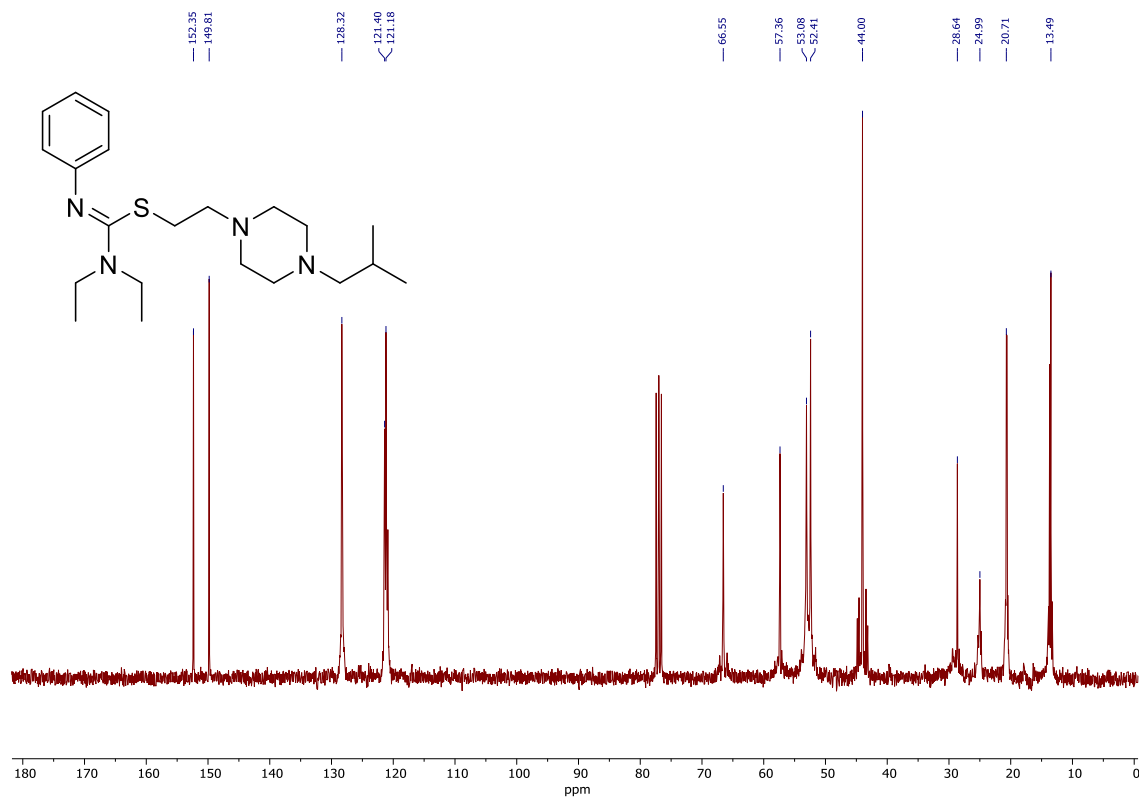
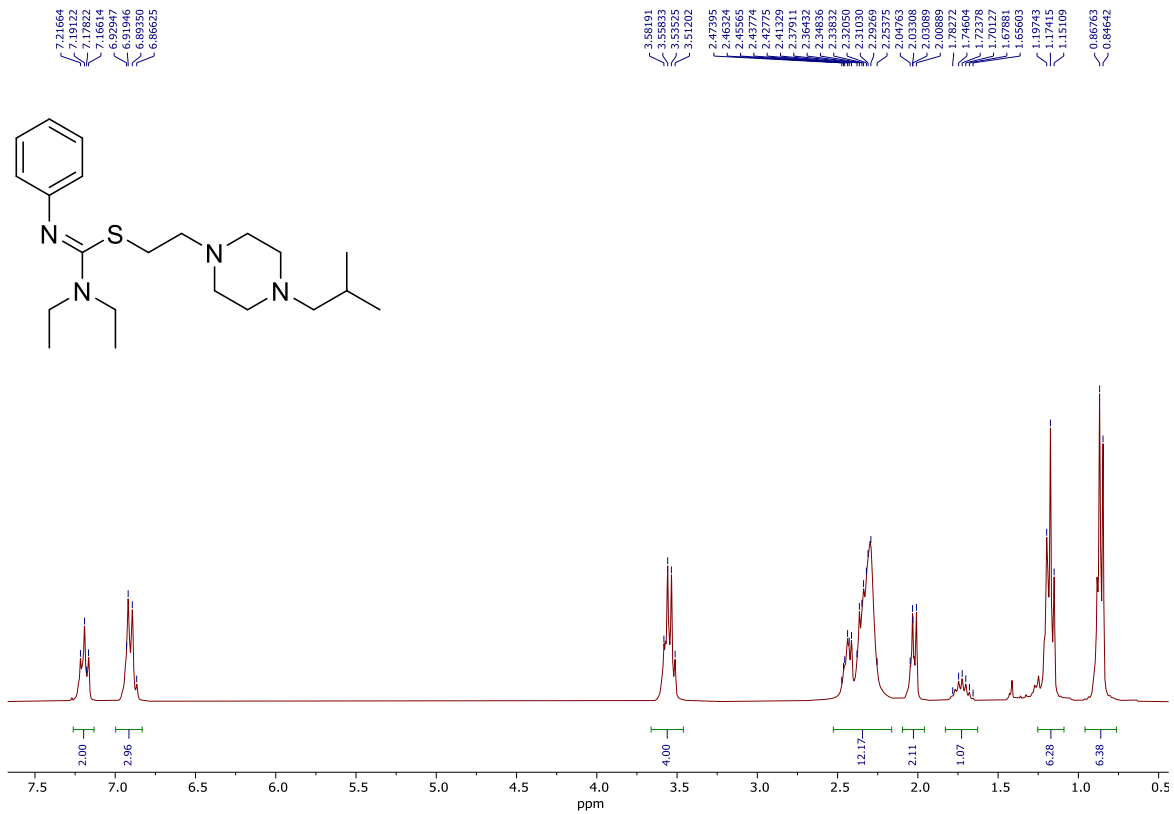


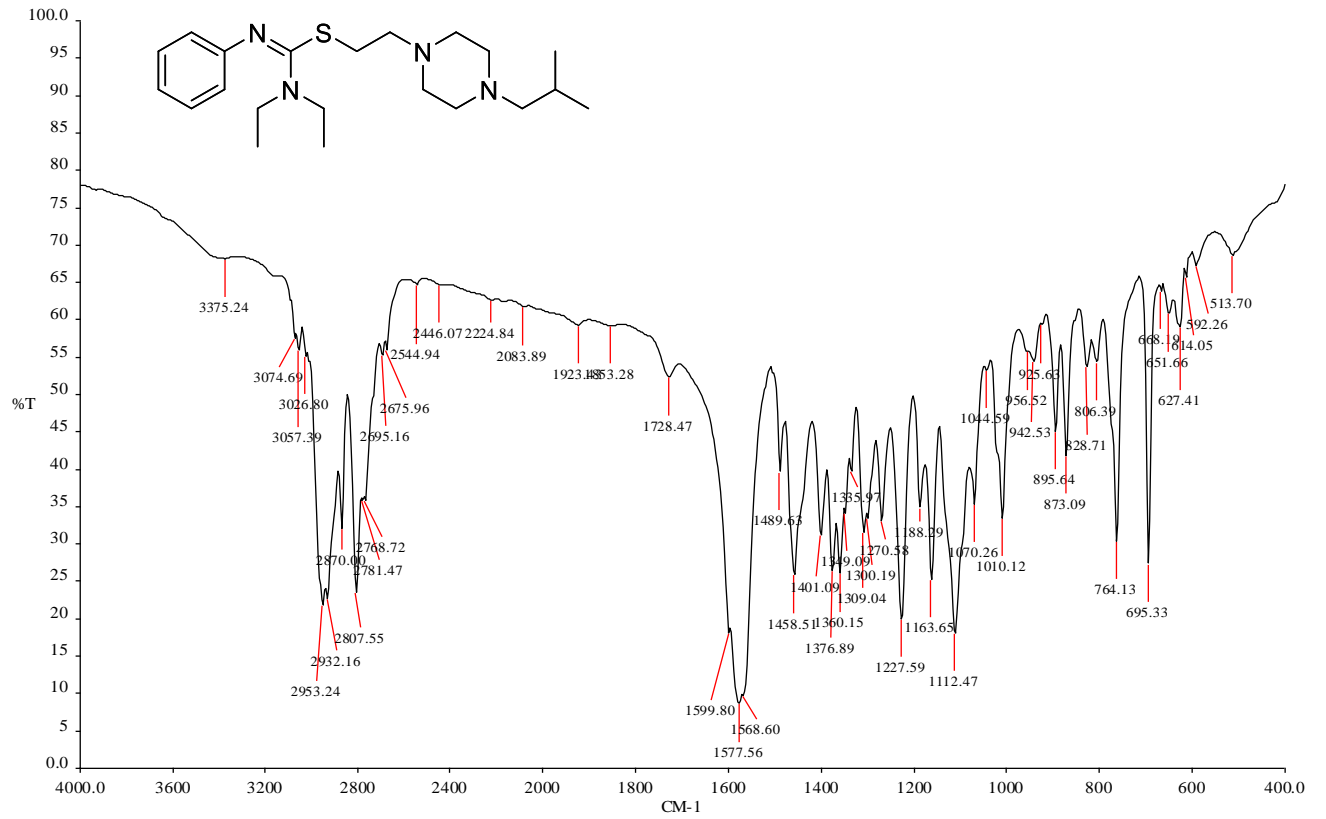
# **One-pot four-component synthesis of novel isothiourea ethylene-tethered piperazine derivatives**

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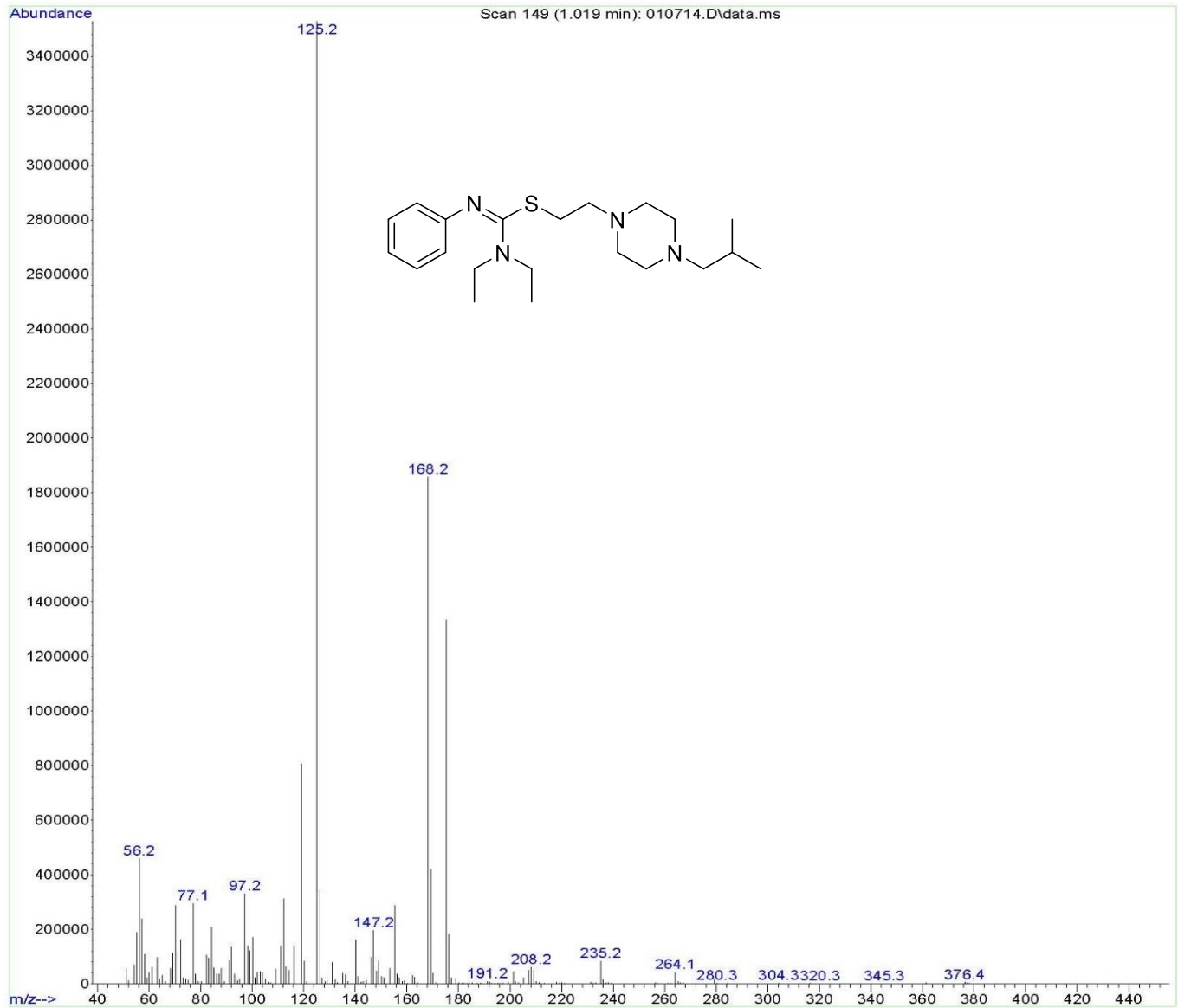


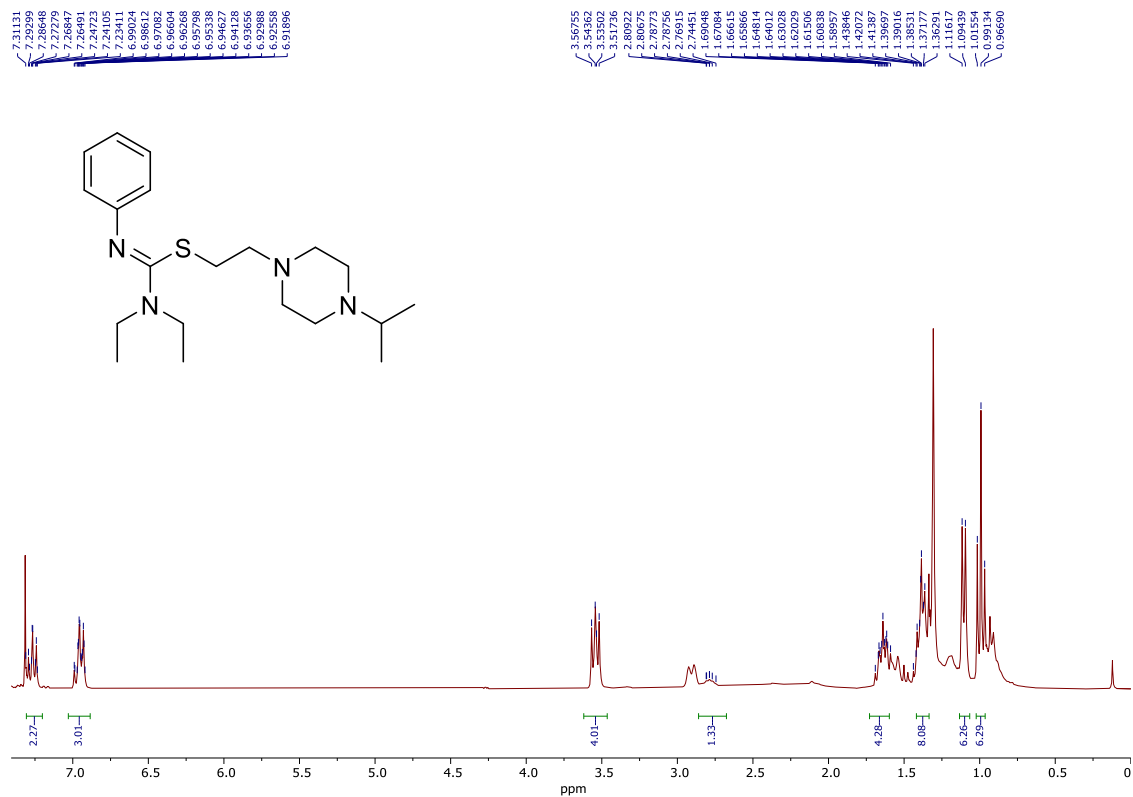


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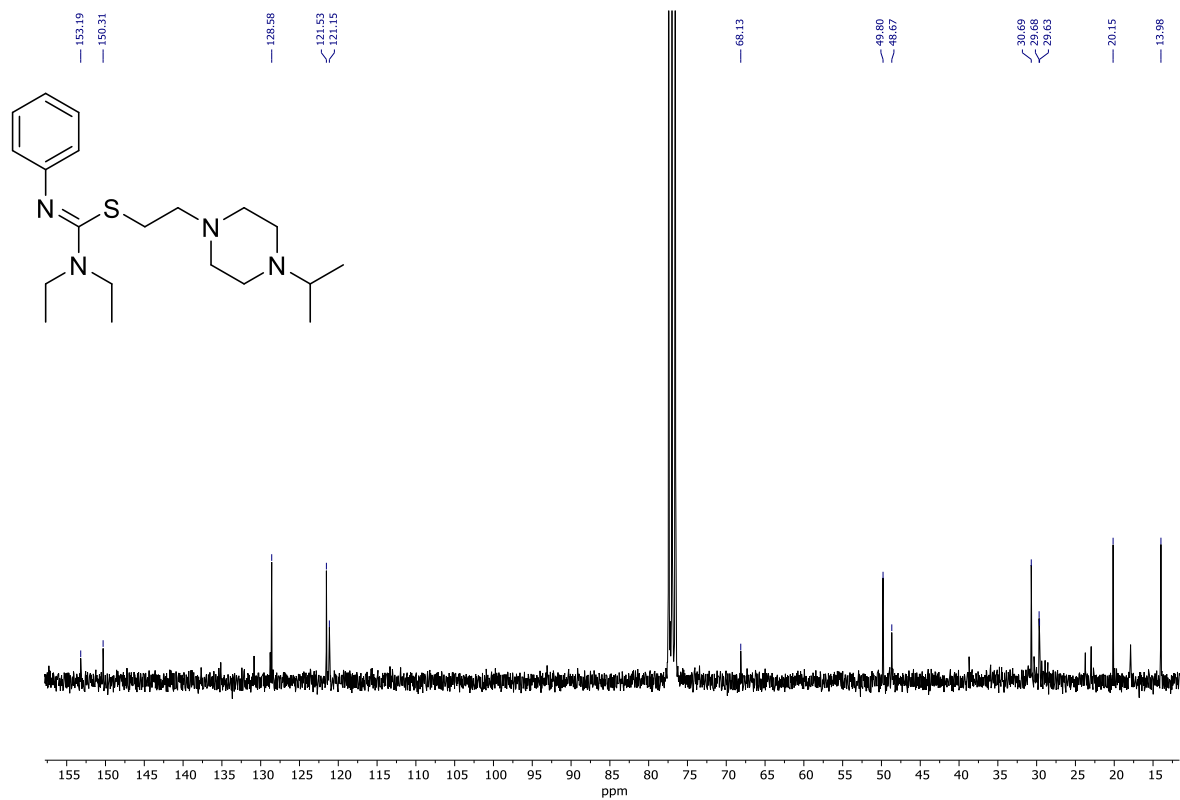
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Sample Name: D3  
Misc Info :  
Vial Number: 1

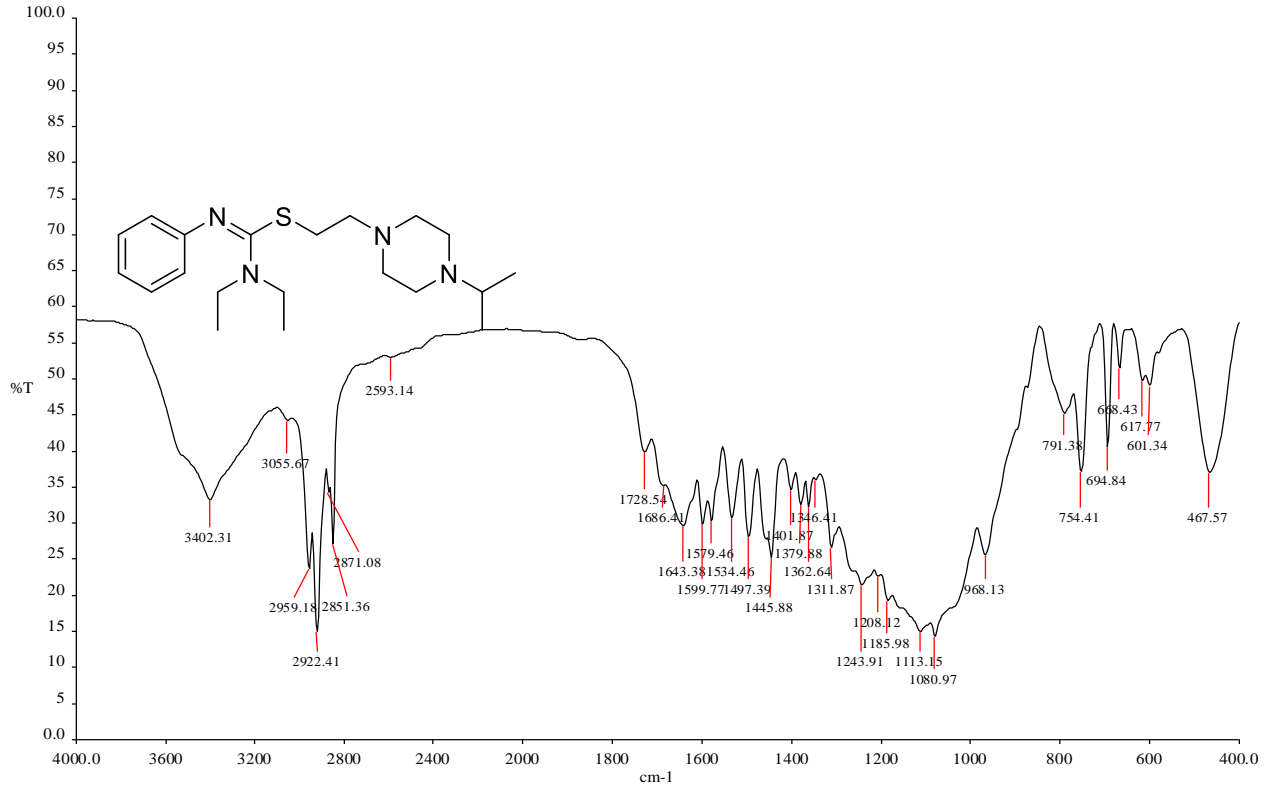




<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Isopropylpiperazin-1-yl)ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3b**



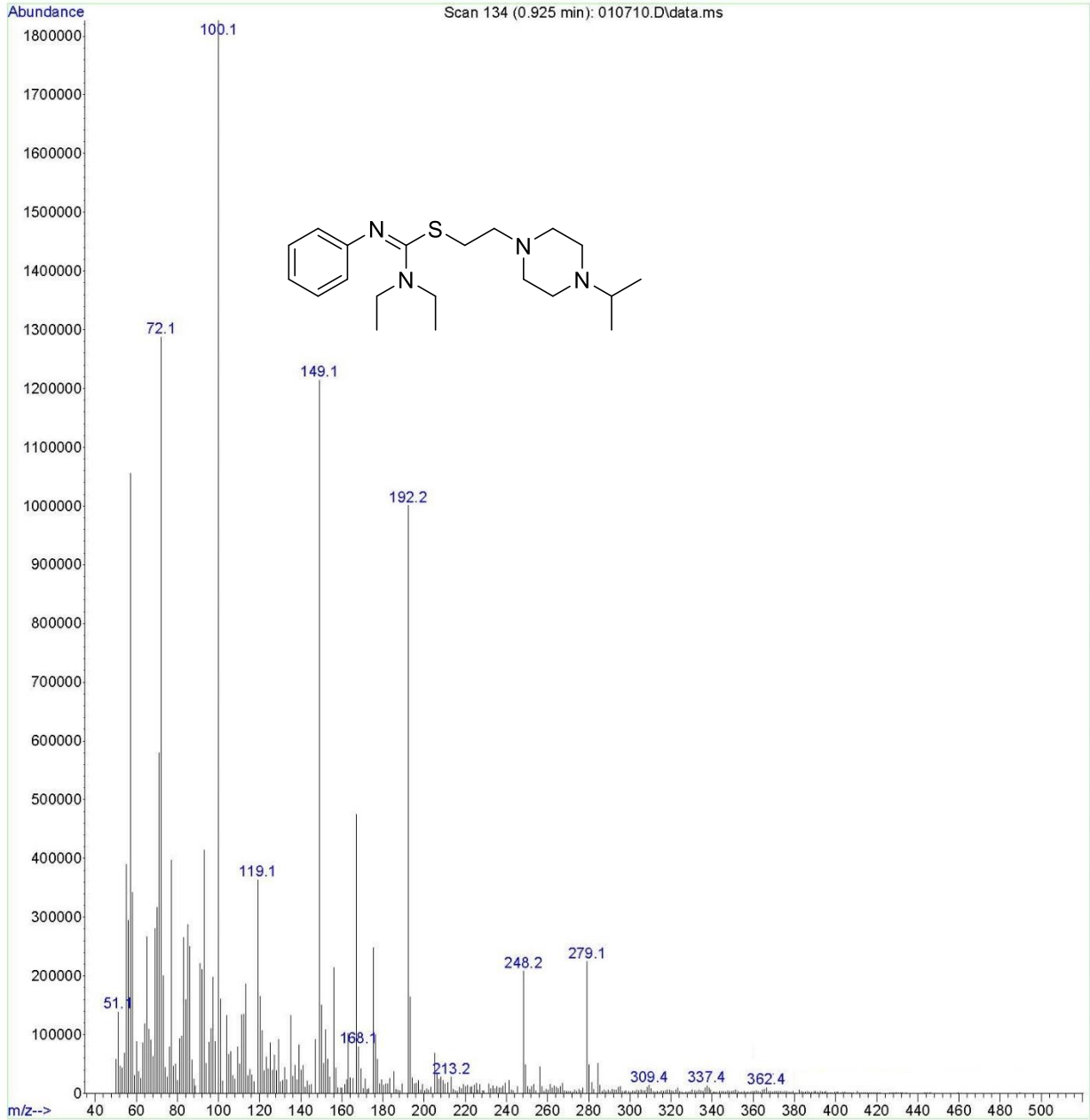
<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Isopropylpiperazin-1-yl)ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3b**

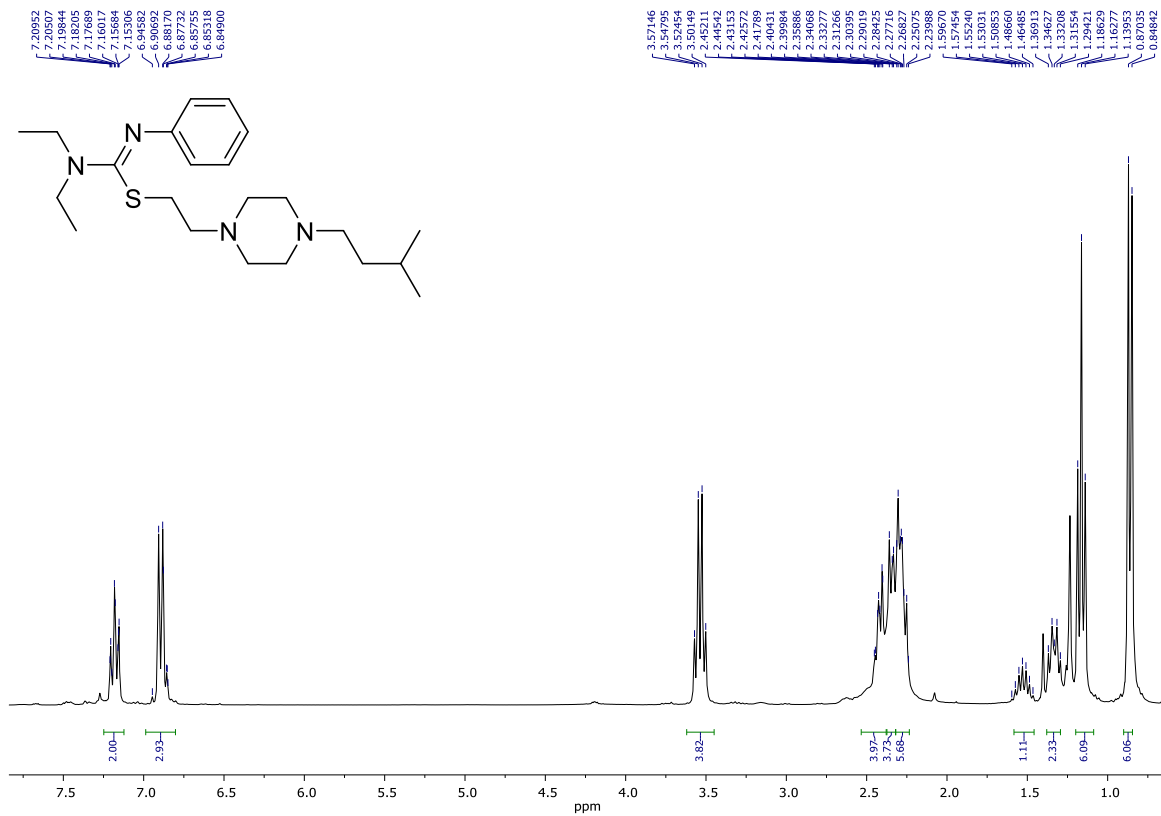


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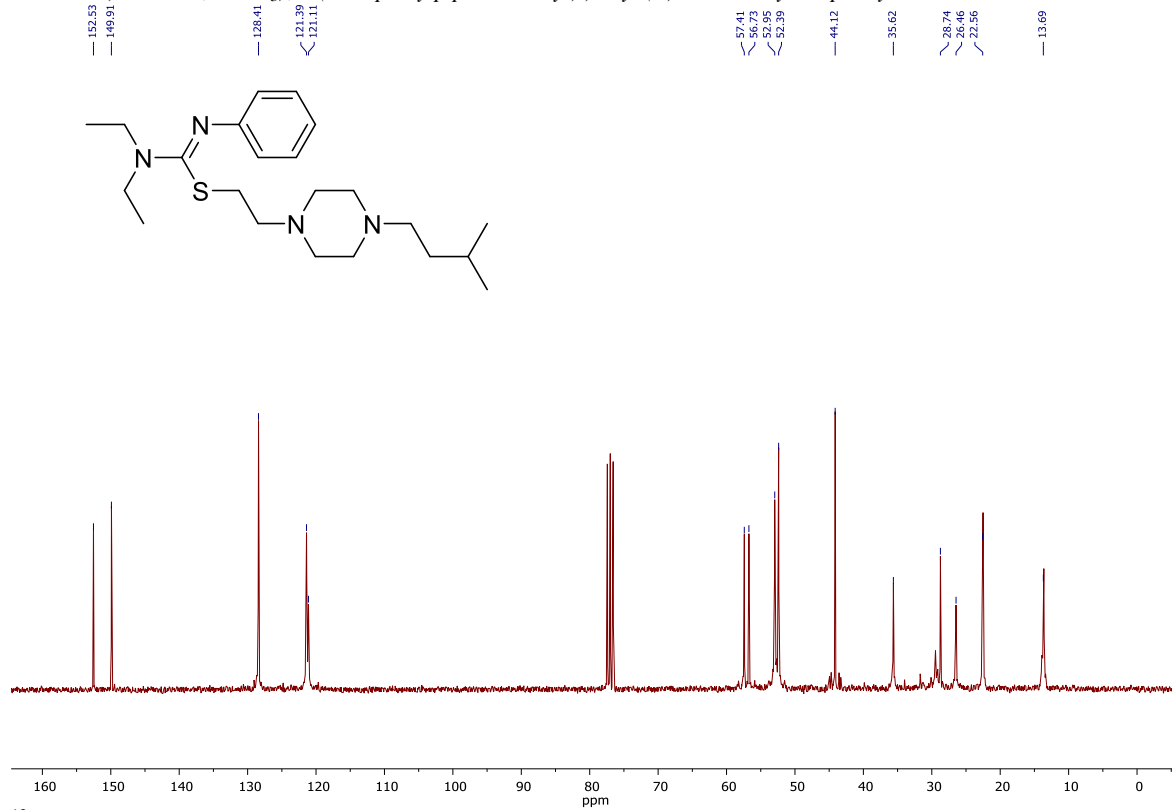
Sample: D5

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Sample Name: D5  
Misc Info :  
Vial Number: 1



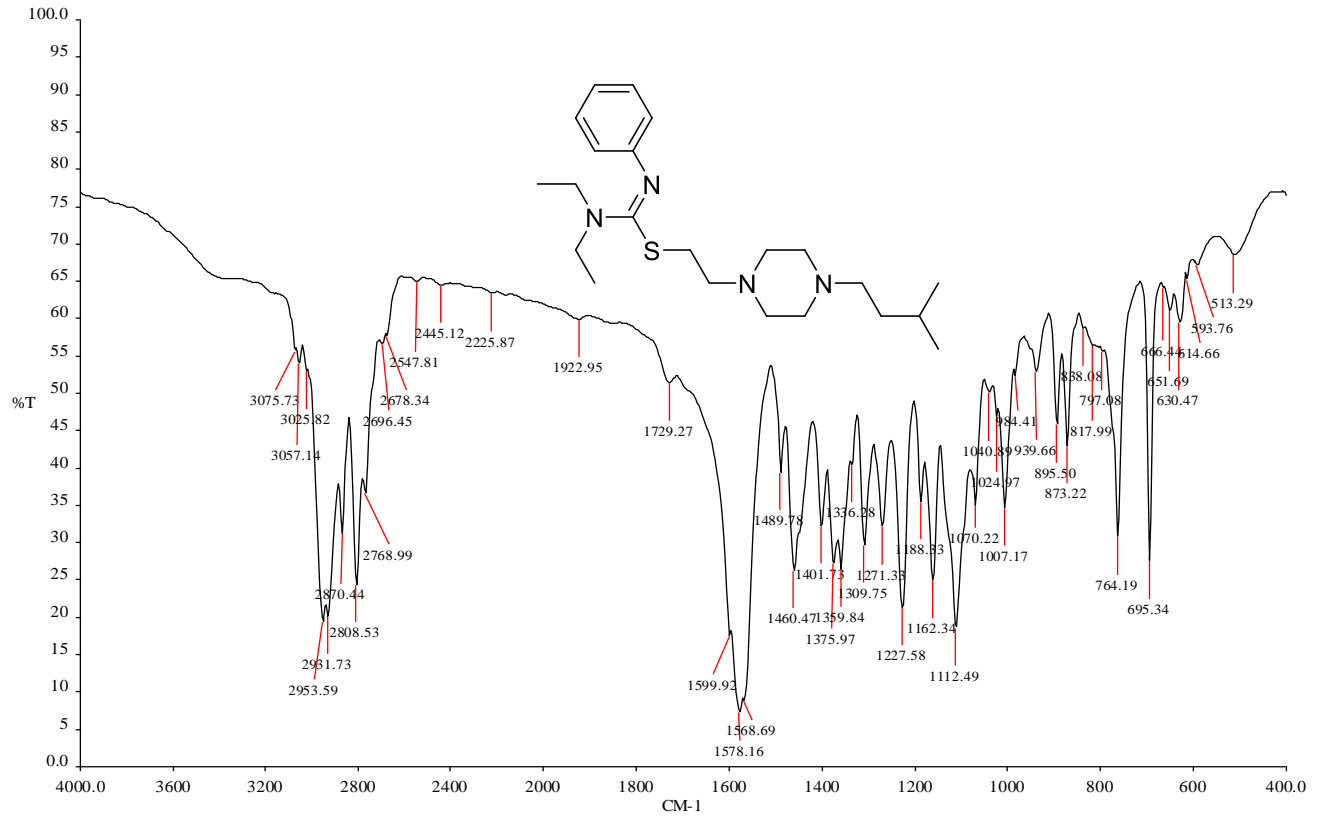


<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Isopentylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamidithioate **3c**



<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Isopentylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamidithioate **3c**

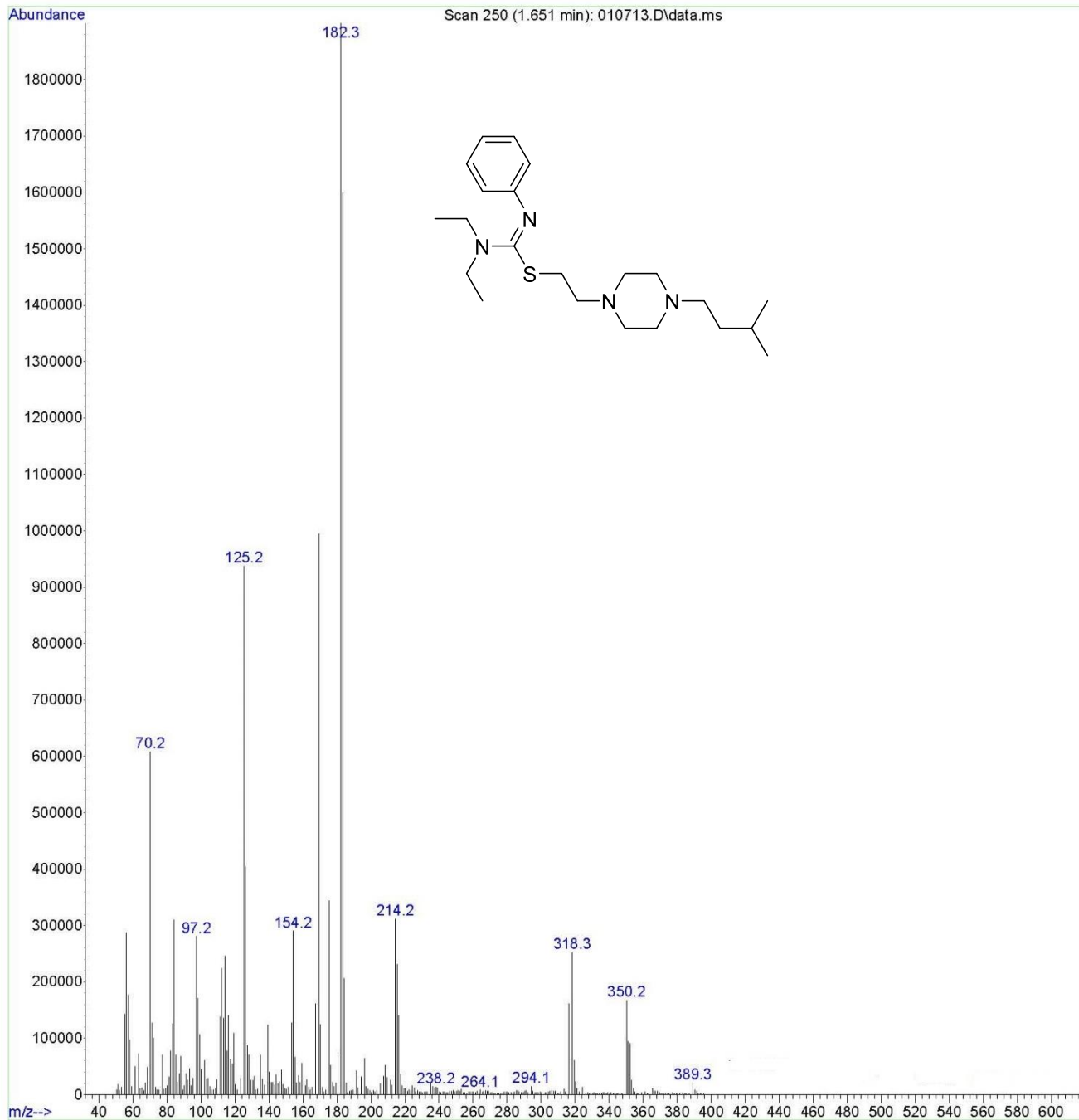


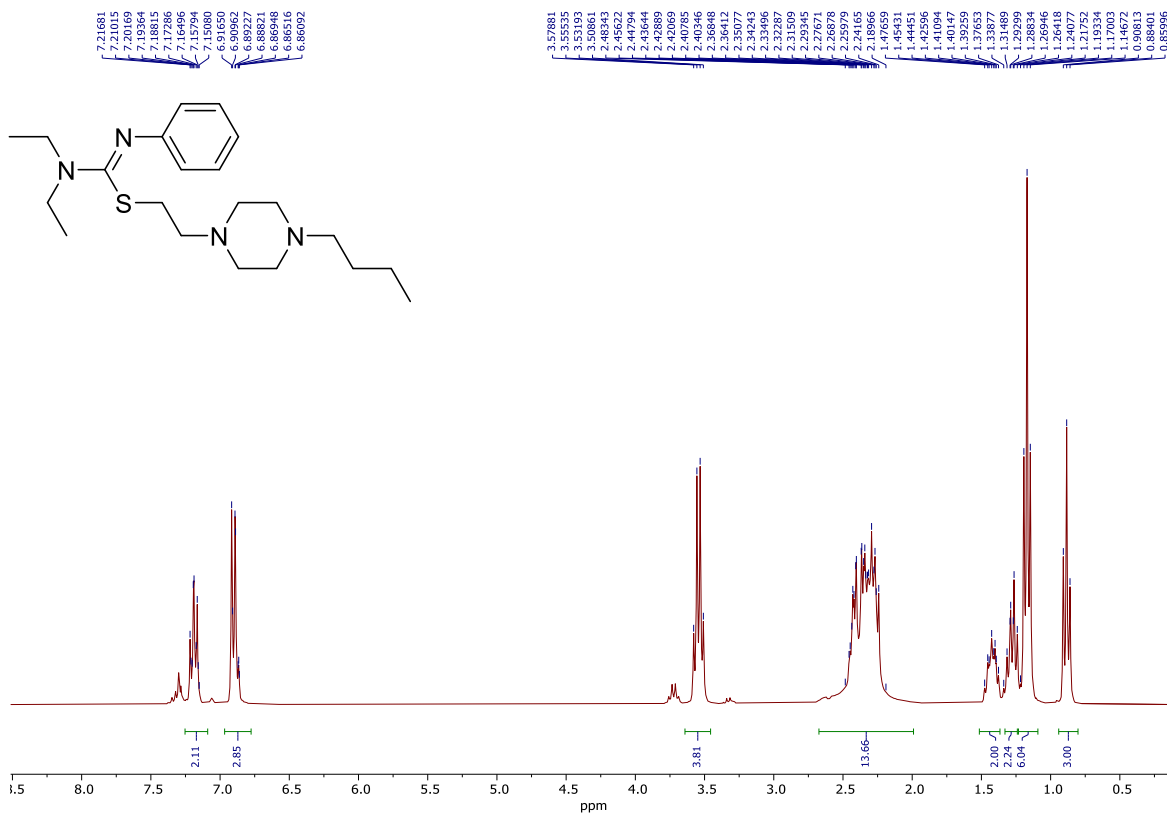


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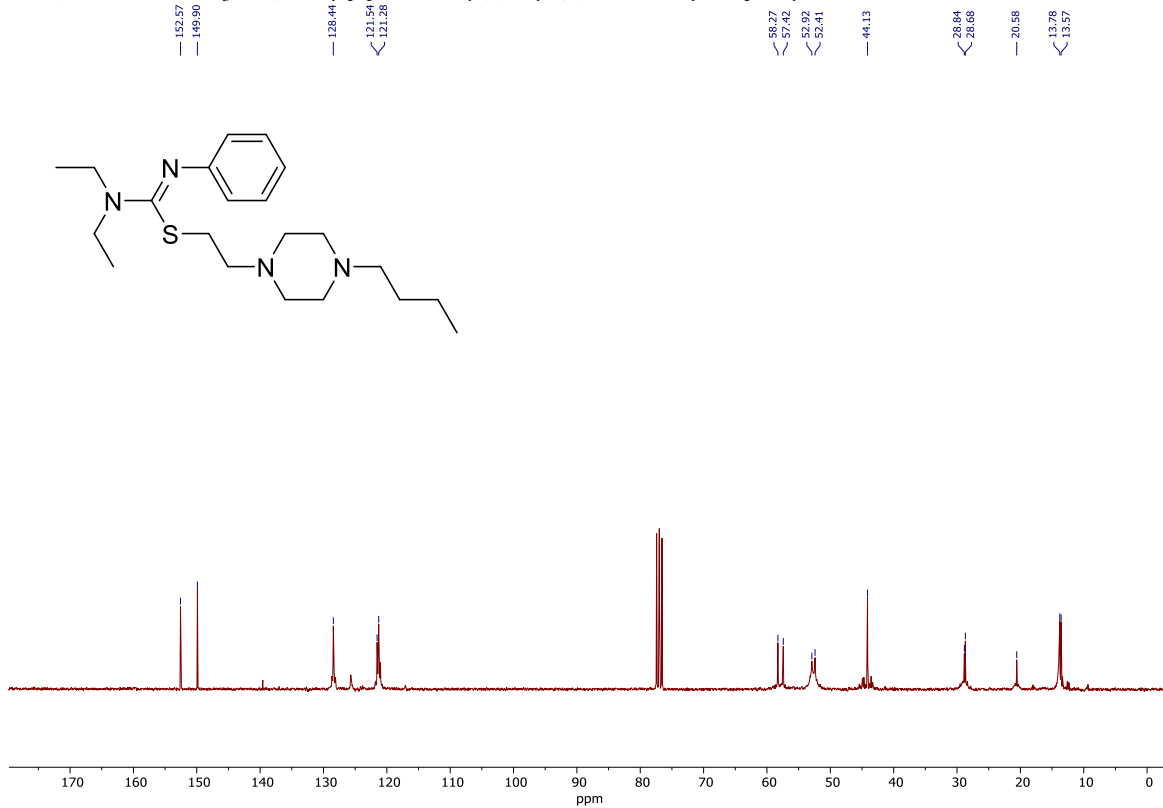
Sample: D 2

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Sample Name: D2  
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Vial Number: 1

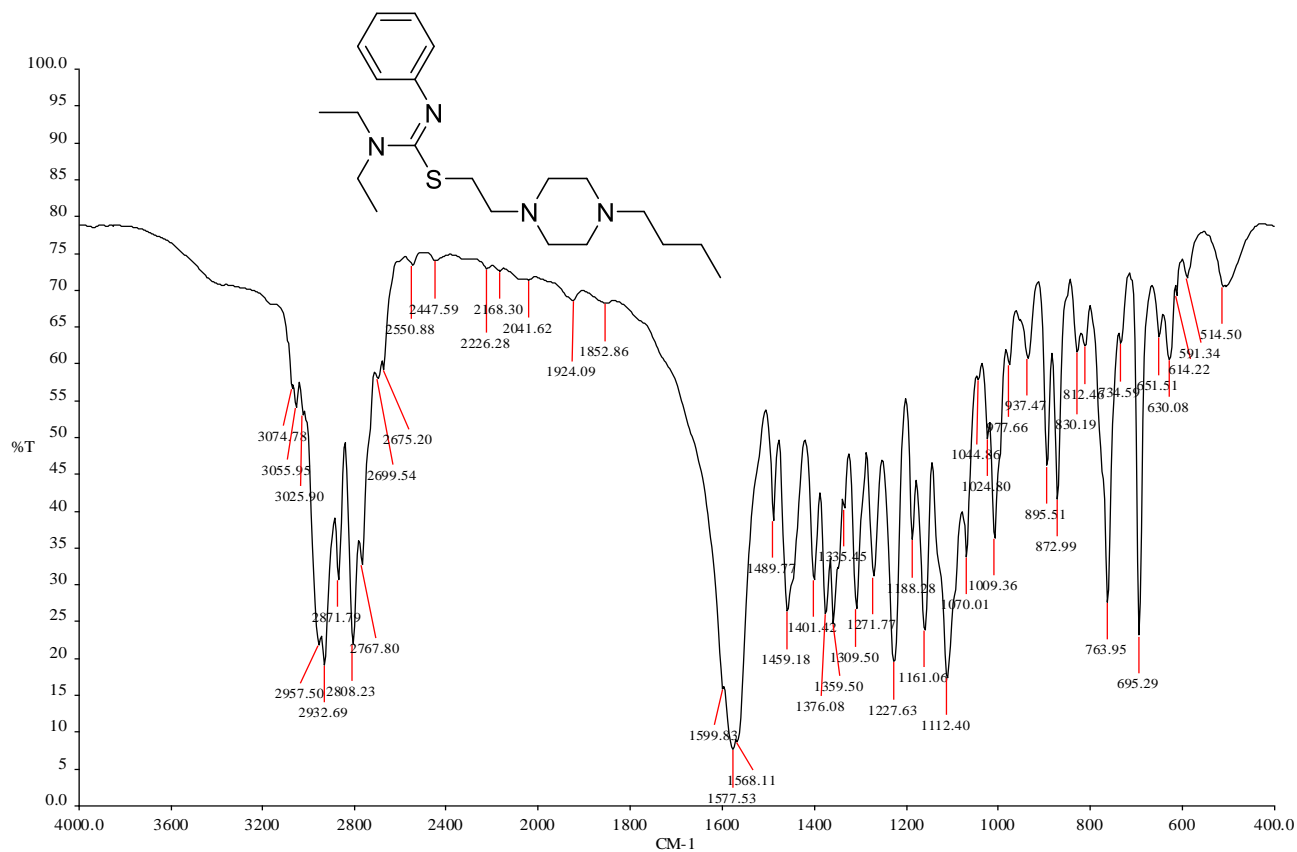




<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3d**



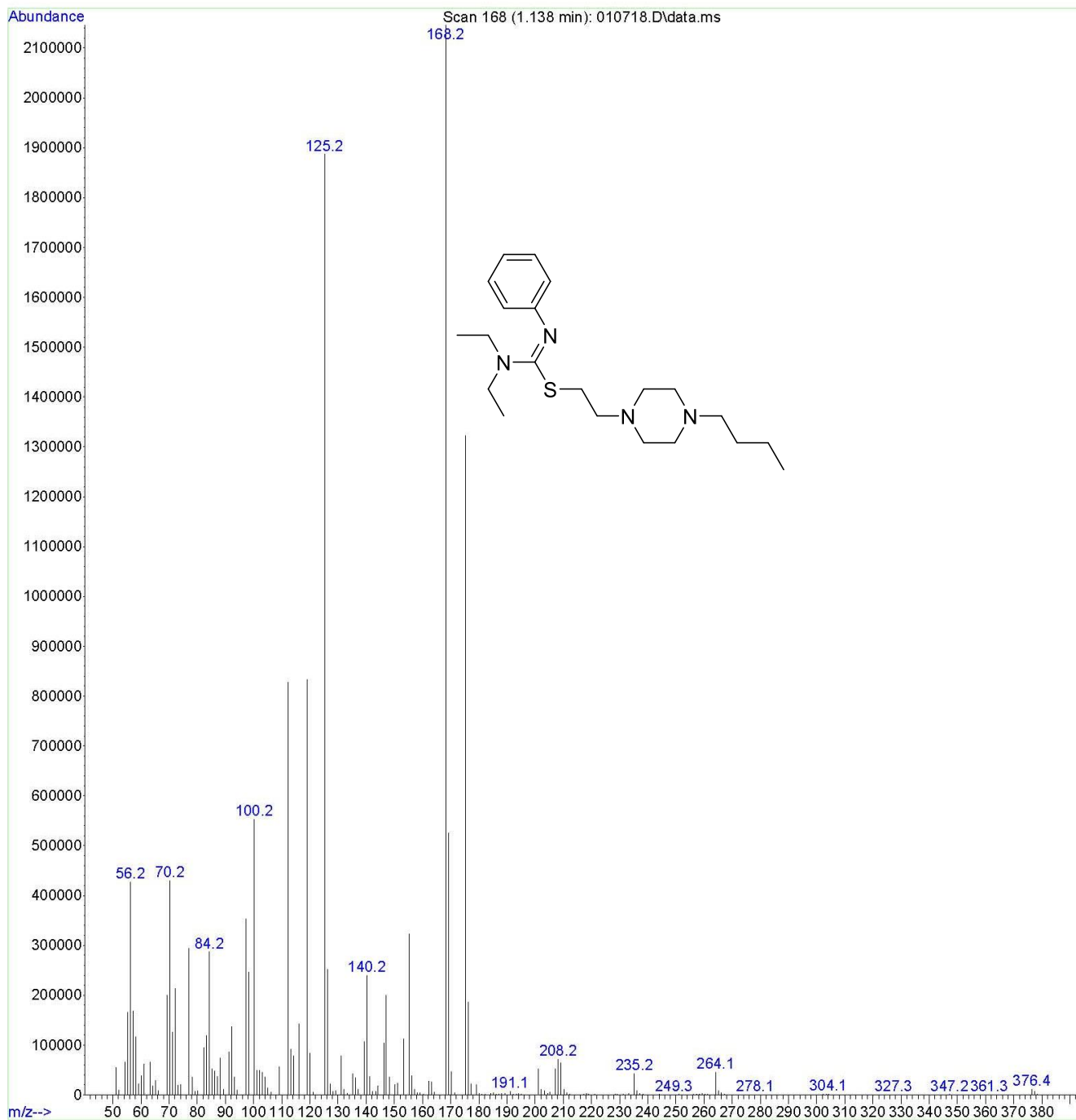
<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3d**

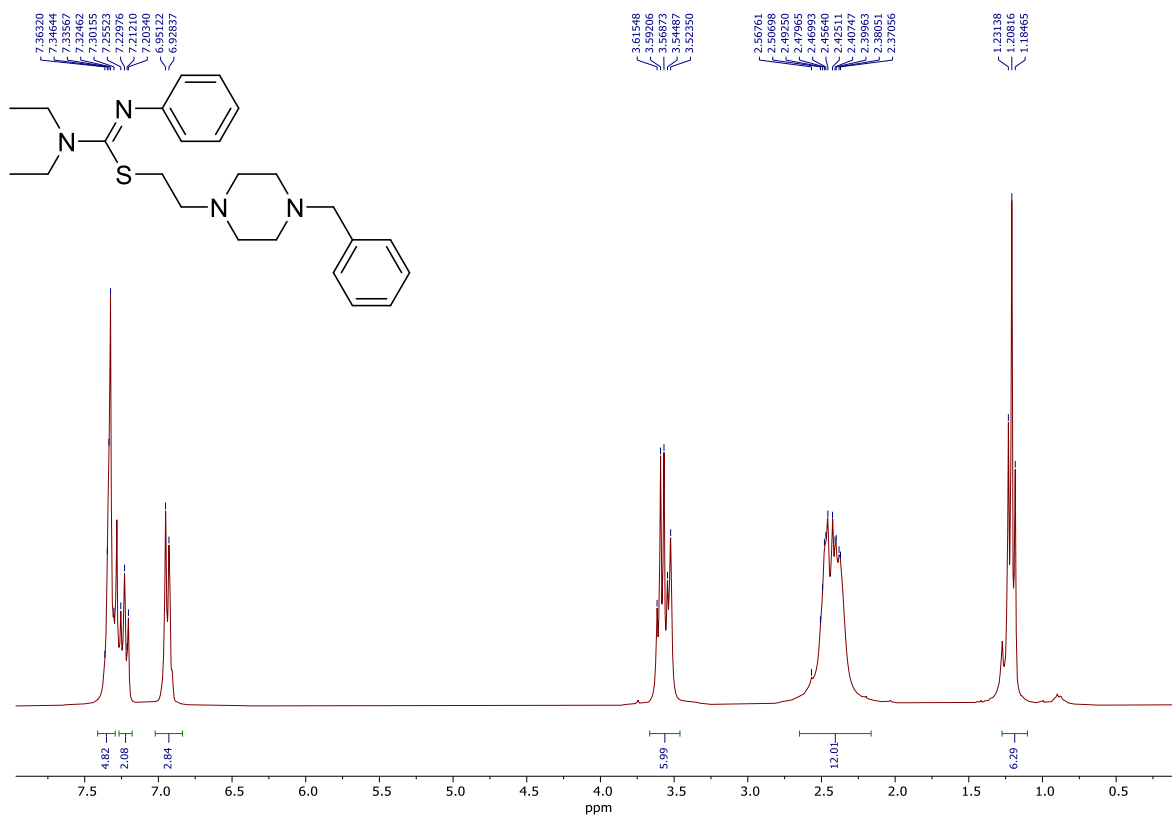


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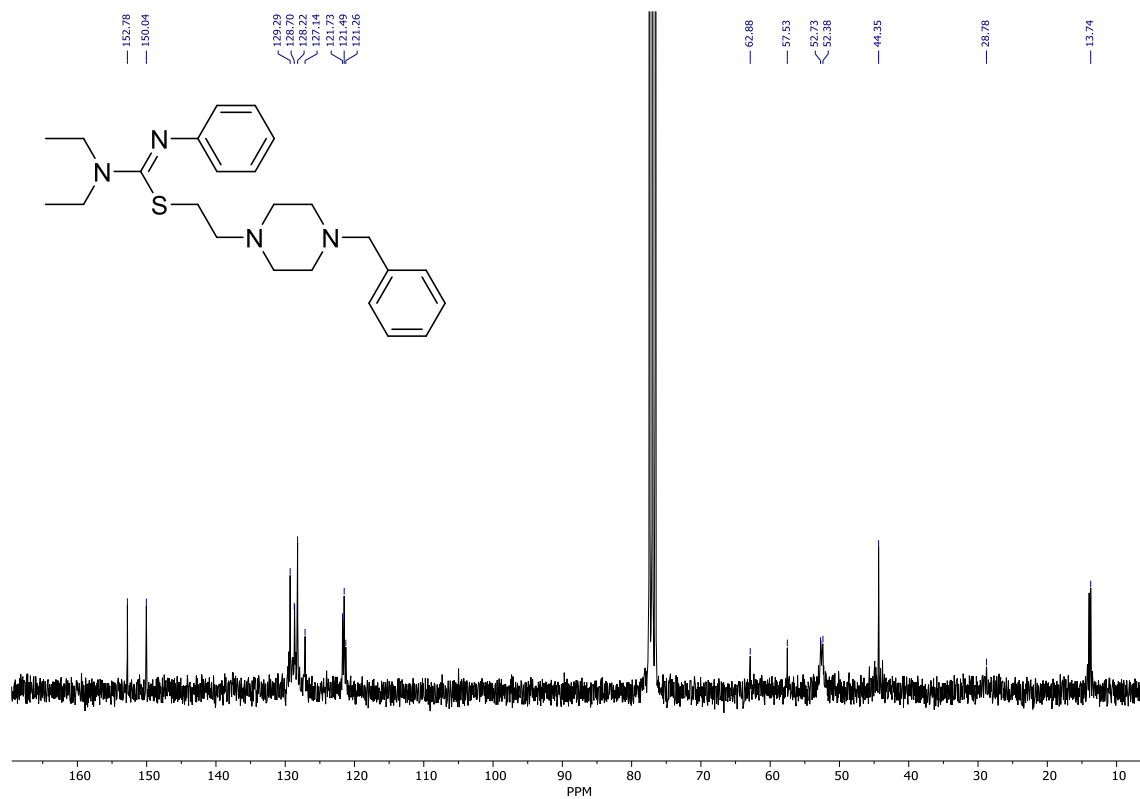
Sample: D 14

Acquired : 3 Jan 2007 7:34 using AcqMethod f1.M  
Instrument : MSD  
Sample Name: D14  
Misc Info :  
Vial Number: 1

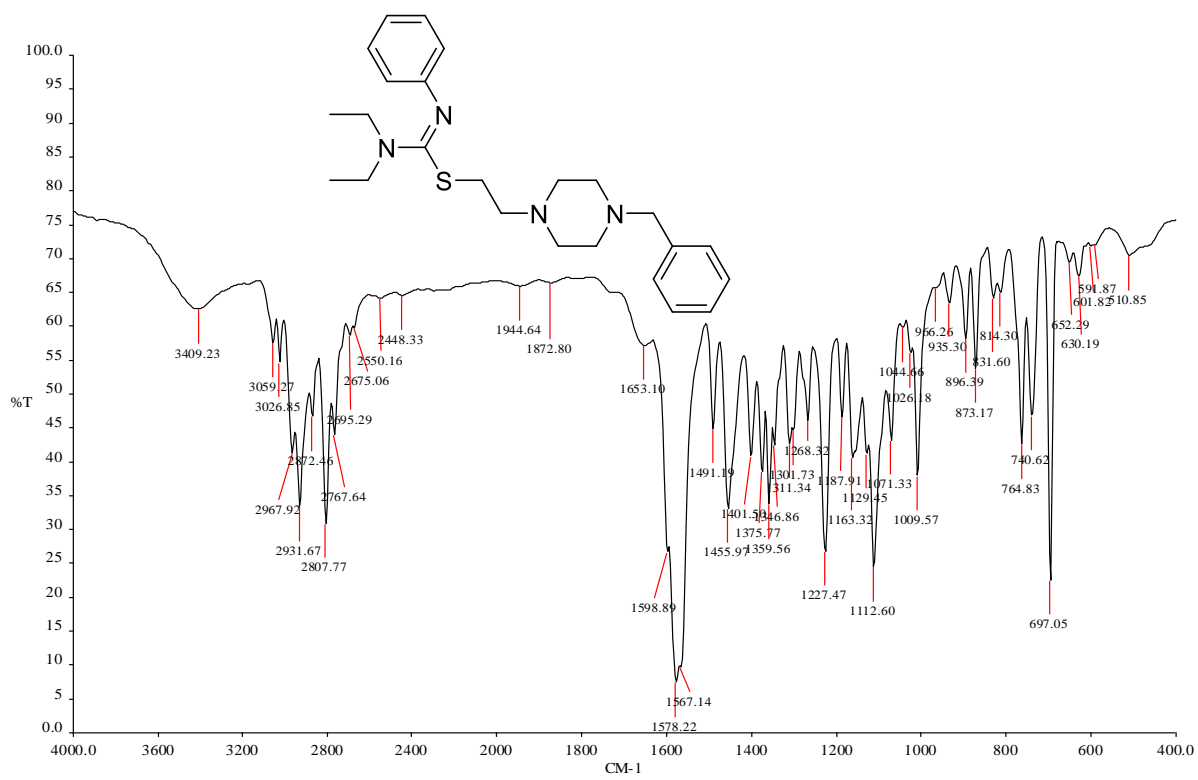




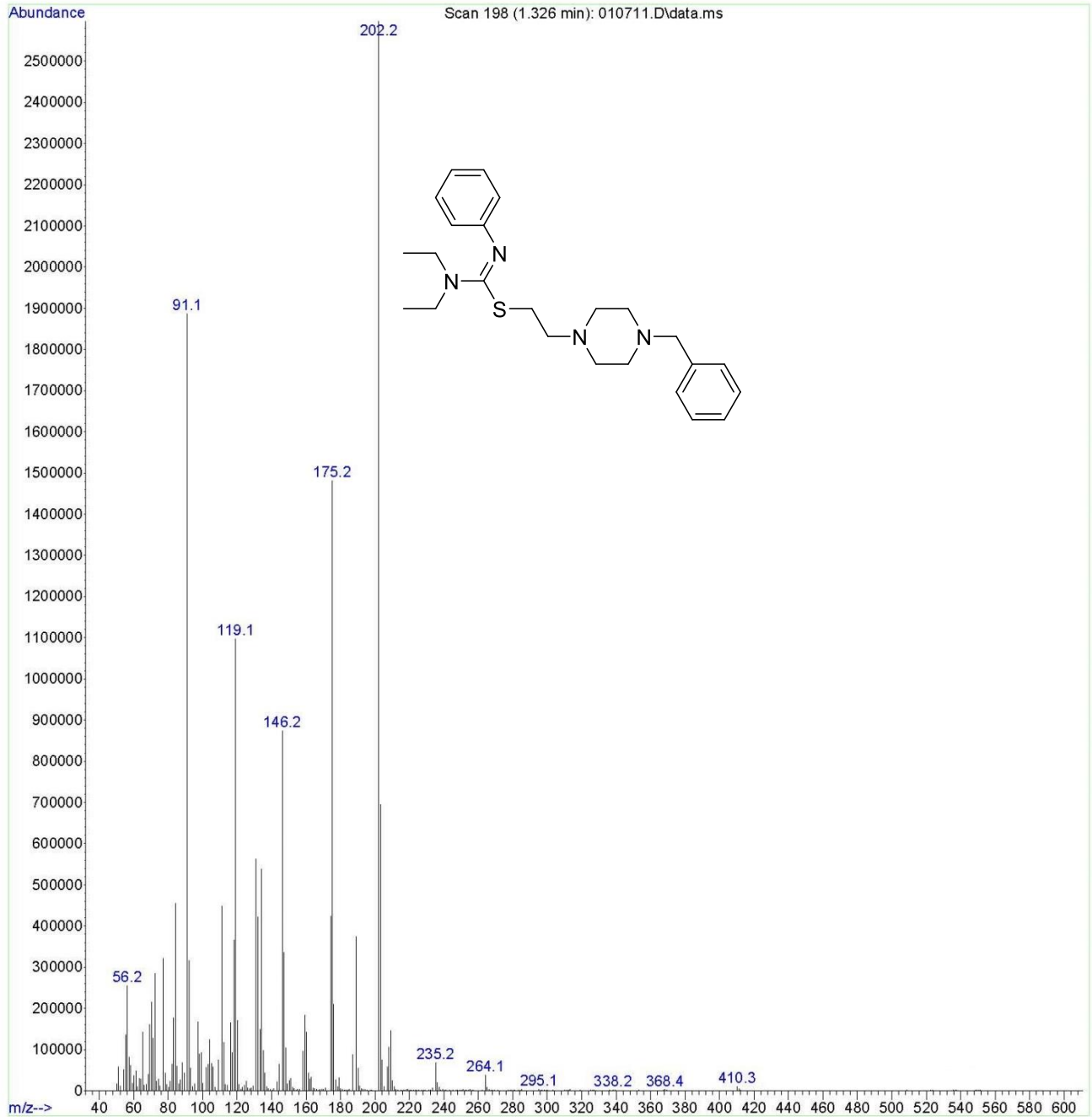
**<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3e****



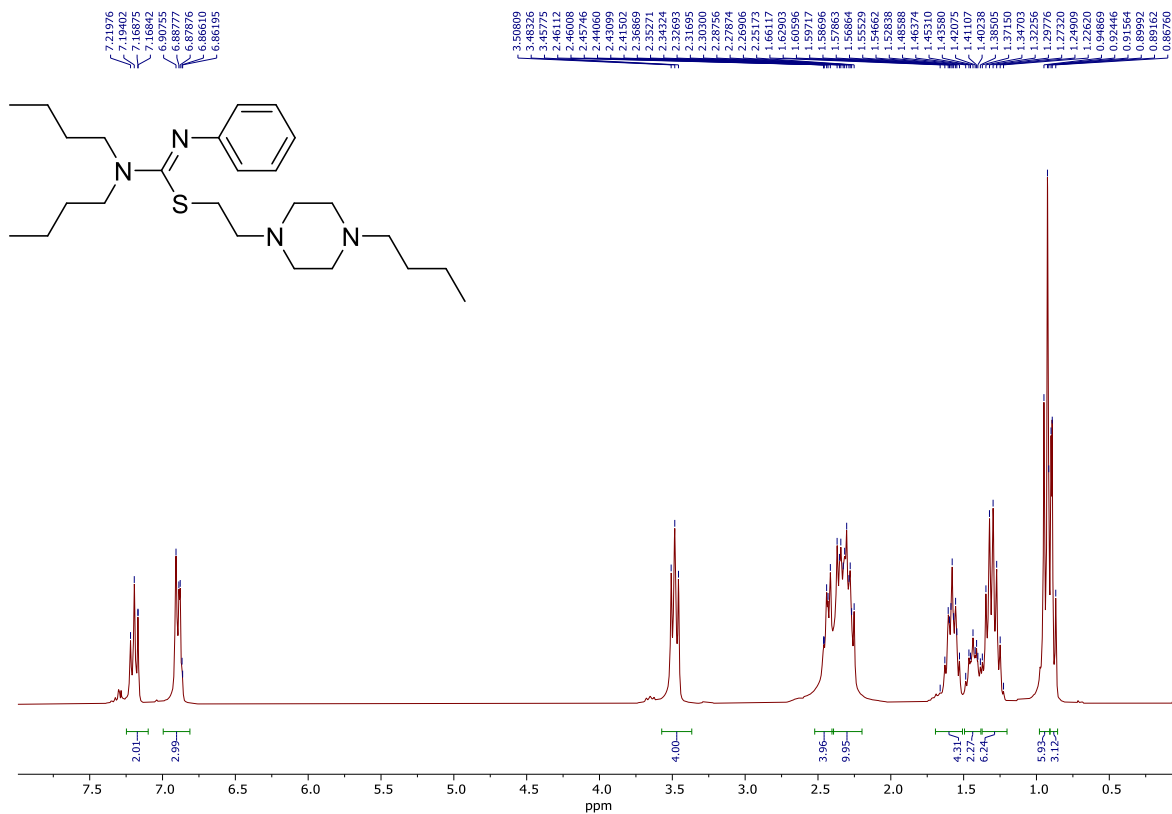
**<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl) ethyl (Z)-N,N-diethyl-N'-phenylcarbamimidothioate **3e****



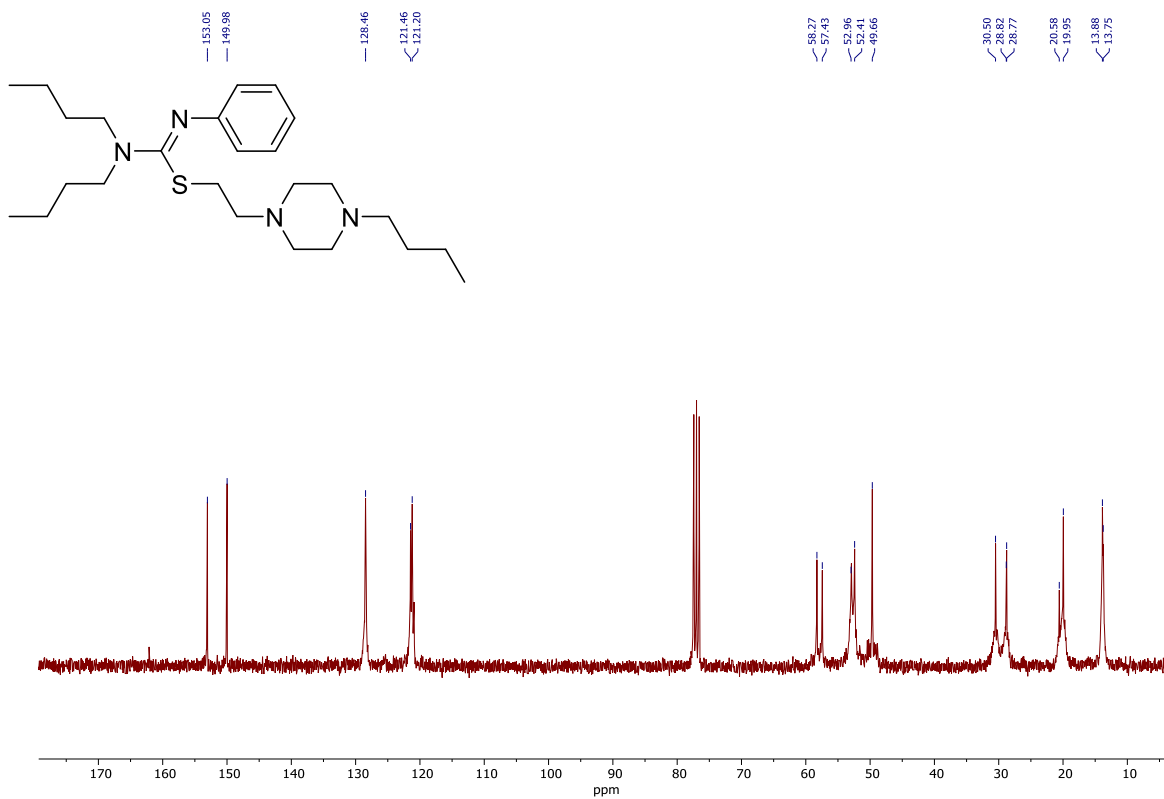
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Instrument : MSD  
Sample Name: D10  
Misc Info :  
Vial Number: 1



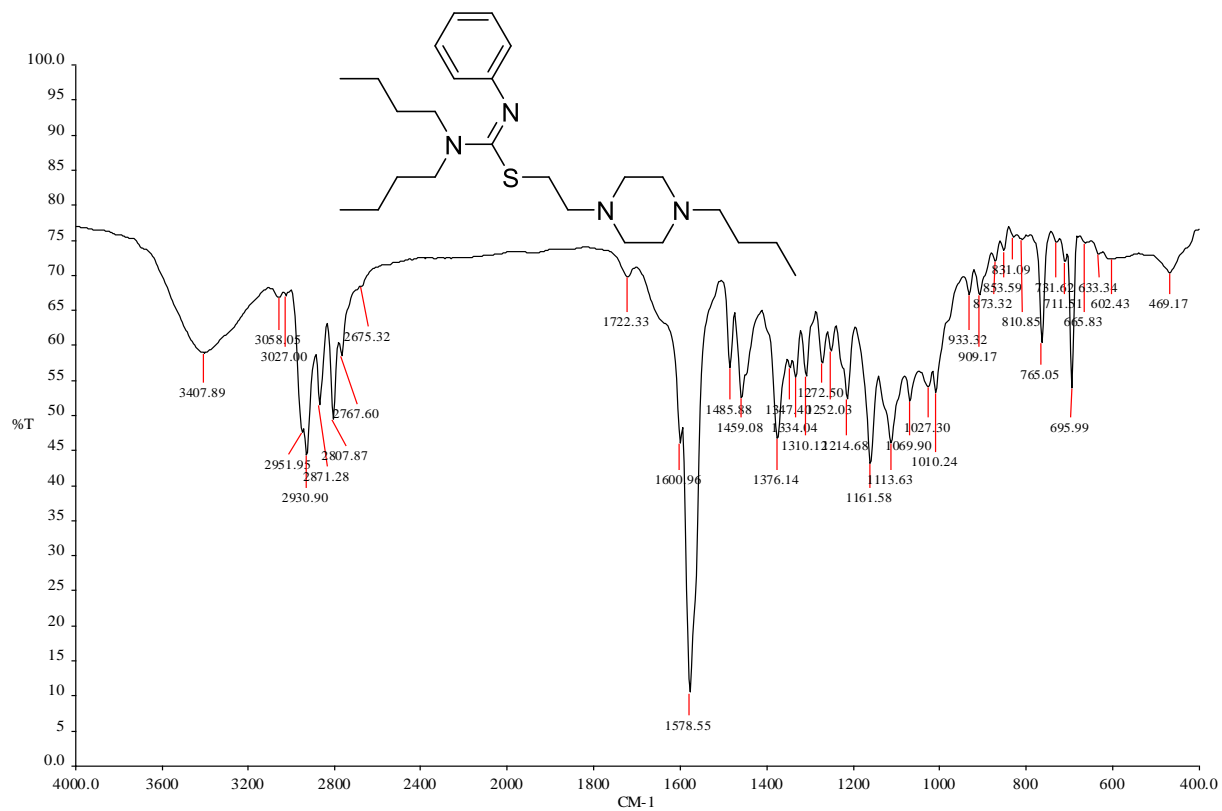




**<sup>1</sup>H NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl)ethyl (Z)-N,N-dibutyl-N'-phenylcarbamimidothioate **3f****



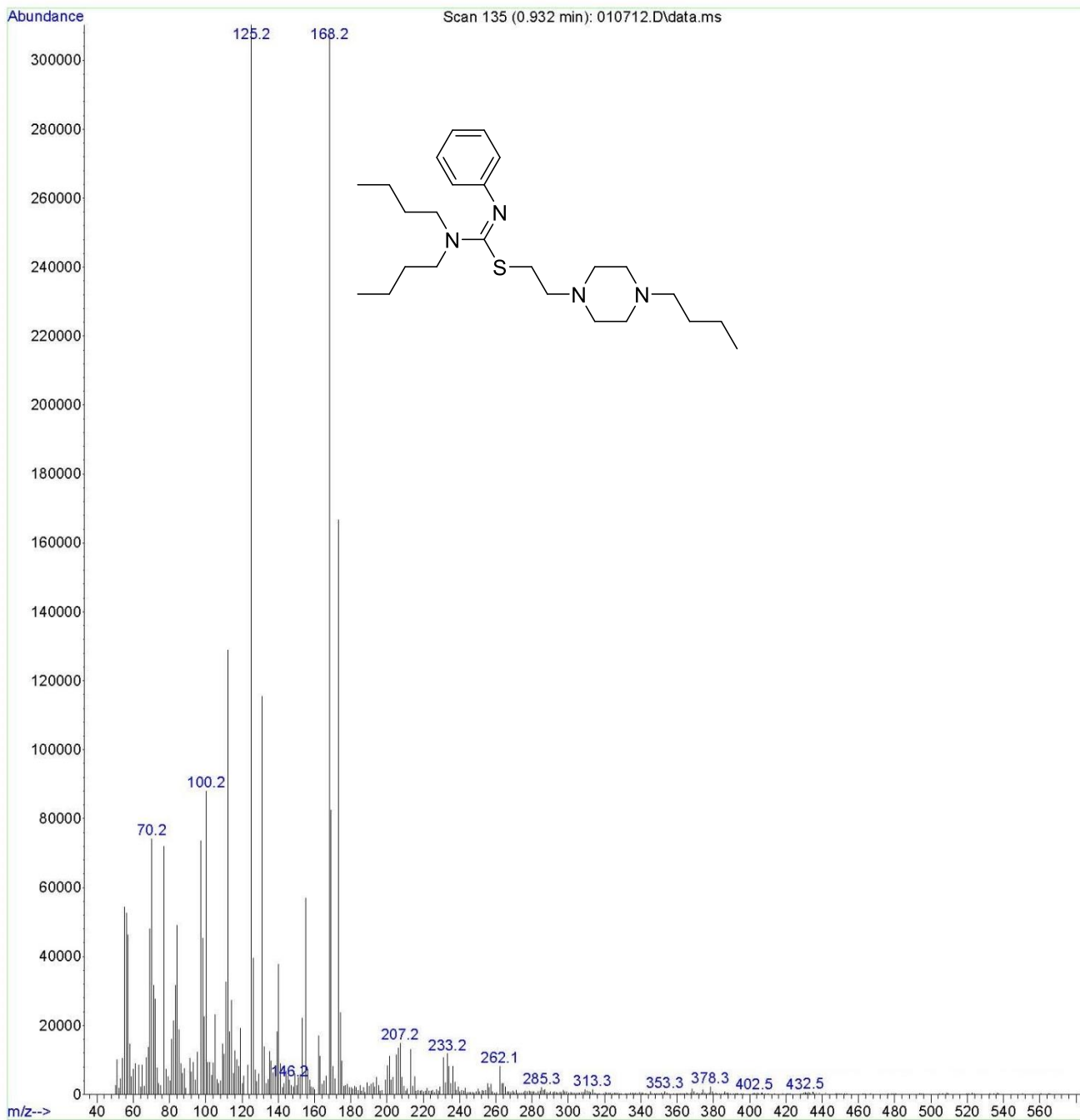
**<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl)ethyl (Z)-N,N-dibutyl-N'-phenylcarbamimidothioate **3f****

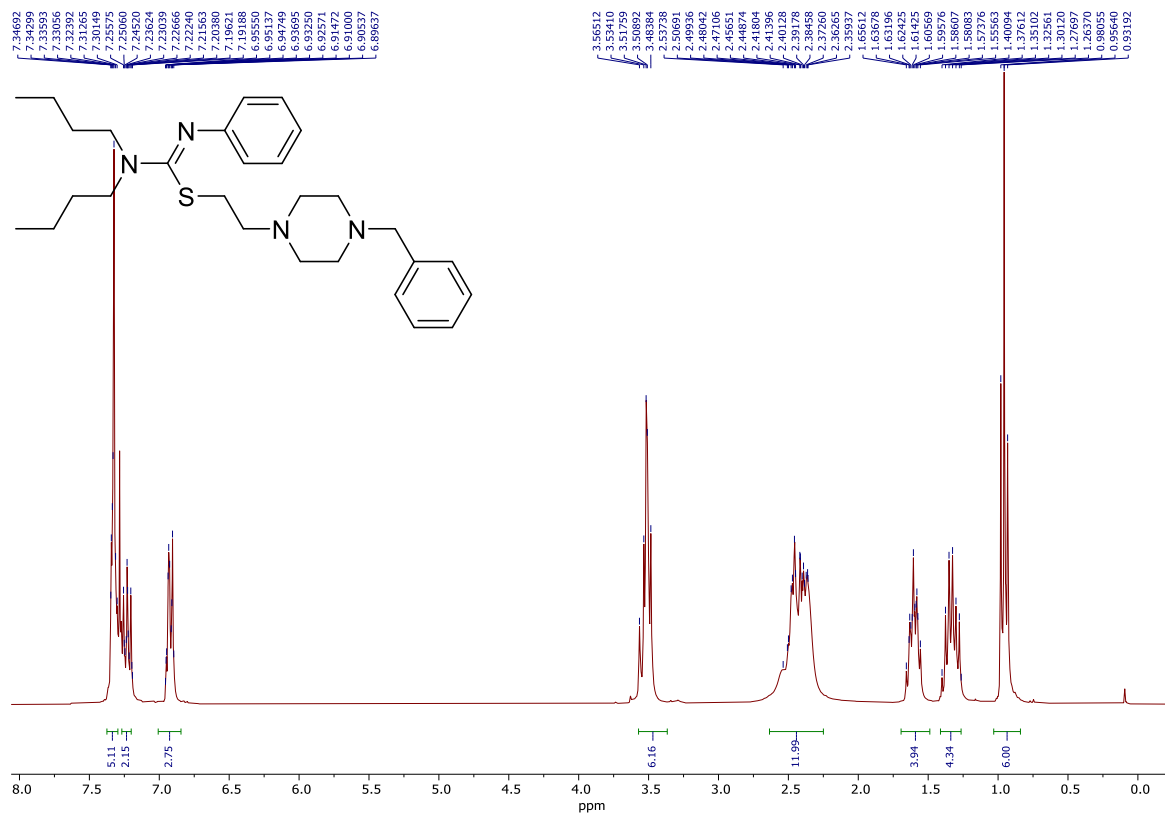


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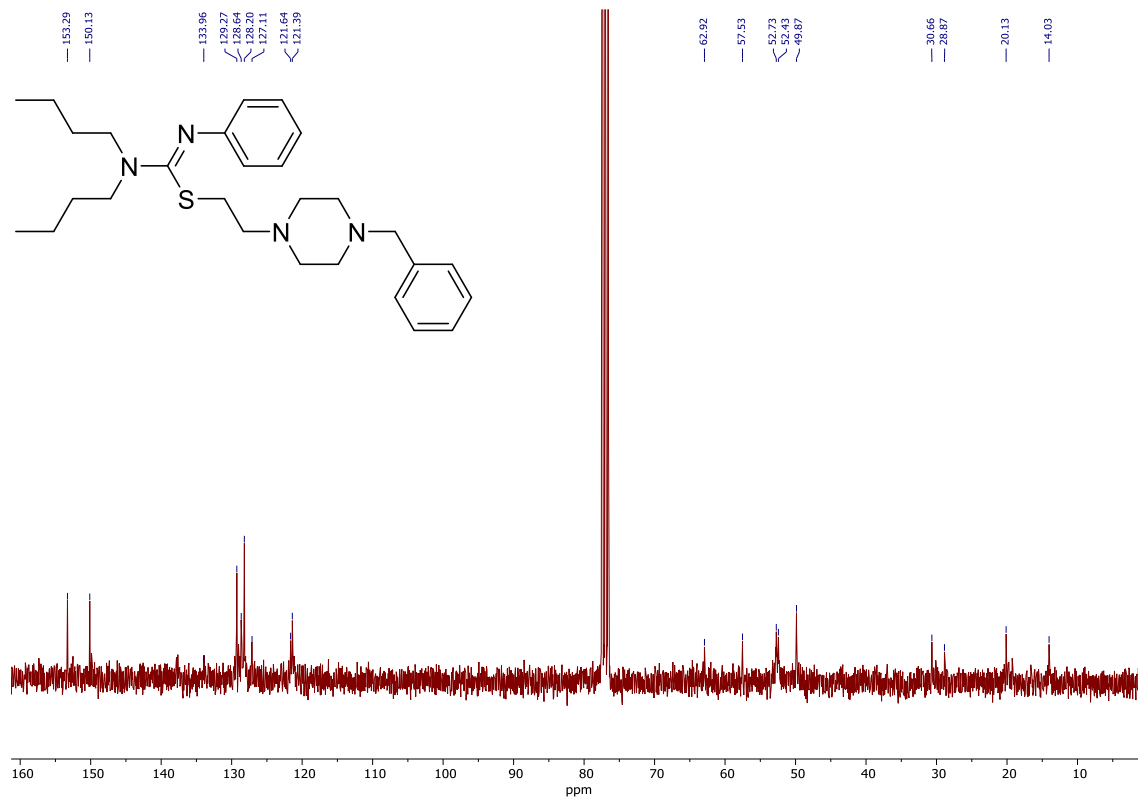
Sample: D 16

Acquired : 3 Jan 2007 6:51 using AcqMethod f1.M  
Instrument : MSD  
Sample Name: D16  
Misc Info :  
Vial Number: 1

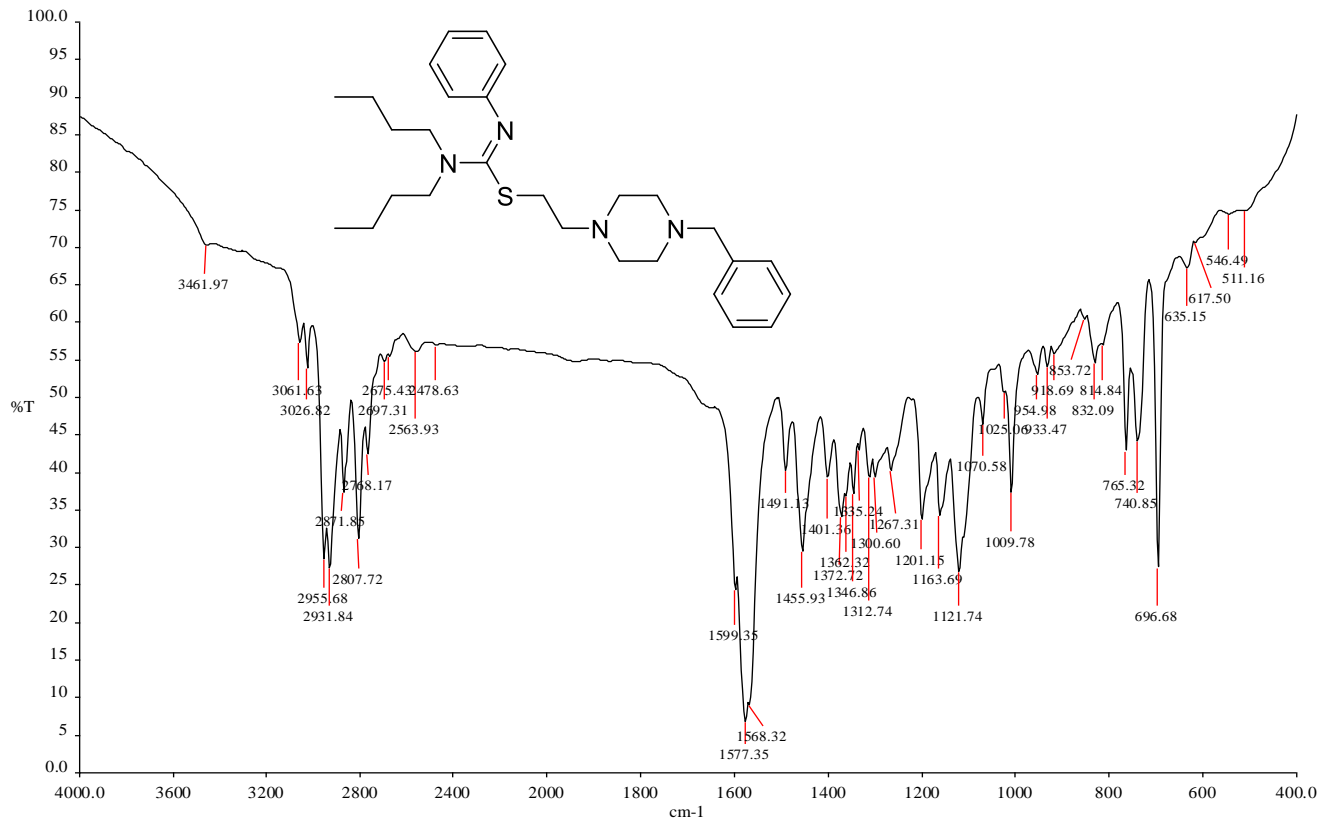




<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl)ethyl (Z)-N,N-dibutyl-N'-phenylcarbamimidothioate **3g**



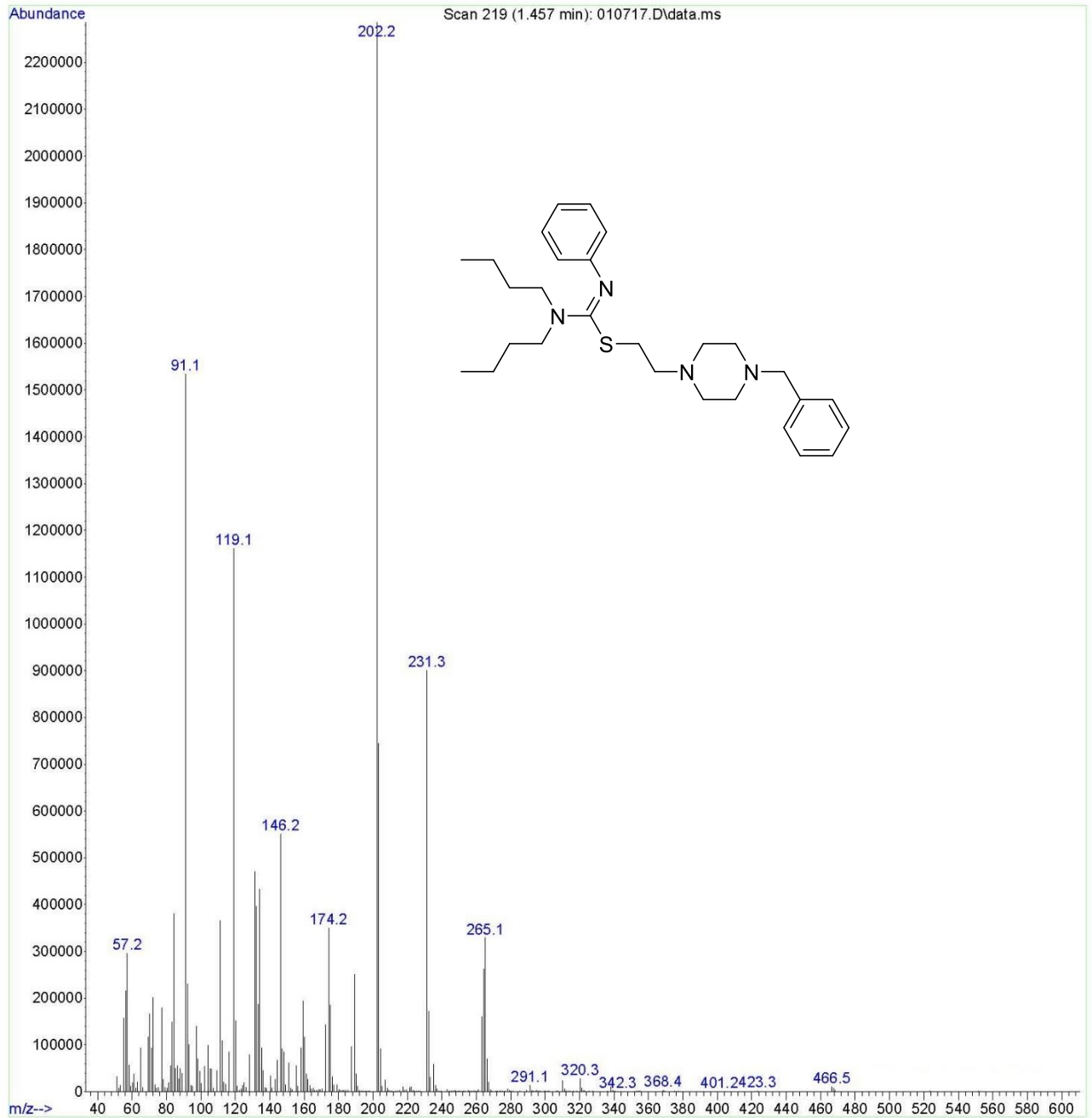
<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl)ethyl (Z)-N,N-dibutyl-N'-phenylcarbamimidothioate **3g**

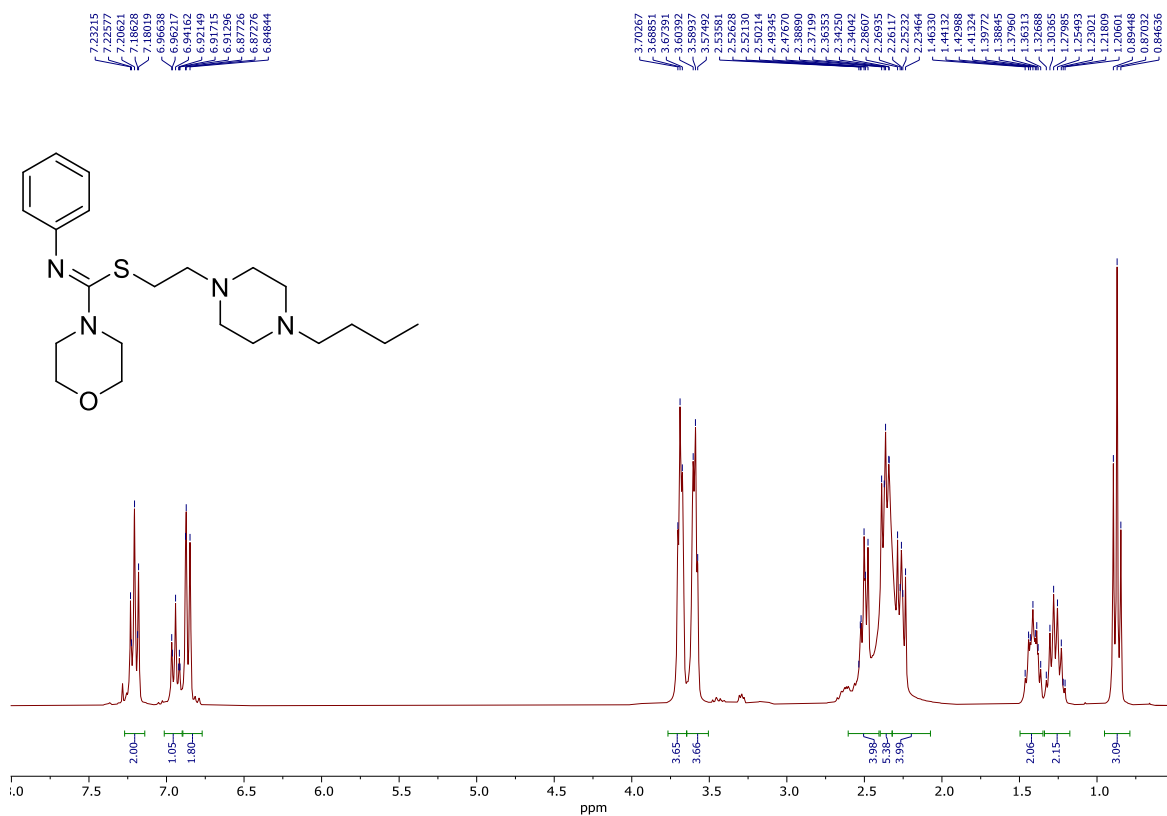


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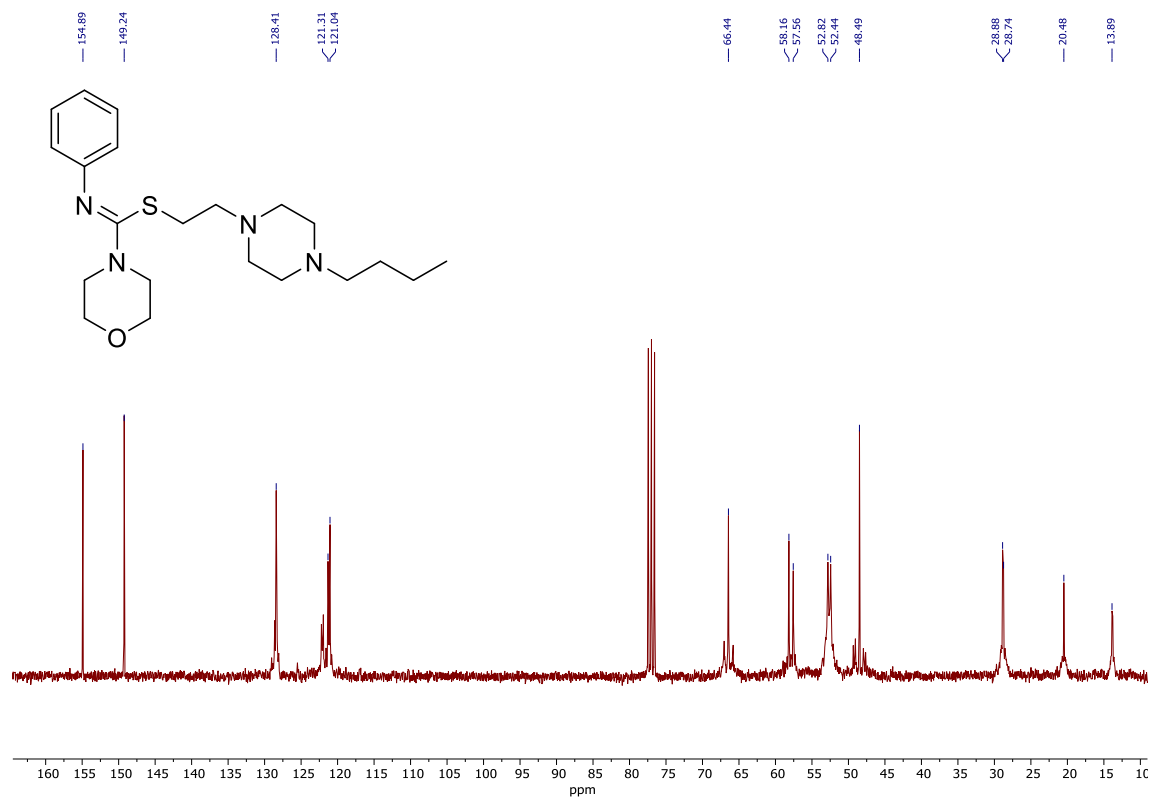
Sample: D 13

Acquired : 3 Jan 2007 7:27 using AcqMethod f1.M  
Instrument : MSD  
Sample Name: D13  
Misc Info :  
Vial Number: 1

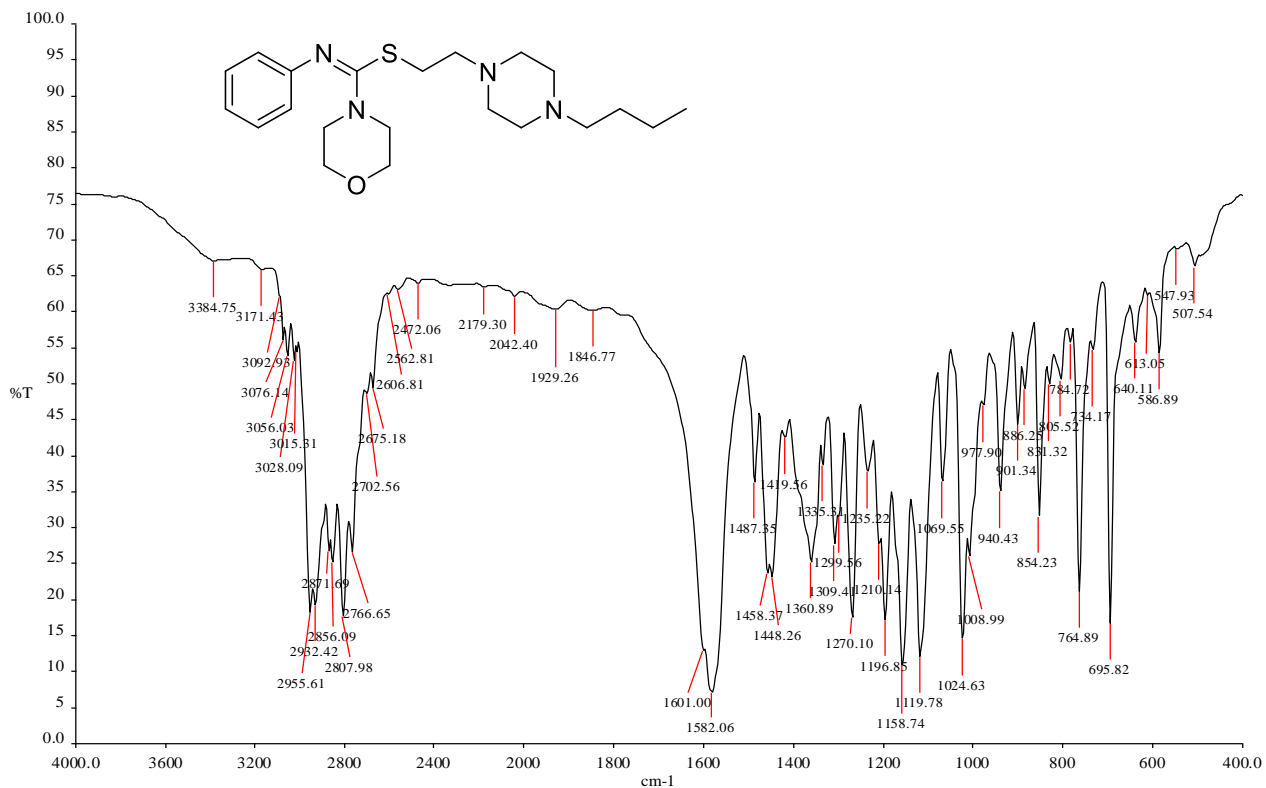




<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3h**



<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Butylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3h**

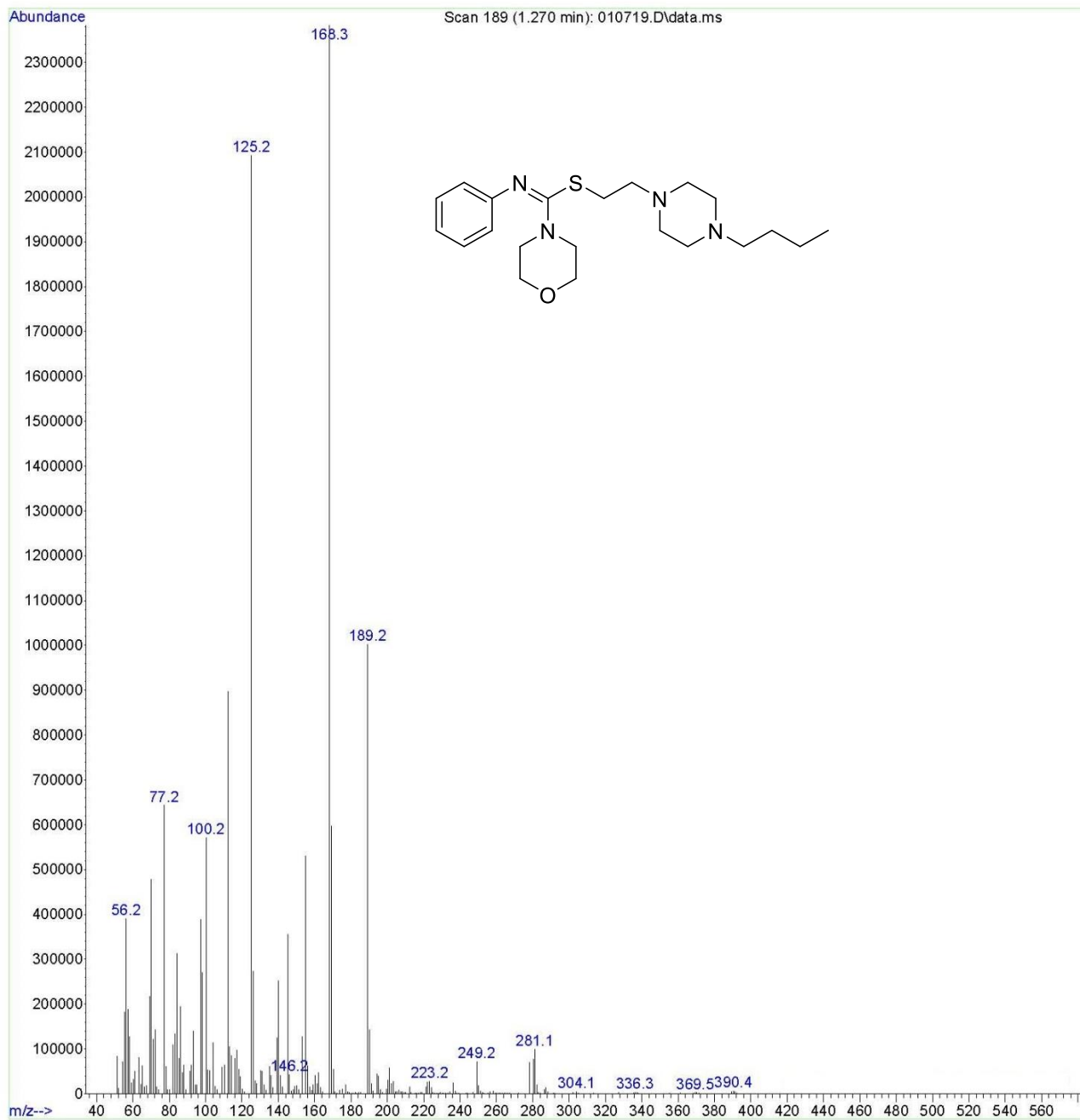


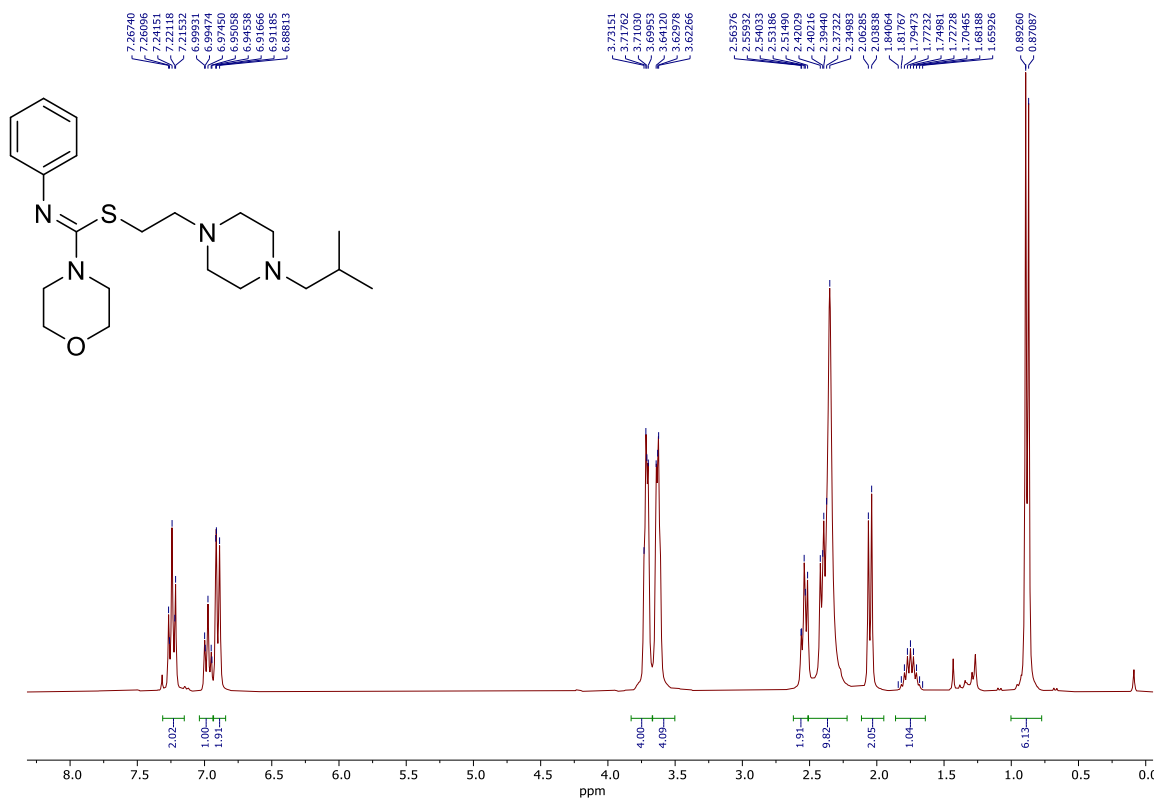
Mr. Moradi

Sample: D 15

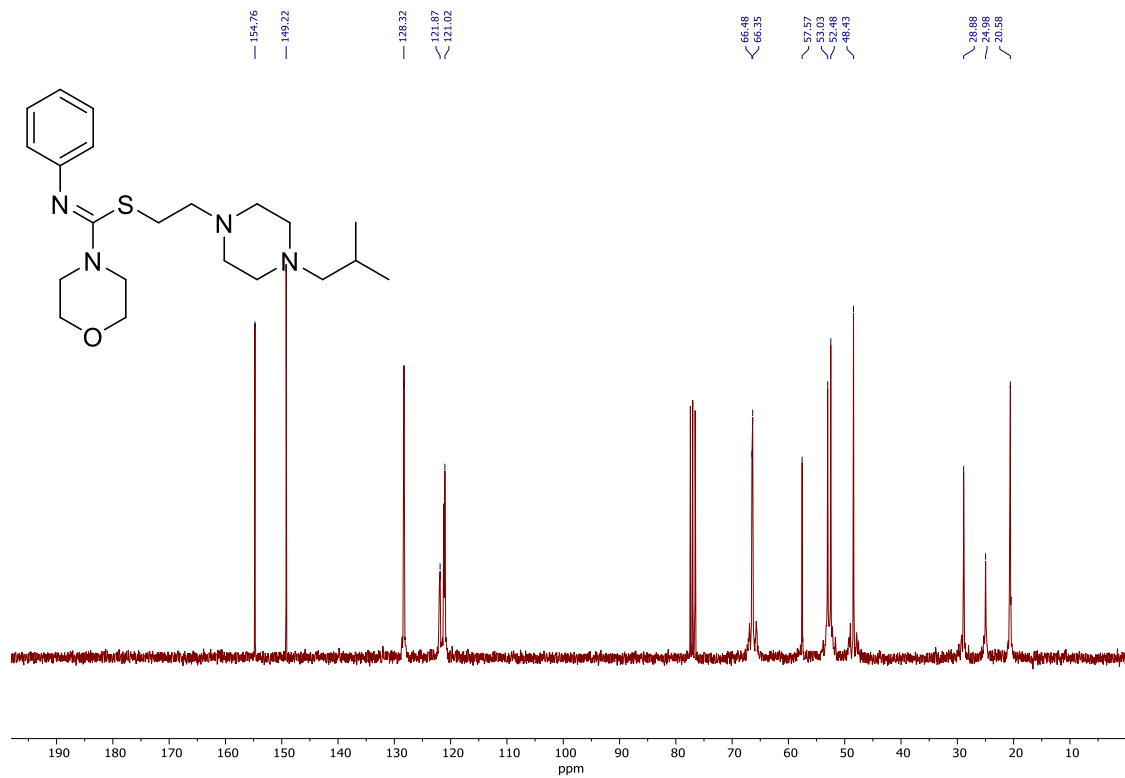


Acquired : 3 Jan 2007 7:40 using AcqMethod F1.M  
Instrument : MSD  
Sample Name: D15  
Misc Info :  
Vial Number: 1

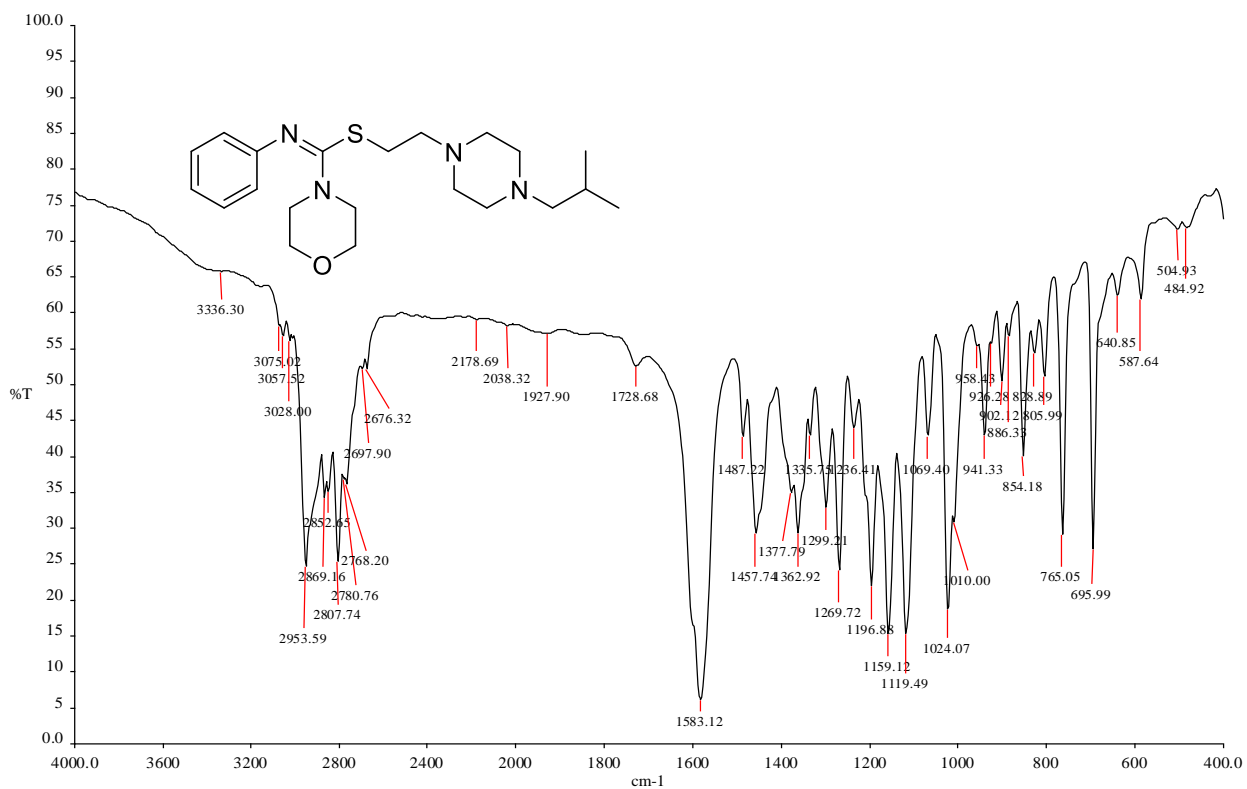




<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>); 2-(4-Isobutylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3i**



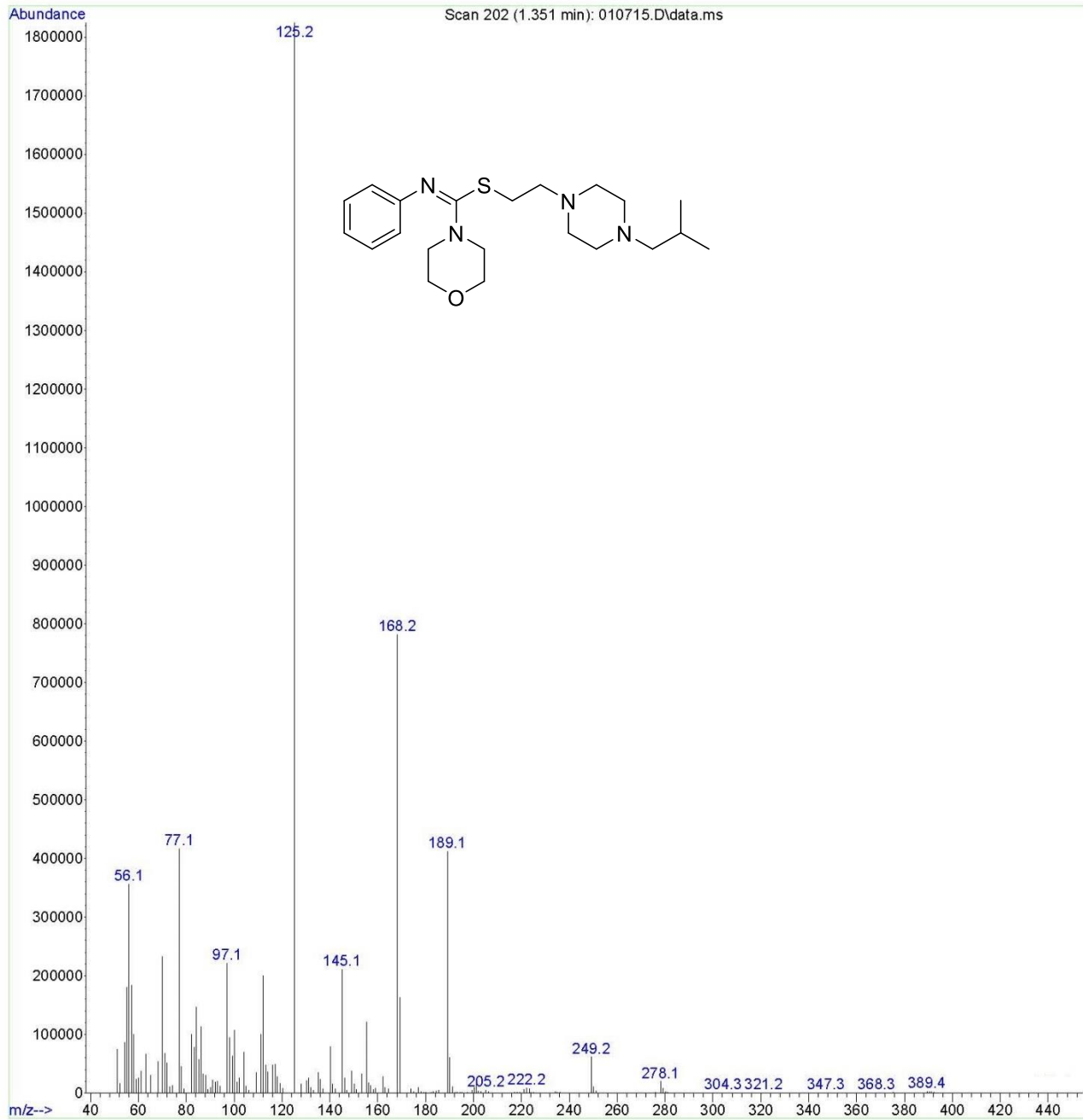
<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Isobutylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3i**

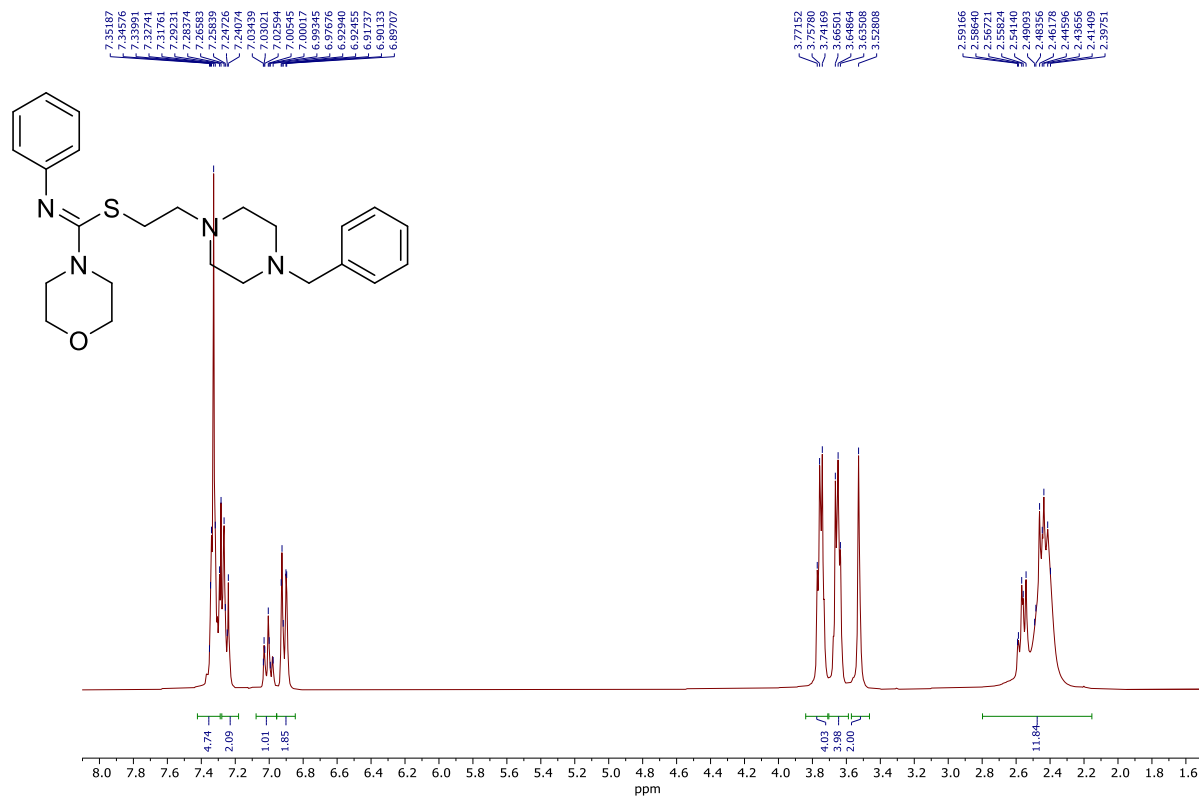


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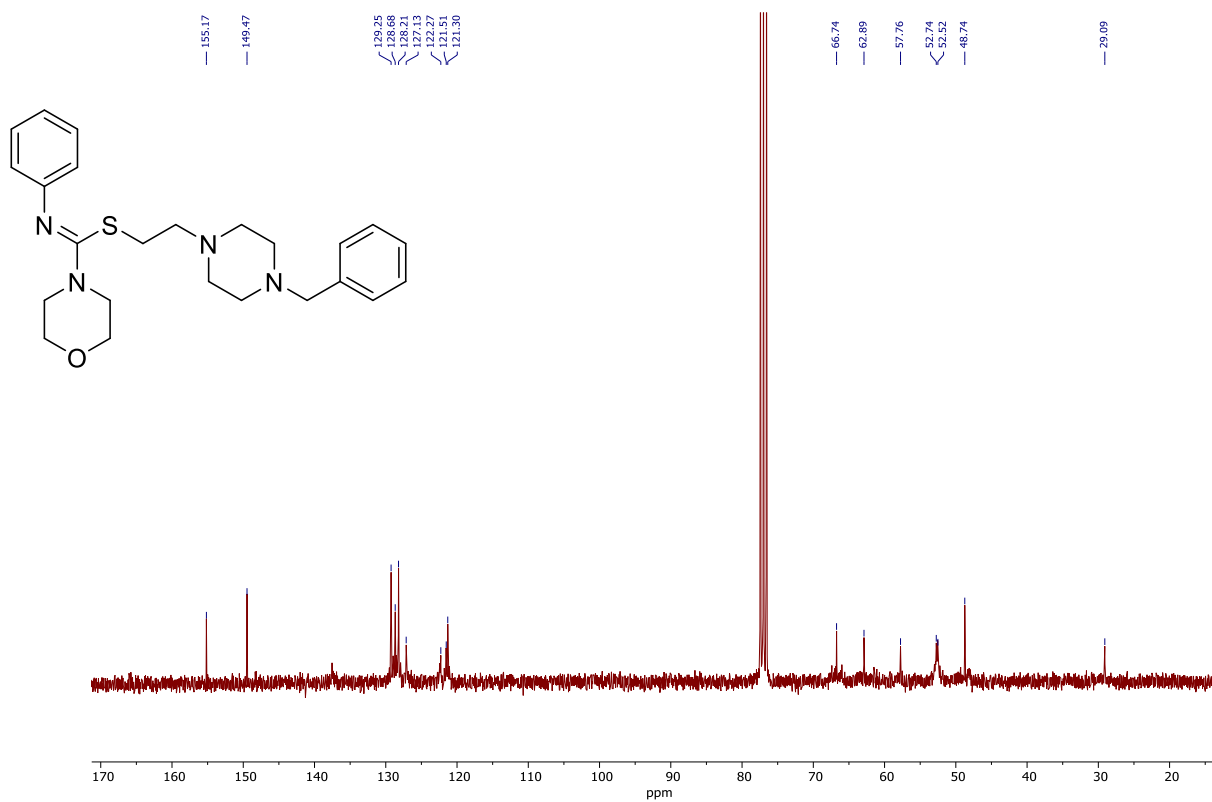
Sample: D 4

Acquired : 3 Jan 2007 7:13 using AcqMethod f1.M  
Instrument : MSD  
Sample Name: D4  
Misc Info :  
Vial Number: 1

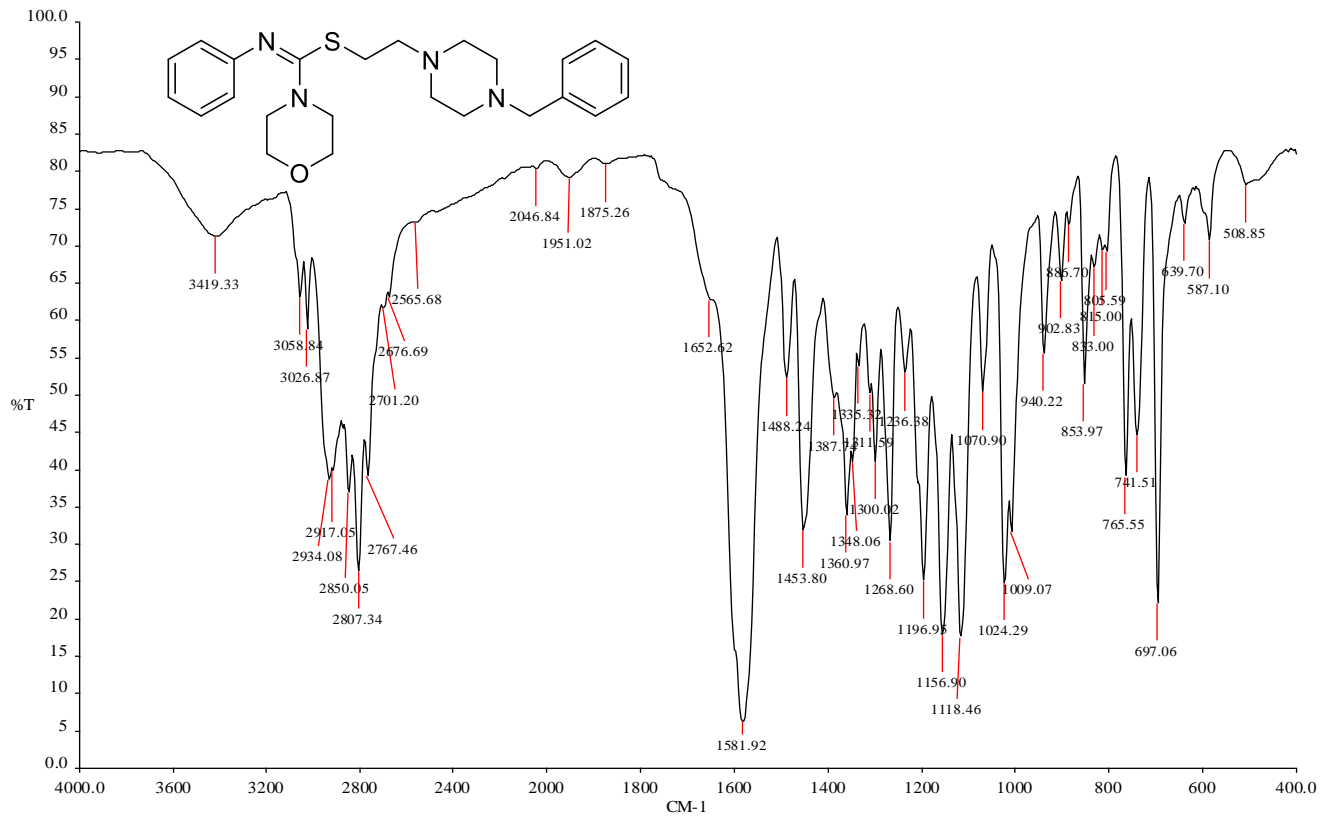




<sup>1</sup>H NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3j**



<sup>13</sup>C NMR (75 MHz, CDCl<sub>3</sub>); 2-(4-Benzylpiperazin-1-yl)ethyl (Z)-N-phenylmorpholine-4-carbimidothioate **3j**



Mr. Moradi

Sample: D 11

Acquired : 3 Jan 2007 7:20 using AcqMethod f1.M  
Instrument : MSD  
Sample Name: D11  
Misc Info :  
Vial Number: 1

