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ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย





APPENDIX

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



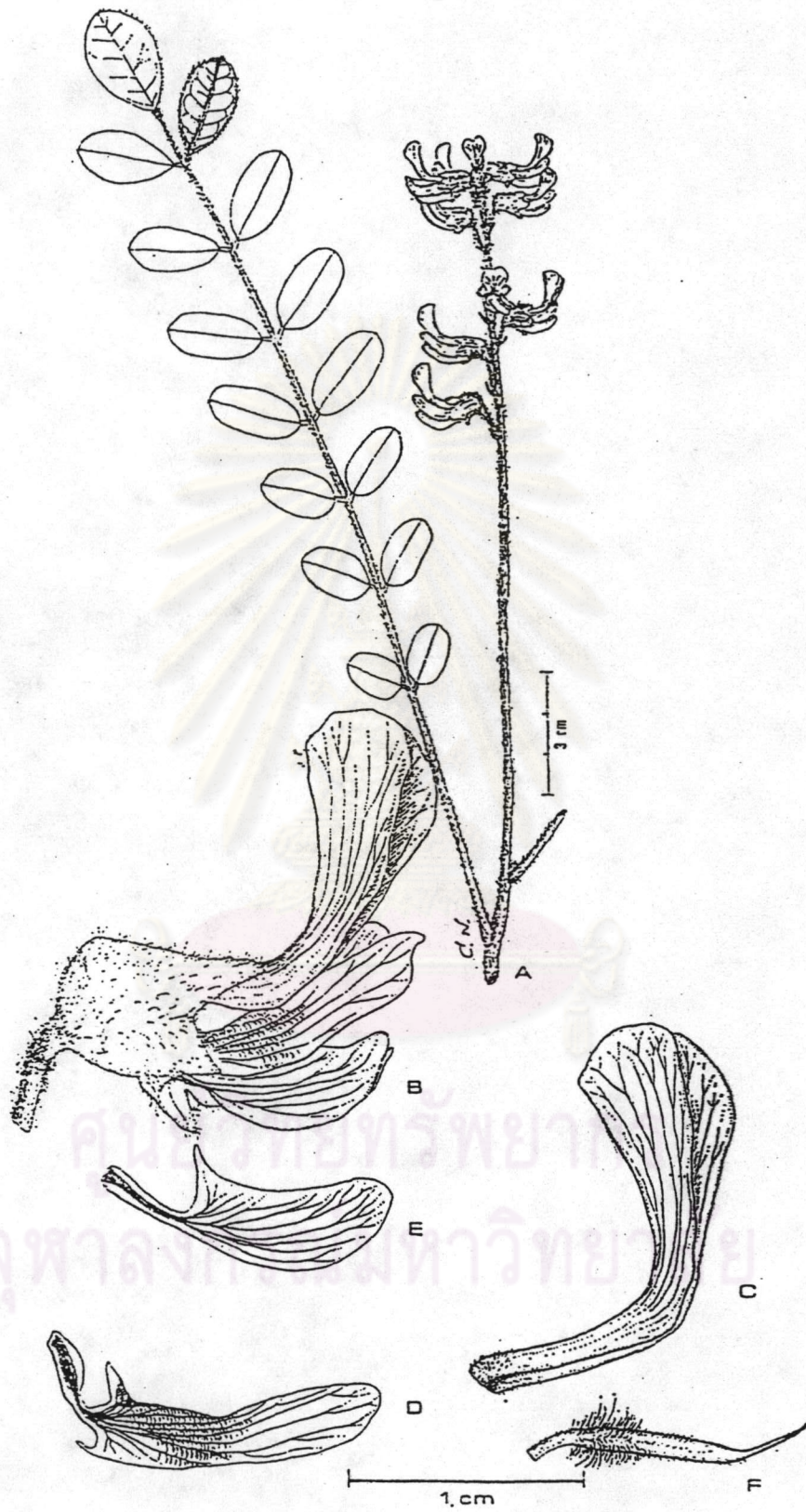


Figure 1 *Sophora exigua* Craib : A = flowering branch ; B = flower ;  
C = standard ; D = wing ; E = keel ; F = ovary.



Silica gel GF<sub>254</sub>/petroleum ether : acetone (85:15)

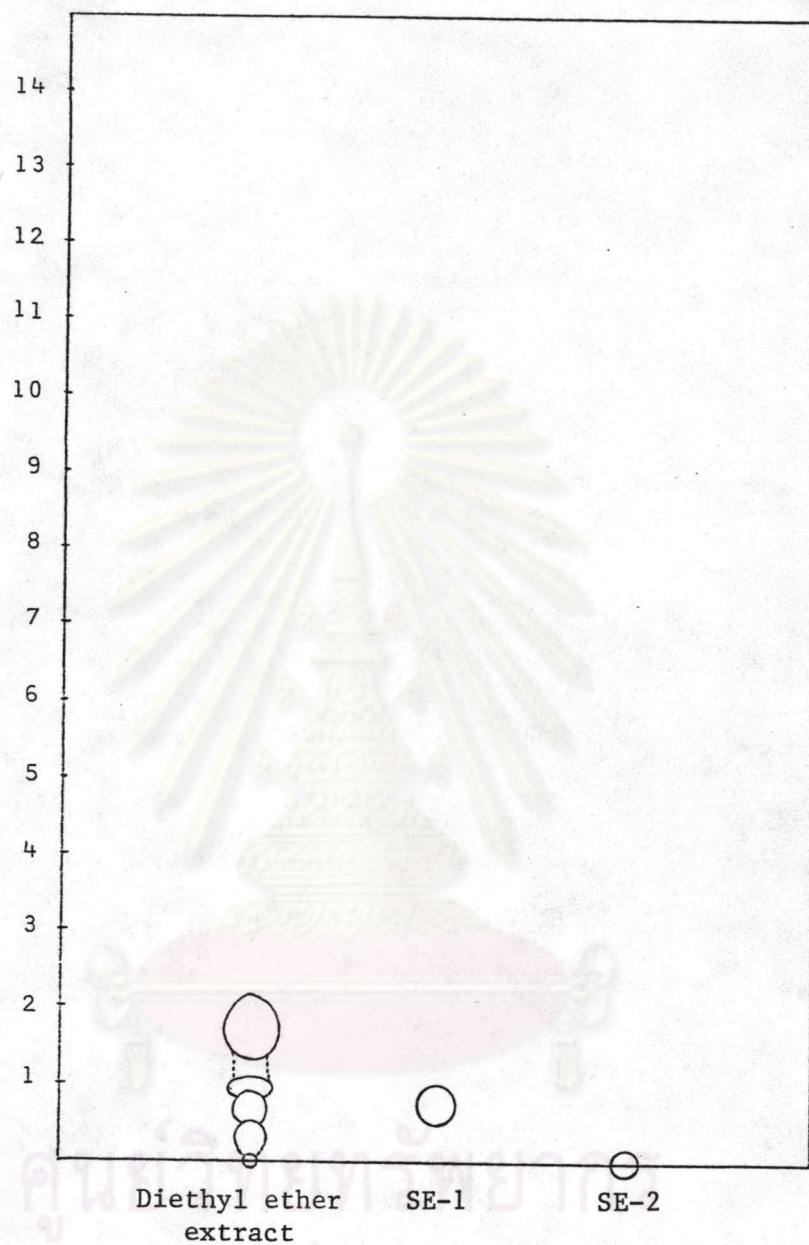


Figure 3.1 Thin-layer chromatogram of the diethyl ether extract and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/chloroform : ethanol (99.5:0.5)

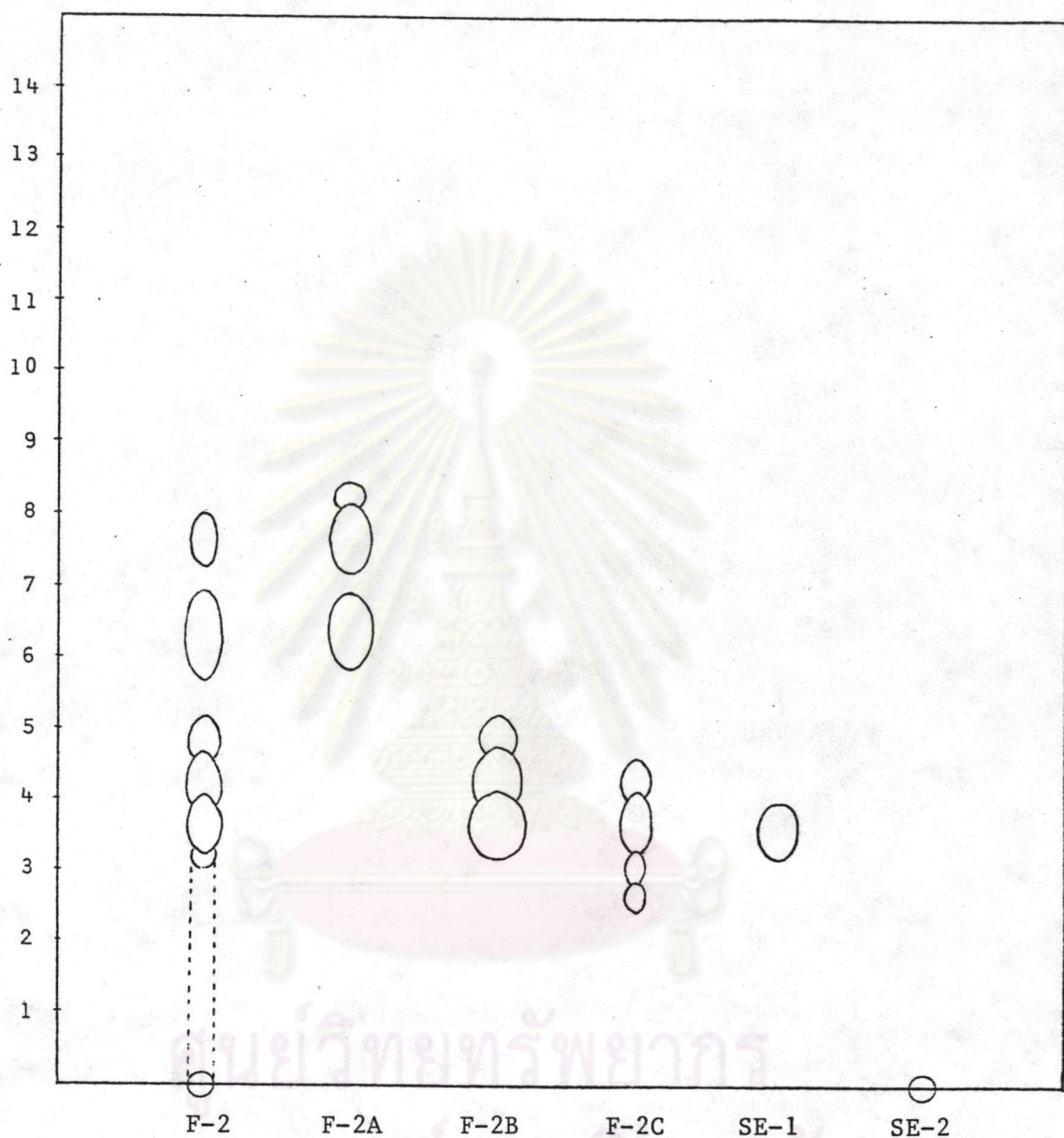
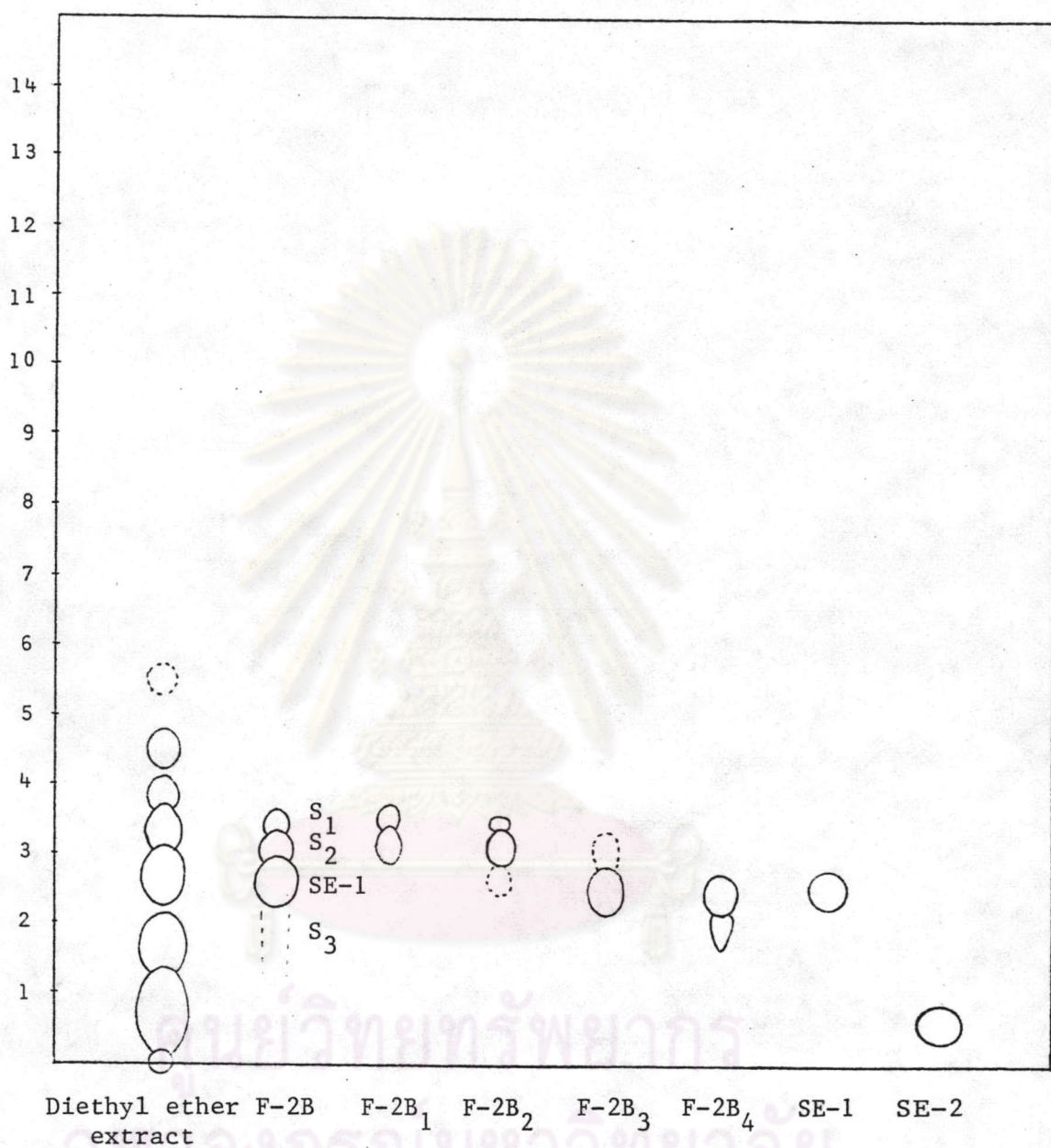


Figure 3.2 Thin-layer chromatogram of the fractions F-2, F-2A, F-2B, F-2C and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/hexane : acetone (7:3)



**Figure 3.3** Thin-layer chromatogram of the diethyl ether extract, the fraction (F-2B, F-2B<sub>1</sub> to F-2B<sub>4</sub>) and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/cyclohexane : diethyl ether (7:3)

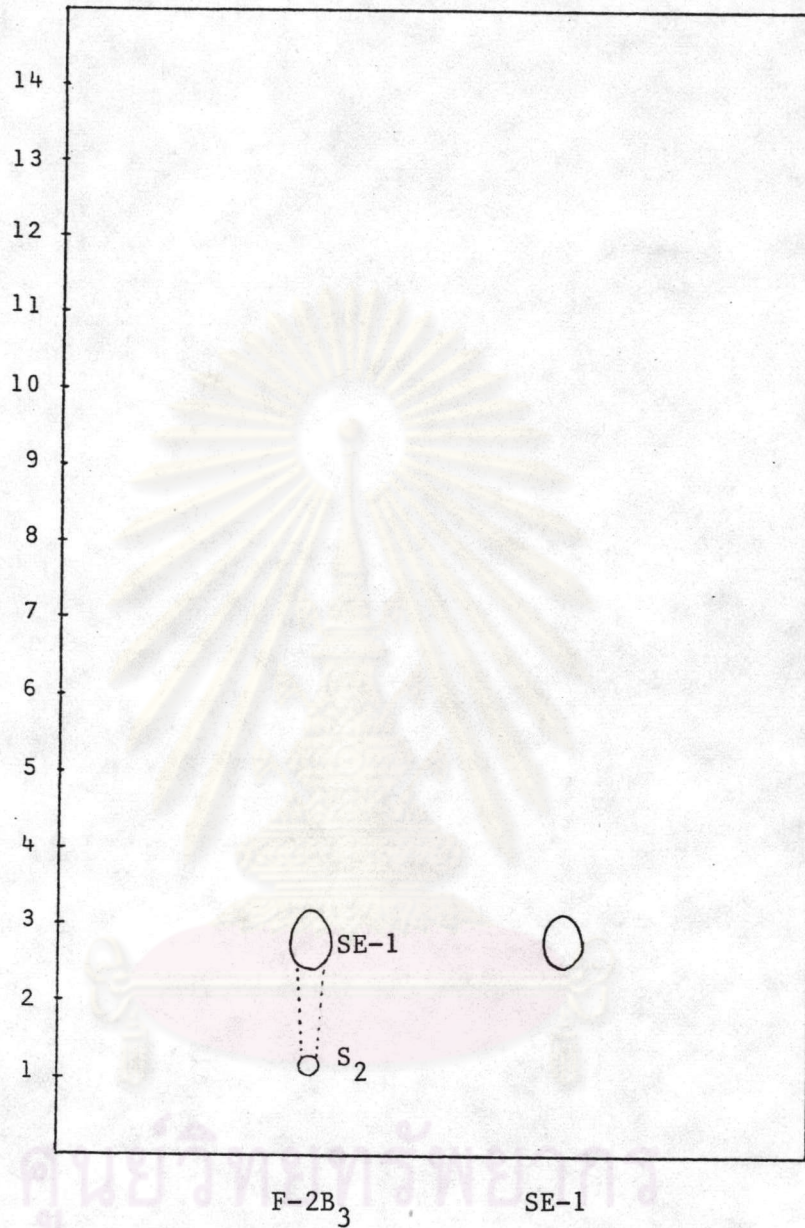


Figure 3.4 Thin-layer chromatogram of the fraction F-2B<sub>3</sub> and the isolated compound, SE-1.



Silica gel GF<sub>254</sub>/chloroform : ethanol (95:5).

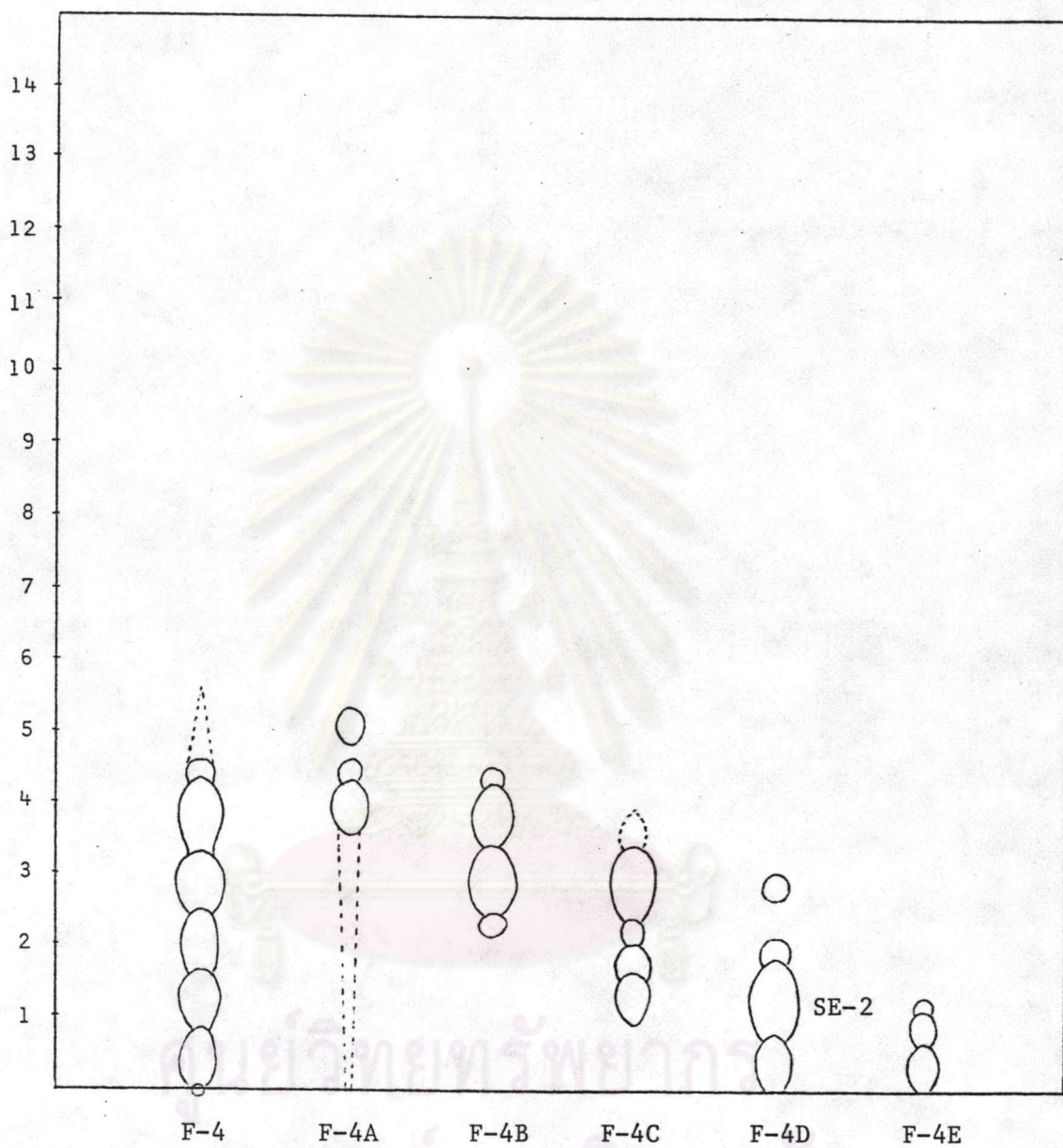


Figure 3.5 Thin-layer chromatogram of the fractions, F-4, F-4A, F-4B, F-4C, F-4D, and F-4E.



Silica gel GF<sub>254</sub>/petroleum ether : diethyl ether (4:6)

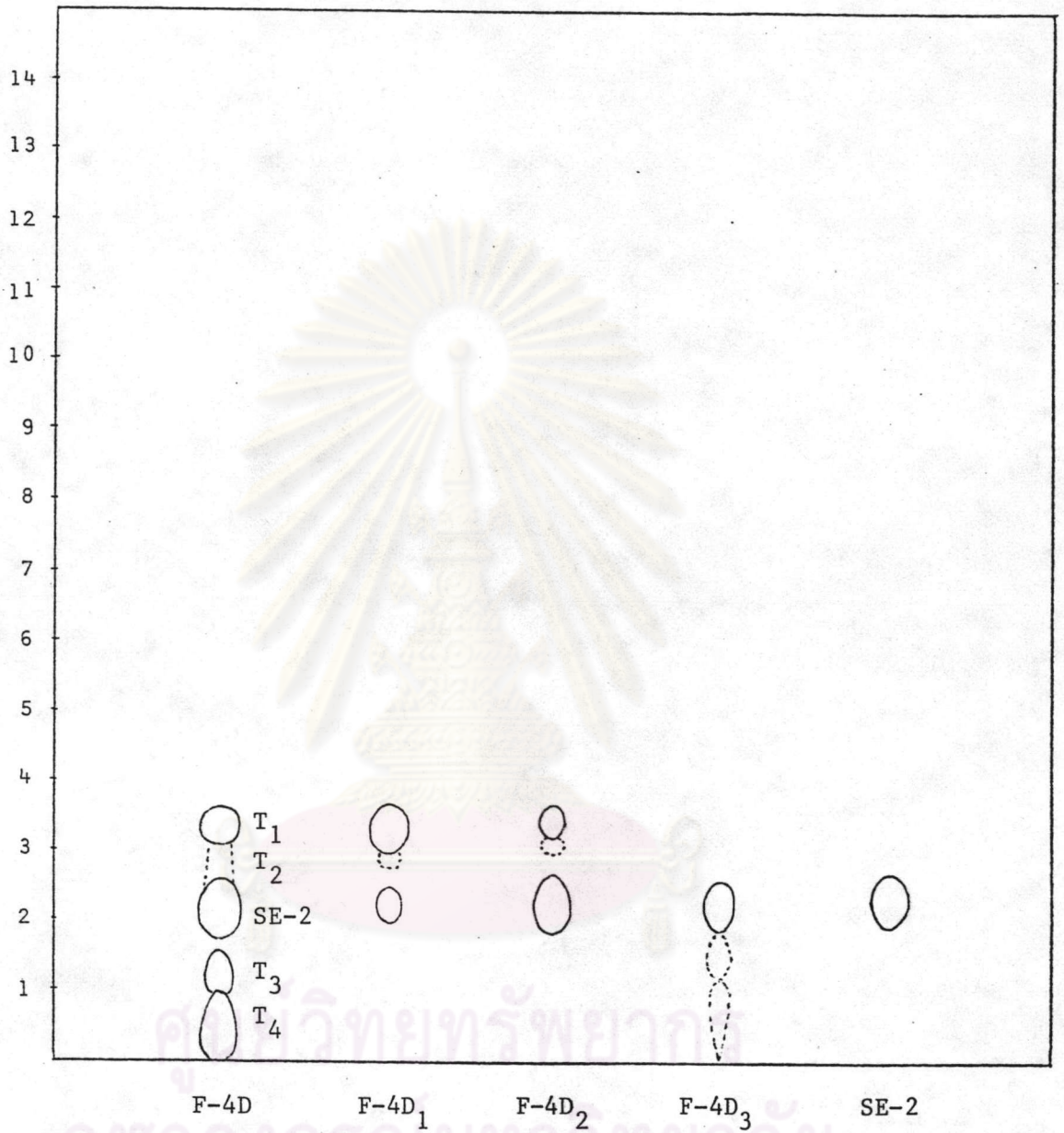


Figure 3.6 Thin-layer chromatogram of the fractions (F-4D, F-4D<sub>1</sub>, F-4D<sub>2</sub>, F-4D<sub>3</sub>) and the isolated compound SE-2.



Silica gel GF<sub>254</sub>/chloroform : ethanol (95:5)

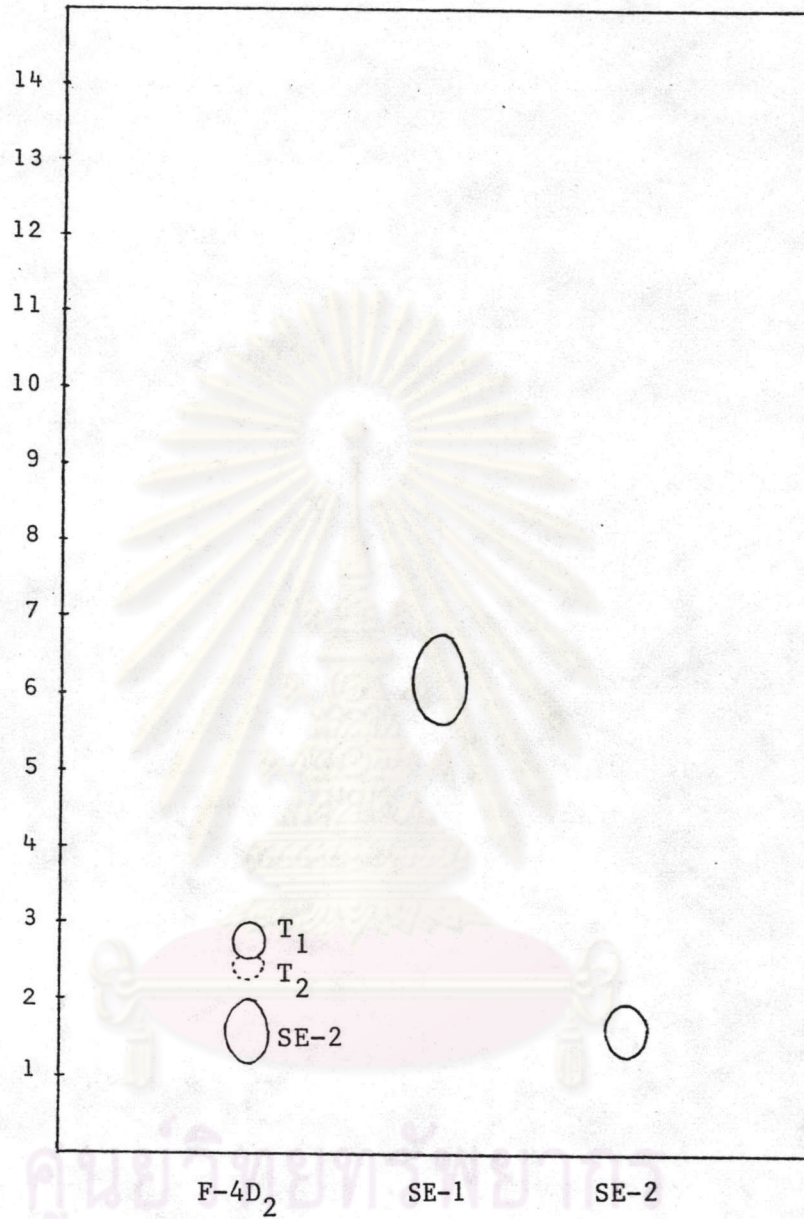


Figure 3.7 Thin-layer chromatogram of the fraction, F-4D<sub>2</sub>, and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/chloroform : ethyl acetate (10:1)

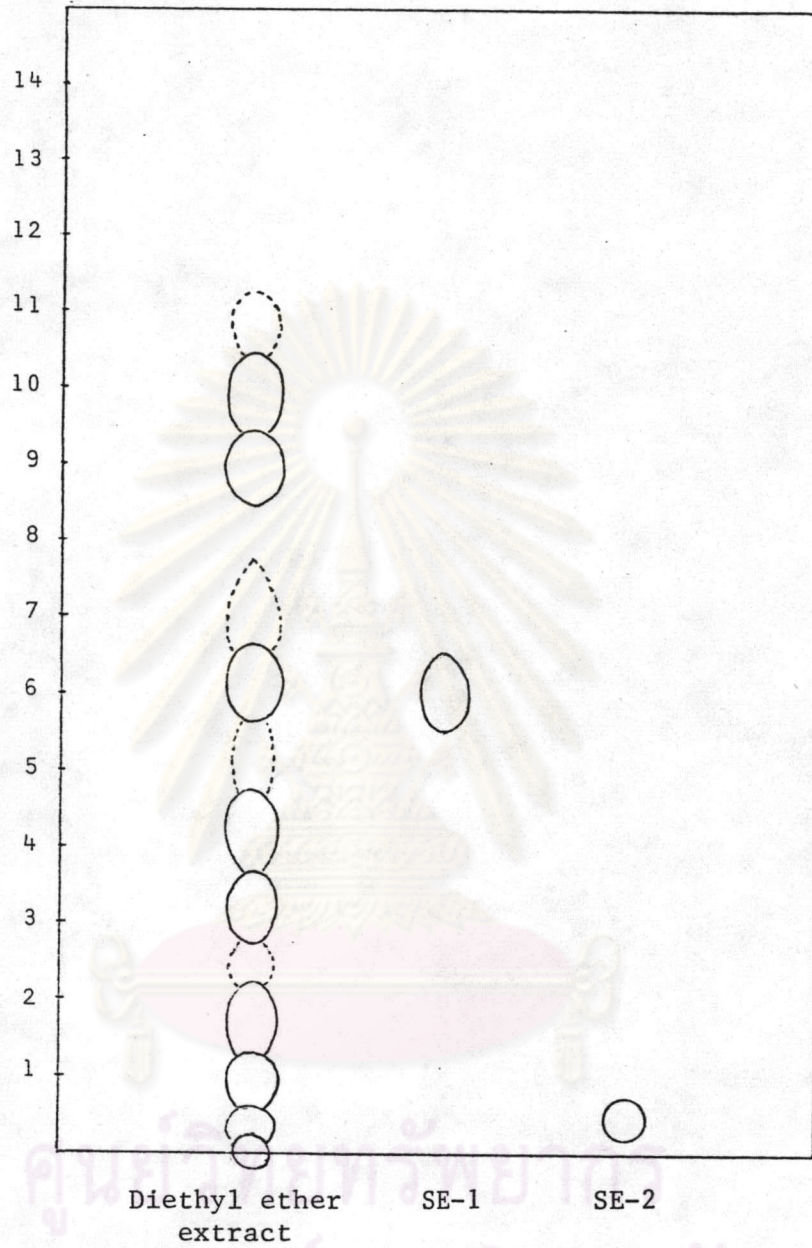


Figure 3.8 Thin-layer chromatogram of the diethyl ether extract and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/petroleum ether : diethyl ether (1:2)

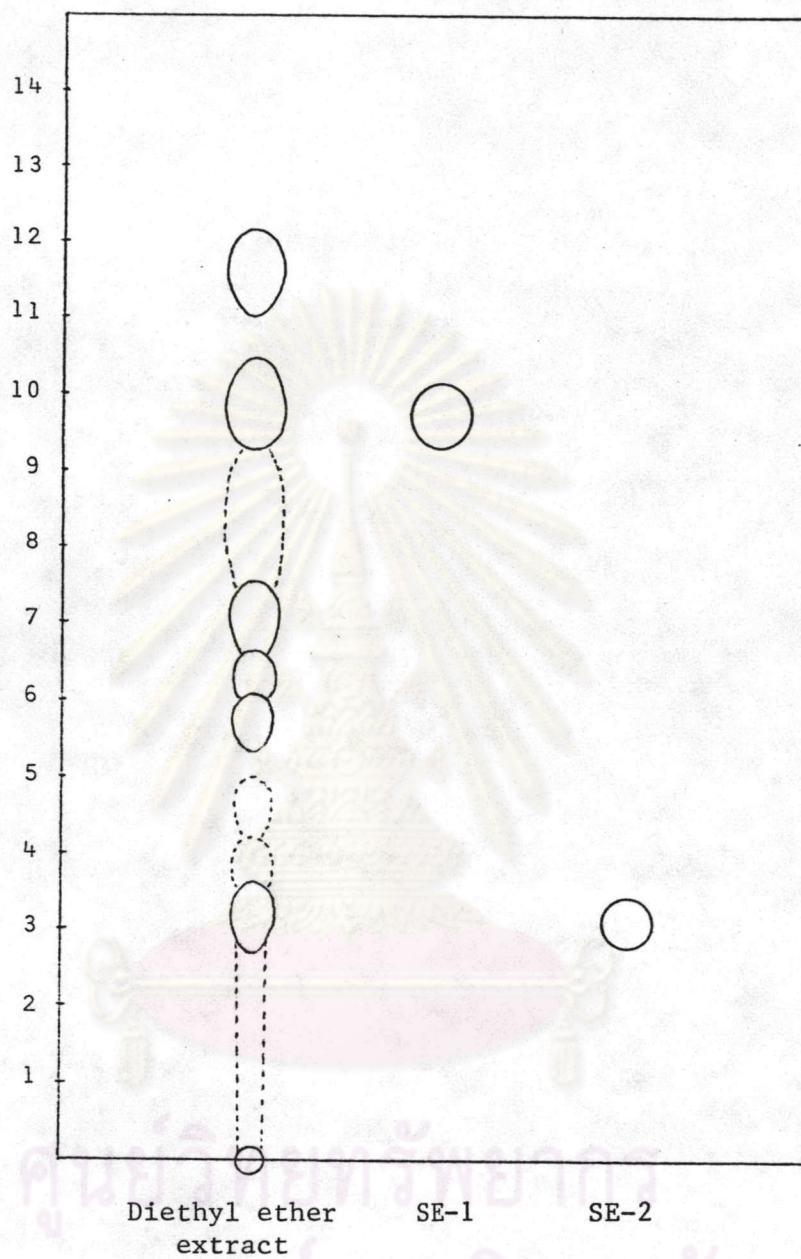


Figure 3.9 Thin-layer chromatogram of the diethyl ether extract and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/cyclohexane : diethyl ether (1:4)

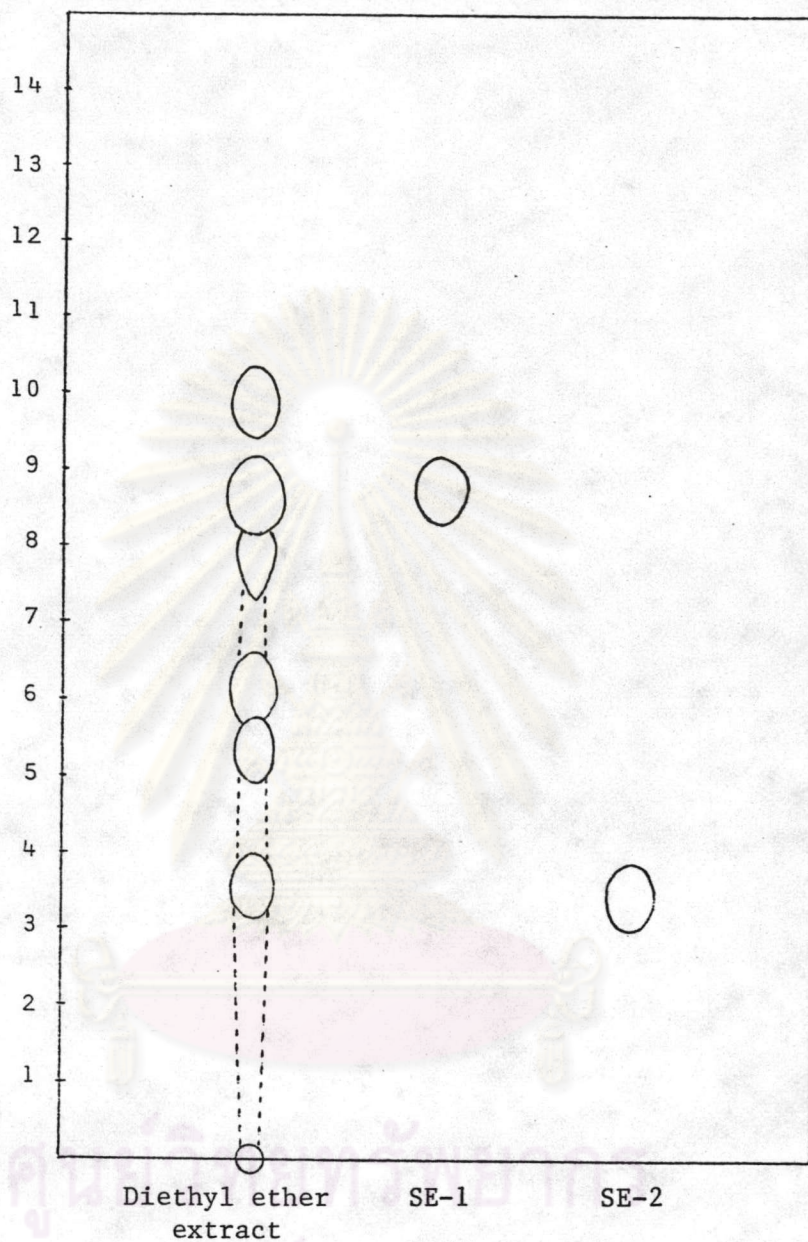


Figure 3.10 Thin-layer chromatogram of the diethyl ether extract and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/benzene : acetone (7:3)

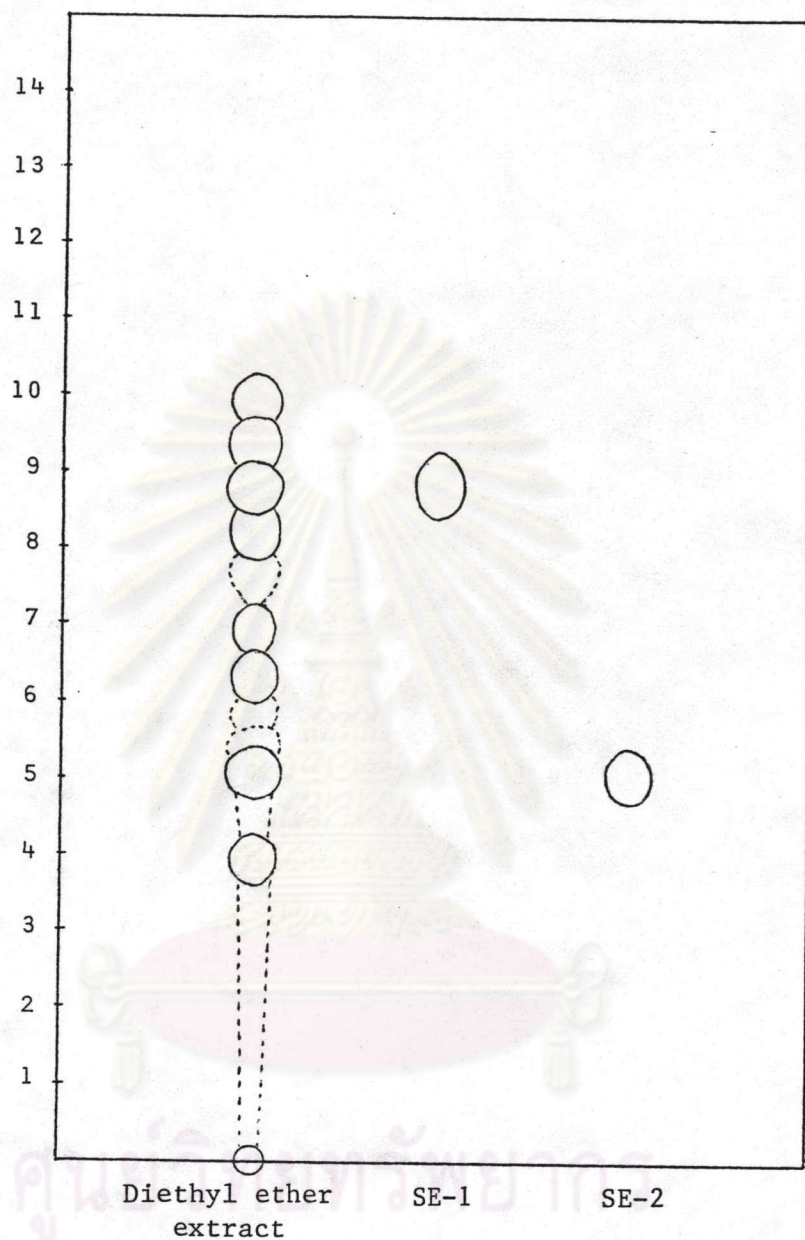


Figure 3.11 Thin-layer chromatogram of the diethyl ether extract and the isolated compounds (SE-1, SE-2).



Silica gel GF<sub>254</sub>/chloroform : ethanol (92:8)

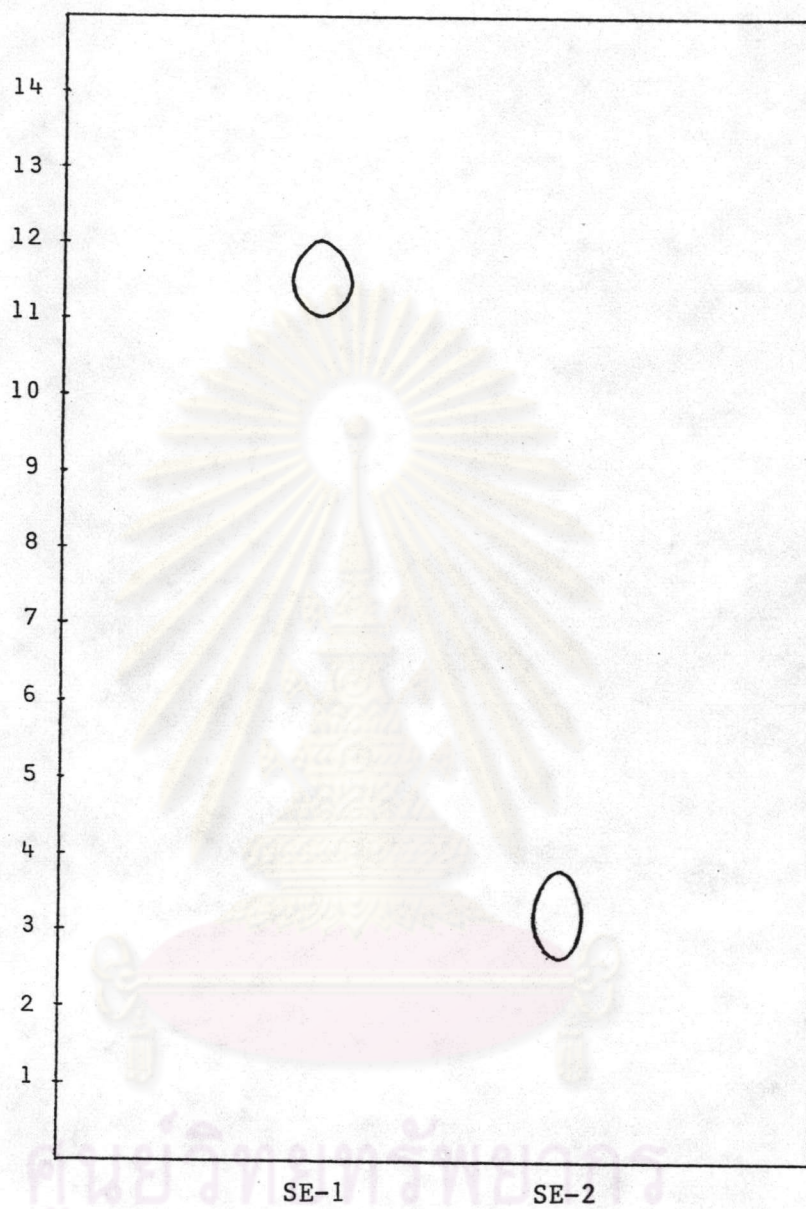


Figure 3.12 Thin-layer chromatogram of the isolated compounds (SE-1 and SE-2).



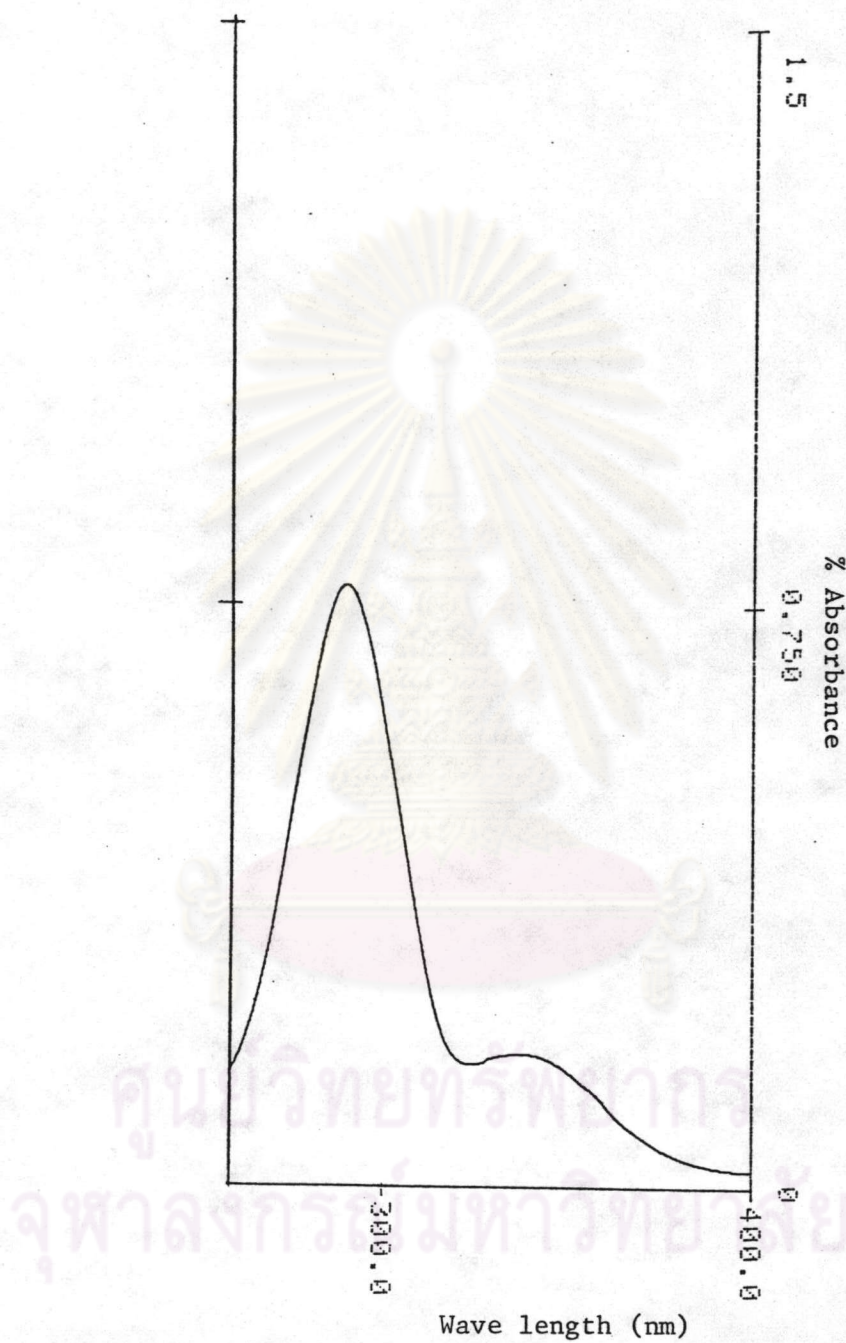


Figure 3.13 Ultraviolet absorption spectrum of SE-1 in methanol.



% Absorbance

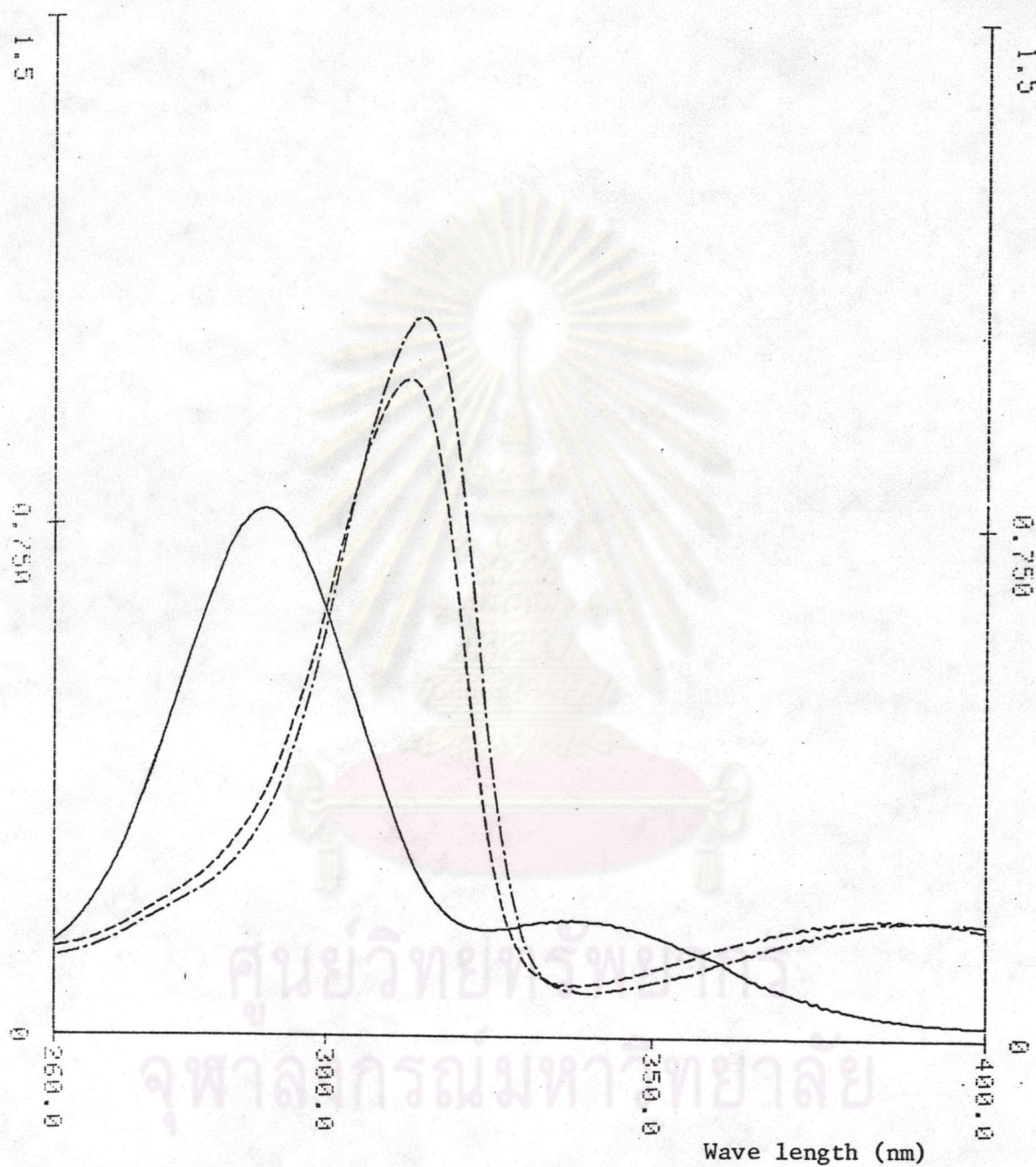


Figure 3.14 Ultraviolet absorption spectra of SE-1

- MeOH  
- · - · - + AlCl<sub>3</sub>  
- - - - + AlCl<sub>3</sub> + HCl



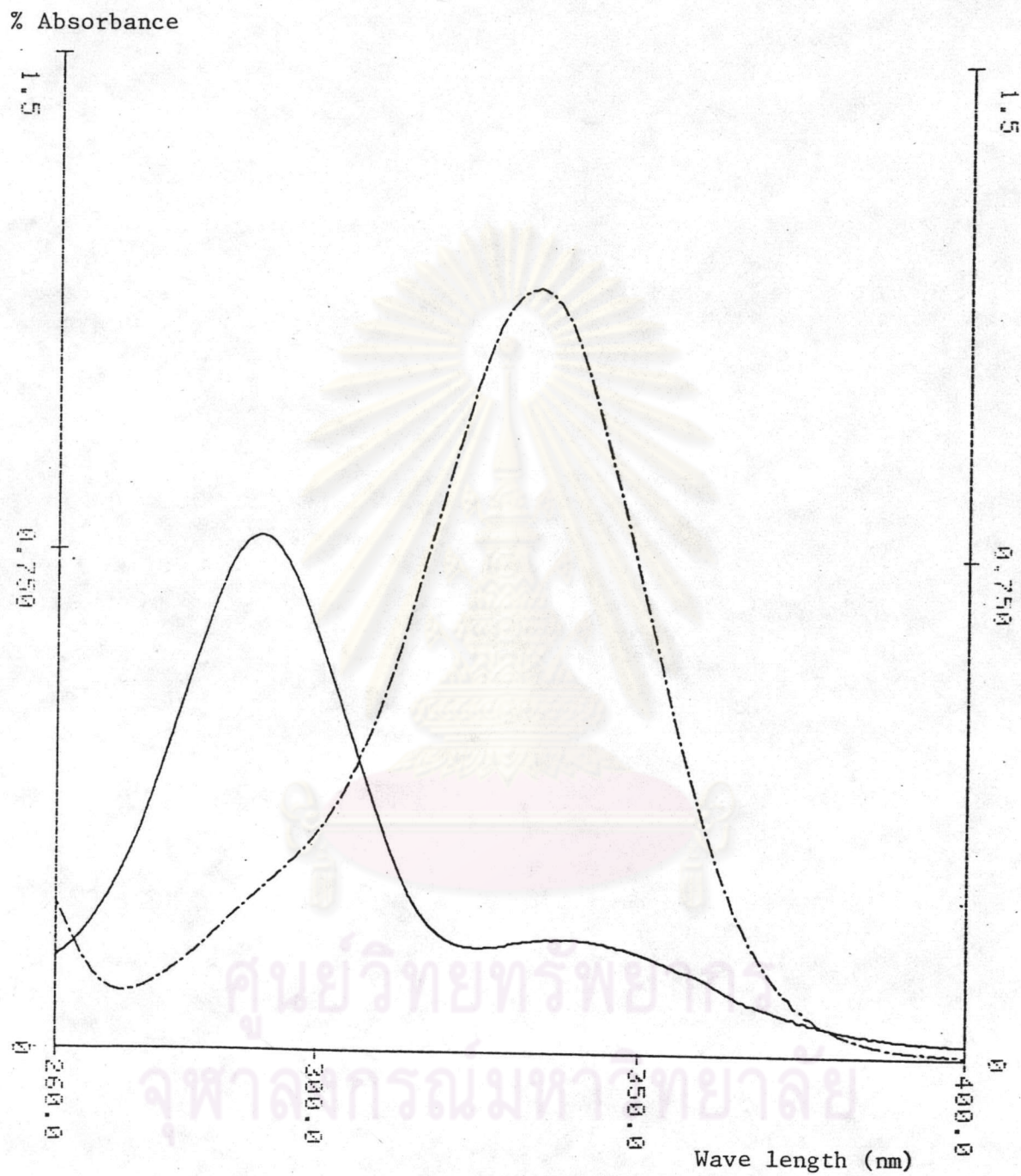


Figure 3.15 Ultraviolet absorption spectra of SE-1

— MeOH  
- · - · - + NaOH



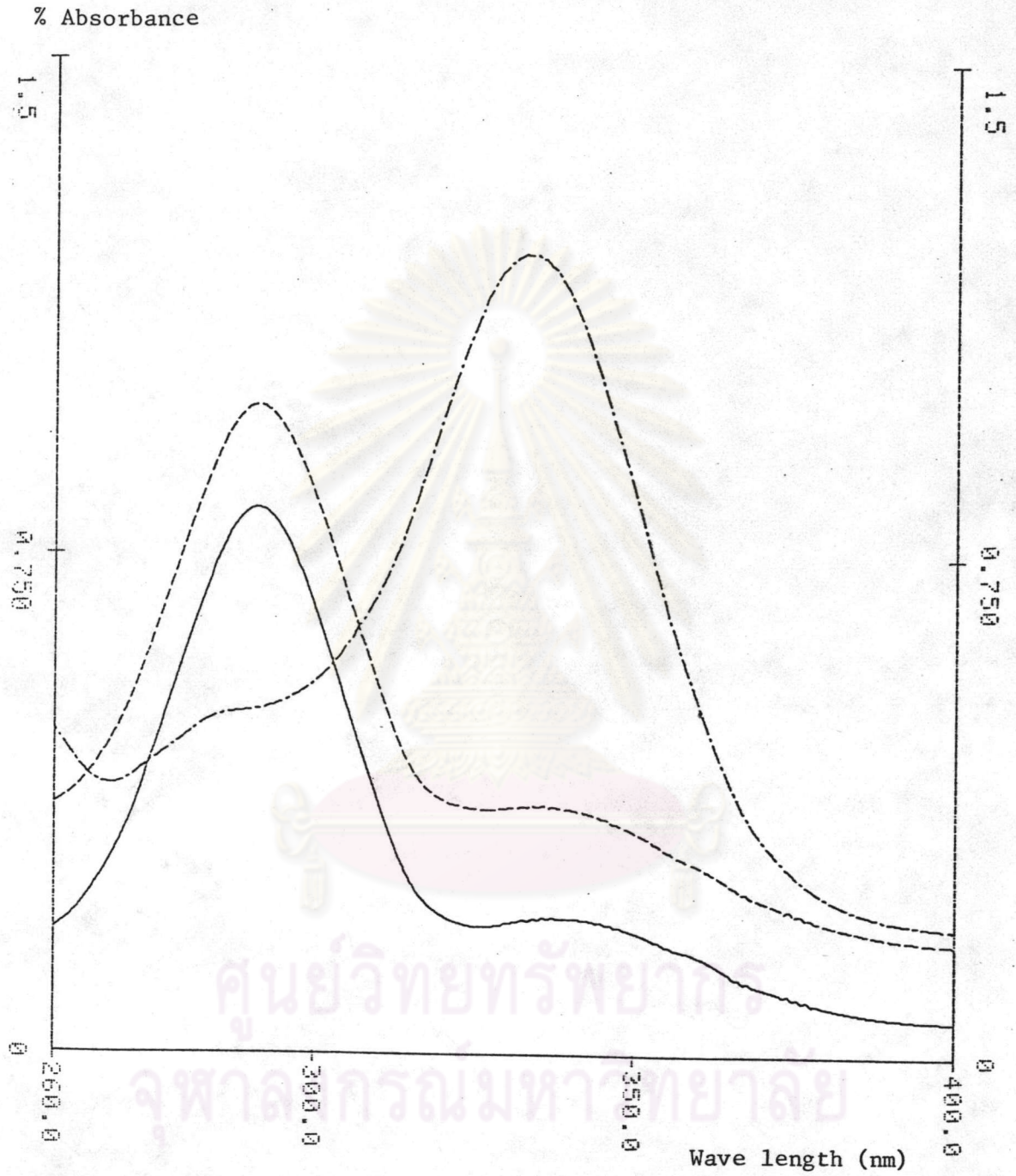


Figure 3.16 Ultraviolet absorption spectra of SE-1

- MeOH  
 - · - · - + NaOAc  
 - - - - + NaOAc + H<sub>3</sub>BO<sub>3</sub>



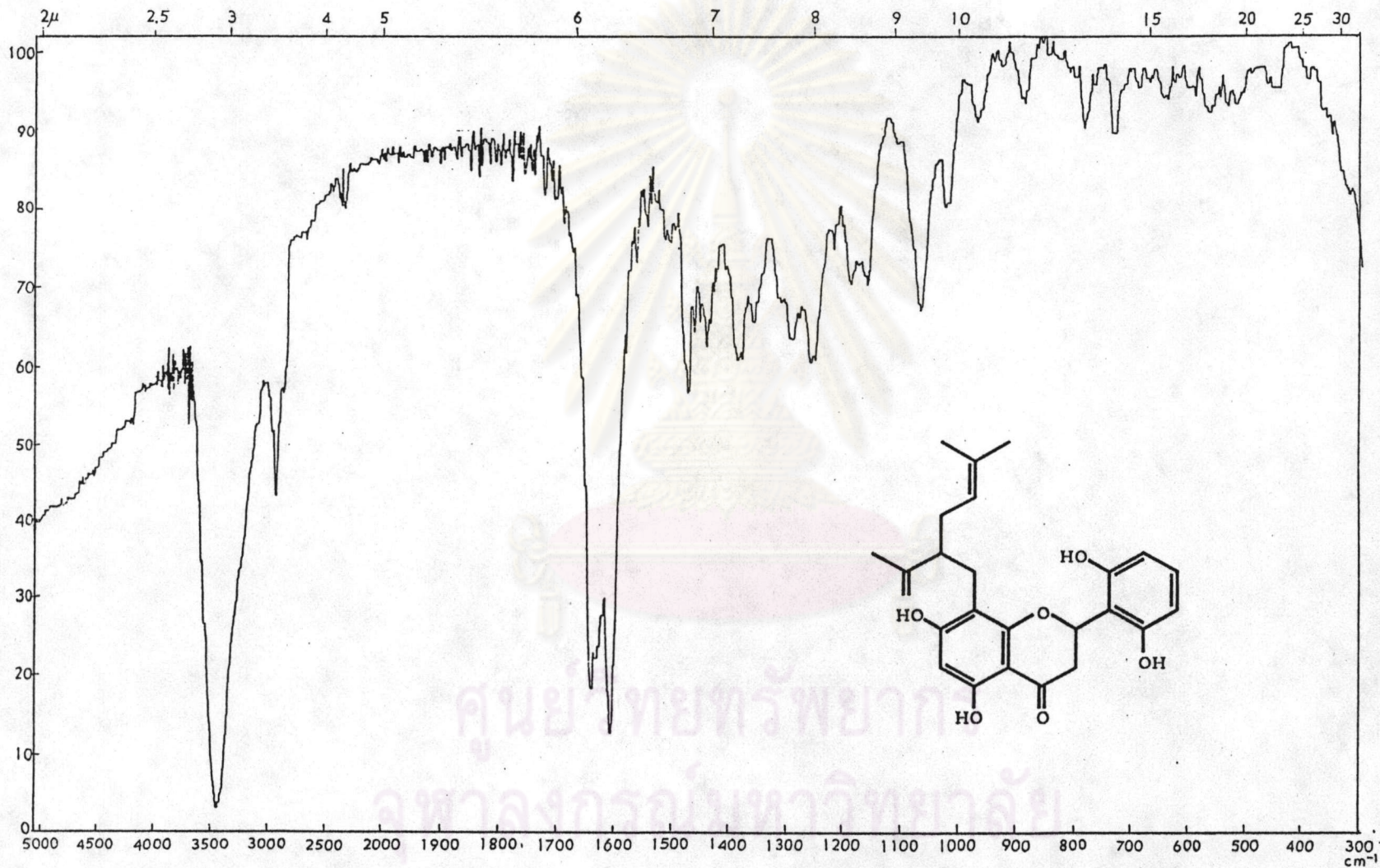


Figure 3.17 Infrared absorption spectrum of SE-1 in potassium bromide disc.



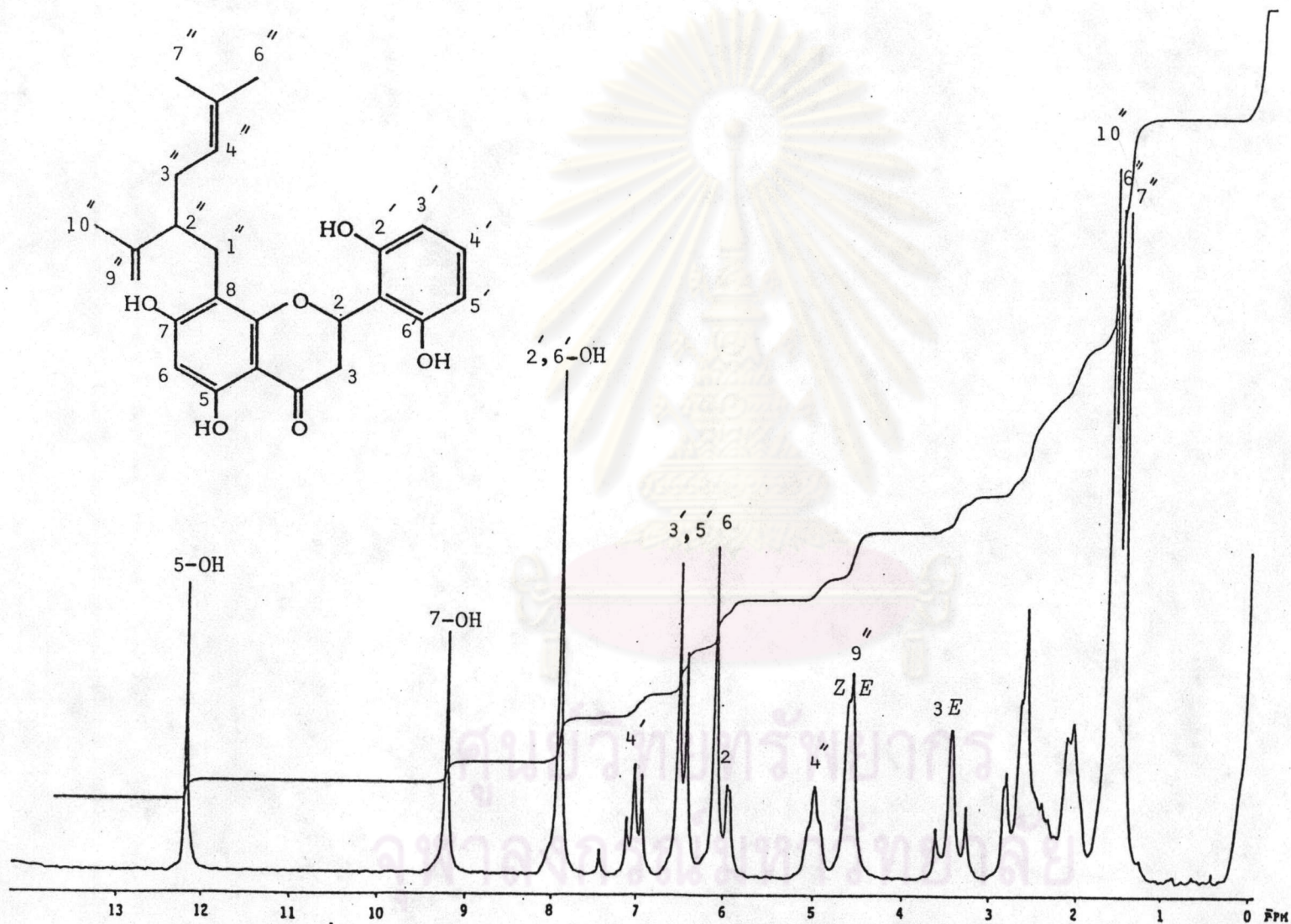


Figure 3.18 <sup>1</sup>H-NMR spectrum of SE-1 in the mixture of hexadeuterated acetone and deuterated chloroform.



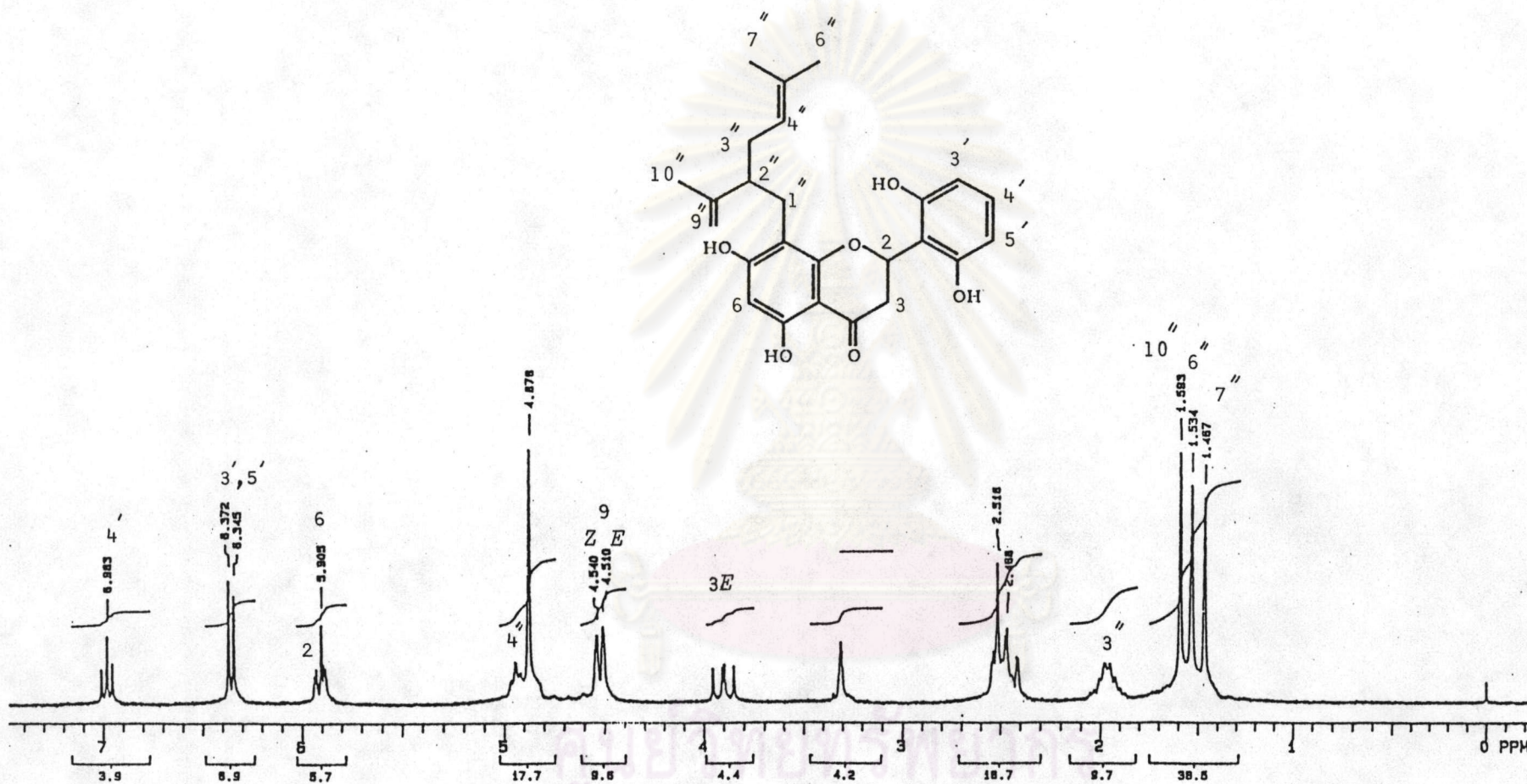


Figure 3.19 <sup>1</sup>H-NMR spectrum of SE-1 in tetradeuterated methanol (300 MHz).



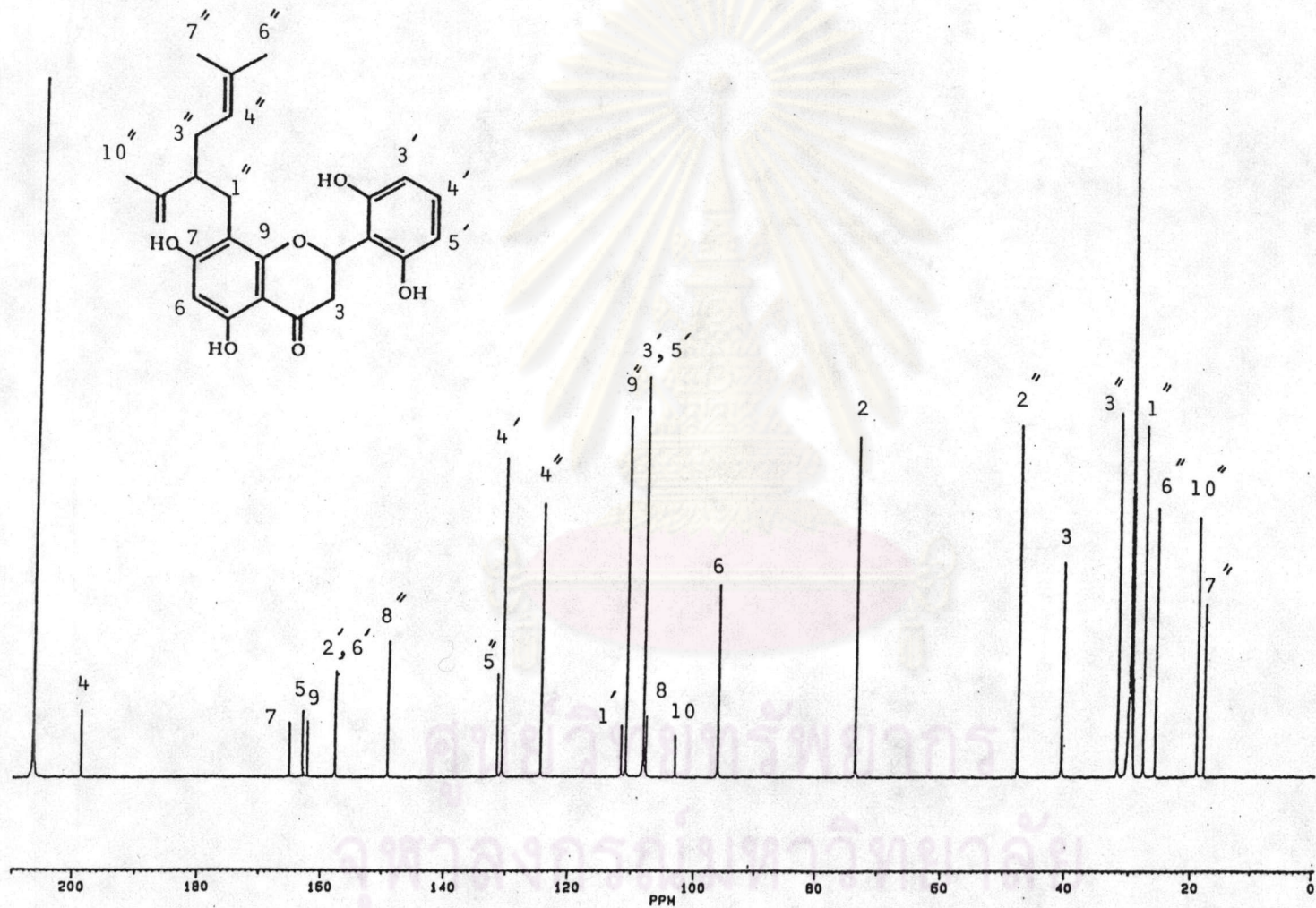


Figure 3.20  $^{13}\text{C}$ -NMR spectrum of SE-1 in hexadeuterated acetone (125 MHz).



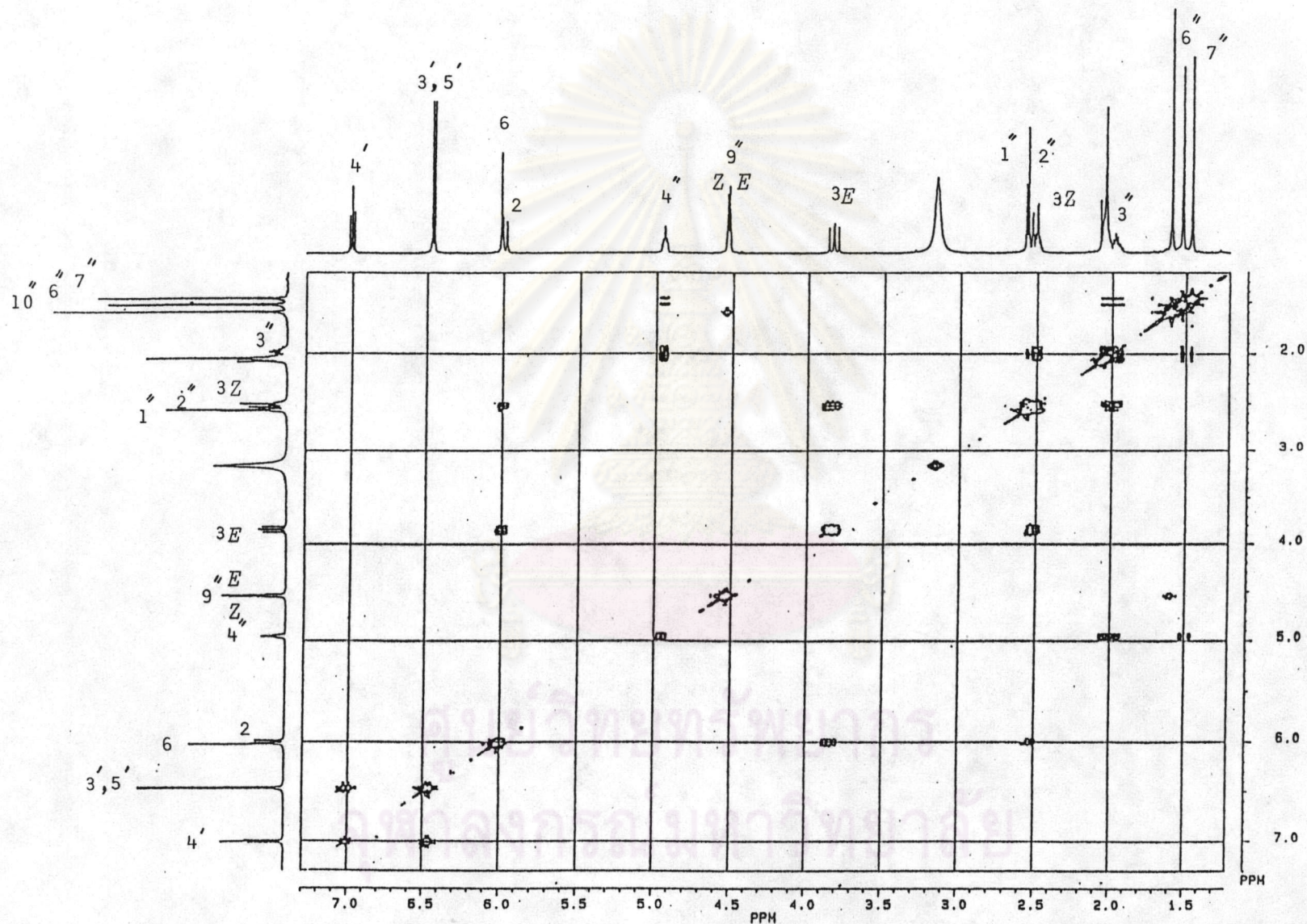


Figure 3.21 Two dimensional  $^1\text{H}$ -NMR spectrum (COSY) of SE-1 in hexadeuterated acetone (500 MHz).



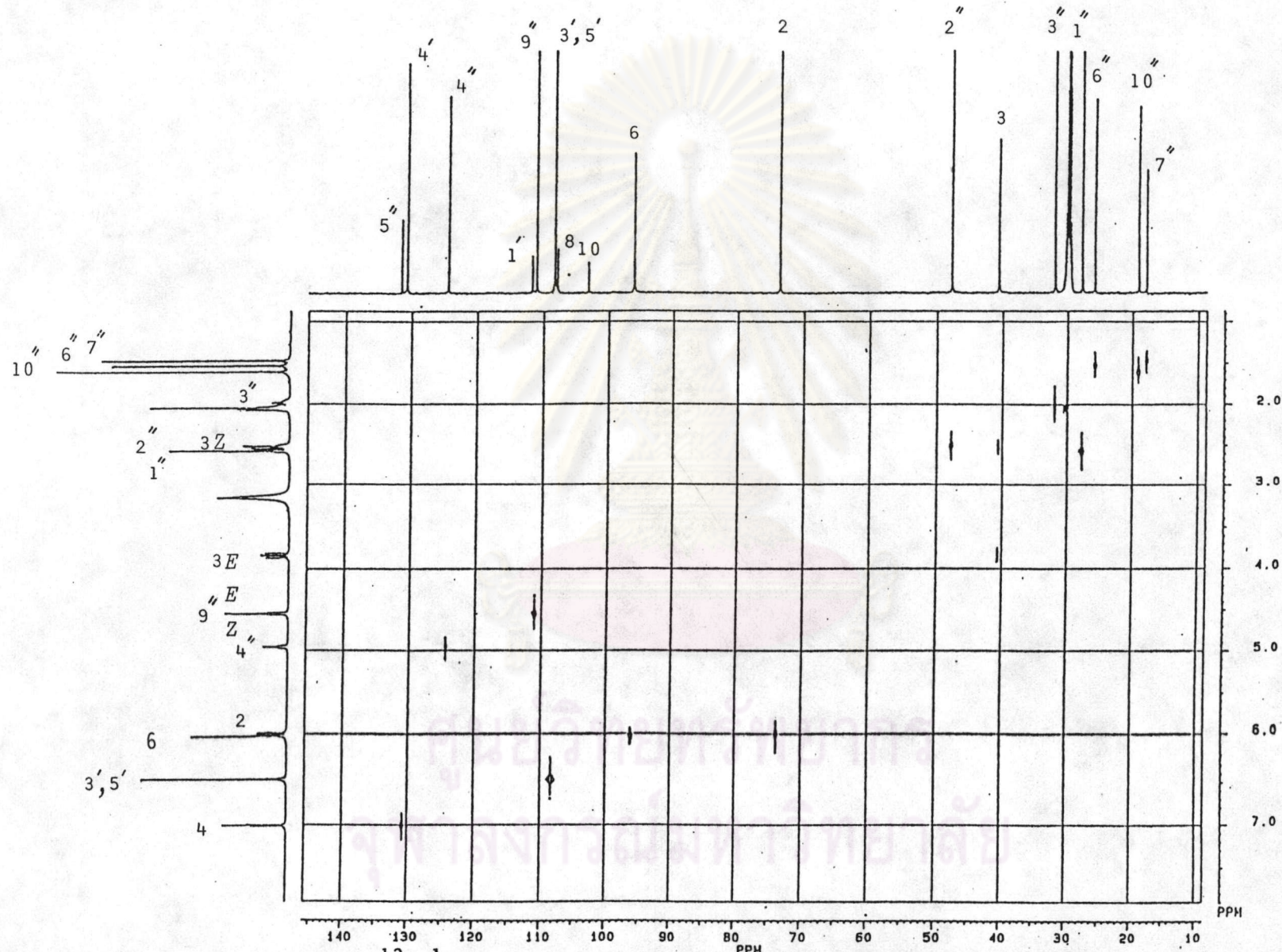


Figure 3.22 Two dimensional  $^{13}\text{C}$ - $^1\text{H}$  HETCOR spectrum of SE-1 in hexadeuterated acetone (125 MHz).



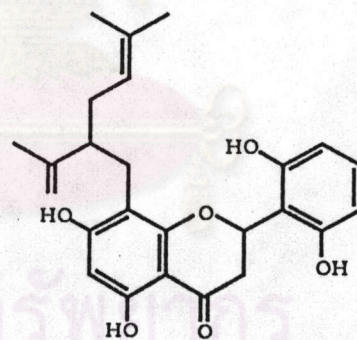
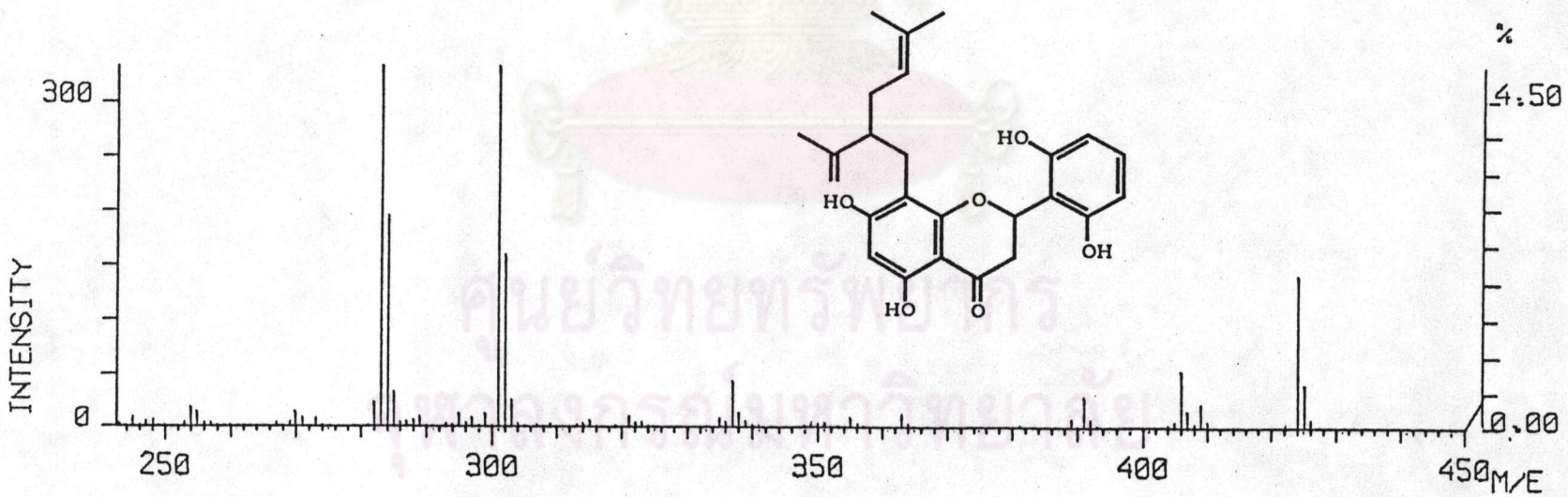
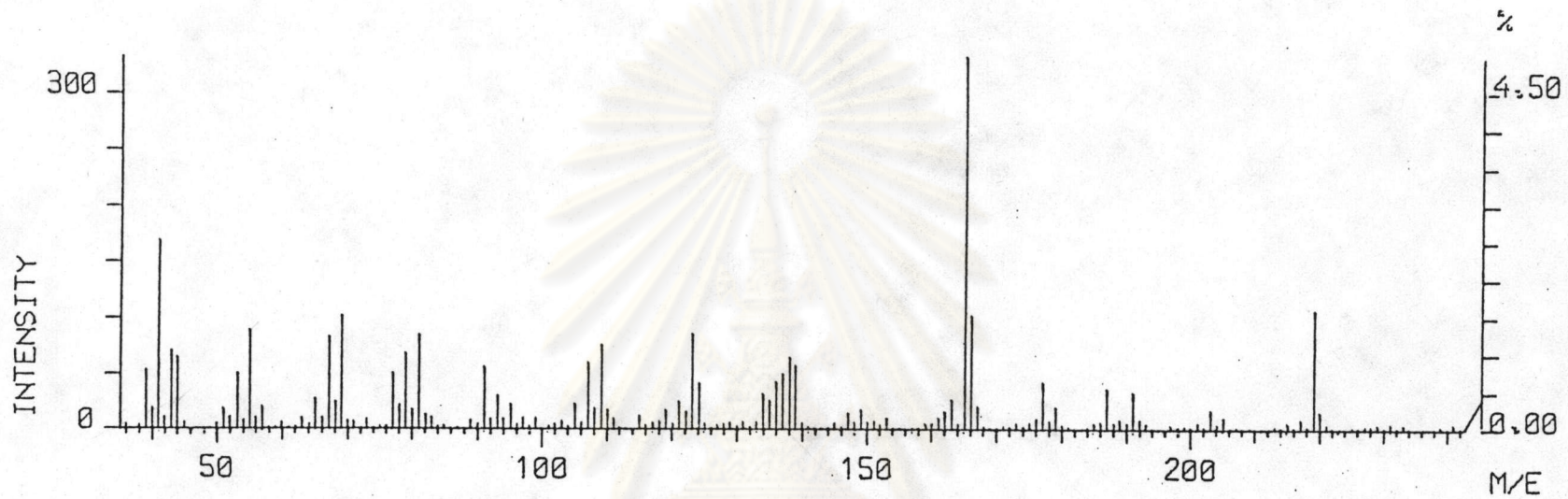


Figure 3.23 Mass spectrum of SE-1



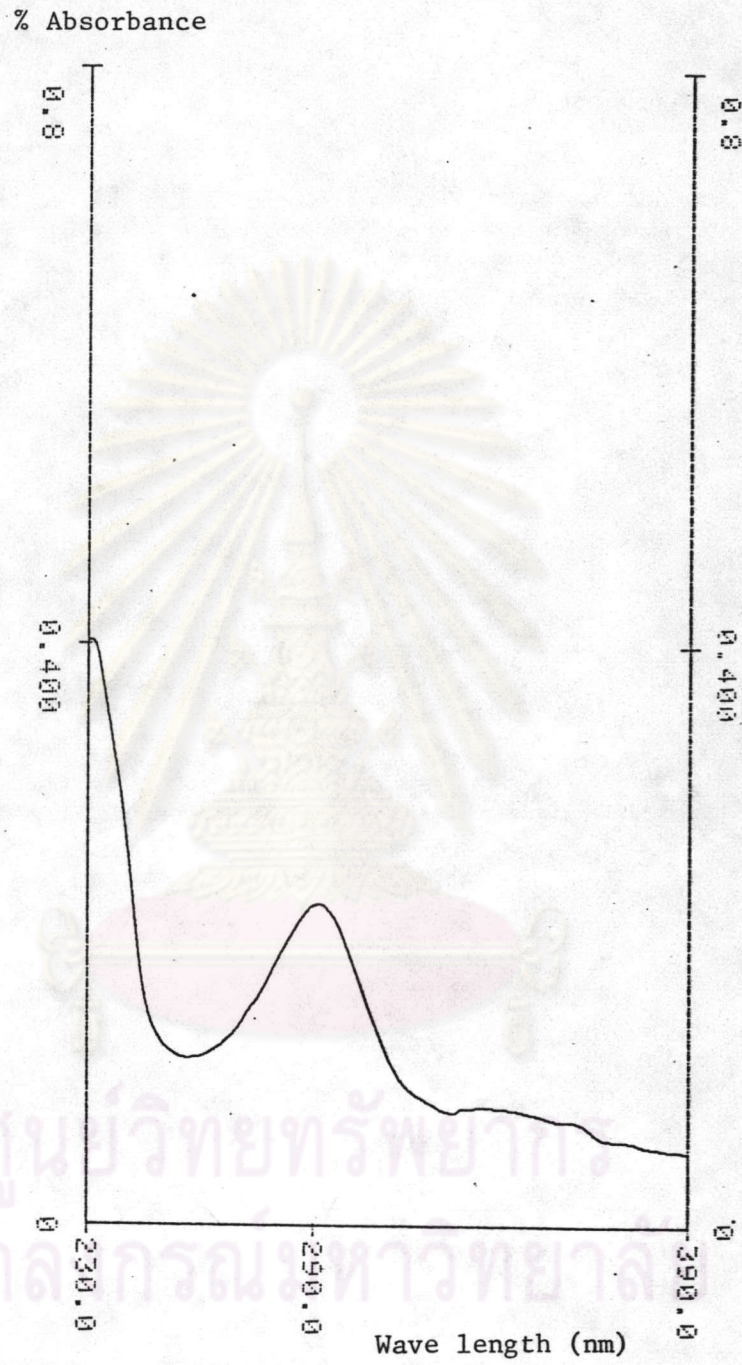


Figure 3.24 Ultraviolet absorption spectrum of SE-2 in methanol.



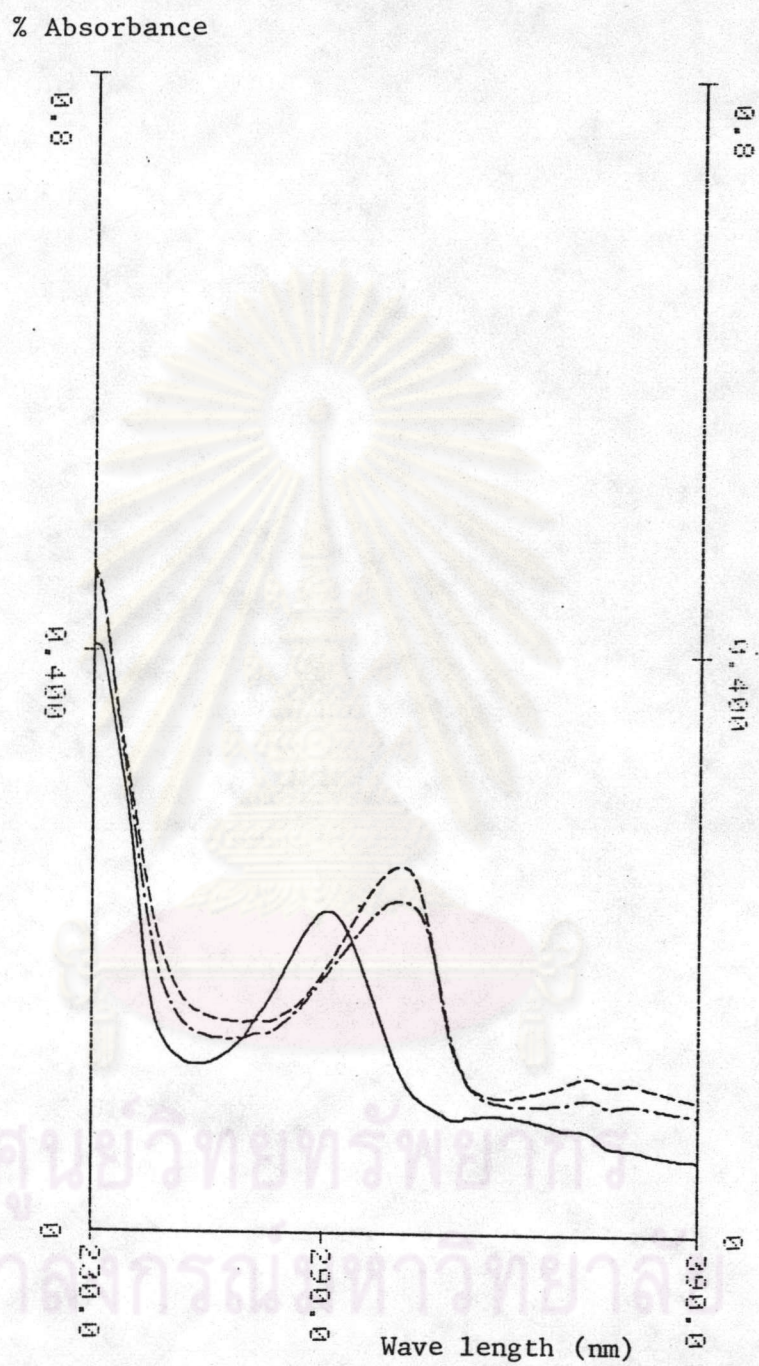


Figure 3.25 Ultraviolet absorption spectra of SE-2.

- MeOH
- + AlCl<sub>3</sub>
- - - + AlCl<sub>3</sub> + HCl



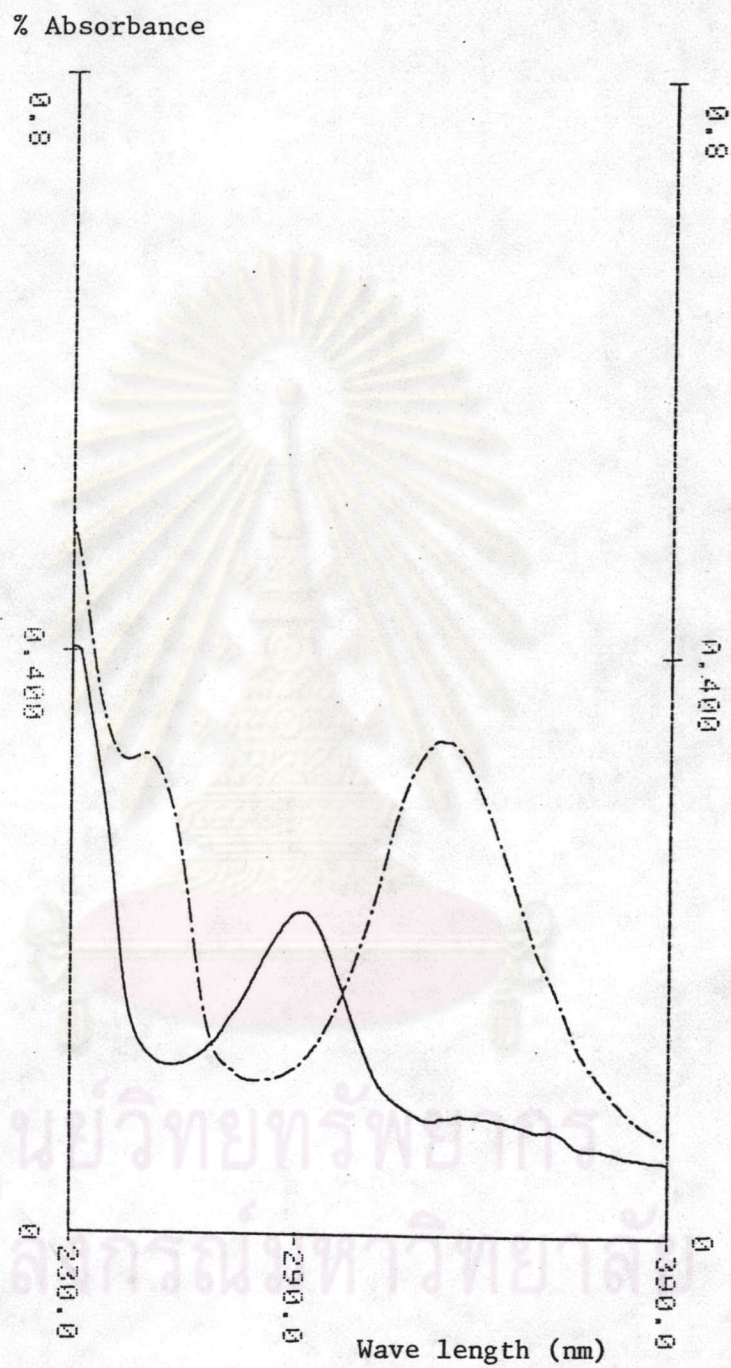


Figure 3.26 Ultraviolet absorption spectra of SE-2.

— MeOH  
- - - + NaOH



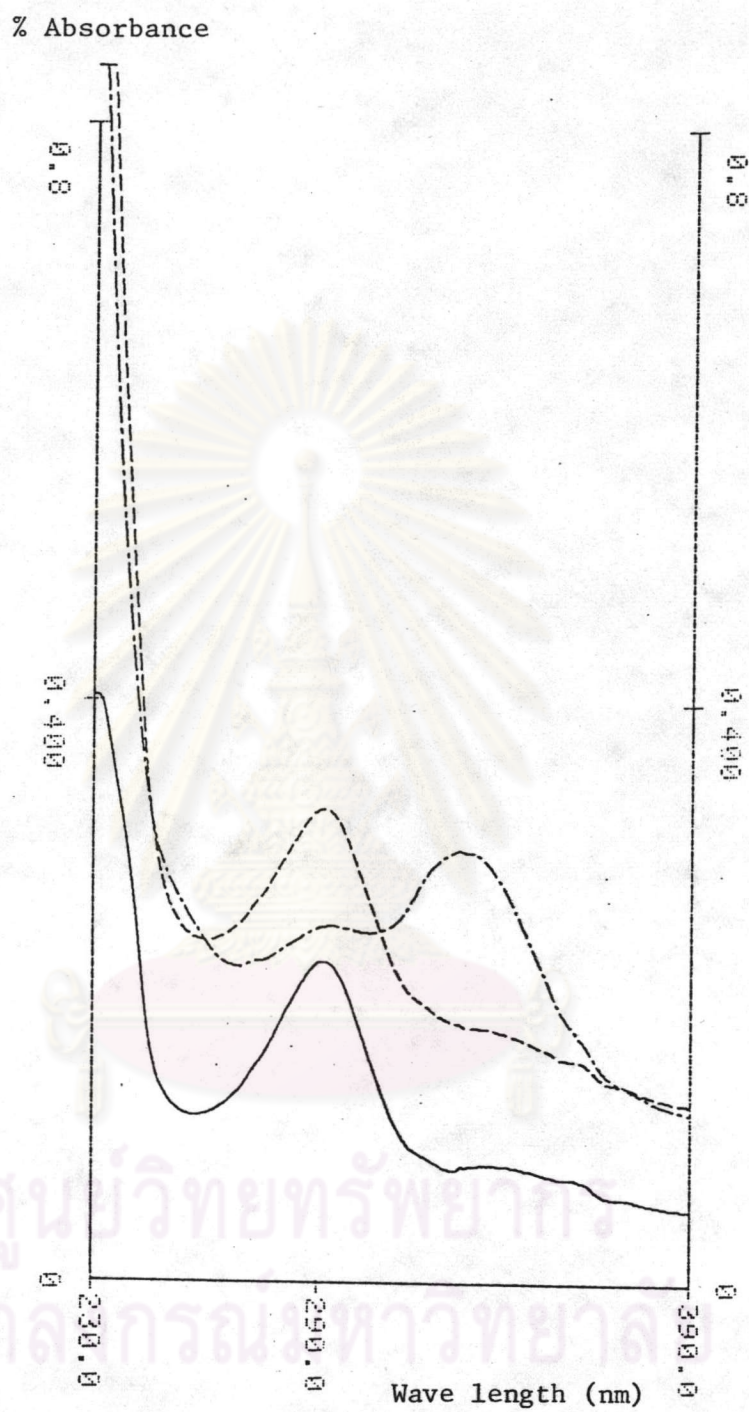


Figure 3.27 Ultraviolet absorption spectra of SE-2.

- MeOH  
 ····· + NaOAc  
 - - - - + NaOAc + H<sub>3</sub>BO<sub>3</sub>



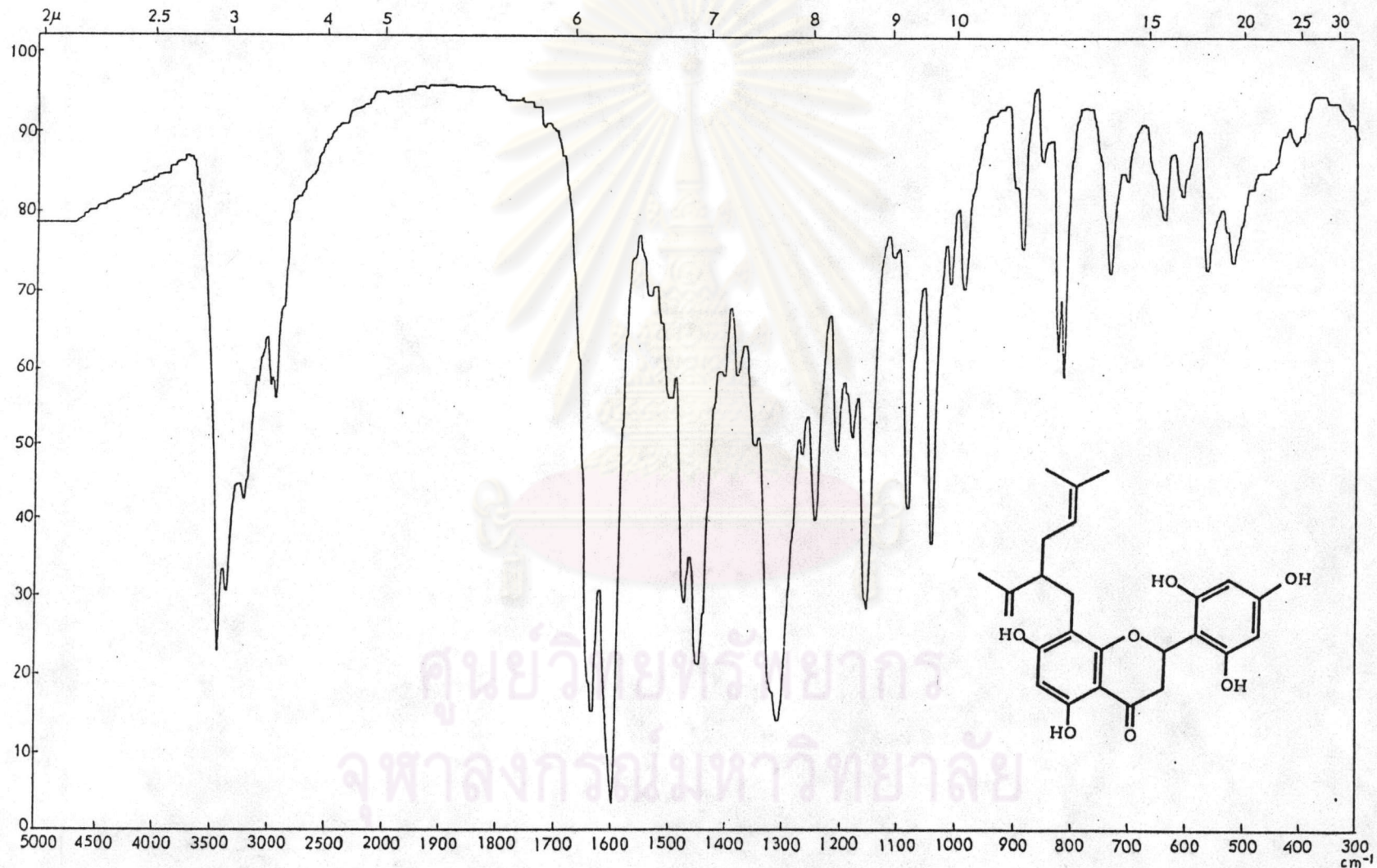


Figure 3.28 Infrared absorption spectrum of SE-2 in potassium bromide disc.



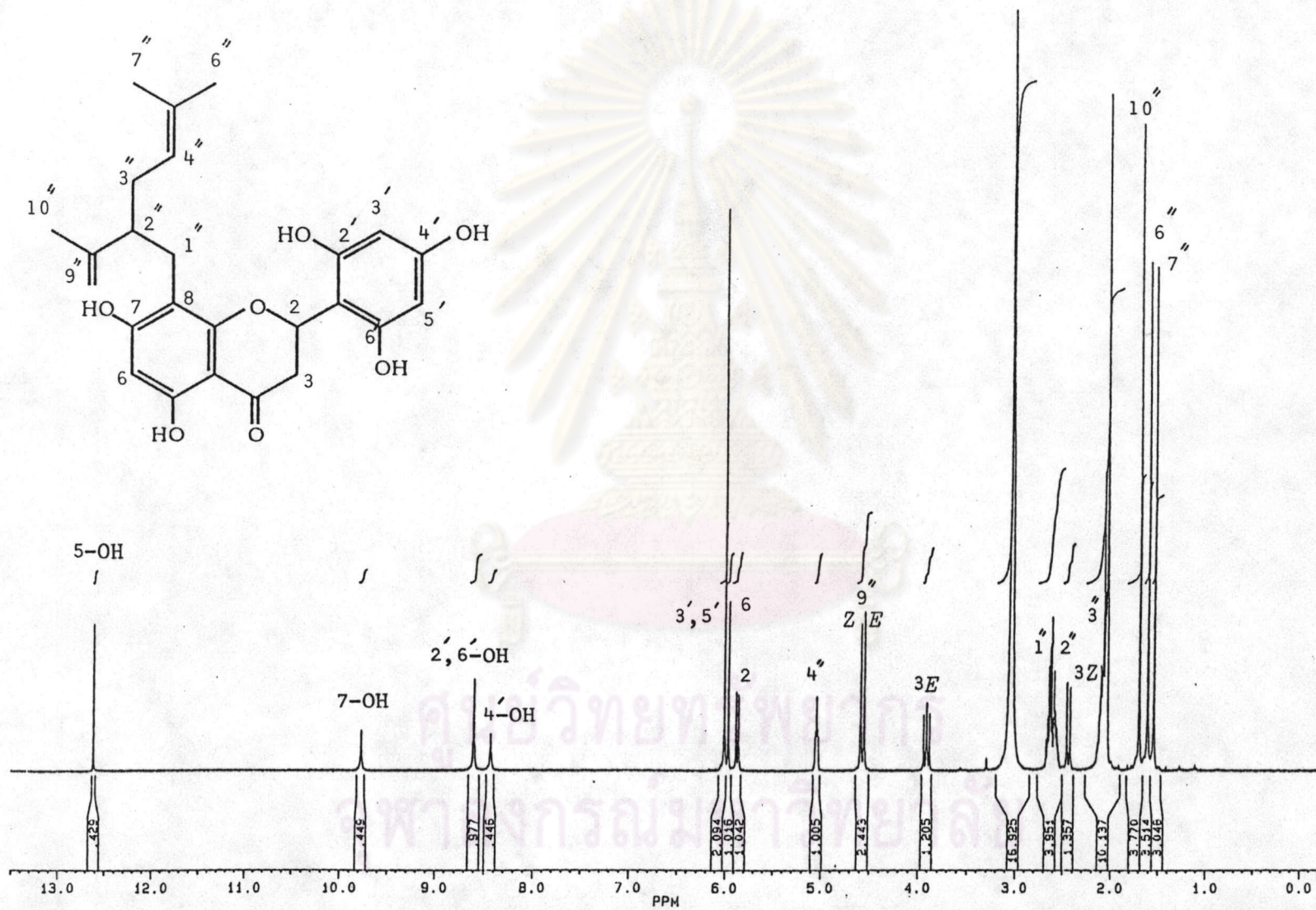


Figure 3.29  $^1\text{H-NMR}$  spectrum of SE-2 in hexadeuterated acetone (500 MHz).



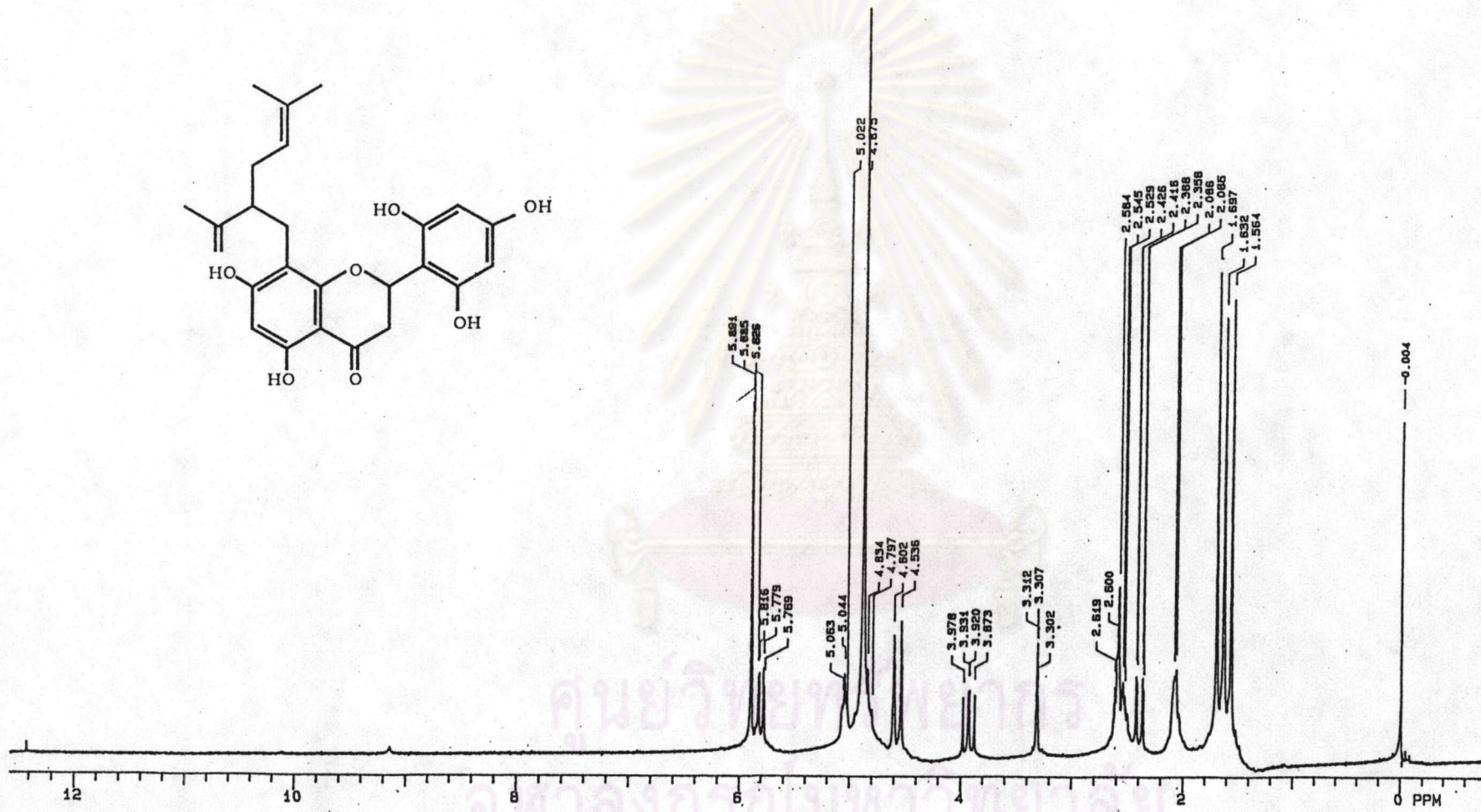
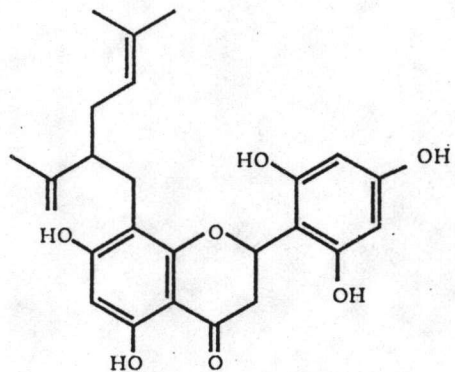


Figure 3.30  $^1\text{H-NMR}$  spectrum of SE-2 in tetradeuterated methanol (300 MHz).



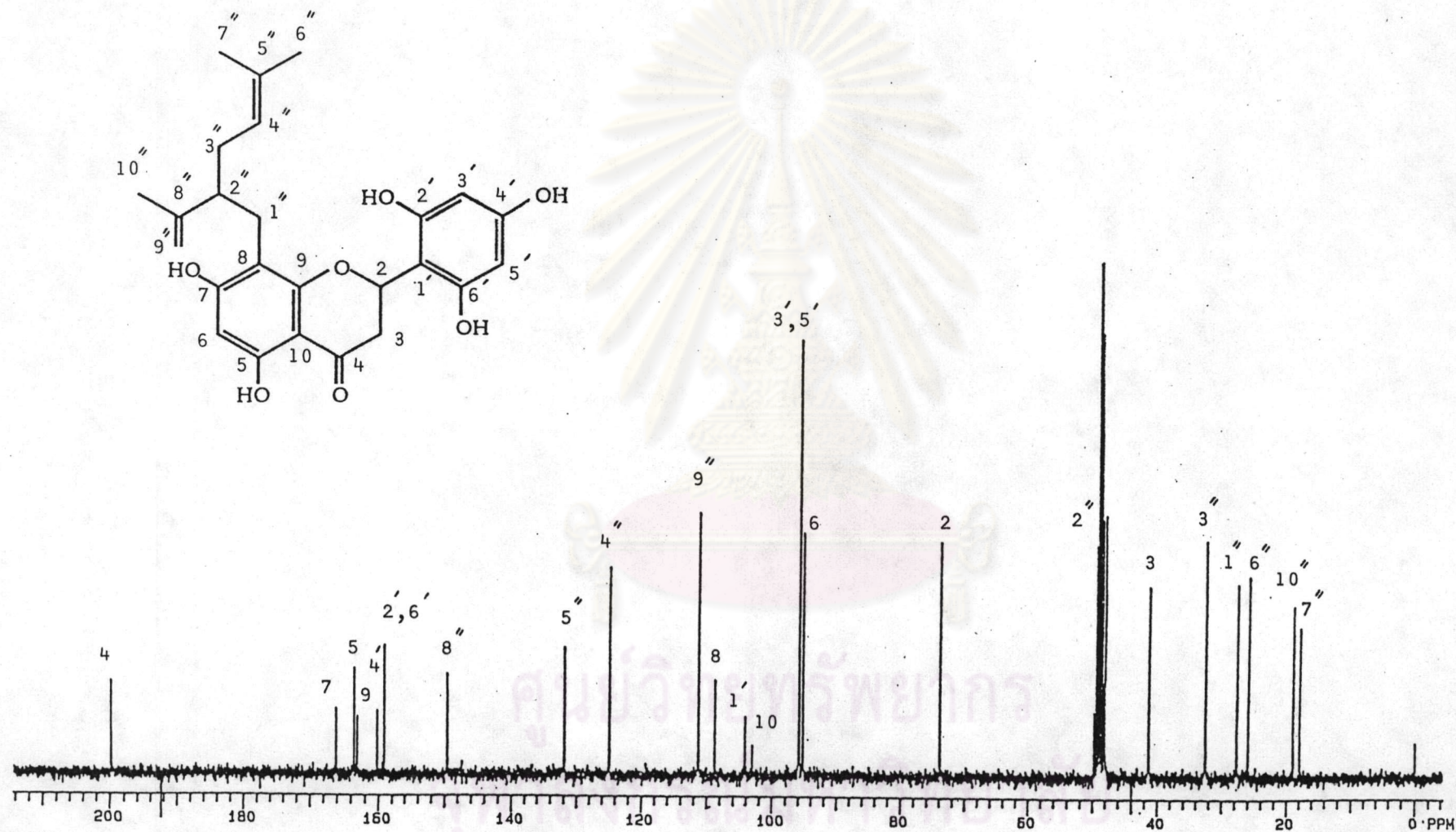


Figure 3.31  $^{13}\text{C}$ -NMR spectrum of SE-2 in tetradeuterated methanol (75 MHz).



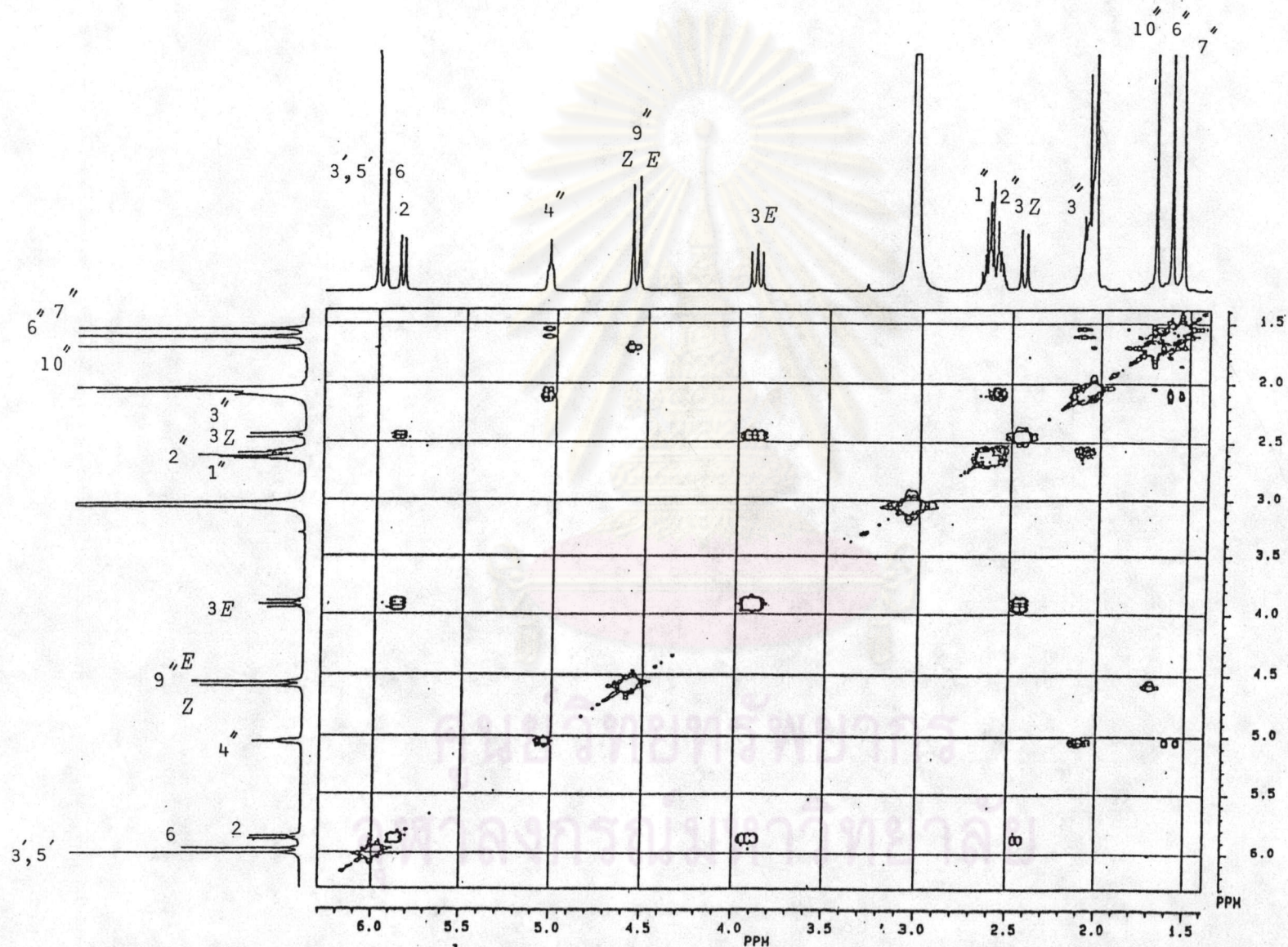


Figure 3.32 Two dimensional  $^1\text{H-NMR}$  spectrum (COSY) of SE-2 in hexadeuterated acetone (500 MHz).



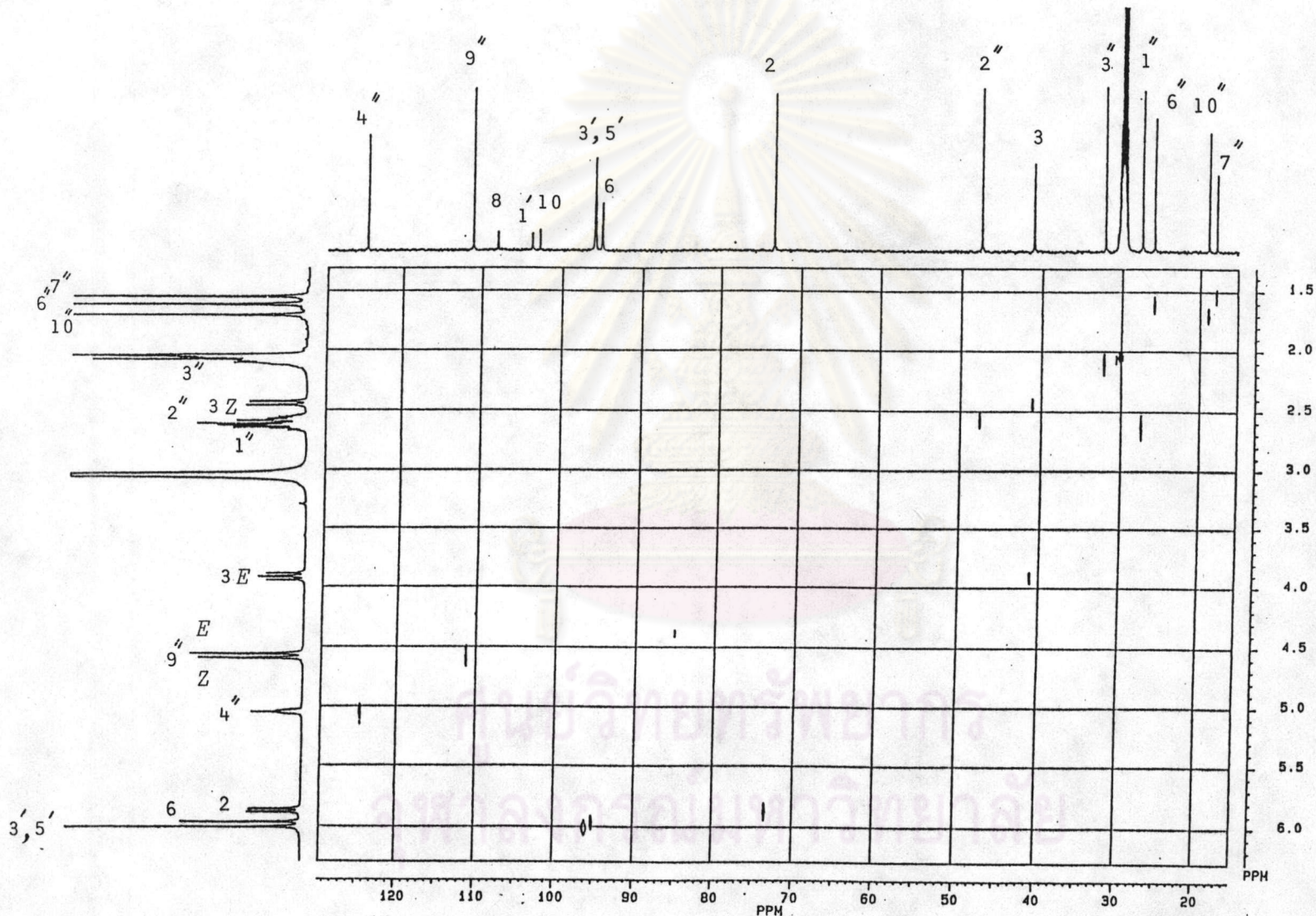


Figure 3.33 Two dimensional  $^{13}\text{C}$ - $^1\text{H}$  HETCOR spectrum of SE-2 in hexadeuterated acetone (125 MHz).



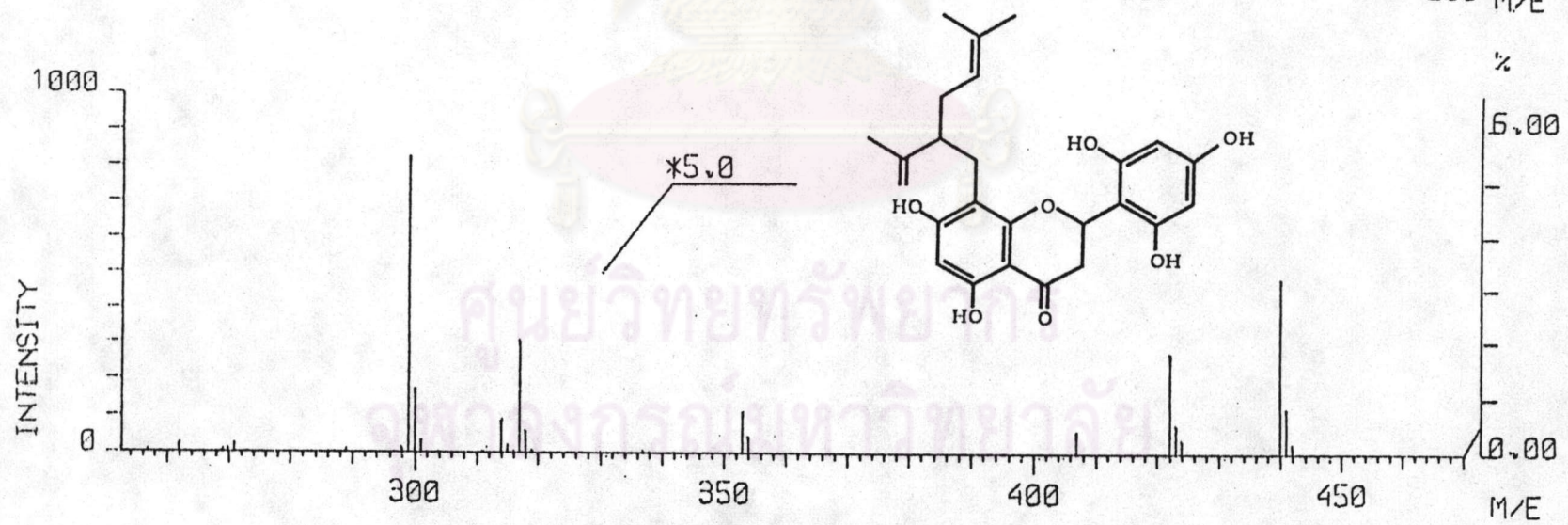
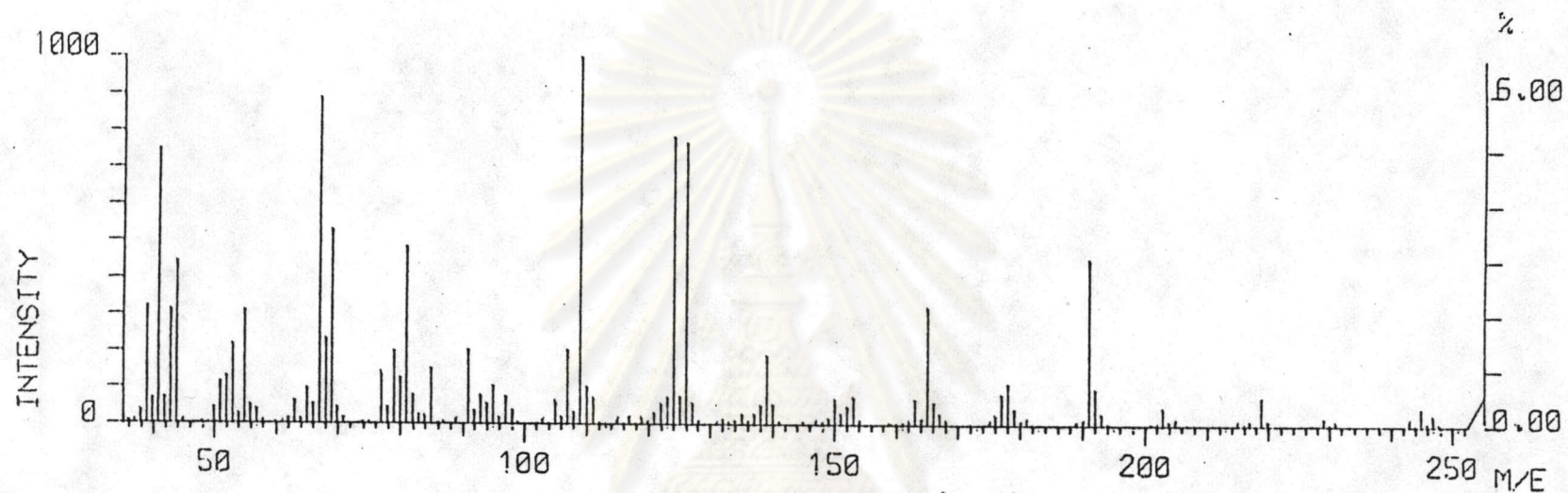


Figure 3.34 Mass spectrum of SE-2.





VITA

Miss Yupynn Chintapakorn was born on October 17, 1960 in Bangkok, Thailand. She received her Bachelor of Science in Pharmacy in 1984 from the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand.

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย