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APPENDIX

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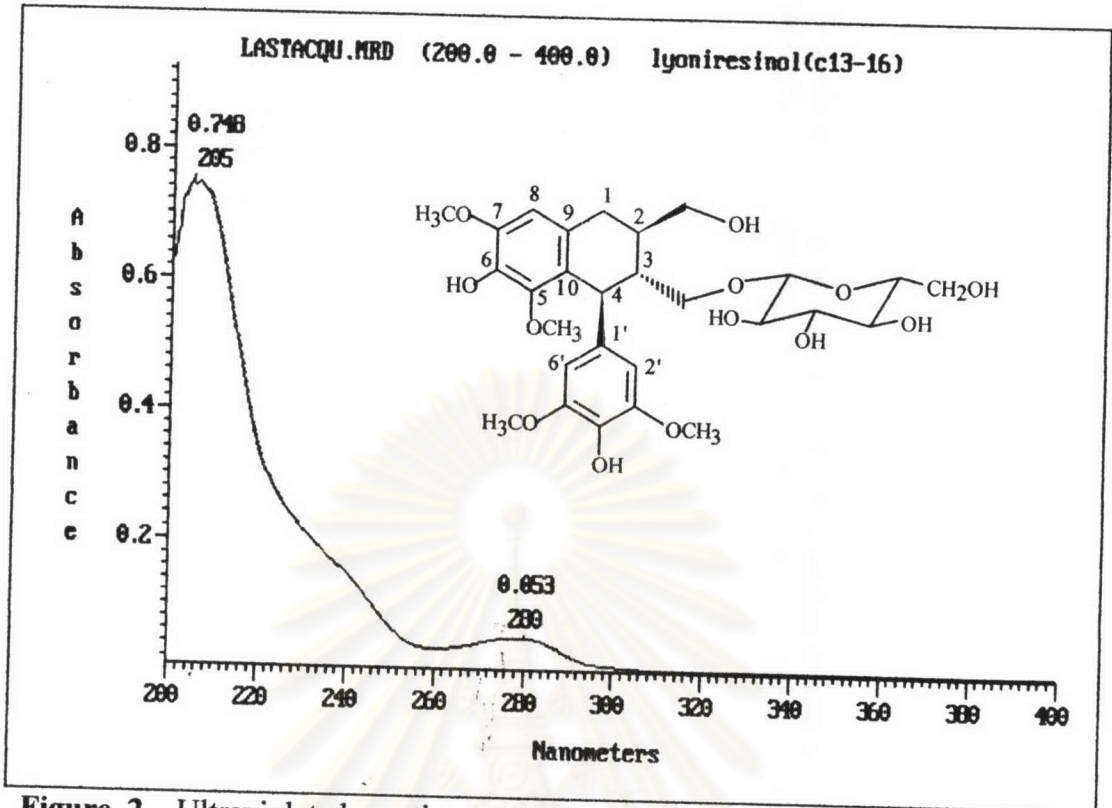


Figure 2 Ultraviolet absorption spectrum of SVM-1

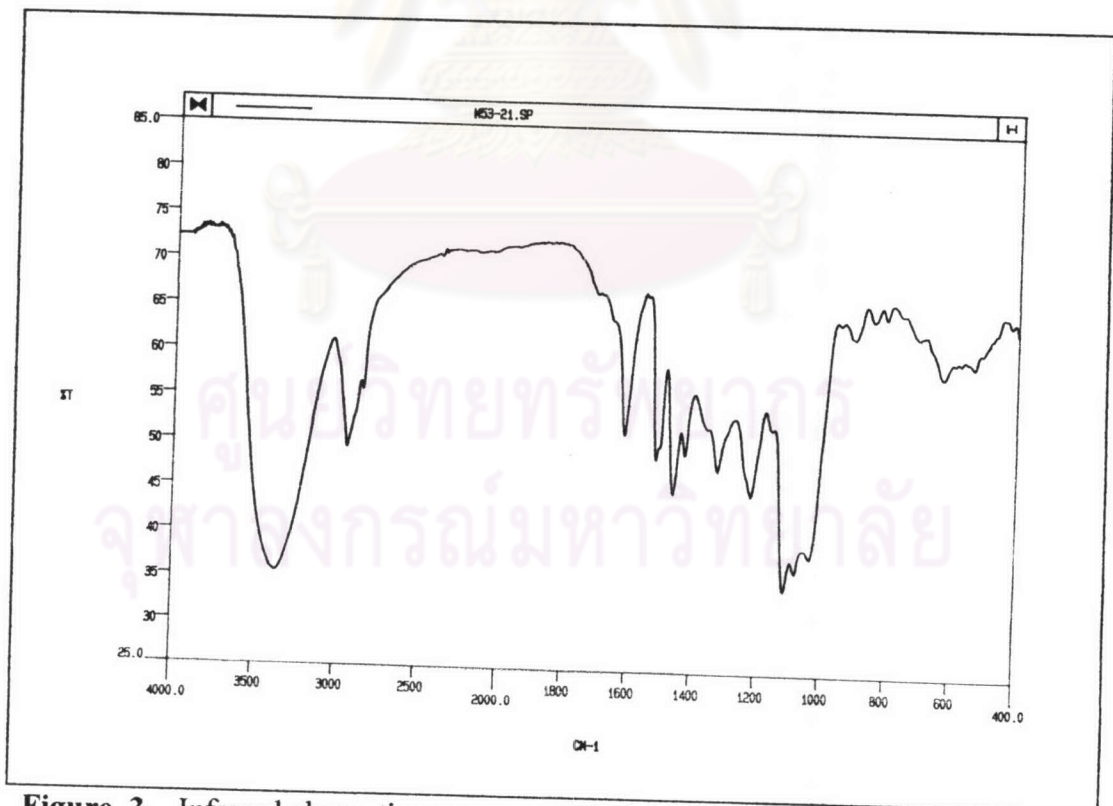


Figure 3 Infrared absorption spectrum of SVM-1

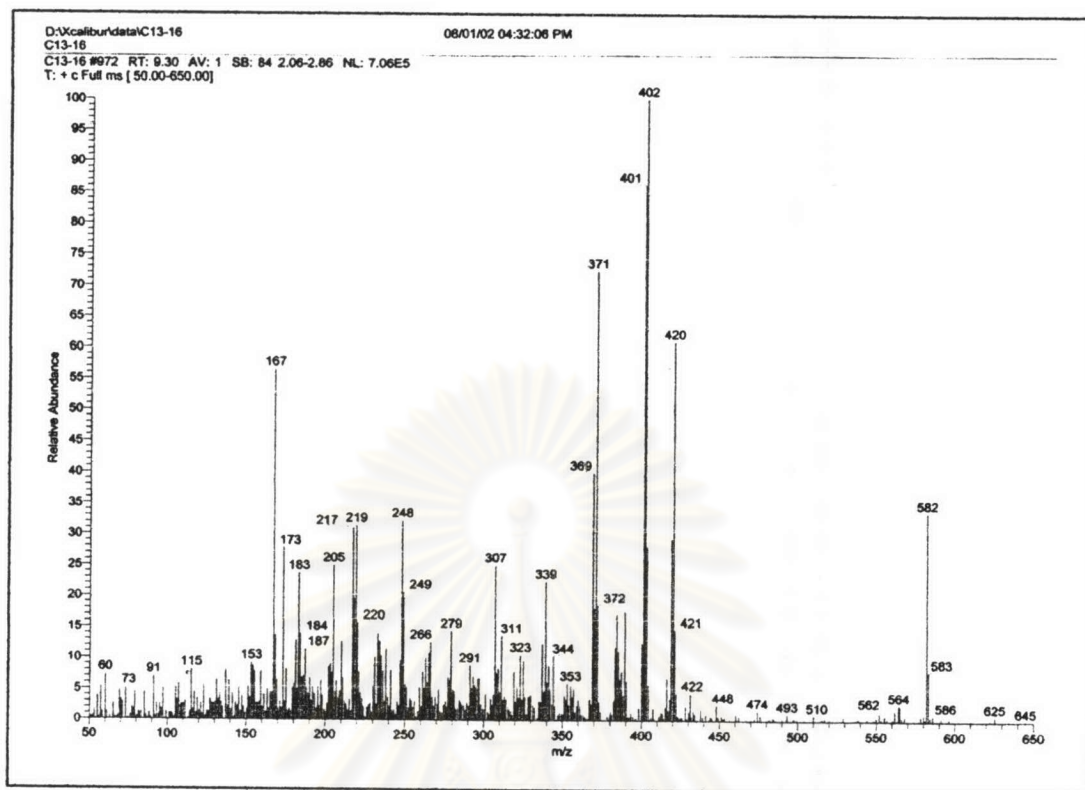
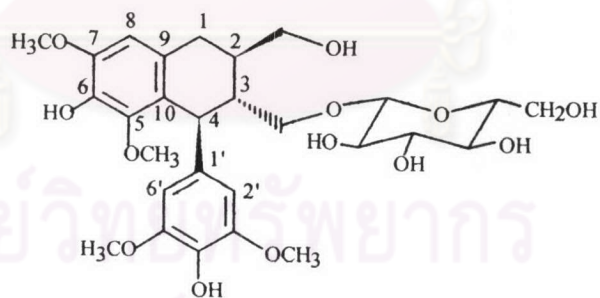


Figure 4 Mass spectrum of SVM-1



SVM-1

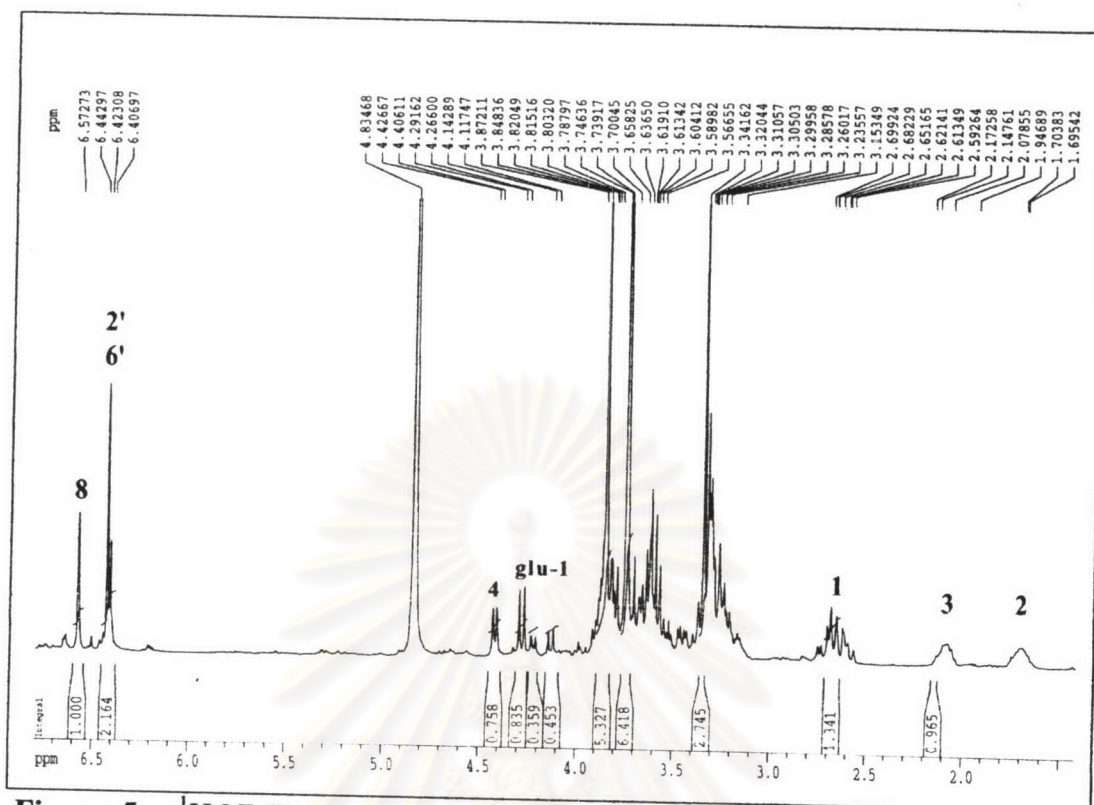


Figure 5 $^1\text{H-NMR}$ spectrum of SVM-1 (300 MHz ; in CD_3OD)

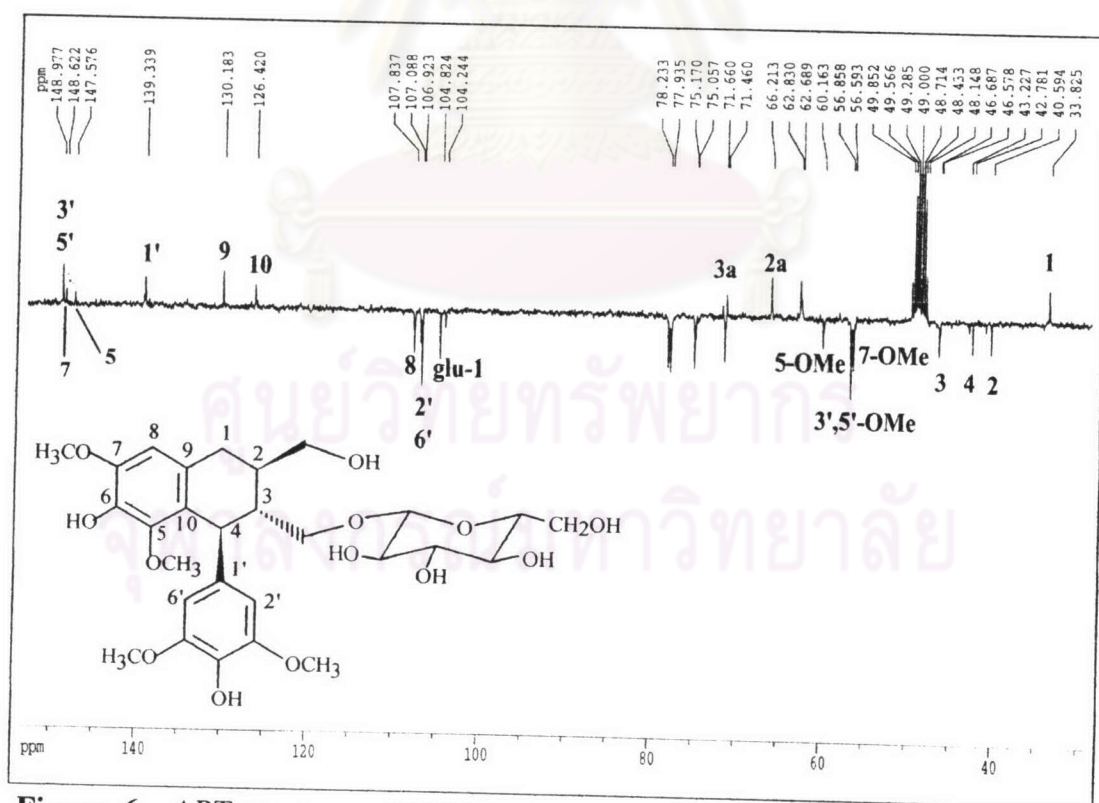


Figure 6 APT spectrum of SVM-1 (75 MHz ; in CD_3OD)

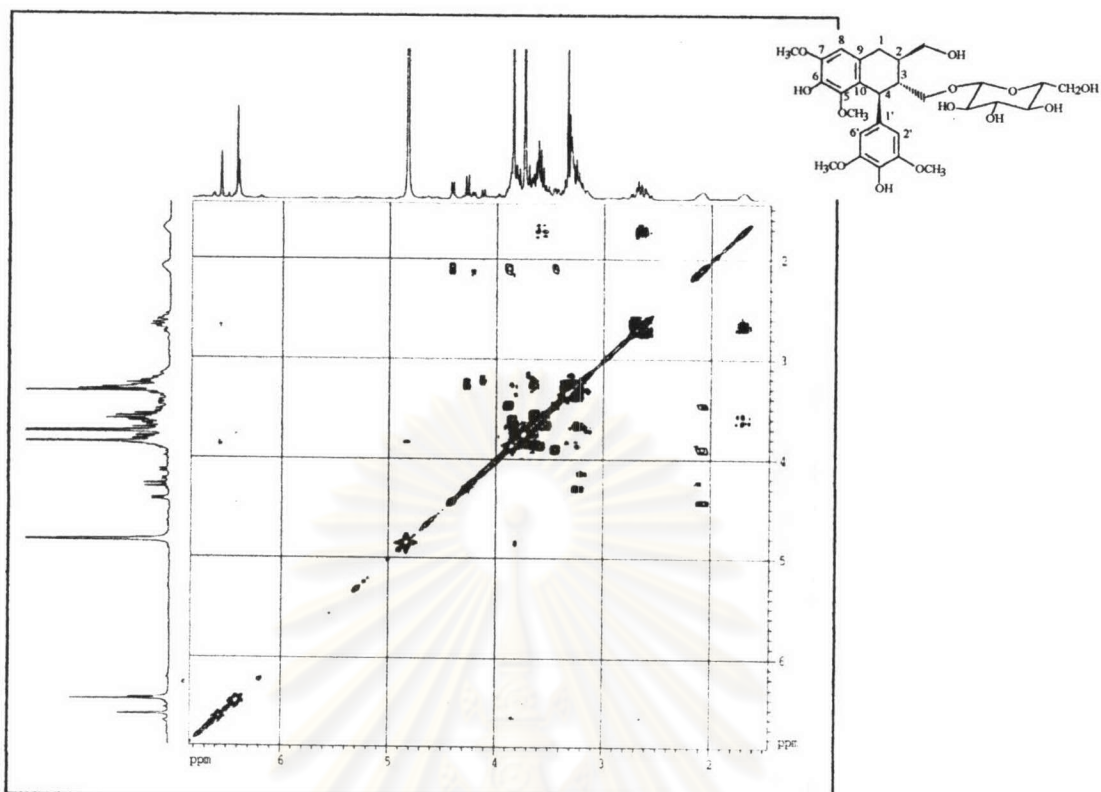


Figure 7 ^1H - ^1H COSY spectrum of SVM-1 (300 MHz; in CD_3OD)

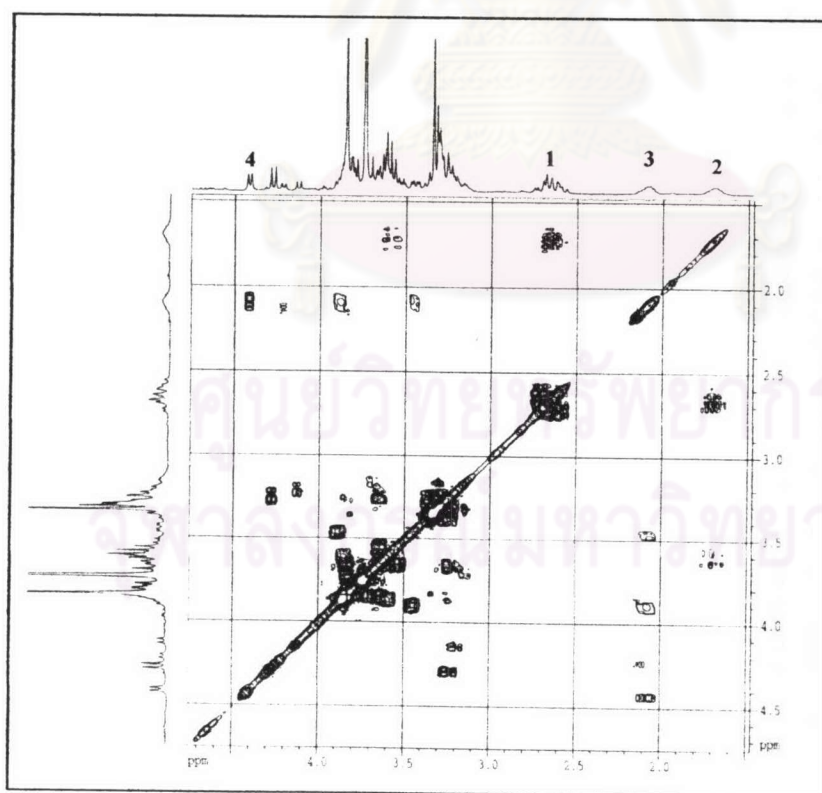


Figure 8 Expanded ^1H - ^1H COSY spectrum of SVM-1 (300 MHz; in CD_3OD)

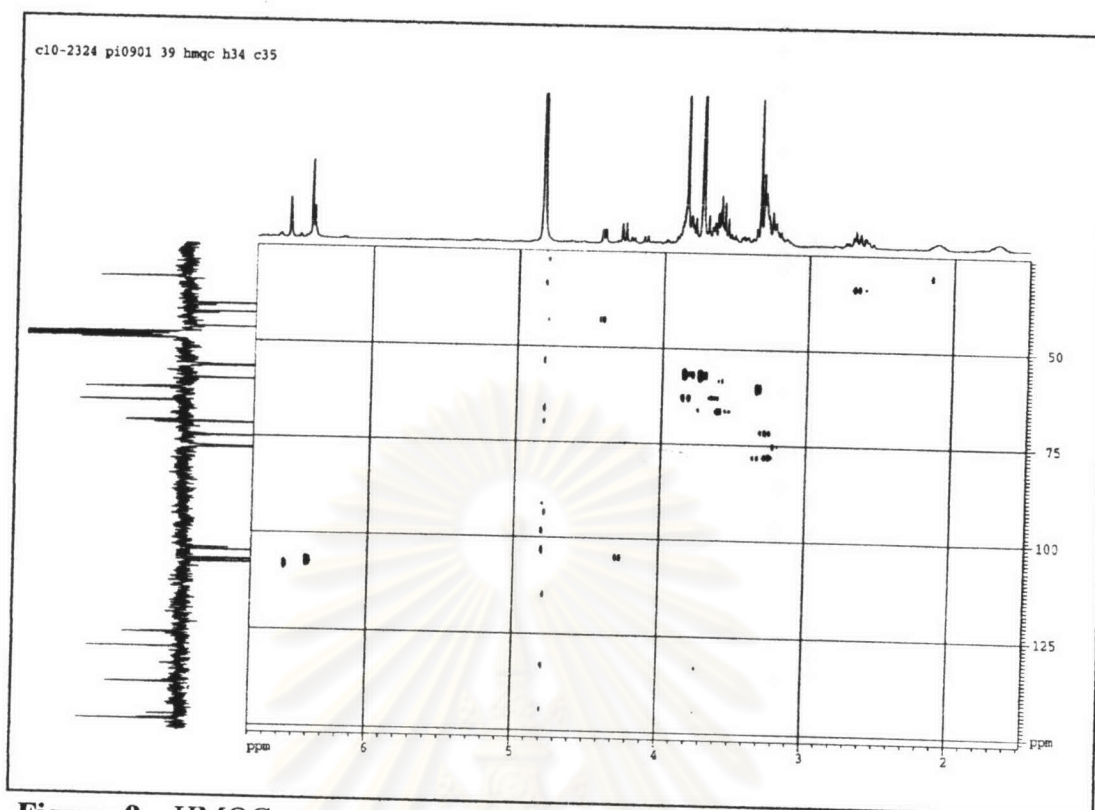


Figure 9 HMQC spectrum of SVM-1 (75 MHz ; in CD₃OD)

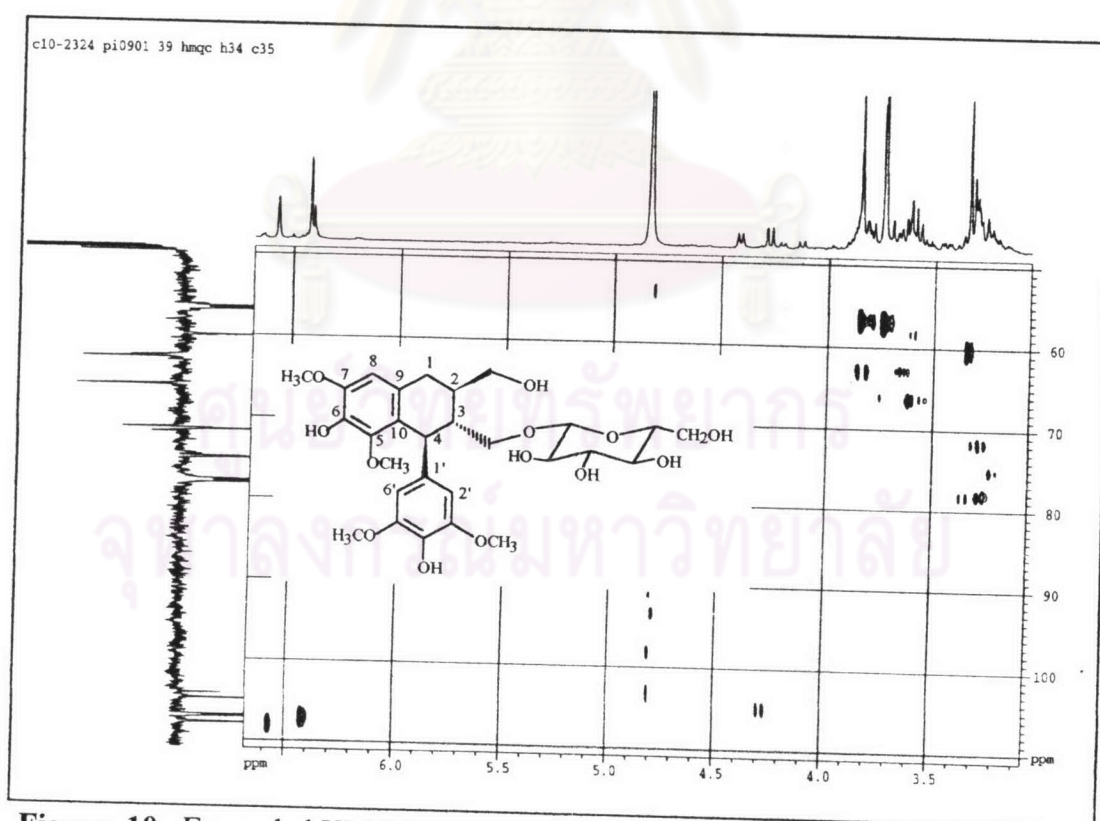


Figure 10 Expanded HMQC spectrum of SVM-1 (75 MHz ; in CD₃OD)

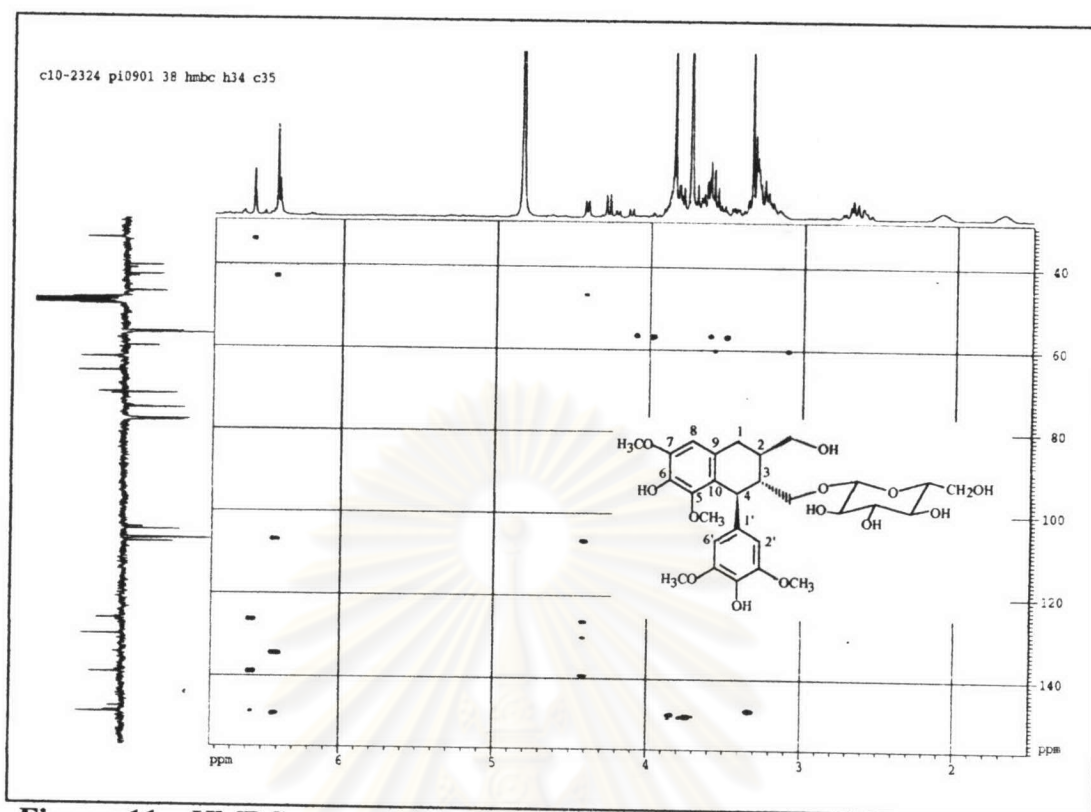


Figure 11 HMBC spectrum of SVM-1 (75 MHz ; in CD₃OD)

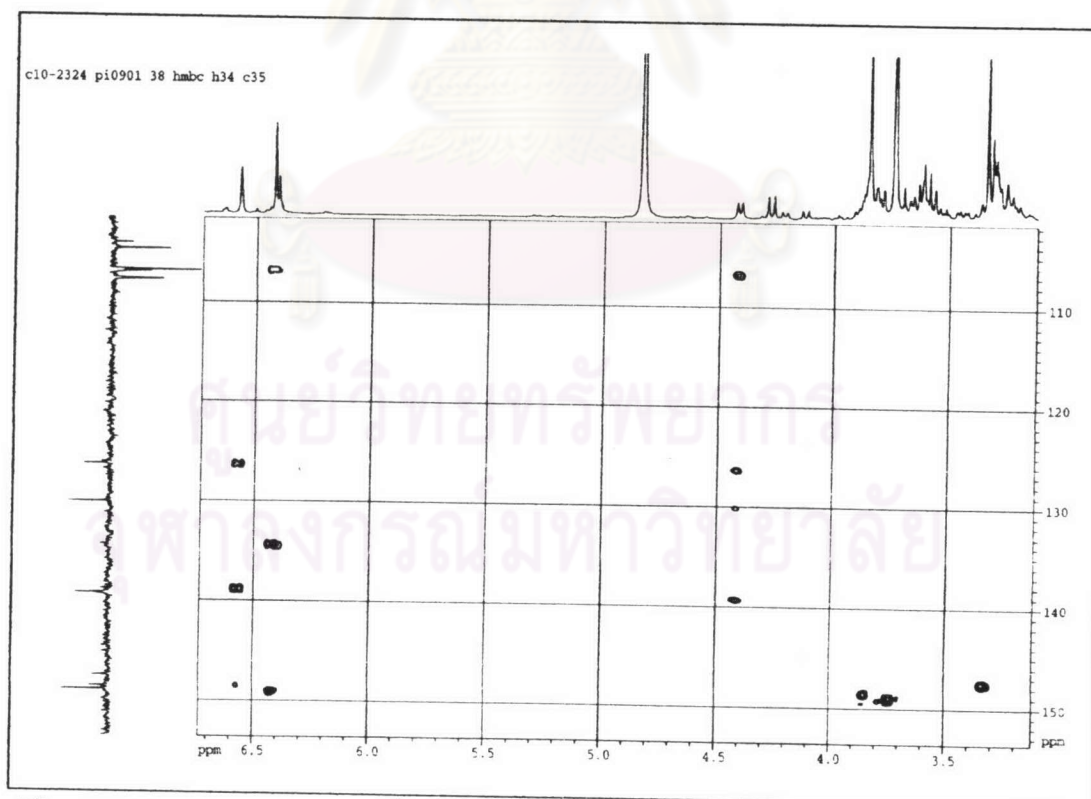


Figure 12 Expanded HMBC spectrum of SVM-1 (75 MHz ; in CD₃OD)

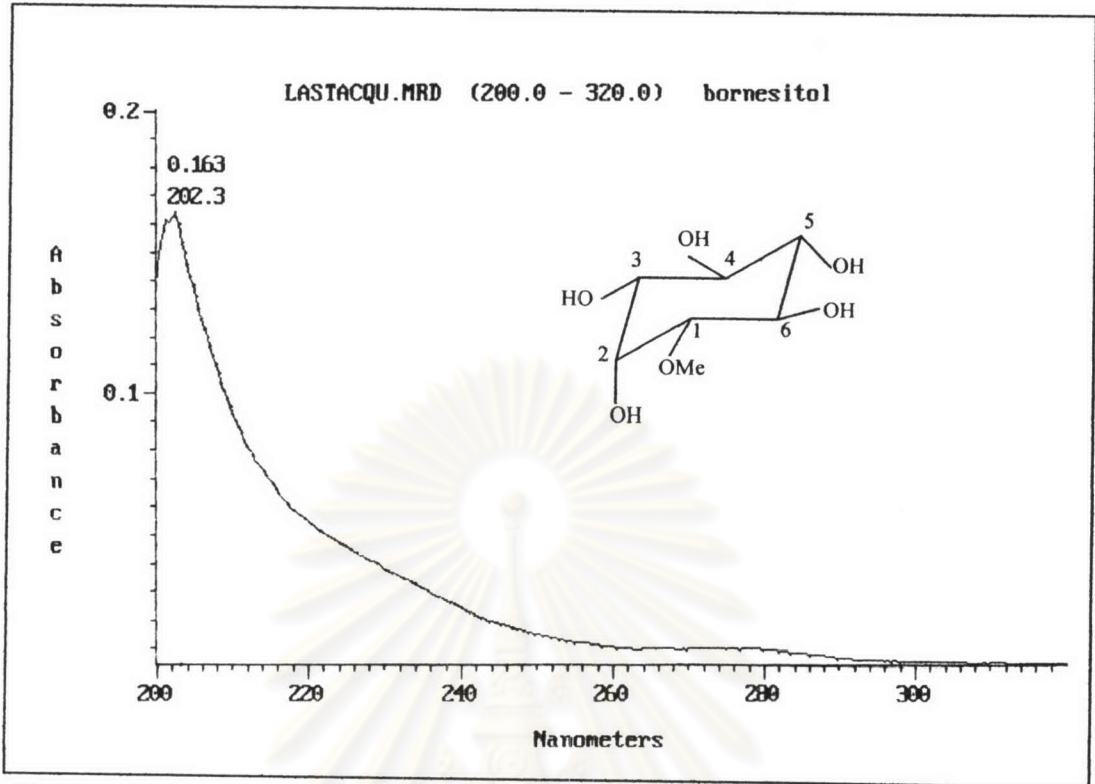


Figure 13 Ultraviolet absorption spectrum of SVM-2

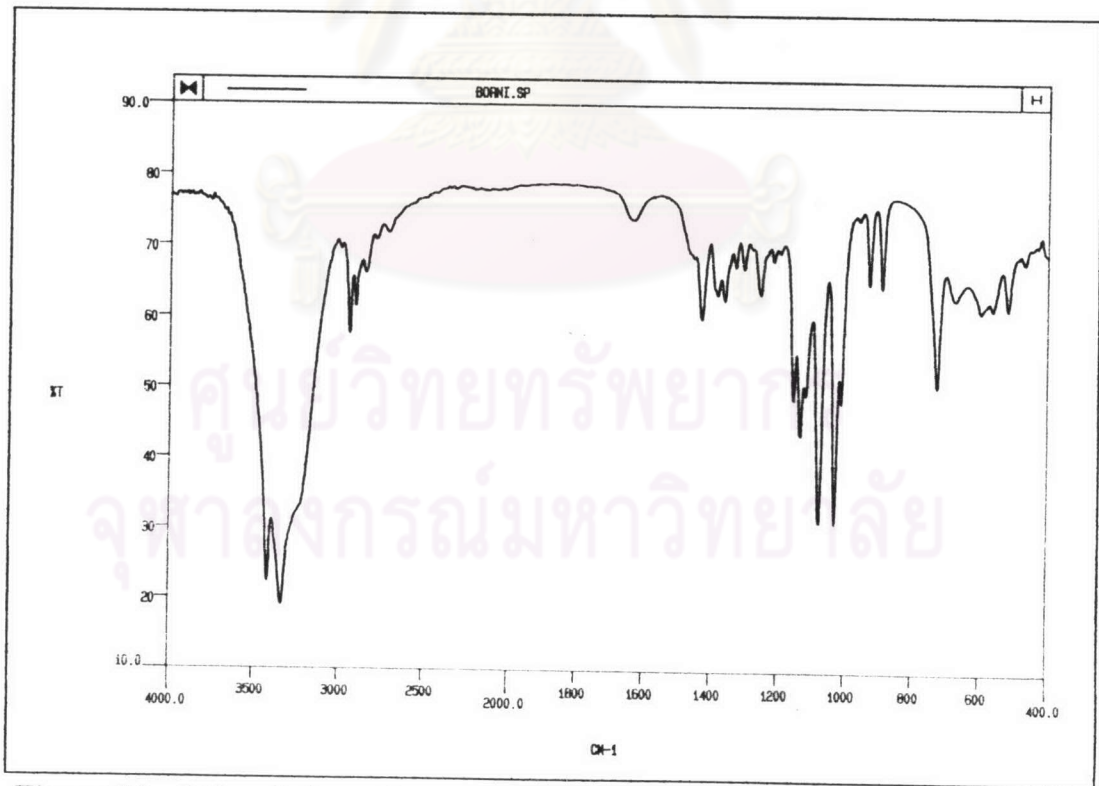


Figure 14 Infrared absorption spectrum of SVM-2

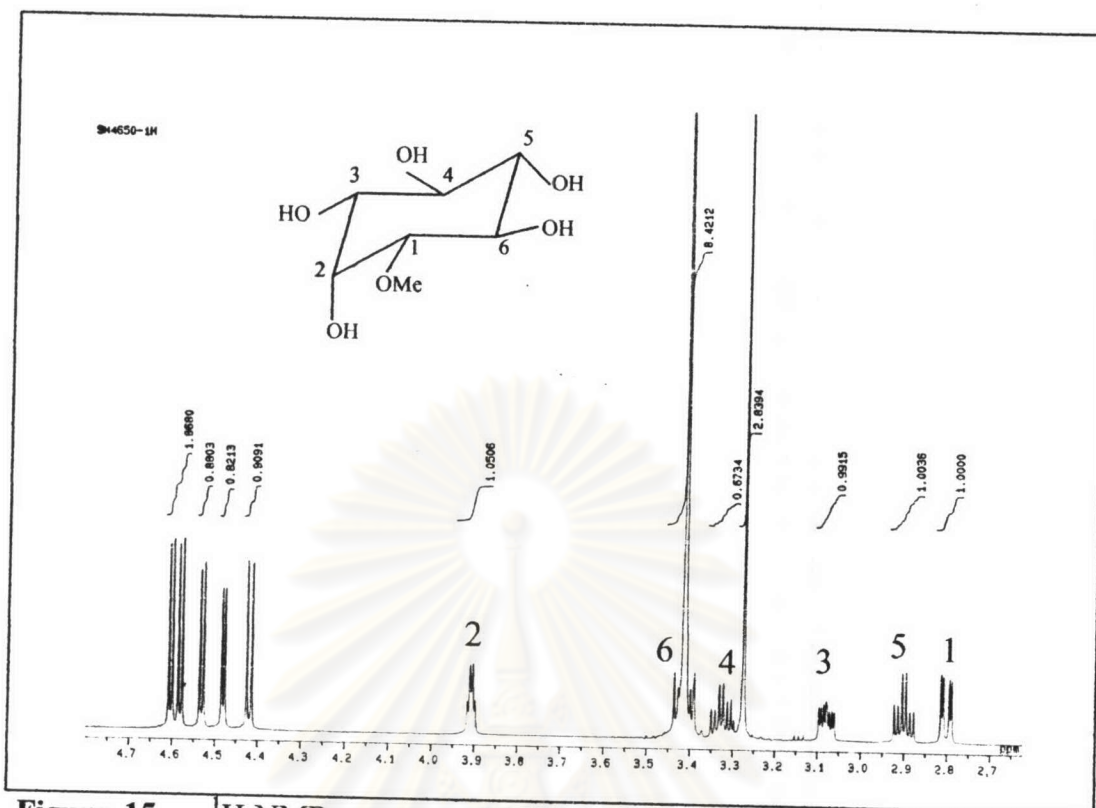


Figure 15 $^1\text{H-NMR}$ spectrum of SVM-2 (500 MHz ; in DMSO)

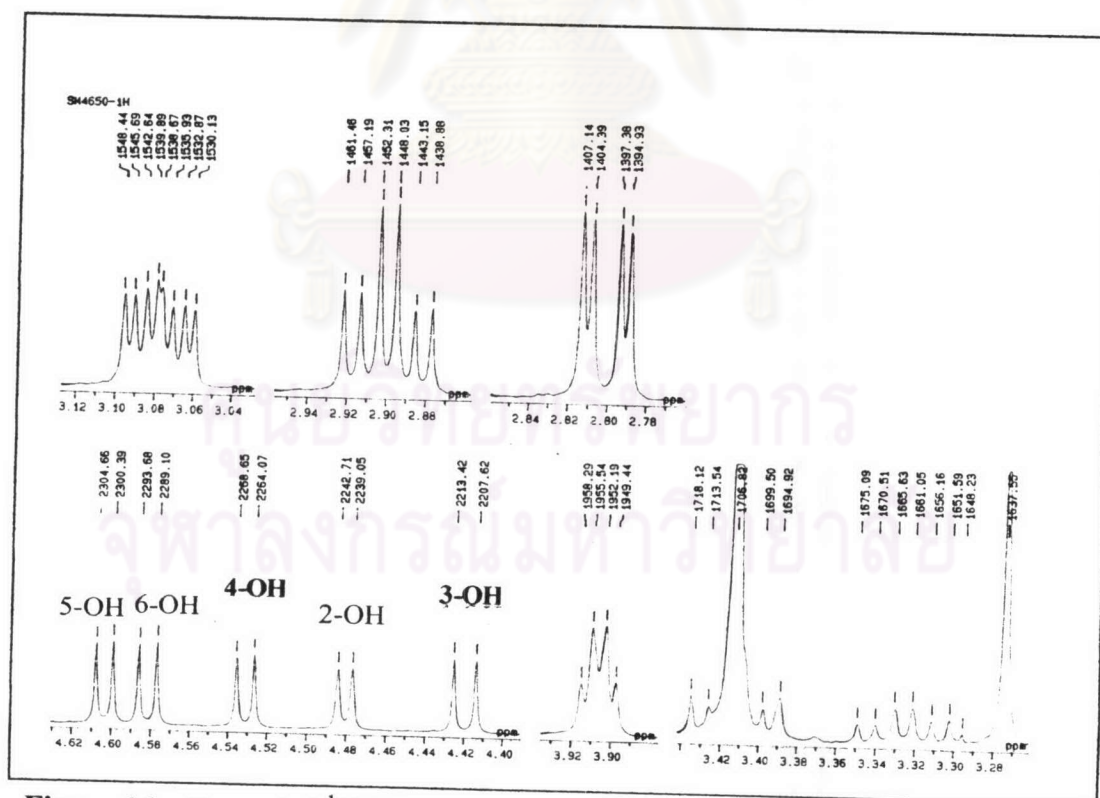


Figure 16 Expanded $^1\text{H-NMR}$ spectrum of SVM-2 (500 MHz ; in DMSO)

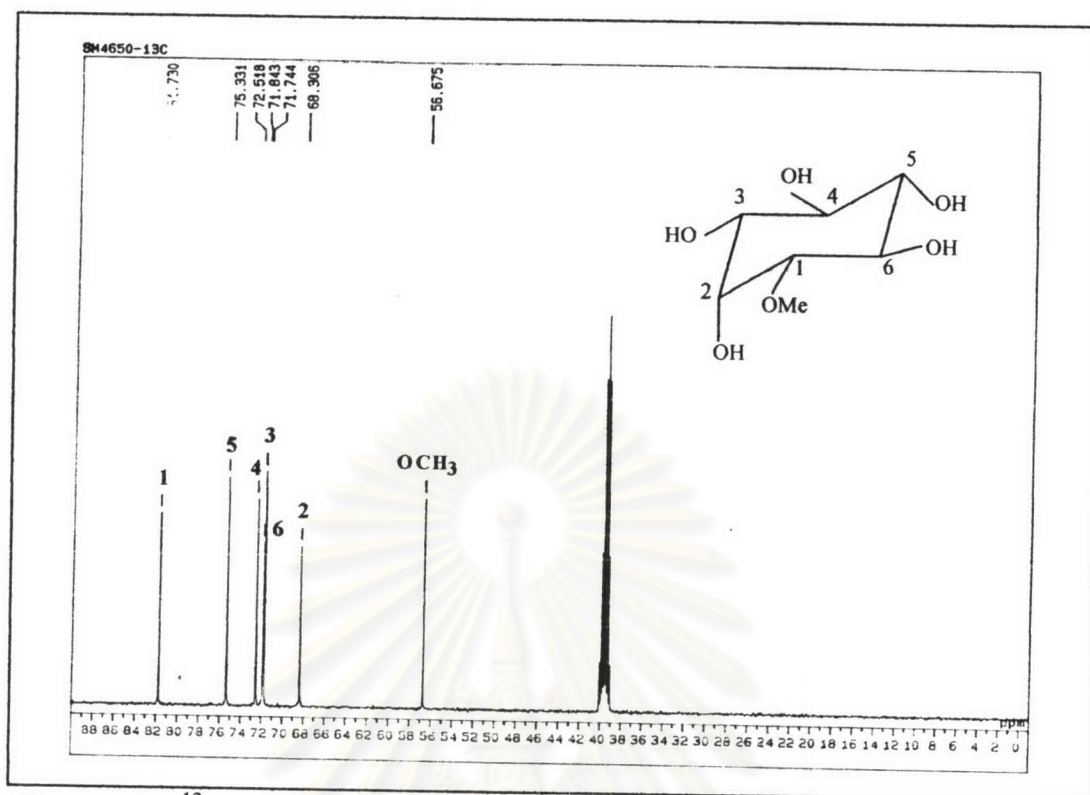


Figure 17 ^{13}C -NMR spectrum of SVM-2 (500 MHz ; in DMSO)

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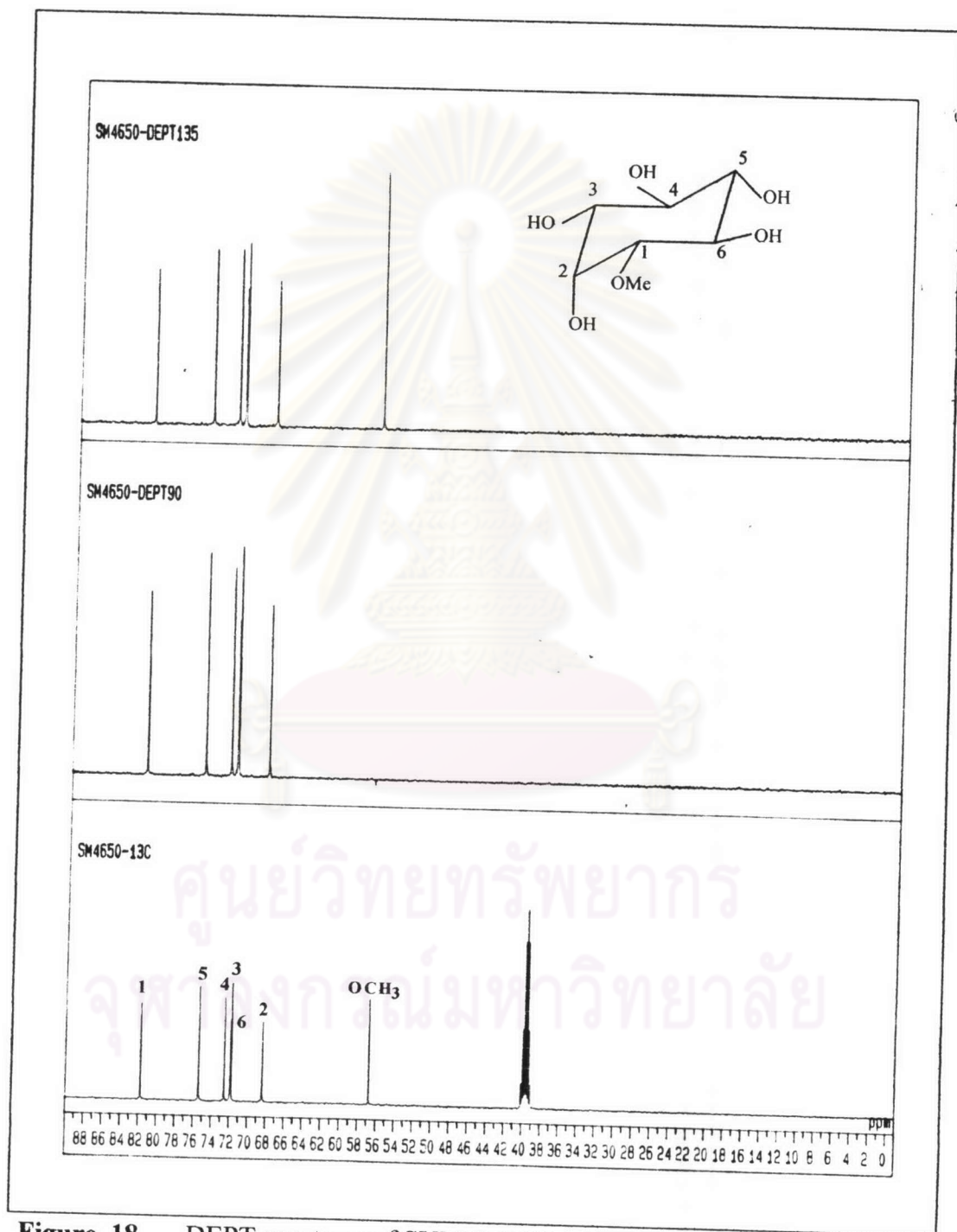


Figure 18 DEPT spectrum of SVM-2 (125 MHz ; in DMSO)

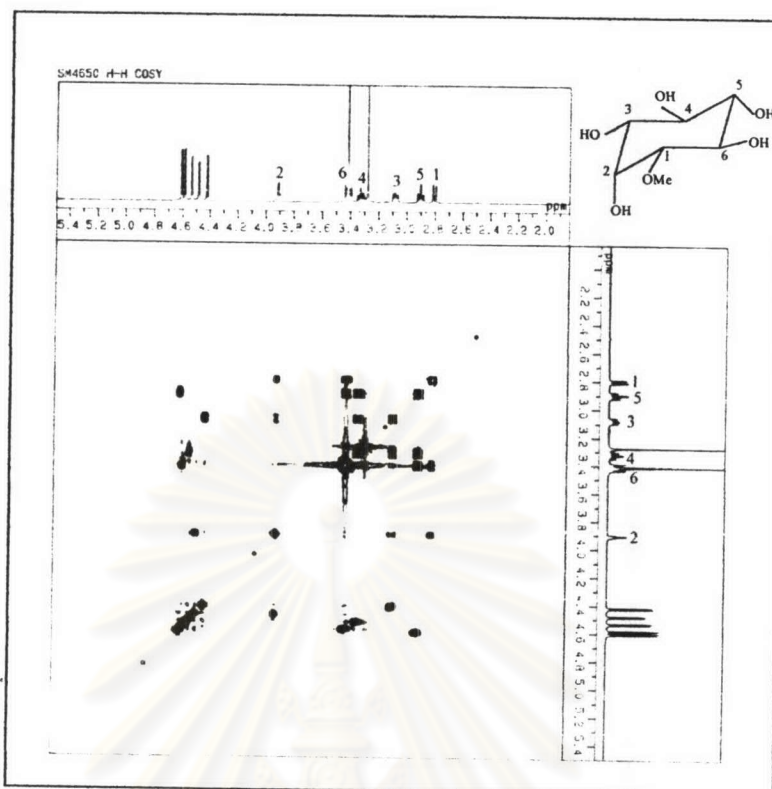


Figure 19 ^1H - ^1H COSY spectrum of SVM-2 (500 MHz ; in DMSO)

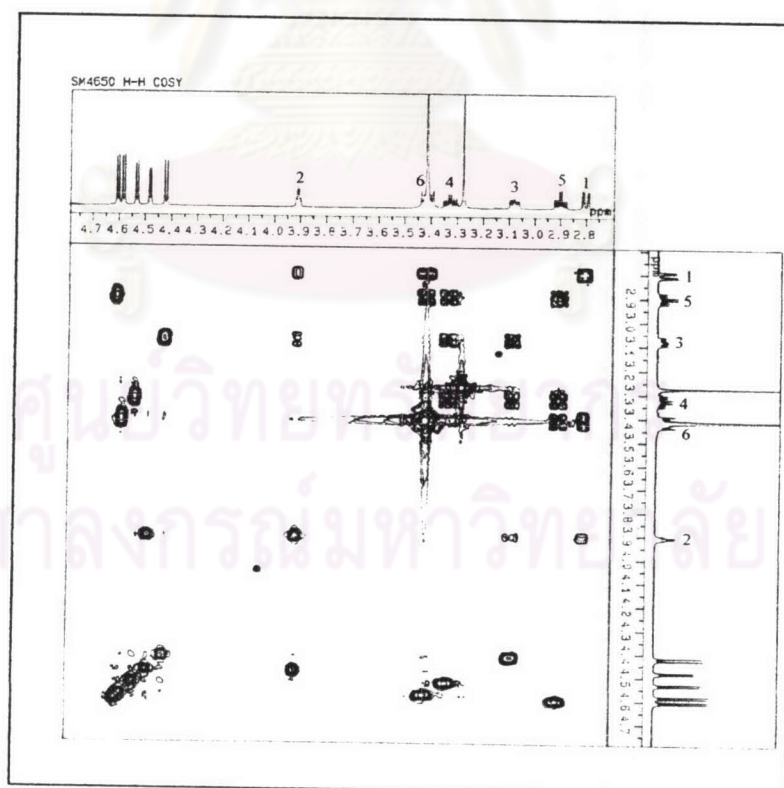


Figure 20 Expanded ^1H - ^1H COSY spectrum of SVM-2 (500 MHz ; in DMSO)

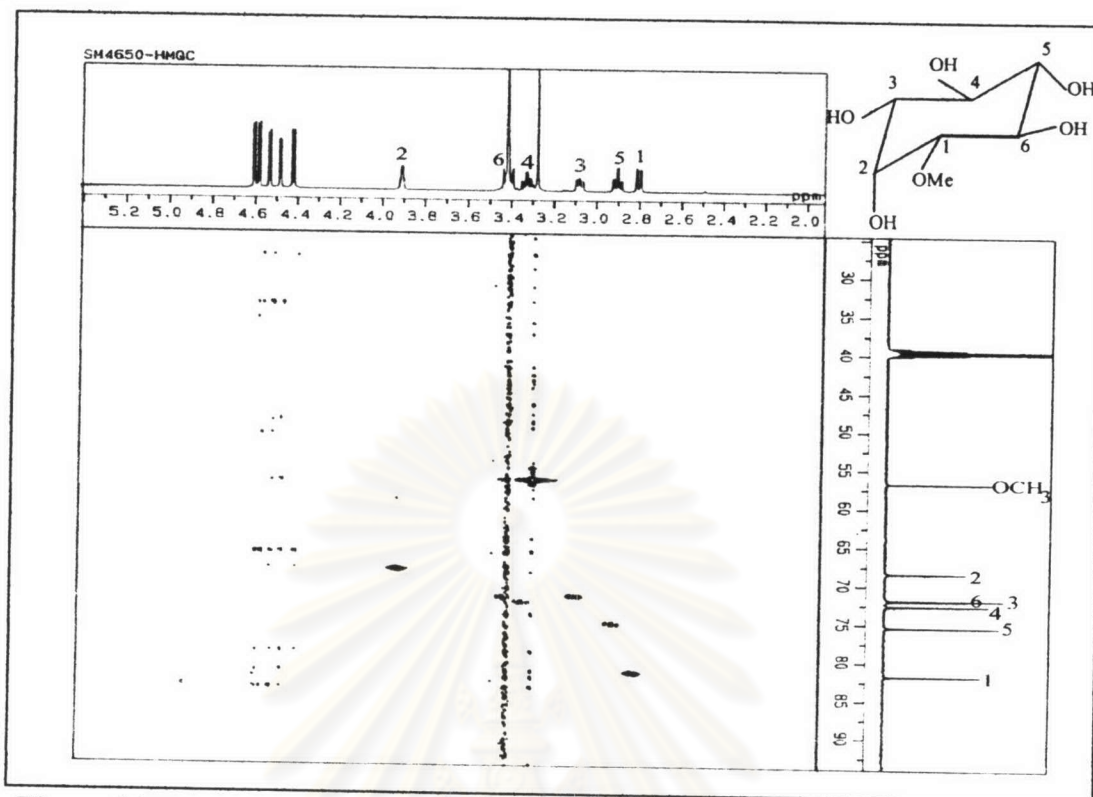


Figure 21 HMQC spectrum of SVM-2 (125 MHz ; in DMSO)

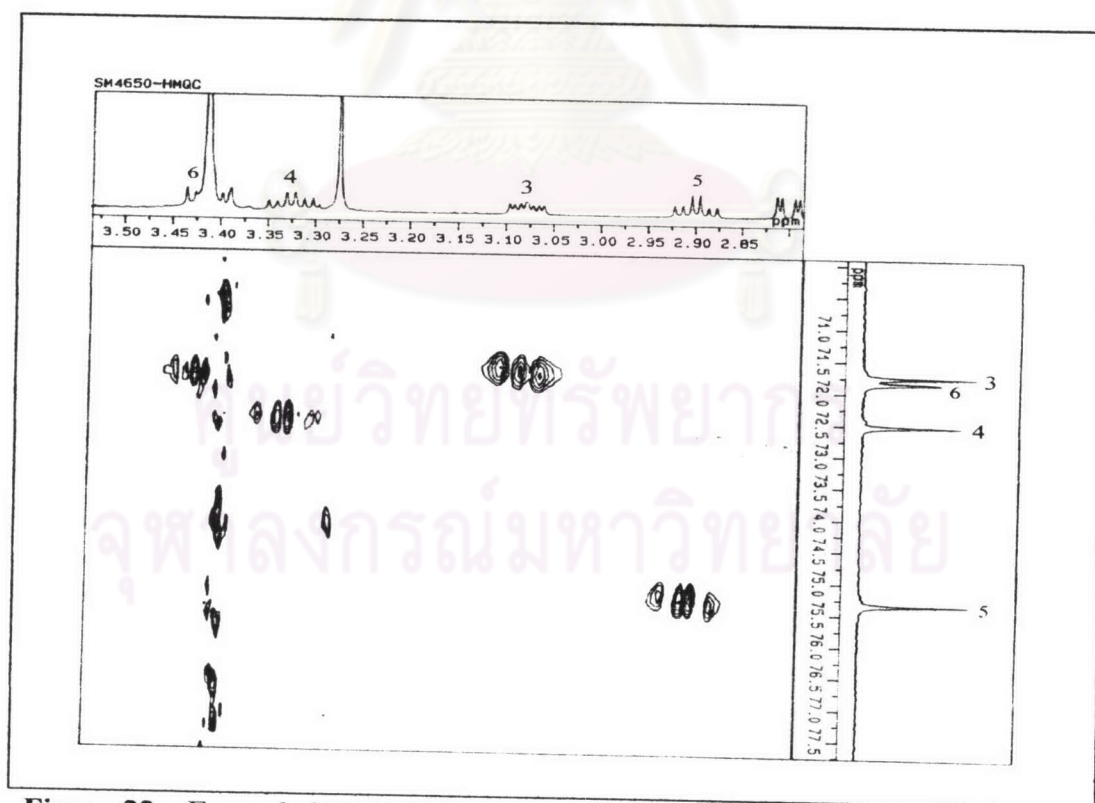


Figure 22 Expanded HMQC spectrum of SVM-2 (125 MHz ; in DMSO)

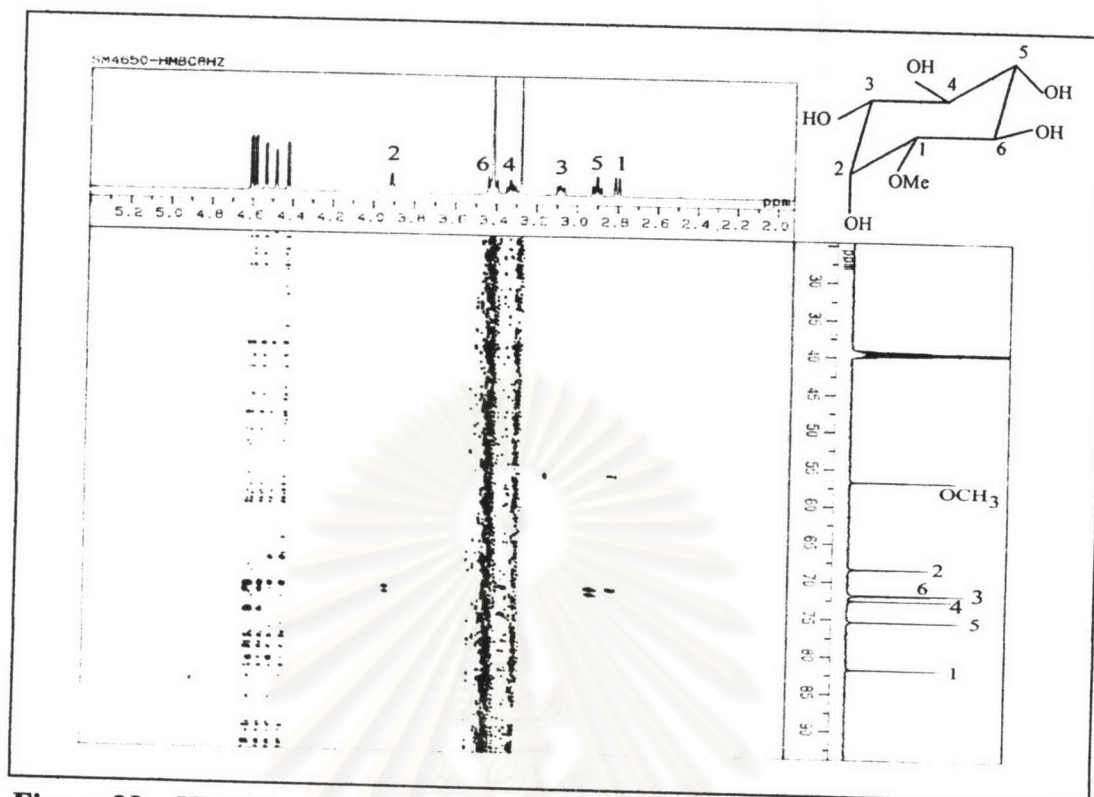


Figure 23 HMBC spectrum of SVM-2 (125 MHz ; in DMSO)



Figure 24 Expanded HMBC spectrum of SVM-2 (125 MHz ; in DMSO)

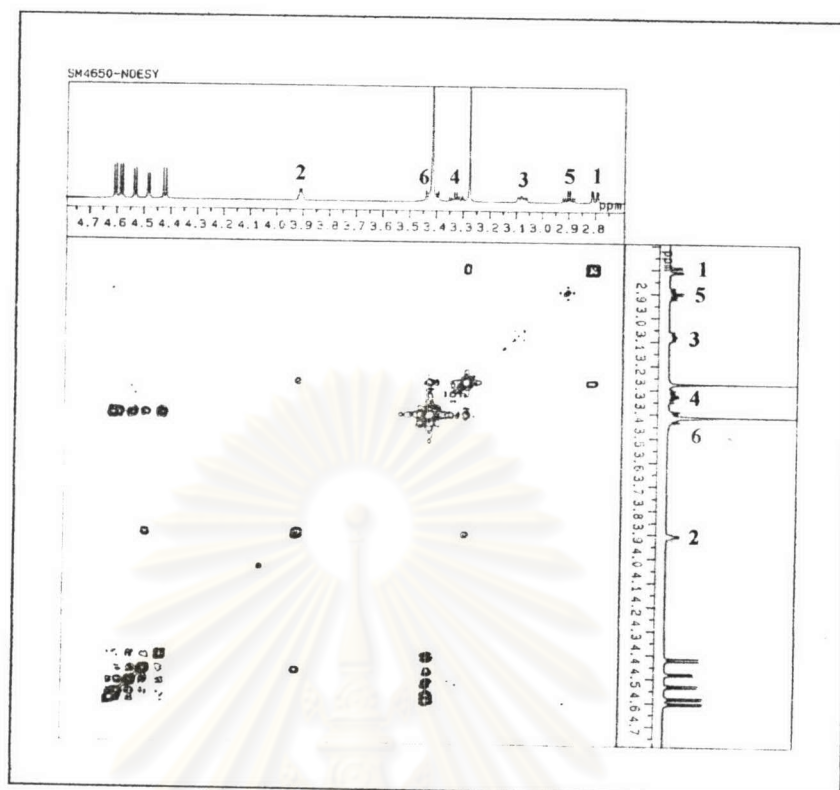


Figure 25 ^1H - ^1H NOESY spectrum of SVM-2 (500 MHz ; in DMSO)

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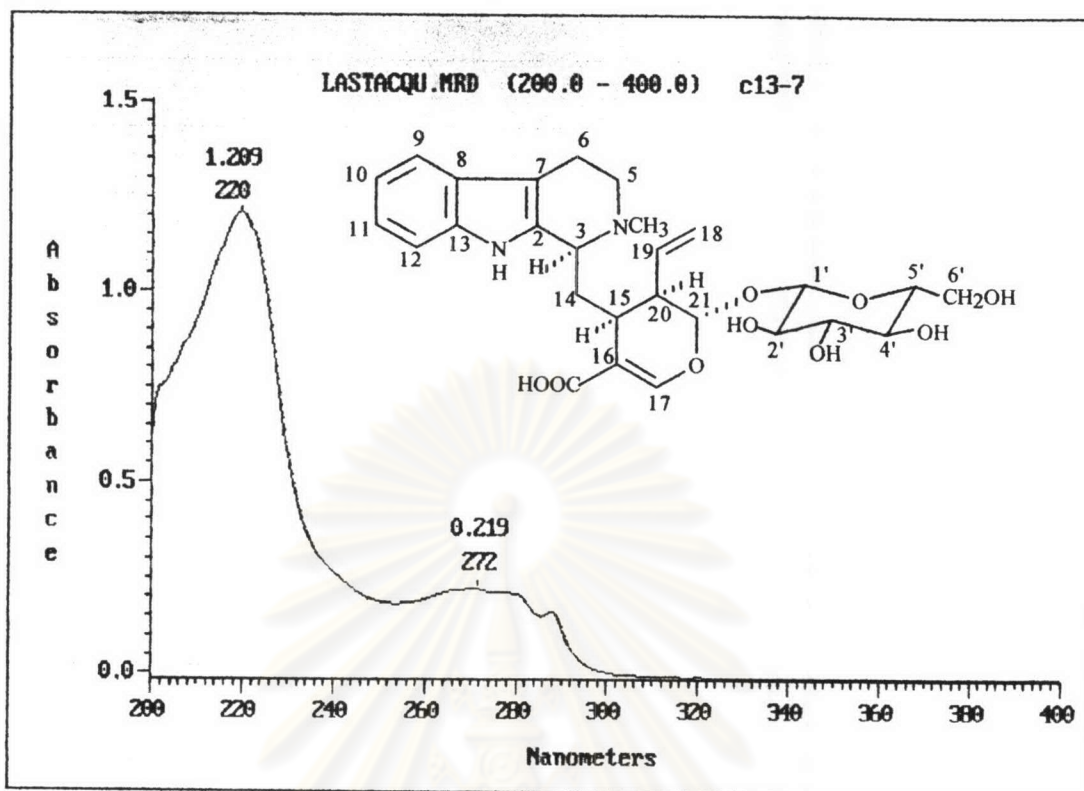


Figure 26 Ultraviolet absorption spectrum of SVM-3

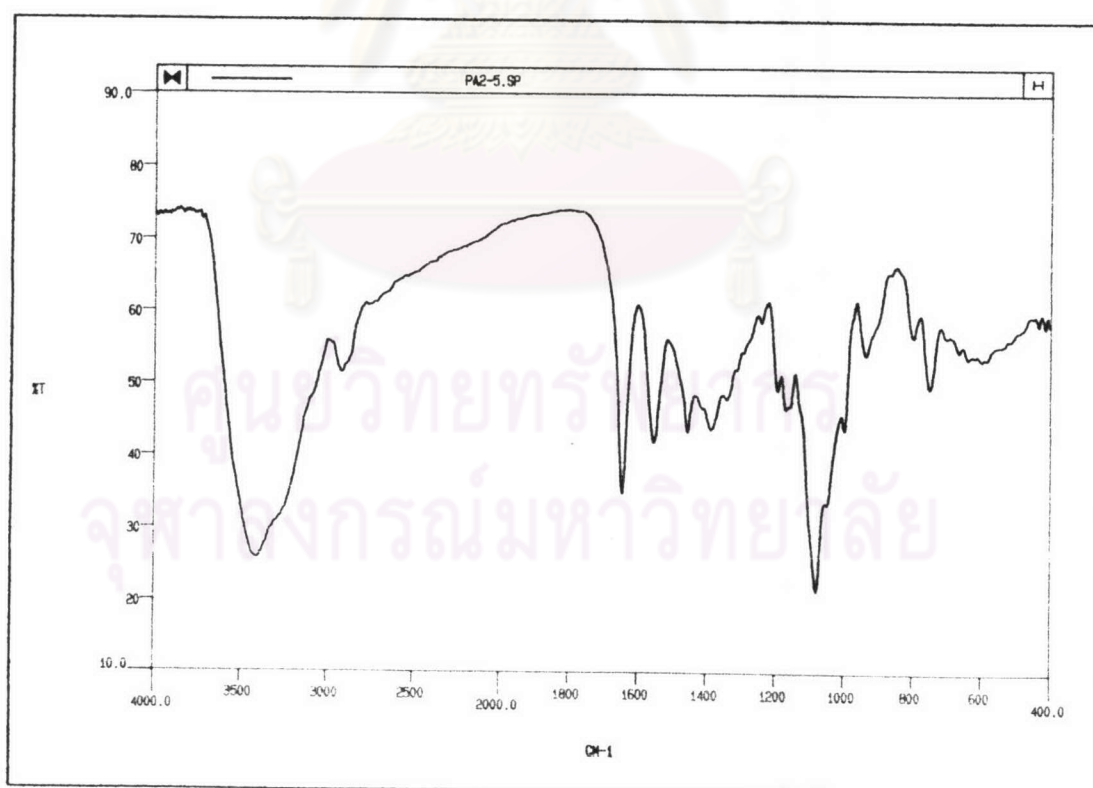


Figure 27 Infrared absorption spectrum of SVM-3

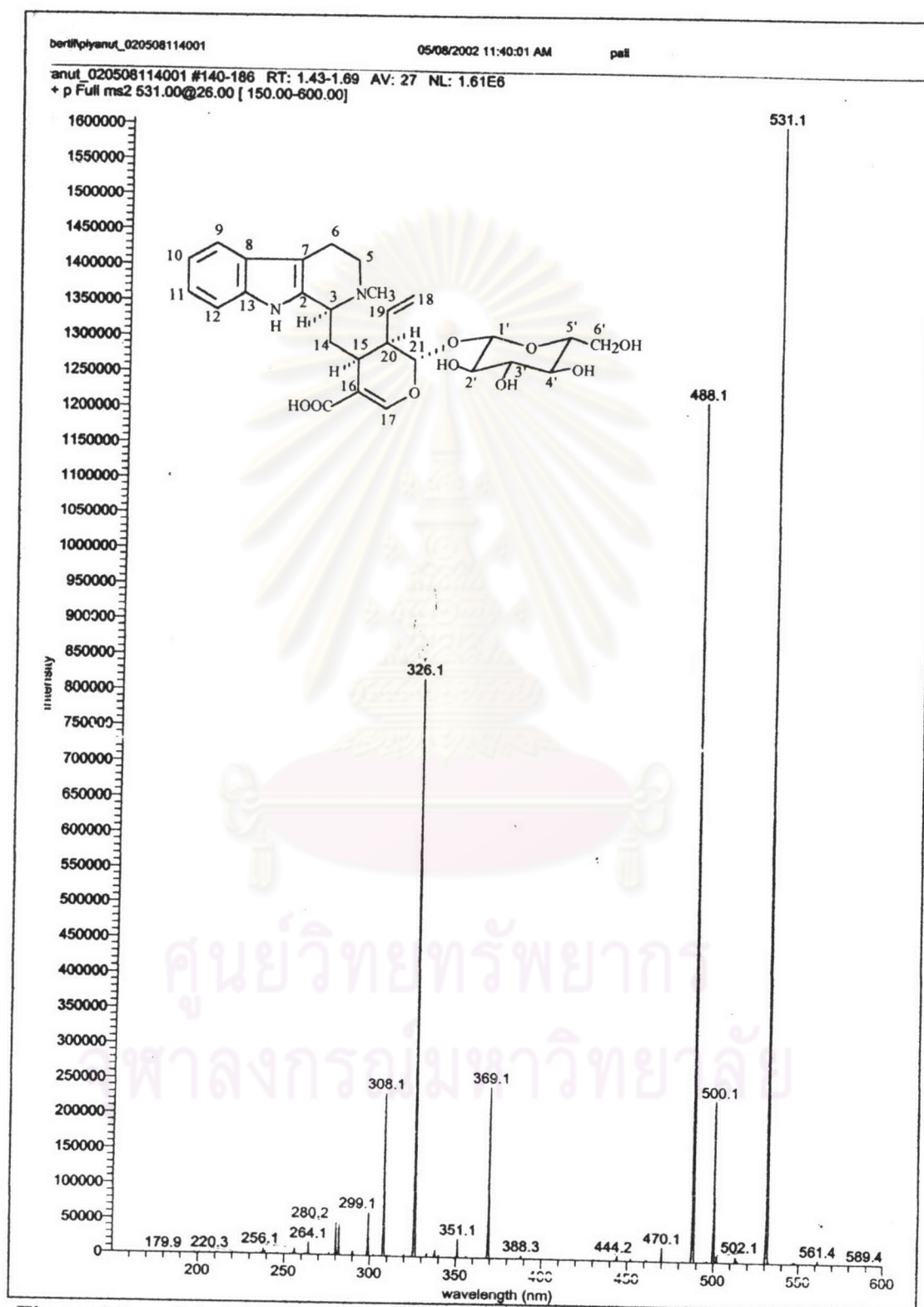


Figure 28 Mass spectrum of SVM-3

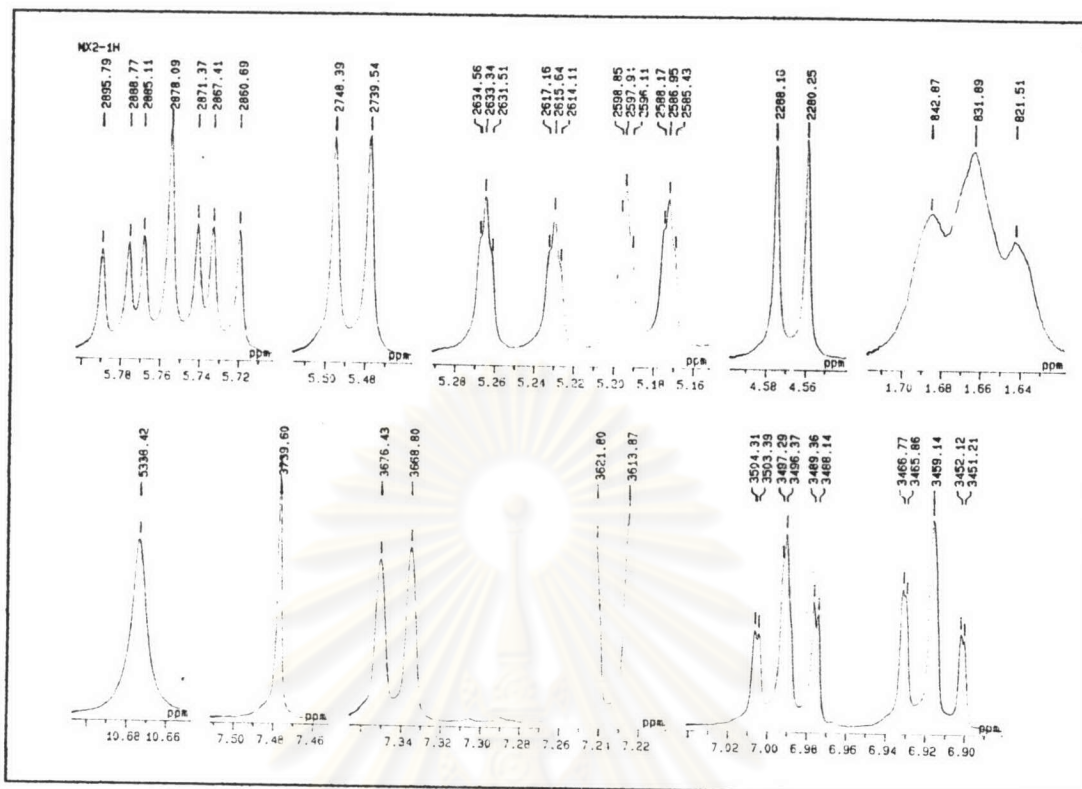


Figure 31 Expanded ^1H -NMR spectrum of SVM-3 (500 MHz ; in DMSO)

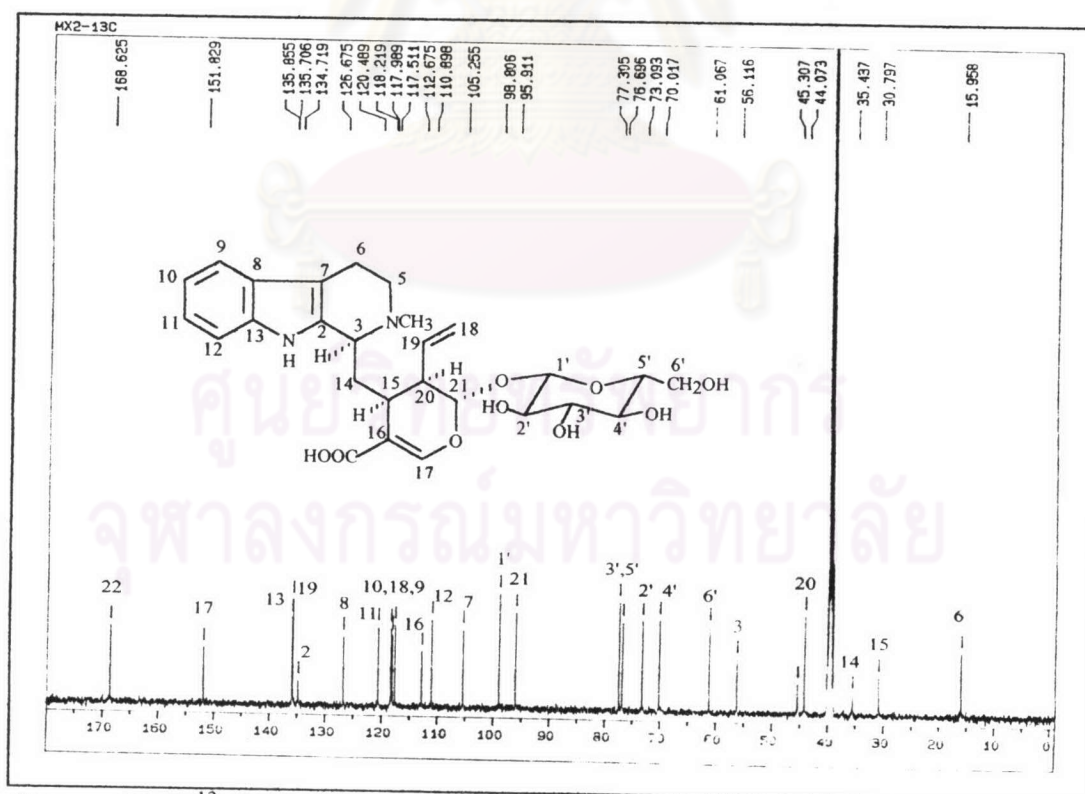


Figure 32 ^{13}C -NMR spectrum of SVM-3 (125 MHz ; in DMSO)

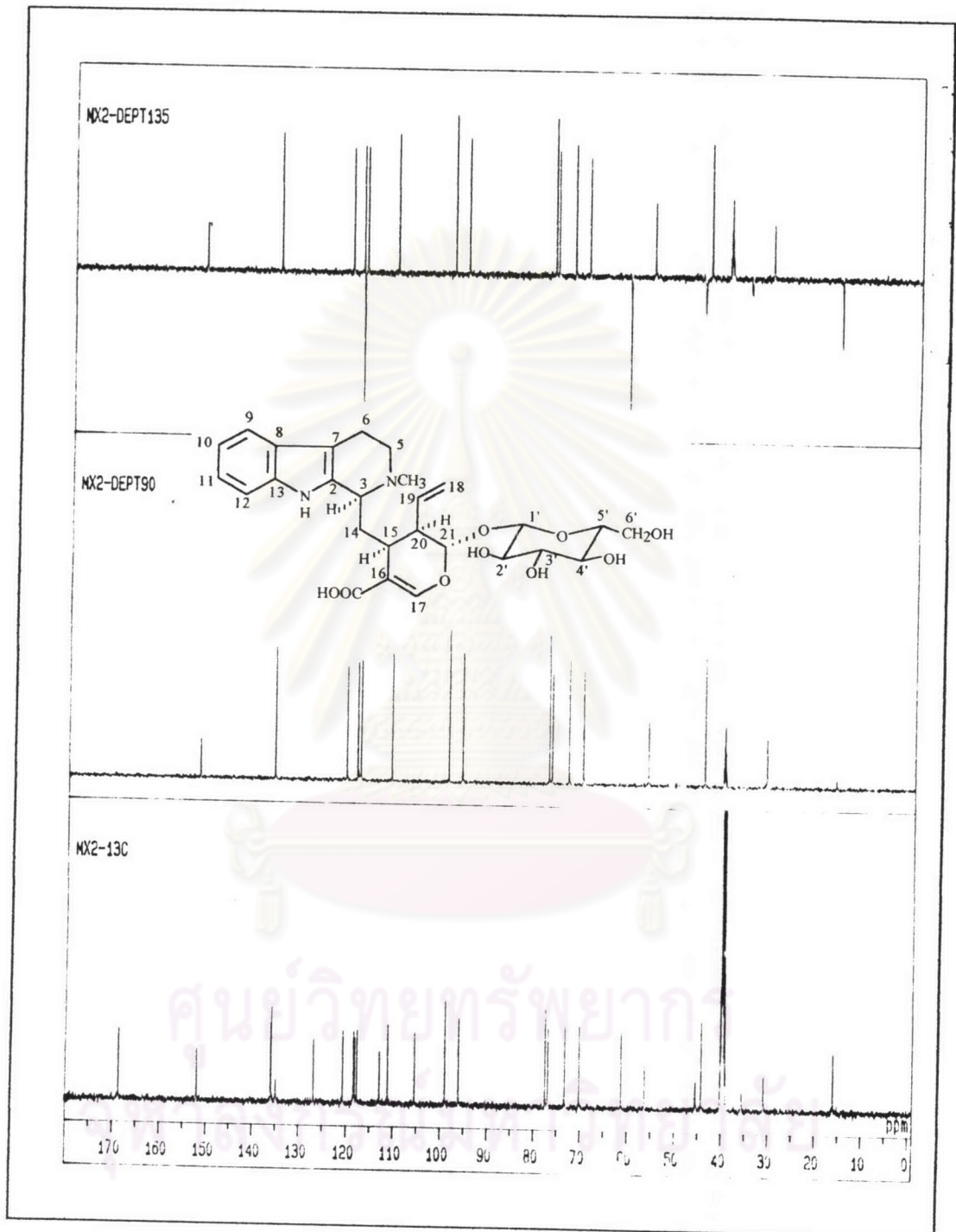


Figure 33 DEPT spectrum of SVM-3 (125 MHz ; in DMSO)

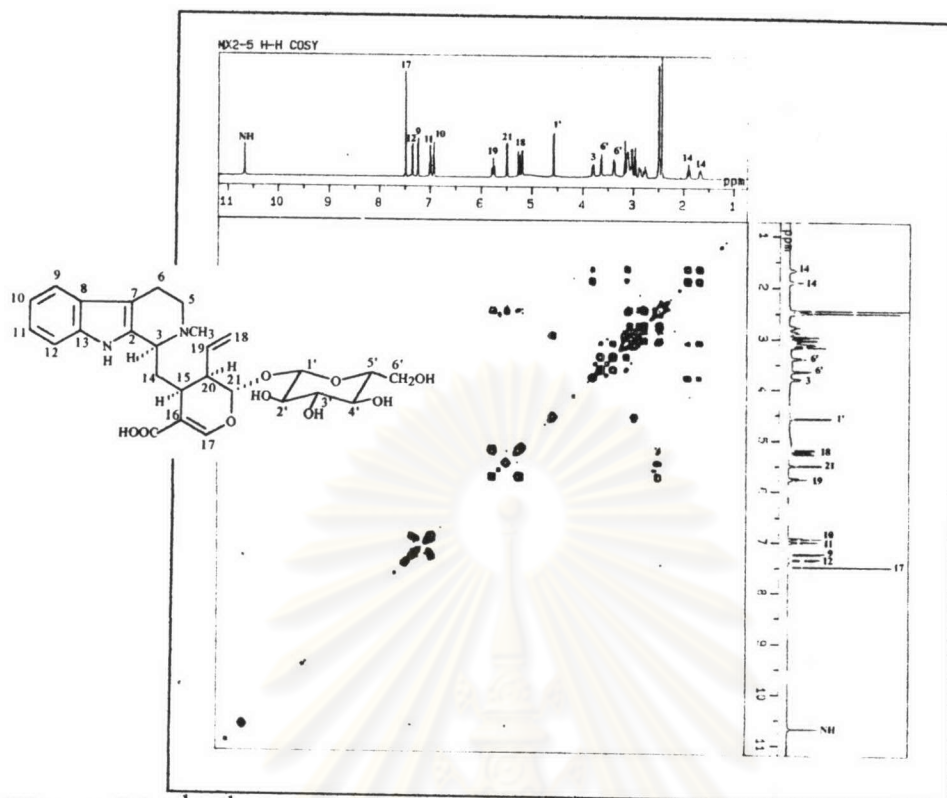


Figure 34 ^1H - ^1H COSY spectrum of SVM-3 (500 MHz ; in DMSO)

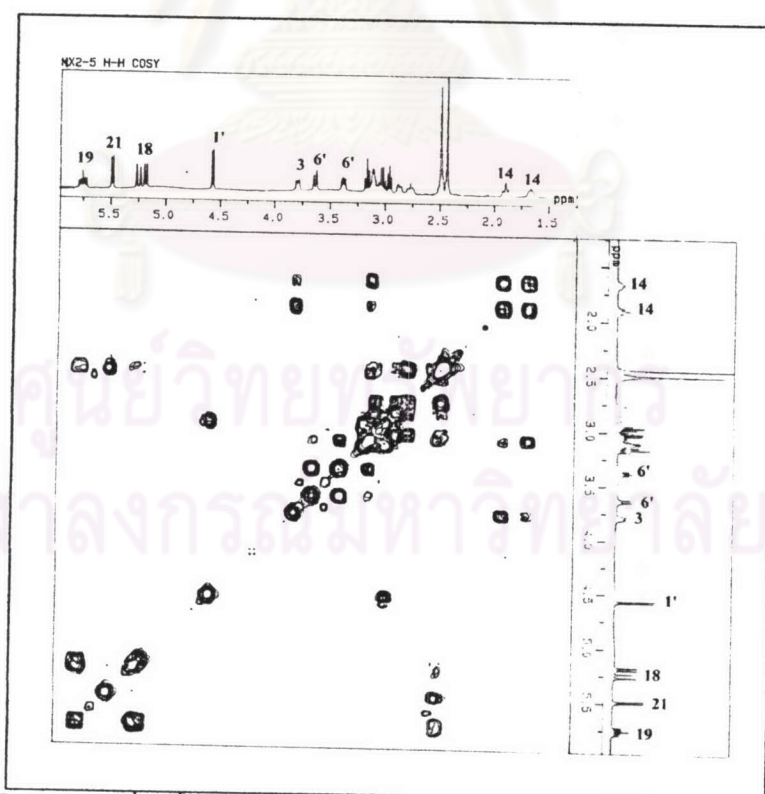


Figure 35 Expanded ^1H - ^1H COSY spectrum of SVM-3 (500 MHz ; in DMSO)

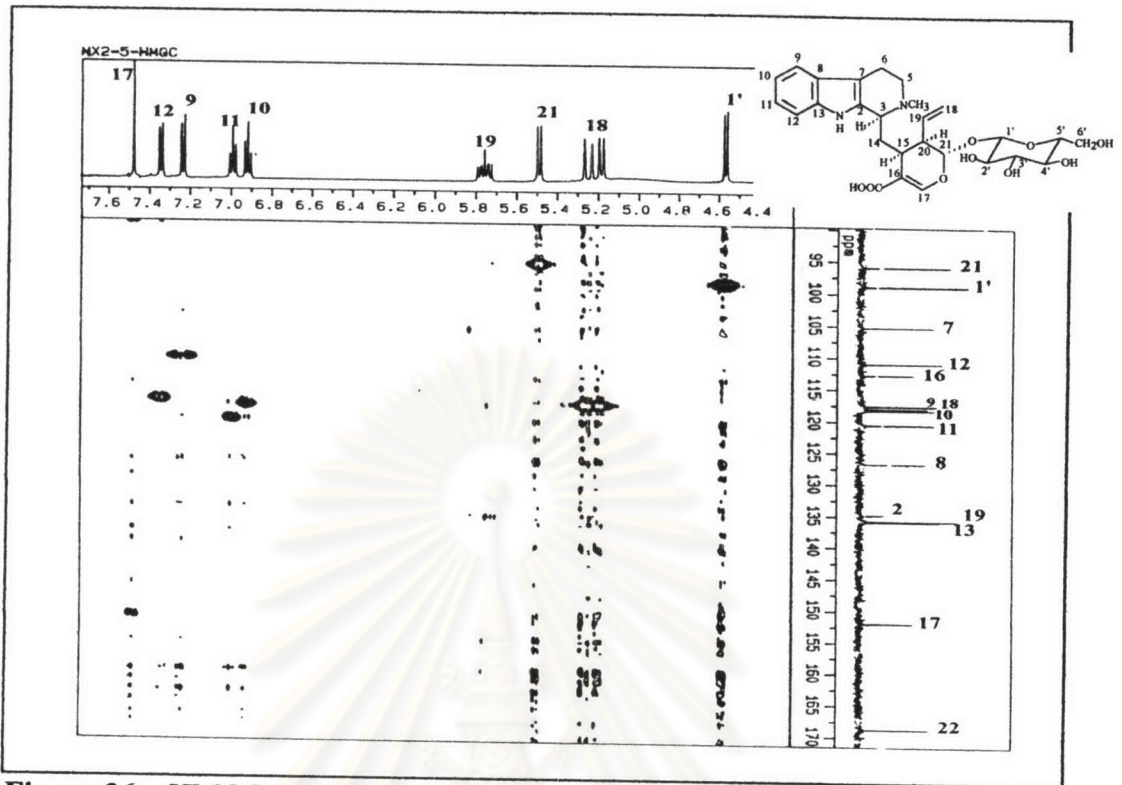


Figure 36 HMQC spectrum of SVM-3 (125 MHz ; in DMSO)

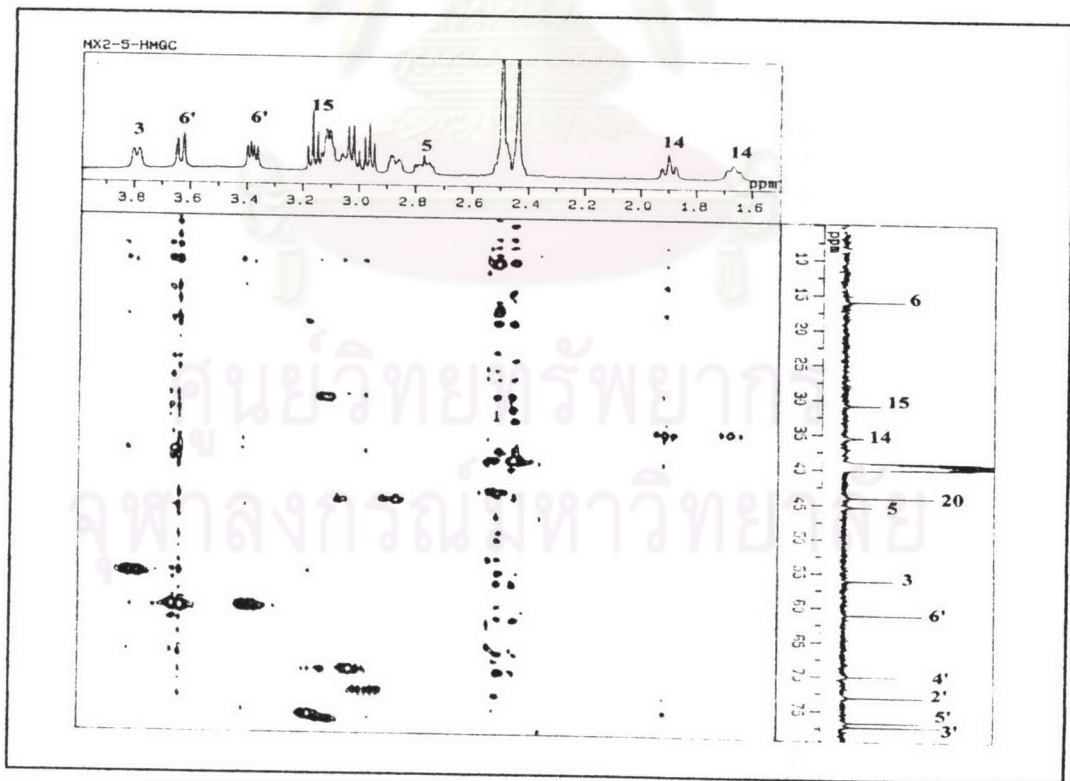


Figure 37 HMQC spectrum of SVM-3 (125 MHz ; in DMSO)

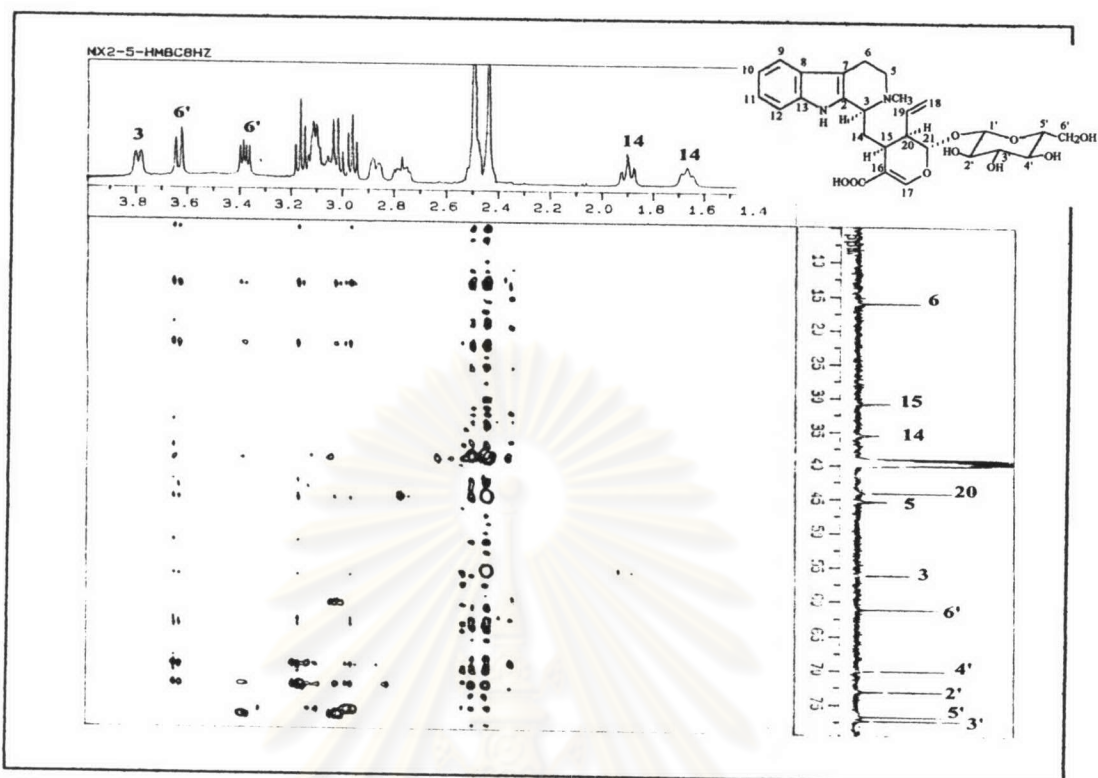


Figure 38 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

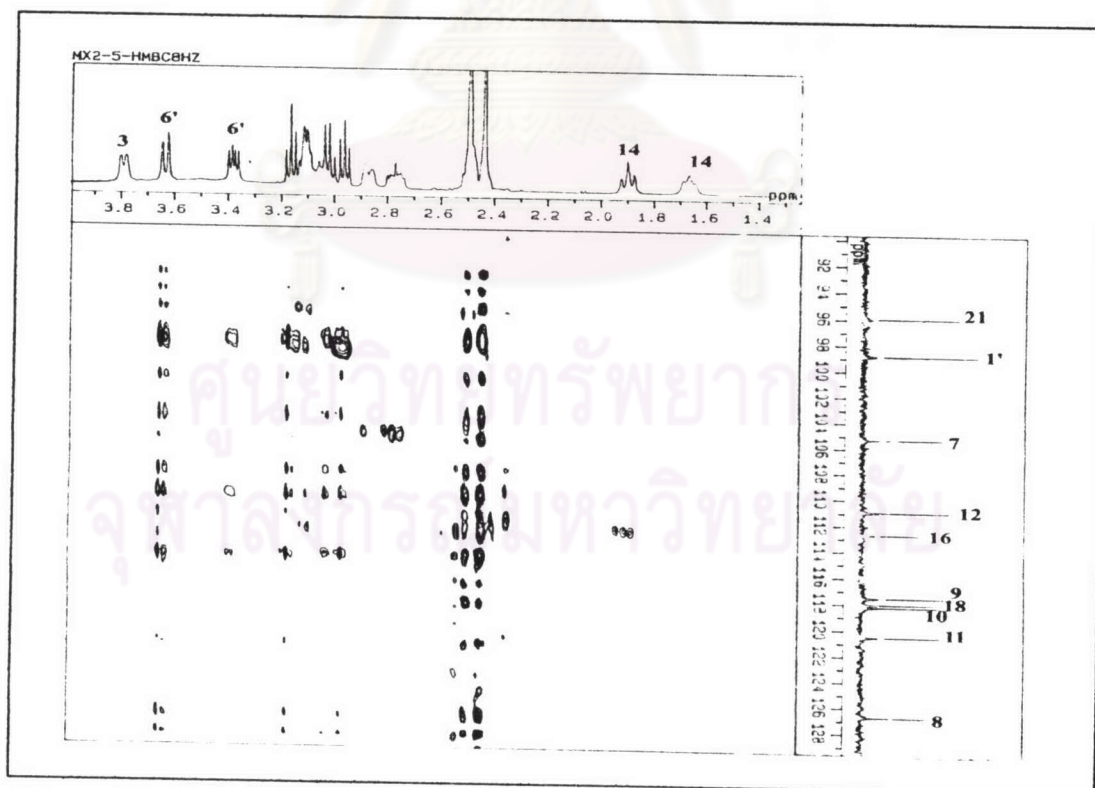


Figure 39 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

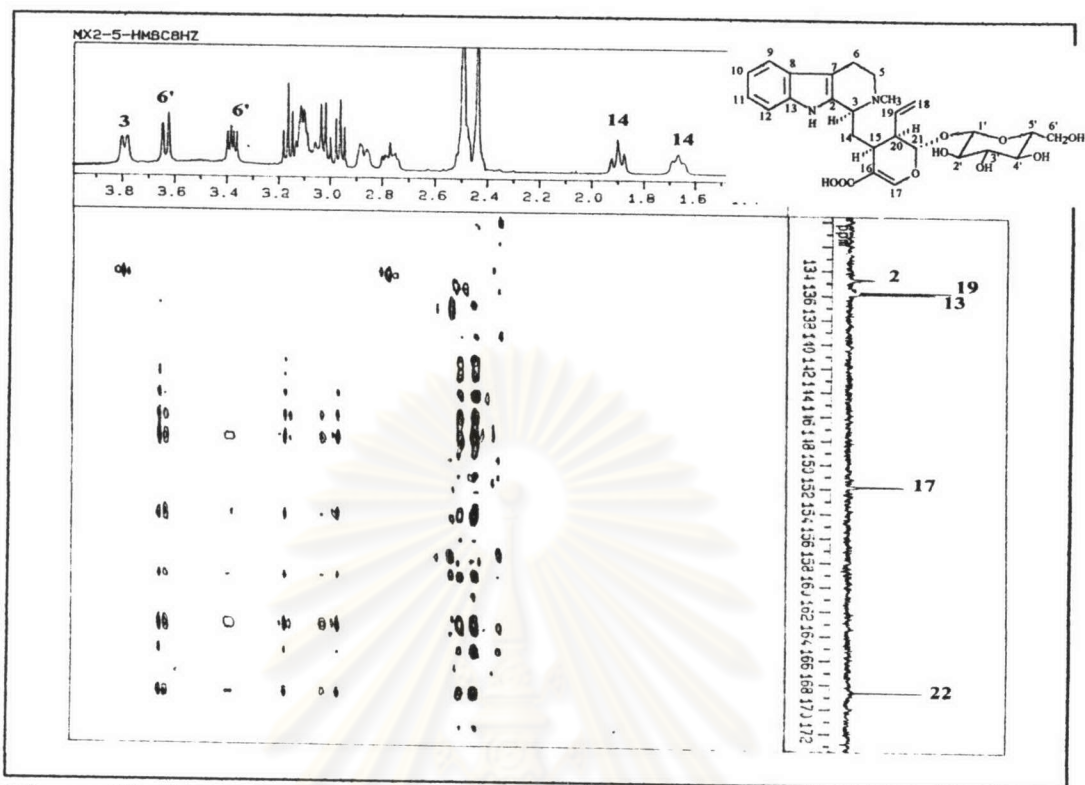


Figure 40 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

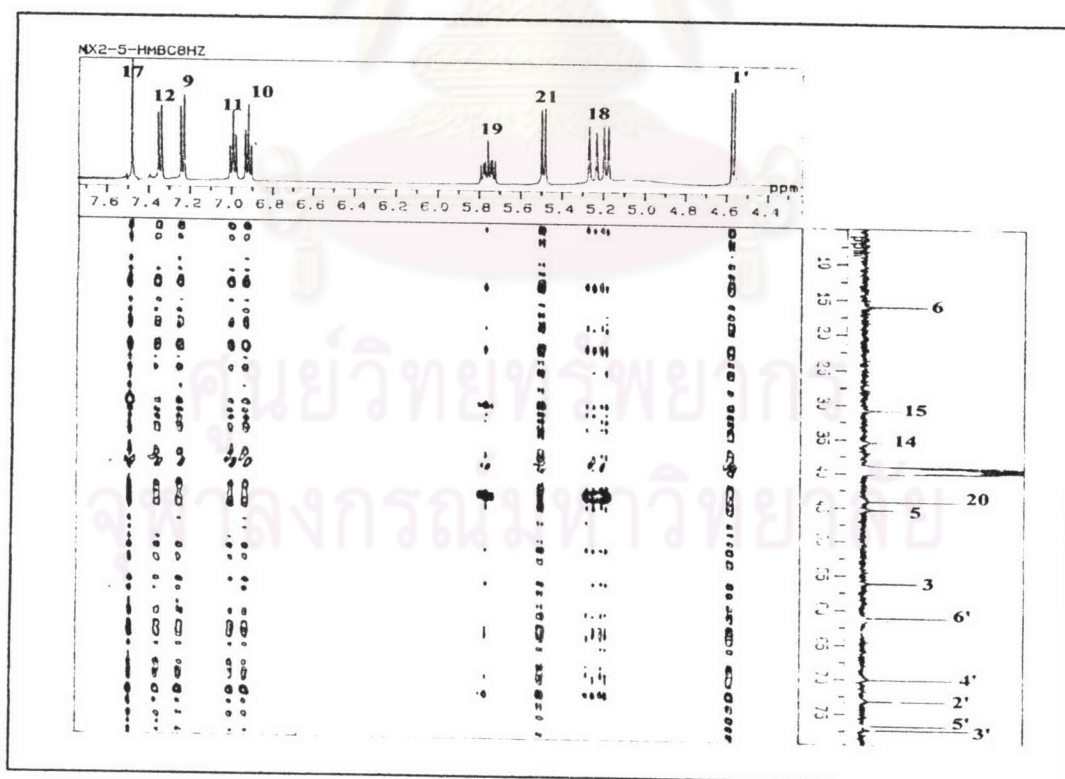


Figure 41 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

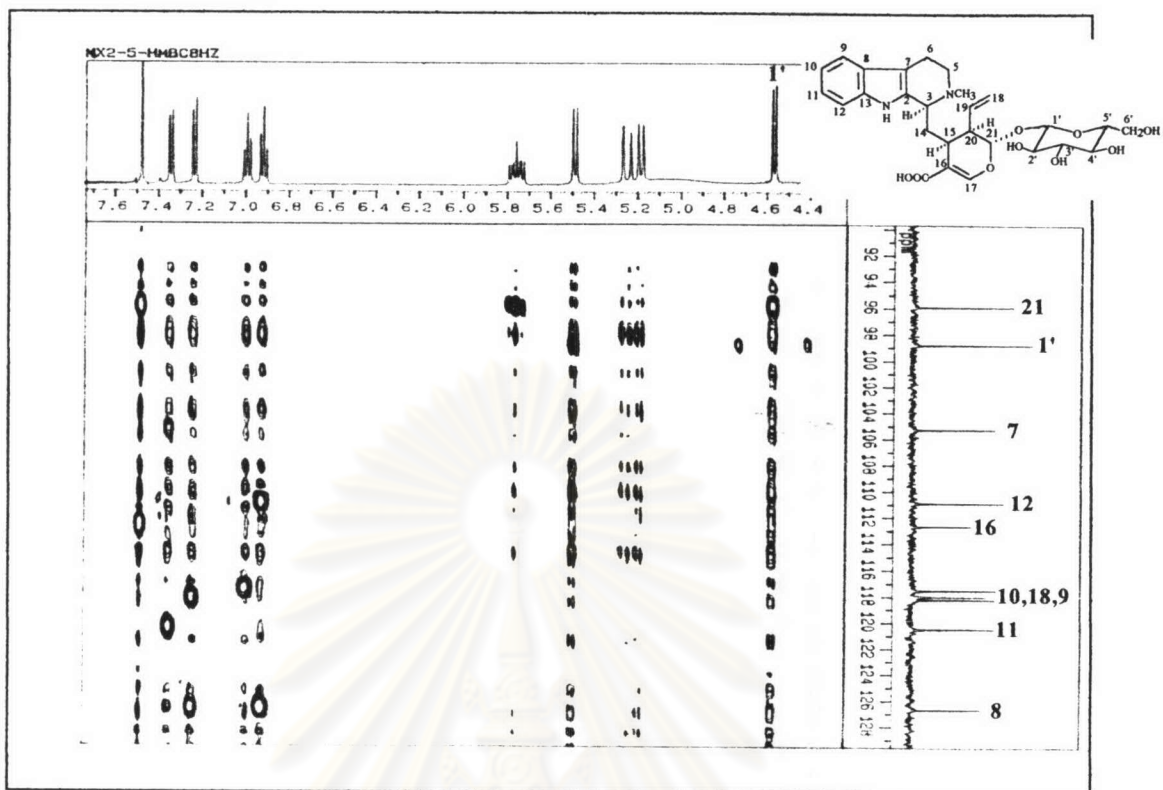


Figure 42 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

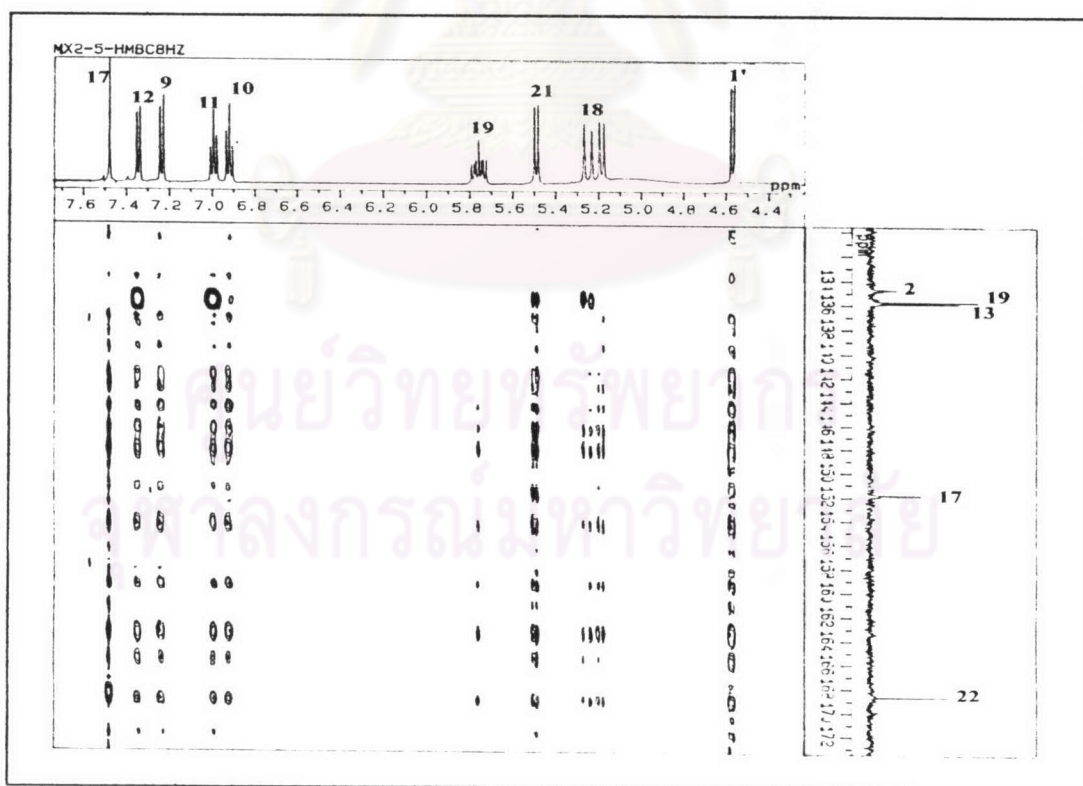


Figure 43 HMBC spectrum of SVM-3 (125 MHz ; in DMSO)

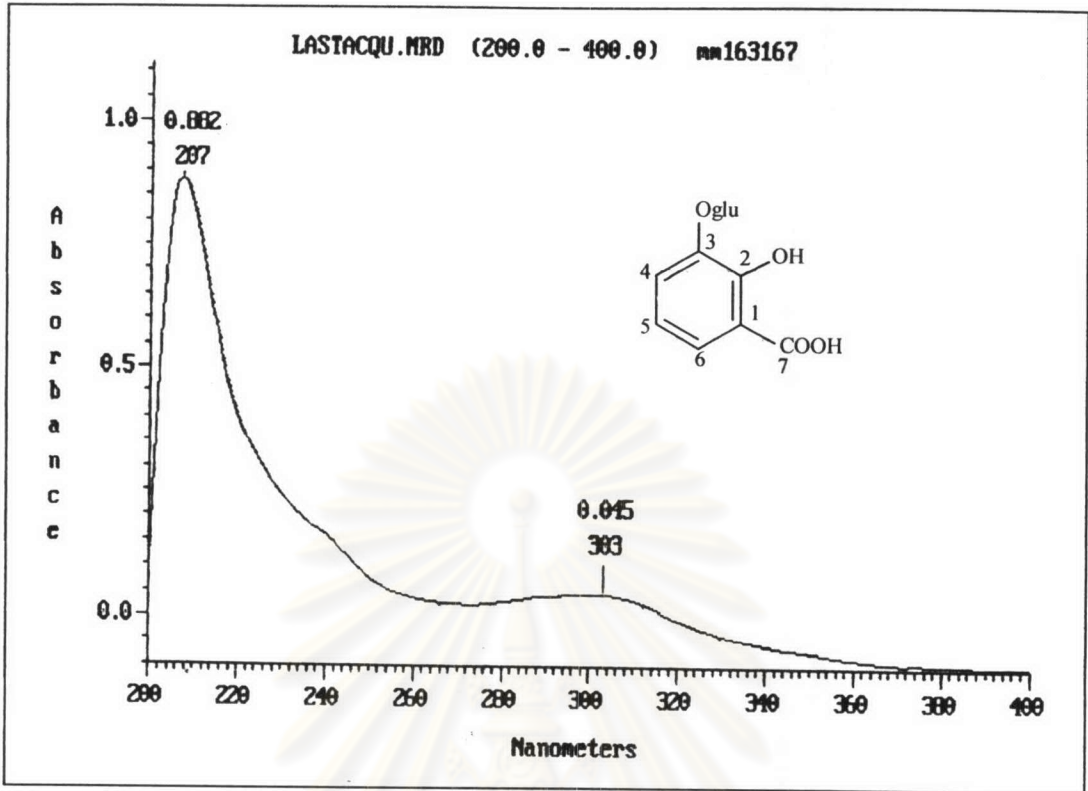


Figure 44 Ultraviolet absorption spectrum of SVM-4

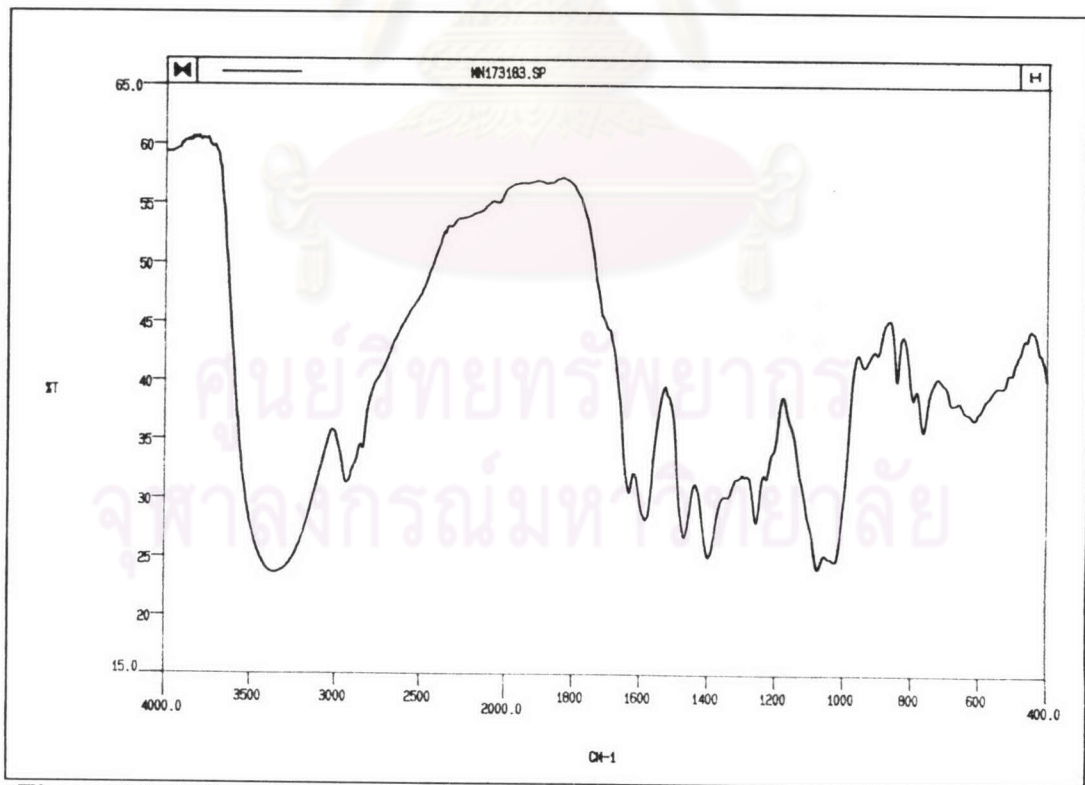


Figure 45 Infrared absorption spectrum of SVM-4

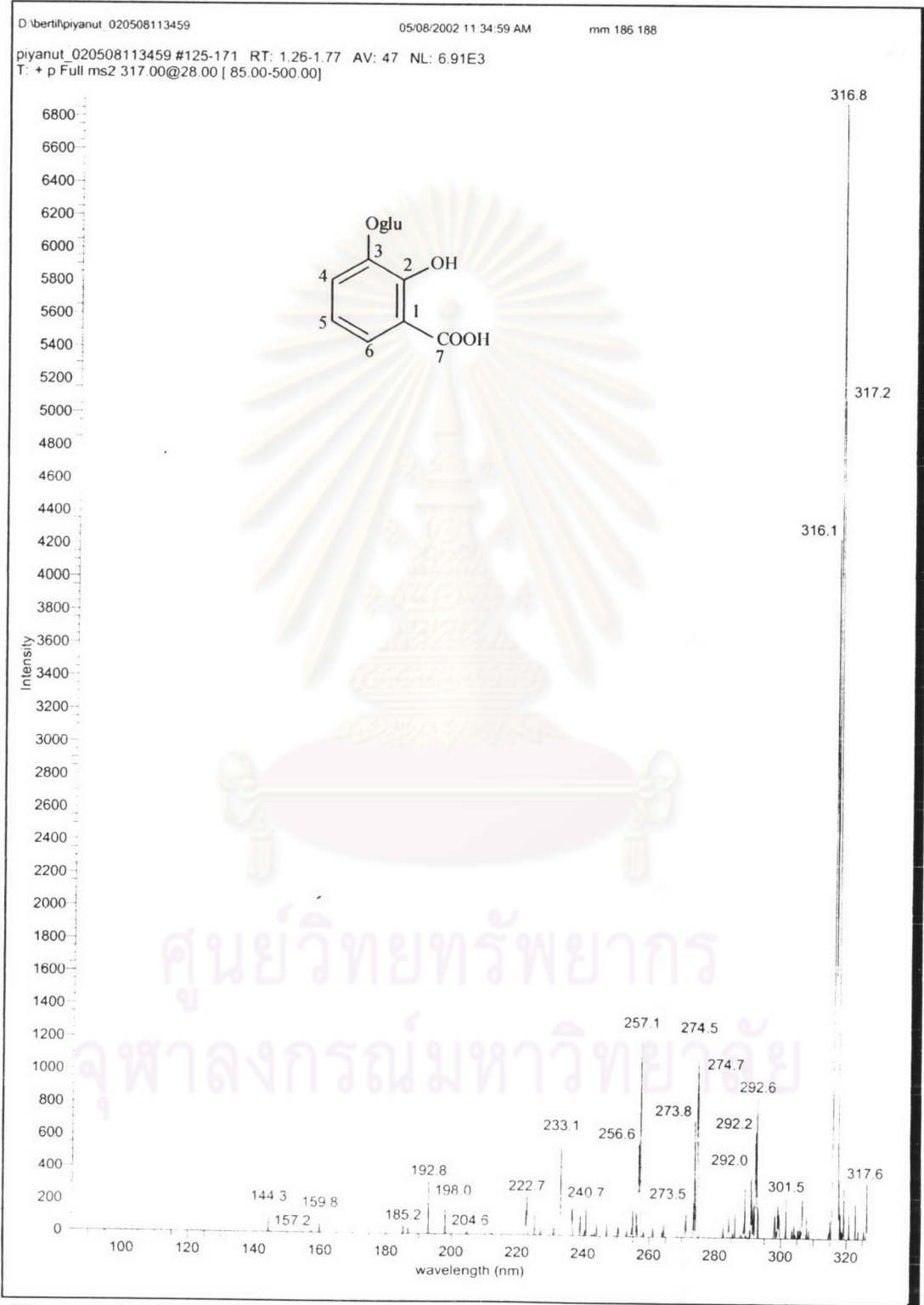


Figure 46 Mass spectrum of SVM-4

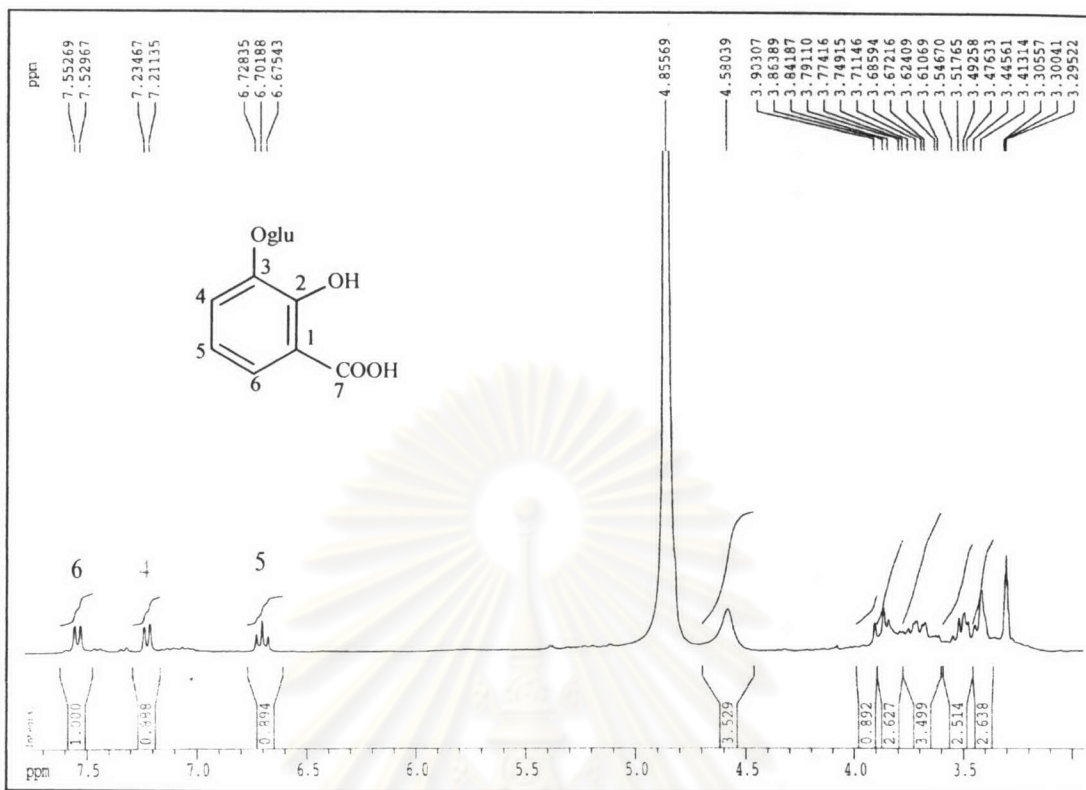


Figure 47 ¹H-NMR spectrum of SVM-4 (300 MHz ; in CD₃OD)

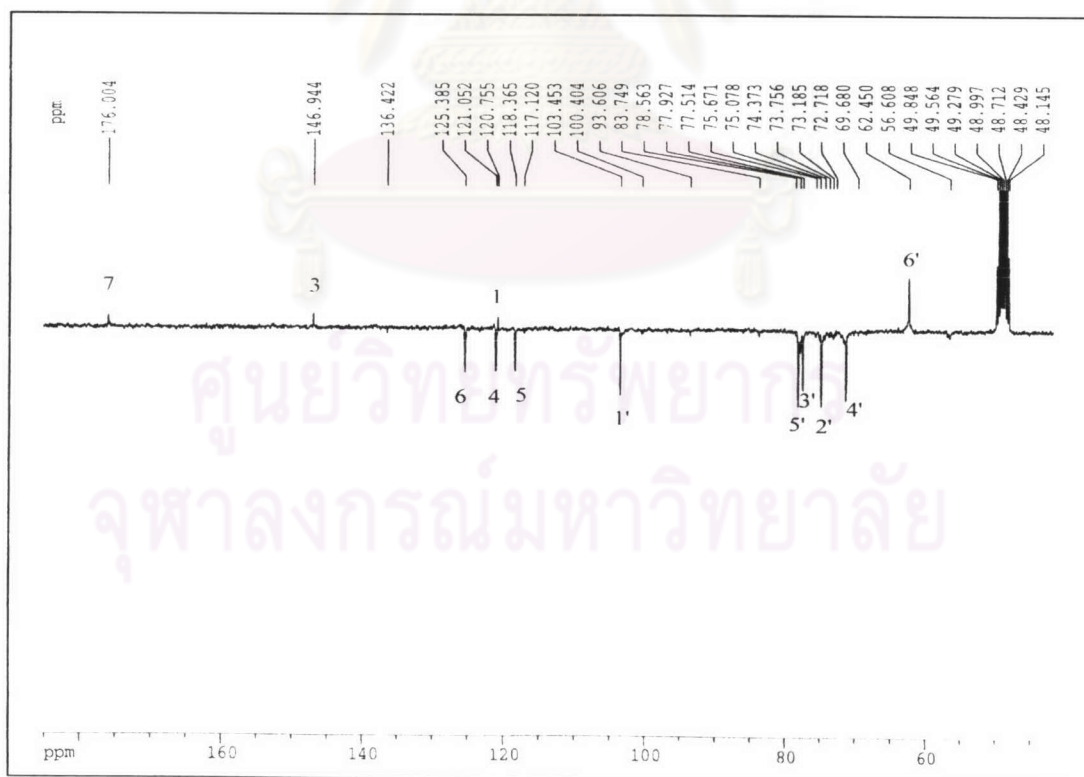


Figure 48 APT spectrum of SVM-4 (75 MHz ; in CD₃OD)

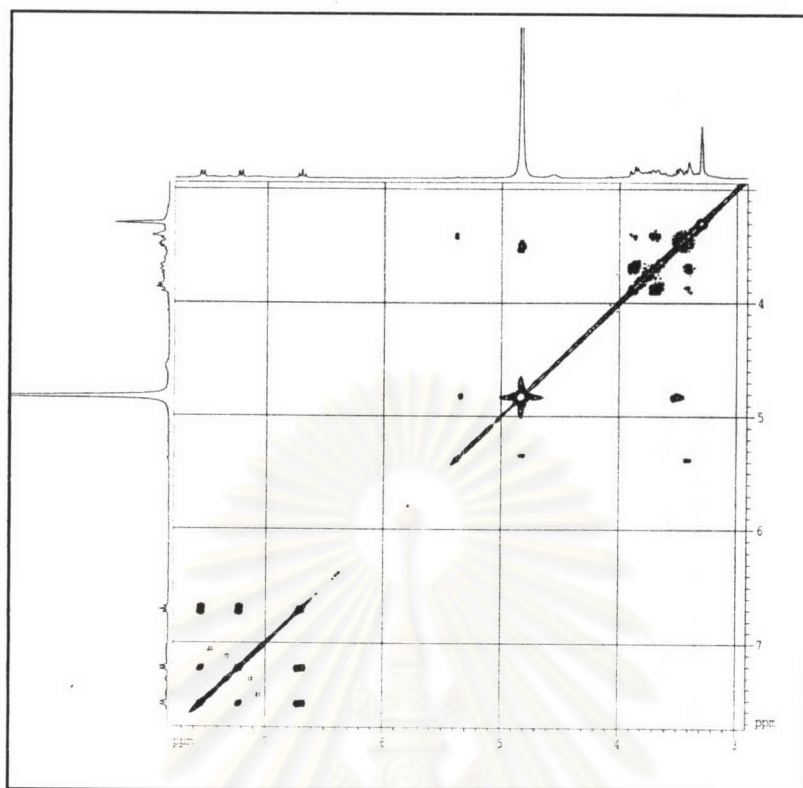
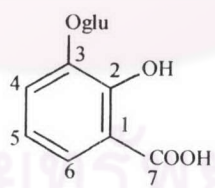


Figure 49 ^1H - ^1H COSY spectrum of SVM-4 (300 MHz ; in CD_3OD)



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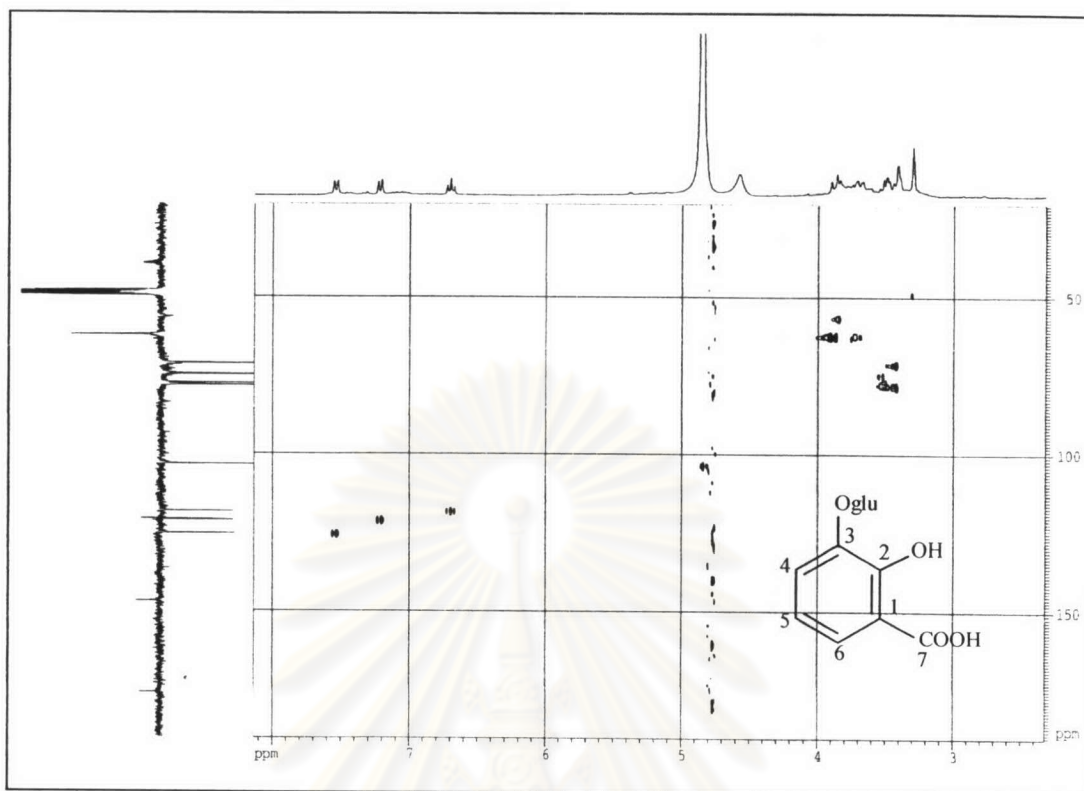


Figure 50 HMQC spectrum of SVM-4 (75 MHz ; in CD₃OD)

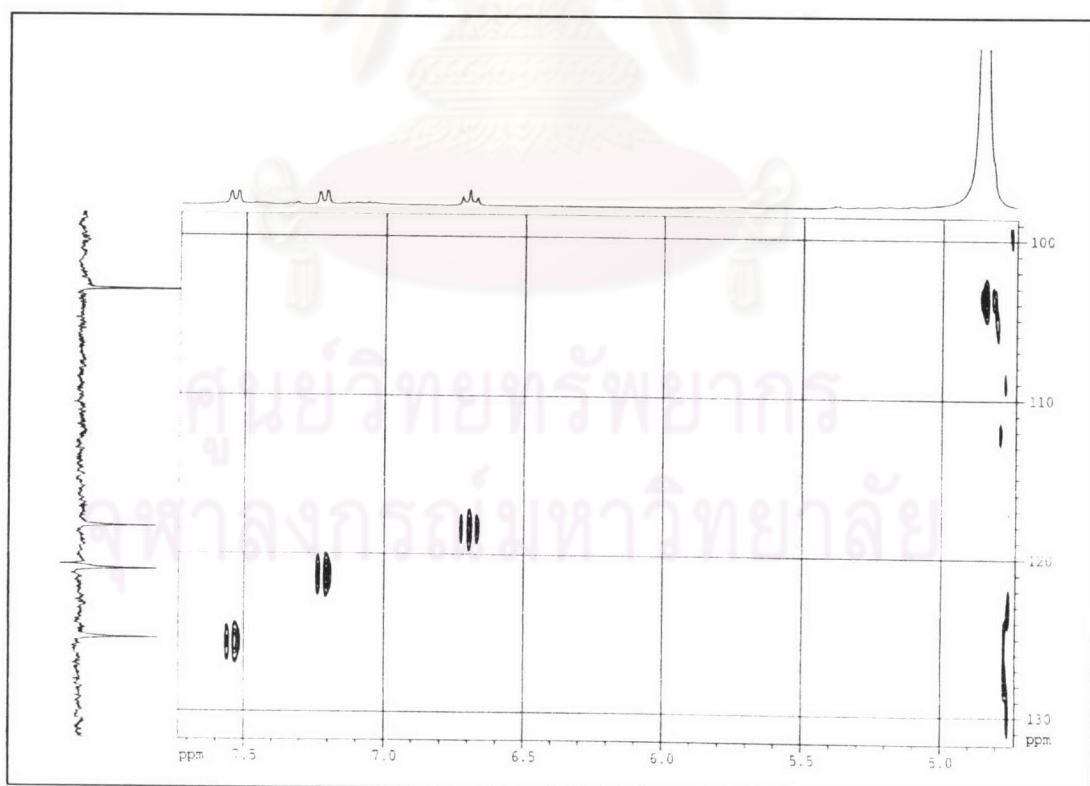


Figure 51 Expanded HMQC spectrum of SVM-4 (75 MHz ; in CD₃OD)

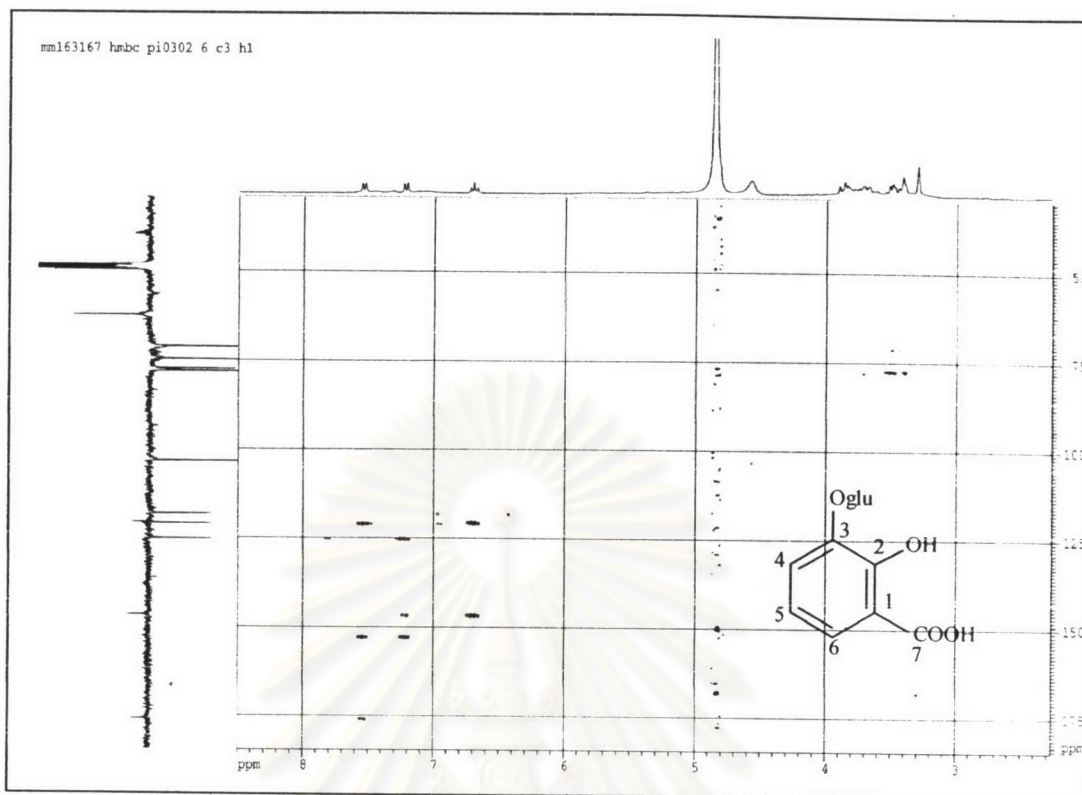


Figure 52 HMBC spectrum of SVM-4 (75 MHz ; in CD₃OD)

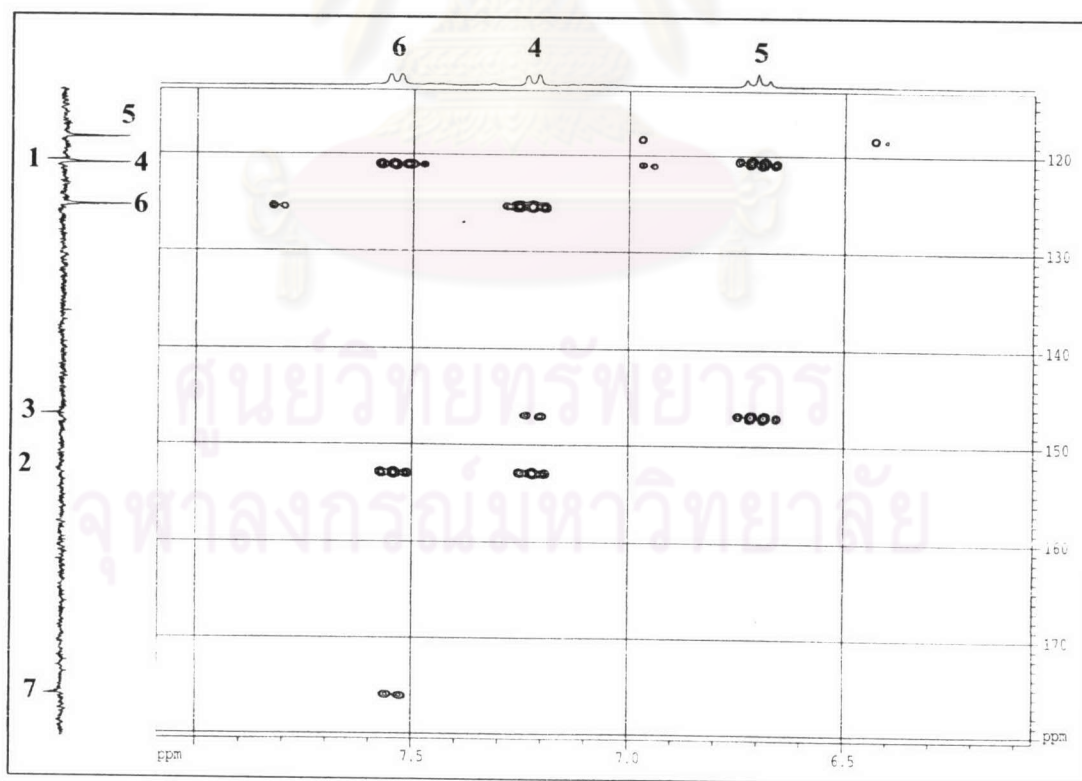


Figure 53 Expanded HMBC spectrum of SVM-4 (75 MHz ; in CD₃OD)

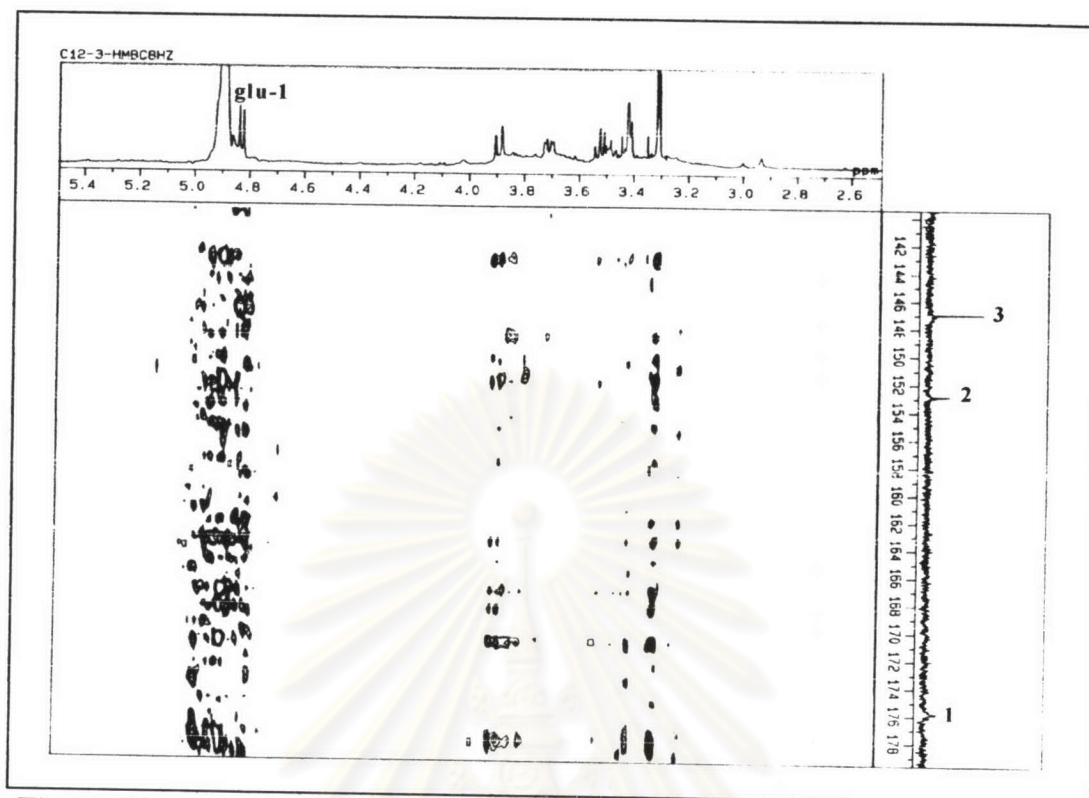


Figure 54 Expanded HMB spectrum of SVC-7 (125 MHz ; in CD₃OD)

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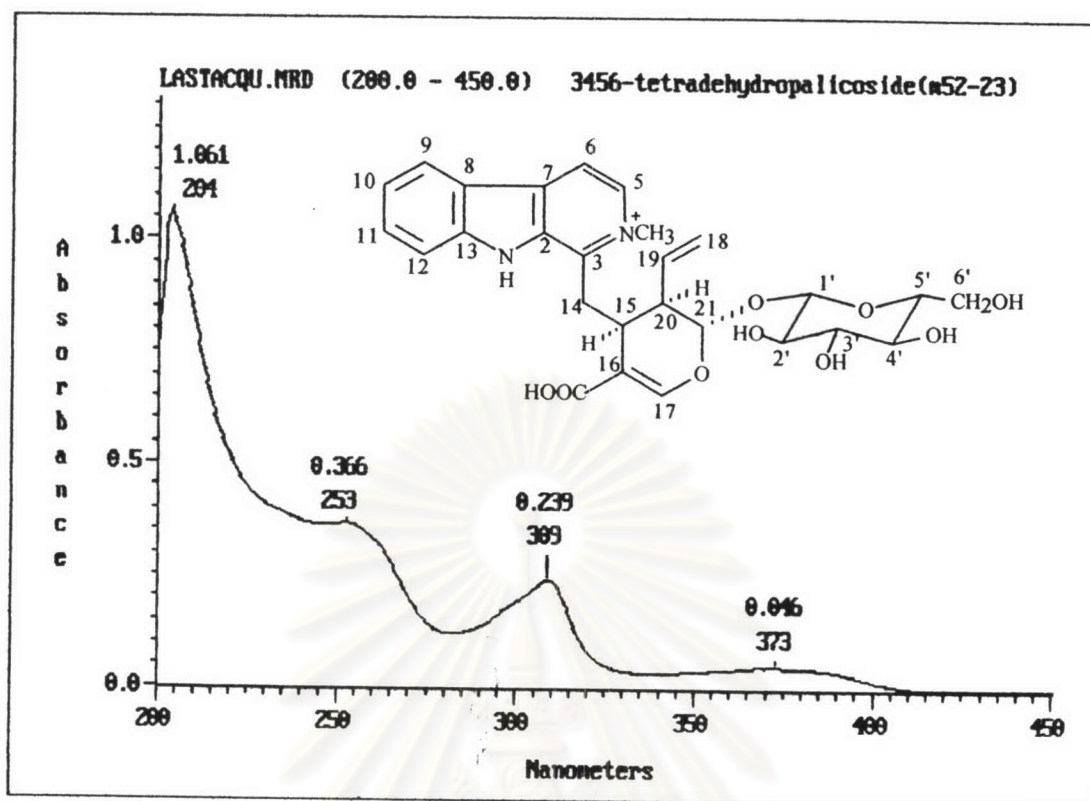


Figure 55 Ultraviolet absorption spectrum of SVM-5

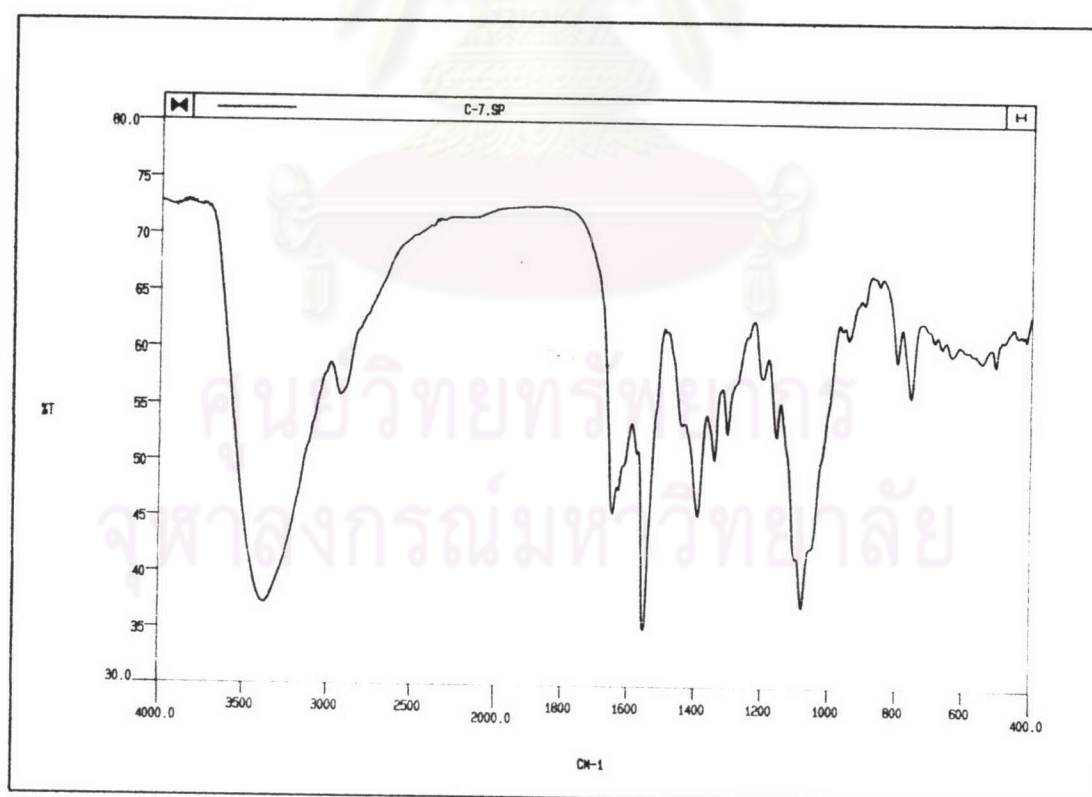


Figure 56 Infrared absorption spectrum of SVM-5

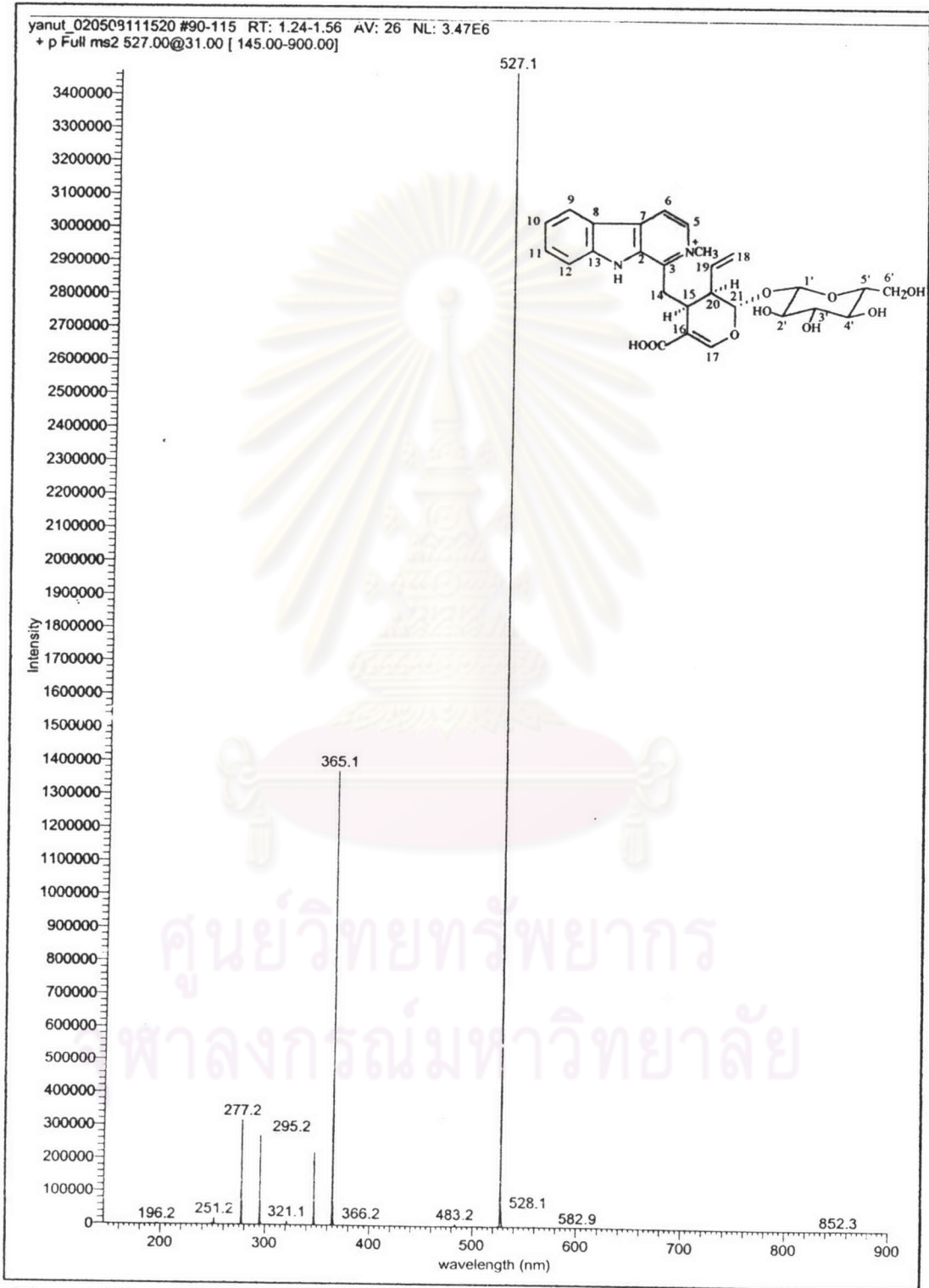


Figure 57 Mass spectrum of SVM-5

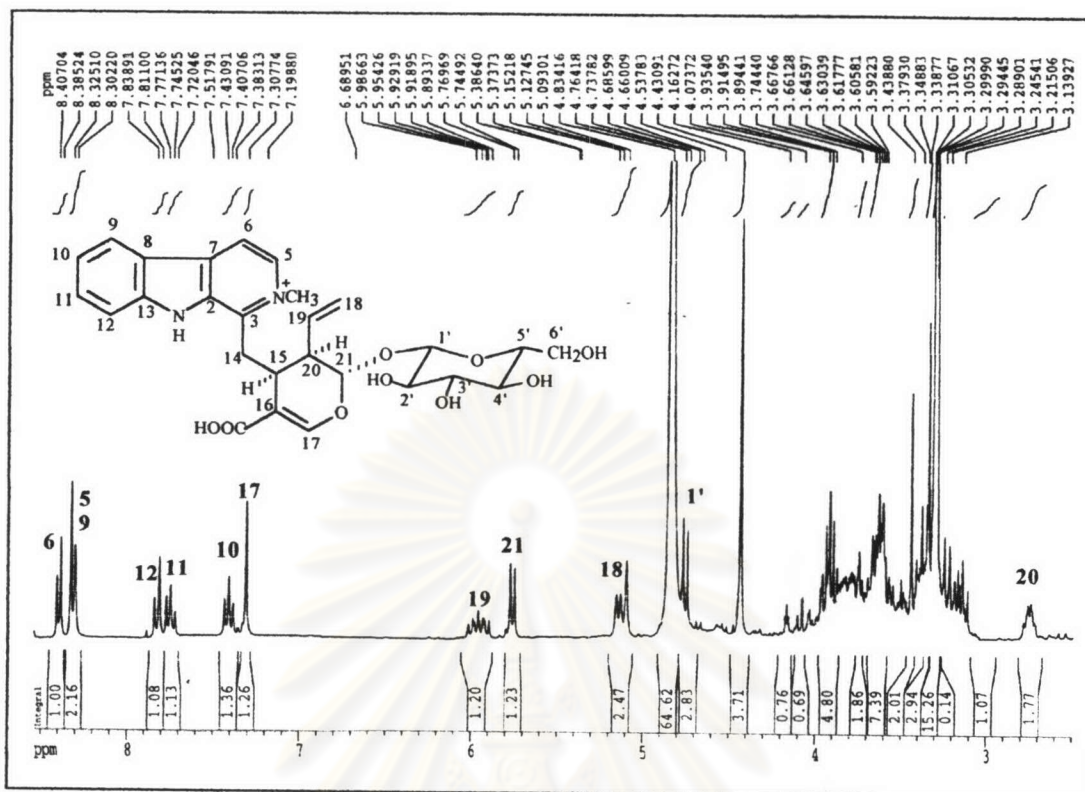


Figure 58 $^1\text{H-NMR}$ spectrum of SVM-5 (300 MHz ; in CD_3OD)

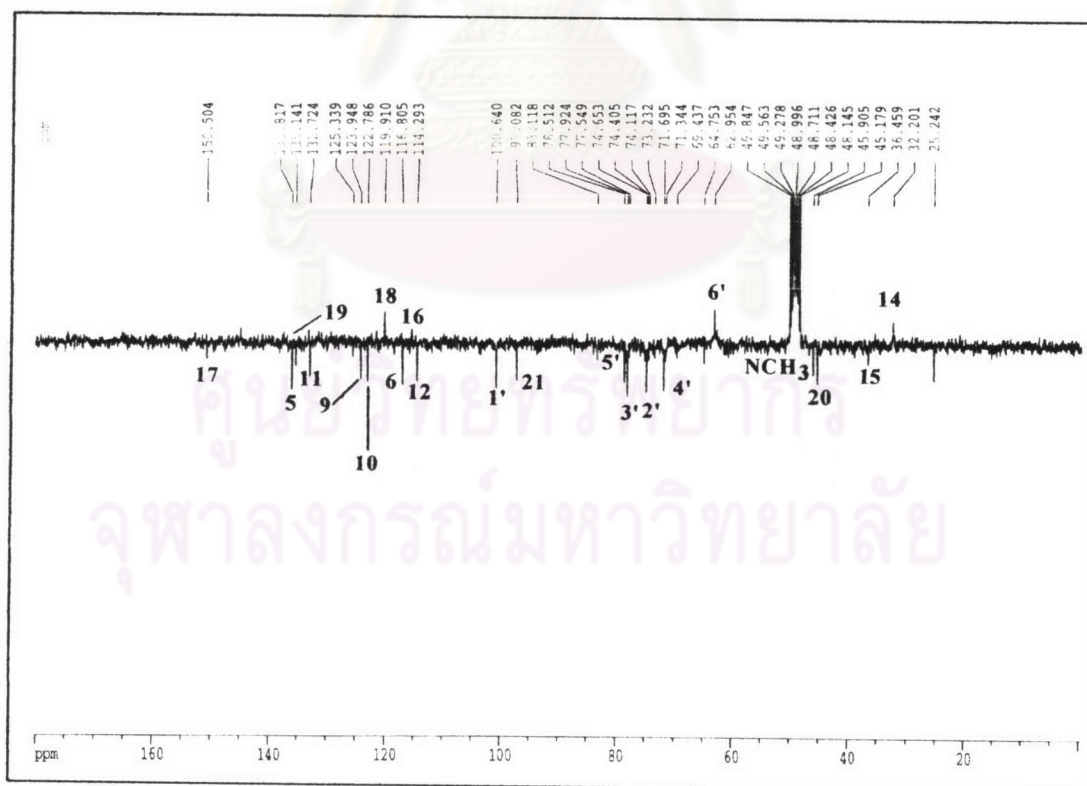


Figure 59 APT spectrum of SVM-5 (75 MHz ; in CD_3OD)

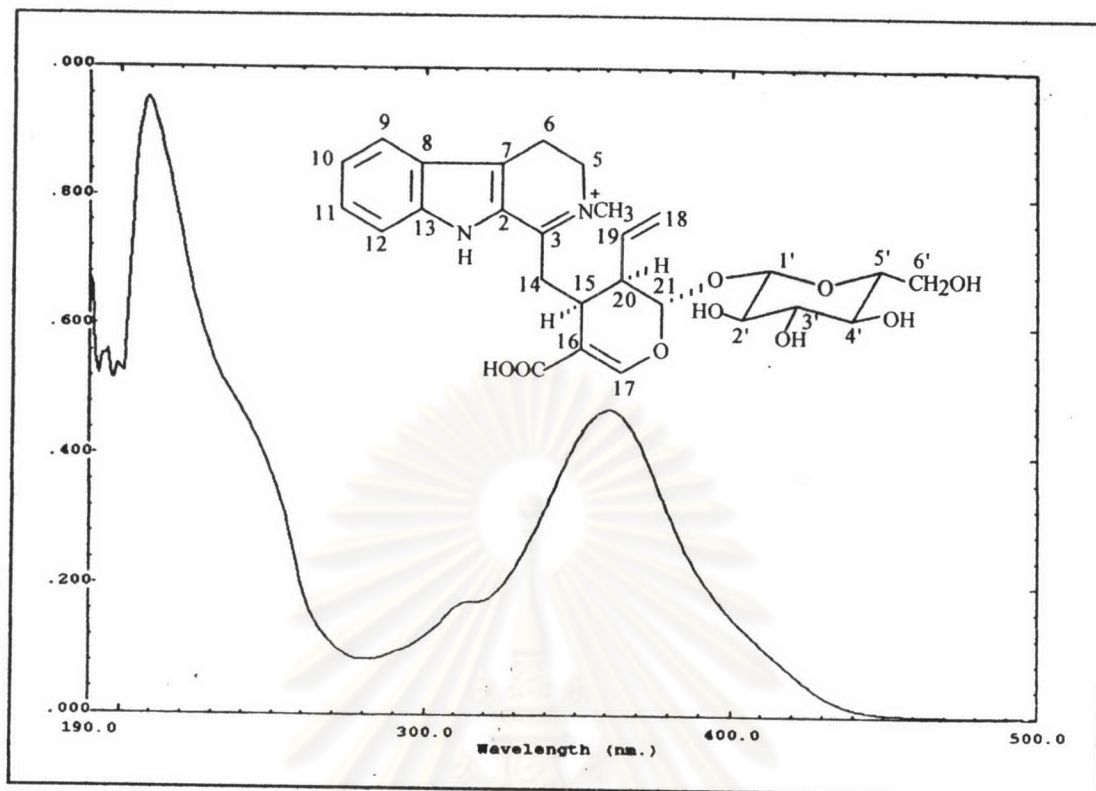


Figure 60 Ultraviolet absorption spectrum of SVM-6

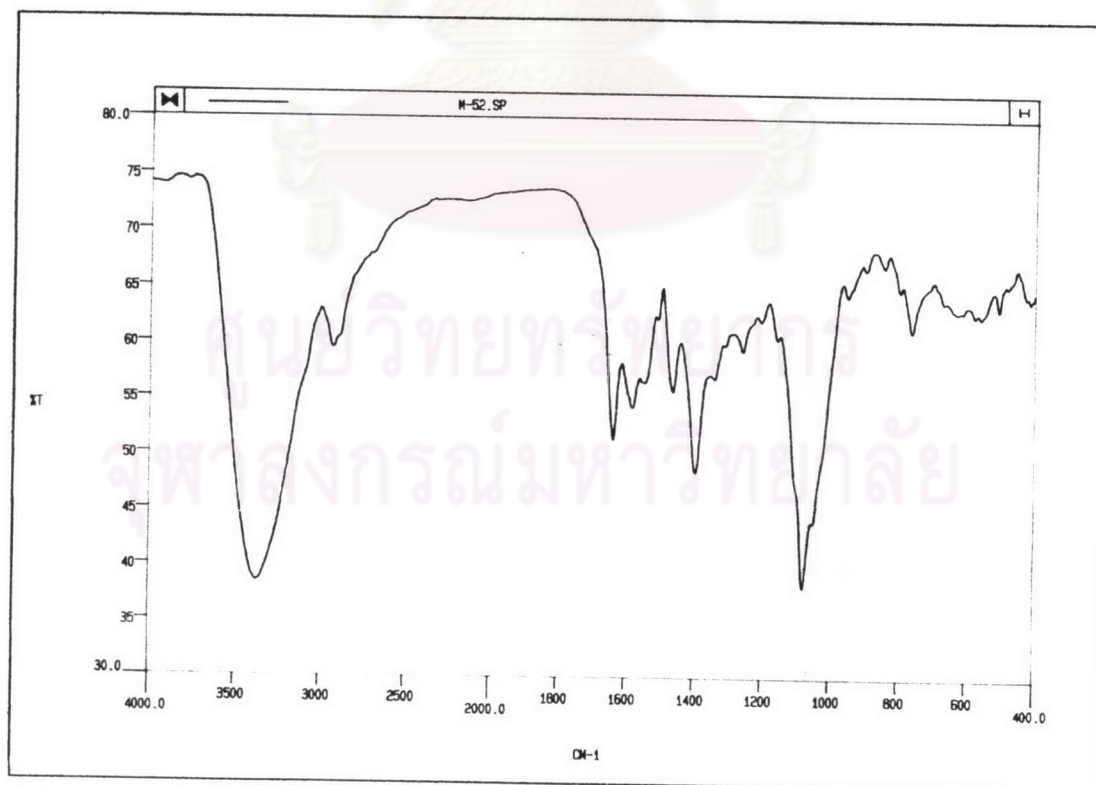


Figure 61 Infrared absorption spectrum of SVM-6

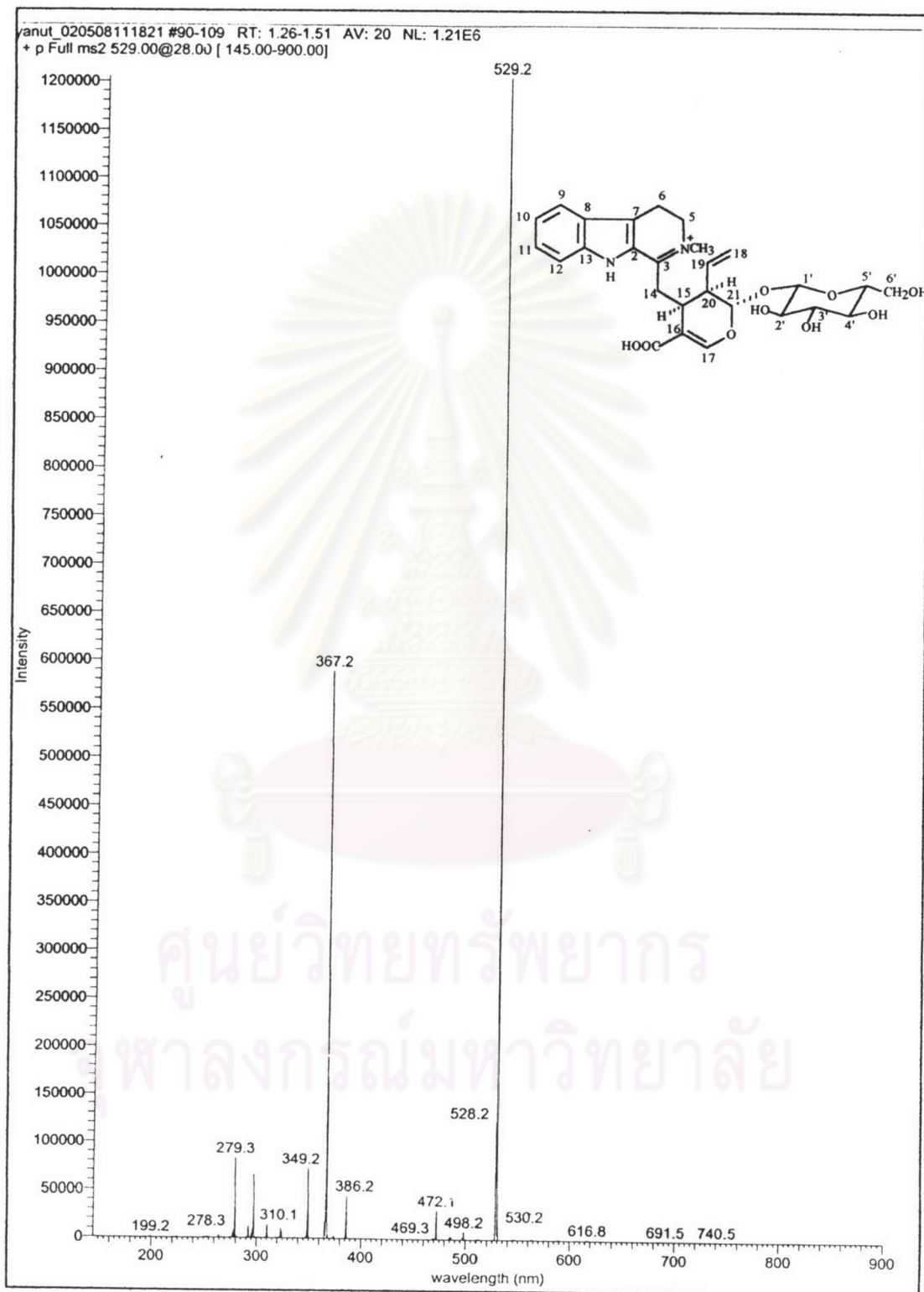


Figure 62 Mass spectrum of SVM-6

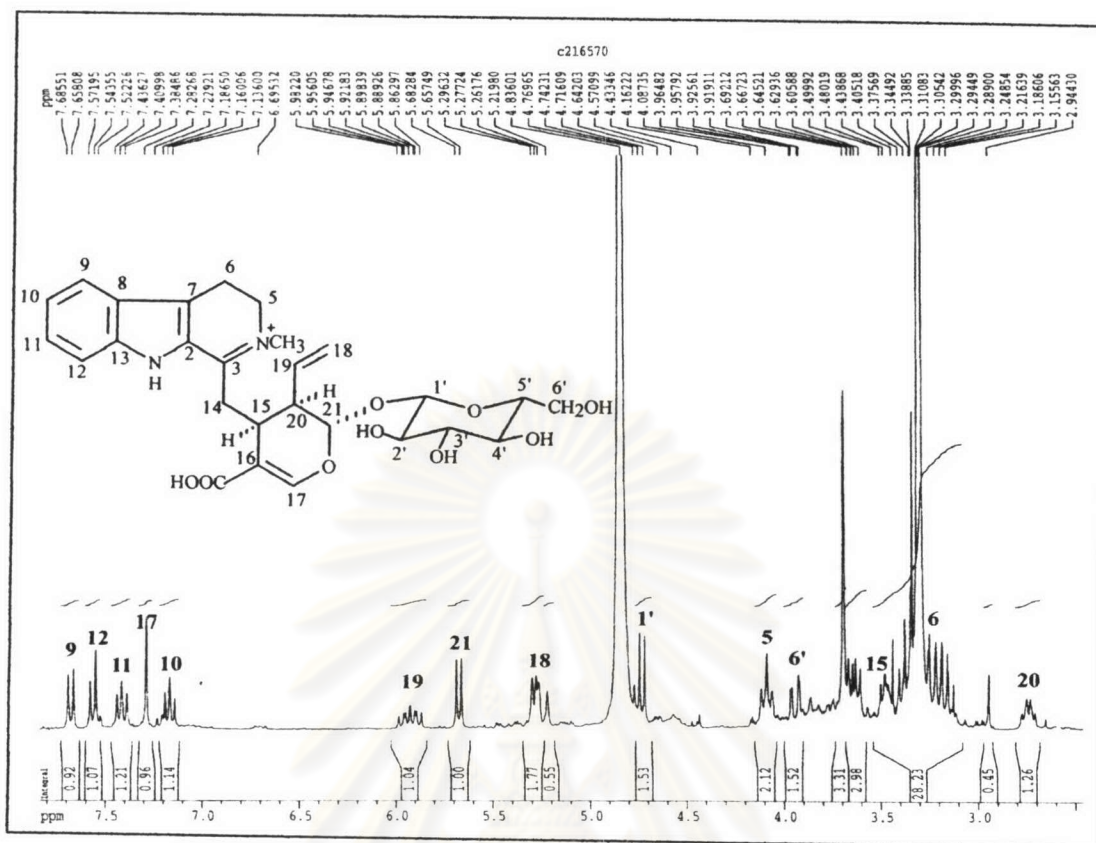


Figure 63 $^1\text{H-NMR}$ spectrum of SVM-6 (300 MHz ; in CD_3OD)

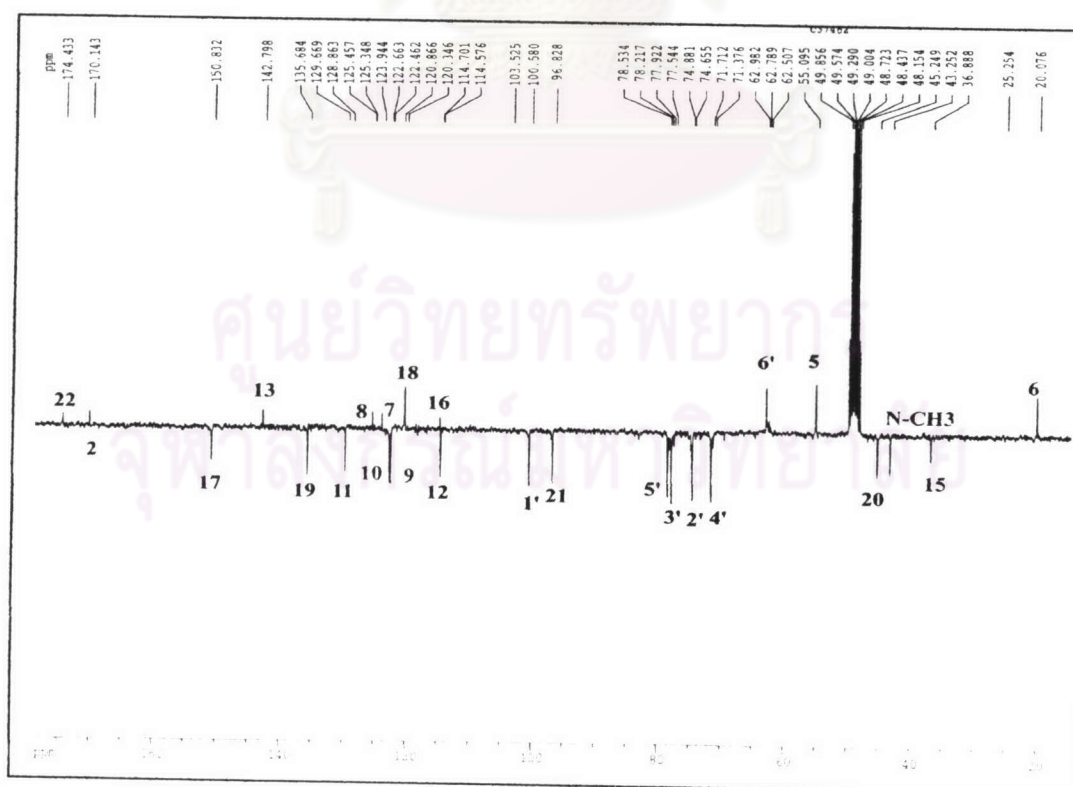


Figure 64 APT spectrum of SVM-6 (75 MHz ; in CD_3OD)

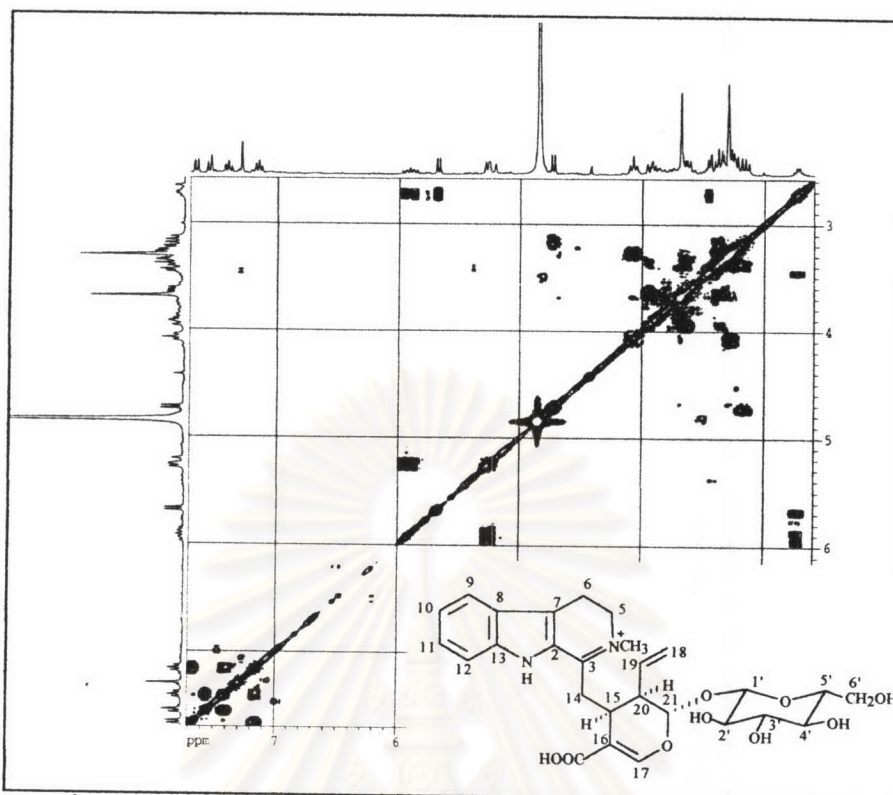


Figure 65 ^1H - ^1H COSY spectrum of SVM-6 (300 MHz ; in CD_3OD)

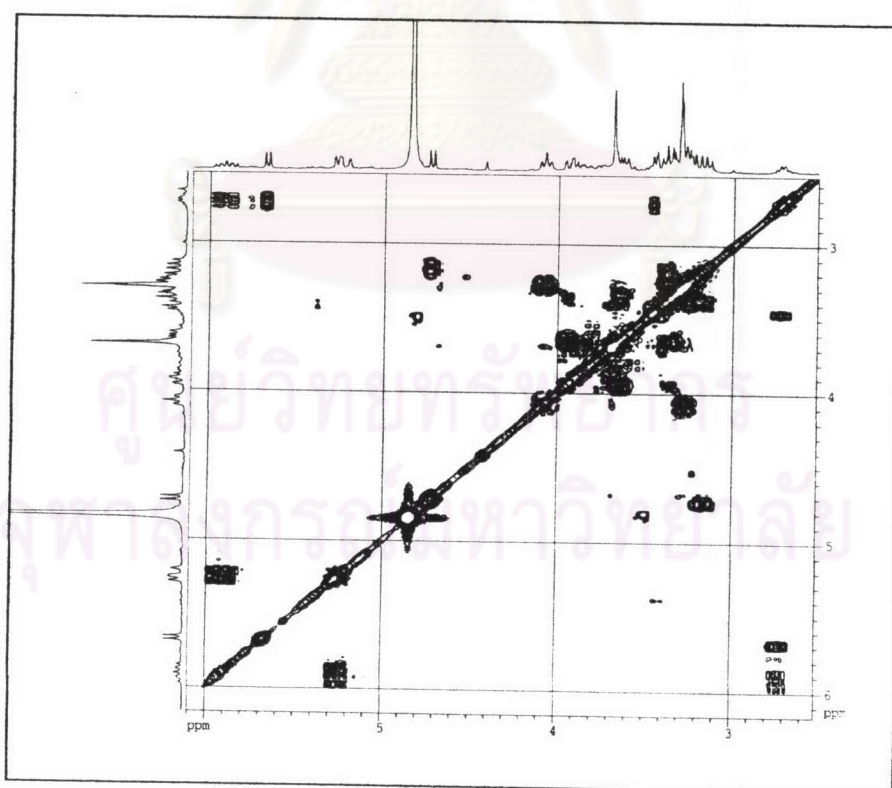


Figure 66 Expanded ^1H - ^1H COSY spectrum of SVM-6 (300 MHz ; in CD_3OD)

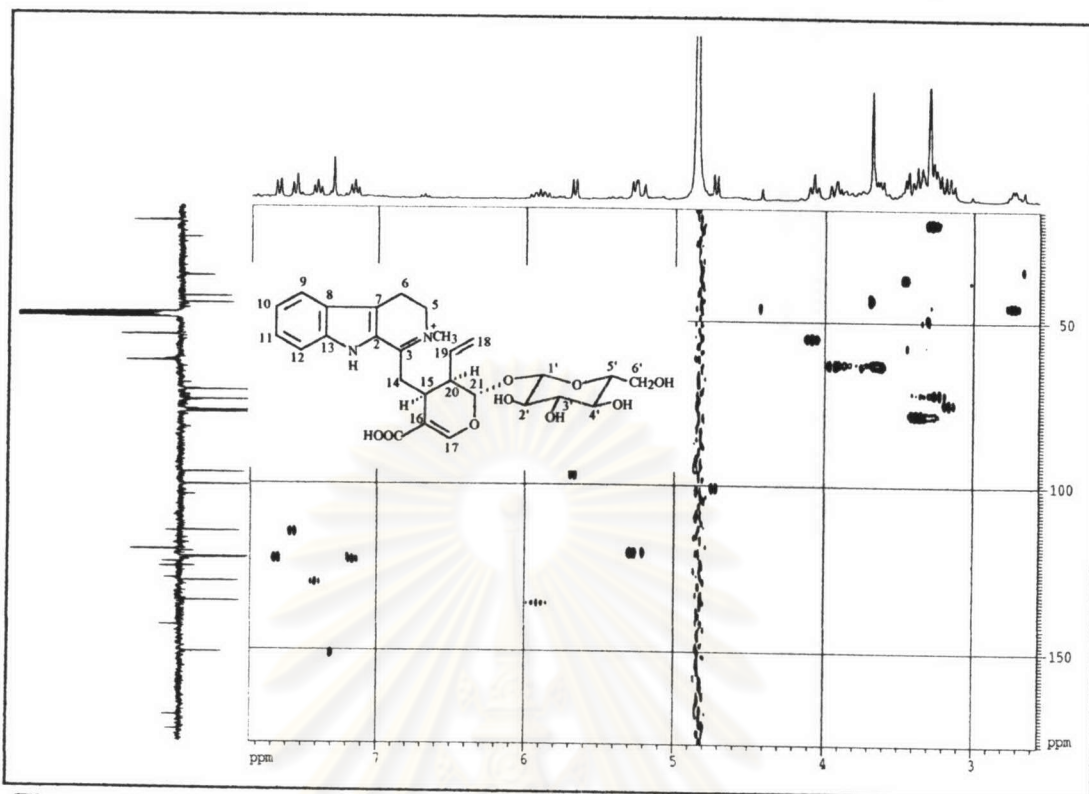


Figure 67 HMQC spectrum of SVM-6 (75 MHz ; in CD_3OD)

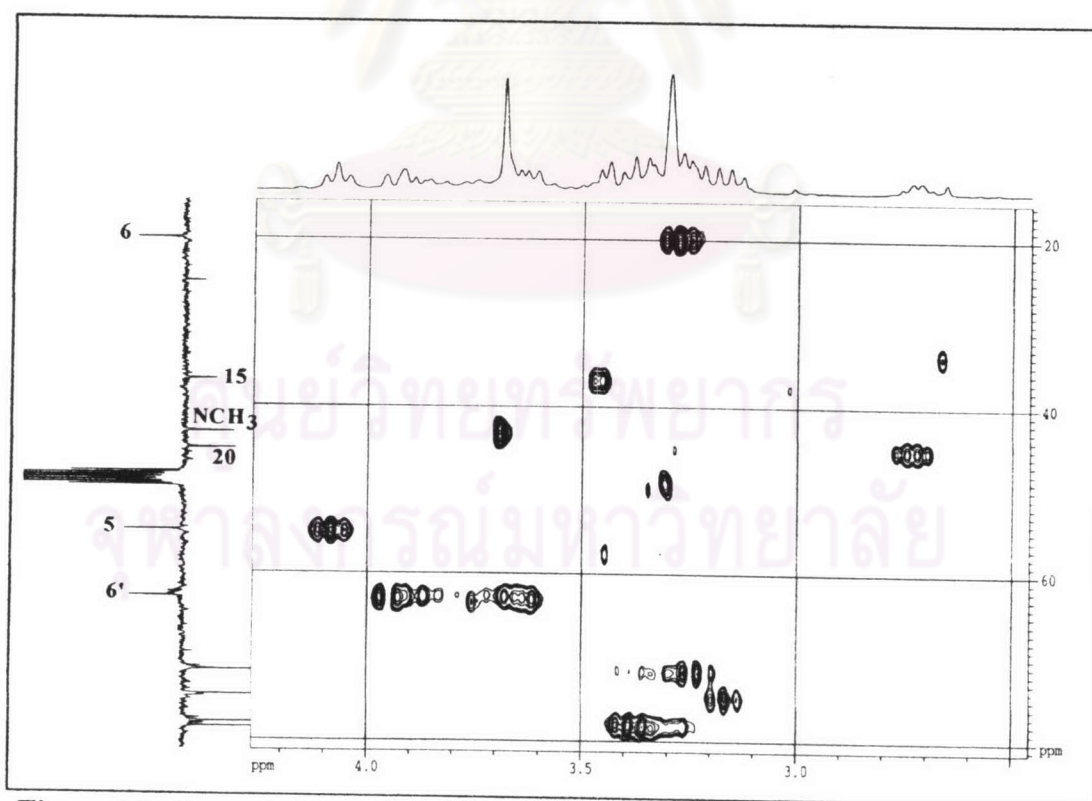


Figure 68 Expanded HMQC spectrum of SVM-6 (75 MHz ; in CD_3OD)

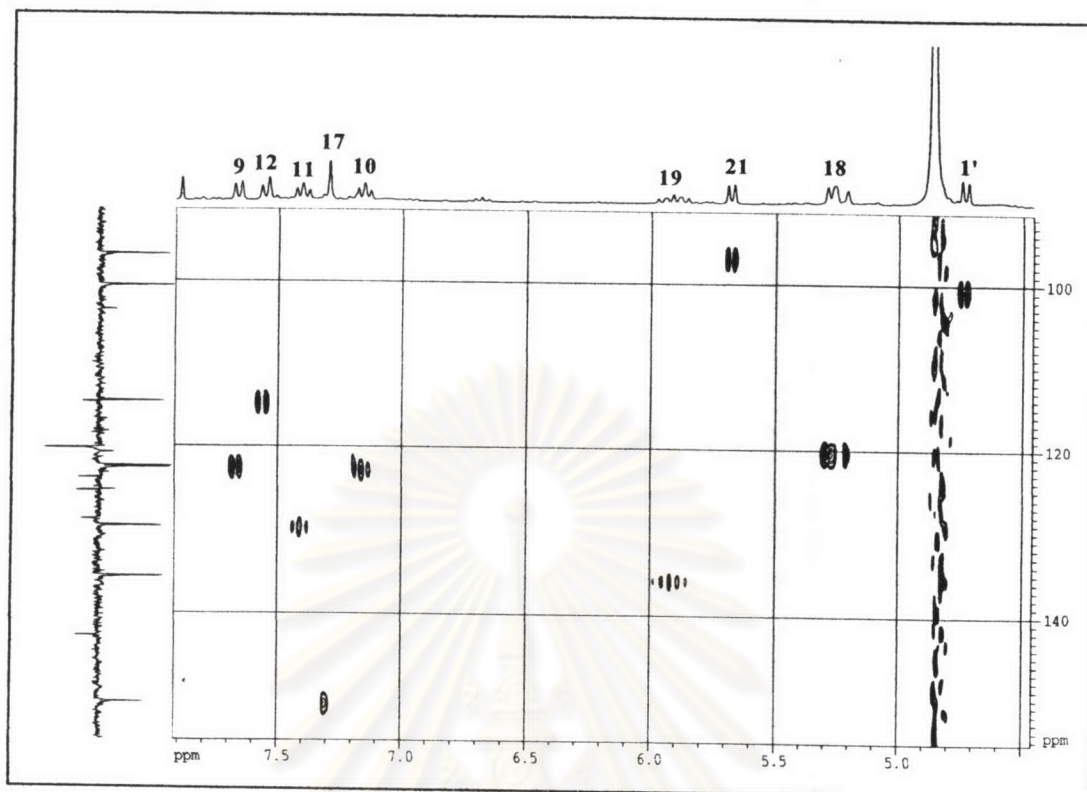
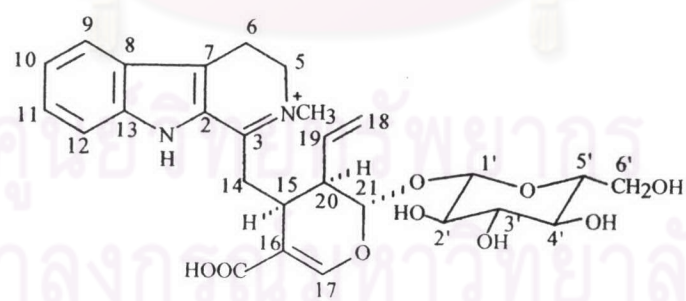


Figure 69 Expanded HMQC spectrum of SVM-6 (75 MHz ; in CD_3OD)



SVM-6

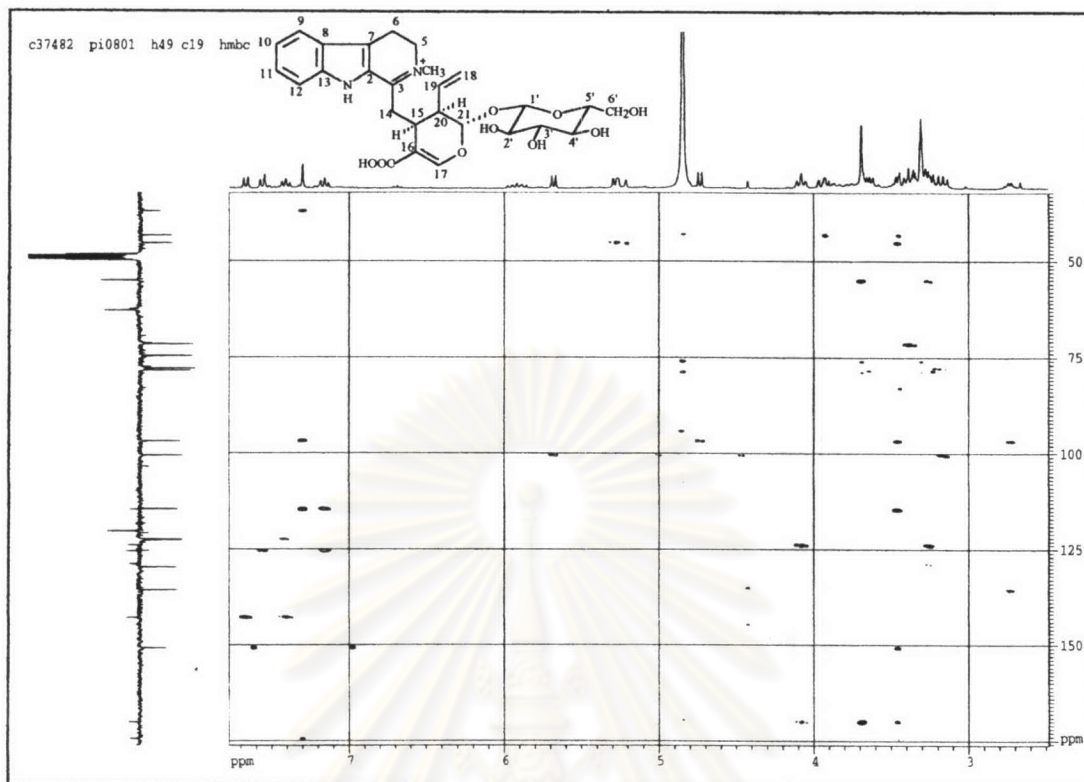


Figure 70 HMBC spectrum of SVM-6 (75 MHz ; in CD_3OD)

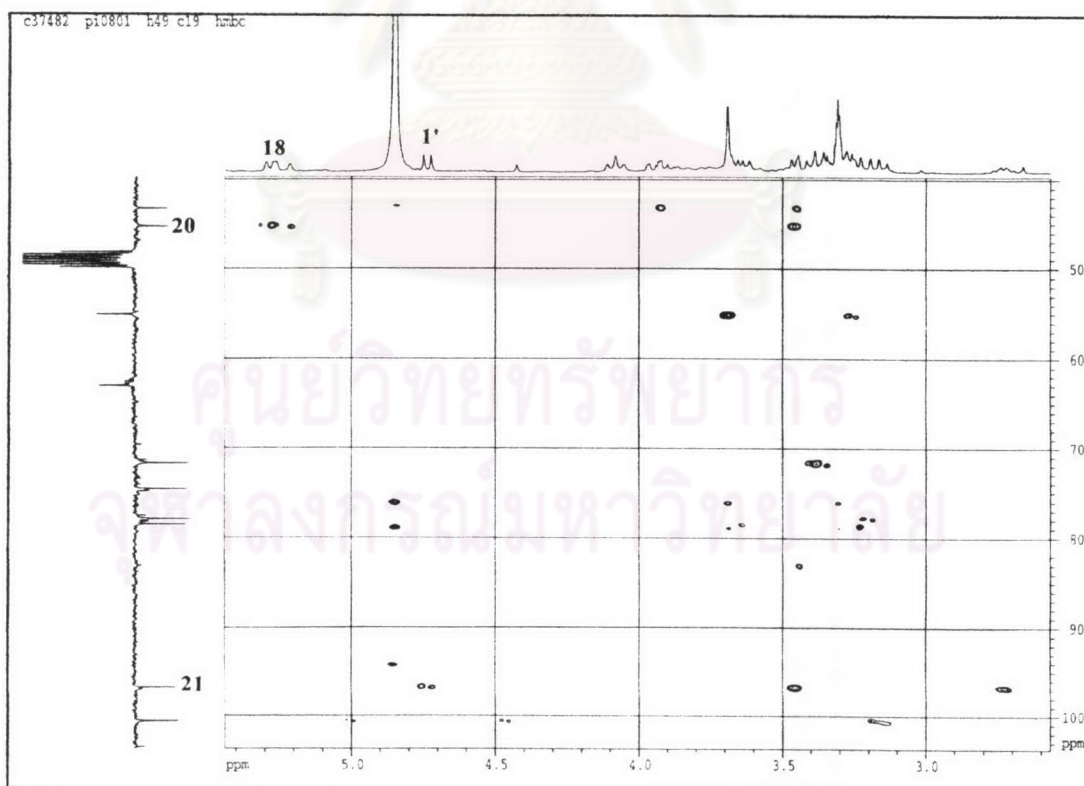


Figure 71 Expanded HMBC spectrum of SVM-6 (75 MHz ; in CD_3OD)

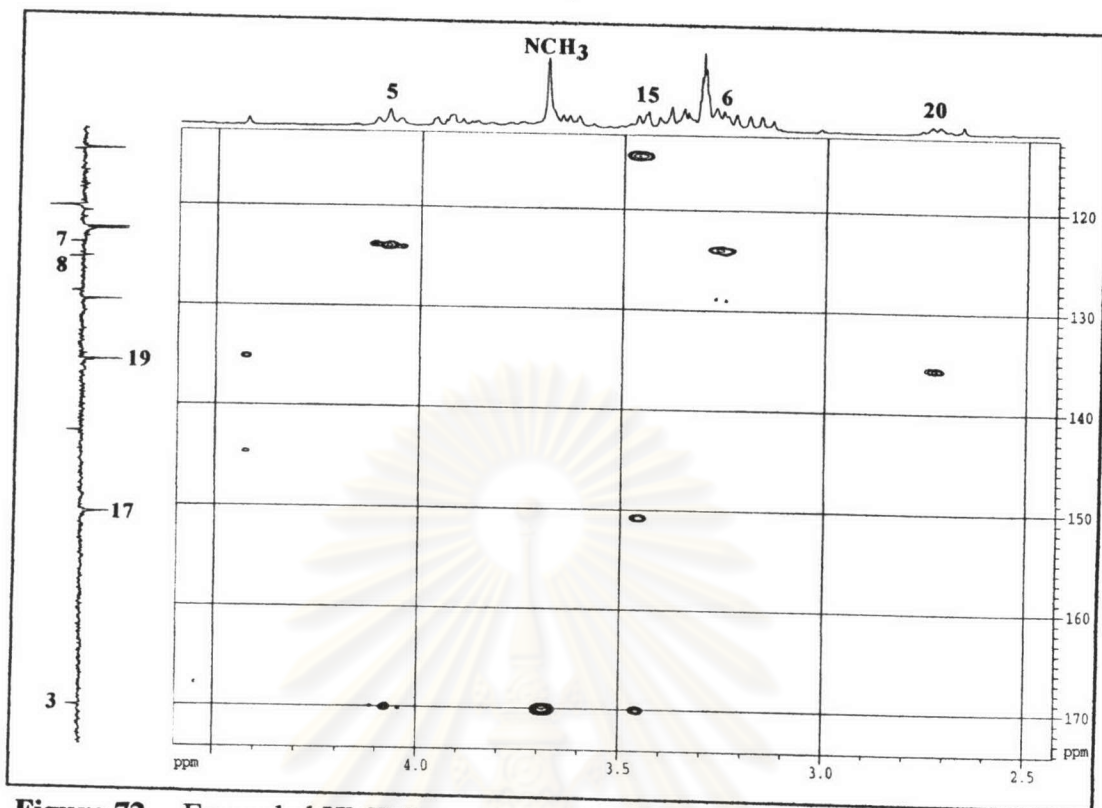


Figure 72 Expanded HMBC spectrum of SVM-6 (75 MHz ; in CD₃OD)

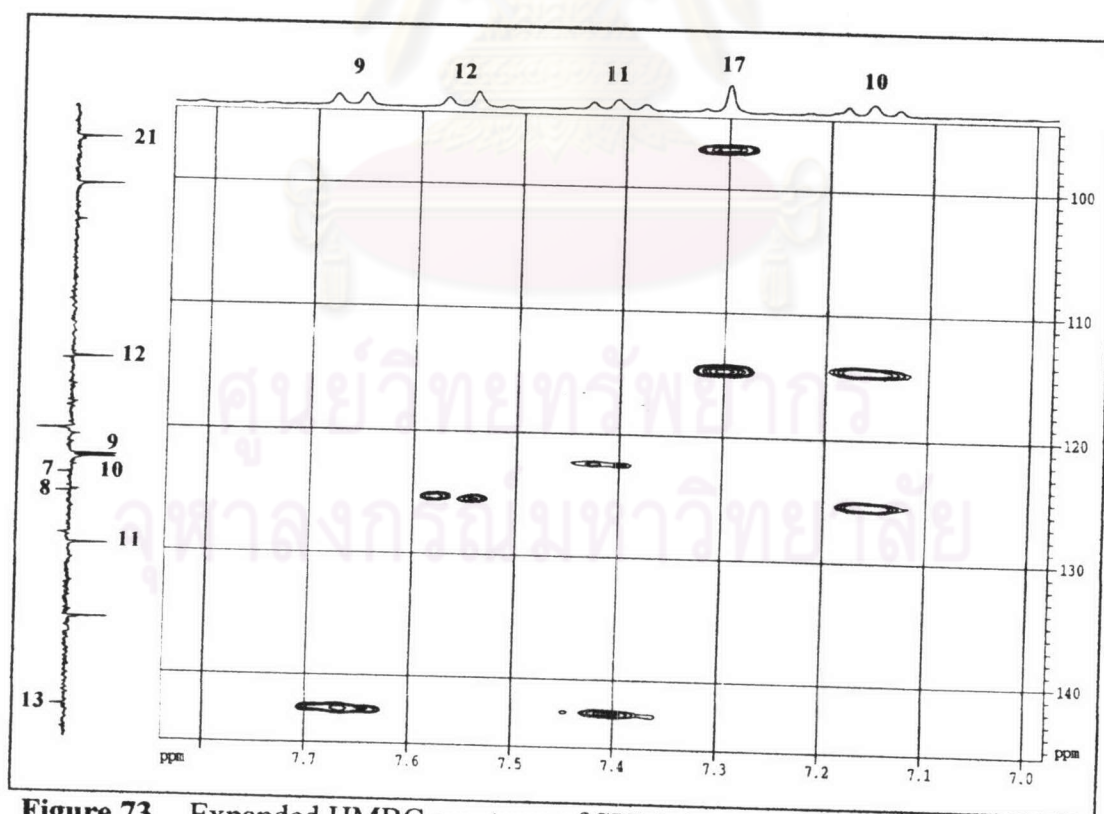


Figure 73 Expanded HMBC spectrum of SVM-6 (75 MHz ; in CD₃OD)

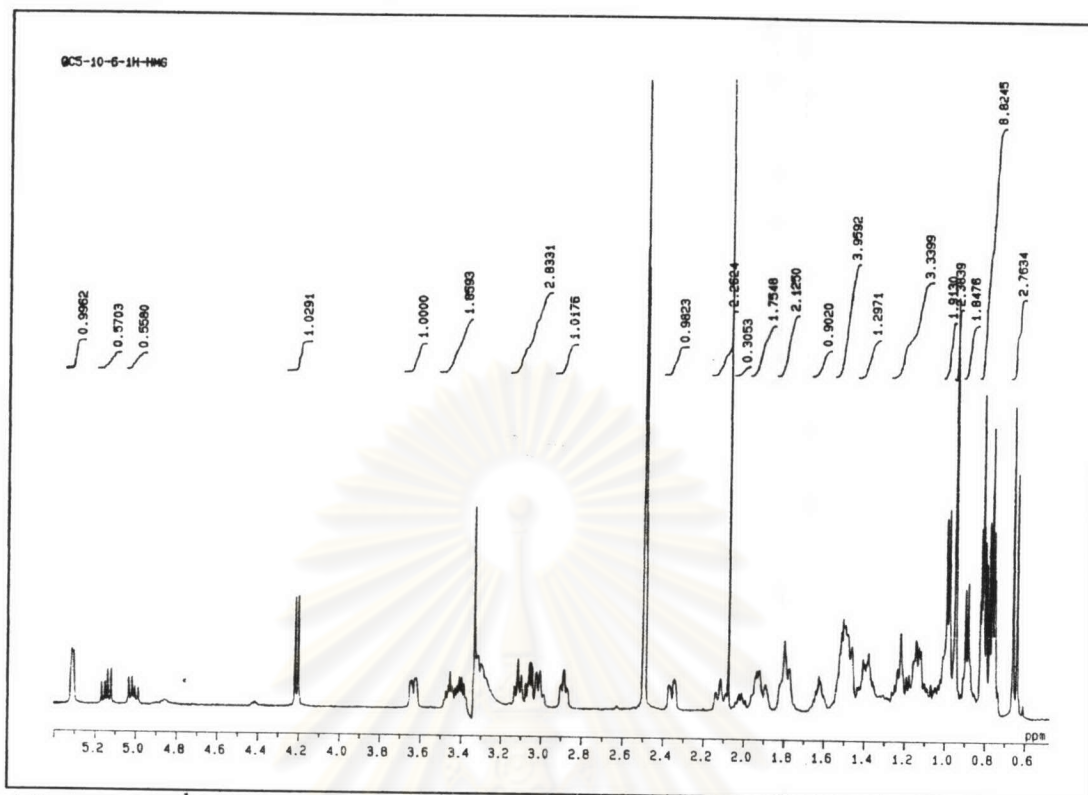
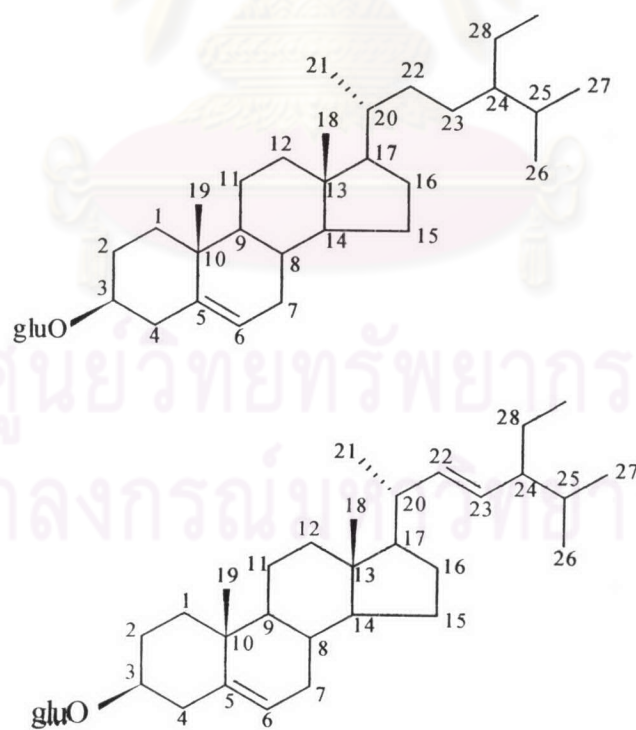


Figure 74 $^1\text{H-NMR}$ spectrum of SVC-1 (500 MHz ; in DMSO)



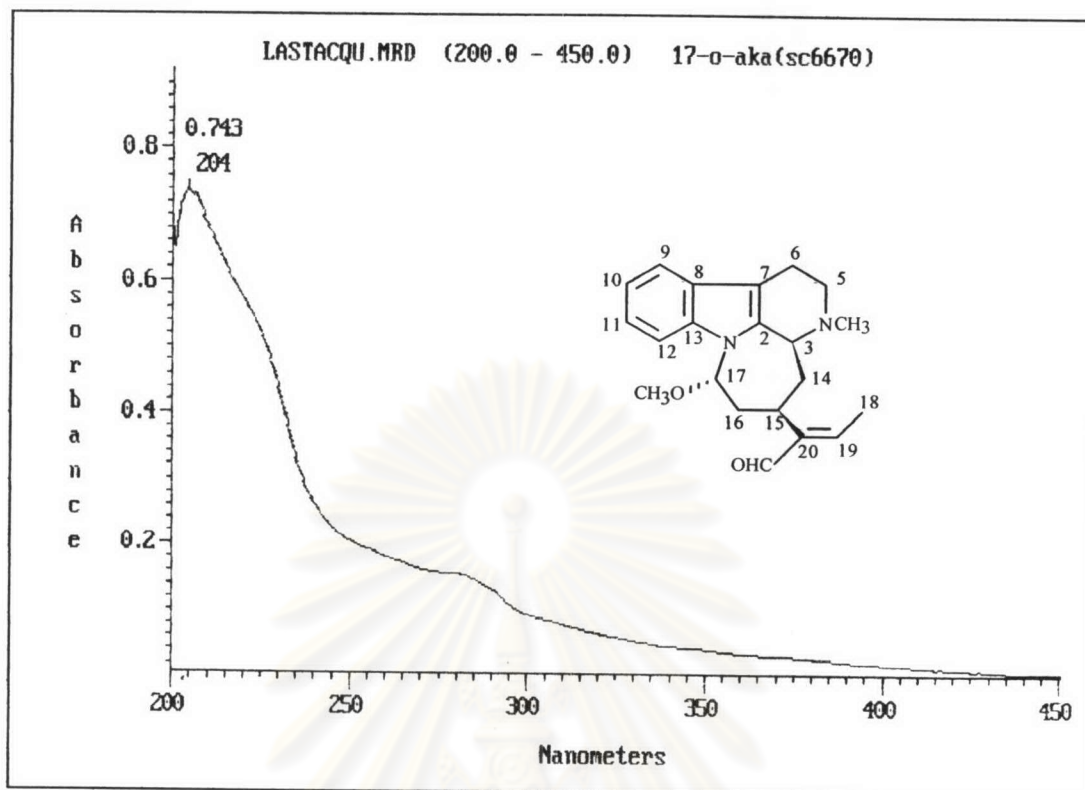


Figure 75 Ultraviolet absorption spectrum of SVC-2

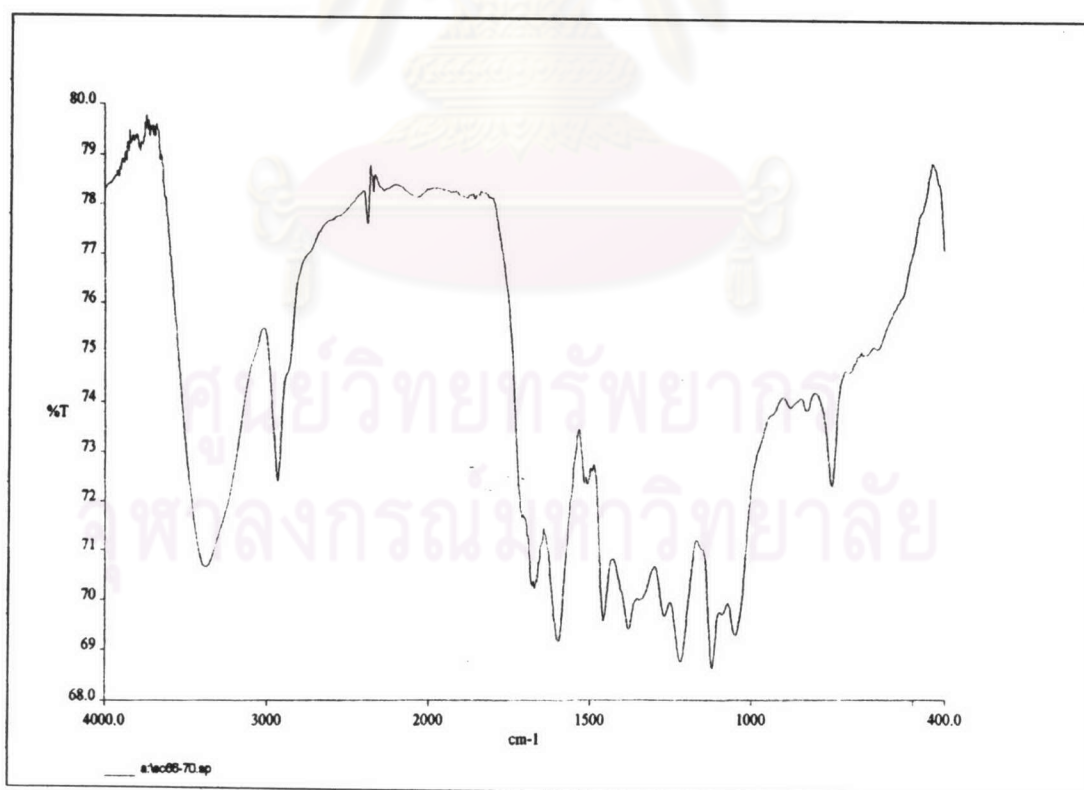


Figure 76 Infrared absorption spectrum of SVC-2

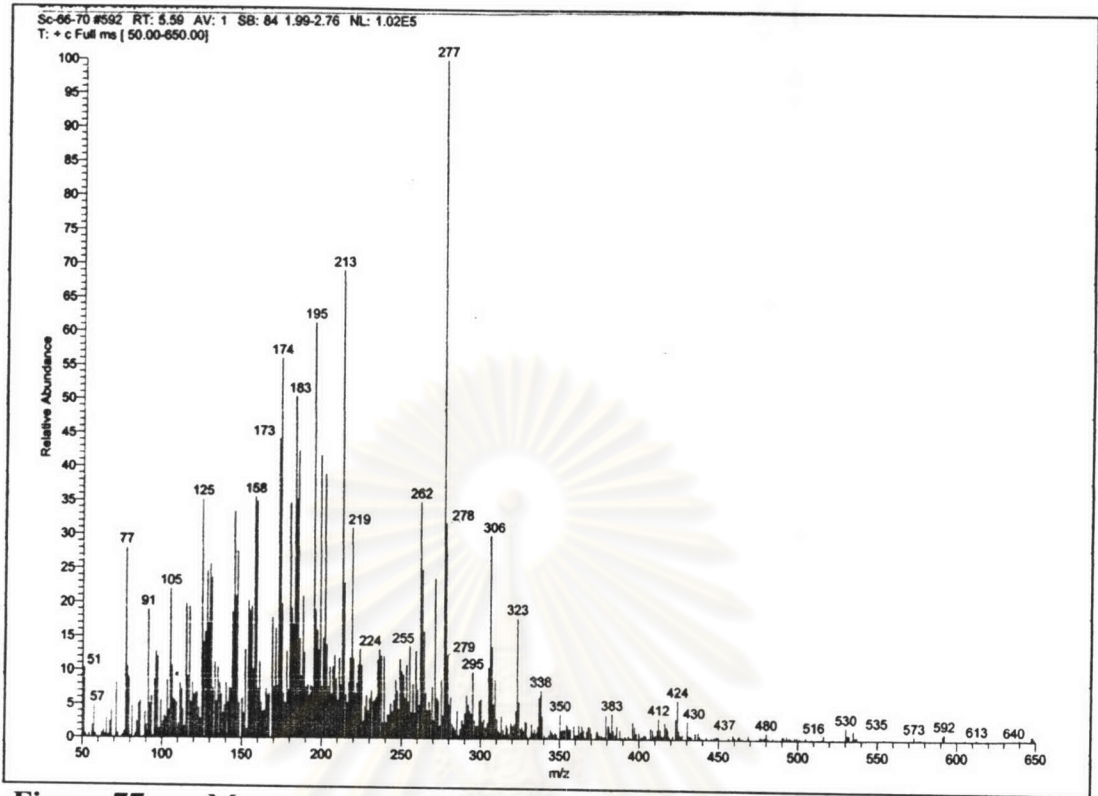
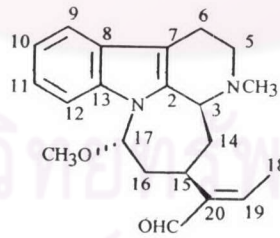


Figure 77 Mass spectrum of SVC-2



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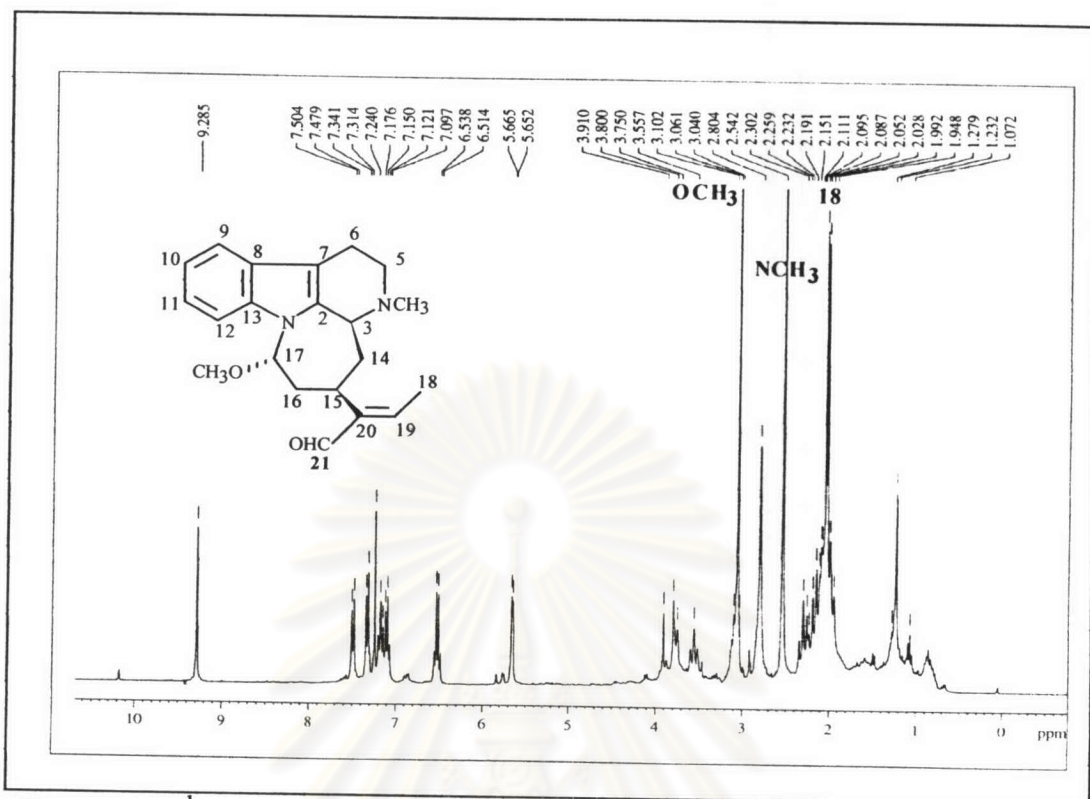


Figure 78 $^1\text{H-NMR}$ spectrum of SVC-2 (300 MHz ; in CDCl_3)

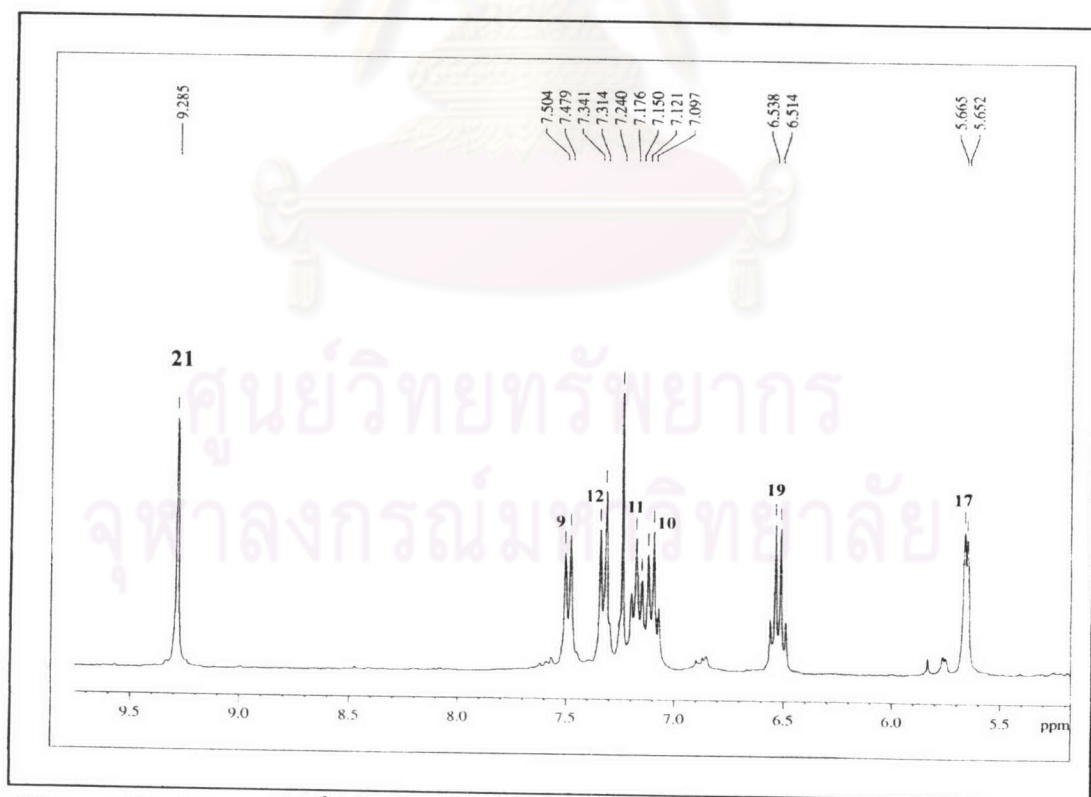


Figure 79 Expanded $^1\text{H-NMR}$ spectrum of SVC-2 (300 MHz ; in CDCl_3)

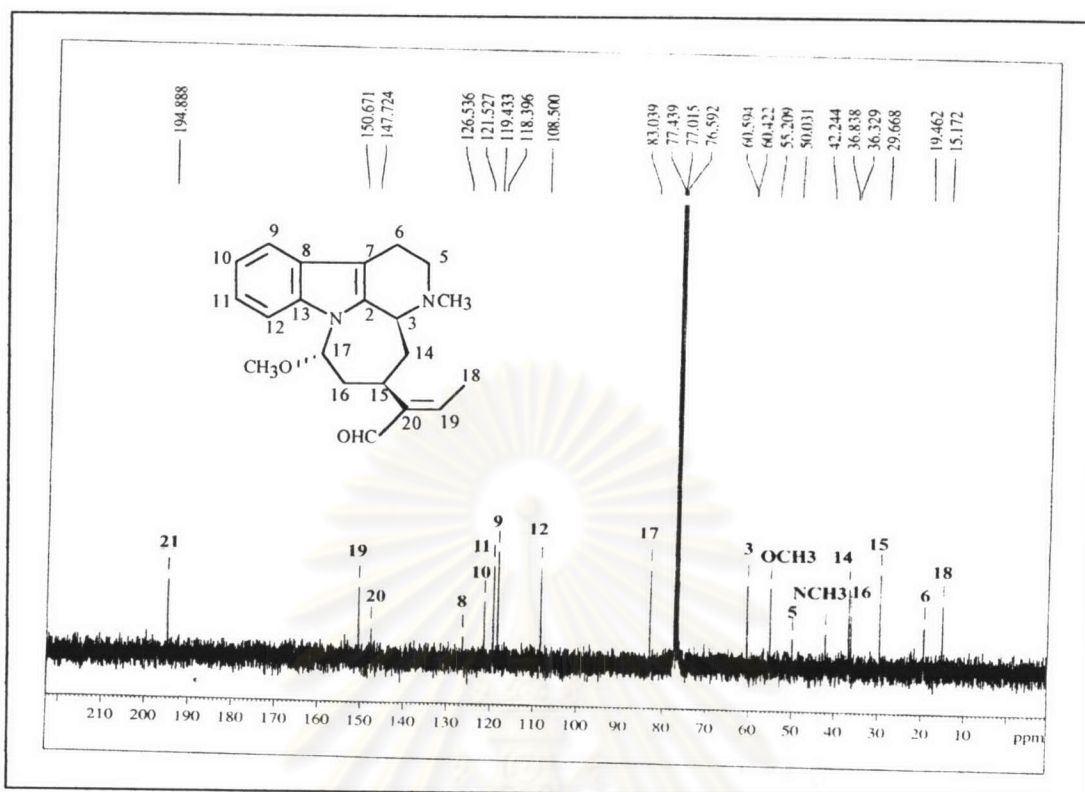


Figure 80 ^{13}C -NMR spectrum of SVC-2 (75 MHz ; in CDCl_3)

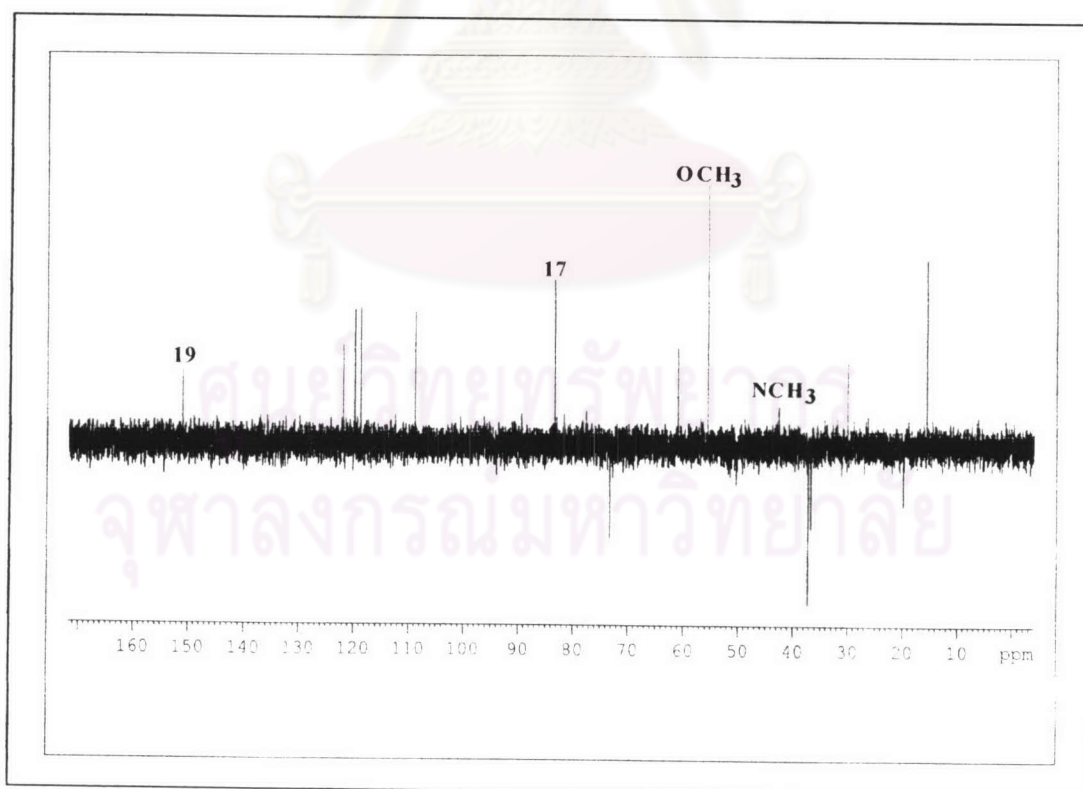


Figure 81 DEPT 135 spectrum of SVC-2 (75 MHz ; in CDCl_3)

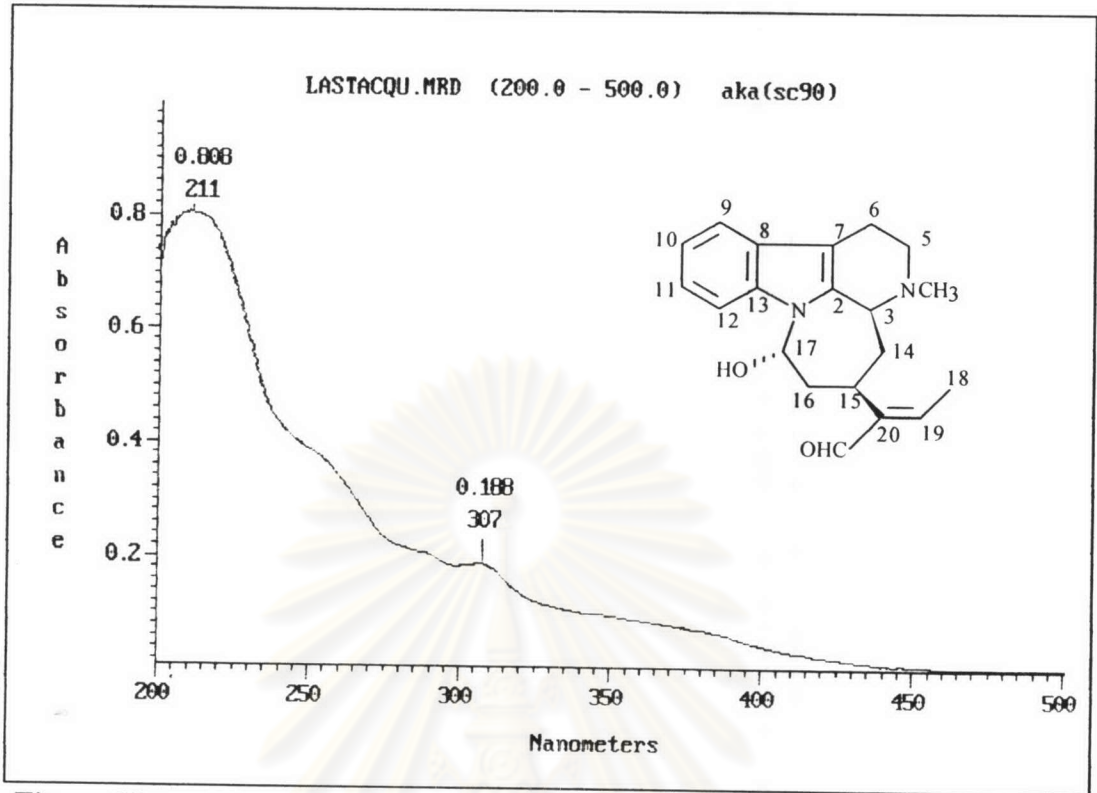


Figure 82 Ultraviolet absorption spectrum of SVC-3

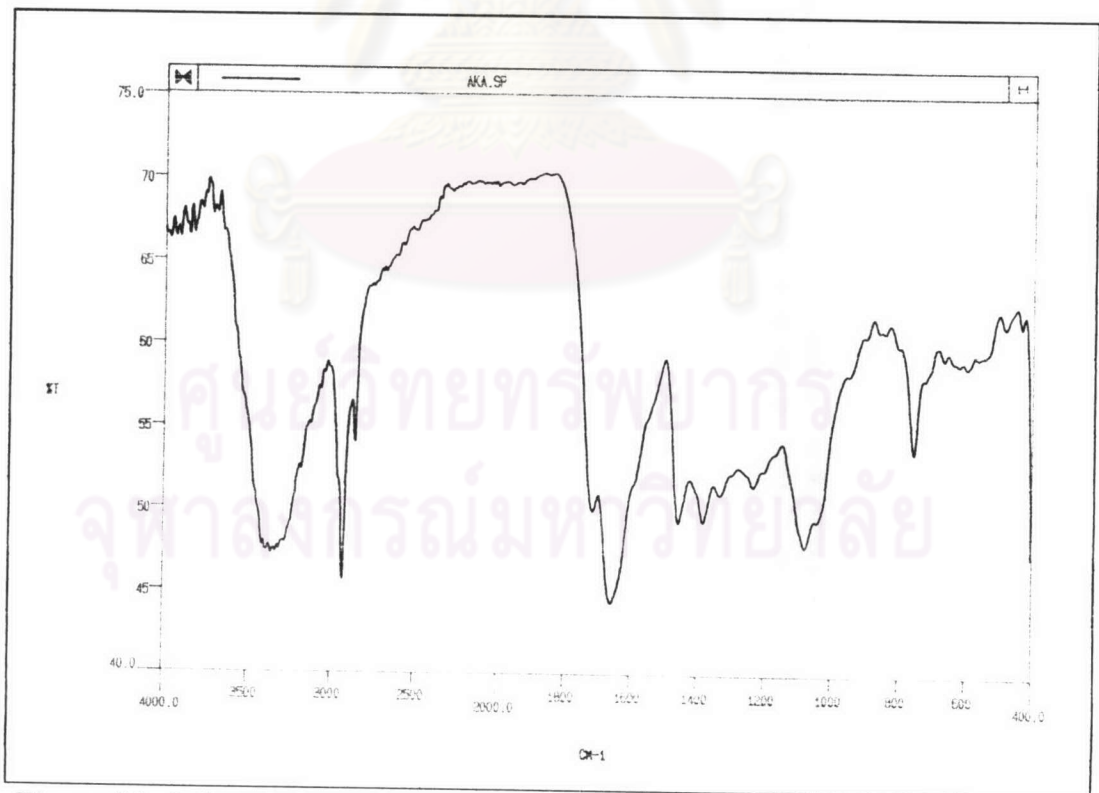


Figure 83 Infrared absorption spectrum of SVC-3

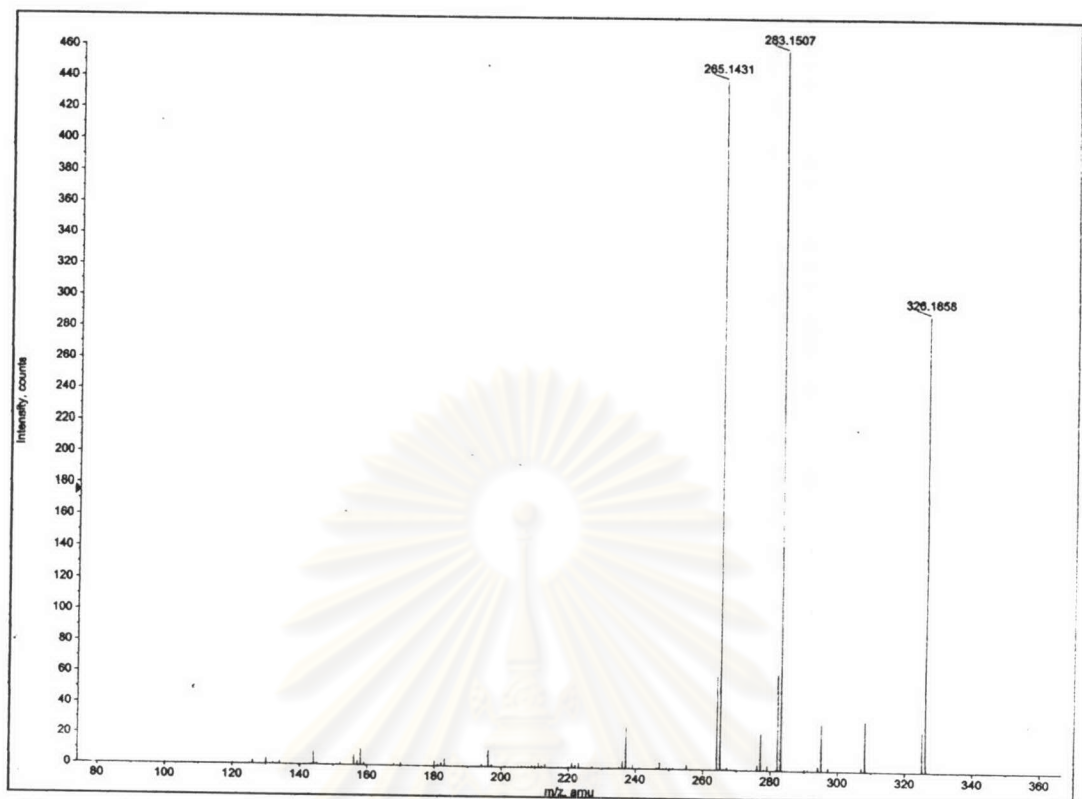
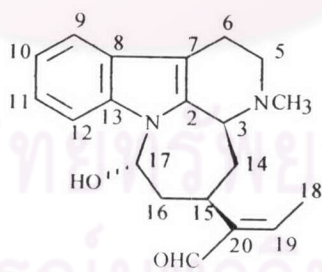


Figure 84 Mass spectrum of SVC-3



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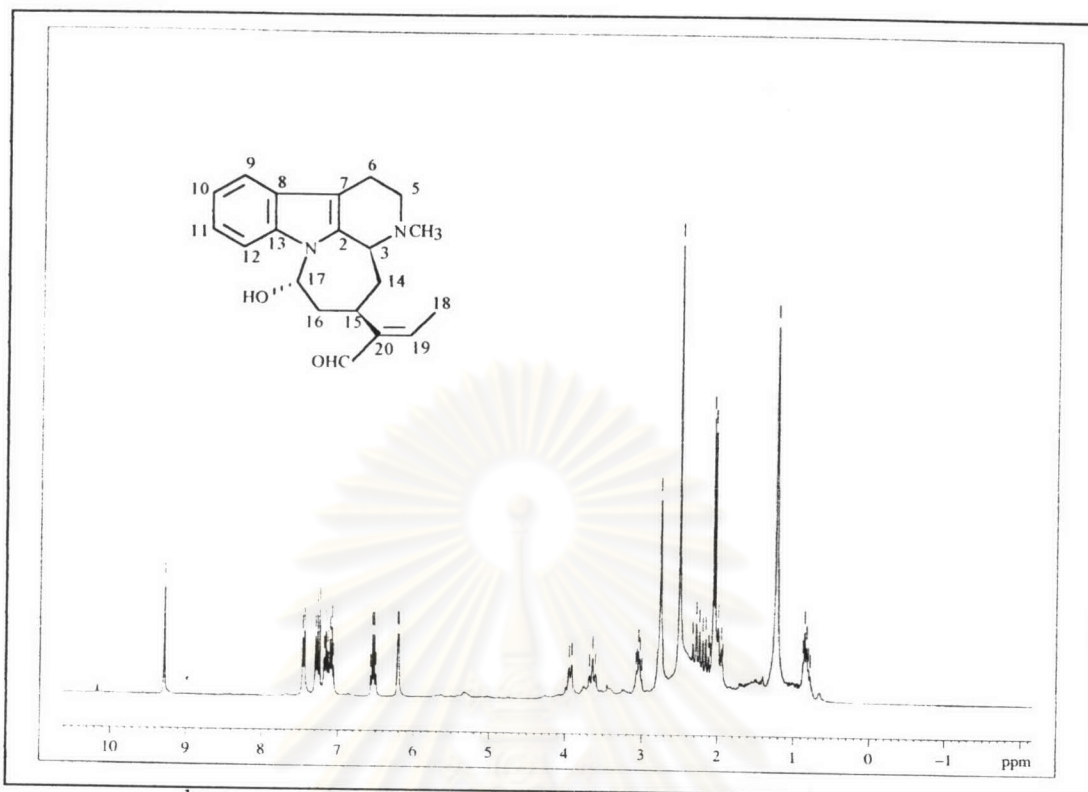


Figure 85 $^1\text{H-NMR}$ spectrum of SVC-3 (300 MHz ; in CDCl_3)

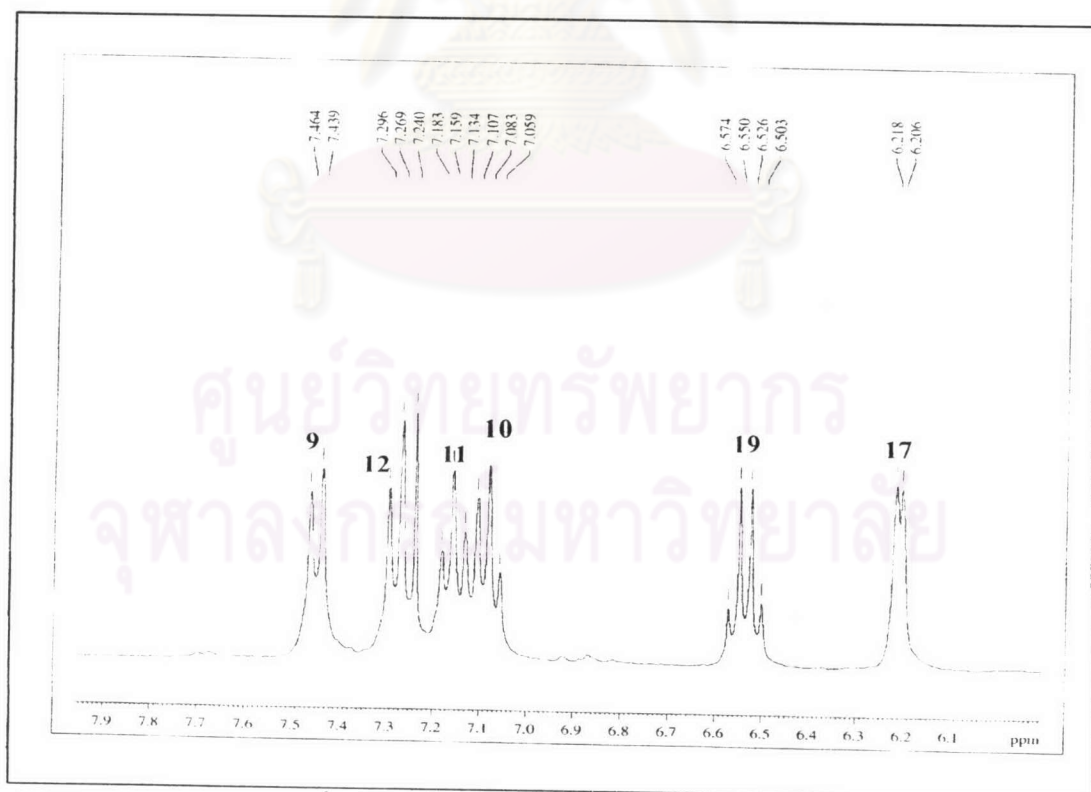


Figure 86 Expanded $^1\text{H-NMR}$ spectrum of SVC-3 (300 MHz ; in CDCl_3)

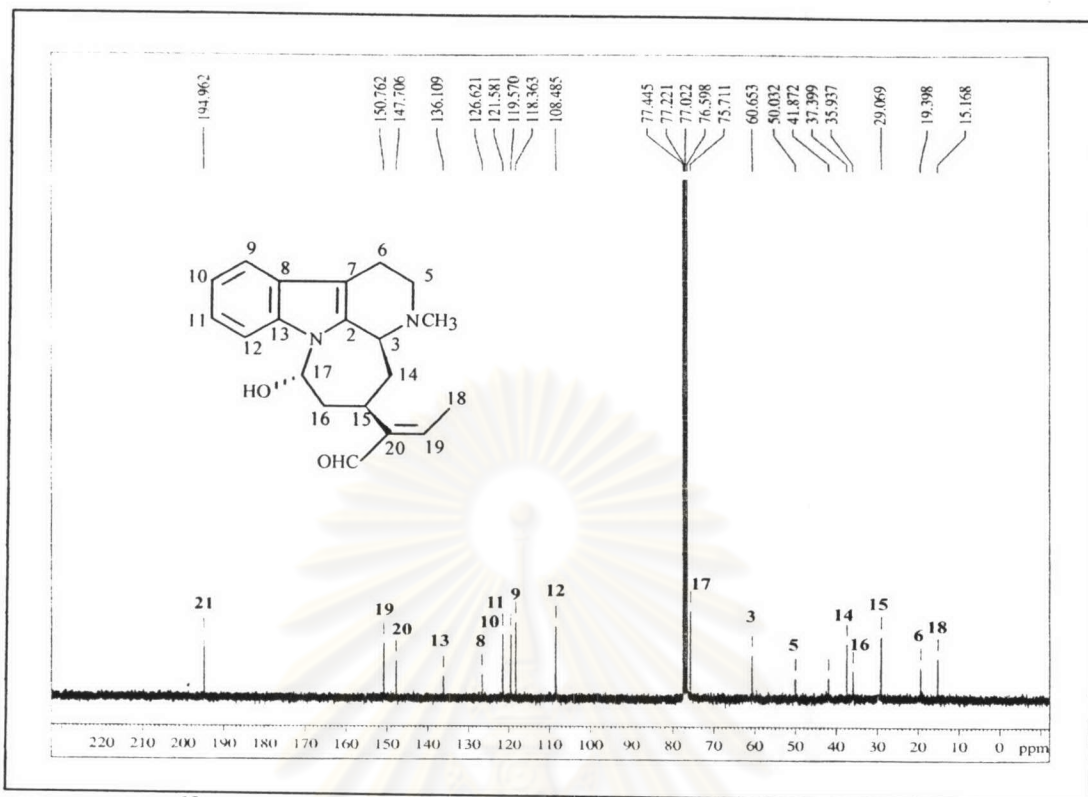


Figure 87 ¹³C-NMR spectrum of SVC-3 (75 MHz ; in CDCl₃)

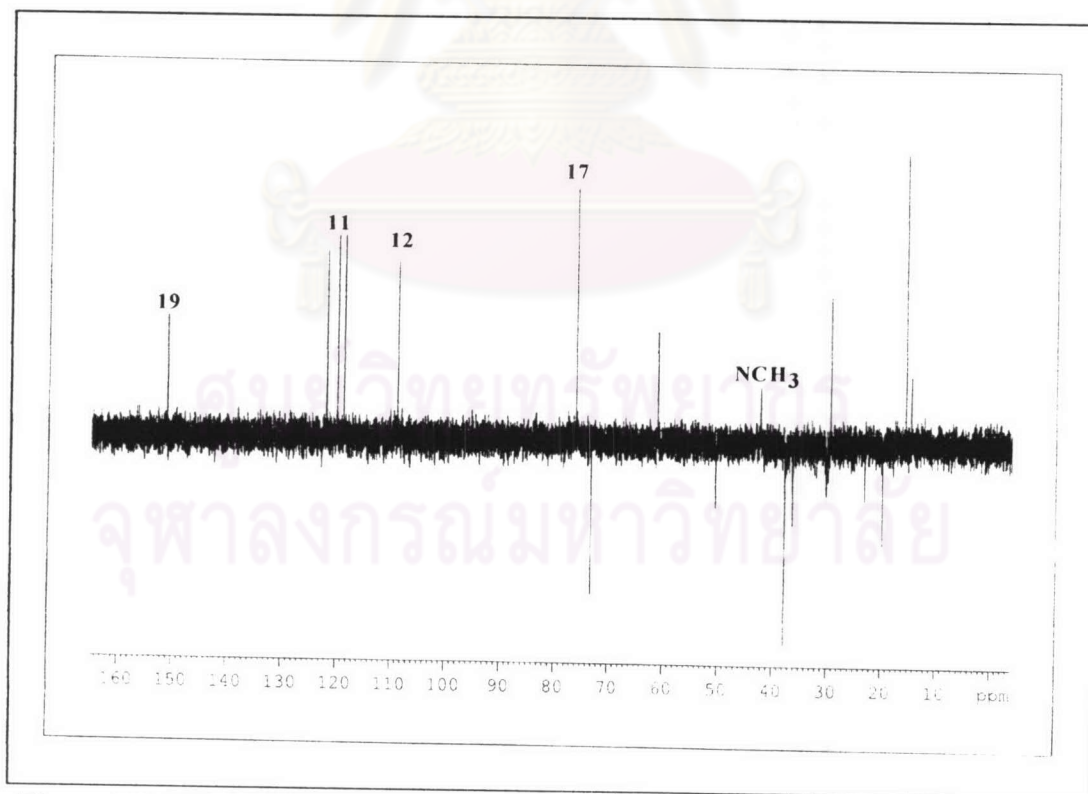


Figure 88 DEPT 135 spectrum of SVC-3 (75 MHz ; in CDCl₃)

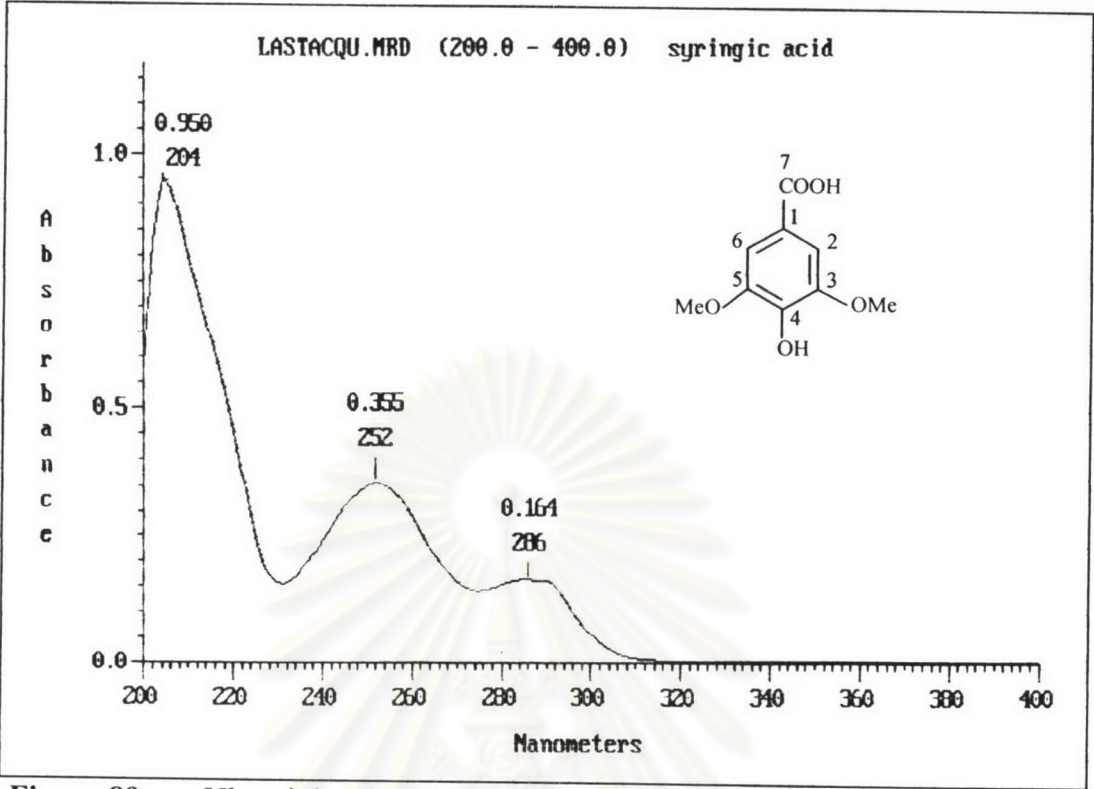


Figure 89 Ultraviolet absorption spectrum of SVC-4

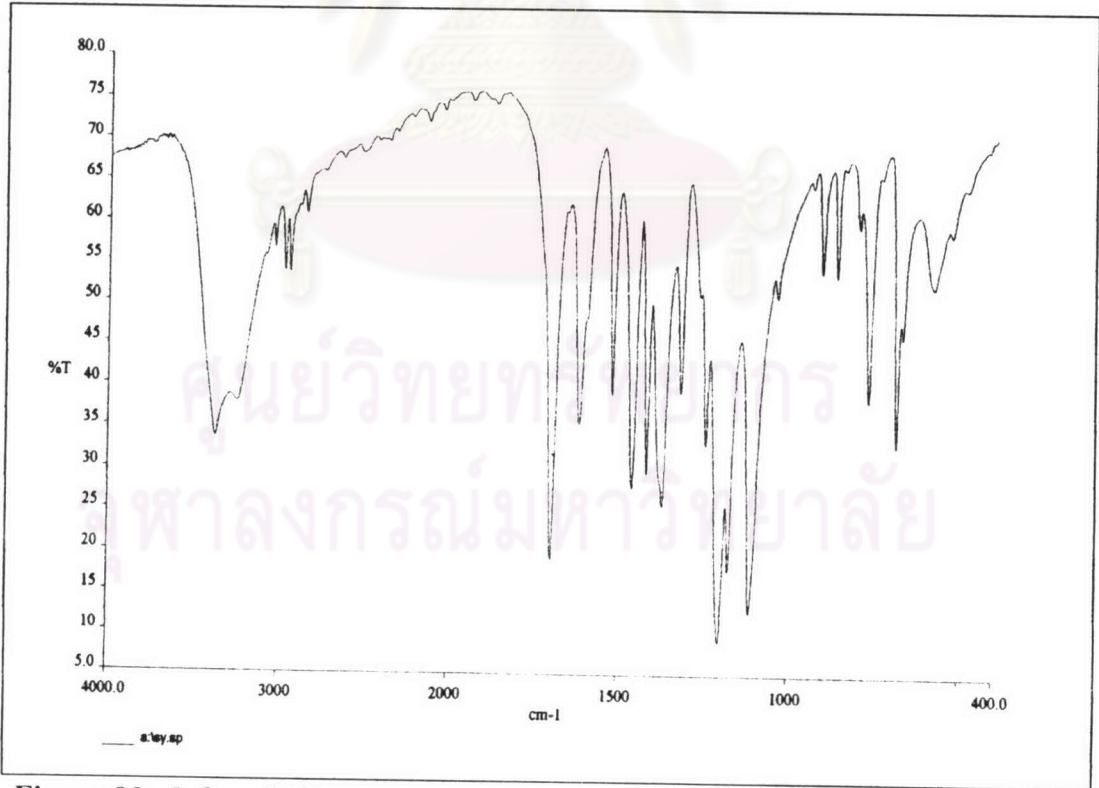


Figure 90 Infrared absorption spectrum of SVC-4

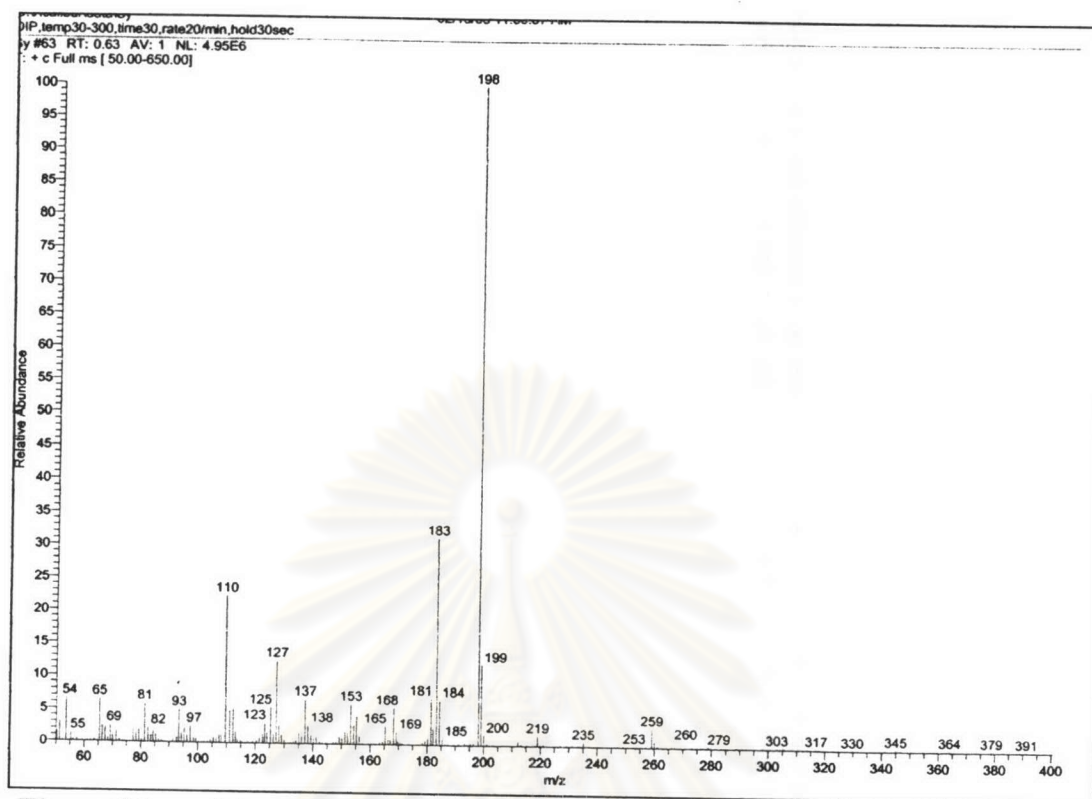
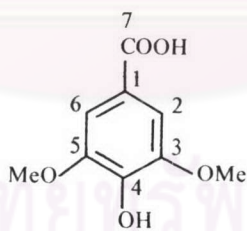


Figure 91 Mass spectrum of SVC-4



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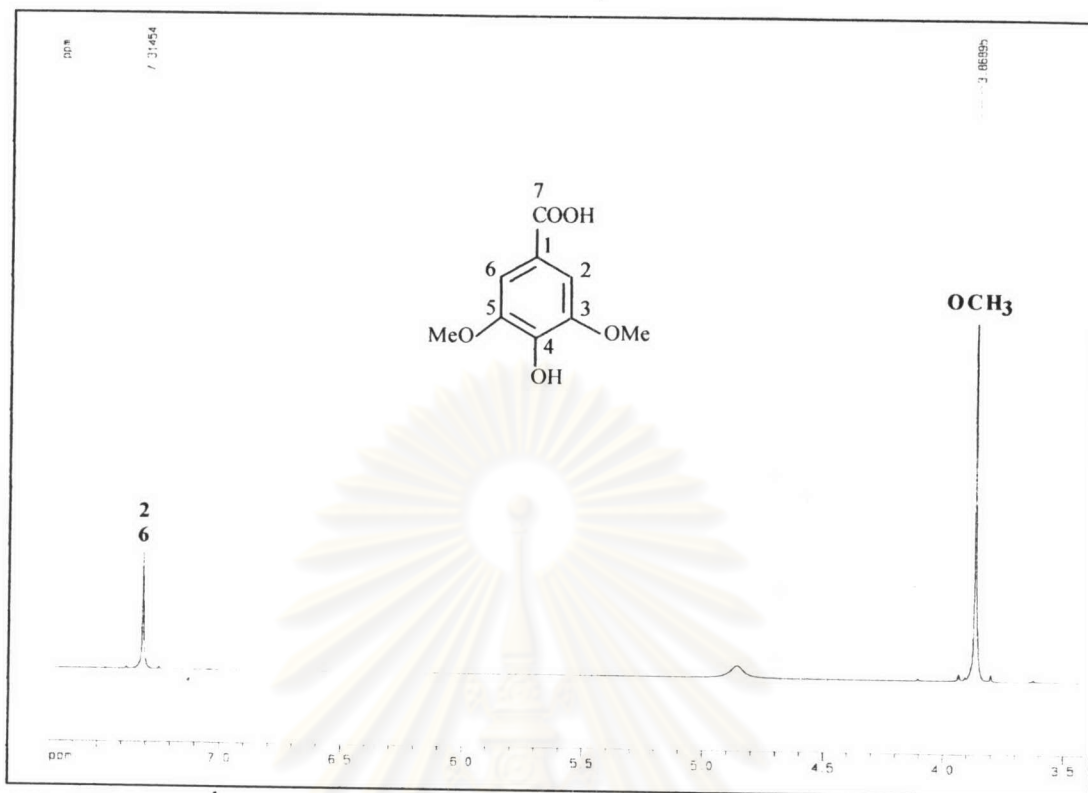


Figure 92 $^1\text{H-NMR}$ spectrum of SVC-4 (300 MHz ; in CD_3OD)

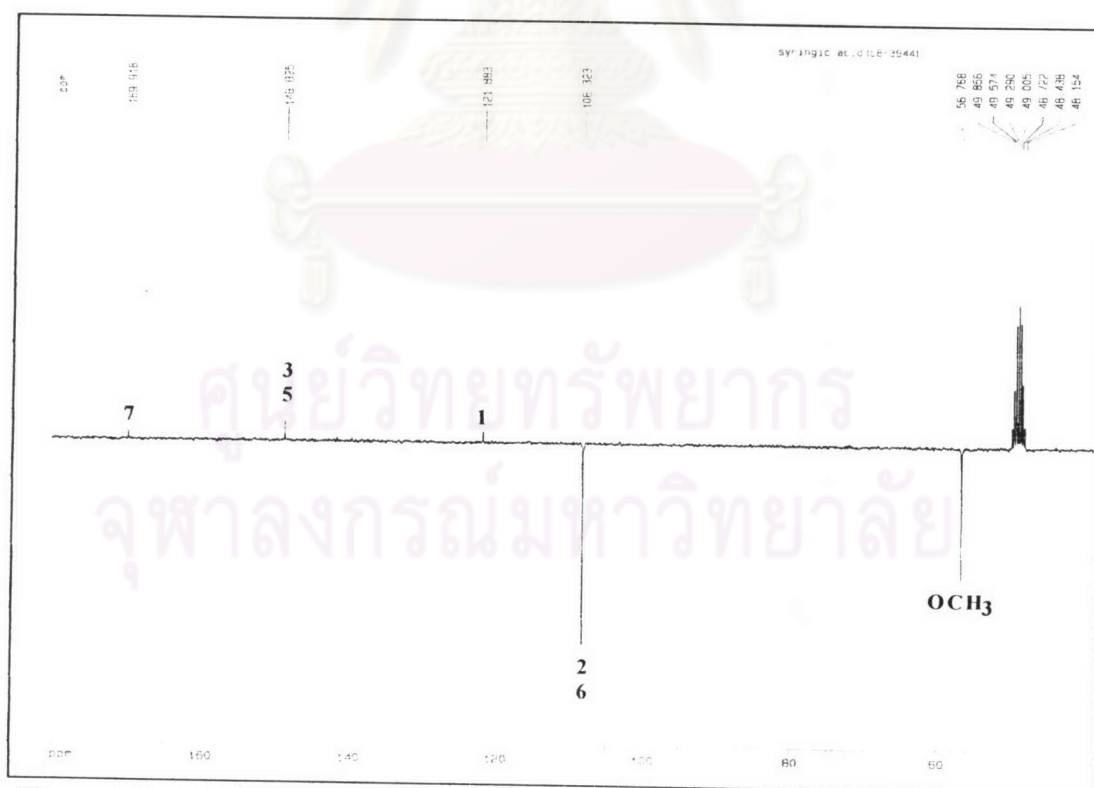


Figure 93 APT spectrum of SVC-4 (75 MHz ; in CD_3OD)

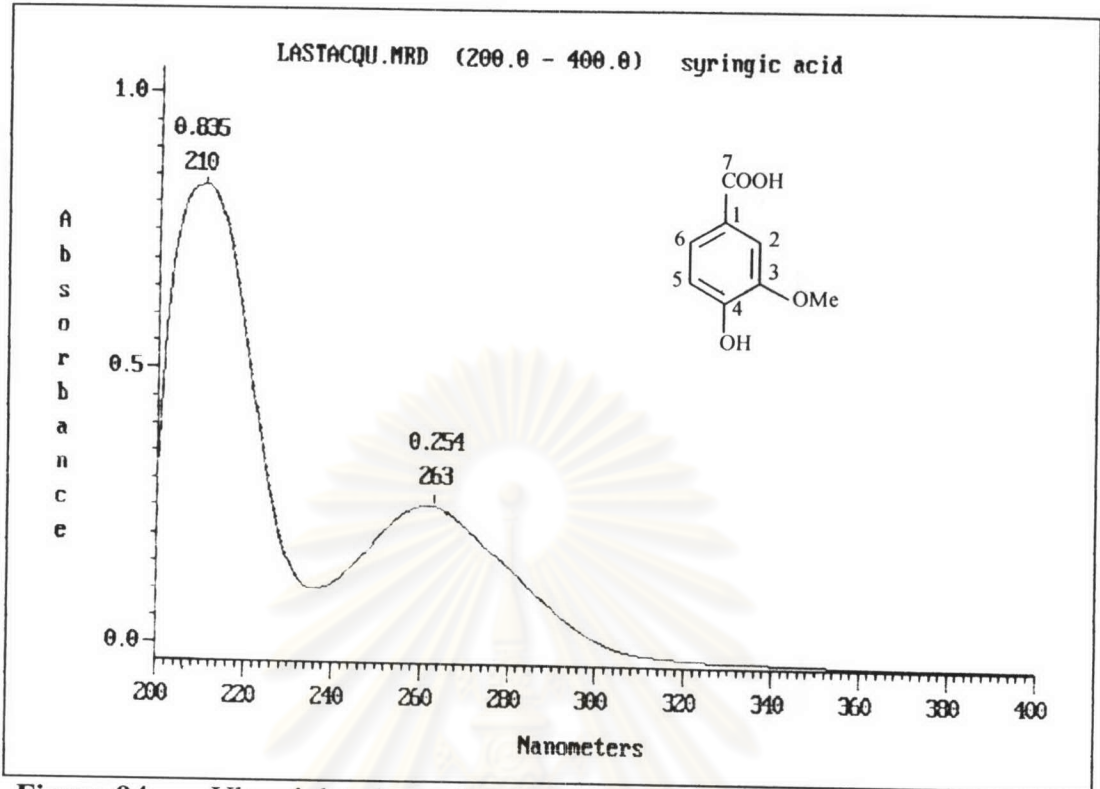


Figure 94 Ultraviolet absorption spectrum of SVC-5

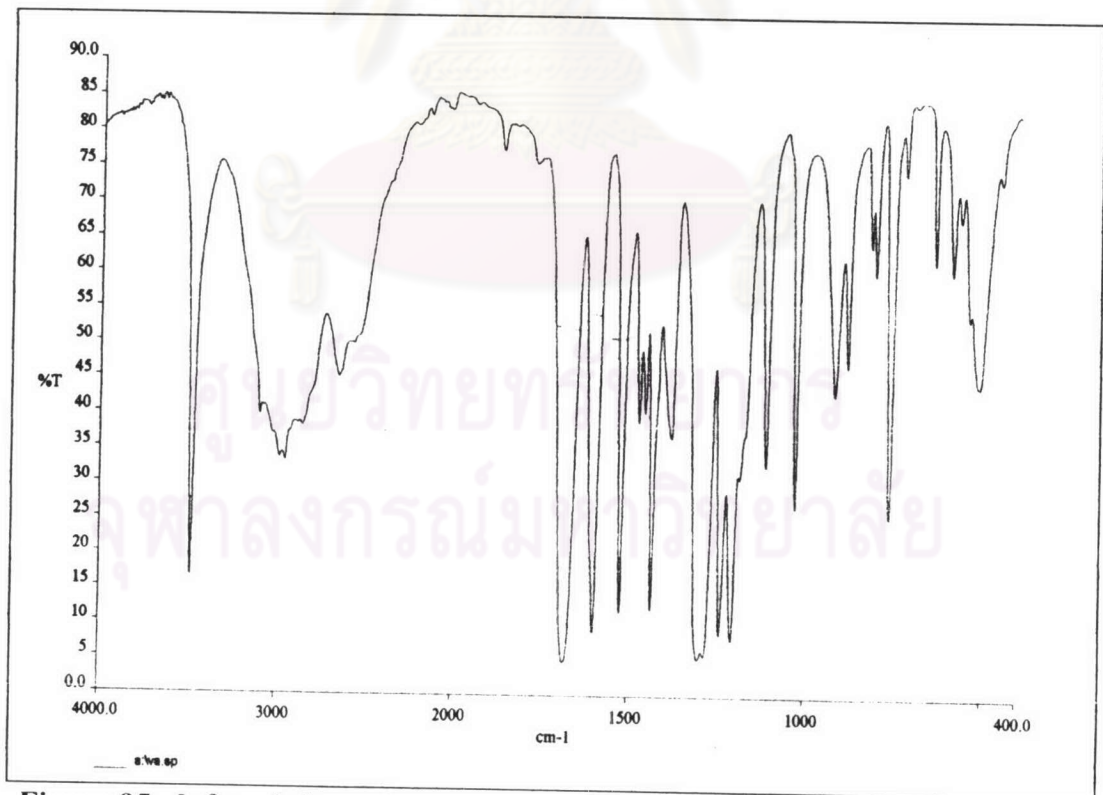


Figure 95 Infrared absorption spectrum of SVC-5

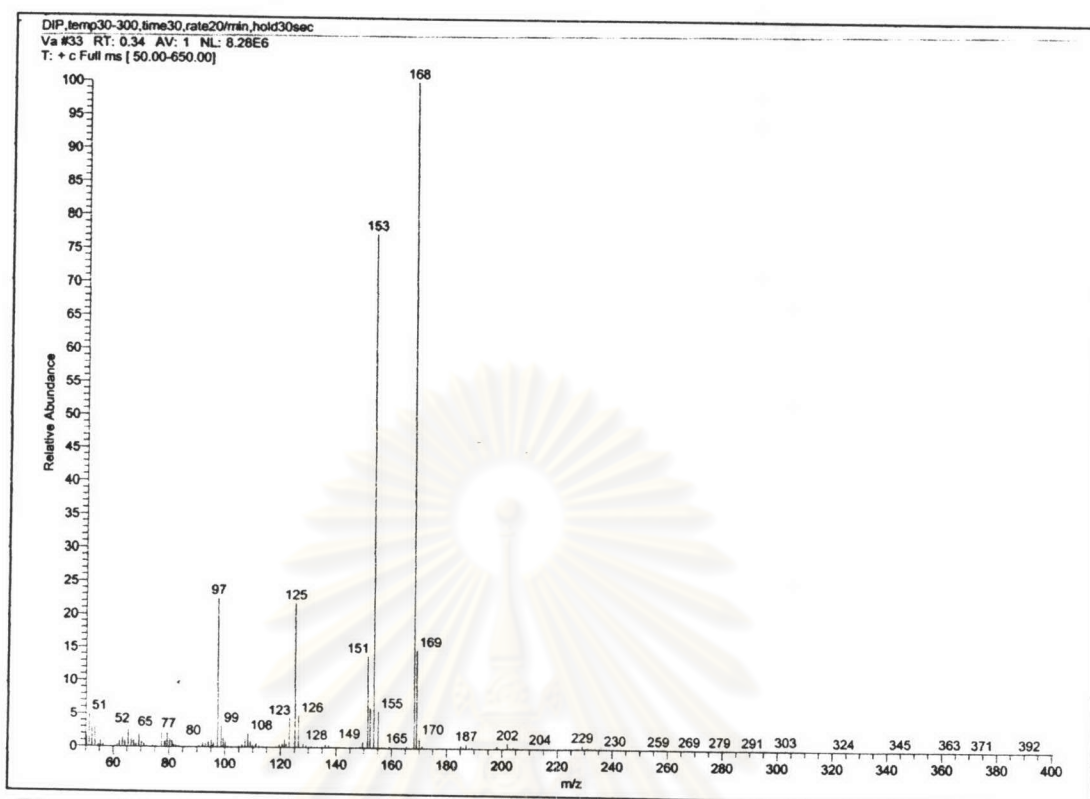
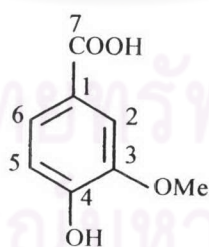


Figure 96 Mass spectrum of SVC-5



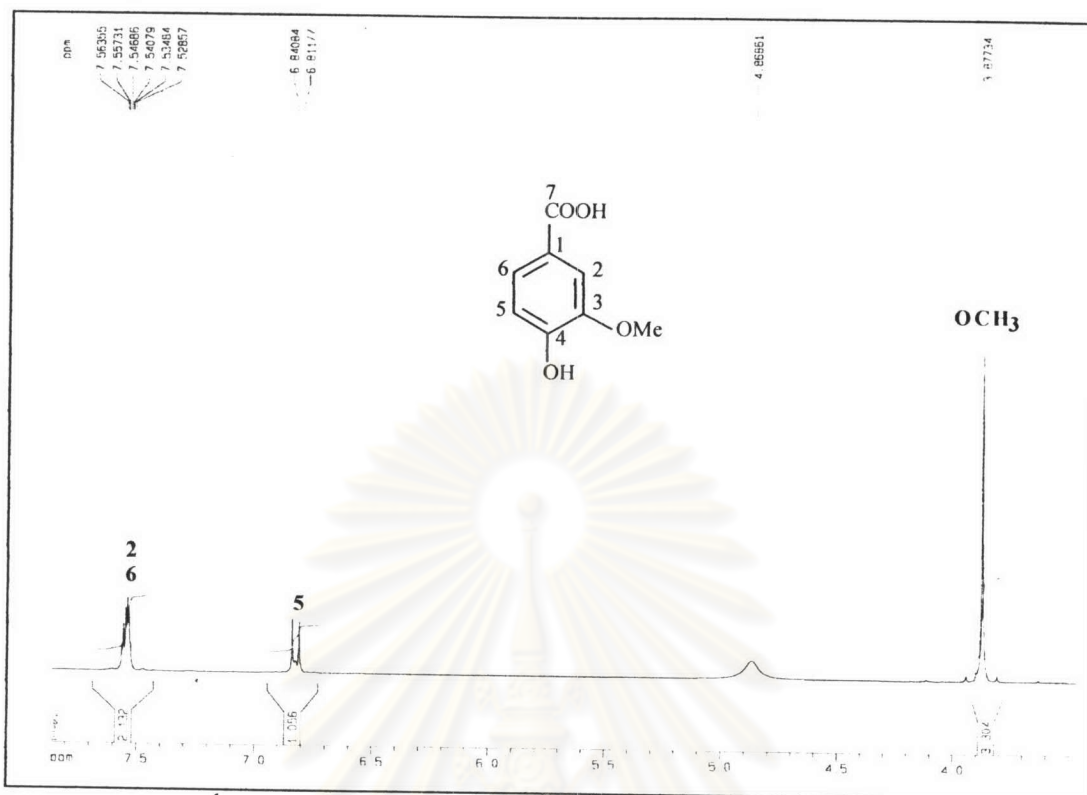


Figure 97 ¹H-NMR spectrum of SVC-5 (300 MHz ; in CD₃OD)

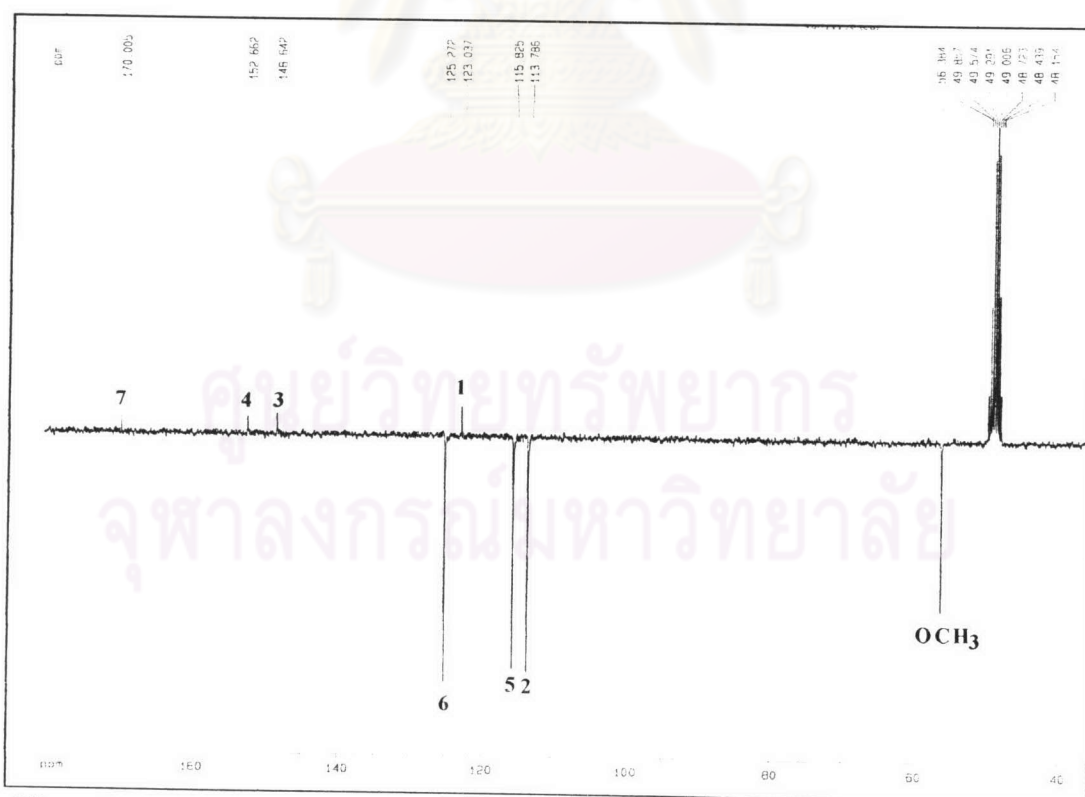
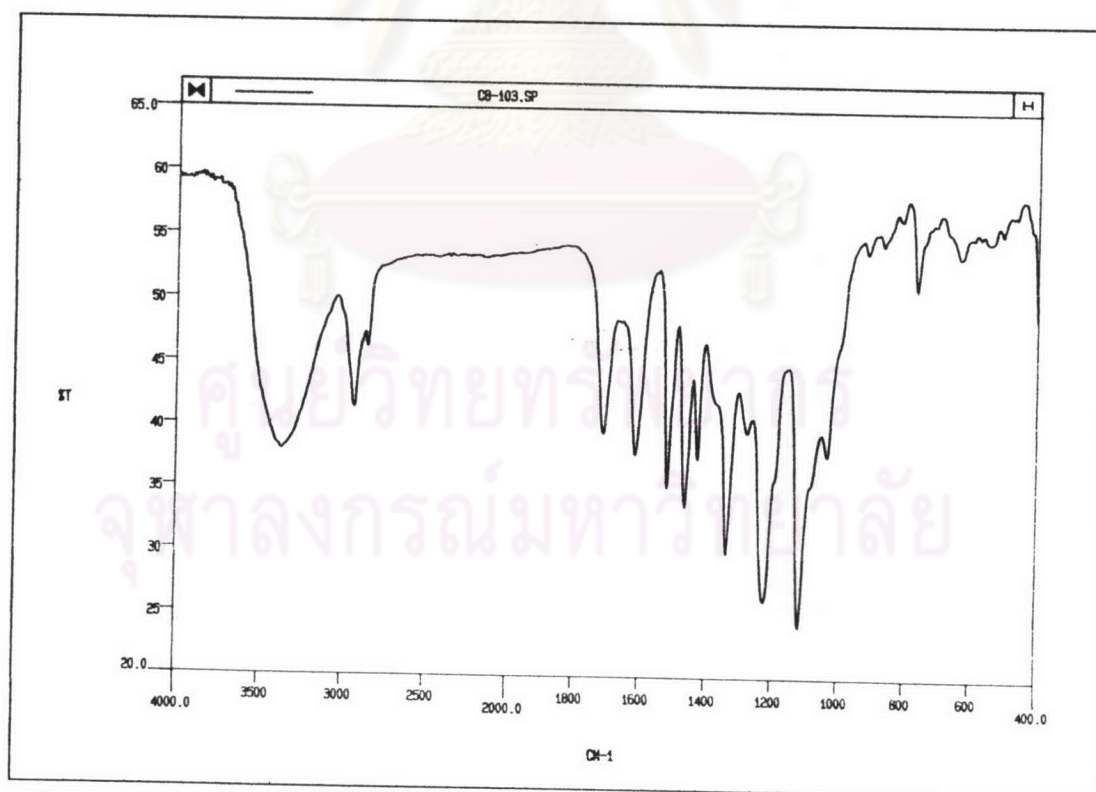
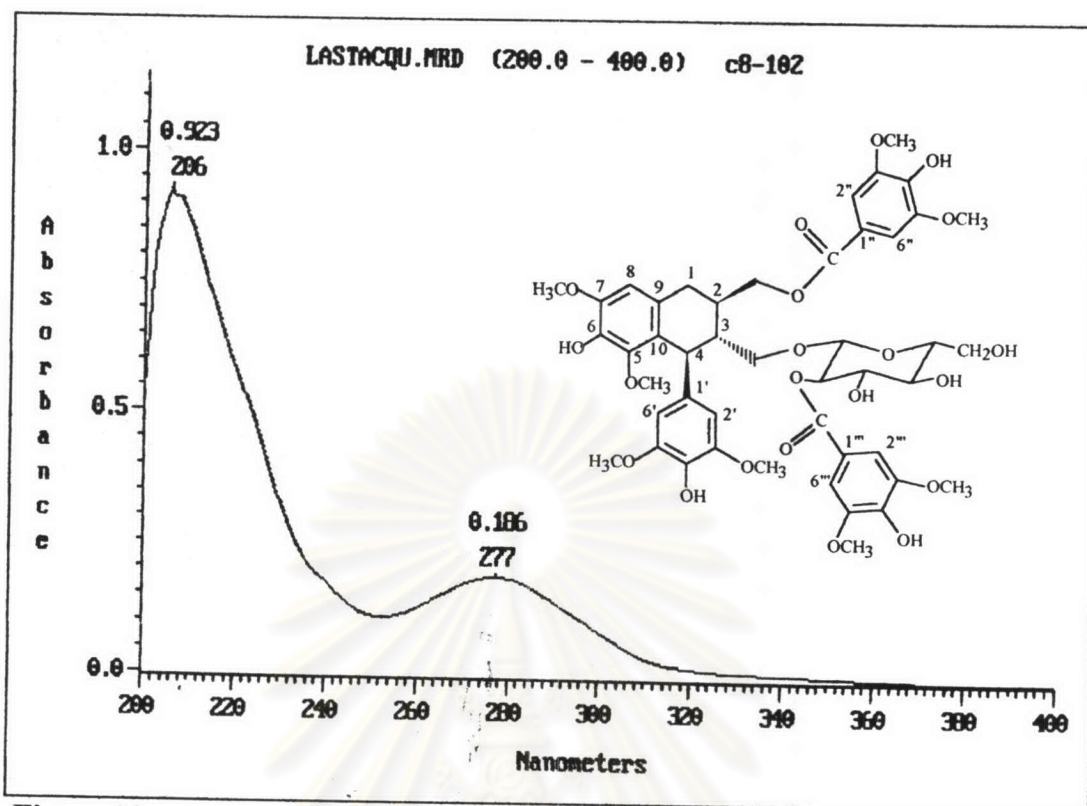


Figure 98 APT spectrum of SVC-5 (75 MHz ; in CD₃OD)



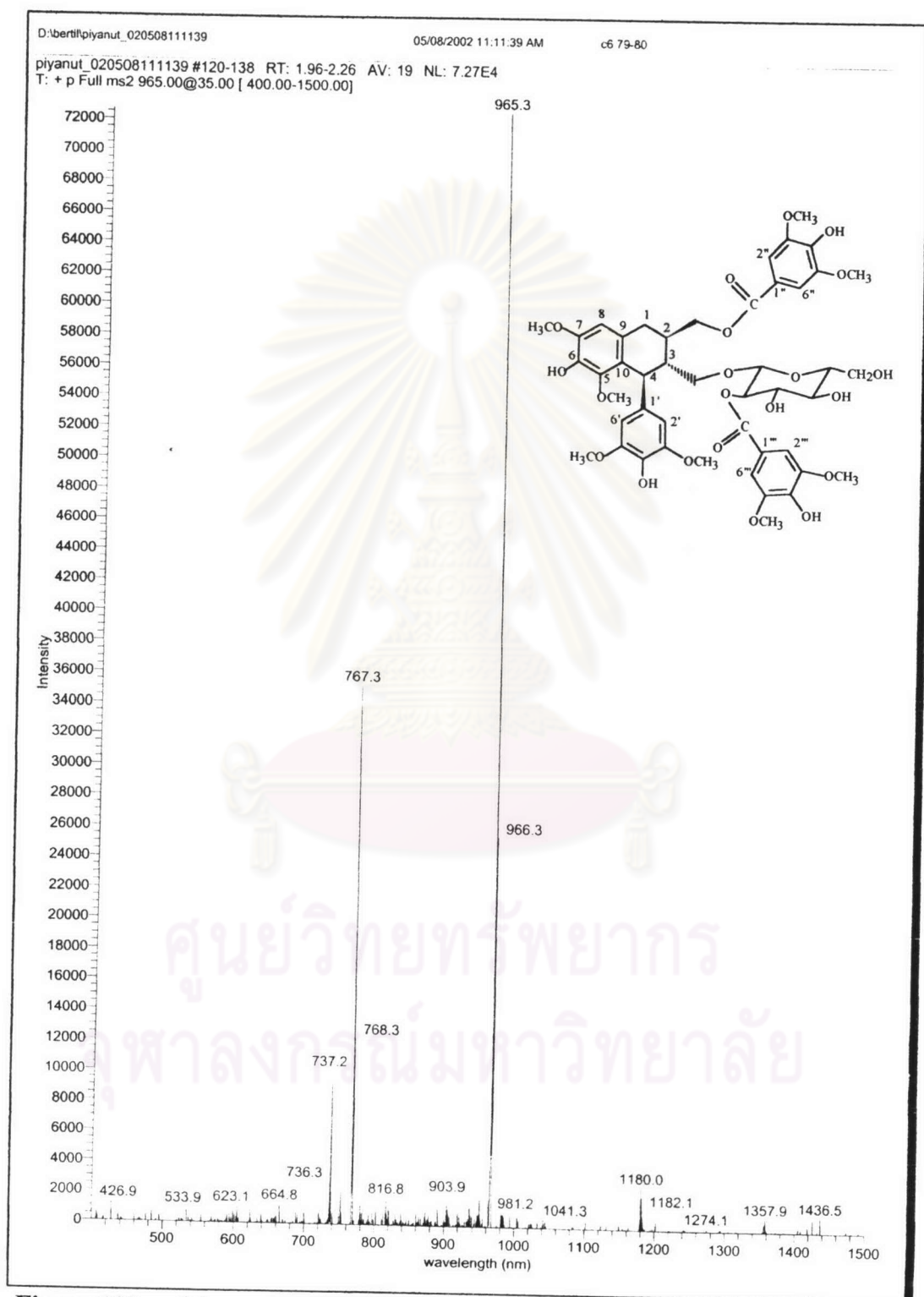


Figure 101 Mass spectrum of SVC-6

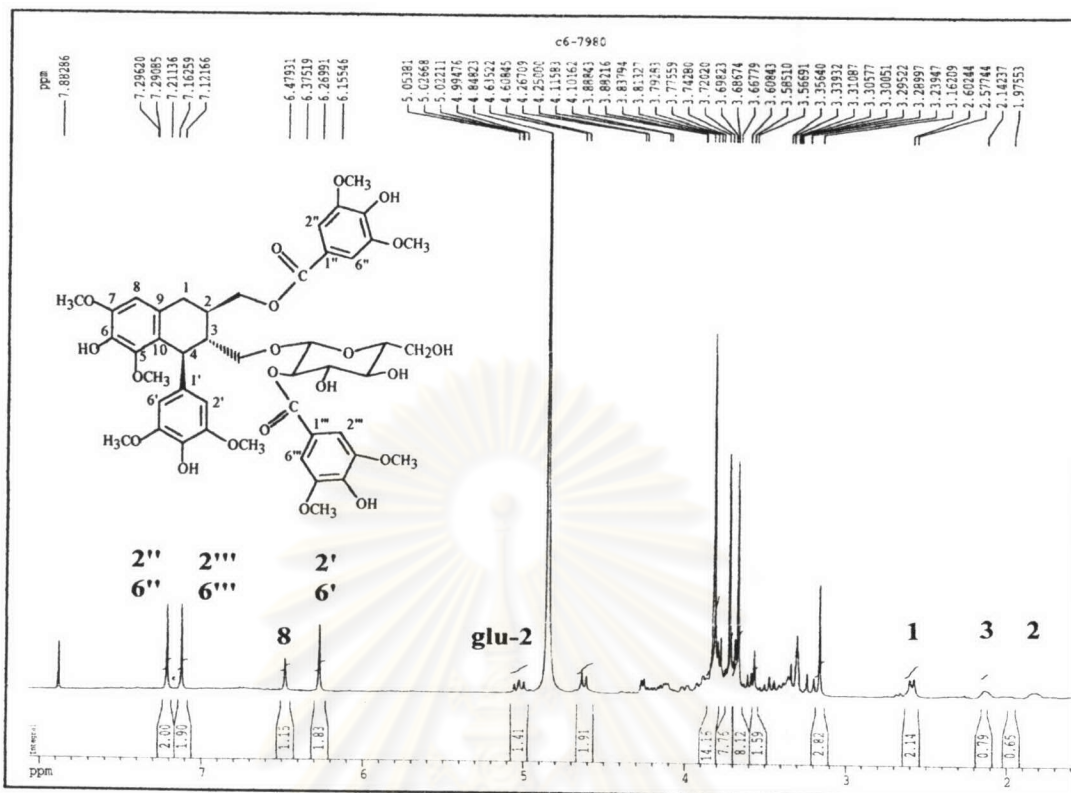


Figure 102 $^1\text{H-NMR}$ spectrum of SVC-6 (300 MHz ; in CD_3OD)

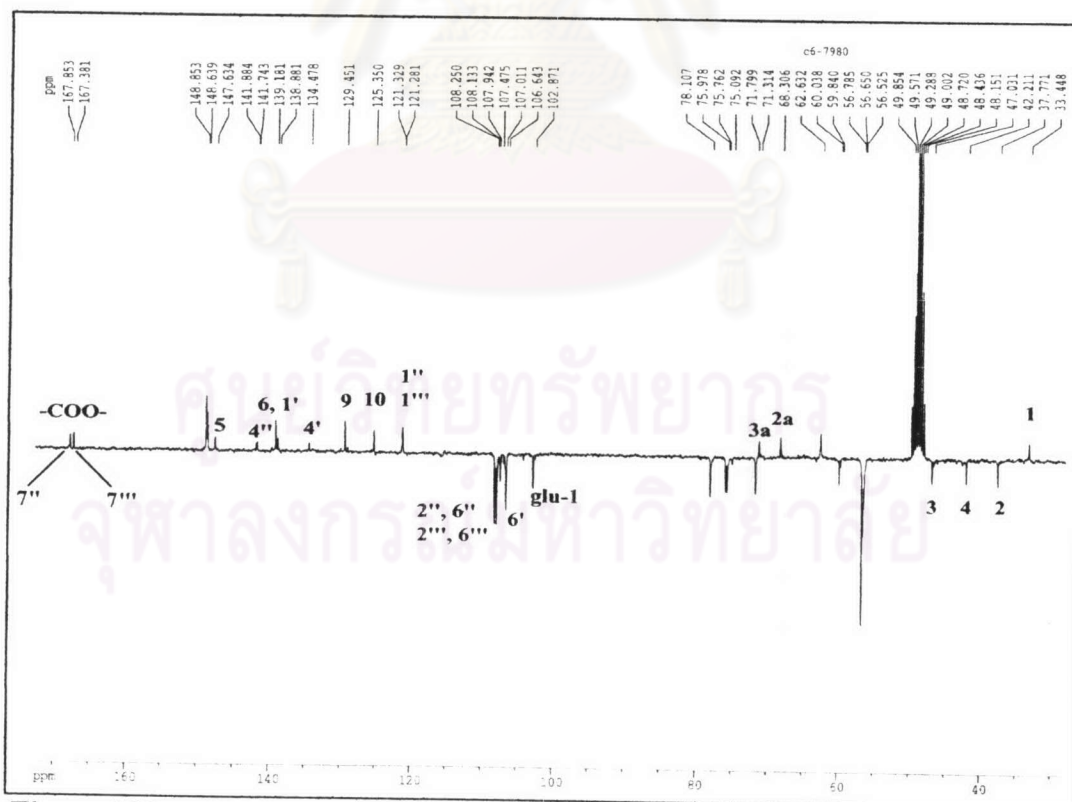


Figure 103 APT spectrum of SVC-6 (75 MHz ; in CD_3OD)

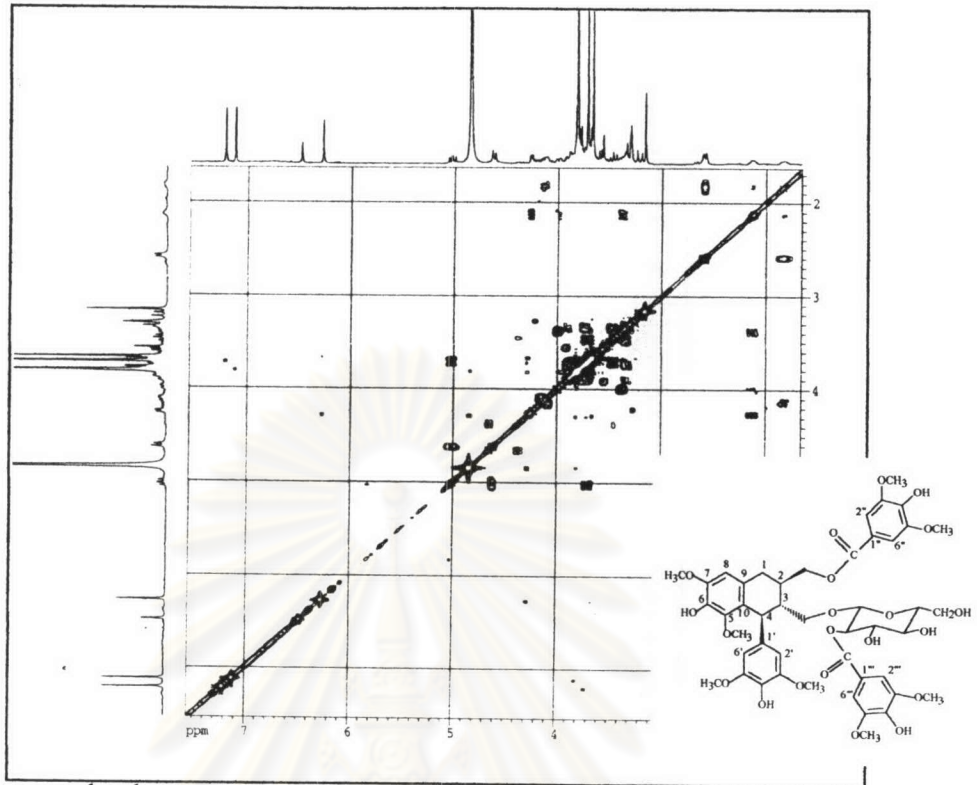


Figure 104 ^1H - ^1H COSY spectrum of SVC-6 (300 MHz ; in CD_3OD)

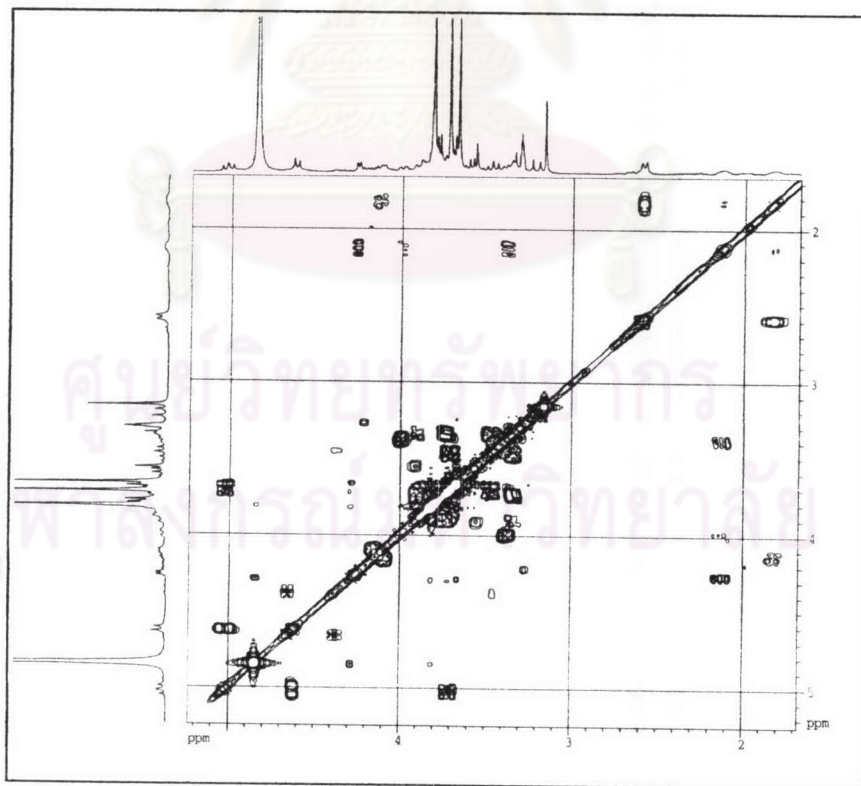


Figure 105 Expanded ^1H - ^1H COSY spectrum of SVC-6 (300 MHz ; in CD_3OD)

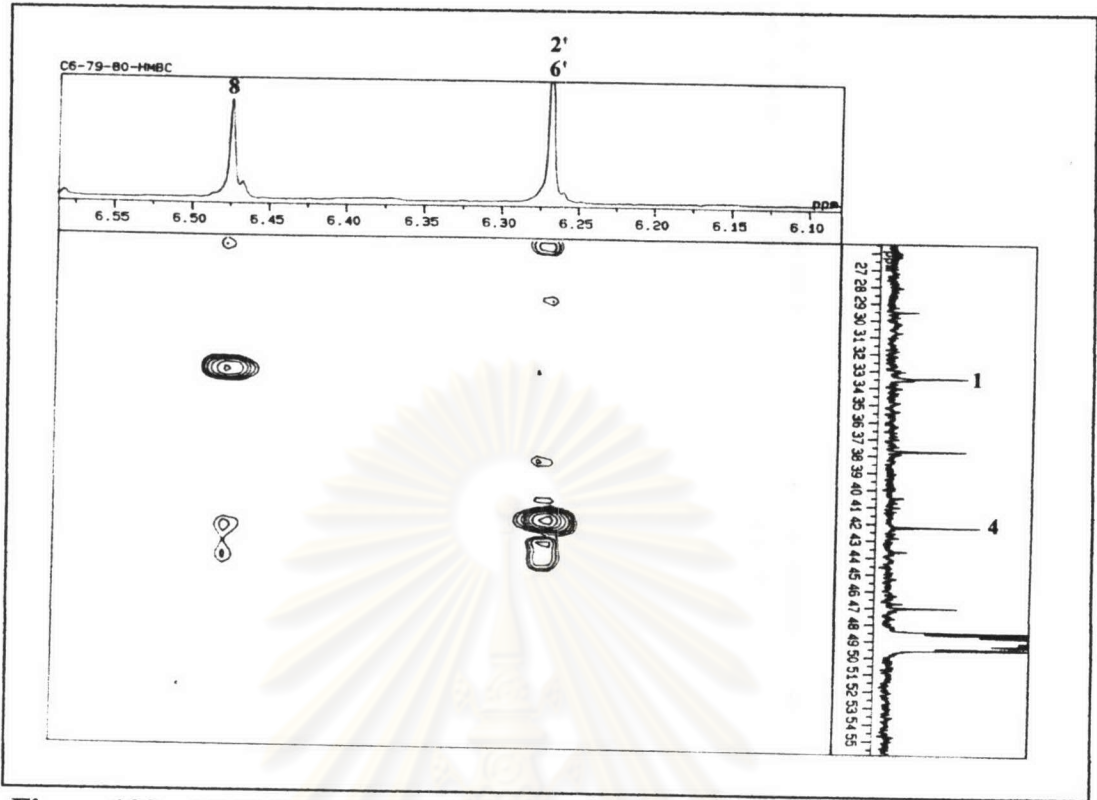


Figure 108 HMBC spectrum of SVC-6 (125 MHz ; in CD₃OD)

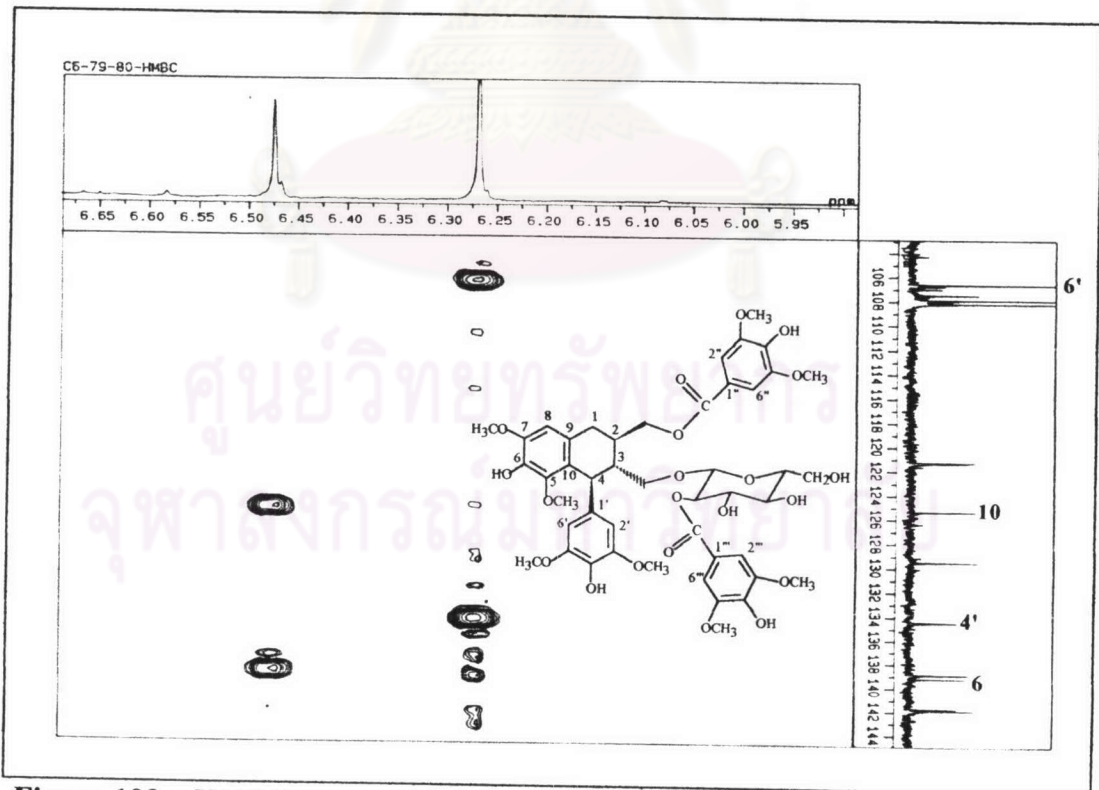


Figure 109 HMBC spectrum of SVC-6 (125 MHz ; in CD₃OD)

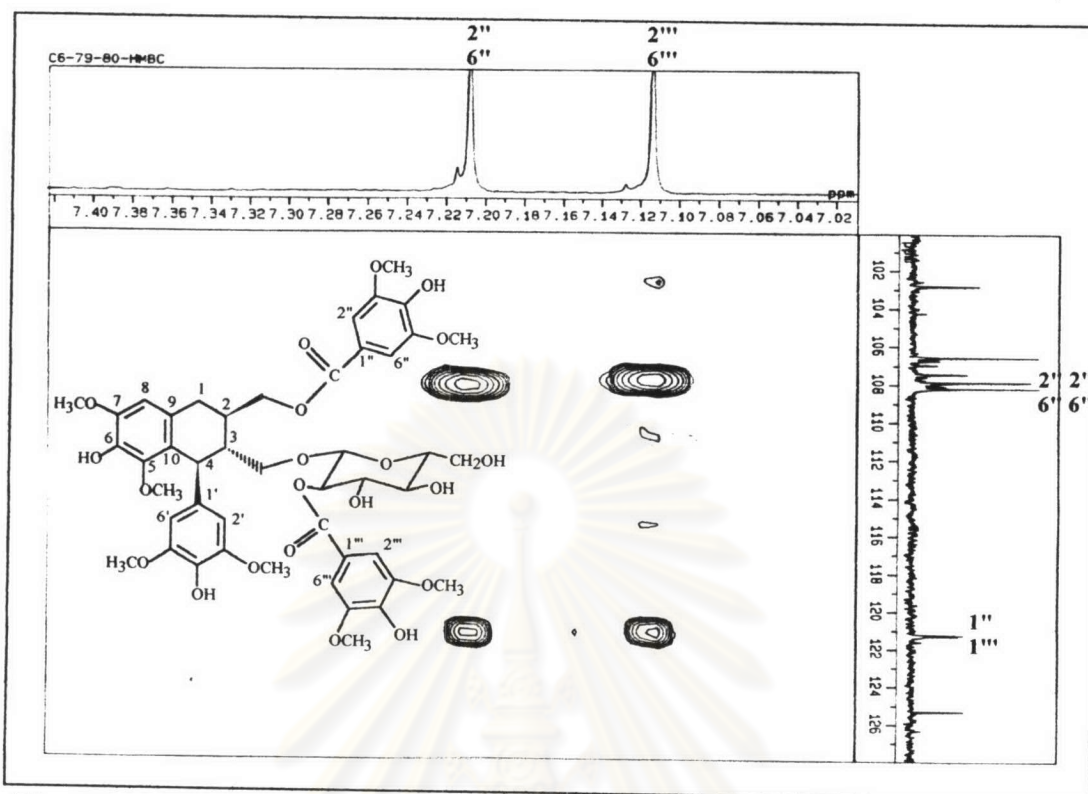


Figure 110 HMBC spectrum of SVC-6 (125 MHz ; in CD₃OD)

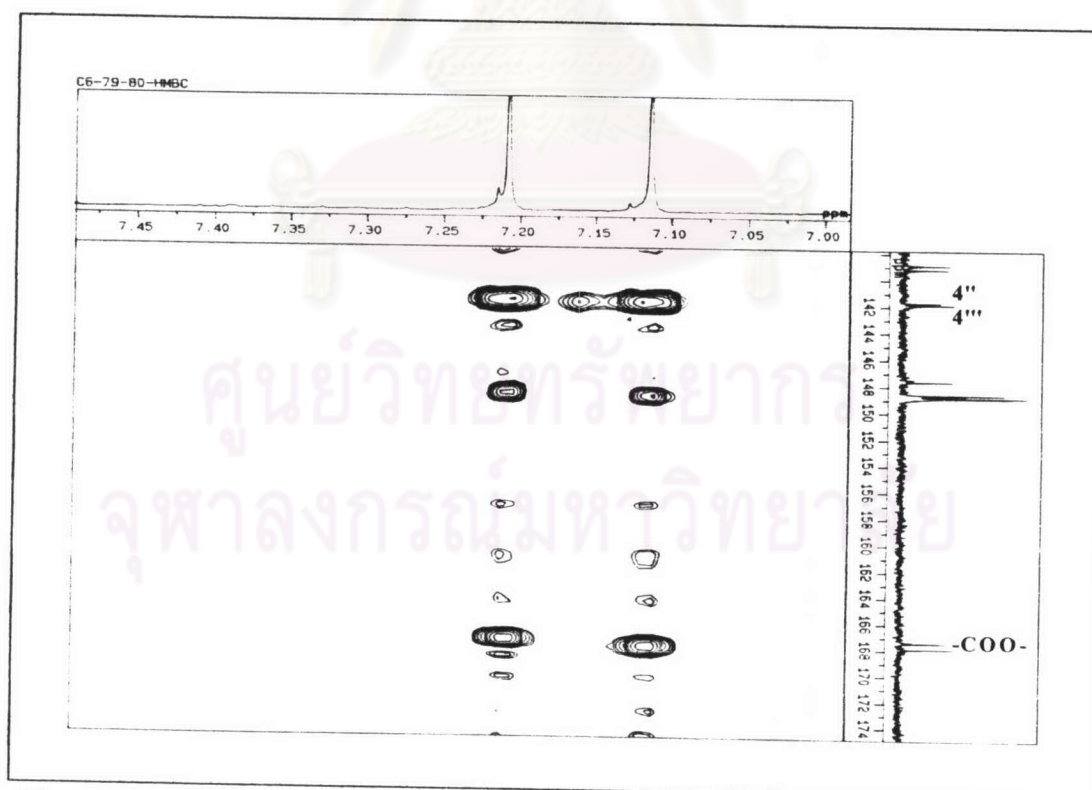


Figure 111 HMBC spectrum of SVC-6 (125 MHz ; in CD₃OD)

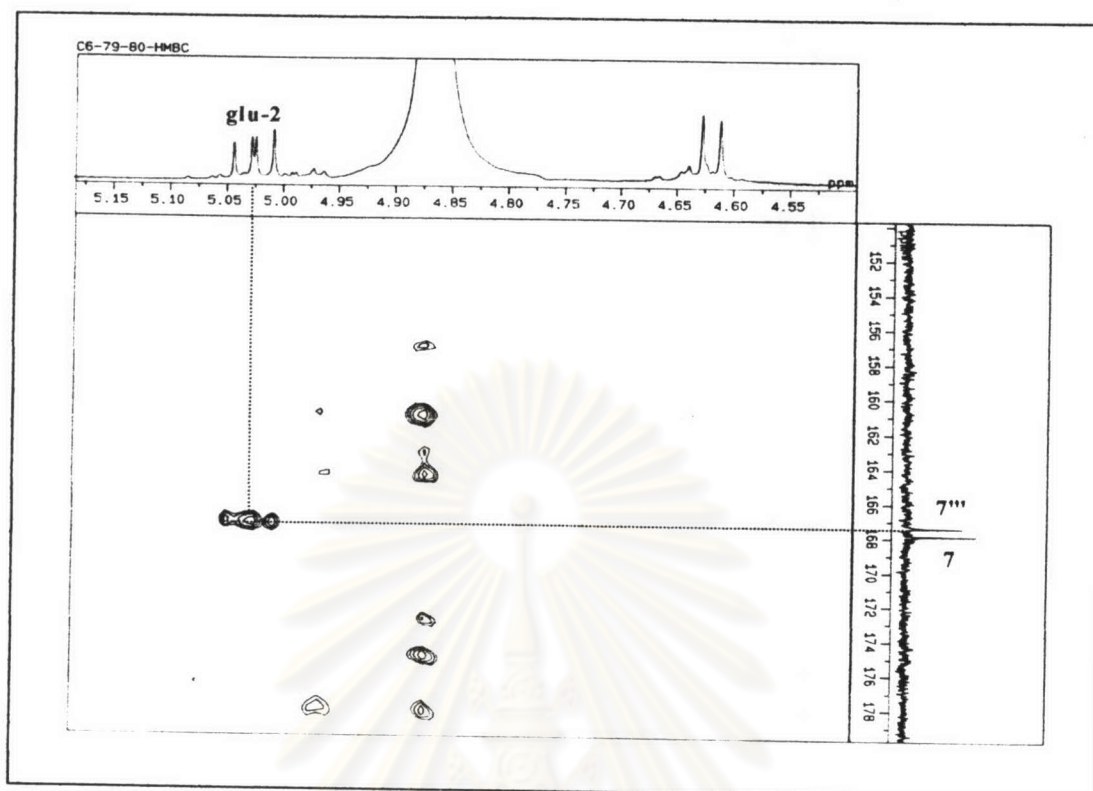


Figure 112 HMBC spectrum of SVC-6 (125 MHz ; in CD₃OD)

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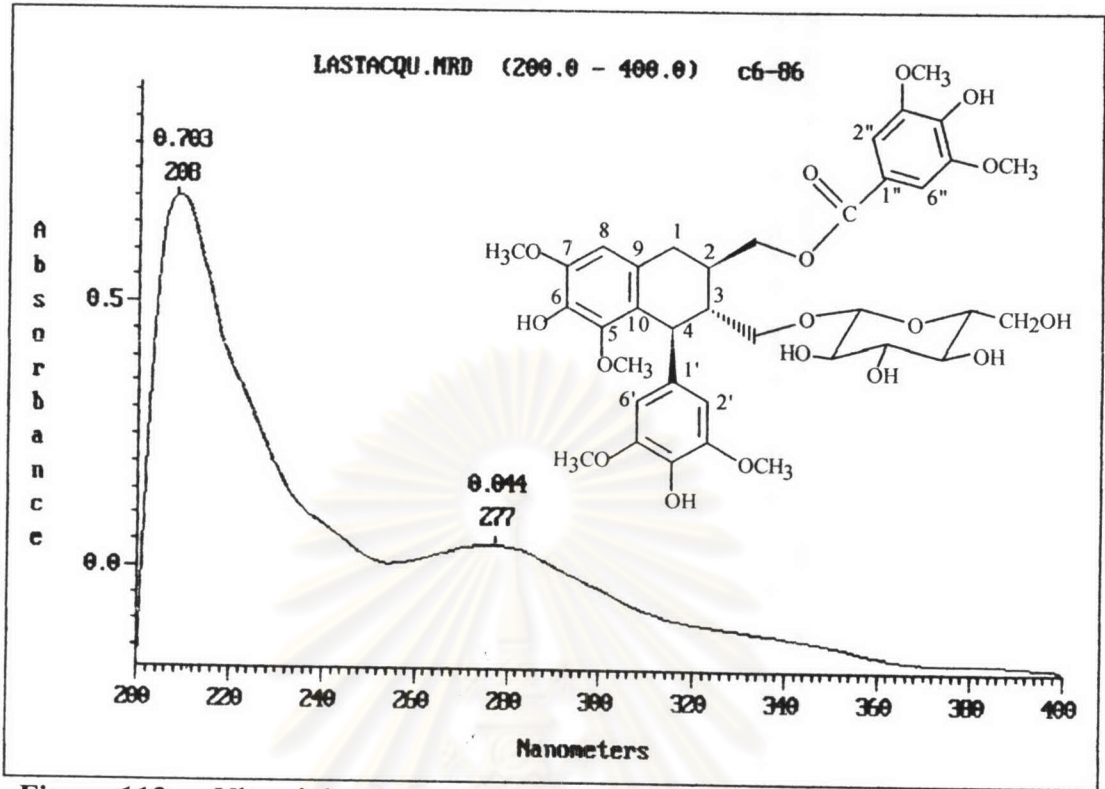


Figure 113 Ultraviolet absorption spectrum of SVC-7

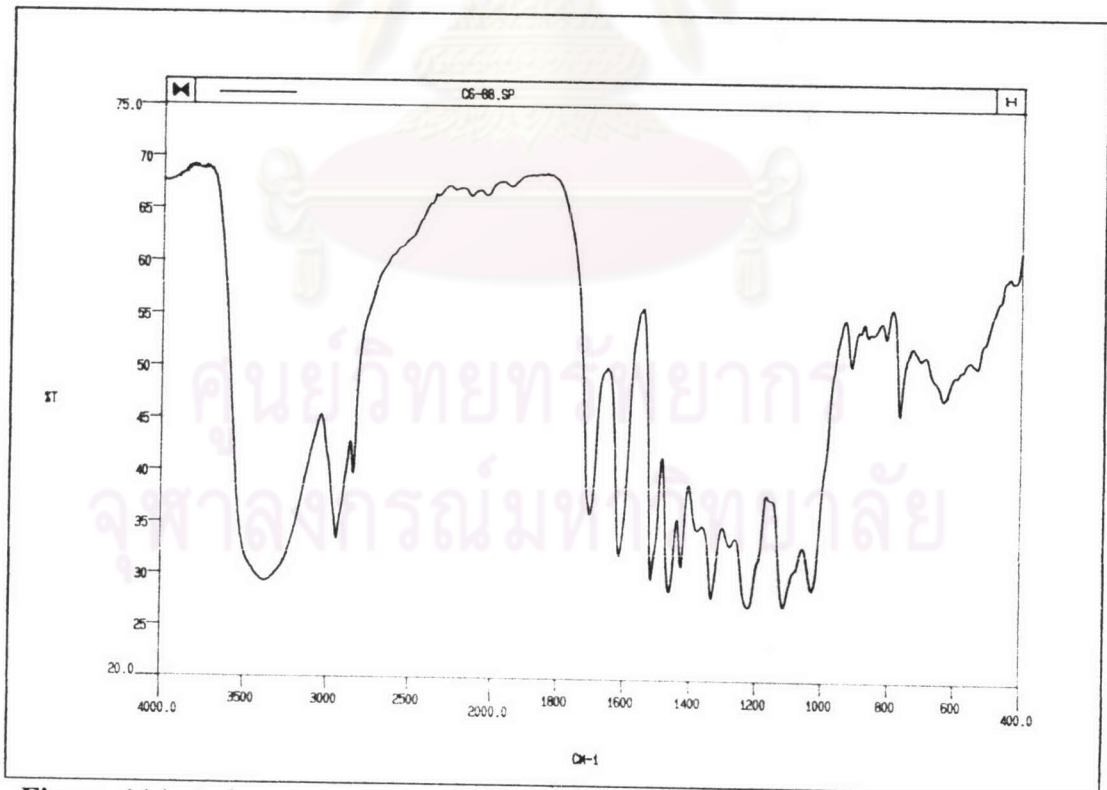
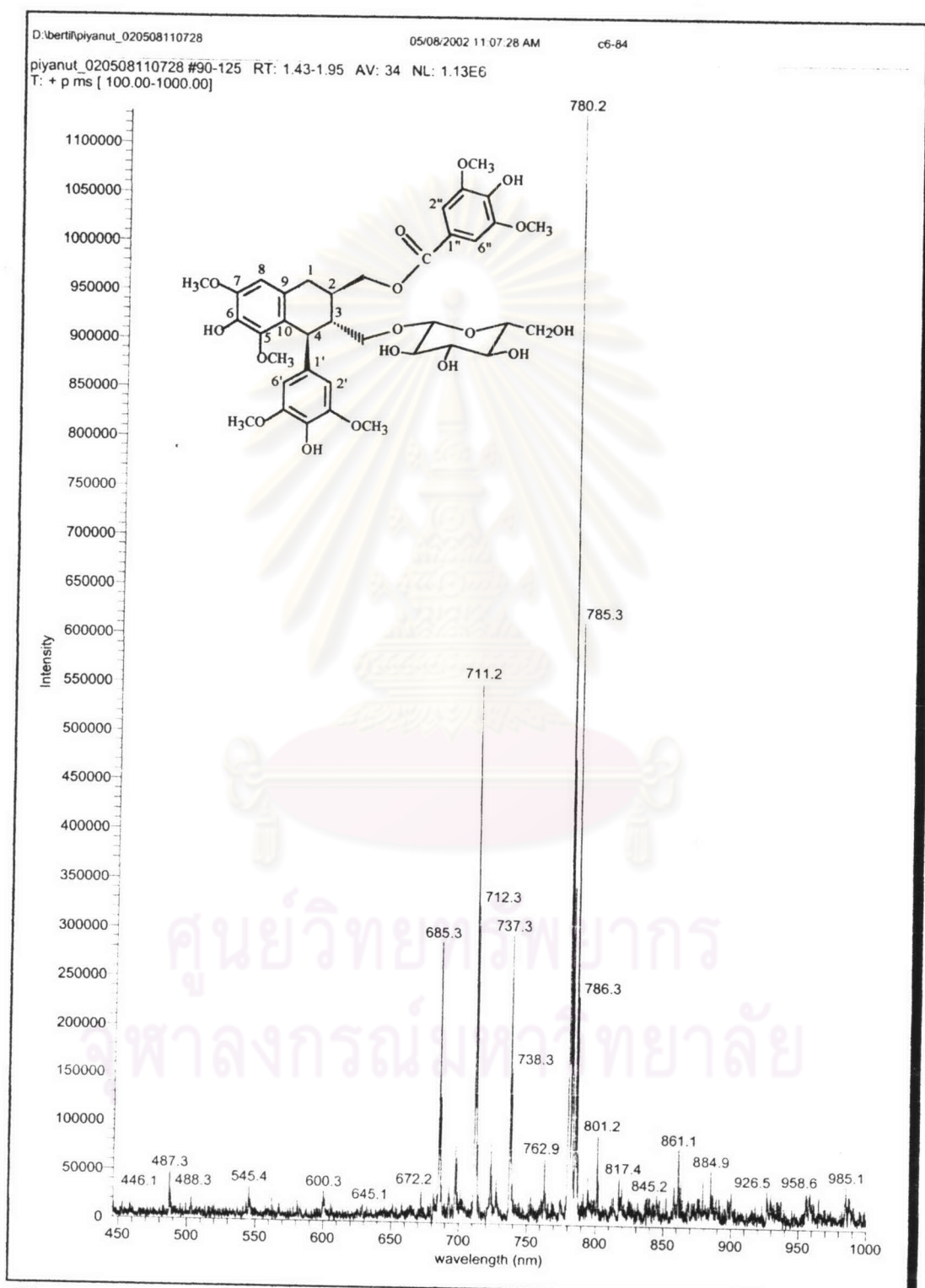


Figure 114 Infrared absorption spectrum of SVC-7



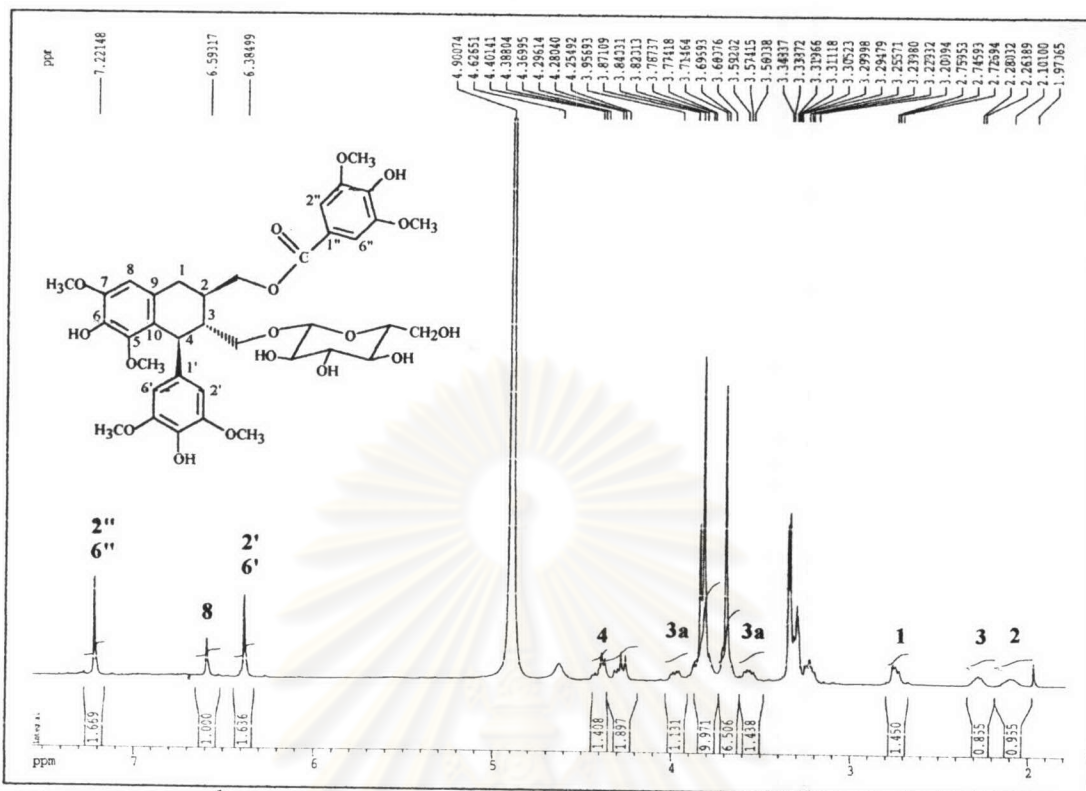


Figure 116 $^1\text{H-NMR}$ spectrum of SVC-7 (75 MHz ; in CD_3OD)

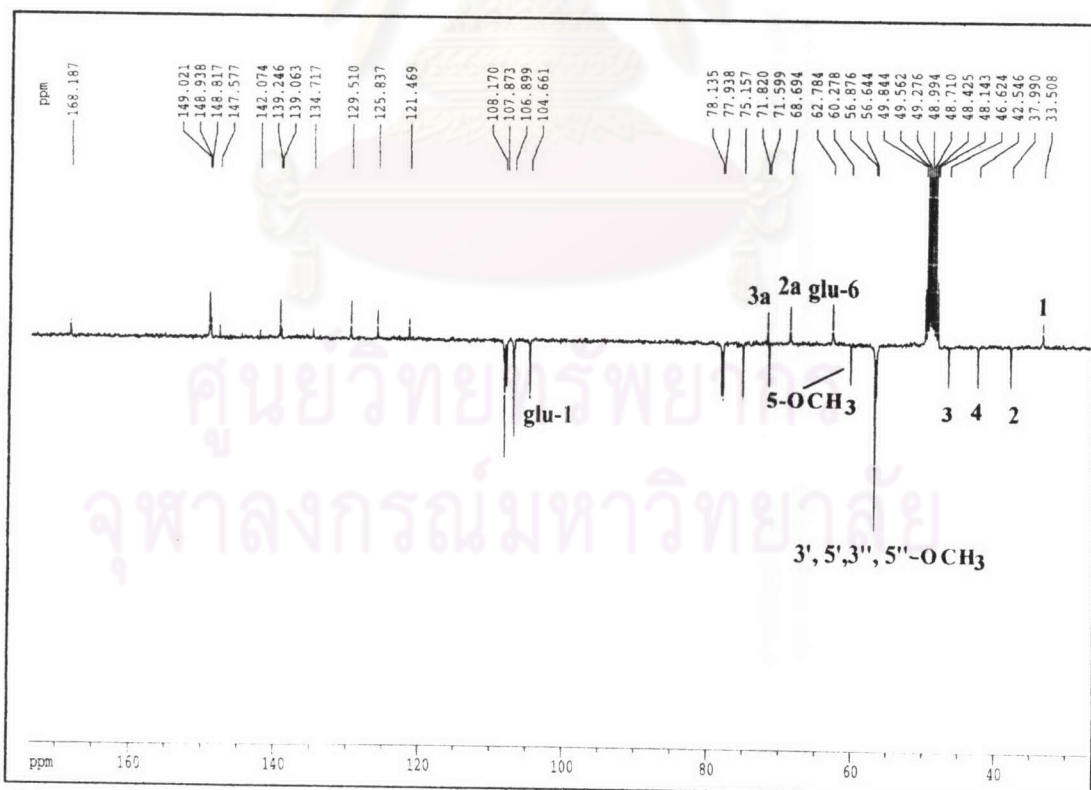


Figure 117 APT spectrum of SVC-7 (75 MHz ; in CD_3OD)

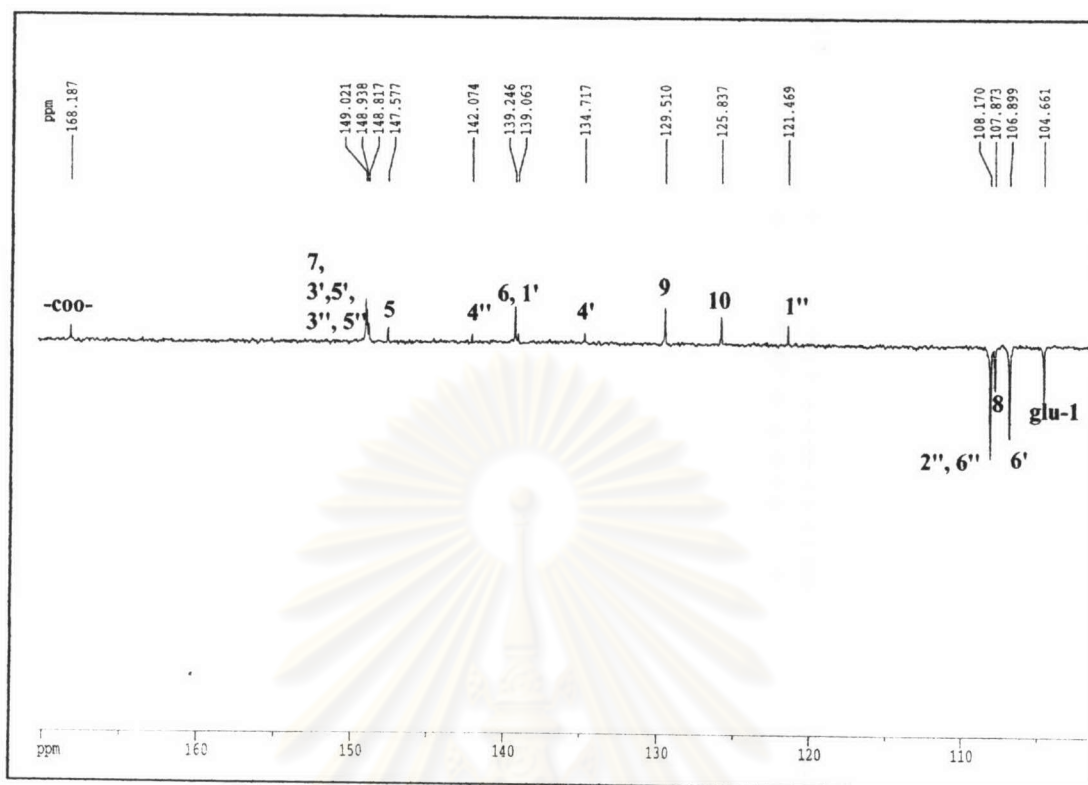
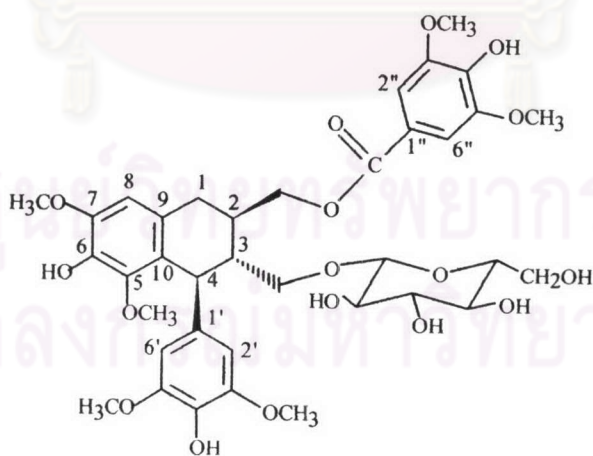


Figure 118 Expanded APT spectrum of SVC-7 (75 MHz ; in CD₃OD)



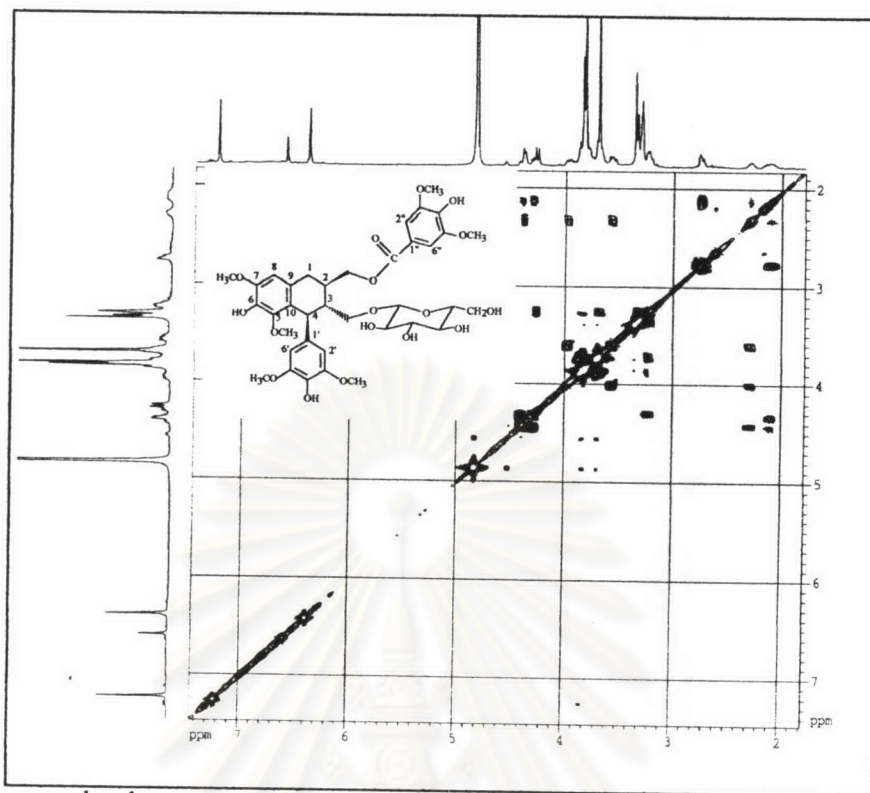


Figure 119 ^1H - ^1H COSY spectrum of SVC-7 (300 MHz ; in CD_3OD)

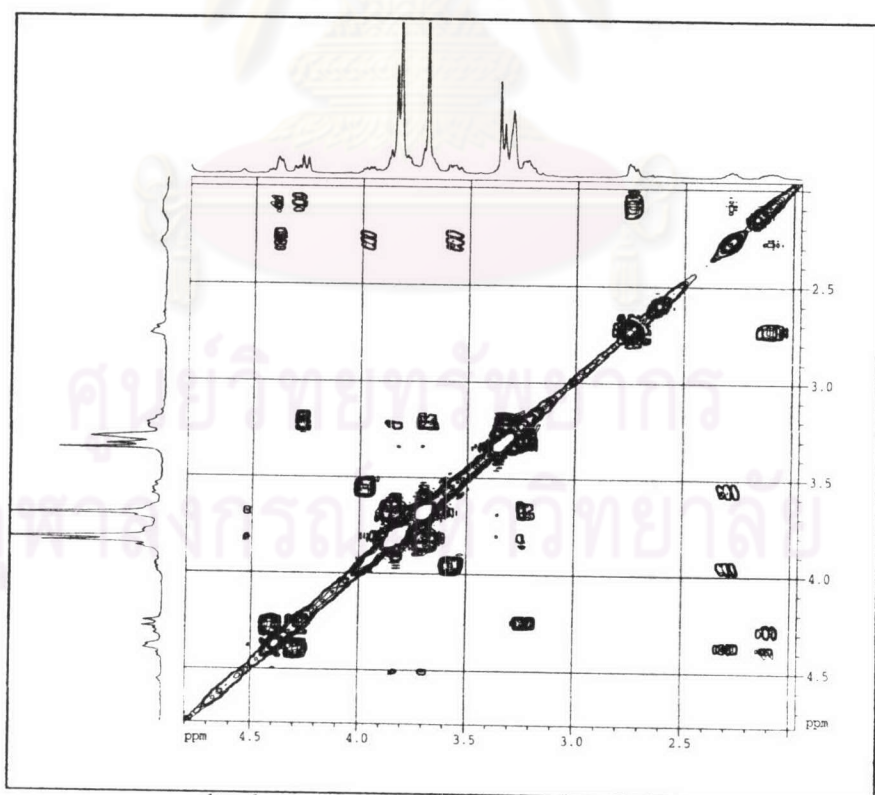


Figure 120 Expanded ^1H - ^1H COSY spectrum of SVC-7 (300 MHz ; in CD_3OD)

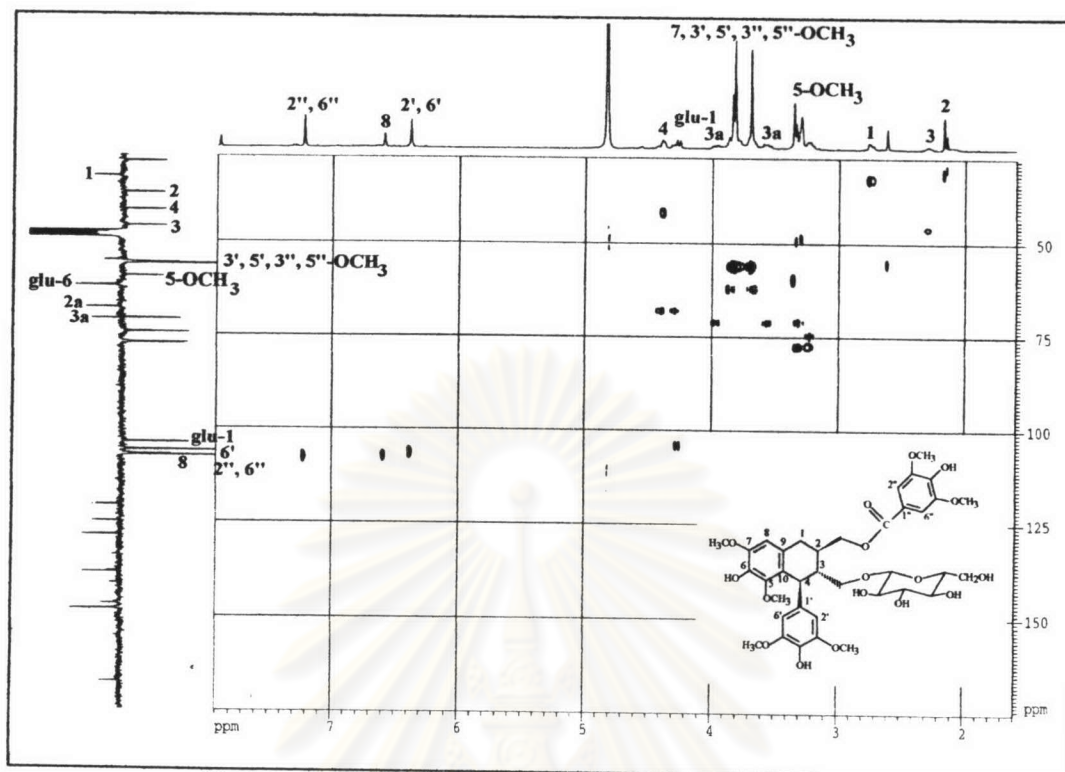


Figure 121 HMQC spectrum of SVC-7 (75 MHz ; in CD_3OD)

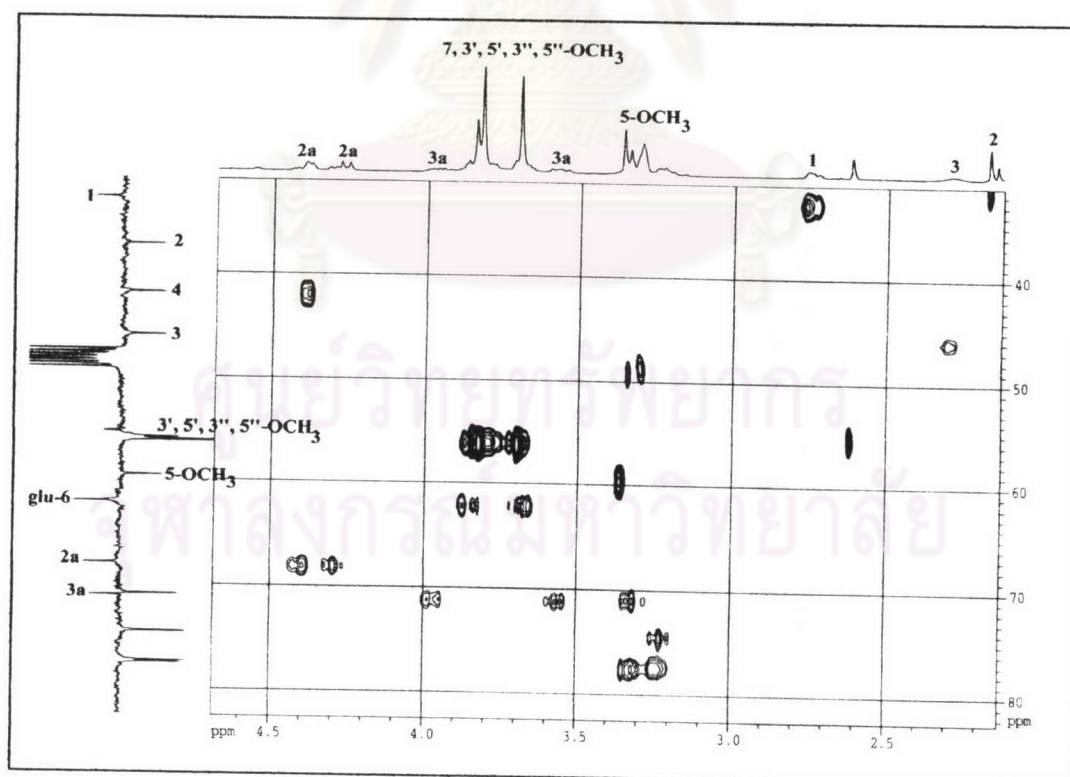


Figure 122 Expanded HMQC spectrum of SVC-7 (75 MHz ; in CD_3OD)

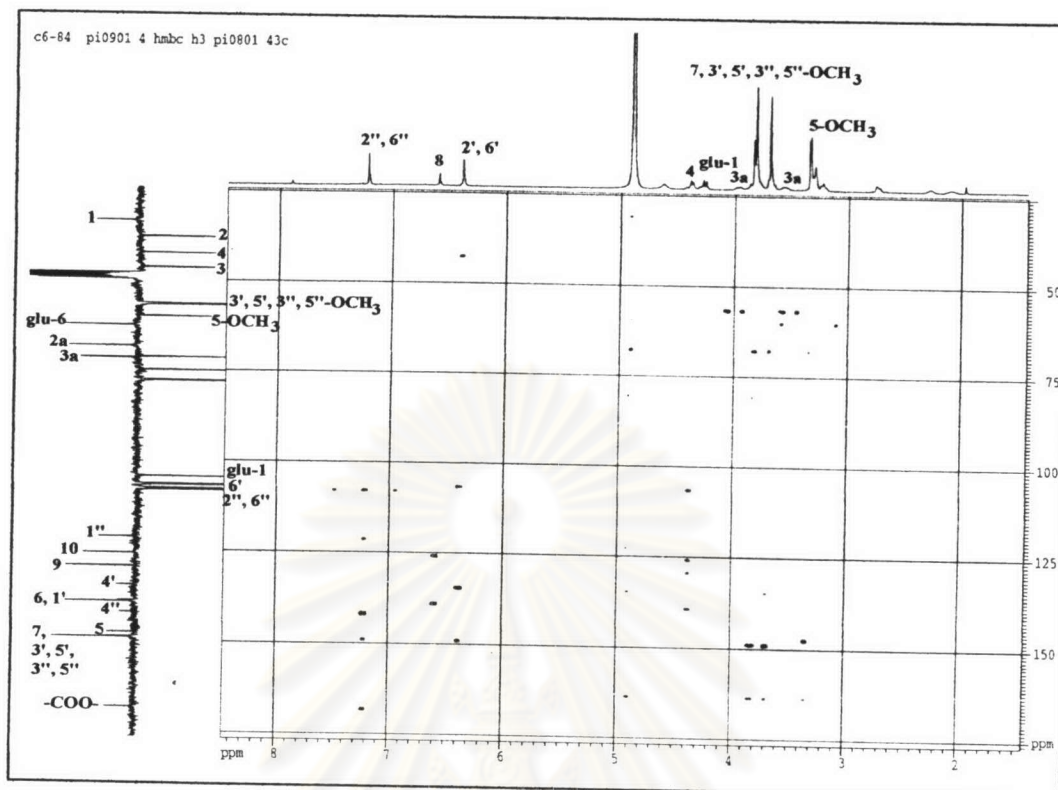


Figure 123 HMBC spectrum of SVC-7 (75 MHz ; in CD₃OD)

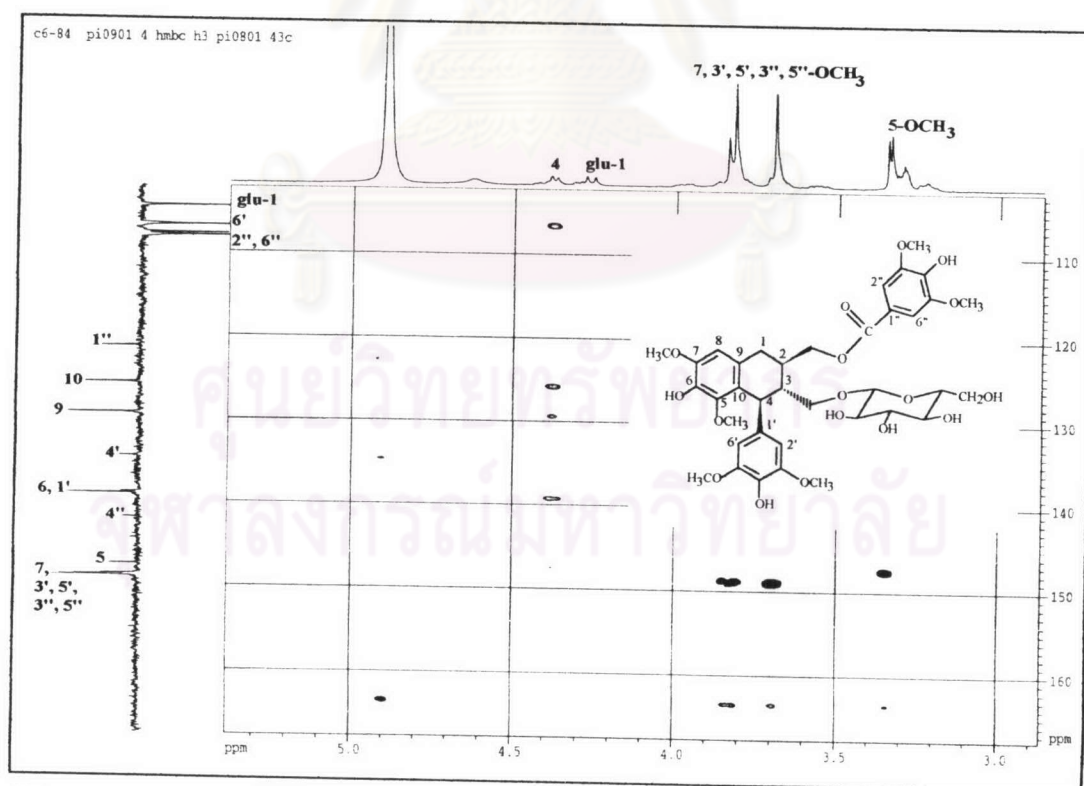


Figure 124 Expanded HMBC spectrum of SVC-7 (75 MHz ; in CD₃OD)

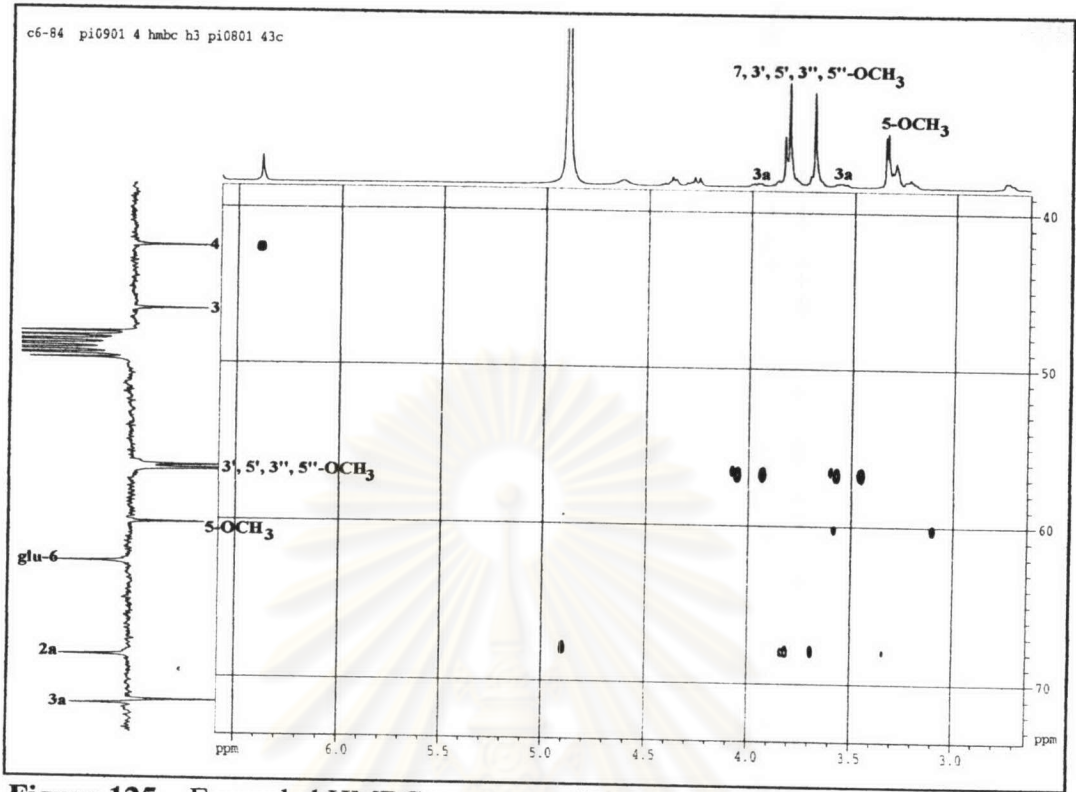


Figure 125 Expanded HMBC spectrum of SVC-7 (75 MHz ; in CD₃OD)

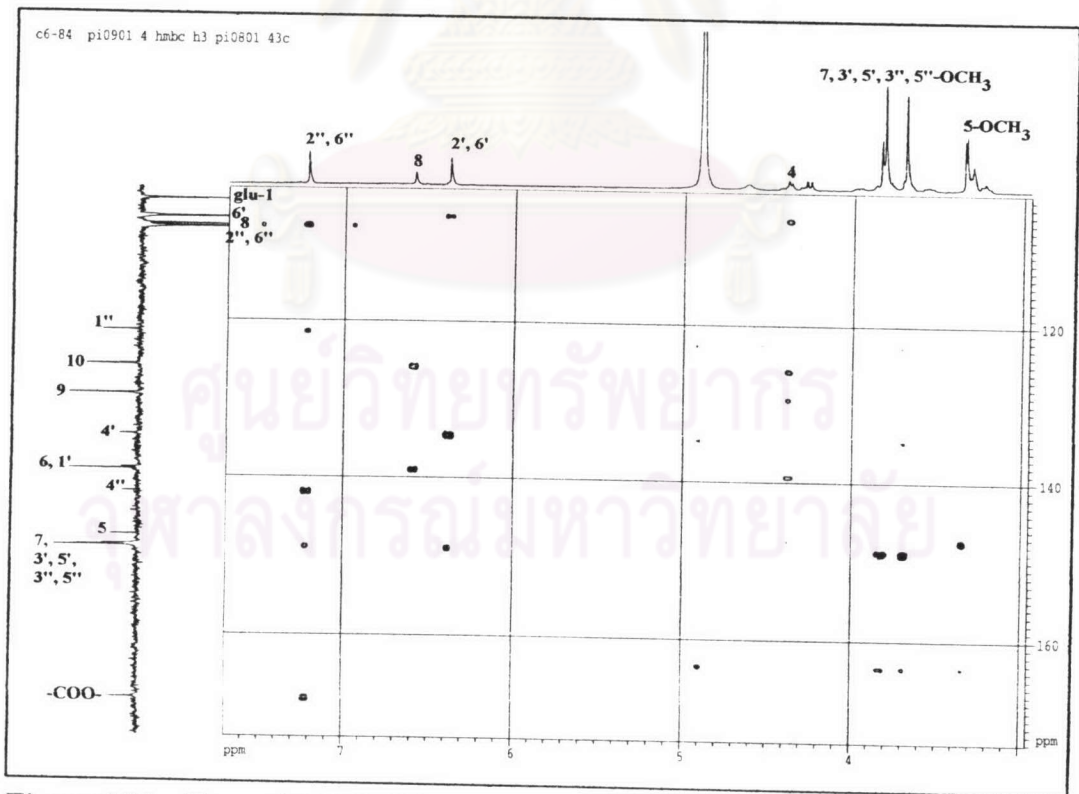


Figure 126 Expanded HMBC spectrum of SVC-7 (75 MHz ; in CD₃OD)

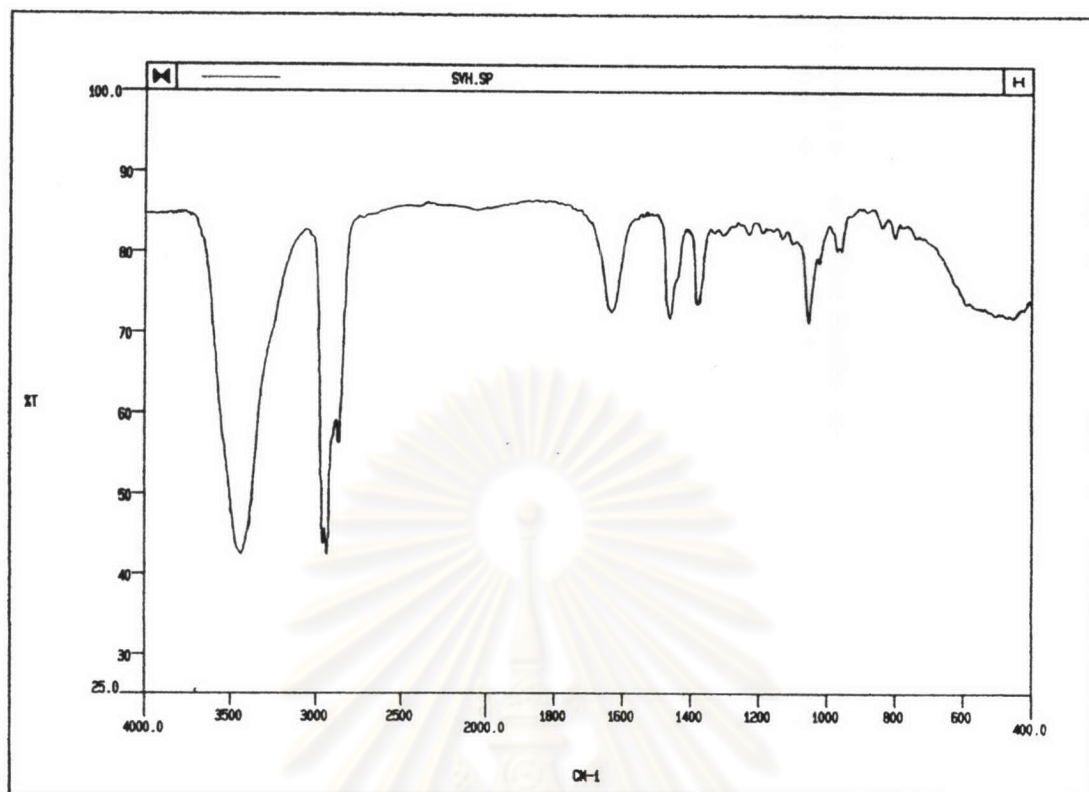
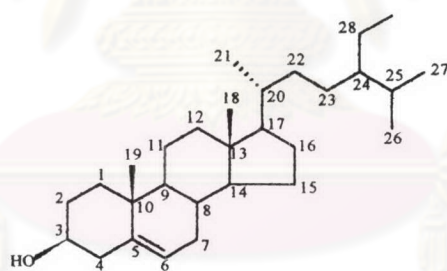
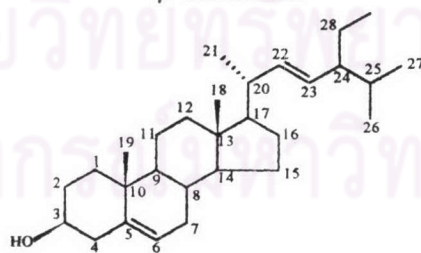


Figure 127 Infrared spectrum of SVH-1



β -sitosterol



stigmasterol

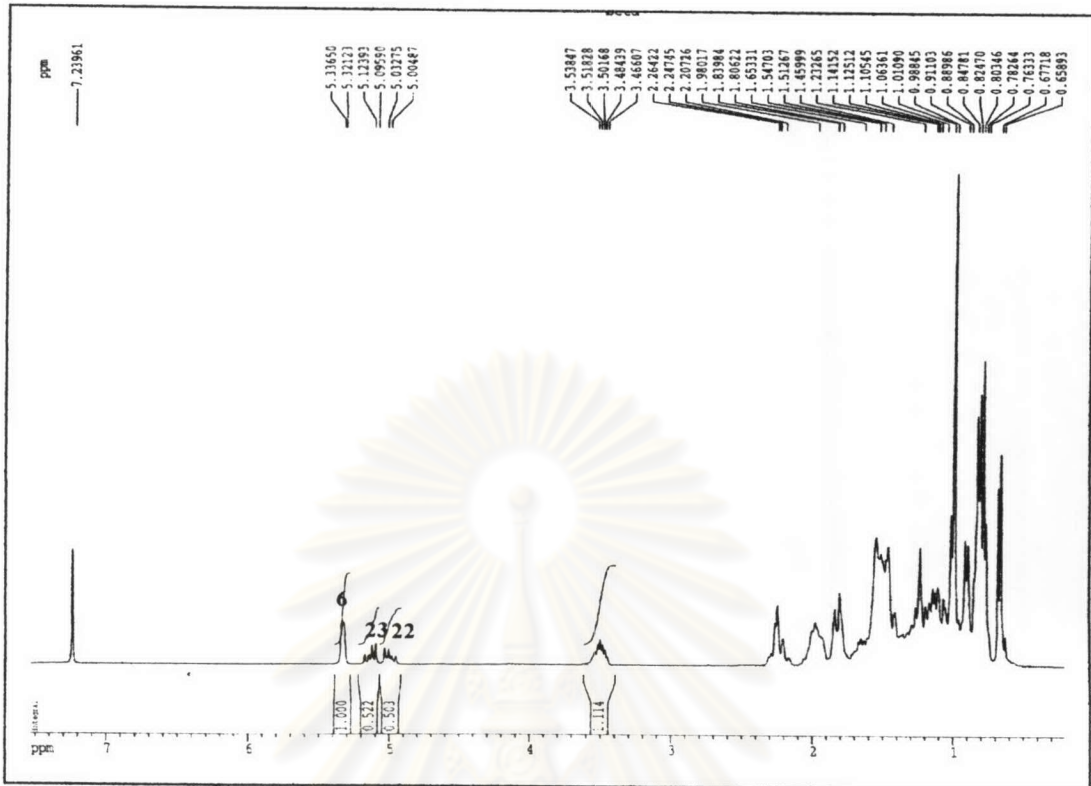
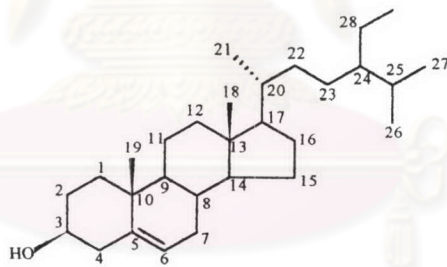
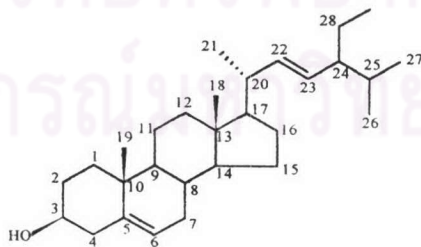


Figure 128 $^1\text{H-NMR}$ spectrum of SVH-1 (300 MHz ; in CDCl_3)



β -sitosterol



stigmasterol

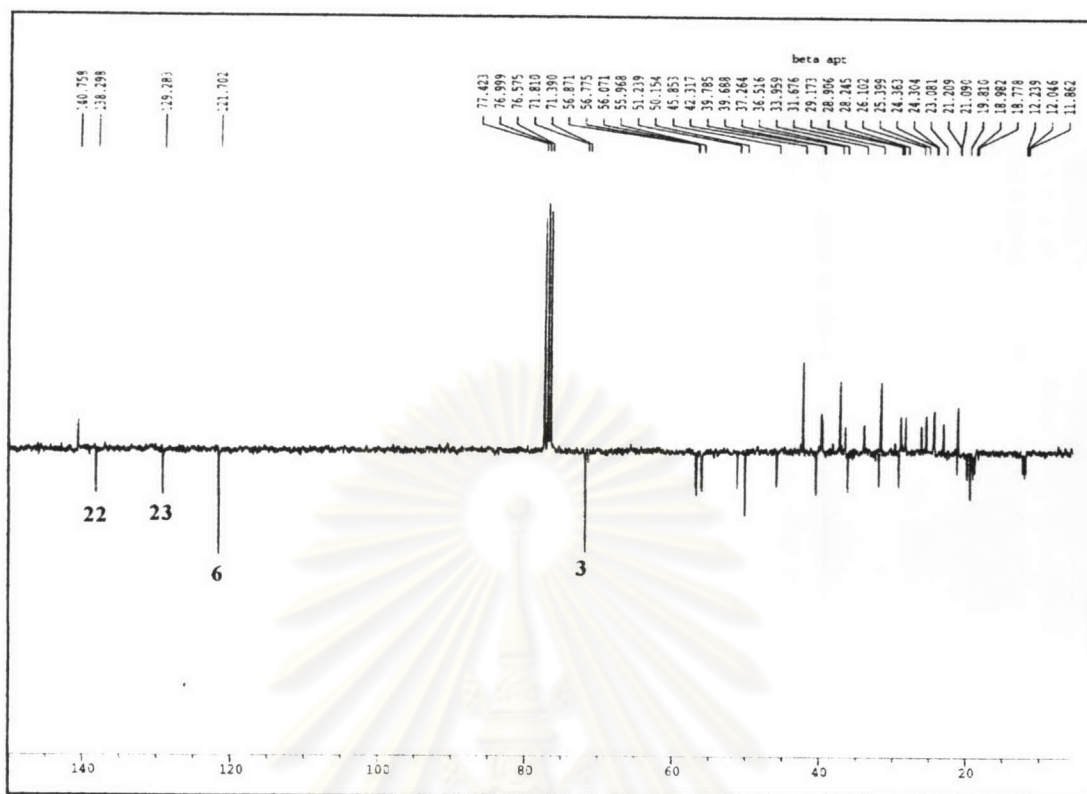


Figure 129 ^{13}C -NMR spectrum of SVH-1 (75 MHz ; in CDCl_3)

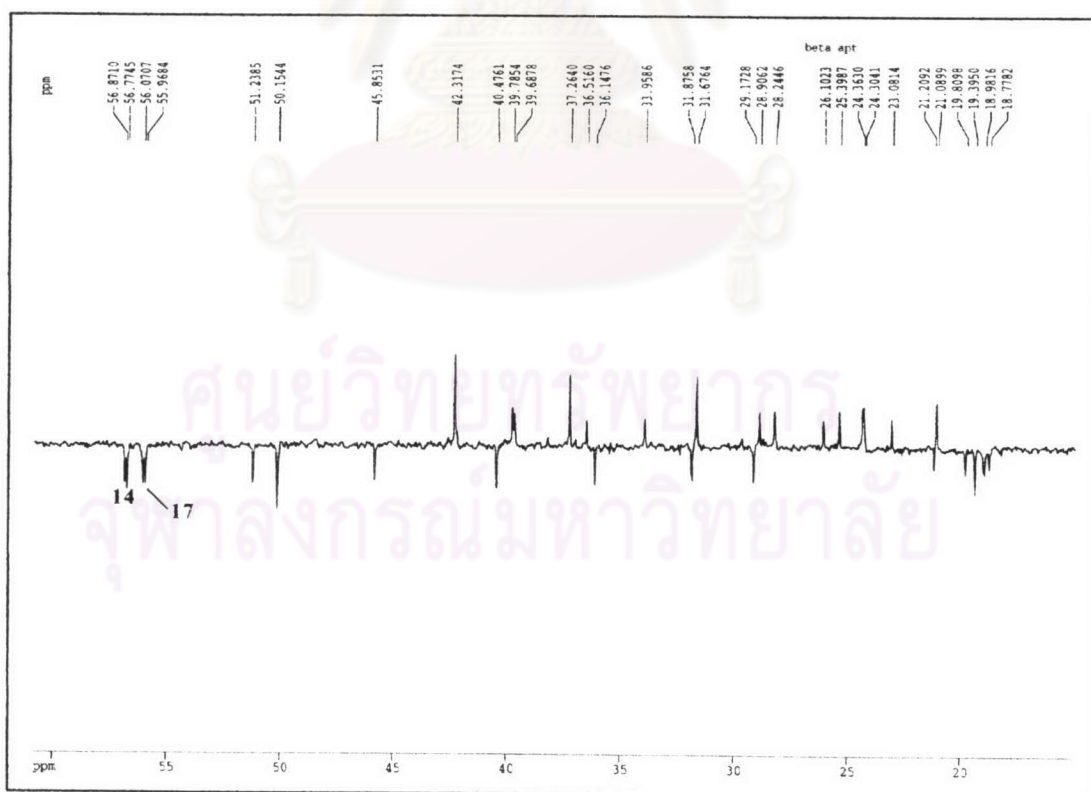


Figure 130 Expanded ^{13}C -NMR spectrum of SVH-1 (75 MHz ; in CDCl_3)

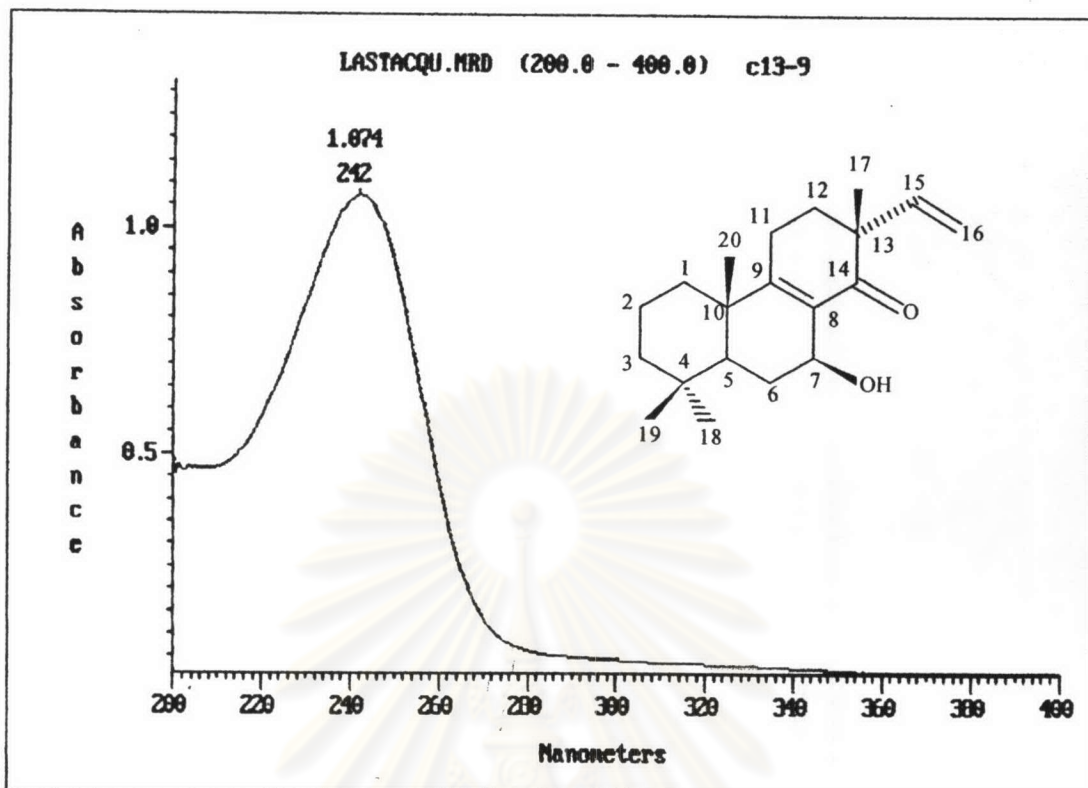


Figure 131 Ultraviolet absorption spectrum of SVH-2

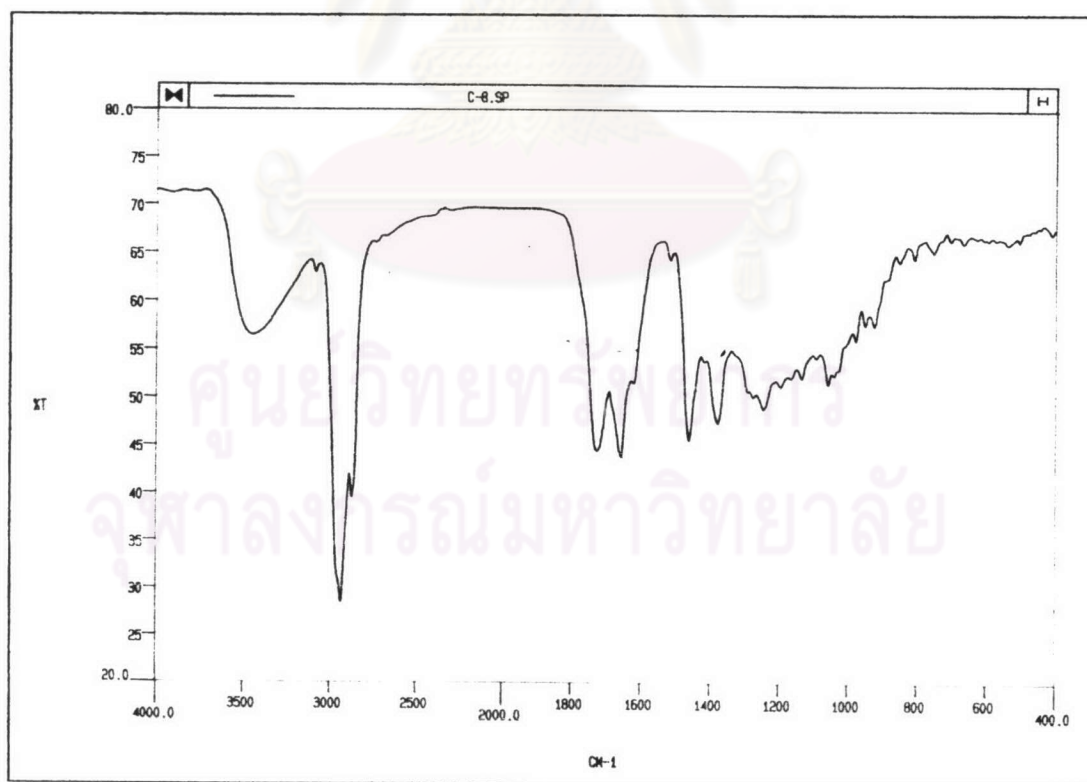


Figure 132 Infrared absorption spectrum of SVH-2

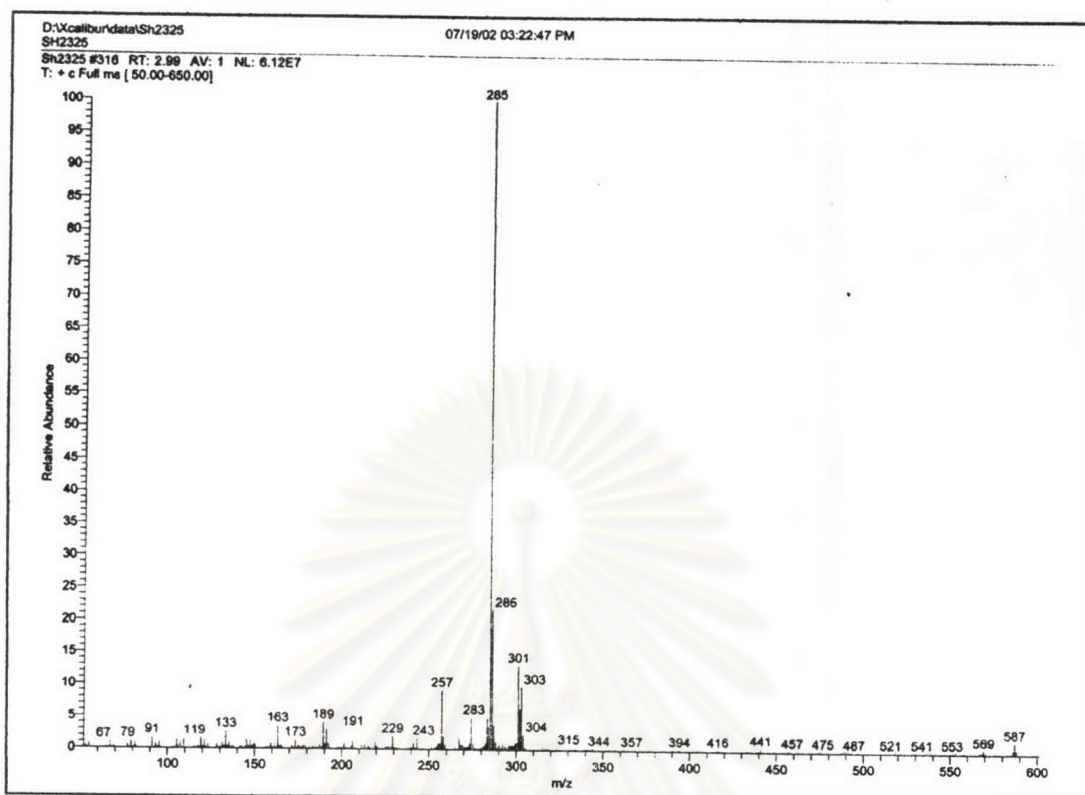
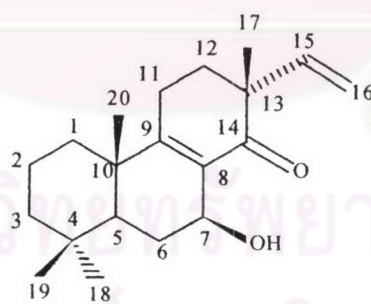


Figure 133 Mass spectrum of SVH-2



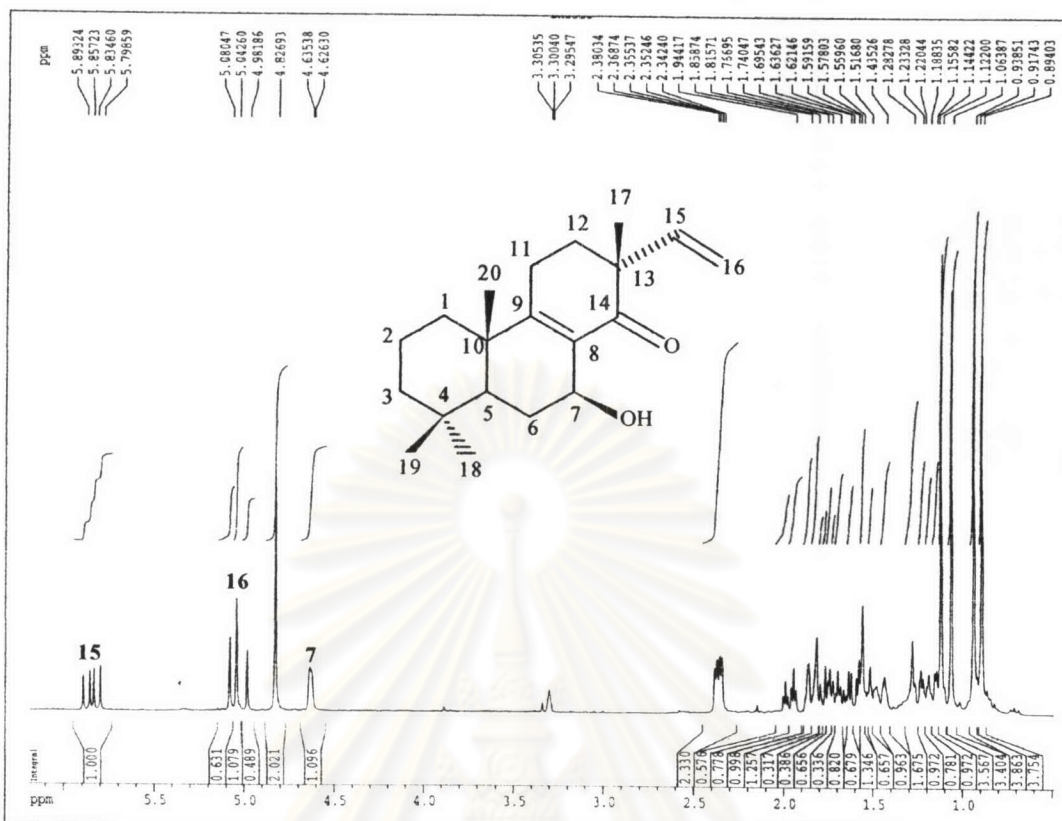


Figure 134 $^1\text{H-NMR}$ spectrum of SVH-2 (300 MHz ; in CD_3OD)

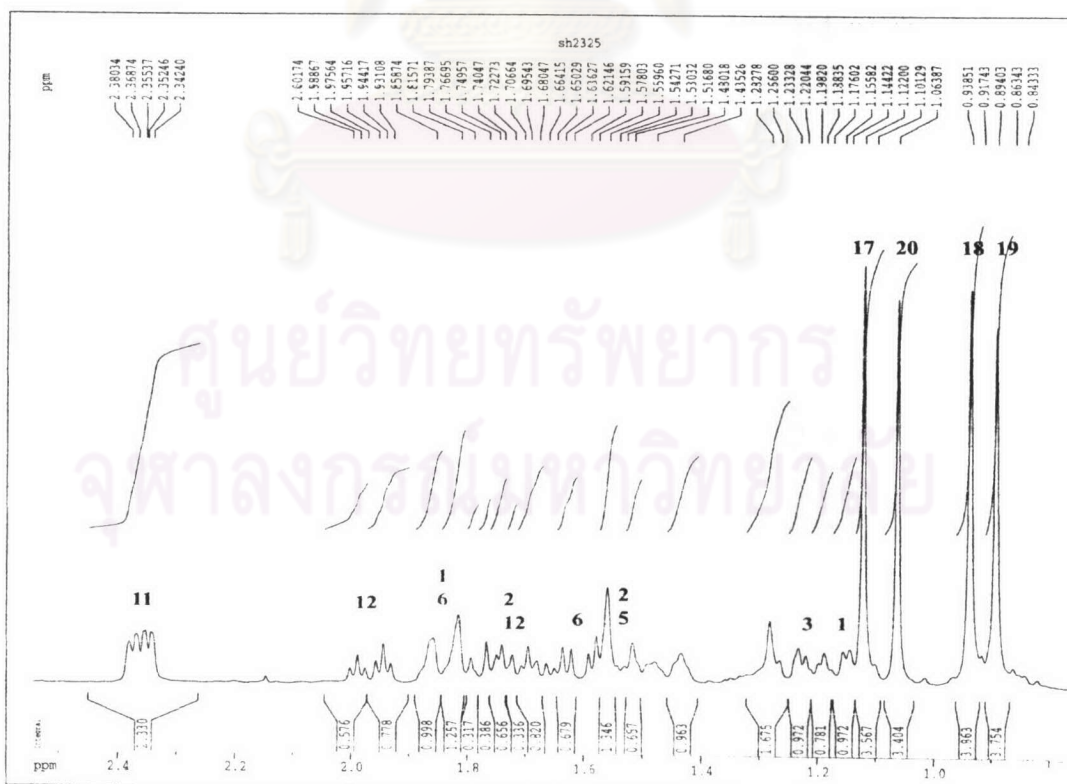


Figure 135 Expanded $^1\text{H-NMR}$ spectrum of SVH-2 (300 MHz ; in CD_3OD)

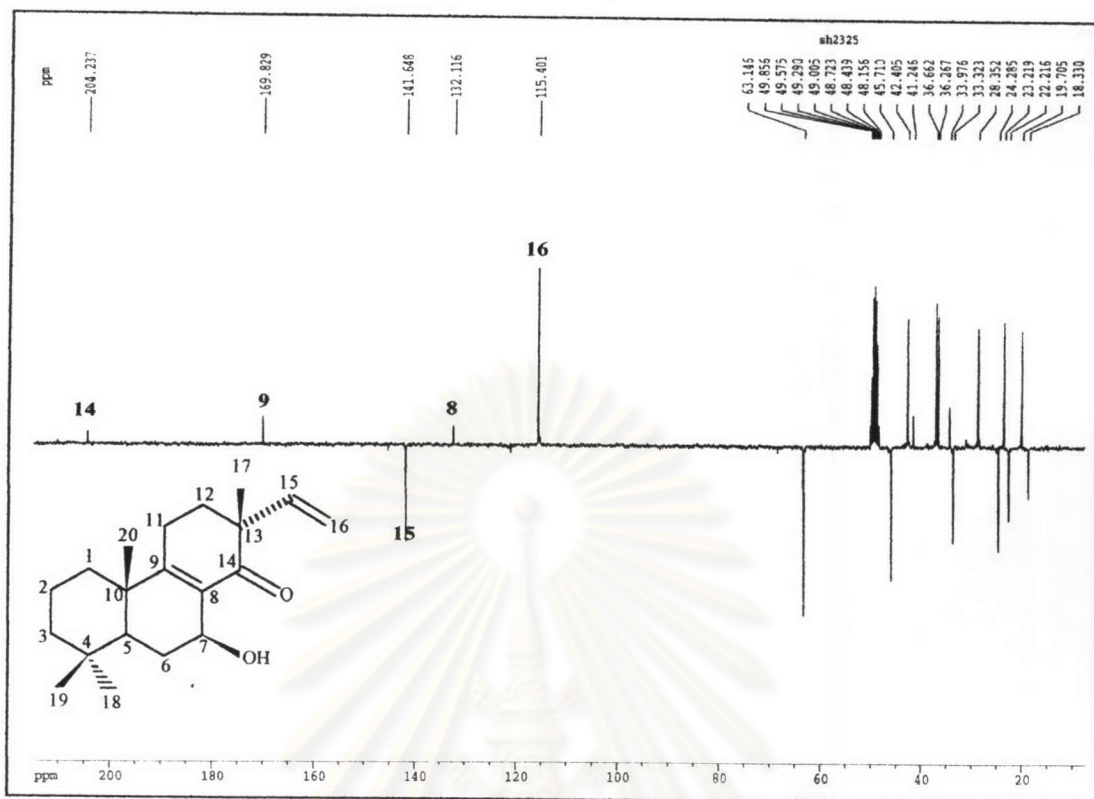


Figure 136 APT spectrum of SVH-2 (75 MHz ; in CD₃OD)

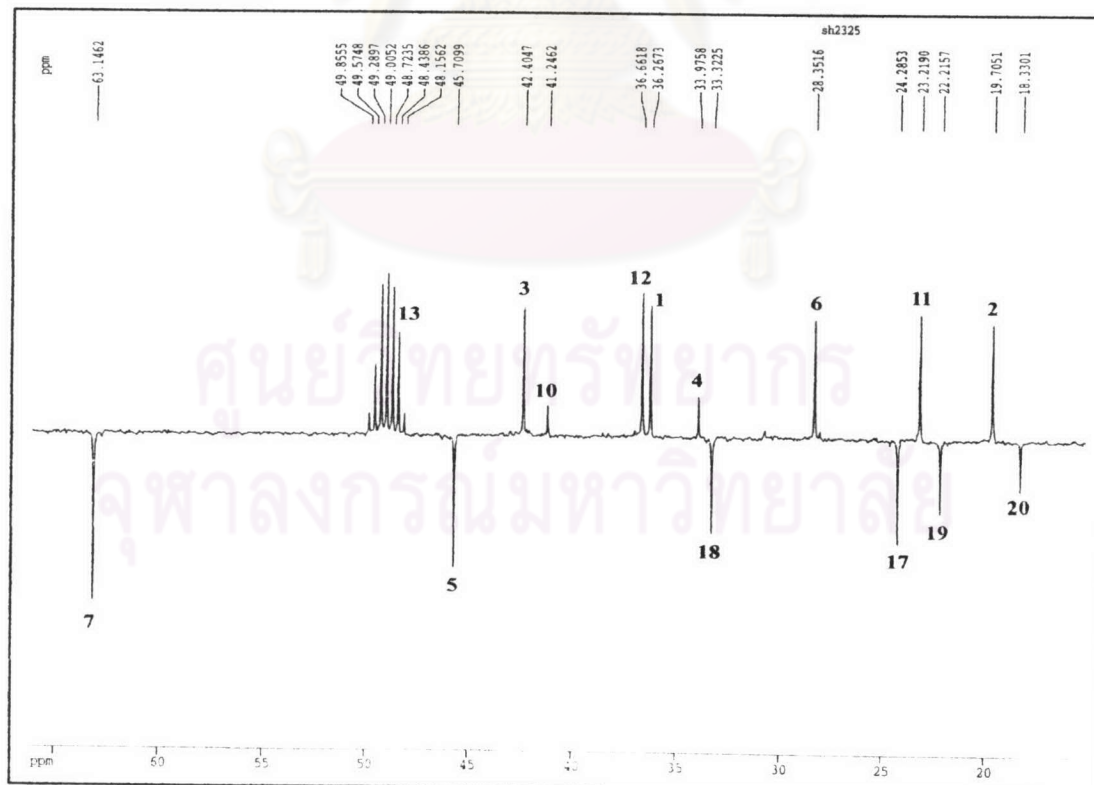


Figure 137 Expanded APT spectrum of SVH-2 (75 MHz ; in CD₃OD)

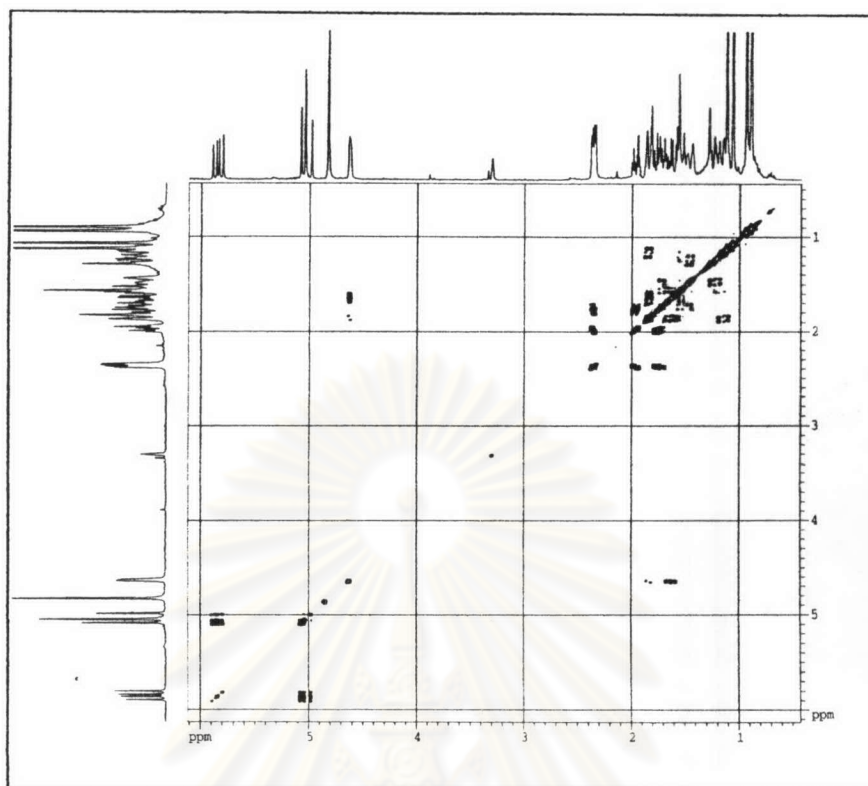


Figure 138 ^1H - ^1H COSY spectrum of SVH-2 (300 MHz ; in CD_3OD)

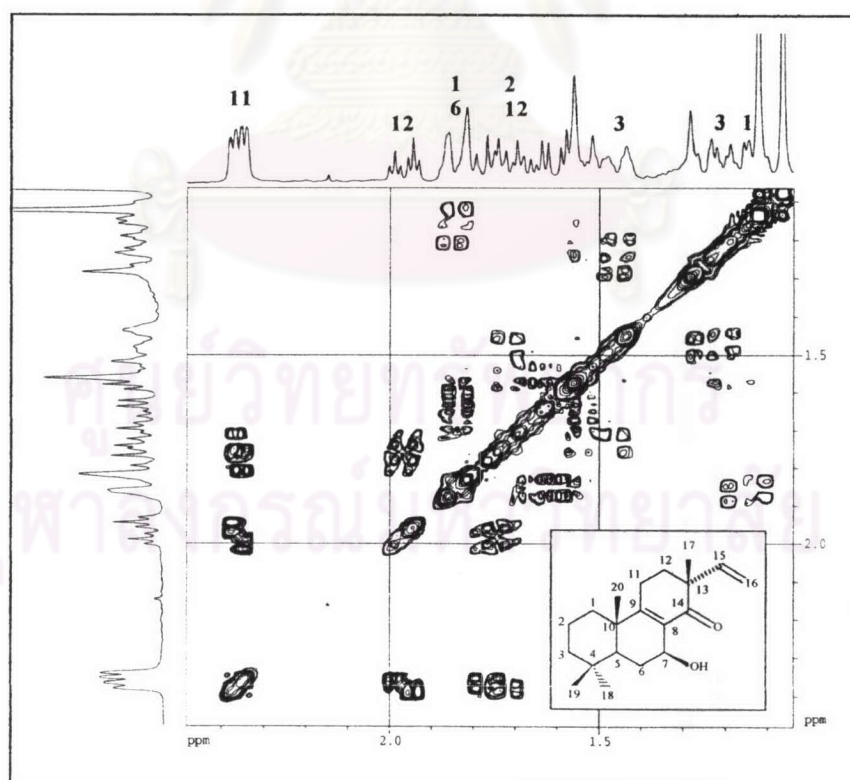


Figure 139 Expanded ^1H - ^1H COSY spectrum of SVH-2 (300 MHz ; in CD_3OD)

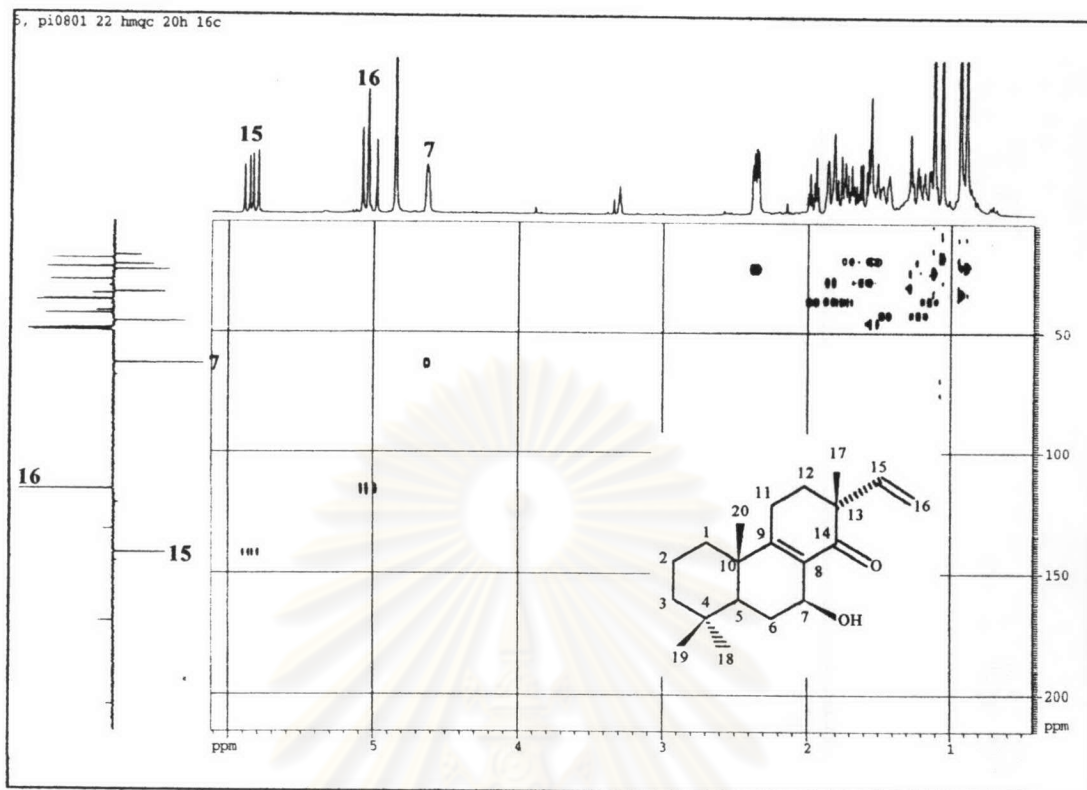


Figure 140 HMQC spectrum of SVH-2 (75 MHz ; in CD₃OD)

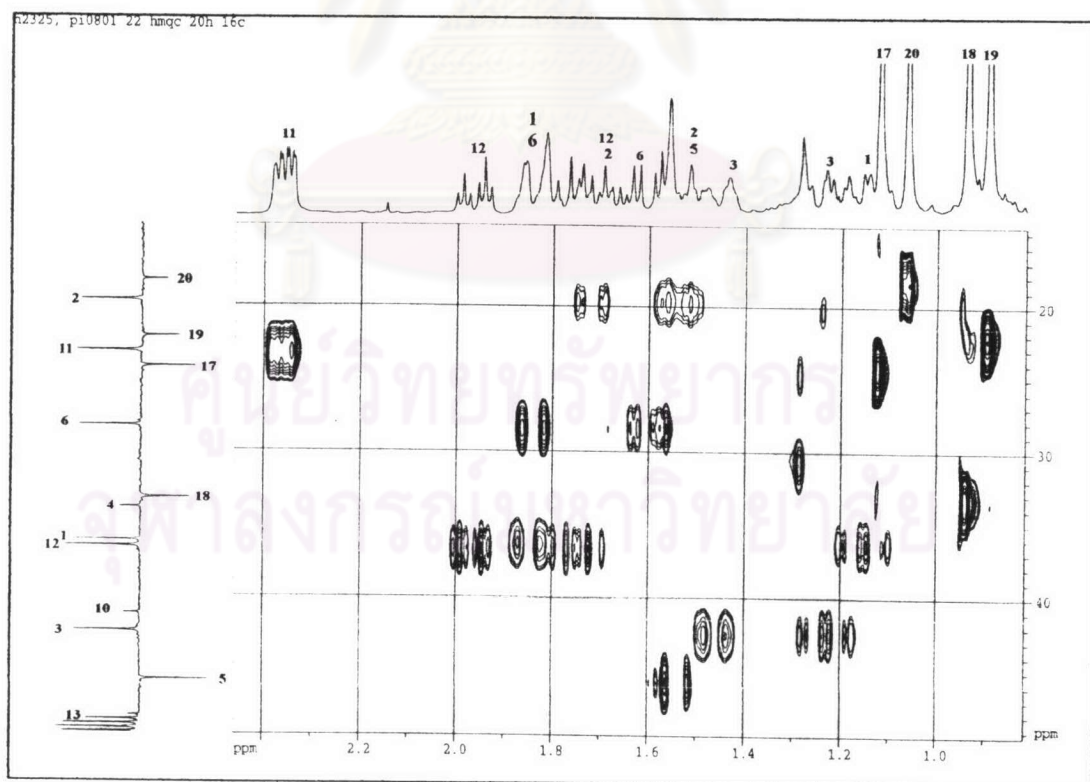
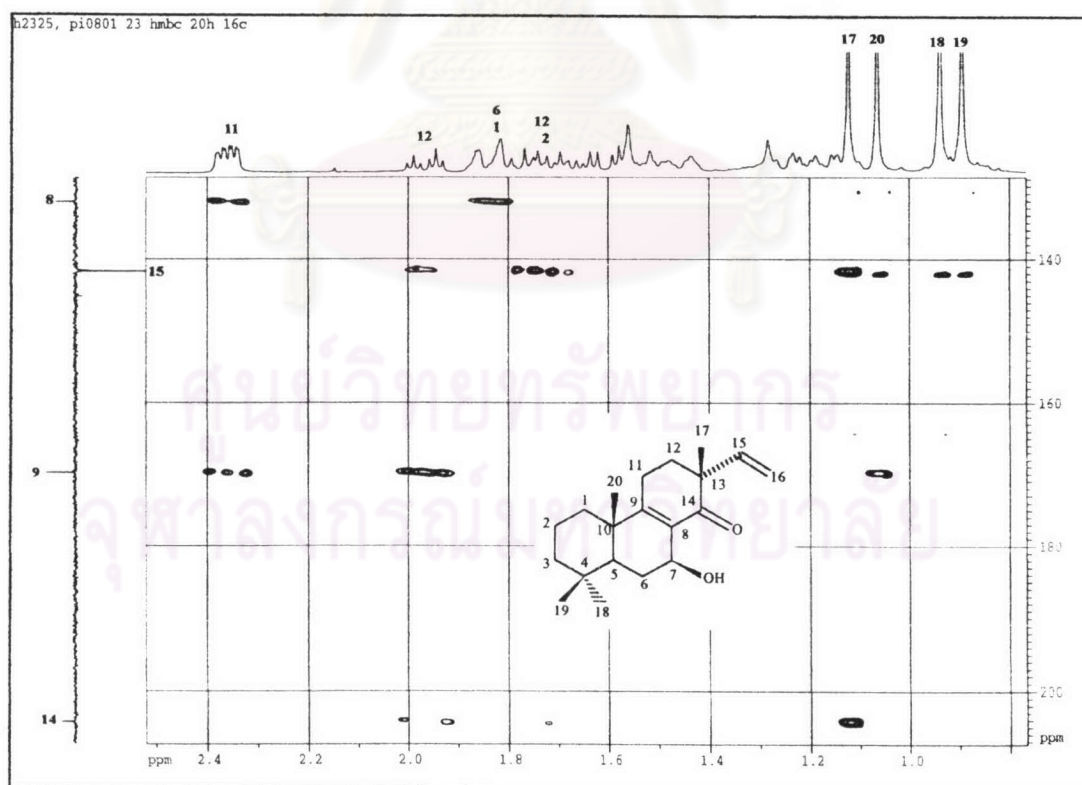
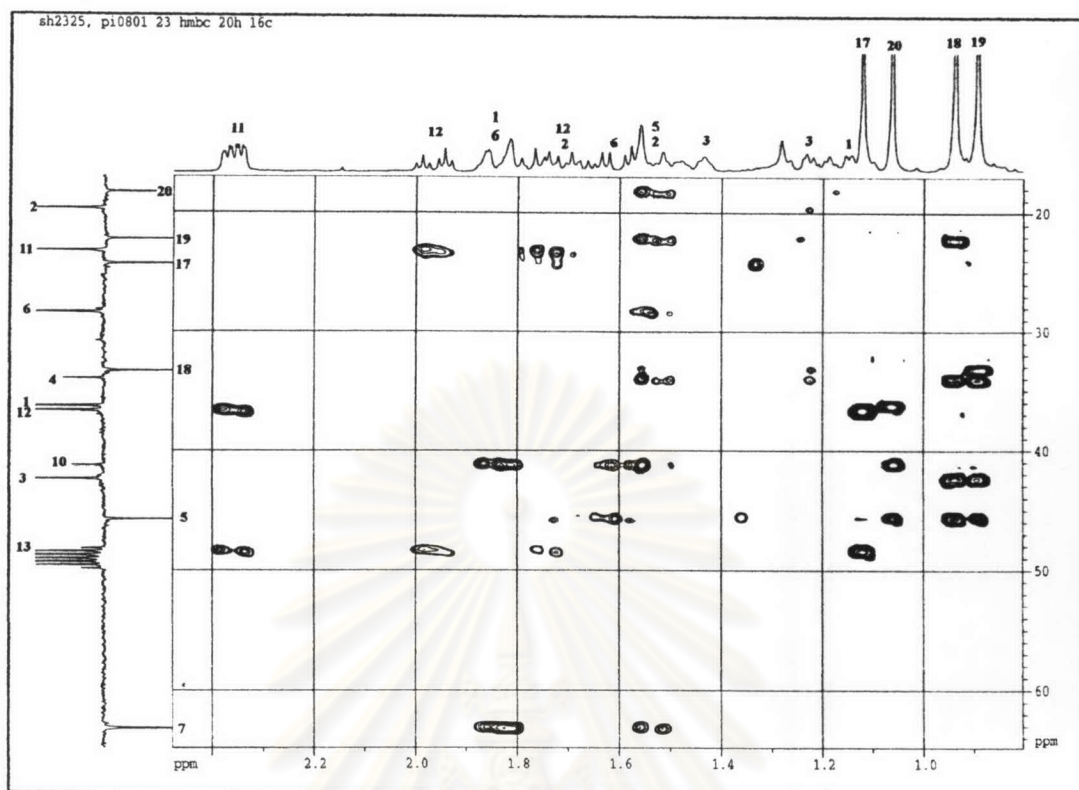


Figure 141 Expanded HMQC spectrum of SVH-2 (75 MHz ; in CD₃OD)



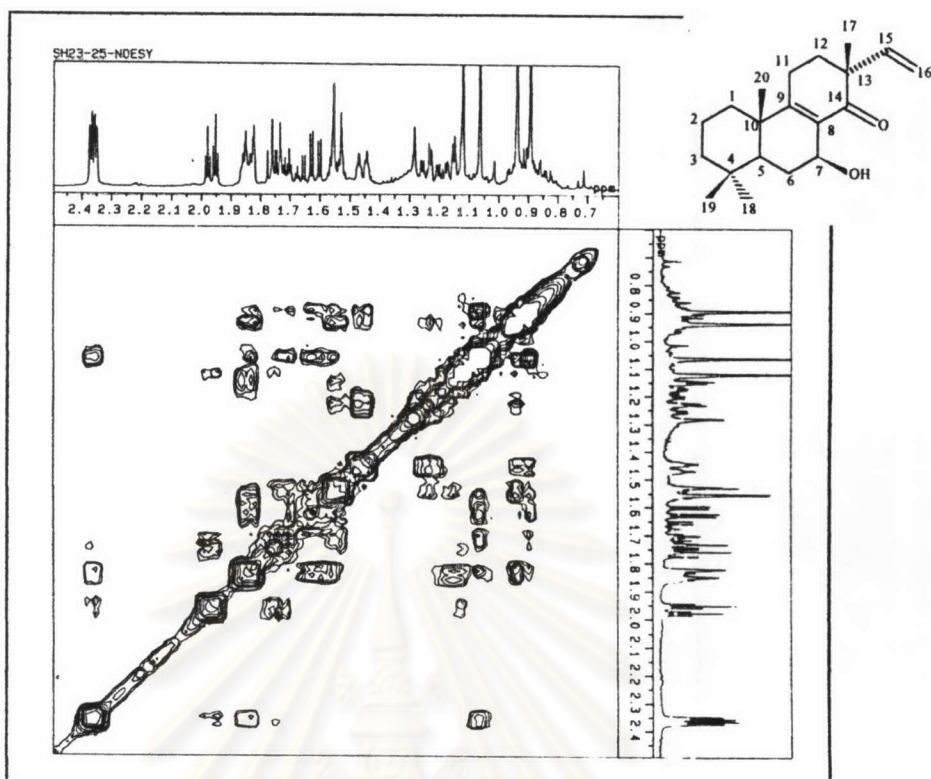


Figure 144 ^1H - ^1H NOESY spectrum of SVH-2 (300 MHz ; in CD_3OD)

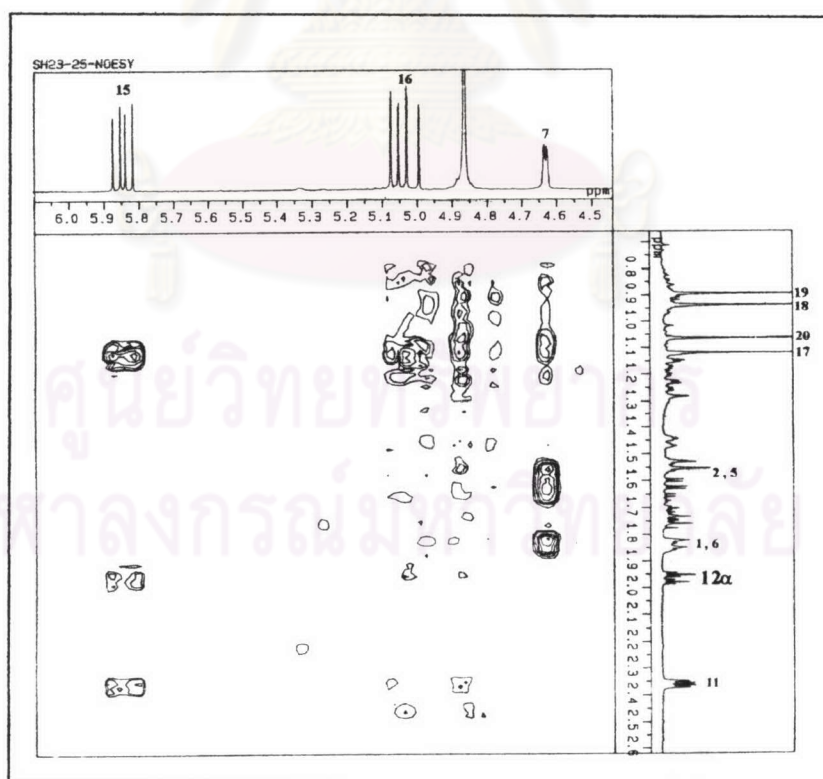


Figure 145 ^1H - ^1H NOESY spectrum of SVH-2 (300 MHz ; in CD_3OD)

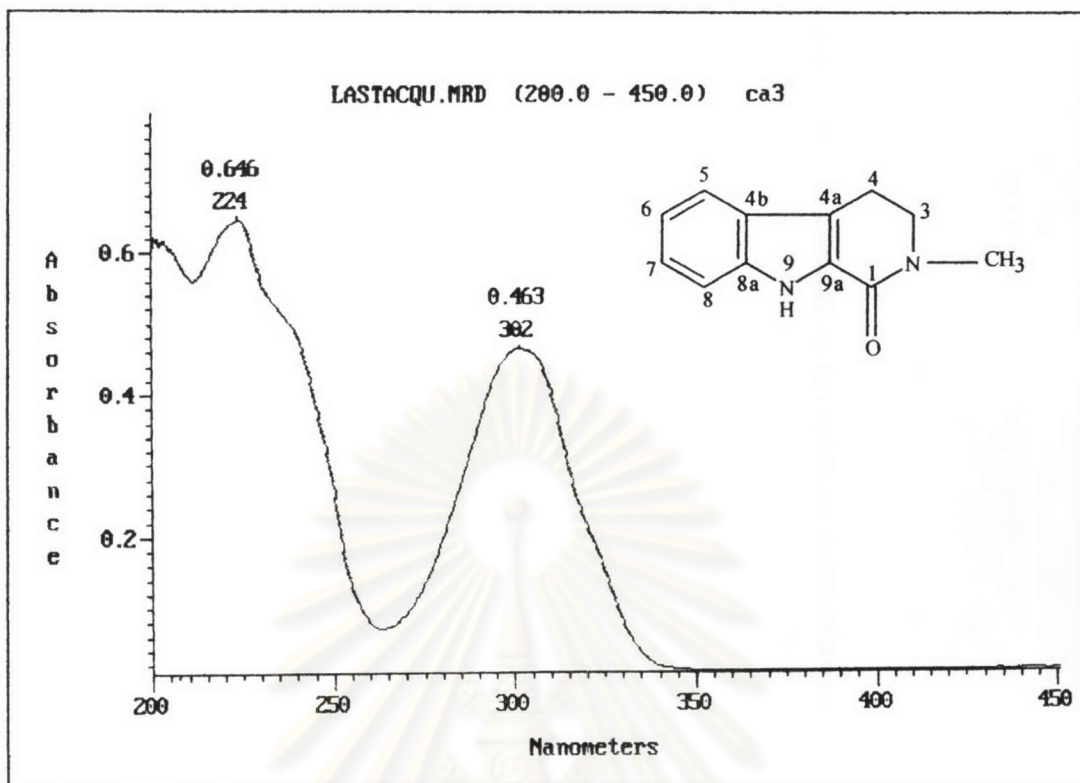


Figure 146 Ultraviolet absorption spectrum of SVH-3

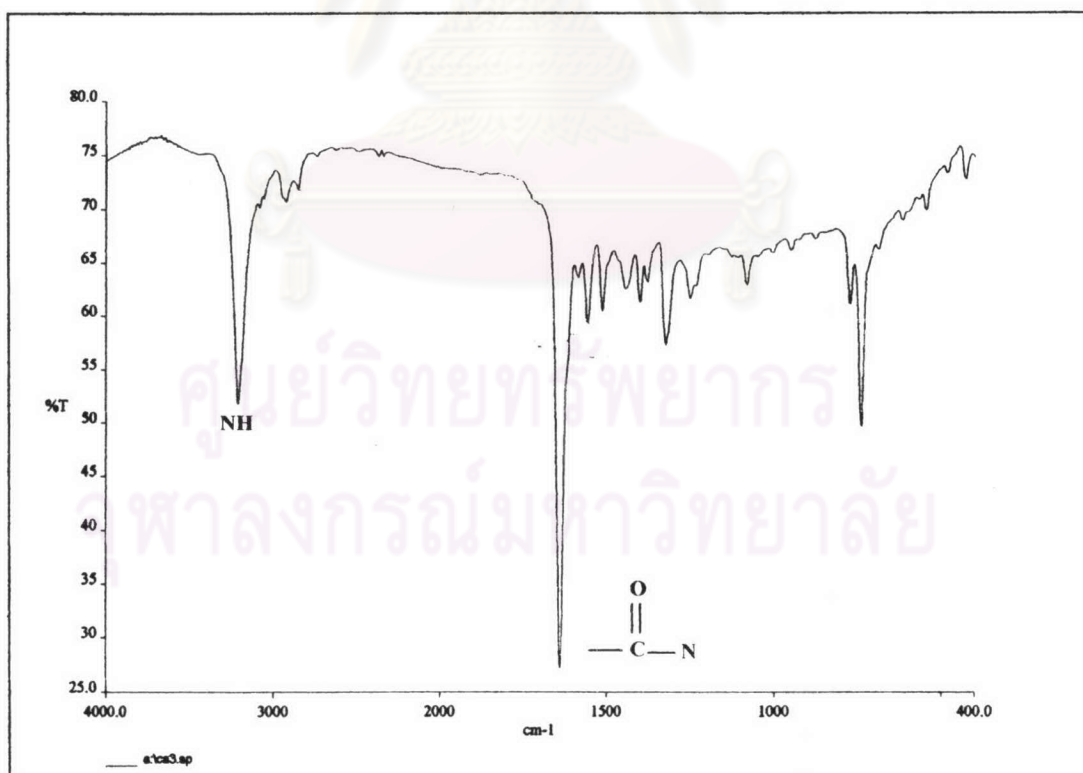


Figure 147 Infrared absorption spectrum of SVH-3

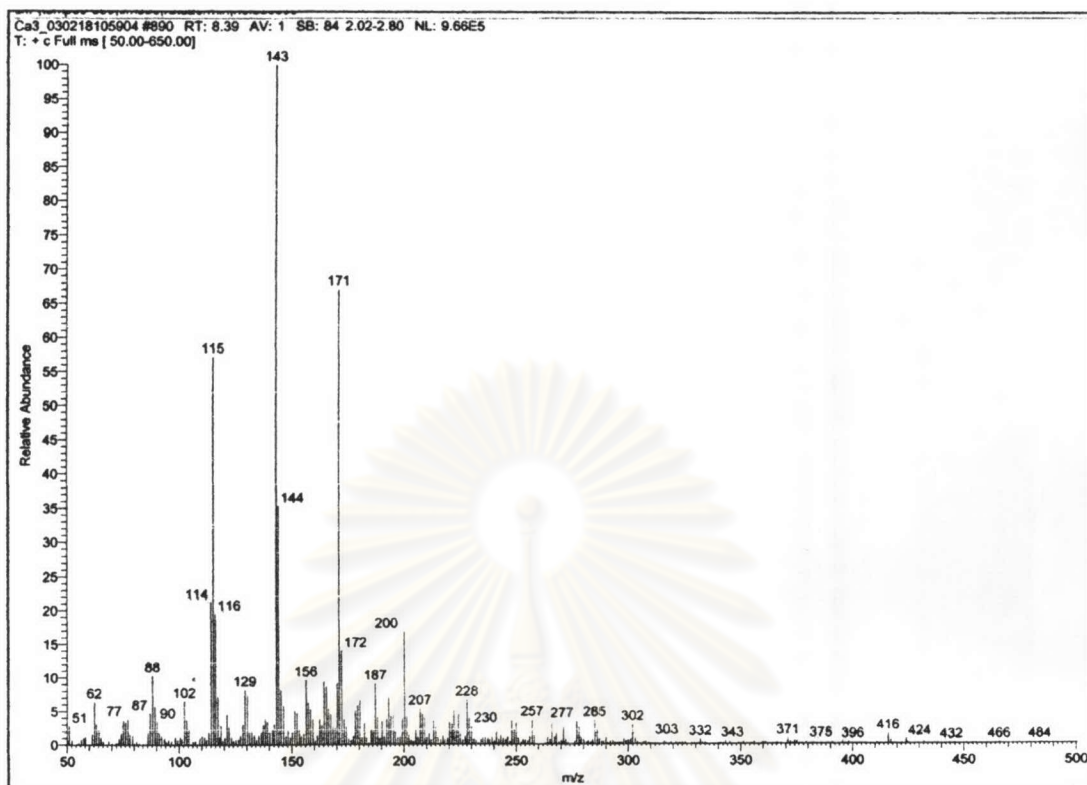
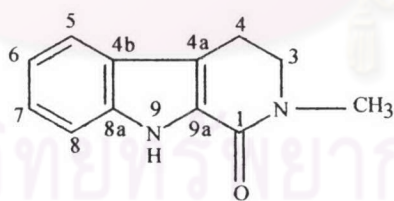


Figure 148 Mass spectrum of SVH-3



SVH-3

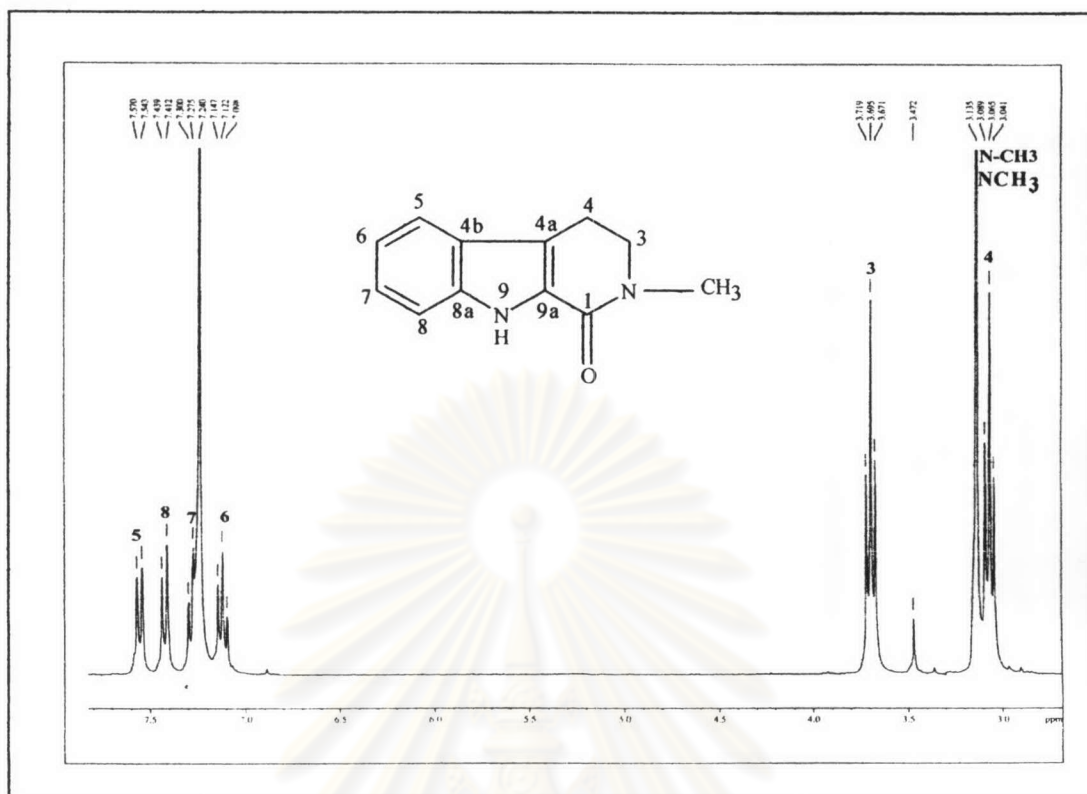


Figure 149 ¹H-NMR spectrum of SVH-3 (300 MHz; in CDCl₃)

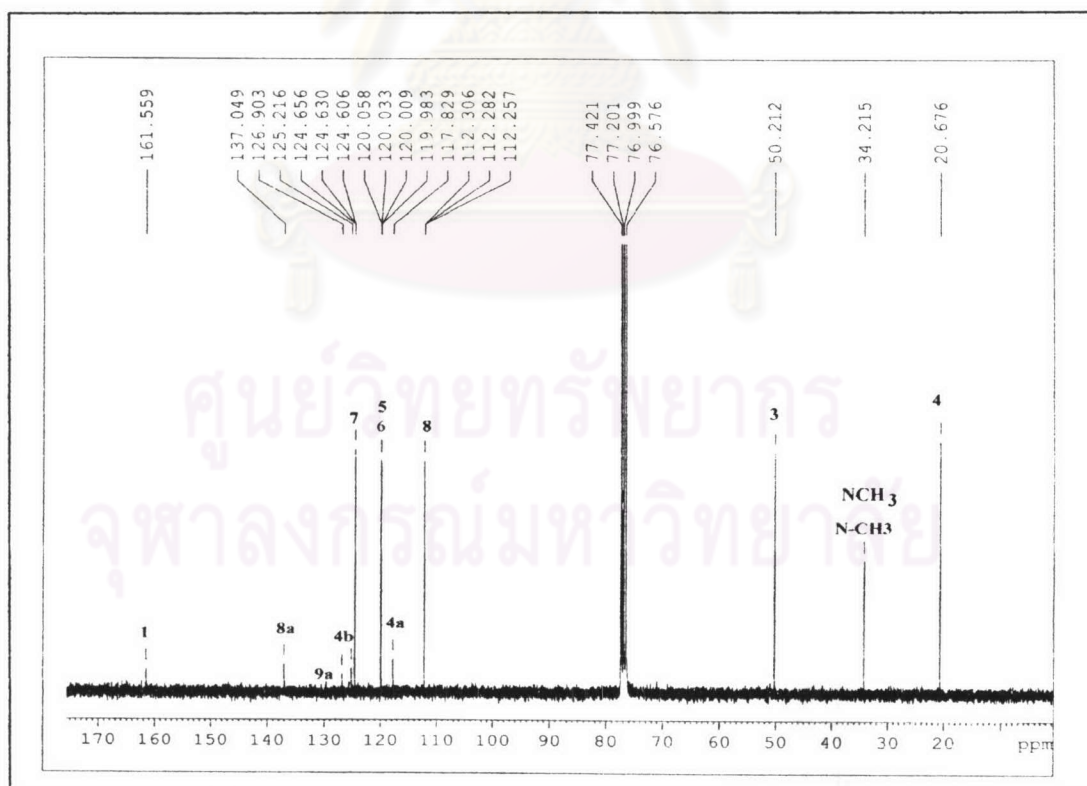


Figure 150 ¹³C-NMR spectrum of SVH-3 (75 MHz; in CDCl₃)

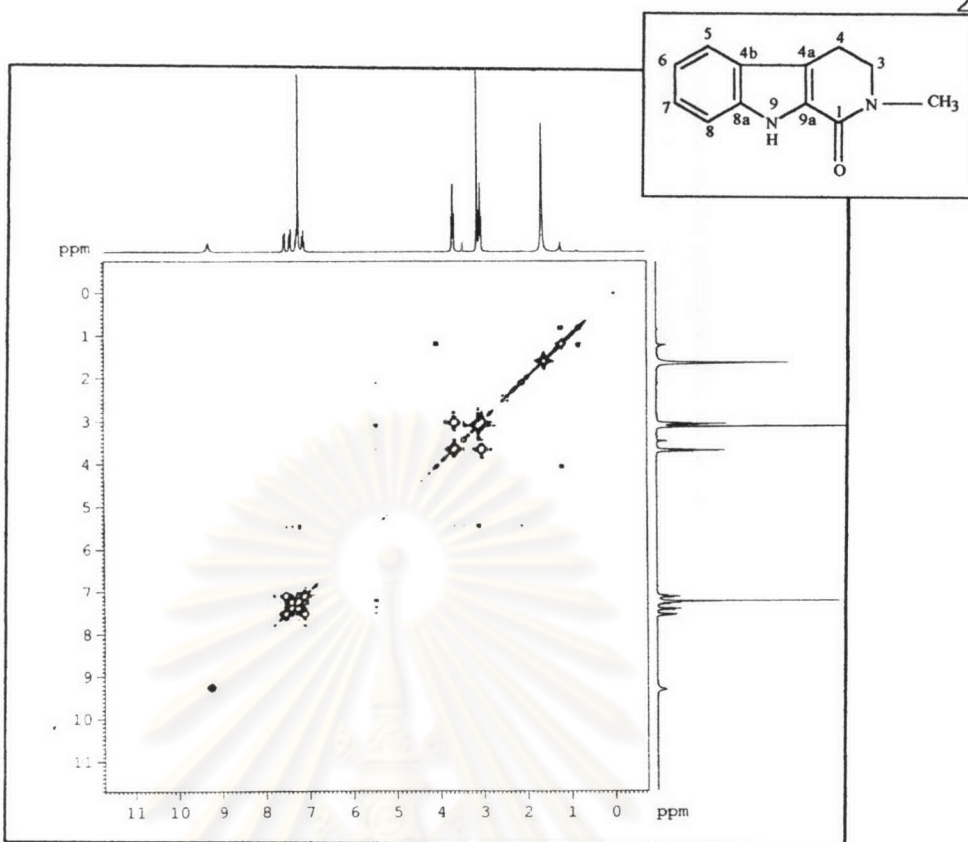


Figure 151 ^1H - ^1H COSY spectrum of SVH-3 (300 MHz; in CDCl_3)

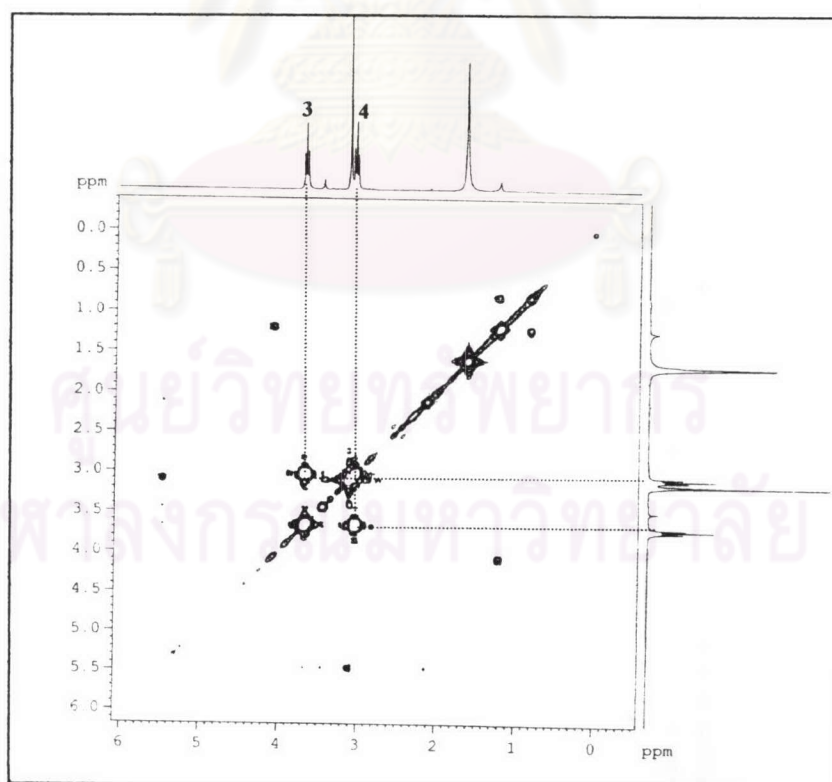


Figure 152 Expanded ^1H - ^1H COSY spectrum of SVH-3 (300 MHz; in CDCl_3)

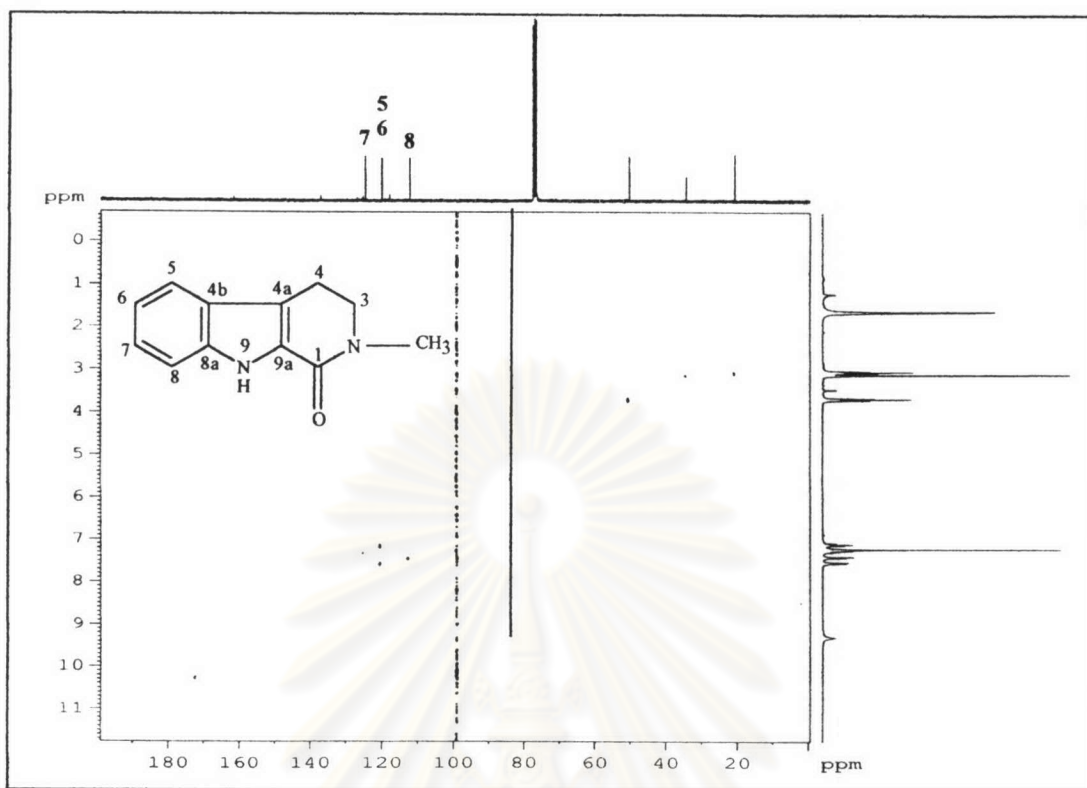


Figure 153 HETCOR spectrum of SVH-3 (75 MHz ; in CDCl_3)

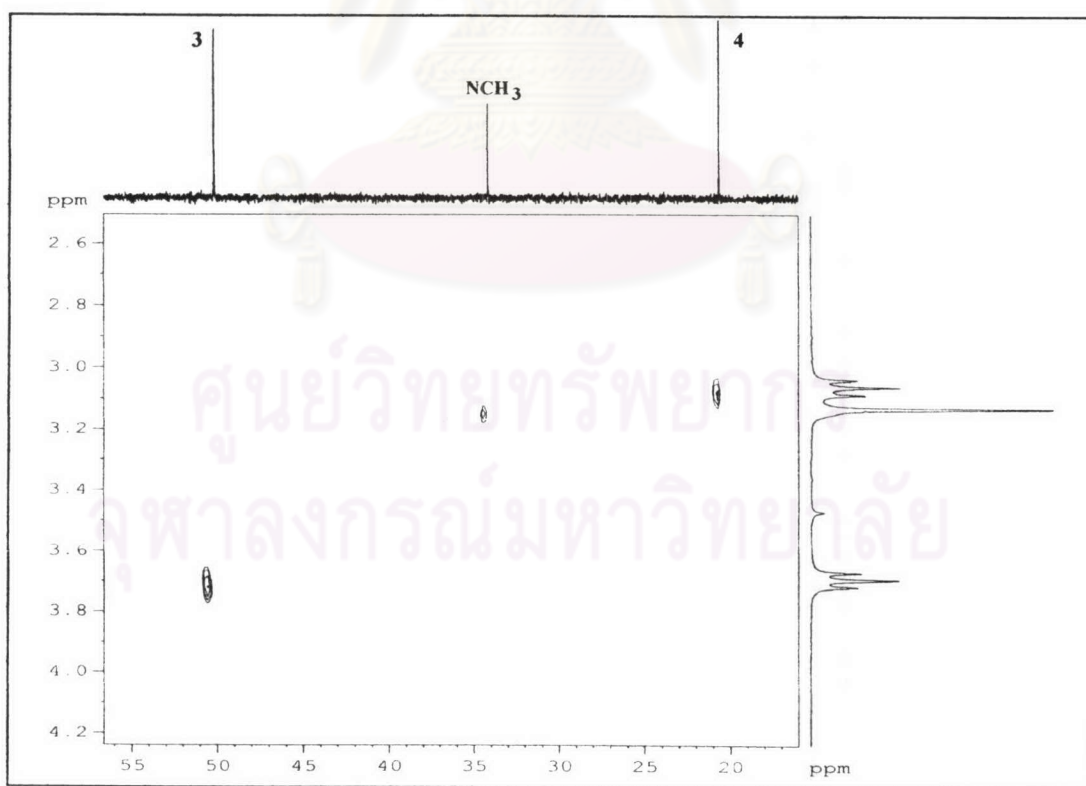


Figure 154 Expanded HETCOR spectrum of SVH-3 (75 MHz ; in CDCl_3)

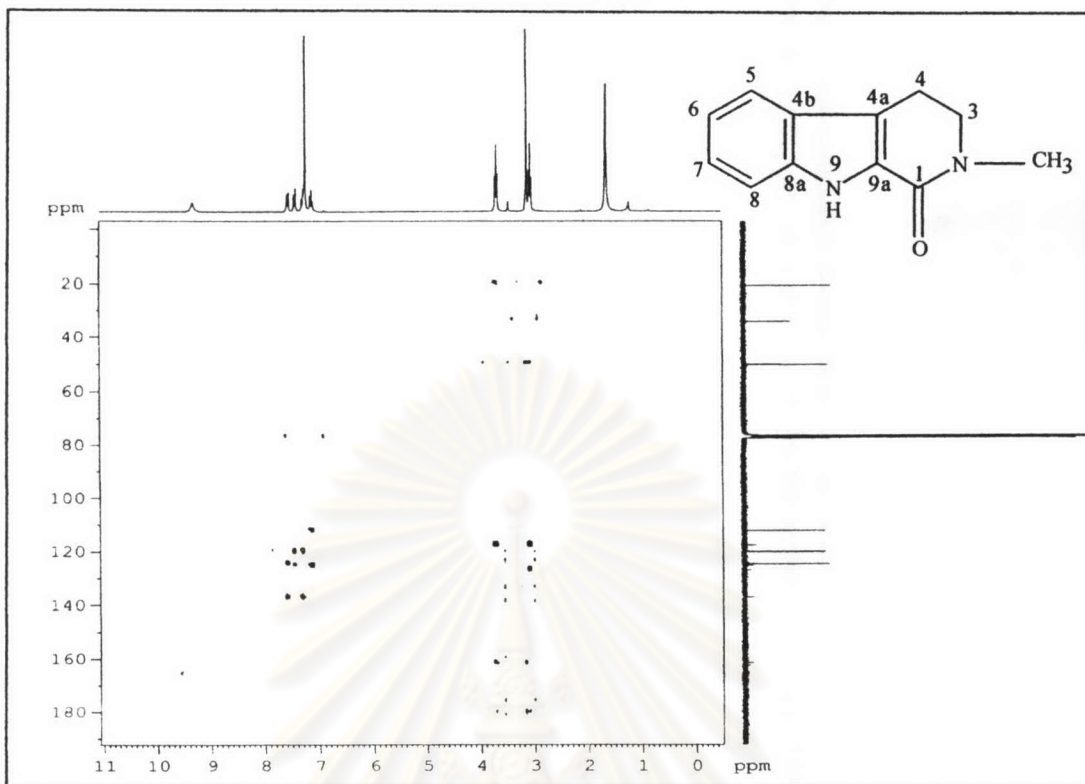


Figure 155 HMBC spectrum of SVH-3 (75 MHz ; in CDCl₃)

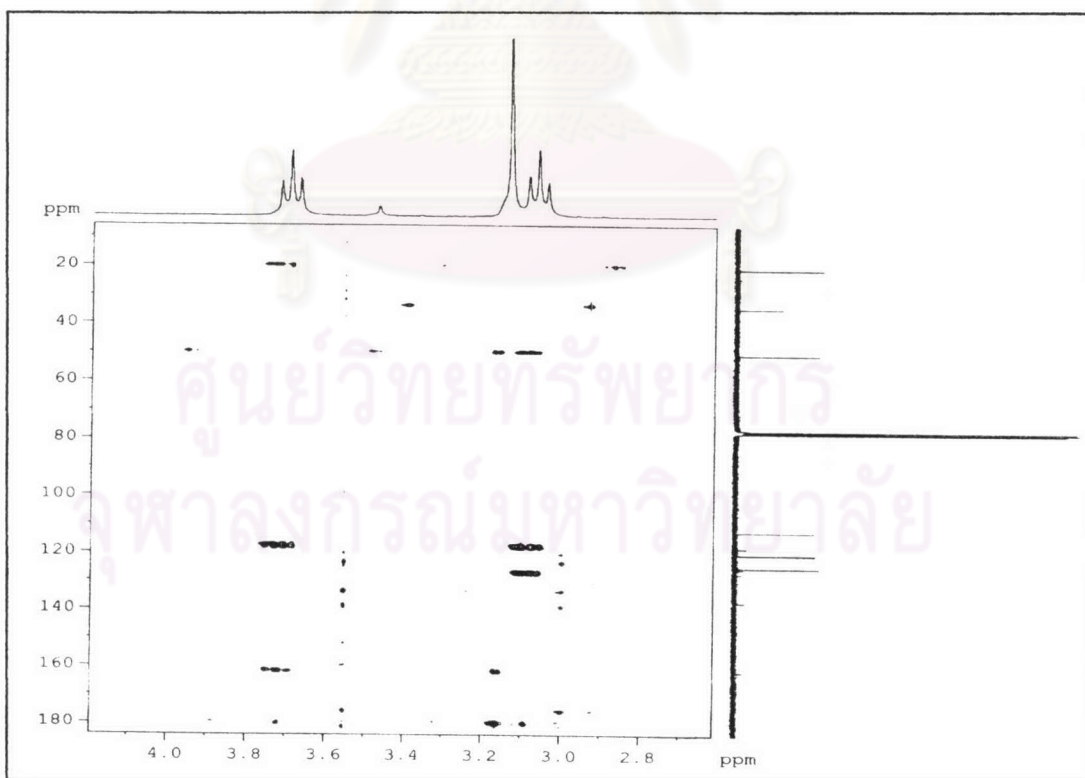


Figure 156 Expanded HMBC spectrum of SVH-3 (75 MHz ; in CDCl₃)

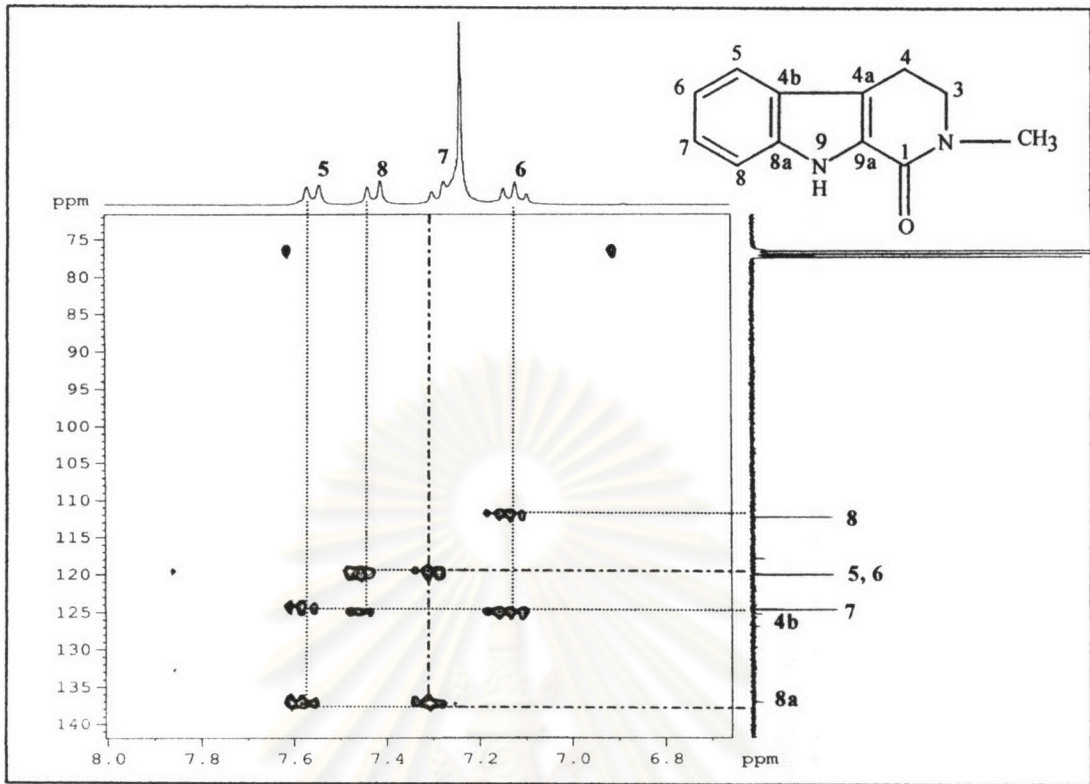


Figure 157 Expanded HMBC spectrum of SVH-3 (75 MHz ; in CDCl₃)

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

VITA

Piyanuch Thongphasuk was born on 24 July 1973 in Bangkok, Thailand. In 1990, she passed the university entrance examination for the faculty of Pharmaceutical science, Chulalongkorn university. She obtained her bachelor degree in 1994 (second classed honour). In 1995 she started her career as a pharmacist in Krung Thon hospital and then as a professional sales representative at Organon company. In 1998, she started her Ph.D. program at Faculty of pharmaceutical science, Chulalongkorn university with the Royal Golden Jubilee Grant from the Thailand Research Fund.

Publication

1. Thongphasuk, P., Suttisri, R., Bavovada, R. and Verpoorte, R. 2003. Alkaloids and isopimarane diterpenoid from *Strychnos vanprukii*. *Phytochemistry* : In press.

Poster Presentations

1. Thongphasuk, P., Suttisri, R., Bavovada, R. and Verpoorte, R. 2001. Chemical constituents from *Strychnos vanprukii* Craib. The 18th Annual Research Meeting in Pharmaceutical Sciences, December 7, 2001, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok.

2. Thongphasuk, P., Suttisri, R., Bavovada, R. and Verpoorte, R. 2003. Chemical constituents from *Strychnos vanprukii* stem and their biological activities. p. 125. RGJ-Ph.D. Congress IV, April 25-27, 2003, Chomtien Beach Resort Hotel, Chonburi.