}C NMR (50 MHz, $CDCl_3$) of compound **27**



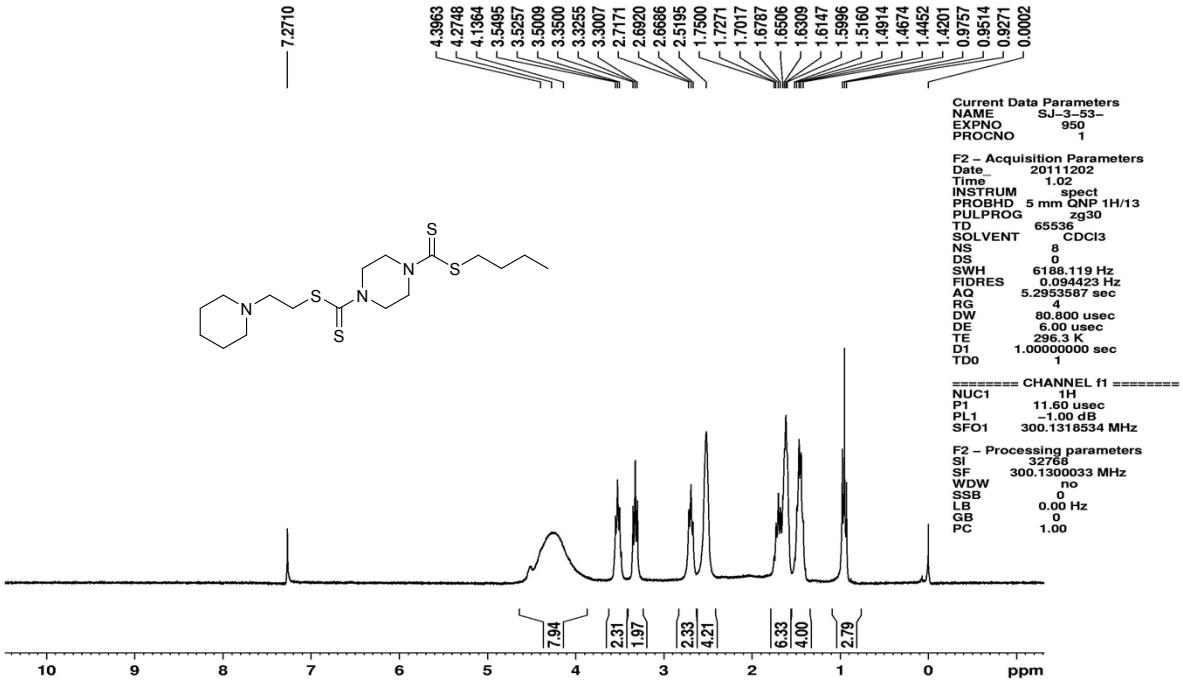
HRMS of compound **27**



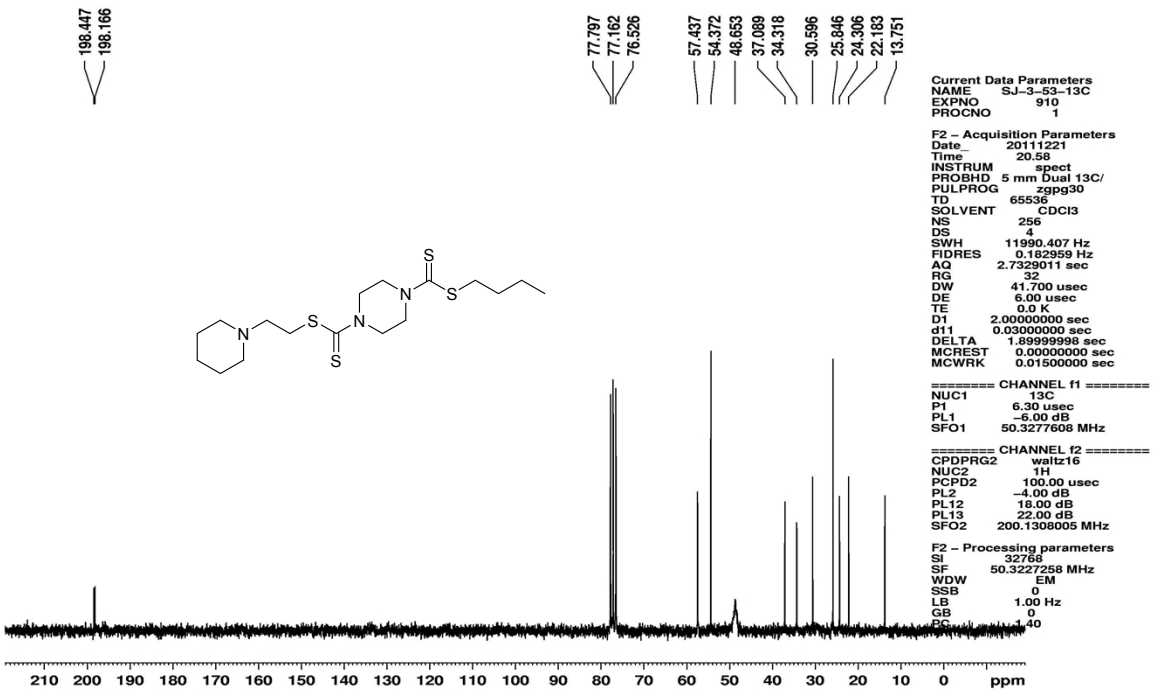
^{1}H NMR (300 MHz, $CDCl_3$) of compound **28**



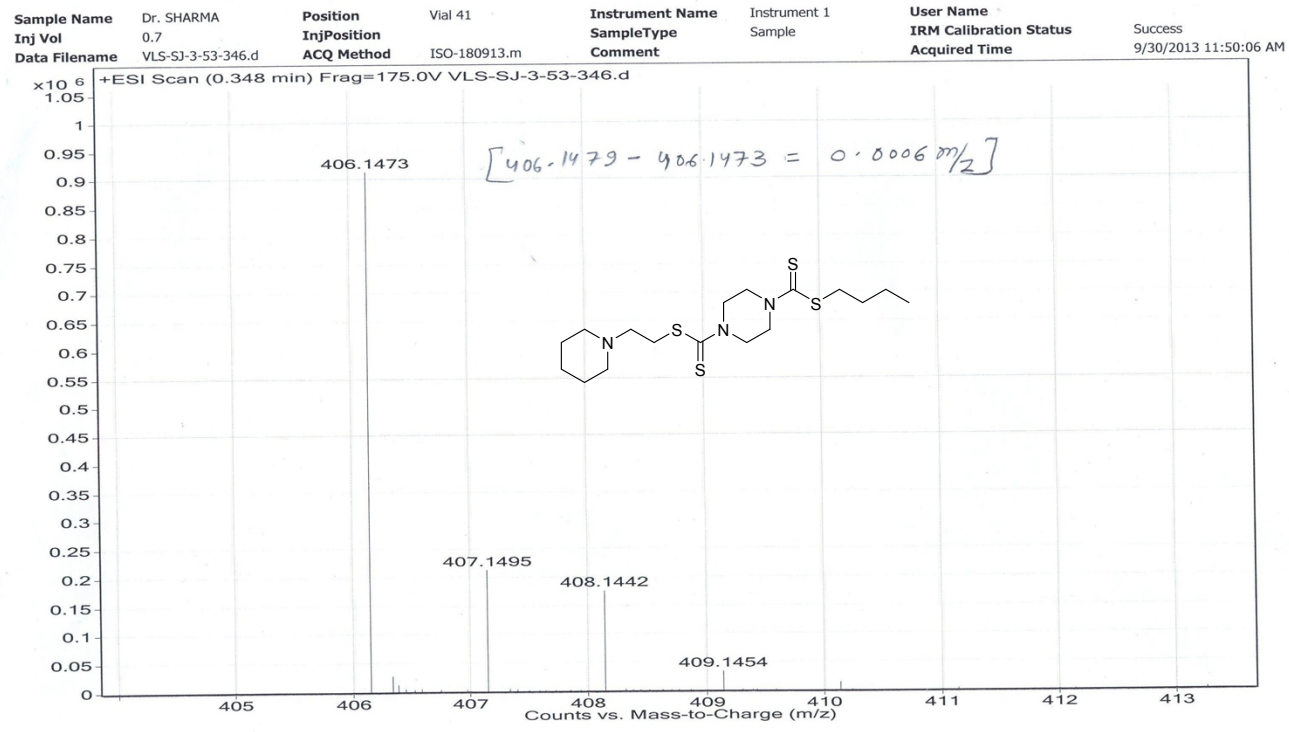
^{13}C NMR (75 MHz, $CDCl_3$) of compound **28**



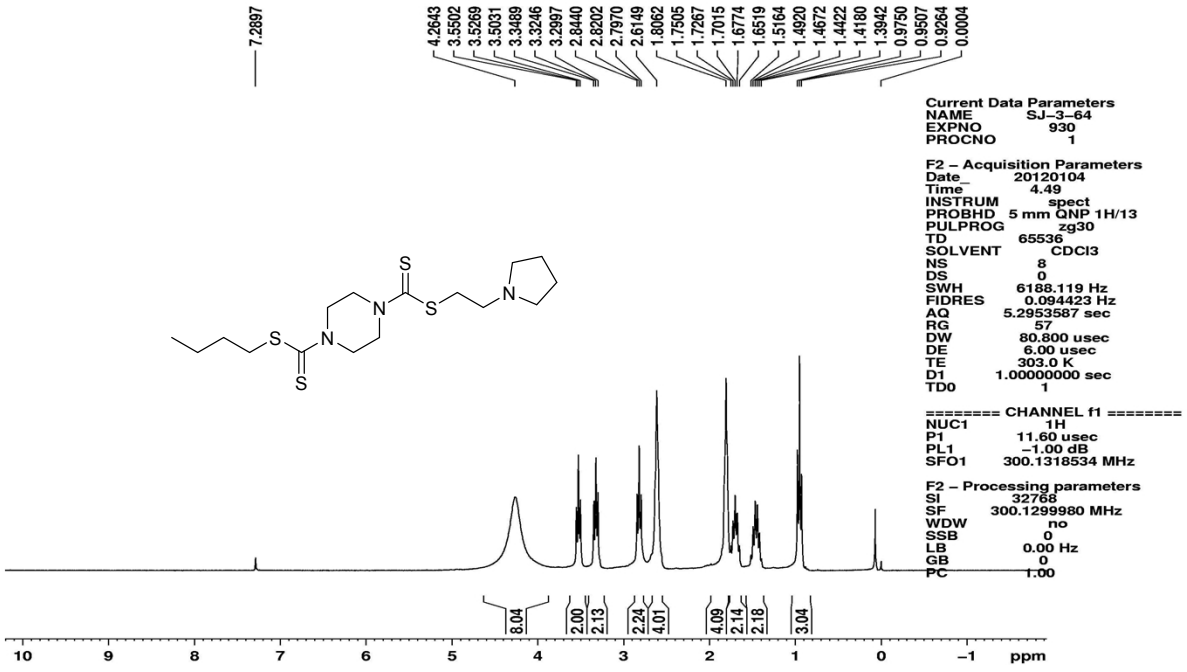
^{1}H NMR (300 MHz, $CDCl_3$) of compound **29**



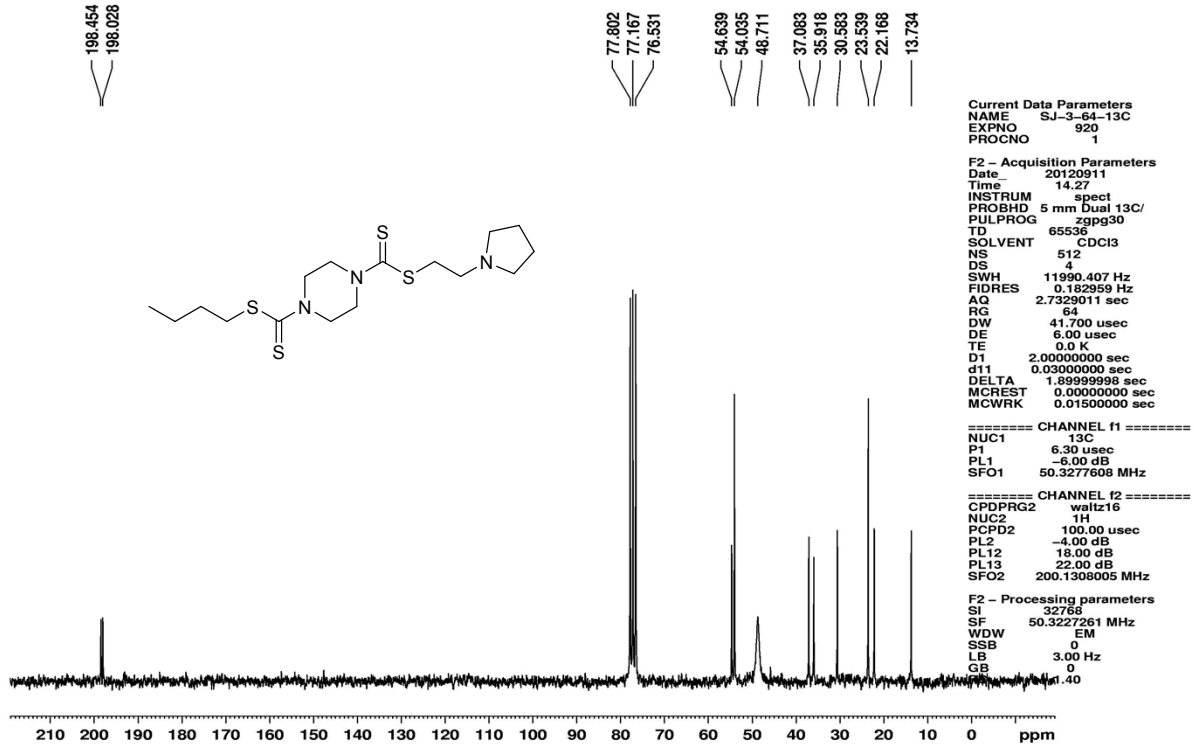
^{13}C NMR (50 MHz, $CDCl_3$) of compound **29**



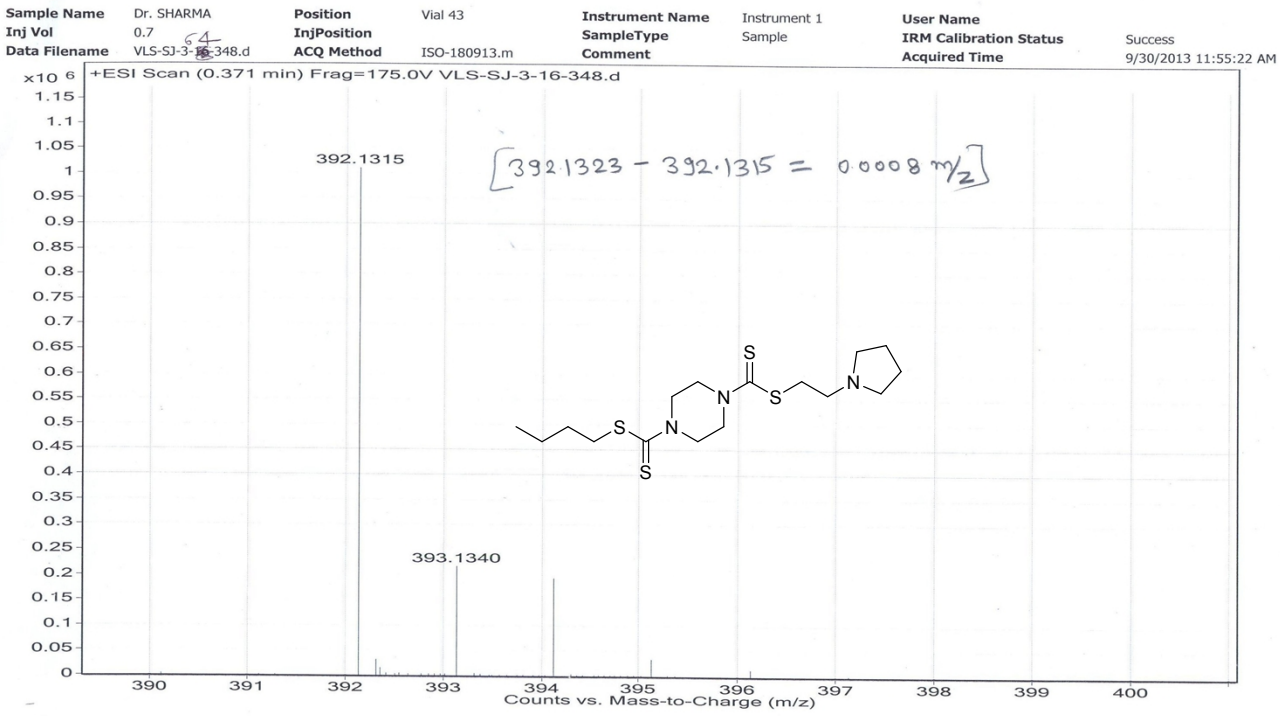
HRMS of compound **29**



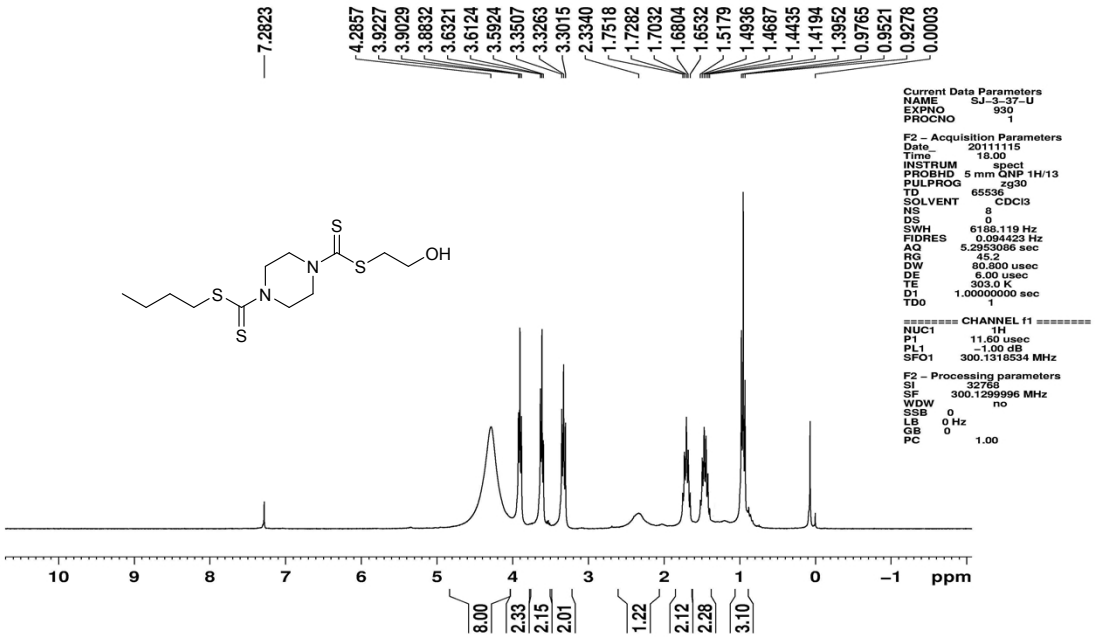
^{1}H NMR (300 MHz, $CDCl_3$) of compound **30**



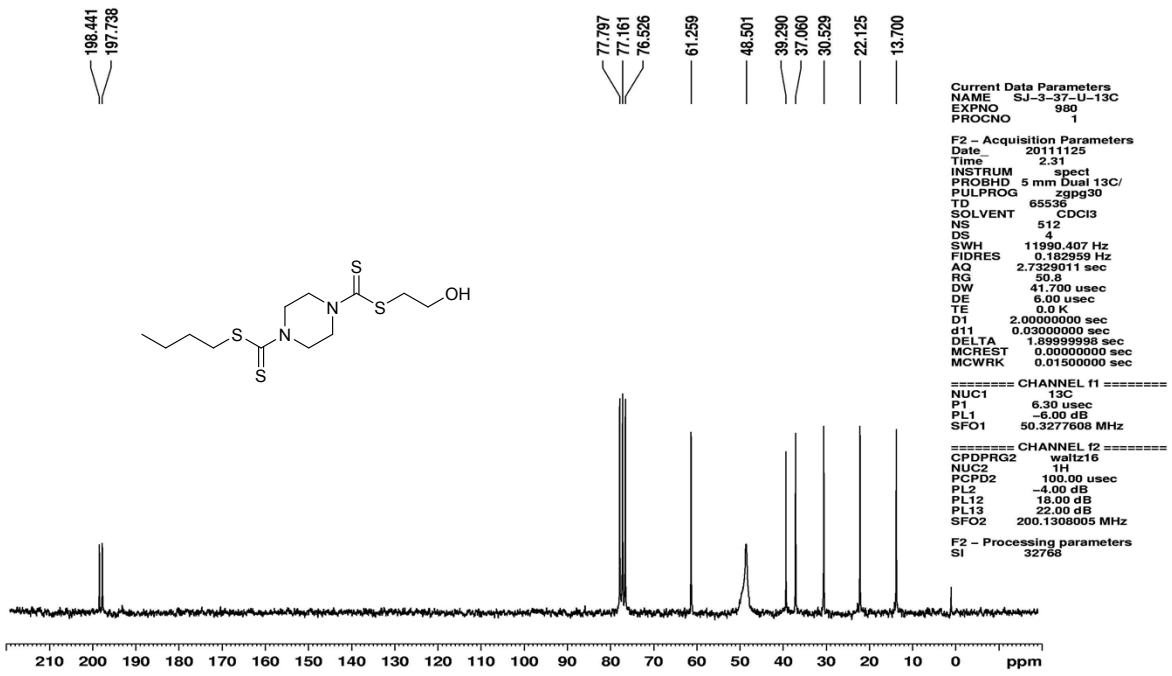
^{13}C NMR (50 MHz, $CDCl_3$) of compound **30**



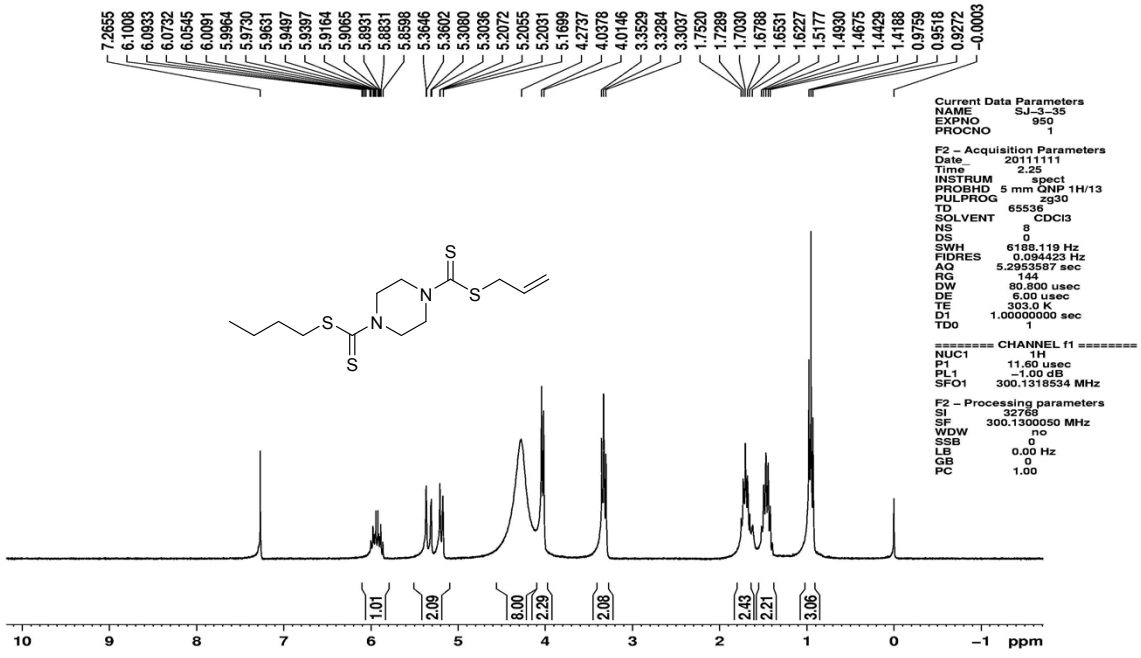
HRMS of compound **30**



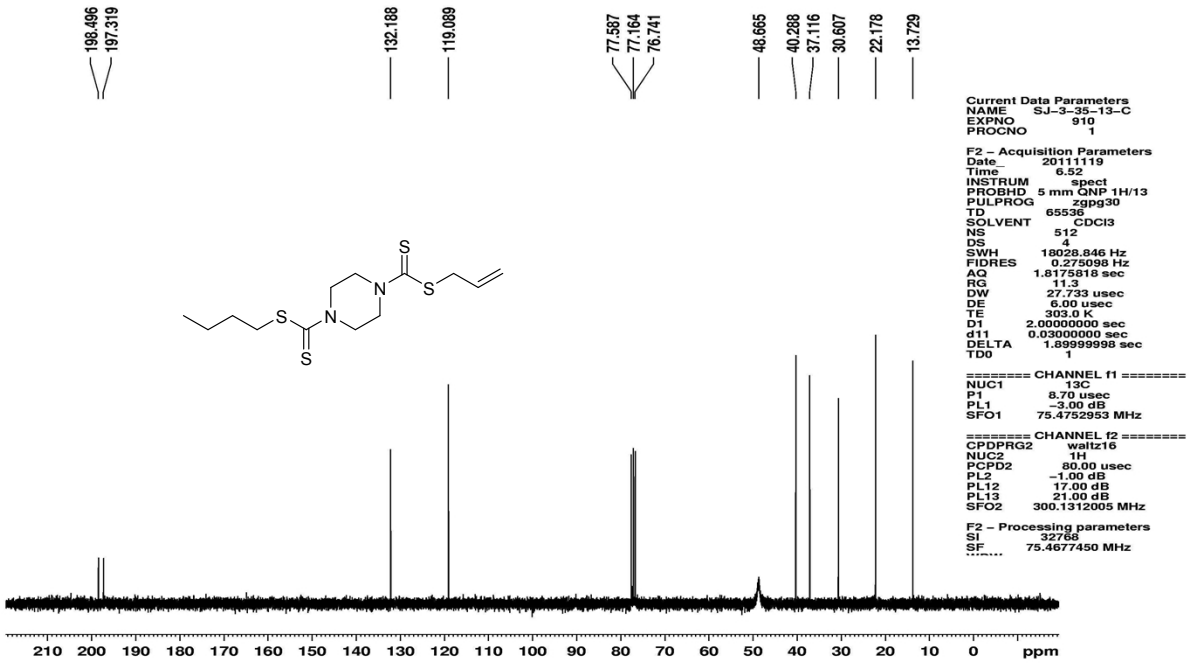
^{1}H NMR (300 MHz, $CDCl_3$) of compound **31**



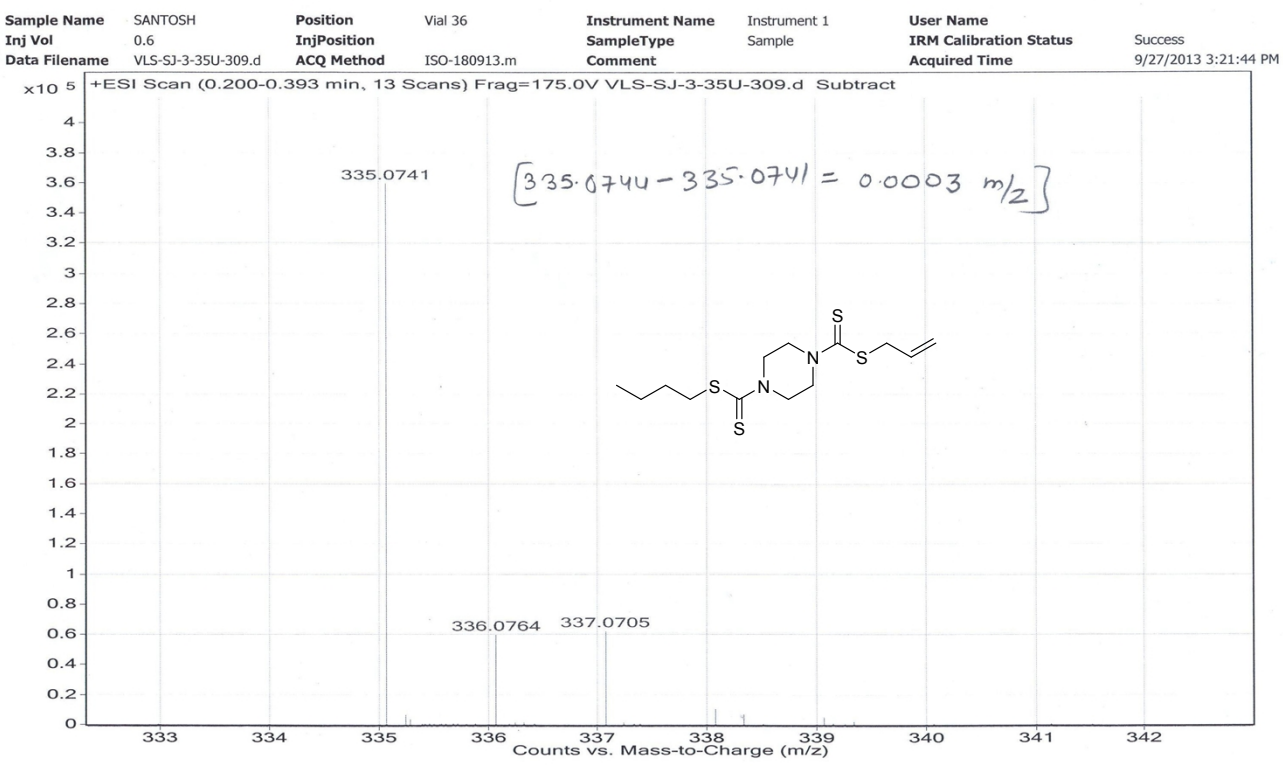
^{13}C NMR (50 MHz, $CDCl_3$) of compound **31**



^{1}H NMR (300 MHz, $CDCl_3$) of compound **32**



^{13}C NMR (75 MHz, $CDCl_3$) of compound **32**



HRMS of compound **32**