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APPENDIX A

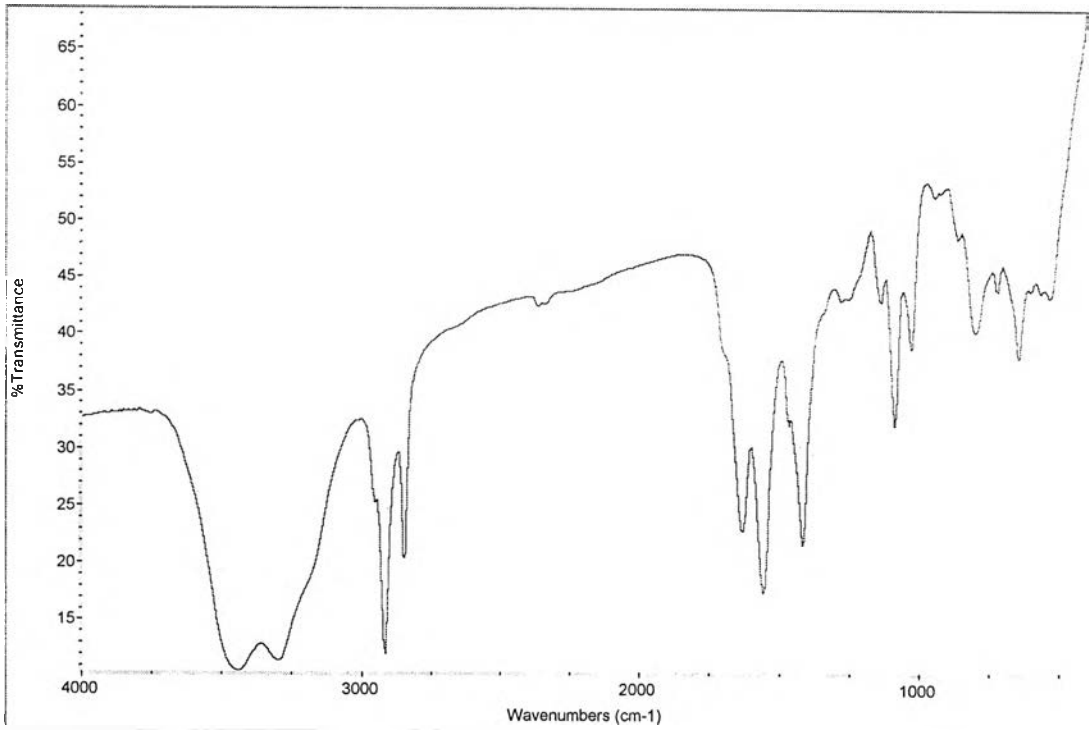

Figure A.1 The IR spectrum of **1C**

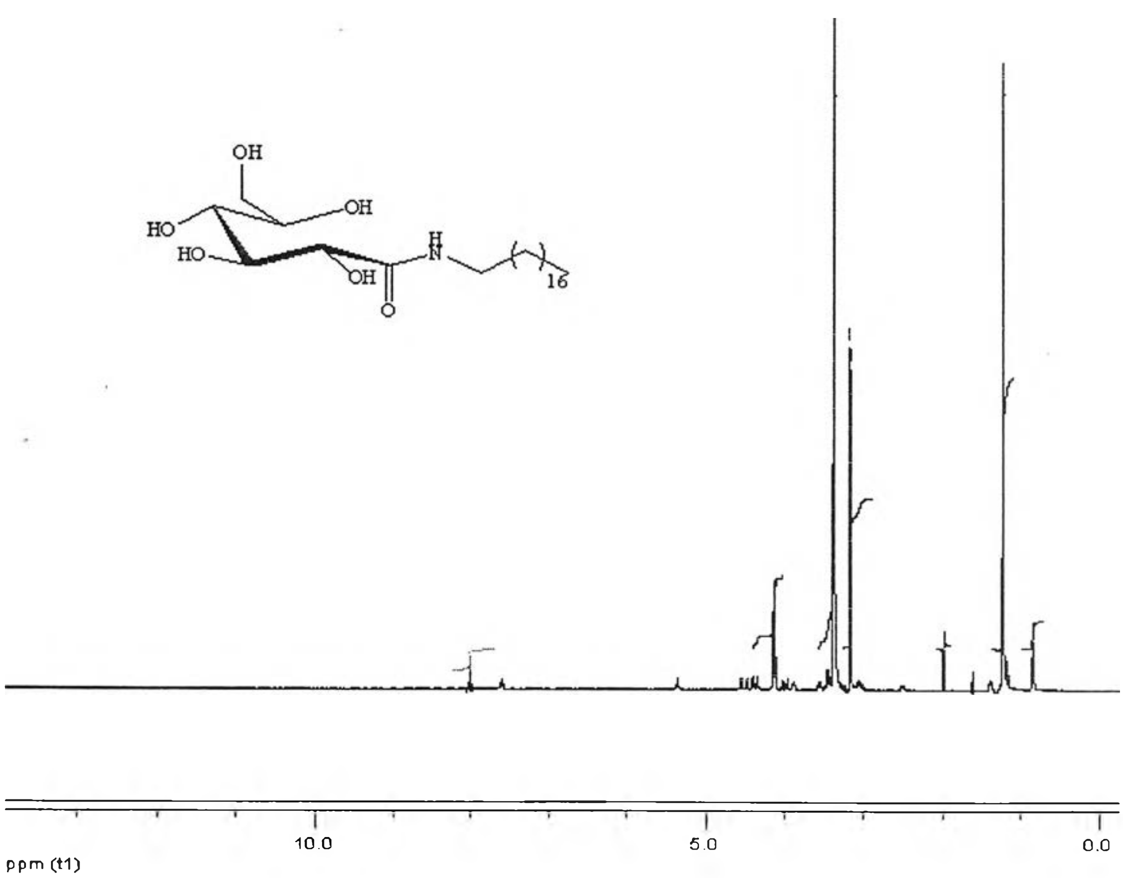

Figure A.2 The ^{1}H-NMR spectrum of **1C**

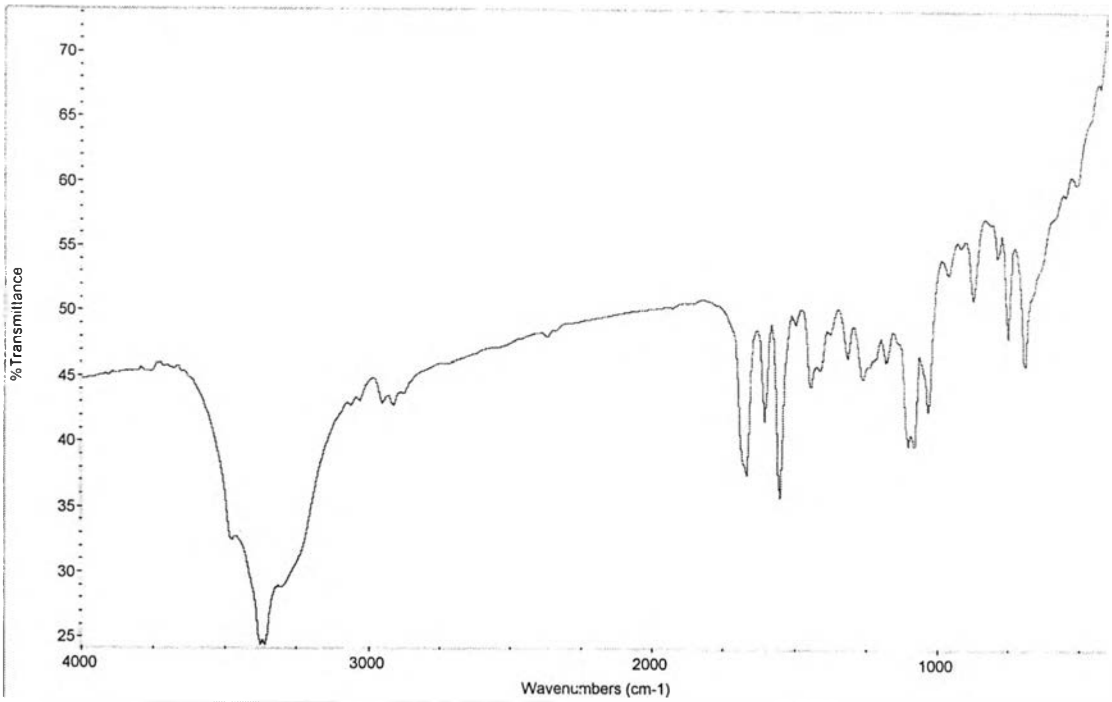

Figure A.3 The IR spectrum of **2C**

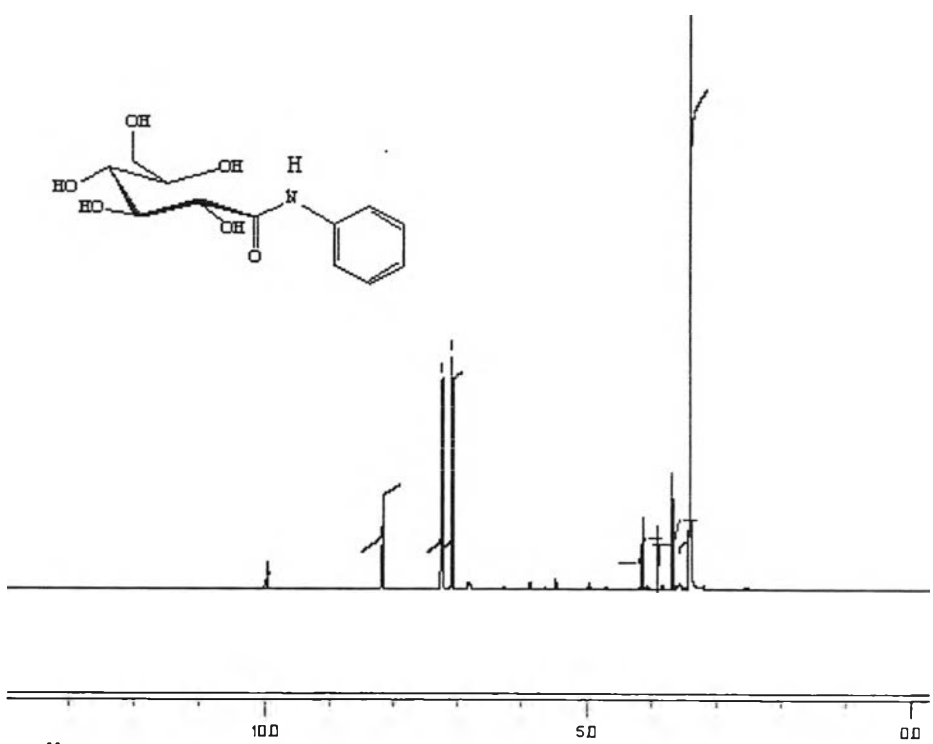

Figure A.4 The ^{1}H-NMR spectrum of **2C**

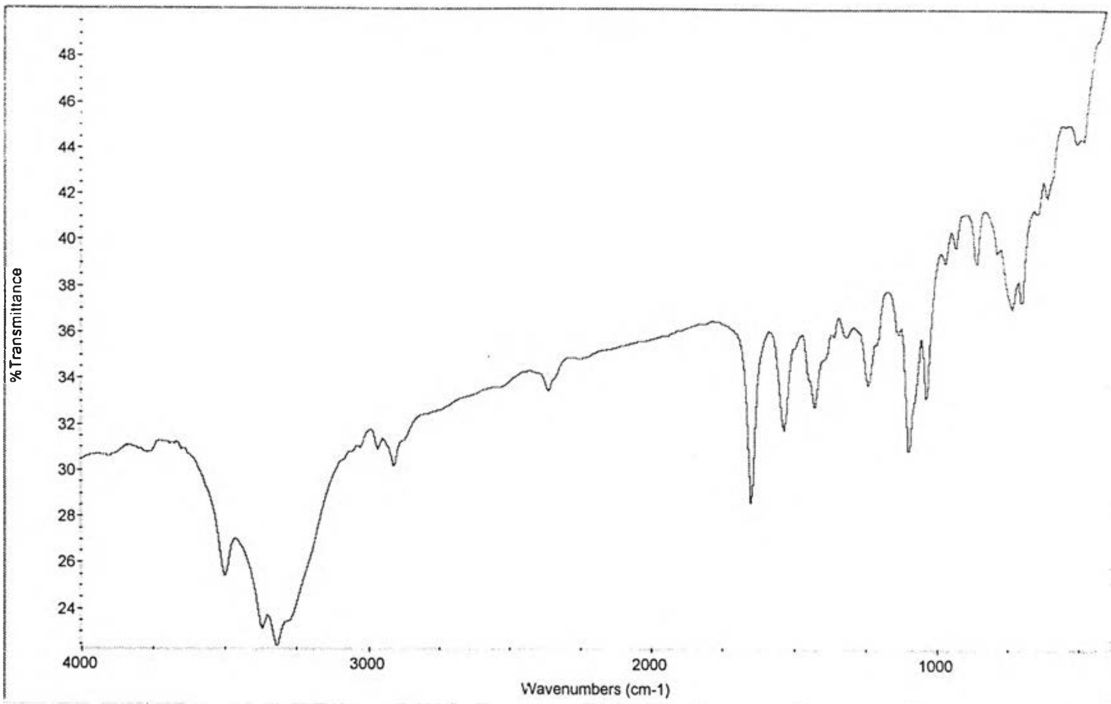

Figure A.5 The IR spectrum of **3C**

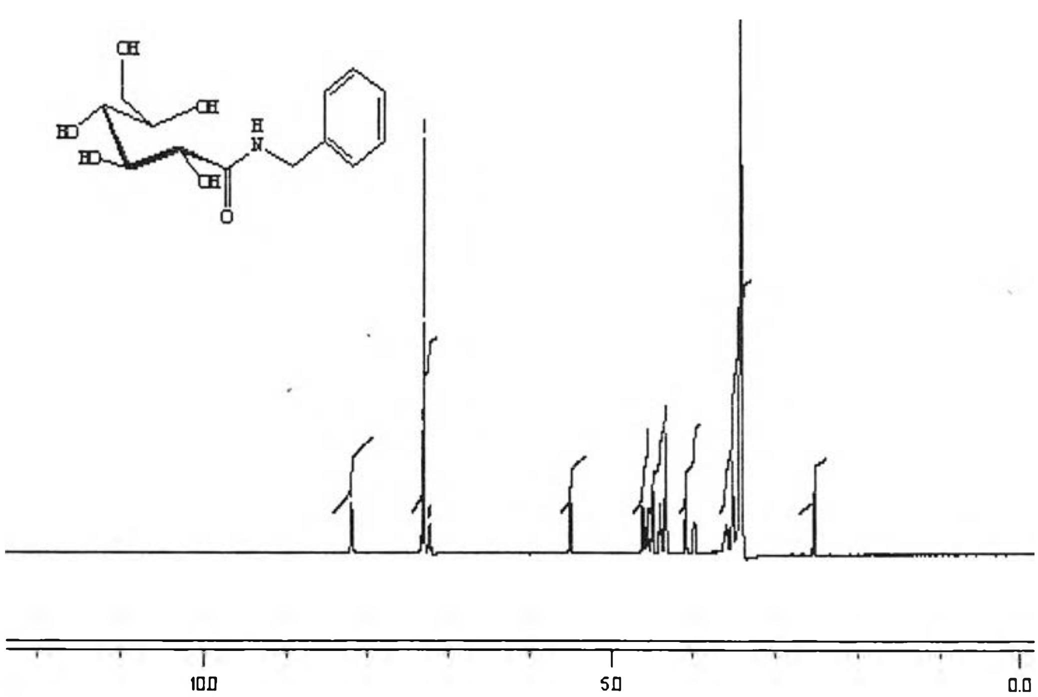

Figure A.6 The ^{1}H-NMR spectrum of **3C**

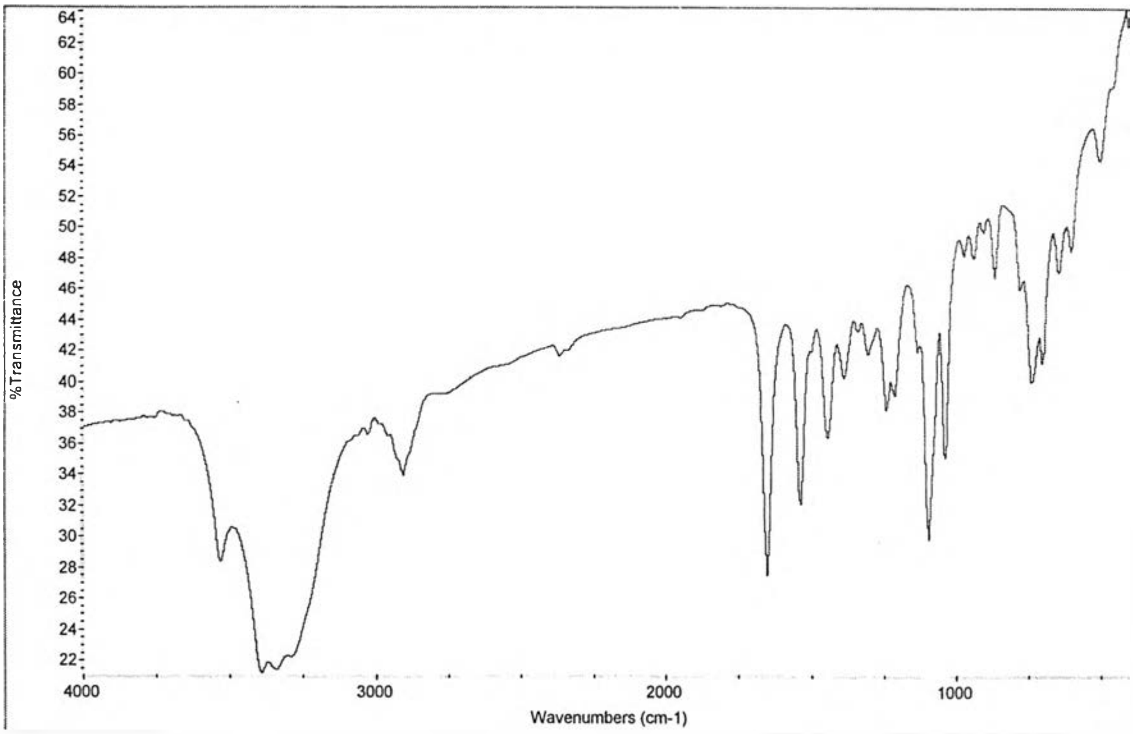

Figure A.7 The IR spectrum of **4C**

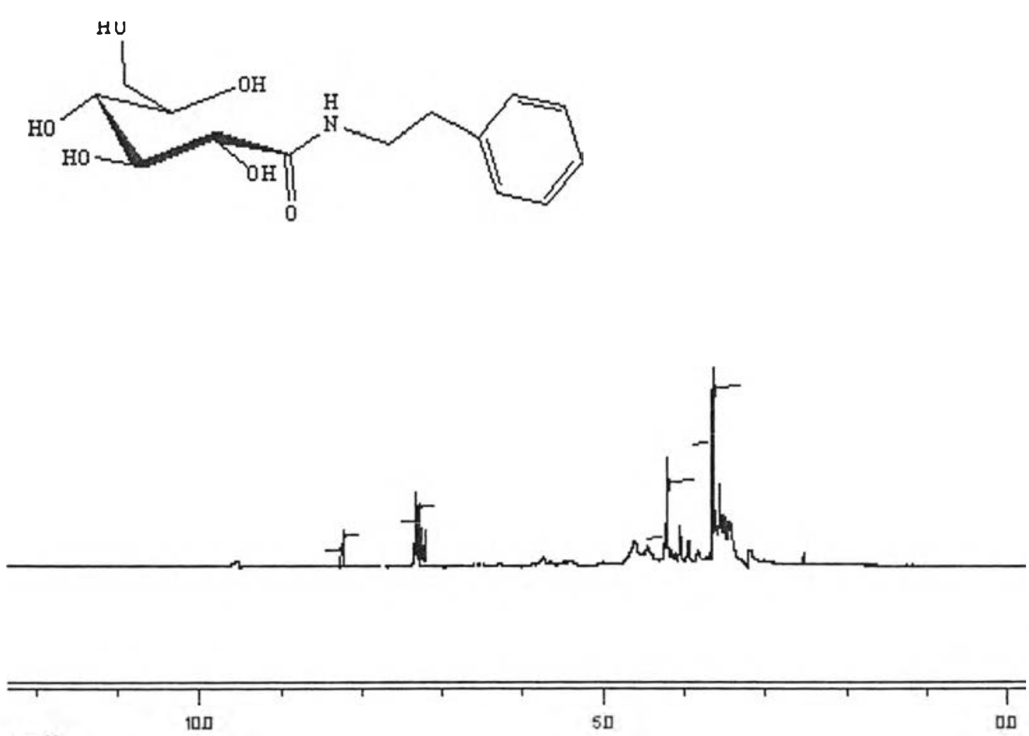

Figure A.8 The ^{1}H-NMR spectrum of **4C**

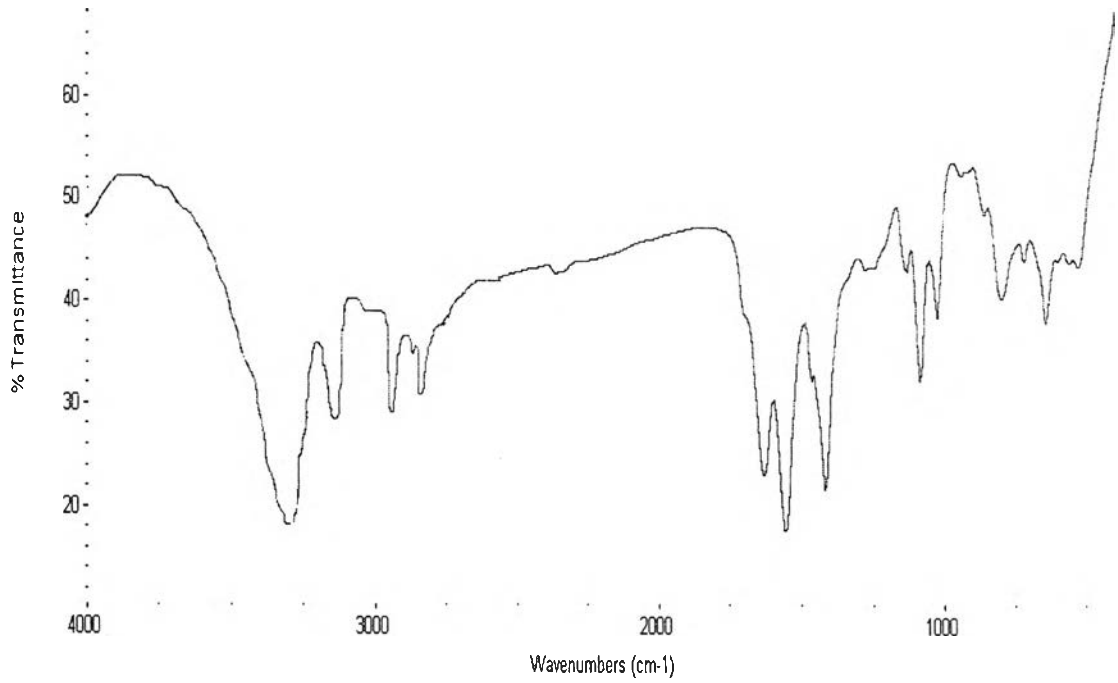

Figure A.9 The IR spectrum of **5C**

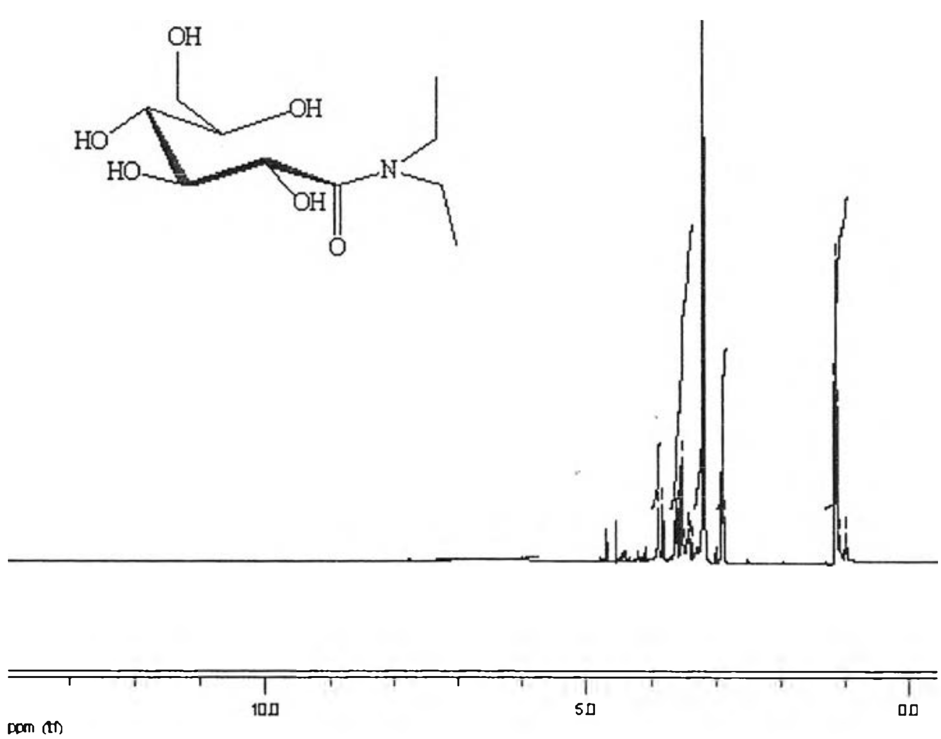

Figure A.10 The ^{1}H-NMR spectrum of **5C**

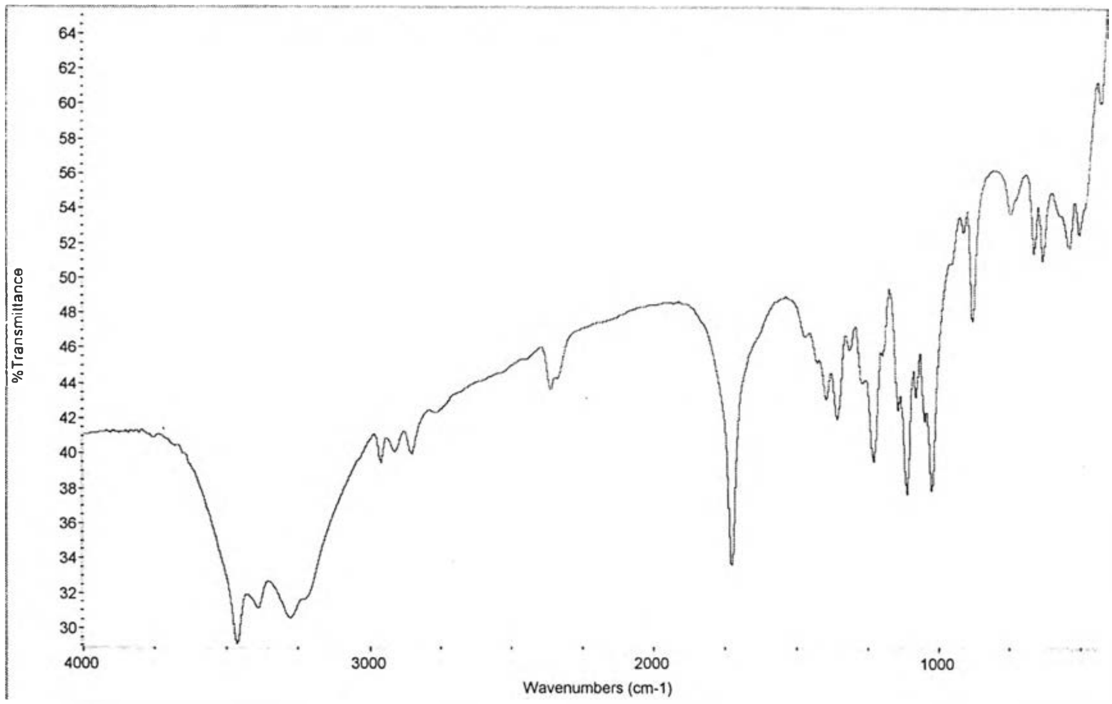

Figure A.11 The IR spectrum of **6C**

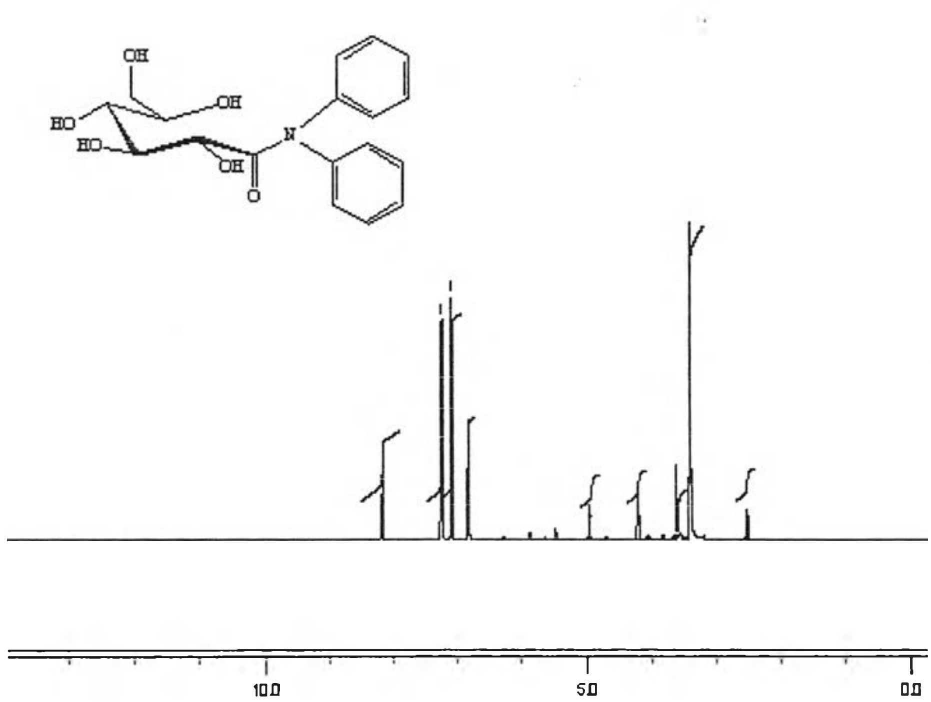

Figure A.12 The ^{1}H-NMR spectrum of **6C**

APPENDIX B

B.1 Calulation for %yield of *N*-alkyl/aryl -D-gluconamides

$$\% \text{ Yield} = \left(\frac{\text{Actual Yield}}{\text{Theoretical Yield}} \right) \times 100 \qquad (1)$$

% yield of N-Octadecyl – D-gluconamide when D- glucono–1,5 –lactone : Octadecylamine is 1:1

$$\% \text{ Yield} = \left[\frac{2.211 \text{ g}}{2.571 \text{ g}} \right] \text{x } 100$$

$$= 86 \%$$

% yield of N-Phenyl –D- gluconamide when D- glucono–1,5 –lactone : Phenylamine is 1:1

$$\% \text{ Yield} = \left[\frac{0.809 \text{ g}}{1.556 \text{ g}} \right] \text{x } 100$$

$$= 52 \%$$

% yield of N-Benzyl –D- gluconamide when D- glucono–1,5 –lactone : Benzylamine is 1:1

$$\% \text{ Yield} = \left[\frac{1.178 \text{ g}}{1.636 \text{ g}} \right] \text{x } 100$$

$$= 72 \%$$

% yield of N-Phenethyl –D- gluconamide when D- glucono–1,5 –lactone : Phenethylamine is 1:1

$$\% \text{ Yield} = \left[\frac{1.424 \text{ g}}{1.716 \text{ g}} \right] \text{x } 100$$

$$= 83 \%$$

% yield of N,N-Diethyl-D-gluconamide when D- glucono–1,5 –lactone : Diethylamine is 1:1

$$\% \text{ Yield} = \left[\frac{0.592 \text{ g}}{1.444 \text{ g}}\right] \times 100$$

$$= 41\%$$

% yield of N,N-Diphenyl –D- gluconamide when D- glucono–1,5 –lactone : Diphenylamine is 1:1

$$\% \text{ Yield} = \left[\frac{1.138 \text{ g}}{1.996 \text{ g}}\right] \times 100$$

$$= 57\ \%$$

B.2 Calculation of Hydrophilic-lipophilic balance (HLB)

$$\text{HLB} = 20 \times (M_H / M_H + M_L)$$

When
M_H = formula weight of the hydrophilic
M_L = formula weight of the lipophilic

HLB of N- Octadeccyl-D- gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 269.52}\right]$$

$$= 8.0$$

HLB of N- Phenyl - D- gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 93.13}\right]$$

$$= 13.1$$

HLB of N- Benzyl -D-gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 107.16}\right]$$

$$= 12.5$$

HLB of .N- Phenethyl -D-gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 121.18} \right]$$

$$= 11.9$$

HLB of N,N- Diethyl- D- gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 73.14} \right]$$

$$= 14.2$$

HLB of N,N- Diphenyl - D-gluconamide

$$= 20 \times \left[\frac{178.14}{178.14 + 169.23} \right]$$

$$= 10.3$$

HLB of NP 4 (Nonylphenolethoxylates of 4ethylene oxide)

$$= 20 \times \left[\frac{60.72}{60.72 + 203.28} \right]$$

$$= 4.6$$

HLB of NP40 (Nonylphenolethoxylates of 40 ethylene oxide)

$$= 20 \times \left[\frac{1787.4}{1787.4 + 198.6} \right]$$

$$= 18.0$$

Table B.1 Surface tension of gluconamide derivatives (**1C-6C**)

Compound	%W/V	Concentration(mM)	Surface tension (mN/m)
1C	0	0	73.00
	0.1	2.234	70.40
	1.0	22.340	68.61
2C	0	0	73.00
	0.1	3.686	66.83
	1.0	36.860	64.23
3C	0	0	73.00
	0.1	3.505	72.60
	1.0	35.050	69.63
4C	0	0	73.00
	0.1	3.341	67.84
	1.0	33.410	59.87
5C	0	0	73.00
	0.1	3.979	64.08
	1.0	39.790	48.37
6C	0	0	73.00
	0.1	2.878	68.26
	1.0	28.780	62.15

VITAE

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