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APPENDIX

Solvent System No. 9

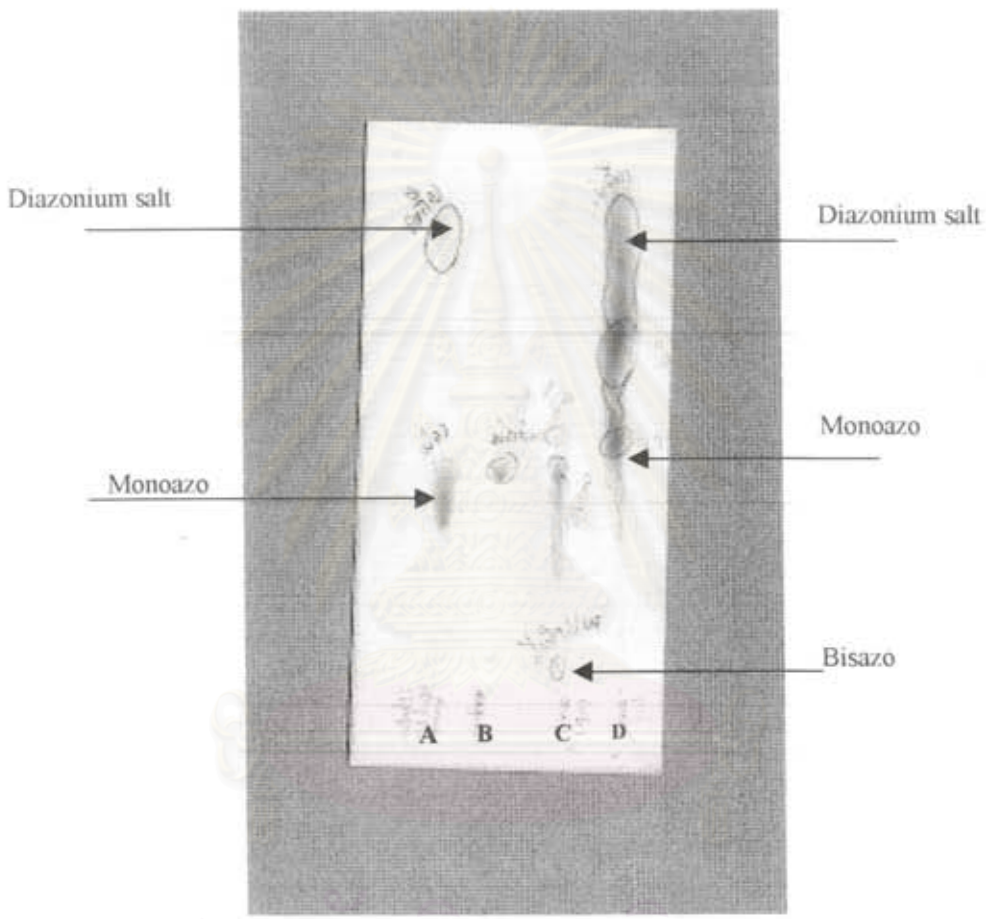

Figure A-1 Chromatogram of attempt to prepare 5N-dye and 4N-dye

A : Attempt to prepare 5N-dye with method 1
B : Attempt to prepare 4N-dye with method 1
C : Attempt to prepare 5N-dye with method 2
D : Attempt to prepare 4N-dye with method 2

Solvent System No. 11

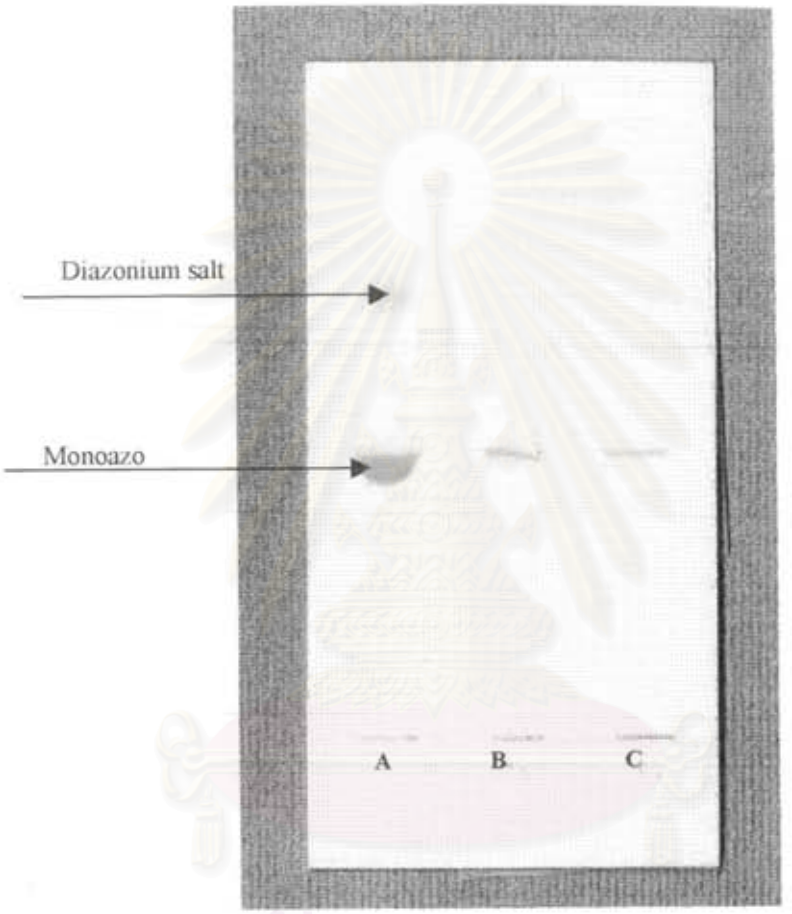

Figure A-2 Chromatogram of attempt to prepare 5N-dye with method 1

A : Crude dye
B : 1st recrystallization
C : 3rd recrystallization

Solvent System No. 9

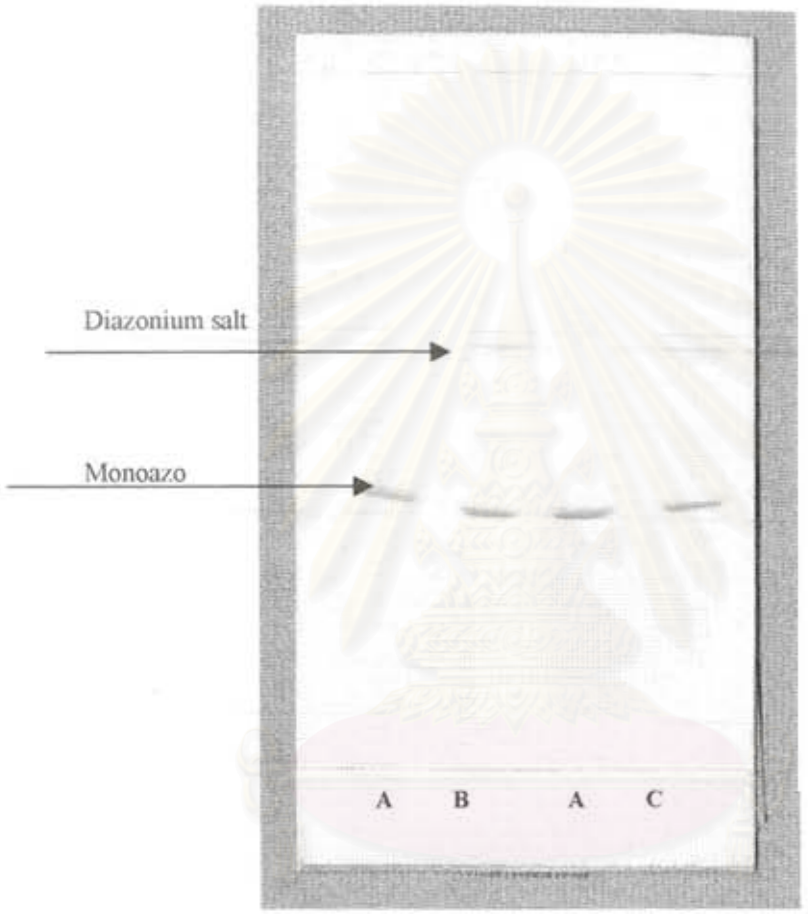

Figure A-3 Chromatogram of attempt to prepare 5N-dye with method 3 and method 4

A : 2-[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalene disulfonic acid (monoazo)
B : Attempt to prepare 5N-dye with method 3
C : Attempt to prepare 5N-dye with method 4

Solvent System No. 9

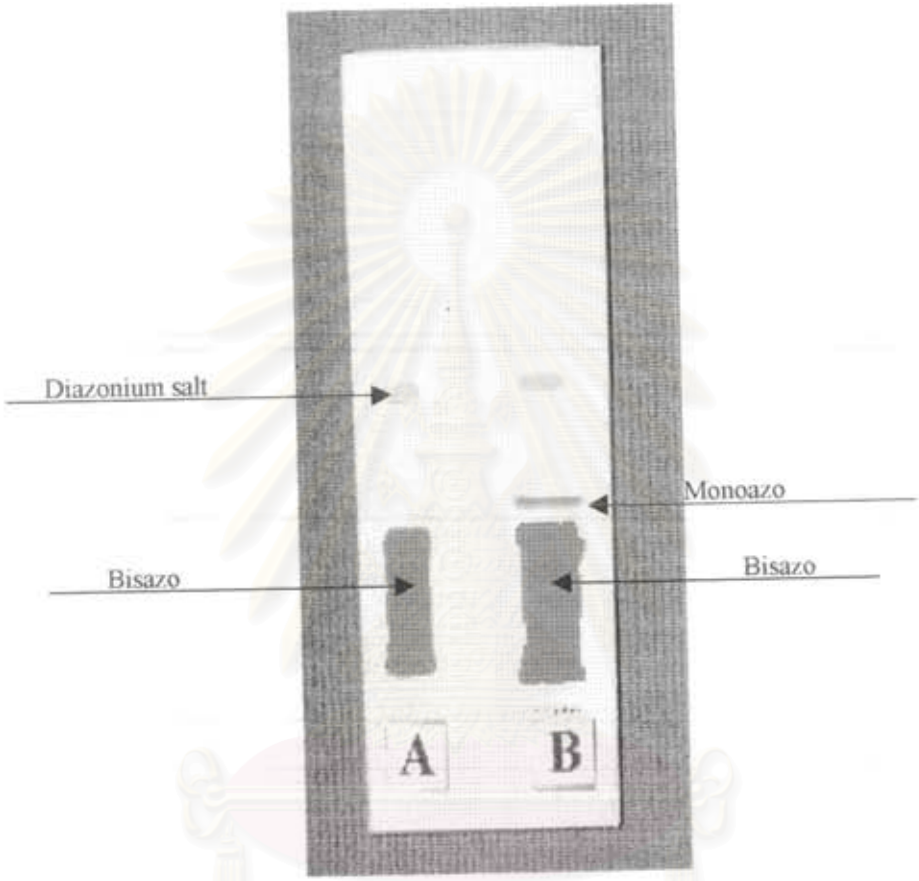

Figure A-4 Chromatogram of attempt to prepare 5N-dye with method 5 and method 6

A : Attempt to prepare 5N-dye with method 6
B : Attempt to prepare 5N-dye with method 5

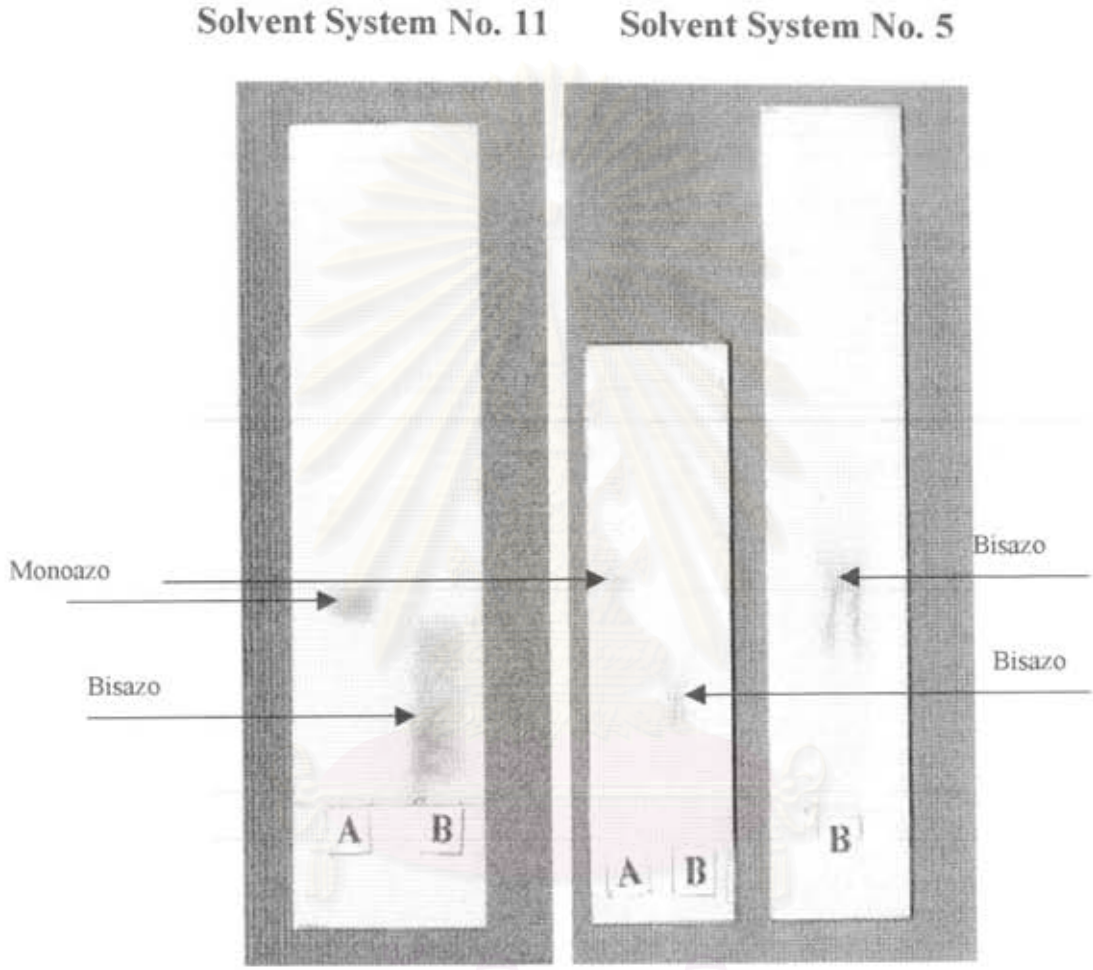

Figure A-5 Chromatogram of attempt to prepare 5N-dye with method 6

A : 2-[(2-hydroxy-5-nitrophenyl)azo]-1,8 dihydroxy-3,6-naphthalene disulfonic acid (monoazo)

B : 2,7-bis[(2-hydroxy-5-nitrophenyl)azo]-1,8 dihydroxy-3,6-naphthalenedisulfonic acid (bisazo)

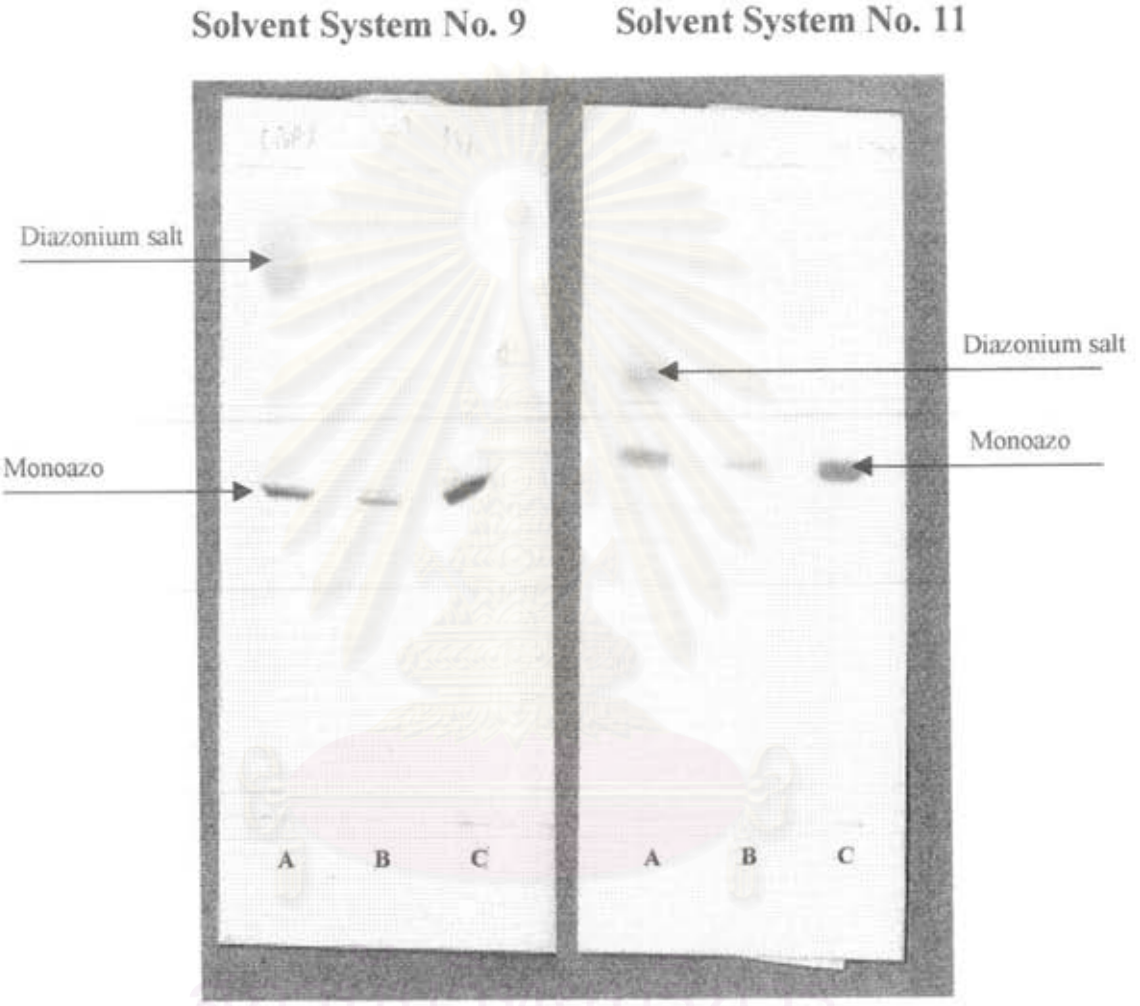

Figure A-6 Chromatogram of attempt to prepare 4N-dye with method 1

A : Crude dye
B : 1st recrystallization
C : 3rd recrystallization

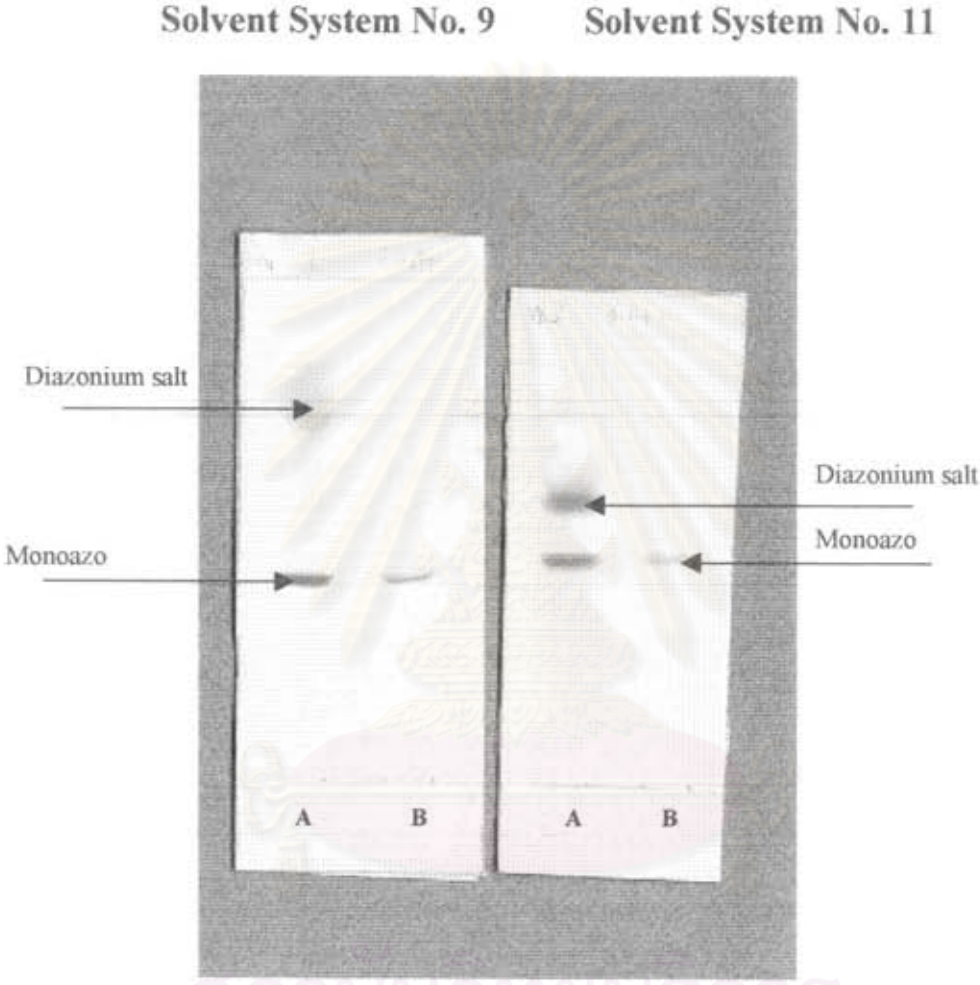

Figure A-7 Chromatogram of attempt to prepare 4N-dye with method 4

A : 2-[(2-hydroxy-4-nitrophenyl)azo]-1,8 dihydroxy-3,6-naphthalene disulfonic acid (monoazo)
B : Attempt to prepare 4N-dye

Solvent System No. 11

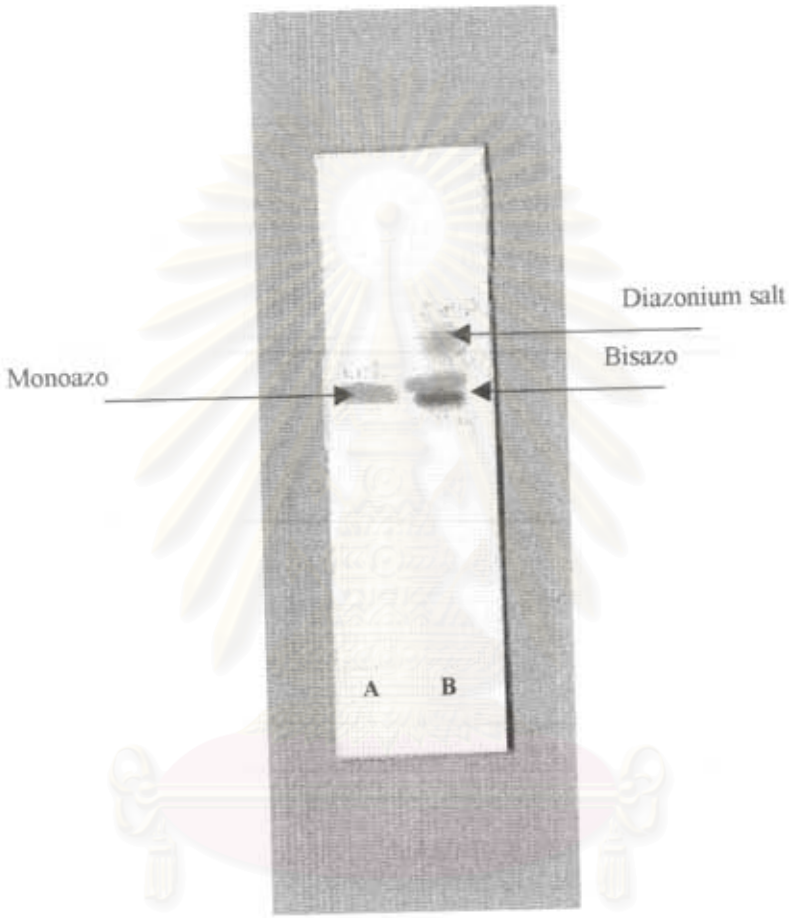

Figure A-8 Chromatogram of attempt to prepare 4N-dye with method 6

A : 2-[(2-hydroxy-4-nitrophenyl)azo]-1,8 dihydroxy-3,6-naphthalene disulfonic acid (monoazo)
B : Attempt to prepare 4N-dye

Solvent System No. 9

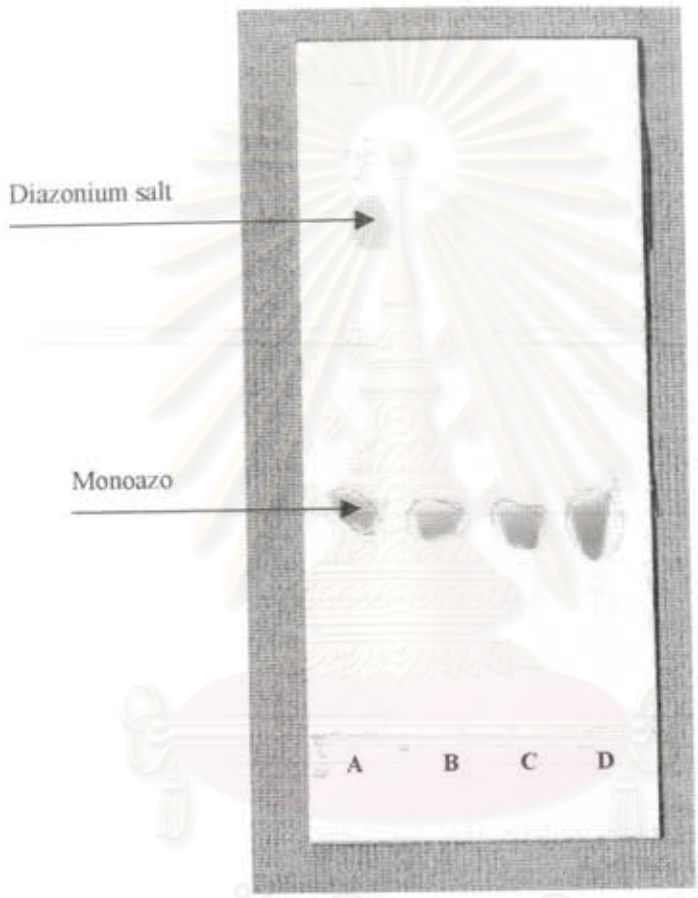

Figure A-9 Chromatogram of attempt to prepare 3,5N-dye with method 1

A : Crude dye
B : 1st recrystallization
C : 2nd recrystallization
D : 3rd recrystallization

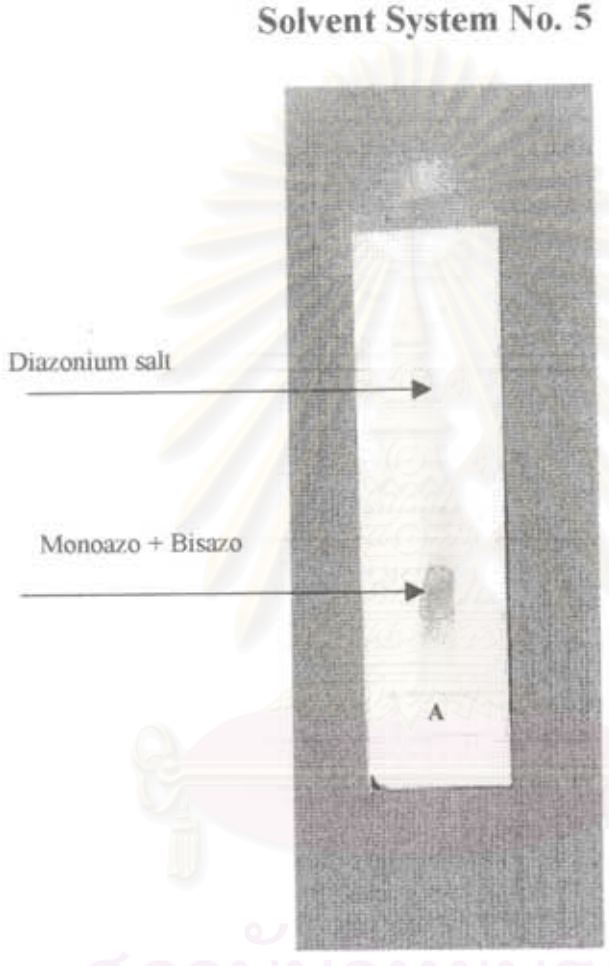

Figure A-10 Chromatogram of attempt to prepare 3,5N-dye with method 6

A : Attempt to prepare 3,5N-dye

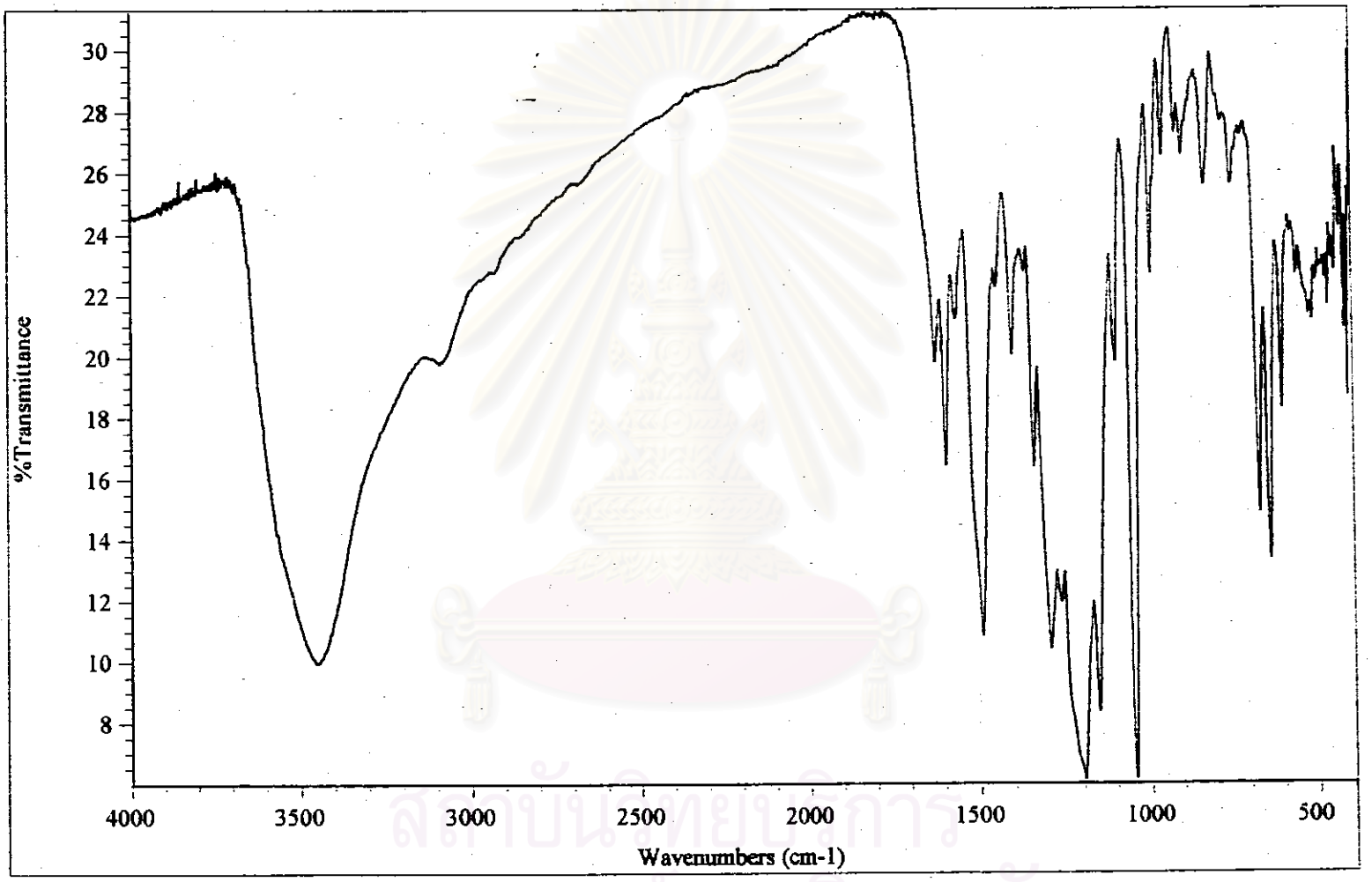

Figure A-11 IR spectrum of 2[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

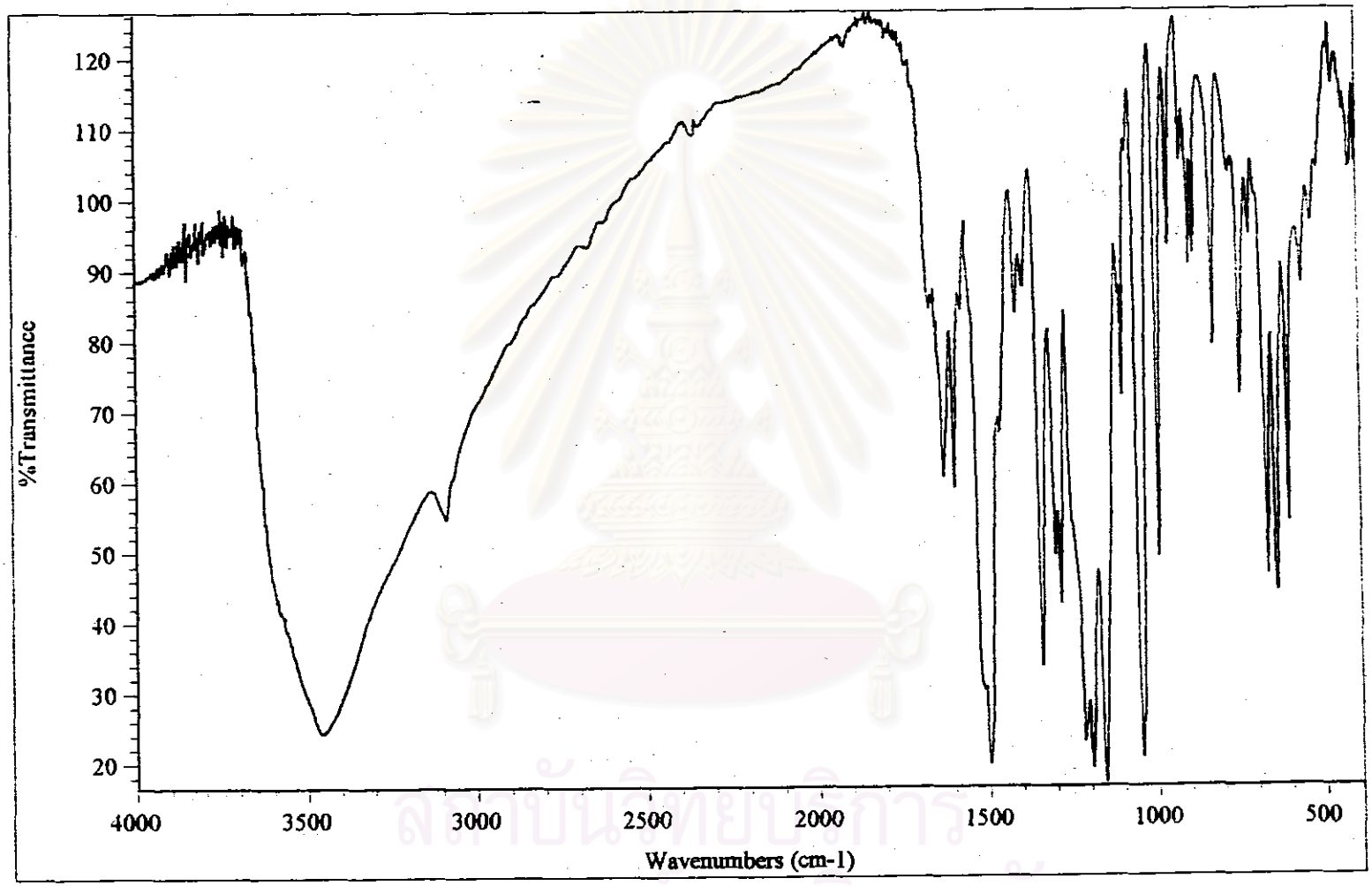

Figure A-12 IR spectrum of 2[(2-hydroxy-4-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

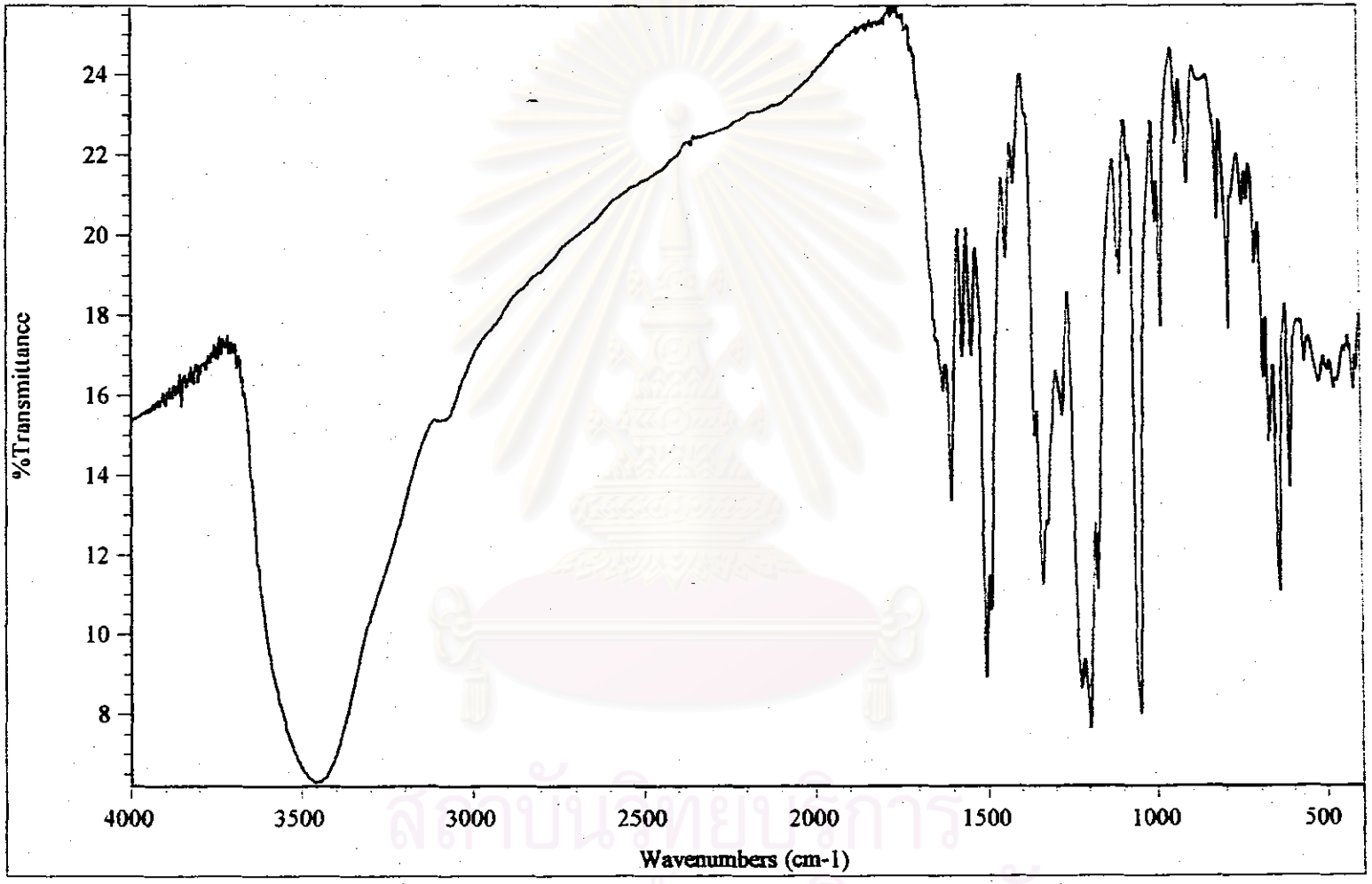

Figure A-13 IR spectrum of 2[(2-hydroxy-3,5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

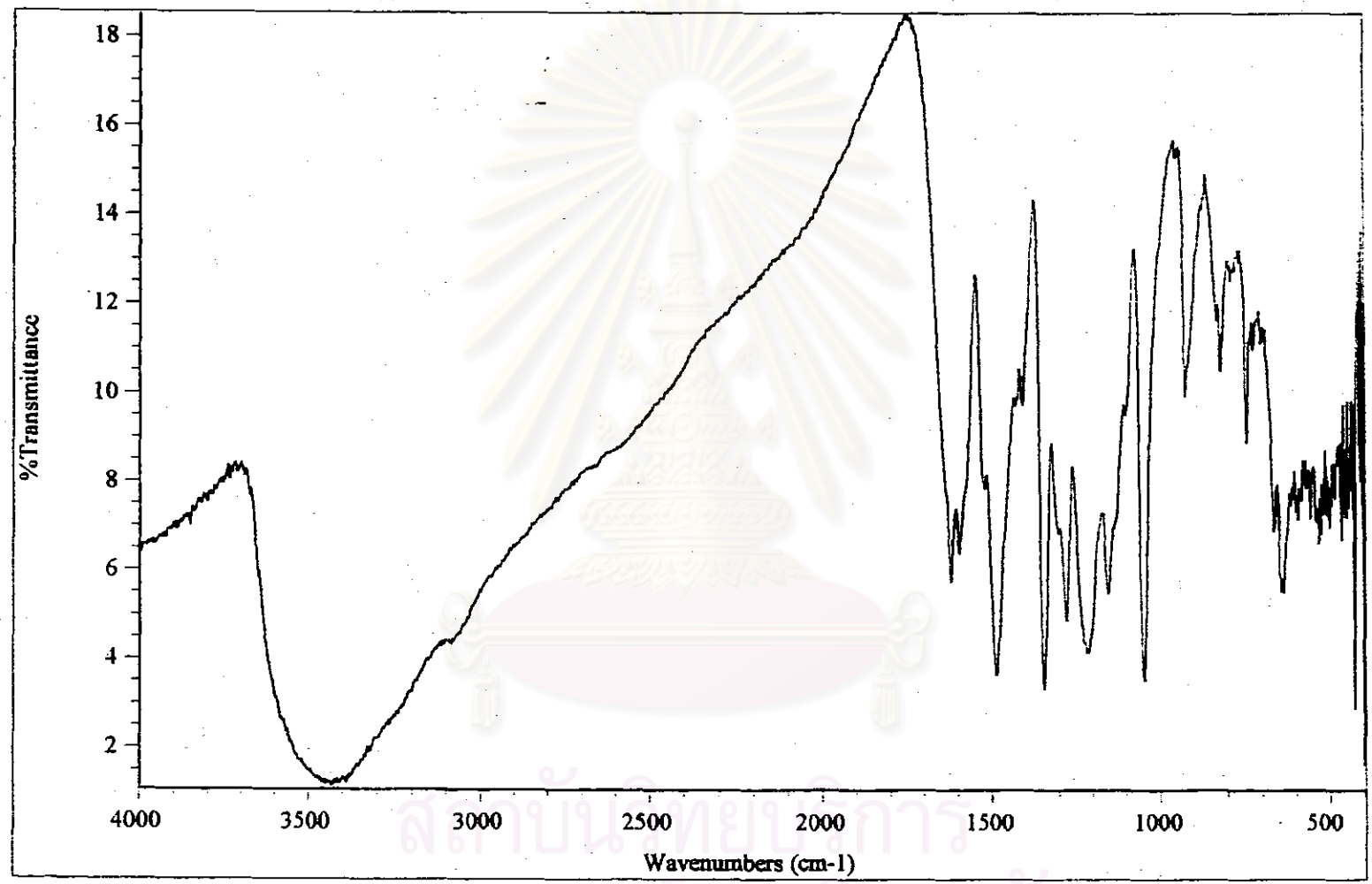

Figure A-14 IR spectrum of 2,7-bis[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

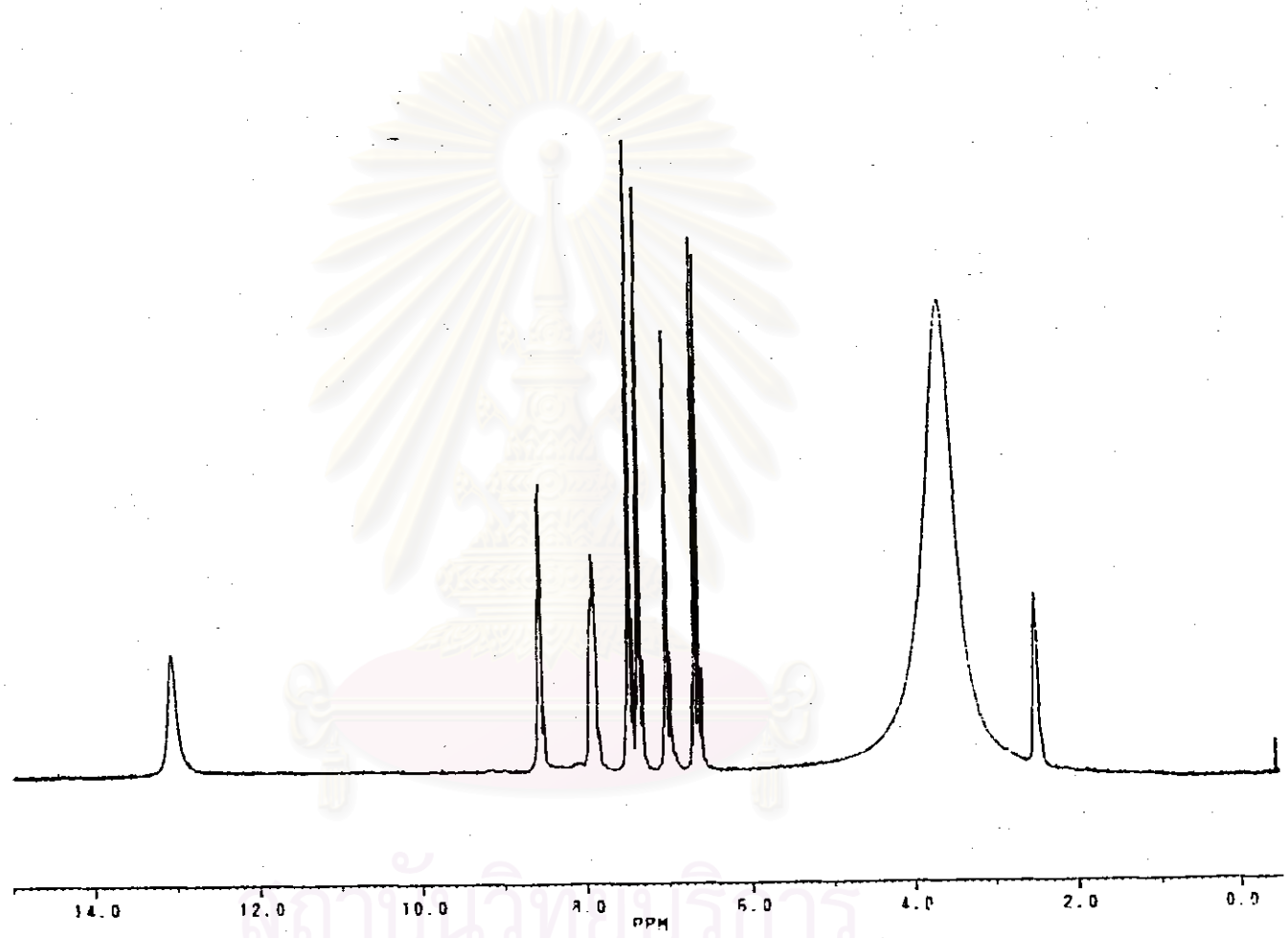

Figure A-15 ^{1}H-NMR spectrum of 2-[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

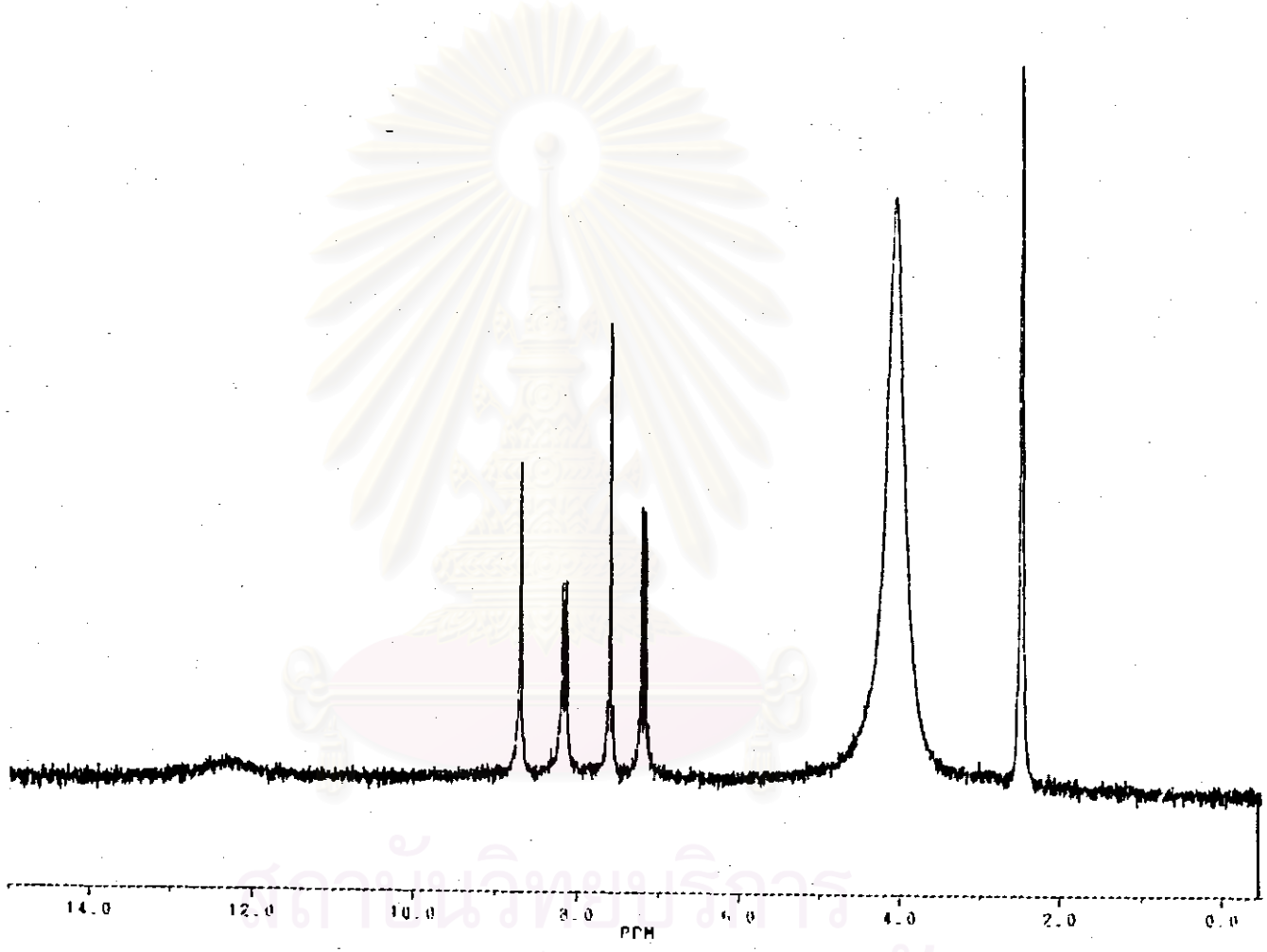

Figure A-16 ^{1}H-NMR spectrum of 2,7-bis[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

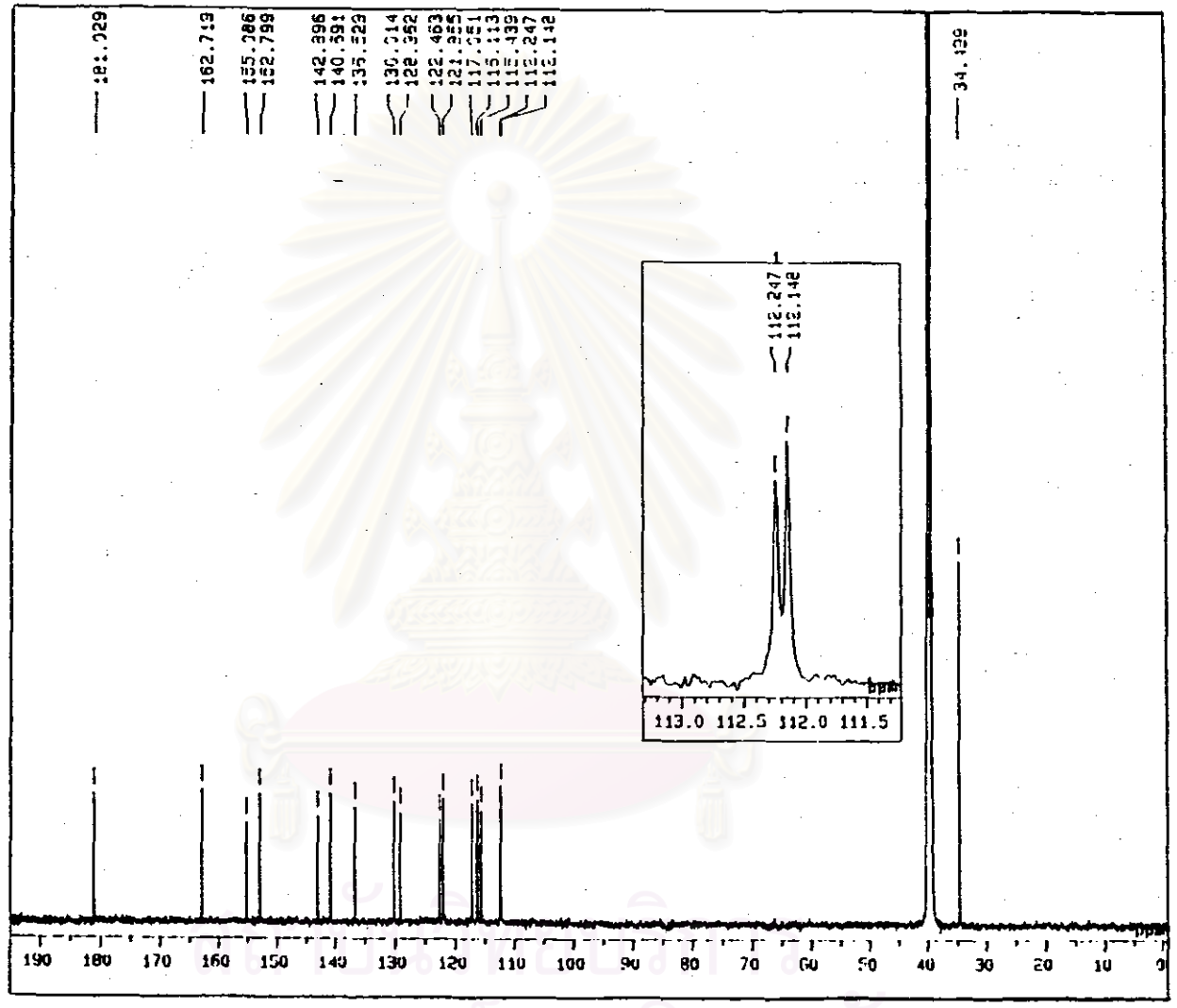

Figure A-17 ^{13}C-NMR spectrum of 2-[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

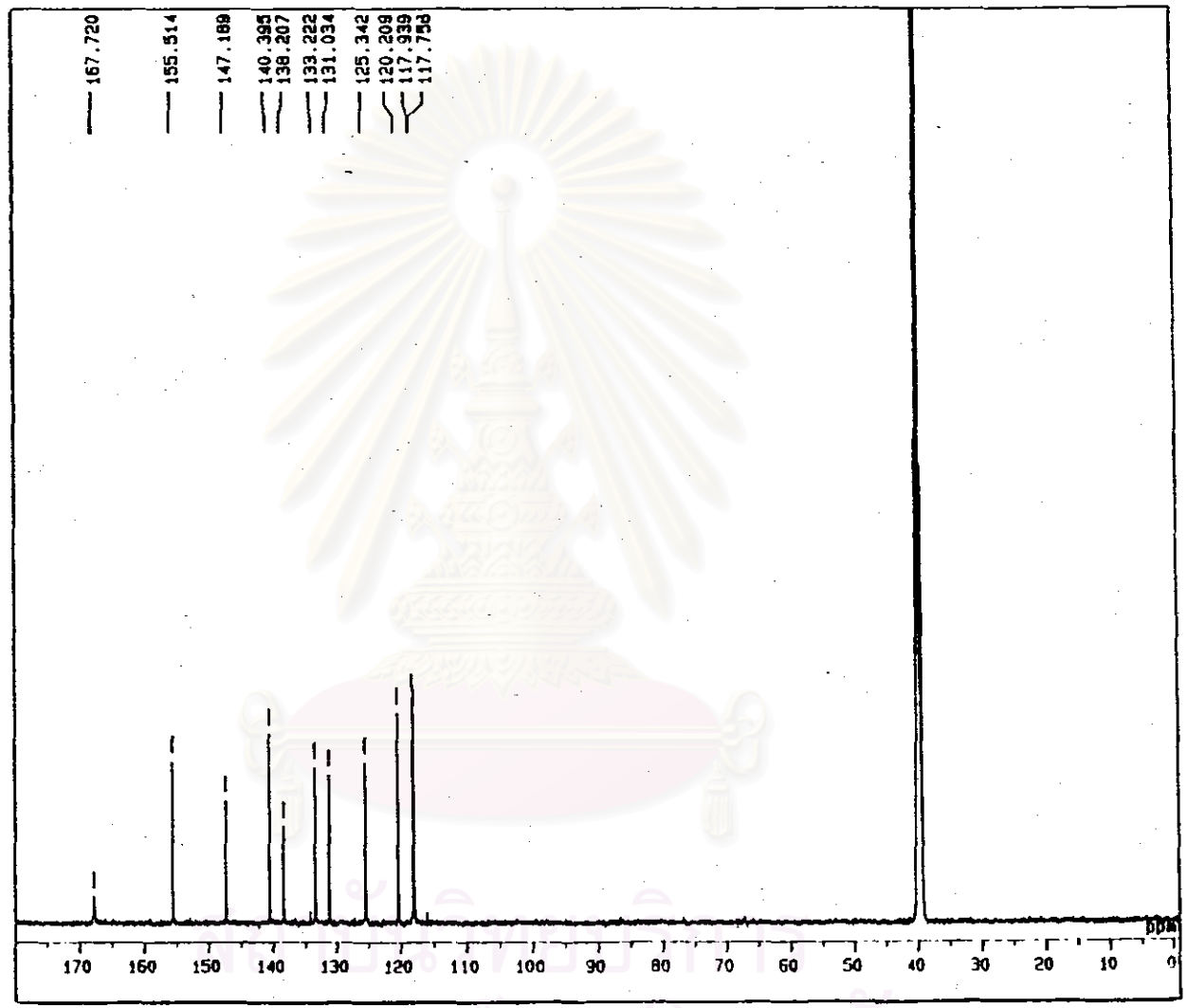

Figure A-18 ^{13}C-NMR spectrum of 2,7-bis[(2-hydroxy-5-nitrophenyl)azo]-1,8-dihydroxy-3,6-naphthalenedisulfonic acid

VITA

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