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APPENDIX

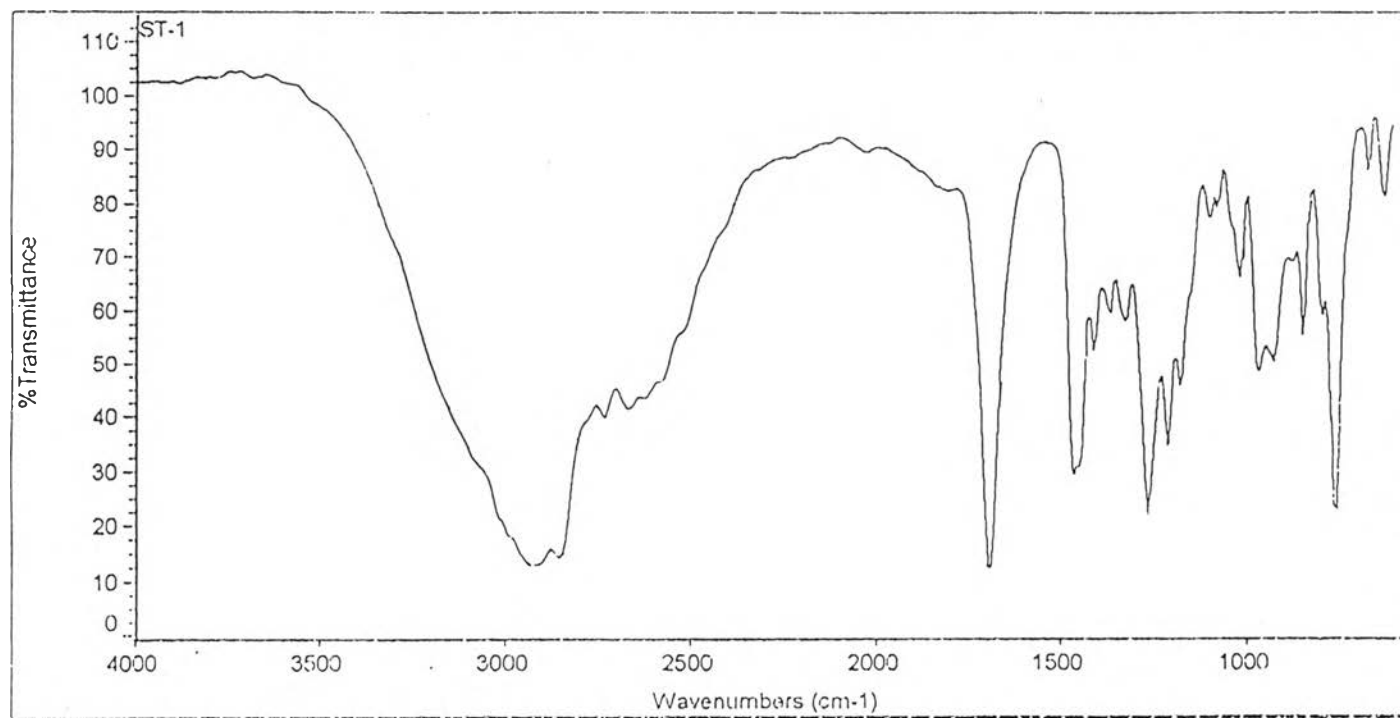


Figure 17 The IR spectrum of compound 1

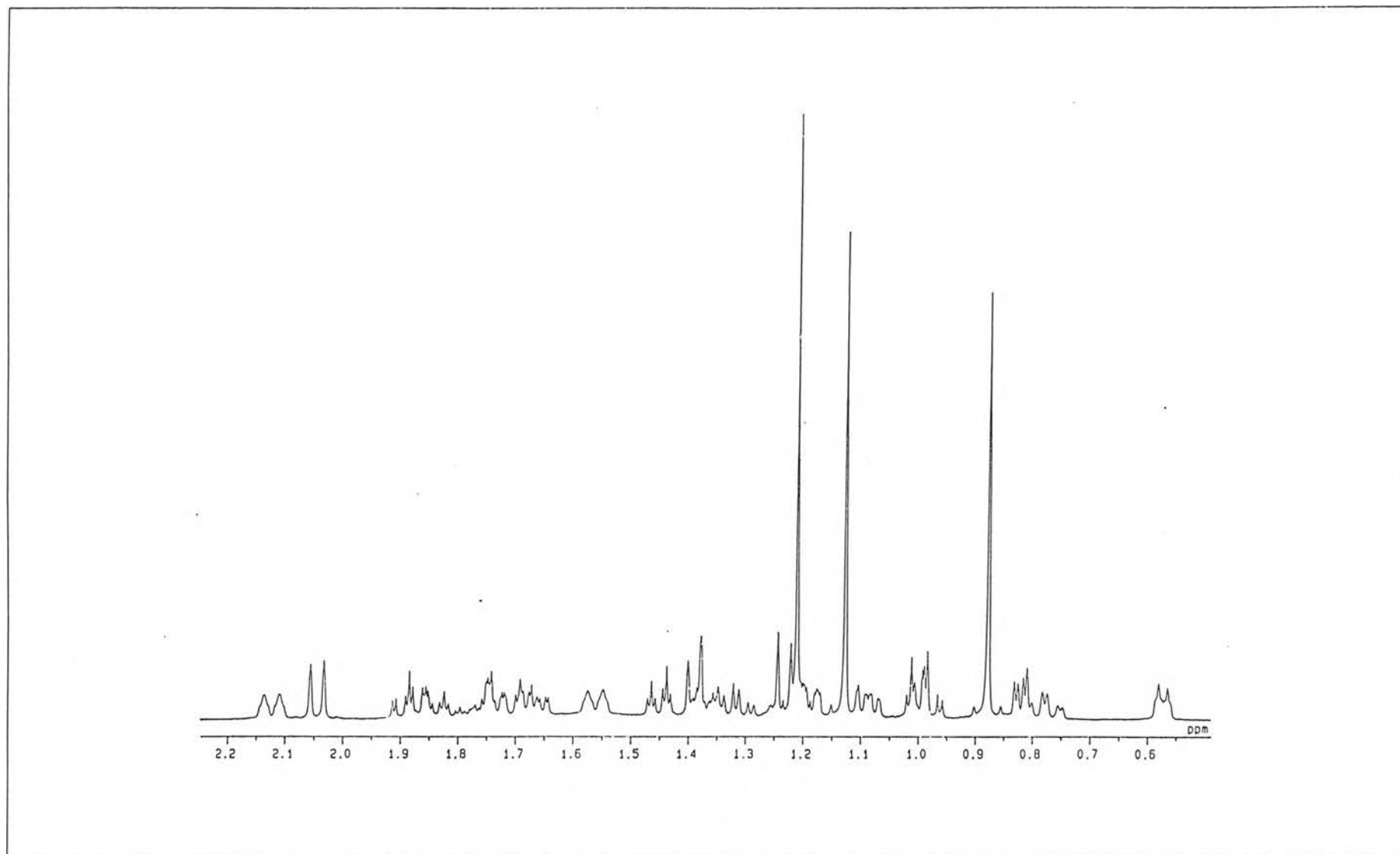


Figure 18 The ^1H -NMR spectrum of compound 1

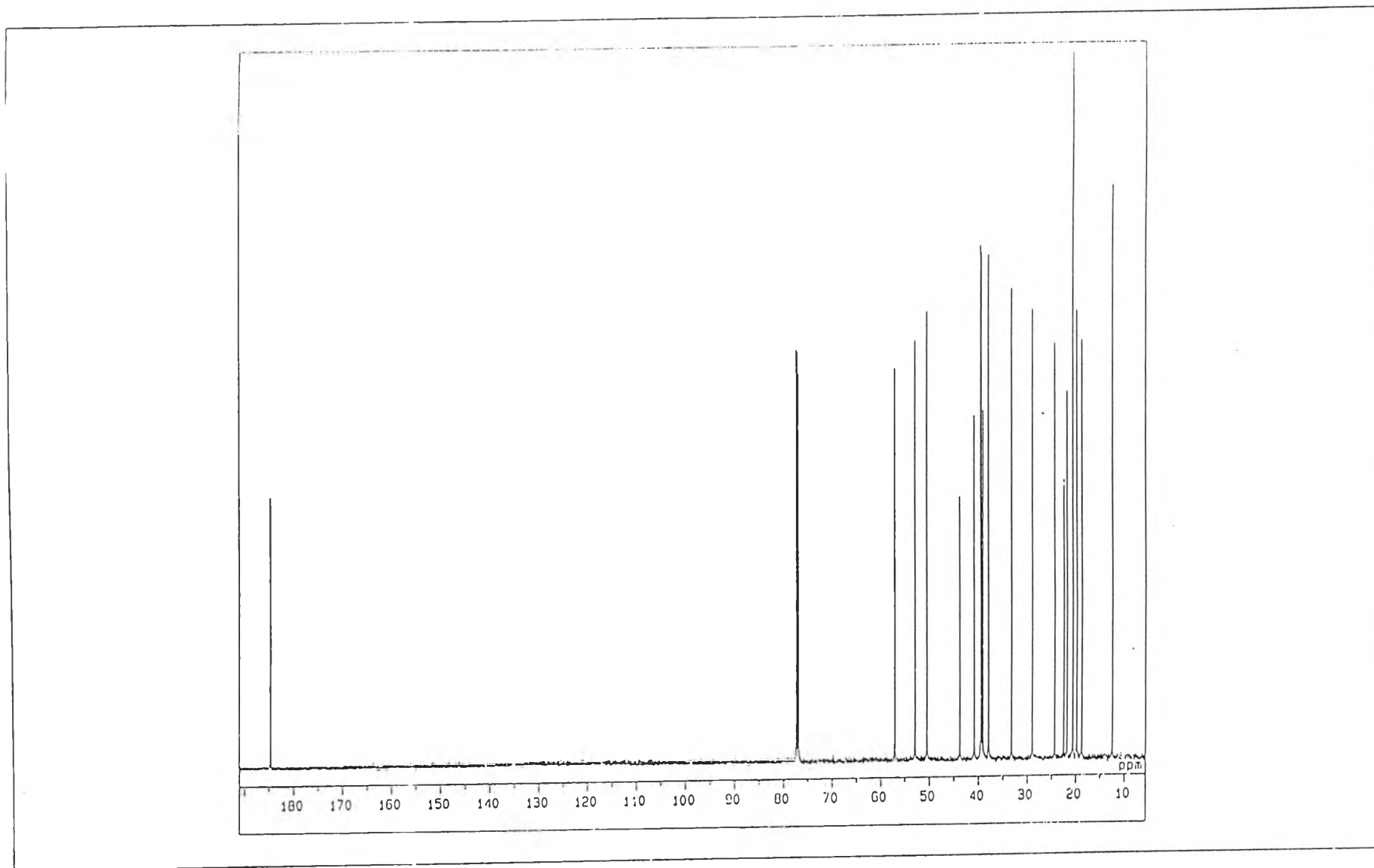


Figure 19 The ^{13}C -NMR spectrum of compound 1

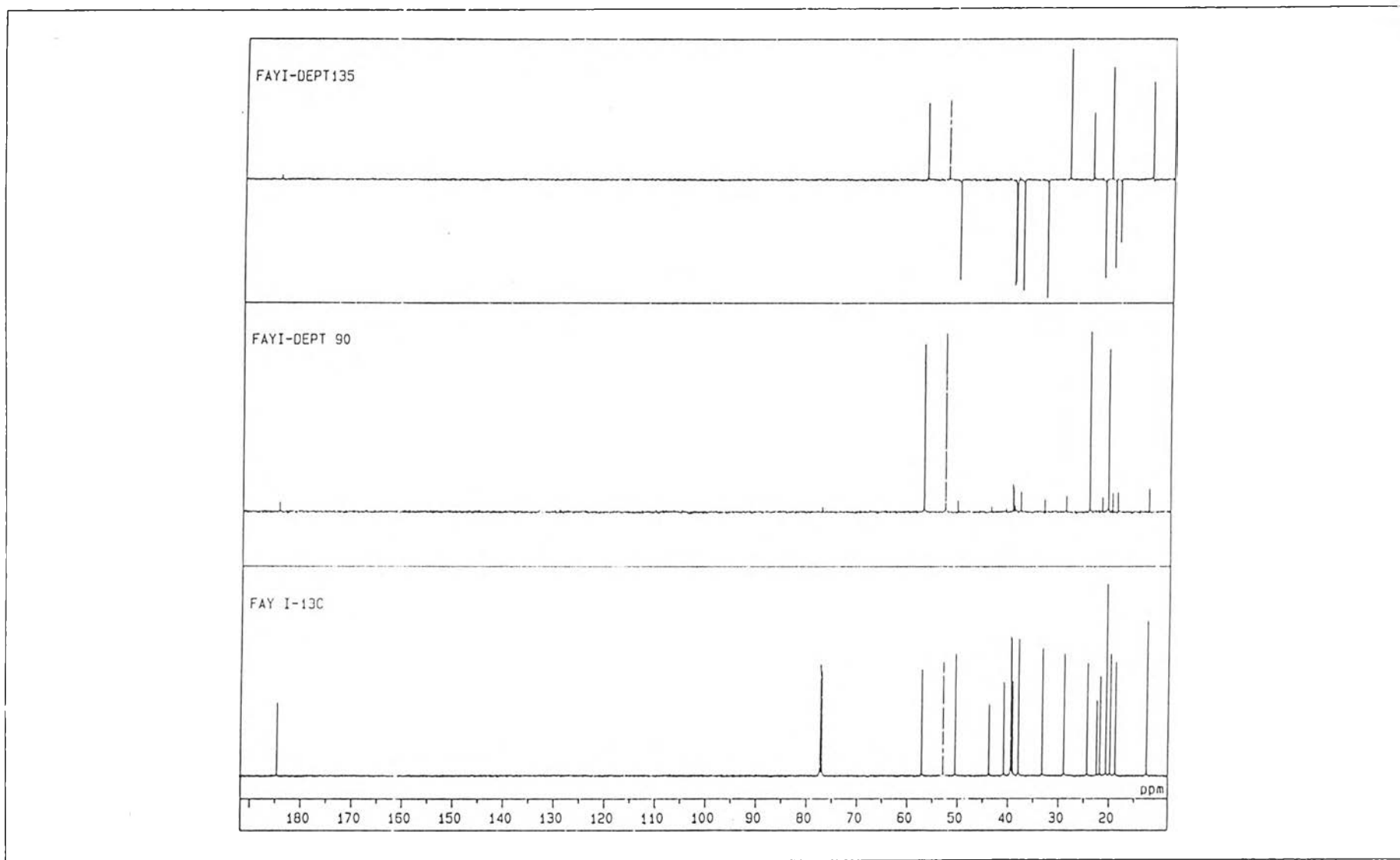


Figure 20 DEPT 135, 90, ¹³C-NMR spectrum of compound 1

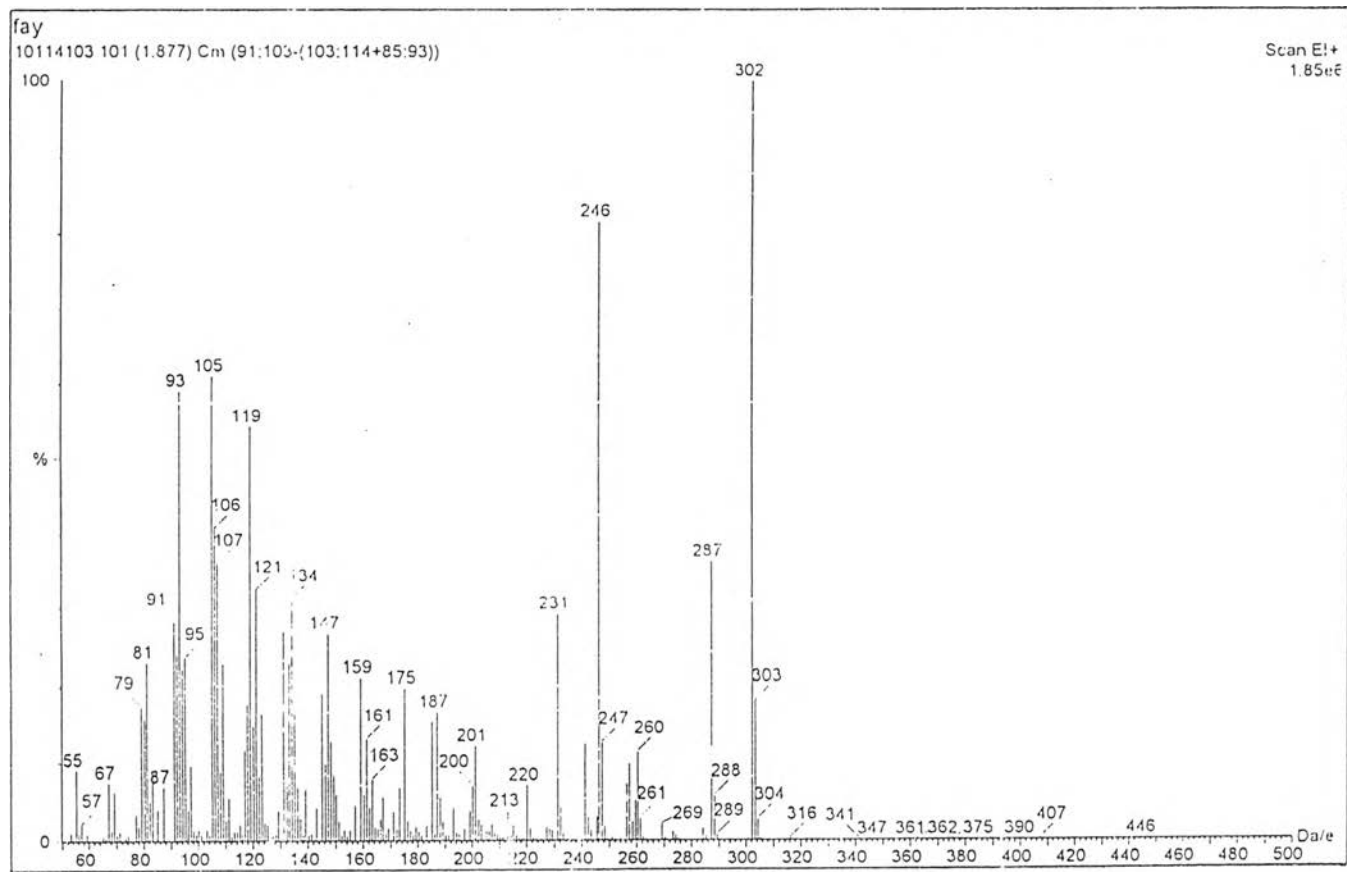


Figure 21 The EI MS spectrum of compound 1

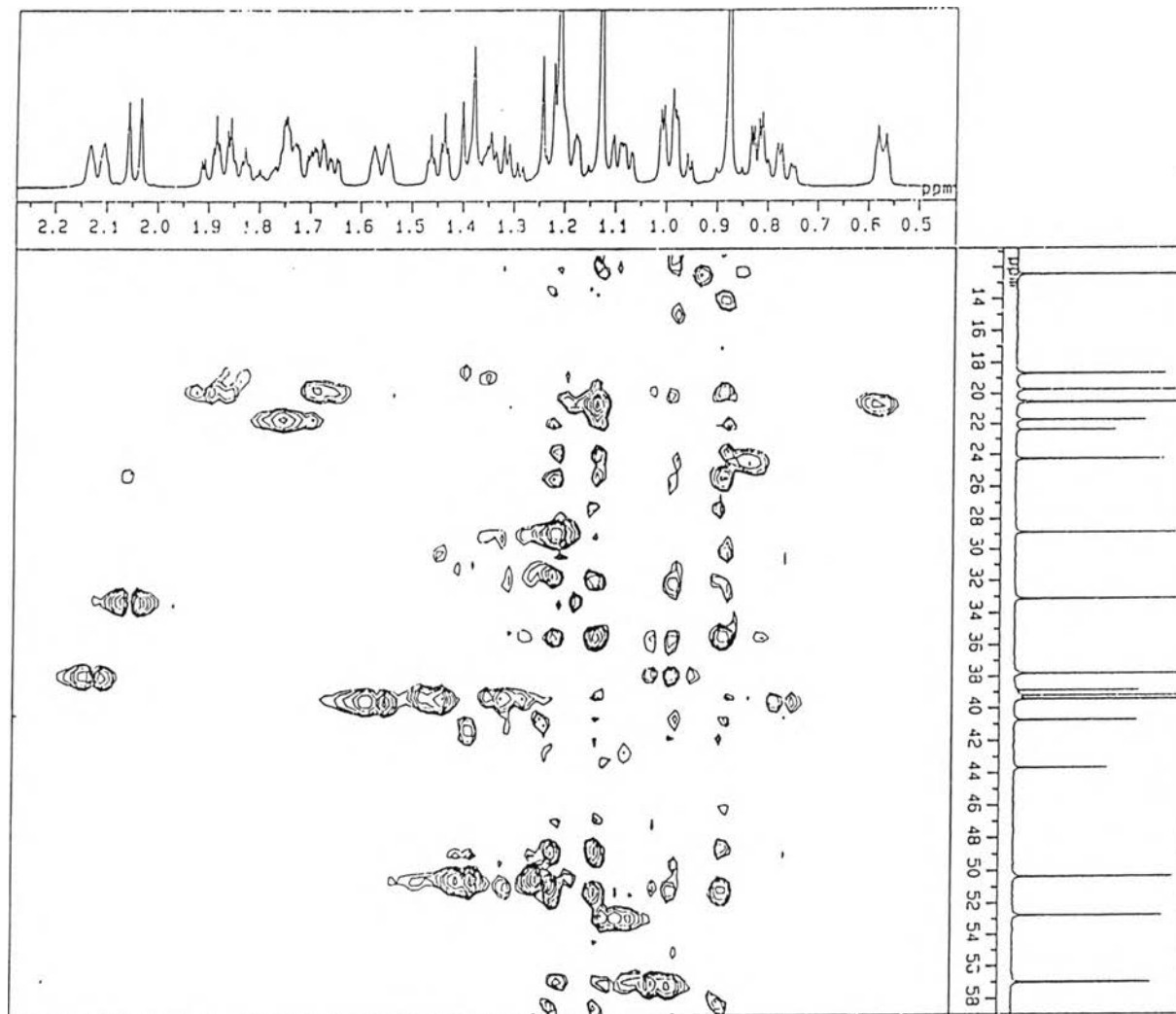


Figure 22 The HMOC-NMR spectrum of compound 1

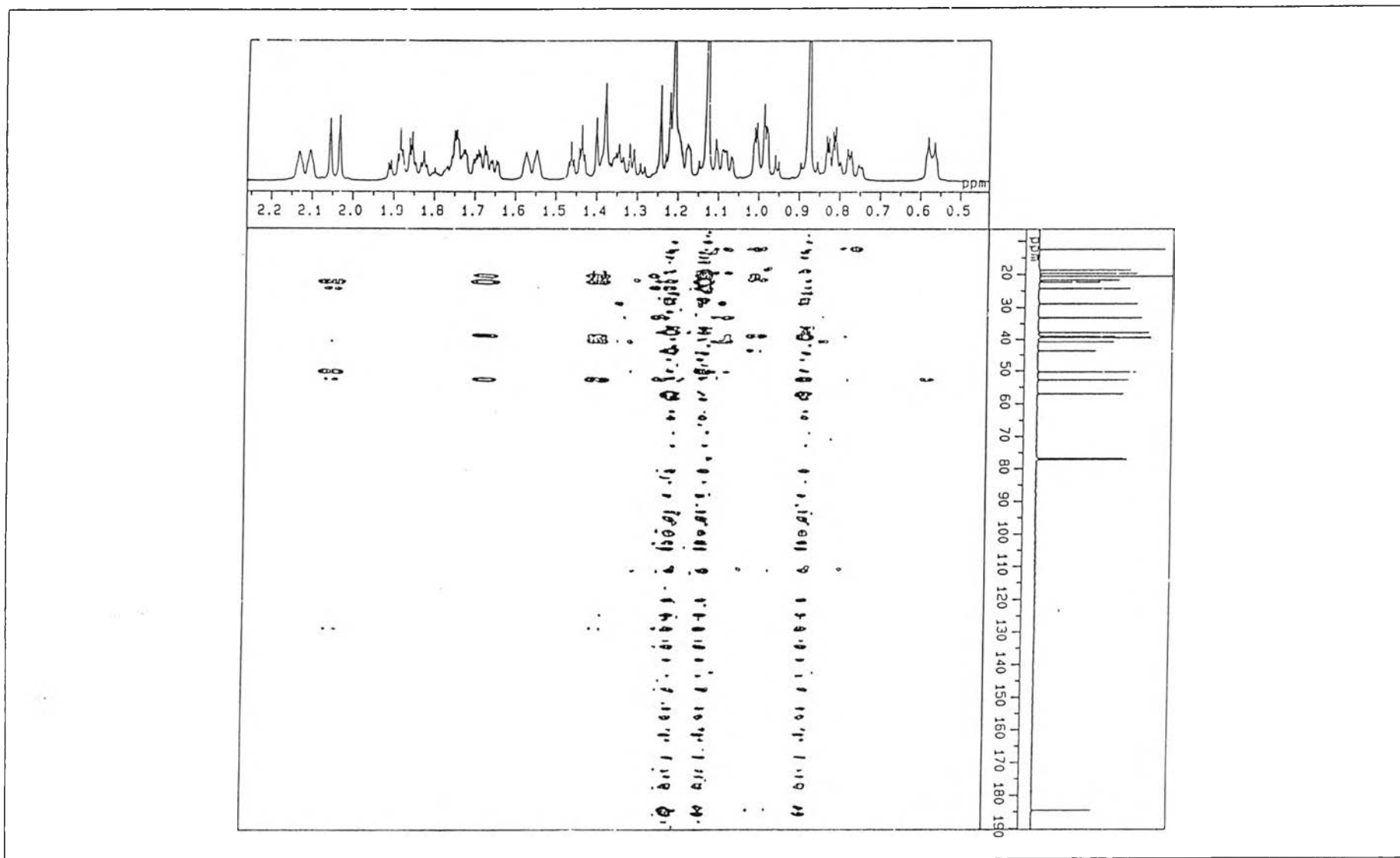


Figure 23 The HMBC-NMR spectrum of compound 1

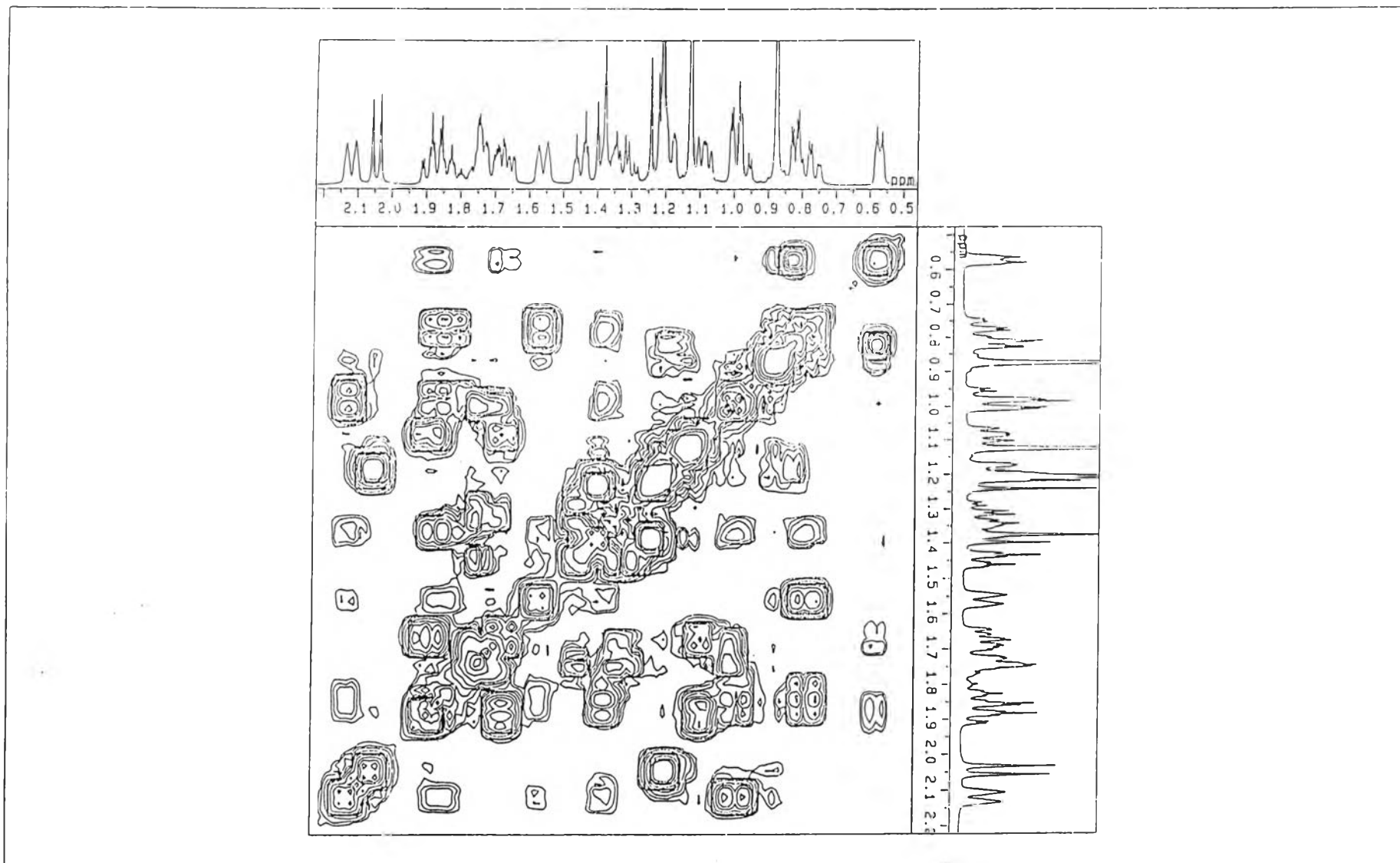


Figure 24 The COSY-NMR spectrum of compound 1

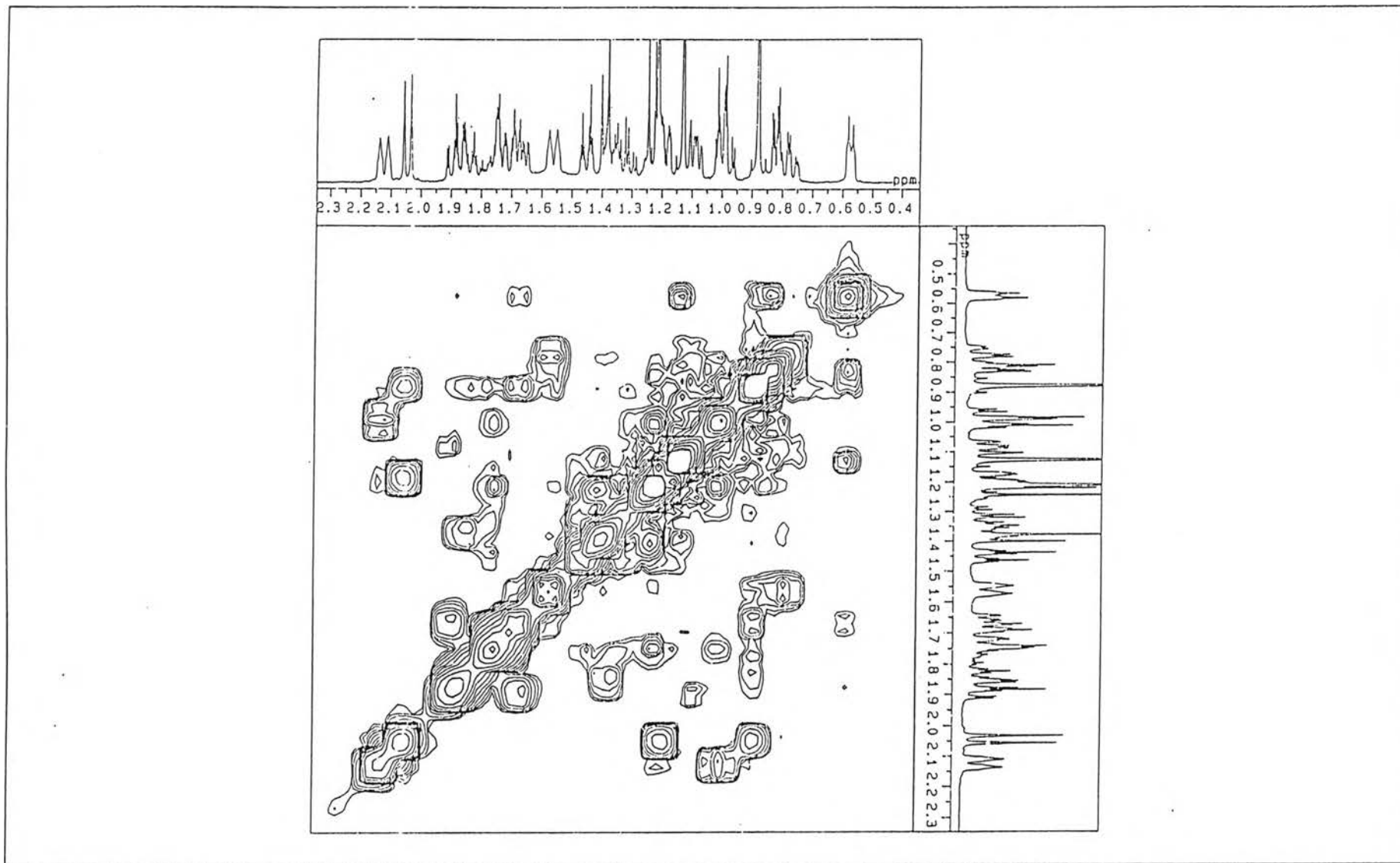


Figure 25 The NOESY-NMR spectrum of compound 1

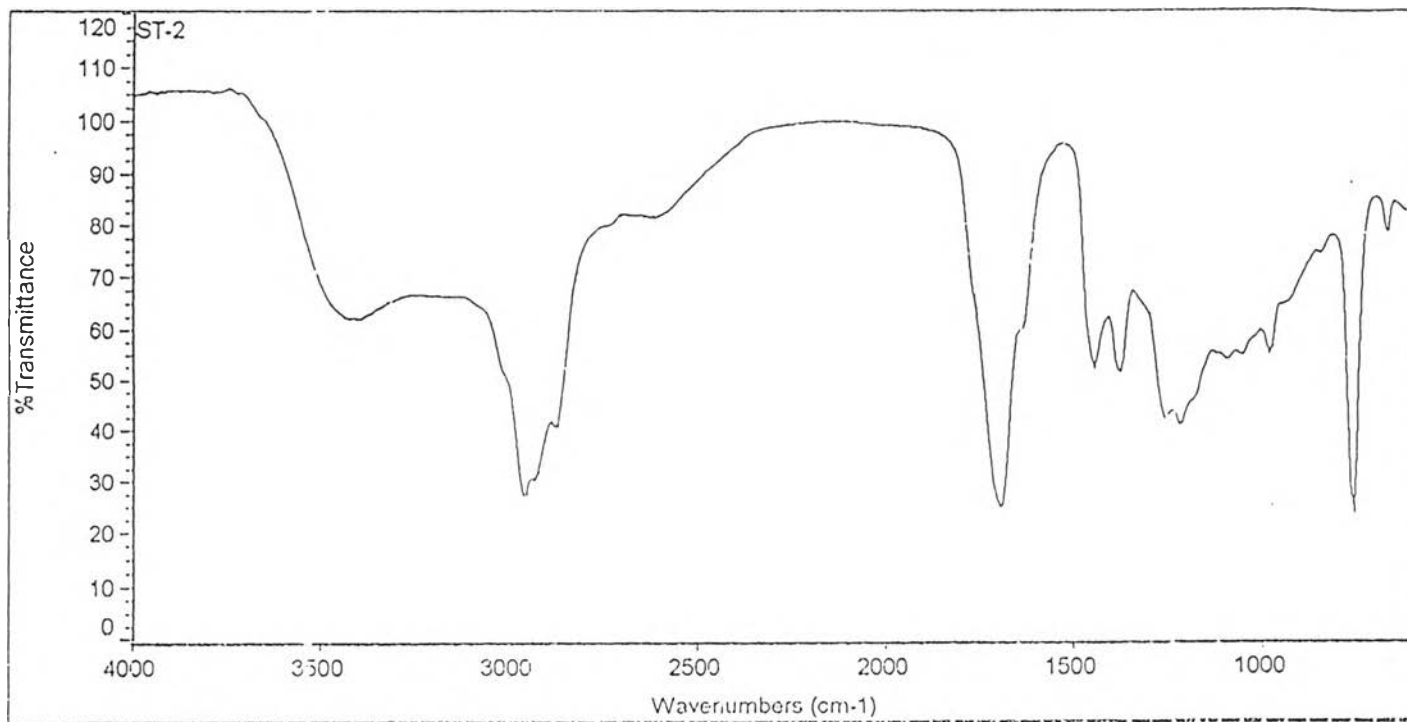


Figure 26 The IR spectrum of compound 2

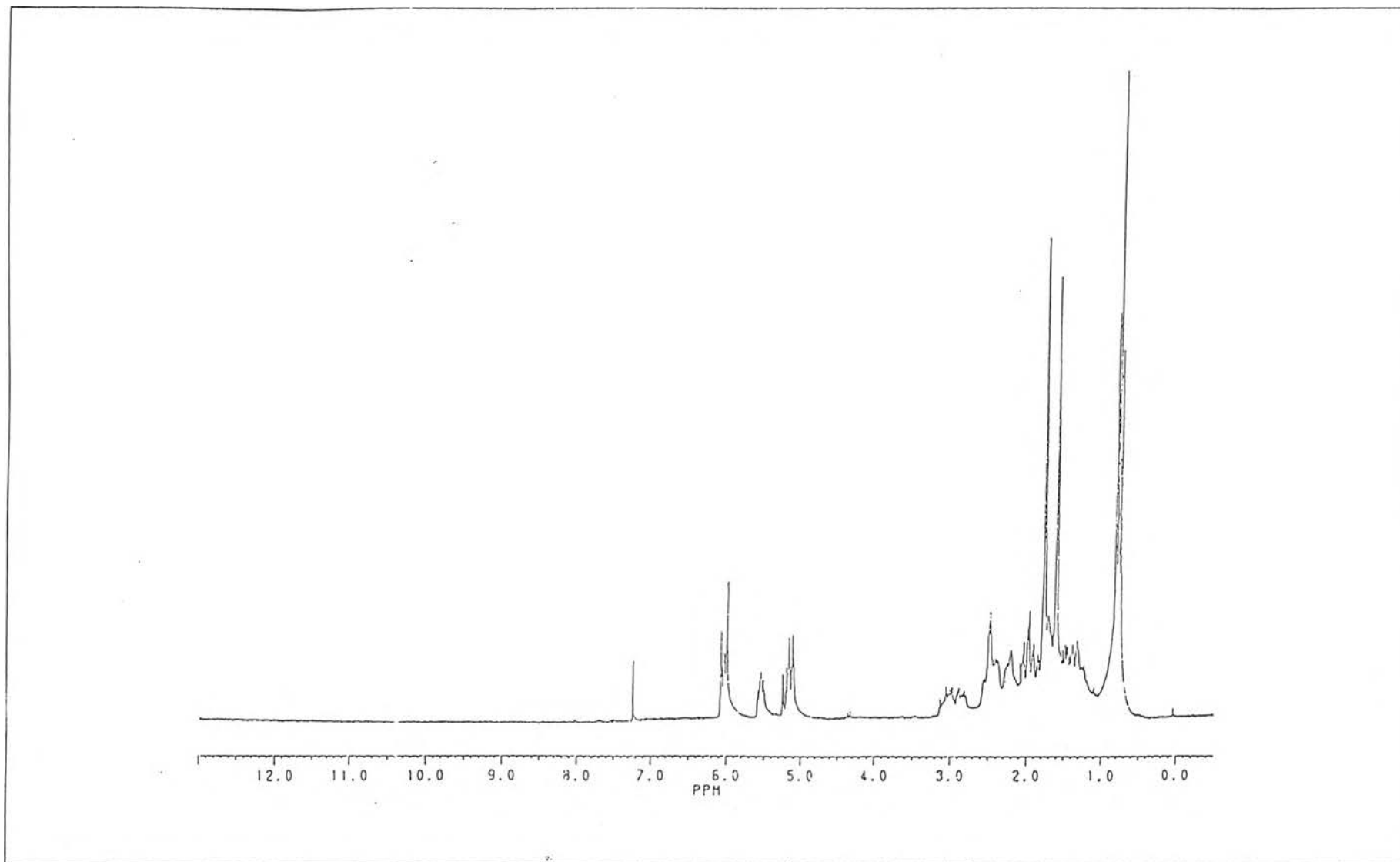


Figure 27 The $^1\text{H-NMR}$ spectrum of compound 2

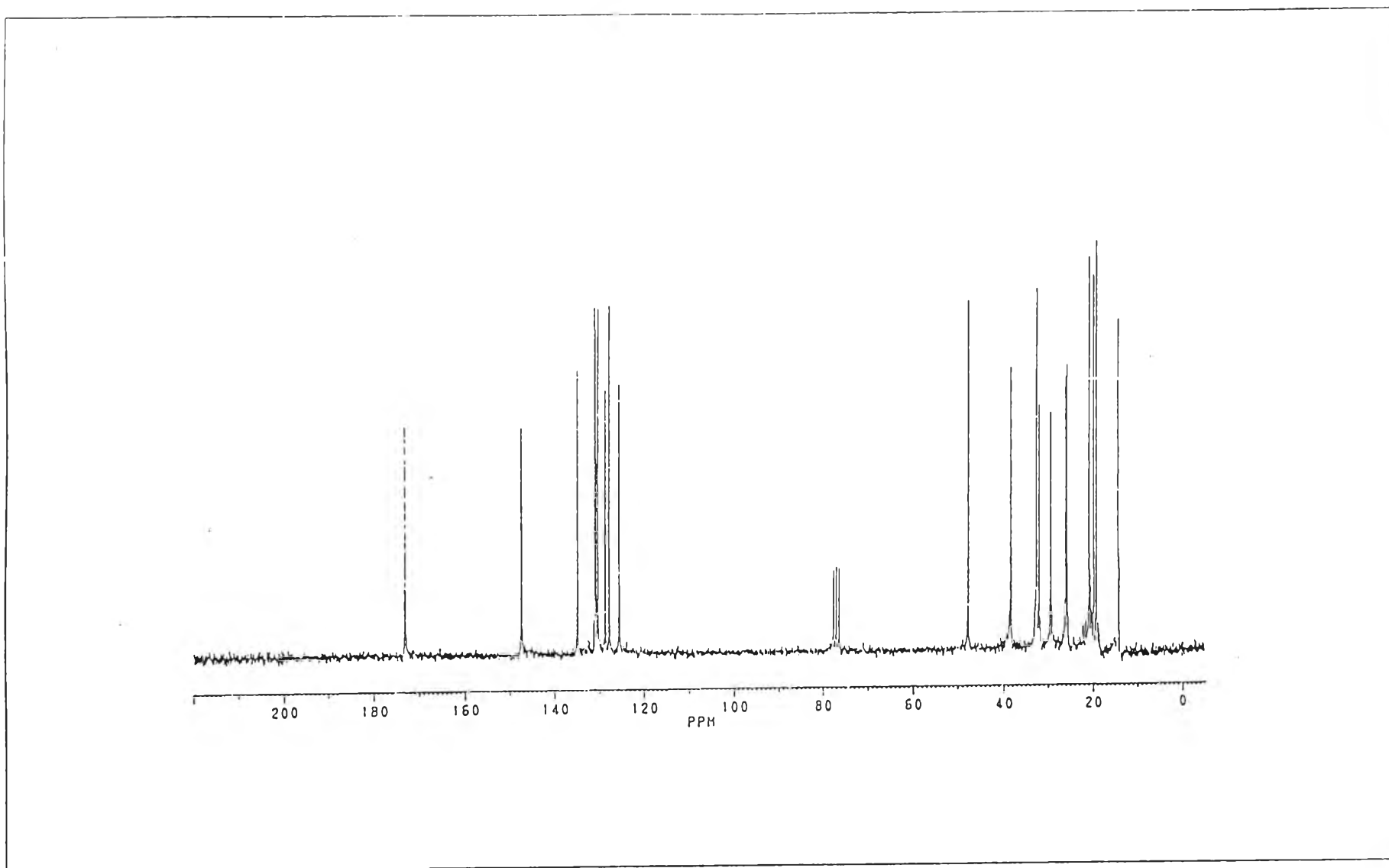


Figure 28 The ^{13}C -NMR spectrum of compound 2

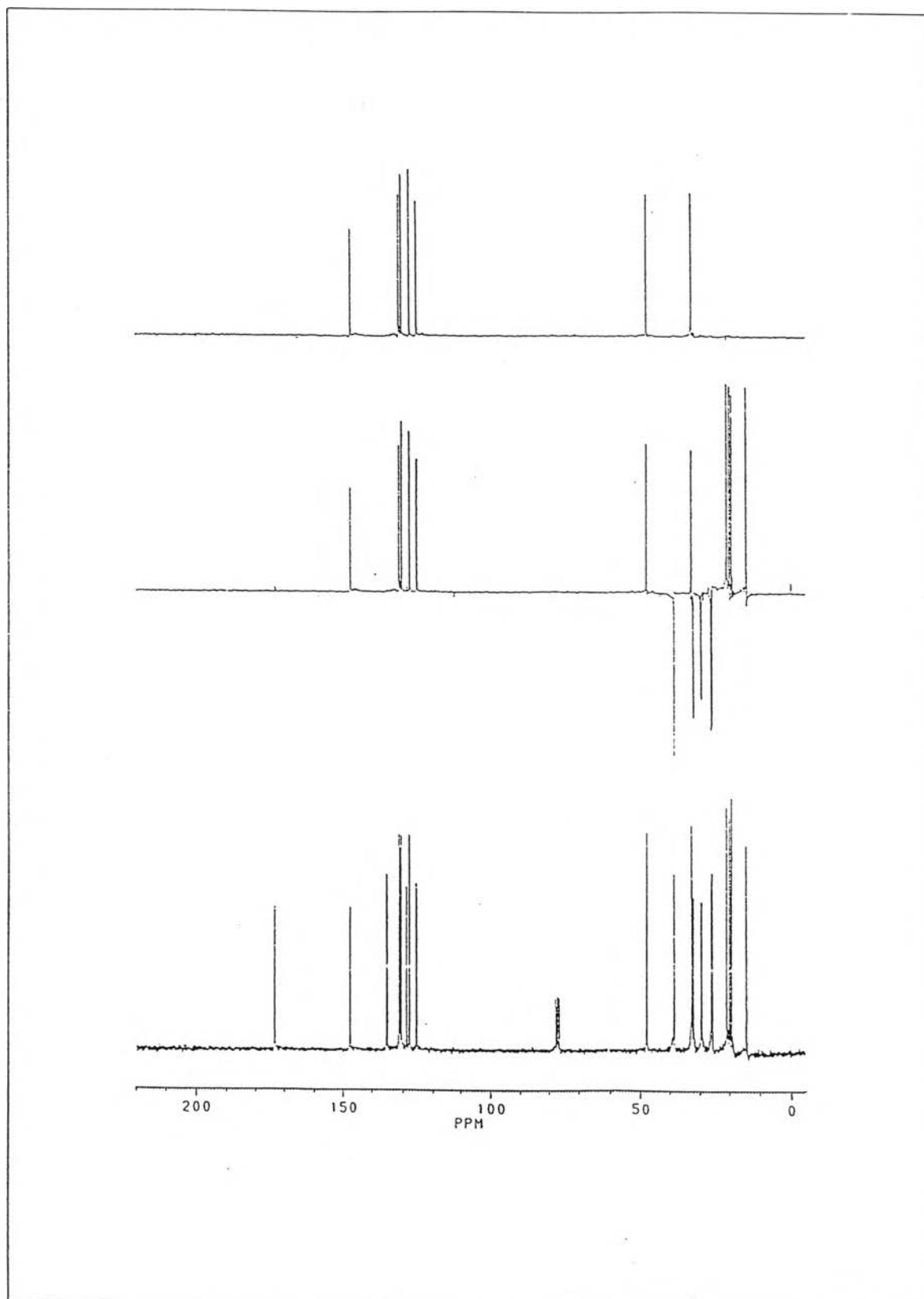


Figure 29 The DEPT-135, 90, ^{13}C -NMR spectrum of compound 2

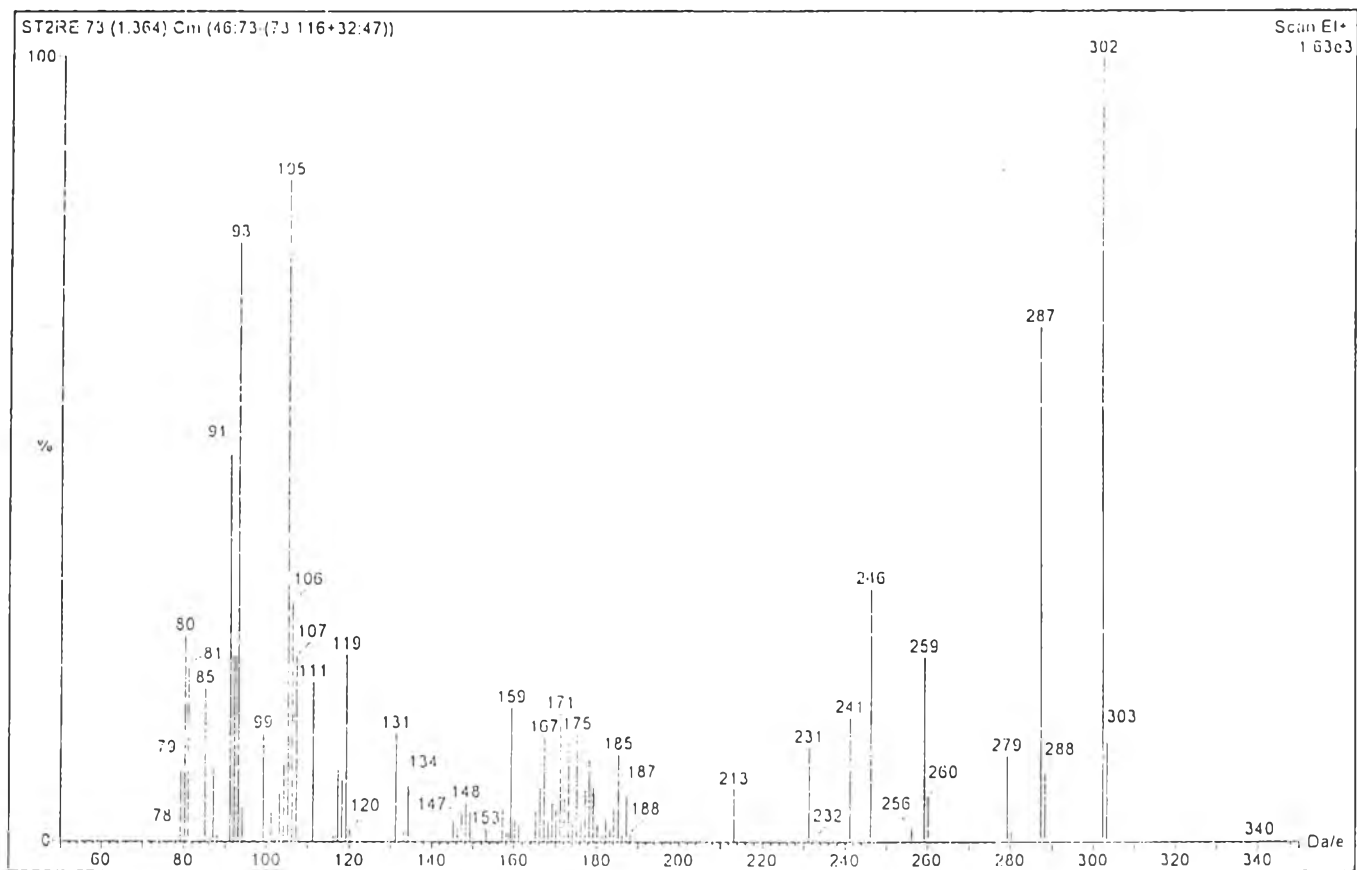


Figure 30 The EI MS spectrum of compound 2

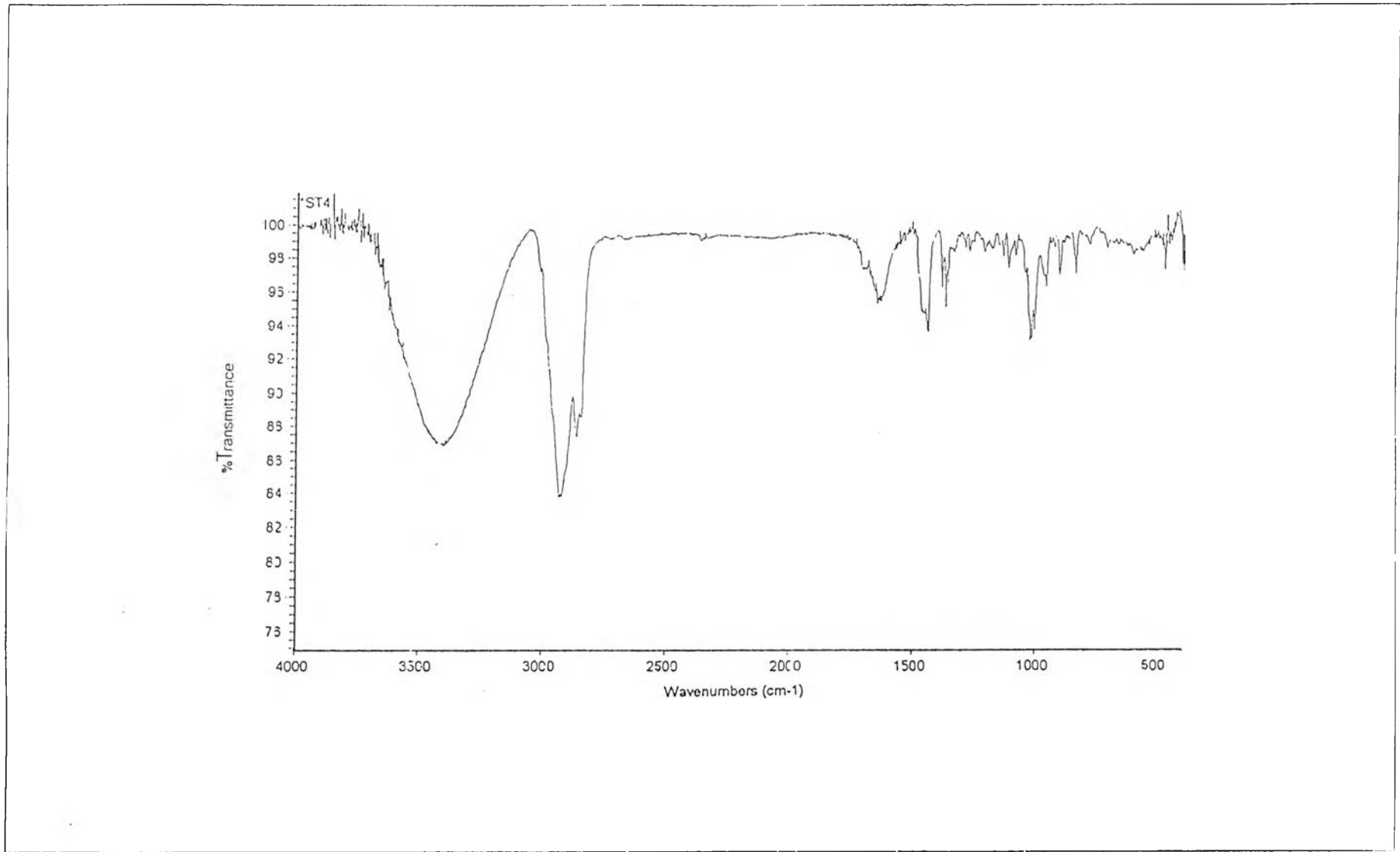


Figure 31 The IR spectrum of compound 3

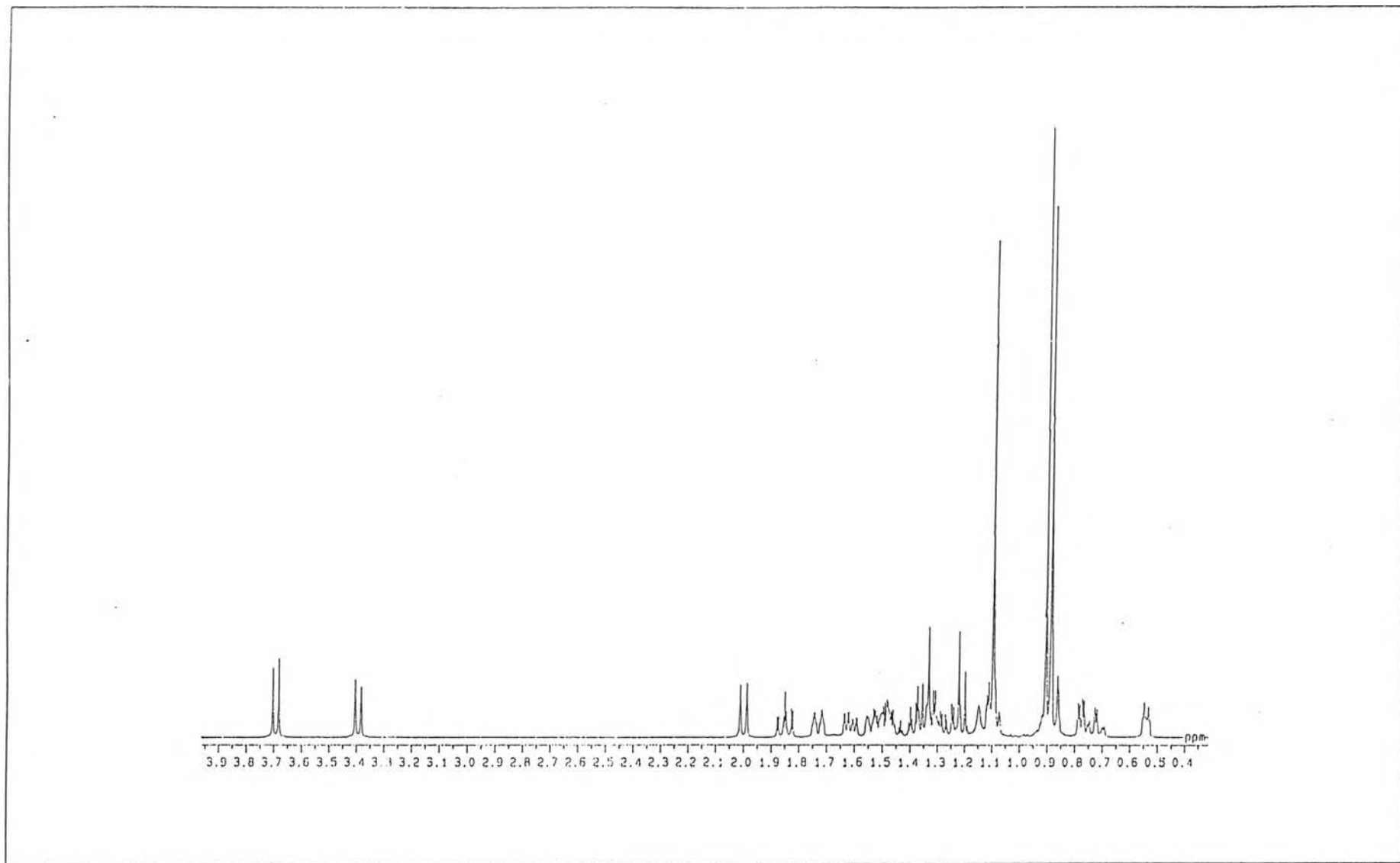


Figure 32 The ¹H-NMR spectrum of compound 3

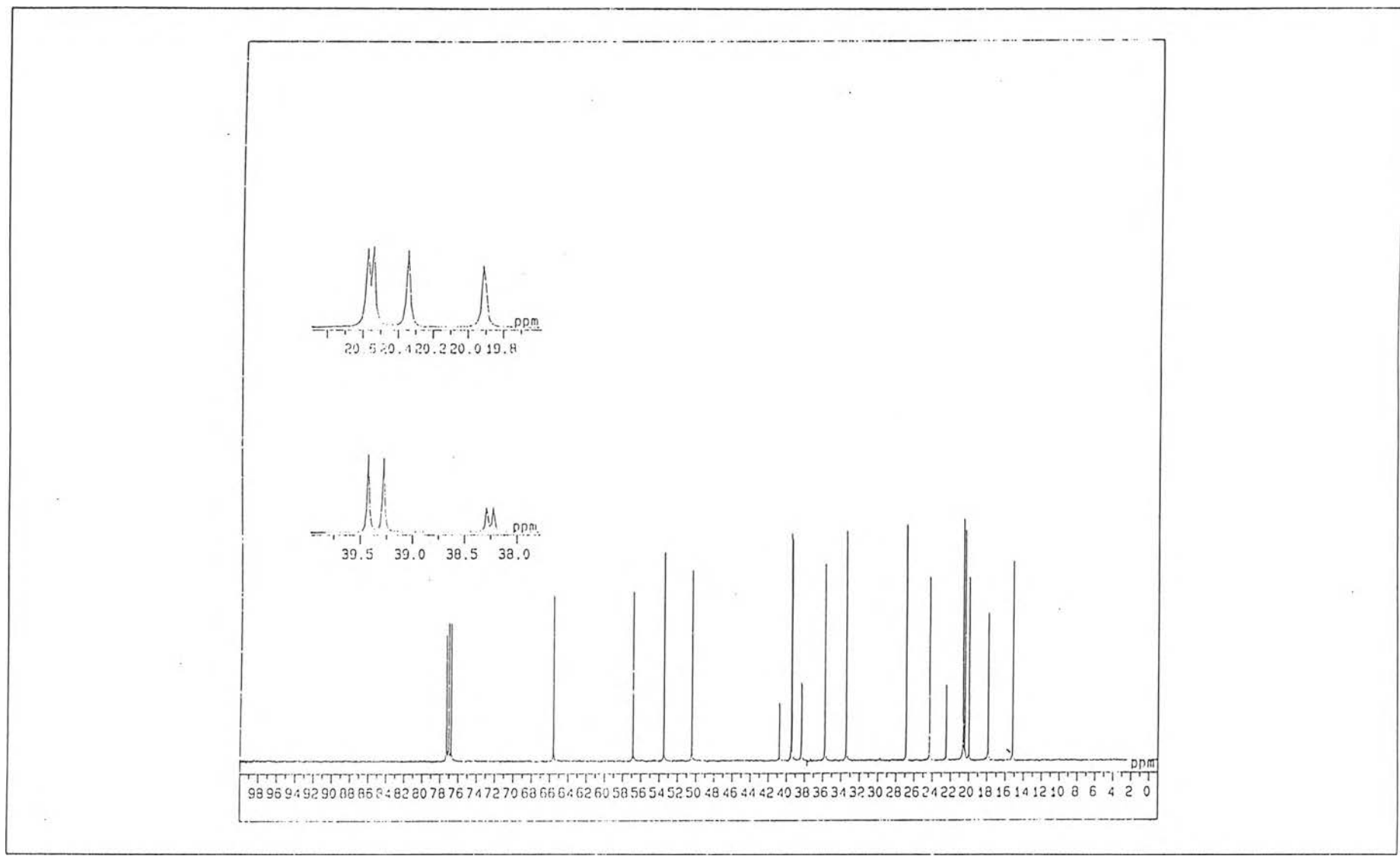


Figure 33 The ^{13}C -NMR spectrum of compound 3

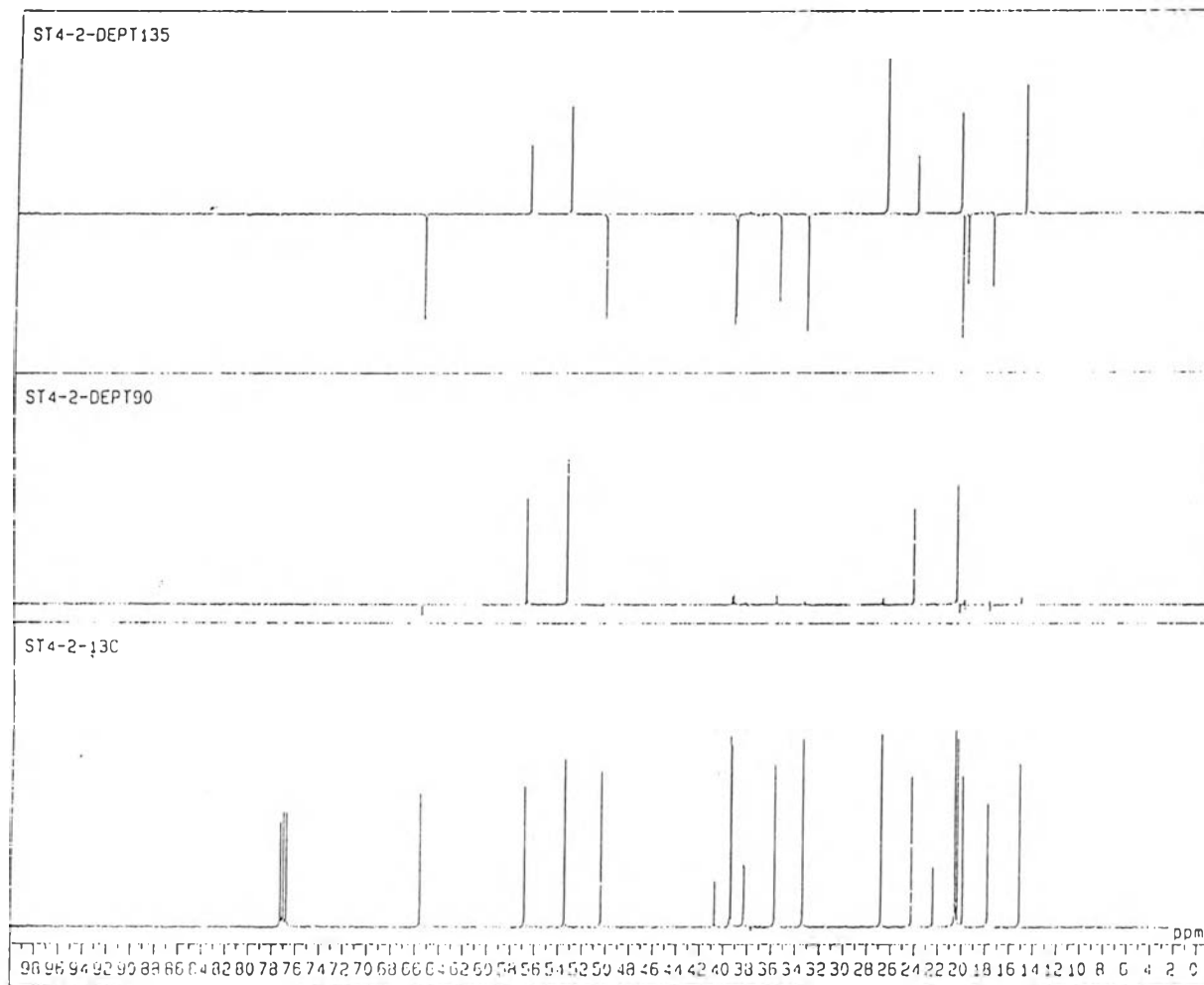


Figure 34 The DEPT 135, 90, ^{13}C -NMR spectrum of compound 3

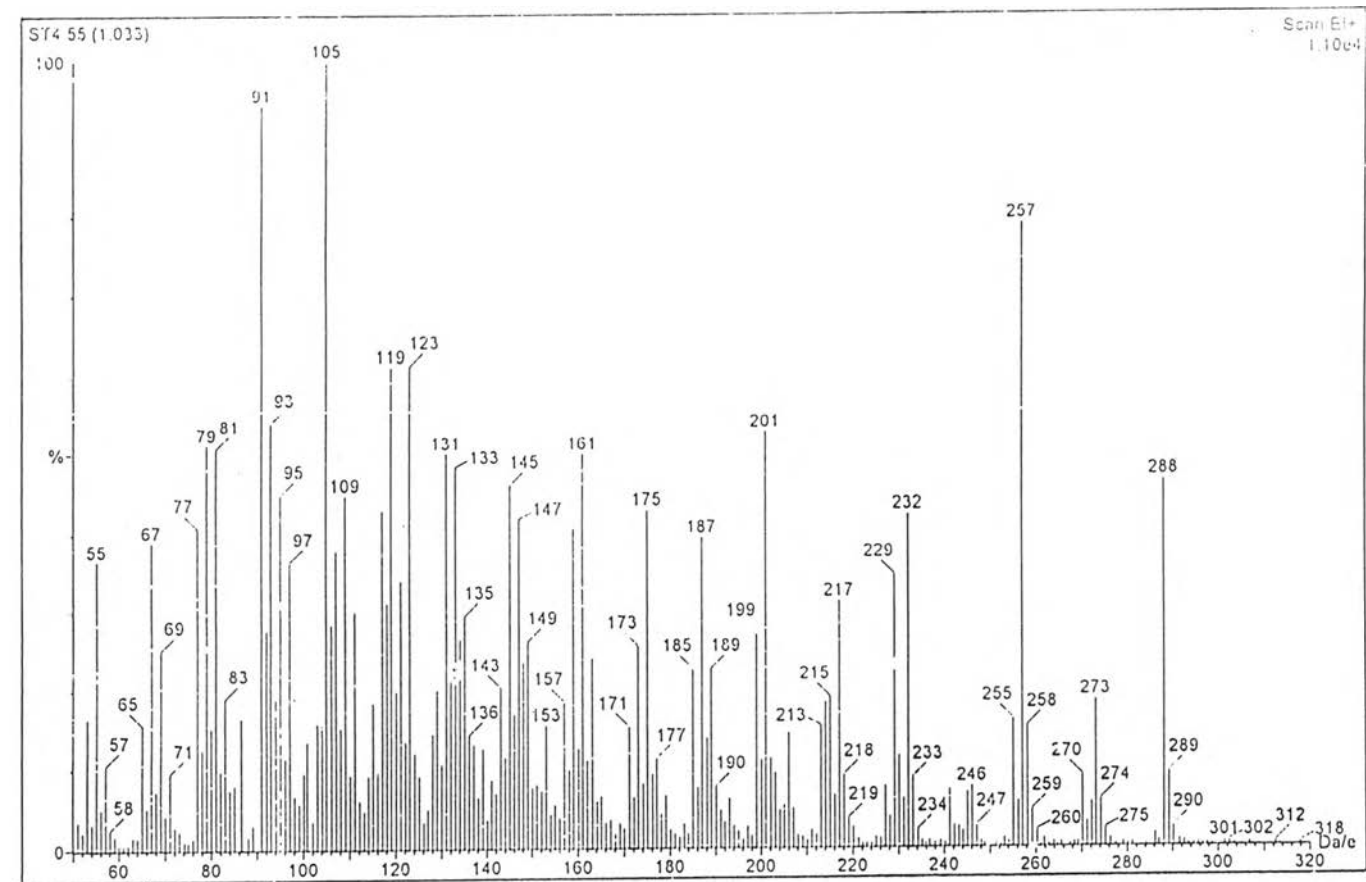


Figure 35 The EI MS spectrum of compound 3

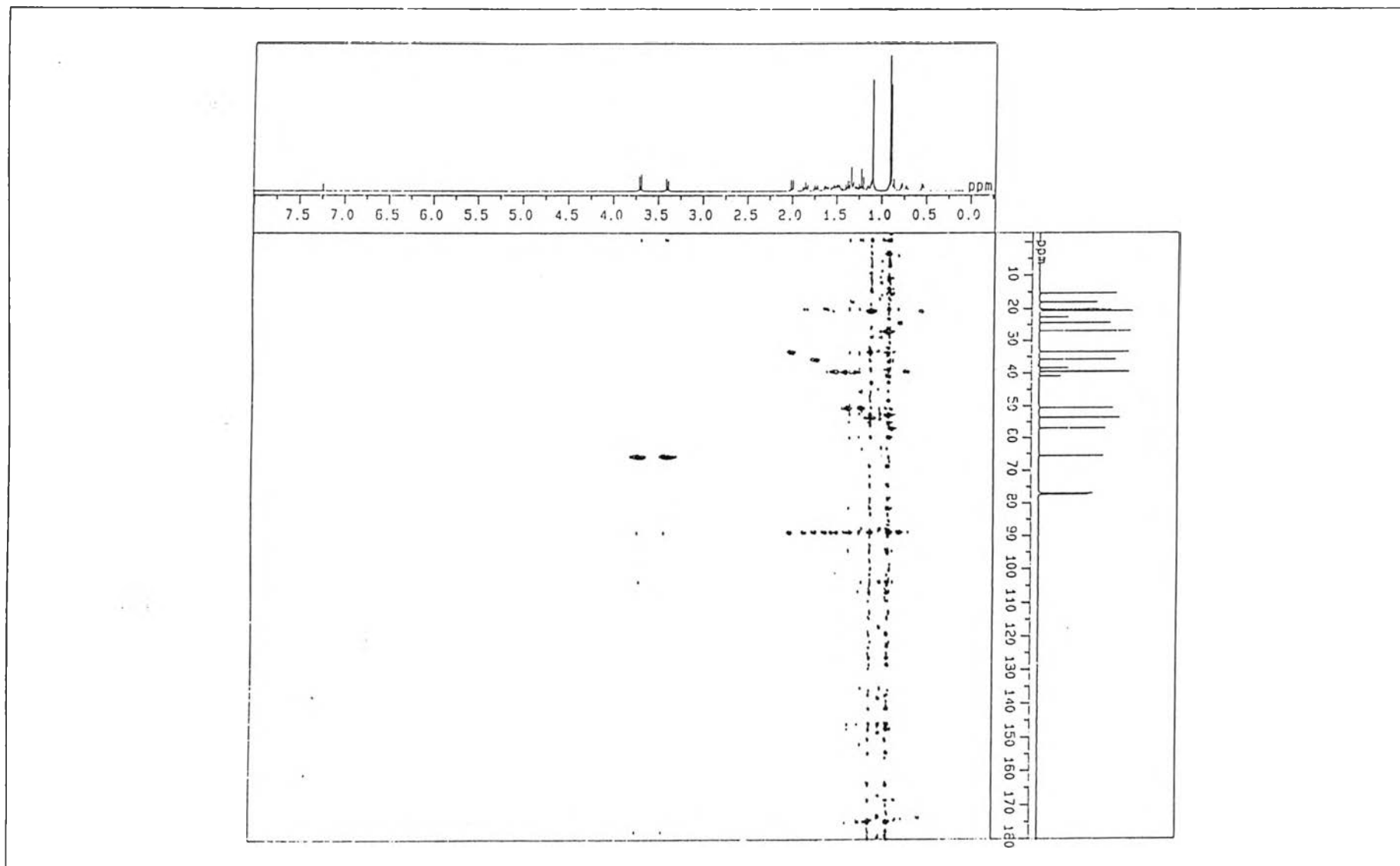


Figure 36 The HMQC-NMR spectrum of compound 3

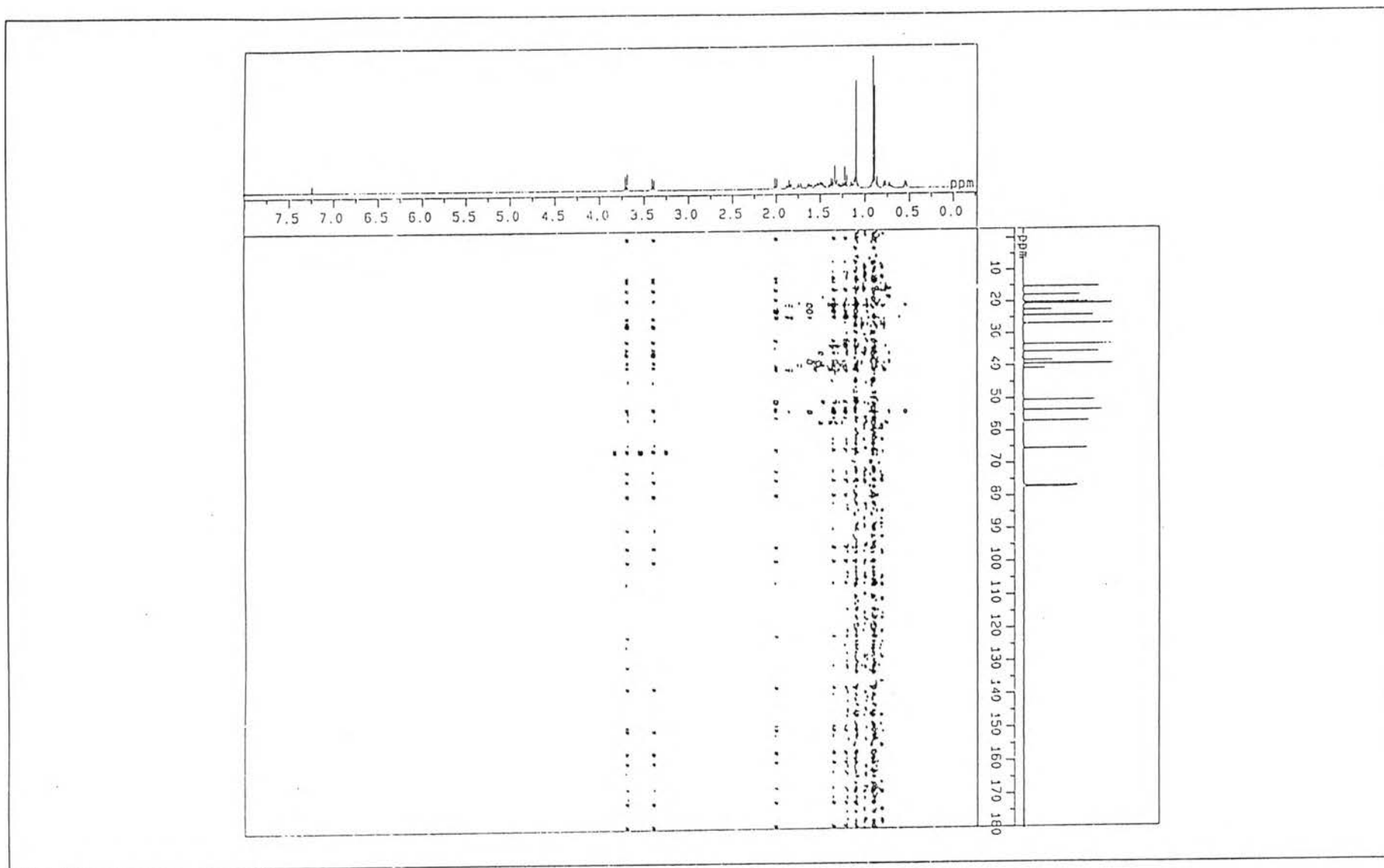


Figure 37 The HMBC-NMR spectrum of compound 3

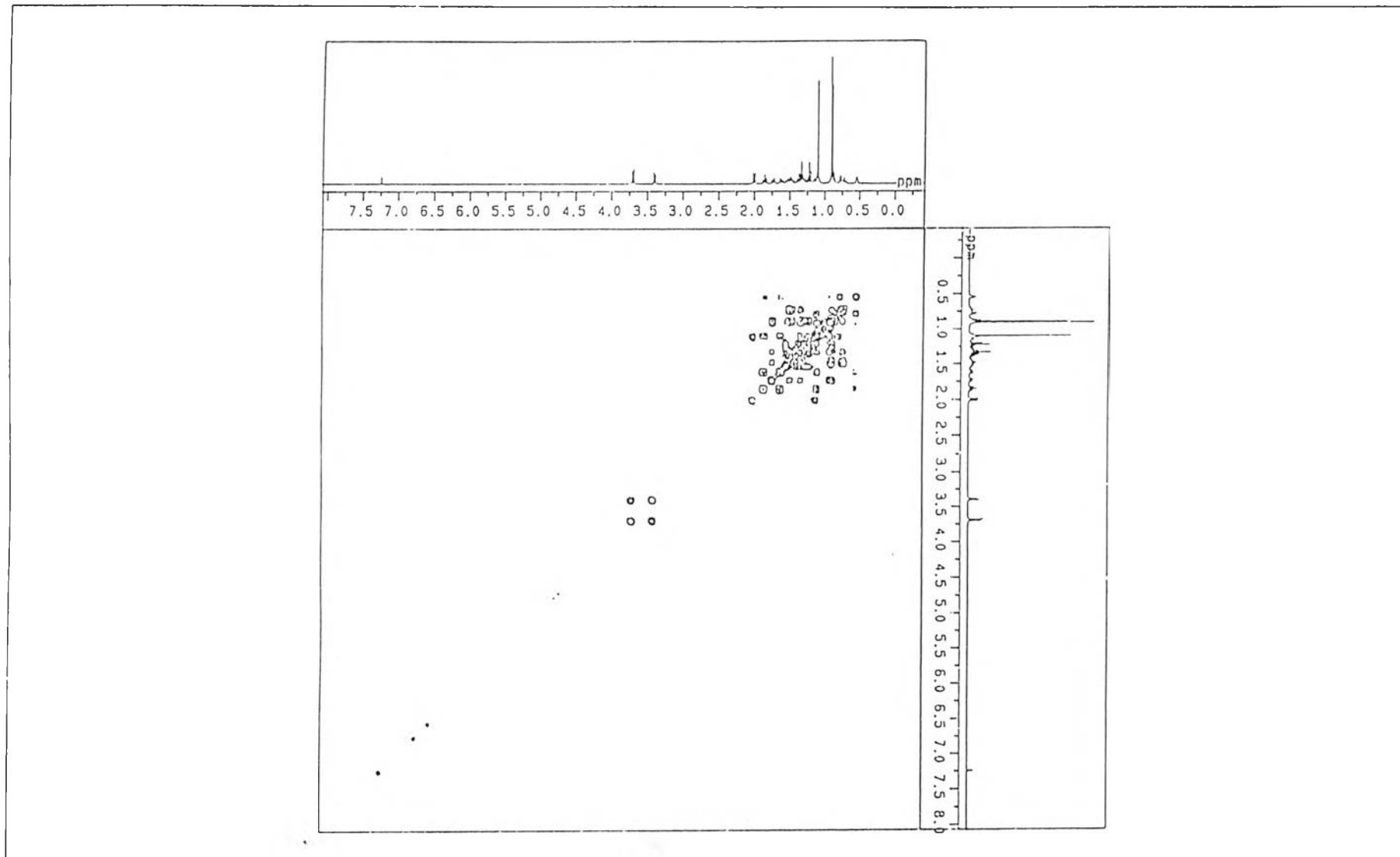


Figure 38 The COSY-NMR spectrum of compound 3

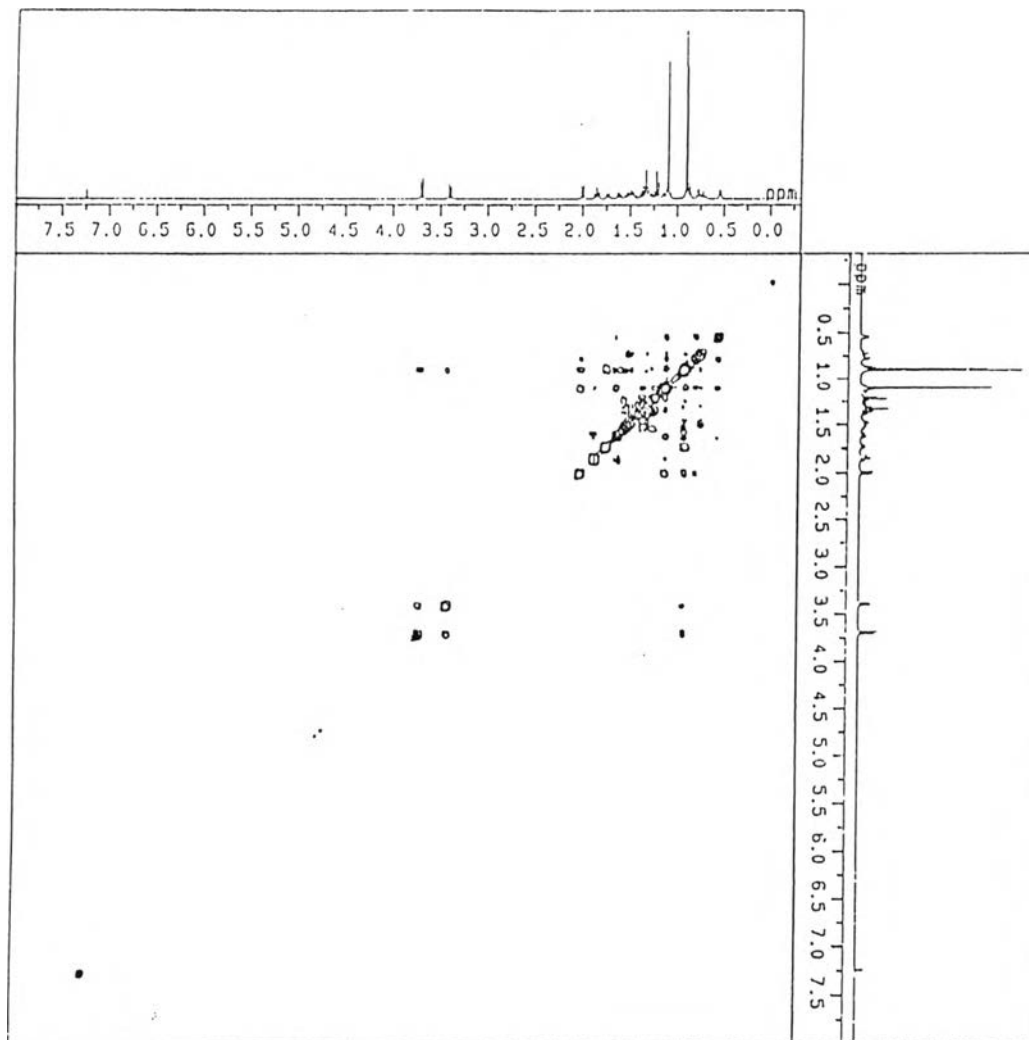


Figure 39 The NOESY-NMR spectrum of compound 3

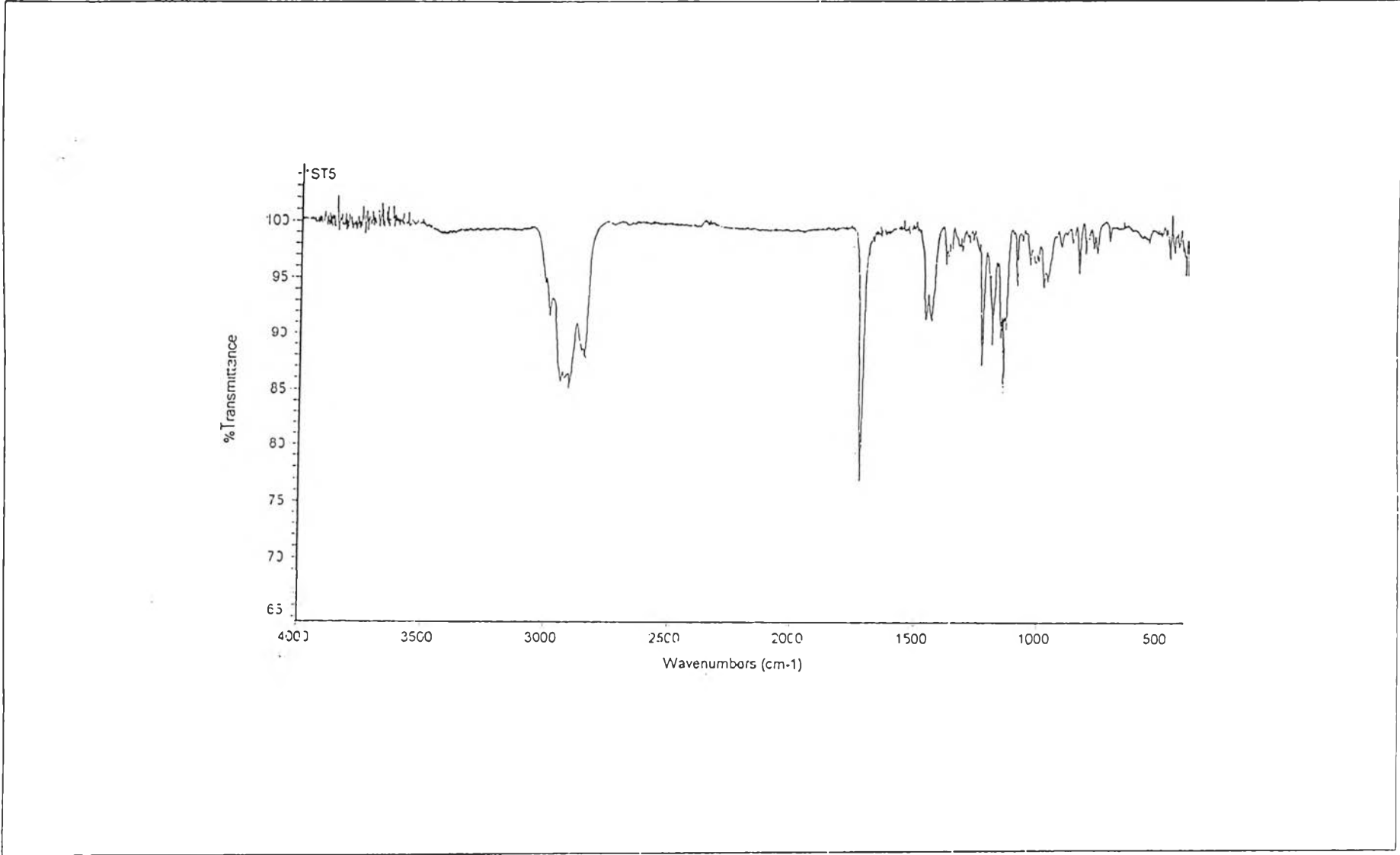


Figure 40 The IR spectrum of methyl ester

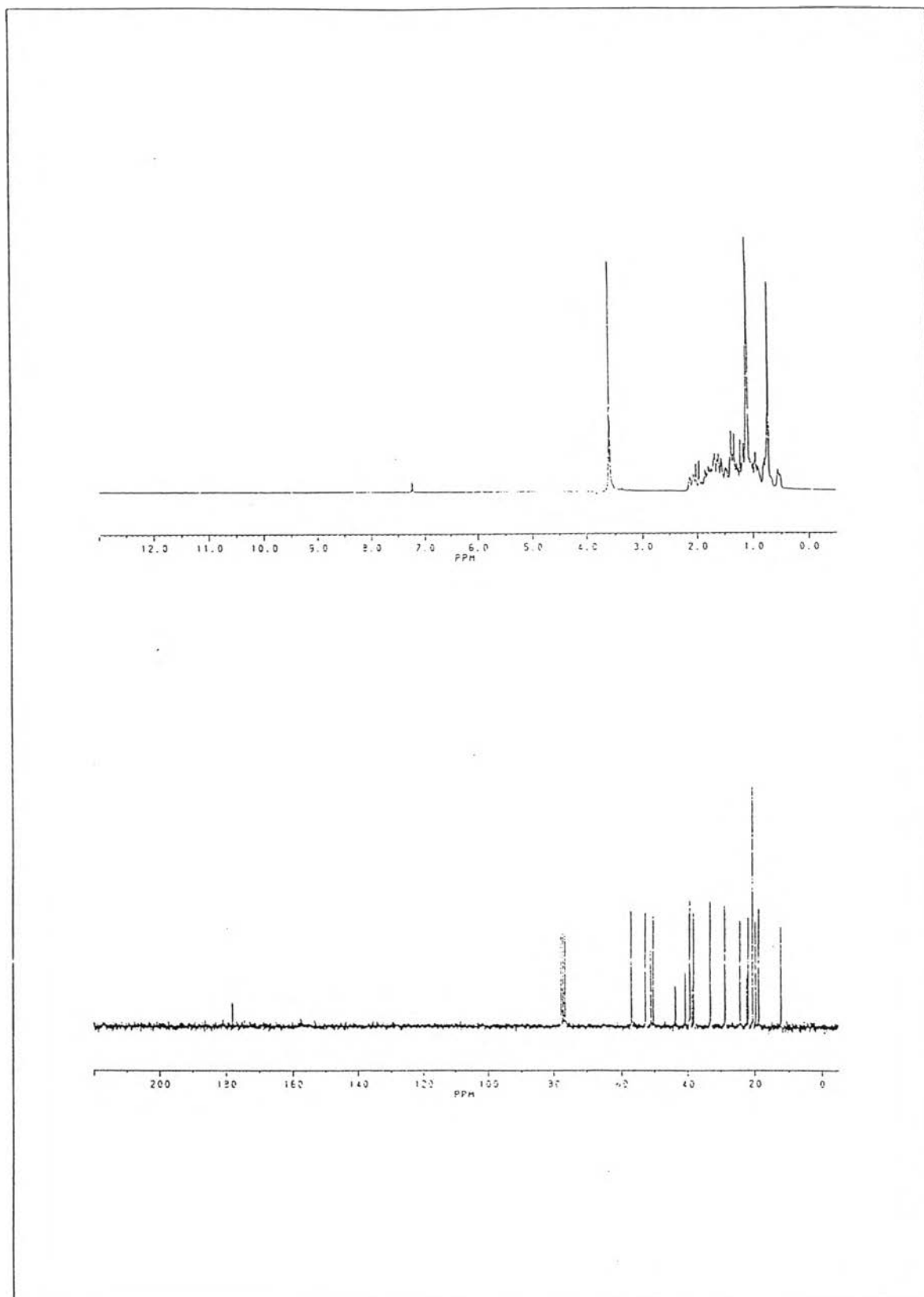


Figure 41 The ^1H and ^{13}C -NMR spectrum of methyl ester

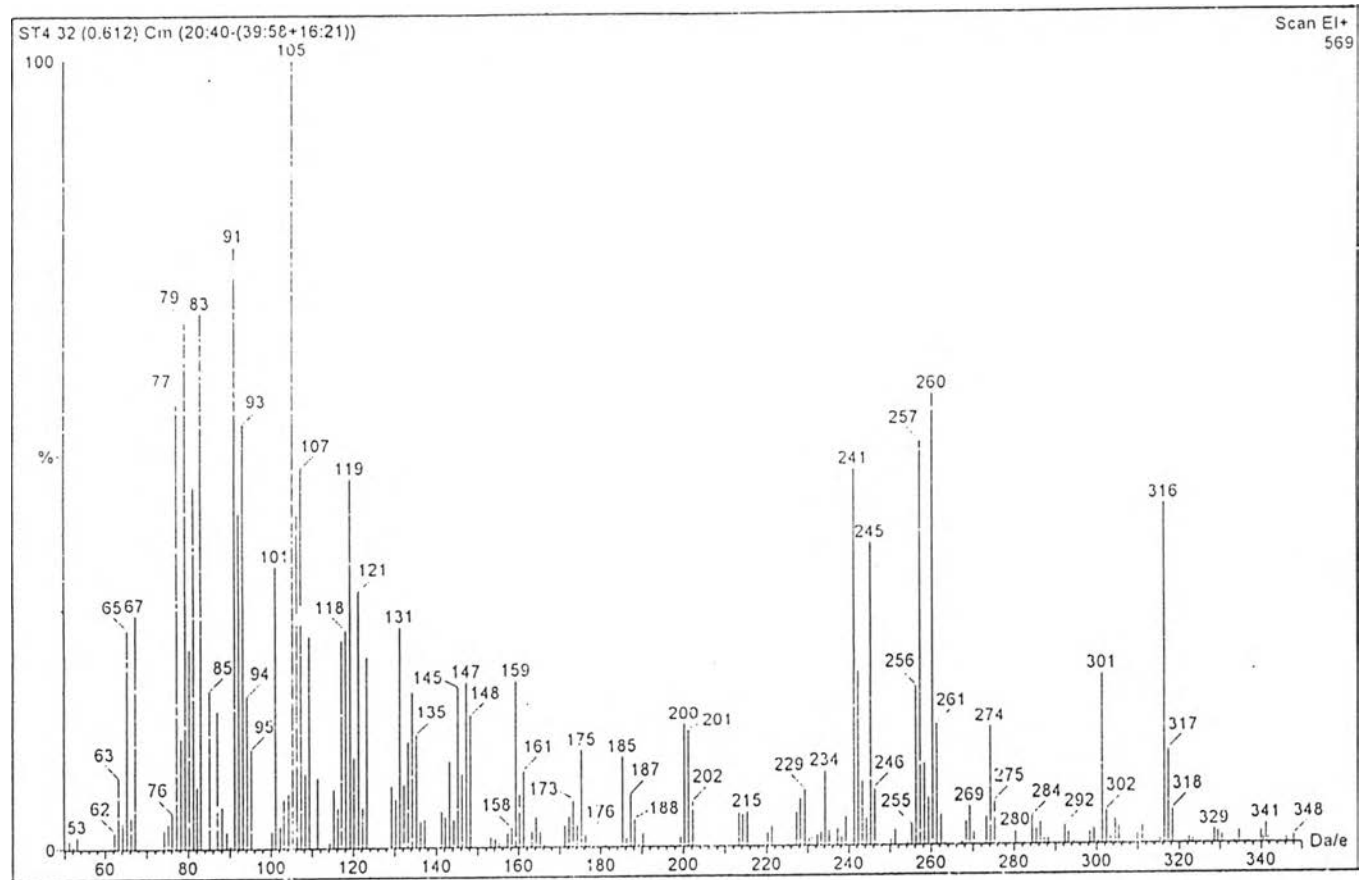


Figure 42 The EI MS spectrum of methyl ester

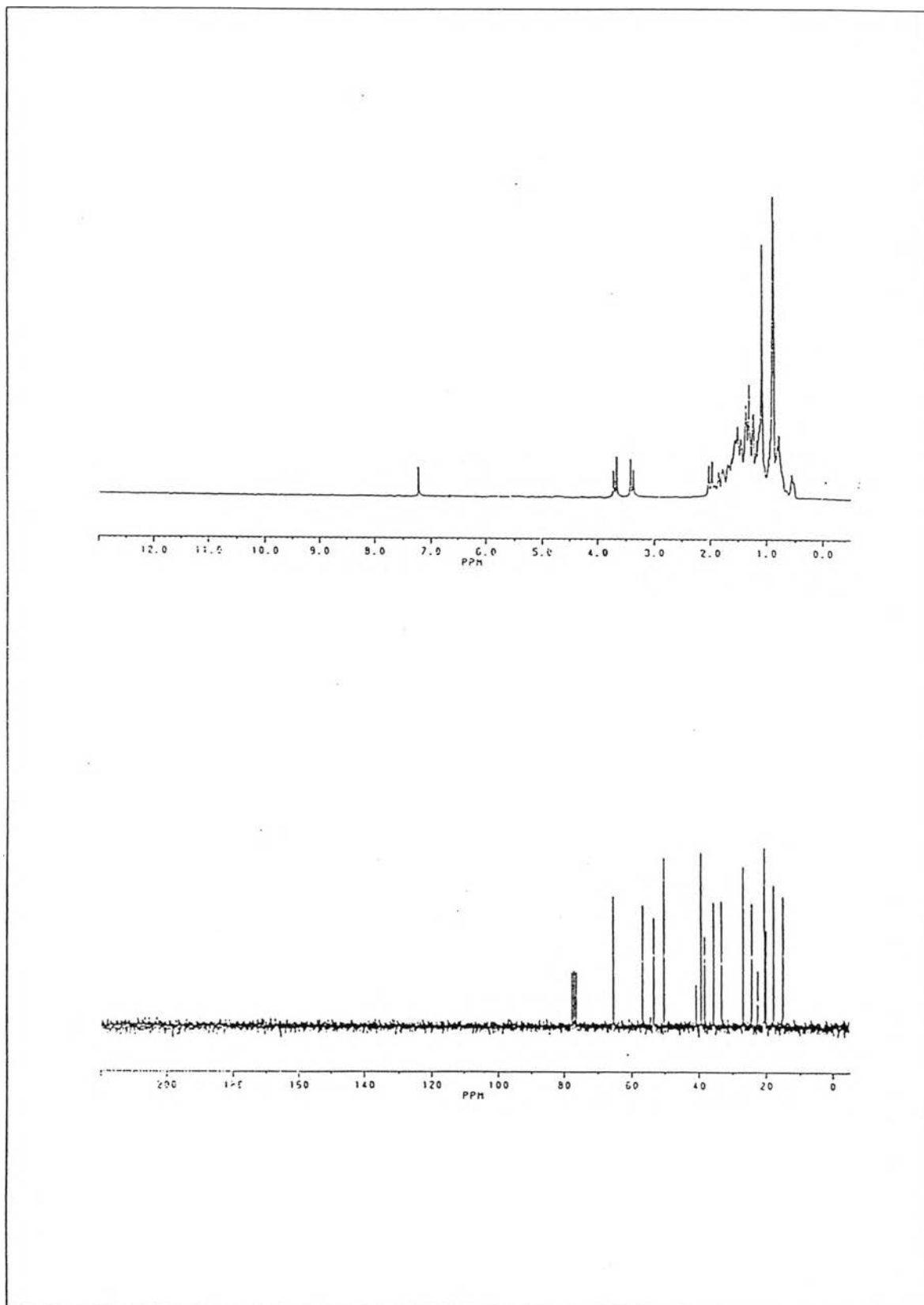


Figure 43 The ^1H , ^{13}C -NMR spectrum of product from reduction of compound 1a

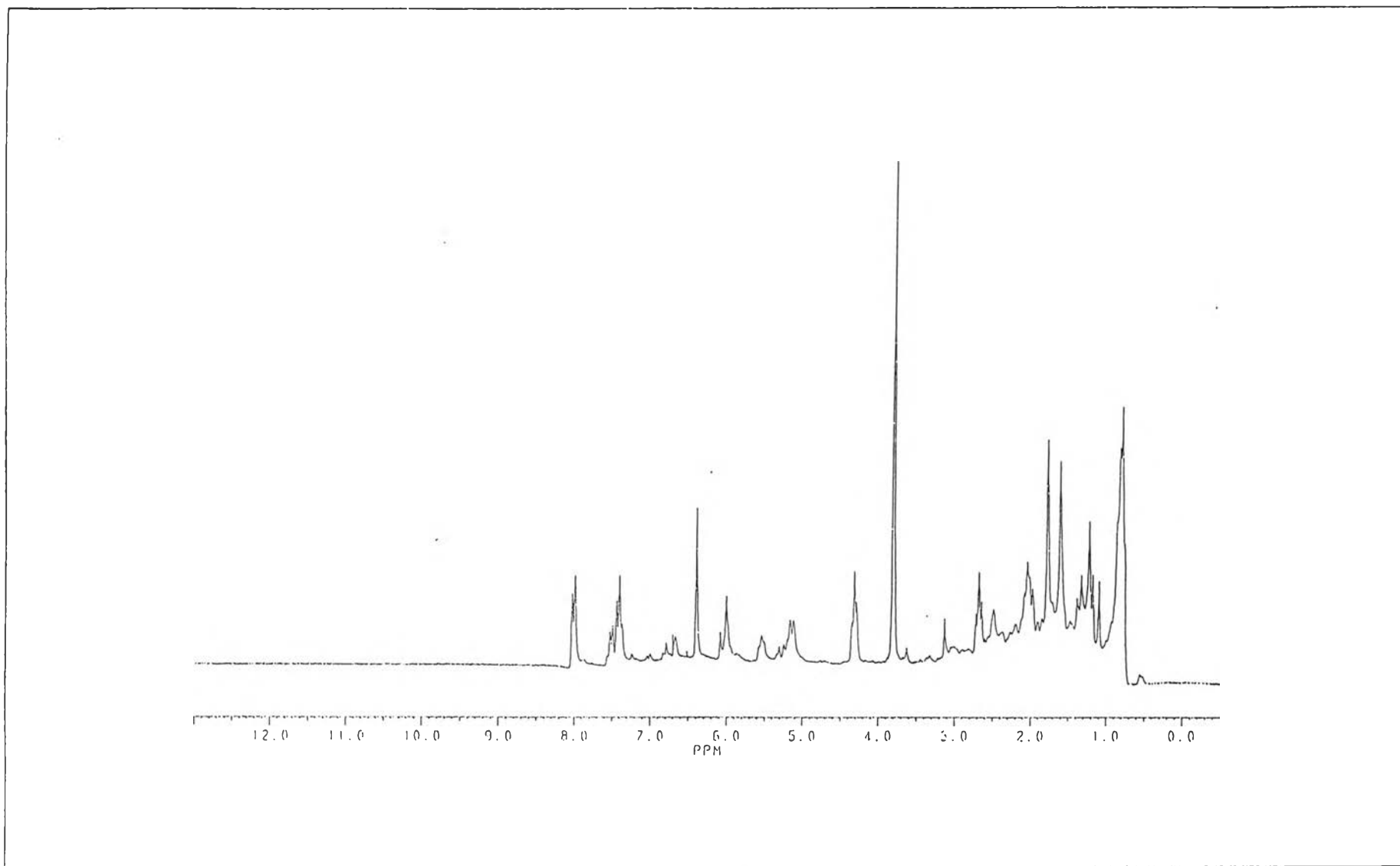


Figure 44 The $^1\text{H-NMR}$ of crude chloroform extraction

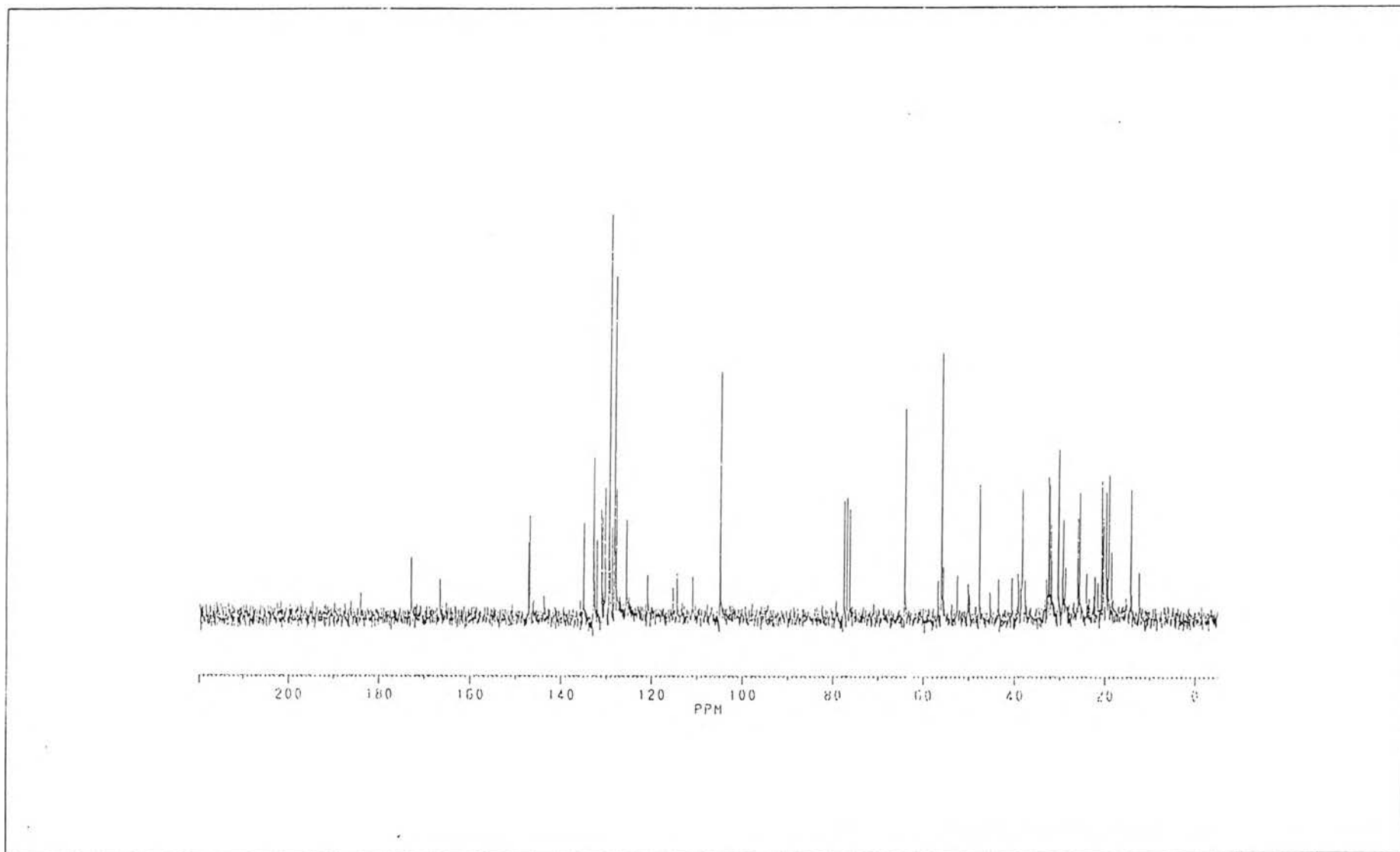


Figure 45 The ^{13}C -NMR of crude chloroform extraction

VITA

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