

Green and Scalable Alternative for Reduction of Sulfoxides

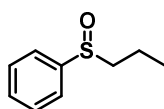
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Supplementary Information

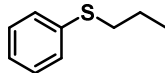
Phenyl propyl sulfoxide



¹H NMR (400 MHz, CDCl₃) δ : 7.58 – 7.68 (m, 2H), 7.45 – 7.57 (m, 3H), 2.68 – 2.86 (m, 2H), 1.75 – 1.88 (m, 1H), 1.58 – 1.75 (m, 2H), 1.05 (t, J = 7.4 Hz, 3H).

¹³C NMR (100 MHz CDCl₃) δ : 144.2, 131.0, 129.3, 124.2, 59.4, 16.0, 13.4.

Phenyl propyl sulfide



¹H NMR (400 MHz, CDCl₃) δ : 7.33 (d, J = 7.8 Hz, 2H), 7.27 (t, J = 7.7 Hz, 2H), 7.16 (t, J = 7.2 Hz, 1H), 2.90 (t, J = 7.3 Hz, 2H), 1.61 – 1.83 (m, 2H), 1.02 (t, J = 7.3 Hz, 3H).

¹³C NMR (100 MHz CDCl₃) δ : 137.0, 129.1, 128.9, 125.8, 35.7, 22.7, 13.6.

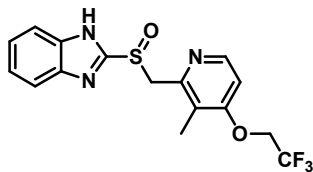
Albendazole Hydrochloride



¹H NMR (400 MHz, DMSO-*d*₆) δ : 7.50 – 7.59 (m, 2H), 7.32 (d, J = 10.2 Hz, 1H), 3.86 (s, 3H), 2.93 (t, J = 7.2 Hz, 2H), 1.49 – 1.63 (m, 2H), 0.96 (t, J = 7.3 Hz, 3H).

¹³C NMR (100 MHz DMSO-*d*₆) δ : 152.9, 144.5, 131.7, 130.7, 128.6, 125.4, 113.9, 113.4, 53.7, 35.4, 22.0, 13.2.

2-(((3-methyl-4-(2,2,2-trifluoroethoxy)pyridin-2-yl)methyl)thio)-1H-benzo[d]imidazole

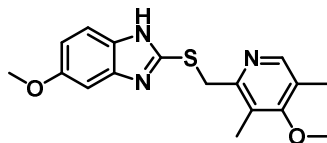


¹H NMR (400 MHz, CDCl₃) δ : 12.60 (s, 1H), 8.42 (d, J = 5.7 Hz, 1H), 7.54 (d, J = 65.8 Hz, 2H), 7.16 – 7.23 (m, 2H), 6.73 (d, J = 5.8 Hz, 1H), 4.42 (d, J = 8.3 Hz, 4H), 2.32 (s, 3H).

¹³C NMR (100 MHz CDCl₃) δ : 162.5, 157.7, 151.3, 147.5, 122.8 (q, J_{C-F} = 277.9 Hz), 122.0, 121.8, 106.0, 65.5 (q, J_{C-F} = 36.5 Hz), 34.9, 10.7.

¹⁹F NMR (374 MHz CDCl₃) δ : -73.5 (s).

5-methoxy-2-(((4-methoxy-3,5-dimethylpyridin-2-yl)methyl)thio)-1H-benzo[d]imidazole



¹H NMR (400 MHz, CDCl₃) δ : 8.25 (s, 1H), 7.42 (d, J = 8.7 Hz, 1H), 7.04 (d, J = 2.4 Hz, 1H), 6.82 (dd, J = 8.7, 2.4 Hz, 1H), 4.35 (s, 2H), 3.85 (s, 3H), 3.78 (s, 3H), 2.32 (s, 3H), 2.28 (s, 3H).

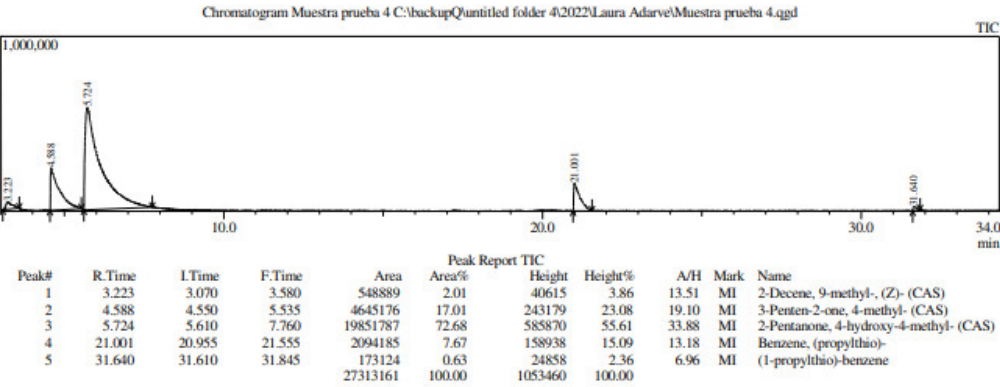
¹³C NMR (100 MHz CDCl₃) δ : 165.4, 156.2, 155.9, 148.4, 126.7, 125.8, 111.4, 60.3, 56.0, 35.1, 13.6, 11.5.

GC-MS of the crude reaction mixture.

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End Time :34.33min
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Event Time :0.30sec
Scan Speed : 909
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End m/z :300.00

Sample Inlet Unit :GC

[MS Program]
Use MS Program :OFF



Copies of NMR Spectra

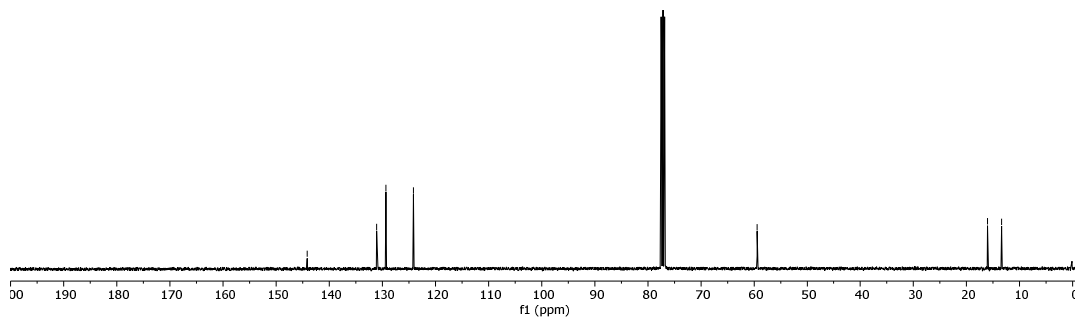
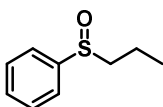
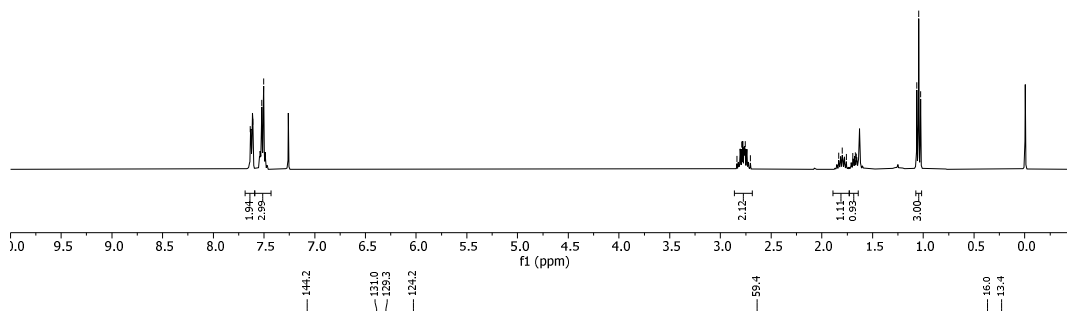
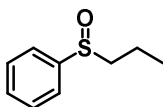
Phenyl propyl sulfoxide

7.64
7.61
7.52
7.50

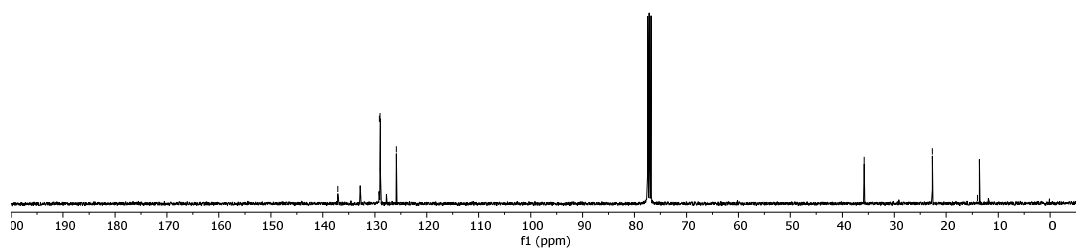
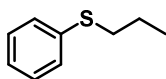
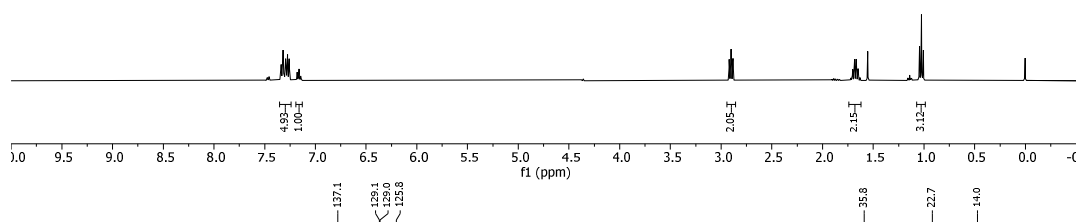
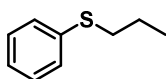
2.84
2.82
2.79
2.71

1.83
1.80
1.76
1.70
1.67
1.66

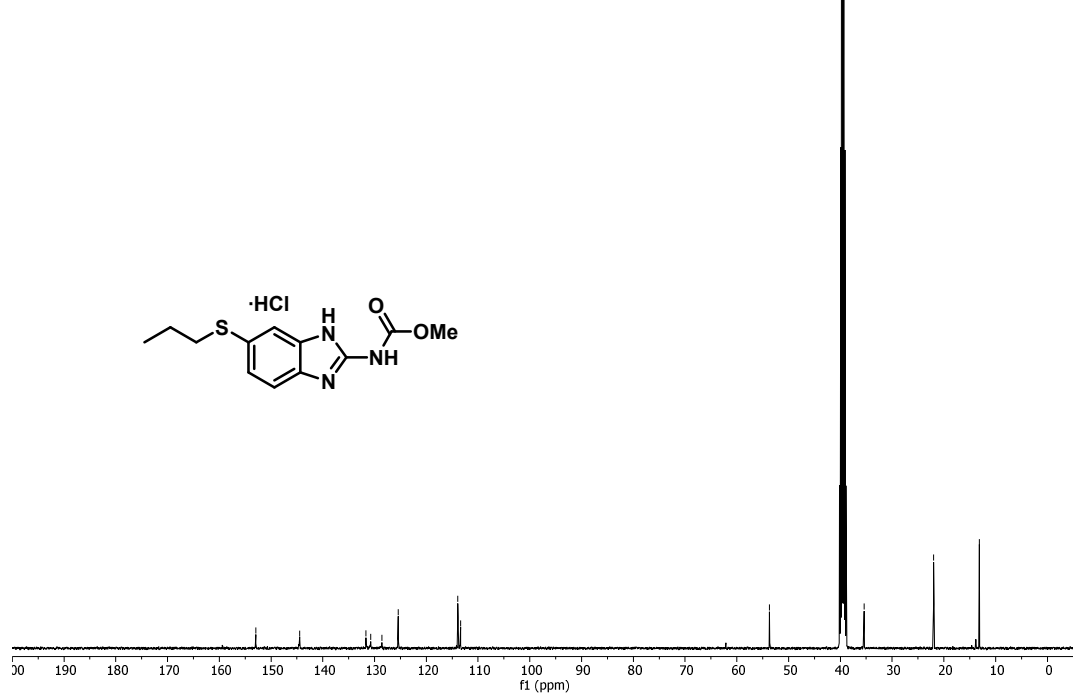
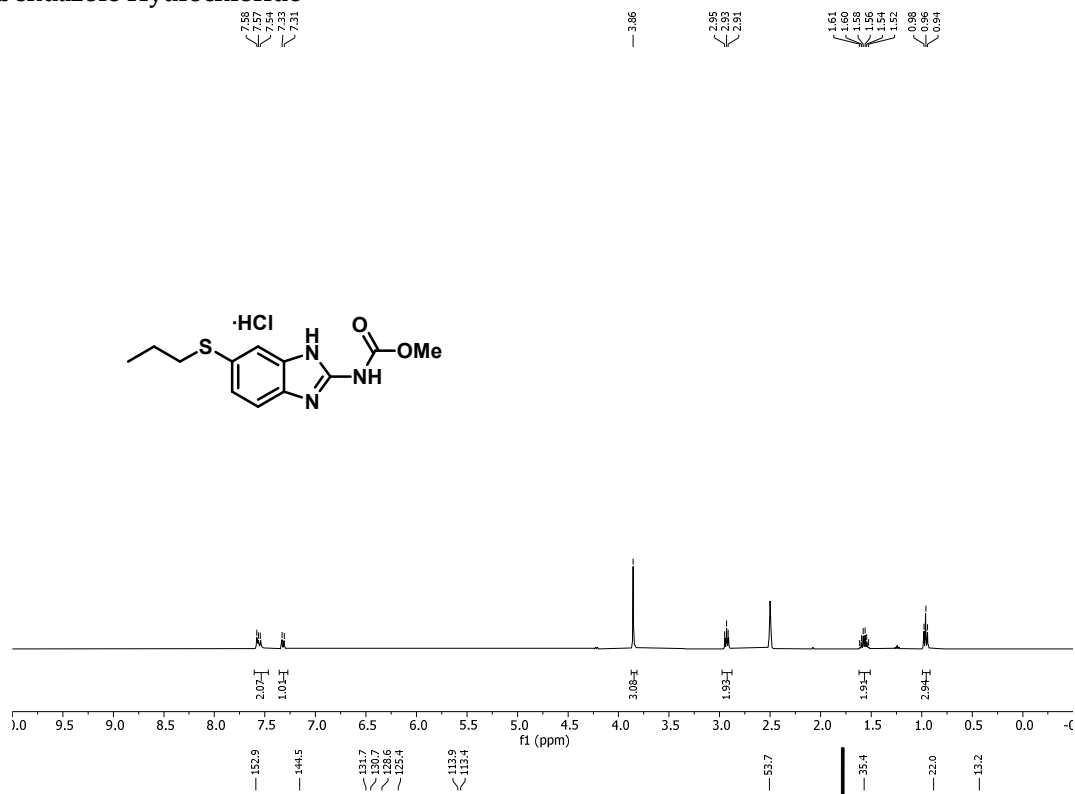
1.06
1.05
1.03



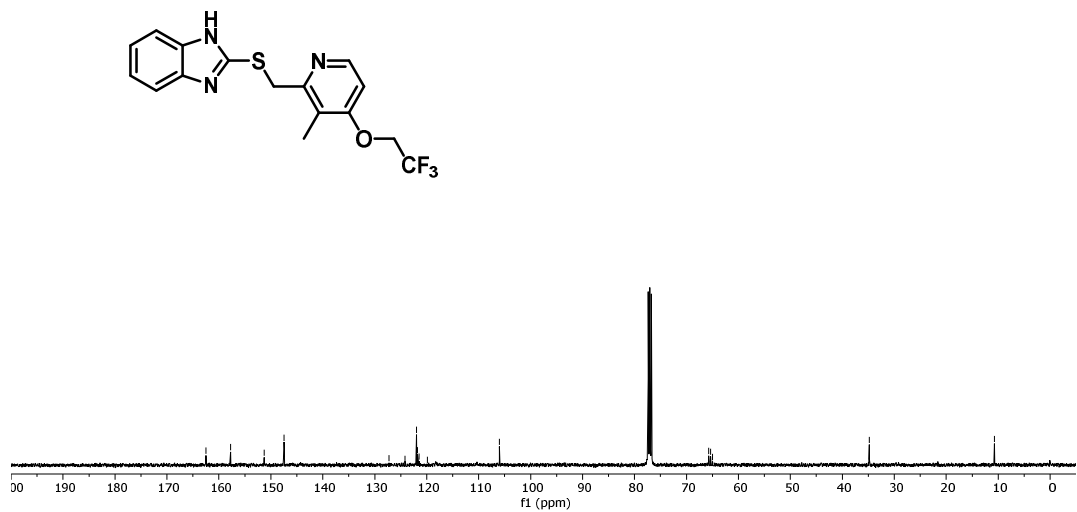
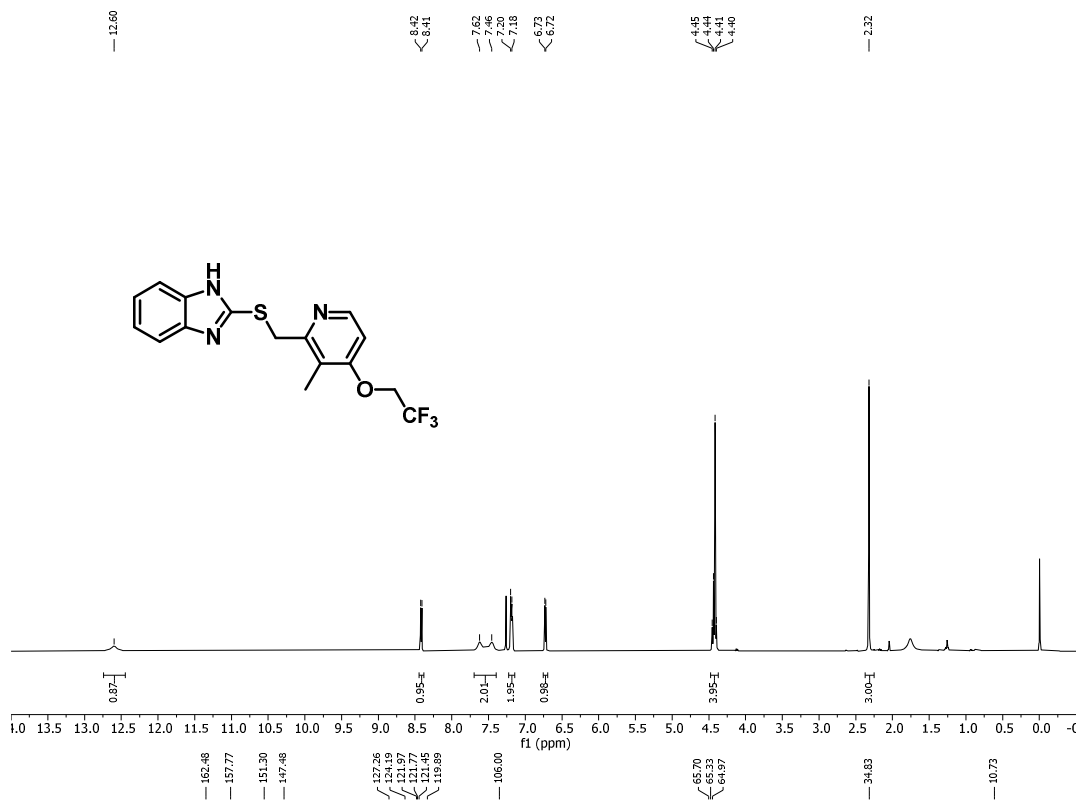
Phenyl propyl sulfide



Albendazole Hydrochloride



Reduced Lansoprazole



Reduced Omeprazole

