

Supplementary information

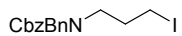
First asymmetric total synthesis of lycoserramine-R

Hiroaki Ishida, Shinya Kimura, Noriyuki Kogure, Mariko Kitajima and Hiromitsu Takayama*

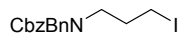
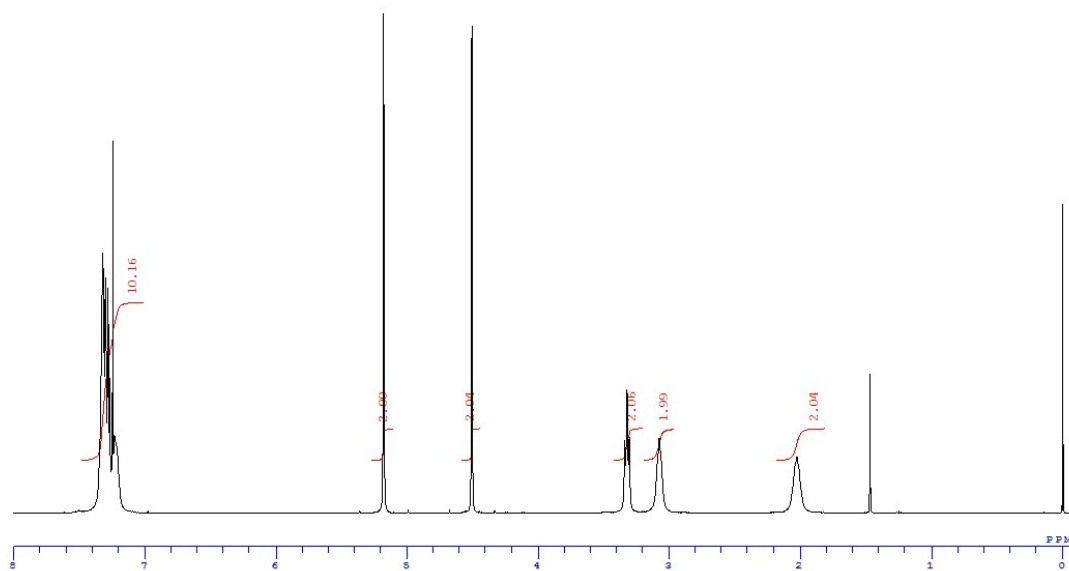
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Chiba 260-8675, Japan*

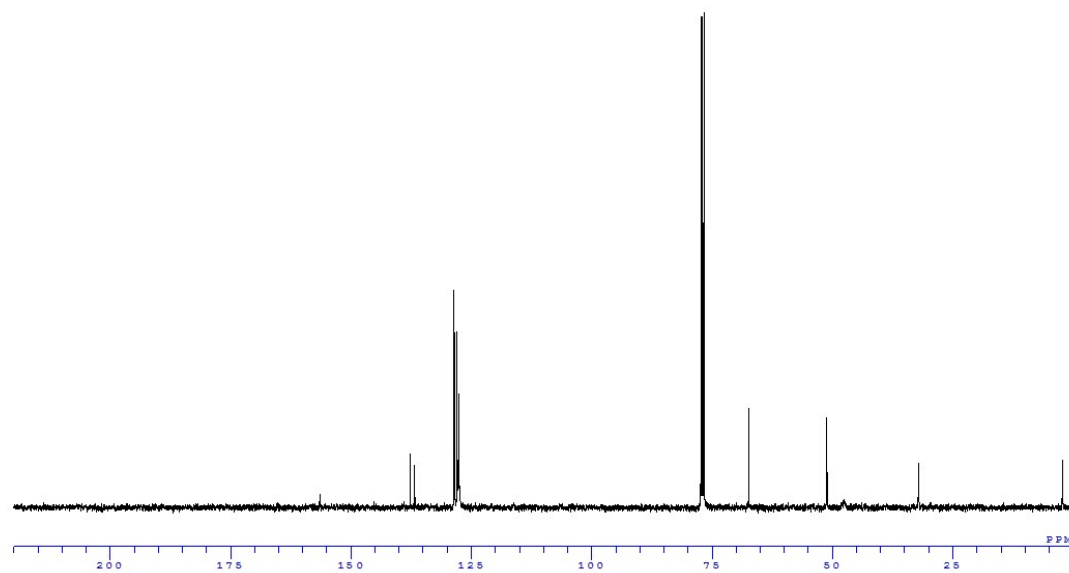
Copies of ^1H and ^{13}C NMR spectral data for synthetic (–)-lycoserramine-R (**1**), compounds **2-4**, **7**, **8**, **12-19**, and **23**.

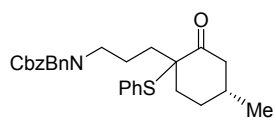


¹H NMR of **7**
(400 MHz, in CDCl₃ at 55 °C)

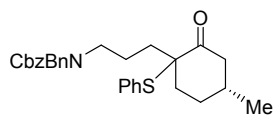
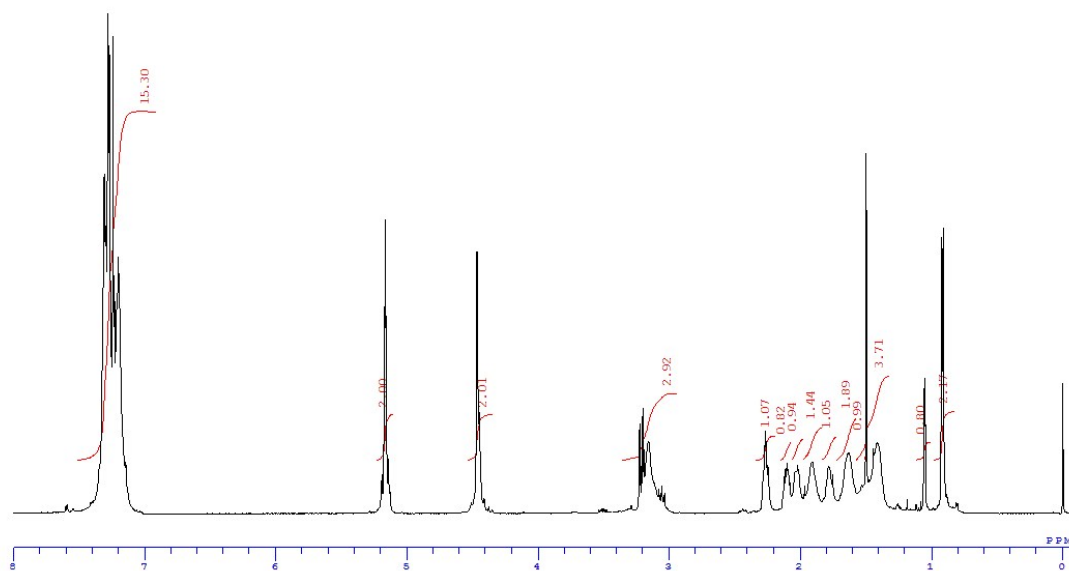


¹³C NMR of **7**
(100 MHz, in CDCl₃ at 55 °C)

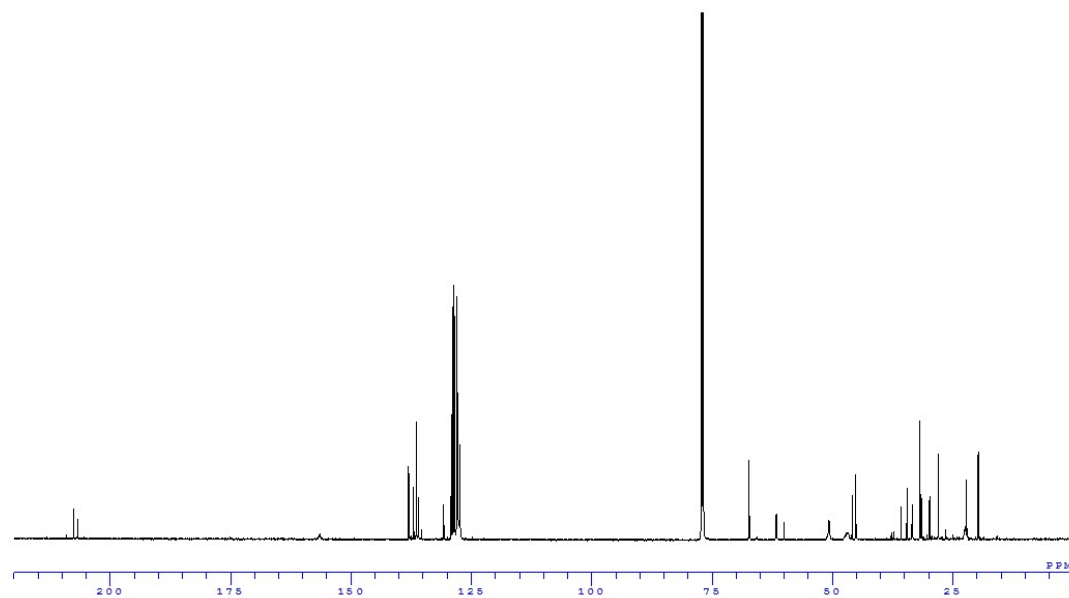


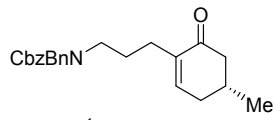


¹H NMR of **8**
(600 MHz, in CDCl₃ at 55 °C)

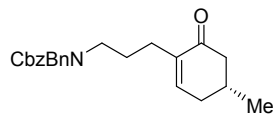
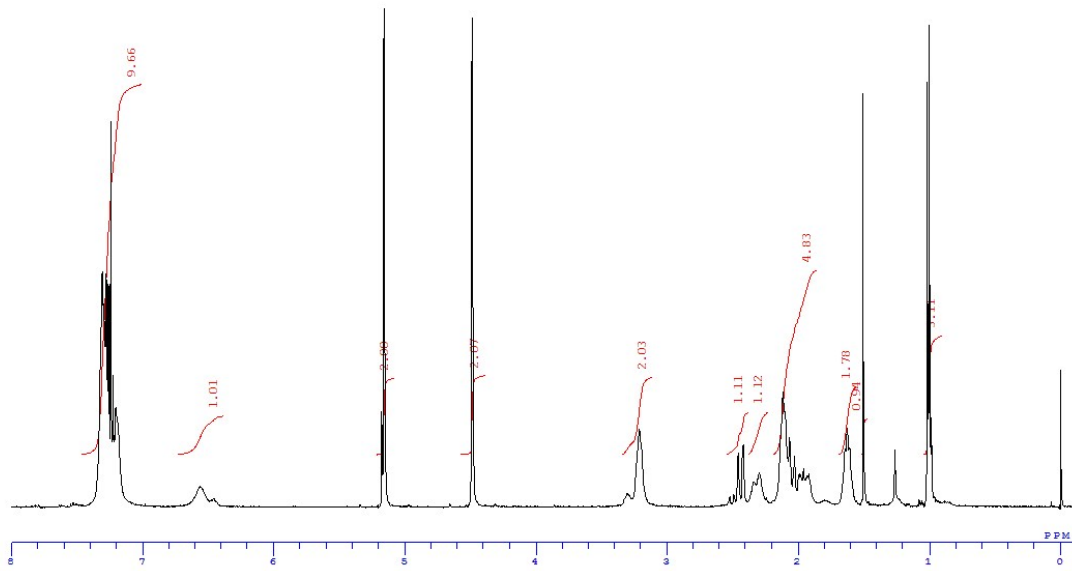


¹³C NMR of **8**
(150 MHz, in CDCl₃ at 55 °C)

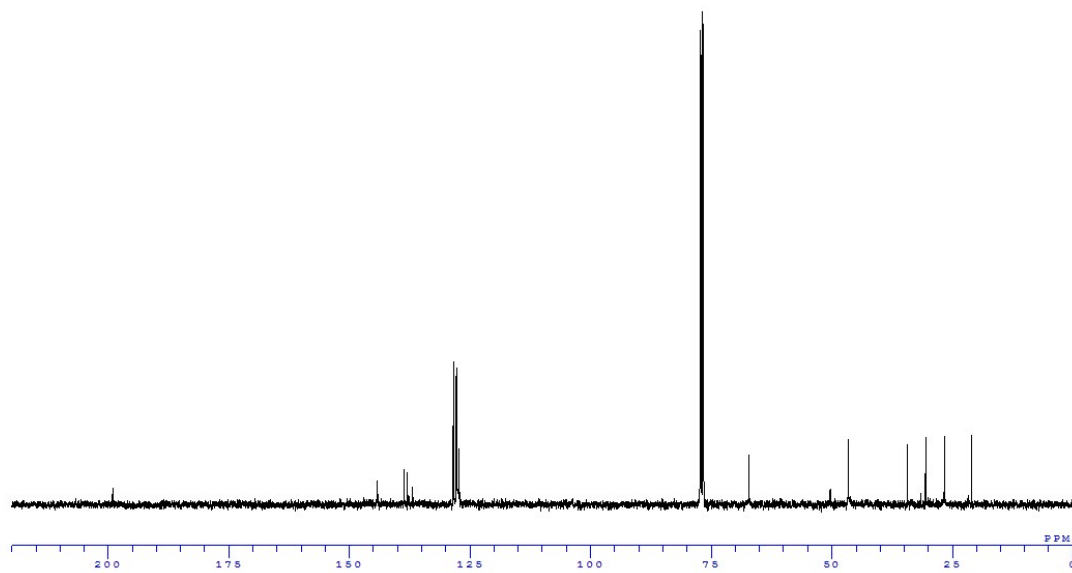


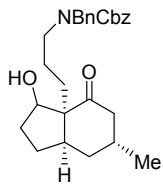


¹H NMR of 4
 (400 MHz, in CDCl₃ at 55 °C)

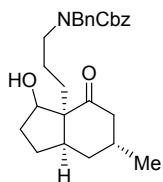
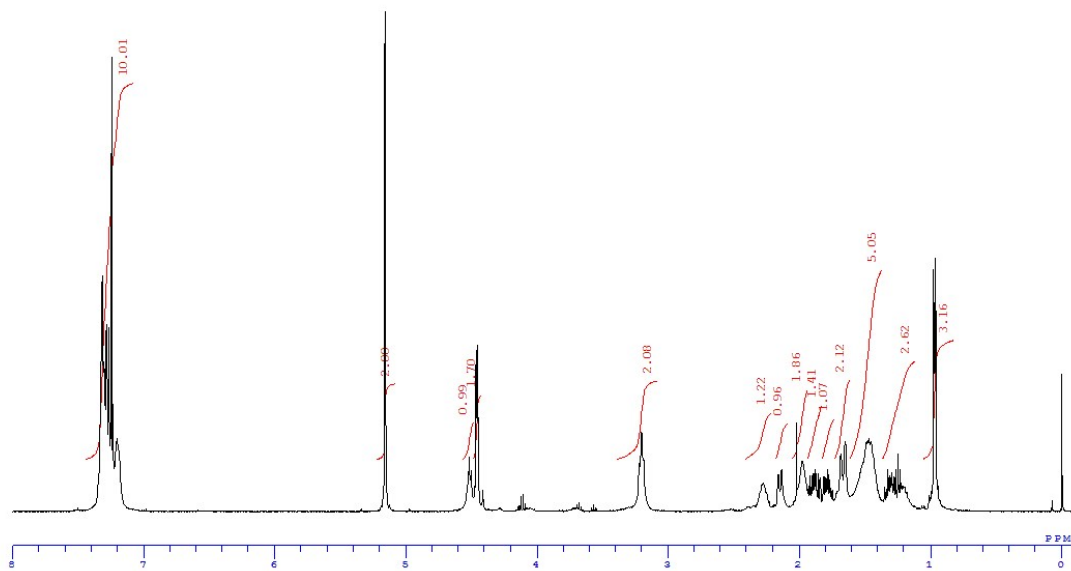


¹³C NMR of 4
 (150 MHz, in CDCl₃ at 55 °C)

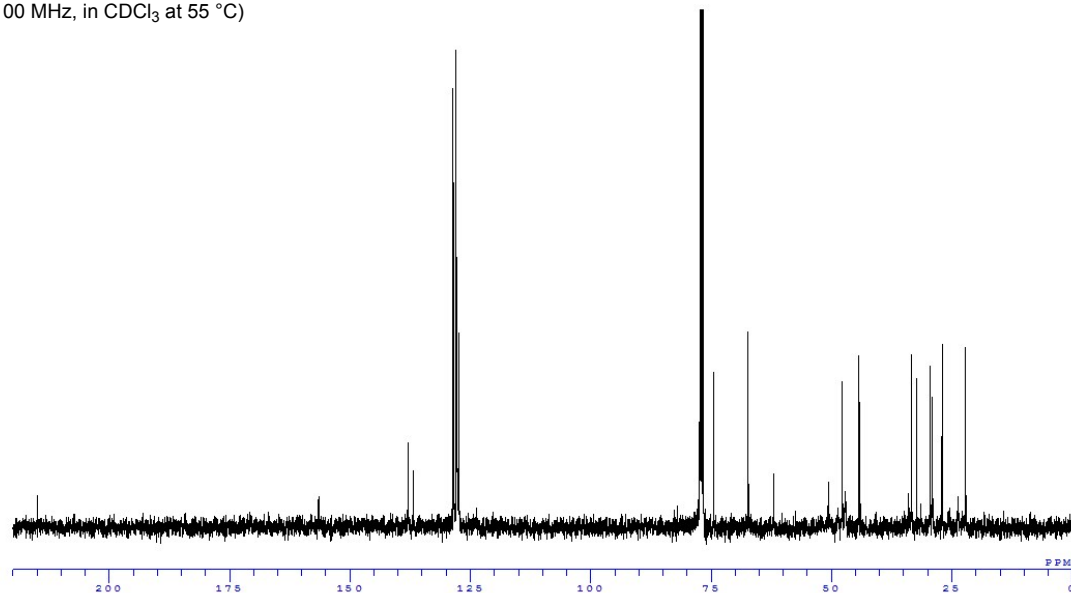


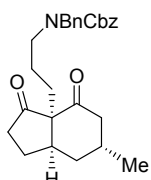


¹H NMR of **12**
(400 MHz, in CDCl₃ at 55 °C)

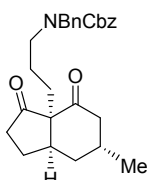
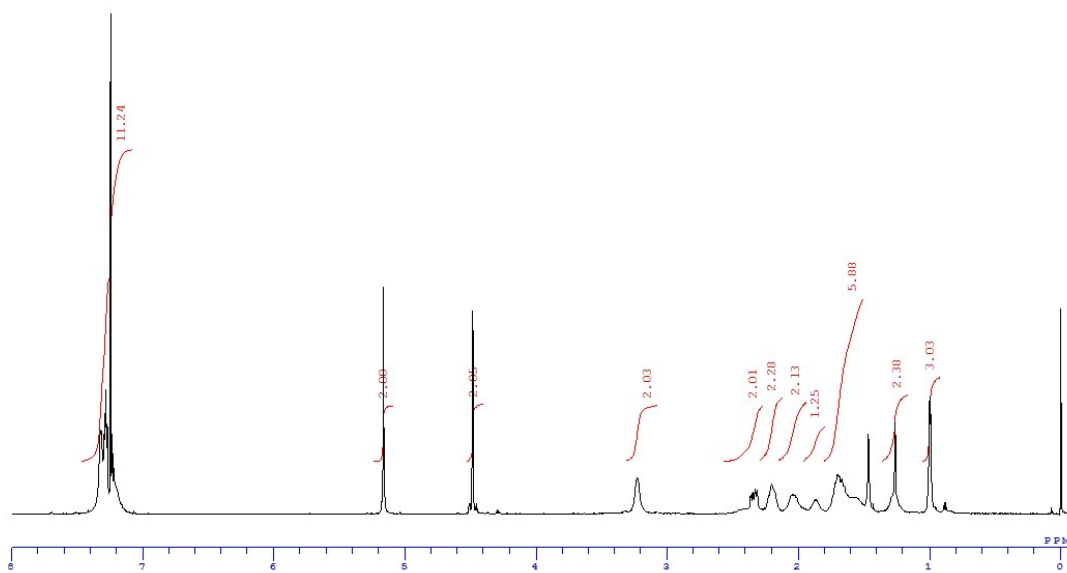


¹³C NMR of **12**
(100 MHz, in CDCl₃ at 55 °C)

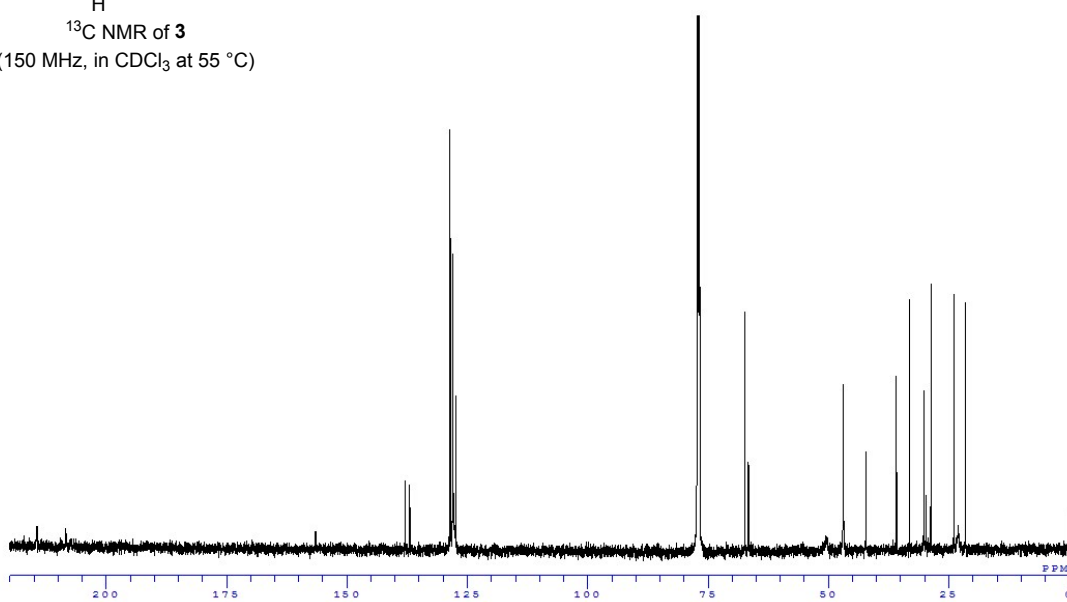


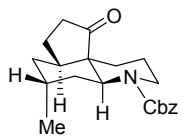


¹H NMR of 3
(600 MHz, in CDCl₃ at 55 °C)

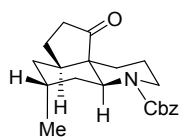
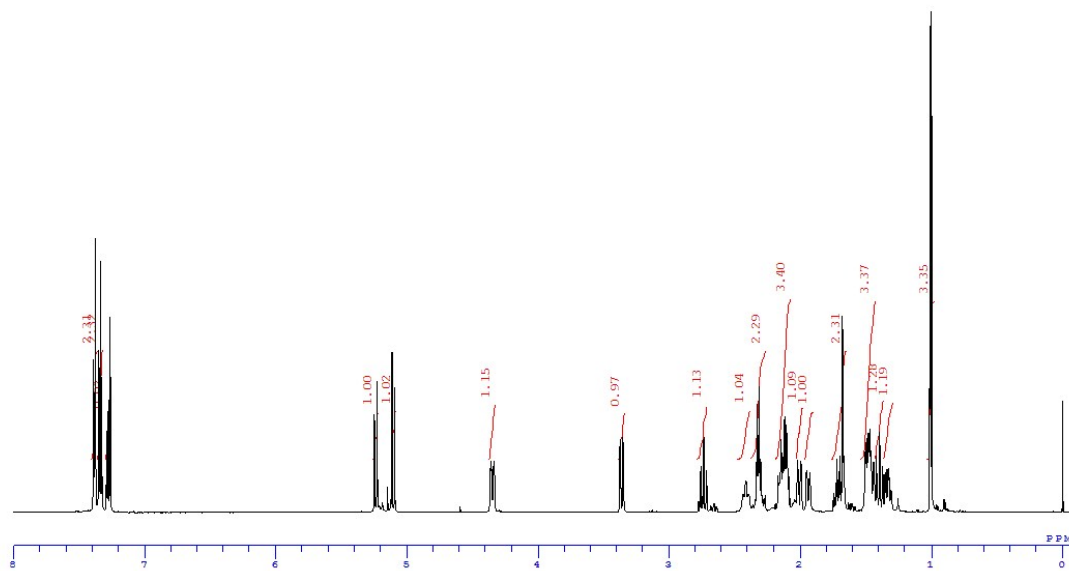


¹³C NMR of 3
(150 MHz, in CDCl₃ at 55 °C)

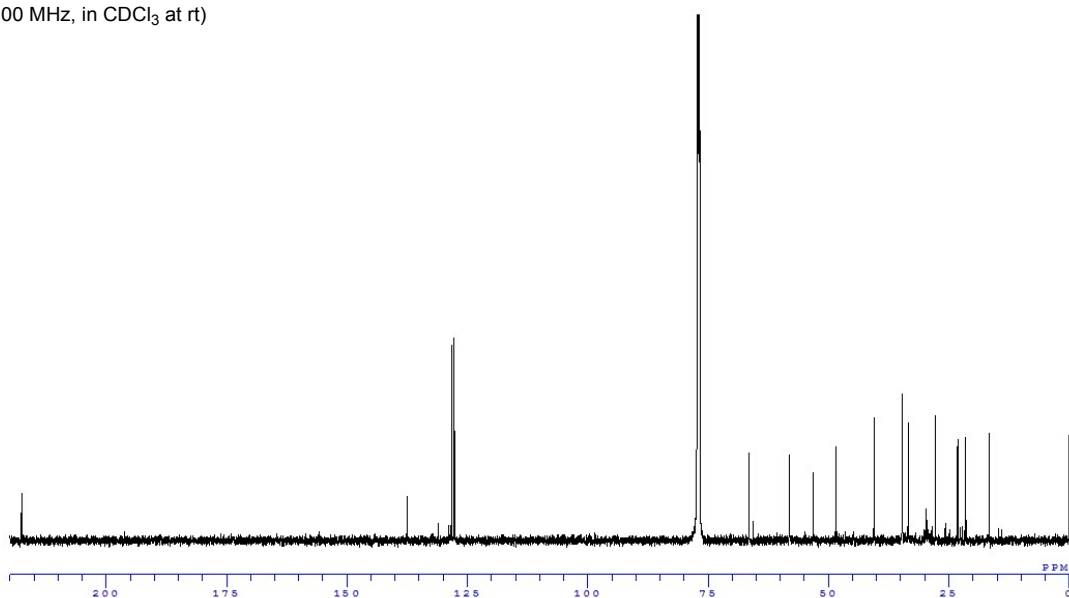


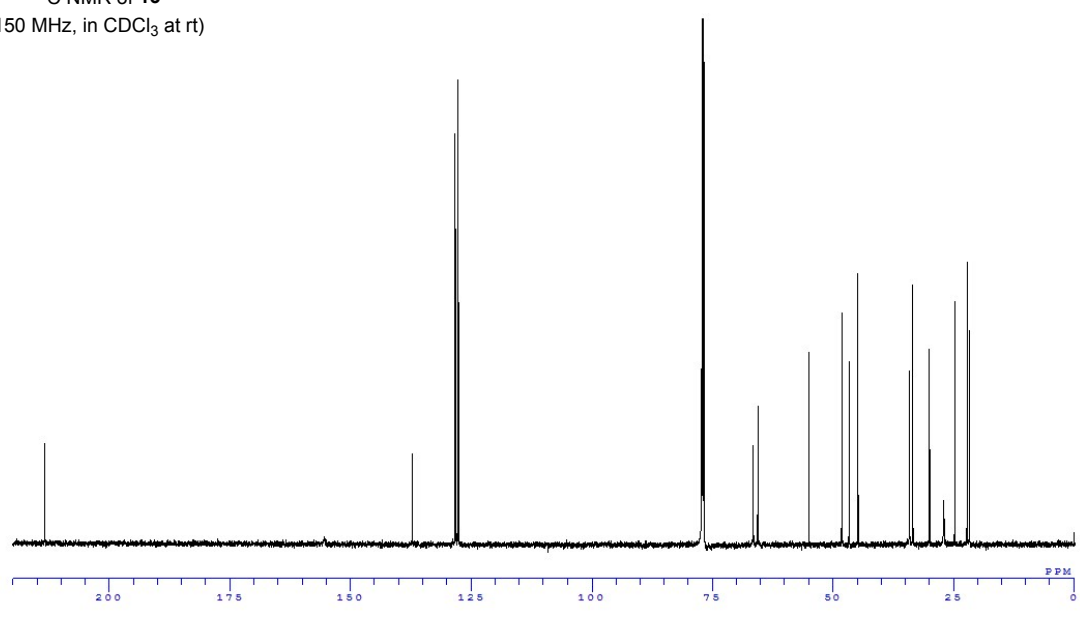
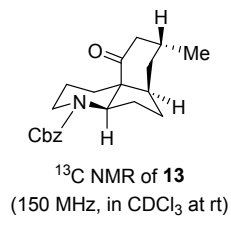
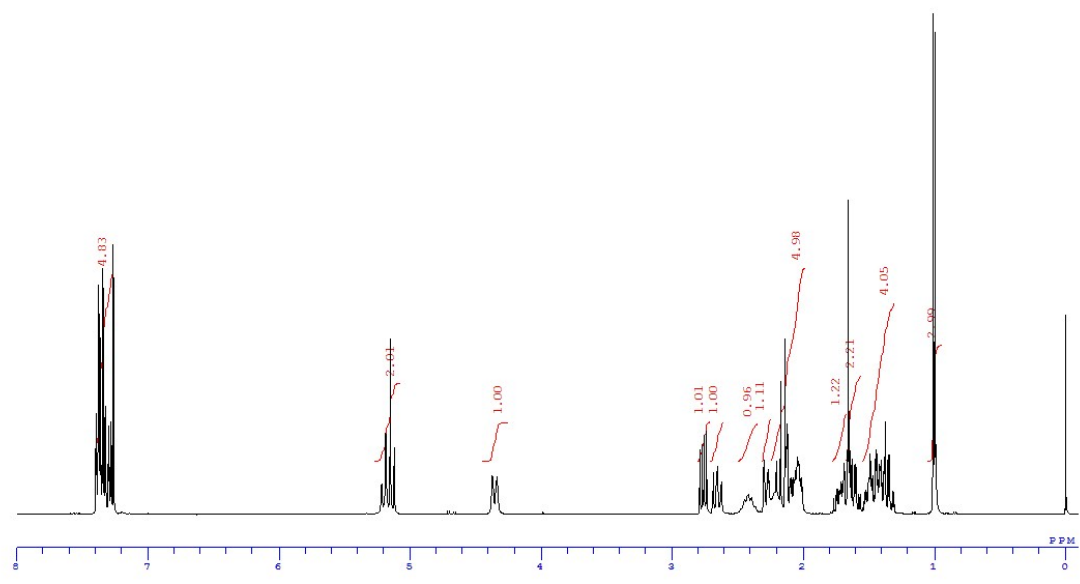
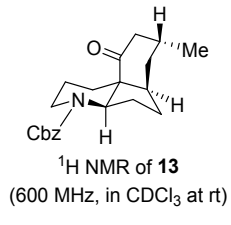


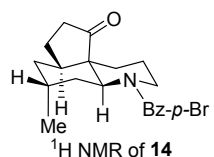
¹H NMR of 2
(400 MHz, in CDCl₃ at rt)



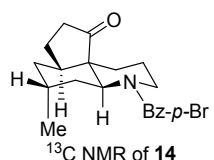
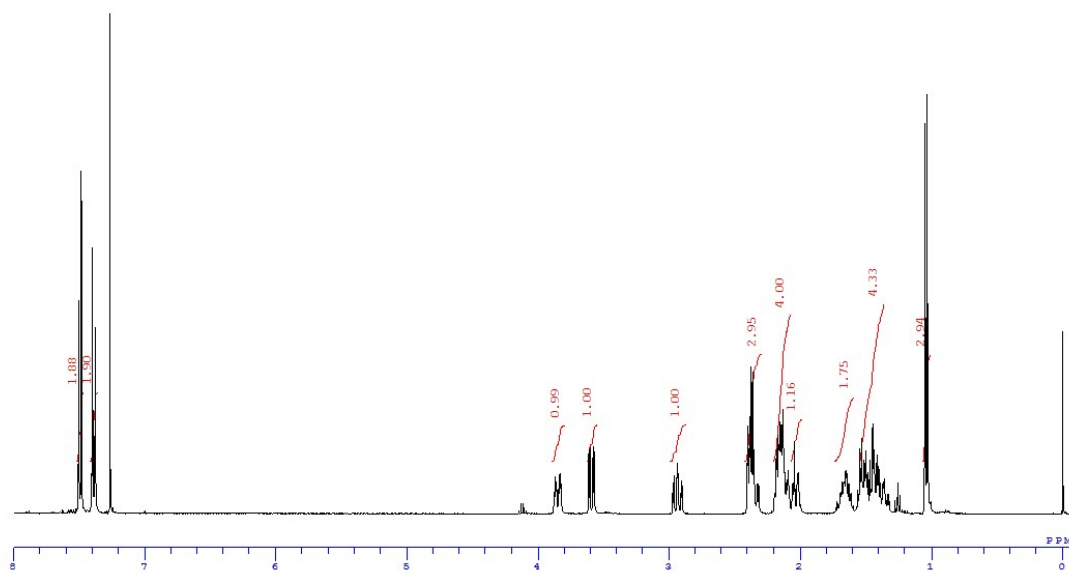
¹³C NMR of 2
(100 MHz, in CDCl₃ at rt)



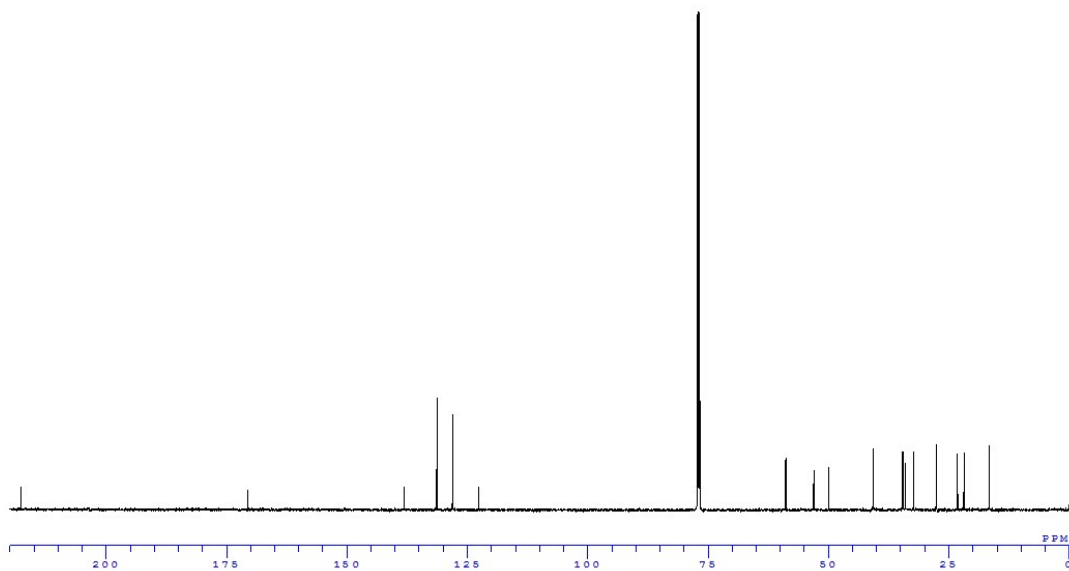


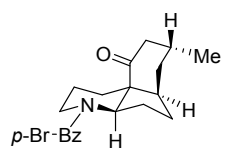


(400 MHz, in CDCl₃ at rt)

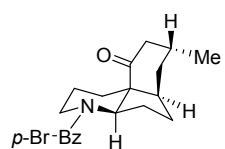
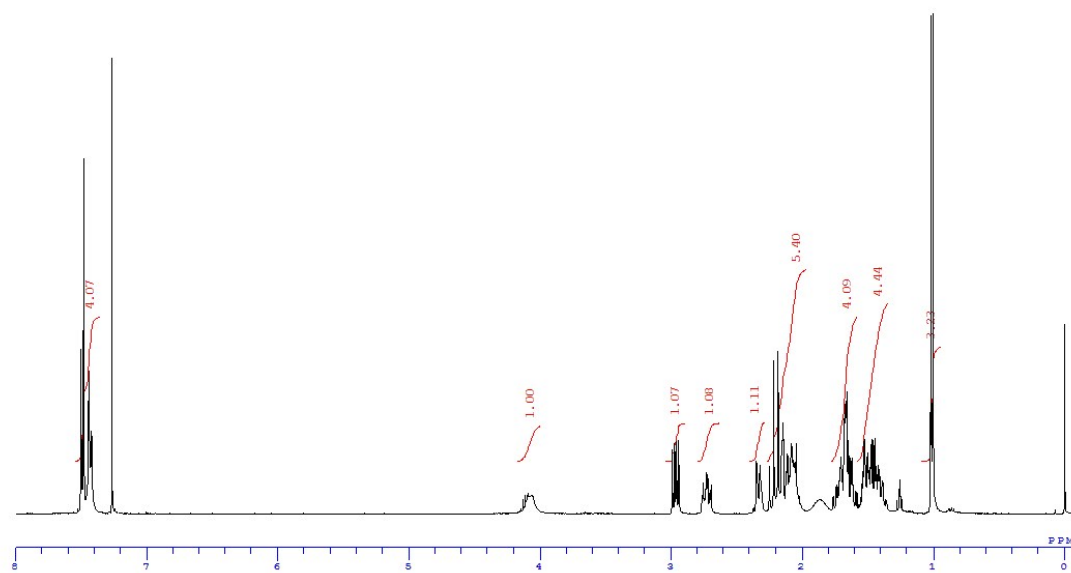


(150 MHz, in CDCl₃ at rt)

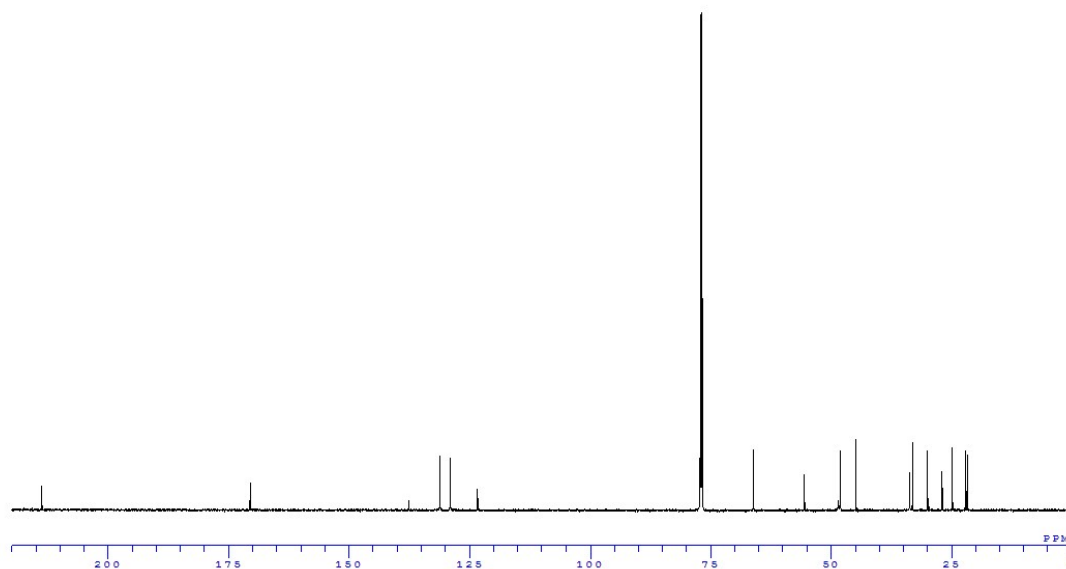


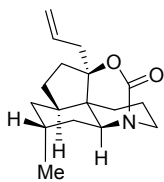


¹H NMR of **15**
(400 MHz, in CDCl₃ at rt)

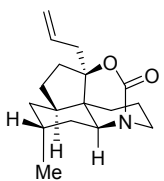
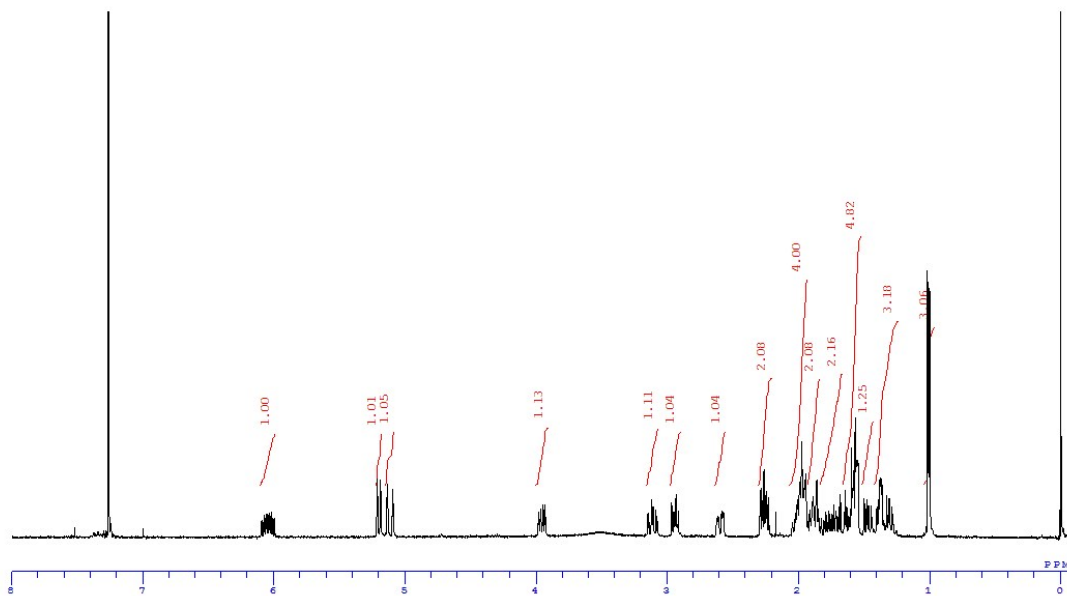


¹³C NMR of **15**
(150 MHz, in CDCl₃ at rt)

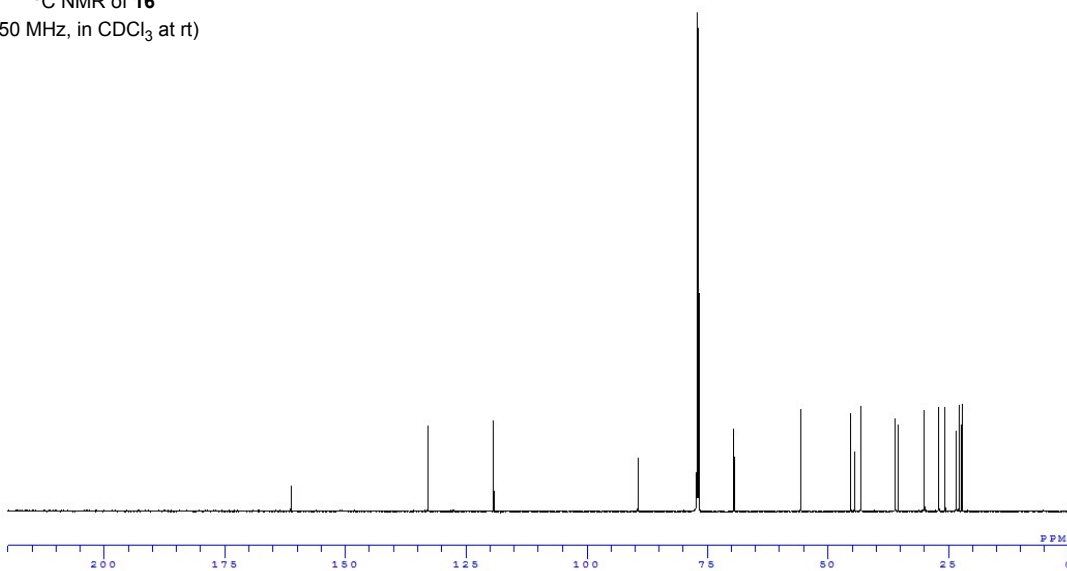


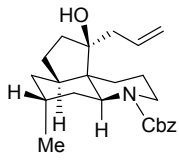


¹H NMR of **16**
(600 MHz, in CDCl₃ at rt)

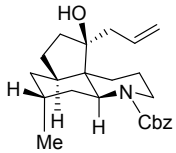
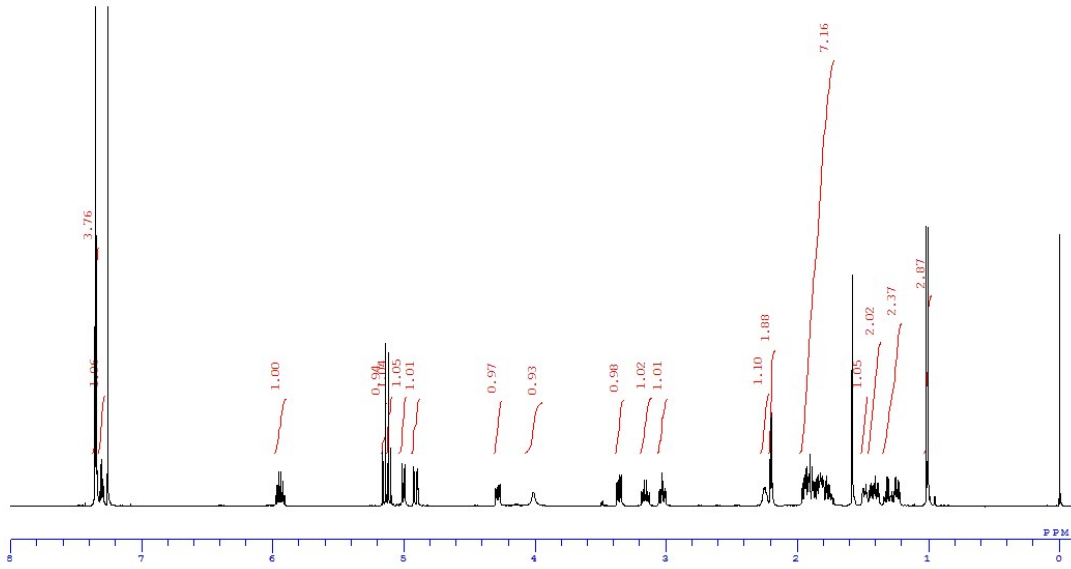


¹³C NMR of **16**
(150 MHz, in CDCl₃ at rt)

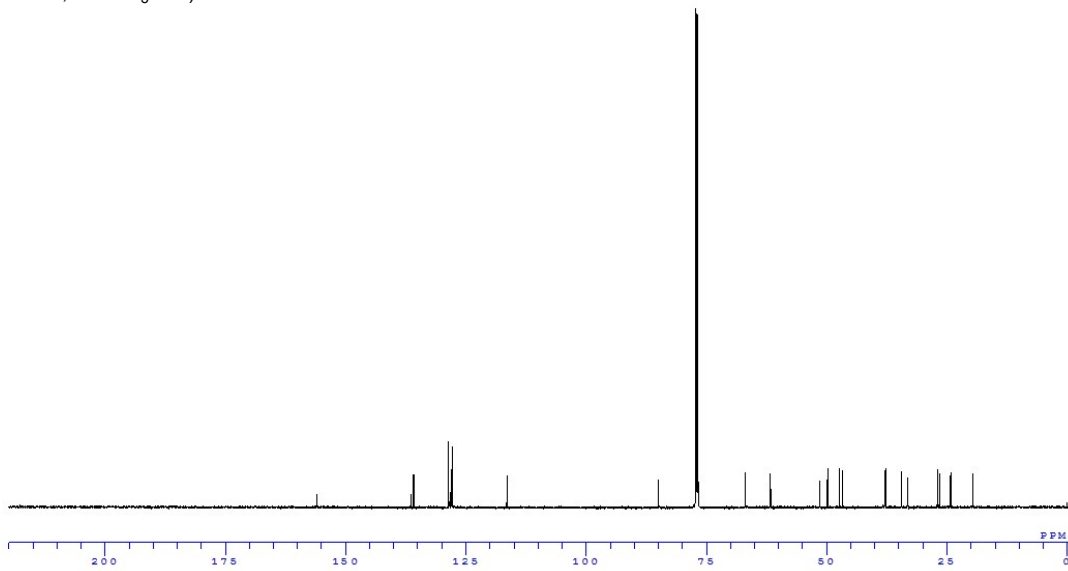


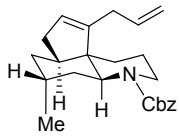


¹H NMR of 17
(400 MHz, in CDCl₃ at rt)

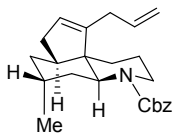
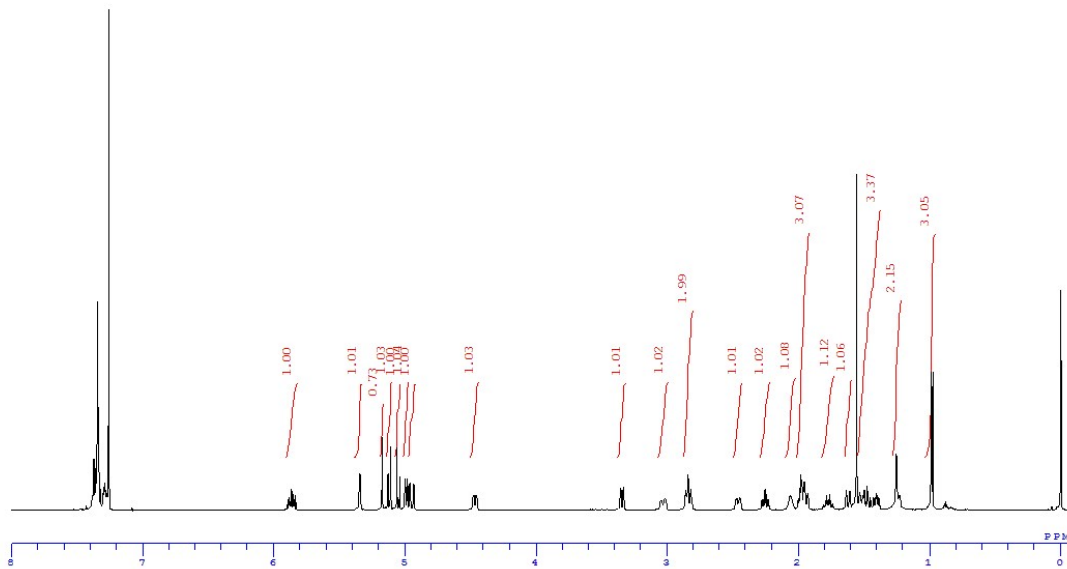


¹³C NMR of 17
(150 MHz, in CDCl₃ at rt)

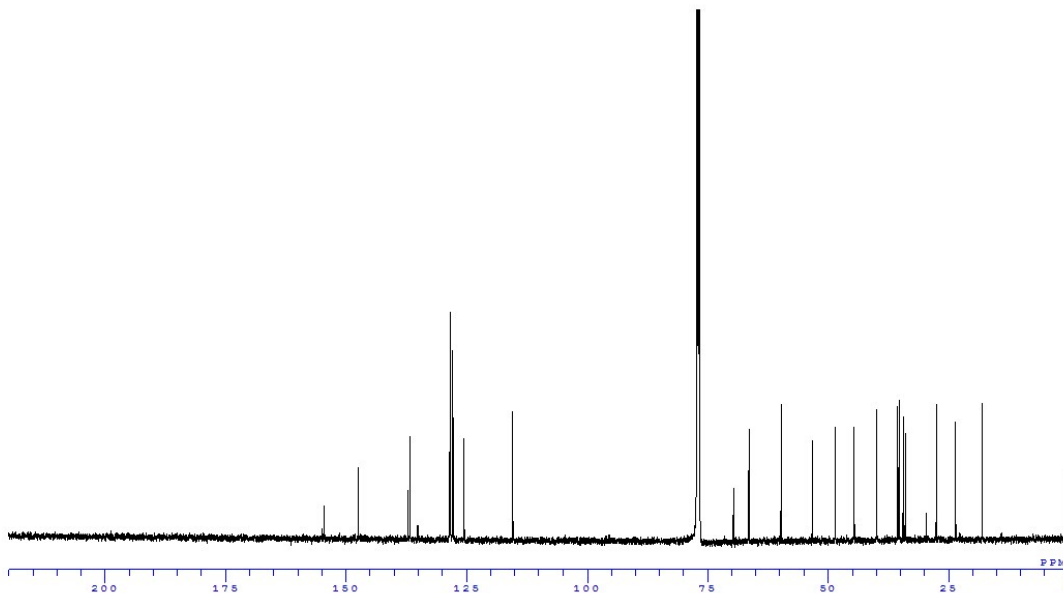


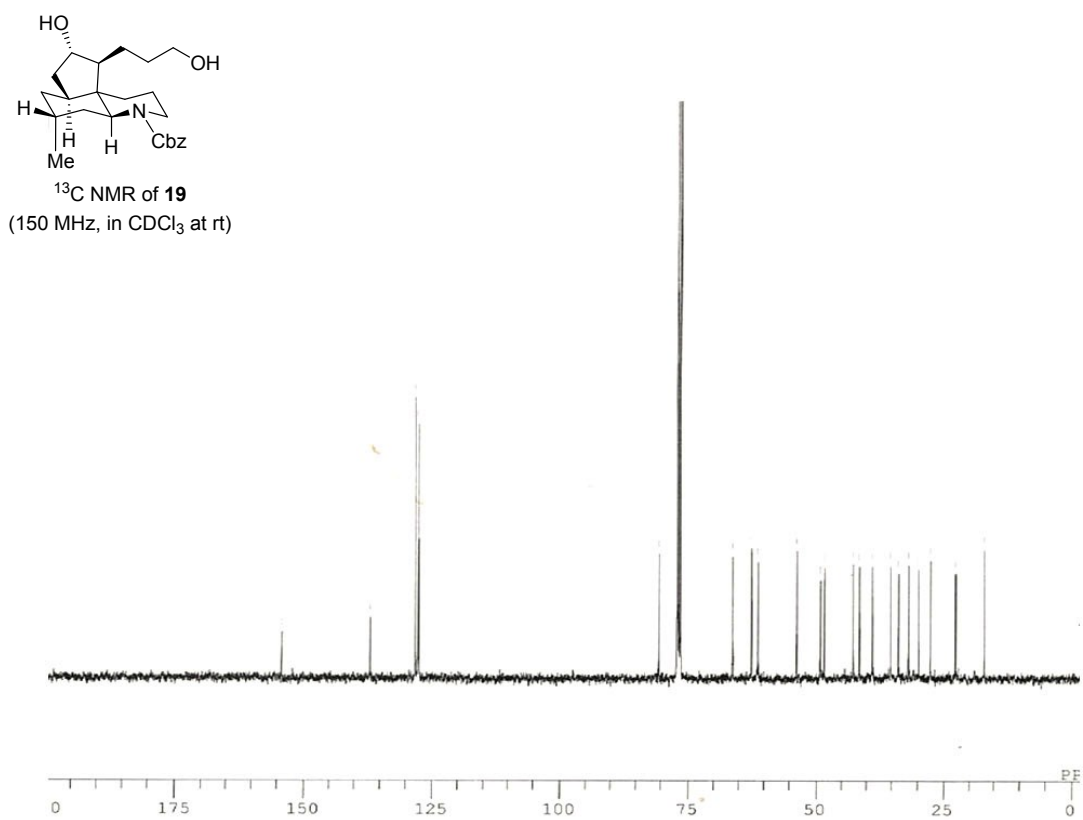
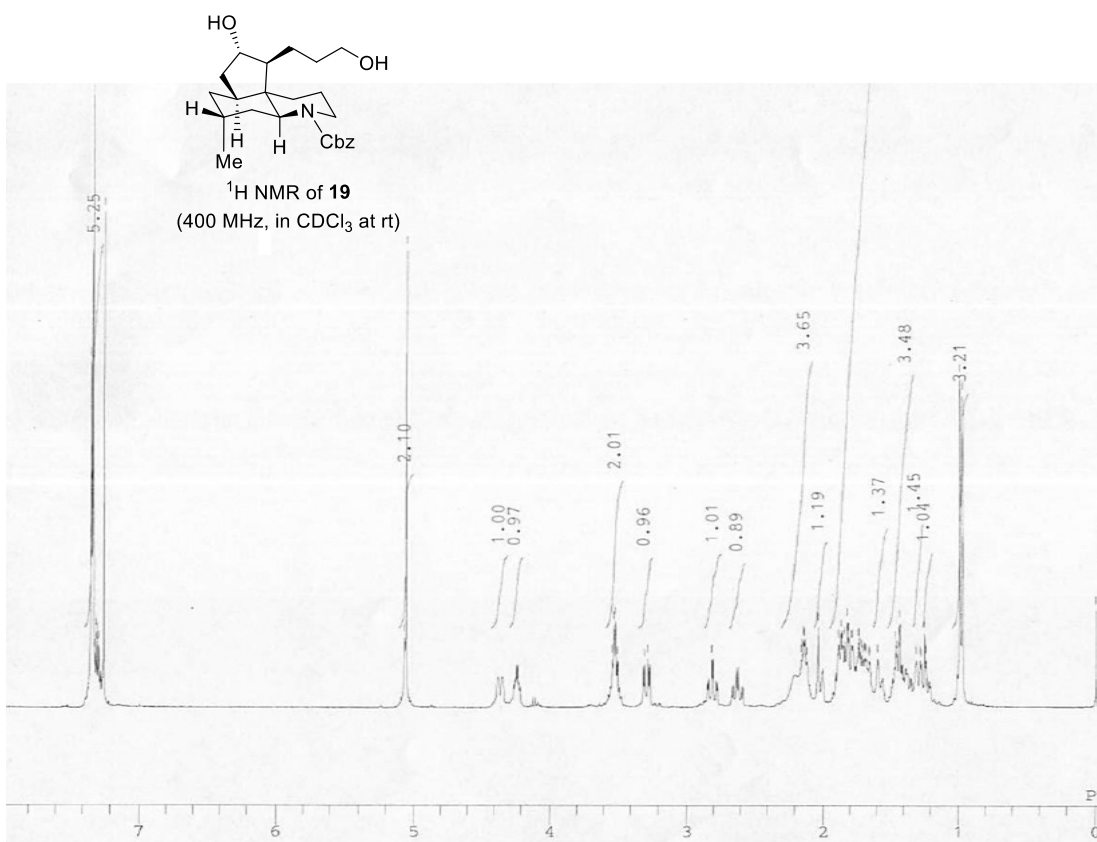


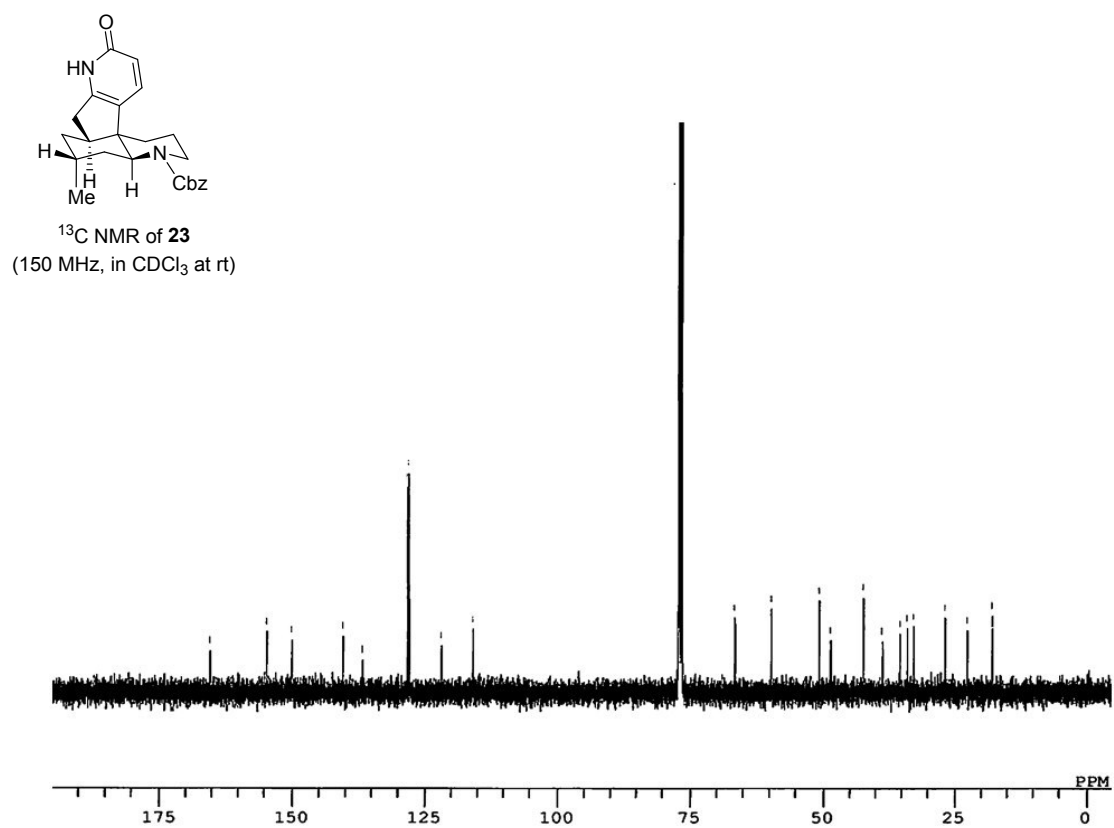
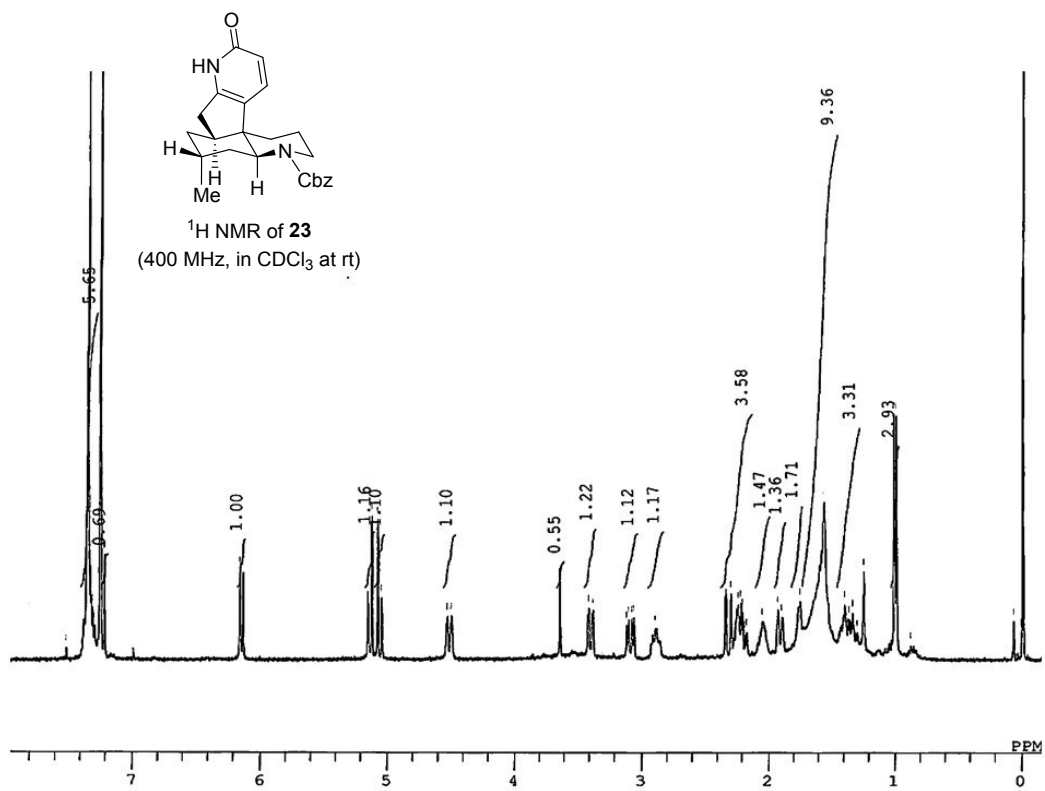
¹H NMR of **18**
(600 MHz, in CDCl₃ at rt)

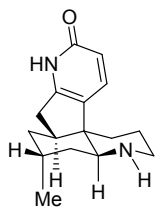


¹³C NMR of **18**
(150 MHz, in CDCl₃ at rt)

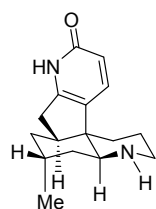
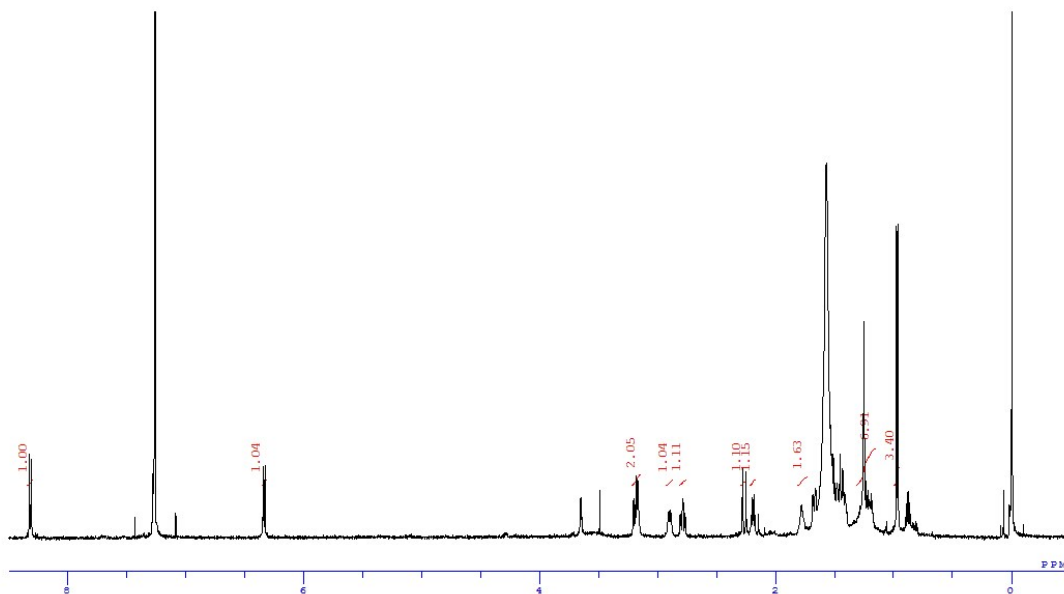








^1H NMR of (-)-lycoposerramine-R (1)
(600 MHz, in CDCl_3 at rt)



^{13}C NMR of (-)-lycoposerramine-R (1)
(150 MHz, in CDCl_3 at rt)

