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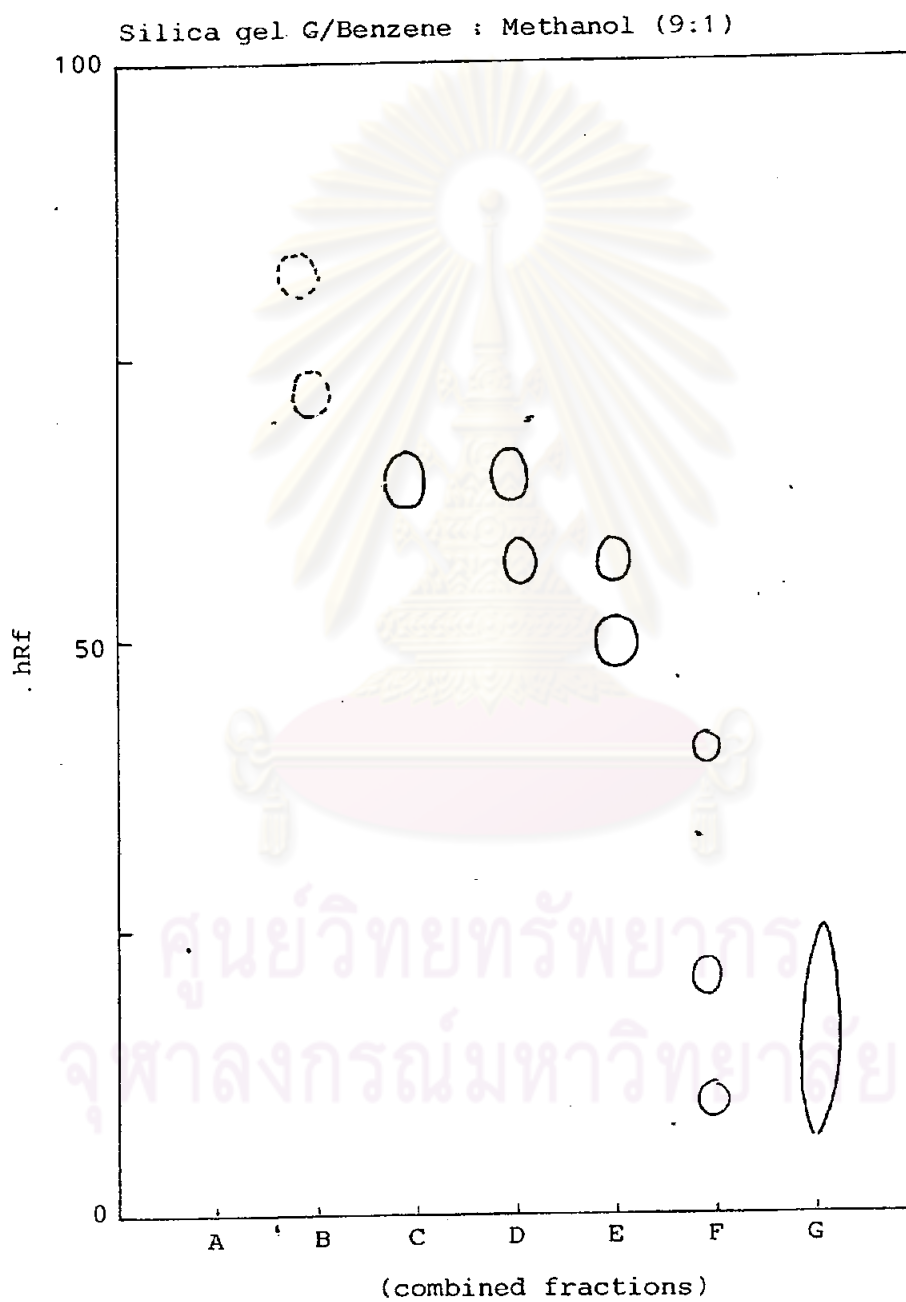


Fig. 12 Thin-layer chromatogram of isolated anthraquinones

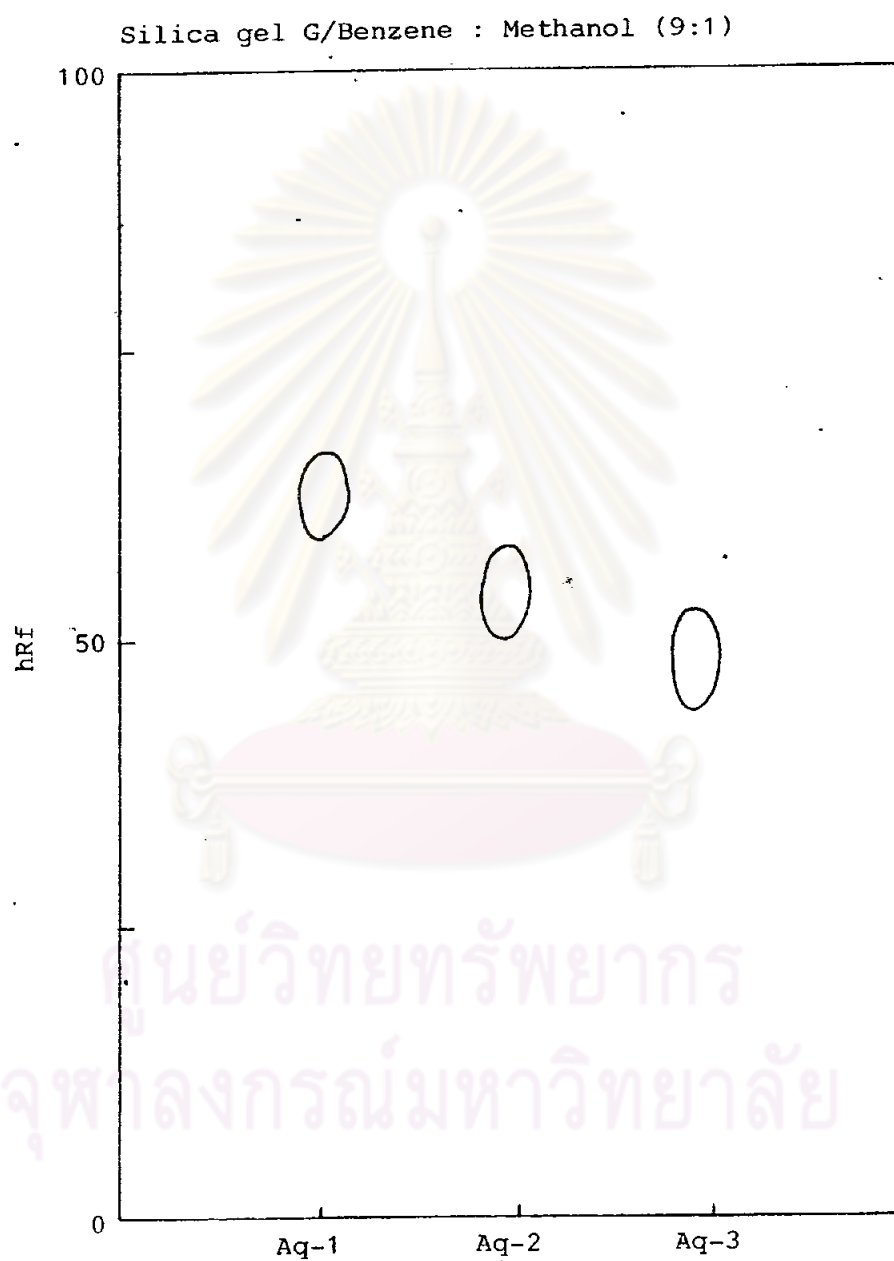


Fig. 13 Thin layer chromatogram of anthraquinone aglycones

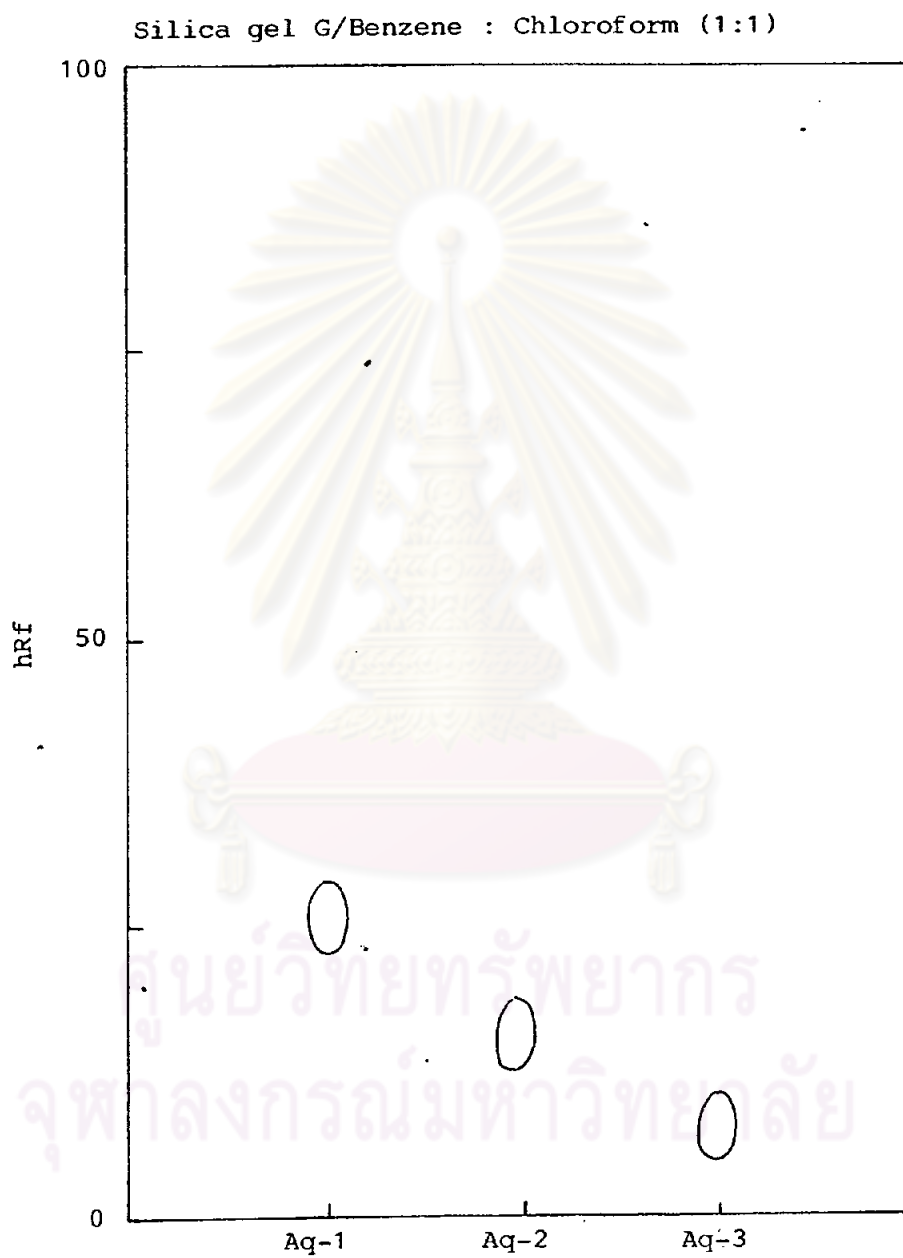


Fig. 14 Thin layer chromatogram of anthraquinone aglycones

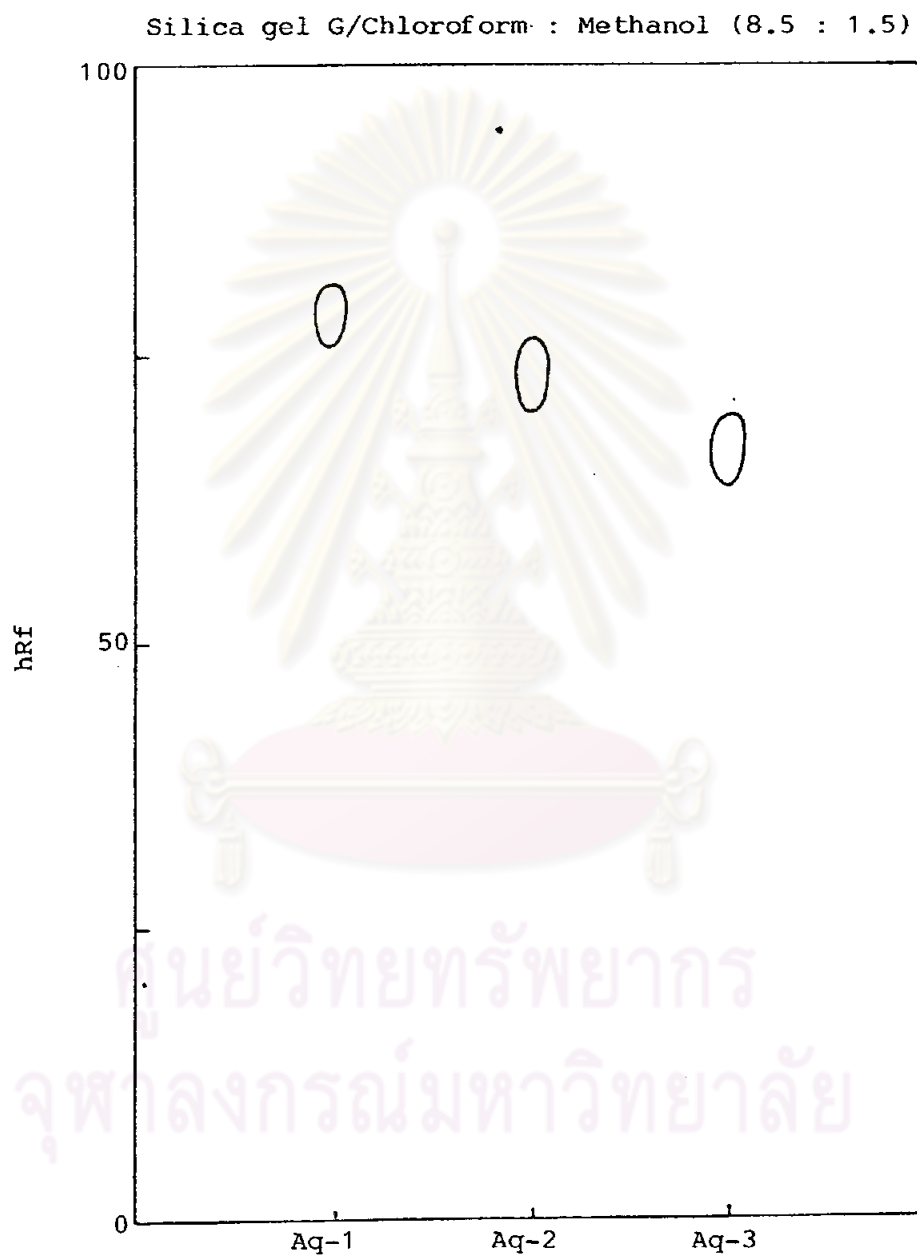


Fig. 15 Thin layer chromatogram of anthraquinone aglycones

Silica gel G/Methyl ethyl ketone + Acetic acid +  
Isopropanol + Methanol (6+2+1+1)



Fig. 16 Thin layer chromatogram of anthraquinone glycoside





Fig. 17 Thin layer chromatogram of anthraquinone glycoside

Silica gel G/benzene : methanol (9:1)

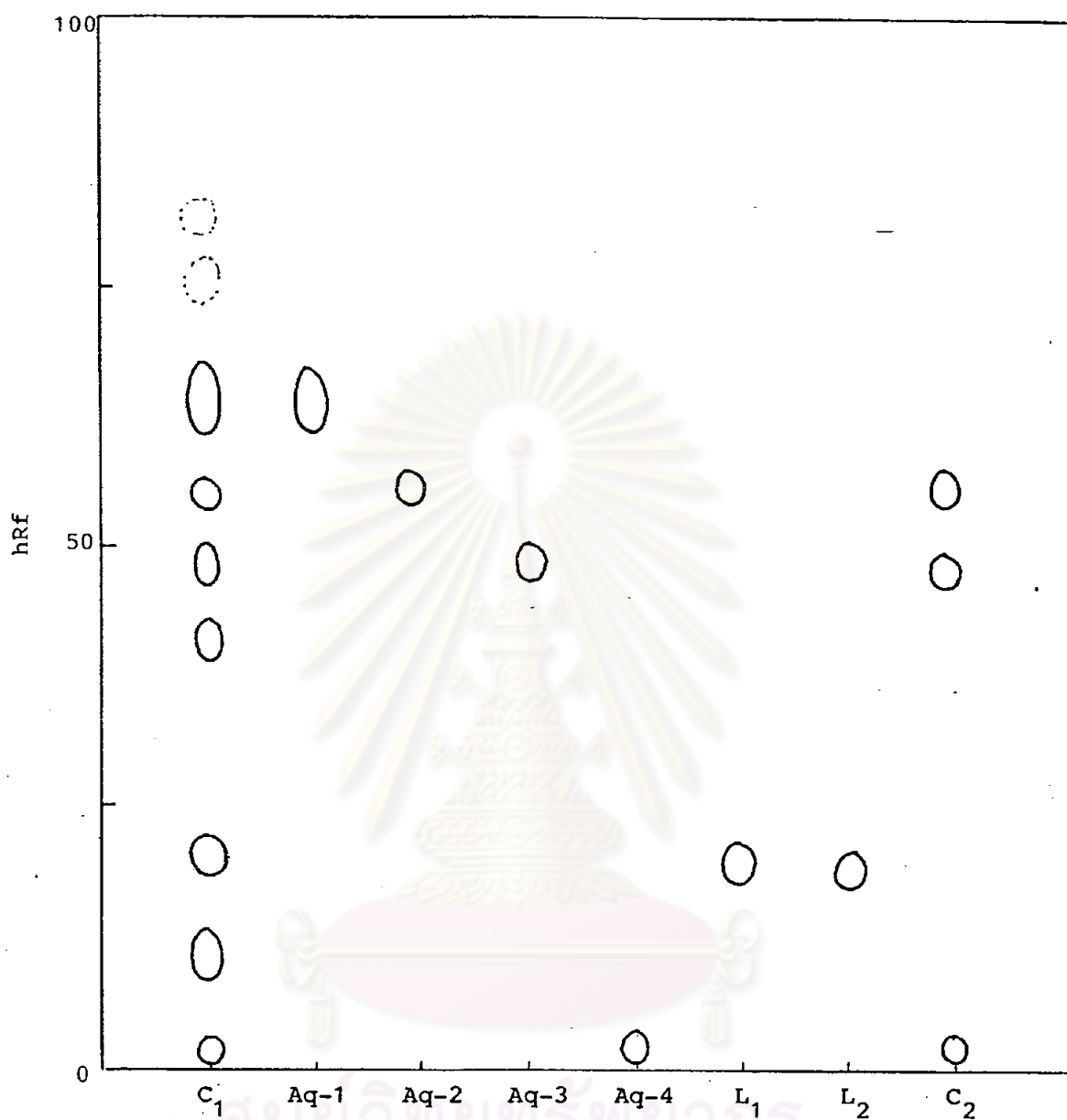


Fig. 18 Thin layer chromatogram of crude anthraquinones compared with isolated anthraquinones and with authentic sample

- C<sub>1</sub> - crude anthraquinones (refluxed with acid alcohol)
- C<sub>2</sub> - crude anthraquinones (macerated in ethanol)
- L<sub>1</sub> - lucidin (authentic sample)
- L<sub>2</sub> - lucidin (hydrolyzed from Aq-4)

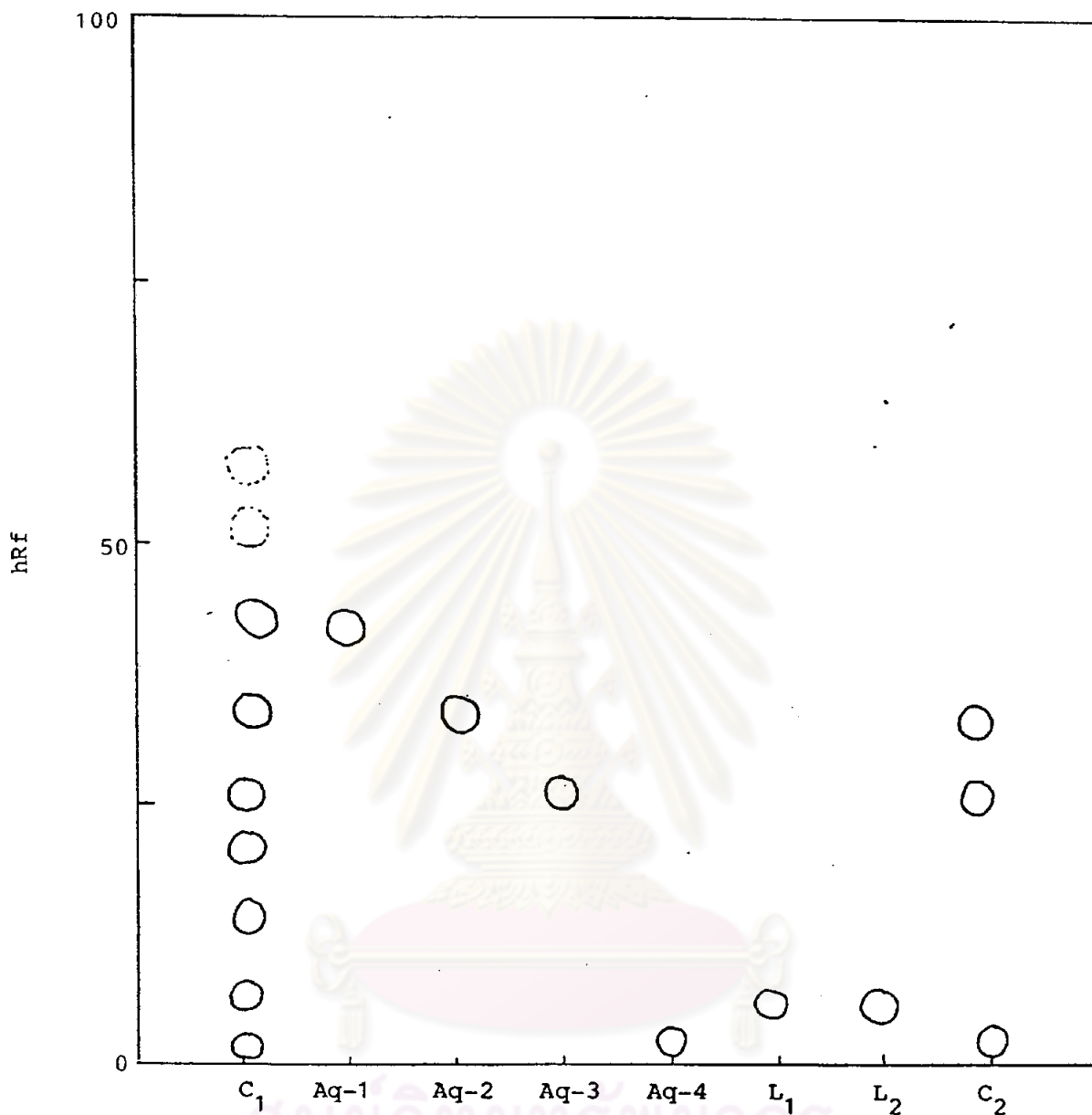


Fig. 19 Thin layer chromatogram of crude anthraquinones compared with isolated anthraquinones and with authentic sample

- C<sub>1</sub> - crude anthraquinones (refluxed with acid alcohol)
- C<sub>2</sub> - crude anthraquinones (macerated in ethanol)
- L<sub>1</sub> - lucidin (authentic sample)
- L<sub>2</sub> - lucidin (hydrolyzed from Aq-4),

Silica gel G

Methyl ethyl ketone + Glacial acetic acid + 2-methyl propan-2-ol(6+2+2)

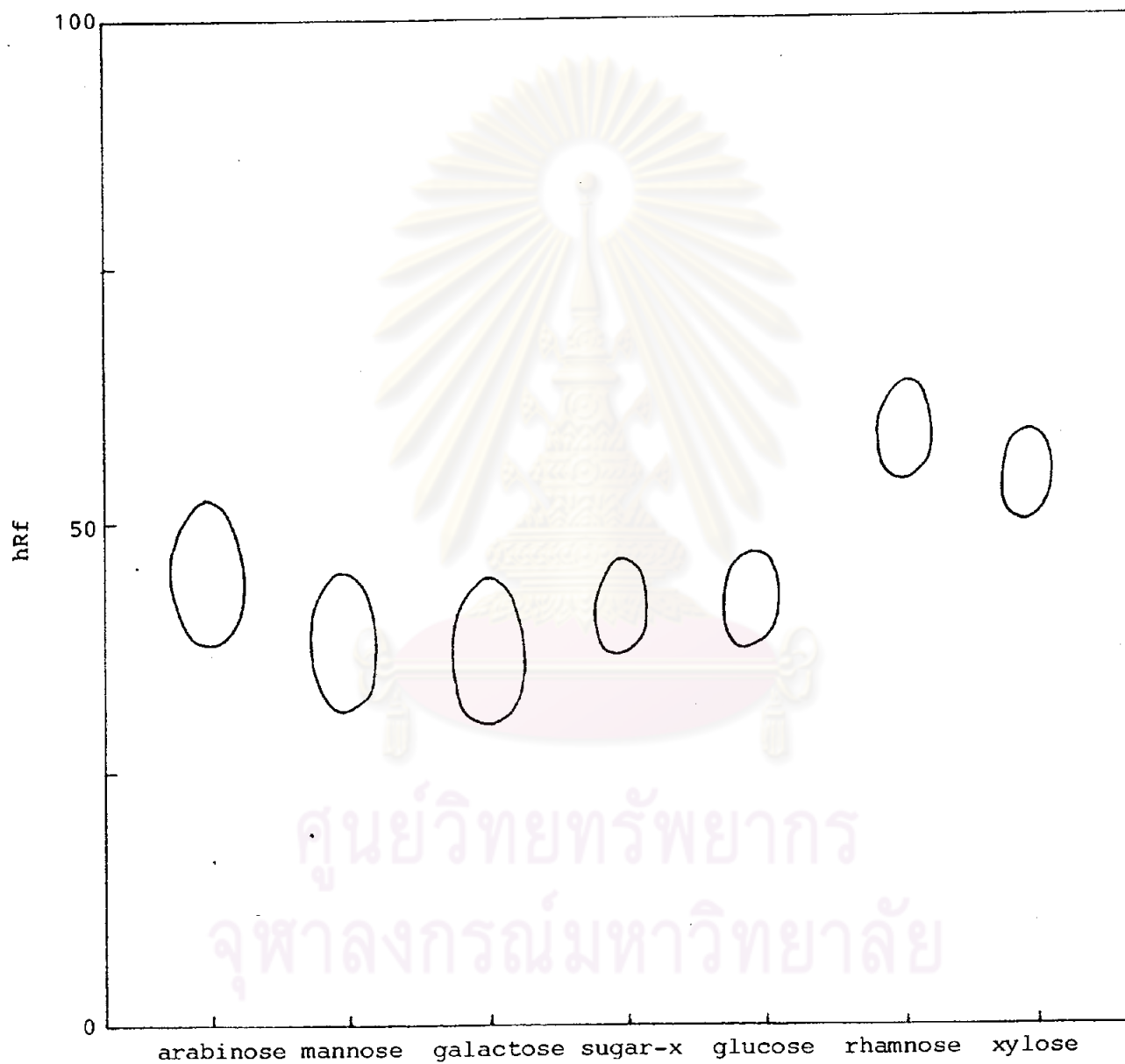


Fig. 20 Thin layer chromatogram of sugars

Silica gel G

N-butanol + Glacial acetic acid + Diethyl ether + Water (9+6+3+1)



Fig. 21 Thin layer chromatogram of sugars

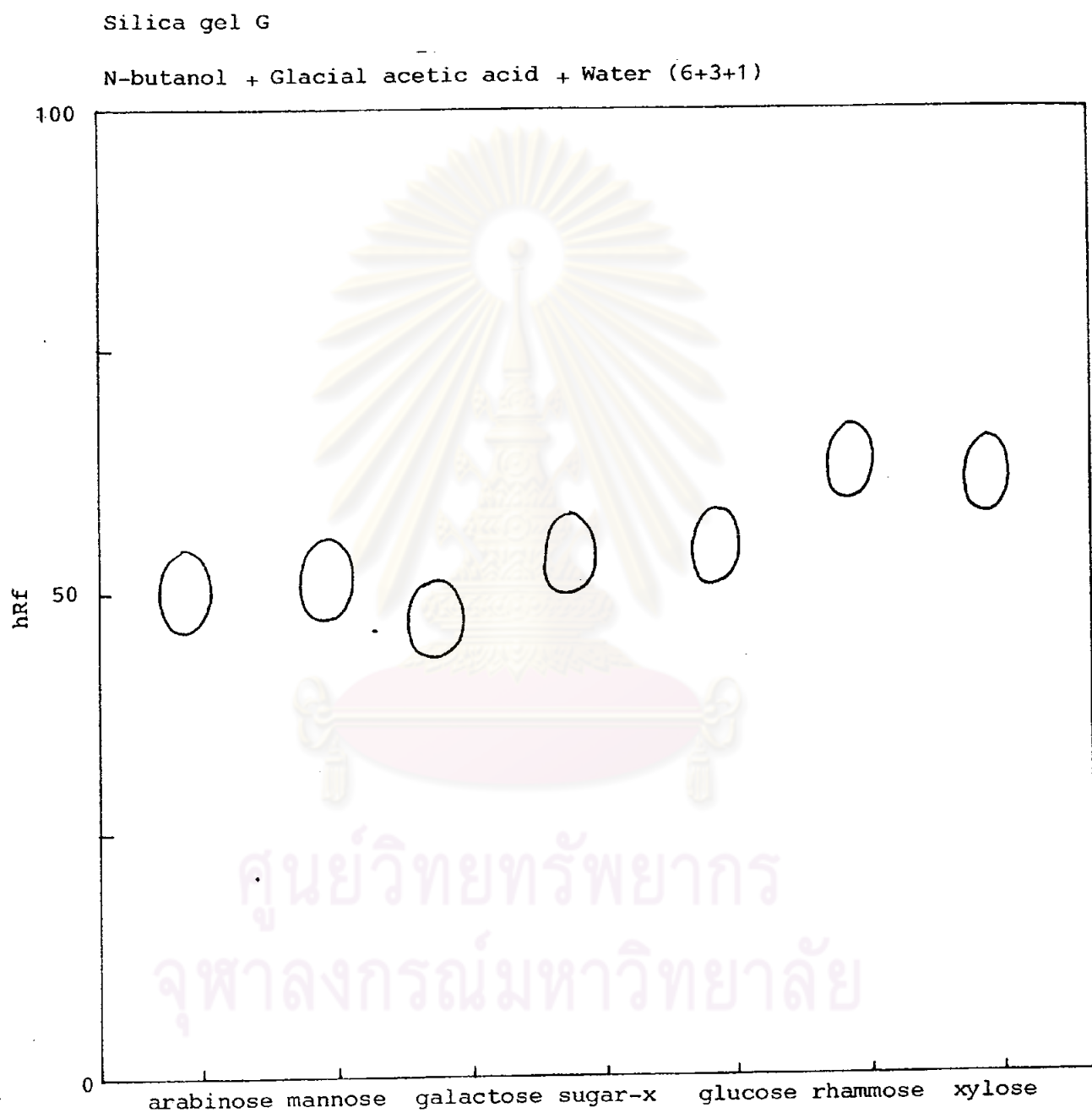


Fig. 22 Thin layer chromatogram of sugars



Silica gel G

Chloroform + Methanol + Water (6+4+1)

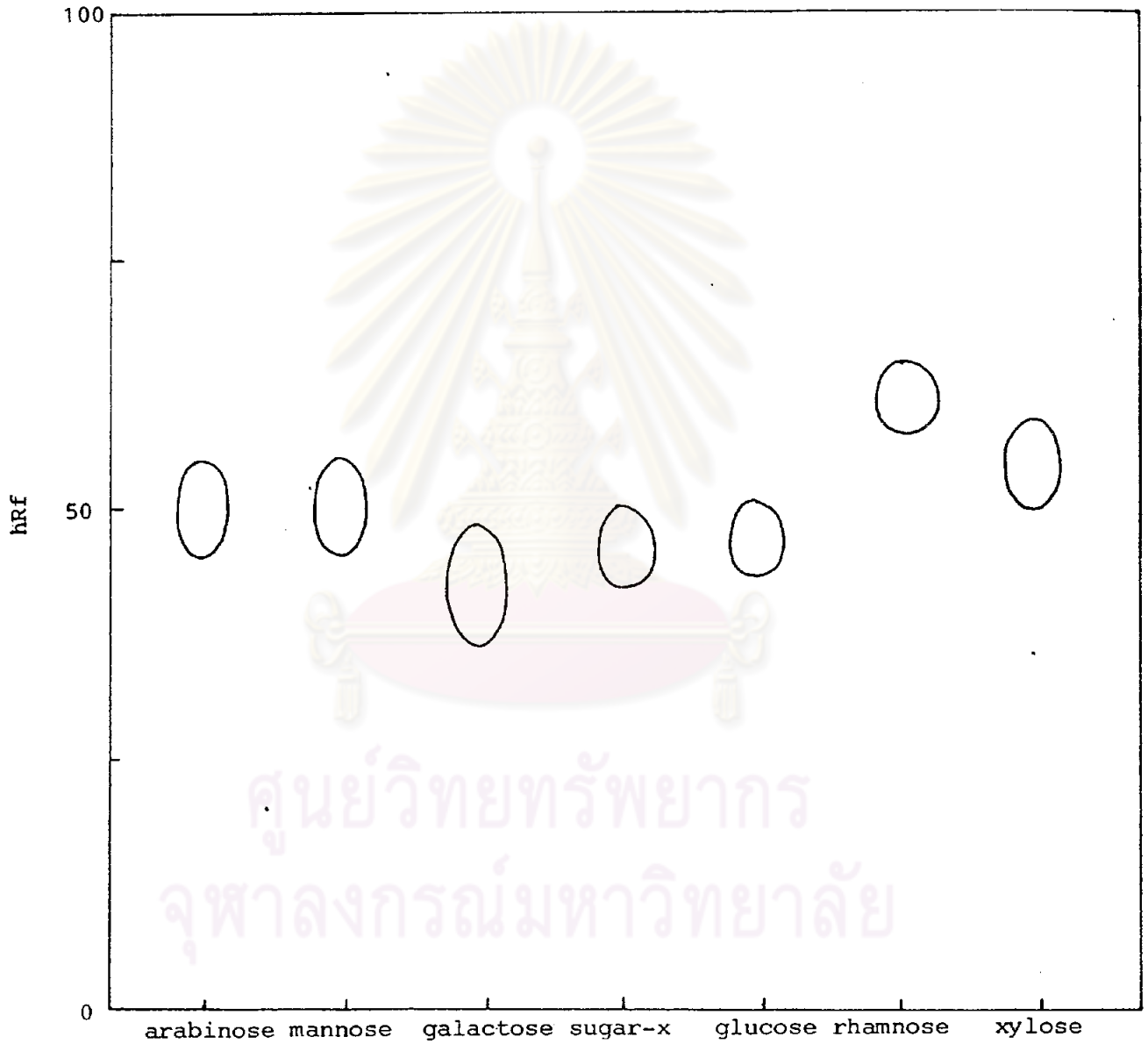


Fig. 23 Thin layer chromatogram of sugars



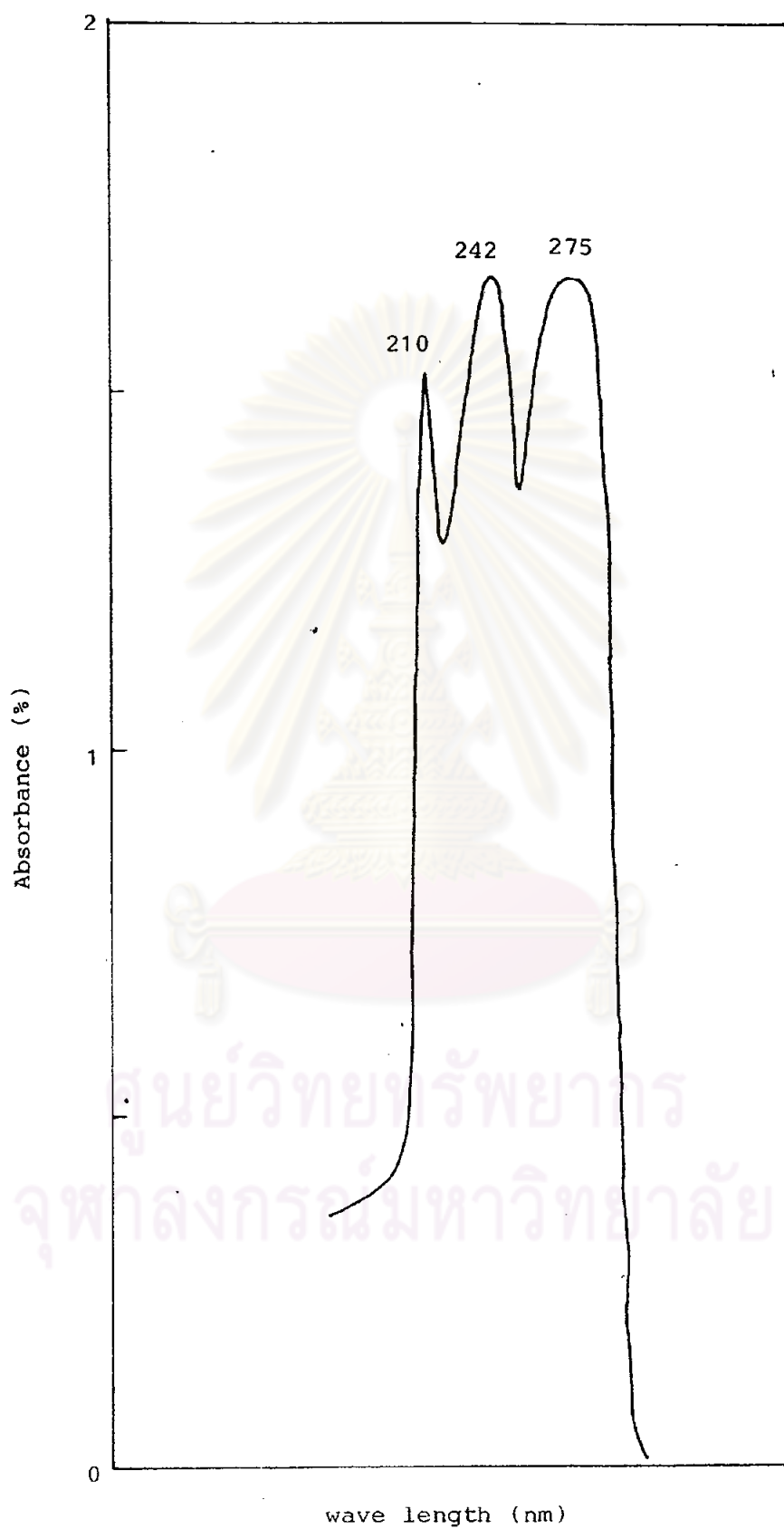


Fig. 24 Ultraviolet absorption spectrum of  
Aq-1

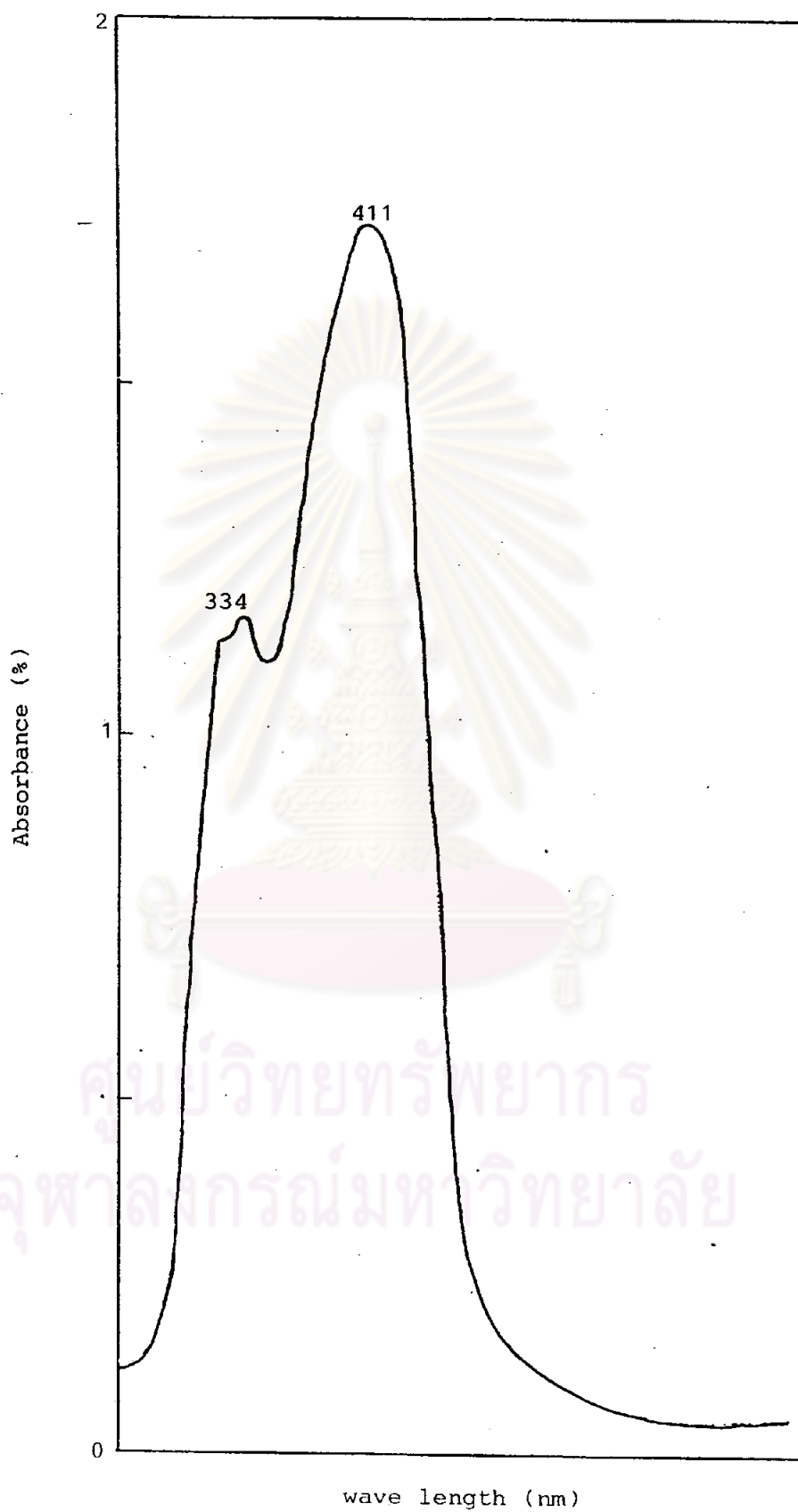


Fig. 25 Visible absorption spectrum of anthraquinone Aq-1

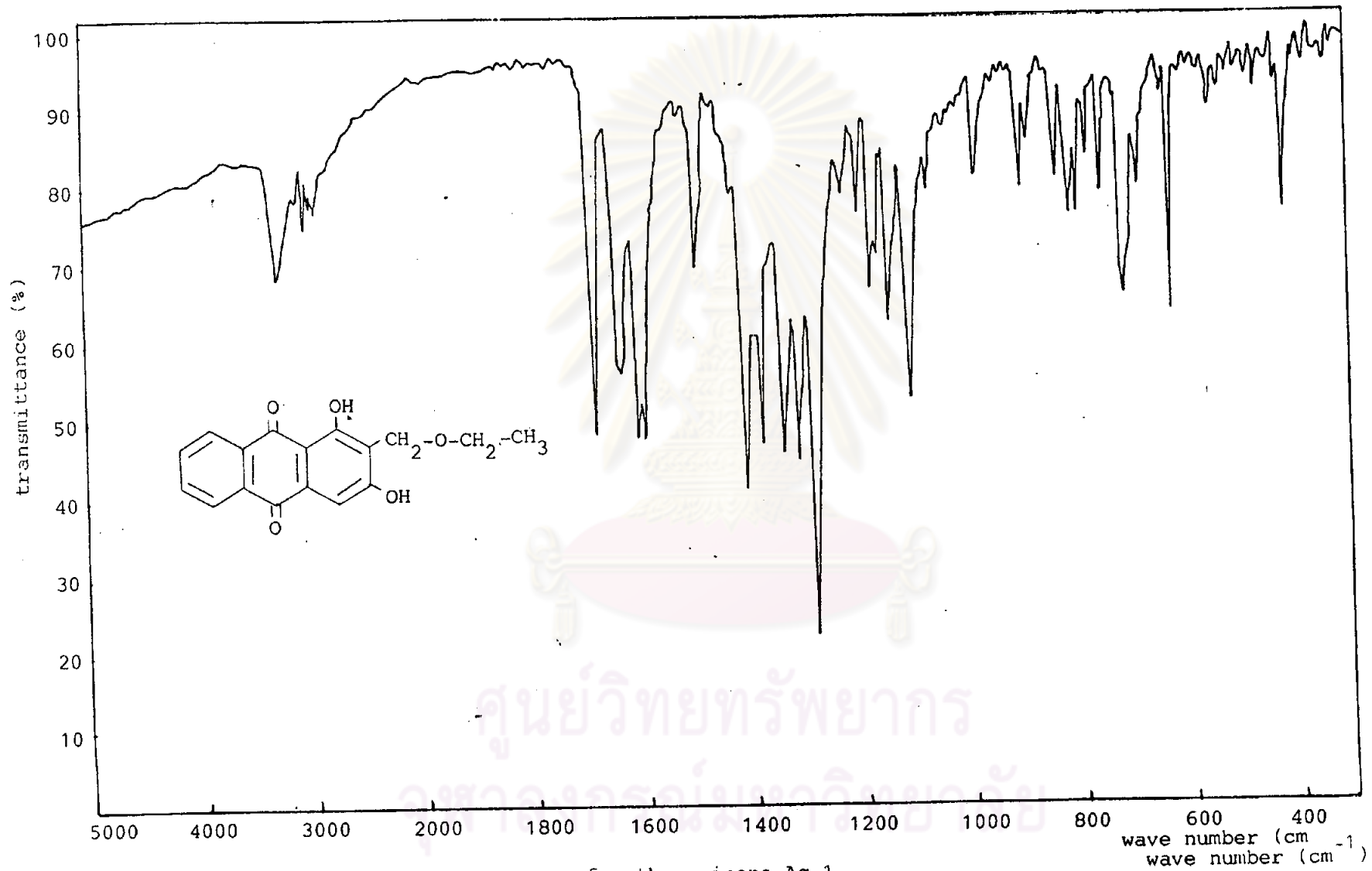


Fig. 26 Infrared absorption spectrum of anthraquinone Aq-1

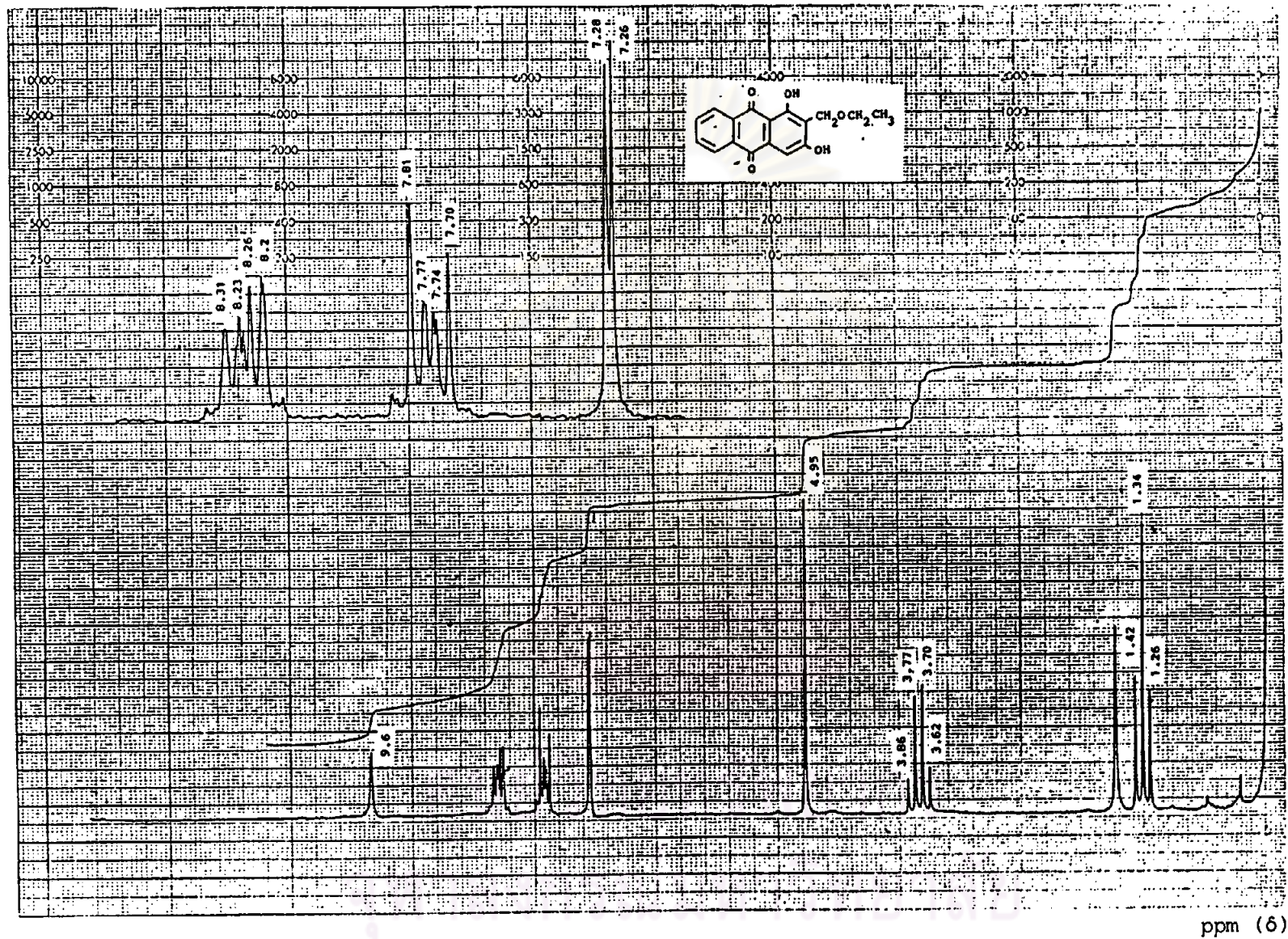


Fig. 27 Proton nuclear magnetic resonance spectrum of anthraquinone Aq-1



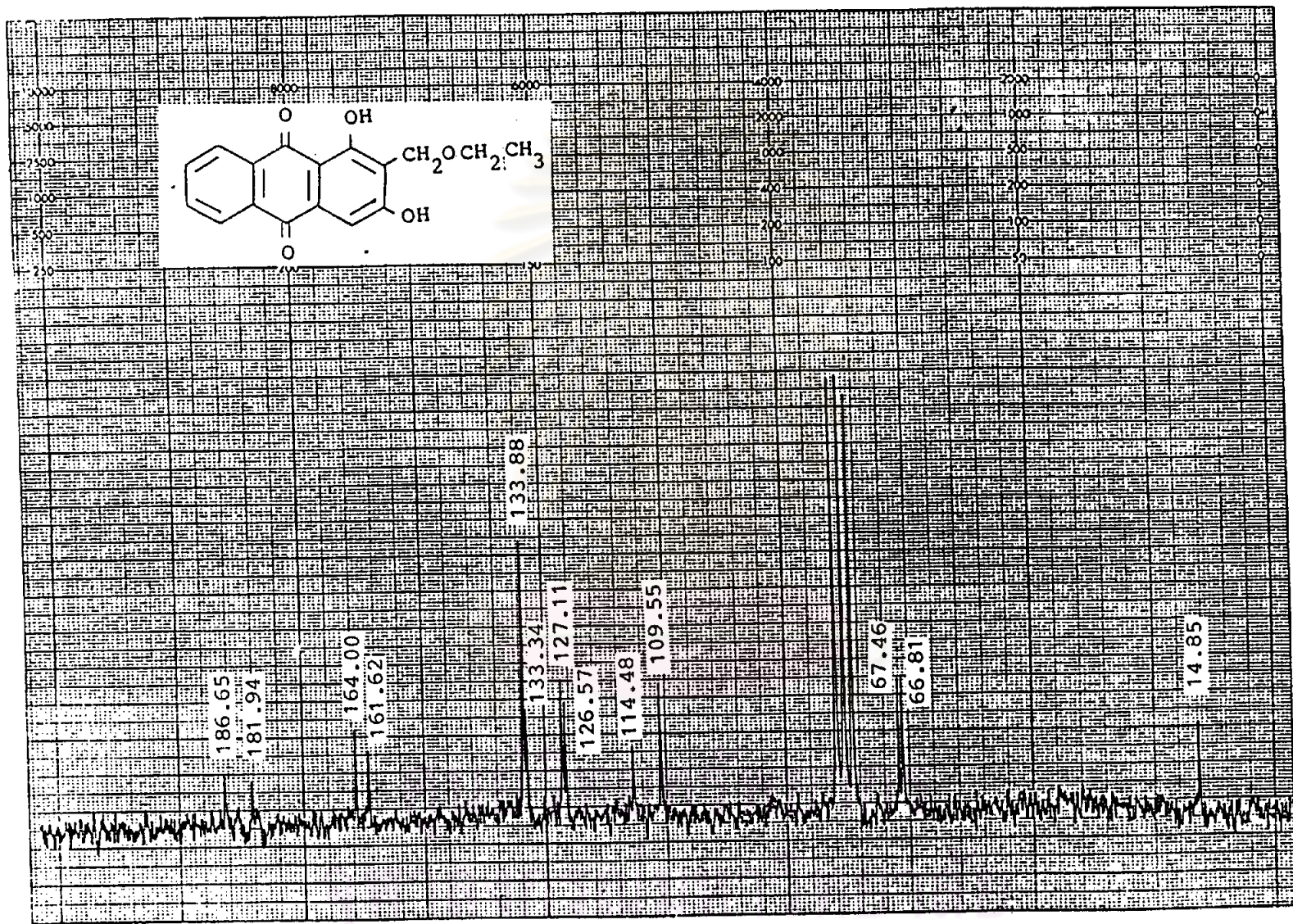


Fig. 28  $^{13}\text{C}$  nuclear magnetic resonance spectrum of anthraquinone Aq-1

ppm ( $\delta$ )

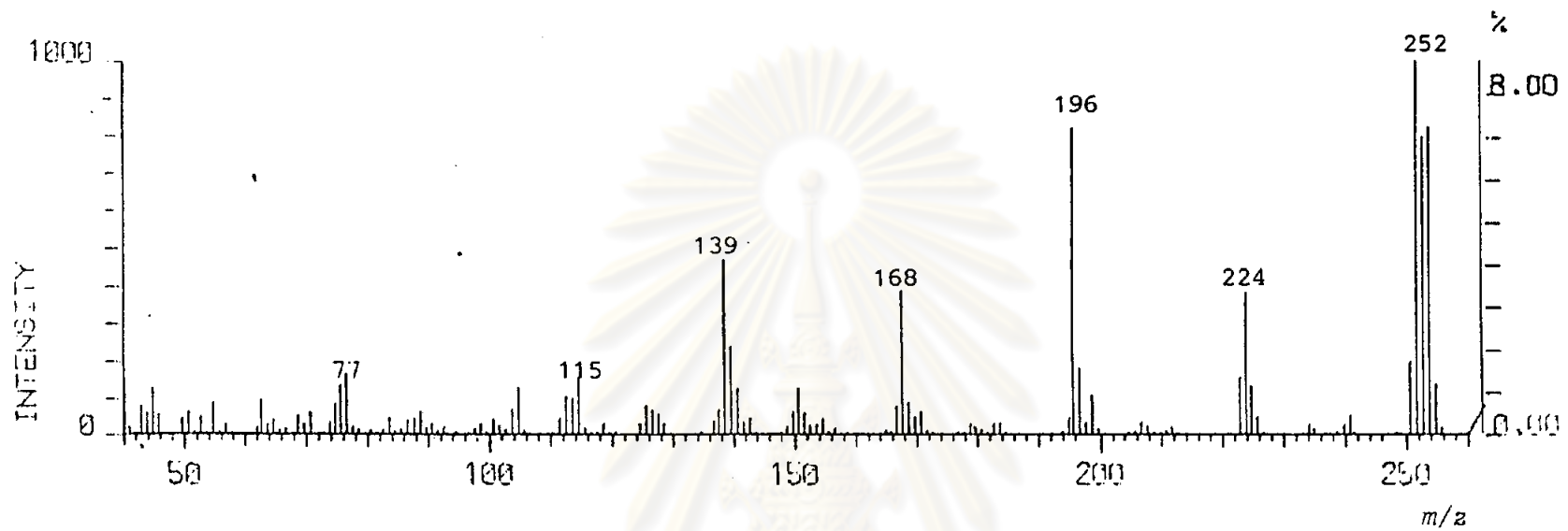


Fig. 29 Mass spectrum of anthraquinone Aq-1

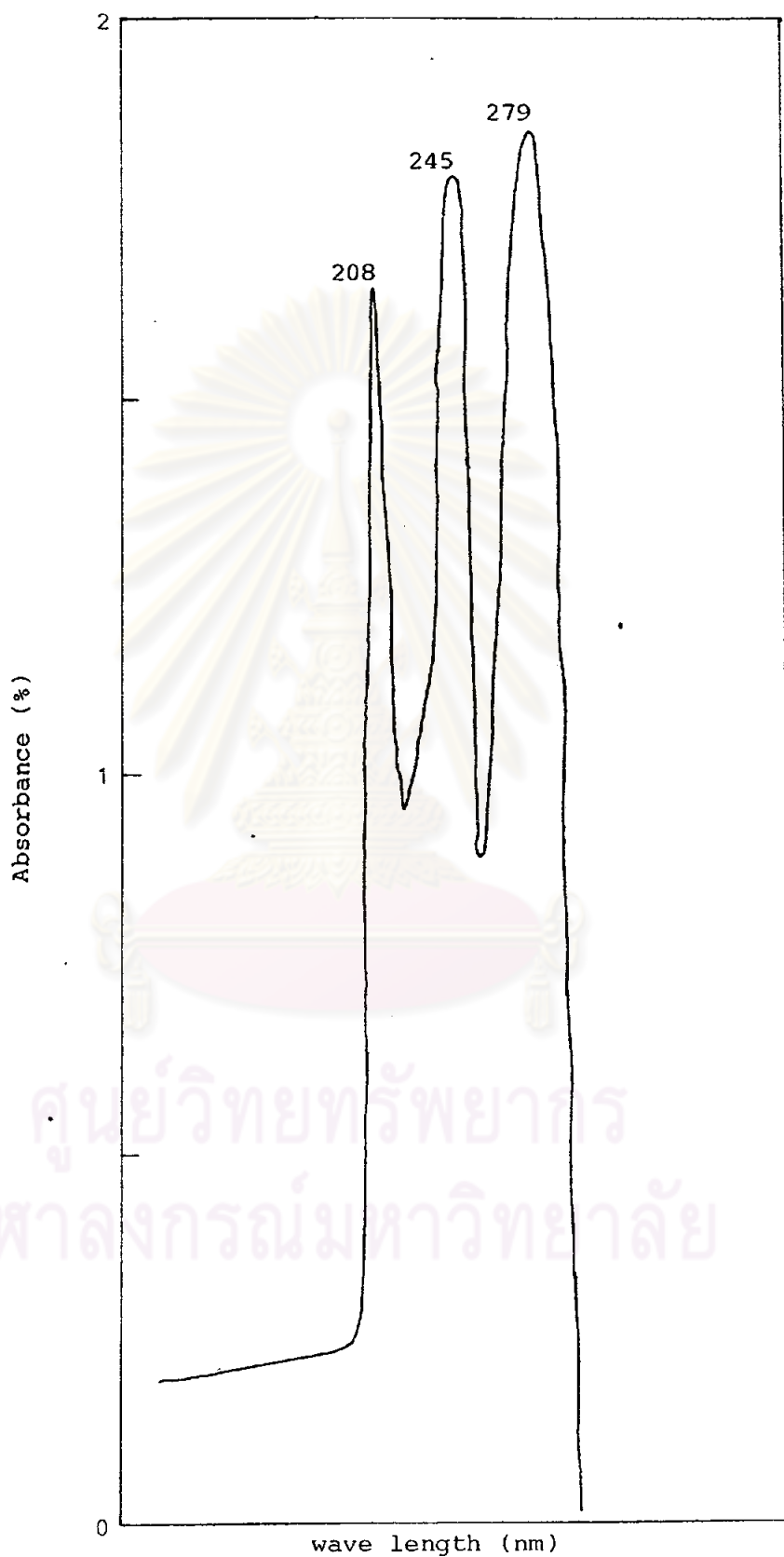


Fig. 30 Ultraviolet absorption spectrum of

Aq-2



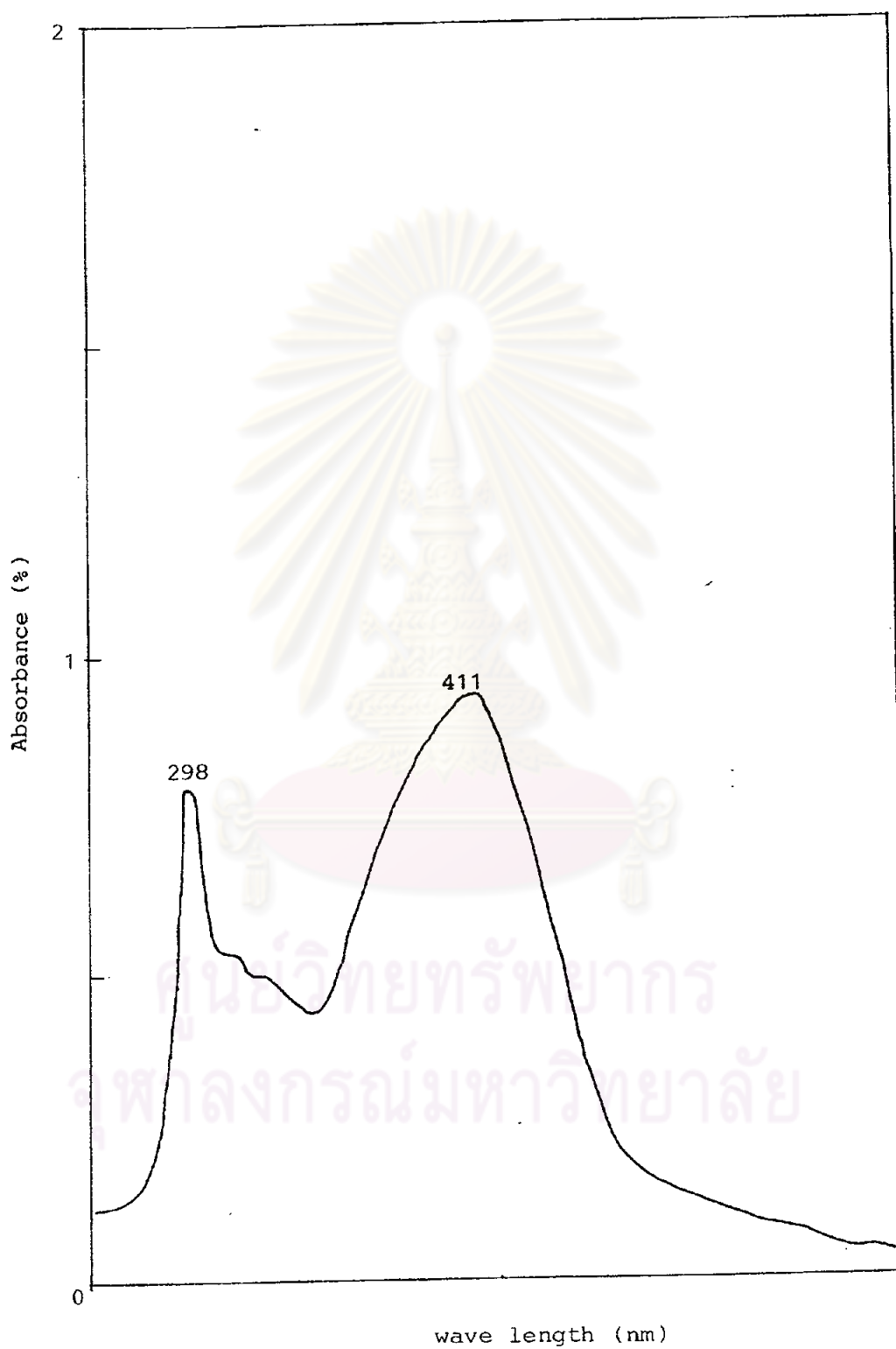


Fig. 31 Visible absorption spectrum of anthraquinone Aq-2

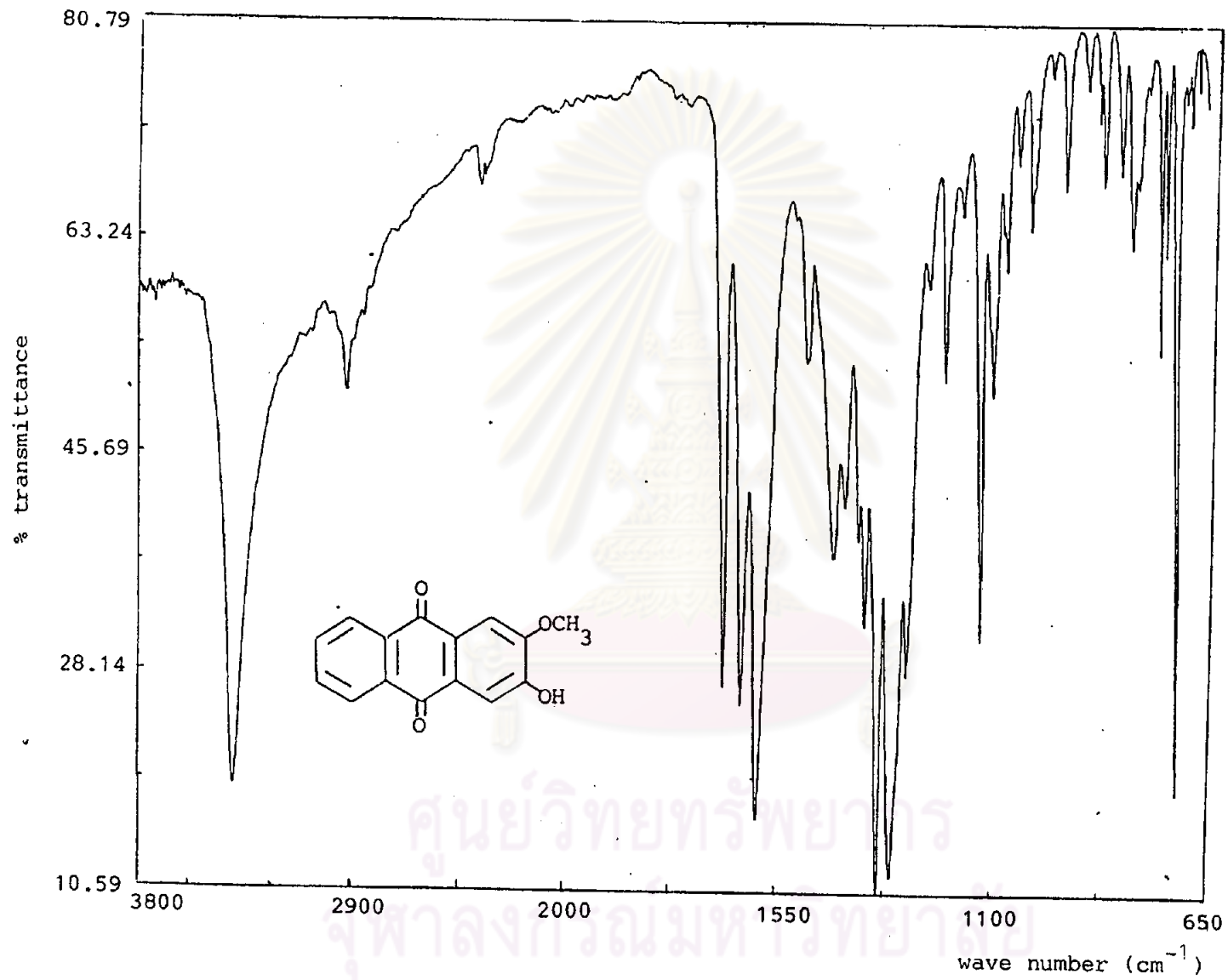


Fig. 32 Infrared absorption spectrum of anthraquinone Aq-2

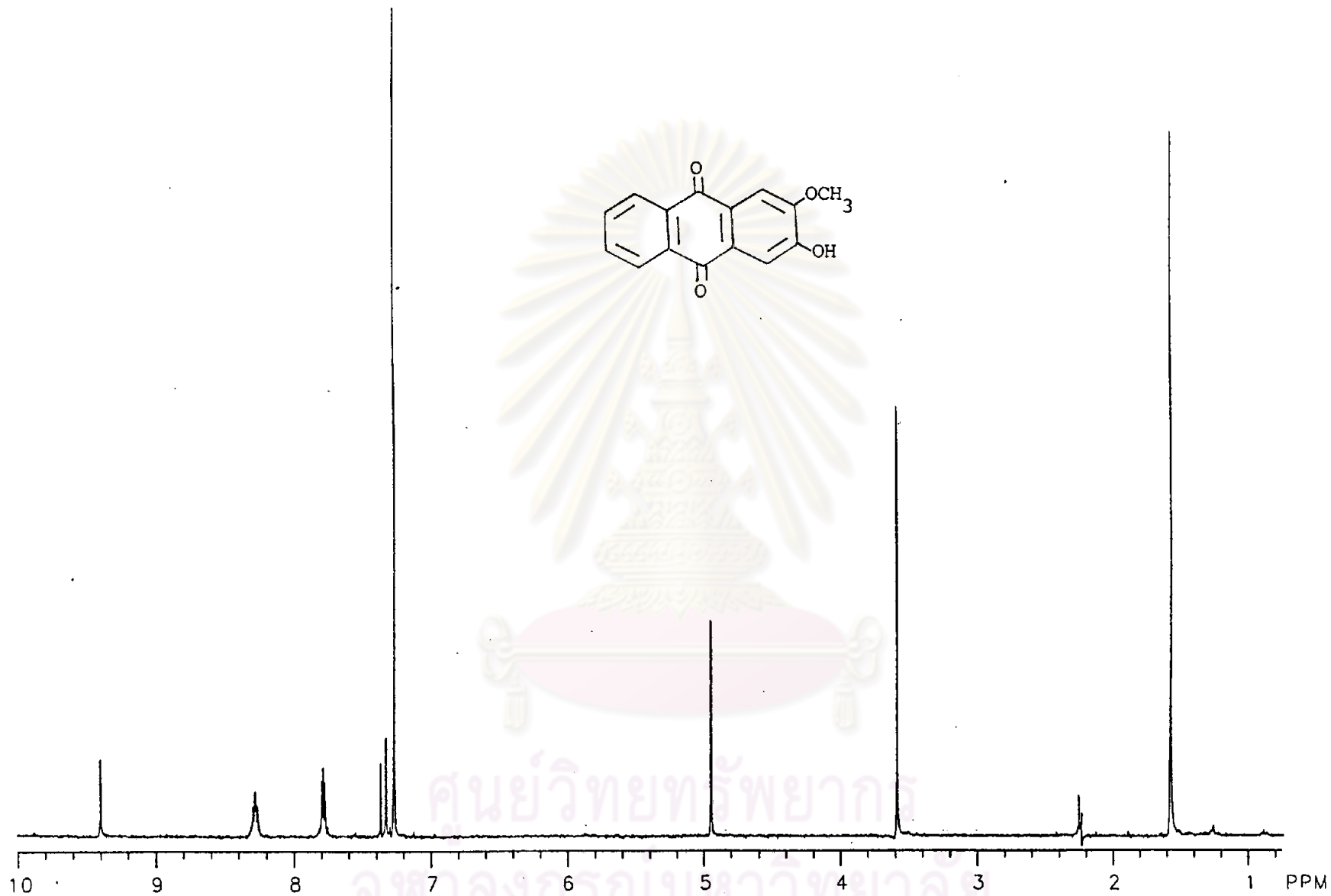


Fig. 33 Proton nuclear magnetic resonance spectrum of anthraquinone Aq-2

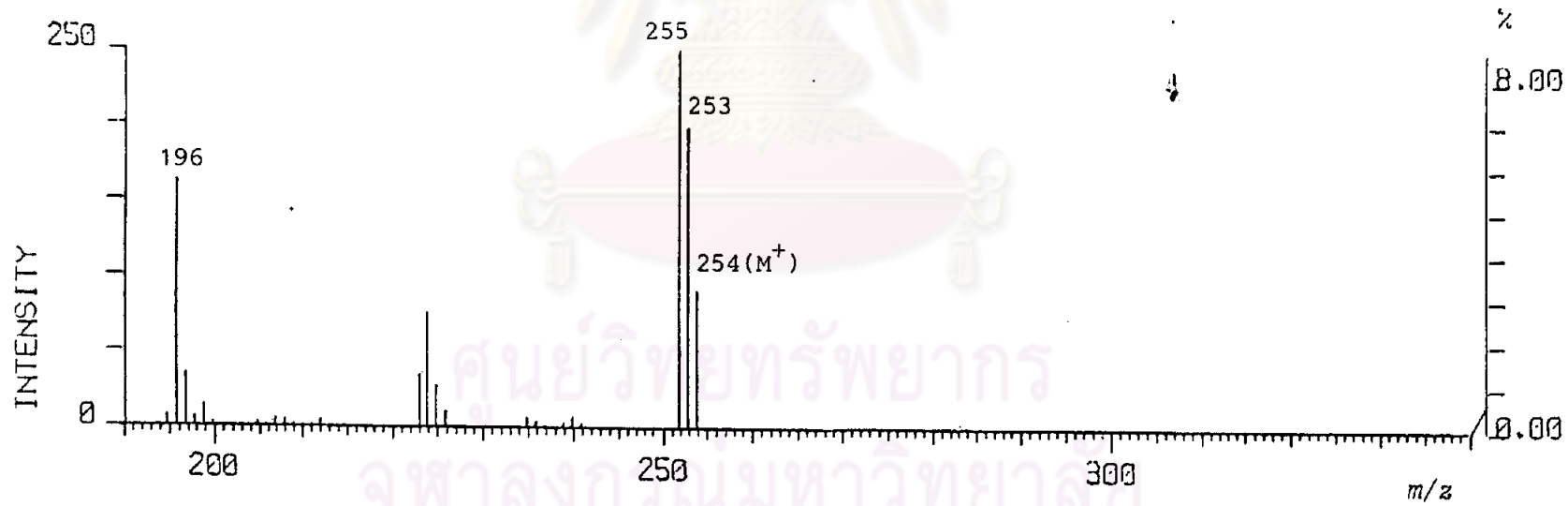
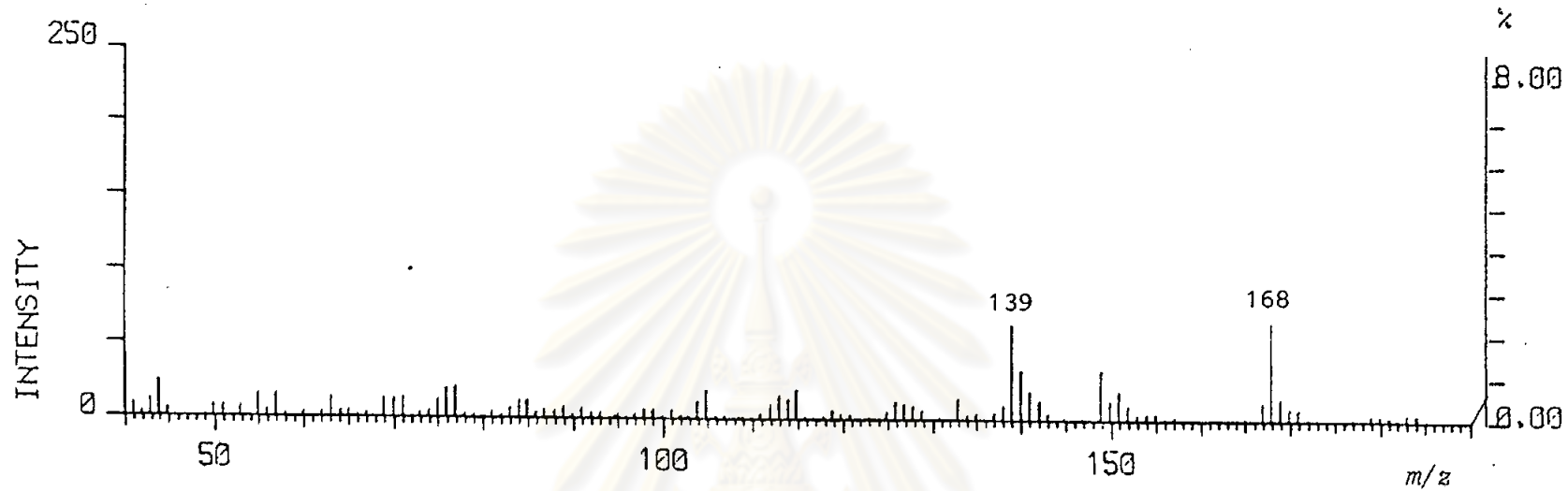


Fig. 34 Mass spectrum of anthraquinone Aq-2

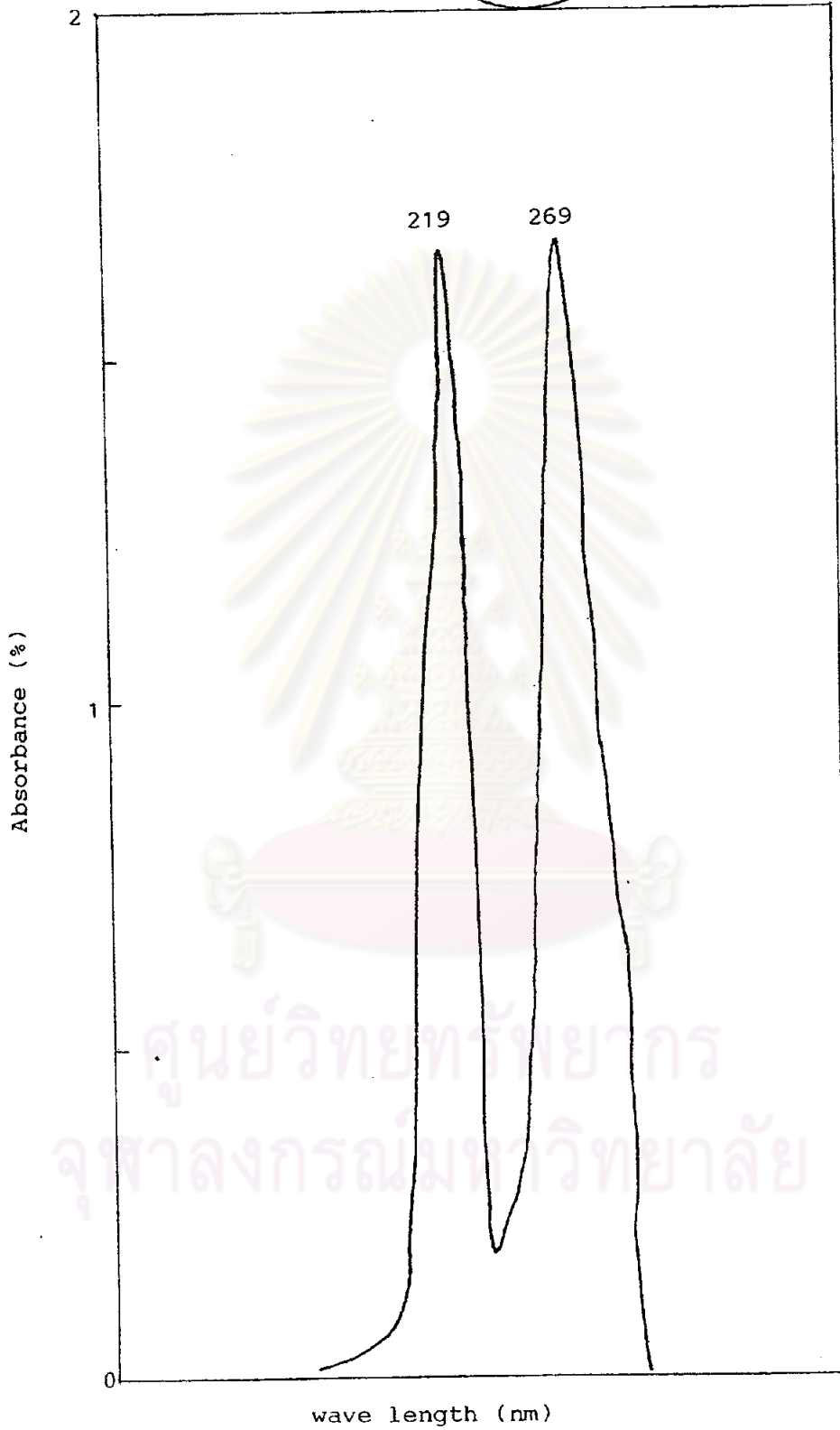


Fig. 35 Ultraviolet absorption spectrum of anthraquinone Aq-3

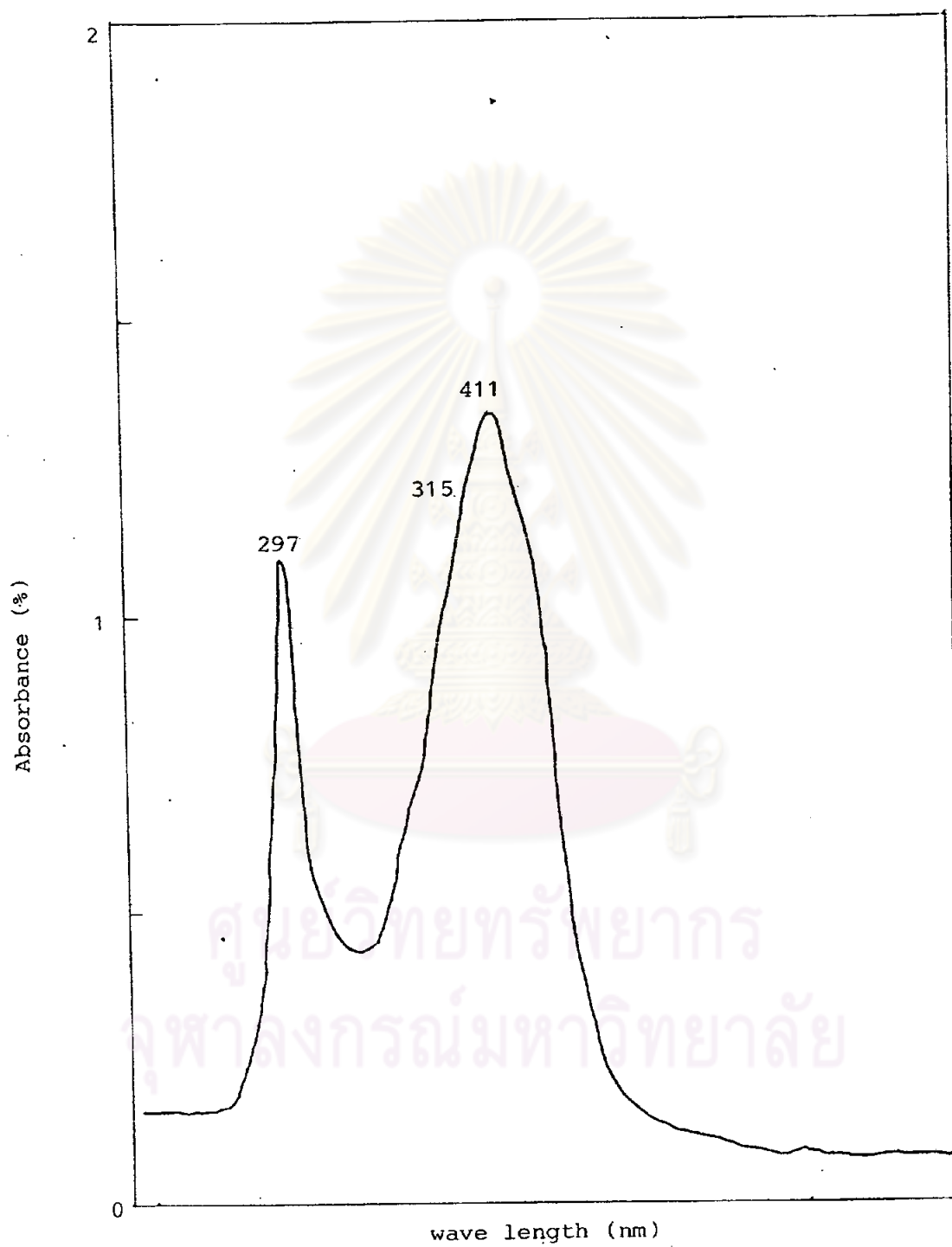


Fig. 36 Visible absorption spectrum of anthraquinone Aq-3

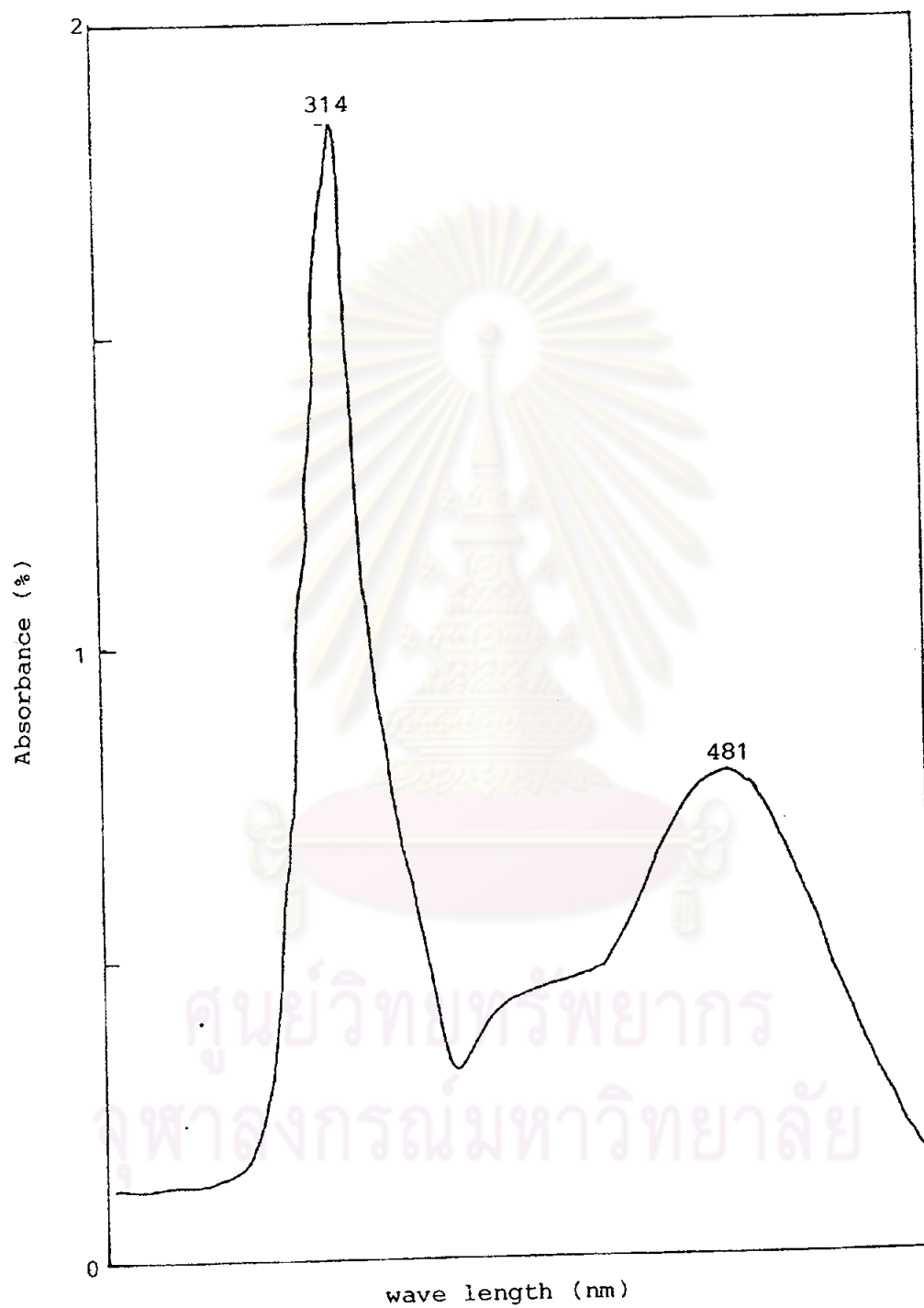


Fig. 37 Bathochromic shift of anthraquinone Aq-3  
(AlCl<sub>3</sub> added)



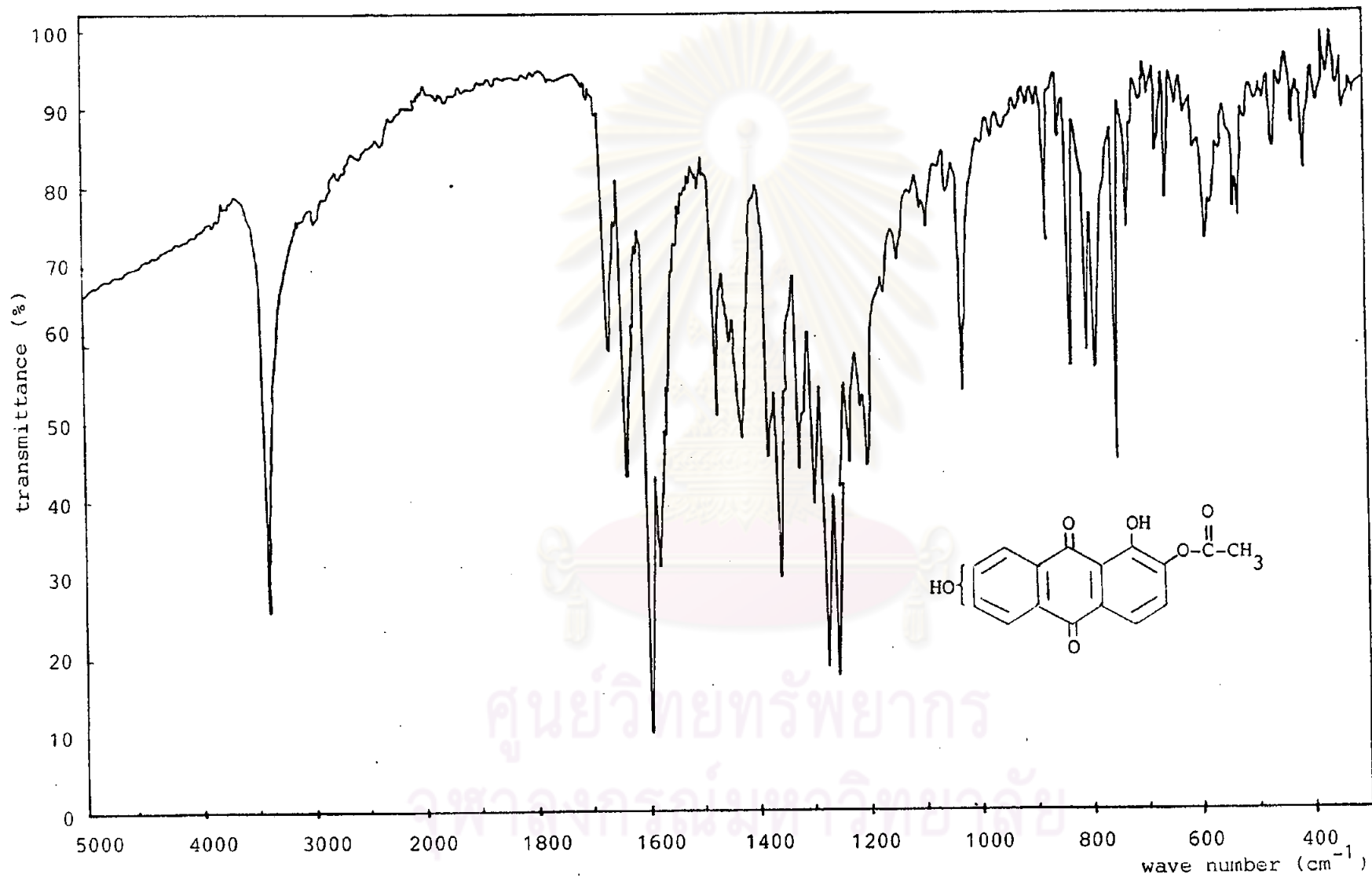


Fig. 38 Infrared absorption spectrum of anthraquinone Aq-3

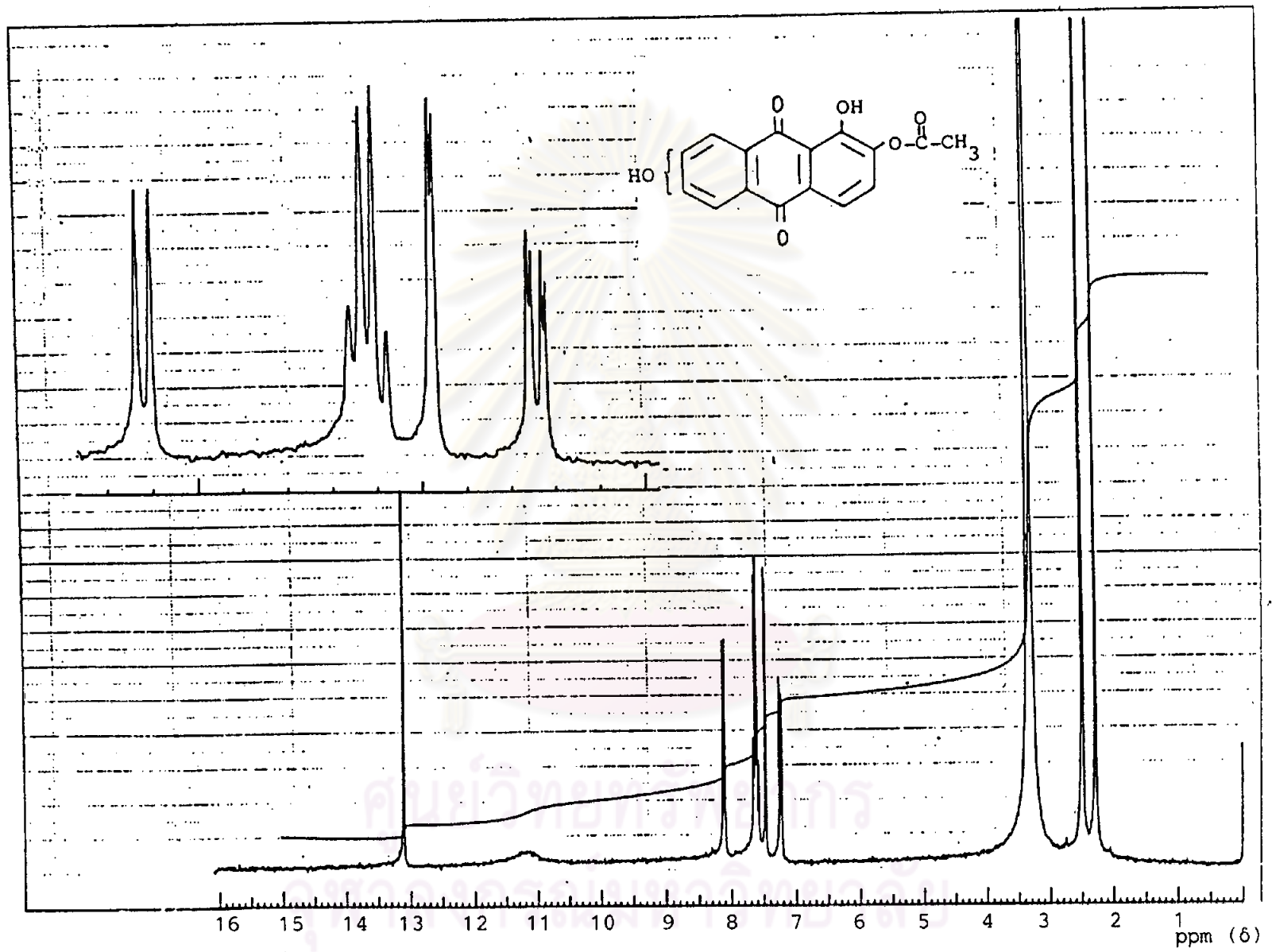


Fig. 39 Proton nuclear magnetic resonance spectrum of anthraquinone Aq-3

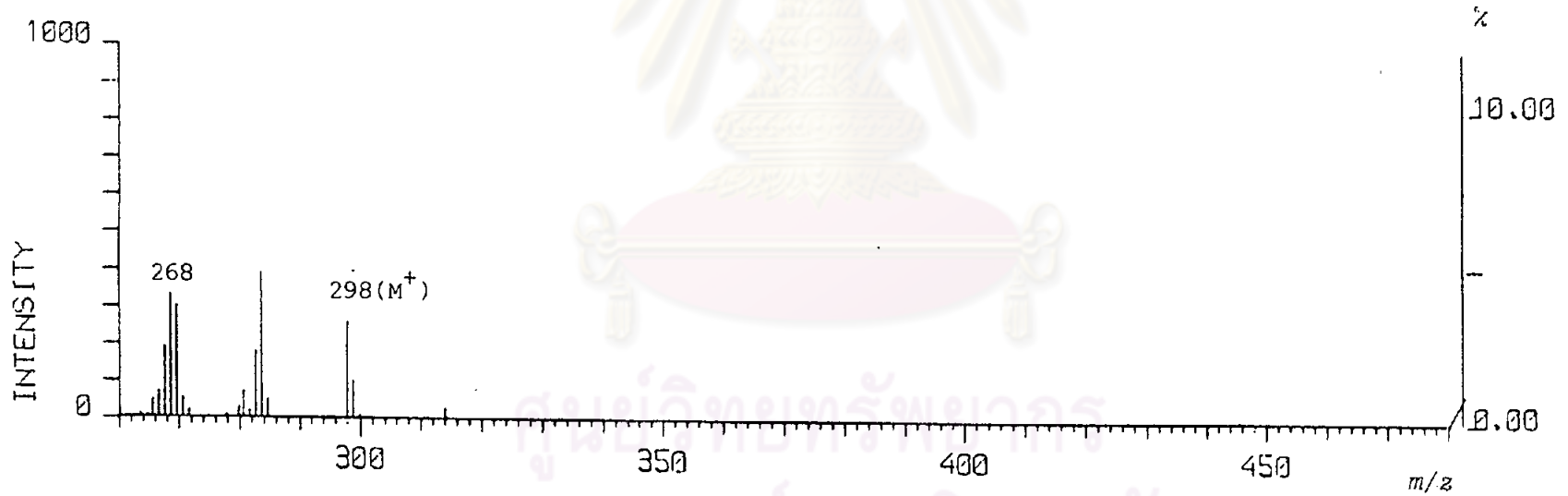
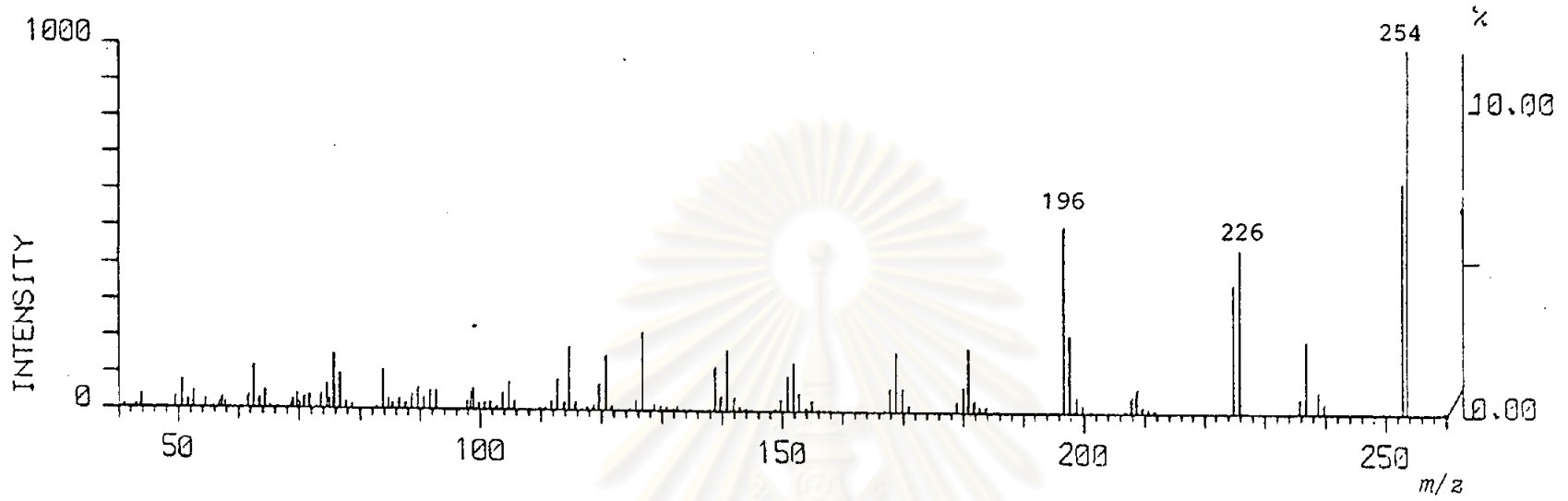


Fig. 40 Mass spectrum of anthraquinone Aq-3

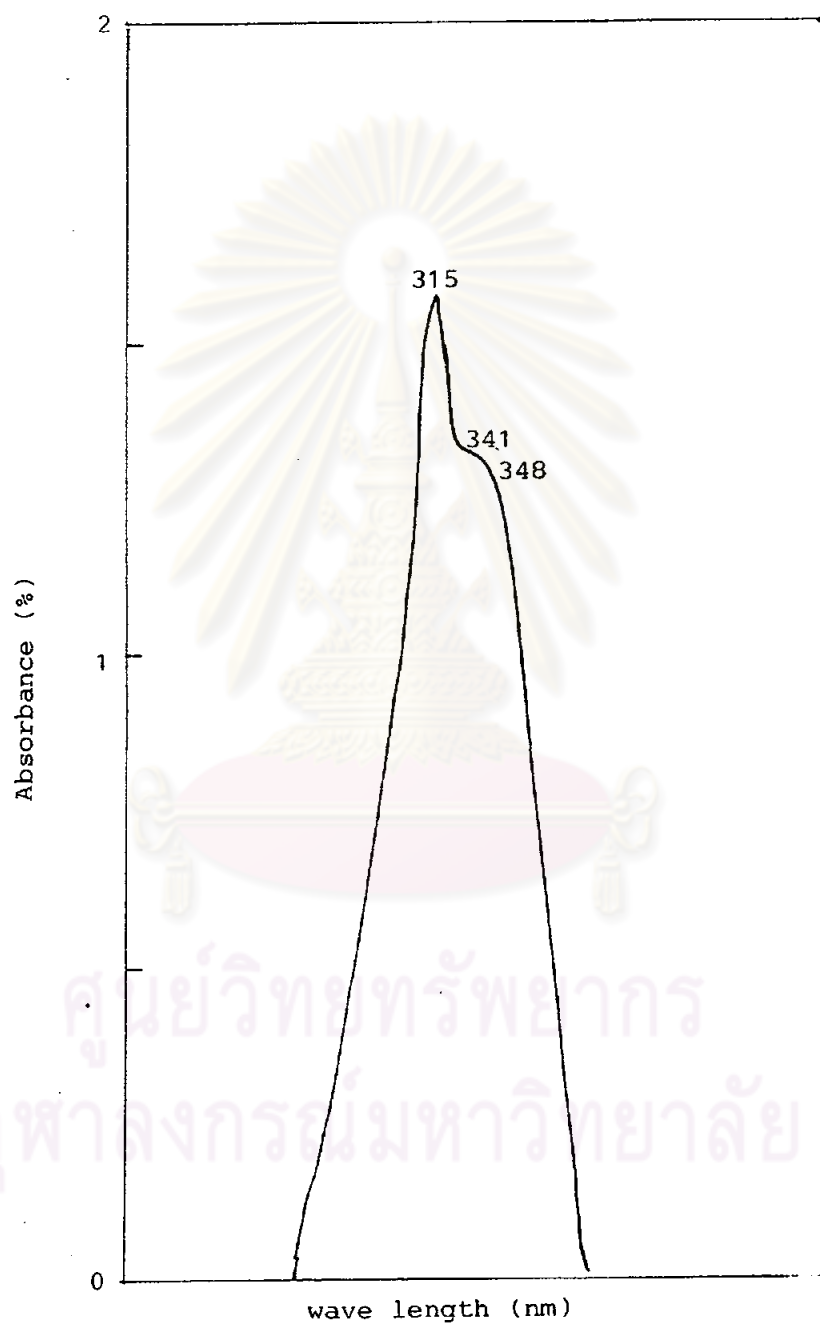


Fig. 41 Ultraviolet absorption spectrum of anthraquinone Aq-4

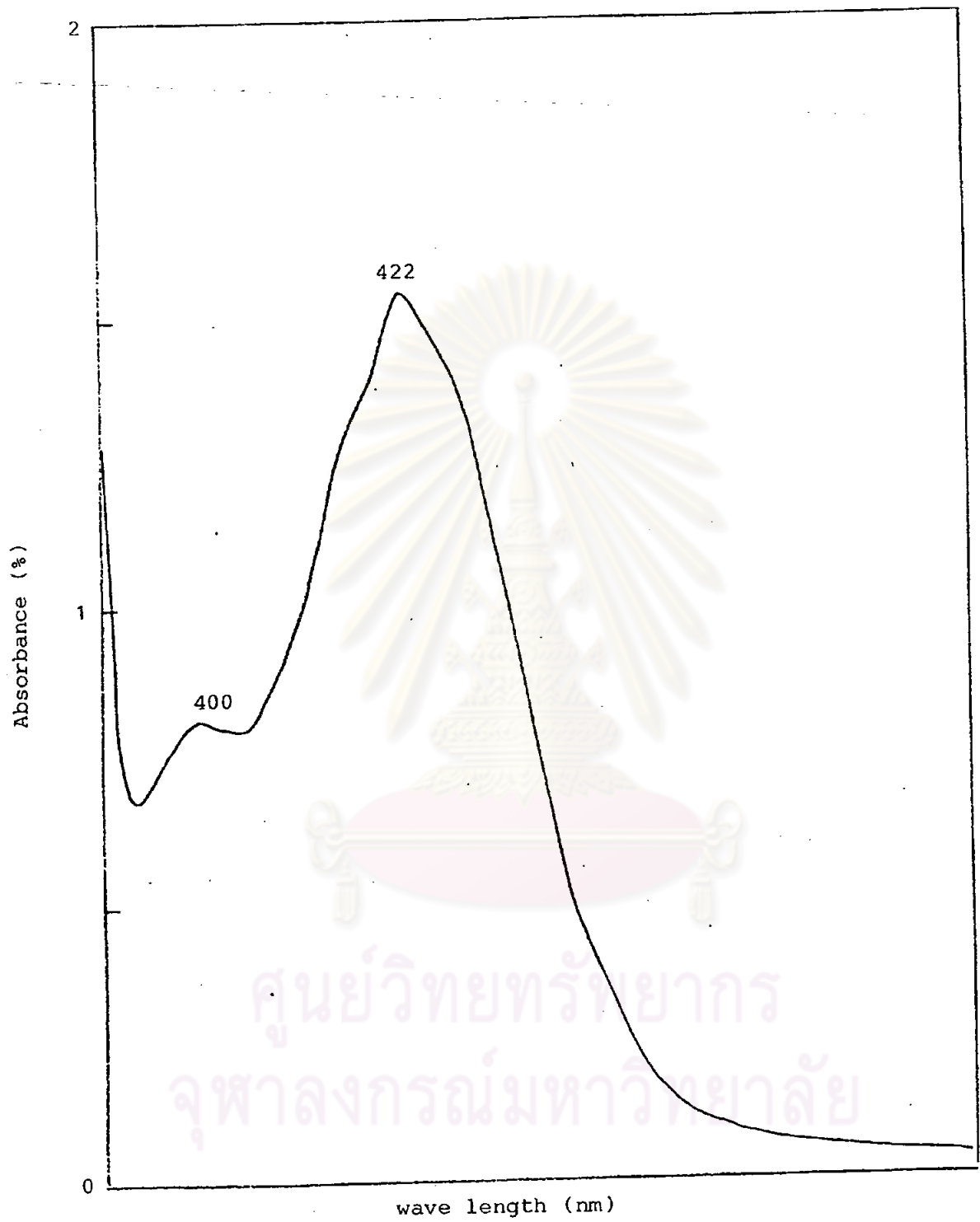


Fig. 42 Visible absorption spectrum of anthraquinone Aq-4

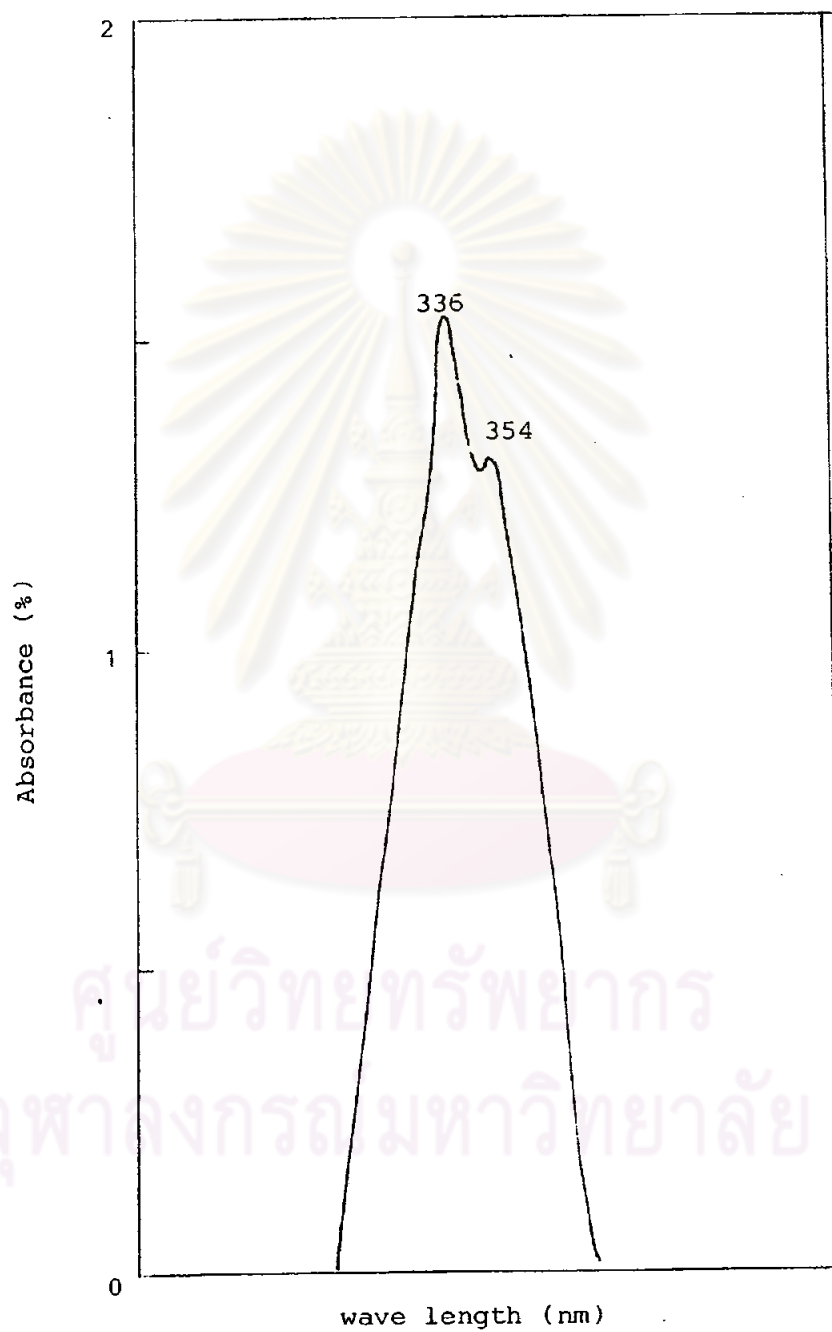


Fig. 43 Bathochromic shift of anthraquinone

Aq-4 ( $\text{AlCl}_3$  added)

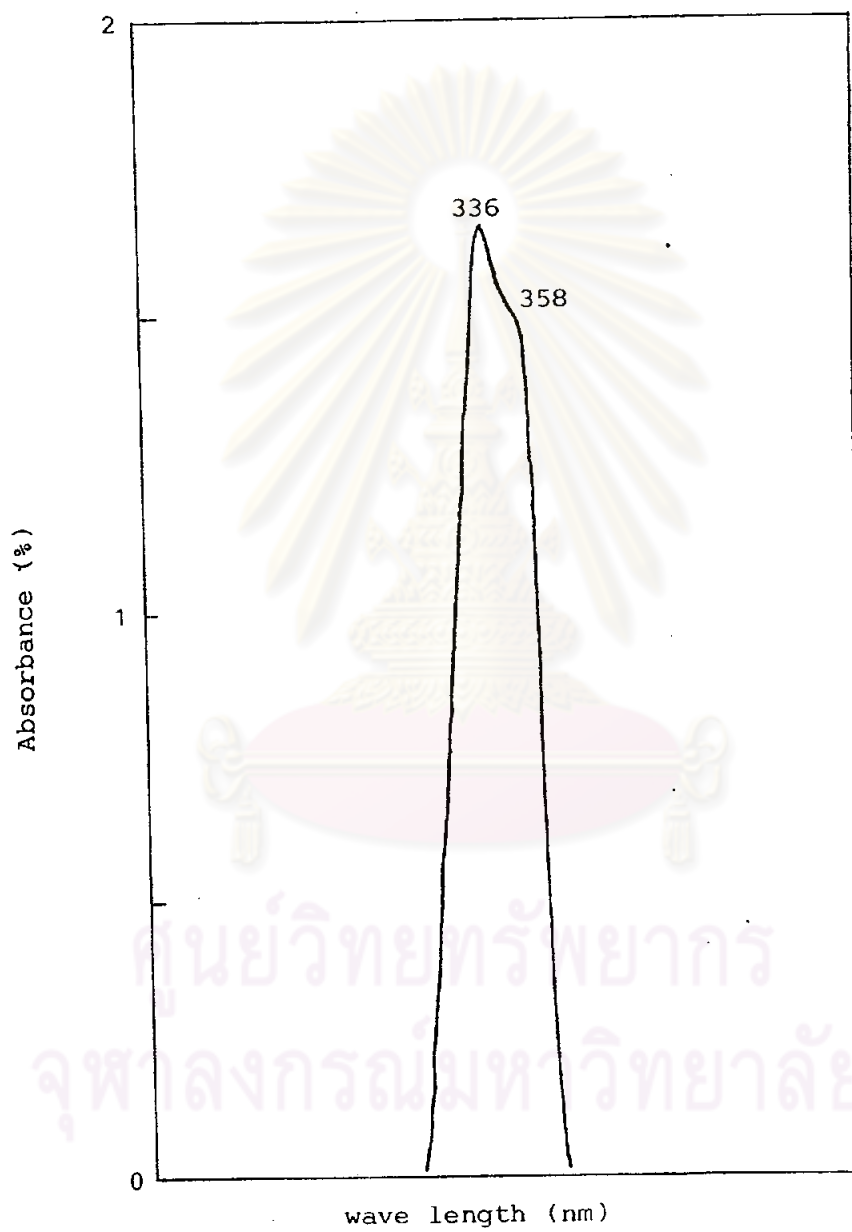


Fig. 44 Bathochromic shift of anthraquinone  
Aq-4 ( $\text{AlCl}_3$  and NaOAc added)

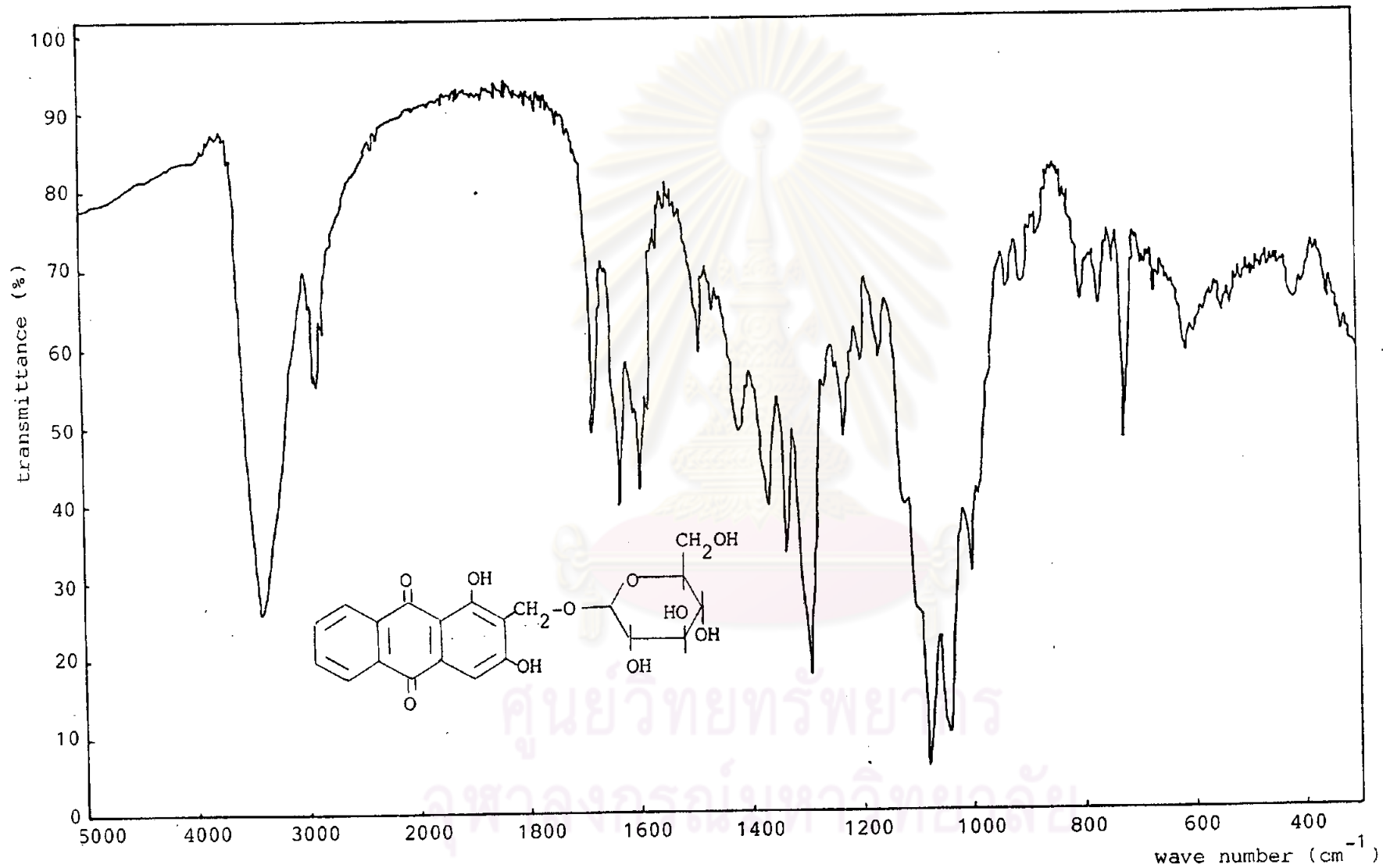


Fig. 45 Infrared absorption spectrum of anthraquinone Aq-4



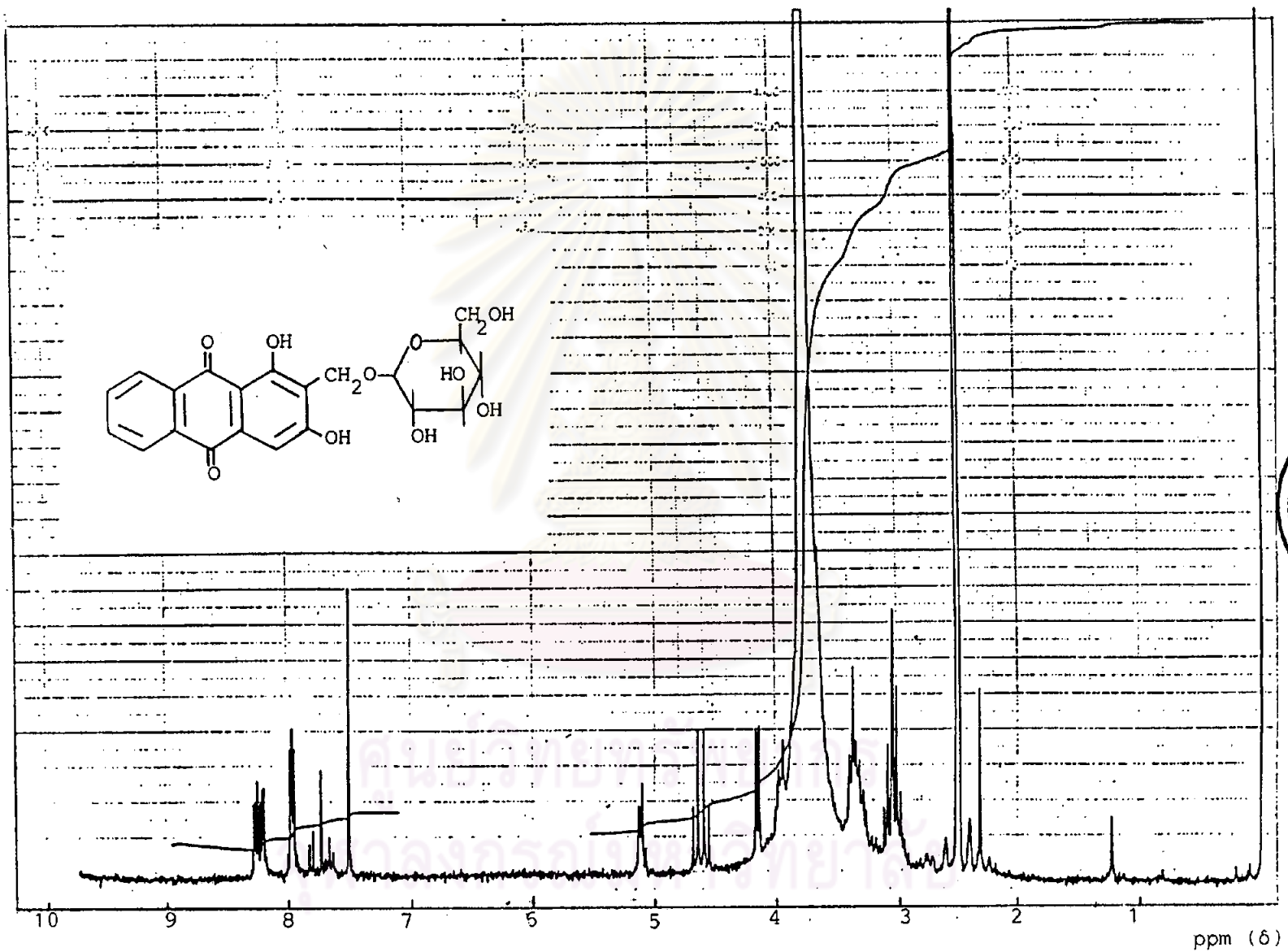


Fig. 46 Proton nuclear magnetic resonance spectrum of anthraquinone Aq-4

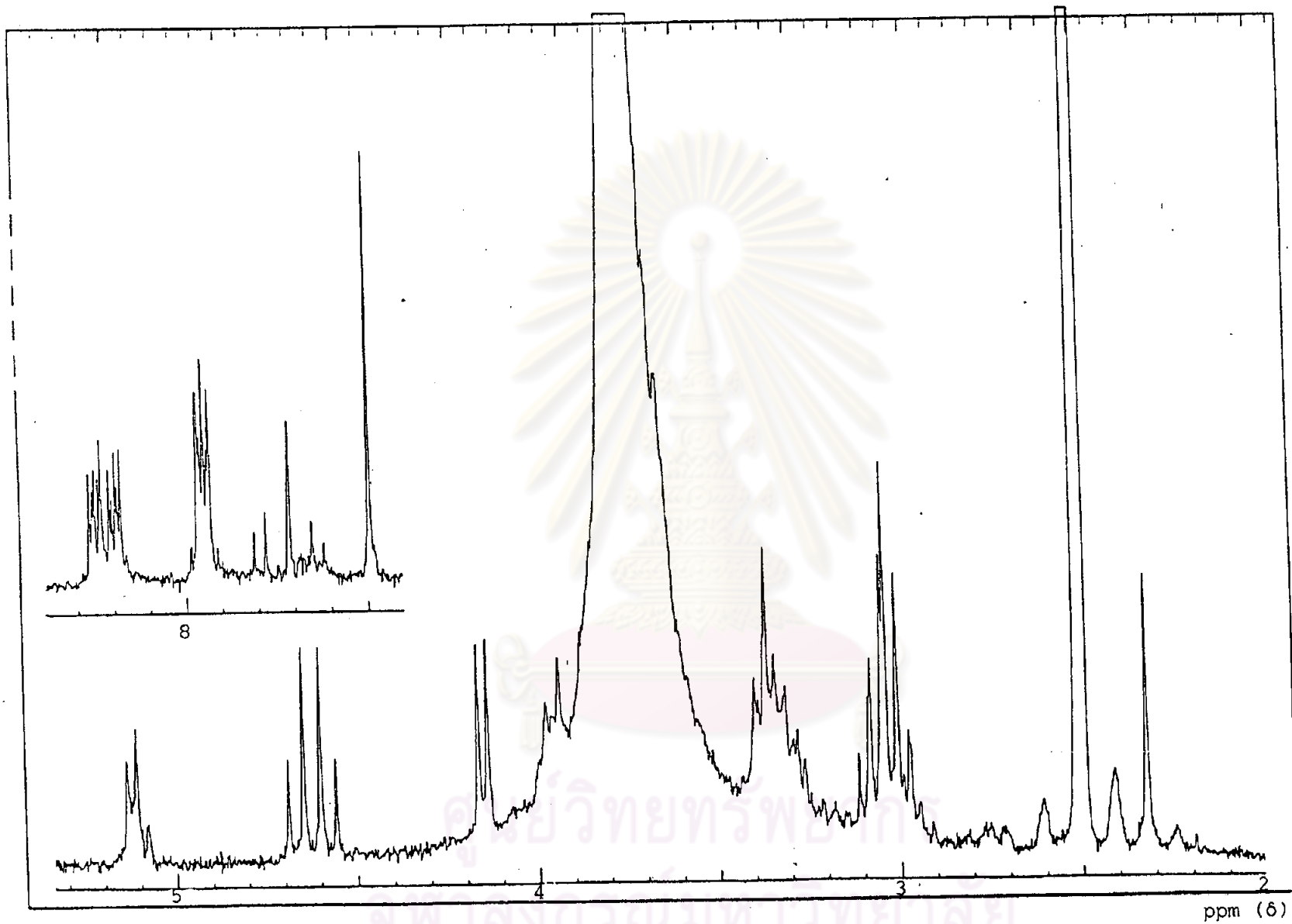


Fig. 47 Expansion of proton nuclear magnetic resonance spectrum of anthraquinone Aq-4

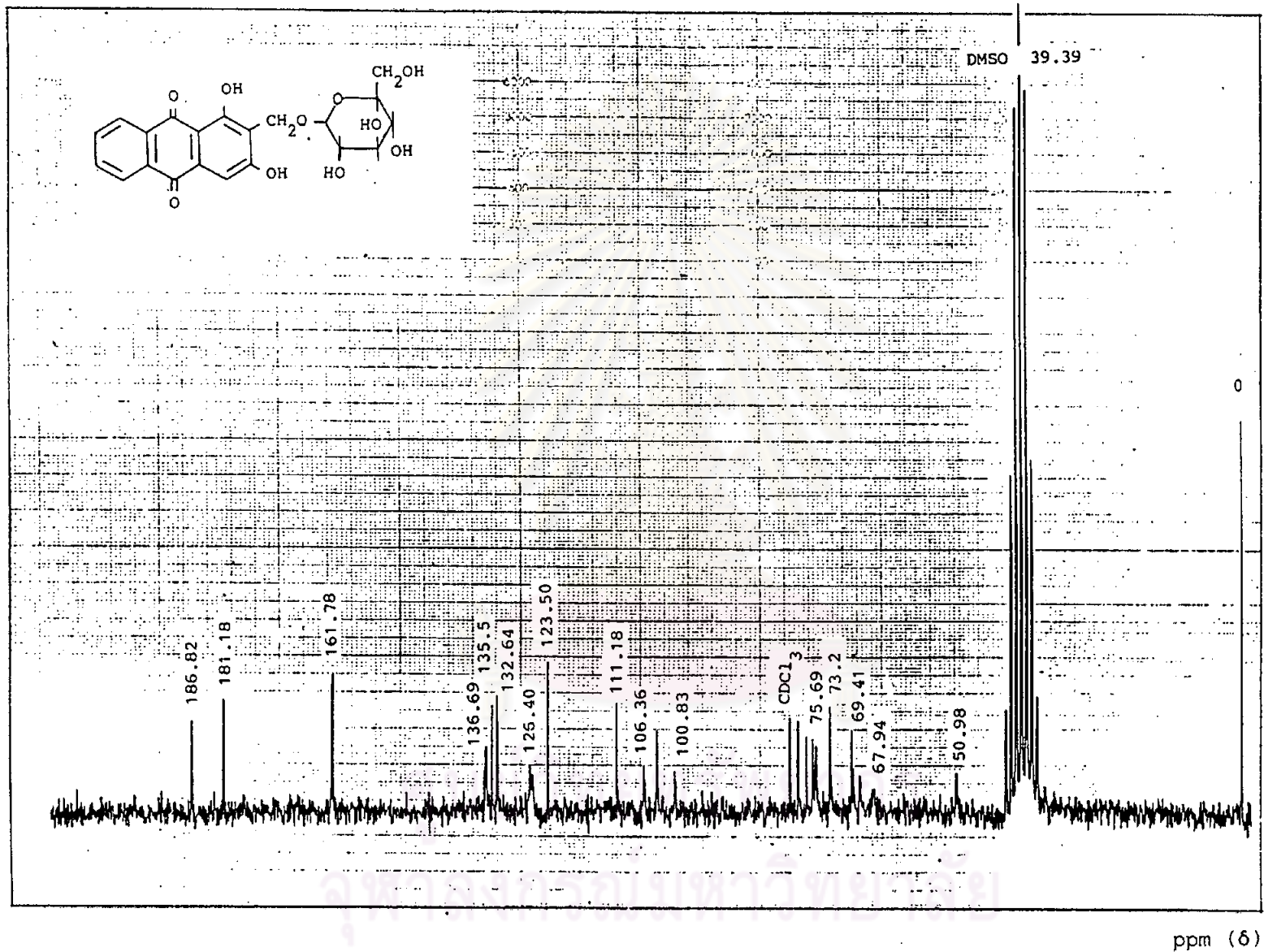


Fig. 48 <sup>13</sup>C nuclear magnetic resonance spectrum of anthraquinone Aq-4

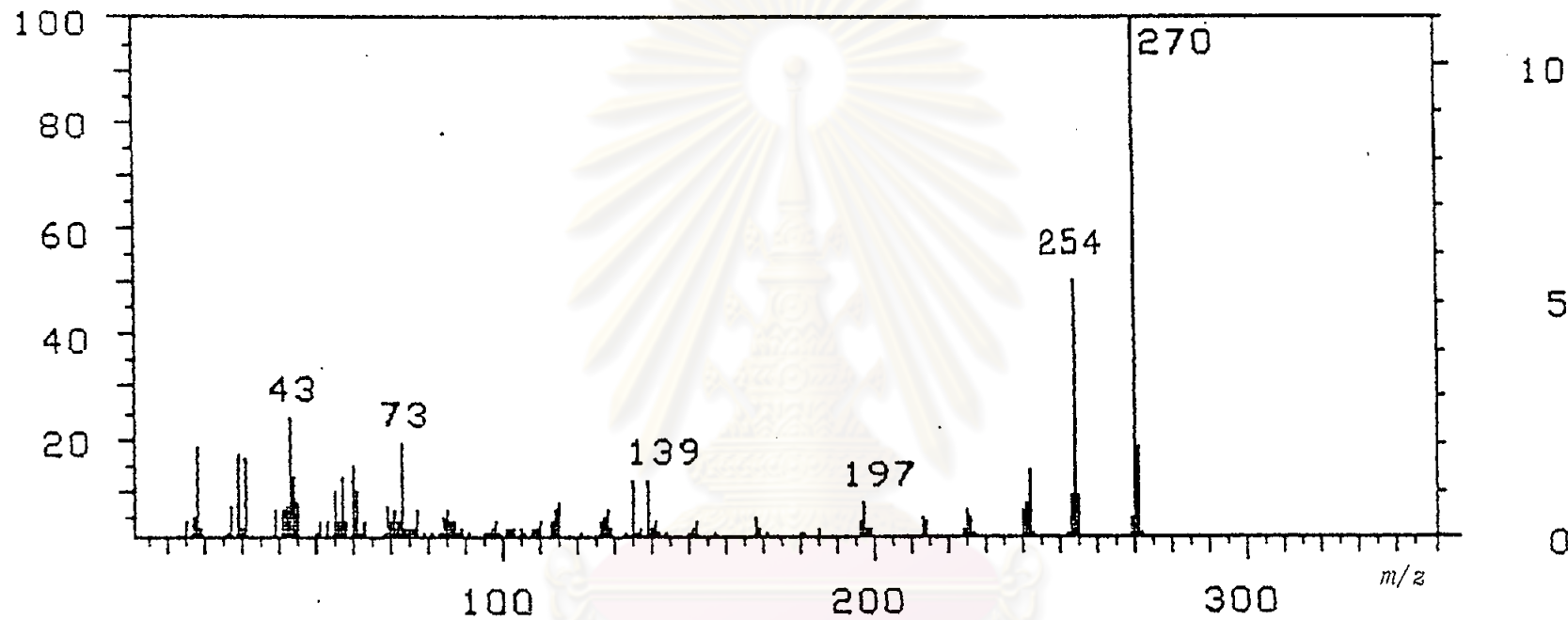


Fig. 49 Mass spectrum of anthraquinone Aq-4

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