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ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



APPENDIX

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

a) silica gel G/diethyl ether : petroleum ether  
(5:95)



Figure 8 Thin-layer chromatogram of isolated compounds from *Typha elephantina* Roxb. fruits.



b) silica gel G/diethyl ether : petroleum ether  
(2:3)



Figure 9

Thin layer chromatogram of isolated compounds from  
*Typha elephantina* Roxb. fruits.



c) silica gel G/chloroform

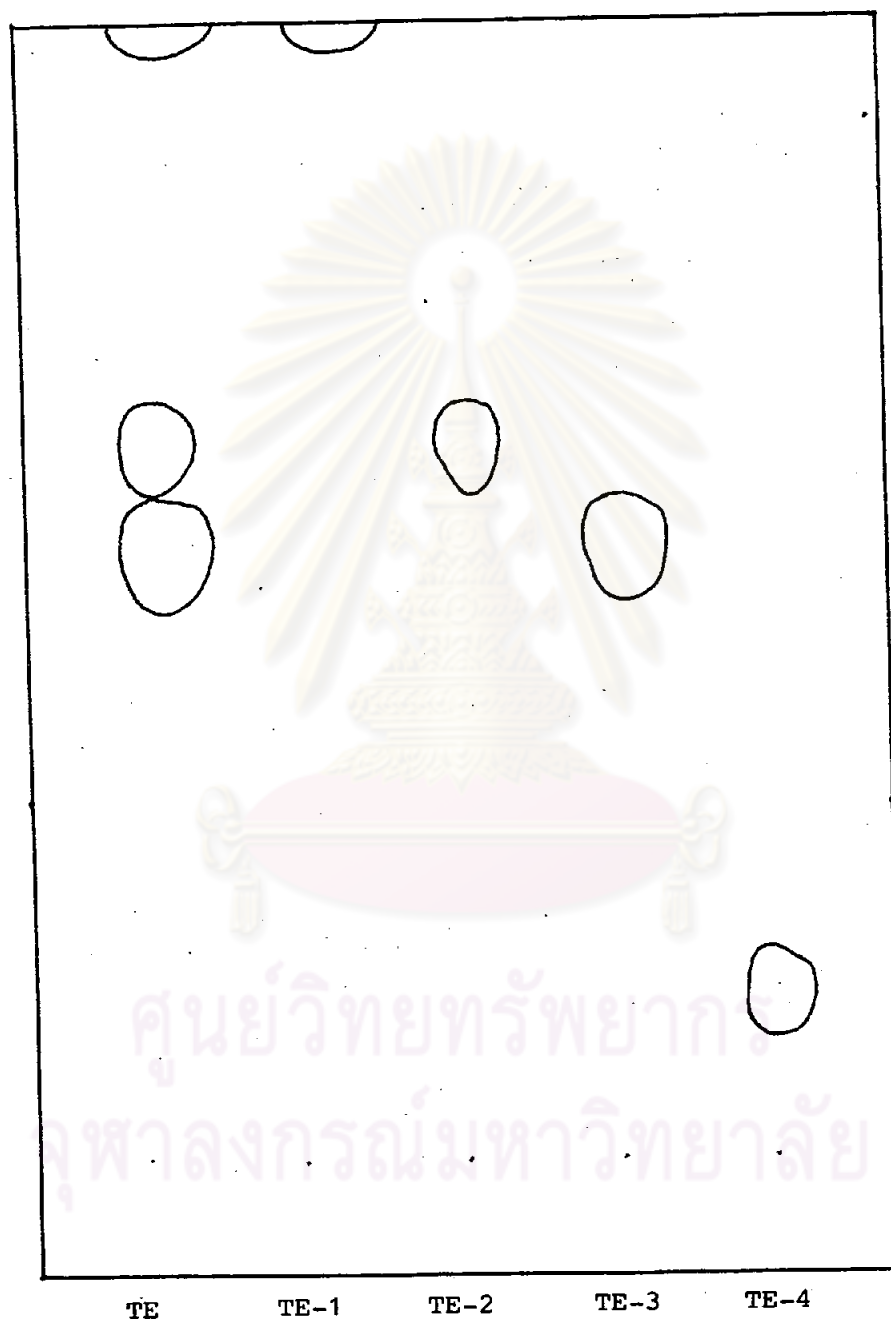


Figure 10

Thin-layer chromatogram of isolated compounds from  
*Typha elephantina* Roxb. fruits.

d) silica gel G/chloroform : methanol (95:5)

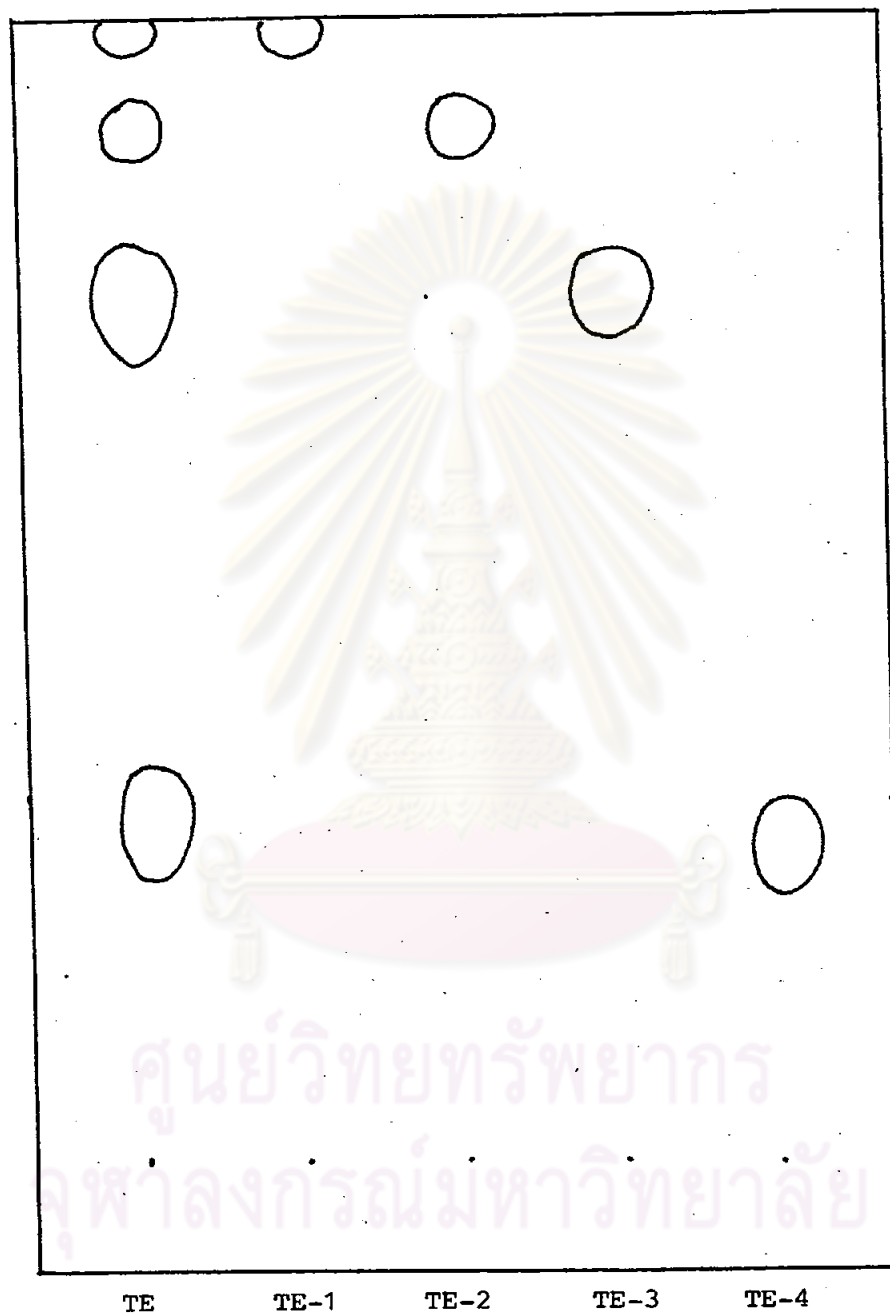


Figure 11 Thin-layer chromatogram of isolated compounds from *Typha elephantina* Roxb. fruits.

a) silica gel G/chloroform

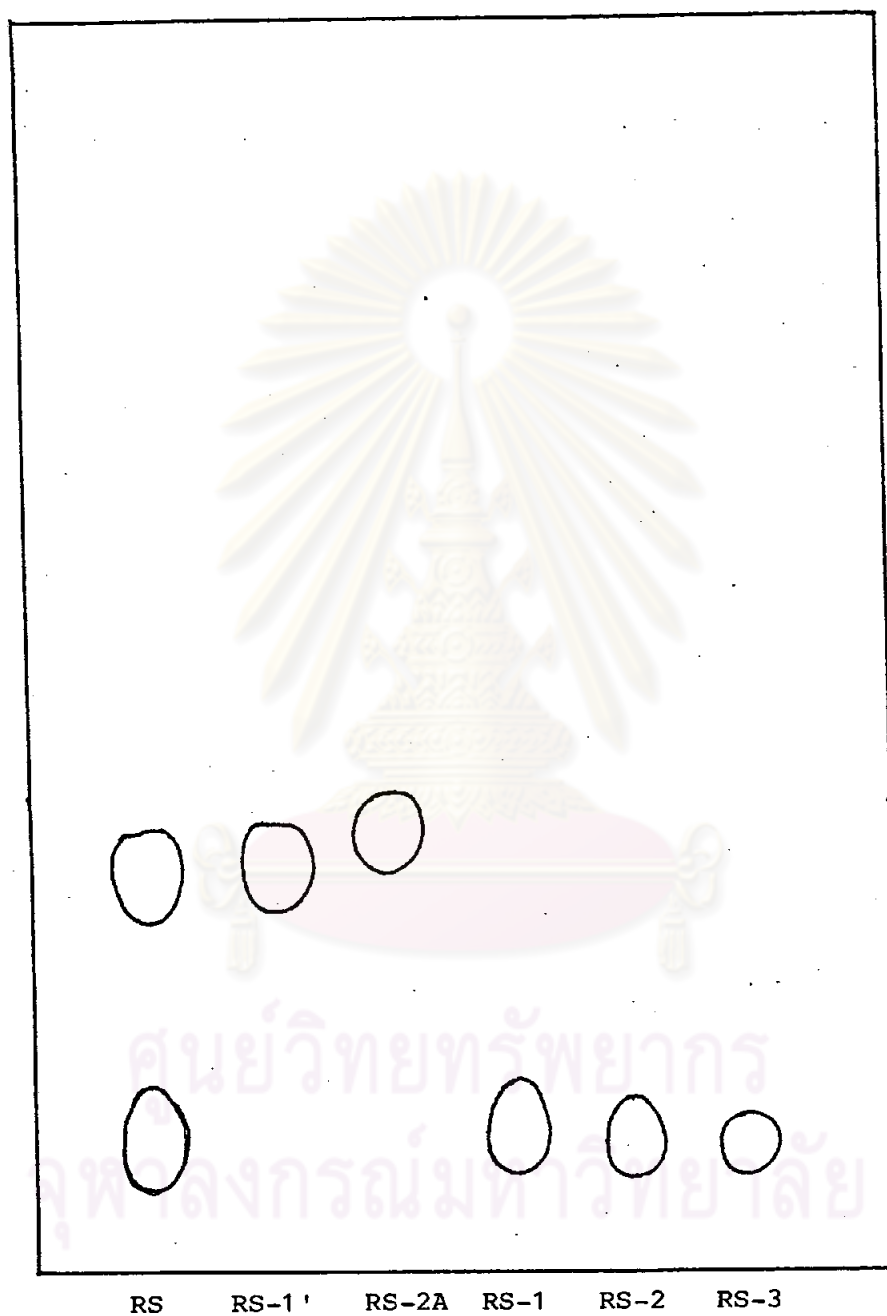


Figure 12

Thin-layer chromatogram of isolated compounds from  
*Randia siamensis* Craib. fruits.

b) silica gel G/chloroform : methanol (95:5)

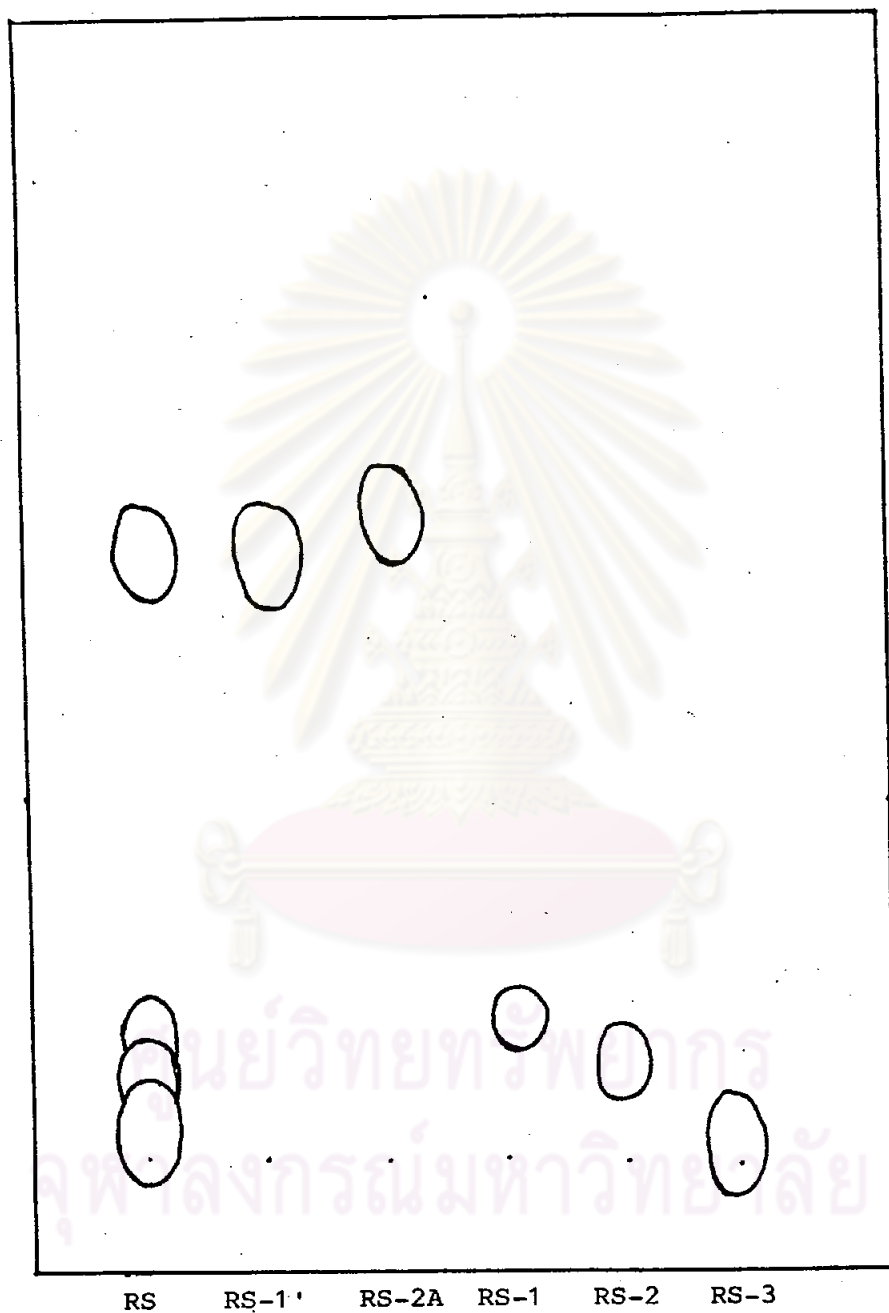


Figure 13

Thin-layer chromatogram of isolated compounds from  
*Randia siamensis* Craib. fruits.

c) silica gel G/chloroform : methanol : water

(65:35:10)



Figure 14

Thin-layer chromatogram of isolated compounds from  
*Randia siamensis* Craib. fruits.

I. silica gel G/methyl ethyl ketone : glacial acetic acid  
: 2-methyl propan-2-ol (60:20:20)

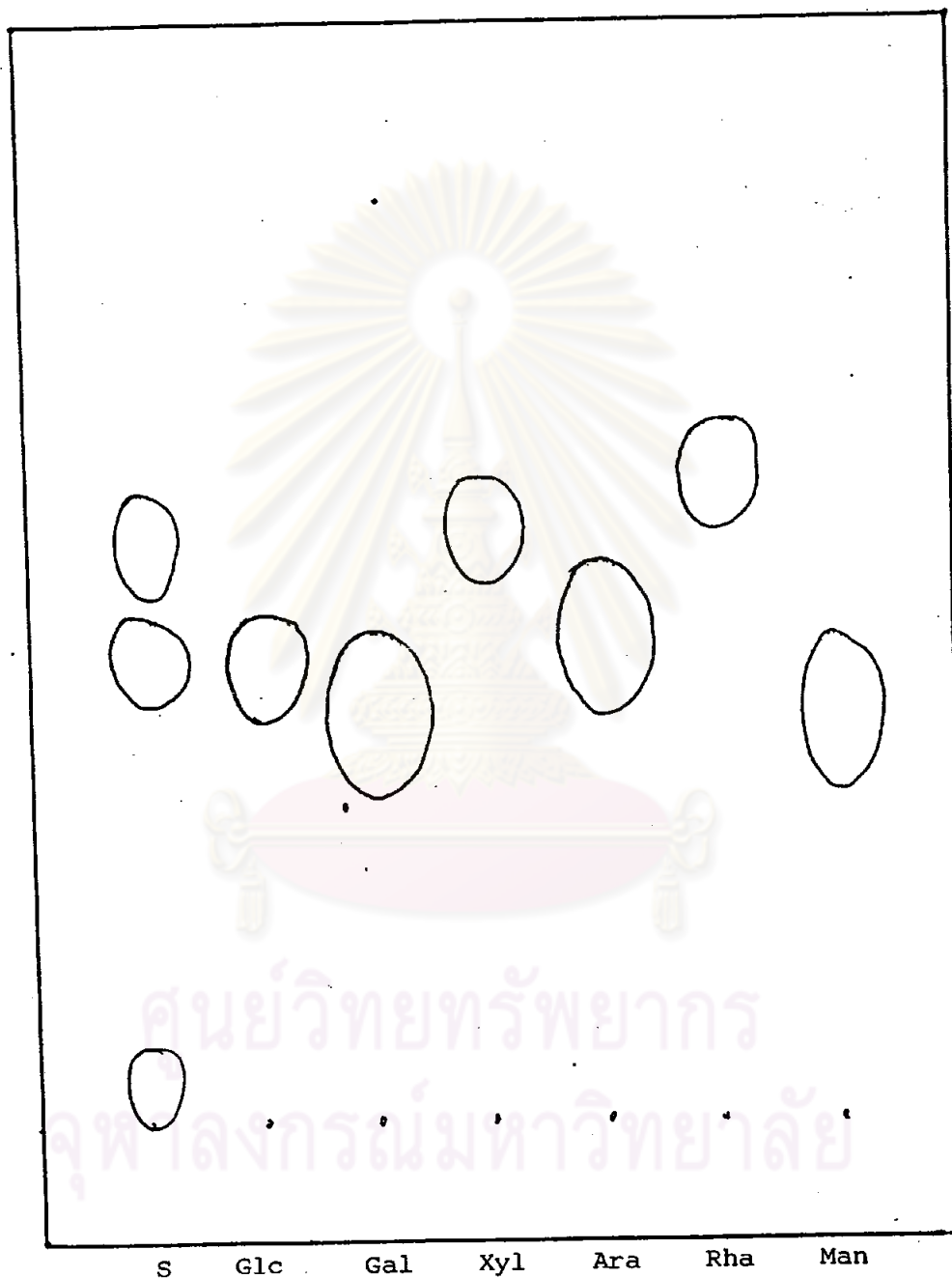


Figure 15 Thin layer chromatogram of sugar moieties of  
RS-2 from *Randia siamensis* Craib fruits.



II. silica gel G/n-butanol : glacial acetic acid :  
diethyl ether : water (9:6:3:1)



Figure 16

Thin layer chromatogram of sugar moieties of  
RS-2 from *Randia siamensis* Craib fruits.

III. silica gel G/n-butanol : glacial acetic acid : water  
(60:30:10)

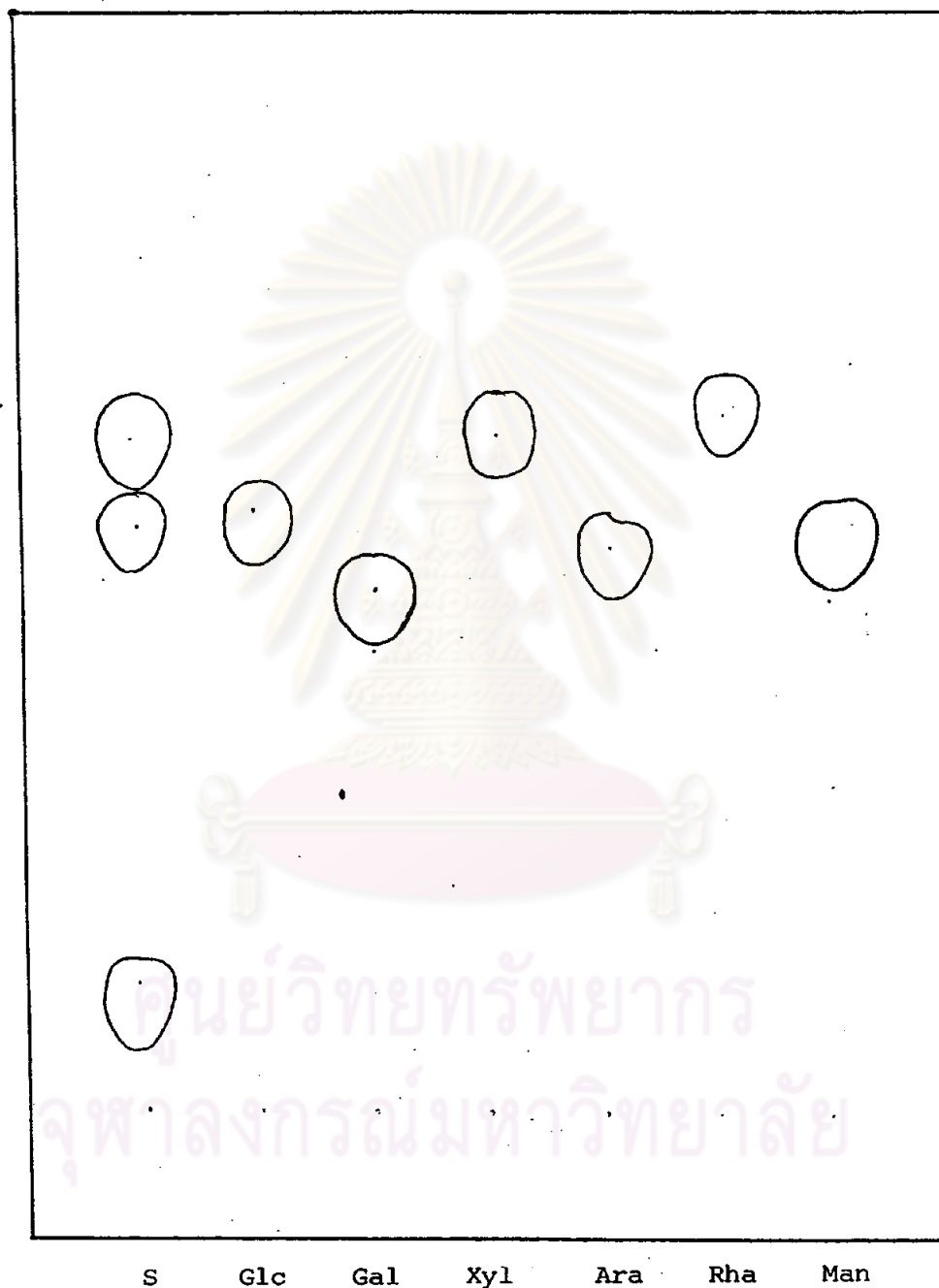


Figure 17

Thin layer chromatogram of sugar moieties of  
RS-2 from *Randia siamensis* Craib fruits.



IV. silica gel G/chloroform : methanol : water  
(60:40:10)



Figure 18 Thin layer chromatogram of sugar moieties of  
RS-2 from *Randia siamensis* Craib fruits.

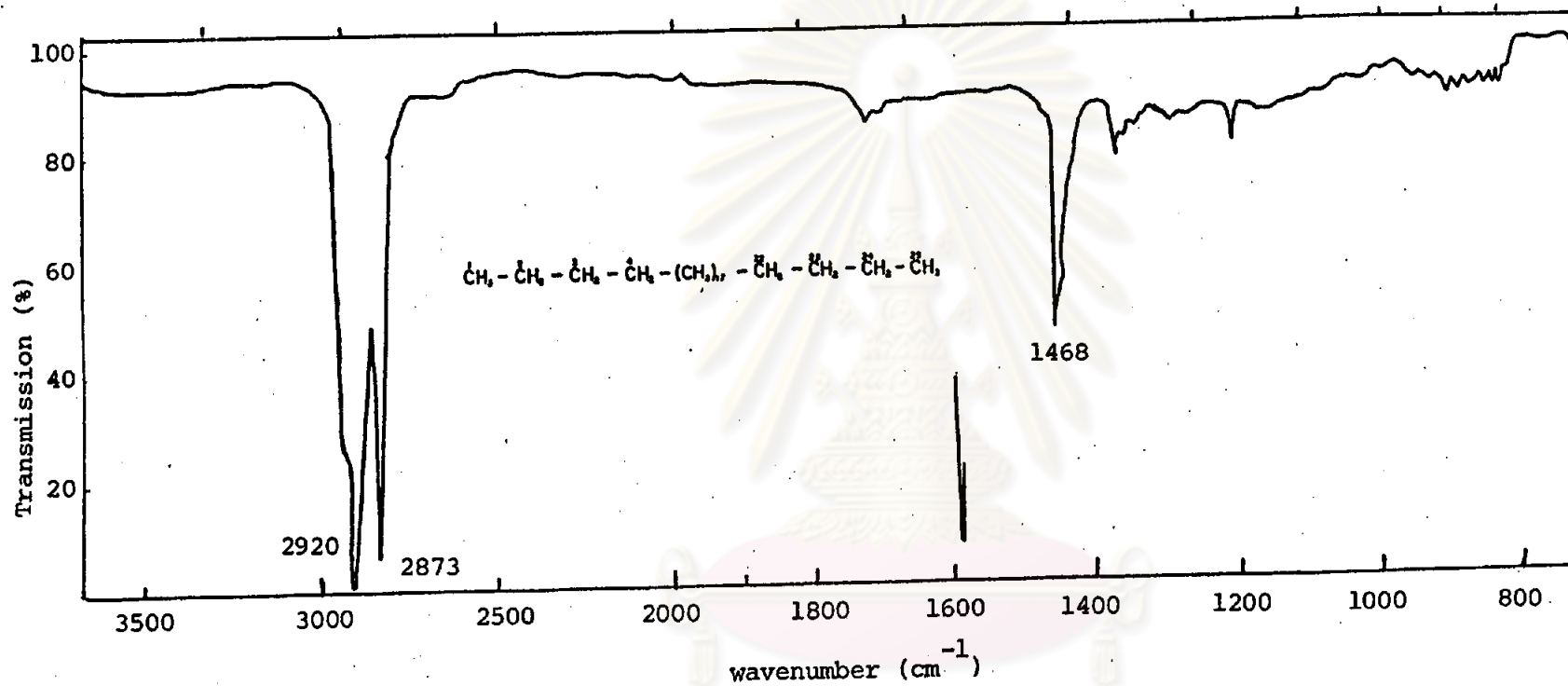


Figure 19

Infrared absorption spectrum of TE-1 from *Typha elephantina* Roxb. fruits in KBr disc.

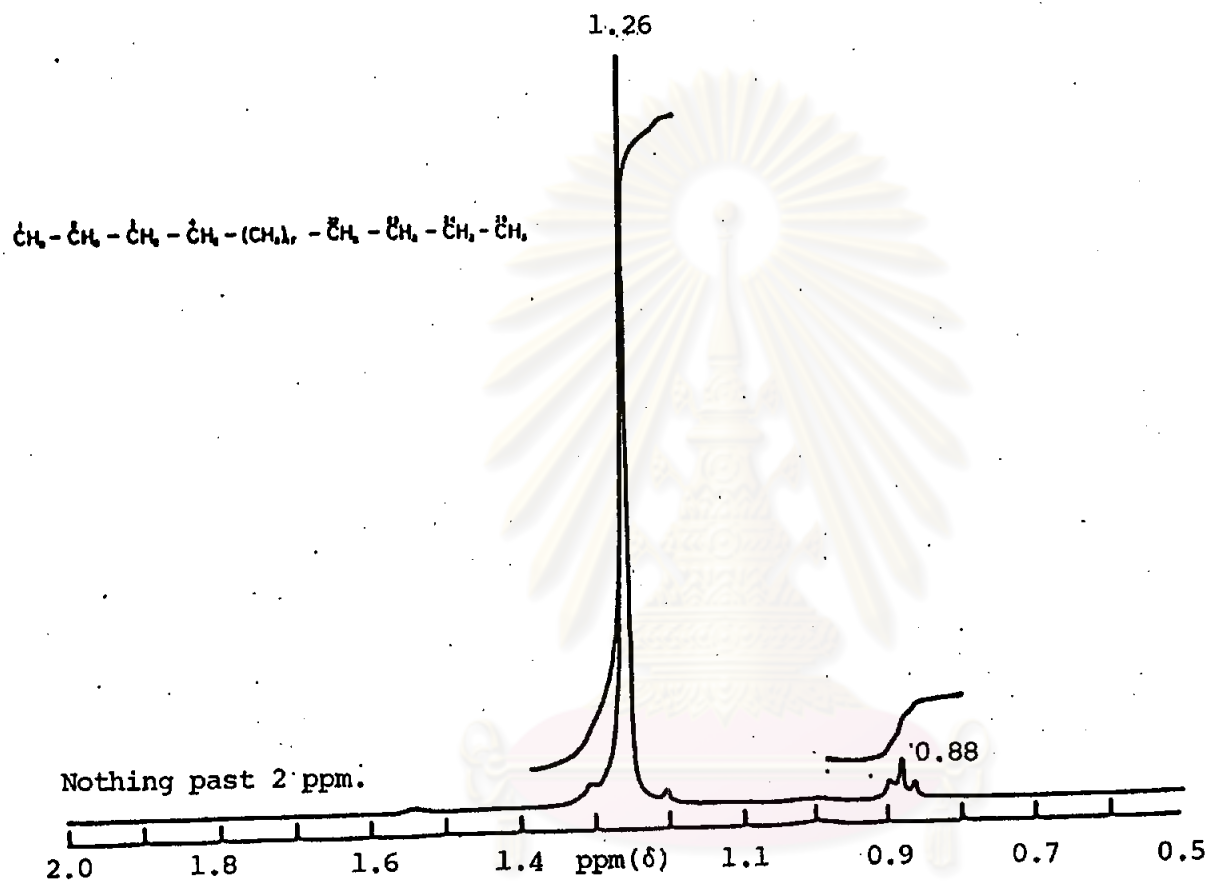


Figure 20  $^1H$ -nuclear magnetic resonance (400 MHz) of TE-1 from  
*Typha elephantina* Roxb. fruits in  $CDCl_3$

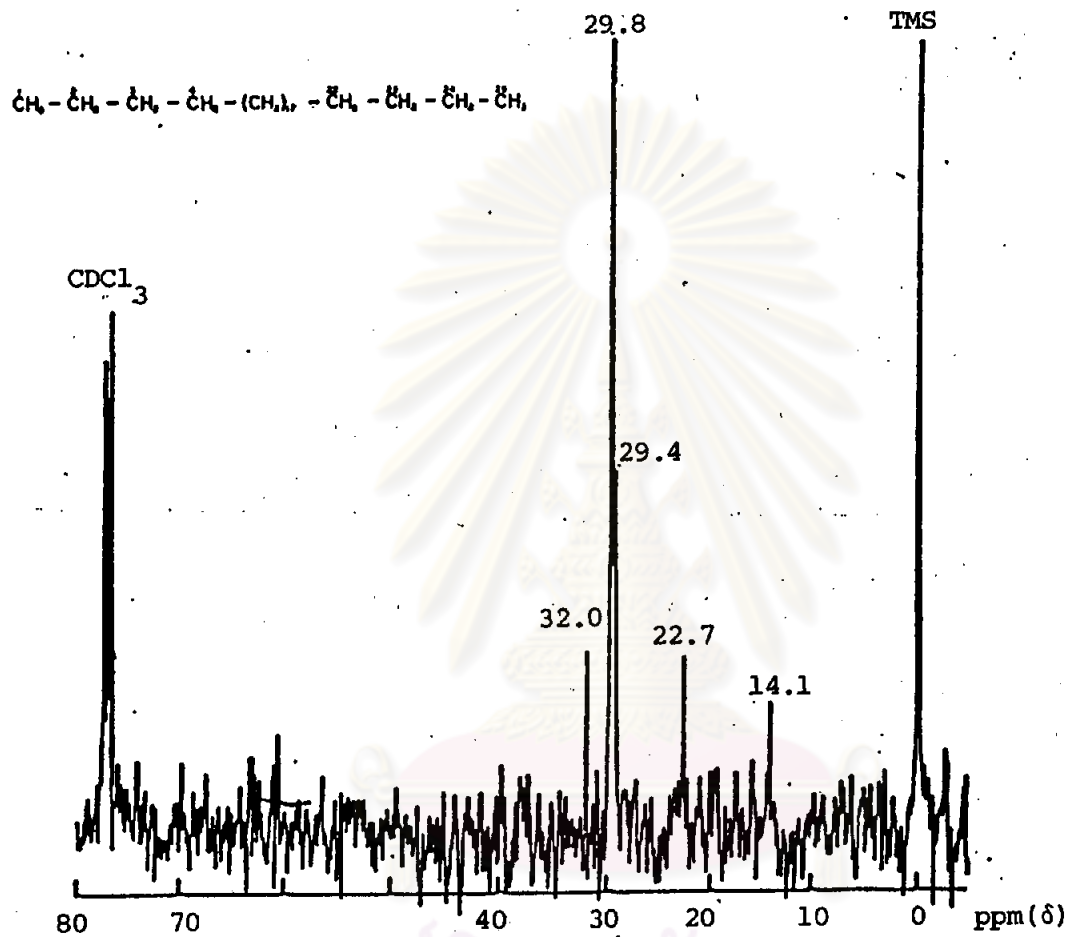


Figure 21  $^{13}\text{C}$ -nuclear magnetic resonance spectrum (100 MHz) of TE-1 from *Typha elephantina* Roxb. fruits in  $\text{CDCl}_3$

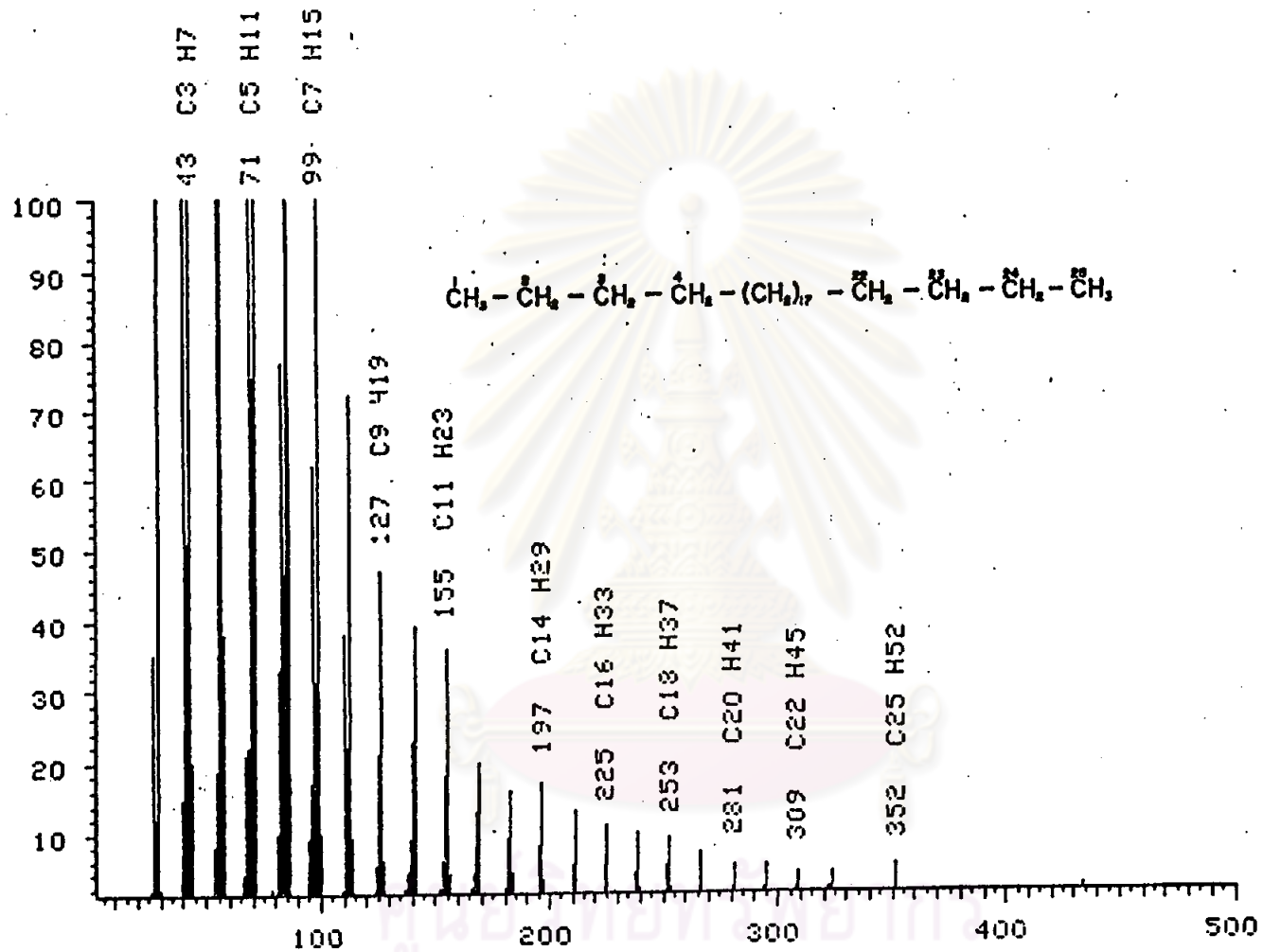


Figure 22A

Electron impact mass spectrum of TE-1 from *Typha elephantina* Roxb. fruits.

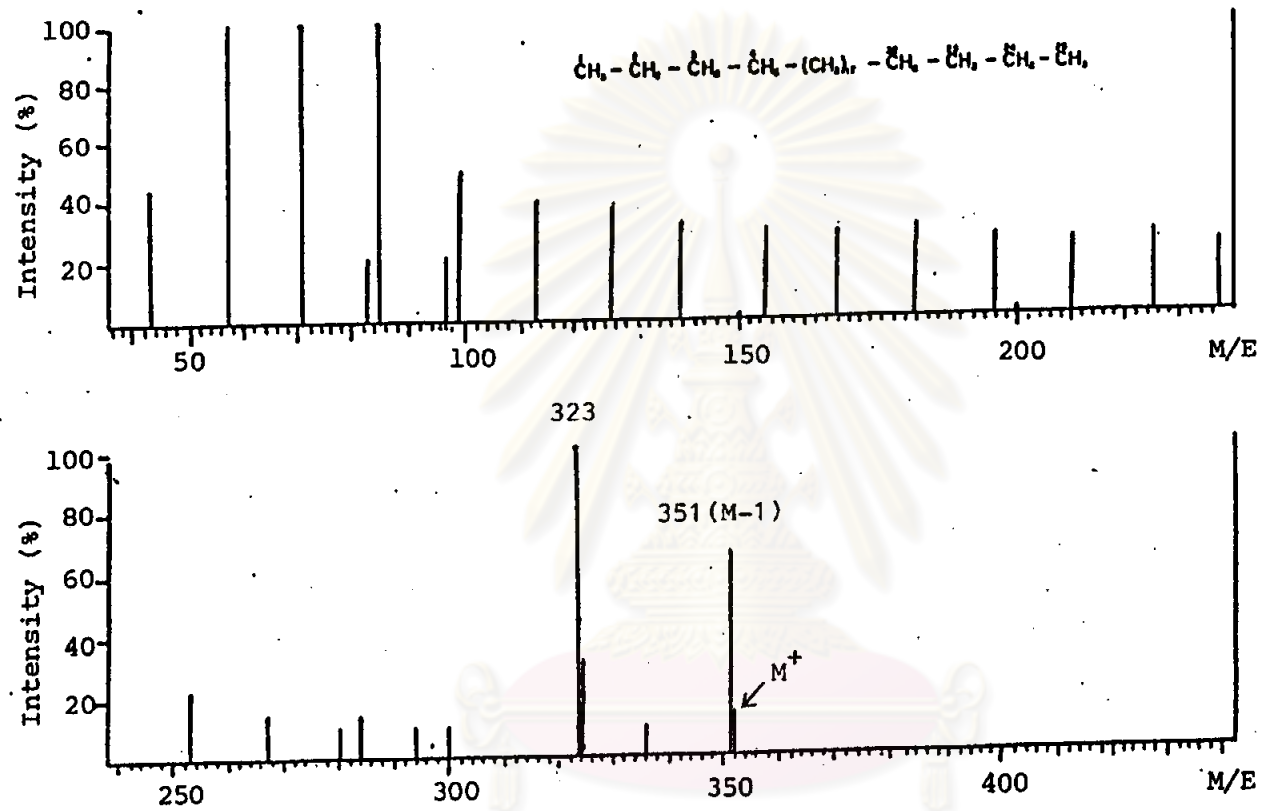


Figure 22B Chemical ionization mass spectrum of TE-1 from  
*Typha elephantina* Roxb. fruits

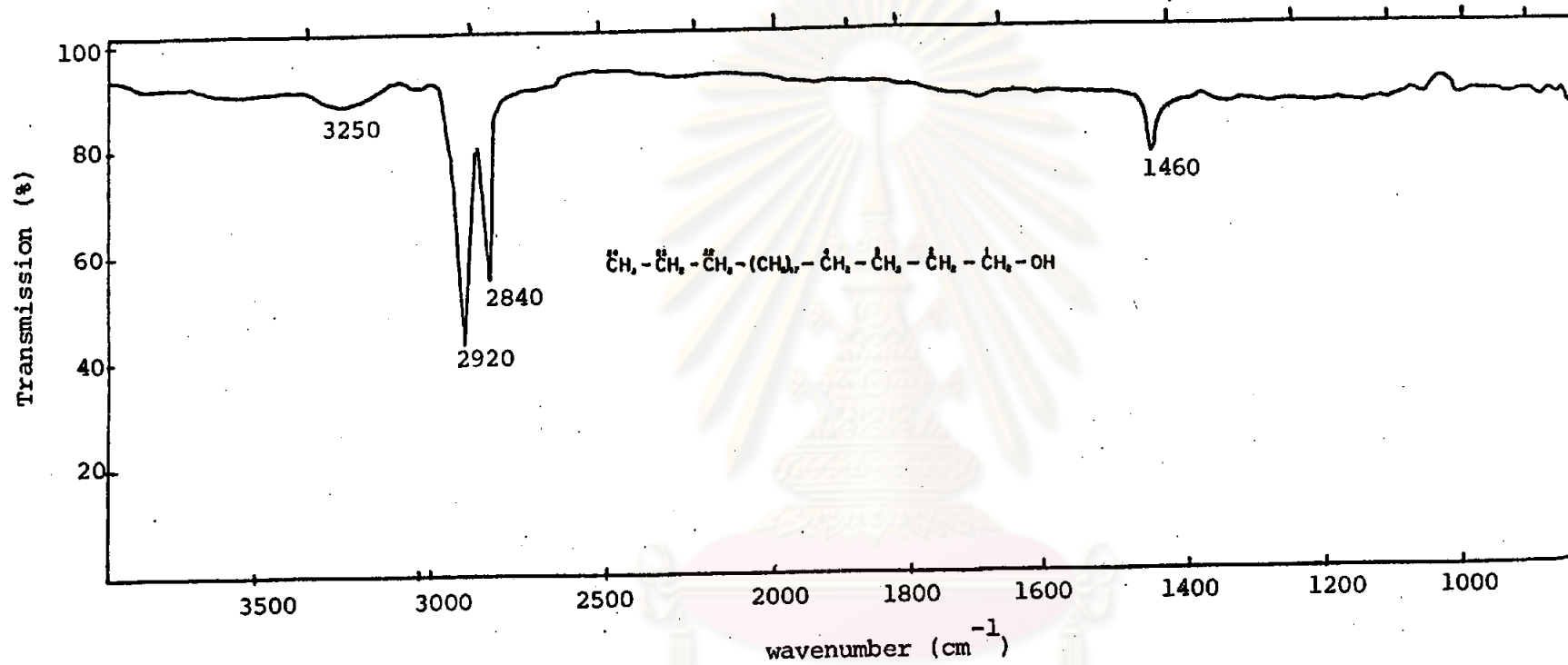


Figure 23 Infrared absorption spectrum of TE-2 from *Typha elephantina* Roxb. fruits in KBr disc.

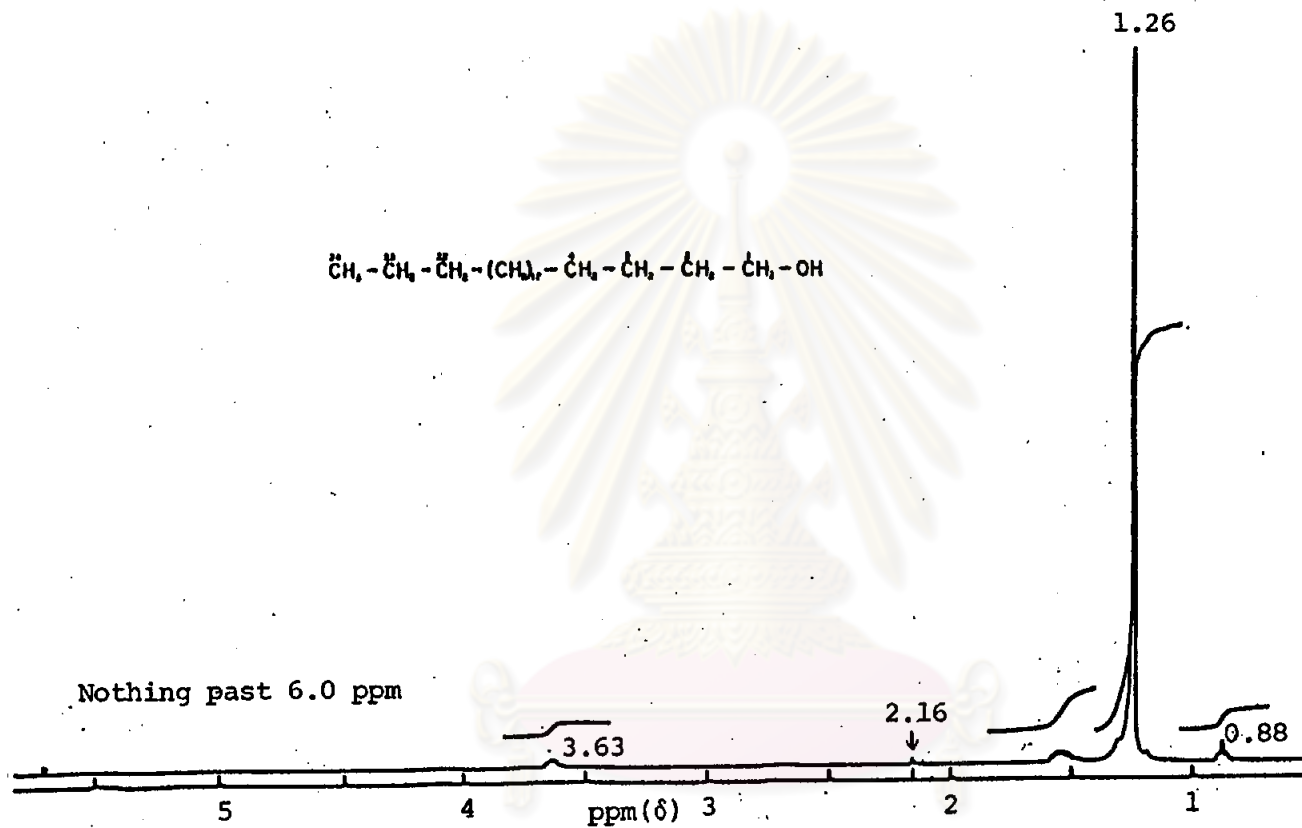


Figure 24  $^1\text{H}$ -nuclear magnetic resonance spectrum (400 MHz) of TE-2 from *Typha elephantina* Roxb. fruits in  $\text{CDCl}_3$



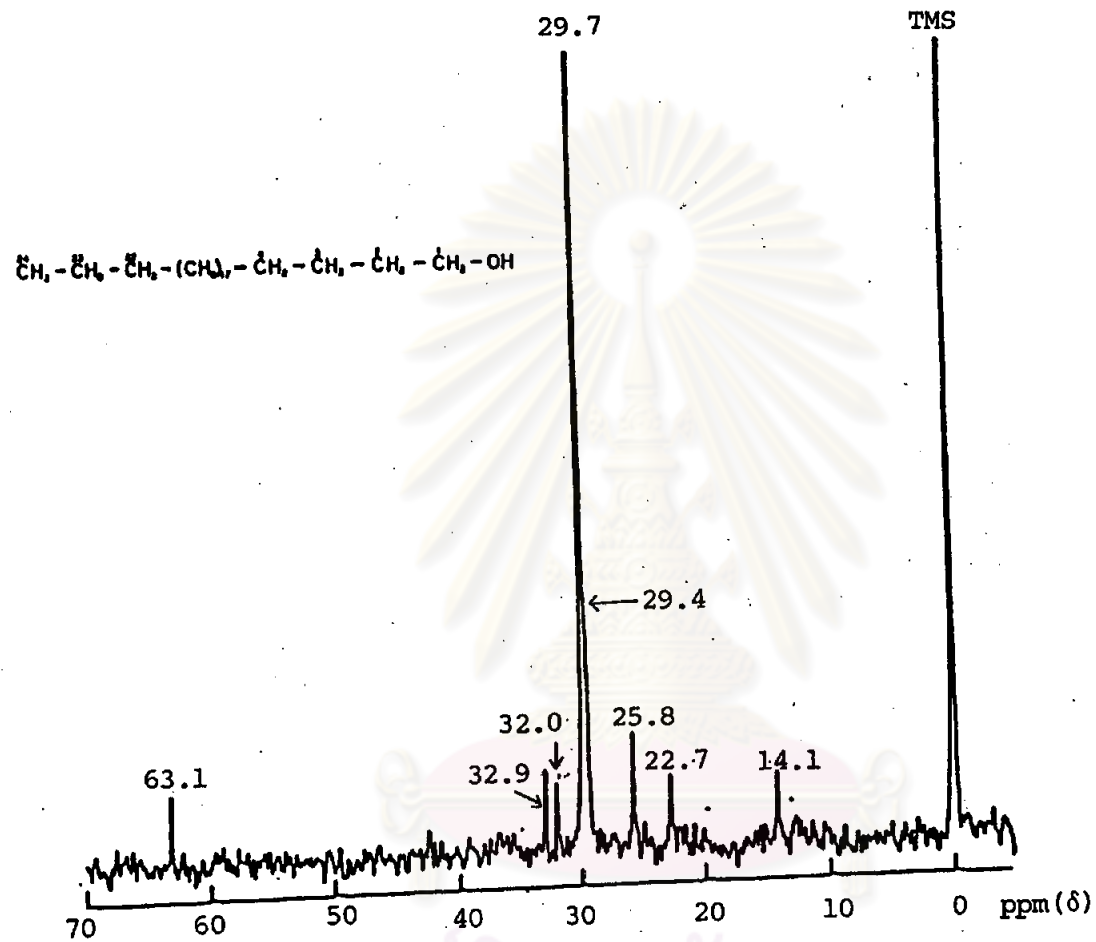


Figure 25  $^{13}\text{C}$ -nuclear magnetic resonance spectrum (400 MHz) of TE-2 from *Typha elephantina* Roxb. fruit in  $\text{CDCl}_3$

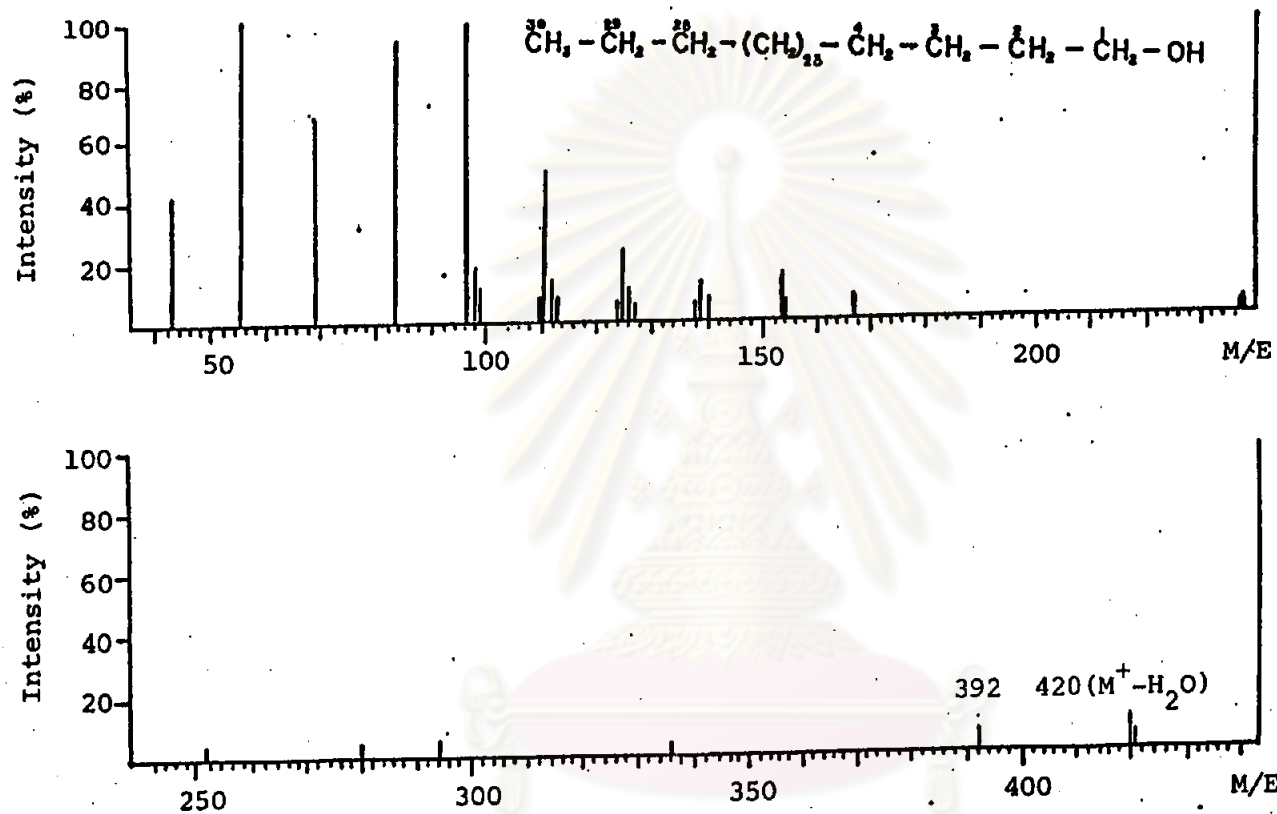


Figure 26A Electron impact mass spectrum of TE-2 from *Typha elephantina* Roxb. fruits.

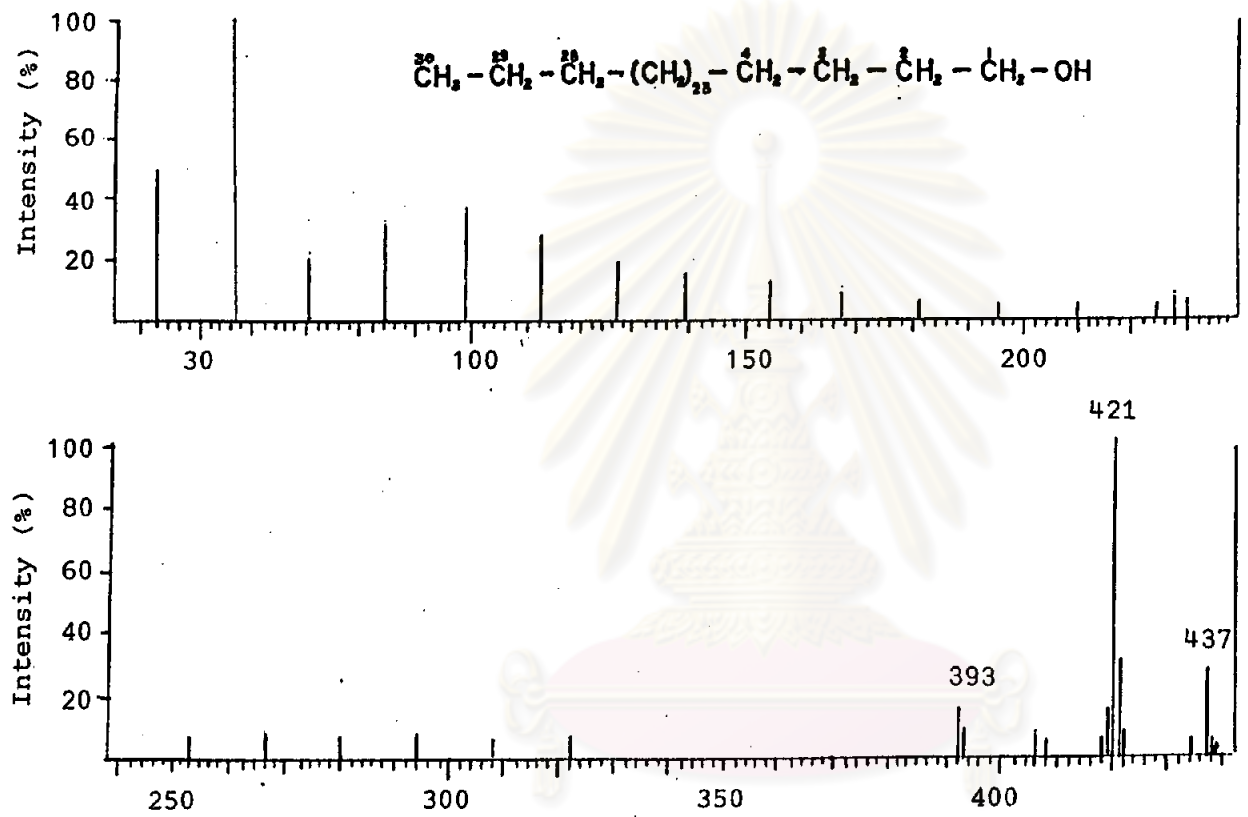


Figure 26B

Chemical ionization mass spectrum of TE-2 from *Typha elephantina* Roxb. fruits.

ศูนย์วิจัยทรัพยากร  
 จุฬาลงกรณ์มหาวิทยาลัย

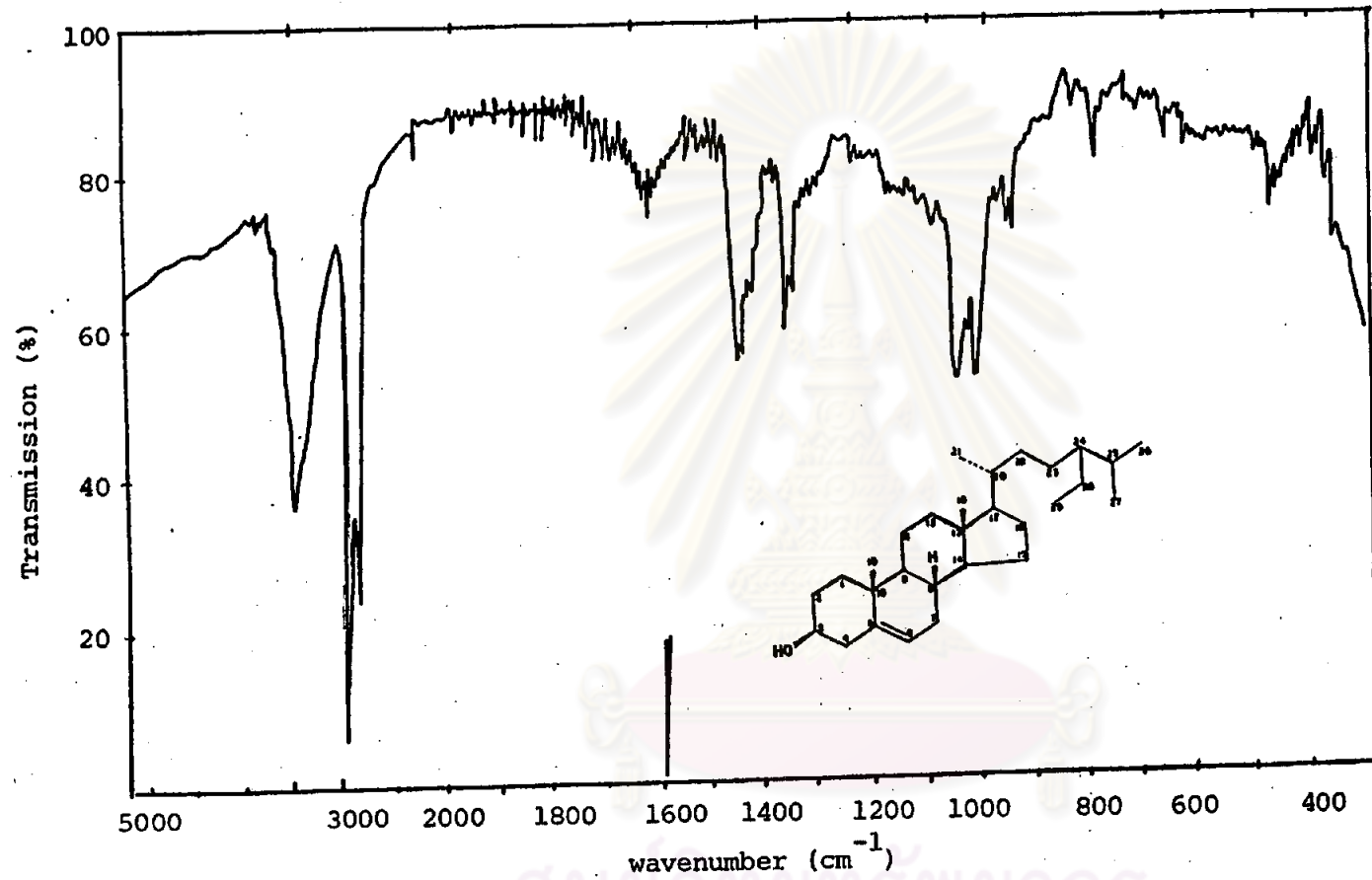


Figure 27 Infrared absorption spectrum of TE-3 from *Typha elephantina* Roxb. fruits in KBr disc.

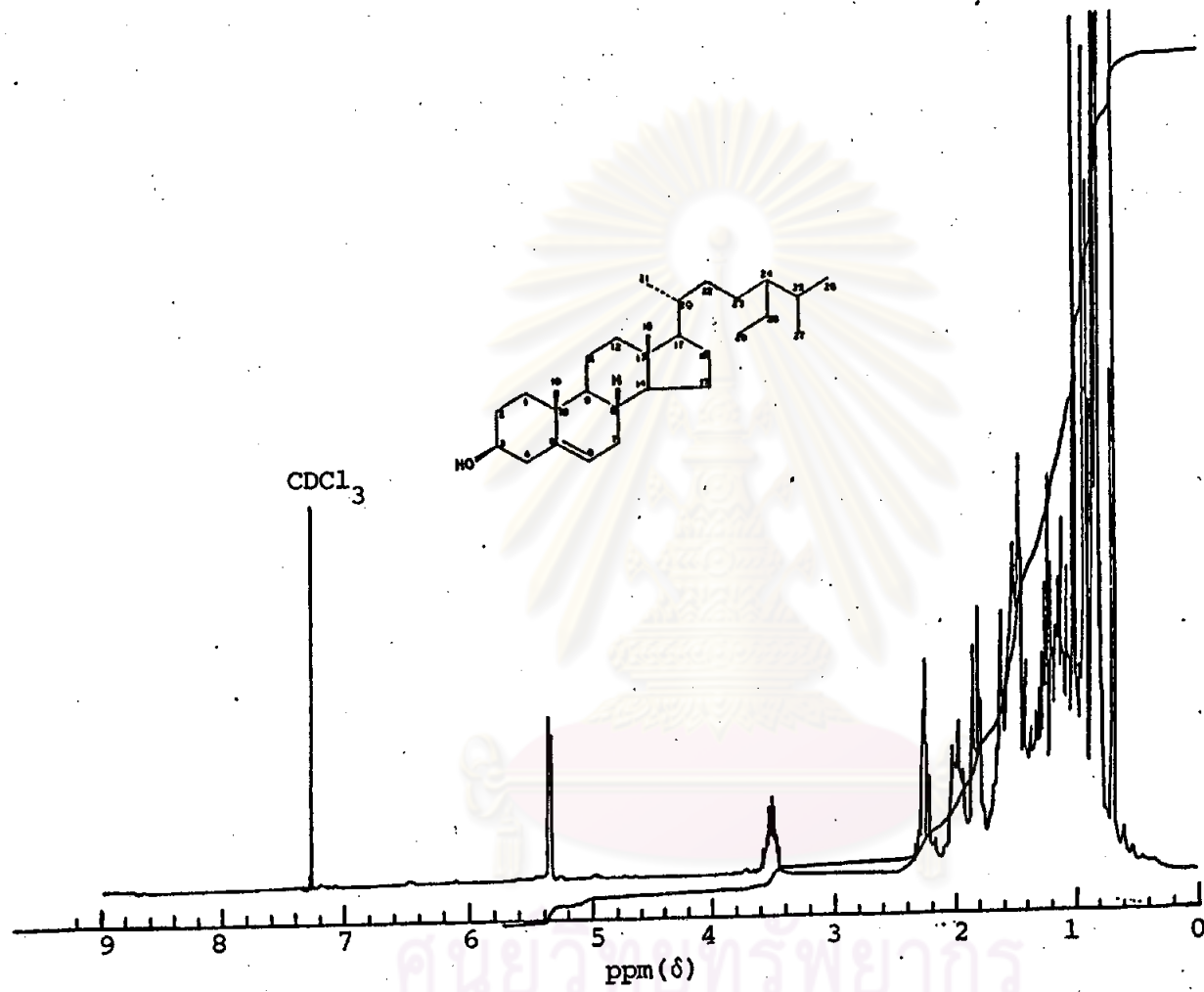


Figure 28 <sup>1</sup>H-Nuclear magnetic resonance spectrum (270 MHz) of TE-3 from *Typha elephantina* Roxb. fruits.

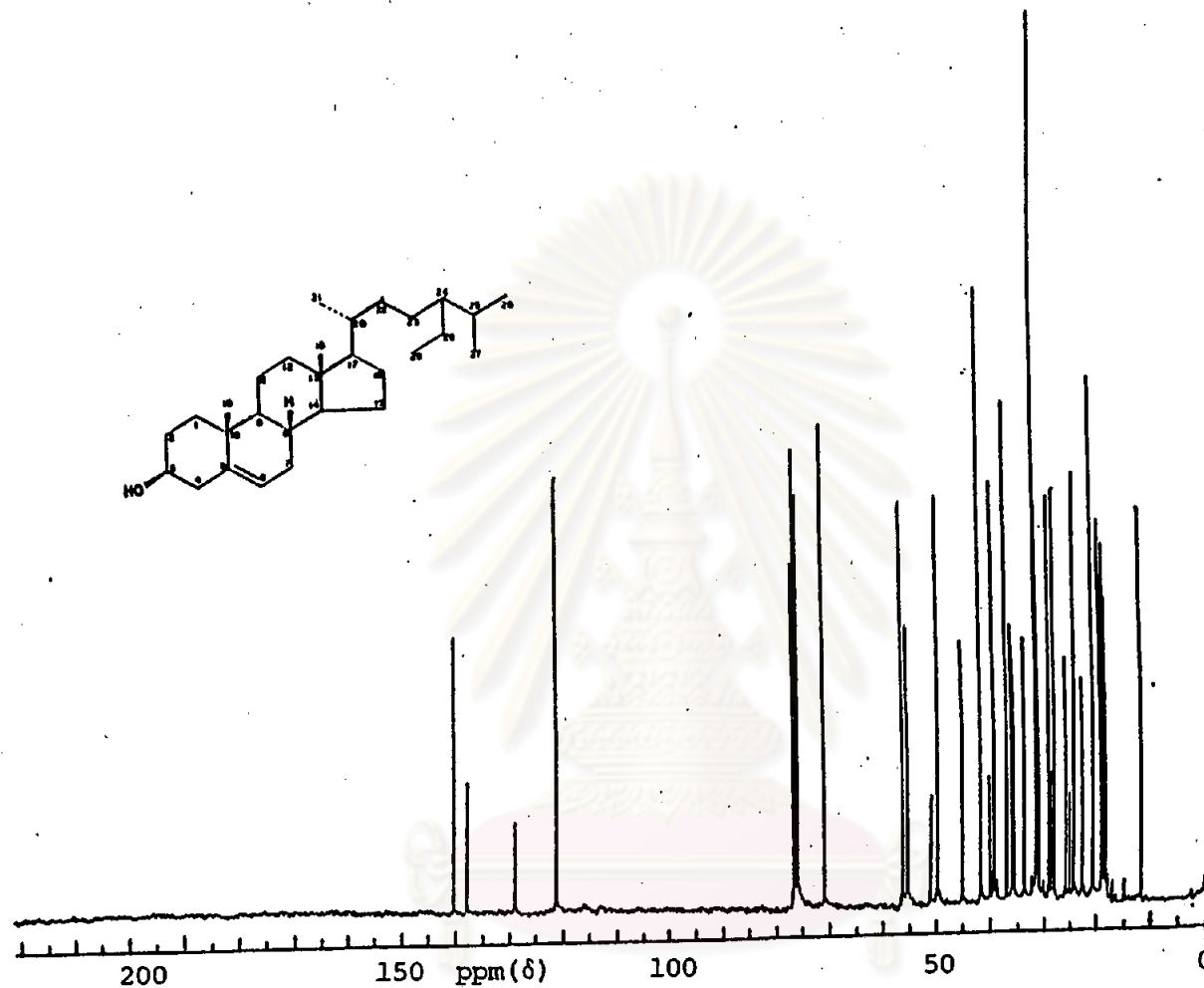


Figure 29

<sup>13</sup>C-Nuclear magnetic resonance spectrum (67.8 MHz) of TE-3

from *Typha elephantina* Roxb. fruits in CDCl<sub>3</sub>

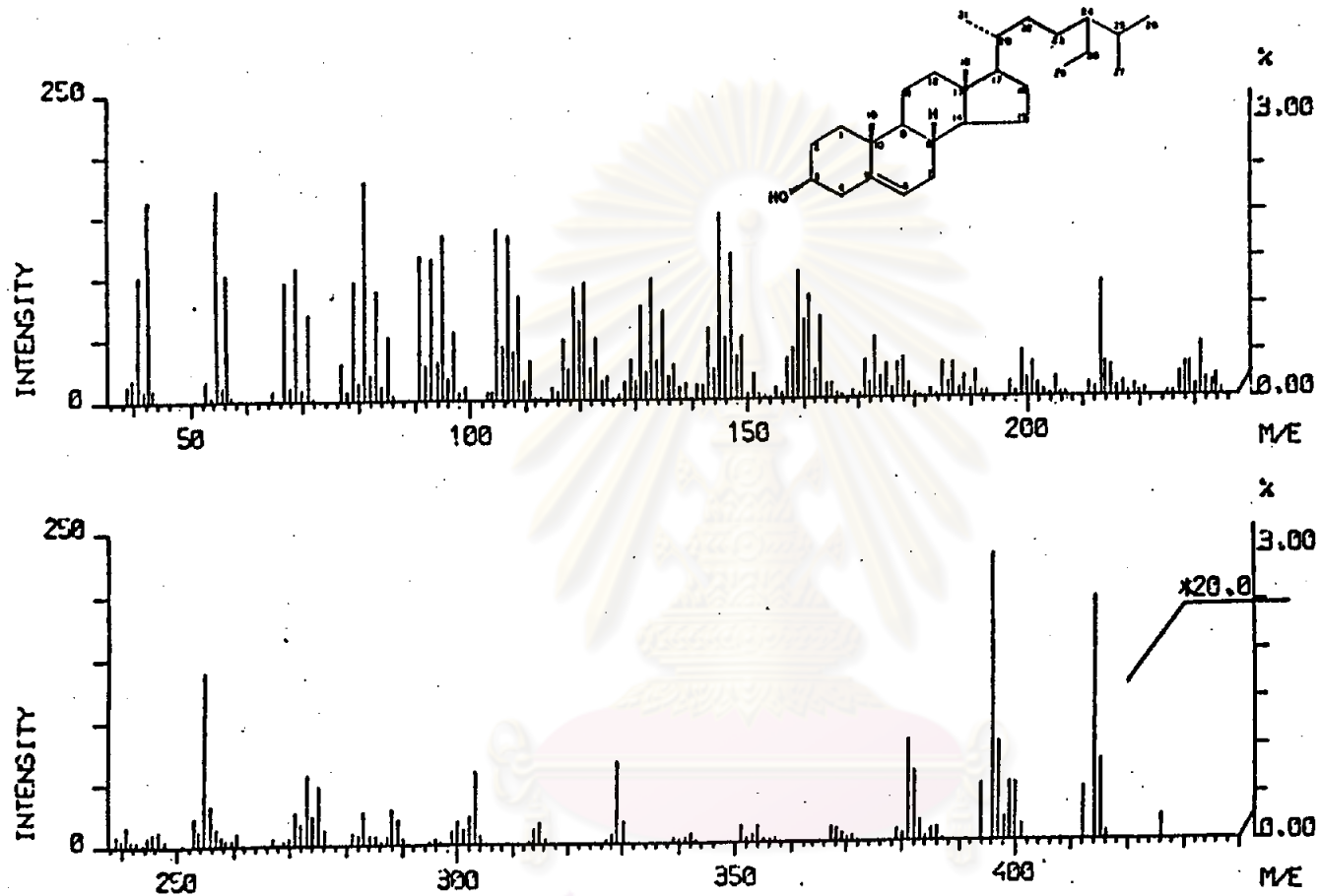
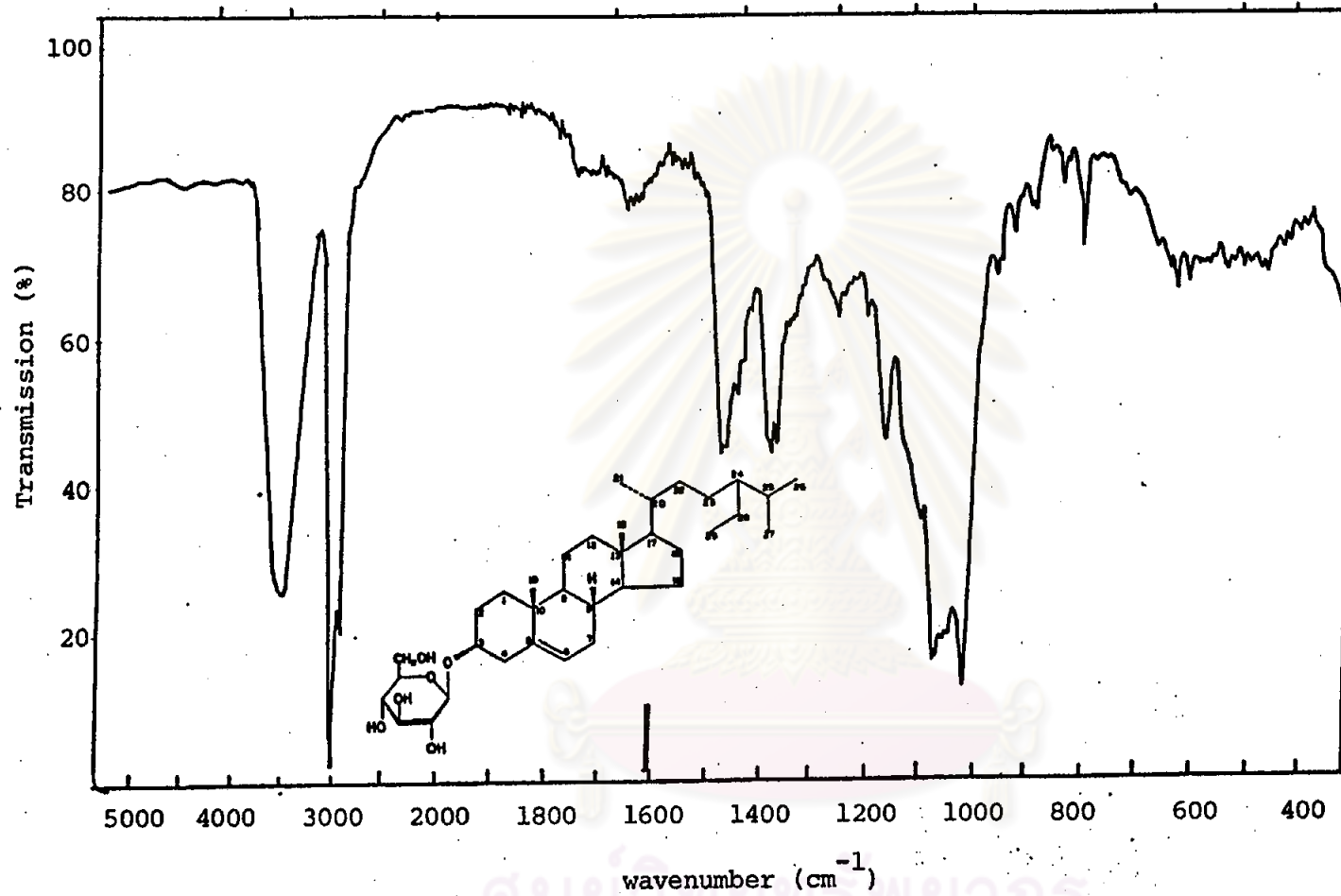


Figure 30 Electron impact mass spectrum of TE-3 from *Typha elephantina* Roxb. fruits.

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**Figure 31.** Infrared absorption spectrum of TE-4 from *Typha elephantina* Roxb. fruits in KBr disc.



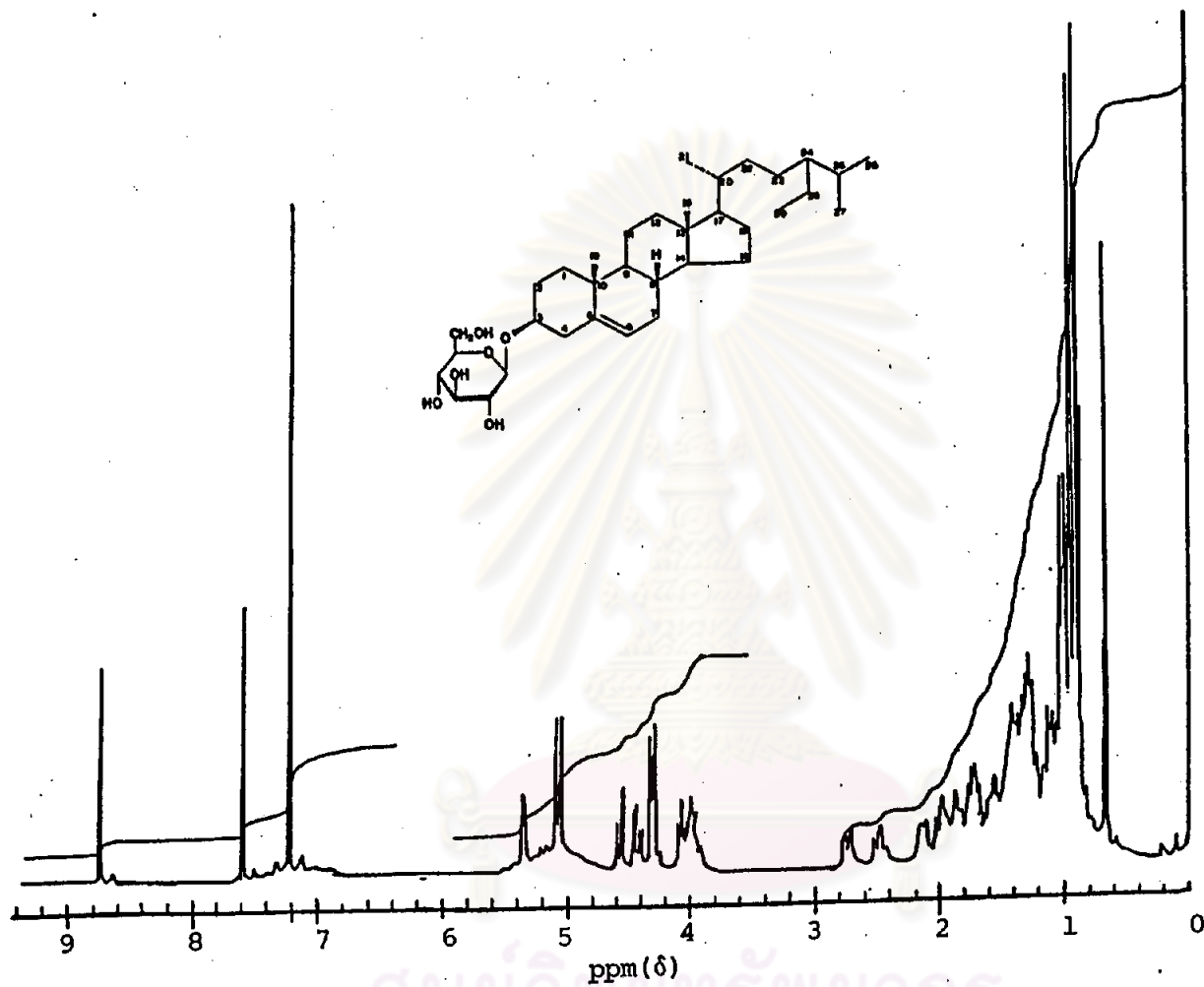


Figure 32 <sup>1</sup>H-Nuclear magnetic resonance spectrum (270 MHz) of TE-4 from *Typha elephantina* Roxb. fruits in C<sub>5</sub>D<sub>5</sub>N

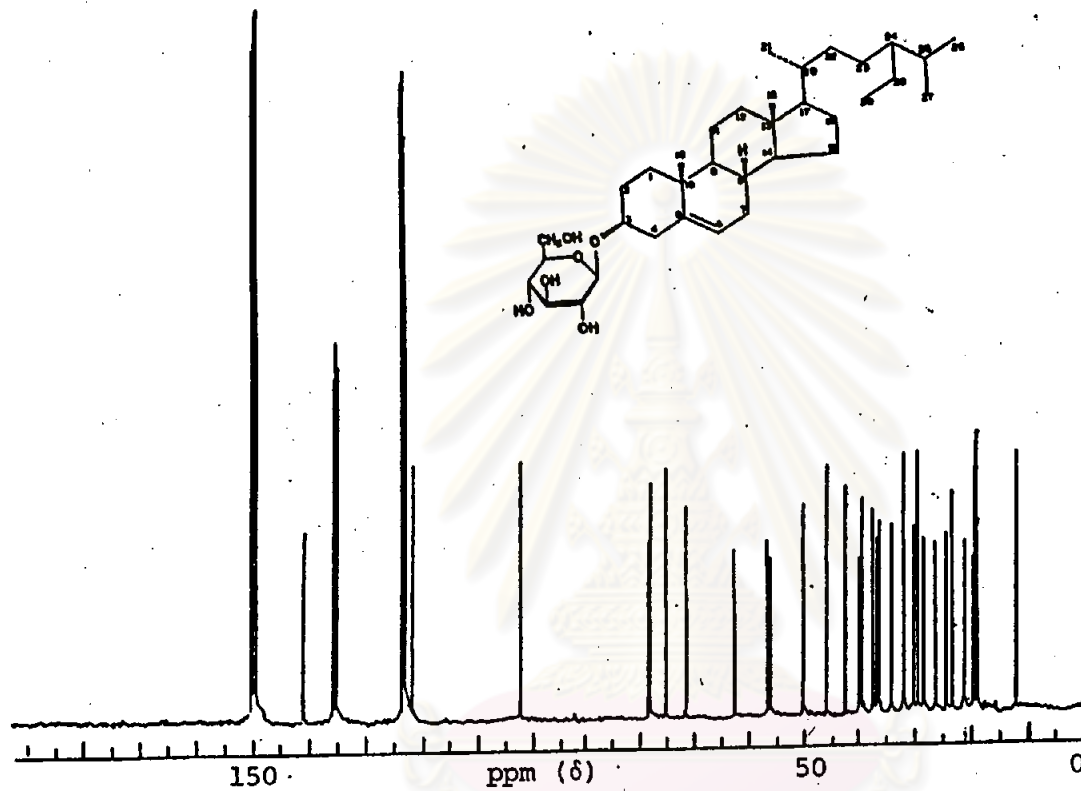


Figure 33  $^{13}\text{C}$ -Nuclear magnetic resonance spectrum (67.8 MHz) of TE-4 from *Typha elephantina* Roxb. fruits in  $\text{C}_5\text{D}_5\text{N}$

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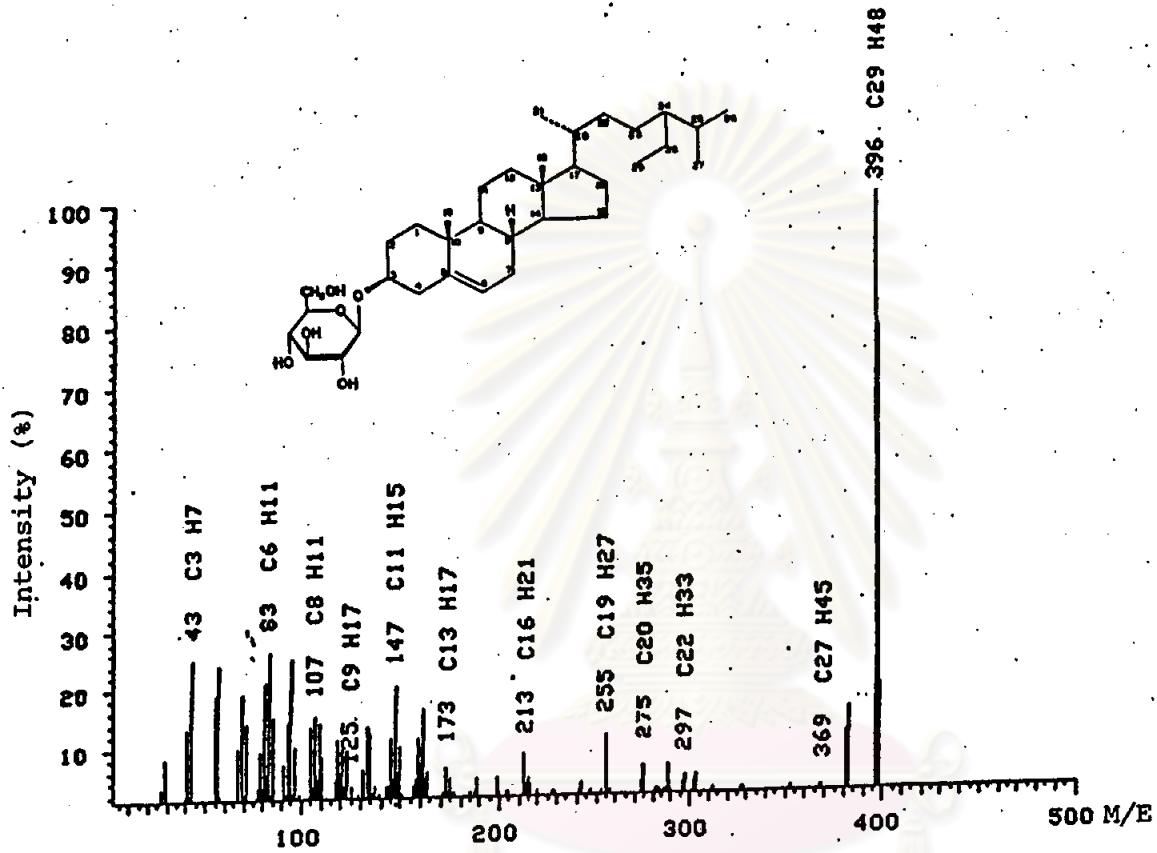
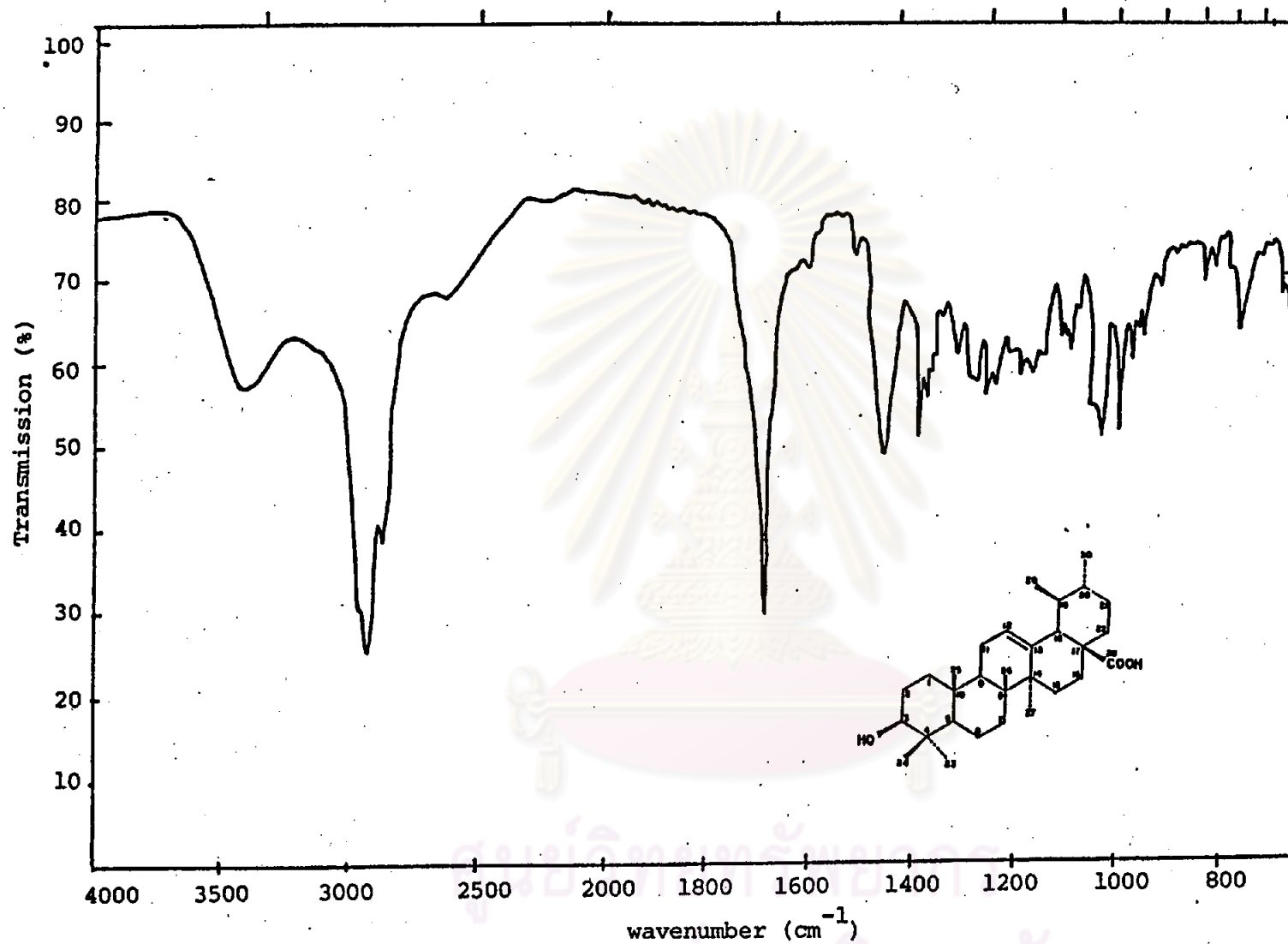


Figure 34

High resolution mass spectrum of TE-4 from  
*Typha elephantina* Roxb. fruits

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**Figure 35**

Infrared absorption spectrum of RS-1 from *Randia siamensis* Craib fruits in KBr disc.

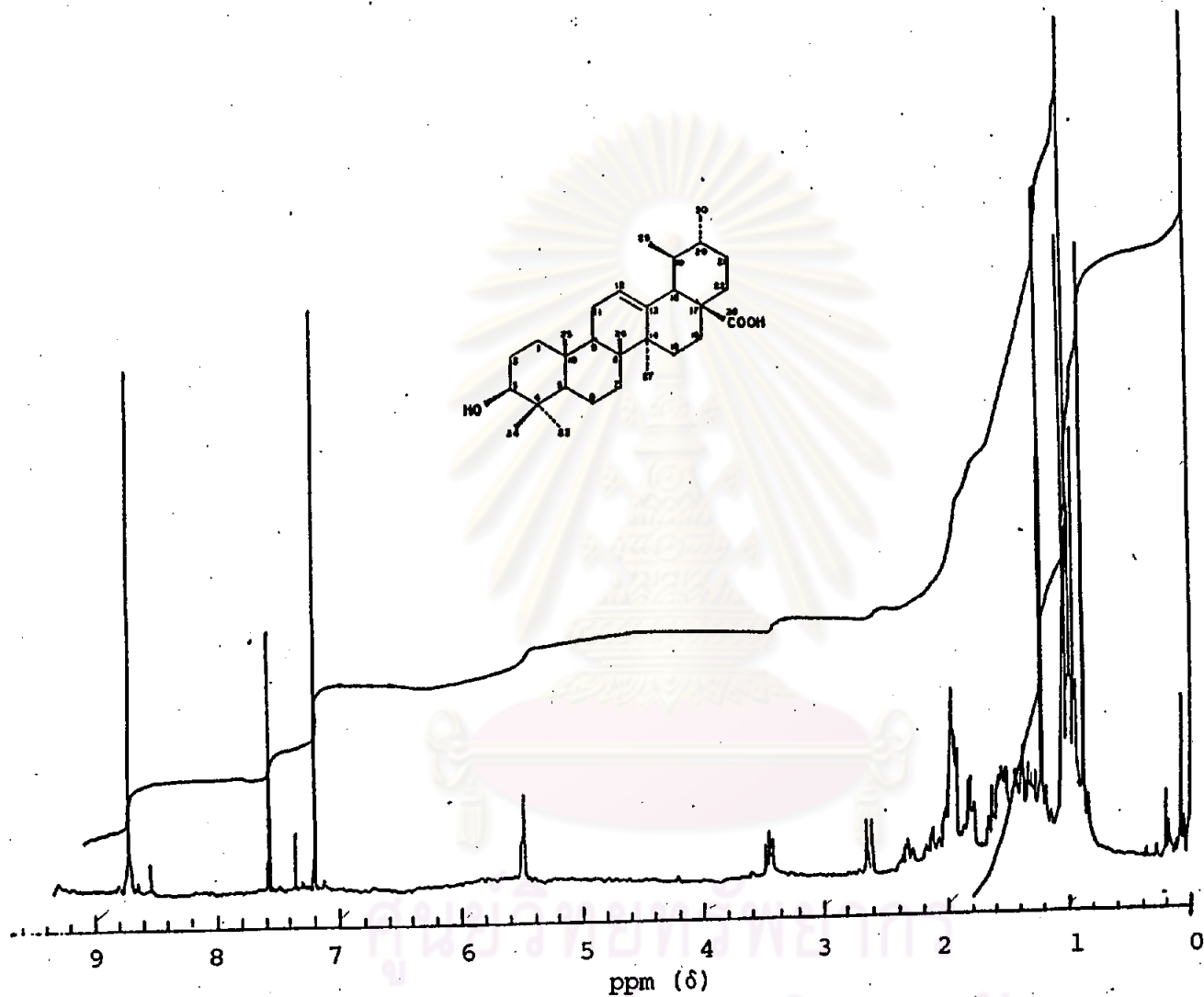


Figure 36

$^1\text{H}$ -Nuclear magnetic resonance spectrum (270 MHz) of RS-1 from  
*Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$

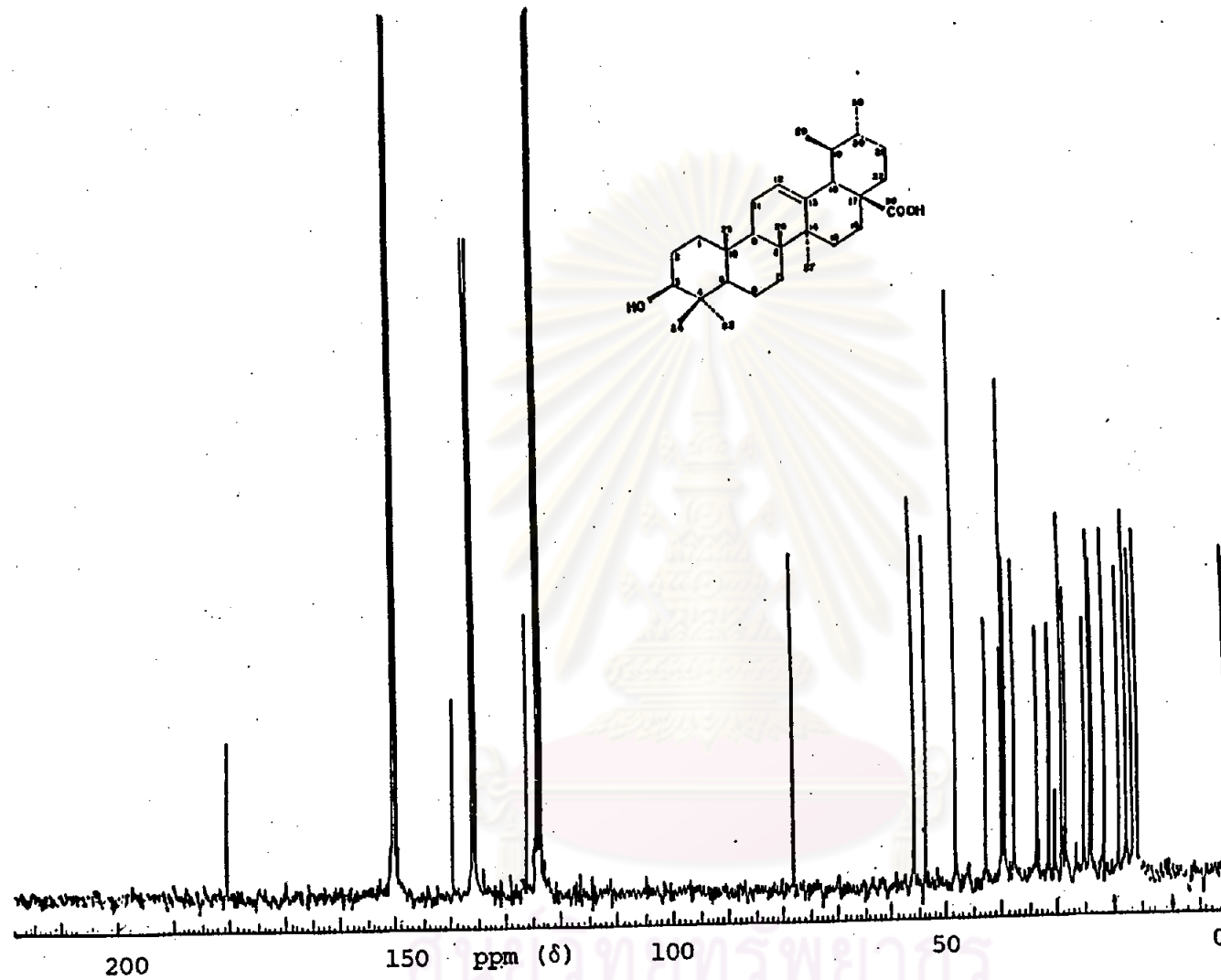


Figure 37.  $^{13}\text{C}$ -Nuclear magnetic resonance spectrum (67.8 MHz) of RS-1 from *Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$ .

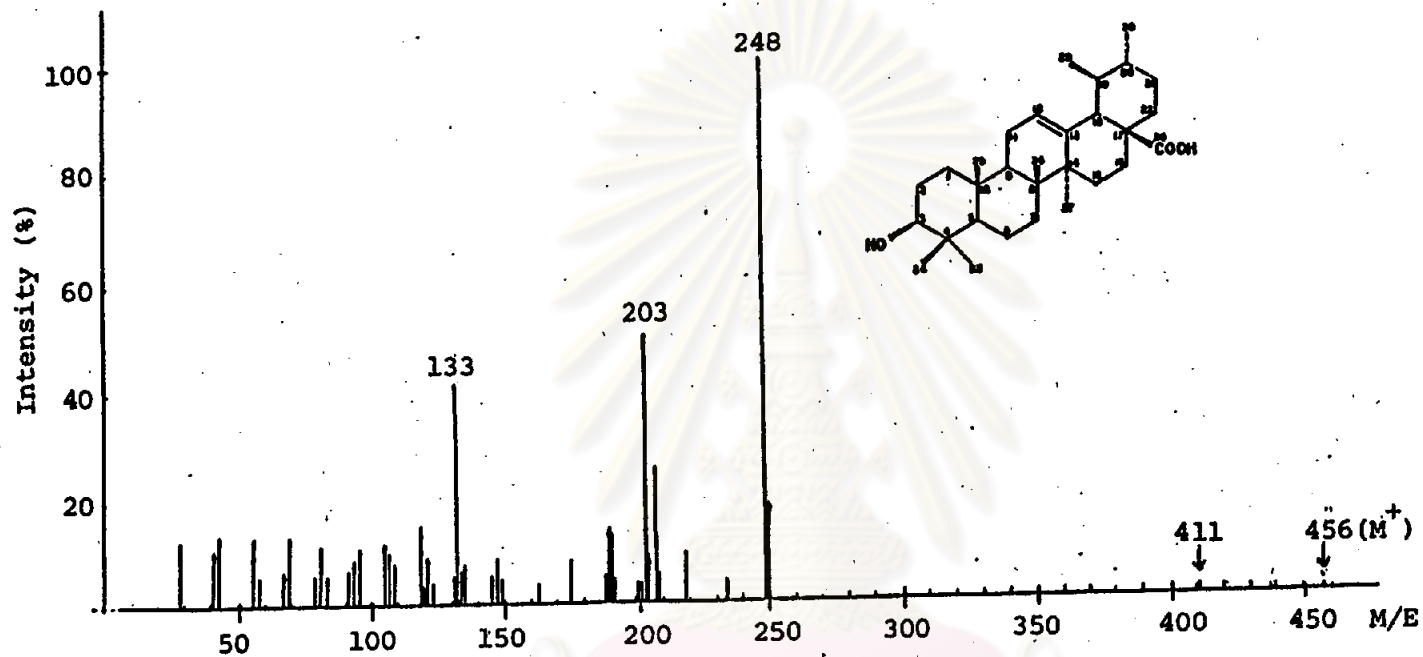


Figure 38 Electron impact mass spectrum of RS-1 from *Randia siamensis* Craib fruits.

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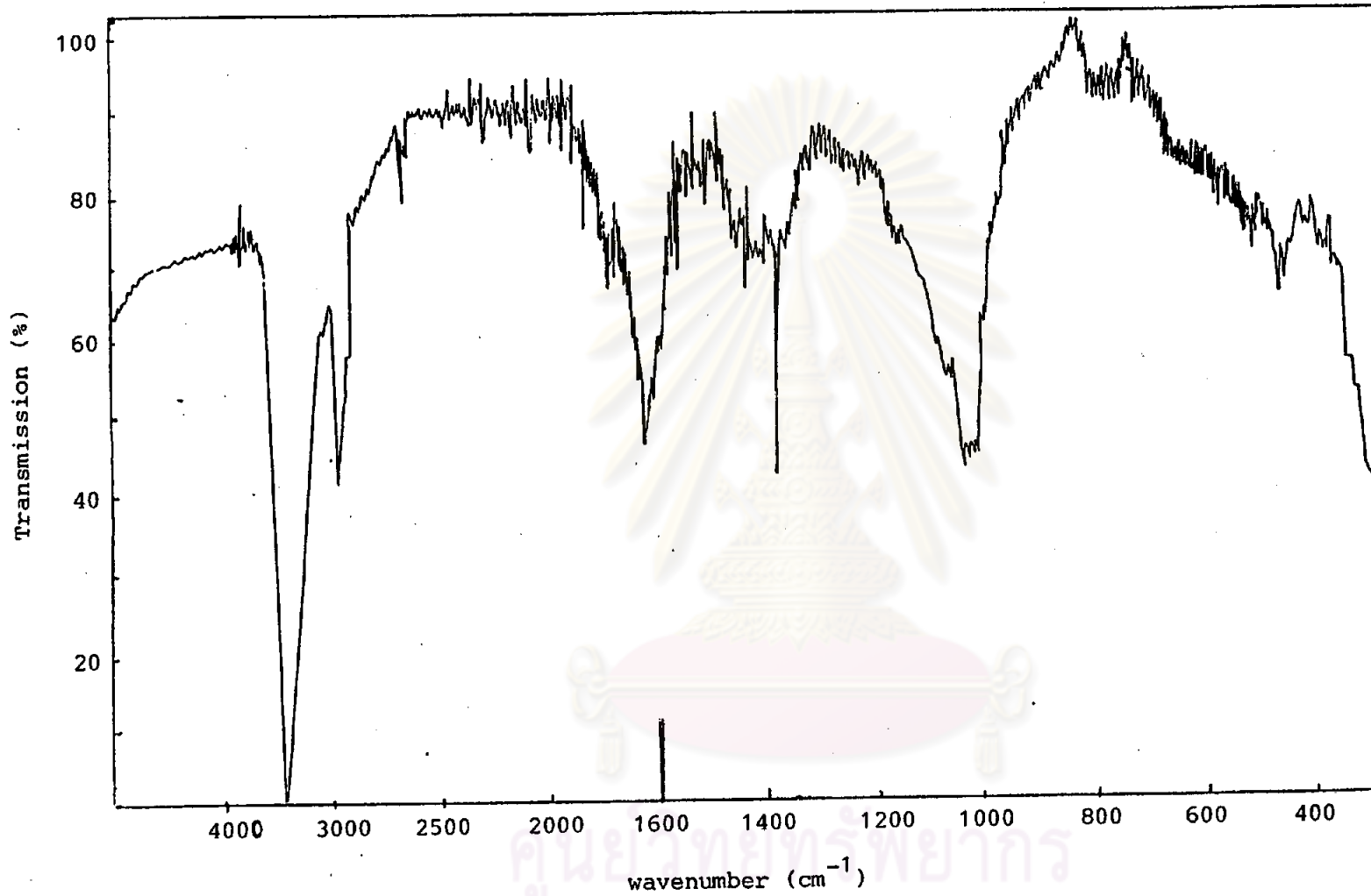


Figure 39 Infrared absorption spectrum of RS-1 from *Randia siamensis* Craib fruits.



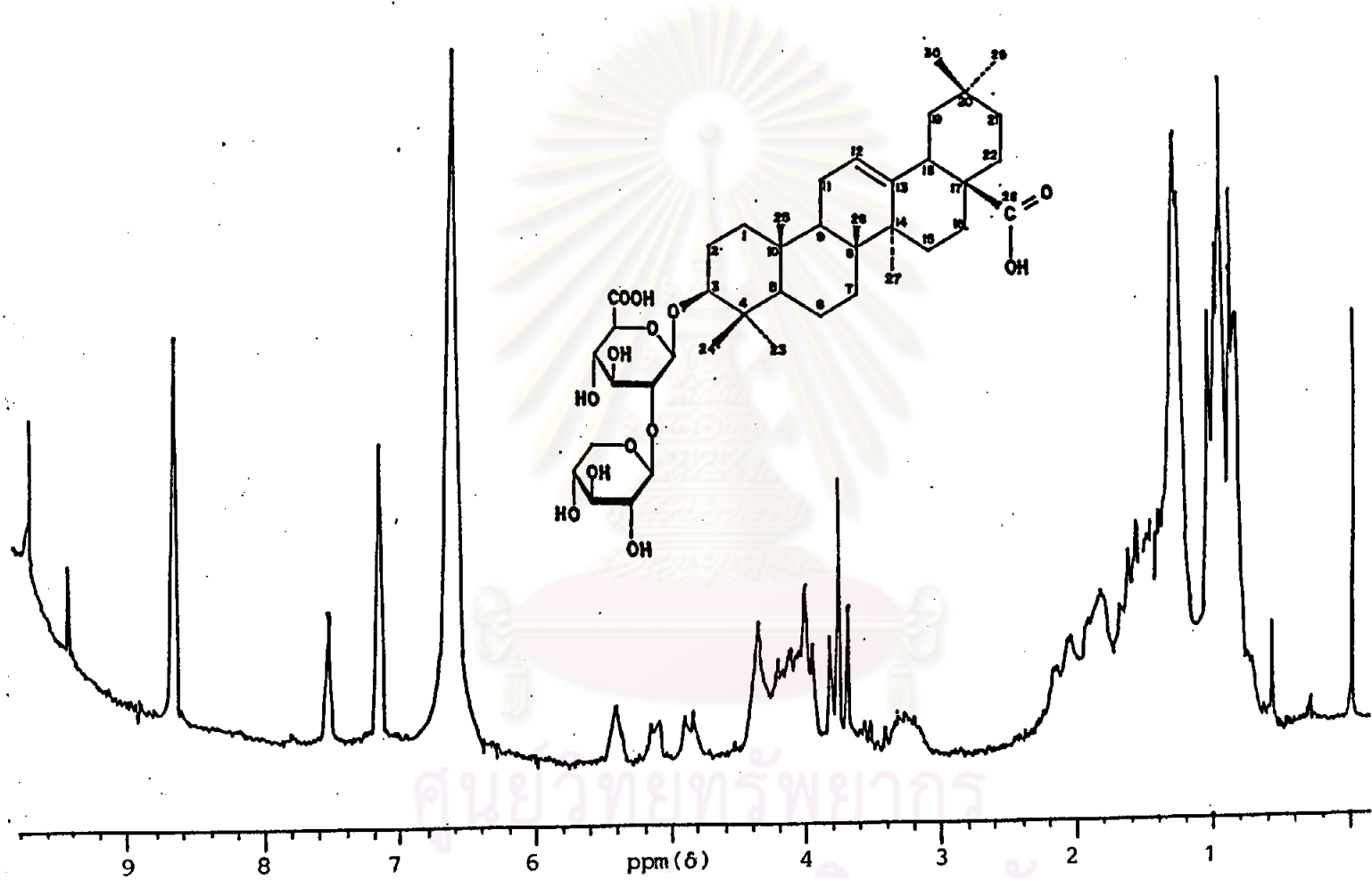


Figure 40 <sup>1</sup>H-Nuclear magnetic resonance spectrum of RS-1 from *Randia siamensis* Craib fruits.

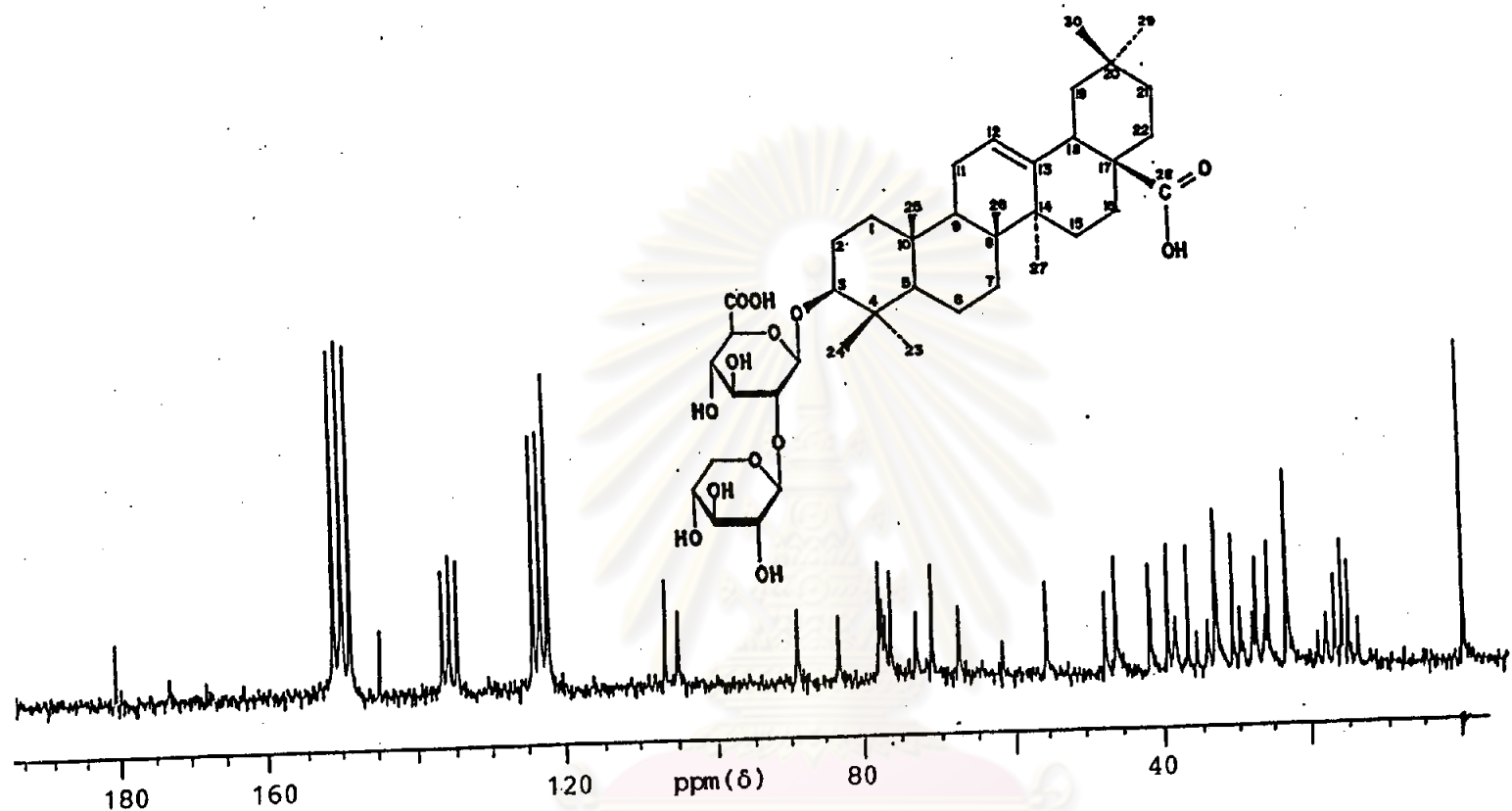


Figure 41  $^{13}\text{C}$ -Nuclear magnetic resonance spectrum of RS-1 from *Randia siamensis* Craib fruits.

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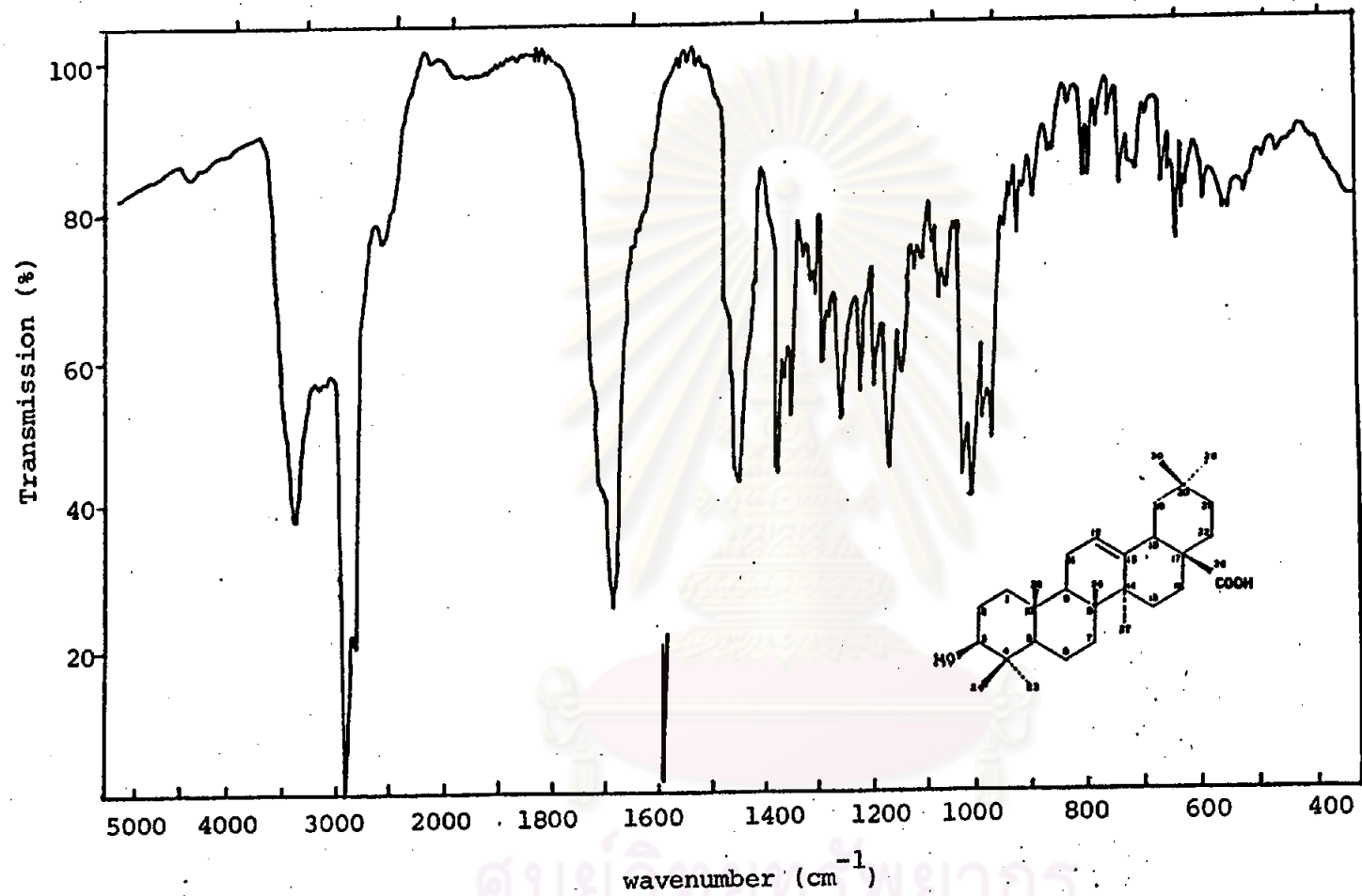
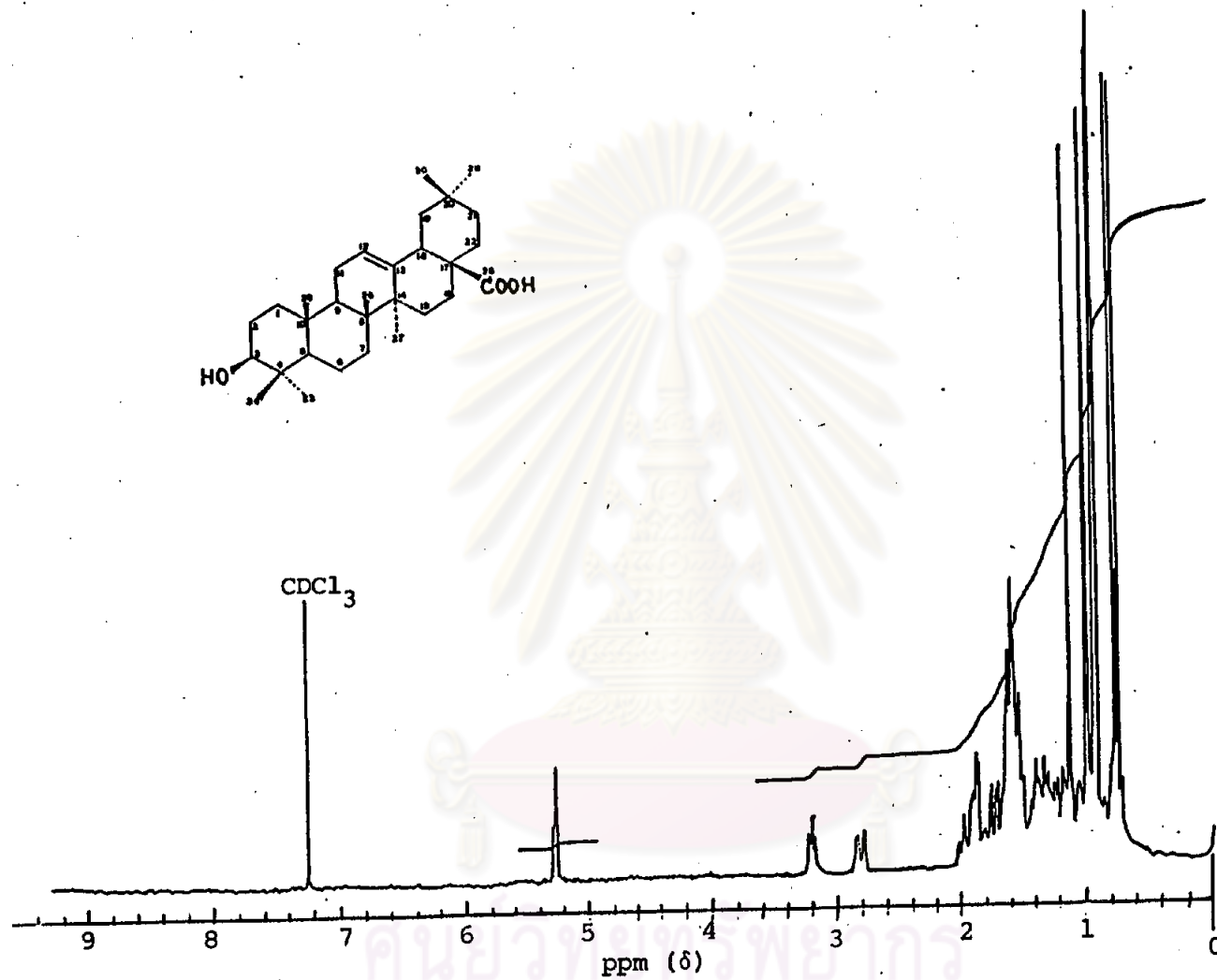


Figure 42 Infrared absorption spectrum of RS-2A from *Randia siamensis* Craib fruits in KBr disc.



**Figure 43** <sup>1</sup>H-Nuclear magnetic resonance spectrum (270 MHz) of RS-2A from *Randia siamensis* Craib fruits.

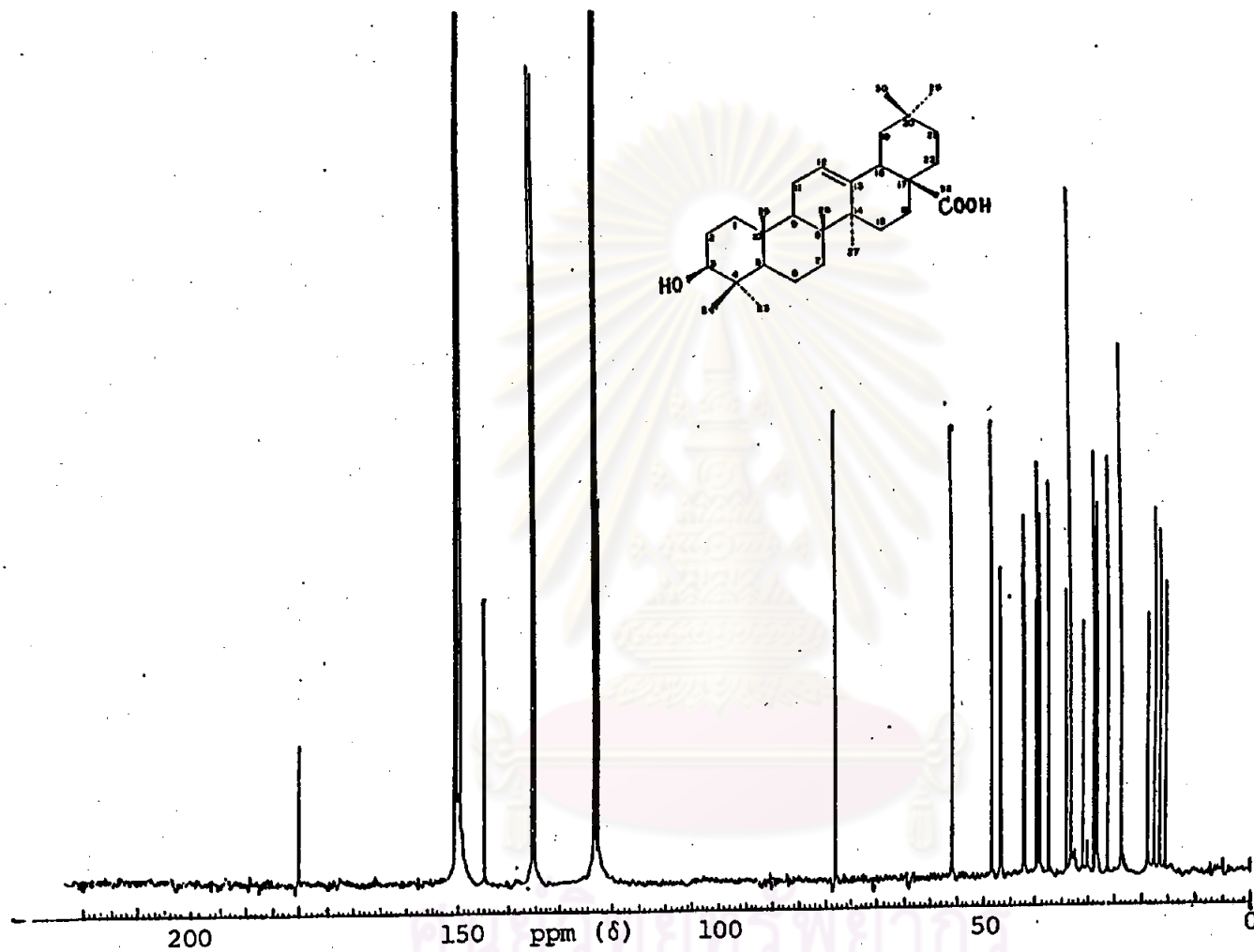


Figure 44

$^{13}\text{C}$ -Nuclear magnetic resonance spectrum (67.8 MHz) of RS-2A from  
*Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$ .

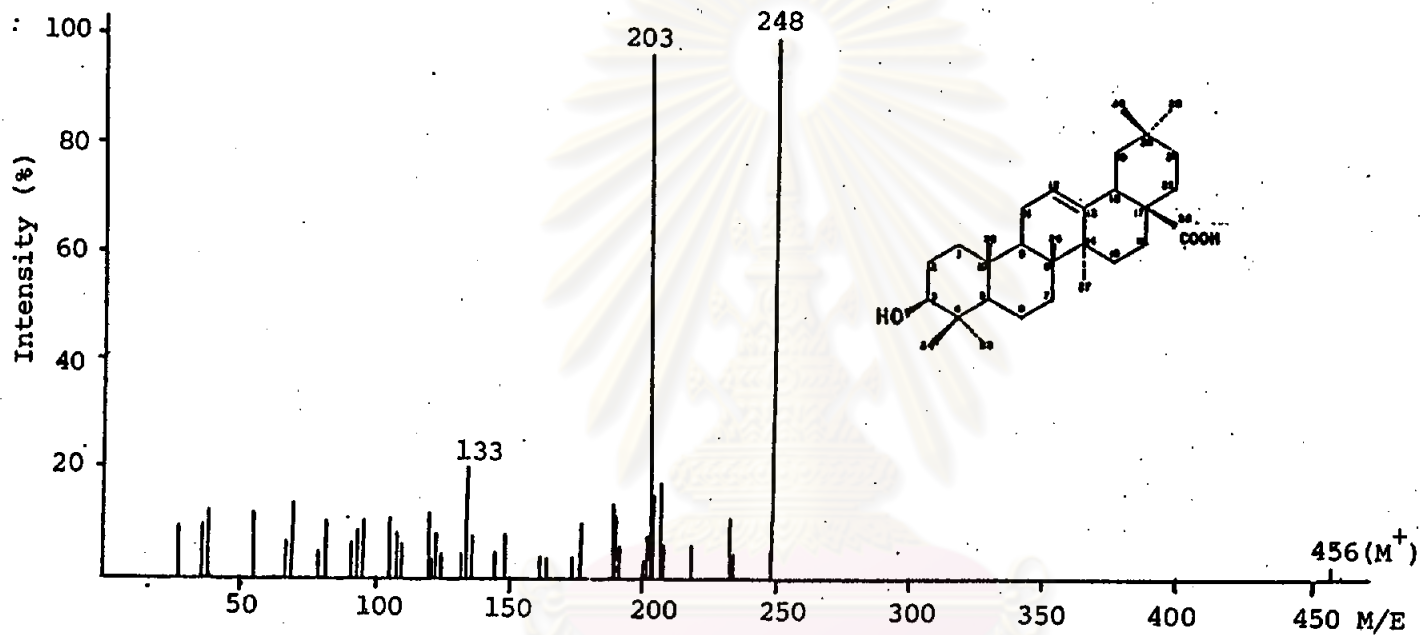


Figure 45 Electron impact mass spectrum of RS-2A from *Randia siamensis* Craib fruits.

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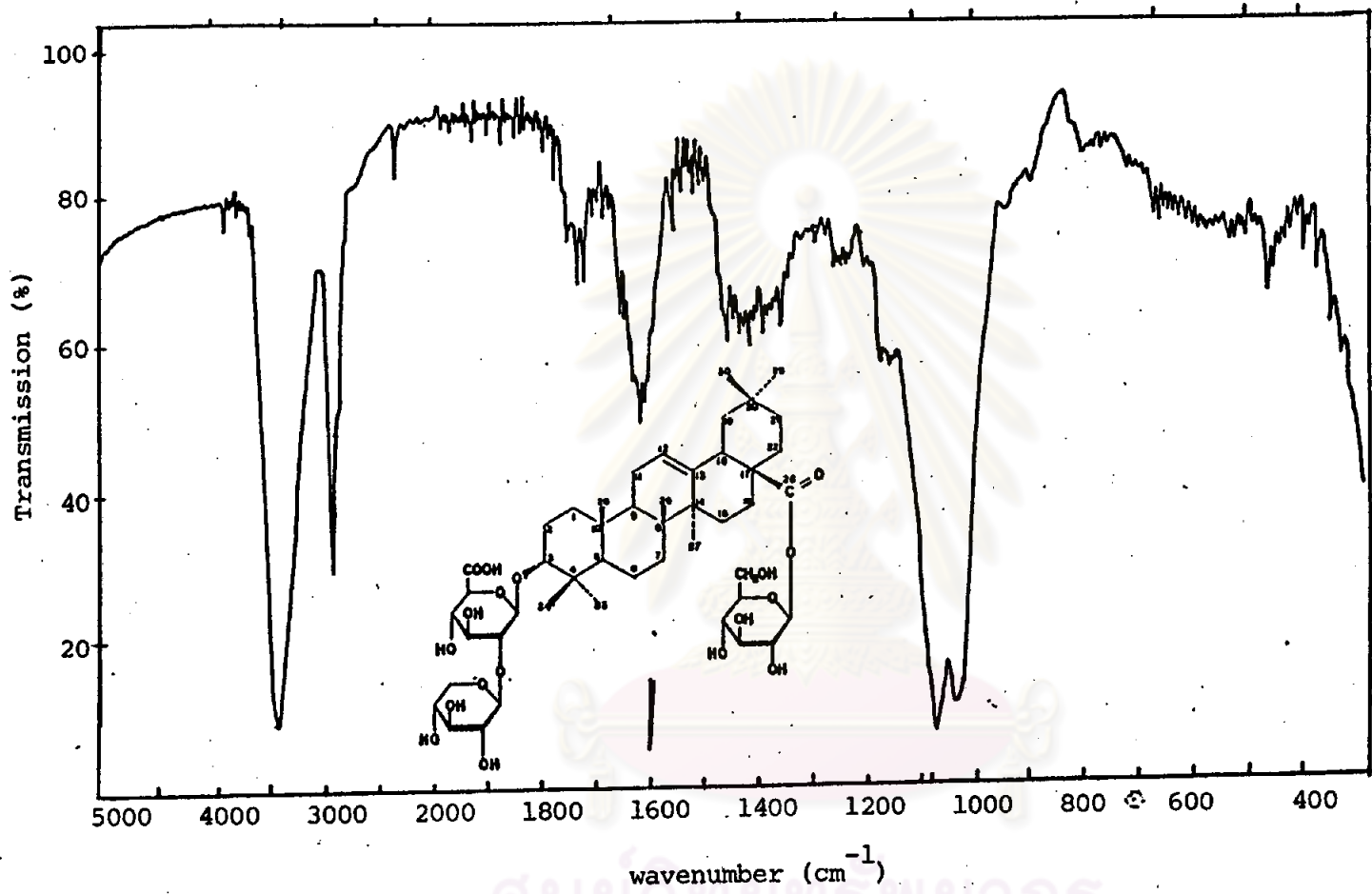
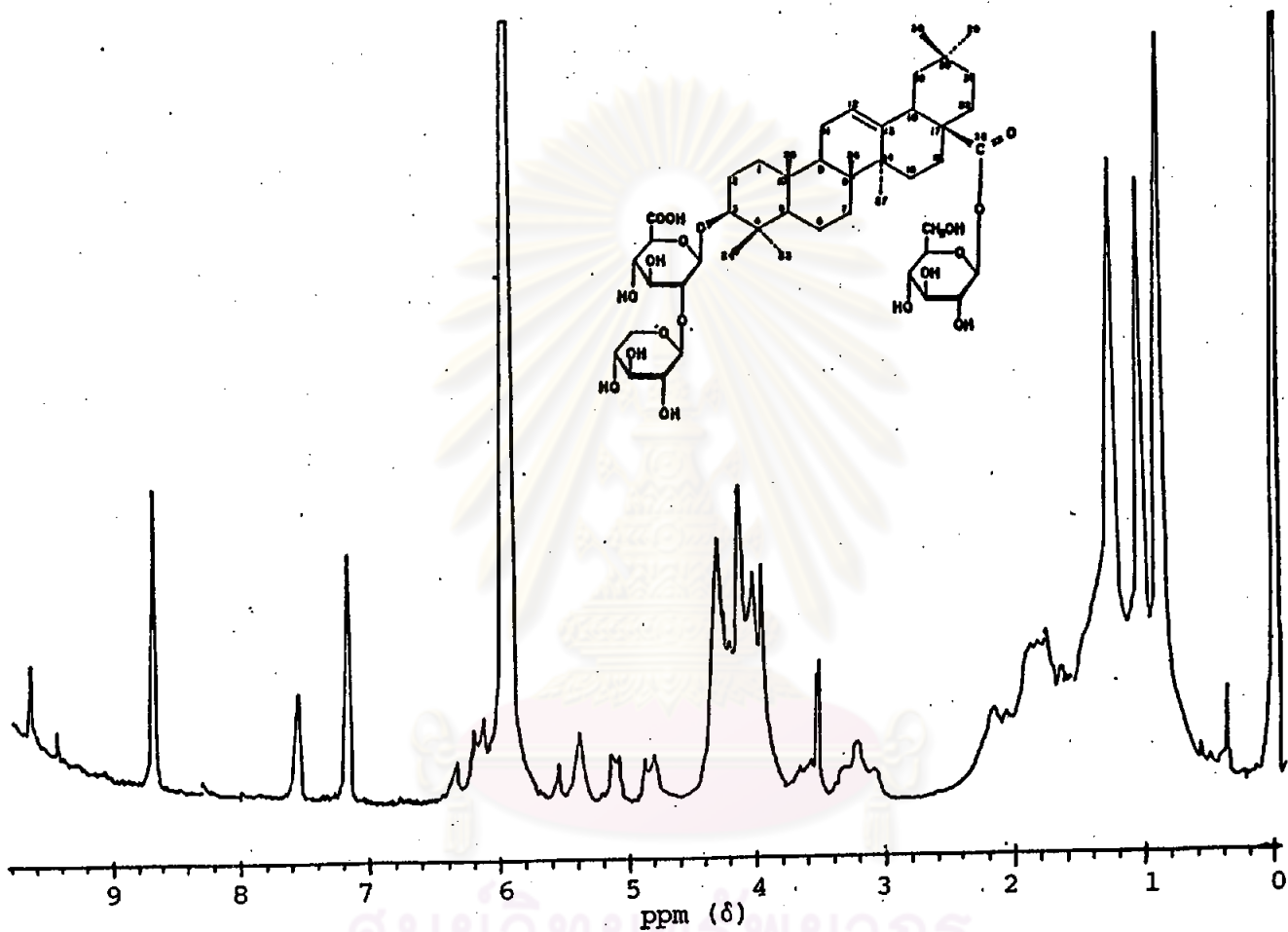


Figure 46 Infrared absorption spectrum of RS-2 from *Randia siamensis* Craib fruits in KBr disc.



**Figure 47** <sup>1</sup>H-Nuclear magnetic resonance spectrum (270 MHz) of RS-2 from *Randia siamensis* Craib fruits in C<sub>5</sub>D<sub>5</sub>N.



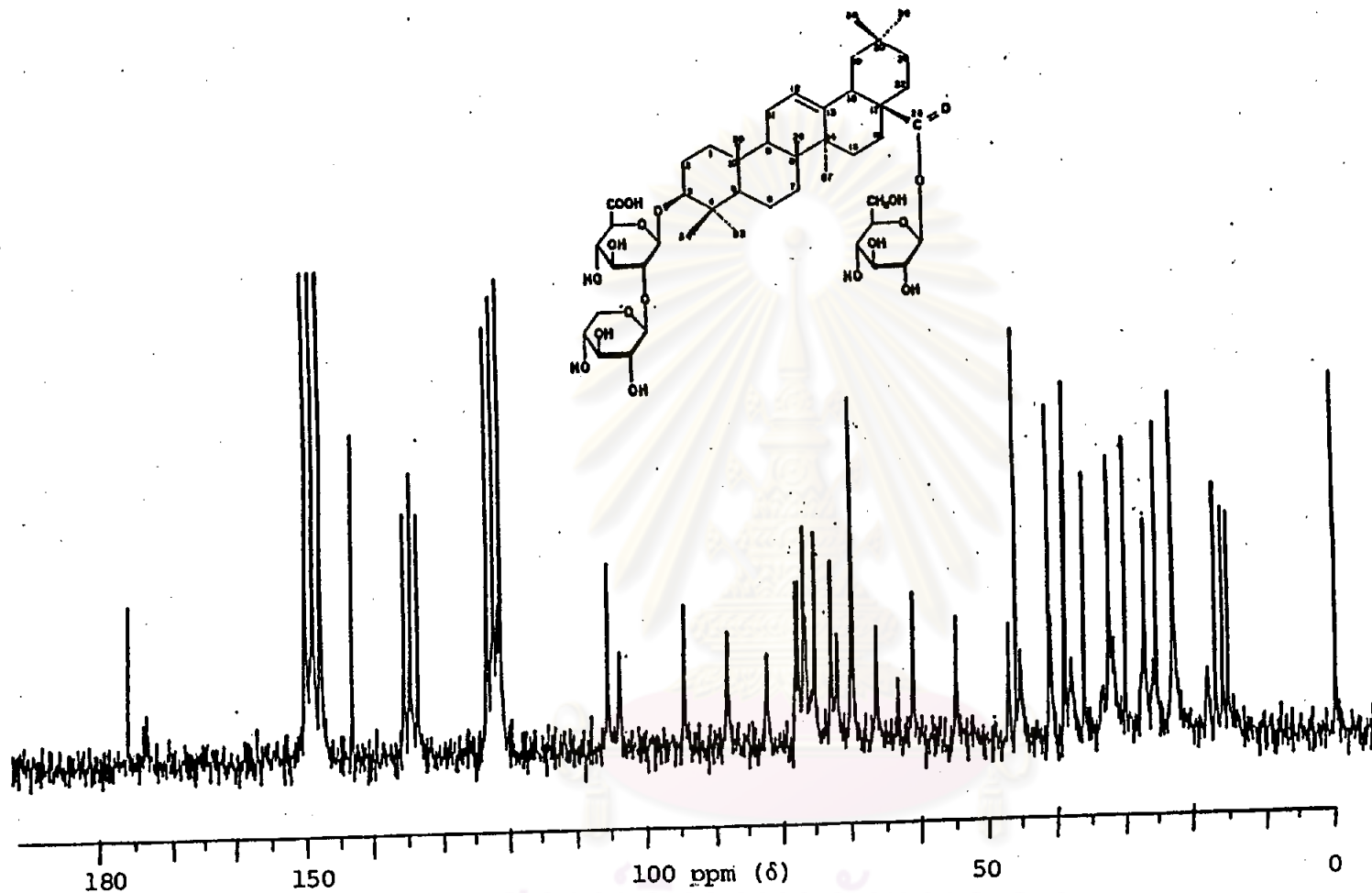


Figure 48  $^{13}\text{C}$ -Nuclear magnetic resonance spectrum (67.8 MHz) of RS-2 from *Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$ .

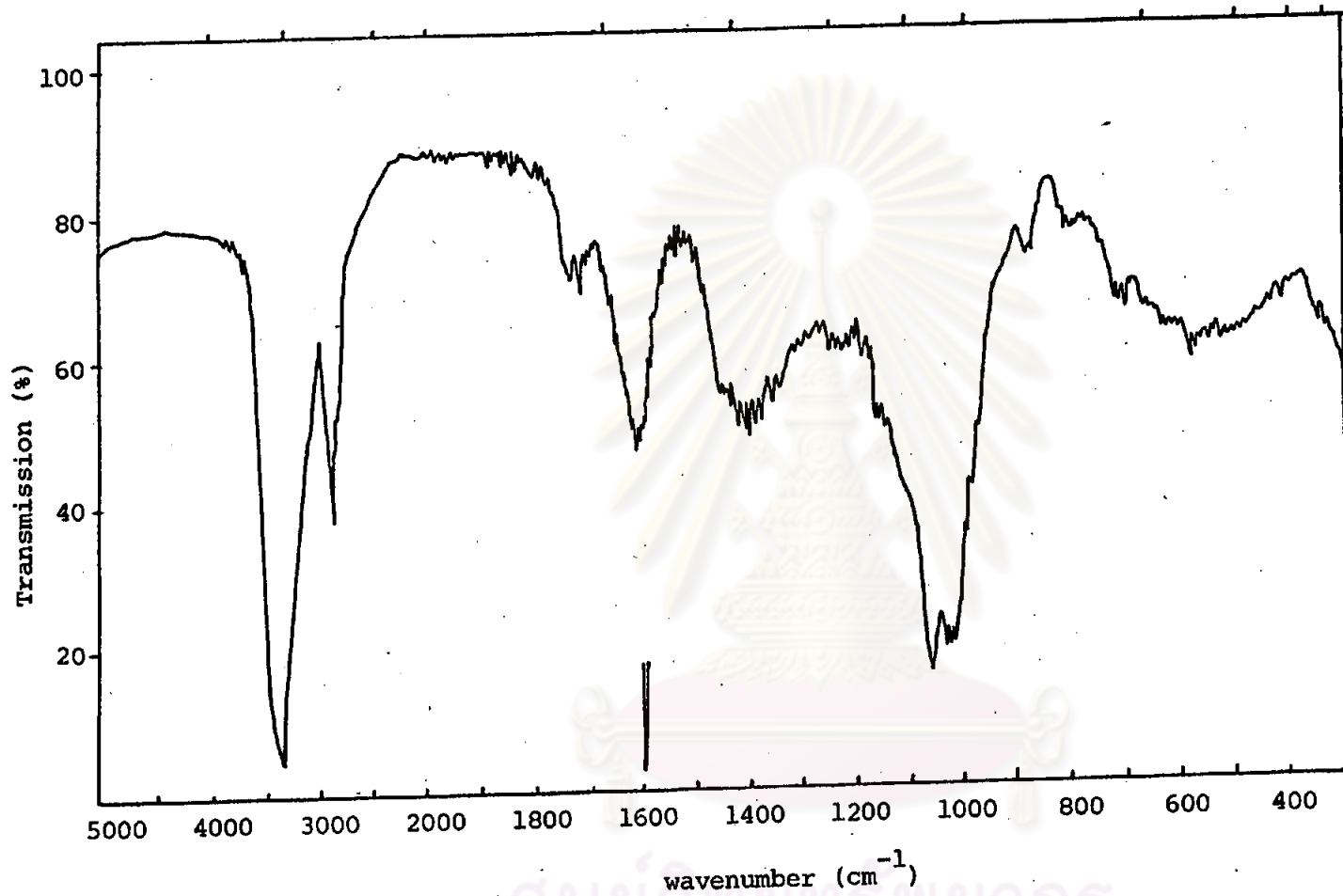


Figure 49 Infrared absorption spectrum of RS-3 from *Randia siamensis* Craib fruits in KBr disc.

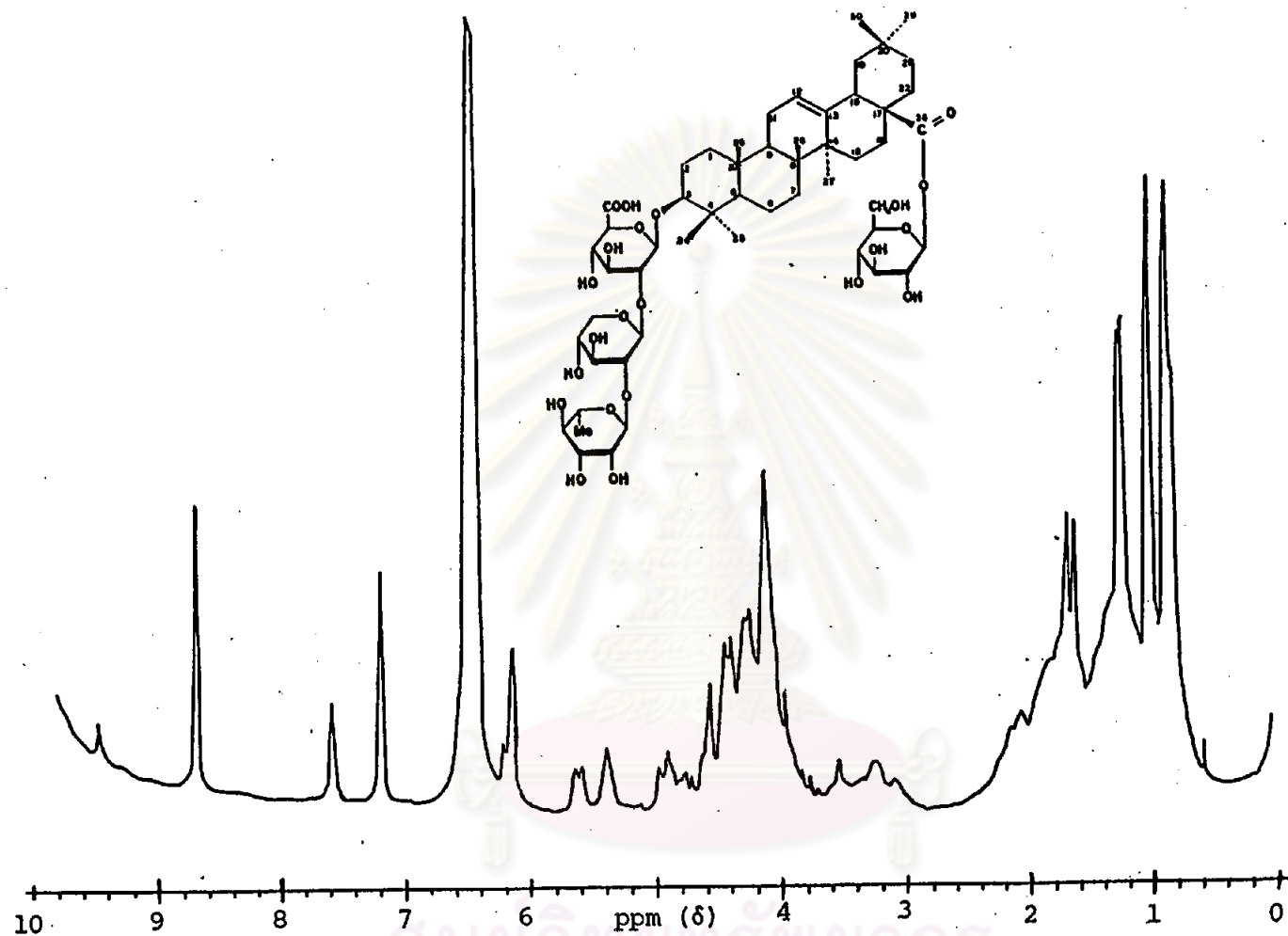


Figure 50  $^1\text{H-NMR}$  nuclear magnetic resonance spectrum (270 MHz) of RS-3 from *Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$ .

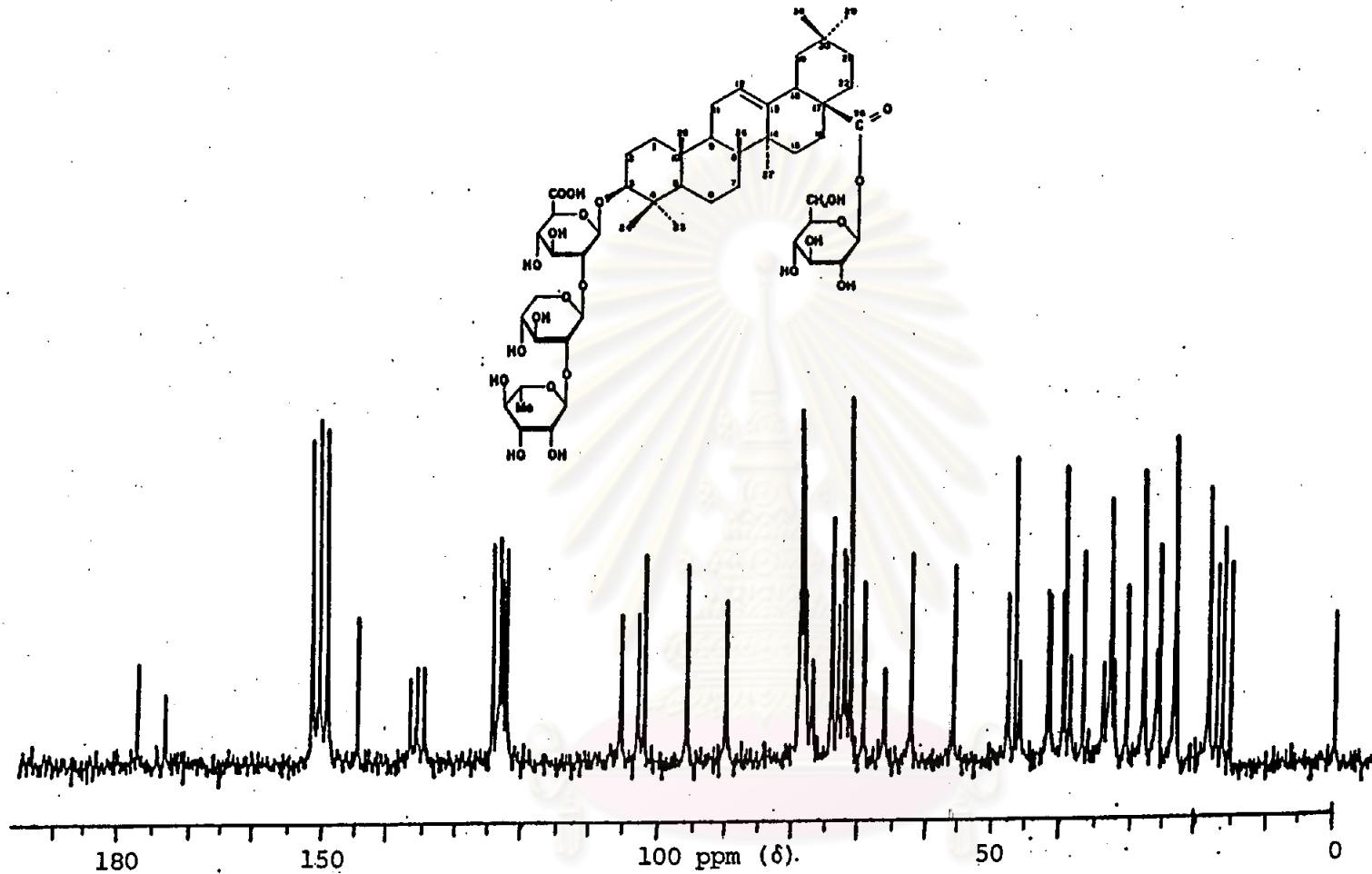


Figure 51  $^{13}\text{C}$ -Nuclear magnetic resonance spectrum (67.8 MHz) of RS-3 from  
*Randia siamensis* Craib fruits in  $\text{C}_5\text{D}_5\text{N}$ .

## VITA

Miss Arunporn Aukkanibutra was born on September 24, 1958 in Bangkok, Thailand. She received her Bachelor of Science in Pharmacy in 1981 from the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand. She has been an instructor in the Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Songkla, Thailand, since her graduation.



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