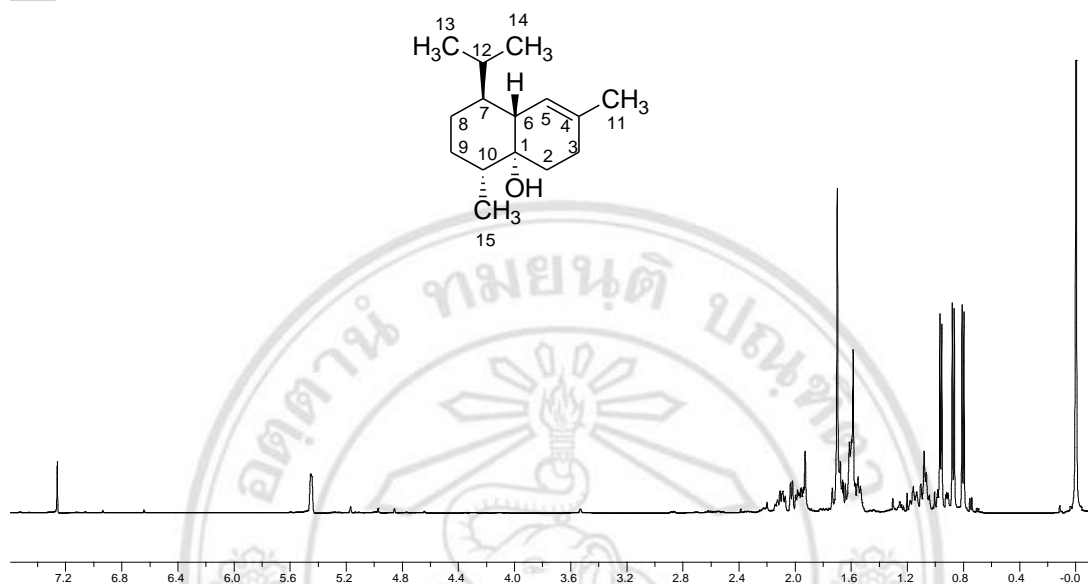




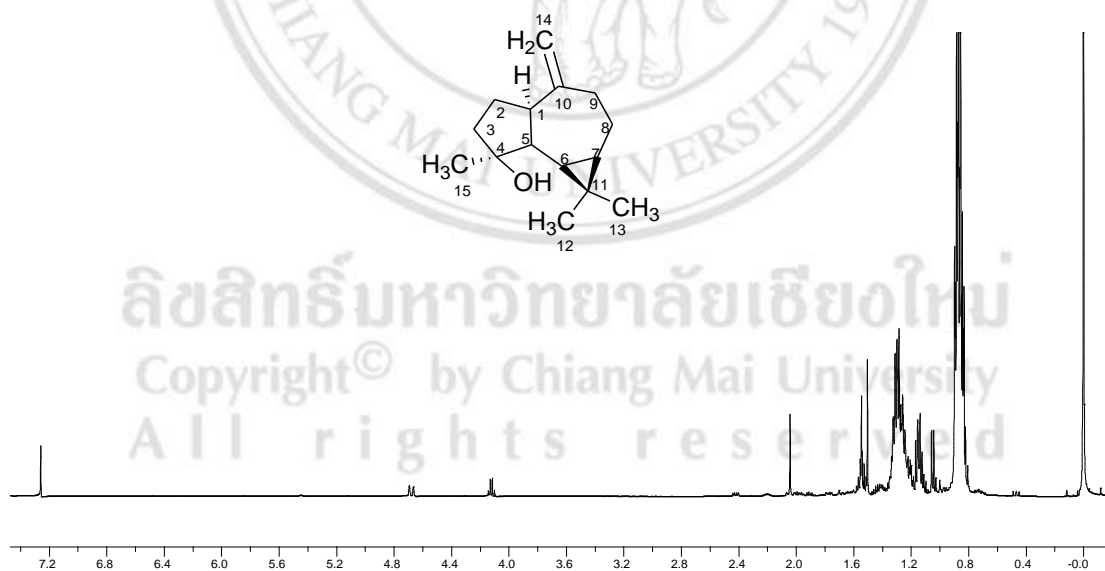
**APPENDIX**

**ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่**  
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## APPENDIX A



**Figure 1.** <sup>1</sup>H NMR spectrum of compound [OP3-4] in CDCl<sub>3</sub> (500 MHz)



**Figure 2.** <sup>1</sup>H NMR spectrum of compound [OP3-6] in CDCl<sub>3</sub> (500 MHz)

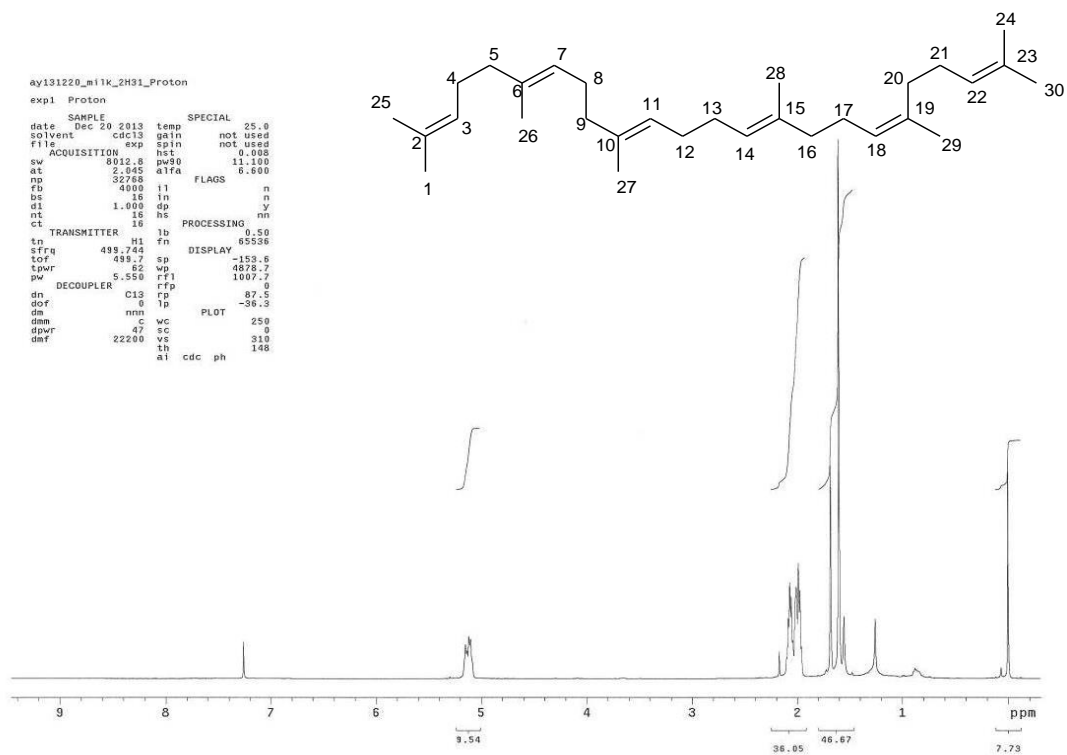


Figure 3.  $^1\text{H}$  NMR spectrum of compound [1H-3.1] in  $\text{CDCl}_3$  (500 MHz)

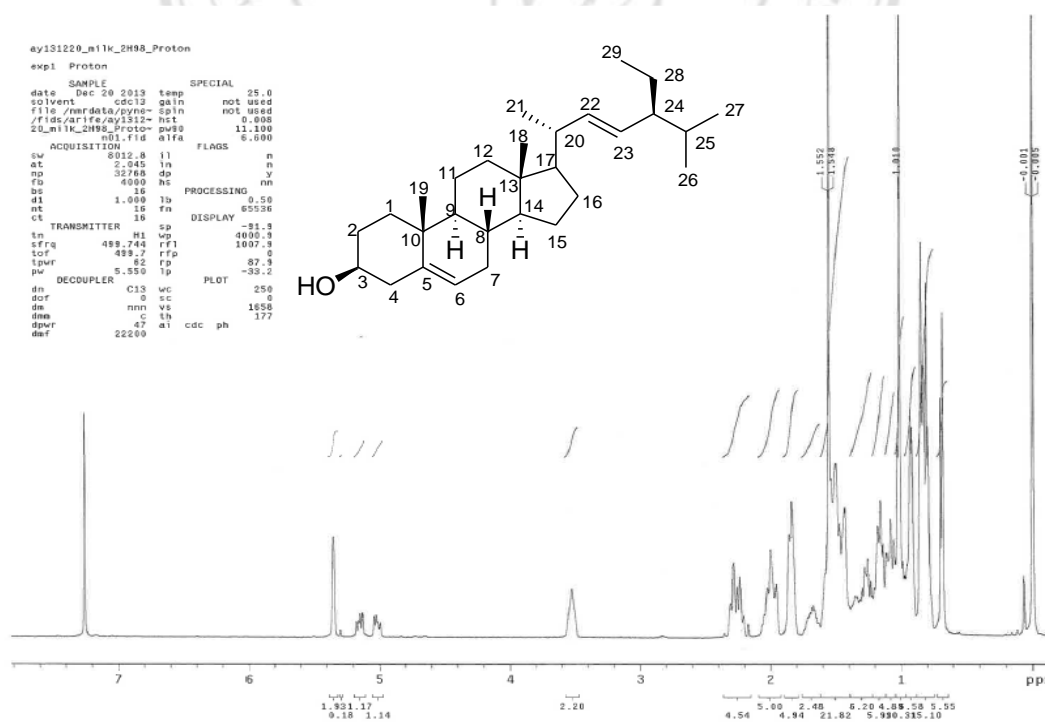


Figure 4.  $^1\text{H}$  NMR spectrum of compound [1H-9.6] in  $\text{CDCl}_3$  (500 MHz)

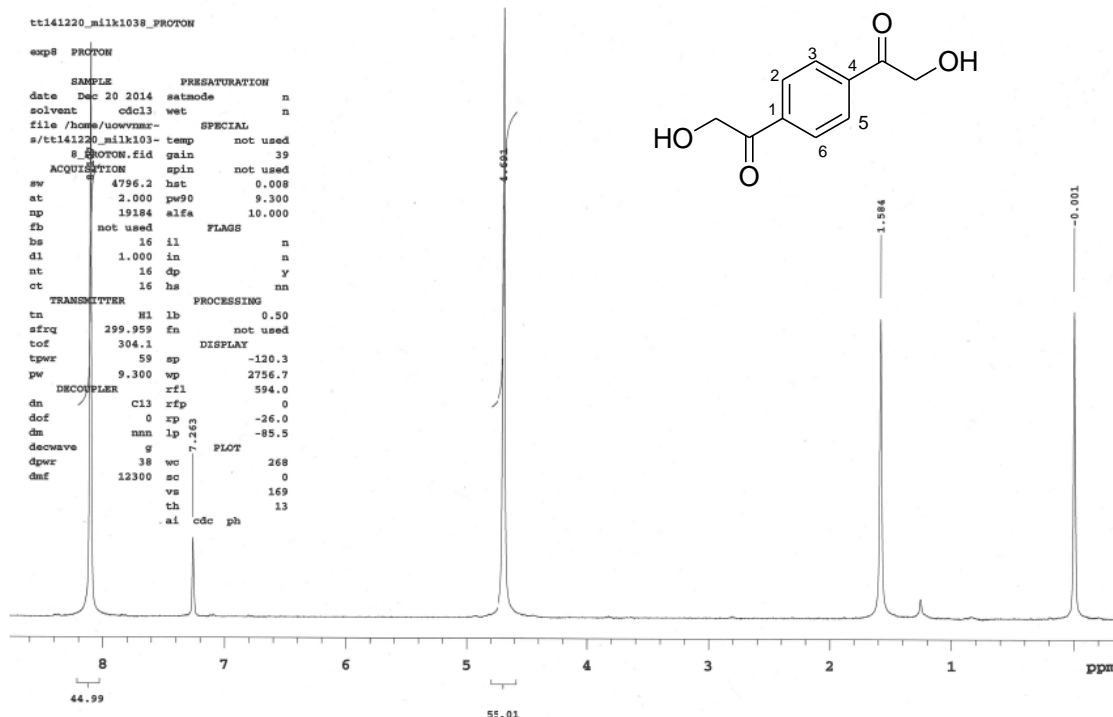


Figure 5.  $^1\text{H}$  NMR spectrum of compound [1EA-3.3.3] in  $\text{CDCl}_3$  (500 MHz)

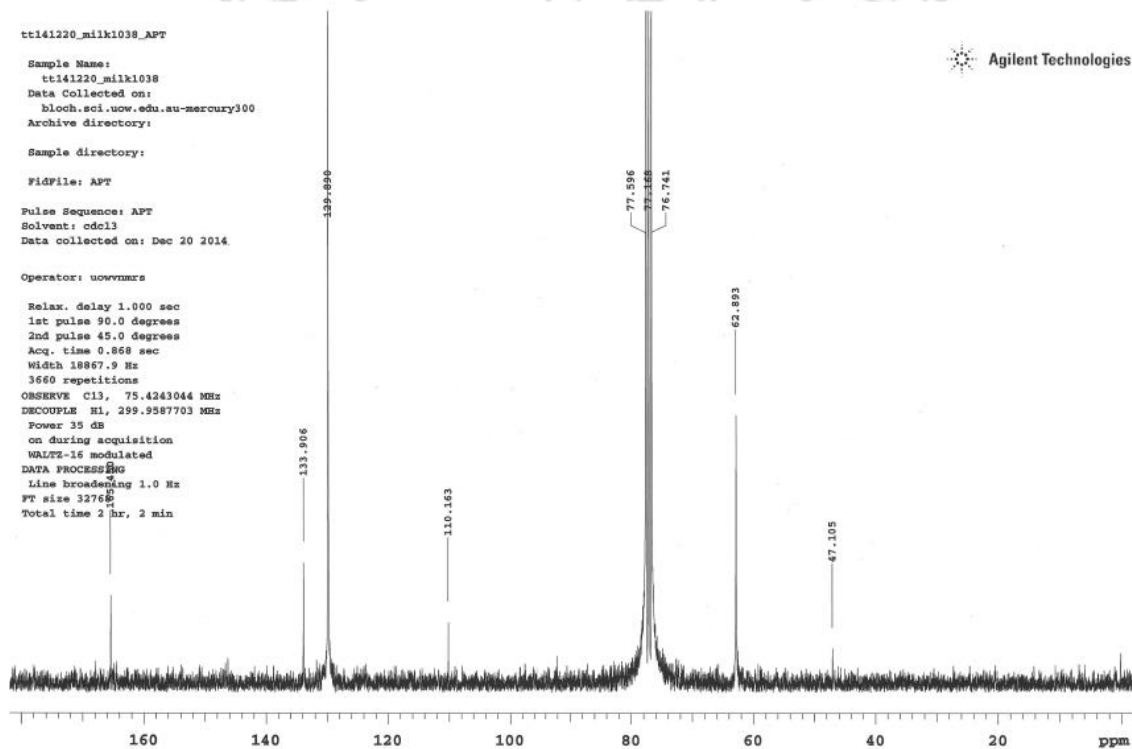


Figure 6.  $^{13}\text{C}$  NMR spectrum of compound [1EA-3.3.3] in  $\text{CDCl}_3$  (125 MHz)

tt141220\_milk1038\_gBMC

Sample Name:  
tt141220\_milk1038  
Data Collected on:  
bloch.sci.uow.edu.au-mercury300  
Archive directory:

Sample directory:

F1dfile: gBMC

Pulse Sequence: gBMC  
Solvent: cdcl3  
Data collected on: Dec 20 2014

Operator: uowmmrs

Relax. delay 1.000 sec  
Acq. time 0.213 sec  
Width 4807.7 Hz  
2D Width 18103.6 Hz  
32 repetitions  
250 increments  
OBSERVE H1, 299.9572703 MHz  
DATA PROCESSING  
Line broadening 3.0 Hz  
Sq. sine bell 0.106 sec  
F1 DATA PROCESSING  
Line broadening 3.0 Hz  
Sq. sine bell 0.004 sec  
FT size 2048 x 512  
Total time 2 hr, 58 min

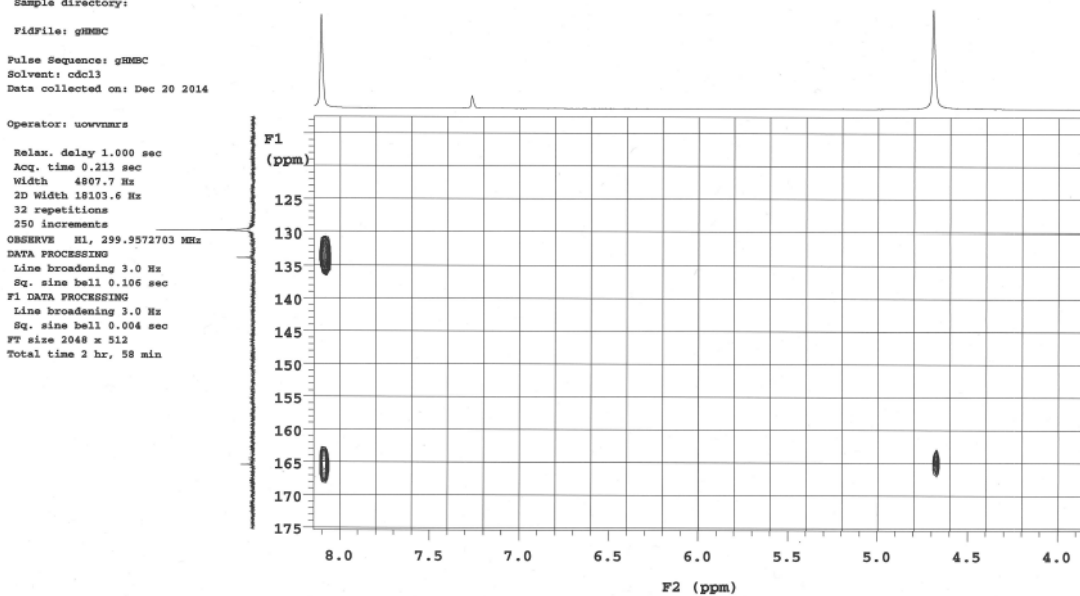


Figure 7. HMBC spectrum of compound [1EA-3.3.3] in CDCl<sub>3</sub> (500 MHz)

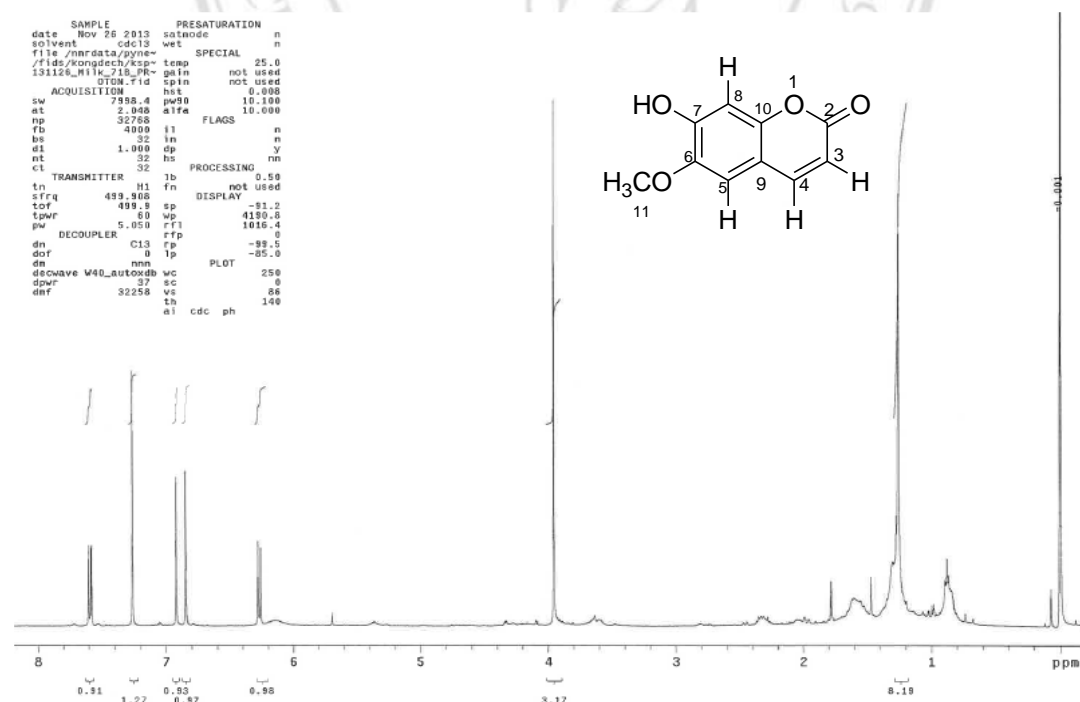
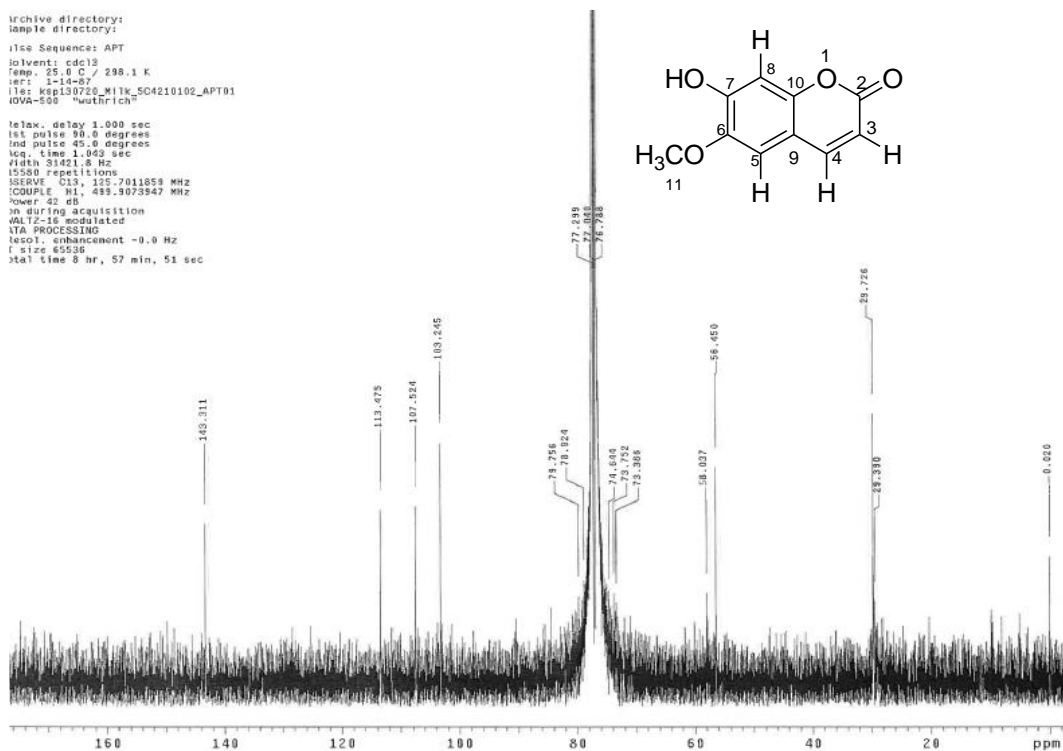
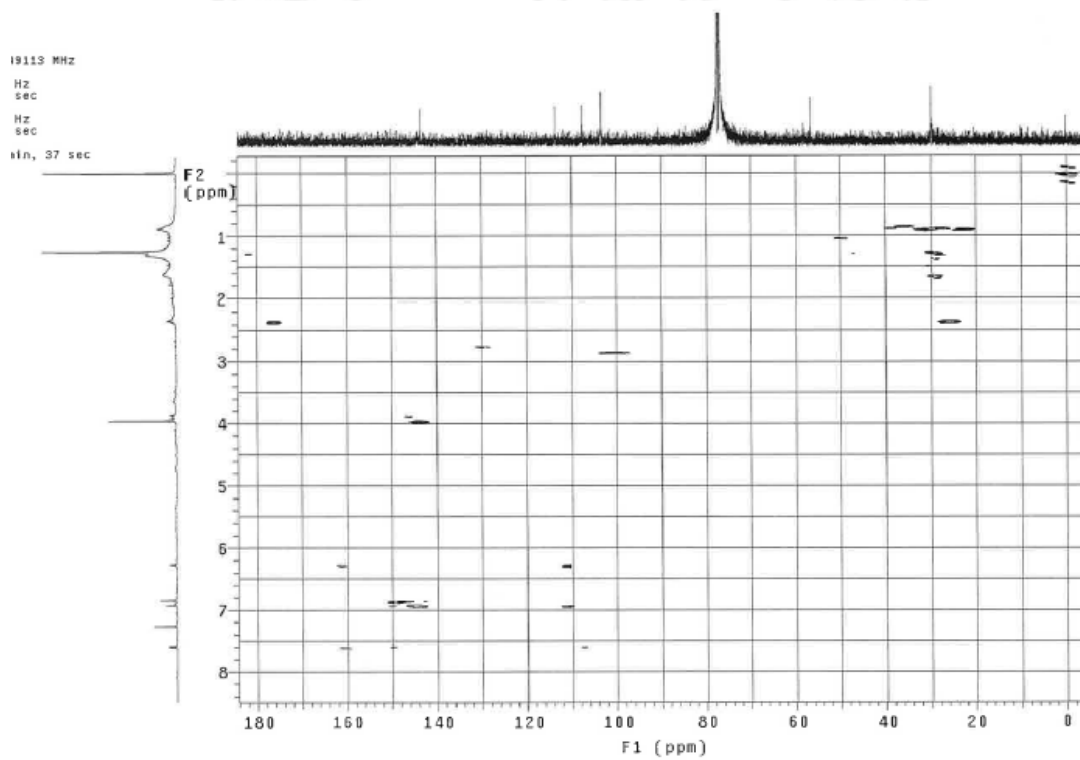


Figure 8. <sup>1</sup>H NMR spectrum of compound [6.3.2] in CDCl<sub>3</sub> (500 MHz)

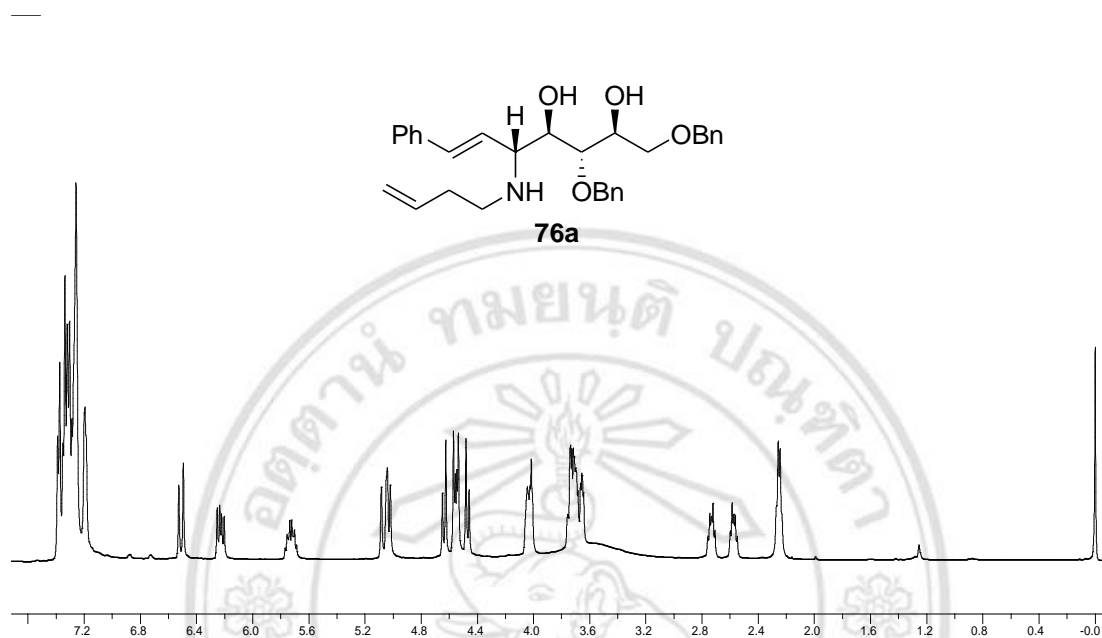


**Figure 9.** <sup>13</sup>C NMR spectrum of compound [6.3.2] in CDCl<sub>3</sub> (125 MHz)

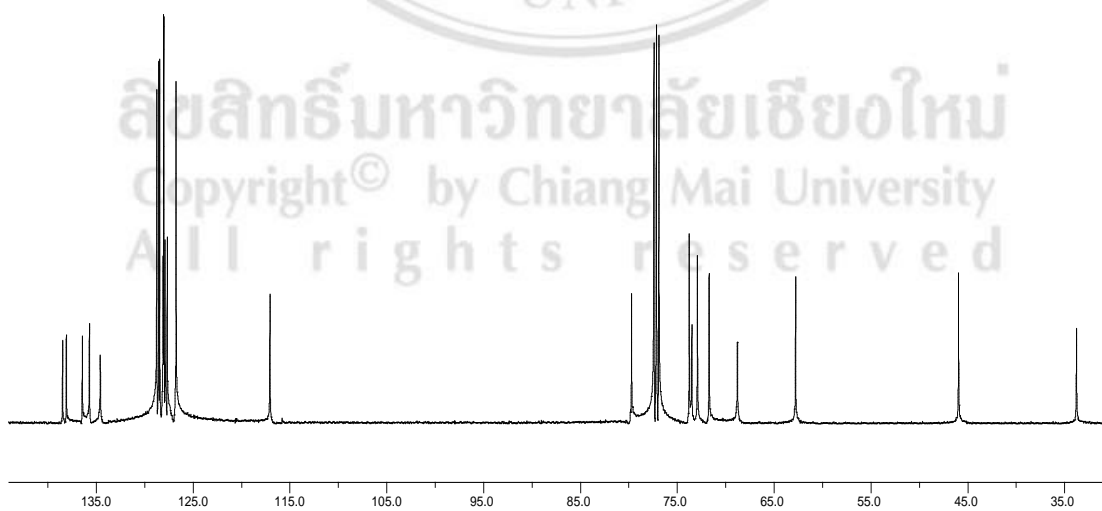


**Figure 10.** HMBC spectrum of compound [6.3.2] in CDCl<sub>3</sub> (500 MHz)

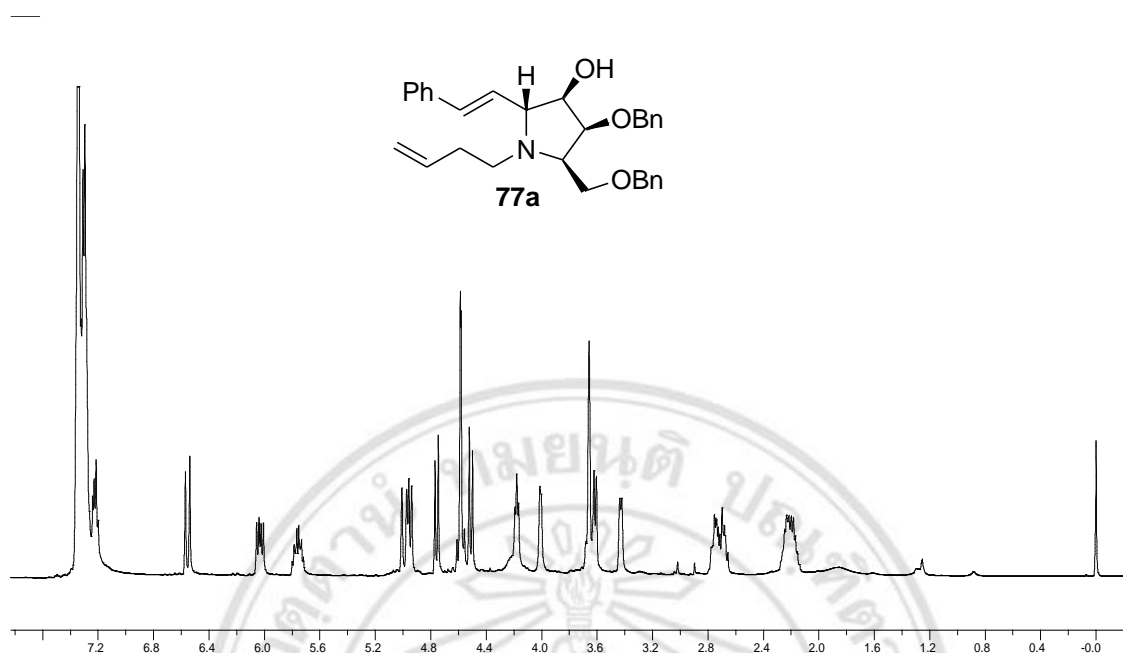
## APPENDIX B



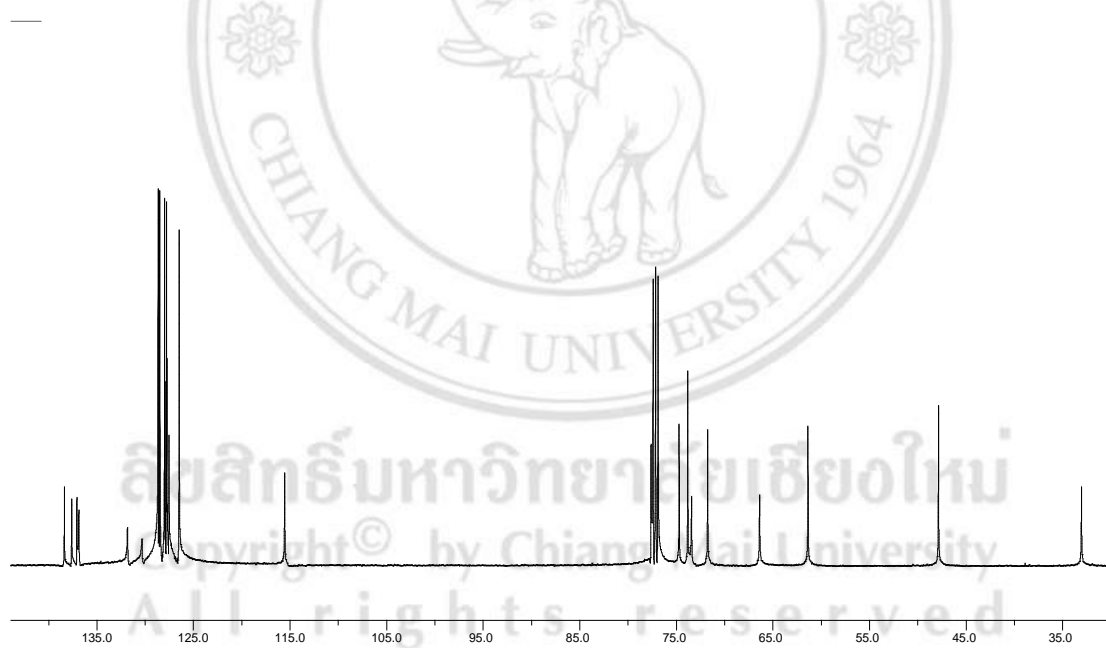
**Figure 1.**  $^1\text{H}$  NMR spectrum of compound **76a** in  $\text{CDCl}_3$  (500 MHz)



**Figure 2.**  $^{13}\text{C}$  NMR spectrum of compound **76a** in  $\text{CDCl}_3$  (125 MHz)

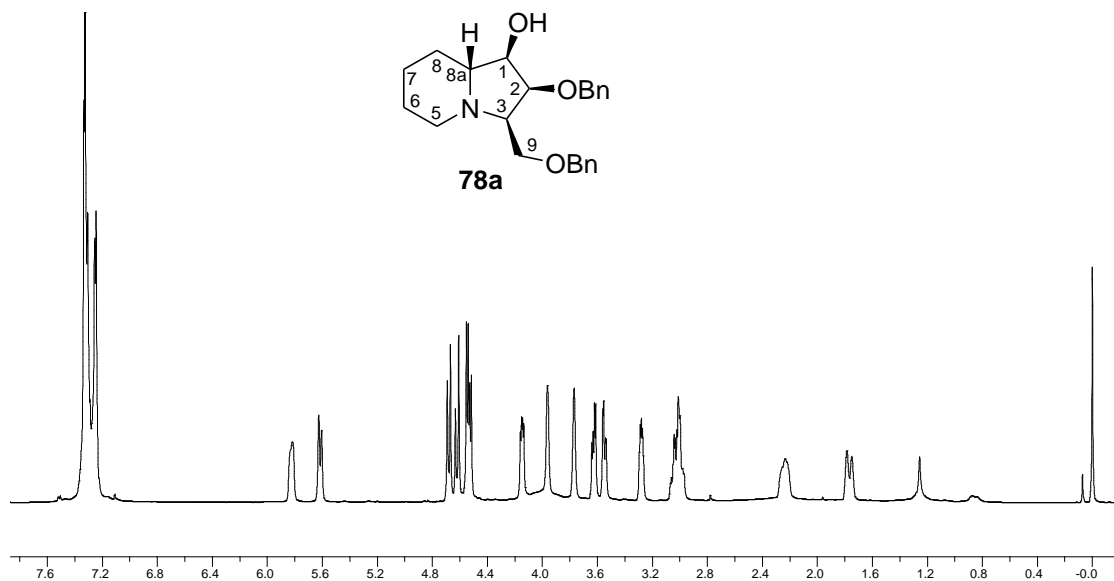


**Figure 3.** <sup>1</sup>H NMR spectrum of compound **77a** in CDCl<sub>3</sub> (500 MHz)

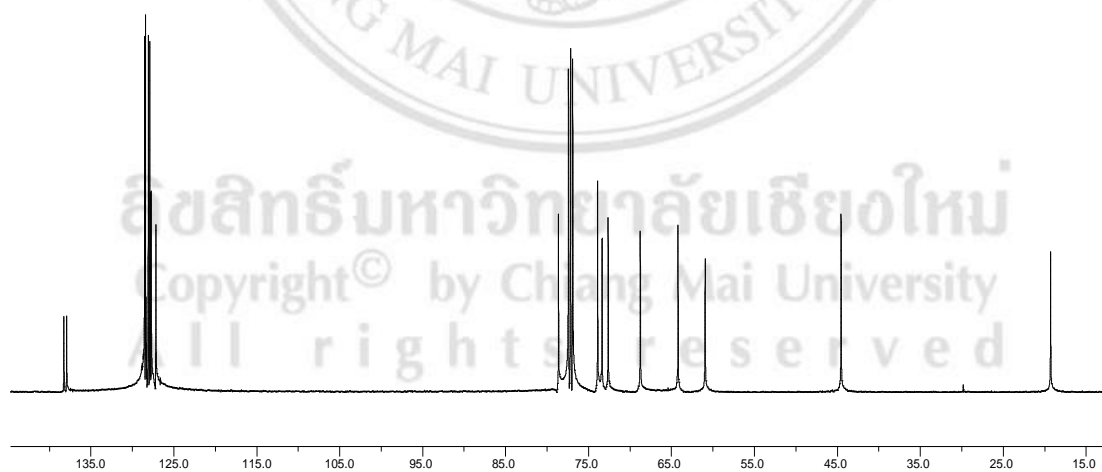


**Figure 4.** <sup>13</sup>C NMR spectrum of compound **77a** in CDCl<sub>3</sub> (125 MHz)

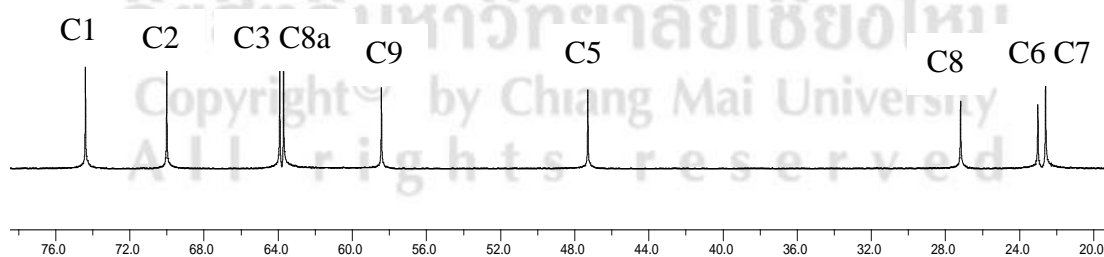
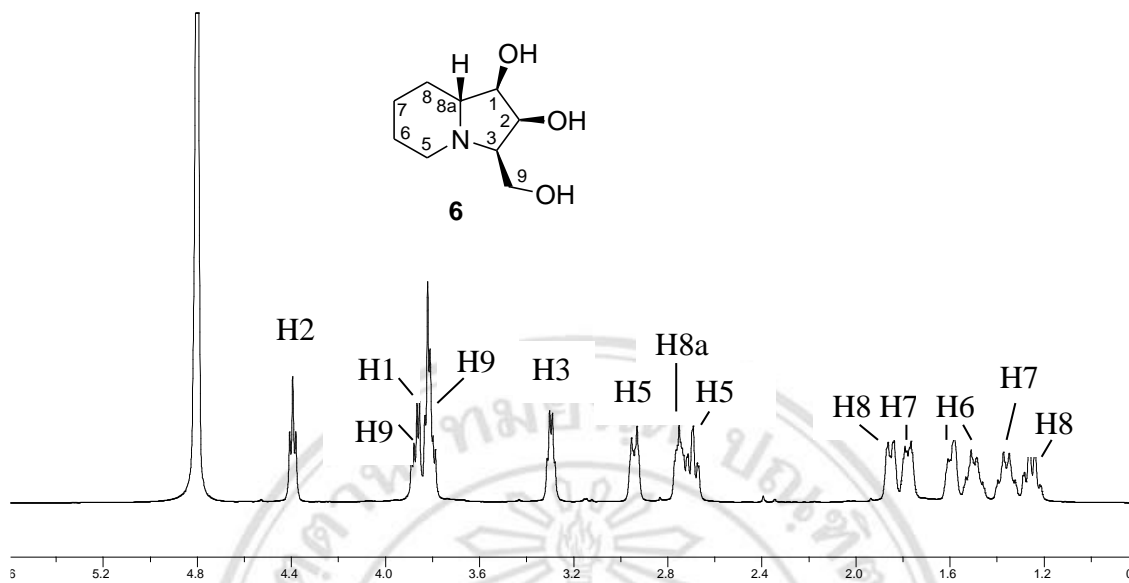




**Figure 5.**  $^1\text{H}$  NMR spectrum of compound **78a** in  $\text{CDCl}_3$  (500 MHz)



**Figure 6.**  $^{13}\text{C}$  NMR spectrum of compound **78a** in  $\text{CDCl}_3$  (125 MHz)



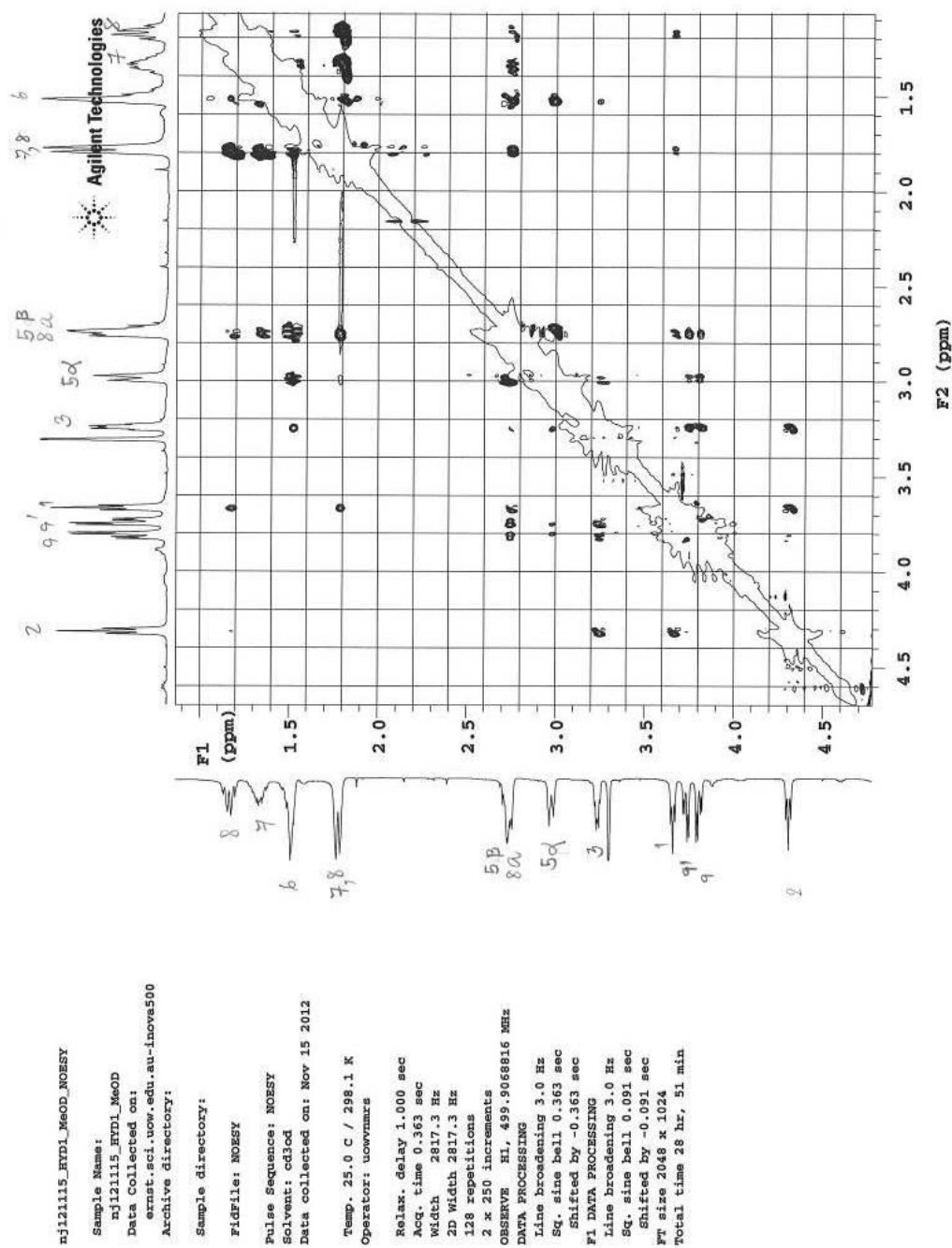


Figure 9. NOESY NMR spectrum of compound **6** in CD<sub>3</sub>OD (500 MHz)

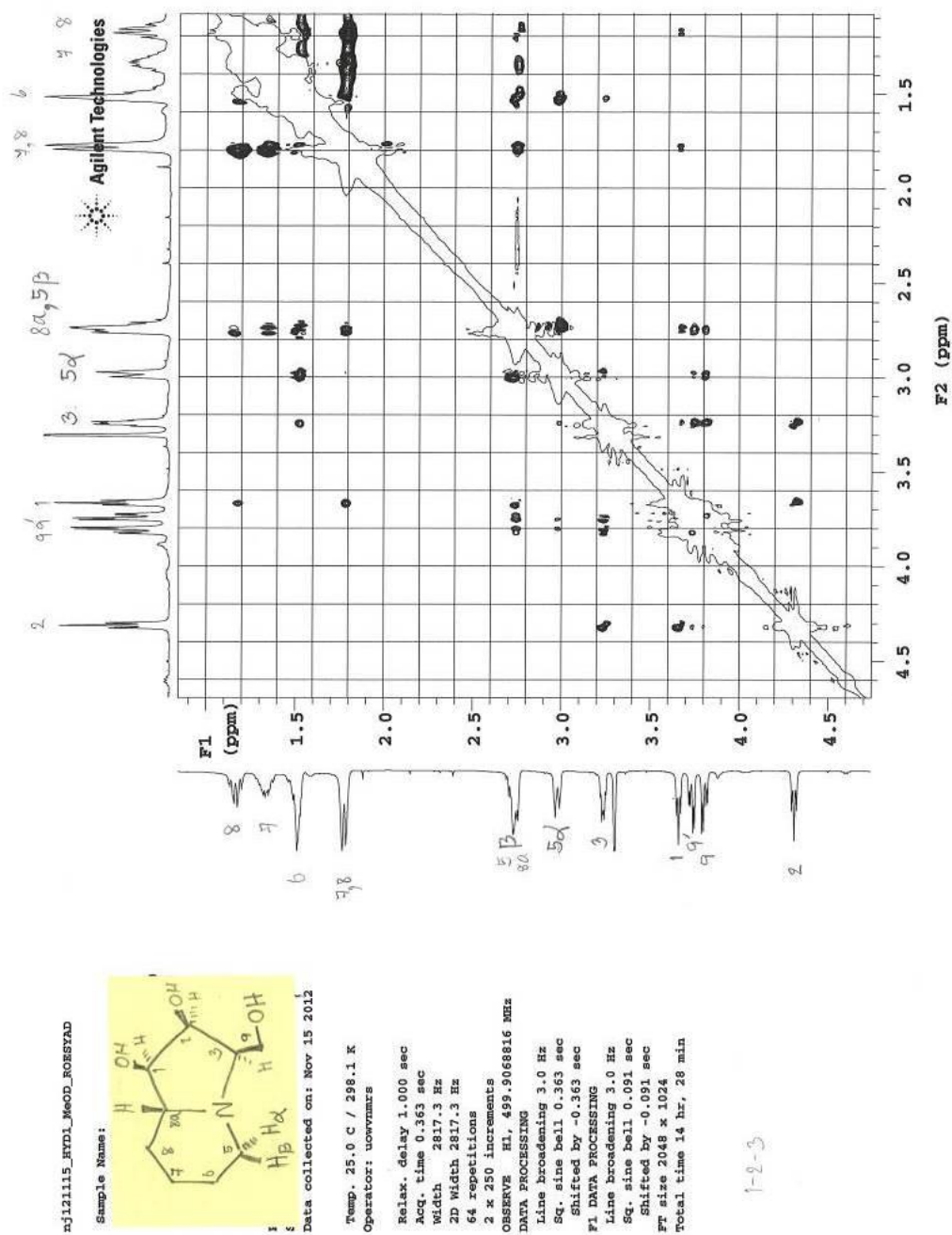
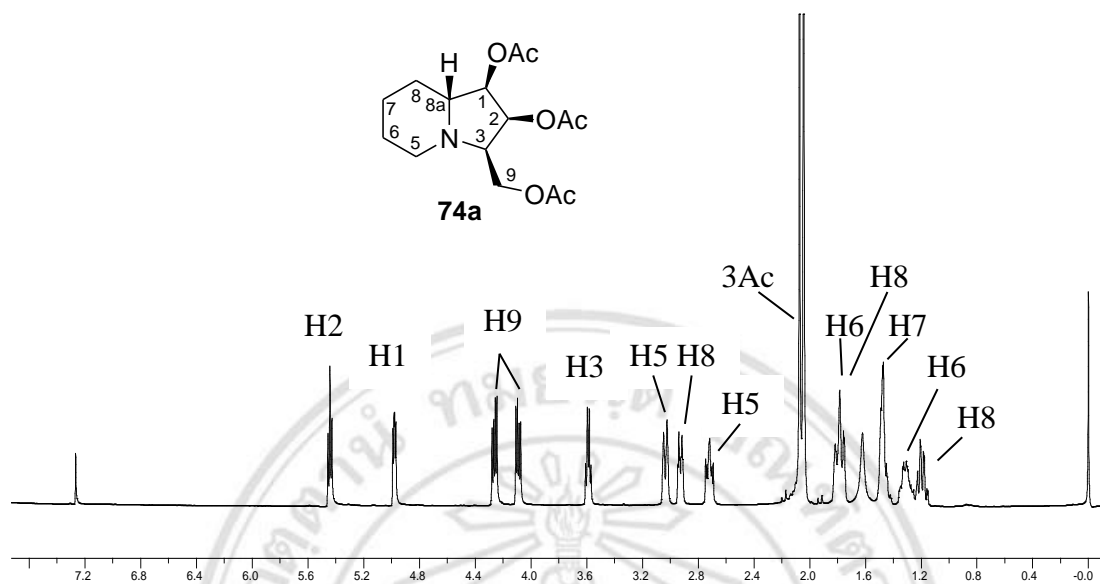
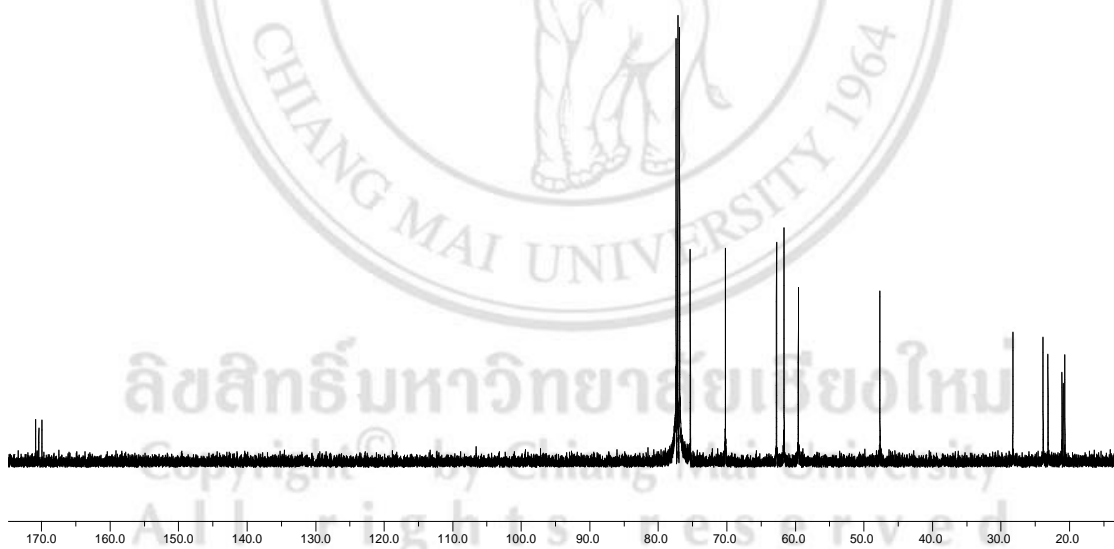


Figure 10. ROESYAD NMR spectrum of compound 6 in CD<sub>3</sub>OD (500 MHz)



**Figure 11.**  $^1\text{H}$  NMR spectrum of compound **74a** in  $\text{CDCl}_3$  (500 MHz)



**Figure 12.**  $^{13}\text{C}$  NMR spectrum of compound **74a** in  $\text{CDCl}_3$  (125 MHz)

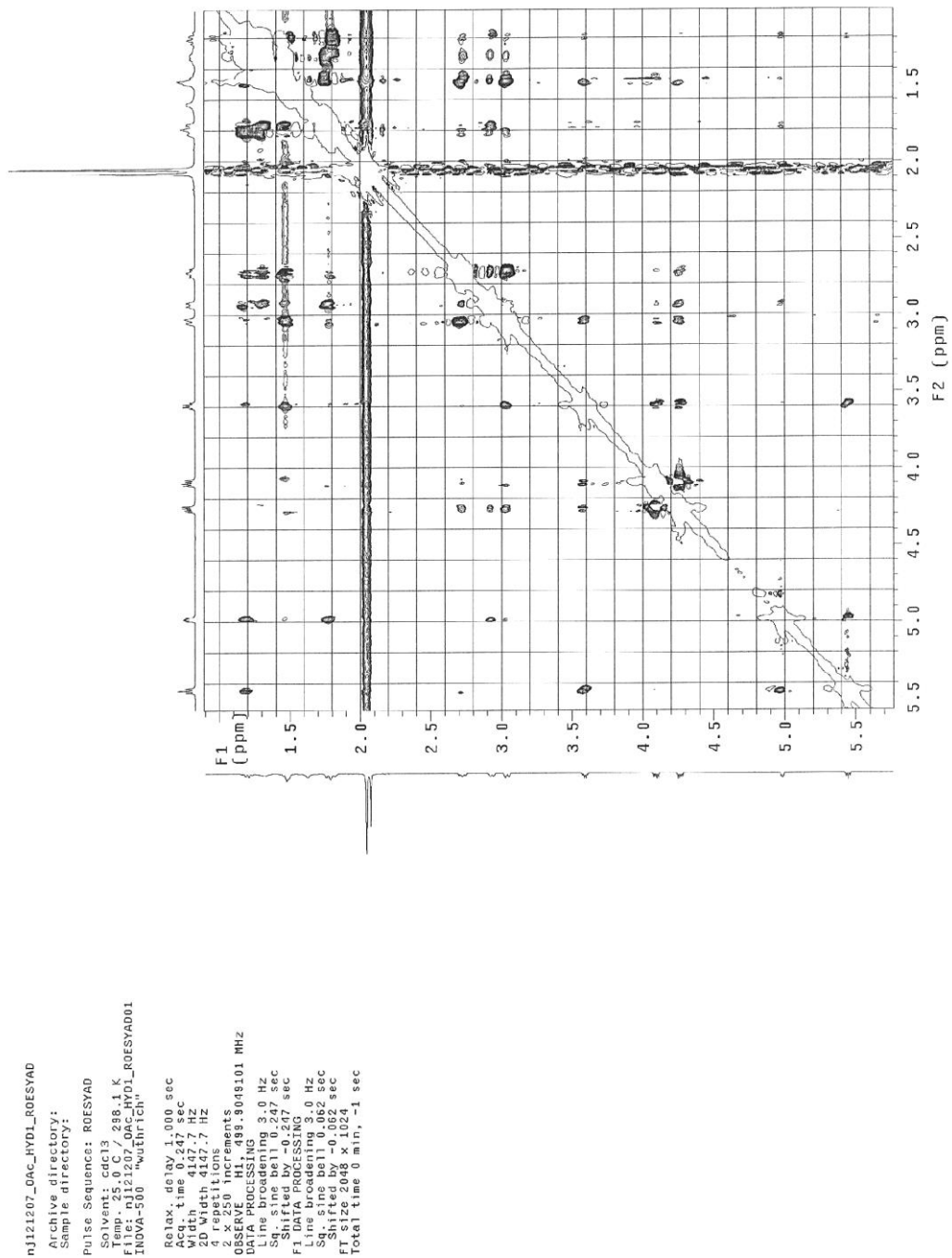
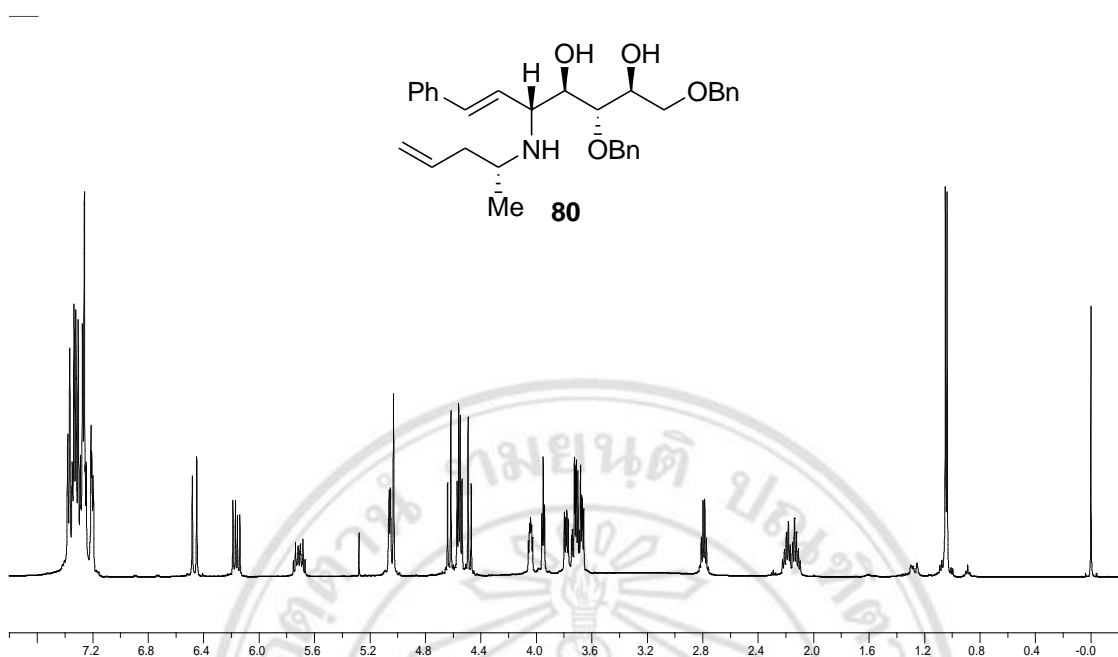


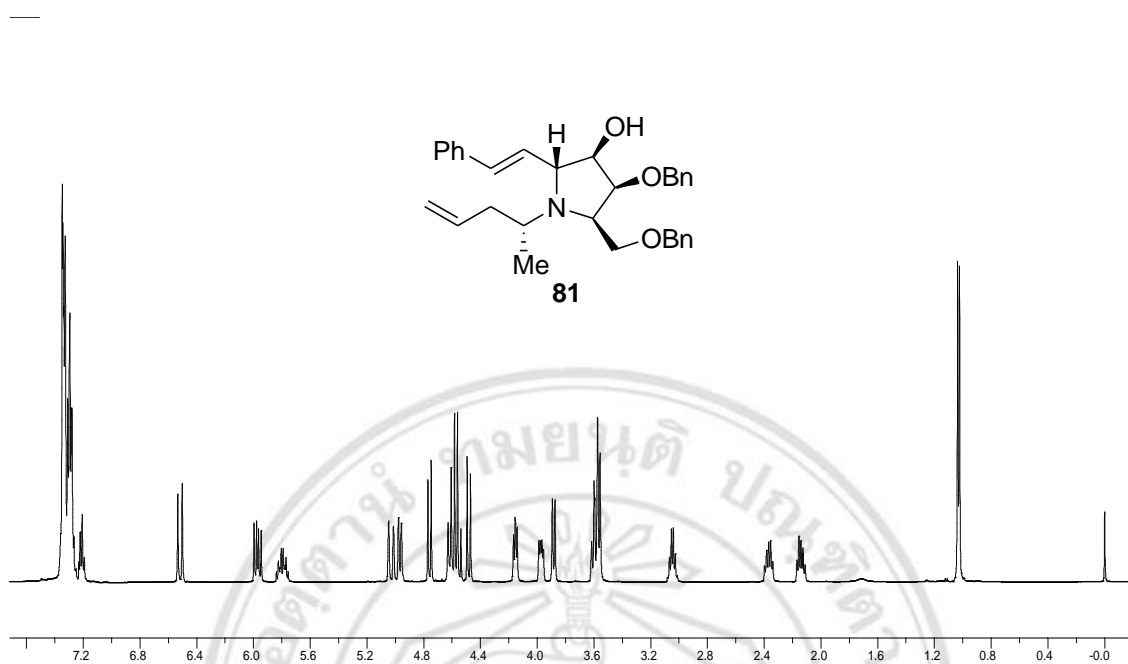
Figure 13. ROESYAD NMR spectrum of compound **74a** in  $\text{CDCl}_3$  (500 MHz)



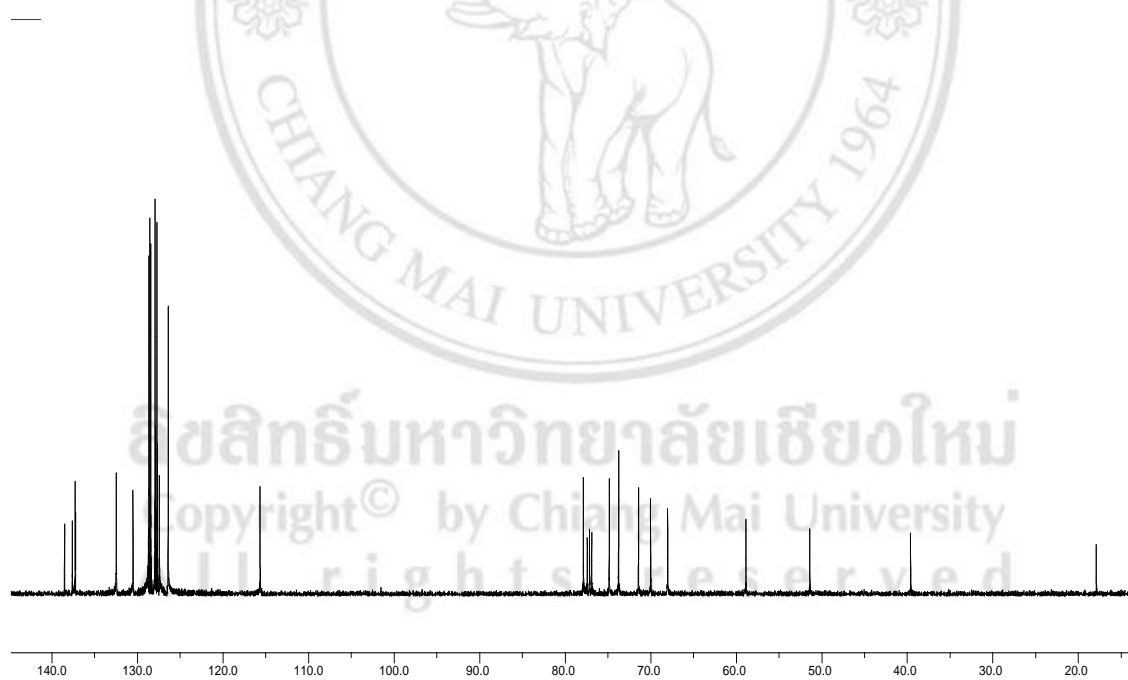
**Figure 14.**  $^1\text{H}$  NMR spectrum of compound **80** in  $\text{CDCl}_3$  (500 MHz)



**Figure 15.**  $^{13}\text{C}$  NMR spectrum of compound **80** in  $\text{CDCl}_3$  (125 MHz)

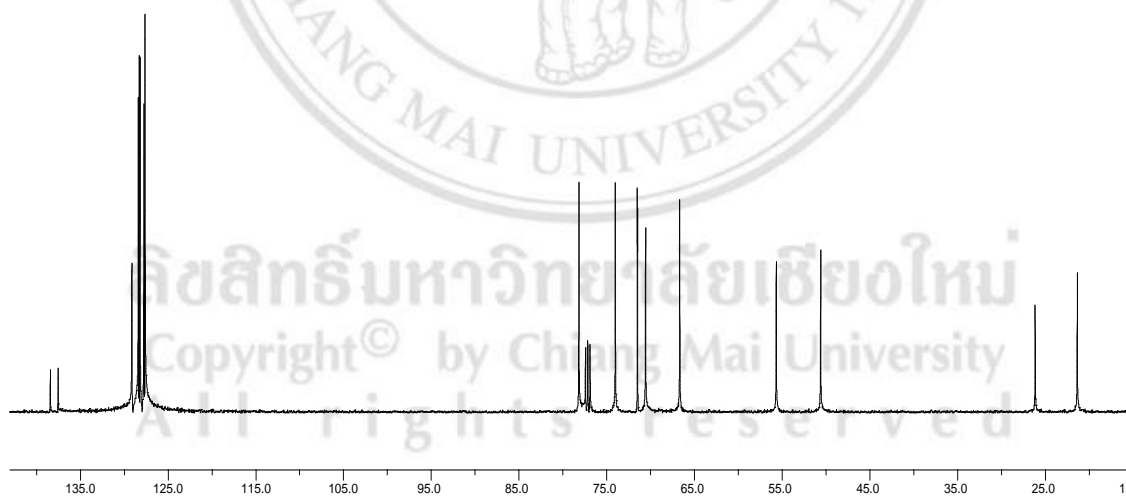
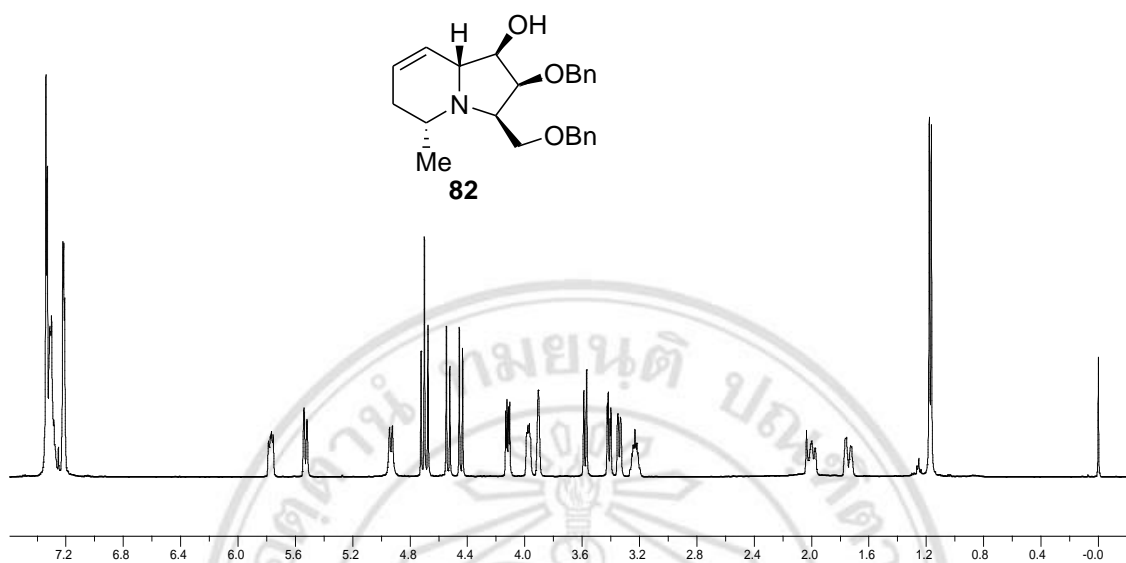


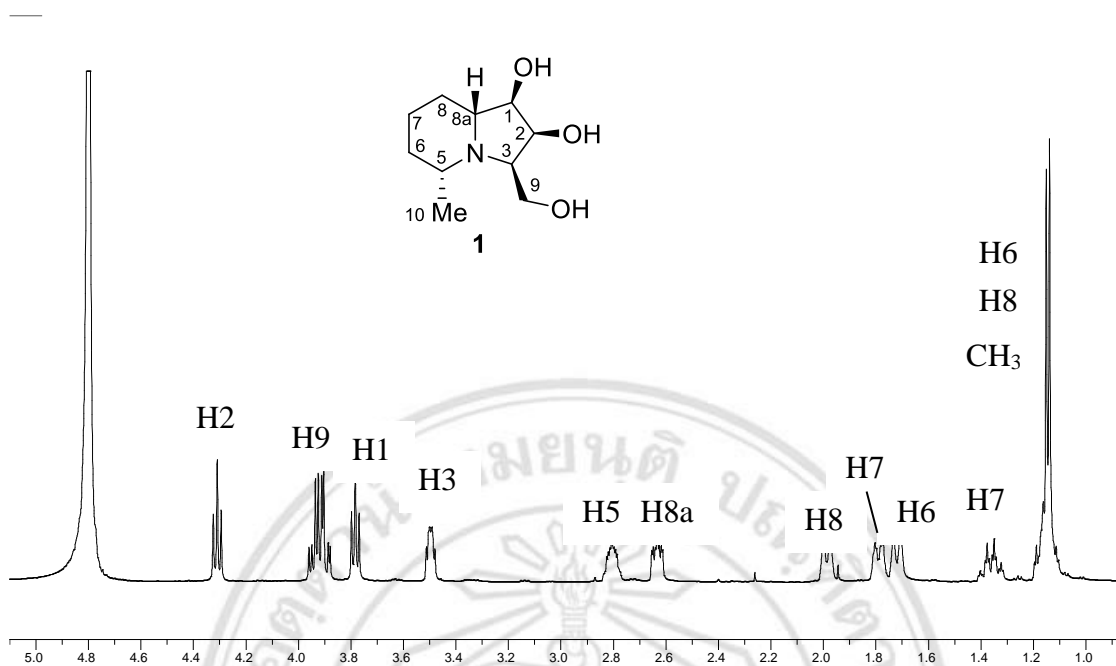
**Figure 16.** <sup>1</sup>H NMR spectrum of compound **81** in CDCl<sub>3</sub> (500 MHz)



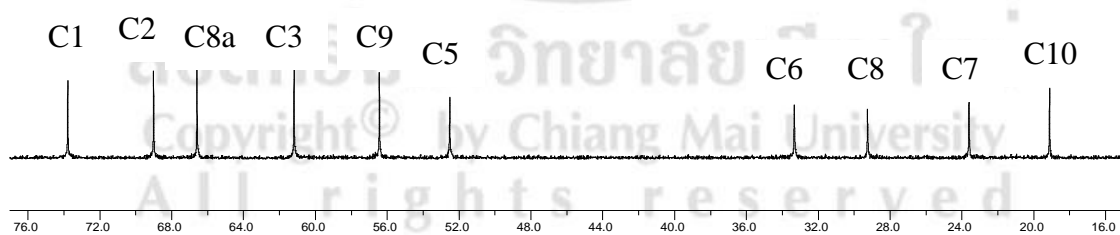
**Figure 17.** <sup>13</sup>C NMR spectrum of compound **81** in CDCl<sub>3</sub> (125 MHz)



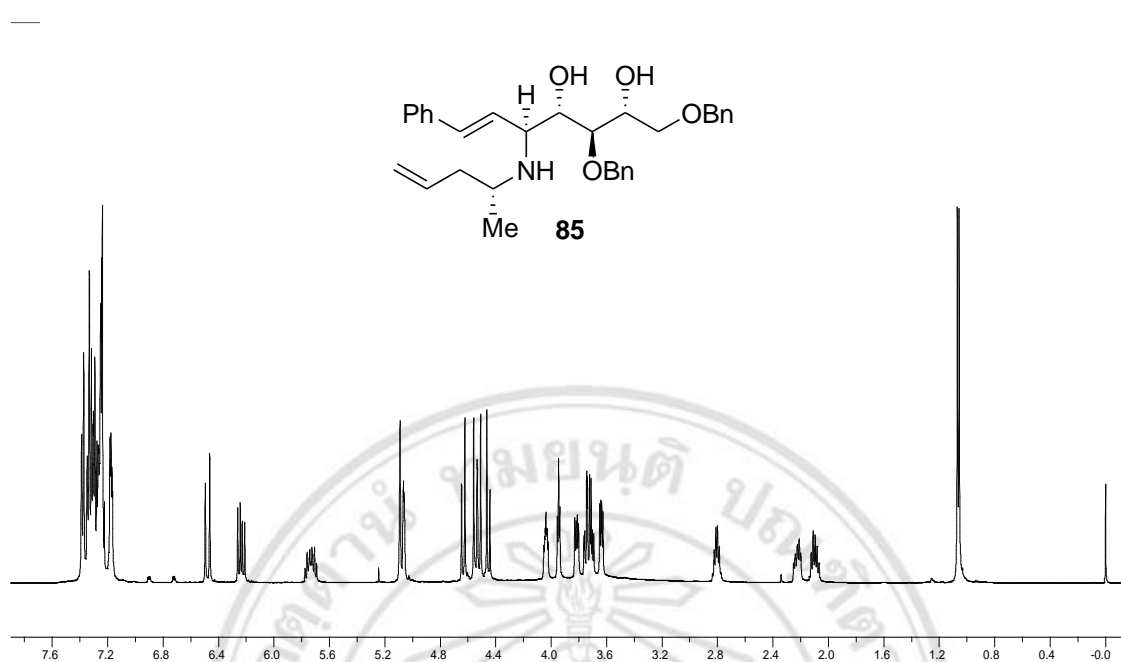




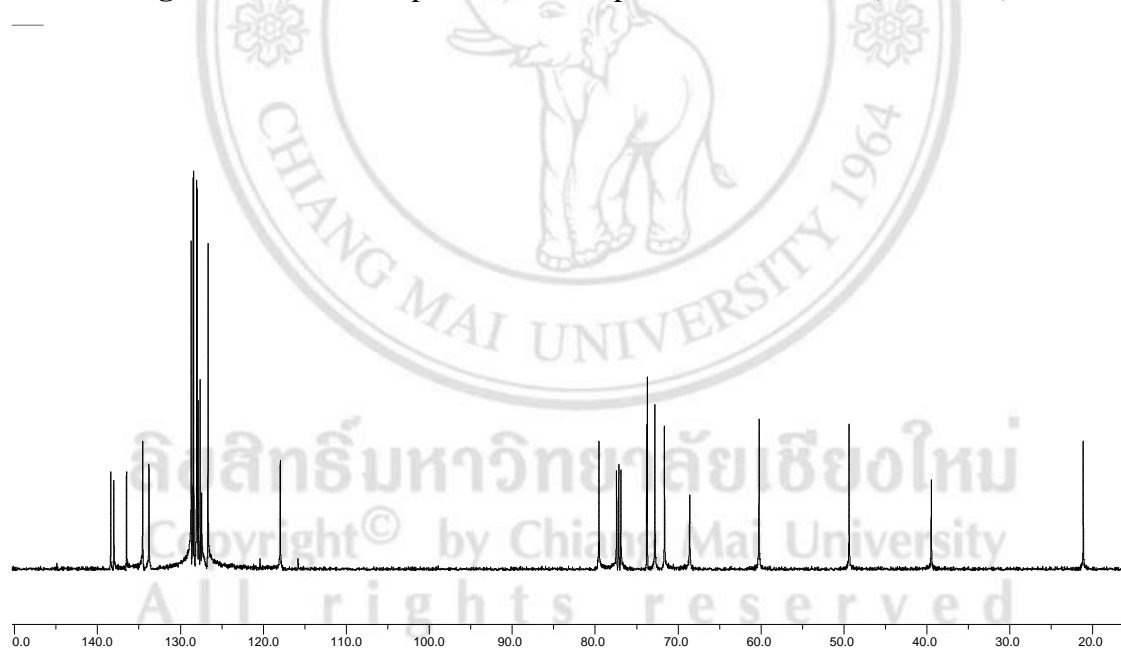
**Figure 20.**  $^1\text{H}$  NMR spectrum of compound **1** in  $\text{D}_2\text{O}$  (500 MHz)



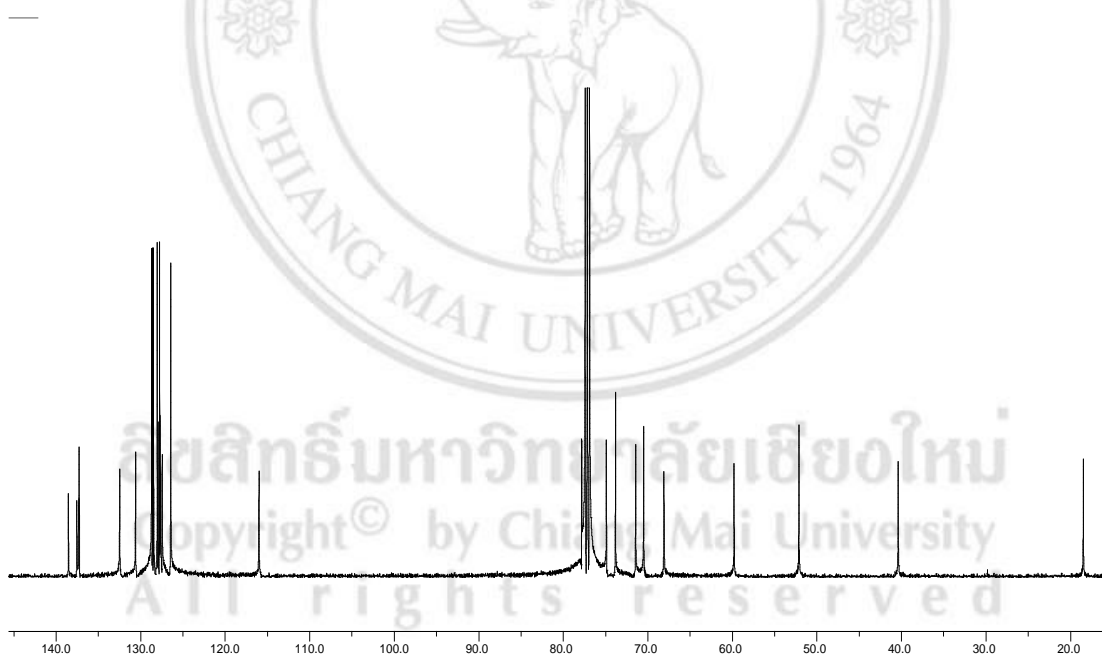
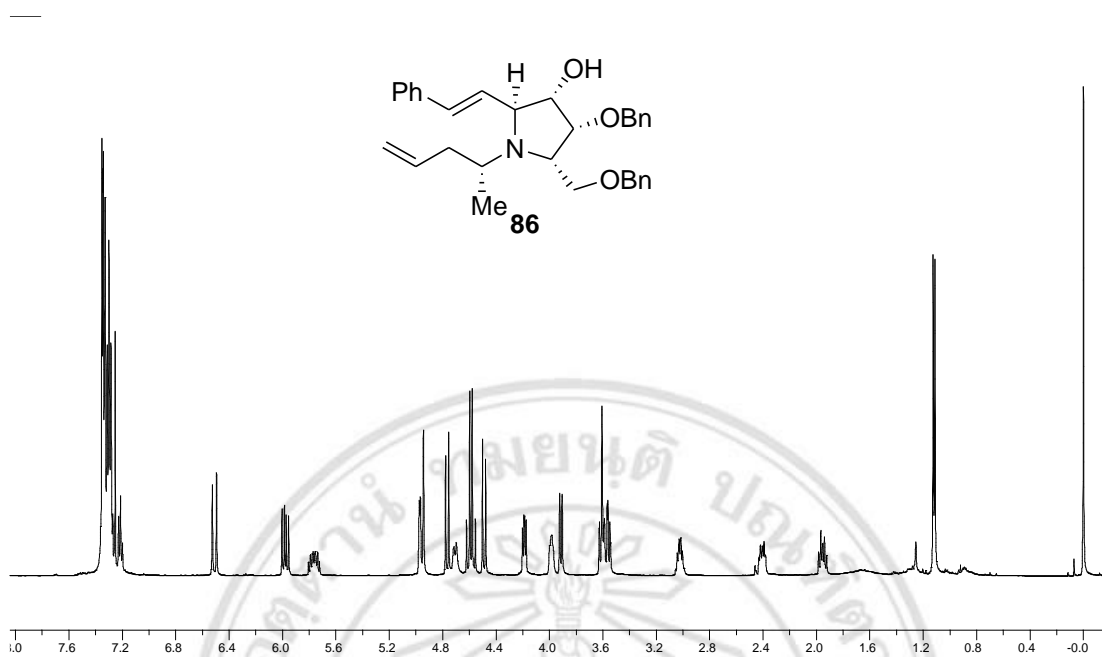
**Figure 21.**  $^{13}\text{C}$  NMR spectrum of compound **1** in  $\text{D}_2\text{O}$  (125 MHz)

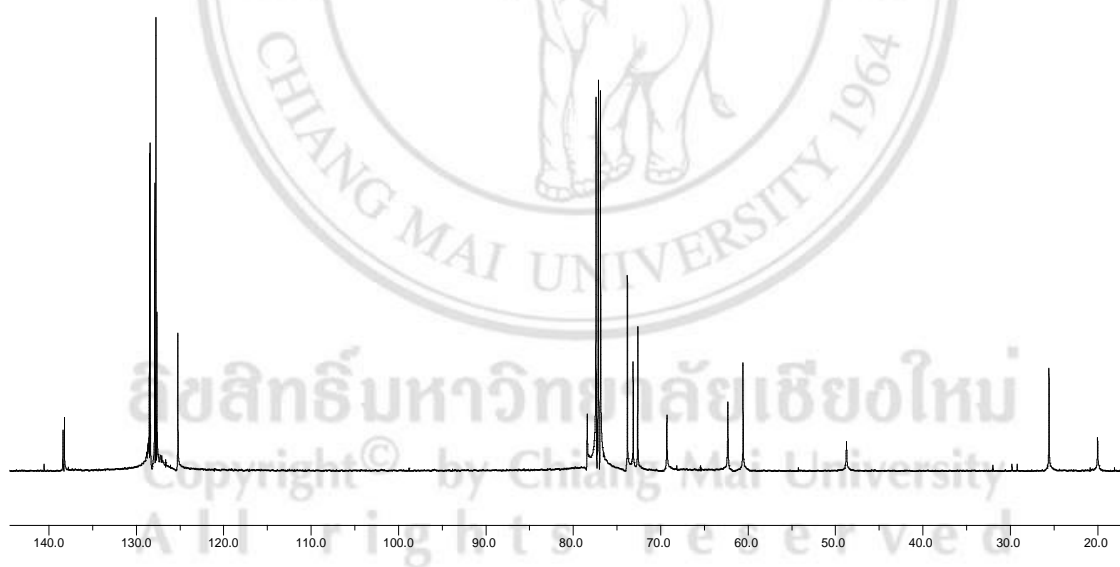
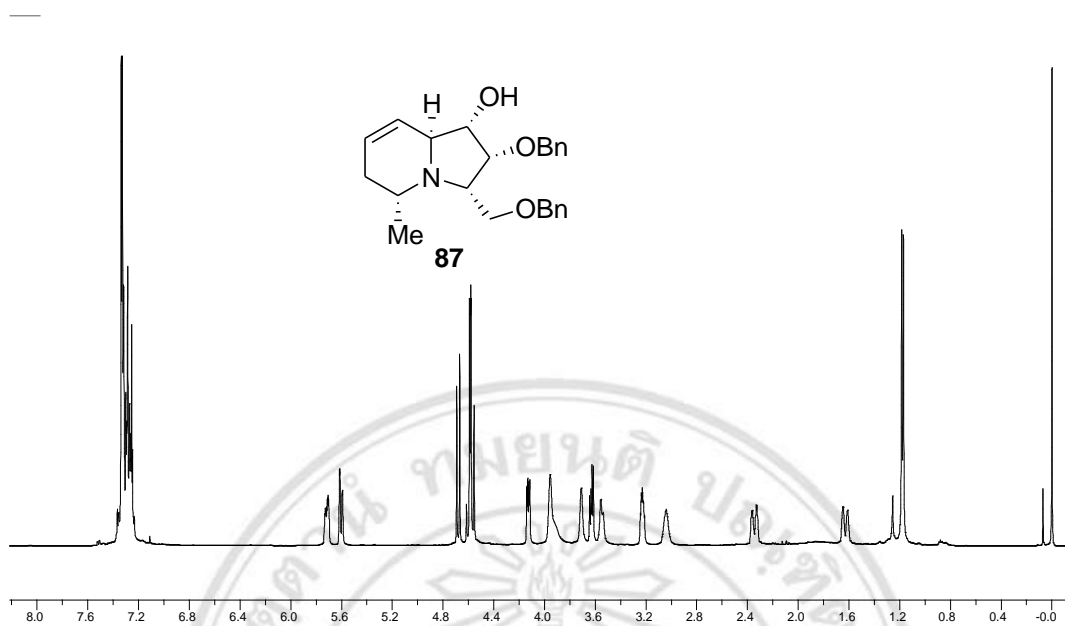


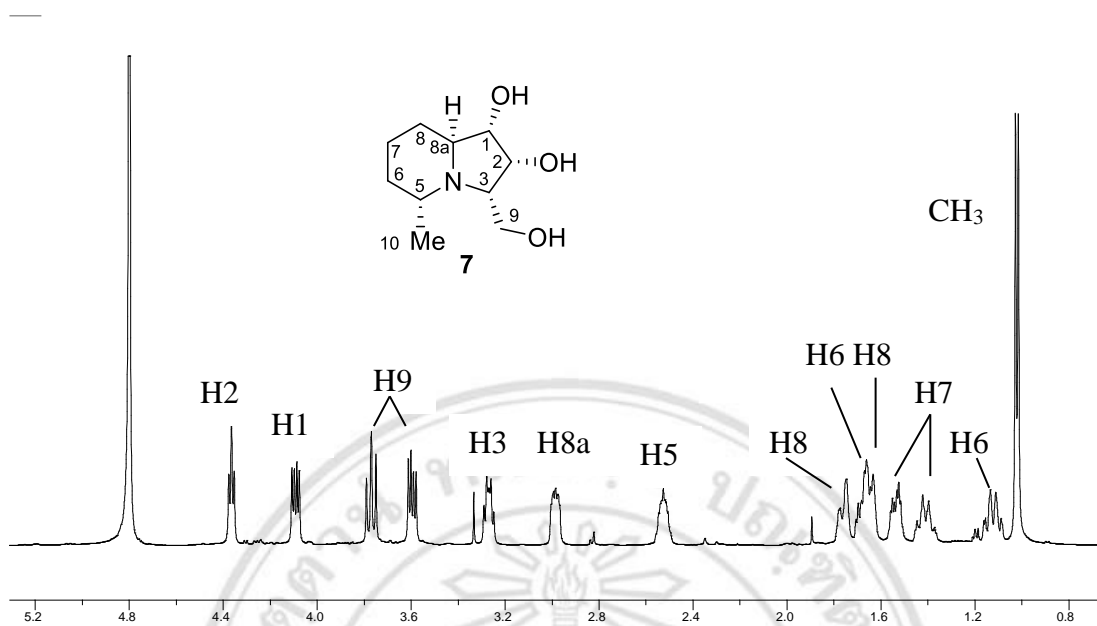
**Figure 22.**  $^1\text{H}$  NMR spectrum of compound **85** in  $\text{CDCl}_3$  (500 MHz)



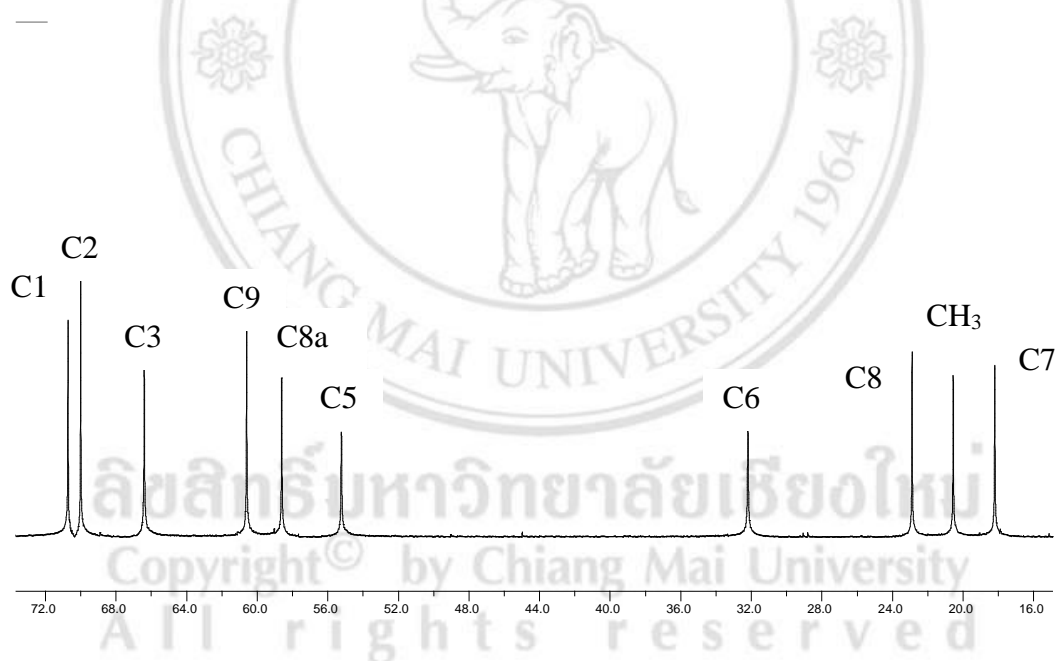
**Figure 23.**  $^{13}\text{C}$  NMR spectrum of compound **85** in  $\text{CDCl}_3$  (125 MHz)



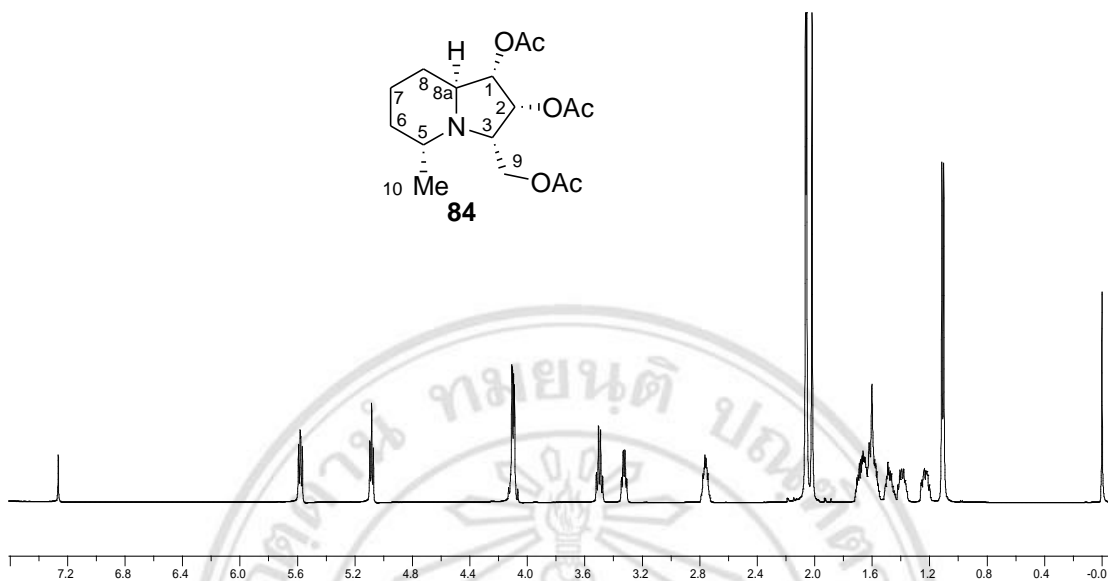




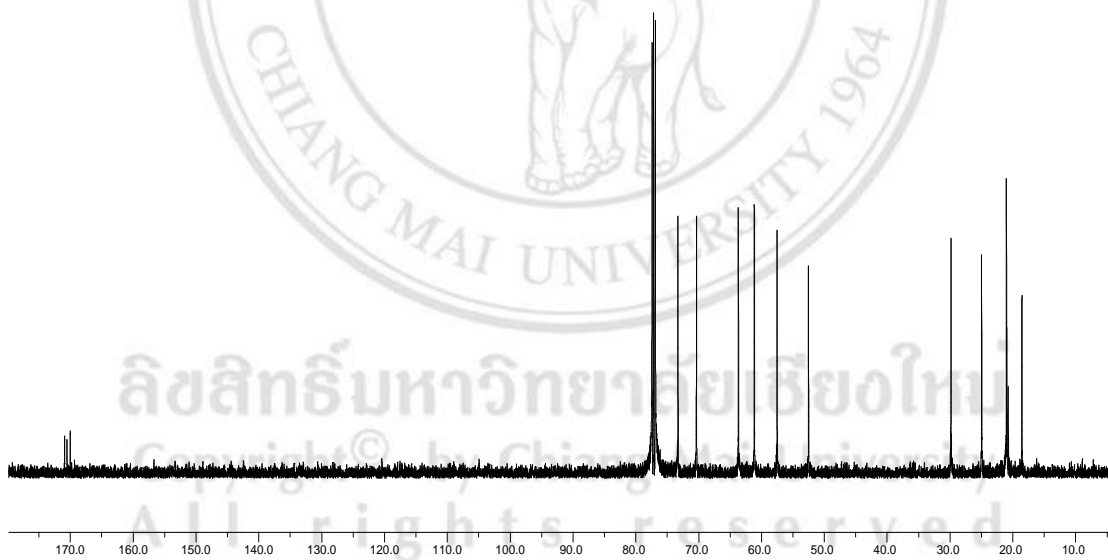
**Figure 28.** <sup>1</sup>H NMR spectrum of compound 7 in D<sub>2</sub>O (500 MHz)



**Figure 29.** <sup>13</sup>C NMR spectrum of compound 7 in D<sub>2</sub>O (125 MHz)



**Figure 30.**  $^1\text{H}$  NMR spectrum of compound **84** in  $\text{CDCl}_3$  (500 MHz)



**Figure 31.**  $^{13}\text{C}$  NMR spectrum of compound **84** in  $\text{CDCl}_3$  (125 MHz)

## CURRICULUM VITAE

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<b>Experience</b>	Research and Development Pharmacist (Cosmetic), Prima herb (Thailand) Co.,Ltd., Chiang Mai, Thailand, 2007-2009.
<b>Presentation</b>	1. Jiangseubchatveera N, Liawruangrath B, Liawruangrath S, Teerawutgulrag A, Santiarworn D, Pyne SG, Isolation and Structure Elucidation of Cerebroside from <i>Gynura divaricata</i> DC., RGJ seminar series LXXIX "Recent Advances in Natural Product, Pharmaceutical, Food, Cosmetic and Environmental Sciences", 11 February 2011, University Academic Service Center (UNISERV), Chiang Mai University, Chiang Mai, Thailand, (oral presentation). 2. Jiangseubchatveera N, Liawruangrath B, Liawruangrath S, Teerawutgulrag A, Santiarworn D, Pyne SG, Antimicrobial and Antioxidant Activities of Some Thai Medicinal Plants, RGJ-Ph.D. Congress XII "Discovery and Diversity", 1-3 April 2011,



Jomtien Palm Beach Hotel & Resort, Pattaya City, Chon Buri, Thailand, (poster presentation).

3. Jiangseubchatveera N, Liawruangrath B, Liawruangrath S, Pyne SG, Concise synthesis of steviamine and its analogues, RACI Organic Group One-Day Symposium, 5 December 2012, School of Chemistry, The University of New South Wales, Australia, (poster presentation).

4. Jiangseubchatveera N, Liawruangrath B, Liawruangrath S, Teerawutgulrag A, Santiarworn D, Korth J, Pyne SG, The Chemical Constituents and the Cytotoxicity, Antioxidant and Antibacterial Activities of the Essential Oil of *Graptophyllum pictum* (L.) Griff, RGI Seminar Series XCIV Materials Science for the Sustainable Society, 22 February 2013, Seminar Room, SCB2, Faculty of Science, Chiang Mai University, Thailand, (oral presentation).



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