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APPENDIX

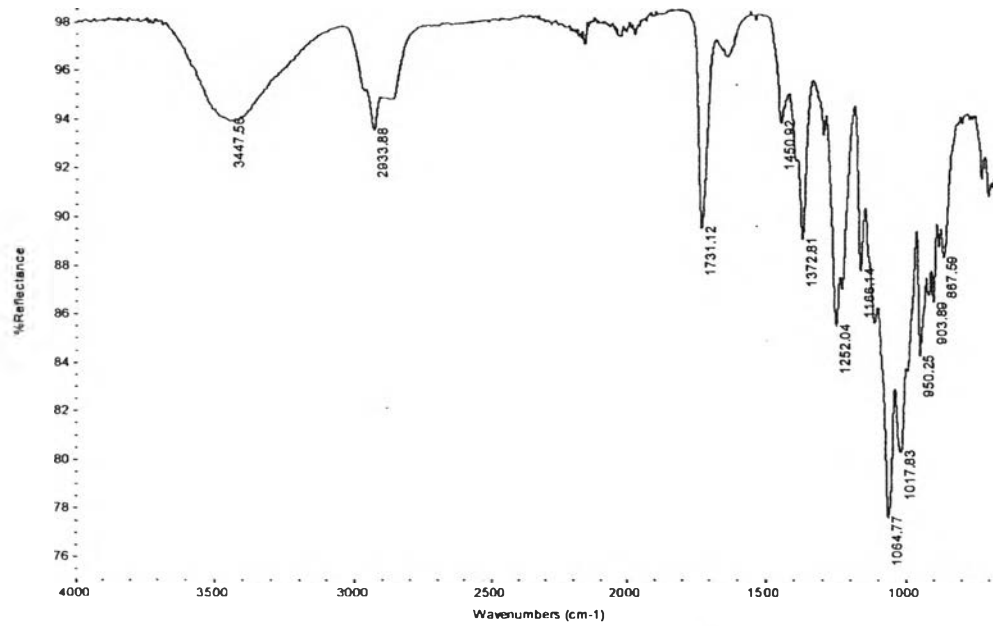


Figure A1 ATR-FTIR spectrum of compound 61

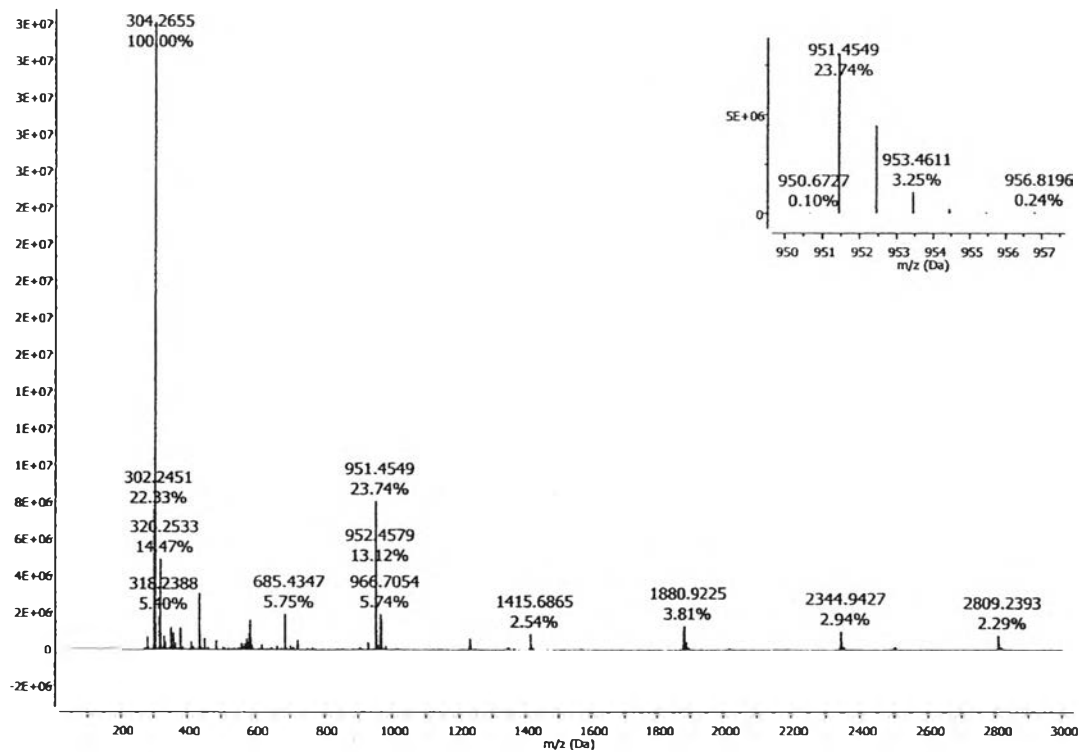
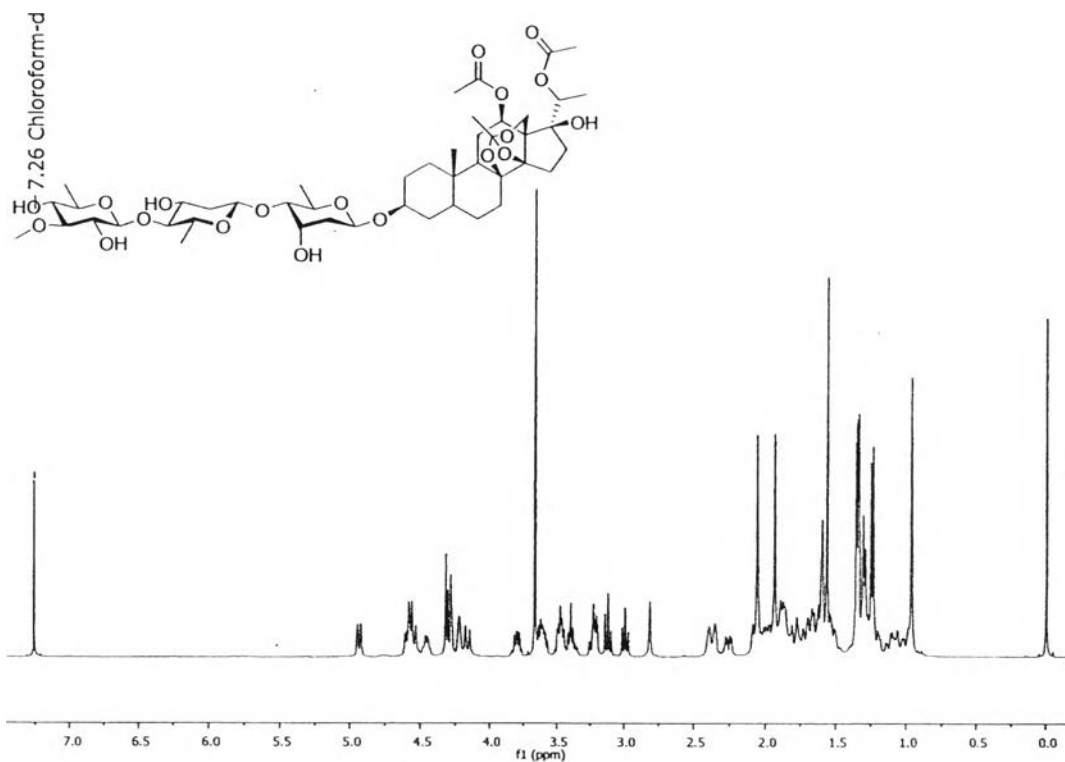
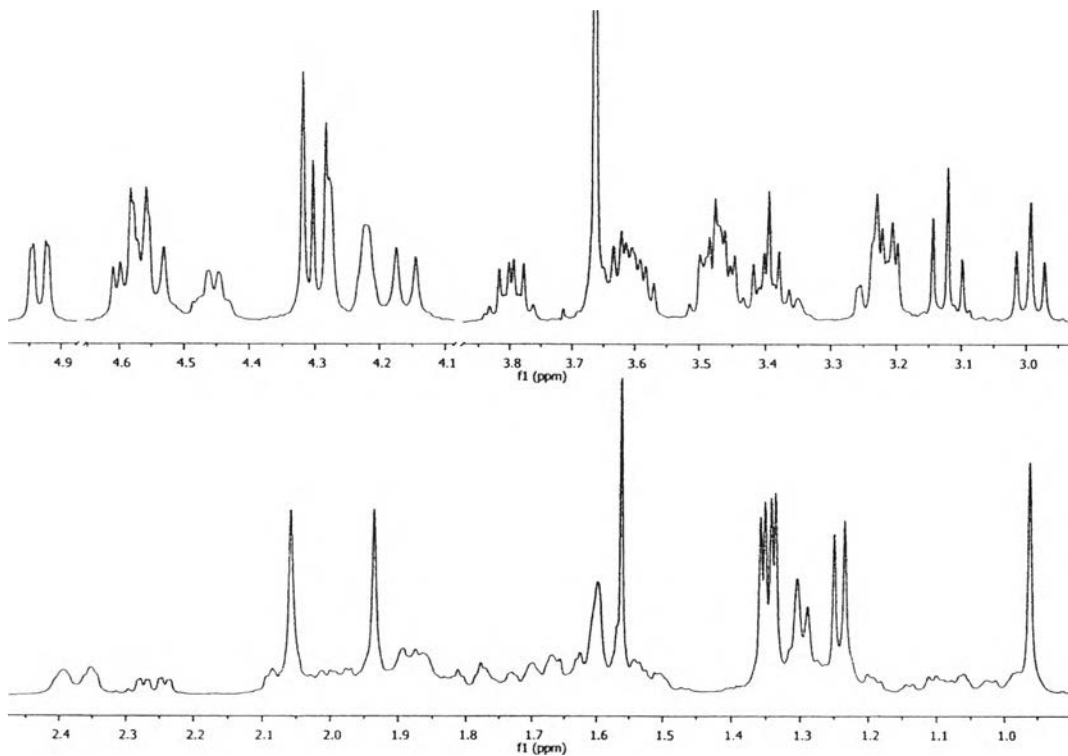
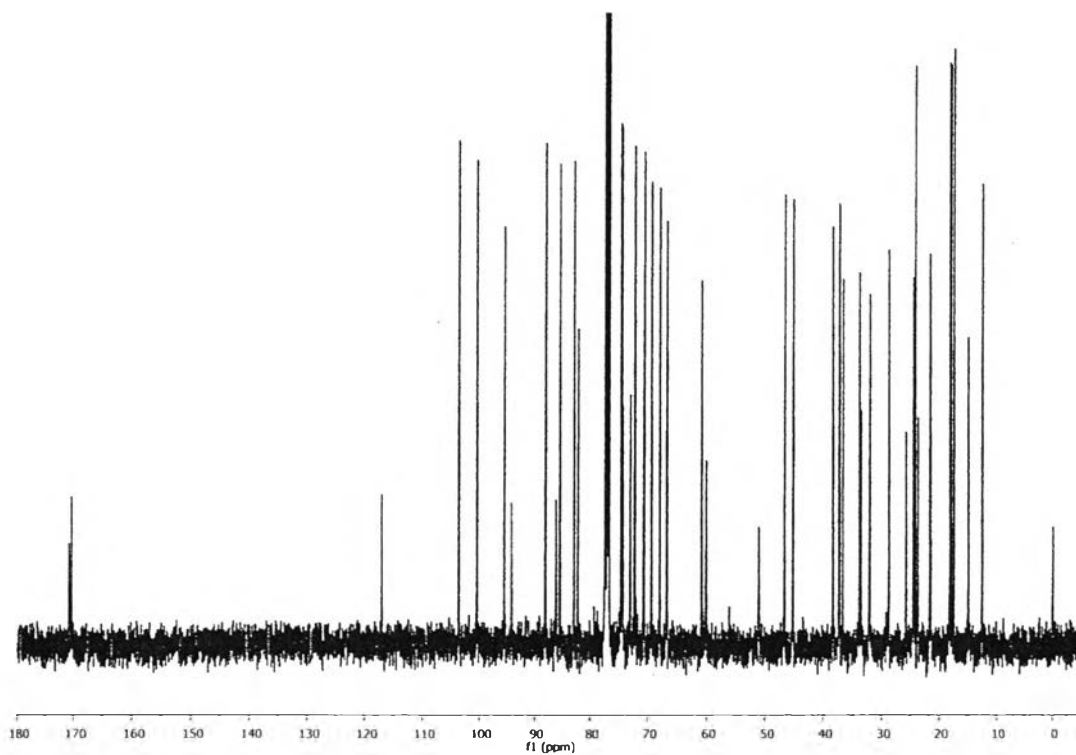
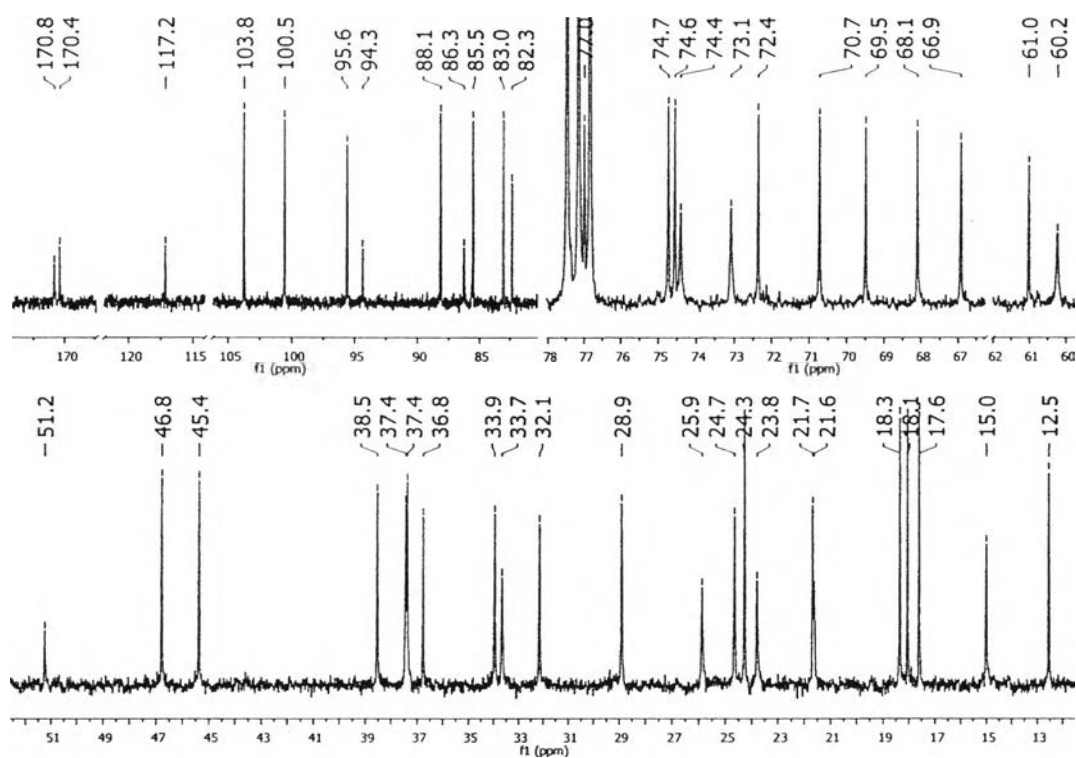


Figure A2 HR-ESIMS spectrum of compound 61

Figure A3 ^1H NMR spectrum of compound 61Figure A4 ^1H NMR spectrum of compound 61 (Expansion)

Figure A5 ^{13}C NMR spectrum of compound 61Figure A6 ^{13}C NMR spectrum of compound 61 (Expansion)

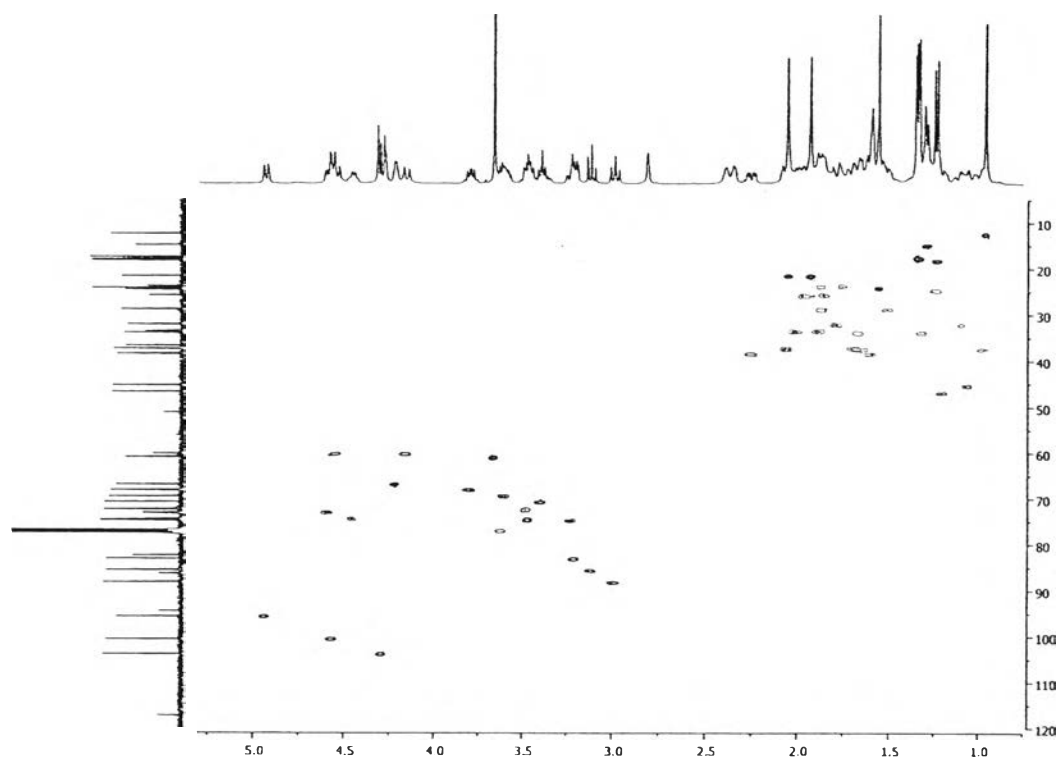


Figure A7 HSQC spectrum of compound 61

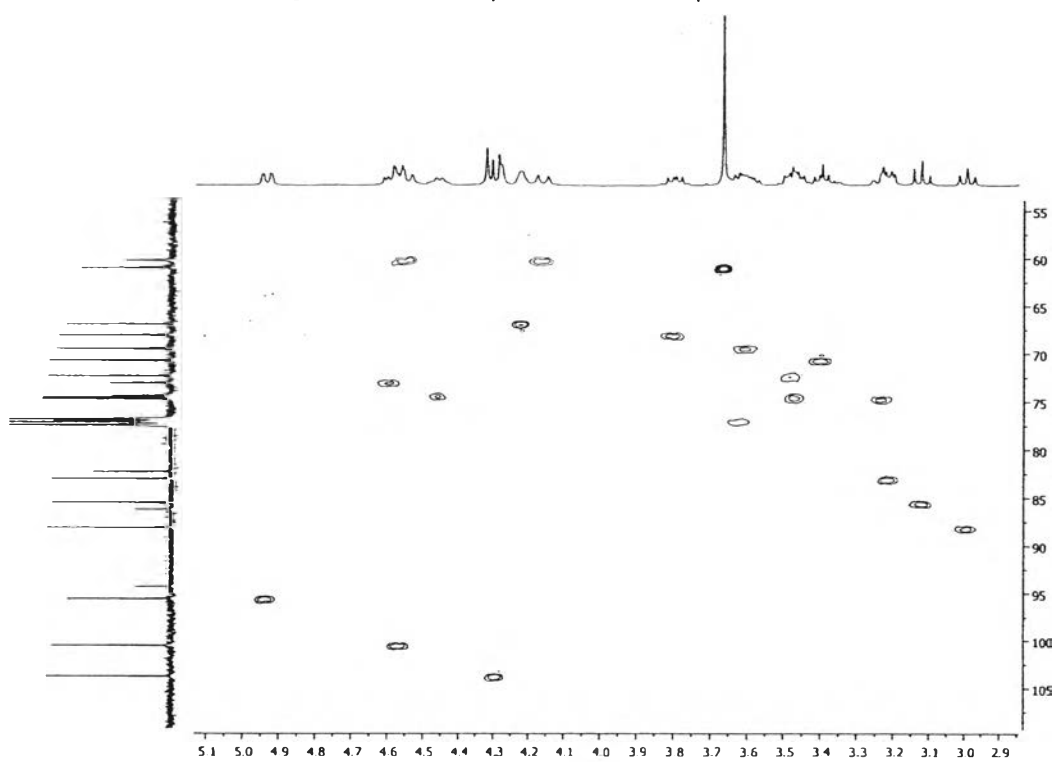


Figure A8 HSQC spectrum of compound 61 (Expansion)

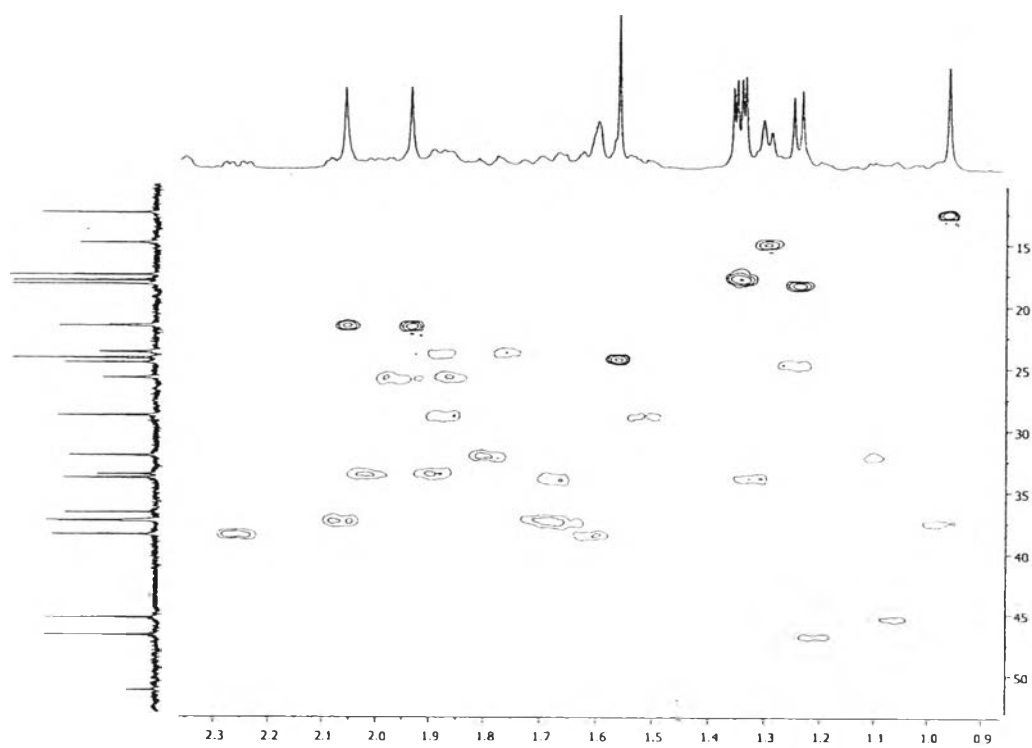


Figure A9 HSQC spectrum of compound 61 (Expansion)

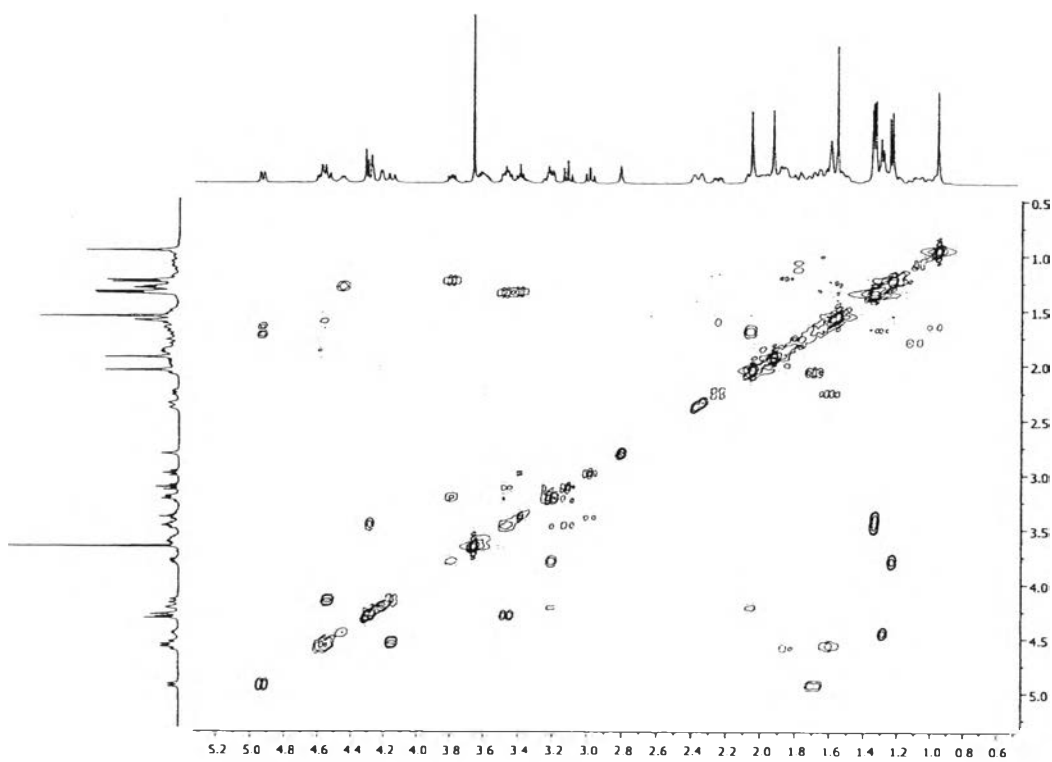


Figure A10 COSY spectrum of compound 61



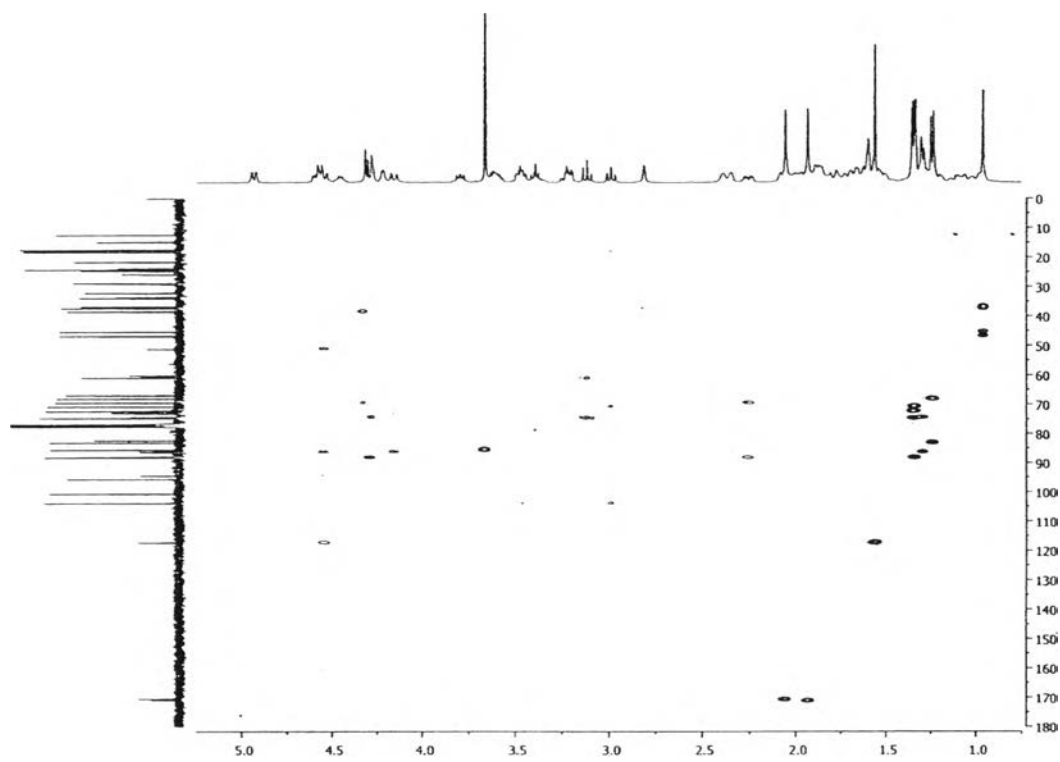


Figure A11 HMBC spectrum of compound 61

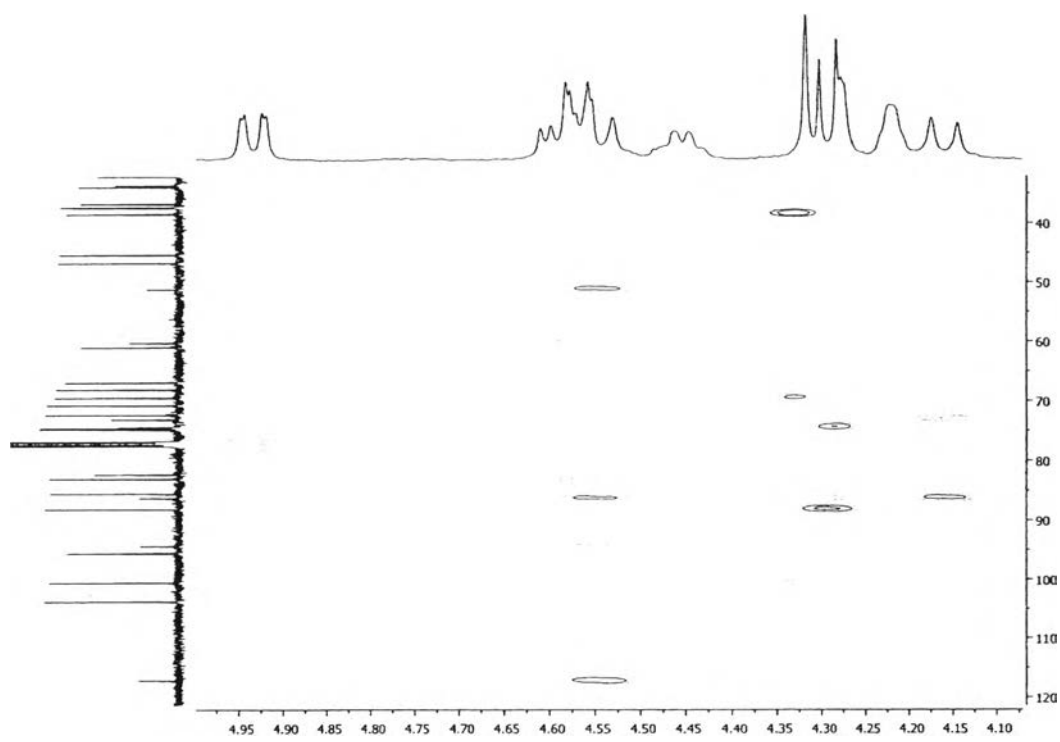


Figure A12 HMBC spectrum of compound 61 (Expansion)

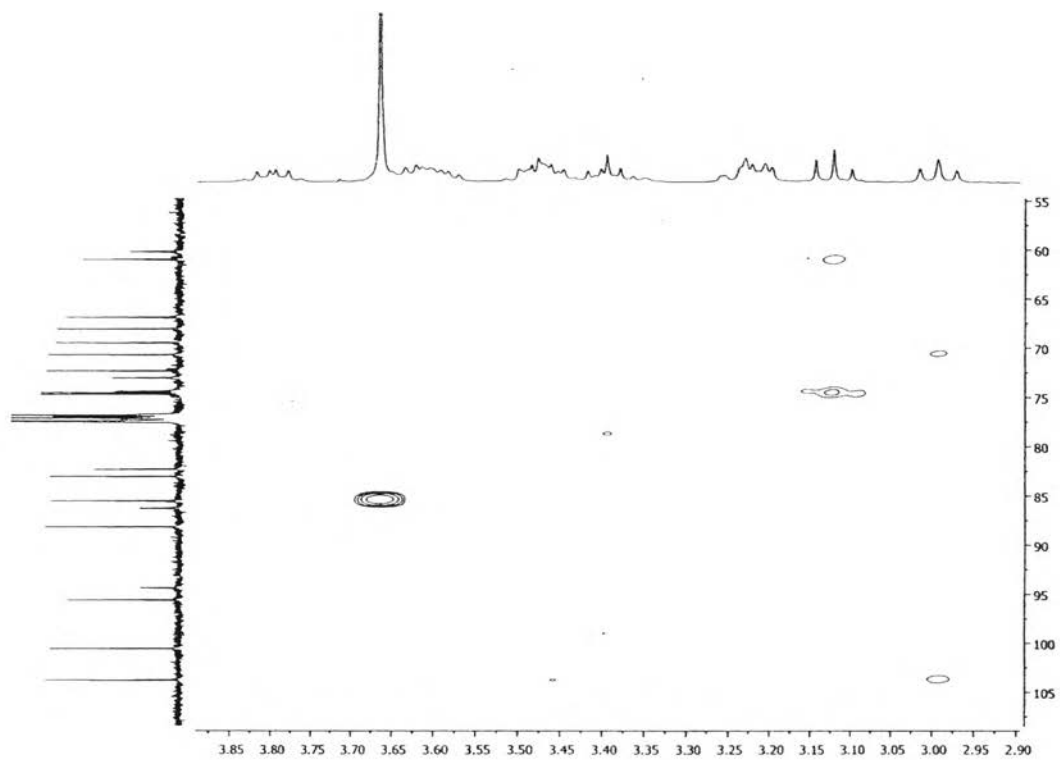


Figure A13 HMBC spectrum of compound 61 (Expansion)

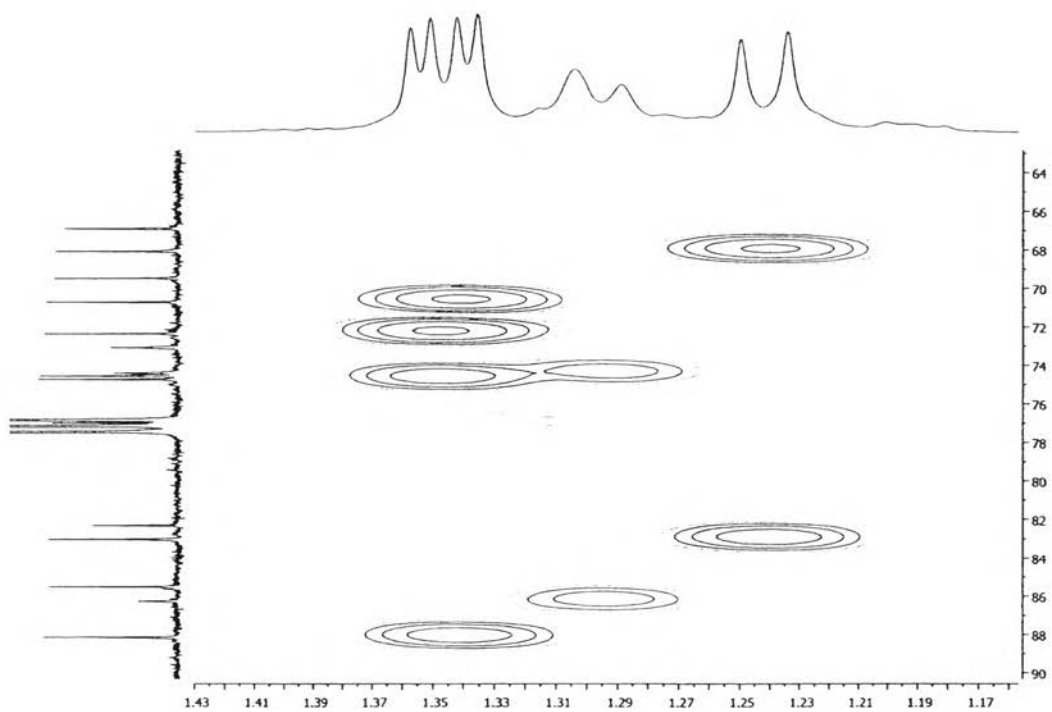


Figure A14 HMBC spectrum of compound 61 (Expansion)

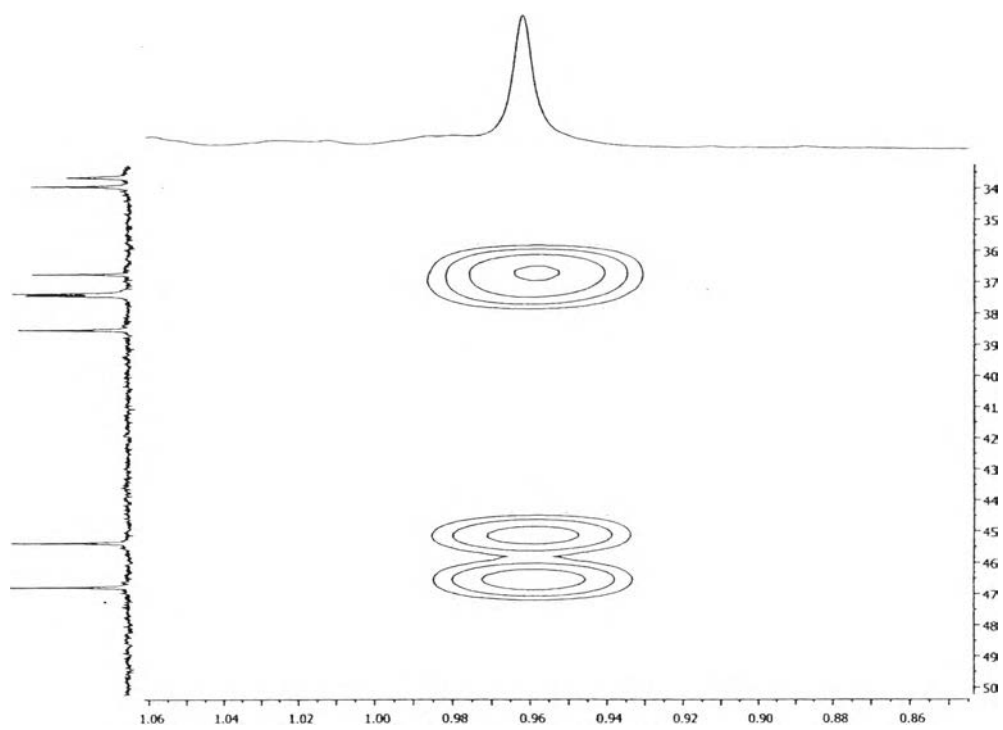


Figure A15 HMBC spectrum of compound 61 (Expansion)

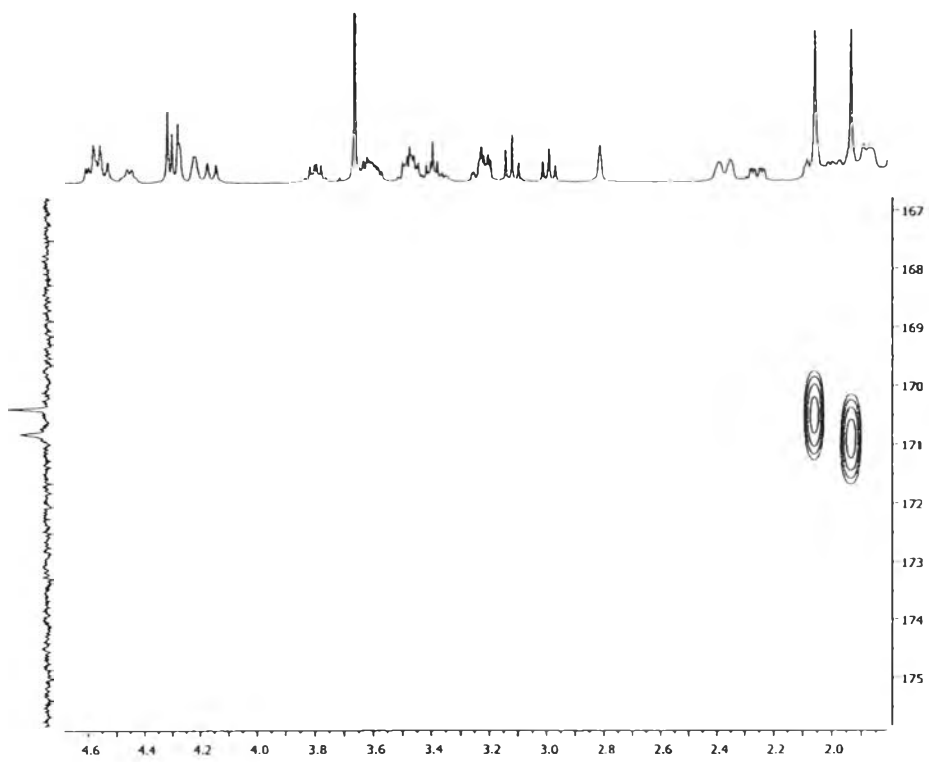


Figure A16 HMBC spectrum of compound 61 (Expansion)



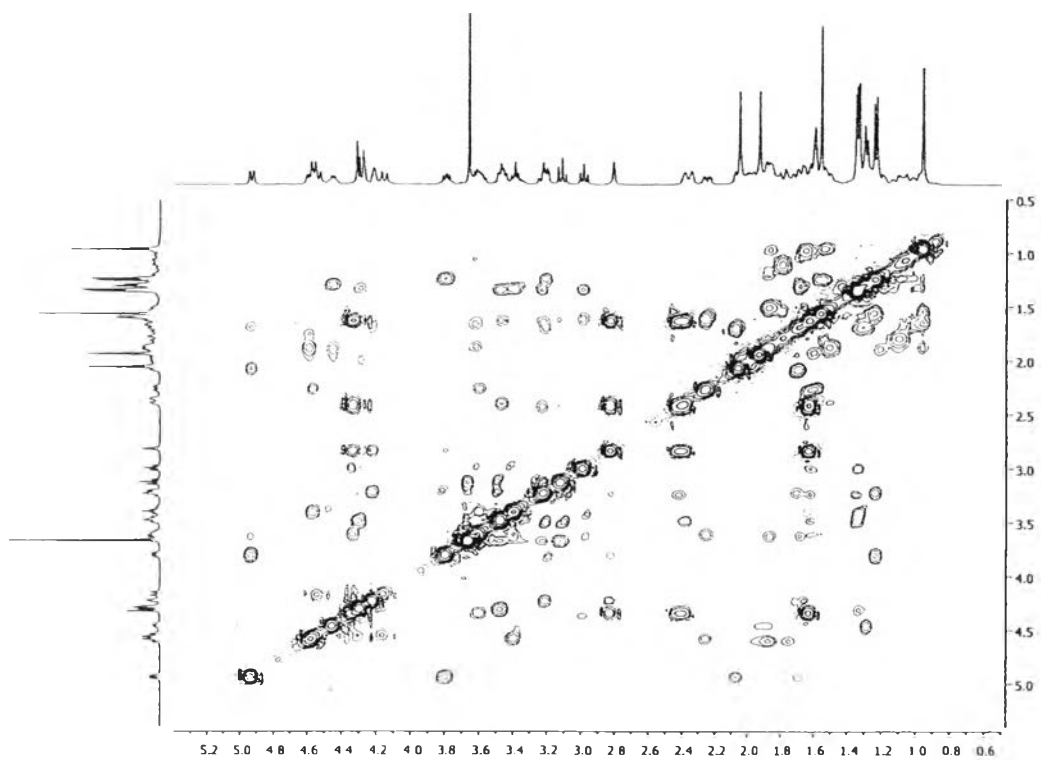


Figure A17 NOESY spectrum of compound 61

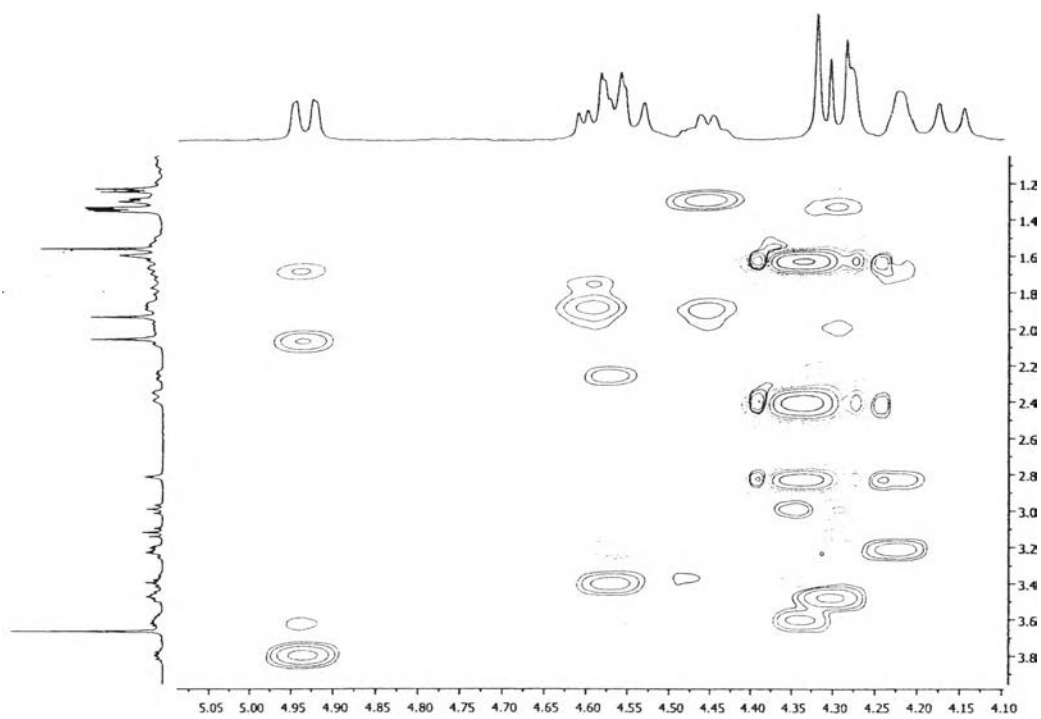


Figure A18 NOESY spectrum of compound 61 (Expansion)



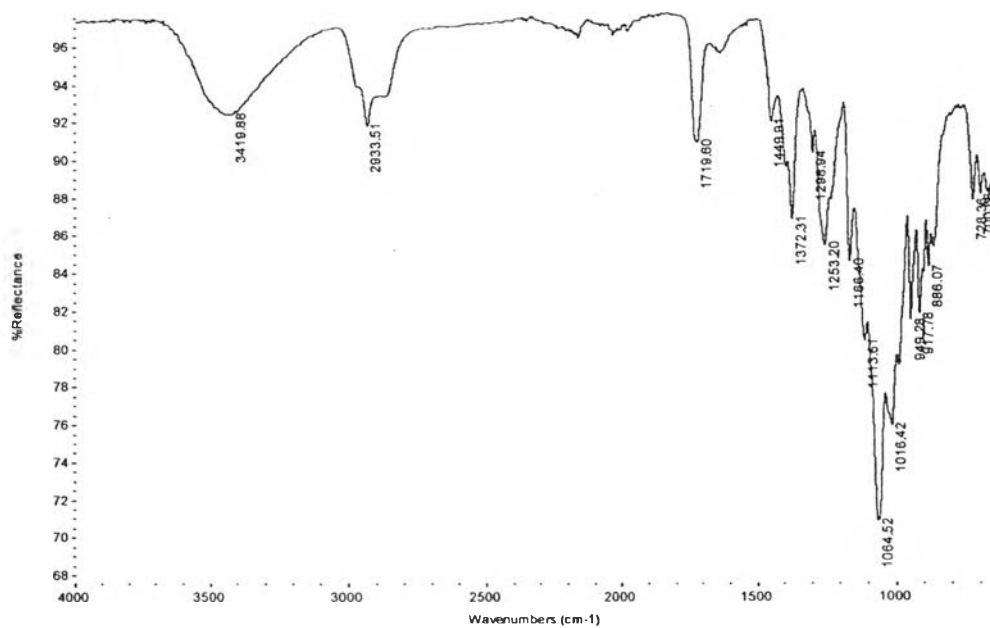


Figure A19 ATR-FTIR spectrum of compound 62

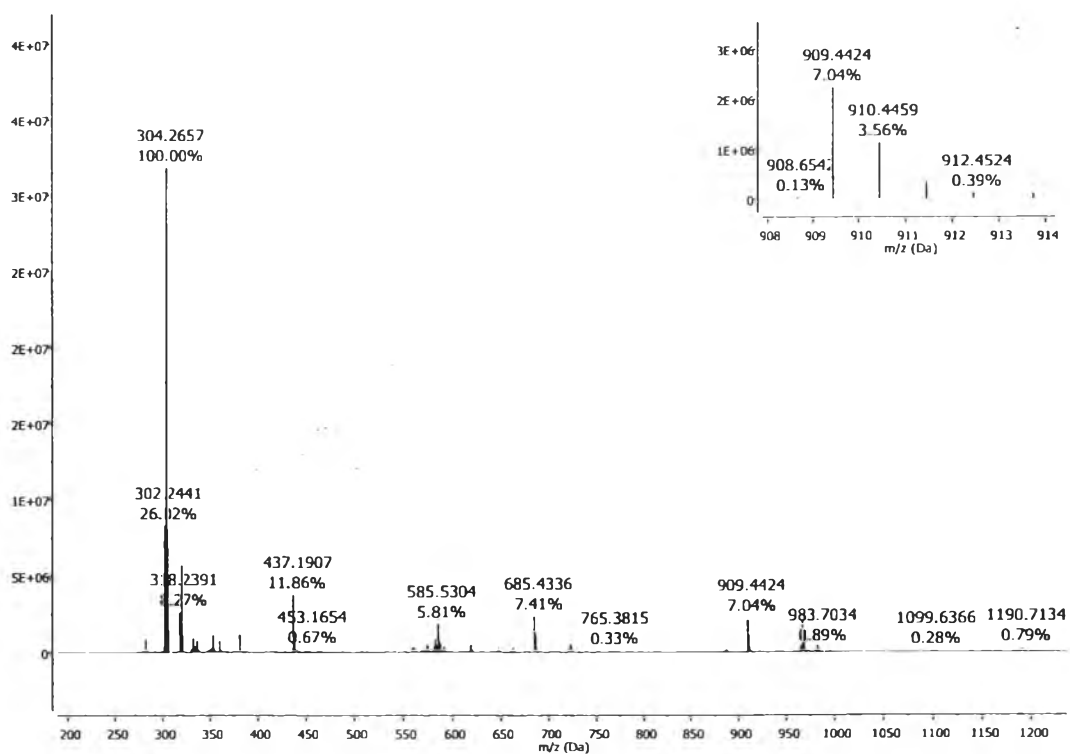
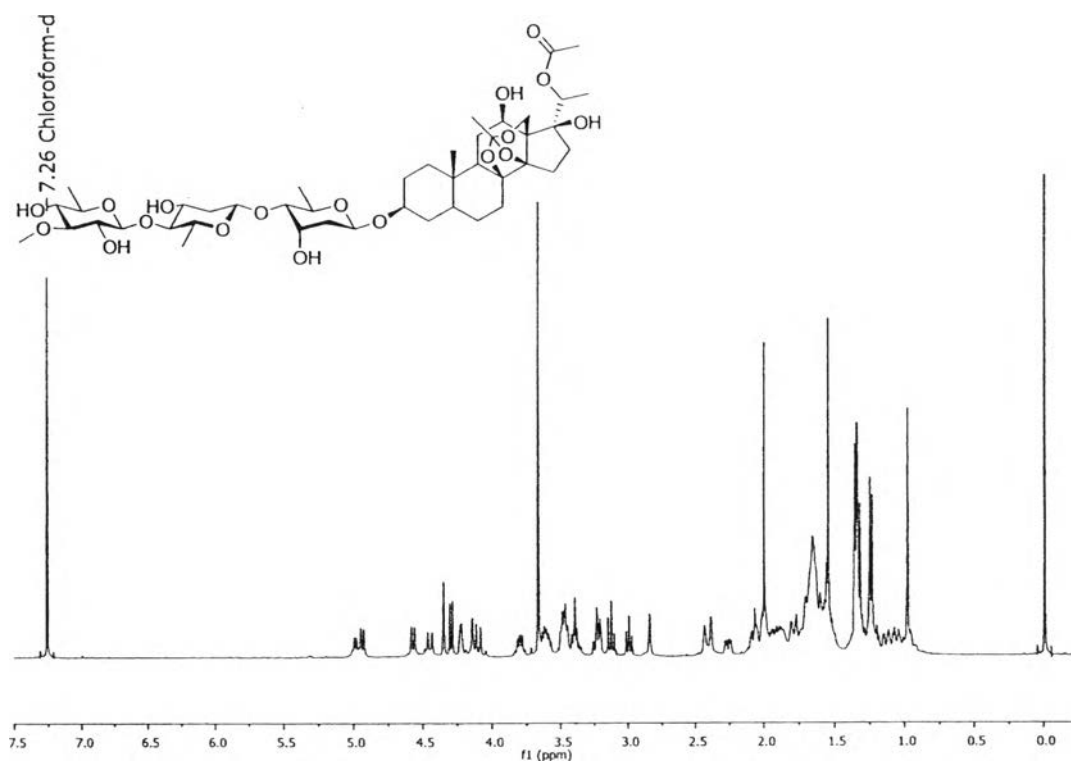
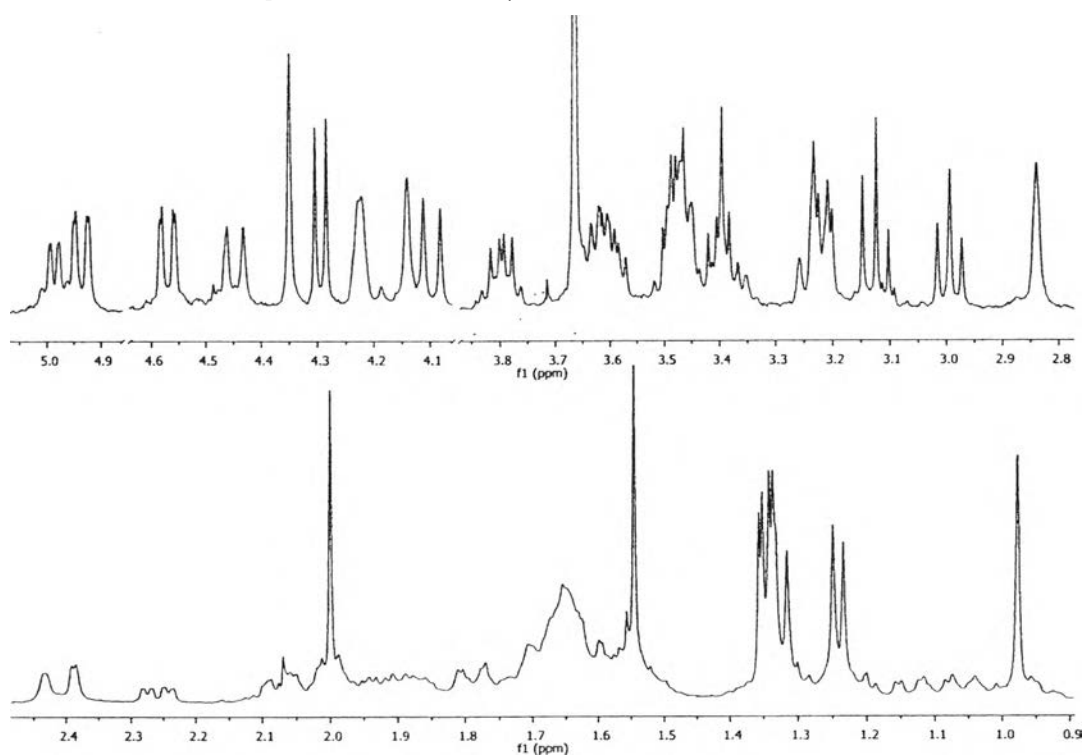
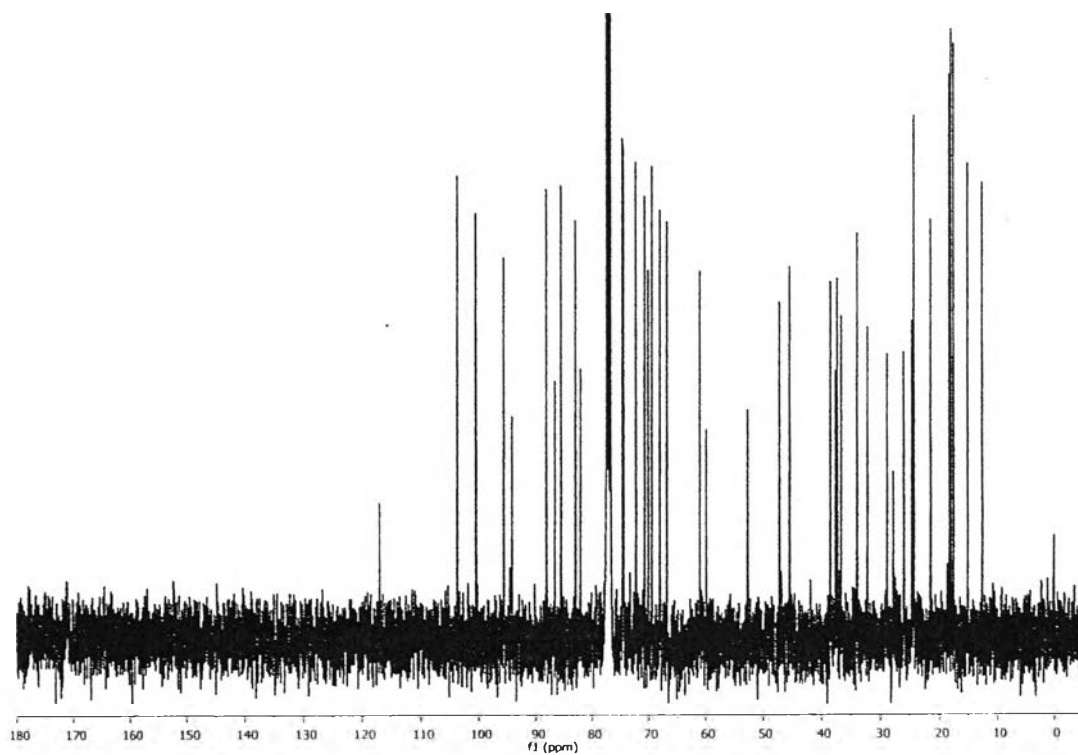
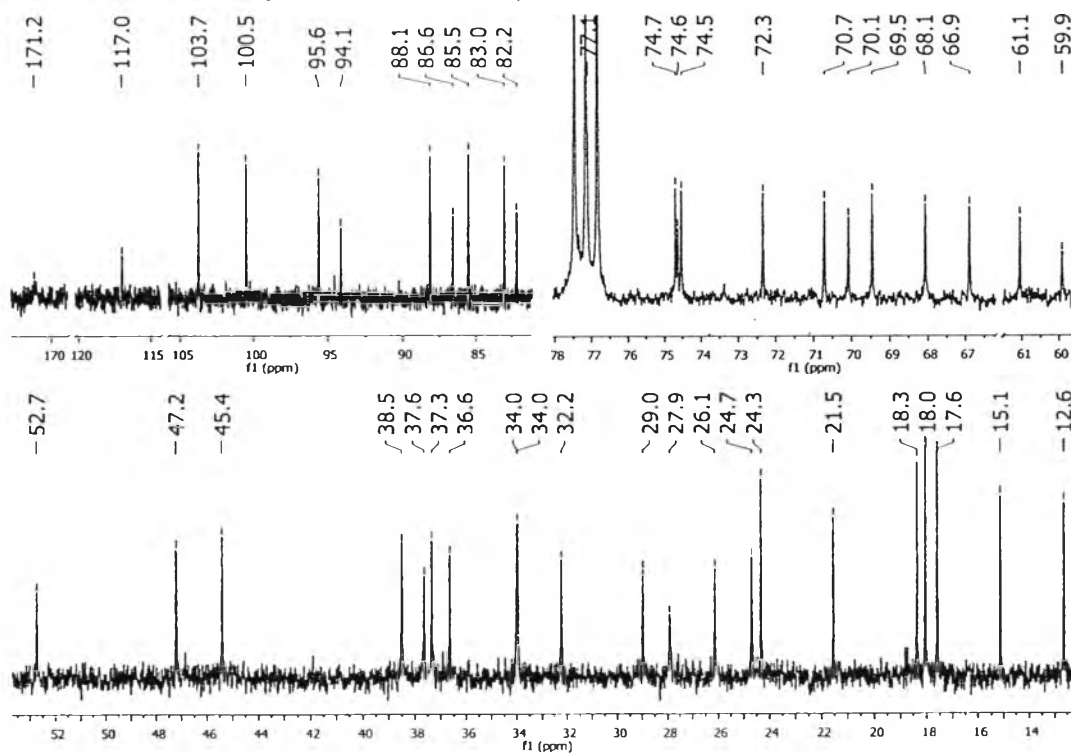


Figure A20 HR-ESIMS spectrum of compound 62

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Figure A21 ^1H NMR spectrum of compound 62Figure A22 ^1H NMR spectrum of compound 62 (Expansion)

Figure A23 ^{13}C NMR spectrum of compound 62Figure A24 ^{13}C NMR spectrum of compound 62 (Expansion)

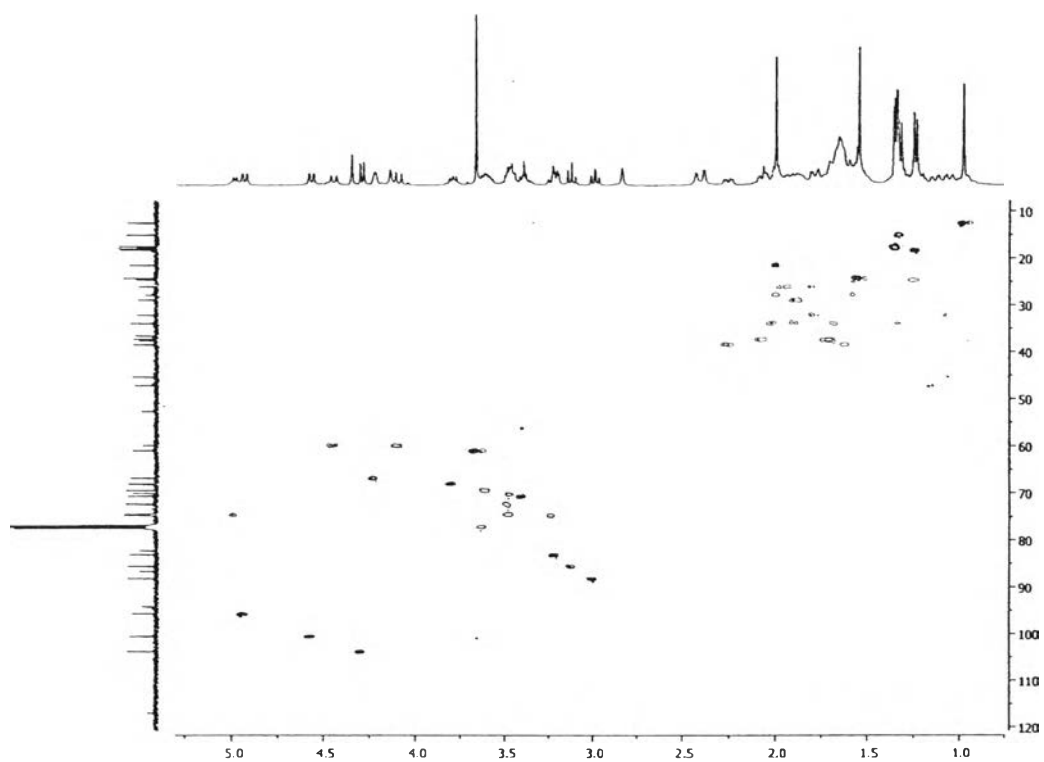


Figure A25 HSQC spectrum of compound 62

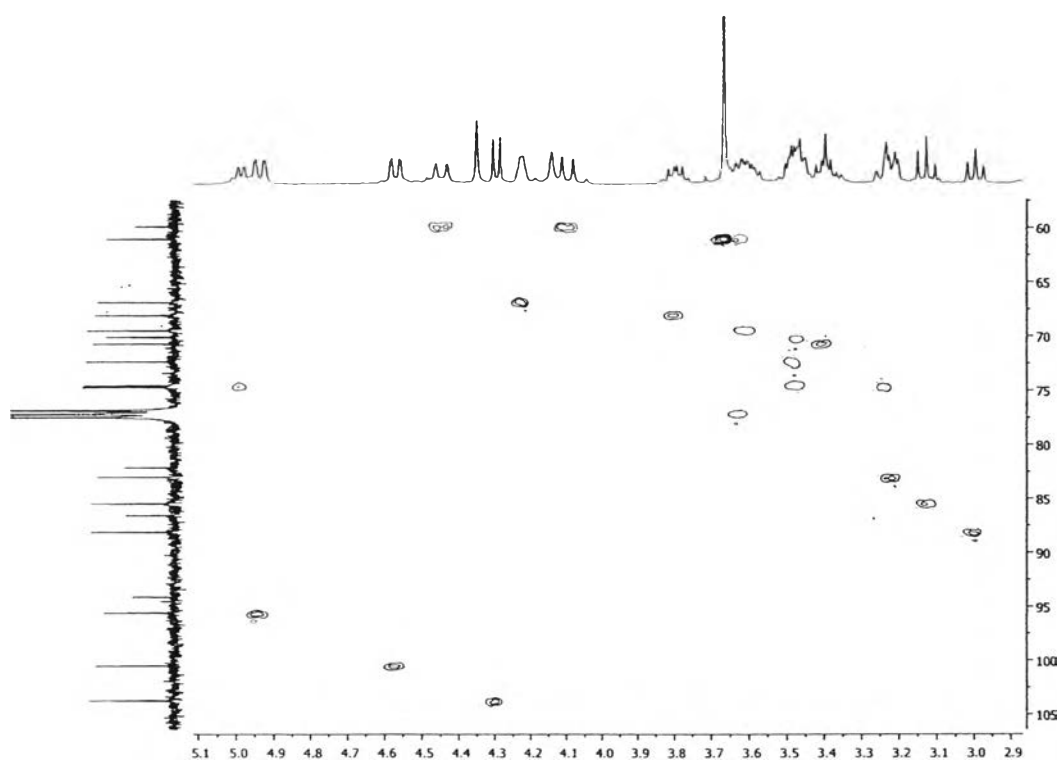


Figure A26 HSQC spectrum of compound 62 (Expansion)



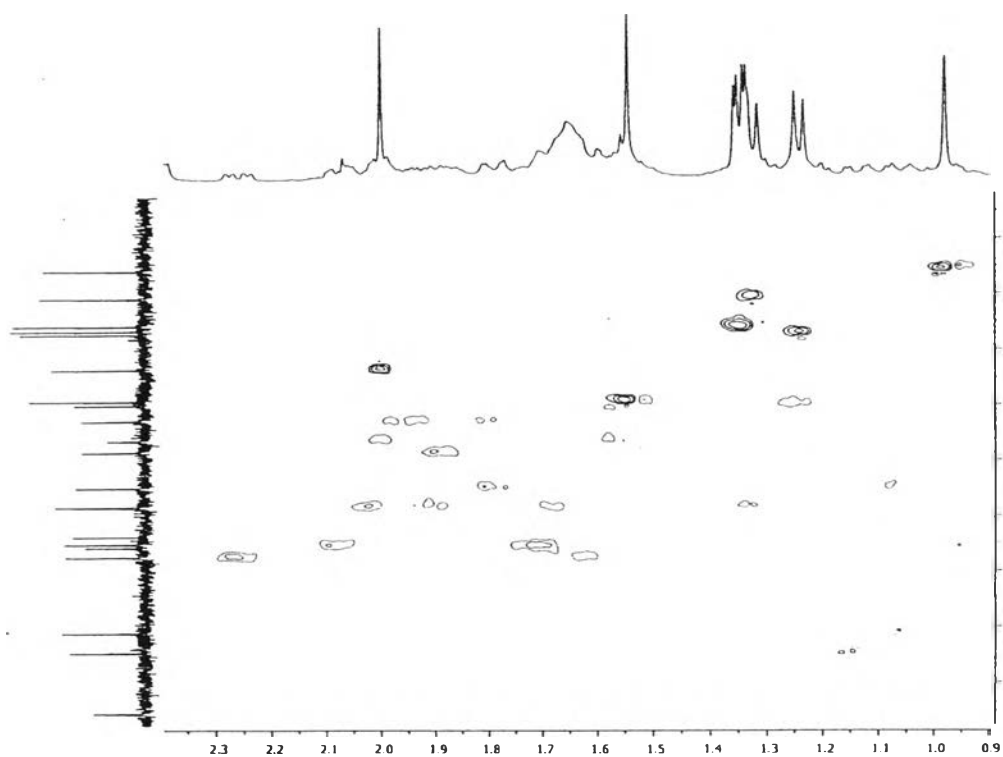


Figure A27 HSQC spectrum of compound 62 (Expansion)

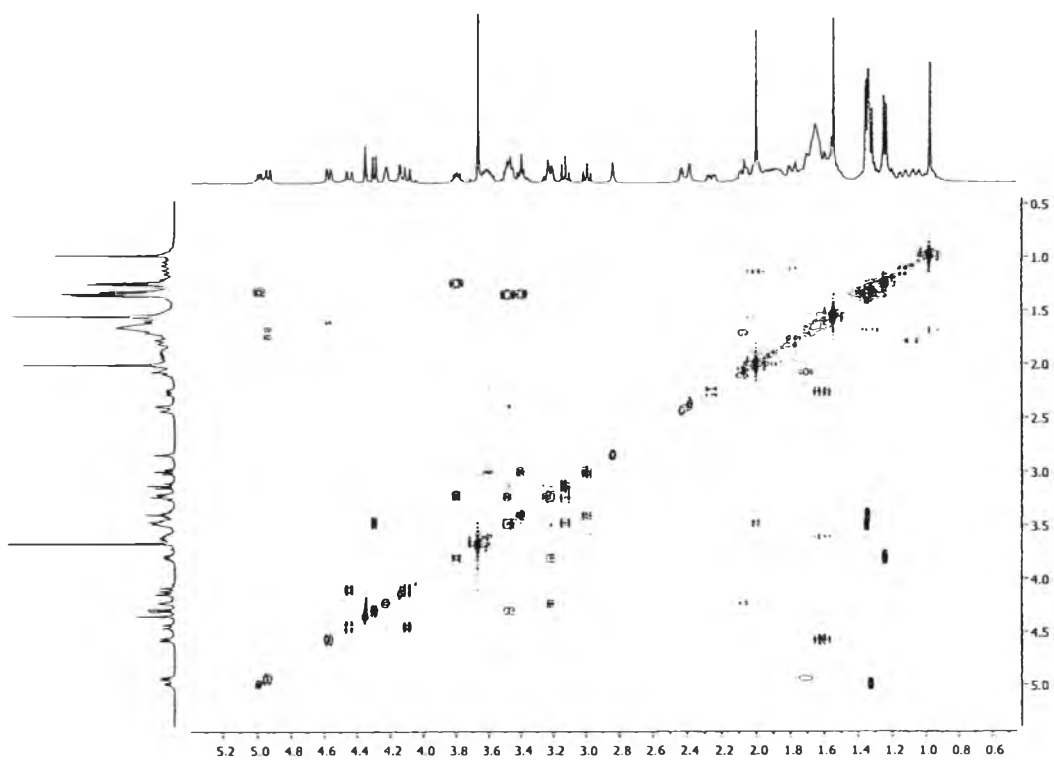


Figure A28 COSY spectrum of compound 62

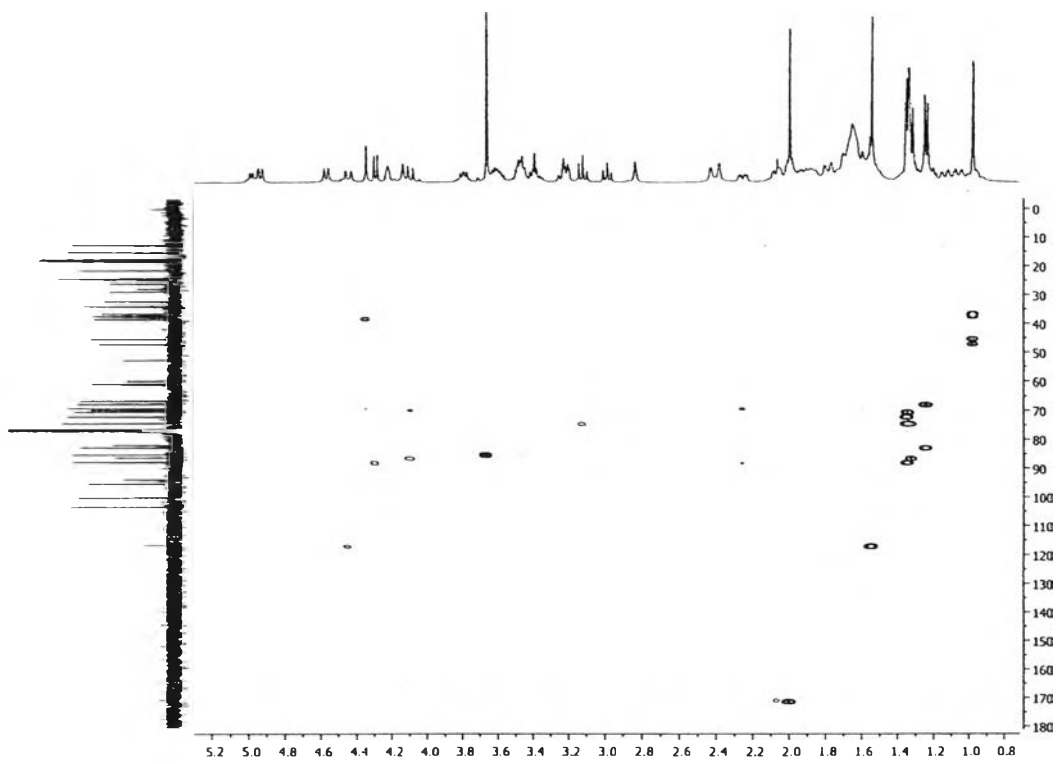


Figure A29 HMBC spectrum of compound 62

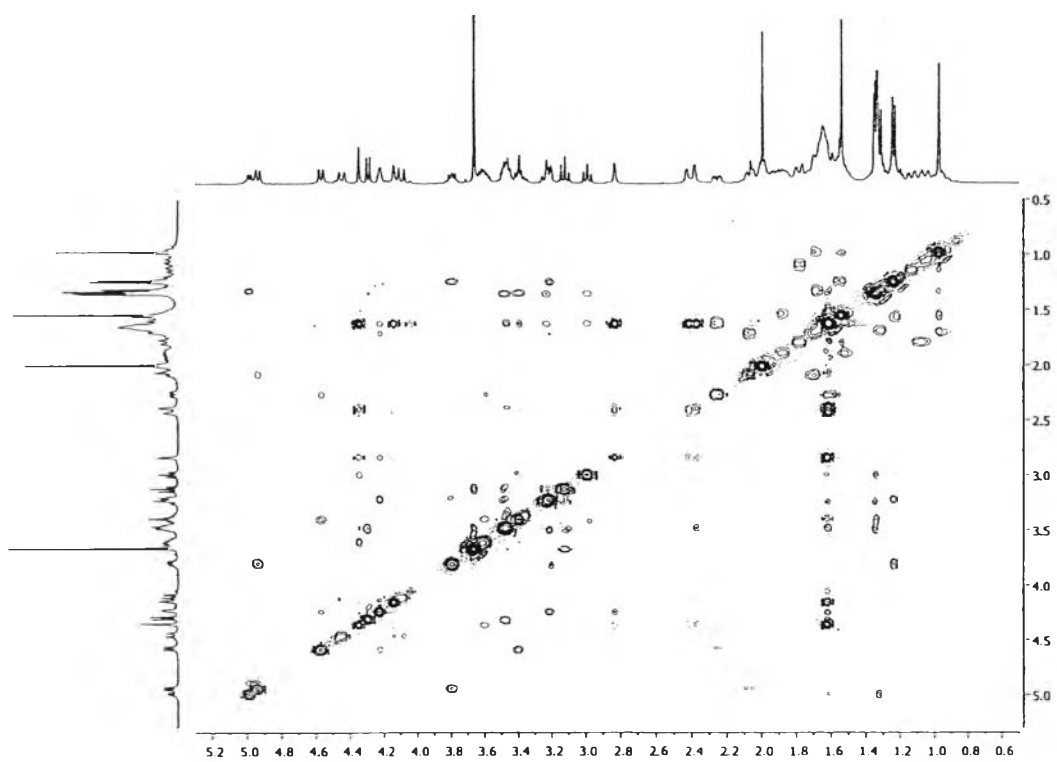


Figure A30 NOESY spectrum of compound 62



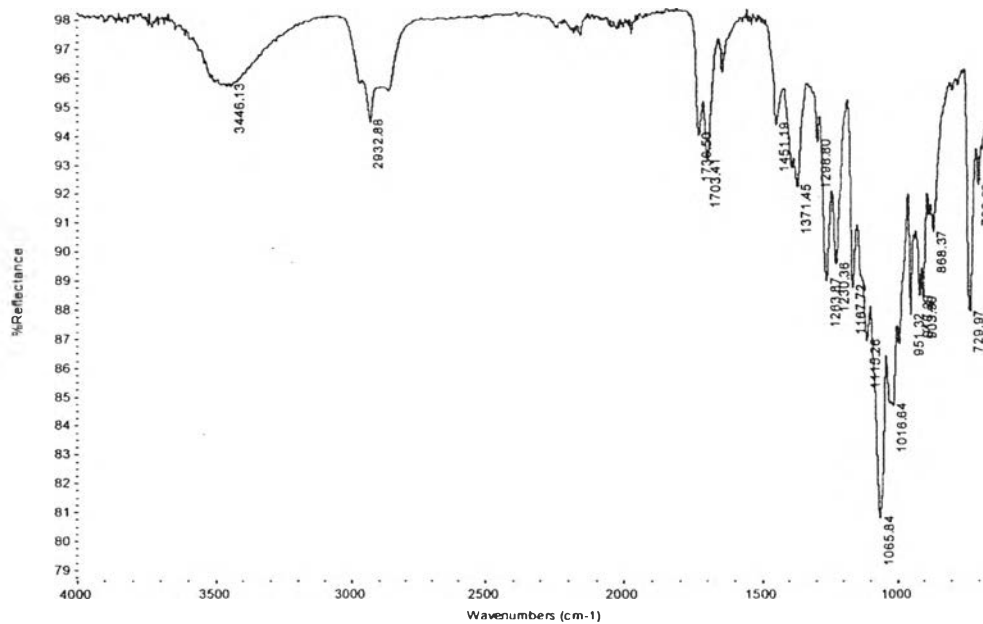


Figure A31 ATR-FTIR spectrum of compound 63

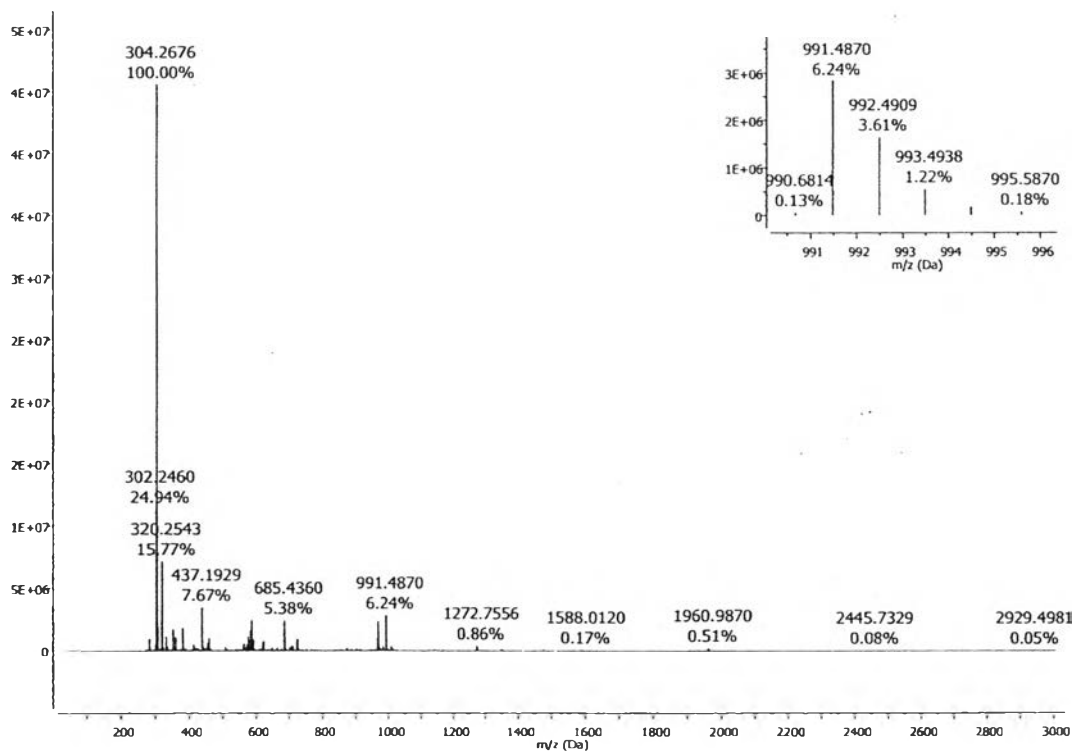
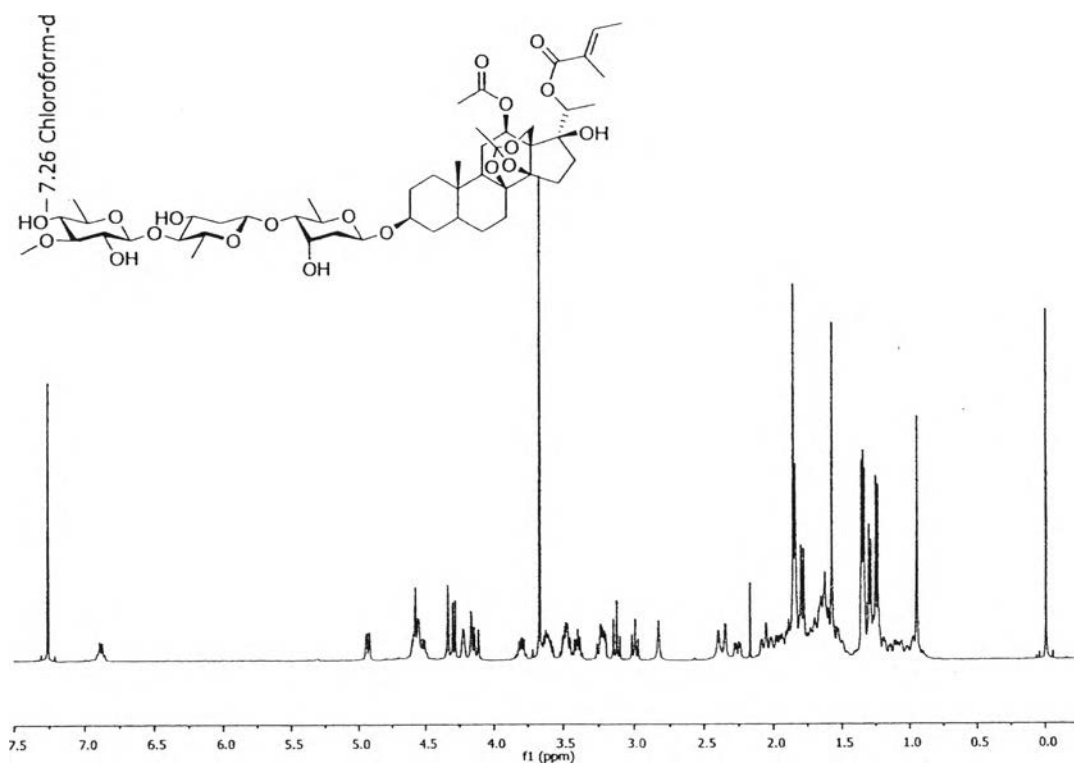
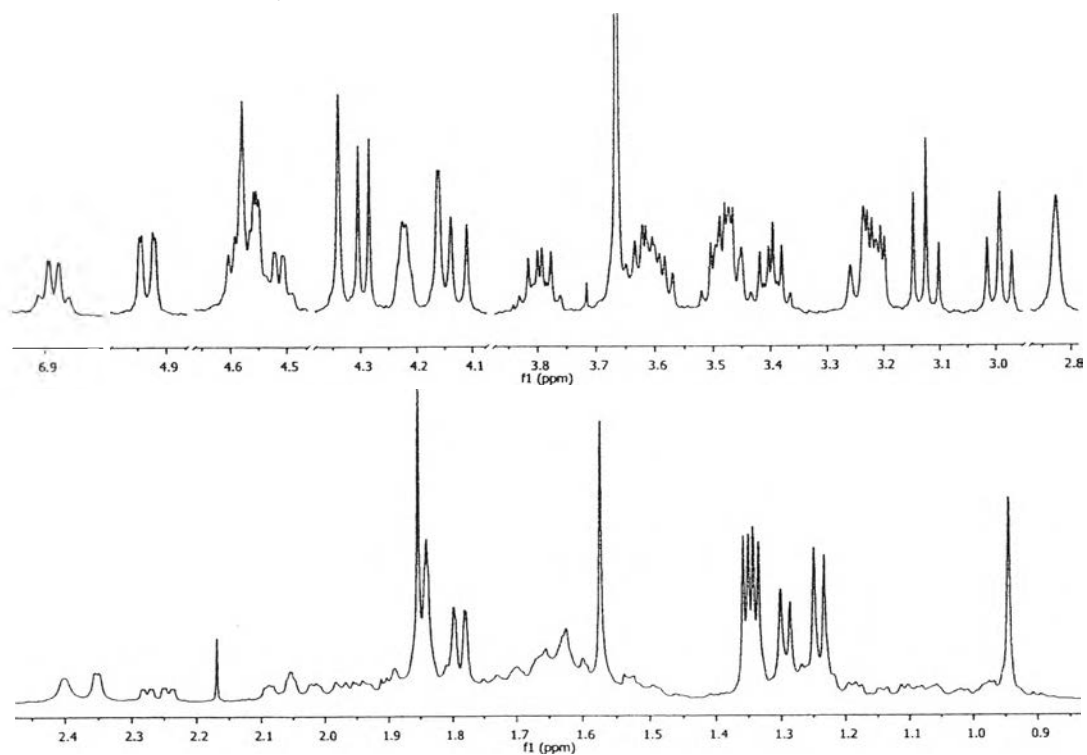
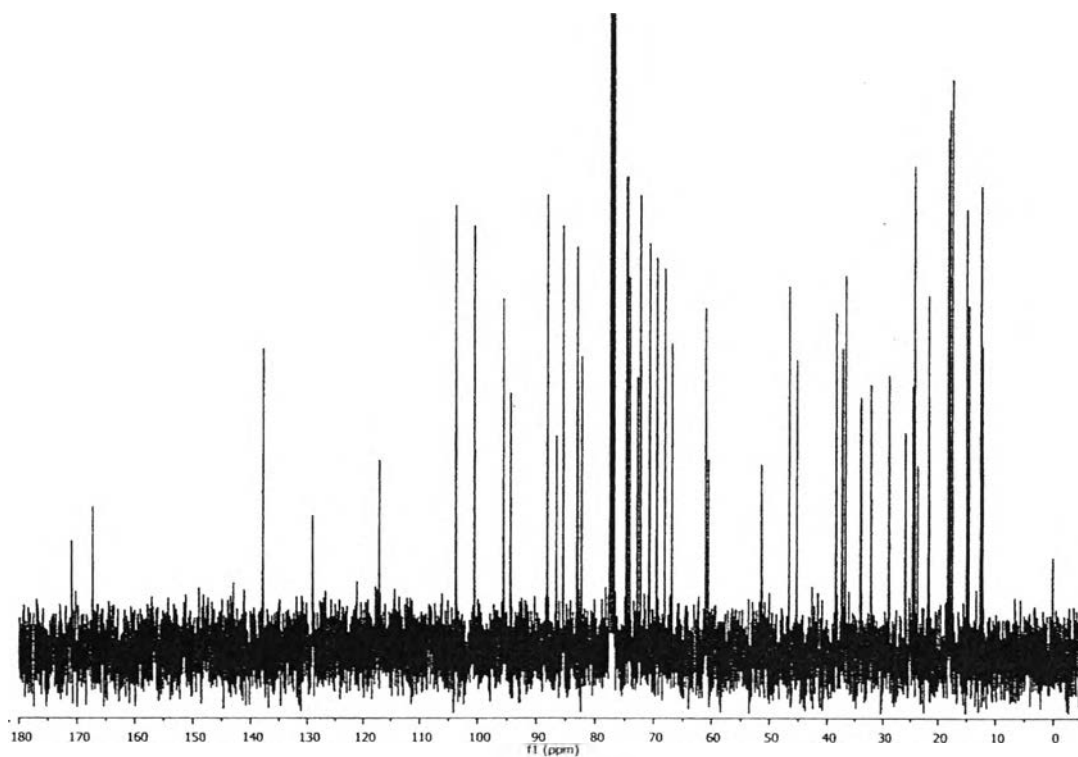
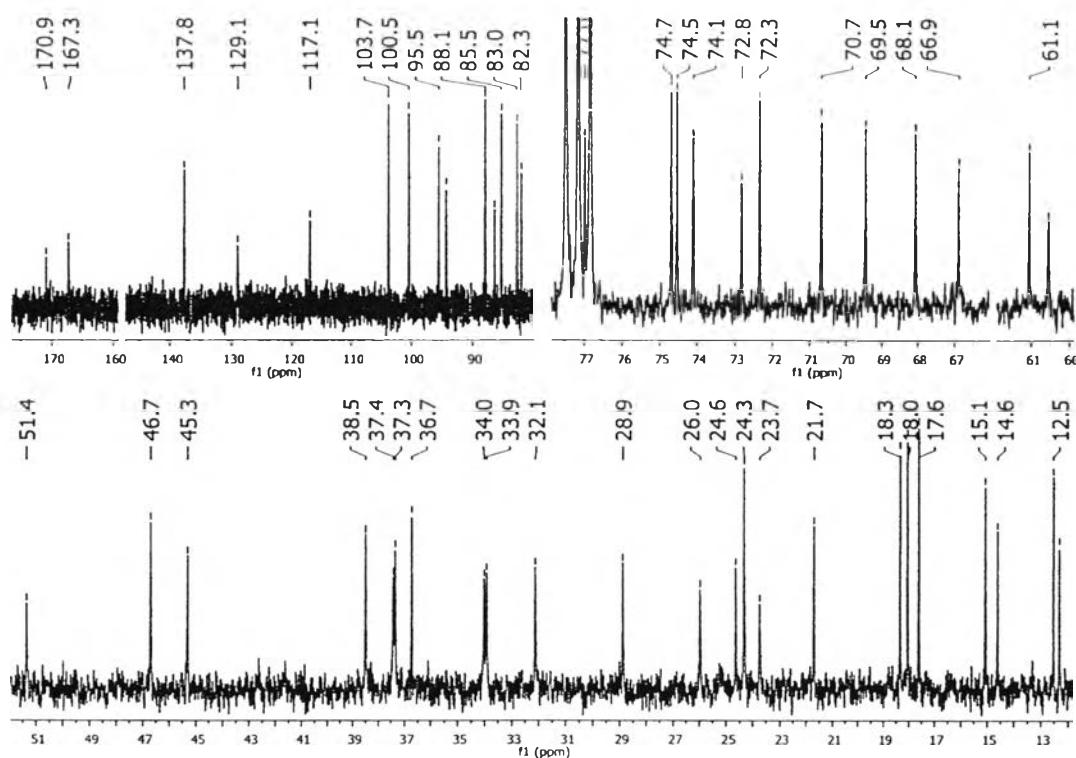


Figure A32 HR-ESIMS spectrum of compound 63



Figure A33 ^1H NMR spectrum of compound 63Figure A34 ^1H NMR spectrum of compound 63 (Expansion)

Figure A35 ^{13}C NMR spectrum of compound 63Figure A36 ^{13}C NMR spectrum of compound 63 (Expansion)

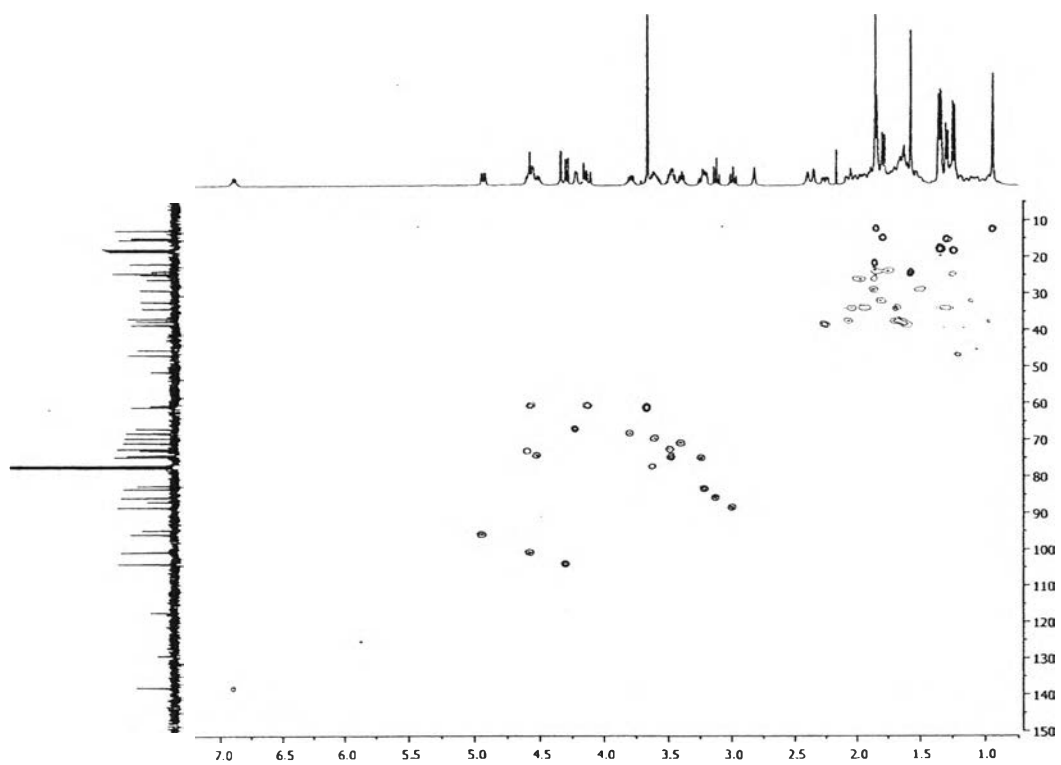


Figure A37 HSQC spectrum of compound 63

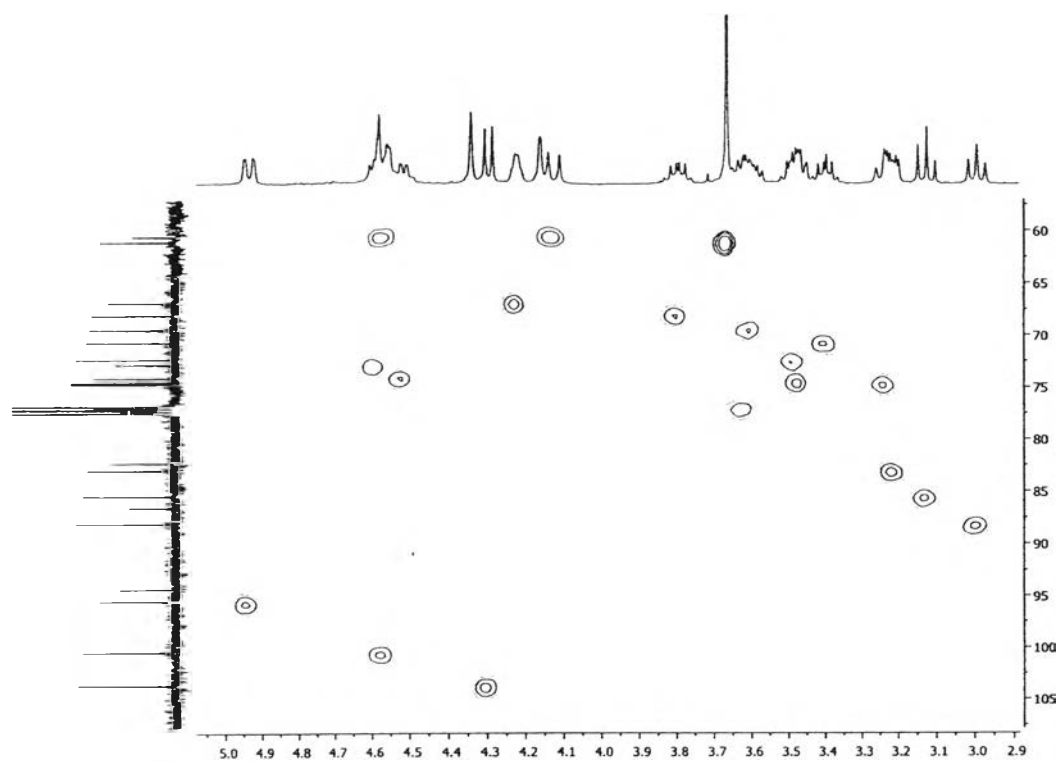


Figure A38 HSQC spectrum of compound 63 (Expansion)



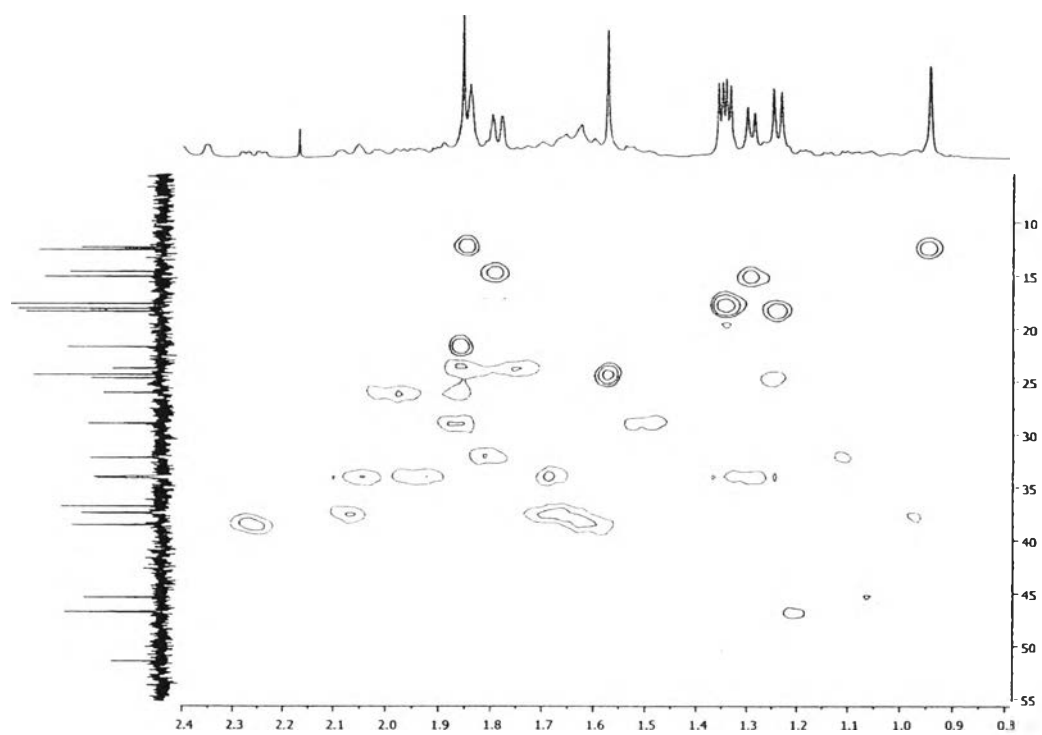


Figure A39 HSQC spectrum of compound 63 (Expansion)

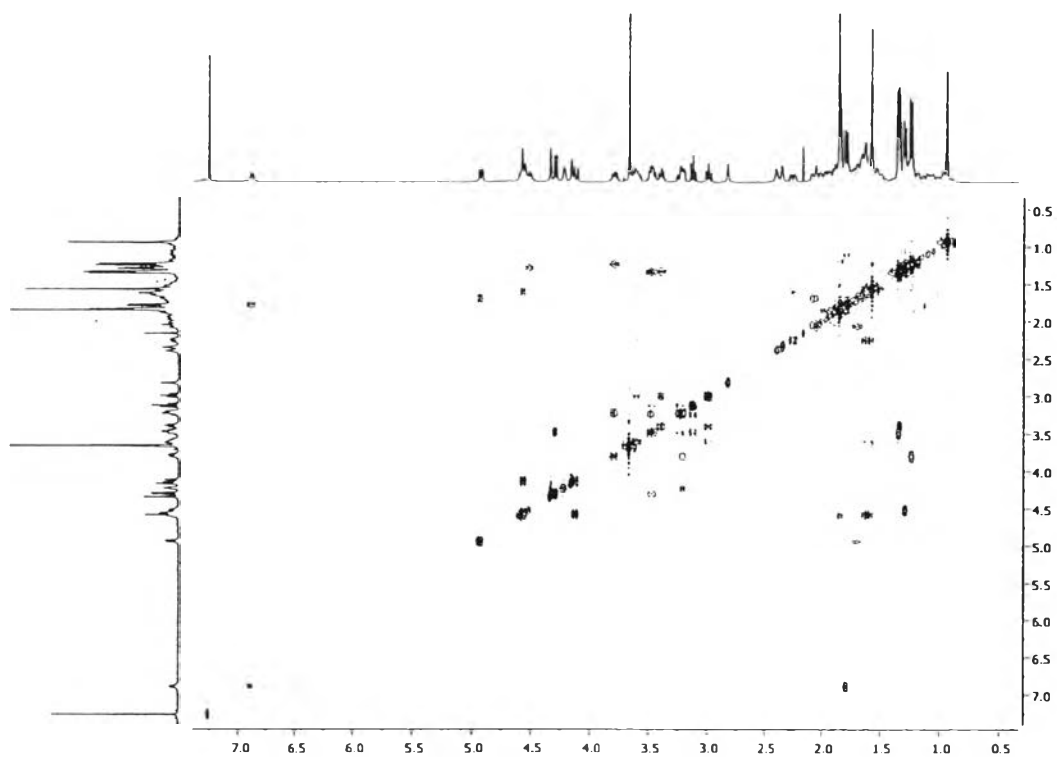


Figure A40 COSY spectrum of compound 63

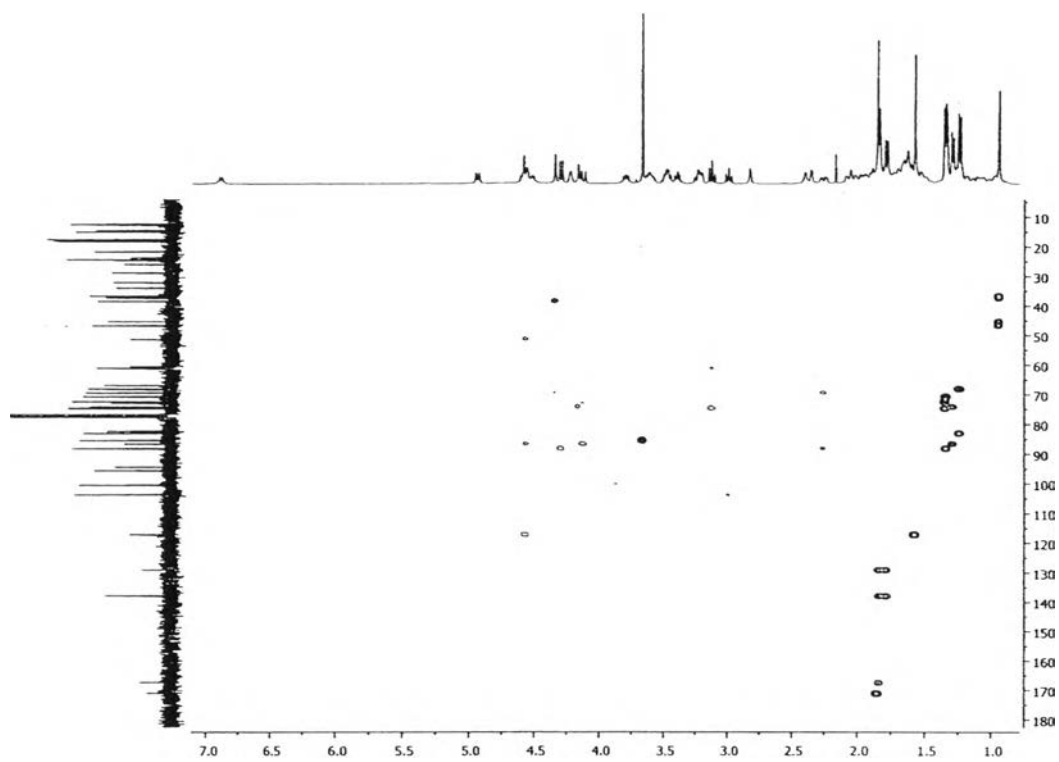


Figure A41 HMBC spectrum of compound 63

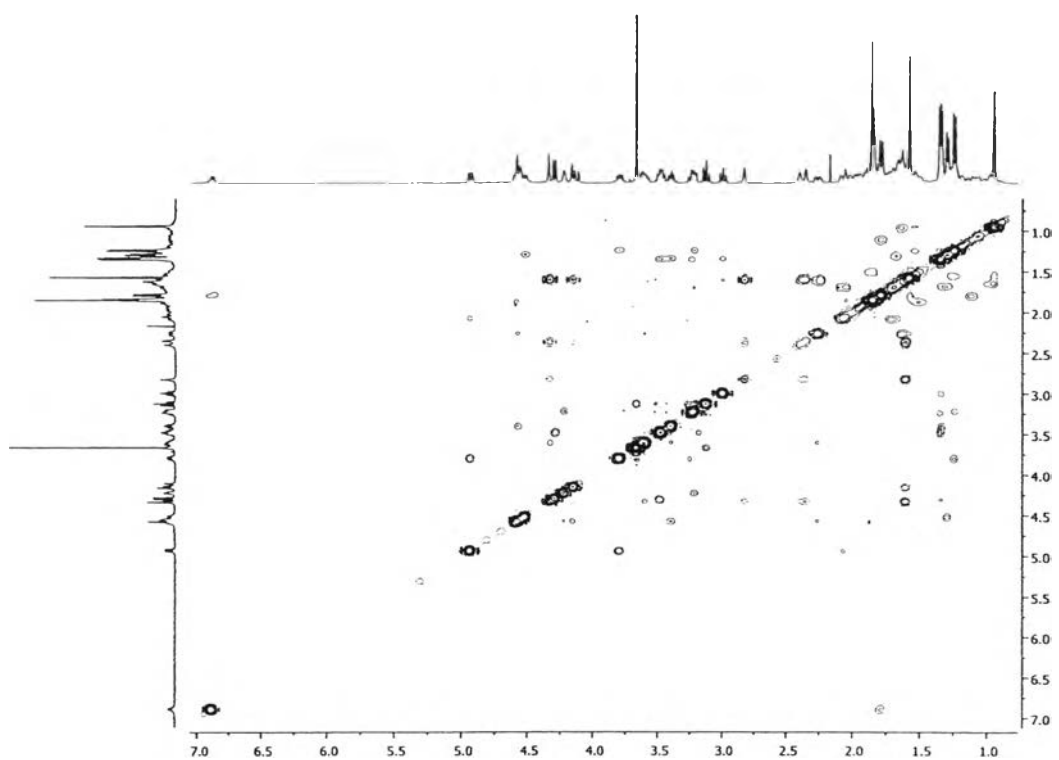


Figure A42 NOESY spectrum of compound 63



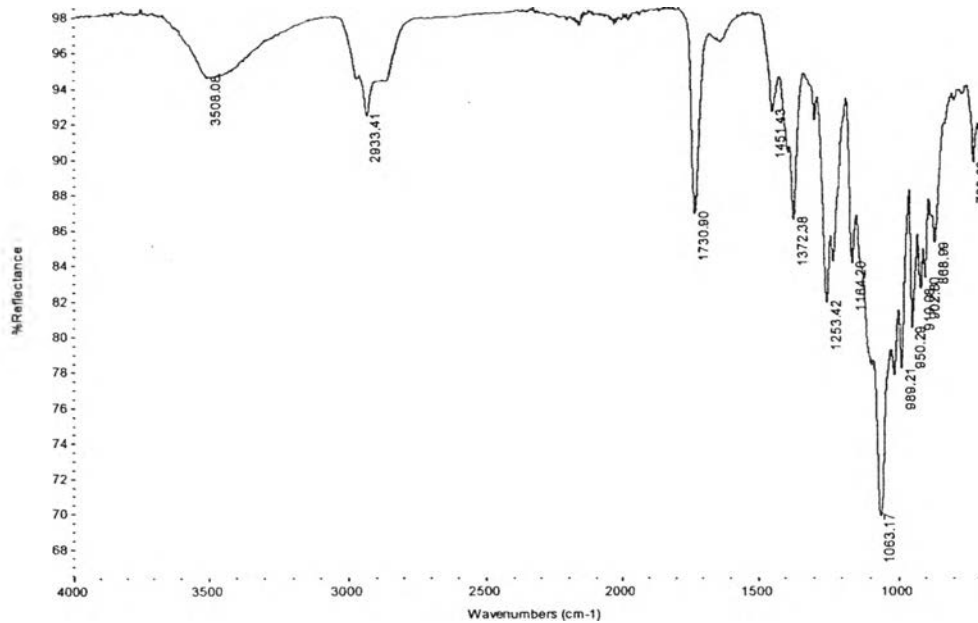


Figure A43 ATR-FTIR spectrum of compound 64

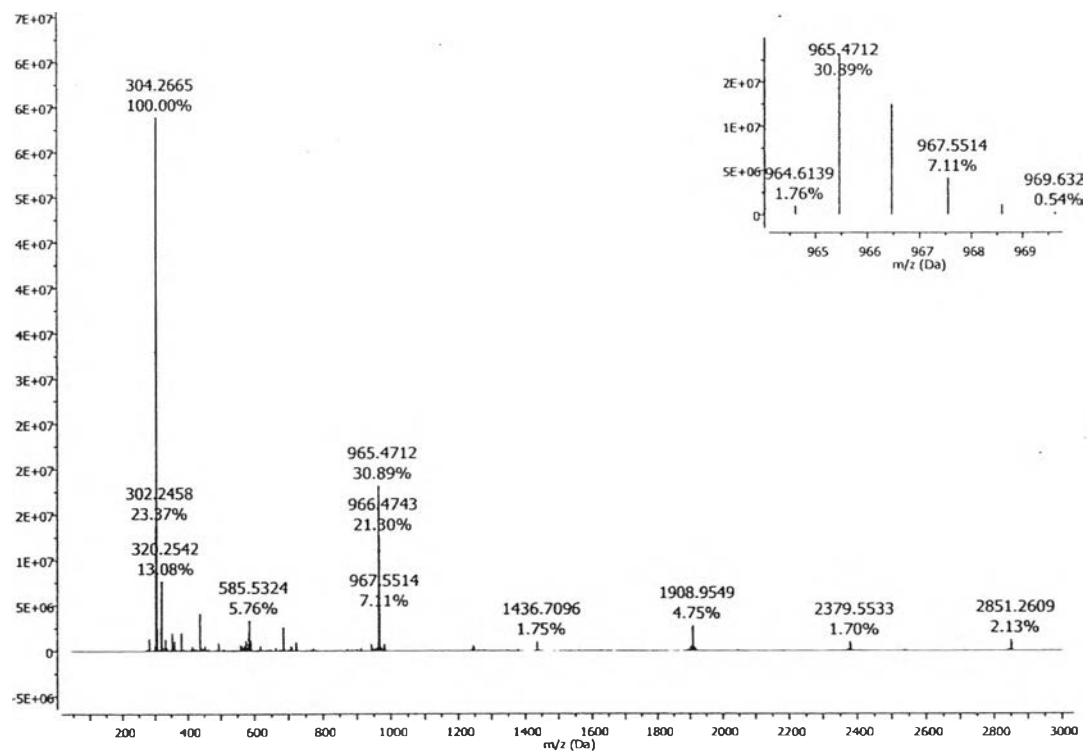
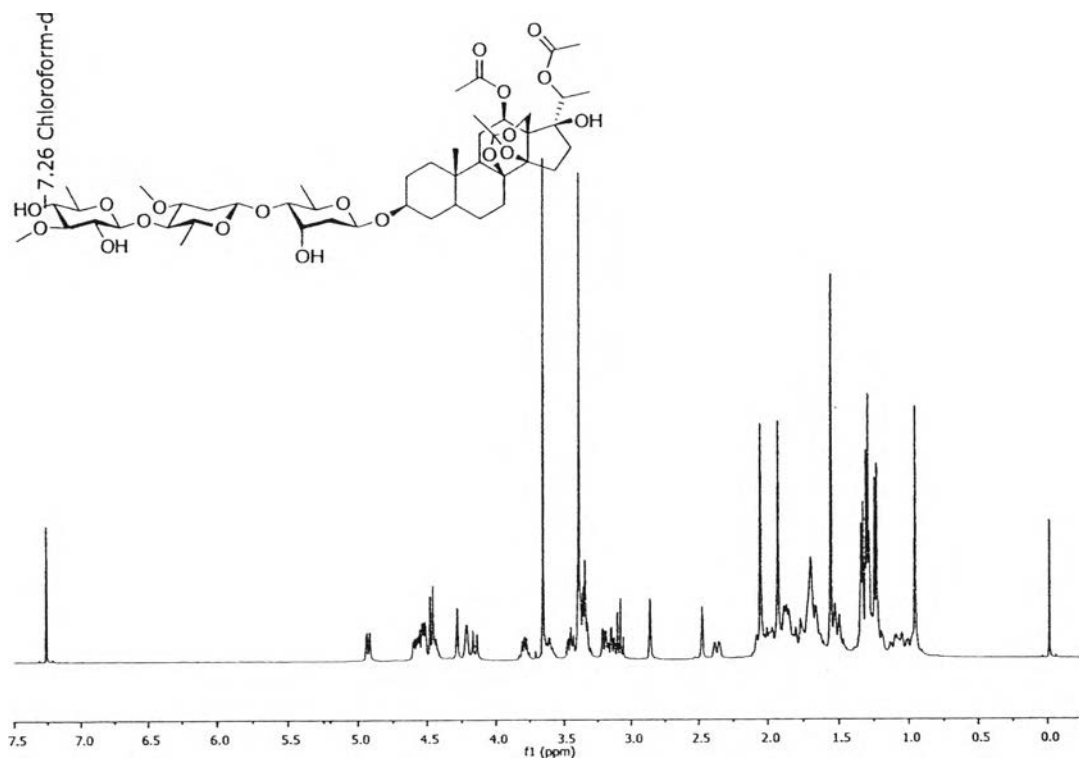
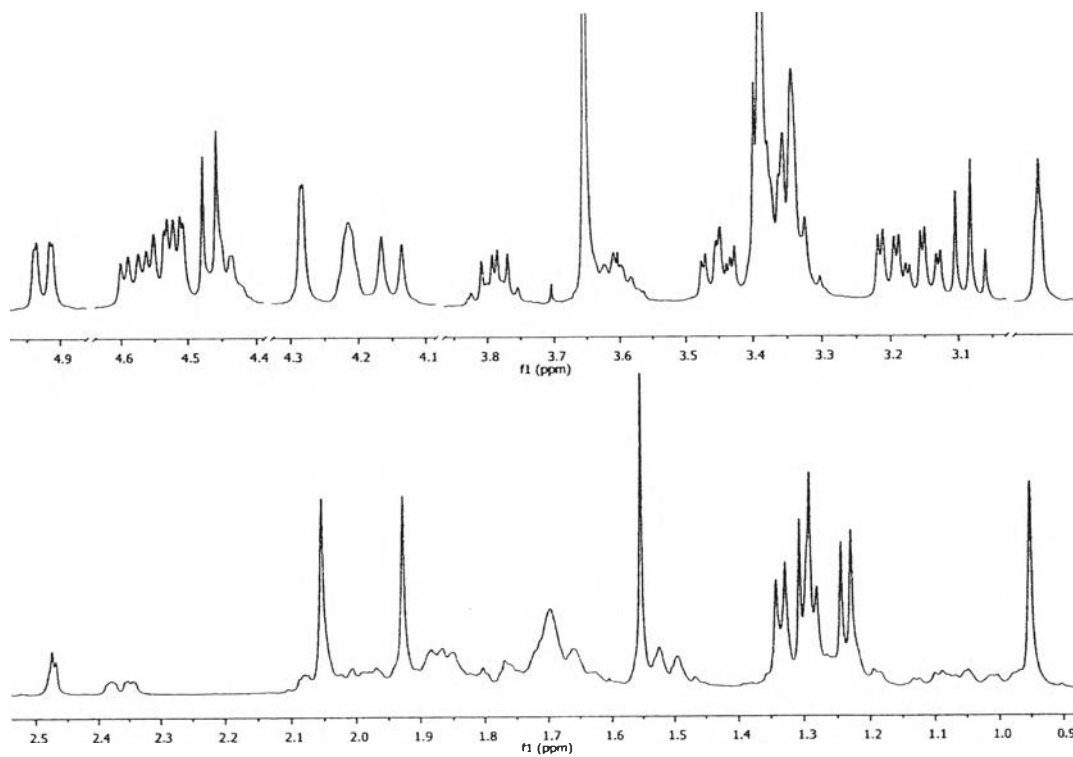
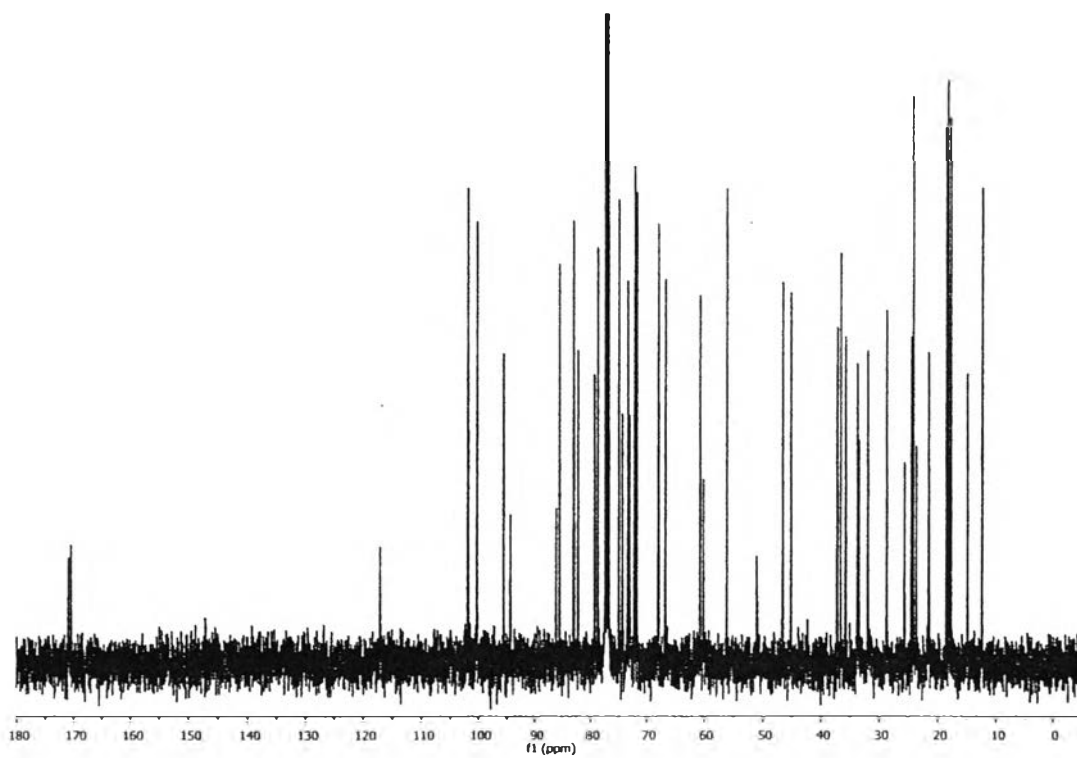
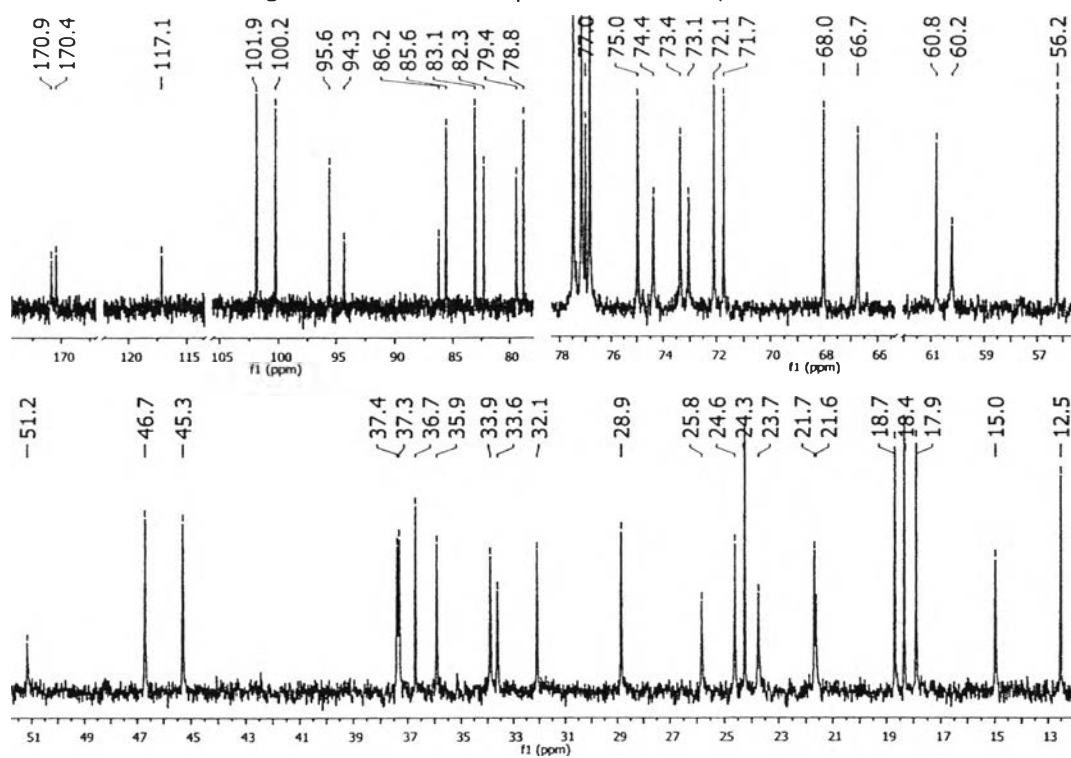


Figure A44 HR-ESIMS spectrum of compound 64

Figure A45 ^1H NMR spectrum of compound 64Figure A46 ^1H NMR spectrum of compound 64 (Expansion)

Figure A47 ^{13}C NMR spectrum of compound 64Figure A48 ^{13}C NMR spectrum of compound 64 (Expansion)

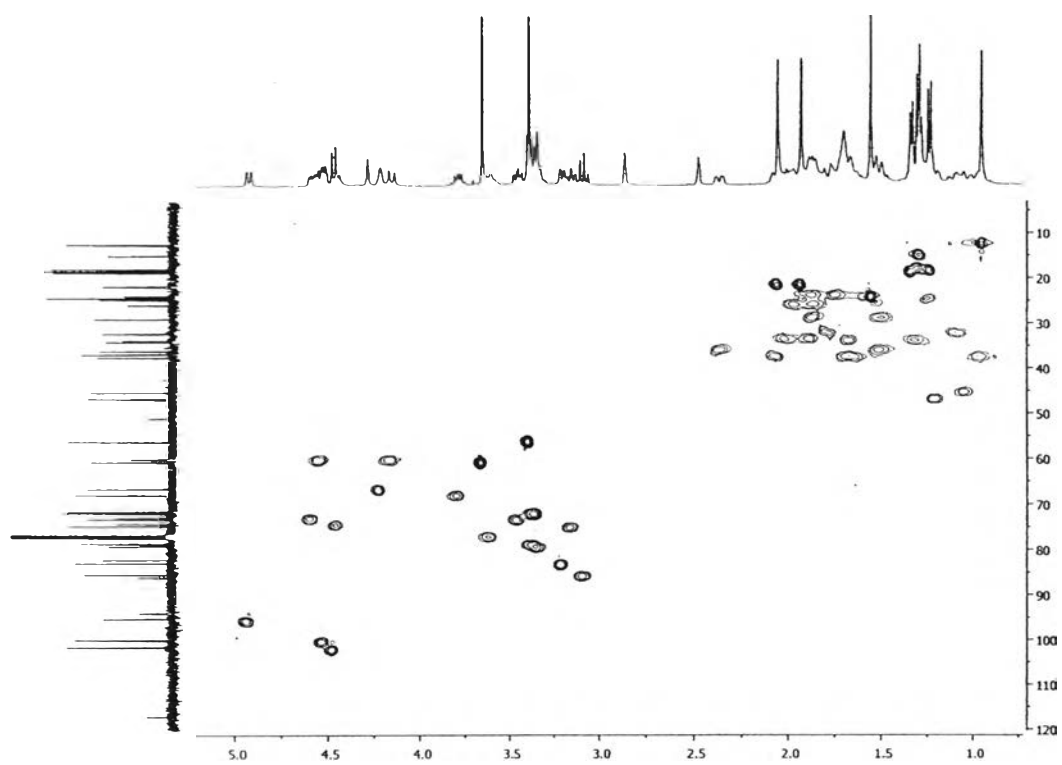


Figure A49 HSQC spectrum of compound 64

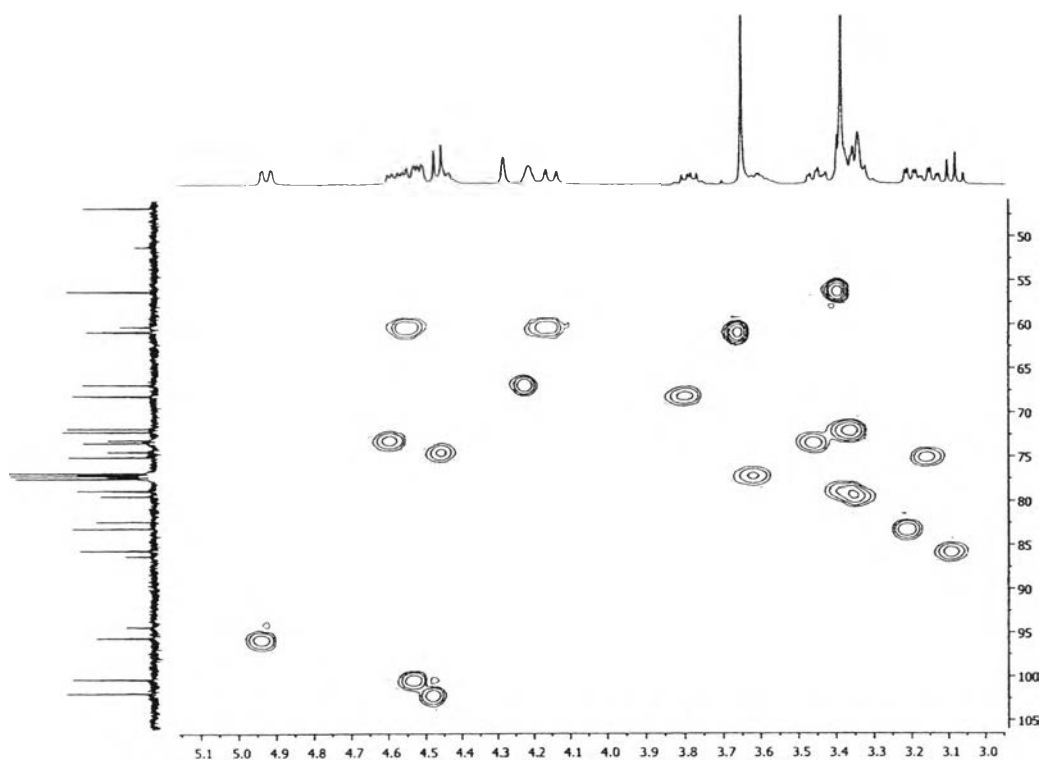


Figure A50 HSQC spectrum of compound 64 (Expansion)



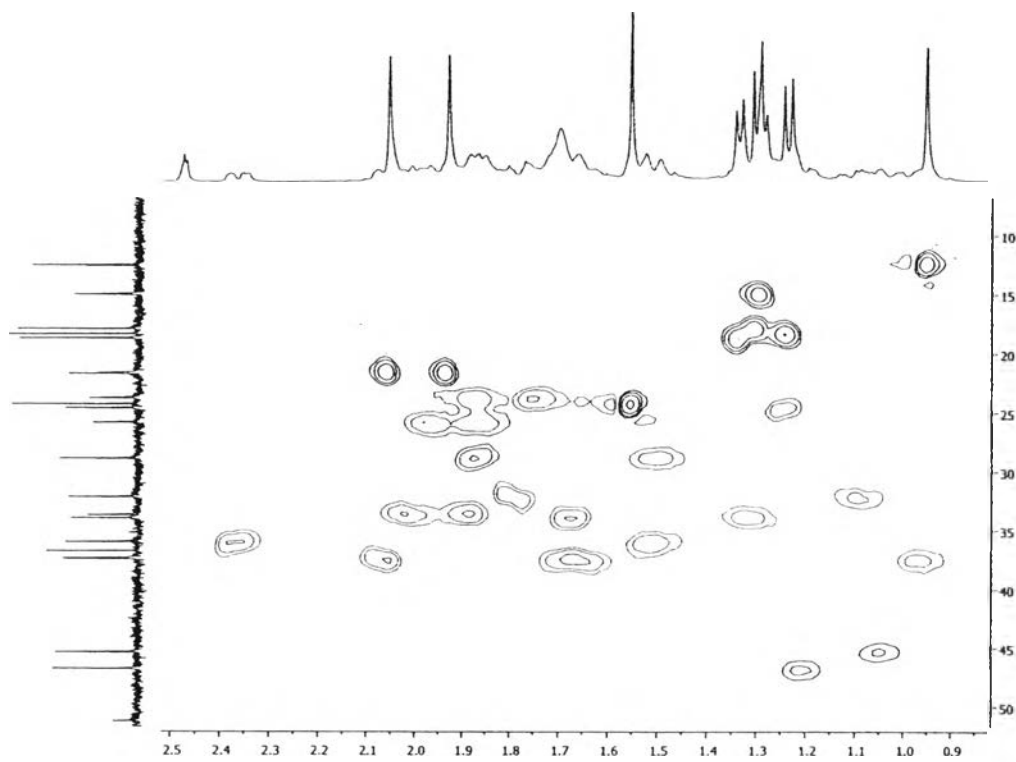


Figure A51 HSQC spectrum of compound 64 (Expansion)

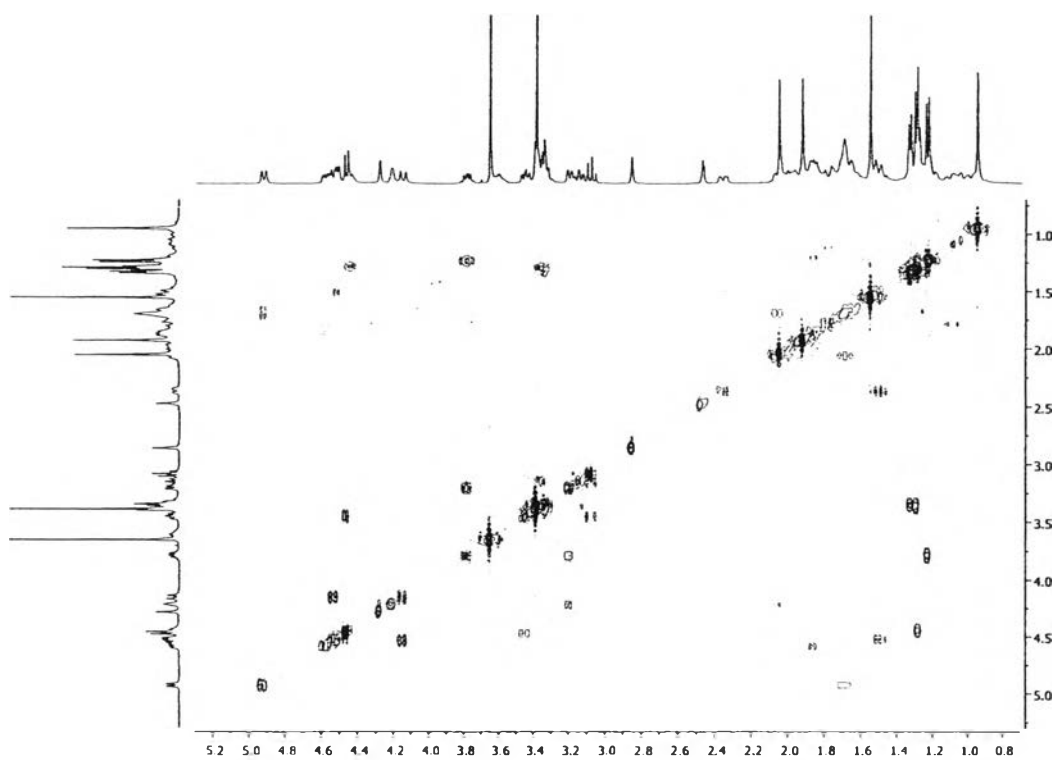


Figure A52 COSY spectrum of compound 64

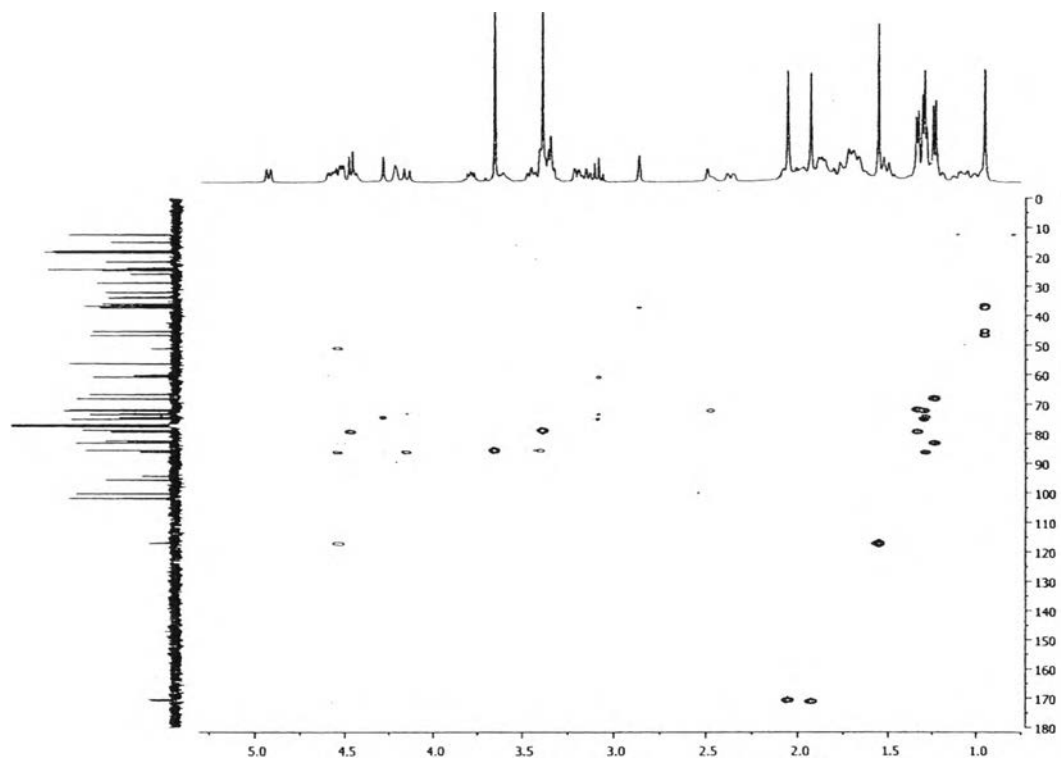


Figure A53 HMBC spectrum of compound 64

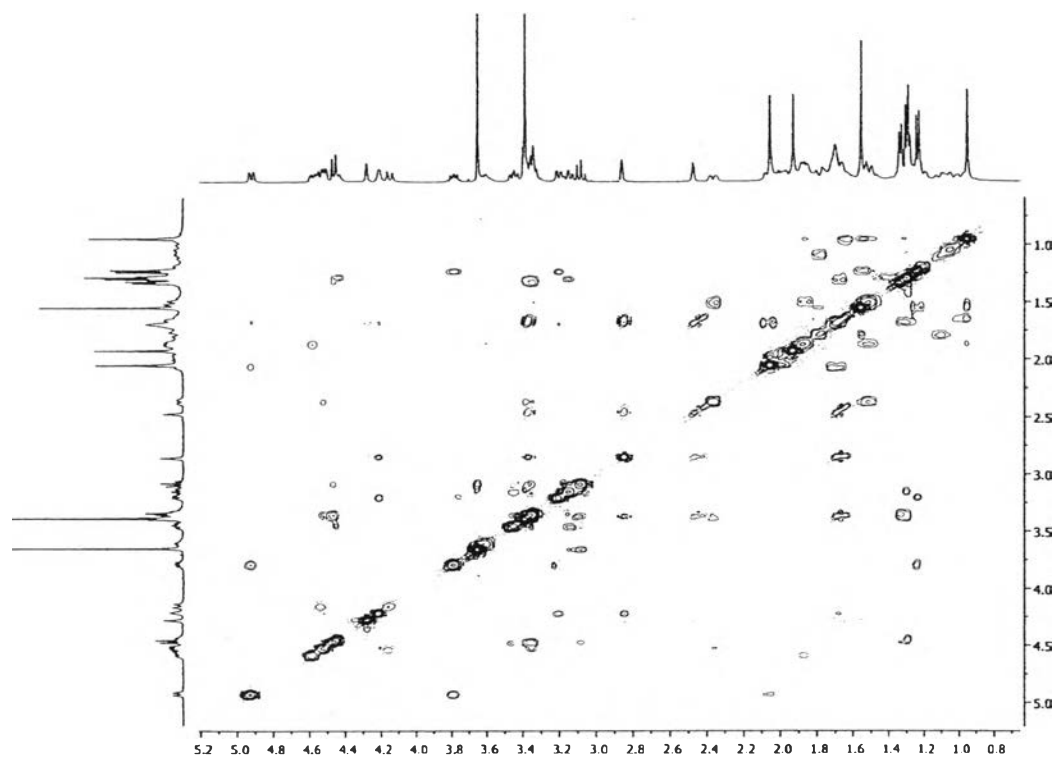


Figure A54 NOESY spectrum of compound 64

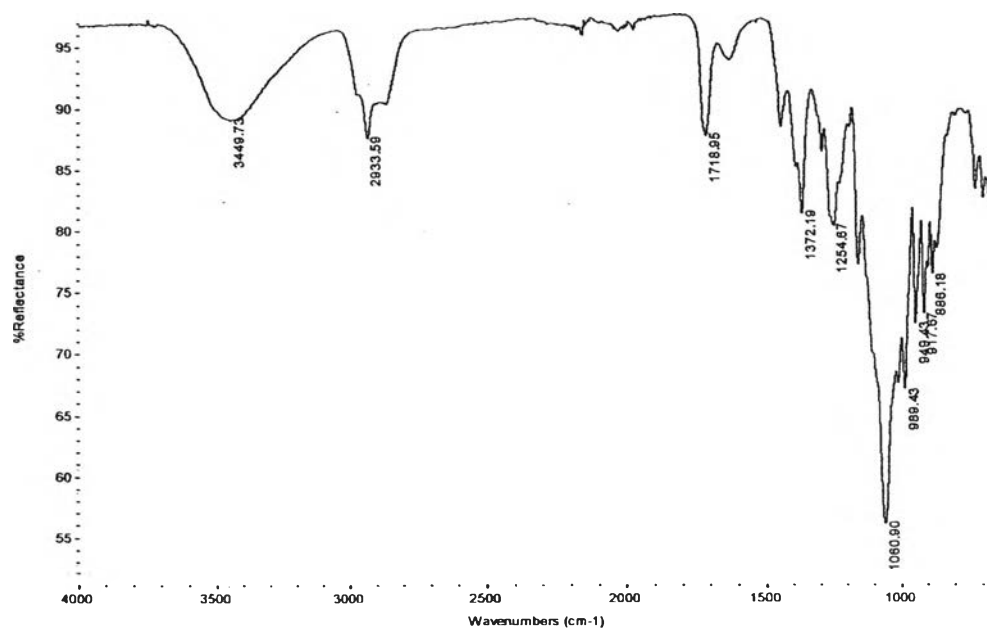


Figure A55 ATR-FTIR spectrum of compound 65

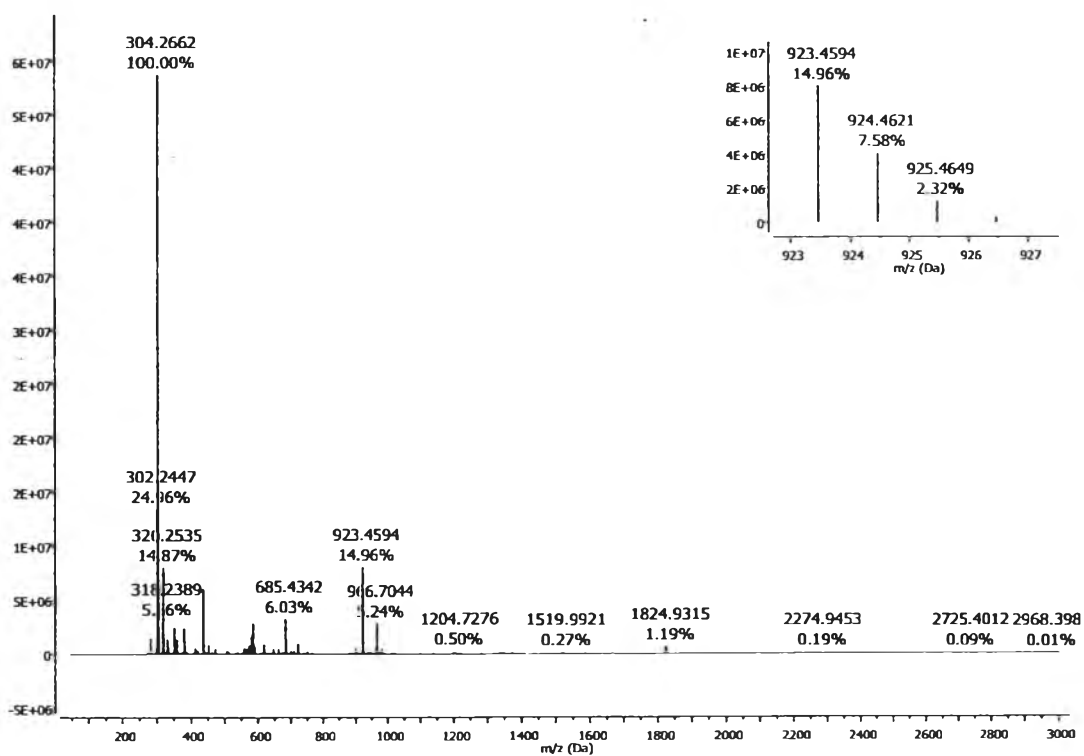
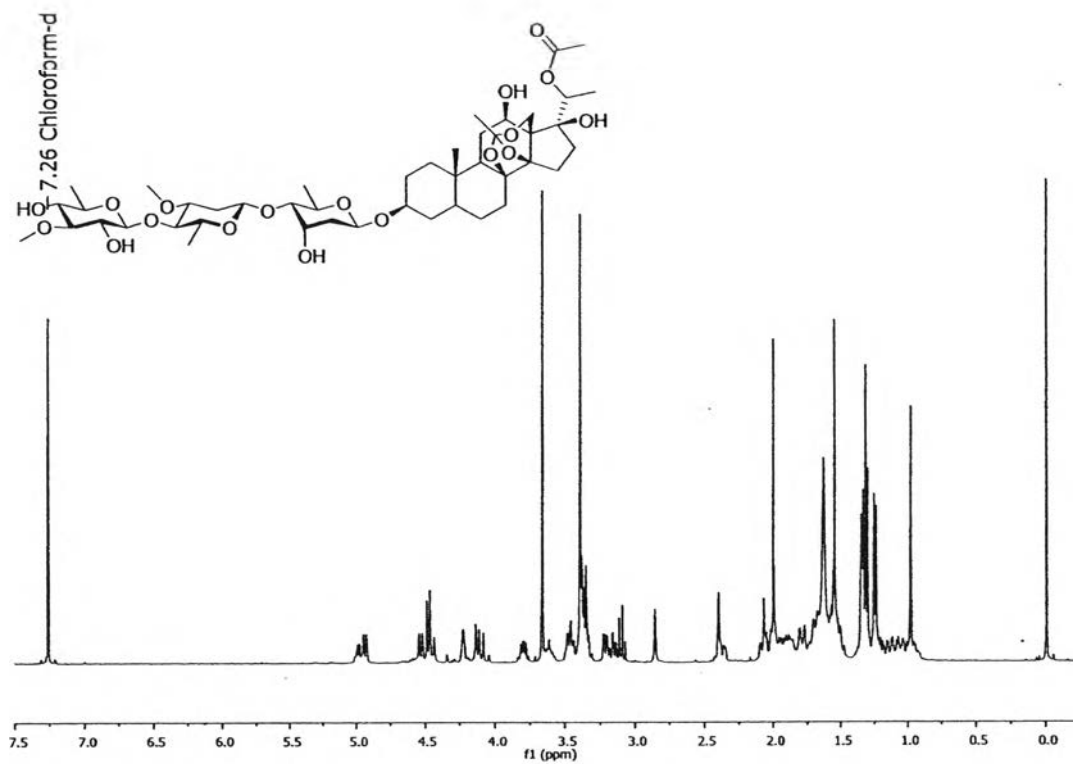
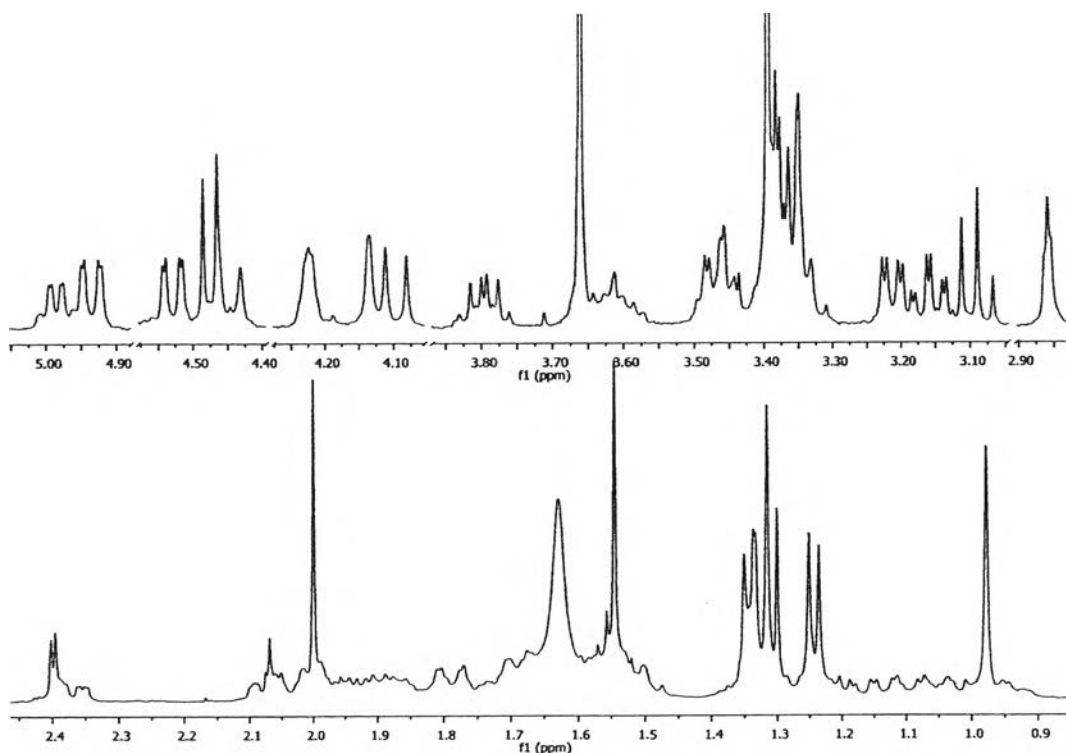
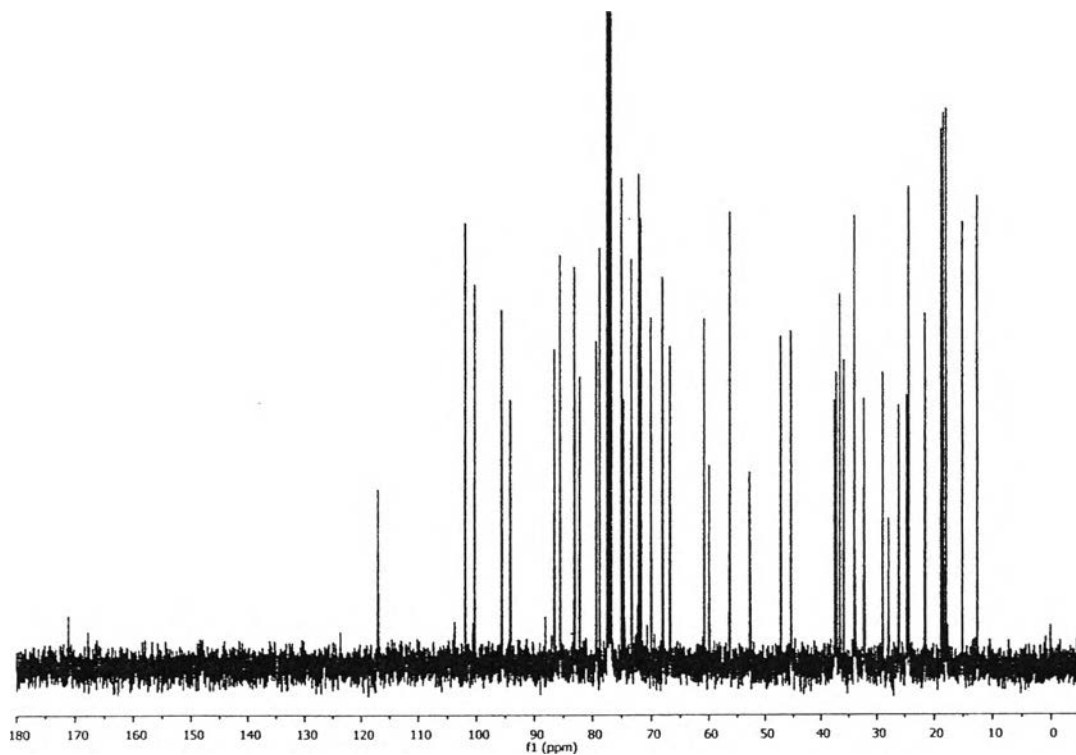
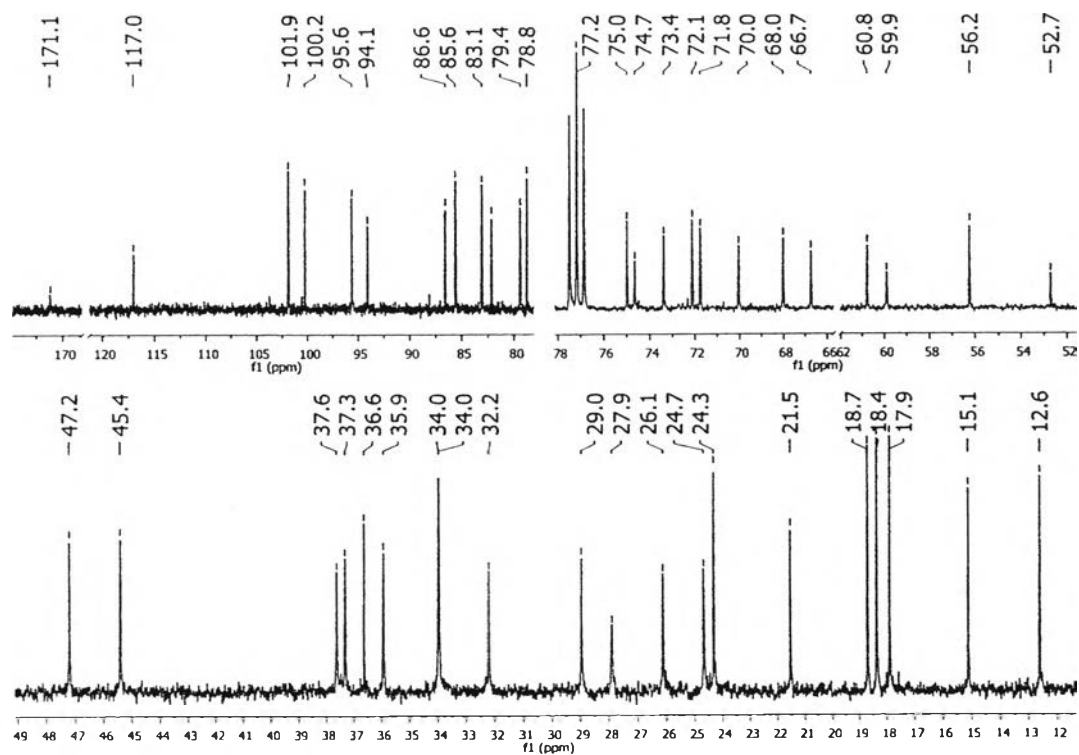


Figure A56 HR-ESIMS spectrum of compound 65



Figure A57 ^1H NMR spectrum of compound 65Figure A58 ^1H NMR spectrum of compound 65 (Expansion)

Figure A59 ^{13}C NMR spectrum of compound 65Figure A60 ^{13}C NMR spectrum of compound 65 (Expansion)

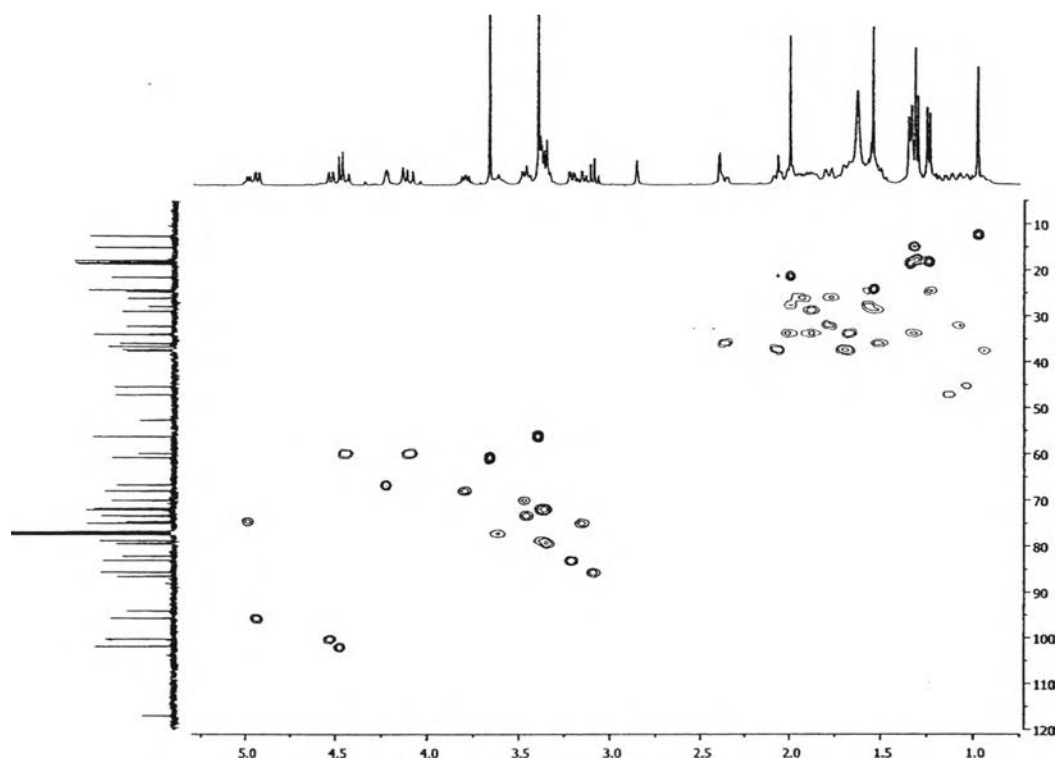


Figure A61 HSQC spectrum of compound 65

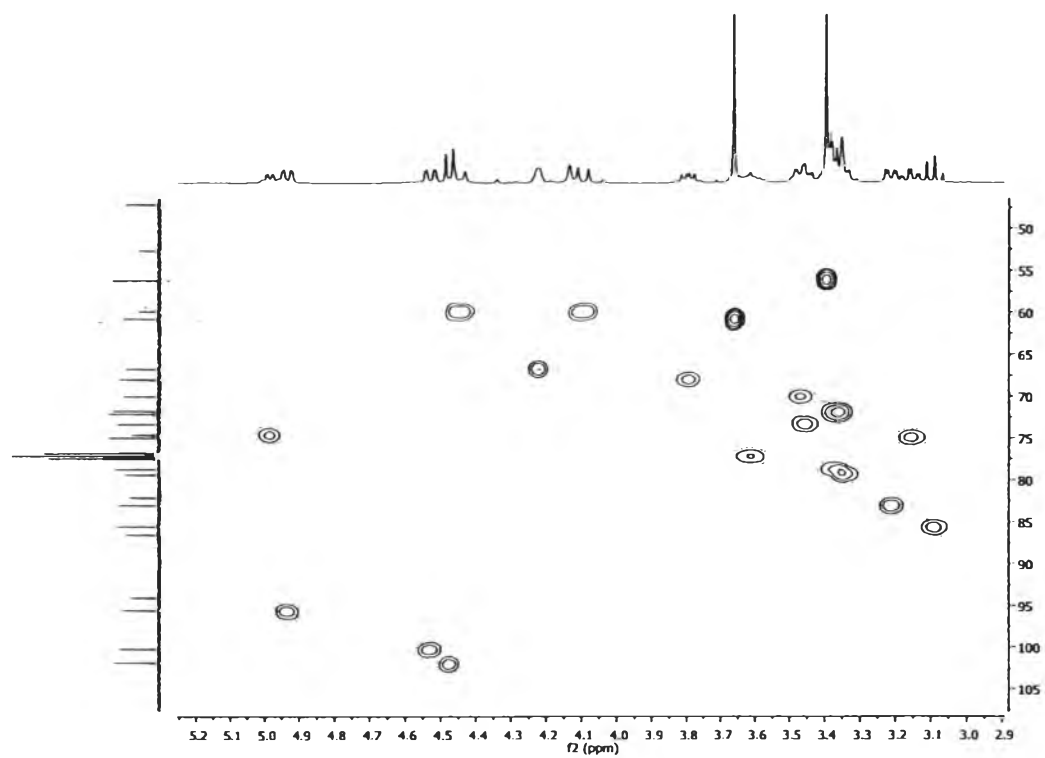


Figure A62 HSQC spectrum of compound 65 (Expansion)

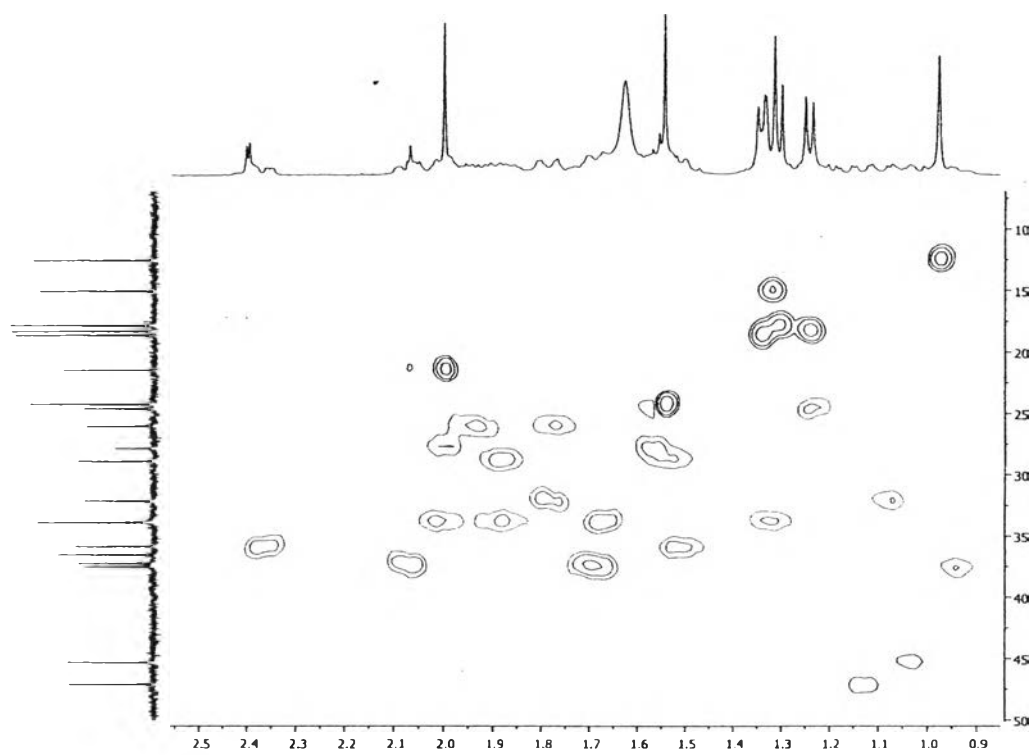


Figure A63 HSQC spectrum of compound 65 (Expansion)

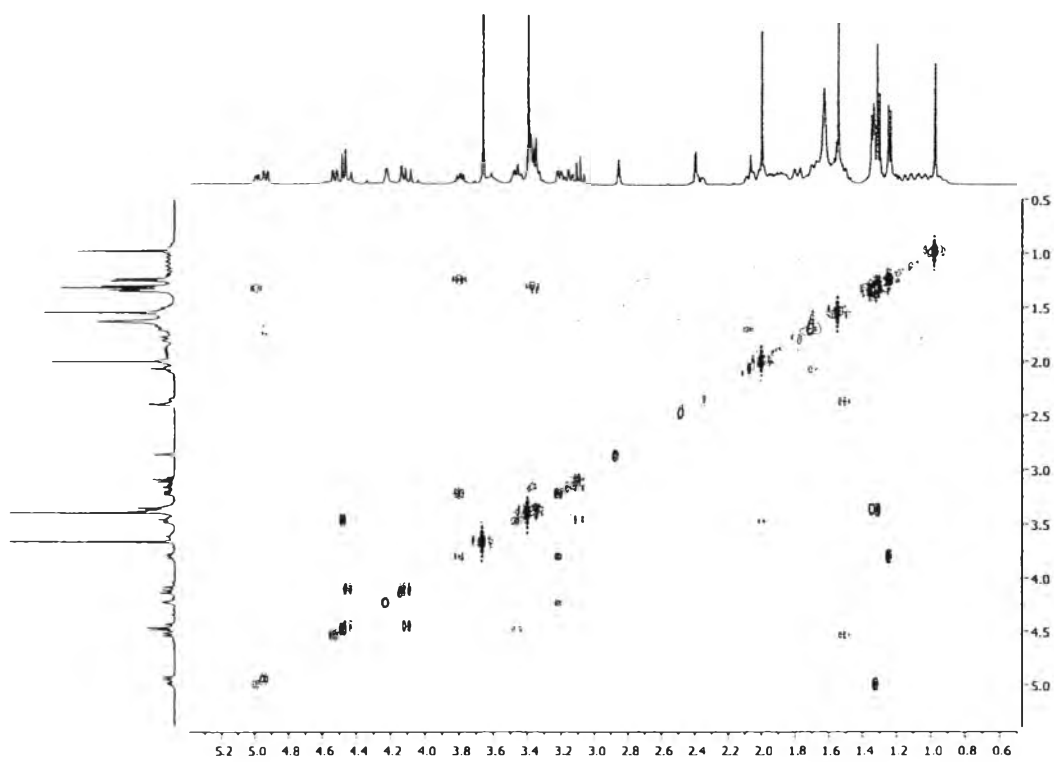


Figure A64 COSY spectrum of compound 65



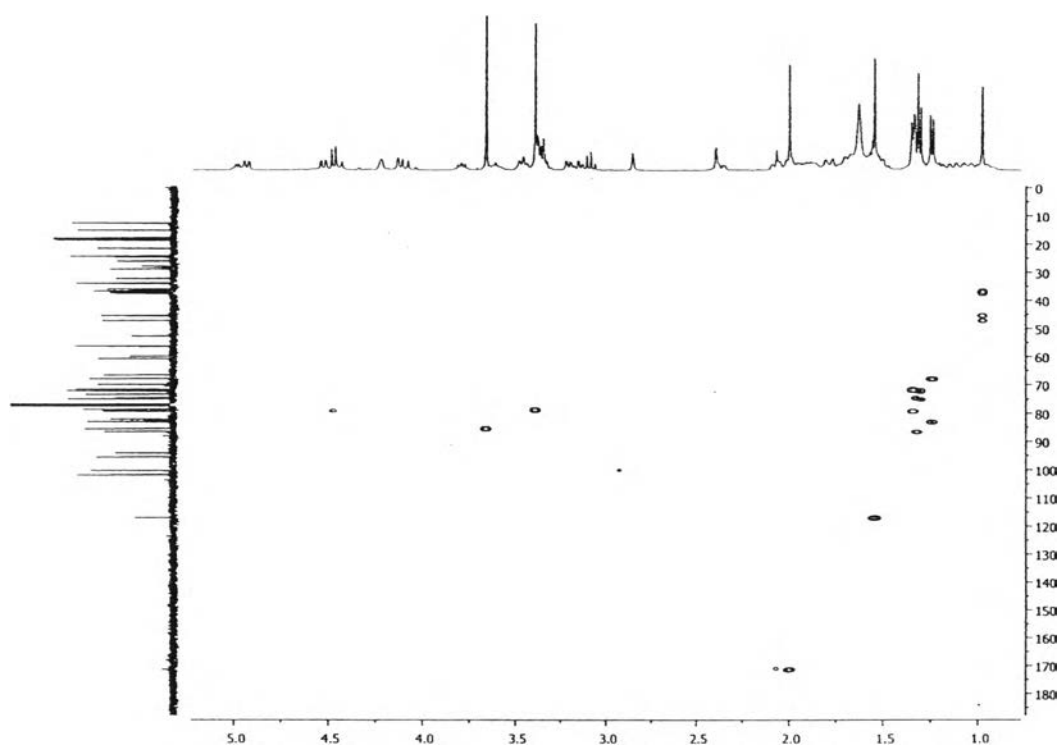


Figure A65 HMBC spectrum of compound 65

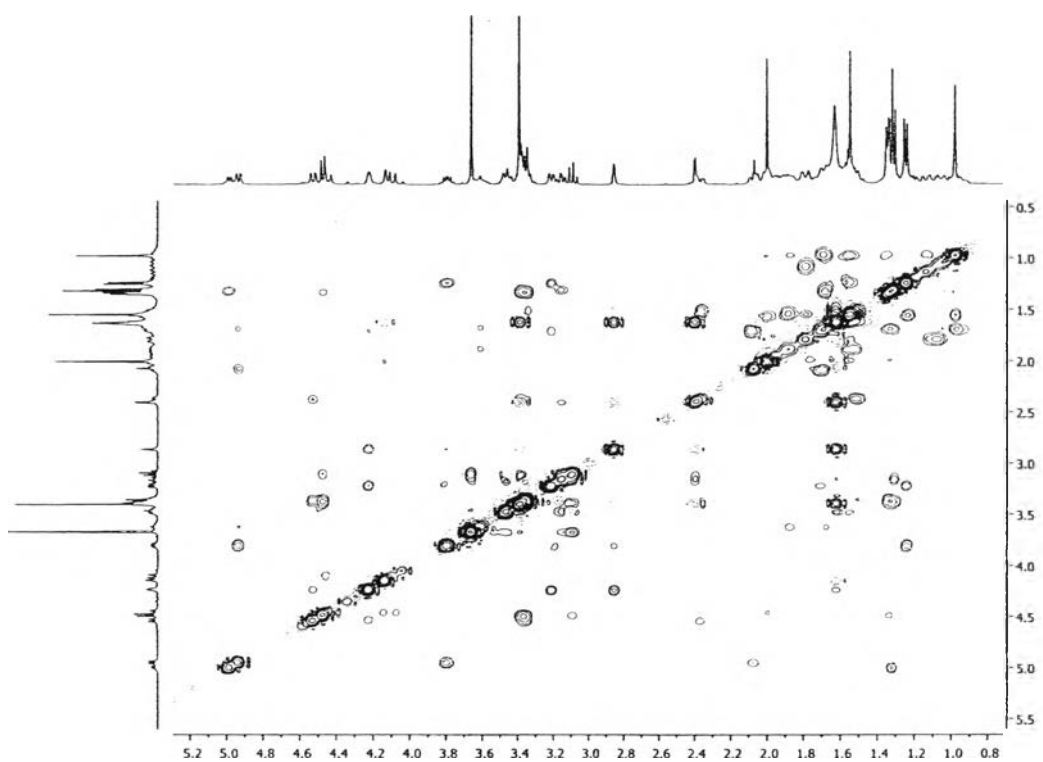


Figure A66 NOESY spectrum of compound 65



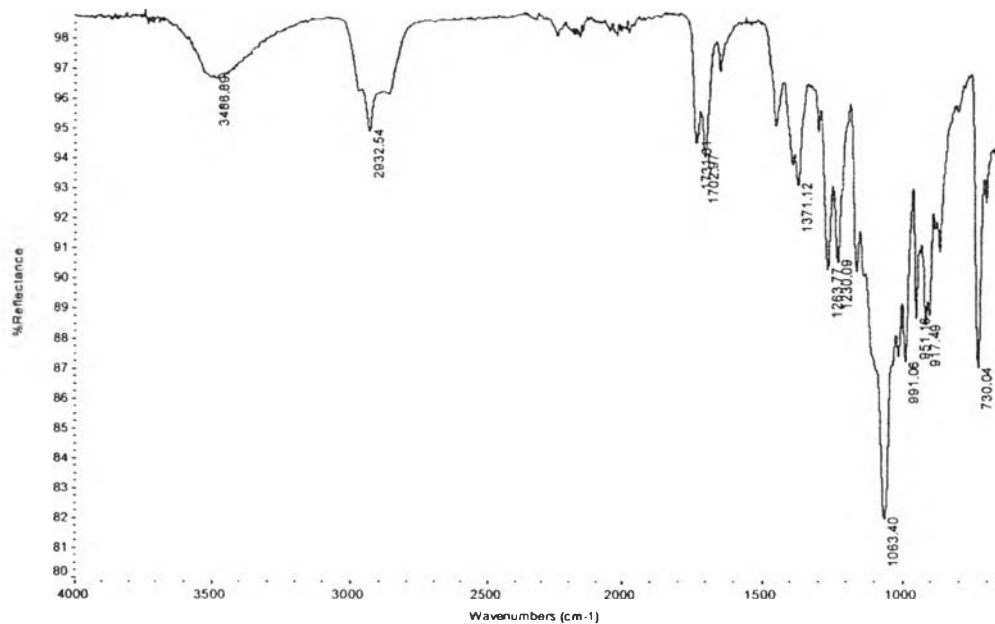


Figure A67 ATR-FTIR spectrum of compound 66

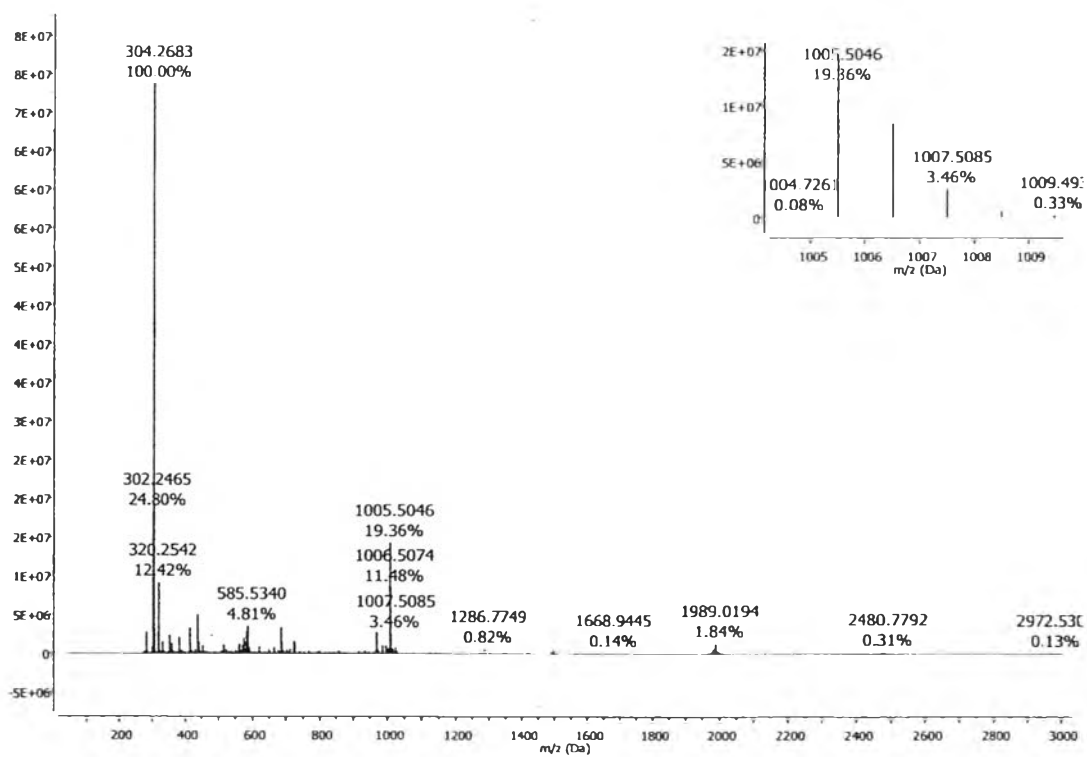
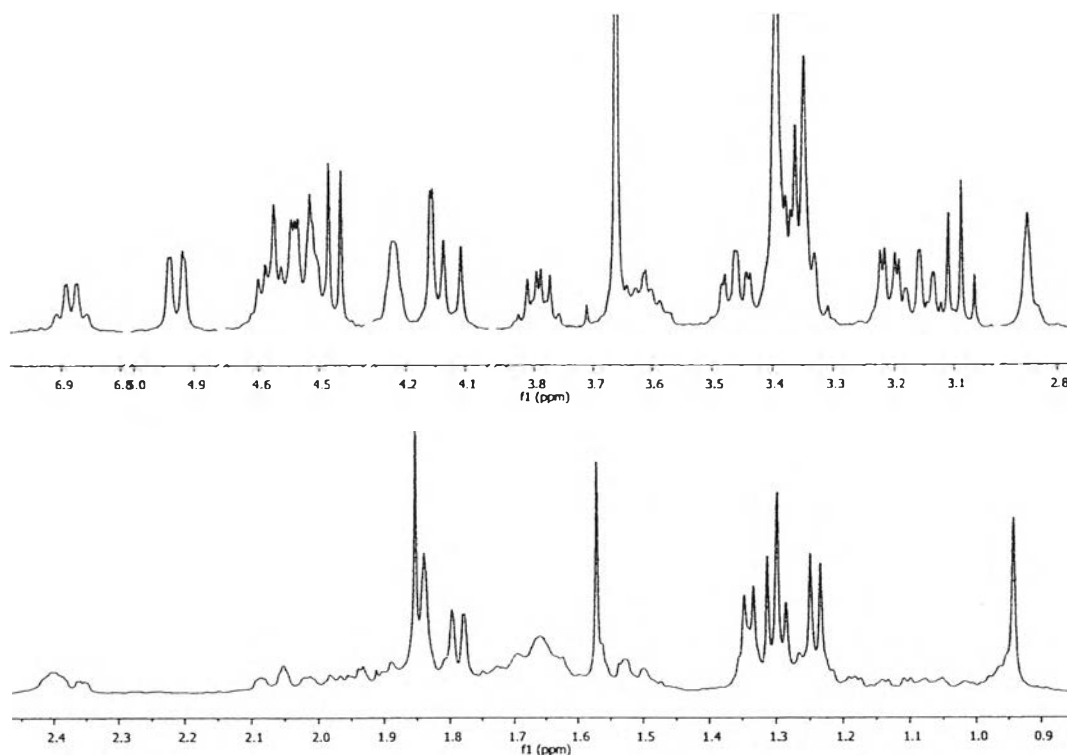
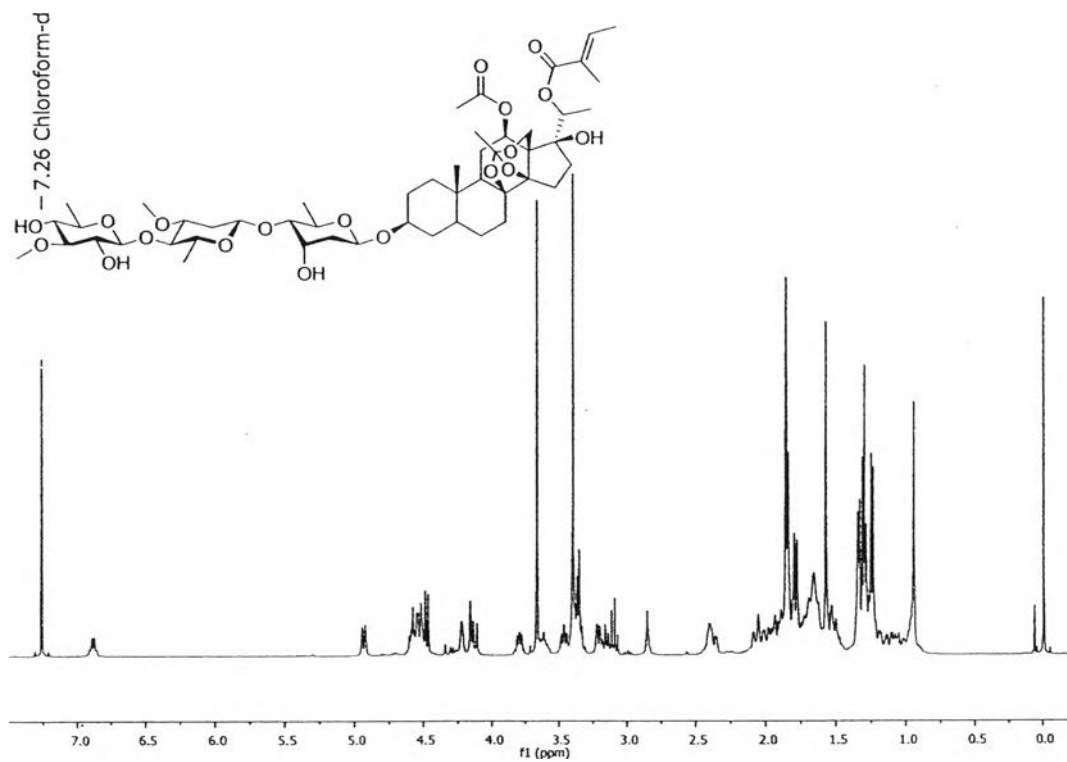
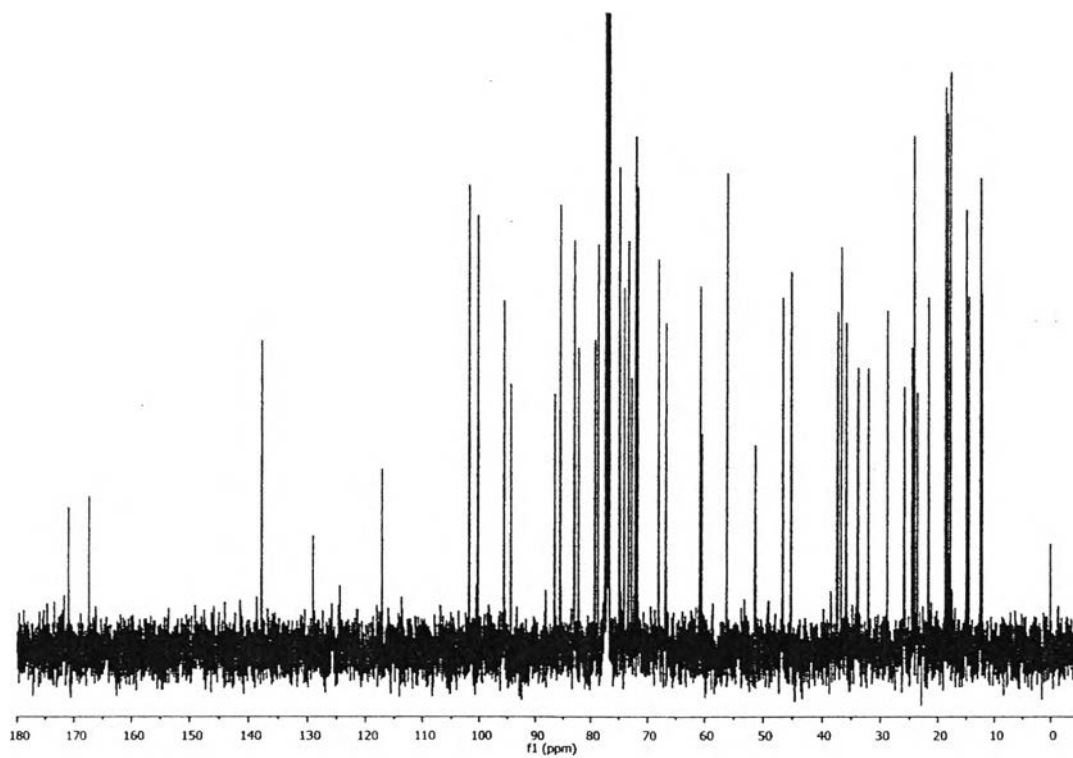
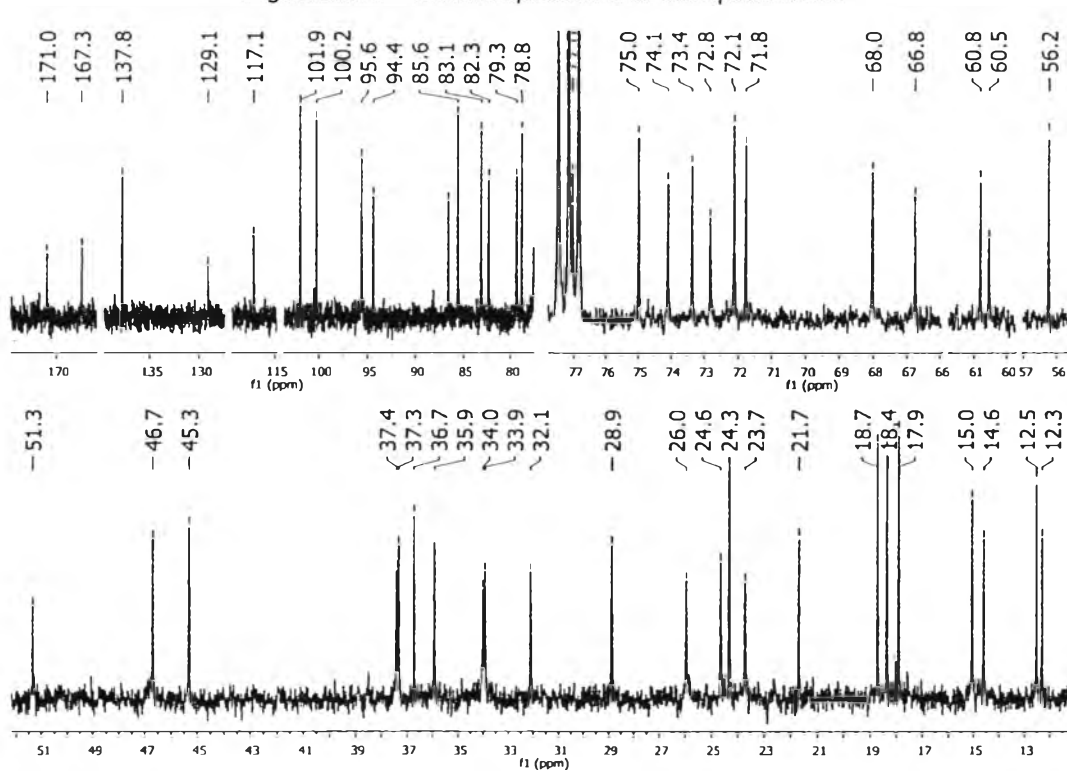


Figure A68 HR-ESIMS spectrum of compound 66





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Figure A71 ^{13}C NMR spectrum of compound 66Figure A72 ^{13}C NMR spectrum of compound 66 (Expansion)

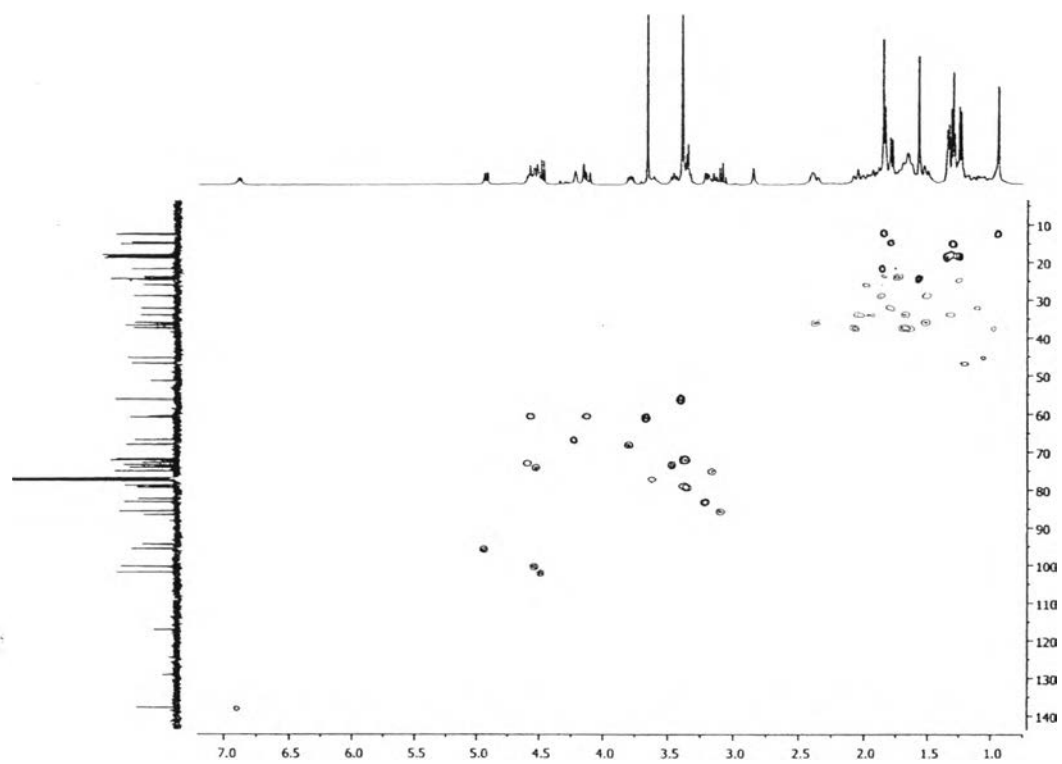


Figure A73 HSQC spectrum of compound 66

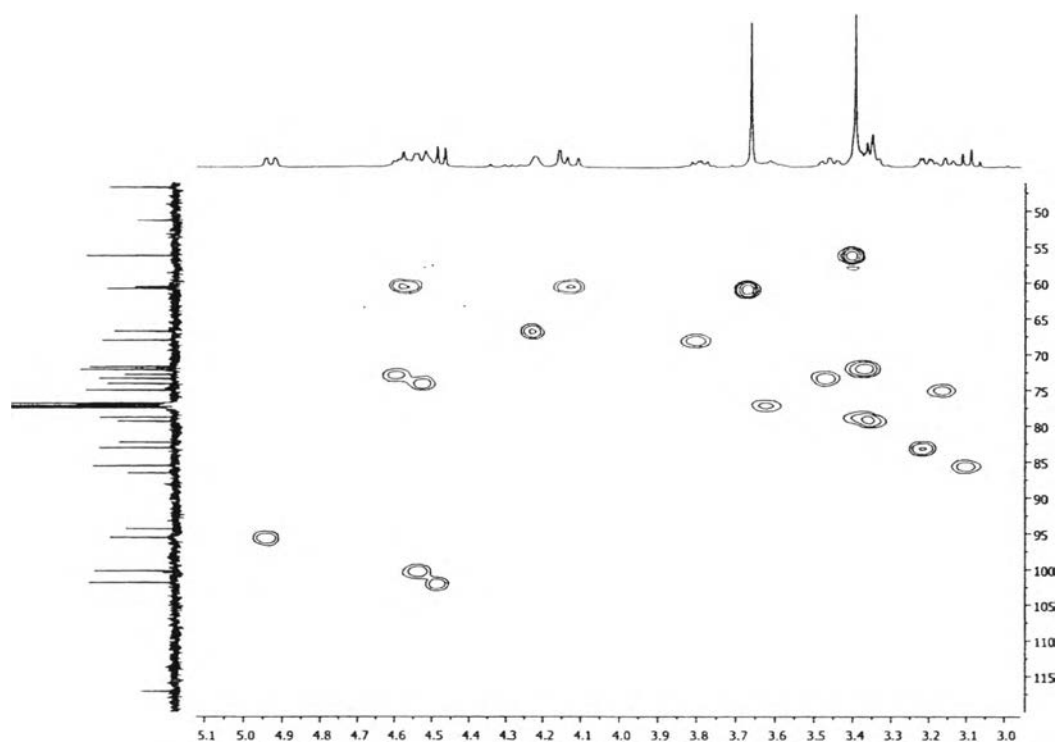


Figure A74 HSQC spectrum of compound 66 (Expansion)



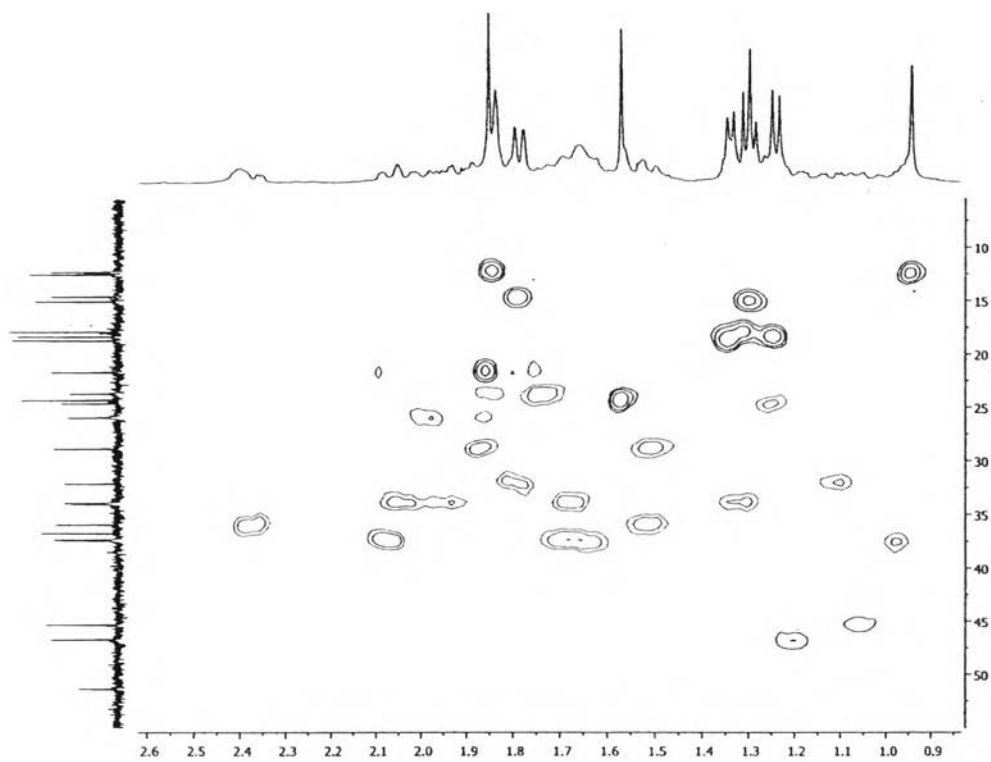


Figure A75 HSQC spectrum of compound 66 (Expansion)

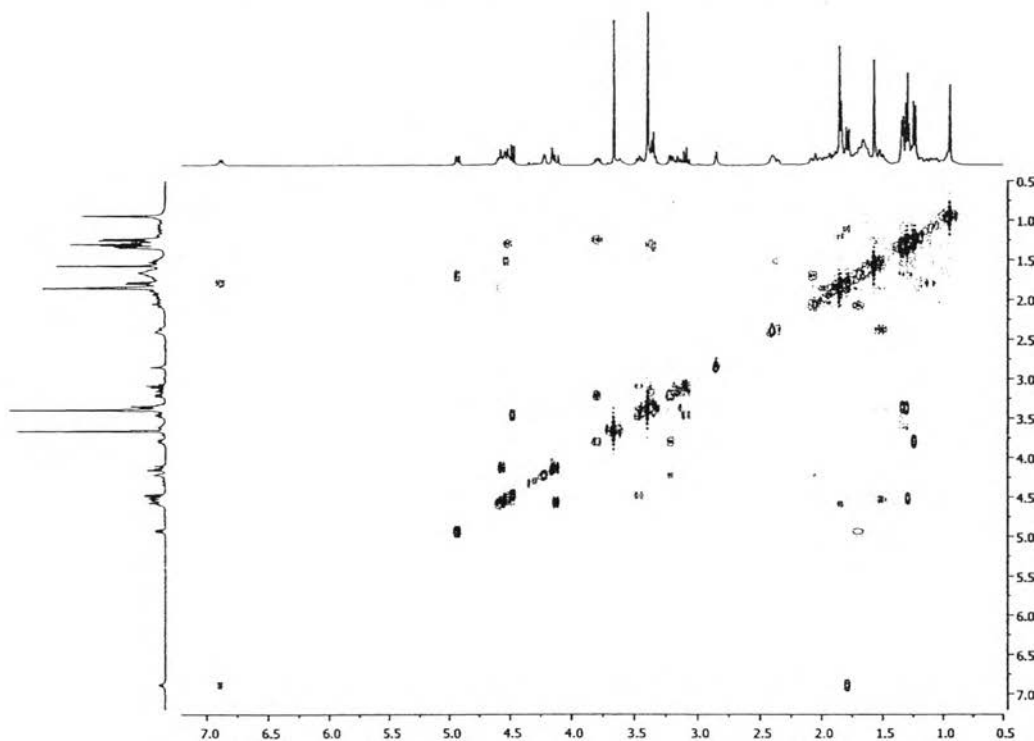


Figure A76 COSY spectrum of compound 66



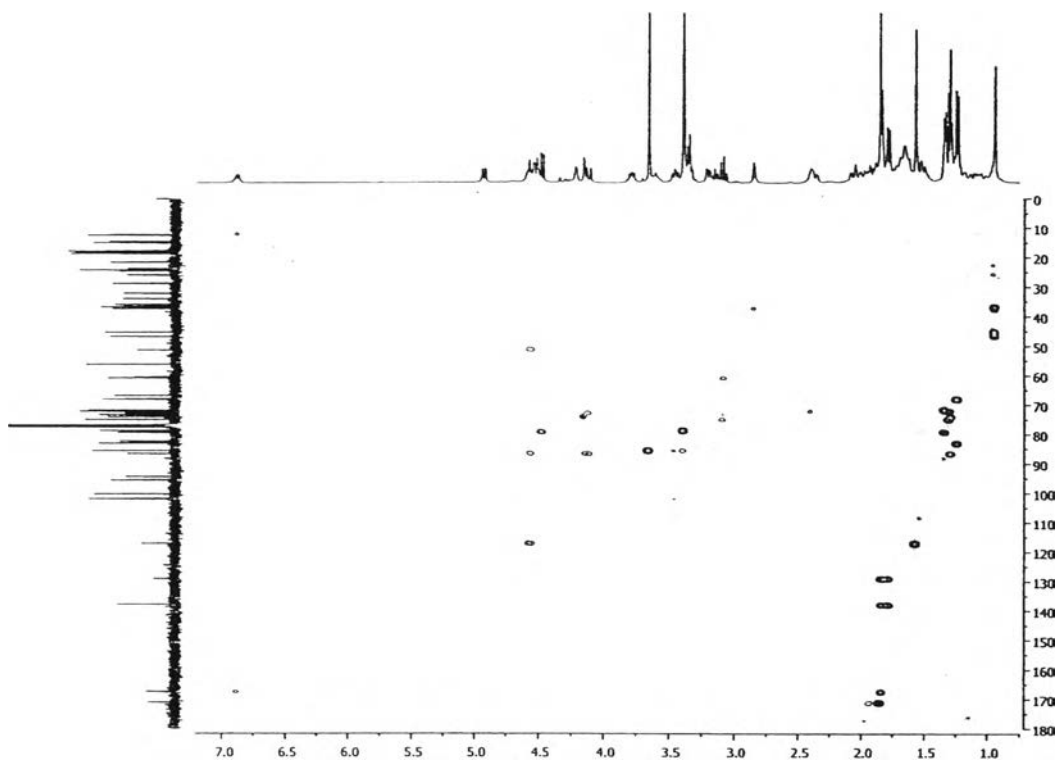


Figure A77 HMBC spectrum of compound 66

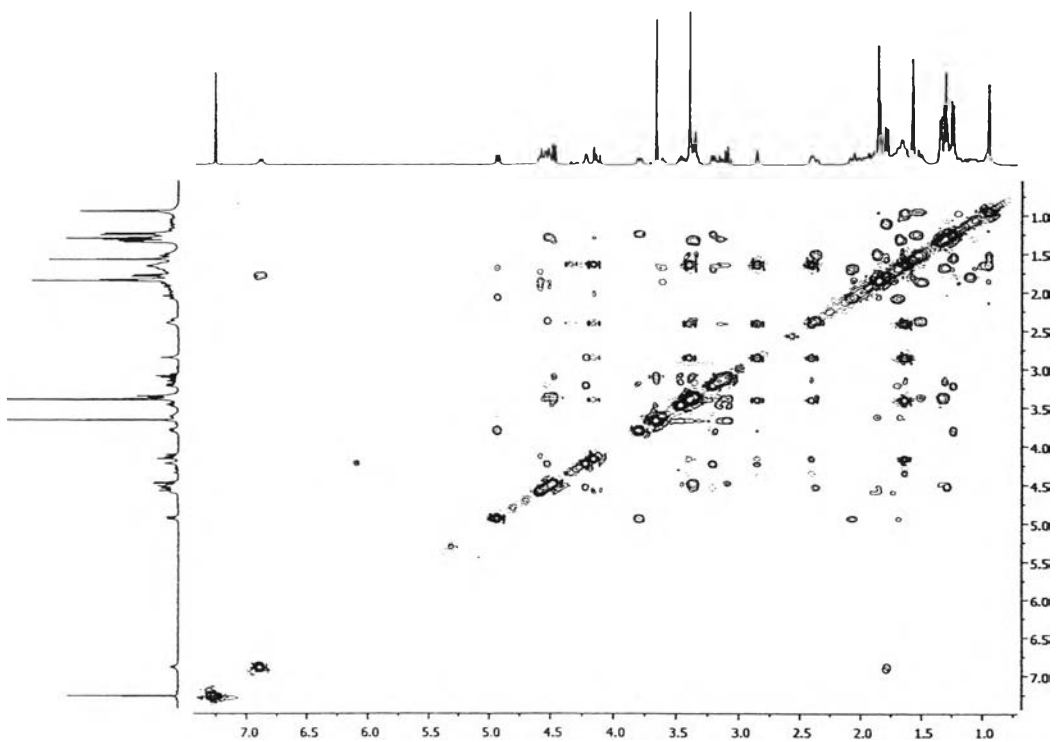


Figure A78 NOESY spectrum of compound 66

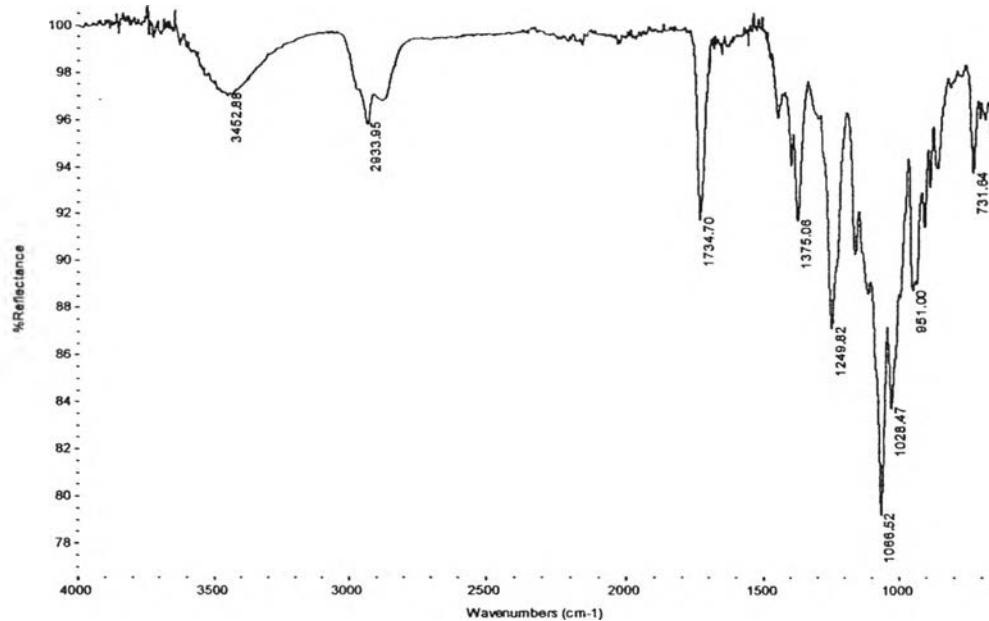


Figure A79 ATR-FTIR spectrum of compound 67

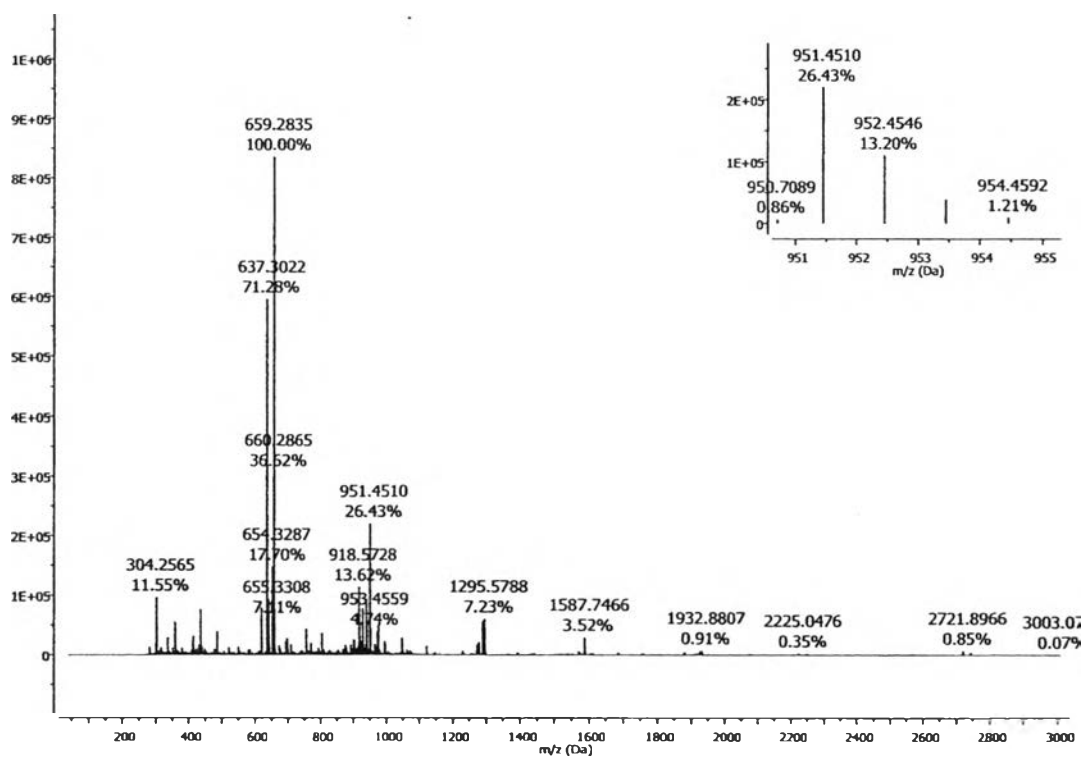
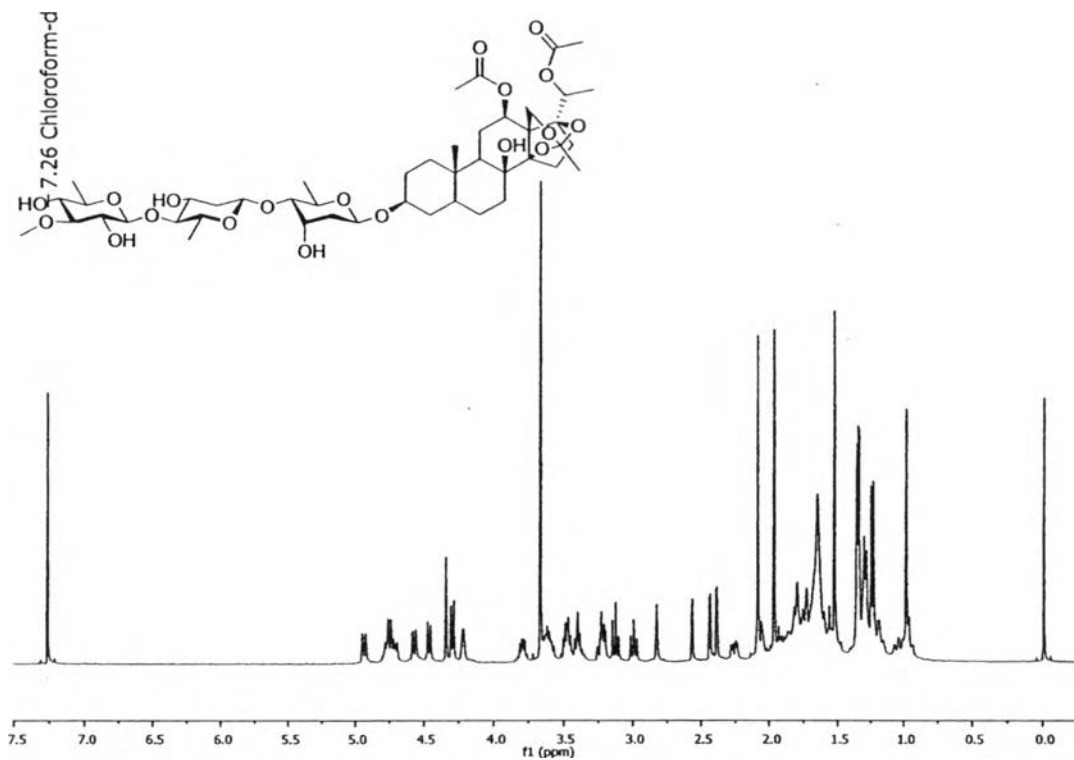
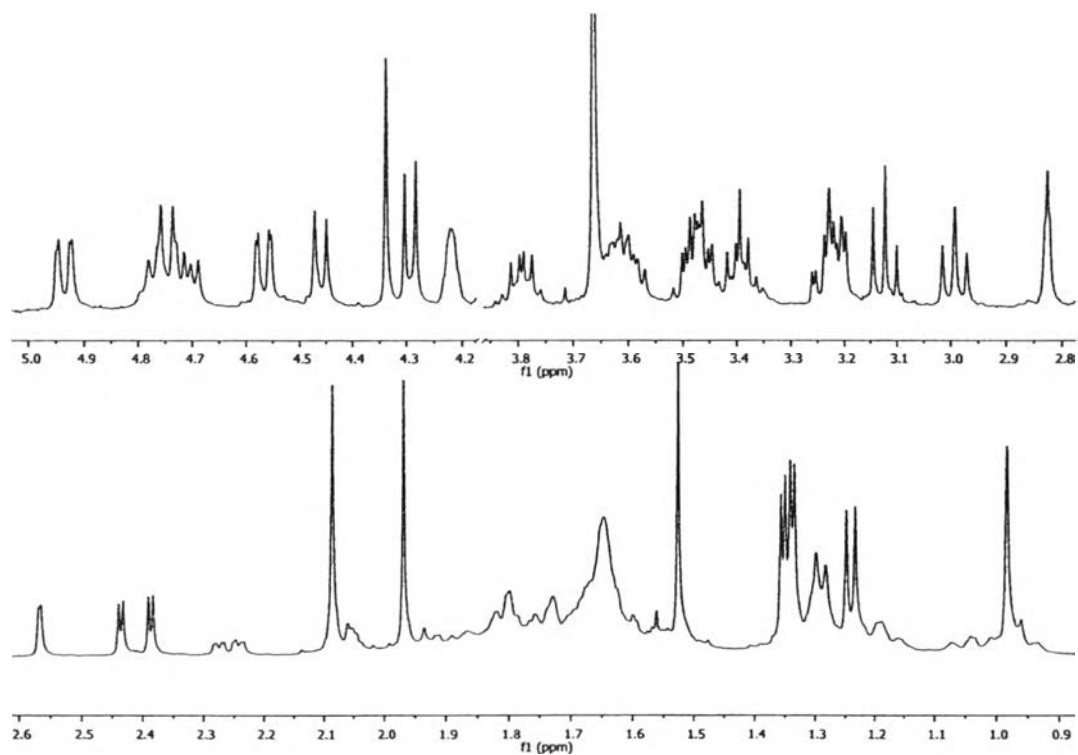
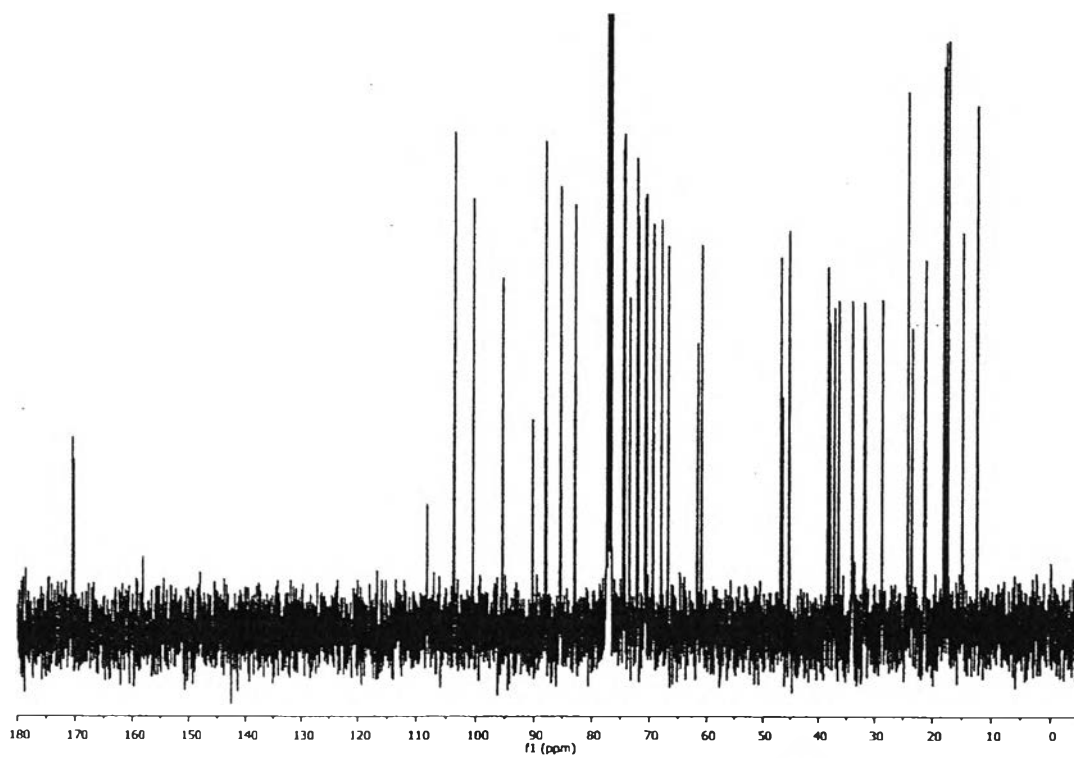
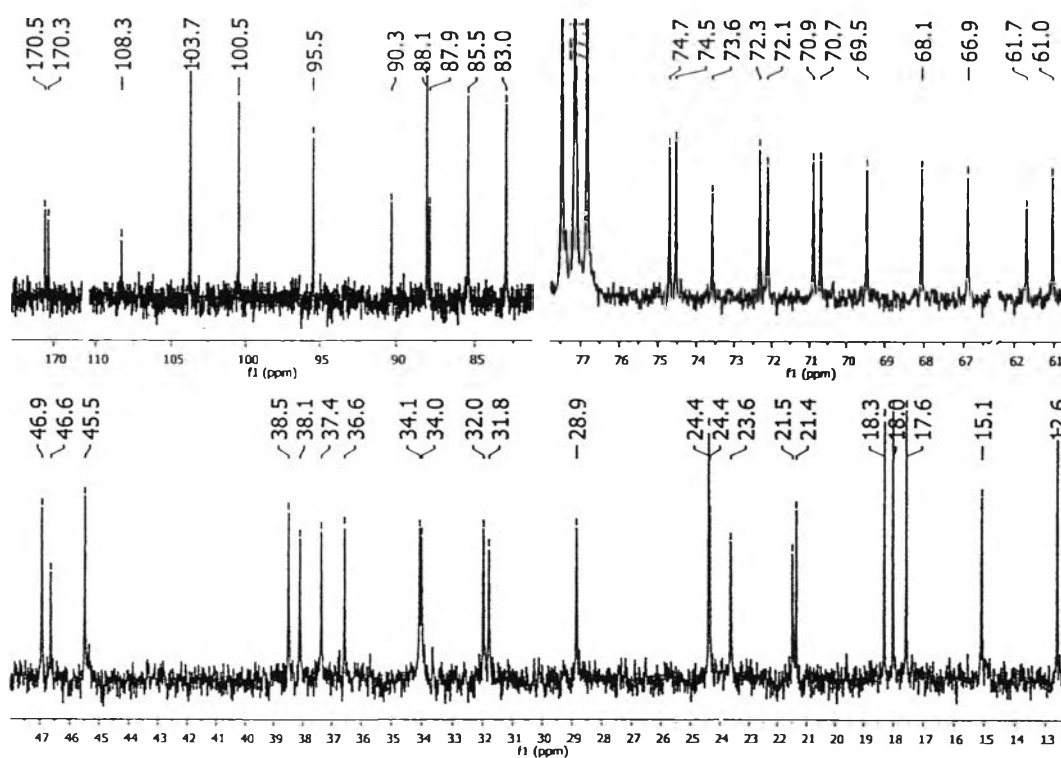


Figure A80 HR-ESIMS spectrum of compound 67

Figure A81 ^1H NMR spectrum of compound 67Figure A82 ^1H NMR spectrum of compound 67 (Expansion)

Figure A83 ^{13}C NMR spectrum of compound 67Figure A84 ^{13}C NMR spectrum of compound 67 (Expansion)

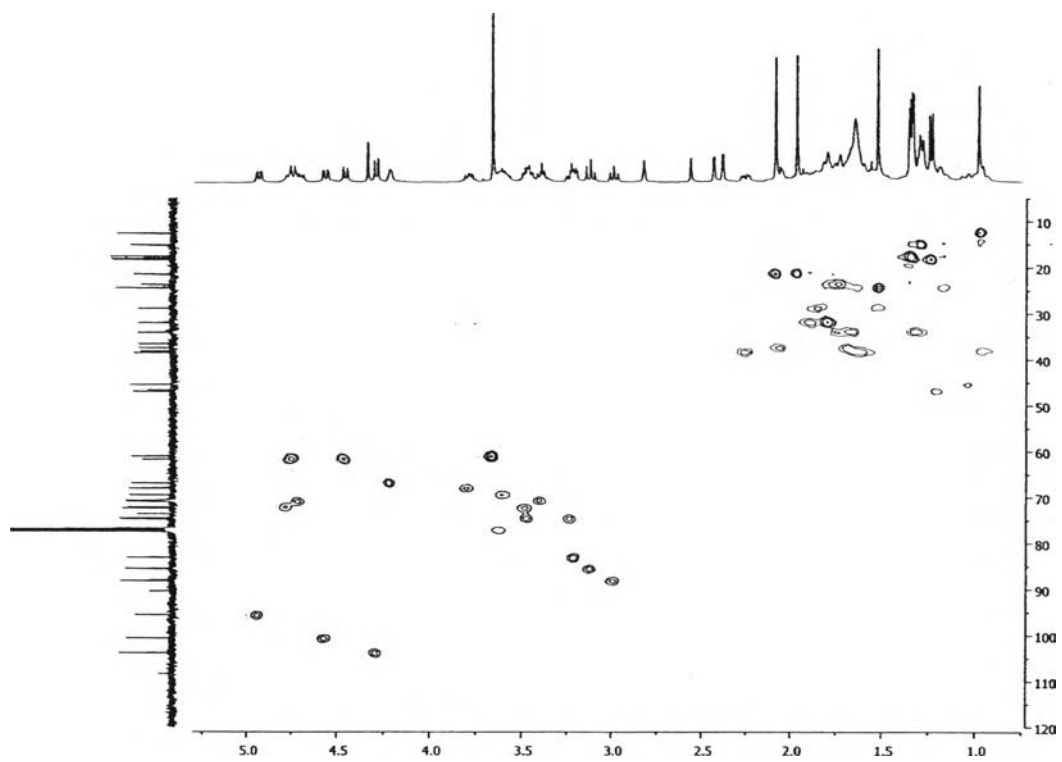


Figure A85 HSQC spectrum of compound 67

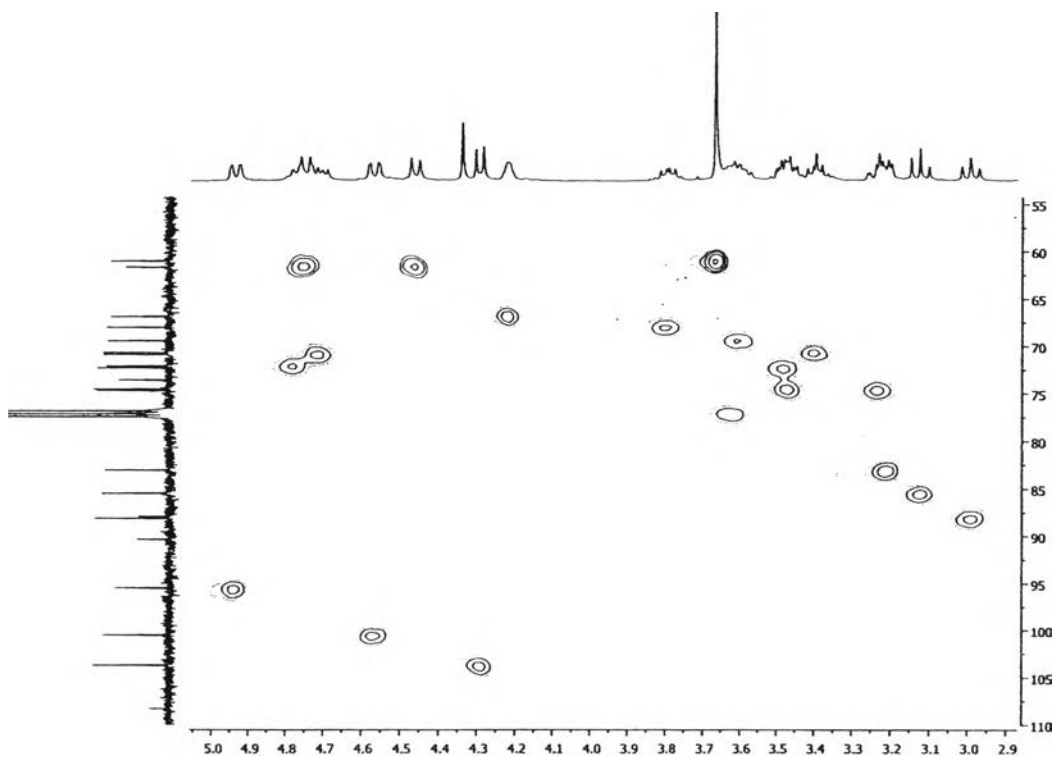


Figure A86 HSQC spectrum of compound 67 (Expansion)

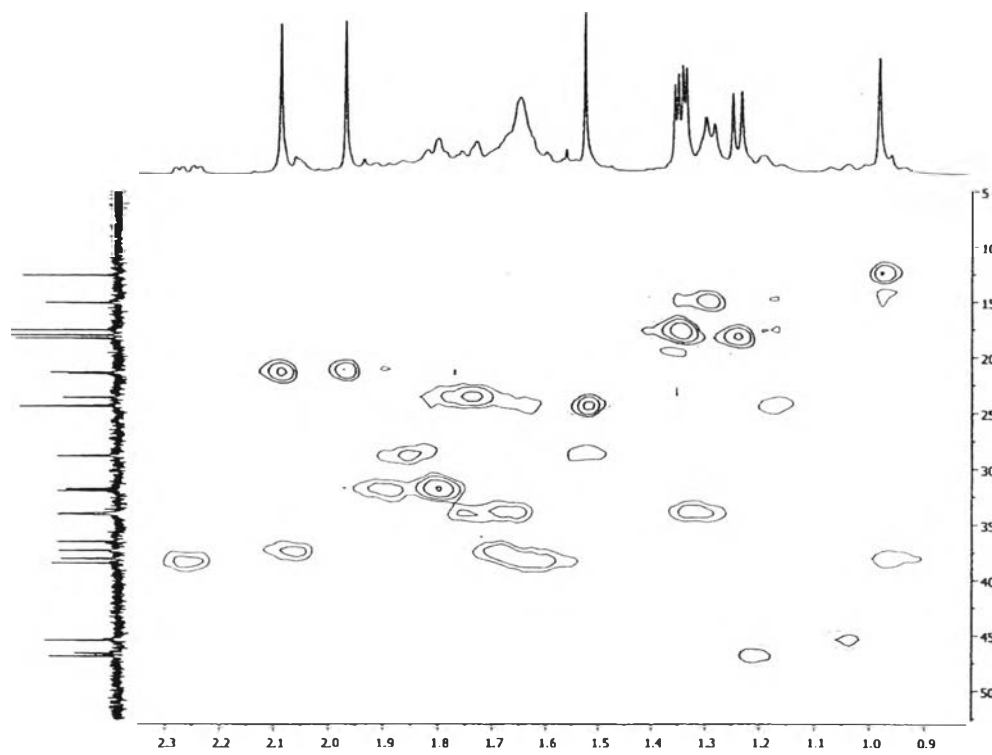


Figure A87 HSQC spectrum of compound 67 (Expansion)

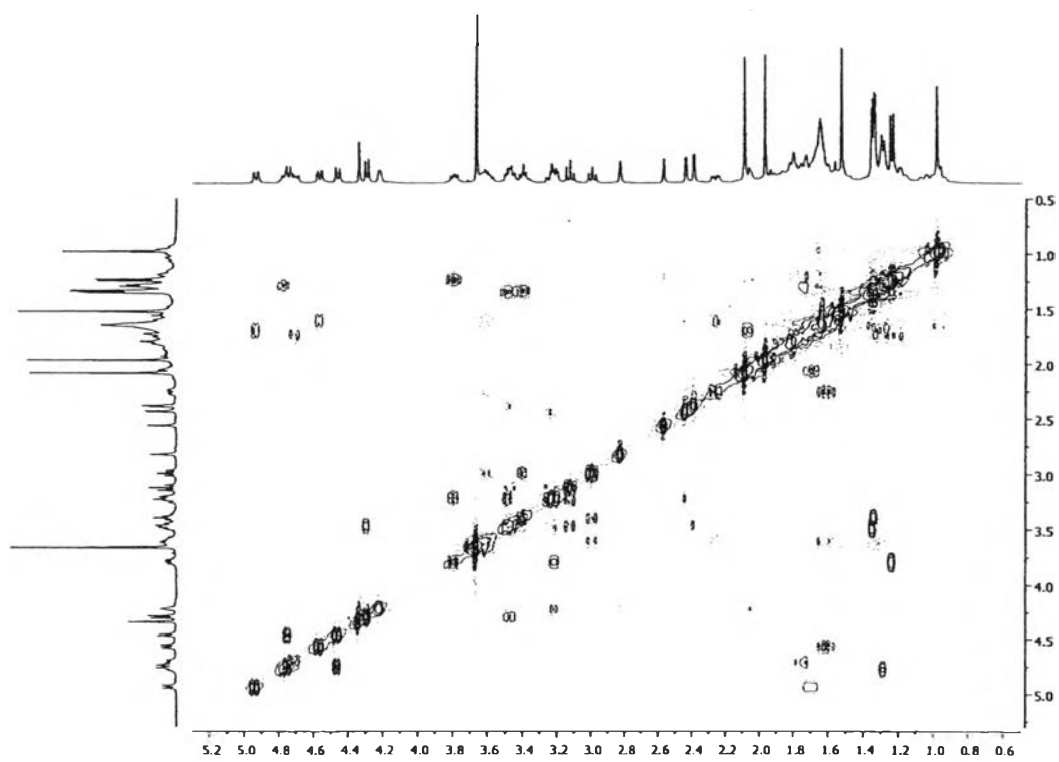


Figure A88 COSY spectrum of compound 67

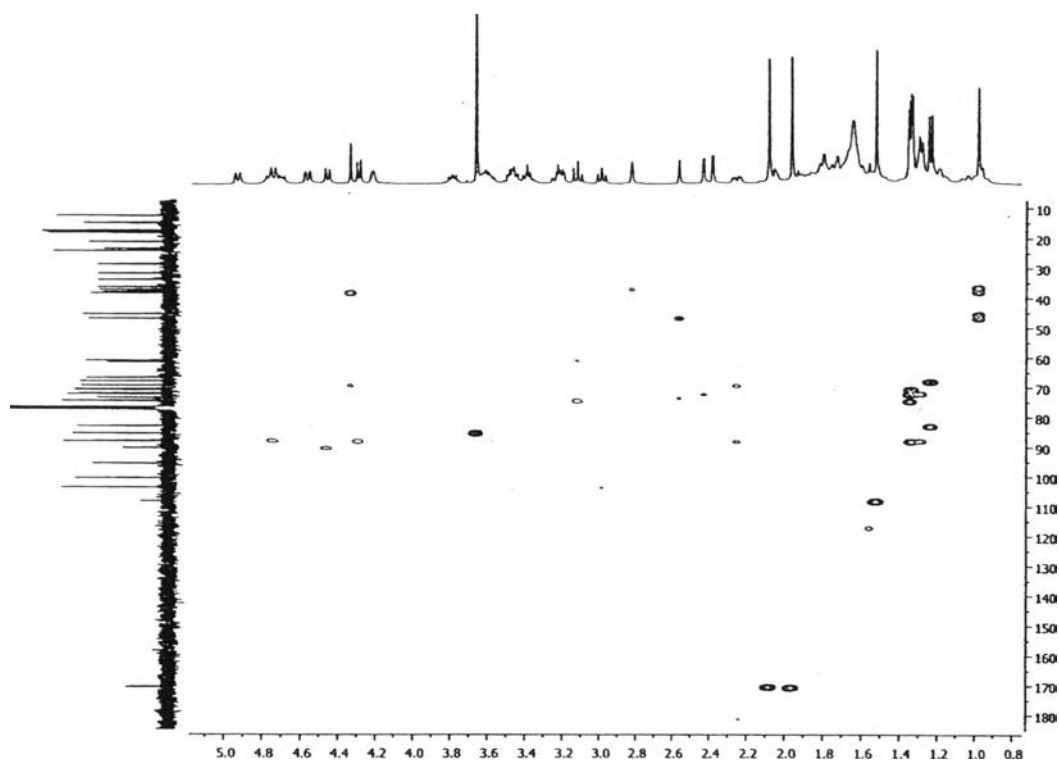


Figure A89 HMBC spectrum of compound 67

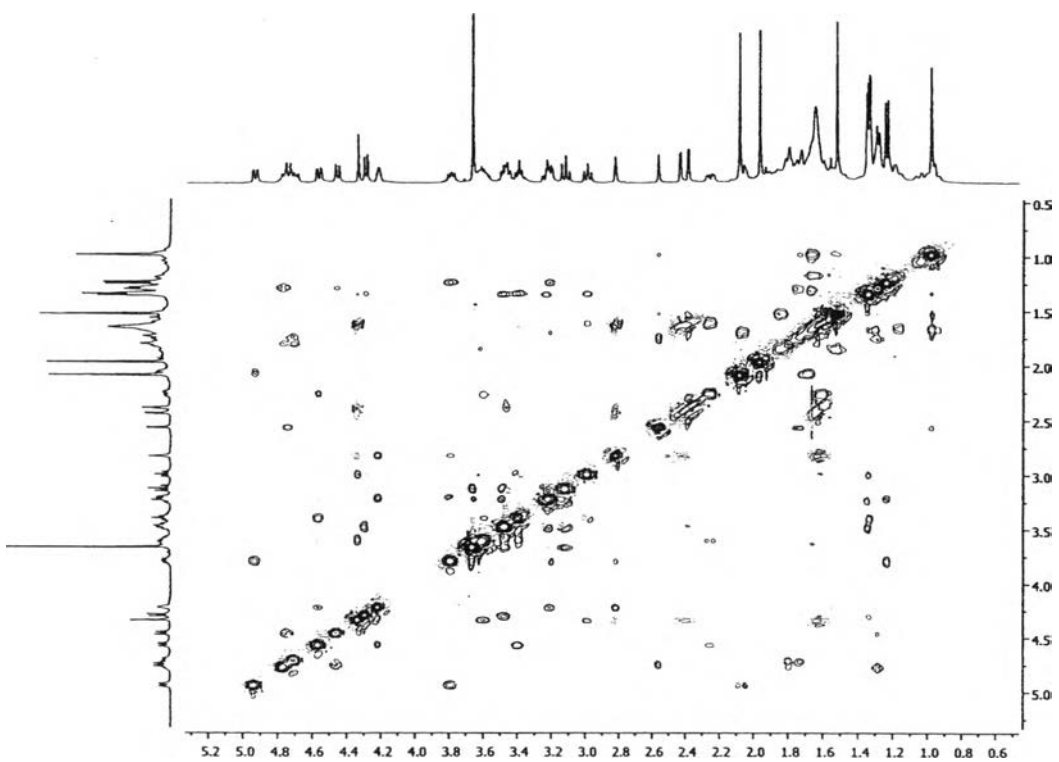


Figure A90 NOESY spectrum of compound 67



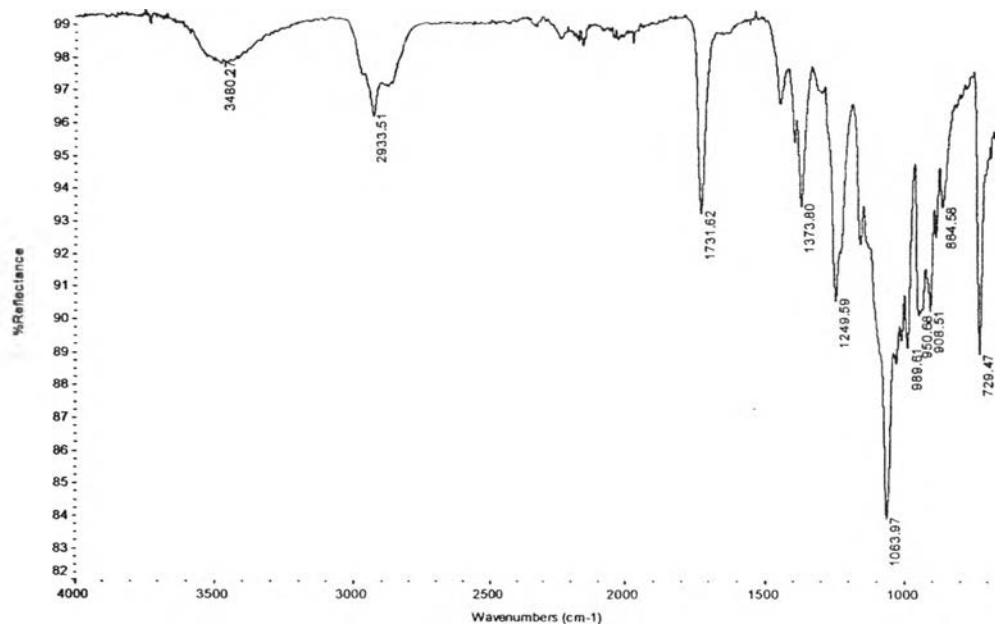


Figure A91 ATR-FTIR spectrum of compound 68

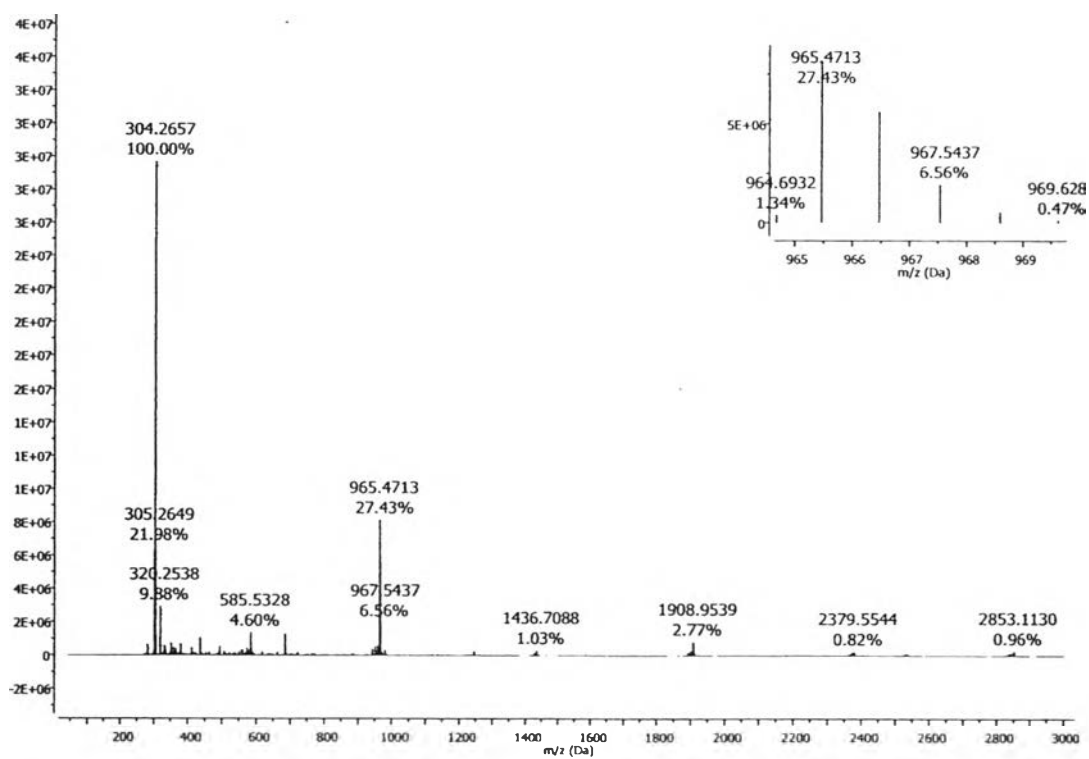
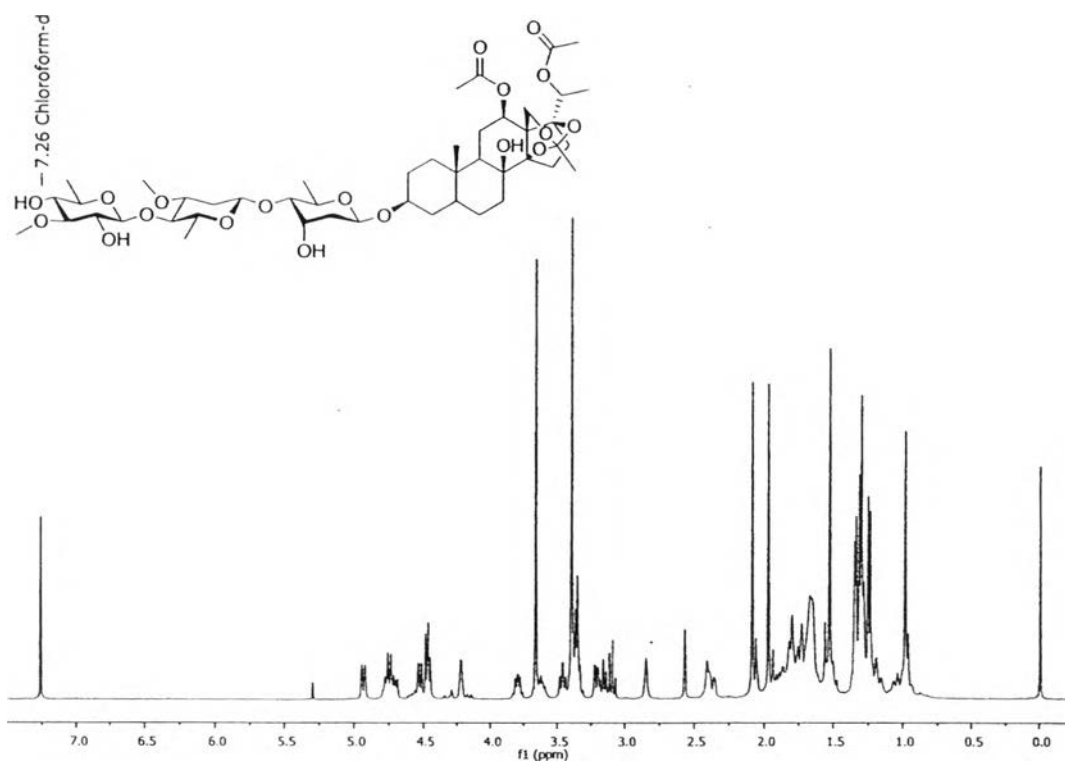
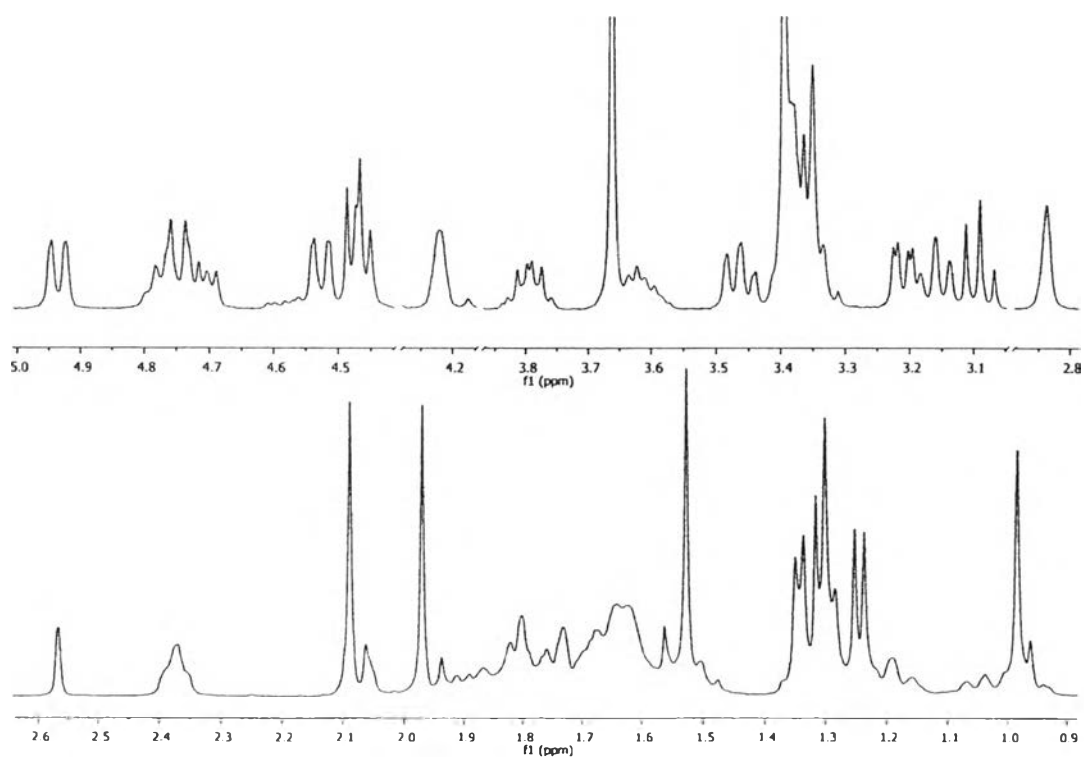
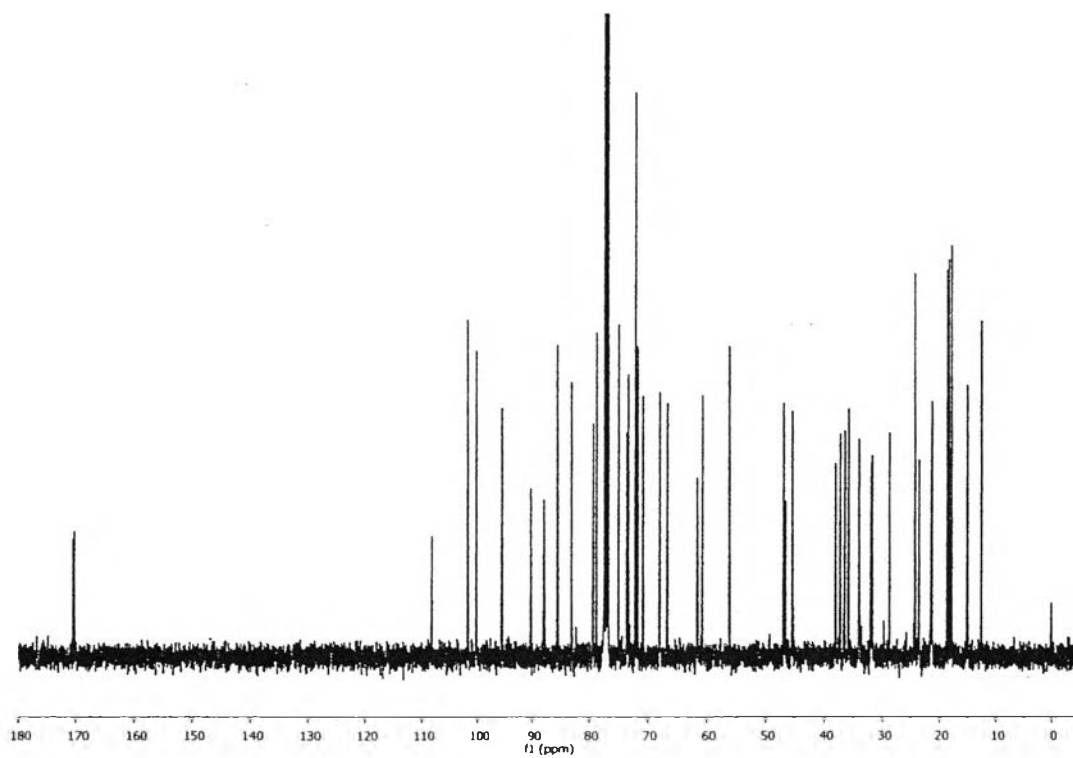
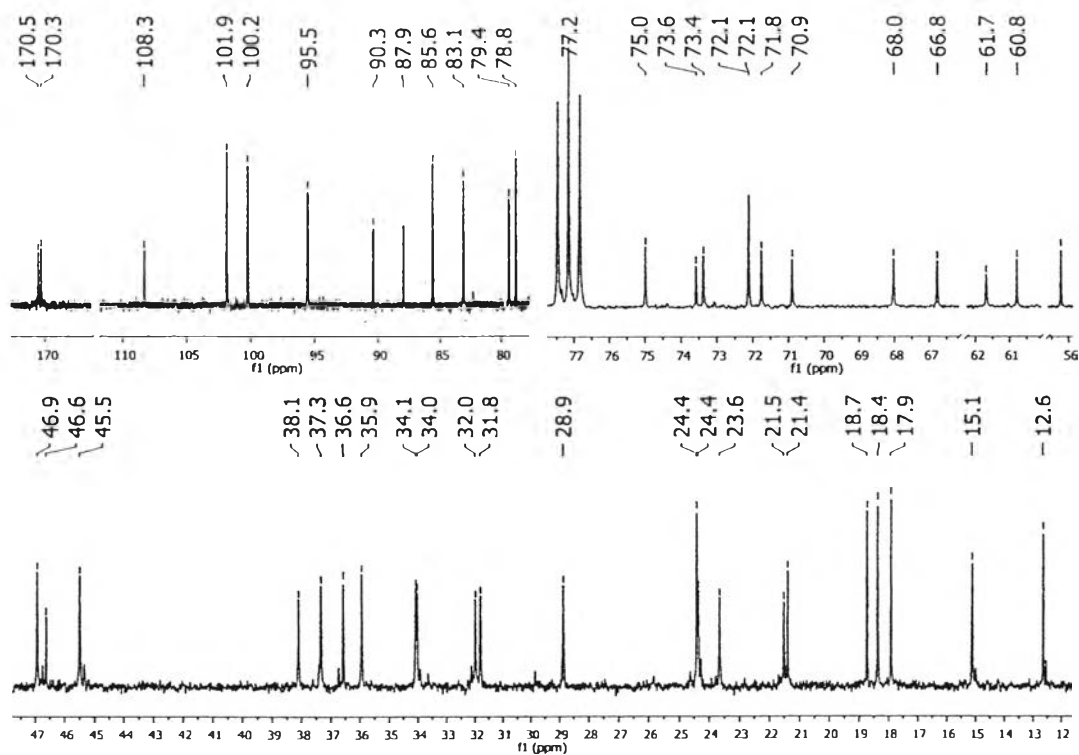


Figure A92 HR-ESIMS spectrum of compound 68



Figure A93 ^1H NMR spectrum of compound 68Figure A94 ^1H NMR spectrum of compound 68 (Expansion)

Figure A95 ^{13}C NMR spectrum of compound 68Figure A96 ^{13}C NMR spectrum of compound 68 (Expansion)

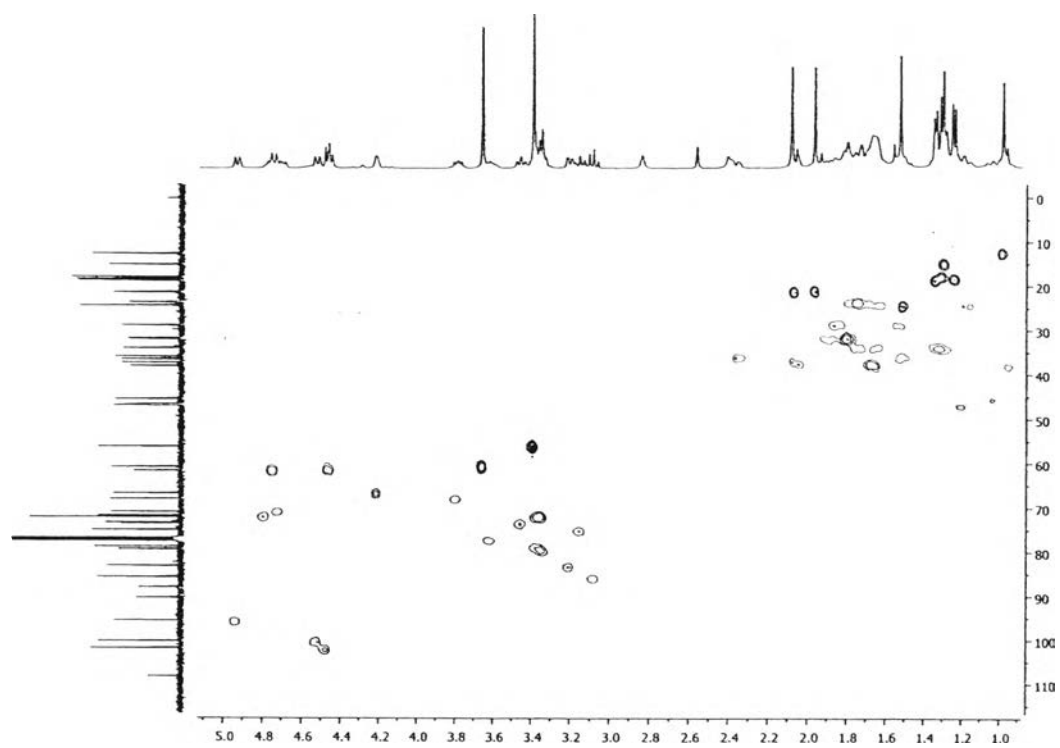


Figure A97 HSQC spectrum of compound 68

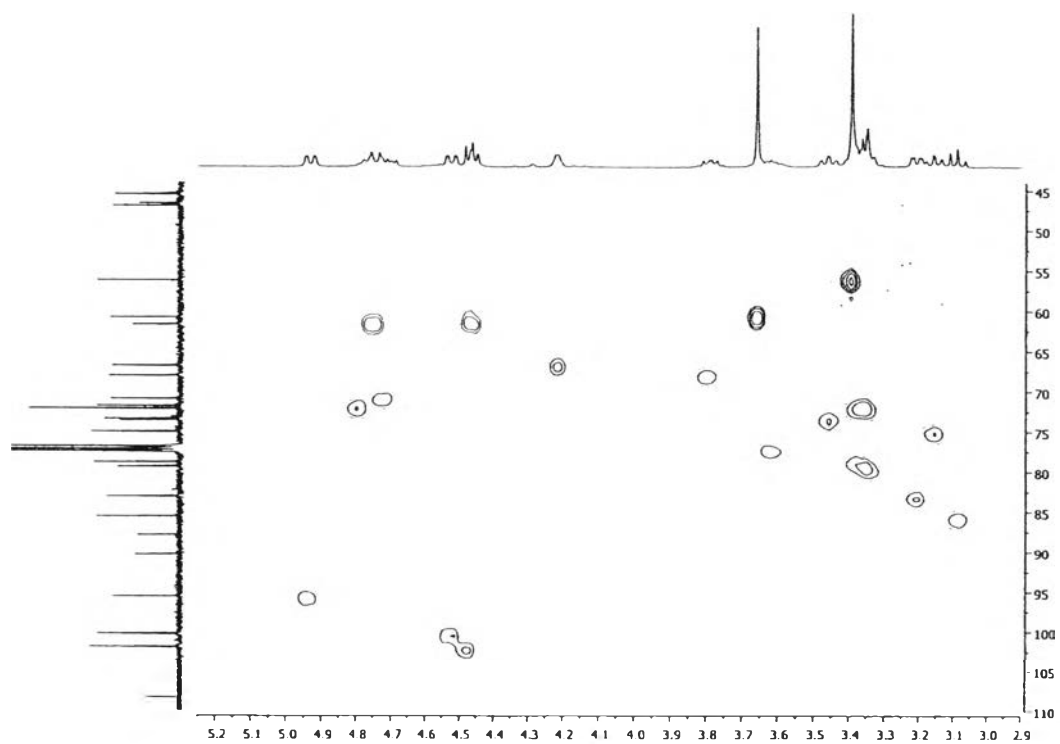


Figure A98 HSQC spectrum of compound 68 (Expansion)

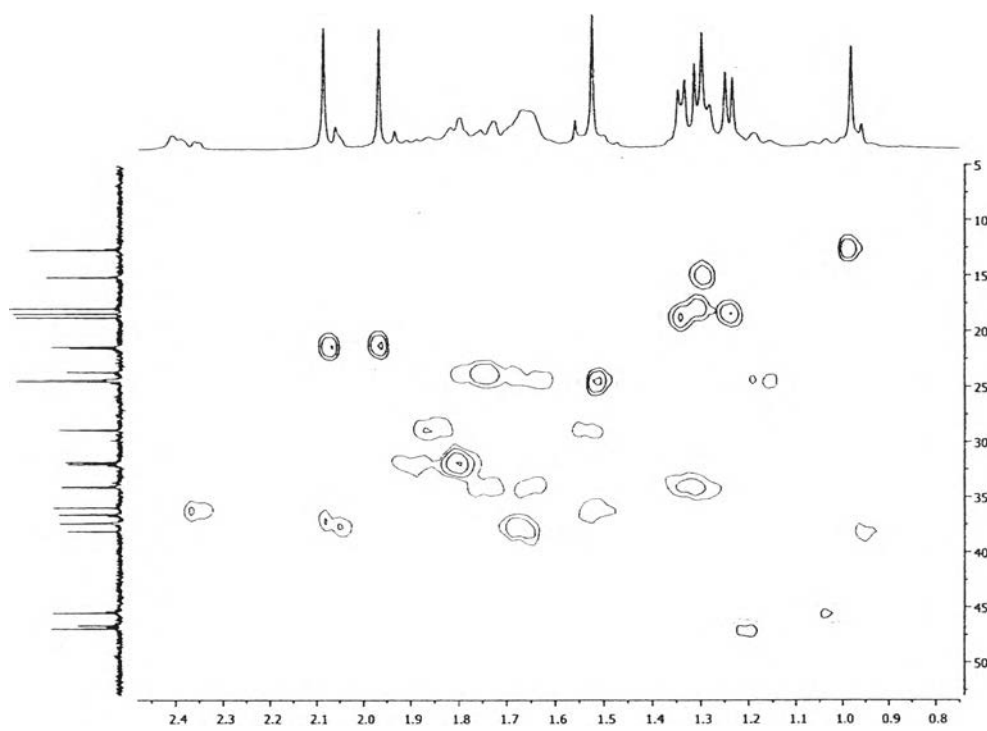


Figure A99 HSQC spectrum of compound 68 (Expansion)

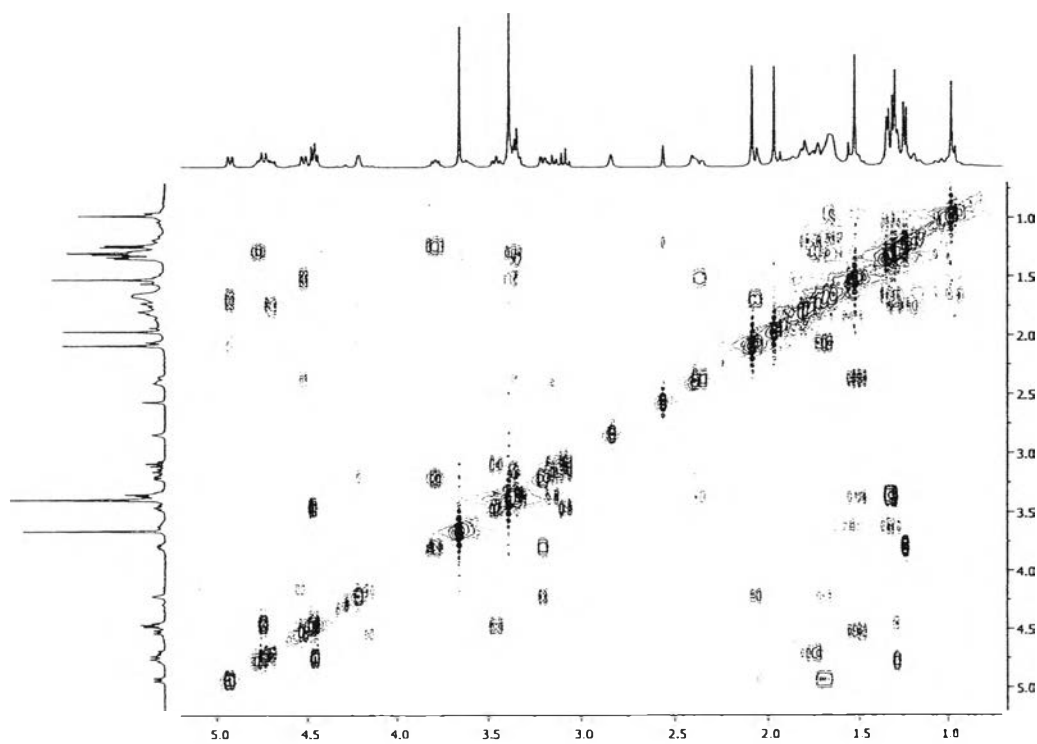


Figure A100 COSY spectrum of compound 68

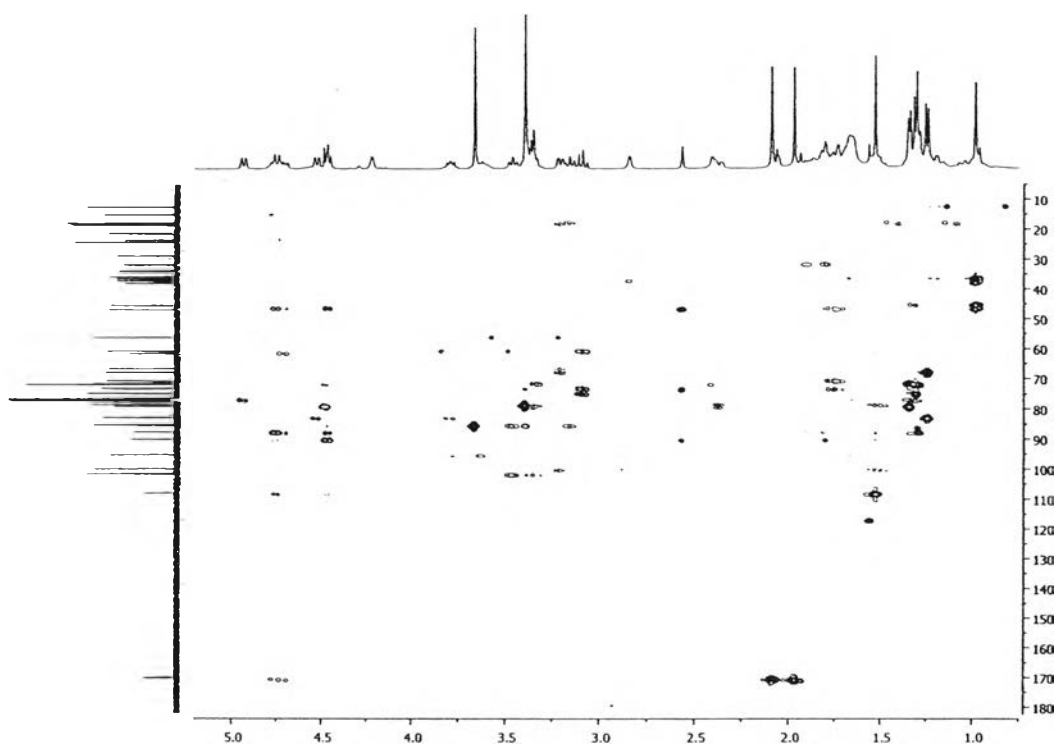


Figure A101 HMBC spectrum of compound 68

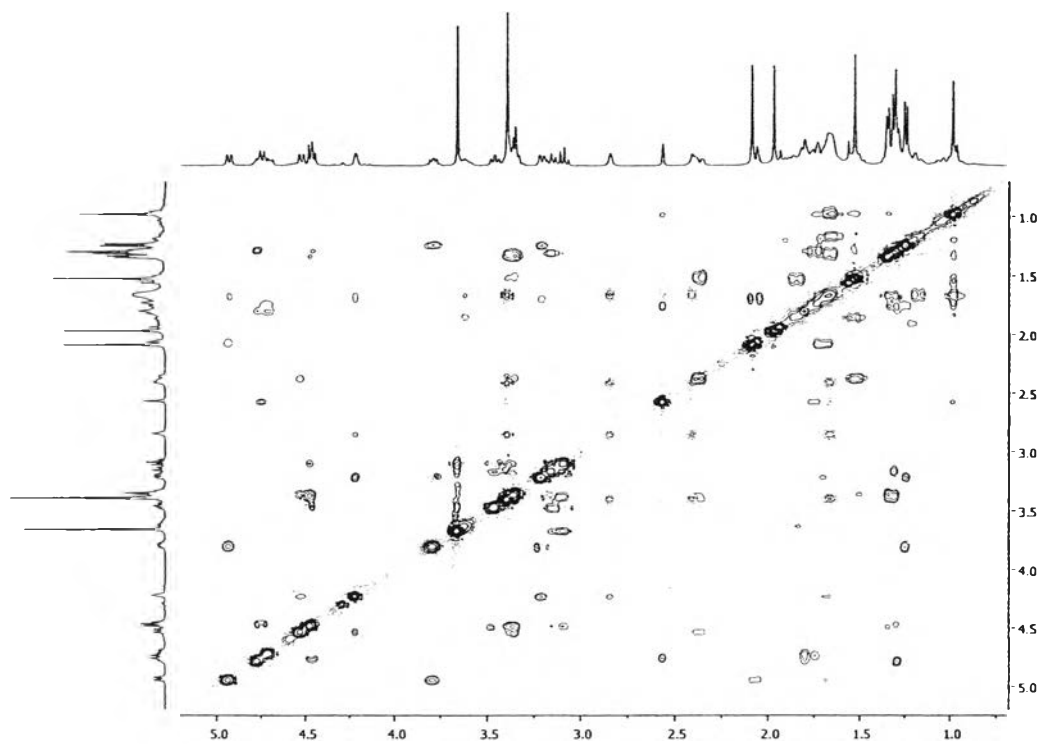


Figure A102 NOESY spectrum of compound 68

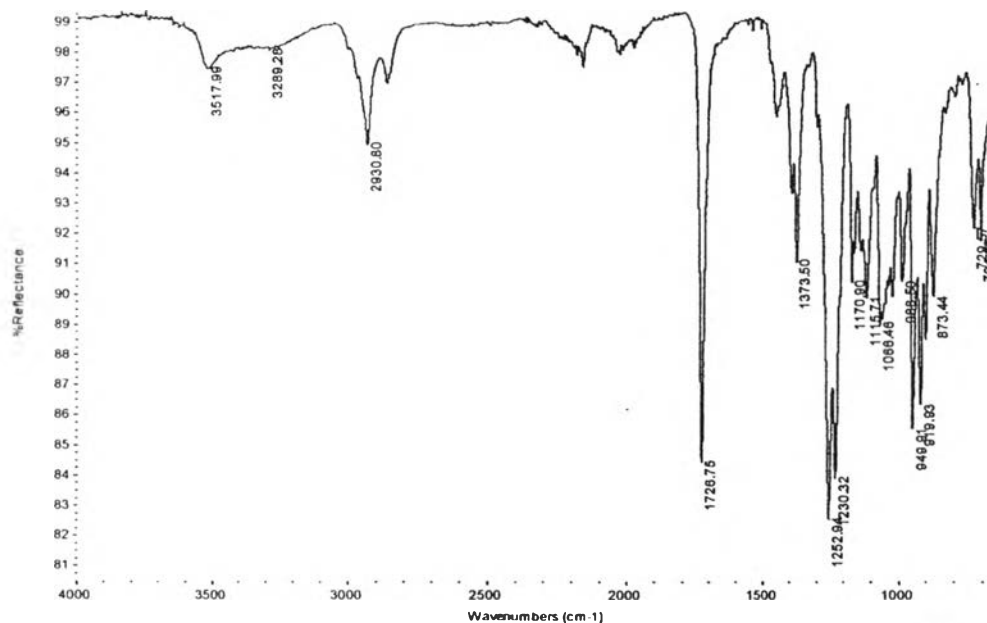


Figure A103 ATR-FTIR spectrum of compound 61a

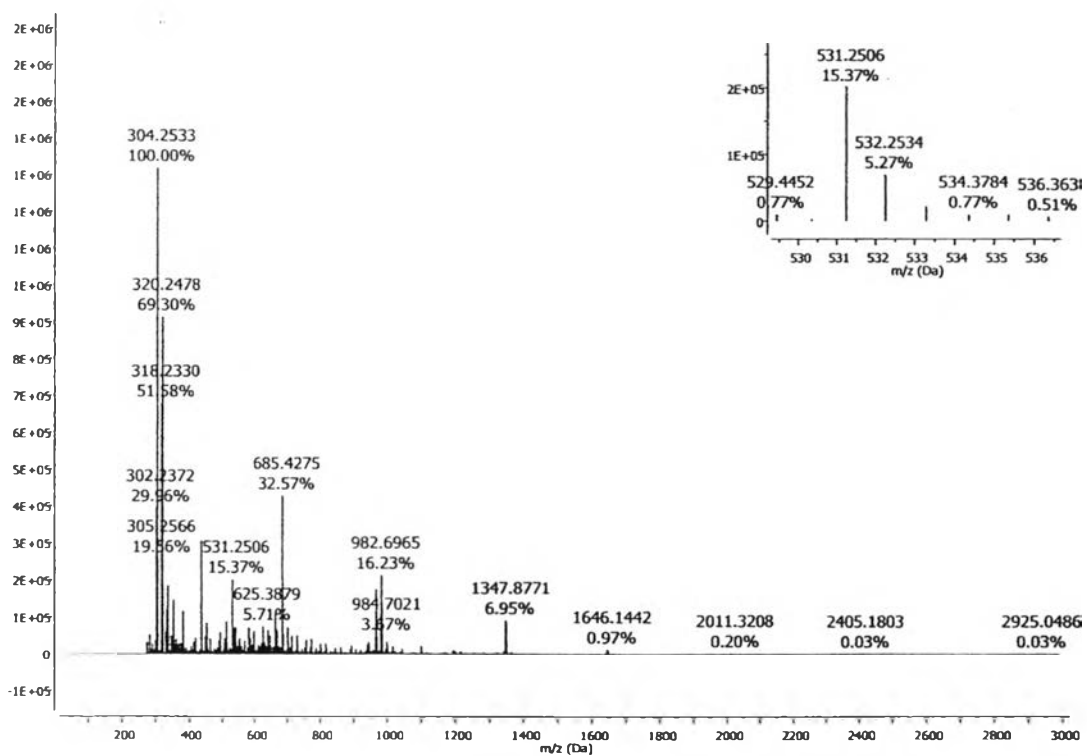
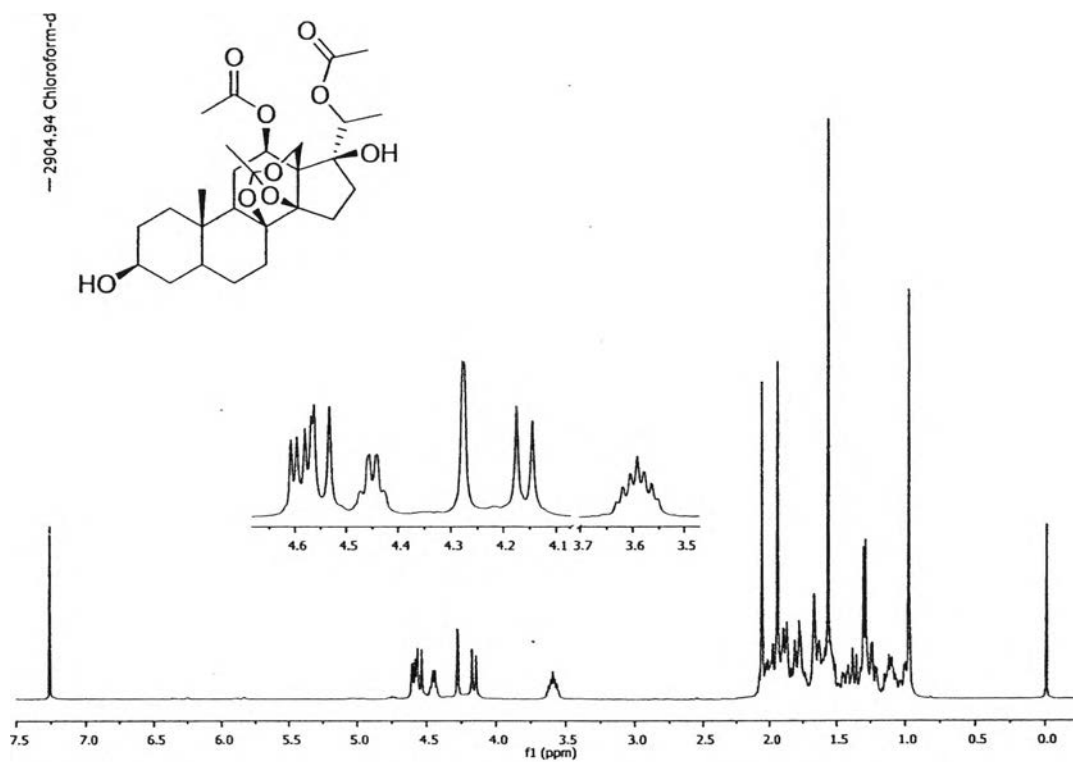
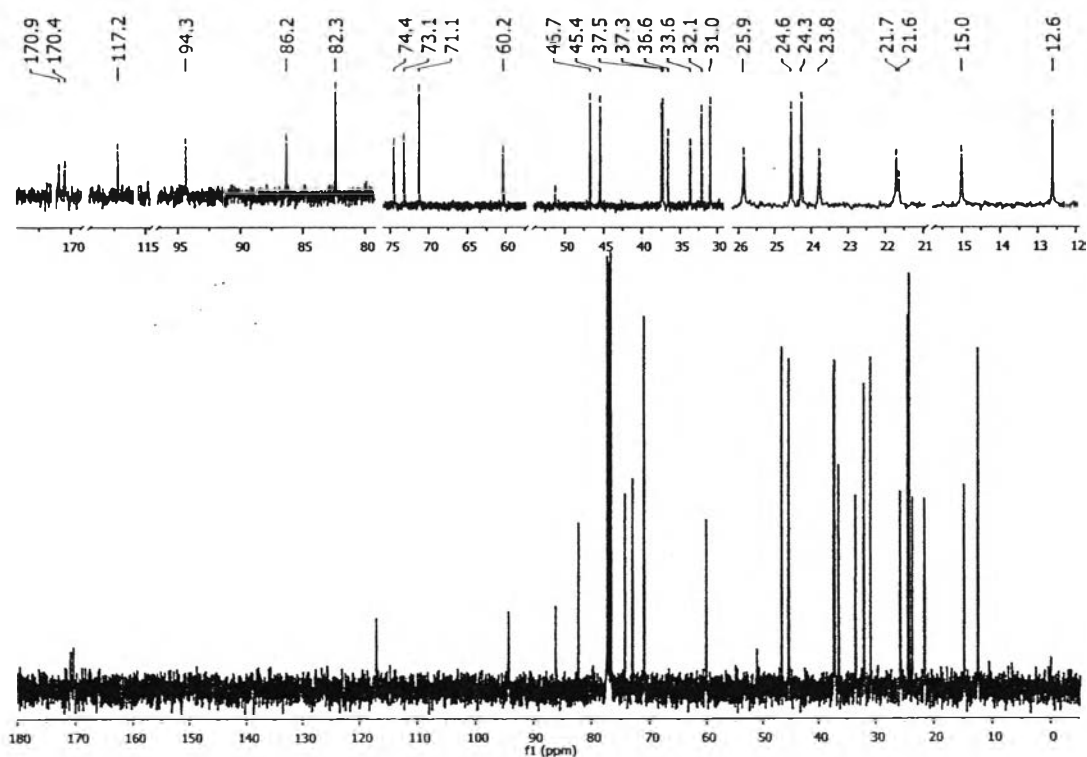


Figure A104 HR-ESIMS spectrum of compound 61a



Figure A105 ^1H NMR spectrum of compound 61aFigure A106 ^{13}C NMR spectrum of compound 61a

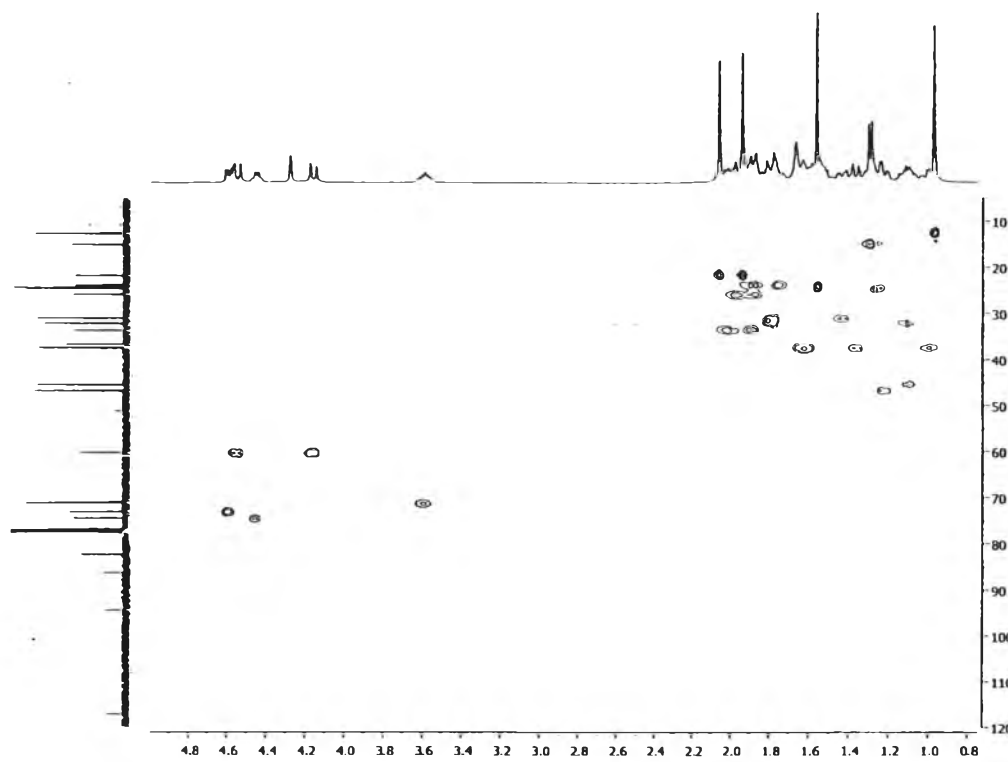


Figure A107 HSQC spectrum of compound 61a

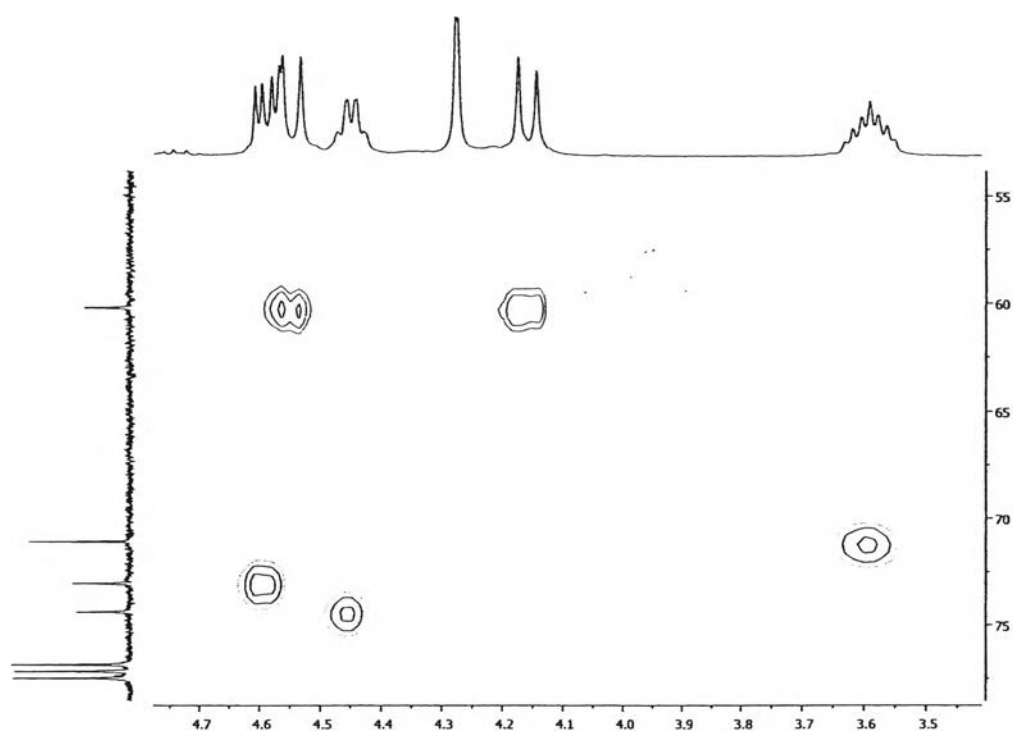


Figure A108 HSQC spectrum of compound 61a (Expansion)

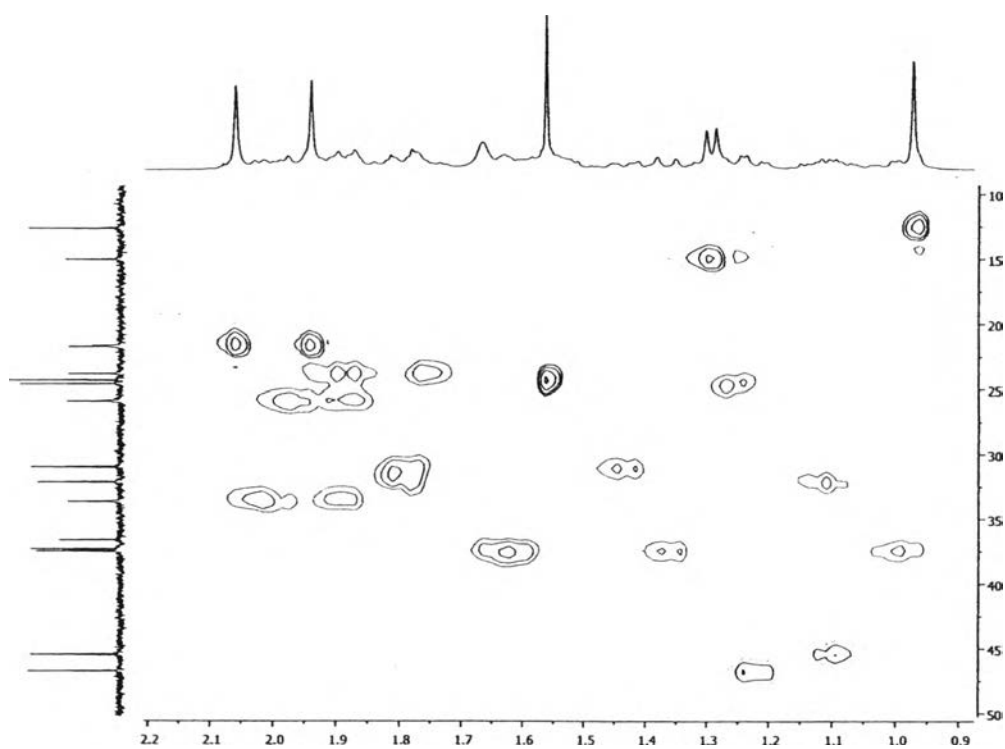


Figure A109 HSQC spectrum of compound 61a (Expansion)

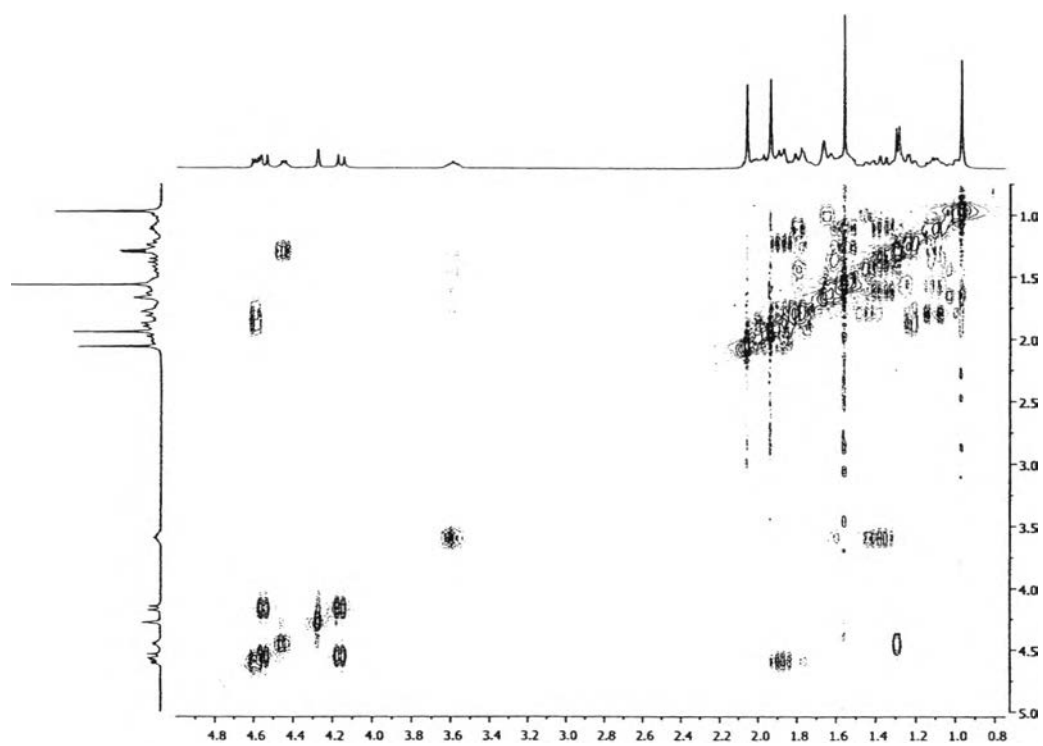


Figure A110 COSY spectrum of compound 61a



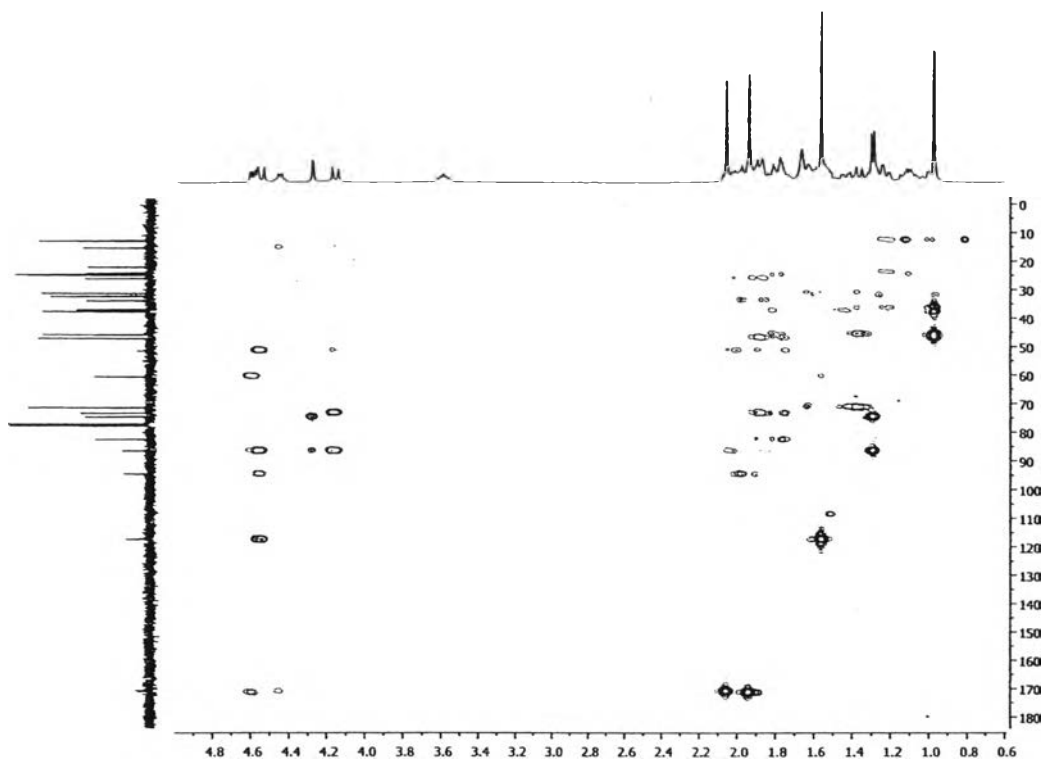


Figure A111 HMBC spectrum of compound 61a

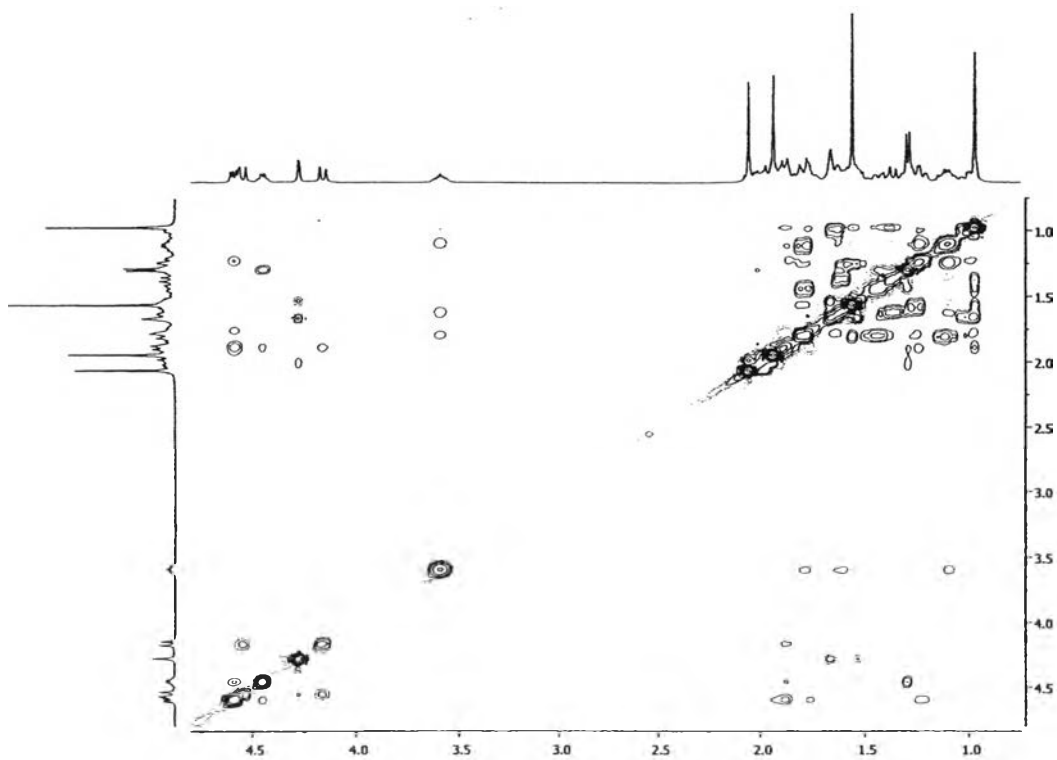


Figure A112 NOESY spectrum of compound 61a



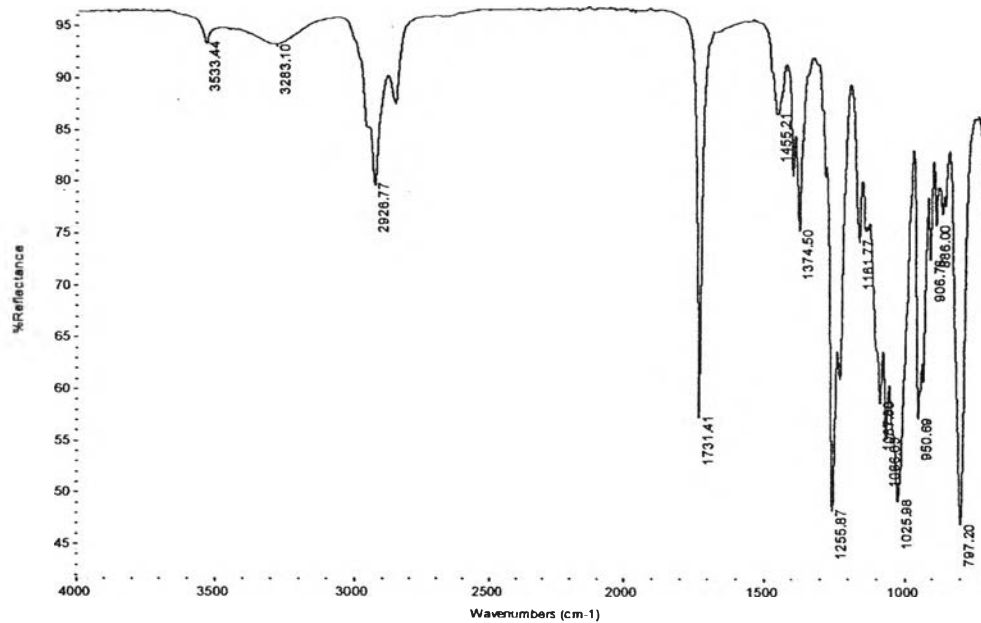


Figure A113 ATR-FTIR spectrum of compound 67a

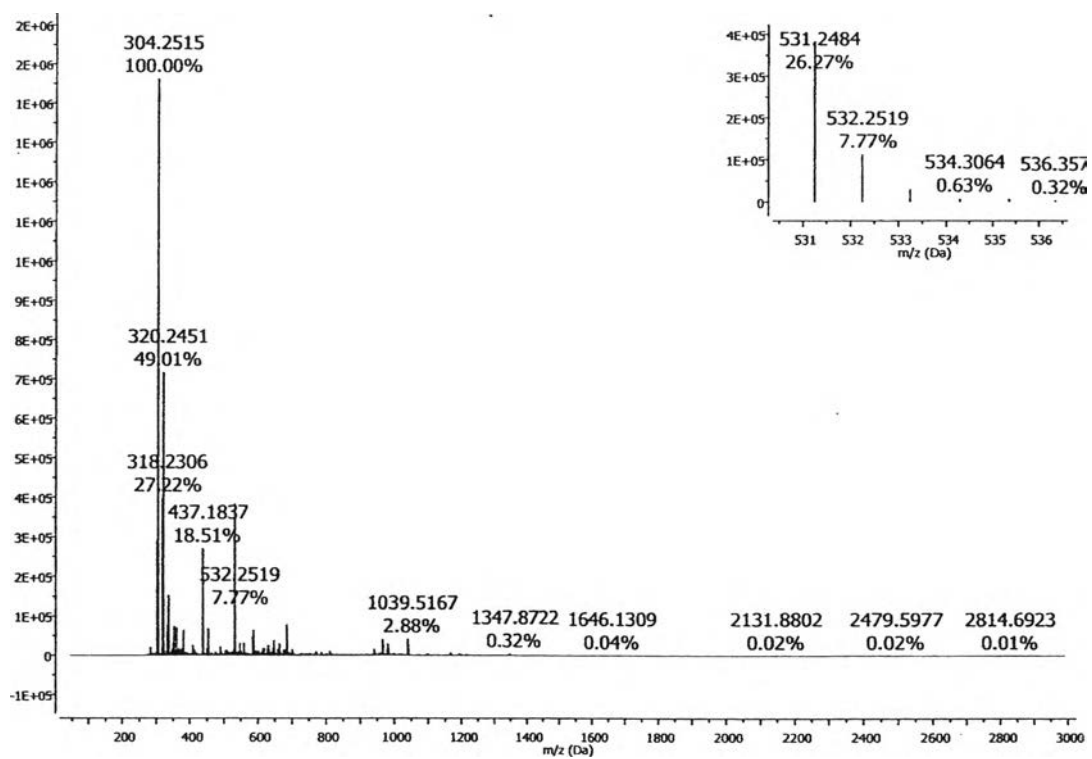
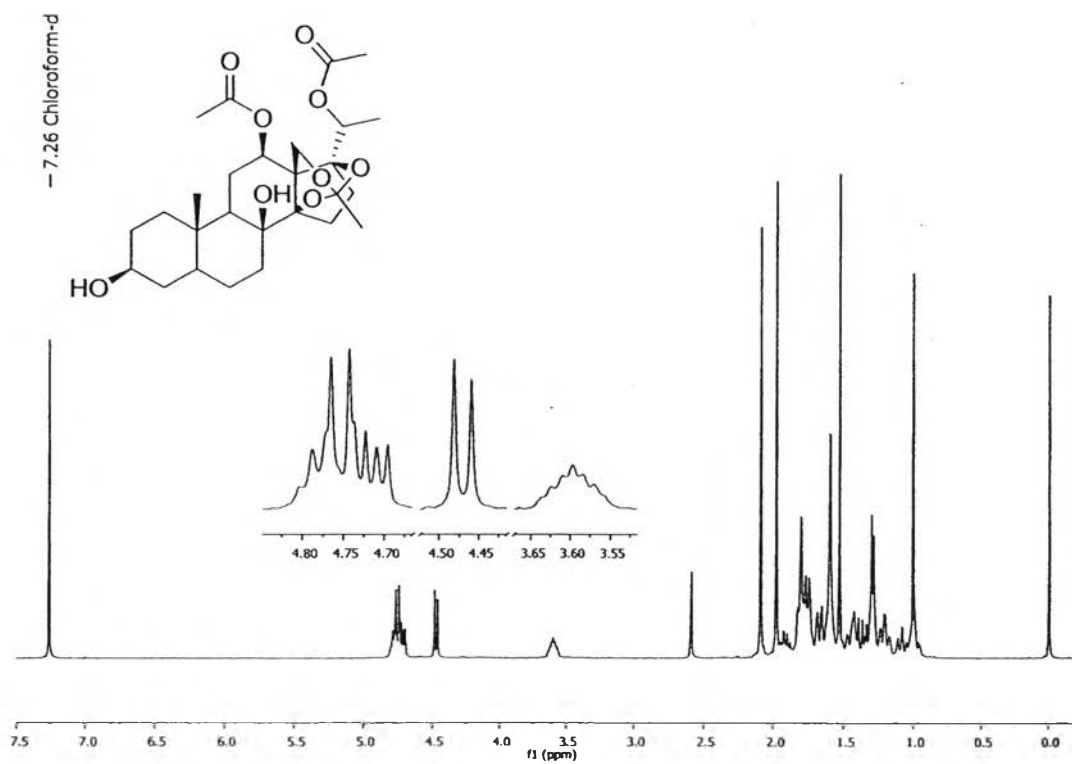
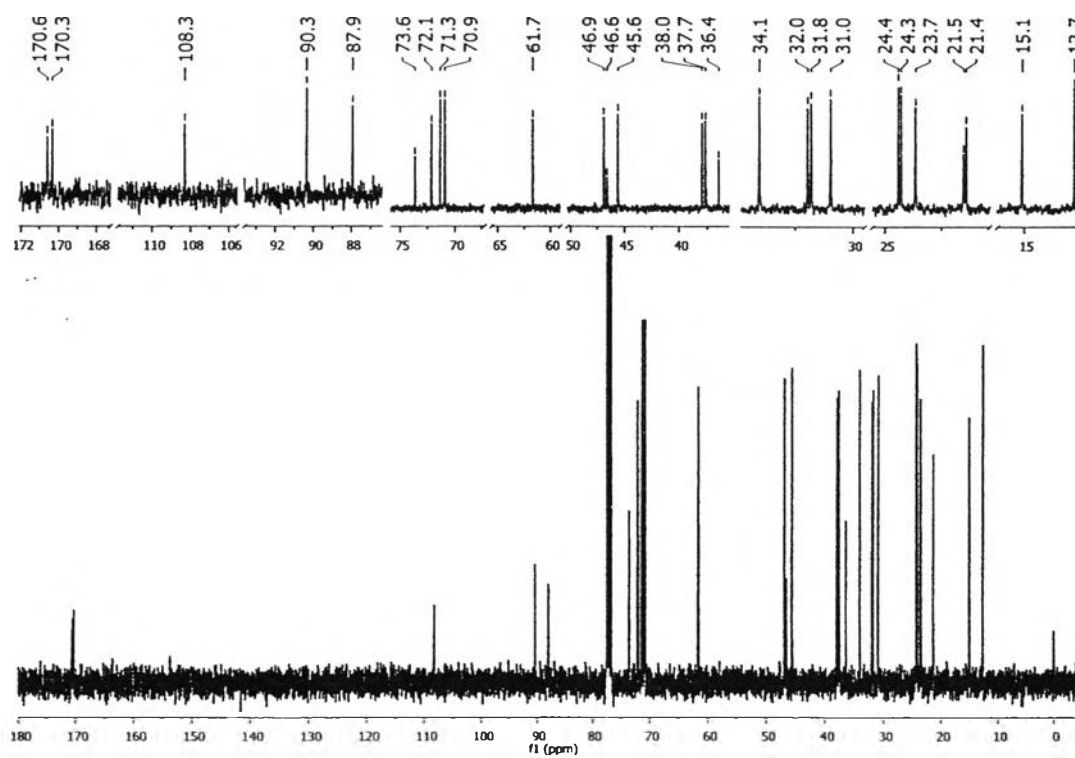


Figure A114 HR-ESIMS spectrum of compound 67a



Figure A115 ^1H NMR spectrum of compound 67aFigure A116 ^{13}C NMR spectrum of compound 67a

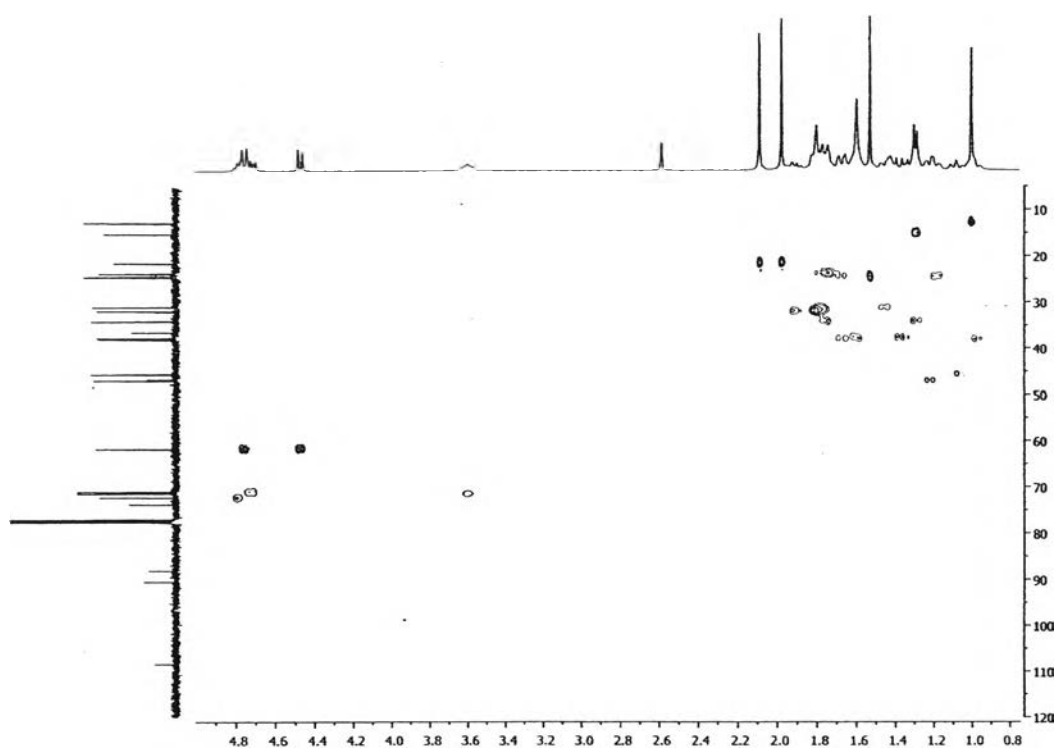


Figure A117 HSQC spectrum of compound 67a

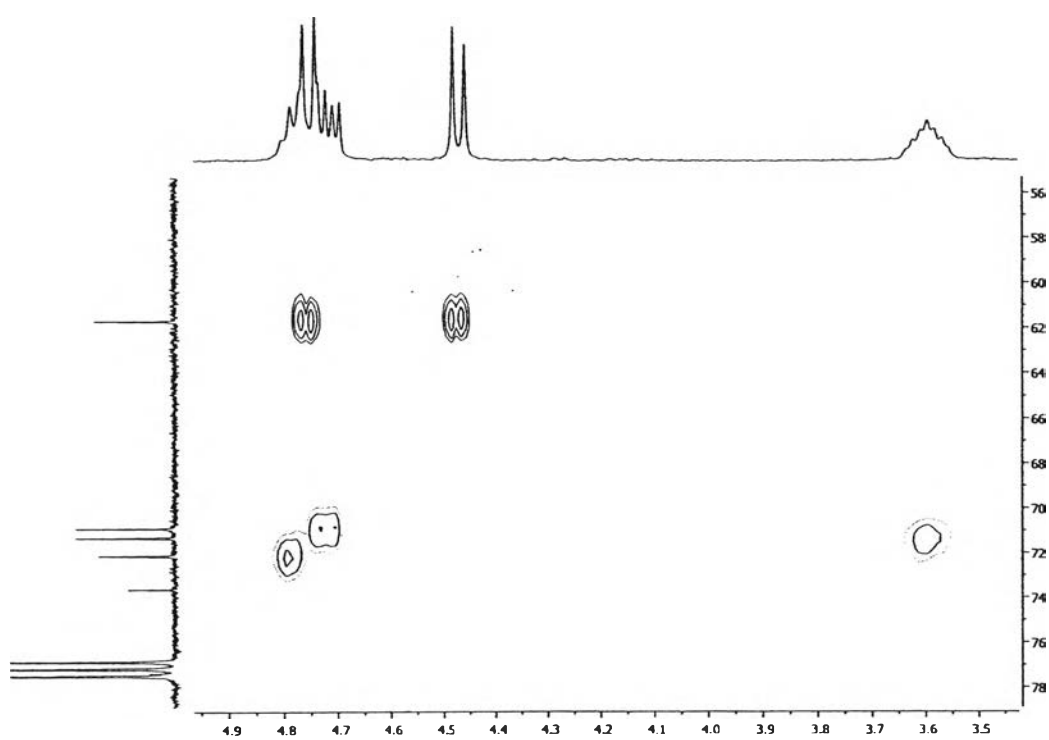


Figure A118 HSQC spectrum of compound 67a (Expansion)



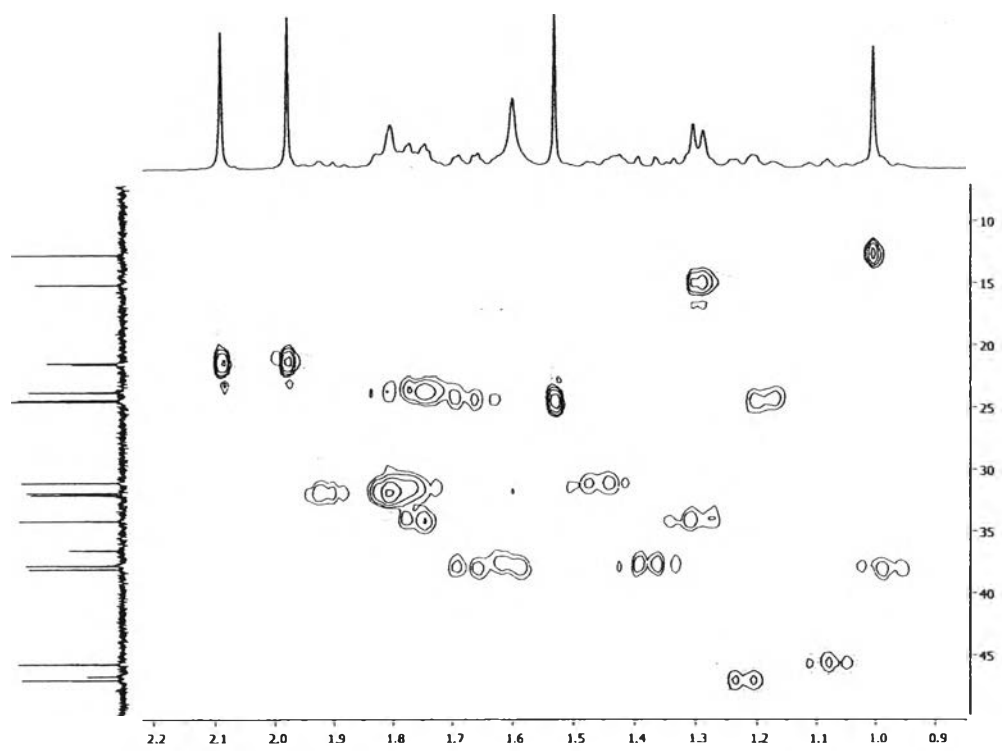


Figure A119 HSQC spectrum of compound 67a (Expansion)

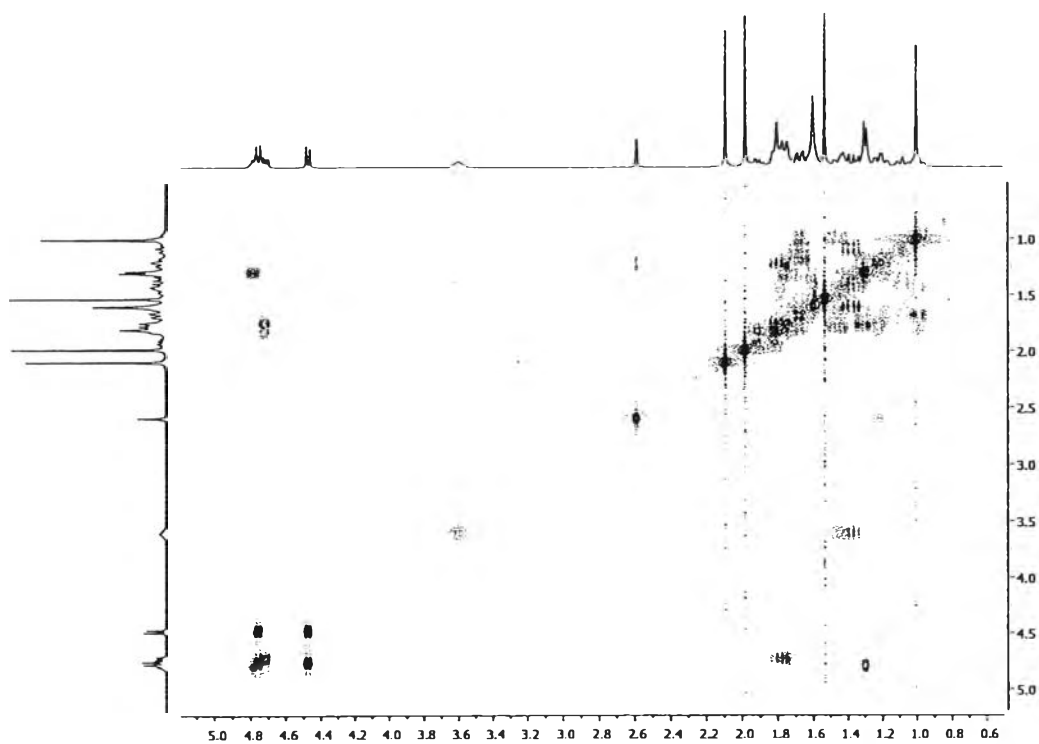


Figure A120 COSY spectrum of compound 67a



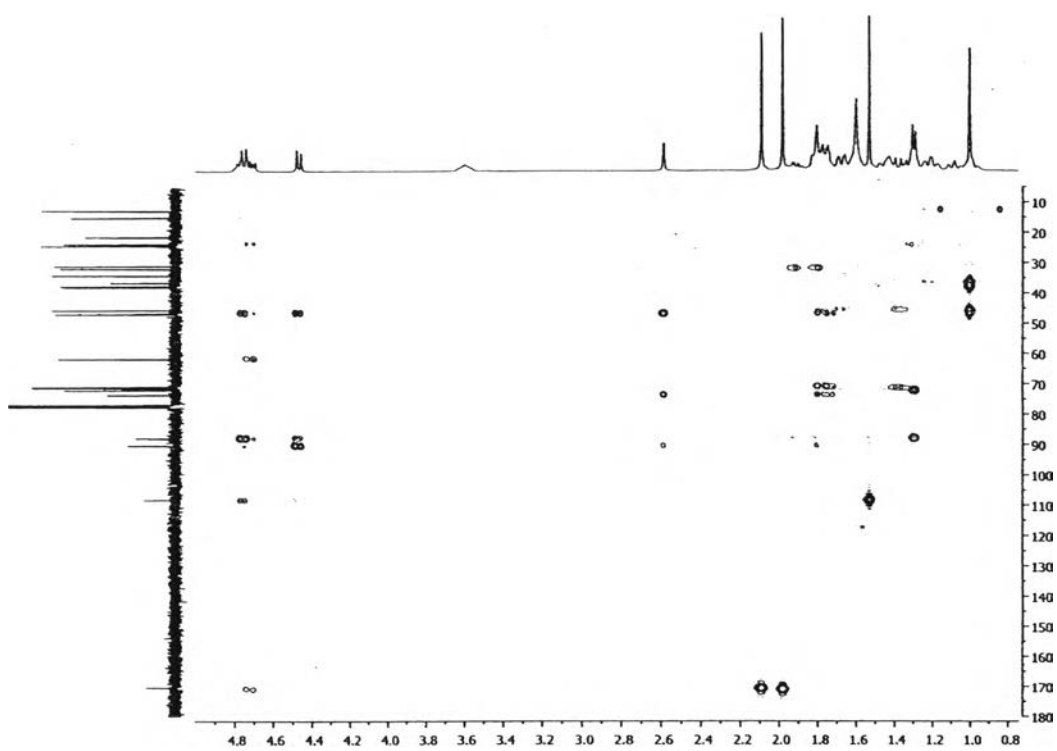


Figure A121 HMBC spectrum of compound 67a

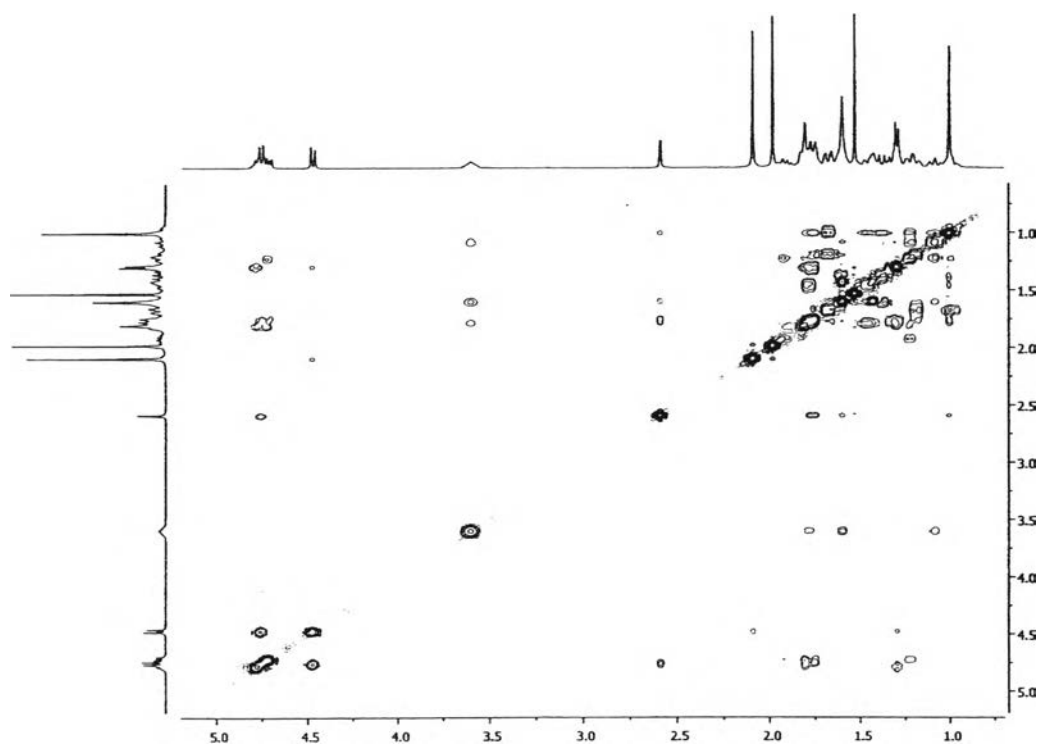
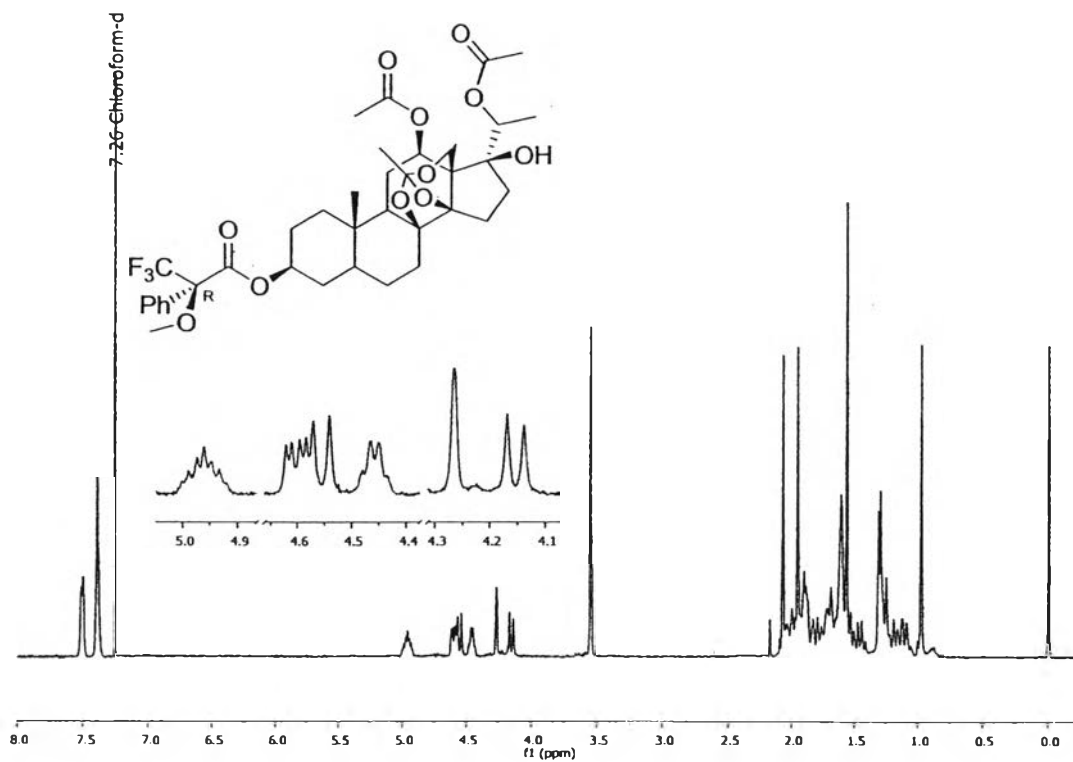
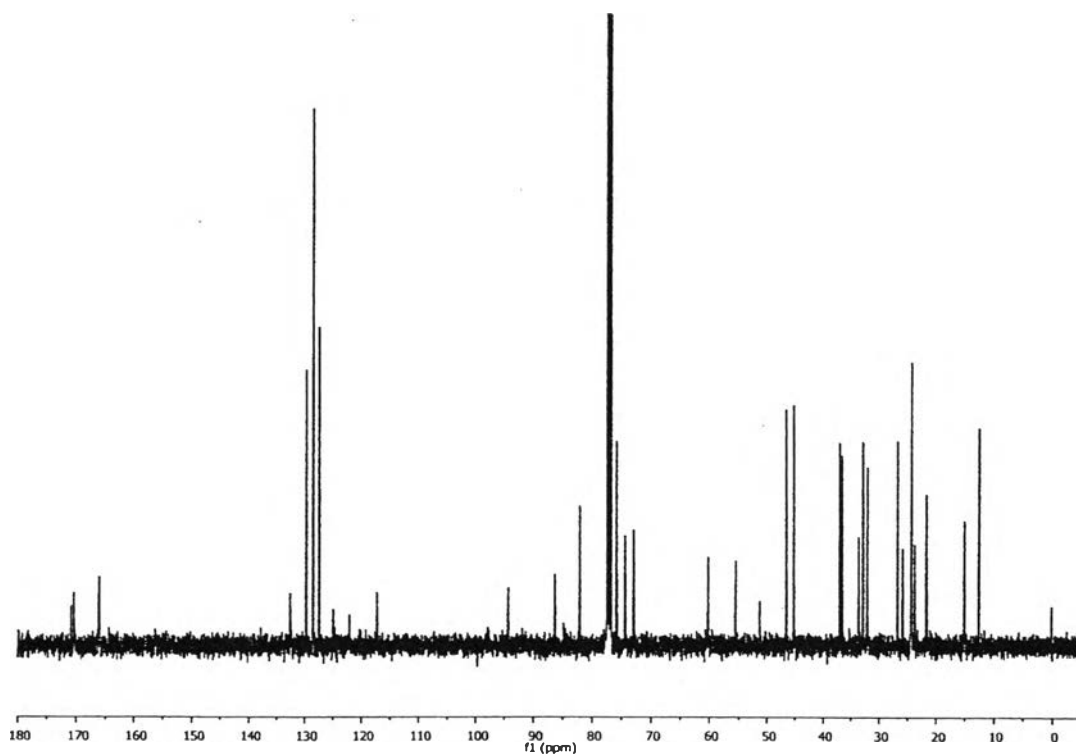
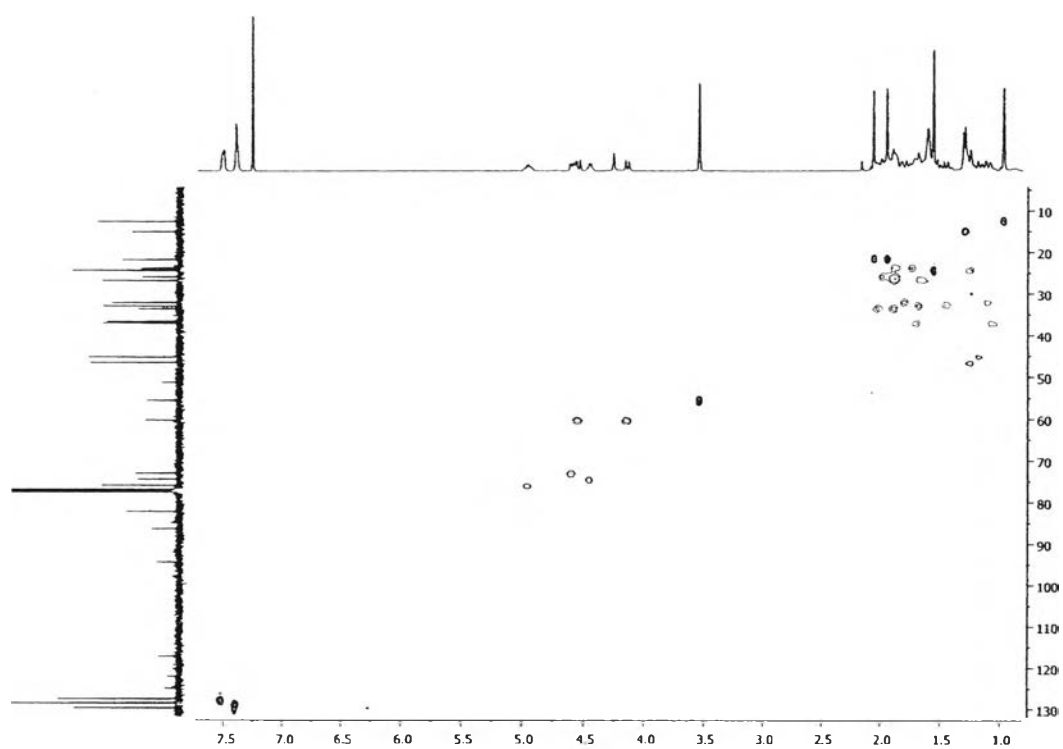
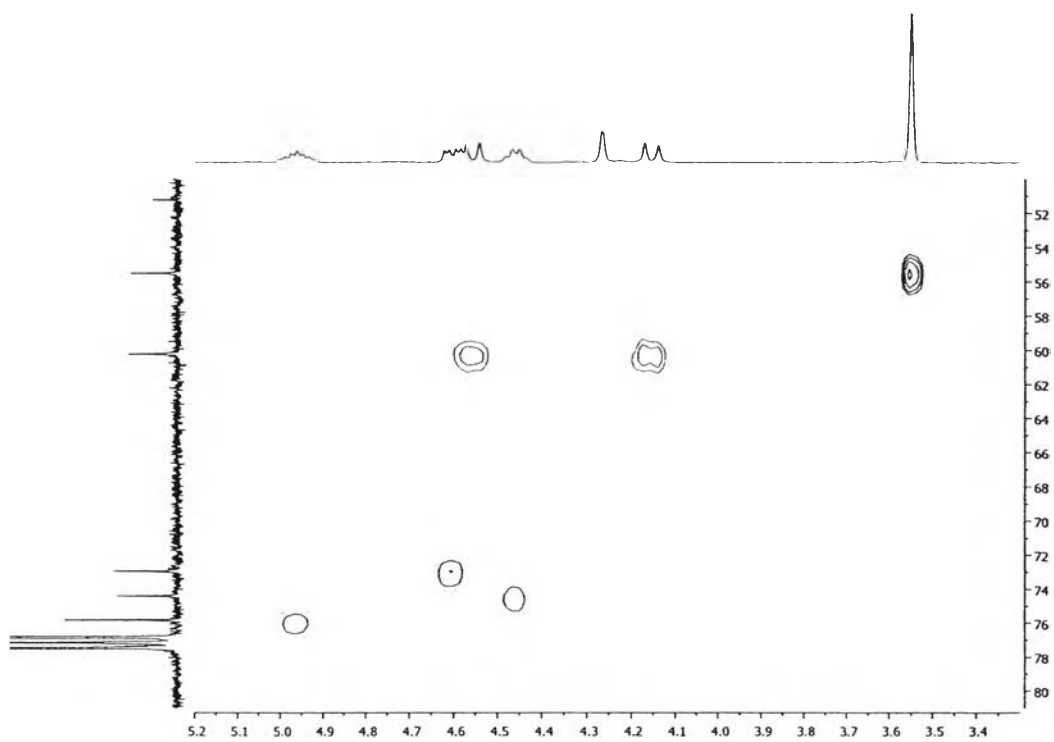
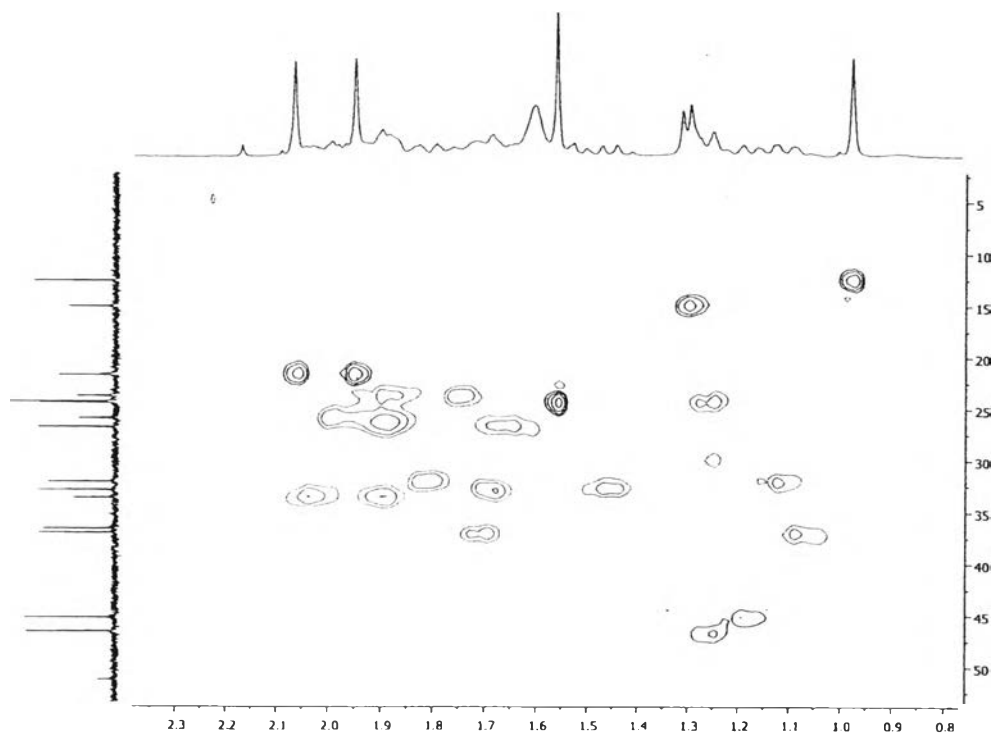
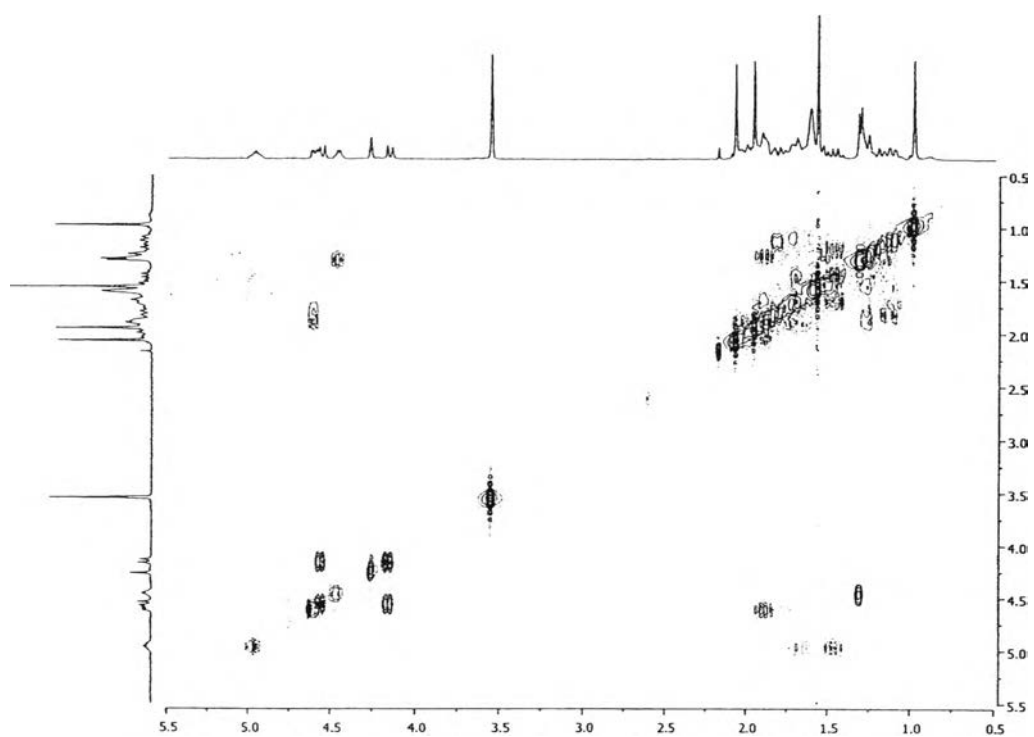


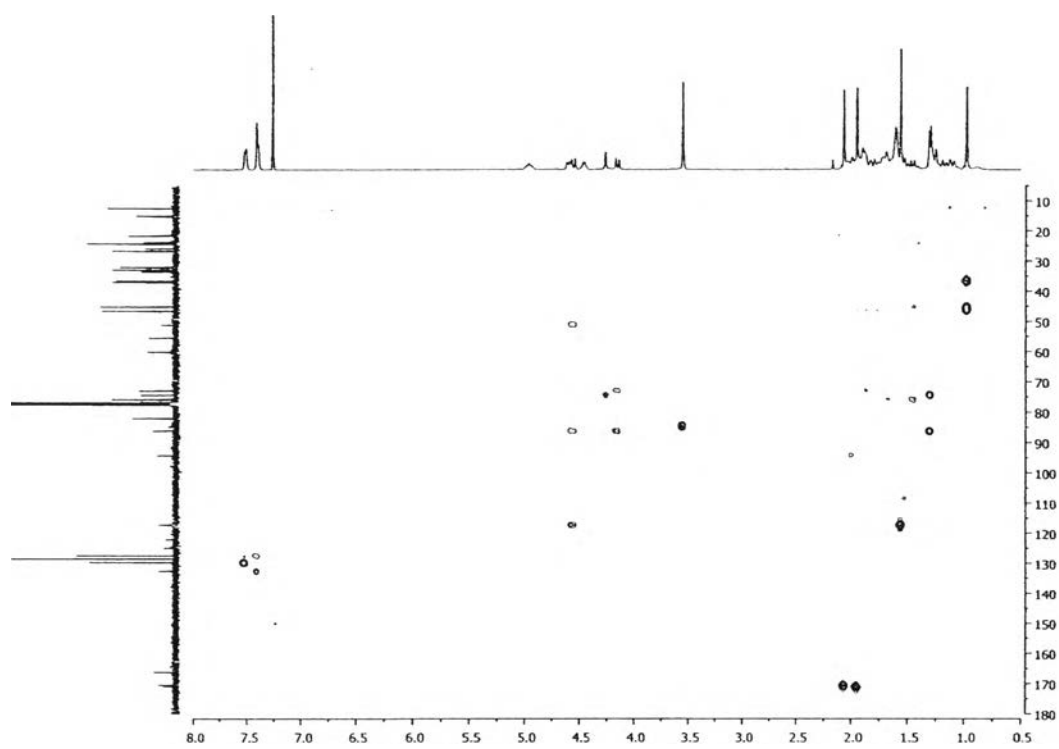
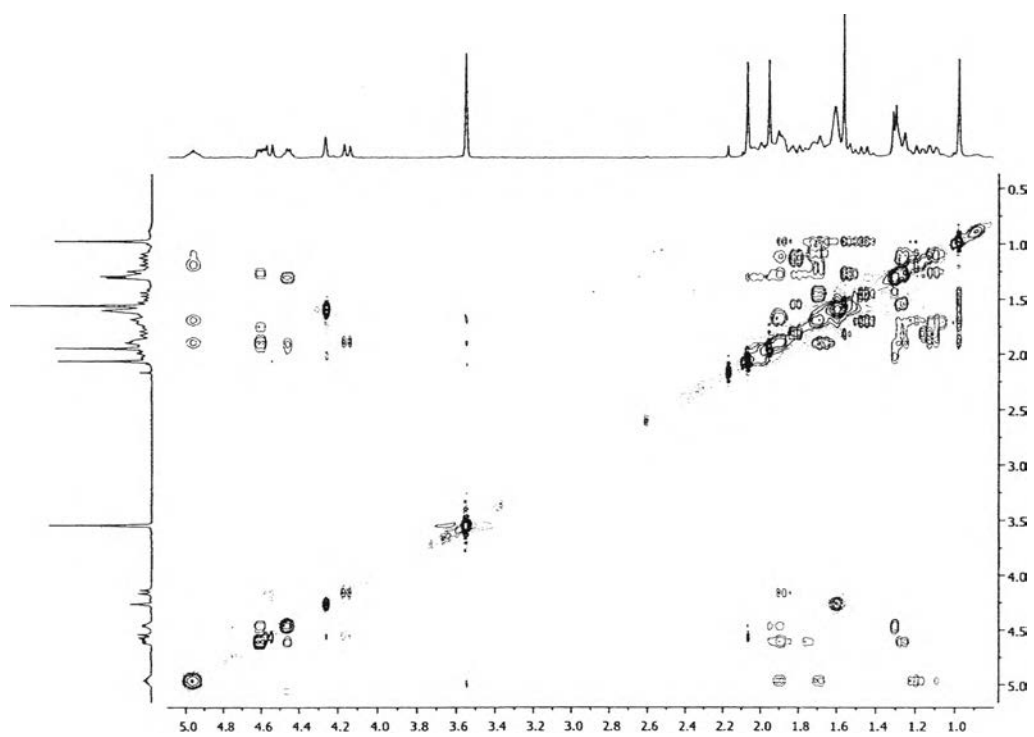
Figure A122 NOESY spectrum of compound 67a

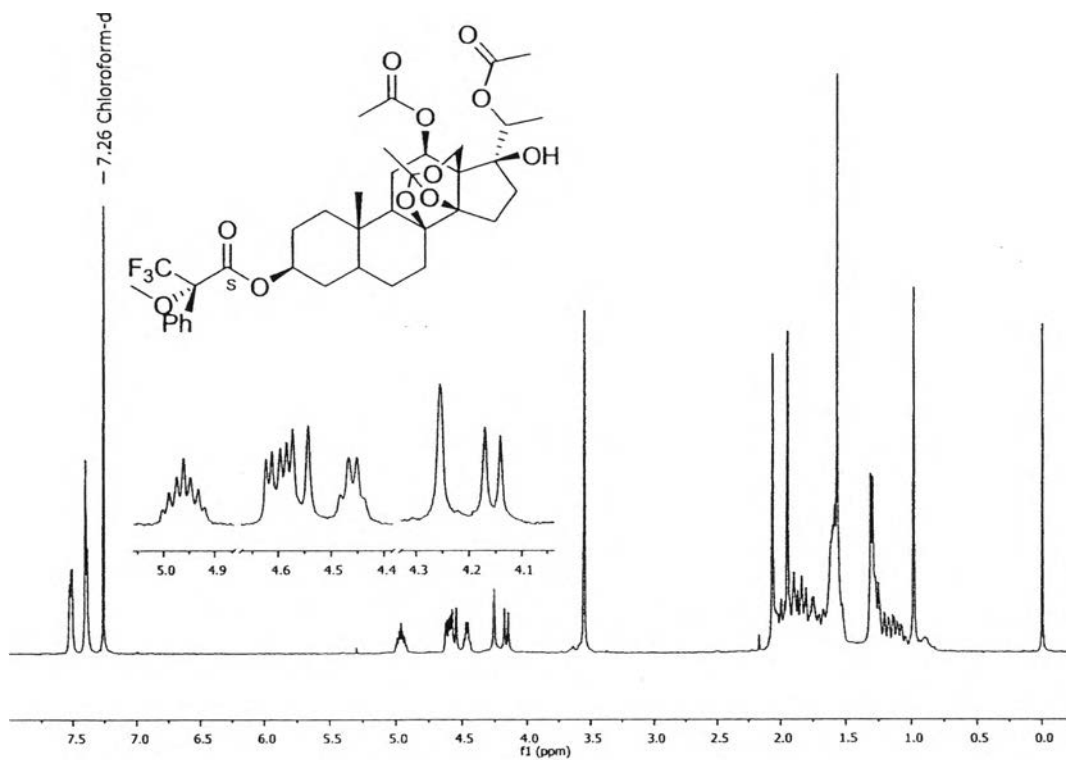
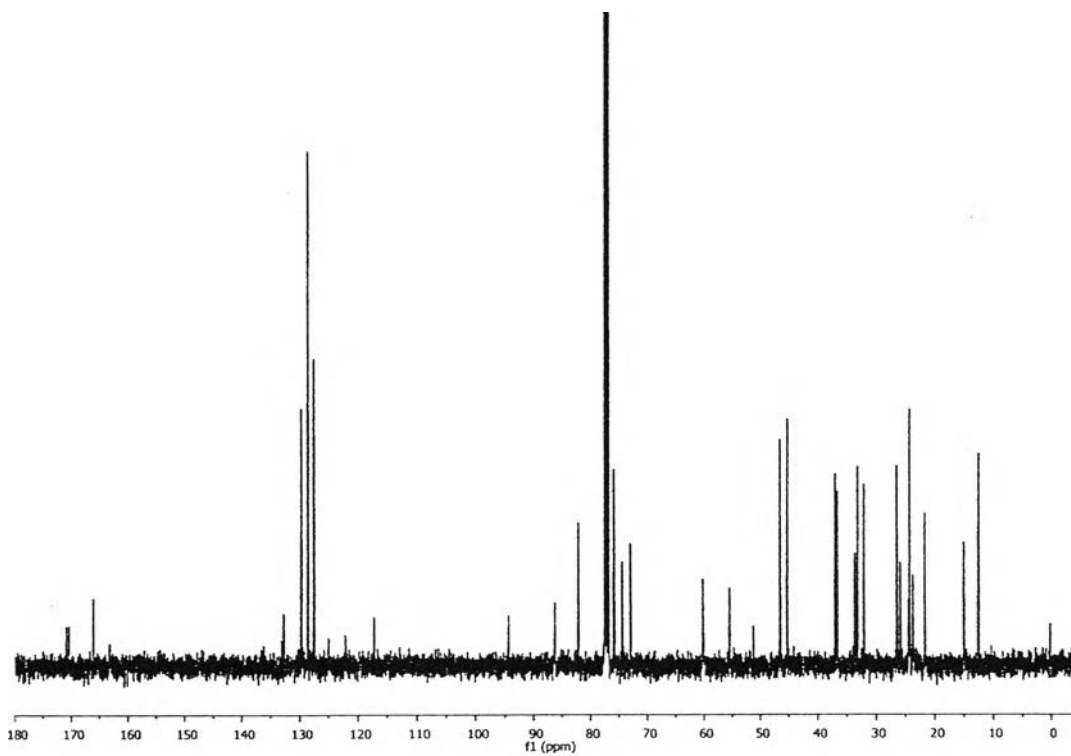


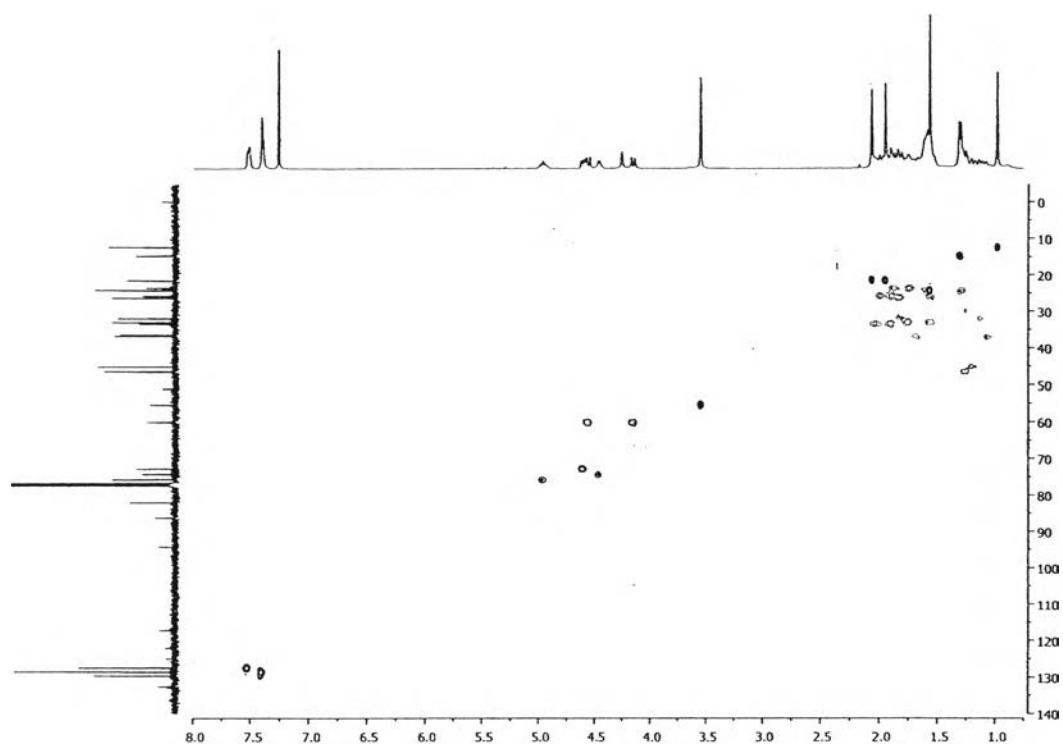
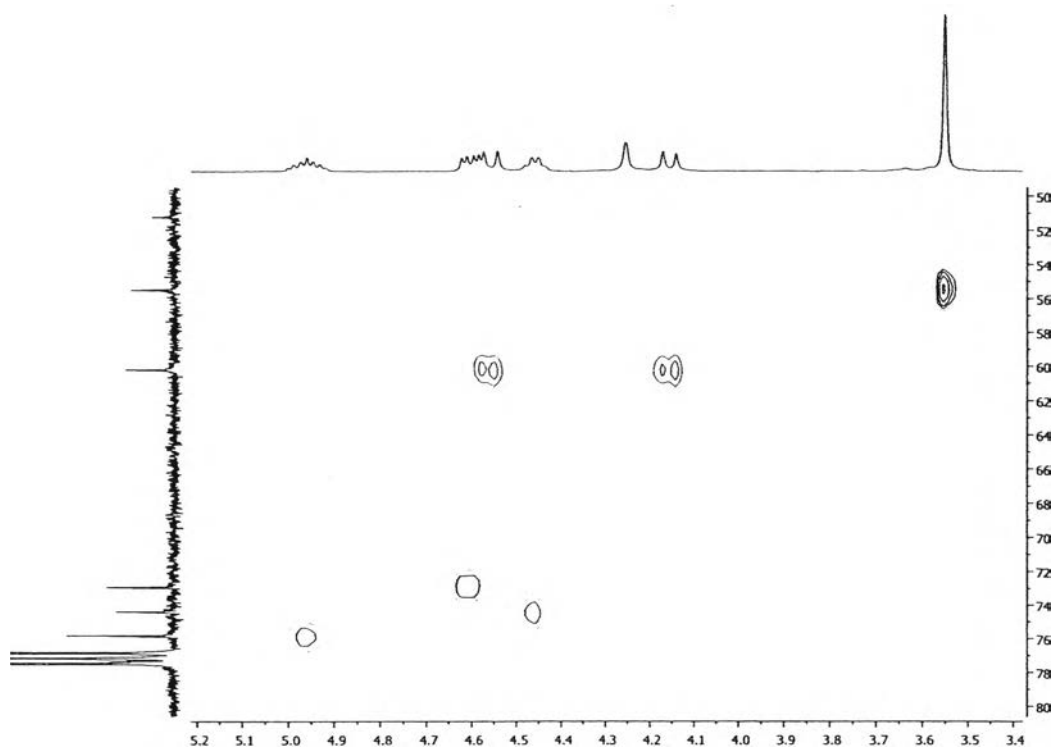
Figure A123 ^1H NMR spectrum of compound $61a_R$ Figure A124 ^{13}C NMR spectrum of compound $61a_R$

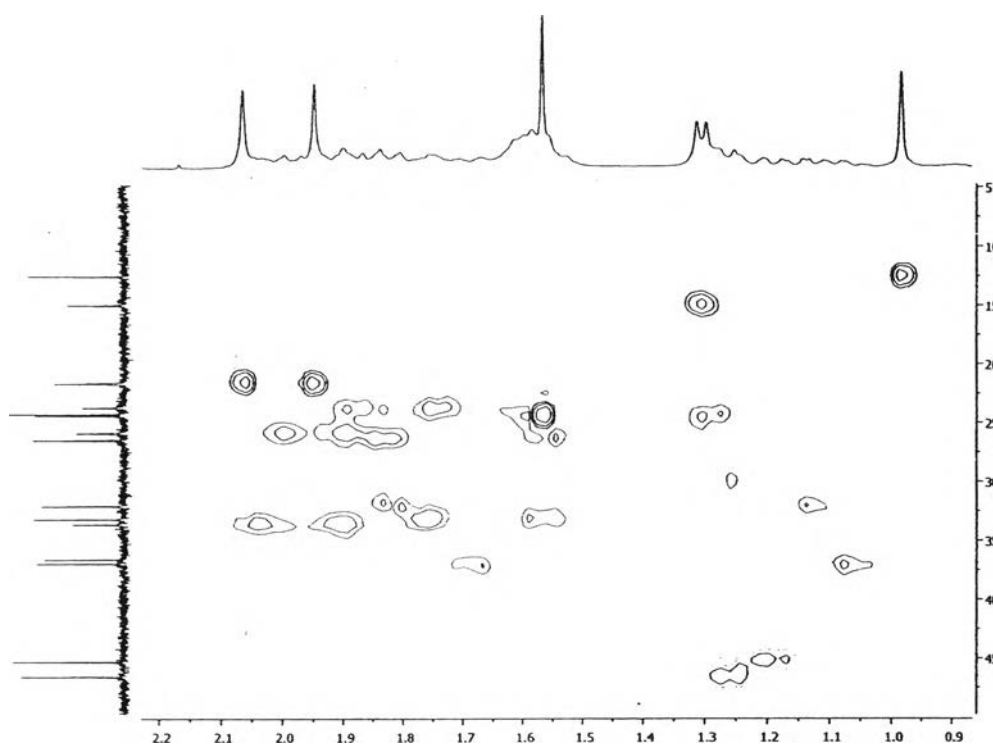
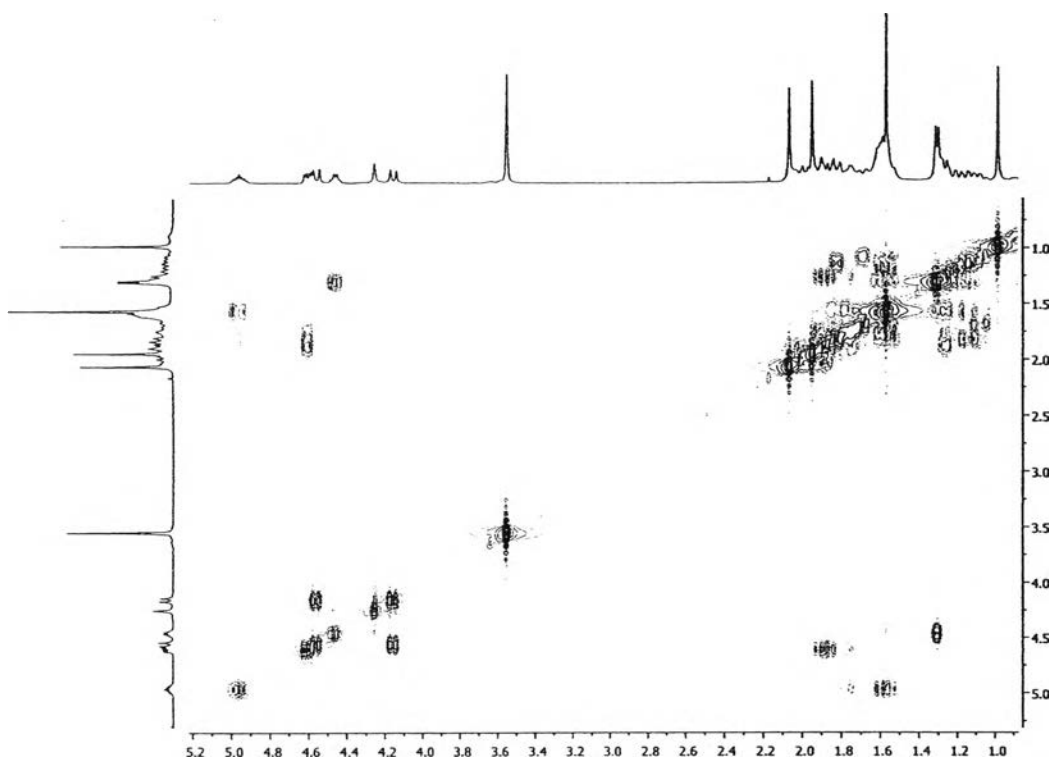
Figure A125 HSQC spectrum of compound 61a_RFigure A126 HSQC spectrum of compound 61a_R (Expansion)

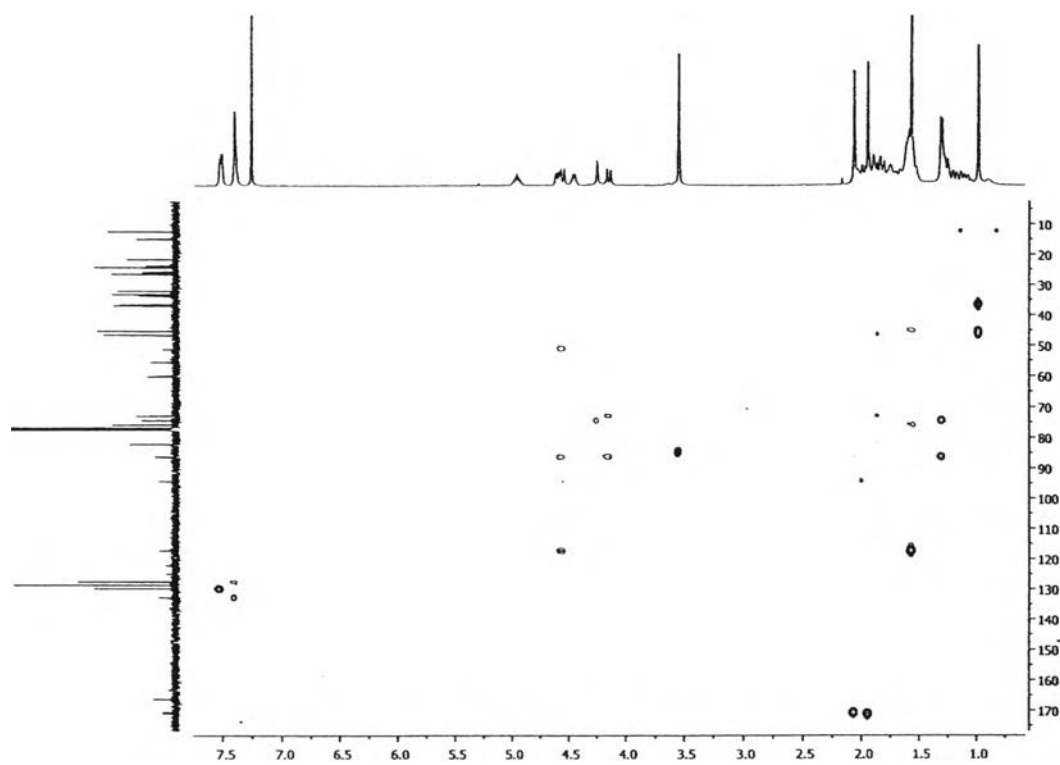
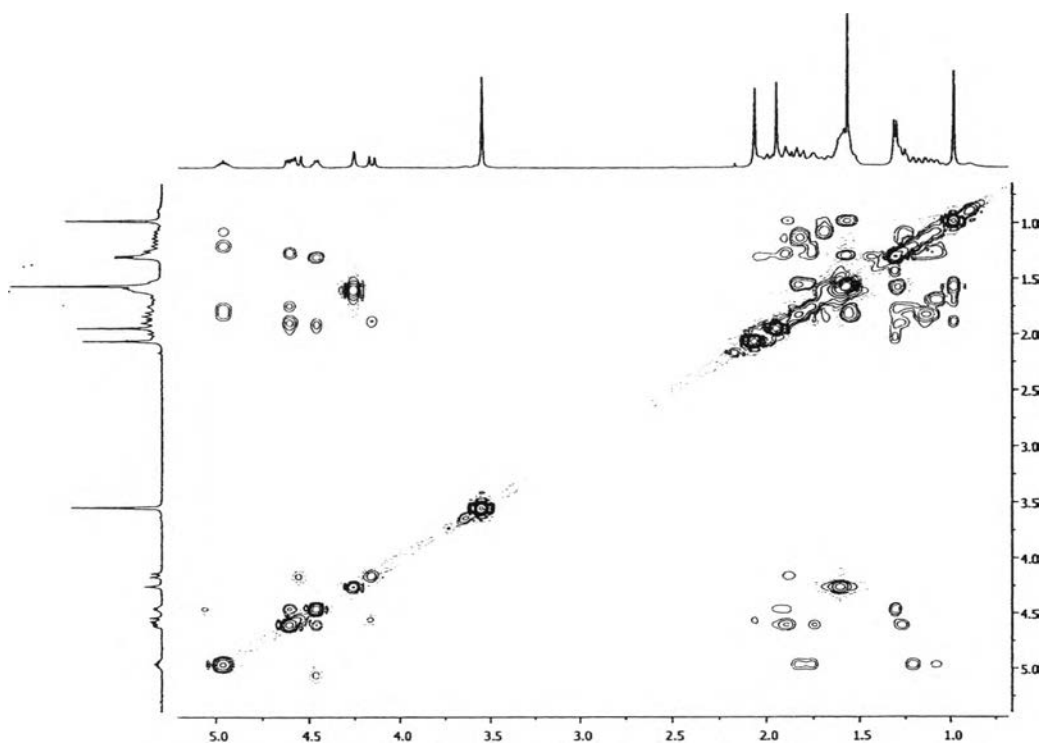
Figure A127 HSQC spectrum of compound 61a_R (Expansion)Figure A128 COSY spectrum of compound 61a_R

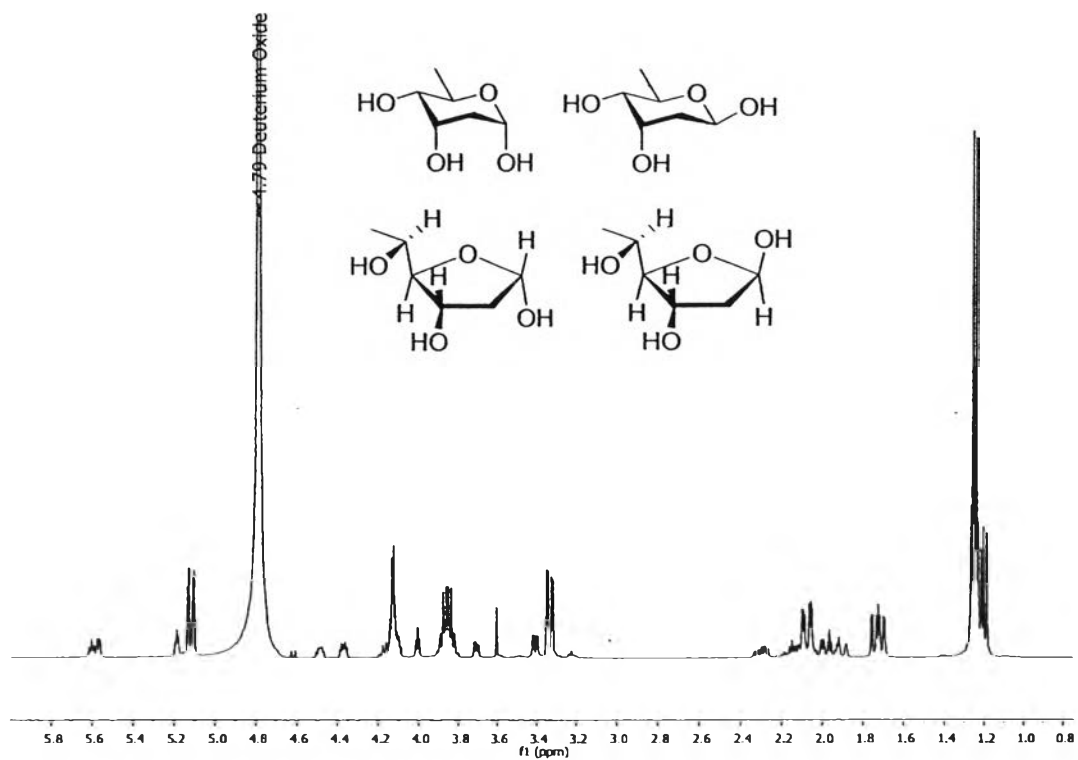
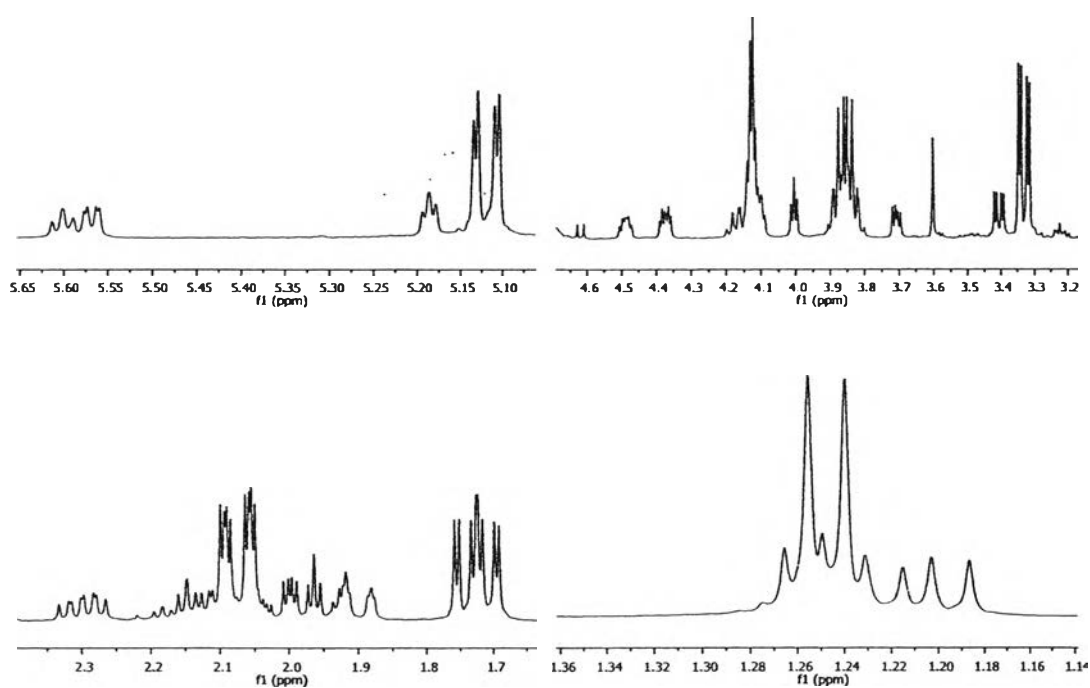
Figure A129 HMBC spectrum of compound 61a_RFigure A130 NOESY spectrum of compound 61a_R

Figure A131 ^1H NMR spectrum of compound 61a₅Figure A132 ^{13}C NMR spectrum of compound 61a₅

Figure A133 HSQC spectrum of compound 61a₅Figure A134 HSQC spectrum of compound 61a₅ (Expansion)

Figure A135 HSQC spectrum of compound 61a₅ (Expansion)Figure A136 COSY spectrum of compound 61a₅

Figure A137 HMBC spectrum of compound 61a₅Figure A138 NOESY spectrum of compound 61a₅

Figure A139 ^1H NMR spectrum of compound 69Figure A140 ^1H NMR spectrum of compound 69 (Expansion)

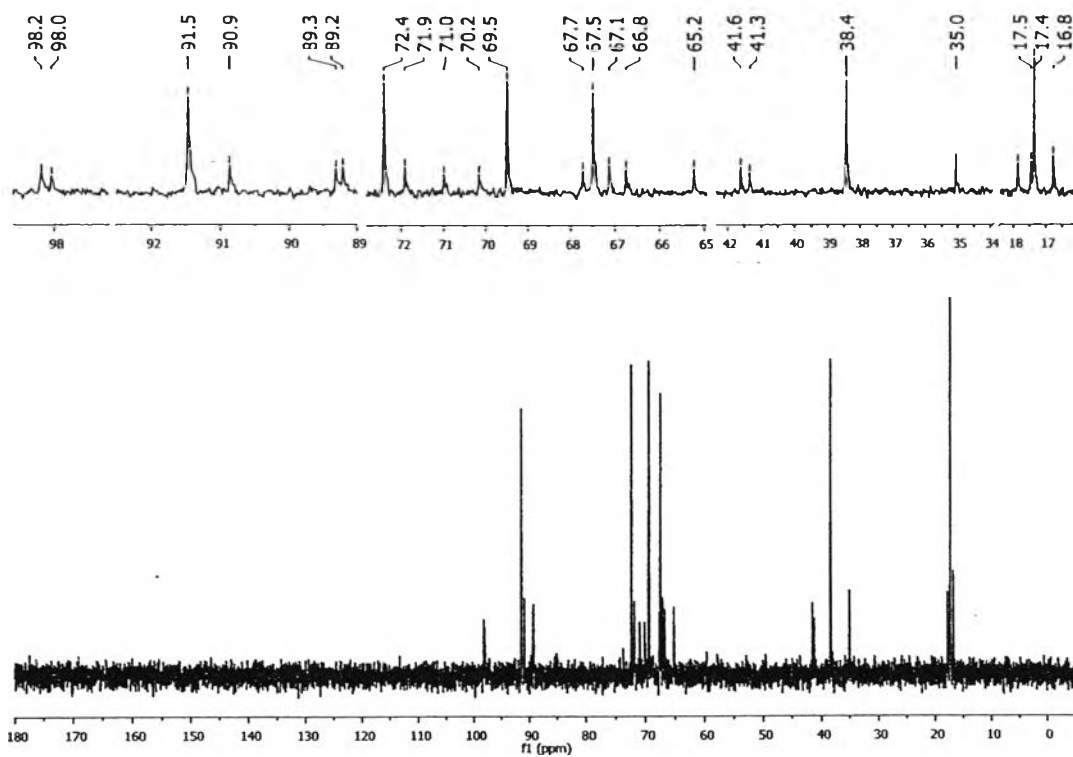
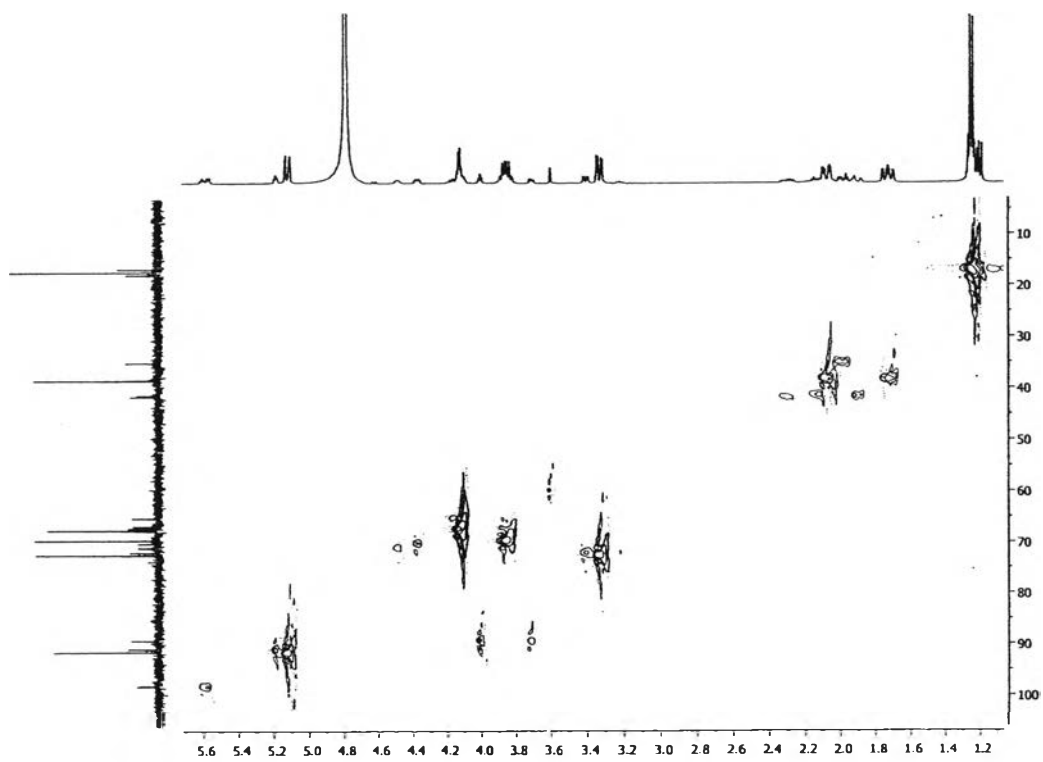
Figure A141 ^{13}C NMR spectrum of compound 69

Figure A142 HSQC NMR spectrum of compound 69



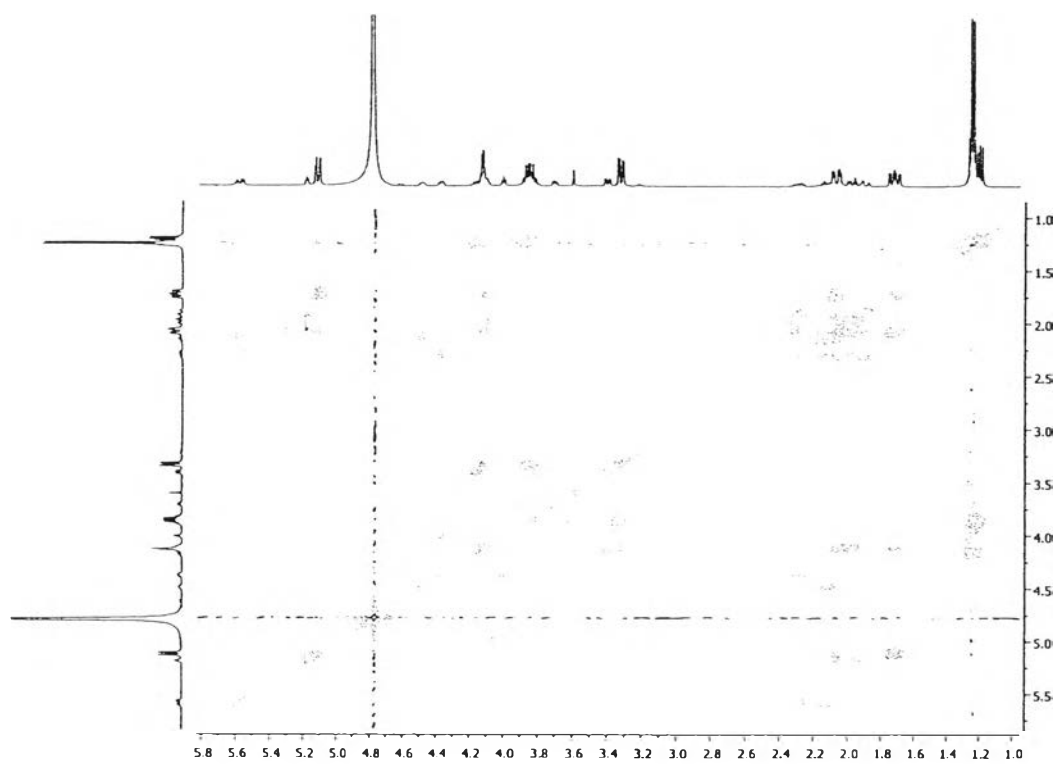


Figure A143 COSY NMR spectrum of compound 69

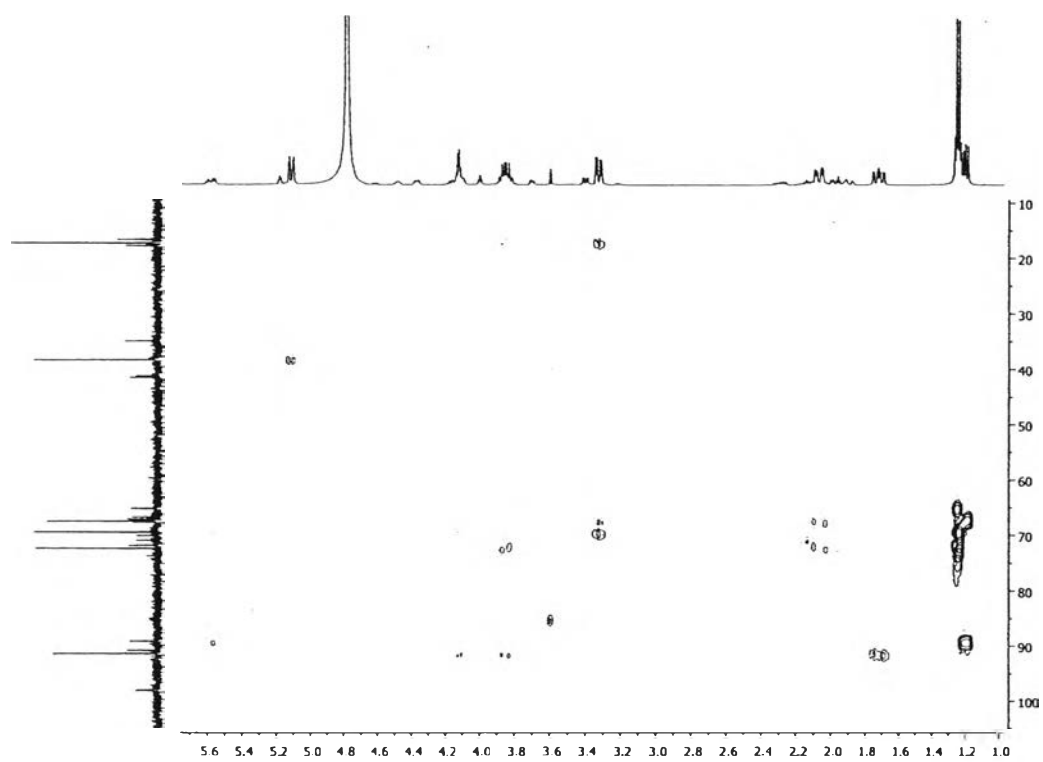
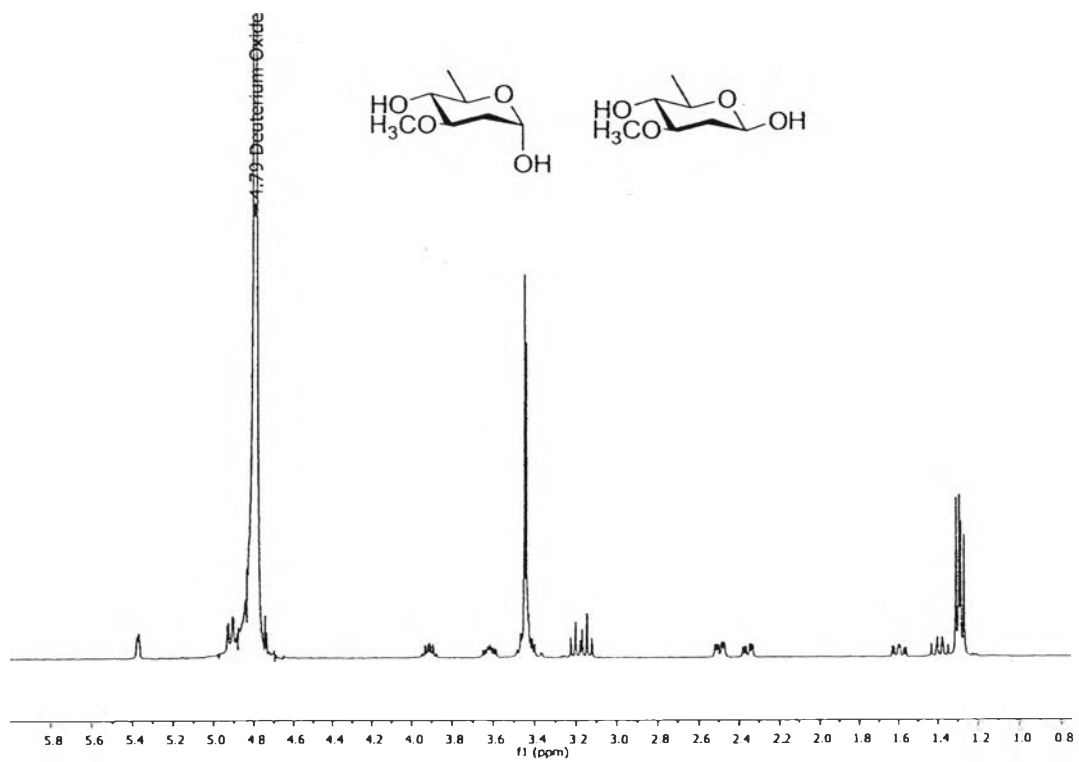
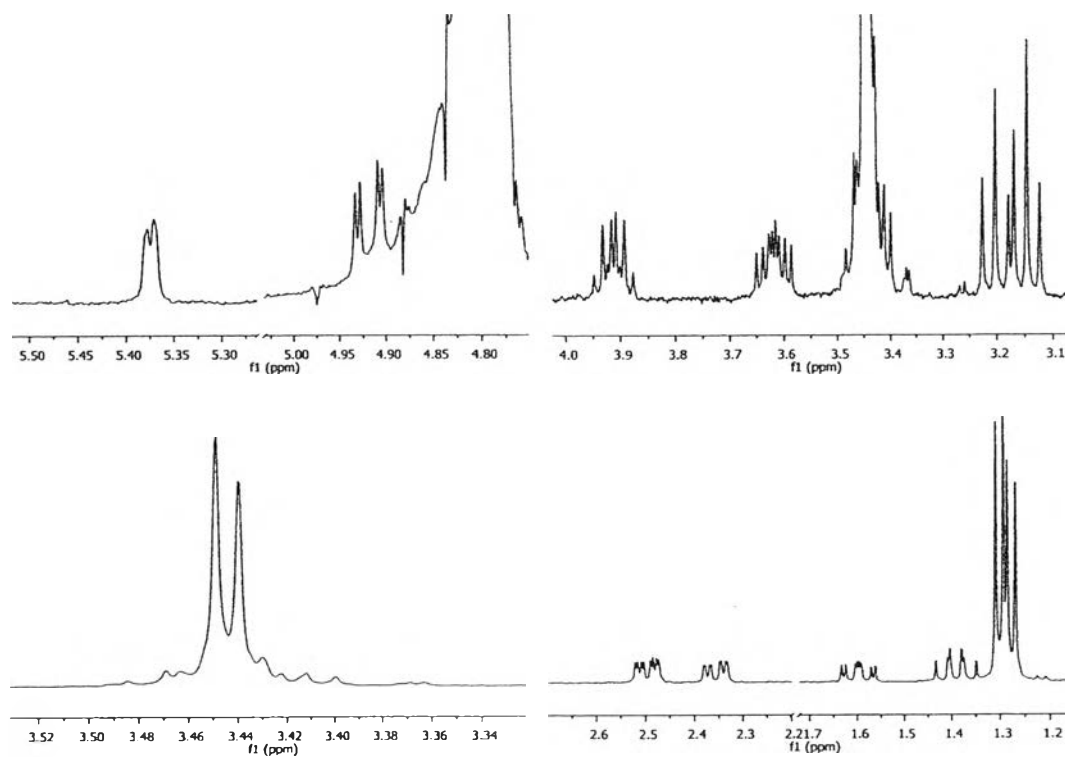
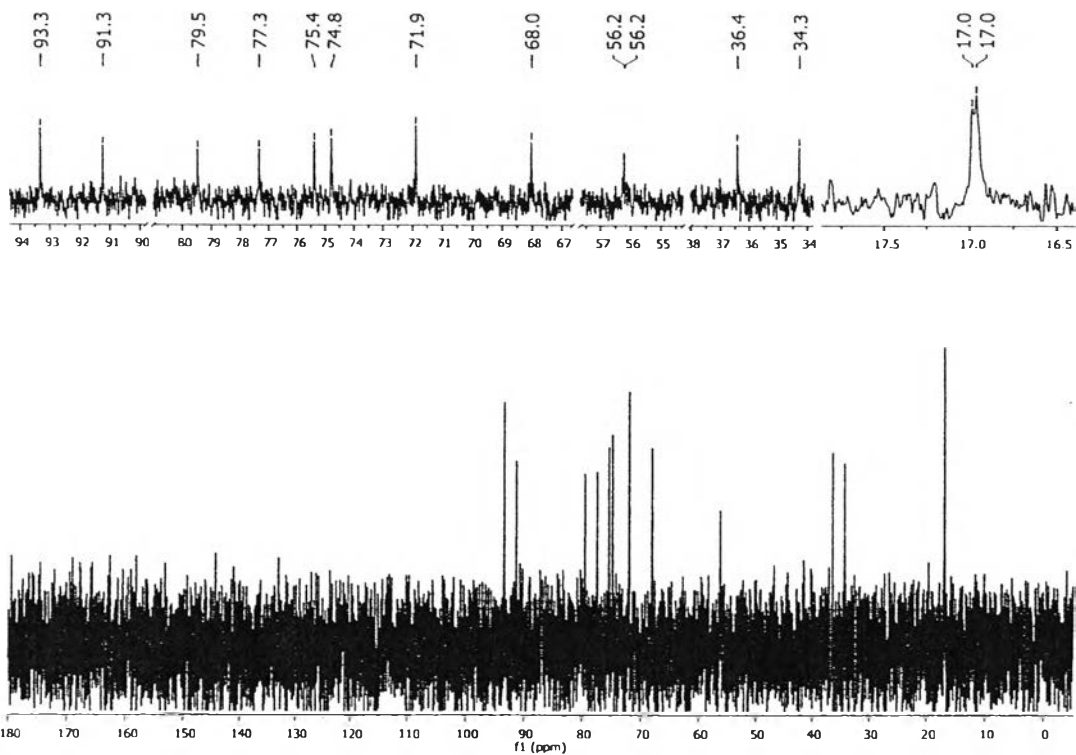
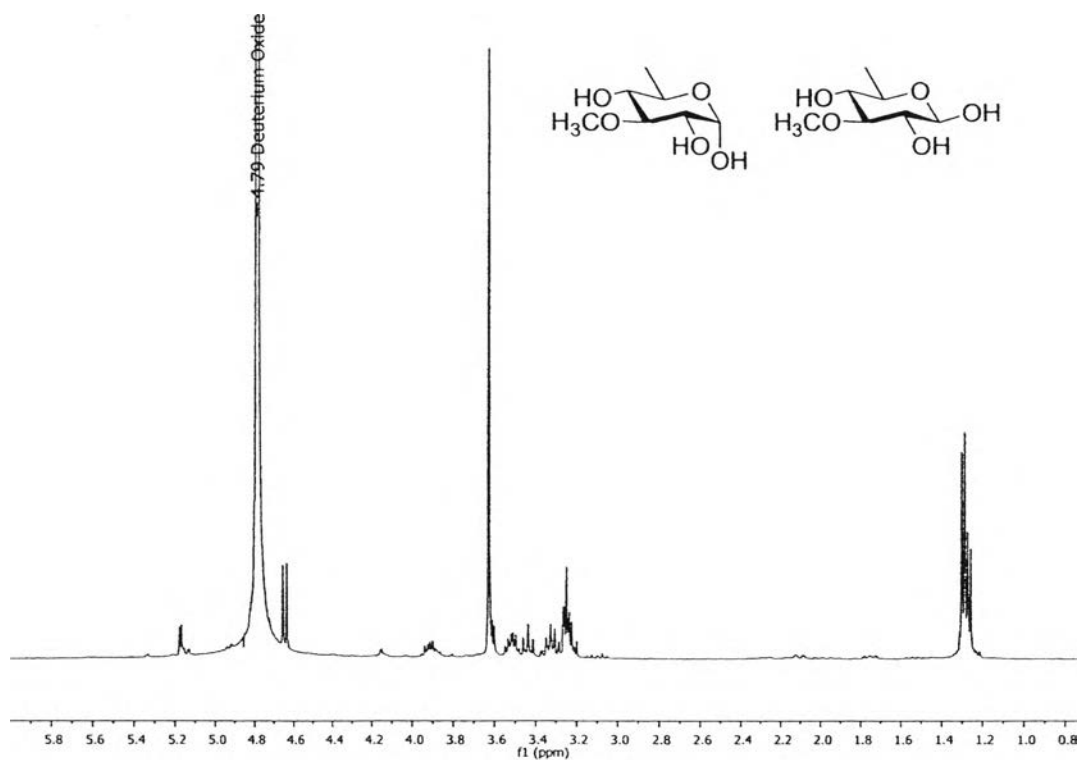
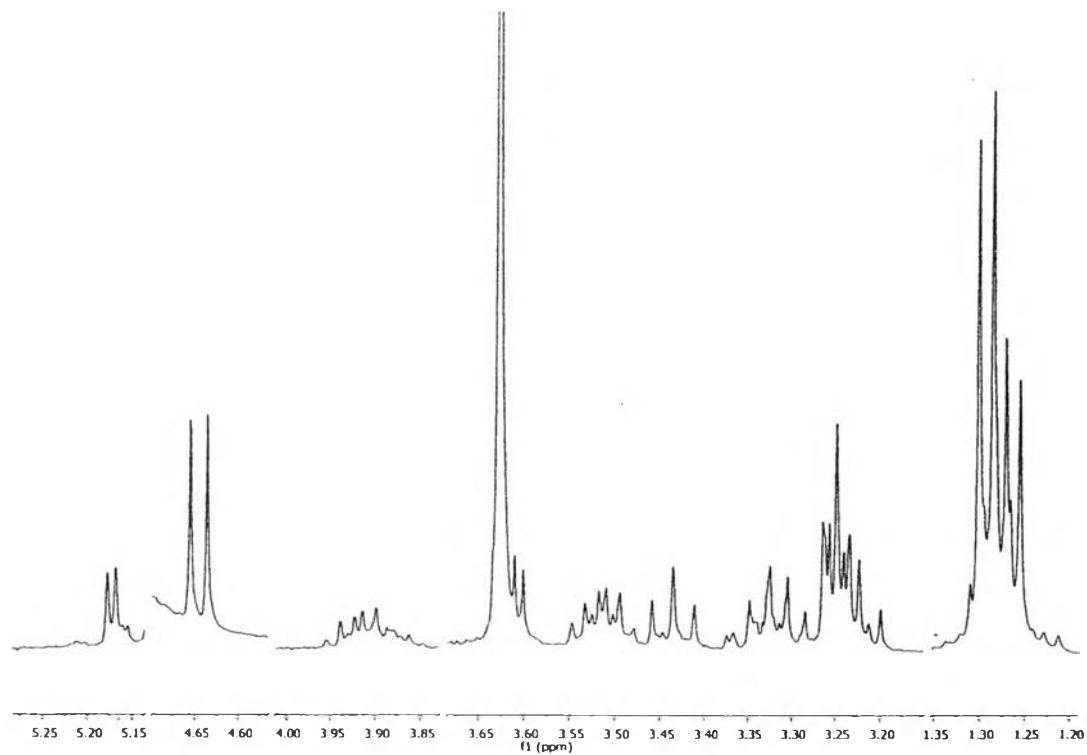
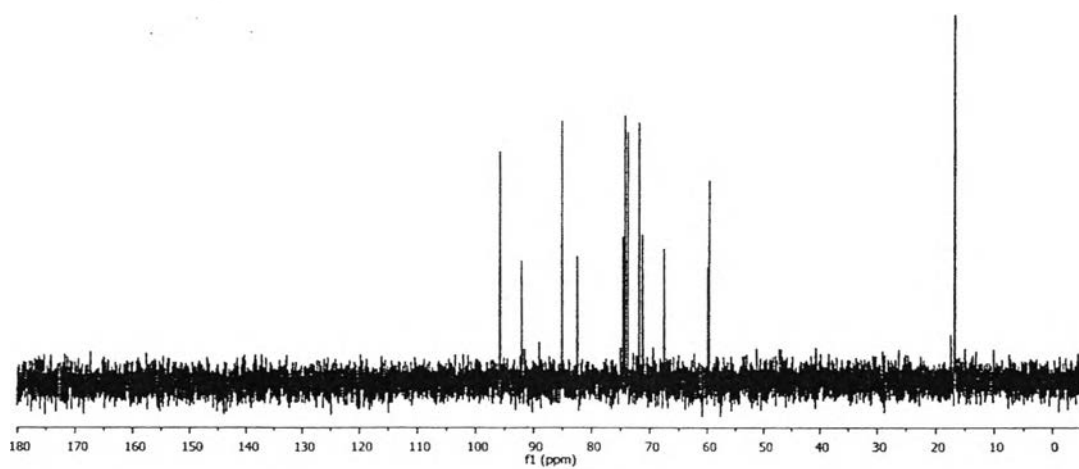
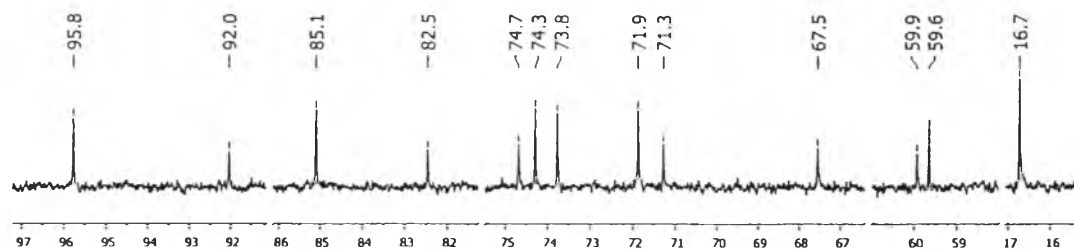


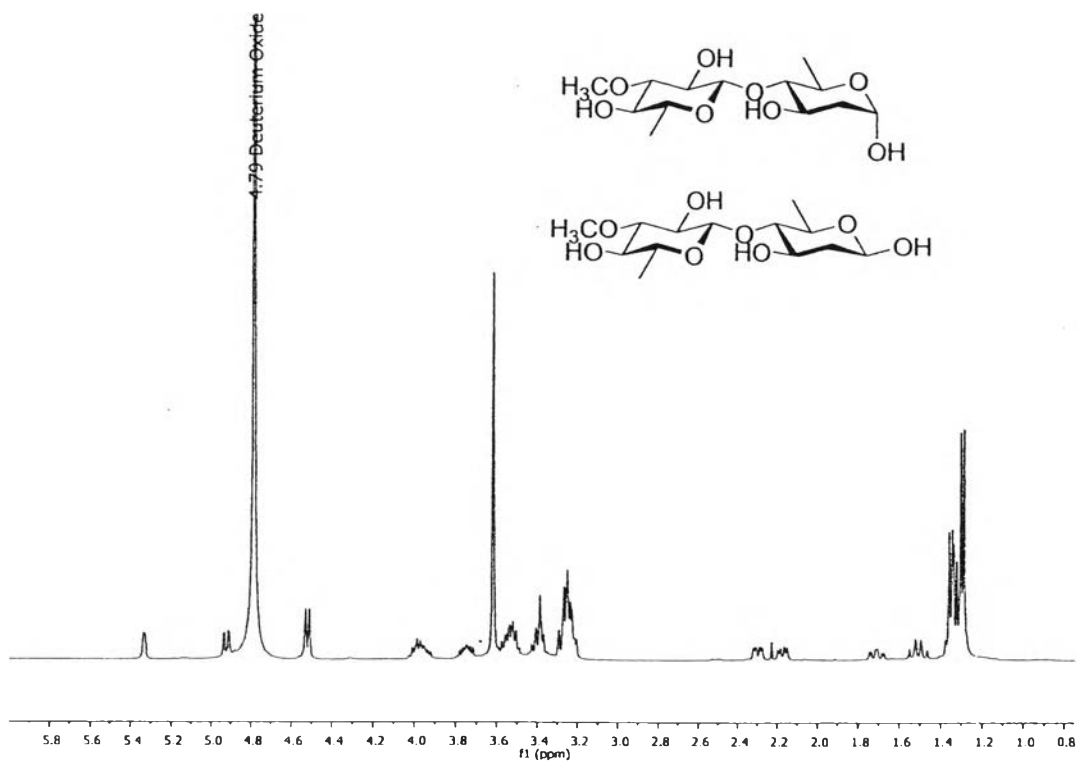
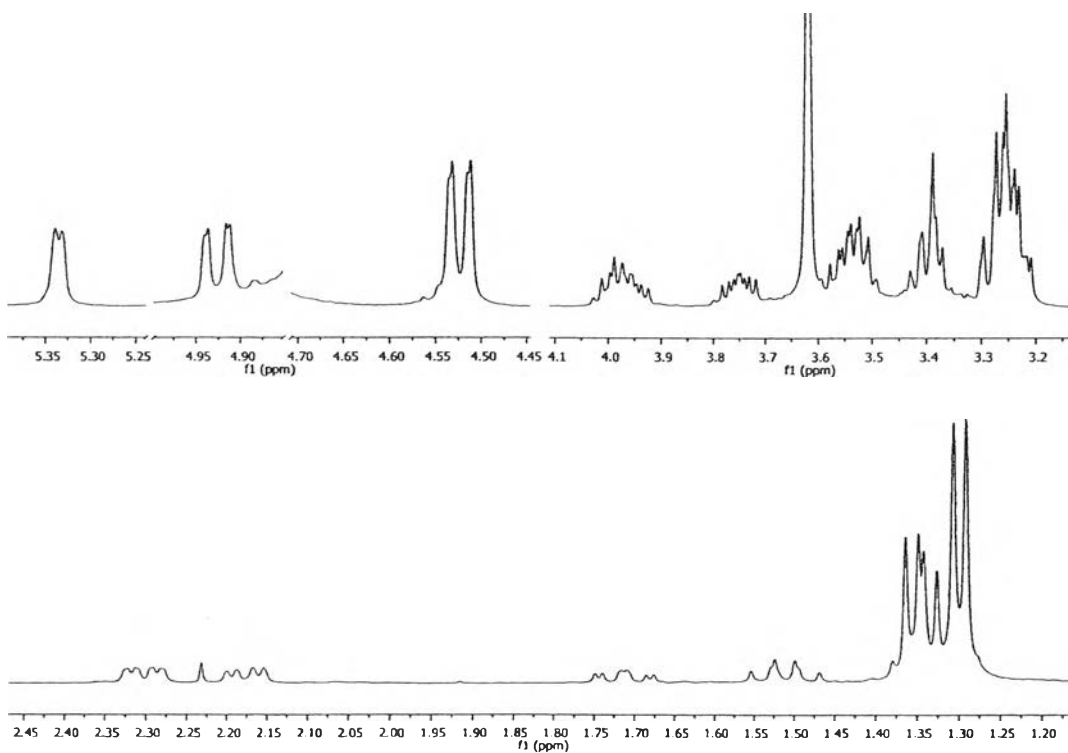
Figure A144 HMBC NMR spectrum of compound 69

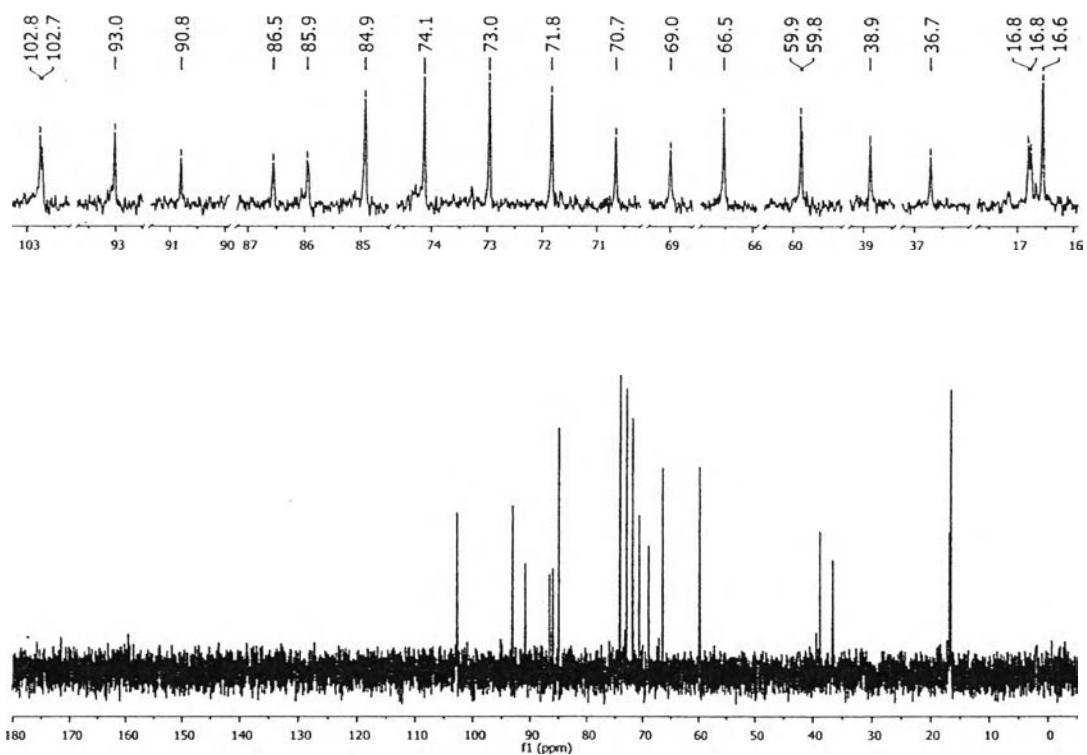
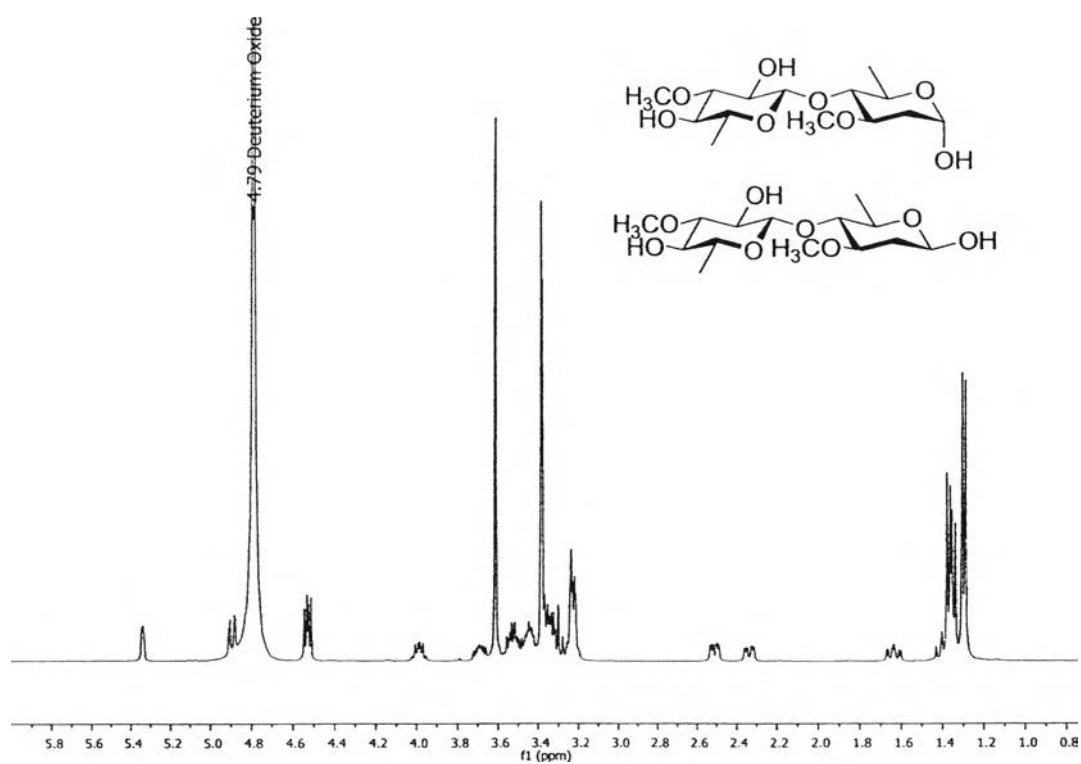


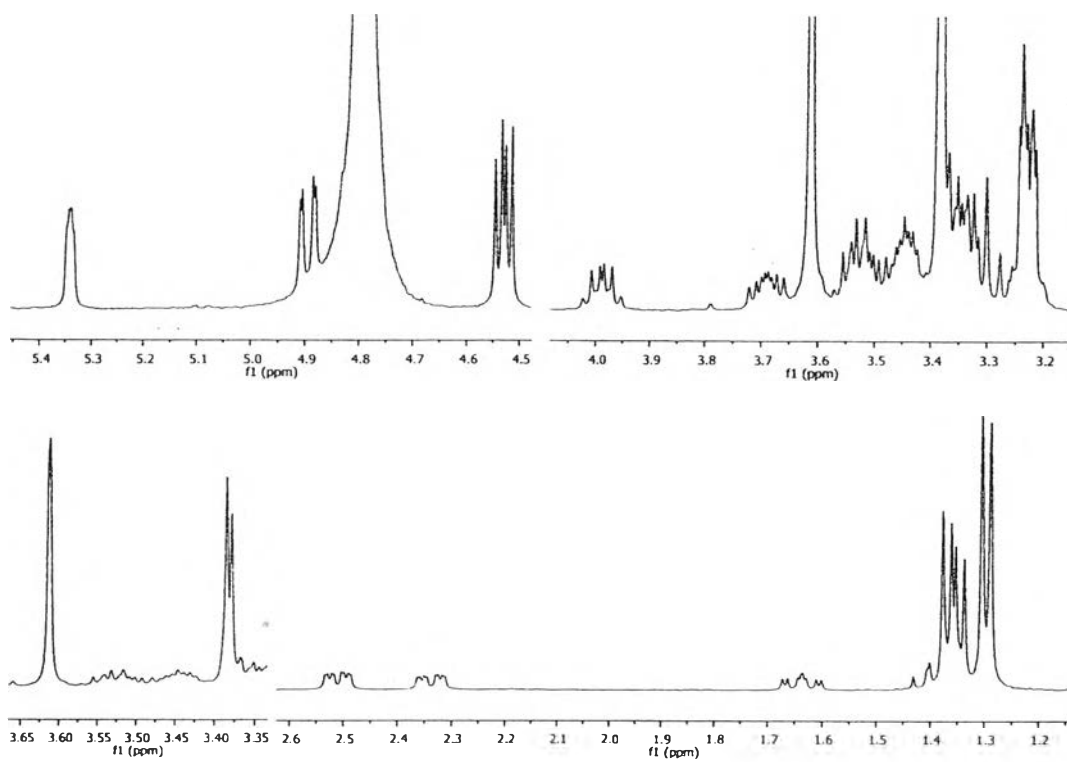
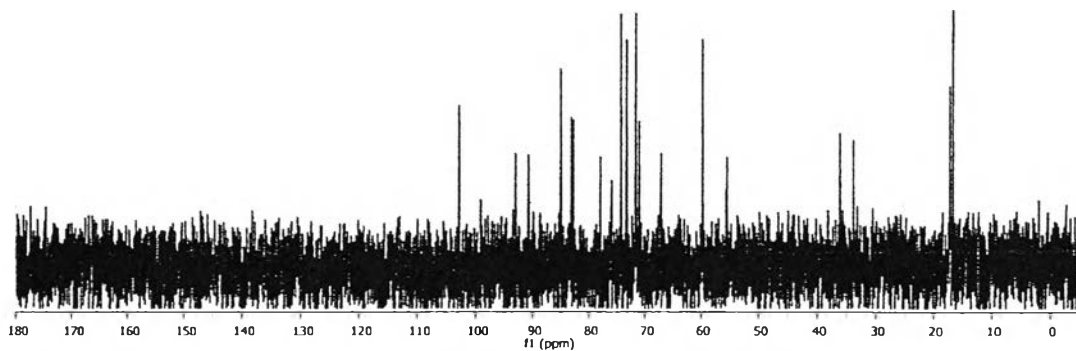
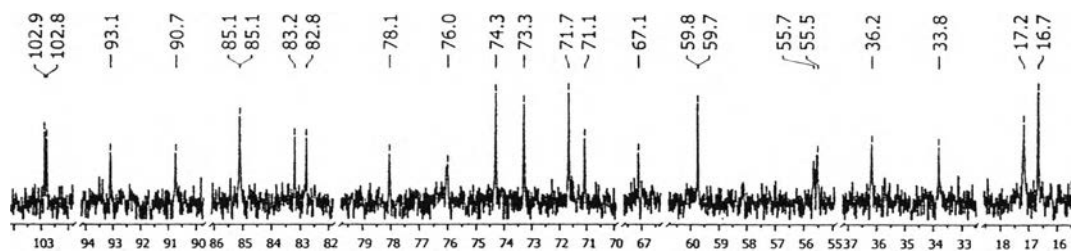
Figure A145 ^1H NMR spectrum of compound 71Figure A146 ^{13}C NMR spectrum of compound 71 (Expansion)

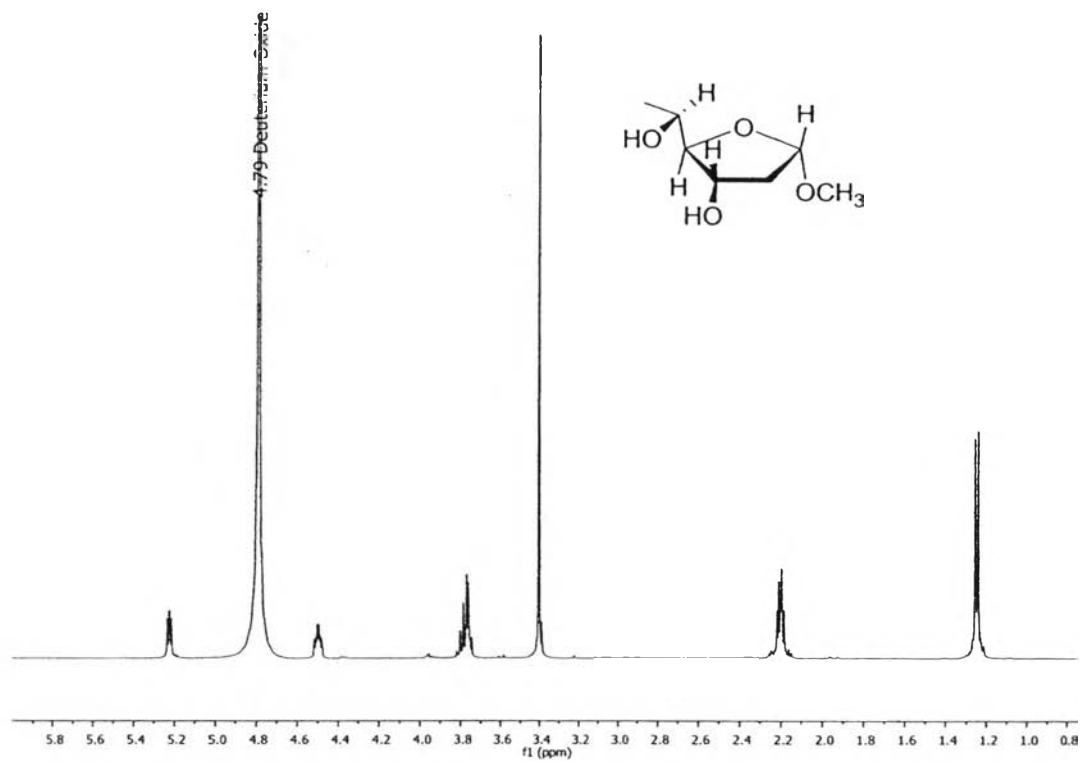
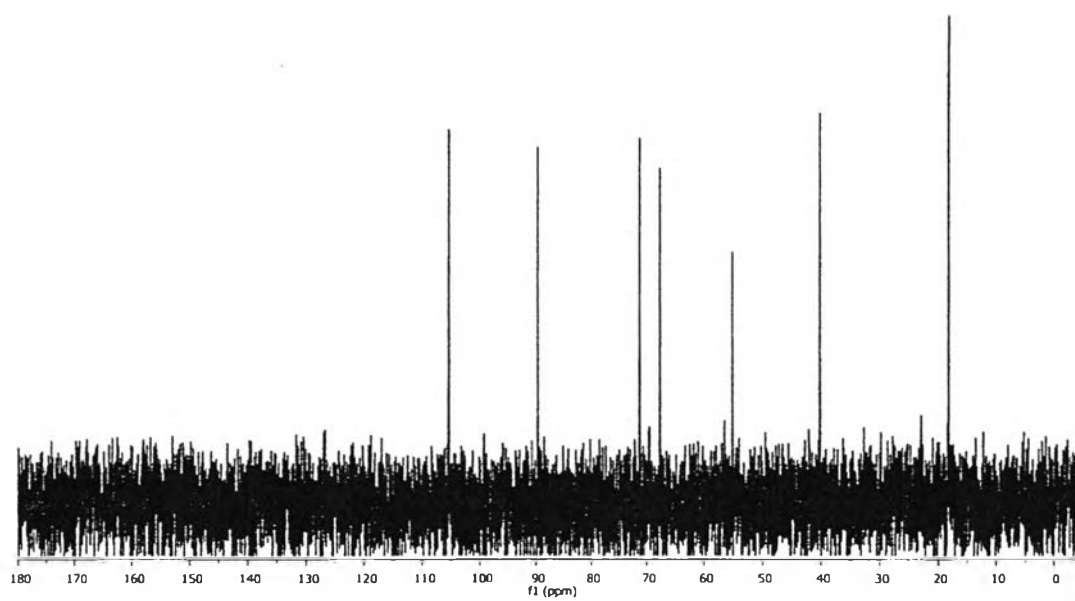
Figure A147 ^{13}C NMR spectrum of compound 71Figure A148 ^1H NMR spectrum of compound 72

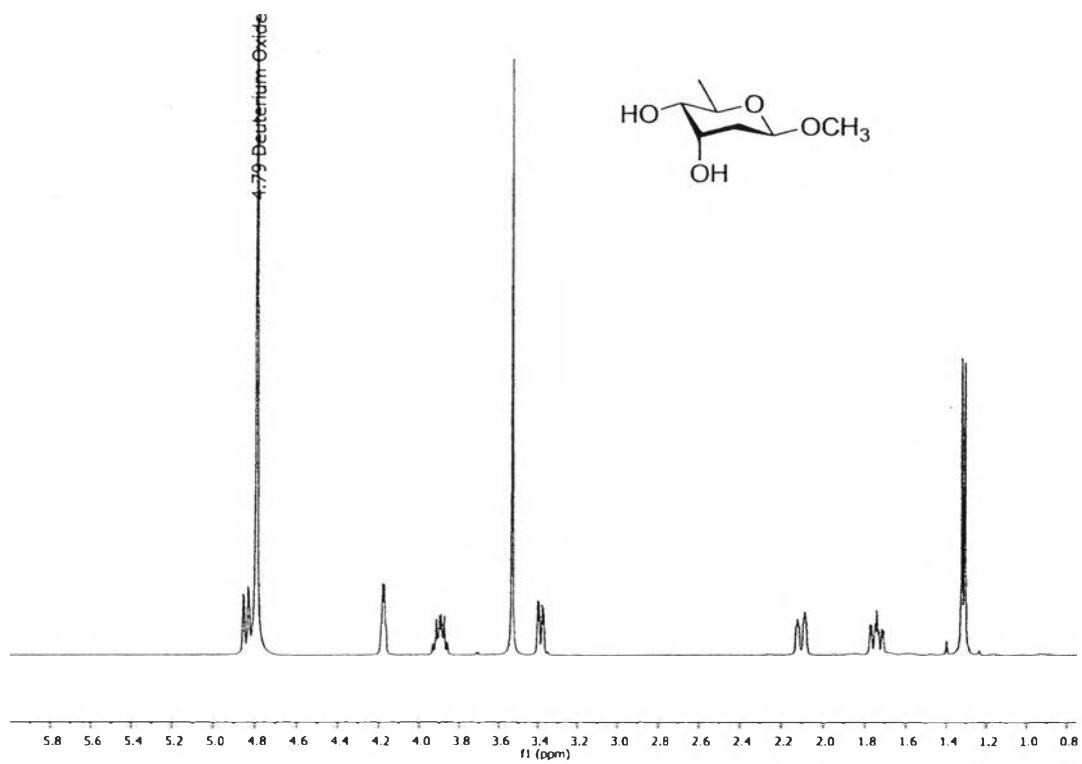
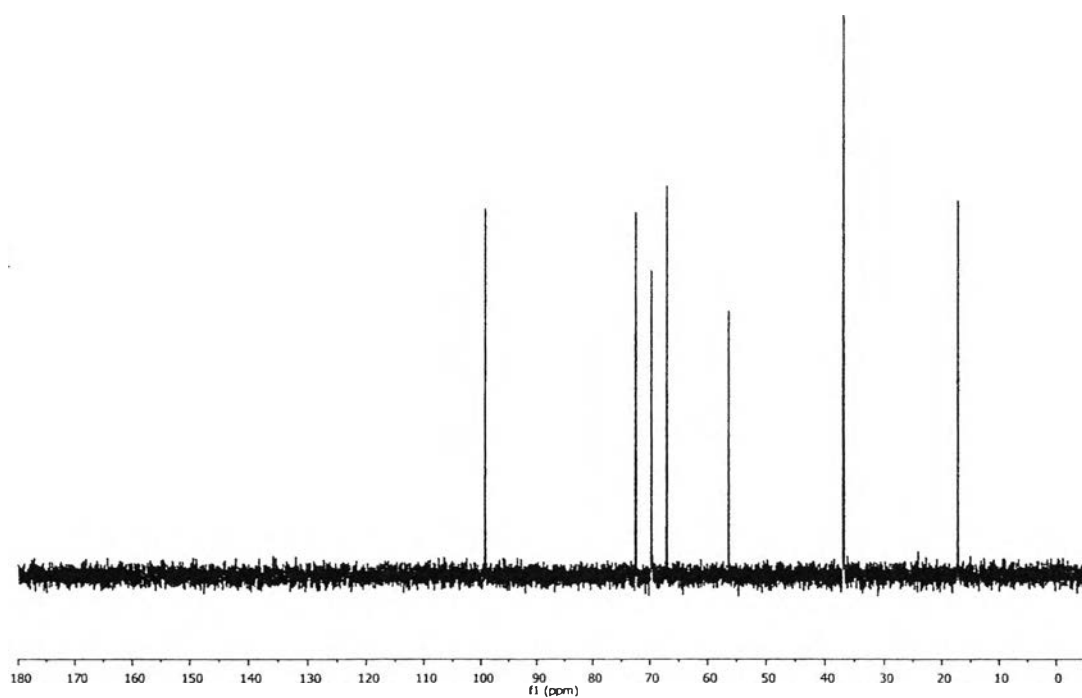
Figure A149 ^1H NMR spectrum of compound 72 (Expansion)Figure A150 ^{13}C NMR spectrum of compound 72

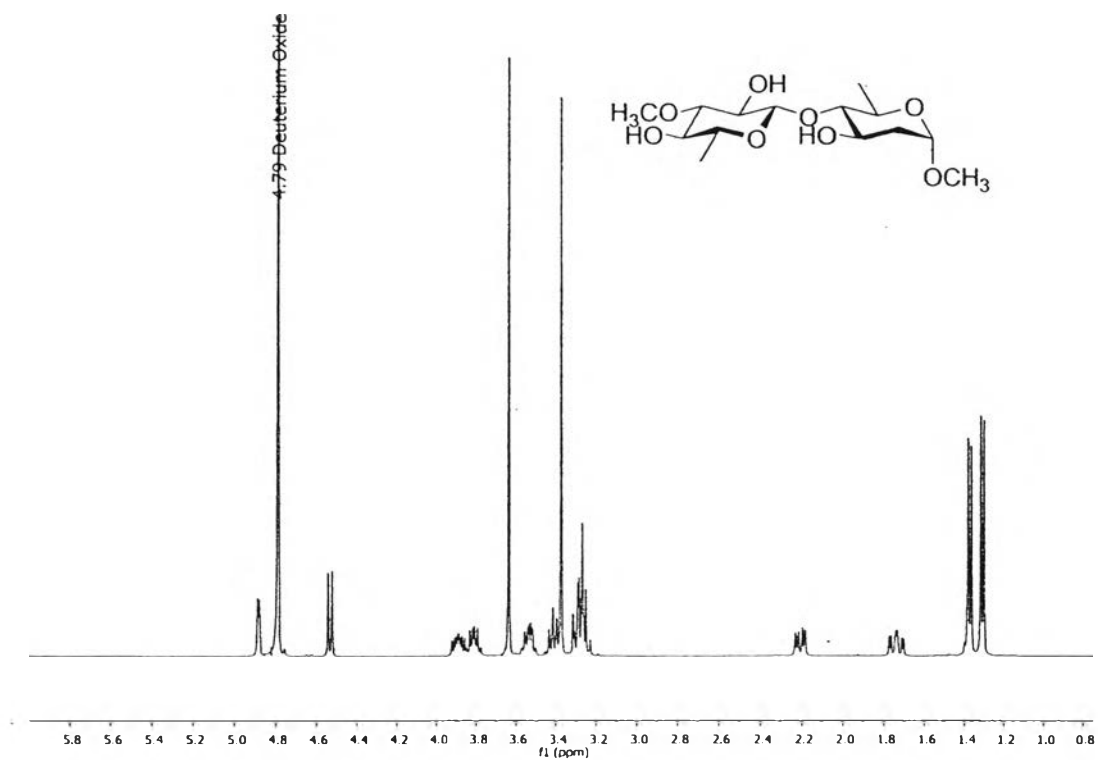
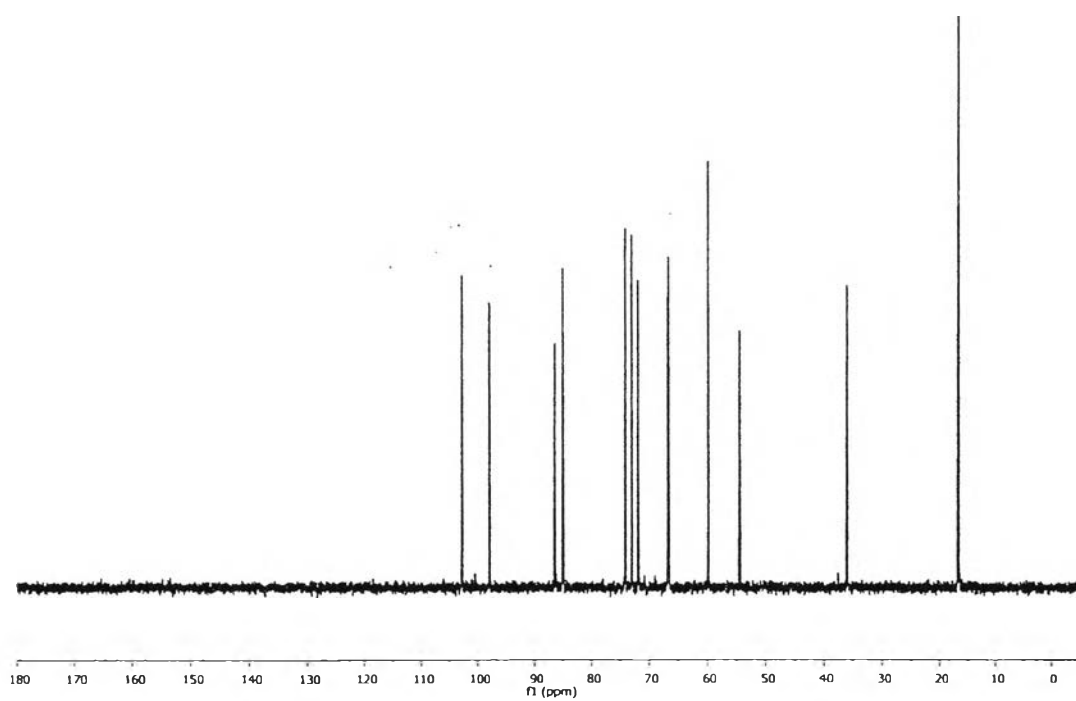
Figure A151 ^1H NMR spectrum of compound 73Figure A152 ^1H NMR spectrum of compound 73 (Expansion)

Figure A153 ^{13}C NMR spectrum of compound 73Figure A154 ^1H NMR spectrum of compound 74

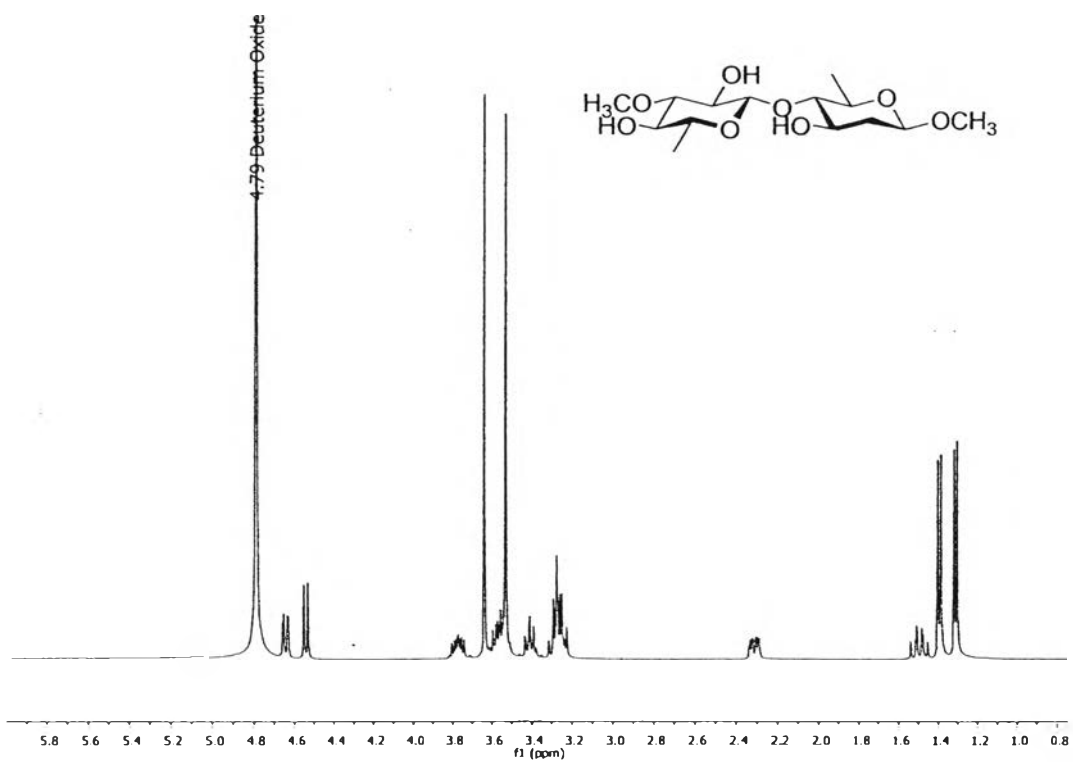
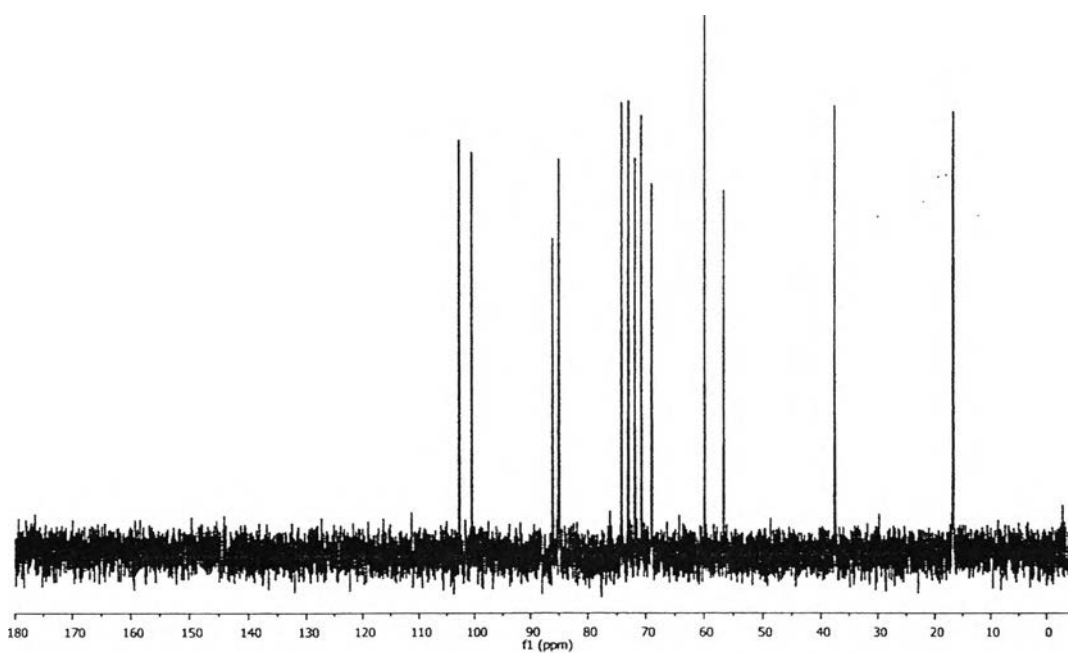
Figure A155 ^1H NMR spectrum of compound 74 (Expansion)Figure A156 ^{13}C NMR spectrum of compound 74

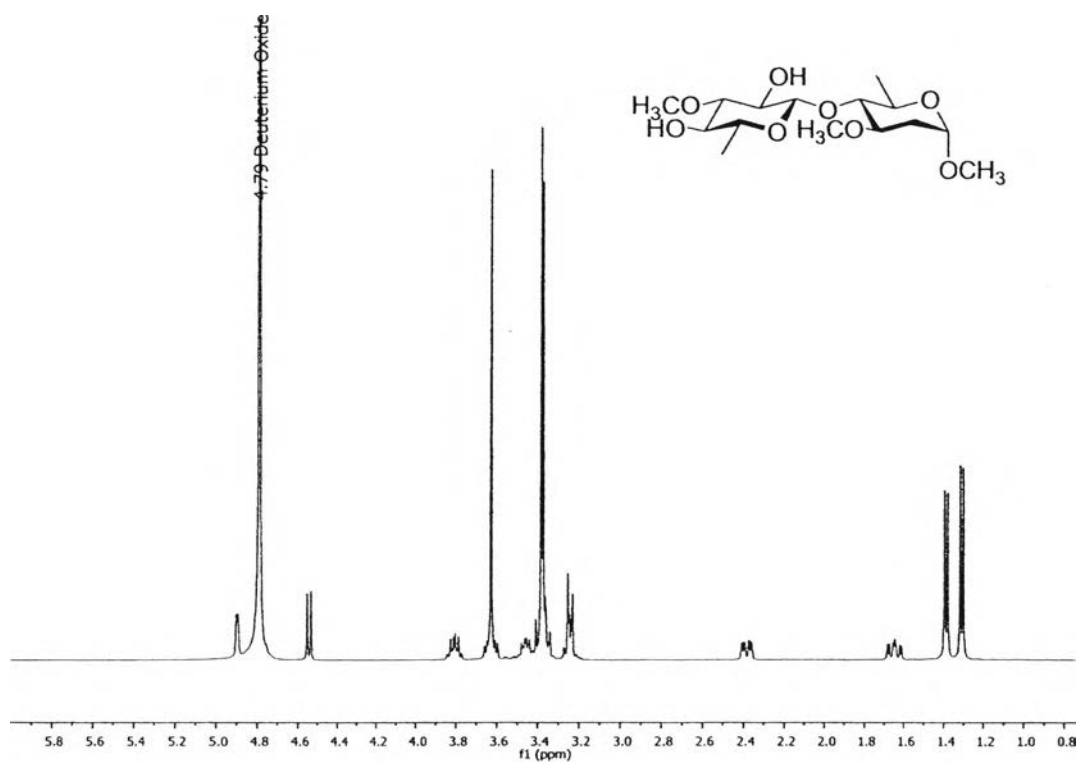
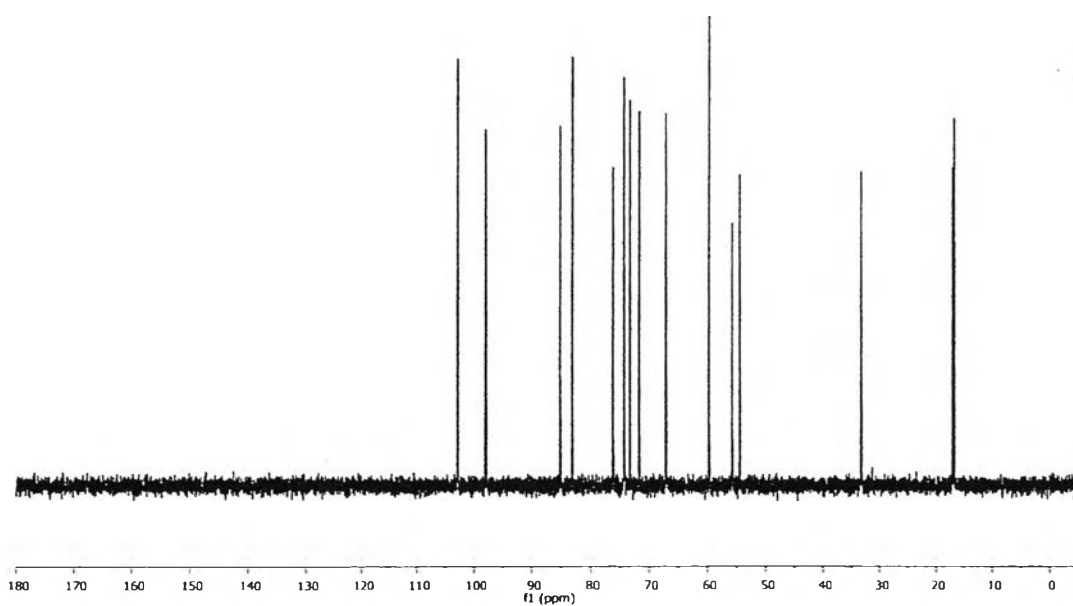
Figure A157 ^1H NMR spectrum of compound 75Figure A158 ^{13}C NMR spectrum of compound 75

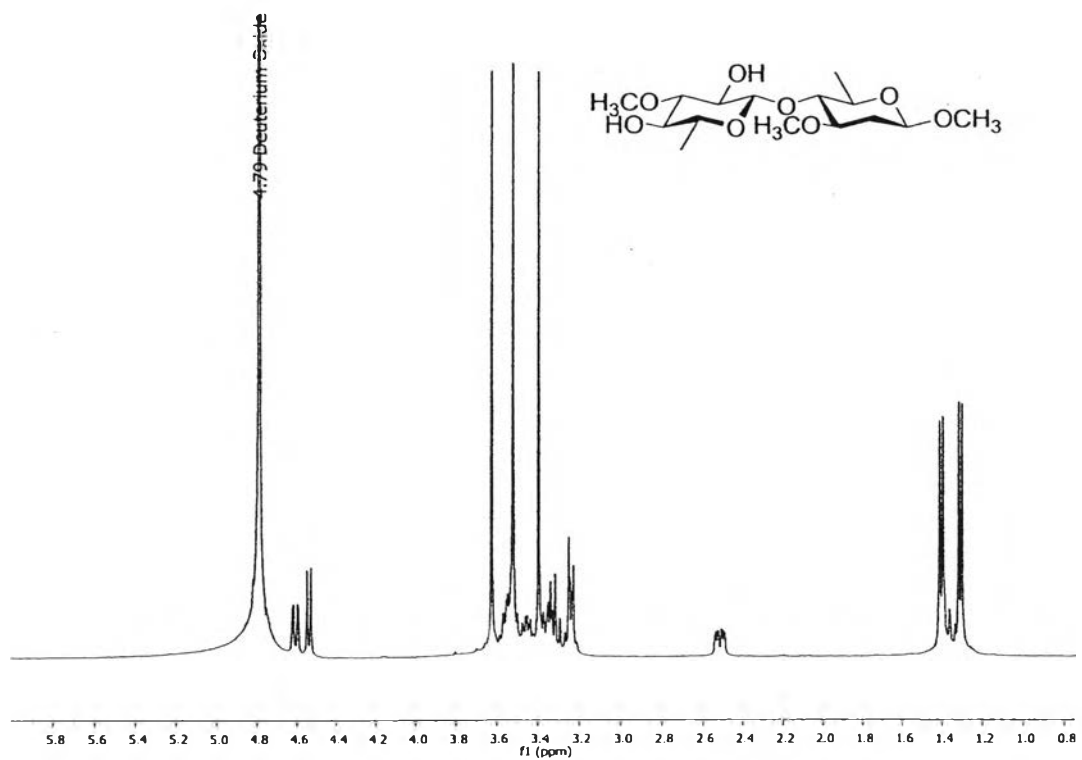
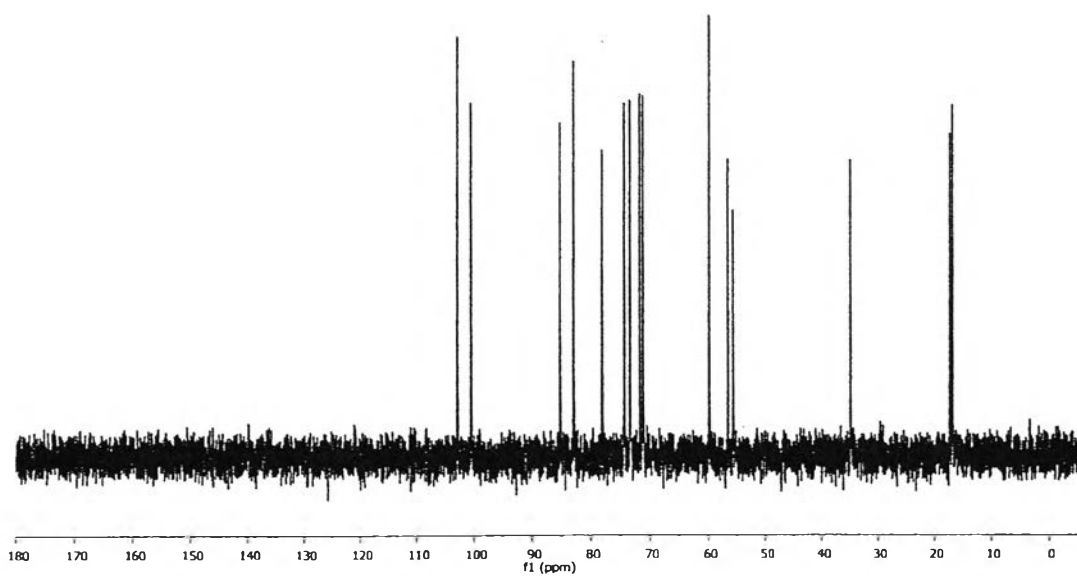
Figure A159 ^1H NMR spectrum of compound 76Figure A160 ^{13}C NMR spectrum of compound 76

Figure A161 ^1H NMR spectrum of compound 77Figure A162 ^{13}C NMR spectrum of compound 77

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Figure A163 ^1H NMR spectrum of compound 78Figure A164 ^{13}C NMR spectrum of compound 78

Figure A165 ^1H NMR spectrum of compound 79Figure A166 ^{13}C NMR spectrum of compound 79

Figure A167 ¹H NMR spectrum of compound 80Figure A168 ¹³C NMR spectrum of compound 80

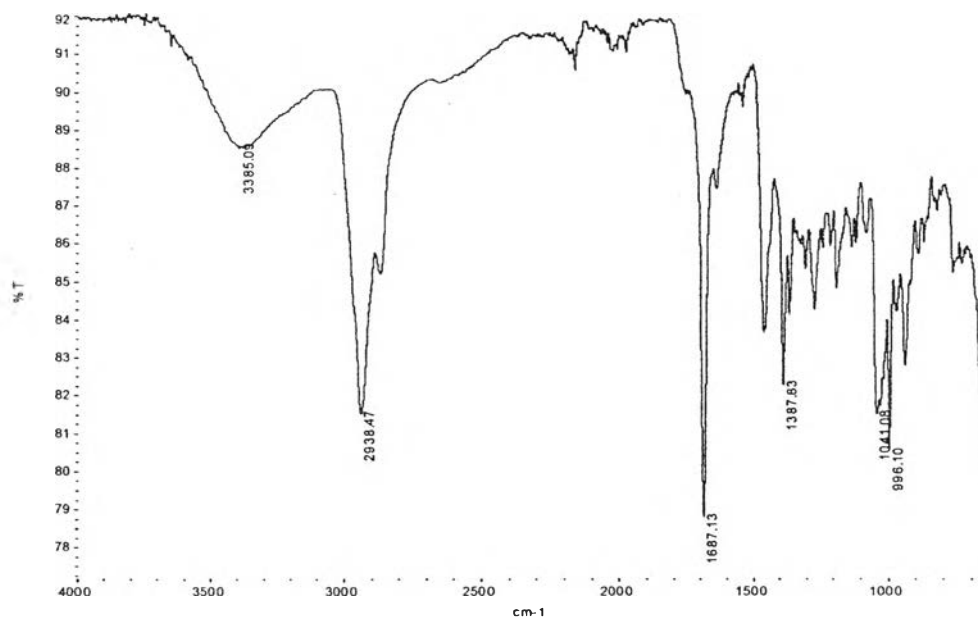


Figure A169 ATR-FTIR spectrum of compound 81

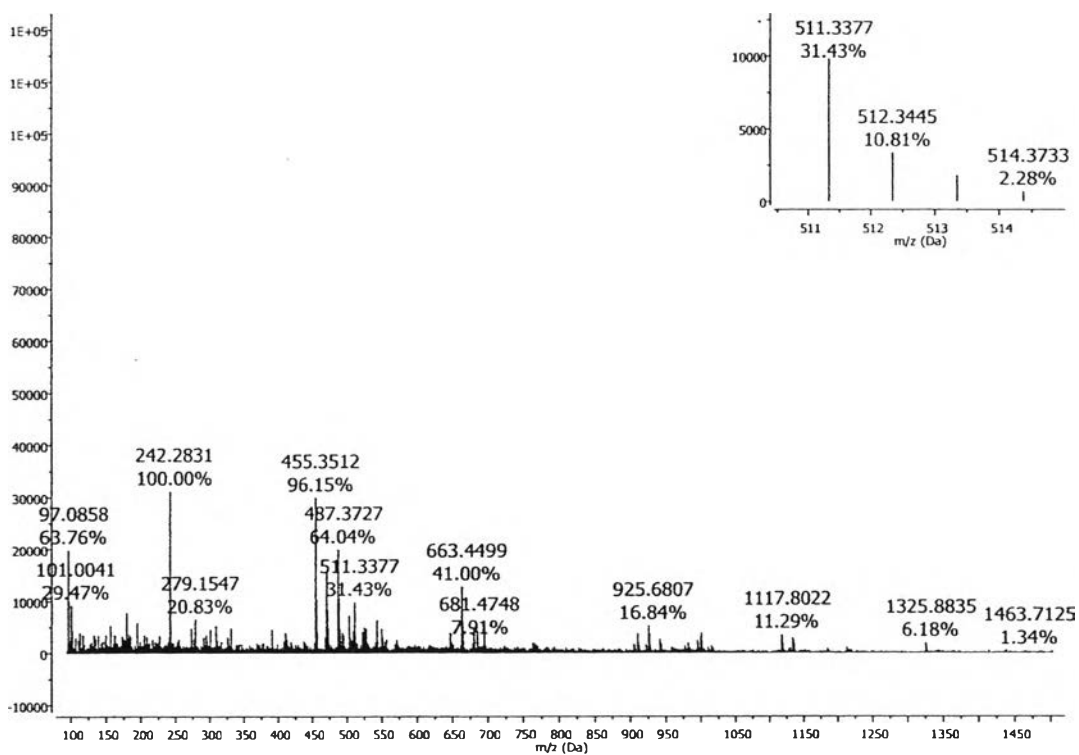
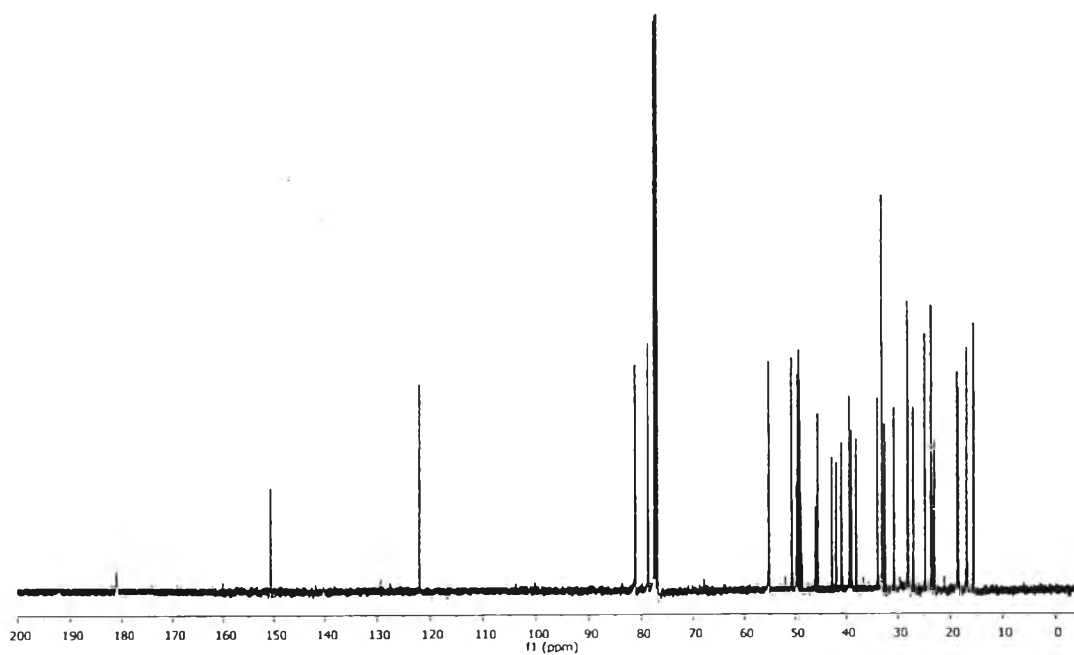
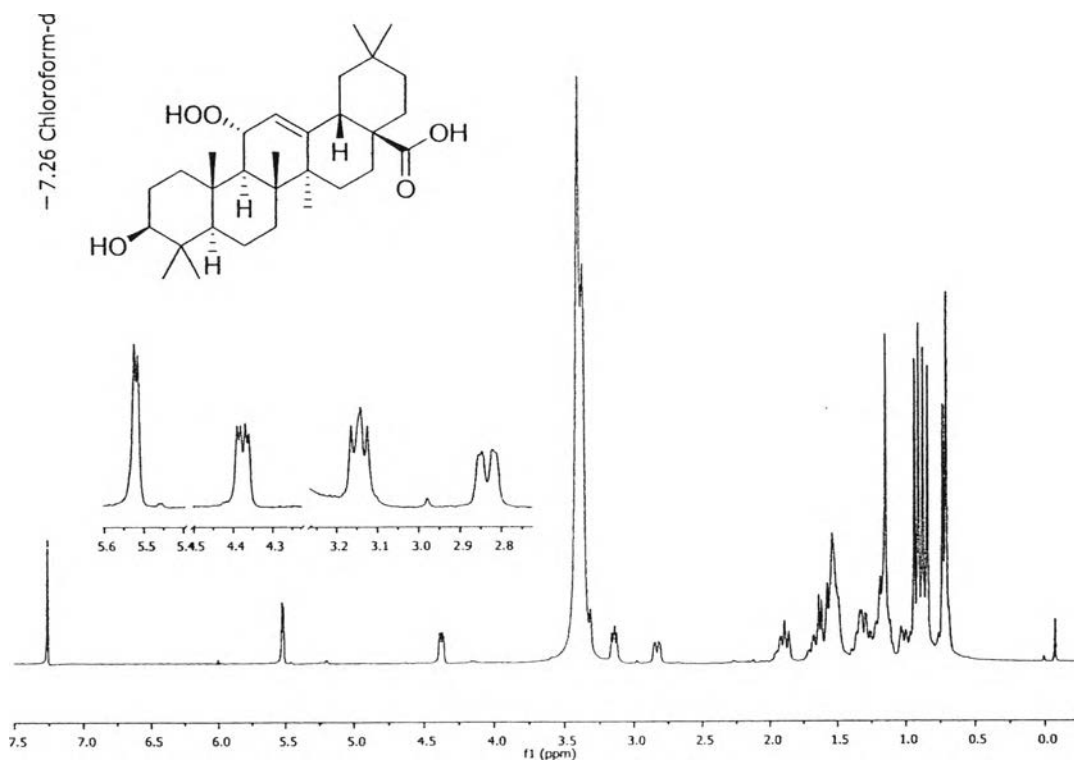


Figure A170 HR-ESIMS spectrum of compound 81



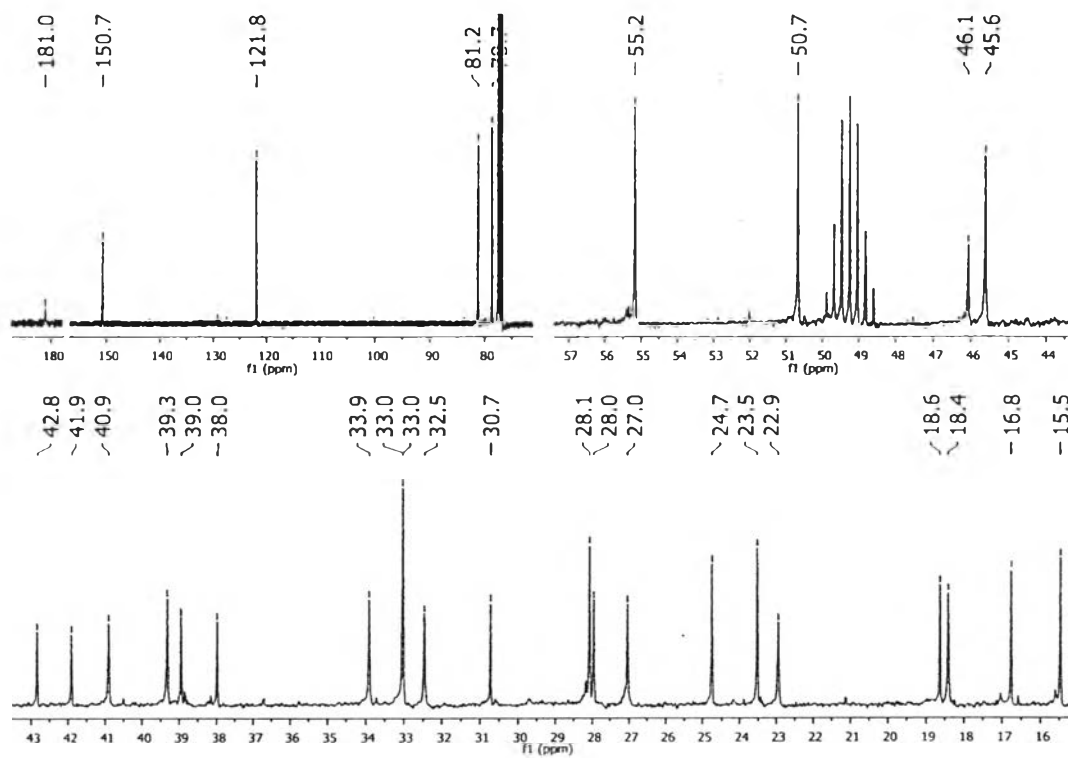
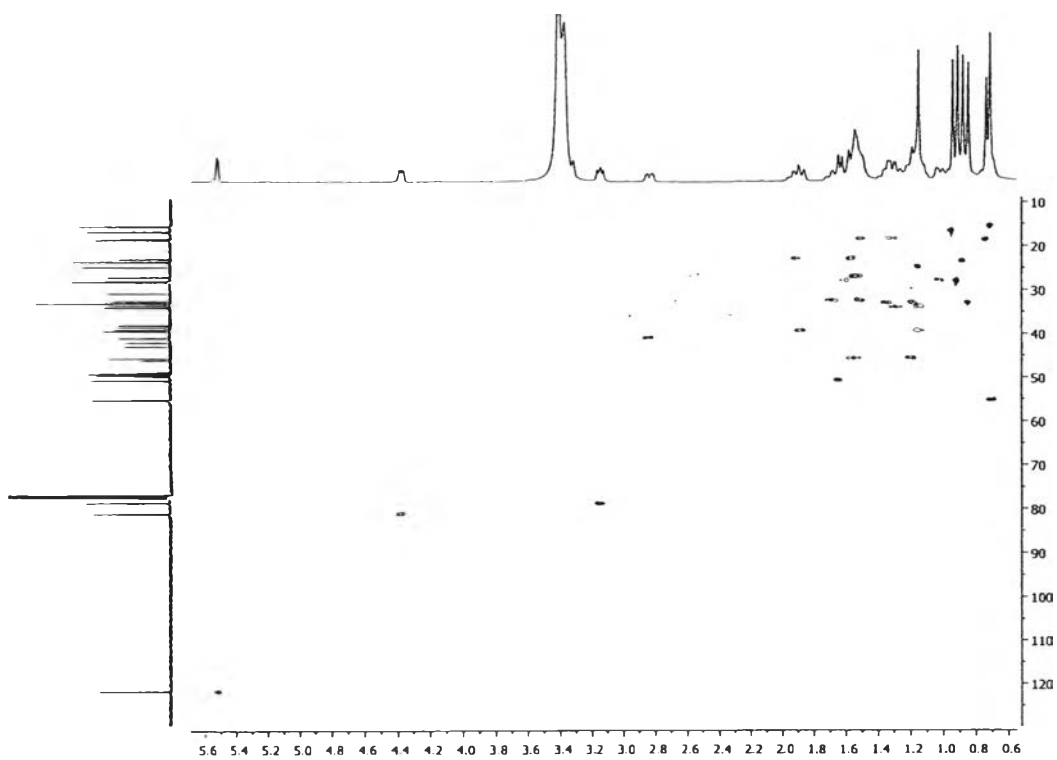
Figure A173 ^{13}C NMR spectrum of compound 81 (Expansion)

Figure A174 HSQC spectrum of compound 81

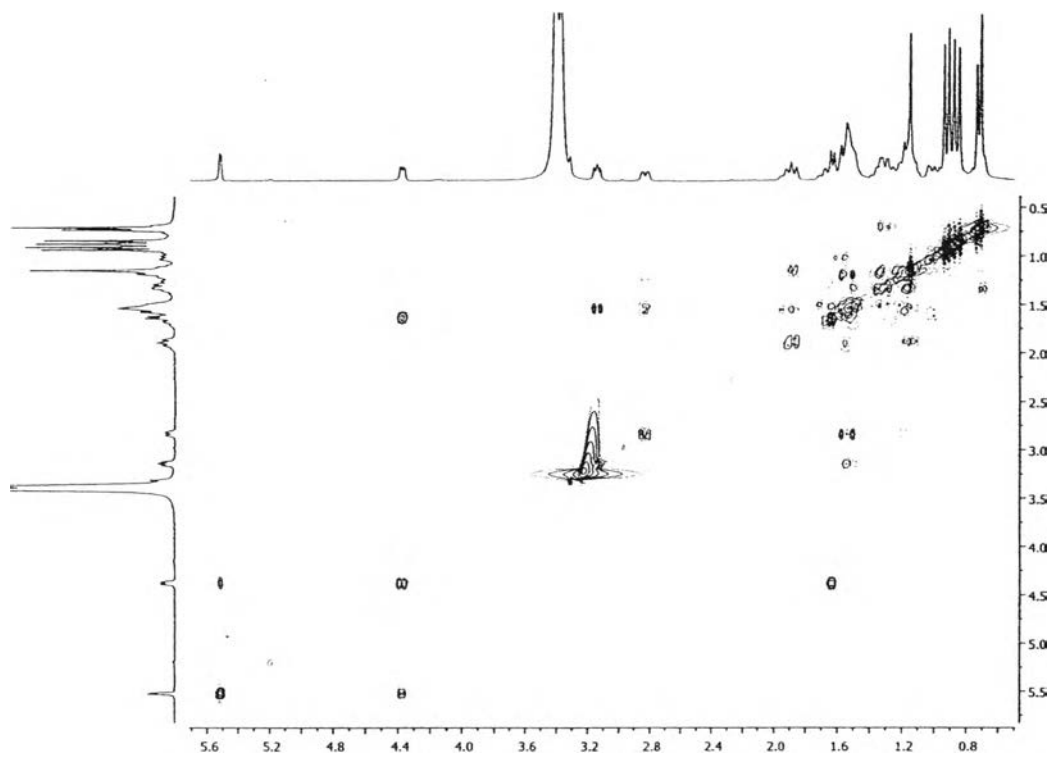


Figure A175 COSY spectrum of compound 81

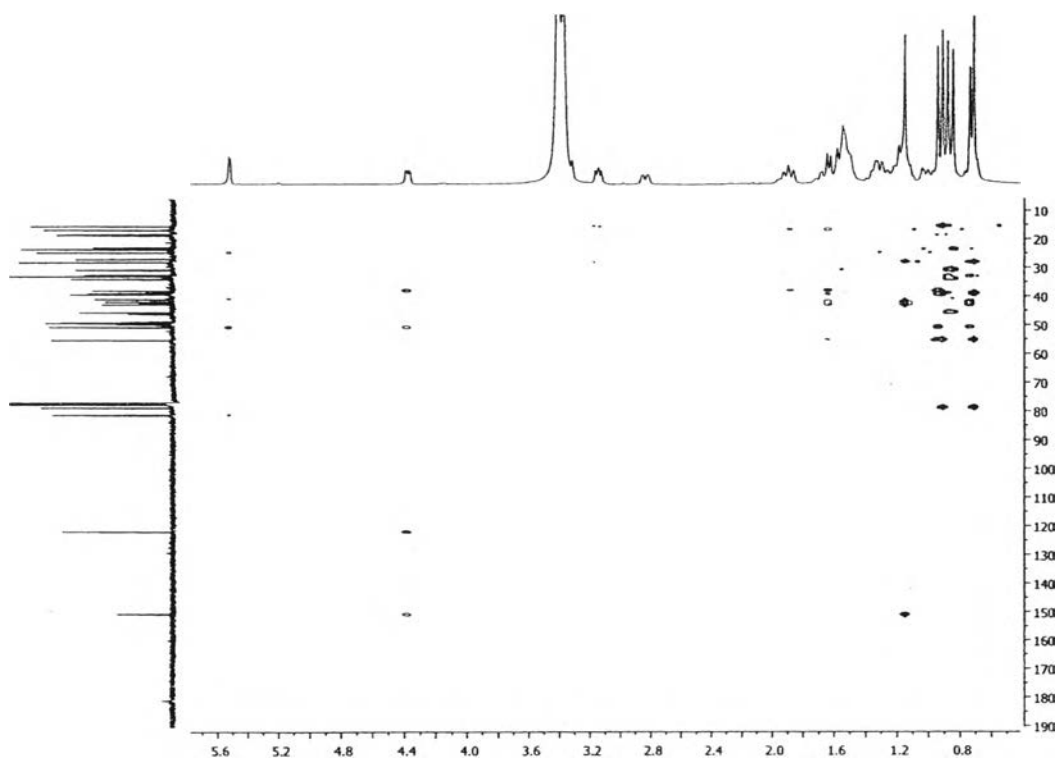


Figure A176 HMBC spectrum of compound 81



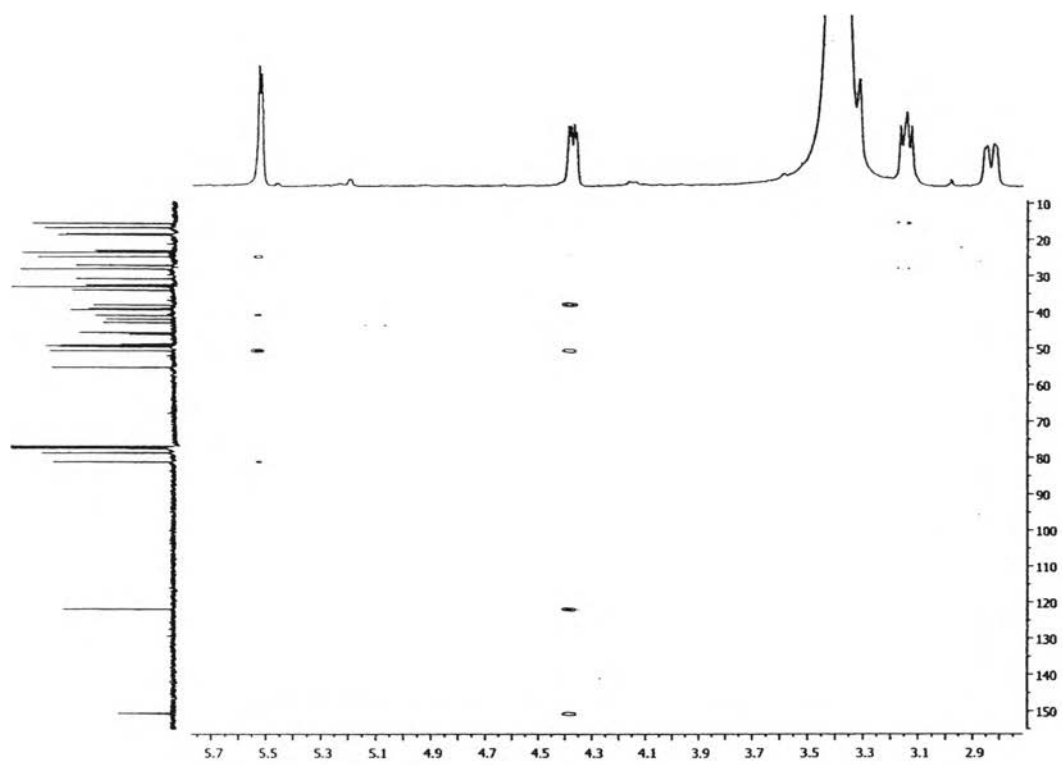


Figure A177 HMBC spectrum of compound 81 (Expansion)

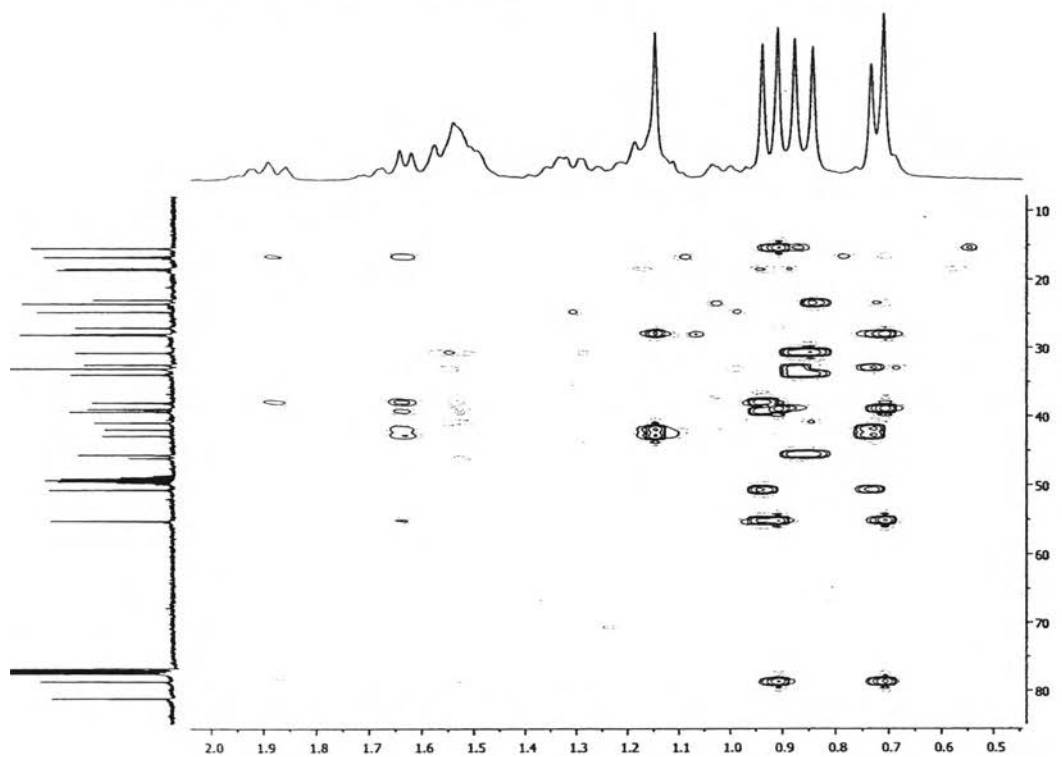


Figure A178 HMBC spectrum of compound 81 (Expansion)

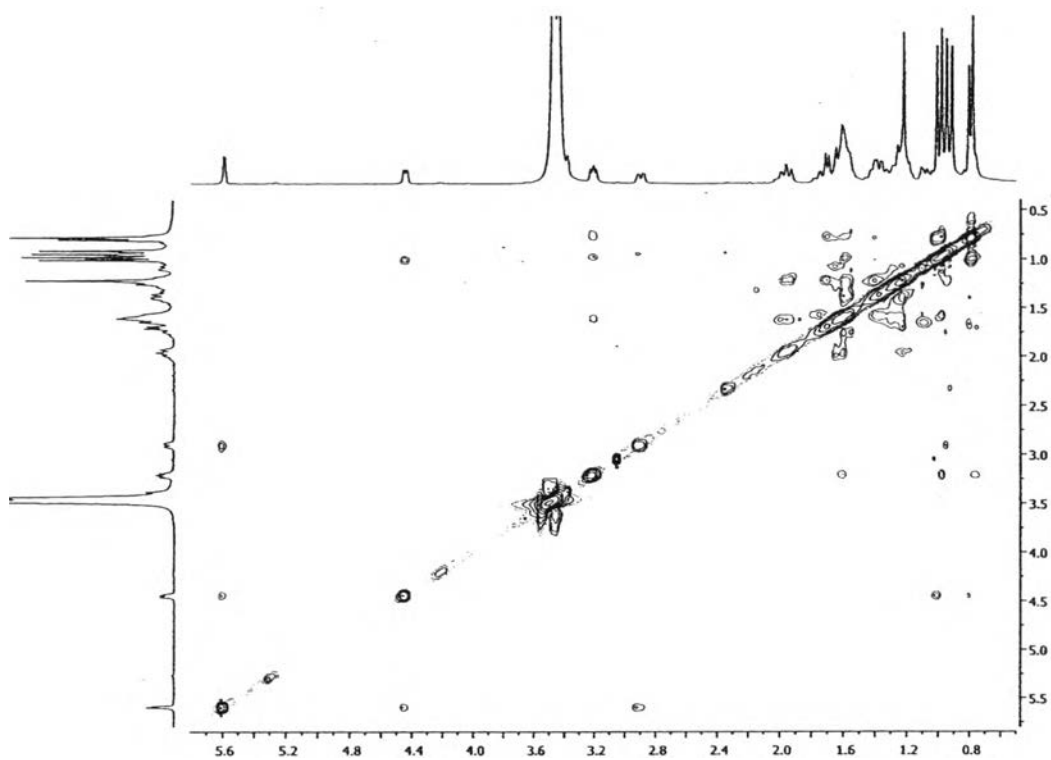


Figure A179 NOESY spectrum of compound 81

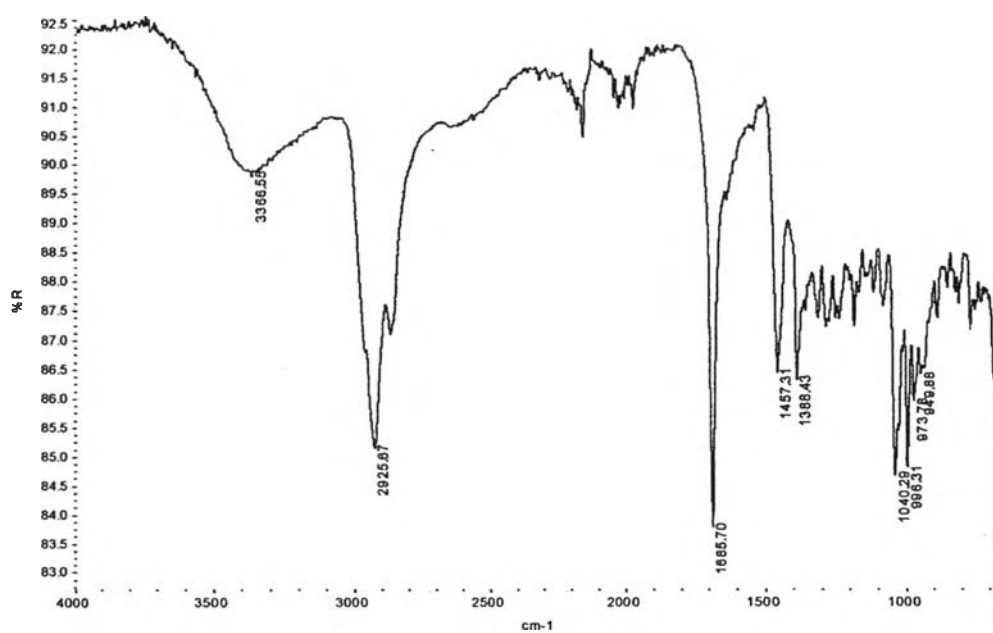


Figure A180 ATR-FTIR spectrum of compound 82



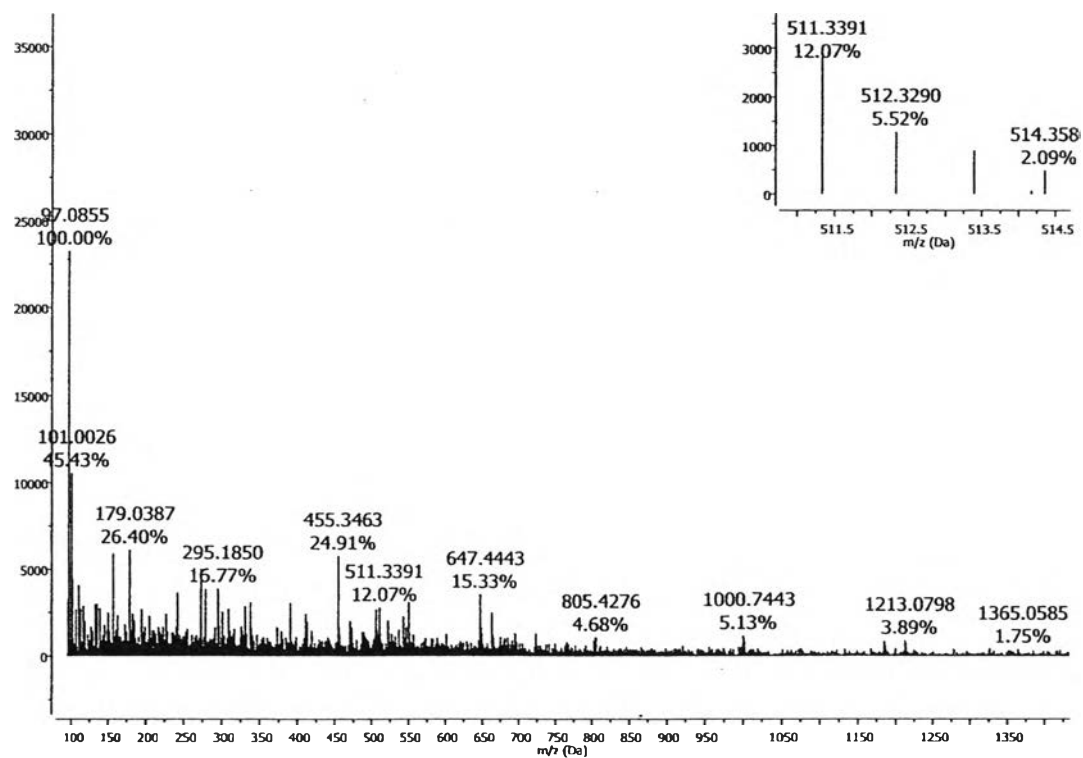
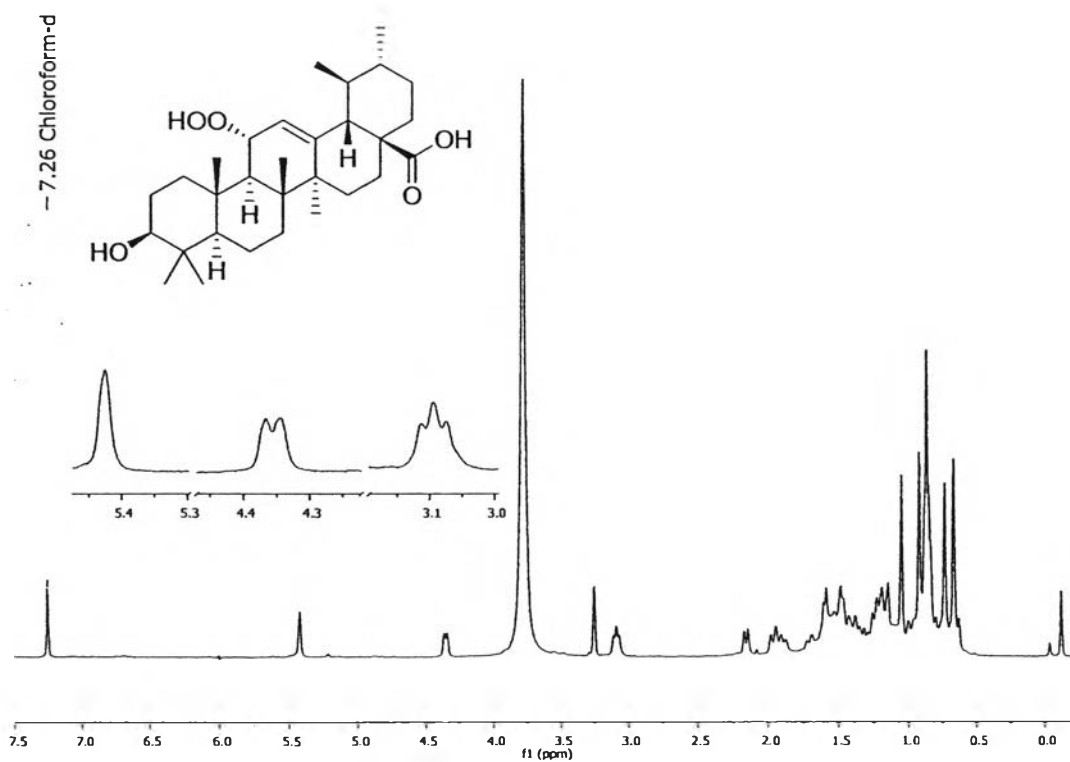
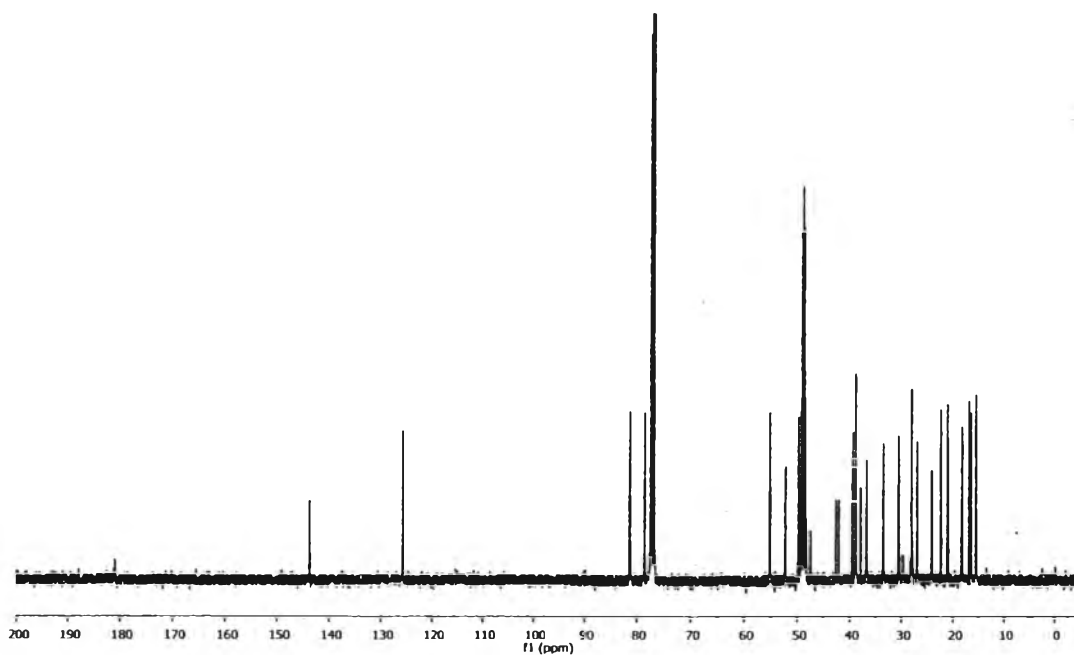
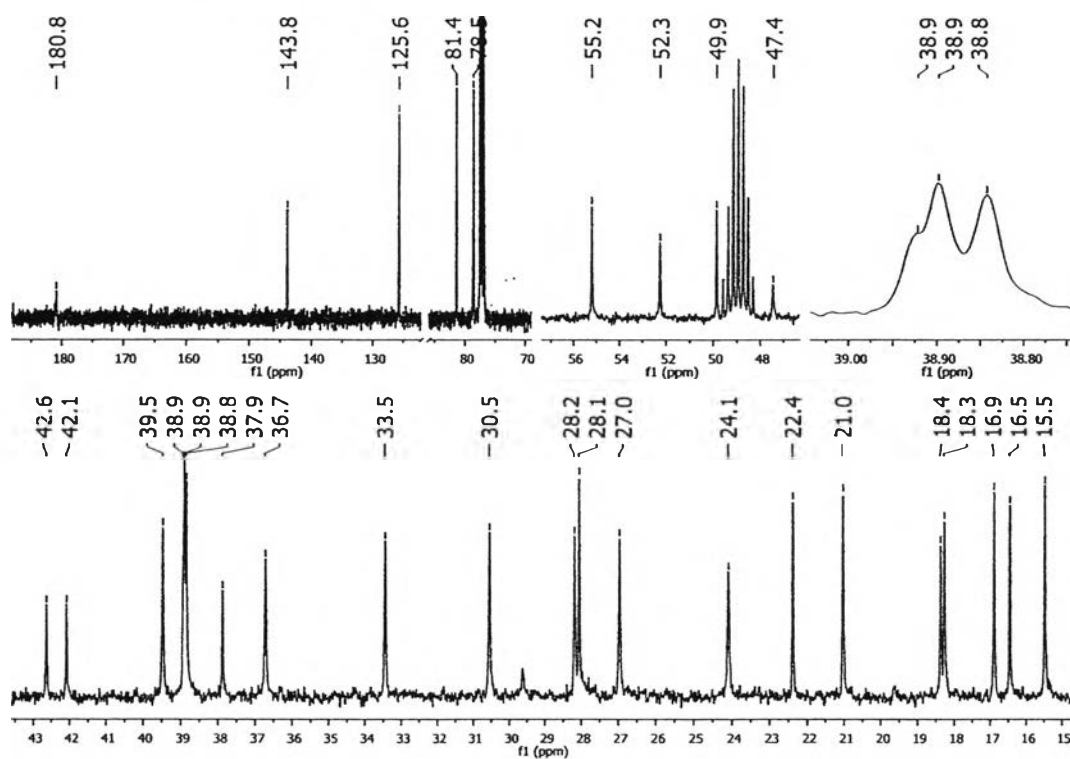


Figure A181 HR-ESIMS spectrum of compound 82

Figure A182 ^1H NMR spectrum of compound 82

Figure A183 ^{13}C NMR spectrum of compound 82Figure A184 ^{13}C NMR spectrum of compound 82 (Expansion)

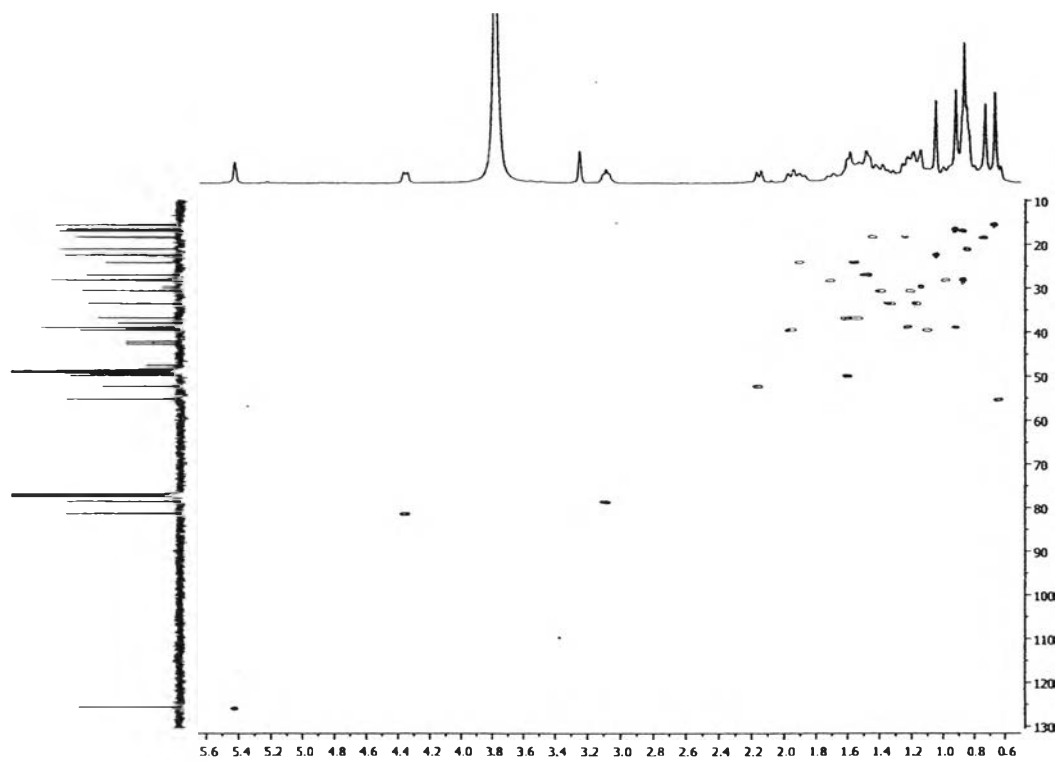


Figure A185 HSQC spectrum of compound 82

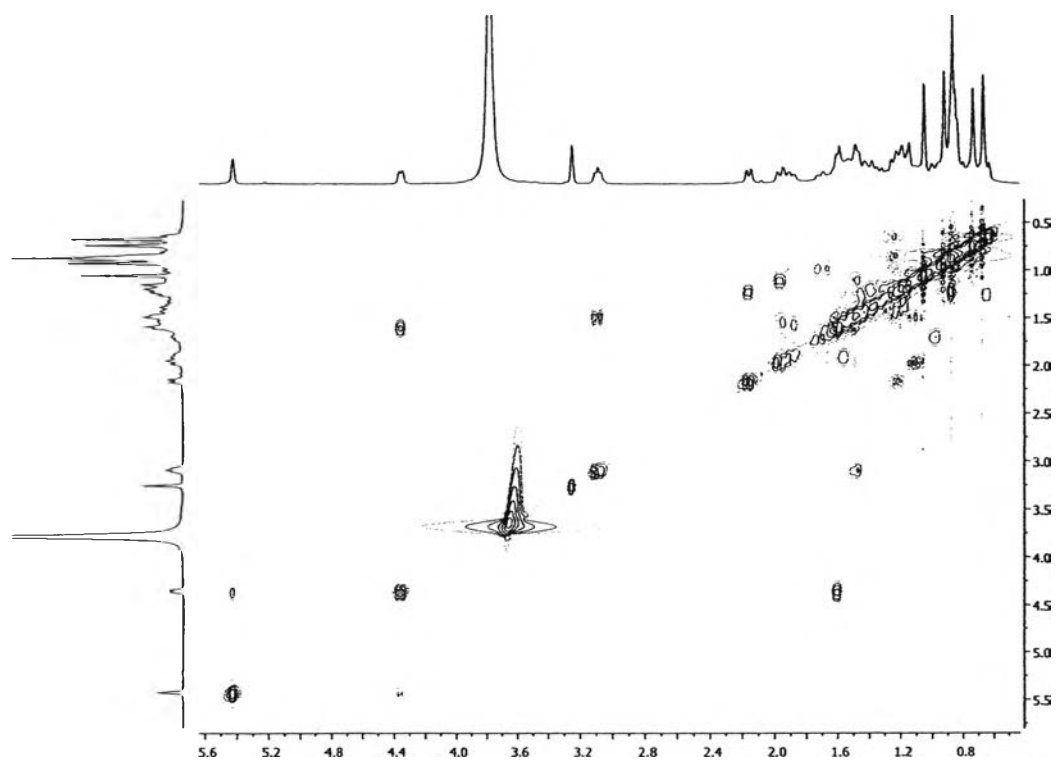


Figure A186 COSY spectrum of compound 82

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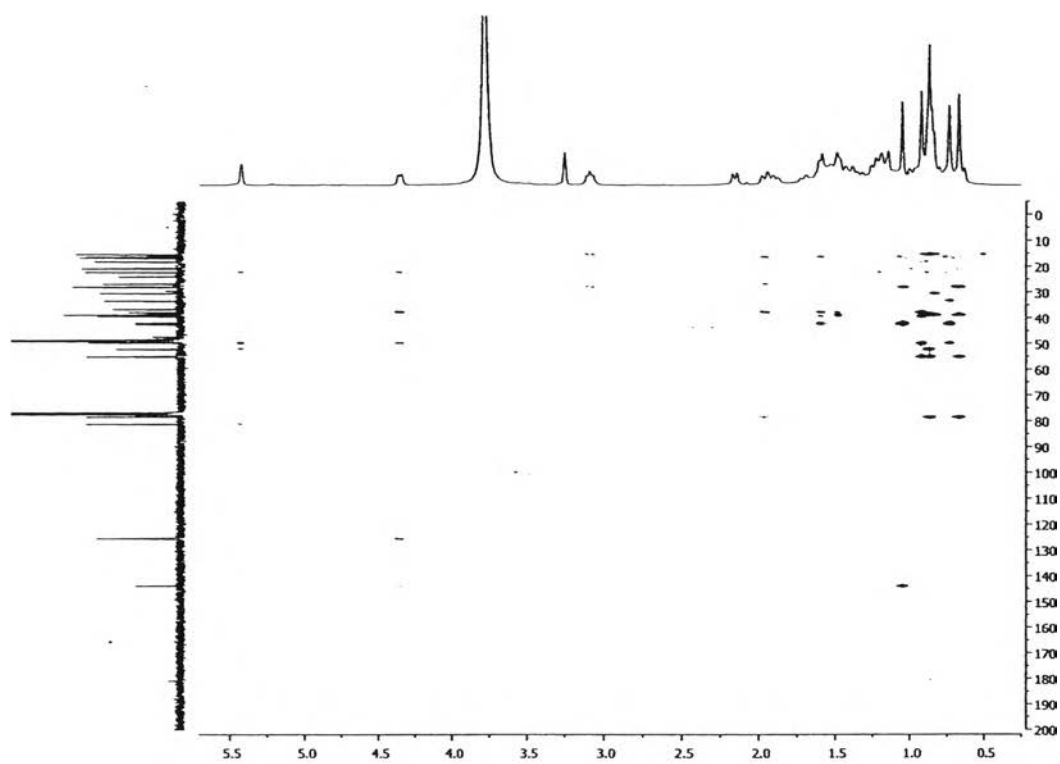


Figure A187 HMBC spectrum of compound 82

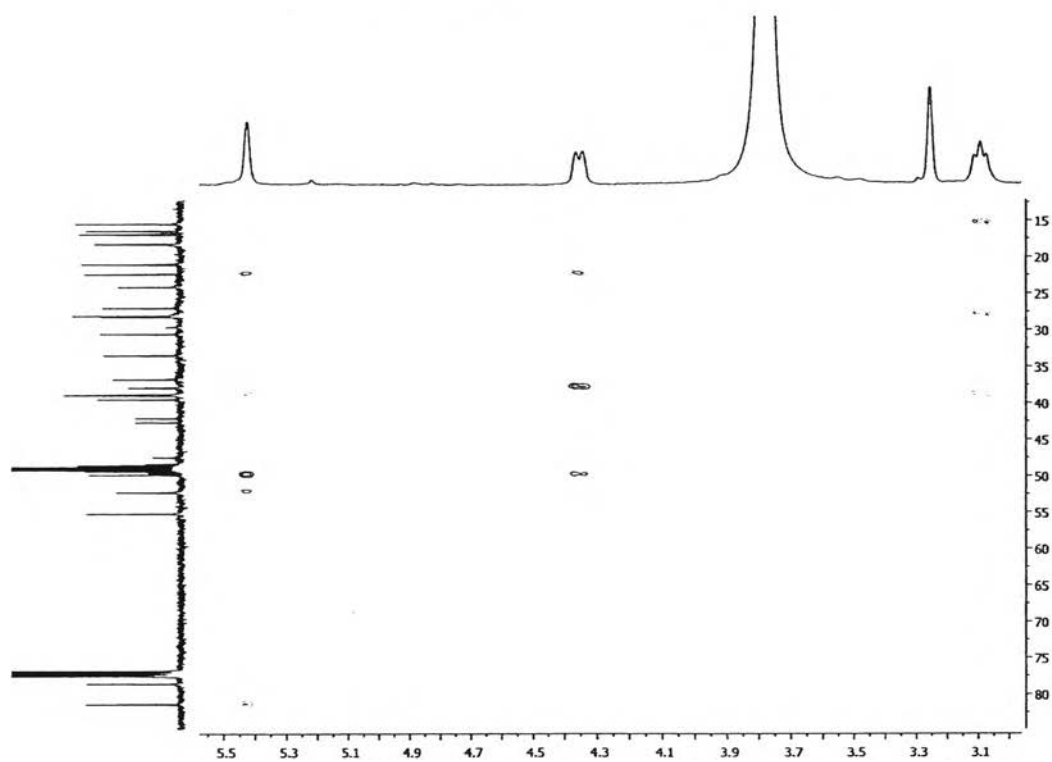


Figure A188 HMBC spectrum of compound 82 (Expansion)



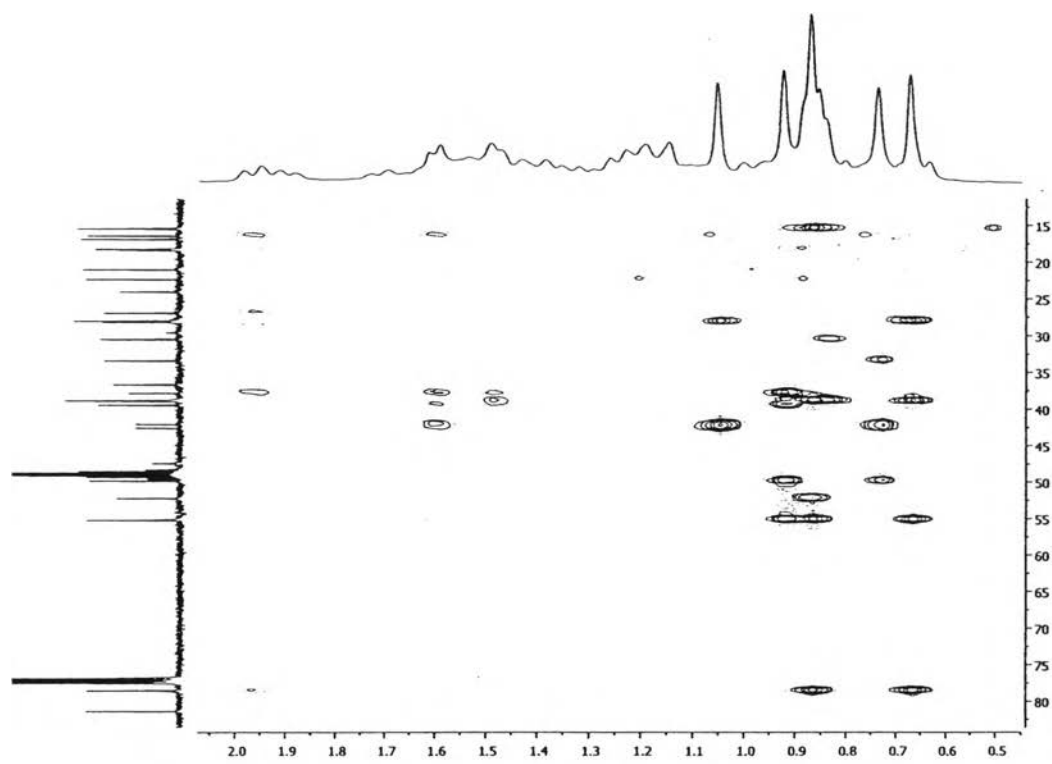


Figure A189 HMBC spectrum of compound 82 (Expansion)

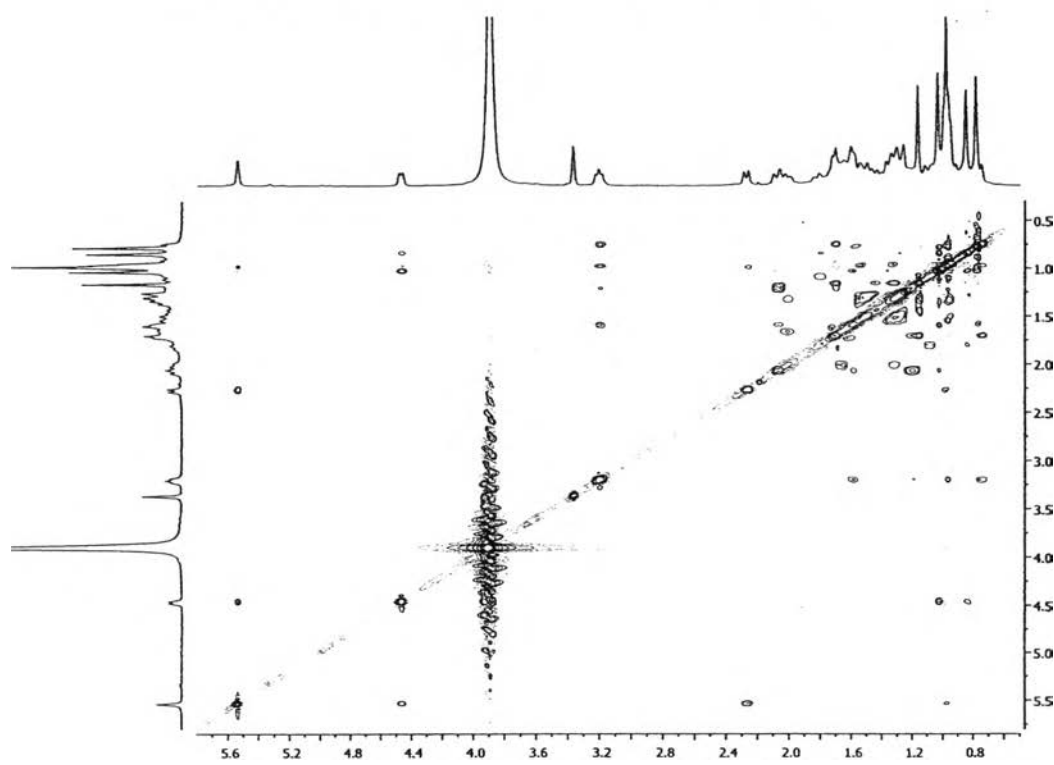
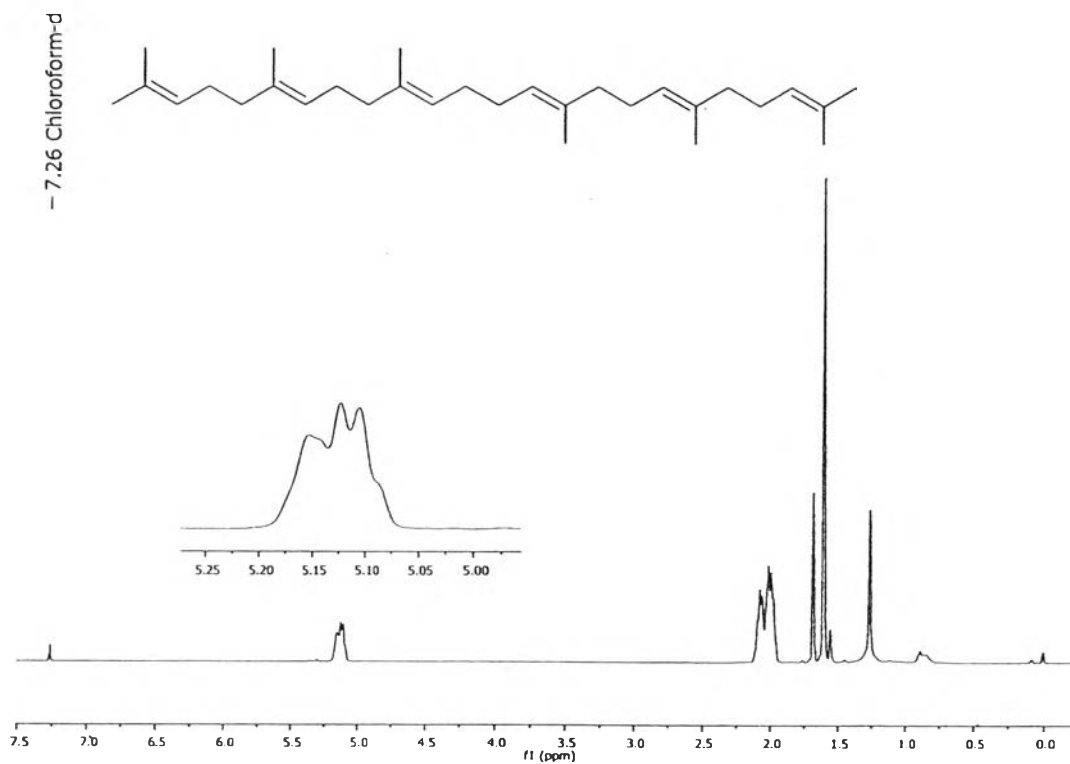
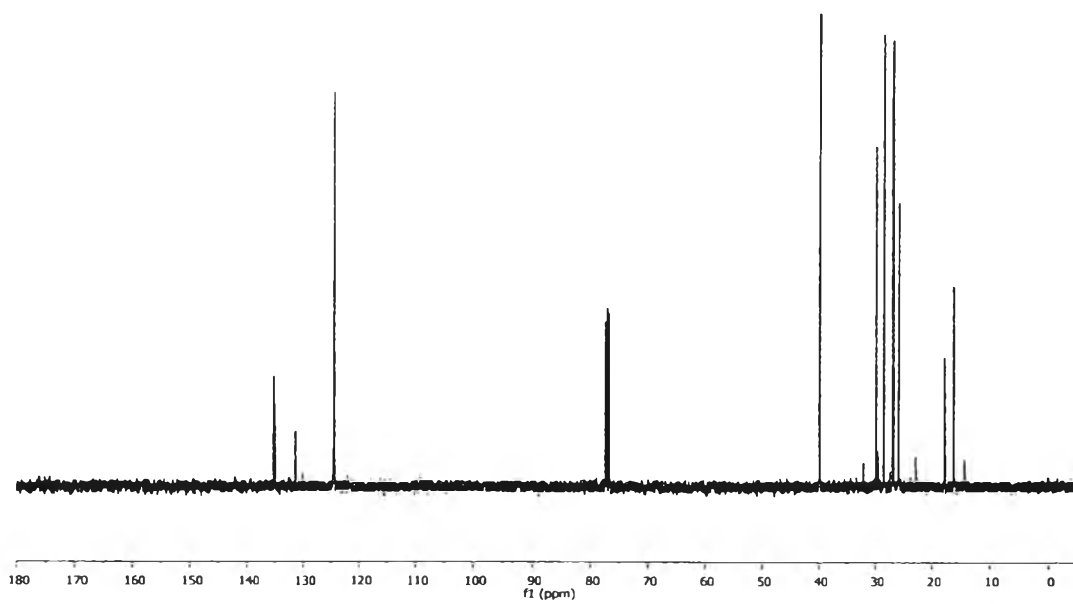


Figure A190 NOESY spectrum of compound 82

Figure A191 ^1H NMR spectrum of compound 83Figure A192 ^{13}C NMR spectrum of compound 83

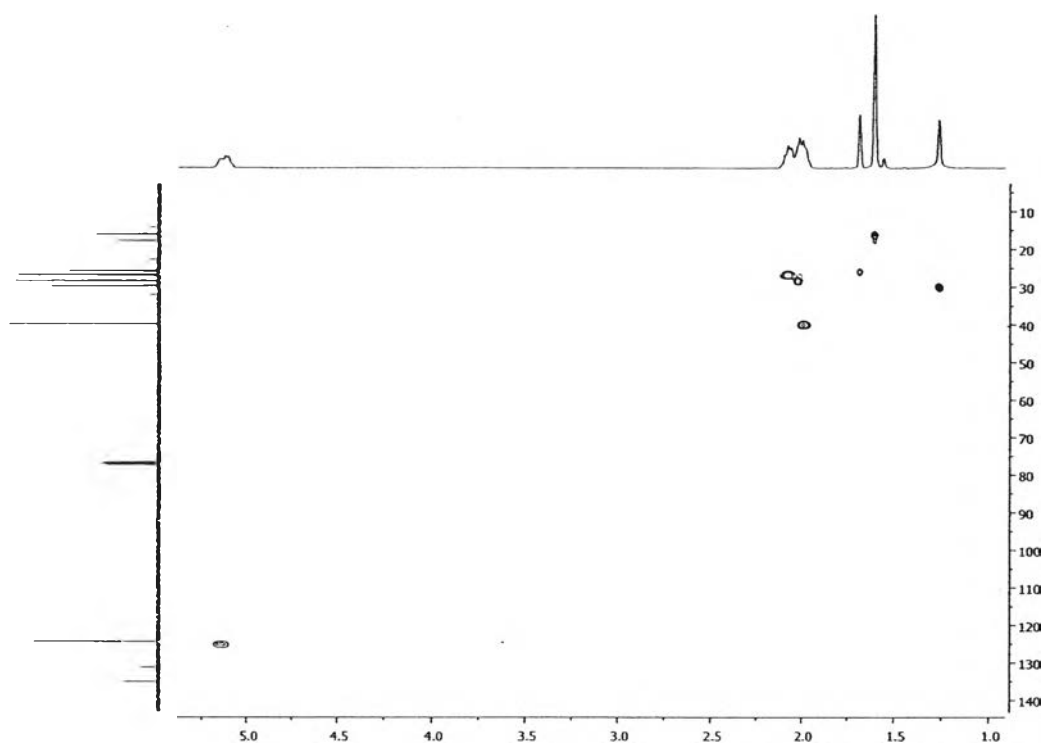


Figure A193 HSQC spectrum of compound 83

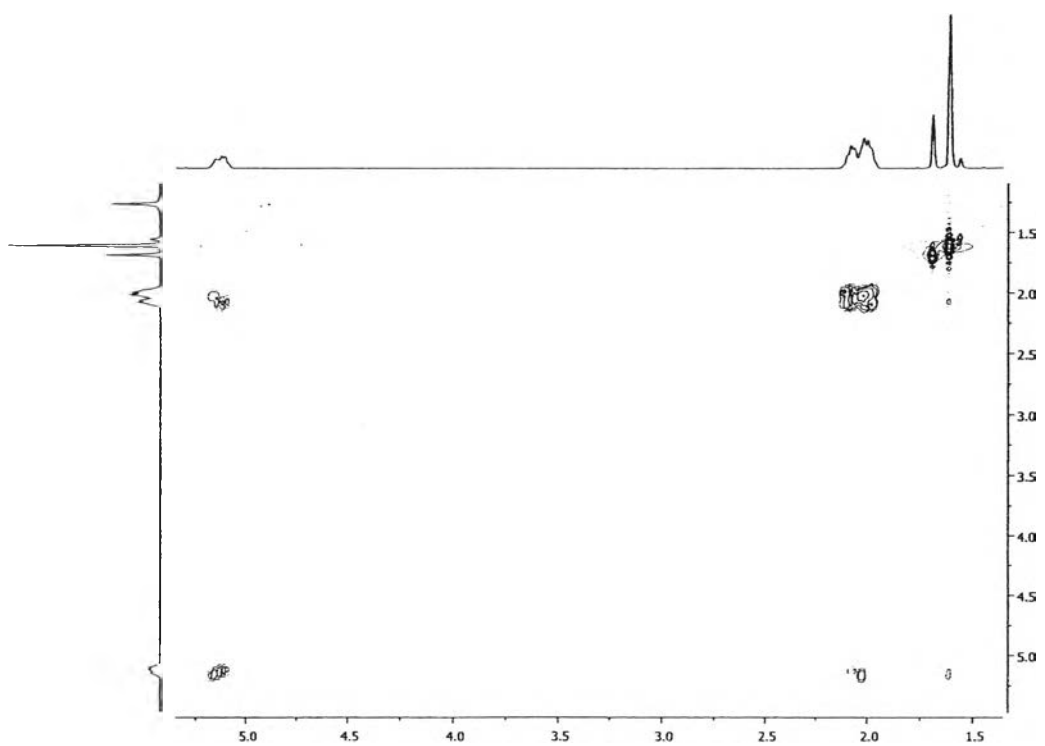


Figure A194 COSY spectrum of compound 83



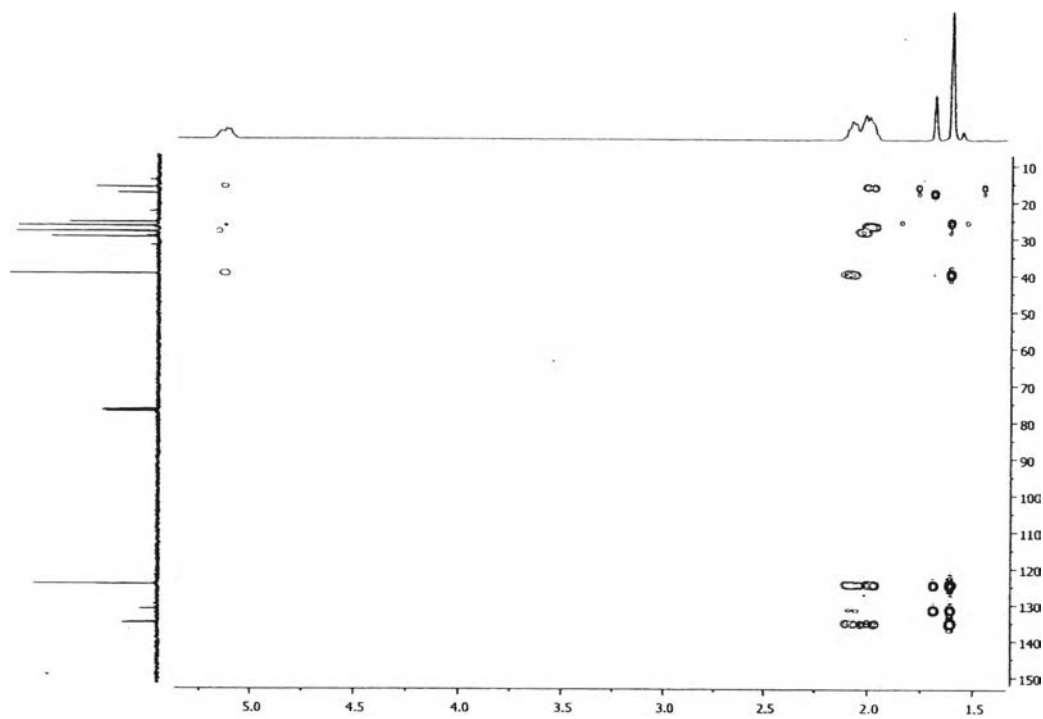


Figure A195 HMBC spectrum of compound 83

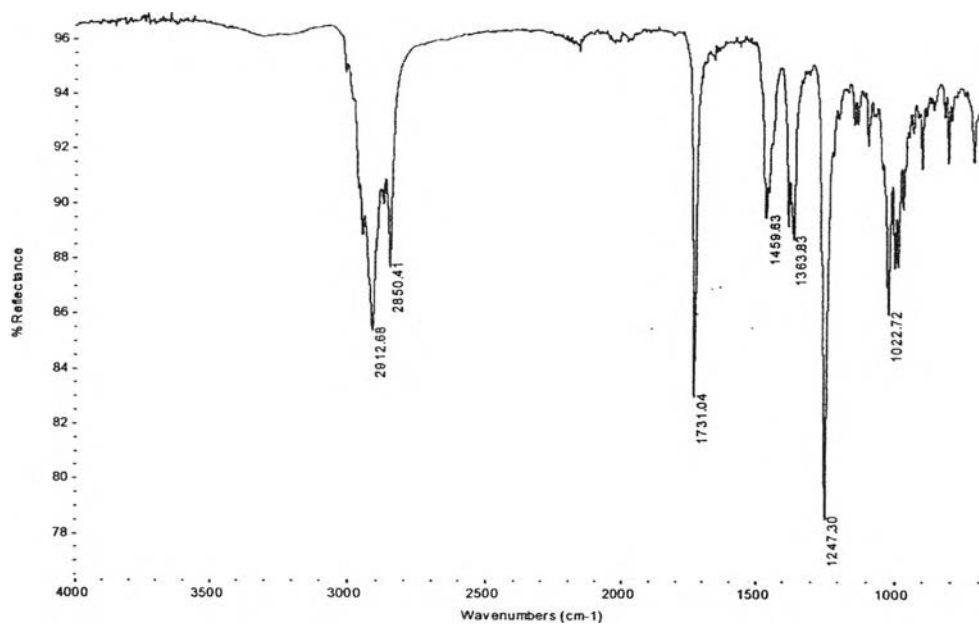
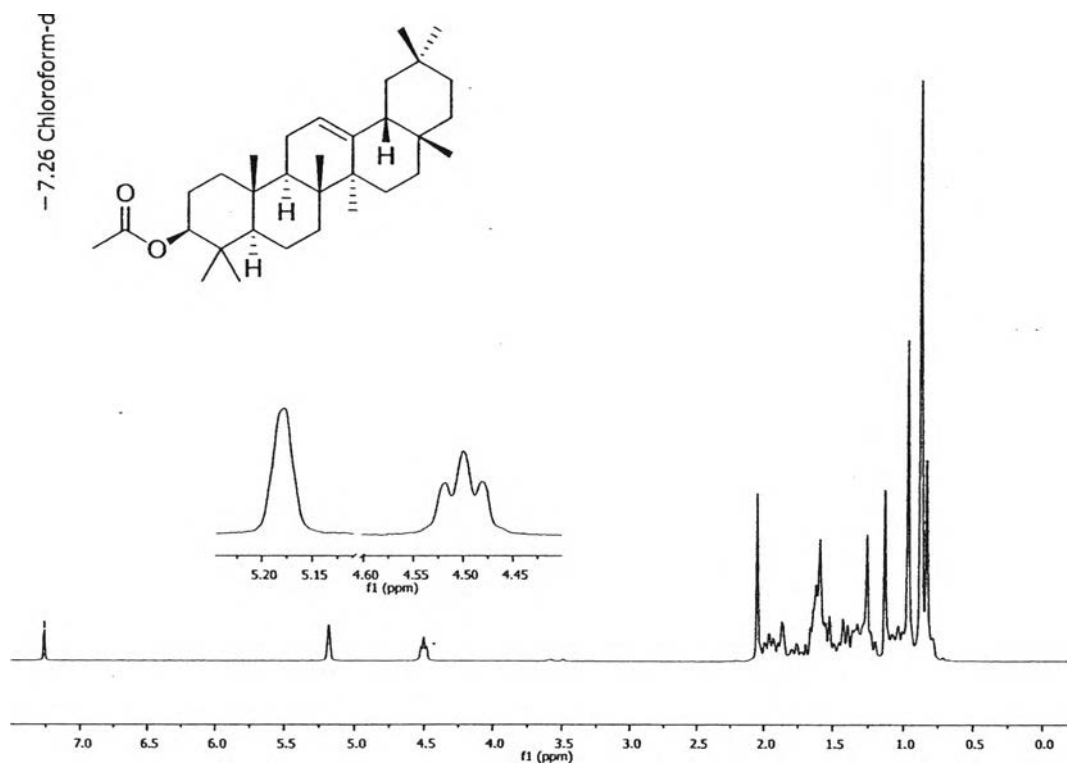
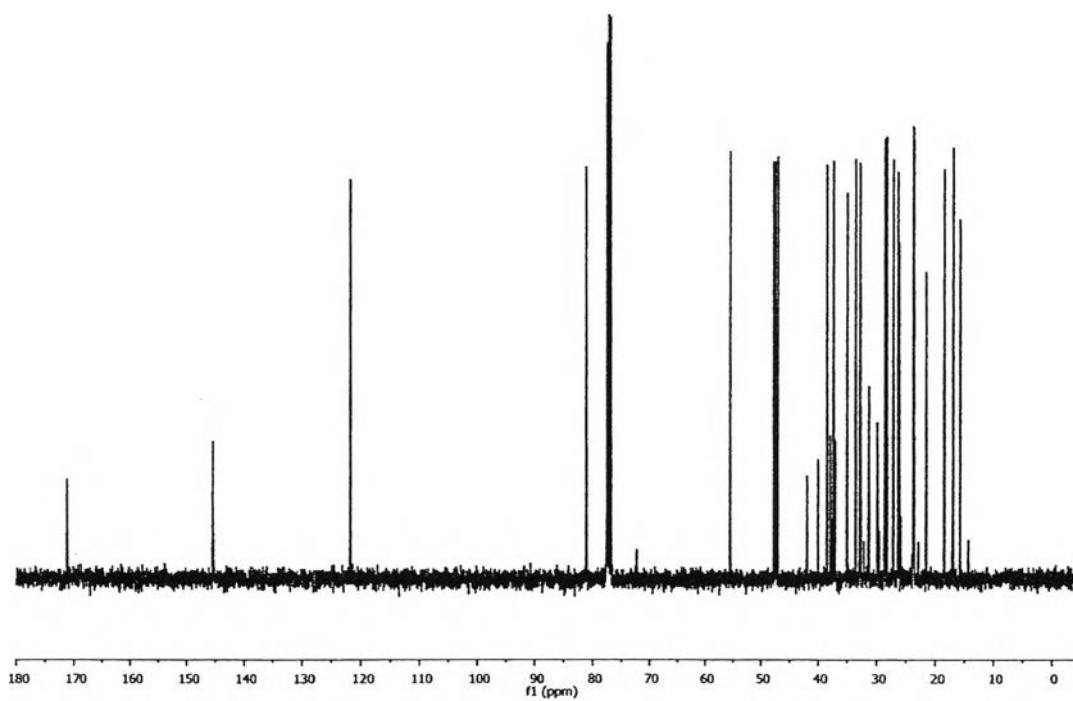


Figure A196 ATR-FTIR spectrum of compound 84

Figure A197 ^1H NMR spectrum of compound 84Figure A198 ^{13}C NMR spectrum of compound 84

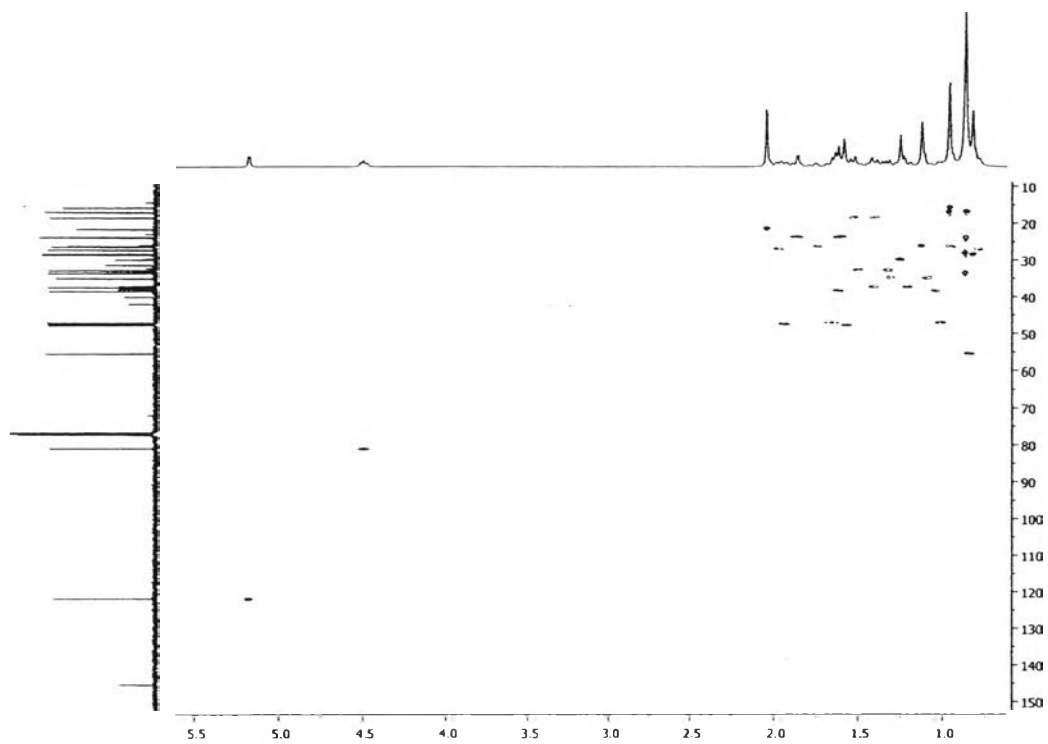


Figure A199 HSQC spectrum of compound 84

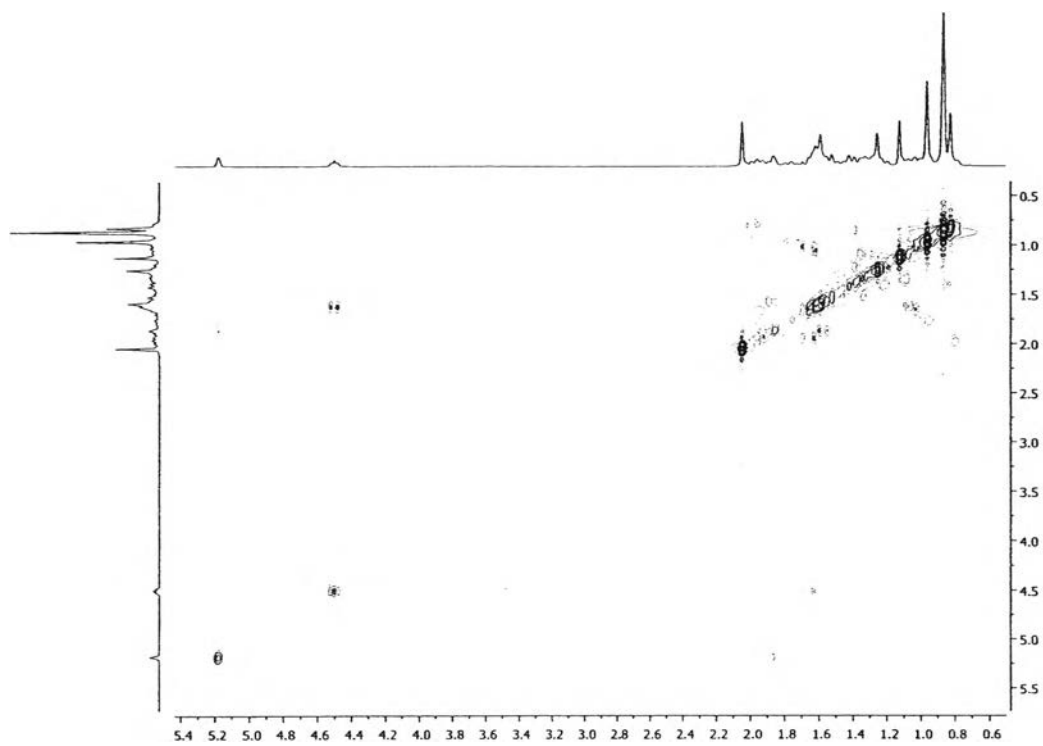


Figure A200 COSY spectrum of compound 84

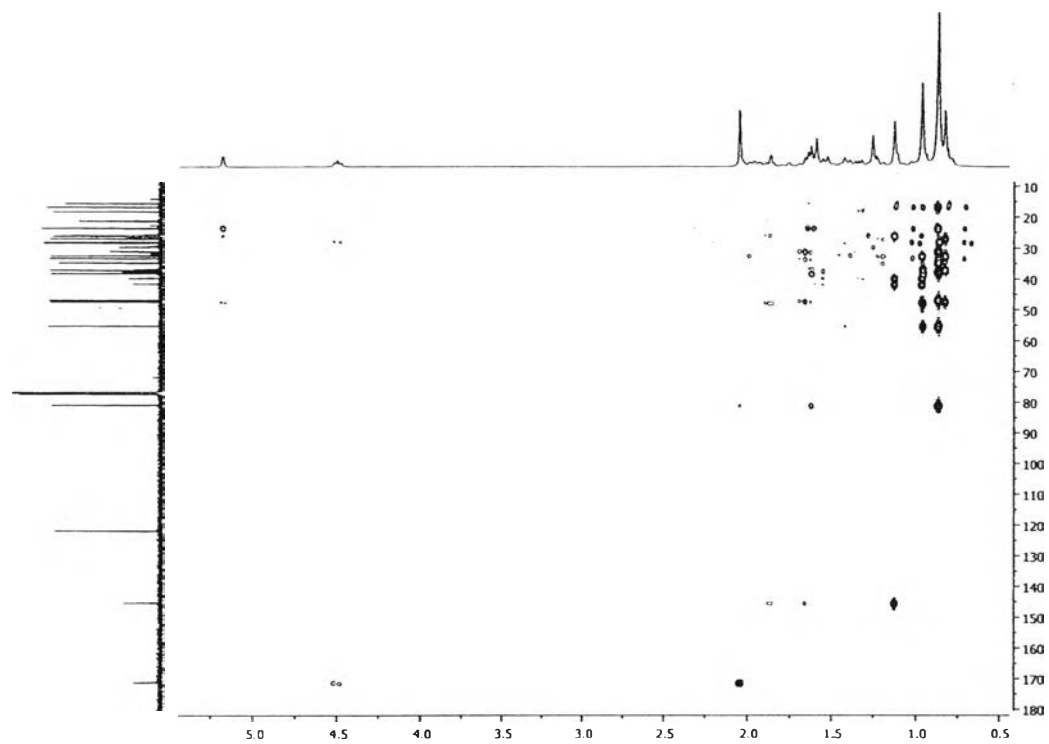


Figure A201 HMBC spectrum of compound 84

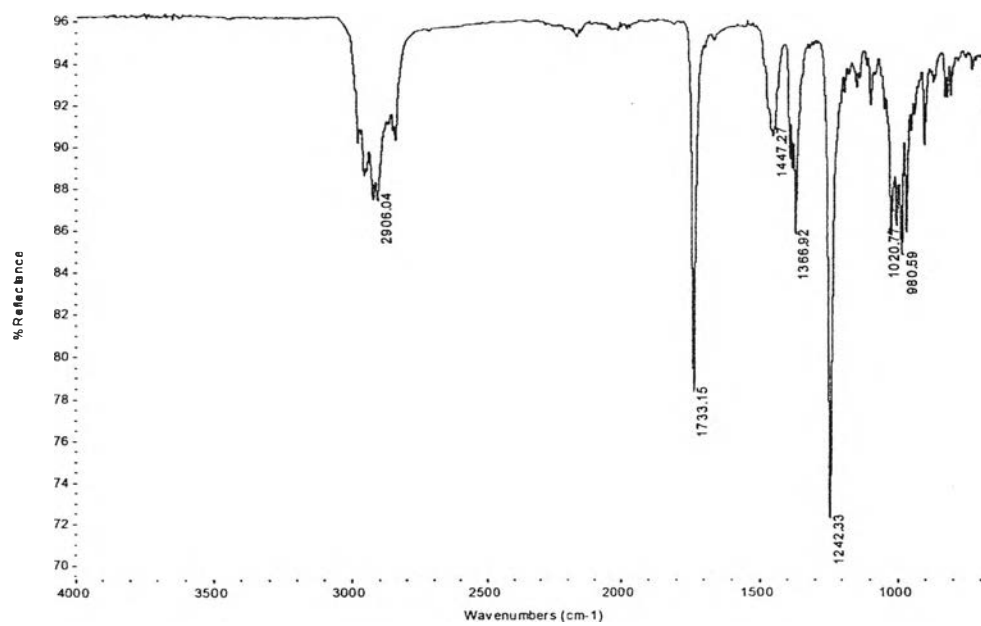
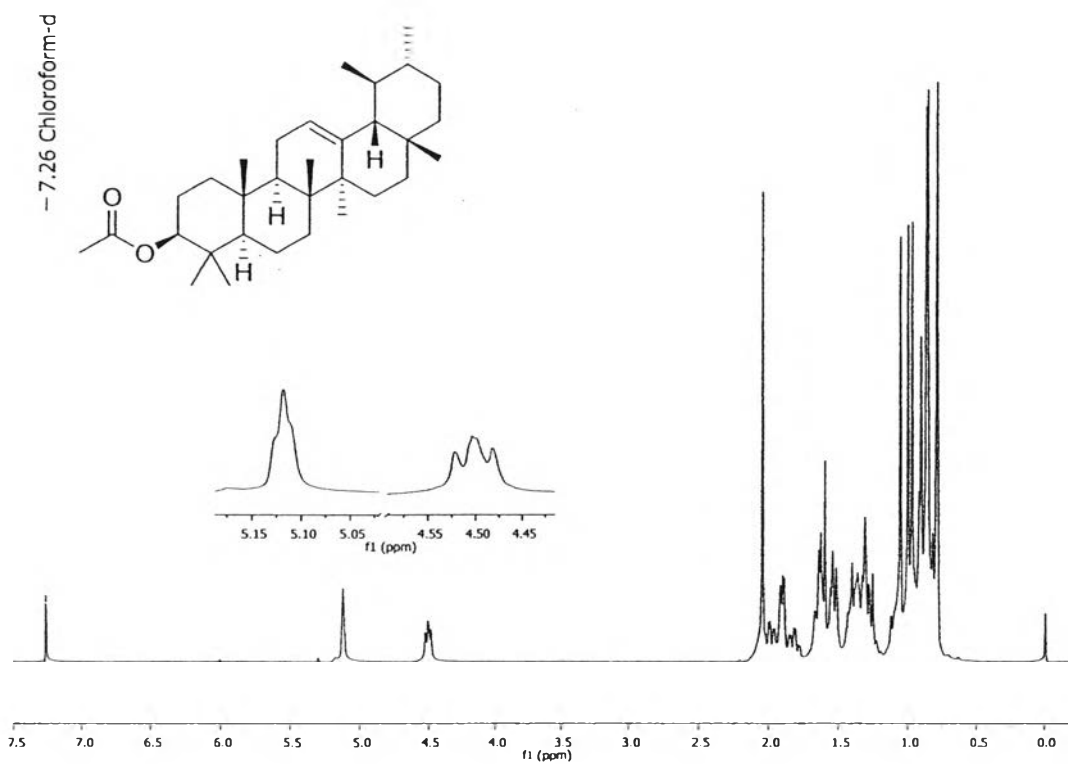
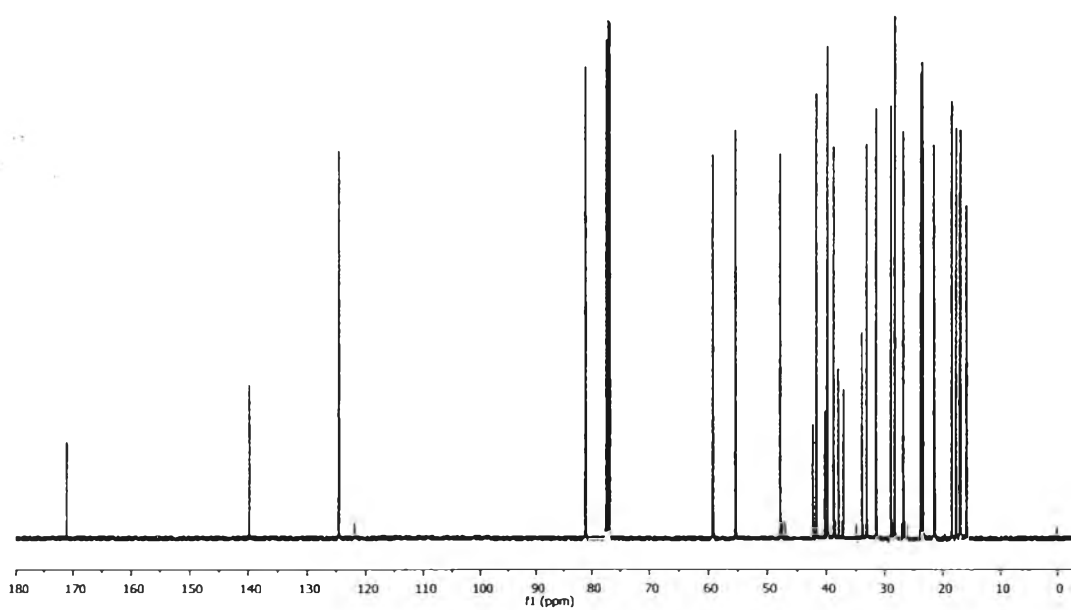


Figure A202 ATR-FTIR spectrum of compound 85



Figure A203 ^1H NMR spectrum of compound 85Figure A204 ^{13}C NMR spectrum of compound 85

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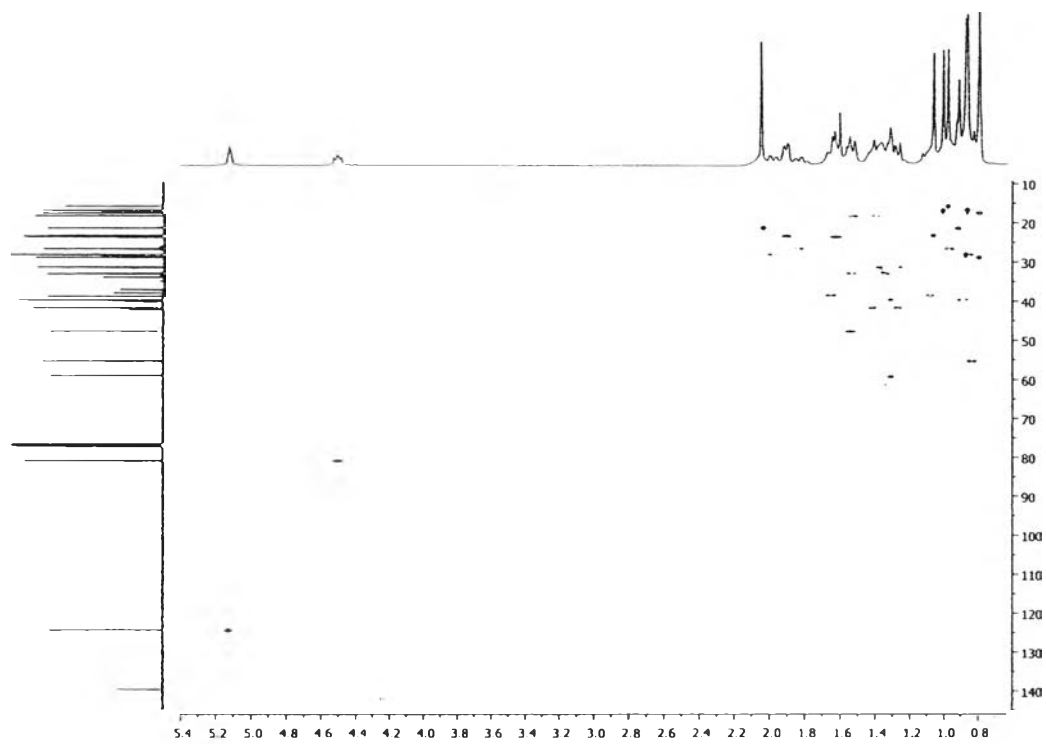


Figure A205 HSQC spectrum of compound 85

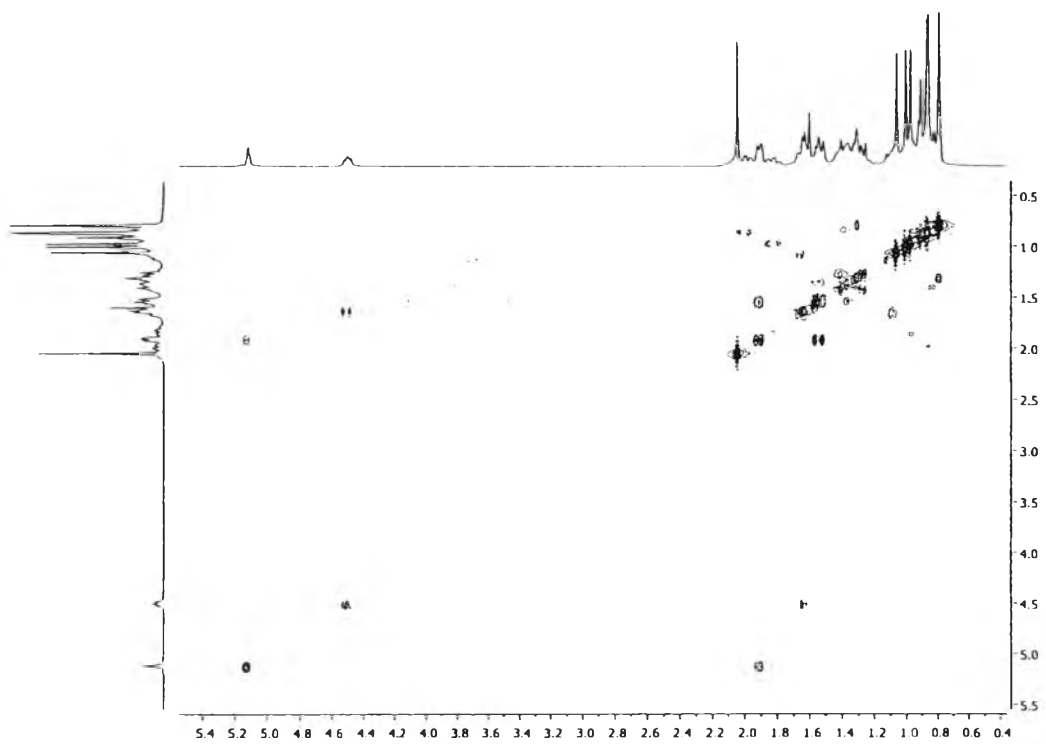


Figure A206 COSY spectrum of compound 85

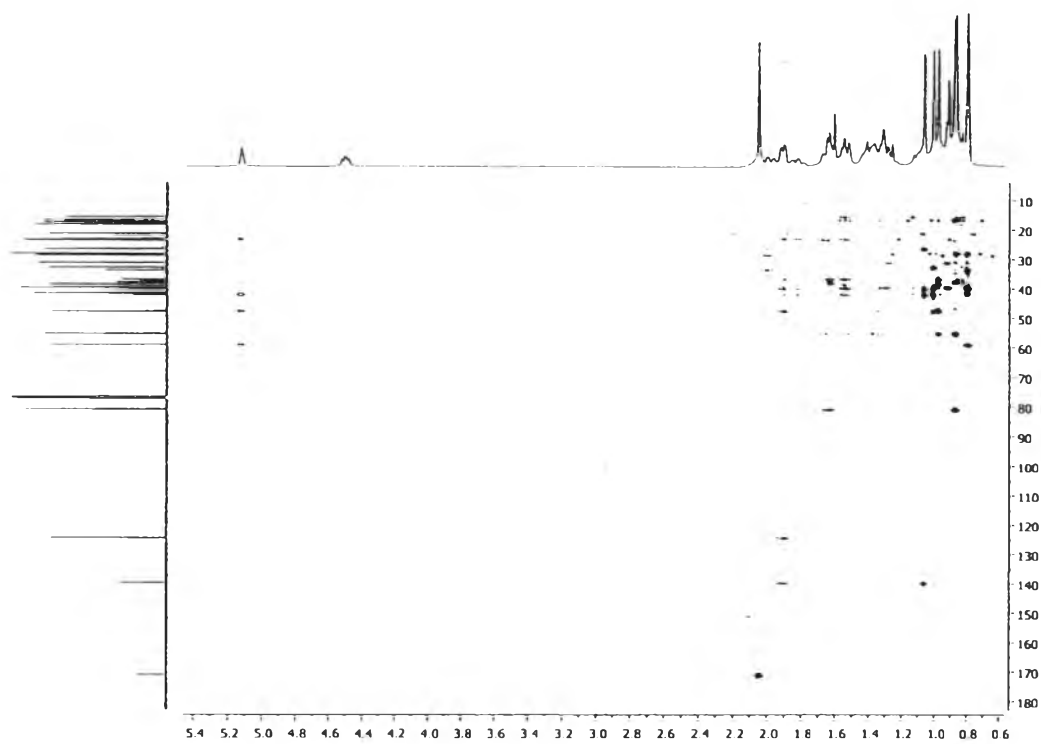


Figure A207 HMBC spectrum of compound 85

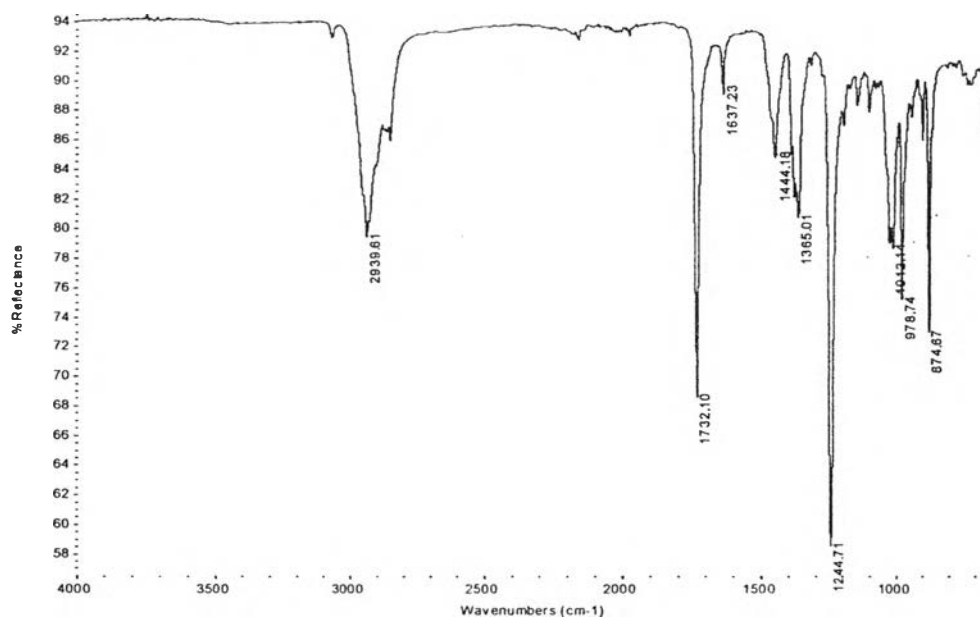
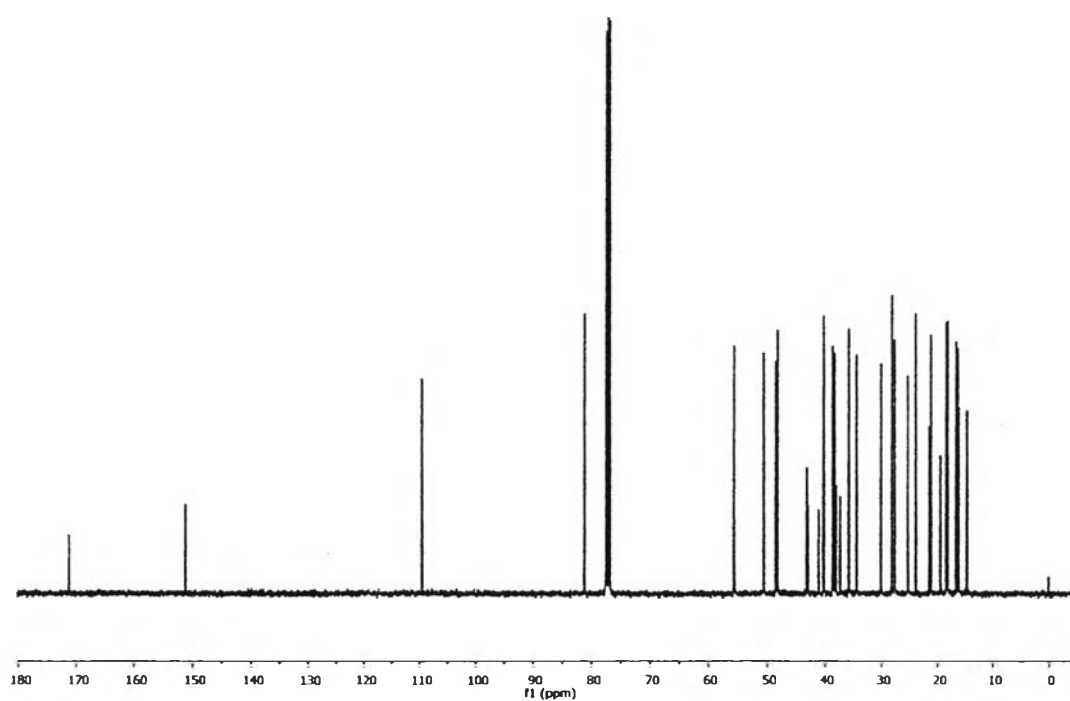
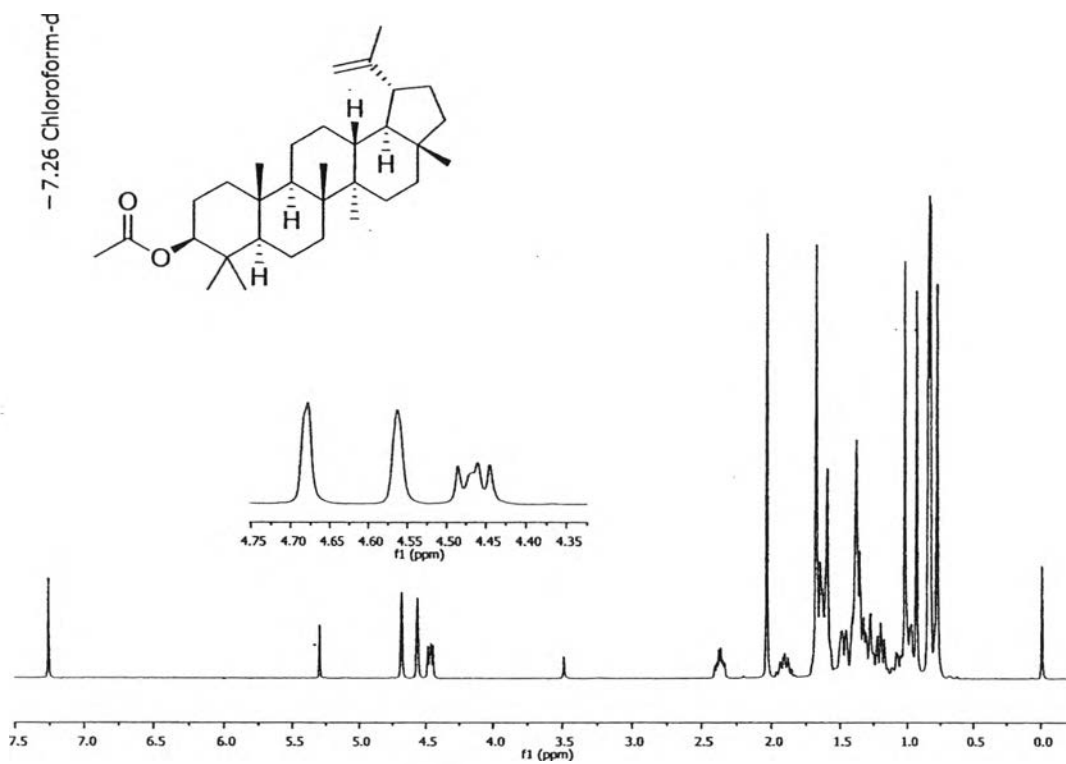


Figure A208 ATR-FTIR spectrum of compound 86





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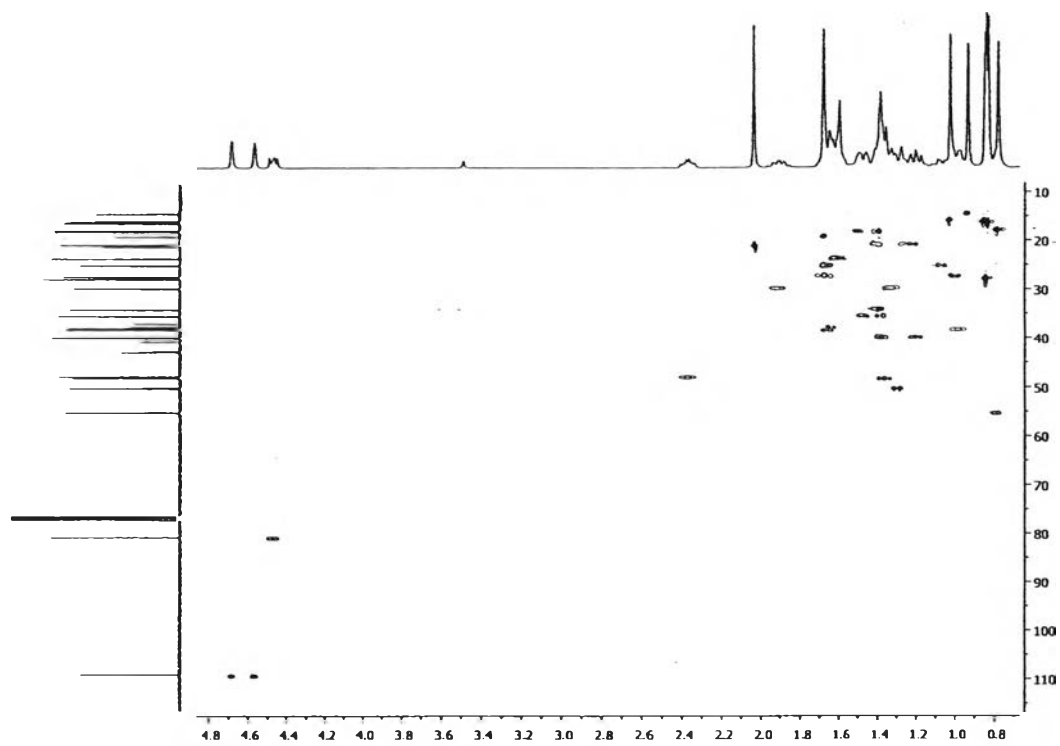


Figure A211 HSQC spectrum of compound 86

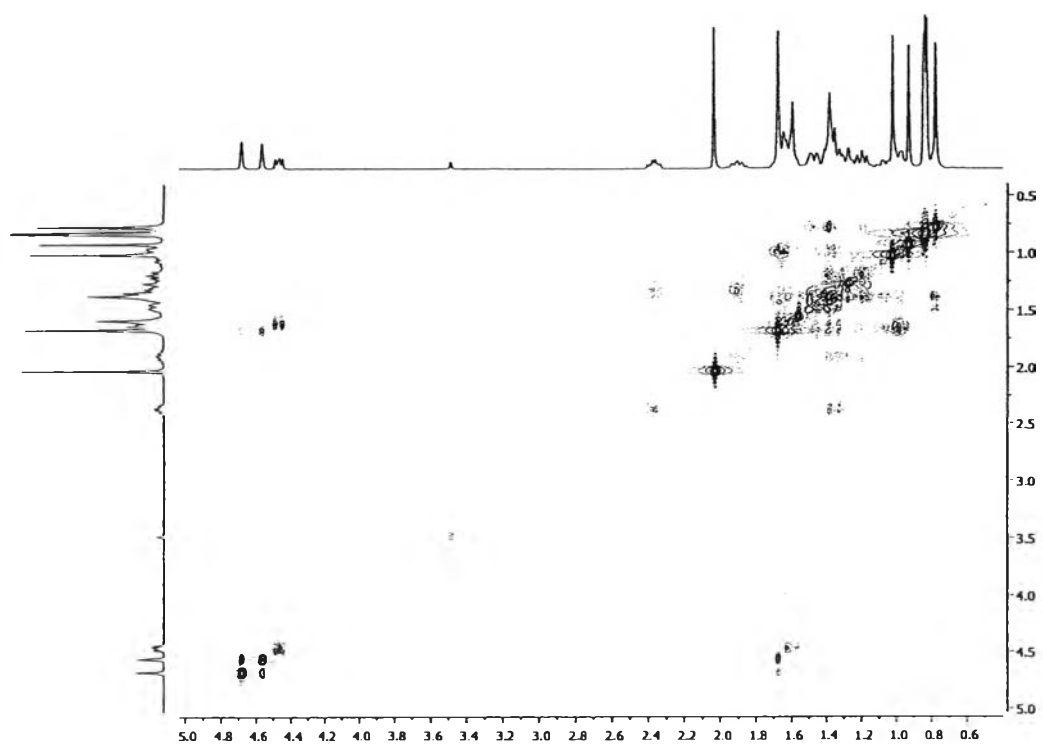


Figure A212 COSY spectrum of compound 86

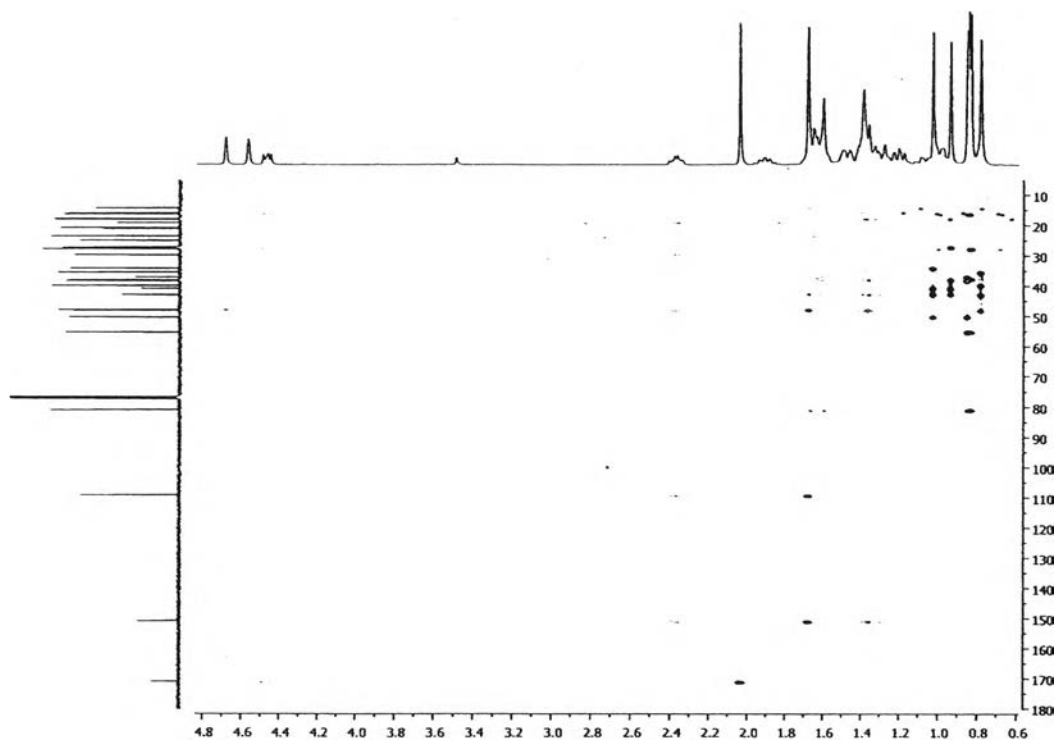


Figure A213 HMBC spectrum of compound 86

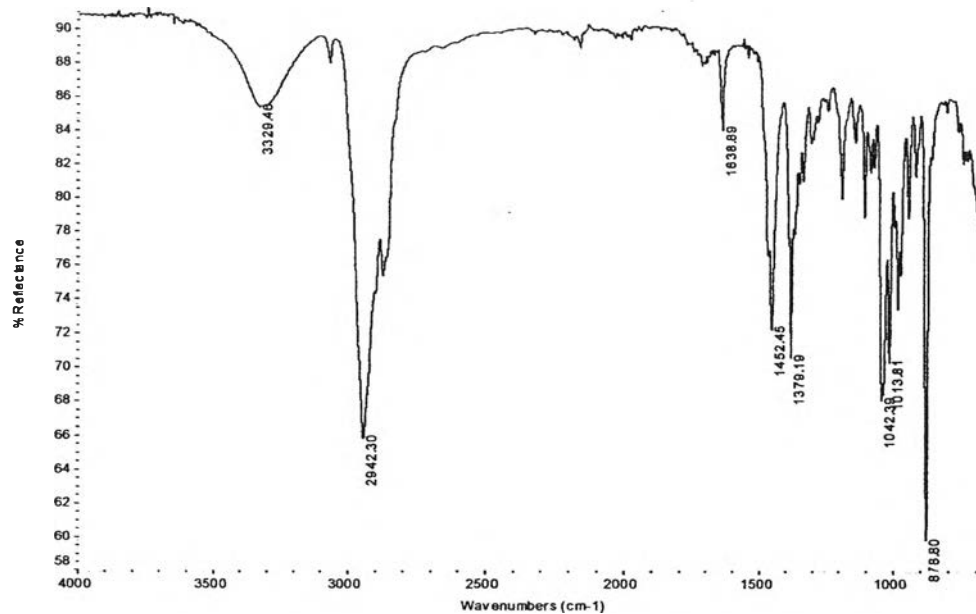
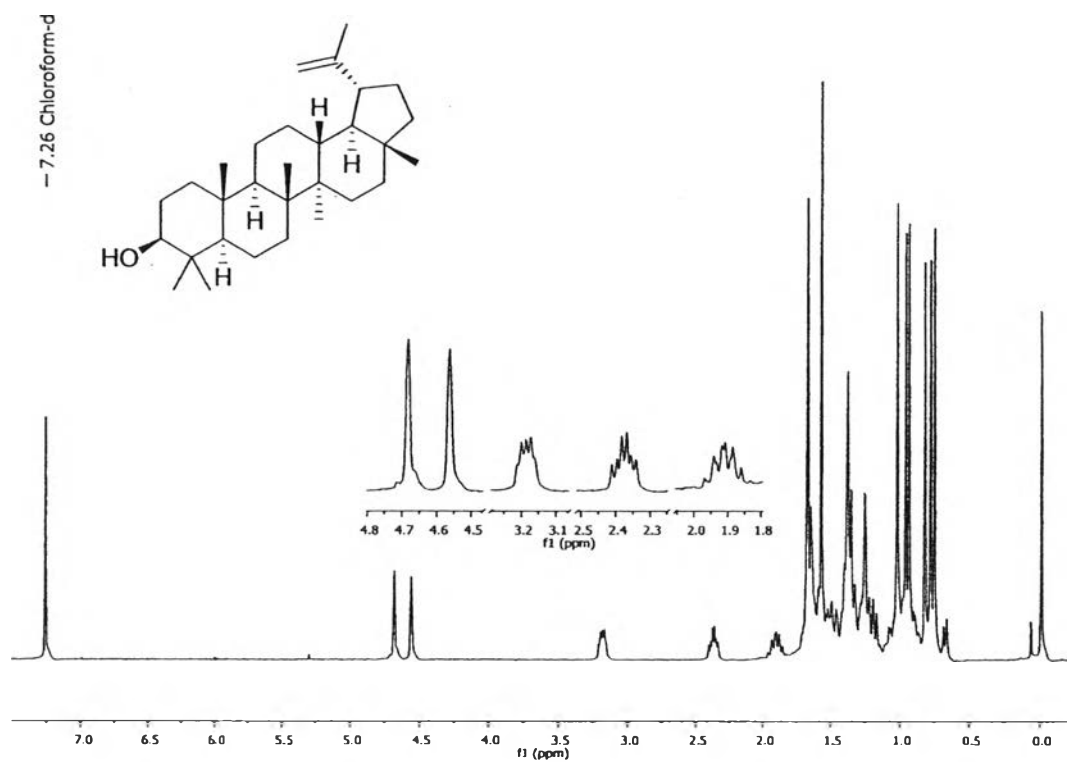
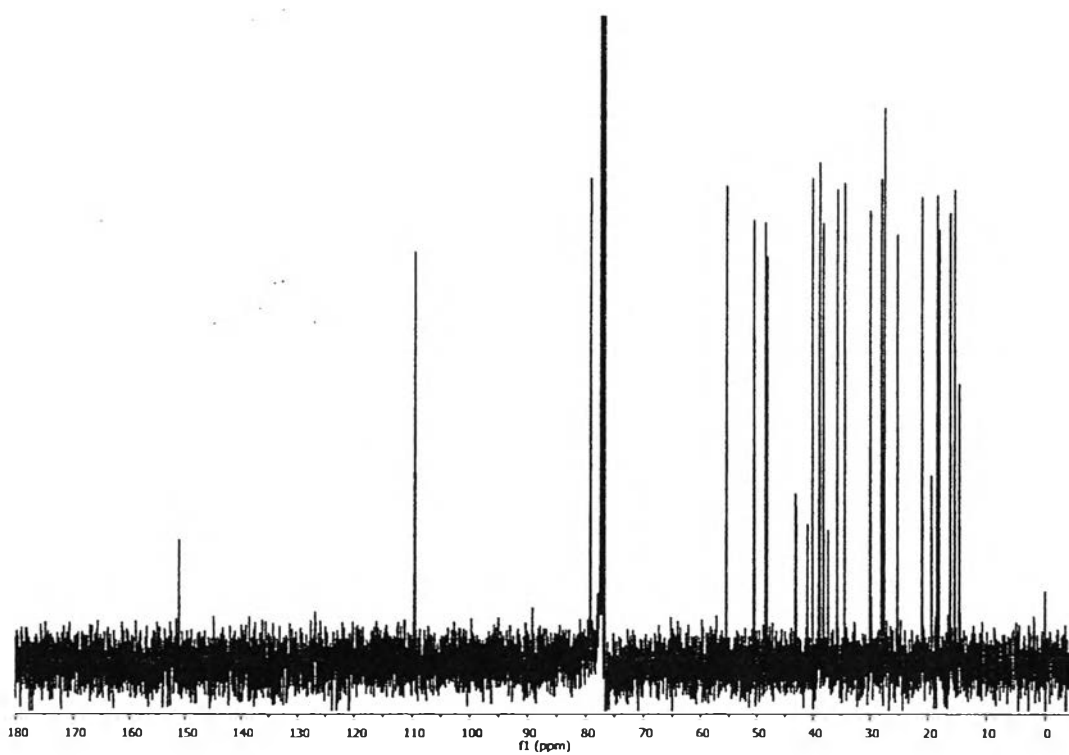


Figure A214 ATR-FTIR spectrum of compound 57

Figure A215 ^1H NMR spectrum of compound 57Figure A216 ^{13}C NMR spectrum of compound 57

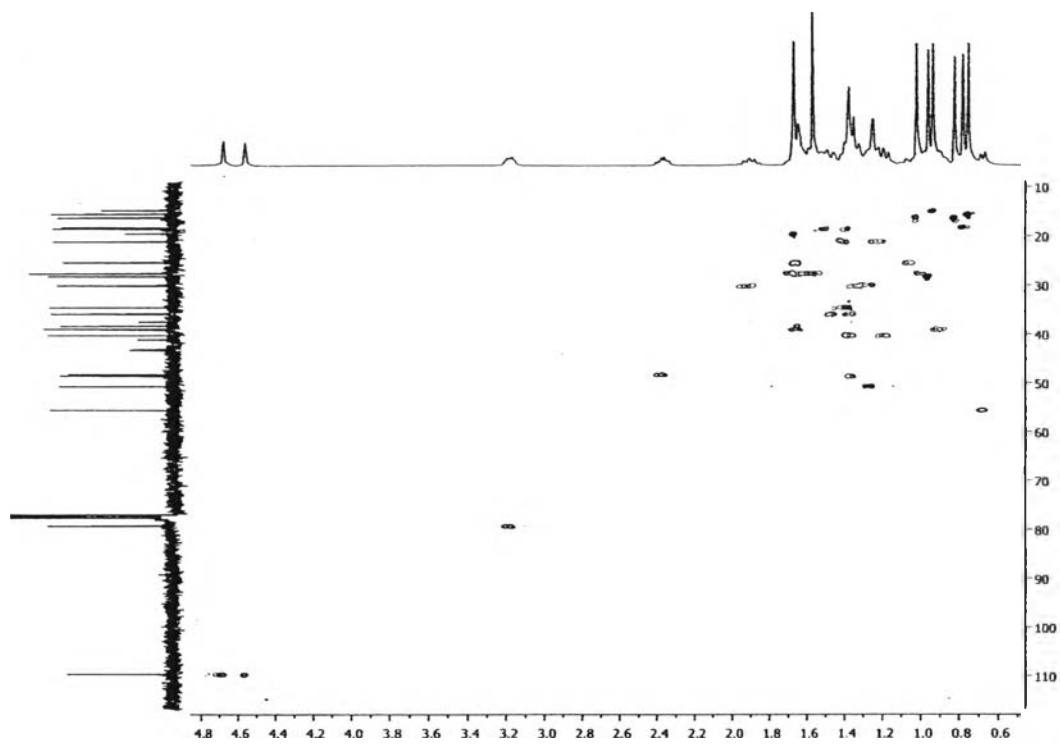


Figure A217 HSQC spectrum of compound 57

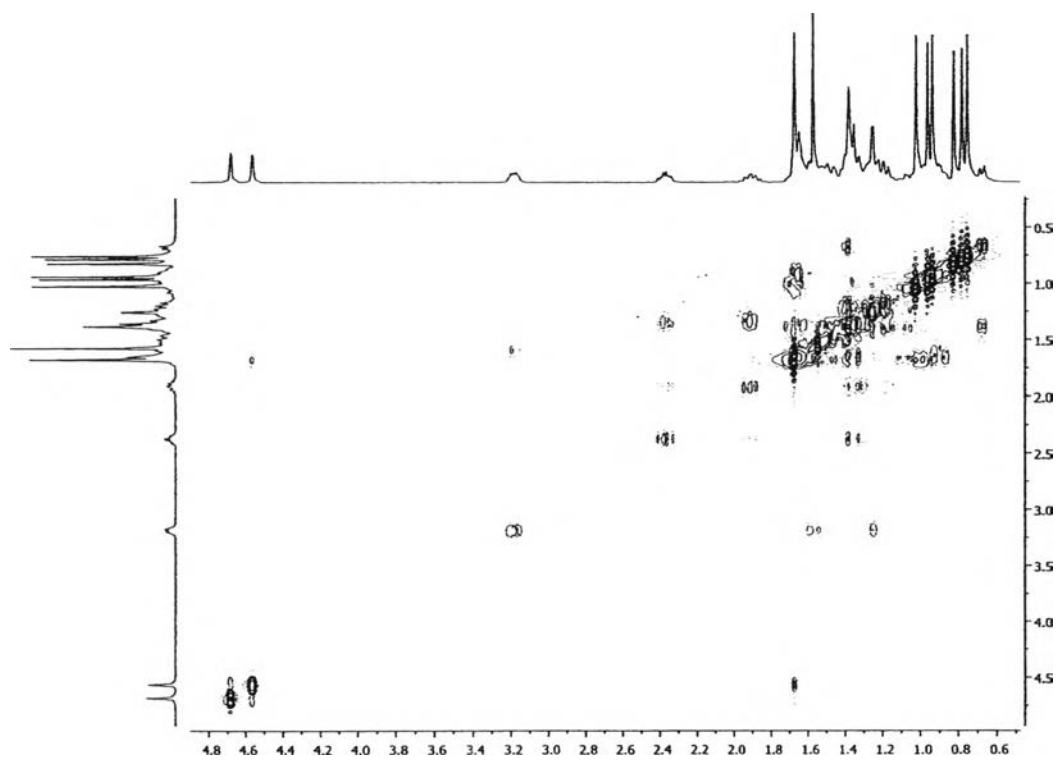


Figure A218 COSY spectrum of compound 57

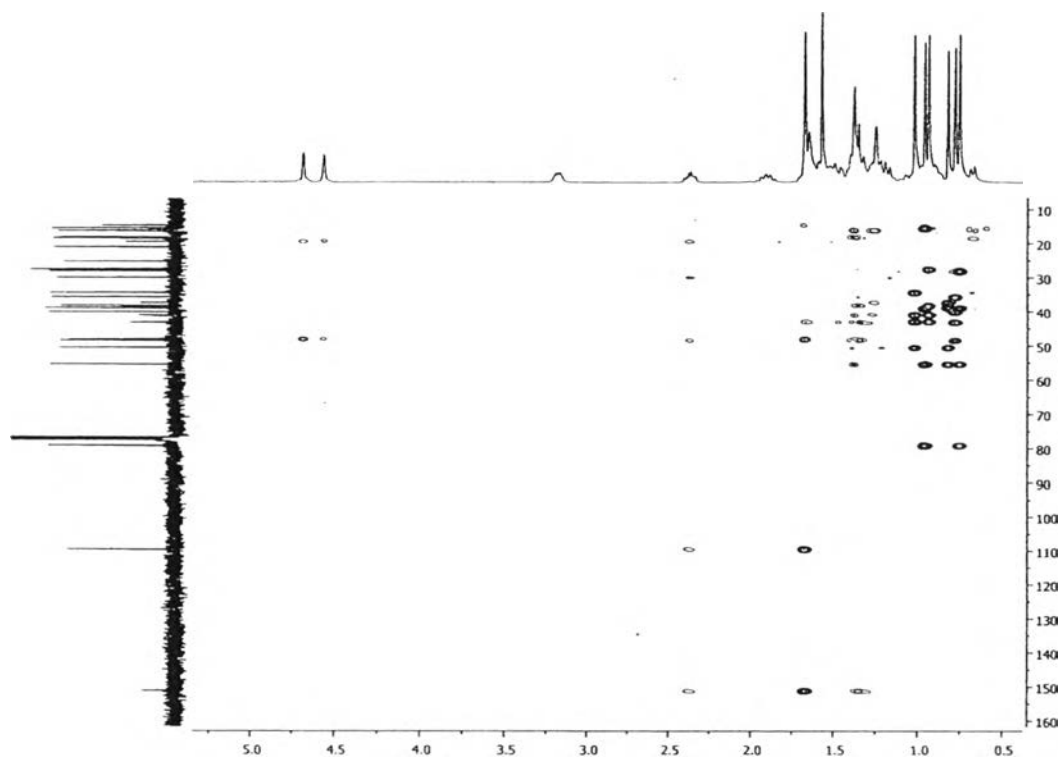


Figure A219 HMBC spectrum of compound 57

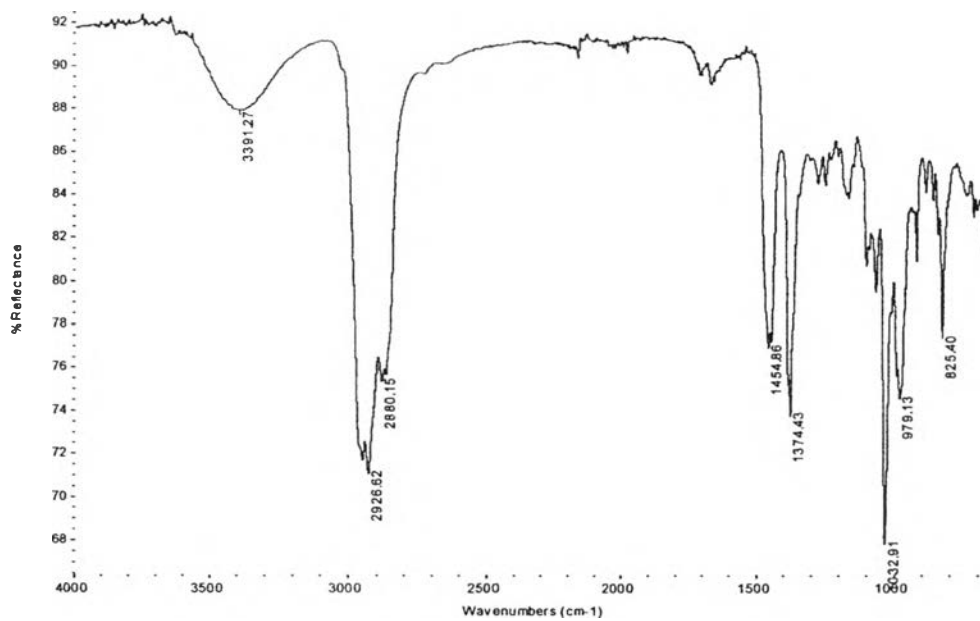
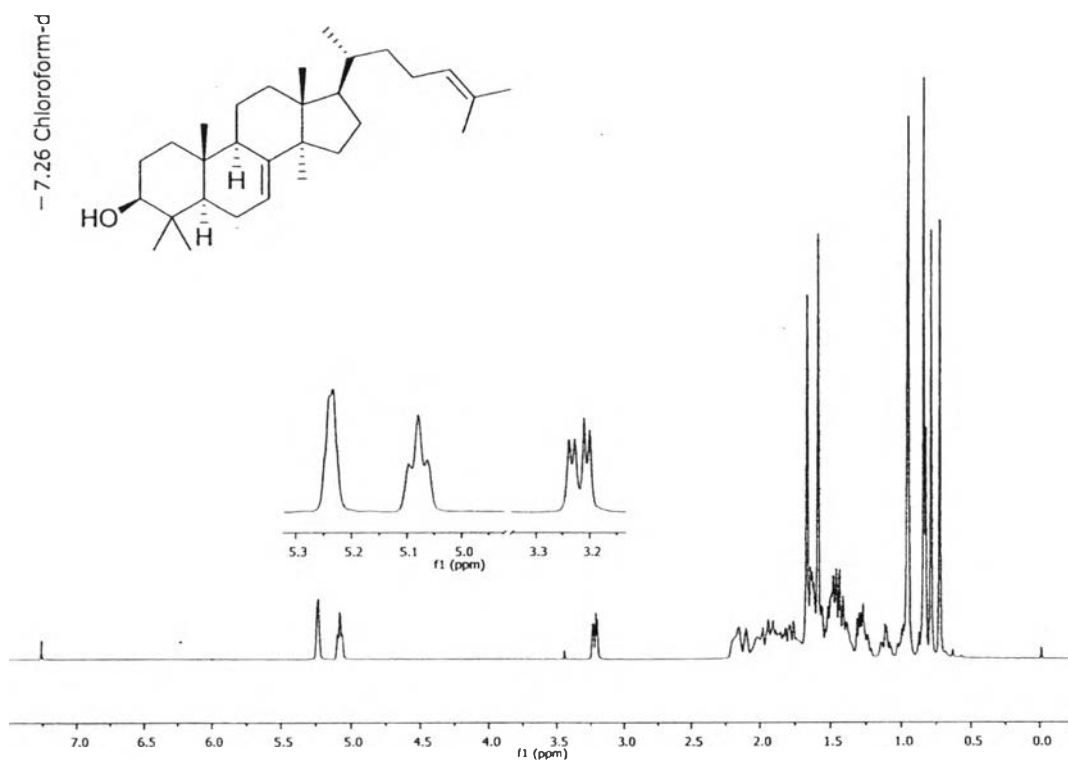
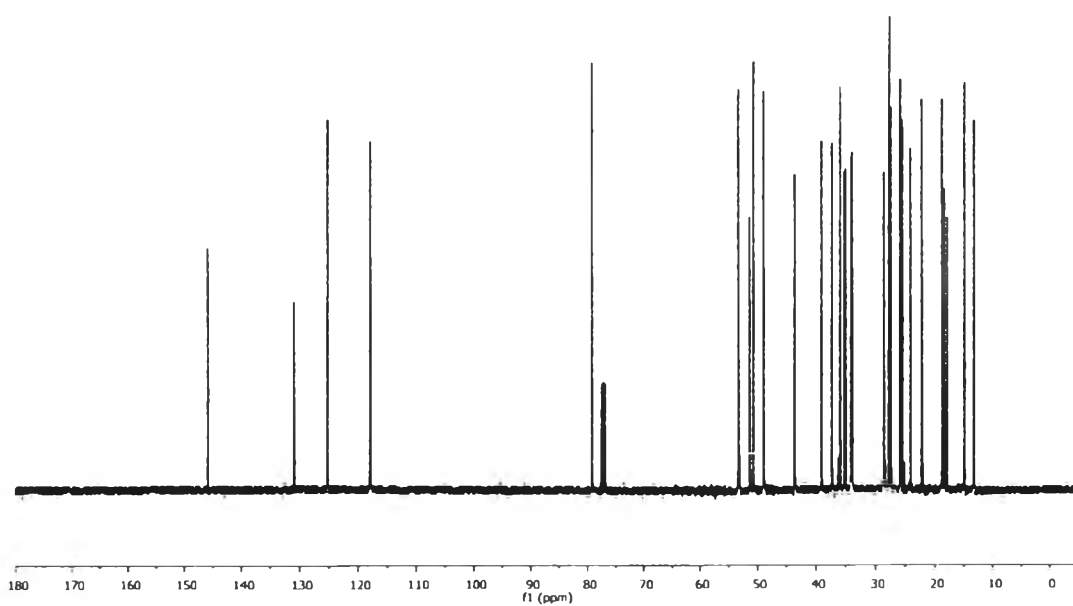


Figure A220 ATR-FTIR spectrum of compound 87



Figure A221 ^1H NMR spectrum of compound 87Figure A222 ^{13}C NMR spectrum of compound 87

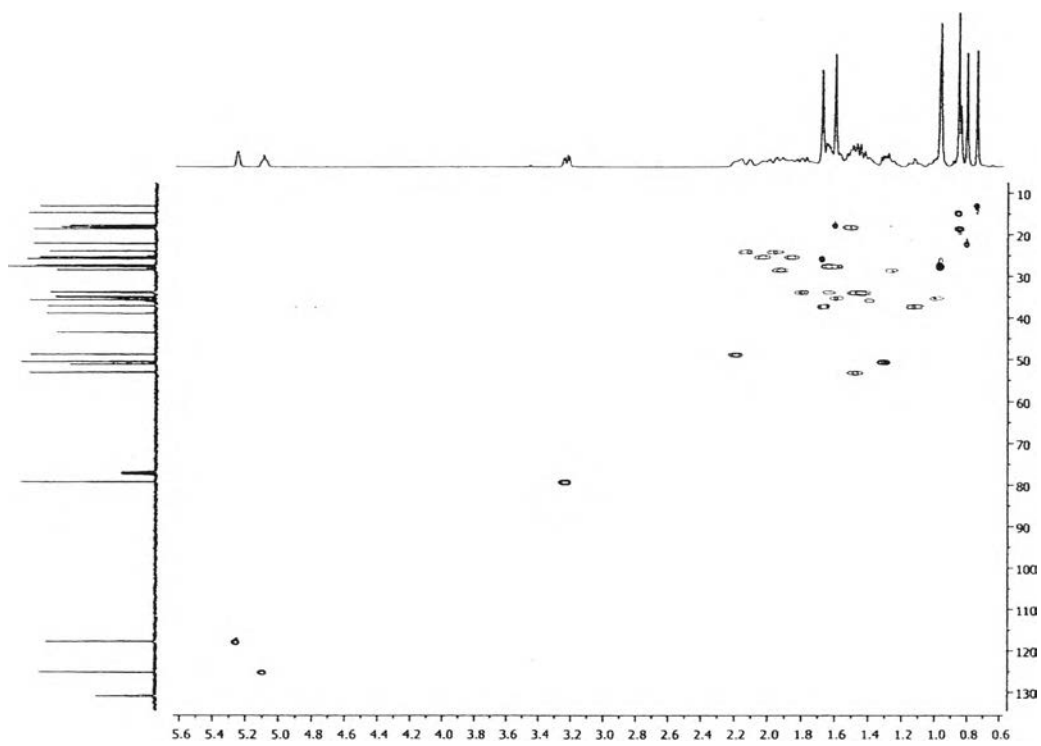


Figure A223 HSQC spectrum of compound 87

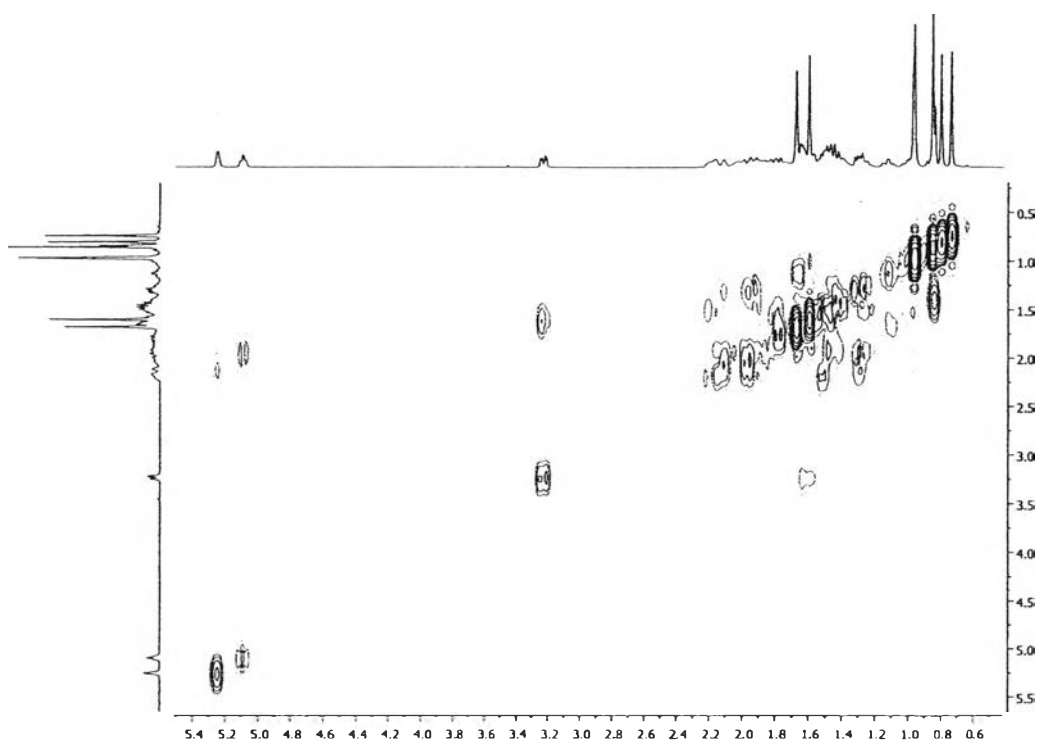


Figure A224 COSY spectrum of compound 87

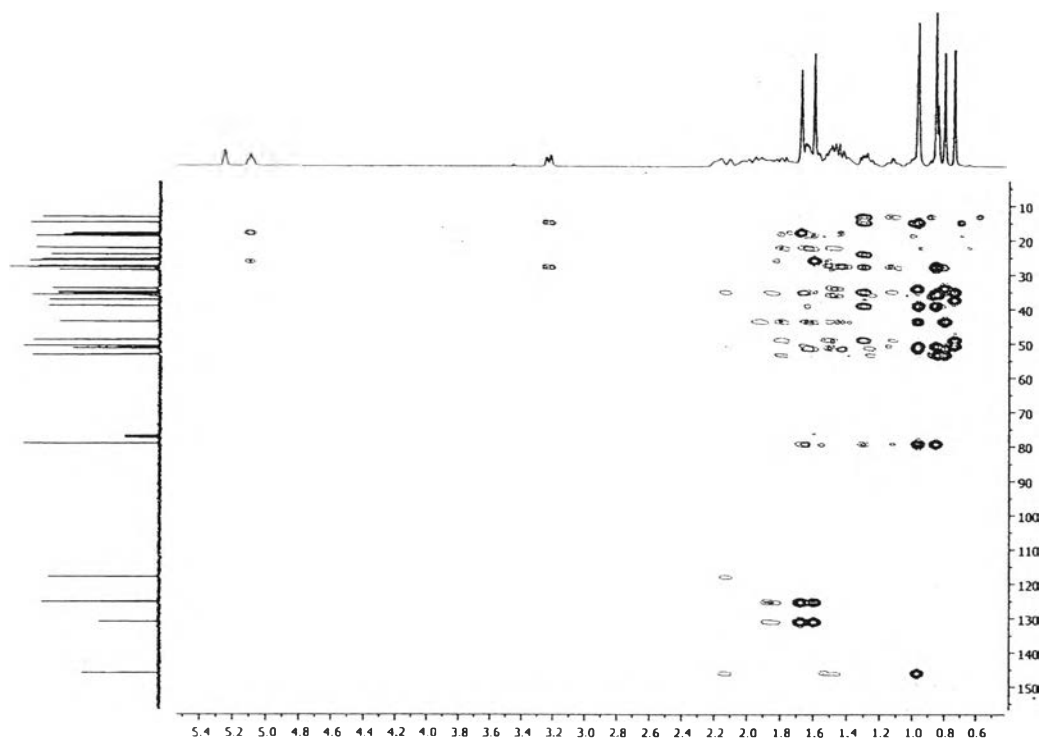


Figure A225 HMBC spectrum of compound 87

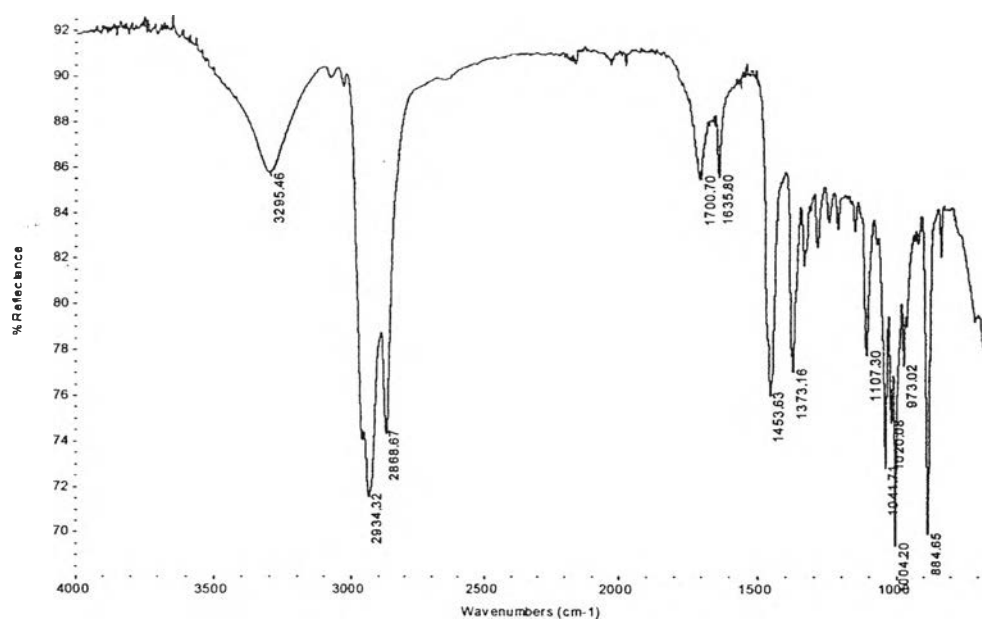
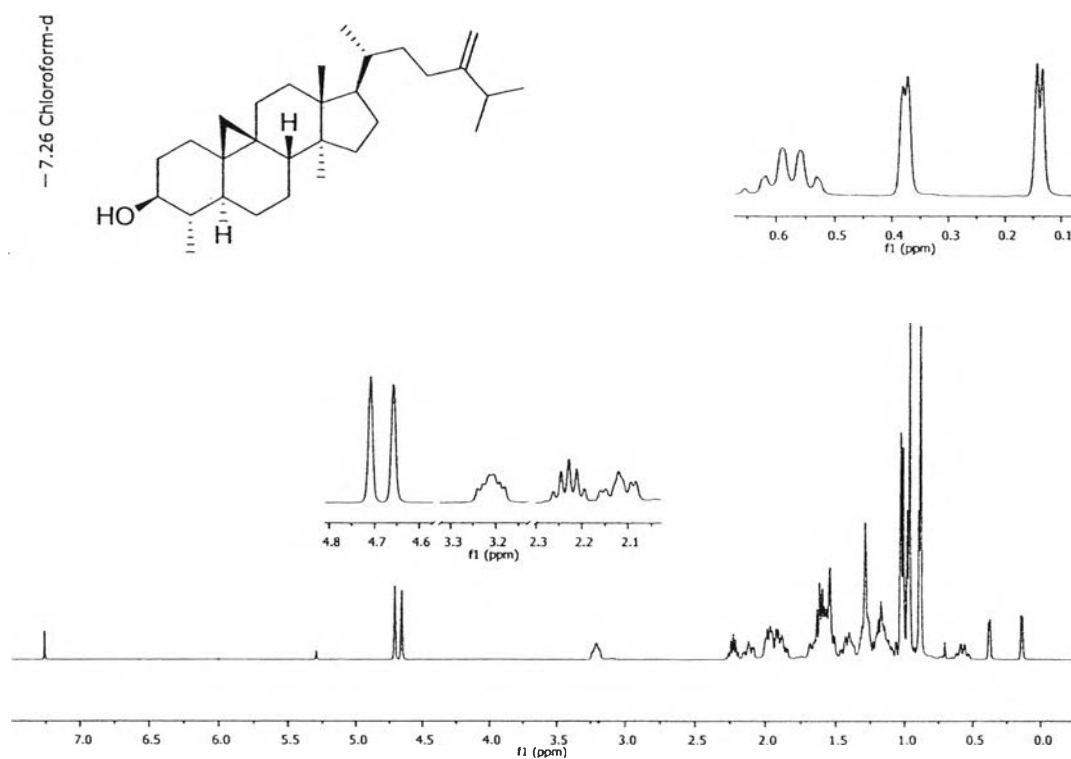
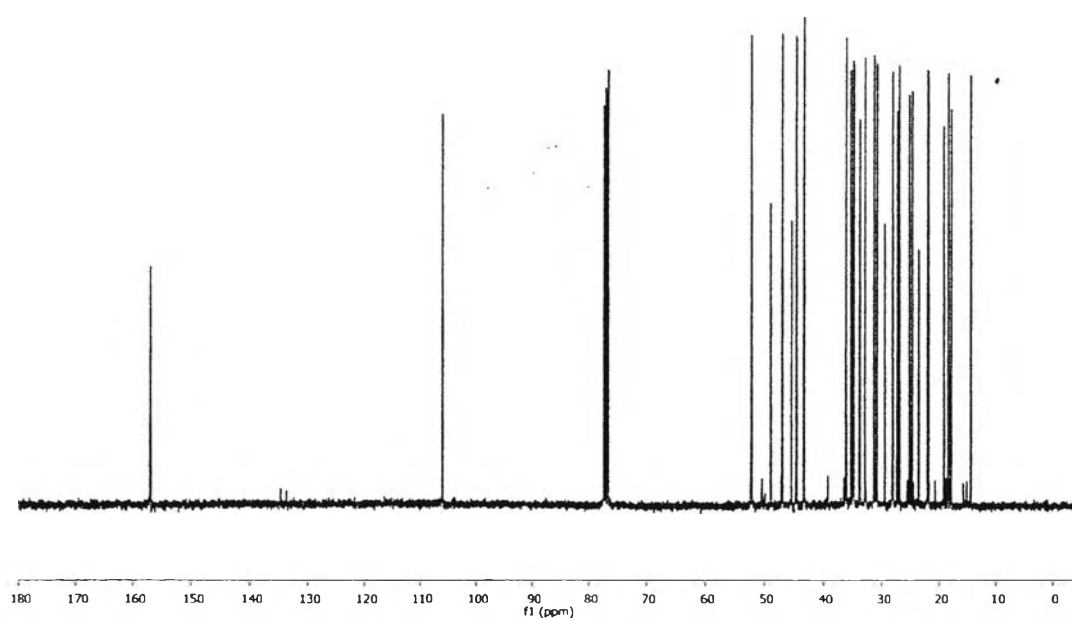


Figure A226 ATR-FTIR spectrum of compound 88



Figure A227 ^1H NMR spectrum of compound 88Figure A228 ^{13}C NMR spectrum of compound 88

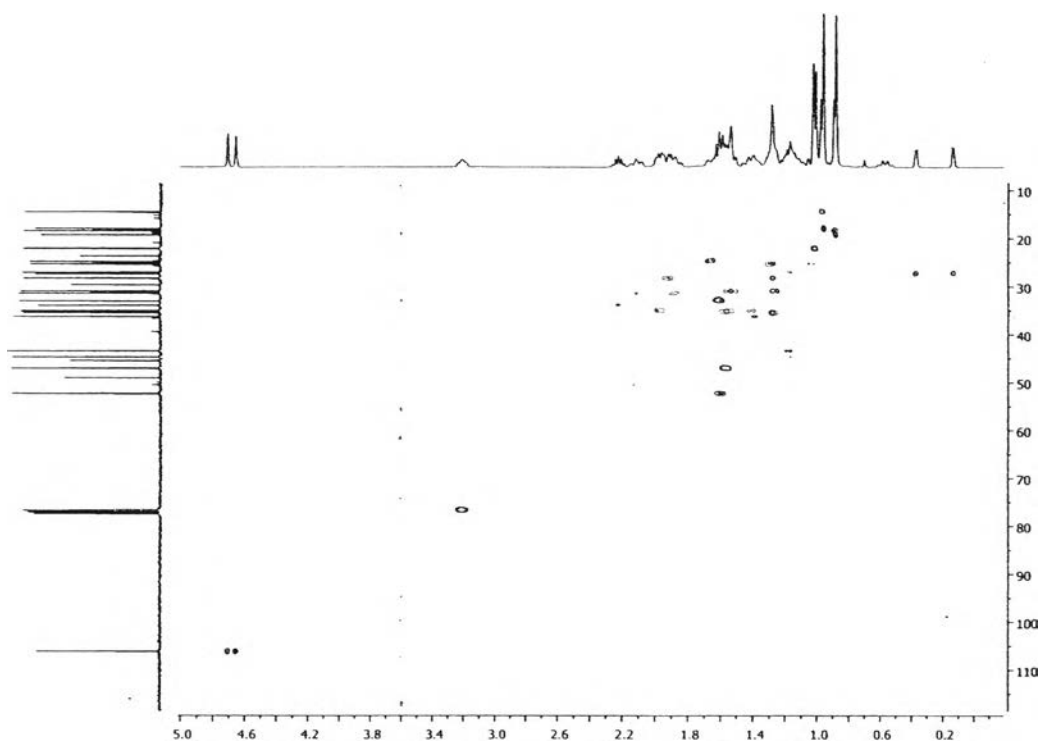


Figure A229 HSQC spectrum of compound 88

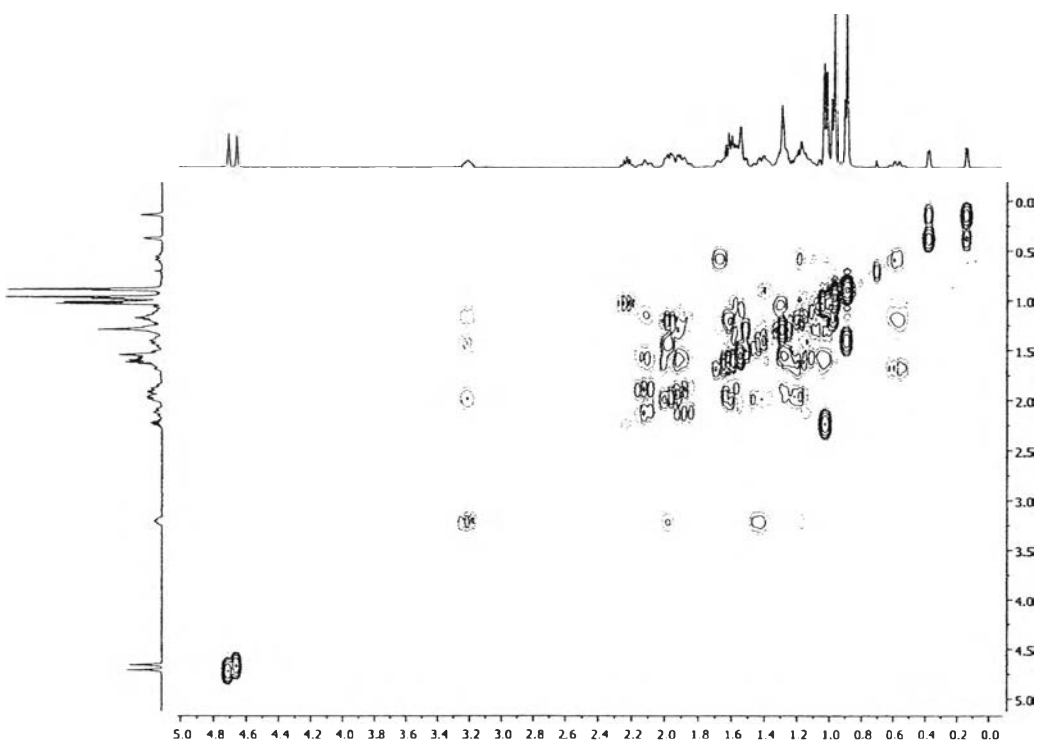


Figure A230 COSY spectrum of compound 88

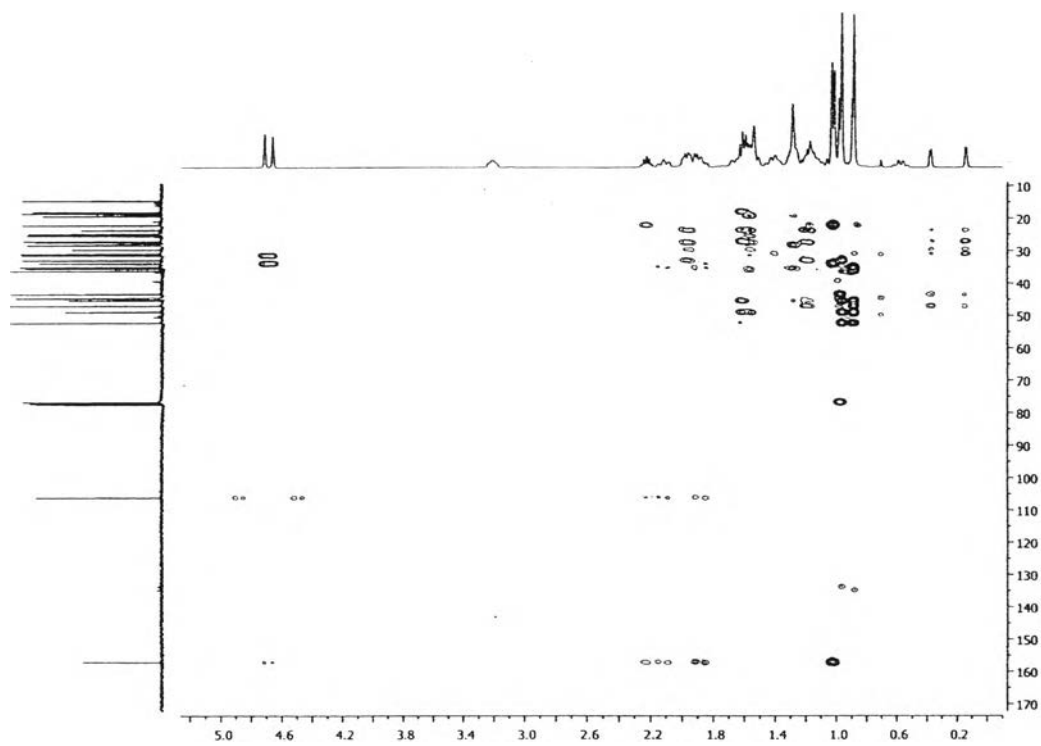


Figure A231 HMBC spectrum of compound 88

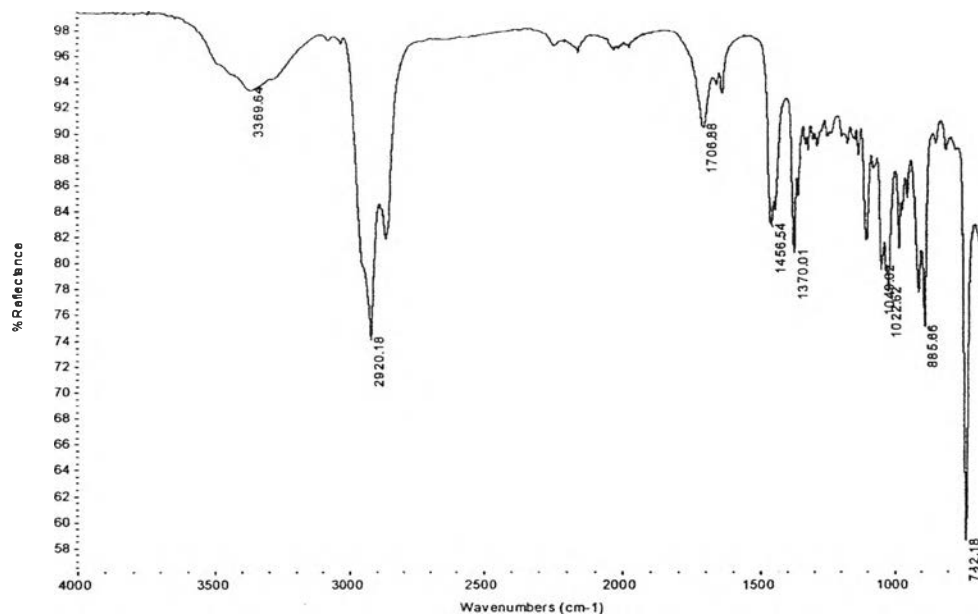
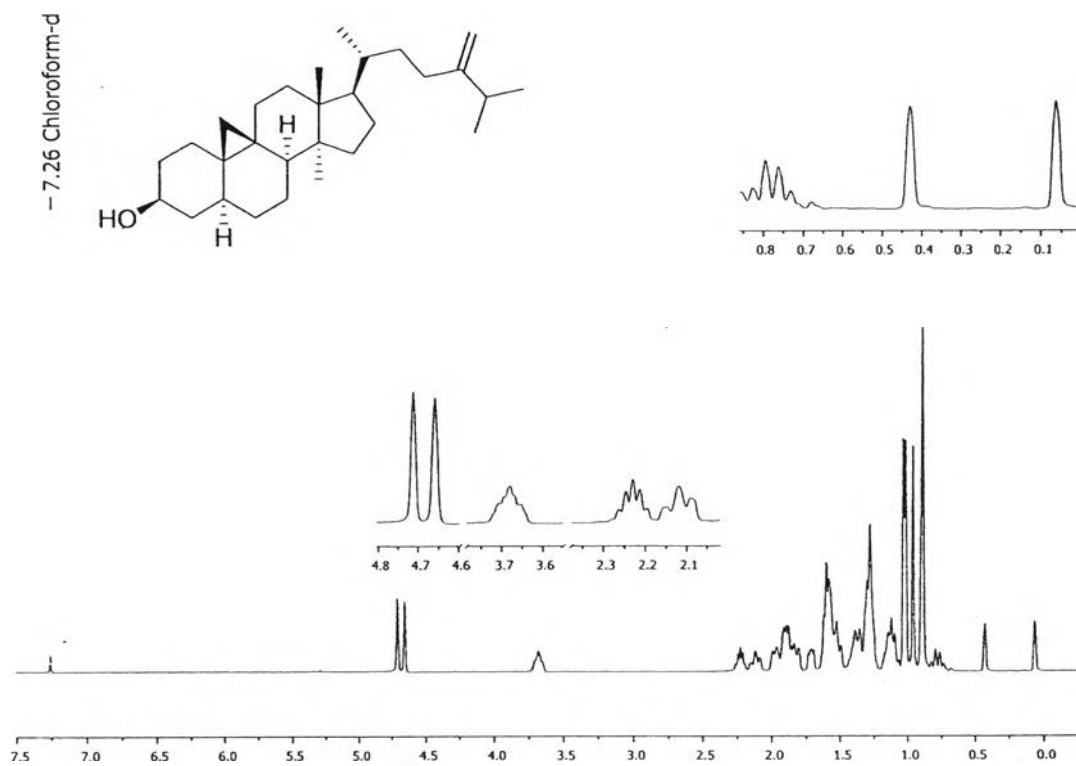
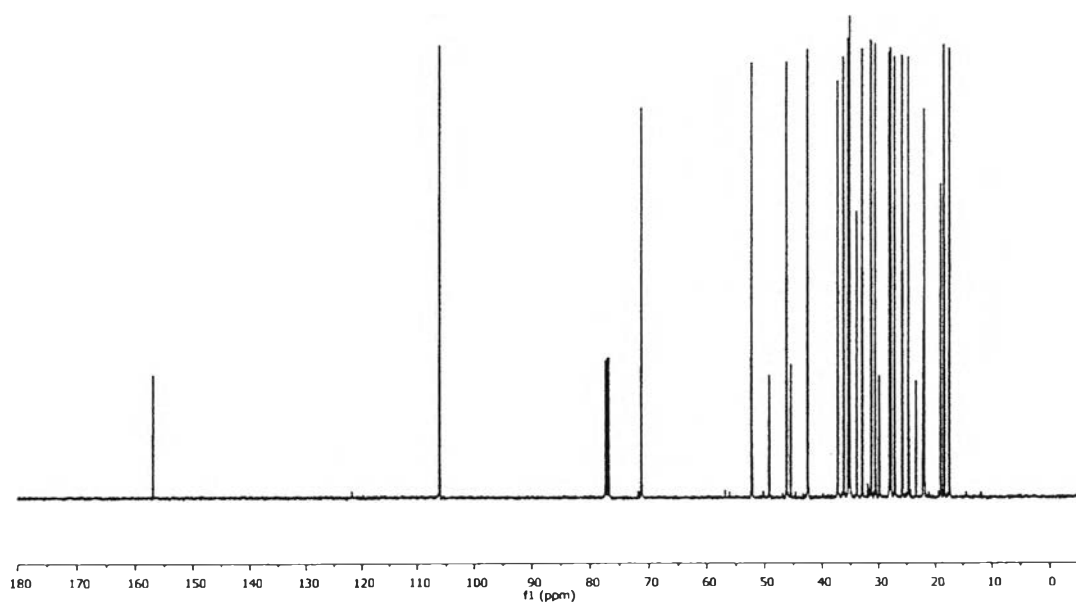


Figure A232 ATR-FTIR spectrum of compound 89



Figure A233 ^1H NMR spectrum of compound 89Figure A234 ^{13}C NMR spectrum of compound 89

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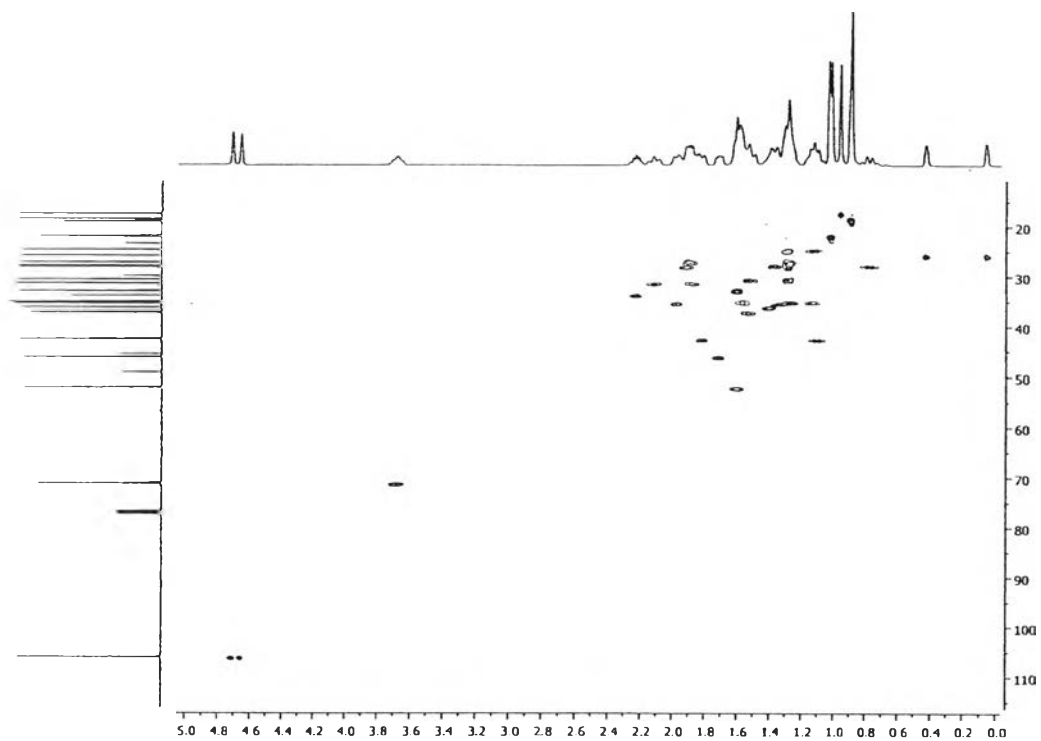


Figure A235 HSQC spectrum of compound 89

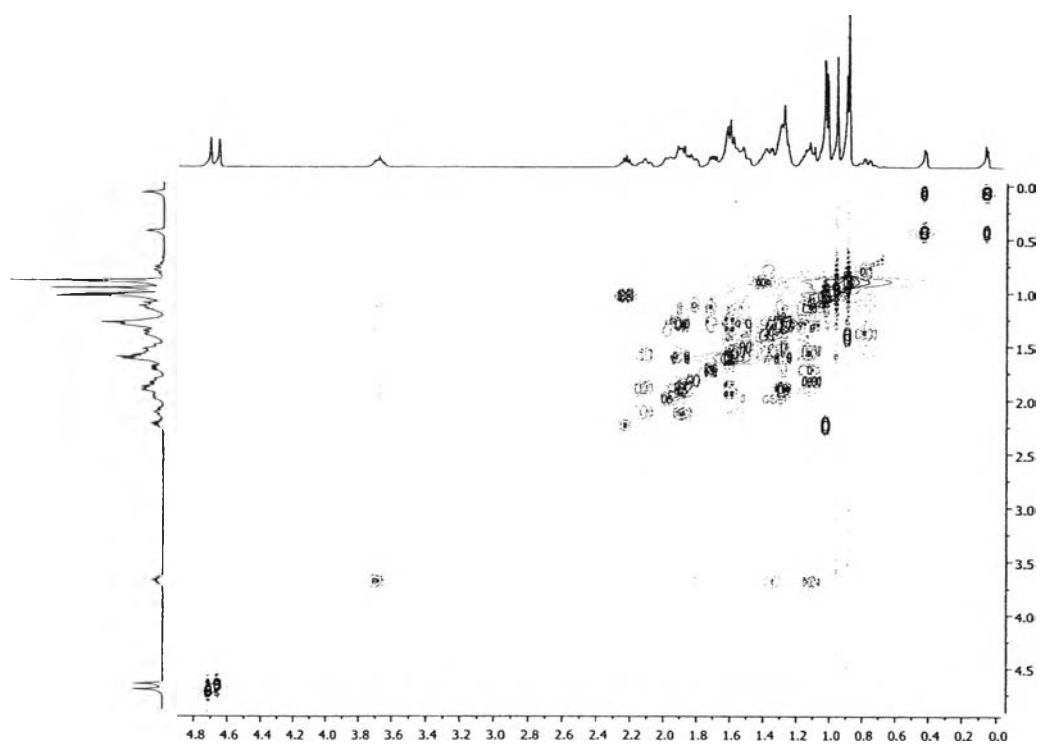


Figure A236 COSY spectrum of compound 89



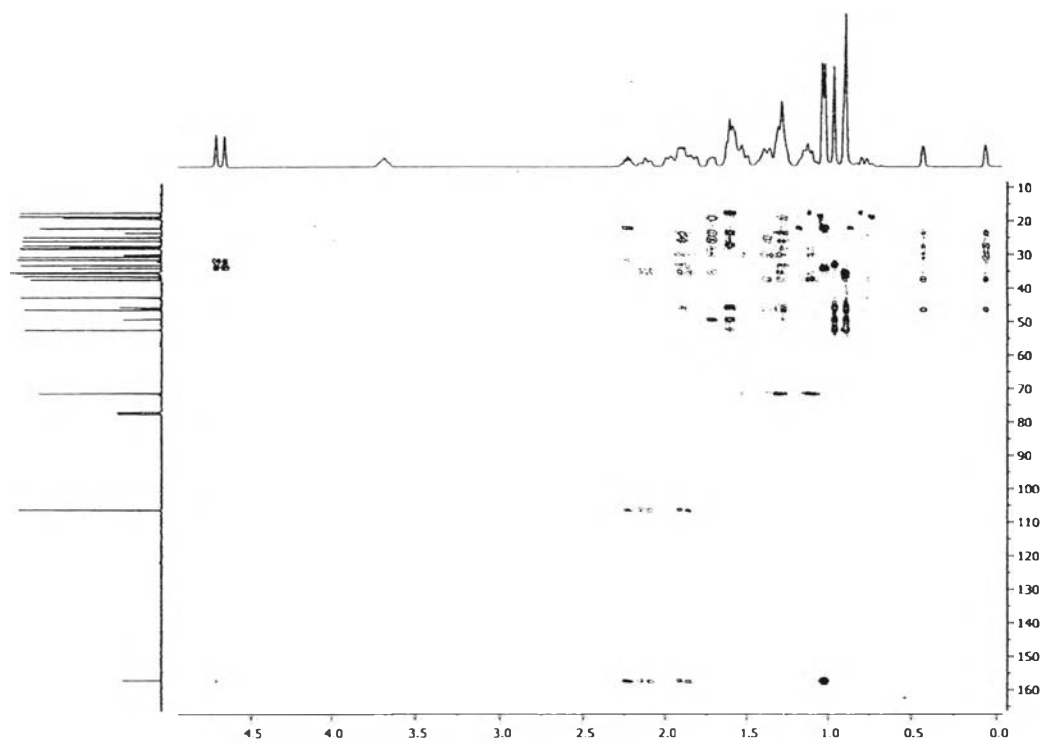


Figure A237 HMBC spectrum of compound 89

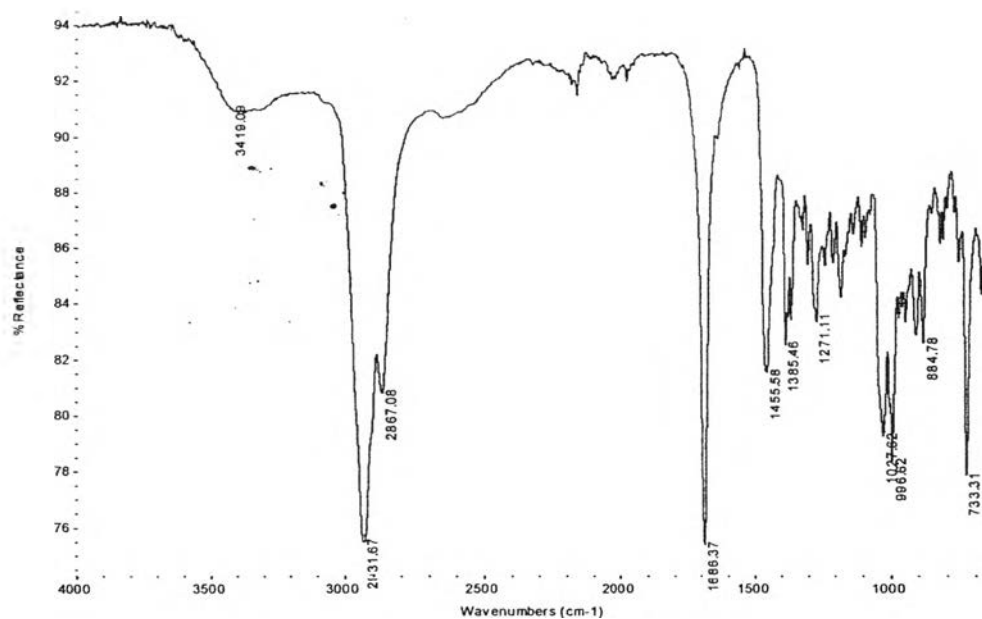
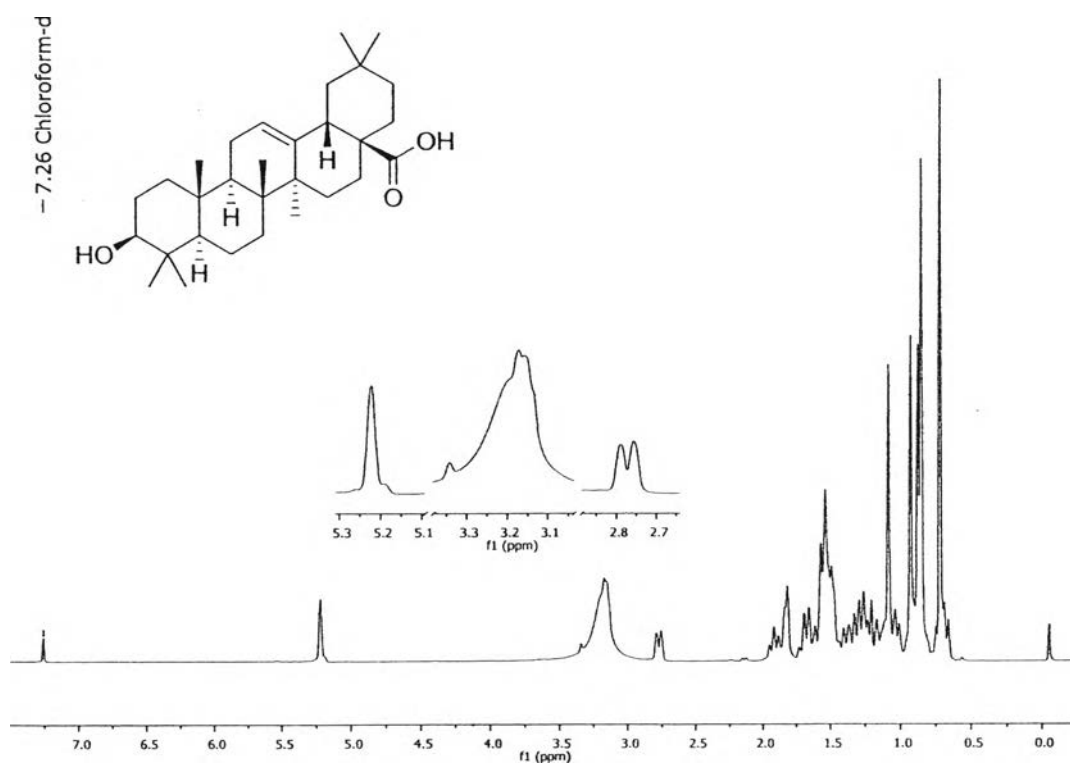
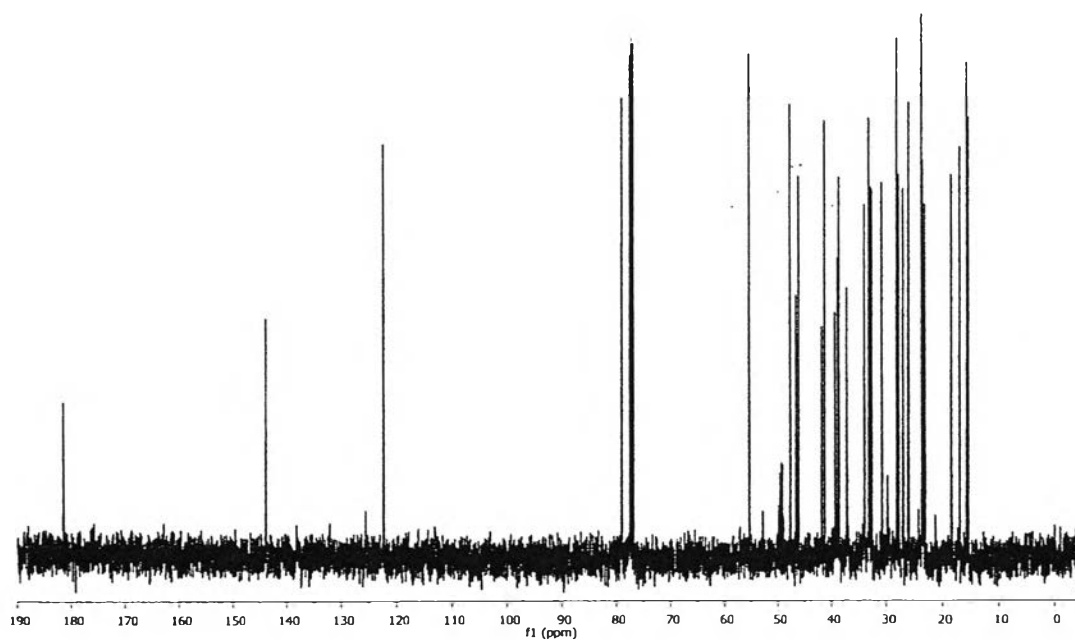


Figure A238 ATR-FTIR spectrum of compound 90



Figure A239 ^1H NMR spectrum of compound 90Figure A240 ^{13}C NMR spectrum of compound 90

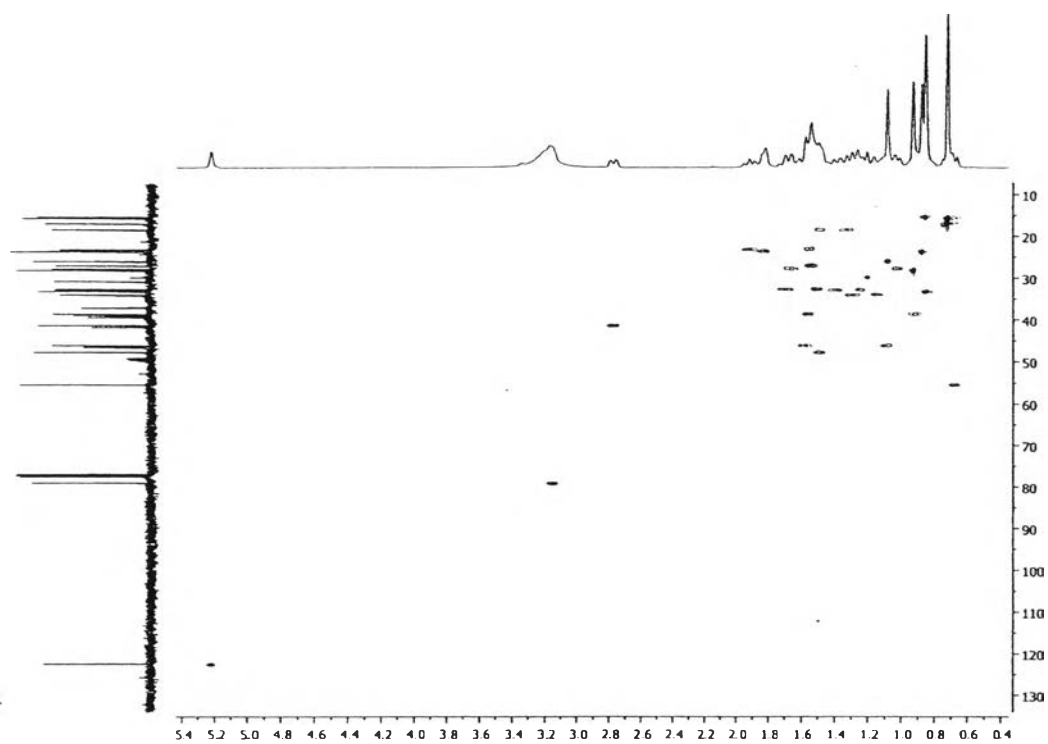


Figure A241 HSQC spectrum of compound 90

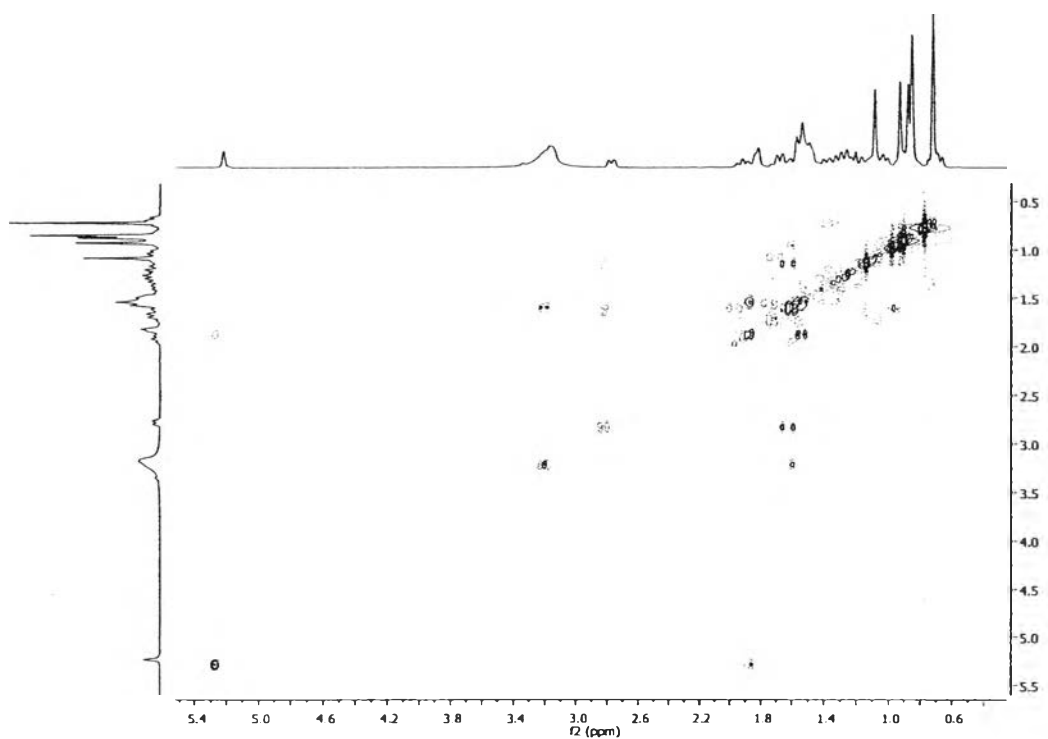


Figure A242 COSY spectrum of compound 90

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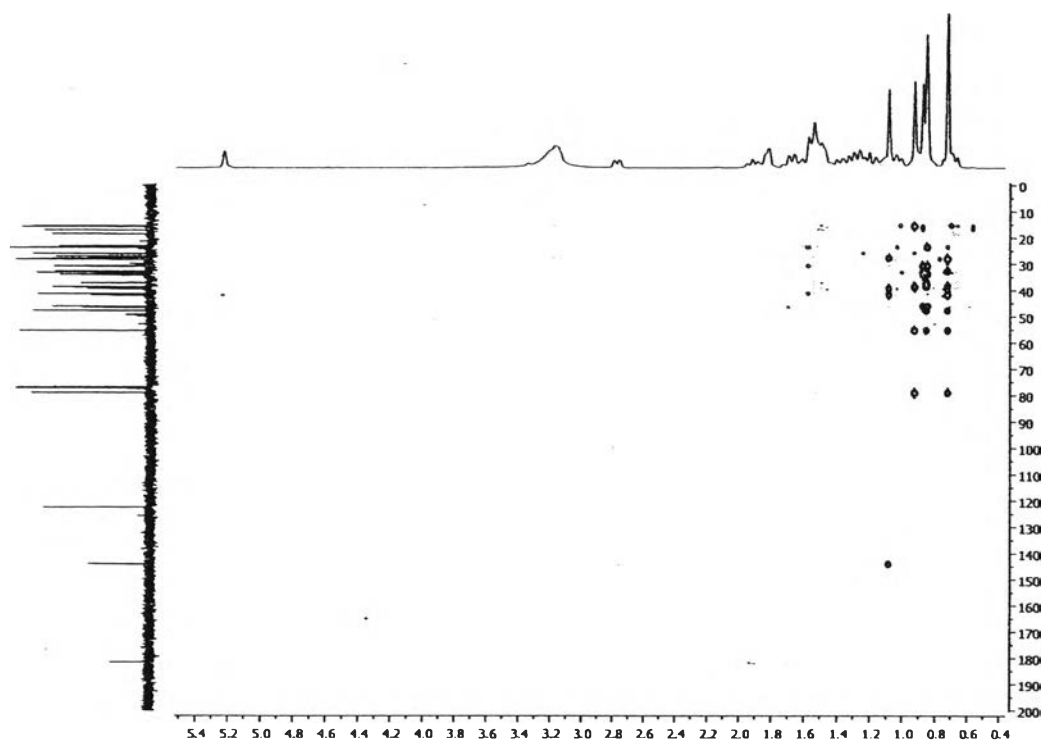


Figure A243 HMBC spectrum of compound 90

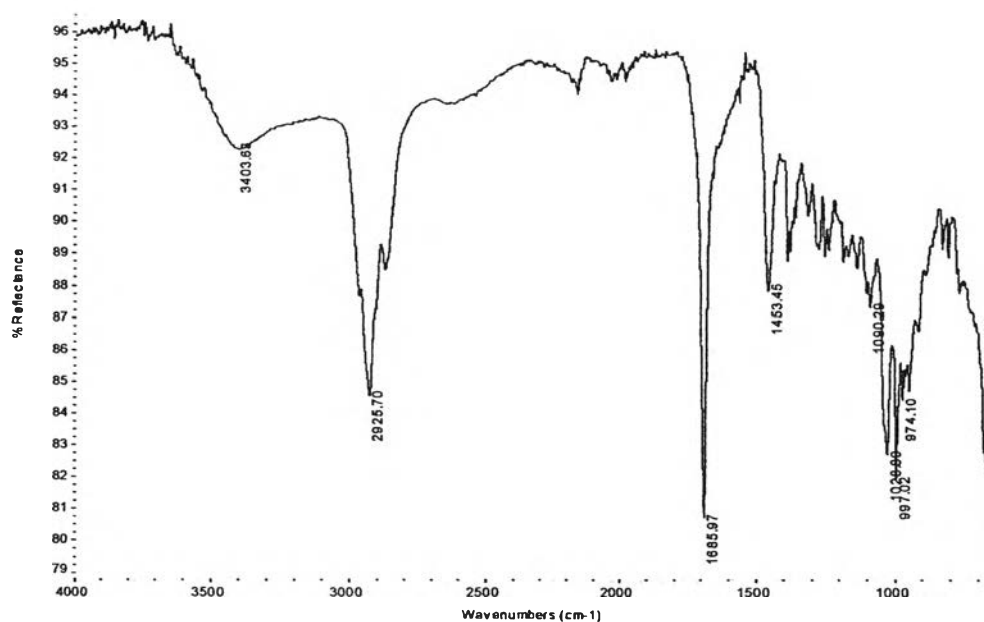
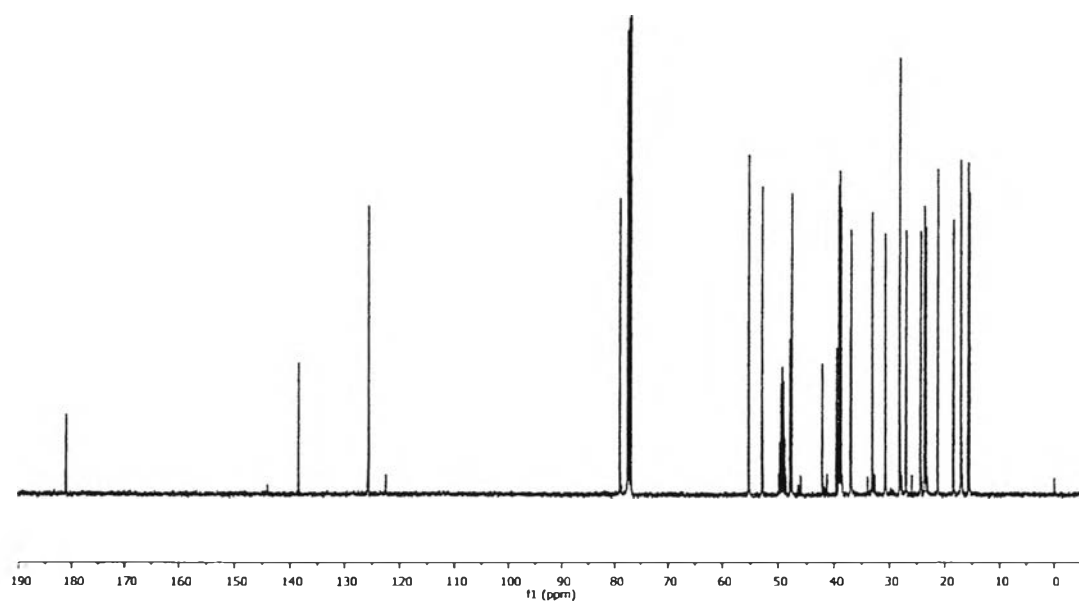
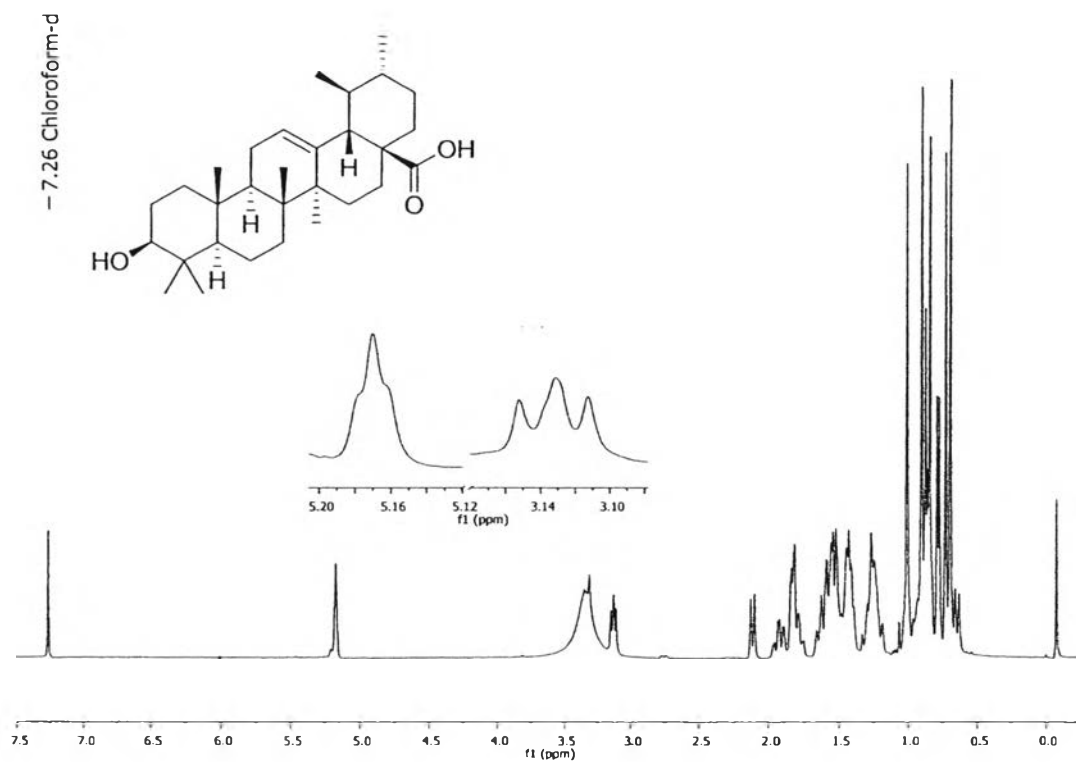


Figure A244 ATR-FTIR spectrum of compound 91





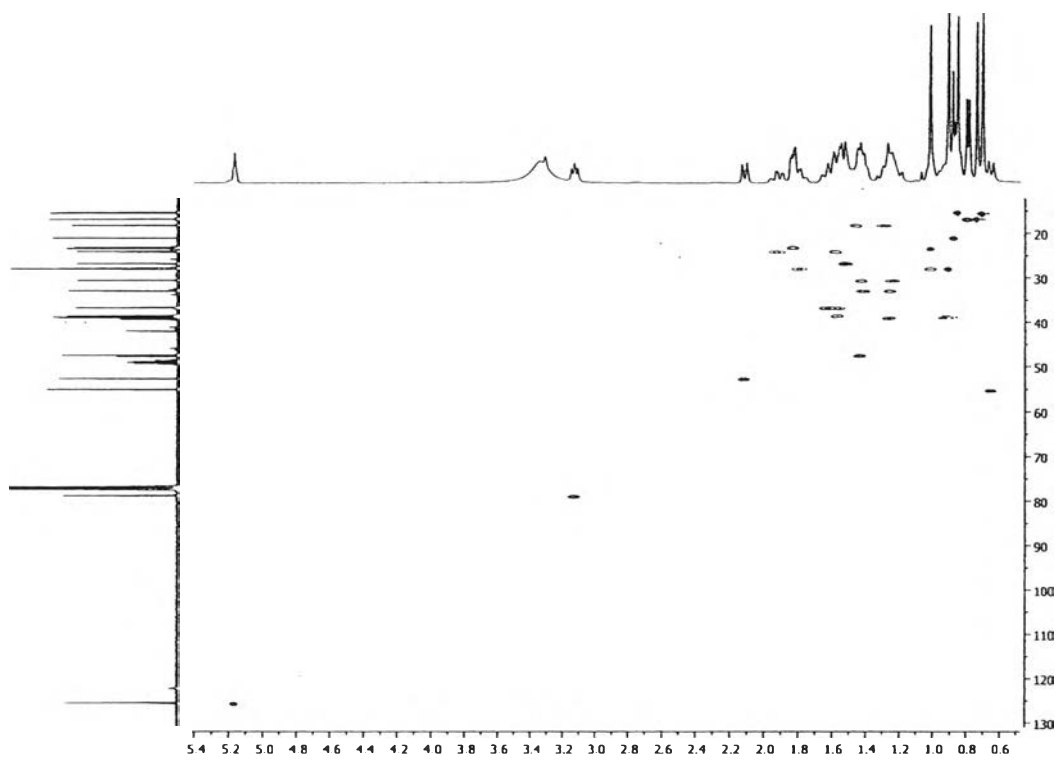


Figure A247 HSQC spectrum of compound 91

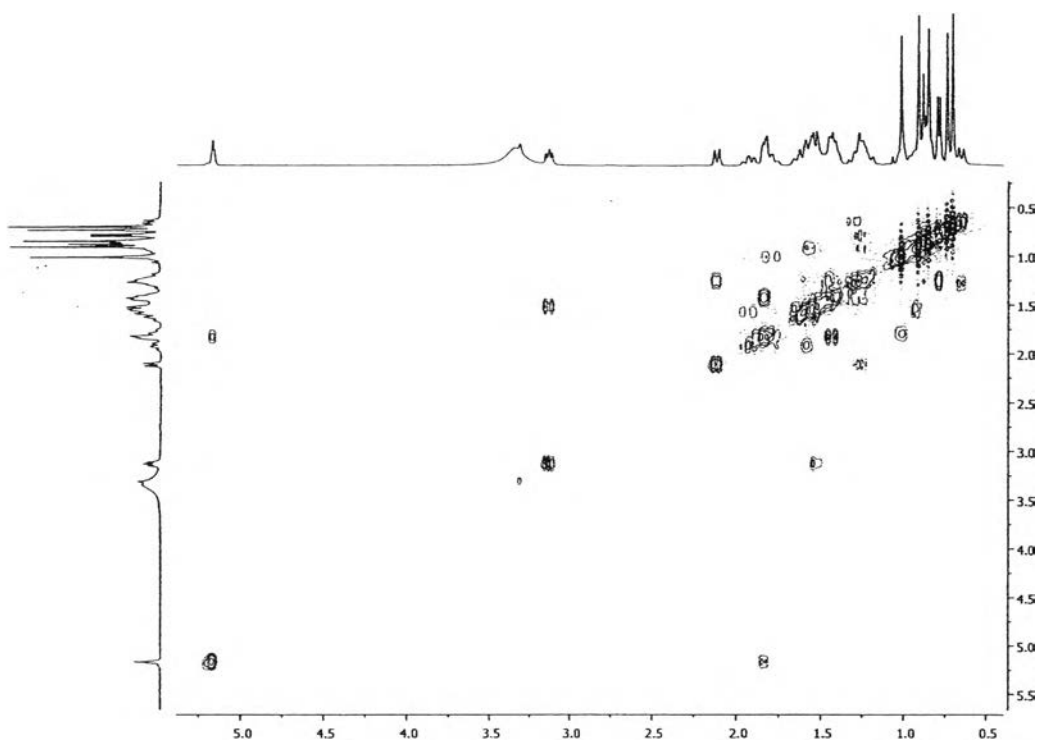


Figure A248 COSY spectrum of compound 91

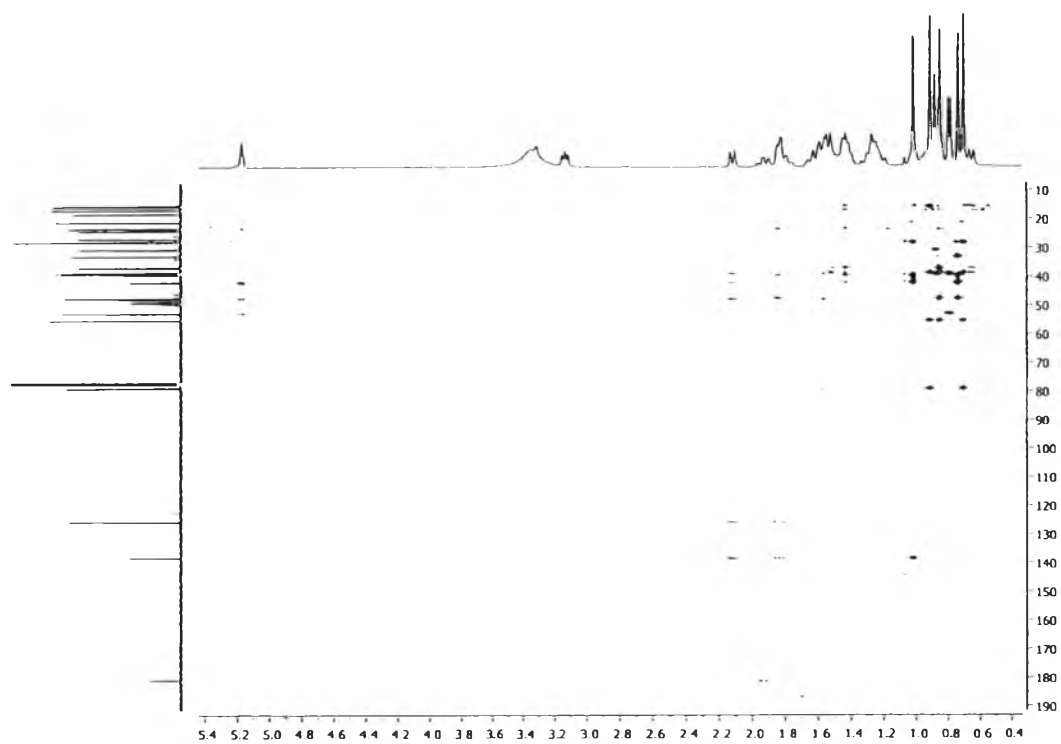


Figure A249 HMBC spectrum of compound 91

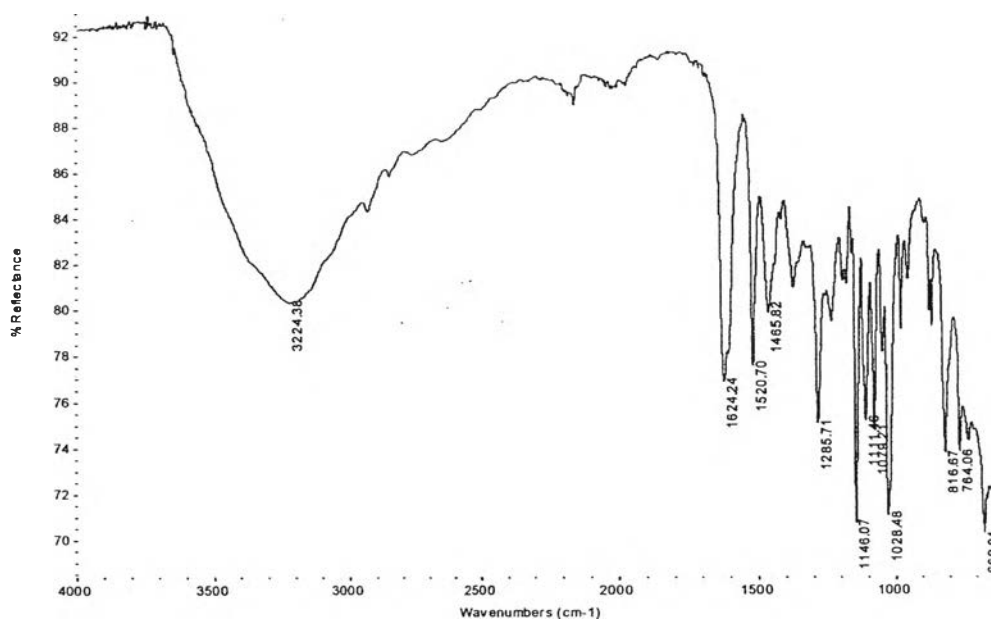
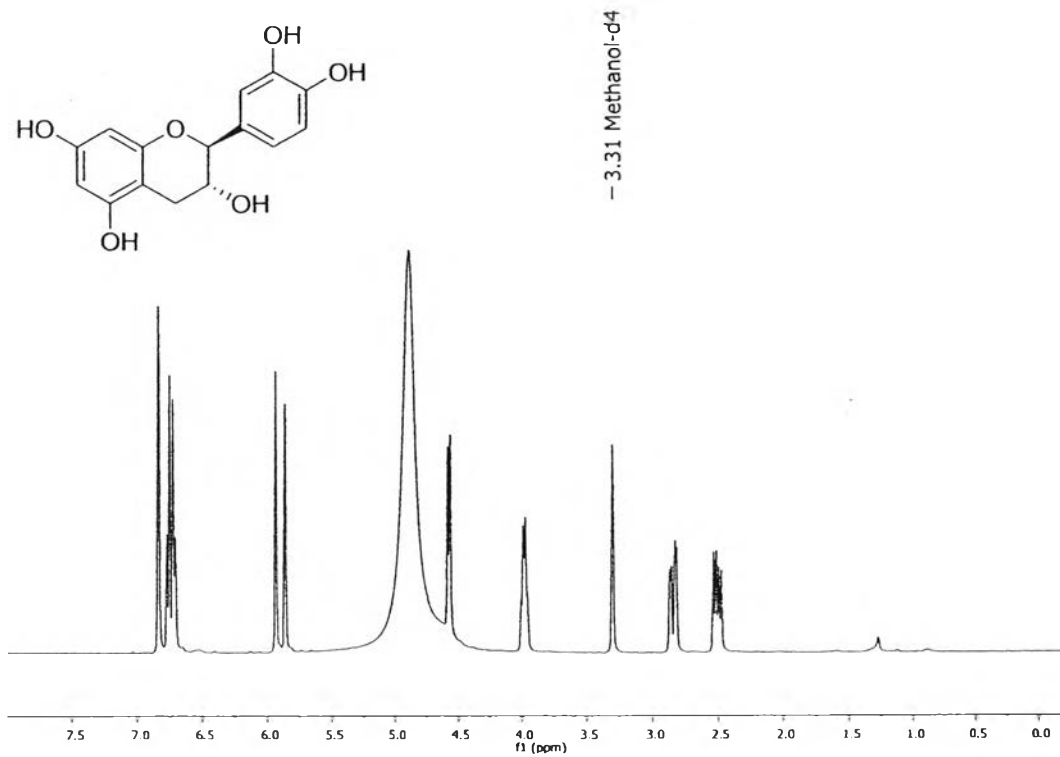
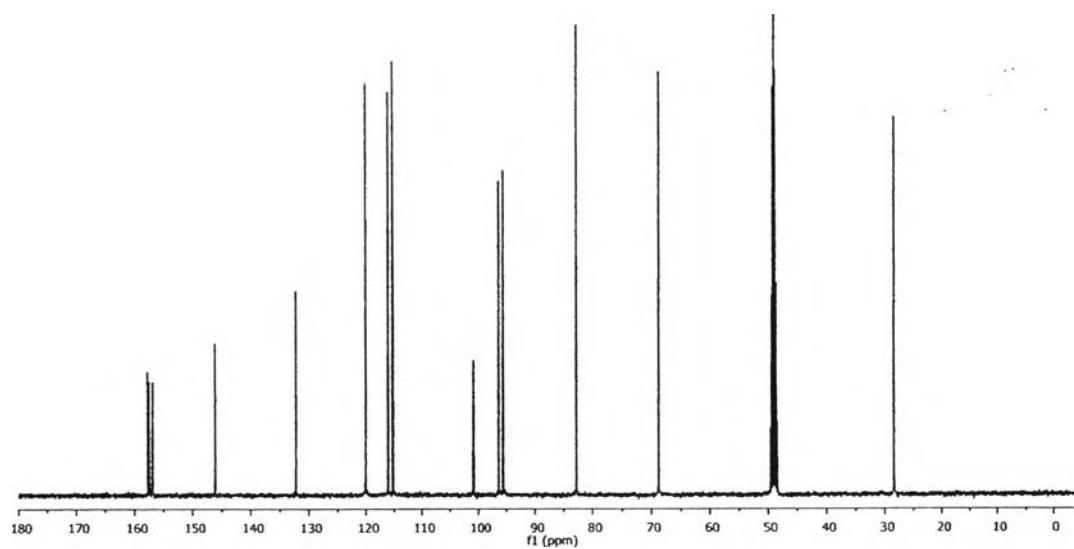


Figure A250 ATR-FTIR spectrum of compound 92



Figure A251 ^1H NMR spectrum of compound 92Figure A252 ^{13}C NMR spectrum of compound 92

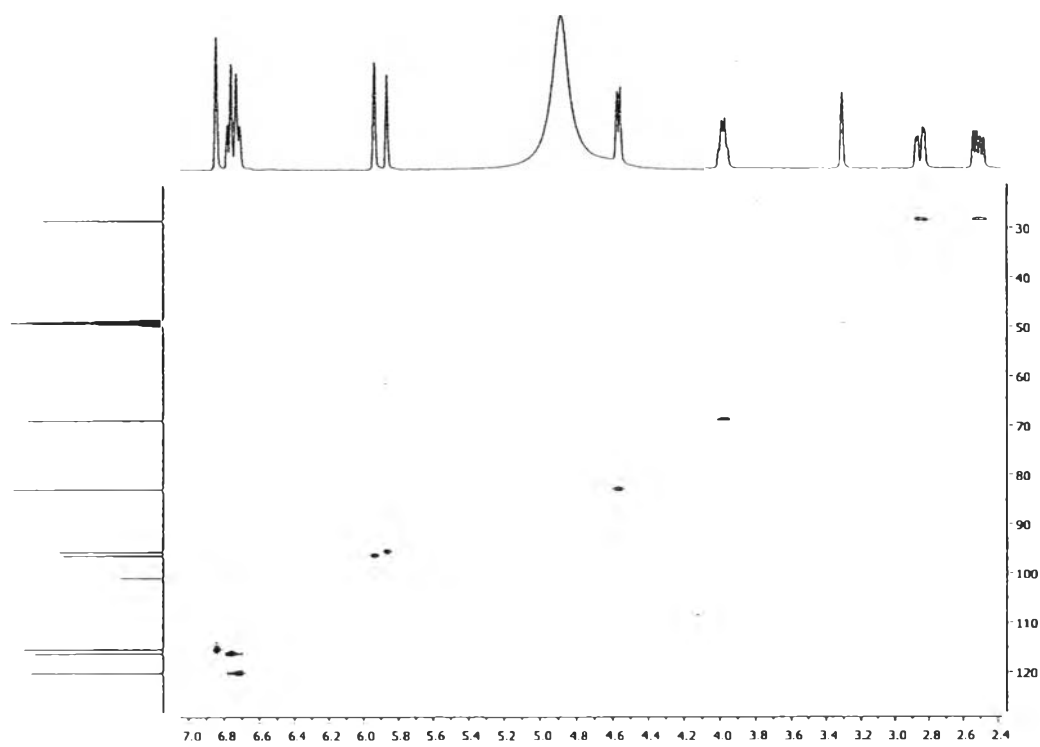


Figure A253 HSQC spectrum of compound 92

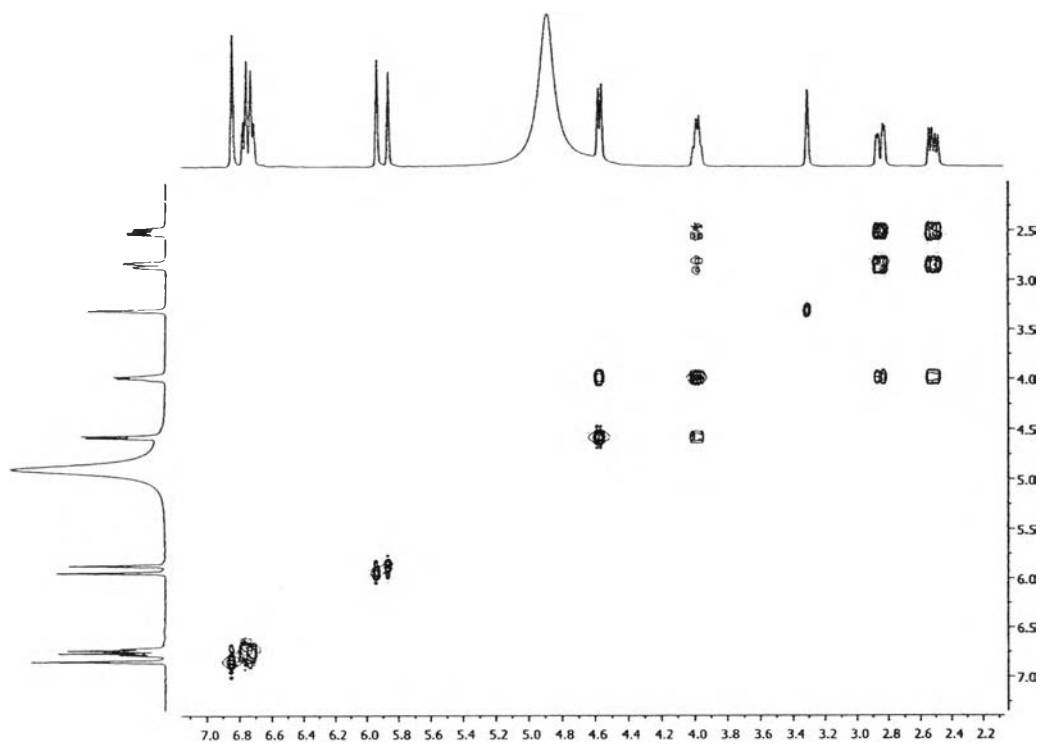


Figure A254 COSY spectrum of compound 92



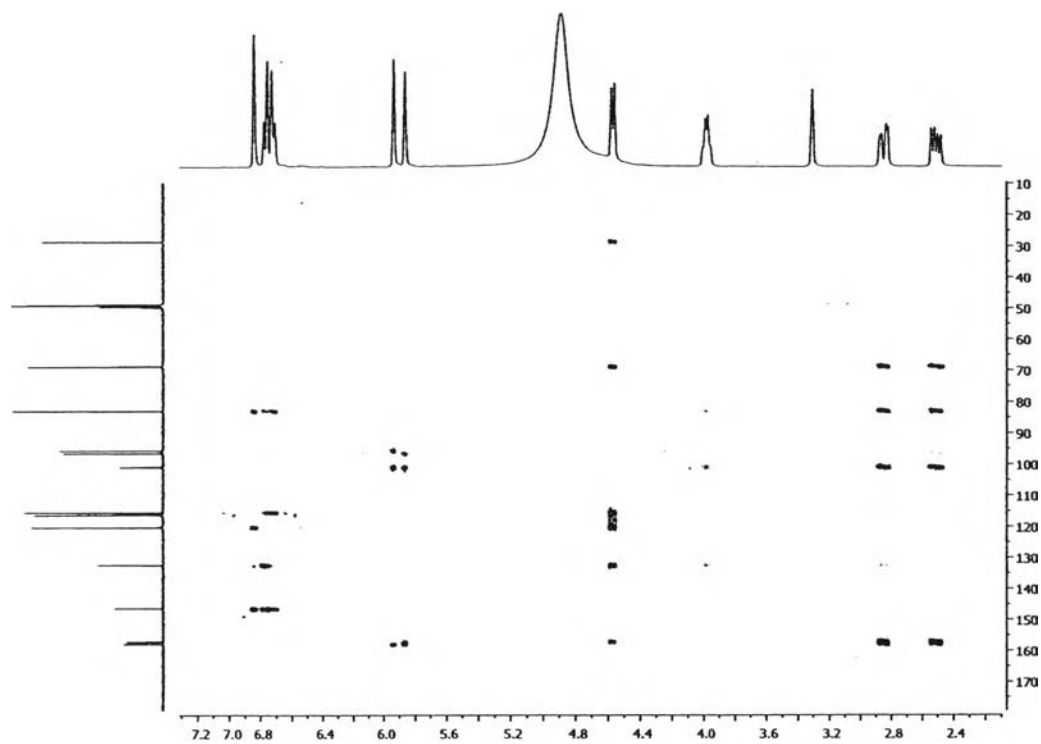


Figure A255 HMBC spectrum of compound 92

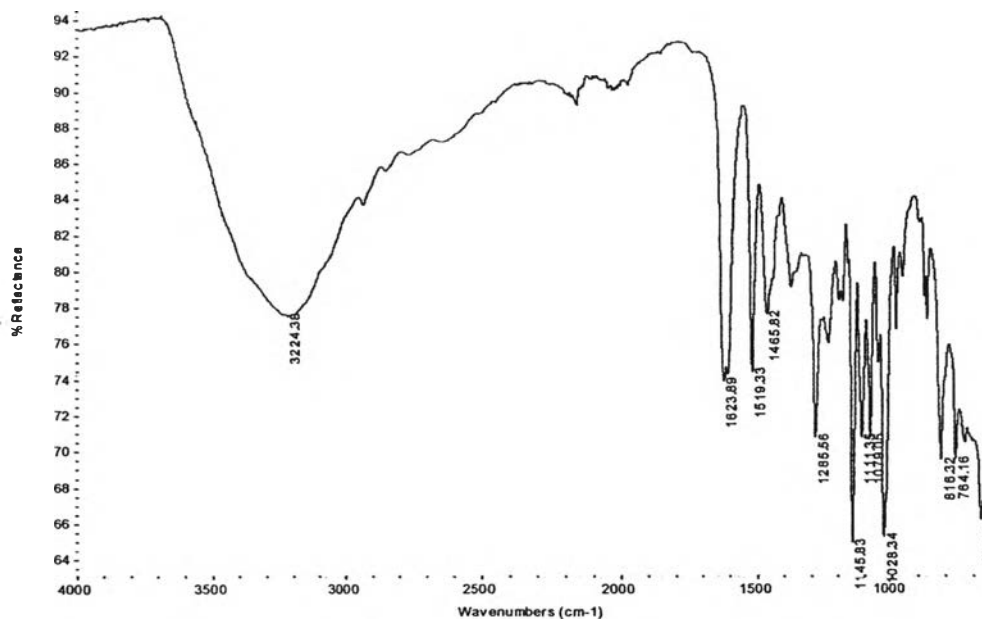
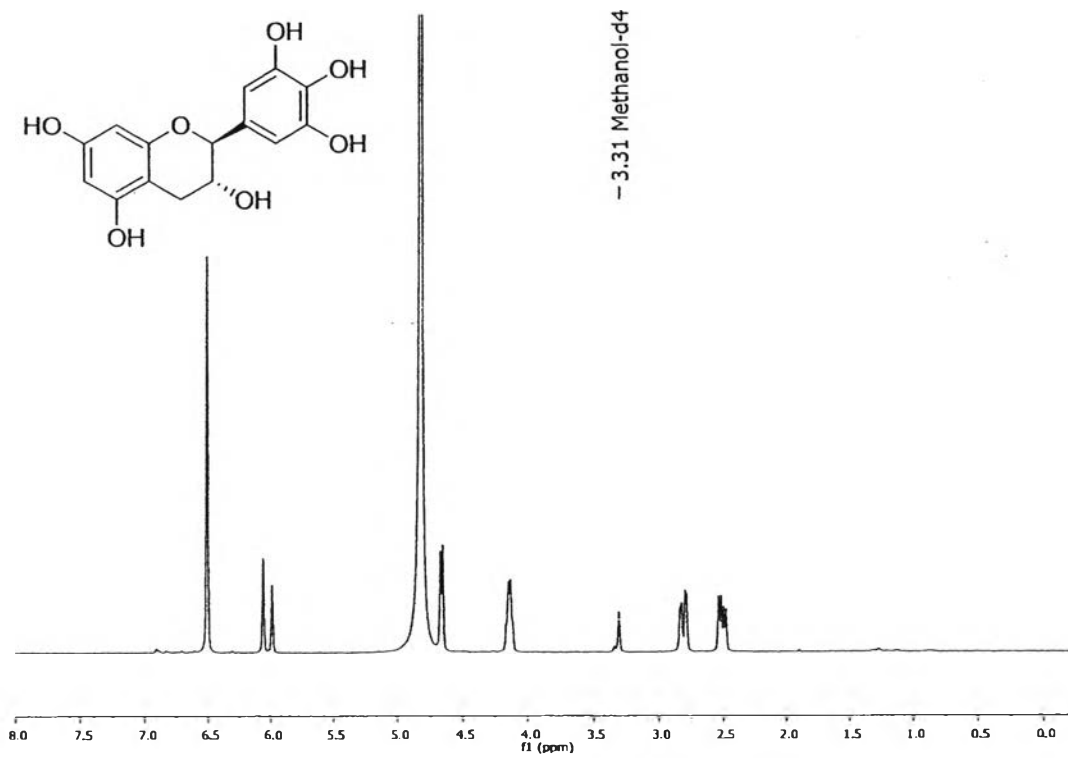
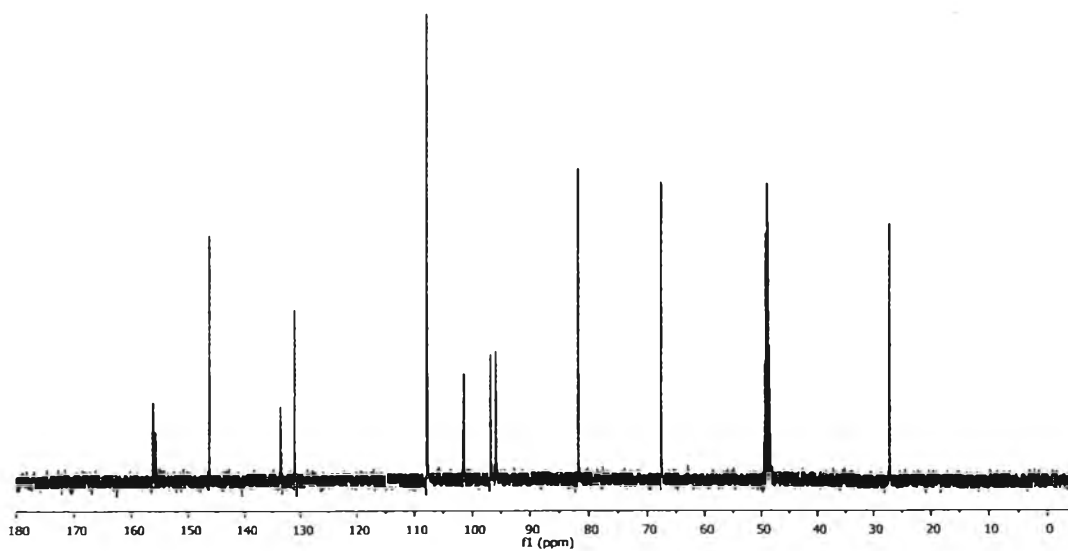


Figure A256 ATR-FTIR spectrum of compound 93

Figure A257 ^1H NMR spectrum of compound 93Figure A258 ^{13}C NMR spectrum of compound 93

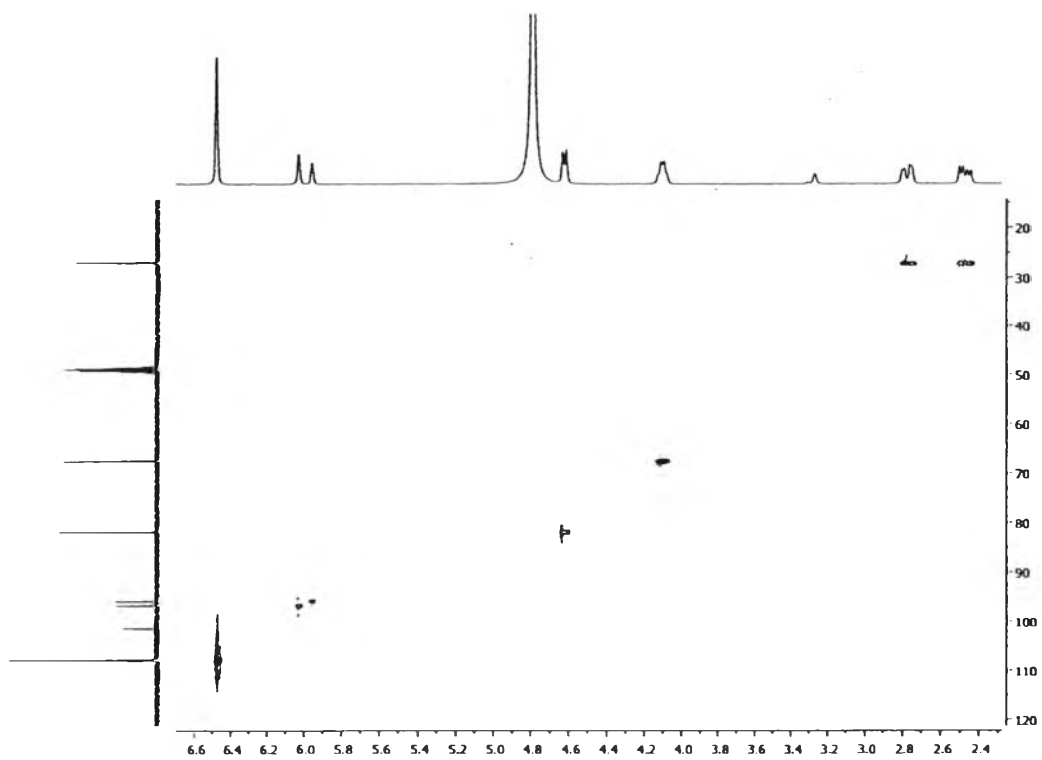


Figure A259 HSQC spectrum of compound 93

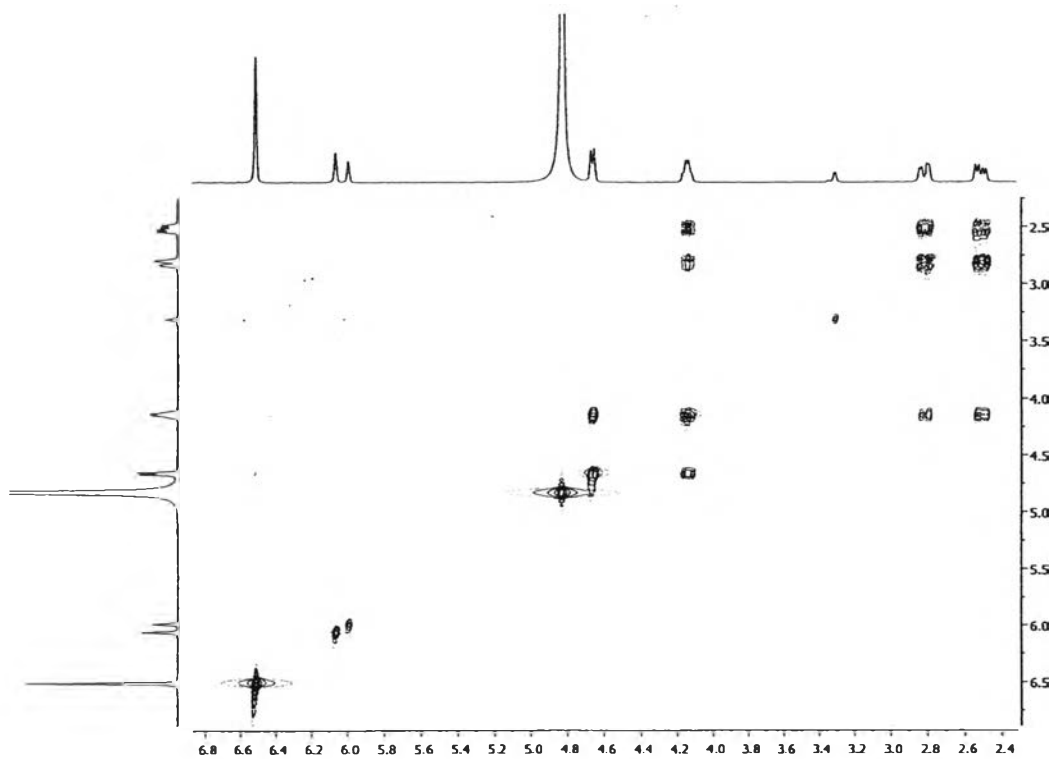


Figure A260 COSY spectrum of compound 93

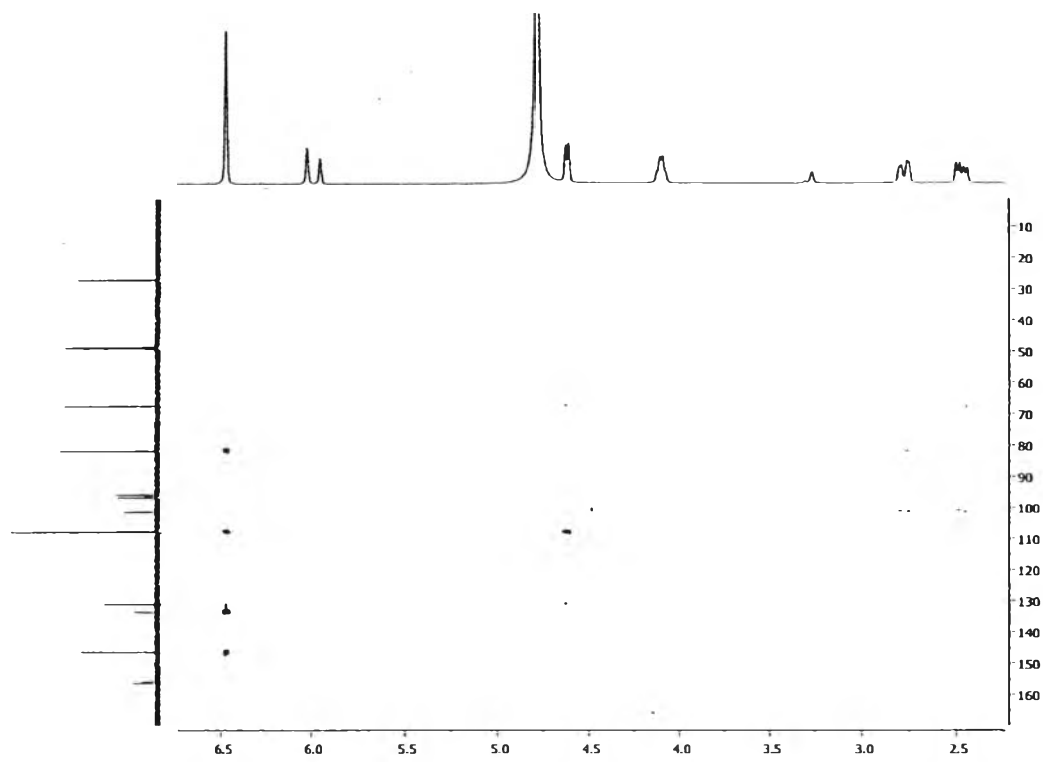


Figure A261 HMBC spectrum of compound 93



VITA

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