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APPENDIX

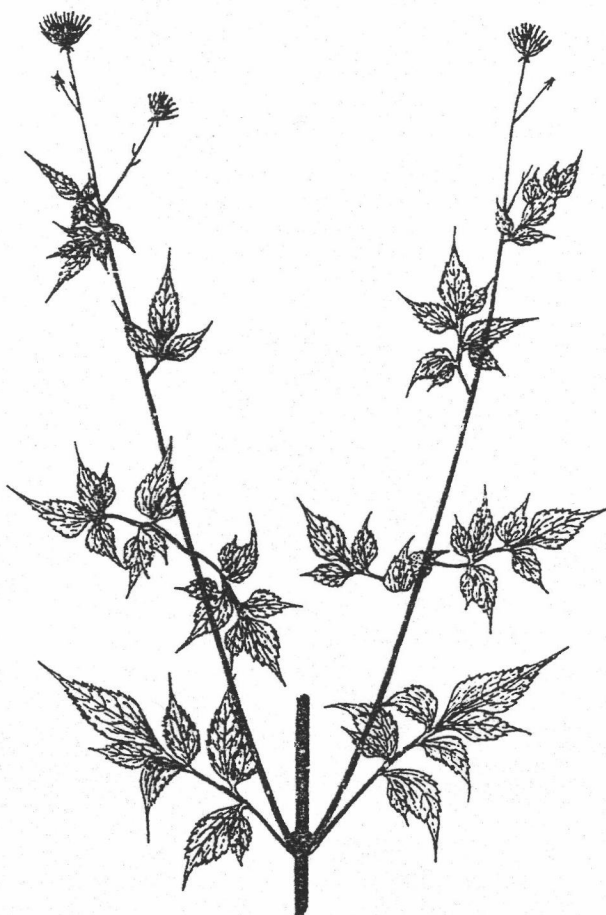


Figure 1 *Bidens biternata* (Lour.) Merr. & Sherff

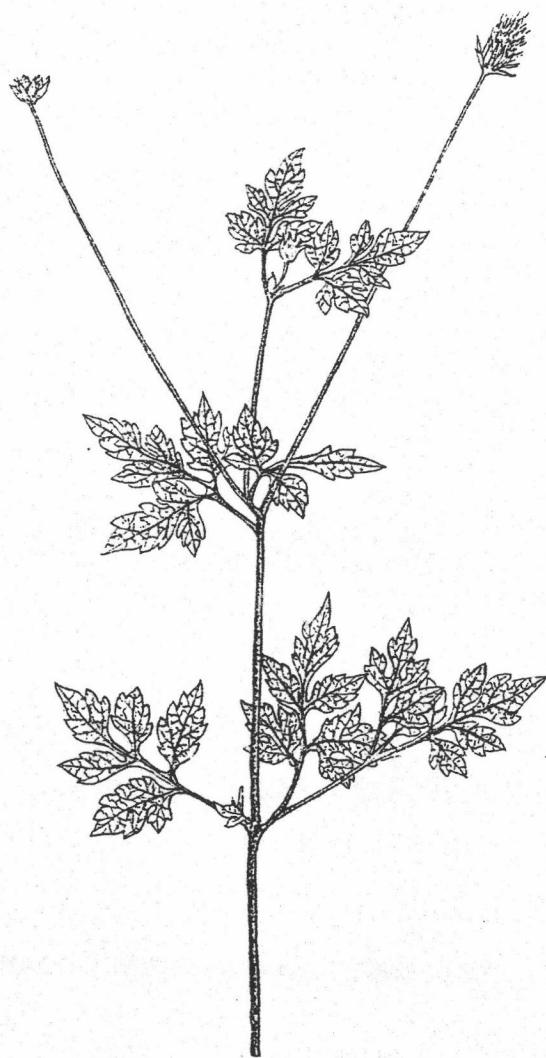


Figure 2 *Bidens bipinnata* Linn.



Figure 3 *Bidens pilosa* Linn.

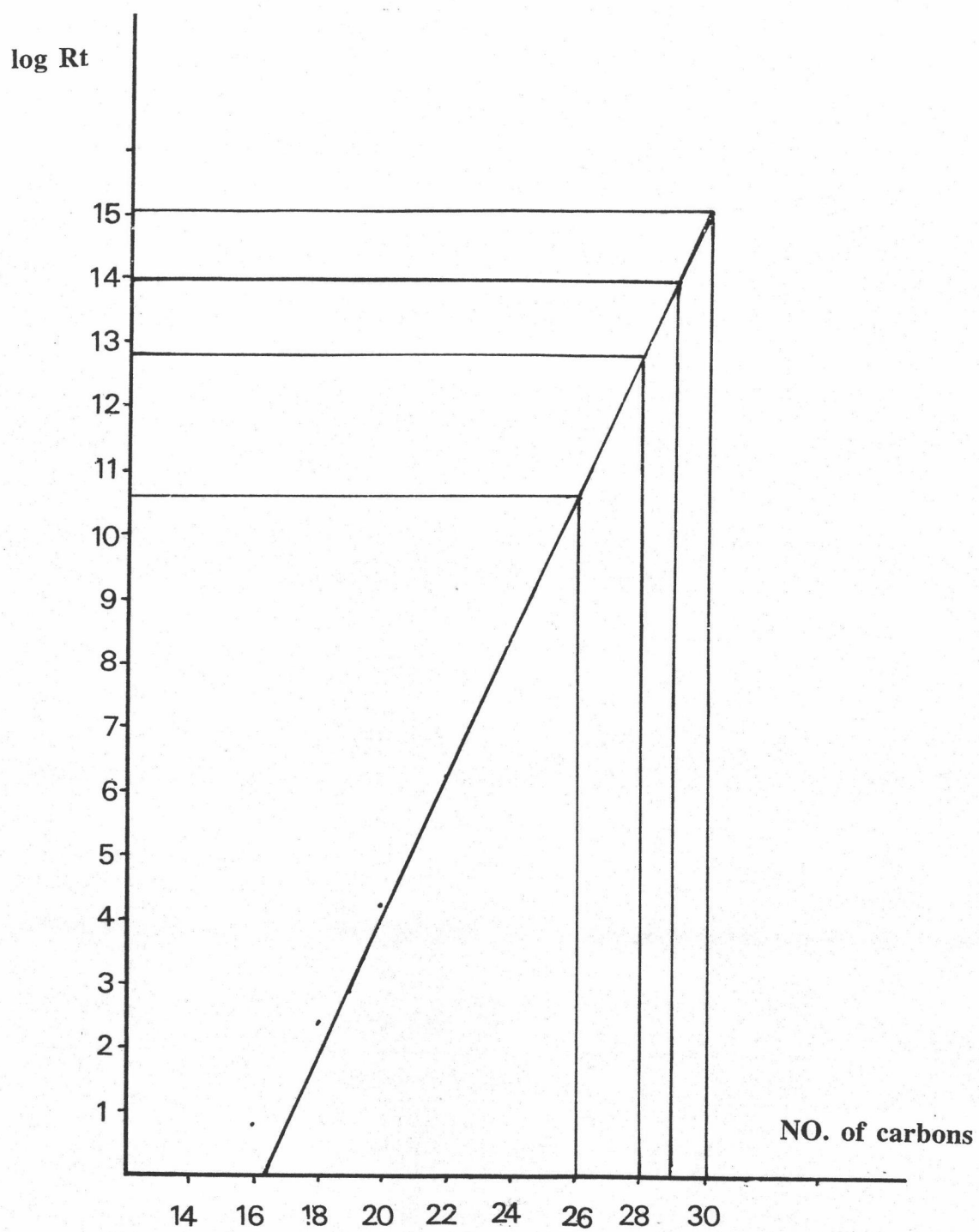


Figure 4 Graph illustrating the relationship between the log Rt and the number of carbon of authentic long chain alcohols and BB-1

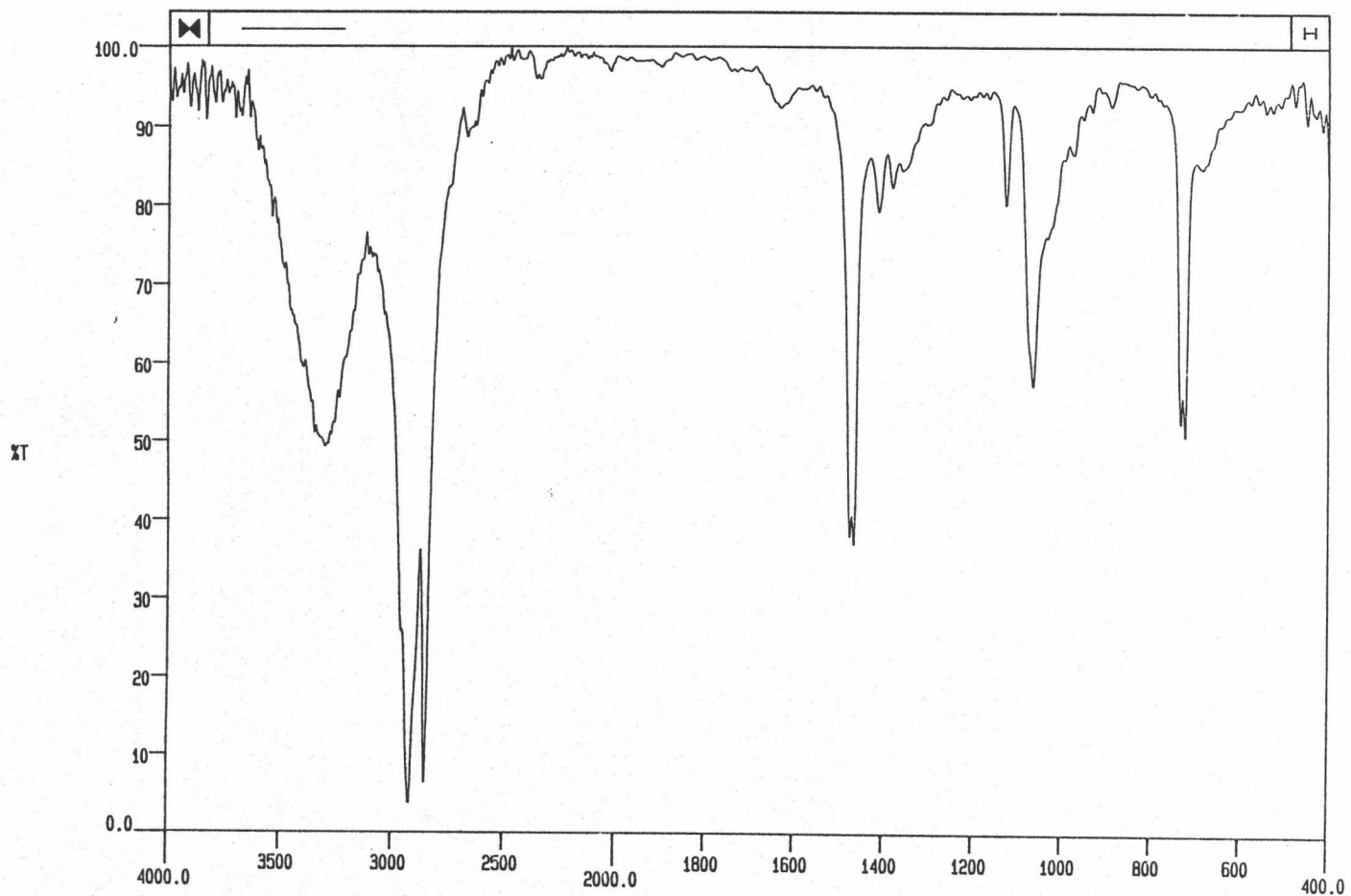


Figure 5 The IR spectrum of BB-1 (KBr disc)

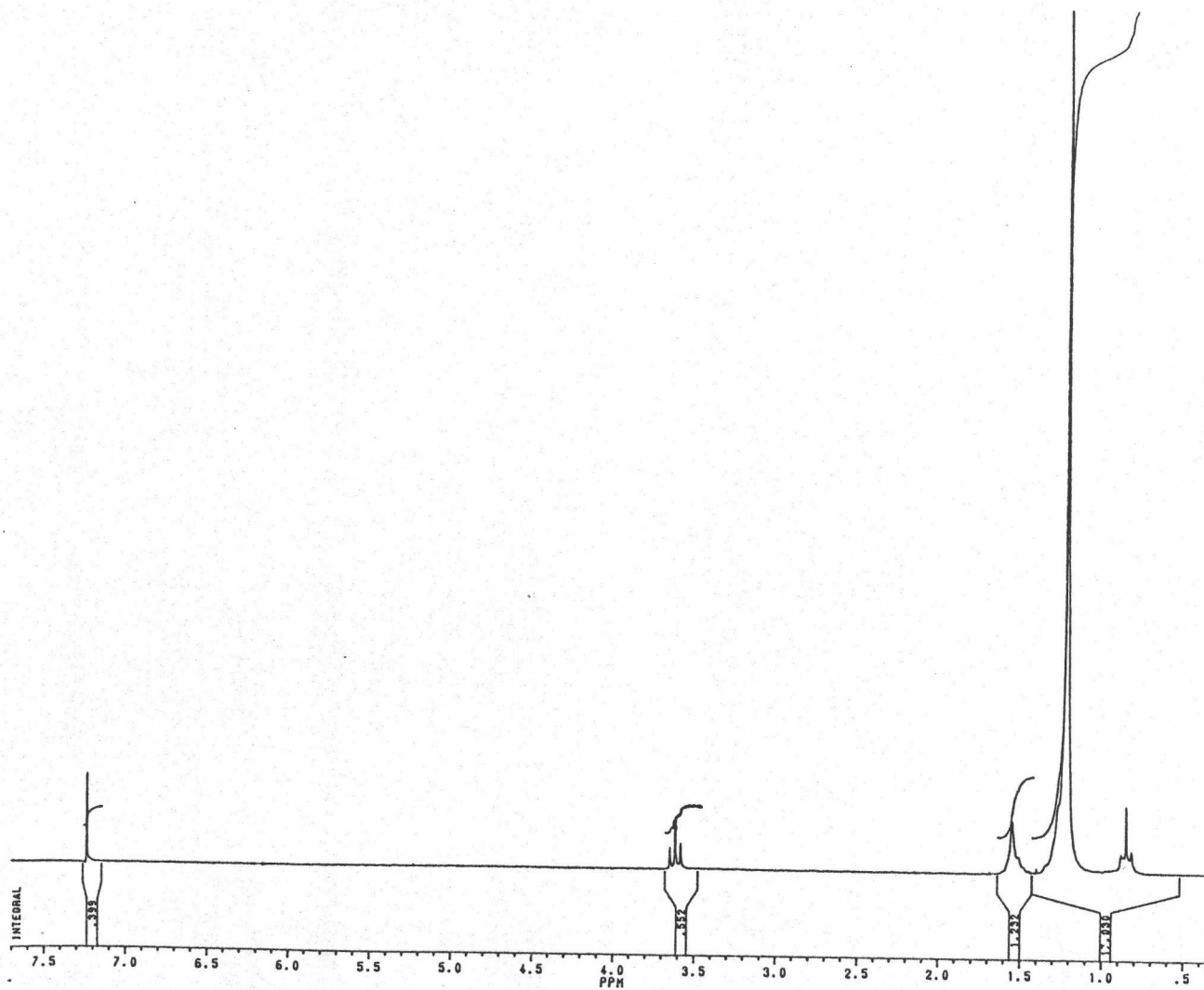


Figure 6 The 200 MHz ¹H NMR spectrum of BB-1 (in CDCl₃).

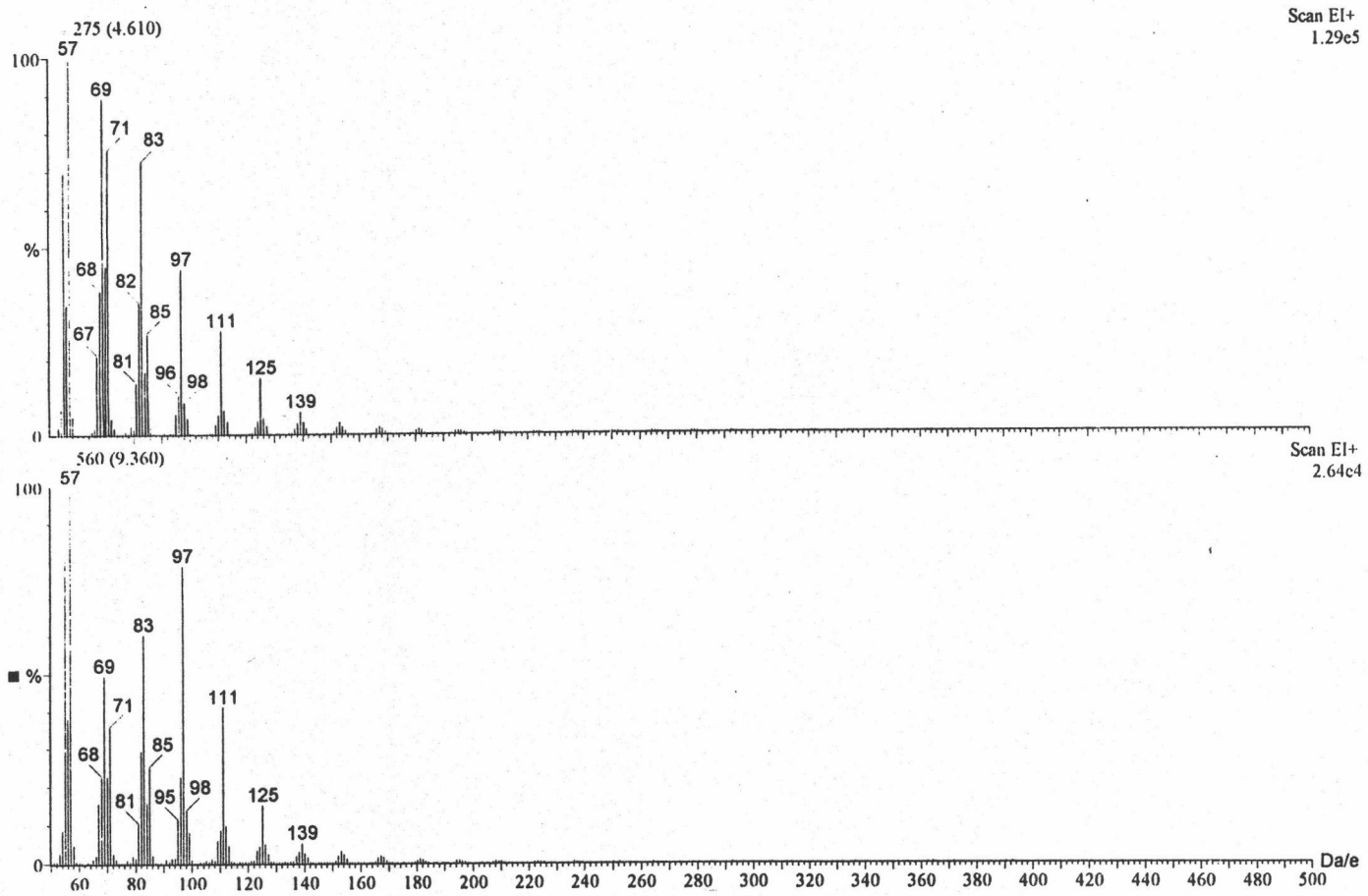


Figure 7 The EIMS spectrum of BB-1

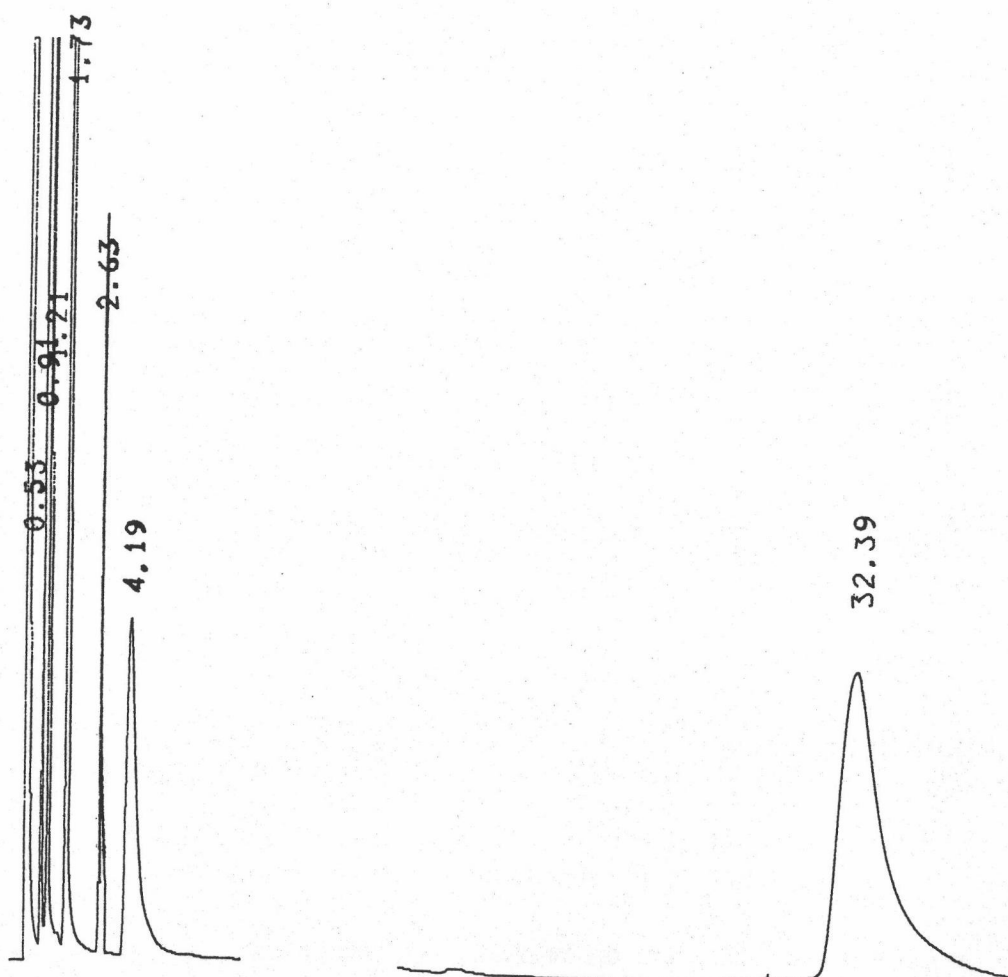


Figure 8 The gas chromatograms of the authentic long chain alcohols

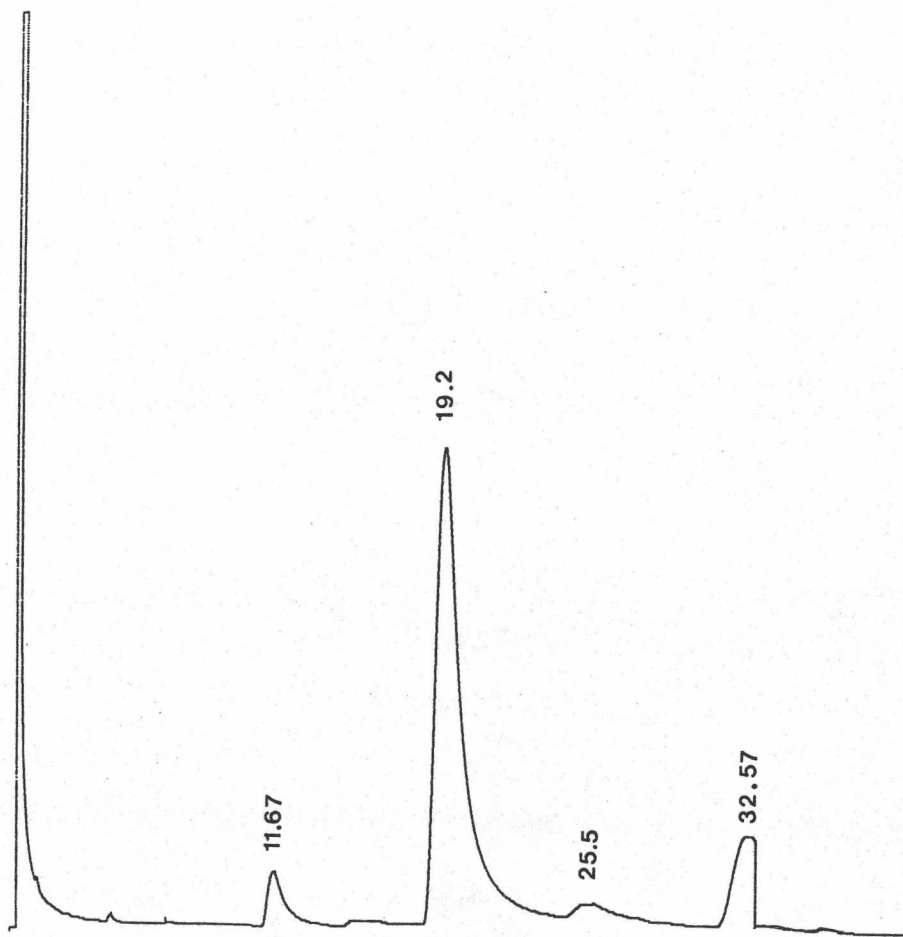


Figure 9 The gas chromatogram of BB-1

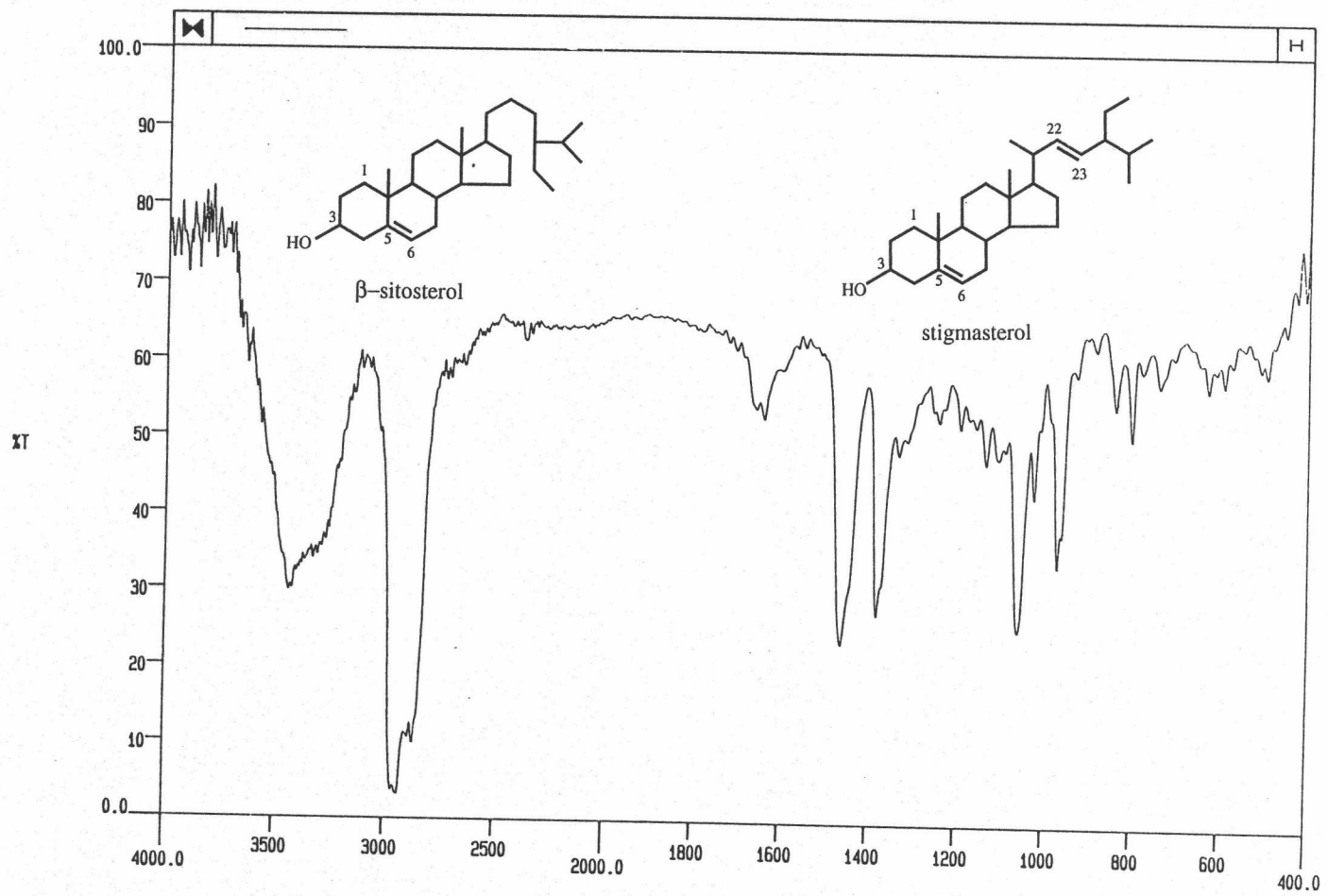


Figure 10 The IR spectrum of BB-2 (KBr disc)

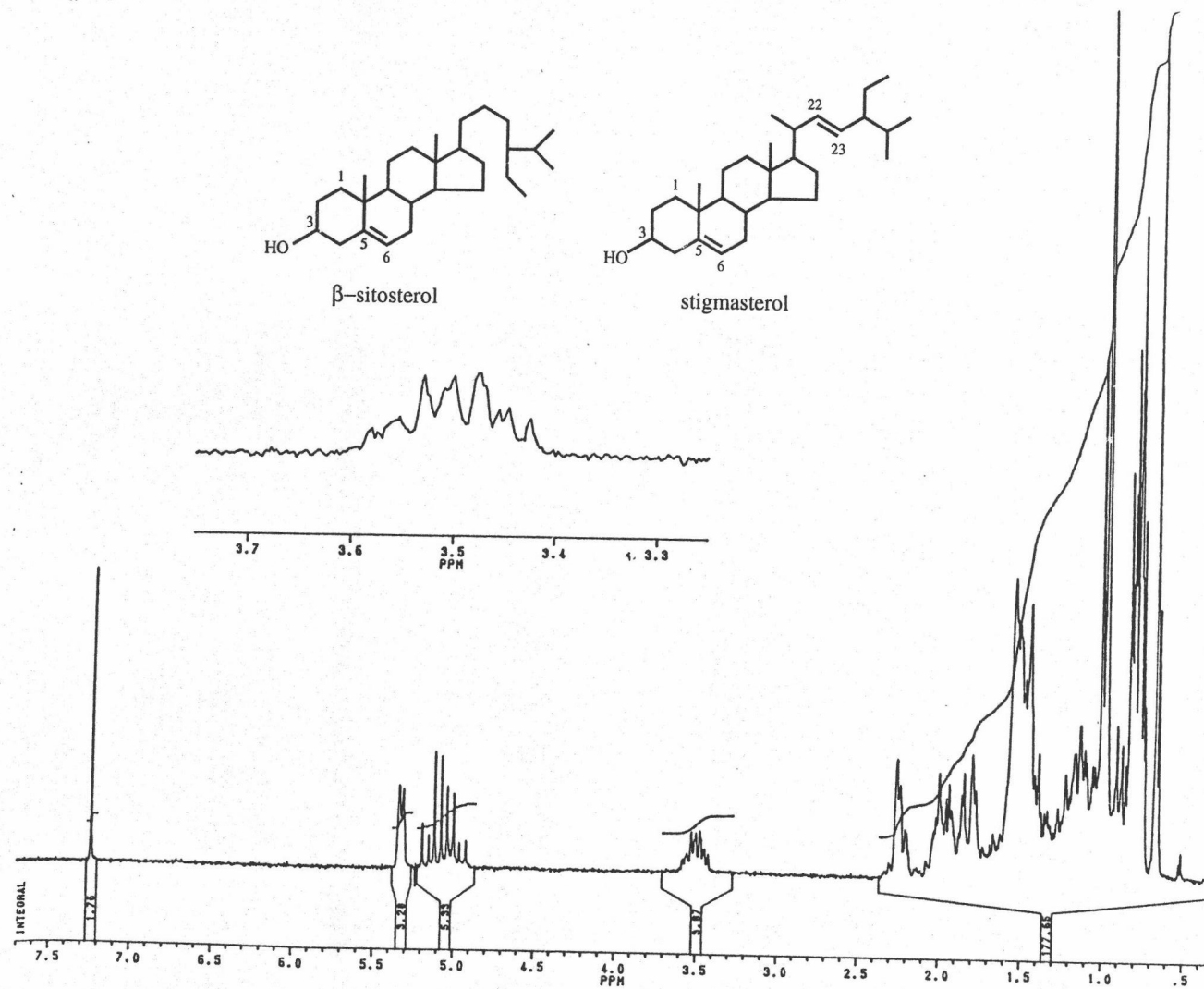


Figure 11 The 200 MHz ^1H NMR spectrum of BB-2(in CDCl_3)

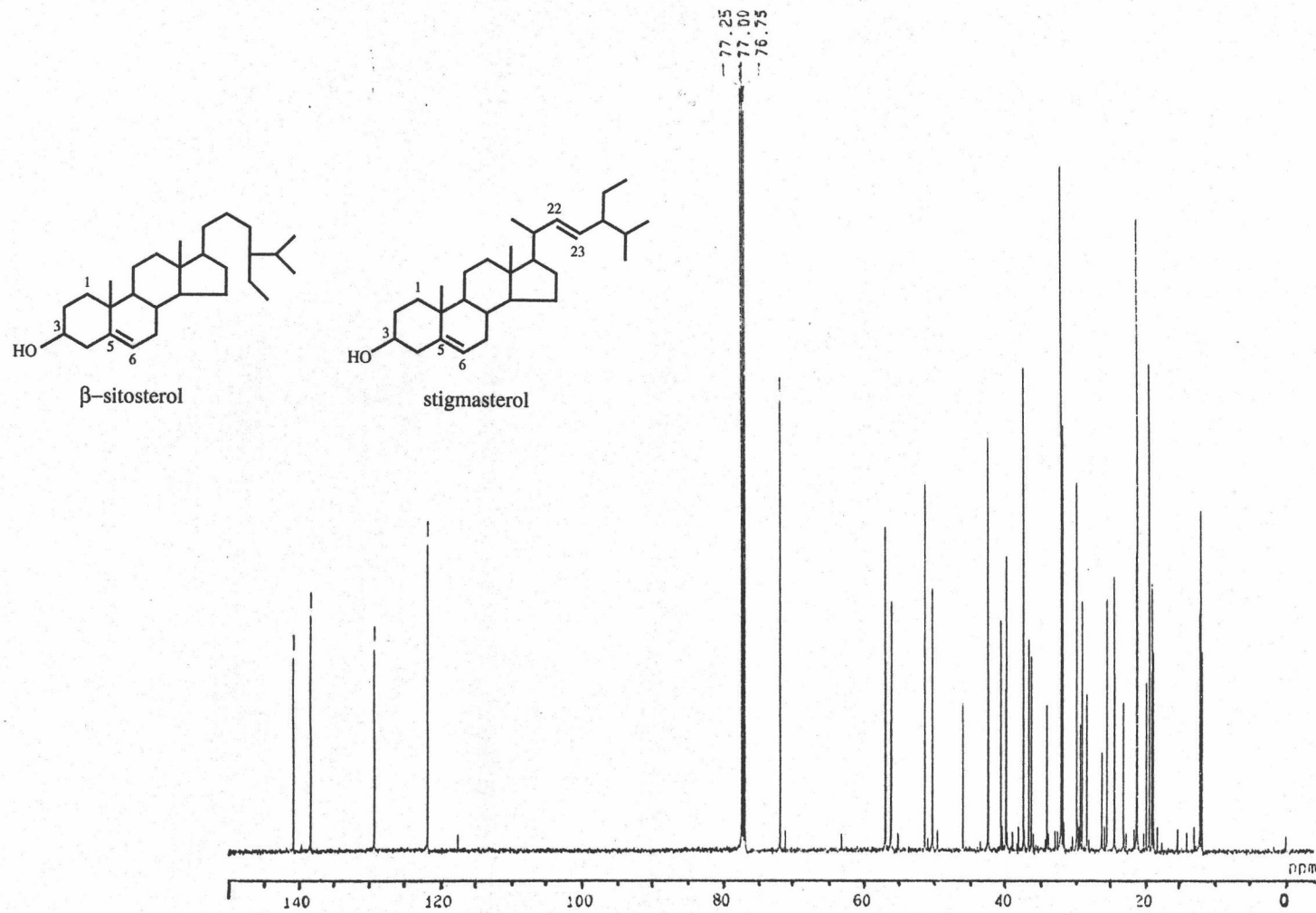


Figure 12 The 125 MHz ^{13}C NMR spectrum of BB-2(in CDCl_3)

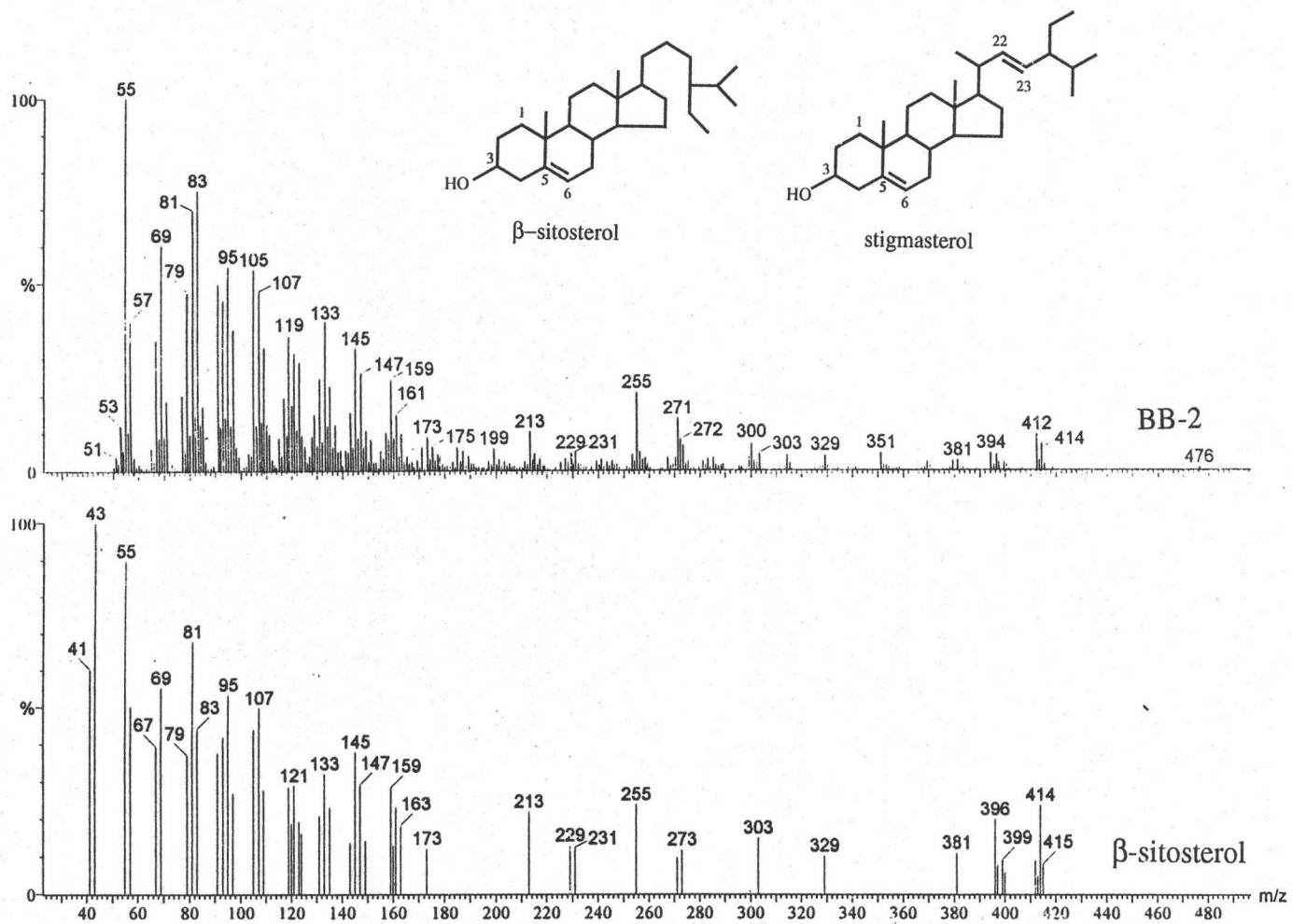


Figure 13 The EIMS spectrum of BB-2 and β -sitosterol

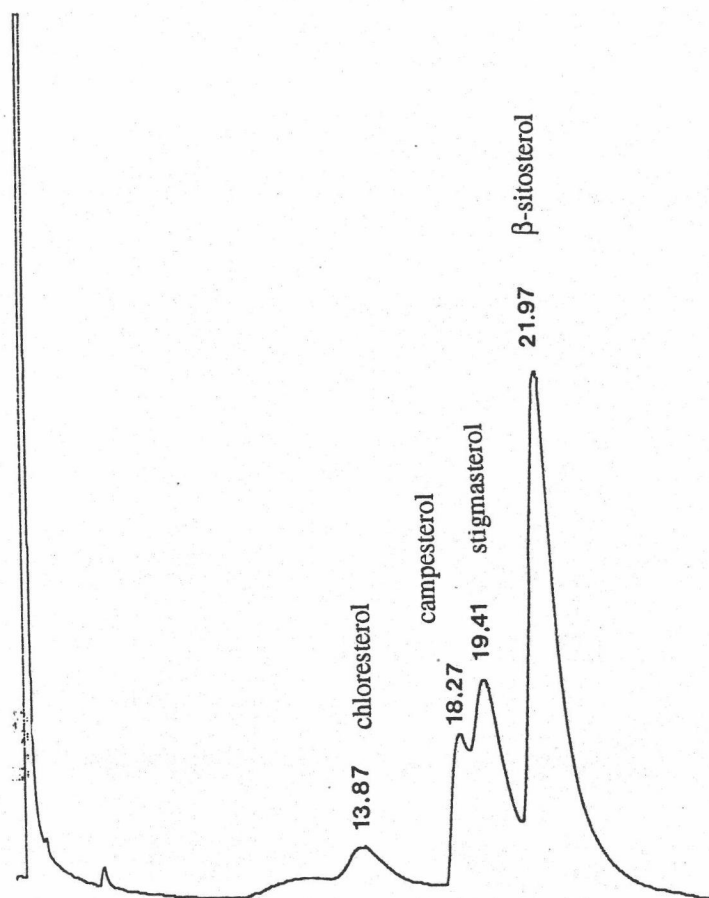


Figure 14 The gas chromatogram of the authentic steroids

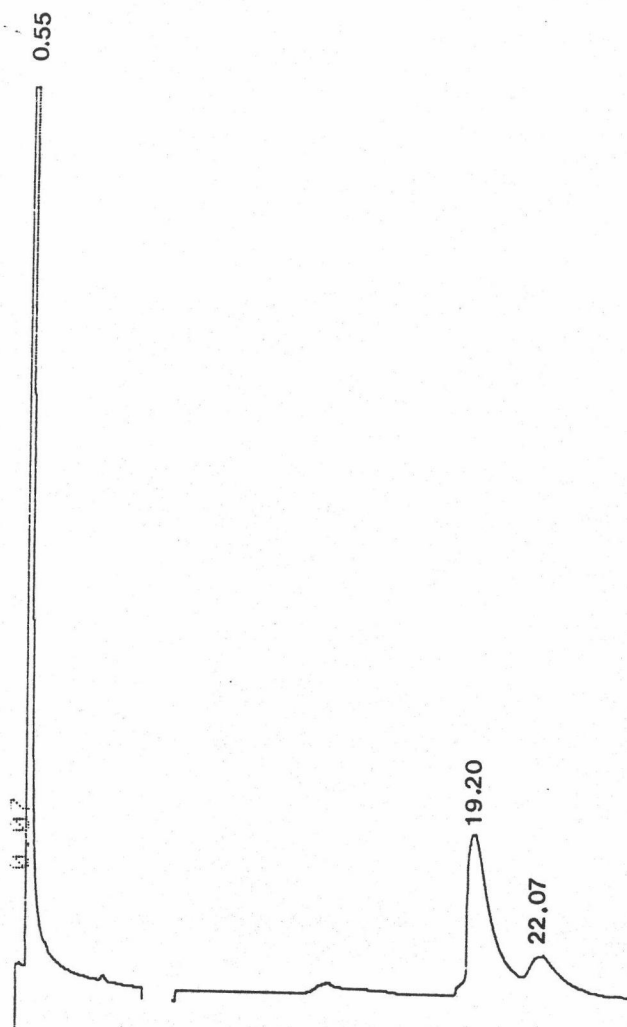


Figure 15 The gas chromatogram of BB-2

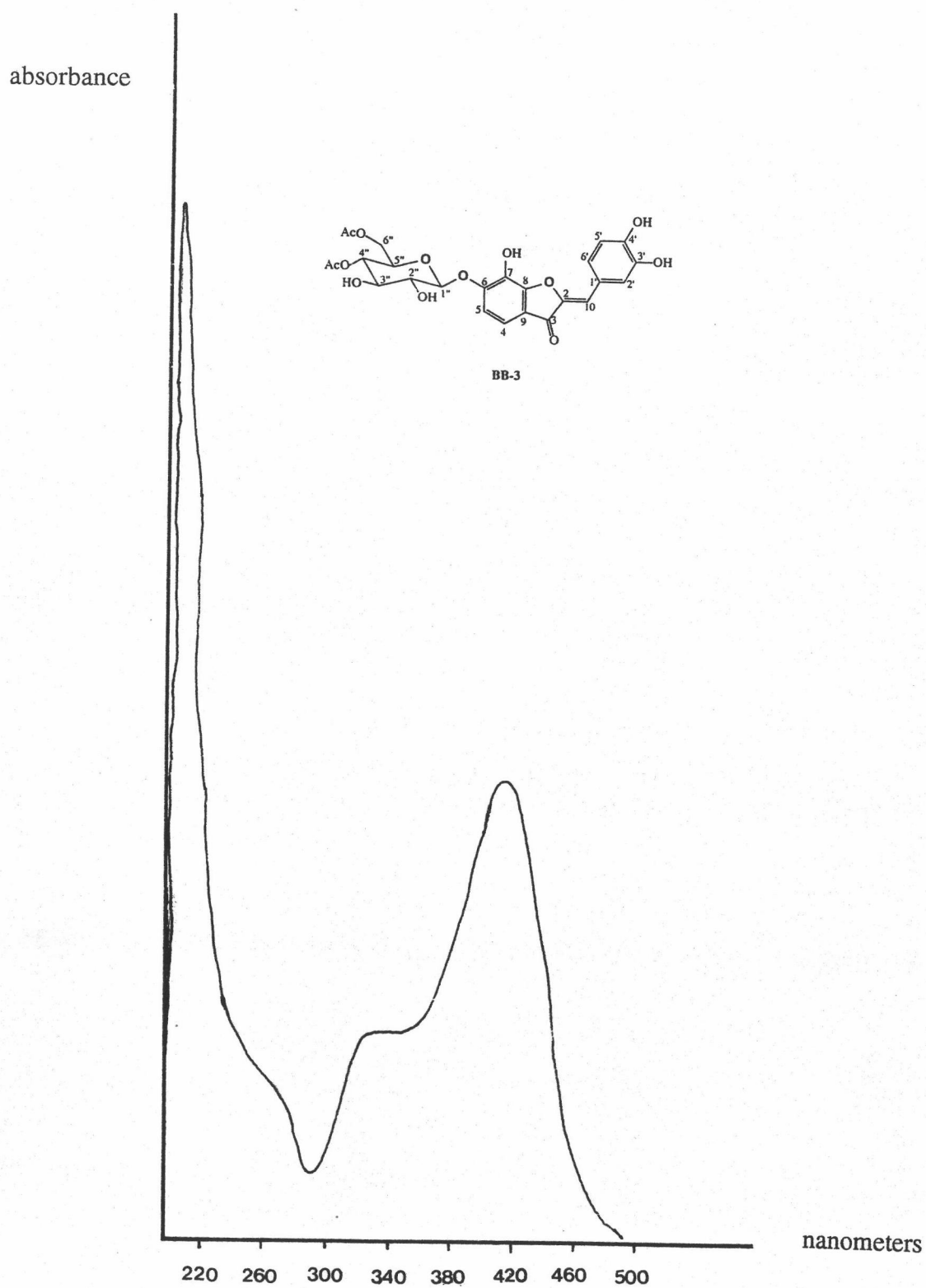


Figure 16 The UV spectrum of BB-3 (in methanol)

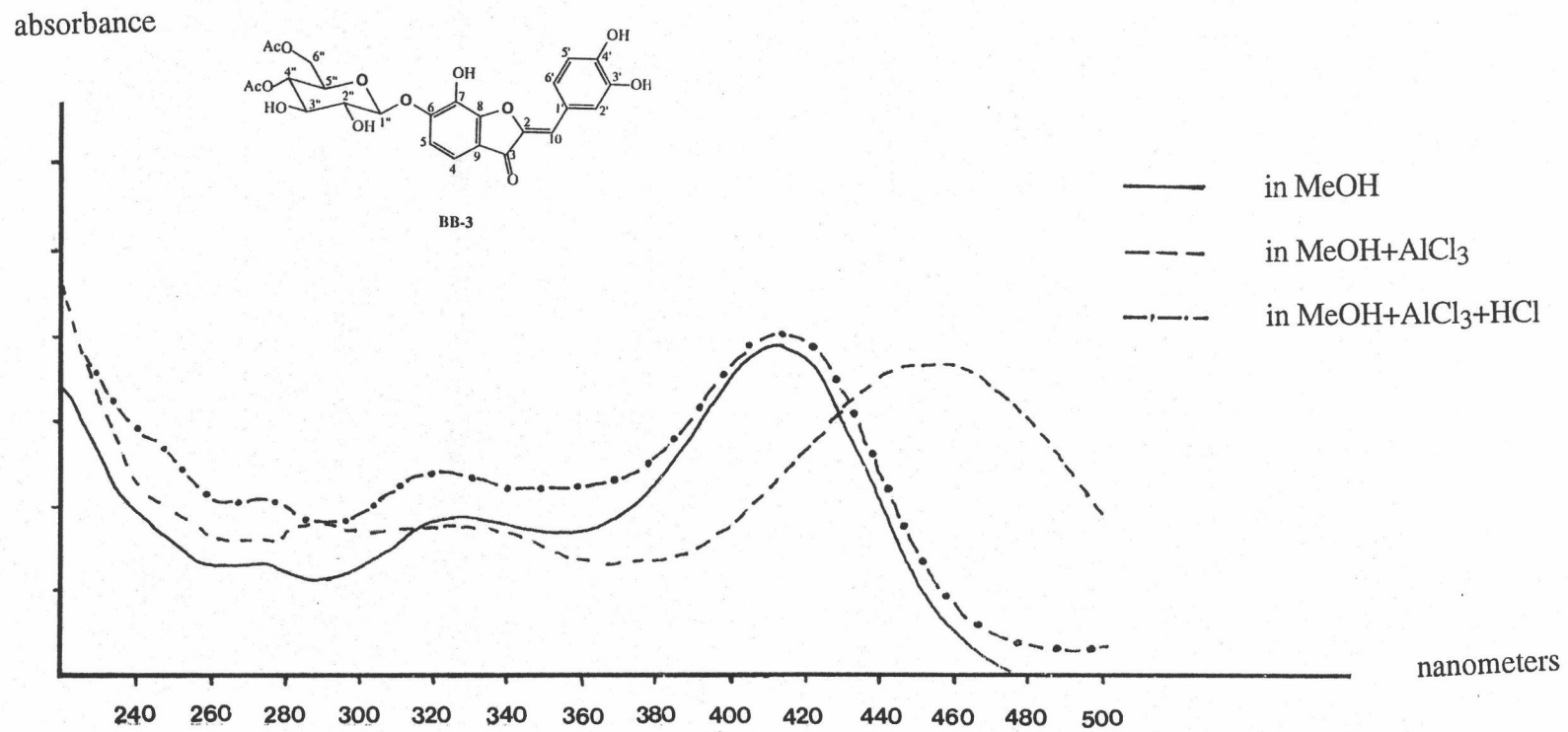


Figure 17 The UV spectra of BB-3 with shift reagent

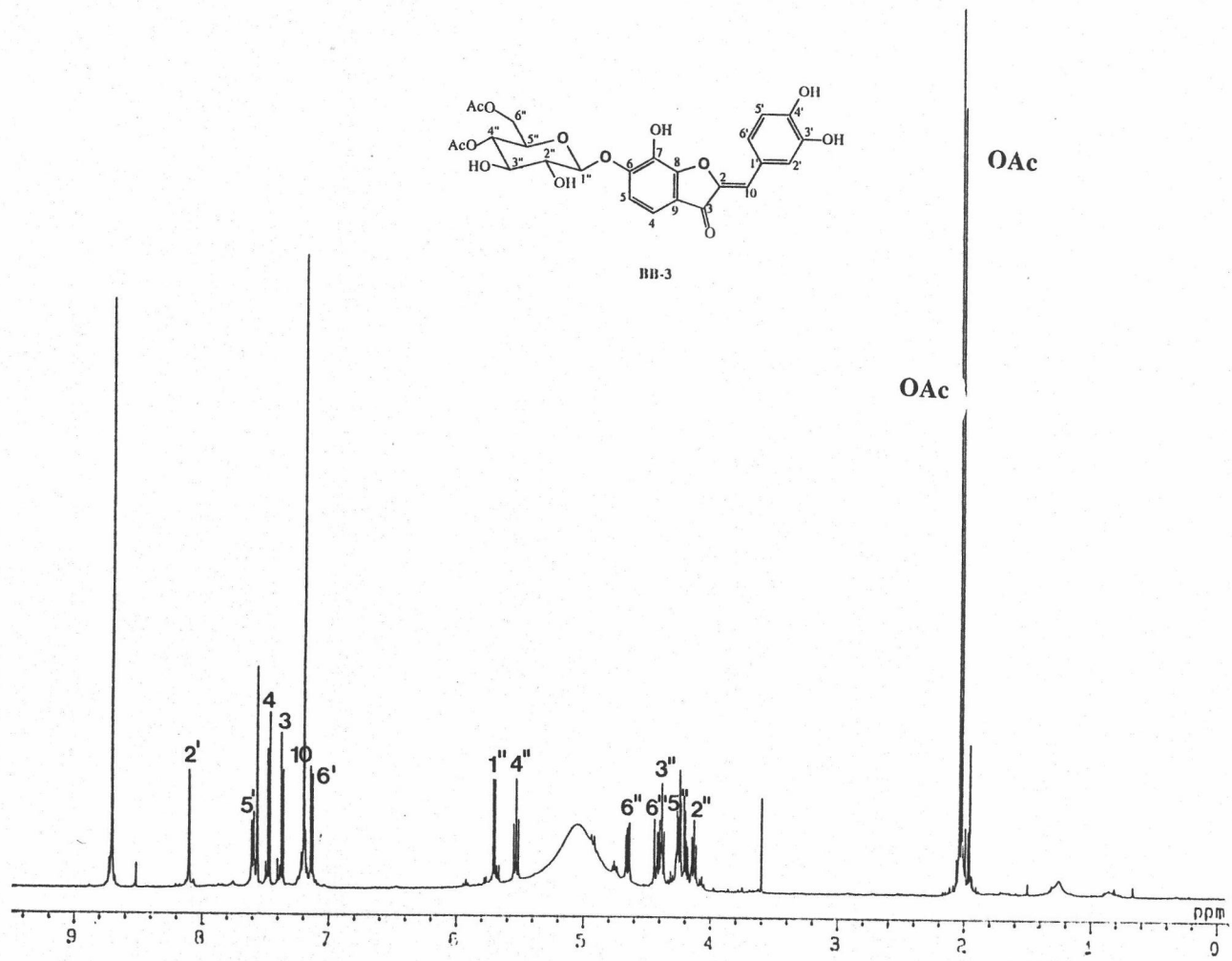


Figure 18 The 500 MHz ^1H NMR spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$)

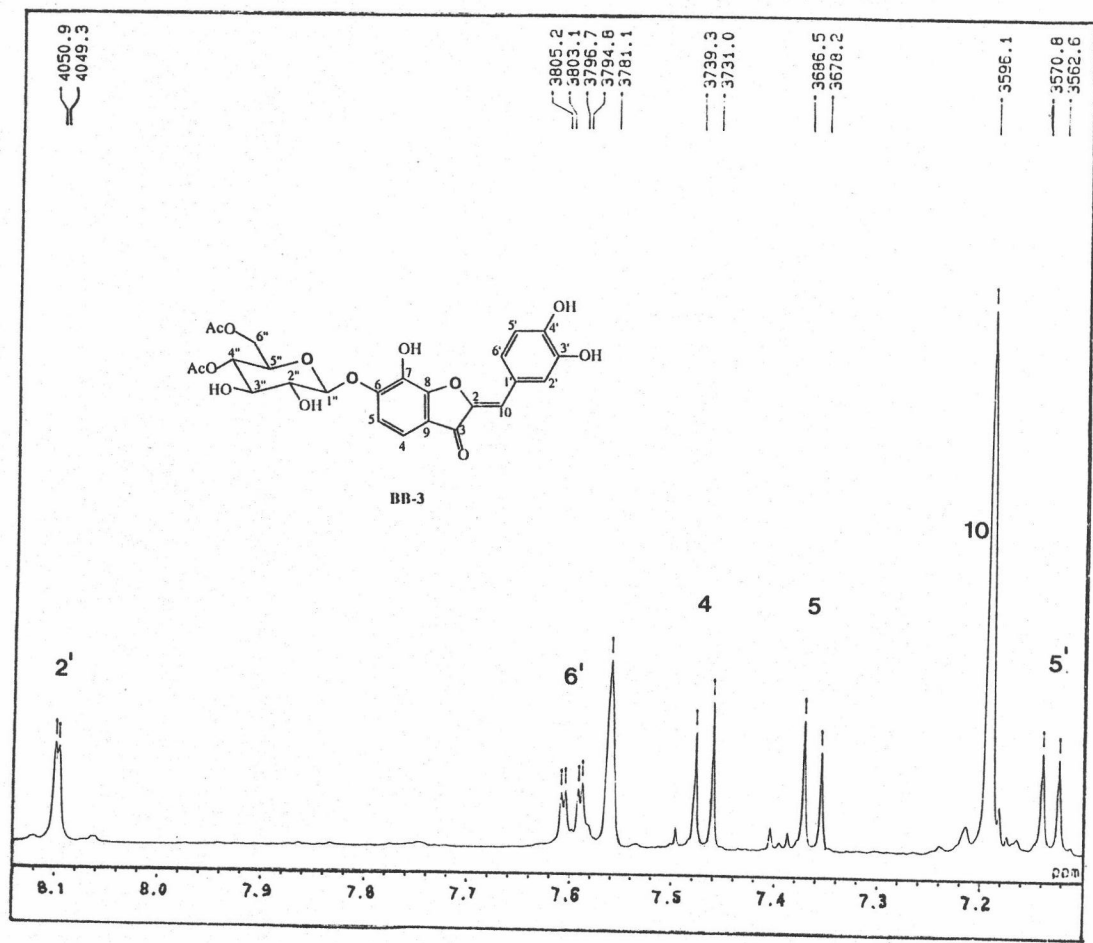


Figure 19 The 500 MHz ¹H NMR spectrum of BB-3 (in C₅D₅N) (expanded from 7.1-8.2 ppm)

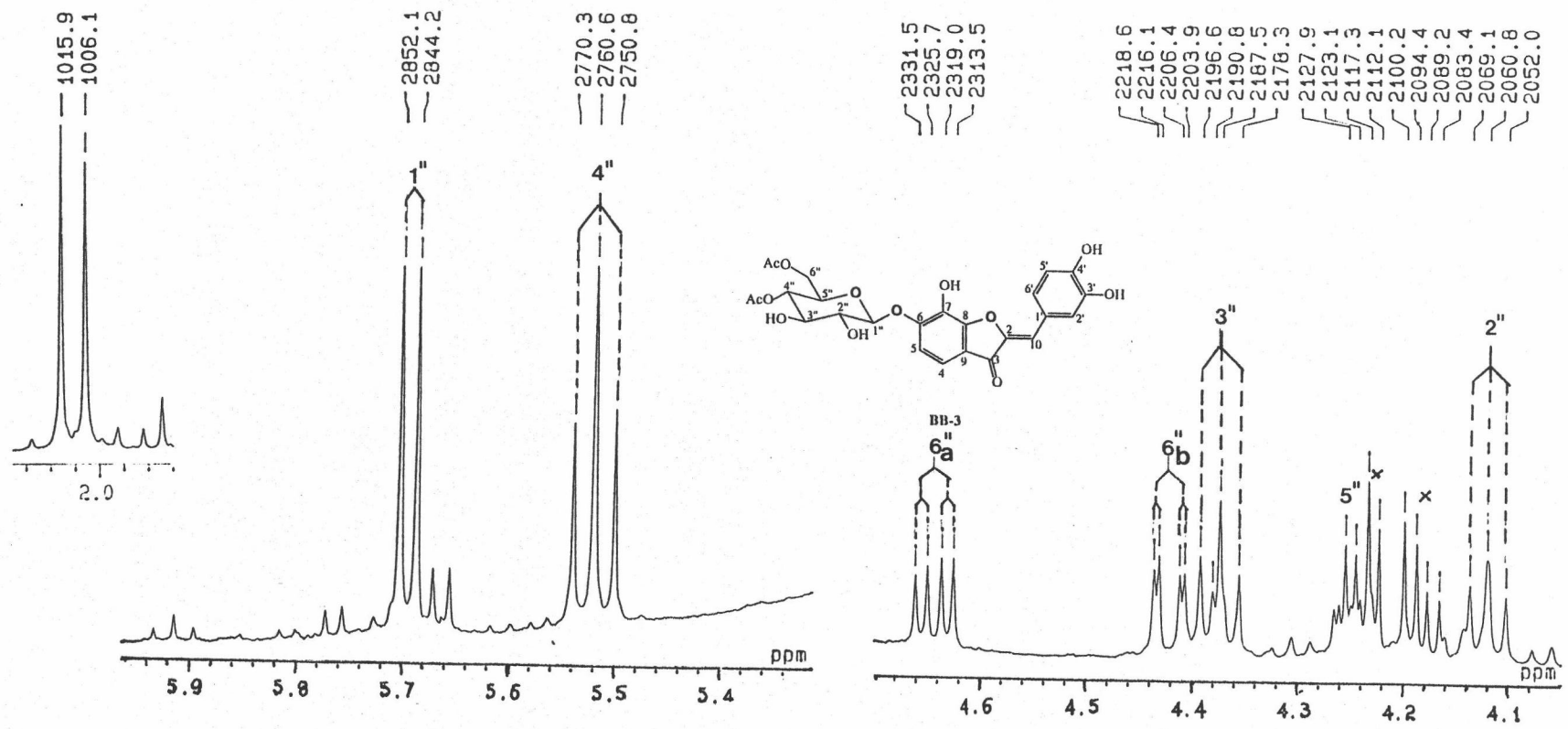


Figure 20 The expansion of 500 MHz ^1H NMR partial spectra of BB-3 (in $\text{C}_5\text{D}_5\text{N}$)

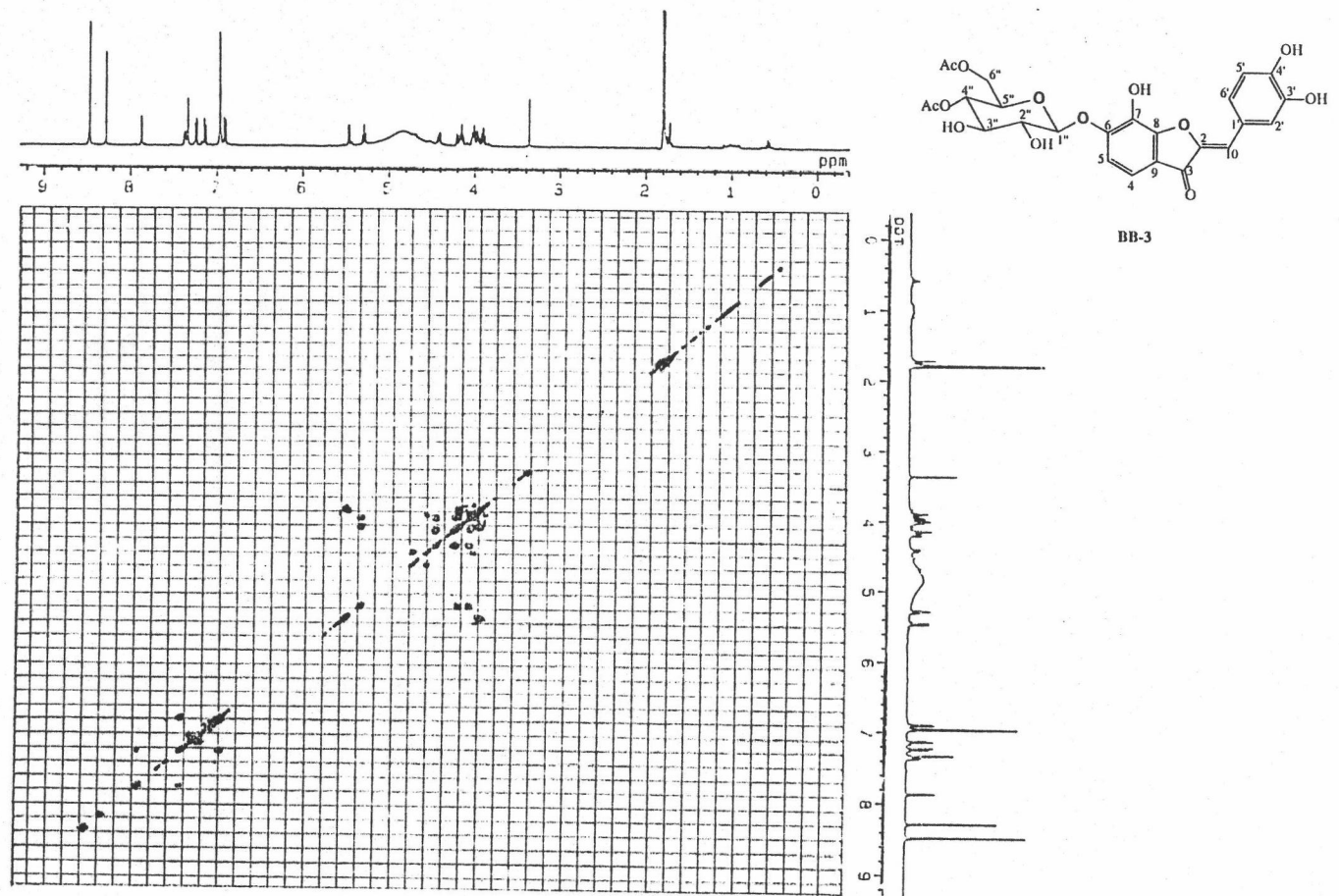


Figure 21 The 500 MHz ^1H - ^1H COSY spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$)

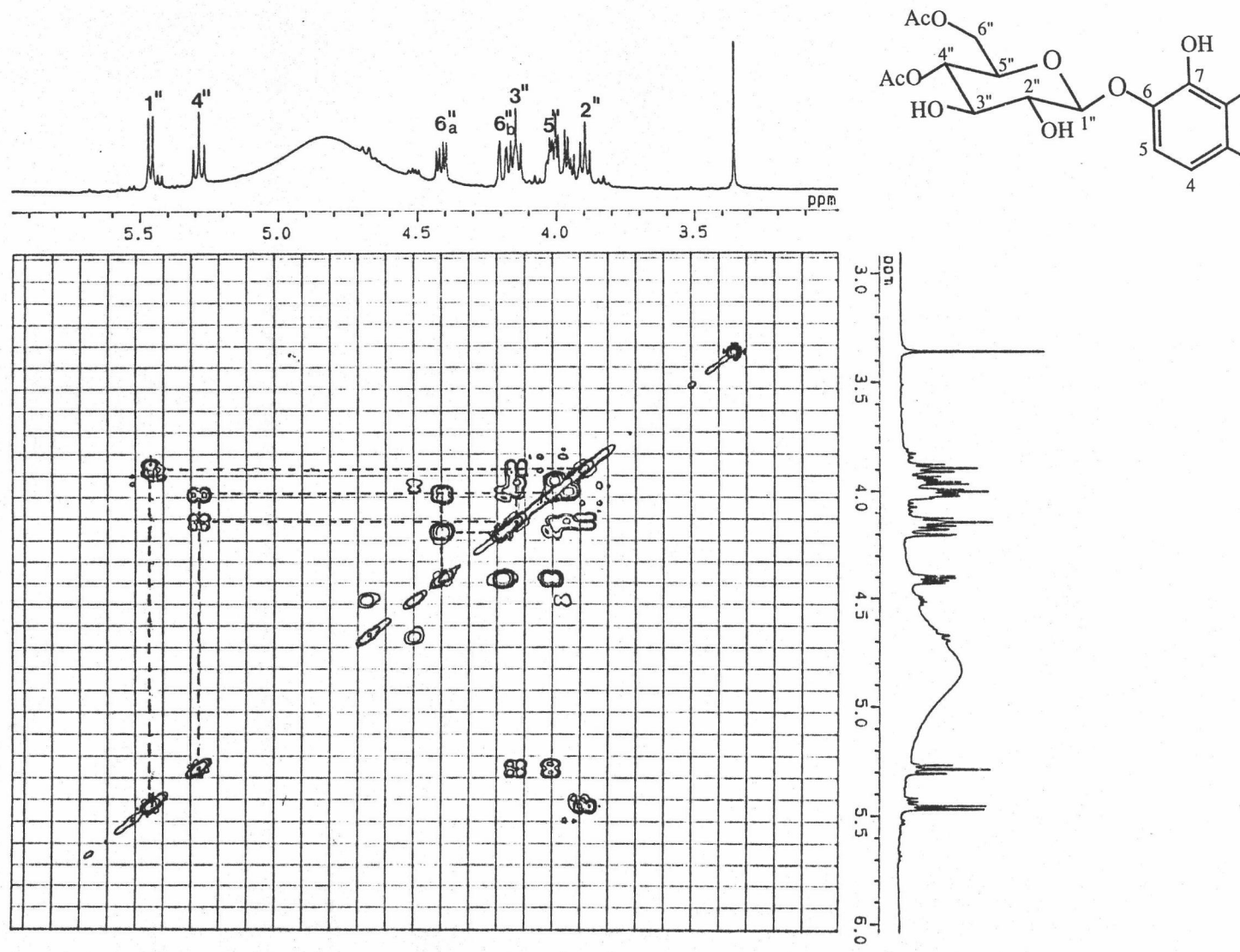


Figure 22 The 500 MHz ^1H - ^1H COSY spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$) (expanded from 3.0-6.0 ppm)

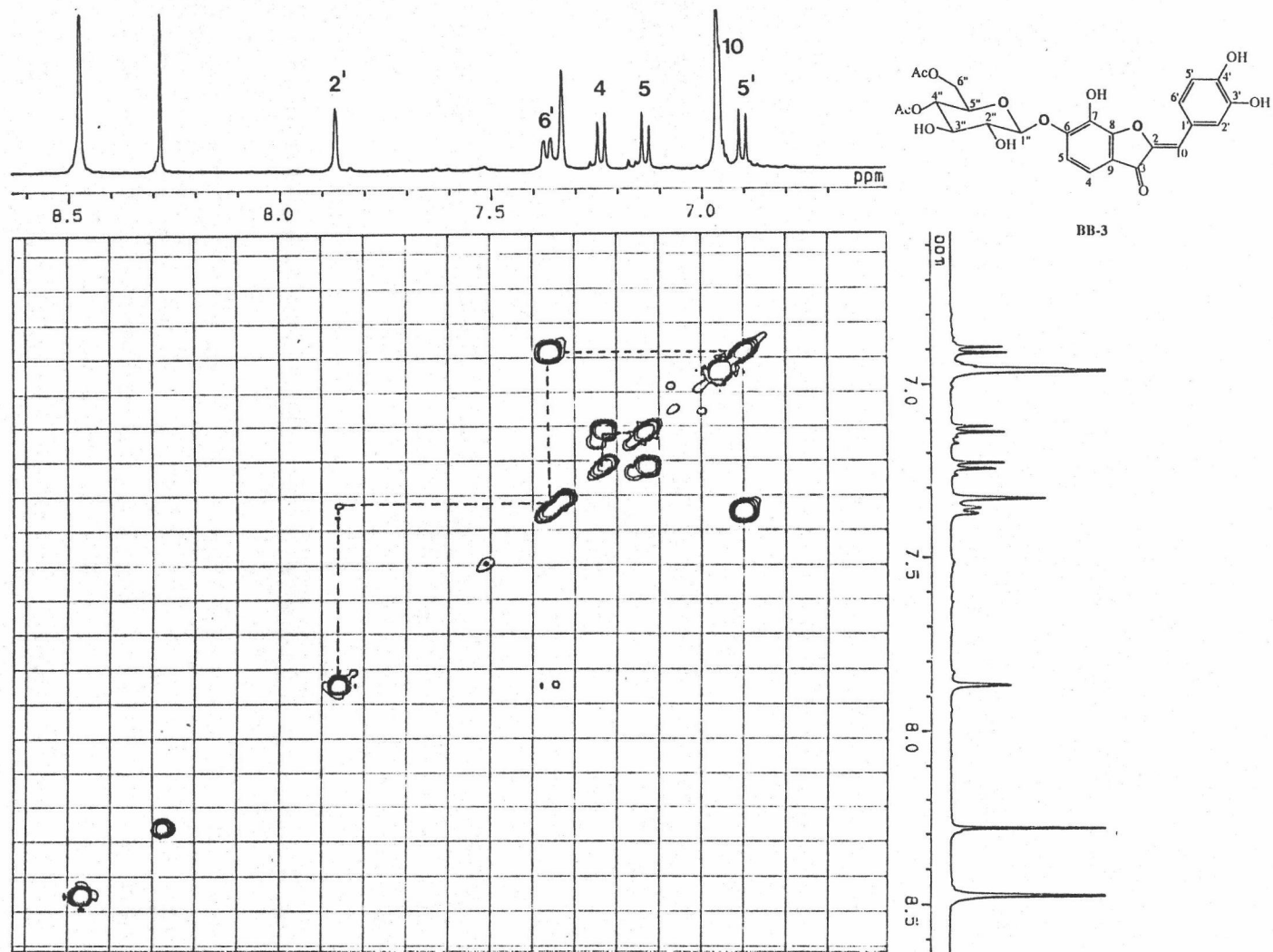


Figure 23 The 500 MHz ^1H ^1H COSY spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$) (expanded from 6.0-8.6 ppm)

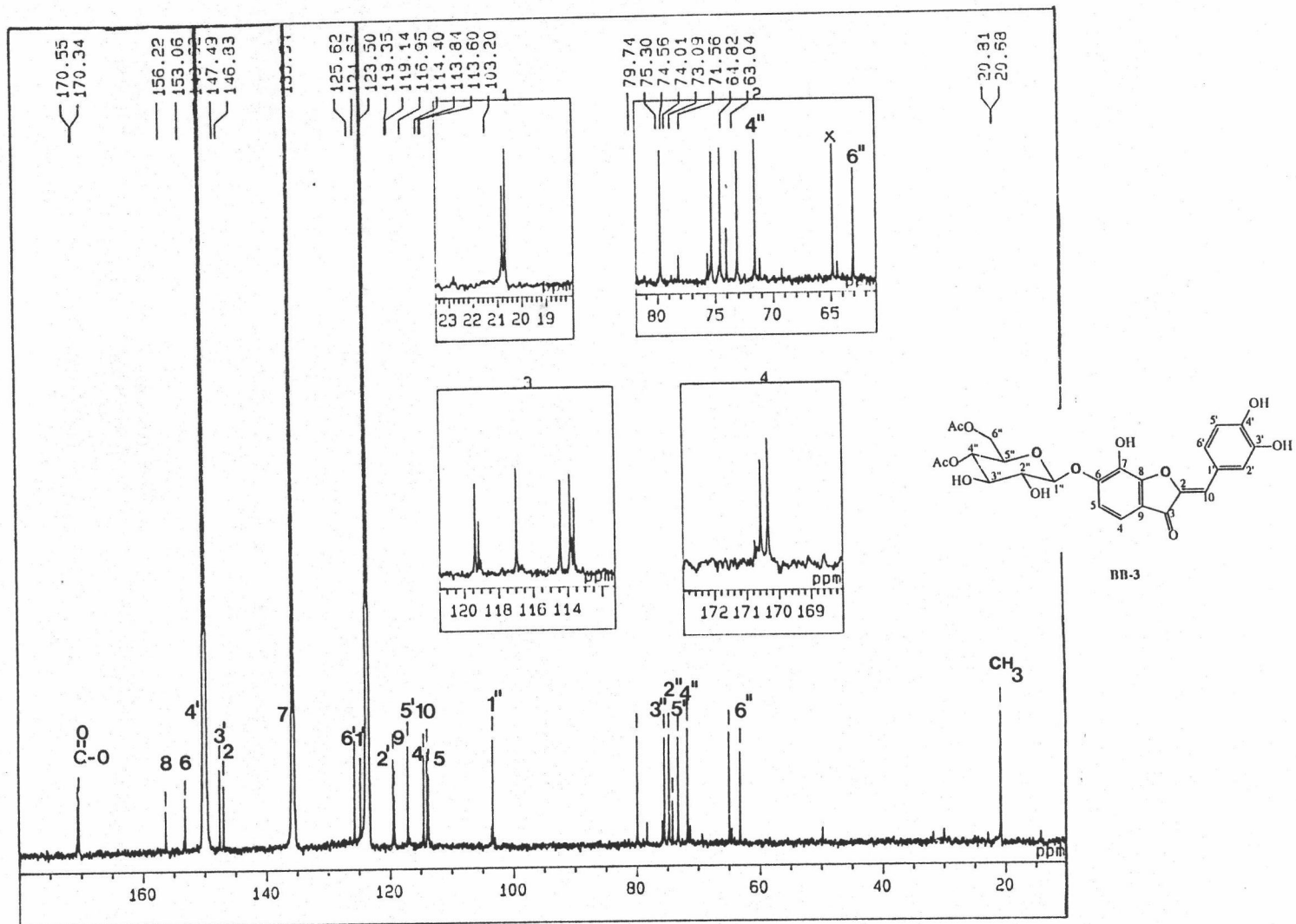


Figure 24 The 125 MHz ^{13}C spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$)

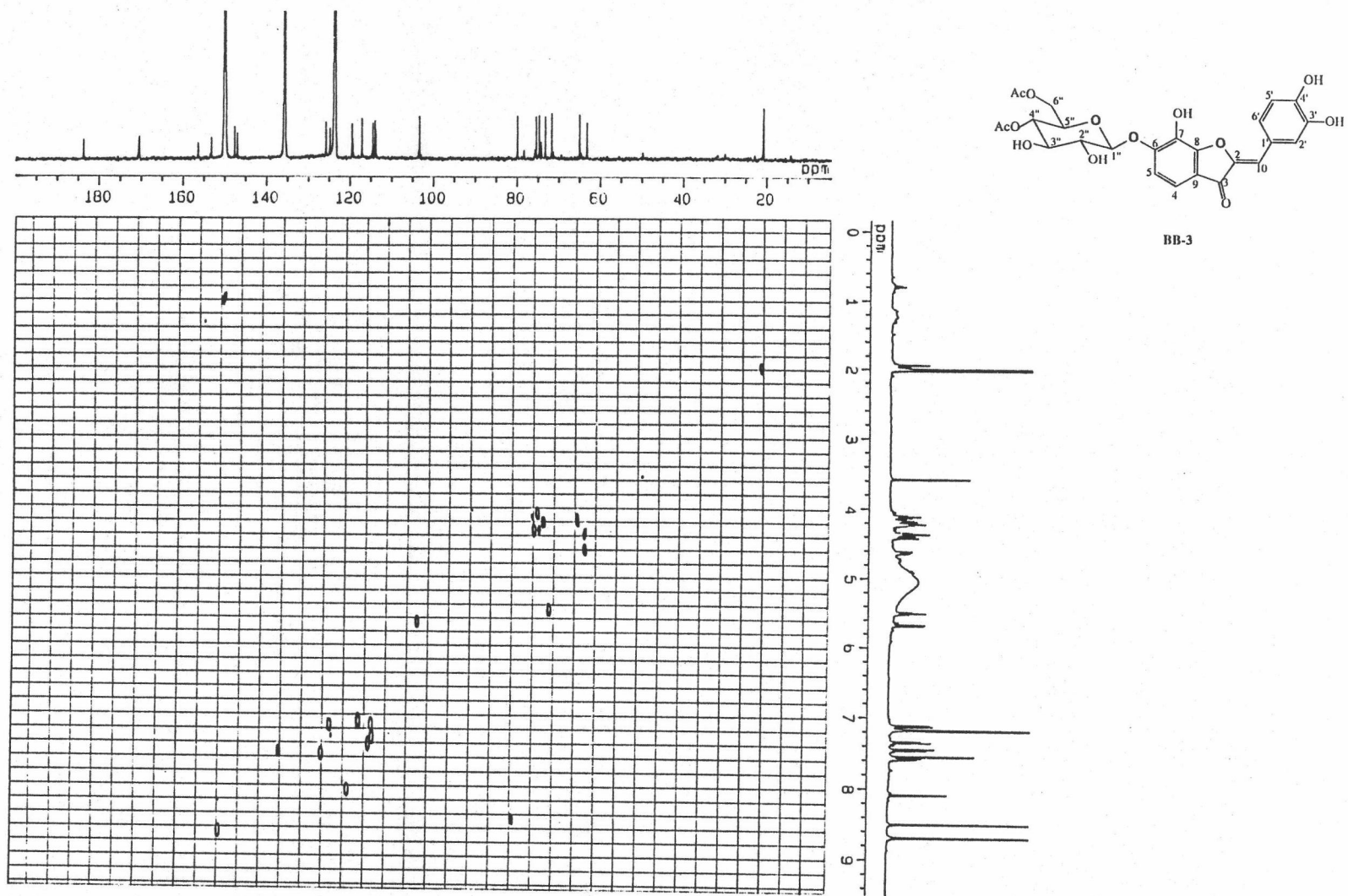


Figure 25 The 125 MHz ^{13}C - ^1H COSY spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$)

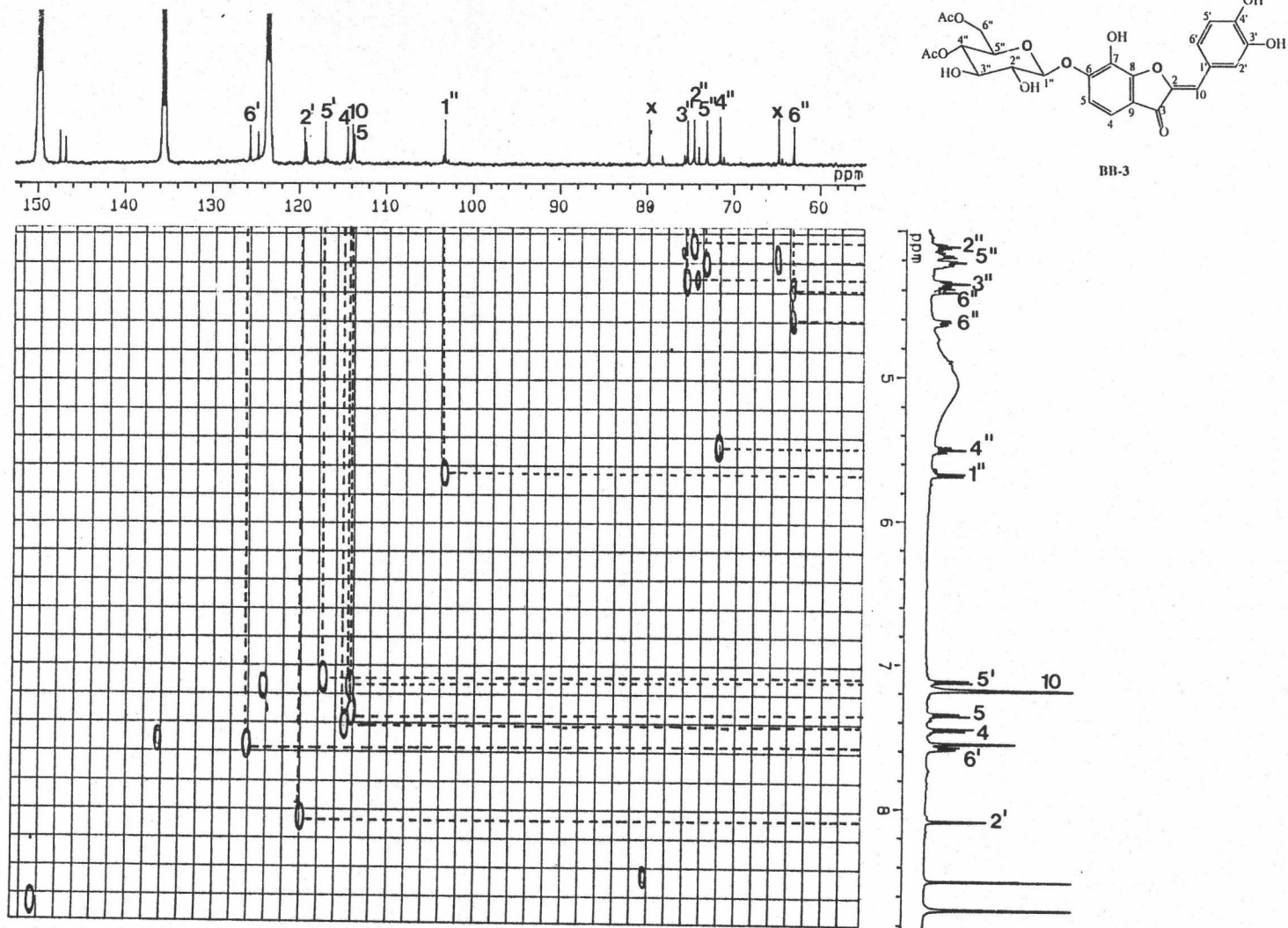


Figure 26 The 125 MHz ^{13}C - ^1H COSY spectrum of BB-3 (in $\text{C}_5\text{D}_5\text{N}$) (expanded from 4.0-9.0 ppm)

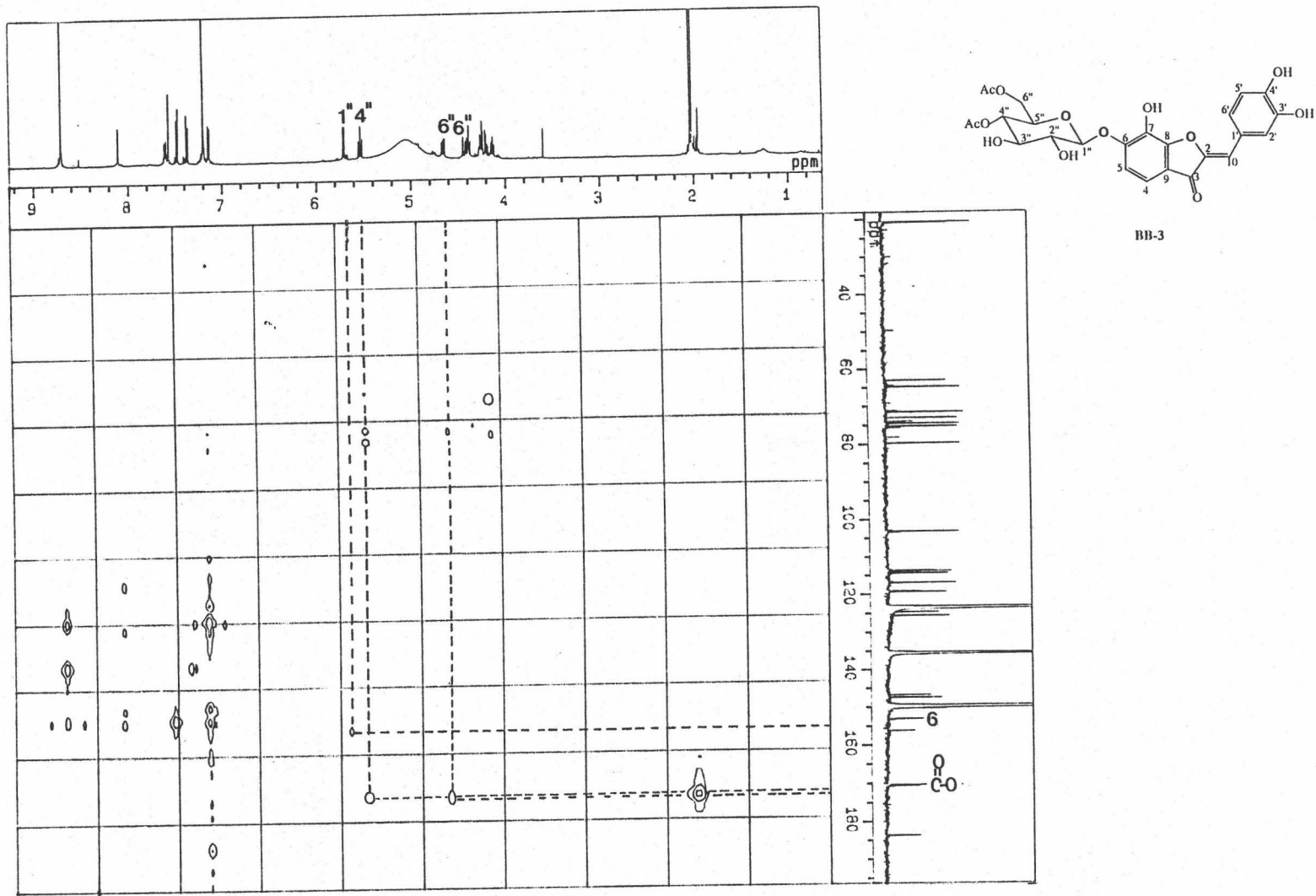


Figure 27 The 500 MHz HMBC at 5 Hz spectrum of BB-3 (in C_5D_5N)

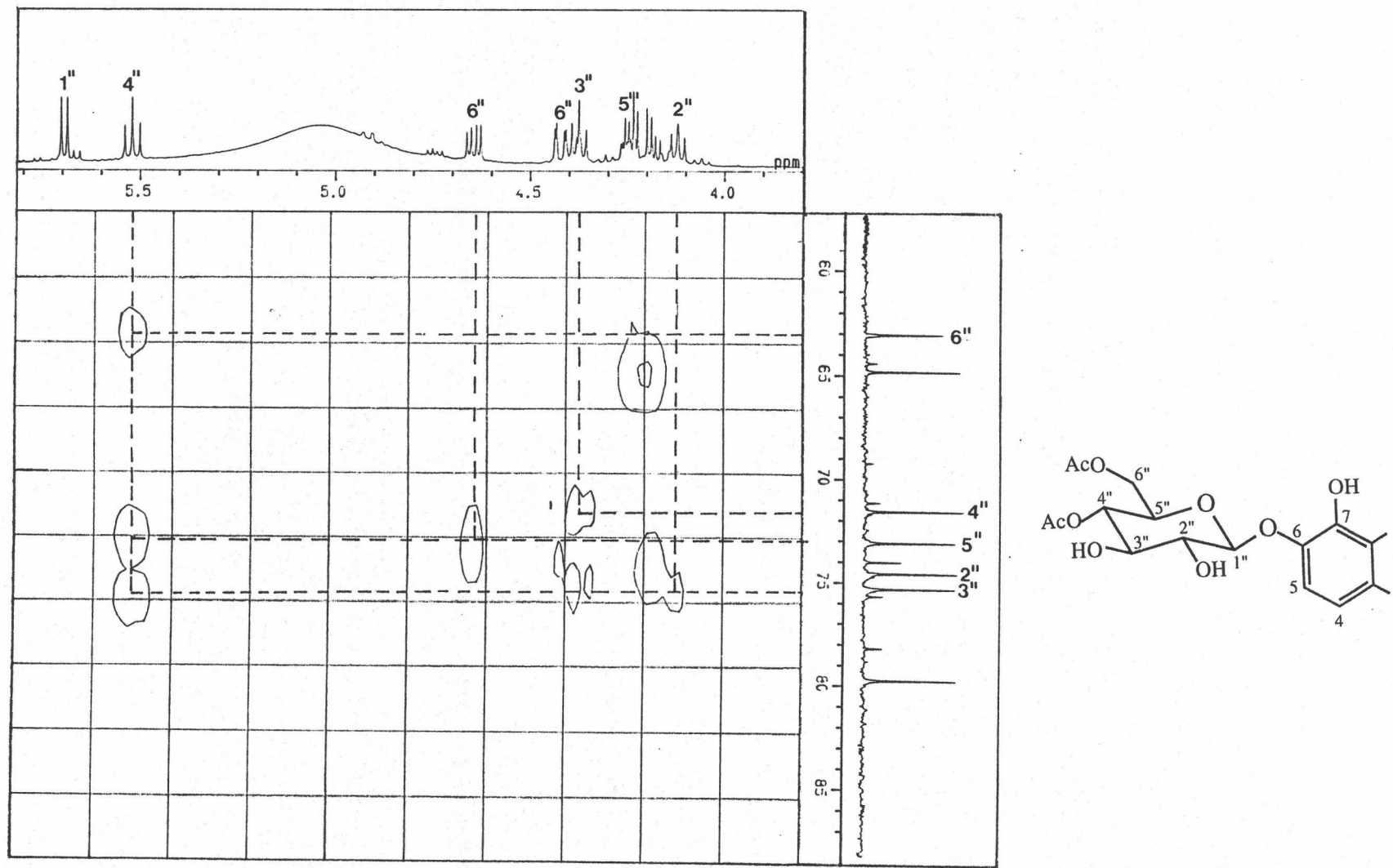


Figure 28 The 500 MHz HMBC at 5 Hz spectrum of BB-3 (in C_5D_5N) (expanded from 3.8-5.3 ppm)

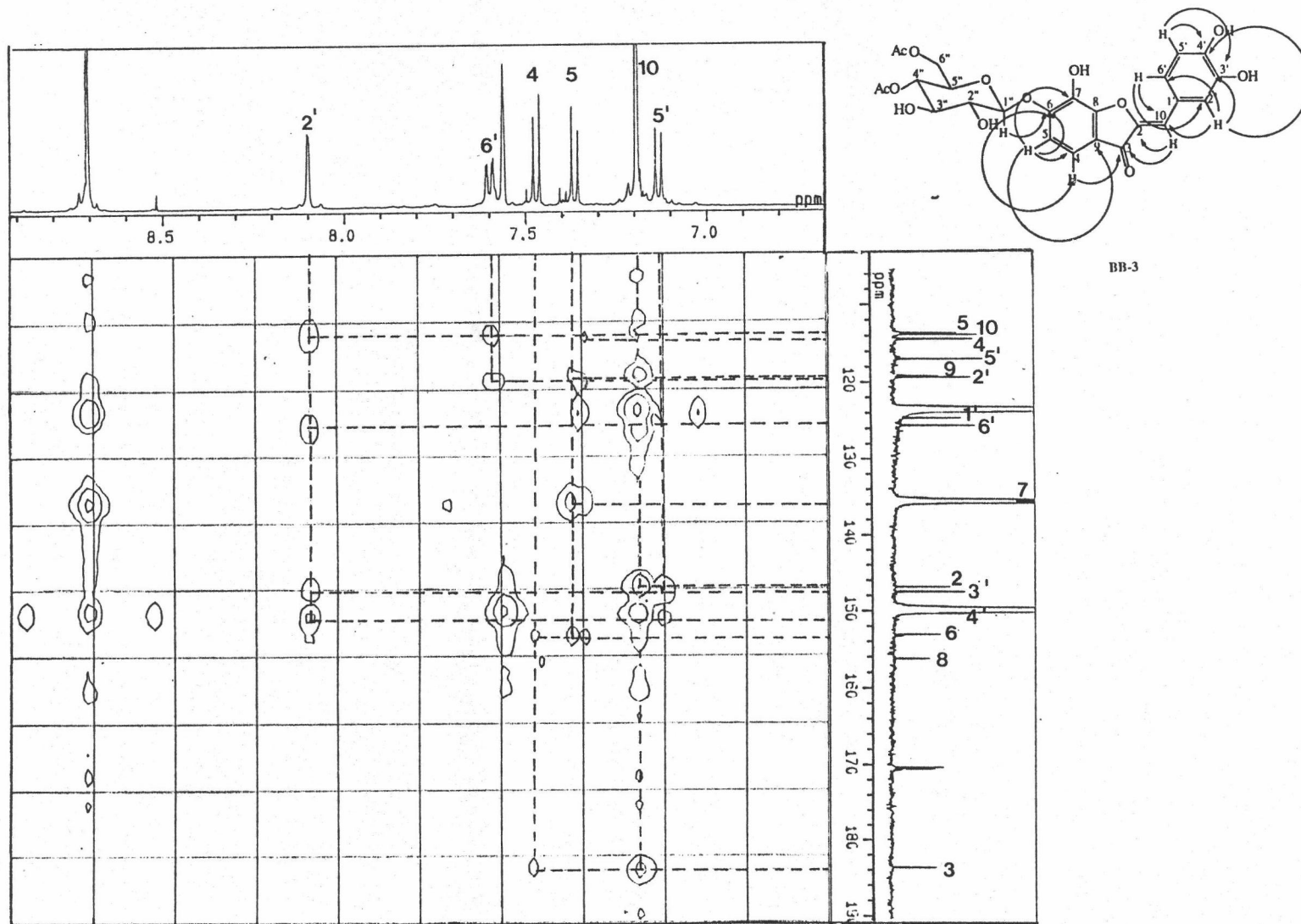


Figure 29 The 500 MHz HMBC at 5 Hz spectrum of BB-3 (in C_5D_5N) (expanded from 6.2-9.0 ppm)

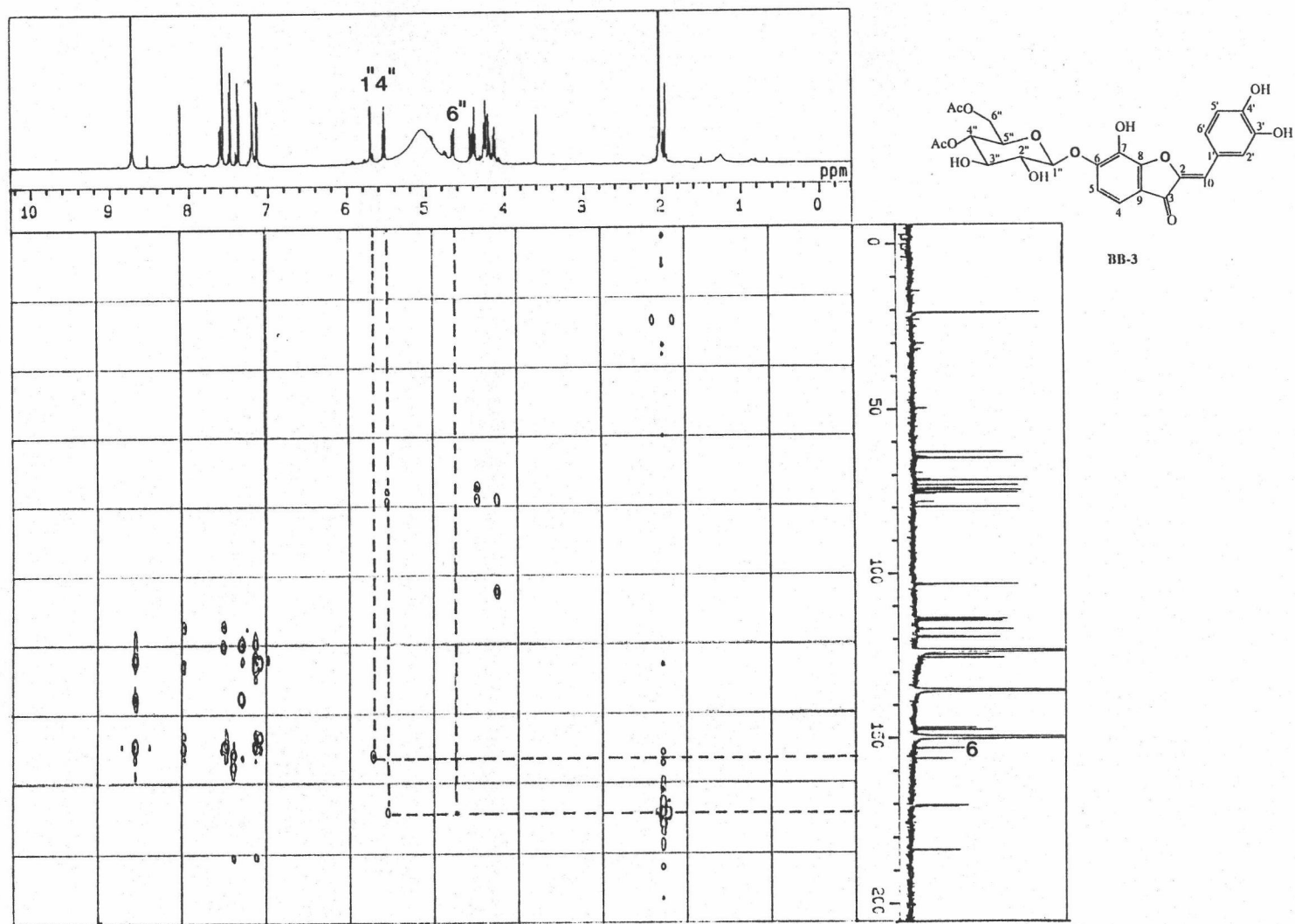


Figure 30 The 500 MHz HMBC at 8 Hz spectrum of BB-3 (in C_5D_5N)

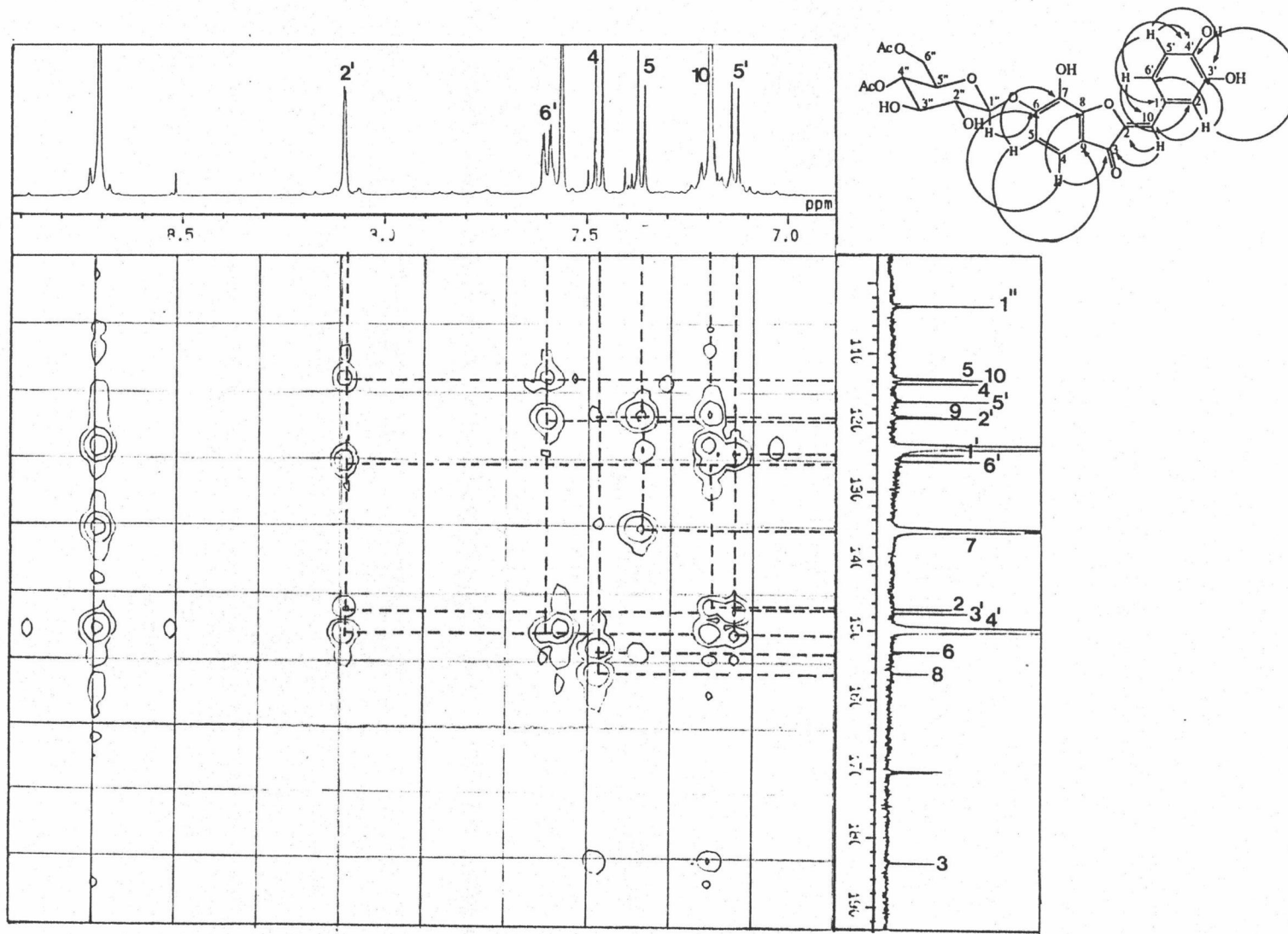


Figure 31 The 500 MHz HMBC at 8 Hz spectrum of BB-3 (in C_5D_5N) (expanded from 6.9-9.0 ppm)

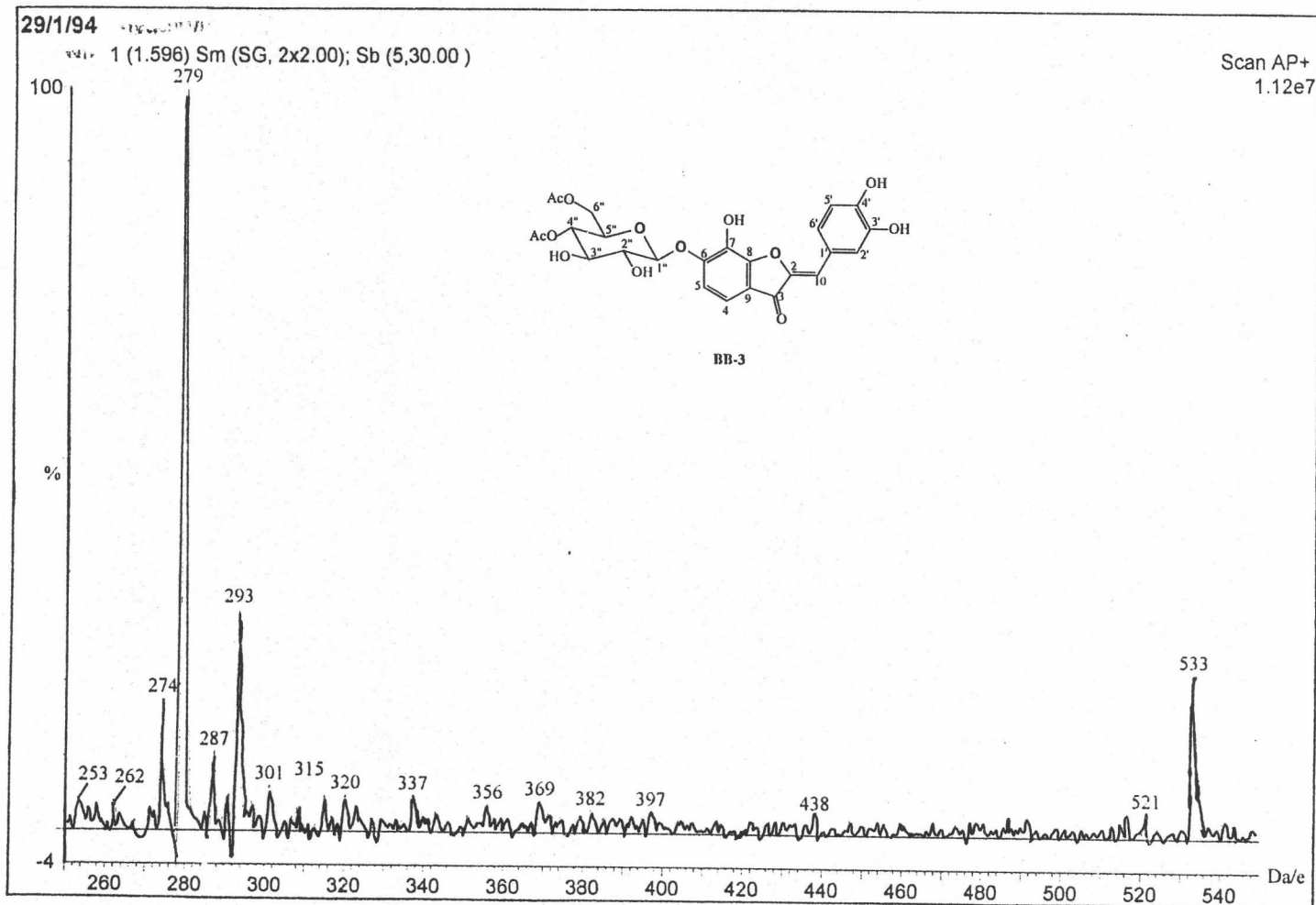


Figure 32 The APCI spectrum of BB-3

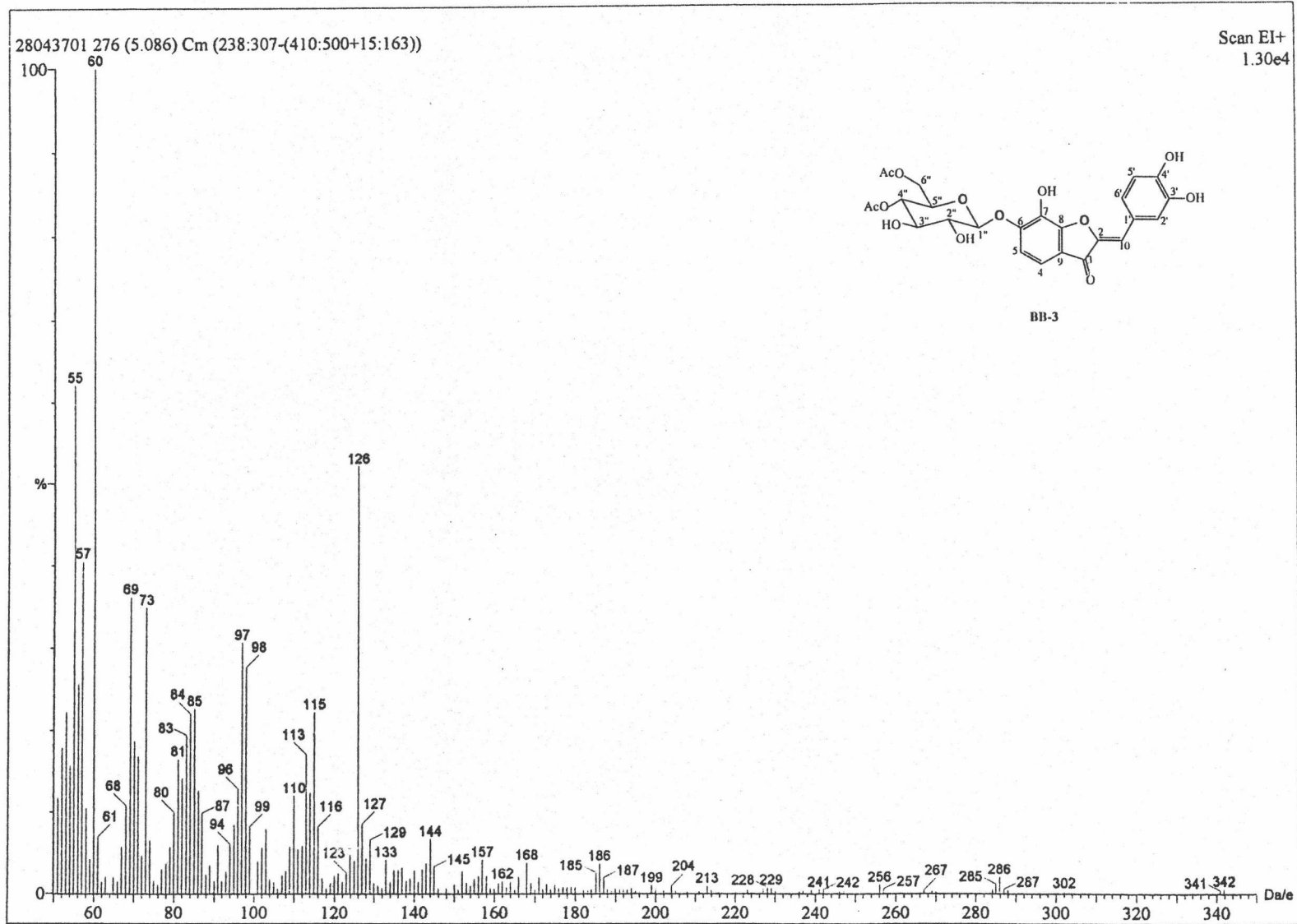


Figure 33 The EIMS spectrum of BB-3

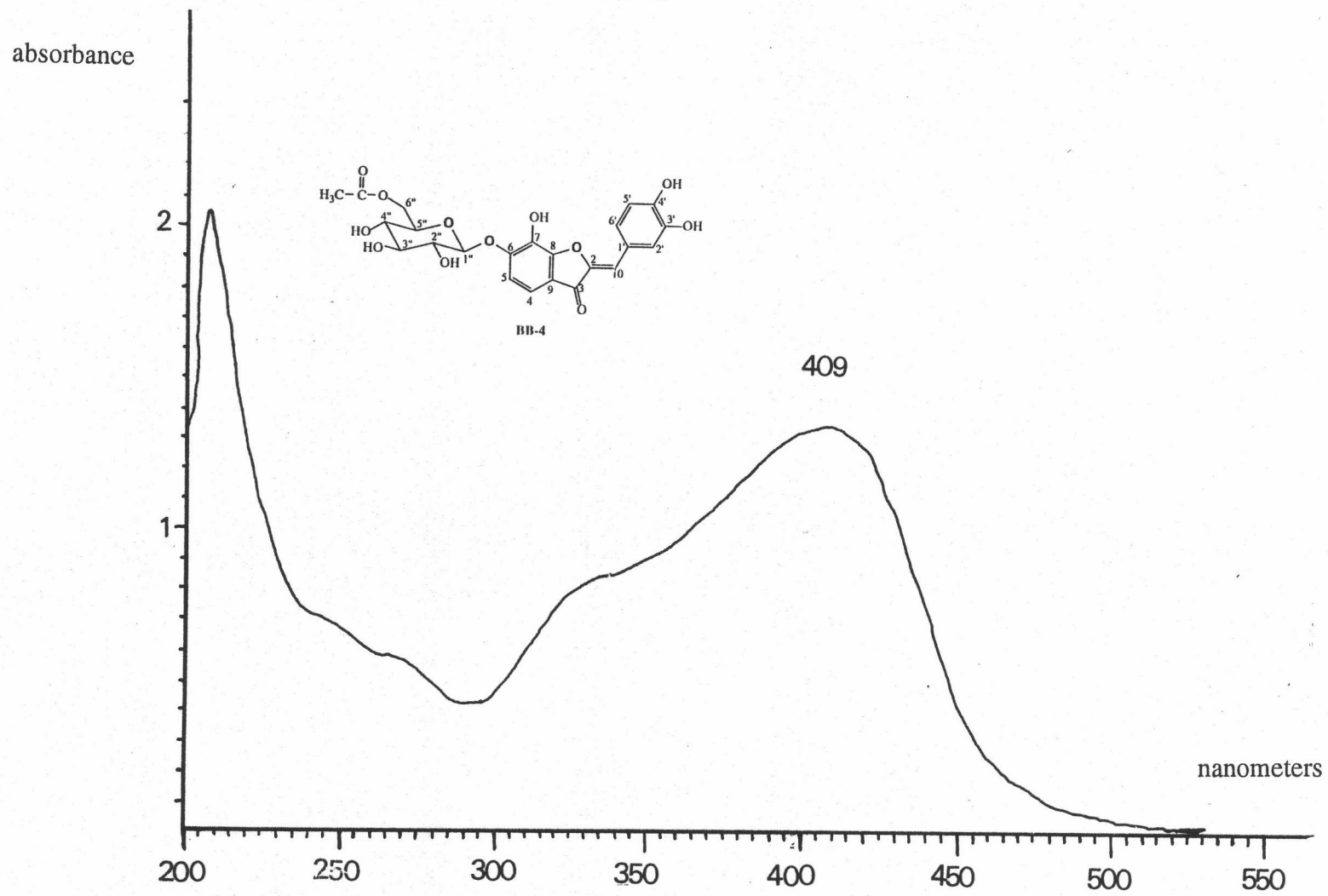


Figure 34 The UV spectrum of BB-4 (in methanol)

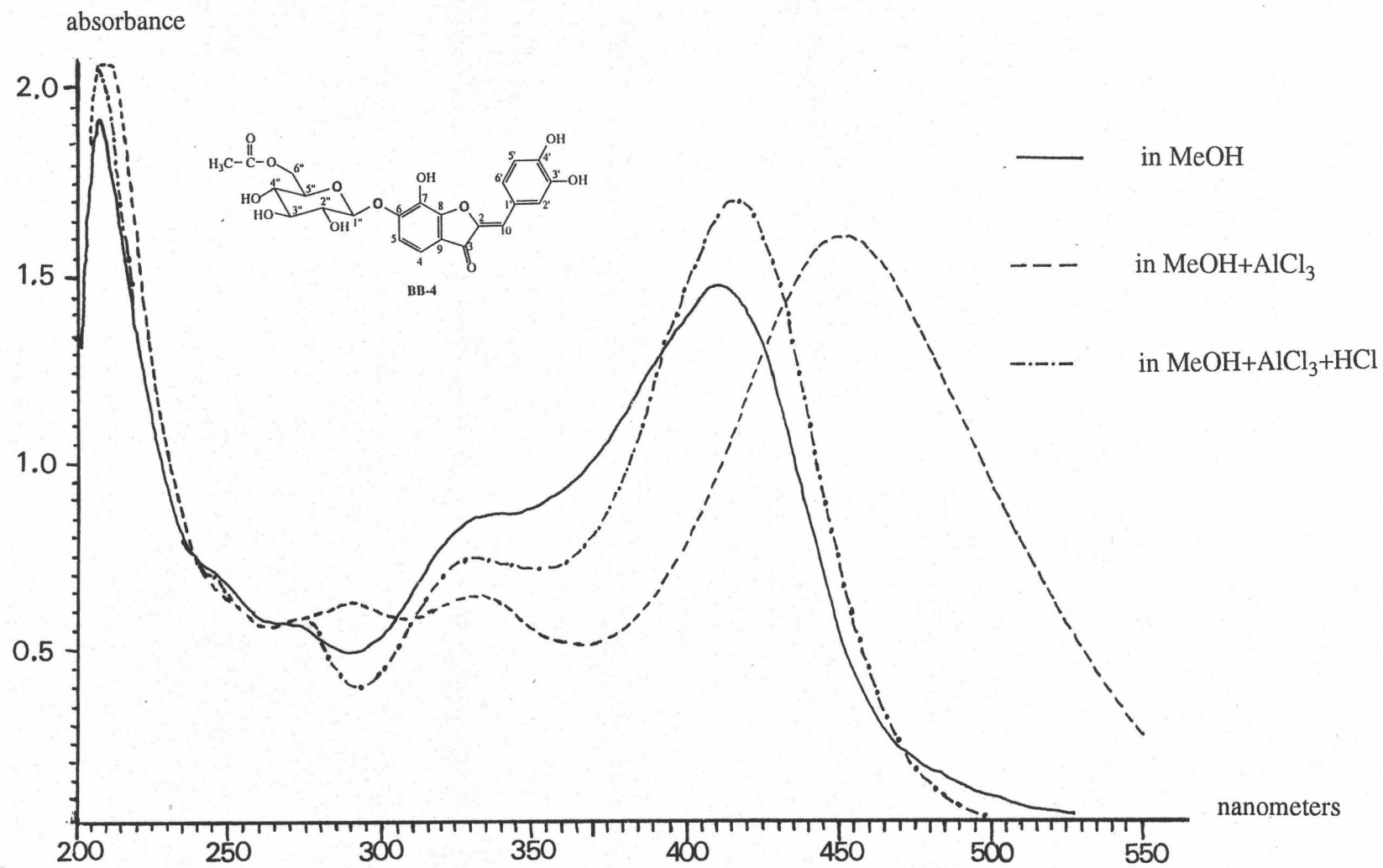


Figure 35 The UV spectra of BB-4 (in methanol) with shift reagents

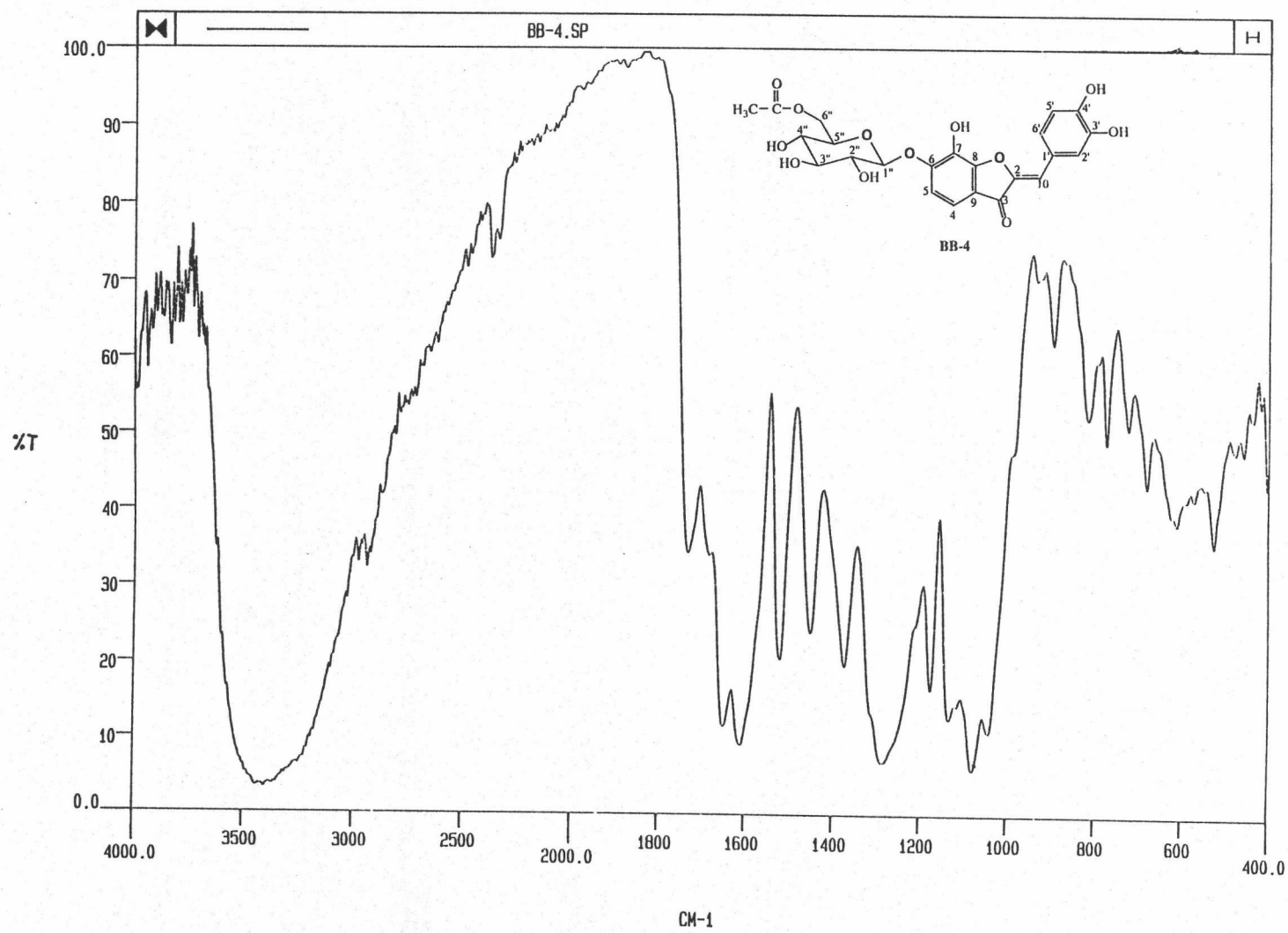


Figure 36 The IR spectrum of BB-4 (KBr disc)

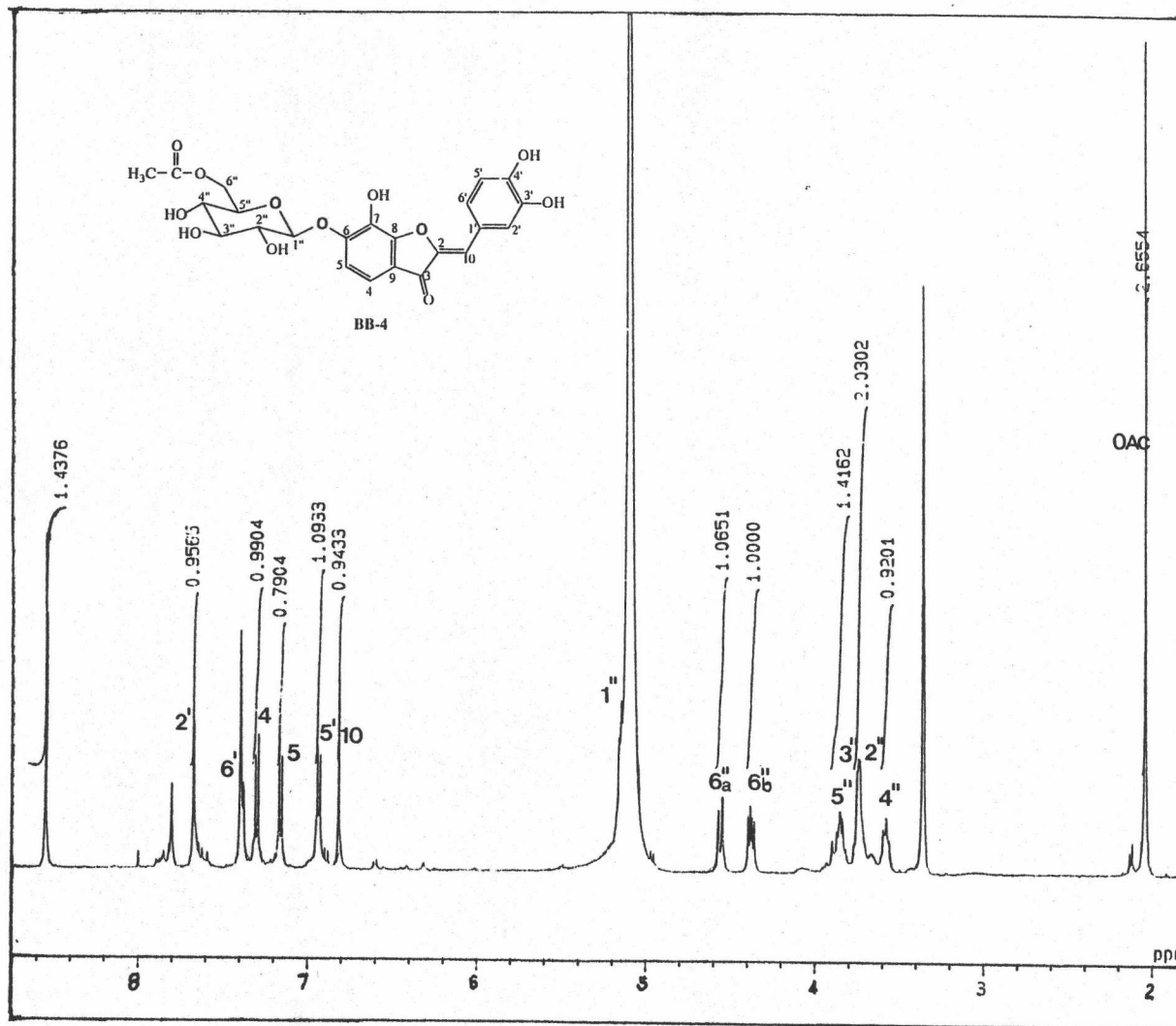


Figure 37 The 500 MHz ^1H NMR spectrum of BB-4 (in $\text{C}_5\text{D}_5\text{N}-\text{CD}_3\text{OD}$ 1:5)

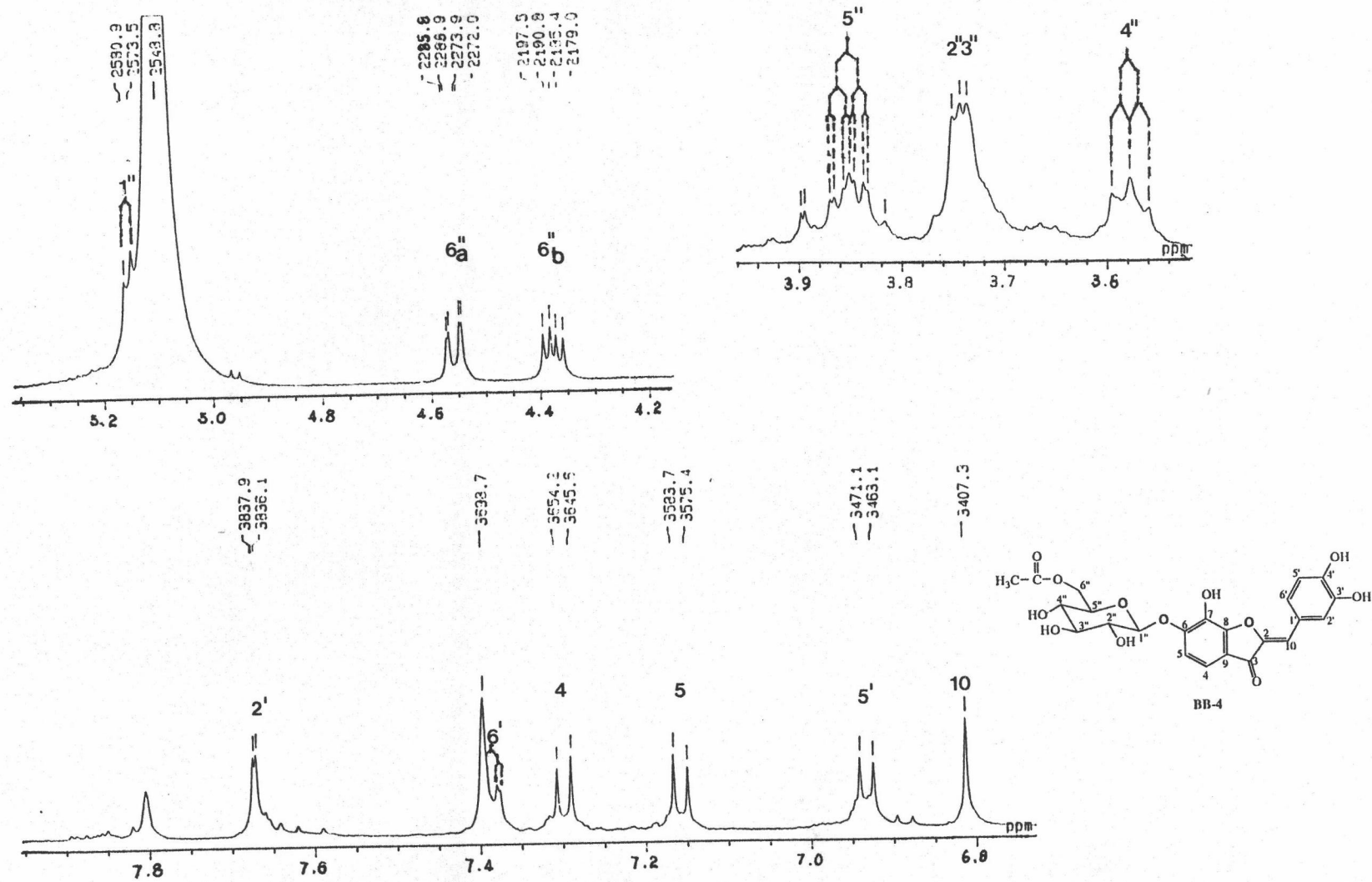


Figure 38 The expansion of 500 MHz ^1H NMR partial spectra of BB-4 (in $\text{C}_5\text{D}_5\text{N}-\text{CD}_3\text{OD}$ 1:5)

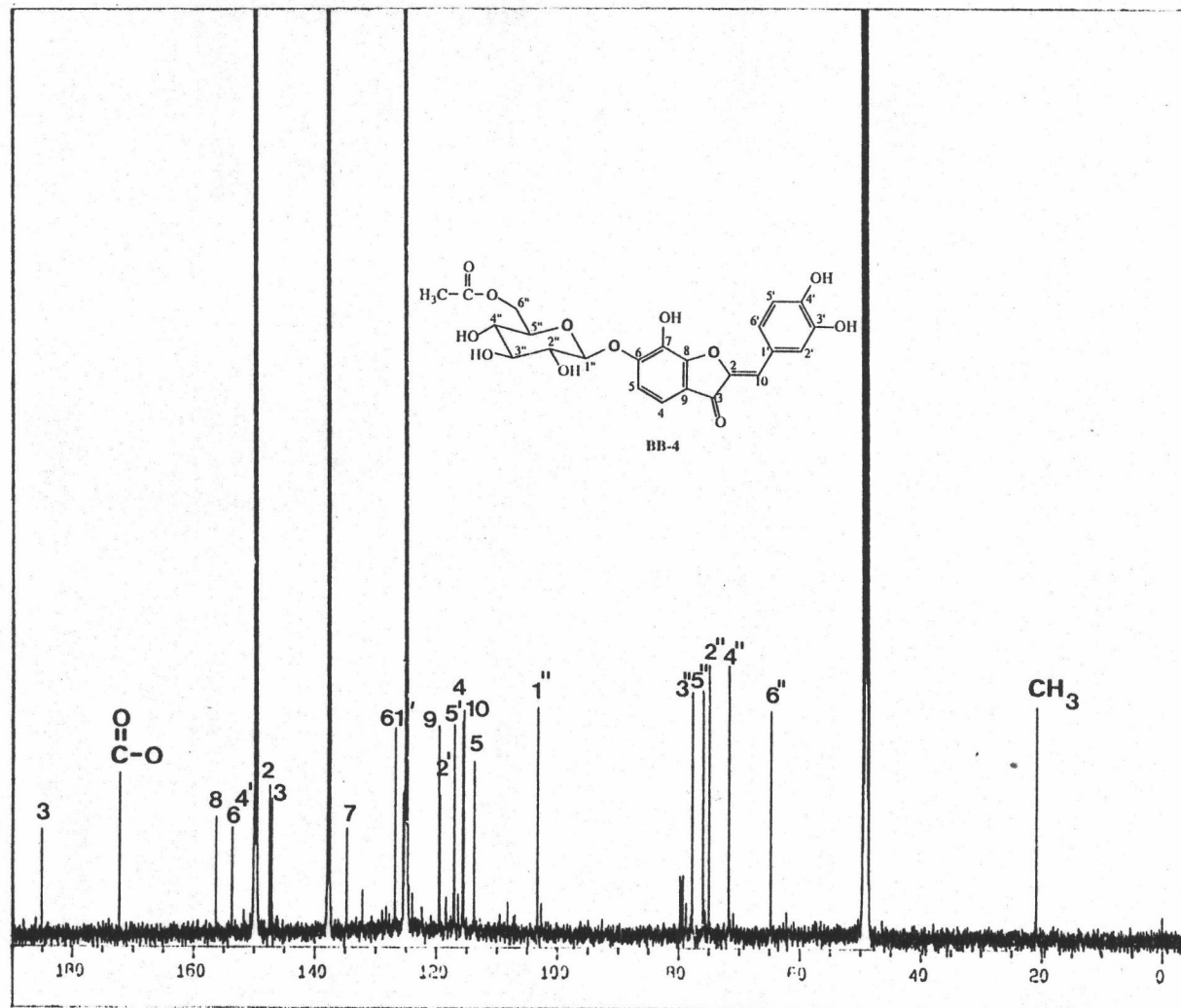


Figure 39 The 125 MHz ¹³C NMR spectrum of BB-4 (in C₅D₅N-CD₃OD 1:5)

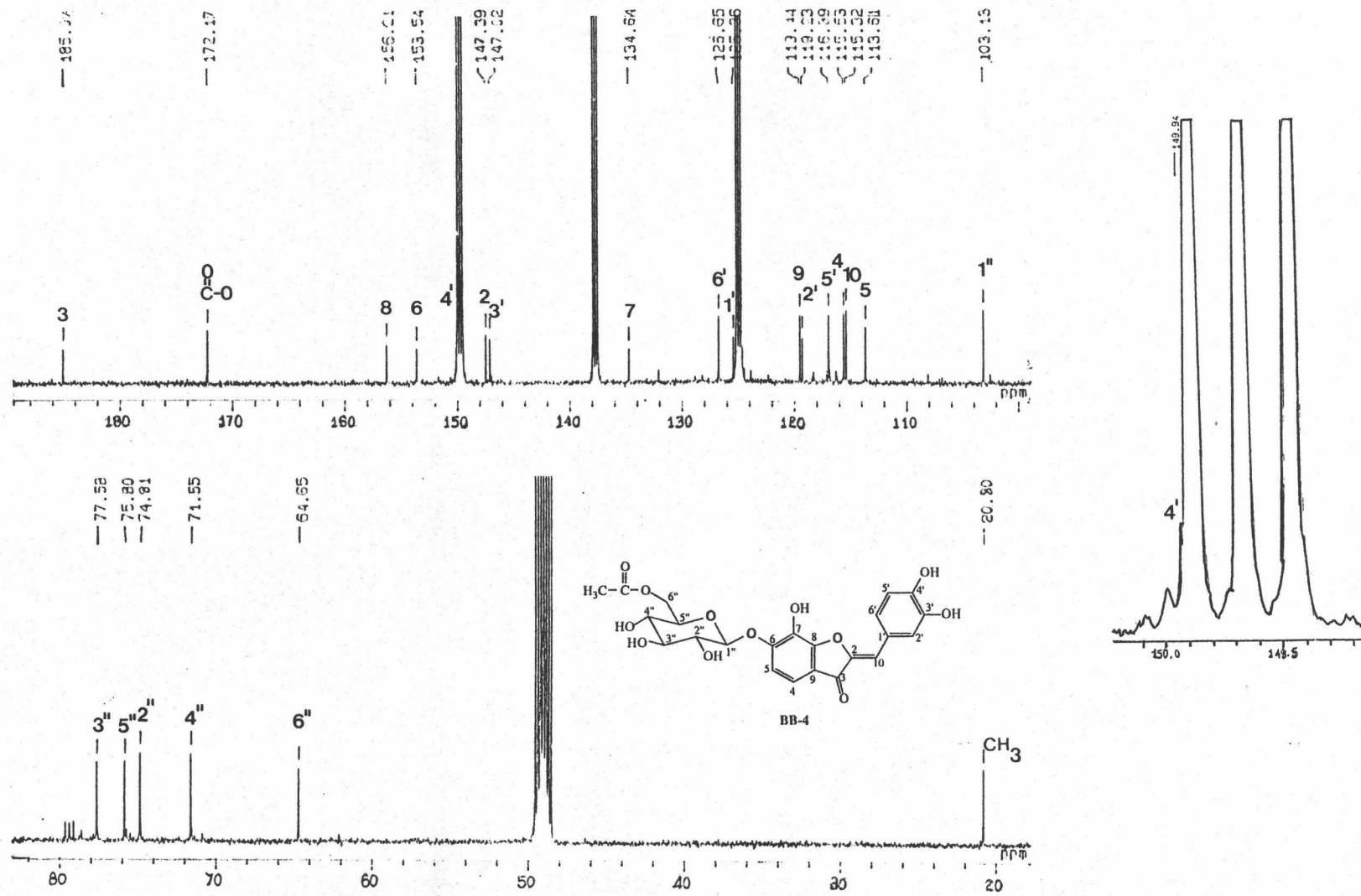


Figure 40 The expansion of 125 MHz ^1H NMR partial spectra of BB-4 (in $\text{C}_5\text{D}_5\text{N}-\text{CD}_3\text{OD}$ 1:5)

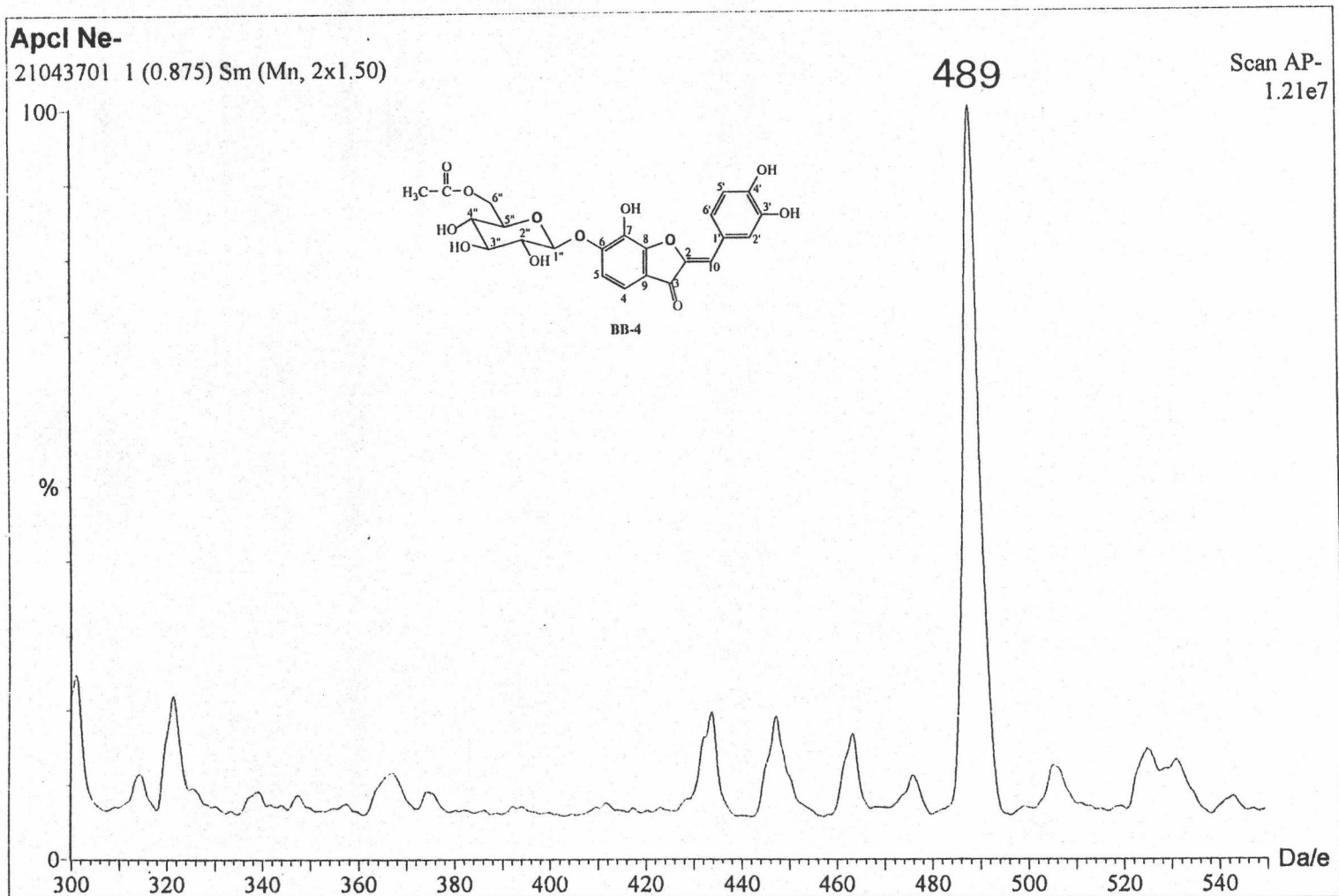
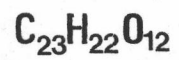


Figure 41 The APCI spectrum of BB-4

Kornkanok : KORN-I EI+ 70 eV

25043701 283 (6.595) Cm (272:301-179:222)

Scan EI+
3.15e5

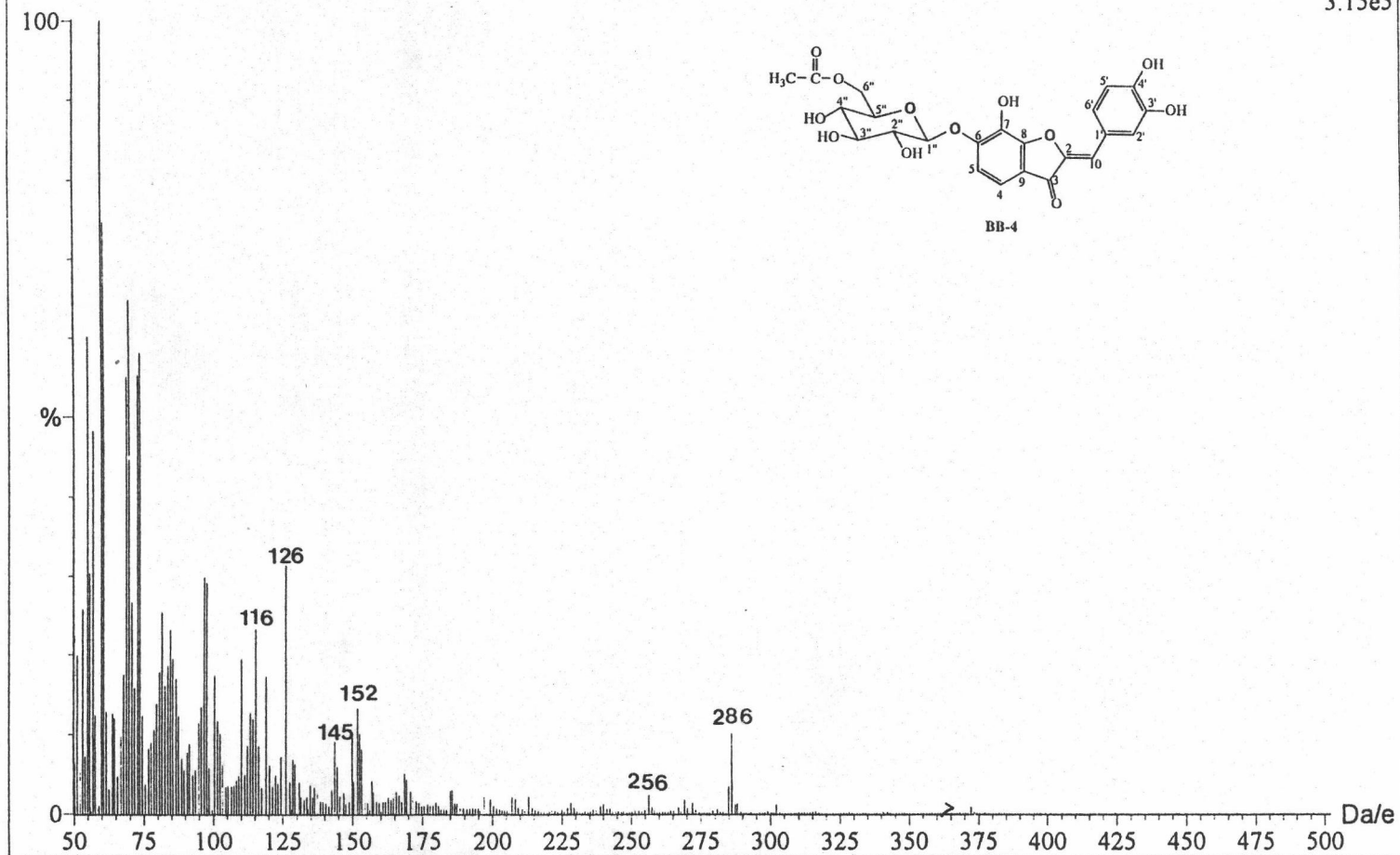


Figure 42 The EIMS spectrum of BB-4



VITA

Miss Kornkanok Ingkaninan was born on June 19, 1967 in Bangkok, Thailand. She received her Bachelor of Science in Pharmacy in 1990 from the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Thailand. At present she is a faculty member of Naresuan University, Pitsanulok, Thailand.